

# MOTOTRBO™ MTR3000

Base Station/Repeater

*Detailed Service Manual*

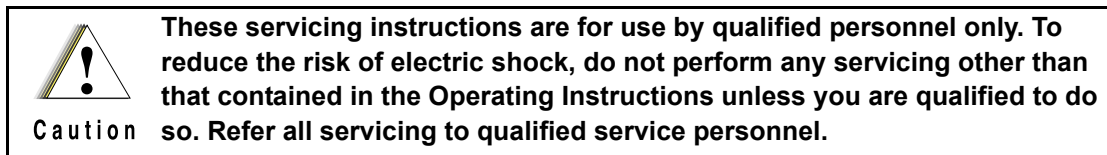




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## Foreword

This manual covers all models of the MTR3000 Base Station/Repeater, unless otherwise specified. This manual provides sufficient information to enable qualified service technicians to troubleshoot and repair the MTR3000 Base Station/Repeater to the component level (for the selective FRUs). For details on radio operation or basic troubleshooting, refer to the applicable manuals available separately.



### General Safety Precautions

See "General Safety and Installation Standards and Guidelines," on page ii

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# General Safety and Installation Standards and Guidelines

## ATTENTION!



WARNING

**WARNING:** For safe installation, operation, service and repair of this equipment, follow the safety precautions and instructions described below, as well as any additional safety information in Motorola's product service and installation manuals and the Motorola R56 Standards and Guidelines for Communications Sites manual (6881089E50). To obtain copies of these materials, please contact Motorola as directed at the end of this section. After installation, these instructions should be retained and readily available for any person operating or servicing this base station or working near it.


Failure to follow these safety precautions and instructions could result in serious injury or property damage.

The installation process requires preparation and knowledge of the site before installation begins. Review installation procedures and precautions in the Motorola R56 manual before performing any site or component installation. Personnel must use safe work practices and good judgment, and always follow applicable safety procedures, such as requirements of the Occupational Safety and Health Administration (OSHA), the National Electrical Code (NEC), and local codes.

The following are additional general safety precautions that must be observed:

- To continue compliance with any applicable regulations and maintain the safety of this equipment, do not install substitute parts or perform any unauthorized modifications.
- All equipment must be serviced by Motorola trained personnel.
- If troubleshooting the equipment while the power is on, be aware of live circuits which could contain hazardous voltage.
- Do not operate the radio transmitters unless all RF connectors are secure and all connectors are properly terminated.
- All equipment must be properly grounded in accordance with the Motorola R56 and specified installation instructions for safe operation.
- Slots and openings in the cabinet are provided for ventilation. Do not block or cover openings that protect the devices from overheating.
- Some equipment components can become extremely hot during operation. Turn off all power to the equipment and wait until sufficiently cool before touching.
- Maintain emergency first aid kits at the site.
- Never store combustible materials in or near equipment racks. The combination of combustible material, heat and electrical energy increases the risk of a fire hazard.
- Equipment shall be installed in a site that meets the requirements of a "restricted access location," per (UL60950-1 & EN60950-1), which is defined as follows: "Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and

about any precautions that shall be taken; and access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.”

- Burn hazard. The metal housing of the product may become extremely hot. Use caution when working around the equipment.
- RF energy burn hazard. Disconnect power in the cabinet to prevent injury before disconnecting and connecting antennas.
- Shock hazard. The outer shields of all TX and RX RF cables outer shields must be grounded per Motorola R56 manual.
- Shock hazard. DC input voltage shall be no higher than 60 VDC. This maximum voltage shall include consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment.
- All TX and RX RF cables shall be connected to a surge protection device according to Motorola R56 manual. Do not connect TX and RX RF cables directly to an outside antenna.
-  Compliance with National and International standards and guidelines for human exposure to Electromagnetic Energy (EME) at Transmitter Antenna sites generally requires that persons having access to a site shall be aware of the potential for exposure to EME and can exercise control of exposure by appropriate means, such as adhering to warning sign instructions. See this installation manual and Appendix A of Motorola R56.

This product complies with the requirements set forth by the European R&TTE regulations and applicable CENELEC standards concerning human exposure to Electromagnetic Energy (EME) at Transmitter Antenna sites. "Appendix D" in this manual includes an EME exposure analysis of a typical system configuration for this product.

For a different system configuration than the typical configuration, compliance with applicable EME exposure standards (current versions of the EN50384 and EN50385 standards for occupational and general public exposure, respectively) can be evaluated by either employing the method illustrated in the typical system configuration EME exposure analysis included in "Appendix D" in this manual, or employing another suitable method among those described in the current version of the EN50383 standard.

Once the occupational and general public compliance boundaries are determined, means to ensure that workers and people are outside the respective boundaries, for instance using appropriate signage or restricted access, should be implemented; if this is not possible or practically achievable for the specific system configuration, the configuration should be modified in order to make it possible. The R56 Standards and Guidelines for Communications Sites (6881089E50) manual provides examples of signage that can be used to identify the occupational or general public compliance boundaries.

Refer to product specific manuals for detailed safety and installation instructions. Manuals can be obtained with product orders, downloaded from <https://businessonline.motorola.com>, or purchased through the Motorola Aftermarket & Accessory Department.



WARNING

**This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.**

# **MOTOTRBO MTR3000 Base Station/Repeater Supplemental Safety and Installation Requirements**

## **ATTENTION!**

The MOTOTRBO MTR3000 Base Station/Repeater must be installed in a suitable, in-building enclosure. A restricted access location is required when installing this equipment into the end system.

The base station/repeater contains a Class 1 built-in power supply component. It is equipped with an appliance inlet for connecting to an AC input, as well as DC input terminals which meet SELV DC circuit requirements.

When installing the equipment, all requirements of relevant standards and local electrical codes must be fulfilled.

The maximum operating ambient temperature of this equipment is 60°C. The maximum operating altitude is 3000 meters above sea level.

The 28.6 VDC output from the power supply to the PA is at an energy hazard level (exceeds 240 VA). When installing into the end system, care must be taken so as not to touch the output wires.

When the MOTOTRBO MTR3000 Base Station/Repeater is used in a DC reverting system, the DC power supply must be located in the same building as the MOTOTRBO MTR3000 Base Station/Repeater, and it must meet the requirements of a SELV circuit.

# Environmental Information

## Material Content

**NOTE** The Motorola MOTOTRBO MTR3000 Base Station/Repeater system and its subsystems have been created in compliance with the environmental goals of the European Union's **Restriction of Hazardous Substances (RoHS)** and the **Waste Electrical and Electronic Equipment (WEEE)** Directive 2002/96/EC as well as Motorola's corporate goals to minimize environmental impact of its products.

This Motorola policy is reflected throughout the entire design, procurement, assembly, and packaging process.

In support of these efforts to provide environmentally-responsible products, please comply with the information in the following sections regarding product disposal for systems being replaced.

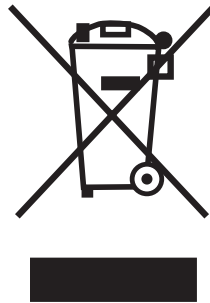
## Disposal of your Electronic and Electric Equipment

Please do not dispose of electronic and electric equipment or electronic and electric accessories with your household waste. In some countries or regions, collection systems have been set up to handle waste of electrical and electronic equipment.

In European Union countries, please contact your local equipment supplier representative or service center for information about the waste collection system in your country.

## Disposal Guideline

The following symbol on a Motorola product indicates that the product should not be disposed of with household waste.



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## Part 68 Information

### Part 68 FCC Guideline

This section applies when the MTR3000 Base Station/Repeater is equipped with the optional Wireline Interface Board.

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the rear of this equipment is a label that contains, among other information, the registration number:

**US:ABZNINANT3000**

If requested, this number must be provided to the telephone company.

The connector used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant connector is provided with this product. See installation instructions for details.

**REN: N/A**

**Connector: RJ1DC**

**Authorized Network Port: 04NO2**

**Service Order Code: 7.0Y**

If the equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify you as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If you experience trouble with this equipment, please refer to "Appendix A", "Appendix B" or "Appendix C" for repair and warranty information. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

None of the circuit boards in this equipment are field repairable. For assistance in sending the boards back for repair, please contact the Service Center listed in "Appendix A", "Appendix B" or "Appendix C".

This equipment cannot be used on public coin phone service provided by the telephone company. Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.



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## Document History

The following major changes have been implemented in this manual since the previous edition:

<b>Edition</b>	<b>Description</b>	<b>Date</b>
68007024097-A	Initial Release	January 2010
68007024097-B	Updated General Safety and Installation Standards and Guidelines section, Added Appendix D: MOTOTRBO Base Station/Repeater – EME ASSESSMENT	April 2010
68007024097-C	Added 800/900 MHZ information	August 2010

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## Related Publications

MOTOTRBO MTR3000 Base Station/Repeater Installation and User Manual .....	68007024098
MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual .....	68007024096

## Summary of Printed Circuit Boards and Bands

Table below lists the MTR3000 base station/repeater bands that are available in this manual.

Frequency Band	Bandwidth	Power Level	PCB Part No.	Board Rev.	Chapter
UHF	403–470 MHZ	8 W–100 W	84009277001 (RF Board)	A	3
			84009274001 (Output Board)	A	3
			84009279002 (Distribution Board)	B	3
			8475374H04 (Controller Board)	D	4
			84009273002 (Receiver Board)	B	6
			84009272002 (Exciter Board)	B	7
	470–524 MHZ	8 W–100 W	84009296001 (RF Board)	A	3
			84009274001 (Output Board)	A	3
			84009279002 (Distribution Board)	B	3
			8475374H02 (Controller Board)	B	4
			84009273002 (Receiver Board)	B	6
			84009272002 (Exciter Board)	B	7
800/900 MHZ	Rx: 806–825 MHZ & 896–902 MHZ Tx : 851–870 MHZ & 935–941 MHZ	8 W–100 W	84009277001 (RF Board)	B	3
			84009325001 (Output Board)	A	3
			84009279003 (Distribution Board)	C	3
			8475374H04 (Controller Board)	D	4
			84009313001 (Receiver Board)	A	6
			84009314001 (Exciter Board)	B	7
			84009315001 (Wireline Board)	A	8

The following table lists the MTR2000 MOTOTRBO Digital Upgrade bands that are available.

Frequency Band	Bandwidth	Power Level	PCB Part No.	Board Rev.	Chapter
UHF	403–435 MHZ	1–30 W (low power)	8475374H02 (Controller Board)	B	4
			84009273002 (Receiver Board)	B	6
		2–40 W (low power)	84009272002 (Exciter Board)	B	7
	435–470 MHZ	1–30 W (low power)	8475374H02 (Controller Board)	B	4
			84009273002 (Receiver Board)	B	6
		2–40 W (low power)	84009272002 (Exciter Board)	B	7
800/900 MHZ	Rx:806–825 MHZ & 896–902 MHZ  Tx :851–870 MHZ & 935–941 MHZ	8 W–100 W	8475374H04 (Controller Board)	B	3
			84009313001 (Receiver Board)	D	4
			84009314001 (Exciter Board)	A	6

# Commercial Warranty

For details on the regional Motorola Service Centers, Replacement Parts Ordering and Technical Support assistance, refer to the relevant regions in the Appendix section of this manual.

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# Chapter 1 MTR3000 Base Station/Repeater

## 1.1 Notations Used in This Manual

Throughout the text in this publication, you will notice the use of WARNING, CAUTION and Note notations. These notations are used to emphasize that safety hazards exist, and due care must be taken and observed.

**Note** An operational procedure, practice, or condition which is essential to emphasize.



Caution

CAUTION indicates a potentially hazardous situation which, if not avoided, **might** result in equipment damage.



WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or injury.

## 1.2 Description

The Motorola MTR3000 Base Station/Repeater (BR) provides a modular, flexible analog and digital station design for today's communication systems and for the future. The station is available for use in these configurations:

- Analog Conventional
- Digital (MOTOTRBO)
  - MOTOTRBO DMR Tier 2 Conventional – Single Site
  - MOTOTRBO DMR Tier 2 Conventional – IP Site Connect
  - MOTOTRBO Capacity Plus Trunking
  - MOTOTRBO Connect Plus Trunking
  - MOTOTRBO Dynamic Mixed Mode (DMM)
  - MOTOTRBO Transmit Interrupt
- LTR Trunking
- Passport Trunking

The base station/repeater can either be configured as a stand-alone base station/repeater or as a base station/repeater connected to a back-end network, as in the case of operating in IP Site Connect mode. As a base station/repeater, it listens on one uplink frequency, and then re-transmits on a downlink frequency, thus providing the RF interface to the field subscribers. When configured for analog station operation, the base station/repeater is designed to operate with most existing analog systems, which enables a smooth migration to the MOTOTRBO system.

When configured for digital operation, the base station/repeater offers additional services. The digital base station/repeater operates in TDMA mode, which essentially divides one channel into two virtual channels using time slots; therefore the user capacity is doubled. The base station/repeater utilizes embedded signaling to inform the field radios of the busy/idle status of each channel (time slot), the type of traffic, and even the source and destination information.

**Note** When configured in Digital Mode, the base station/repeater can only be used as a repeater.

The MTR3000 base station/repeater is divided into functional modules that separate the frequency band specific and transmitter power specific circuits from other circuits and has separate modules for the control interface. These modules are self contained functional blocks with module-specific alarms. This design facilitates the field replaceable unit (FRU) concept of field repair to maximize system uptime.

The FRU architecture also allows another important feature, which is the upgrading of an existing MTR2000 base station/repeater to support MOTOTRBO functionality. With MTR2000 MOTOTRBO Digital Upgrade kit, a current user of the MTR2000 base station/repeater can upgrade their base station/repeater to support all MOTOTRBO digital functionality as that of a factory produced MTR3000 base station/repeater.

Currently, the MTR2000 MOTOTRBO Digital Upgrade supports the following:

- UHF : 1–30 W (low power), 2–40 W (low power) and 25–100 W (high power)
- 800/900 MHZ : 20–75 W

Once the upgrade is performed, the MTR2000 or MTR3000 Wireline and Auxiliary I/O board functionality will no longer be supported.

**Note** A MTR2000 MOTOTRBO Upgrade will only support the MTR3000 wireline card if the backplane interface board is replaced by model DLN6721.

A MTR2000 MOTOTRBO Digital Upgrade comprises the following:

- New Exciter Module
- New Receiver Module
- New Station Control Module
- New Front Bezel
- Regulatory Sticker

Refer to Figure 1-1 for the front view (with front bezel) and Figure 1-2 for the front view (without front bezel) of MTR3000 base station/repeater. Figure 1-3 shows the rear view portion of the base station/repeater.



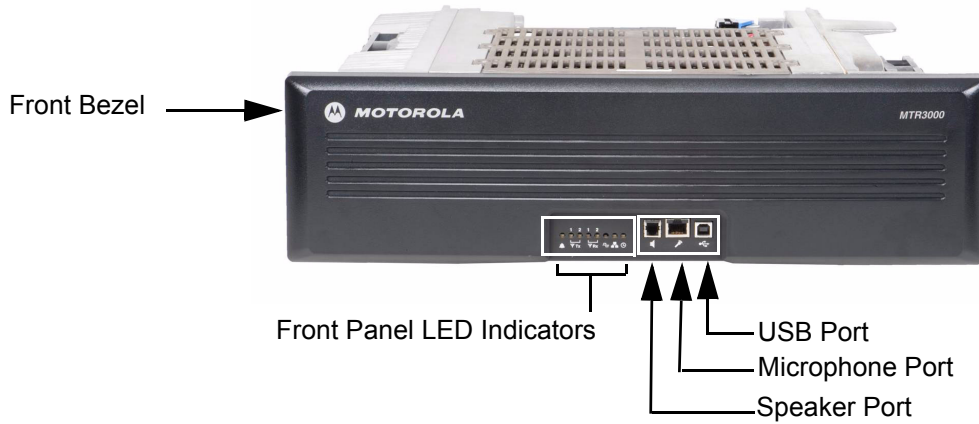


Figure 1-1 Front view (with front bezel) of MTR3000 Base Station/Repeater

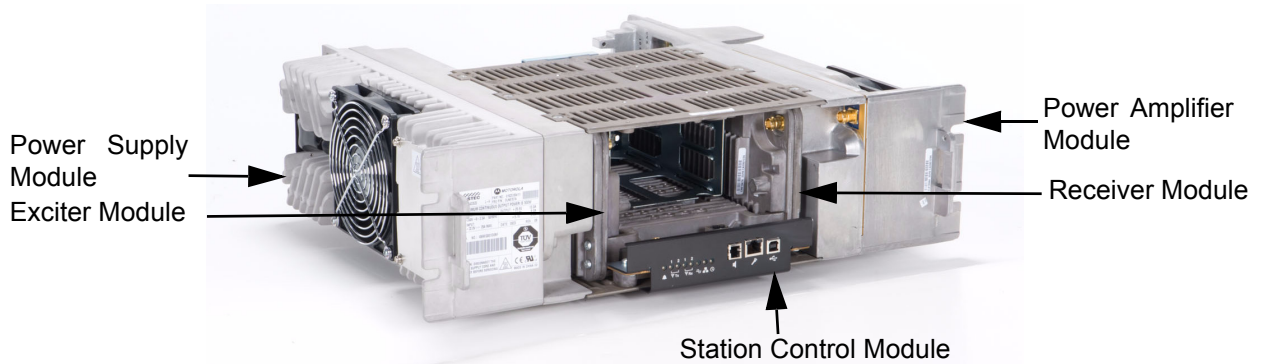


Figure 1-2 Front view (without front bezel) of MTR3000 Base Station/Repeater

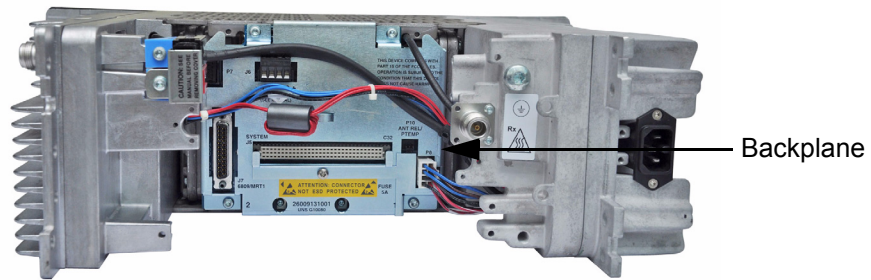


Figure 1-3 Rear view of MTR3000 Base Station/Repeater

The MTR3000 base station/repeater model ships pre configured for analog conventional operation. Additional configurations can be selected and created through the Customer Programming Software (CPS) on a per-channel basis, based on the modulation type selected during station configuration.

## 1.2.1 Operating Features

The following are the standard features of a MTR3000 base station/repeater model:

- MOTOTRBO Conventional Operation (2-Slot TDMA, 4FSK Modulation)
- Analog Conventional Operation (FM)
- Continuous Duty Cycle Operation over -30°C to +60°C
- Meets or exceeds the following standards
  - TIA603D
  - ETSI 086
  - ETSI 113
  - ETSI TS 102 361-1 Part 1: DMR Air Interface Protocol
  - ETSI TS 102 361-2 Part 2: DMR Voice and Generic Services and Facilities
  - ETSI TS 102 361-3 Part 3: DMR Packet Data Protocol
- Synthesized Frequency Generation
- Two Female N-type Antenna Connectors (Rx and Tx)
- Ethernet Port (Network)
- Front mounted USB Port (Service)
- Front mounted microphone port
- Front mounted speaker port
- 9 configurable GPIO/GPI ports
- Power for third party controllers (1 Amp)
- 1.5 PPM Frequency Stability (Temperature AND 1-Year Aging) (UHF)
- 0.1 PPM Frequency Stability (Temperature AND 1-Year Aging) (800/900 MHz)
- External Reference Capability
- Wireline Capability
- Switching Power Supply operates from 85–264 VAC (47–63 Hz)
- Multi-Power Source configurable (AC, DC, or AC with Battery Revert)
- Station Diagnostic Tests-Fixed Set of Tests Factory run upon Start-up
- Physical Dimensions: 5.25" H x 19" W x 16.5" D (133 x 483 x 419 mm) 3RU
- Weight: 40 pounds (19 kg) excluding cabinet or other peripheral equipment

Motorola Network Interface:

- IP Site Connect
- Repeater Diagnostics and Control (RDAC)

Third Party Controller Interface:

- Phone Patch
- Multi Coded Squelch Interface (Repeater Panel)
- Tone Remote Adapter
- LTR Trunking
- Passport Trunking

**Note** The MTR3000 base station/repeater only supports the third party controllers noted above when it is configured in analog mode.

Optionally, the MTR3000 base station/repeater may be configured with

- External Pre-selector (Not available for the 800/900 MHz band)
- Antenna Relay
- Duplexer
- External Dual Circulator Tray
- Integrated Tone Remote Control (with Wireline option)
- Integrated DC Remote Control (with Wireline option)

In addition, the following features are also included. These features are shipped in a preset condition, but may be altered through the use of the CPS.

- 16 Tx/Rx Frequencies – Factory Programmed with 1 Tx, 1 Rx
- 12.5 kHz or 25 kHz Operation – Factory Programmed to 12.5 kHz
- 6.25e compliant
- 1 Tx and 1 Rx (PL or DPL) Squelch Code per channel – Factory Programmed to CSQ
- Base Station Identification (BSI) – Factory Programmed as BLANK
- Push-To-Talk (PTT) Priority – Factory Programmed to Repeat Path

### 1.2.2 Features not offered

Please disregard any references to the following items.

- Auxiliary I/O Option Board
- Peripheral temperature sensing device
- Voting or standalone Receiver
- Simplex operation (Tx=Rx)

### 1.2.3 Frequency Ranges and Power Levels

The MTR3000 Base Station/Repeater and MTR2000 MOTOTRBO Digital Upgrade is available in the following frequency ranges and power levels as specified in Table 1-1 and Table 1-2.

*Table 1-1 MTR3000 Base Station/Repeater Frequency Ranges and Power Levels*

Frequency Band	Bandwidth	Power Level
UHF	403–470 MHz	8–100 W
	470–524 MHz	8–100 W
800/900 MHz	Rx : 806–825 MHz & 896–902 MHz	–
	Tx : 851–870 MHz & 935–941 MHz	8–100 W

*Table 1-2 MTR2000 MOTOTRBO Digital Upgrade Frequency Ranges and Power Levels*

Frequency Band	Bandwidth	Power Level
UHF	403–435 MHz	1–30 W (low power) 2–40 W (low power) 25–100 W (high power)
	435–470 MHz	1–30 W (low power) 2–40 W (low power) 25–100 W (high power)
800 MHz	Rx : 806–825 MHz	–
	Tx : 851–870 MHz	20–75 W
900 MHz	Rx : 896–902 MHz	–
	Tx : 935–941 MHz	20–75 W

## 1.3 Specifications

Table 1-3 shows the specifications of the MTR3000 Base Station/Repeater.

*Table 1-3 MTR3000 Base Station/Repeater General Specifications (All Bands)*

Parameter	Specifications
Number of Channels	16
Frequency Generation	Synthesized
Input Voltage AC	85–264 VAC (47–63 Hz)
Input Voltage DC	UHF : 28.6 VDC (25.7–30.7 VDC full rated output power) 800/900 MHz : 28.6 VDC (24.7–30.7 VDC full rated output power)
Power Supply Type	Switching
Station Weight	40 lbs (19 kg)
Temperature Range	-30°C to +60°C (-22°F to +140°F)
Antenna Connectors Tx/Rx	N-Type
Modes of Operation	Half-Duplex / Duplex
Rack Units	3
Height	5.25" (133 mm)
Width	19" (483 mm)
Depth	16.5" (419 mm)

*Table 1-4 MTR3000 Base Station/Repeater Specifications*

Parameter	Specifications	
	UHF	800/900 MHz
<b>Input Power (All Modulations)</b>		
100 W Standby (AC Line 117 V / 220 V)	0.4 A / 0.2 A	0.7 A / 0.4 A
100 W Transmit at Rated Power (AC Line 117 V / 220 V)	3.3 A / 1.8 A	4.5 A / 2.5 A
100 W Standby (28 VDC)	0.8 A	1 A
100 W Transmit at Rated Power (28 VDC)	11.5 A	11.5 A
<b>Frequency Reference</b>		
Internal Frequency Stability (PPM)	1.5 PPM	0.1 PPM
External Reference Capable	Yes	Yes
<b>Frequency Bands</b>		

Table 1-4 MTR3000 Base Station/Repeater Specifications (Continued)

Parameter	Specifications	
	UHF	800/900 MHZ
Electronic Bandwidth	403–470 MHz (UHF R1), 470–524 MHz (UHF R2)	Rx : 806–825 MHz & 896–902 MHz Tx : 851–870 MHz & 935–941 MHz
<b>Receiver</b>		
Selectivity* 25 kHz / 12.5 kHz	80 dB / 75 dB	85 dB / 75 dB
Sensitivity <sup>†</sup> (12 dB Sinad)	0.3 uV	0.3 uV
Sensitivity <sup>†**</sup> (5% BER)	0.3 uV	0.3 uV
Sensitivity with External Peripherals (Antenna Relay and/or Preselector)	0.35 uV	0.35 uV
Intermodulation Rejection 25 kHz / 12.5 kHz	85 dB	85 dB
Spurious Rejection	85 dB (without External Preselector)	90 dB (without External Preselector)
Spurious and Image Response Rejection with Narrow Preselector (Optional)	90 dB	Option not offered
Audio Distortion	<3%	<3%
FM Hum and Noise 25 kHz / 12.5 kHz	50 dB / 45 dB	50 dB / 45 dB
FCC Identifier	ABZ89FR4824 (UHF R1) or ABZ89FR4826 (UHF R2)	ABZ89FR5818 (806–902 MHz)
<b>Transmitter</b>		
Rated Output Power (Continuous Duty)	8–100 W	8–100 W
Intermodulation Attenuation	55 dB	55 dB
Adjacent Channel Power 25 kHz / 12.5 kHz	75 dB / 60 dB	75 dB / 60 dB
Wideband Noise (1 MHz)	-152 dBc/Hz	-152 dBc/Hz
RSD 25 kHz / 12.5 kHz	5 kHz / 2.5 kHz	5 kHz / 2.5 kHz
Spurious Harmonics and Emissions	-90 dBc	-90 dBc (800 MHz), -86 dBc (900 MHz)
Audio Distortion	<3%	<3%
FM Hum and Noise 25 kHz / 12.5 kHz	50 dB / 45 dB	50 dB / 45 dB
FCC Identifier	ABZ89FC4823 (403–470 MHz) or ABZ89FC4825 (470–524 MHz)	ABZ89FC5817 (851–870 MHz, 896–941 MHz)

Table 1-4 MTR3000 Base Station/Repeater Specifications (Continued)

Parameter	Specifications	
	UHF	800/900 MHZ
Industry Canada		
• IC certification / registration number	109AB-T3000	109AB-5817
• IC model number	T3000-UHF R1	T3000-8/900
• Tx / Rx Frequency range	406.1–430 MHZ, 450–470 MHZ	Rx : 806–824 MHZ & 896–901 MHZ Tx : 851–869 MHZ & 935–940 MHZ

All specifications noted above are in accordance to TIA603D unless otherwise noted as below.

**Note** (\*) Per TIA603  
(\*\*) Per TIA102 Method  
(‡) Without Rx peripherals attached

**Note** To determine the proper amount of air conditioning at a radio site, refer to the “Power Dissipation” and “BTU Energy” specifications in the MTR3000 Product Planner located on Motorola on line (MOL), <http://www.motorola.com/businessonline>

The latest MTR3000 Product Planner can be located by the following path:  
MOL > Resource Centre > Product Information > Systems > MOTOTRBO > MTR3000 Product Planner

## 1.4 Theory of Operation

The MTR3000 Base Station/Repeater (BR) provides the radio frequency (RF) link between the base station/repeater and the subscriber radios. The base station/repeater acquires inbound signals via its external receive (Rx) antenna and then amplifies, filters and demodulates the signals into data or voice packets. From that point, the data is either forwarded to the base station/repeater transmitter to be re-modulated and amplified for delivery to subscriber radios, and/or the data is delivered via a wired interface for distribution to networked base station/repeaters, consoles, or other networked infrastructure.

The MTR3000 base station/repeater consists of a Receiver module, Exciter module, Station Control Module (SCM), Power Amplifier (PA) and Power Supply (PS). These modules are also known as field replaceable units (FRU).

- The Receiver Module is a dual heterodyne Receiver which receives the RF signal from the subscriber’s transmitter. It then converts the resulting final intermediate frequency (IF) from an analog signal to that of a digital word in IQ signal format. Finally, the Receiver delivers the IQ signal, via the SSI bus, to the SCM for demodulation. Additionally, the Receiver also provides for its own metering and diagnostics via software, as well as a self-contained calibration (no field tuning is needed for the Receiver Module).

- The Exciter Module converts a two-port base band data signal, sent over the SSI bus from the SCM, to an analog signal representation. The analog signal is then modulated with a low power RF transmitter carrier that is generated by the Exciter. The low power modulated RF carrier is then amplified and delivered to the PA at approximately +14 dBm for further amplification. The Exciter and PA constitute the transmitter of the MTR3000 base station/repeater. Additionally, the Exciter also provides its own metering and diagnostics via software, as well as a self-contained calibration (no field tuning is needed for the Exciter Module).
- The heart of the SCM Module is the two Texas Instruments OMAP1710 processors. Each OMAP processor contains an ARM Host and a C55 DSP processor. One of these OMAP processor is dedicated to Receiver DSP operations, while the other OMAP provides for all other operations, including the transmitter functions.  
In general, the SCM controls the entire coordination of the base station/repeater functions. Specifically, the SCM provides for the following functionalities:
  - Contains and runs the preloaded base station/repeater software
  - Manages inbound and outbound RF and Audio traffic
  - Provides external speaker and microphone ports
  - Provides an on-board USB port for local configuring, alignment and diagnostics via the following applications:
    - Customer Programming Software (CPS)
    - Tuner application
    - Repeater Diagnostic and Control (RDAC) software
    - Online Help
  - Provides an Ethernet port for IP site connectivity and remote RDAC
  - Provides GPIO connectivity for third party controller interfaces
  - Provides for analog base station/repeater audio connectivity
  - Data and Control to the Receiver via the SPI and SSI respectively
  - Data and Control to the Exciter via the SPI and SSI respectively
  - Control of the PA's set power via the SPI
  - Generates the internal station reference
  - Provides control of the front panel status indicators.
- The PA Module amplifies the low level modulated RF signal from the Exciter module. It then delivers the amplified signal to the transmitter antenna port at a power level within the rated power band of the base station/repeater, for transmission to the subscriber radios. In addition to its primary task of amplification, the PA provides the following hardware functions for the base station/repeater.
  - Harmonic attenuation
  - Inter-modulation attenuation (IMA) suppression
  - VSWR detection
  - RF power control (primary means)
  - Self contained cooling fan and control circuit
  - Meters for diagnostics
  - Power rollback for temperature, VSWR, and voltage
  - Self-Contained calibration (no field alignment is needed for the PA Module).



- The PS Module provides DC power to the Receiver, Exciter, SCM and PA Module via one or more of the three DC output taps; 28.6 VDC, 14.2 VDC, and 5.1 VDC. It can also be used to provide auxiliary power (14 VDC) to a number of third party controllers. Additionally, it can operate in three different input modes:

- AC Input Only
- DC Input Only
- AC with Battery Revert.

In addition to providing power to the noted FRU and controllers, the PS also provides the following:

- AC Failure detect signaling to the SCM
- Output over-current protection for all three outputs
- Self contained cooling fan and control circuit (thermal shut down if the environmental temperatures exceed the cooling capacity provided by the fan).

- Further details can be found in the individual “Theory of Operation” sections of the respective FRU chapters in the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

## 1.5 Basic Troubleshooting

Diagnostic tests are available for the SCM, Exciter, PA, and Receiver Modules. If a problem occurs during station operation, it is logged as an alarm that is read with the Repeater Diagnostic and Control application (RDAC). Refer to Figure 1-4 for the RDAC diagnostic screen.

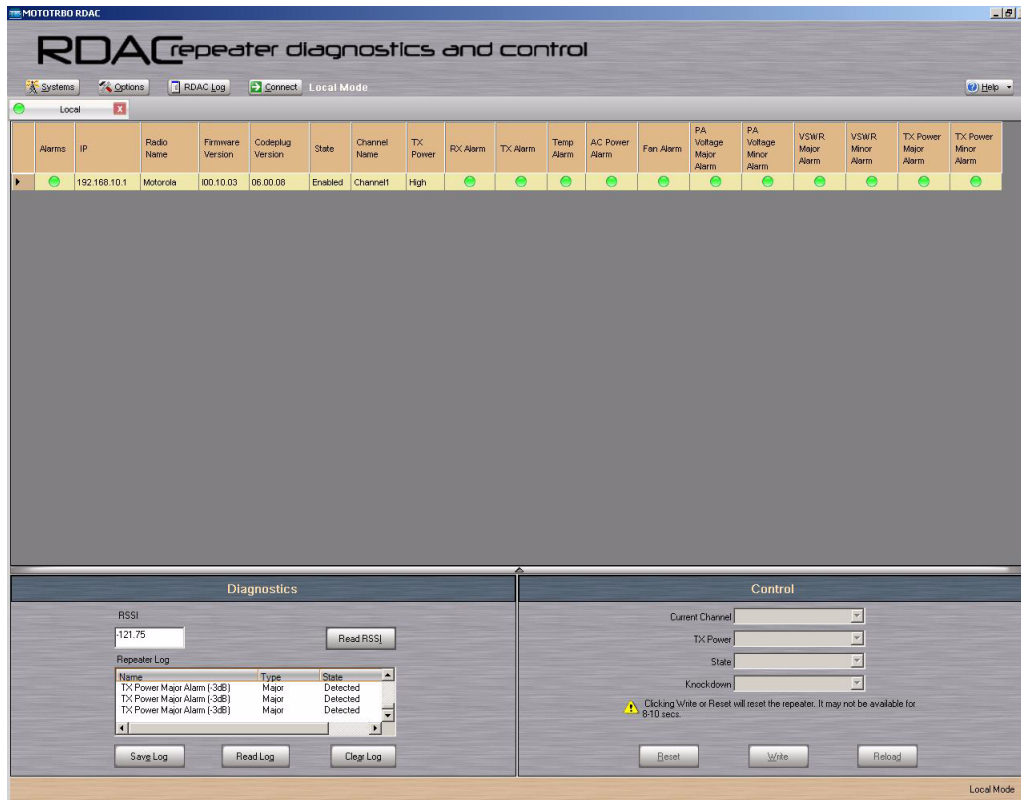


Figure 1-4 RDAC Diagnostic Screen

The station operator will then evaluate the problem locally or remotely, as the station will maintain an Alarm Log with the name of the alarm that has failed since the last power up. Via the RDAC application's Alarm Log, the alarm messages will aid in identifying the FRU that failed along with the fault condition.

After booting up the base station/repeater, the 6 LEDs (Power/Status, Tx Slot 1, Tx Slot 2, Rx Slot 1, Rx Slot 2 and the Mode LEDs) will flash in unison.

The general status and condition of the MTR3000 base station/repeater can be obtained by observing the eight LED indicators on the front panel. Table 1-5 shows the LED symbols and their meaning, while Table 1-6 identifies the information conveyed via the LED indicators. Table 1-7 shows the alarm diagnosis table and probable diagnosis to aid in identifying the fault.

Table 1-5. Front Panel LED indicators



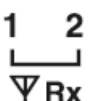



LED	Definition
	Status
	Tx Slot 1 (for label number 1) Tx Slot 2 (for label number 2)
	Rx Slot 1 (for label number 1) Rx Slot 2 (for label number 2)
	Mode
	Ethernet Link
	Reference

Table 1-6. MTR3000 Base Station/Repeater Software and Hardware Controlled LEDs

LED Function Name	LED Color	LED State	Status Indication
Power/Status, Tx Slot 1, Tx Slot 2, Rx Slot 1, Rx Slot 2  Mode	Amber	Flashing	Station booting up
	Blue		
Power/Status	Off	Off	Station Off
	Green	Flashing	Station Operating Normally, with DC power
		Solid	Station Operating Normally, with AC power
	Red	Flashing	Station Operational – Minor Alarm
		Solid	Station Not Operational – Major Alarm
	Amber	Flashing	Station in Service Mode
Solid		Station is Disabled (Dekeyed)	
Tx Slot 1 Tx Slot 2	Off	Off	Transmitter is not transmitting
	Green	Solid	Transmitter is transmitting
		Flashing	Transmitter is transmitting, but at reduced power
Rx Slot 1 Rx Slot 2	Off	Off	Receiver qualifier has not been met
	Green	Solid	Receiver qualifier has been met
Mode	Off	Off	Analog Mode (FM)
	Blue	Solid	Digital Mode (2 Slot TDMA, 4FSK)
	Blue	Flashing	DMM feature is active, but no calls are currently being processed.
Ethernet Link	Off	Off	No Ethernet connection
	Green	Solid	Linked
		Flashing	Network traffic
Reference	Off	Off	No external reference is present
	Green	Solid	Training process is completed, and the calibration data has been written to the EEPROM, or an external reference is present after training (which the base station/repeater has phase locked to).
	Amber	Solid	Locked to external reference, and training is in progress

**Note** The RDAC application will be needed when the Status LED is red (solid or flashing). This status indicates a minor or major alarm. The RDAC application is used to identify the specific alarm and probable diagnosis to aid in identifying the FRU at fault.

If the Reference LED remains amber for more than ten minutes during the alignment, then verify the integrity of the source used to train the base station/repeater's internal reference. If the integrity of the source is verified to be good, then the SCM will need to be replaced.

*Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table*

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Receiver	Rx Alarm	Major	Yes	Yes	The Receiver PLL has lost lock.	<b>Local Dealer:</b> Replace the Receiver FRU  <b>Motorola Repair Depot:</b> Repair or replace the Receiver FRU
	Receiver EEPROM Corruption Type 1	Minor	No	Yes	The Receiver EEPROM has incurred non-recoverable corruption in a semi-critical memory location.	<b>Local Dealer:</b> Replace the Receiver FRU  <b>Motorola Repair Depot:</b> Recalibrate the Receiver FRU
	Receiver EEPROM Corruption Type 2	Minor	No	Yes	The Receiver EEPROM has incurred a recoverable corruption in critical memory location or non-recoverable corruption in a non-critical area of memory.	No action needed. This is informational only.
	Receiver EEPROM Corruption Type 3	Major	No	Yes	The Receiver EEPROM has incurred non-recoverable corruption in a critical memory location.	<b>Local Dealer:</b> Replace the Receiver FRU  <b>Motorola Repair Depot:</b> Recalibrate the Receiver FRU

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Transmitter	Tx Alarm	Major	Yes	Yes	The Exciter PLL has lost lock.	<p><b>Local Dealer:</b> Replace the Exciter FRU</p> <p><b>Motorola Repair Depot:</b> Repair/recalibrate or replace the Exciter FRU</p>
	Fan Alarm	Minor	Yes	Yes	The PA fan has failed.	<p><b>Local Dealer:</b> Replace the PA fan</p> <p><b>Motorola Repair Depot:</b> Replace the PA fan</p> <p>Note: The PA and PS fans should be replaced in pairs.</p>
	Tx Power Minor Alarm	Minor	Yes	No	The PA output power is between 2 dB to 3 dB below the set output power, or the output power is more than 3 dB below the set output power with one or more of the following alarms already detected: Fan Alarm, Temp Alarm, PA Voltage Minor Alarm, PA Voltage Major Alarm, VSWR Minor Alarm or VSWR Major Alarm.	When this alarm is detected, check the Diagnostic Repeater Log to determine which failure – “Tx Power Minor Alarm (-2 dB)” or “Tx Power Minor Alarm (-3 dB)” – has occurred.

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Transmitter	Tx Power Major Alarm	Major	Yes	No	The PA output power is more than 3 dB below the set output power.	<p><b>Local Dealer:</b> Remedy 1: Verify that the “Exciter to PA” cable is properly installed</p> <p>Remedy 2: If Remedy 1 does not solve this issue, replace the PA FRU</p> <p><b>Motorola Repair Depot:</b> Remedy 1: Verify that the “Exciter to PA” cable is properly installed</p> <p>Remedy 2: If Remedy 1 does not solve this issue, repair/recalibrate or replace the PA FRU</p>
	Tx Power Minor Alarm (-2 dB)	Minor	No	Yes Counterpart to “Tx Power Minor Alarm”	The PA output power is between 2 dB to 3 dB below the set output power of the station.	<p><b>Local Dealer:</b> Replace the PA FRU</p> <p><b>Motorola Repair Depot:</b> Repair/recalibrate or replace the PA FRU</p>
	Tx Power Minor Alarm (-3 dB)	Minor	No	Yes Counterpart to “Tx Power Minor Alarm”	The PA output power is more than 3 dB below the set output power of the station, but at least one of the following “primary” alarms is also present: Fan Alarm, Temp Alarm, PA Voltage Minor Alarm, PA Voltage Major Alarm, VSWR Minor Alarm or VSWR Major Alarm.	<p><b>Local Dealer:</b> Attend to the primary alarms (see appropriate remedies at the relevant alarm sections)</p> <p><b>Motorola Repair Depot:</b> Attend to the primary alarms (see appropriate remedies at the relevant alarm sections)</p>

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Transmitter	Tx Power Major Alarm (-3 dB)	Major	No	Yes  Counterpart to "Tx Power Major Alarm"	The PA output power is more than 3 dB below the set output power.	<b>Motorola Repair Depot:</b> Remedy 1: Verify that the "Exciter to PA" cable is properly installed.  Remedy 2: If Remedy 1 does not solve this issue, repair/recalibrate or replace the PA FRU
	PA EEPROM Corruption Type 1	Minor	No	Yes	The PA EEPROM has incurred non-recoverable corruption in a semi-critical memory location.  Note : Alarm is not applicable to the MTR2000 MOTOTRBO Digital Upgrade, as the MTR2000 Power Amplifier (PA) does not have an EEPROM	<b>Local Dealer:</b> Replace the PA FRU  <b>Motorola Repair Depot:</b> Recalibrate the PA FRU
	PA EEPROM Corruption Type 2	Minor	No	Yes	The PA EEPROM has incurred recoverable corruption in a critical memory location or non-recoverable corruption in a non-critical area of memory.  Note : Alarm is not applicable to the MTR2000 MOTOTRBO Digital Upgrade, as the MTR2000 Power Amplifier (PA) does not have an EEPROM	No action needed. This is informational only.



Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Transmitter	PA EEPROM Corruption Type 3	Major	No	Yes	The PA EEPROM has incurred non-recoverable corruption in a critical memory location.  Note : Alarm is not applicable to the MTR2000 MOTOTRBO Digital Upgrade, as the MTR2000 Power Amplifier (PA) does not have an EEPROM	<b>Local Dealer:</b> Replace the PA FRU  <b>Motorola Repair Depot:</b> Recalibrate the PA FRU
	Exciter EEPROM Corruption Type 1	Minor	No	Yes	The Exciter EEPROM has incurred non-recoverable corruption in a semi-critical memory location.	<b>Local Dealer:</b> Replace the Exciter FRU  <b>Motorola Repair Depot:</b> Recalibrate the Exciter FRU
	Exciter EEPROM Corruption Type 2	Minor	No	Yes	The Exciter EEPROM has incurred recoverable corruption in a critical memory location or non-recoverable corruption in a non-critical area of memory.	No action needed. This is informational only.
	Exciter EEPROM Corruption Type 3	Major	No	Yes	The Exciter EEPROM has incurred non-recoverable corruption in a critical memory location.	<b>Local Dealer:</b> Replace the Exciter FRU  <b>Motorola Repair Depot:</b> Recalibrate the Exciter FRU

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Transmitter	Interoperability Between Exciter and PA	Major	No	Yes	The PA and Exciter do not have a compatible frequency range with each other.	<p><b>Local Dealer:</b> Remedy 1: Verify that the correct PA or Exciter is installed in the station.</p> <p>Remedy 2: If Remedy 1 does not solve this issue, verify that the backplane and PS cables to the PA are correctly installed.</p> <p>Remedy 3: If Remedy 1 or Remedy 2 does not solve this issue, replace the Exciter or PA FRU.</p> <p><b>Motorola Repair Depot:</b> Remedy 1: Verify that the correct PA or Exciter is installed in the station.</p> <p>Remedy 2: If Remedy 1 does not solve this issue, verify that the backplane and PS cables to the PA are correctly installed.</p> <p>Remedy 3: If Remedy 1 or Remedy 2 does not solve this issue, repair/ recalibrate or replace the Exciter or PA FRU.</p>
	Reference Incompatibility	Major	No	Yes	<p>A standard stability reference (1.5 ppm) SCM has been installed into a 800/900 MHZ base station/ repeater.</p> <p>Note: This alarm is only applicable to 800/900 MHZ base station/ repeater.</p>	<p><b>Local Dealer:</b> Replace the SCM FRU with a version (DLN6718) that provides a high stability reference (0.1 ppm).</p> <p><b>Motorola Repair Depot:</b> Replace the SCM FRU with a version (DLN6718) that provides a high stability reference (0.1 ppm).</p>

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Power System	AC Power Alarm	Minor	Yes	Yes	The station is not at fault. The AC power source has been interrupted and the station is operating on DC power.	<p><b>Local Dealer:</b> The alarm will clear when the AC power source is brought back on line.</p> <p>Note: This alarm will be masked if the station is set for "DC Operation Only" in the "General Settings" of the CPS.</p>
Power System	PA Voltage Minor Alarm	Minor	Yes	No	The station is not at fault. This alarm occurs when the station is operating from a DC source with an output voltage that cannot sustain the maximum rated output power from the PA.	<p><b>Local Dealer:</b> When this alarm is detected, check the Diagnostic Repeater Log to determine whether the voltage is at an intermediate level "PA Voltage alarm (Intermediate)" or it is too high "PA Voltage alarm (High)".</p>
	PA Voltage Major Alarm	Major	Yes	No	The station is not at fault. This alarm occurs when the station is operating from a DC source that has an output voltage which is too low to sustain any level of output power from the PA.	<p><b>Local Dealer:</b> The site batteries are near depletion and station shut down is imminent. Service personnel should be dispatched to the site to restore AC power or provide alternate power. This alarm will clear when either the AC is restored or the DC voltage levels are restored to the working limits required by the station.</p>
	PA Voltage Alarm (High)	Minor	No	Yes Counterpart to "PA Voltage Minor Alarm"	The station is not at fault. This alarm occurs when the station is operating from a DC source with an output voltage that is too high to sustain the maximum rated output power from the PA.	<p><b>Local Dealer:</b> Proper operation of the battery charger / rectifier should be verified, or verify that the battery plant is designed to the specified voltage operating limits of the station. This alarm will clear when either the AC is restored or the DC voltage levels are restored to the working limits required by the station.</p>

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Power System	PA Voltage Alarm (Intermediate)	Minor	No	Yes  Counterpart to "PA Voltage Minor Alarm"	The station is not at fault. This alarm occurs when the station is operating from a DC source with an intermediate output voltage level that can not sustain the maximum rated output power from the PA.	<b>Local Dealer:</b> The site batteries are within their normal discharge curve. This alarm will clear when AC power is restored.
	PA Voltage Alarm (low)	Major	No	Yes  Counterpart to "PA Voltage Major Alarm"	The station is not at fault. This alarm occurs when the station is operating from a DC source that has an output voltage which is too low to sustain any level of output power from the PA.	<b>Local Dealer:</b> The site batteries are near depletion and station shut down is imminent. Service personnel should be dispatched to the site to restore AC power or provide alternate power. This alarm will clear when either the AC is restored or the DC voltage levels are restored to the working limits required by the station.
Codeplug Configuration	Incorrect Carrier Frequency	Major	No	Yes	At least one personality (analog or digital channel) exists in the codeplug which has a frequency outside of the supported electronic bandwidth of the Receiver, Exciter, or PA.	<b>Local Dealer:</b> Correct the invalid personality with the CPS application.  Note: Upon reading the codeplug, CPS will automatically set the invalid personality to a default value that falls within the valid limits of the hardware. The user must then set the defaulted personality to the required setting.
	Incorrect Codeplug for MTR2000 PA	Major	No	Yes	The MTR3000 codeplug contains an unsupported MTR2000 PA.	<b>Local Dealer:</b> Correct the invalid MTR2000 sticker code with the Tuner application.

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Environmental -- External to Station	Temp Alarm	Minor	Yes	Yes	The station has exceeded the temperature limit that will allow maximum rated output power from the PA	<p><b>Local Dealer:</b> Remedy 1: If the "Fan Alarm" is present, this can cause the "Temp Alarm" to be issued as a secondary alarm. If applicable, correct the "Fan Alarm" first, see "Fan Alarm".</p> <p>Remedy 2: If Remedy 1 does not solve this issue, verify that there is not a problem with the site temperature itself. The station will clear the "Temp Alarm" and allow maximum rated output power when the temperature of the site is lowered.</p> <p>Remedy 3: If Remedy 1 and Remedy 2 does not solve this issue, verify that the rack and cabinet installations of the station are in accordance with the product planner instructions.</p> <p>Remedy 4: If Remedy 1, Remedy 2 and Remedy 3 does not solve this issue, replace the PA FRU.</p>
Environmental -- External to Station	Temp Alarm	Minor	Yes	Yes	The station has exceeded the temperature limit that will allow maximum rated output power from the PA	<p><b>Motorola Repair Depot:</b> Remedy 1: If the "Fan Alarm" is present, this can cause the "Temp Alarm" to be issued as a secondary alarm. If applicable, correct the "Fan Alarm" first, see "Fan Alarm".</p> <p>Remedy 2: If Remedy 1 does not solve this issue, repair/replace/recalibrate the PA FRU.</p>

Table 1-7 MTR3000 Base Station/Repeater Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
Environmental -- External to Station	VSWR Minor Alarm	Minor	Yes	Yes	The Voltage Standing Wave Ratio (VSWR), of the equipment the station is coupled to, is between a 3:1 to 5:1. If needed, the station will roll back power in order to protect the PA.	<p><b>Local Dealer:</b> Remedy 1: Verify the operational load coupled to the station is better than a 2:1 VSWR (minimally). The load should be better than a 1.5:1.</p> <p>Remedy 2: If Remedy 1 does not solve this issue, replace the PA FRU.</p> <p><b>Motorola Repair Depot:</b> Replace/repair/recalibrate the PA FRU.</p>
	VSWR Major Alarm	Major	Yes	Yes	The Voltage Standing Wave Ratio (VSWR), of the equipment the station is coupled to, is greater than a 5:1. The station disables itself since very little power, if any, is being delivered to the transmitter antenna.	<p><b>Local Dealer:</b> Remedy 1: Verify the operational load coupled to the station is better than a 2:1 VSWR (minimally). The load should be better than a 1.5:1.</p> <p>Remedy 2: If Remedy 1 does not solve this issue, replace the PA FRU.</p> <p><b>Motorola Repair Depot:</b> Replace/repair/recalibrate the PA FRU.</p>

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## Chapter 2 Maintenance

### 2.1 Introduction

This chapter provides details about the following:

- Routine Maintenance
- Preventive maintenance (inspection and cleaning)
- Safe handling of CMOS devices
- Repair procedures and techniques
- Recommended Test Equipment
- Service Aids.

#### 2.1.1 Routine Maintenance

**Note** It is recommended that the station is cleaned with a soft dry cloth while in service.

The station and ancillary equipment have been designed with state-of-the-art technology and operate under software control, thus requiring minimal routine maintenance. Virtually all station operating parameters are monitored and self-corrected by the Station Control Module (SCM) and the firmware it runs, which makes adjustments and tuning virtually unnecessary.

Provided that the equipment is installed in an area which meets the specified environmental requirements, the only routine maintenance task required is the calibration of the station reference oscillator circuit.

#### 2.1.2 Preventive Maintenance

Periodic visual inspection and cleaning is recommended.

##### 2.1.2.1 Inspection

Check that the external surfaces of the repeater are clean. It is not recommended to inspect the interior electronic circuitry.

### 2.1.2.2 Cleaning Procedures

The following procedures describe the recommended cleaning agents and the methods to be used when cleaning the external and internal surfaces of the repeater. External surfaces include the top cover and repeater enclosure.

Periodically clean smudges and grime from exterior enclosure. Use a soft, non-abrasive cloth moistened in a 0.5% mild dishwashing detergent-water solution. Rinse the surface using a second cloth moistened in clean water, and clean any dirt or debris from the fan grill and louvers on the front side.

**Note** Internal surfaces should be cleaned only when the station is disassembled for service or repair.

The only factory recommended liquid for cleaning the printed circuit boards and their components is isopropyl alcohol (100% by volume).

#### Cleaning Internal Circuit Boards and Components

Isopropyl alcohol (100%) may be applied with a stiff, non-metallic, short-bristled brush to dislodge embedded or caked materials located in hard-to-reach areas. The brush stroke should direct the dislodged material out and away from the inside of the repeater. Make sure that controls or tunable components are not soaked with alcohol. Do not use high-pressure air to hasten the drying process since this could cause the liquid to collect in unwanted places. Once the cleaning process is complete, use a soft, absorbent, lintless cloth to dry the area. Do not brush or apply any isopropyl alcohol to the top cover and repeater enclosure.

**Note** Always use a fresh supply of alcohol and a clean container to prevent contamination by dissolved material (from previous usage).

### 2.1.3 Safe Handling of CMOS Devices

Complementary metal-oxide semiconductor (CMOS) devices are used in this family of stations, and are susceptible to damage by electrostatic or high voltage charges. Damage can be latent, resulting in failures occurring weeks or months later. Therefore, special precautions must be taken to prevent device damage during disassembly, troubleshooting, and repair.

Handling precautions are mandatory for CMOS circuits and are especially important in low humidity conditions.



DO NOT attempt to disassemble the base station/repeater without first referring to the following CAUTION statement.

**Caution**

**This station contains static-sensitive devices. Do not open the base station/repeater unless you are properly grounded. Take the following precautions when working on this unit:**

- Store and transport all CMOS devices in conductive material so that all exposed leads are shorted together. Do not insert CMOS devices into conventional plastic “snow” trays used for storage and transportation of other semiconductor devices.
- Ground the working surface of the service bench to protect the CMOS device. We recommend using a wrist strap, two ground cords, a table mat, and a floor mat.
- Wear a conductive wrist strap in series with a 100k resistor to ground (replacement wrist straps that connect to the bench top covering can be ordered using the Motorola part number 4280385A59).
- Do not wear nylon clothing while handling CMOS devices.
- Do not insert or remove CMOS devices with power applied. Check all power supplies used for testing CMOS devices to be certain that there are no voltage transients present.
- When straightening CMOS Pins, provide ground straps for the apparatus used.
- When soldering, use a grounded soldering iron.
- Where possible, handle CMOS devices by the package and not by the leads. Prior to touching the unit, touch an electrical ground to remove any static charge that you may have accumulated. The package and substrate may be electrically common. If so, the reaction of a discharge to the case would cause the same damage as touching the leads.

## 2.1.4 Repair Procedures and Techniques – General

**Note** The Motorola MOTOTRBO MTR3000 Base Station/Repeater system and its subsystems have been created in compliance with the environmental goals of the European Union’s **Restriction of Hazardous Substances (RoHS)** and the **Waste Electrical and Electronic Equipment (WEEE)** Directive 2002/96/EC as well as Motorola’s corporate goals to minimize environmental impact of its products.

This Motorola policy is reflected throughout the entire design, procurement, assembly, and packaging process.

In support of these efforts to provide environmentally-responsible products, please comply with the information in the following sections regarding any rework or repair on RoHS-compliant products.

Any rework or repair on Environmentally Preferred Products must be done using the appropriate lead-free solder wire and lead-free solder paste as stated in the following table:

Table 2-1 Lead Free Solder Wire Part Number List

Motorola Part Number	Alloy	Flux Type	Flux Content by Weight	Melting Point	Supplier Part number	Diameter	Weight
1088929Y01	95.5Sn/3.8Ag/0.7Cu	RMAVersion	2.7-3.2%	217C	52171	0.015	1lb spool

Table 2-2 Lead Free Solder Paste Part Number List

Motorola Part Number	Manufacturer Part Number	Viscosity	Type	Composition & Percent Metal	Liquid Temperature
1085674C03	NC-SMQ230	900-1000KCPs Brookfield (5rpm)	Type 3 (-325/+500)	(95.5%Sn-3.8%Ag-0.7%Cu) 89.3%	217°C

**Note** MTR3000 Power Amplifier with Solder Wire Part Number 1010041C24 and Solder Paste Part Number 1010041C20 uses leaded solder.

### Parts Replacement and Substitution

When damaged parts are replaced, identical parts should be used. If the identical replacement part is not locally available, check the parts list for the proper Motorola part number and order the part from the nearest Motorola Radio Products and Solutions Organization listed in the respective Appendix chapters in this manual.

### Rigid Circuit Boards

The repeater uses bonded, multi-layer, printed circuit boards. Since the inner layers are not accessible, some special considerations are required when soldering and unsoldering components. The printed through holes may interconnect multiple layers of the printed circuit. Therefore, exercise care to avoid pulling the plated circuit out of the hole.

When soldering near a connector:

- Avoid accidentally getting solder in the connector
- Be careful not to form solder bridges between the connector pins
- Examine your work closely for shorts due to solder bridges.

### Chip Components

Use the RLN4062 Hot-Air Repair Station for chip component replacement. Adjust the temperature control to 370 °C (700 °F), and adjust the airflow to a minimum setting. Airflow can vary due to component density.

- **To remove a chip component:**
  1. Use a hot-air hand piece, and position the nozzle of the hand piece approximately 0.3 cm (1/8") above the component to be removed.
  2. Begin applying the hot air. Once the solder reflows, remove the component using a pair of tweezers.
  3. Using a solder wick and a soldering iron or a power desoldering station, remove the excess solder from the pads.

- **To replace a chip component using a soldering iron:**
  1. Select the appropriate micro-tipped soldering iron and apply fresh solder to one of the solder pads.
  2. Using a pair of tweezers, position the new chip component in place while heating the fresh solder.
  3. Once solder wicks onto the new component, remove the heat from the solder.
  4. Heat the remaining pad with the soldering iron and apply solder until it wicks to the component. If necessary, touch up the first side. All solder joints should be smooth and shiny.
- **To replace a chip component using hot air:**
  1. Use the hot-air hand piece and reflow the solder on the solder pads to smooth it.
  2. Apply a drop of solder paste flux to each pad.
  3. Using a pair of tweezers, position the new component in place.
  4. Position the hot-air hand piece approximately 0.3 cm (1/8") above the component and begin applying heat.
  5. Once the solder wicks to the component, remove the heat and inspect the repair. All joints should be smooth and shiny.

## Shields

Removing and replacing shields is recommended to be done with an Air Blower, BOSCH GHG 600-3 or equivalent. The temperature should be set to approximately 400°C (752°F).

- **To remove the shield:**
  1. Place the circuit board in the circuit board holder.
  2. Add solder paste flux around the base of the shield.
  3. Position the heat-focus head onto the shield.
  4. Turn on the heater, and wait until the shield lifts off the circuit board.
  5. Once the shield is off, turn off the heat, and grab the part with a pair of tweezers.
  6. Remove the circuit board from the circuit board holder.
- **To replace the shield:**
  1. Add solder to the shield if necessary, using a micro-tipped soldering iron.
  2. Next, rub the soldering iron tip along the edge of the shield to smooth out any excess solder. Use solder wick and a soldering iron to remove excess solder from the solder pads on the circuit board.
  3. Place the circuit board back in the circuit board holder.
  4. Place the shield on the circuit board using a pair of tweezers.
  5. Position the heat-focus head over the shield.
  6. Turn on the heater, and wait for the solder to reflow.
  7. Once complete, turn off the heat, raise the heat-focus head, and wait approximately one minute for the part to cool.
  8. Remove the circuit board and inspect the repair. No cleaning should be necessary.

## 2.1.5 Test Equipment

The list of equipment contained in Table 2-3 includes most of the standard test equipment required for servicing Motorola repeaters.

*Table 2-3 Recommended Test Equipment*

<b>Equipment</b>	<b>Characteristic</b>	<b>Example</b>	<b>Application</b>
Service Monitor	Can be used as a substitute for items marked with an asterisk (*)	Aeroflex 3900 Series Communications System Analyzer ( <a href="http://www.aeroflex.com">www.aeroflex.com</a> ), General Dynamics R8000 with optional DMR/MOTOTRBO options installed ( <a href="http://www.gdsatcom.com">www.gdsatcom.com</a> ) or equivalent	Frequency/deviation meter and signal generator for wide-range troubleshooting and alignment  To test the radio using digital MOTOTRBO modulation (Aeroflex Option 400)
Digital rms Multimeter*	100 $\mu$ V to 300V 5 Hz to 1 MHz 10 Meg $\Omega$ Impedance	Fluke 179 or equivalent ( <a href="http://www.fluke.com">www.fluke.com</a> )	AC/DC voltage and current measurements. Audio voltage measurements
Oscilloscope*	2 Channel 100 MHz Bandwidth 5 mV/div to 20V/div	Leader LS8050 ( <a href="http://www.leaderusa.com">www.leaderusa.com</a> ), Tektronix TDS1001b ( <a href="http://www.tektronix.com">www.tektronix.com</a> ), or equivalent	Waveform measurements
Power Meter and Sensor*	5% Accuracy 100 MHz to 500 MHz 50 Watts	Bird 43 Thruline Watt Meter ( <a href="http://www.bird-electronic.com">www.bird-electronic.com</a> ) or equivalent	Power Output measurements for use on "analog" channels
RF Millivolt Meter	100 mV to 3V RF 10 kHz to 1 GHz	Boonton 92EA ( <a href="http://www.boonton.com">www.boonton.com</a> ) or equivalent	RF level measurements

## 2.1.6 Service Aids

Table 2-4 lists the service aids recommended for working on the Base Station/Repeater (BR). While all of these items are available from Motorola, most are standard workshop equipment items, and any equivalent item capable of the same performance may be substituted for the item listed.

Table 2-4 Service Aids

Motorola Part Number	Schroff Part number	Description	Application
DDN9957A	–	Standard Type "A" to Type "B" USB Programming cable	To connect a service computer to the MTR3000 base station/repeater's front USB port for Programming, Testing and Alignment.
HSN1006	–	Speaker	To listen to any active audible alarms  Note : Use speaker type HSN1000 (older model) or HSN1006 via adapter cable Part.No. 0185180U01.
3083191X02	–	RJ-45 to BNC cable / Receiver Audio Test Cable	Connects the external speaker RJ-45 jack to the Oscilloscope input BNC connector.
GMMN4063	–	Microphone	To transmit voice by connecting it to microphone connector on SCM.  Note : Use microphone type GMN6147 (older model) or GMMN4063.
0185180U01	–	Speaker adapter cable	To connect the speaker to speaker connector on SCM.
RVN5115	–	Customer Programming Software (CPS) Package (Includes CPS, Air Tracer, Tuner, Radio Diagnostic and Control (RDAC))	Program customer option and channel data.
–	23021653	Extender Card	To power up the cluster module (Exciter, Receiver, Station Control Module) external from the MTR3000 Base Station/Repeater (BR).
6683334X01	–	Option Card tool	To pull the option boards (e.g. Wireline Interface Board or the Auxiliary I/O Board).

The following tools are also required for disassembly and reassembly the base station/repeater:

- Small Flat Blade Screwdriver
- Torque Drivers (T10, T15 and T20). Refer to Table 2-5 for the different size fasteners of screw torques.
- Cable Ties
- Hand-held tool/Side Cutters to cut Cable Ties

*Table 2-5 Torque Specifications for Nuts and Screws*

Assembly	Description	Bit Size	Torque		
			N-m	lbs-in	kg-cm
Exciter	M4 screws	T20	2.8	25	28.8
Receiver					
Station Control Module					
Power Amplifier					
Base Radio	M4 screws	T20	2.3	20	23.0
Backplane	M4 screws	T20	2.3	20	23.0
Power Amplifier	M3.5 screws	T15	1.7	15	17.3
Power Amplifier	M3 screws	T10	1.1	10	11.5
Base Radio	M3 screws	T10	1.1	17	11.5
Backplane	M3 screws	T10	1.1	17	11.5

## Chapter 3 MTR3000 Power Amplifier

### 3.1 Overview

This section provides an overview, detailed Theory of Operation and troubleshooting information of the Power Amplifier (PA) Module. The schematic diagrams, overlays, and parts lists are provided on the foldout sheets. A complete list of all parts is provided with the parts ordered according to the schematic reference number.

For specifications of the PA, refer to the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

### 3.2 Theory of Operation

The following theory of operation describes the operation of the Power Amplifier circuitry at a detailed level. The information is presented to give the service technician an understanding of the functions performed by the module in order to facilitate maintenance and troubleshooting to the component level.

The Power Amplifier (PA) module is designed for continuous-duty operation across its specified frequency band and transmit power range. It is a multi-stage RF amplifier, and contains various metering, control, and protection circuitry that govern its operation. The PA module will accept a fixed-level RF input signal from the Exciter module, and amplify it to the desired transmit power and deliver it to the PA output connector, which is the Base Station/Repeater (BR) antenna port. Through a combination of software (SW) and hardware (HW) controls, the PA transmit power is determined.

The PA module contains the sub-modules below:

- RF Board (replaceable)
- Output Board (replaceable)
- Distribution Board (replaceable)
- Internal isolator (replaceable) which consists of a Circulator and isolation load.

Refer to Figure 3-1 for the PA sub-modules.

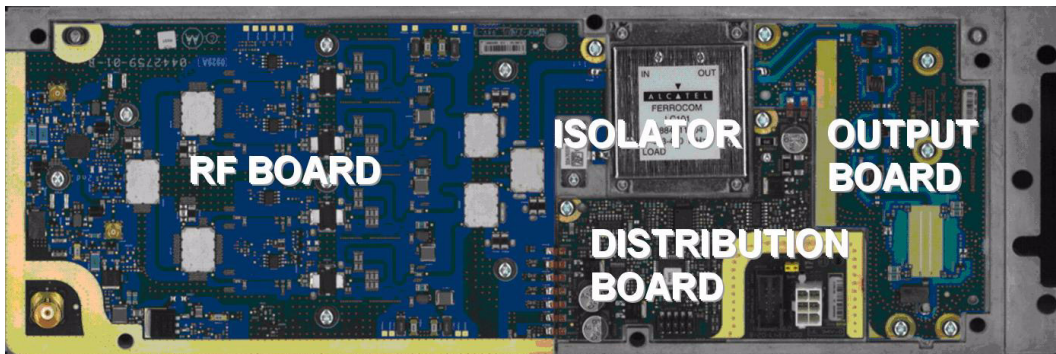


Figure 3-1 PA sub-modules

The RF Board is a multi-stage power amplifier board that contains the Driver Amplifier and final amplifier circuits, and is the interface to the Exciter module output. The Output Board contains the harmonic (low-pass) filter and directional couplers for forward and reverse power sensors, and is connected to the PA output/antenna port. The Distribution Board contains the PA SPI circuitry, diagnostic metering circuitry, RF power control circuitry, and the fan power supply, and is the interface to the site control module (SCM) and power supply module (PS). The SPI circuitry within the PA includes the analog to digital converter (A/D), digital to analog converter (D/A), non-volatile memory (NVM), and the customer programmable logic device (CPLD). The PA and its sub-modules are broad-band and require no manual tuning or alignment to operate at the station site over the specified rated conditions.

The station PS provides 28.6 V and 14.2 V supplies to the PA through a direct connection. The PA utilizes these voltages to supply power within the PA to the various sub-circuits described herein. Additional internal voltages of 3.3 V and 5 V are derived from the 14.2 V supply within the PA, and these are used to supply certain peripheral circuitry within the PA.

Within the PA, the input RF signal is initially amplified by the Driver Amplifier stages, and is then further amplified by the final amplifier stage. The Driver Amplifier is gain-controlled by a control voltage,  $V\_Control$ , provided by the power control loop within the PA. The final amplifier is a fixed-gain amplifier stage, and is the last stage of RF amplification within the PA. The amplified RF signal then passes from the final amplifier through an isolator and harmonic filter, through the directional couplers for power detection, and then out of the PA output port.

The directional coupler is a calibrated wattmeter, with its calibration information stored in the PA NVM. The forward power wattmeter provides a DC voltage corresponding to the measured output power to the A/D for metering purposes, so that SW can monitor the PA or the base station/repeater output power. Also, this voltage is provided to the power control circuitry within the PA to serve as the feedback signal in the power control loop. Using the unique PA calibration information stored in the NVM, SW can control the PA output power level via the SPI bus from the SCM through the PA signal connector. SW controls the transmit power by programming the D/A within the PA power control circuit to a specific DC reference voltage corresponding to the desired output power based on the calibration information. Under normal operating conditions, the power control circuitry compares the DC voltage from the directional coupler to the reference voltage from the D/A, and based on the comparison a control voltage is generated that controls the PA gain to yield the requested output power from the PA module.

The SW requested output power level may include one or more SW controlled adjustments based on various alarm conditions generated from monitored PA metering signals which are fed back to the SCM via an A/D converter (also connected to the SPI bus). Using the A/D metering circuits, SW monitors for conditions such as high reflected power/VSWR or high/low supply voltages and takes action to reduce output power or dekey the station accordingly to protect the HW from damage or improper operation. During excessive output VSWR, the ratio of the forward and reflected voltages from the directional coupler may be used by software to reduce, or turn off, the transmitter power based on the reflected power level and severity of the VSWR. Likewise when the main PA supply voltage level is outside of its nominal range, the output power is reduced by SW accordingly to protect the HW.

Temperature sense circuitry is also contained within the PA and is used to monitor the PA internal temperature. When the temperature reaches a certain threshold, the PA fan will power on to reduce the operating temperature of the PA. If the temperature continues to rise and reaches another predefined threshold, it will begin to impact the power control loop and will result in an output power reduction in order to protect the HW from thermal failure. When this latter threshold is exceeded, it provides a voltage contribution into the power control loop feedback and results in a reduced output power. Both the fan control and the power control manipulation for thermal protection is fully HW



controlled, and requires no SW interaction for this to occur. Additionally, the PA also contains metering circuitry to monitor for low output power and fan failure alarming, although these are informational in nature and do not result in a HW or SW action on the PA.

The PA can be placed in standby mode when not transmitting. This is achieved through the PA\_Enable signal controlled by the SCM through the PA signal connector. When this signal is in the high state, the PA is enabled. When the PA is placed in standby mode, the power consumption of the PA is significantly reduced.

The PA HW type is identified by way of the PA\_IDA and PA\_IDB meters within the PA. These signals are provided to the A/D, and are also controlled by the D/A to result in multiple states for each A/D input. These meter values are used to determine HW type.

Refer to Figure 3-2 for the functional block diagram of the PA and Figure 3-3 for the PA DC Power Structure.

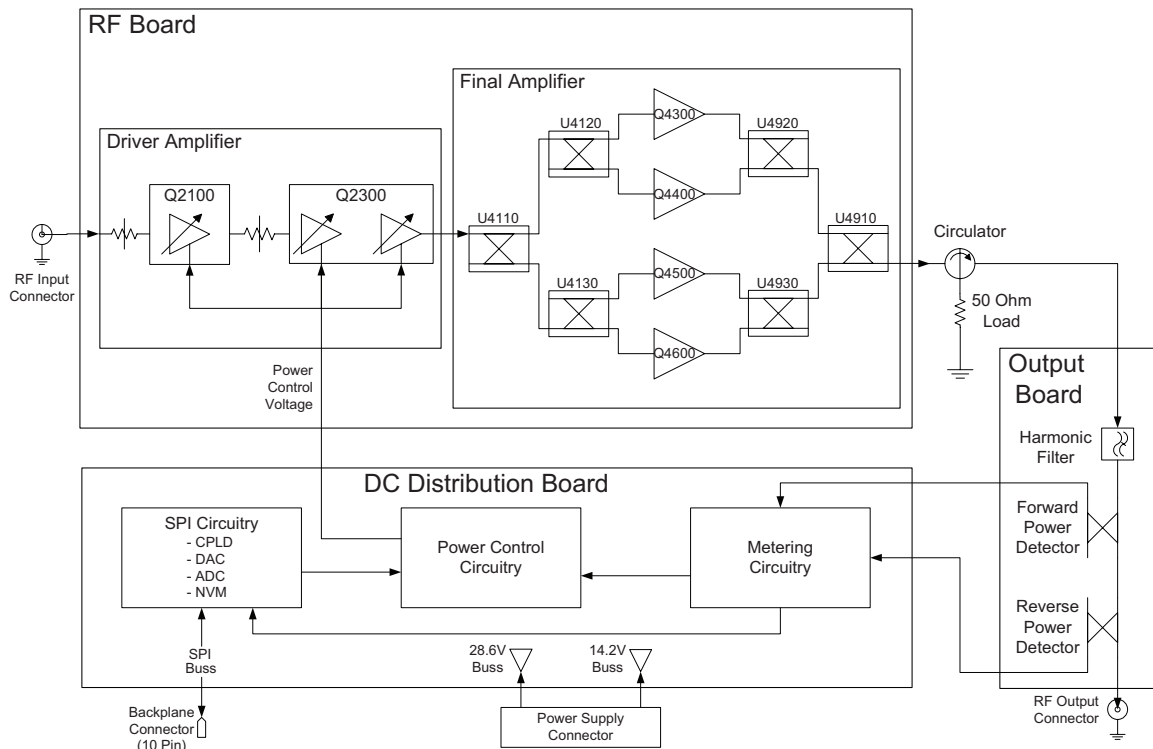


Figure 3-2 PA Functional Block Diagram

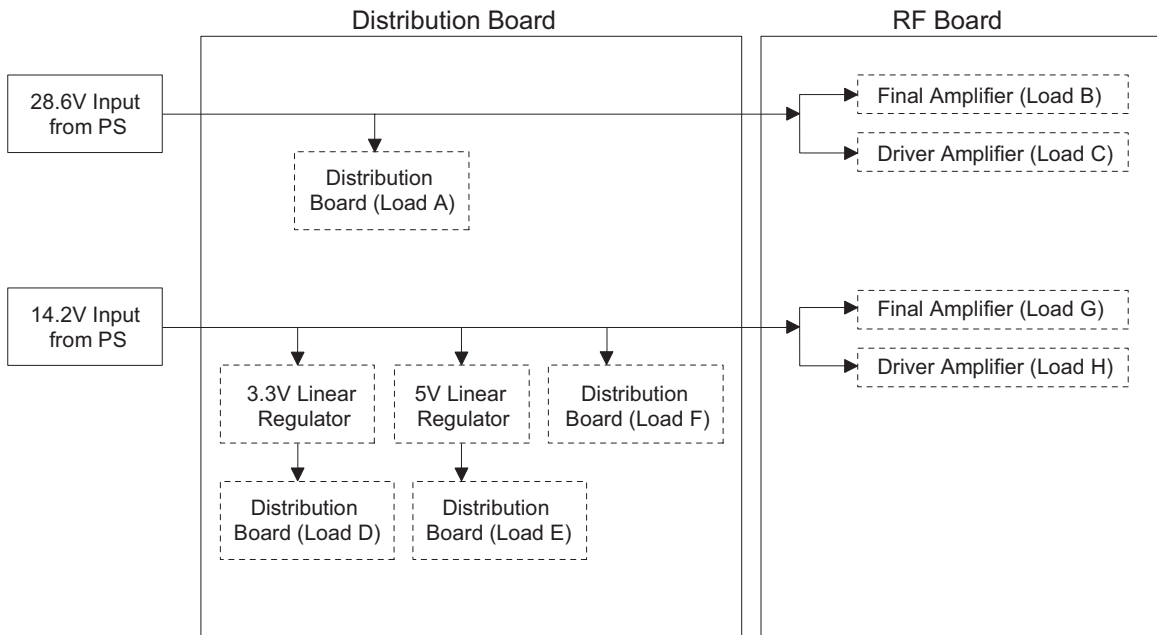


Figure 3-3 PA DC Power Structure

PA DC Load Definitions:

- Load A – Metering Circuit
- Load B – Final Amplifier RF Devices
- Load C – Driver Amplifier RF Devices
- Load D – SPI, Metering, Power Control
- Load E – SPI, Metering, Power Control
- Load F – Metering, Power Control, PA Fan
- Load G – Final Amplifier Bias Circuitry
- Load H – Driver Amplifier Bias Circuitry, Driver Amplifier RF Device

### 3.2.1 RF Board

The RF Board is a replaceable module within the PA, and contains the driver and final amplifier circuits, as well as the PA input BNC connector. This board performs all of the RF amplification within the PA required to achieve the desired transmit power. The output power of the RF Board is greater than the PA output power, as it must overcome the losses introduced by the elements following the RF board within the PA, such as the isolator and harmonic filter.

The RF board utilizes local heat spreaders under the main RF amplifier devices and final amplifier combiner isolation loads. These heat spreaders contact the PA cast heat sink and provide a thermal path to maintain adequate operational temperatures of these components. Thermal grease is used between the heat spreader and the PA cast heat sink interface to maintain a proper thermal interface.

### 3.2.1.1 Driver Amplifier

The Driver Amplifier is the first amplifier within the PA, and is capable of reaching output power levels of approximately 4 W max. The Driver Amplifier consists of three adjustable-gain amplifier stages and supporting matching circuits and attenuators. The Driver Amplifier and supporting circuitry is denoted by reference designators in the 2000's (i.e. R2000, C2450, etc). The driver gain stages are gain-controlled, by way of V\_Control, in order to adjust the PA output power to the desired level through the power control loop within the PA. Depending on the PA input level and the desired PA output level, the control voltage will be adjusted to yield the necessary driver gain, up to a maximum of approximately 25 dB, in order to achieve the desired PA output power.

### 3.2.1.2 Final Amplifier

The RF output signal delivered from the Driver Amplifier is then further amplified by the final amplifier stage within the PA. This is the last RF amplification stage, and will yield the output power required to deliver the requested power to the base station/repeater's antenna port. The final amplifier and supporting circuitry is denoted by reference designators in the 4000's (i.e. R4000, C4450, etc). The final amplifier is a fixed-gain stage with approximately 20 dB of gain, which will vary depending on the frequency band of operation. The final amplifier consists of four discrete devices operating in a parallel configuration. A multi-stage hybrid splitter/combiner distributes the Driver Amplifier output signal to these final amplifier devices, and then later recombines the amplified signals from these devices to deliver combined power to the next element within the PA.

### 3.2.1.3 Module I/Os

RF INPUT (J2000) – RF input from the Exciter to the PA

ISOL\_RF\_INPUT (M2050) – RF output from the final amplifier to the isolator input

28V\_A (M2021) – 28 V supply input from Distribution Board for final amp

28V\_B (M2020) – 28 V supply input from Distribution Board for final and driver amps

14V (M2022) – 14 V supply input from Distribution Board, for final and driver amps

V\_CONTROL (M2023) – Control voltage input from Distribution Board

V\_OMNI (M2024) – Metering signal output supplied from driver to A/D

PA\_ENABLE (M2025) – PA enable signal input from Distribution Board

PA\_ID (M2026) – PA\_ID metering circuit input from Distribution Board for PA ID

## 3.2.2 Isolator

The PA internal isolator (which is comprised of a discrete circulator and a bolt-down isolation load) follows the final amplifier within the PA. It maintains good loading for the final amplifier (regardless of the PA's external load) by preventing a high VSWR at the output of the PA from damaging the final amplifier stage. Also, by providing additional isolation to the final amplifier, the isolator improves the intermodulation attenuation (IMA) performance of the transmitter.

### 3.2.3 Output Board

The Output Board is a replaceable module within the PA, and contains the harmonic filter, directional couplers, and surge suppression circuitry within the PA. The Output Board circuitry is denoted by reference designators in the 8000's (i.e. R8000, C8450, etc). The Output Board connects the isolator output to the PA N-Type output connector that is mounted to the PA cast heat sink.

#### 3.2.3.1 Harmonic Filter

The harmonic filter is located following the isolator stage of the PA. This filter attenuates the harmonic energy created by the final amplifier stage prior to reaching the antenna port. The harmonic filter will be fully distributed for some frequency bands and will contain lumped elements (capacitors and inductors) for other frequency bands, but will be located in the same location for all bands.

#### 3.2.3.2 Directional Couplers

The forward and reverse directional couplers on the output board utilize edge-coupled lines and isolation loads with a coupling coefficient of approximately 30 dB, and perform a diode rectification of the coupled RF signal to provide a DC voltage back to the distribution board that will be routed to the A/D for metering. The forward power sensor voltage is also tied into the power control loop, and is used to balance the loop for the desired output power.

#### 3.2.3.3 Surge Suppression

For suppression of surges entering the PA output port, an air-wound inductor is placed between the output line and ground to provide a high impedance within the specified frequency band of the PA. During a surge event such as a nearby lightning strike, this will reduce the energy entering the PA output port prior to reaching other PA internal components, and help to prevent damage during these types of events.

#### 3.2.3.4 Module I/Os

RF\_IN (M8002) – RF input from the isolator output

RFOUT (M8000) – RF output to the antenna port

REV\_DET (M8001) – Reverse power sensor output to Distribution Board

FWD\_DET (M8003) – Forward power sensor output to Distribution Board

### 3.2.4 Distribution Board

The Distribution Board is a replaceable module within the PA, and contains the PA SPI circuitry, diagnostic metering circuitry, RF power control circuitry, and the fan supply. The Distribution Board circuitry is denoted by reference designators in the 6000's (i.e. R6000, C6450, etc).

A 10-pin signal connector (J6000) is located on this board and is the external interface to the backplane through a ribbon cable for communication with the SCM. A 6-pin power connector (J6001) is also located on this board and is the interface to the PS for supplying main supply bus voltages to the PA, with 2 pins dedicated to 28.6 V, 2 pins for 14.2 V, and the other 2 pins are ground although the ground return path in the base station/repeater is also achieved through the station chassis.

In addition to the signal and power connectors, a 4-pin header (J6002) and 2-pin jumper is located in this same area. This is not supported, and has no impact on HW functionality regardless of jumper position.

#### 3.2.4.1 SPI

The SPI circuitry within the PA includes the analog to digital converter (A/D), digital to analog converter (D/A), non-volatile memory (NVM), and the customer programmable logic device (CPLD). A brief description of the PA SPI devices is shown below.

- CPLD – Main PA SPI interface, with all other PA SPI devices connected through this device. This device performs addressing to the other SPI devices using the two address lines from the SCM. One single bit output on the CPLD controls the PA fan for diagnostic purposes, and another single bit output is used for the PA identification meters
- NVM – EEPROM that is used to store PA calibration data and identification information
- D/A – Converts SW digital signals to analog within the PA. This controls the PA power control circuit
- A/D – Converts analog signals within the PA to digital for SW interface. These signals are used by SW for HW metering.

#### 3.2.4.2 Power Control

A combination of SW and HW controls are used to regulate the PA transmit power level. The PA output power is regulated by the power control loop within the PA. This control loop uses a reference voltage from a digital-to-analog (D/A) converter that is programmed by SW through the SPI bus. The D/A programmed value is determined based on the calibration information stored in the PA NVM. Once programmed, the PA power control loop will level the output power to the requested level, if possible.

The temperature sense circuit within the PA can also affect the power control loop, and if an excessive thermal condition exists, the control loop will be forced to reduce output power in order to protect the PA HW from damage. The more excessive the thermal condition, the greater the amount of output power reduction.

### 3.2.4.3 Metering

The DC Distribution Board contains the PA metering circuitry used by both SW and internal PA HW for determining when fault conditions are present and take appropriate action when needed. Metering is performed in order to support the PA related alarms including high temperature, VSWR, low/high main supply voltage, low output power, and fan failure. The metering signals are tied to the A/D, and are monitored by SW as required in order to determine when fault conditions exist.

### 3.2.4.4 Fan Supply

The PA fan is powered through the Distribution Board. The supply to the fan is connected through a feed-through capacitor on the fin side of the PA cast heat sink. The fan ground connection is attached to the PA cast heat sink. The fan supply is controlled by either SW or HW. When a thermal limit defined by the PA HW has been exceeded, the HW control circuit will enable the fan supply switch (Q6590) to power the fan, to attempt to lower the PA temperature. This is entirely HW controlled and does not require any SW action to occur. The SW control is only required for periodic monitoring of fan functionality. During these diagnostic tests, SW will force the fan on for a short period so that the fan current can be calculated in order to determine if the current is high or low which would indicate if the fan is failing or has already failed. The fan current is determined by measuring a voltage drop across a fixed series resistance located in the fan supply line (R6595/ R6596).

### 3.2.4.5 Module I/Os

For PA Supply Connector (J6001), refer to Table 3-1

*Table 3-1 PA Supply Connector (J6001)*

Pin	Name	Description	Input/Output
1	14.2V	+14.2 V Supply	Input
2	Ground	Ground	NA
3	28.6V	+28.6 V Supply	Input
4	14.2V	+14.2 V Supply	Input
5	Ground	Ground	NA
6	28.6V	+28.6V Supply	Input

For PA Signal Connector (J6000), refer to Table 3-2

*Table 3-2 PA Signal Connector (J6000)*

Pin	Name	Description	Input/Output
1	UNUSED	Unused – No-Connect	NA
2	BP_PA_ENABLE	PA Enable	Input
3	BP_RESET_N	Reset Line	Input

Table 3-2 PA Signal Connector (J6000) (Continued)

Pin	Name	Description	Input/Output
4	V_CONTROL	V_Control analog (Not base station/repeater Interface)	Input/Output
5	UNUSED	Unused – No-Connect	NA
6	BP_PA_ADDR0	PA Address Line 0	Input
7	BP_CLK	SPI Clock	Input
8	BP_MOSI	SPI MOSI Line	Input
9	BP_MISO	SPI MISO Line	Output
10	BP_PA_ADDR1	PA Address Line 1	Input

V\_FWD\_DST (M6910) – V\_Forward input from Output Board

V\_REV\_DST (M6911) – V\_Reverse input from Output Board

28V\_DST (M6900) – 28 V output to RF Board

28V\_DST (M6901) – 28 V output to RF Board

14V\_DST (M6902) – 14 V output to RF Board

V\_CTRL\_DST (M6903) – Control voltage output to RF Board

V\_OMNI\_DST (M6904) – Metering signal input from RF Board

PA\_EN\_DST (M6905) – PA enable signal output to RF Board

PA\_IDA\_DST (M6906) – PA\_ID metering circuit output to RF Board

BAND\_ID\_JUMPER (J6002) – Unsupported

Refer to Figure 3-4 for the external power and signal connector pin-outs.

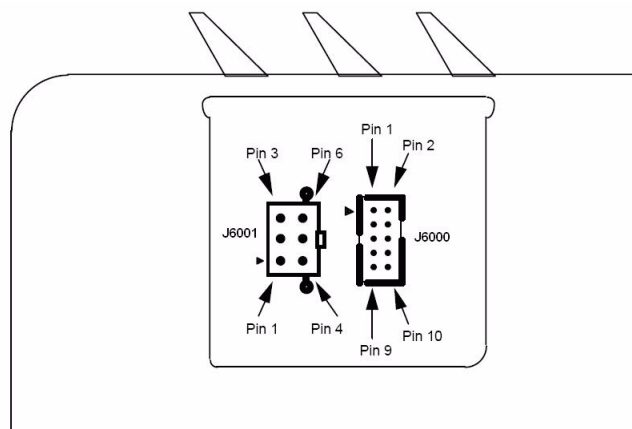


Figure 3-4 PA Signal Connectors

## 3.3 Troubleshooting

### 3.3.1 Application and Removal of Thermal Grease

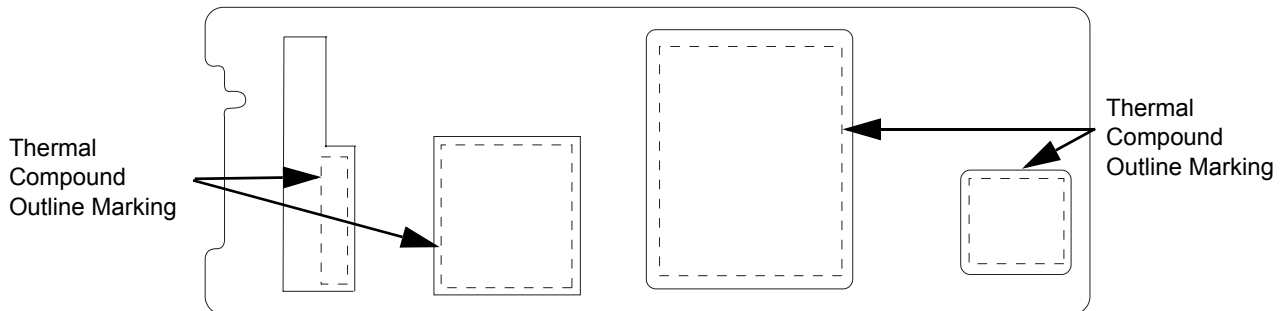
In the procedures below, there are instances where thermal grease is used to help disperse heat generated by the various boards. If boards are to be reused, please make sure the old thermal grease is removed completely by using 100% denatured alcohol before reapplying new thermal grease; this will ensure good thermal interface. Please use the appropriate application brush to apply an even layer of thermal grease in the stated areas.

### 3.3.2 Disassembly and Reassembly Procedures

**Note** The Distribution Board omega straps and the Circulator leads overlap onto the RF Board and Output Board, and should be the first to be removed and the last to be replaced if either the RF Board or Output Board requires removal/replacement.

**Note** Refer to Table 2-5 for the different size fasteners of screw torques.


To reapply thermal grease on the PA metal casting when reassembling the Output and RF Board, refer to Figure 3-5.



*Figure 3-5 Areas to apply thermal grease on the PA metal casting*



### 3.3.2.1 Output Board



**Caution** The PA will require recalibration if the Output Board is replaced. Recalibration is not necessary if the RF Board is replaced. If recalibration is not possible but is required, the PA module will need to be replaced.

#### 3.3.2.1.1 Disassembly

1. Remove the 5 screws from the board using a Torque driver.
2. Unsolder the output connector from the board.
3. Unsolder the lead which connects the board to the Circulator.
4. Unsolder the 2 omega straps on the output board, which connect it to the distribution board.

#### 3.3.2.1.2 Reassembly

1. Apply thermal grease to the marked section on the reverse side of the replacement output board as shown in Figure 3-6.
2. On the metal casting, remove the old thermal grease, and apply the new grease on the four outline areas as shown in Figure 3-5.
3. Install the replacement output board.
4. Secure the board with the 5 screws according to the order shown in Figure 3-6.

**Note** Ensure that the output board is placed under the Circulator lead.

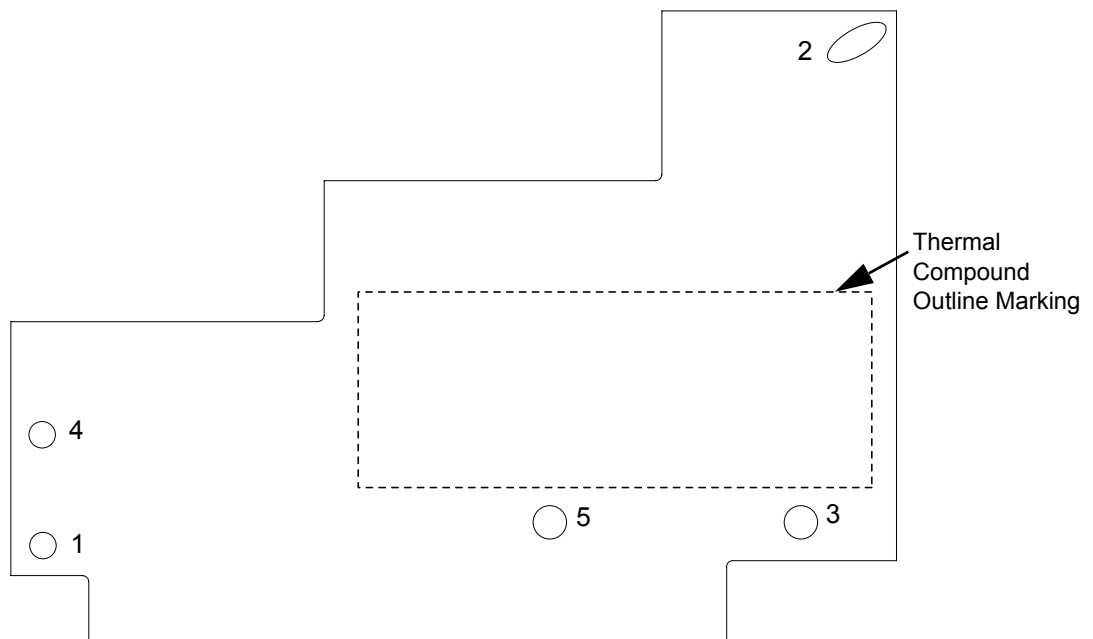


Figure 3-6 Sequence to tighten back screws on the output board

5. Solder the 2 omega straps, which connect the output board to the distribution board.
6. Solder the lead that connects the board to the Circulator.
7. Solder the output connector to the board.

### 3.3.2.2 Distribution Board



Caution

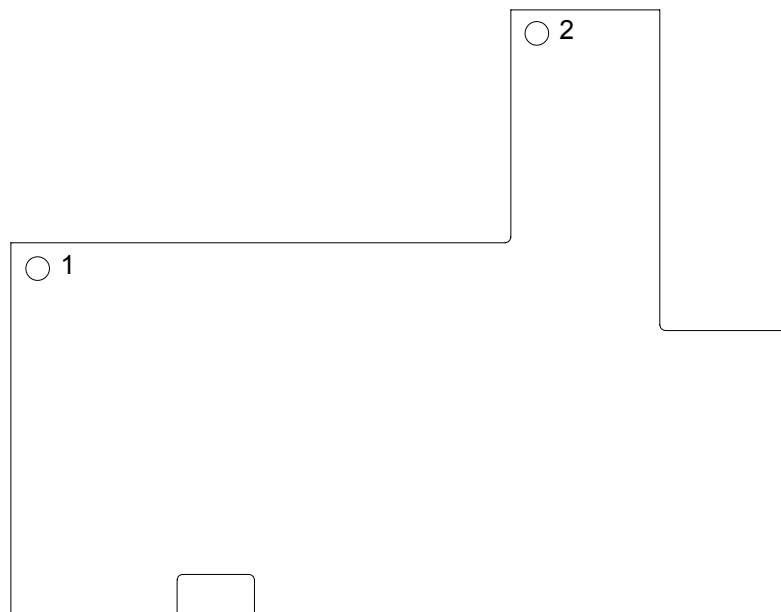
The PA will require recalibration if the Distribution Board is replaced. Recalibration is not necessary if the RF Board is replaced. If recalibration is not possible but is required, the PA module will need to be replaced.

#### 3.3.2.2.1 Disassembly

1. Remove the 2 screws from the board using a Torque driver.
2. Unsolder the lead which connects the fan connector to the board.
3. Unsolder the 2 omega straps on the output board, which connect the distribution board to the output board.
4. Unsolder the 7 omega straps on the RF board, which connect the distribution board to the RF board.

#### 3.3.2.2.2 Reassembly

1. Install the replacement distribution board.
2. Secure the board with the 2 screws according to the order shown in Figure 3-7.



*Figure 3-7 Sequence to tighten back screws on the distribution board*

3. Solder the 7 omega straps, which connect the board to the RF board.
4. Solder the 2 omega straps, which connect the board to the output board.
5. Solder the lead that connects the board to the fan connector.

### 3.3.2.3 RF board

#### 3.3.2.3.1 Disassembly

1. Remove the 8 screws from the board using a Torque driver.
2. Unsolder the Circulator from the board.
3. Unsolder the 7 omega straps on the RF board, which connect it to the distribution board.
4. Disassemble the Circulator and the load resistor according to the procedures outlined at Section 3.3.2.4.1 and Section 3.3.2.5.1.
5. Gently lift the RF board to remove it. Some additional force may be needed to overcome the thermal grease bonds under the board.

#### 3.3.2.3.2 Reassembly

1. Apply thermal grease to the three coins (driver coin, final device coin, final combiner coin) on the reverse side of the replacement RF board as shown in Figure 3-8.
2. On the metal casting, remove the old thermal grease, and apply the new grease on the four outline areas as shown in Figure 3-5.
3. Install the replacement RF board.
4. Secure the board with the 8 screws according to the order shown in Figure 3-8.

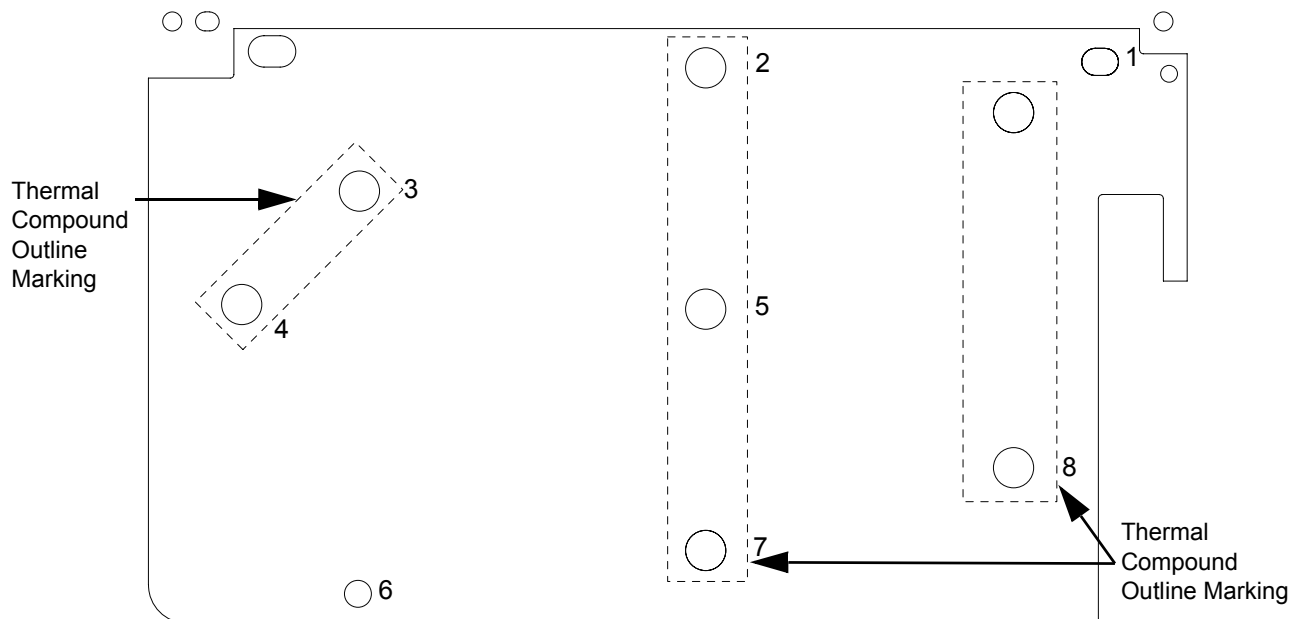


Figure 3-8 Sequence to tighten back screws on the RF board

5. Solder the 7 omega straps, which connect the board to the distribution board.
6. Solder the lead that connects the board to the Circulator.
7. Reassemble the Circulator and the load resistor according to the procedures outlined at Section 3.3.2.4.2 and Section 3.3.2.5.2.

### **3.3.2.4 Circulator**

#### **3.3.2.4.1 Disassembly**

1. Remove the 4 screws from the Circulator using a Torque driver.
2. Unsolder the Circulator from the RF board.
3. Unsolder the Circulator from the output board.
4. Unsolder the Circulator from the load resistor.

#### **3.3.2.4.2 Reassembly**

1. On the replacement Circulator, apply thermal grease to the underside of the Circulator as well as the Circulator pocket on the metal casting.
2. Install the replacement Circulator.
3. Secure the Circulator with the 4 screws which was previously removed.
4. Solder the lead that connects the Circulator to the load resistor.
5. Solder the lead that connects the Circulator to the output board.
6. Solder the lead that connects the Circulator to the RF board.

### **3.3.2.5 Load resistor**

#### **3.3.2.5.1 Disassembly**

1. Remove the 2 screws from the load resistor using a Torque driver.
2. Unsolder the lead which connects the load resistor to the Circulator.

#### **3.3.2.5.2 Reassembly**

1. Install the replacement load resistor.
2. Secure the load resistor with the 2 screws which was previously removed.
3. Solder the lead that connects the load resistor to the Circulator.

### 3.3.3 Troubleshooting Chart

Follow the procedures in the troubleshooting charts below to isolate the cause of PA problems.

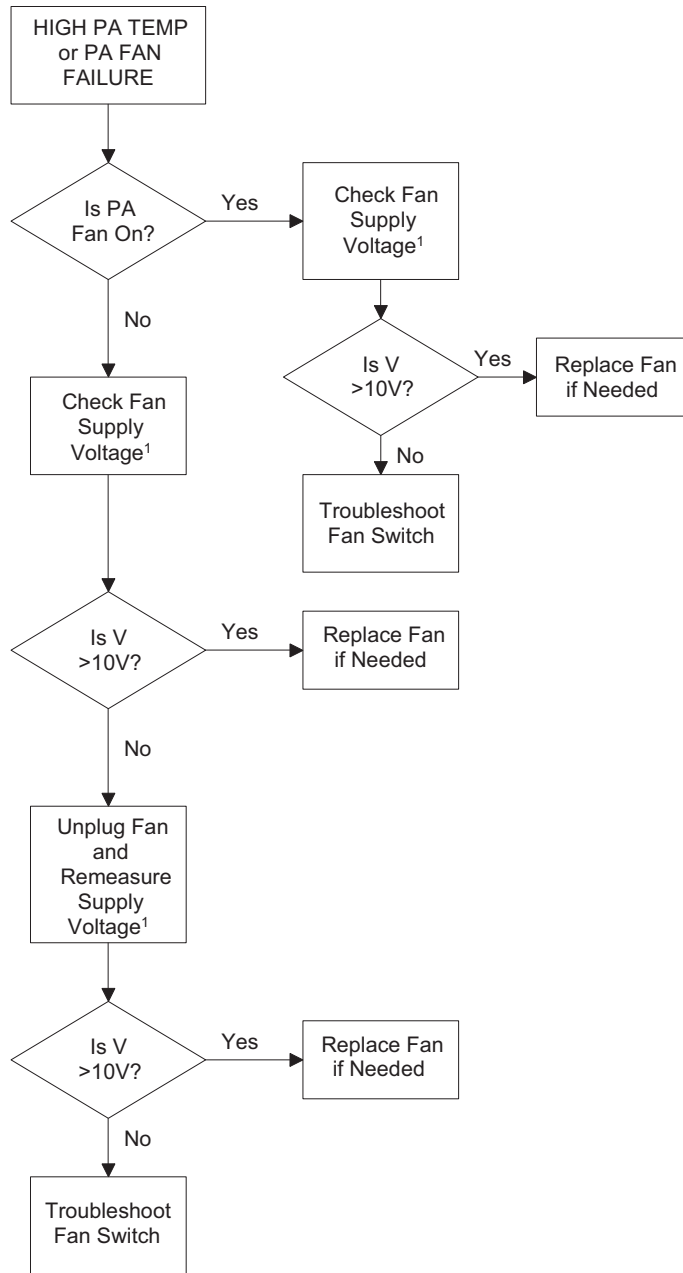


Figure 3-9 Fan Troubleshooting Flow Chart (PA)

**Note** 1. PA fan supply should be measured at feed-through capacitor output.

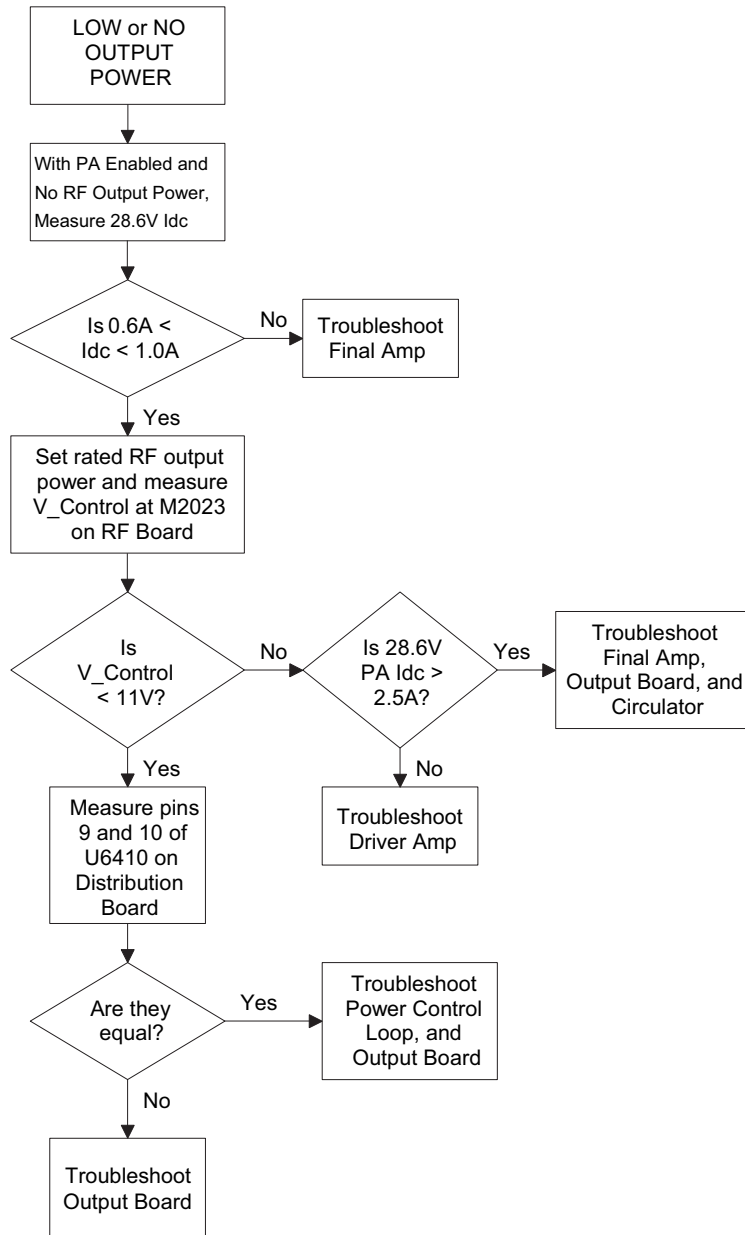


Figure 3-10 Power Troubleshooting Flow Chart (PA)

### 3.3.4 Detailed Troubleshooting



WARNING

Be aware of the dangers involved with high power RF and DC circuitry, and take extra care when testing a PA.



Caution

The PA output should always be terminated into an RF load capable of a minimum of 500 W for any functional testing when troubleshooting. Certain failure modes may result in loads measuring in excess of 300 W.



Caution

The circuit boards are sensitive to electrostatic discharge (ESD). Always wear a properly grounded wrist strap, and observe anti-static precautions when handling the circuit boards.



Caution

The sequencing of the DC supply voltages of the PA is critical, and failure to follow the proper sequencing can result in damage to the PA HW. If removal of a circuit board is required, the proper disassembly/reassembly procedure must be adhered to. Failure to do so may result in HW failure due to electrical and/or mechanical stress.

#### 3.3.4.1 Setup Instructions

##### 3.3.4.1.1 Main DC Supplies

When troubleshooting the PA module, if it is required to apply 28.6 V and 14.2 V DC power to the PA it can be done one of two ways. These are explained below.

If a mule base station/repeater or base station/repeater PS is used for testing, or if the bench power supplies do not have accurate current metering, the currents of the 28.6 V and 14.2 V buses should be monitored. This can be achieved by an inline current meter, or a clamp-on current probe onto the supply lines. If multiple wires are supplying a given voltage supply, all wires for that supply must be monitored together.

### **Method 1 (Using a Mule Base Station/Repeater for DC Power and Control)**

This method most faithfully recreates the application, although the setup is more limited in the ability to separate out the key-up or dekey process, and it may not be possible to troubleshoot all circuitry as described herein. With the base station/repeater's controlled key/dekey sequence, the PA enable signal will be controlled by SW, and it will not be possible to measure the enabled current draws of the PA supply lines, should that be required to debug the PA HW.

A base station/repeater may be connected to the PA, and can be used to supply DC power to the PA, as well as control the PA through the application SW (firmware). The PA will need to be removed from the base station/repeater, and the cover will need to be removed in order to access the circuit boards. For this, the base station/repeater's cable connecting the PS to PA can be used to supply main 28.6 V and 14.2 VDC power to the PA. The 10 pin signal cable will need to be replaced with a slightly longer cable. This is a standard 10 pin ribbon cable, and approximately 1 foot of length should be sufficient to connect the PA to the base station/repeater. This signal cable length should be kept as short as possible to prevent signal integrity issues.

A longer RF cable will be required to connect the Exciter module output to the PA input, and the length will be dictated by the setup constraints. This cable should be kept as short as possible to minimize insertion loss.

### **Method 2 (Using a Mule Base Station/Repeater Power Supply for DC Power with Manual Control)**

This method offers the additional flexibility that method 1 does not allow, and the PA can be placed into an enabled state without RF output power present. This will allow for troubleshooting of additional circuitry within the PA. The advantage of this method is that it does not require high power lab supplies to provide the DC power required by the PA.

A base station/repeater PS may be used to provide the main DC supplies of 28.6 V and 14.2 V to the PA. As in method 1, the base station/repeater PS to PA cable can be used. Two additional low power voltage supply lines will be required for this method. Neither of these lines will draw appreciable current, and supplies capable of 100 mA are sufficient.

The first of the additional supplies needed is the PA\_Enable signal. This will require a 5 V level to enable the PA, applied to pin 2 of J6000 when prompted, and 0 V on this pin to disable the PA and put it into standby mode.

The other of the additional supplies needed is for a control voltage signal to manually adjust the gain of the PA. Note that this supply must be capable of sinking several milliamps of current; otherwise it will be unable to override the control loop voltage. This supply must be capable of up to 14 V potentials.

### **Method 3 (Using Lab Power Supplies for DC Power and Control)**

This method is essentially the same as method 2, except lab DC power supplies are also used to supply the PA mains. These supplies will need to be capable of 15 A for the 28.6 V supply, and 5 A for the 14.2 V supply. The PA enable and control voltage supply requirements are the same as outlined in method 2.



### 3.3.4.1.2 Sequencing

The sequence of applying the supply and control voltages is critical, and if not followed exactly then the PA HW may fail. The following sequences for power up and power down are to be followed for any functional testing performed.

If method 1 is used, and a mule base station/repeater with application firmware controlling the full base station/repeater HW is used, the correct sequencing will occur automatically and this section does not apply in that case.

If method 2 above is used, and a mule base station/repeater PS only is used, the 28.6 V and 14.2 V power supplies will come up or go down in the proper order. Note that voltages may not be exactly 28.6 V and 14.2 V, but must be within the power supply tolerances. For this method, the power supply should be plugged in at the step where 28.6 V and 14.2 V potentials are applied or removed, but all steps preceding and following those steps must be followed as shown.

If method 3 above is used, the following sequence applies.

Powering Up the PA:

1. Disable PA by applying 0 V to pins 2 and 4 of J6000
2. Apply 28.6 V main supply voltage to pins 3 and 6 of J6001
3. Apply 14.2 V main supply voltage to pins 1 and 4 of J6001
4. Apply 12 dBm for UHF to RF input connector J2000
5. Apply the PA Enable signal 5.0 V to pin 2 of J6000, if the PA is to be enabled
6. If RF output power required, very slowly increase V\_Control signal from 0 V on pin 4 of J6000 until desired output power is achieved. Step size of less than 0.05 V should be taken, else severe RF output power may result and damage to the HW could occur. During this step, main supply voltage bus currents should be monitored to make sure excessive currents do not result.



Caution

If supply currents for either 28.6 V or 14.2 V bus become excessive for the resulting output power, then the troubleshooting steps for low or no output power should be followed to determine the problem.

Powering Down the PA:


1. Slowly decrease V\_Control to 0V on pin 4 of J6000
2. Disable PA by applying 0 V to pin 2 of J6000
3. Disable RF input to PA
4. Remove 14.2 V main supply voltage (set to 0 V) to pins 1 and 4 of J6001
5. Remove 28.6 V main supply voltage (set to 0 V) to pins 3 and 6 of J6001


### 3.3.4.2 Troubleshooting Details

Prior to any detailed troubleshooting, once the cover is off, it is suggested to inspect all of the circuit boards of the PA to look for evidence of damage. This may include loose components, charred PCB/ components, black residue surrounding components or black residue on inside of cover. This may help to guide you to the problematic area, or indicate a secondary failure mode that may have resulted but was not diagnosed.

The details below will indicate when DC and/or RF power is to be applied. It should be assumed that no DC or RF power is to be applied until stated.

PA circuitry is grounded to the PA cast heat sink, and measurement equipment should be connected to the same ground when performing any testing of the PA.

 Caution	<p>Technicians troubleshooting and repairing the circuit boards must be trained, and capable of removing and replacing surface-mount components of the appropriate package sizes. Failure to properly install/replace any component may result in failure and/or reduced reliability.</p>
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 Caution	<p>The PA will require recalibration if the Output Board is replaced. Recalibration is not necessary if the RF Board is replaced. If recalibration is not possible but is required, the PA module will need to be replaced.</p>
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#### 3.3.4.2.1 Troubleshooting the Fan Switch

1. Disconnect the fan connector from the feed-through capacitor on the fin side of the PA heat sink.
2. Check for DC continuity through feed-through capacitor to determine if component failure has occurred, and replace if necessary. Severe electrical or mechanical stress could result in failure of this component.
3. Verify resistance of R6595 (if placed), R6596, and R6597 to determine if component failure has occurred, and replace if necessary. A fan failure could result in over-dissipation of these resistors.
4. Apply 28.6 V and 14.2 V DC power to the PA. Measure pin 3 of Q6590, and it should be approximately equal to the 14.2 V input voltage to the PA (pins 1 and 4 of J6001). If not, something between these points is disconnected. If it is, then the only way to force the fan to turn on is to use the mule base station/repeater, and it will attempt to turn on the fan on upon the base station/repeater boot up for a diagnostic test, at which point pin 4 of Q6590 should be approximately equal to pin 3.
5. When the fan circuit is energized during the fan test during the base station/repeater boot up, the voltage drop across resistor R6596 should be approximately 2 V. If it is significantly more or less than this, this indicates abnormal current draw of the fan, and the fan should be replaced.
6. If no specific failure is found, replace the fan and/or distribution board. Recalibration and retest is required, if the distribution board is replaced.

### 3.3.4.2.2 Troubleshooting the Driver Amplifier



Caution

When working on the RF Board, do not use a heat gun or hot plate. Damage to the circuit board can result.



Caution

Do not attempt to replace RF amplifier devices Q2300, Q4300, Q4400, Q4500, or Q4600 on the RF Board. If any of these devices fail, the entire RF Board kit must be replaced.

1. Check for blown fuses F2400, F2100. If any of these fuses is blown, this indicates a damaged device that has shorted to ground. Inspect for failures downstream. If Q2300 has failed, it cannot be repaired and the kit must be replaced.
2. Apply 28.6 V and 14.2 V main DC supplies. Measure output voltage at pin 2 of U2500 linear regulator; it should be ~28.6 V. Measure drain voltage at final driver stage U2300 pins 13 and 23; they should be ~28.6 V.
3. Enable the PA, and measure output voltage at pin 2 of U2500 linear regulator; it should be ~25 V, when PA is enabled. Measure drain voltage at final driver stage U2300 pins 13 and 23; they should be ~25 V.
4. Key the PA to rated output power, and measure drain voltage at final driver stage U2300 pins 13 and 23; they should be ~25 V.
5. Measure V\_Omni at pin 4 of Q2400; it should equal ~1.5 times V\_Control at M2023.
6. Measure pin 3 of predriver stage Q2100 (AH101 device); it should equal a few volts below V\_Omni. If it is notably less than this, the AH101 device is damaged and should be replaced.
7. Measure pins 10 and 20 of final driver stage U2300; they should equal 2 V to 3 V each.
8. If no issues are found in the steps above, and the 28 V current indicates a final amplifier related issue, perform troubleshooting steps on the Circulator and Output Board. This can be additionally verified by sniffing the RF levels at the various stages of the driver to ensure that the correct diagnosis has been performed.
9. If no issues are found in the steps above, and 28 V current does indicate increased final amplifier current draw with increased V\_Control, perform the final amplifier troubleshooting steps.

### 3.3.4.2.3 Troubleshooting the Final Amplifier



Caution

Do not use a hot plate when working on the RF Board, and do not use a heat gun at/or around the coined areas, as this will cause damage to the PCB.



Caution

Do not attempt to replace RF amplifier devices Q2300, Q4300, Q4400, Q4500, or Q4600 on the RF Board. If any of these devices fail, the entire RF Board kit must be replaced.

1. Inspect all final amplifier RF devices for signs of failure: Q4300, Q4400, Q4500, and Q4600. Signs of failure may include a pin hole on the top of the device package, charred marks at the output lead, or black marks around or on the inside of the PA cover above any of these devices. Also inspect the combiner isolation loads – R4911, R2912, R4921, R4922, R4931, and R4932 – for signs of over dissipation, as this is also indicative of a final amplifier device failure. If any of Q4300, Q4400, Q4500, or Q4600 is found to be damaged, it cannot be repaired and the kit must be replaced.
2. Check for blown fuses at F4316, F4416, F4516, and F4616. If a fuse is blown, this indicates a damaged device that has shorted to ground. Inspect for failures downstream. If Q4300, Q4400, Q4500, or Q4600 has failed, it cannot be repaired and the kit must be replaced.
3. Apply 28.6 V and 14.2 V main DC supplies. Measure drain voltages at final amplifier devices Q4300, Q4400, Q4500, and Q4600, which should be ~28.6 V.
4. Enable the PA and measure gate voltage at pin 5 of U4337, U4437, U4537, and U4637, which should be approximately 3 V each and approximately equal to each other.
5. Measure voltage drop across each R4315, R4415, R4515, and R4615, which are 10 mΩ sense resistors for drain current. Top side probe pads are present adjacent to each of these resistors (TP4301/TP4302, TP4401/TP4402, TP4501/TP4502, and TP4601/TP4602 respectively) to accommodate probing across the resistors. Each resistor should have approximately 2 mV of drop across it indicating 200 mA. Note that this value can vary with temperature, but all devices should be approximately equal.
6. Key the PA to rated output power, and measure drain voltage at final amplifier devices Q4300, Q4400, Q4500, and Q4600, which should be ~28 V.
7. Measure voltage drop across each R4315, R4415, R4515, and R4615, which are 10 mΩ sense resistors for drain current. Each resistor should have approximately 20 mV of drop across it indicating 2 A of current drain. Note that this value can vary with temperature, but all devices should be approximately equal.
8. If no issues are found in the steps above, and 28 V current does indicate a final amplifier related issue, perform the troubleshooting steps on the Circulator and Output Board.

#### 3.3.4.2.4 Troubleshooting the Output Board

1. Inspect the PCB micro-strip traces for signs thermal failure (severe discoloration, charred PCB, etc). If damage is found, replace the Output Board kit, and retest and calibrate the PA.
2. Check for presence and condition of L8000, L8001, L8002, and L8003 of LPF for UHF and VHF. If severe VSWR is presented to PA and SW does not react (i.e. when using Tuner Application), these components could reflow from the PCB or could melt the air wound coil finish resulting in shorted windings. If the coil has reflowed from the PCB or shows signs of thermal stress but no signs of damage are visible to the PCB, replace the air wound coil and retest PA to ensure the issue has been corrected. Recalibration may be required if power set or detection accuracy performance is not restored.
3. Check for presence and condition of L8004. If a severe surge even occurs, this component could become damaged. If the coil has reflowed from the PCB but no signs of damage are visible, replace the air wound coil and retest PA to ensure the issue has been corrected. Recalibration may be required if power set or detection accuracy performance is not restored.
4. Key the PA to rated power, and measure the voltage at M8003. It should be approximately 5 V at rated power.

#### 3.3.4.2.5 Troubleshooting the Isolator Load

If a severe reflected power condition or surge event occurred, it is possible that damage to the isolation load may occur. Although unlikely, this should be verified whenever it is suspected that this type of event occurred.

1. Inspect the load for signs of severe thermal stress (i.e. discoloration or solder joint fatigue).
2. Verify load impedance is  $\sim 50 \Omega$ . When verifying the isolation load impedance, it is required to disconnect the conductor from the Circulator tab or it will not be possible to accurately measure the load impedance.

#### 3.3.4.2.6 Troubleshooting the Circulator

When low or no output power is observed, but current draw indicates that the final amplifiers are working properly and are providing notable RF output power to the Circulator, it is possible that the Circulator has failed. Although this is unlikely and it is more likely to be an issue on another board, it should be verified if no other reason is found for the low or no output power condition.

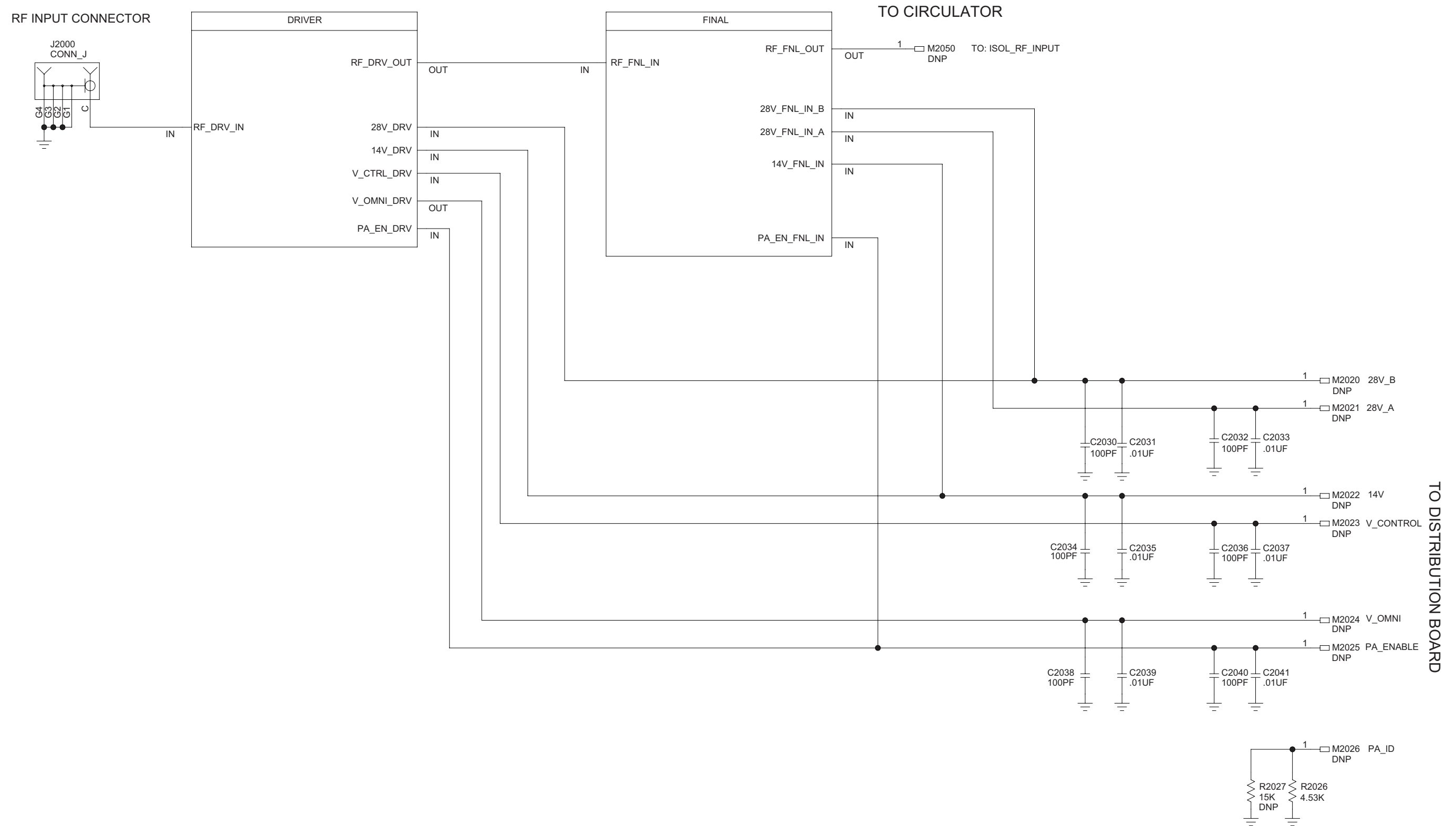
1. Inspect load for signs of arcing at the I/Os of the Circulator. If found, replace the Circulator and retest the PA to verify if this corrected the issue.
2. Perform DC continuity testing between the I/Os of the Circulator. For UHF, the result should be high impedance to ground and near  $0 \Omega$  between any of the ports. If an internal short is discovered, replace the Circulator and retest the PA to ensure it has corrected the issue. Note that disconnection of the isolator leads from the interfacing circuit boards and isolation load may be required to properly verify the continuity and impedance.

### 3.3.4.2.7 Troubleshooting the Power Control Loop

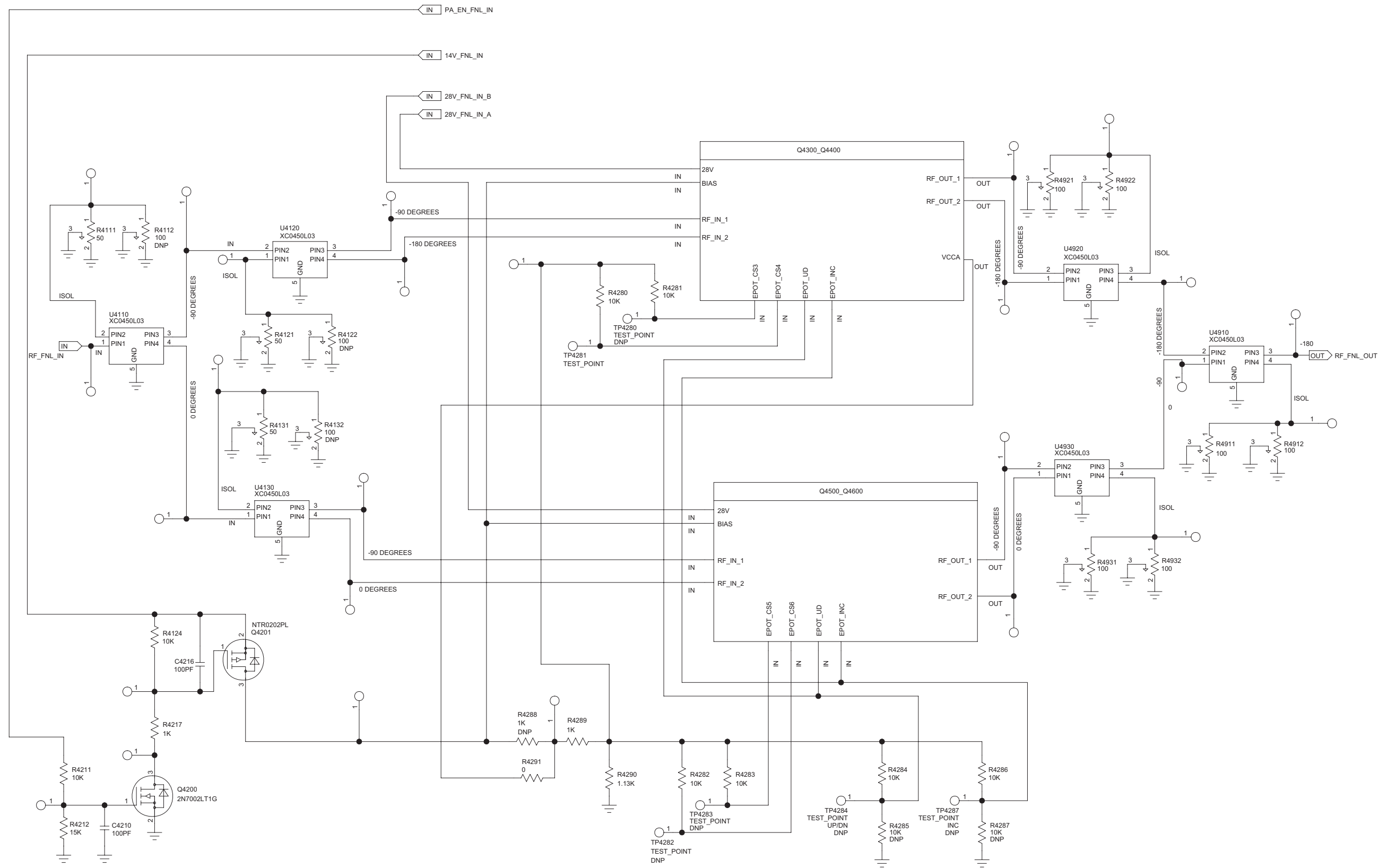
If the individual pieces of the PA are working properly, the power control loop response should be verified. For this, the entire loop will be checked to make sure it is working properly.

1. Apply 28.6 V and 14.2 V main DC supplies.
2. Check 3.3 V regulator output U6050 pin 2 to make sure it is ~3.3 V.
3. Check 5 V regulator output U6060 pin 2 to make sure it is ~5 V.
4. Key the PA to rated output power, and measure  $V_{\text{Forward}}$  at M8003; it should increase with output power to several volts at rated  $P_{\text{out}}$ . If not, replace Output Board.
5. If using a mule base station/repeater to control the PA, when keyed, pin 16 of U6170 should decrease with increased output power, ranging from ~3.3 V in standby mode and down to lower voltages for increased output power. Likewise the output on pin 14 of U6410 should track, as it is a level shifted version of the voltage on pin 16 of U6170.
6. If output power can be manually set using method 2 or 3 of the setup, but cannot be set using method 1, this would indicate an issue with the SPI circuitry, which could include the NVM, DAC, or CPLD devices, or with the communication lines for SPI communication. The ribbon cable to the backplane should be replaced first to determine if that is the issue.

### 3.4 Power Amplifier (PA) Schematics (UHF)

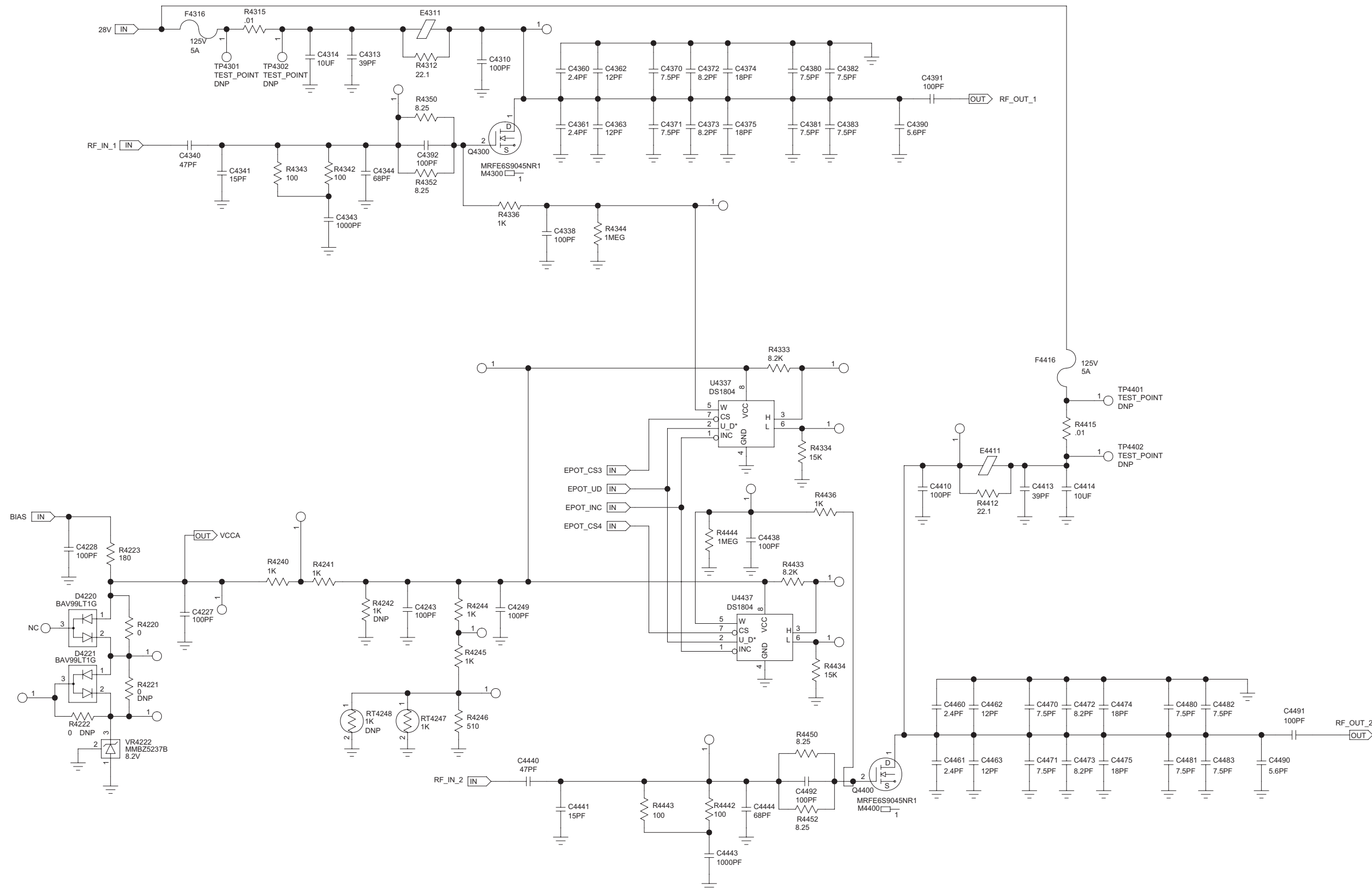


Power Amplifier – RF Board Root Schematic Diagram (Kit No. CLE6215)

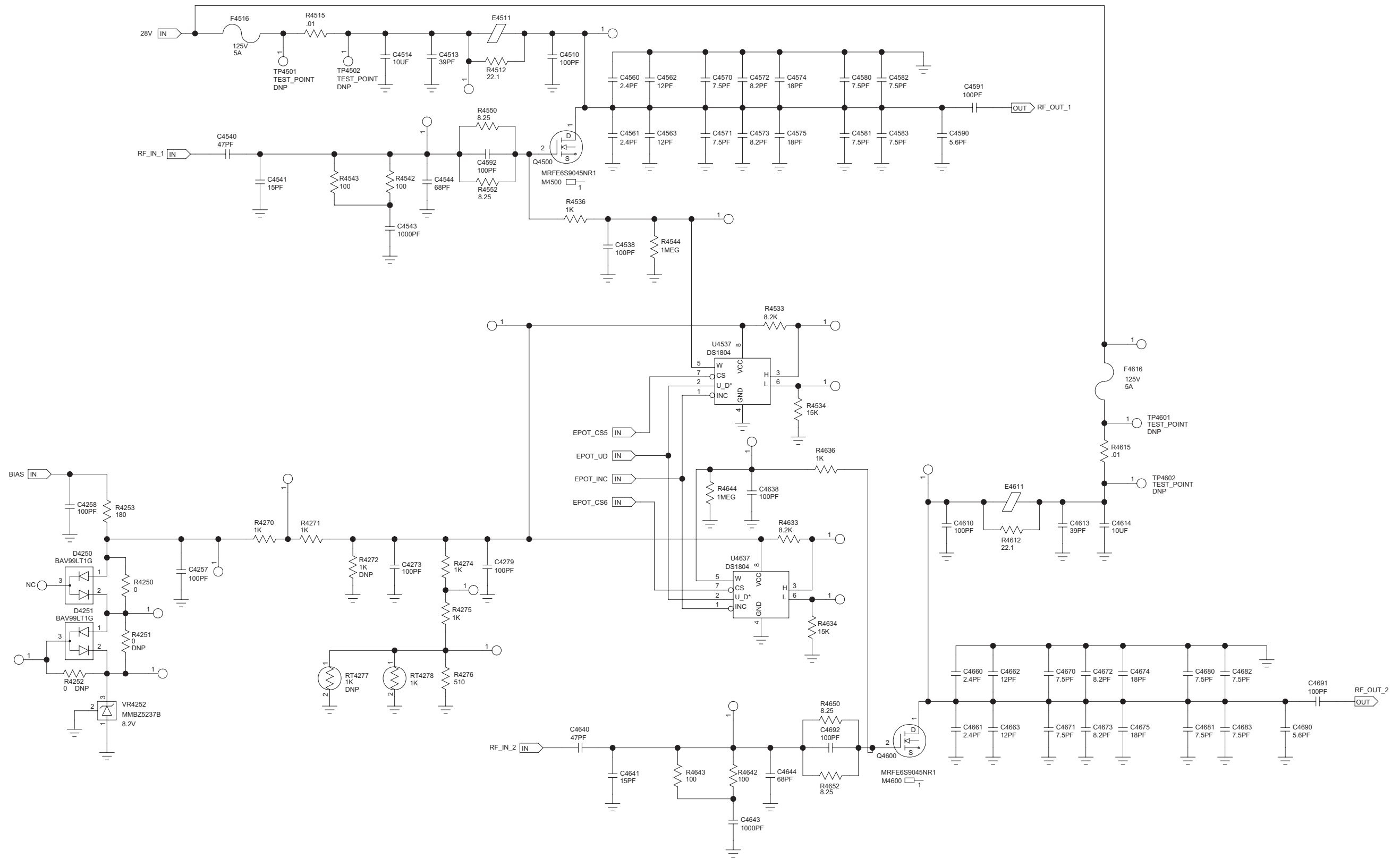


**Power Amplifier – Final Amplifier Main Schematic Diagram (Kit No. CLE6215)**

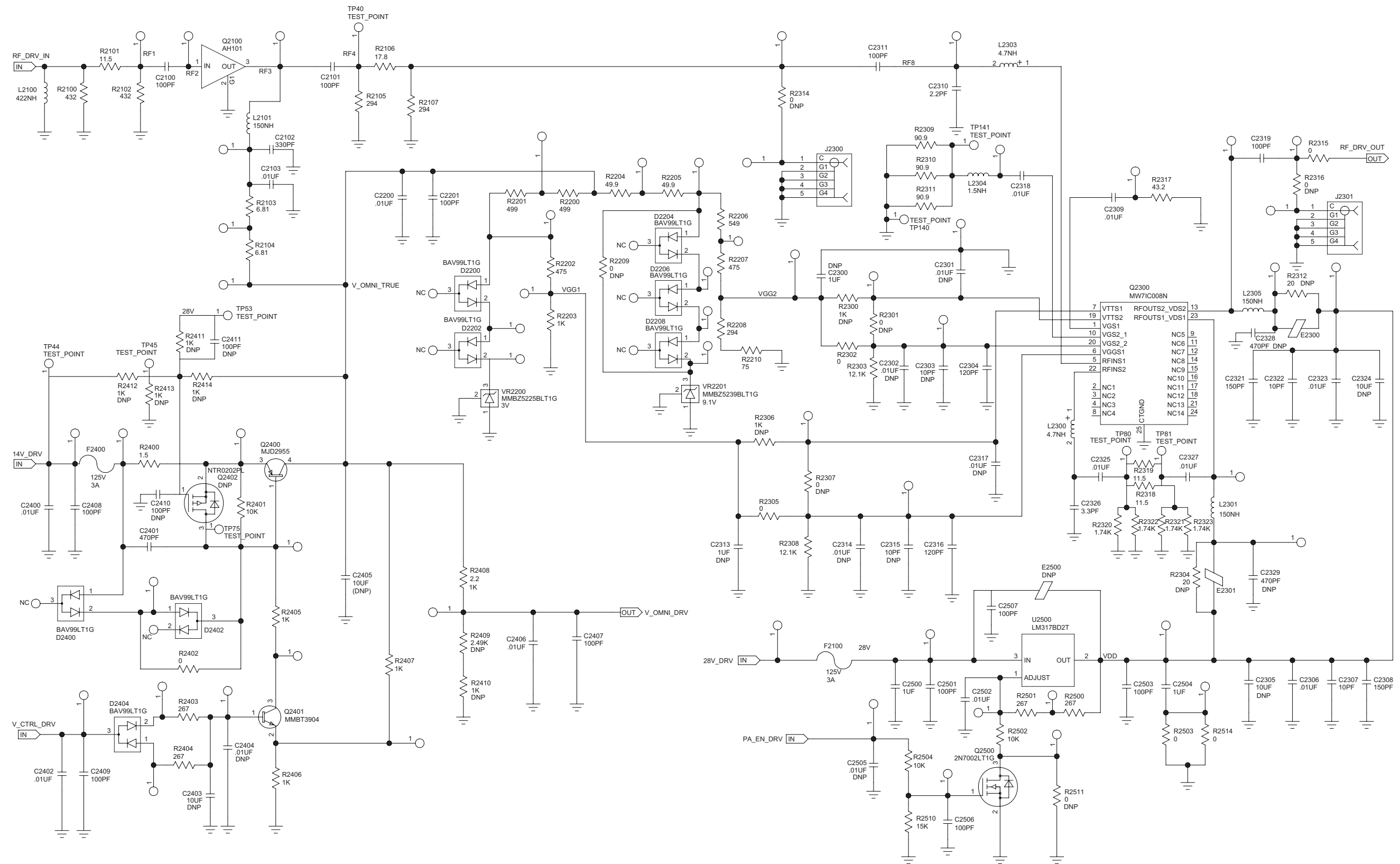




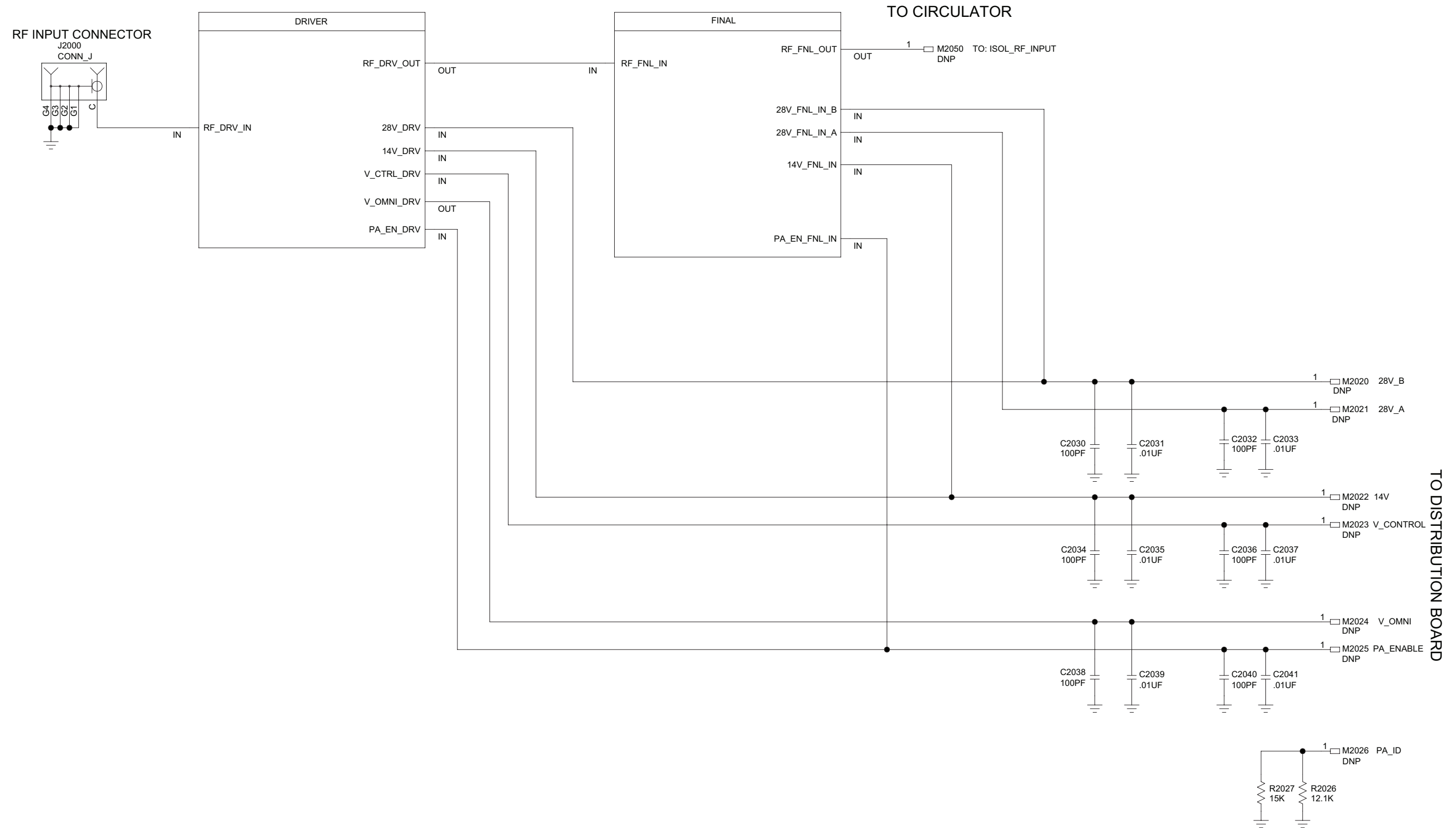
Power Amplifier – Final Amplifier Q4300, Q4400 Circuit Schematic Diagram (Kit No. CLE6215)



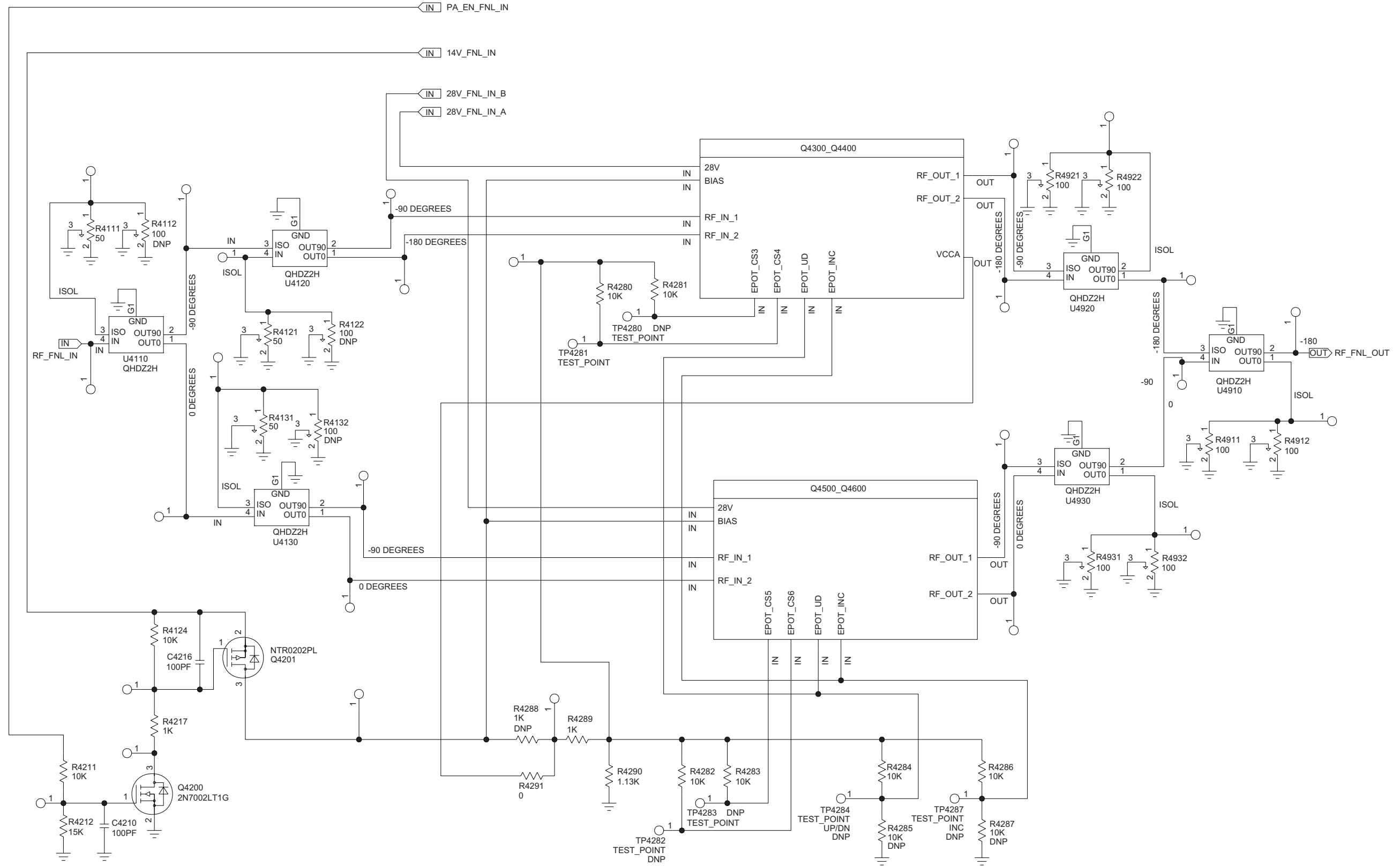
Power Amplifier – Final Amplifier Q4500, Q4600 Circuit Schematic Diagram (Kit No. CLE6215)



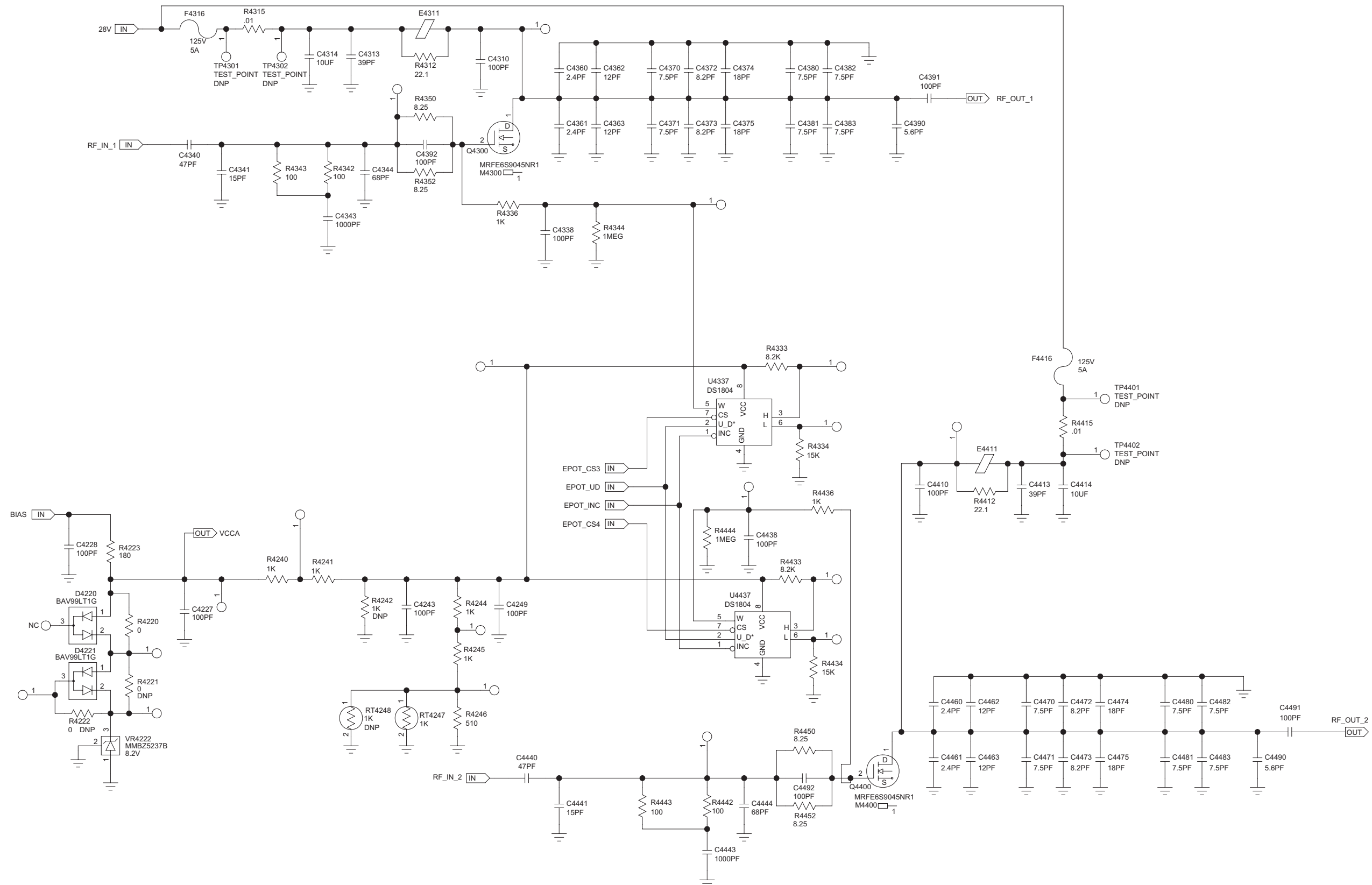
Power Amplifier – Driver Amplifier Schematic Diagram (Kit No. CLE6215)



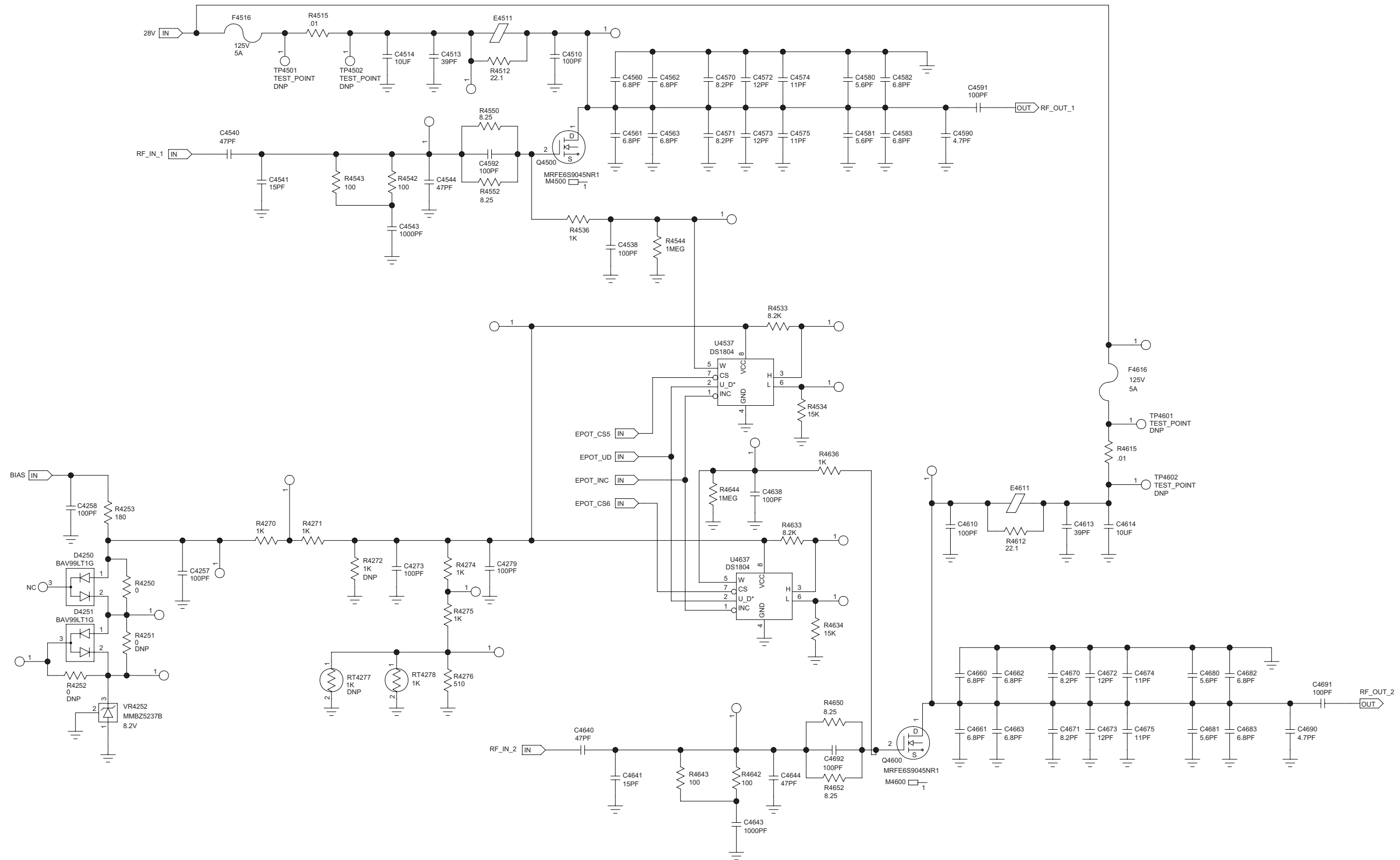
Power Amplifier – RF Board Root Schematic Diagram (Kit No. CLE6216)



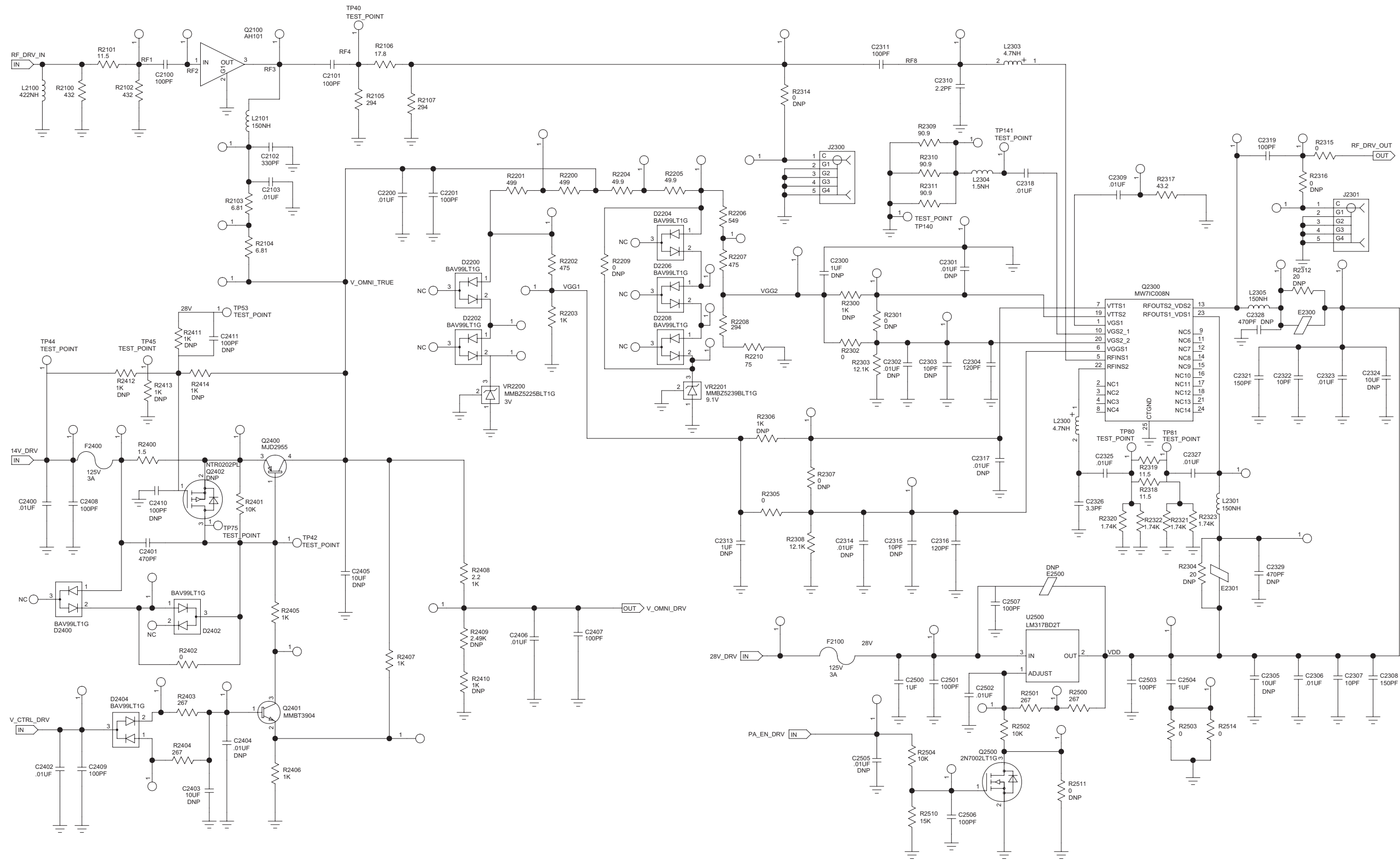
**Power Amplifier – Final Amplifier Main Schematic Diagram (Kit No. CLE6216)**



Power Amplifier – Final Amplifier Q4300, Q4400 Circuit Schematic Diagram (Kit No. CLE6216)

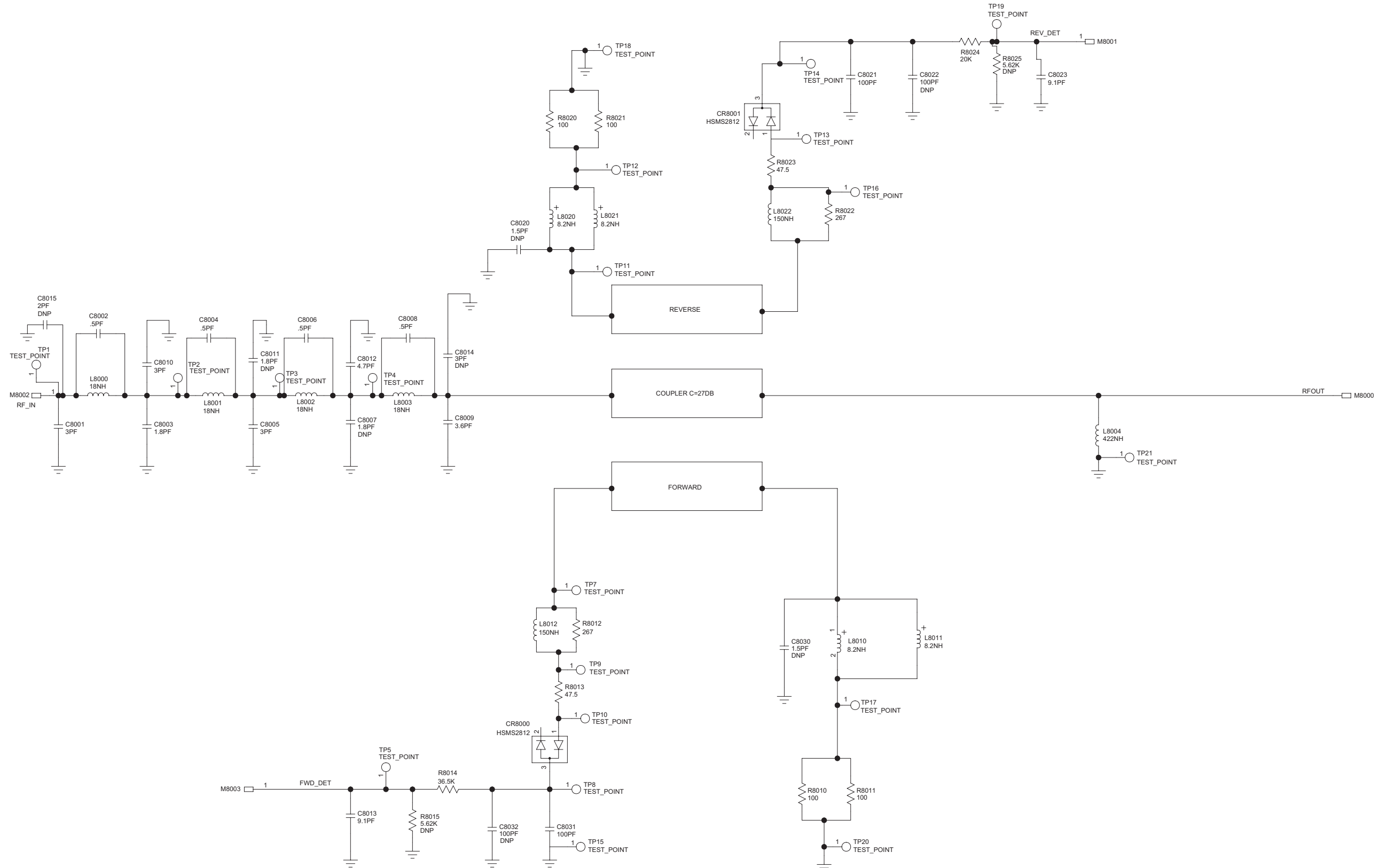


**Power Amplifier – Final Amplifier Q450, Q460 Circuit Schematic Diagram (Kit No. CLE6216)**

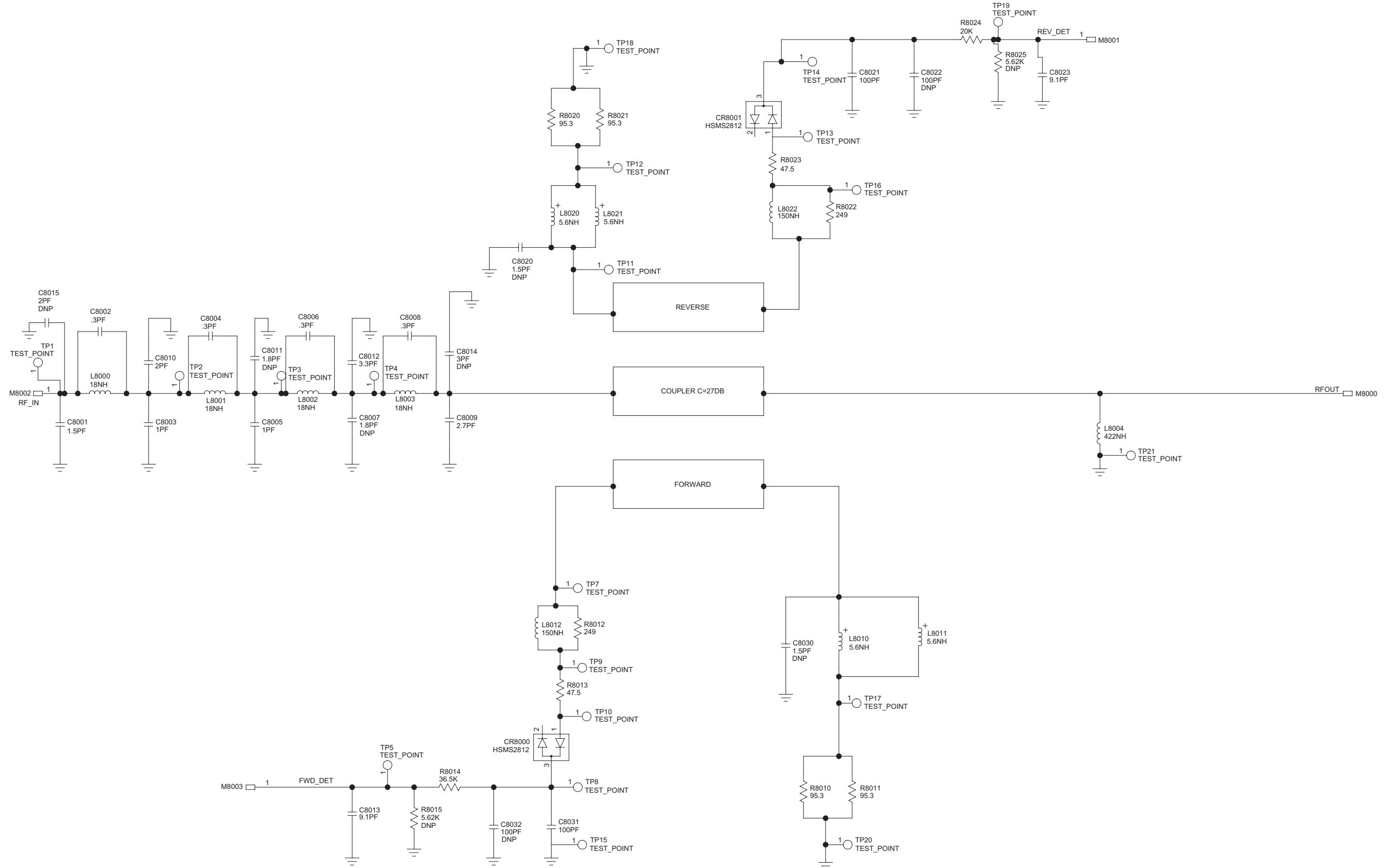


Power Amplifier – Driver Schematic Diagram (Kit No. CLE6216)

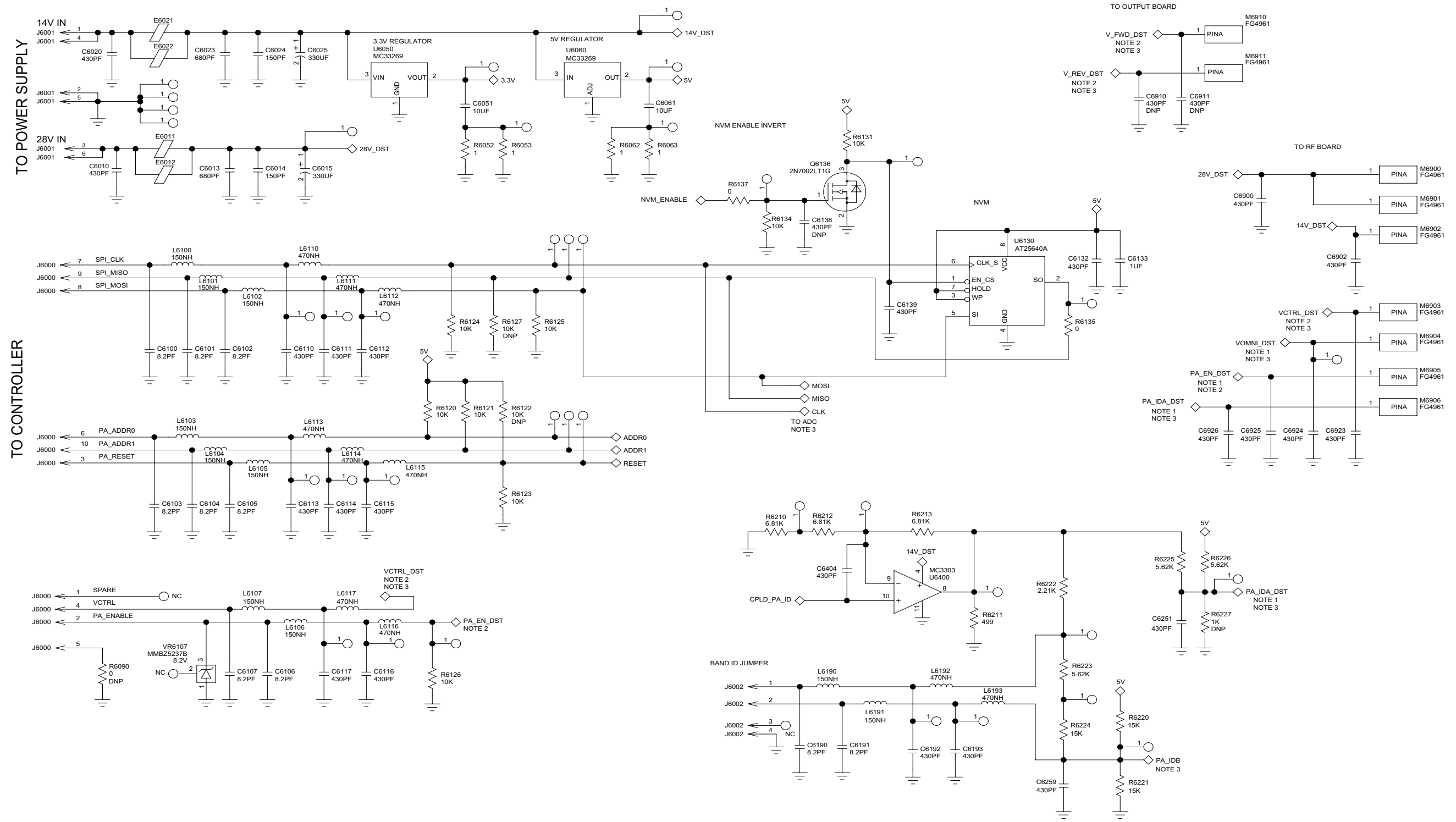




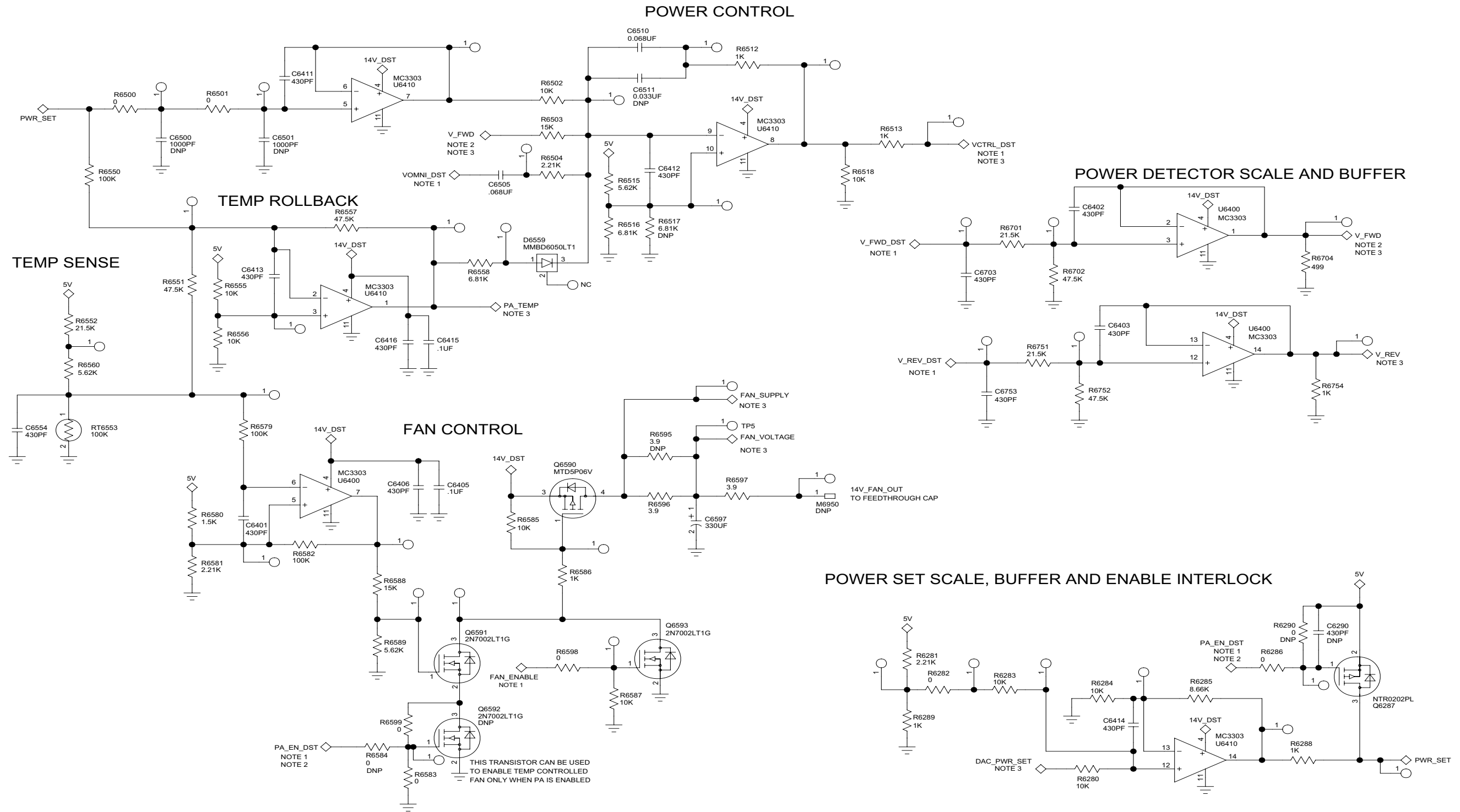
**Power Amplifier – Output Board Schematic Diagram (Kit No. CLE6217)**



**Power Amplifier – Output Board Schematic Diagram (Kit No. CLE6218)**

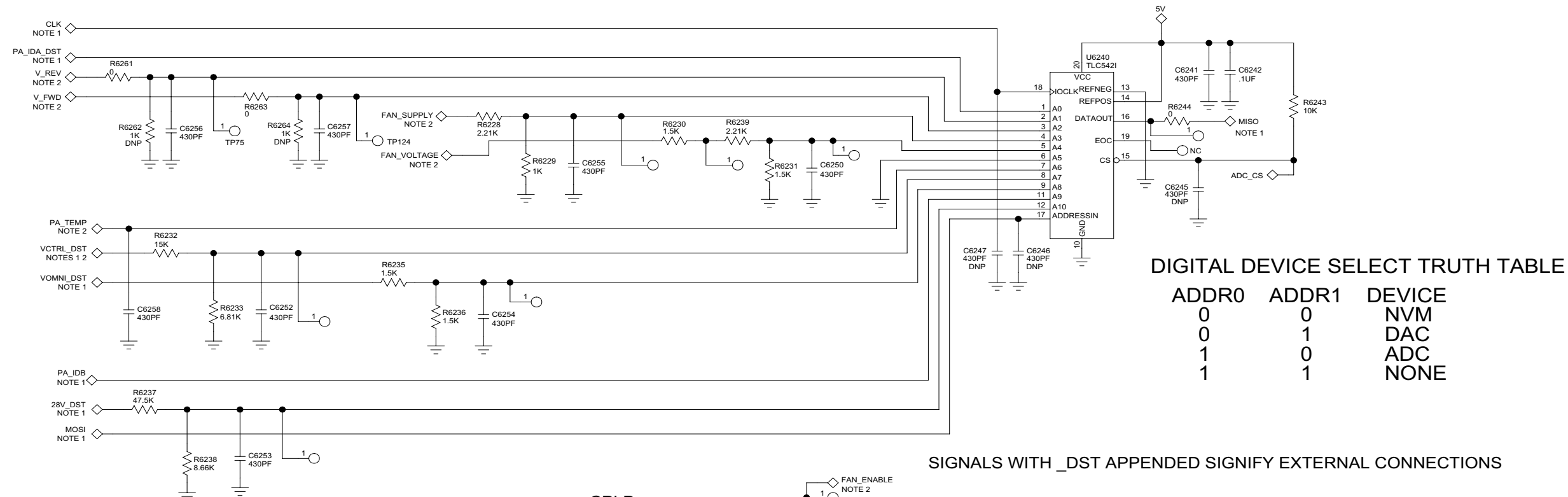


NOTE 1 : DC Distribution Board I/O, NVM (Kit No. CLE6219)  
 NOTE 2 : DC Distribution Board Power Control (Kit No. CLE6219)  
 NOTE 3 : DC Distribution Board ADC, CPLD, DAC (Kit No. CLE6219)

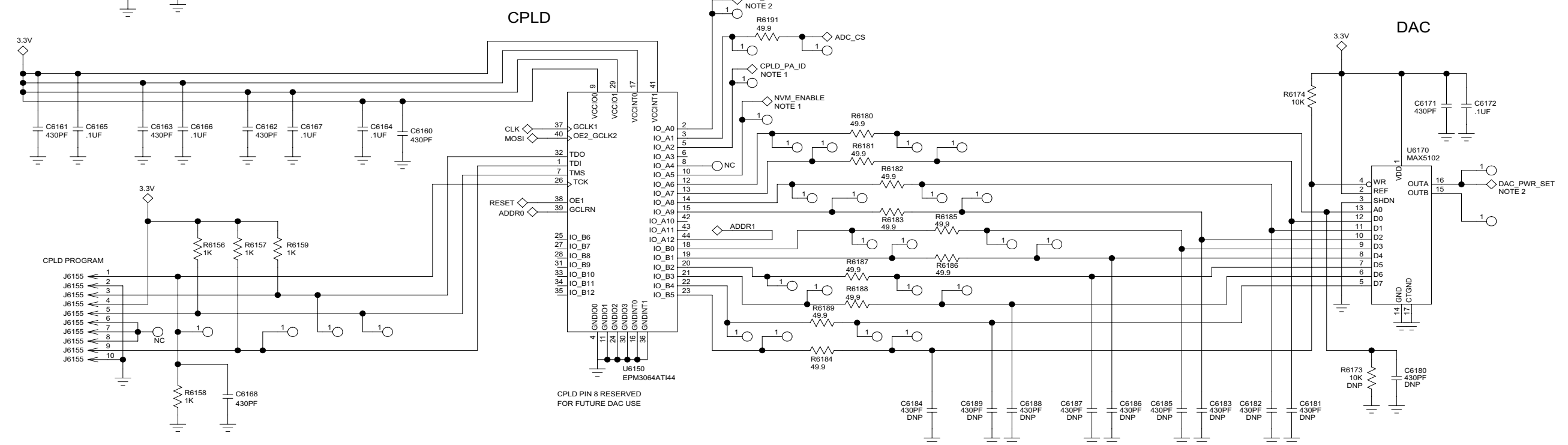


NOTE 1 : DC Distribution Board I/O,NVM (Kit No.CLE6219)  
 NOTE 2 : DC Distribution Board Power Control (Kit No.CLE6219)  
 NOTE 3 : DC Distribution Board ADC,CPLD,DAC (Kit No.CLE6219)

**Power Amplifier – DC Distribution Board Power Control (Kit No. CLE6219)**

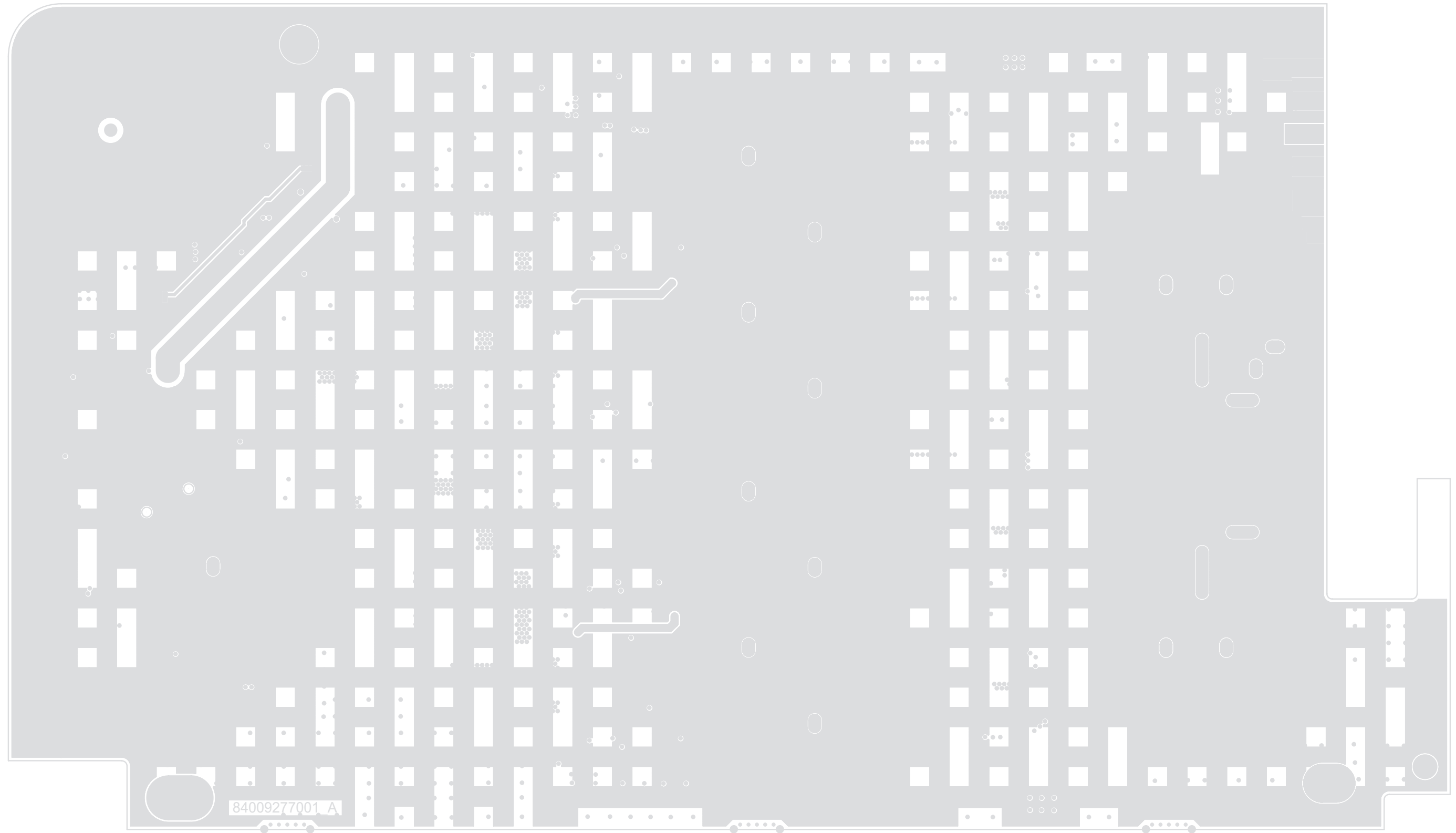


SIGNALS WITH \_DST APPENDED SIGNIFY EXTERNAL CONNECTIONS

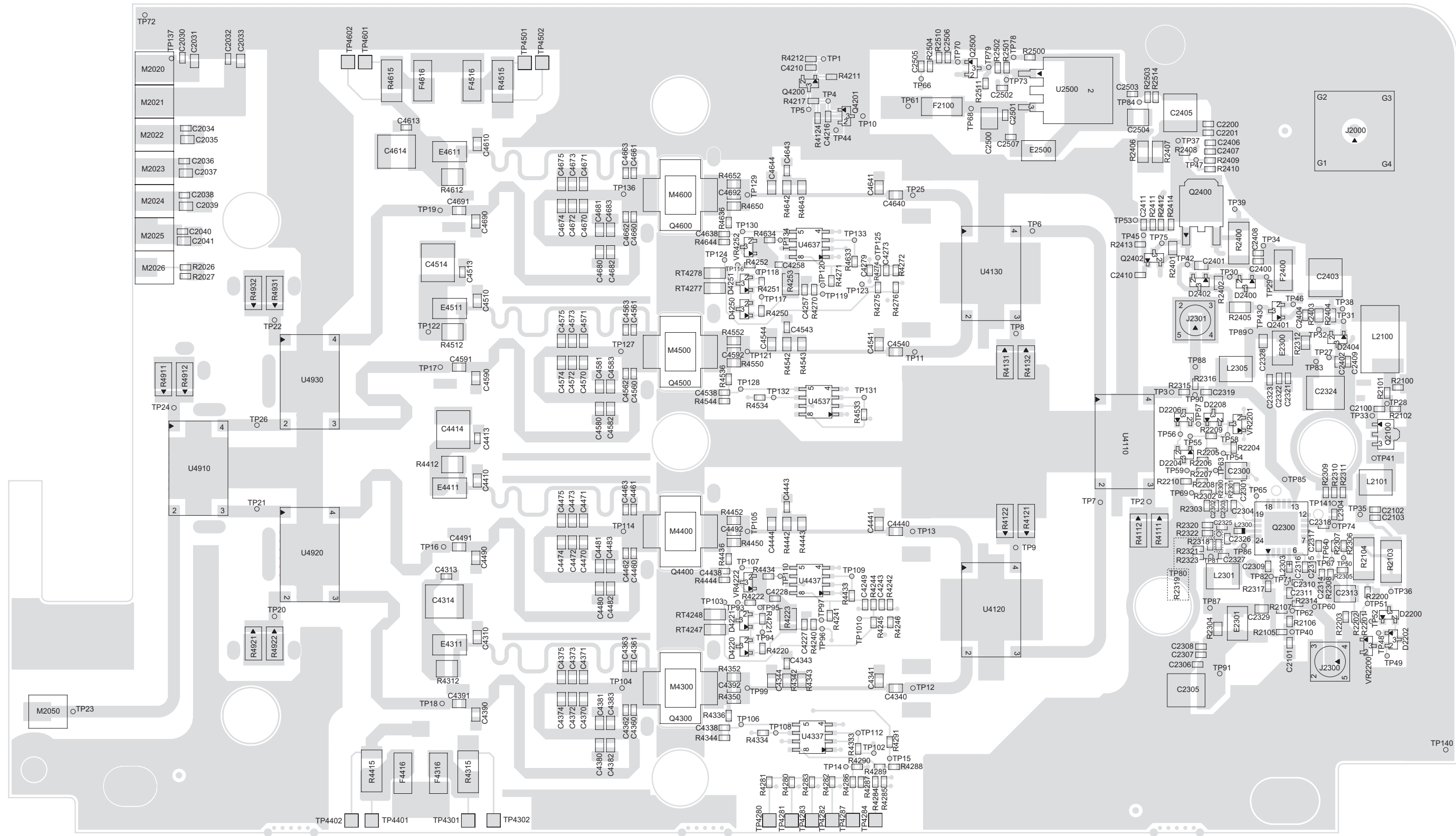


NOTE 1 : DC Distribution Board I/O, NVM (Kit No. CLE6219)  
 NOTE 2 : DC Distribution Board Power Control (Kit No. CLE6219)  
 NOTE 3 : DC Distribution Board ADC, CPLD, DAC (Kit No. CLE6219)



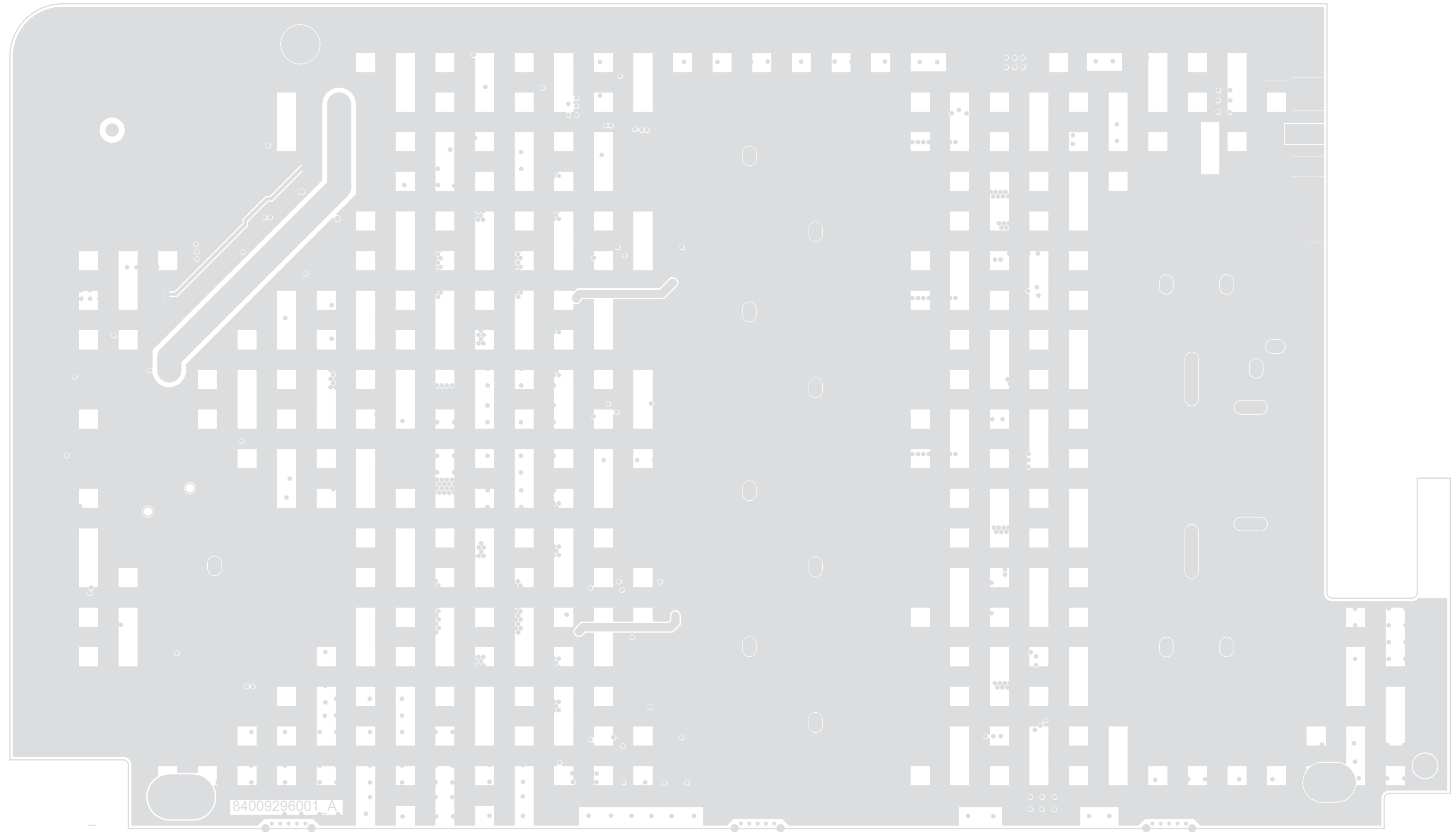


**RF Board PCB – Bottom View (PCB No. 84009277001)**



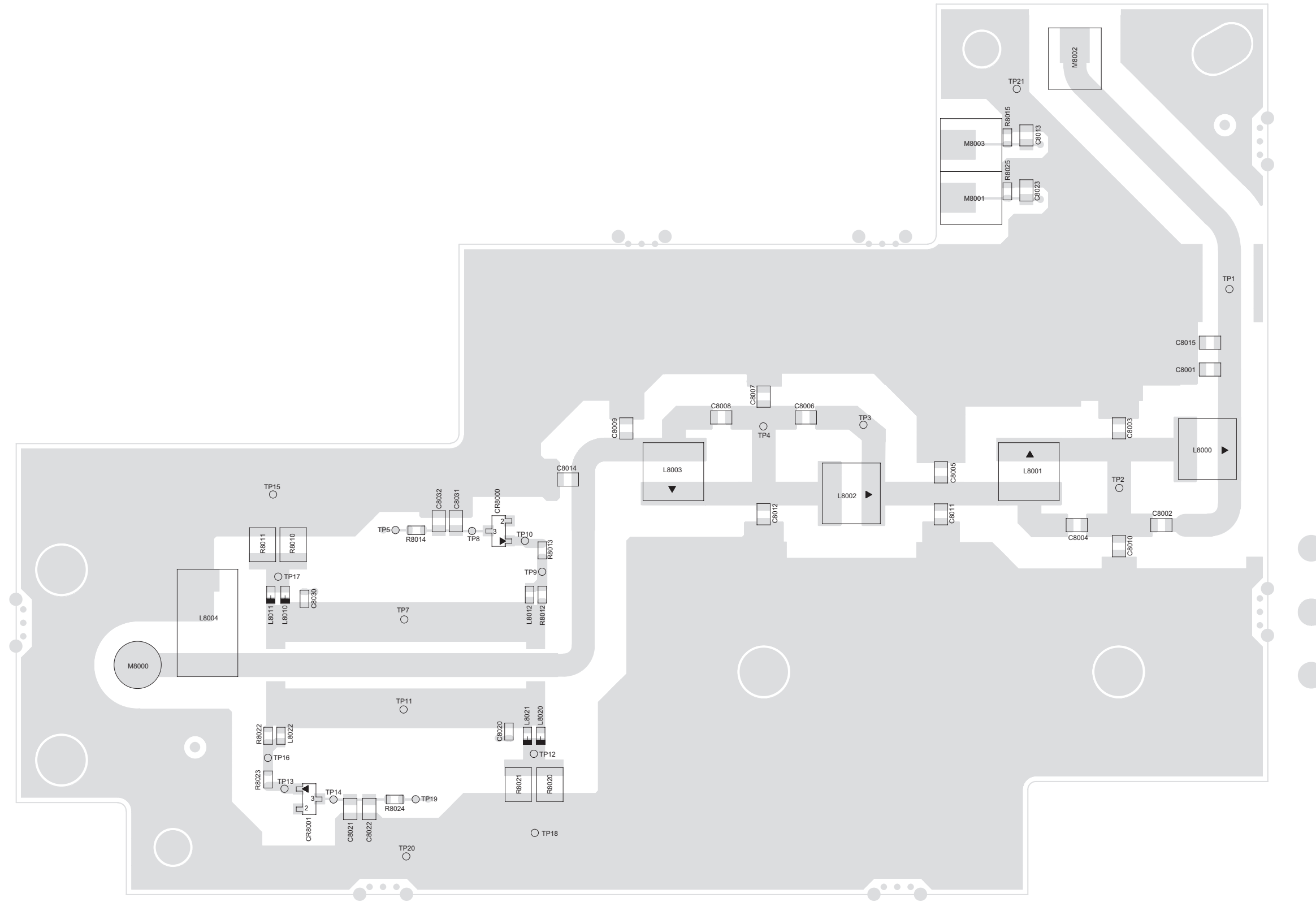
**RF Board PCB – Top View (PCB No. 84009296001)**





84009296001\_A

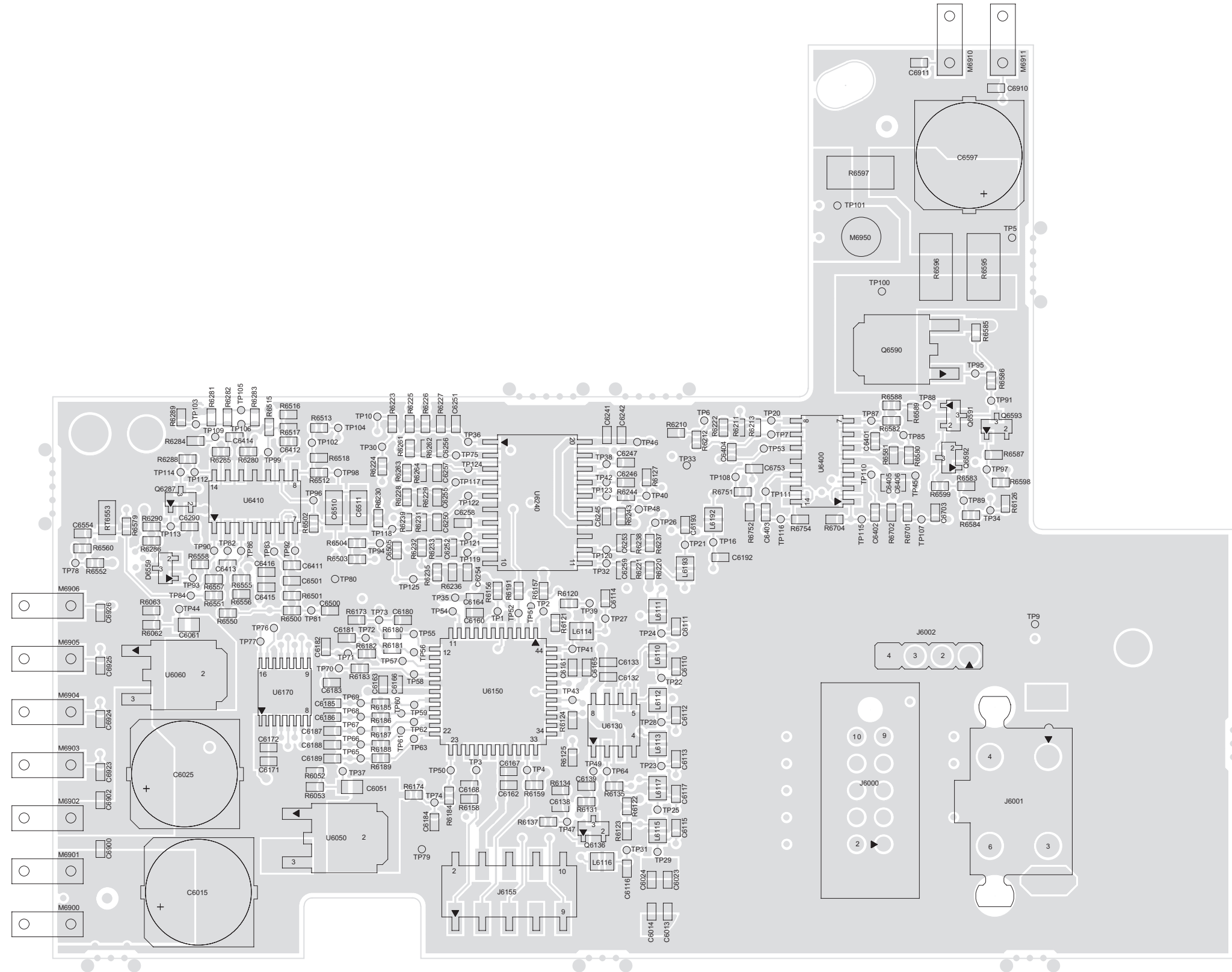
**RF Board PCB – Bottom View (PCB No. 84009296001)**



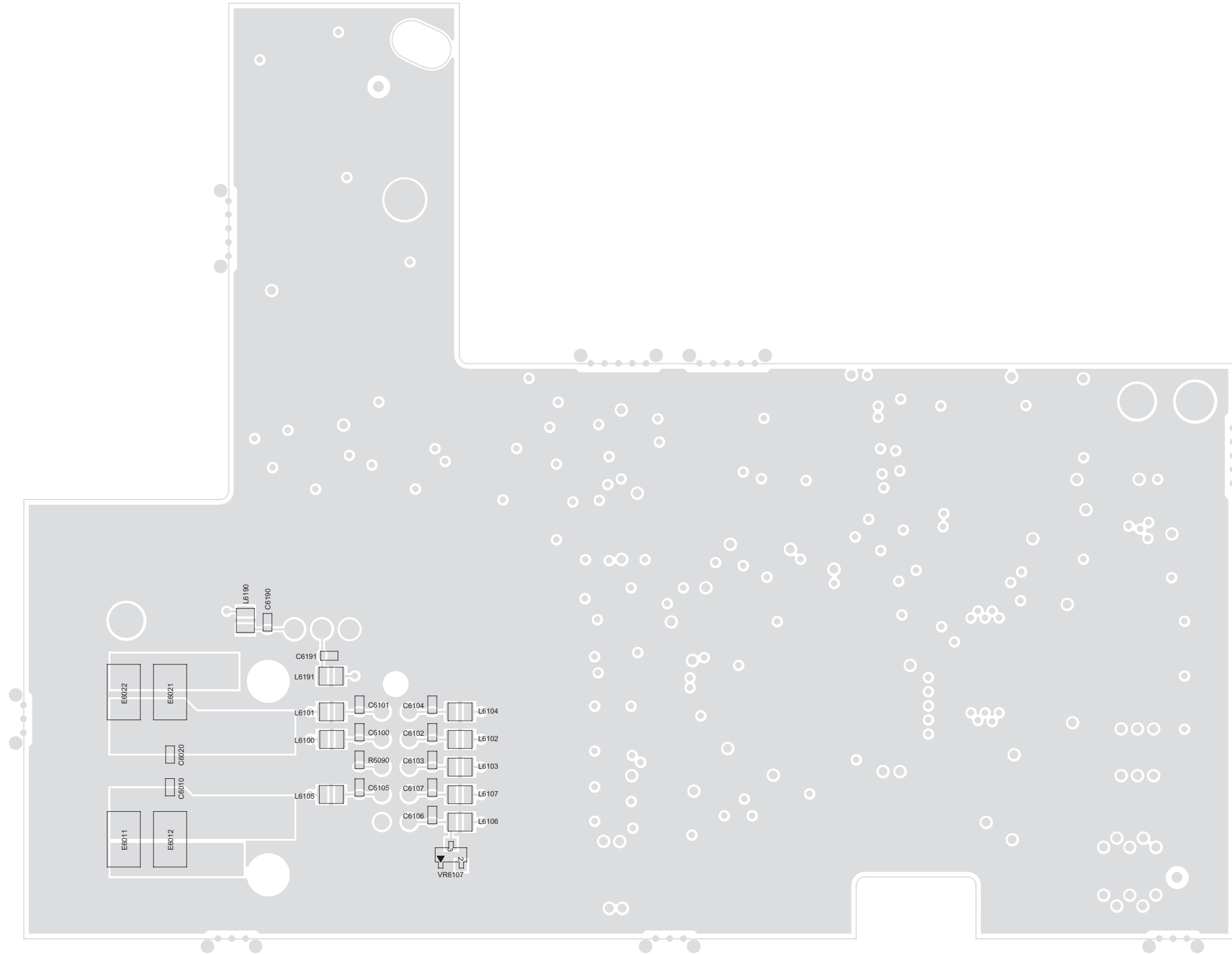
Output Board PCB – Top View (PCB No. 84009274001)



**Output Board PCB – Bottom View (PCB No. 84009274001)**



Distribution Board PCB – Top View (PCB No. 84009279002)



**Distribution Board PCB – Bottom View (PCB No. 84009279002)**

### 3.6 Power Amplifier Parts List (UHF) – CLE1333

Circuit Ref	Motorola Part No	Description
*	5884911T04	CIRCULATOR
*	CLE6215	PA RF BRD UHF 403–470 MHZ
*	CLE6217	PA OUTPUT UHF 403–470 MHZ
*	CLE6219	PA DIST UHF 403–527 MHZ
*	CLN8504	PA HDWR HIGH POWER MTR3000

**3.7 Power Amplifier Parts List  
(UHF) – CLE1334**

<b>Circuit Ref</b>	<b>Motorola Part No</b>	<b>Description</b>
*	5884911T18	UHF CIRCULATOR 470–524 MHZ
*	CLE6216	PA RF BRD UHF 450–527 MHZ
*	CLE6218	PA OUTPUT UHF 450–527 MHZ
*	CLE6219	PA DIST UHF 403–527 MHZ
*	CLN8504	PA HDWR HIGH POWER MTR3000

### 3.8 Power Amplifier Parts List (UHF) – CLE6215

Circuit Ref	Motorola Part No	Description
C2030	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2031	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2032	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2033	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2034	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2035	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2036	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2037	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2038	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2039	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2040	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2041	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2100	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2101	2113944C45	CAP CER CHP 100.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C2102	2113944C04	CAP CER CHP 330.0PF 50V 5%
C2103	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2200	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2201	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2304	2113944C46	CAP CER CHP 120.0PF 50V 5%
C2306	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2307	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2308	2113944C47	CAP CER CHP 150.0PF 50V 5%
C2309	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2310	2113951A18	CAP NPO 2.20PF +/- .1PF 250V HI FREQ
C2311	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2316	2113944C46	CAP CER CHP 120.0PF 50V 5%
C2318	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2319	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2321	2113944C47	CAP CER CHP 150.0PF 50V 5%
C2322	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2323	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2325	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2326	2113951A22	CAP NPO 3.30PF +/- .1PF 250V HI FREQ
C2327	2113945C02	CAP CER CHP 10,000PF 50V 10%

Circuit Ref	Motorola Part No	Description
C2400	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2401	2113944F05	CAP,CHIP,470PF,+5%,-5%,50V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C2402	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2404	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2406	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2407	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2408	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2409	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2500	2113955E11	CAP,FXD,1UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR
C2501	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2502	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2503	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2504	2113955E11	CAP,FXD,1UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR
C2506	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2507	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4210	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4216	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4227	2113944C45	CAP CER CHP 100.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C4228	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4243	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4249	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4257	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4258	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4273	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4279	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4310	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4313	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4314	2185457Y01	CAP CHIP CER 10UF 35V W18
C4338	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4340	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4341	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4343	2113945C13	CAP CER CHP 1000PF 50V 10%
C4344	2113951B52	CAP NPO HIGH FREQ 68.0 +/- 5% 250V
C4360	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4361	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4362	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P



Circuit Ref	Motorola Part No	Description
C4363	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4370	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4371	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4372	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4373	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4374	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4375	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4380	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4381	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4382	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4383	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4390	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4391	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4392	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4410	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4413	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4414	2185457Y01	CAP CHIP CER 10UF 35V W18
C4438	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4440	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V

Circuit Ref	Motorola Part No	Description
C4441	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4443	2113945C13	CAP CER CHP 1000PF 50V 10%
C4444	2113951B52	CAP NPO HIGH FREQ 68.0 +/- 5% 250V
C4460	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4461	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4462	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4463	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4470	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4471	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4472	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4473	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4474	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4475	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4480	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4481	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4482	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4483	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ

Circuit Ref	Motorola Part No	Description
C4490	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4491	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4492	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4510	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4513	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4514	2185457Y01	CAP CHIP CER 10UF 35V W18
C4538	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4540	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4541	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4543	2113945C13	CAP CER CHP 1000PF 50V 10%
C4544	2113951B52	CAP NPO HIGH FREQ 68.0 +/- 5% 250V
C4560	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4561	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4562	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4563	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4570	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4571	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ

Circuit Ref	Motorola Part No	Description
C4572	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4573	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4574	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4575	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4580	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4581	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4582	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4583	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4590	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4591	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4592	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4610	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4613	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4614	2185457Y01	CAP CHIP CER 10UF 35V W18
C4638	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4640	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4641	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4643	2113945C13	CAP CER CHP 1000PF 50V 10%
C4644	2113951B52	CAP NPO HIGH FREQ 68.0 +/- 5% 250V

Circuit Ref	Motorola Part No	Description
C4660	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4661	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4662	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4663	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4670	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4671	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4672	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4673	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4674	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4675	2113951B38	CAP NPO 18.0PF +/- 5% 250V HI FREQ
C4680	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4681	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4682	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4683	2113951B31	CAP NPO 7.50PF +/- 5% 250V HI FREQ
C4690	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4691	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4692	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V

Circuit Ref	Motorola Part No	Description
D2200	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2202	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2204	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2206	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2208	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2400	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2402	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2404	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4220	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4221	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4250	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-

Circuit Ref	Motorola Part No	Description
D4251	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
E2300	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E2301	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4311	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4411	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4511	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4611	2485011Y01	INDUCTOR BEAD CHP PB-FREE
F2100	6585118Y06	FUSE,3A,125V,FAST ACT,SM
F2400	6585118Y06	FUSE,3A,125V,FAST ACT,SM
F4316	6585118Y03	FUSE 5A, 125V FAST ACT W18
F4416	6585118Y03	FUSE 5A, 125V FAST ACT W18
F4516	6585118Y03	FUSE 5A, 125V FAST ACT W18
F4616	6585118Y03	FUSE 5A, 125V FAST ACT W18
J2000	0982492W01	BNC CONN PCB VERTICAL RECEPT
L2100	2471604H03	SMD AIR WOUND COIL, 422NH, 5.0%
L2101	2416077H21	150NH MIDI SPRING COIL
L2300	2414017N08	IDCTR,FXD,4.7NH,6.38%, 1A,.17Ω,CER,10 Q,3.3GHZ SRF,SM,0603
L2301	2416077H21	150NH MIDI SPRING COIL
L2303	2414017N08	IDCTR,FXD,4.7NH,6.38%, 1A,.17Ω,CER,10 Q,3.3GHZ SRF,SM,0603

Circuit Ref	Motorola Part No	Description
L2304	2414017N02	IDCTR,CHIP,1.5NH,1A,.1Ω,CER,8 Q,6GHZ SRF,SM,0603,PB-FREE
L2305	2416077H21	150NH MIDI SPRING COIL
M4300	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4400	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4500	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4600	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
PWB	0180706J22	RF BOARD COIN ASSEMBLY
Q2100	5185337Y01	IC, HIGH LINEARITY AMPLIFIER, W18
Q2300	4888606T31	HIGH POWER DISTRIUBTED AMPLIFIER
Q2400	4813971A10	XSTR,BIP GP POWER,BIPLR,NPN,MJD 2955,DPAK,SM,60V,20W,10A,2 MHZ,P
Q2401	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA,300 MHZ
Q2500	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q4200	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q4201	4813970M64	XSTR,FET GP PWR,MOSFET,P-CH,ENHN,SM,SOT-23,-20V,.225W,PB-FRE
Q4300	4878031A01	RF POWER FET, MRFE6S9045NR1
Q4400	4878031A01	RF POWER FET, MRFE6S9045NR1
Q4500	4878031A01	RF POWER FET, MRFE6S9045NR1

Circuit Ref	Motorola Part No	Description
Q4600	4878031A01	RF POWER FET, MRFE6S9045NR1
R2026	0613952D64	CER CHIP RES 4530Ω 1% 0603
R2100	0613952C62	CER CHIP RES 432Ω 1% 0603
R2101	0613952B07	CER CHIP RES 11.5Ω 1% 0603
R2102	0613952C62	CER CHIP RES 432Ω 1% 0603
R2103	0613959S81	CER CHIP RESΩ 1% 2512
R2104	0613959S81	CER CHIP RESΩ 1% 2512
R2105	0613952C46	CER CHIP RES 294Ω 1% 0603
R2106	0613952B25	CER CHIP RES 17.8Ω 1% 0603
R2107	0613952C46	CER CHIP RES 294Ω 1% 0603
R2200	0613952C68	CER CHIP RES 499Ω 1% 0603
R2201	0613952C68	CER CHIP RES 499Ω 1% 0603
R2202	0613952C66	CER CHIP RES 475Ω 1% 0603
R2203	0613952D01	CER CHIP RES 1000Ω 1% 0603
R2204	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R2205	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R2206	0613952C72	CER CHIP RES 549Ω 1% 0603
R2207	0613952C66	CER CHIP RES 475Ω 1% 0603
R2208	0613952C46	CER CHIP RES 294Ω 1% 0603
R2210	0613952B85	CER CHIP RES 75.0Ω 1% 0603
R2302	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω

Circuit Ref	Motorola Part No	Description
R2303	0613952E09	CER CHIP RES 12.1KΩ 1% 0603
R2305	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R2308	0613952E09	CER CHIP RES 12.1KΩ 1% 0603
R2309	0613952B93	CER CHIP RES 90.9Ω 1%
R2310	0613952B93	CER CHIP RES 90.9Ω 1%
R2311	0613952B93	CER CHIP RES 90.9Ω 1%
R2315	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R2317	0613952B62	CER CHIP RES 43.2Ω 1%
R2318	0613952B07	CER CHIP RES 11.5Ω 1% 0603
R2319	0613952B07	CER CHIP RES 11.5Ω 1% 0603
R2320	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2321	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2322	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2323	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2400	0613959S18	CER CHIP RESΩ 1% 2512
R2401	0613958E01	CER CHIP RES 10.0KΩ 1% 0805
R2402	0613958J74	CER CHIP RES 0.0Ω JMP 0805
R2403	0613958E01	CER CHIP RES 10.0KΩ 1% 0805
R2404	0613958E01	CER CHIP RES 10.0KΩ 1% 0805
R2405	0613958N01	CER CHIP RES 1000Ω 1%
R2406	0613958N01	CER CHIP RES 1000Ω 1%
R2407	0613958N01	CER CHIP RES 1000Ω 1%
R2408	0613952D34	CER CHIP RES 2210Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R2500	0613952C42	CER CHIP RES 267Ω 1% 0603
R2501	0613952C42	CER CHIP RES 267Ω 1% 0603
R2502	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R2503	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R2504	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R2510	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R2514	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4111	06009095002	RES CHIP 3-TERM ALN 50Ω 10W 2% EPP
R4121	06009095002	RES CHIP 3-TERM ALN 50Ω 10W 2% EPP
R4124	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4131	06009095002	RES CHIP 3-TERM ALN 50Ω 10W 2% EPP
R4211	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4212	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R4217	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4220	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4223	0613959G55	CER CHIP RES 180Ω 5% 1210
R4240	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4241	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4244	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4245	0613952H73	CER CHIP RES 1000Ω 5% 0603

Circuit Ref	Motorola Part No	Description
R4246	0613952H66	CER CHIP RES 510Ω 5% 0603
R4250	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4253	0613959G55	CER CHIP RES 180Ω 5% 1210
R4270	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4271	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4274	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4275	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4276	0613952H66	CER CHIP RES 510Ω 5% 0603
R4280	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4281	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4282	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4283	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4284	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4286	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4289	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4290	0613952D06	CER CHIP RES 1130Ω 1% 0603
R4291	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4312	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4315	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4333	0613952H95	CER CHIP RES 8200Ω 5% 0603

Circuit Ref	Motorola Part No	Description
R4334	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4336	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4342	0613958H49	CER CHIP RES 100Ω 5% 0805
R4343	0613958H49	CER CHIP RES 100Ω 5% 0805
R4344	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4350	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4352	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4412	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4415	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4433	0613952H95	CER CHIP RES 8200Ω 5% 0603
R4434	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4436	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4442	0613958H49	CER CHIP RES 100Ω 5% 0805
R4443	0613958H49	CER CHIP RES 100Ω 5% 0805
R4444	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4450	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4452	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4512	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4515	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4533	0613952H95	CER CHIP RES 8200Ω 5 0603

Circuit Ref	Motorola Part No	Description
R4534	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4536	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4542	0613958H49	CER CHIP RES 100Ω 5% 0805
R4543	0613958H49	CER CHIP RES 100Ω 5% 0805
R4544	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4550	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4552	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4612	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4615	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4633	0613952H95	CER CHIP RES 8200Ω 5% 0603
R4634	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4636	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4642	0613958H49	CER CHIP RES 100Ω 5% 0805
R4643	0613958H49	CER CHIP RES 100Ω 5% 0805
R4644	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4650	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4652	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4911	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4912	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4921	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%

Circuit Ref	Motorola Part No	Description
R4922	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4931	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4932	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
RT4247	0685191Y02	THERMISTOR CHIP 1 KΩ W18
RT4278	0685191Y02	THERMISTOR CHIP 1 KΩ W18
U2500	5114014M27	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO 37V,1.5A,SM,D2PAK,PB-FREE
U4110	5885163Y02	UHF 3DB HYBRID COUPLER
U4120	5885163Y02	UHF 3DB HYBRID COUPLER
U4130	5885163Y02	UHF 3DB HYBRID COUPLER
U4337	5185560Y01	IC, DIG POT,10K,SOIC
U4437	5185560Y01	IC, DIG POT,10K,SOIC
U4537	5185560Y01	IC, DIG POT,10K,SOIC
U4637	5185560Y01	IC, DIG POT,10K,SOIC
U4910	5885163Y02	UHF 3DB HYBRID COUPLER
U4920	5885163Y02	UHF 3DB HYBRID COUPLER
U4930	5885163Y02	UHF 3DB HYBRID COUPLER
VR2200	4813977M04	DIODE,ZEN,MMBZ5225,S M,SOT-23,3V,10MA,.225W,ZEN,P B-FREE
VR2201	4813977M18	DIODE,ZEN,MBZ5239,SM, SOT-23,9.1V,10MA,.225W,ZEN, PB-FREE

Circuit Ref	Motorola Part No	Description
VR4222	4813977M16	DIODE,ZEN,MBZ5237,SM, SOT-23,8.2V,10MA,.225W,ZEN, PB-FREE
VR4252	4813977M16	DIODE,ZEN,MBZ5237,SM, SOT-23,8.2V,10MA,.225W,ZEN, PB-FREE

**3.9 Power Amplifier Parts List (UHF) – CLE6216**

Circuit Ref	Motorola Part No	Description
C2030	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2031	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2032	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2033	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2034	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2035	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2036	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2037	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2038	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2039	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2040	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2041	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2100	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2101	2113944C45	CAP CER CHP 100.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C2102	2113944C04	CAP CER CHP 330.0PF 50V 5%
C2103	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2200	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2201	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2304	2113944C46	CAP CER CHP 120.0PF 50V 5%
C2306	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2307	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2308	2113944C47	CAP CER CHP 150.0PF 50V 5%
C2309	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2310	2113951A18	CAP NPO 2.20PF +/- .1PF 250V HI FREQ
C2311	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2316	2113944C46	CAP CER CHP 120.0PF 50V 5%
C2318	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2319	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2321	2113944C47	CAP CER CHP 150.0PF 50V 5%
C2322	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2323	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2325	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2326	2113951A22	CAP NPO 3.30PF +/- .1PF 250V HI FREQ
C2327	2113945C02	CAP CER CHP 10,000PF 50V 10%

Circuit Ref	Motorola Part No	Description
C2400	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2401	2113944F05	CAP,CHIP,470PF,+5%,-5%,50V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C2402	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2404	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2406	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2407	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2408	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2409	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2500	2113955E11	CAP,FXD,1UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR
C2501	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2502	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2503	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2504	2113955E11	CAP,FXD,1UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR
C2506	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2507	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4210	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4216	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4227	2113944C45	CAP CER CHP 100.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C4228	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4243	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4249	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4257	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4258	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4273	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4279	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4310	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4313	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4314	2185457Y01	CAP CHIP CER 10UF 35V W18
C4338	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4340	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4341	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4343	2113945C13	CAP CER CHP 1000PF 50V 10%
C4344	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4360	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4361	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4362	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C4363	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4370	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4371	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4372	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4373	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4374	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4375	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4380	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4381	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4382	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ
C4383	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ
C4390	2113951B26	CAP NPO 4.70PF +/- 0.25PF 250V HI-F
C4391	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4392	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4410	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4413	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4414	2185457Y01	CAP CHIP CER 10UF 35V W18
C4438	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4440	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V

Circuit Ref	Motorola Part No	Description
C4441	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4443	2113945C13	CAP CER CHP 1000PF 50V 10%
C4444	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4460	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4461	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4462	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4463	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4470	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4471	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4472	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4473	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4474	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4475	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4480	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4481	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4482	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ
C4483	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ

Circuit Ref	Motorola Part No	Description
C4490	2113951B26	CAP NPO 4.70PF +/- 0.25PF 250V HI-F
C4491	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4492	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4510	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4513	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4514	2185457Y01	CAP CHIP CER 10UF 35V W18
C4538	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4540	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4541	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4543	2113945C13	CAP CER CHP 1000PF 50V 10%
C4544	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4560	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4561	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4562	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4563	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4570	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4571	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ

Circuit Ref	Motorola Part No	Description
C4572	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4573	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4574	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4575	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4580	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4581	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4582	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ
C4583	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ
C4590	2113951B26	CAP NPO 4.70PF +/- 0.25PF 250V HI-F
C4591	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4592	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4610	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4613	2113944C37	CAP CER CHP 39.0PF 50V 5%
C4614	2185457Y01	CAP CHIP CER 10UF 35V W18
C4638	2113951A56	CAP NPO 100.0PF +/-5% 250V HI FREQ
C4640	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V
C4641	2113951B37	CAP NPO 15.0PF +/- 5% 250V HI FREQ
C4643	2113945C13	CAP CER CHP 1000PF 50V 10%
C4644	2113951B48	CAP NPO HIGH FREQ 47.0 +/- 5% 250V

Circuit Ref	Motorola Part No	Description
C4660	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4661	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4662	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4663	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4670	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4671	2113951B32	CAP NPO 8.20PF +/- 5% 250V HI FREQ
C4672	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4673	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4674	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4675	2113951B35	CAP NPO 11.0PF +/- 5% 250V HI FREQ
C4680	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4681	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4682	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ
C4683	2113951B30	CAP NPO 6.80PF +/- 5% 250V HI FREQ
C4690	2113951B26	CAP NPO 4.70PF +/- 0.25PF 250V HI-F
C4691	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V
C4692	2113951B56	CAP NPO HIGH FREQ 100 +/- 5V

Circuit Ref	Motorola Part No	Description
D2200	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2202	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2204	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2206	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2208	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2400	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2402	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2404	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4220	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4221	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4250	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-

Circuit Ref	Motorola Part No	Description
D4251	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
E2300	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E2301	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4311	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4411	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4511	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4611	2485011Y01	INDUCTOR BEAD CHP PB-FREE
F2100	6585118Y06	FUSE,3A,125V,FAST ACT,SM
F2400	6585118Y06	FUSE,3A,125V,FAST ACT,SM
F4316	6585118Y03	FUSE 5A, 125V FAST ACT W18
F4416	6585118Y03	FUSE 5A, 125V FAST ACT W18
F4516	6585118Y03	FUSE 5A, 125V FAST ACT W18
F4616	6585118Y03	FUSE 5A, 125V FAST ACT W18
J2000	0982492W01	BNC CONN PCB VERTICAL RECEPT
L2100	2471604H03	SMD AIR WOUND COIL, 422NH, 5.0%
L2101	2416077H21	150NH MIDI SPRING COIL
L2300	2414017N08	IDCTR,FXD,4.7NH,6.38%, 1A,.17Ω,CER,10 Q,3.3GHZ SRF,SM,0603
L2301	2416077H21	150NH MIDI SPRING COIL
L2303	2414017N08	IDCTR,FXD,4.7NH,6.38%, 1A,.17Ω,CER,10 Q,3.3GHZ SRF,SM,0603

Circuit Ref	Motorola Part No	Description
L2304	2414017N02	IDCTR,CHIP,1.5NH,1A,.1Ω,CER,8 Q,6GHZ SRF,SM,0603,PB-FREE
L2305	2416077H21	150NH MIDI SPRING COIL
M4300	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4400	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4500	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4600	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
PWB	0180706J25	RF BOARD COIN ASSEMBLY
Q2100	5185337Y01	IC, HIGH LINEARITY AMPLIFIER, W18
Q2300	4888606T31	HIGH POWER DISTRIUBTED AMPLIFIER
Q2400	4813971A10	XSTR,BIP GP POWER,BIPLR,NPN,MJD 2955,DPAK,SM,60V,20W,10A,2 MHZ,P
Q2401	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA,300 MHZ
Q2500	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q4200	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q4201	4813970M64	XSTR,FET GP PWR,MOSFET,P-CH,ENHN,SM,SOT-23,-20V,.225W,PB-FRE
Q4300	4878031A01	RF POWER FET, MRFE6S9045NR1
Q4400	4878031A01	RF POWER FET, MRFE6S9045NR1
Q4500	4878031A01	RF POWER FET, MRFE6S9045NR1

Circuit Ref	Motorola Part No	Description
Q4600	4878031A01	RF POWER FET, MRFE6S9045NR1
R2026	0613952E09	CER CHIP RES 12.1KΩ 1% 0603
R2027	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R2100	0613952C62	CER CHIP RES 432Ω 1% 0603
R2101	0613952B07	CER CHIP RES 11.5Ω 1% 0603
R2102	0613952C62	CER CHIP RES 432Ω 1% 0603
R2103	0613959S81	CER CHIP RESΩ 1% 2512
R2104	0613959S81	CER CHIP RESΩ 1% 2512
R2105	0613952C46	CER CHIP RES 294Ω 1% 0603
R2106	0613952B25	CER CHIP RES 17.8Ω 1% 0603
R2107	0613952C46	CER CHIP RES 294Ω 1% 0603
R2200	0613952C68	CER CHIP RES 499Ω 1% 0603
R2201	0613952C68	CER CHIP RES 499Ω 1% 0603
R2202	0613952C66	CER CHIP RES 475Ω 1% 0603
R2203	0613952D01	CER CHIP RES 1000Ω 1% 0603
R2204	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R2205	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R2206	0613952C72	CER CHIP RES 549Ω 1% 0603
R2207	0613952C66	CER CHIP RES 475Ω 1% 0603
R2208	0613952C46	CER CHIP RES 294Ω 1% 0603
R2210	0613952B85	CER CHIP RES 75.0Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R2302	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R2303	0613952E09	CER CHIP RES 12.1KΩ 1% 0603
R2305	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R2308	0613952E09	CER CHIP RES 12.1KΩ 1% 0603
R2309	0613952B93	CER CHIP RES 90.9Ω 1%
R2310	0613952B93	CER CHIP RES 90.9Ω 1%
R2311	0613952B93	CER CHIP RES 90.9Ω 1%
R2315	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R2317	0613952B62	CER CHIP RES 43.2Ω 1%
R2318	0613952B07	CER CHIP RES 11.5Ω 1% 0603
R2319	0613952B07	CER CHIP RES 11.5Ω 1% 0603
R2320	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2321	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2322	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2323	0613952D24	CER CHIP RES 1740Ω 1% 0603
R2400	0613959S18	CER CHIP RESΩ 1% 2512
R2401	0613958E01	CER CHIP RES 10.0KΩ 1% 0805
R2402	0613958J74	CER CHIP RES 0.0Ω JMP 0805
R2403	0613958E01	CER CHIP RES 10.0KΩ 1% 0805
R2404	0613958E01	CER CHIP RES 10.0KΩ 1% 0805
R2405	0613958N01	CER CHIP RES 1000Ω 1%
R2406	0613958N01	CER CHIP RES 1000Ω 1%
R2407	0613958N01	CER CHIP RES 1000Ω 1%

Circuit Ref	Motorola Part No	Description
R2408	0613952D34	CER CHIP RES 2210Ω 1% 0603
R2500	0613952C42	CER CHIP RES 267Ω 1% 0603
R2501	0613952C42	CER CHIP RES 267Ω 1% 0603
R2502	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R2503	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R2504	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R2510	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R2514	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4111	06009095002	RES CHIP 3-TERM ALN 50Ω 10W 2% EPP
R4121	06009095002	RES CHIP 3-TERM ALN 50Ω 10W 2% EPP
R4124	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4131	06009095002	RES CHIP 3-TERM ALN 50Ω 10W 2% EPP
R4211	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4212	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R4217	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4220	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4223	0613959G55	CER CHIP RES 180Ω 5% 1210
R4240	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4241	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4244	0613952H73	CER CHIP RES 1000Ω 5% 0603

Circuit Ref	Motorola Part No	Description
R4245	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4246	0613952H66	CER CHIP RES 510Ω 5% 0603
R4250	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4253	0613959G55	CER CHIP RES 180Ω 5% 1210
R4270	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4271	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4274	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4275	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4276	0613952H66	CER CHIP RES 510Ω 5% 0603
R4280	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4281	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4282	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4283	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4284	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4286	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4289	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4290	0613952D06	CER CHIP RES 1130Ω 1% 0603
R4291	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4312	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4315	0685357Y01	RES FIXED CHIP .0100 1W EPP



Circuit Ref	Motorola Part No	Description
R4333	0613952H95	CER CHIP RES 8200Ω 5% 0603
R4334	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4336	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4342	0613958H49	CER CHIP RES 100Ω 5% 0805
R4343	0613958H49	CER CHIP RES 100Ω 5% 0805
R4344	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4350	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4352	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4412	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4415	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4433	0613952H95	CER CHIP RES 8200Ω 5% 0603
R4434	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4436	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4442	0613958H49	CER CHIP RES 100Ω 5% 0805
R4443	0613958H49	CER CHIP RES 100Ω 5% 0805
R4444	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4450	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4452	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4512	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4515	0685357Y01	RES FIXED CHIP .0100 1 1W EPP

Circuit Ref	Motorola Part No	Description
R4533	0613952H95	CER CHIP RES 8200Ω 5% 0603
R4534	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4536	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4542	0613958H49	CER CHIP RES 100Ω 5% 0805
R4543	0613958H49	CER CHIP RES 100Ω 5% 0805
R4544	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4550	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4552	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4612	0613959B34	CER CHIP RES 22.1Ω 1% 1210
R4615	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4633	0613952H95	CER CHIP RES 8200Ω 5% 0603
R4634	0613952J05	CER CHIP RES 15KΩ 5% 0603
R4636	0613952H73	CER CHIP RES 1000Ω 5% 0603
R4642	0613958H49	CER CHIP RES 100Ω 5% 0805
R4643	0613958H49	CER CHIP RES 100Ω 5% 0805
R4644	0613952J49	CER CHIP RES 1.0MΩ 5% 0603
R4650	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4652	0613958A89	CER CHIP RES 8.25Ω 1% 0805
R4911	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4912	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%

Circuit Ref	Motorola Part No	Description
R4921	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4922	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4931	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
R4932	0685609Y06	RES CHIP 3-TERM ALN 10W 100Ω 2%
RT4247	0685191Y02	THERMISTOR CHIP 1 KΩ W18
RT4278	0685191Y02	THERMISTOR CHIP 1 KΩ W18
U2500	5114014M27	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO 37V,1.5A,SM,D2PAK,PB-FREE
U4110	5871224H02	COUPLER 435-524 MHZ 3 DB HYBRID
U4120	5871224H02	COUPLER 435-524 MHZ 3 DB HYBRID
U4130	5871224H02	COUPLER 435-524 MHZ 3 DB HYBRID
U4337	5185560Y01	IC, DIG POT,10K,SOIC
U4437	5185560Y01	IC, DIG POT,10K,SOIC
U4537	5185560Y01	IC, DIG POT,10K,SOIC
U4637	5185560Y01	IC, DIG POT,10K,SOIC
U4910	5871224H02	COUPLER 435-524 MHZ 3 DB HYBRID
U4920	5871224H02	COUPLER 435-524 MHZ 3 DB HYBRID
U4930	5871224H02	COUPLER 435-524 MHZ 3 DB HYBRID
VR2200	4813977M04	DIODE,ZEN,MMBZ5225,S M,SOT-23,3V,10MA,.225W,ZEN,P B-FREE
VR2201	4813977M18	DIODE,ZEN,MBZ5239,SM, SOT-23,9.1V,10MA,.225W,ZEN, PB-FREE

Circuit Ref	Motorola Part No	Description
VR4222	4813977M16	DIODE,ZEN,MBZ5237,SM, SOT-23,8.2V,10MA,.225W,ZEN, PB-FREE
VR4252	4813977M16	DIODE,ZEN,MBZ5237,SM, SOT-23,8.2V,10MA,.225W,ZEN, PB-FREE

### 3.10 Power Amplifier Parts List (UHF) – CLE6217

Circuit Ref	Motorola Part No	Description
C8001	2113951D21	CAP,FXD,3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8002	2113951D05	CAP,FXD,.5PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8003	2113951D16	CAP,FXD,1.8PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMA
C8004	2113951D05	CAP,FXD,.5PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8005	2113951D21	CAP,FXD,3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8006	2113951D05	CAP,FXD,.5PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8008	2113951D05	CAP,FXD,.5PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8009	2113951D23	CAP,FXD,3.6PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMA
C8010	2113951D21	CAP,FXD,3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8012	2113951D26	CAP,FXD,4.7PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMA
C8013	2113951B33	CAP NPO 9.10PF 5% 250V HI FREQ
C8021	2113951B56	CAP NPO HIGH FREQ 100 5V
C8023	2113951B33	CAP NPO 9.10PF 5% 250V HI FREQ
C8031	2113951B56	CAP NPO HIGH FREQ 100 5V
CR8000	4885046Y01	DIODE RF SCHOTTKY PB-FREE

Circuit Ref	Motorola Part No	Description
CR8001	4885046Y01	DIODE RF SCHOTTKY PB-FREE
L8000	2485873L01	ENCAPSULATED AIR WOUND COIL
L8001	2485873L01	ENCAPSULATED AIR WOUND COIL
L8002	2485873L01	ENCAPSULATED AIR WOUND COIL
L8003	2485873L01	ENCAPSULATED AIR WOUND COIL
L8004	2471604H03	SMD AIR WOUND COIL, 422NH, 5.0%
L8010	2414017N11	IDCTR,CHIP,8.2NH,5%,60 0MA,.26Ω,CER,10 Q,2.5GHZ SRF,SM,0603
L8011	2414017N11	IDCTR,CHIP,8.2NH,5%,60 0MA,.26Ω,CER,10 Q,2.5GHZ SRF,SM,0603
L8012	2414017N26	IDCTR,CHIP,150NH,5%,20 0MA,2.4Ω,CER,11 Q,550 MHZ SRF,SM,0603
L8020	2414017N11	IDCTR,CHIP,8.2NH,5%,60 0MA,.26Ω,CER,10 Q,2.5GHZ SRF,SM,0603
L8021	2414017N11	IDCTR,CHIP,8.2NH,5%,60 0MA,.26Ω,CER,10 Q,2.5GHZ SRF,SM,0603
L8022	2414017N26	IDCTR,CHIP,150NH,5%,20 0MA,2.4Ω,CER,11 Q,550 MHZ SRF,SM,0603
PWB	84009274001	PA OUTPUT PCB 403 - 470 MHZ
R8010	0613959C01	CER CHIP RES 100Ω 1% 1210
R8011	0613959C01	CER CHIP RES 100Ω 1% 1210
R8012	0613952C42	CER CHIP RES 267Ω 1% 0603
R8013	0613952B66	CER CHIP RES 47.5Ω 1% 0603
R8014	0613952E55	CER CHIP RES 36.5KΩ 1% 0603

Circuit Ref	Motorola Part No	Description
R8020	0613959C01	CER CHIP RES 100Ω 1% 1210
R8021	0613959C01	CER CHIP RES 100Ω 1% 1210
R8022	0613952C42	CER CHIP RES 267Ω 1% 0603
R8023	0613952B66	CER CHIP RES 47.5Ω 1% 0603
R8024	0613952E30	CER CHIP RES 20.0KΩ 1% 0603

### 3.11 Power Amplifier Parts List (UHF) – CLE6218

Circuit Ref	Motorola Part No	Description
C8001	2113951D14	CAP,FXD,1.5PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMA
C8002	2113951D03	CAP,FXD,.3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8003	2113951D10	CAP,FXD,1PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8004	2113951D03	CAP,FXD,.3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8005	2113951D10	CAP,FXD,1PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8006	2113951D03	CAP,FXD,.3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8008	2113951D03	CAP,FXD,.3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8009	2113951D20	CAP,FXD,2.7PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMA
C8010	2113951D17	CAP,FXD,2PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C8012	2113951D22	CAP,FXD,3.3PF,.05PF,250V-DC,0805,C0G,-55DEG CMIN,125DEG CMA
C8013	2113951B33	CAP NPO 9.10PF 5% 250V HI FREQ
C8021	2113951B56	CAP NPO HIGH FREQ 100 5V
C8023	2113951B33	CAP NPO 9.10PF 5% 250V HI FREQ
C8031	2113951B56	CAP NPO HIGH FREQ 100 5V
CR8000	4885046Y01	DIODE RF SCHOTTKY PB-FREE

Circuit Ref	Motorola Part No	Description
CR8001	4885046Y01	DIODE RF SCHOTTKY PB-FREE
L8000	2485873L01	ENCAPSULATED AIR WOUND COIL
L8001	2485873L01	ENCAPSULATED AIR WOUND COIL
L8002	2485873L01	ENCAPSULATED AIR WOUND COIL
L8003	2485873L01	ENCAPSULATED AIR WOUND COIL
L8004	2471604H03	SMD AIR WOUND COIL, 422NH, 5.0%
L8010	2414017N09	IDCTR,FXD,5.6NH,5.35%, 600MA,.2Ω,CER,10 Q,3GHZ SRF,SM,0603
L8011	2414017N09	IDCTR,FXD,5.6NH,5.35%, 600MA,.2Ω,CER,10 Q,3GHZ SRF,SM,0603
L8012	2414017N26	IDCTR,CHIP,150NH,5%,20 0MA,2.4Ω,CER,11 Q,550 MHZ SRF,SM,0603
L8020	2414017N09	IDCTR,FXD,5.6NH,5.35%, 600MA,.2Ω,CER,10 Q,3GHZ SRF,SM,0603
L8021	2414017N09	IDCTR,FXD,5.6NH,5.35%, 600MA,.2Ω,CER,10 Q,3GHZ SRF,SM,0603
L8022	2414017N26	IDCTR,CHIP,150NH,5%,20 0MA,2.4Ω,CER,11 Q,550 MHZ SRF,SM,0603
PWB	84009274001	PA OUTPUT PCB 403– 470 MHZ
R8010	0613959B95	CER CHIP RES 95.3Ω 1% 1210
R8011	0613959B95	CER CHIP RES 95.3Ω 1% 1210
R8012	0613952C39	CER CHIP RES 249Ω 1% 0603
R8013	0613952B66	CER CHIP RES 47.5Ω 1% 0603
R8014	0613952E55	CER CHIP RES 36.5KΩ 1% 0603

Circuit Ref	Motorola Part No	Description
R8020	0613959B95	CER CHIP RES 95.3Ω 1% 1210
R8021	0613959B95	CER CHIP RES 95.3Ω 1% 1210
R8022	0613952C39	CER CHIP RES 249Ω 1% 0603
R8023	0613952B66	CER CHIP RES 47.5Ω 1% 0603
R8024	0613952E30	CER CHIP RES 20.0KΩ 1% 0603

### 3.12 Power Amplifier Parts List (UHF) – CLE6219

Circuit Ref	Motorola Part No	Description
*	1010041C20	SOLDER PASTE(SN62/PB36/AG2)
C6010	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6013	2113944C49	CAP CER CHP 680.OPF 50V 5
C6014	2113944C47	CAP CER CHP 150.0PF 50V 5%
C6015	2385169Y04	CAP ALU LYT 330UF 35V 20%
C6020	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6023	2113944C49	CAP CER CHP 680.OPF 50V 5
C6024	2113944C47	CAP CER CHP 150.0PF 50V 5%
C6025	2385169Y04	CAP ALU LYT 330UF 35V 20%
C6051	2113946F05	CAP,CHIP,10UF,+10%,-10%,6.3V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C6061	2113946F05	CAP,CHIP,10UF,+10%,-10%,6.3V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C6100	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6101	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6102	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6103	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6104	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF

Circuit Ref	Motorola Part No	Description
C6105	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6106	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6107	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6110	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6111	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6112	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6113	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6114	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6115	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6116	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6117	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6132	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6133	2113945D04	CAP CER CHP 100,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
C6160	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6161	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6162	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6163	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6164	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6165	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6166	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6167	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6168	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6171	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6172	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6190	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6191	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6192	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C6193	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6241	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6242	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6250	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6251	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6252	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6253	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6254	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6255	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6256	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6257	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6258	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C6259	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6401	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6402	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6403	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6404	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6405	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6406	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6411	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6412	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6413	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6414	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6415	2113945D04	CAP CER CHP 100,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
C6416	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6505	2113945D03	CAP CER CHP 68,000PF 25V 10%
C6510	2113944G96	CAP,FXD,.068UF,+5%,-5%,50V-DC,1206,C0G,-55DEG CMIN,125DEG CMAX
C6554	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6597	2385169Y04	CAP ALU LYT 330UF 35V 20%
C6703	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6753	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6900	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6902	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6923	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6924	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6925	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C6926	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
D6559	4813978P10	DIODE,SWG,MMBD6050,SM,SOT-23,200MA,70V,.225W,PB-FREE
E6011	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E6012	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E6021	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E6022	2485011Y01	INDUCTOR BEAD CHP PB-FREE
J6000	2875367H01	10 PIN SIGNAL CONNECTOR
J6001	2884490T03	HDR 2X3 VERT PWR
J6002	28009262001	HEADER 1X4 VERTICAL
L6100	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6101	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6102	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6103	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6104	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6105	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6106	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6107	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6110	2485364Y21	IND CHIP 470 NH 5% EPP
L6111	2485364Y21	IND CHIP 470 NH 5% EPP
L6112	2485364Y21	IND CHIP 470 NH 5% EPP
L6113	2485364Y21	IND CHIP 470 NH 5% EPP

Circuit Ref	Motorola Part No	Description
L6114	2485364Y21	IND CHIP 470 NH 5% EPP
L6115	2485364Y21	IND CHIP 470 NH 5% EPP
L6116	2485364Y21	IND CHIP 470 NH 5% EPP
L6117	2485364Y21	IND CHIP 470 NH 5% EPP
L6190	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6191	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6192	2485364Y21	IND CHIP 470 NH 5% EPP
L6193	2485364Y21	IND CHIP 470 NH 5% EPP
M6900	4280500F01	T & R VER OF 4282981X01
M6901	4280500F01	T & R VER OF 4282981X01
M6902	4280500F01	T & R VER OF 4282981X01
M6903	4280500F01	T & R VER OF 4282981X01
M6904	4280500F01	T & R VER OF 4282981X01
M6905	4280500F01	T & R VER OF 4282981X01
M6906	4280500F01	T & R VER OF 4282981X01
M6910	4280500F01	T & R VER OF 4282981X01
M6911	4280500F01	T & R VER OF 4282981X01
PWB	84009279002	PCB, PA, DC DISTRIBUTION
Q6136	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q6287	4813970M64	XSTR,FET GP PWR,MOSFET,P-CH,ENHN,SM,SOT-23,-20V,.225W,PB-FRE
Q6590	4813970A20	XSTR,FET GP PWR,MOSFET,P,ENHN,SM,DPAK,SMT,60V,40W,PB-FREE

Circuit Ref	Motorola Part No	Description
Q6591	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q6593	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
R6052	0613952A01	CER CHIP RES 1.00Ω 1% 0603
R6053	0613952A01	CER CHIP RES 1.00Ω 1% 0603
R6062	0613952A01	CER CHIP RES 1.00Ω 1% 0603
R6063	0613952A01	CER CHIP RES 1.00Ω 1% 0603
R6120	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6121	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6123	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6124	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6125	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6126	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6131	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6134	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6135	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6137	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6156	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6157	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6158	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6159	0613952D01	CER CHIP RES 1000Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R6174	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6180	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6181	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6182	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6183	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6184	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6185	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6186	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6187	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6188	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6189	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6191	0613952B68	CER CHIP RES 49.9Ω 1% 0603
R6210	0613952D81	CER CHIP RES 6810Ω 1% 0603
R6211	0613952C68	CER CHIP RES 499Ω 1% 0603
R6212	0613952D81	CER CHIP RES 6810Ω 1% 0603
R6213	0613952D81	CER CHIP RES 6810Ω 1% 0603
R6220	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R6221	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R6222	0613952D34	CER CHIP RES 2210Ω 1% 0603
R6223	0613952D73	CER CHIP RES 5620Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R6224	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R6225	0613952D73	CER CHIP RES 5620Ω 1% 0603
R6226	0613952D73	CER CHIP RES 5620Ω 1% 0603
R6228	0613952D34	CER CHIP RES 2210Ω 1% 0603
R6229	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6230	0613952D18	CER CHIP RES 1500Ω 1% 0603
R6231	0613952D18	CER CHIP RES 1500Ω 1% 0603
R6232	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R6233	0613952D81	CER CHIP RES 6810Ω 1% 0603
R6235	0613952D18	CER CHIP RES 1500Ω 1% 0603
R6236	0613952D18	CER CHIP RES 1500Ω 1% 0603
R6237	0613952E66	CER CHIP RES 47.5KΩ 1 0603
R6238	0613952D91	CER CHIP RES 8660Ω 1% 0603
R6239	0613952D34	CER CHIP RES 2210Ω 1% 0603
R6243	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6244	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6261	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6263	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6280	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6281	0613952D34	CER CHIP RES 2210Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R6282	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6283	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6284	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6285	0613952D91	CER CHIP RES 8660Ω 1% 0603
R6286	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6288	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6289	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6500	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6501	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6502	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6503	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R6504	0613952D34	CER CHIP RES 2210Ω 1% 0603
R6512	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6513	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6515	0613952D73	CER CHIP RES 5620Ω 1% 0603
R6516	0613952D81	CER CHIP RES 6810Ω 1% 0603
R6518	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6550	0613952F01	CER CHIP RES 100KΩ 1% 0603
R6551	0613952E66	CER CHIP RES 47.5KΩ 1% 0603
R6552	0613952E33	CER CHIP RES 21.5KΩ 1% 0603

Circuit Ref	Motorola Part No	Description
R6555	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6556	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6557	0613952E66	CER CHIP RES 47.5KΩ 1% 0603
R6558	0613952D81	CER CHIP RES 6810Ω 1% 0603
R6560	0613952D73	CER CHIP RES 5620Ω 1% 0603
R6579	0613952F01	CER CHIP RES 100KΩ 1% 0603
R6580	0613952D18	CER CHIP RES 1500Ω 1% 0603
R6581	0613952D34	CER CHIP RES 2210Ω 1% 0603
R6582	0613952F01	CER CHIP RES 100KΩ 1% 0603
R6583	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6585	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6586	0613952D01	CER CHIP RES 1000Ω 1% 0603
R6587	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R6588	0613952E18	CER CHIP RES 15.0KΩ 1% 0603
R6589	0613952D73	CER CHIP RES 5620Ω 1% 0603
R6596	0613959Y15	CER CHIP RESΩ 5% 2512
R6597	0613959Y15	CER CHIP RESΩ 5% 2512
R6598	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6599	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R6701	0613952E33	CER CHIP RES 21.5KΩ 1% 0603
R6702	0613952E66	CER CHIP RES 47.5KΩ 1% 0603

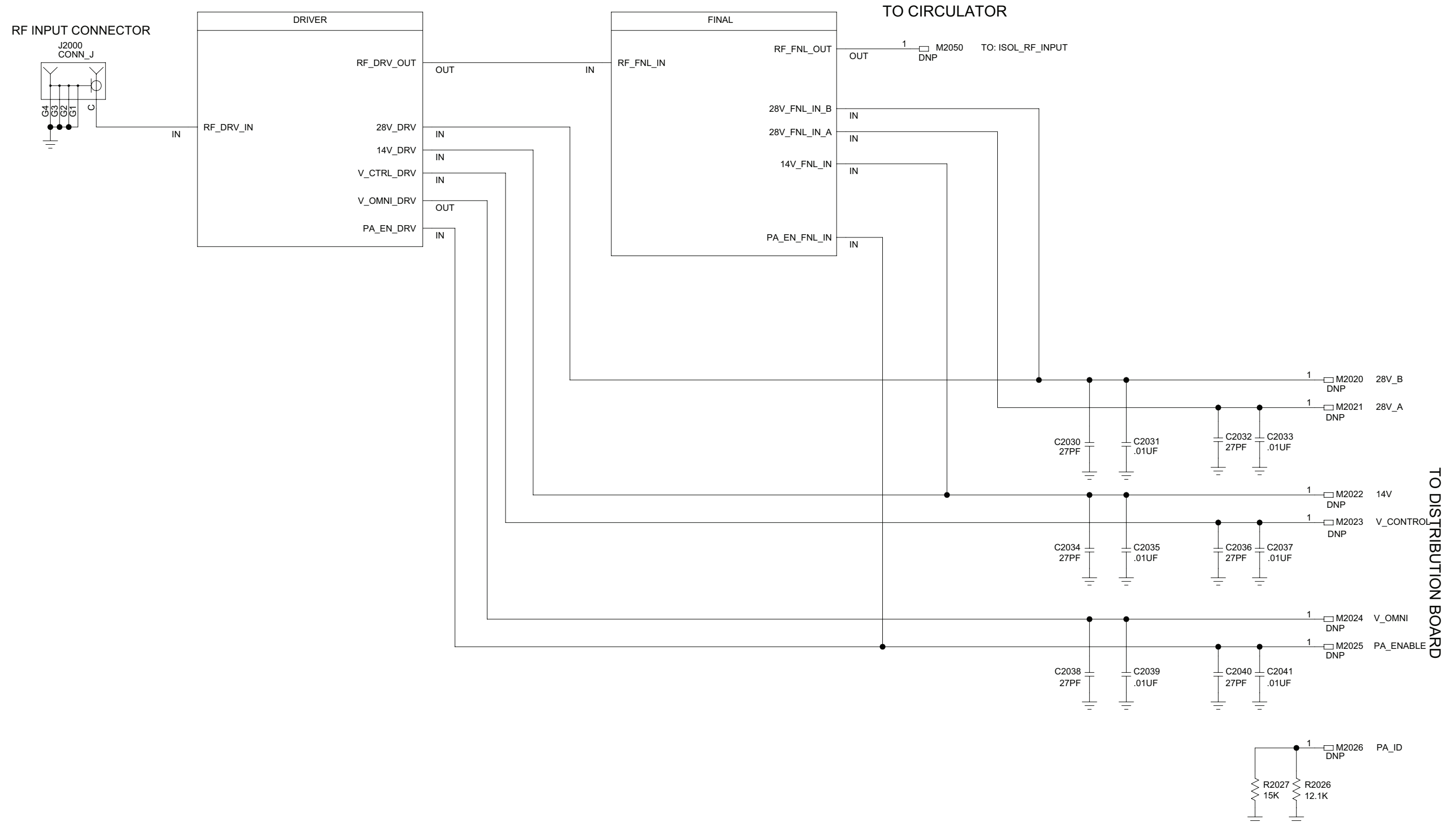
Circuit Ref	Motorola Part No	Description
R6704	0613952C68	CER CHIP RES 499Ω 1% 0603
R6751	0613952E33	CER CHIP RES 21.5KΩ 1% 0603
R6752	0613952E66	CER CHIP RES 47.5KΩ 1% 0603
R6754	0613952D01	CER CHIP RES 1000Ω 1% 0603
RT6553	0685191Y01	THERMISTOR CHIP 100 KΩ W18
U6050	5114014A30	IC,LNR V REGLTR,FXD,3.3V,800MA ,SM,DPAK,PB-FREE
U6060	5114014A21	IC,LNR V REGLTR,FXD,5V,800MA,S M,DPAK,PB-FREE
U6130	5184943Y01	64KB SERIAL EEPROM 8192X8
U6150	5185130Y02	CPLD EPM3064ATI44 W18 CMLNT
U6170	51009279001	DAC, 8 BIT, 2 CH, PARALLEL
U6240	51009278001	ADC, 8 BIT, 10 CH, SPI
U6400	5114016A02	IC,OP AMP,4PER PKG,GP,SM,SO-14,PB- FREE
U6410	5114016A02	IC,OP AMP,4PER PKG,GP,SM,SO-14,PB- FREE
VR6107	4813977M16	DIODE,ZEN,MBZ5237,SM, SOT- 23,8.2V,10MA,.225W,ZEN, PB-FREE

### 3.13 Power Amplifier Parts List (UHF) – CLN8504

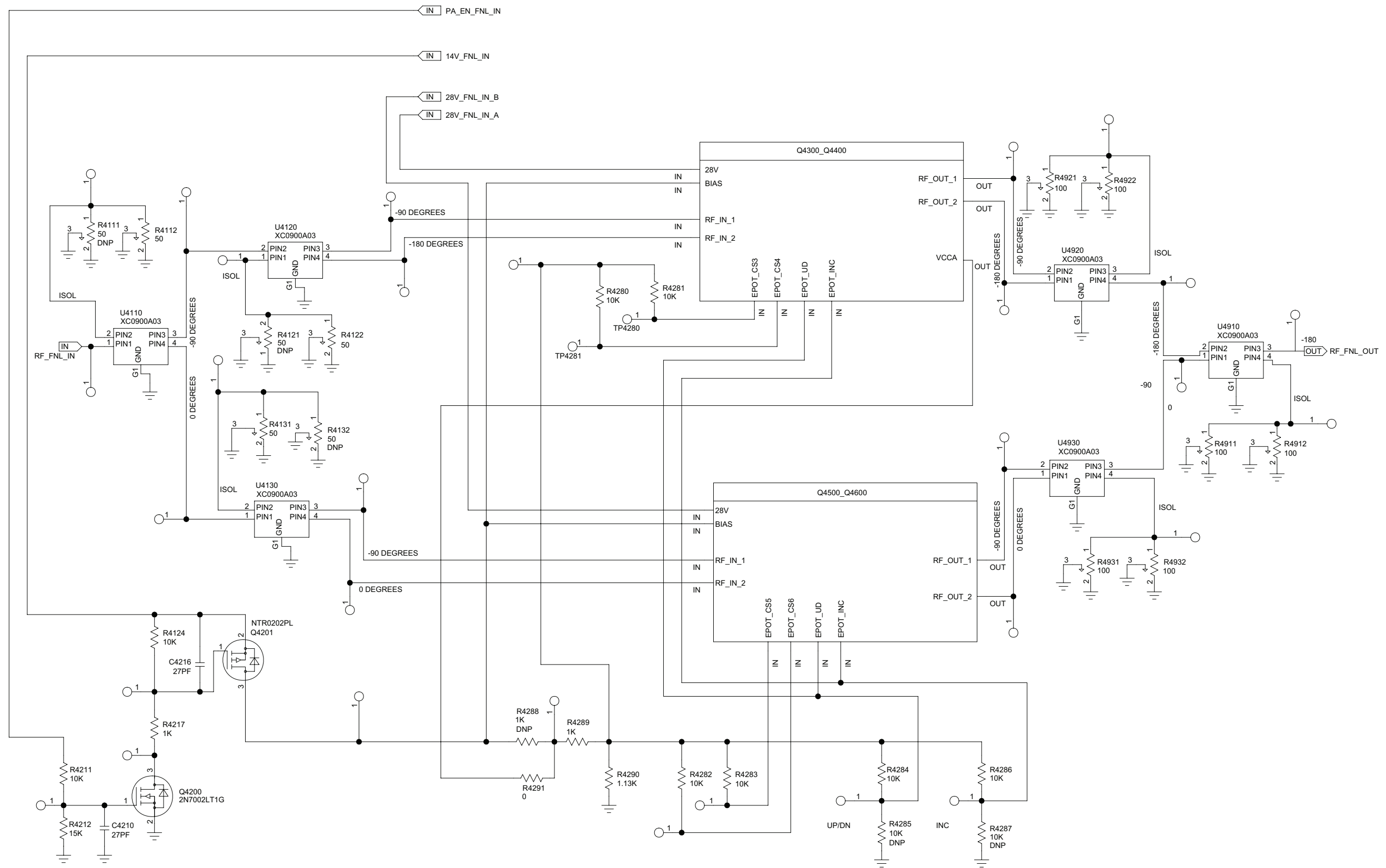
Circuit Ref	Motorola Part No	Description
*	0310909B31	SCREW,SCRMCH (M3X0.5X8) ROHSWEEE REPLACEMENT 0310907A19
*	0310909B45	SCRMCH(M3.5X0.6X8)ST ARPAN STLZNC
*	0310909B65	SCRMCH(M4X0.7X25)ST ARPAN STLZNC &
*	0385539Y01	SCREW,M3.5 WASHER FACED PAN HEAD
*	06009258001	TERMINATION, 250 W, FLANGED
*	0984169Y01	CONNECTOR,RECEPT IN\ CAST HSG
*	0984728L01	SKT CONN
*	1010041C24	SLDR WIRE,SN63PB37,031DIA, 245 NOCLN
*	1383852R01	GRILLE FAN
*	15009280001	COVER PA CASTING
*	2182805H09	CAP CER FEEDTHRU 1000 GMV X5U
*	26009259002	HT SINK HIPWR PA,R2
*	3282610Y02	GASKET, RF
*	5485212U03	LABEL MIRS/IDEN
*	59009254002	FAN DC 1 THKX120MMX120MM



3.14 Power Amplifier (PA) Schematics (800/900 MHz)

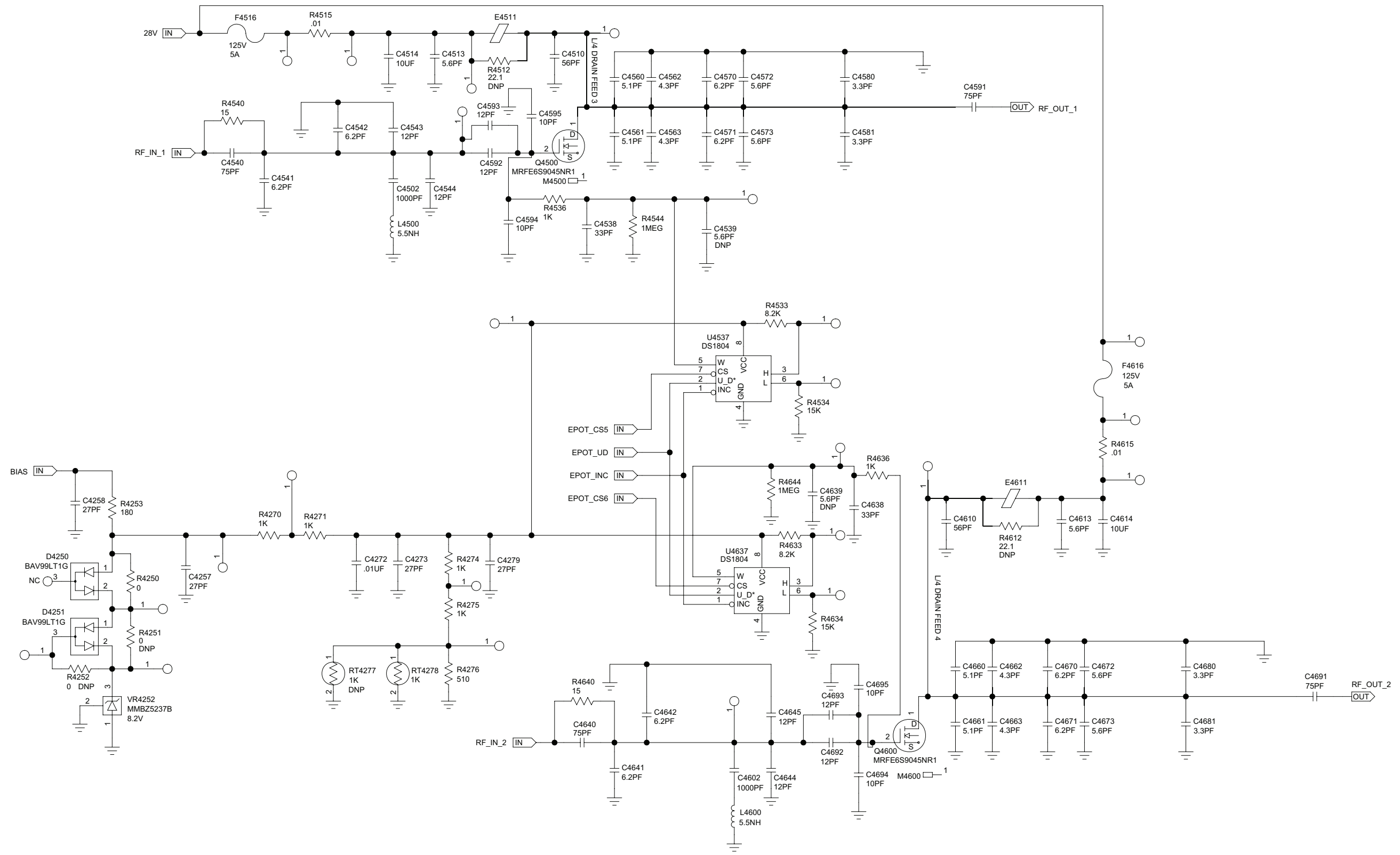


Power Amplifier – RF Board Root Schematic Diagram (Kit No. CLF6549)

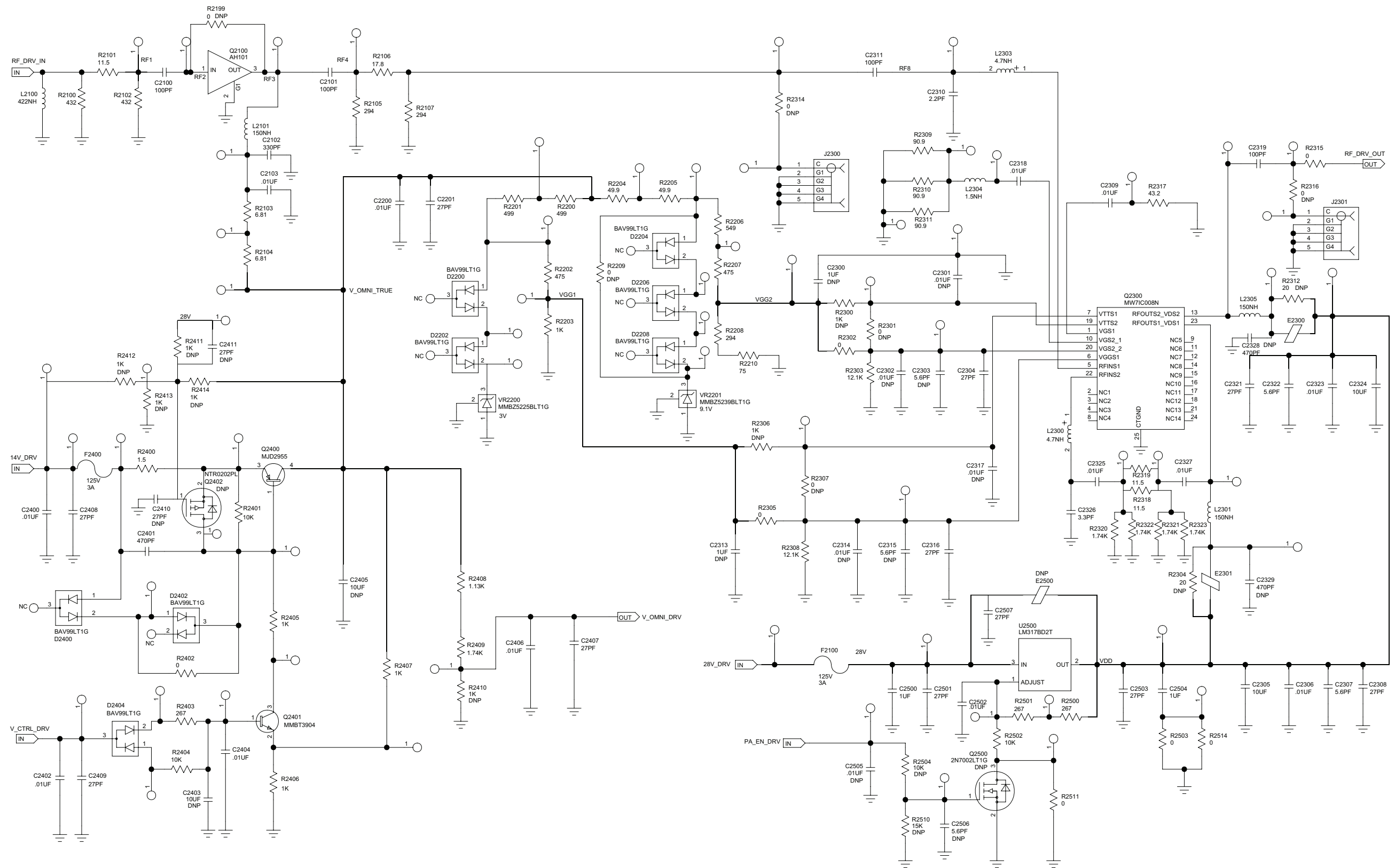


**Power Amplifier – Final Amplifier Main Schematic Diagram (Kit No. CLF6549)**

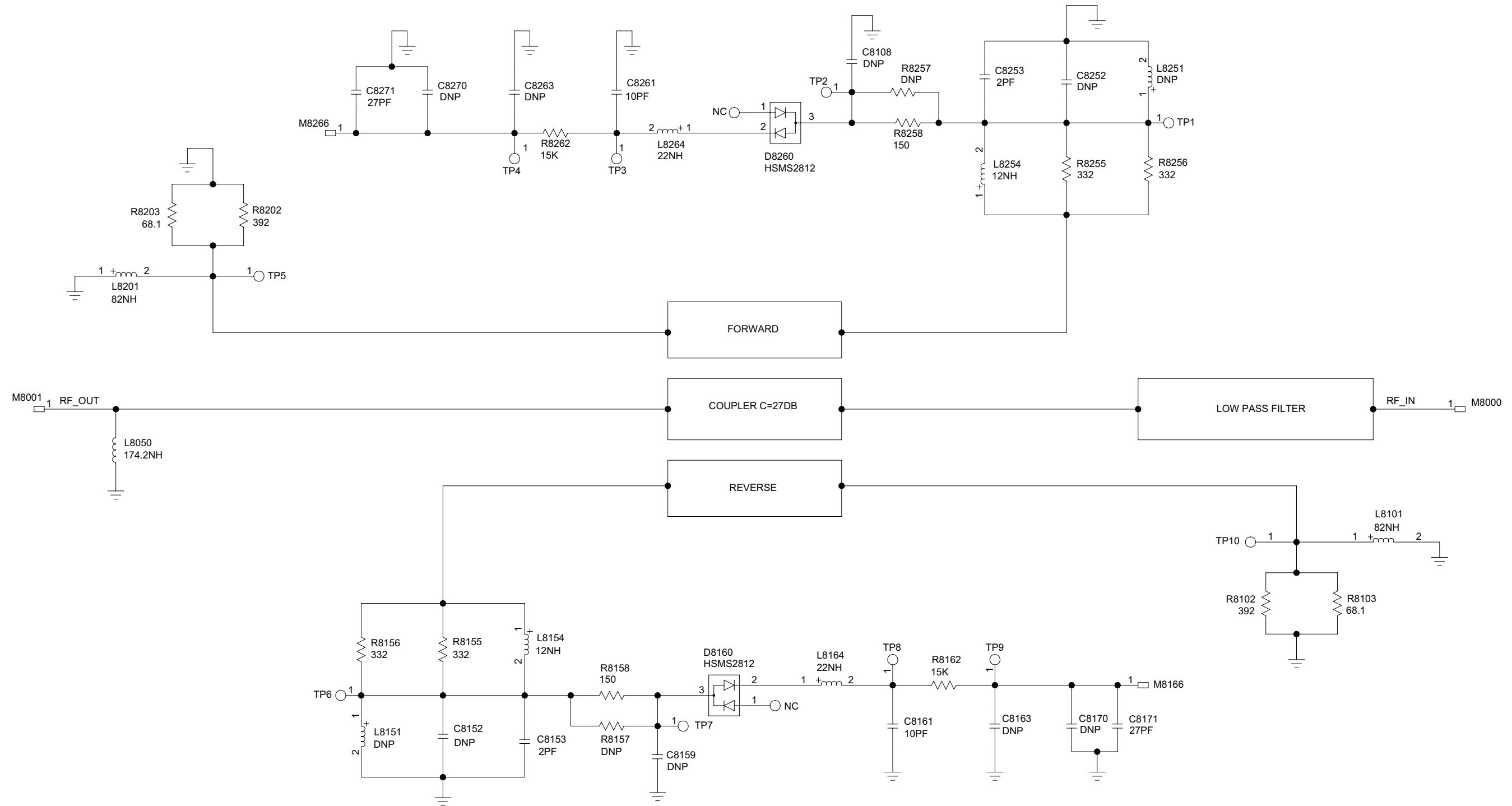




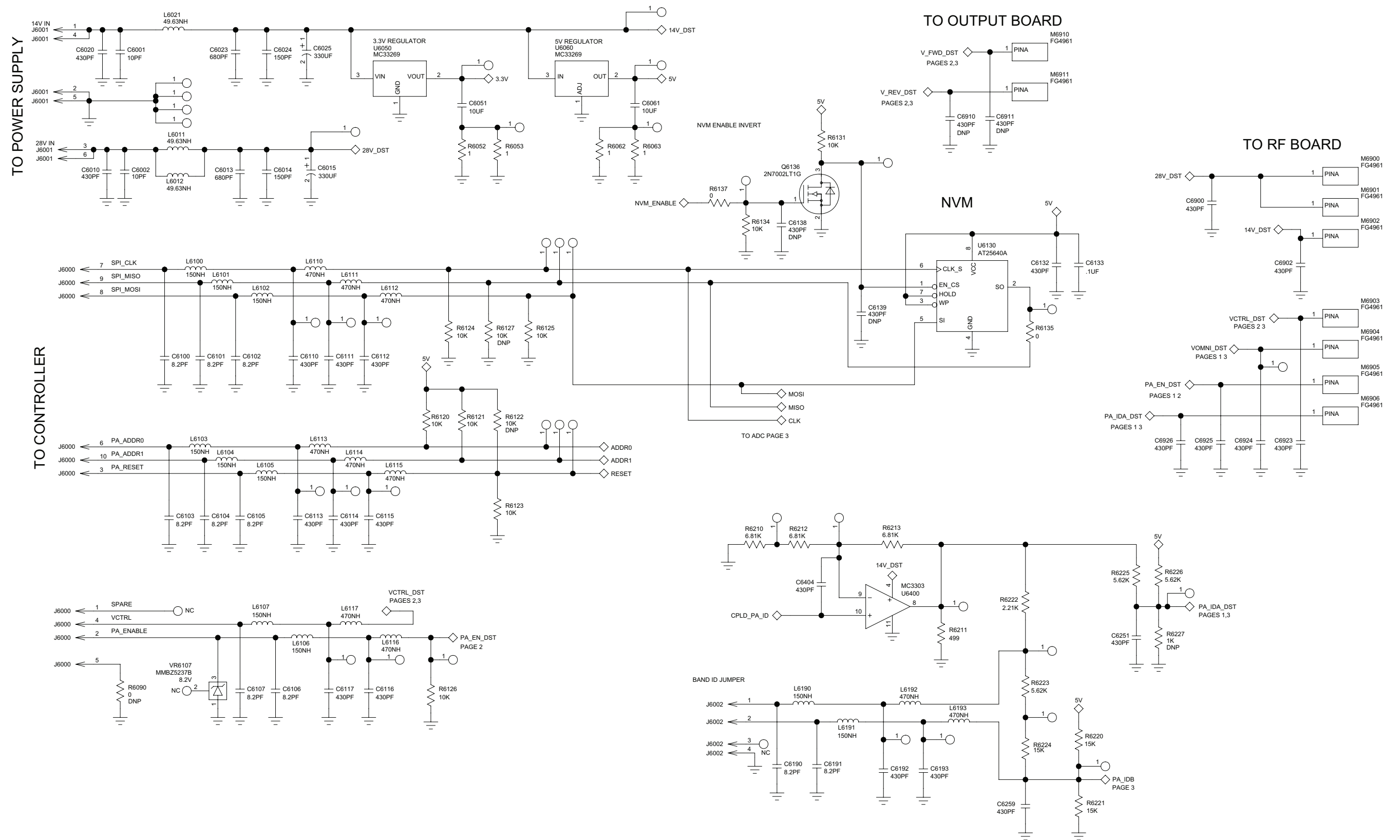
Power Amplifier – RF Board Bias and Output Q450, Q460 Circuit Schematic Diagram (Kit No. CLF6549)



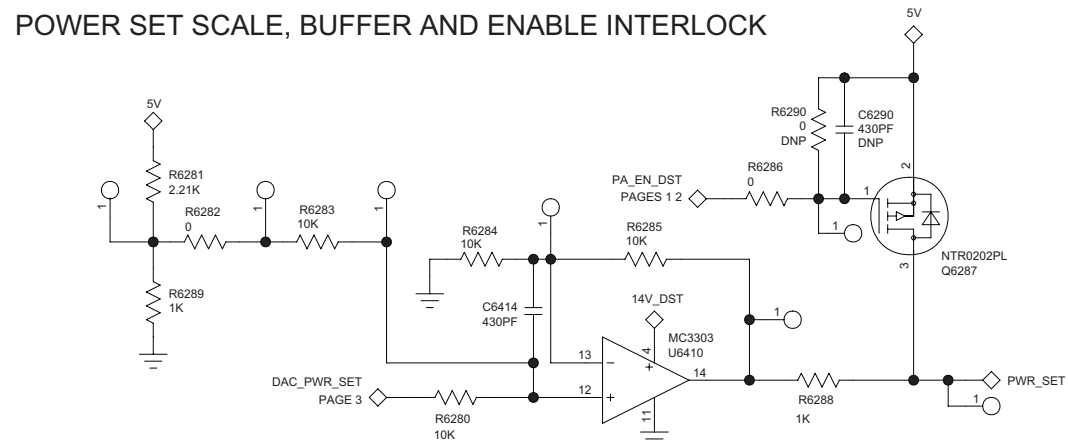
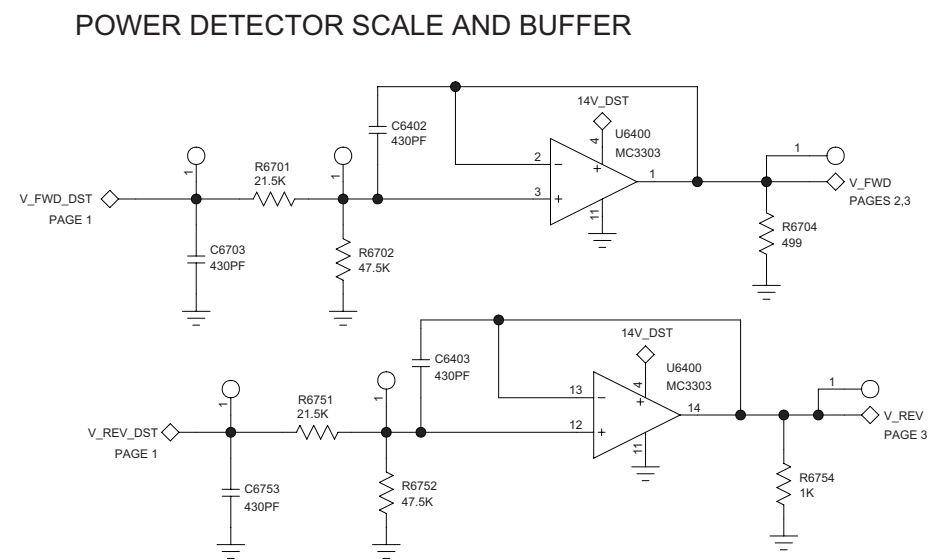
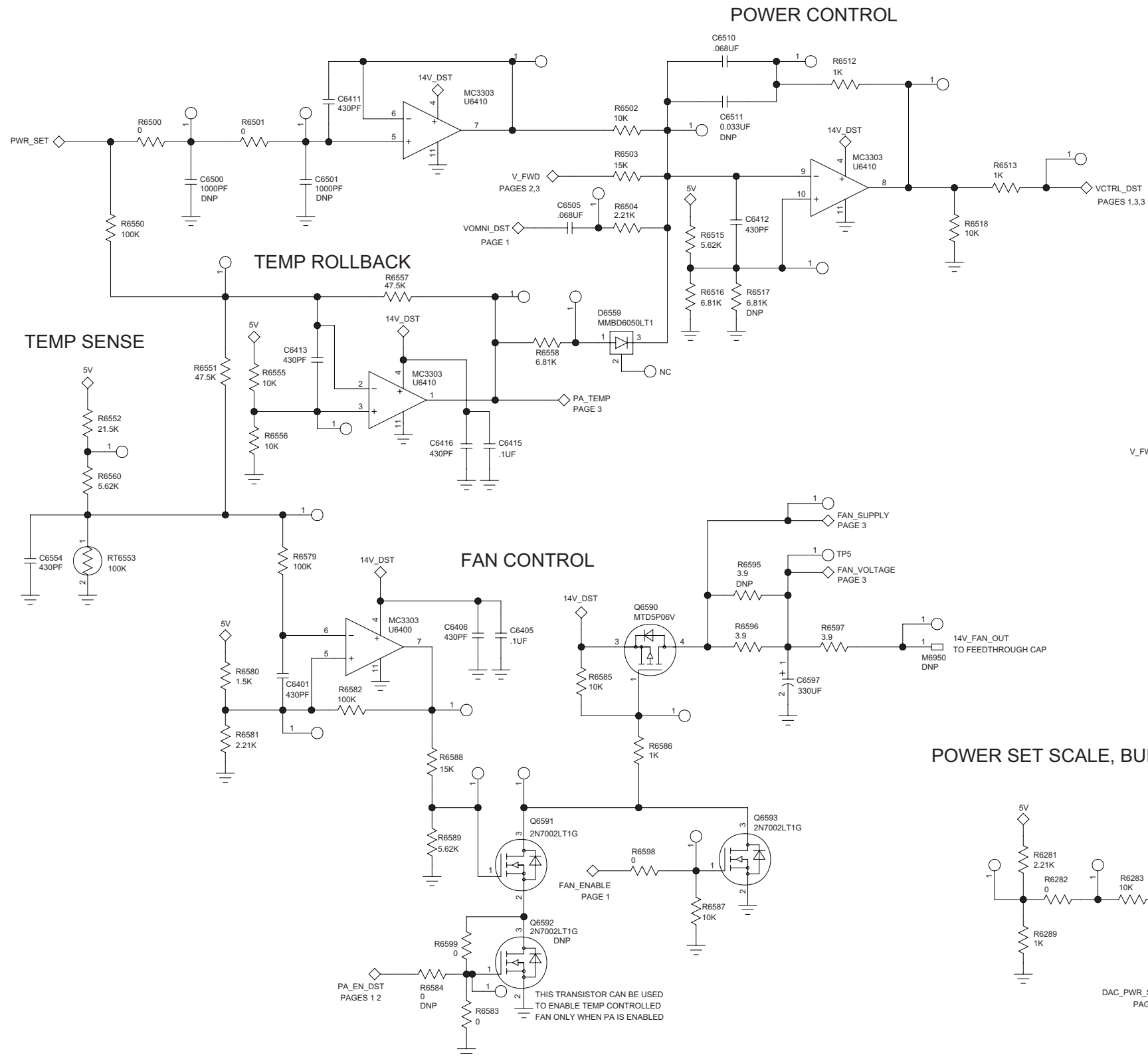
Power Amplifier – RF Board Driver Schematic Diagram (Kit No. CLF6549)



Power Amplifier – Output Board Schematic Diagram (Kit No. CLF6550)

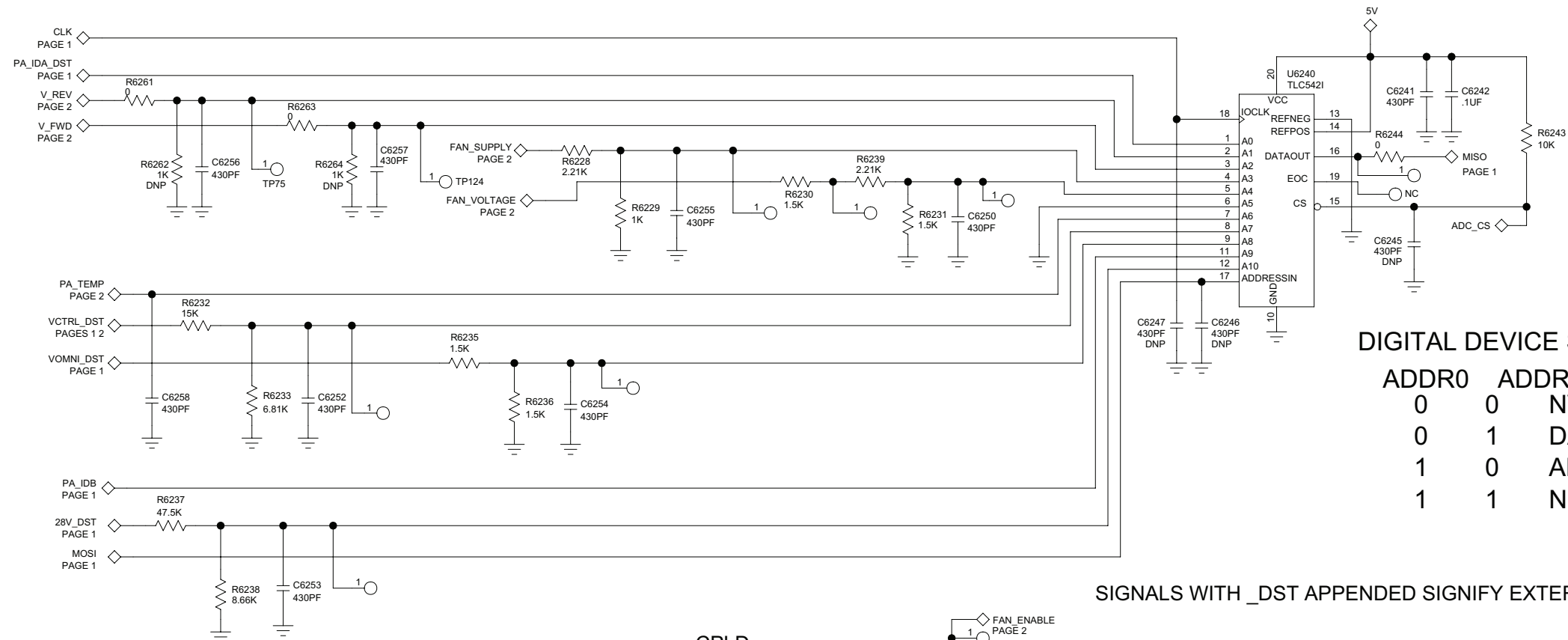


Power Amplifier – DC Distribution Board I/O, NVM (Kit No. CLE6219)



**Power Amplifier – DC Distribution Board Power Control and Detection (Kit No. CLE6219)**

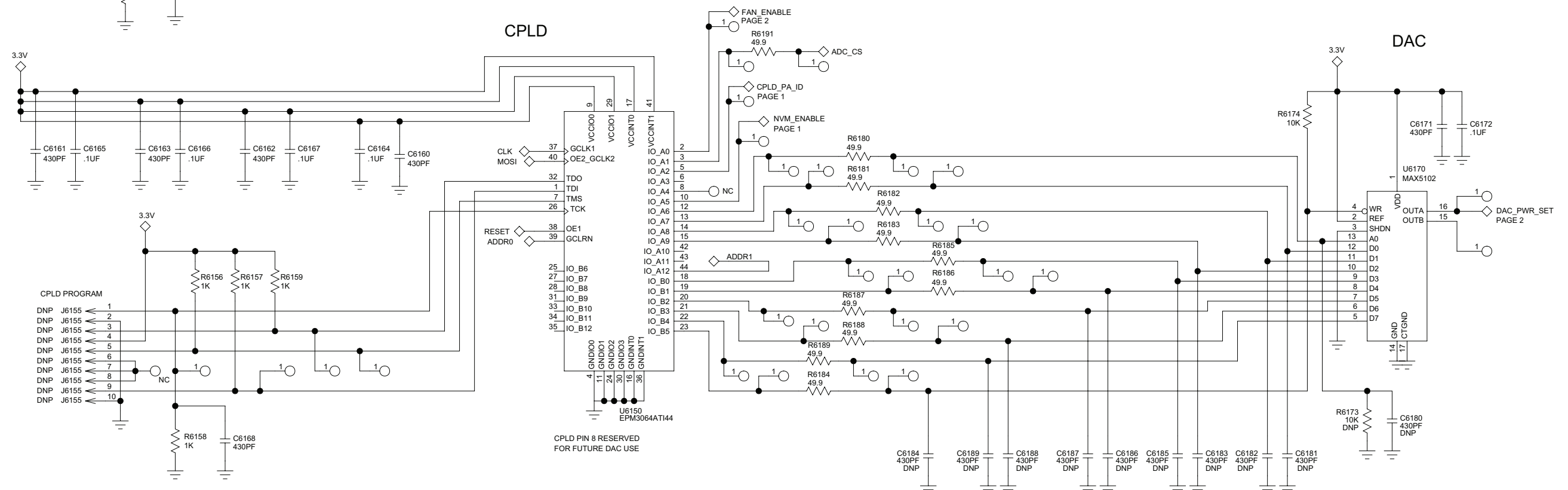




DIGITAL DEVICE SELECT TRUTH TABLE

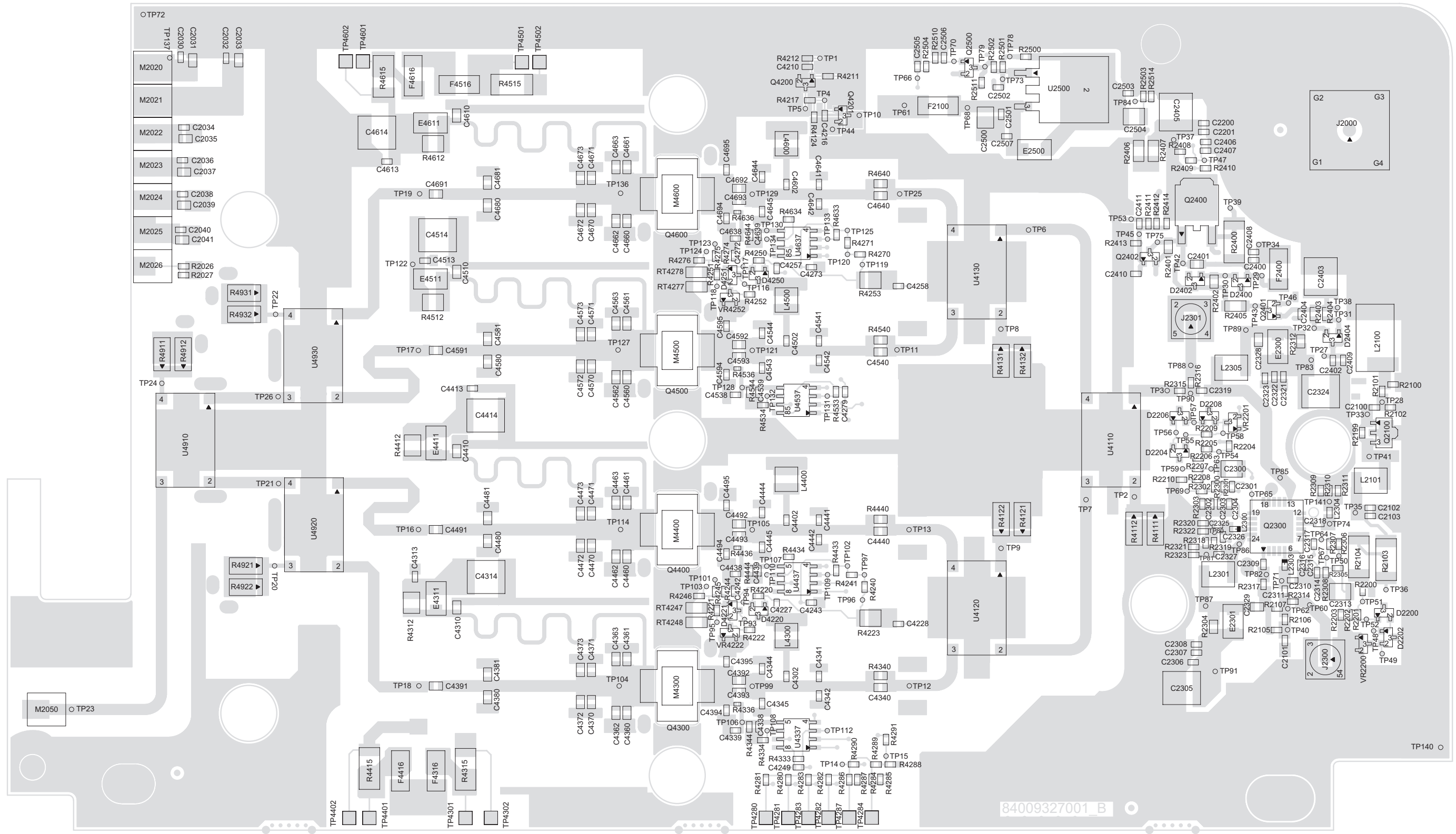
ADDR0	ADDR1	DEVICE
0	0	NVM
0	1	DAC
1	0	ADC
1	1	NONE

SIGNALS WITH \_DST APPENDED SIGNIFY EXTERNAL CONNECTIONS

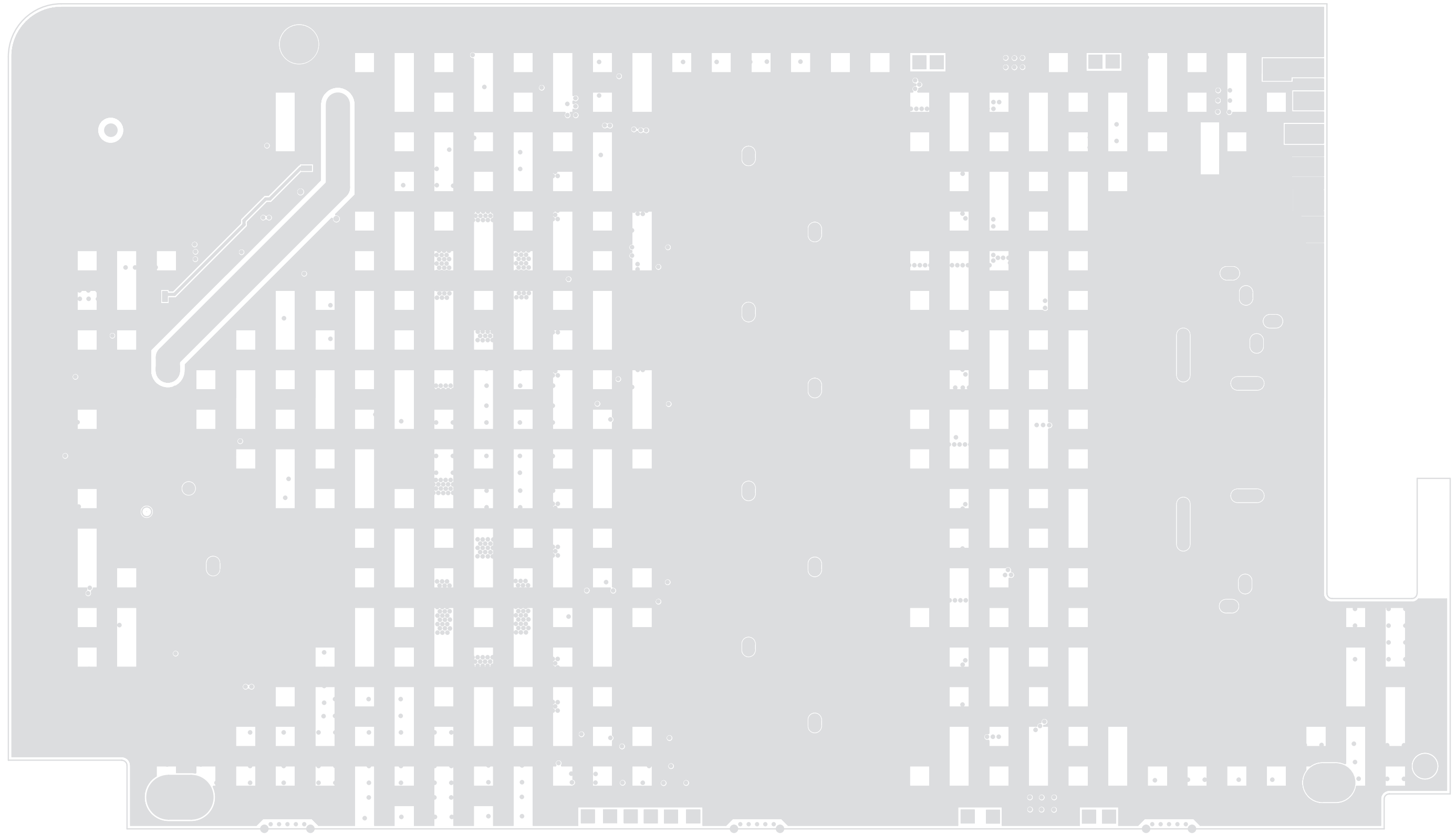


Power Amplifier – DC Distribution Board ADC, CPLD, DAC (Kit No. CLE6219)

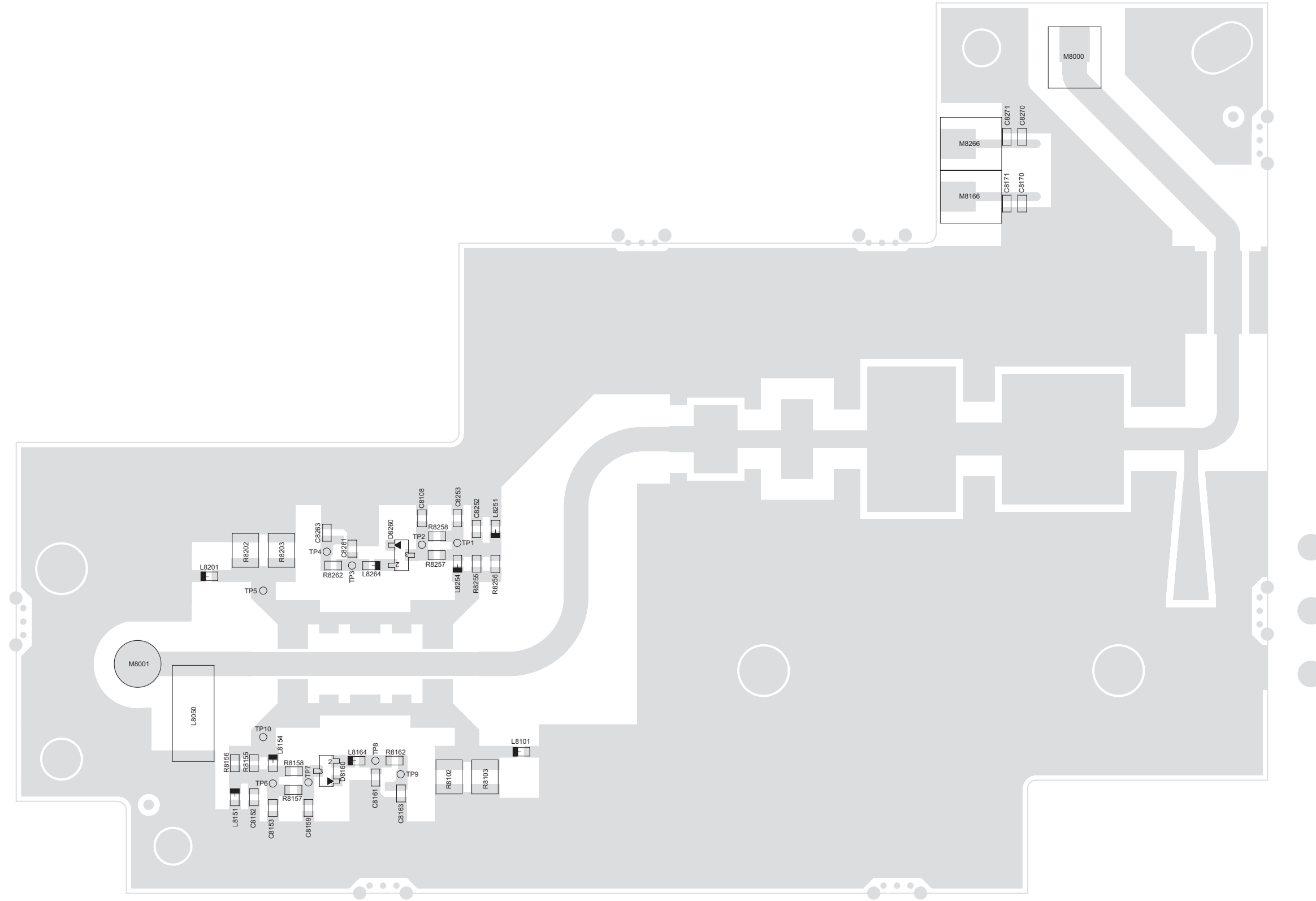
### 3.15 Power Amplifier (PA) PCB (800/900 MHz)



RF Board PCB – Top View (PCB No. 84009327001)



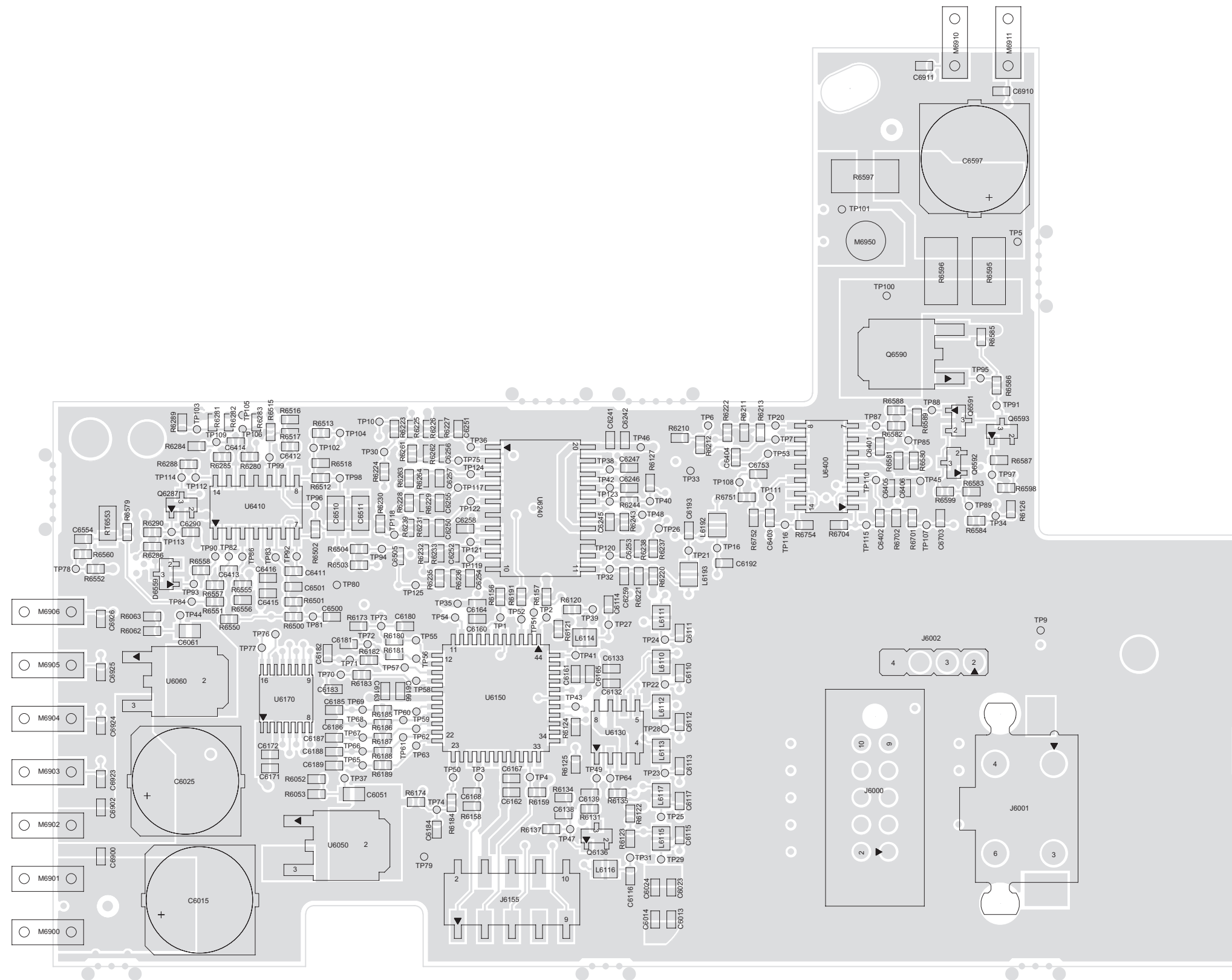
**RF Board PCB – Bottom View (PCB No. 84009277001)**



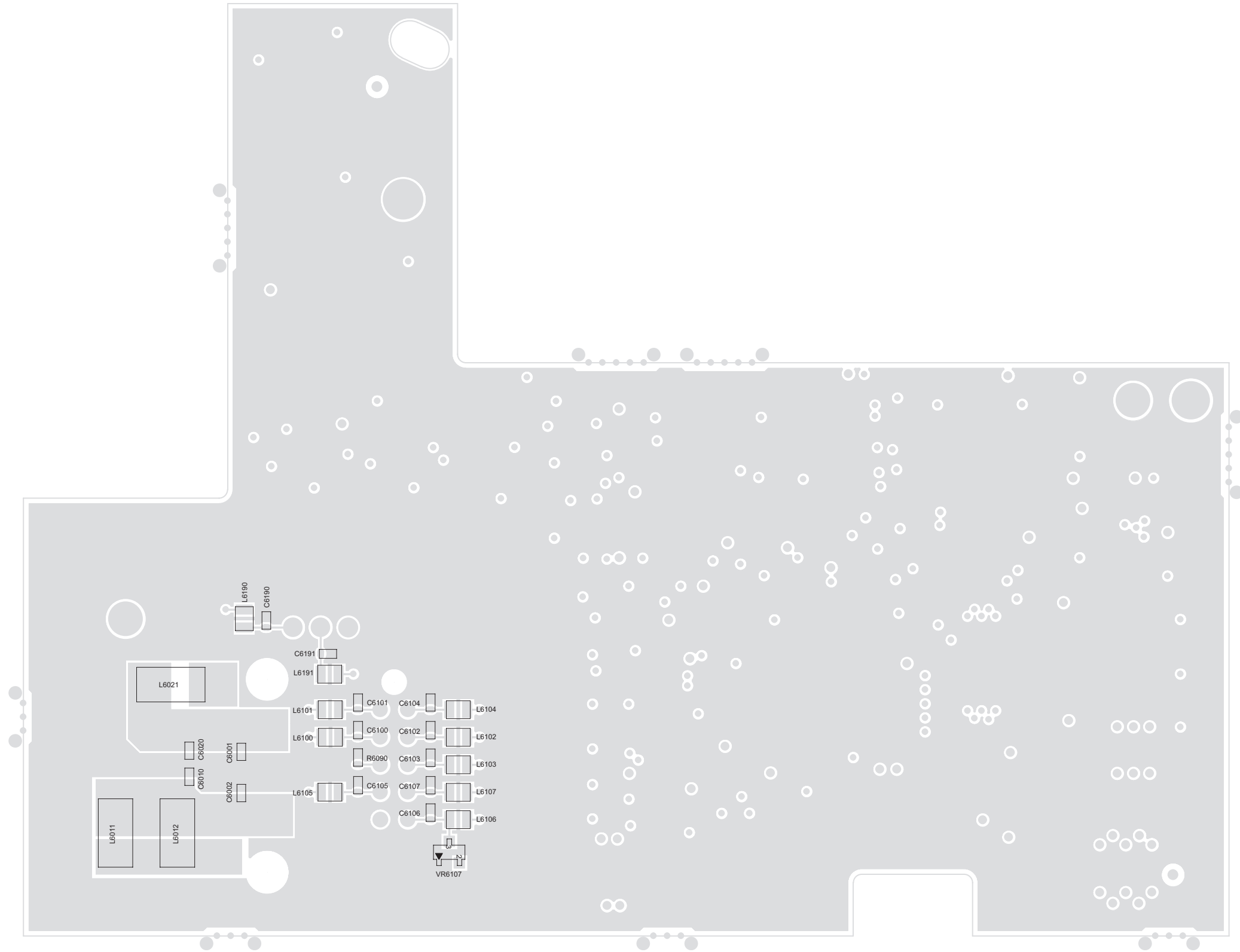
Output Board PCB – Top View (PCB No. 84009325001)



**Output Board PCB – Bottom View (PCB No. 84009325001)**



**Distribution Board PCB – Top View (PCB No. 84009279003)**



**Distribution Board PCB – Bottom View (PCB No. 84009279003)**

**3.16 Power Amplifier Parts List  
(800/900 MHz) – CLF1852**

Circuit Ref	Motorola Part No	Description
*	5884911T06	CIRCULATOR
*	CLE6219	PA DIST UHF 403-527 MHZ
*	CLF6549	PA RF BRD 851-941 MHZ
*	CLF6550	PA OUTPUT 851-941 MHZ
*	CLN8504	PA HDWR HIGH POWER MTR3000



### 3.17 Power Amplifier Parts List (800/900 MHZ) – CLF6549

Circuit Ref	Motorola Part No	Description
C2030	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2031	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2032	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2033	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2034	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2035	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2036	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2037	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2038	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2039	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2040	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2041	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C2100	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2101	2113944C45	CAP CER CHP 100.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C2102	2113944C04	CAP CER CHP 330.0PF 50V 5%
C2103	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2200	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2201	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2304	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2305	2185457Y01	CAP CHIP CER 10UF 35V W18
C2306	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2307	2113944C24	CAP CER CHP 5.6PF 50V +/- 0.5PF
C2308	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2309	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2310	2113951A18	CAP NPO 2.20PF +/- .1PF 250V HI FREQ
C2311	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2316	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2318	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2319	2113944C45	CAP CER CHP 100.0PF 50V 5%
C2321	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2322	2113944C24	CAP CER CHP 5.6PF 50V +/- 0.5PF
C2323	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2324	2185457Y01	CAP CHIP CER 10UF 35V W18
C2325	2113945C02	CAP CER CHP 10,000PF 50V 10%

Circuit Ref	Motorola Part No	Description
C2326	2113951A22	CAP NPO 3.30PF +/- .1PF 250V HI FREQ
C2327	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2400	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2401	2113944F05	CAP,CHIP,470PF,+5%,-5%,50V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C2402	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2404	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2406	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2407	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2408	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2409	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2500	2113955E11	CAP,FXD,1UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR
C2501	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2502	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2503	2113944C35	CAP CER CHP 27.0PF 50V 5%
C2504	2113955E11	CAP,FXD,1UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR
C2507	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4210	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4216	2113944C35	CAP CER CHP 27.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C4227	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4228	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4242	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4243	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4249	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4257	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4258	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4272	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4273	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4279	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4302	2113945C13	CAP CER CHP 1000PF 50V 10%
C4310	2113951B50	CAP NPO HIGH FREQ 56.0 +/- 5% 250V
C4313	2113944C24	CAP CER CHP 5.6PF 50V +/- 0.5PF
C4314	2185457Y01	CAP CHIP CER 10UF 35V W18
C4338	2113951A44	CAP NPO 33.0PF +/-5% 250V HI FREQ
C4340	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4341	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4342	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4344	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ
C4345	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ

Circuit Ref	Motorola Part No	Description
C4360	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4361	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4362	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4363	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4370	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F
C4371	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F
C4372	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4373	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4380	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F
C4381	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F
C4391	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4392	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4393	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4394	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C4395	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C4402	2113945C13	CAP CER CHP 1000PF 50V 10%
C4410	2113951B50	CAP NPO HIGH FREQ 56.0 +/- 5% 250V
C4413	2113944C24	CAP CER CHP 5.6PF 50V +/- 0.5PF
C4414	2185457Y01	CAP CHIP CER 10UF 35V W18
C4439	2113951A44	CAP NPO 33.0PF +/-5% 250V HI FREQ

Circuit Ref	Motorola Part No	Description
C4440	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4441	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4442	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4444	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ
C4445	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ
C4460	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4461	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4462	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4463	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4470	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F
C4471	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F
C4472	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4473	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4480	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F
C4481	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F
C4491	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4492	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4493	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4494	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C4495	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ

Circuit Ref	Motorola Part No	Description
C4502	2113945C13	CAP CER CHP 1000PF 50V 10%
C4510	2113951B50	CAP NPO HIGH FREQ 56.0 +/- 5% 250V
C4513	2113944C24	CAP CER CHP 5.6PF 50V +/- 0.5PF
C4514	2185457Y01	CAP CHIP CER 10UF 35V W18
C4538	2113951A44	CAP NPO 33.0PF +/-5% 250V HI FREQ
C4540	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4541	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4542	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4543	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ
C4544	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ
C4560	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4561	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4562	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4563	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4570	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F
C4571	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F
C4572	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4573	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4580	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F
C4581	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F

Circuit Ref	Motorola Part No	Description
C4591	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4592	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4593	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4594	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C4595	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C4602	2113945C13	CAP CER CHP 1000PF 50V 10%
C4610	2113951B50	CAP NPO HIGH FREQ 56.0 +/- 5% 250V
C4613	2113944C24	CAP CER CHP 5.6PF 50V +/- 0.5PF
C4614	2185457Y01	CAP CHIP CER 10UF 35V W18
C4638	2113951A44	CAP NPO 33.0PF +/-5% 250V HI FREQ
C4640	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4641	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4642	2113951A29	CAP NPO 6.20PF +/- .1PF 250V HI FREQ
C4644	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ
C4645	2113951A36	CAP NPO 12.0PF +/-5% 250V HI FREQ
C4660	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4661	2113951B27	CAP NPO 5.10PF +/- 0.25PF 250V HI-F
C4662	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4663	2113951B25	CAP NPO 4.30PF +/- 0.25PF 250V HI-F
C4670	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F

Circuit Ref	Motorola Part No	Description
C4671	2113951B29	CAP NPO 6.20PF +/- 0.25PF 250V HI-F
C4672	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4673	2113951B28	CAP NPO 5.60PF +/- 0.25PF 250V HI-F
C4680	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F
C4681	2113951B22	CAP NPO 3.30PF +/- 0.25PF 250V HI-F
C4691	2113951B53	CAP NPO HIGH FREQ 75.0 +/- 5% 250V
C4692	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4693	2113951B36	CAP NPO 12.0PF +/- 5% 250V HI FREQ
C4694	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C4695	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
D2200	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2202	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2204	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2206	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2208	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2400	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-

Circuit Ref	Motorola Part No	Description
D2402	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D2404	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4220	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4221	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4250	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
D4251	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
E2300	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E2301	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4311	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4411	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4511	2485011Y01	INDUCTOR BEAD CHP PB-FREE
E4611	2485011Y01	INDUCTOR BEAD CHP PB-FREE
F2100	6585118Y06	FUSE,3A,125V,FAST ACT,SM
F2400	6585118Y06	FUSE,3A,125V,FAST ACT,SM
F4316	6585118Y08	FUSE 8A, 125V FAST ACT W18
F4416	6585118Y08	FUSE 8A, 125V FAST ACT W18

Circuit Ref	Motorola Part No	Description
F4516	6585118Y08	FUSE 8A, 125V FAST ACT W18
F4616	6585118Y08	FUSE 8A, 125V FAST ACT W18
J2000	0982492W01	BNC CONN PCB VERTICAL RECEPT
J2300	0909901V02	RECP SMT MCX
J2301	0909901V02	RECP SMT MCX
L2100	2471604H03	SMD AIR WOUND COIL, 422NH, 5.0%
L2101	2416077H21	150NH MIDI SPRING COIL
L2300	2414017N08	IDCTR,FXD,4.7NH,6.38%, 1A,.17Ω,CER,10 Q,3.3GHZ SRF,SM,0603
L2301	2416077H21	150NH MIDI SPRING COIL
L2303	2414017N08	IDCTR,FXD,4.7NH,6.38%, 1A,.17Ω,CER,10 Q,3.3GHZ SRF,SM,0603
L2304	2414017N02	IDCTR,CHIP,1.5NH,1A,.1Ω ,CER,8 Q,6GHZ SRF,SM,0603,PB-FREE
L2305	2416077H21	150NH MIDI SPRING COIL
L4300	2471968L01	INDUCTOR COILS, 5.5NH, 5%, Q=115
L4400	2471968L01	INDUCTOR COILS, 5.5NH, 5%, Q=115
L4500	2471968L01	INDUCTOR COILS, 5.5NH, 5%, Q=115
L4600	2471968L01	INDUCTOR COILS, 5.5NH, 5%, Q=115
M4300	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4400	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4500	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
M4600	1084806Y05	SOLDER, PREFRM, TR 7.0X4.6 PB
Q2100	5183513Y01	MMIC, HF LINEAR ,GAAS

Circuit Ref	Motorola Part No	Description
Q2300	4888606T31	HIGH POWER DISTRIBUTED AMPLIFIER
Q2400	4813971A10	XSTR,BIP GP POWER,BIPLR,NPN,MJD 2955,DPAK,SM,60V,20W,1 0A,2 MHZ,P
Q2401	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300 MHZ
Q4200	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q4201	4813970M64	XSTR,FET GP PWR,MOSFET,P-CH,ENHN,SM,SOT-23,-20V,.225W,PB-FRE
Q4300	4878031A01	RF POWER FET, MRFE6S9045NR1
Q4400	4878031A01	RF POWER FET, MRFE6S9045NR1
Q4500	4878031A01	RF POWER FET, MRFE6S9045NR1
Q4600	4878031A01	RF POWER FET, MRFE6S9045NR1
R2026	0613952E09	CER CHIP RES 12.1K Ω 1 0603
R2100	0613952C62	CER CHIP RES 432 Ω 1% 0603
R2101	0613952B07	CER CHIP RES 11.5 Ω 1% 0603
R2102	0613952C62	CER CHIP RES 432 Ω 1% 0603
R2103	0613959S81	CER CHIP RES Ω 1% 2512
R2104	0613959S81	CER CHIP RES Ω 1% 2512
R2105	0613952C46	CER CHIP RES 294 Ω 1% 0603
R2106	0613952B25	CER CHIP RES 17.8 Ω 1% 0603
R2107	0613952C46	CER CHIP RES 294 Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R2200	0613952C68	CER CHIP RES 499 Ω 1 0603
R2201	0613952C68	CER CHIP RES 499 Ω 1 0603
R2202	0613952C66	CER CHIP RES 475 Ω 1% 0603
R2203	0613952D01	CER CHIP RES 1000 Ω 1% 0603
R2204	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R2205	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R2206	0613952C72	CER CHIP RES 549 Ω 1 0603
R2207	0613952C66	CER CHIP RES 475 Ω 1% 0603
R2208	0613952C46	CER CHIP RES 294 Ω 1% 0603
R2210	0613952B85	CER CHIP RES 75.0 Ω 1% 0603
R2302	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R2303	0613952E09	CER CHIP RES 12.1K Ω 1 0603
R2305	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R2308	0613952E09	CER CHIP RES 12.1K Ω 1 0603
R2309	0613952B93	CER CHIP RES 90.9 Ω 1
R2310	0613952B93	CER CHIP RES 90.9 Ω 1
R2311	0613952B93	CER CHIP RES 90.9 Ω 1
R2315	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R2317	0613952B62	CER CHIP RES 43.2 Ω 1
R2318	0613952B07	CER CHIP RES 11.5 Ω 1% 0603
R2319	0613952B07	CER CHIP RES 11.5 Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R2320	0613952D24	CER CHIP RES 1740 Ω 1 0603
R2321	0613952D24	CER CHIP RES 1740 Ω 1 0603
R2322	0613952D24	CER CHIP RES 1740 Ω 1 0603
R2323	0613952D24	CER CHIP RES 1740 Ω 1 0603
R2400	0613959S18	CER CHIP RES Ω 1% 2512
R2401	0613958E01	CER CHIP RES 10.0K Ω 1% 0805
R2402	0613958J74	CER CHIP RES 0.0 Ω JMP 0805
R2403	0613958C42	CER CHIP RES 267 Ω 1% 0805
R2404	0613958E01	CER CHIP RES 10.0K Ω 1% 0805
R2405	0613958N01	CER CHIP RES 1000 Ω 1
R2406	0613958N01	CER CHIP RES 1000 Ω 1
R2407	0613958N01	CER CHIP RES 1000 Ω 1
R2408	0613952D06	CER CHIP RES 1130 Ω 1 0603
R2409	0613952D24	CER CHIP RES 1740 Ω 1 0603
R2500	0613952C42	CER CHIP RES 267 Ω 1% 0603
R2501	0613952C42	CER CHIP RES 267 Ω 1% 0603
R2502	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R2503	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R2511	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R2514	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4112	06009095002	RES CHIP 3-TERM ALN 50 Ω 10W 2% EPP

Circuit Ref	Motorola Part No	Description
R4122	06009095002	RES CHIP 3-TERM ALN 50 Ω 10W 2% EPP
R4124	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4131	06009095002	RES CHIP 3-TERM ALN 50 Ω 10W 2% EPP
R4211	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4212	0613952E18	CER CHIP RES 15.0K Ω 1 0603
R4217	0613952D01	CER CHIP RES 1000 Ω 1% 0603
R4220	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4223	0613959G55	CER CHIP RES 180 Ω 5% 1210
R4240	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4241	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4244	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4245	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4246	0613952H66	CER CHIP RES 510 Ω 5 0603
R4250	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4253	0613959G55	CER CHIP RES 180 Ω 5% 1210
R4270	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4271	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4274	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4275	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R4276	0613952H66	CER CHIP RES 510 Ω 5 0603

Circuit Ref	Motorola Part No	Description
R4280	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4281	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4282	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4283	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4284	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4286	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4289	0613952D01	CER CHIP RES 1000 Ω 1% 0603
R4290	0613952D06	CER CHIP RES 1130 Ω 1 0603
R4291	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4315	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4333	0613952H95	CER CHIP RES 8200 Ω 5 0603
R4334	0613952J05	CER CHIP RES 15K Ω 5% 0603
R4336	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R4340	0613958H29	CER CHIP RES 15.0 Ω 5% 0805
R4344	0613952J49	CER CHIP RES 1.0M Ω 5% 0603
R4415	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4433	0613952H95	CER CHIP RES 8200 Ω 5 0603
R4434	0613952J05	CER CHIP RES 15K Ω 5% 0603
R4436	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R4440	0613958H29	CER CHIP RES 15.0 Ω 5% 0805

Circuit Ref	Motorola Part No	Description
R4444	0613952J49	CER CHIP RES 1.0M $\Omega$ 5% 0603
R4515	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4533	0613952H95	CER CHIP RES 8200 $\Omega$ 5 0603
R4534	0613952J05	CER CHIP RES 15K $\Omega$ 5% 0603
R4536	0613952M01	CER CHIP RES 1000 $\Omega$ 1% 0402
R4540	0613958H29	CER CHIP RES 15.0 $\Omega$ 5% 0805
R4544	0613952J49	CER CHIP RES 1.0M $\Omega$ 5% 0603
R4615	0685357Y01	RES FIXED CHIP .0100 1 1W EPP
R4633	0613952H95	CER CHIP RES 8200 $\Omega$ 5 0603
R4634	0613952J05	CER CHIP RES 15K $\Omega$ 5% 0603
R4636	0613952M01	CER CHIP RES 1000 $\Omega$ 1% 0402
R4640	0613958H29	CER CHIP RES 15.0 $\Omega$ 5% 0805
R4644	0613952J49	CER CHIP RES 1.0M $\Omega$ 5% 0603
R4911	0685609Y06	RES CHIP 3-TERM ALN 10W 100 $\Omega$ 2%
R4912	0685609Y06	RES CHIP 3-TERM ALN 10W 100 $\Omega$ 2%
R4921	0685609Y06	RES CHIP 3-TERM ALN 10W 100 $\Omega$ 2%
R4922	0685609Y06	RES CHIP 3-TERM ALN 10W 100 $\Omega$ 2%
R4931	0685609Y06	RES CHIP 3-TERM ALN 10W 100 $\Omega$ 2%
R4932	0685609Y06	RES CHIP 3-TERM ALN 10W 100 $\Omega$ 2%
RT4247	0685191Y02	THERMISTOR CHIP 1 K $\Omega$ W18

Circuit Ref	Motorola Part No	Description
RT4278	0685191Y02	THERMISTOR CHIP 1 K $\Omega$ W18
U2500	5114014M27	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO 37V,1.5A,SM,D2PAK,PB-FREE
U4110	5888156T01	SPLTR CMBR,2-WAY,811 MHZ MIN,1GHZ MAX,50 $\Omega$ ,23DB ISLN,.15DB IL,SM
U4120	5888156T01	SPLTR CMBR,2-WAY,811 MHZ MIN,1GHZ MAX,50 $\Omega$ ,23DB ISLN,.15DB IL,SM
U4130	5888156T01	SPLTR CMBR,2-WAY,811 MHZ MIN,1GHZ MAX,50 $\Omega$ ,23DB ISLN,.15DB IL,SM
U4337	5185560Y01	IC, DIG POT,10K,SOIC
U4437	5185560Y01	IC, DIG POT,10K,SOIC
U4537	5185560Y01	IC, DIG POT,10K,SOIC
U4637	5185560Y01	IC, DIG POT,10K,SOIC
U4910	5888156T01	SPLTR CMBR,2-WAY,811 MHZ MIN,1GHZ MAX,50 $\Omega$ ,23DB ISLN,.15DB IL,SM
U4920	5888156T01	SPLTR CMBR,2-WAY,811 MHZ MIN,1GHZ MAX,50 $\Omega$ ,23DB ISLN,.15DB IL,SM
U4930	5888156T01	SPLTR CMBR,2-WAY,811 MHZ MIN,1GHZ MAX,50 $\Omega$ ,23DB ISLN,.15DB IL,SM
VR2200	4813977M04	DIODE,ZEN,MMBZ5225,SM,SOT-23,3V,10MA,.225W,ZEN,PB-FREE
VR2201	4813977M18	DIODE,ZEN,MBZ5239,SM,SOT-23,9.1V,10MA,.225W,ZEN,PB-FREE

Circuit Ref	Motorola Part No	Description
VR4222	4813977M16	DIODE,ZEN,MBZ5237,SM,SOT-23,8.2V,10MA,.225W,ZEN,PB-FREE
VR4252	4813977M16	DIODE,ZEN,MBZ5237,SM,SOT-23,8.2V,10MA,.225W,ZEN,PB-FREE

### 3.18 Power Amplifier Parts List (800/900 MHZ) – CLF6550

Circuit Ref	Motorola Part No	Description
C8153	2113951A17	CAP NPO 2.00PF .1PF 250V HI FREQ
C8161	2113951A34	CAP NPO 10.0PF 5% 250V HI FREQ
C8171	2113951A42	CAP NPO 27.0PF 5% 250V HI FREQ
C8253	2113951A17	CAP NPO 2.00PF .1PF 250V HI FREQ
C8261	2113951A34	CAP NPO 10.0PF 5% 250V HI FREQ
C8271	2113951A42	CAP NPO 27.0PF 5% 250V HI FREQ
D8160	4885046Y01	DIODE RF SCHOTTKY PB-FREE
D8260	4885046Y01	DIODE RF SCHOTTKY PB-FREE
L8050	2460591V77	COIL AIR WOUND INDUC 174.20
L8101	2414017N23	IDCTR,CHIP,82NH,5%,300 MA,1.8Ω,CER,14 Q,750 MHZ SRF,SM,0603
L8154	2414017N13	IDCTR,CHIP,12NH,5%,600 MA,.35Ω,CER,12 Q,2GHZ SRF,SM,0603,PB
L8164	2414017N16	IDCTR,CHIP,22NH,5%,600 MA,.54Ω,CER,12 Q,1.3GHZ SRF,SM,0603
L8201	2414017N23	IDCTR,CHIP,82NH,5%,300 MA,1.8Ω,CER,14 Q,750 MHZ SRF,SM,0603
L8254	2414017N13	IDCTR,CHIP,12NH,5%,600 MA,.35Ω,CER,12 Q,2GHZ SRF,SM,0603,PB
L8264	2414017N16	IDCTR,CHIP,22NH,5%,600 MA,.54Ω,CER,12 Q,1.3GHZ SRF,SM,0603
R8102	0613959C58	CER CHIP RES 392 Ω 1% 1210

Circuit Ref	Motorola Part No	Description
R8103	0613959B81	CER CHIP RES 68.1 Ω 1% 1210
R8155	0613952C51	CER CHIP RES 332 Ω 1% 0603
R8156	0613952C51	CER CHIP RES 332 Ω 1% 0603
R8158	0613952C18	CER CHIP RES 150 Ω 1% 0603
R8162	0613952E18	CER CHIP RES 15.0K Ω 1 0603
R8202	0613959C58	CER CHIP RES 392 Ω 1% 1210
R8203	0613959B81	CER CHIP RES 68.1 Ω 1% 1210
R8255	0613952C51	CER CHIP RES 332 Ω 1% 0603
R8256	0613952C51	CER CHIP RES 332 Ω 1% 0603
R8258	0613952C18	CER CHIP RES 150 Ω 1% 0603
R8262	0613952E18	CER CHIP RES 15.0K Ω 1 0603

### 3.19 Power Amplifier Parts List (800/900 MHZ) – CLE6219

Circuit Ref	Motorola Part No	Description
C6001	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C6002	2113951A34	CAP NPO 10.0PF +/-5% 250V HI FREQ
C6010	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6013	2113944C49	CAP CER CHP 680.OPF 50V 5
C6014	2113944C47	CAP CER CHP 150.0PF 50V 5%
C6015	2385169Y04	CAP ALU LYT 330UF 35V 20%
C6020	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6023	2113944C49	CAP CER CHP 680.OPF 50V 5
C6024	2113944C47	CAP CER CHP 150.0PF 50V 5%
C6025	2385169Y04	CAP ALU LYT 330UF 35V 20%
C6051	2113946F05	CAP,CHIP,10UF,+10%,-10%,6.3V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C6061	2113946F05	CAP,CHIP,10UF,+10%,-10%,6.3V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C6100	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6101	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6102	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6103	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF

Circuit Ref	Motorola Part No	Description
C6104	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6105	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6106	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6107	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6110	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6111	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6112	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6113	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6114	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6115	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6116	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6117	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6132	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C6133	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6160	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6161	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6162	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6163	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6164	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6165	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6166	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6167	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6168	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6171	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6172	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6190	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6191	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C6192	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C6193	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6241	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6242	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6250	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6251	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6252	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6253	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6254	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6255	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6256	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6257	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6258	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C6259	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6401	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6402	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6403	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6404	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6405	2113945D04	CAP CER CHP 100,000PF 25V 10%
C6406	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6411	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6412	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6413	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6414	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6415	2113945D04	CAP CER CHP 100,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
C6416	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6505	2113945D03	CAP CER CHP 68,000PF 25V 10%
C6510	2113944G96	CAP,FXD,.068UF,+5%,-5%,50V-DC,1206,C0G,-55DEG CMIN,125DEG CMAX
C6554	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6597	2385169Y04	CAP ALU LYT 330UF 35V 20%
C6703	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6753	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6900	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6902	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6923	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6924	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C6925	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C6926	2113944C93	CAP,FXD,430PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
D6559	4813978P10	DIODE,SWG,MMBD6050,SM,SOT-23,200MA,70V,.225W,PB-FREE
J6000	2875367H01	10 PIN SIGNAL CONNECTOR
J6001	2884490T03	HDR 2X3 VERT PWR
J6002	28009262001	HEADER 1X4 VERTICAL
L6011	2486015Y01	COIL,AWC, 49.63, TOP HAT
L6012	2486015Y01	COIL,AWC, 49.63, TOP HAT
L6021	2486015Y01	COIL,AWC, 49.63, TOP HAT
L6100	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6101	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6102	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6103	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6104	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6105	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6106	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6107	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6110	2485364Y21	IND CHIP 470 NH 5% EPP
L6111	2485364Y21	IND CHIP 470 NH 5% EPP
L6112	2485364Y21	IND CHIP 470 NH 5% EPP
L6113	2485364Y21	IND CHIP 470 NH 5% EPP
L6114	2485364Y21	IND CHIP 470 NH 5% EPP

Circuit Ref	Motorola Part No	Description
L6115	2485364Y21	IND CHIP 470 NH 5% EPP
L6116	2485364Y21	IND CHIP 470 NH 5% EPP
L6117	2485364Y21	IND CHIP 470 NH 5% EPP
L6190	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6191	2485364Y16	CHIP IND 150 NH 5% 0805 EPP
L6192	2485364Y21	IND CHIP 470 NH 5% EPP
L6193	2485364Y21	IND CHIP 470 NH 5% EPP
M6900	4280500F01	T & R VER OF 4282981X01
M6901	4280500F01	T & R VER OF 4282981X01
M6902	4280500F01	T & R VER OF 4282981X01
M6903	4280500F01	T & R VER OF 4282981X01
M6904	4280500F01	T & R VER OF 4282981X01
M6905	4280500F01	T & R VER OF 4282981X01
M6906	4280500F01	T & R VER OF 4282981X01
M6910	4280500F01	T & R VER OF 4282981X01
M6911	4280500F01	T & R VER OF 4282981X01
Q6136	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q6287	4813970M64	XSTR,FET GP PWR,MOS-FET,P-CH,ENHN,SM,SOT-23,-20V,.225W,PB-FRE
Q6590	4813970A20	XSTR,FET GP PWR,MOS-FET,P,ENHN,SM,DPAK,SMT,60V,40W,PB-FREE
Q6591	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED
Q6593	4813972M07	PB-FREE,NOT COMPLETELY ENRICHED



Circuit Ref	Motorola Part No	Description
R6052	0613952A01	CER CHIP RES 1.00 $\Omega$ 1% 0603
R6053	0613952A01	CER CHIP RES 1.00 $\Omega$ 1% 0603
R6062	0613952A01	CER CHIP RES 1.00 $\Omega$ 1% 0603
R6063	0613952A01	CER CHIP RES 1.00 $\Omega$ 1% 0603
R6120	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6121	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6123	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6124	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6125	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6126	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6131	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6134	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6135	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6137	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6156	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6157	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6158	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6159	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6174	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6180	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R6181	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6182	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6183	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6184	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6185	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6186	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6187	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6188	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6189	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6191	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R6210	0613952D81	CER CHIP RES 6810 $\Omega$ 1% 0603
R6211	0613952C68	CER CHIP RES 499 $\Omega$ 1% 0603
R6212	0613952D81	CER CHIP RES 6810 $\Omega$ 1% 0603
R6213	0613952D81	CER CHIP RES 6810 $\Omega$ 1% 0603
R6220	0613952E18	CER CHIP RES 15.0K $\Omega$ 1% 0603
R6221	0613952E18	CER CHIP RES 15.0K $\Omega$ 1% 0603
R6222	0613952D34	CER CHIP RES 2210 $\Omega$ 1% 0603
R6223	0613952D73	CER CHIP RES 5620 $\Omega$ 1% 0603
R6224	0613952E18	CER CHIP RES 15.0K $\Omega$ 1% 0603
R6225	0613952D73	CER CHIP RES 5620 $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R6226	0613952D73	CER CHIP RES 5620 $\Omega$ 1% 0603
R6228	0613952D34	CER CHIP RES 2210 $\Omega$ 1% 0603
R6229	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6230	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R6231	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R6232	0613952E18	CER CHIP RES 15.0K $\Omega$ 1% 0603
R6233	0613952D81	CER CHIP RES 6810 $\Omega$ 1% 0603
R6235	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R6236	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R6237	0613952E66	CER CHIP RES 47.5K $\Omega$ 1% 0603
R6238	0613952D91	CER CHIP RES 8660 $\Omega$ 1% 0603
R6239	0613952D34	CER CHIP RES 2210 $\Omega$ 1% 0603
R6243	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6244	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6261	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6263	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6280	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6281	0613952D34	CER CHIP RES 2210 $\Omega$ 1% 0603
R6282	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6283	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R6284	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6285	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6286	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6288	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6289	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6500	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6501	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6502	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6503	0613952E18	CER CHIP RES 15.0K $\Omega$ 1% 0603
R6504	0613952D34	CER CHIP RES 2210 $\Omega$ 1% 0603
R6512	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6513	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6515	0613952D73	CER CHIP RES 5620 $\Omega$ 1% 0603
R6516	0613952D81	CER CHIP RES 6810 $\Omega$ 1% 0603
R6518	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6550	0613952F01	CER CHIP RES 100K $\Omega$ 1% 0603
R6551	0613952E66	CER CHIP RES 47.5K $\Omega$ 1% 0603
R6552	0613952E33	CER CHIP RES 21.5K $\Omega$ 1% 0603
R6555	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6556	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R6557	0613952E66	CER CHIP RES 47.5K $\Omega$ 1 0603
R6558	0613952D81	CER CHIP RES 6810 $\Omega$ 1% 0603
R6560	0613952D73	CER CHIP RES 5620 $\Omega$ 1% 0603
R6579	0613952F01	CER CHIP RES 100K $\Omega$ 1% 0603
R6580	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R6581	0613952D34	CER CHIP RES 2210 $\Omega$ 1% 0603
R6582	0613952F01	CER CHIP RES 100K $\Omega$ 1% 0603
R6583	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6585	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6586	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R6587	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R6588	0613952E18	CER CHIP RES 15.0K $\Omega$ 1 0603
R6589	0613952D73	CER CHIP RES 5620 $\Omega$ 1% 0603
R6596	0613959Y15	CER CHIP RES $\Omega$ 5% 2512
R6597	0613959Y15	CER CHIP RES $\Omega$ 5% 2512
R6598	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6599	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R6701	0613952E33	CER CHIP RES 21.5K $\Omega$ 1 0603
R6702	0613952E66	CER CHIP RES 47.5K $\Omega$ 1 0603
R6704	0613952C68	CER CHIP RES 499 $\Omega$ 1 0603

Circuit Ref	Motorola Part No	Description
R6751	0613952E33	CER CHIP RES 21.5K $\Omega$ 1 0603
R6752	0613952E66	CER CHIP RES 47.5K $\Omega$ 1 0603
R6754	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
RT6553	0685191Y01	THERMISTOR CHIP 100 K $\Omega$ W18
U6050	5114014A30	IC,LNR V REGLTR,FXD,3.3V,800MA ,SM,DPAK,PB-FREE
U6060	5114014A21	IC,LNR V REGLTR,FXD,5V,800MA,S M,DPAK,PB-FREE
U6130	5184943Y01	64KB SERIAL EEPROM 8192X8
U6150	5185130Y02	CPLD EPM3064AT144 W18 CMLNT
U6170	51009279001	DAC, 8 BIT, 2 CH, PARAL- LEL
U6240	51009278001	ADC, 8 BIT, 10 CH, SPI
U6400	5114016A02	IC,OP AMP,4PER PKG,GP,SM,SO-14,PB- FREE
U6410	5114016A02	IC,OP AMP,4PER PKG,GP,SM,SO-14,PB- FREE
VR6107	4813977M16	DIODE,ZEN,MBZ5237,SM, SOT- 23,8.2V,10MA,.225W,ZEN, PB-FREE

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# Chapter 4 MTR3000 Station Control Module

## 4.1 Overview

This section provides an overview, detailed Theory of Operation and troubleshooting information of the Station Control Module (SCM). The schematic diagrams, overlays, and parts lists are provided on the foldout sheets. A complete list of all parts is provided with the parts ordered according to the schematic reference number.

For specifications of the SCM, refer to the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

## 4.2 Theory of Operation

The following theory of operation describes the operation of the SCM circuitry at a detailed level. The information is presented to give the service technician an understanding of the functions performed by the module in order to facilitate maintenance and troubleshooting to the component level.

The MTR3000 Controller circuitry performs the digital signal processing, data formatting and audio routing for the base station/repeater (BR) and provides external interfaces to the rest of the site.

The controller uses two TI OMAP1710 processors:

- Transmit and overall base station/repeater control functionality
- All receive functionality

Both OMAP1710 processors have their independent boot Flash and RAM, therefore can boot independently. ARMIO12 on each OMAP1710 is used for the software to differentiate between Tx and Rx OMAP1710. Tx OMAP has ARMIO12 tied high and Rx OMAP has ARMIO12 tied low.

The general functionality includes:

- Data and Control interface to the Receiver's Abacus III devices
- Data and Control interface to the Receiver's Trident chip set
- Data and Control interface to the Exciter's Trident chip set
- Audio Codec interface with MAKO IC
- Host memory size, speed, and types supported
- External ports (Ethernet, USB, speaker and microphone)
- External physical interfaces (switches, connectors, LEDs, external references etc.)
- Tx/Rx DSP MCBSP interfaces
- Intermodule communication (SPI)
- Internal station reference generation
  - OCXO (DLN6718)
  - TCXO (DLN6719)

Refer to Figure 4-1 for the MTR3000 Controller Block Diagram.

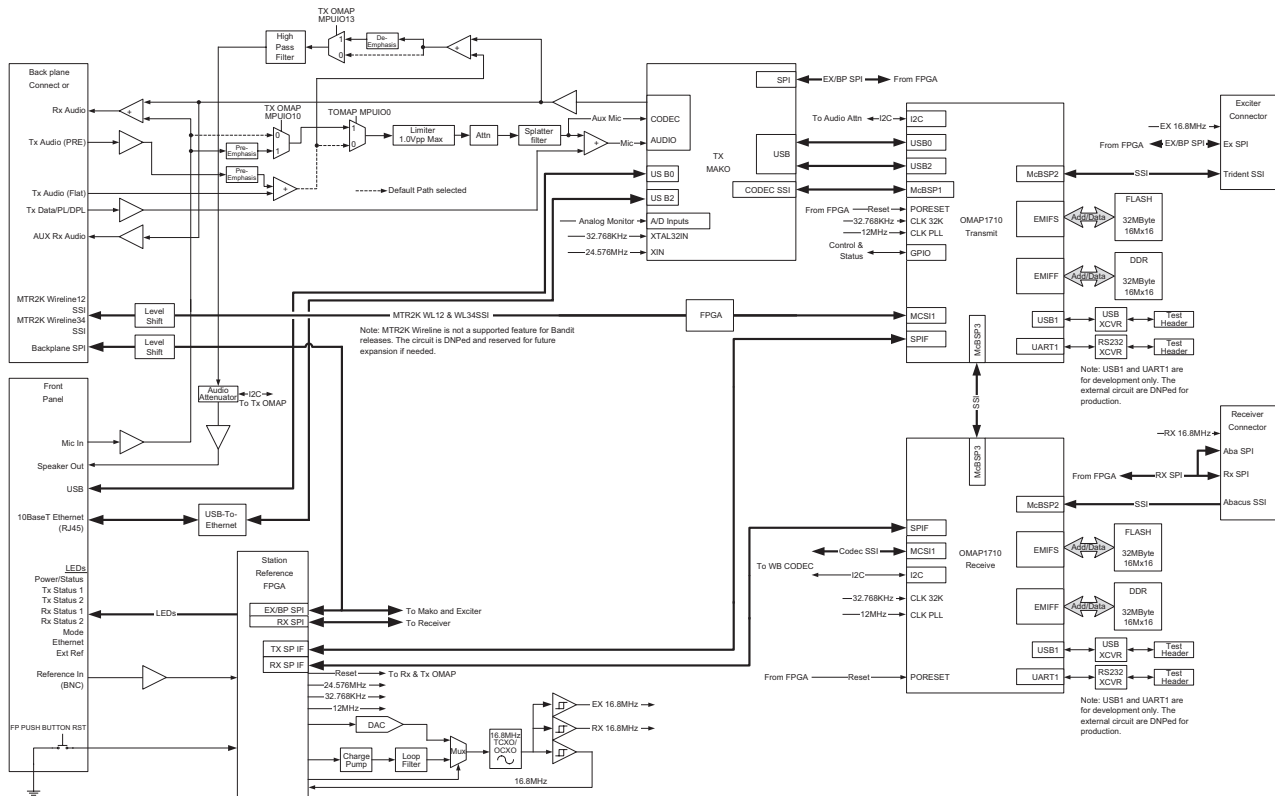


Figure 4-1 MTR3000 Controller Block Diagram

### 4.2.1 Tx/Rx OMAP

The Tx DSP is a TI OMAP Multimedia Processor. The OMAP1710 consists of a microprocessor unit (MPU) subsystem and a digital signal processor (DSP) subsystem.

OMAP1710 has dedicated external memory interface that allow point-to-point connection to standard mobile SDRAM/DDR and mobile flash devices. It is a low-power device (1.4 V Core and 1.8 V I/O supply). Tx OMAP (U1000M1) handles all transmit tasks of the SCM while Rx OMAP (U1001M1) handles receiving tasks of the SCM only.

### 4.2.1.1 External Memory

Both transmit and receive DSP's support independent external memory banks.

#### 4.2.1.1.1 RAM

The SCM supports Tx/Rx OMAP Mobile Double Data Rate (U1003M1 and U1601M1) SDRAM respectively. It has the following basic characteristics:

- 32 MB organized as 4 MB x 16 x 4 Banks
- Four internal banks for concurrent operation
- Programmable burst lengths: 2, 4, or 8 bytes
- Auto refresh and self refresh modes
- Selectable output drive (DS)
- VDD/VDDQ = 1.7–1.95 V

The maximum external clock rate for the DDR is 90 MHz. Since data is transferred on both clock edges, the effective data rate is 180 Mwords/s.

#### 4.2.1.1.2 Flash

The SCM supports 256 MB external Tx/Rx OMAP flash memory (U1002M1 and U1600M1). The device has the following basic characteristics:

- Four 32 KB Bottom Boot Sectors
- 128 KB main blocks (254 for 256 MB part, 514 for 512 MB part)
- 1.8V VCC and VCCO

## 4.2.2 Serial Peripheral Interface (SPI)

The station local and Intermodule SPI Bus is controlled by both Tx and Rx OMAP1710 processors, which has an on-chip SPIF (fast SPI) interface. The OMAP1710 SPIF supports master and slave modes, programmable clock rate, phase, polarity, programmable word size, programmable bit ordering, and loopback.

Before an SPI data transfer can take place, the SPI master (initiator) must assert the select line of the slave (target) device. The OMAP1710 is always the SPI master for MTR3000 base station/repeater. To simplify overall SPI architecture for MTR3000 base station/repeater, address decoding is used instead of individual device chip signals. This approach not only minimizes the number of GPIOs needed for device chip select, it also provides flexibility for future expansion. This device address decoding is handled by an Field Programmable Gate Array (FPGA) on the SCM and a Customer Programmable Logic Device (CPLD) on each FRU's, except the power supply.

The FPGA SPI module performs address and chip select decoding, level shifting, and signal mixing for both the Tx OMAP SPI bus and the Rx OMAP SPI bus. Simultaneous Rx and Tx SPI accesses are allowed. The Tx and Rx SPI are 100% independent.

Table 4-1 SPI decoding truth table

Signal Name	Section	Device CS (DCS4:DCS1)	SPI Address (A2:A0)	OMAP GPIO16	OMAP SPI_NCS3x
				Enable	Enable
Default	No device selected	1111	111	x	1
OP1_CS1x	BP	0000	111	x	0
OP1_CS2x	BP	0001	111	x	0
OP1_CS3x	BP	0010	111	x	0
OP2_CS1x	BP	0011	111	x	0
OP2_CS2x	BP	0100	111	x	0
OP2_CS3x	BP	0101	111	x	0
WL_CS1x	Wireline	0110	111	x	0
WL_CS1x	Wireline	0111	111	x	0
MAKO	Control	1000	111	x	0
Metering	Exciter	1001	000	x	0
Trident IC	Exciter	1001	001	x	0
EEPROM	Exciter	1001	010	x	0
TRIDENT_RST_N <sup>1</sup>	Exciter	1001	011	x	0
EX_STANDBY <sup>1</sup>	Exciter	1001	110	x	0
EEPROM	PA	1010	x00	x	0
DAC	PA	1010	x01	x	0
ADC	PA	1010	x10	x	0
PA Inactive	PA	1010	x11	x	1
FPGA SPI	Control	1011	000	1	0
Metering	RCVR	xxxx	000	0	1
Trident IC	RCVR	xxxx	001	0	1
EEPROM	RCVR	xxxx	010	0	1
TRIDENT_RST_N <sup>1</sup>	RCVR	xxxx	011	0	1
Abacus	RCVR	xxxx	100	1	0
RX_STANDBY <sup>1</sup>	RCVR	xxxx	110	0	1
Reserved	NA	xxxx	xxx	1	1

**Note 1.** SPI Write to the Exciter/Receiver CPLD.

Refer to Figure 4-2 for the MTR3000 Controller SPI connection.

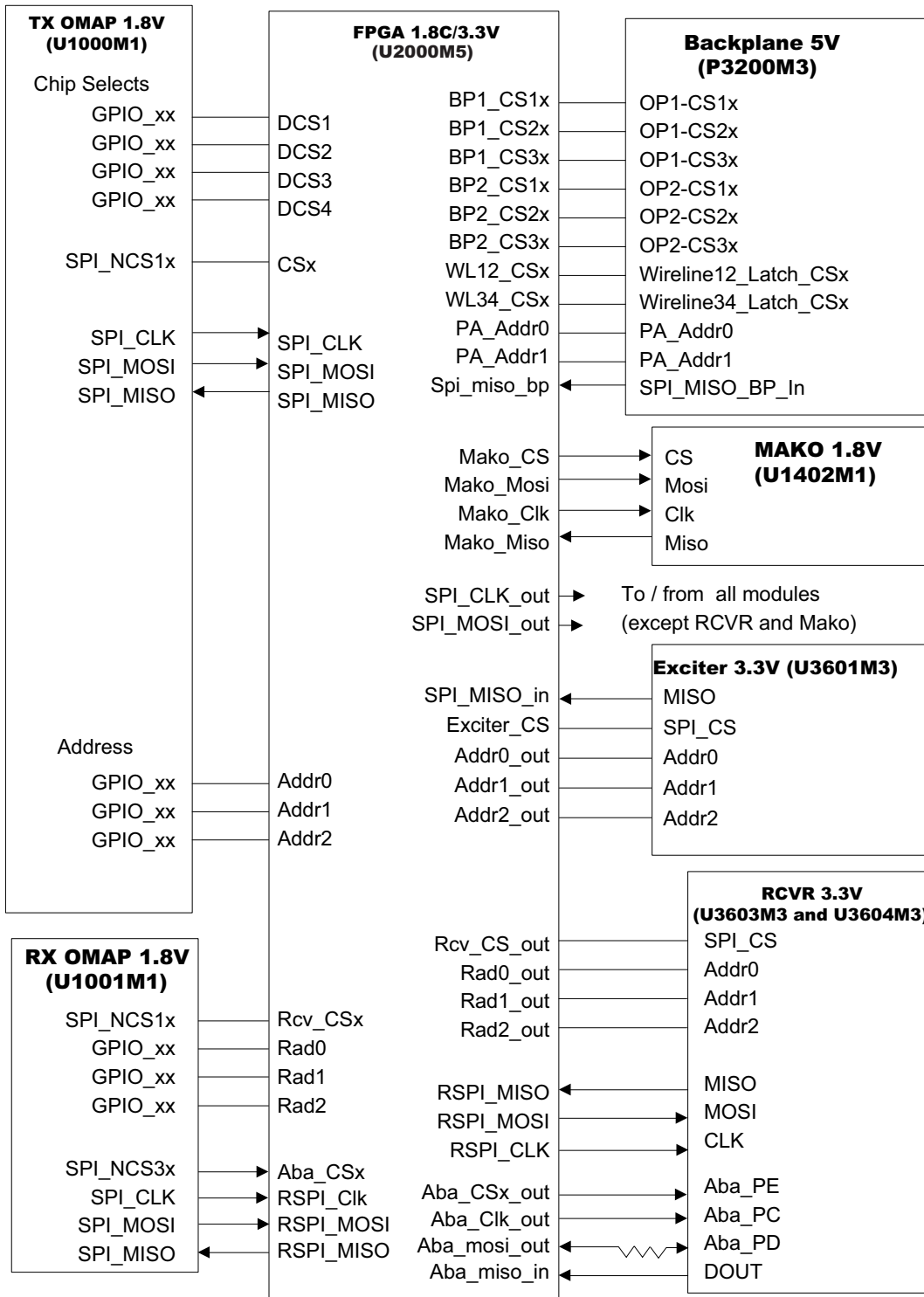


Figure 4-2 MTR3000 Controller SPI connection

Refer to Table 4-2 for the Tx/Rx OMAP SPI Module and Device Parameters.

Table 4-2 Tx/Rx OMAP SPI Module and Device Parameters

Module	SPI Device	Device Enable (active high/low)	MOSI Data Latched (rising/falling edge of SPI clock)	Minimum number of bits per access	Max Clock Rate	Module Select active to 1st clock edge (min)	Data complete to Module select negated (min)
Exciter	SPI CPLD	High	rising	8 bits	1 MHZ	–	–
	EEPROM (Atmel AT25640)	Low	rising	32 bits <sup>3</sup>	2 MHZ	50 ns	50 ns
	Trident IC	Low	rising	24 bits	20 MHZ/10 MHZ <sup>1</sup>	10 ns/20 ns <sup>1</sup>	0 ns
	Metering ADC (Maxim Max149B)	Low	rising	24 bits	1.8 MHZ	100 ns	0 ns
PA	EEPROM (AT25640)	Low	rising	32 bits <sup>3</sup>	2 MHZ	50 ns	50 ns
	DAC (Motorola 5183977M73)	Low	rising	24 bits	500 kHz	–	0 ns
	ADC (TI TLC542C)	Low	rising	8 bits	1 MHZ	3.8 us	0 ns
CNTL	FPGA	Low	rising	16 bit	12 MHZ	–	0 ns
	MAKO	High	rising	48 bit for RTC register access  32 bit for non-RTC register access	10 MHZ	11 ns	0 ns
WL	MTR3000 Wireline FPGA	Low	rising	8 bits	3.3 MHZ	–	0 ns
AUXIO	MC74HC595A	Low	rising	8 bits	3.3 MHZ	–	0 ns
	MC74HC598A	Low	rising	8 bits	3.3 MHZ	–	0 ns



Table 4-2 Tx/Rx OMAP SPI Module and Device Parameters (Continued)

Module	SPI Device	Device Enable (active high/low)	MOSI Data Latched (rising/falling edge of SPI clock)	Minimum number of bits per access	Max Clock Rate	Module Select active to 1st clock edge (min)	Data complete to Module select negated (min)
RCVR <sup>2</sup>	SPI CPLD	High	rising	8 bits	1 MHz	–	–
	Metering_1 ADC (Maxim Max149B)	Low	rising	24 bits	1.8 MHz	100 ns	0 ns
	Metering_2 ADC (Maxim Max149B)	Low	rising	24 bits	1.8 MHz	100 ns	0 ns
	Trident IC	Low	rising	24 bits	20 MHz/10 MHz <sup>1</sup>	10 ns/20 ns <sup>1</sup>	0 ns
	EEPROM (AT25640)	Low	rising	32 bits <sup>3</sup>	2 MHz	50 ns	50 ns
	Abacus	Low	rising	16 bits <sup>3</sup>	10 MHz	5 ns	5 ns

- Note**
1. Write specifications or Read specifications for Trident IC.
  2. Applied to Rx OMAP only.
  3. Subsequent location(s) can be accessed if the CS\* remain asserted.

### 4.2.3 Station Reference

A Temperature Compensated Crystal Oscillator (TCXO) or Oven Controlled Crystal Oscillator (OCXO) constitute two different SCMs and provide frequency reference for the base station/repeater. The TCXO or OCXO is 16.8 MHz.

The stability of the TCXO is  $\pm 0.5$  ppm over temperature ( $-30^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ ) with an aging rate of  $\pm 1.0$  ppm per year and  $\pm 3.0$  ppm over 10 years. This stability is sufficient for some applications but not for others. The MTR3000 controller will also have the option to use an OCXO for high stability applications (800/900 MHz). This change will be transparent to the software. The stability of the OCXO is  $\pm 50$  ppb over temperature ( $-30^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ ) with an aging rate of  $\pm 50$  ppb per year. The OCXO will not be placed for all applications other than 800/900 MHz.

Table 4-3 summarizes the frequency stability and service intervals for the TCXO and OCXO.

*Table 4-3 SCM FCC Frequency Stability Requirement*

Required Stability (ppm)	TCXO Service Interval	OCXO Service Interval
5	5 years	10 years
2.5	2 years	10 years
1.5	1 year	10 years
1	6 months	10 years
0.5	External Reference required	5 years
0.1	External Reference required	1 year

**Note** The TCXO version (DLN6719) is for the UHF band and the OCXO version (DLN6718) is for the 800/900 MHz band.

#### 4.2.3.2 MTR3000 Controller Clocks

The FPGA is used to create other clocks locked to the Temperature Compensated Crystal Oscillator (TCXO) or Oven Controlled Crystal Oscillator (OCXO) which are needed by various devices on the Control Board. The clocks are summarized in Table 4-4.

*Table 4-4 SCM FPGA output Frequencies*

Frequency	Destination
12 MHz	Tx OMAP, Rx OMAP
24.576 MHz	MAKO
32.768 kHz	Tx OMAP, Rx OMAP

Refer to Figure 4-3 for the MTR3000 Controller Clock Configuration.

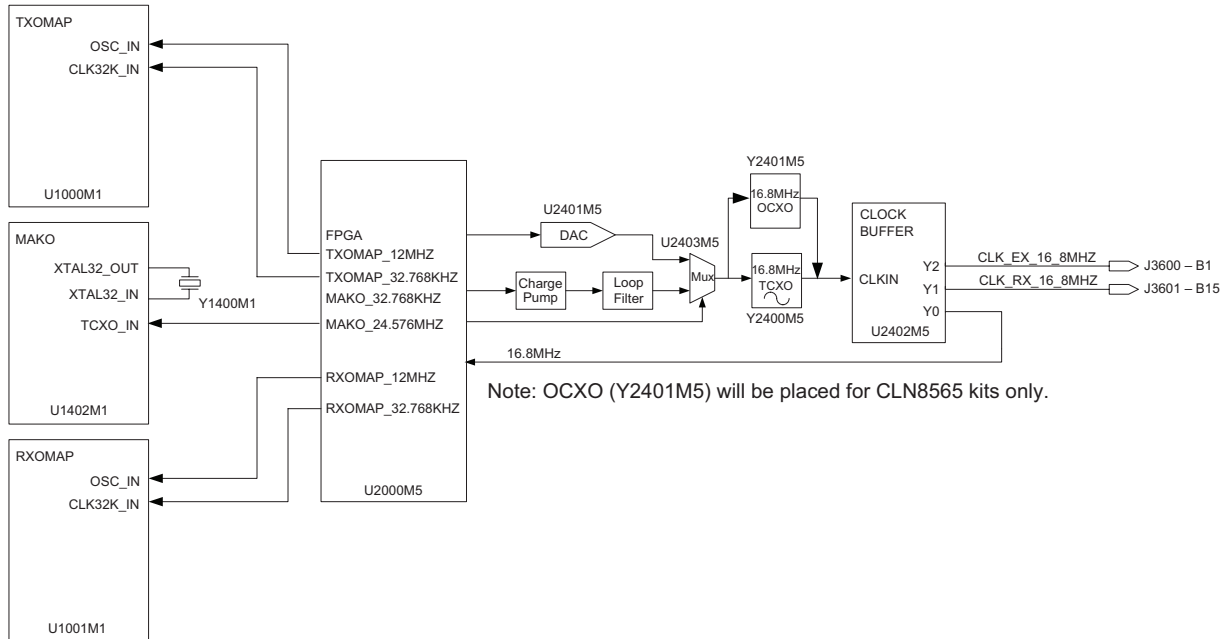


Figure 4-3 MTR3000 Controller Clock Configuration

**Note** For the OCXO kit, the controller must be warmed up for a minimum of 10 minutes before the base station/repeater is enabled for transmit.

#### 4.2.4 MAKO

MAKO IC (U1402M1) is a customized IC and the SCM uses this device to leverage some unique functionality that it provides.

Most of the MAKO functionality are not used on the SCM. Only the MAKO codec, USB driver, ADC, DAC, and some voltage regulators are used for MTR3000 base station/repeater. The 9 channel general purpose ADC is used for various controller metering.

Refer to Figure 4-4 for the MAKO block diagram and usage of MTR3000 Controller.

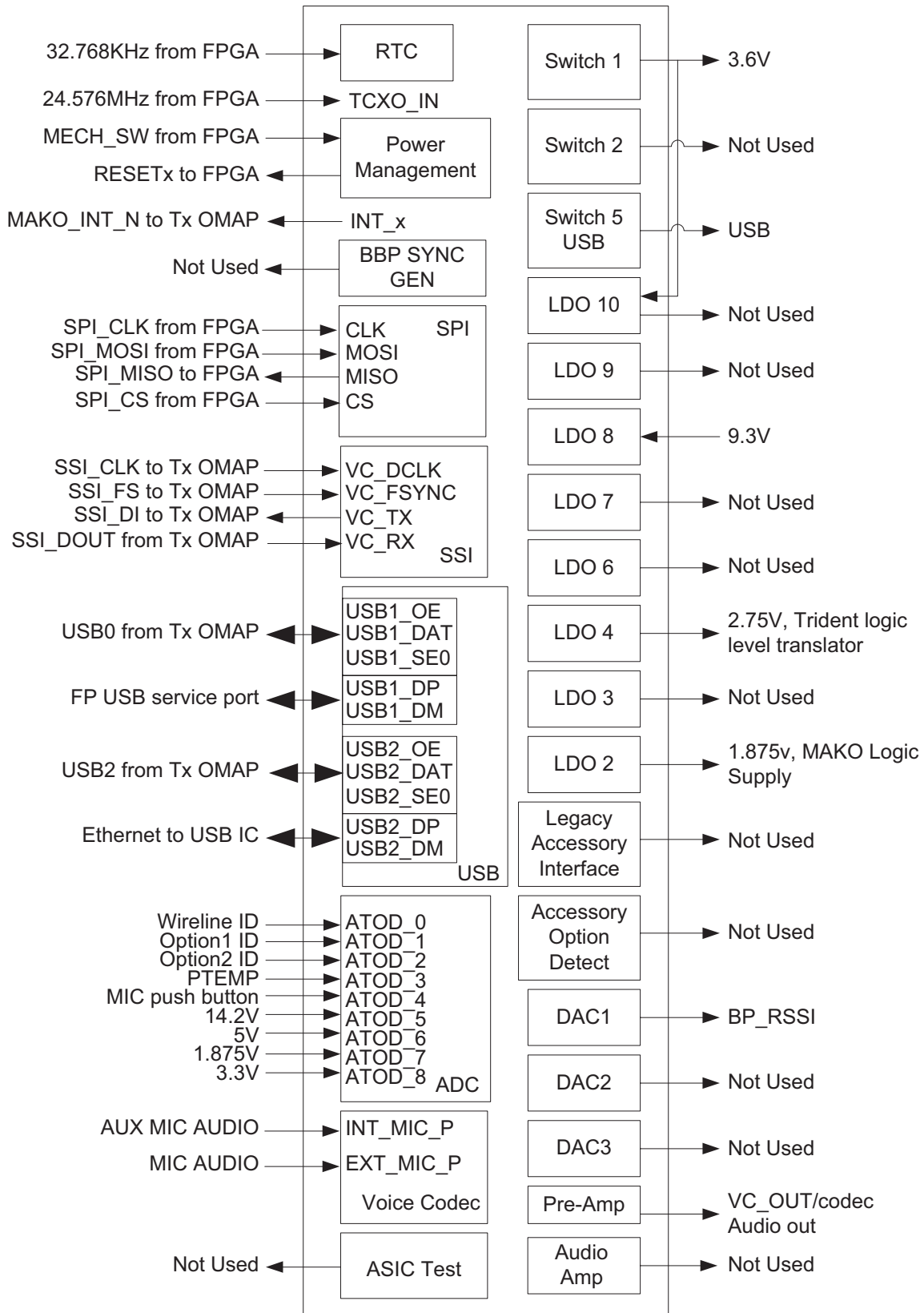


Figure 4-4 MAKO Block Diagram and usage of MTR3000 Controller

Refer to Table 4-5 for the MAKO general purpose ADC allocation.

*Table 4-5 MAKO General Purpose ADC Allocation*

Channel #	Metering	Module	Voltage (V)	Value (Hex)	Comment
0	Wireline ID	MTR3000 Wireline	2.5	0x359	Wireline identification number. Read during initialization when wireline module is present.
1	Option1 ID	AUX IO	0.373	0x080	AUXIO identification number. Read during initialization when AUXIO module is present on Option 1 slot.
2	Option2 ID	AUX IO	0.550	0x0BC	AUXIO identification number. Read during initialization when AUXIO module is present on Option 2 slot.
3	PTEMP+	NA	0.55–2.269	0x0BD–0x30A	Peripheral Temp from 3 pin connector on backplane.
4	RESERVED	NA	NA	NA	Pin is reserved for future expansion.
5	14_2V	Control	1.79	0x265	For factory to check PS 14.2 V voltage level.
6	5V	Control	1.55	0x213	For factory to check PS 5 V voltage level.
7	1.875V	Control	1.875	0x283	For factory to check main 1.875 V voltage level.
8	3.3V	Control	3.3	0x296	For factory to check main 3.3 V voltage level.

#### 4.2.5 Field Programmable Gate Array (FPGA)

The SCM FPGA includes the following major functions:

- External reference watchdog
- SPI Address decoding and buffering
- OCXO and TCXO Phase detection and compensation
- Clock generation
- Reset controller
- External Interface (Wireline SSI, LED, etc.)

FPGA field upgrade capability is also supported on MTR3000 base station/repeater.

Refer to Figure 4-5 for the block diagram of MTR3000 Controller FPGA.

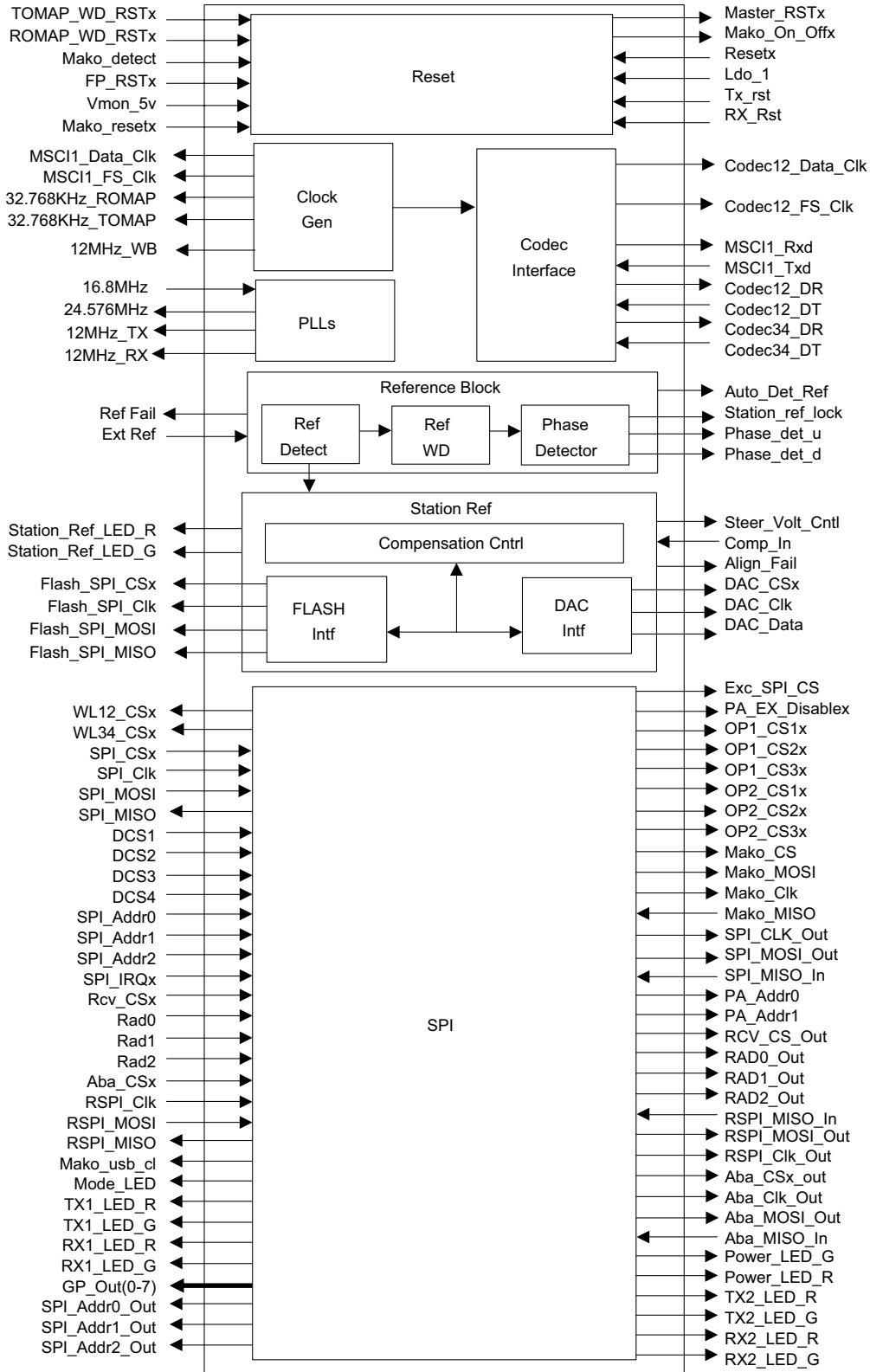


Figure 4-5 MTR3000 Controller FPGA Block Diagram

### 4.2.6 Audio

There are four transmit inputs: Tx Audio, Tx Audio-Pre and Tx Data on the backplane DB25 connector, and the Microphone input on a front panel RJ45 connector.

Tx Audio is a flat (not pre-emphasized) input which is used if the incoming transmit audio signal is already pre-emphasized, if hardware pre-emphasis is not needed, or if the CPS has pre-emphasis enabled. The Tx Audio-Pre input provides a hardware pre-emphasis filter. The Tx Data input is used for low speed data, Private-Line (PL) and Digital Private Line (DPL) signals. The microphone input can be selected under software control to be flat or pre-emphasized using an OMAP GPIO.

The Tx Audio, Tx Audio-Pre and microphone inputs pass through a hardware modulation limiter and splatter filter before being summed with Tx Data, which bypasses the limiter and splatter filter. Mic is never summed with TDATA. This summed signal is applied to the MAKO codec "mic" input. The audio signal without Tx Data is provided on the MAKO codec "aux\_mic" input. The MAKO codec "aux\_mic" is used for microphone audio only.

There are three receive outputs: Rx Audio and Aux Rx Audio on the backplane DB25 connector and speaker audio on a front panel RJ11.

The speaker audio is the sum of the MAKO codec output (demodulated audio) and transmit audio. The speaker audio can be selected under software control to be flat or pre-emphasized using an OMAP GPIO. A high pass filter removes any data, PL or DPL from the speaker audio. A programmable attenuator is used to adjust the speaker audio level before being output on the RJ11 connector.

Aux Rx Audio is the output of the MAKO codec (demodulated audio), and Rx Audio is the sum of the MAKO codec output and microphone audio.

Refer to Figure 4-6 for audio paths and voltage levels.

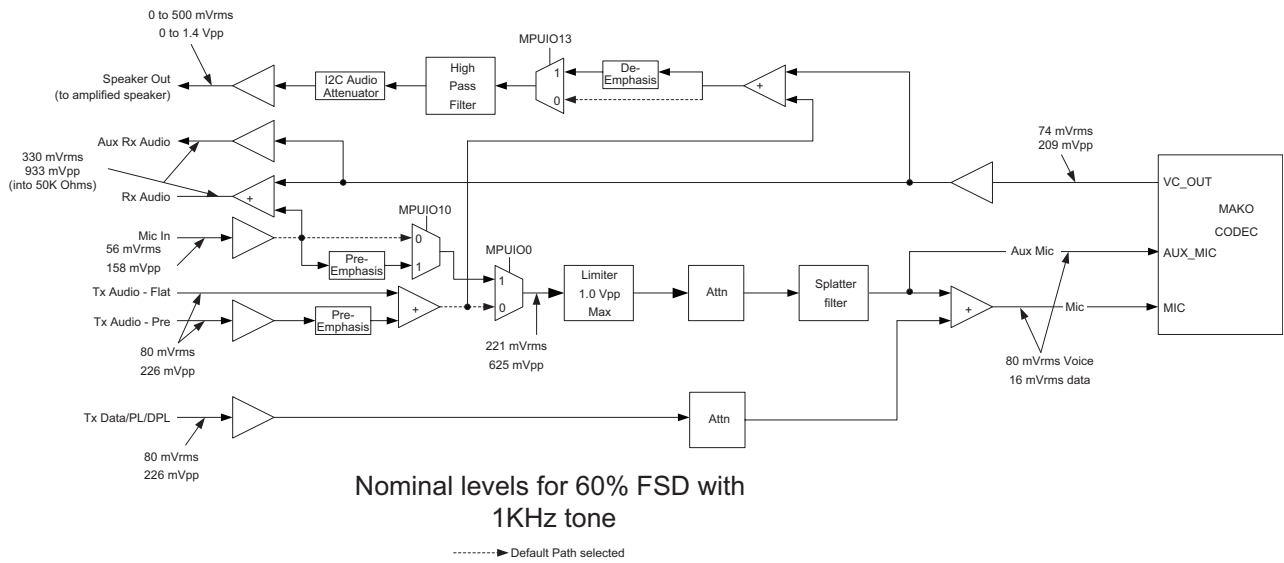


Figure 4-6 Station Control Module (SCM) Audio Path

Refer to Table 4-6 for description on audio signals.

*Table 4-6 SCM Audio Level*

Audio Signal	Description
Tx Audio	The Tx Audio input provides no pre-emphasis. The nominal level of 80 mVrms (226 mVpp) produces 60% Relative Standard Deviation (RSD).
Tx Audio-Pre	The Tx Audio-Pre input provides a pre-emphasis network. The nominal level of 80 mVrms (226 mVpp) produces 60% RSD.
Tx Data	Transmit data, PL or DPL signaling. The nominal level of 80 mVrms (226 mVpp) produces 12% RSD.
Mic	<p>Local microphone Input. Use microphone type GMN6147 (older model) or GMMN4063. Modulation sensitivity for 60% system deviation is typically 56 mVrms (158 mVpp).</p> <p>Note : The Mic port is only supported in analog mode regardless of the Mic used. For older model of microphone (GMN6147), the 3 control buttons for speaker volume control, Rx monitor and Intercom control functions are not supported.</p>
Rx Audio	An RF input signal with 60% RSD provides an Rx Audio output of 330 mVrms into 50 k $\Omega$ . Also a microphone input of 56 mVrms provides an Rx Audio output of 330 mVrms into 50 k $\Omega$ . The Rx Audio output has DC bias of 2.5 VDC.
Aux Rx Audio	An RF input signal with 60% RSD provides an Aux Rx Audio output of 330 mVrms into 50 k $\Omega$ . The Aux Rx Audio output has a DC bias of 2.5 VDC.
Speaker	<p>Output to Powered Voice speaker. Adjustable between 0 to 500 mVrms [1.4 Vpp] across 2.4 k<math>\Omega</math> @ 60% system deviation. Audio signal appears between Pins 3 and 4 on the connector. Must use speaker type HSN1000 (older model) or HSN1006 via adapter cable Part.No. 0185180U01.</p> <p>Note : The Speaker port is only supported in analog mode regardless of the speaker used.</p>

**Note** When using third party controllers, refer to MTR3000 Third Party Controllers (Appendix E) section in the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096) for CPS configuration in conjunction with the selection of the correct Tx Audio paths to prevent a double pre-emphasis.



## 4.2.7 Ethernet Interface

Since OMAP1710 does not support a direct Ethernet interface, a bridge device (U3005M7) is needed to support Ethernet on the SCM. The bridge device is a high performance hi-speed USB2.0 to 10/100 Ethernet controller. The device contains an integrated 10/100 Ethernet PHY, USB PHY, Hi-Speed USB 2.0 device controller, 10/100 Ethernet MAC, TAP controller, EEPROM controller and a FIFO controller with a total of 30 KB of internal packet buffering. The following is a list for functionality that the Ethernet Interface can provide:

- Fully Compliant with IEEE 802.3 and 802.3u Compatible Ethernet Controller
- 10Base-T and 100Base-Tx support
- Integrated Media Access Control (MAC) and PHYSical (PHY)
- Supports one 10BT port with automatic polarity detection and correction
- Supports full and half duplex mode and flow control
- Universal Serial Bus (USB) and Joint Test Action Group (JTAG) parameters

Refer to Figure 4-7 for the MTR3000 Ethernet bridge IC connection.

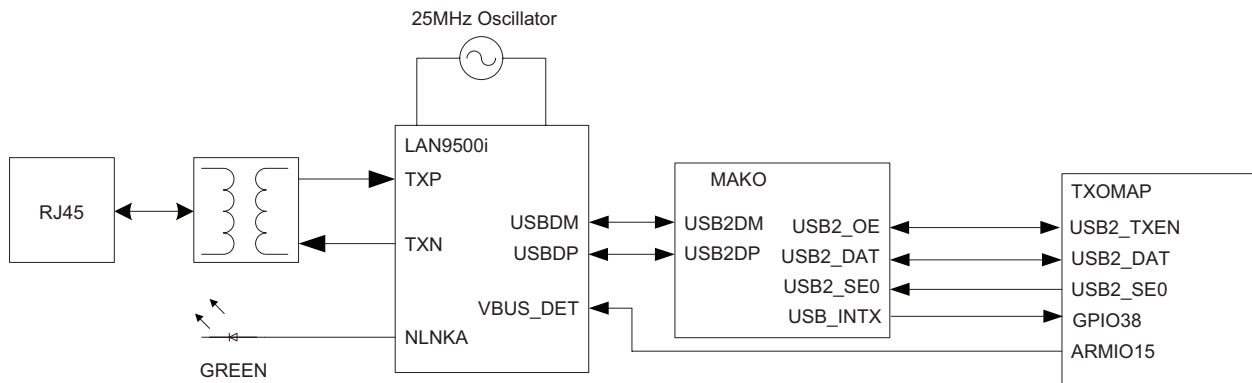


Figure 4-7 MTR3000 Controller Ethernet Connection

### 4.2.7.3 LAN9500i Power-up Configuration

SMSC LAN9500i will be configured into the following mode after power-up.

Table 4-7 SMSC LAN9500i Default Configuration after Power-up

Pin Name	Default Setting	Description
EEP_SIZE	PU	1 = 256/512 byte EEPROM is attached and a total of nine address bits are used. <sup>1, 2</sup>
PORT_SWAP	PD	0 = USBDP maps to the USB D+ line and USBDM maps to the USB D- line. <sup>1</sup>
RMT_WKP	PD	0 = Remote wakeup is not supported. <sup>1</sup>
EEP_DISABLE	PD	0 = EEPROM is recognized if present. <sup>1</sup>
AUTOMDIX_EN	PU	1 = Auto-MDIX is enabled. <sup>1</sup>
PWR_SEL	PD	0 = The LAN9500i is bus powered.

- Note**
1. Internal PU and PD are used, no external connections.
  2. No external EEPROM is connected.

## 4.2.8 Backplane

The connector that connects the controller to the backplane is a right angle, 96-Pin Connector. It provides connectivity between the MTR3000 controller and other station FRU, such as the Wireline card, the AUXIO card as well as, third party equipment. For details on backplane connection, refer to the MTR3000 Backplane chapter in the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

## 4.2.9 Exciter

The connector (J3600M3) used to connect the controller to the Exciter is a dual row, right angle, early entry receptacle, without flange, 30-Pin Connector. It provides 16.8 MHz reference clock, 14.2 V, 10 V and 8 V supply voltage, SPI, Trident SSI and other digital handshake signals with the Exciter.

Refer to Table 4-8 for pinout for the Exciter connector.

*Table 4-8 MTR3000 Controller Exciter Connector connection*

Pin	Signal Name	Description	Signal Level	Controller Connection
A1	Ground			Ground
A2	Ground			Ground
A3	TXD_EX	Trident SSI data	2.775 V	Tx OMAP McBSP2.DX
A4	TXFS_EX	Trident SSI frame sync	2.775 V	Tx OMAP McBSP2.FSX
A5	Ground			Ground
A6	EX_ENABLE_EX	Ex Slot Enable	3.3 V	Tx OMAP GPIO28
A7	NC			No Connect on Controller
A8	NC			No Connect on Controller
A9	+8V	Ex 8.0 V supply	8 V	8VDC
A10	Ground			Ground
A11	EX_CPLD_ADD_0	CPLD SPI address 0	3.3 V	FPGA
A12	Ground			Ground
A13	EX_CPLD_CLK	CPLD SPI input clock	3.3 V	Clock Buffer
A14	EX_CPLD_CE	CPLD SPI chip enable	3.3 V	Ground
A15	NC			No connect on Controller
B1	CLK_EX_16_8 MHZ	Station Reference	3.3 V	Clock Buffer
B2	Ground			Ground
B3	DMCS_EX	Trident SSI data enable	2.775 V	Tx OMAP GPIO2
B4	TXCLK_EX	Trident SSI data clock	2.775 V	Tx OMAP McBSP2.SCK
B5	Ground			Ground

Table 4-8 MTR3000 Controller Exciter Connector connection (Continued)

Pin	Signal Name	Description	Signal Level	Controller Connection
B6	NC			No Connect on Controller
B7	NC			No Connect on Controller
B8	+10V	Ex 10.0 V supply	10 V	10VDC
B9	+14_2V	Ex 14.2 V supply	14.2 V	14.2VDC
B10	Ground			Ground
B11	EX_CPLD_ADD_2	CPLD SPI address 2	3.3 V	FPGA
B12	EX_CPLD_ADD_1	CPLD SPI address 1	3.3 V	FPGA
B13	EX_CPLD_MOSI	CPLD SPI MOSI	3.3 V	FPGA
B14	EX_CPLD_MISO	CPLD SPI MISO	3.3 V	FPGA
B15	NC			No Connect on Controller

#### 4.2.10 Receiver

The connector (J3601M3) used to connect the controller to the Receiver is a dual row, right angle, early entry receptacle, without flange, 30-Pin Connector. It provides 16.8 MHz reference clock, 14.2 V, 10 V and 8 V supply voltage, SPI, Abacus SPI/SSI and other digital handshake signals with the Receiver.

Refer to Table 4-9 for pinout for the Receiver connector.

Table 4-9 MTR3000 Controller Receiver Connector connection

Pin	Signal Name	Description	Signal Level	Controller Connection
A1	ABA_ODC	Abacus SSI clock	3.3 V	Rx OMAP McBSP2.CLKR
A2	Ground			Ground
A3	ABA_SYNCB	Abacus SYNCB	3.3 V	Rx OMAP GPIO40
A4	ABA_PE	Abacus SPI chip select	3.3 V	FPGA
A5	ABA_PC	Abacus SPI clock	3.3 V	FPGA
A6	Ground			Ground
A7	RX_CPLD_CE	CPLD SPI chip select	3.3 V	FPGA
A8	RX_CPLD_MISO	CPLD SPI MISO	3.3 V	FPGA
A9	RX_CPLD_ADD_1	CPLD SPI Address 1	3.3 V	FPGA
A10	RX_CPLD_ADD_0	CPLD SPI Address 0	3.3 V	FPGA
A11	NC			No Connect on Controller
A12	Ground			Ground
A13	+10V	Rx 10.0 V supply	10 V	10VDC

Table 4-9 MTR3000 Controller Receiver Connector connection (Continued)

Pin	Signal Name	Description	Signal Level	Controller Connection
A14	RX_ATTEN	Rx Attenuation Control	3.3 V	Rx OMAP GPIO18
A15	Ground			Ground
B1	ABA_RX	Abacus SSI Data	3.3 V	Rx OMAP McBSP2.DR
B2	ABA_FS	Abacus SSI FS	3.3 V	Rx OMAP McBSP2.FSR
B3	Ground			Ground
B4	ABA_PD	Abacus SPI MOSI	3.3 V	FPGA
B5	ABA_DOUTB	Abacus SPI MISO	3.3 V	FPGA
B6	NC			No Connect on Controller
B7	RX_CPLD_CLK	CPLD SPI CLK	3.3 V	FPGA
B8	RX_CPLD_MOSI	CPLD SPI MOSI	3.3 V	FPGA
B9	RX_CPLD_ADD_2	CPLD SPI Address 2	3.3 V	FPGA
B10	Ground			Ground
B11	NC			No Connect on Controller
B12	+8V	Rx 8.0 V supply	8.0 V	8VDC
B13	+14_2V	Rx 14.2 V supply	14.2 V	14.2VDC
B14	Ground			Ground
B15	CLK_RX_16_8 MHZ	Station Reference	3.3 V	Clock Buffer

## 4.2.11 Front Panel (FP) Connectors and Switch

Table 4-10 to Table 4-15 describe the front panel connectors and switch while Figure 4-8 describes the USB connector pin-out.

*Table 4-10 SCM FP Connectors*

Connector Name	Connector Type	Purpose
USB Service (J3009M7)	USB Type B	Service Computer connection. This connector is accessible with front cover in place. VBUS (+5 V) is not provided on the USB connector.
Mic (J3000M7)	RJ45 (8 Pin)	Microphone connection. Compatible with microphone GMN6147 (older model) or GMMN4063. This connector is accessible with front cover in place.  Note : The Mic port is only supported in analog mode regardless of the Mic used. For older model of microphone (GMN6147), the 3 control buttons for speaker volume control, Rx monitor and Intercom control functions are not supported.
Speaker (J3010M7)	4P4C	Speaker connection. Compatible with Service Speaker HSN1000 (older model) or HSN1006 This connector is accessible with front cover in place.  Note : The Speaker port is only supported in analog mode regardless of the speaker used.
Ethernet (J3006M7)	RJ45 (8 Pin) (Vertical)	Network connection to Trunking Controller. The front cover must be removed to access this connector. An optional extension cable can also be used to route this input to the rear of the station. Alternatively, the Ethernet cable can also be routed out through the slots provided in the front panel.
Debug/Sync (P3013M7)	Header (8 Pin)	Provide service access to Rx OMAP Trigger in/out, Tx OMAP trigger in, and Rx SSI port.
Ext Ref (J3008M7)	BNC (Vertical)	External reference input. The front cover must be removed to access this connector. Alternatively, an extension cable can be used to route this input to the rear of the station.

**Note** USB Host mode is not supported by the MTR3000 SCM. Therefore, it cannot supply 5 VDC to USB accessories.

Table 4-11 SCM FP USB Connector Pin-out

Pin Number	Pin Name	I/O	Voltage Level (V)	Pin Description
1	VCC	VCC	5	Supply Voltage for USB Client mode
2	DM	I/O	3.3	Connects to MAKO USB1 transceiver
3	DP	I/O	3.3	Connects to MAKO USB1 transceiver
4	GND	GND	GND	Ground
G1	GND	GND	GND	Ground
G2	GND	GND	GND	Ground

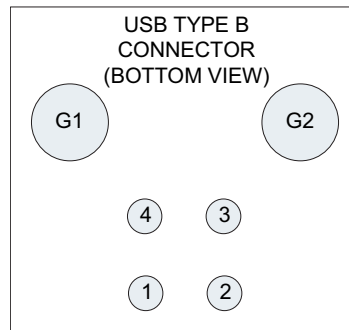


Figure 4-8 USB connector pin-out

Table 4-12 SCM FP Microphone Connector Pin-out

MIC Connector Pin Number	Schematic Pin Number	Pin Name	I/O	Voltage Level	Pin Description
1	5	NC	NC	NC	No Connect
2	4	Reserved	Input		Reserved for future use. DO NOT CONNECT
3	6	MIC_PTT*	Input	0 to 5 V	Voltage generated by PTT button
4	3	MIC_AUDIO	Input	850 mVpp	Audio Input, Level indicated here is the maximum value
5	7	GND	GND	GND	Ground
6	2	NC	NC	NC	No Connect
7	8	NC	NC	NC	No Connect
8	1	NC	NC	NC	No Connect

Table 4-12 SCM FP Microphone Connector Pin-out (Continued)

MIC Connector Pin Number	Schematic Pin Number	Pin Name	I/O	Voltage Level	Pin Description
G1	G1	GND	GND	GND	Ground
G2	G2	GND	GND	GND	Ground

From the base station/repeater front view, the MIC connector pin 1 to pin 8 are arranged from right to left sequentially.

**Note** The schematic pin number and MIC pin number does not match due to imprecise geometry and this will remain, since it is widely used in many other kits within Motorola.

Table 4-13 SCM FP Speaker Connector Pin-out

Pin Number	Pin Name	I/O	Voltage Level (V)	Pin Description
1	GND	GND	GND	Ground
2	14.2V	14.2V	14.2 V	14.2 V supplied to the speaker
3	GND	GND	GND	Ground
4	SPEAKER_AUDIO	Output	1.4 Vpp	Audio Output. Level indicated here is the maximum value
G1	GND	GND	GND	Ground
G2	GND	GND	GND	Ground

From the base station/repeater front view, the SPEAKER connector pin 1 to pin 4 are arranged from left to right sequentially.

Table 4-14 SCM FP Ethernet Connector Pin-out

Pin Number	Pin Name	I/O	Voltage Level	Pin Description
1	ENET_TXN_FP	Output	5 V	Ethernet Tx negative
2	ENET_TXN_FP	Output	5 V	Ethernet Tx positive
3	ENET_RXN_FP	Input	5 V	Ethernet Rx negative
4	GND	GND	GND	Ground
5	GND	GND	GND	Ground
6	ENET_RXP_FP	Input	5 V	Ethernet Rx positive
7	GND	GND	GND	Ground
8	GND	GND	GND	Ground
G1	GND	GND	GND	Ground
G2	GND	GND	GND	Ground

Table 4-15 SCM FP External Reference Connector Pin-out

Pin Number	Pin Name	I/O	Voltage Level	Pin Description
C	EXT_REFERENCE	Input	5 V	5 MHz or 10 MHz external reference. This can be either a sine or a square wave.
G1	GND	GND	GND	Ground
G2	GND	GND	GND	Ground
G3	GND	GND	GND	Ground
G4	GND	GND	GND	Ground

#### 4.2.12 Front Panel LEDs

For details on this section, refer to Table 1-5 on page 1-12.

#### 4.2.13 Supply Voltage Circuitry

The SCM contains on-board regulator and filtering circuitry to generate the various operating voltages required by the SCM circuitry. The SCM routes +10 V and +8 V from two regulators on the backplane to the Receiver and Exciter modules. +14.2 V and +5.1 V from the power supply (via the backplane) are used as sources for the following supply voltage circuits:

- +14.2 V Regulator Circuitry – input to generate 9.3 V for MAKO, 5 V analog for audio circuit. This regulator also routes 14 VDC to the Receiver and Exciter modules.
- +5.1 V Regulator Circuitry – input to generate the following voltage: 3.3 V, 3.3 V analog, 2.775 V analog, 1.875 V, 1.4 V Core for Tx and Rx OMAP1710, 1.2 V Core for FPGA.

The SCM requires a specific power-up and reset sequence. At initial power-up, the power supply of the base station/repeater provides 14 V and 5 V directly to the SCM. The SCM also provides 10 V and 8 V through the base station/repeater backplane directly to Exciter and Receiver without any additional delay. 14 V is used only to derive a 9.3 V supply voltage for the Mako IC and a 5 V supply voltage for the audio section. The 14 V is also used to derive a 12 V supply voltage for the OCXO. The majority of supply voltages on the SCM are derived from the 5 V using linear regulators. Each regulator outputs are enabled in the sequence shown in Figure 4-9 to meet all the device power-up sequences. 1 indicates the first power-rail that reaches steady state, and 7 is the last voltage rail that reaches the steady state.

During the power-up sequence, the SCM is held in a reset state. Once the power-up sequence is completed, the FPGA and the MAKO IC complete their internal initialization; then the main-reset is released, and the SCM starts its normal operation. There are several sources, both hardware and software, that can reset the SCM. From a hardware perspective, when the 5 V, Tx OMAP or Rx OMAP core voltage dip below the minimum operation threshold, then the SCM enters and stays in the reset state, until the voltage reaches its operation level again. From the software perspective, both the Tx OMAP and Rx OMAP have the means to initiate SCM reset. This can be done from either the CPS or RDAC application.



Refer to Figure 4-9 for the MTR3000 base station/repeater power up block diagram.

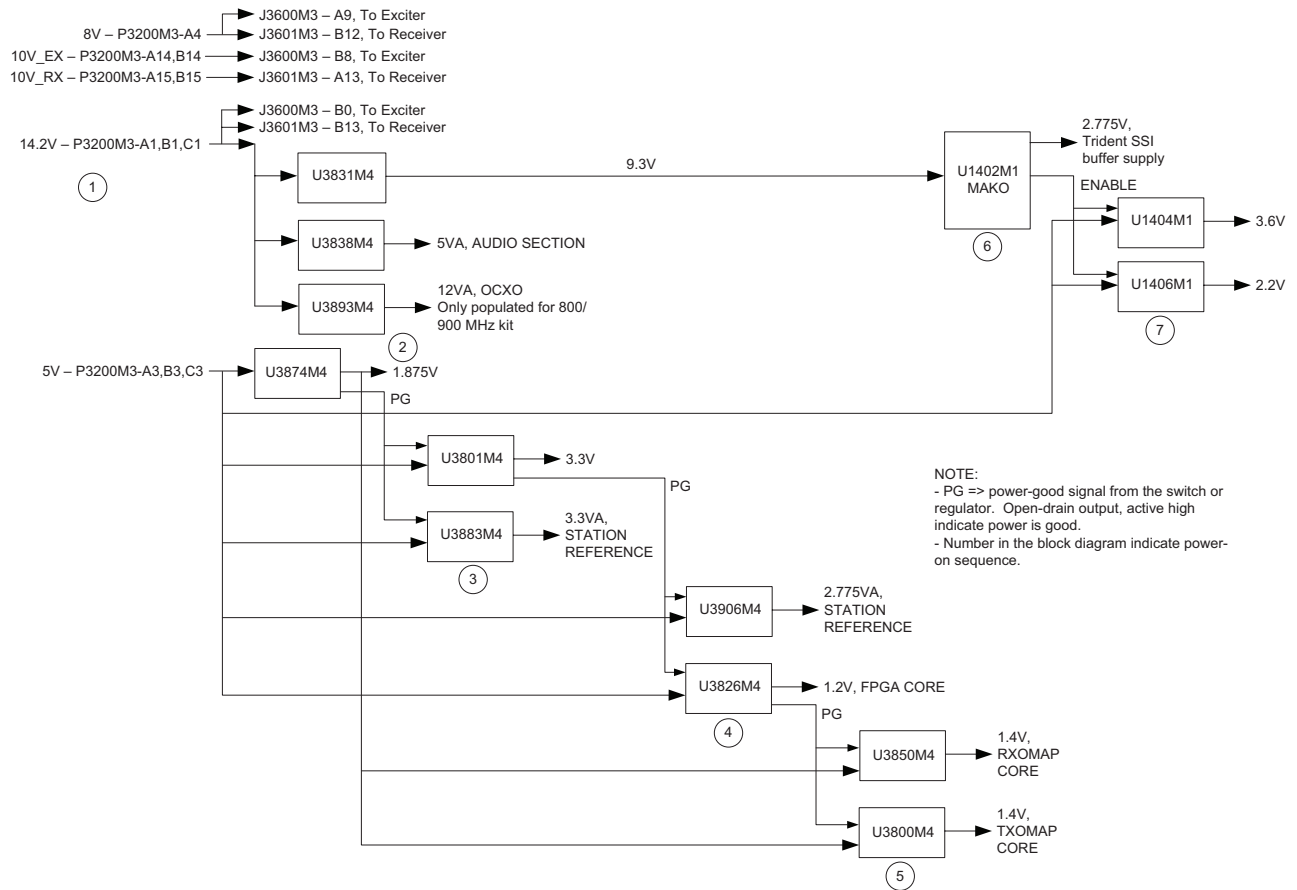


Figure 4-9 MTR3000 base station/repeater power up block diagram

## 4.3 Troubleshooting

### 4.3.14 Disassembly and Reassembly Procedures

**Note** Refer to Table 2-5 for the different size fasteners of screw torques.

1. Make sure the station power is turned off at the breaker to the AC or DC source.
2. Disconnect the cables, as follows:
  - Rx cable from Receiver Module
  - Exciter-to-PA coaxial Cable
  - Front Panel USB cable (if connected)
  - Front Panel Mic cable (if connected)
  - Front Panel Speaker cable (if connected)
  - Front Panel External Reference cable (if connected)
  - Front Panel Ethernet cable (if connected)
3. Remove the two screws holding the transceiver assembly to the bottom plate.
4. Pull forward on the cast knobs (above the front panel that projects horizontally from the Exciter and Receiver module), carefully slide the transceiver assembly (Exciter Module, Receiver Module, Station Control Module (SCM)) out of station.
5. Remove four screws securing Exciter Module, and four screws securing Receiver Module to the SCM, and disconnect both modules from the SCM.
6. Remove the six screws securing the SCM casting to the SCM board.
7. Ensure that the correct SCM board is being installed. Fasten the board into the casting with the six screws.
8. Plug back the Exciter Module and the Receiver Module into the respective connectors on the SCM. Tighten the screws and slide the transceiver assembly back into the station (along the guide rails) to mate with the connector on the backplane.

**Note** Do not slam the transceiver assembly against the backplane or push any harder than necessary to seat the connector.

9. Reconnect all the cables.
10. Fasten the transceiver assembly into the unit using the two screws.
11. Restore power to the station.

### 4.3.15 Troubleshooting Chart

Follow the procedures in the troubleshooting charts below to isolate the cause of SCM problems. The following assumptions should be taken note of before carrying out the troubleshooting procedures.

- Depot Repair Centres will have a golden MTR3000 base station/repeater
- Depot Repair Centres will not replace BGA devices
- Depot Repair Centres will not have capability to program FPGA
- Audio Flow Chart is based on the usage of CPS. Factory will use the controller's 12M, schematics and flow charts to perform troubleshooting.

- Note**
1. Reference Designator with/without M suffix are identical in the design
  2. Factory should reprogram FPGA with test fixture prior to replacing the device
  3. Factory should replace the failure device prior to replacing the controller
  4. Transmitter output refers to PA RF output. Test equipment that is capable of demodulating the signal is required to perform this test.

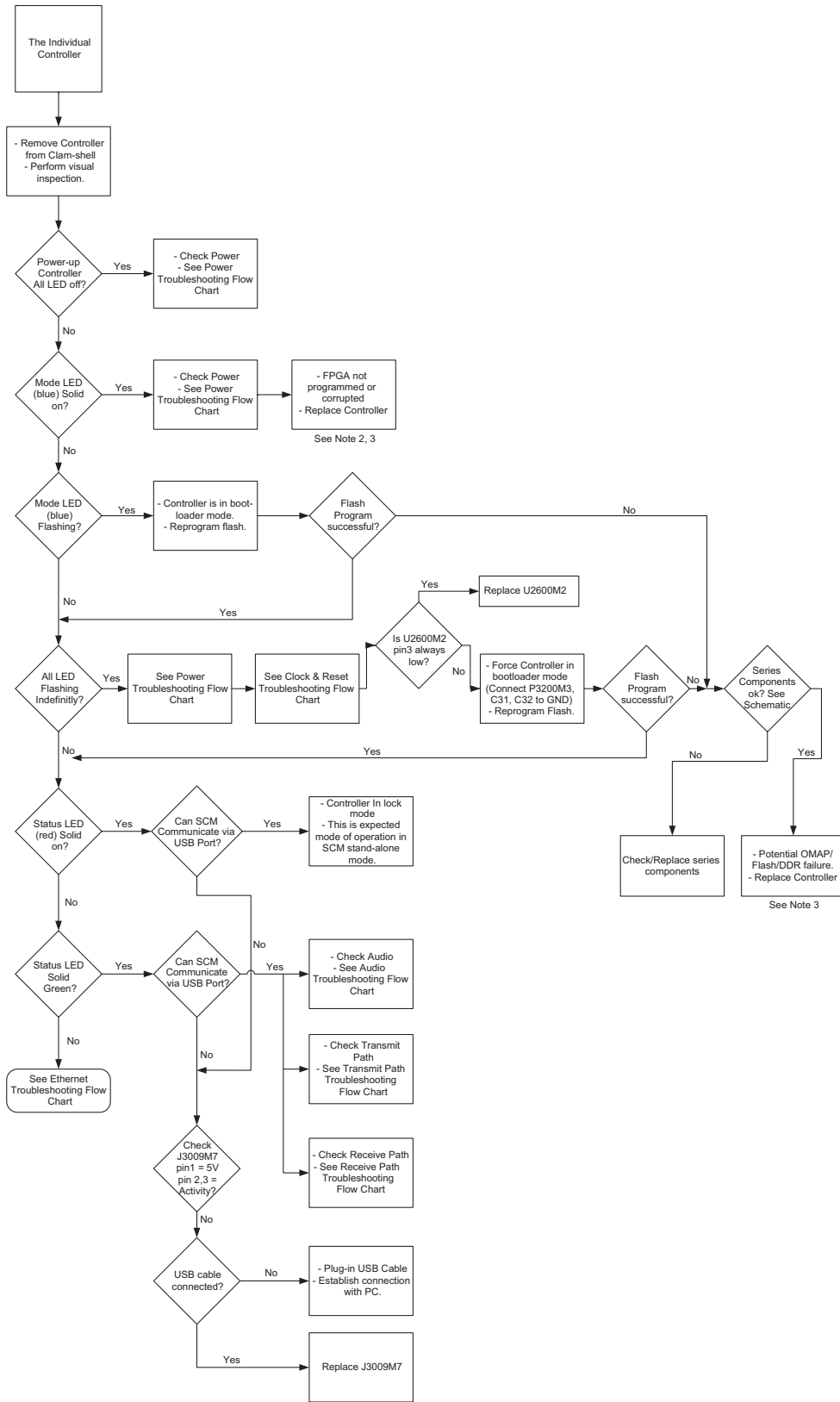


Figure 4-10 Controller Troubleshooting Flow Chart

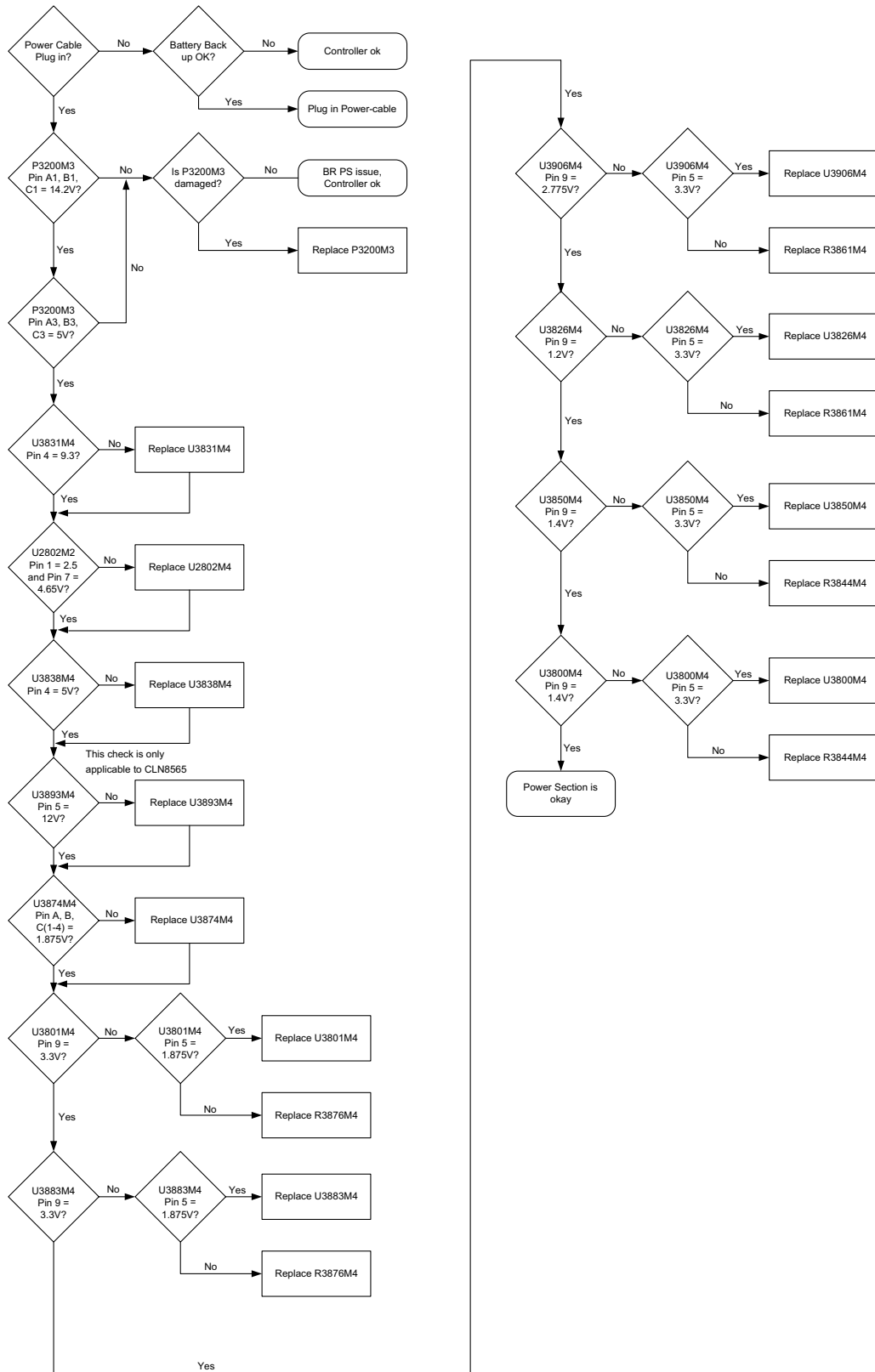


Figure 4-11 Power Troubleshooting Flow Chart (Controller)

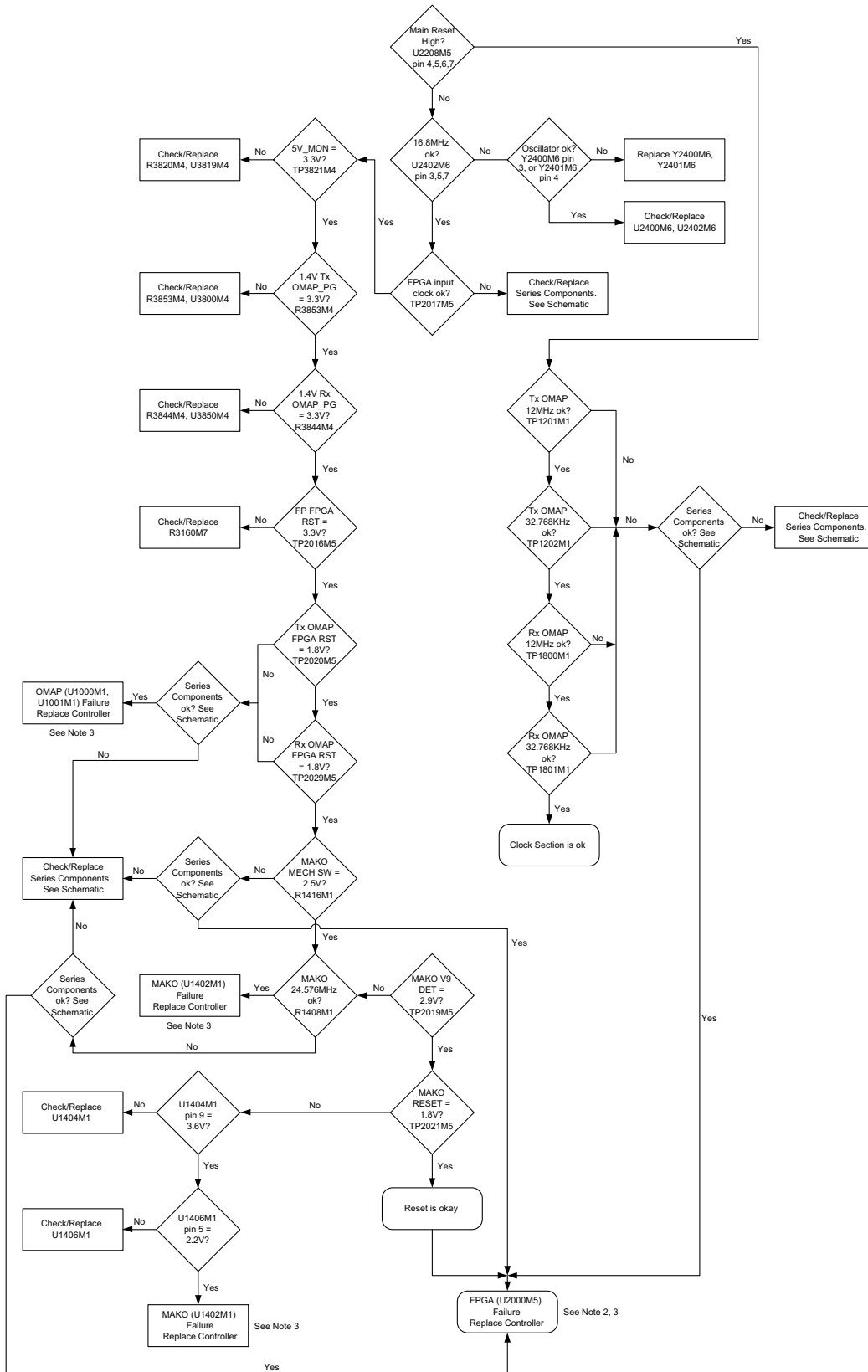


Figure 4-12 Clock and Reset Troubleshooting Flow Chart (Controller)

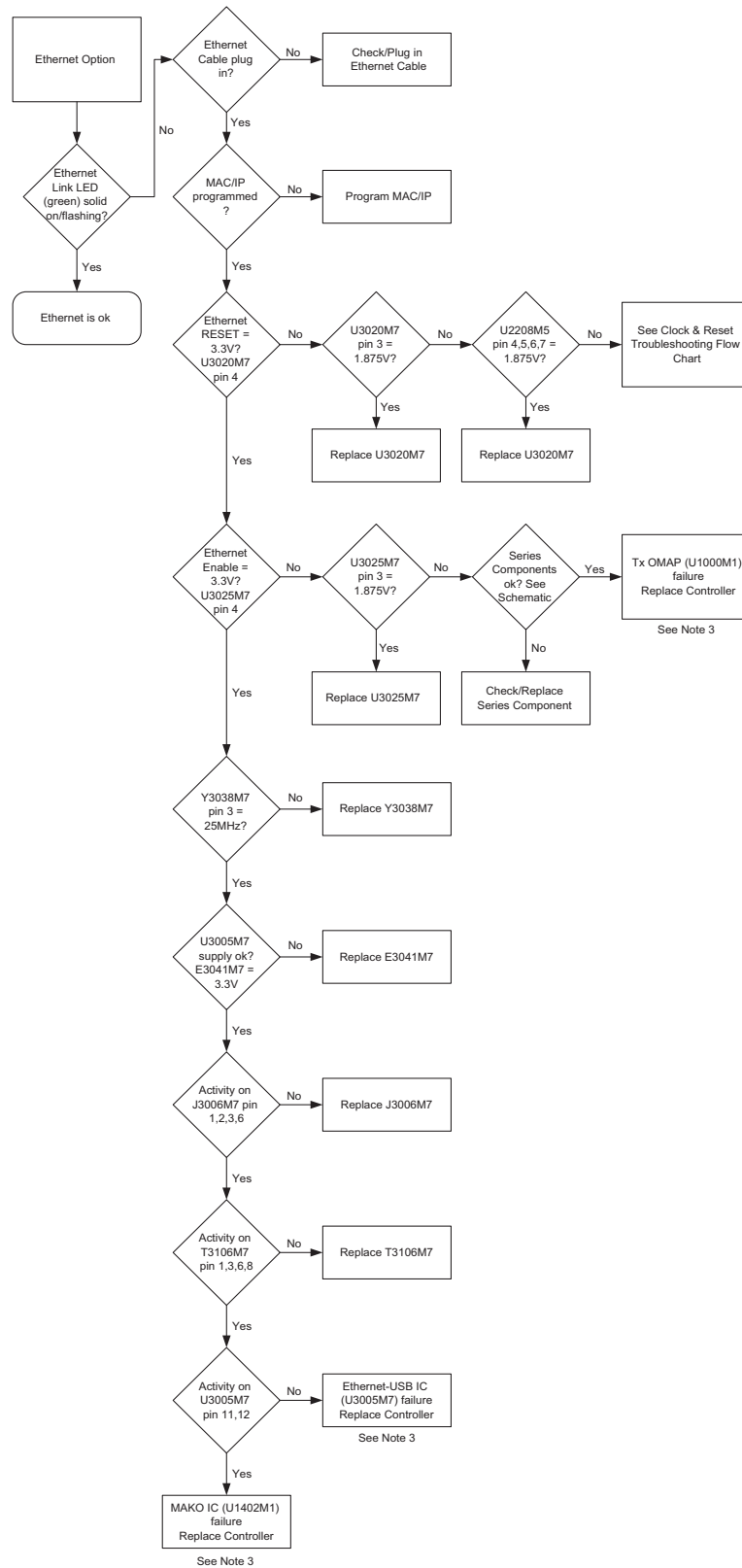


Figure 4-13 Ethernet Troubleshooting Flow Chart (Controller)

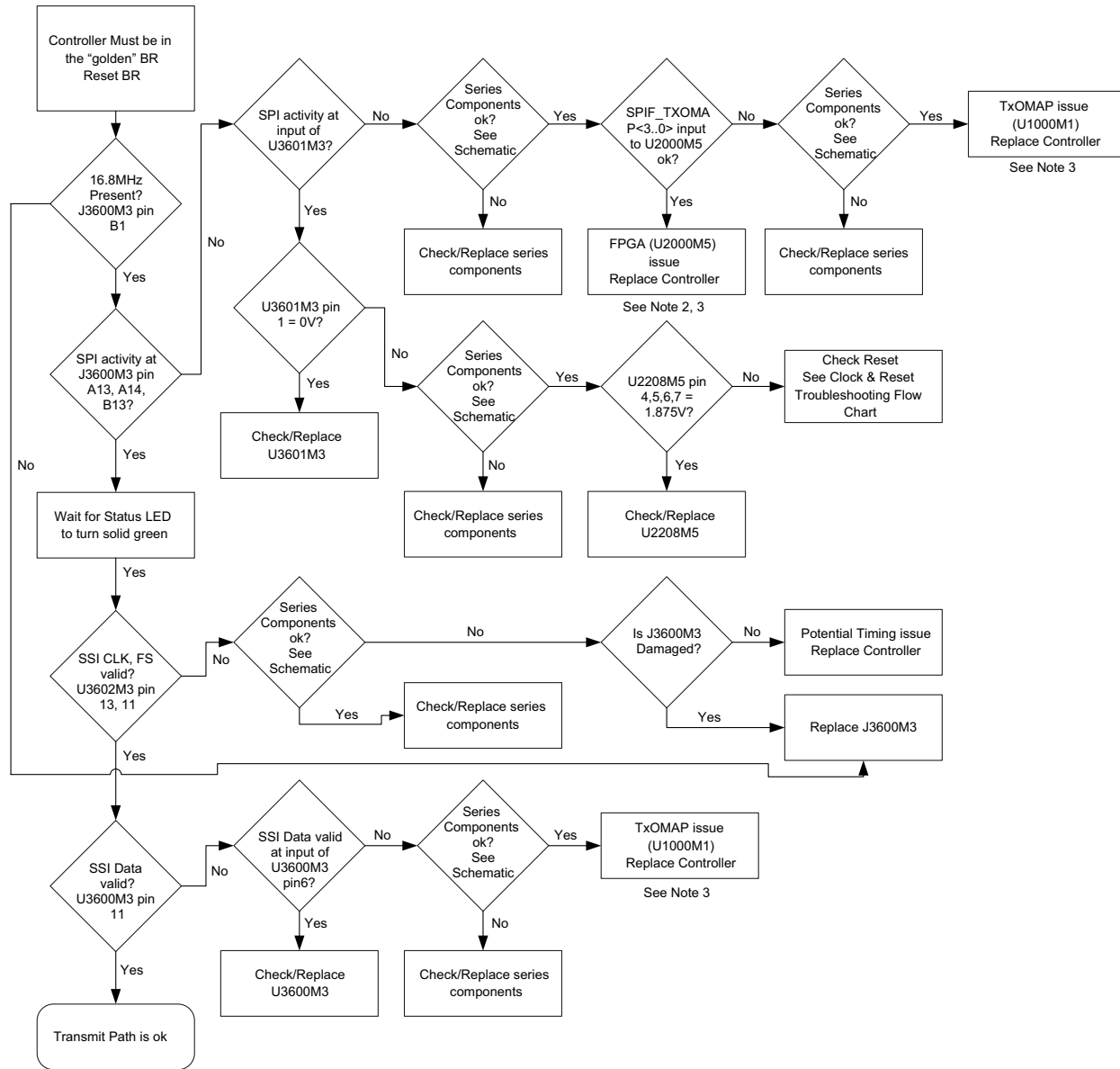


Figure 4-14 Transmit Path Troubleshooting Flow Chart (Controller)



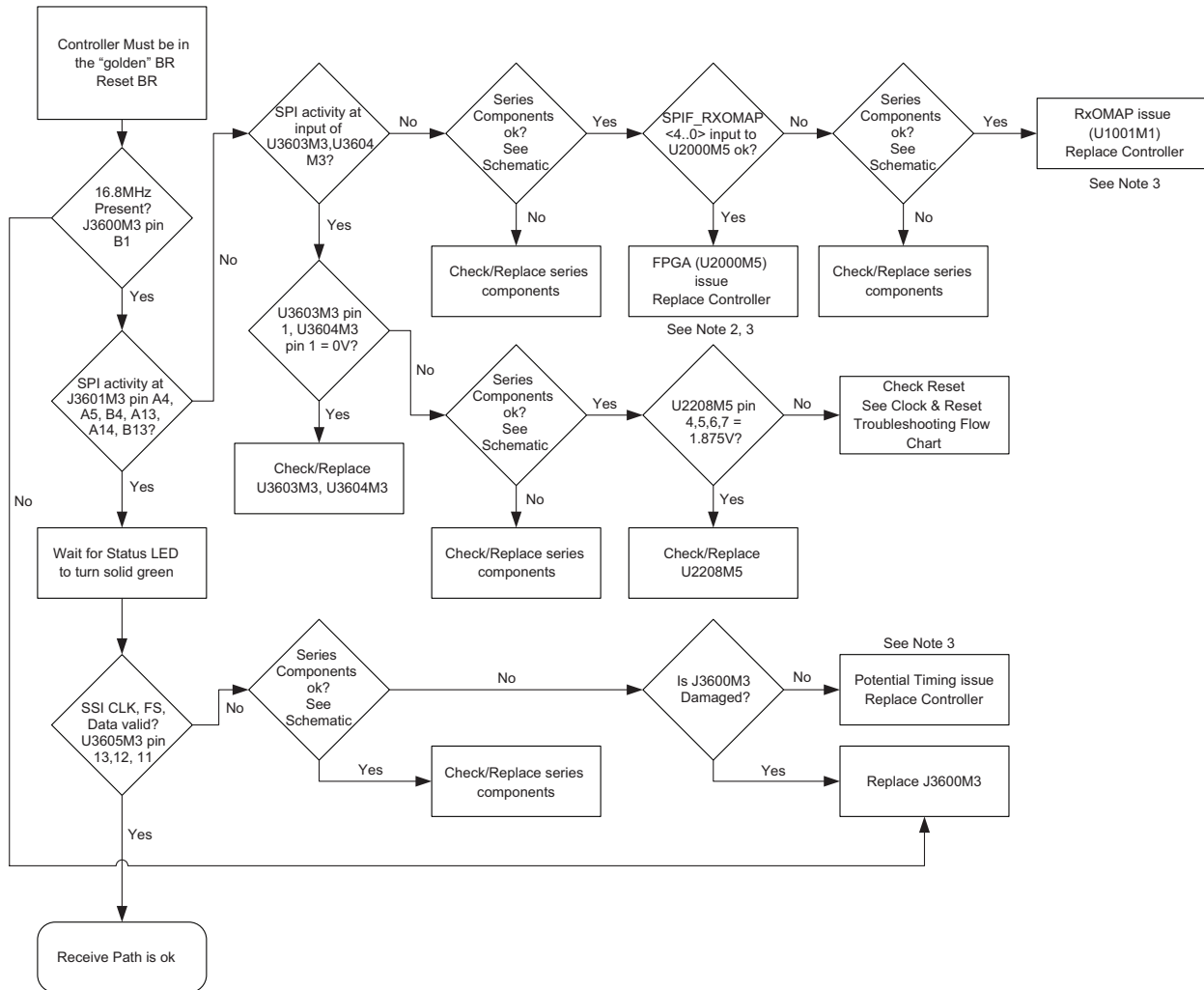


Figure 4-15 Receive Path Troubleshooting Flow Chart (Controller)

## Notes

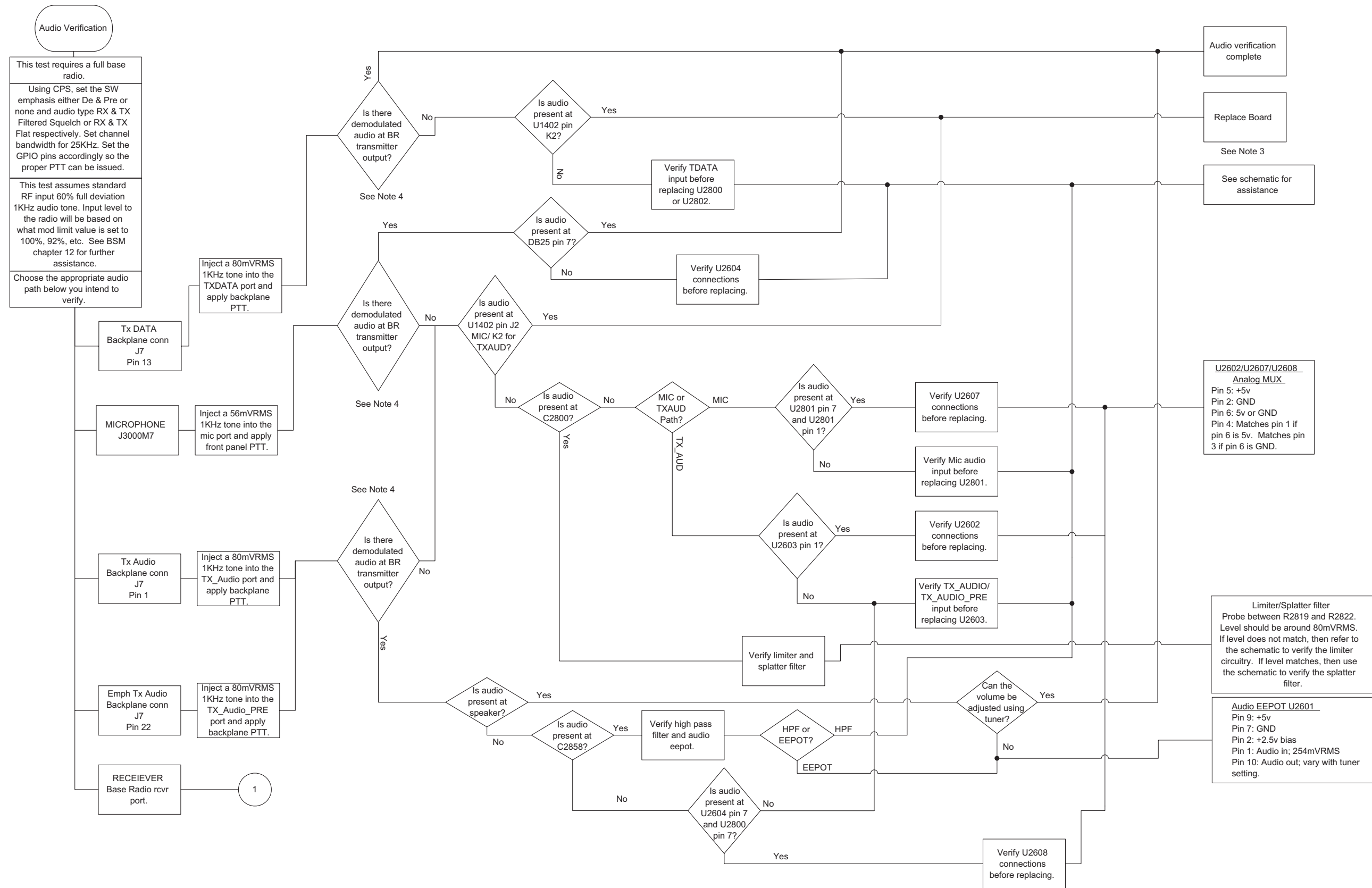


Figure 4-16 Audio Troubleshooting Flow Chart (Sheet 1 of 2)

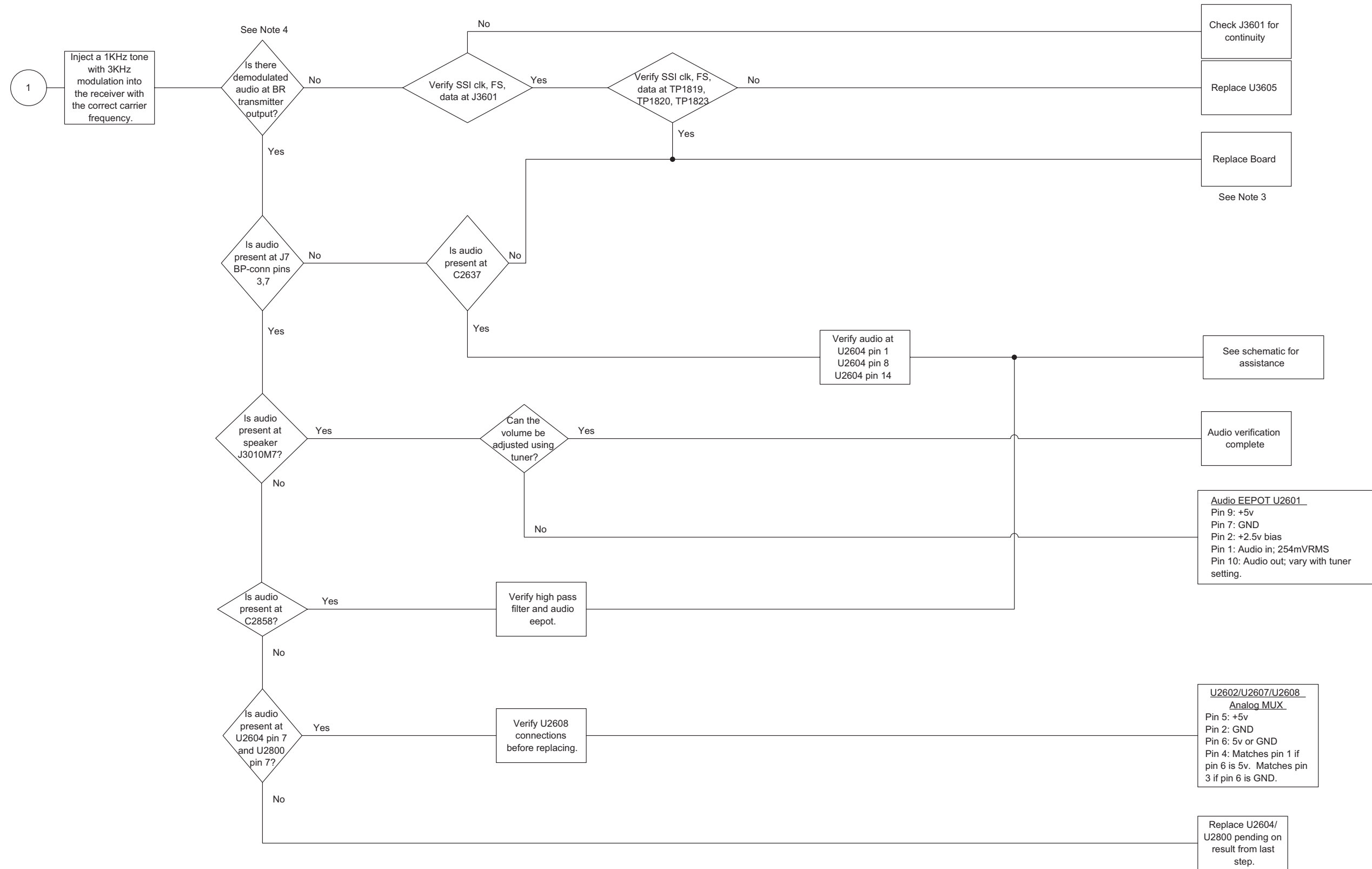


Figure 4-17 Audio Troubleshooting Flow Chart (Sheet 2 of 2)

### 4.3.16 Calibration Procedure

To calibrate the base station/repeater reference:

1. Remove the front bezel of the base station/repeater.
2. Connect the External Reference to J3008M7 of the SCM. SCM accepts 5 MHz or 10 MHz sine or square wave with 3V peak-to-peak.



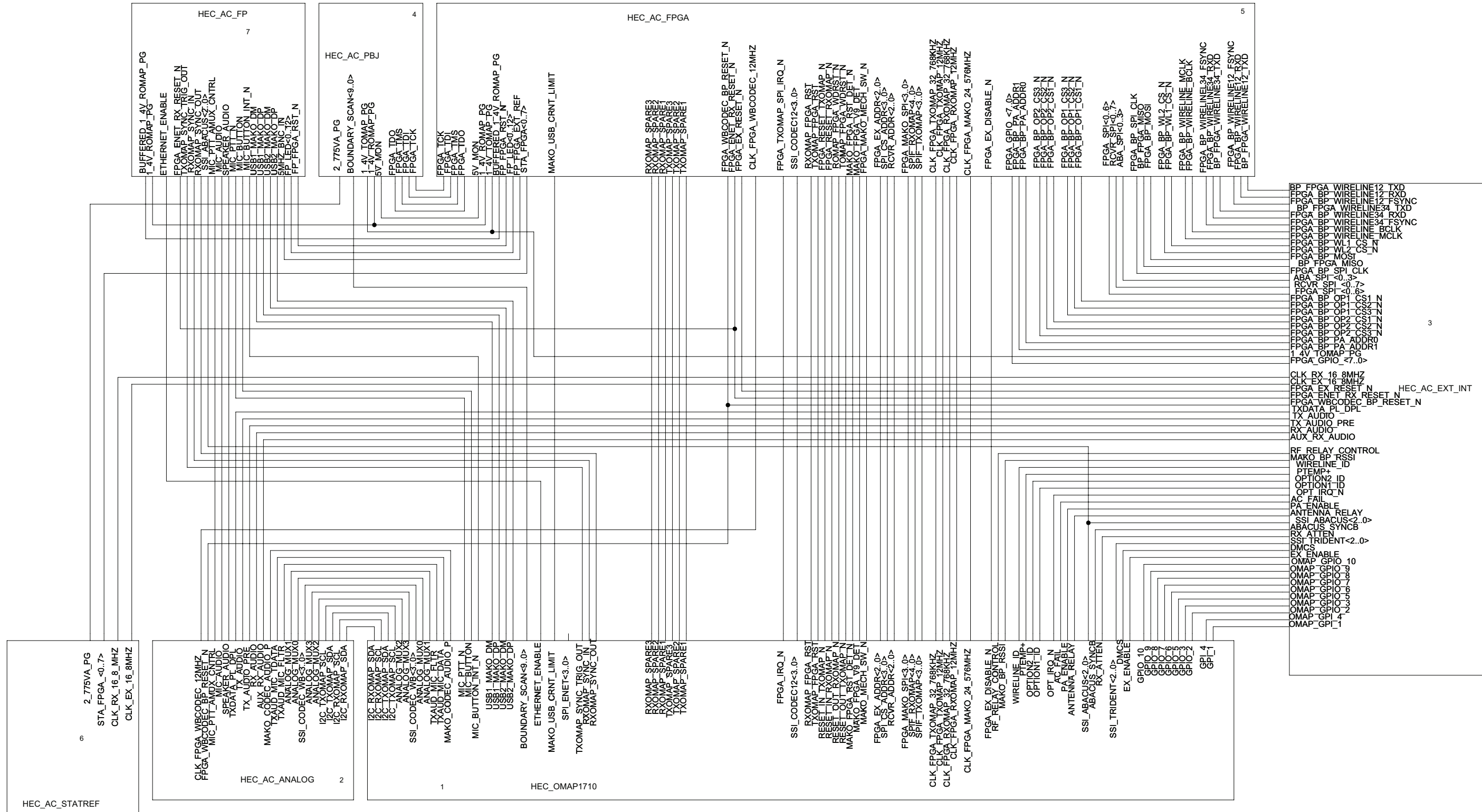
WARNING

The 800/900 MHz base station/repeater must be in a powered state (AC/DC applied) for a minimum of 10 minutes prior to applying an external reference for the purpose of alignment. Failure to comply to the 10 minutes wait time will result in an inaccurate reference frequency alignment.

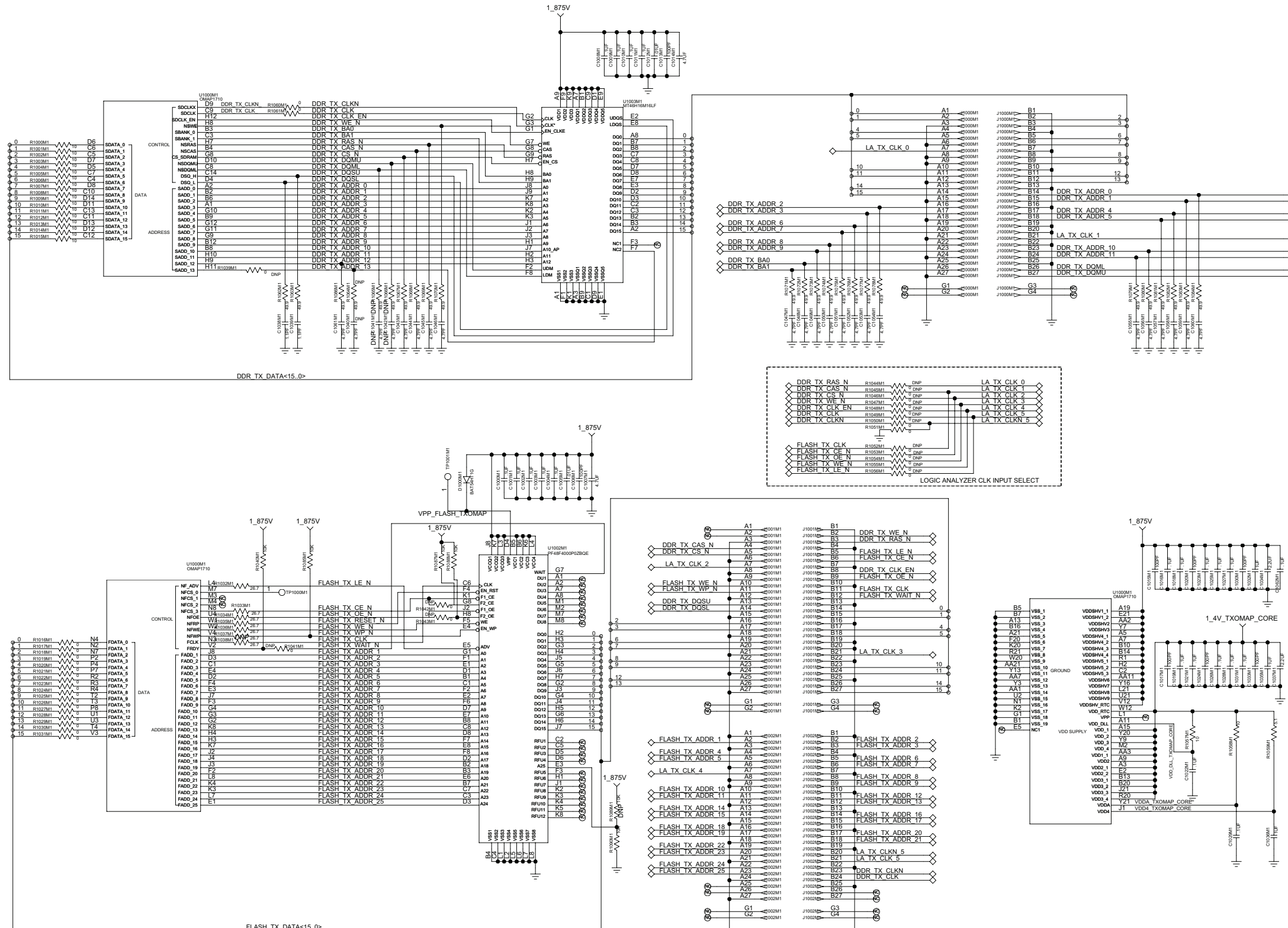
3. The reference LED on the SCM will turn solid amber to indicate that the alignment is in progress.
4. The reference LED on the SCM will turn solid green to indicate that the alignment is completed successfully.
5. Remove the External Reference from J3008M7, and the reference LED will turn off.
6. Replace the front bezel of the base station/repeater.

## Notes

### 4.4 Controller Schematics (UHF)

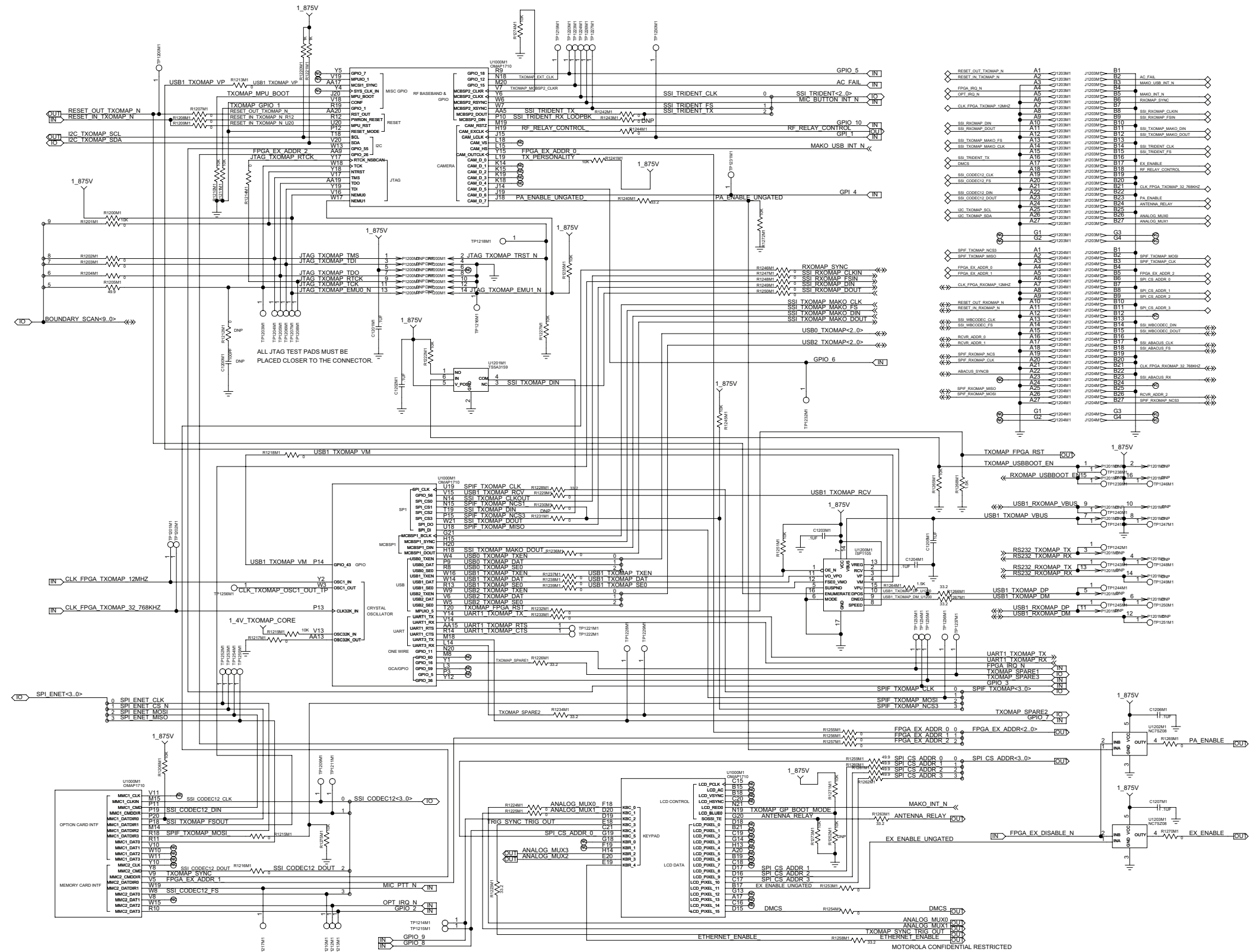


Controller – Main Schematic Diagram (Kit No. CLN8502)



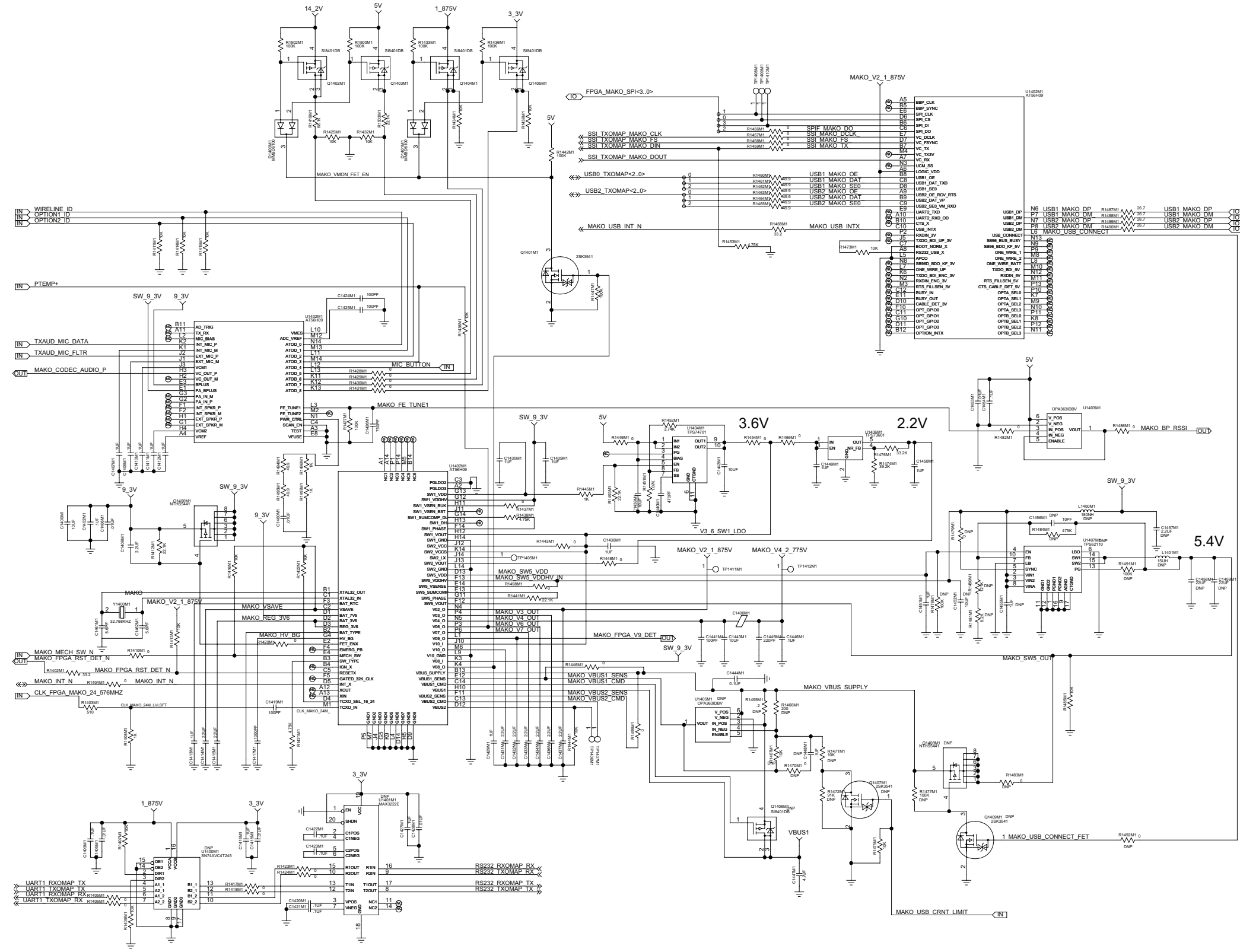
Controller – Tx OMAP Memory Schematic Diagram (Kit No. CLN8502)



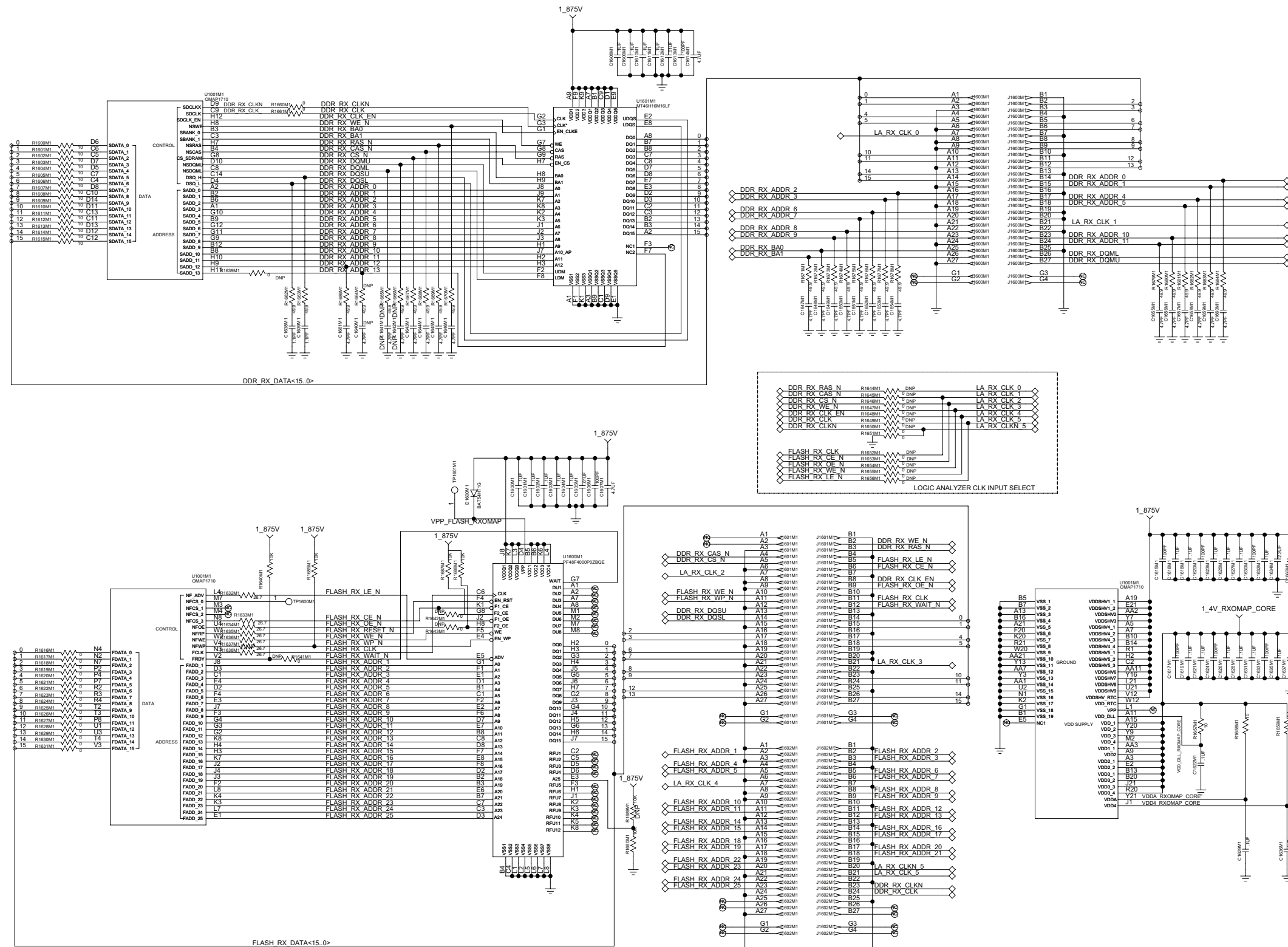


Controller – Tx OMAP Schematic Diagram (Kit No. CLN8502)

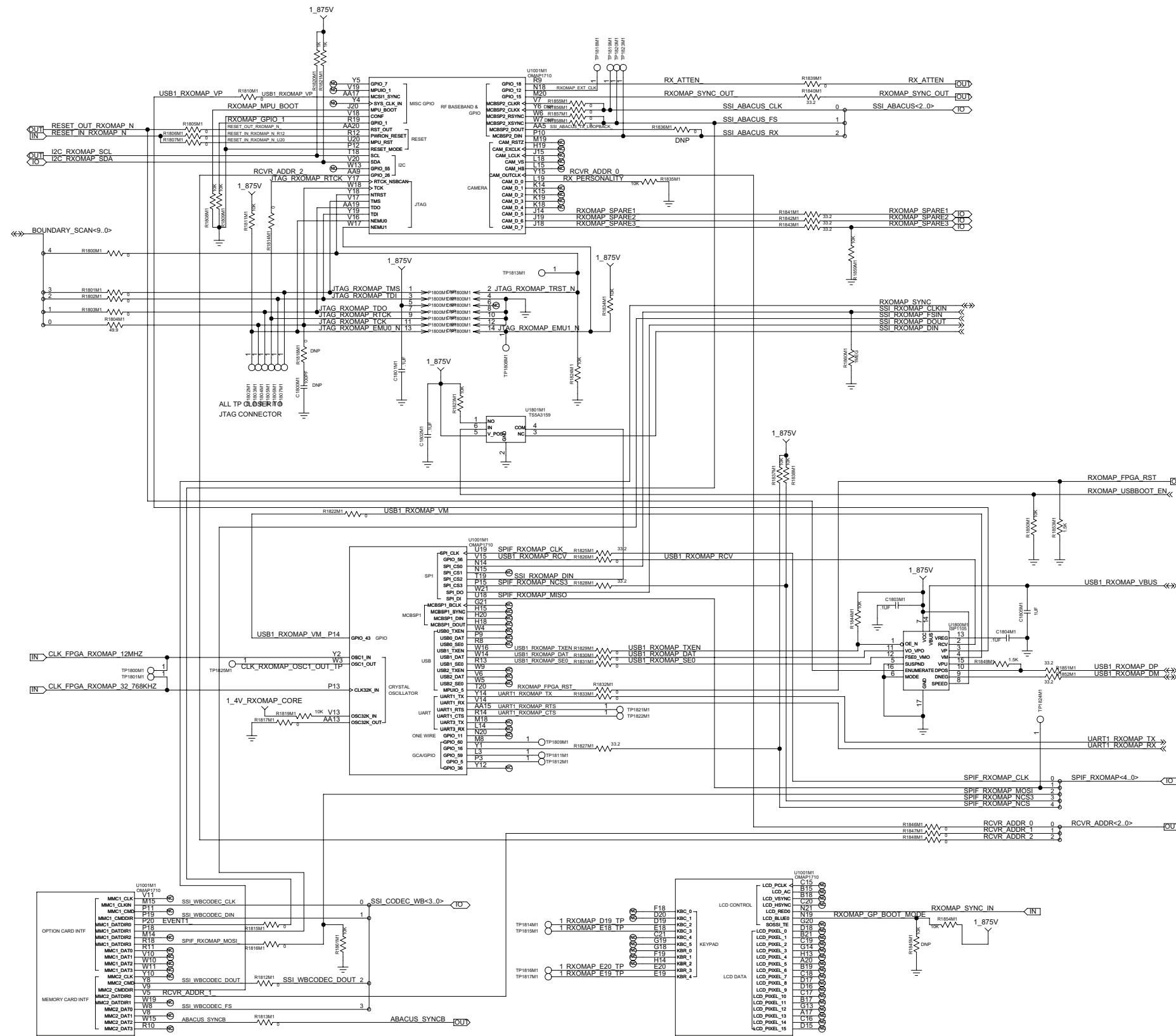
MOTOROLA CONFIDENTIAL RESTRICTED



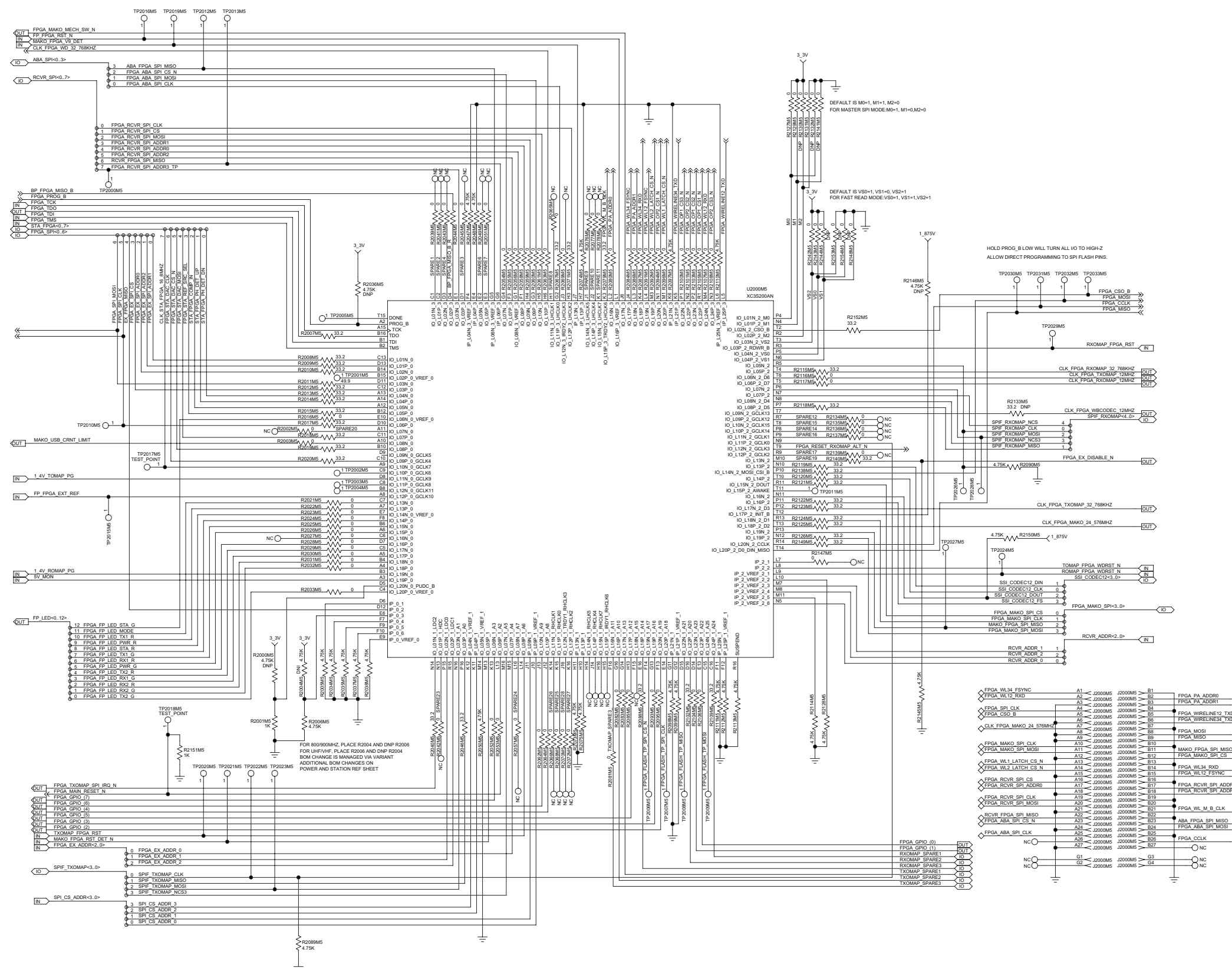
Controller – MAKO Schematic Diagram (Kit No. CLN8502)



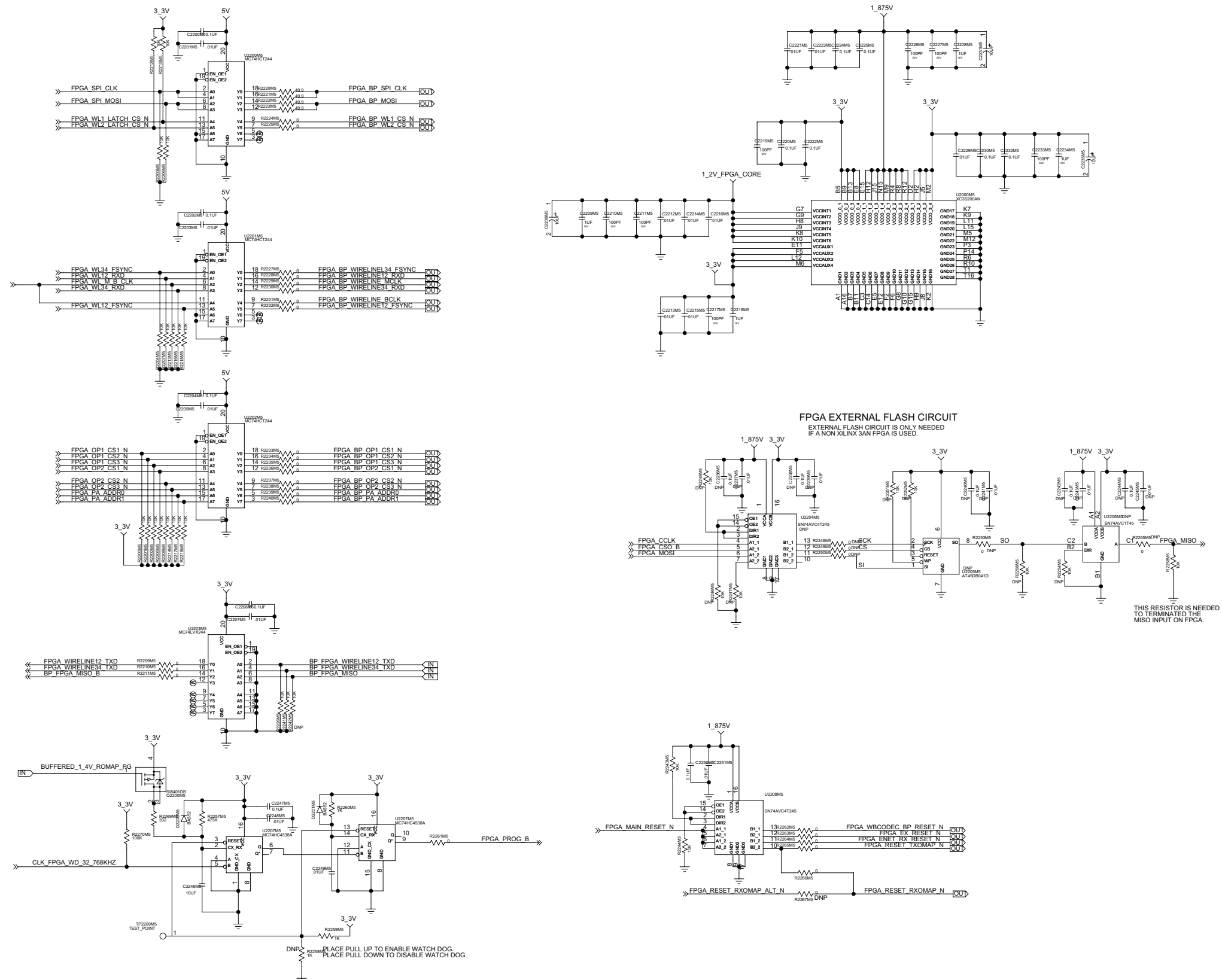
Controller – Rx OMAP Memory Schematic Diagram (Kit No. CLN8502)



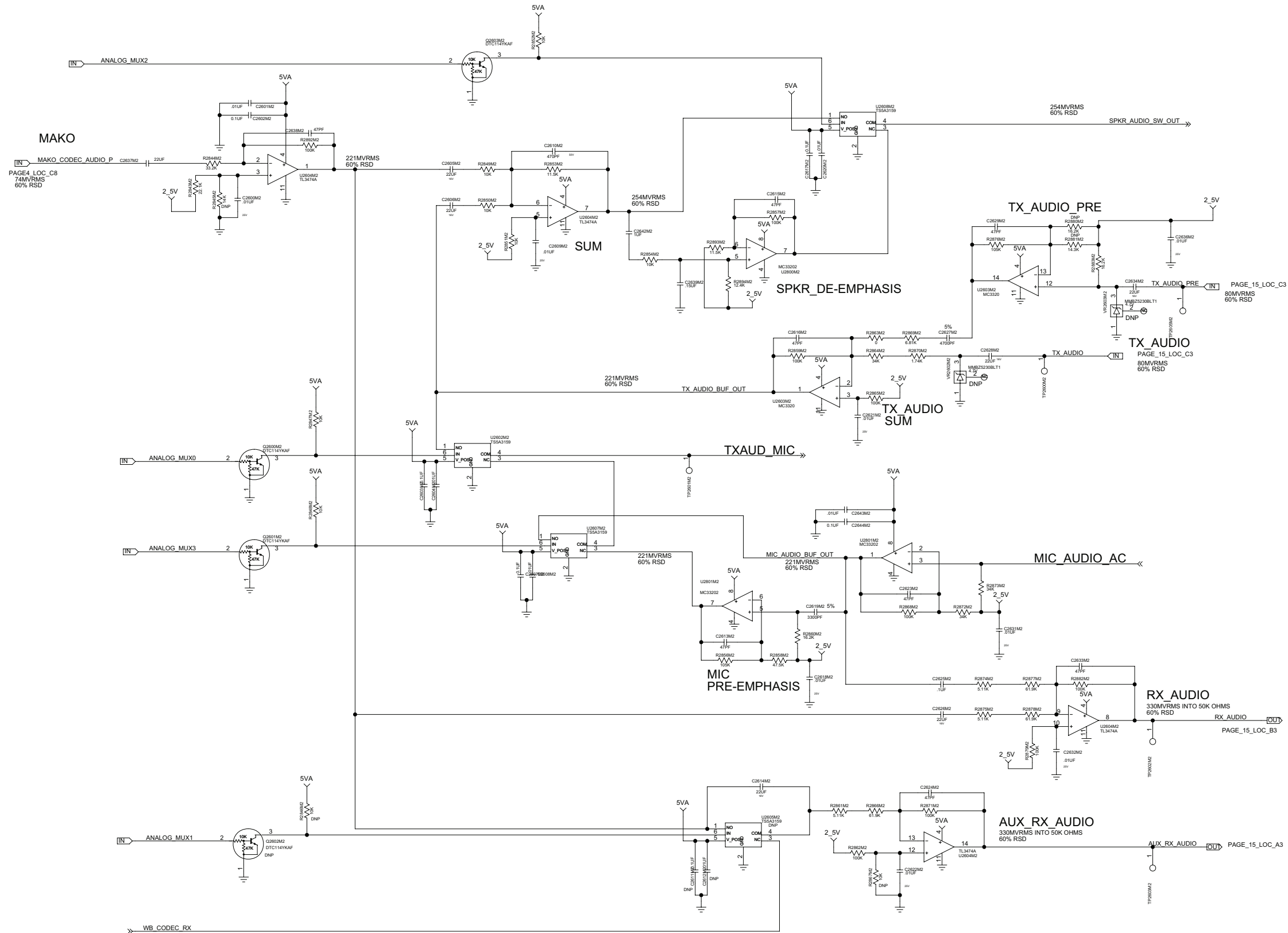
Controller – Rx OMAP Schematic Diagram (Kit No. CLN8502)



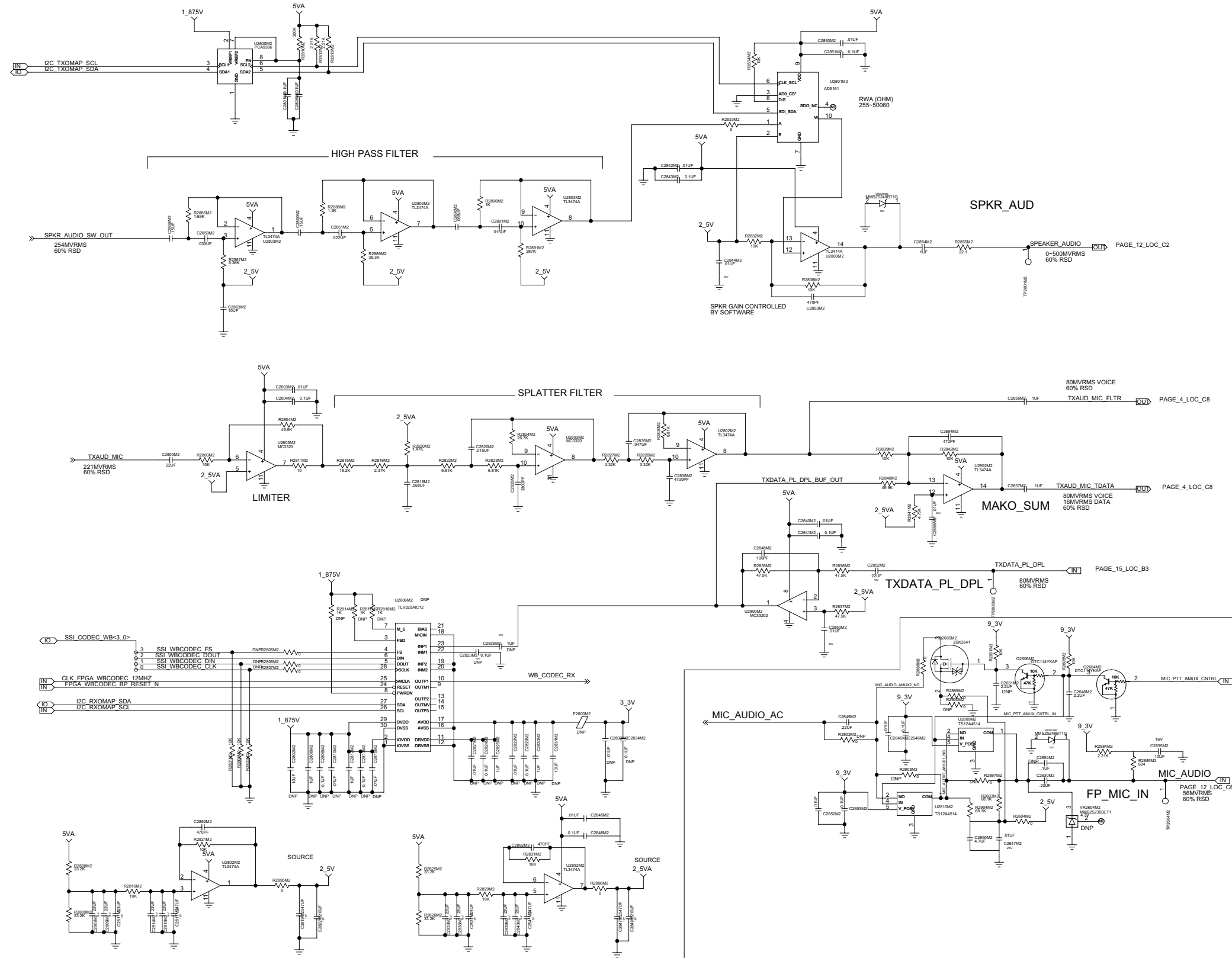
**Controller – FPGA Schematic Diagram (Kit No. CLN8502)**



Controller – FPGA Logic Schematic Diagram (Kit No. CLN8502)

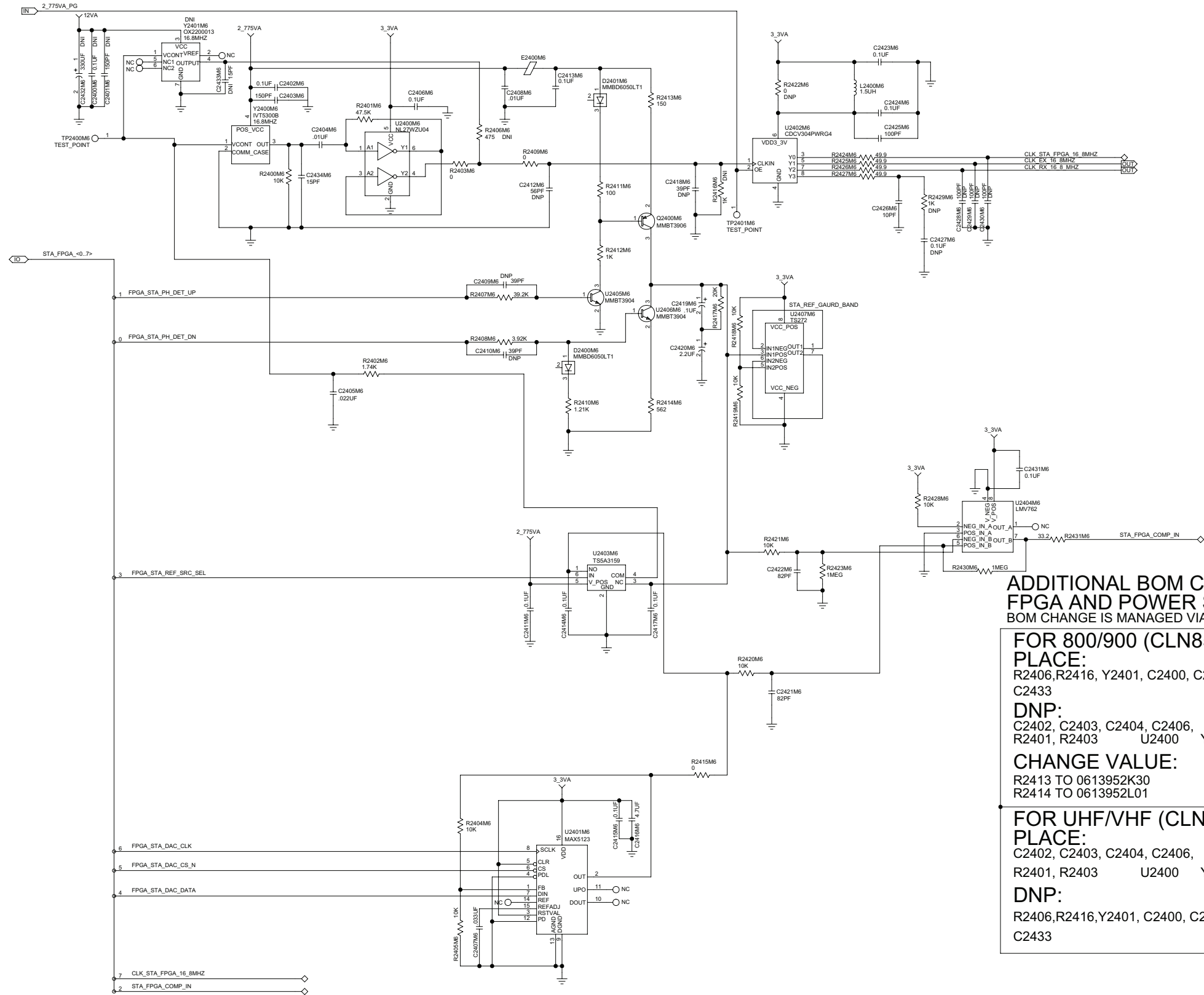


Controller – Analog 1 Schematic Diagram (Kit No. CLN8502)



Controller – Analog 2 Schematic Diagram (Kit No. CLN8502)





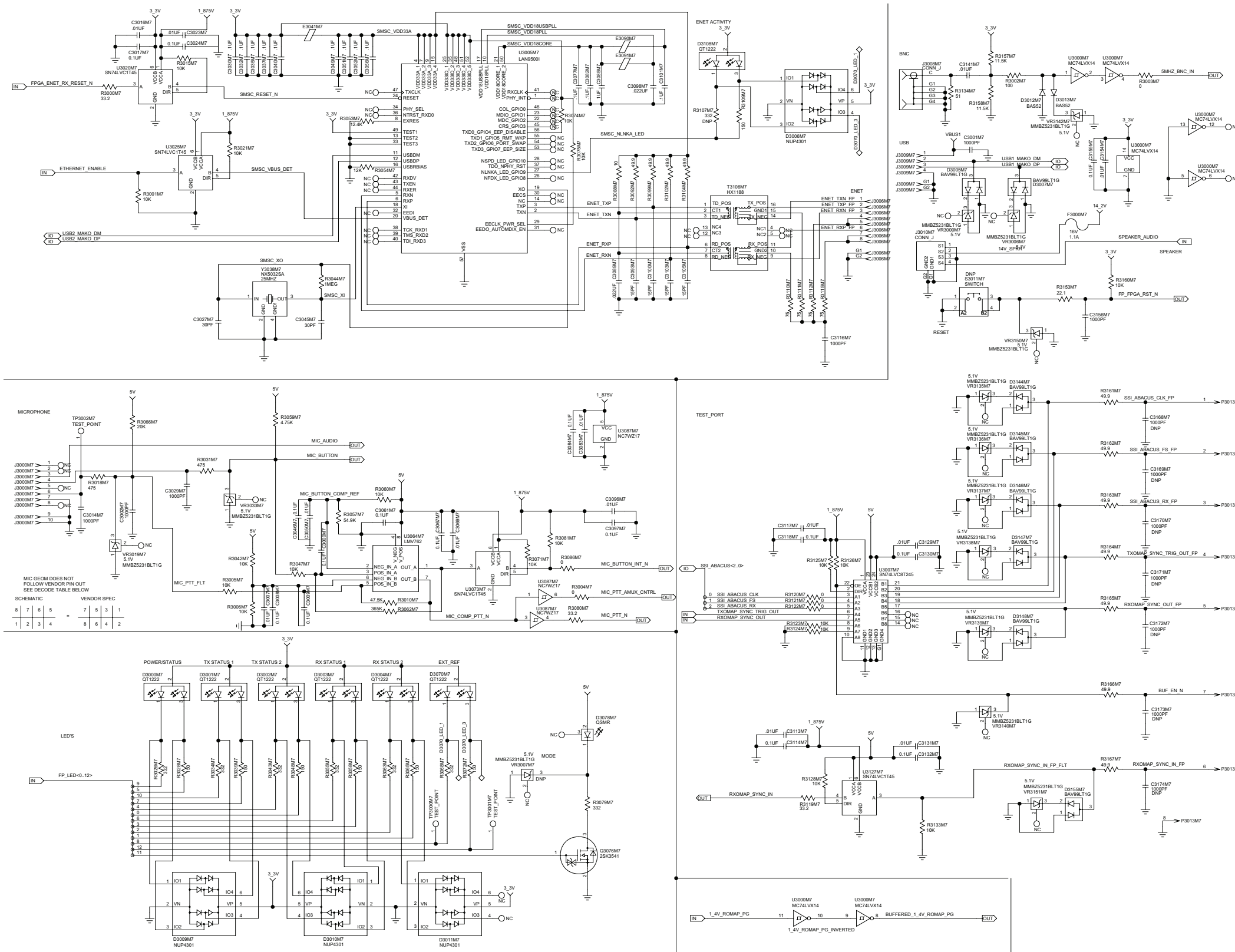
**ADDITIONAL BOM CHANGES ON  
FPGA AND POWER SHEET  
BOM CHANGE IS MANAGED VIA VARIANT**

**FOR 800/900 (CLN8565)**  
**PLACE:**  
 R2406,R2416, Y2401, C2400, C2401, C2432,  
 C2433  
**DNP:**  
 C2402, C2403, C2404, C2406,  
 R2401, R2403 U2400 Y2400 R2400 C2434

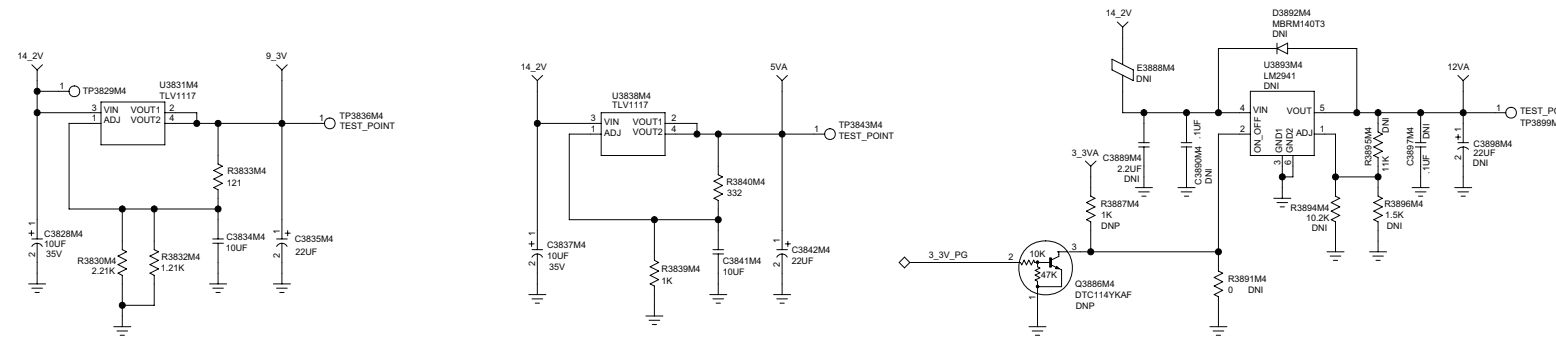
**CHANGE VALUE:**  
 R2413 TO 0613952K30 (20 OHM)  
 R2414 TO 0613952L01 (100 OHM)

**FOR UHF/VHF (CLN8502)**  
**PLACE:**  
 C2402, C2403, C2404, C2406,  
 R2401, R2403 U2400 Y2400 R2400 C2434  
**DNP:**  
 R2406,R2416,Y2401, C2400, C2401, C2432,  
 C2433

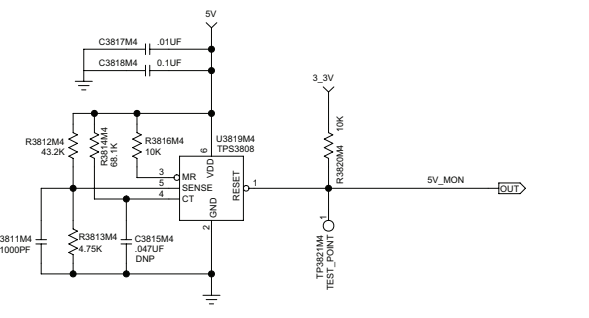
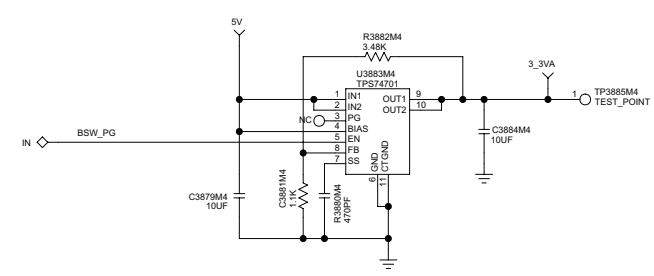
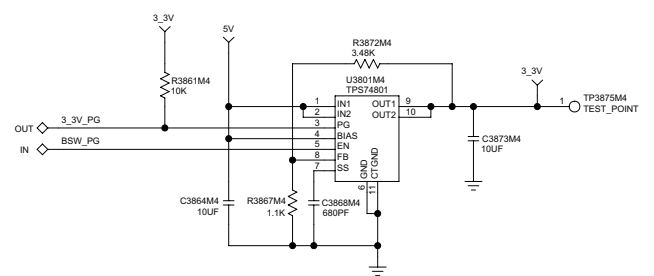
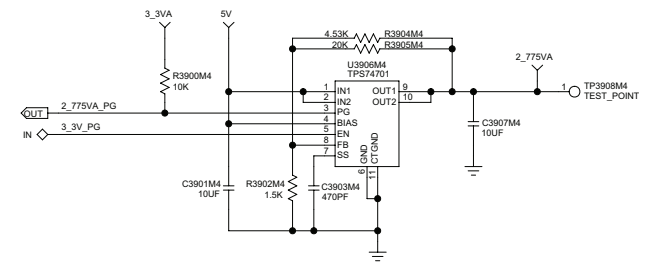
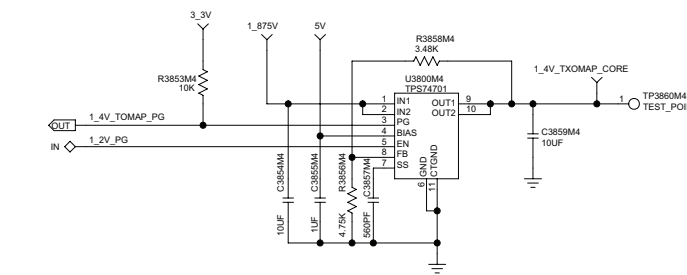
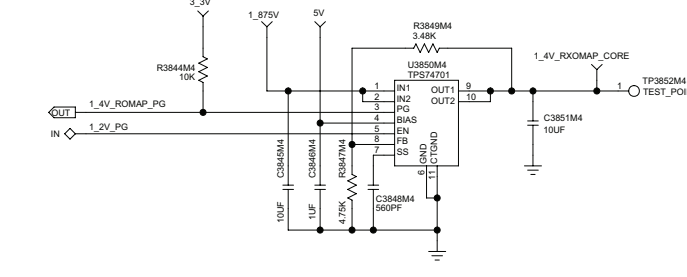
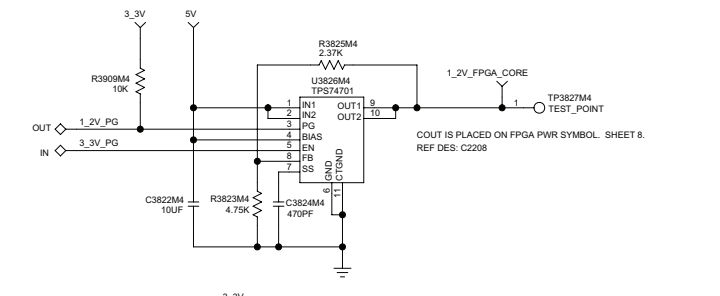
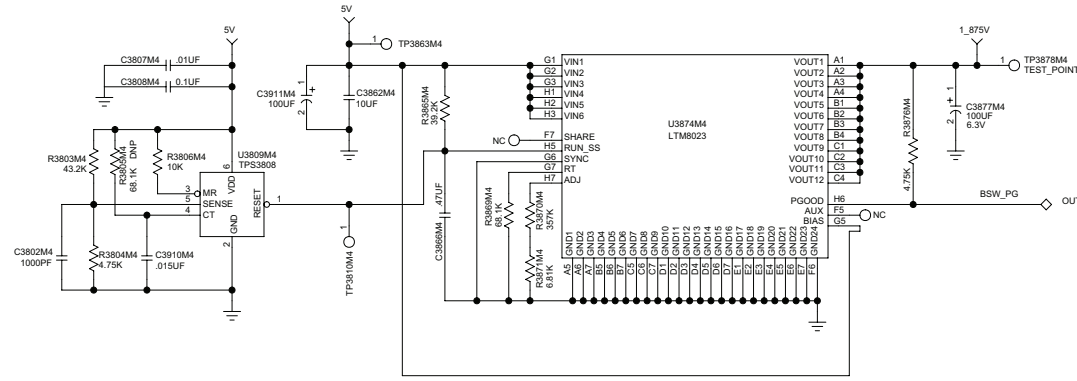
**Controller – Station Reference Schematic Diagram (Kit No. CLN8502)**



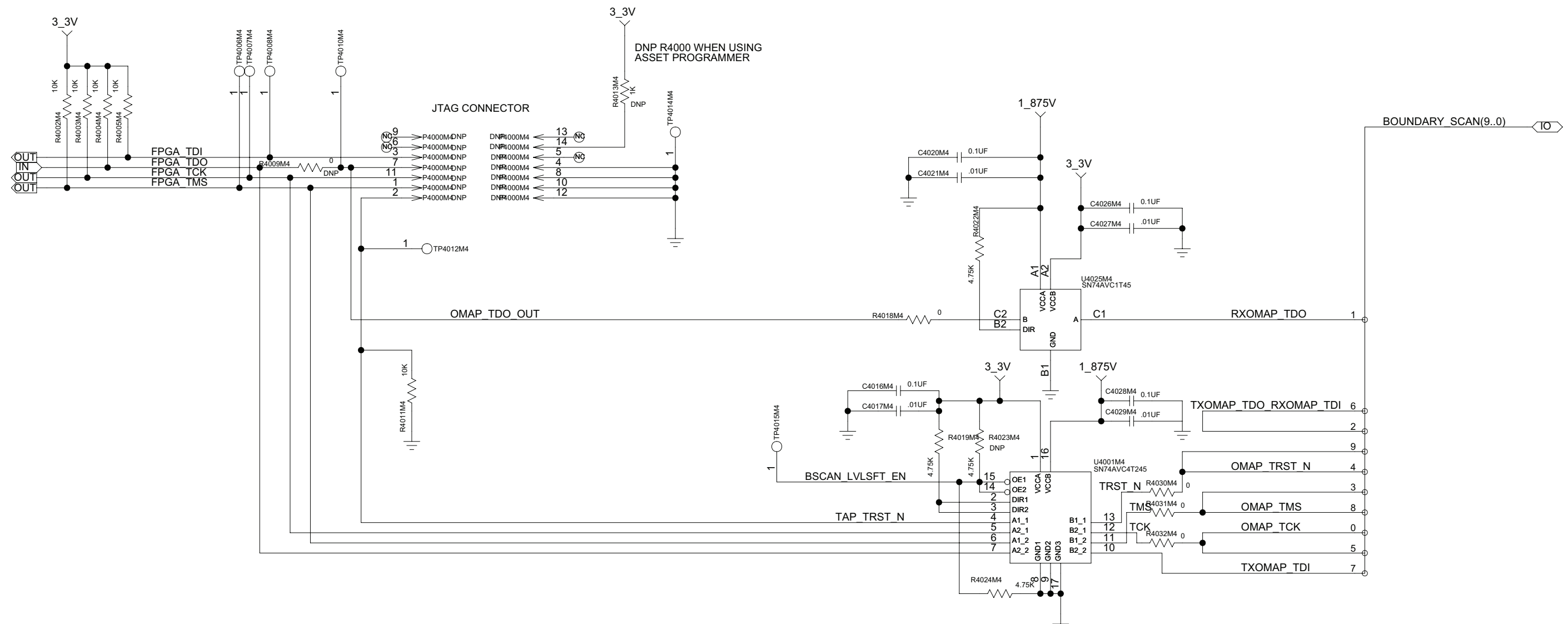
Controller – Front Panel Schematic Diagram (Kit No. CLN8502)



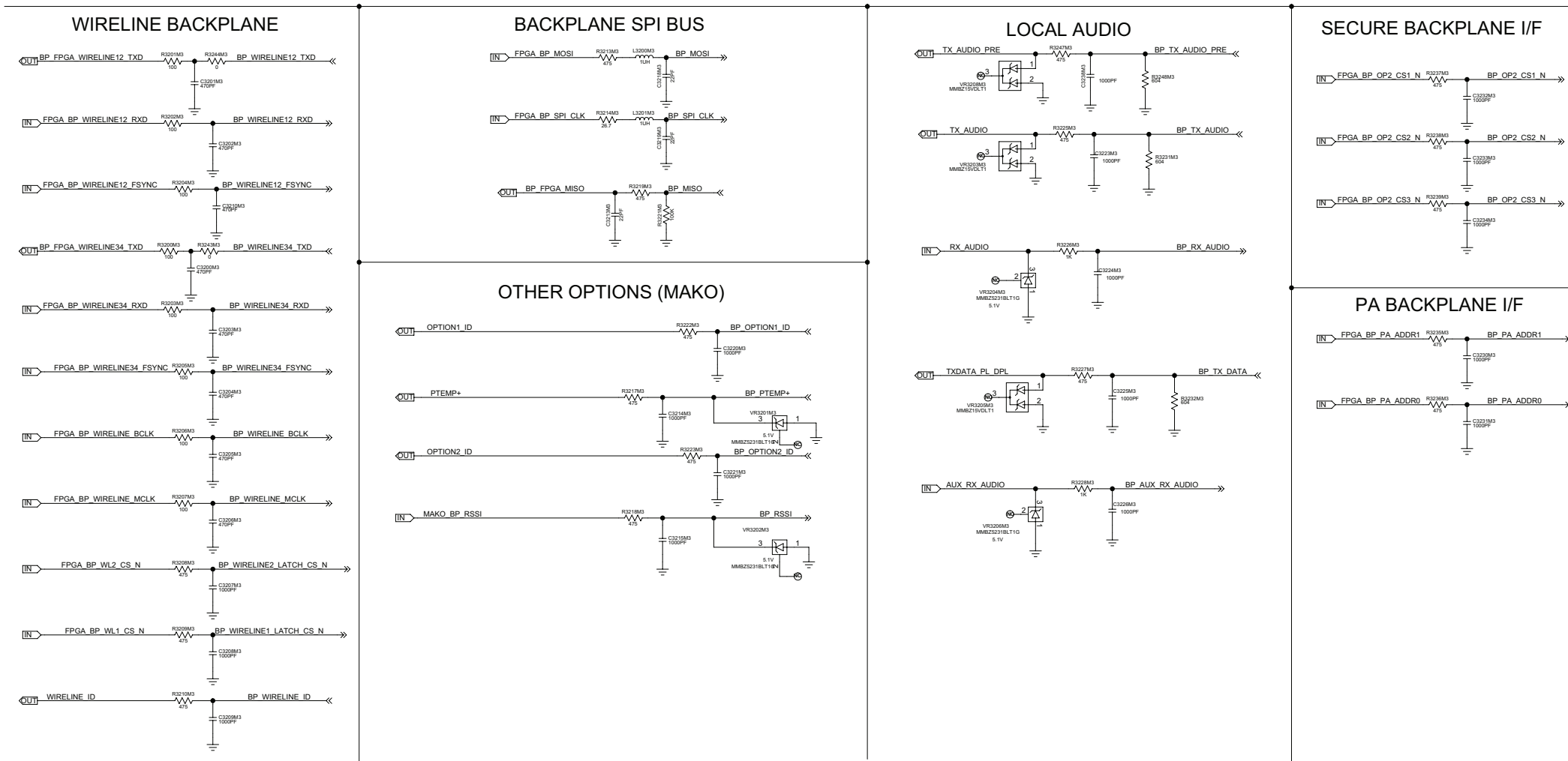
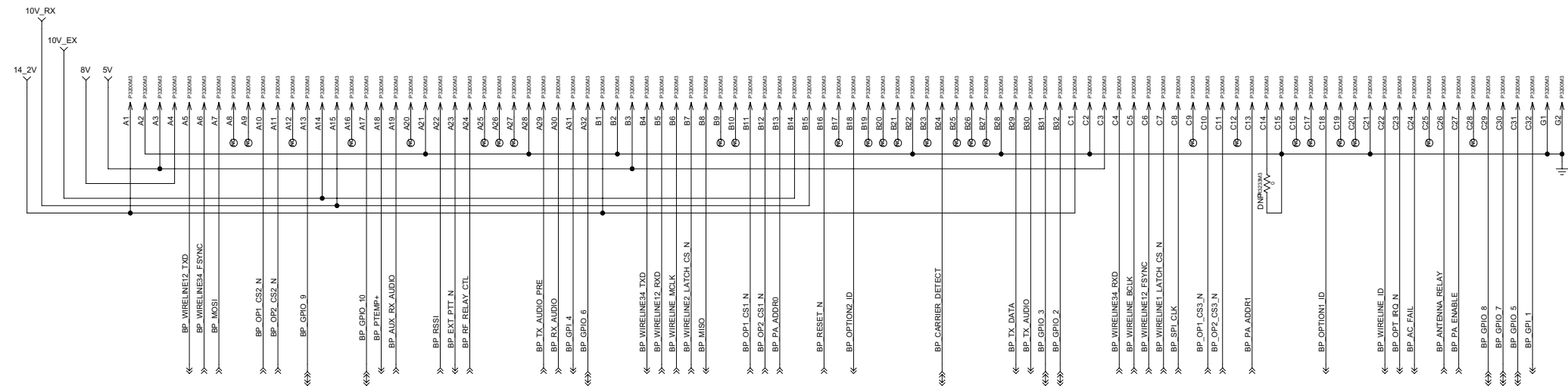
**ADDITIONAL BOM CHANGES ON  
FPGA AND STATION REF SHEET  
BOM CHANGE IS MANAGED VIA VIARANT  
PLACE:**  
R3891, R3894, R3895, R3896,  
C3889, C3890, C3897, C3898  
D3892, E3888, U3893  
**FOR UHF/VHF (CLN8502)  
DNP:**  
R3891, R3894, R3895, R3896,  
C3889, C3890, C3897, C3898  
D3892, E3888, U3893



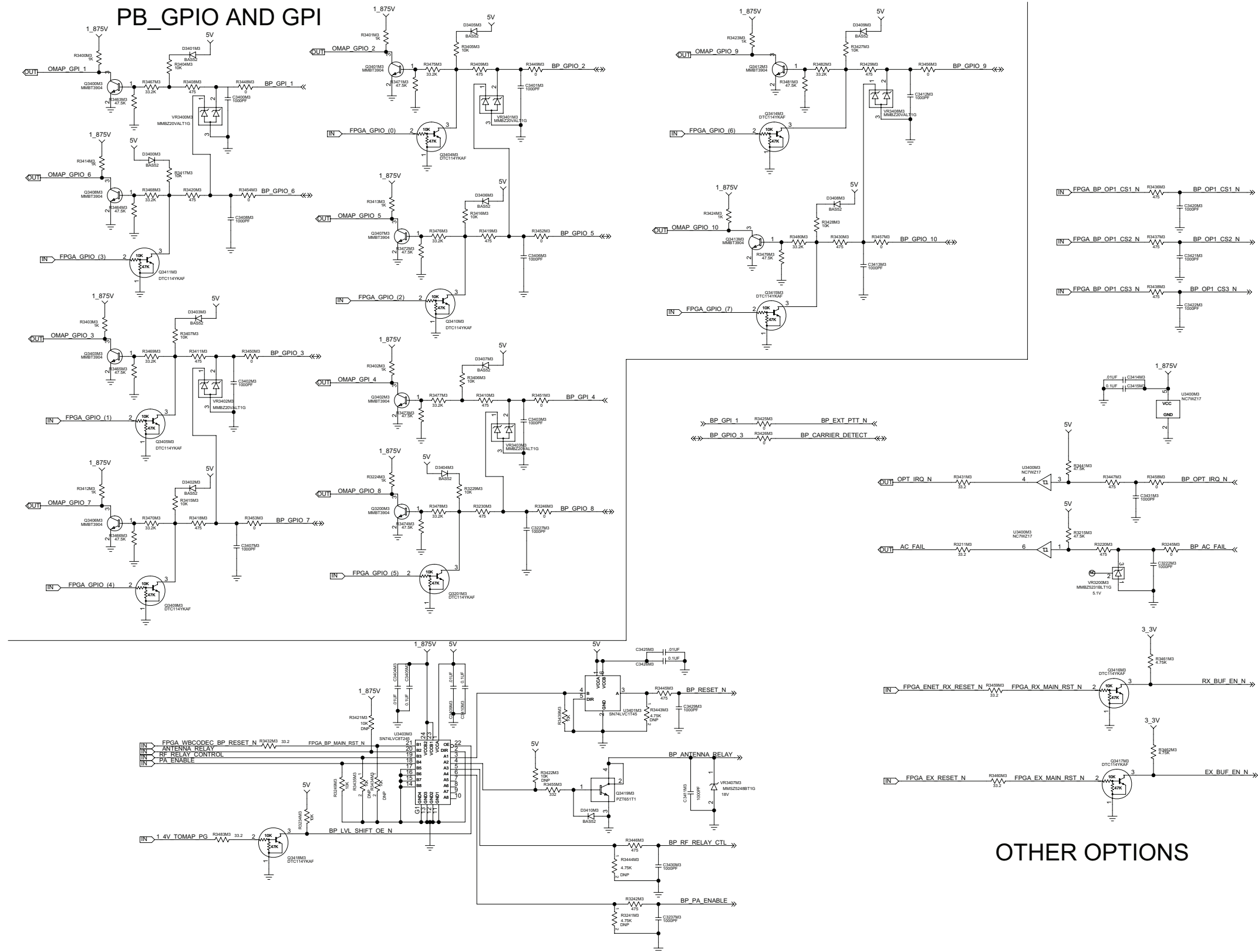
**Controller – Power Schematic Diagram (Kit No. CLN8502)**



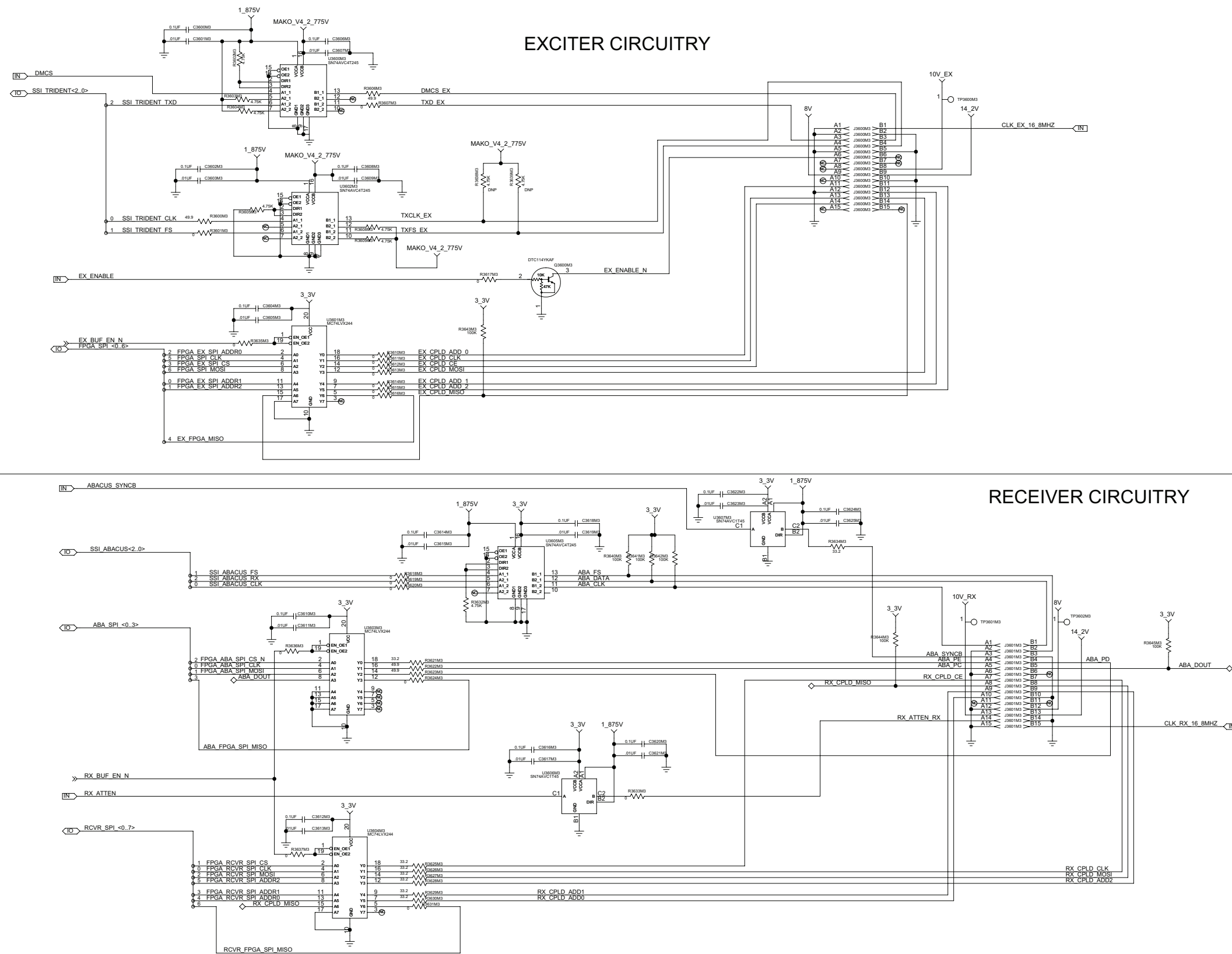
Controller – JTAG Schematic Diagram (Kit No. CLN8502)



Controller – Backplane Circuitry Schematic Diagram (Kit No. CLN8502)

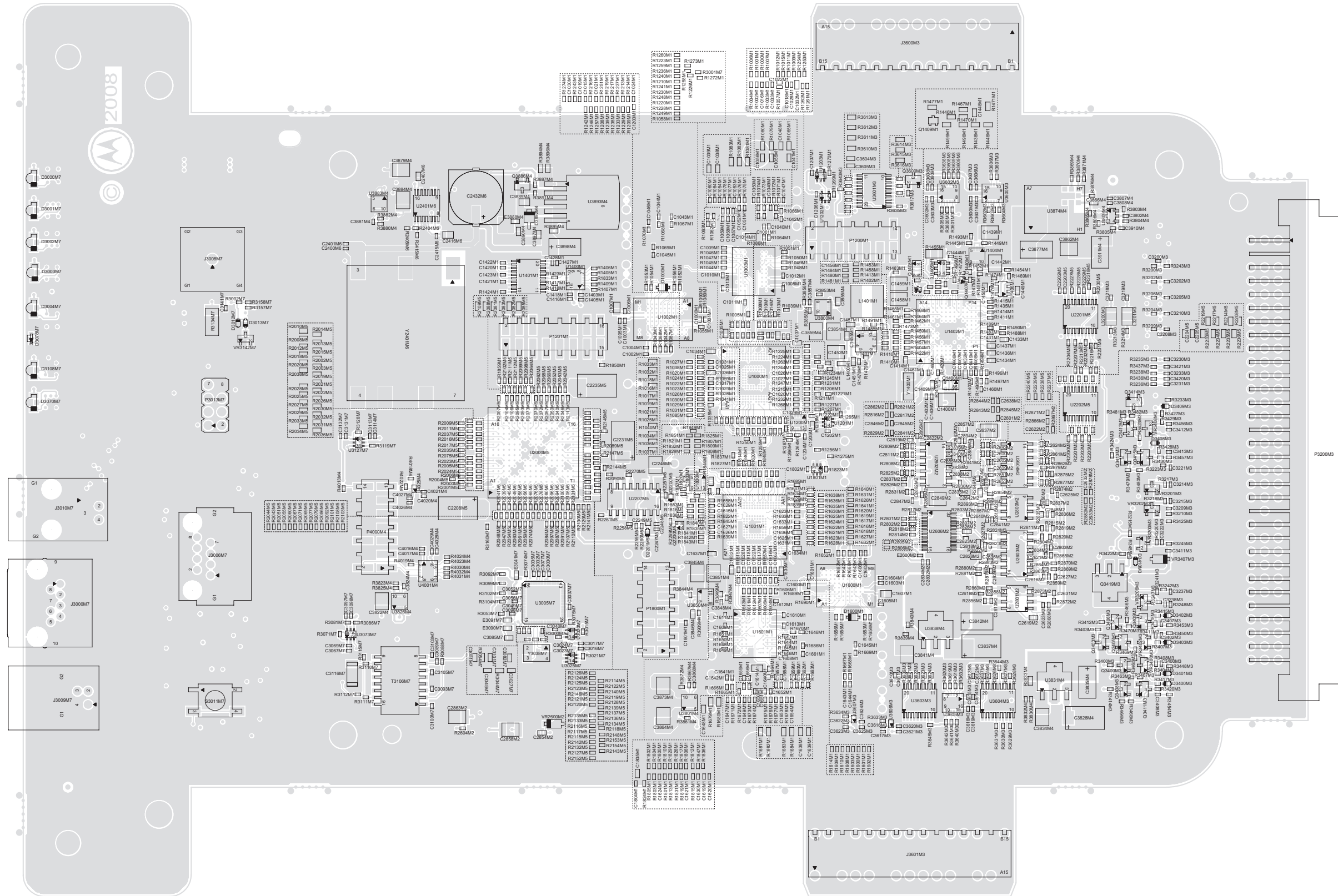


Controller – Trunking/Options Schematic Diagram (Kit No. CLN8502)



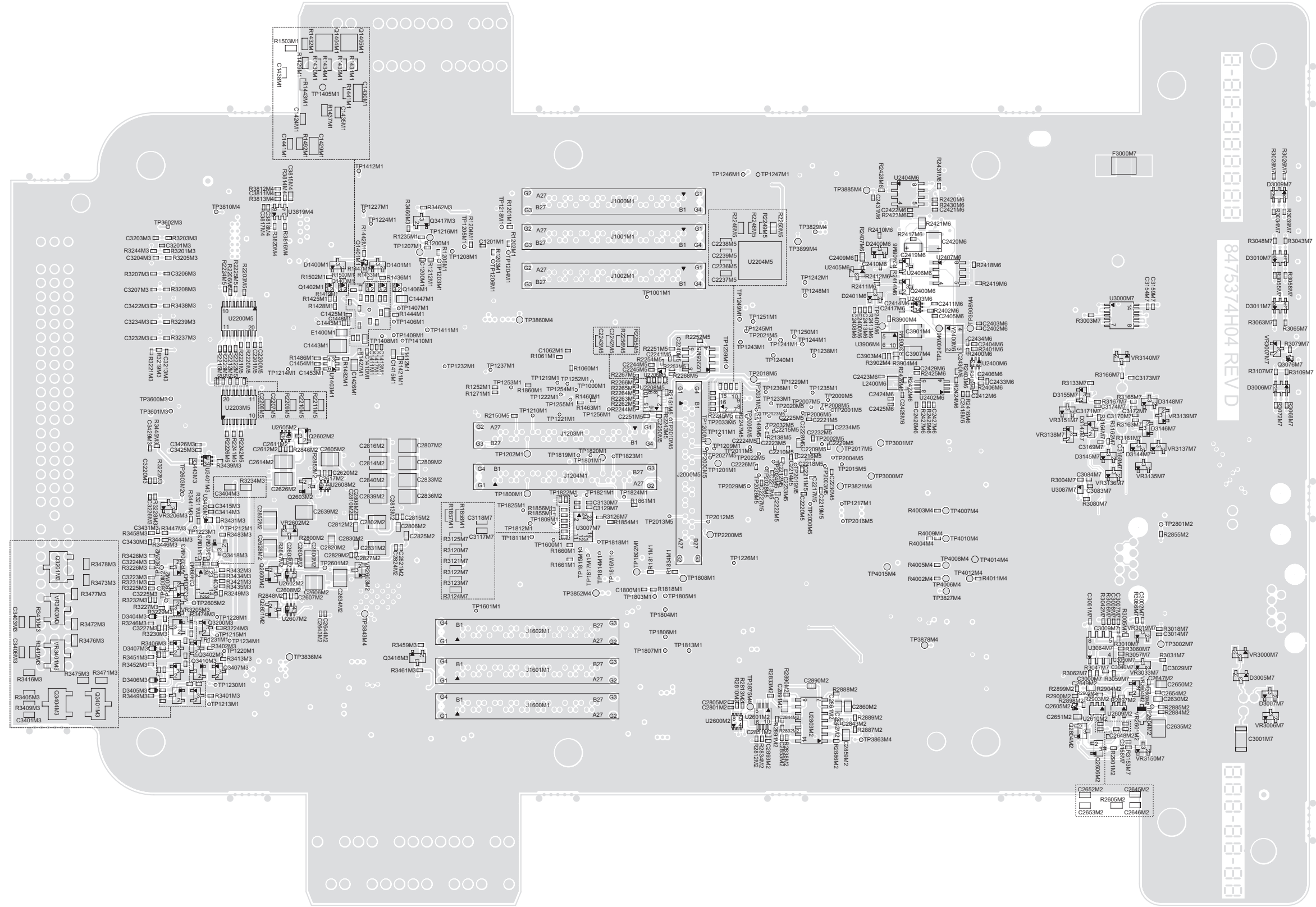
**Controller – Exciter and Receiver Schematic Diagram (Kit No. CLN8502)**

### 4.5 Controller PCB (UHF)



Controller PCB – Top View (PCB No. 8475374H04)





Controller PCB – Bottom View (PCB No. 8475374H04)

## 4.6 Controller Parts List (UHF)

Circuit Ref	Motorola Part No	Description
C1000M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1001M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1002M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1003M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1004M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1005M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1006M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1007M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C1008M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1009M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1010M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1011M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1012M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1013M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1014M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C1015M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1016M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1017M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1018M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1019M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1020M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1021M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1022M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1023M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1024M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1025M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1026M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1027M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1028M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1029M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1030M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1031M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1032M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1033M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1034M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1035M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1036M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1037M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1038M1	2113944A01	CAP CER CHP 1.1PF 50V +/- 0.25PF
C1039M1	2113944A01	CAP CER CHP 1.1PF 50V +/- 0.25PF
C1043M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF

Circuit Ref	Motorola Part No	Description
C1044M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1045M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1046M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1047M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1048M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1049M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1050M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1051M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1052M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1053M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1054M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1055M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1056M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1057M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1058M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1059M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1060M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1061M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1062M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1201M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1202M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1203M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1204M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1205M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1206M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1207M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1400M1	2113956E91	CAP,FXD,10UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX,P
C1402M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1403M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1405M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1406M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1407M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1408M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1409M1	2113956B33	CAP,FXD,2.2UF,+10%,-10%,16V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX
C1410M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1411M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1412M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1413M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1414M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1415M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1416M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1417M1	2113945A09	CAP CER CHP 1000PF 50V 10%
C1418M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1419M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1420M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1421M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1422M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1423M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1424M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1425M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1426M1	2113944F81	CAP,FXD,750PF,+5%,-5%,50V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX,P
C1427M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1428M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1429M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1430M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1431M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1432M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1433M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA

Circuit Ref	Motorola Part No	Description
C1434M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1435M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1436M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1437M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1438M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1439M1	2113946J03	CAP CER CHP 10.0UF 16V 10%
C1440M1	2113945A05	CAP CER CHP 470PF 50V 10%
C1441M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1442M1	2113946J03	CAP CER CHP 10.0UF 16V 10%
C1443M1	2113956E91	CAP,FXD,10UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX,P
C1444M1	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1445M1	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C1446M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1447M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX

Circuit Ref	Motorola Part No	Description
C1449M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1450M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1451M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1453M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1454M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1460M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1461M1	2113944A19	CAP CER CHP 5.6PF 50V +/- 0.5PF
C1462M1	2113944A19	CAP CER CHP 5.6PF 50V +/- 0.5PF
C1600M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1601M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1602M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1603M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1604M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1605M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1606M1	2113944A40	CAP CER CHP 100.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C1607M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C1608M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1609M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1610M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1611M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1612M1	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1613M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1614M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C1615M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1616M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1617M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1618M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1619M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1620M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1621M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1622M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1623M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1624M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1625M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1626M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1627M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1628M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1629M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1630M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1631M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1632M1	2113946S35	CAP CER CHP 1.0UF 16V 10%

Circuit Ref	Motorola Part No	Description
C1633M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1634M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1635M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1636M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1637M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1638M1	2113944A01	CAP CER CHP 1.1PF 50V +/- 0.25PF
C1639M1	2113944A01	CAP CER CHP 1.1PF 50V +/- 0.25PF
C1643M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1644M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1645M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1646M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1647M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1648M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1649M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1650M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1651M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1652M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1653M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1654M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF





Circuit Ref	Motorola Part No	Description
C2847M2	2113946B02	CAP CER CHP 0.047UF 10V 10%
C2848M2	2113944A40	CAP CER CHP 100.0PF 50V 5%
C2849M2	2113946J03	CAP CER CHP 10.0UF 16V 10%
C2850M2	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2851M2	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2852M2	2113946J04	CAP CER CHP 22.0UF 16V 10%
C2853M2	2113945A05	CAP CER CHP 470PF 50V 10%
C2854M2	2113946S35	CAP CER CHP 1.0UF 16V 10%
C2855M2	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2856M2	2113946S35	CAP CER CHP 1.0UF 16V 10%
C2857M2	2113946S35	CAP CER CHP 1.0UF 16V 10%
C2858M2	2113945J21	CAP,FXD,.15UF,+5%,-5%,50V-DC,1210,X7R,-55DEG CMIN,125DEG CMAX,P
C2859M2	2113945G57	CAP,FXD,.033UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2860M2	2113945G93	CAP,FXD,.15UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2861M2	2113944F15	CAP,CHIP,.022UF,+5%,-5%,50V-DC,0805,COG,-55DEG CMIN,125DEG CMAX
C2862M2	2113945A05	CAP CER CHP 470PF 50V 10%
C2890M2	21009275001	68000 PF CAPACITOR

Circuit Ref	Motorola Part No	Description
C2891M2	2113945G49	CAP,FXD,.015UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2892M2	2113945A05	CAP CER CHP 470PF 50V 10%
C2893M2	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2894M2	2113945A05	CAP CER CHP 470PF 50V 10%
C3000M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3001M7	2188473T01	CAP,CER CHIP,1000PF,10PF+/-,2000V-DC,-55DEG CMIN,125DEG CMAX
C3002M7	2113945A09	CAP CER CHP 1000PF 50V 10%
C3007M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3008M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3009M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3014M7	2113945A09	CAP CER CHP 1000PF 50V 10%
C3016M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3017M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3023M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3024M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3027M7	2115153H44	CAP, CERAMIC, COG
C3029M7	2113945A09	CAP CER CHP 1000PF 50V 10%
C3030M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C3032M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3035M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3037M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3040M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3045M7	2115153H44	CAP, CERAMIC, COG
C3046M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3049M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3050M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3051M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3052M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3056M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3061M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3067M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3069M7	2113945B02	CAP CER CHP 10,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
C3077M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3082M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3083M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3084M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3085M7	2113946S35	CAP CER CHP 1.0UF 16V 10%
C3089M7	2113945B04	CAP,FXD,.022UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C3093M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C3096M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3097M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3098M7	2113945B04	CAP,FXD,.022UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C3100M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C3101M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C3103M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C3105M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C3113M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3114M7	2113946B04	CAP CER CHP 0.10UF 10V 10%

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C3116M7	2188473T01	CAP,CER CHIP,1000PF,10PF+/- ,2000V-DC,-55DEG CMIN,125DEG CMAX	C3208M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3234M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3421M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3117M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3209M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3237M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3422M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3118M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3210M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3238M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3425M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3129M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3213M3	2113944A29	CAP CER CHP 22.0PF 50V 5%	C3400M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3426M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3130M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3214M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3401M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3429M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3131M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3215M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3402M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3430M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3132M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3218M3	2113944A29	CAP CER CHP 22.0PF 50V 5%	C3403M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3431M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3141M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3219M3	2113944A29	CAP CER CHP 22.0PF 50V 5%	C3404M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3600M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3154M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3220M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3405M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3601M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3156M7	2113945A09	CAP CER CHP 1000PF 50V 10%	C3221M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3406M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3602M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3159M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3222M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3407M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3603M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3200M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3223M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3408M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3604M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3201M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3224M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3409M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3605M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3202M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3225M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3410M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3606M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3203M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3226M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3411M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3607M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3204M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3227M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3412M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3608M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3205M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3230M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3413M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3609M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3206M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3231M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3414M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3610M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3207M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3232M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3415M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3611M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
			C3233M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3420M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3612M3	2113946B04	CAP CER CHP 0.10UF 10V 10%





Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
D3007M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT- 23,215MA,70V,.225W,S HTK,2,PB-	D3148M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT- 23,215MA,70V,.225W,S HTK,2,PB-	E2400M6	2485449Y01	SURFACE MOUNT FERRITE BEAD W18	Q1401M1	4809579E77	FET, NCH MOS FET, 1.2MM X 1.2MM PACK- AGE, SMD, W18 COM- PLIANT
D3009M7	4813979B23	DIODE ARRAY,SUPR,SM,TSOP 6,200MA,70V,8,PB- FREE	D3155M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT- 23,215MA,70V,.225W,S HTK,2,PB-	E3041M7	7686949J15	FLTR,FERR,,,,2A,,,,SM, 0603	Q1402M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
D3010M7	4813979B23	DIODE ARRAY,SUPR,SM,TSOP 6,200MA,70V,8,PB- FREE	D3400M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	E3090M7	7686949J15	FLTR,FERR,,,,2A,,,,SM, 0603	Q1403M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
D3011M7	4813979B23	DIODE ARRAY,SUPR,SM,TSOP 6,200MA,70V,8,PB- FREE	D3401M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	E3091M7	7686949J15	FLTR,FERR,,,,2A,,,,SM, 0603	Q1404M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
D3012M7	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	D3402M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	F3000M7	6585677Y04	FUSE,RESET,PTC,1.1A, 1812	Q1405M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
D3013M7	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	D3403M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3000M7	0915930H01	RJ-45, CAT5 SHIELDED, ONE PORT	Q2200M5	4805585Q23	XSTR,FET GEN PURP,PB-FREE
D3070M7	4885062E01	LED RE/GRN SIDE- LOOKER	D3404M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3008M7	0982492W01	BNC CONN PCB VER- TICAL RECEP	Q2400M6	4813973A13	XSTR,GEN PURPOSE SMALL SIG,PNP,MMBT3906L,T O-236,4, PB-FREE
D3078M7	4885102C29	INDCTR,LED,BLUE,LE D SIDE FIRING	D3405M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3009M7	0989742V01	CONN USB,2 ROW,RCPT,4CONT,GLD ,PCB - THRU-HOLE,PB- FREE	Q2600M2	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
D3108M7	4885062E01	LED RE/GRN SIDE- LOOKER	D3406M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3010M7	09009263001	Modular Jack,R/ A,Shld,4x4	Q2601M2	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
D3144M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT- 23,215MA,70V,.225W,S HTK,2,PB-	D3407M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3600M3	09009147002	RECEPT 30 PIN RA	Q2603M2	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
D3145M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT- 23,215MA,70V,.225W,S HTK,2,PB-	D3408M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3601M3	09009147002	RECEPT 30 PIN RA	Q3076M7	4809579E77	FET, NCH MOS FET, 1.2MM X 1.2MM PACK- AGE, SMD, W18 COM- PLIANT
D3146M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT- 23,215MA,70V,.225W,S HTK,2,PB-	D3409M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	L2400M6	2485364Y24	CHIP IND 1500 NH 5% EPP	Q3200M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
D3147M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT- 23,215MA,70V,.225W,S HTK,2,PB-	D3410M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	L3200M3	2414032D30	IDCTR,WW,1UH,5%,320 MA,2.8Ω,CER,28 Q,340 MHZ SRF,SM,PB-FREE	Q3201M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
			E1400M1	2485410Y02	MIN CHIP FERRITE BEAD 30 Ω W18	L3201M3	2414032D30	IDCTR,WW,1UH,5%,320 MA,2.8Ω,CER,28 Q,340 MHZ SRF,SM,PB-FREE	Q3400M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
						P3013M7	28009146005	HEADER 8 POSN,DOU- BLE ROW,VERTICAL			
						P3200M3	2886267Y04	PLUG, EUROCARD 96 PIN R A			
						PWB	8475374H03	MID_TIER CONV CON- TROL PCB			
						Q1400M1	4813970A62	XSTR,FET GP PWR,MOSFET,P- CH,ENHN,CF,- 20V,1.3W,PB-FREE			

Circuit Ref	Motorola Part No	Description
Q3401M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3402M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3403M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3404M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3405M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3406M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3407M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3408M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3409M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3410M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3411M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN

Circuit Ref	Motorola Part No	Description
Q3412M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3413M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3414M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3415M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3416M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3417M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3418M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
Q3419M3	4813973B04	XSTR,BIP GP SS,NPN,T651,SM,SOT- 223,SMT,60V,.8W,2A,75 MHZ,PB-FRE
Q3600M3	4815261H01	TRANSISTOR,BIP GEN- ERAL PURPOSE SMALL NPN
R1000M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1001M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1002M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1003M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1004M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1005M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R1006M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1007M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1008M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1009M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1010M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1011M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1012M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1013M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1014M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1015M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1016M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1017M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1018M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1019M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1020M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1021M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1022M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1023M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1024M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1025M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R1026M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1027M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1028M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1029M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1030M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1031M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1032M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1033M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1034M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1035M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1036M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1038M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1040M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1051M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1057M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1058M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1059M1	0613952Q18	CER CHIP RES 5.1 Ω 5 0402
R1060M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1061M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1062M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R1063M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1086M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1217M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1238M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1067M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1087M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1218M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1239M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1068M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1088M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1219M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1240M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1069M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1090M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1220M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402	R1241M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1070M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1200M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1221M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402	R1242M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1071M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1201M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1222M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1244M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1072M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1202M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1223M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R1245M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1073M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1203M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1224M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1246M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1074M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1204M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1225M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1247M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1075M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1205M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1226M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R1248M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1076M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1206M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1227M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1249M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1077M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1207M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1228M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R1250M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1078M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1208M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1229M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1251M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1079M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1209M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1231M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1253M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1080M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1210M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1232M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1254M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1081M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1211M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1233M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1255M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1082M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1213M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1234M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R1256M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1083M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1214M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1235M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1257M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1084M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R1215M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1236M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1258M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1085M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R1216M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1237M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R1259M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402





Circuit Ref	Motorola Part No	Description
R1681M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1682M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1683M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1684M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1685M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1686M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1687M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1688M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1690M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1800M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1801M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1802M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1803M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1804M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1805M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1806M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1807M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1808M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1809M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1810M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R1811M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1812M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1813M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1814M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1815M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1816M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1817M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1819M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1820M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R1821M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R1822M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1823M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1824M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1825M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1826M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1827M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1828M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1829M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1830M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1831M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R1832M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1833M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1834M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1835M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1837M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1838M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1839M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1840M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1841M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1842M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1843M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1844M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1846M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1847M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1848M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1849M1	0613952M18	CER CHIP RES 1500 Ω 1% 0402
R1850M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1851M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1852M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1853M1	0613952M18	CER CHIP RES 1500 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R1854M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1855M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1857M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1859M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1860M1	0613952P97	CER CHIP RES 1.0M Ω 1 0402
R1861M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2001M5	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R2002M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2003M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2005M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2006M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2007M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2008M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2009M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2010M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2011M5	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2012M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2013M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2014M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2015M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402





Circuit Ref	Motorola Part No	Description
R2097M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2098M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2099M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2100M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2101M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2102M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2103M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2104M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2105M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2106M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2107M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2108M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2109M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2110M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2111M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2112M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2113M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2114M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2115M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2116M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R2117M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2118M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2119M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2120M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2121M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2122M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2123M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2124M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2125M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2126M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2127M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2128M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2129M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2131M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2134M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2135M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2136M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2137M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2138M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2139M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R2140M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2142M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2143M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2145M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2147M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2148M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2149M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2150M5	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2151M5	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R2152M5	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2200M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2201M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2202M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2203M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2204M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2205M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2206M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2207M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2208M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2209M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R2210M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2211M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2212M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2213M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2214M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2215M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2216M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2217M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2218M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2219M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2220M5	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2221M5	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2222M5	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2223M5	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2224M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2225M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2226M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2227M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2228M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2229M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R2230M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2231M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2232M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2233M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2234M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2235M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2236M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2237M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2238M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2239M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2240M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2241M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2243M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2244M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2256M5	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2257M5	0613952P66	CER CHIP RES 475K Ω 1 0402
R2259M5	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R2260M5	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R2261M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2262M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R2263M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2264M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2265M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2266M5	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2269M5	0613952L51	CER CHIP RES 332 Ω 1% 0402
R2270M5	0613952P01	CER CHIP RES 100K Ω 1 0402
R2400M6	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2401M6	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R2402M6	0613952M24	CER CHIP RES 1740 Ω 1 0402
R2403M6	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2404M6	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2405M6	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2407M6	0613952E58	CER CHIP RES 39.2K Ω 1 0603
R2408M6	0613952D58	CER CHIP RES 3920 Ω 1% 0603
R2409M6	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2410M6	0613952M09	CER CHIP RES 1210 Ω 1% 0402
R2411M6	0613952L01	CER CHIP RES 100 Ω 1% 0402
R2412M6	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R2413M6	0613952L18	CER CHIP RES 150 Ω 1% 0402
R2414M6	0613952L73	CER CHIP RES 562 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R2415M6	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2417M6	0613952N30	CER CHIP RES 20.0K Ω 1 0402
R2418M6	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2419M6	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2420M6	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2421M6	0613958E01	CER CHIP RES 10.0K Ω 1% 0805
R2423M6	0613952P97	CER CHIP RES 1.0M Ω 1 0402
R2424M6	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2425M6	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2426M6	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2427M6	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R2428M6	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2430M6	0613952P97	CER CHIP RES 1.0M Ω 1 0402
R2431M6	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2800M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2801M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2802M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2803M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2804M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2808M2	0613952P03	CER CHIP RES 105K Ω 1 0402

Circuit Ref	Motorola Part No	Description
R2809M2	0613952N58	CER CHIP RES 39.2K Ω 1 0402
R2810M2	0613952P30	CER CHIP RES 200K Ω 1 0402
R2811M2	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R2812M2	0613952M34	CER CHIP RES 2210 Ω 1% 0402
R2813M2	0613952M34	CER CHIP RES 2210 Ω 1% 0402
R2815M2	0613952M56	CER CHIP RES 3740 Ω 1 0402
R2816M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2819M2	0613952N52	CER CHIP RES 34.0K Ω 1 0402
R2820M2	0613952M17	CER CHIP RES 1470 Ω 1 0402
R2821M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2822M2	0613952M81	CER CHIP RES 6810 Ω 1% 0402
R2823M2	0613952M81	CER CHIP RES 6810 Ω 1% 0402
R2824M2	0613952N42	CER CHIP RES 26.7K Ω 1 0402
R2825M2	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R2826M2	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R2827M2	0613952M51	CER CHIP RES 3320 Ω 1% 0402
R2828M2	0613952M51	CER CHIP RES 3320 Ω 1% 0402
R2829M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2830M2	0613952M81	CER CHIP RES 6810 Ω 1% 0402
R2831M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402

Circuit Ref	Motorola Part No	Description
R2832M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2833M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2834M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2835M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R2836M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R2837M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R2838M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2839M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2840M2	0613952N68	CER CHIP RES 49.9K Ω 1 0402
R2841M2	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R2842M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2843M2	0613952N34	CER CHIP RES 22.1K Ω 1 0402
R2844M2	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R2847M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2848M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2849M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2850M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2851M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2852M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2853M2	0613952N07	CER CHIP RES 11.5K Ω 1 0402

Circuit Ref	Motorola Part No	Description
R2854M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2855M2	0613952K34	CER CHIP RES 22.1 Ω 1% 0402
R2856M2	0613952P03	CER CHIP RES 105K Ω 1 0402
R2857M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2858M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R2859M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2860M2	0613952N21	CER CHIP RES 16.2K Ω 1 0402
R2861M2	0613952M69	CER CHIP RES 5110 Ω 1 0402
R2862M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2863M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2864M2	0613952N52	CER CHIP RES 34.0K Ω 1 0402
R2865M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2866M2	0613952N77	CER CHIP RES 61.9K Ω 1 0402
R2868M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2869M2	0613952M81	CER CHIP RES 6810 Ω 1% 0402
R2870M2	0613952M24	CER CHIP RES 1740 Ω 1 0402
R2871M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2872M2	0613952N52	CER CHIP RES 34.0K Ω 1 0402
R2873M2	0613952N52	CER CHIP RES 34.0K Ω 1 0402
R2874M2	0613952M69	CER CHIP RES 5110 Ω 1 0402

Circuit Ref	Motorola Part No	Description
R2875M2	0613952M69	CER CHIP RES 5110 Ω 1 0402
R2876M2	0613952P03	CER CHIP RES 105K Ω 1 0402
R2877M2	0613952N77	CER CHIP RES 61.9K Ω 1 0402
R2878M2	0613952N77	CER CHIP RES 61.9K Ω 1 0402
R2879M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2882M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2883M2	0613952N21	CER CHIP RES 16.2K Ω 1 0402
R2884M2	0613952M34	CER CHIP RES 2210 Ω 1% 0402
R2885M2	0613952L76	CER CHIP RES 604 Ω 1 0402
R2886M2	0613952M23	CER CHIP RES 1690 Ω 1 0402
R2887M2	0613952M71	CER CHIP RES 5360 Ω 1 0402
R2888M2	0613952M12	CER CHIP RES 1300 Ω 1 0402
R2889M2	0613952N57	CER CHIP RES 38.3K Ω 1 0402
R2890M2	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R2891M2	0613952P45	CER CHIP RES 287K Ω 1 0402
R2892M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2893M2	0613952N07	CER CHIP RES 11.5K Ω 1 0402
R2894M2	0613952N10	CER CHIP RES 12.4K Ω 1 0402
R2895M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2896M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R3000M7	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R3001M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3002M7	0613952L01	CER CHIP RES 100 Ω 1% 0402
R3003M7	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3004M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3005M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3006M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3010M7	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R3015M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3018M7	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3021M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3026M7	0613952L51	CER CHIP RES 332 Ω 1% 0402
R3028M7	0613952L18	CER CHIP RES 150 Ω 1% 0402
R3031M7	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3034M7	0613952L51	CER CHIP RES 332 Ω 1% 0402
R3039M7	0613952L18	CER CHIP RES 150 Ω 1% 0402
R3042M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3043M7	0613952L51	CER CHIP RES 332 Ω 1% 0402
R3044M7	0613952P97	CER CHIP RES 1.0M Ω 1 0402
R3047M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R3048M7	0613952L18	CER CHIP RES 150 Ω 1% 0402	R3086M7	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R3133M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3207M3	0613952L01	CER CHIP RES 100 Ω 1% 0402
R3053M7	0613952N10	CER CHIP RES 12.4K Ω 1 0402	R3088M7	0613952K01	CER CHIP RES 10.0 Ω 1% 0402	R3134M7	0613959Q42	CER CHIP RES Ω 5% 2010	R3208M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3054M7	0613952Z55	RES,MF,12KΩ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3092M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3153M7	0613952K34	CER CHIP RES 22.1 Ω 1% 0402	R3209M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3055M7	0613952L51	CER CHIP RES 332 Ω 1% 0402	R3099M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3157M7	0613952N07	CER CHIP RES 11.5K Ω 1 0402	R3210M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3057M7	0613952N72	CER CHIP RES 54.9K Ω 1 0402	R3102M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3158M7	0613952N07	CER CHIP RES 11.5K Ω 1 0402	R3211M3	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R3058M7	0613952L18	CER CHIP RES 150 Ω 1% 0402	R3104M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3160M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3213M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3059M7	0613952M66	CER CHIP RES 4750 Ω 1% 0402	R3109M7	0613952L18	CER CHIP RES 150 Ω 1% 0402	R3161M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3214M3	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R3060M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3110M7	0613952K85	CER CHIP RES 75.0 Ω 1% 0402	R3162M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3215M3	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R3062M7	0613952P55	CER CHIP RES 365K Ω 1 0402	R3111M7	0613952K85	CER CHIP RES 75.0 Ω 1% 0402	R3163M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3217M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3063M7	0613952L51	CER CHIP RES 332 Ω 1% 0402	R3112M7	0613952K85	CER CHIP RES 75.0 Ω 1% 0402	R3164M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3218M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3065M7	0613952L18	CER CHIP RES 150 Ω 1% 0402	R3115M7	0613952K85	CER CHIP RES 75.0 Ω 1% 0402	R3165M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3219M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3066M7	0613952N30	CER CHIP RES 20.0K Ω 1 0402	R3119M7	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R3166M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3220M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3068M7	0613952L51	CER CHIP RES 332 Ω 1% 0402	R3120M7	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R3167M7	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3221M3	0613952P01	CER CHIP RES 100K Ω 1 0402
R3071M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3121M7	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R3200M3	0613952L01	CER CHIP RES 100 Ω 1% 0402	R3222M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3072M7	0613952L18	CER CHIP RES 150 Ω 1% 0402	R3122M7	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R3201M3	0613952L01	CER CHIP RES 100 Ω 1% 0402	R3223M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3074M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3123M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3202M3	0613952L01	CER CHIP RES 100 Ω 1% 0402	R3224M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3075M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3124M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3203M3	0613952L01	CER CHIP RES 100 Ω 1% 0402	R3225M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3079M7	0613952L51	CER CHIP RES 332 Ω 1% 0402	R3125M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3204M3	0613952L01	CER CHIP RES 100 Ω 1% 0402	R3226M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3080M7	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R3126M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3205M3	0613952L01	CER CHIP RES 100 Ω 1% 0402	R3227M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3081M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3128M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R3206M3	0613952L01	CER CHIP RES 100 Ω 1% 0402	R3228M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R3229M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3230M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3231M3	0613952L76	CER CHIP RES 604 Ω 1 0402
R3232M3	0613952L76	CER CHIP RES 604 Ω 1 0402
R3234M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3235M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3236M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3237M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3238M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3239M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3242M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3243M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3244M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3245M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3246M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3247M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3248M3	0613952L76	CER CHIP RES 604 Ω 1 0402
R3249M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3400M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3401M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R3402M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3403M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3404M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3405M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3406M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3407M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3408M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3409M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3410M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3411M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3412M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3413M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3414M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3415M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3416M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3417M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3418M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3419M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3420M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3423M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R3424M3	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R3425M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3426M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3427M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3428M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3429M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3430M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3431M3	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R3432M3	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R3436M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3437M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3438M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3439M3	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3441M3	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R3445M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3446M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3447M3	0613952L66	CER CHIP RES 475 Ω 1% 0402
R3448M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3449M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3450M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R3451M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3452M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3453M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3454M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3455M3	0613952L51	CER CHIP RES 332 Ω 1% 0402
R3456M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3457M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3458M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R3459M3	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R3460M3	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R3461M3	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R3462M3	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R3463M3	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R3464M3	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R3465M3	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R3466M3	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R3467M3	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R3468M3	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R3469M3	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R3470M3	0613952N51	CER CHIP RES 33.2K Ω 1 0402

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R3471M3	0613952N66	CER CHIP RES 47.5K $\Omega$ 1 0402	R3607M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3627M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3812M4	0613952N62	CER CHIP RES 43.2K $\Omega$ 1 0402
R3472M3	0613952N66	CER CHIP RES 47.5K $\Omega$ 1 0402	R3608M3	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3628M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3813M4	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402
R3473M3	0613952N66	CER CHIP RES 47.5K $\Omega$ 1 0402	R3609M3	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3629M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3814M4	0613952N81	CER CHIP RES 68.1K $\Omega$ 1 0402
R3474M3	0613952N66	CER CHIP RES 47.5K $\Omega$ 1 0402	R3610M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3630M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3816M4	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R3475M3	0613952N51	CER CHIP RES 33.2K $\Omega$ 1 0402	R3611M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3631M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3820M4	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R3476M3	0613952N51	CER CHIP RES 33.2K $\Omega$ 1 0402	R3612M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3632M3	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3823M4	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402
R3477M3	0613952N51	CER CHIP RES 33.2K $\Omega$ 1 0402	R3613M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3633M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3825M4	0613952M37	CER CHIP RES 2370 $\Omega$ 1 0402
R3478M3	0613952N51	CER CHIP RES 33.2K $\Omega$ 1 0402	R3614M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3634M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3830M4	0613952M34	CER CHIP RES 2210 $\Omega$ 1% 0402
R3479M3	0613952N66	CER CHIP RES 47.5K $\Omega$ 1 0402	R3615M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3635M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3832M4	0613952M09	CER CHIP RES 1210 $\Omega$ 1% 0402
R3480M3	0613952N51	CER CHIP RES 33.2K $\Omega$ 1 0402	R3616M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3636M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3833M4	0613952C09	CER CHIP RES 121 $\Omega$ 1% 0603
R3481M3	0613952N66	CER CHIP RES 47.5K $\Omega$ 1 0402	R3617M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3637M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3839M4	0613952M01	CER CHIP RES 1000 $\Omega$ 1% 0402
R3482M3	0613952N51	CER CHIP RES 33.2K $\Omega$ 1 0402	R3618M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3640M3	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402	R3840M4	0613952L51	CER CHIP RES 332 $\Omega$ 1% 0402
R3483M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3619M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3641M3	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402	R3844M4	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R3600M3	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402	R3620M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3642M3	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402	R3847M4	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402
R3601M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3621M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3643M3	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402	R3849M4	0613952M53	CER CHIP RES 3480 $\Omega$ 1 0402
R3602M3	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3622M3	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402	R3644M3	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402	R3853M4	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R3603M3	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3623M3	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402	R3645M3	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402	R3856M4	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402
R3604M3	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3624M3	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$	R3803M4	0613952N62	CER CHIP RES 43.2K $\Omega$ 1 0402	R3858M4	0613952M53	CER CHIP RES 3480 $\Omega$ 1 0402
R3605M3	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3625M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3804M4	0613952M66	CER CHIP RES 4750 $\Omega$ 1% 0402	R3861M4	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R3606M3	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402	R3626M3	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402	R3806M4	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402	R3865M4	0613952N58	CER CHIP RES 39.2K $\Omega$ 1 0402

Circuit Ref	Motorola Part No	Description
R3867M4	0613952M05	CER CHIP RES 1100 Ω 1 0402
R3869M4	0613952N81	CER CHIP RES 68.1K Ω 1 0402
R3870M4	0613952P54	CER CHIP RES 357K Ω 1 0402
R3871M4	0613952M81	CER CHIP RES 6810 Ω 1% 0402
R3872M4	0613952M53	CER CHIP RES 3480 Ω 1 0402
R3876M4	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R3880M4	0613952M05	CER CHIP RES 1100 Ω 1 0402
R3882M4	0613952M53	CER CHIP RES 3480 Ω 1 0402
R3900M4	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R3902M4	0613952M18	CER CHIP RES 1500 Ω 1% 0402
R3904M4	0613952M64	CER CHIP RES 4530 Ω 1 0402
R3905M4	0613952N30	CER CHIP RES 20.0K Ω 1 0402
R3909M4	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4002M4	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4003M4	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4004M4	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4005M4	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4011M4	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4018M4	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4019M4	0613952M66	CER CHIP RES 4750 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4022M4	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4024M4	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4030M4	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4031M4	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4032M4	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
T3106M7	2489647C01	XFMR,1:1,SM,10BASE-T_XFMR, ENET TRANSFORMER, HALO, TG110-SO
U1000M1	5102495J13	IC,MICROP,P1710ZZGE ,BGA,,,12 MHZ,32BITS
U1001M1	5102495J13	IC,MICROP,P1710ZZGE ,BGA,,,12 MHZ,32BITS
U1002M1	0180706J37	IC, FLASH, PREPROGRAMMED
U1003M1	51012031001	32MB DIE SHRINK DDR SDRAM IC
U1200M1	5187970L07	IC ADV USB TRANSCEIVER 3.1X3.1
U1201M1	5171779H01	SPDT ANALOG SWITCH
U1202M1	5188540T01	IC,AND,NC7SZ08,1PER PKG,SC70,SC70,PB-FREE
U1203M1	5188540T01	IC,AND,NC7SZ08,1PER PKG,SC70,SC70,PB-FREE
U1402M1	5185143E77	IC, MAKO ASIC, CMOS PWR MGMT
U1403M1	5171674H01	OP AMP
U1404M1	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U1406M1	5184790Y04	IC,400MA ADJ VREG LDO,SOT23
U1600M1	0180706J37	IC, FLASH, PREPROGRAMMED

Circuit Ref	Motorola Part No	Description
U1601M1	51012031001	32MB DIE SHRINK DDR SDRAM IC
U1800M1	5187970L07	IC ADV USB TRANSCEIVER 3.1X3.1
U1801M1	5171779H01	SPDT ANALOG SWITCH
U2000M5	5114698D01	IC,FPGA,FTBGA256,SPARTAN 3AN FPGA
U2200M5	5114000C01	IC,BFR,8PER PKG,74VHCT244,3ST,SM,TSSOP20,PB-FREE
U2201M5	5114000C01	IC,BFR,8PER PKG,74VHCT244,3ST,SM,TSSOP20,PB-FREE
U2202M5	5114000C01	IC,BFR,8PER PKG,74VHCT244,3ST,SM,TSSOP20,PB-FREE
U2203M5	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL-ATGE,3ST,SM,TSSOP20,PB-FREE
U2207M5	5114000M42	IC,MONOSTABLE MULTIVIBRATOR,2PER PKG,74HC4538,DUAL PRECISION,SM
U2208M5	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U2400M6	5115001H02	NL27WZU04DFT2G INVERTER (EPP)
U2401M6	5185096Y01	12-BIT DAC W OUTPUT AMPLF W18
U2402M6	5184936Y01	CLOCK BUFFER
U2403M6	5171779H01	SPDT ANALOG SWITCH
U2404M6	5184937Y01	PRECISION COMPARTOR
U2405M6	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200 MA,300 MHZ

Circuit Ref	Motorola Part No	Description
U2406M6	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200 MA,300 MHZ
U2407M6	5185183Y01	HI PERF DUAL CMOS OPAMP W18
U2600M2	5164852H47	IC, I2C LEVEL TRANSLATOR
U2601M2	5115368H01	I2C AUDIO ATTENUATOR
U2602M2	5171779H01	SPDT ANALOG SWITCH
U2603M2	5114016A12	IC,OP AMP,4PER PKG,LVOLT,SM,SO-14,PB-FREE
U2604M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U2607M2	5171779H01	SPDT ANALOG SWITCH
U2608M2	5171779H01	SPDT ANALOG SWITCH
U2800M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U2802M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U2803M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U3000M7	5114019M05	IC,INVTR,SCHMITT,74LVX14,6PER PKG,SM,TSSOP14,PB-FREE
U3005M7	51009265001	USB 2.0 TO 10/100 USB CONTROLLER
U3007M7	5175422H01	8-BIT DUAL SUPPLY BUS TXCVR
U3020M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70

Circuit Ref	Motorola Part No	Description
U3025M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3064M7	5184937Y01	PRECISION COMPARATOR
U3073M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3087M7	5109522E84	IC DUAL SCHMITT TRIG MICRO PAK
U3127M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3400M3	5109522E84	IC DUAL SCHMITT TRIG MICRO PAK
U3401M3	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3403M3	5175422H01	8-BIT DUAL SUPPLY BUS TXCVR
U3600M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U3601M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL-ATGE,3ST,SM,TSSOP20,PB-FREE
U3602M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U3603M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL-ATGE,3ST,SM,TSSOP20,PB-FREE
U3604M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL-ATGE,3ST,SM,TSSOP20,PB-FREE
U3605M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER

Circuit Ref	Motorola Part No	Description
U3606M3	5115865H01	SINGLE-BIT BUS TRANSCEIVER
U3607M3	5115865H01	SINGLE-BIT BUS TRANSCEIVER
U3800M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3801M4	5171590Y73	IC,LNR V REGLTR,ADJUSTABLE,1.5A,SM,PB-FREE
U3809M4	5187904J03	IC,,,SOT-23,SOT-23,0PER PKG,,LOW QUIESCENT CURRENT, PROGRAMMABLE
U3819M4	5187904J03	IC,,,SOT-23,SOT-23,0PER PKG,,LOW QUIESCENT CURRENT, PROGRAMMABLE
U3826M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3831M4	5188550D01	REGULATOR, T.I., TLV1117IDCY
U3838M4	5188550D01	REGULATOR, T.I., TLV1117IDCY
U3850M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3874M4	5163316A09	IC SWITCHING REGULATOR
U3883M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3906M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U4001M4	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U4025M4	5115865H01	SINGLE-BIT BUS TRANSCEIVER
VR2600M2	4813977C28	DIODE,ZEN,MMSZ5248,SM,SOD-123,18V,10MA,.5W,ZEN,PB-FREE

Circuit Ref	Motorola Part No	Description
VR2601M2	4813977C28	DIODE,ZEN,MMSZ5248,SM,SOD-123,18V,10MA,.5W,ZEN,PB-FREE
VR3000M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3006M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3019M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3033M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3135M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3136M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3137M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3138M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3139M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3140M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE

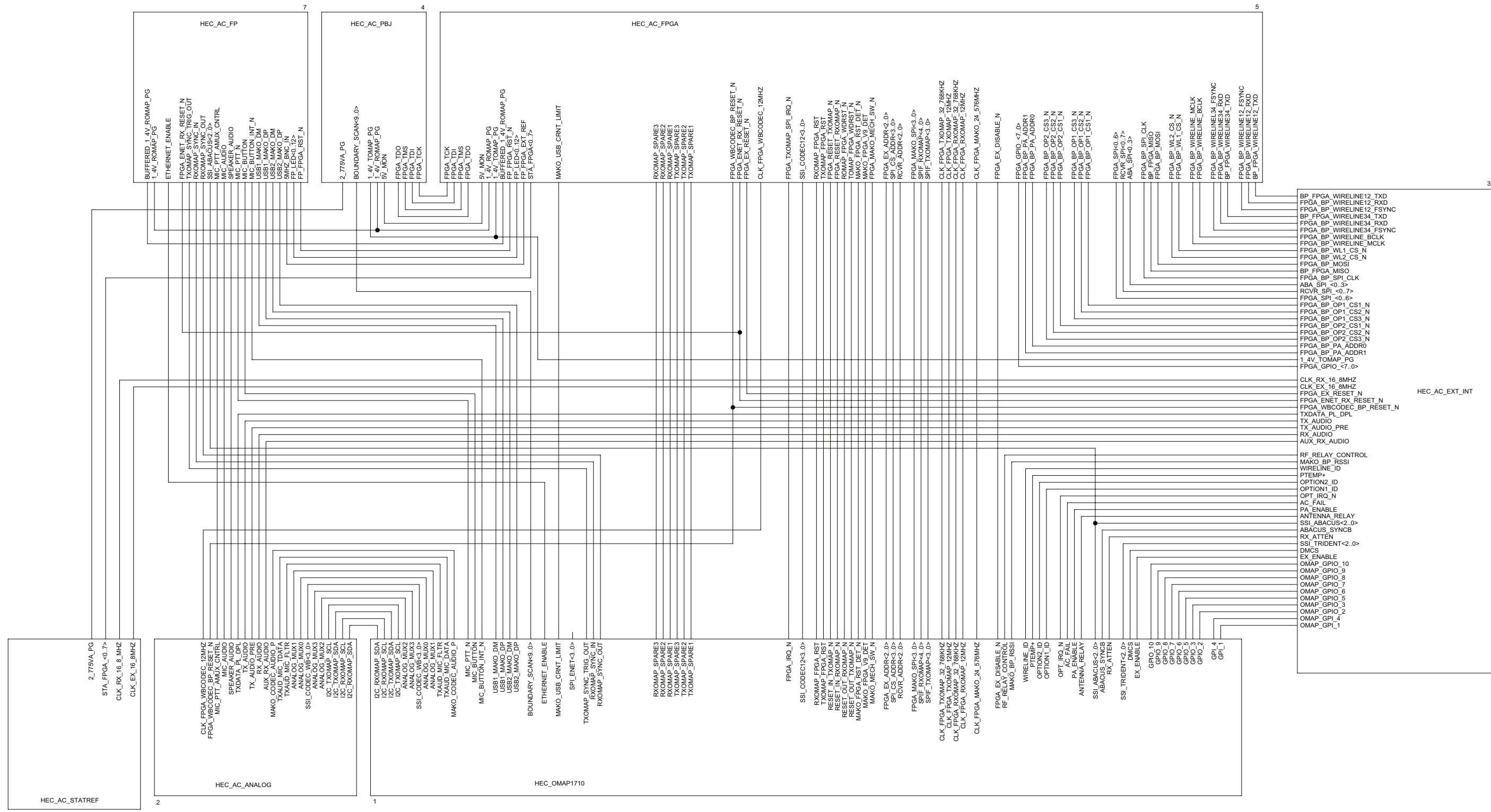
Circuit Ref	Motorola Part No	Description
VR3142M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3150M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3151M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3200M3	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3201M3	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3202M3	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3203M3	4813979C08	DIODE,SUPR,.225W,M MBZ15,SM,SOT-23,ZEN,PB-FREE
VR3204M3	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3205M3	4813979C08	DIODE,SUPR,.225W,M MBZ15,SM,SOT-23,ZEN,PB-FREE
VR3206M3	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3208M3	4813979C08	DIODE,SUPR,.225W,M MBZ15,SM,SOT-23,ZEN,PB-FREE
VR3400M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT-23,17V,.225W,ZEN,2,PB-FREE



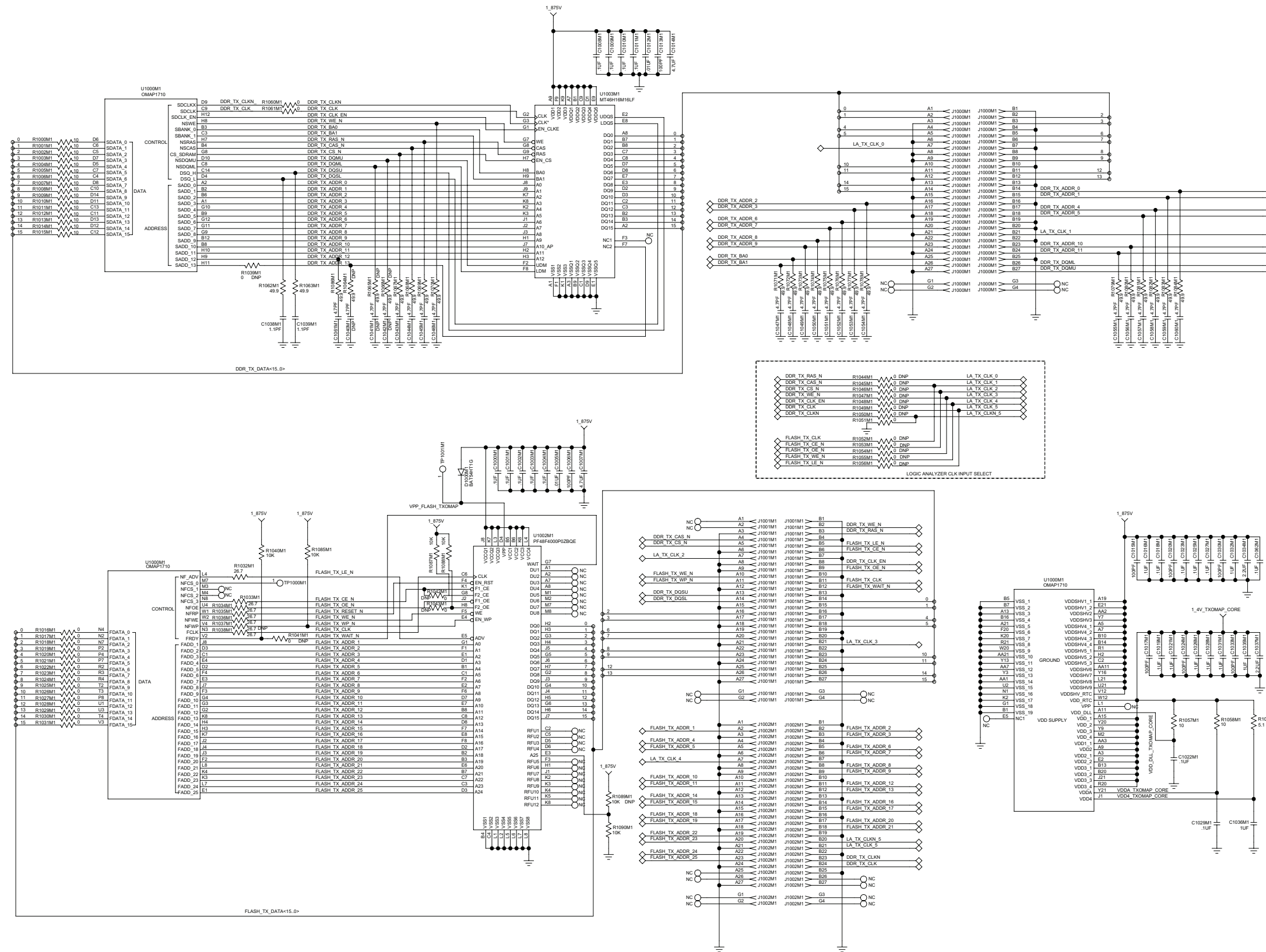
Circuit Ref	Motorola Part No	Description
VR3401M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
VR3402M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
VR3403M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
VR3407M3	4813977C28	DIODE,ZEN,MMSZ5248, SM,SOD- 123,18V,10MA,.5W,ZEN, PB-FREE
VR3408M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
Y1400M1	4809995L05	XTAL QUARTZ 32.768KHZ CC4V-T1
Y2400M6	5116032H01	CRYSTAL OSCILLA- TOR
Y3038M7	4884121Y01	XTAL,SMT 25 MHZ,50PPM



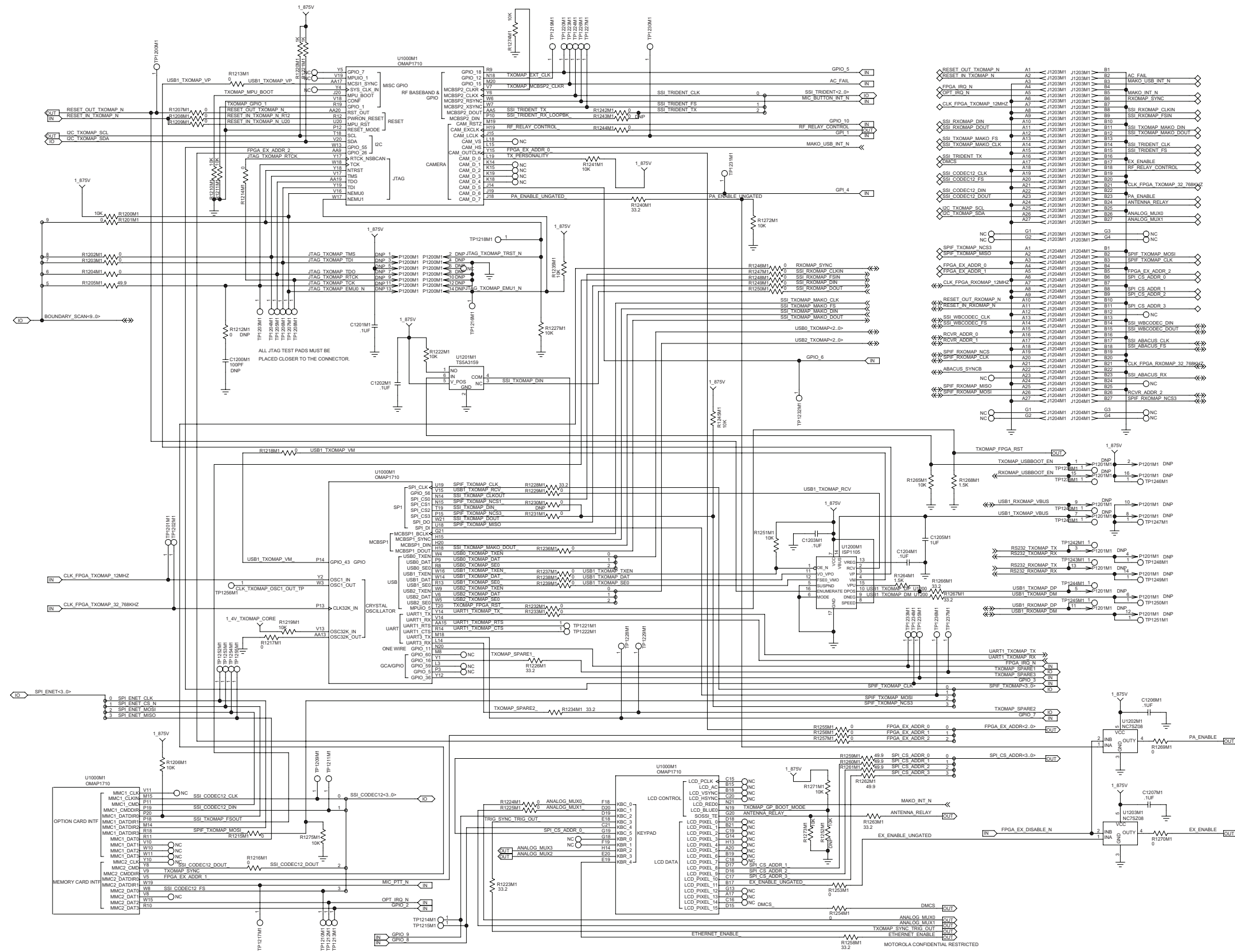
### 4.7 Controller Schematics (800/900 MHz)



Controller – Main Schematic Diagram (Kit No. CLN8565)

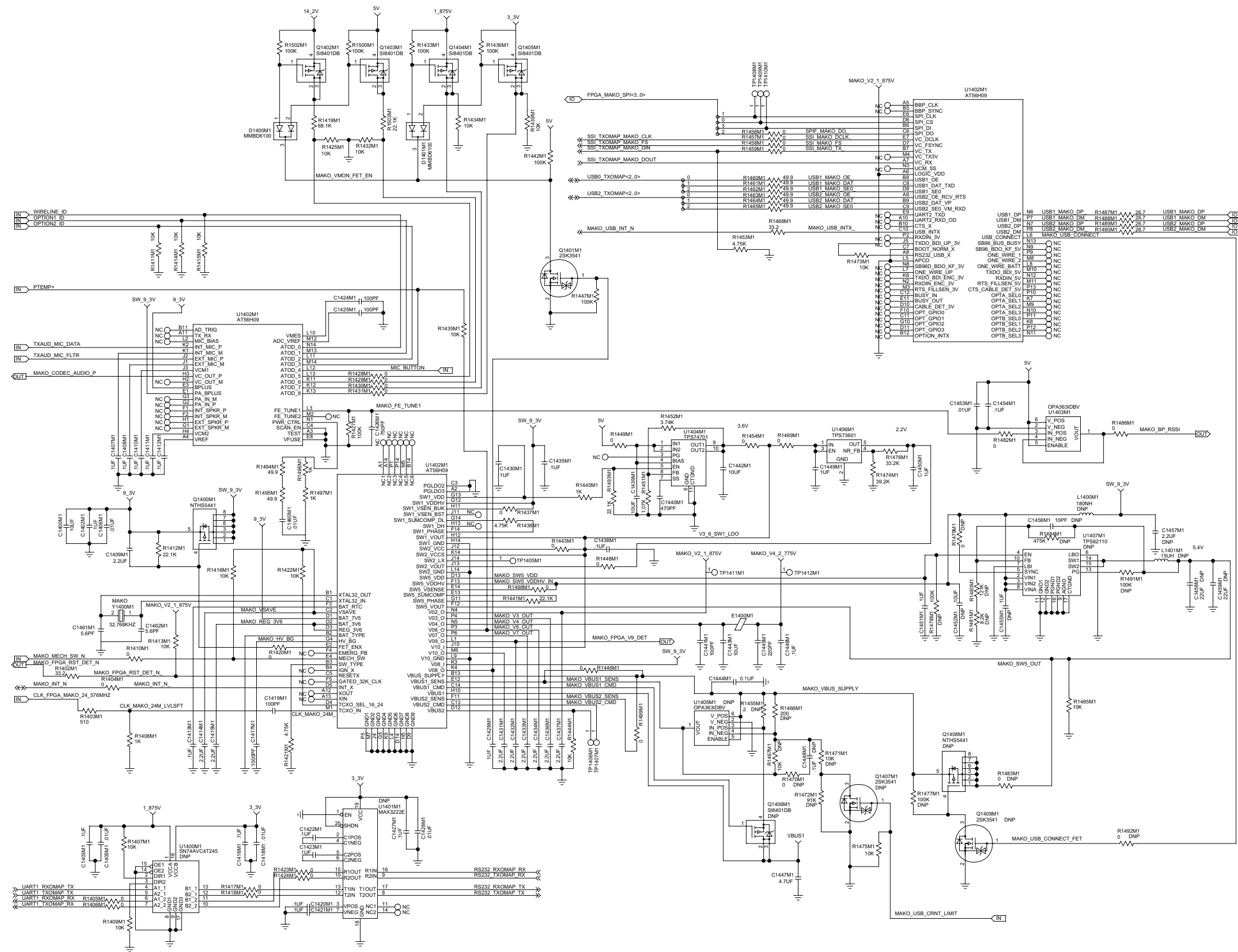


Controller – Tx OMAP Memory Schematic Diagram (Kit No. CLN8565)

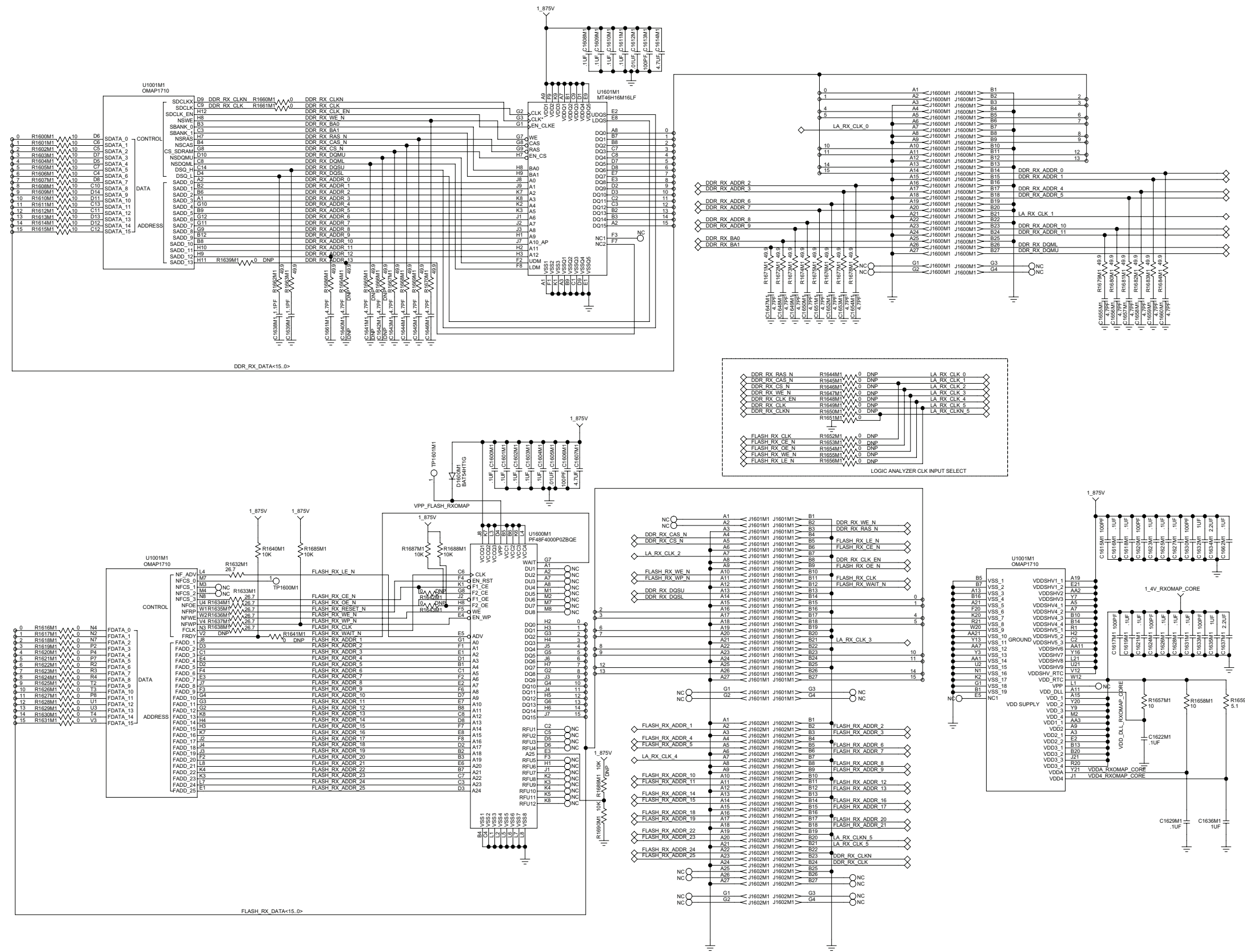


Controller – Tx OMAP Schematic Diagram (Kit No. CLN8565)

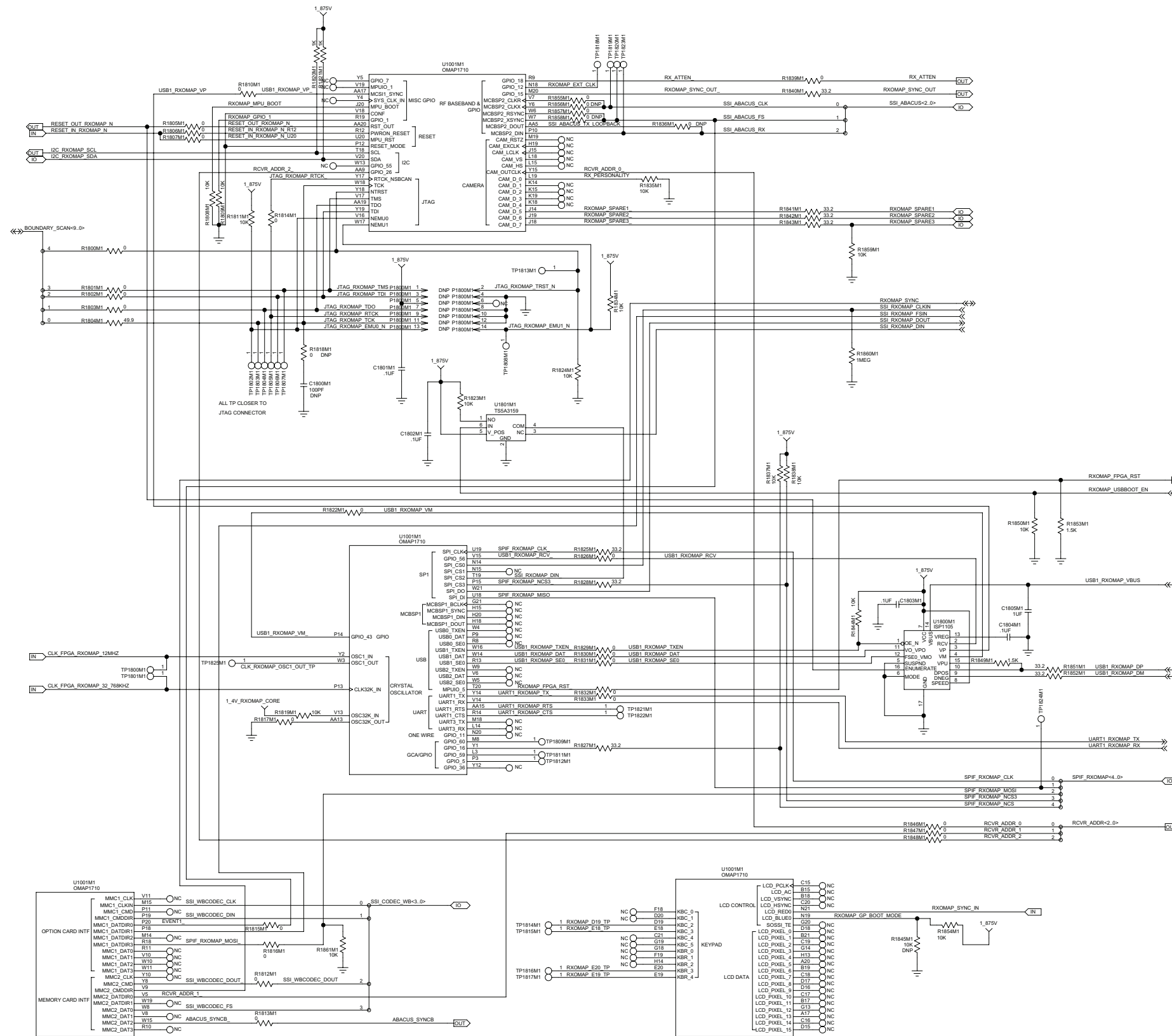
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Controller – MAKO Schematic Diagram (Kit No. CLN8565)

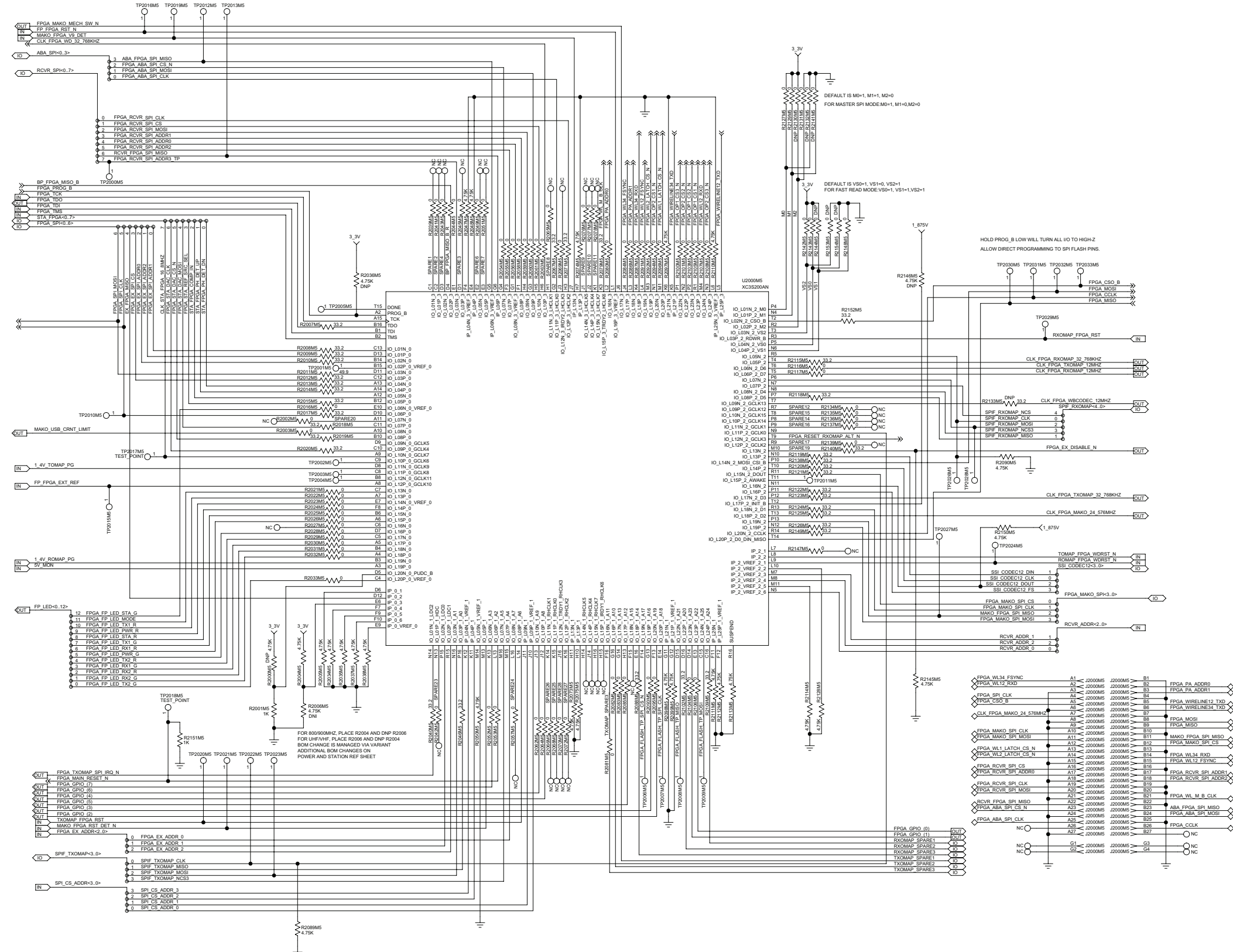


Controller – Rx OMAP Memory Schematic Diagram (Kit No. CLN8565)

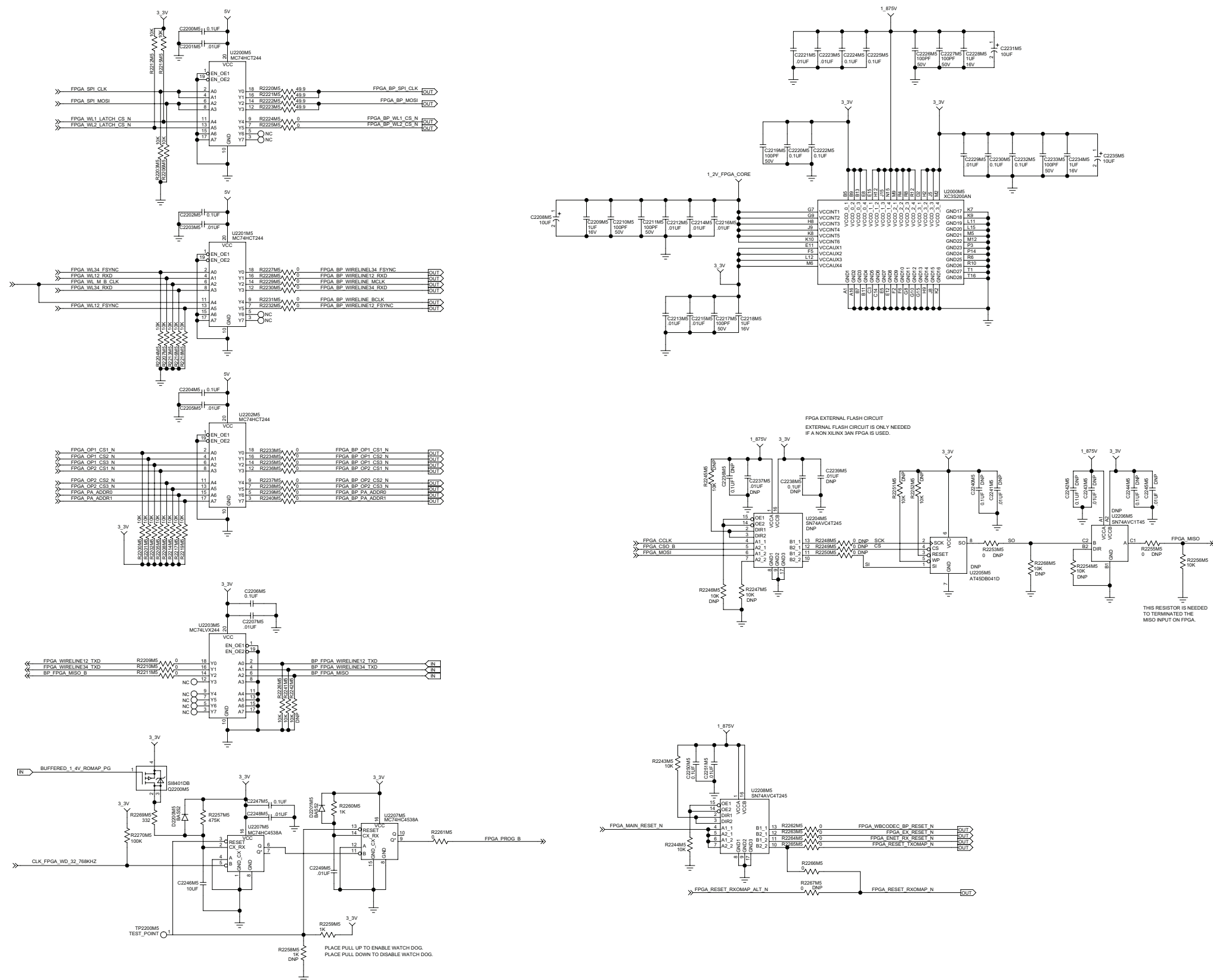


Controller – Rx OMAP Schematic Diagram (Kit No. CLN8565)

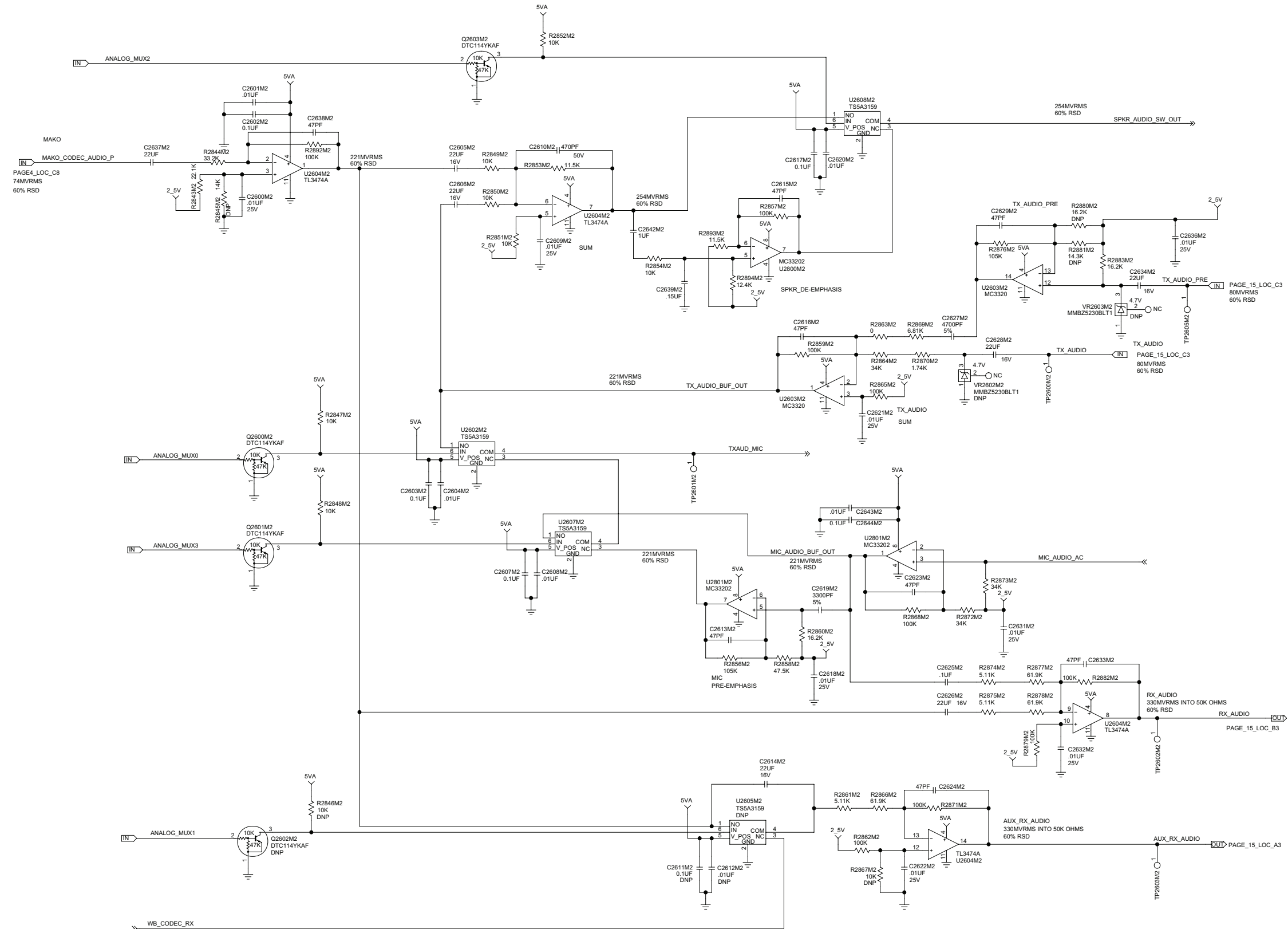




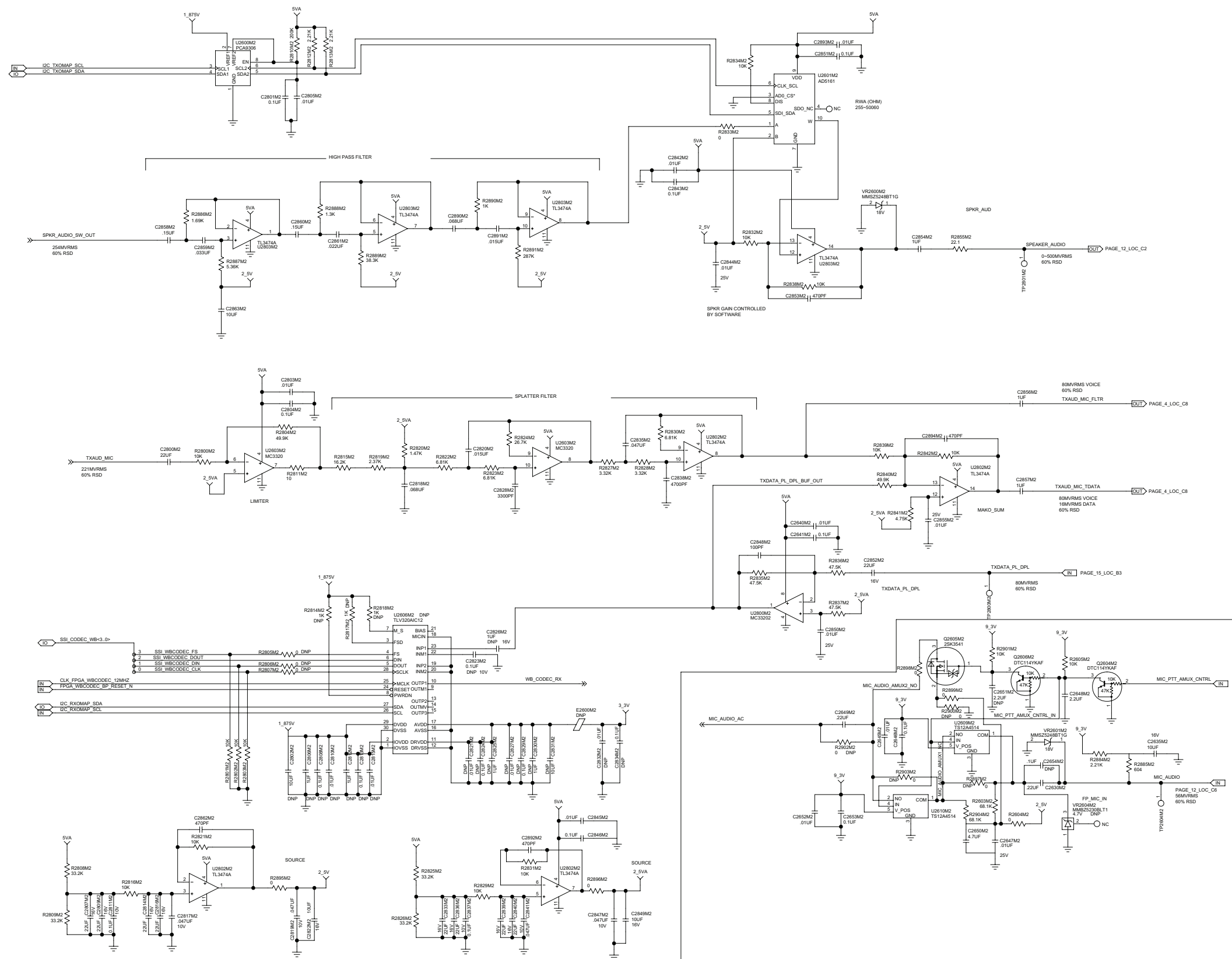
Controller – FPGA Schematic Diagram (Kit No. CLN8565)



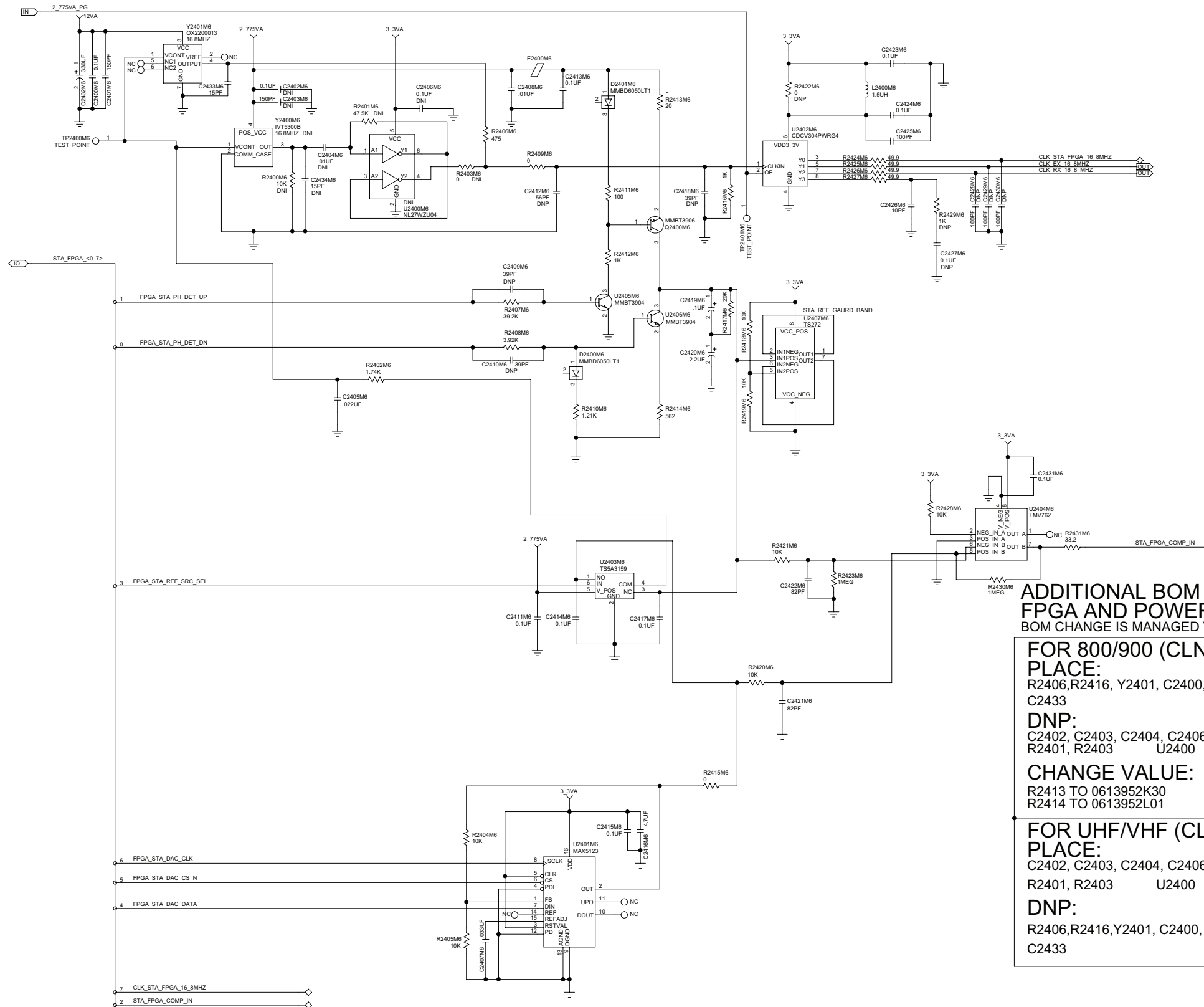
**Controller – FPGA Logic Schematic Diagram (Kit No. CLN8565)**



**Controller – Analog 1 Schematic Diagram (Kit No. CLN8565)**



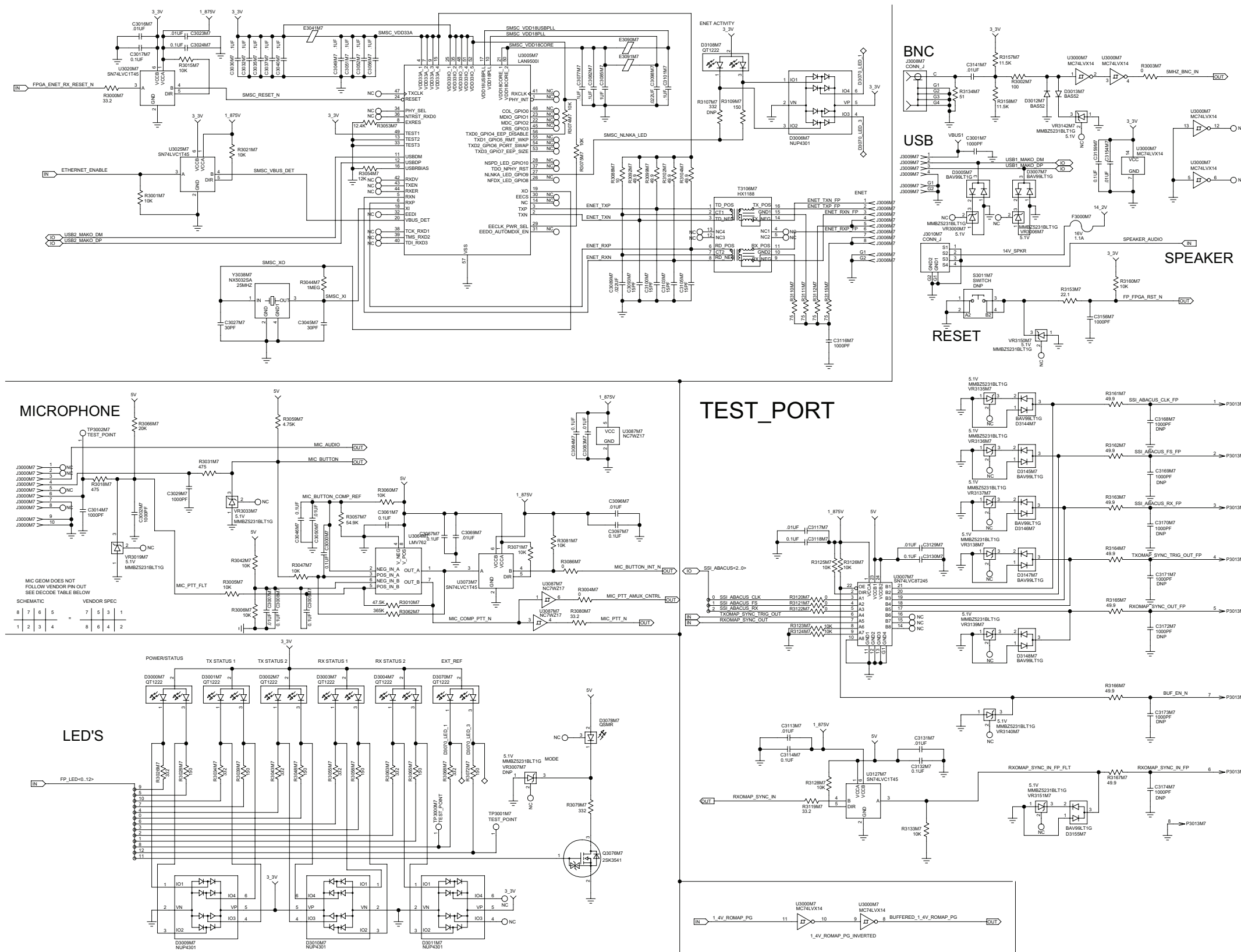
Controller – Analog 2 Schematic Diagram (Kit No. CLN8565)



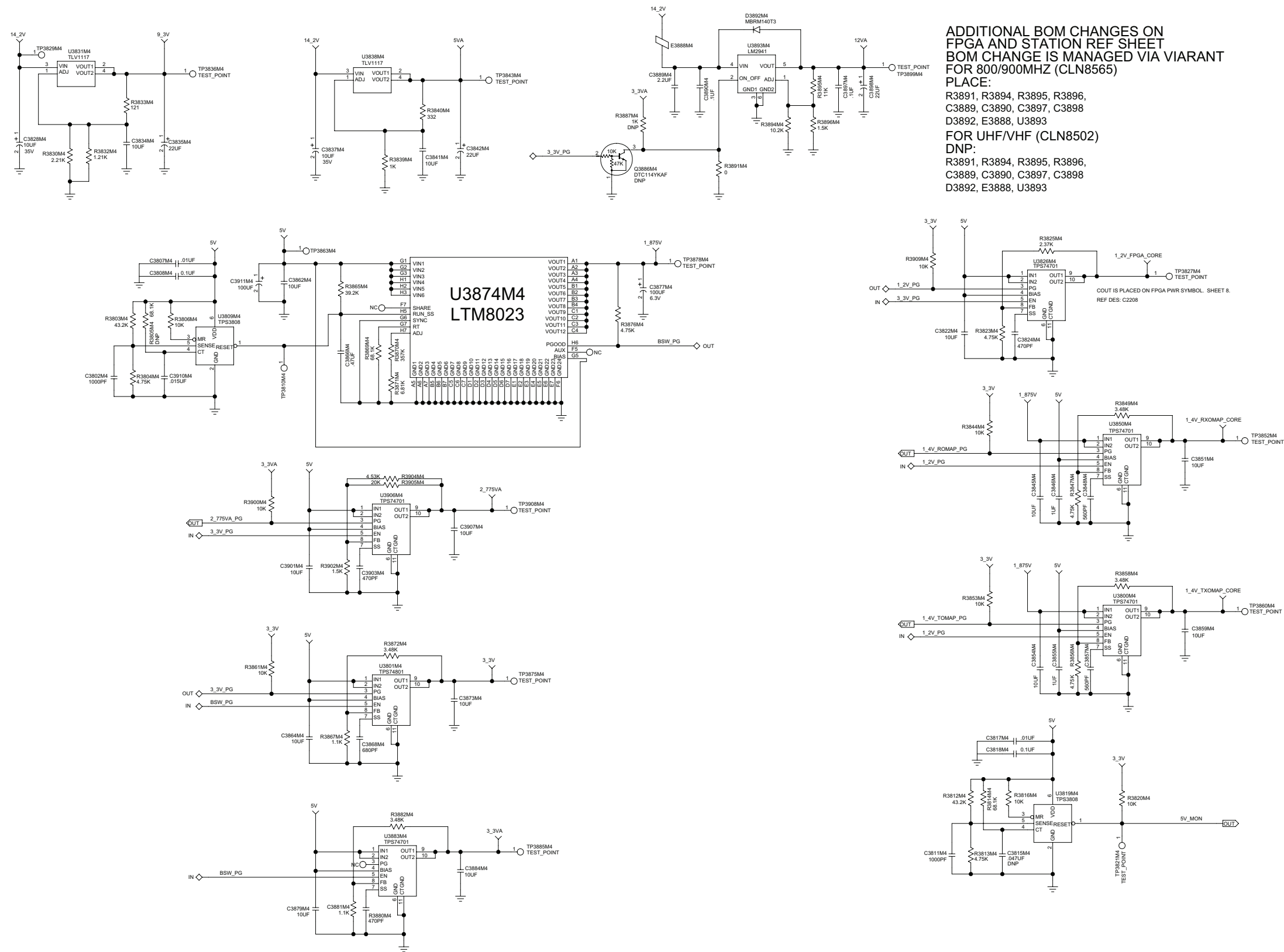
**ADDITIONAL BOM CHANGES ON  
FPGA AND POWER SHEET  
BOM CHANGE IS MANAGED VIA VARIANT**

<b>FOR 800/900 (CLN8565)</b>
<b>PLACE:</b> R2406,R2416, Y2401, C2400, C2401, C2432, C2433
<b>DNP:</b> C2402, C2403, C2404, C2406, R2401, R2403      U2400   Y2400   R2400   C2434
<b>CHANGE VALUE:</b> R2413 TO 0613952K30      (20 OHM) R2414 TO 0613952L01      (100 OHM)
<b>FOR UHF/VHF (CLN8502)</b>
<b>PLACE:</b> C2402, C2403, C2404, C2406, R2401, R2403      U2400   Y2400   R2400   C2434
<b>DNP:</b> R2406,R2416,Y2401, C2400, C2401, C2432, C2433

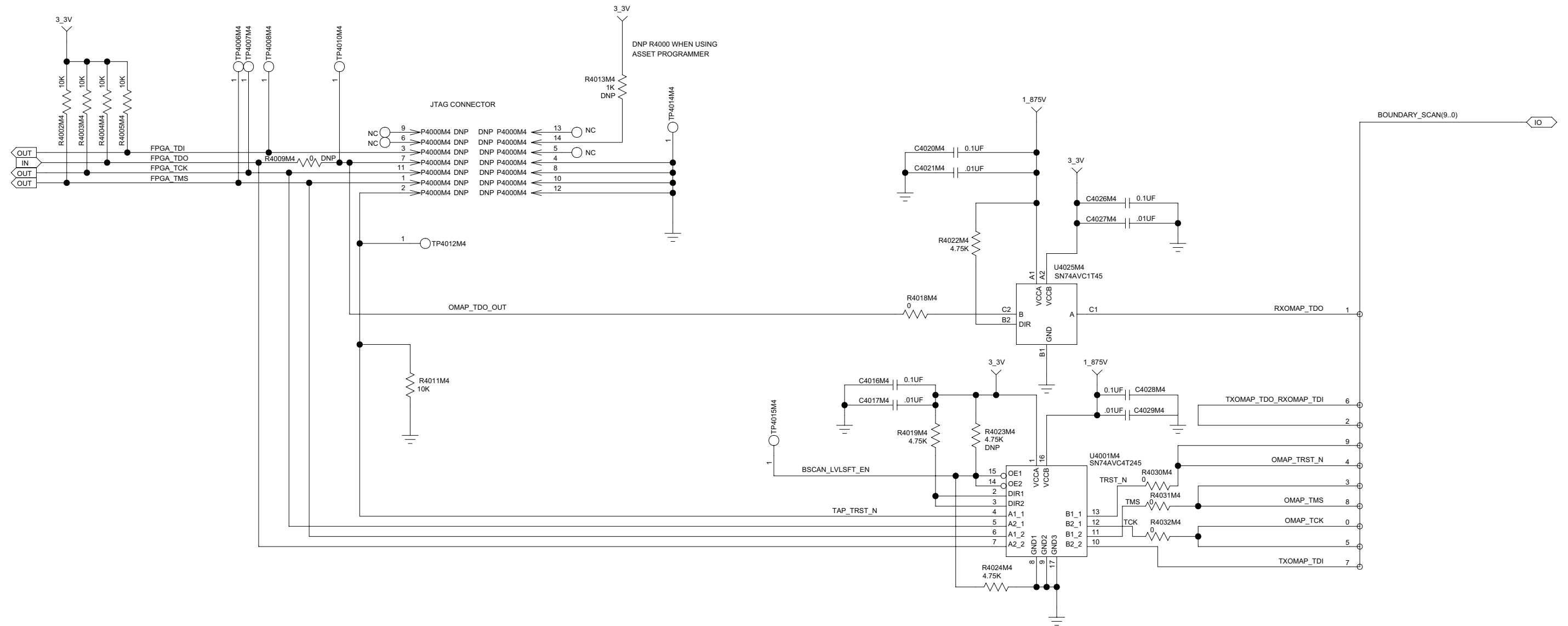
**Controller – Station Reference Schematic Diagram (Kit No. CLN8565)**



Controller – Front Panel Schematic Diagram (Kit No. CLN8565)

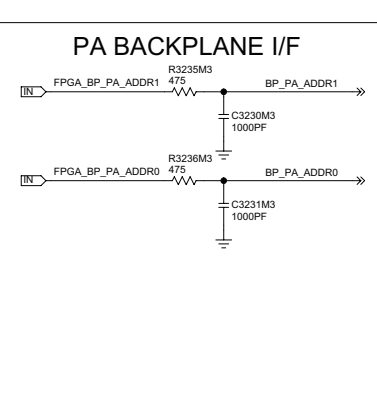
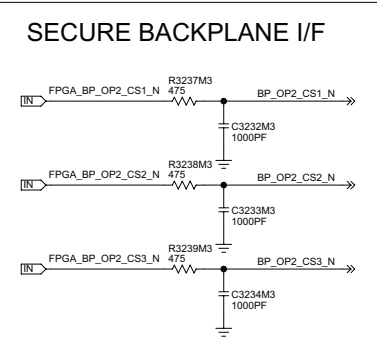
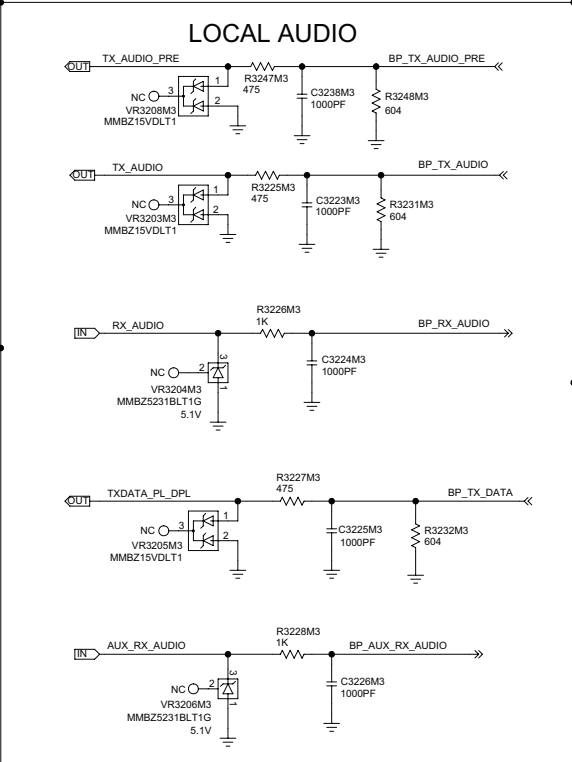
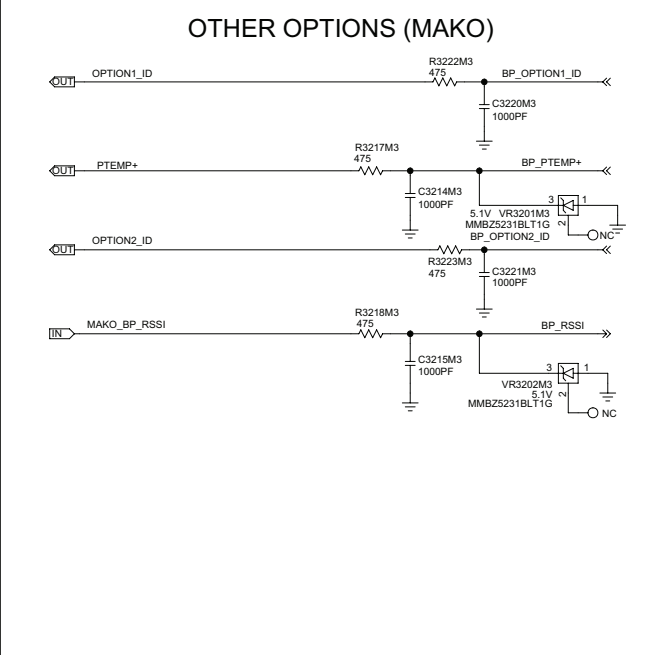
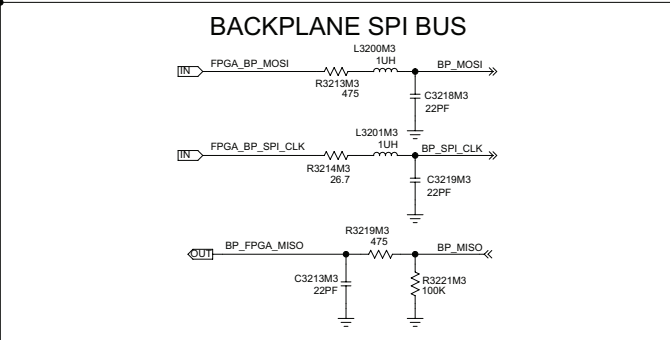
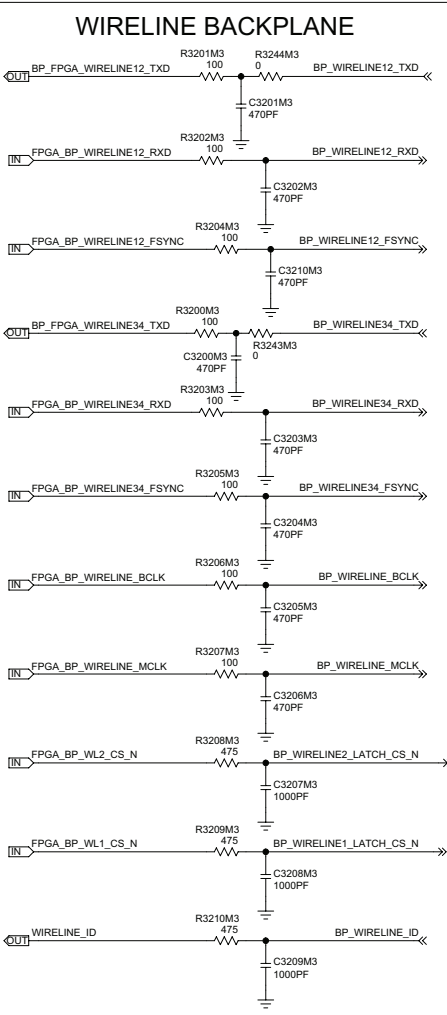
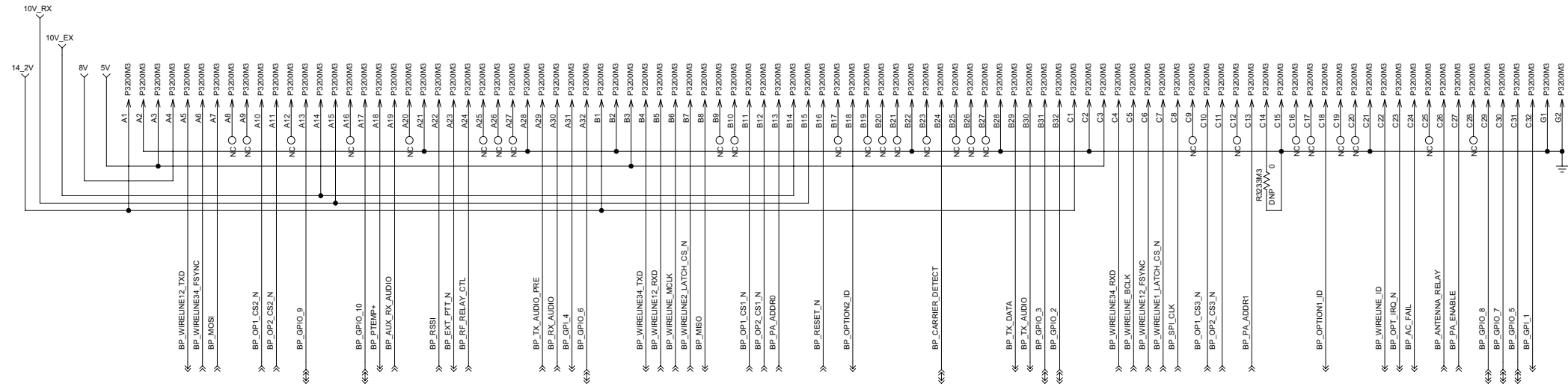


Controller – Power Schematic Diagram (Kit No. CLN8565)



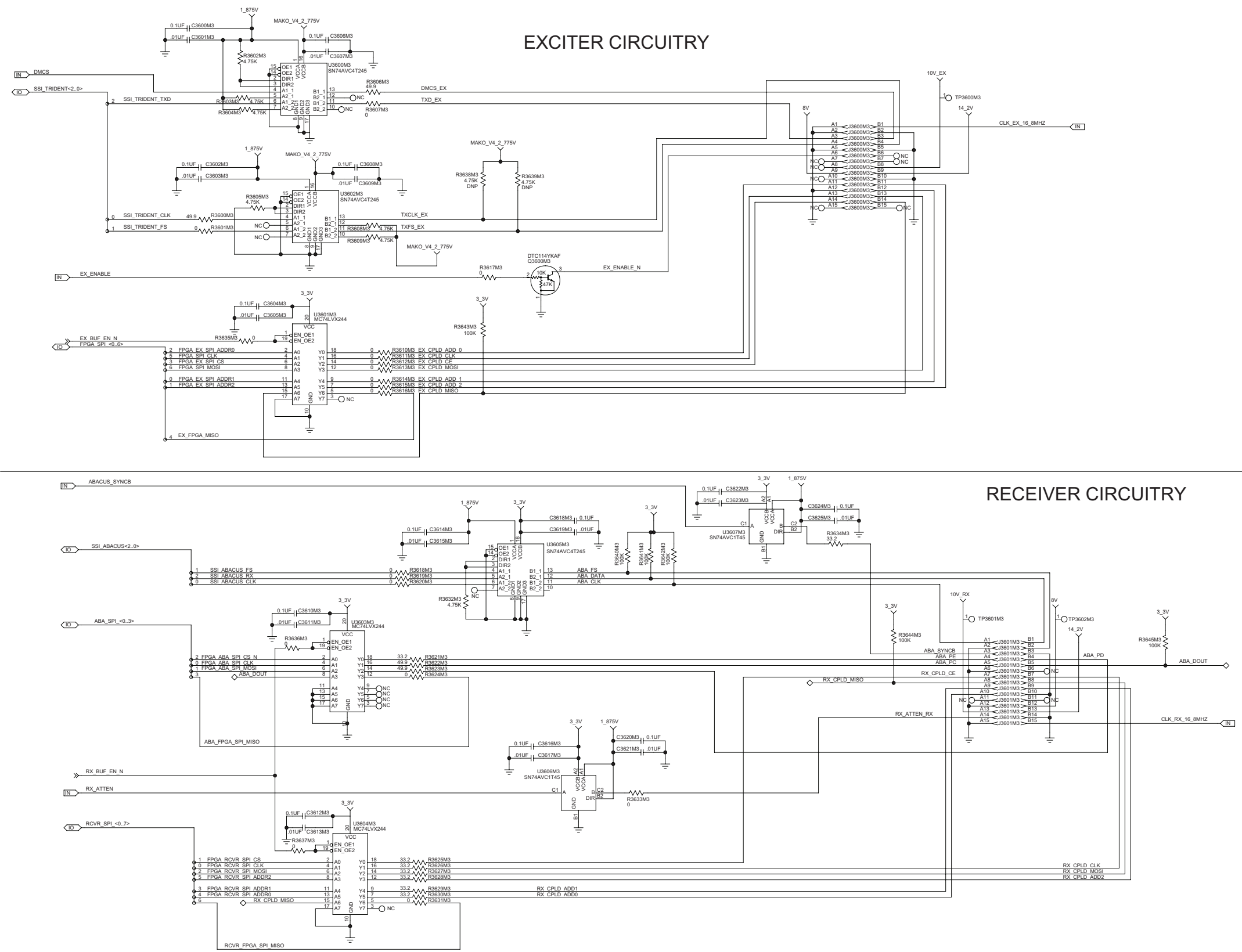
Controller – JTAG Schematic Diagram (Kit No. CLN8565)





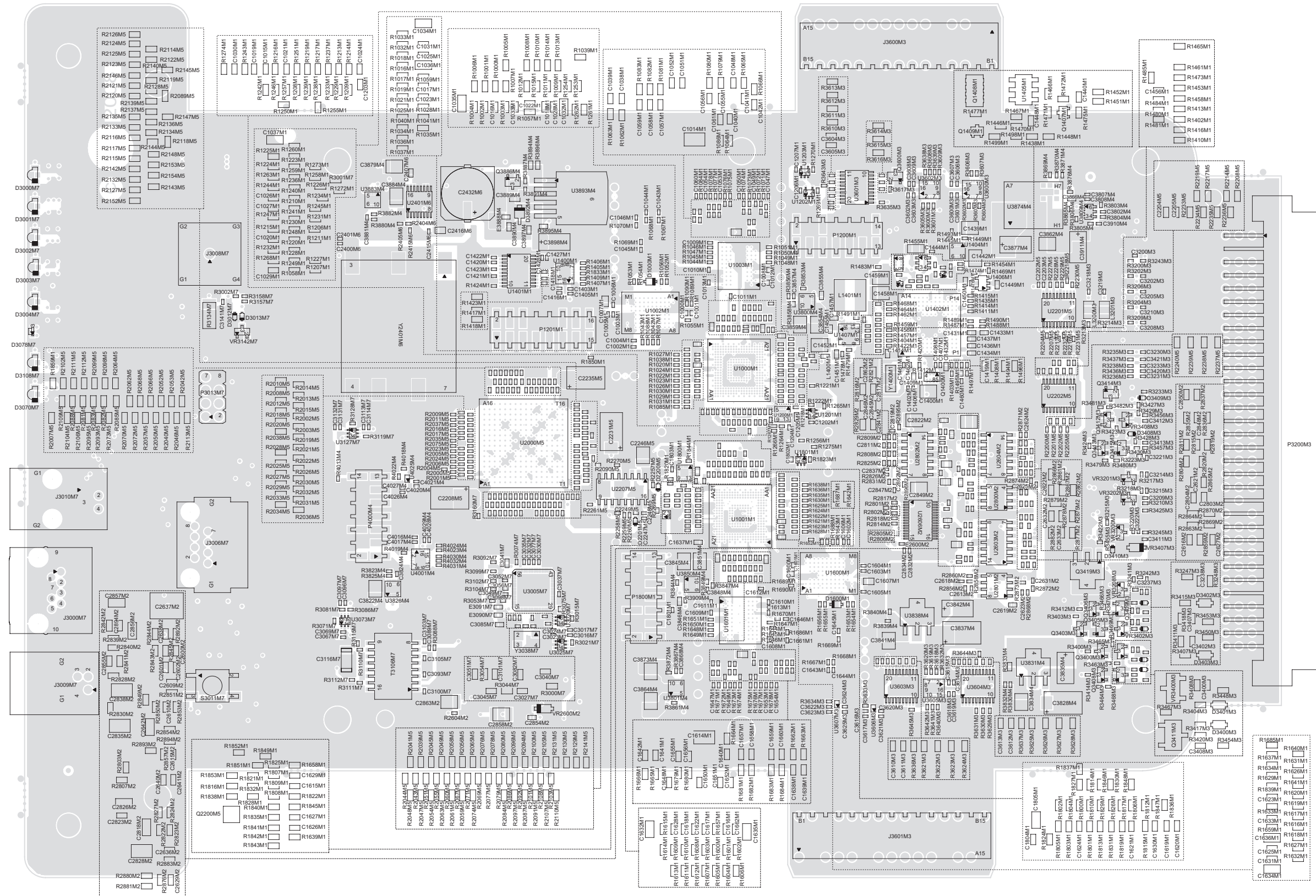
Controller – Backplane Circuitry Schematic Diagram (Kit No. CLN8565)



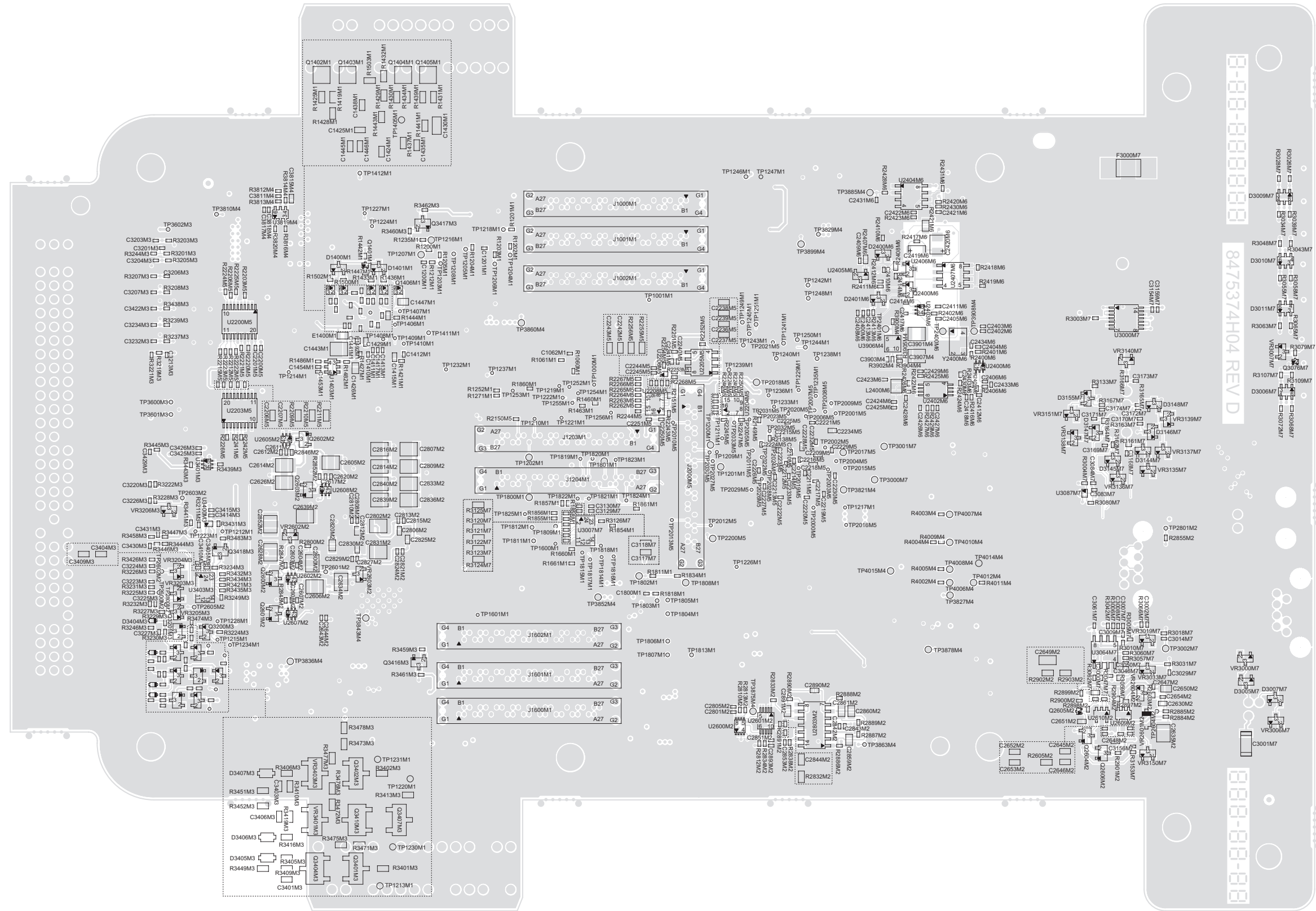


Controller – Exciter and Receiver Schematic Diagram (Kit No. CLN8565)

### 4.8 Controller PCB (800/900 MHz)



Controller PCB – Top View (PCB No. 8475374H04)



Controller PCB – Bottom View (PCB No. 8475374H04)















Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C3116M7	2188473T01	CAP,CER CHIP,1000PF,10PF+/-,2000V-DC,-55DEG CMIN,125DEG CMAX	C3208M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3234M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3421M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3117M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3209M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3237M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3422M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3118M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3210M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3238M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3425M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3129M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3213M3	2113944A29	CAP CER CHP 22.0PF 50V 5%	C3400M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3426M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3130M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3214M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3401M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3429M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3131M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3215M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3402M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3430M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3132M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3218M3	2113944A29	CAP CER CHP 22.0PF 50V 5%	C3403M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3431M3	2113945A09	CAP CER CHP 1000PF 50V 10%
C3141M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3219M3	2113944A29	CAP CER CHP 22.0PF 50V 5%	C3404M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3600M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3154M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3220M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3405M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3601M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3156M7	2113945A09	CAP CER CHP 1000PF 50V 10%	C3221M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3406M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3602M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3159M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3222M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3407M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3603M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3200M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3223M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3408M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3604M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3201M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3224M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3409M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3605M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3202M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3225M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3410M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3606M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3203M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3226M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3411M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3607M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3204M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3227M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3412M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3608M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3205M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3230M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3413M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3609M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3206M3	2113945A05	CAP CER CHP 470PF 50V 10%	C3231M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3414M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3610M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3207M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3232M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3415M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3611M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
			C3233M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3420M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3612M3	2113946B04	CAP CER CHP 0.10UF 10V 10%

Circuit Ref	Motorola Part No	Description
C3613M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3614M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3615M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3616M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3617M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3618M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3619M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3620M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3621M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3622M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3623M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3624M3	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3625M3	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3802M4	2113945A09	CAP CER CHP 1000PF 50V 10%
C3807M4	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3808M4	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3811M4	2113945A09	CAP CER CHP 1000PF 50V 10%
C3817M4	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3818M4	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3822M4	2113946J03	CAP CER CHP 10.0UF 16V 10%

Circuit Ref	Motorola Part No	Description
C3824M4	2113945A05	CAP CER CHP 470PF 50V 10%
C3828M4	2313960G32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,387MA
C3834M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3835M4	2314030F03	CAP,FXD,22UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,561MA
C3837M4	2313960G32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,387MA
C3841M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3842M4	2314030F03	CAP,FXD,22UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,561MA
C3845M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3846M4	2113946S35	CAP CER CHP 1.0UF 16V 10%
C3848M4	2113945A06	CAP CER CHP 560PF 50V 10%
C3851M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3854M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3855M4	2113946S35	CAP CER CHP 1.0UF 16V 10%
C3857M4	2113945A06	CAP CER CHP 560PF 50V 10%
C3859M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3862M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3864M4	2113946J03	CAP CER CHP 10.0UF 16V 10%

Circuit Ref	Motorola Part No	Description
C3866M4	2113946C08	CAP,FXD,.47UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX
C3868M4	2113945A07	CAP CER CHP 680PF 50V 10%
C3873M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3877M4	2382983Y07	CAP,TANT,100UF,20%,6.3V,SM
C3879M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3881M4	2113945A05	CAP CER CHP 470PF 50V 10%
C3884M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3889M4	2113956C23	CAP,FXD,2.2UF,+10%,-10%,25V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C3890M4	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3897M4	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3898M4	2314030F03	CAP,FXD,22UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,561MA
C3901M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3903M4	2113945A05	CAP CER CHP 470PF 50V 10%
C3907M4	2113946J03	CAP CER CHP 10.0UF 16V 10%
C3910M4	2113946A01	CAP CER CHP 0.015UF 16V 10%
C3911M4	2382983Y07	CAP,TANT,100UF,20%,6.3V,SM
C4016M4	2113946B04	CAP CER CHP 0.10UF 10V 10%
C4017M4	2113945B02	CAP CER CHP 10,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
C4020M4	2113946B04	CAP CER CHP 0.10UF 10V 10%
C4021M4	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4026M4	2113946B04	CAP CER CHP 0.10UF 10V 10%
C4027M4	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4028M4	2113946B04	CAP CER CHP 0.10UF 10V 10%
C4029M4	2113945B02	CAP CER CHP 10,000PF 25V 10%
D1000M1	4813978A25	SCHOTTKY 30V SOD-323 T&R PB FREE
D1400M1	4813978C02	PB FREE, NOT COMPLETELY ENRICHED
D1401M1	4813978C02	PB FREE, NOT COMPLETELY ENRICHED
D1600M1	4813978A25	SCHOTTKY 30V SOD-323 T&R PB FREE
D2200M5	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D2201M5	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D2400M6	4813978P10	DIODE,SWG,MMBD605 0,SM,SOT-23,200MA,70V,.225W,P B-FREE
D2401M6	4813978P10	DIODE,SWG,MMBD605 0,SM,SOT-23,200MA,70V,.225W,P B-FREE
D3000M7	4885062E01	LED RE/GRN SIDE-LOOKER
D3001M7	4885062E01	LED RE/GRN SIDE-LOOKER
D3002M7	4885062E01	LED RE/GRN SIDE-LOOKER
D3003M7	4885062E01	LED RE/GRN SIDE-LOOKER

Circuit Ref	Motorola Part No	Description
D3004M7	4885062E01	LED RE/GRN SIDE-LOOKER
D3005M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-
D3006M7	4813979B23	DIODE ARRAY,SUPR,SM,TSO P6,200MA,70V,8,PB-FREE
D3007M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-
D3009M7	4813979B23	DIODE ARRAY,SUPR,SM,TSO P6,200MA,70V,8,PB-FREE
D3010M7	4813979B23	DIODE ARRAY,SUPR,SM,TSO P6,200MA,70V,8,PB-FREE
D3011M7	4813979B23	DIODE ARRAY,SUPR,SM,TSO P6,200MA,70V,8,PB-FREE
D3012M7	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3013M7	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3070M7	4885062E01	LED RE/GRN SIDE-LOOKER
D3078M7	4885102C29	INDCTR,LED,BLUE,LED SIDE FIRING
D3108M7	4885062E01	LED RE/GRN SIDE-LOOKER
D3144M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-

Circuit Ref	Motorola Part No	Description
D3145M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-
D3146M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-
D3147M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-
D3148M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-
D3155M7	4813978P05	DIODE ARRAY,SIGNL/SWG,BAV99,SM,SOT-23,215MA,70V,.225W,S HTK,2,PB-
D3400M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3401M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3402M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3403M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3404M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3405M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3406M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3407M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT

Circuit Ref	Motorola Part No	Description
D3408M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3409M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3410M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D3892M4	4813978M15	DIODE,RECT,RM140,SM,1A,40V,SHTK,PB-FREE
E1400M1	2485410Y02	MIN CHIP FERRITE BEAD 30 Ω W18
E2400M6	2485449Y01	SURFACE MOUNT FERRITE BEAD W18
E3041M7	7686949J15	FLTR,FERR,,,2A,,,SM, 0603
E3090M7	7686949J15	FLTR,FERR,,,2A,,,SM, 0603
E3091M7	7686949J15	FLTR,FERR,,,2A,,,SM, 0603
E3888M4	7686949J15	FLTR,FERR,,,2A,,,SM, 0603
F3000M7	6585677Y04	FUSE,RESET,PTC,1.1A, 1812
J3000M7	0915930H01	RJ-45, CAT5 SHIELDED, ONE PORT
J3006M7	0975079B01	MODULAR JACK,VERTICAL, RJ45,W/LED'S
J3008M7	0982492W01	BNC CONN PCB VERTICAL RECEPT
J3009M7	0989742V01	CONN USB,2 ROW,RCPT,4CONT,GLD,PCB - THRU-HOLE,PB-FREE
J3010M7	09009263001	Modular Jack,R/A,Shld,4x4
J3600M3	09009147002	RECEPT 30 PIN RA
J3601M3	09009147002	RECEPT 30 PIN RA
L2400M6	2485364Y24	CHIP IND 1500 NH 5% EPP

Circuit Ref	Motorola Part No	Description
L3200M3	2414032D30	IDCTR,WW,1UH,5%,320 MA,2.8Ω,CER,28 Q,340 MHZ SRF,SM,PB-FREE
L3201M3	2414032D30	IDCTR,WW,1UH,5%,320 MA,2.8Ω,CER,28 Q,340 MHZ SRF,SM,PB-FREE
P3013M7	28009146005	HEADER 8 POSN,DOUBLE ROW,VERTICAL
P3200M3	2886267Y04	PLUG, EUROCARD 96 PIN R A
PWB	8475374H03	MID_TIER CONV CONTROL PCB
Q1400M1	4813970A62	XSTR,FET GP PWR,MOSFET,PCH,ENHN,CF,-20V,1.3W,PB-FREE
Q1401M1	4809579E77	FET, NCH MOS FET, 1.2MM X 1.2MM PACKAGE, SMD, W18 COMPLIANT
Q1402M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
Q1403M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
Q1404M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
Q1405M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE
Q2200M5	4805585Q23	XSTR,FET GEN PURP,PB-FREE
Q2400M6	4813973A13	XSTR,GEN PURPOSE SMALL SIG,PNP,MMBT3906L,T O-236,4, PB-FREE
Q2600M2	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q2601M2	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q2603M2	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN

Circuit Ref	Motorola Part No	Description
Q3076M7	4809579E77	FET, NCH MOS FET, 1.2MM X 1.2MM PACKAGE, SMD, W18 COMPLIANT
Q3200M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3201M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3400M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3401M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3402M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3403M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3404M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3405M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3406M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ

Circuit Ref	Motorola Part No	Description
Q3407M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3408M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3409M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3410M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3411M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3412M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3413M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT - 23,SMT,40V,.225W,200 MA,300 MHZ
Q3414M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3415M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3416M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3417M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q3418M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN

Circuit Ref	Motorola Part No	Description
Q3419M3	4813973B04	XSTR,BIP GP SS,NPN,T651,SM,SOT-223,SMT,60V,.8W,2A,75 MHZ,PB-FRE
Q3600M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
R1000M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1001M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1002M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1003M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1004M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1005M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1006M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1007M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1008M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1009M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1010M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1011M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1012M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1013M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1014M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1015M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1016M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R1017M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1018M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1019M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1020M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1021M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1022M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1023M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1024M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1025M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1026M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1027M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1028M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1029M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1030M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1031M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1032M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1033M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1034M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1035M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1036M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R1038M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1040M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1051M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1057M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1058M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1059M1	0613952Q18	CER CHIP RES 5.1 Ω 5 0402
R1060M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1061M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1062M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1063M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1067M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1068M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1069M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1070M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1071M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1072M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1073M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1074M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1075M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1076M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R1077M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1078M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1079M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1080M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1081M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1082M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1083M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1084M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1085M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1086M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1087M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1088M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1090M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1200M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1201M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1202M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1203M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1204M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1205M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1206M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402

Circuit Ref	Motorola Part No	Description
R1207M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1208M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1209M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1210M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1211M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1213M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1214M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1215M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1216M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1217M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1218M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1219M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1220M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R1221M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R1222M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1223M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1224M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1225M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1226M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1227M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402

Circuit Ref	Motorola Part No	Description
R1228M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1229M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1231M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1232M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1233M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1234M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1235M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1236M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1237M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1238M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1239M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1240M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1241M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1242M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1244M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1245M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1246M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1247M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1248M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1249M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω





Circuit Ref	Motorola Part No	Description
R1461M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1462M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1463M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1464M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1465M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1468M1	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R1469M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1473M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1474M1	0613952N58	CER CHIP RES 39.2K Ω 1 0402
R1475M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1476M1	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R1482M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1485M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1486M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1487M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1488M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1489M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1490M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1493M1	0613952N34	CER CHIP RES 22.1K Ω 1 0402
R1494M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R1495M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1496M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R1497M1	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R1498M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1499M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1500M1	0613952P01	CER CHIP RES 100K Ω 1 0402
R1502M1	0613952P01	CER CHIP RES 100K Ω 1 0402
R1503M1	0613952N34	CER CHIP RES 22.1K Ω 1 0402
R1600M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1601M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1602M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1603M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1604M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1605M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1606M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1607M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1608M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1609M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1610M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1611M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R1612M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1613M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1614M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1615M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1616M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1617M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1618M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1619M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1620M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1621M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1622M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1623M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1624M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1625M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1626M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1627M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1628M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1629M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1630M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1631M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R1632M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1633M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1634M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1635M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1636M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1638M1	0613952K42	CER CHIP RES 26.7 Ω 1% 0402
R1640M1	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R1651M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1657M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1658M1	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R1659M1	0613952Q18	CER CHIP RES 5.1 Ω 5 0402
R1660M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1661M1	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R1662M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1663M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1667M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1668M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1669M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1670M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R1671M1	0613952K68	CER CHIP RES 49.9 Ω 1% 0402









Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R2824M2	0613952N42	CER CHIP RES 26.7K Ω 1 0402	R2844M2	0613952N51	CER CHIP RES 33.2K Ω 1 0402	R2866M2	0613952N77	CER CHIP RES 61.9K Ω 1 0402	R2889M2	0613952N57	CER CHIP RES 38.3K Ω 1 0402
R2825M2	0613952N51	CER CHIP RES 33.2K Ω 1 0402	R2847M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2868M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R2890M2	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R2826M2	0613952N51	CER CHIP RES 33.2K Ω 1 0402	R2848M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2869M2	0613952M81	CER CHIP RES 6810 Ω 1% 0402	R2891M2	0613952P45	CER CHIP RES 287K Ω 1 0402
R2827M2	0613952M51	CER CHIP RES 3320 Ω 1% 0402	R2849M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2870M2	0613952M24	CER CHIP RES 1740 Ω 1 0402	R2892M2	0613952P01	CER CHIP RES 100K Ω 1 0402
R2828M2	0613952M51	CER CHIP RES 3320 Ω 1% 0402	R2850M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2871M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R2893M2	0613952N07	CER CHIP RES 11.5K Ω 1 0402
R2829M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2851M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2872M2	0613952N52	CER CHIP RES 34.0K Ω 1 0402	R2894M2	0613952N10	CER CHIP RES 12.4K Ω 1 0402
R2830M2	0613952M81	CER CHIP RES 6810 Ω 1% 0402	R2852M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2873M2	0613952N52	CER CHIP RES 34.0K Ω 1 0402	R2895M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2831M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2853M2	0613952N07	CER CHIP RES 11.5K Ω 1 0402	R2874M2	0613952M69	CER CHIP RES 5110 Ω 1 0402	R2896M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2832M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2854M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2875M2	0613952M69	CER CHIP RES 5110 Ω 1 0402	R3000M7	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R2833M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R2855M2	0613952K34	CER CHIP RES 22.1 Ω 1% 0402	R2876M2	0613952P03	CER CHIP RES 105K Ω 1 0402	R3001M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2834M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2856M2	0613952P03	CER CHIP RES 105K Ω 1 0402	R2877M2	0613952N77	CER CHIP RES 61.9K Ω 1 0402	R3002M7	0613952L01	CER CHIP RES 100 Ω 1% 0402
R2835M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402	R2857M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R2878M2	0613952N77	CER CHIP RES 61.9K Ω 1 0402	R3003M7	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R2836M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402	R2858M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402	R2879M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R3004M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2837M2	0613952N66	CER CHIP RES 47.5K Ω 1 0402	R2859M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R2882M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R3005M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2838M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2860M2	0613952N21	CER CHIP RES 16.2K Ω 1 0402	R2883M2	0613952N21	CER CHIP RES 16.2K Ω 1 0402	R3006M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2839M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2861M2	0613952M69	CER CHIP RES 5110 Ω 1 0402	R2884M2	0613952M34	CER CHIP RES 2210 Ω 1% 0402	R3010M7	0613952N66	CER CHIP RES 47.5K Ω 1 0402
R2840M2	0613952N68	CER CHIP RES 49.9K Ω 1 0402	R2862M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R2885M2	0613952L76	CER CHIP RES 604 Ω 1 0402	R3015M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2841M2	0613952M66	CER CHIP RES 4750 Ω 1% 0402	R2863M2	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R2886M2	0613952M23	CER CHIP RES 1690 Ω 1 0402	R3018M7	0613952L66	CER CHIP RES 475 Ω 1% 0402
R2842M2	0613952N01	CER CHIP RES 10.0K Ω 1 0402	R2864M2	0613952N52	CER CHIP RES 34.0K Ω 1 0402	R2887M2	0613952M71	CER CHIP RES 5360 Ω 1 0402	R3021M7	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R2843M2	0613952N34	CER CHIP RES 22.1K Ω 1 0402	R2865M2	0613952P01	CER CHIP RES 100K Ω 1 0402	R2888M2	0613952M12	CER CHIP RES 1300 Ω 1 0402	R3026M7	0613952L51	CER CHIP RES 332 Ω 1% 0402











Circuit Ref	Motorola Part No	Description
U2604M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U2607M2	5171779H01	SPDT ANALOG SWITCH
U2608M2	5171779H01	SPDT ANALOG SWITCH
U2800M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U2802M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U2803M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY
U3000M7	5114019M05	IC,INVTR,SCHMITT,74LVX14,6PER PKG,SM,TSSOP14,PB-FREE
U3005M7	51009265001	USB 2.0 TO 10/100 USB CONTROLLER
U3007M7	5175422H01	8-BIT DUAL SUPPLY BUS TXCVR
U3020M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3025M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3064M7	5184937Y01	PRECISION COMPARTOR
U3073M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3087M7	5109522E84	IC DUAL SCHMITT TRIG MICRO PAK
U3127M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3400M3	5109522E84	IC DUAL SCHMITT TRIG MICRO PAK

Circuit Ref	Motorola Part No	Description
U3401M3	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DC KRG4,LVCMOS,SOT-353/SC-88A,SC70
U3403M3	5175422H01	8-BIT DUAL SUPPLY BUS TXCVR
U3600M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U3601M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL-ATGE,3ST,SM,TSSOP20,PB-FREE
U3602M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U3603M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL-ATGE,3ST,SM,TSSOP20,PB-FREE
U3604M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL-ATGE,3ST,SM,TSSOP20,PB-FREE
U3605M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U3606M3	5115865H01	SINGLE-BIT BUS TRANSCEIVER
U3607M3	5115865H01	SINGLE-BIT BUS TRANSCEIVER
U3800M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3801M4	5171590Y73	IC,LNR V REGLTR,ADJUSTABLE,1.5A,SM,PB-FREE
U3809M4	5187904J03	IC,,,SOT-23,SOT-23,0PER PKG,,LOW QUIESCENT CURRENT, PROGRAMMABLE

Circuit Ref	Motorola Part No	Description
U3819M4	5187904J03	IC,,,SOT-23,SOT-23,0PER PKG,,LOW QUIESCENT CURRENT, PROGRAMMABLE
U3826M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3831M4	5188550D01	REGULATOR, T.I., TLV1117IDCY
U3838M4	5188550D01	REGULATOR, T.I., TLV1117IDCY
U3850M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3874M4	5163316A09	IC SWITCHING REGULATOR
U3883M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U3893M4	5164015H94	IC, LM2941, TO DROP-OUT REG
U3906M4	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT
U4001M4	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U4025M4	5115865H01	SINGLE-BIT BUS TRANSCEIVER
VR2600M2	4813977C28	DIODE,ZEN,MMSZ5248,SM,SOD-123,18V,10MA,.5W,ZEN,PB-FREE
VR2601M2	4813977C28	DIODE,ZEN,MMSZ5248,SM,SOD-123,18V,10MA,.5W,ZEN,PB-FREE
VR3000M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3006M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE

Circuit Ref	Motorola Part No	Description
VR3019M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3033M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3135M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3136M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3137M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3138M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3139M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3140M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3142M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3150M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE
VR3151M7	4813977M10	DIODE,ZEN,MBZ5231,SM,SOT-23,5.1V,10MA,.225W,ZEN,PB-FREE

Circuit Ref	Motorola Part No	Description
VR3200M3	4813977M10	DIODE,ZEN,MBZ5231,S M,SOT- 23,5.1V,10MA,.225W,ZE N,PB-FREE
VR3201M3	4813977M10	DIODE,ZEN,MBZ5231,S M,SOT- 23,5.1V,10MA,.225W,ZE N,PB-FREE
VR3202M3	4813977M10	DIODE,ZEN,MBZ5231,S M,SOT- 23,5.1V,10MA,.225W,ZE N,PB-FREE
VR3203M3	4813979C08	DIODE,SUPR,.225W,M MBZ15,SM,SOT- 23,ZEN,PB-FREE
VR3204M3	4813977M10	DIODE,ZEN,MBZ5231,S M,SOT- 23,5.1V,10MA,.225W,ZE N,PB-FREE
VR3205M3	4813979C08	DIODE,SUPR,.225W,M MBZ15,SM,SOT- 23,ZEN,PB-FREE
VR3206M3	4813977M10	DIODE,ZEN,MBZ5231,S M,SOT- 23,5.1V,10MA,.225W,ZE N,PB-FREE
VR3208M3	4813979C08	DIODE,SUPR,.225W,M MBZ15,SM,SOT- 23,ZEN,PB-FREE
VR3400M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
VR3401M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
VR3402M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
VR3403M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE

Circuit Ref	Motorola Part No	Description
VR3407M3	4813977C28	DIODE,ZEN,MMSZ5248 ,SM,SOD- 123,18V,10MA,.5W,ZEN ,PB-FREE
VR3408M3	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB -FREE
Y1400M1	4809995L05	XTAL QUARTZ 32.768KHZ CC4V-T1
Y2401M6	93009259001	16.8 MHZ OVENIZED CRYSTAL OSCILLA- TOR
Y3038M7	4884121Y01	XTAL,SMT 25 MHZ,50PPM

**Notes**

## Chapter 5 MTR3000 Power Supply

### 5.1 Overview

This section provides an overview and probing of the Power Supply (PS) module's output to isolate fault.

For specifications of the Power Supply refer to the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

### 5.2 Troubleshooting

#### 5.2.1 Basic Voltage Check Procedure

This section is to illustrate measurement of the 28.6 VDC, 14.2 VDC, and 5.1 VDC sources if a known good AC or DC source is applied to the Power Supply but there is no apparent activity from the station.

To check the basic voltage for station failure, such as no power indicated to the station when the AC and DC mains are connected, perform the following steps:

1. Turn on station power at source (e.g. AC or DC breaker).
2. Push a voltmeter probe into the power connector at the Backplane Interconnect Board or PA adjacent to the indicated wires. Ensure enough of the probe tip is inserted to touch the metal Pin inside the connector housing.
3. Touch the other voltmeter probe anywhere on the chassis (or either casting) to complete the measurement circuit.

To measure the 14.2 VDC and 5.1 VDC, refer to Figure 5-1 For the pin-out, refer to Figure 5-2

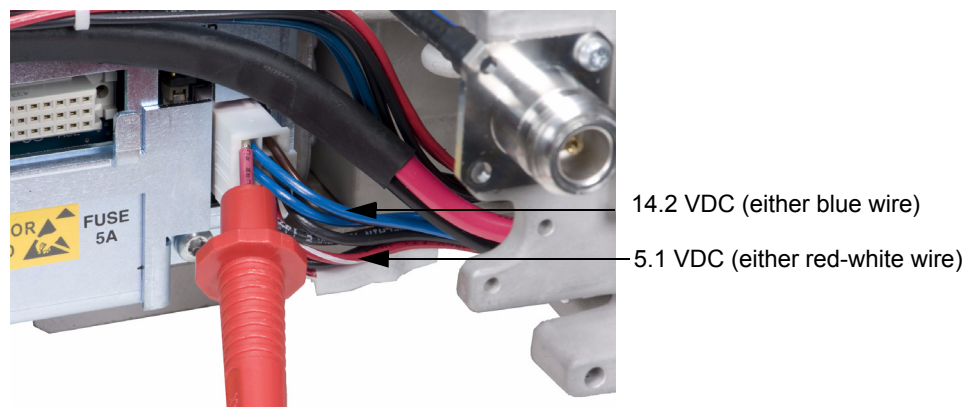


Figure 5-1 Measuring 14.2 VDC and 5.1 VDC (other voltmeter probe to chassis)

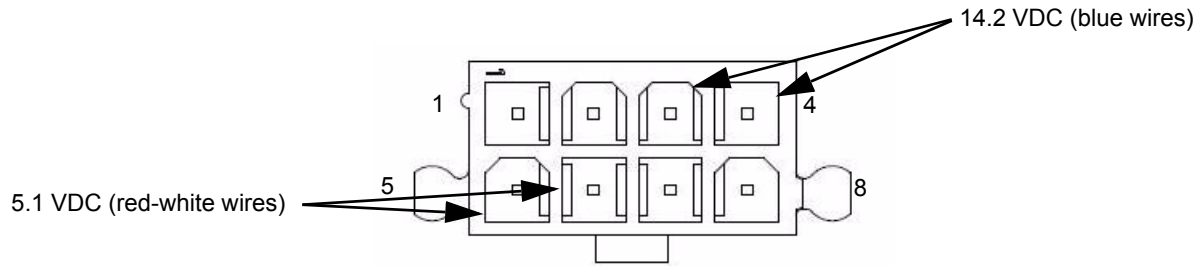


Figure 5-2 Pin-out of connector (measuring 14.2 VDC and 5.1 VDC)

To measure the 14.2 VDC and 28.6 VDC, refer to Figure 5-3 For the pin-out, refer to Figure 5-4

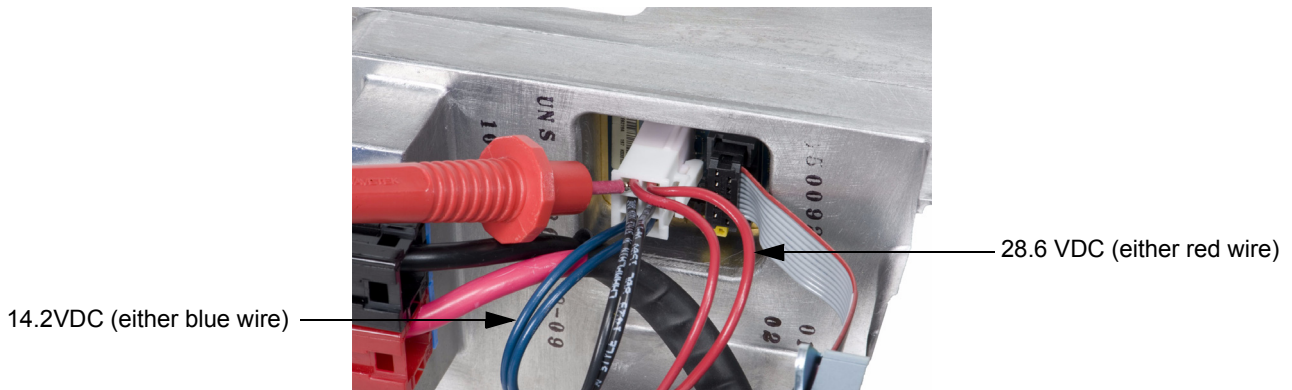


Figure 5-3 Measuring 14.2 VDC and 28.6 VDC (other voltmeter probe to chassis)

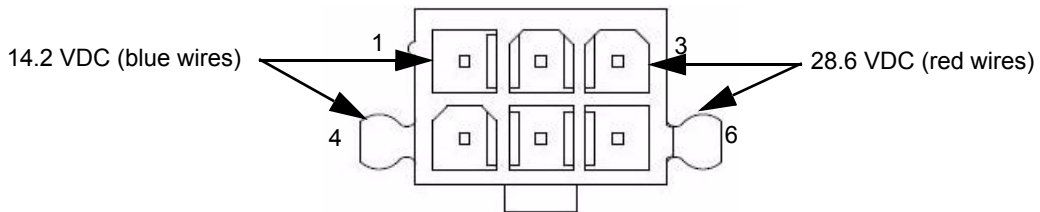


Figure 5-4 Pin-out of connector (measuring 14.2 VDC and 28.6 VDC)

If it is determined that the Power Supply is not functioning, the whole unit needs to be sent to the nearest Motorola Repair Center to be replaced as it is not designed to be field serviceable.



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## Chapter 6 MTR3000 Receiver Module

### 6.1 Overview

This section provides an overview and functional Theory of Operation of the Receiver Module. The schematic diagrams, overlays, and parts lists are provided on the foldout sheets. A complete list of all parts is provided with the parts ordered according to the schematic reference number.

For the Block Diagram, Specifications and troubleshooting procedures of the Receiver Module, refer to the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

### 6.2 Functional Theory of Operation

The base station/repeater's Receiver (Rx) is one Receiver on a single four-layer board.

#### 6.2.1 Functional Overview

##### 6.2.1.1 Receiver Front End Circuitry

The RF signal enters the Receiver through a BNC-type RF connector, located on the bottom side of the Receiver. The signal is then low-pass filtered, and the 1/2 IF and image frequency are filtered through the preselector filter. This signal is then amplified using a low-noise amplifier (LNA), and then further filtered to remove the image signal.

##### 6.2.1.2 Receiver Back End Circuitry

The signal after the image filter is then mixed down to the first IF, via a high performance (high IIP3) mixer, driven by the low-phase noise, voltage-controlled Colpitts oscillator (VCO). The mixed-down signal then passes through a 3-pole, crystal IF bandpass filter and an IF amplifier. The amplifier output signal passes through another 3-pole crystal bandpass filter, and the resultant signal passes through a digital step attenuator. The desired signal is then applied to the RF input of the backend Receiver-specific IC.

##### 6.2.1.3 Voltage Controlled Oscillator (VCO)

The Receiver Voltage Controlled Oscillator (VCO) generates a sinusoidal output signal that ranges from 476.35 MHz to 543.35 MHz (UHF R1), 523.35 MHz to 597.35 MHz (UHF R2), 732.65 MHz to 751.65 MHz (800 MHz) and 969.35 MHz to 975.35 MHz (900 MHz). Either UHF R1, UHF R2, 800 MHz or 900 MHz can be used at a time. The Receive Voltage-Controlled Oscillator (RXVCO) line-up consists of four sub-circuits: a Voltage-Controlled Oscillator (VCO), an attenuator, a buffer-amplifier, and a low pass filter (LPF).

The active device is from oscillator topology, utilizing a high-Q resonator, and four anti-parallel-configured, hyper-abrupt, tuning varactors.

The attenuator provides a broadband RF load for the VCO. The buffer-amplifier provides power-leveling and isolation. The LPF provides VCO harmonic attenuation.

#### **6.2.1.4 Synthesizer Circuitry**

The Receiver synthesizer is a subcircuit within the receiver-specific IC, which when connected with a loop filter, VCO, buffer amplifier, lowpass filter, driver amplifier, unequal splitter, and feedback attenuator forms a phase-locked loop. The frequency and phase of the VCO is locked to a highly-stable external Temperature Compensated Crystal Oscillator (TCXO) reference (16.8 MHz). This IC contains the following integrated Phase locked loop (PLL) components: prescaler, fractional-N divider, reference divider, phase detector, and charge-pump (for the external loop-filter). The reference divider frequency is selected to be either 8.4 MHz, 5.6 MHz or 16.8 MHz (800/900 MHz band).

#### **6.2.1.5 Backend Receiver-specific IC Circuitry**

The backend Receiver-specific IC provides additional amplification, filtering, and a second down-conversion. The second IF signal is converted to a digital signal, and output via either a differential or single-ended driver to the digital signal processor (DSP) in the SCM.

#### **6.2.1.6 Memory Circuitry**

The memory circuitry consists of an Electrically Erasable Programmable Read-Only Memory (EEPROM), located in the Receiver. The SCM performs memory read and write operations via the SPI bus. The Rx Front-End Filter tuning calibration is stored in the EEPROM. Therefore, no field tuning is ever required for the Receiver.

#### **6.2.1.7 Analog to Digital (ADC) Converter Metering Circuitry**

Analog signals from points throughout the Receiver are applied to the ADC converter. These analog signals are converted to digital signals and then sent to the SCM, via the Serial Peripheral Interface (SPI) lines, upon request of the SCM.

### **6.2.2 Data Communications**

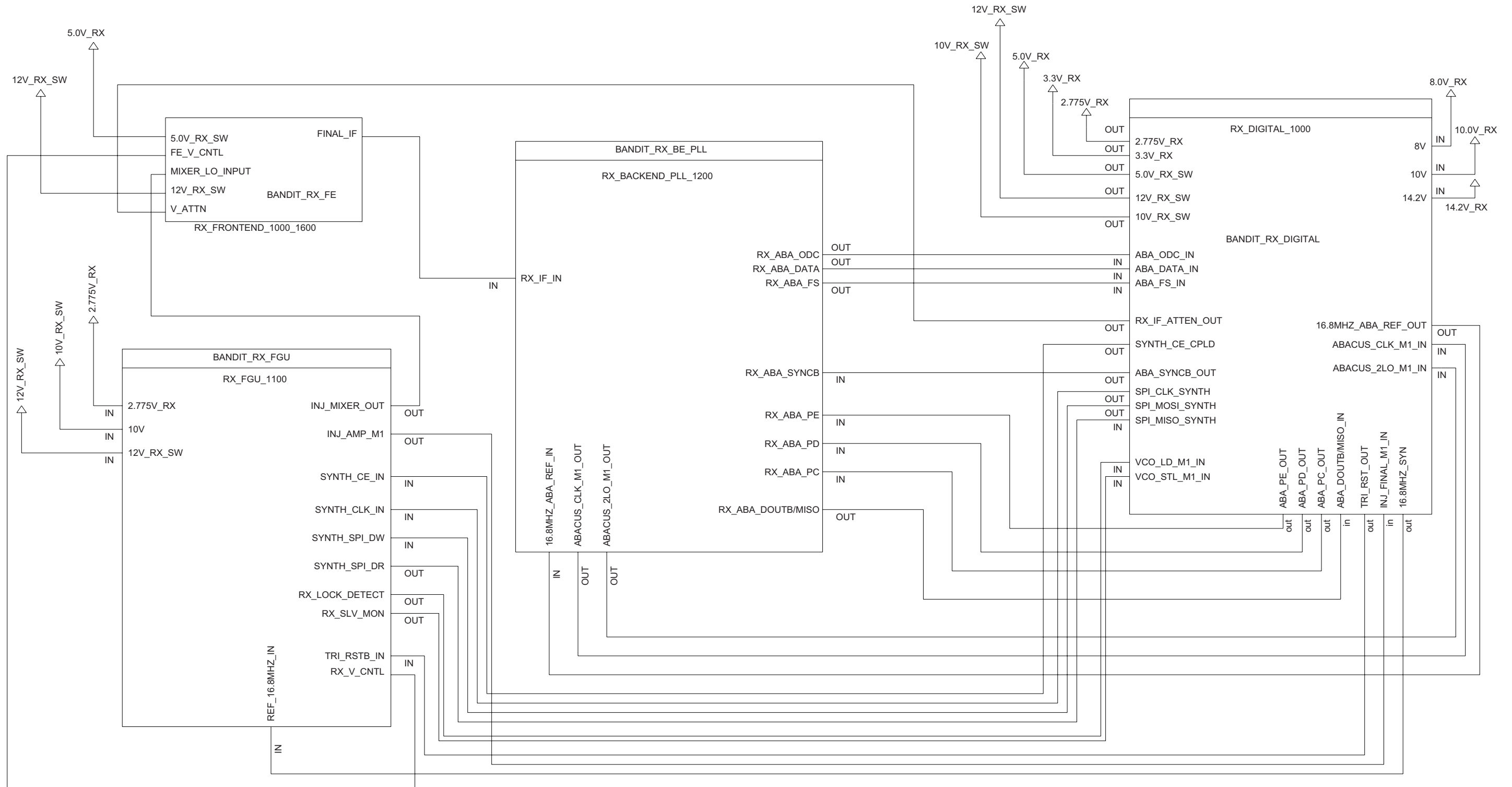
#### **6.2.2.1 Communications with Station Control Module**

Data communications between the Receiver and the Station Control Module microprocessor ( $\mu\text{P}$ ) is performed via a Serial Peripheral Interface (SPI) bus. This bus allows the SCM  $\mu\text{P}$  to send data to the synthesizer PLL IC (to select frequency) and to read the ADC Converter IC.

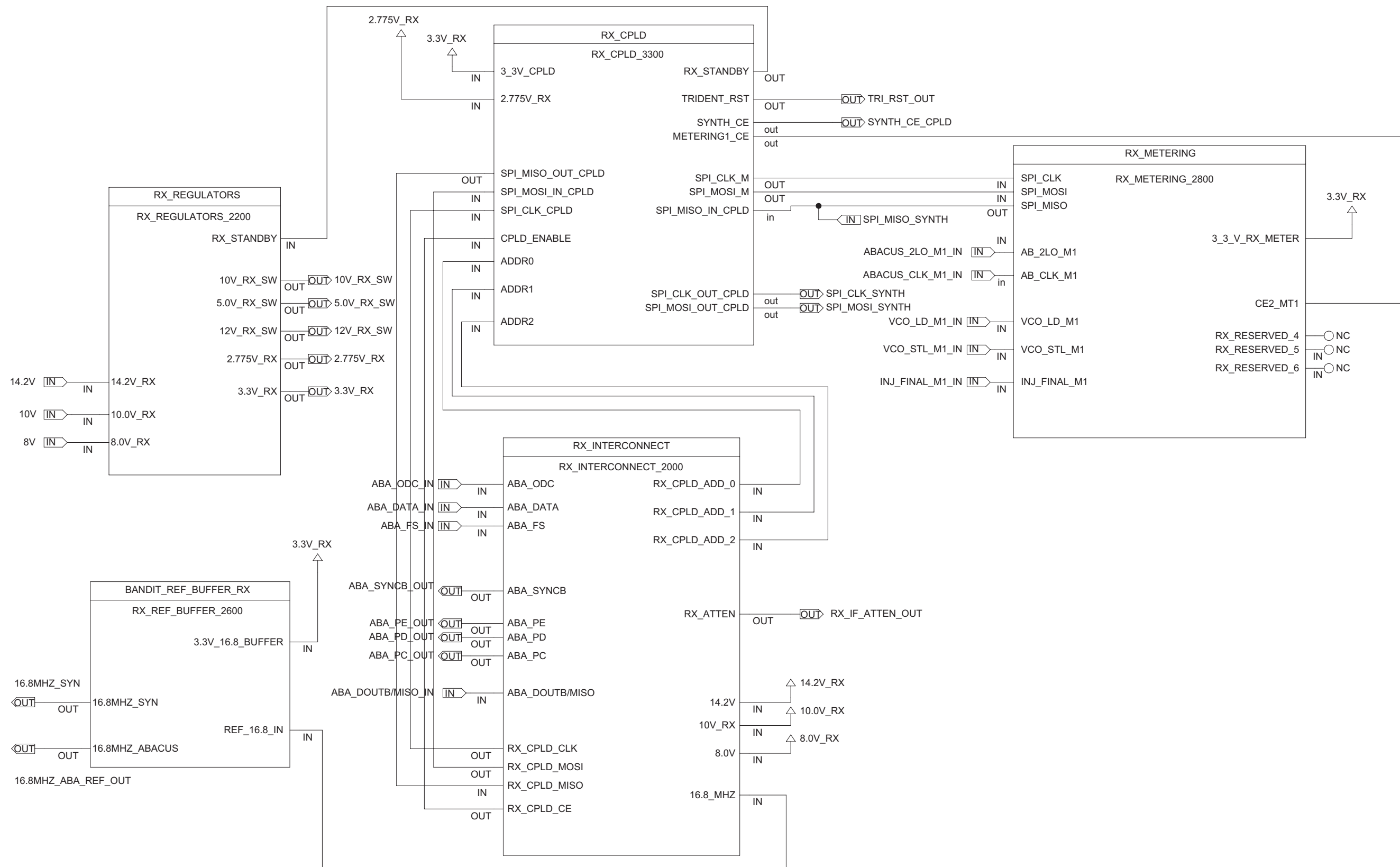
#### **6.2.2.2 ADC Converter Circuitry**

Analog signals from various strategic operating points throughout the Receiver board are fed to an ADC converter, which converts them to a digital signal and, upon request by the Station Control Module, outputs the signal to the Station Control Module via the Serial Peripheral Interface (SPI) bus.

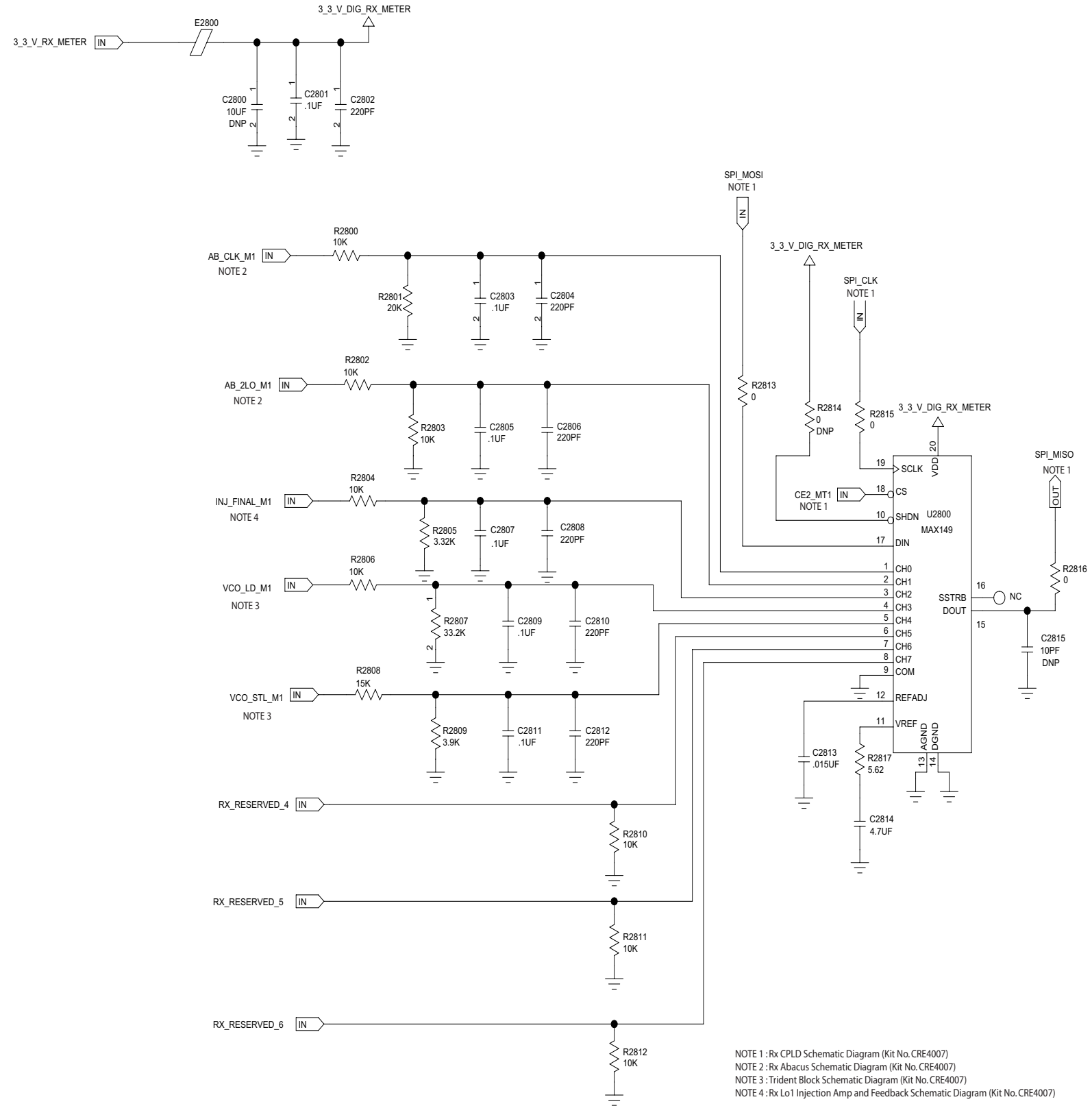
6.2 Receiver Schematics (UHF)



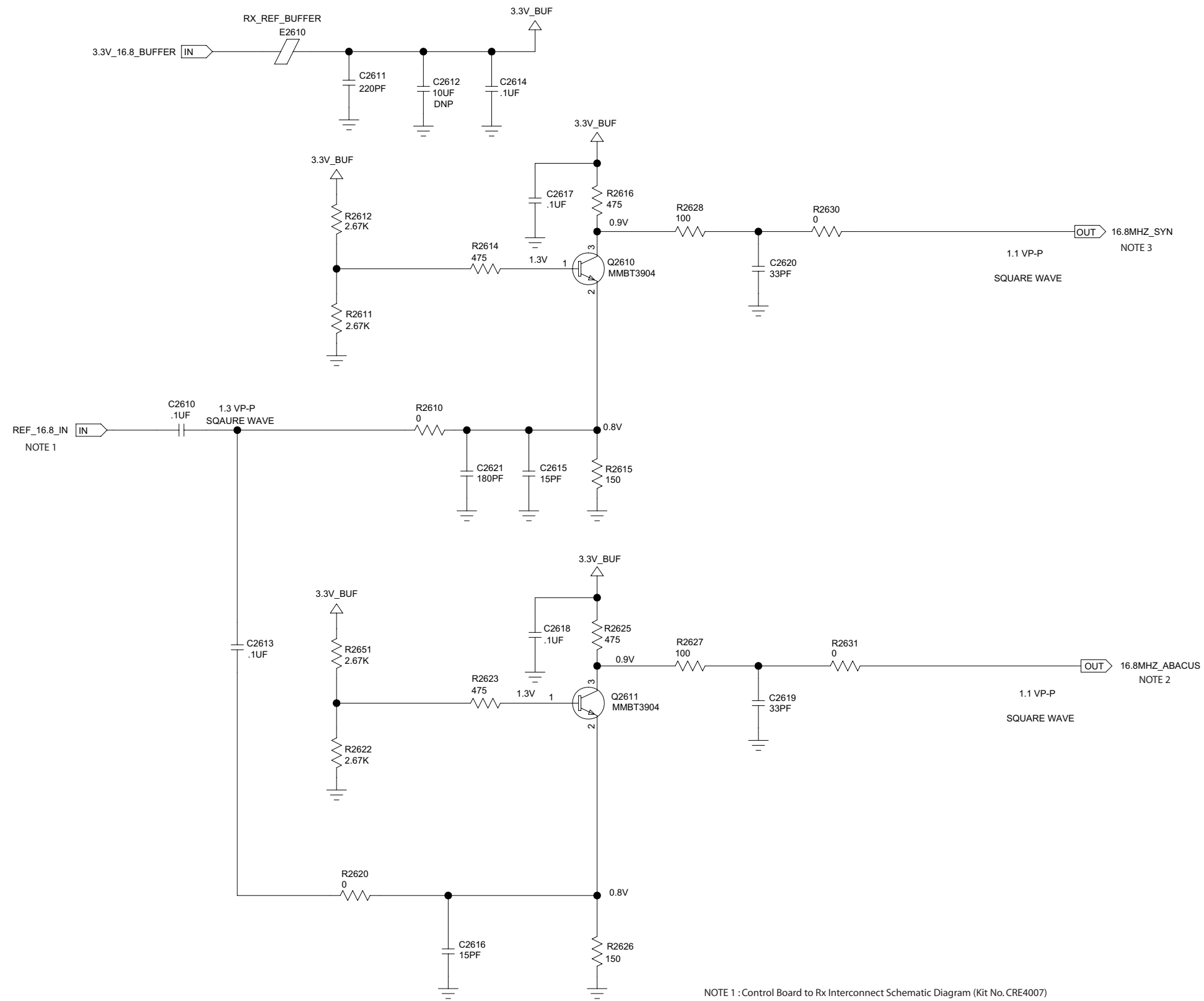
Receiver – Main Schematic Diagram (Kit No. CRE4007)



Receiver – General Rx Digital Section Schematic Diagram (Kit No. CRE4007)

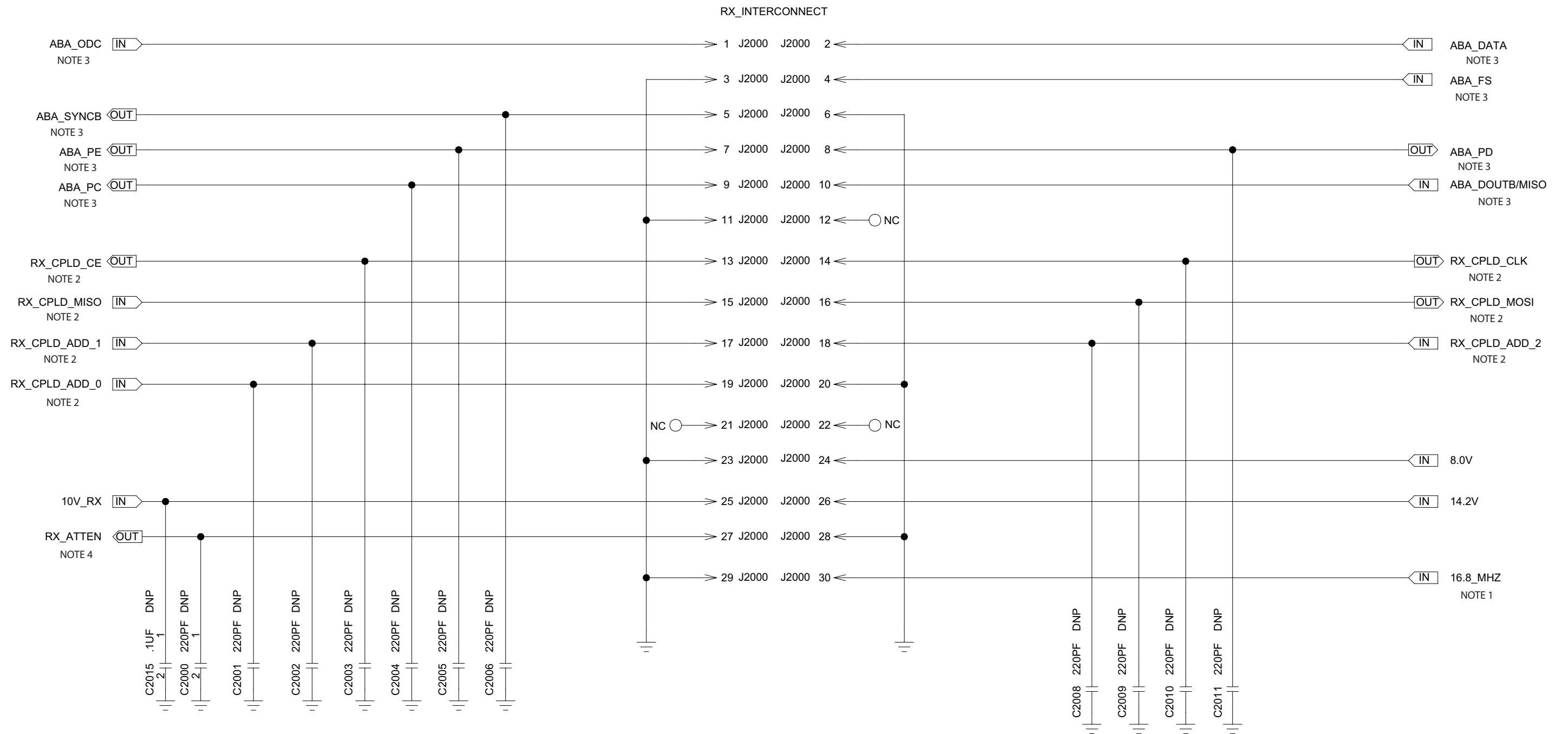


**Receiver – Rx Metering Schematic Diagram (Kit No. CRE4007)**



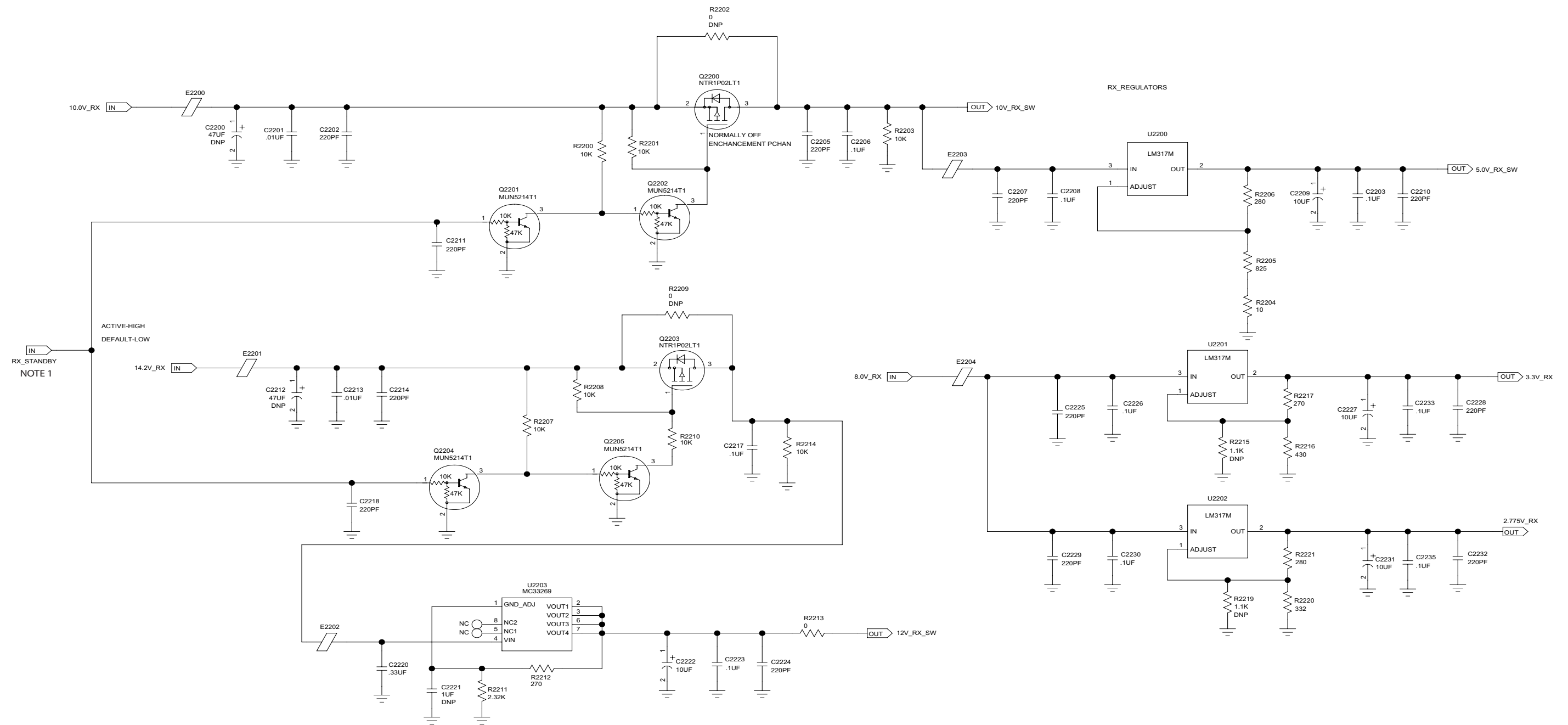
NOTE 1 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Rx Abacus Schematic Diagram (Kit No. CRE4007)  
 NOTE 3 : Trident Block Schematic Diagram (Kit No. CRE4007)

**Receiver – Rx 16.8 MHZ Ref Buffer Schematic Diagram (Kit No. CRE4007)**



NOTE 1 : Rx 16.8MHz Ref Buffer Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Rx CPLD Schematic Diagram (Kit No. CRE4007)  
 NOTE 3 : Rx Abacus Schematic Diagram (Kit No. CRE4007)  
 NOTE 4 : Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)

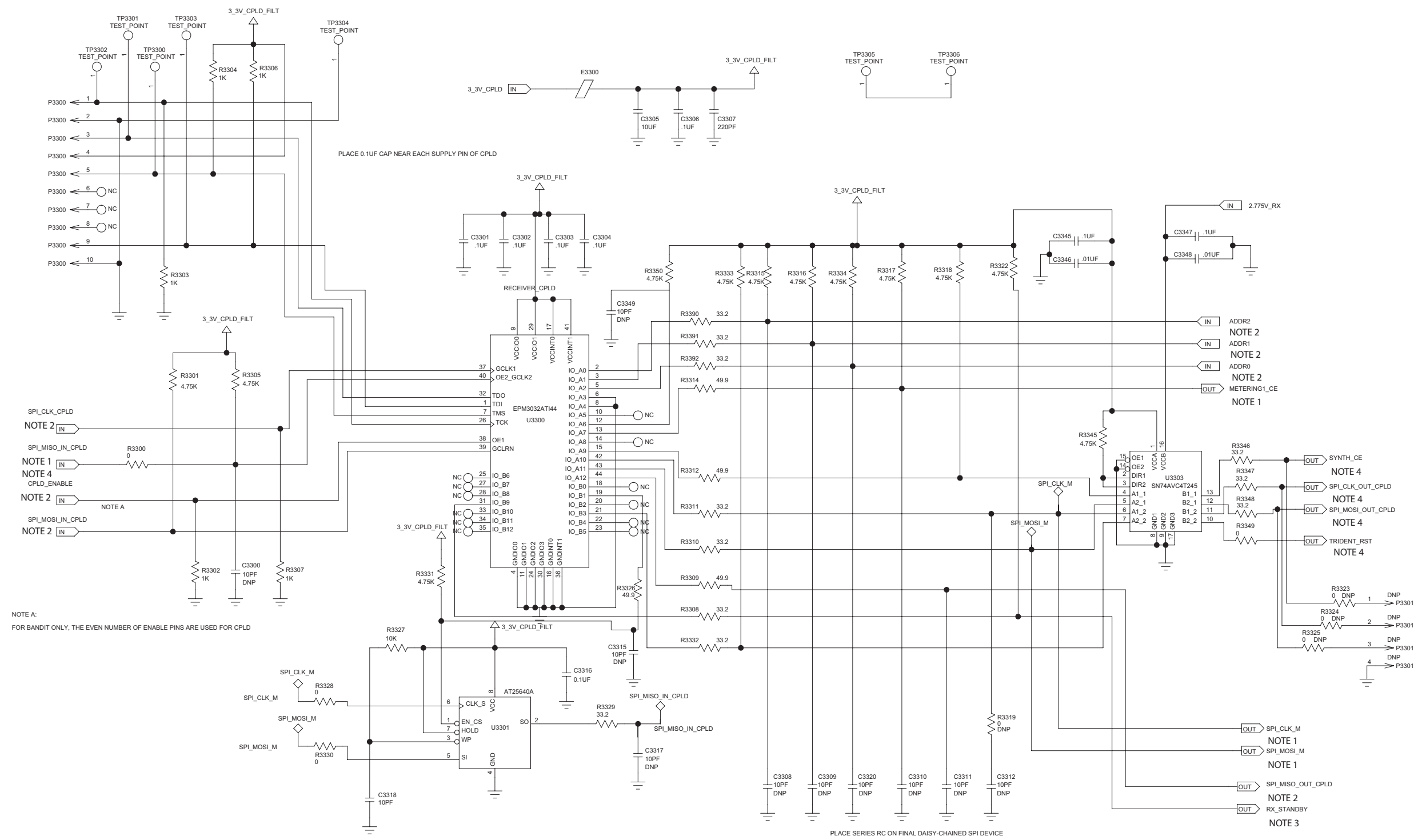
**Receiver – Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)**



NOTE 1 : Rx CPLD Schematic Diagram (Kit No. CRE4007)

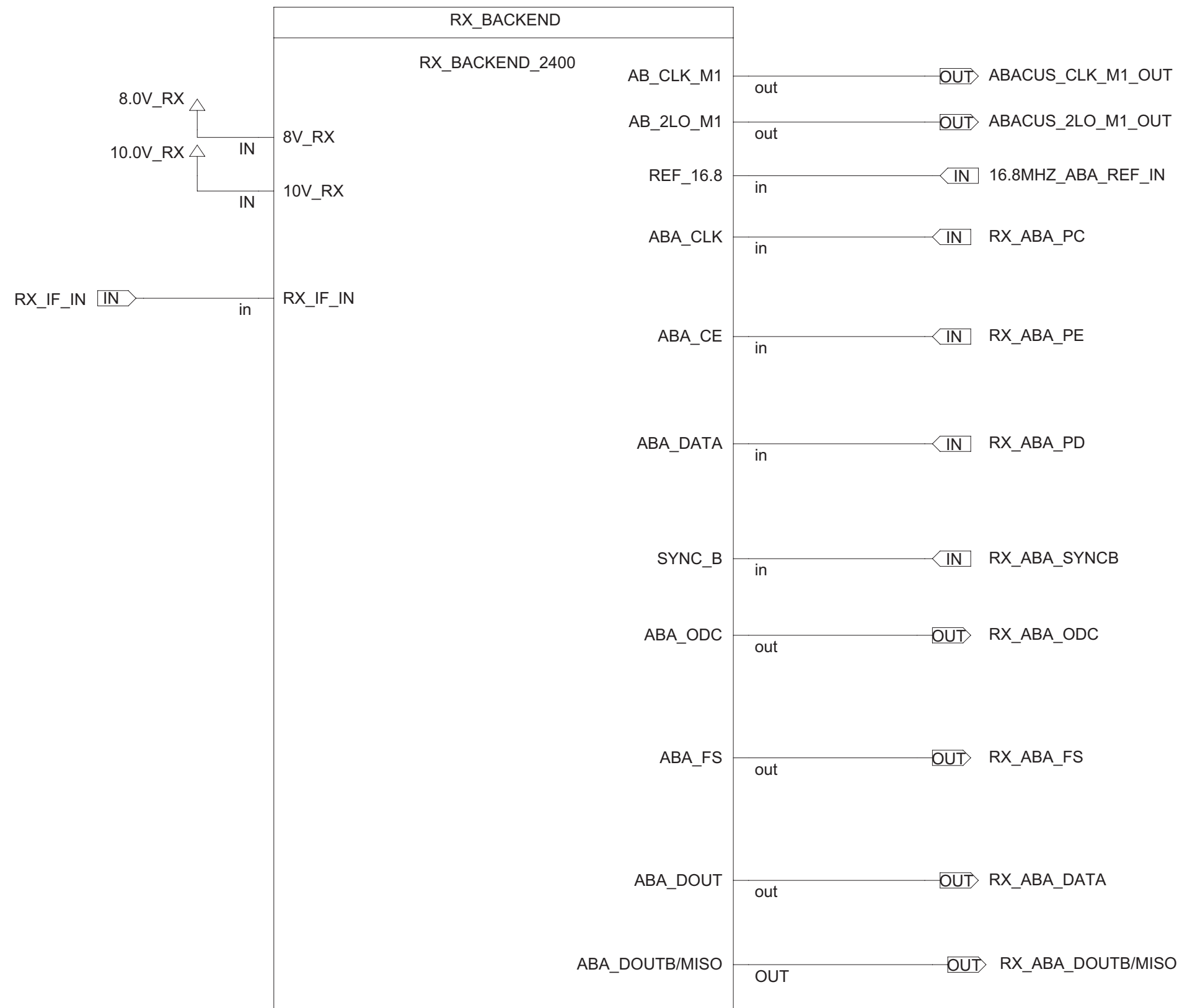
Receiver – Rx Voltage Regulators Schematic Diagram (Kit No. CRE4007)



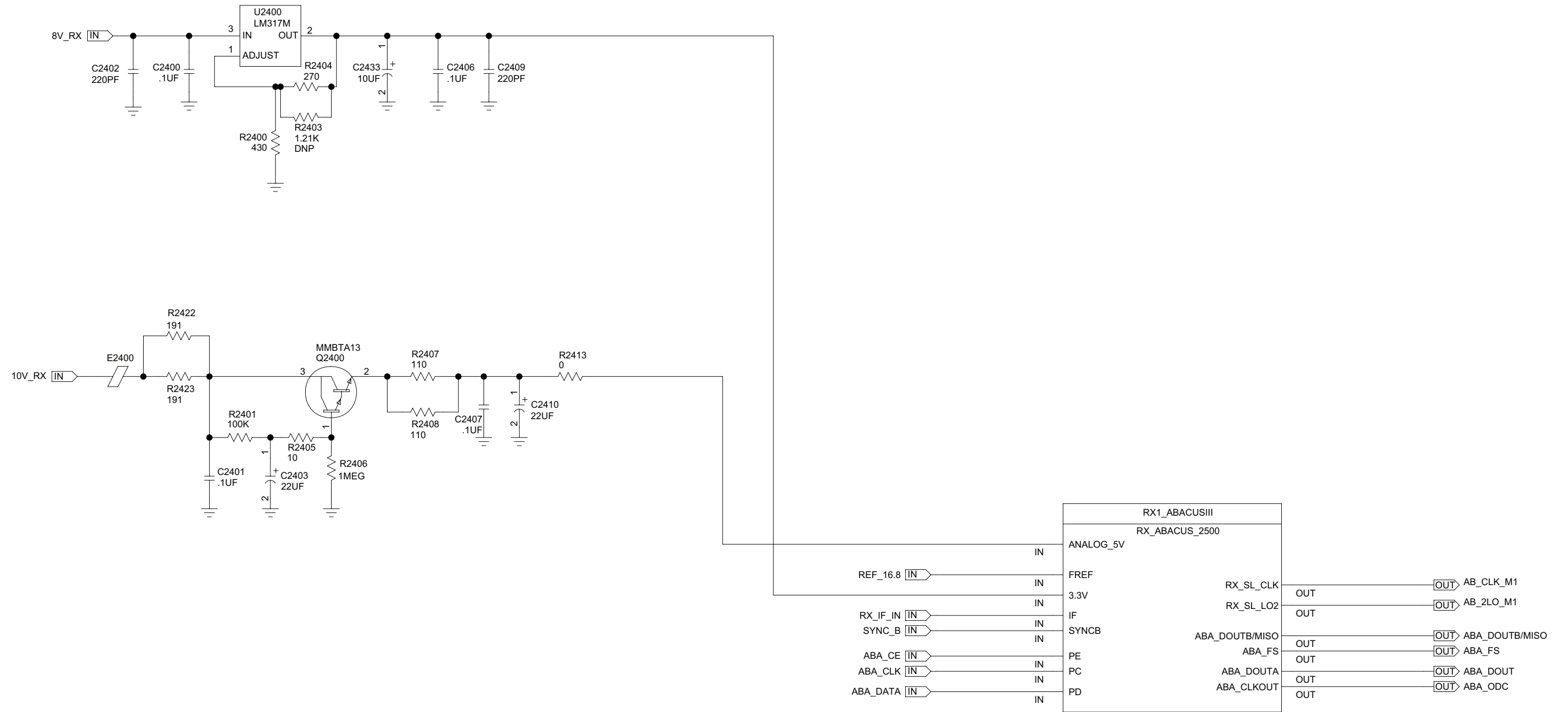


- NOTE 1 : Rx Metering Schematic Diagram (Kit No. CRE4007)
- NOTE 2 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)
- NOTE 3 : Rx Voltage Regulators Schematic Diagram (Kit No. CRE4007)
- NOTE 4 : Trident Block Schematic Diagram (Kit No. CRE4007)

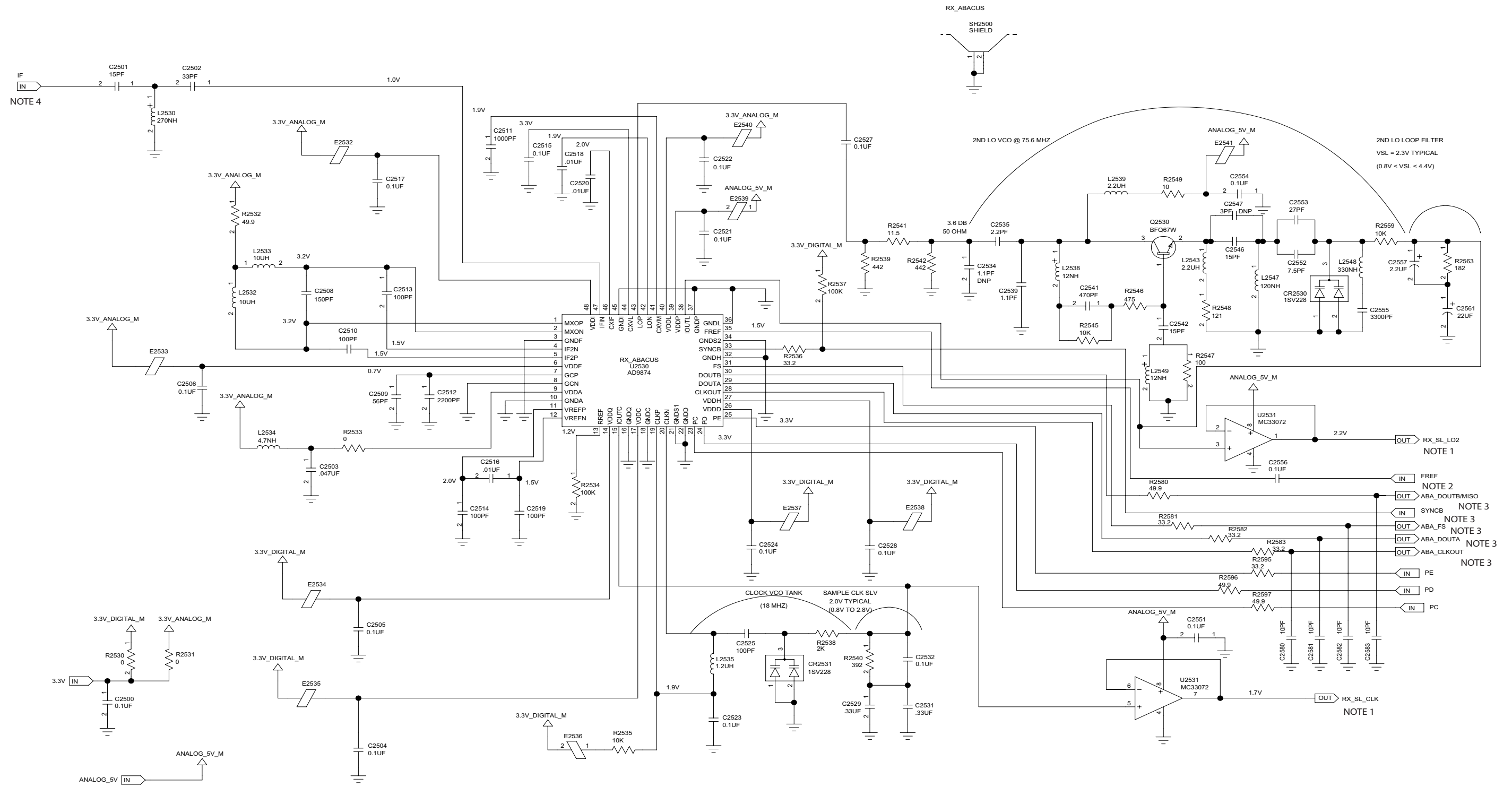
**Receiver – Rx CPLD Schematic Diagram (Kit No. CRE4007)**



Receiver – Rx Backend PLL Schematic Diagram (Kit No. CRE4007)

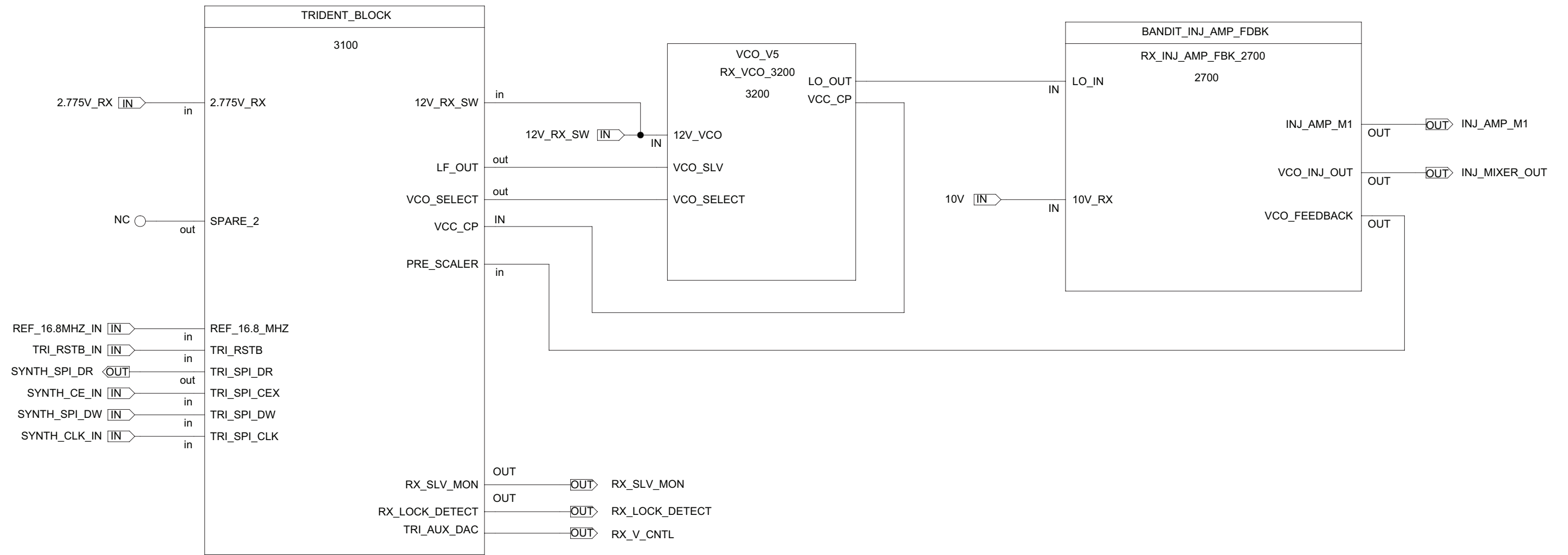


Receiver – Rx Backend Schematic Diagram (Kit No. CRE4007)

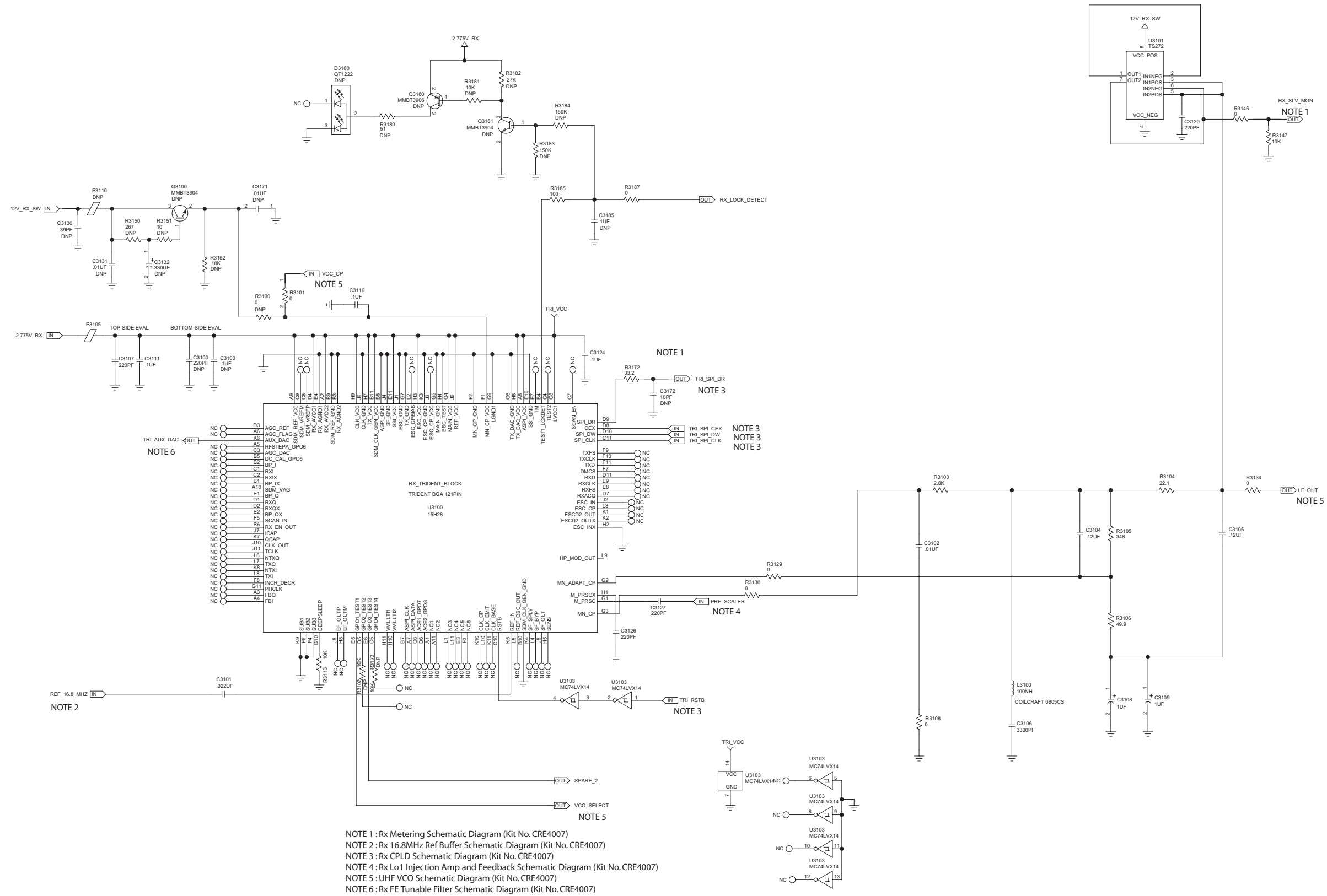


NOTE 1 : Rx Metering Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Rx 16.8MHz Ref Buffer Schematic Diagram (Kit No. CRE4007)  
 NOTE 3 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)  
 NOTE 4 : Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)

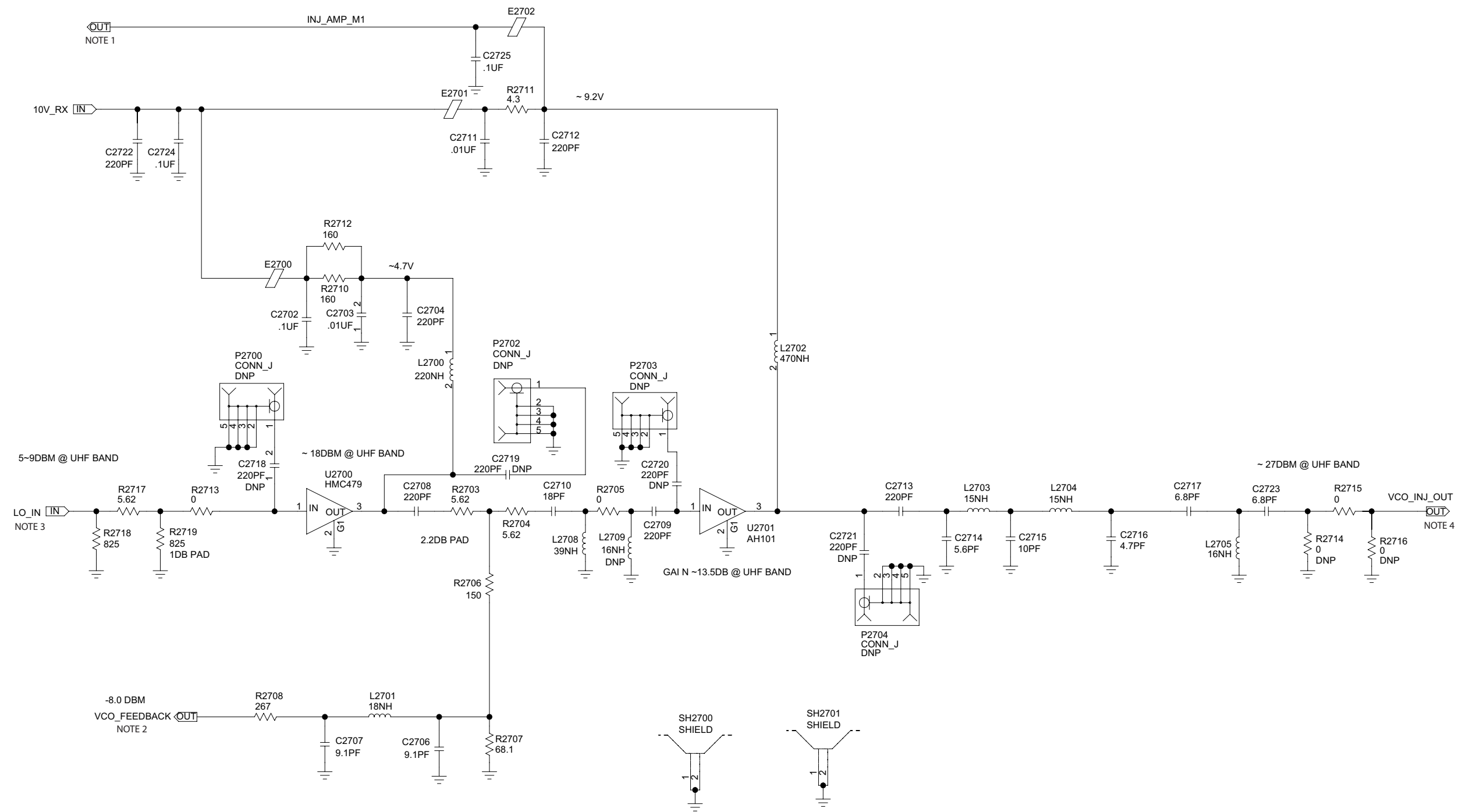
Receiver – Rx Abacus Schematic Diagram (Kit No. CRE4007)



Receiver – Rx Frequency Generation Unit (FGU) Schematic Diagram (Kit No. CRE4007)

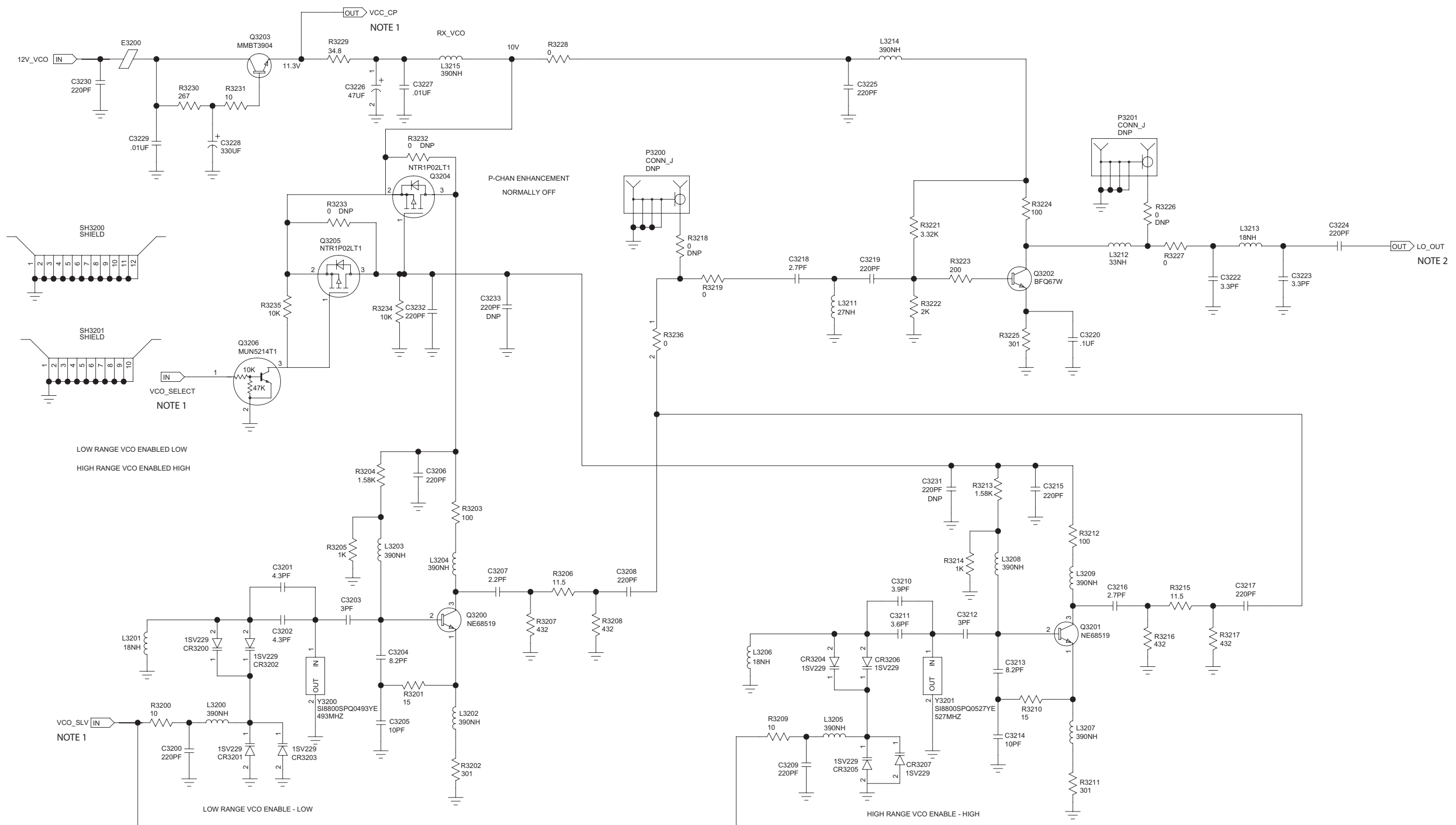


Receiver – Trident Block Schematic Diagram (Kit No. CRE4007)



NOTE 1 : Rx Metering Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Trident Block Schematic Diagram (Kit No. CRE4007)  
 NOTE 3 : UHF VCO Schematic Diagram (Kit No. CRE4007)  
 NOTE 4 : Mixer Schematic Diagram (Kit No. CRE4007)

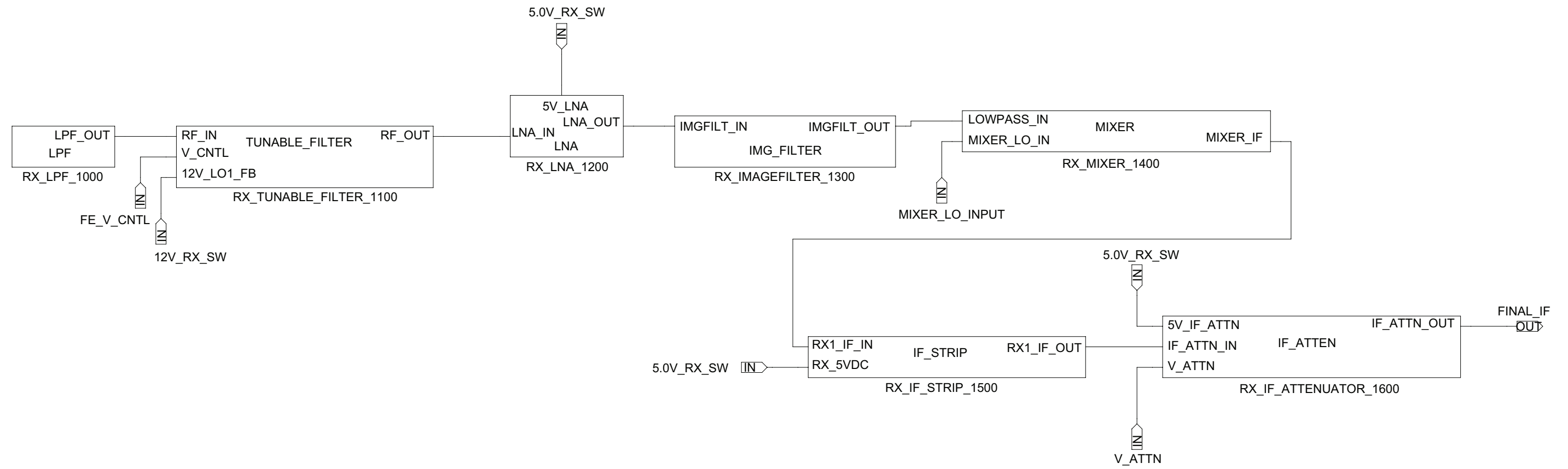
**Receiver – Rx Lo1 Injection Amp and Feedback Schematic Diagram (Kit No. CRE4007)**

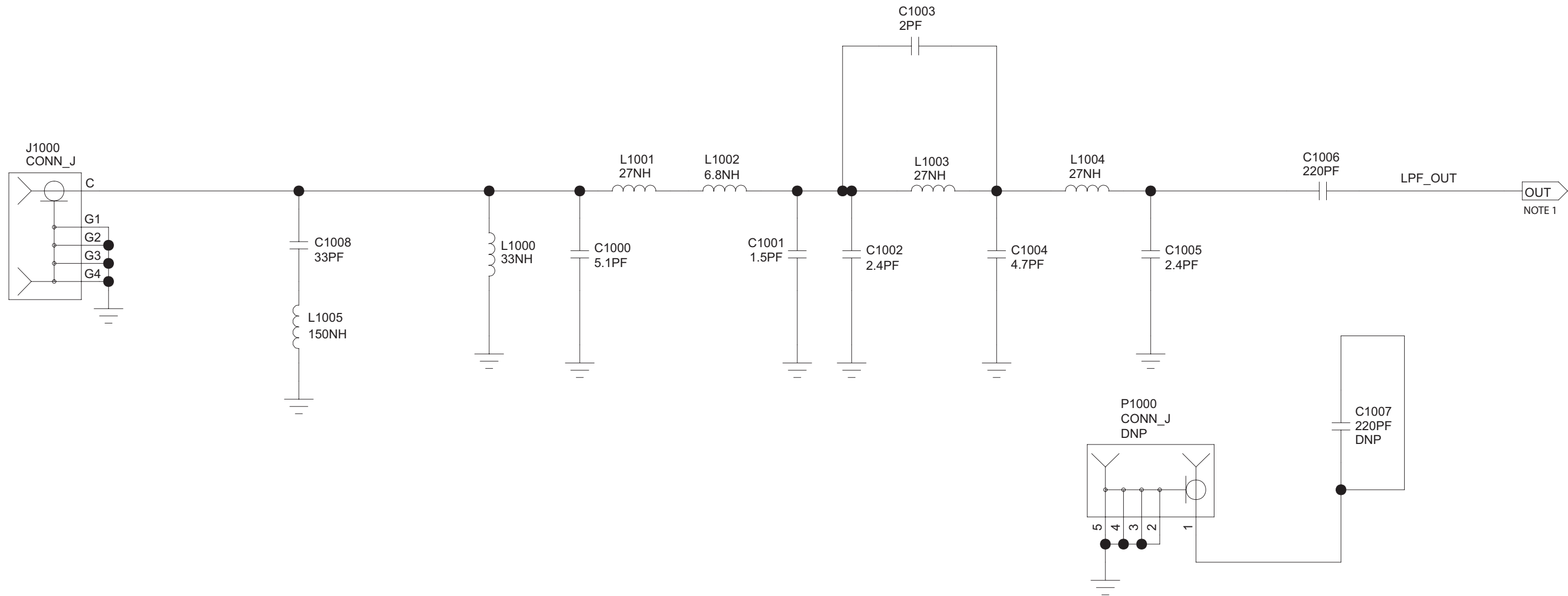


NOTE 1 : Trident Block Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Rx Lo1 Injection Amp and Feedback Schematic Diagram (Kit No. CRE4007)

**Receiver – UHF VCO Schematic Diagram (Kit No. CRE4007)**

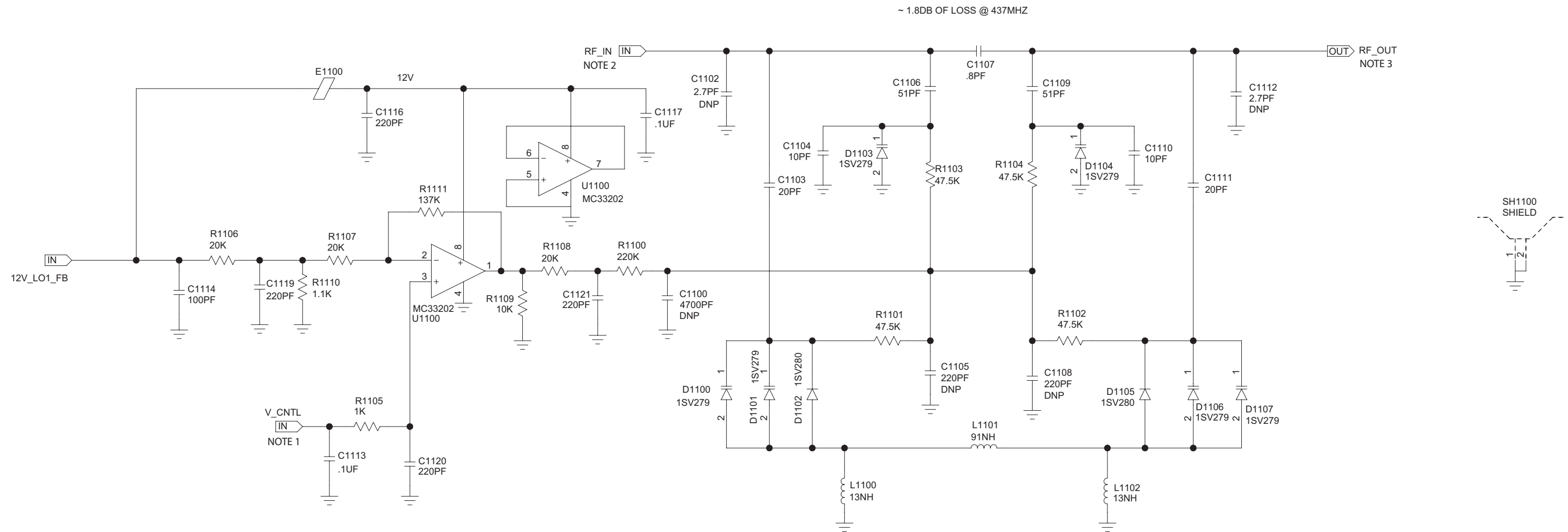






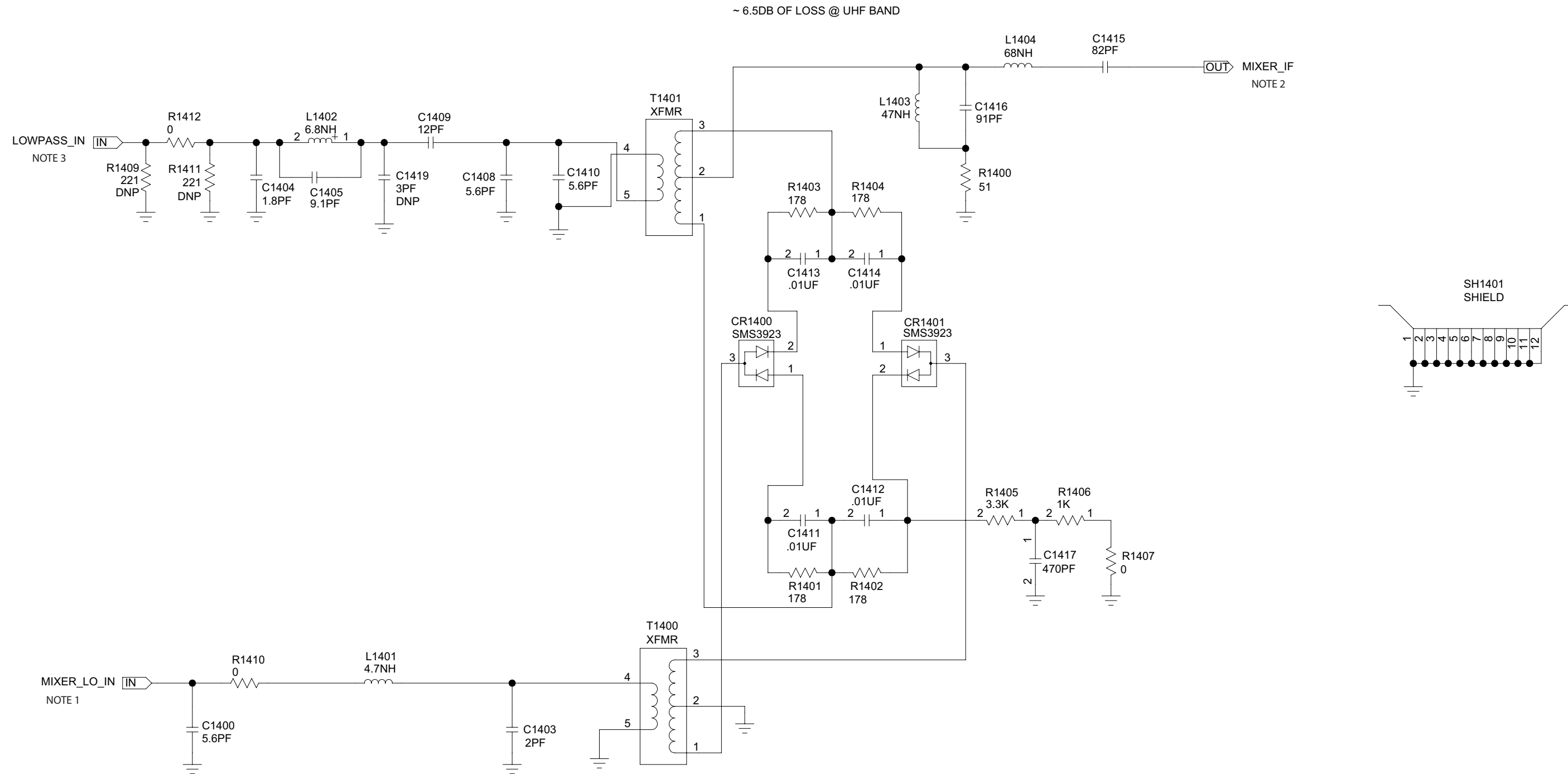
NOTE 1 : Rx FE Tunable Filter Schematic Diagram (Kit No. CRE4007)

Receiver – Rx Low Pass Filter Schematic Diagram (Kit No. CRE4007)



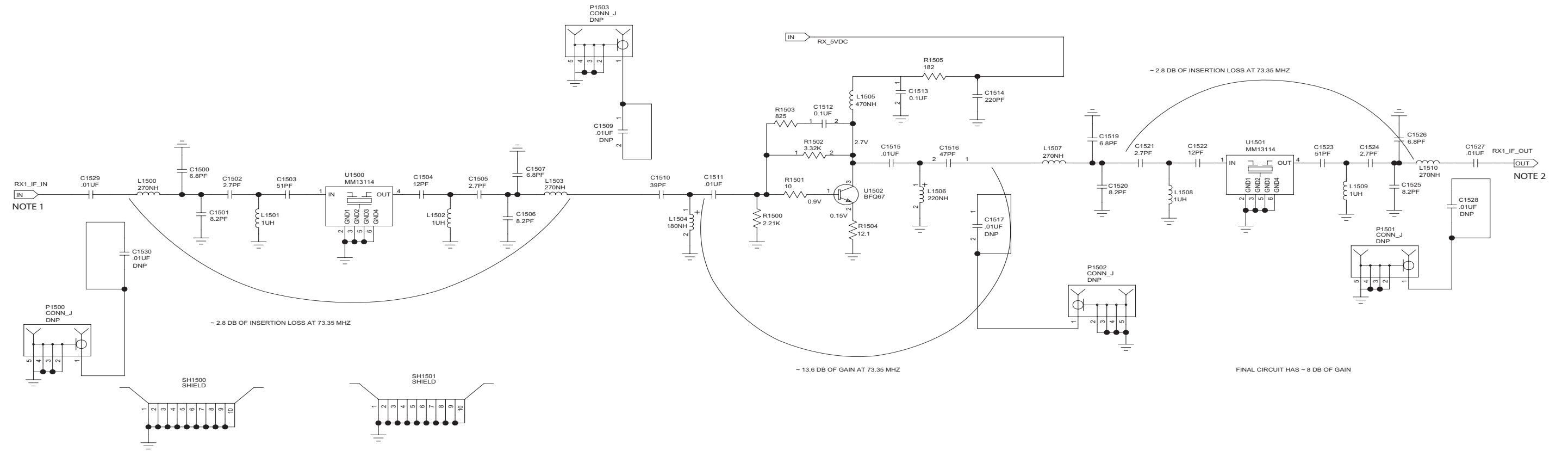
NOTE 1 : Trident Block Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Rx Low Pass Filter Schematic Diagram (Kit No. CRE4007)  
 NOTE 3 : LNA Schematic Diagram (Kit No. CRE4007)

**Receiver – Rx FE Tunable Filter Schematic Diagram (Kit No. CRE4007)**

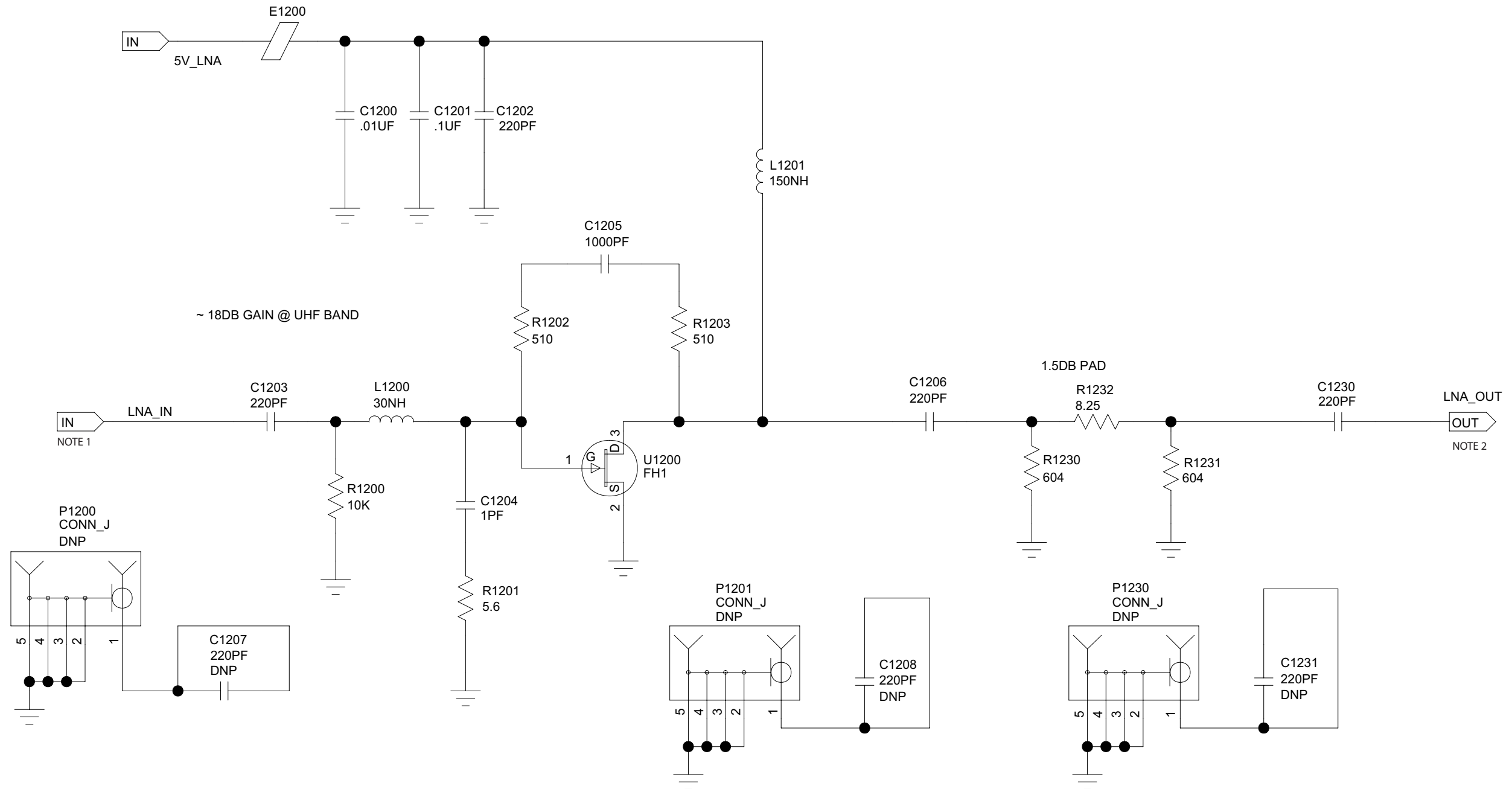


NOTE 1 : Rx Lo1 Injection Amp and Feedback Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : IF Strip Schematic Diagram (Kit No. CRE4007)  
 NOTE 3 : Image Filter Schematic Diagram (Kit No. CRE4007)

**Receiver – Mixer Schematic Diagram (Kit No. CRE4007)**

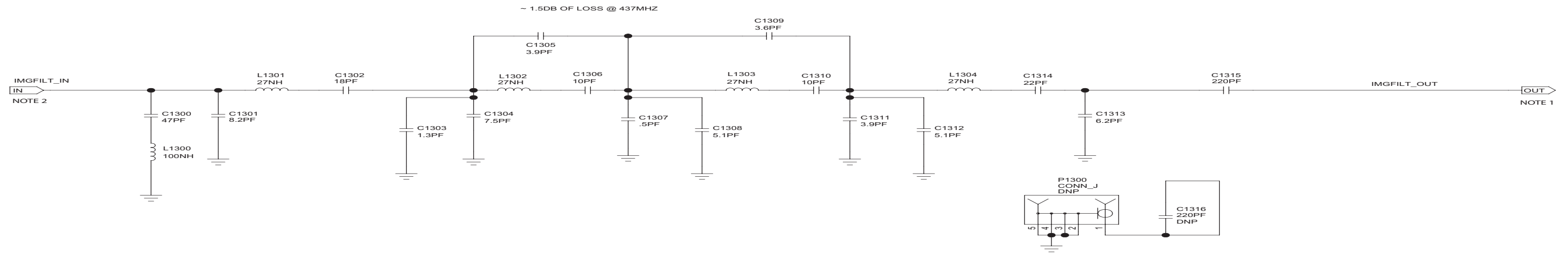


NOTE 1 : Mixer Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)

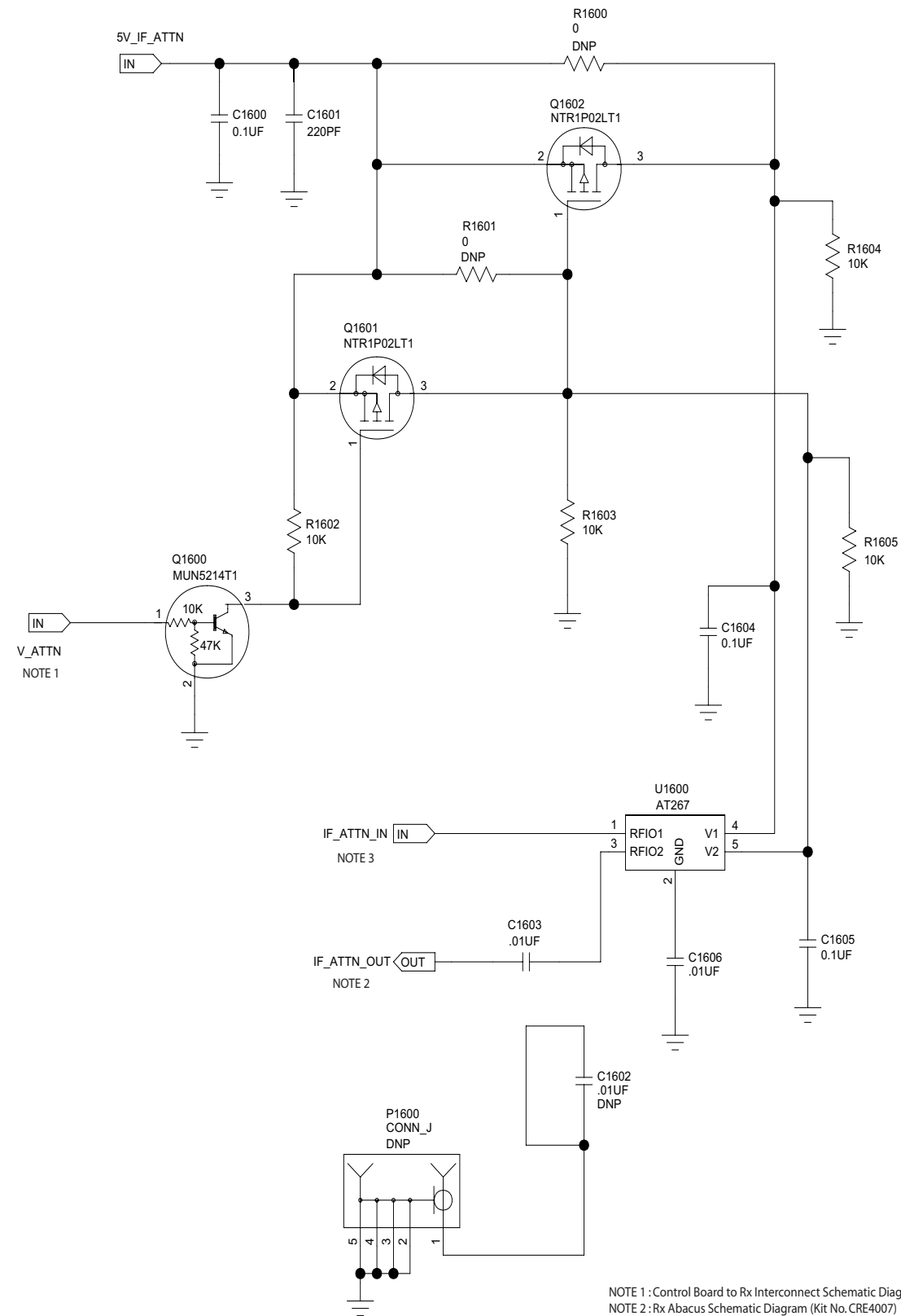


NOTE 1 : Rx FE Tunable Filter Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Image Filter Schematic Diagram (Kit No. CRE4007)

**Receiver – LNA Schematic Diagram (Kit No. CRE4007)**



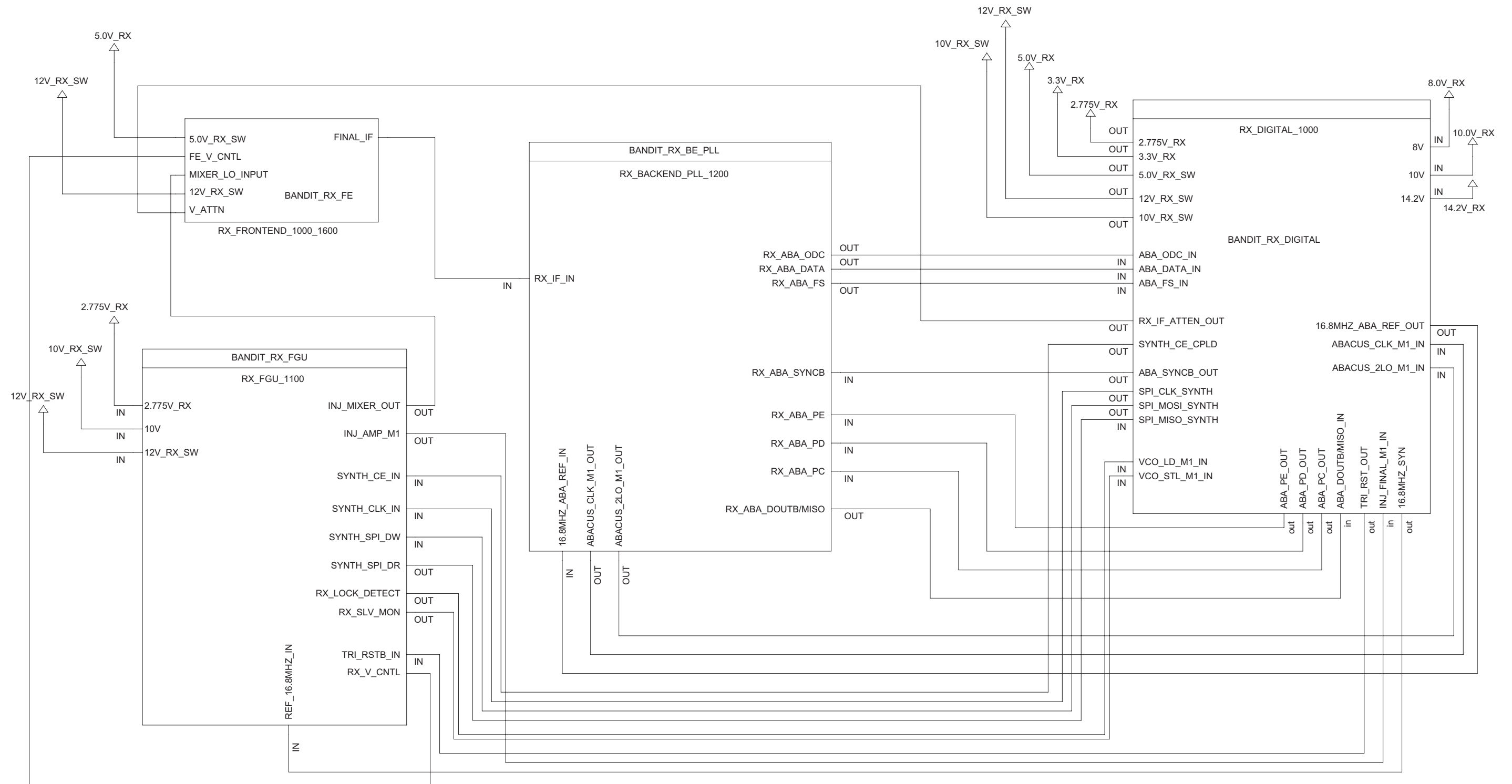
NOTE 1 : Mixer Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : LNA Schematic Diagram (Kit No. CRE4007)



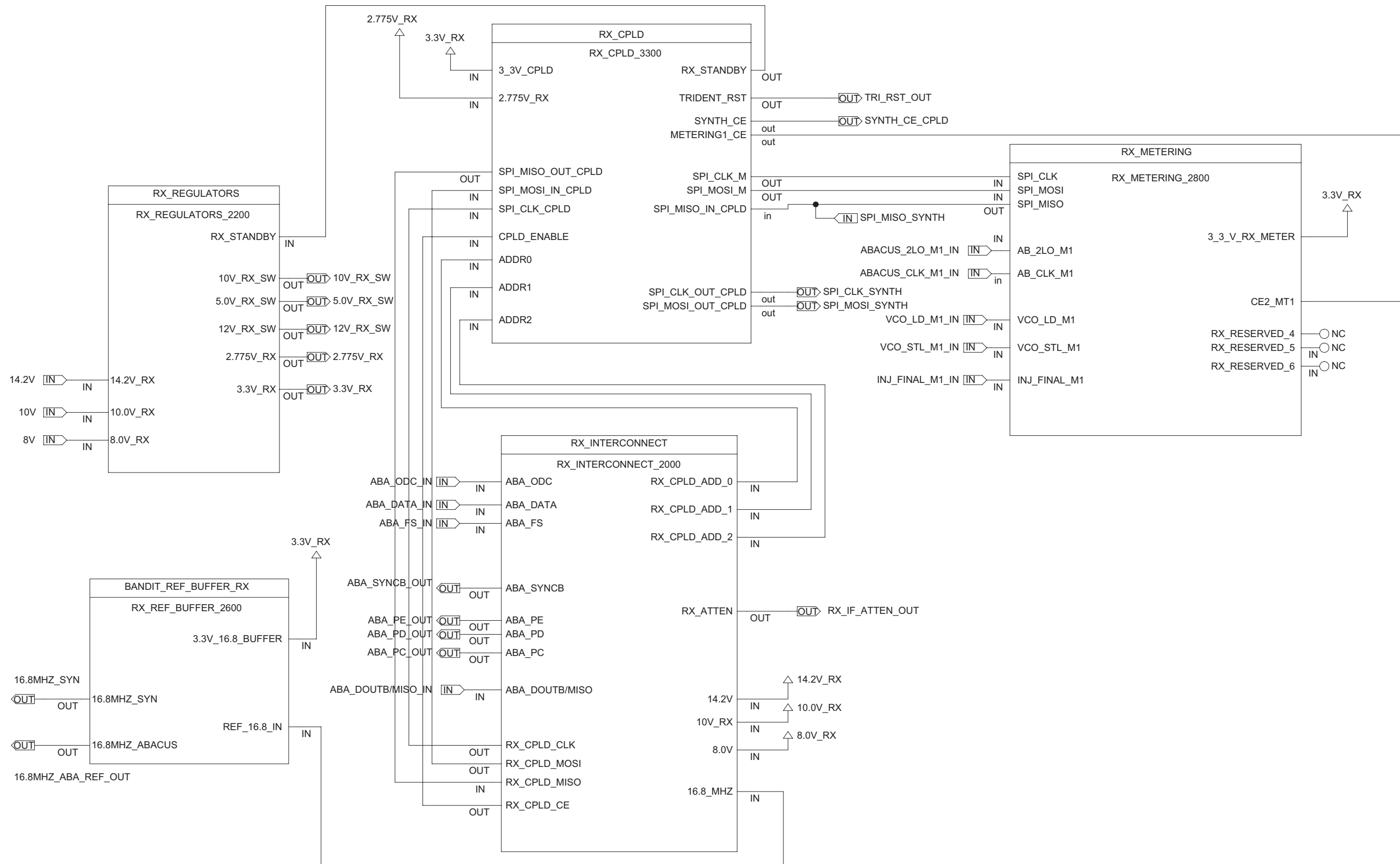
NOTE 1 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)  
 NOTE 2 : Rx Abacus Schematic Diagram (Kit No. CRE4007)  
 NOTE 3 : IF Strip Schematic Diagram (Kit No. CRE4007)

**Receiver – Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)**

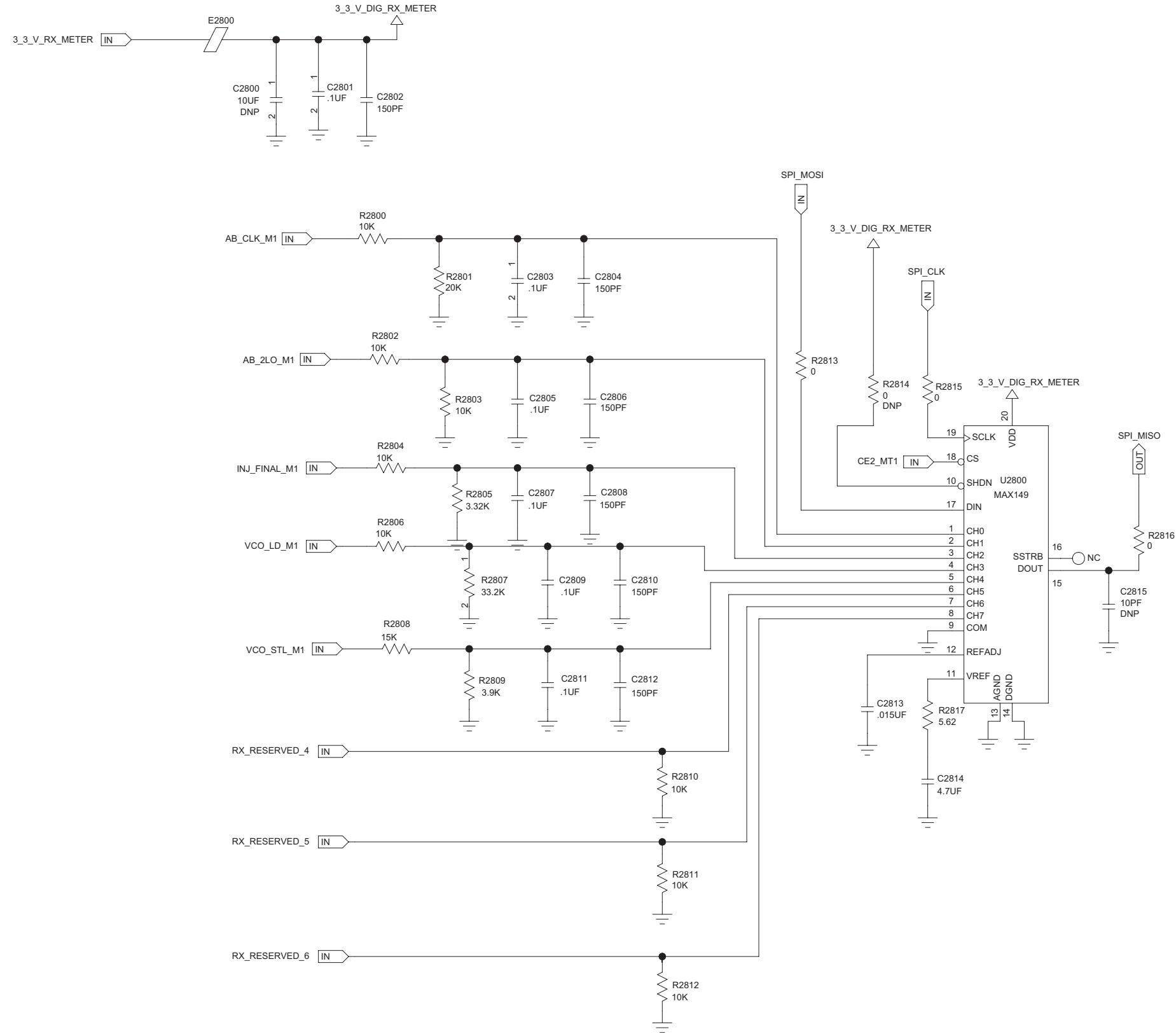




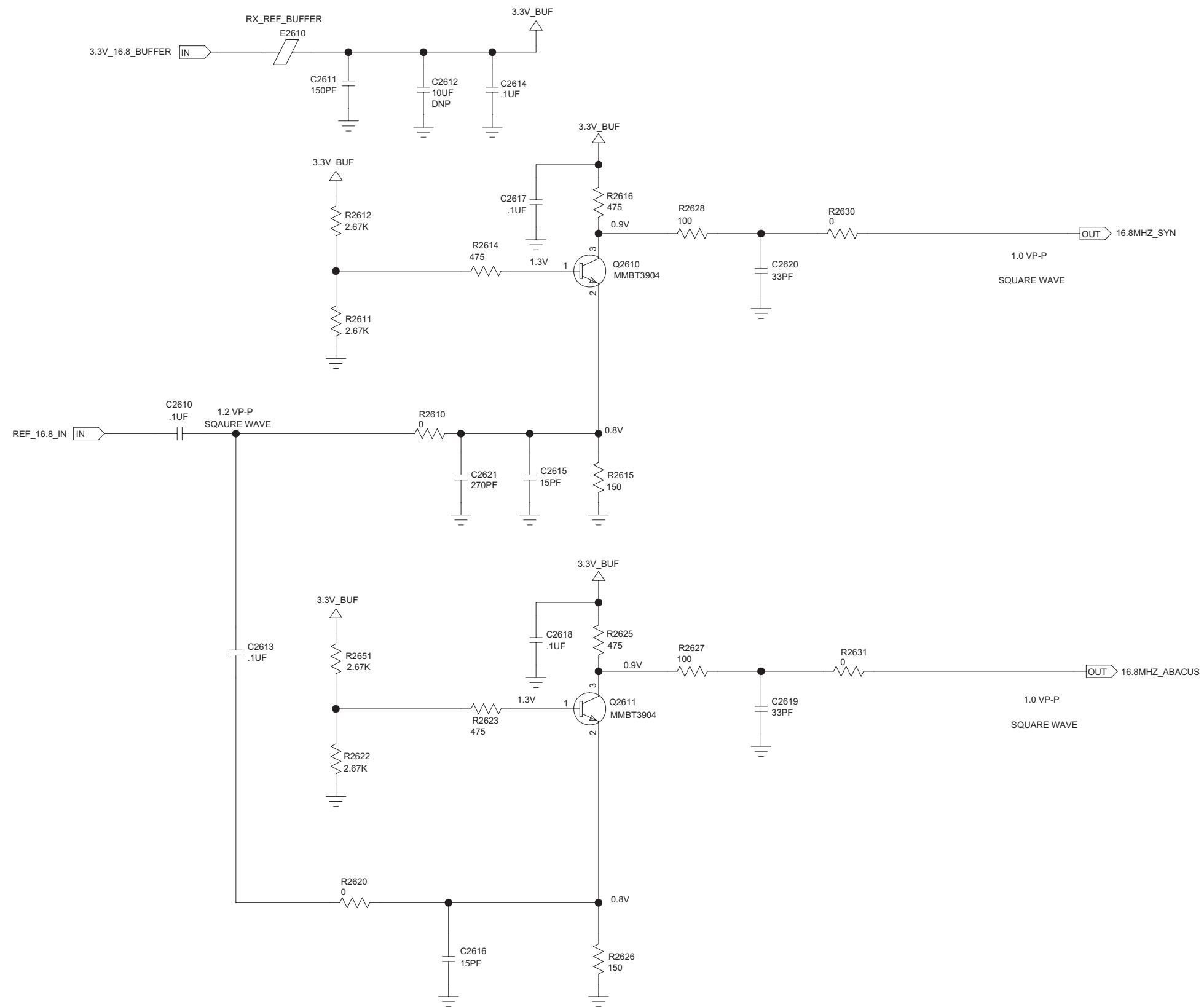
Receiver – Main Schematic Diagram (Kit No. CRE4008)



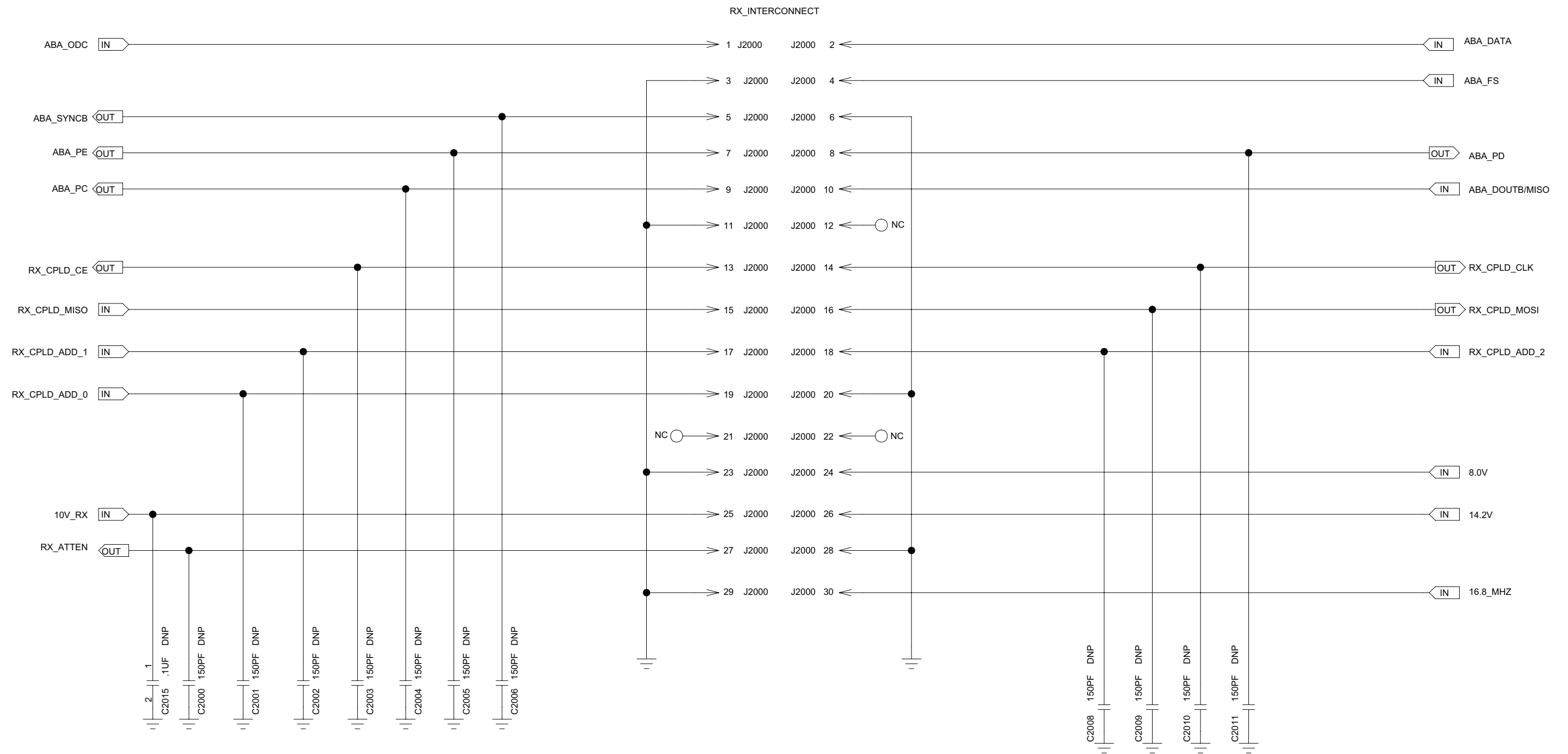
Receiver – General Rx Digital Section Schematic Diagram (Kit No. CRE4008)



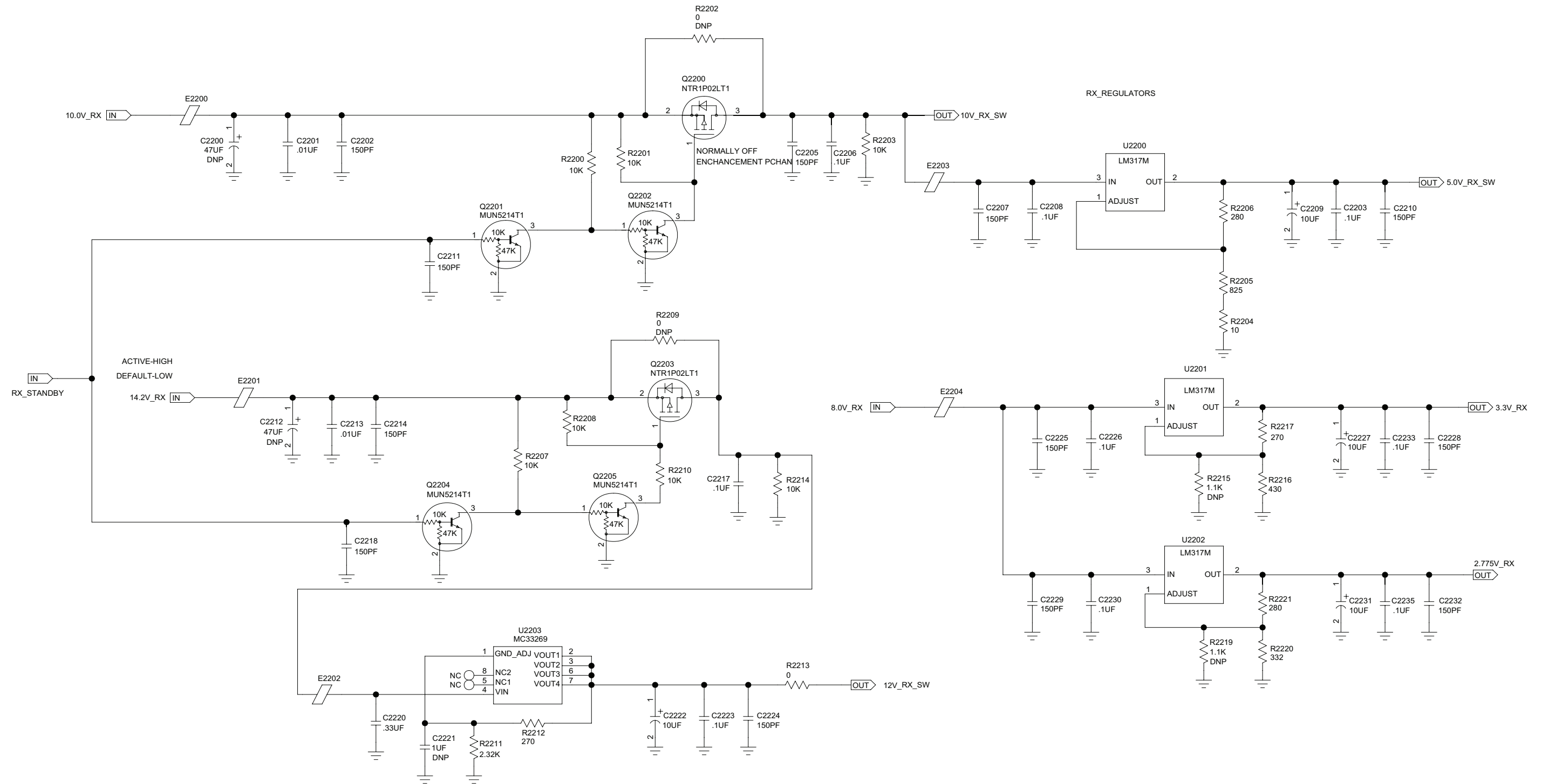
Receiver – Rx Metering Schematic Diagram (Kit No. CRE4008)



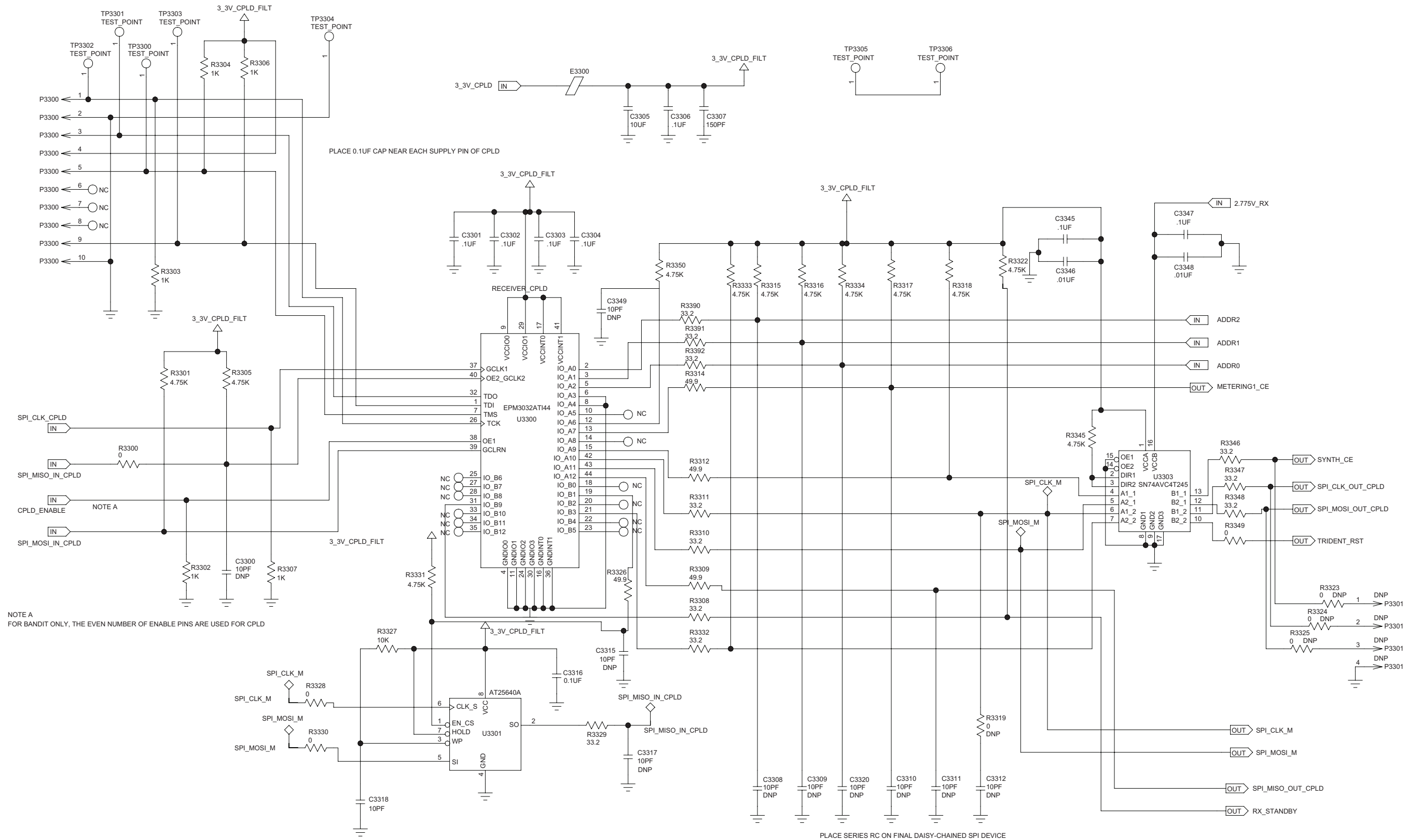
Receiver – Rx 16.8 MHZ Ref Buffer Schematic Diagram (Kit No. CRE4008)



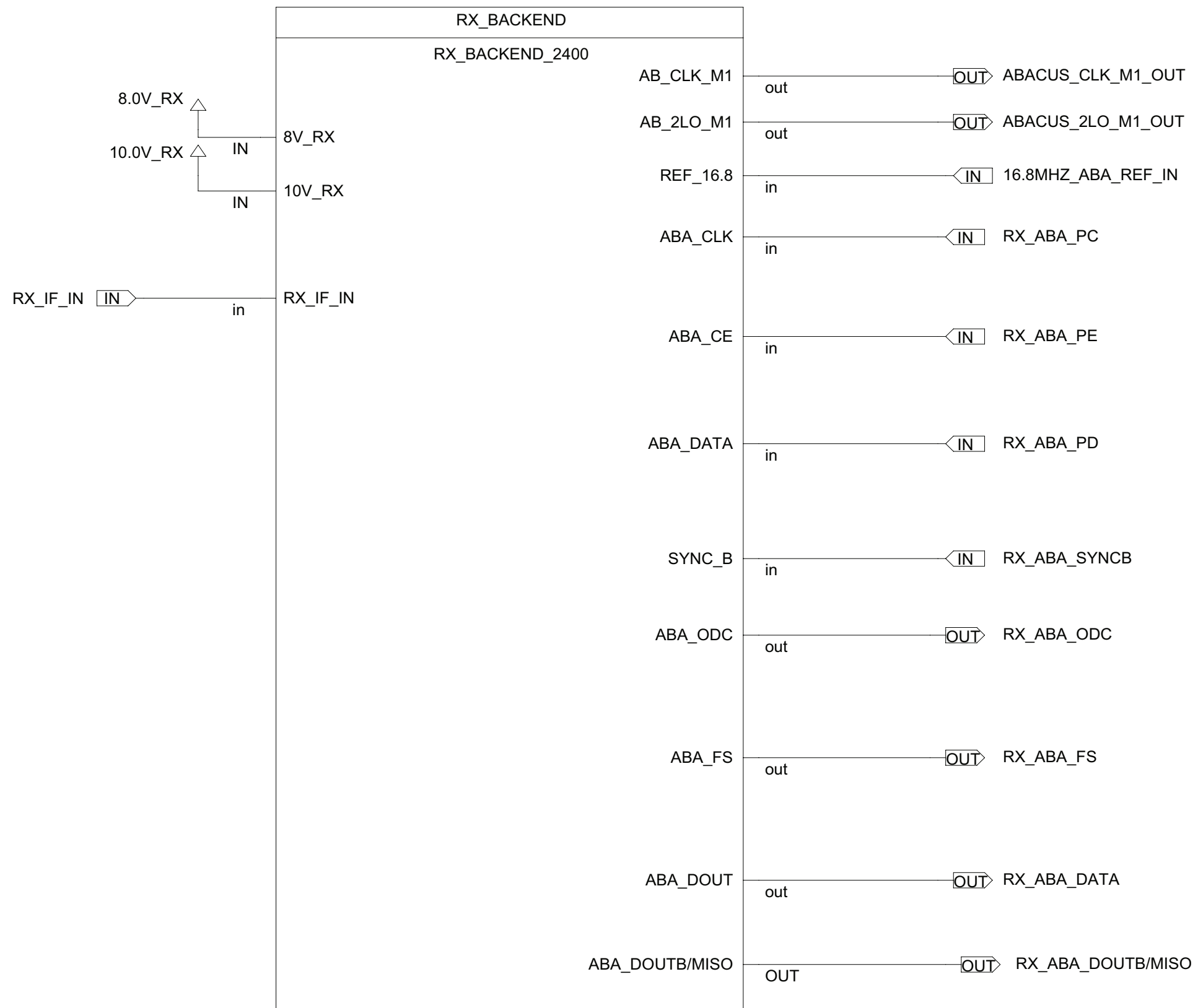
**Receiver – Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4008)**



Receiver – Rx Voltage Regulators Schematic Diagram (Kit No. CRE4008)

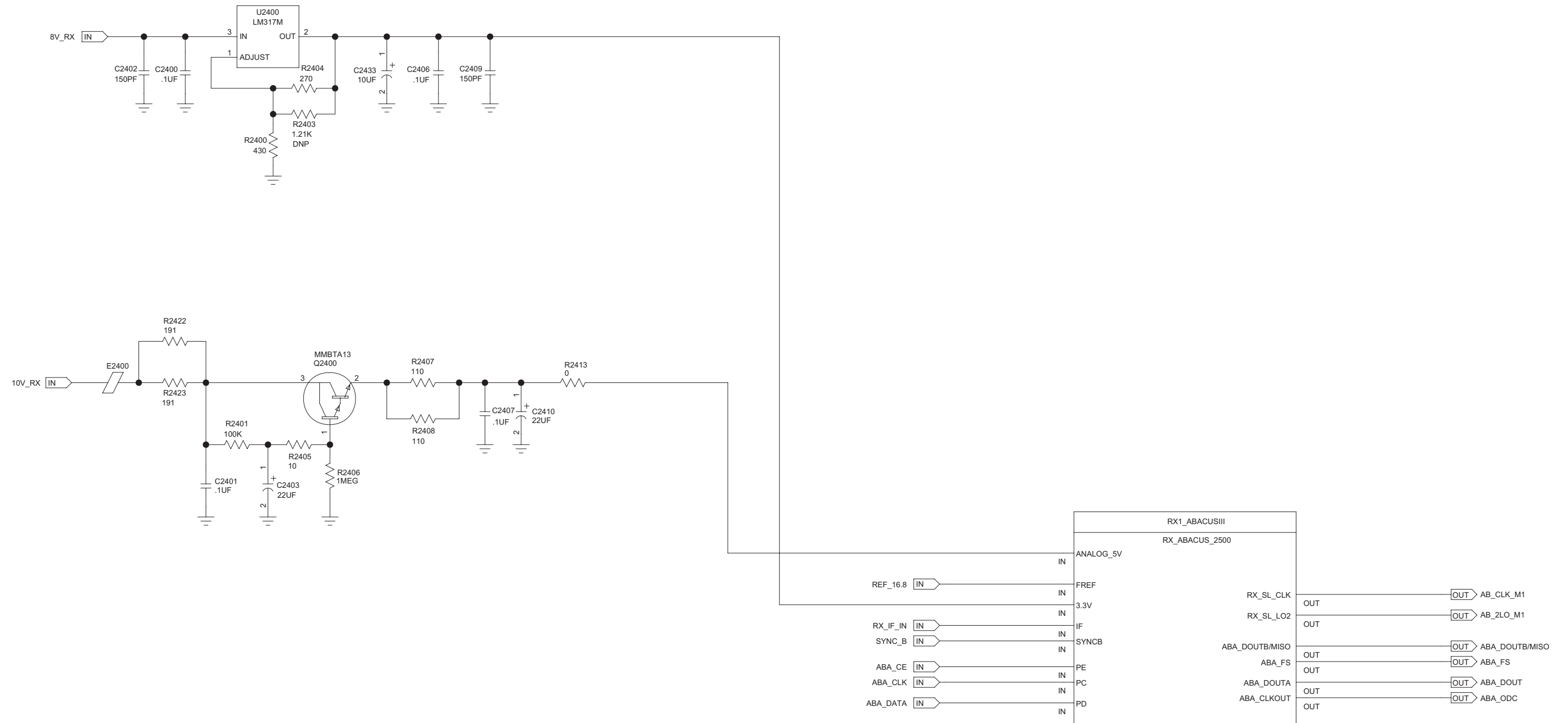


Receiver – Rx CPLD Schematic Diagram (Kit No. CRE4008)

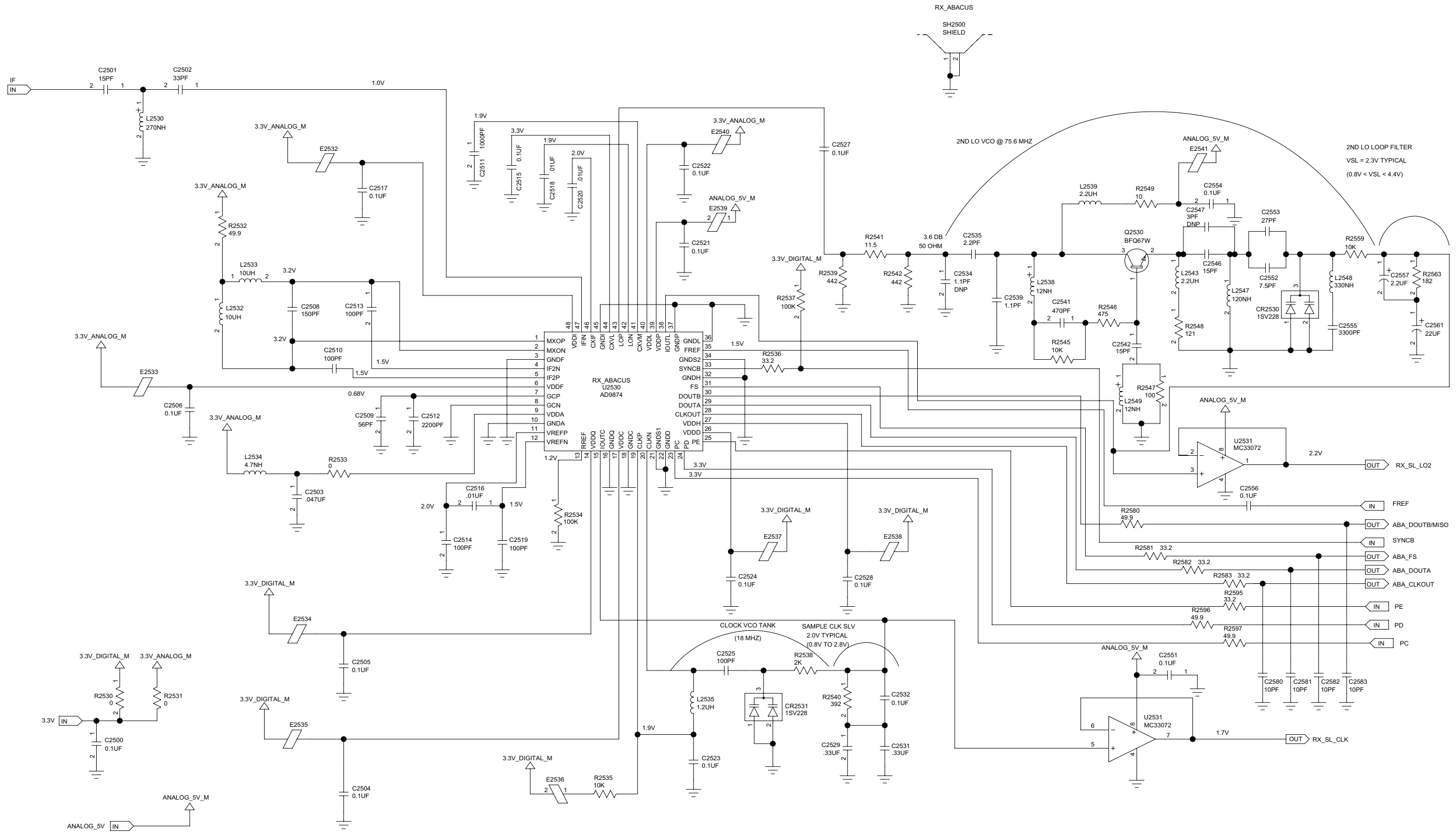


Receiver – Rx Backend PLL Schematic Diagram (Kit No. CRE4008)

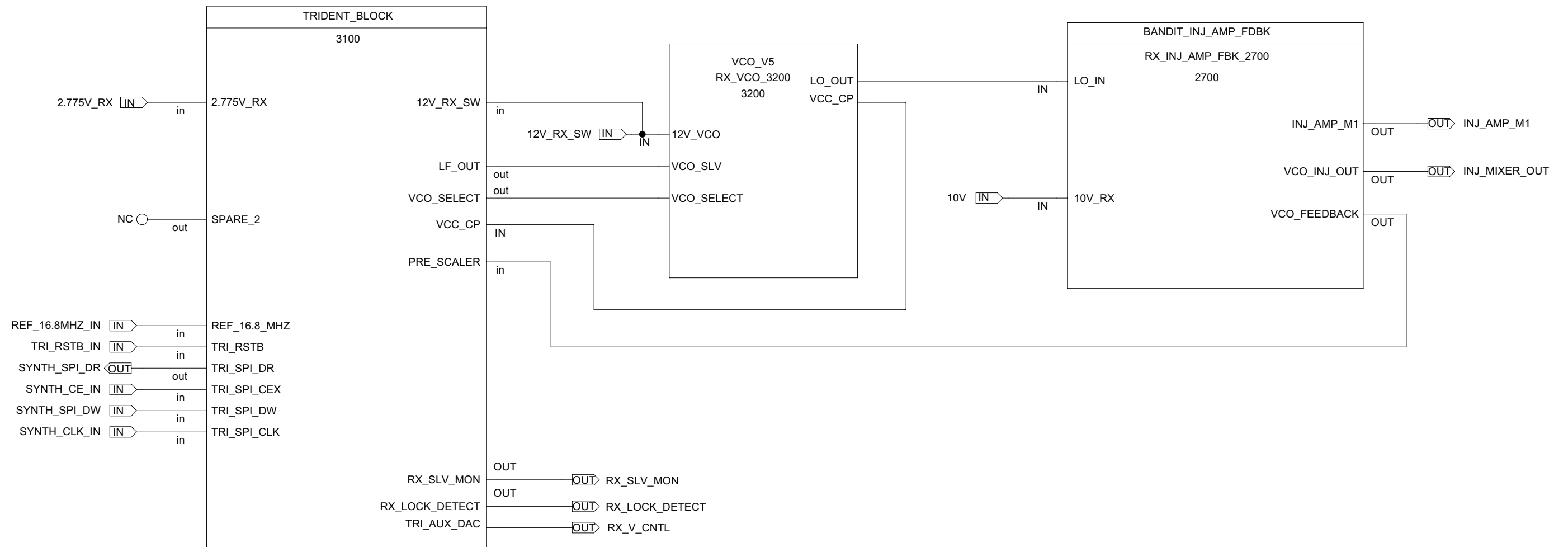




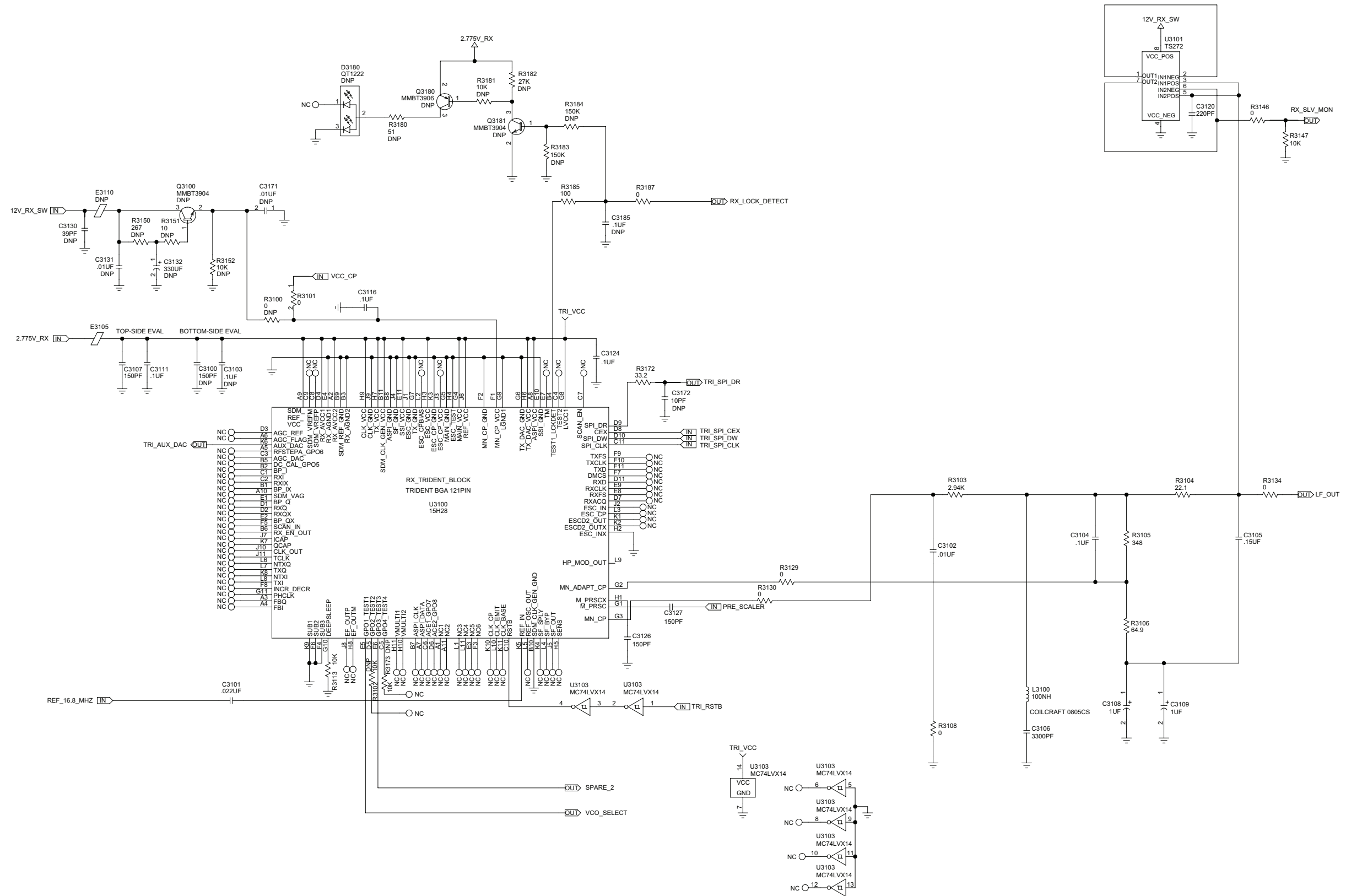
Receiver – Rx Backend Schematic Diagram (Kit No. CRE4008)



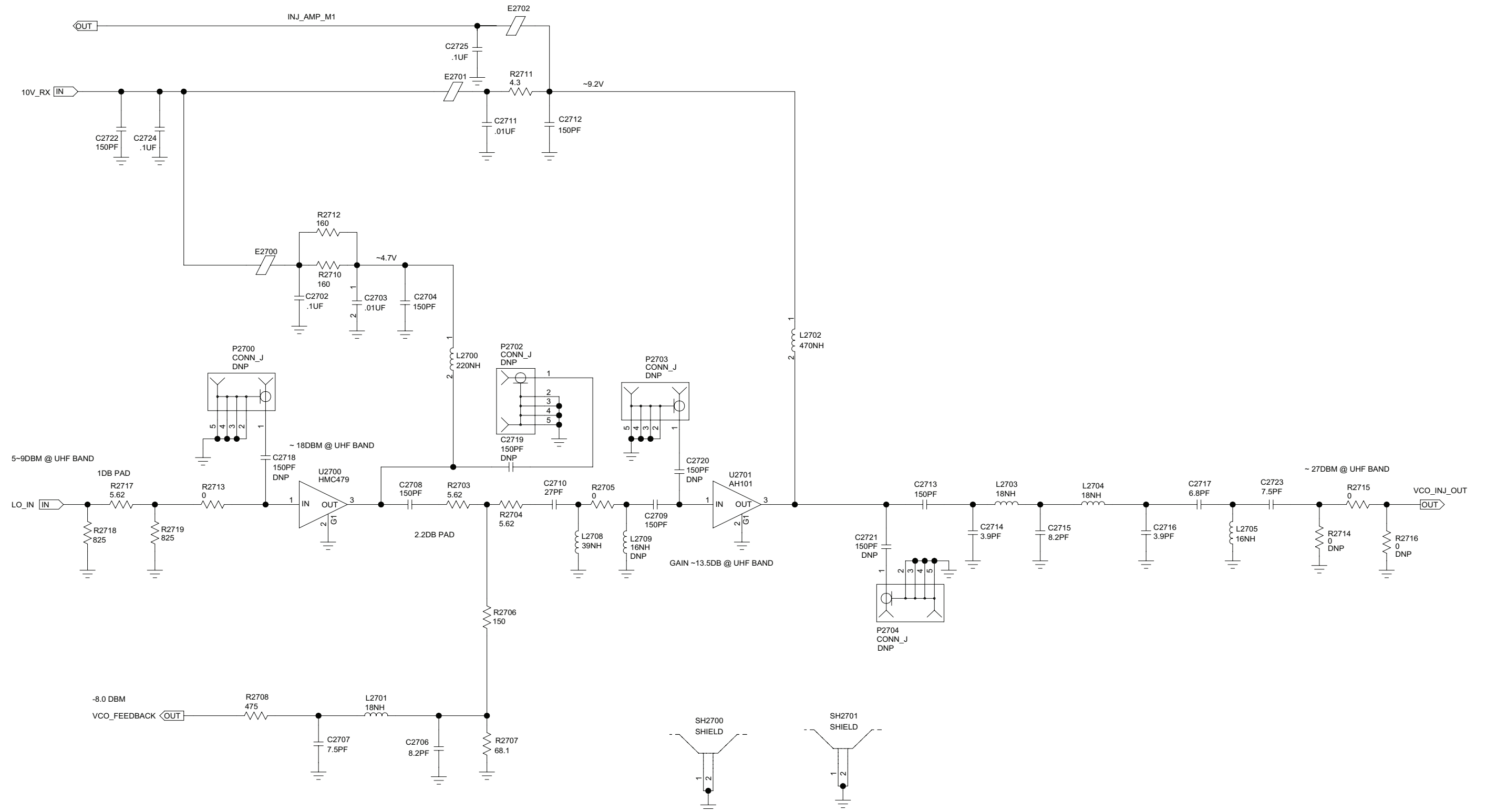
Receiver – Rx Abacus Schematic Diagram (Kit No. CRE4008)



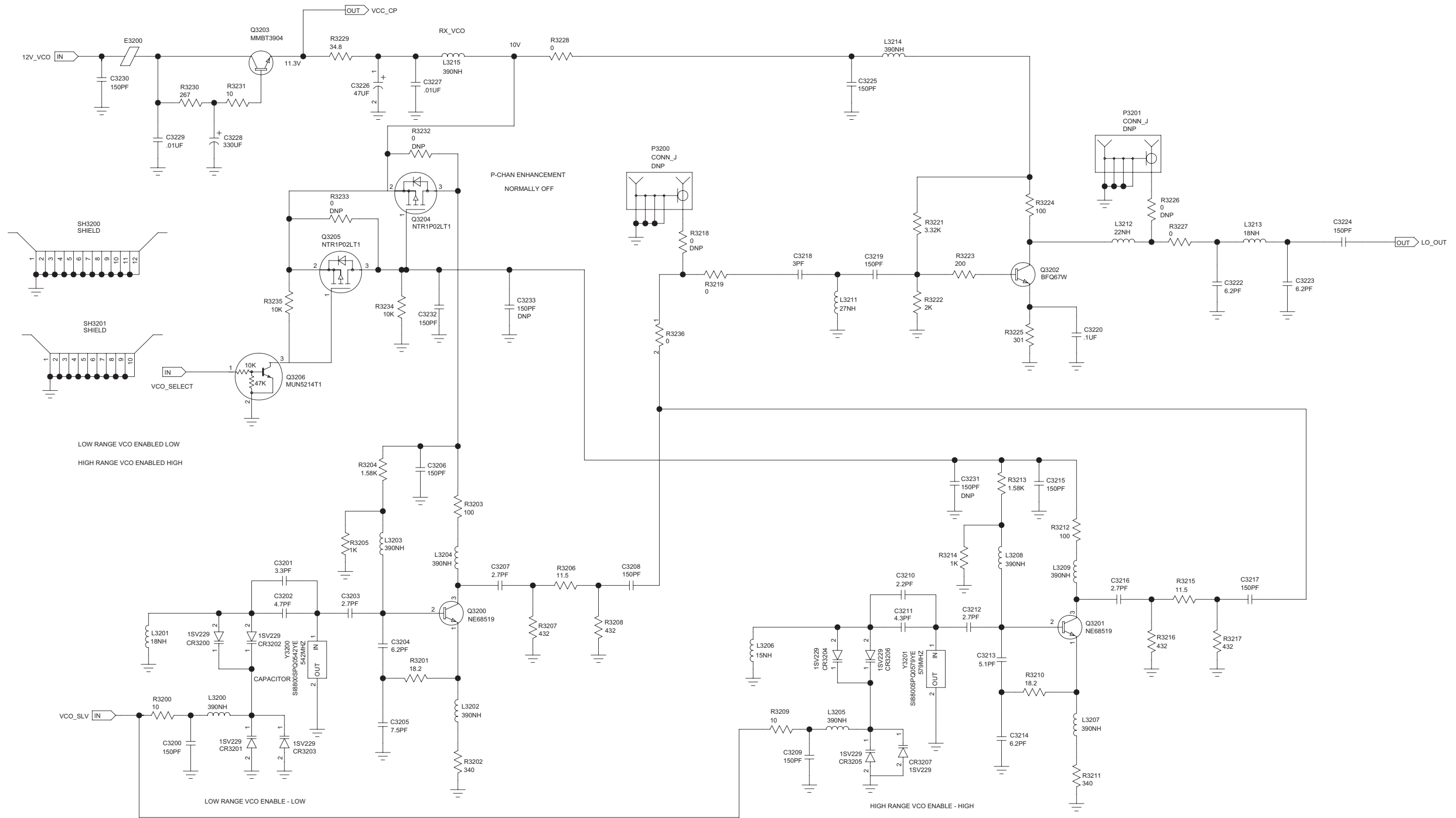
Receiver – Rx Frequency Generation Unit (FGU) Schematic Diagram (Kit No. CRE4008)



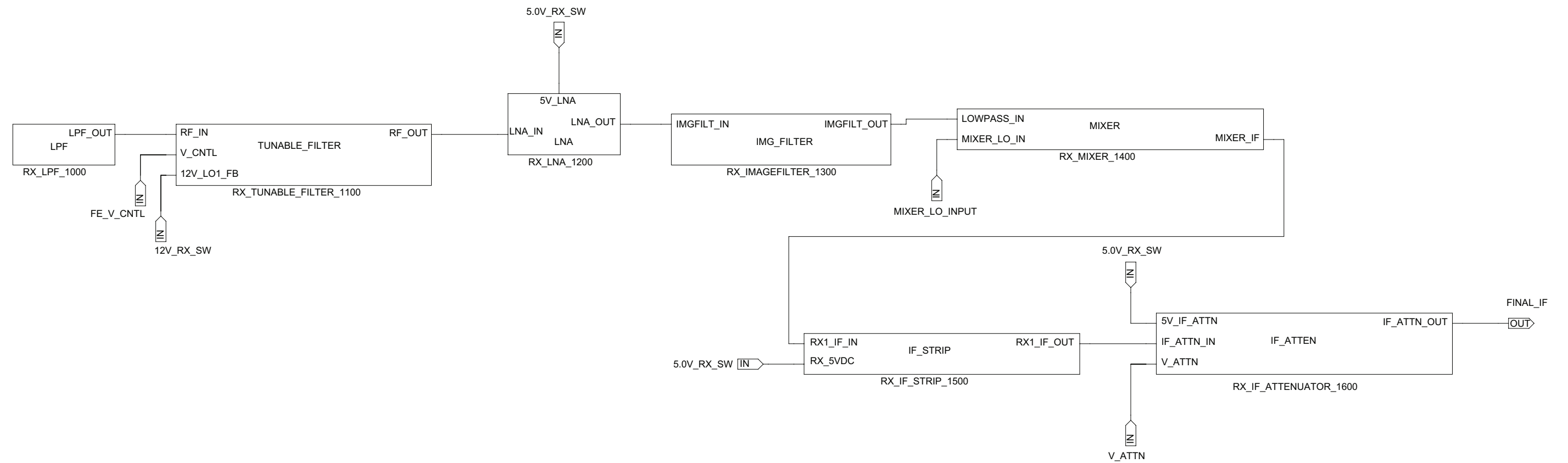
Receiver – Trident Block Schematic Diagram (Kit No. CRE4008)

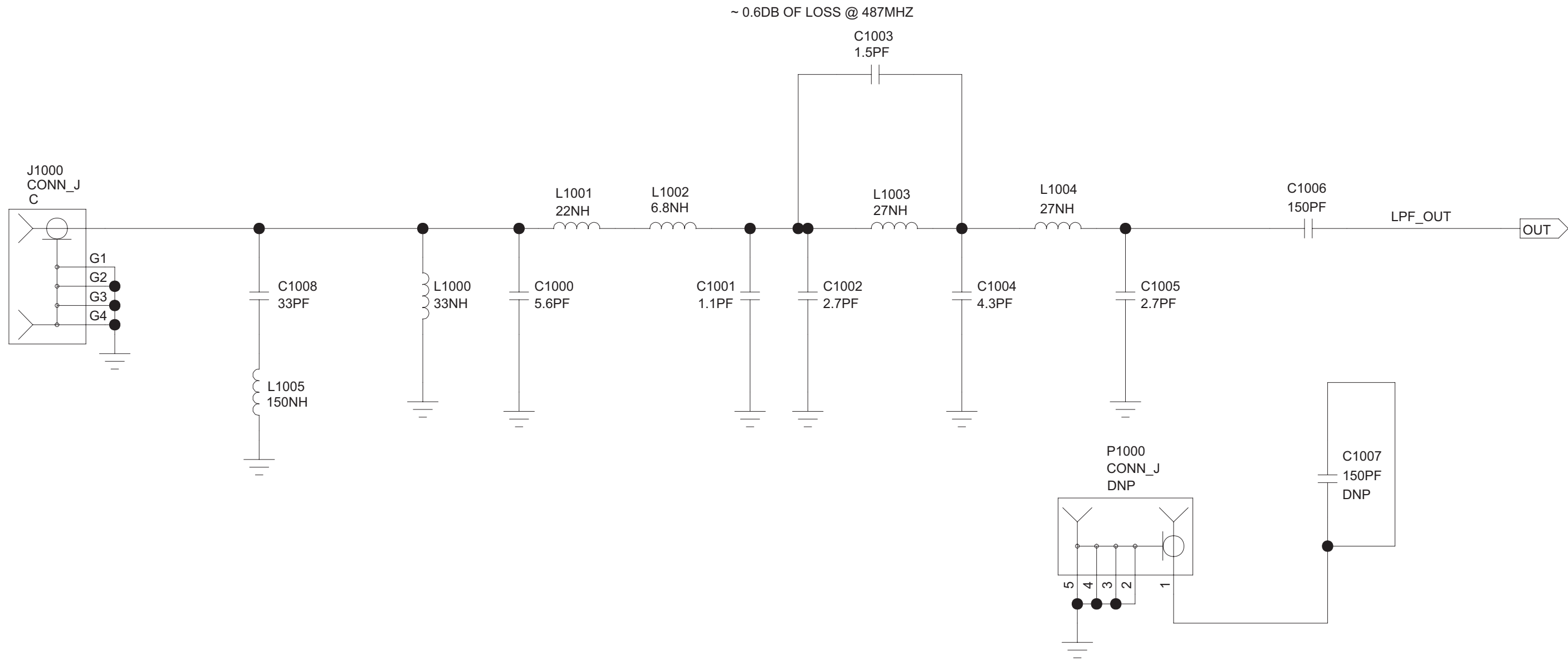


Receiver – Rx Lo1 Injection Amp and Feedback Schematic Diagram (Kit No. CRE4008)



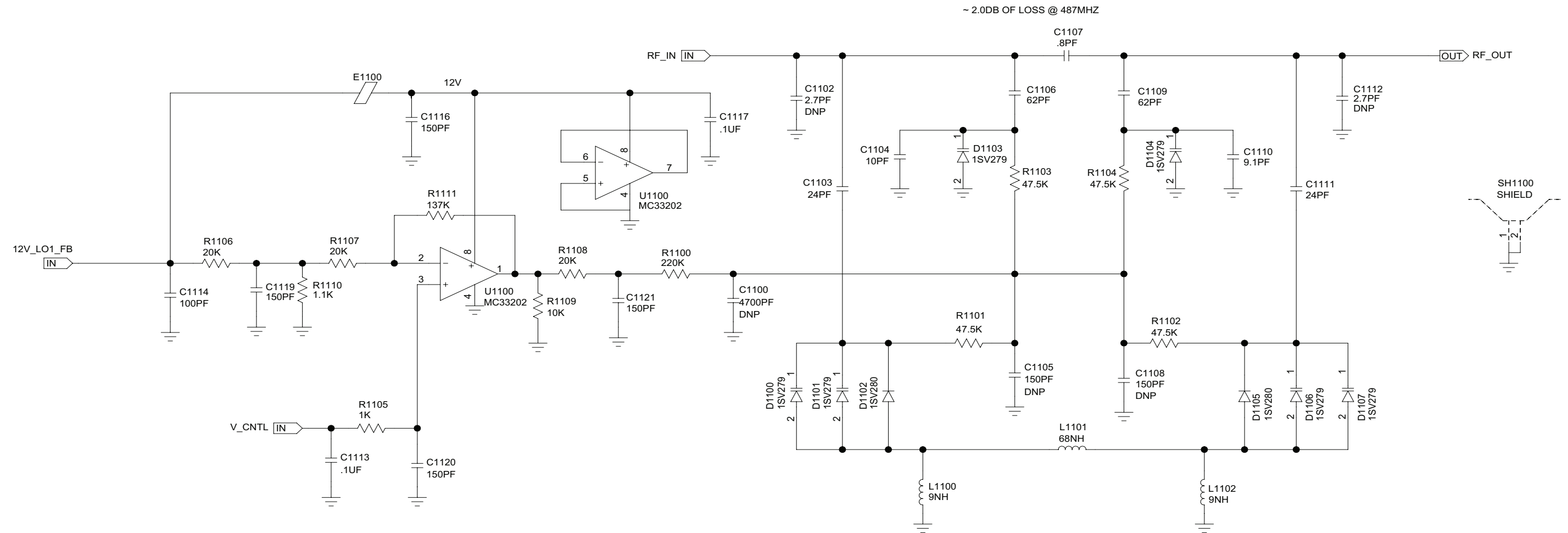
Receiver – UHF VCO Schematic Diagram (Kit No. CRE4008)



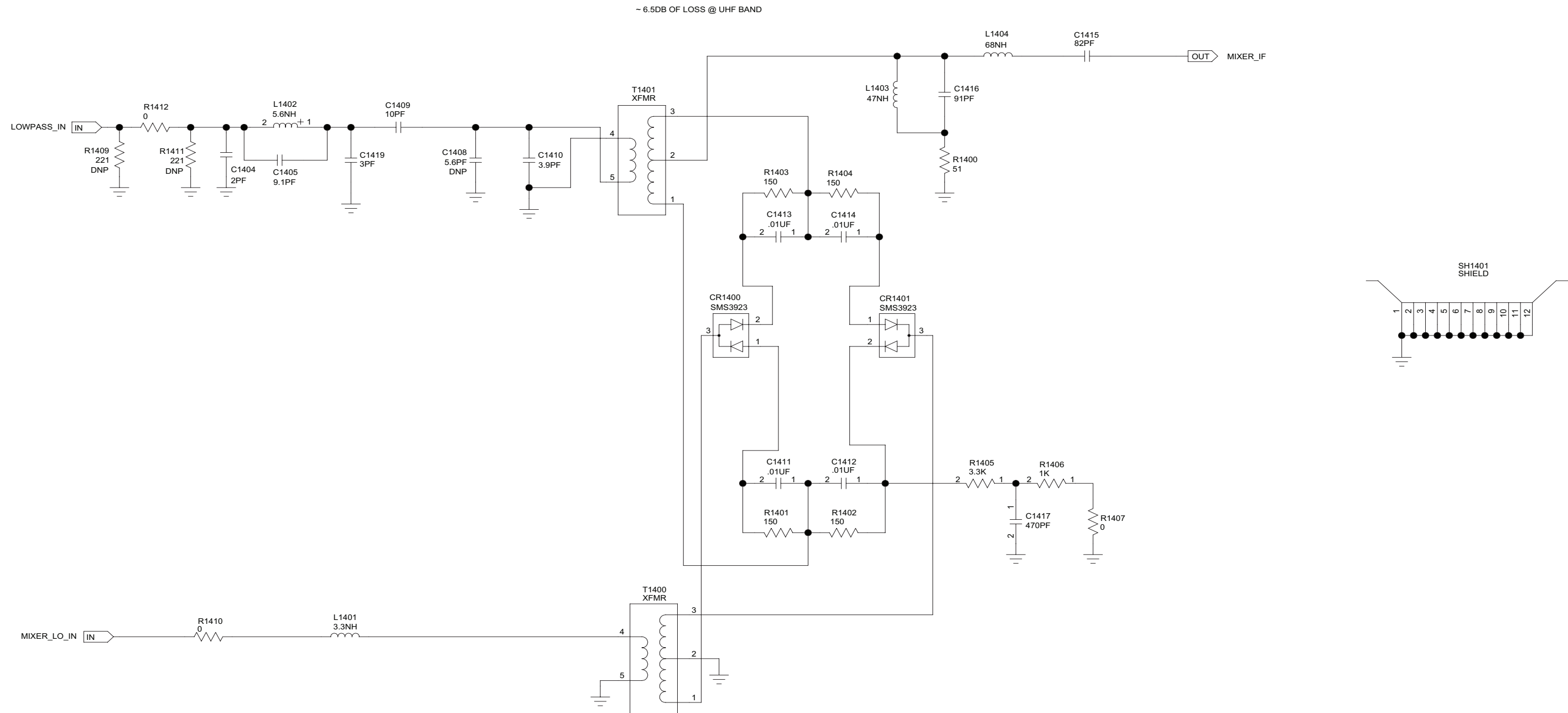


Receiver – Rx Low Pass Filter Schematic Diagram (Kit No. CRE4008)

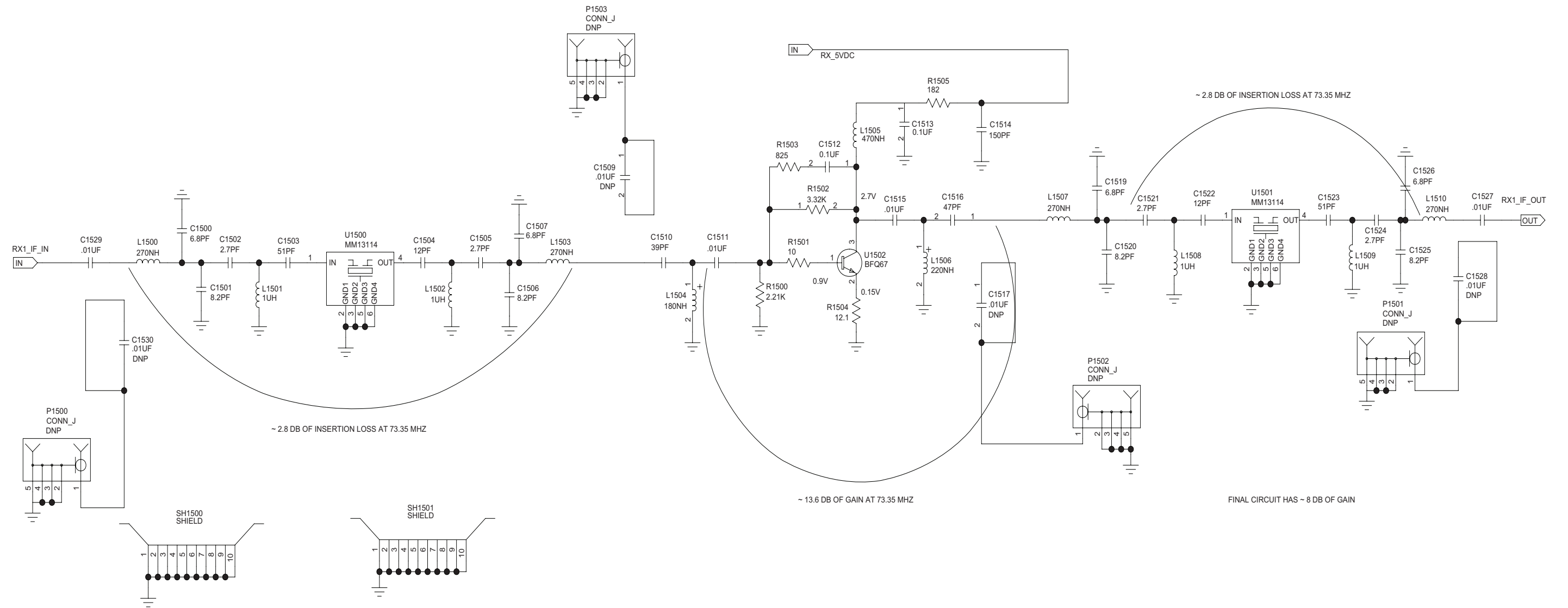




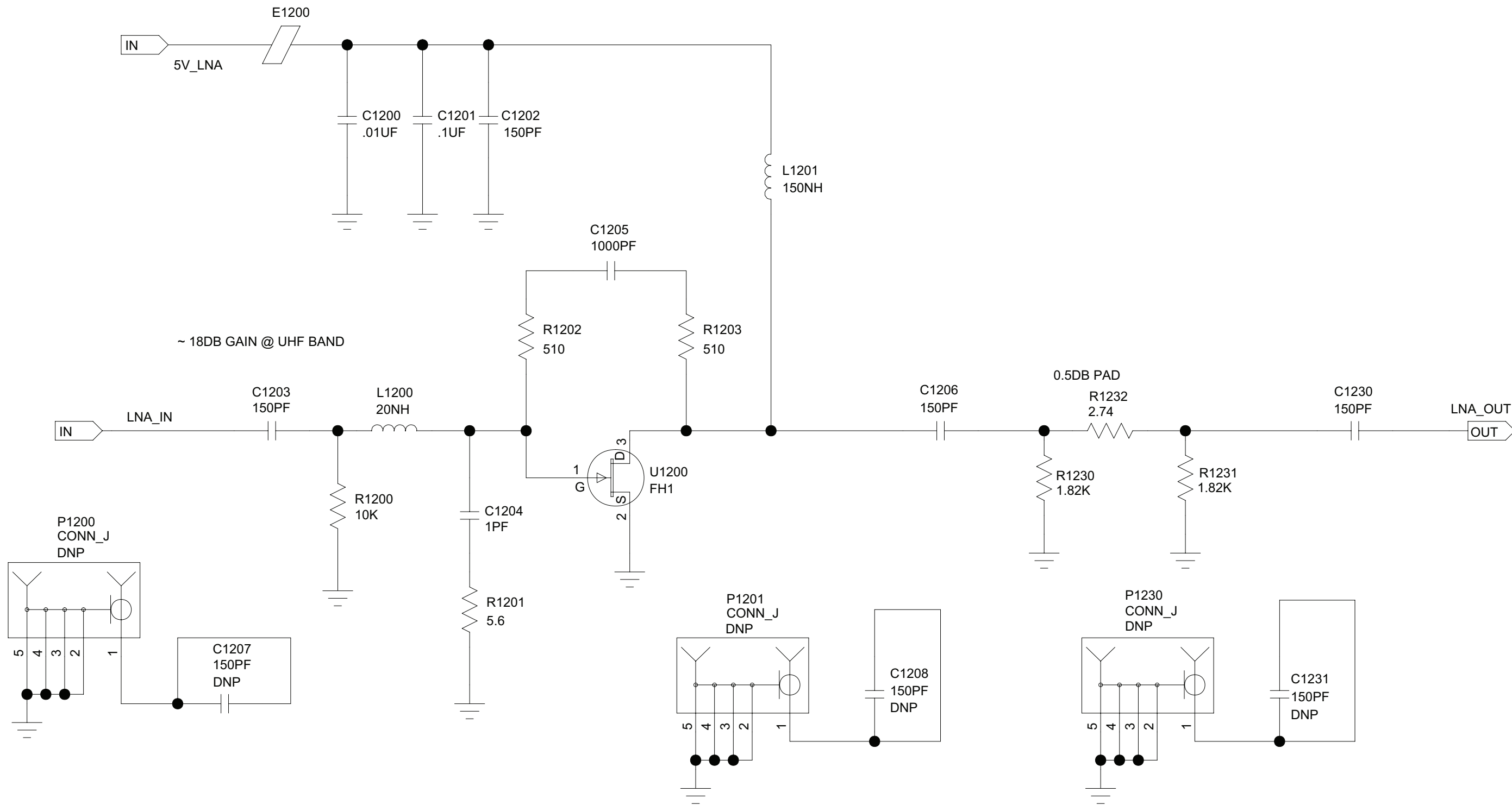
Receiver - Rx FE Tunable Filter Schematic Diagram (Kit No. CRE4008)



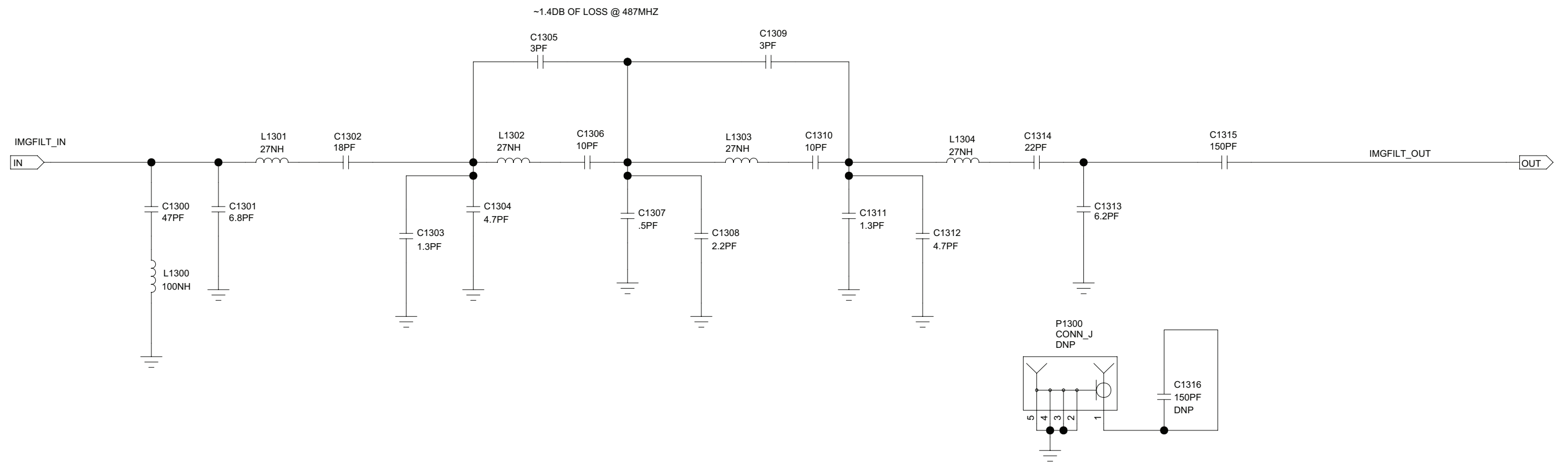
Receiver – Mixer Schematic Diagram (Kit No. CRE4008)



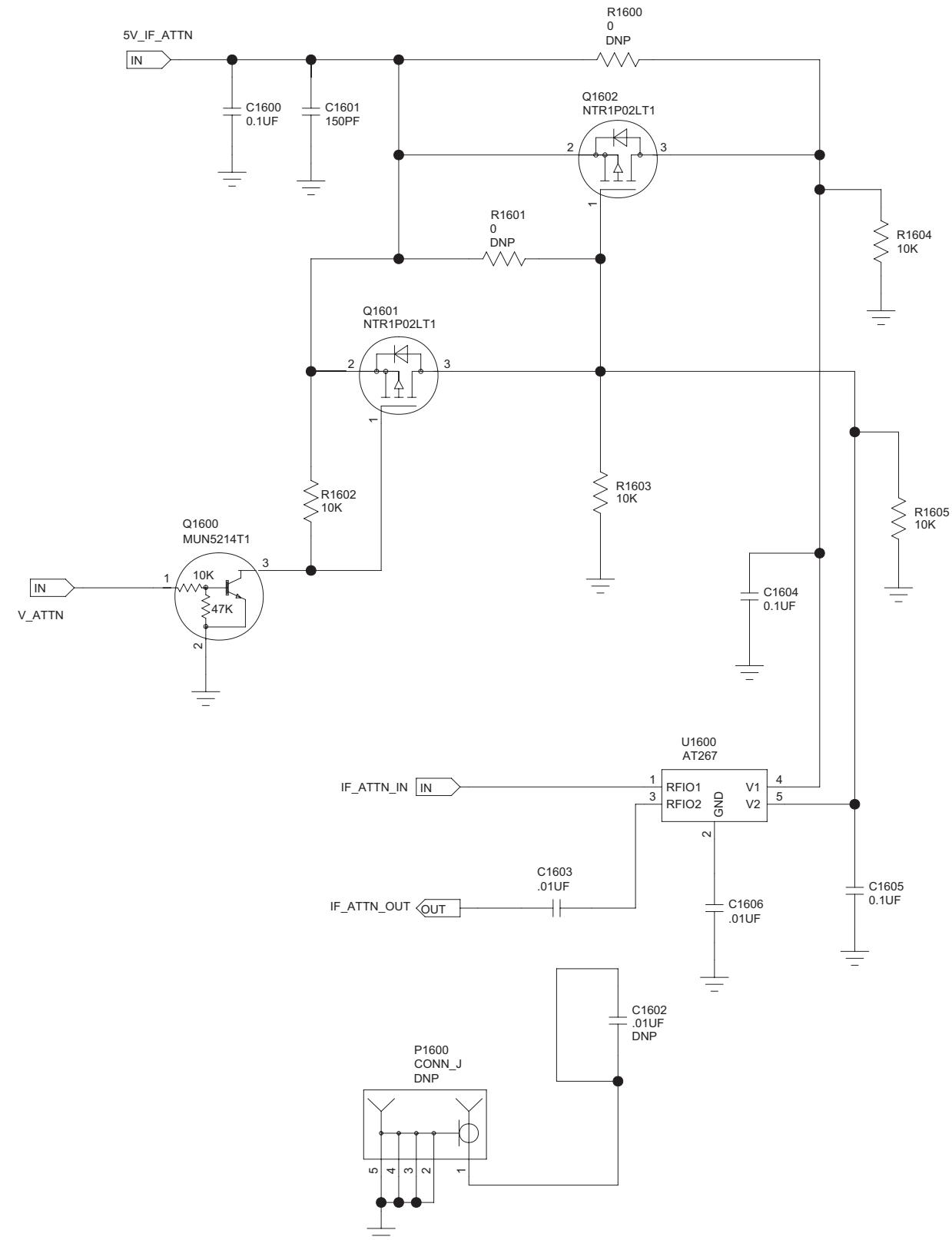
Receiver – IF Strip Schematic Diagram (Kit No. CRE4008)



Receiver – LNA Schematic Diagram (Kit No. CRE4008)

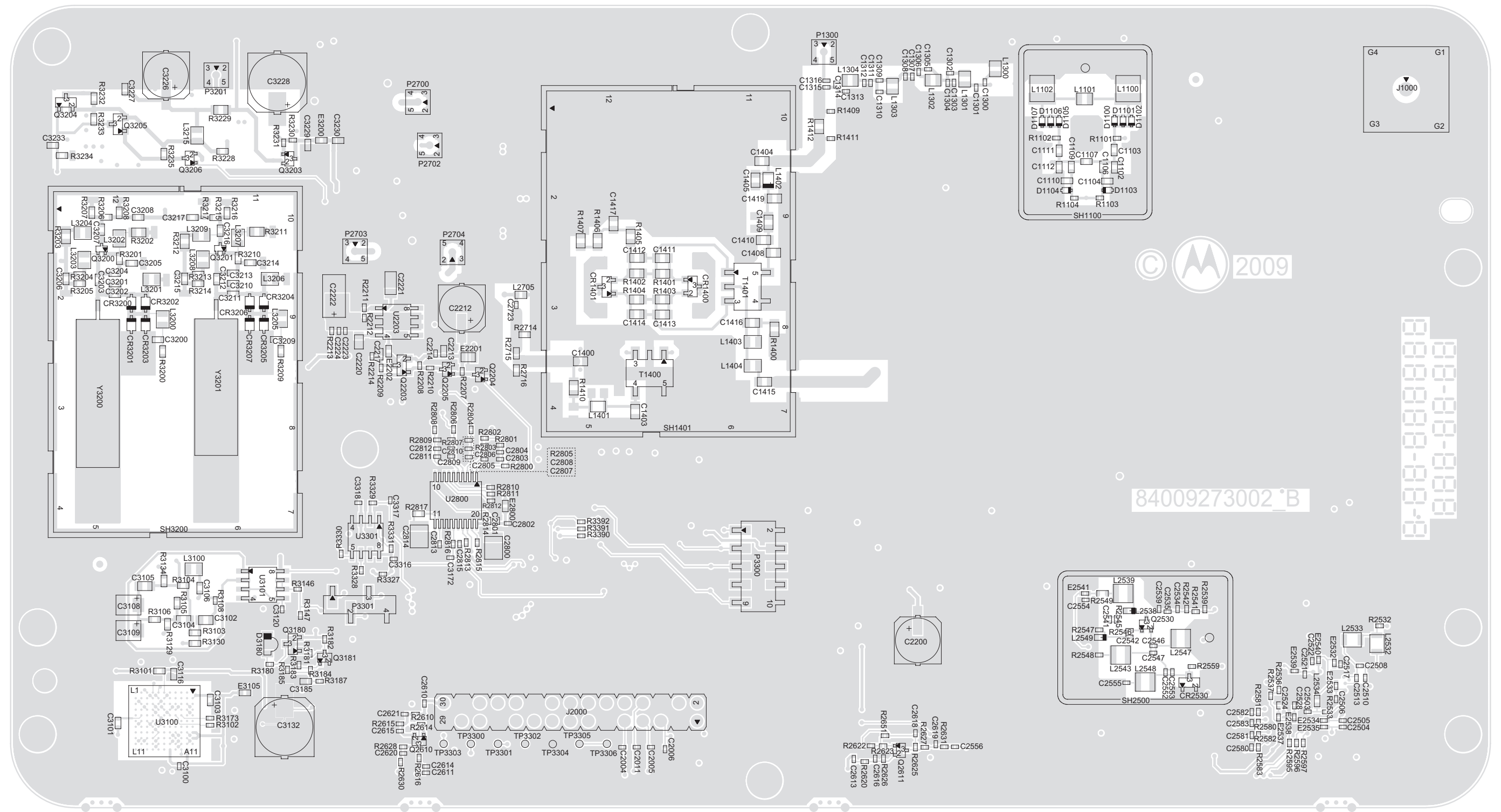


Receiver – Image Filter Schematic Diagram (Kit No. CRE4008)

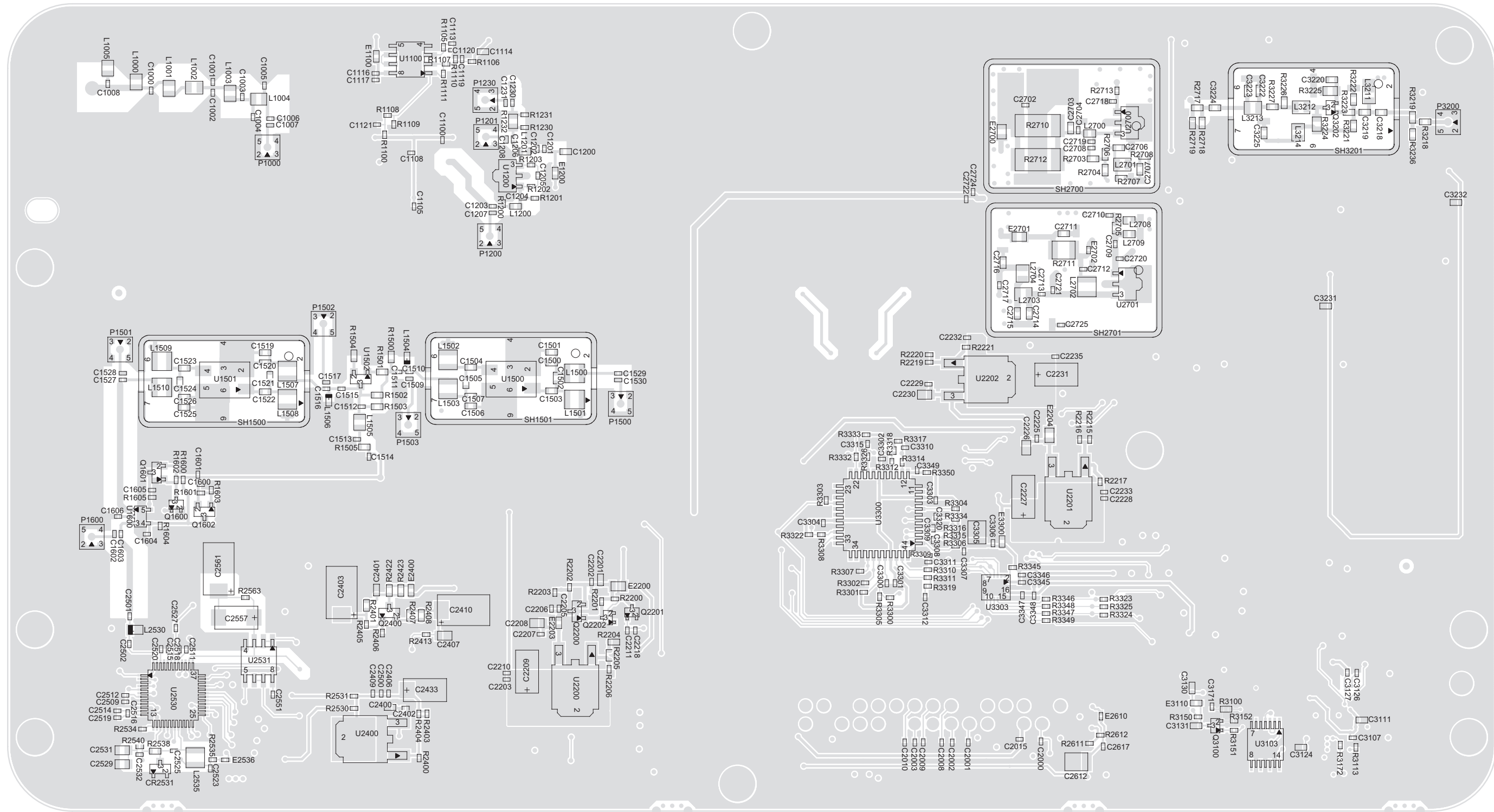


Receiver – Rx IF Attenuator Schematic Diagram (Kit No. CRE4008)

### 6.3 Receiver PCB (UHF)



Receiver Board PCB – Top View (PCB No. 84009273002)



Receiver Board PCB – Bottom View (PCB No. 84009273002)



## 6.4 Receiver Parts List (UHF) – CRE4007

Circuit Ref	Motorola Part No	Description
C1000	2115153H20	CAP,FXD,5.1PF,.1PF+/-, +2%, -2%,50V-DC,0402,C0G,CAP, CERAMIC, CO
C1001	2115153H07	CAP,FXD,1.5PF,.1PF+/-, +6.67%, -6.67%,50V-DC,0402,C0G
C1002	2115153H12	CAP,CERAMIC CHIP,2.4PF,.1PF+/-,+1%,- .1%,50V-DC,0402,C0G,CAP,
C1003	2115153H10	CAP,CER CHIP,2PF,.1PF+/-, +1%,-.1%,50V-DC,0402,C0G
C1004	2115153H19	CAP,FXD,4.7PF,.1PF+/-, +1%,-.1%,50V-DC,0402,C0G
C1005	2115153H12	CAP,CERAMIC CHIP,2.4PF,.1PF+/-,+1%,- .1%,50V-DC,0402,C0G,CAP,
C1006	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1008	2115153H45	CAP,CERAMIC CHIP,33PF,+1%,-1%,50V-DC,0402,C0G
C1103	2113951C39	CAP,FXD,20PF,+1%,- 1%,250V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX,P
C1104	2113951C34	CAP,FXD,10PF,+1%,- 1%,250V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX,P
C1106	2113951C49	CAP,FXD,51PF,+1%,- 1%,250V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C1107	2113951C08	CAP,FXD,.8PF,.05PF+/-, 250V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX
C1109	2113951C49	CAP,FXD,51PF,+1%,- 1%,250V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX,P
C1110	2113951C34	CAP,FXD,10PF,+1%,- 1%,250V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX,P
C1111	2113951C39	CAP,FXD,20PF,+1%,- 1%,250V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX,P
C1113	2113946K02	CAP,CHIP,.1UF,+80%,- 20%,16V-DC,0402,Y5V,- 30DEG CMIN,85DEG CMAX
C1114	2113944C45	CAP,CHIP,100PF,+5%,- 5%,50V-DC,0603,C0G,- 55DEG CMIN,125DEG CMAX
C1116	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1117	2113946K02	CAP,CHIP,.1UF,+80%,- 20%,16V-DC,0402,Y5V,- 30DEG CMIN,85DEG CMAX
C1119	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1120	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1121	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1200	2113945C02	CAP,CHIP,.01UF,+10%,- 10%,50V-DC,0603,X7R,- 55DEG CMIN,125DEG CMA
C1201	2113946K02	CAP,CHIP,.1UF,+80%,- 20%,16V-DC,0402,Y5V,- 30DEG CMIN,85DEG CMAX
C1202	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1203	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1204	2115153H03	CAP,CER CHIP,1PF,.1PF+/-, +1%,-.1%,50V-DC,0402,C0G
C1205	2113944A52	CAP,CHIP,1000PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1206	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1230	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1300	2115153H49	CAP,FXD,47PF,+1%,- 1%,50V-DC,0402,C0G
C1301	2115153H25	CAP,CERAMIC CHIP,8.2PF,.1PF+/-,+1%,- .1%,50V-DC,0402,C0G,CAP,
C1302	2115153H39	CAP,FXD,18PF,50V-DC,0402,C0G
C1303	2115153H06	CAP,FXD,1.3PF,.1PF+/-, 50V-DC,0402,C0G
C1304	2115153H24	CAP,CER CHIP,7.5PF,.1PF+/-,+1%,- .1%,50V-DC,0402,C0G,CAP, CERA

Circuit Ref	Motorola Part No	Description
C1305	2115153H17	CAP,FXD,3.9PF,.1PF+/-, 50V-DC,0402,C0G,CAP, CERAMIC, COG
C1306	2115153H27	CAP,FXD,10PF,.1PF+/-, +1%,-1%,50V-DC,0402,C0G,CAP, CERAMIC, COG
C1307	2185957Y47	CAP,.5PF,CAP,NP0,0.5 PF +/-,.05PF,200V,0402
C1308	2115153H20	CAP,FXD,5.1PF,.1PF+/-, +2%, -2%,50V-DC,0402,C0G,CAP, CERAMIC, CO
C1309	2115153H16	CAP,CERAMIC CHIP,3.6PF,.1PF+/-,+1%,- .1%,50V-DC,0402,C0G,CAP,
C1310	2115153H27	CAP,FXD,10PF,.1PF+/-, +1%,-1%,50V-DC,0402,C0G,CAP, CERAMIC, COG
C1311	2115153H17	CAP,FXD,3.9PF,.1PF+/-, 50V-DC,0402,C0G,CAP, CERAMIC, COG
C1312	2115153H20	CAP,FXD,5.1PF,.1PF+/-, +2%, -2%,50V-DC,0402,C0G,CAP, CERAMIC, CO
C1313	2115153H22	CAP,CERAMIC CHIP,6.2PF,.1PF+/-,+1%,- .1%,50V-DC,0402,C0G,CAP,
C1314	2115153H41	CAP,FXD,22PF,+1%,- 1%,50V-DC,0402,C0G,CAP, CERAMIC, COG
C1315	2113944A44	CAP,CHIP,220PF,+5%,- 5%,50V-DC,0402,C0G,- 55DEG CMIN,125DEG CMAX
C1400	2113901A23	CAP,CHIP,5.6PF,.5PF+/-, 200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1403	2113901A11	CAP,CHIP,2PF,.25PF+/-, 200V-DC,0805,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1404	2113901A09	CAP,CHIP,1.8PF,.25PF+/-,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1405	2113901A28	CAP,CHIP,9.1PF,.5PF+/-,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1408	2113901A23	CAP,CHIP,5.6PF,.5PF+/-,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1409	2113901A31	CAP,CHIP,12PF,+5%,-5%,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1410	2113901A23	CAP,CHIP,5.6PF,.5PF+/-,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1411	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C1412	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C1413	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C1414	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C1415	2113901A56	CAP,CHIP,82PF,+5%,-5%,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1416	2113901A57	CAP,CHIP,91PF,+5%,-5%,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1417	2113944F05	CAP,CHIP,470PF,+5%,-5%,50V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX
C1500	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C1501	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1502	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1503	2113951C49	CAP,FXD,51PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1504	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1505	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1506	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1507	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1510	2113944A32	CAP,CHIP,39PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C1511	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C1512	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C1513	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX

Circuit Ref	Motorola Part No	Description
C1514	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1515	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C1516	2113944A33	CAP,CHIP,47PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C1519	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1520	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1521	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1522	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1523	2113951C49	CAP,FXD,51PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1524	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1525	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1526	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C1527	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C1529	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C1600	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C1601	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1603	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C1604	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C1605	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C1606	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2201	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA
C2202	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2203	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX

Circuit Ref	Motorola Part No	Description
C2205	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2206	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2207	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2208	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2209	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C2210	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2211	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2213	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA
C2214	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2217	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2218	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C2220	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2222	2.31E+38	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C2223	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2224	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2225	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2226	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2227	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C2228	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2229	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2230	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2231	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA

Circuit Ref	Motorola Part No	Description
C2232	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2233	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2235	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2400	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2401	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2402	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2403	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA
C2406	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2407	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2409	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2410	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA

Circuit Ref	Motorola Part No	Description
C2433	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C2500	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2501	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2502	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2503	2113946B02	CAP,CHIP,.047UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMA
C2504	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2505	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2506	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2508	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2509	2113944A34	CAP,CHIP,56PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2510	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2511	2113945A09	CAP,CHIP,1000PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CM

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C2512	2113945A11	CAP,CHIP,2200PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2524	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2546	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2583	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2513	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2525	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2551	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2610	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2514	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2527	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2552	2113944A22	CAP,CHIP,7.5PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2611	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2515	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2528	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2553	2113944A30	CAP,CHIP,27PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2613	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2516	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2529	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C2554	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2614	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2517	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2531	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C2555	2113945A12	CAP,CHIP,3300PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2615	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2518	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2532	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2556	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2616	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2519	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2535	2113944A09	CAP,CHIP,2.2PF,.25PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMA	C2557	2.31E+34	CAP,FXD,2.2UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,177MA	C2617	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2520	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2539	2113944A01	CAP,CHIP,1.1PF,.25PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMA	C2561	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA	C2618	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2521	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2541	2113945A05	CAP,CHIP,470PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2580	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2619	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2522	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2542	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2581	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2620	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2523	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX				C2582	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX			

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C2621	2113944A43	CAP,CHIP,180PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2713	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2803	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3101	2113945C04	CAP,CHIP,.022UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2702	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2714	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2804	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3102	2113945G78	CAP,FXD,.01UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2703	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C2715	2113951C34	CAP,FXD,10PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P	C2805	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3104	2113945G92	CAP,FXD,.12UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2704	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2716	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2806	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3105	2113945G92	CAP,FXD,.12UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2706	2113951C33	CAP,FXD,9.1PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2717	2115153H23	CAP,CER CHIP,6.8PF,.1PF+/-,.1%,-.1%,50V-DC,0402,C0G,CAP, CERA	C2807	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3106	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2707	2113951C33	CAP,FXD,9.1PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2722	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2808	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3107	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2708	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2723	2115153H23	CAP,CER CHIP,6.8PF,.1PF+/-,.1%,-.1%,50V-DC,0402,C0G,CAP, CERA	C2809	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3108	2313960C26	CAP,FXD,1UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,114MA,E
C2709	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2724	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2810	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3109	2313960C26	CAP,FXD,1UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,114MA,E
C2710	2113944A28	CAP,CHIP,18PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2725	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2811	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3111	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2711	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C2801	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2812	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3116	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2712	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2802	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2813	2113946A01	CAP,CHIP,.015UF,+10%,-10%,16V-DC,0402,X5R,-55DEG CMIN,85DEG CMA	C3120	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
						C2814	2113946J02	CAP,CHIP,4.7UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX	C3124	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C3126	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C3127	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C3200	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3201	2113951C25	CAP,FXD,4.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3202	2113951C25	CAP,FXD,4.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3203	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3204	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3205	2113951C34	CAP,FXD,10PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C3206	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3207	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3208	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C3209	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3210	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3211	2113951C23	CAP,FXD,3.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3212	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3213	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3214	2113951C34	CAP,FXD,10PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C3215	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3216	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3217	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3218	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3219	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C3220	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3222	2113951C22	CAP,FXD,3.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3223	2113951C22	CAP,FXD,3.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3224	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3225	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3226	2385170Y10	CAP,47UF,25V-DC,-55DEG CMIN,105DEG CMAX
C3227	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA
C3228	2385170Y08	CAP,AL EL,330UF,25V-DC
C3229	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA
C3230	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3232	2113944C02	CAP,CHIP,220PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3301	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX

Circuit Ref	Motorola Part No	Description
C3302	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3303	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3304	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3306	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3307	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C3316	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C3318	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C3345	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3346	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C3347	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3348	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
CR1400	48009262001	DIODE,SUR MT MXR SHTK DIODE

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CR1401	48009262001	DIODE,SUR MT MXR SHTK DIODE
CR2530	4885094Y01	DIODE,VCTR, 15V
CR2531	4885094Y01	DIODE,VCTR, 15V
CR3200	4885055Y01	DIODE,VCTR, 15V
CR3201	4885055Y01	DIODE,VCTR, 15V
CR3202	4885055Y01	DIODE,VCTR, 15V
CR3203	4885055Y01	DIODE,VCTR, 15V
CR3204	4885055Y01	DIODE,VCTR, 15V
CR3205	4885055Y01	DIODE,VCTR, 15V
CR3206	4885055Y01	DIODE,VCTR, 15V
CR3207	4885055Y01	DIODE,VCTR, 15V
D1100	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
D1101	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
D1102	4885095Y01	DIODE,VARACTOR,15V
D1103	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
D1104	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
D1105	4885095Y01	DIODE,VARACTOR,15V
D1106	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
D1107	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
E1100	2485410Y01	CHIP INDUCTOR
E1200	2485410Y01	CHIP INDUCTOR
E2200	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2201	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2202	2485410Y01	CHIP INDUCTOR

Circuit Ref	Motorola Part No	Description
E2203	2485410Y01	CHIP INDUCTOR
E2204	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2400	2485410Y01	CHIP INDUCTOR
E2532	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2533	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2534	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2535	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2536	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2537	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2538	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2539	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2540	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2541	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2610	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2700	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2701	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2702	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2800	2485410Y01	CHIP INDUCTOR
E3105	2485410Y01	CHIP INDUCTOR
E3200	2485410Y01	CHIP INDUCTOR
E3300	2485410Y01	CHIP INDUCTOR
J1000	0982492W01	RF CONNECTOR,BNC,RCPT, ST,PCMT

Circuit Ref	Motorola Part No	Description
J2000	28009146002	CONN,HDR,2 ROW,M,30CONT,2.54MM, GLD,ST,THRU HOLE,HDR 2 X 15 VER
L1000	2414015B10	IDCTR,FXD,33NH,2%,500 MA,.34 $\Omega$ ,CER,40 Q,1.3GHZ SRF,SM,0805,P
L1001	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25 $\Omega$ ,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1002	2414032F21	IDCTR,WW,6.8NH,5%,600 MA,.11 $\Omega$ ,CER,50 Q,3GHZ SRF,SM,PB-FREE
L1003	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25 $\Omega$ ,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1004	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25 $\Omega$ ,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1005	2414015B06	IDCTR,FXD,150NH,2%,400 MA,.56 $\Omega$ ,CER,35 Q,780 MHZ SRF,SM,0805
L1100	2471968L11	IDCTR,AW,13NH,2%,4A,.0039 $\Omega$ ,AIR,5 TURNS,100 Q,3GHZ SRF,SM,1
L1101	524669-029-00	IDCTR,WW,91NH,2%,400 MA,.48 $\Omega$ ,CER,65 Q,1.33GHZ SRF,SM,0805,L
L1102	2471968L11	IDCTR,AW,13NH,2%,4A,.0039 $\Omega$ ,AIR,5 TURNS,100 Q,3GHZ SRF,SM,1
L1200	24012009005	IDCTR,WW,30NH,2%,600 MA,CER,PACKAGED,CHIP IDCTR - 0603CT
L1201	2478057A28	IDCTR,WW,150NH,2%,390 MA,CER,PACKAGED,CHIP IDCTR - 0603HP
L1300	2414015B04	IDCTR,FXD,100NH,2%,400 MA,.46 $\Omega$ ,CER,40 Q,1250 MHZ SRF,SM,0805
L1301	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25 $\Omega$ ,CER,55 Q,2.5GHZ SRF,SM,0805,P

Circuit Ref	Motorola Part No	Description
L1302	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25 $\Omega$ ,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1303	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25 $\Omega$ ,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1304	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25 $\Omega$ ,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1401	2486905Y23	CHIP INDUCTOR,CHIP,4.7NH,4%,750MA,CER,43 Q,SM,0805,IND CHI
L1402	2486905Y41	CHIP INDUCTOR,CHIP,6.8NH,2.94%,750MA,CER,43 Q,SM,0805,IND CHIP
L1403	2414032F30	IDCTR,WW,47NH,5%,500 MA,.31 $\Omega$ ,CER,40 Q,1.4GHZ SRF,SM,PB-FRE
L1404	2414032F32	IDCTR,FXD,68NH,5%,500 MA,.38 $\Omega$ ,CER,40 Q,1.2GHZ SRF,SM,0805,P
L1500	2414015A09	IDCTR,FXD,270NH,2%,690 MA,.91 $\Omega$ ,CER,28 Q,550 MHZ SRF,SM,1008
L1501	2489917V05	IDCTR,RF,1UH,1%,370MA,.175 $\Omega$ ,290 MHZ SRF,SM,1008,PB FREE
L1502	2489917V05	IDCTR,RF,1UH,1%,370MA,.175 $\Omega$ ,290 MHZ SRF,SM,1008,PB FREE
L1503	2414015A09	IDCTR,FXD,270NH,2%,690 MA,.91 $\Omega$ ,CER,28 Q,550 MHZ SRF,SM,1008
L1504	2414017N27	IDCTR,CHIP,180NH,5%,150 MA,2.7 $\Omega$ ,CER,11 Q,500 MHZ SRF,SM,0603
L1505	2485364Y21	IDCTR,470NH, 5%, 0805, SMT
L1506	2414017N28	IDCTR,CHIP,220NH,5%,150 MA,3 $\Omega$ ,CER,11 Q,400 MHZ SRF,SM,0603,P

Circuit Ref	Motorola Part No	Description
L1507	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Ω,CER,28 Q,550 MHZ SRF,SM,1008
L1508	2489917V05	IDCTR,RF,1UH,1%,370MA,1.75Ω,290 MHZ SRF,SM,1008,PB FREE
L1509	2489917V05	IDCTR,RF,1UH,1%,370MA,1.75Ω,290 MHZ SRF,SM,1008,PB FREE
L1510	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Ω,CER,28 Q,550 MHZ SRF,SM,1008
L2530	2414017K28	IDCTR,CHIP,270NH,5%,200MA,1.3Ω,CER,11 Q,270 MHZ SRF,SM,0805
L2532	2485364Y25	IDCTR
L2533	2485364Y25	IDCTR
L2534	2414017H08	IDCTR,CHIP,4.7NH,300MA,.16Ω,CER,10 Q,3GHZ SRF,SM,0603,PB-
L2535	2414015A25	IDCTR,FXD,1.2UH,2%,440MA,2Ω,CER,20 Q,200 MHZ SRF,SM,1008,PB
L2538	2414017N13	IDCTR,CHIP,12NH,5%,600MA,.35Ω,CER,13 Q,2GHZ SRF,SM,0603,PB
L2539	2414032B72	IDCTR,WW,2.2UH,5%,380MA,2.8Ω,CER,20 Q,140 MHZ SRF,SM,PB-FR
L2543	2414032B72	IDCTR,WW,2.2UH,5%,380MA,2.8Ω,CER,20 Q,140 MHZ SRF,SM,PB-FR
L2543	2414032B72	IDCTR,WW,2.2UH,5%,380MA,2.8Ω,CER,20 Q,140 MHZ SRF,SM,PB-FR
L2547	2414015A05	IDCTR,FXD,120NH,2%,800MA,.63Ω,CER,25 Q,900 MHZ SRF,SM,1008
L2548	2414015A10	IDCTR,FXD,330NH,2%,660MA,1.05Ω,CER,30 Q,500 MHZ SRF,SM,1008
L2549	2414017N13	IDCTR,CHIP,12NH,5%,600MA,.35Ω,CER,13 Q,2GHZ SRF,SM,0603,PB

Circuit Ref	Motorola Part No	Description
L2700	2415429H43	IDCTR,WW,220NH,5%,300MA,2.1Ω,CER,SM,0603,C HIP
L2701	2414032F25	IDCTR,WW,18NH,5%,600MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L2702	2414032B61	IDCTR,WW,470NH,5%,600MA,1.19Ω,CER,30 Q,425 MHZ SRF,SM,PB-F
L2703	2414032F24	IDCTR,WW,15NH,5%,600MA,.17Ω,CER,45 Q,2.5GHZ SRF,SM,PB-FRE
L2704	2414032F24	IDCTR,WW,15NH,5%,600MA,.17Ω,CER,45 Q,2.5GHZ SRF,SM,PB-FRE
L2705	2415429H19	IDCTR,WW,16NH,5%,700MA,CER,104KHZ SRF,SM,0603,CHIP
L2708	2415429H28	IDCTR,WW,39NH,5%,600MA,CER,SM,CHIP
L3100	2414032F34	IDCTR,WW,100NH,5%,400MA,.46Ω,CER,40 Q,950 MHZ SRF,SM,PB-FR
L3200	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3201	2414032F25	IDCTR,WW,18NH,5%,600MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L3202	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3203	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3204	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3205	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR

Circuit Ref	Motorola Part No	Description
L3206	2414032F25	IDCTR,WW,18NH,5%,600MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L3207	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3208	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3209	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3211	2414032F27	IDCTR,FXD,27NH,5%,500MA,.25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-
L3212	2414032F28	IDCTR,WW,33NH,5%,500MA,.27Ω,CER,40 Q,1.8GHZ SRF,SM,PB-FRE
L3213	2414032F25	IDCTR,WW,18NH,5%,600MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L3214	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3215	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
Q1600	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q1601	4885065Y01	XSTR,FET GP PWR
Q1602	4885065Y01	XSTR,FET GP PWR
Q2200	4885065Y01	XSTR,FET GP PWR
Q2201	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q2202	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q2203	4885065Y01	XSTR,FET GP PWR

Circuit Ref	Motorola Part No	Description
Q2204	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q2205	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q2400	4813973A04	XSTR,BIP GP SS,NPN,TA13,SM,SOT-23,SMT,30V,.225W,300MA,125 MHZ,P
Q2530	4805218N63	XSTR,GEN PURPOSE SMALL SIG,SOT-323,BROADBAND AND XSTR
Q2610	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q2611	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q3200	4885061Y01	XSTR,BIP RF SMALL SIGNAL
Q3201	4885061Y01	XSTR,BIP RF SMALL SIGNAL
Q3202	4805218N63	XSTR,GEN PURPOSE SMALL SIG,SOT-323,BROADBAND AND XSTR
Q3203	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q3204	4885065Y01	XSTR,FET GP PWR
Q3205	4885065Y01	XSTR,FET GP PWR
Q3206	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
R1100	0613952R33	RES,MF,220000,5,.0625,SM,0402,200,PB-FREE



Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R1101	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1203	0613952Q66	RES,MF,510Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1501	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2206	0613952L44	RES,MF,280Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1102	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1230	0613952L76	RES,MF,604Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1502	0613952D51	RES,MF,3.32KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2207	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1103	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1231	0613952L76	RES,MF,604Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1503	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2208	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1104	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1232	0613958A89	RES,MF,8.25Ω,1%,.125W,SM,0805,400PPM/CEL,PB-FREE	R1504	0613952B09	RES,MF,12.1Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2210	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1105	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1400	0613958H42	RES,MF,51Ω,5%,.125W,SM,0805,200PPM/CEL,PB-FREE	R1505	0613952C26	RES,MF,182Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2211	0613952M36	RES,MF,2.32KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1106	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1401	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE	R1602	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2212	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1107	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1402	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE	R1603	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2213	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R1108	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1403	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE	R1604	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2214	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1109	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1404	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE	R1605	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2216	0613952Q64	RES,MF,430Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1110	0613952M05	RES,MF,1.1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1405	0613958H85	RES,MF,3.3KΩ,5%,.125W,SM,0805,200PPM/CEL,PB-FREE	R2200	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2217	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1111	0613952P14	RES,MF,137KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1406	0613958H73	RES,MF,1KΩ,5%,.125W,SM,0805,200PPM/CEL,PB-FREE	R2201	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2220	0613952L51	RES,MF,332Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1200	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1407	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE	R2203	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2221	0613952L44	RES,MF,280Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1201	0613952Q19	RES,MF,5.6Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1410	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE	R2204	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2400	0613952Q64	RES,MF,430Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1202	0613952Q66	RES,MF,510Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1412	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE	R2205	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2401	0613952F01	RES,MF,100KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
			R1500	0613952D34	RES,MF,2.21KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE				R2404	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE



Circuit Ref	Motorola Part No	Description
R2717	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE
R2718	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2719	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2800	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2801	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2802	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2803	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2804	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2805	0613952M51	RES,MF,3.32KΩ,1%,0.0625W,SM,0402,200PPM/CEL,PB-FREE
R2806	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2807	0613952N51	RES,MF,33.2KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2808	0613952N18	RES,MF,15KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2809	0613952Z46	RES,MF,3.9KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2810	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R2811	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2812	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2813	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R2815	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R2816	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R2817	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE
R3101	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3103	0613952D44	RES,MF,2.8KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3104	0613952B34	RES,MF,22.1Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3105	0613952C53	RES,MF,348Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3106	0613952B68	RES,MF,49.9Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3108	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R3113	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3129	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3130	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3134	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3146	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE

Circuit Ref	Motorola Part No	Description
R3147	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3172	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3185	0613952L01	RES,MF,100Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3187	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R3200	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3201	0613952B18	RES,MF,15Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3202	0613958C47	RES,MF,301Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R3203	0613958C01	RES,MF,100Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R3204	0613952D20	RES,MF,1.58KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3205	0613952D01	RES,MF,1KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3206	0613952B07	RES,MF,11.5Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3207	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3208	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3209	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3210	0613952B18	RES,MF,15Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R3211	0613958C47	RES,MF,301Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R3212	0613958C01	RES,MF,100Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R3213	0613952D20	RES,MF,1.58KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3214	0613952D01	RES,MF,1KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3215	0613952B07	RES,MF,11.5Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3216	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3217	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3219	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3221	0613952D51	RES,MF,3.32KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3222	0613952D30	RES,MF,2KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3223	0613952C30	RES,MF,200Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3224	0613958C01	RES,MF,100Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R3225	0613958C47	RES,MF,301Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R3227	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3228	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R3229	0613958B53	RES,MF,34.8 $\Omega$ ,1%,.125W, SM,0805,100PPM/ CEL,PB-FREE	R3309	0613952K68	RES,MF,49.9 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3331	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	SH1500	2685668Y01	SHLD,CORRAL,NI- AG,24MMLG,13MMW,3.28 MM
R3230	0613952L42	RES,MF,267 $\Omega$ ,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE	R3310	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3332	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	SH1501	2685668Y01	SHLD,CORRAL,NI- AG,24MMLG,13MMW,3.28 MM
R3231	0613952K01	RES,MF,10 $\Omega$ ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE	R3311	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3333	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	SH2500	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73 MMW,4.45MM,VCO
R3234	6139520	RES,MF,10K $\Omega$ ,1%,.1W,SM ,0603,100PPM/CEL,PB- FREE	R3312	0613952K68	RES,MF,49.9 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3334	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	SH2700	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73 MMW,4.45MM,VCO
R3235	6139520	RES,MF,10K $\Omega$ ,1%,.1W,SM ,0603,100PPM/CEL,PB- FREE	R3314	0613952K68	RES,MF,49.9 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3345	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	SH2701	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73 MMW,4.45MM,VCO
R3236	0613952G67	RES,MF,0,1,1,SM,0603,P B-FREE	R3315	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3346	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	SH3200	1583004X05	SHLD,SHIELD, VCO
R3300	0613952R66	RES,MF,0 $\Omega$ ,5%,.0625W,S M,0402,PB-FREE	R3316	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3347	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	SH3201	2685668Y01	SHLD,CORRAL,NI- AG,24MMLG,13MMW,3.28 MM
R3301	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3317	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3348	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	T1400	2585040Y01	XFMR,BALUN
R3302	0613952M01	RES,MF,1K $\Omega$ ,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE	R3318	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3349	0613952R66	RES,MF,0 $\Omega$ ,5%,.0625W,S M,0402,PB-FREE	T1401	2585040Y01	XFMR,BALUN
R3303	0613952M01	RES,MF,1K $\Omega$ ,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE	R3322	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3350	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	U1100	5114005M13	IC,OP AMP,2PER PKG,LVOLT,SM,SOIC8,PB -FREE
R3304	0613952M01	RES,MF,1K $\Omega$ ,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE	R3326	0613952K68	RES,MF,49.9 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3390	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	U1200	5185481Y01	XSTR
R3305	0613952M66	RES,MF,4.75K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE	R3327	0613952N01	RES,MF,10K $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3391	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	U1500	91012005001	FLTR,73.35 MHZ MAX,SM,73.35 MHZ XTAL FILTER, 3-POLE
R3306	0613952M01	RES,MF,1K $\Omega$ ,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE	R3328	0613952R66	RES,MF,0 $\Omega$ ,5%,.0625W,S M,0402,PB-FREE	R3392	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	U1501	91012005001	FLTR,73.35 MHZ MAX,SM,73.35 MHZ XTAL FILTER, 3-POLE
R3307	0613952M01	RES,MF,1K $\Omega$ ,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE	R3329	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	SH1100	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73 MMW,4.45MM,VCO	U1502	4805218N55	XSTR,BIP RF SMALL SIGNAL,SLCN,NPN,BFQ6 7,SM,SOT- 23,SMT,10V,.3W,5
R3308	0613952K51	RES,MF,33.2 $\Omega$ ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE	R3330	0613952R66	RES,MF,0 $\Omega$ ,5%,.0625W,S M,0402,PB-FREE	SH1401	1583004X05	SHLD,SHIELD, VCO	U1600	5185941F45	ATTEN,VAR,14.4DBMIN,1 5.6DBMAX,0-2000 MHZFREQ,50 $\Omega$ ,PCMT,SO T-25
									U2200	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO ,37V,500MA,SM,DPAK,PB -FREE

Circuit Ref	Motorola Part No	Description
U2201	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO ,37V,500MA,SM,DPAK,PB -FREE
U2202	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO ,37V,500MA,SM,DPAK,PB -FREE
U2203	5114014A20	IC,LNR V REGLTR,ADJUSTABLE,1. 35V TO ,10V,800MA,SM,SO-8,PB- FREE
U2400	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO ,37V,500MA,SM,DPAK,PB -FREE
U2530	5185963A85	IC-ABACUS III-LP
U2531	5114005A19	IC,OP AMP,2PER PKG,HI- SPD,SM,SO-8,SING SPLY, PB-FREE
U2700	5171183H01	AMP MDL,GAIN BLCK MMIC AMP
U2701	5185337Y01	AMP
U2800	5184998Y01	IC,LOW- POWER,8CHANNEL,SERI AL 10-BIT ADCS
U3100	5164015H28	IC,CUST,MULTI PROTOCOL/BAND TRANSCVR IC,SM,BGA,TRIDENT, INTEG
U3101	5185183Y01	IC,OP AMP,SO-8
U3103	5114019M05	IC,INVTR,SCHMITT,74LVX 14,6PER PKG,SM,TSSOP14,PB- FREE
U3300	5185130Y01	IC,PLD,TQFP
U3301	5184943Y01	IC,EEPROM,64 KB,SOIC,AT25640AN- 10SU-2.7

Circuit Ref	Motorola Part No	Description
U3303	5185941F86	IC,XCVR,0PER PKG,PQFP,PQFP16,IC, 4- BIT BUS XCVR
Y3200	9171848H09	RESON,CER,SMD,13.95N H,493 MHZ
Y3201	9171848H10	RESON,CER,SMD,12.14N H,527 MHZ



Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C1501	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C1519	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C1605	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2217	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C1502	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C1520	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C1606	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2218	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1503	2113951C49	CAP,FXD,51PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P	C1521	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2201	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C2220	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C1504	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P	C1522	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P	C2202	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2222	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C1505	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C1523	2113951C49	CAP,FXD,51PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P	C2203	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2223	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C1506	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C1524	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2205	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2224	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1507	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C1525	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2206	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2225	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1510	2113944A32	CAP,CHIP,39PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C1526	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2207	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2226	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C1511	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C1527	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2208	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C2227	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C1512	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C1529	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2209	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA	C2228	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1513	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C1600	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2210	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2229	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1514	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C1601	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2211	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2230	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C1515	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C1603	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2213	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C2231	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C1516	2113944A33	CAP,CHIP,47PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C1604	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2214	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2232	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C2233	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2503	2113946B02	CAP,CHIP,.047UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMA	C2518	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2539	2113944A01	CAP,CHIP,1.1PF,.25PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMA
C2235	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2504	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2519	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2541	2113945A05	CAP,CHIP,470PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2400	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C2505	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2520	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2542	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2401	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C2506	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2521	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2546	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2402	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2508	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2522	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2551	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2403	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA	C2509	2113944A34	CAP,CHIP,56PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2523	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2552	2113944A22	CAP,CHIP,7.5PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2406	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2510	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2524	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2553	2113944A30	CAP,CHIP,27PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2407	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C2511	2113945A09	CAP,CHIP,1000PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CM	C2525	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2554	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2409	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2512	2113945A11	CAP,CHIP,2200PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CM	C2527	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2555	2113945A12	CAP,CHIP,3300PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CM
C2410	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA	C2513	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2528	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2556	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2433	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA	C2514	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2529	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C2557	2313960E28	CAP,FXD,2.2UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,177MA
C2500	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2515	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2531	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C2561	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA
C2501	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2516	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA	C2532	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2580	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2502	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2517	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	C2535	2113944A09	CAP,CHIP,2.2PF,.25PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMA	C2581	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX



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C2582	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2703	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C2722	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2811	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2583	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2704	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2723	2115153H24	CAP,CER CHIP,7.5PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G,CAP, CERA	C2812	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2610	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2706	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2724	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2813	2113946A01	CAP,CHIP,.015UF,+10%,-10%,16V-DC,0402,X5R,-55DEG CMIN,85DEG CMA
C2611	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2707	2113951C31	CAP,FXD,7.5PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2725	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2814	2113946J02	CAP,CHIP,4.7UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX
C2613	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2708	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2801	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3101	2113945C04	CAP,CHIP,.022UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CM
C2614	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2709	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2802	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3102	2113945G78	CAP,FXD,.01UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2615	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2710	2113944A30	CAP,CHIP,27PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2803	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3104	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2616	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2711	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C2804	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3105	2113945G93	CAP,FXD,.15UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2617	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2712	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2805	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3106	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2618	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2713	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2806	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3107	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2619	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2714	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2807	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3108	2313960C26	CAP,FXD,1UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,114MA,E
C2620	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P	C2715	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2808	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3109	2313960C26	CAP,FXD,1UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,114MA,E
C2621	2113944A45	CAP,CHIP,270PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C2716	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C2809	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C3111	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C2702	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	C2717	2115153H23	CAP,CER CHIP,6.8PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G,CAP, CERA	C2810	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3116	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

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C3120	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3210	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3225	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3345	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3124	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C3211	2113951C25	CAP,FXD,4.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3226	2385170Y10	CAP,47UF,25V-DC,-55DEG CMIN,105DEG CMAX	C3346	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C3126	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3212	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3227	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C3347	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C3127	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	C3213	2113951C27	CAP,FXD,5.1PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3228	2385170Y08	CAP,AL EL,330UF,25V-DC	C3348	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C3200	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3214	2113951C29	CAP,FXD,6.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3229	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	CR1400	48009262001	DIODE,SUR MT MXR SHTK DIODE
C3201	2113951C22	CAP,FXD,3.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3215	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3230	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	CR1401	48009262001	DIODE,SUR MT MXR SHTK DIODE
C3202	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3216	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3232	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	CR2530	4885094Y01	DIODE,VCTR, 15V
C3203	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3217	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3301	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR2531	4885094Y01	DIODE,VCTR, 15V
C3204	2113951C29	CAP,FXD,6.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3218	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3302	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3200	4885055Y01	DIODE,VCTR, 15V
C3205	2113951C31	CAP,FXD,7.5PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3219	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3303	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3201	4885055Y01	DIODE,VCTR, 15V
C3206	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3220	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C3304	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3202	4885055Y01	DIODE,VCTR, 15V
C3207	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3222	2113951C29	CAP,FXD,6.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3306	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3203	4885055Y01	DIODE,VCTR, 15V
C3208	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3223	2113951C29	CAP,FXD,6.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA	C3307	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	CR3204	4885055Y01	DIODE,VCTR, 15V
C3209	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3224	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	C3316	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	CR3205	4885055Y01	DIODE,VCTR, 15V
						C3318	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	CR3206	4885055Y01	DIODE,VCTR, 15V
									CR3207	4885055Y01	DIODE,VCTR, 15V
									D1100	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
									D1101	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
									D1102	4885095Y01	DIODE,VARACTOR,15V
									D1103	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
									D1104	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79

Circuit Ref	Motorola Part No	Description
D1105	4885095Y01	DIODE,VARACTOR,15V
D1106	4805656W87	DIODE,VCTR,@ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
D1107	4805656W87	DIODE,VCTR,@ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79
E1100	2485410Y01	CHIP INDUCTOR
E1200	2485410Y01	CHIP INDUCTOR
E2200	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2201	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2202	2485410Y01	CHIP INDUCTOR
E2203	2485410Y01	CHIP INDUCTOR
E2204	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2400	2485410Y01	CHIP INDUCTOR
E2532	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2533	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2534	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2535	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2536	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2537	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2538	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2539	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2540	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2541	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2610	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2700	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2701	2485410Y04	FLTR,FERR,1.5A,SM,0805
E2702	2485449Y01	CHIP INDUCTOR,FXD,FERR
E2800	2485410Y01	CHIP INDUCTOR
E3105	2485410Y01	CHIP INDUCTOR
E3200	2485410Y01	CHIP INDUCTOR
E3300	2485410Y01	CHIP INDUCTOR

Circuit Ref	Motorola Part No	Description
J1000	0982492W01	RF CONNecTOR,BNC,RCPT,ST,PCMT
J2000	28009146002	CONN,HDR,2 ROW,M,30CONT,2.54MM,GLD, ST,THRU HOLE,HDR 2 X 15 VER
L1000	2414015B10	IDCTR,FXD,33NH,2%,500MA,.34Q,CER,40 Q,1.3GHZ SRF,SM,0805,P
L1001	2414015B15	IDCTR,FXD,22NH,2%,500MA,.22Q,CER,55 Q,2.6GHZ SRF,SM,0805,P
L1002	2414032F21	IDCTR,WW,6.8NH,5%,600MA,.11Q,CER,50 Q,3GHZ SRF,SM,PB-FREE
L1003	2414015B16	IDCTR,FXD,27NH,2%,500MA,.25Q,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1004	2414015B16	IDCTR,FXD,27NH,2%,500MA,.25Q,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1005	2414015B06	IDCTR,FXD,150NH,2%,400MA,.56Q,CER,35 Q,780 MHZ SRF,SM,0805
L1100	2471968L10	IDCTR,AW,9NH,2%,4A,.0034Q ,AIR,5 TURNS,120 Q,4GHZ SRF,SM,9.
L1101	2414015B19	IDCTR,FXD,68NH,2%,500MA,.38Q,CER,60 Q,1.45GHZ SRF,SM,0805
L1102	2471968L10	IDCTR,AW,9NH,2%,4A,.0034Q ,AIR,5 TURNS,120 Q,4GHZ SRF,SM,9.
L1200	24012009001	IDCTR,WW,20NH,2%,760MA,C ER,PACKAGED,CHIP IDCTR - 0603CT
L1201	2478057A28	IDCTR,WW,150NH,2%,390MA, CER,PACKAGED,CHIP IDCTR - 0603HP
L1300	2414015B04	IDCTR,FXD,100NH,2%,400MA,.46Q,CER,40 Q,1250 MHZ SRF,SM,0805

Circuit Ref	Motorola Part No	Description
L1301	2414015B16	IDCTR,FXD,27NH,2%,500MA,.25Q,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1302	2414015B16	IDCTR,FXD,27NH,2%,500MA,.25Q,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1303	2414015B16	IDCTR,FXD,27NH,2%,500MA,.25Q,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1304	2414015B16	IDCTR,FXD,27NH,2%,500MA,.25Q,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1401	2486905Y21	CHIP INDUC-TOR,CHIP,3.3NH,6.06%,1A,CE R,42 Q,SM,0805,IND CHIP 3
L1402	2486905Y42	HIP INDUC-TOR,CHIP,5.6NH,3.57%,750M A,CER,50 Q,SM,0805
L1403	2414032F30	IDCTR,WW,47NH,5%,500MA,.31Q,CER,40 Q,1.4GHZ SRF,SM,PB-FRE
L1404	2414032F32	IDCTR,FXD,68NH,5%,500MA,.38Q,CER,40 Q,1.2GHZ SRF,SM,0805,P
L1500	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Q,CER,28 Q,550 MHZ SRF,SM,1008
L1501	2489917V05	IDCTR,RF,1UH,1%,370MA,1.7 5Q,290 MHZ SRF,SM,1008,PB FREE
L1502	2489917V05	IDCTR,RF,1UH,1%,370MA,1.7 5Q,290 MHZ SRF,SM,1008,PB FREE
L1503	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Q,CER,28 Q,550 MHZ SRF,SM,1008
L1504	2414017N27	IDCTR,CHIP,180NH,5%,150MA ,2.7Q,CER,11 Q,500 MHZ SRF,SM,0603
L1505	2485364Y21	IDCTR,470NH, 5%, 0805, SMT
L1506	2414017N28	IDCTR,CHIP,220NH,5%,150MA ,3Q,CER,11 Q,400 MHZ SRF,SM,0603,P

Circuit Ref	Motorola Part No	Description
L1507	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Q,CER,28 Q,550 MHZ SRF,SM,1008
L1508	2489917V05	IDCTR,RF,1UH,1%,370MA,1.7 5Q,290 MHZ SRF,SM,1008,PB FREE
L1509	2489917V05	IDCTR,RF,1UH,1%,370MA,1.7 5Q,290 MHZ SRF,SM,1008,PB FREE
L1510	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Q,CER,28 Q,550 MHZ SRF,SM,1008
L2530	2414017K28	IDCTR,CHIP,270NH,5%,200MA ,1.3Q,CER,11 Q,270 MHZ SRF,SM,0805
L2532	2485364Y25	IDCTR
L2533	2485364Y25	IDCTR
L2534	2414017H08	IDCTR,CHIP,4.7NH,300MA,.16 Q,CER,10 Q,3GHZ SRF,SM,0603,PB-
L2535	2414015A25	IDCTR,FXD,1.2UH,2%,440MA, 2Q,CER,20 Q,200 MHZ SRF,SM,1008,PB
L2538	2414017N13	IDCTR,CHIP,12NH,5%,600MA,.35Q,CER,13 Q,2GHZ SRF,SM,0603,PB
L2539	2414032B72	IDCTR,WW,2.2UH,5%,380MA, 2.8Q,CER,20 Q,140 MHZ SRF,SM,PB-FR
L2543	2414032B72	IDCTR,WW,2.2UH,5%,380MA, 2.8Q,CER,20 Q,140 MHZ SRF,SM,PB-FR
L2547	2414015A05	IDCTR,FXD,120NH,2%,800MA,.63Q,CER,25 Q,900 MHZ SRF,SM,1008
L2548	2414015A10	IDCTR,FXD,330NH,2%,660MA, 1.05Q,CER,30 Q,500 MHZ SRF,SM,1008
L2549	2414017N13	IDCTR,CHIP,12NH,5%,600MA,.35Q,CER,13 Q,2GHZ SRF,SM,0603,PB
L2700	2415429H43	IDCTR,WW,220NH,5%,300MA, 2.1Q,CER,SM,0603,CHIP

Circuit Ref	Motorola Part No	Description
L2701	2414032F25	IDCTR,WW,18NH,5%,600MA, 2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L2702	2414032B61	IDCTR,WW,470NH,5%,600MA, 1.19Ω,CER,30 Q,425 MHZ SRF,SM,PB-F
L2703	2414032F25	IDCTR,WW,18NH,5%,600MA, 2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L2704	2414032F25	IDCTR,WW,18NH,5%,600MA, 2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L2705	2415429H19	IDCTR,WW,16NH,5%,700MA,C ER,104KHZ SRF,SM,0603,CHIP
L2708	2415429H28	IDCTR,WW,39NH,5%,600MA,C ER,SM,CHIP
L3100	2414032F34	IDCTR,WW,100NH,5%,400MA, .46Ω,CER,40 Q,950 MHZ SRF,SM,PB-FR
L3200	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3201	2414032F25	IDCTR,WW,18NH,5%,600MA, 2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L3202	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3203	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3204	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3205	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3206	2414032F24	IDCTR,WW,15NH,5%,600MA, 17Ω,CER,45 Q,2.5GHZ SRF,SM,PB-FRE
L3207	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR

Circuit Ref	Motorola Part No	Description
L3208	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3209	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3211	2414032F27	IDCTR,FXD,27NH,5%,500MA, 25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-
L3212	2414032F26	IDCTR,WW,22NH,5%,500MA, 22Ω,CER,45 Q,2.2GHZ SRF,SM,PB-FRE
L3213	2414032F25	IDCTR,WW,18NH,5%,600MA, 2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L3214	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L3215	2414032F59	IDCTR,WW,390NH,5%,290MA, 1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
Q1600	4813973A34	XSTR,BIP GP SS,NPN,SM,SC- 70,SMT,50V,.202W,100MA,PB- FREE
Q1601	4885065Y01	XSTR,FET GP PWR
Q1602	4885065Y01	XSTR,FET GP PWR
Q2200	4885065Y01	XSTR,FET GP PWR
Q2201	4813973A34	XSTR,BIP GP SS,NPN,SM,SC- 70,SMT,50V,.202W,100MA,PB- FREE
Q2202	4813973A34	XSTR,BIP GP SS,NPN,SM,SC- 70,SMT,50V,.202W,100MA,PB- FREE
Q2203	4885065Y01	XSTR,FET GP PWR
Q2204	4813973A34	XSTR,BIP GP SS,NPN,SM,SC- 70,SMT,50V,.202W,100MA,PB- FREE
Q2205	4813973A34	XSTR,BIP GP SS,NPN,SM,SC- 70,SMT,50V,.202W,100MA,PB- FREE

Circuit Ref	Motorola Part No	Description
Q2400	4813973A04	XSTR,BIP GP SS,NPN,TA13,SM,SOT- 23,SMT,30V,.225W,300MA,125 MHZ,P
Q2530	4805218N63	XSTR,GEN PURPOSE SMALL SIG,SOT-323,BROADBAND AND XSTR
Q2610	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC- 70,SMT,40V,.15W,200MA,300 MHZ,PB
Q2611	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC- 70,SMT,40V,.15W,200MA,300 MHZ,PB
Q3200	4885061Y01	XSTR,BIP RF SMALL SIGNAL
Q3201	4885061Y01	XSTR,BIP RF SMALL SIGNAL
Q3202	4805218N63	XSTR,GEN PURPOSE SMALL SIG,SOT-323,BROADBAND AND XSTR
Q3203	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC- 70,SMT,40V,.15W,200MA,300 MHZ,PB
Q3204	4885065Y01	XSTR,FET GP PWR
Q3205	4885065Y01	XSTR,FET GP PWR
Q3206	4813973A34	XSTR,BIP GP SS,NPN,SM,SC- 70,SMT,50V,.202W,100MA,PB- FREE
R1100	0613952R33	RES,MF,220000,5,.0625,SM,04 02,200,PB-FREE
R1101	0613952N66	RES,MF,47.5KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE
R1102	0613952N66	RES,MF,47.5KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE
R1103	0613952N66	RES,MF,47.5KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE
R1104	0613952N66	RES,MF,47.5KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE

Circuit Ref	Motorola Part No	Description
R1105	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R1106	0613952N30	RES,MF,20KΩ,1%,.0625W,SM, 0402,200PPM/CEL,PB-FREE
R1107	0613952N30	RES,MF,20KΩ,1%,.0625W,SM, 0402,200PPM/CEL,PB-FREE
R1108	0613952N30	RES,MF,20KΩ,1%,.0625W,SM, 0402,200PPM/CEL,PB-FREE
R1109	0613952N01	RES,MF,10KΩ,1%,.0625W,SM, 0402,200PPM/CEL,PB-FREE
R1110	0613952M05	RES,MF,1.1KΩ,1%,.0625W,SM ,0402,200PPM/CEL,PB-FREE
R1111	0613952P14	RES,MF,137KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE
R1200	0613952R01	RES,MF,10KΩ,5%,.0625W,SM, 0402,200PPM/CEL,PB-FREE
R1201	0613952Q19	RES,MF,5.6KΩ,5%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R1202	0613952Q66	RES,MF,510Ω,5%,.0625W,SM, 0402,200PPM/CEL,PB-FREE
R1203	0613952Q66	RES,MF,510Ω,5%,.0625W,SM, 0402,200PPM/CEL,PB-FREE
R1230	0613952M26	RES,MF,1.82KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE
R1231	0613952M26	RES,MF,1.82KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE
R1232	0613958A43	RES,MF,2.74Ω,1%,.125W,SM,0 805,400PPM/CEL,PB-FREE
R1400	0613958H42	RES,MF,51Ω,5%,.125W,SM,08 05,200PPM/CEL,PB-FREE
R1401	0613958C18	RES,MF,150Ω,1%,.125W,SM,0 805,100PPM/CEL,PB-FREE
R1402	0613958C18	RES,MF,150Ω,1%,.125W,SM,0 805,100PPM/CEL,PB-FREE
R1403	0613958C18	RES,MF,150Ω,1%,.125W,SM,0 805,100PPM/CEL,PB-FREE
R1404	0613958C18	RES,MF,150Ω,1%,.125W,SM,0 805,100PPM/CEL,PB-FREE





Circuit Ref	Motorola Part No	Description
R3224	0613958C01	RES,MF,100Ω,1%,.125W,SM,0 805,100PPM/CEL,PB-FREE
R3225	0613958C47	RES,MF,301Ω,1%,.125W,SM,0 805,100PPM/CEL,PB-FREE
R3227	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3228	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3229	0613958B53	RES,MF,34.8Ω,1%,.125W,SM,0 805,100PPM/CEL,PB-FREE
R3230	0613952L42	RES,MF,267Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3231	0613952K01	RES,MF,10Ω,1%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R3234	6139520	RES,MF,10KΩ,1%,.1W,SM,060 3,100PPM/CEL,PB-FREE
R3235	6139520	RES,MF,10KΩ,1%,.1W,SM,060 3,100PPM/CEL,PB-FREE
R3236	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3300	0613952R66	RES,MF,0Ω,5%,.0625W,SM,04 02,PB-FREE
R3301	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3302	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R3303	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R3304	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R3305	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3306	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R3307	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0 402,200PPM/CEL,PB-FREE
R3308	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R3309	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3310	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3311	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3312	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3314	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3315	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3316	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3317	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3318	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3322	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3326	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3327	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3328	0613952R66	RES,MF,0Ω,5%,.0625W,SM,04 02,PB-FREE
R3329	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3330	0613952R66	RES,MF,0Ω,5%,.0625W,SM,04 02,PB-FREE
R3331	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3332	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE

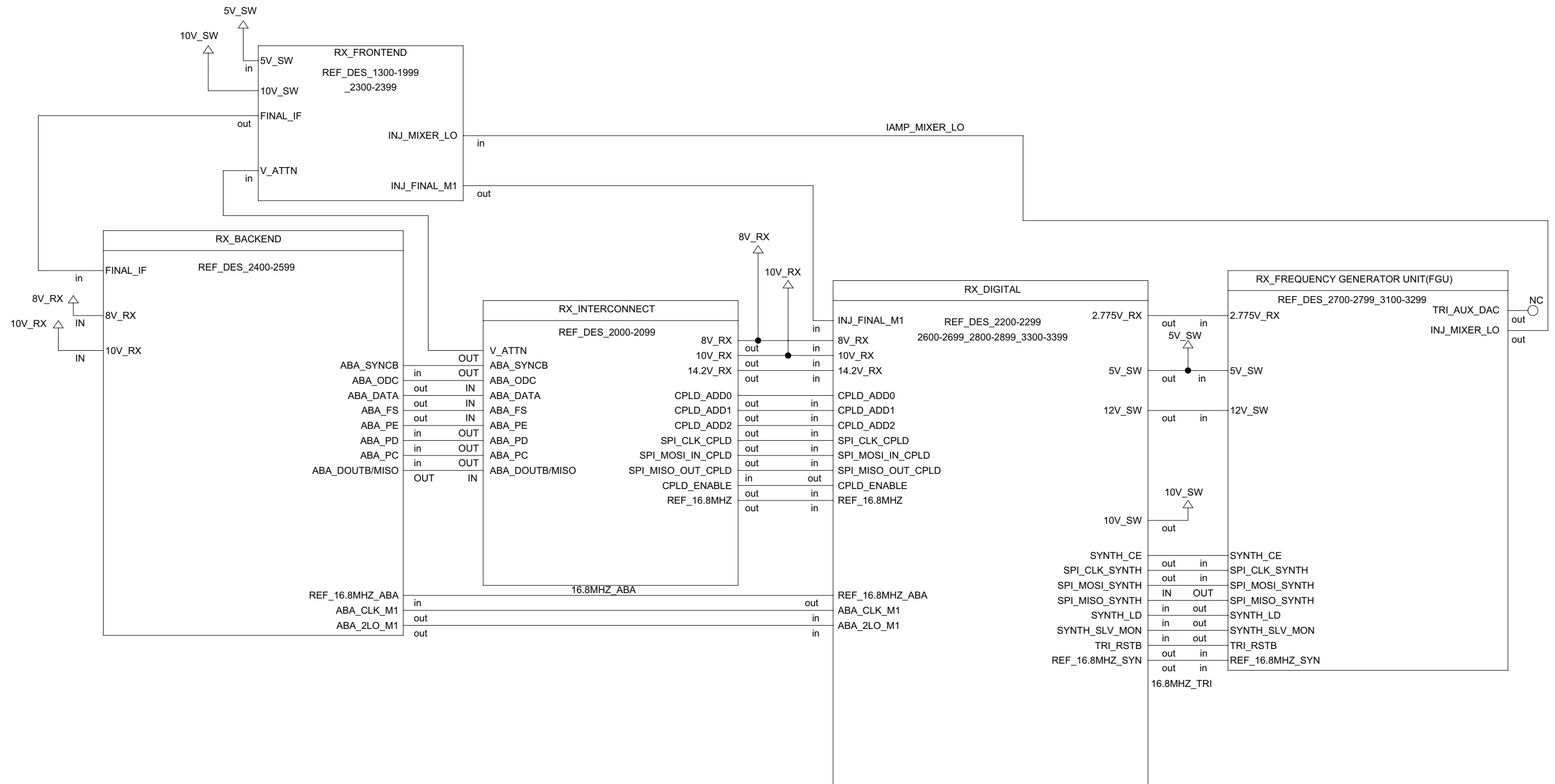
Circuit Ref	Motorola Part No	Description
R3333	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3334	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3345	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3346	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3347	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3348	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3349	0613952R66	RES,MF,0Ω,5%,.0625W,SM,04 02,PB-FREE
R3350	0613952M66	RES,MF,4.75KΩ,1%,.0625W,S M,0402,200PPM/CEL,PB-FREE
R3390	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3391	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3392	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
SH1100	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO
SH1401	1583004X05	SHLD,SHIELD, VCO
SH1500	2685668Y01	SHLD,CORRAL,NI-AG,24MMLG,13MMW,3.28MM
SH1501	2685668Y01	SHLD,CORRAL,NI-AG,24MMLG,13MMW,3.28MM
SH2500	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO
SH2700	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO

Circuit Ref	Motorola Part No	Description
SH2701	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO
SH3200	1583004X05	SHLD,SHIELD, VCO
SH3201	2685668Y01	SHLD,CORRAL,NI-AG,24MMLG,13MMW,3.28MM
T1400	2585040Y01	XFMR,BALUN
T1401	2585040Y01	XFMR,BALUN
U1100	5114005M13	IC,OP AMP,2PER PKG,LVOLT,SM,SOIC8,PB-FREE
U1200	5185481Y01	XSTR
U1500	91012005001	FLTR,73.35 MHZ MAX,SM,73.35 MHZ XTAL FILTER, 3-POLE
U1501	91012005001	FLTR,73.35 MHZ MAX,SM,73.35 MHZ XTAL FILTER, 3-POLE
U1502	4805218N55	XSTR,BIP RF SMALL SIGNAL,SLCN,NPN,BFQ67,SM,SOT-23,SMT,10V,.3W,5
U1600	5185941F45	ATTEN,VAR,14.4DBMIN,15.6DBMAX,0-2000 MHZ-FREQ,50Ω,PCMT,SOT-25
U2200	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE
U2201	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE
U2202	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE
U2203	5114014A20	IC,LNR V REGLTR,ADJUSTABLE,1.35V TO ,10V,800MA,SM,SO-8,PB-FREE
U2400	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE

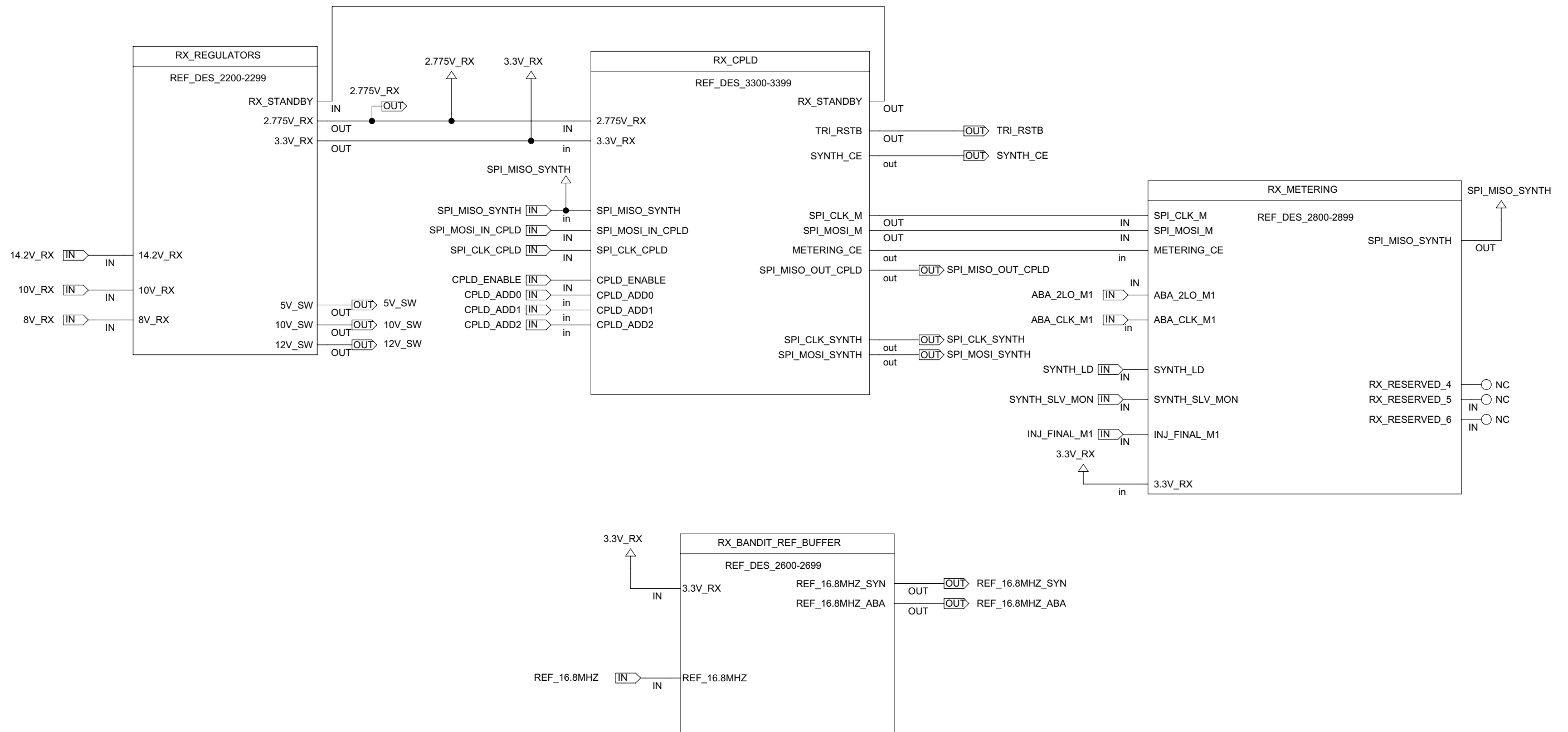
Circuit Ref	Motorola Part No	Description
U2530	5185963A85	IC-ABACUS III-LP
U2531	5114005A19	IC,OP AMP,2PER PKG,HI-SPD,SM,SO-8,SING SPLY, PB-FREE
U2700	5171183H01	AMP MDL,GAIN BLCK MMIC AMP
U2701	5185337Y01	AMP
U2800	5184998Y01	IC,LOW-POWER,8CHANNEL,SERIAL 10-BIT ADCS
U3100	5164015H28	IC,CUST,MULTI PROTOCOL/BAND TRANSCVR IC,SM,BGA,TRIDENT, INTEG
U3101	5185183Y01	IC,OP AMP,SO-8
U3103	5114019M05	IC,INVTR,SCHMITT,74LVX14,6 PER PKG,SM,TSSOP14,PB-FREE
U3300	5185130Y01	IC,PLD,TQFP
U3301	5184943Y01	IC,EEPROM,64 KB,SOIC,AT25640AN-10SU-2.7
U3303	5185941F86	IC,XCVR,0PER PKG,PQFP,PQFP16,IC, 4- BIT BUS XCVR
Y3200	9171848H11	RESON,CER,SMD,11.53NH,54 2 MHZ
Y3201	9171848H12	RESON,CER,SMD,10.90NH,57 9 MHZ



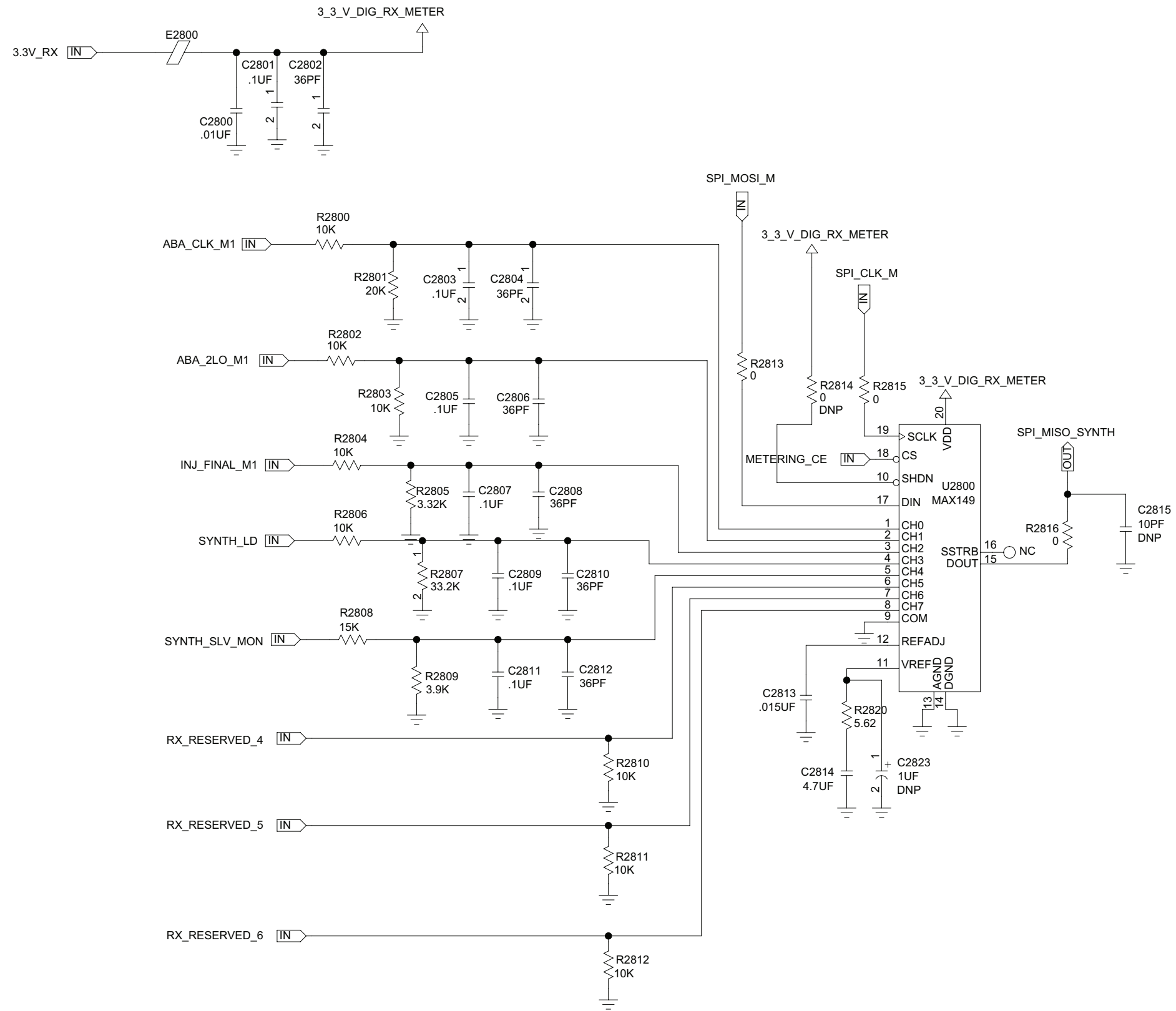
6.2 Receiver Schematics (800/900 MHz)



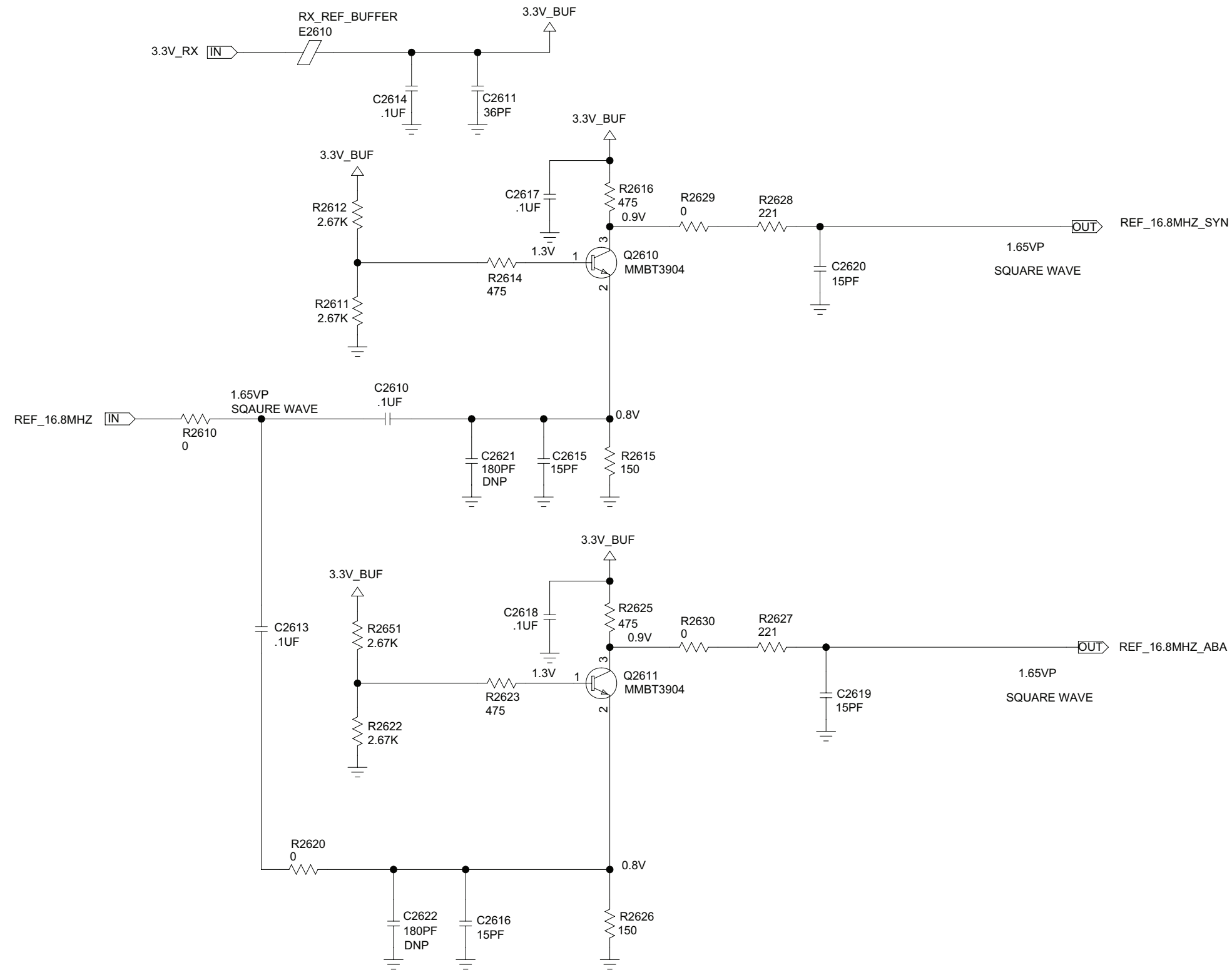
Receiver – Main Schematic Diagram (Kit No. CRF1024)



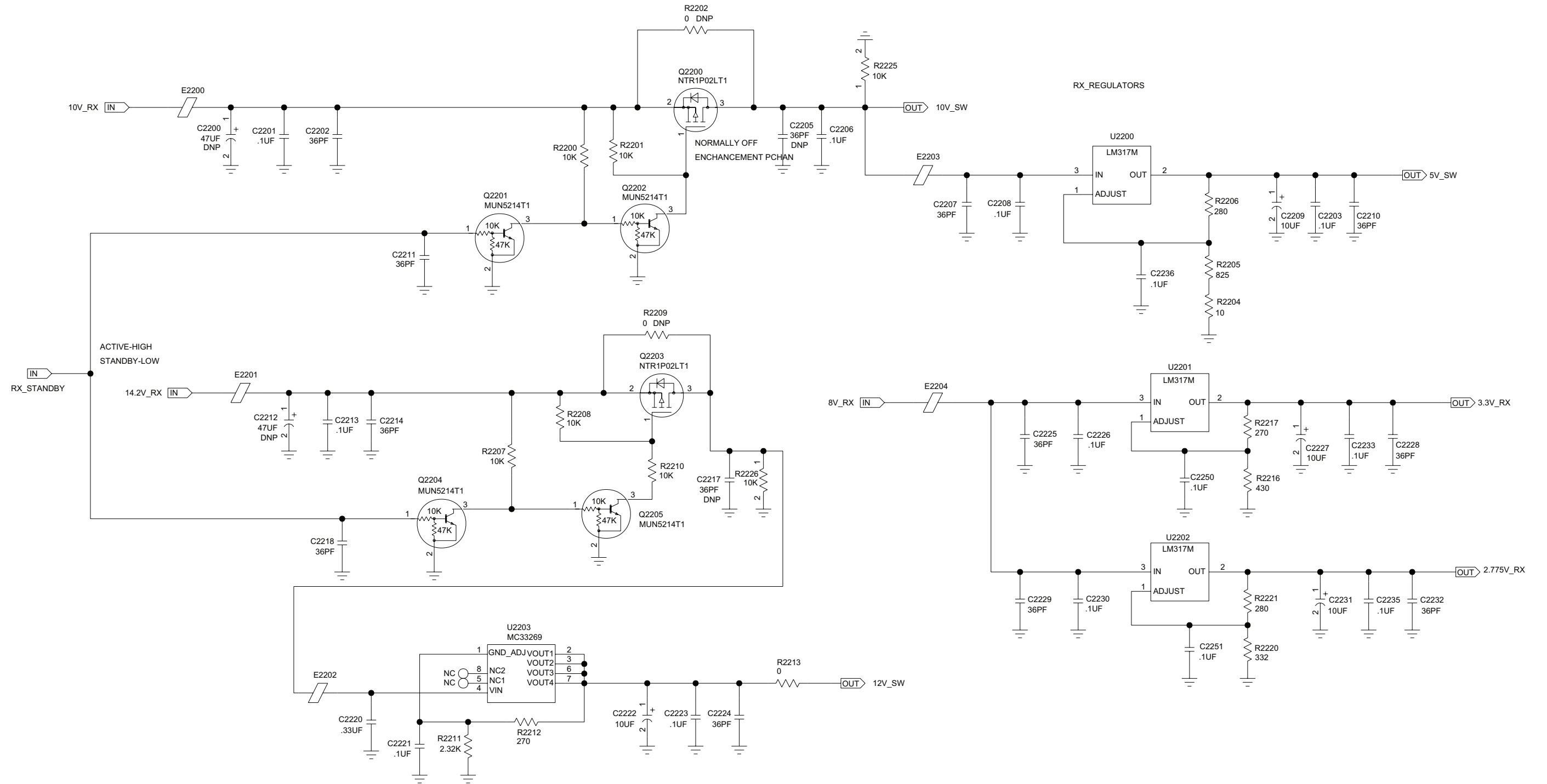
Receiver – Rx Digital Section Schematic Diagram (Kit No. CRF1024)



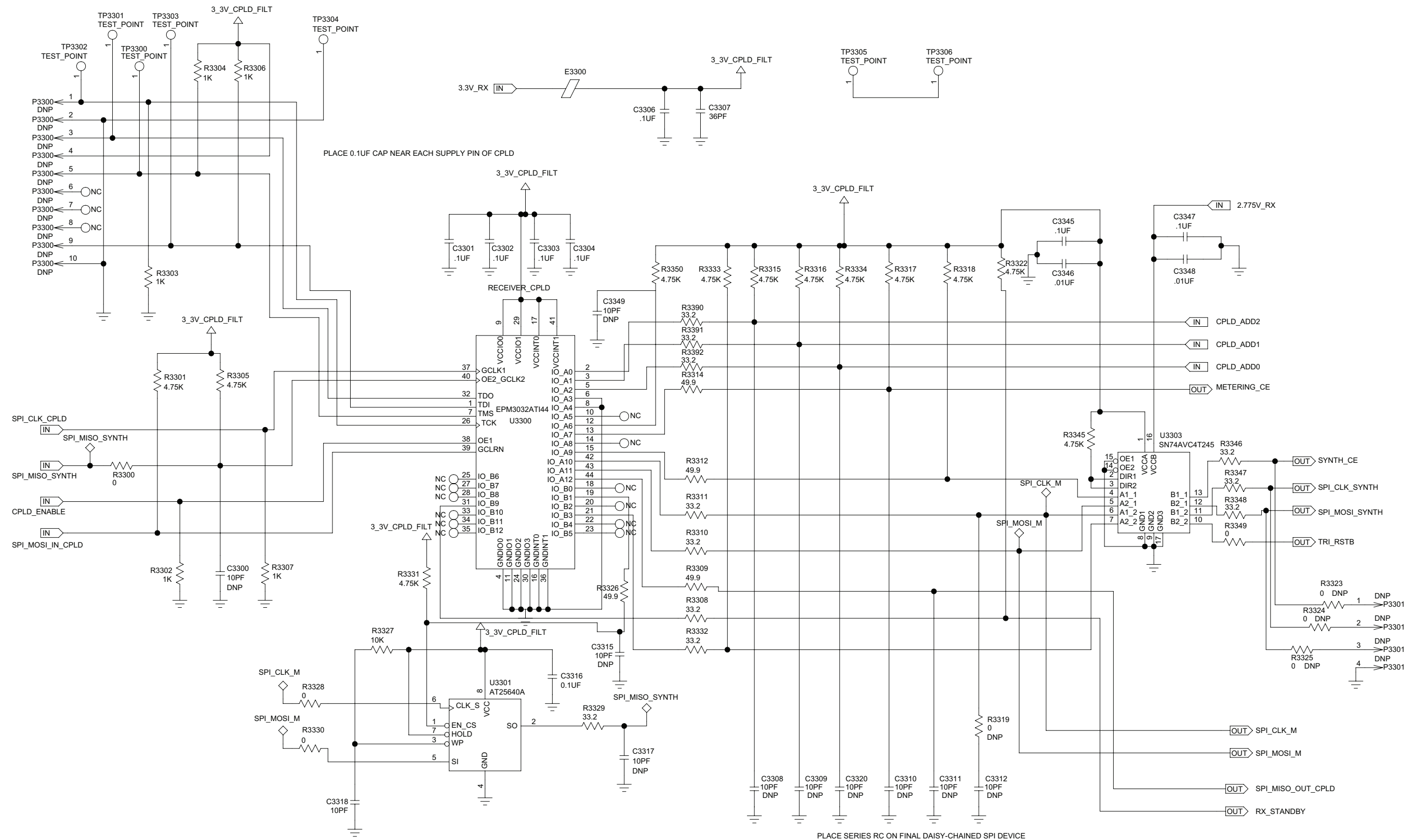
Receiver – Rx Metering Schematic Diagram (Kit No. CRF1024)



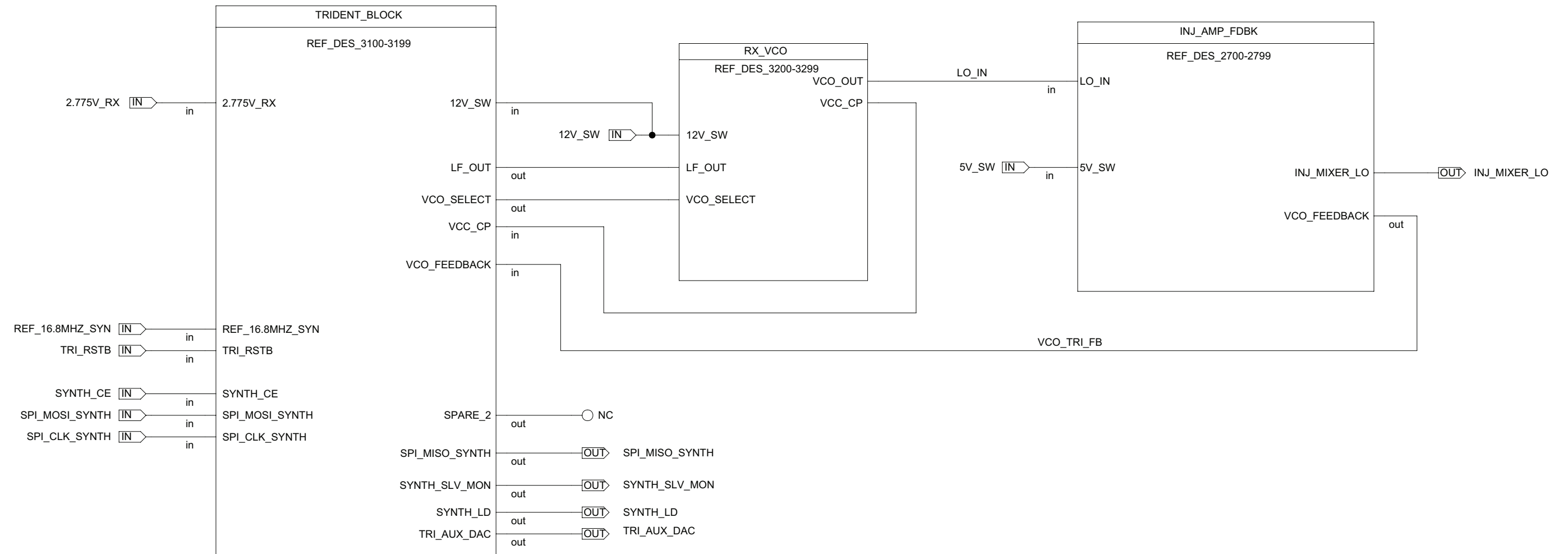
Receiver – Rx 16.8 MHZ Ref Buffer Schematic Diagram (Kit No. CRF1024)



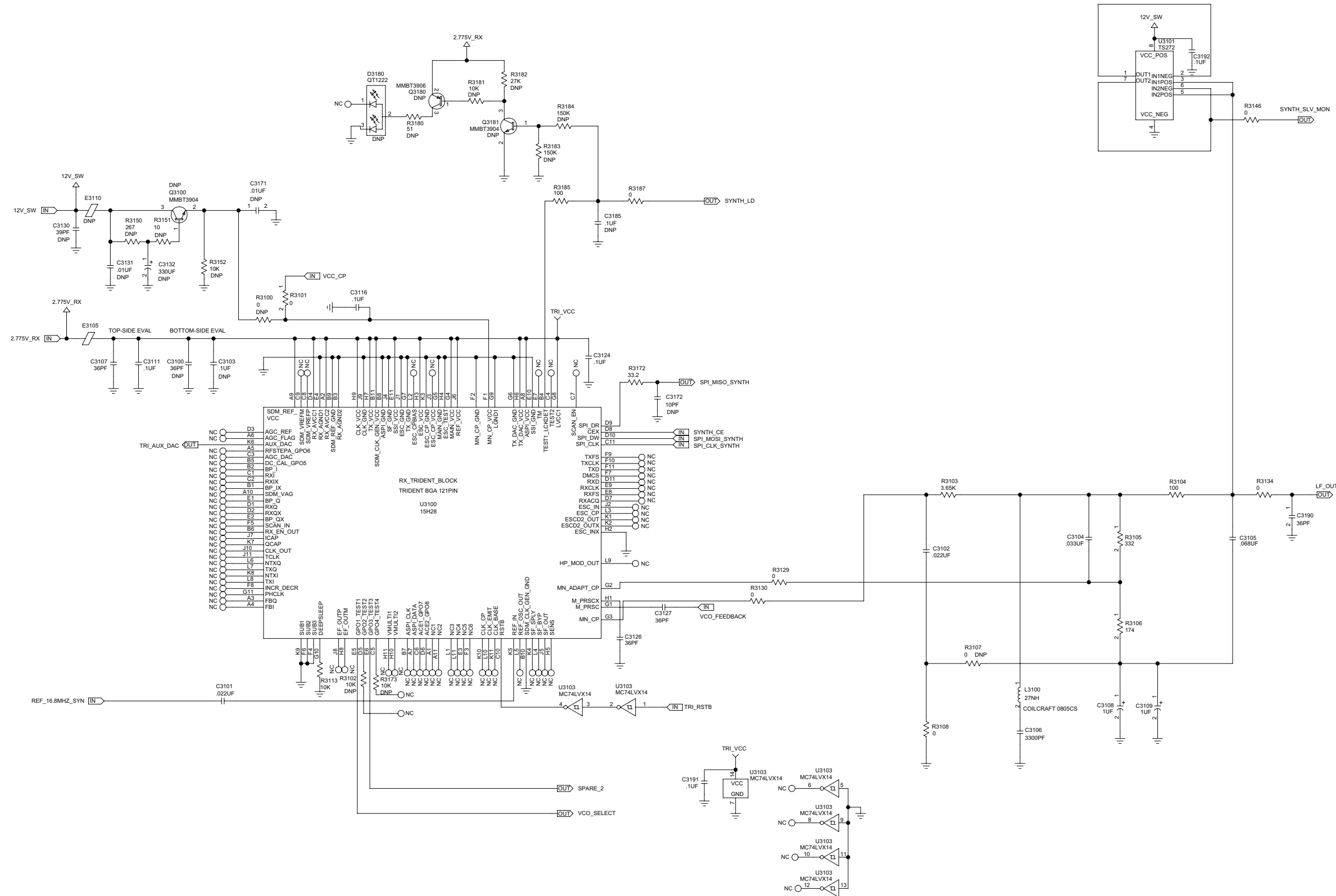
Receiver – Rx Voltage Regulators Schematic Diagram (Kit No. CRF1024)



Receiver - Rx CPLD Schematic Diagram (Kit No. CRF1024)

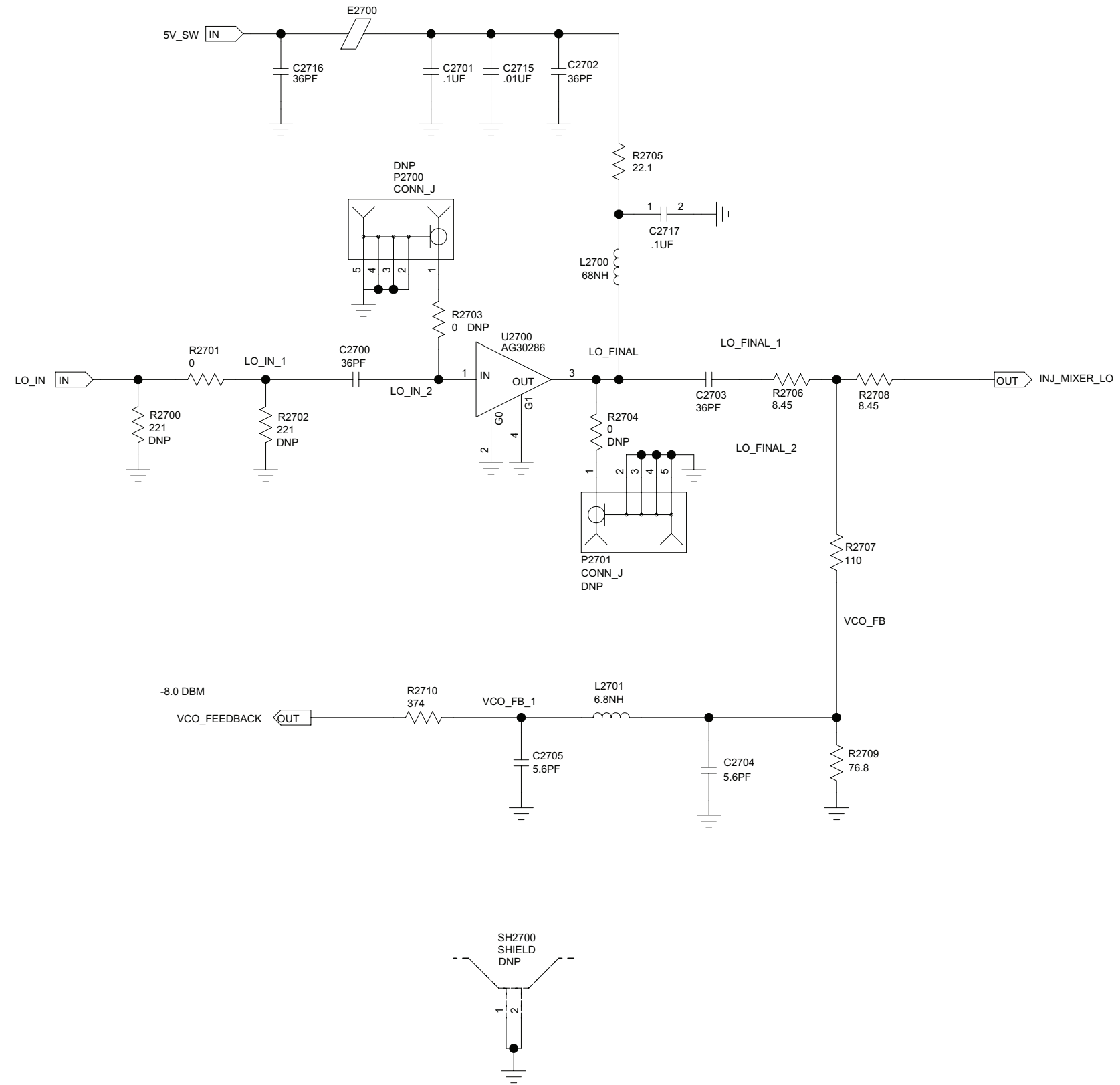


**Receiver – Rx Frequency Generation Unit (FGU) Schematic Diagram (Kit No. CRF1024)**

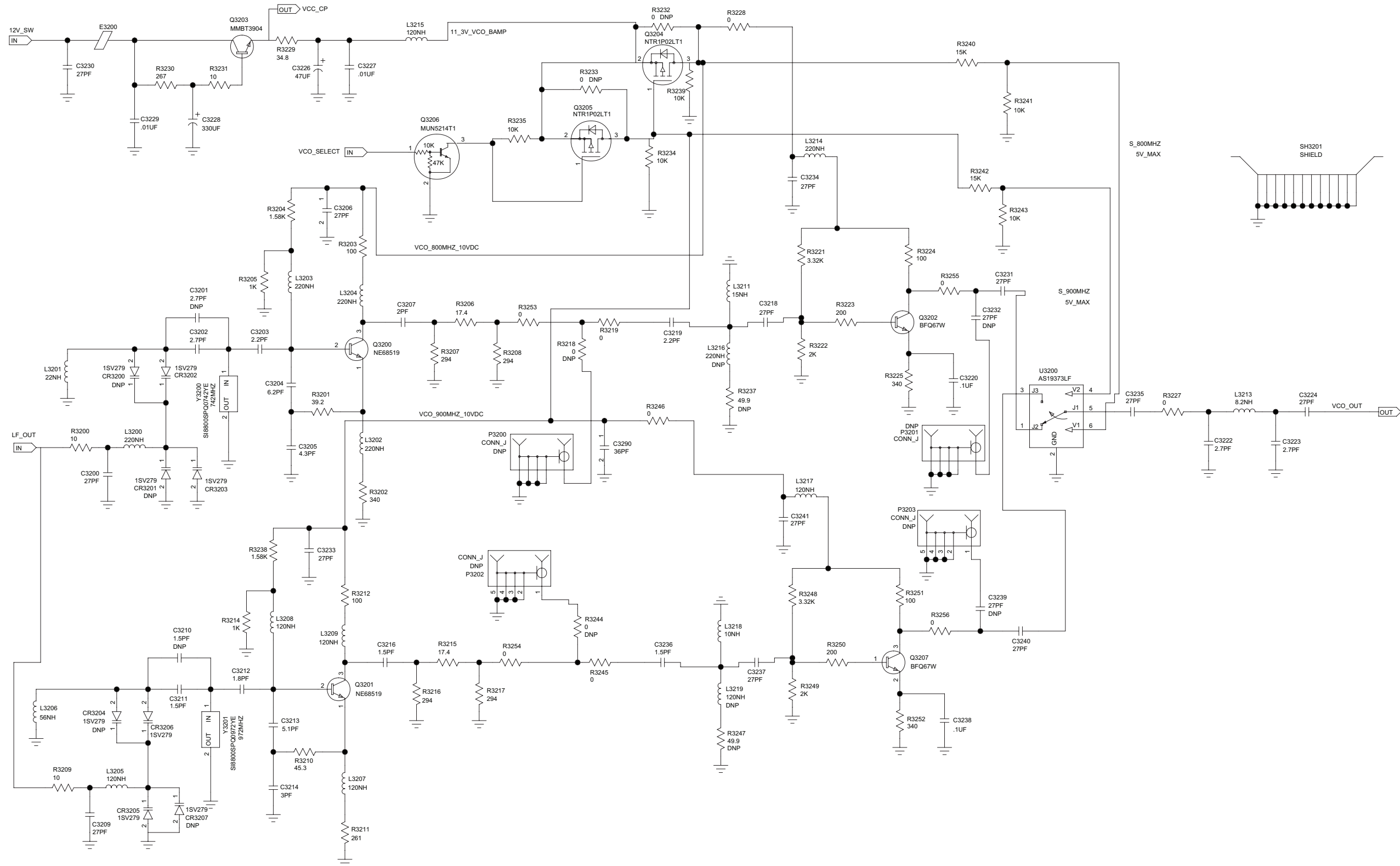


Receiver – Trident Block Schematic Diagram (Kit No. CRF1024)

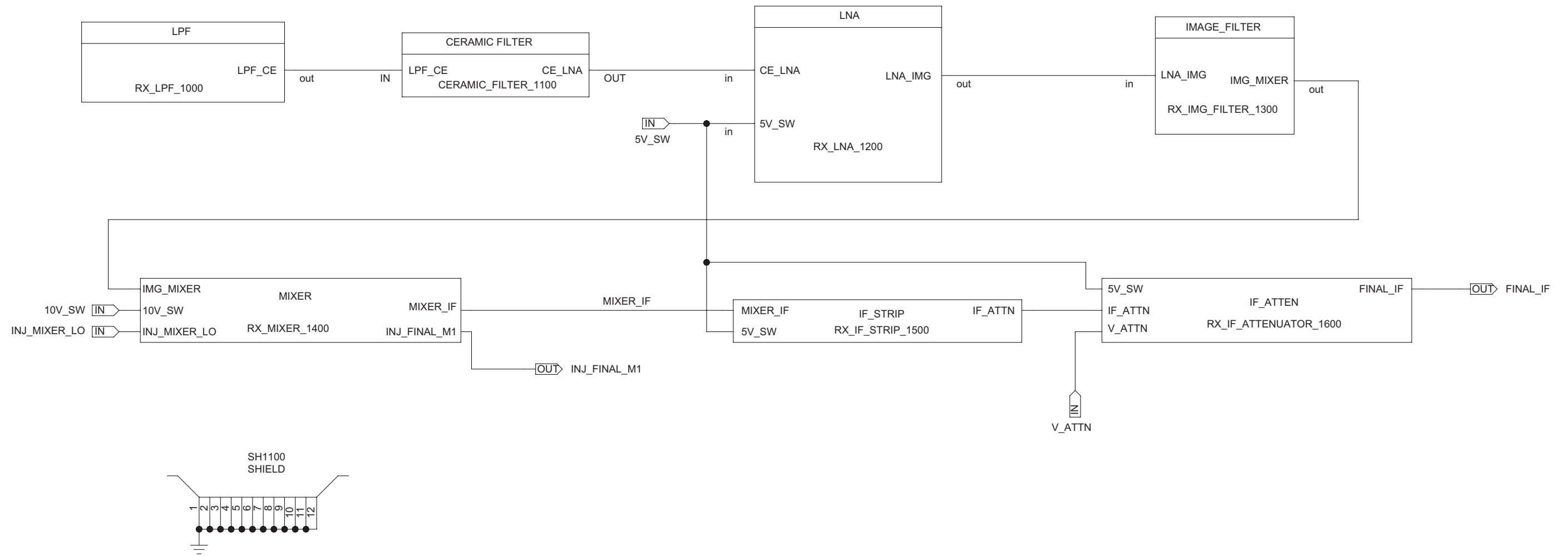




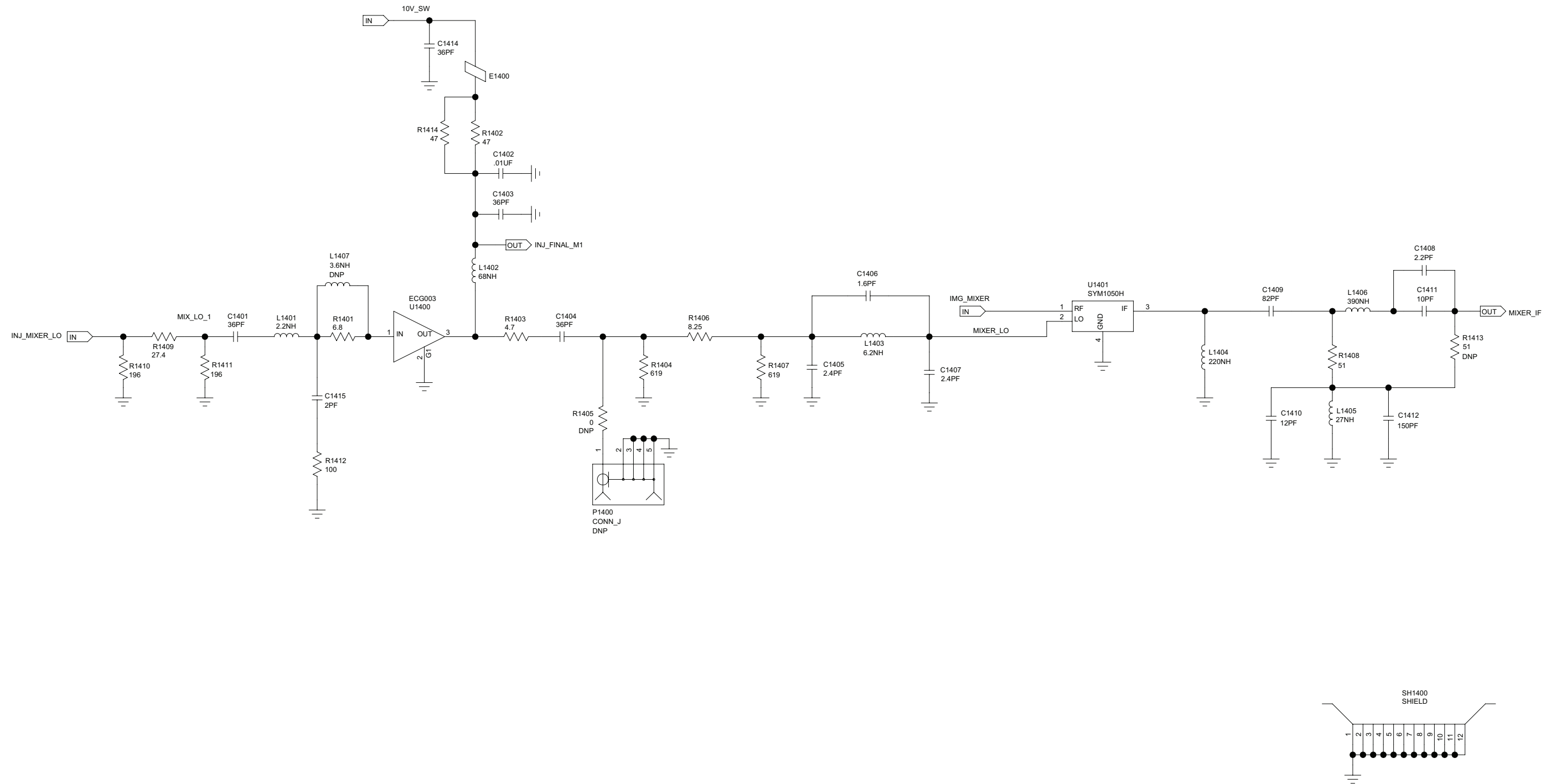
Receiver – Injection Amp. and VCO Feedback Schematic Diagram (Kit No. CRF1024)



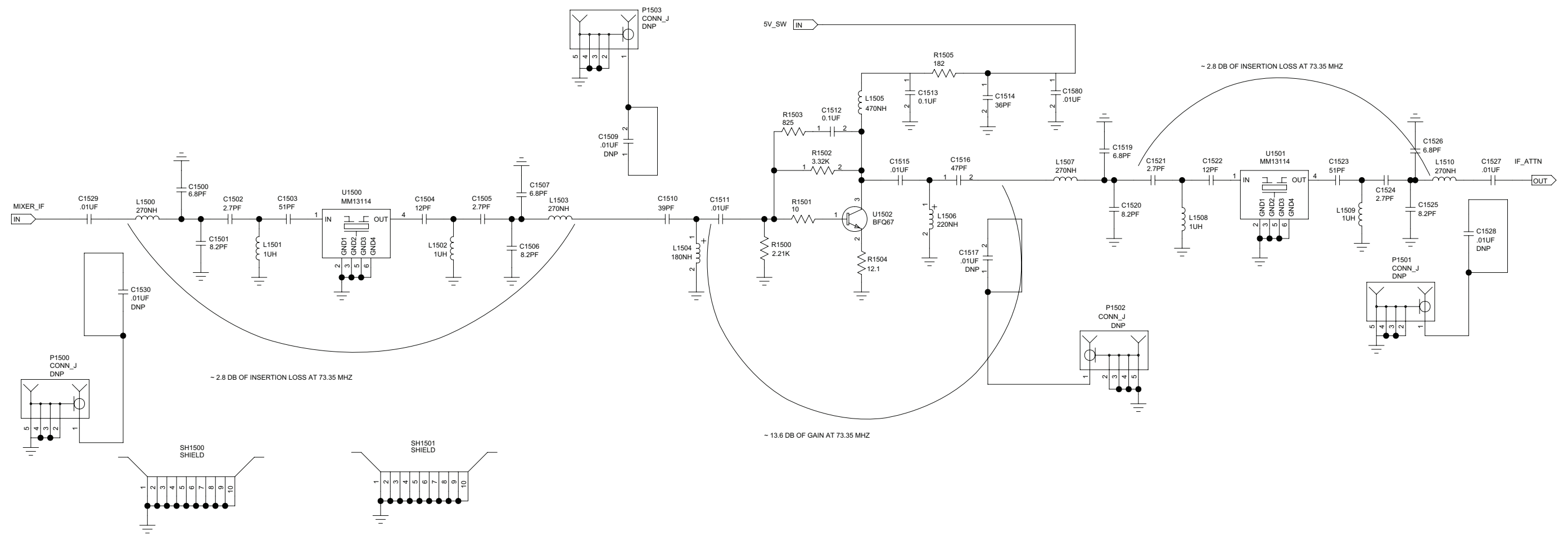
Receiver – VCO Schematic Diagram (Kit No. CRF1024)



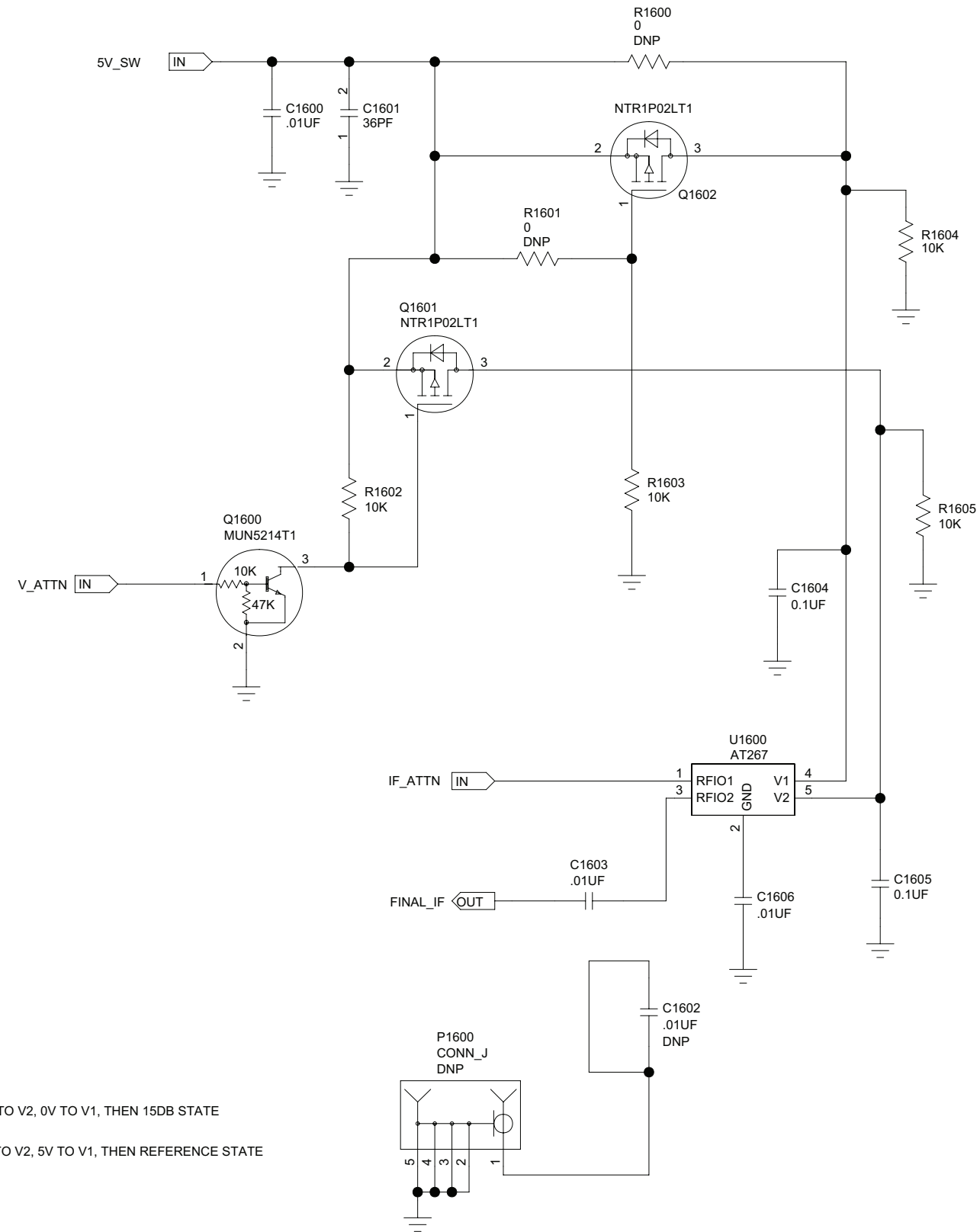
Receiver – Receiver Front End Schematic Diagram (Kit No. CRF1024)



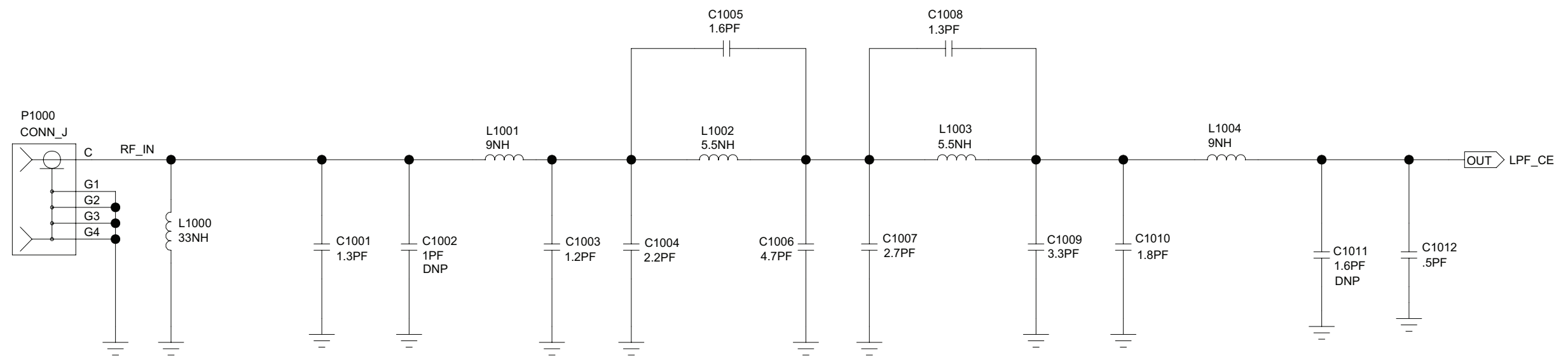
Receiver – Mixer Schematic Diagram (Kit No. CRF1024)



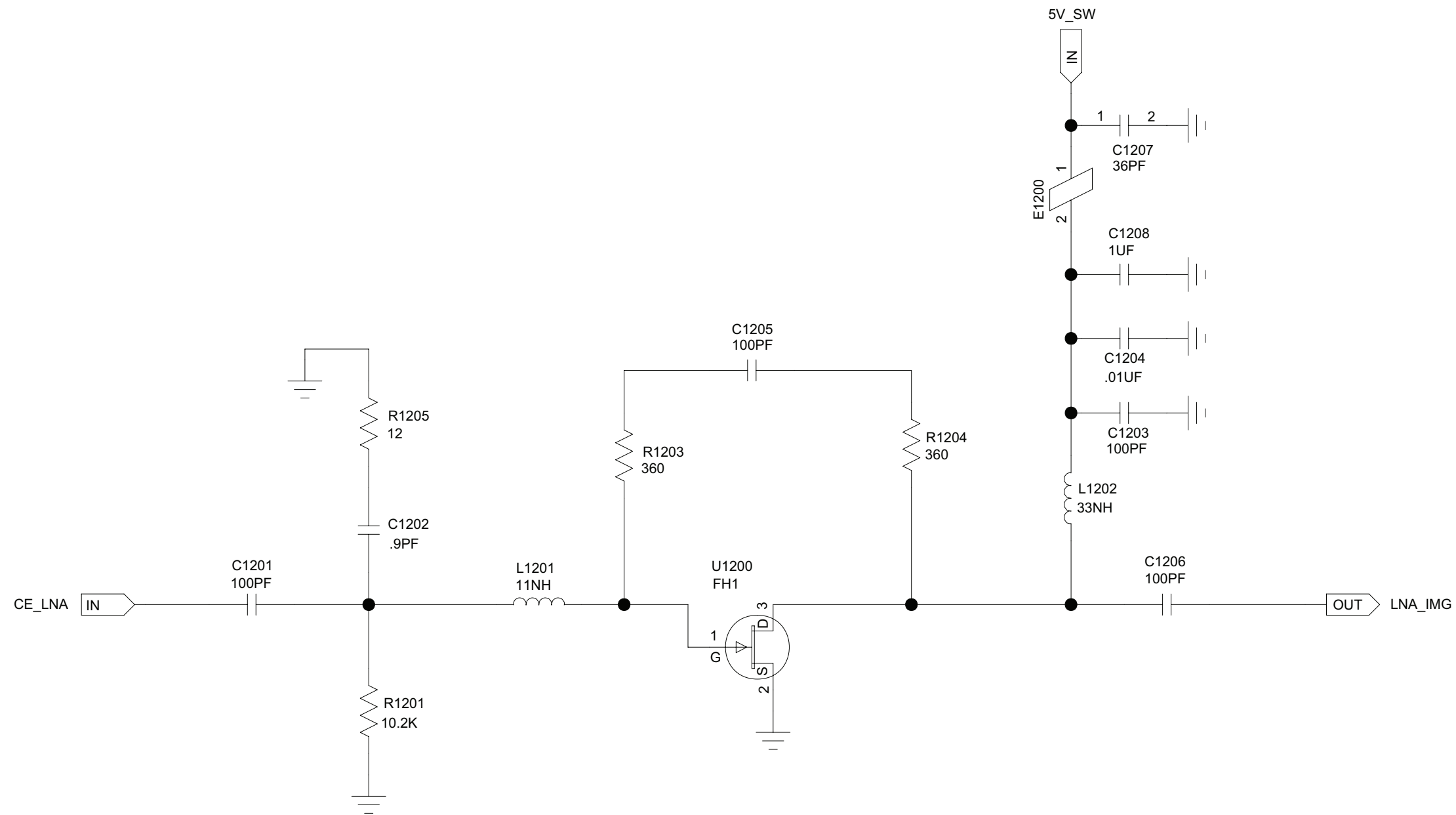
Receiver – If Schematic Diagram (Kit No. CRF1024)



Receiver – If Attenuator Diagram (Kit No. CRF1024)

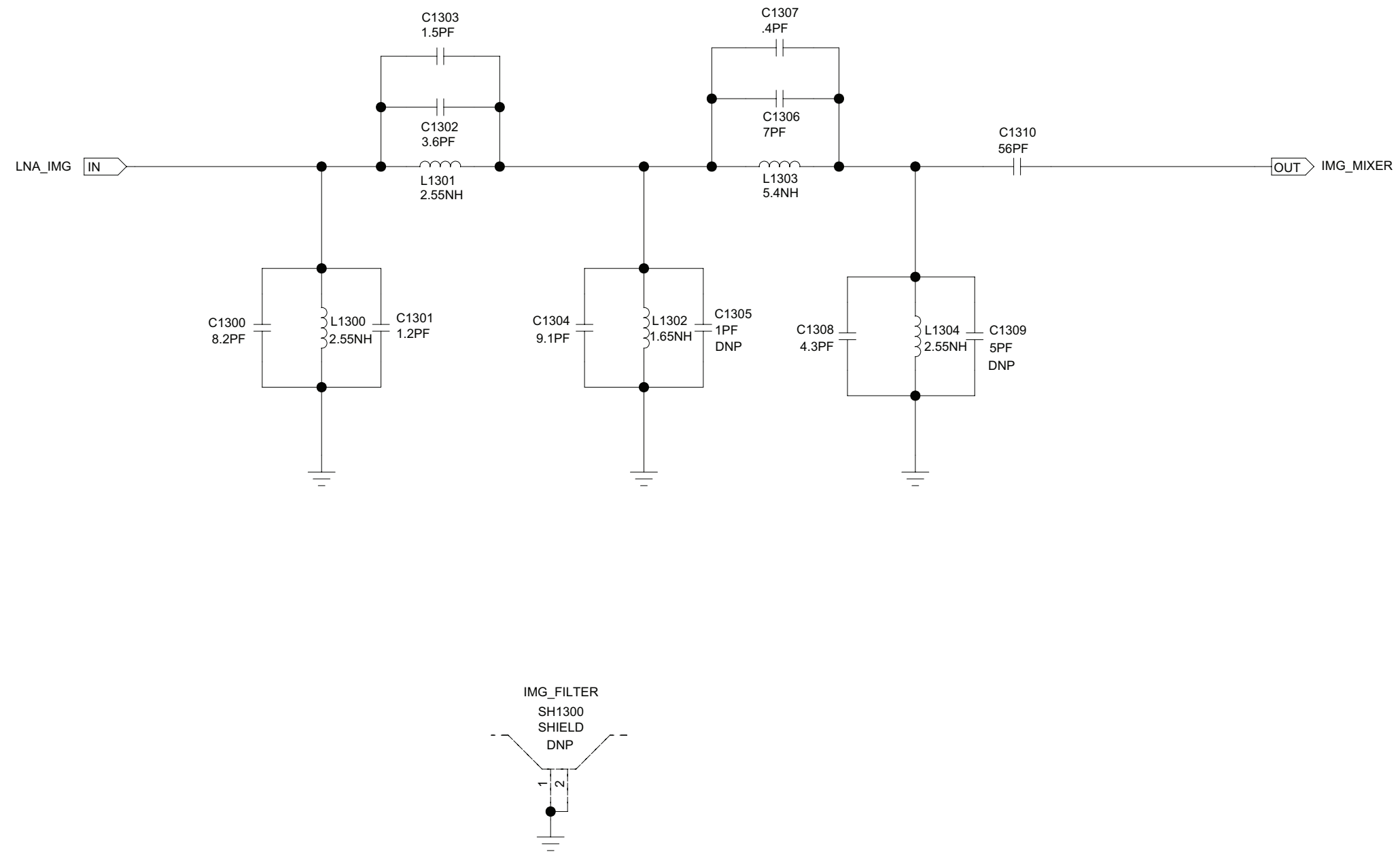


**Receiver – Low Pass Filter Schematic Diagram (Kit No. CRF1024)**

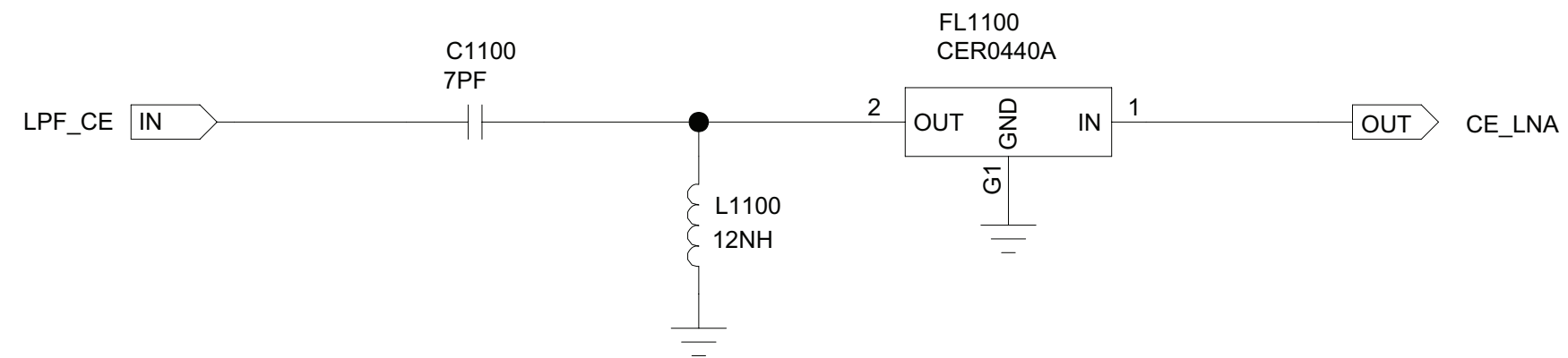


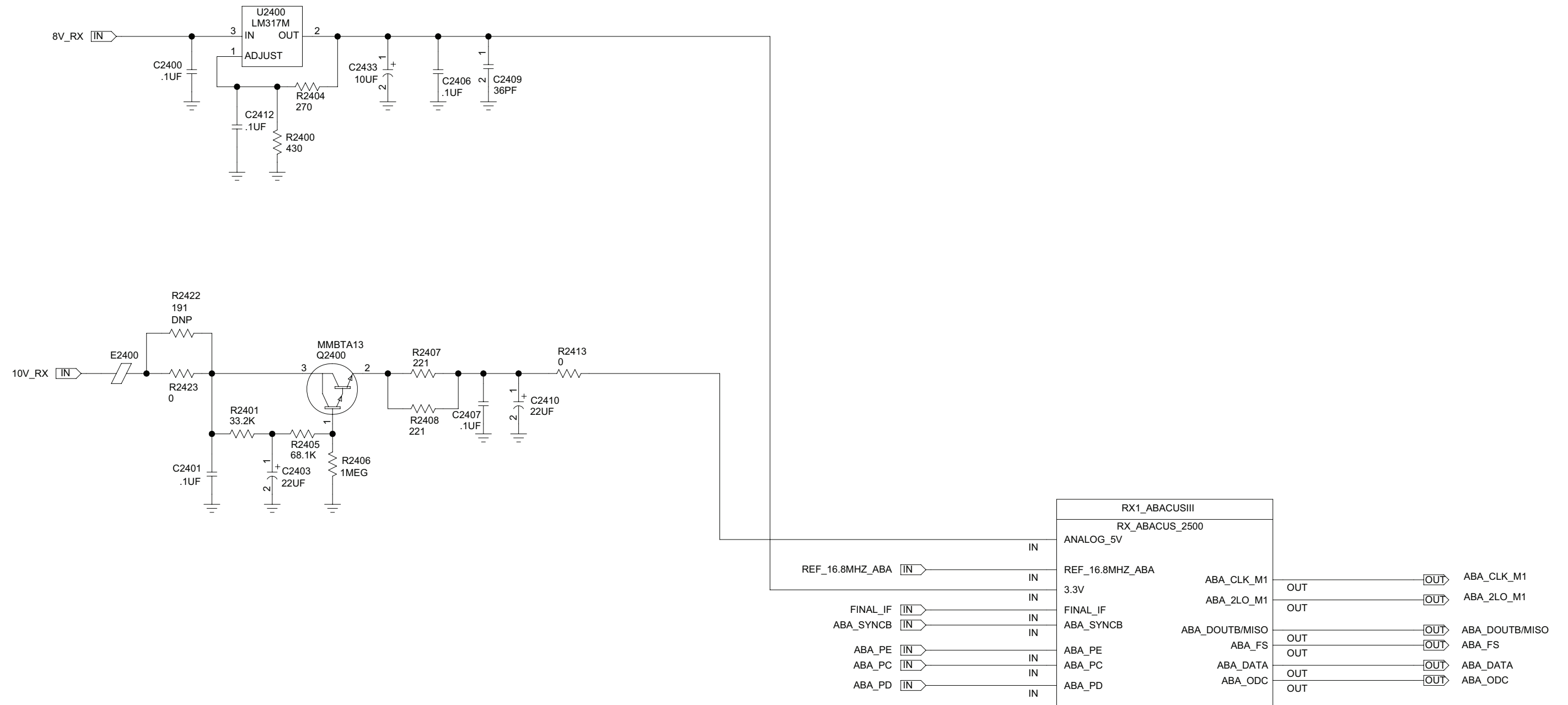
Receiver – Low Noise Amplifier Schematic Diagram (Kit No. CRF1024)



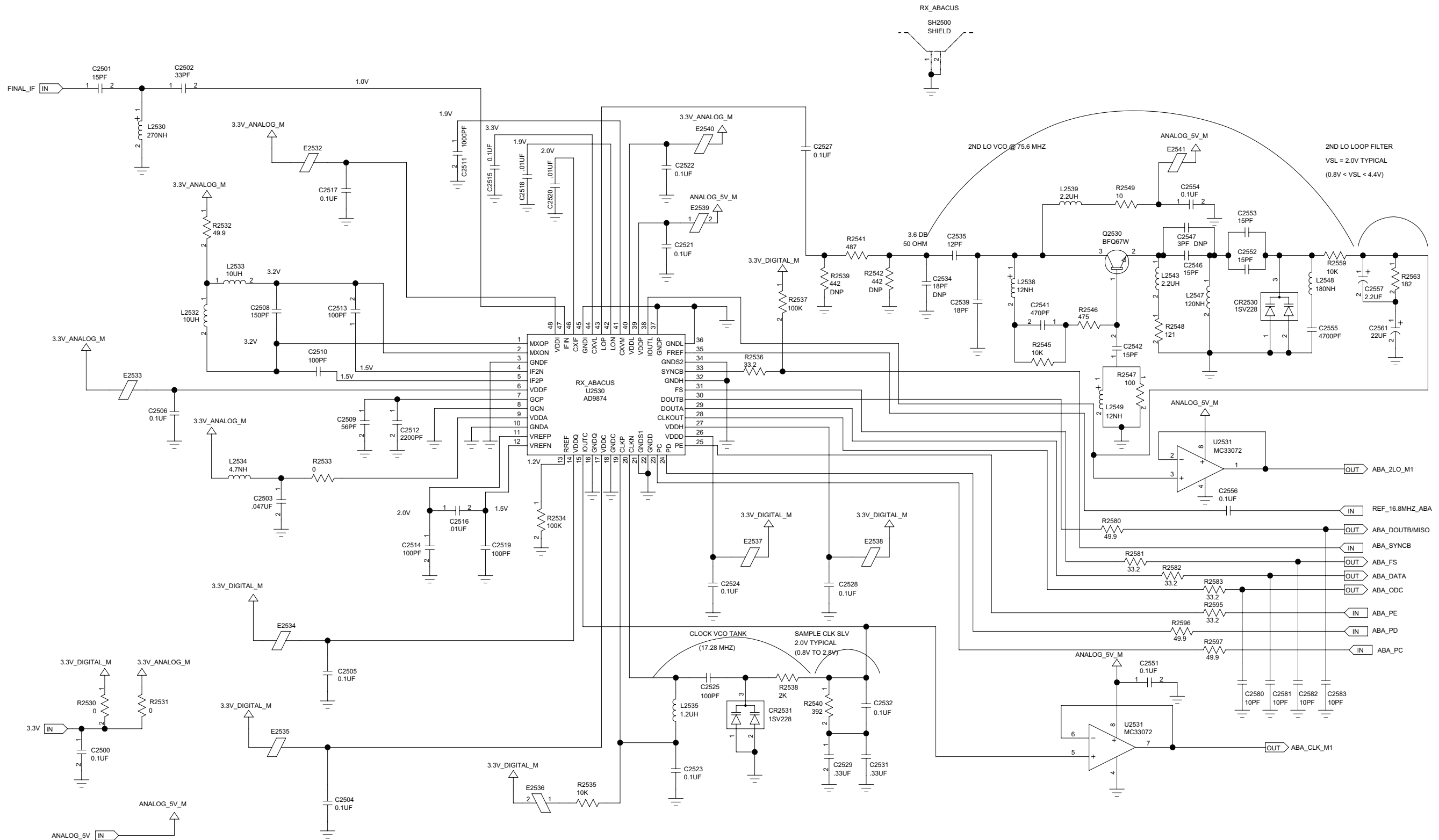


Receiver – Image Filter Schematic Diagram (Kit No. CRF1024)

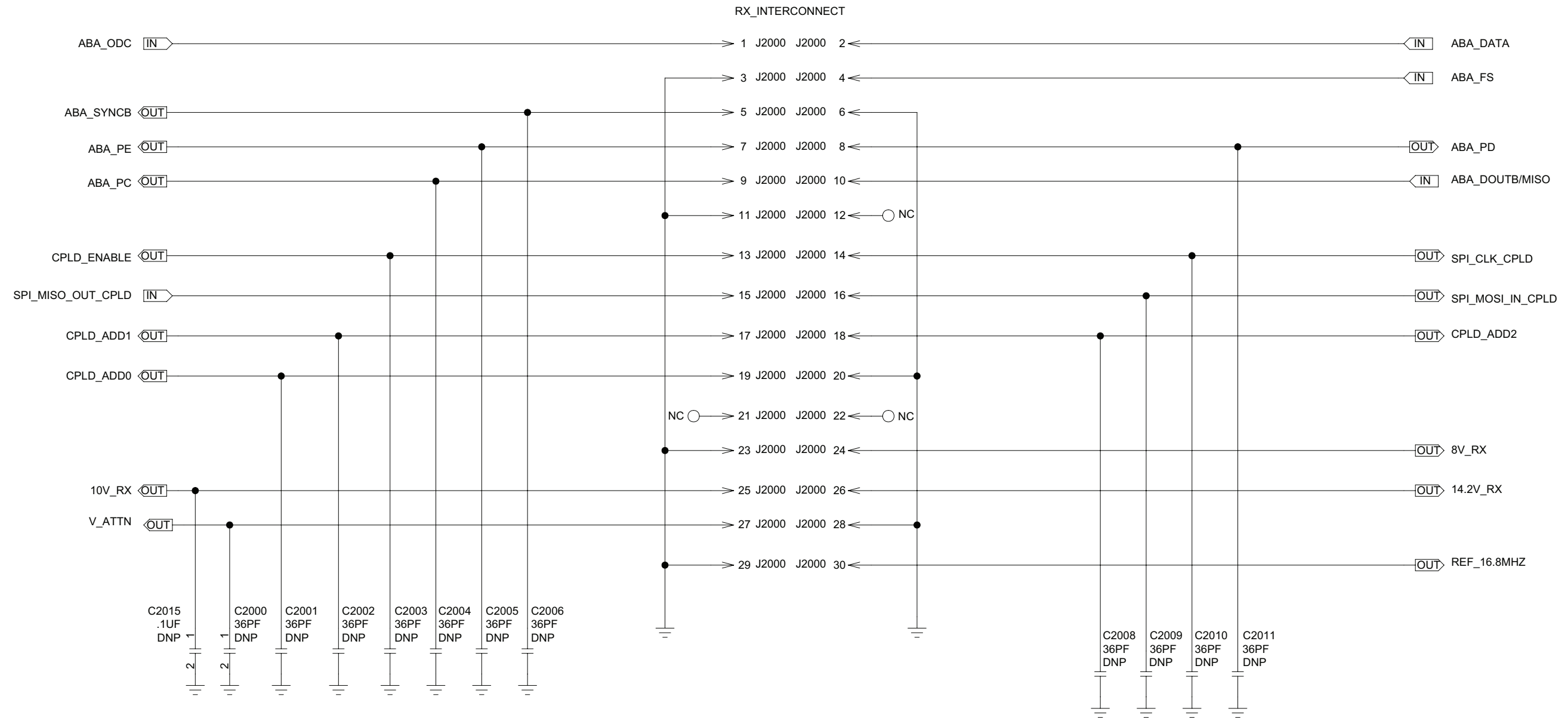




Receiver – Receiver Backend Schematic Diagram (Kit No. CRF1024)

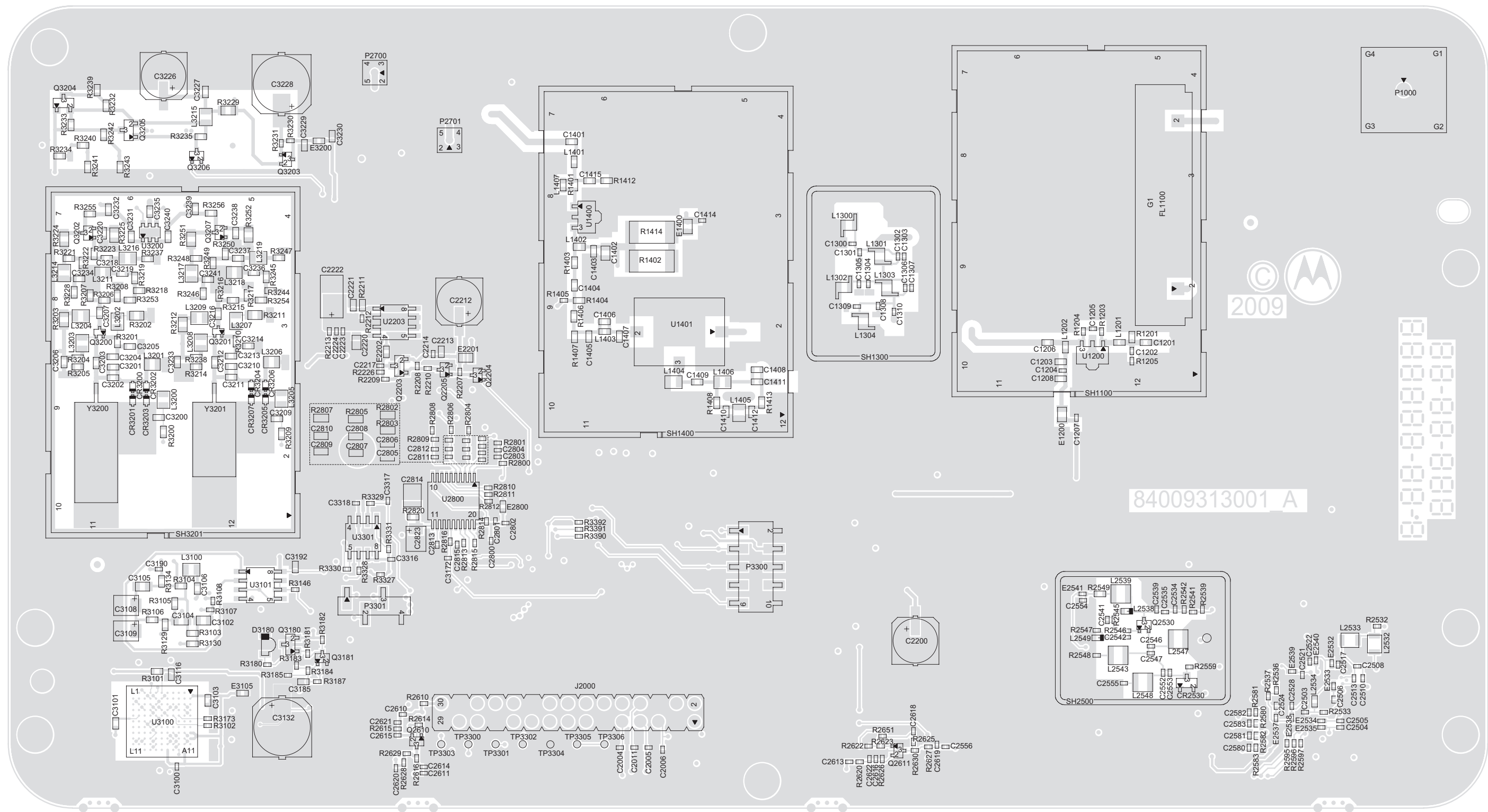


Receiver – Abacus Circuitry Schematic Diagram (Kit No. CRF1024)

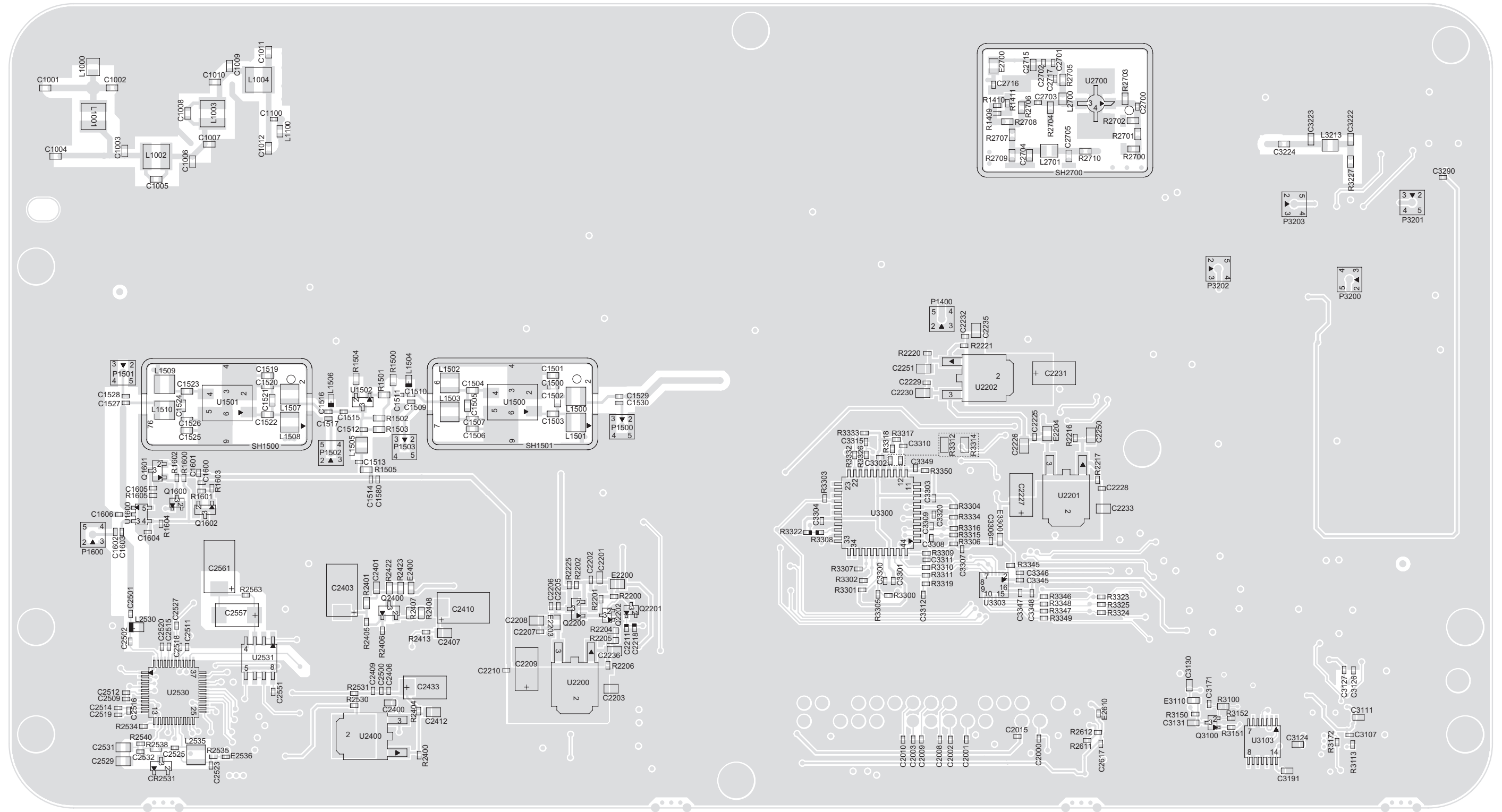


Receiver – Receiver Interconnect Schematic Diagram (Kit No. CRF1024)

### 6.3 Receiver PCB (800/900 MHz)



Receiver Board PCB – Top View (PCB No. 84009313001)



Receiver Board PCB – Bottom View (PCB No. 84009313001)

**6.4 Receiver Parts List (800/900 MHz) – CRF1024**

Circuit Ref	Motorola Part No	Description
C1001	2113951C13	CAP,FXD,1.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1003	2113951A12	CAP NPO 1.20PF +/- .1PF 250V HI FREQ
C1004	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1005	2113951C15	CAP,FXD,1.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1006	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1007	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1008	2113951C13	CAP,FXD,1.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1009	2113951C22	CAP,FXD,3.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1010	2113951A16	CAP NPO 1.80PF +/- .1PF 250V HI FREQ
C1012	2113951A05	CAP NPO 0.50PF +/- .1PF 250V HI FREQ
C1100	2115153H31	CAP, CERAMIC, COG
C1201	2113944C45	CAP CER CHP 100.0PF 50V 5%
C1202	2185957Y51	CAP,NP0,0.9 PF +/- .05PF,200V,0402
C1203	2113944C45	CAP CER CHP 100.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C1204	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1205	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1206	2113944C45	CAP CER CHP 100.0PF 50V 5%
C1207	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C1208	2113956B31	CAP,FXD,1UF,+10%,-10%,16V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX,PB
C1300	2185957Y74	CAP,NP0,8.2 PF +/- .10PF,200V,0402
C1301	2185957Y54	CAP,NP0,1.2 PF +/- .05PF,200V,0402
C1302	2185957Y65	CAP,NP0,3.6 PF +/- .05PF,200V,0402
C1303	2185957Y56	CAP,NP0,1.5 PF +/- .05PF,200V,0402
C1304	2115153H26	CAP, CERAMIC, COG
C1306	2115153H31	CAP, CERAMIC, COG
C1307	2185957Y46	CAP,NP0,0.4 PF +/- .05PF,200V,0402
C1308	2185957Y67	CAP,NP0,4.3 PF +/- .05PF,200V,0402
C1310	2113944A34	CAP CER CHP 56.0PF 50V 5%
C1401	2113944C83	CAP,FXD,36PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,PB
C1402	2113945G45	CAP,FXD,.01UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX,P
C1403	2113944C83	CAP,FXD,36PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,PB

Circuit Ref	Motorola Part No	Description
C1404	2113944C83	CAP,FXD,36PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,PB
C1405	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1406	2113951C15	CAP,FXD,1.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1407	2113951C19	CAP,FXD,2.4PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1408	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1409	2113944C43	CAP CER CHP 82.0PF 50V 5%
C1410	2113944C31	CAP CER CHP 12.0PF 50V 5%
C1411	2113951C34	CAP,FXD,10PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1412	2113944C47	CAP CER CHP 150.0PF 50V 5%
C1414	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C1415	2113951C17	CAP,FXD,2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C1500	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1501	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C1502	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1503	2113951C49	CAP,FXD,51PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1504	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1505	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1506	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1507	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1510	2113944A32	CAP CER CHP 39.0PF 50V 5%
C1511	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1512	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1513	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1514	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C1515	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1516	2113944A33	CAP CER CHP 47.0PF 50V 5%
C1519	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA



Circuit Ref	Motorola Part No	Description
C1520	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1521	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1522	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1523	2113951C49	CAP,FXD,51PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1524	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1525	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1526	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C1527	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1529	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1580	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1600	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1601	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C1603	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1604	2113946B04	CAP CER CHP 0.10UF 10V 10%

Circuit Ref	Motorola Part No	Description
C1605	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1606	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2201	2113945D04	CAP CER CHP 100,000PF 25V 10%
C2202	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2203	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2206	2113946K02	CAP CER CHP 0.10UF 16V
C2207	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2208	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2209	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C2210	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2211	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2213	2113945D04	CAP CER CHP 100,000PF 25V 10%
C2214	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB

Circuit Ref	Motorola Part No	Description
C2218	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2220	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2221	2113945D04	CAP CER CHP 100,000PF 25V 10%
C2222	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C2223	2113946K02	CAP CER CHP 0.10UF 16V
C2224	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2225	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2226	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2227	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C2228	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2229	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2230	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C2231	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C2232	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2233	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2235	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2236	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2250	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2251	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2400	2113945D04	CAP CER CHP 100,000PF 25V 10%
C2401	2113945D04	CAP CER CHP 100,000PF 25V 10%
C2403	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA
C2406	2113946K02	CAP CER CHP 0.10UF 16V
C2407	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2409	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB

Circuit Ref	Motorola Part No	Description
C2410	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA
C2412	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2433	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C2500	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2501	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2502	2113944A31	CAP CER CHP 33.0PF 50V 5%
C2503	2113946B02	CAP CER CHP 0.047UF 10V 10,
C2504	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2505	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2506	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2508	2113944A42	CAP CER CHP 150.0PF 50V 5%
C2509	2113944A34	CAP CER CHP 56.0PF 50V 5%
C2510	2113944A40	CAP CER CHP 100.0PF 50V 5%
C2511	2113945A09	CAP CER CHP 1000PF 50V 10%
C2512	2113945A11	CAP CER CHP 2200PF 50V 10%
C2513	2113944A40	CAP CER CHP 100.0PF 50V 5%
C2514	2113944A40	CAP CER CHP 100.0PF 50V 5%
C2515	2113946B04	CAP CER CHP 0.10UF 10V 10%

Circuit Ref	Motorola Part No	Description
C2516	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2517	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2518	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2519	2113944A40	CAP CER CHP 100.0PF 50V 5%
C2520	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2521	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2522	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2523	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2524	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2525	2113944A40	CAP CER CHP 100.0PF 50V 5%
C2527	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2528	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2529	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2531	2113945G96	CAP,FXD,.33UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C2532	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2535	2113944A26	CAP CER CHP 12.0PF 50V 5%
C2539	2113944A28	CAP CER CHP 18.0PF 50V 5%
C2541	2113945A05	CAP CER CHP 470PF 50V 10%
C2542	2113944A27	CAP CER CHP 15.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C2546	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2551	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2552	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2553	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2554	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2555	2113945A13	CAP CER CHP 4700PF 50V 10%
C2556	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2557	2313960E28	CAP,FXD,2.2UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,177MA
C2561	2313960G78	CAP,FXD,22UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,433MA
C2580	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2581	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2582	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2583	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C2610	2113946K02	CAP CER CHP 0.10UF 16V
C2611	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2613	2113946K02	CAP CER CHP 0.10UF 16V
C2614	2113946K02	CAP CER CHP 0.10UF 16V
C2615	2113944A27	CAP CER CHP 15.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C2616	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2617	2113946K02	CAP CER CHP 0.10UF 16V
C2618	2113946K02	CAP CER CHP 0.10UF 16V
C2619	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2620	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2700	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2701	2113946K02	CAP CER CHP 0.10UF 16V
C2702	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2703	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2704	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2705	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2715	2113945C02	CAP CER CHP 10,000PF 50V 10%
C2716	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2717	2113946K02	CAP CER CHP 0.10UF 16V
C2800	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2801	2113946K02	CAP CER CHP 0.10UF 16V

Circuit Ref	Motorola Part No	Description
C2802	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2803	2113946K02	CAP CER CHP 0.10UF 16V
C2804	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2805	2113946K02	CAP CER CHP 0.10UF 16V
C2806	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2807	2113946K02	CAP CER CHP 0.10UF 16V
C2808	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2809	2113946K02	CAP CER CHP 0.10UF 16V
C2810	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2811	2113946K02	CAP CER CHP 0.10UF 16V
C2812	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C2813	2113946A01	CAP CER CHP 0.015UF 16V 10%
C2814	2113946J02	CAP CER CHP 4.7UF 16V 10%
C3101	2113945C04	CAP CER CHP 22,000PF 50V 10%
C3102	2113945G81	CAP,FXD,.022UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C3104	2113945G82	CAP,FXD,.033UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMA
C3105	2113945G89	CAP,FXD,.068UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMA
C3106	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3107	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C3108	2313960C26	CAP,FXD,1UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,114MA,E
C3109	2313960C26	CAP,FXD,1UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,114MA,E
C3111	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3116	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3124	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3126	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C3127	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C3190	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C3191	2113945D04	CAP CER CHP 100,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
C3192	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3200	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3202	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3203	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3204	2113951C29	CAP,FXD,6.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3205	2113951C25	CAP,FXD,4.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3206	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3207	2113951C17	CAP,FXD,2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C3209	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3211	2113951C14	CAP,FXD,1.5PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3212	2113951C16	CAP,FXD,1.8PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3213	2113951C27	CAP,FXD,5.1PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3214	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C3216	2113951C14	CAP,FXD,1.5PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3218	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3219	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3220	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3222	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3223	2113951C20	CAP,FXD,2.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3224	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3226	2385170Y10	CAP AL LYTIC 47UF 25V 20% PB-FREE
C3227	2113945C02	CAP CER CHP 10,000PF 50V 10%
C3228	2385170Y08	CAP AL LYTIC 330UF 25V 20% PB-FREE
C3229	2113945C02	CAP CER CHP 10,000PF 50V 10%
C3230	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3231	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3233	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3234	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3235	2113944C35	CAP CER CHP 27.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C3236	2113951C14	CAP,FXD,1.5PF,.05PF+/- .250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C3237	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3238	2113945D04	CAP CER CHP 100,000PF 25V 10%
C3240	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3241	2113944C35	CAP CER CHP 27.0PF 50V 5%
C3290	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C3301	2113946K02	CAP CER CHP 0.10UF 16V
C3302	2113946K02	CAP CER CHP 0.10UF 16V
C3303	2113946K02	CAP CER CHP 0.10UF 16V
C3304	2113946K02	CAP CER CHP 0.10UF 16V
C3306	2113946K02	CAP CER CHP 0.10UF 16V
C3307	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C3316	2113946B04	CAP CER CHP 0.10UF 10V 10%
C3318	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C3345	2113946K02	CAP CER CHP 0.10UF 16V
C3346	2113945B02	CAP CER CHP 10,000PF 25V 10%
C3347	2113946K02	CAP CER CHP 0.10UF 16V
C3348	2113945B02	CAP CER CHP 10,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
CR2530	4885094Y01	DIODE VARACTOR ISV228 W18
CR2531	4885094Y01	DIODE VARACTOR ISV228 W18
CR3202	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/SC-79
CR3203	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/SC-79
CR3205	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/SC-79
CR3206	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/SC-79
E1200	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E1400	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E2200	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E2201	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E2202	2485410Y01	MIN CHIP FERRITE BEAD
E2203	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E2204	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E2400	2485410Y01	MIN CHIP FERRITE BEAD
E2532	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2533	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2534	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2535	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2536	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18

Circuit Ref	Motorola Part No	Description
E2537	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2538	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2539	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2540	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2541	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2610	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E2700	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E2800	2485410Y01	MIN CHIP FERRITE BEAD
E3105	2485410Y01	MIN CHIP FERRITE BEAD
E3200	2462586G01	INDUCTOR CHIP FER- RITE BEADS
E3300	2485410Y01	MIN CHIP FERRITE BEAD
FL1100	9185786Y03	RF CERAMIC BPF(806-825,896-902 MHZ)
J2000	28009146002	HEADER 2 X 15 VERTI- CAL
L1000	2414032F28	IDCTR,WW,33NH,5%,500 MA,.27Ω,CER,40 Q,1.8GHZ SRF,SM,PB- FRE
L1001	2471968L10	9.0NH 2% LP AIRWOUND INDUCTOR
L1002	2471968L13	LOW PROFILE MINI SPRING INDUCTOR
L1003	2471968L13	LOW PROFILE MINI SPRING INDUCTOR
L1004	2471968L10	9.0NH 2% LP AIRWOUND INDUCTOR
L1100	2414017H13	IDCTR,CHIP,12NH,5%,3A, .28Ω,CER,12 Q,1.7GHZ SRF,SM,0603,PB-
L1201	24008157022	FIXED INDUC- TOR,WW,CER,SM,11 NH +/- 2 %

Circuit Ref	Motorola Part No	Description
L1202	24008157044	FIXED INDUC- TOR,WW,CER,SM,33 NH +/- 2 %
L1300	2415428H02	AIR WOUND INDUCTOR
L1301	2415428H02	AIR WOUND INDUCTOR
L1302	2415428H01	AIR WOUND INDUCTOR
L1303	2415428H04	AIR WOUND INDUCTOR
L1304	2415428H02	AIR WOUND INDUCTOR
L1401	24008157001	FIXED INDUC- TOR,WW,CER,SM,2.2 NH +/- 0.5 NH
L1402	2416540H29	CHIP INDUCTOR
L1403	24008157012	FIXED INDUC- TOR,WW,CER,SM,6.2 NH,TOL 0.5 NH
L1404	2414032F38	IDCTR,WW,220NH,5%,400 MA,.7Ω,CER,30 Q,630 MHZ SRF,SM,PB-FRE
L1405	2414032F27	IDCTR,FXD,27NH,5%,500 MA,.25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-
L1406	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L1500	2414015A09	IDCTR,FXD,270NH,2%,69 0MA,.91Ω,CER,28 Q,550 MHZ SRF,SM,1008
L1501	2489917V05	IDCTR,RF,1UH,1%,370MA ,1.75Ω,290 MHZ SRF,SM,1008,PB-FREE
L1502	2489917V05	IDCTR,RF,1UH,1%,370MA ,1.75Ω,290 MHZ SRF,SM,1008,PB-FREE
L1503	2414015A09	IDCTR,FXD,270NH,2%,69 0MA,.91Ω,CER,28 Q,550 MHZ SRF,SM,1008
L1504	2414017N27	IDCTR,CHIP,180NH,5%,15 0MA,2.7Ω,CER,11 Q,500 MHZ SRF,SM,0603
L1505	2485364Y21	IND CHIP 470 NH 5% EPP

Circuit Ref	Motorola Part No	Description
L1506	2414017N28	IDCTR,CHIP,220NH,5%,150MA,.3Ω,CER,11 Q,450 MHZ SRF,SM,0603,P
L1507	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Ω,CER,28 Q,550 MHZ SRF,SM,1008
L1508	2489917V05	IDCTR,RF,1UH,1%,370MA,1.75Ω,290 MHZ SRF,SM,1008,PB-FREE
L1509	2489917V05	IDCTR,RF,1UH,1%,370MA,1.75Ω,290 MHZ SRF,SM,1008,PB-FREE
L1510	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Ω,CER,28 Q,550 MHZ SRF,SM,1008
L2530	2414017K28	IDCTR,CHIP,270NH,5%,200MA,1.3Ω,CER,11 Q,270 MHZ SRF,SM,0805
L2532	2485364Y25	CHIP IND 10000 NH 5% EPP
L2533	2485364Y25	CHIP IND 10000 NH 5% EPP
L2534	2414017H08	IDCTR,CHIP,4.7NH,300MA,.16Ω,CER,10 Q,3GHZ SRF,SM,0603,PB-
L2535	2414015A25	IDCTR,FXD,1.2UH,2%,440MA,2Ω,CER,20 Q,200 MHZ SRF,SM,1008,PB
L2538	2414017N13	IDCTR,CHIP,12NH,5%,600MA,.35Ω,CER,12 Q,2GHZ SRF,SM,0603,PB
L2539	2414032B72	IDCTR,WW,2.2UH,5%,380MA,2.8Ω,CER,20 Q,140 MHZ SRF,SM,PB-FR
L2543	2414032B72	IDCTR,WW,2.2UH,5%,380MA,2.8Ω,CER,20 Q,140 MHZ SRF,SM,PB-FR
L2547	2414015A05	IDCTR,FXD,120NH,2%,800MA,.63Ω,CER,25 Q,900 MHZ SRF,SM,1008
L2548	2414015A07	IDCTR,FXD,180NH,2%,750MA,.77Ω,CER,25 Q,700 MHZ SRF,SM,1008

Circuit Ref	Motorola Part No	Description
L2549	2414017N13	IDCTR,CHIP,12NH,5%,600MA,.35Ω,CER,12 Q,2GHZ SRF,SM,0603,PB
L2700	2416540H29	CHIP INDUCTOR
L2701	2414032F21	IDCTR,WW,6.8NH,5%,600MA,.11Ω,CER,50 Q,3GHZ SRF,SM,PB-FREE
L3100	2414032F27	IDCTR,FXD,27NH,5%,500MA,.25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-
L3200	2414032F38	IDCTR,WW,220NH,5%,400MA,.7Ω,CER,30 Q,630 MHZ SRF,SM,PB-FRE
L3201	2414015B15	IDCTR,FXD,22NH,2%,500MA,.22Ω,CER,55 Q,2.6GHZ SRF,SM,0805,P
L3202	2414032F38	IDCTR,WW,220NH,5%,400MA,.7Ω,CER,30 Q,630 MHZ SRF,SM,PB-FRE
L3203	2414032F38	IDCTR,WW,220NH,5%,400MA,.7Ω,CER,30 Q,630 MHZ SRF,SM,PB-FRE
L3204	2414032F38	IDCTR,WW,220NH,5%,400MA,.7Ω,CER,30 Q,630 MHZ SRF,SM,PB-FRE
L3205	2414032F35	IDCTR,WW,120NH,5%,400MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L3206	2414015B18	IDCTR,FXD,56NH,2%,500MA,.34Ω,CER,60 Q,1.55GHZ SRF,SM,0805
L3207	2414032F35	IDCTR,WW,120NH,5%,400MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L3208	2414032F35	IDCTR,WW,120NH,5%,400MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L3209	2414032F35	IDCTR,WW,120NH,5%,400MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L3211	2414015B24	IDCTR,FXD,15NH,2%,600MA,.17Ω,CER,50 Q,3.4GHZ SRF,SM,0805,P

Circuit Ref	Motorola Part No	Description
L3213	2414015B25	IDCTR,FXD,8.2NH,2%,600MA,.12Ω,CER,50 Q,4.7GHZ SRF,SM,0805
L3214	2414032F38	IDCTR,WW,220NH,5%,400MA,.7Ω,CER,30 Q,630 MHZ SRF,SM,PB-FRE
L3215	2414032F35	IDCTR,WW,120NH,5%,400MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L3217	2414032F35	IDCTR,WW,120NH,5%,400MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L3218	2414015B29	IDCTR,FXD,10NH,2%,600MA,.1Ω,CER,60 Q,4.2GHZ SRF,SM,0805,PB
P1000	0982492W01	BNC CONN PCB VERTICAL RECEPT
PWB	84009313001	800/900 MHZ RECEIVER BOARD
Q1600	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q1601	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q1602	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q2200	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q2201	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q2202	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q2203	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q2204	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE

Circuit Ref	Motorola Part No	Description
Q2205	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q2400	4813973A04	XSTR,BIP GP SS,NPN,TA13,SM,SOT-23,SMT,30V,.225W,300MA ,125 MHZ,P
Q2530	4805218N63	RF TRANS SOT 323 Bfq67w
Q2610	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA, 300 MHZ,PB
Q2611	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA, 300 MHZ,PB
Q3200	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q3201	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q3202	4805218N63	RF TRANS SOT 323 Bfq67w
Q3203	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA, 300 MHZ,PB
Q3204	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q3205	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q3206	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q3207	4805218N63	RF TRANS SOT 323 Bfq67w
R1201	0613952E02	CER CHIP RES 10.2K Ω 1 0603
R1203	0613952Q62	CER CHIP RES 360 Ω 5 0402
R1204	0613952Q62	CER CHIP RES 360 Ω 5 0402

Circuit Ref	Motorola Part No	Description
R1205	0613952Q27	CER CHIP RES 12.0 $\Omega$ 5 0402
R1401	0613952H21	CER CHIP RES 6.8 $\Omega$ 5 0603
R1402	0613959Y41	CER CHIP RES $\Omega$ 5% 2512
R1403	0613952H17	CER CHIP RES 4.7 $\Omega$ 5%
R1404	0613952C77	CER CHIP RES 619 $\Omega$ 1 0603
R1406	0613952A89	RES CER CHIP 8.25 $\Omega$ 1% 0603
R1407	0613952C77	CER CHIP RES 619 $\Omega$ 1 0603
R1408	0613952H42	CER CHIP RES 51.0 $\Omega$ 5% 0603
R1409	0613952K43	CER CHIP RES 27.4 $\Omega$ 1 0402
R1410	0613952L29	CER CHIP RES 196 $\Omega$ 1 0402
R1411	0613952L29	CER CHIP RES 196 $\Omega$ 1 0402
R1412	0613952H49	CER CHIP RES 100 $\Omega$ 5% 0603
R1414	0613959Y41	CER CHIP RES $\Omega$ 5% 2512
R1500	0613952D34	CER CHIP RES 2210 $\Omega$ 1% 0603
R1501	0613952B01	CER CHIP RES 10.0 $\Omega$ 1% 0603
R1502	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R1503	0613952C89	CER CHIP RES 825 $\Omega$ 1% 0603
R1504	0613952B09	CER CHIP RES 12.1 $\Omega$ 1% 0603
R1505	0613952C26	CER CHIP RES 182 $\Omega$ 1% 0603
R1602	0613952R01	CER CHIP RES 10K $\Omega$ 5% 0402

Circuit Ref	Motorola Part No	Description
R1603	0613952R01	CER CHIP RES 10K $\Omega$ 5% 0402
R1604	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R1605	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2200	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2201	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2204	0613952B01	CER CHIP RES 10.0 $\Omega$ 1% 0603
R2205	0613952C89	CER CHIP RES 825 $\Omega$ 1% 0603
R2206	0613952L44	CER CHIP RES 280 $\Omega$ 1 0402
R2207	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2208	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2210	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2211	0613952D36	CER CHIP RES 2320 $\Omega$ 1 0603
R2212	0613952Q59	CER CHIP RES 270 $\Omega$ 5 0402
R2213	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2216	0613952Q64	CER CHIP RES 430 $\Omega$ 5 0402
R2217	0613952Q59	CER CHIP RES 270 $\Omega$ 5 0402
R2220	0613952L51	CER CHIP RES 332 $\Omega$ 1% 0402
R2221	0613952L44	CER CHIP RES 280 $\Omega$ 1 0402
R2225	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2226	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402

Circuit Ref	Motorola Part No	Description
R2400	0613952Q64	CER CHIP RES 430 $\Omega$ 5 0402
R2401	0613952E51	CER CHIP RES 33.2K $\Omega$ 1 0603
R2404	0613952Q59	CER CHIP RES 270 $\Omega$ 5 0402
R2405	0613952N81	CER CHIP RES 68.1K $\Omega$ 1 0402
R2406	0613952P97	CER CHIP RES 1.0M $\Omega$ 1 0402
R2407	0613952C34	CER CHIP RES 221 $\Omega$ 1% 0603
R2408	0613952C34	CER CHIP RES 221 $\Omega$ 1% 0603
R2413	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2423	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2530	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2531	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2532	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402
R2533	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2534	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402
R2535	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2536	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402
R2537	0613952P01	CER CHIP RES 100K $\Omega$ 1 0402
R2538	0613952D30	CER CHIP RES 2000 $\Omega$ 1% 0603
R2540	0613952L58	CER CHIP RES 392 $\Omega$ 1% 0402
R2541	0613952L67	CER CHIP RES 487 $\Omega$ 1 0402

Circuit Ref	Motorola Part No	Description
R2545	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2546	0613952L66	CER CHIP RES 475 $\Omega$ 1% 0402
R2547	0613952L01	CER CHIP RES 100 $\Omega$ 1% 0402
R2548	0613952L09	CER CHIP RES 121 $\Omega$ 1% 0402
R2549	0613952B01	CER CHIP RES 10.0 $\Omega$ 1% 0603
R2559	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2563	0613952L26	CER CHIP RES 182 $\Omega$ 1% 0402
R2580	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402
R2581	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402
R2582	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402
R2583	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402
R2595	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402
R2596	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402
R2597	0613952K68	CER CHIP RES 49.9 $\Omega$ 1% 0402
R2610	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2611	0613952M42	CER CHIP RES 2670 $\Omega$ 1% 0402
R2612	0613952M42	CER CHIP RES 2670 $\Omega$ 1% 0402
R2614	0613952L66	CER CHIP RES 475 $\Omega$ 1% 0402
R2615	0613952L18	CER CHIP RES 150 $\Omega$ 1% 0402
R2616	0613952L66	CER CHIP RES 475 $\Omega$ 1% 0402

Circuit Ref	Motorola Part No	Description
R2620	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2622	0613952M42	CER CHIP RES 2670 $\Omega$ 1% 0402
R2623	0613952L66	CER CHIP RES 475 $\Omega$ 1% 0402
R2625	0613952L66	CER CHIP RES 475 $\Omega$ 1% 0402
R2626	0613952L18	CER CHIP RES 150 $\Omega$ 1% 0402
R2627	0613952L34	CER CHIP RES 221 $\Omega$ 1% 0402
R2628	0613952L34	CER CHIP RES 221 $\Omega$ 1% 0402
R2629	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2630	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2651	0613952M42	CER CHIP RES 2670 $\Omega$ 1% 0402
R2701	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2705	0613952B34	CER CHIP RES 22.1 $\Omega$ 1% 0603
R2706	0613952A90	CER CHIP RES 8.45 $\Omega$ 1% 0603
R2707	0613952C05	CER CHIP RES 110 $\Omega$ 1% 0603
R2708	0613952A90	CER CHIP RES 8.45 $\Omega$ 1% 0603
R2709	0613952B86	CER CHIP RES 76.8 $\Omega$ 1% 0603
R2710	0613952C56	CER CHIP RES 374 $\Omega$ 1% 0603
R2800	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2801	0613952N30	CER CHIP RES 20.0K $\Omega$ 1 0402
R2802	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402

Circuit Ref	Motorola Part No	Description
R2803	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2804	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2805	0613952M51	CER CHIP RES 3320 $\Omega$ 1% 0402
R2806	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2807	0613952N51	CER CHIP RES 33.2K $\Omega$ 1 0402
R2808	0613952R05	CER CHIP RES 15K $\Omega$ 5% 0402
R2809	0613952Z46	RES,MF,3.9K $\Omega$ ,1%,.0625 W,SM,0402,200PPM/CEL,PB-FREE
R2810	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2811	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2812	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R2813	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2815	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2816	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R2820	0613952A73	CER CHIP RES 5.62 $\Omega$ 1% 0603
R3101	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3103	0613952D55	CER CHIP RES 3650 $\Omega$ 1 0603
R3104	0613952C01	CER CHIP RES 100 $\Omega$ 1% 0603
R3105	0613952C51	CER CHIP RES 332 $\Omega$ 1% 0603
R3106	0613952C24	CER CHIP RES 174 $\Omega$ 1% 0603
R3108	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$

Circuit Ref	Motorola Part No	Description
R3113	0613952N01	CER CHIP RES 10.0K $\Omega$ 1 0402
R3129	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3130	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3134	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3146	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3172	0613952K51	CER CHIP RES 33.2 $\Omega$ 1% 0402
R3185	0613952L01	CER CHIP RES 100 $\Omega$ 1% 0402
R3187	0613952R66	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3200	0613952B01	CER CHIP RES 10.0 $\Omega$ 1% 0603
R3201	0613952B58	CER CHIP RES 39.2 $\Omega$ 1% 0603
R3202	0613958C52	CER CHIP RES 340 $\Omega$ 1% 0805
R3203	0613958C01	CER CHIP RES 100 $\Omega$ 1% 0805
R3204	0613952D20	CER CHIP RES 1580 $\Omega$ 1 0603
R3205	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R3206	0613952B24	CER CHIP RES 17.4 $\Omega$ 1 0603
R3207	0613952C46	CER CHIP RES 294 $\Omega$ 1% 0603
R3208	0613952C46	CER CHIP RES 294 $\Omega$ 1% 0603
R3209	0613952B01	CER CHIP RES 10.0 $\Omega$ 1% 0603
R3210	0613952B64	CER CHIP RES 45.3 $\Omega$ 1
R3211	0613958C41	CER CHIP RES 261 $\Omega$ 1% 0805

Circuit Ref	Motorola Part No	Description
R3212	0613958C01	CER CHIP RES 100 $\Omega$ 1% 0805
R3214	0613952D01	CER CHIP RES 1000 $\Omega$ 1% 0603
R3215	0613952B24	CER CHIP RES 17.4 $\Omega$ 1 0603
R3216	0613952C46	CER CHIP RES 294 $\Omega$ 1% 0603
R3217	0613952C46	CER CHIP RES 294 $\Omega$ 1% 0603
R3219	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3221	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R3222	0613952D30	CER CHIP RES 2000 $\Omega$ 1% 0603
R3223	0613952C30	CER CHIP RES 200 $\Omega$ 1% 0603
R3224	0613958C01	CER CHIP RES 100 $\Omega$ 1% 0805
R3225	0613958C52	CER CHIP RES 340 $\Omega$ 1% 0805
R3227	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3228	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3229	0613958B53	CER CHIP RES 34.8 $\Omega$ 1% 0805
R3230	0613952L42	CER CHIP RES 267 $\Omega$ 1% 0402
R3231	0613952K01	CER CHIP RES 10.0 $\Omega$ 1% 0402
R3234	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R3235	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R3238	0613952D20	CER CHIP RES 1580 $\Omega$ 1 0603
R3239	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R3240	0613952E18	CER CHIP RES 15.0K Ω 1 0603	R3305	0613952M66	CER CHIP RES 4750 Ω 1% 0402	R3332	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	U1200	5185481Y01	HIGH DYNEMIC RANGE FET W18
R3241	0613952E01	CER CHIP RES 10.0K Ω 1% 0603	R3306	0613952M01	CER CHIP RES 1000 Ω 1% 0402	R3333	0613952M66	CER CHIP RES 4750 Ω 1% 0402	U1400	51012045001	INGAP HBT GAIN BLOCK
R3242	0613952E18	CER CHIP RES 15.0K Ω 1 0603	R3307	0613952M01	CER CHIP RES 1000 Ω 1% 0402	R3334	0613952M66	CER CHIP RES 4750 Ω 1% 0402	U1401	5185342Y01	MIXER CUSTOM 660-1050 MHZ, W18
R3243	0613952E01	CER CHIP RES 10.0K Ω 1% 0603	R3308	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R3345	0613952M66	CER CHIP RES 4750 Ω 1% 0402	U1500	91012005001	73.35 MHZ CRYSTAL FILTER, 3-POLE
R3245	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω	R3309	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3346	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	U1501	91012005001	73.35 MHZ CRYSTAL FILTER, 3-POLE
R3246	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω	R3310	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R3347	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	U1502	4805218N55	TRANSISTOR 3 LEAD BFQ67
R3248	0613952D51	CER CHIP RES 3320 Ω 1% 0603	R3311	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	R3348	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	U1600	5185941F45	ATTEN,VAR,14.4DBMIN,1 5.6DBMAX,0-2000 MHZ-FREQ,50Ω,PCMT,,SOT
R3249	0613952D30	CER CHIP RES 2000 Ω 1% 0603	R3312	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3349	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	U2200	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO 37V,500MA,SM,DPAK,PB-FREE
R3250	0613952C30	CER CHIP RES 200 Ω 1% 0603	R3314	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	R3350	0613952M66	CER CHIP RES 4750 Ω 1% 0402	U2201	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO 37V,500MA,SM,DPAK,PB-FREE
R3251	0613958C01	CER CHIP RES 100 Ω 1% 0805	R3315	0613952M66	CER CHIP RES 4750 Ω 1% 0402	R3390	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	U2202	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO 37V,500MA,SM,DPAK,PB-FREE
R3252	0613958C52	CER CHIP RES 340 Ω 1% 0805	R3316	0613952M66	CER CHIP RES 4750 Ω 1% 0402	R3391	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	U2203	5114014A20	IC,LNR V REGLTR,ADJUST-ABLE,1.35V TO 10V,800MA,SM,SO-8,PB-FREE
R3253	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω	R3317	0613952M66	CER CHIP RES 4750 Ω 1% 0402	R3392	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	U2400	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO 37V,500MA,SM,DPAK,PB-FREE
R3254	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω	R3318	0613952M66	CER CHIP RES 4750 Ω 1% 0402	SH1100	1583004X05	SHIELD, VCO	U2530	5185963A85	IC-ABACUS III-LP
R3255	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω	R3322	0613952M66	CER CHIP RES 4750 Ω 1% 0402	SH1100	2683006X02	COVER, TX VCO SHIELD	U2531	5114005A19	IC,OP AMP,2PER PKG,HI-SPD,SM,SO-8,SING SPLY, PB-FREE
R3256	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω	R3326	0613952K68	CER CHIP RES 49.9 Ω 1% 0402	SH1400	1583004X05	SHIELD, VCO			
R3300	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	R3327	0613952N01	CER CHIP RES 10.0K Ω 1 0402	SH1400	2683006X02	COVER, TX VCO SHIELD			
R3301	0613952M66	CER CHIP RES 4750 Ω 1% 0402	R3328	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	SH1500	2685668Y01	SHIELD, XCVR RX IF FILTER			
R3302	0613952M01	CER CHIP RES 1000 Ω 1% 0402	R3329	0613952K51	CER CHIP RES 33.2 Ω 1% 0402	SH1501	2685668Y01	SHIELD, XCVR RX IF FILTER			
R3303	0613952M01	CER CHIP RES 1000 Ω 1% 0402	R3330	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω	SH2500	2685297D02	SHIELD,CVR,NI-AG,,STOCK FINISH,24.58MMLG,18.73MM W,4.45MM,,VC			
R3304	0613952M01	CER CHIP RES 1000 Ω 1% 0402	R3331	0613952M66	CER CHIP RES 4750 Ω 1% 0402	SH3201	1583004X05	SHIELD, VCO			
						SH3201	2683006X02	COVER, TX VCO SHIELD			



Circuit Ref	Motorola Part No	Description
U2700	5185106Y01	INGAP HBT GAIN BLOCK W18
U2800	5184998Y01	IC ADC 10BIT 8CHNNL LOPWR 149
U3100	5164015H28	IC,TRIDENT,INTEG SYNTH,RX/TX BSBND
U3101	5185183Y01	HI PERF DUAL CMOS OPAMP W18
U3103	5114019M05	IC,INVTR,SCHMITT,74LVX 14,6PER PKG,SM,TSSOP14,PB-FREE
U3200	5185553Y01	SPDT SWITCH 0.1-2.5GHZ, W18
U3300	5185130Y01	CPLD EPM3032AT144 W18 CMLNT
U3301	5184943Y01	64KB SERIAL EEPROM 8192X8
U3303	5185941F86	IC, 4- BIT BUS TRANS-CEIVER
Y3200	9171848H13	TABBED CERAMIC RES-ONATOR
Y3201	9171848H14	TABBED CERAMIC RES-ONATOR

**Notes**

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# Chapter 7 MTR3000 Exciter Module

## 7.1 Overview

This section provides an overview and functional Theory of Operation of the Exciter Module. The schematic diagrams, overlays, and parts lists are provided on the foldout sheets. A complete list of all parts is provided with the parts ordered according to the schematic reference number.

For the Block Diagram, Specifications and troubleshooting procedures of the Exciter Module, refer to the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

## 7.2 Functional Theory of Operation

The following theory of operation describes the operation of the Exciter circuitry at a functional level.

### 7.2.1 Functional Overview

#### 7.2.1.1 Synthesizer and VCO Circuitry

##### 7.2.1.1.1 Phase-Locked Loop

The phase-locked loop (PLL) IC receives frequency selection data from the SCM microprocessor (via the SPI bus). Once programmed, the PLL IC compares a 8.4 MHz (UHF) or 16.8 MHz (800/900 MHz) reference signal (from the SCM) with a divided-down feedback sample of the VCO output. Depending on whether the feedback signal is higher or lower in frequency than the 8.4 MHz reference, up/down correction pulses are generated. (The width of these correction pulses depends on the quantitative difference between the 8.4 MHz reference and the VCO feedback.)

The up/down pulses from the PLL IC are fed to a charge pump which outputs a DC voltage proportional to the pulse widths. This DC voltage is then low-pass filtered and fed to the VCO as the control voltage.

**Note** If a frequency change is requested by the SCM microprocessor, the lowpass loop filter is momentarily bypassed to accelerate the frequency change (via a SYNTH ADAPT signal from the SCM).

##### 7.2.1.1.2 Voltage Controlled Oscillator (VCO)

The DC control voltage from the synthesizer is fed to dual VCOs which generate the RF carrier signal. Within each band, one VCO generates signals in the upper half of the band, while the other VCO generates signals in the lower half of the band. Only one VCO is active at a time. Selection of the active VCO is provided by a VCO\_SELECT signal from the PLL IC.

The active VCO responds to the DC control voltage and generates the appropriate RF signal. This signal is fed through impedance matching, amplification, and filtering and is output to the RF Switch Circuitry. A sample of the output is returned to the PLL IC to serve as a VCO feedback signal.

### **7.2.1.1.3 Modulation**

The Exciter uses dual-port FM modulator consisting of Digital Signal Processor (DSP), PLL low-port and high port blocks, fractional-N PLL, loop filter and the VCO. The modulator is calibrated once during factory test and its values are stored in the EEPROM. The modulator does not require any further tuning or maintenance.

### **7.2.1.1.4 Amplifiers**

The amplifiers consist of a driver amplifier and the final amplifier. The driver amplifier operates from a nominal 5V supply and the final amplifier operates from a nominal 10 V supply. The driver amplifier amplifies the VCO output signal and provides the output signal to the final amplifier. There are fixed attenuators at the output of the driver and final amplifier to set the Exciter output power level. The final amplifier amplifies the signal and provides a constant signal level to the PA.

### **7.2.1.1.5 RF Switch Circuitry**

The modulated RF signal from the VCO is fed through a buffer, driver, attenuator and finally to an RF switch circuit. Signal EX\_ENABLE from the SCM controls the switch and final amplifier. The RF signal is passed through a LPF and to a BNC connector mounted in one corner of the module, just outside the module cover. A short coaxial cable connects the Exciter output to the power amplifier module.

## **7.2.1.2 Data Communications**

### **7.2.1.2.1 Communications with Station Control Module**

Data communications between the Exciter and the Station Control Module microprocessor ( $\mu$ P) is performed via a Serial Peripheral Interface (SPI) bus. This bus allows the SCM  $\mu$ P to send data to the synthesizer PLL IC (to select frequency) and to read the ADC Converter IC.

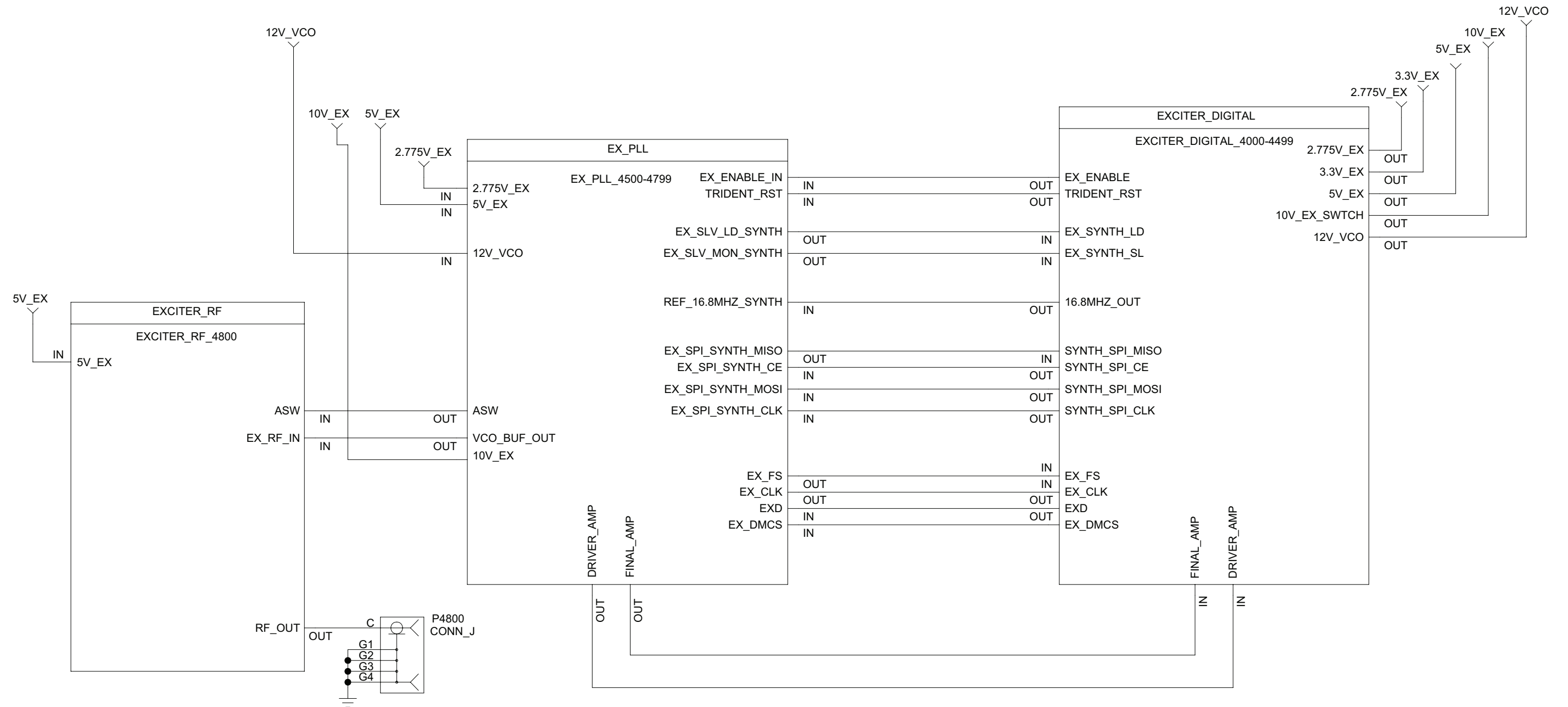
### **7.2.1.2.2 ADC Converter Circuitry**

Analog signals from various strategic operating points throughout the Exciter board are fed to an ADC converter, which converts them to a digital signal and, upon request by the Station Control Module, outputs the signal to the Station Control Module via the Serial Peripheral Interface (SPI) bus.

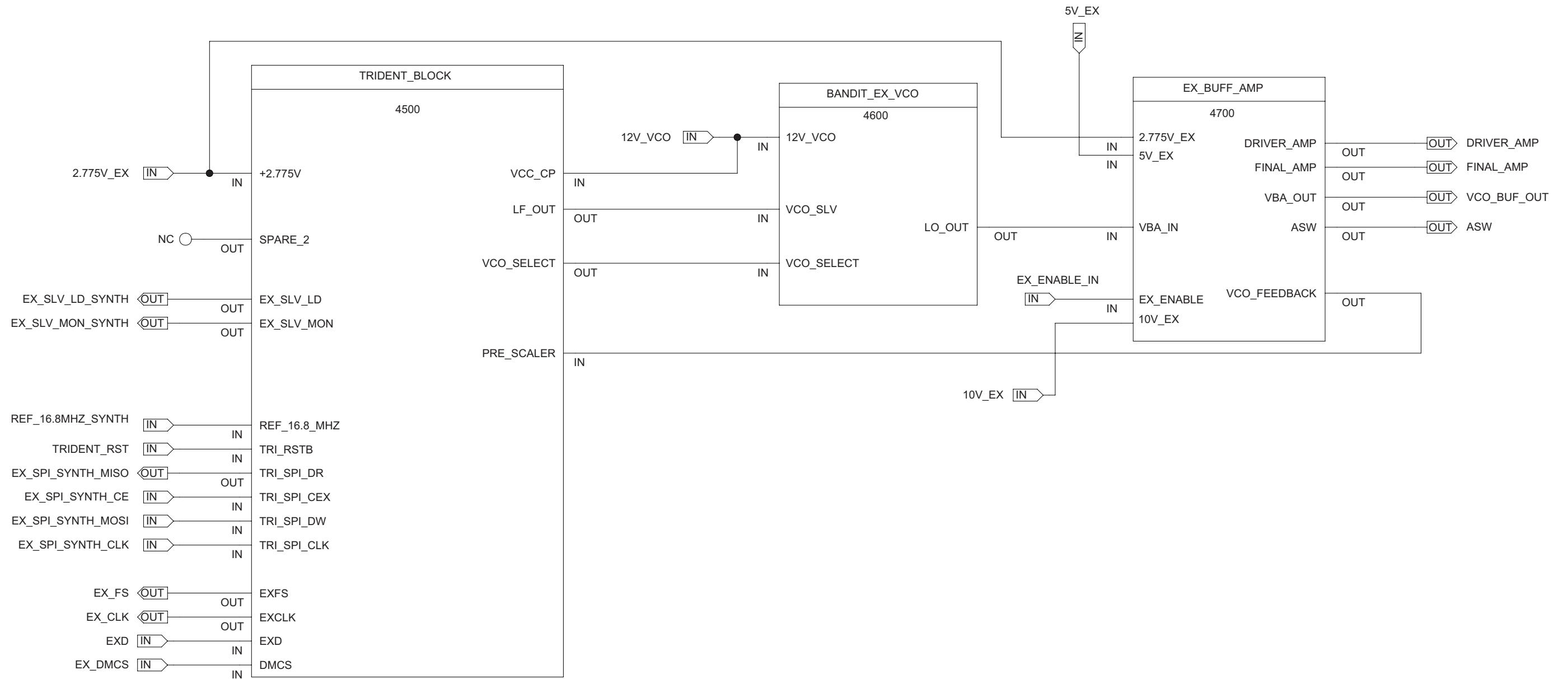
### **7.2.1.3 Voltage Regulation/Filtering Circuitry**

The voltage regulator circuitry consists of a +5 V, +3.3 V and +2.775 V regulators that supplies power to the digital circuitry and the PLL. The +12 V regulator is used to supply power to the VCO and the +10 V supplies power to the final device.

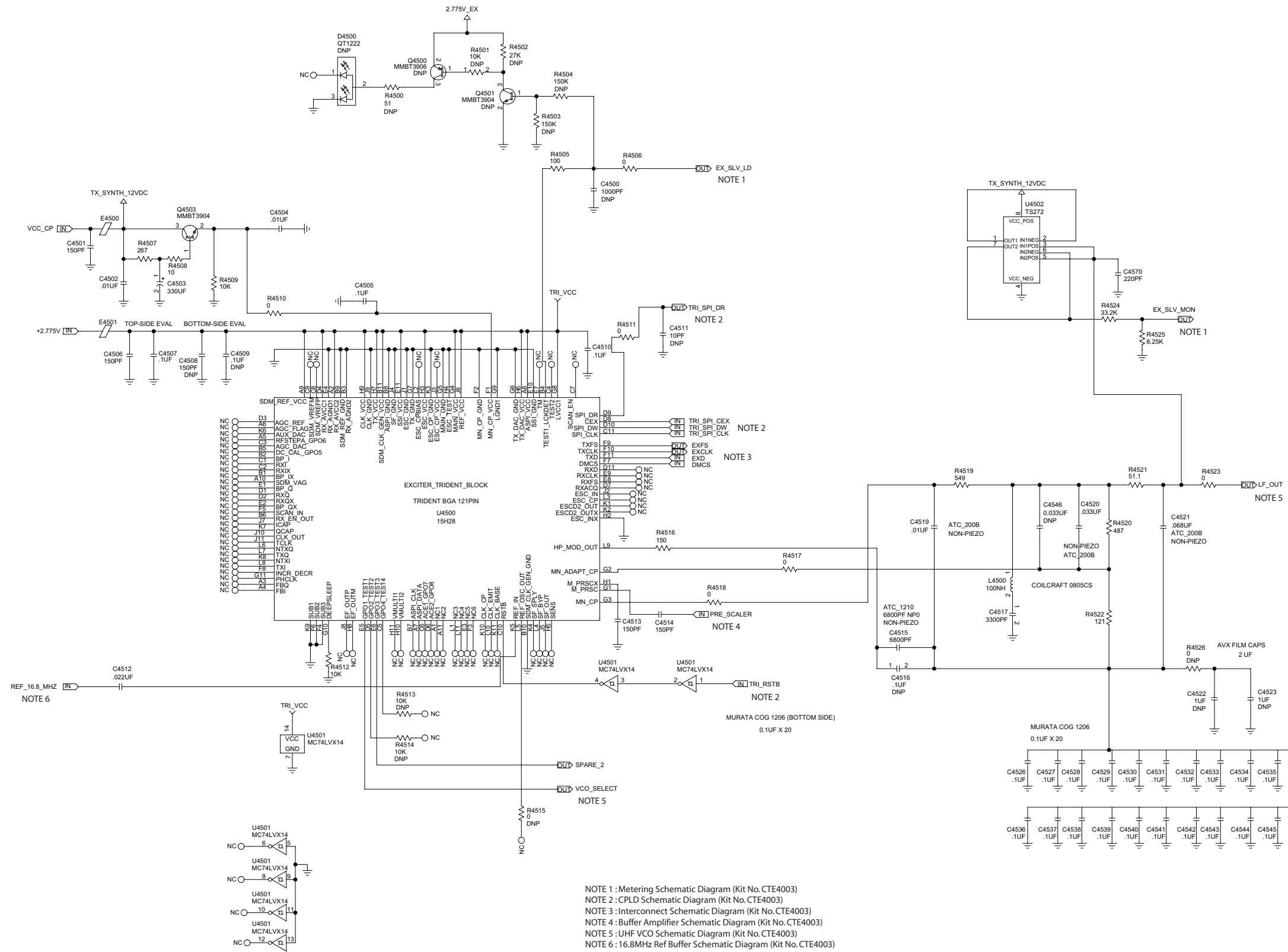
7.2 Exciter Schematics (UHF)



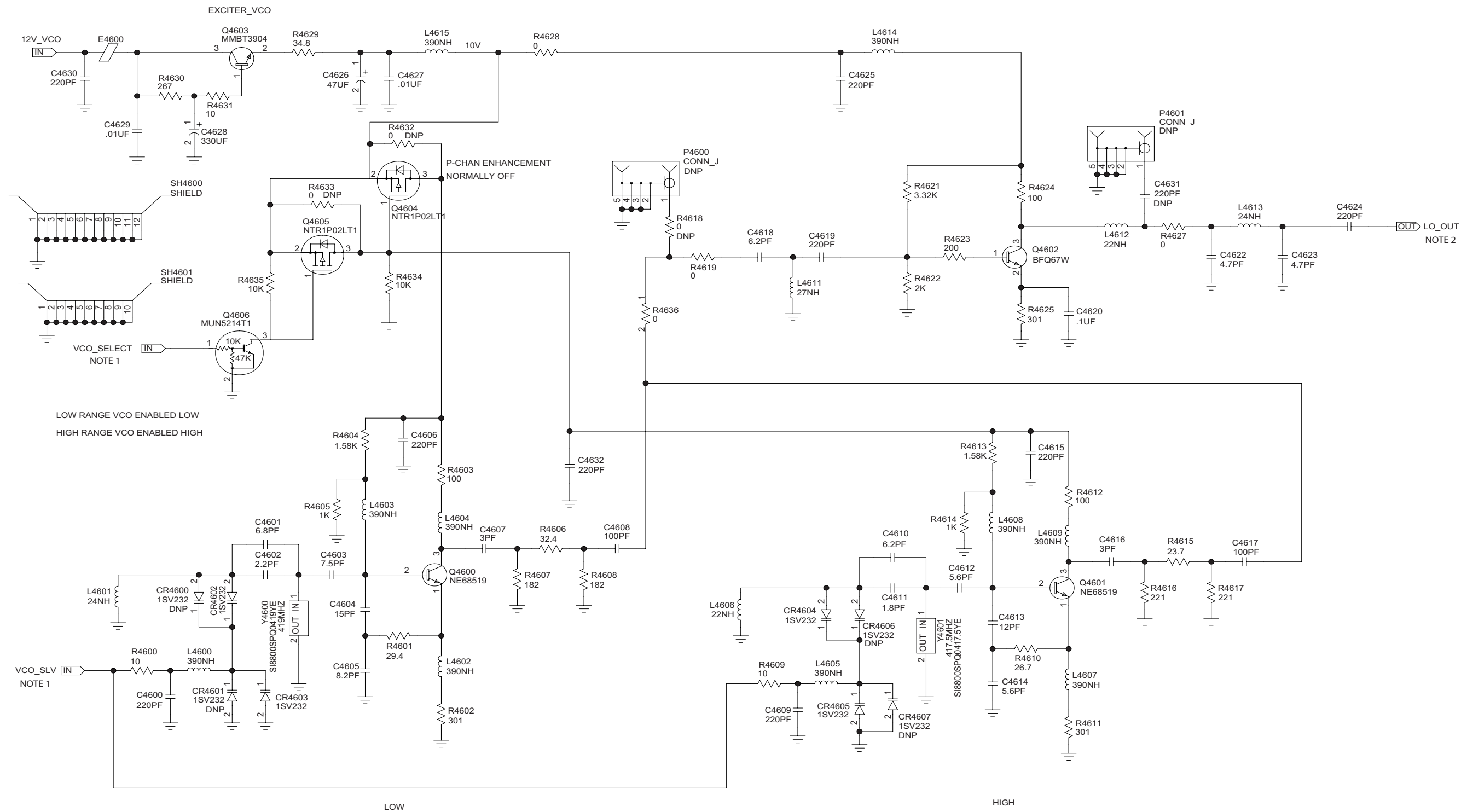
Exciter – Main Schematic Diagram (Kit No. CTE4003)



Exciter – Frequency Generation Unit (FGU) Schematic Diagram (Kit No.CTE4003)



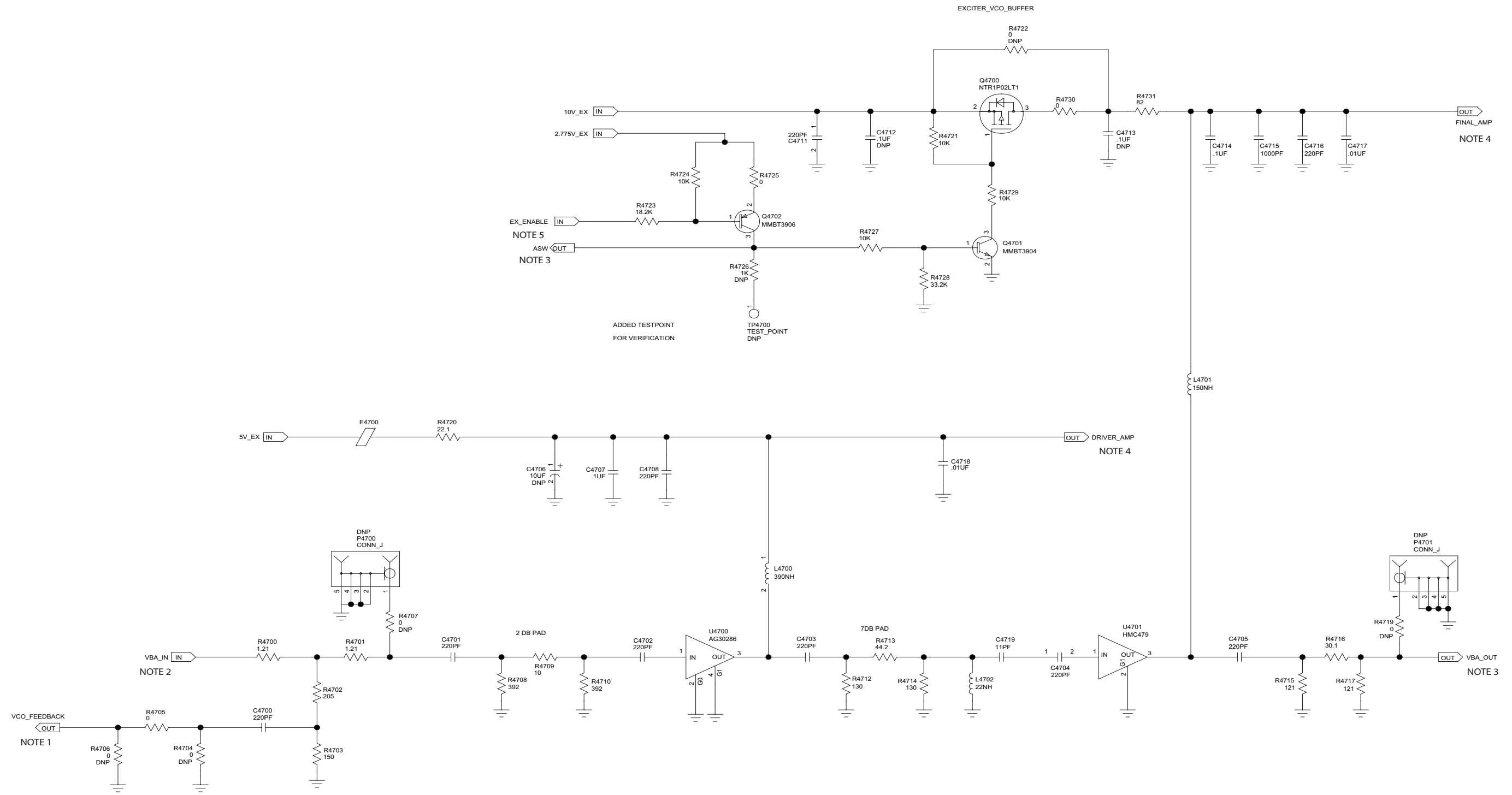
**Exciter – Trident Block Schematic Diagram (Kit No. CTE4003)**



NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)  
 NOTE 2 : Buffer Amplifier Schematic Diagram (Kit No. CTE4003)

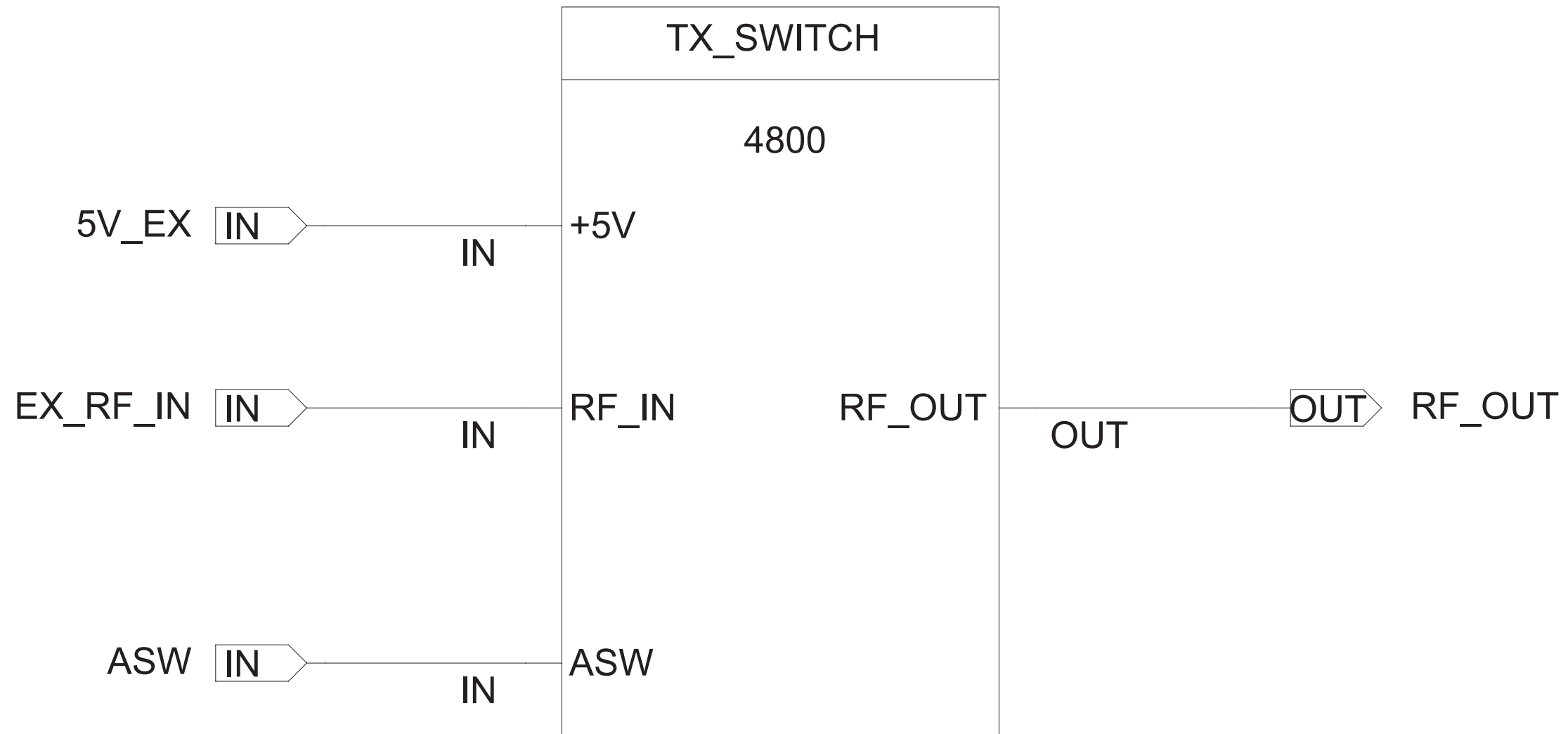
**Exciter – UHF VCO Schematic Diagram (Kit No. CTE4003)**



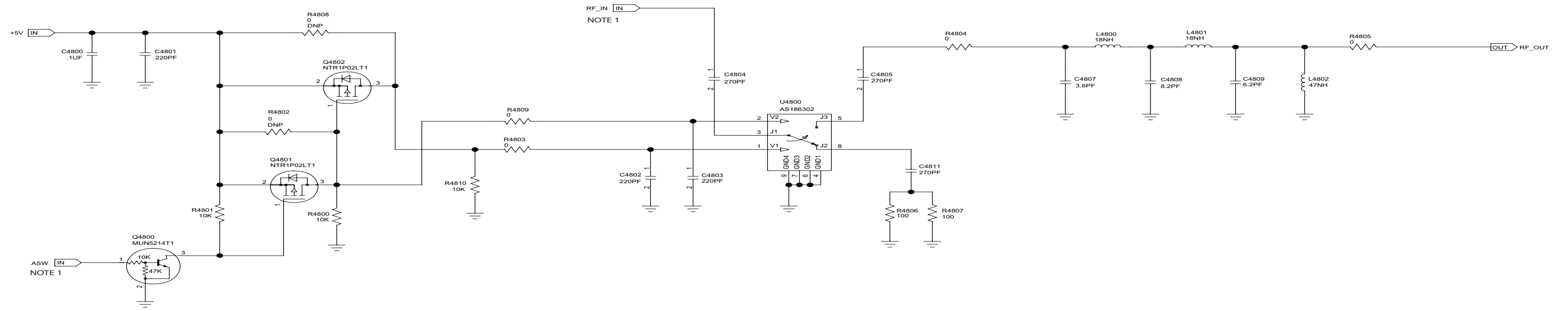


- NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)
- NOTE 2 : UHF VCO Schematic Diagram (Kit No. CTE4003)
- NOTE 3 : Switch Schematic Diagram (Kit No. CTE4003)
- NOTE 4 : Metering Schematic Diagram (Kit No. CTE4003)
- NOTE 5 : Interconnect Schematic Diagram (Kit No. CTE4003)

**Exciter – Buffer Amplifier Schematic Diagram (Kit No. CTE4003)**

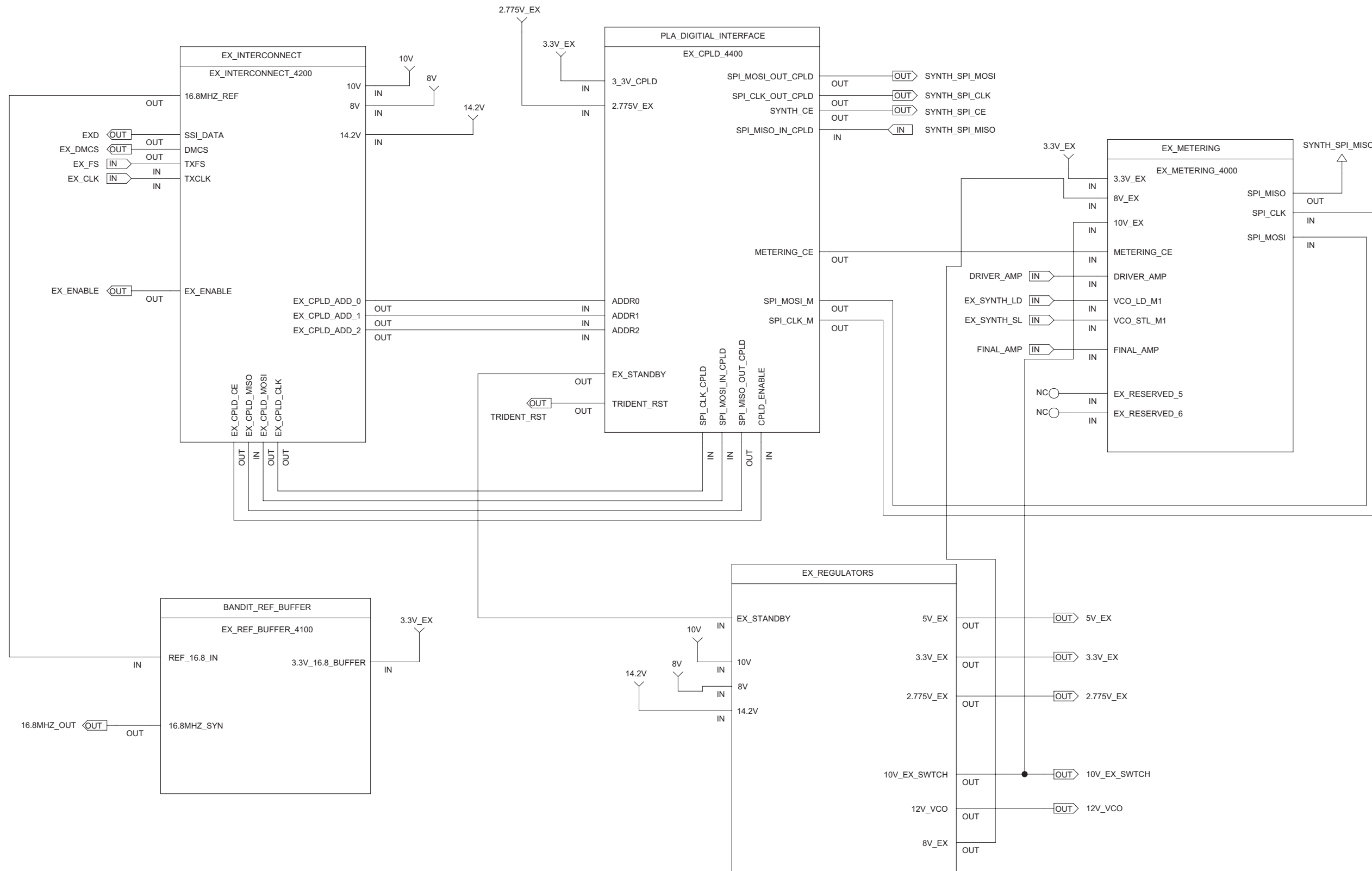


Exciter – RF Section Schematic Diagram (Kit No. CTE4003)

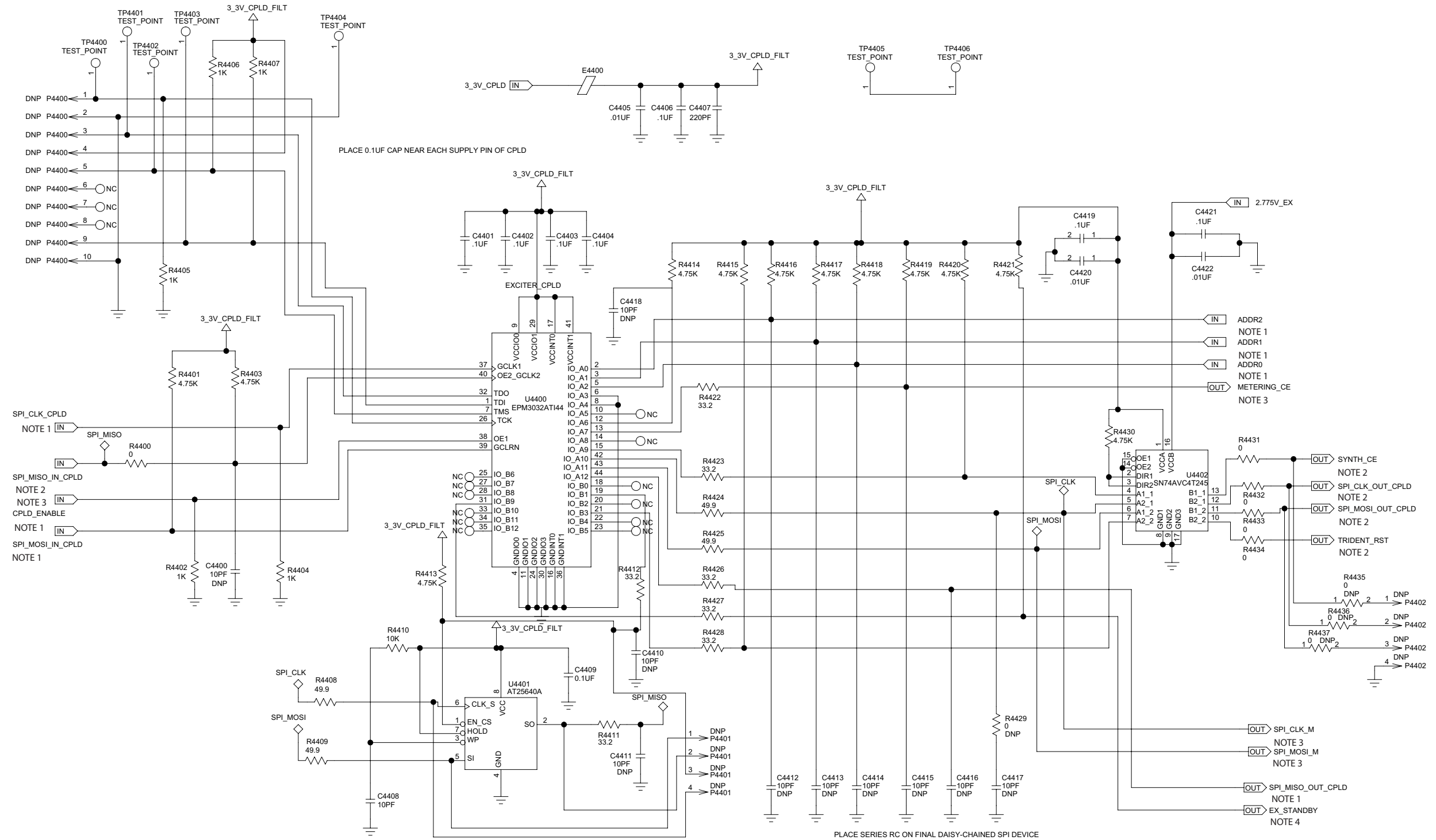


NOTE 1 : Exciter – Buffer Amplifier Schematic Diagram (Kit No. CTE4003)

**Exciter – Switch Schematic Diagram (Kit No. CTE4003)**

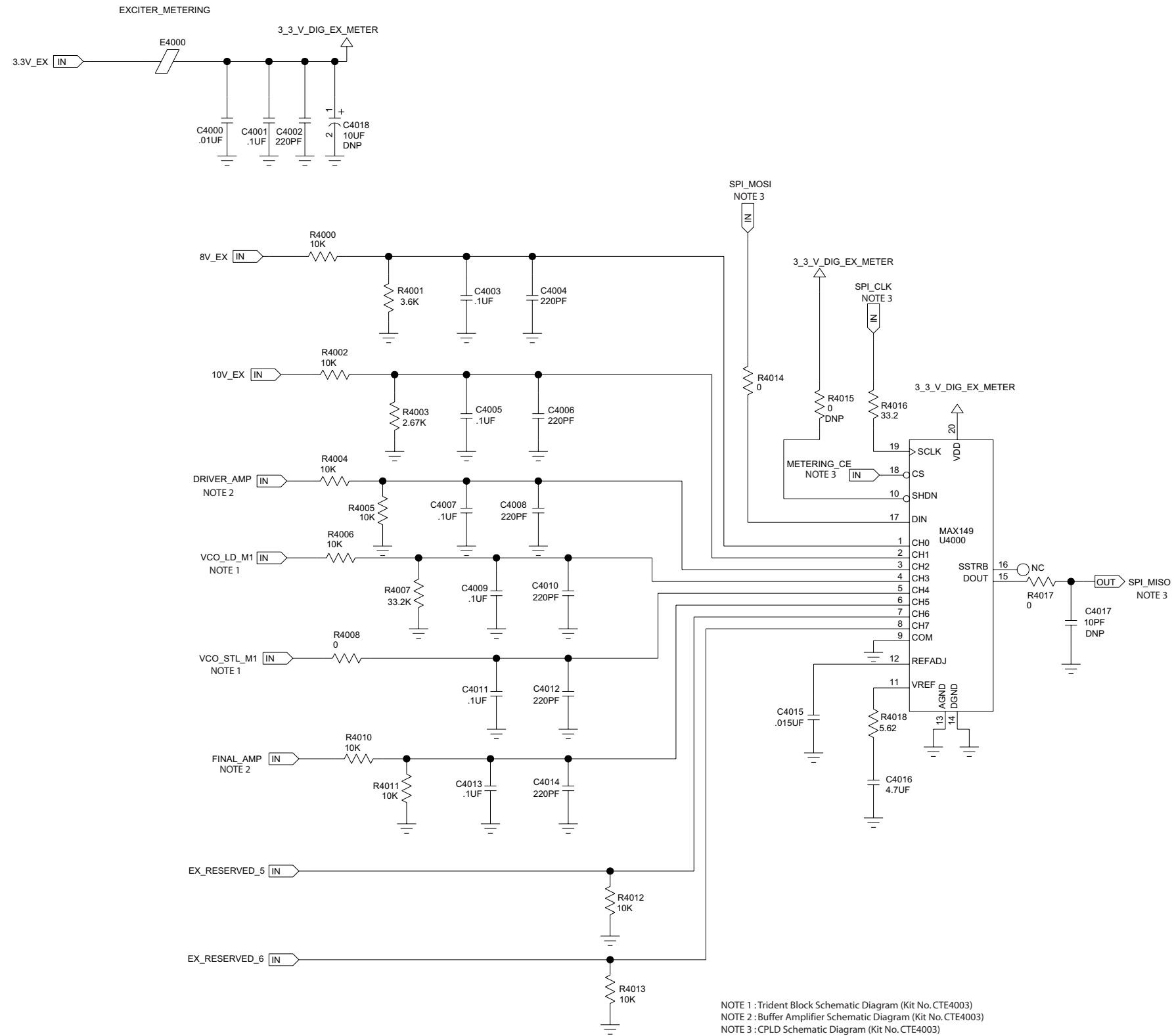


Exciter – Digital Section Schematic Diagram (Kit No. CTE4003)

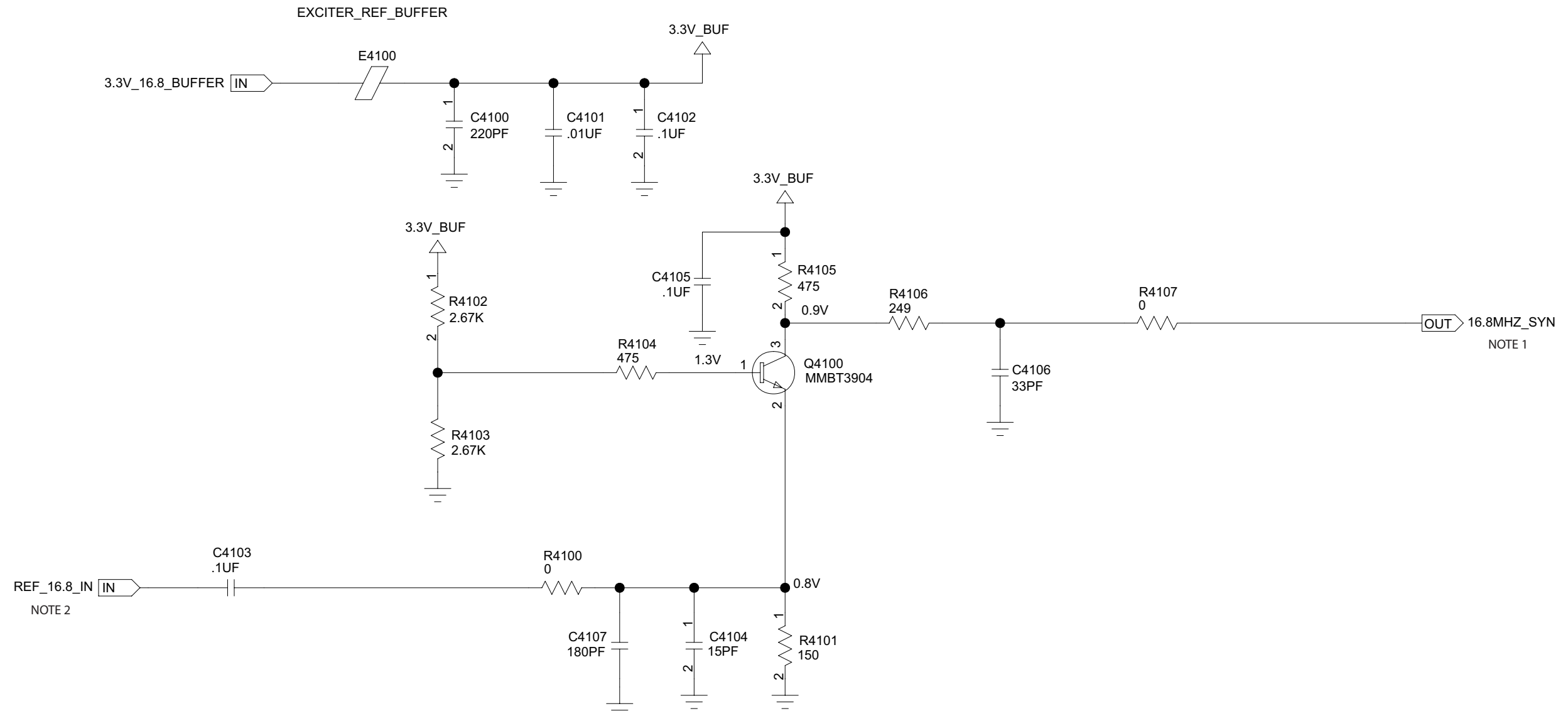


- NOTE 1 : Interconnect Schematic Diagram (Kit No. CTE4003)
- NOTE 2 : Trident Block Schematic Diagram (Kit No. CTE4003)
- NOTE 3 : Metering Schematic Diagram (Kit No. CTE4003)
- NOTE 4 : Regulators Schematic Diagram (Kit No. CTE4003)

**Exciter – CPLD Schematic Diagram (Kit No. CTE4003)**

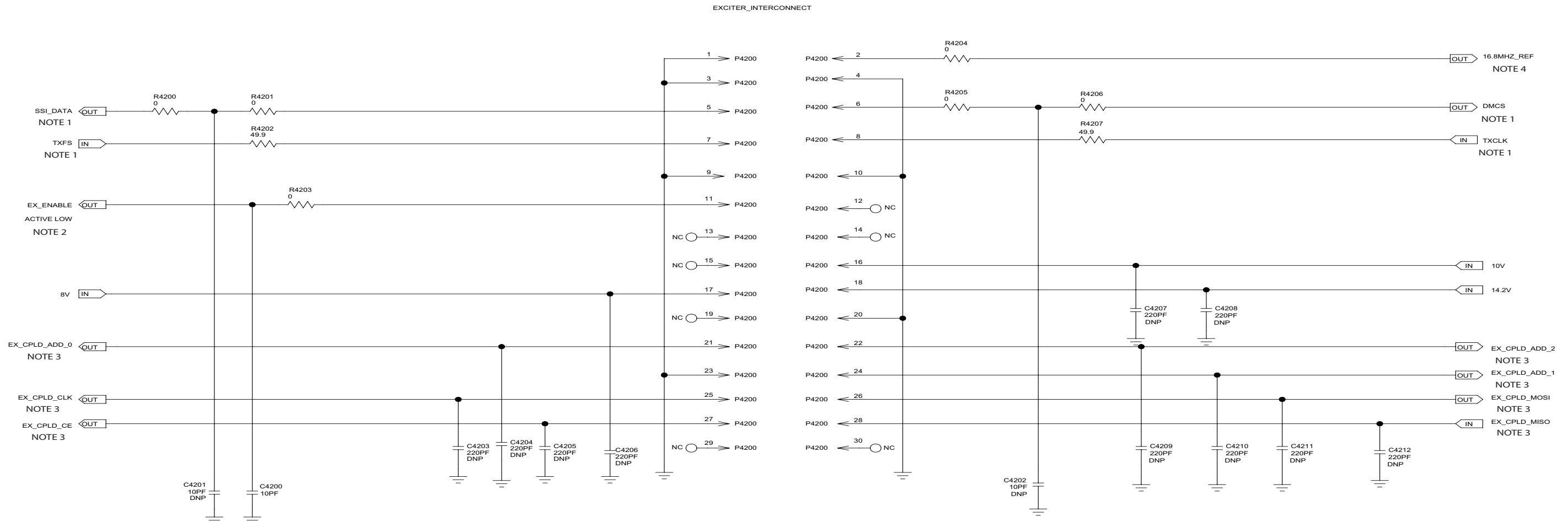


Exciter – Metering Schematic Diagram (Kit No. CTE4003)



NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)  
 NOTE 2 : Interconnect Schematic Diagram (Kit No. CTE4003)

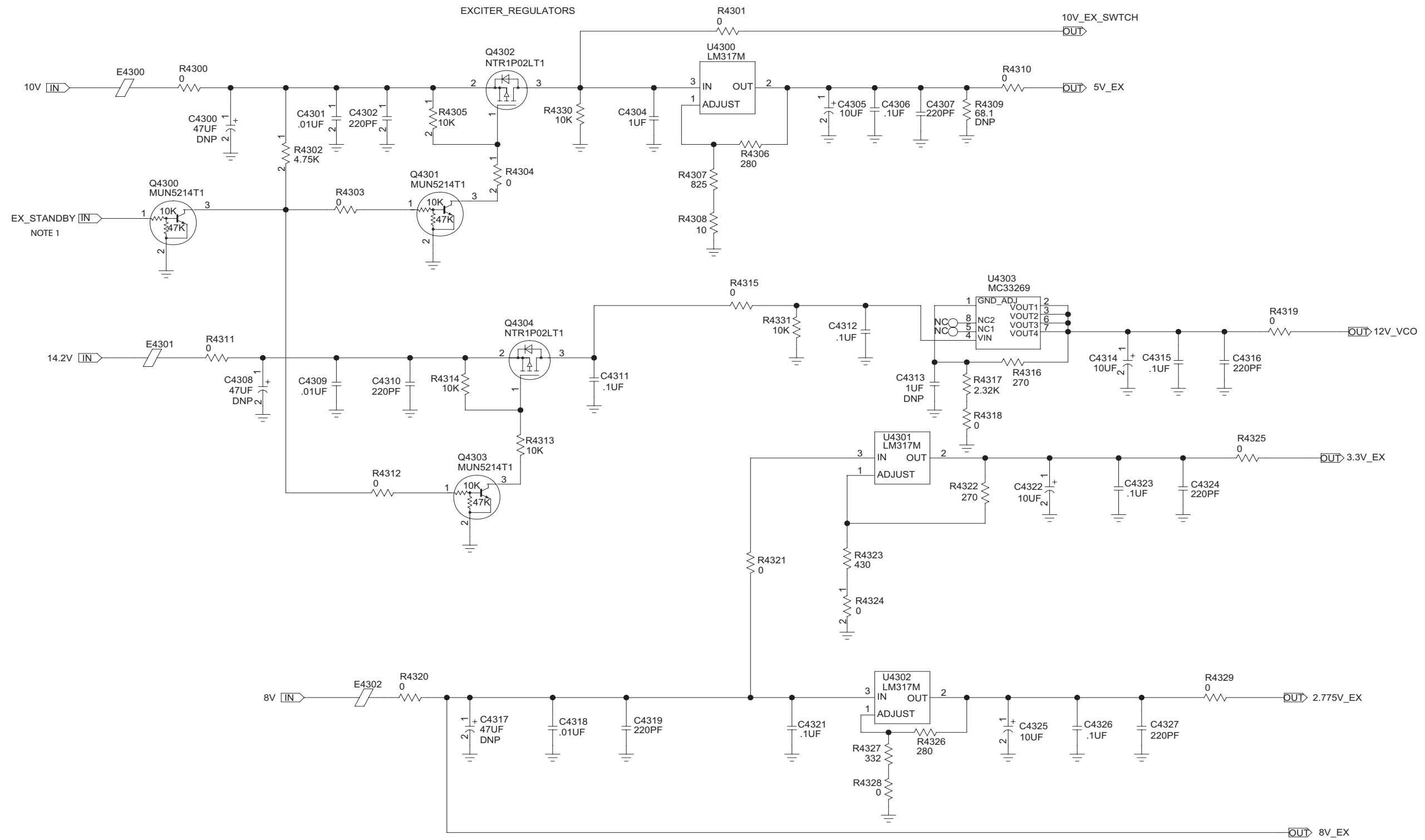
**Exciter – 16.8 MHZ Ref Buffer Schematic Diagram (Kit No. CTE4003)**



NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)  
 NOTE 2 : Buffer Amplifier Schematic Diagram (Kit No. CTE4003)  
 NOTE 3 : CPLD Schematic Diagram (Kit No. CTE4003)  
 NOTE 4 : 16.8MHz Ref Buffer Schematic Diagram (Kit No. CTE4003)

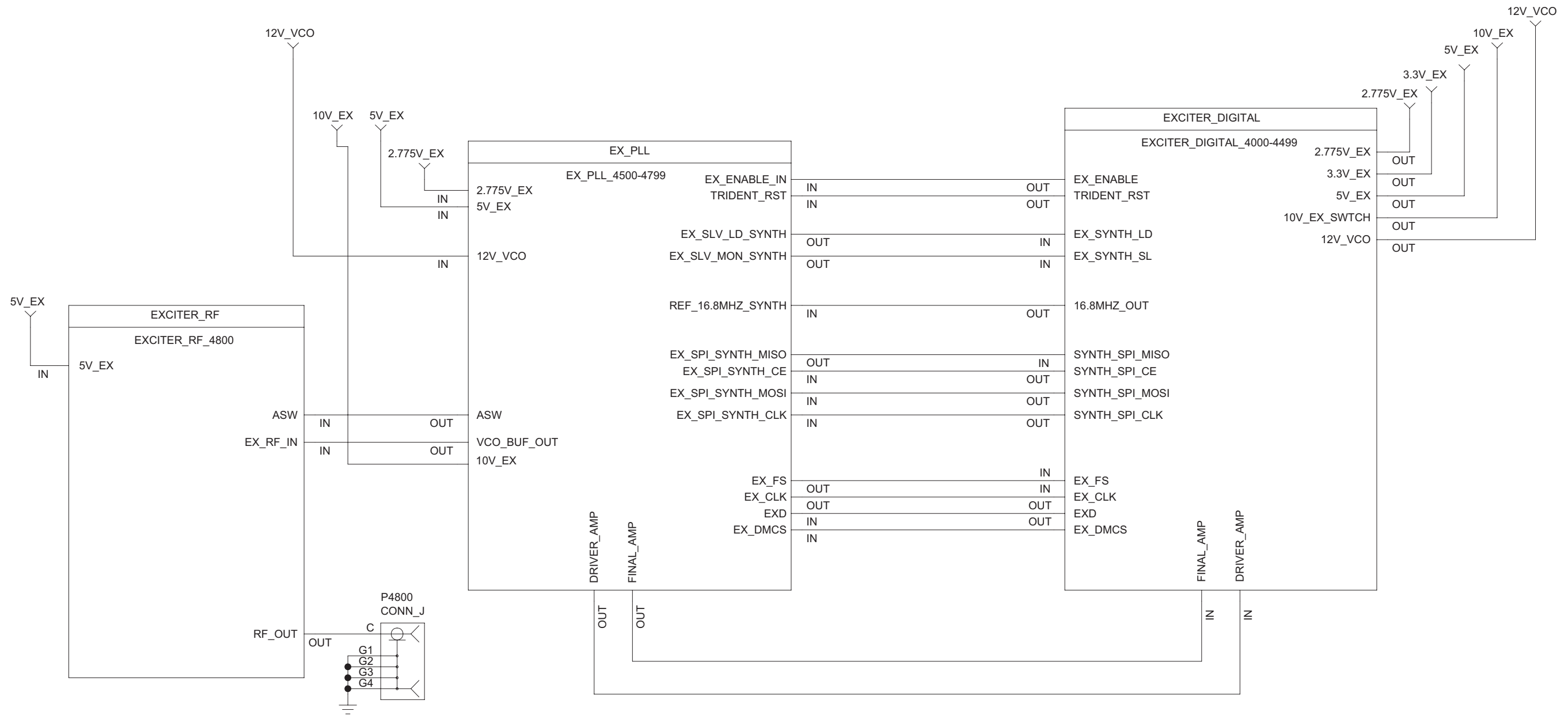
**Exciter – Interconnect Schematic Diagram (Kit No. CTE4003)**



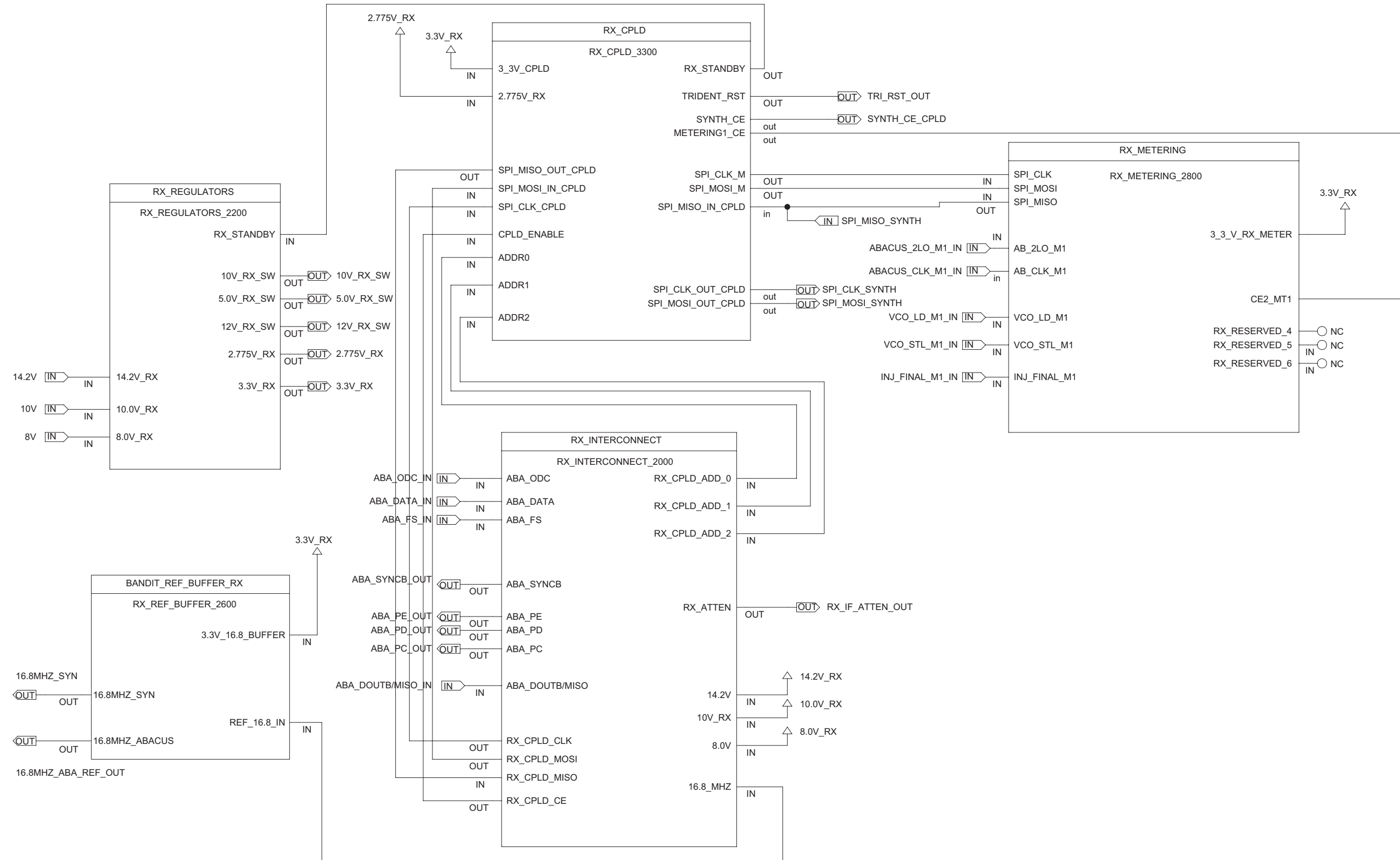


NOTE 1 : CPLD Schematic Diagram (Kit No. CTE4003)

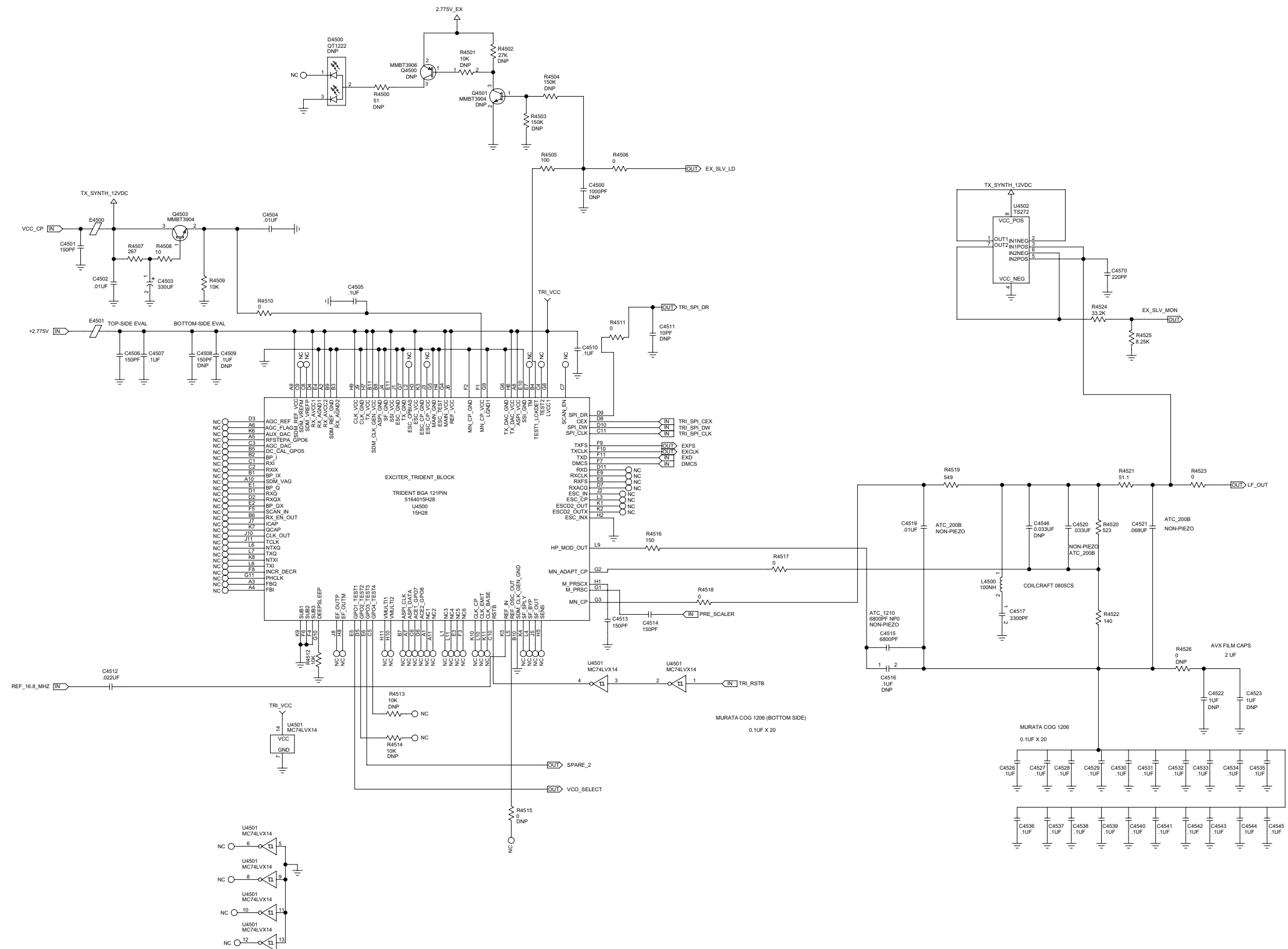
**Exciter – Regulators Schematic Diagram (Kit No. CTE4003)**



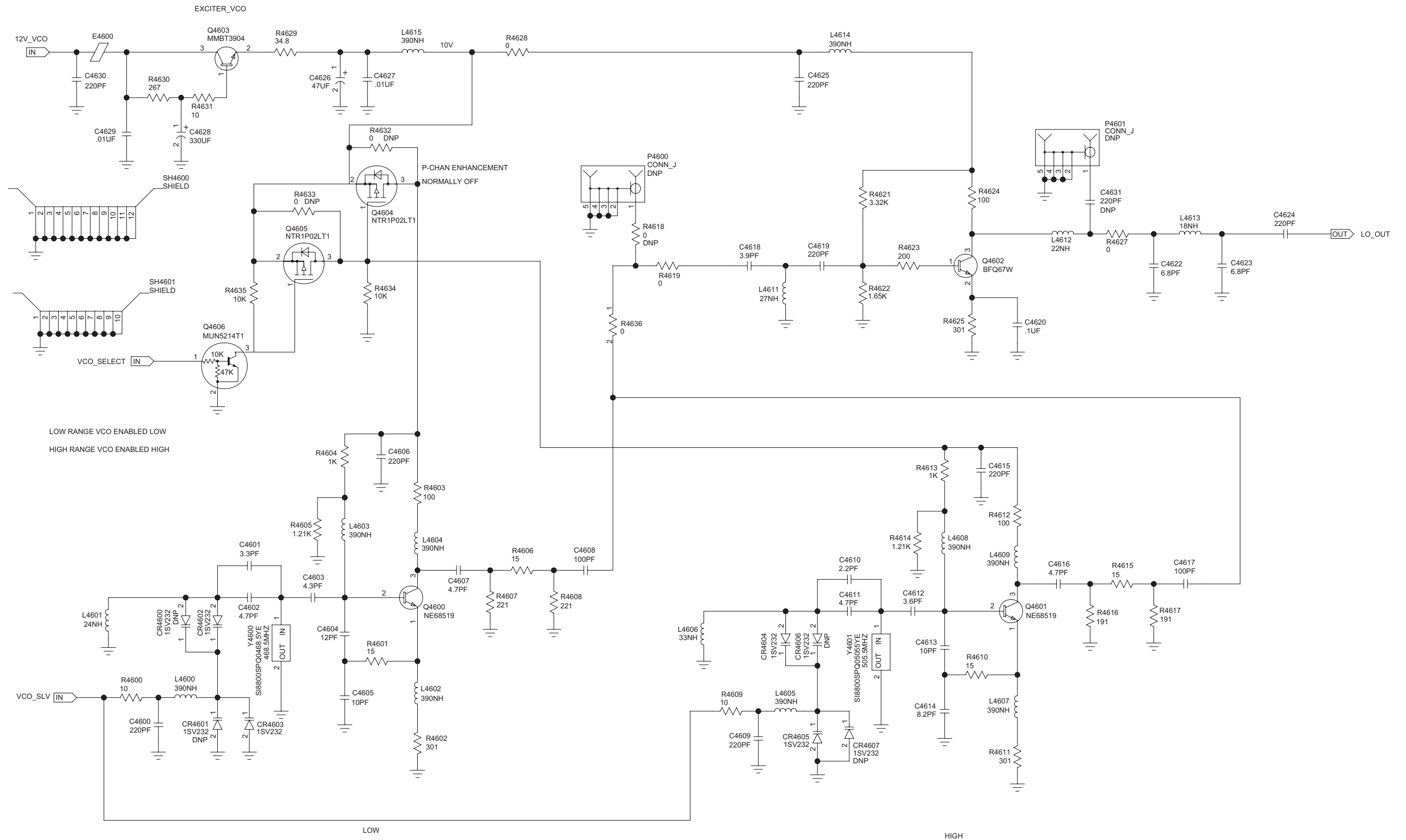
**Exciter – Main Schematic Diagram (Kit No. CTE4004)**



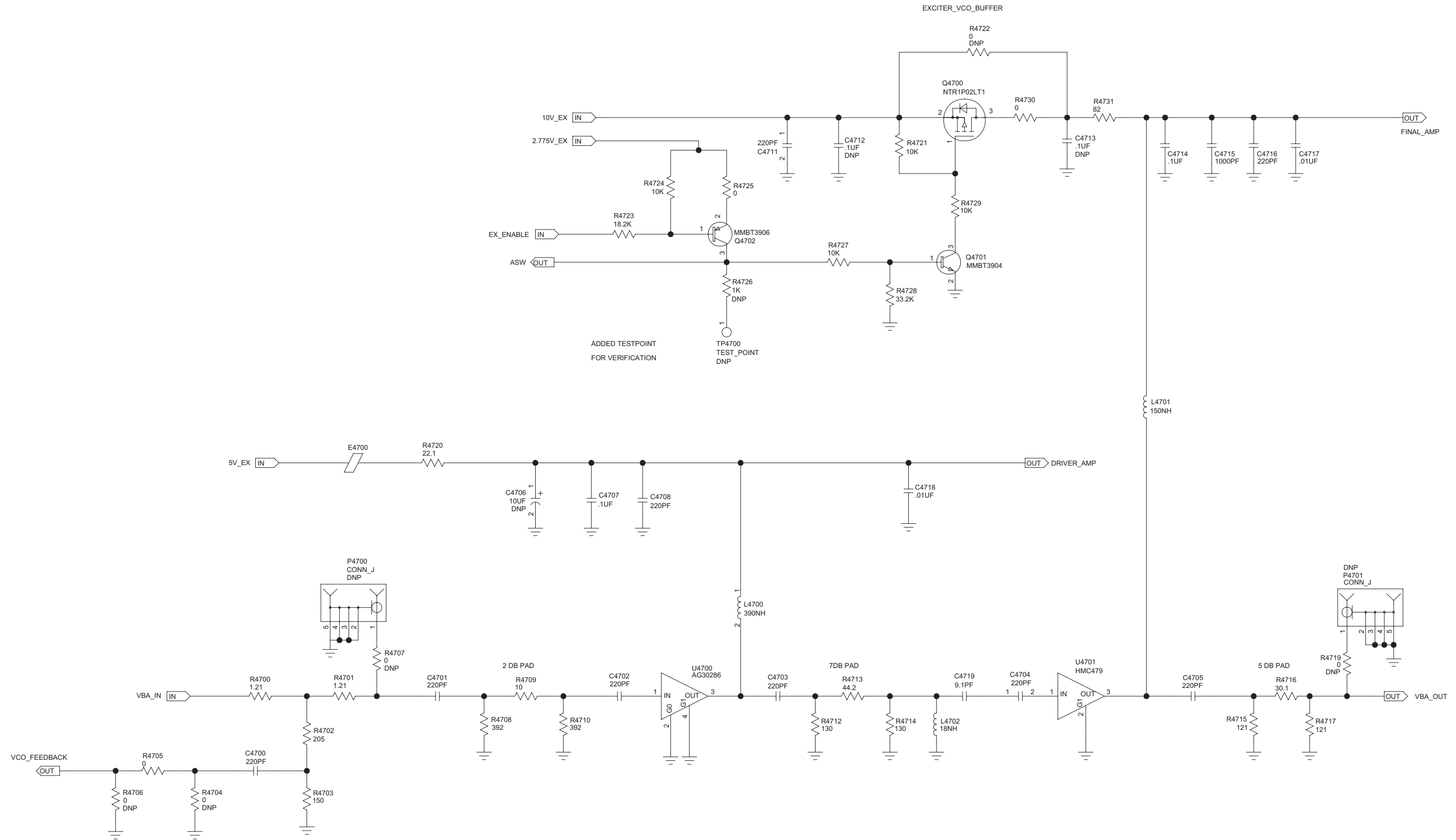
Exciter – Frequency Generation Unit (FGU) Schematic Diagram (Kit No. CTE4004)



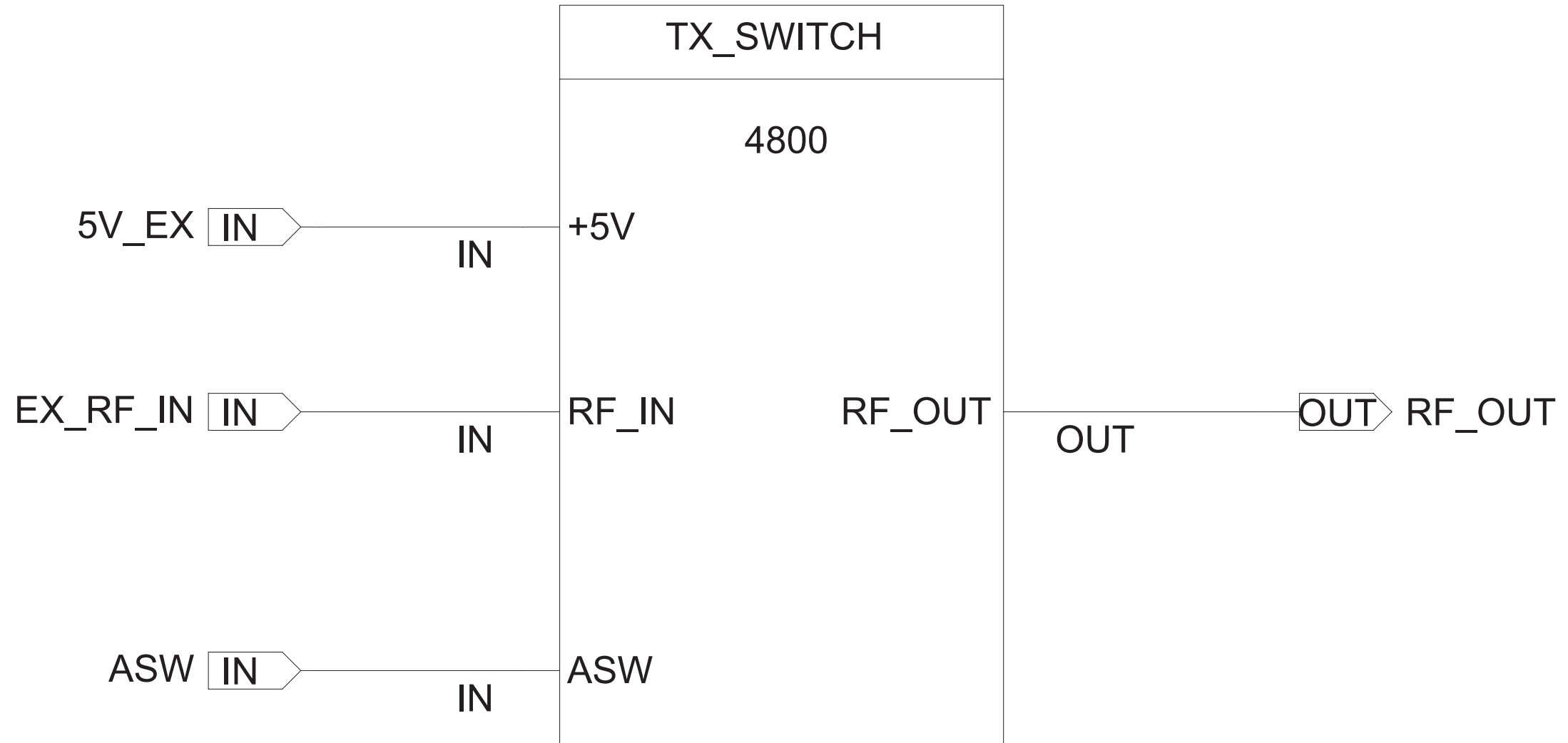
Exciter – Trident Block Schematic Diagram (Kit No. CTE4004)

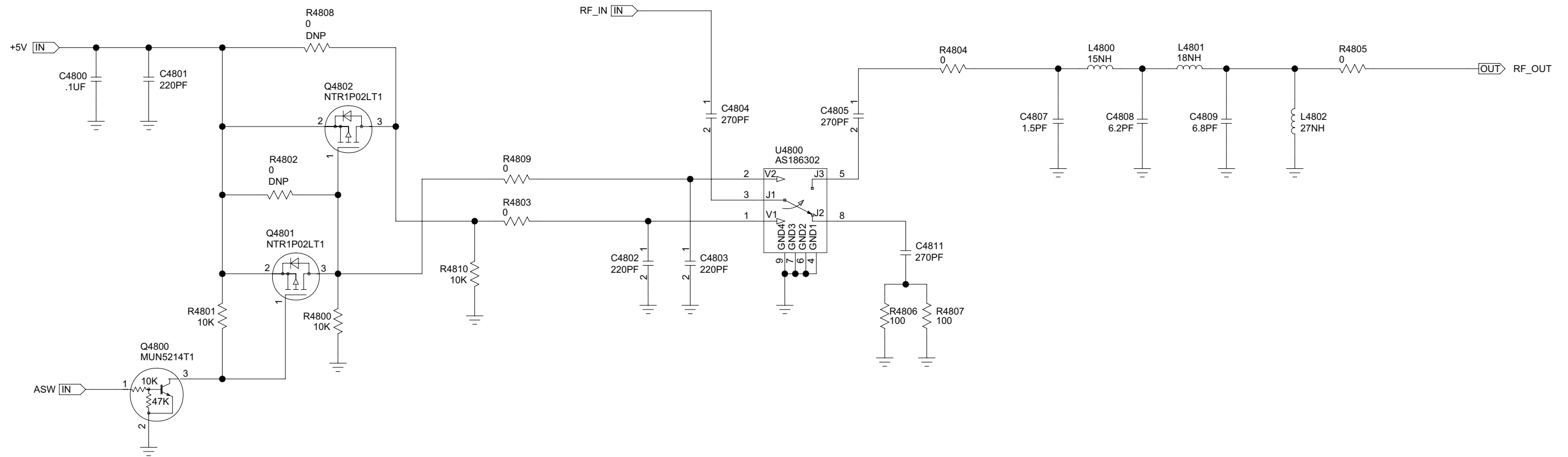


Exciter – UHF VCO Schematic Diagram (Kit No. CTE4004)



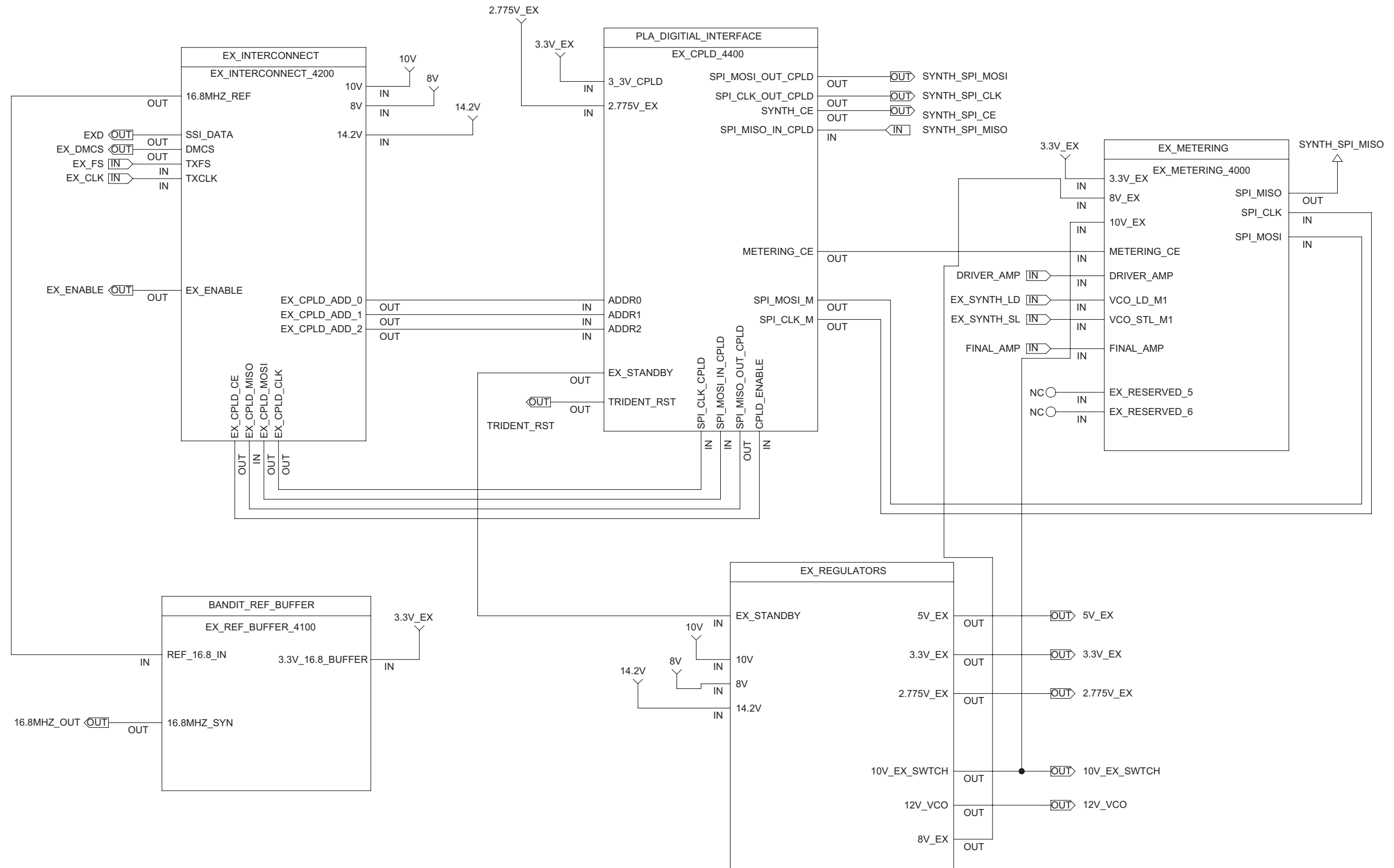
Exciter – Buffer Amplifier Schematic Diagram (Kit No. CTE4004)



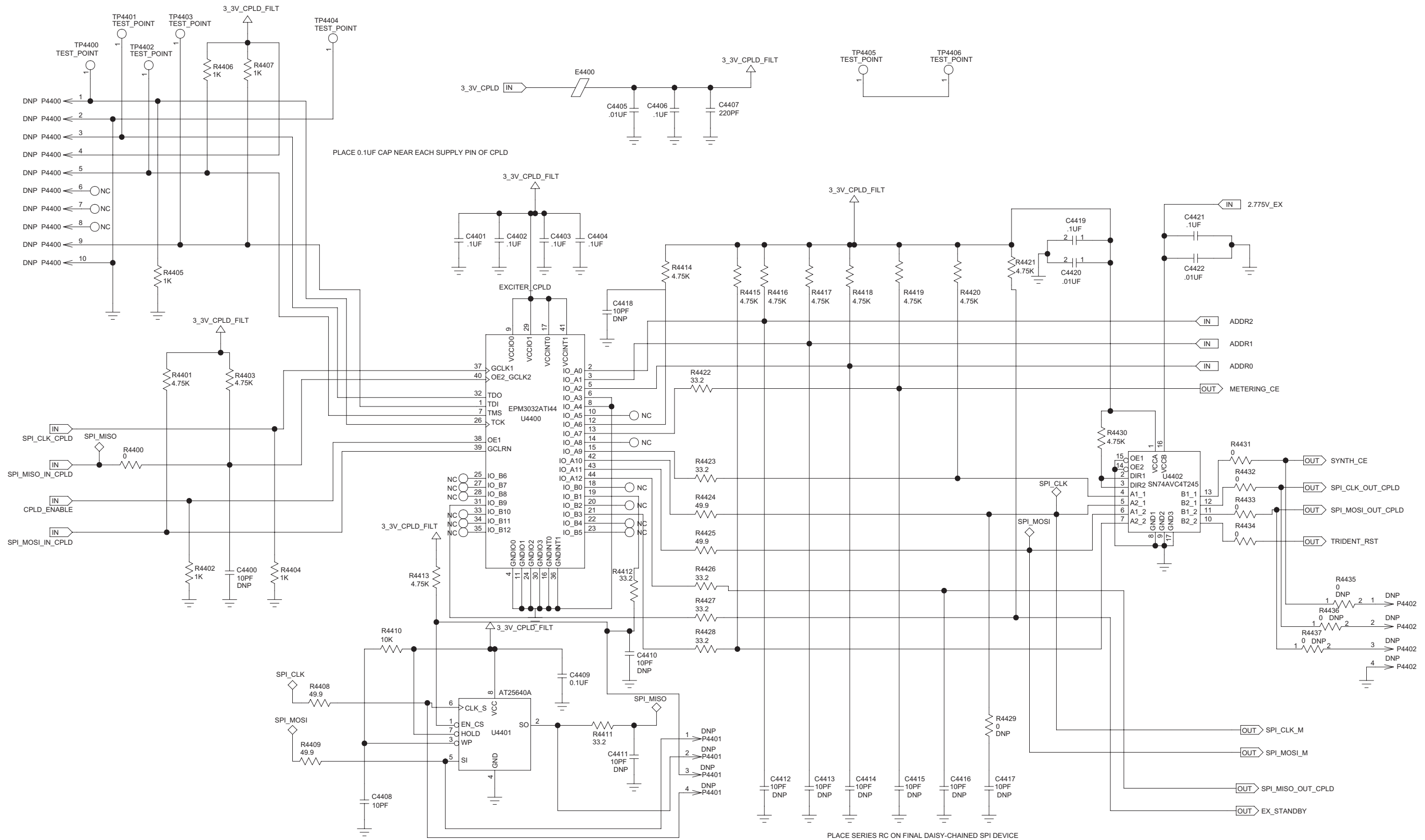


Exciter – Switch Schematic Diagram (Kit No. CTE4004)

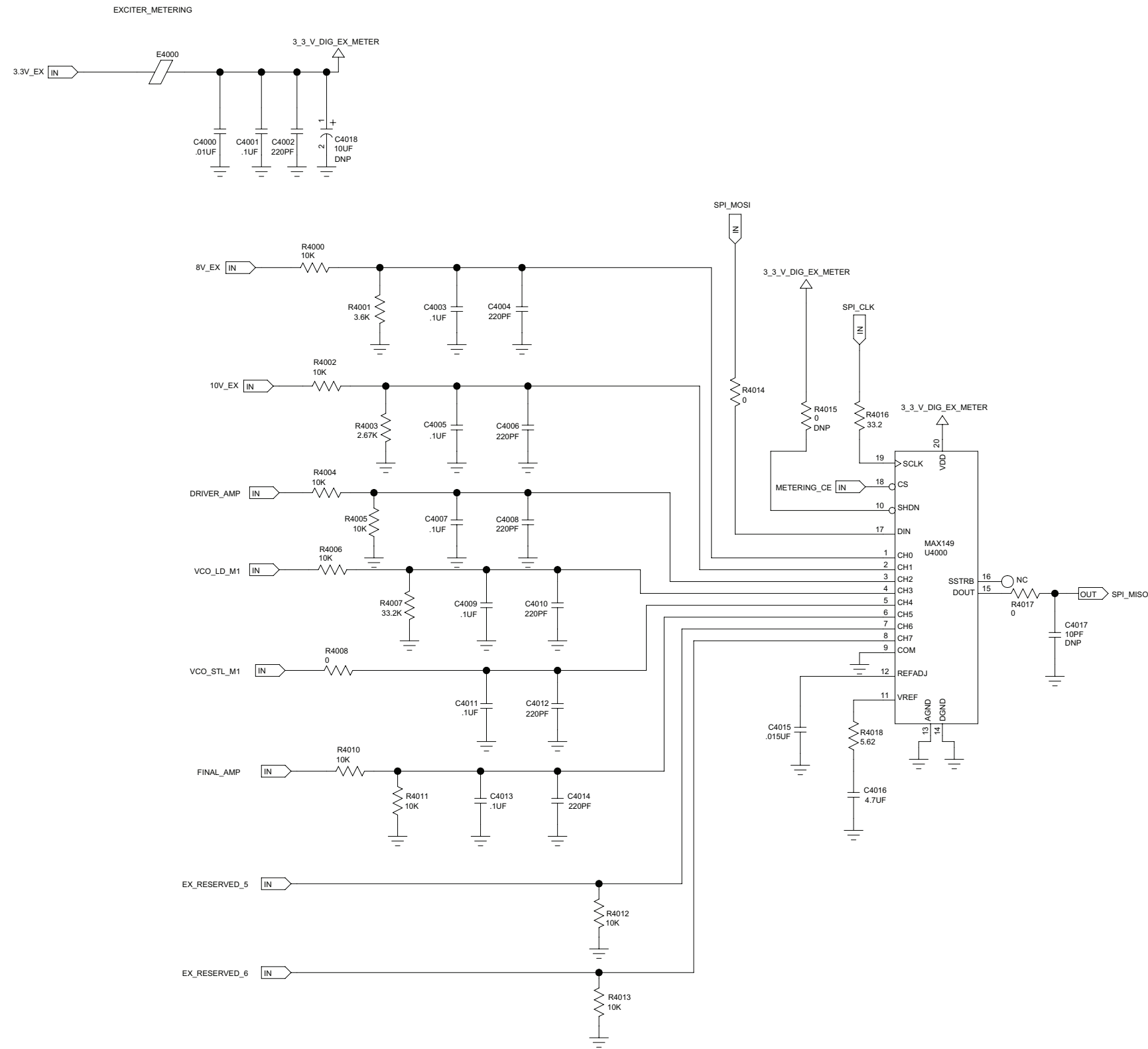




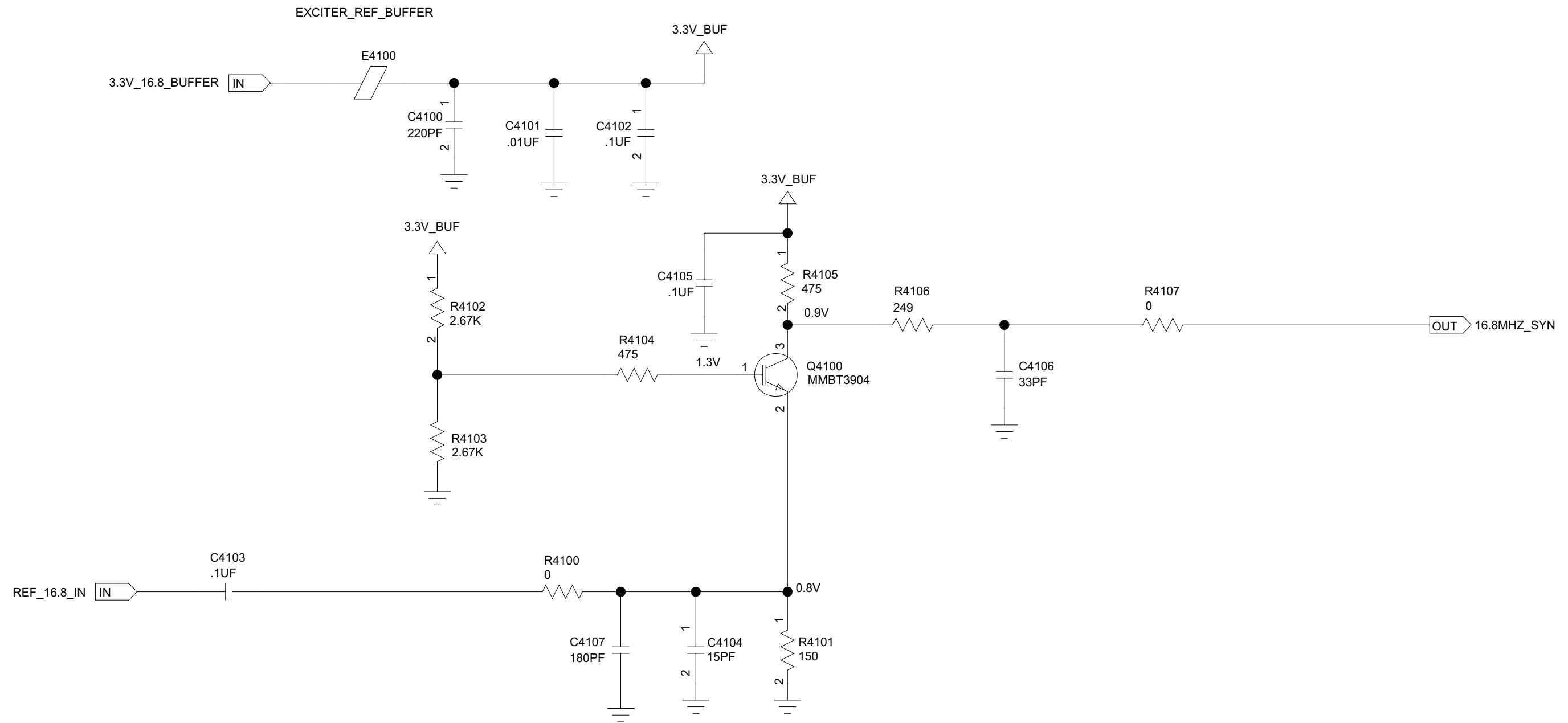
Exciter – Digital Section Schematic Diagram (Kit No. CTE4004)



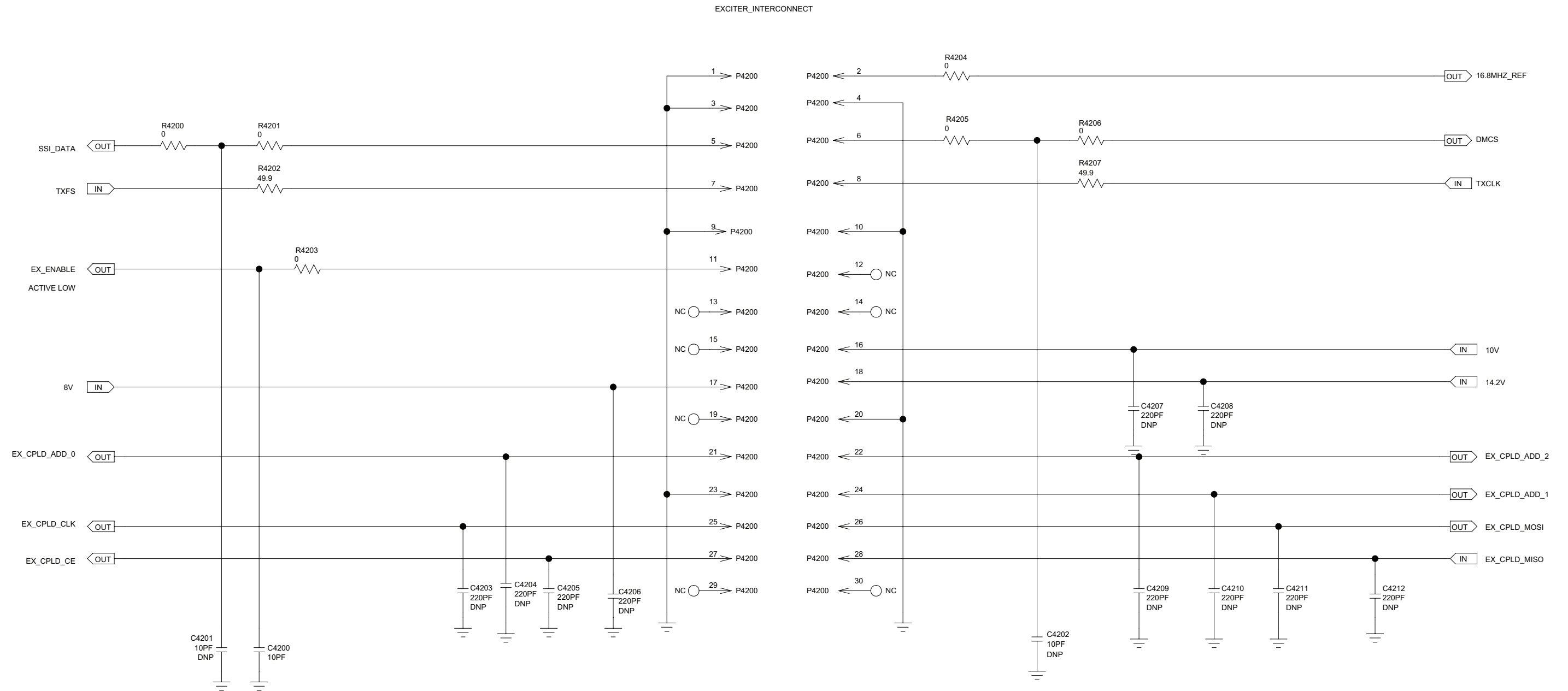
**Exciter – CPLD Schematic Diagram (Kit No. CTE4004)**



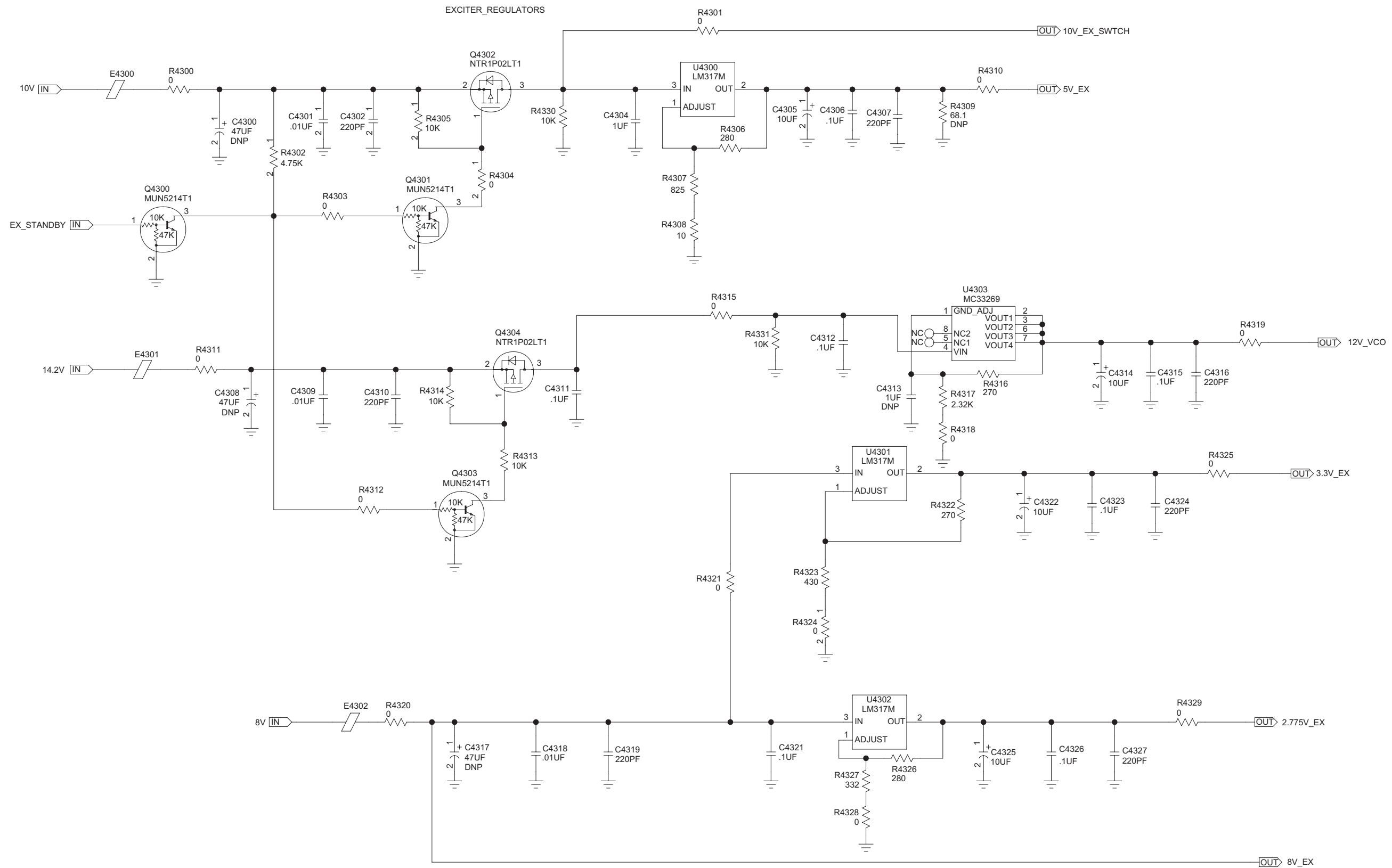
Exciter – Metering Schematic Diagram (Kit No. CTE4004)



Exciter – 16.8 MHZ Ref Buffer Schematic Diagram (Kit No. CTE4004)

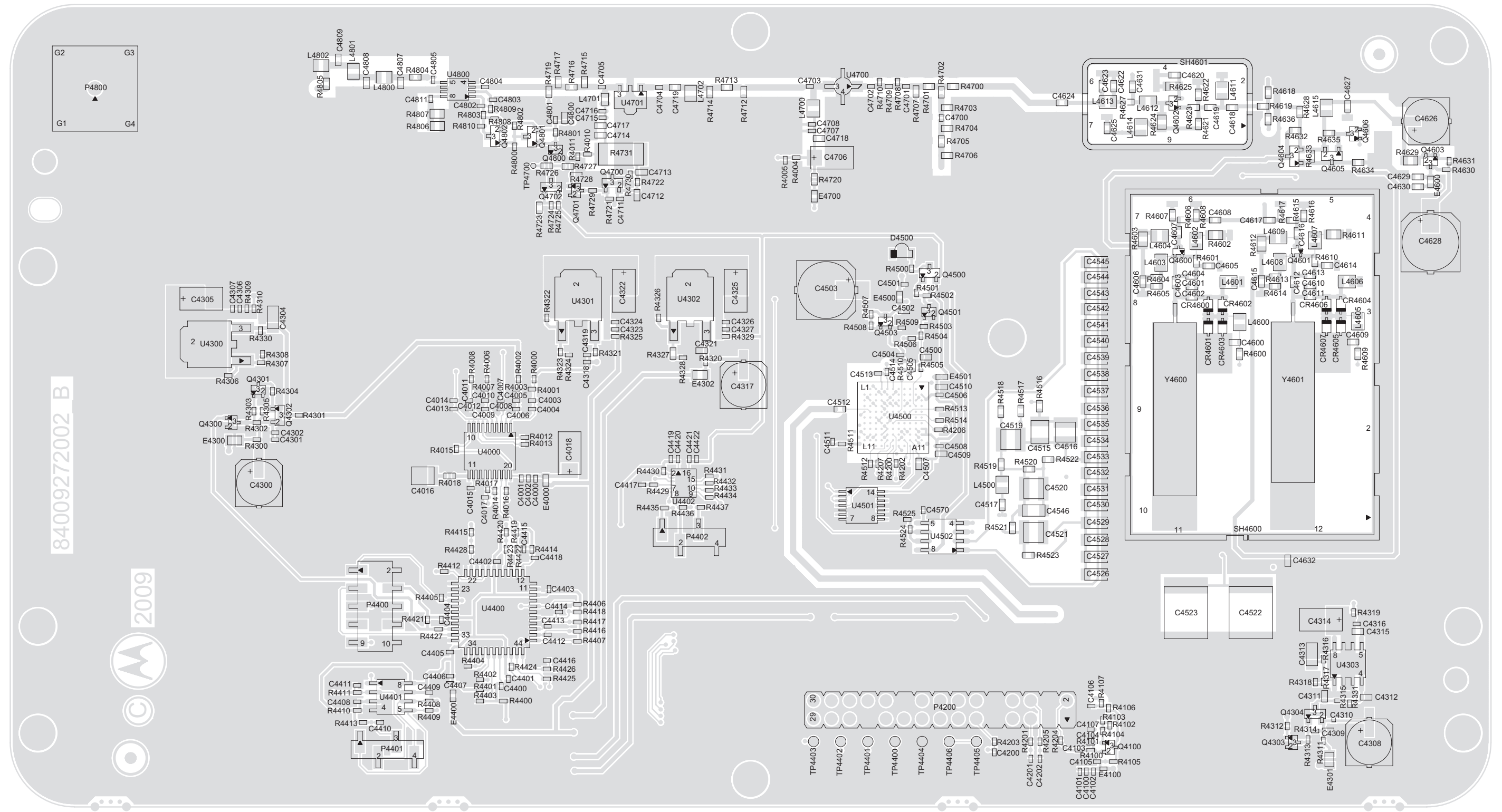


**Exciter – Interconnect Schematic Diagram (Kit No. CTE4004)**

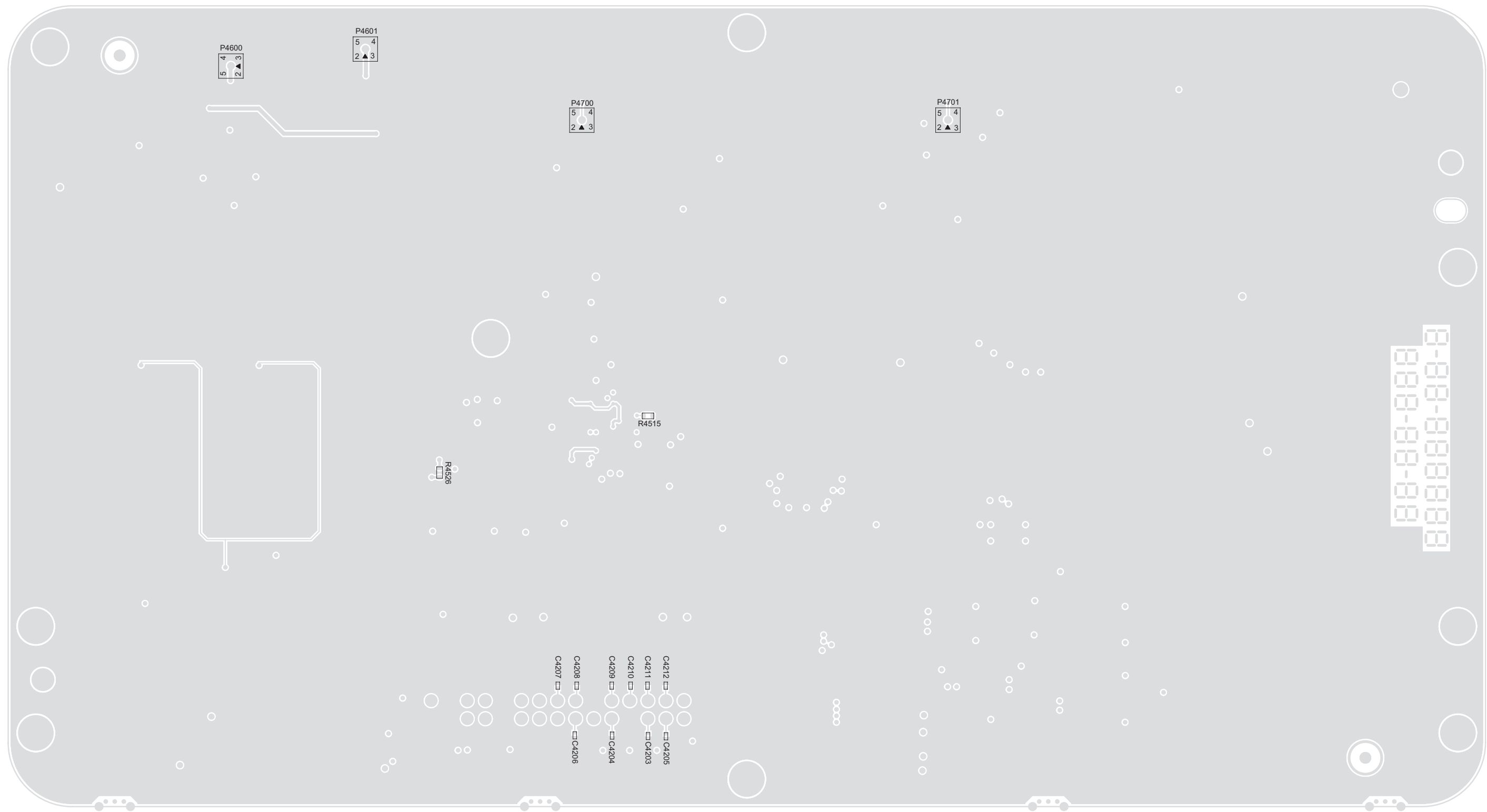


Exciter – Regulators Schematic Diagram (Kit No. CTE4004)

### 7.3 Exciter PCB (UHF)



**Exciter Board PCB – Top View (PCB No. 84009272002)**



**Exciter Board PCB – Bottom View (PCB No. 84009272002)**



#### 7.4 Exciter Parts List (UHF) – CTE4003

Circuit Ref	Motorola Part No	Description
*	1085674C03	PASTE/NC-SMQ230
*	2683006X02	COVER, TX VCO SHIELD
*	84009272002	MTR3000 EXCITER
C4000	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4001	2113946K02	CAP CER CHP 0.10UF 16V
C4002	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4003	2113946K02	CAP CER CHP 0.10UF 16V
C4004	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4005	2113946K02	CAP CER CHP 0.10UF 16V
C4006	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4007	2113946K02	CAP CER CHP 0.10UF 16V
C4008	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4009	2113946K02	CAP CER CHP 0.10UF 16V
C4010	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4011	2113946K02	CAP CER CHP 0.10UF 16V
C4012	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4013	2113946K02	CAP CER CHP 0.10UF 16V
C4014	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4015	2113946A01	CAP CER CHP 0.015UF 16V 10%
C4016	2113946J02	CAP CER CHP 4.7UF 16V 10%

Circuit Ref	Motorola Part No	Description
C4100	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4101	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4102	2113946K02	CAP CER CHP 0.10UF 16V
C4103	2113946K02	CAP CER CHP 0.10UF 16V
C4104	2113944A27	CAP CER CHP 15.0PF 50V 5%
C4105	2113946K02	CAP CER CHP 0.10UF 16V
C4106	2113944A31	CAP CER CHP 33.0PF 50V 5%
C4107	2113944A43	CAP CER CHP 180.0PF 50V 5%
C4200	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C4301	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4302	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4304	2113955D01	CAP,FXD,1UF,+10%,-10%,100V-DC,1206,X7R,-55DEG CMIN,125DEG CMAX
C4305	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4306	2113946K02	CAP CER CHP 0.10UF 16V
C4307	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4309	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4310	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4311	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C4312	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4314	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C4315	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4316	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4318	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4319	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4321	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4322	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4323	2113946K02	CAP CER CHP 0.10UF 16V
C4324	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4325	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4326	2113946K02	CAP CER CHP 0.10UF 16V
C4327	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4401	2113946K02	CAP CER CHP 0.10UF 16V
C4402	2113946K02	CAP CER CHP 0.10UF 16V
C4403	2113946K02	CAP CER CHP 0.10UF 16V

Circuit Ref	Motorola Part No	Description
C4404	2113946K02	CAP CER CHP 0.10UF 16V
C4405	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4406	2113946K02	CAP CER CHP 0.10UF 16V
C4407	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4408	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C4409	2113946B04	CAP CER CHP 0.10UF 10V 10%
C4419	2113946K02	CAP CER CHP 0.10UF 16V
C4420	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4421	2113946K02	CAP CER CHP 0.10UF 16V
C4422	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4501	2113944A42	CAP CER CHP 150.0PF 50V 5%
C4502	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4503	2385170Y08	CAP AL LYTIC 330UF 25V 20% PB-FREE
C4504	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4505	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4506	2113944A42	CAP CER CHP 150.0PF 50V 5%
C4507	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4510	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4512	2113945C04	CAP CER CHP 22,000PF 50V 10%
C4513	2113944A42	CAP CER CHP 150.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C4514	2113944A42	CAP CER CHP 150.0PF 50V 5%
C4515	21012013006	CHIP CAPACITOR - 1210NPO - 6800PF
C4517	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4519	21012012001	CHIP CAPACITOR - ATC200B SERIES
C4520	21012012008	CHIP CAPACITOR - ATC200B - 33000PF
C4521	21012012013	CHIP CAPACITOR - ATC200B - 68000PF
C4526	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4527	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4528	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4529	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4530	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4531	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4532	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4533	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4534	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4535	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4536	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4537	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4538	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF

Circuit Ref	Motorola Part No	Description
C4539	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4540	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4541	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4542	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4543	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4544	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4545	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4570	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4600	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4601	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4602	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4603	2113951C31	CAP,FXD,7.5PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4604	2113951C37	CAP,FXD,15PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4605	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4606	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4607	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C4608	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4609	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4610	2113951C29	CAP,FXD,6.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4611	2113951C16	CAP,FXD,1.8PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4612	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4613	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4614	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4615	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4616	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C4617	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4618	2113951C29	CAP,FXD,6.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4619	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4620	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4622	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C4623	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4624	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4625	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4626	2385170Y10	CAP AL LYTIC 47UF 25V 20% PB-FREE
C4627	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4628	2385170Y08	CAP AL LYTIC 330UF 25V 20% PB-FREE
C4629	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4630	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4632	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4700	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4701	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4702	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4703	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4704	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4705	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4707	2113946K02	CAP CER CHP 0.10UF 16V
C4708	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4711	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4714	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C4715	2113944A52	CAP CER CHP 1000.0 PF 50V 5%
C4716	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4717	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4718	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4719	2113951C35	CAP,FXD,11PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4800	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4801	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4802	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4803	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4804	2113944A45	CAP CER CHP 270.0 PF 50V 5%
C4805	2113944A45	CAP CER CHP 270.0 PF 50V 5%
C4807	2113944C19	CAP CER CHP 3.6PF 50V +/- 0.25PF
C4808	2113944C28	CAP CER CHP 8.2PF 50V +/- 0.5PF
C4809	2113944C25	CAP CER CHP 6.2PF 50V +/- 0.5PF
C4811	2113944A45	CAP CER CHP 270.0 PF 50V 5%
CR4602	4815072H01	DIODE VARACTOR
CR4603	4815072H01	DIODE VARACTOR
CR4604	4815072H01	DIODE VARACTOR
CR4605	4815072H01	DIODE VARACTOR
E4000	2485410Y01	MIN CHIP FERRITE BEAD
E4100	2485449Y01	SURFACE MOUNT FERRITE BEAD W18

Circuit Ref	Motorola Part No	Description
E4300	2485410Y04	MIN CHIP FERRITE BEAD 330QS W18
E4301	2485410Y04	MIN CHIP FERRITE BEAD 330QS W18
E4302	2485410Y04	MIN CHIP FERRITE BEAD 330QS W18
E4400	2485410Y01	MIN CHIP FERRITE BEAD
E4500	2485410Y01	MIN CHIP FERRITE BEAD
E4501	2485410Y01	MIN CHIP FERRITE BEAD
E4600	2485410Y01	MIN CHIP FERRITE BEAD
E4700	2485410Y01	MIN CHIP FERRITE BEAD
L4500	2414032F34	IDCTR,WW,100NH,5%,400 MA,.46Ω,CER,40 Q,950 MHZ SRF,SM,PB-FR
L4600	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4601	2414032F50	IDCTR,WW,24NH,5%,500 MA,.24Ω,CER,45 Q,2GHZ SRF,SM,PB-FREE
L4602	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4603	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4604	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4605	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4606	2414032F26	IDCTR,WW,22NH,5%,500 MA,.22Ω,CER,45 Q,2.2GHZ SRF,SM,PB-FRE
L4607	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4608	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR

Circuit Ref	Motorola Part No	Description
L4609	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4611	2414032F27	IDCTR,FXD,27NH,5%,500 MA,.25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-
L4612	2414032F26	IDCTR,WW,22NH,5%,500 MA,.22Ω,CER,45 Q,2.2GHZ SRF,SM,PB-FRE
L4613	2414032F50	IDCTR,WW,24NH,5%,500 MA,.24Ω,CER,45 Q,2GHZ SRF,SM,PB-FREE
L4614	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4615	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4700	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4701	2416540H35	CHIP INDUCTOR
L4702	2414015B15	IDCTR,FXD,22NH,2%,500 MA,.22Ω,CER,55 Q,2.6GHZ SRF,SM,0805,P
L4800	2414015B17	IDCTR,FXD,18NH,2%,600 MA,.2Ω,CER,50 Q,3.3GHZ SRF,SM,0805,PB
L4801	2414015B17	IDCTR,FXD,18NH,2%,600 MA,.2Ω,CER,50 Q,3.3GHZ SRF,SM,0805,PB
L4802	2414015B12	IDCTR,FXD,47NH,2%,500 MA,.34Ω,CER,40 Q,1.3GHZ SRF,SM,0805,P
P4200	28009146002	HEADER 2 X 15 VERTICAL
P4800	0982492W01	BNC CONN PCB VERTICAL RECEIPT
Q4100	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB

Circuit Ref	Motorola Part No	Description
Q4300	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4301	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4302	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4303	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4304	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4503	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4600	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q4601	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q4602	4805218N63	RF TRANS SOT 323 BFQ67W
Q4603	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4604	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4605	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4606	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4700	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4701	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB

Circuit Ref	Motorola Part No	Description
Q4702	4813973A13	XSTR,GEN PURPOSE SMALL SIG,PNP,MMBT3906L,TO-236,4, PB-FREE
Q4800	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q4801	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4802	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
R4000	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4001	0613952Q86	CER CHIP RES 3600Ω 5 0402
R4002	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4003	0613952M42	CER CHIP RES 2670Ω 1% 0402
R4004	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4005	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4006	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4007	0613952N51	CER CHIP RES 33.2KΩ 1 0402
R4008	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4010	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4011	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4012	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4013	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4014	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4016	0613952K51	CER CHIP RES 33.2Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4017	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4018	0613952A73	CER CHIP RES 5.62Ω 1% 0603
R4100	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4101	0613952L18	CER CHIP RES 150Ω 1% 0402
R4102	0613952M42	CER CHIP RES 2670Ω 1% 0402
R4103	0613952M42	CER CHIP RES 2670Ω 1% 0402
R4104	0613952L66	CER CHIP RES 475Ω 1% 0402
R4105	0613952L66	CER CHIP RES 475Ω 1% 0402
R4106	0613952L39	CER CHIP RES 249Ω 1 0402
R4107	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4200	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4201	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4202	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4203	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4204	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4205	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4206	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4207	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4300	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4301	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω

Circuit Ref	Motorola Part No	Description
R4302	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4303	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4304	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4305	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4306	0613952L44	CER CHIP RES 280Ω 1 0402
R4307	0613952L89	CER CHIP RES 825Ω 1% 0402
R4308	0613952K01	CER CHIP RES 10.0Ω 1% 0402
R4310	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4311	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4312	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4313	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4314	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4315	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4316	0613952Q59	CER CHIP RES 270Ω 5 0402
R4317	0613952M36	CER CHIP RES 2320Ω 1 0402
R4318	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4319	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4320	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4321	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4322	0613952Q59	CER CHIP RES 270Ω 5 0402

Circuit Ref	Motorola Part No	Description
R4323	0613952Q64	CER CHIP RES 430Ω 5 0402
R4324	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4325	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4326	0613952L44	CER CHIP RES 280Ω 1 0402
R4327	0613952C51	CER CHIP RES 332Ω 1% 0603
R4328	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4329	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4330	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4331	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4400	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4401	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4402	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4403	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4404	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4405	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4406	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4407	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4408	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4409	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4410	0613952N01	CER CHIP RES 10.0KΩ 1 0402

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R4411	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R4432	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R4525	0613952M89	CER CHIP RES 8250Ω 1% 0402	R4621	0613952D51	CER CHIP RES 3320Ω 1% 0603
R4412	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R4433	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R4600	0613952B01	CER CHIP RES 10.0Ω 1% 0603	R4622	0613952D30	CER CHIP RES 2000Ω 1% 0603
R4413	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4434	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R4601	0613952B46	CER CHIP RES 29.4Ω 1% 0603	R4623	0613952C30	CER CHIP RES 200Ω 1% 0603
R4414	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4505	0613952L01	CER CHIP RES 100Ω 1% 0402	R4602	0613958C47	CER CHIP RES 301Ω 1% 0805	R4624	0613958C01	CER CHIP RES 100Ω 1% 0805
R4415	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4506	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R4603	0613958C01	CER CHIP RES 100Ω 1% 0805	R4625	0613958C47	CER CHIP RES 301Ω 1% 0805
R4416	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4507	0613952L42	CER CHIP RES 267Ω 1% 0402	R4604	0613952D20	CER CHIP RES 1580Ω 1 0603	R4627	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4417	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4508	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R4605	0613952D01	CER CHIP RES 1000Ω 1% 0603	R4628	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4418	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4509	0613952N01	CER CHIP RES 10.0KΩ 1 0402	R4606	0613952B50	CER CHIP RES 32.4Ω 1% 0603	R4629	0613958B53	CER CHIP RES 34.8Ω 1% 0805
R4419	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4510	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω	R4607	0613952C26	CER CHIP RES 182Ω 1% 0603	R4630	0613952L42	CER CHIP RES 267Ω 1% 0402
R4420	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4511	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R4608	0613952C26	CER CHIP RES 182Ω 1% 0603	R4631	0613952K01	CER CHIP RES 10.0Ω 1% 0402
R4421	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4512	0613952N01	CER CHIP RES 10.0KΩ 1 0402	R4609	0613952B01	CER CHIP RES 10.0Ω 1% 0603	R4634	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4422	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R4516	0613952C18	CER CHIP RES 150Ω 1% 0603	R4610	0613952B42	CER CHIP RES 26.7Ω 1% 0603	R4635	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4423	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R4517	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω	R4611	0613958C47	CER CHIP RES 301Ω 1% 0805	R4636	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4424	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R4518	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω	R4612	0613958C01	CER CHIP RES 100Ω 1% 0805	R4700	0613952A09	CER CHIP RES 1.21Ω 1
R4425	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R4519	0613952C72	CER CHIP RES 549Ω 1 0603	R4613	0613952D20	CER CHIP RES 1580Ω 1 0603	R4701	0613952A09	CER CHIP RES 1.21Ω 1
R4426	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R4520	0613952C67	CER CHIP RES 487Ω 1 0603	R4614	0613952D01	CER CHIP RES 1000Ω 1% 0603	R4702	0613952C31	CER CHIP RES 205Ω 1% 0603
R4427	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R4521	0613952B69	CER CHIP RES 51.1Ω 1% 0603	R4615	0613952B37	CER CHIP RES 23.7Ω 1% 0603	R4703	0613952C18	CER CHIP RES 150Ω 1% 0603
R4428	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R4522	0613952C09	CER CHIP RES 121Ω 1% 0603	R4616	0613952C34	CER CHIP RES 221Ω 1% 0603	R4705	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4430	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4523	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω	R4617	0613952C34	CER CHIP RES 221Ω 1% 0603	R4708	0613952L58	CER CHIP RES 392Ω 1% 0402
R4431	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R4524	0613952N51	CER CHIP RES 33.2KΩ 1 0402	R4619	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω	R4709	0613952K01	CER CHIP RES 10.0Ω 1% 0402
									R4710	0613952L58	CER CHIP RES 392Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4712	0613952C12	CER CHIP RES 130Ω 1% 0603
R4713	0613952B63	CER CHIP RES 44.2Ω 1% 0603
R4714	0613952C12	CER CHIP RES 130Ω 1% 0603
R4715	0613952C09	CER CHIP RES 121Ω 1% 0603
R4716	0613952B47	CER CHIP RES 30.1Ω 1% 0603
R4717	0613952C09	CER CHIP RES 121Ω 1% 0603
R4720	0613952B34	CER CHIP RES 22.1Ω 1% 0603
R4721	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4723	0613952E26	CER CHIP RES 18.2KΩ 1 0603
R4724	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4725	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4727	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4728	0613952E51	CER CHIP RES 33.2KΩ 1 0603
R4729	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4730	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4731	0613959Y47	CER CHIP RESΩ 5% 2512
R4800	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4801	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4803	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4804	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω

Circuit Ref	Motorola Part No	Description
R4805	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4806	0613958C01	CER CHIP RES 100Ω 1% 0805
R4807	0613958C01	CER CHIP RES 100Ω 1% 0805
R4809	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4810	0613952N01	CER CHIP RES 10.0KΩ 1 0402
SH4600	1583004X05	SHIELD, VCO
SH4601	2685668Y01	SHIELD, XCVR RX IF FILTER
U4000	5184998Y01	IC ADC 10BIT 8CHNNL LOPWR 149
U4300	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO 37V,500MA,SM,DPAK,PB-FREE
U4301	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO 37V,500MA,SM,DPAK,PB-FREE
U4302	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1. 2V TO 37V,500MA,SM,DPAK,PB-FREE
U4303	5114014A20	IC,LNR V REGLTR,ADJUSTABLE,1. 35V TO 10V,800MA,SM,SO-8,PB-FREE
U4400	5185130Y01	CPLD EPM3032AT144 W18 CMLNT
U4401	5184943Y01	64KB SERIAL EEPROM 8192X8
U4402	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U4500	5164015H28	IC,TRIDENT,INTEG SYNTH,RX/TX BSBND

Circuit Ref	Motorola Part No	Description
U4501	5114019M05	IC,INVTR,SCHMITT,74LVX 14,6PER PKG,SM,TSSOP14,PB-FREE
U4502	5185183Y01	HI PERF DUAL CMOS OPAMP W18
U4700	5185106Y01	INGAP HBT GAIN BLOCK W18
U4701	5171183H01	GAIN BLOCK MMIC AMPLIFIER
U4800	5185145Y01	SPDT NON-REFLECTIVE SWITCH W18
Y4600	9171848H05	TABBED CERAMIC RESONATOR
Y4601	9171848H06	TABBED CERAMIC RESONATOR

**7.5 Exciter Parts List (UHF) – CTE4004**

Circuit Ref	Motorola Part No	Description
*	1085674C03	PASTE/NC-SMQ230
*	2683006X02	COVER, TX VCO SHIELD
*	84009272002	MTR3000 EXCITER
C4000	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4001	2113946K02	CAP CER CHP 0.10UF 16V
C4002	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4003	2113946K02	CAP CER CHP 0.10UF 16V
C4004	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4005	2113946K02	CAP CER CHP 0.10UF 16V
C4006	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4007	2113946K02	CAP CER CHP 0.10UF 16V
C4008	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4009	2113946K02	CAP CER CHP 0.10UF 16V
C4010	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4011	2113946K02	CAP CER CHP 0.10UF 16V
C4012	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4013	2113946K02	CAP CER CHP 0.10UF 16V
C4014	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4015	2113946A01	CAP CER CHP 0.015UF 16V 10%
C4016	2113946J02	CAP CER CHP 4.7UF 16V 10%

Circuit Ref	Motorola Part No	Description
C4100	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4101	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4102	2113946K02	CAP CER CHP 0.10UF 16V
C4103	2113946K02	CAP CER CHP 0.10UF 16V
C4104	2113944A27	CAP CER CHP 15.0PF 50V 5%
C4105	2113946K02	CAP CER CHP 0.10UF 16V
C4106	2113944A31	CAP CER CHP 33.0PF 50V 5%
C4107	2113944A43	CAP CER CHP 180.0PF 50V 5%
C4200	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C4301	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4302	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4304	2113955D01	CAP,FXD,1UF,+10%,-10%,100V-DC,1206,X7R,-55DEG CMIN,125DEG CMAX
C4305	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4306	2113946K02	CAP CER CHP 0.10UF 16V
C4307	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4309	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4310	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4311	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C4312	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4314	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C4315	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4316	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4318	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4319	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4321	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4322	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4323	2113946K02	CAP CER CHP 0.10UF 16V
C4324	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4325	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4326	2113946K02	CAP CER CHP 0.10UF 16V
C4327	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4401	2113946K02	CAP CER CHP 0.10UF 16V
C4402	2113946K02	CAP CER CHP 0.10UF 16V
C4403	2113946K02	CAP CER CHP 0.10UF 16V

Circuit Ref	Motorola Part No	Description
C4404	2113946K02	CAP CER CHP 0.10UF 16V
C4405	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4406	2113946K02	CAP CER CHP 0.10UF 16V
C4407	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4408	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C4409	2113946B04	CAP CER CHP 0.10UF 10V 10%
C4419	2113946K02	CAP CER CHP 0.10UF 16V
C4420	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4421	2113946K02	CAP CER CHP 0.10UF 16V
C4422	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4501	2113944A42	CAP CER CHP 150.0PF 50V 5%
C4502	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4503	2385170Y08	CAP AL LYTIC 330UF 25V 20% PB-FREE
C4504	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4505	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4506	2113944A42	CAP CER CHP 150.0PF 50V 5%
C4507	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4510	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4512	2113945C04	CAP CER CHP 22,000PF 50V 10%
C4513	2113944A42	CAP CER CHP 150.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C4514	2113944A42	CAP CER CHP 150.0PF 50V 5%
C4515	21012013006	CHIP CAPACITOR - 1210NPO - 6800PF
C4517	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4519	21012012001	CHIP CAPACITOR - ATC200B SERIES
C4520	21012012008	CHIP CAPACITOR - ATC200B - 33000PF
C4521	21012012013	CHIP CAPACITOR - ATC200B - 68000PF
C4526	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4527	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4528	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4529	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4530	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4531	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4532	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4533	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4534	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4535	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4536	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4537	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4538	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF

Circuit Ref	Motorola Part No	Description
C4539	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4540	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4541	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4542	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4543	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4544	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4545	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4570	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4600	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4601	2113951C22	CAP,FXD,3.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4602	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4603	2113951C25	CAP,FXD,4.3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4604	2113951C36	CAP,FXD,12PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4605	2113951C34	CAP,FXD,10PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4606	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4607	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C4608	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4609	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4610	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4611	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4612	2113951C23	CAP,FXD,3.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4613	2113951C34	CAP,FXD,10PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C4614	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4615	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4616	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4617	2113944C45	CAP CER CHP 100.0PF 50V 5%
C4618	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4619	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4620	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4622	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C4623	2113951C30	CAP,FXD,6.8PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4624	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4625	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4626	2385170Y10	CAP AL LYTIC 47UF 25V 20% PB-FREE
C4627	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4628	2385170Y08	CAP AL LYTIC 330UF 25V 20% PB-FREE
C4629	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4630	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4632	2113944C02	CAP CER CHP 220.0PF 50V 5%
C4700	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4701	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4702	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4703	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4704	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4705	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4707	2113946K02	CAP CER CHP 0.10UF 16V
C4708	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4711	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4714	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX



Circuit Ref	Motorola Part No	Description
C4715	2113944A52	CAP CER CHP 1000.0 PF 50V 5%
C4716	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4717	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4718	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4719	2113951C33	CAP,FXD,9.1PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4800	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4801	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4802	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4803	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C4804	2113944A45	CAP CER CHP 270.0 PF 50V 5%
C4805	2113944A45	CAP CER CHP 270.0 PF 50V 5%
C4807	2113944C10	CAP CER CHP 1.5PF 50V +/- 0.25PF
C4808	2113944C25	CAP CER CHP 6.2PF 50V +/- 0.5PF
C4809	2113944C26	CAP CER CHP 6.8PF 50V +/- 0.5PF
C4811	2113944A45	CAP CER CHP 270.0 PF 50V 5%
CR4602	4815072H01	DIODE VARACTOR
CR4603	4815072H01	DIODE VARACTOR
CR4604	4815072H01	DIODE VARACTOR
CR4605	4815072H01	DIODE VARACTOR
E4000	2485410Y01	MIN CHIP FERRITE BEAD
E4100	2485449Y01	SURFACE MOUNT FERRITE BEAD W18

Circuit Ref	Motorola Part No	Description
E4300	2485410Y04	MIN CHIP FERRITE BEAD 330QS W18
E4301	2485410Y04	MIN CHIP FERRITE BEAD 330QS W18
E4302	2485410Y04	MIN CHIP FERRITE BEAD 330QS W18
E4400	2485410Y01	MIN CHIP FERRITE BEAD
E4500	2485410Y01	MIN CHIP FERRITE BEAD
E4501	2485410Y01	MIN CHIP FERRITE BEAD
E4600	2485410Y01	MIN CHIP FERRITE BEAD
E4700	2485410Y01	MIN CHIP FERRITE BEAD
L4500	2414032F34	IDCTR,WW,100NH,5%,400 MA,.46Ω,CER,40 Q,950 MHZ SRF,SM,PB-FR
L4600	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4601	2414032F50	IDCTR,WW,24NH,5%,500 MA,.24Ω,CER,45 Q,2GHZ SRF,SM,PB-FREE
L4602	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4603	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4604	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4605	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4606	2414032F28	IDCTR,WW,33NH,5%,500 MA,.27Ω,CER,40 Q,1.8GHZ SRF,SM,PB-FRE
L4607	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4608	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR

Circuit Ref	Motorola Part No	Description
L4609	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4611	2414032F27	IDCTR,FXD,27NH,5%,500 MA,.25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-
L4612	2414032F26	IDCTR,WW,22NH,5%,500 MA,.22Ω,CER,45 Q,2.2GHZ SRF,SM,PB-FRE
L4613	2414032F25	IDCTR,WW,18NH,5%,600 MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE
L4614	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4615	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4700	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560 MHZ SRF,SM,PB-FR
L4701	2416540H35	CHIP INDUCTOR
L4702	2414015B17	IDCTR,FXD,18NH,2%,600 MA,.2Ω,CER,50 Q,3.3GHZ SRF,SM,0805,PB
L4800	2414015B24	IDCTR,FXD,15NH,2%,600 MA,.17Ω,CER,50 Q,3.4GHZ SRF,SM,0805,P
L4801	2414015B17	IDCTR,FXD,18NH,2%,600 MA,.2Ω,CER,50 Q,3.3GHZ SRF,SM,0805,PB
L4802	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,CER,55 Q,2.5GHZ SRF,SM,0805,P
P4200	28009146002	HEADER 2 X 15 VERTICAL
P4800	0982492W01	BNC CONN PCB VERTICAL RECEIPT
Q4100	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB

Circuit Ref	Motorola Part No	Description
Q4300	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4301	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4302	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4303	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4304	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4503	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4600	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q4601	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q4602	4805218N63	RF TRANS SOT 323 Bfq67W
Q4603	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4604	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4605	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4606	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE
Q4700	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4701	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB

Circuit Ref	Motorola Part No	Description
Q4702	4813973A13	XSTR,GEN PURPOSE SMALL SIG,PNP,MMBT3906L,TO-236,4, PB-FREE
Q4800	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q4801	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4802	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
R4000	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4001	0613952Q86	CER CHIP RES 3600Ω 5 0402
R4002	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4003	0613952M42	CER CHIP RES 2670Ω 1% 0402
R4004	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4005	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4006	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4007	0613952N51	CER CHIP RES 33.2KΩ 1 0402
R4008	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4010	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4011	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4012	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4013	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4014	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4016	0613952K51	CER CHIP RES 33.2Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4017	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4018	0613952A73	CER CHIP RES 5.62Ω 1% 0603
R4100	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4101	0613952L18	CER CHIP RES 150Ω 1% 0402
R4102	0613952M42	CER CHIP RES 2670Ω 1% 0402
R4103	0613952M42	CER CHIP RES 2670Ω 1% 0402
R4104	0613952L66	CER CHIP RES 475Ω 1% 0402
R4105	0613952L66	CER CHIP RES 475Ω 1% 0402
R4106	0613952L39	CER CHIP RES 249Ω 1 0402
R4107	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4200	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4201	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4202	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4203	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4204	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4205	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4206	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4207	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4300	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4301	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω

Circuit Ref	Motorola Part No	Description
R4302	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4303	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4304	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4305	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4306	0613952L44	CER CHIP RES 280Ω 1 0402
R4307	0613952L89	CER CHIP RES 825Ω 1% 0402
R4308	0613952K01	CER CHIP RES 10.0Ω 1% 0402
R4310	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4311	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4312	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4313	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4314	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4315	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4316	0613952Q59	CER CHIP RES 270Ω 5 0402
R4317	0613952M36	CER CHIP RES 2320Ω 1 0402
R4318	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4319	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4320	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4321	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4322	0613952Q59	CER CHIP RES 270Ω 5 0402

Circuit Ref	Motorola Part No	Description
R4323	0613952Q64	CER CHIP RES 430Ω 5 0402
R4324	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4325	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4326	0613952L44	CER CHIP RES 280Ω 1 0402
R4327	0613952C51	CER CHIP RES 332Ω 1% 0603
R4328	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4329	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4330	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4331	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4400	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4401	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4402	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4403	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4404	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4405	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4406	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4407	0613952M01	CER CHIP RES 1000Ω 1% 0402
R4408	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4409	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4410	0613952N01	CER CHIP RES 10.0KΩ 1 0402

Circuit Ref	Motorola Part No	Description
R4411	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R4412	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R4413	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4414	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4415	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4416	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4417	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4418	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4419	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4420	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4421	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4422	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R4423	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R4424	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4425	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R4426	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R4427	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R4428	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R4430	0613952M66	CER CHIP RES 4750Ω 1% 0402
R4431	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω

Circuit Ref	Motorola Part No	Description
R4432	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4433	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4434	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4505	0613952L01	CER CHIP RES 100Ω 1% 0402
R4506	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4507	0613952L42	CER CHIP RES 267Ω 1% 0402
R4508	0613952K01	CER CHIP RES 10.0Ω 1% 0402
R4509	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4510	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4511	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4512	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4516	0613952C18	CER CHIP RES 150Ω 1% 0603
R4517	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4518	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4519	0613952C72	CER CHIP RES 549Ω 1 0603
R4520	0613952C70	CER CHIP RES 523Ω 1 0603
R4521	0613952B69	CER CHIP RES 51.1Ω 1% 0603
R4522	0613952C15	CER CHIP RES 140Ω 1% 0603
R4523	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4524	0613952N51	CER CHIP RES 33.2KΩ 1 0402

Circuit Ref	Motorola Part No	Description
R4525	0613952M89	CER CHIP RES 8250Ω 1% 0402
R4600	0613952B01	CER CHIP RES 10.0Ω 1% 0603
R4601	0613952B18	CER CHIP RES 15.0Ω 1% 0603
R4602	0613958C47	CER CHIP RES 301Ω 1% 0805
R4603	0613958C01	CER CHIP RES 100Ω 1% 0805
R4604	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4605	0613952D09	CER CHIP RES 1210Ω 1% 0603
R4606	0613952B18	CER CHIP RES 15.0Ω 1% 0603
R4607	0613952C34	CER CHIP RES 221Ω 1% 0603
R4608	0613952C34	CER CHIP RES 221Ω 1% 0603
R4609	0613952B01	CER CHIP RES 10.0Ω 1% 0603
R4610	0613952B18	CER CHIP RES 15.0Ω 1% 0603
R4611	0613958C47	CER CHIP RES 301Ω 1% 0805
R4612	0613958C01	CER CHIP RES 100Ω 1% 0805
R4613	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4614	0613952D09	CER CHIP RES 1210Ω 1% 0603
R4615	0613952B18	CER CHIP RES 15.0Ω 1% 0603
R4616	0613952C28	CER CHIP RES 191Ω 1% 0603
R4617	0613952C28	CER CHIP RES 191Ω 1% 0603
R4619	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω

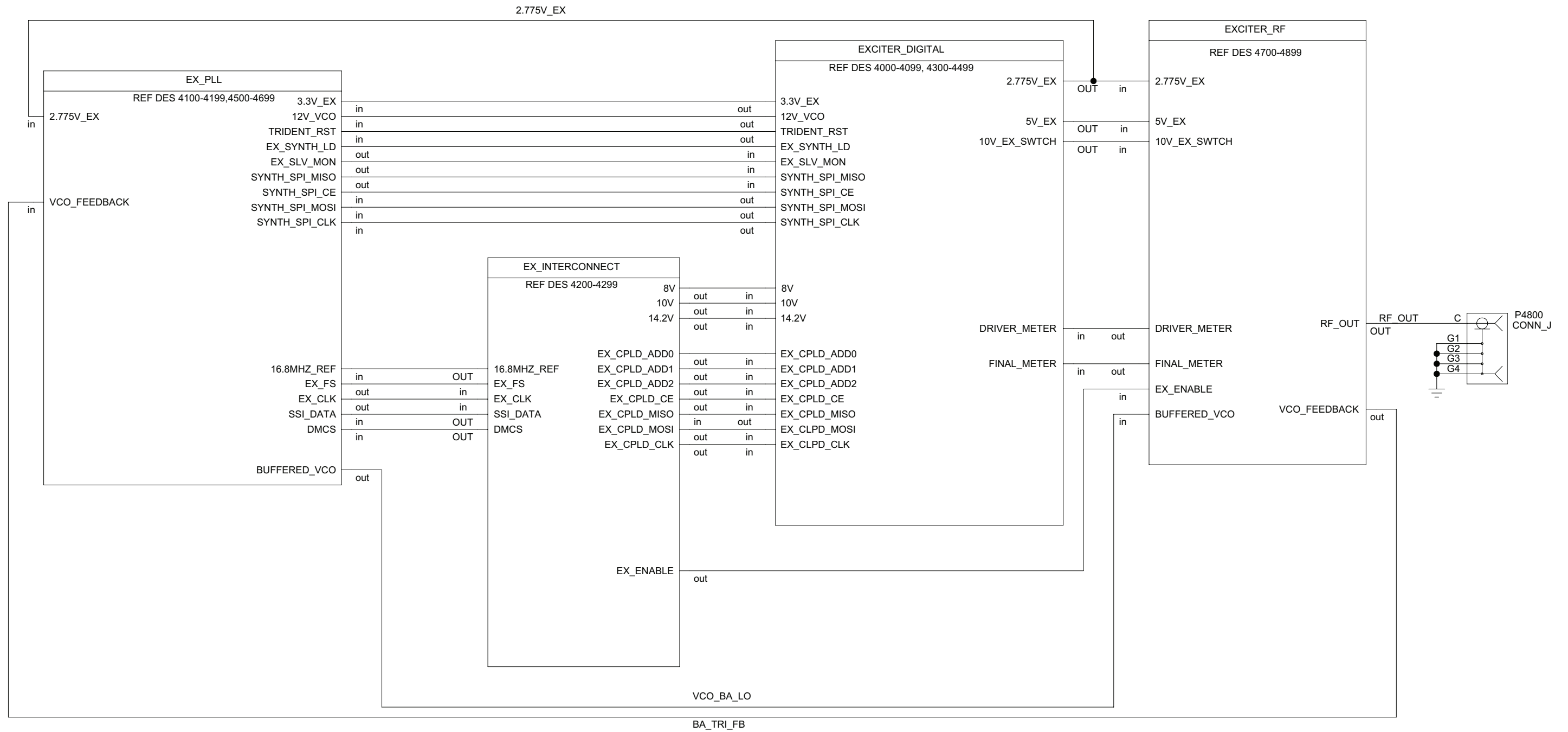
Circuit Ref	Motorola Part No	Description
R4621	0613952D51	CER CHIP RES 3320Ω 1% 0603
R4622	0613952D22	CER CHIP RES 1650Ω 1 0603
R4623	0613952C30	CER CHIP RES 200Ω 1% 0603
R4624	0613958C01	CER CHIP RES 100Ω 1% 0805
R4625	0613958C47	CER CHIP RES 301Ω 1% 0805
R4627	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4628	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4629	0613958B53	CER CHIP RES 34.8Ω 1% 0805
R4630	0613952L42	CER CHIP RES 267Ω 1% 0402
R4631	0613952K01	CER CHIP RES 10.0Ω 1% 0402
R4634	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4635	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4636	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4700	0613952A09	CER CHIP RES 1.21Ω 1
R4701	0613952A09	CER CHIP RES 1.21Ω 1
R4702	0613952C31	CER CHIP RES 205Ω 1% 0603
R4703	0613952C18	CER CHIP RES 150Ω 1% 0603
R4705	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4708	0613952L58	CER CHIP RES 392Ω 1% 0402
R4709	0613952K01	CER CHIP RES 10.0Ω 1% 0402
R4710	0613952L58	CER CHIP RES 392Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4712	0613952C12	CER CHIP RES 130Ω 1% 0603
R4713	0613952B63	CER CHIP RES 44.2Ω 1% 0603
R4714	0613952C12	CER CHIP RES 130Ω 1% 0603
R4715	0613952C09	CER CHIP RES 121Ω 1% 0603
R4716	0613952B47	CER CHIP RES 30.1Ω 1% 0603
R4717	0613952C09	CER CHIP RES 121Ω 1% 0603
R4720	0613952B34	CER CHIP RES 22.1Ω 1% 0603
R4721	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4723	0613952E26	CER CHIP RES 18.2KΩ 1 0603
R4724	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4725	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4727	0613952E01	CER CHIP RES 10.0KΩ 1% 0603
R4728	0613952E51	CER CHIP RES 33.2KΩ 1 0603
R4729	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4730	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4731	0613959Y47	CER CHIP RESΩ 5% 2512
R4800	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4801	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R4803	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4804	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω

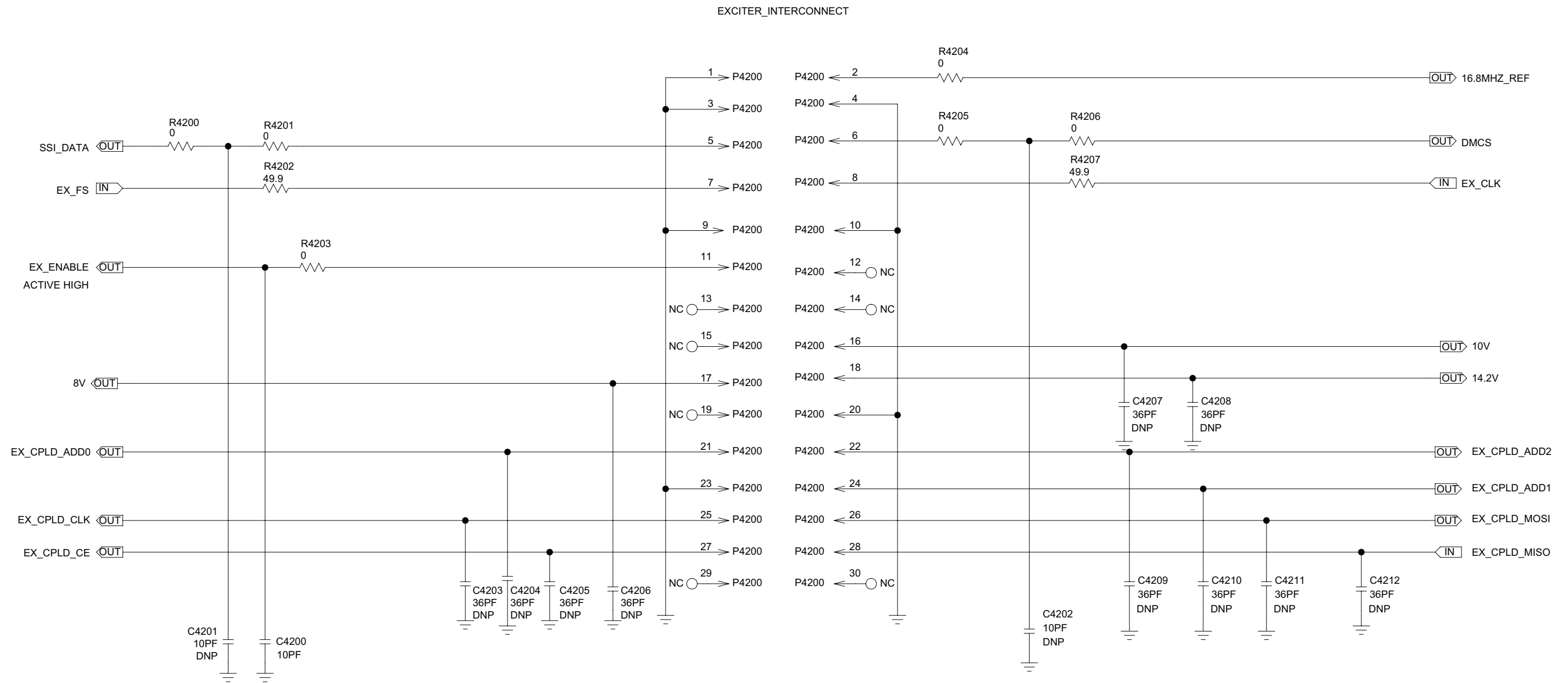
Circuit Ref	Motorola Part No	Description
R4805	0613952G67	CER CHIP RES 0.0 +/- 0.050Ω
R4806	0613958C01	CER CHIP RES 100Ω 1% 0805
R4807	0613958C01	CER CHIP RES 100Ω 1% 0805
R4809	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R4810	0613952N01	CER CHIP RES 10.0KΩ 1 0402
SH4600	1583004X05	SHIELD, VCO
SH4601	2685668Y01	SHIELD, XCVR RX IF FILTER
U4000	5184998Y01	IC ADC 10BIT 8CHNNL LOPWR 149
U4300	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1.2V TO 37V,500MA,SM,DPAK,PB-FREE
U4301	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1.2V TO 37V,500MA,SM,DPAK,PB-FREE
U4302	5114014A26	IC,LNR V REGLTR,ADJUSTABLE,1.2V TO 37V,500MA,SM,DPAK,PB-FREE
U4303	5114014A20	IC,LNR V REGLTR,ADJUSTABLE,1.35V TO 10V,800MA,SM,SO-8,PB-FREE
U4400	5185130Y01	CPLD EPM3032AT144 W18 CMLNT
U4401	5184943Y01	64KB SERIAL EEPROM 8192X8
U4402	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U4500	5164015H28	IC,TRIDENT,INTEG SYNTH,RX/TX BSBND

Circuit Ref	Motorola Part No	Description
U4501	5114019M05	IC,INVTR,SCHMITT,74LVX 14,6PER PKG,SM,TSSOP14,PB-FREE
U4502	5185183Y01	HI PERF DUAL CMOS OPAMP W18
U4700	5185106Y01	INGAP HBT GAIN BLOCK W18
U4701	5171183H01	GAIN BLOCK MMIC AMPLIFIER
U4800	5185145Y01	SPDT NON-REFLECTIVE SWITCH W18
Y4600	9171848H07	TABBED CERAMIC RESONATOR
Y4601	9171848H08	TABBED CERAMIC RESONATOR

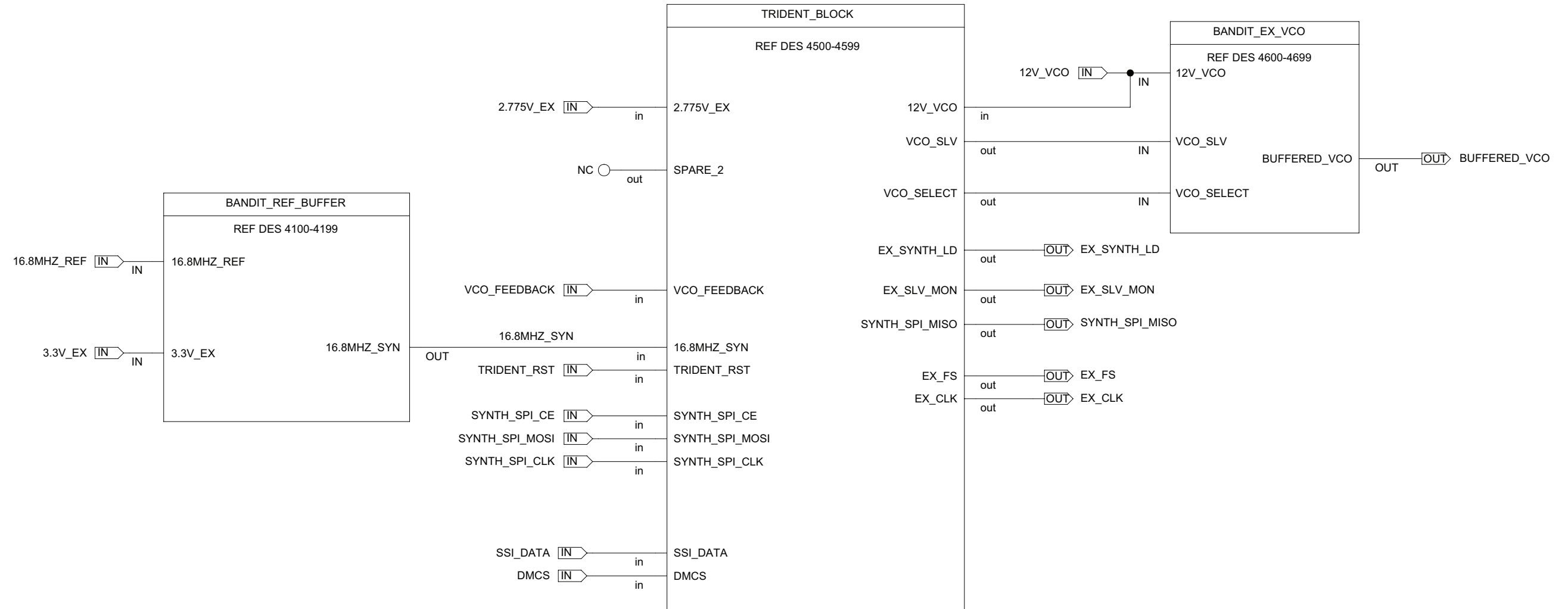
7.2 Exciter Schematics (800/900 MHz)

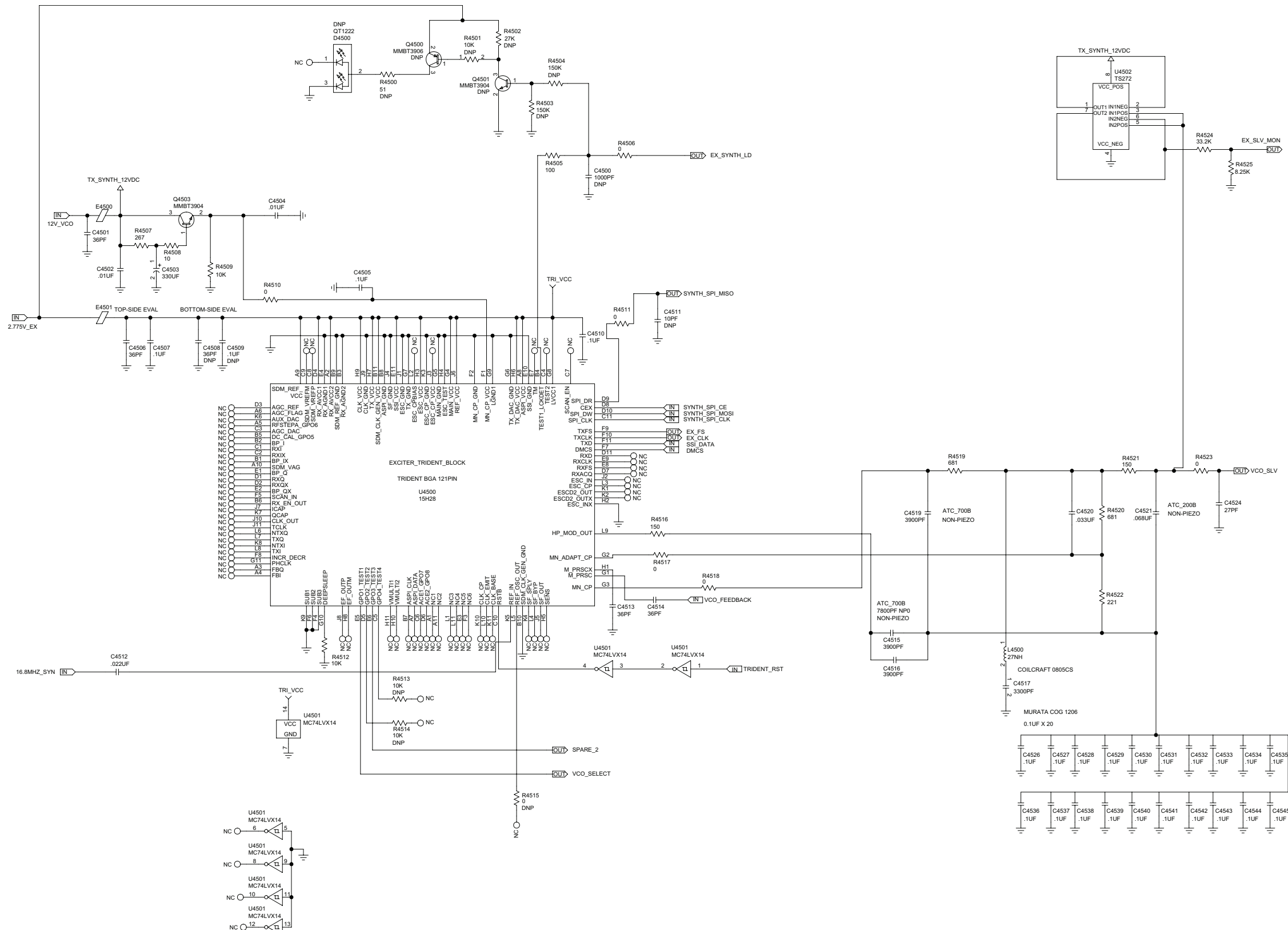


Exciter – Main Schematic Diagram (Kit No. CTF1093)



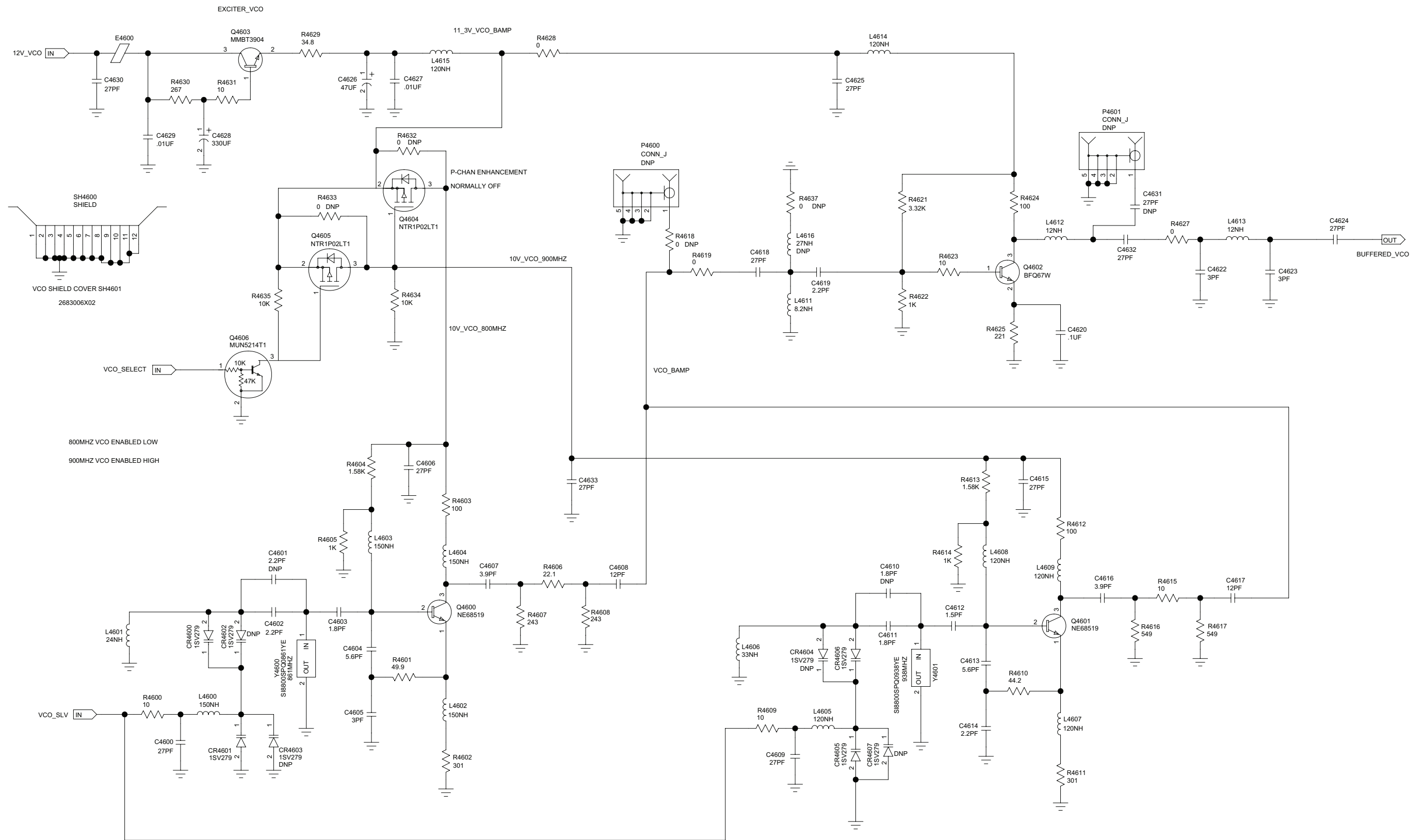
**Exciter – Interconnect Schematic Diagram (Kit No.CTF1093)**



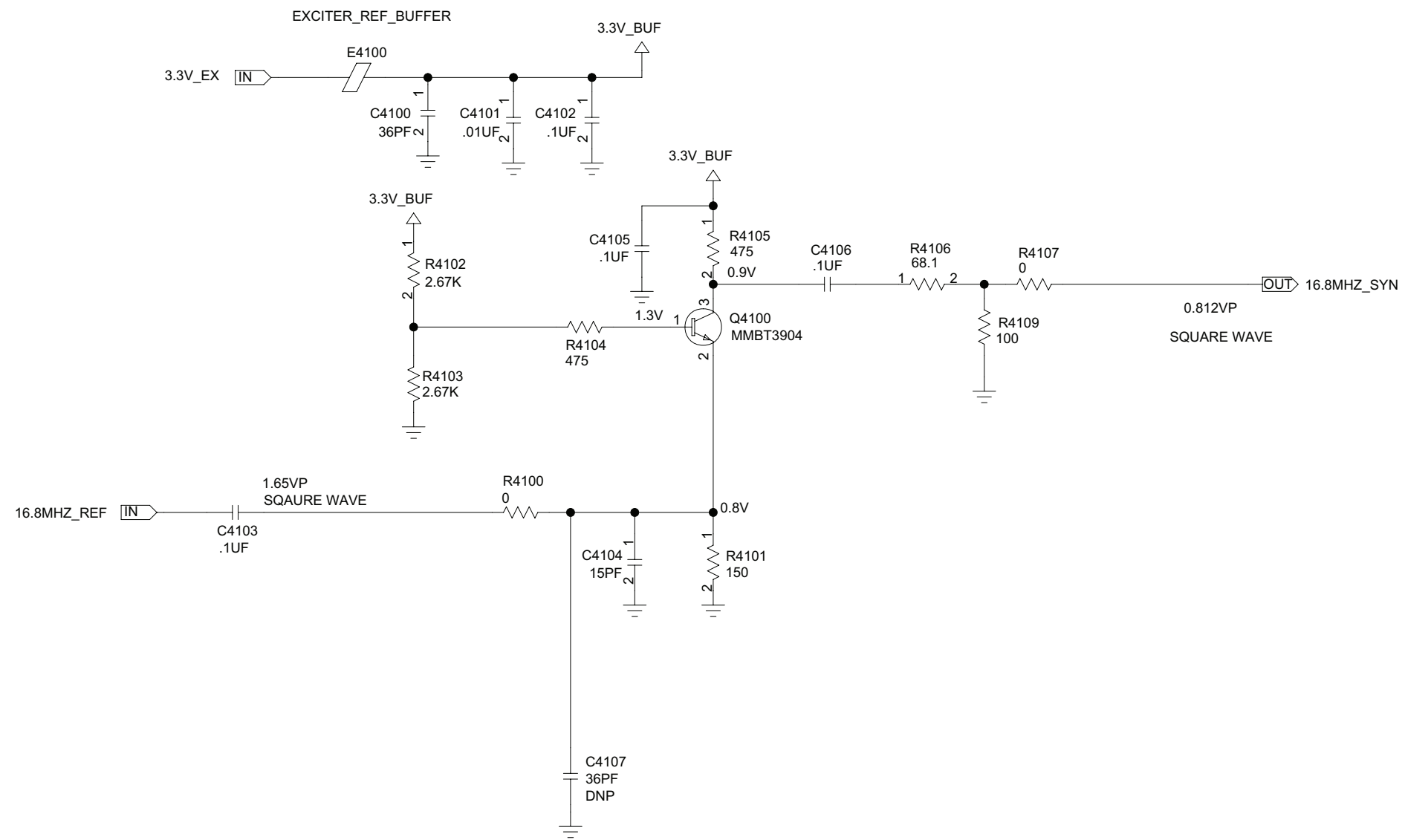


Exciter – Trident Block Schematic Diagram (Kit No. CTF1093)

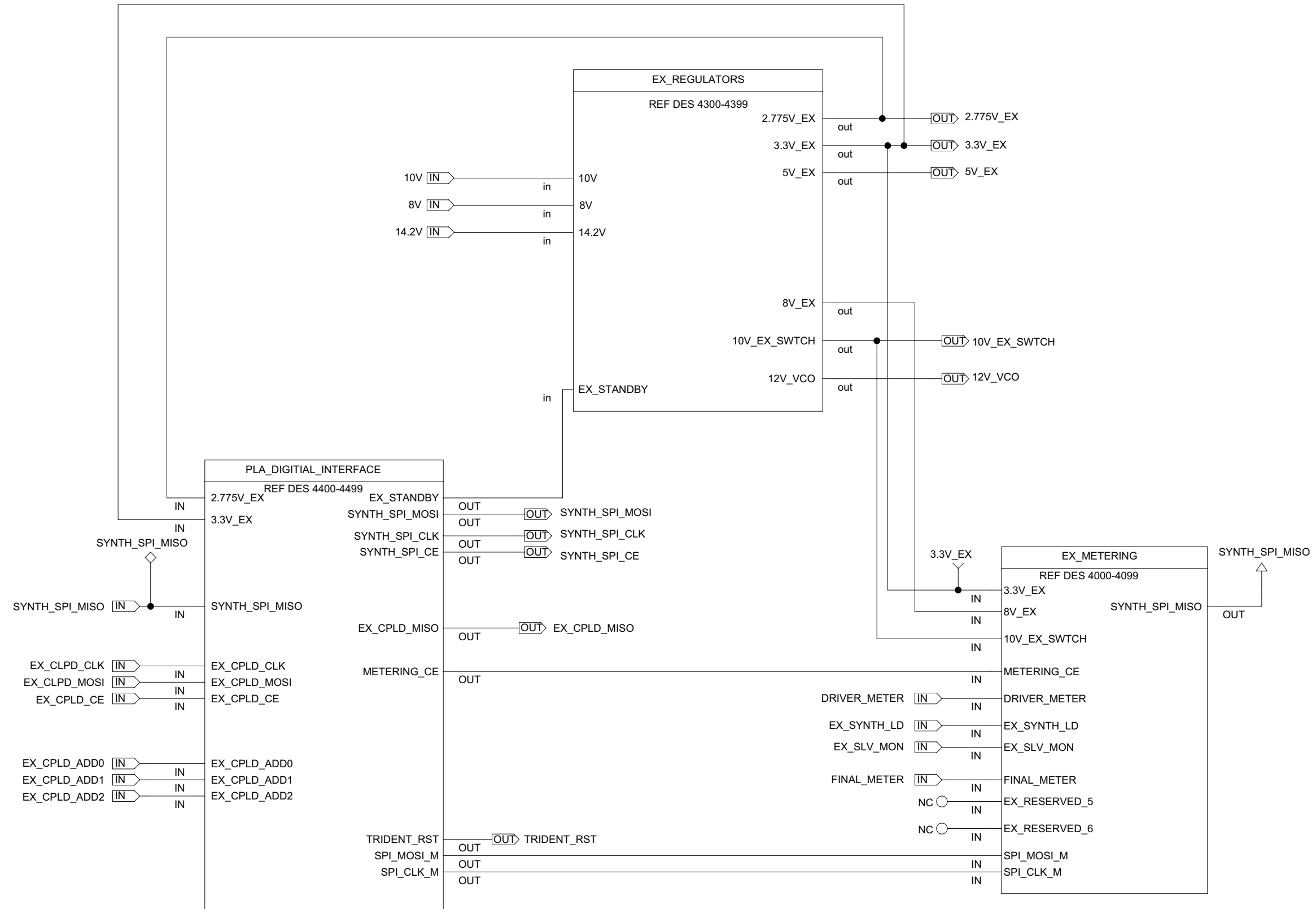




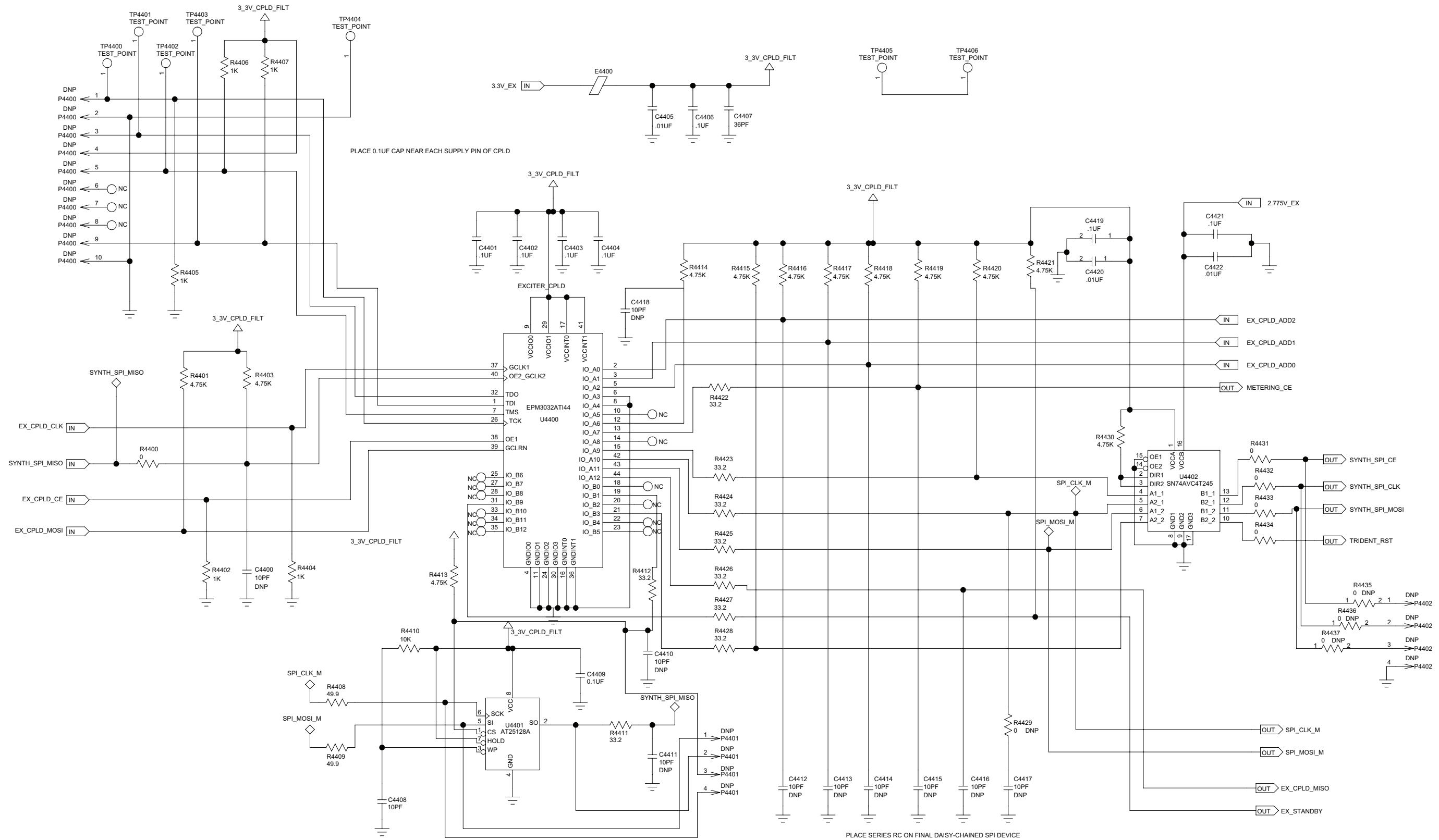
Exciter – VCOSchematic Diagram (Kit No. CTF1093)



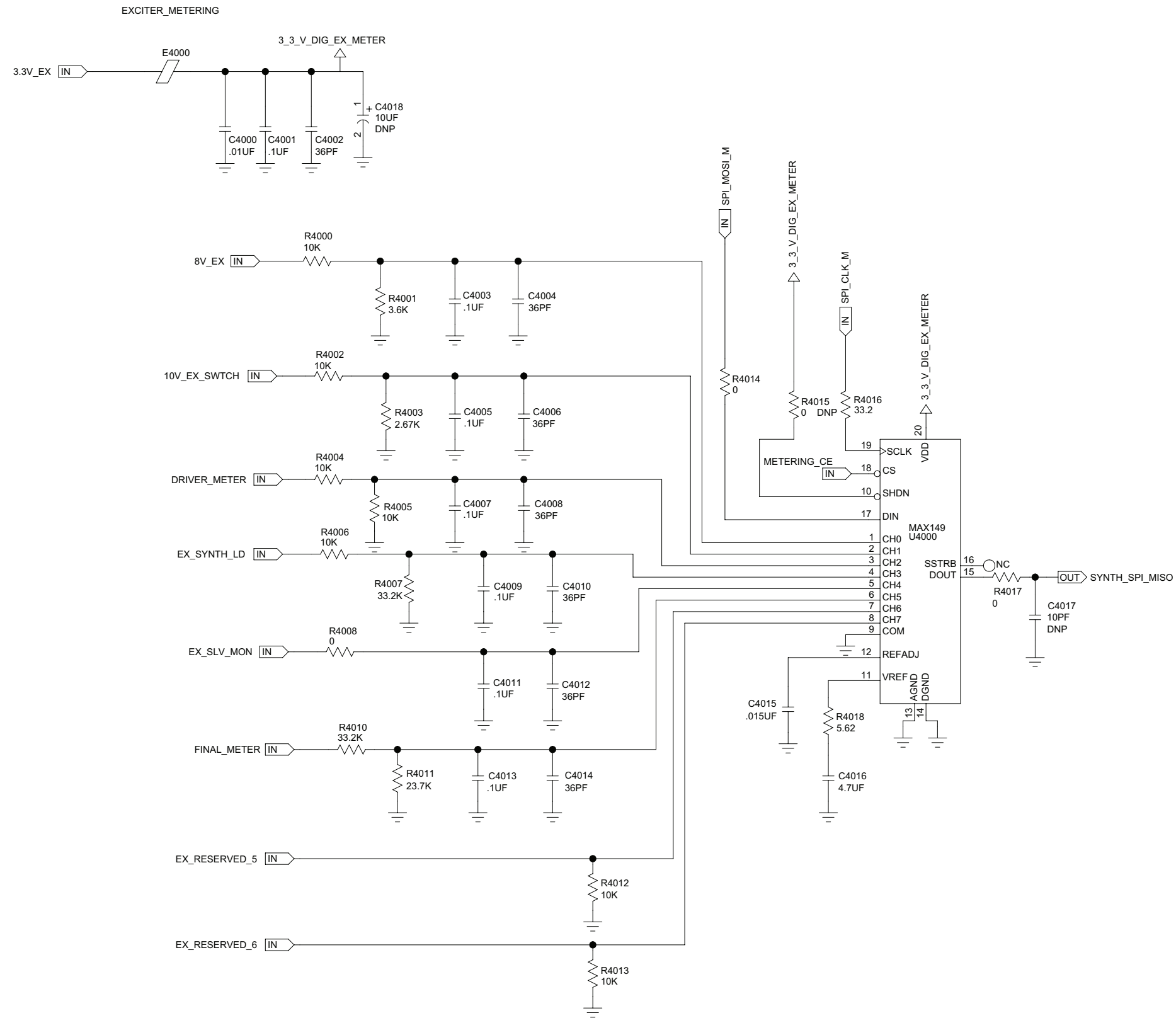
Exciter – 16.8 MHz Ref Buffer Schematic Diagram (Kit No. CTF1093)



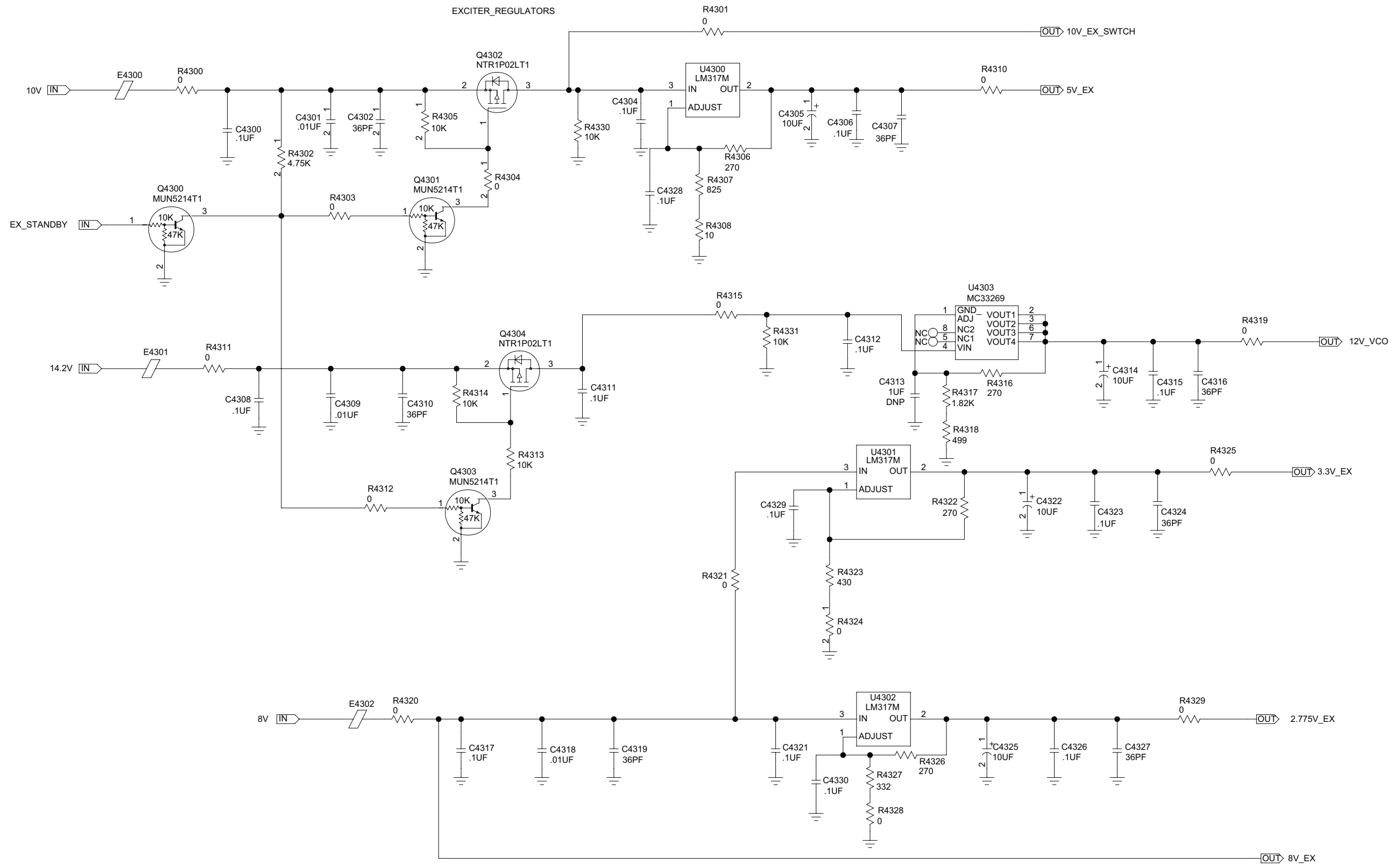
Exciter – Digital Section Schematic Diagram (Kit No. CTF1093)



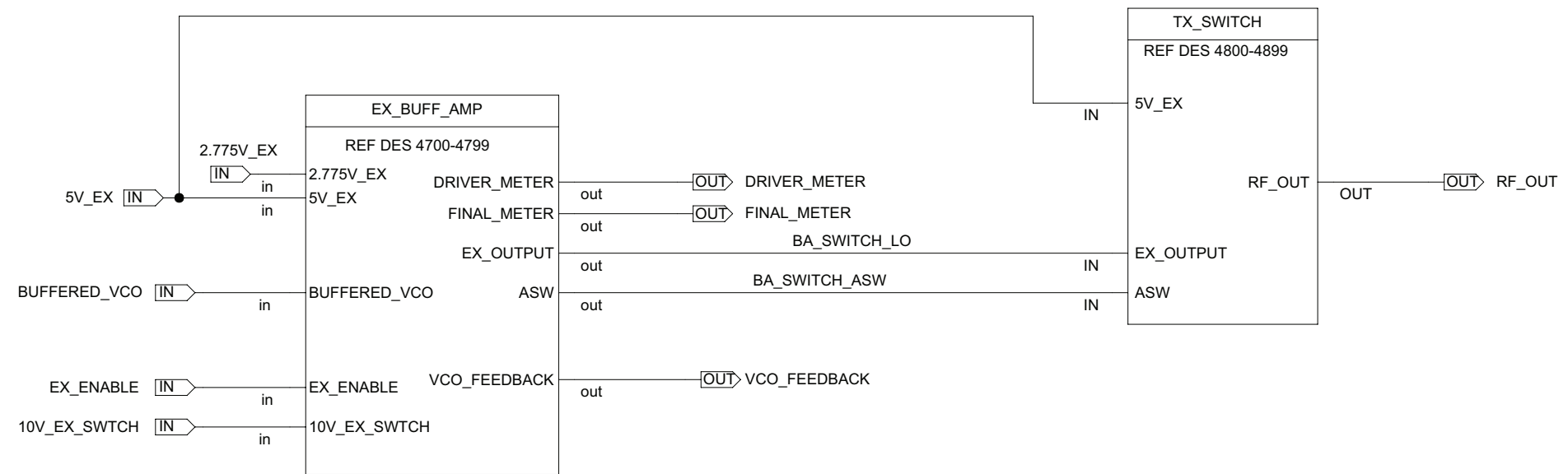
Exciter – CPLD Schematic Diagram (Kit No. CTF1093)



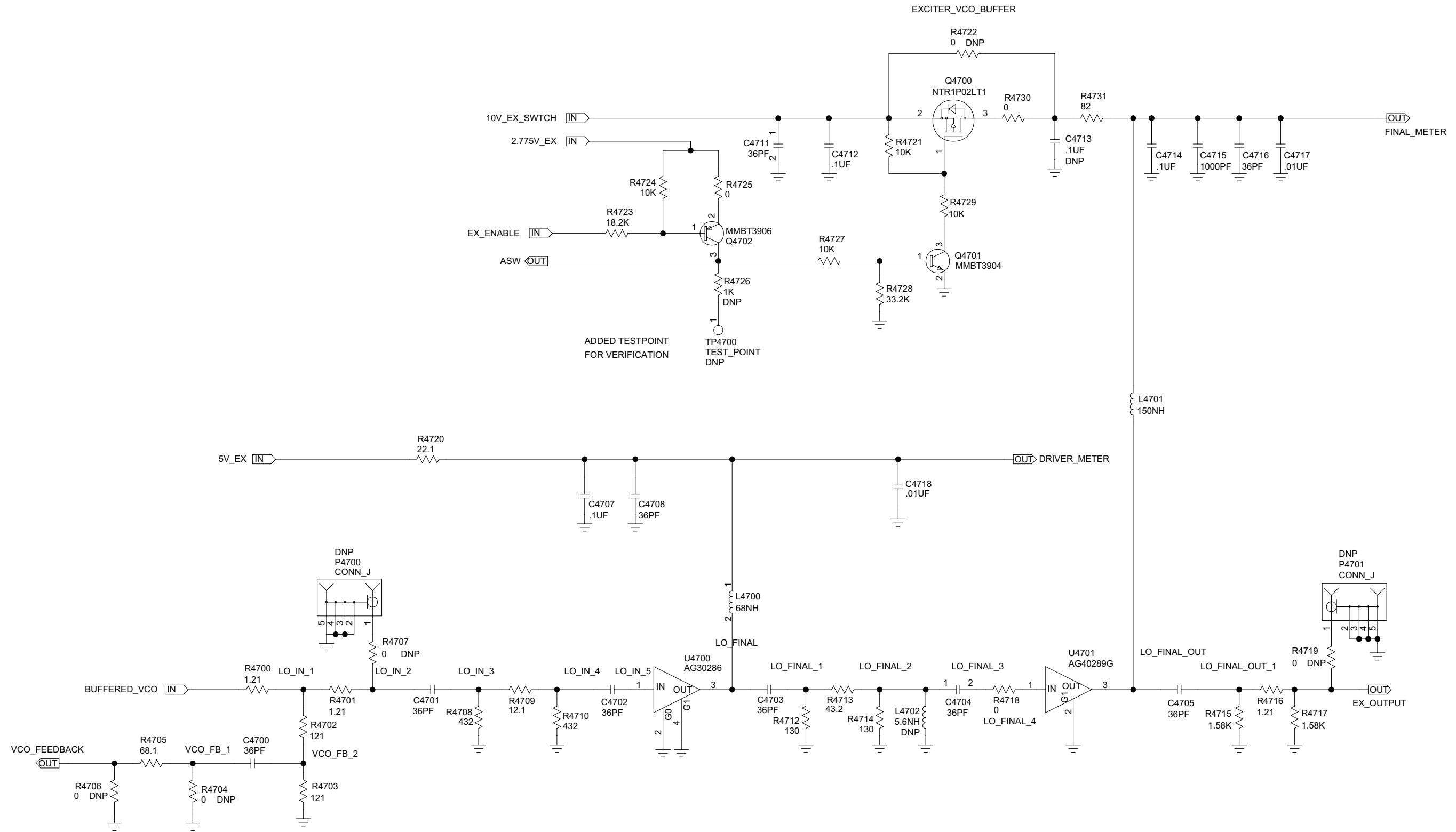
Exciter – Metering Schematic Diagram (Kit No. CTF1093)



Exciter – Regulators Schematic Diagram (Kit No. CTF1093)

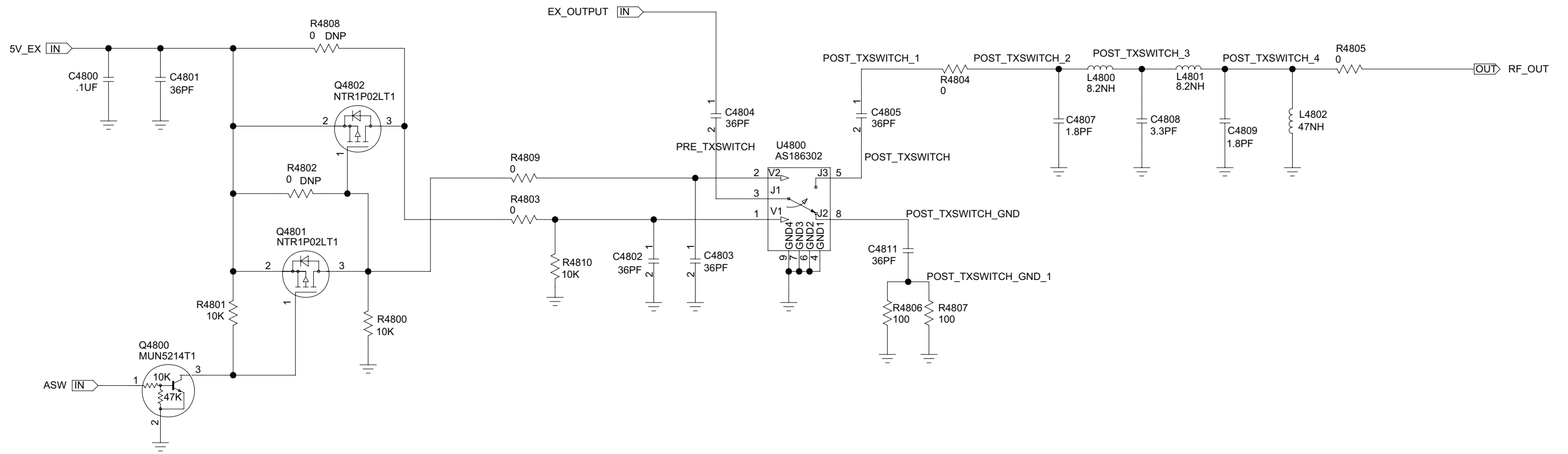


**Exciter – RF Section Schematic Diagram (Kit No. CTF1093)**



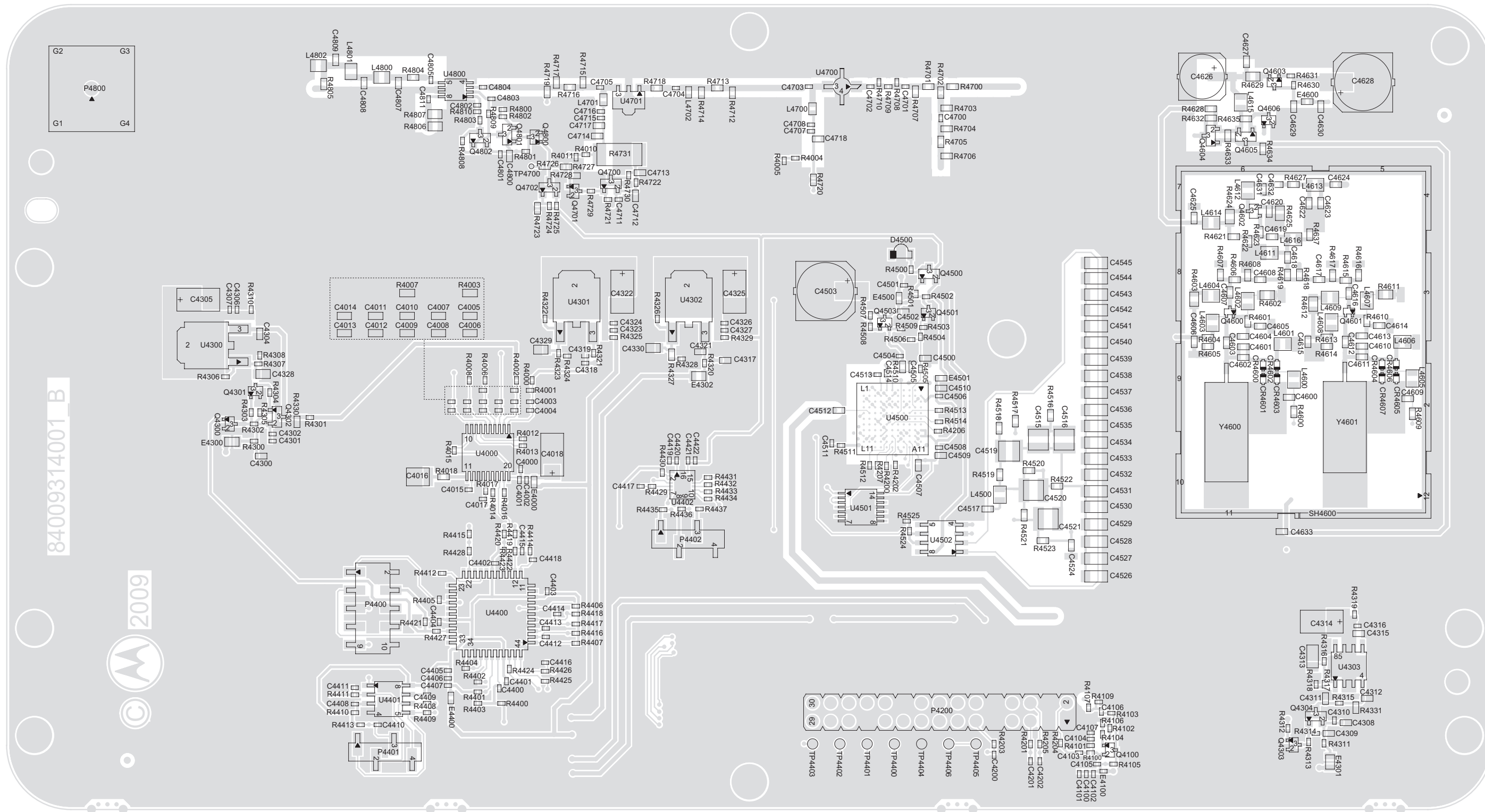
Exciter – Buffer Amplifier Schematic Diagram (Kit No. CTF1093)



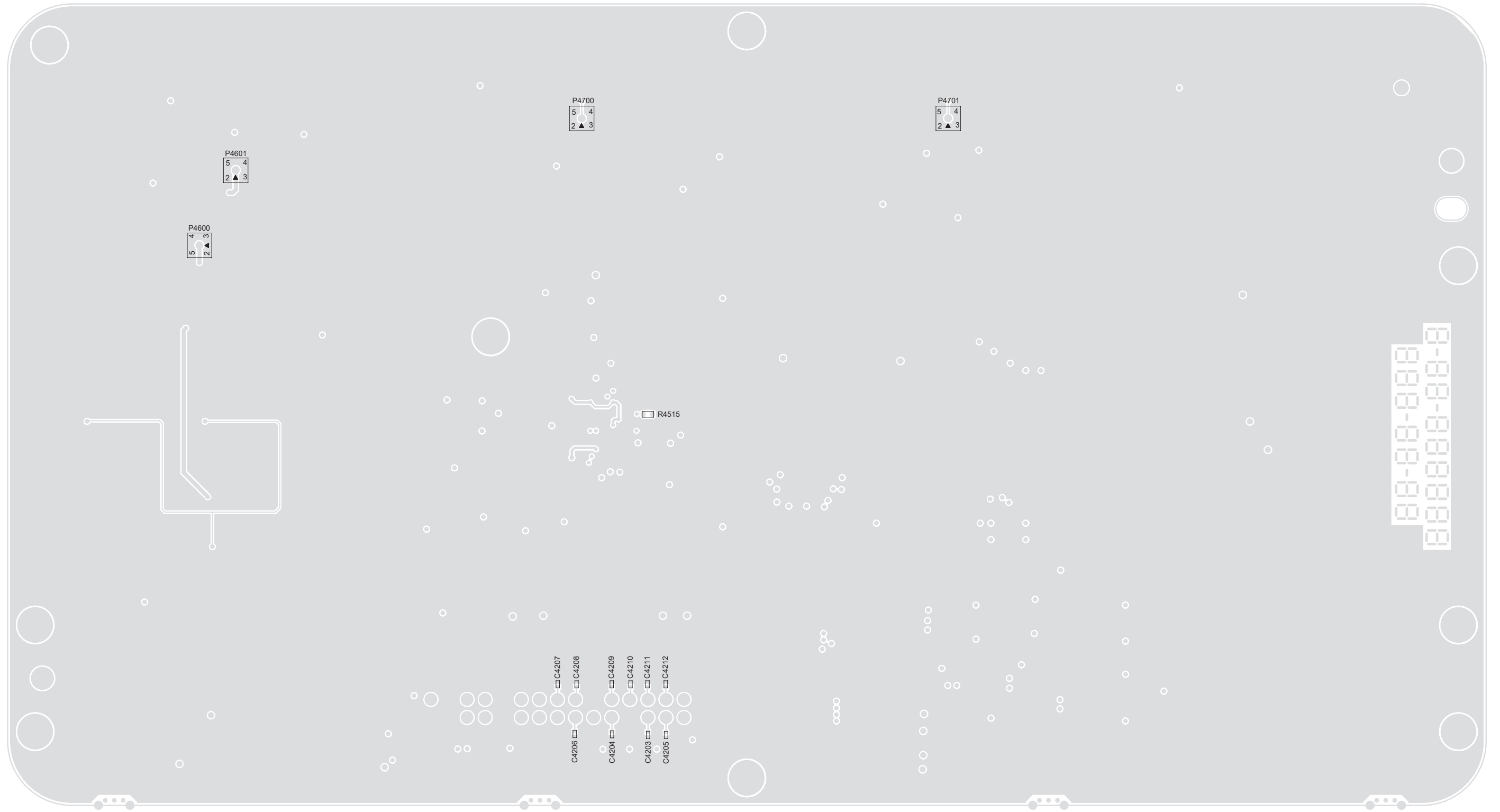


Exciter – Switch Schematic Diagram (Kit No. CTF1093)

### 7.3 Exciter PCB (800/900 MHz)



Exciter Board PCB – Top View (PCB No. 84009314001)



**Exciter Board PCB – Bottom View (PCB No. 84009314001)**

### 7.4 Exciter Parts List (800/900 MHZ) – CTF1093

Circuit Ref	Motorola Part No	Description
C4000	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4001	2113946K02	CAP CER CHP 0.10UF 16V
C4002	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4003	2113946K02	CAP CER CHP 0.10UF 16V
C4004	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4005	2113946K02	CAP CER CHP 0.10UF 16V
C4006	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4007	2113946K02	CAP CER CHP 0.10UF 16V
C4008	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4009	2113946K02	CAP CER CHP 0.10UF 16V
C4010	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4011	2113946K02	CAP CER CHP 0.10UF 16V
C4012	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4013	2113946K02	CAP CER CHP 0.10UF 16V

Circuit Ref	Motorola Part No	Description
C4014	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4015	2113946A01	CAP CER CHP 0.015UF 16V 10%
C4016	2113946J02	CAP CER CHP 4.7UF 16V 10%
C4100	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4101	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4102	2113946K02	CAP CER CHP 0.10UF 16V
C4103	2113946K02	CAP CER CHP 0.10UF 16V
C4104	2113944A27	CAP CER CHP 15.0PF 50V 5%
C4105	2113946K02	CAP CER CHP 0.10UF 16V
C4106	2113946K02	CAP CER CHP 0.10UF 16V
C4200	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C4300	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4301	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4302	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4304	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4305	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA

Circuit Ref	Motorola Part No	Description
C4306	2113946K02	CAP CER CHP 0.10UF 16V
C4307	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4308	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4309	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4310	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4311	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4312	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4314	2313960E32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,262MA
C4315	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4316	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4317	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4318	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4319	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4321	2113945D04	CAP CER CHP 100,000PF 25V 10%

Circuit Ref	Motorola Part No	Description
C4322	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4323	2113946K02	CAP CER CHP 0.10UF 16V
C4324	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4325	2313960F01	CAP,FXD,10UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,247MA
C4326	2113946K02	CAP CER CHP 0.10UF 16V
C4327	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4328	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C4329	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C4330	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C4401	2113946K02	CAP CER CHP 0.10UF 16V
C4402	2113946K02	CAP CER CHP 0.10UF 16V
C4403	2113946K02	CAP CER CHP 0.10UF 16V
C4404	2113946K02	CAP CER CHP 0.10UF 16V
C4405	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4406	2113946K02	CAP CER CHP 0.10UF 16V

Circuit Ref	Motorola Part No	Description
C4407	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4408	2113944A25	CAP CER CHP 10.0PF 50V +/- 0.5PF
C4409	2113946B04	CAP CER CHP 0.10UF 10V 10%
C4419	2113946K02	CAP CER CHP 0.10UF 16V
C4420	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4421	2113946K02	CAP CER CHP 0.10UF 16V
C4422	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4501	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4502	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4503	2385170Y08	CAP AL LYTIC 330UF 25V 20% PB-FREE
C4504	2113945B02	CAP CER CHP 10,000PF 25V 10%
C4505	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4506	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4507	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4510	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4512	2113945C04	CAP CER CHP 22,000PF 50V 10%
C4513	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB

Circuit Ref	Motorola Part No	Description
C4514	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4515	2185400Y96	CAP,NP0,3900PF,5%,1210
C4516	2185400Y96	CAP,NP0,3900PF,5%,1210
C4517	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4519	2185400Y96	CAP,NP0,3900PF,5%,1210
C4520	21012012008	CHIP CAPACITOR - ATC200B - 33000PF
C4521	21012012013	CHIP CAPACITOR - ATC200B - 68000PF
C4524	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4526	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4527	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4528	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4529	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4530	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4531	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4532	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4533	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4534	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4535	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4536	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4537	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF

Circuit Ref	Motorola Part No	Description
C4538	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4539	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4540	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4541	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4542	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4543	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4544	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4545	21012016001	CHIP CAPACITOR -1206 C0G -0.1UF
C4600	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4602	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4603	2113951C16	CAP,FXD,1.8PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4604	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4605	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C4606	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4607	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4608	2113944C31	CAP CER CHP 12.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C4609	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4611	2113951C16	CAP,FXD,1.8PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4612	2113951C14	CAP,FXD,1.5PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4613	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4614	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4615	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4616	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4617	2113944C31	CAP CER CHP 12.0PF 50V 5%
C4618	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4619	2113951C18	CAP,FXD,2.2PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C4620	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4622	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C4623	2113951C21	CAP,FXD,3PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C4624	2113944C35	CAP CER CHP 27.0PF 50V 5%

Circuit Ref	Motorola Part No	Description
C4625	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4626	2385170Y10	CAP AL LYTIC 47UF 25V 20% PB-FREE
C4627	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4628	2385170Y08	CAP AL LYTIC 330UF 25V 20% PB-FREE
C4629	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4630	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4632	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4633	2113944C35	CAP CER CHP 27.0PF 50V 5%
C4700	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4701	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4702	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4703	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4704	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4705	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4707	2113946K02	CAP CER CHP 0.10UF 16V

Circuit Ref	Motorola Part No	Description
C4708	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4711	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4712	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4714	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4715	2113944A52	CAP CER CHP 1000.0 PF 50V 5%
C4716	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4717	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4718	2113945C02	CAP CER CHP 10,000PF 50V 10%
C4800	2113945D04	CAP CER CHP 100,000PF 25V 10%
C4801	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4802	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4803	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4804	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB

Circuit Ref	Motorola Part No	Description
C4805	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
C4807	2113944C12	CAP CER CHP 1.8PF 50V +/- 0.25PF
C4808	2113944C18	CAP CER CHP 3.3PF 50V +/- 0.25PF
C4809	2113944C12	CAP CER CHP 1.8PF 50V +/- 0.25PF
C4811	2113944A83	CAP,FXD,36PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,PB
CR4600	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/ SC-79
CR4601	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/ SC-79
CR4605	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/ SC-79
CR4606	4805656W87	DIODE,VCTR, @ 15V,1SV279,,SOD-523/ SC-79
E4000	2485410Y01	MIN CHIP FERRITE BEAD
E4100	2485449Y01	SURFACE MOUNT FER- RITE BEAD W18
E4300	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E4301	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E4302	2485410Y04	MIN CHIP FERRITE BEAD 330 Ω W18
E4400	2485410Y01	MIN CHIP FERRITE BEAD
E4500	2462586G01	INDUCTOR CHIP FER- RITE BEADS
E4501	2485410Y01	MIN CHIP FERRITE BEAD
E4600	2462586G01	INDUCTOR CHIP FER- RITE BEADS

Circuit Ref	Motorola Part No	Description
L4500	2414032F27	IDCTR,FXD,27NH,5%,500 MA,.25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-
L4600	2414032F36	IDCTR,WW,150NH,5%,400 MA,.56Ω,CER,35 Q,780 MHZ SRF,SM,PB-FR
L4601	2414032F50	IDCTR,WW,24NH,5%,500 MA,.24Ω,CER,45 Q,2GHZ SRF,SM,PB-FREE
L4602	2414032F36	IDCTR,WW,150NH,5%,400 MA,.56Ω,CER,35 Q,780 MHZ SRF,SM,PB-FR
L4603	2414032F36	IDCTR,WW,150NH,5%,400 MA,.56Ω,CER,35 Q,780 MHZ SRF,SM,PB-FR
L4604	2414032F36	IDCTR,WW,150NH,5%,400 MA,.56Ω,CER,35 Q,780 MHZ SRF,SM,PB-FR
L4605	2414032F35	IDCTR,WW,120NH,5%,400 MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L4606	2414032F28	IDCTR,WW,33NH,5%,500 MA,.27Ω,CER,40 Q,1.8GHZ SRF,SM,PB-FRE
L4607	2414032F35	IDCTR,WW,120NH,5%,400 MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L4608	2414032F35	IDCTR,WW,120NH,5%,400 MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L4609	2414032F35	IDCTR,WW,120NH,5%,400 MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L4611	2414032F22	IDCTR,WW,8.2NH,5%,600 MA,.12Ω,CER,50 Q,3GHZ SRF,SM,PB-FREE
L4612	2414032F23	IDCTR,WW,12NH,5%,600 MA,.15Ω,CER,45 Q,2.75GHZ SRF,SM,PB-FR
L4613	2414032F23	IDCTR,WW,12NH,5%,600 MA,.15Ω,CER,45 Q,2.75GHZ SRF,SM,PB-FR

Circuit Ref	Motorola Part No	Description
L4614	2414032F35	IDCTR,WW,120NH,5%,400 MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L4615	2414032F35	IDCTR,WW,120NH,5%,400 MA,.51Ω,CER,35 Q,860 MHZ SRF,SM,PB-FR
L4700	2416540H29	CHIP INDUCTOR
L4701	2416540H35	CHIP INDUCTOR
L4800	2414015B25	IDCTR,FXD,8.2NH,2%,600 MA,.12Ω,CER,50 Q,4.7GHZ SRF,SM,0805
L4801	2414015B25	IDCTR,FXD,8.2NH,2%,600 MA,.12Ω,CER,50 Q,4.7GHZ SRF,SM,0805
L4802	2414015B12	IDCTR,FXD,47NH,2%,500 MA,.34Ω,CER,40 Q,1.3GHZ SRF,SM,0805,P
P4200	28009146002	HEADER 2 X 15 VERTICAL
P4800	0982492W01	BNC CONN PCB VERTICAL RECEPT
PWB	84009314001	800/900 MHZ EXCITER BOARD
Q4100	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4300	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q4301	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q4302	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4303	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q4304	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE

Circuit Ref	Motorola Part No	Description
Q4503	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4600	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q4601	4885061Y01	XSTR NPN 6V 30UA 12GHZ PB-FREE
Q4602	4805218N63	RF TRANS SOT 323 BFG67W
Q4603	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4604	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4605	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4606	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q4700	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4701	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300 MHZ,PB
Q4702	4813973A13	XSTR,GEN PURPOSE SMALL SIG,PNP,MMBT3906L,TO-236,4, PB-FREE
Q4800	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA ,PB-FREE
Q4801	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
Q4802	4885065Y01	POWER MOSFET 1.3A, 20V PB-FREE
R4000	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4001	0613952Q86	CER CHIP RES 3600 Ω 5 0402

Circuit Ref	Motorola Part No	Description
R4002	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4003	0613952M42	CER CHIP RES 2670 Ω 1% 0402
R4004	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4005	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4006	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4007	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R4008	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4010	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R4011	0613952N37	CER CHIP RES 23.7K Ω 1 0402
R4012	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4013	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4014	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4016	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4017	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4018	0613952A73	CER CHIP RES 5.62 Ω 1% 0603
R4100	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4101	0613952L18	CER CHIP RES 150 Ω 1% 0402
R4102	0613952M42	CER CHIP RES 2670 Ω 1% 0402
R4103	0613952M42	CER CHIP RES 2670 Ω 1% 0402
R4104	0613952L66	CER CHIP RES 475 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4105	0613952L66	CER CHIP RES 475 Ω 1% 0402
R4106	0613952K81	CER CHIP RES 68.1 Ω 1% 0402
R4107	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4109	0613952L01	CER CHIP RES 100 Ω 1% 0402
R4200	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4201	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4202	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R4203	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4204	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4205	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4206	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4207	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R4300	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4301	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4302	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4303	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4304	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4305	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4306	0613952Q59	CER CHIP RES 270 Ω 5 0402
R4307	0613952L89	CER CHIP RES 825 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4308	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R4310	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4311	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4312	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4313	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4314	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4315	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4316	0613952Q59	CER CHIP RES 270 Ω 5 0402
R4317	0613952M26	CER CHIP RES 1820 Ω 1% 0402
R4318	0613952L68	CER CHIP RES 499 Ω 1 0402
R4319	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4320	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4321	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4322	0613952Q59	CER CHIP RES 270 Ω 5 0402
R4323	0613952Q64	CER CHIP RES 430 Ω 5 0402
R4324	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4325	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4326	0613952Q59	CER CHIP RES 270 Ω 5 0402
R4327	0613952C51	CER CHIP RES 332 Ω 1% 0603
R4328	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R4329	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4330	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4331	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4400	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4401	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4402	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R4403	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4404	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R4405	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R4406	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R4407	0613952M01	CER CHIP RES 1000 Ω 1% 0402
R4408	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R4409	0613952K68	CER CHIP RES 49.9 Ω 1% 0402
R4410	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4411	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4412	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4413	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4414	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4415	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4416	0613952M66	CER CHIP RES 4750 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4417	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4418	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4419	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4420	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4421	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4422	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4423	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4424	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4425	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4426	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4427	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4428	0613952K51	CER CHIP RES 33.2 Ω 1% 0402
R4430	0613952M66	CER CHIP RES 4750 Ω 1% 0402
R4431	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4432	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4433	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4434	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4505	0613952L01	CER CHIP RES 100 Ω 1% 0402
R4506	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4507	0613952L42	CER CHIP RES 267 Ω 1% 0402

Circuit Ref	Motorola Part No	Description
R4508	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R4509	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4510	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4511	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4512	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4516	0613952C18	CER CHIP RES 150 Ω 1% 0603
R4517	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4518	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4519	0613952C81	CER CHIP RES 681 Ω 1% 0603
R4520	0613952C81	CER CHIP RES 681 Ω 1% 0603
R4521	0613952C18	CER CHIP RES 150 Ω 1% 0603
R4522	0613952C34	CER CHIP RES 221 Ω 1% 0603
R4523	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4524	0613952N51	CER CHIP RES 33.2K Ω 1 0402
R4525	0613952M89	CER CHIP RES 8250 Ω 1% 0402
R4600	0613952B01	CER CHIP RES 10.0 Ω 1% 0603
R4601	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R4602	0613958C47	CER CHIP RES 301 Ω 1% 0805
R4603	0613958C01	CER CHIP RES 100 Ω 1% 0805
R4604	0613952D20	CER CHIP RES 1580 Ω 1 0603



Circuit Ref	Motorola Part No	Description
R4605	0613952D01	CER CHIP RES 1000 Ω 1% 0603
R4606	0613952B34	CER CHIP RES 22.1 Ω 1% 0603
R4607	0613952C38	CER CHIP RES 243 Ω 1% 0603
R4608	0613952C38	CER CHIP RES 243 Ω 1% 0603
R4609	0613952B01	CER CHIP RES 10.0 Ω 1% 0603
R4610	0613952B63	CER CHIP RES 44.2 Ω 1% 0603
R4611	0613958C47	CER CHIP RES 301 Ω 1% 0805
R4612	0613958C01	CER CHIP RES 100 Ω 1% 0805
R4613	0613952D20	CER CHIP RES 1580 Ω 1 0603
R4614	0613952D01	CER CHIP RES 1000 Ω 1% 0603
R4615	0613952B01	CER CHIP RES 10.0 Ω 1% 0603
R4616	0613952C72	CER CHIP RES 549 Ω 1 0603
R4617	0613952C72	CER CHIP RES 549 Ω 1 0603
R4619	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4621	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R4622	0613952D01	CER CHIP RES 1000 Ω 1% 0603
R4623	0613952B01	CER CHIP RES 10.0 Ω 1% 0603
R4624	0613958C01	CER CHIP RES 100 Ω 1% 0805
R4625	0613958C34	CER CHIP RES 221 Ω 1% 0805
R4627	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R4628	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4629	0613958B53	CER CHIP RES 34.8 Ω 1% 0805
R4630	0613952L42	CER CHIP RES 267 Ω 1% 0402
R4631	0613952K01	CER CHIP RES 10.0 Ω 1% 0402
R4634	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4635	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4700	0613952A09	CER CHIP RES 1.21 Ω 1
R4701	0613952A09	CER CHIP RES 1.21 Ω 1
R4702	0613952C09	CER CHIP RES 121 Ω 1% 0603
R4703	0613952C09	CER CHIP RES 121 Ω 1% 0603
R4705	0613952B81	CER CHIP RES 68.1 Ω 1% 0603
R4708	0613952L62	CER CHIP RES 432 Ω 1 0402
R4709	0613952K09	CER CHIP RES 12.1 Ω 1% 0402
R4710	0613952L62	CER CHIP RES 432 Ω 1 0402
R4712	0613952C12	CER CHIP RES 130 Ω 1% 0603
R4713	0613952B62	CER CHIP RES 43.2 Ω 1
R4714	0613952C12	CER CHIP RES 130 Ω 1% 0603
R4715	0613952D20	CER CHIP RES 1580 Ω 1 0603
R4716	0613952A09	CER CHIP RES 1.21 Ω 1
R4717	0613952D20	CER CHIP RES 1580 Ω 1 0603
R4718	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R4720	0613952B34	CER CHIP RES 22.1 Ω 1% 0603
R4721	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4723	0613952E26	CER CHIP RES 18.2K Ω 1 0603
R4724	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4725	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4727	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R4728	0613952E51	CER CHIP RES 33.2K Ω 1 0603
R4729	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4730	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4731	0613959Y47	CER CHIP RES Ω 5% 2512
R4800	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4801	0613952N01	CER CHIP RES 10.0K Ω 1 0402
R4803	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4804	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4805	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R4806	0613958C01	CER CHIP RES 100 Ω 1% 0805
R4807	0613958C01	CER CHIP RES 100 Ω 1% 0805
R4809	0613952R66	CER CHIP RES 0.0 +/- 0.050 Ω
R4810	0613952N01	CER CHIP RES 10.0K Ω 1 0402
SH4600	1583004X05	SHIELD, VCO
SH4601	2683006X02	COVER, TX VCO SHIELD

Circuit Ref	Motorola Part No	Description
U4000	5184998Y01	IC ADC 10BIT 8CHNNL LOPWR 149
U4300	5114014A26	IC,LNR V REGLTR,ADJUST- ABLE,1.2V TO 37V,500MA,SM,DPAK,PB- FREE
U4301	5114014A26	IC,LNR V REGLTR,ADJUST- ABLE,1.2V TO 37V,500MA,SM,DPAK,PB- FREE
U4302	5114014A26	IC,LNR V REGLTR,ADJUST- ABLE,1.2V TO 37V,500MA,SM,DPAK,PB- FREE
U4303	5114014A20	IC,LNR V REGLTR,ADJUST- ABLE,1.35V TO 10V,800MA,SM,SO-8,PB- FREE
U4400	5185130Y01	CPLD EPM3032AT144 W18 CMLNT
U4401	5184943Y01	64KB SERIAL EEPROM 8192X8
U4402	5185941F86	IC, 4- BIT BUS TRANS- CEIVER
U4500	5164015H28	IC,TRIDENT,INTEG SYNTH,RX/TX BSBND
U4501	5114019M05	IC,INVTR,SCHMITT,74LVX 14,6PER PKG,SM,TSSOP14,PB- FREE
U4502	5185183Y01	HI PERF DUAL CMOS OPAMP W18
U4700	5185106Y01	INGAP HBT GAIN BLOCK W18
U4701	509138-001-00	IC,RF AMPLIFIER,GAIN BLOCK,SM,SOT- 89,15DB,0 MHZMIN,6GHZMAX,3.8D B
U4800	5185145Y01	SPDT NON-REFLECTIVE SWITCH W18

Circuit Ref	Motorola Part No	Description
Y4600	9171848H04	TAB RESONATOR L=8.92NH +/-2%
Y4601	9171848H03	TAB RESONATOR L=7.92NH@938 MHZ

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## Chapter 8 MTR3000 Wireline Board

### 8.1 Overview

This section provides an overview and functional Theory of Operation of the Wireline Board. The schematic diagrams, overlays, and parts lists are provided on the foldout sheets. A complete list of all parts is provided with the parts ordered according to the schematic reference number.

For the Block Diagram, Specifications and troubleshooting procedures of the Receiver Module, refer to the MOTOTRBO MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

### 8.2 Functional Theory Of Operation

The following theory of operation describes the Wireline board at a functional level. The information is presented to give the service technician a basic understanding of the functions performed by the module in order to facilitate maintenance and troubleshooting to the module level.

#### 8.2.1 Functional Overview

##### 8.2.1.1 FPGA

The MTR 3000 Wireline board uses Digital Signal Processing (DSP) techniques to implement all required remote control functions, filtering algorithms, and audio adjustments. Audio enters and leaves the board as analog, but is converted to digital in the interim for processing.

The FPGA is responsible for handling all audio processing functions. It accepts digital audio data from the CODEC, applies the required filters and algorithms, and sends the resulting audio samples back to the CODEC to be converted back to analog. In addition to its audio processing functions, the FPGA also manages CODEC configuration, generates the CODEC master clock, drives and interprets backplane interface board GPIO signals, interprets decoded DC Remote Control signals, and services configuration requests from the Station Control Board via the backplane interface board SPI interface.

##### 8.2.1.2 CODEC

The Digital-to-Analog and Analog-to-Digital conversions for both the Tx and Rx paths are handled by a single stereo CODEC. The CODEC converts analog audio to digital samples which are sent to the FPGA for further processing. The FPGA will then return modified digital samples to the CODEC to be converted back to analog.

The CODEC is configured by the FPGA via an I2C interface. The FPGA synthesizes the CODEC master clock from the board's on-board oscillator. In return, the CODEC will generate the bit clock and word clock used to transfer digital audio data between the CODEC and FPGA.

Two-wire and Four-wire Tx audio use different analog input pins on the CODEC. The CODEC will select the appropriate input based on the "Wire Mode" setting in the CPS tool. When operating in 4-wire mode, the 2-wire Tx audio path is automatically disconnected from the CODEC input using an analog switch. This helps to reduce crosstalk and improve audio performance.

### 8.2.1.3 DC Control Decoder

The DC Control Decoder uses a collection of optocouplers and diodes to detect the amplitude and polarity of DC currents on the Wireline Tx pair. The optocouplers provide a set of logic signals to the FPGA that are used when the Wireline board is configured for DC Remote Control operation.

### 8.2.1.4 Surge Protection

The MTR3000 Wireline board implements 3 stages of surge protection on its Wireline port. In the first stage of protection, sidactors limit the instantaneous voltage at the beginning of a transient event by shunting current between voltage potentials. In the second stage of protection, Positive Temperature Coefficient (PTC) fuses disconnect the Wireline Tx and Rx paths from the base station/repeater backplane interface board when the transient current exceeds specified levels. In the third stage of protection, transient voltage suppression diodes will clamp line-to-line events that exceed 9V.

**Note** The PTC fuses are designed to automatically reset when line conditions return to normal. All surge protection components (including the PTC fuses) are not intended to be field serviceable.

### 8.2.1.5 Impedance Matching Network

The impedance matching network is intended to present a known configurable impedance to equipment connected at the far side of the Wireline cable. Line impedance is generally standardized by country or region. The matching network uses 24 analog switches to switch resistors and capacitors onto the receive and transmit audio paths. For any given impedance setting, 3 switches are closed. On the receive pair, impedances are switched in series with each line and on the transmit path impedances are switched in parallel. The line impedance setting is configured using the CPS software configuration tool. The Wireline's FPGA will close the correct switches based on the CPS configuration setting.

Table 8-1 shows the line impedance supported by the Wireline board based on the country or region.

*Table 8-1 Impedance supported by Wireline board*

Option	Functionality
High Impedance	For use with an external impedance matching
600 $\Omega$	For Argentina, Canada, Chile, Columbia, Ecuador, El Salvador, Guam, Hong Kong, India, Indonesia, Japan, Jordan, Kazakhstan, Kuwait, Macao, Malaysia, Mexico, Oman, Pakistan, Peru, Philippines, Russia, Saudi Arabia, Singapore, South Korea, Taiwan, Thailand, UAE, USA and Yemen
270 $\Omega$ + (150 nF    750 $\Omega$ )	For Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Bahrain, Croatia, Cyprus, Czech Republic, Egypt, Hungary, Israel, Latvia, Lebanon, Malta, Morocco, Nigeria, Poland, Romania, Slovakia and Slovenia
220 $\Omega$ + (115 nF    820 $\Omega$ )	For Australia, Bulgaria and South Africa
370 $\Omega$ + (310 nF    620 $\Omega$ )	For New Zealand

*Table 8-1 Impedance supported by Wireline board (Continued)*

Option	Functionality
900 $\Omega$	For Brazil
320 $\Omega$ + (230 nF    1050 $\Omega$ )	For United Kingdom
200 $\Omega$ + (100 nF    680 $\Omega$ )	For China
900 $\Omega$    30 nF	For legacy MTR2000

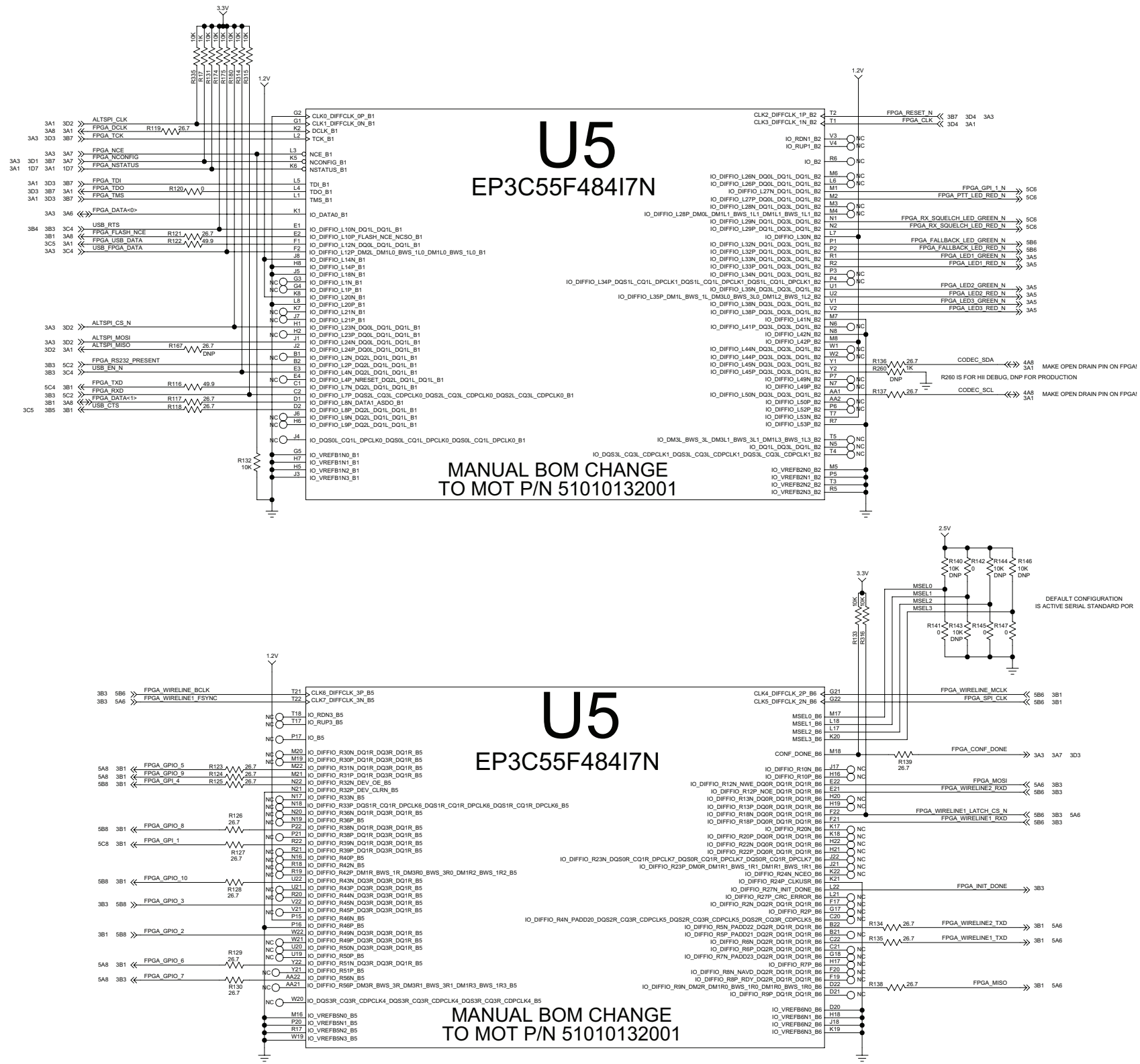
#### 8.2.1.6 Backplane SPI Bus

The backplane SPI interface is used as the primary communication link between the Station Control Board and the Wireline board. This interface is used for configuring and upgrading the Wireline board.

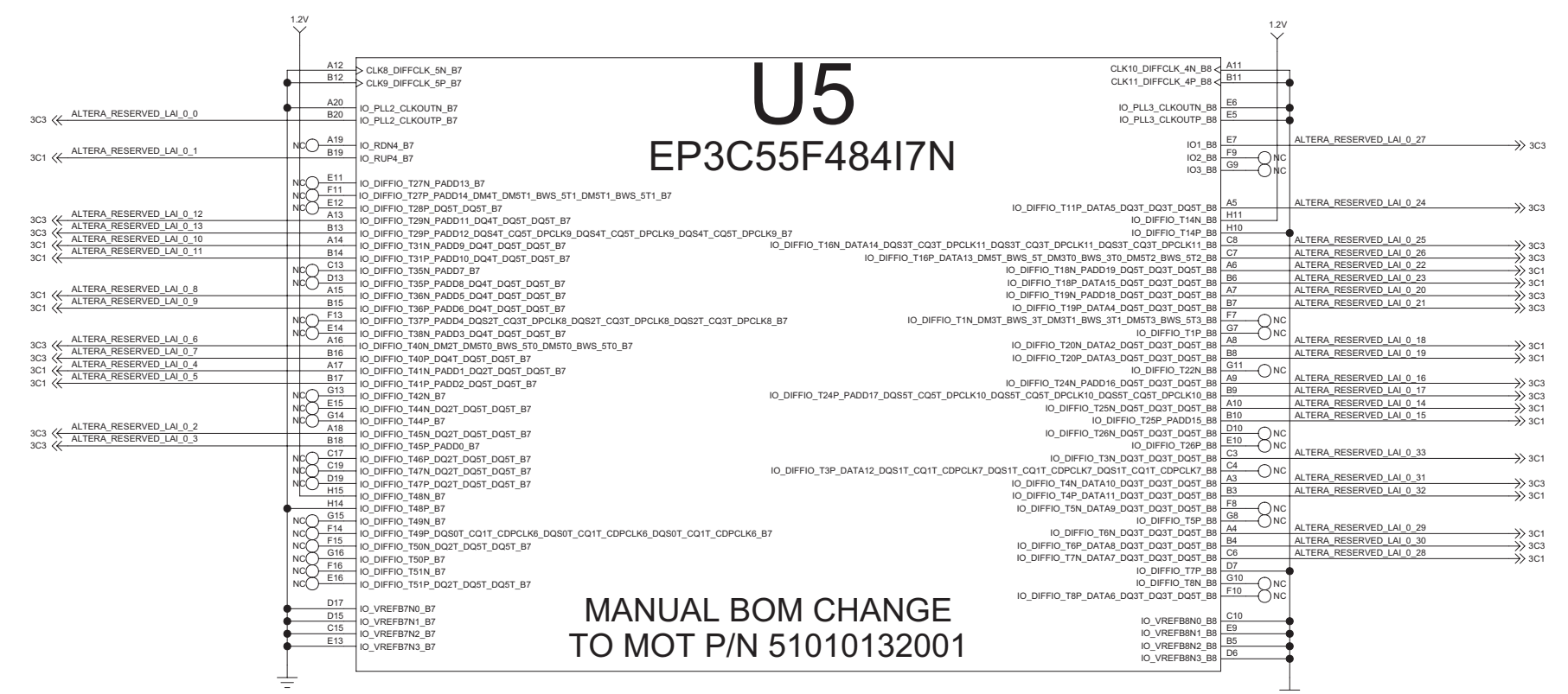
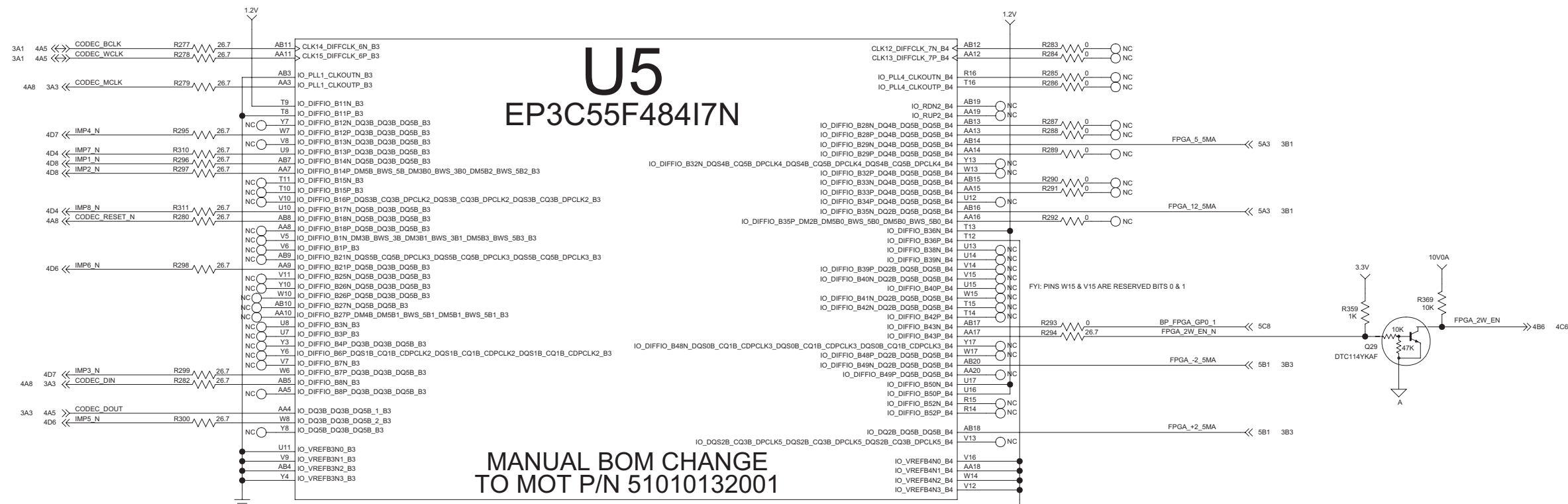
#### 8.2.1.7 GPIO Signals

The GPIO signals comprise both input and output signals that the Wireline FPGA uses to communicate control information with the Station Control Module. Inputs to the Wireline board inform the Wireline FPGA when an RF carrier has been detected or a PL tone has been decoded. Output signals from the Wireline board are used to select the base station/repeater transmit frequency and activate the alternate CPS defined GPIO functions. These signals are generally activated in response to decoded DC currents or tone sequences. The PTT GPIO signal functions as both an input and an output. When used as an output, the signal will key up the base station/repeater's transmitter. When a backplane PTT condition is present, but not driven by the Wireline board, the signal may function as an input. This allows the Wireline to switch the direction of audio when configured for 2-wire half-duplex with no remote control.

### 8.2 Wireline Board Schematics (800/900 MHZ)

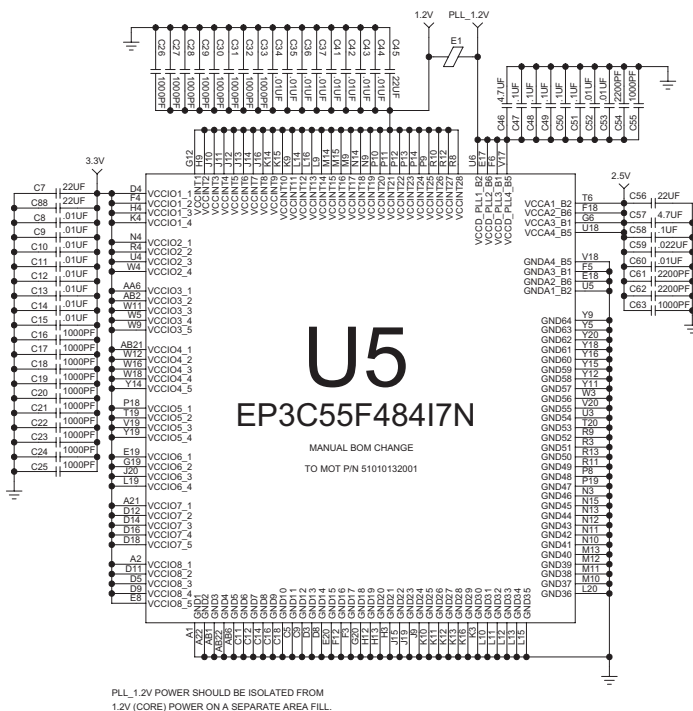


Wireline – FPGA 1 Schematic Diagram (Kit No. CLN8560)



Wireline – FPGA 2 Schematic Diagram (Kit No.CLN8560)

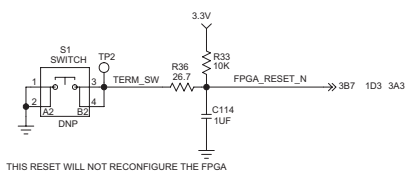
### FPGA POWER & DECOUPLING



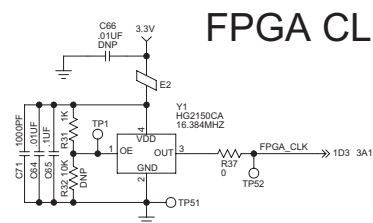
### U5 EP3C55F48417N

MANUAL BOM CHANGE TO MPT PIN 51010132001

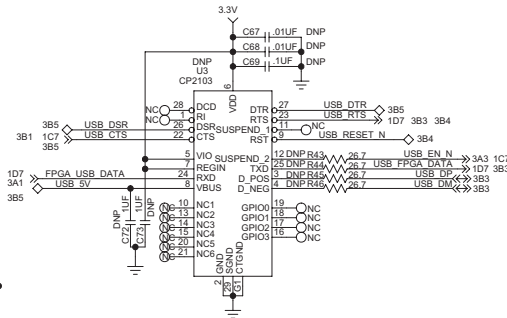
### FPGA RESET



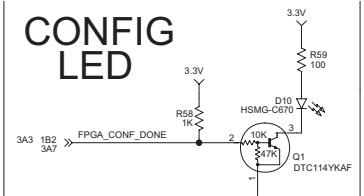
### FPGA CLOCK



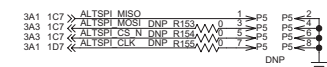
### FPGA USB/RS232



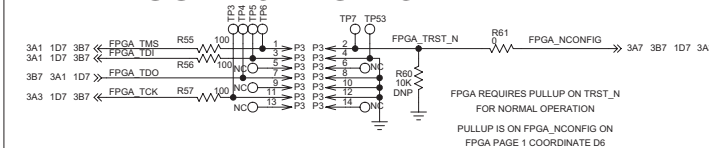
### CONFIG LED



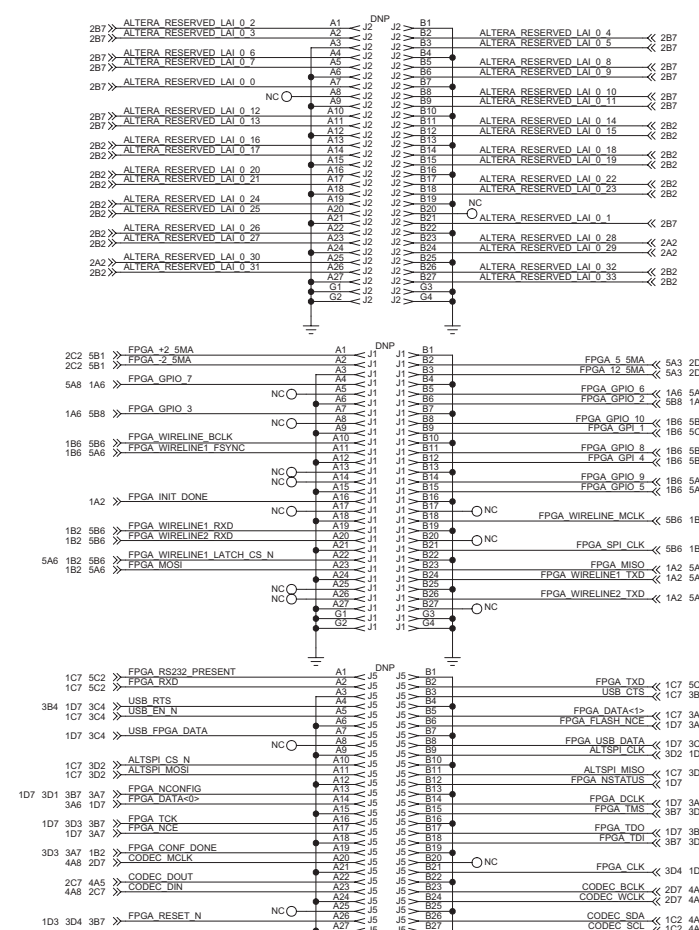
### SPI HEADER



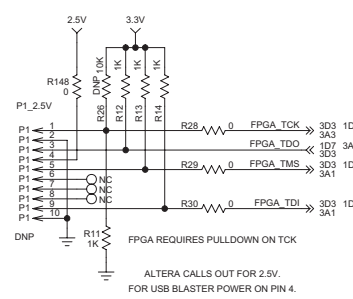
### ASSET JTAG PORT



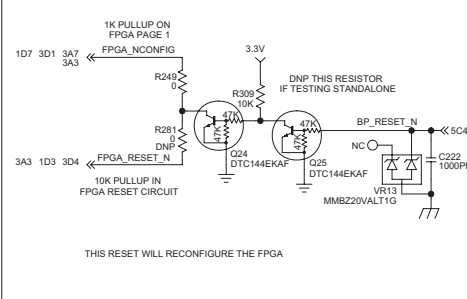
### FPGA LOGIC ANALYZER CONNECTORS



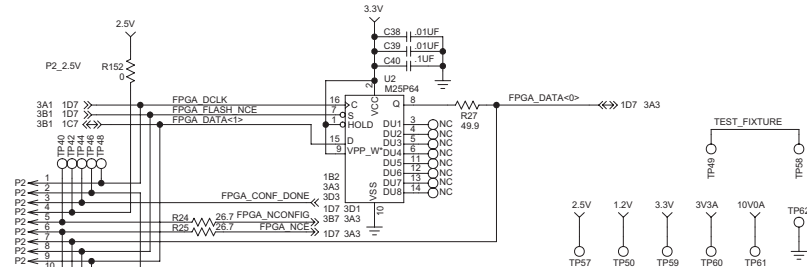
### CONFIG PORT



### SYSTEM RESET

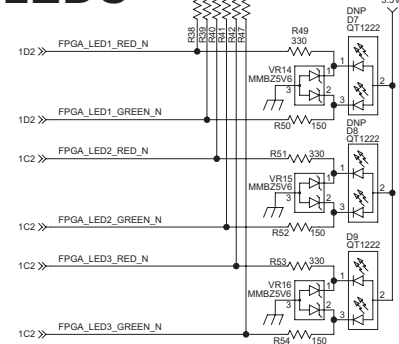


### FPGA SERIAL CONFIGURATION DEVICE



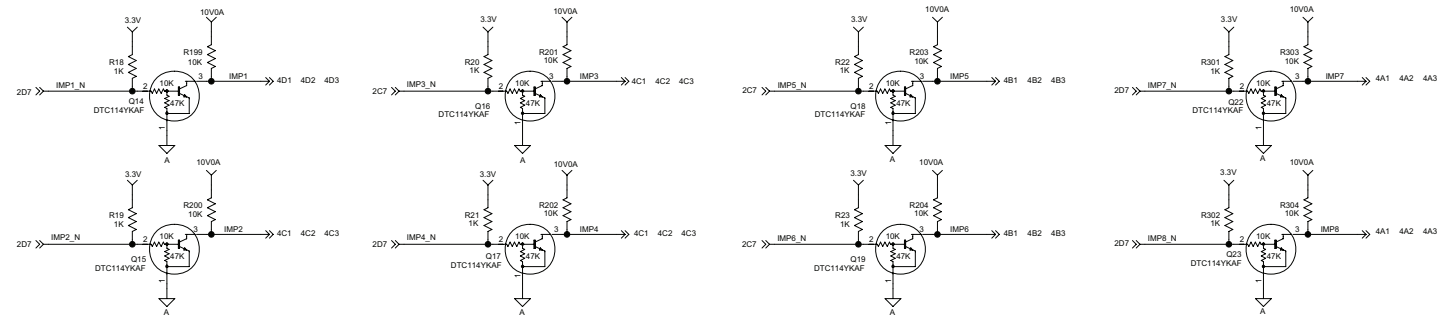
### SERIAL FLASH PROGRAMMING PORT

### LEDS

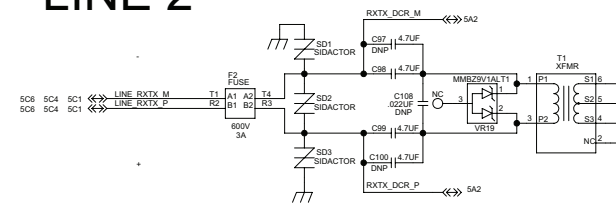




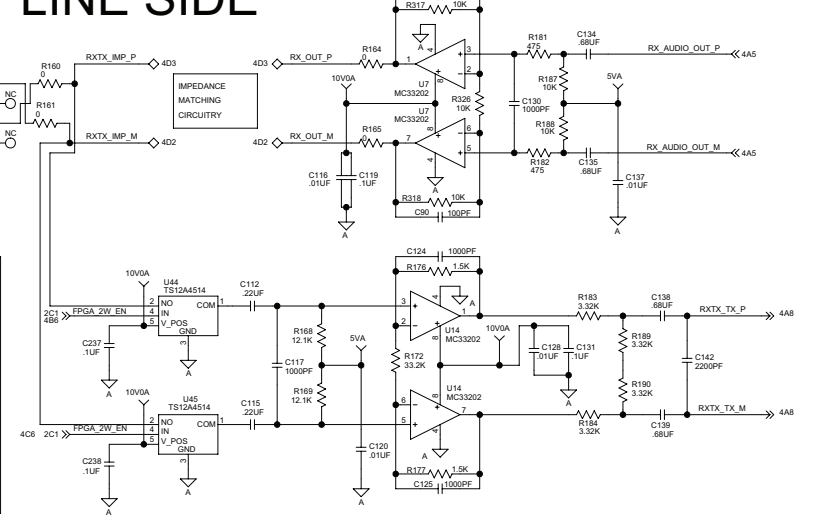
### IMPEDANCE MATCH ENABLE TRANSLATION



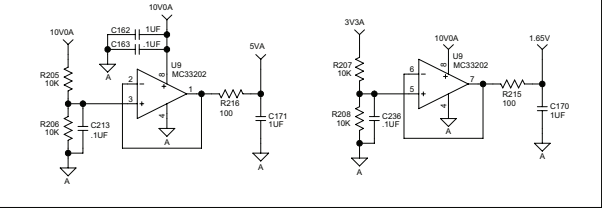
### LINE 2



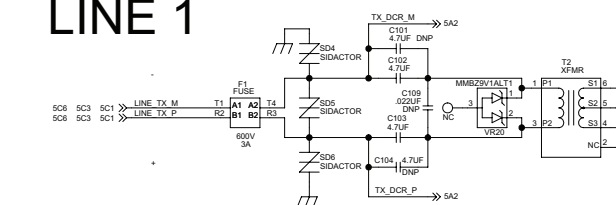
### LINE SIDE



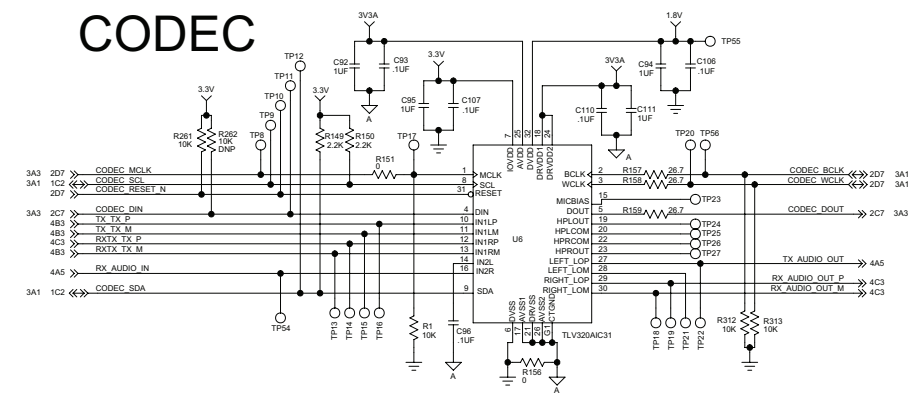
### BIAS



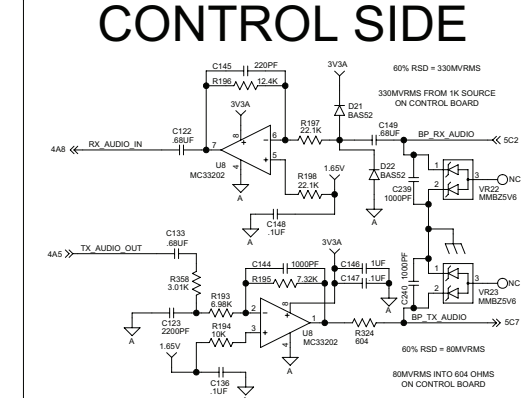
### LINE 1



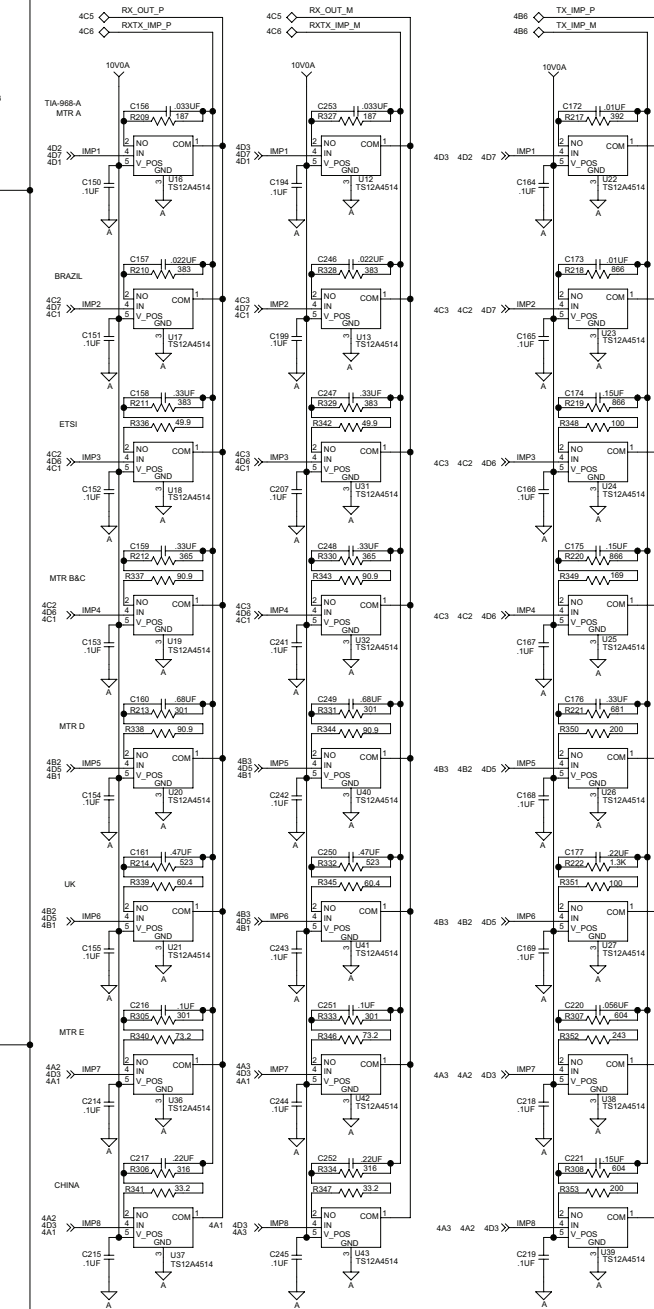
### CODEC

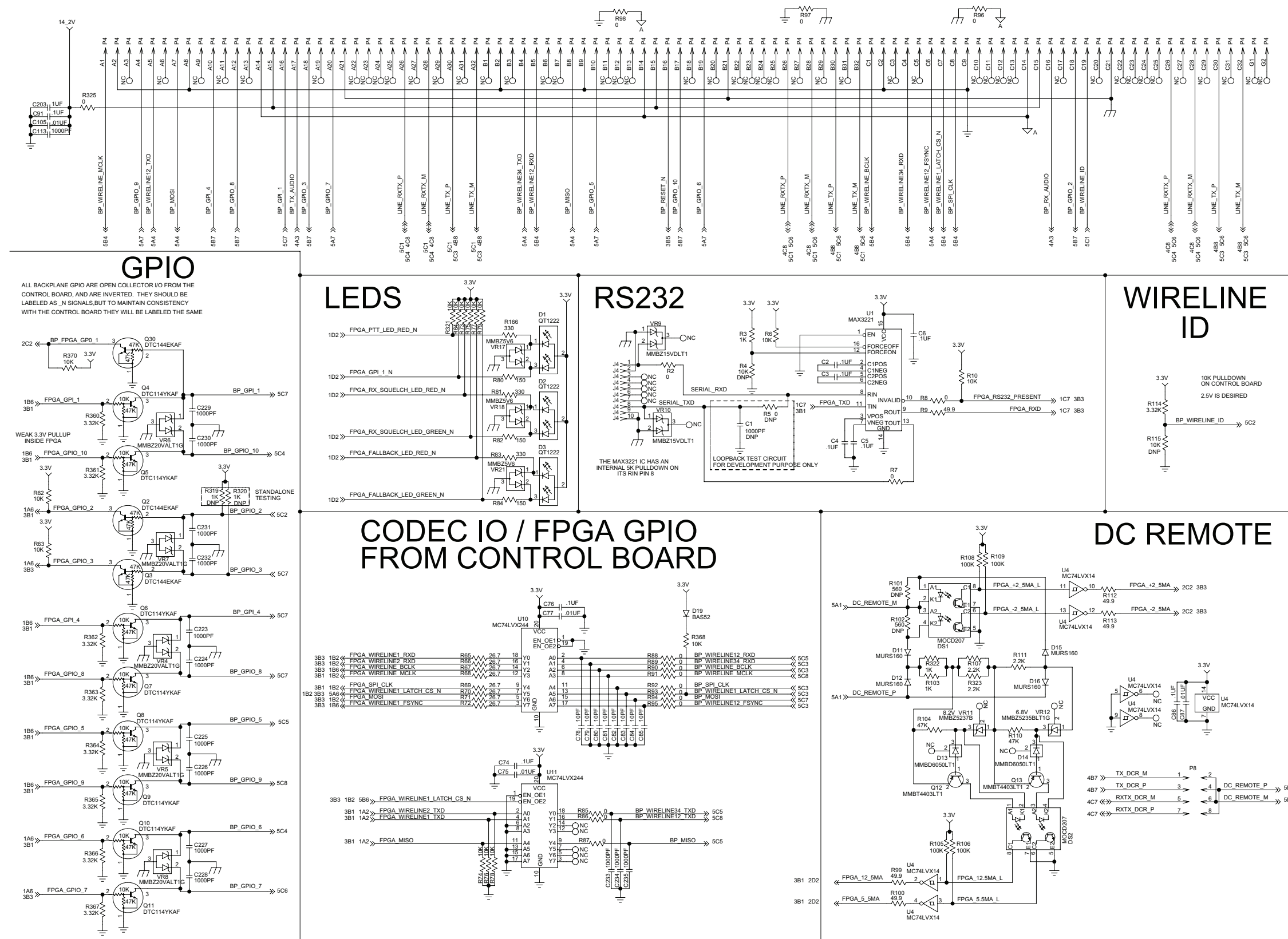


### CONTROL SIDE

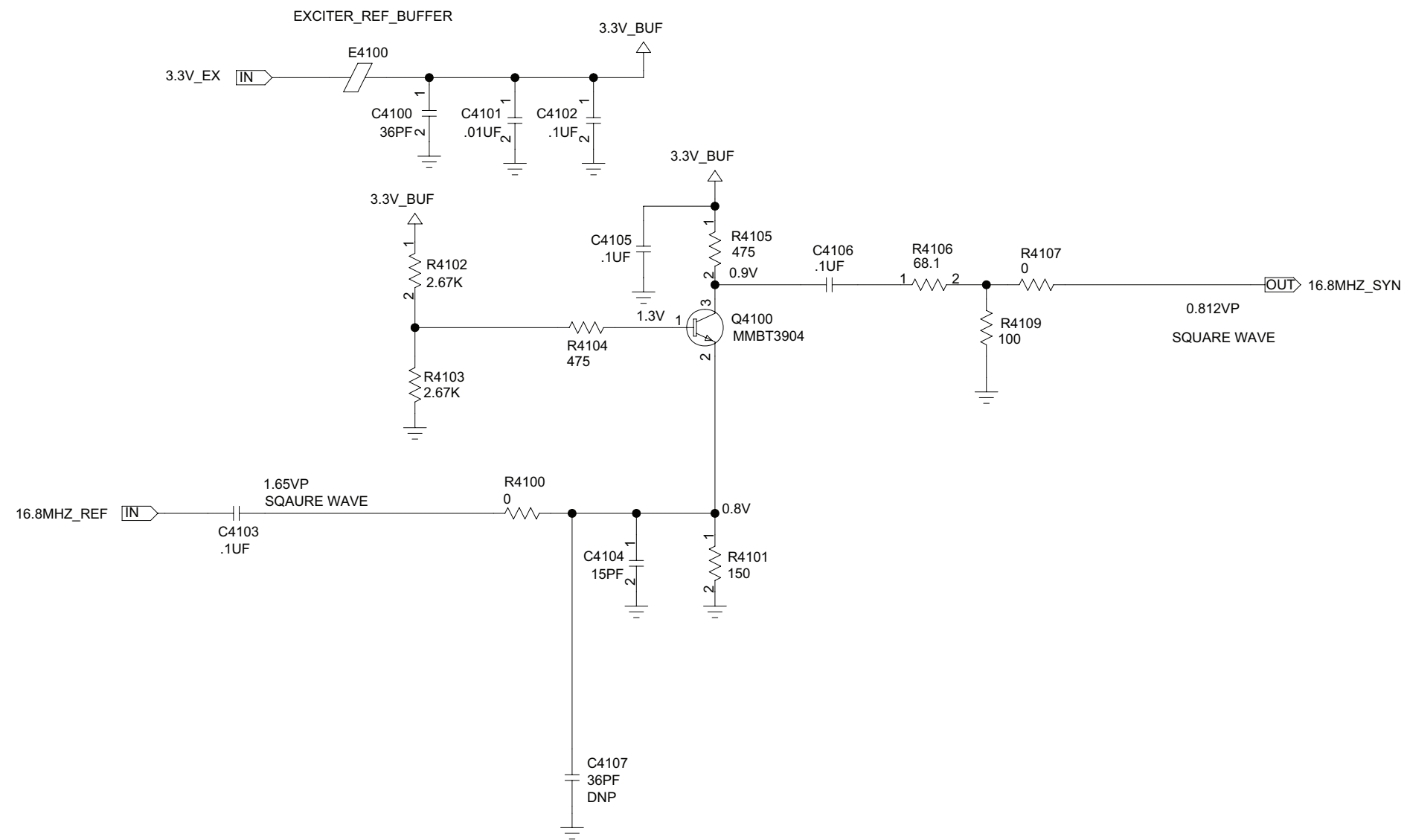


### IMPEDANCE MATCHING RX TX



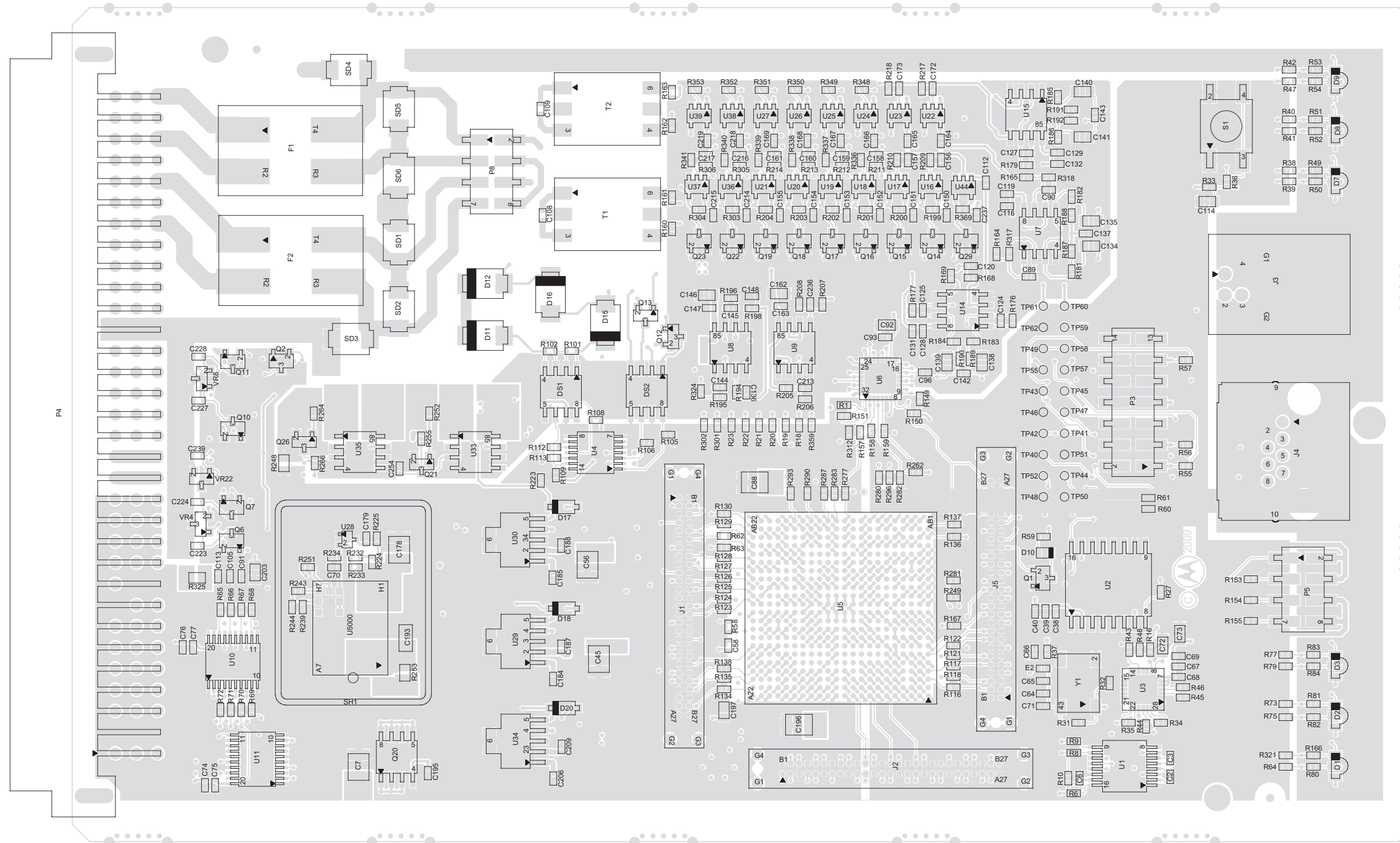


Wireline – Backplane Schematic Diagram (Kit No. CLN8560)

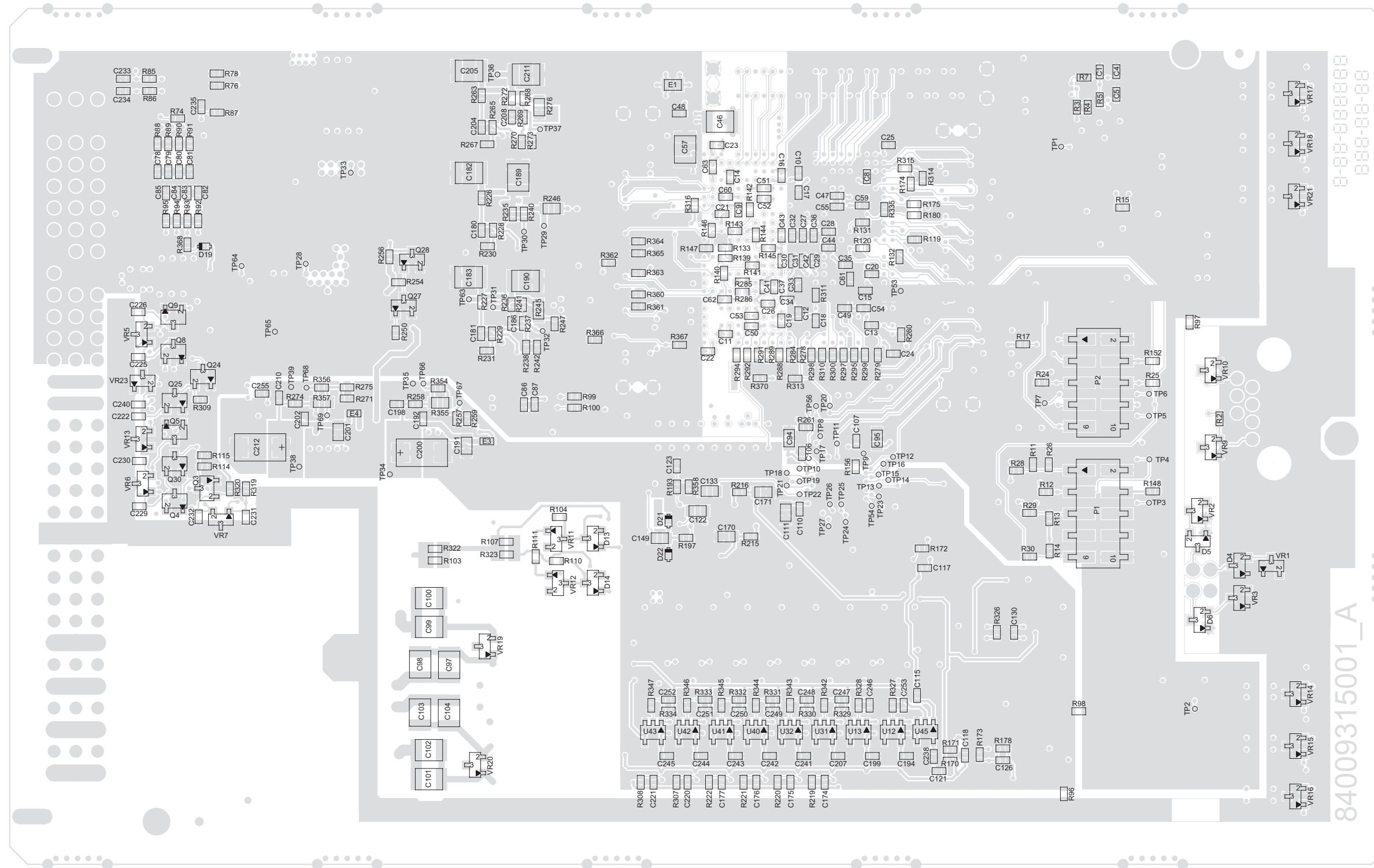


Wireline – Power Schematic Diagram (Kit No. CLN8560)

### 8.3 Wireline Board PCB (800/900 MHz)



Wireline Board PCB – Top View (PCB No. 84009315001)



Wireline Board PCB – Bottom View (PCB No. 84009315001)

**8.4 Wireline Parts List (800/900 MHZ) – CLN8560**

Circuit Ref	Motorola Part No	Description
C2	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C4	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C5	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C6	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C7	2113946J04	CAP CER CHP 22.0UF 16V 10%
C8	2113945C02	CAP CER CHP 10,000PF 50V 10%
C9	2113945C02	CAP CER CHP 10,000PF 50V 10%
C10	2113945C02	CAP CER CHP 10,000PF 50V 10%
C11	2113945C02	CAP CER CHP 10,000PF 50V 10%
C12	2113945C02	CAP CER CHP 10,000PF 50V 10%
C13	2113945C02	CAP CER CHP 10,000PF 50V 10%
C14	2113945C02	CAP CER CHP 10,000PF 50V 10%
C15	2113945C02	CAP CER CHP 10,000PF 50V 10%
C16	2113945C13	CAP CER CHP 1000PF 50V 10%

Circuit Ref	Motorola Part No	Description
C17	2113945C13	CAP CER CHP 1000PF 50V 10%
C18	2113945C13	CAP CER CHP 1000PF 50V 10%
C19	2113945C13	CAP CER CHP 1000PF 50V 10%
C20	2113945C13	CAP CER CHP 1000PF 50V 10%
C21	2113945C13	CAP CER CHP 1000PF 50V 10%
C22	2113945C13	CAP CER CHP 1000PF 50V 10%
C23	2113945C13	CAP CER CHP 1000PF 50V 10%
C24	2113945C13	CAP CER CHP 1000PF 50V 10%
C25	2113945C13	CAP CER CHP 1000PF 50V 10%
C26	2113945C13	CAP CER CHP 1000PF 50V 10%
C27	2113945C13	CAP CER CHP 1000PF 50V 10%
C28	2113945C13	CAP CER CHP 1000PF 50V 10%
C29	2113945C13	CAP CER CHP 1000PF 50V 10%
C30	2113945C13	CAP CER CHP 1000PF 50V 10%
C31	2113945C13	CAP CER CHP 1000PF 50V 10%
C32	2113945C13	CAP CER CHP 1000PF 50V 10%
C33	2113945C13	CAP CER CHP 1000PF 50V 10%
C34	2113945C02	CAP CER CHP 10,000PF 50V 10%
C35	2113945C02	CAP CER CHP 10,000PF 50V 10%
C36	2113945C02	CAP CER CHP 10,000PF 50V 10%

Circuit Ref	Motorola Part No	Description
C37	2113945C02	CAP CER CHP 10,000PF 50V 10%
C38	2113945C02	CAP CER CHP 10,000PF 50V 10%
C39	2113945C02	CAP CER CHP 10,000PF 50V 10%
C40	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C41	2113945C02	CAP CER CHP 10,000PF 50V 10%
C42	2113945C02	CAP CER CHP 10,000PF 50V 10%
C43	2113945C02	CAP CER CHP 10,000PF 50V 10%
C44	2113945C02	CAP CER CHP 10,000PF 50V 10%
C45	2113946J04	CAP CER CHP 22.0UF 16V 10%
C46	2113955E15	CAP,FXD,4.7UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-
C47	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C48	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C49	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C50	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C51	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C52	2113945C02	CAP CER CHP 10,000PF 50V 10%
C53	2113945C02	CAP CER CHP 10,000PF 50V 10%
C54	2113945C15	CAP CER CHP 2200PF 50V 10%
C55	2113945C13	CAP CER CHP 1000PF 50V 10%
C56	2113946J04	CAP CER CHP 22.0UF 16V 10%
C57	2113955E15	CAP,FXD,4.7UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-
C58	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C59	2113945C04	CAP CER CHP 22,000PF 50V 10%
C60	2113945C02	CAP CER CHP 10,000PF 50V 10%
C61	2113945C15	CAP CER CHP 2200PF 50V 10%
C62	2113945C15	CAP CER CHP 2200PF 50V 10%
C63	2113945C13	CAP CER CHP 1000PF 50V 10%
C64	2113945C02	CAP CER CHP 10,000PF 50V 10%
C65	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C70	2113946C02	CAP CER CHP 0.22UF 10V 10%
C71	2113945C13	CAP CER CHP 1000PF 50V 10%
C74	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C75	2113945C02	CAP CER CHP 10,000PF 50V 10%
C76	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C77	2113945C02	CAP CER CHP 10,000PF 50V 10%
C78	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C79	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C80	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C81	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C82	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C83	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C84	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C85	2113944C30	CAP CER CHP 10.0PF 50V +/- 0.5PF
C86	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C87	2113945C02	CAP CER CHP 10,000PF 50V 10%
C88	2113946J04	CAP CER CHP 22.0UF 16V 10%
C89	2113945L01	CAP,FXD,100PF,+5%,-5%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR
C90	2113945L01	CAP,FXD,100PF,+5%,-5%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-FR

Circuit Ref	Motorola Part No	Description
C91	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C92	2113946E02	CAP CER CHP 1.0UF 16V 10%
C93	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C94	2113946E02	CAP CER CHP 1.0UF 16V 10%
C95	2113946E02	CAP CER CHP 1.0UF 16V 10%
C96	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C98	2113955E15	CAP,FXD,4.7UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-
C99	2113955E15	CAP,FXD,4.7UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-
C102	2113955E15	CAP,FXD,4.7UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-
C103	2113955E15	CAP,FXD,4.7UF,+10%,-10%,50V-DC,X7R,-55DEG CMIN,125DEG CMAX,PB-
C105	2113945C02	CAP CER CHP 10,000PF 50V 10%
C106	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C107	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C110	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C111	2113946E02	CAP CER CHP 1.0UF 16V 10%
C112	2113946C02	CAP CER CHP 0.22UF 10V 10%
C113	2113945C13	CAP CER CHP 1000PF 50V 10%
C114	2113946E02	CAP CER CHP 1.0UF 16V 10%
C115	2113946C02	CAP CER CHP 0.22UF 10V 10%
C116	2113945C02	CAP CER CHP 10,000PF 50V 10%
C117	2113945C13	CAP CER CHP 1000PF 50V 10%
C118	2113945C13	CAP CER CHP 1000PF 50V 10%
C119	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C120	2113945C02	CAP CER CHP 10,000PF 50V 10%
C121	2113945C02	CAP CER CHP 10,000PF 50V 10%
C122	2113946E01	CAP CER CHP 0.68UF 16V 10%
C123	2113945C15	CAP CER CHP 2200PF 50V 10%
C124	2113945C13	CAP CER CHP 1000PF 50V 10%
C125	2113945C13	CAP CER CHP 1000PF 50V 10%
C126	2113945C13	CAP CER CHP 1000PF 50V 10%
C127	2113945C13	CAP CER CHP 1000PF 50V 10%
C128	2113945C02	CAP CER CHP 10,000PF 50V 10%
C129	2113945C02	CAP CER CHP 10,000PF 50V 10%

Circuit Ref	Motorola Part No	Description
C130	2113945C13	CAP CER CHP 1000PF 50V 10%
C131	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C132	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C133	2113946E01	CAP CER CHP 0.68UF 16V 10%
C134	2113946E01	CAP CER CHP 0.68UF 16V 10%
C135	2113946E01	CAP CER CHP 0.68UF 16V 10%
C136	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C137	2113945C02	CAP CER CHP 10,000PF 50V 10%
C138	2113946E01	CAP CER CHP 0.68UF 16V 10%
C139	2113946E01	CAP CER CHP 0.68UF 16V 10%
C140	2113946E01	CAP CER CHP 0.68UF 16V 10%
C141	2113946E01	CAP CER CHP 0.68UF 16V 10%
C142	2113945C15	CAP CER CHP 2200PF 50V 10%
C143	2113945C15	CAP CER CHP 2200PF 50V 10%
C144	2113945C13	CAP CER CHP 1000PF 50V 10%
C145	2113945C05	CAP CER CHP 220PF 50V 10%
C146	2113946E02	CAP CER CHP 1.0UF 16V 10%

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C147	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C159	2113946C07	CAP,FXD,.33UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX	C172	2113945C02	CAP CER CHP 10,000PF 50V 10%	C188	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C148	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C160	2113946C09	CAP,FXD,.68UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX	C173	2113945C02	CAP CER CHP 10,000PF 50V 10%	C189	2113946J03	CAP CER CHP 10.0UF 16V 10%
C149	2113946E01	CAP CER CHP 0.68UF 16V 10%	C161	2113946C08	CAP,FXD,.47UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX	C174	2113946C01	CAP CER CHP 0.15UF 10V 10%	C190	2113946J03	CAP CER CHP 10.0UF 16V 10%
C150	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C162	2113946E02	CAP CER CHP 1.0UF 16V 10%	C175	2113946C01	CAP CER CHP 0.15UF 10V 10%	C191	2113956C23	CAP,FXD,2.2UF,+10%,-10%,25V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C151	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C163	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C176	2113946C07	CAP,FXD,.33UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX	C192	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C152	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C164	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C177	2113946C02	CAP CER CHP 0.22UF 10V 10%	C193	2113956D59	CAP,FXD,47UF,+20%,-20%,6.3V-DC,1206,X5R,-55DEG CMIN,85DEG CMAX
C153	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C165	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C178	2113946J04	CAP CER CHP 22.0UF 16V 10%	C194	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C154	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C166	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C179	2113945C04	CAP CER CHP 22,000PF 50V 10%	C195	2113945C04	CAP CER CHP 22,000PF 50V 10%
C155	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C167	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C180	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C196	2113956E60	CAP,FXD,100UF,+20%,-20%,6.3V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX
C156	2113945C25	CAP,FXD,.033UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	C168	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C181	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C197	2113946E02	CAP CER CHP 1.0UF 16V 10%
C157	2113945C04	CAP CER CHP 22,000PF 50V 10%	C169	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C182	2113946J03	CAP CER CHP 10.0UF 16V 10%	C198	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C158	2113946C07	CAP,FXD,.33UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX	C170	2113946E02	CAP CER CHP 1.0UF 16V 10%	C183	2113946J03	CAP CER CHP 10.0UF 16V 10%	C199	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
			C171	2113946E02	CAP CER CHP 1.0UF 16V 10%	C184	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX	C200	2314030F03	CAP,FXD,22UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,561MA
						C185	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX			
						C186	2113945C13	CAP CER CHP 1000PF 50V 10%			
						C187	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX			



Circuit Ref	Motorola Part No	Description
C201	2113956C23	CAP,FXD,2.2UF,+10%,-10%,25V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C202	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C203	2113946E02	CAP CER CHP 1.0UF 16V 10%
C204	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C205	2113946J03	CAP CER CHP 10.0UF 16V 10%
C206	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C207	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C208	2113945C13	CAP CER CHP 1000PF 50V 10%
C209	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C210	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C211	2113946J03	CAP CER CHP 10.0UF 16V 10%
C212	2314030F03	CAP,FXD,22UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,561MA
C213	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C214	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C215	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C216	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C217	2113946C02	CAP CER CHP 0.22UF 10V 10%
C218	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C219	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C220	2113945C28	CAP,FXD,.056UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA
C221	2113946C01	CAP CER CHP 0.15UF 10V 10%
C222	2113945C13	CAP CER CHP 1000PF 50V 10%
C223	2113945C13	CAP CER CHP 1000PF 50V 10%
C224	2113945C13	CAP CER CHP 1000PF 50V 10%
C225	2113945C13	CAP CER CHP 1000PF 50V 10%
C226	2113945C13	CAP CER CHP 1000PF 50V 10%
C227	2113945C13	CAP CER CHP 1000PF 50V 10%
C228	2113945C13	CAP CER CHP 1000PF 50V 10%
C229	2113945C13	CAP CER CHP 1000PF 50V 10%

Circuit Ref	Motorola Part No	Description
C230	2113945C13	CAP CER CHP 1000PF 50V 10%
C231	2113945C13	CAP CER CHP 1000PF 50V 10%
C232	2113945C13	CAP CER CHP 1000PF 50V 10%
C233	2113945C13	CAP CER CHP 1000PF 50V 10%
C234	2113945C13	CAP CER CHP 1000PF 50V 10%
C235	2113945C13	CAP CER CHP 1000PF 50V 10%
C236	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C237	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C238	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C239	2113945C13	CAP CER CHP 1000PF 50V 10%
C240	2113945C13	CAP CER CHP 1000PF 50V 10%
C241	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C242	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C243	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C244	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C245	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C246	2113945C04	CAP CER CHP 22,000PF 50V 10%
C247	2113946C07	CAP,FXD,.33UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX
C248	2113946C07	CAP,FXD,.33UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX
C249	2113946C09	CAP,FXD,.68UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX
C250	2113946C08	CAP,FXD,.47UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX
C251	2113945C31	CAP,FXD,.1UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C252	2113946C02	CAP CER CHP 0.22UF 10V 10%
C253	2113945C25	CAP,FXD,.033UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA
D1	4885062E01	LED RE/GRN SIDE-LOOKER
D2	4885062E01	LED RE/GRN SIDE-LOOKER
D3	4885062E01	LED RE/GRN SIDE-LOOKER
D7	4885062E01	LED RE/GRN SIDE-LOOKER
D8	4885062E01	LED RE/GRN SIDE-LOOKER
D9	4885062E01	LED RE/GRN SIDE-LOOKER

Circuit Ref	Motorola Part No	Description
D10	4805729G75	LED SMT GREEN HP
D11	4813978B05	DIODE,RECT,MURS160,S M,SMB,1A,600V,PB-FREE
D12	4813978B05	DIODE,RECT,MURS160,S M,SMB,1A,600V,PB-FREE
D13	4813978P10	DIODE,SWG,MMSD6050,S M,SOT-23,200MA,70V,.225W,PB-FREE
D14	4813978P10	DIODE,SWG,MMSD6050,S M,SOT-23,200MA,70V,.225W,PB-FREE
D15	4813978B05	DIODE,RECT,MURS160,S M,SMB,1A,600V,PB-FREE
D16	4813978B05	DIODE,RECT,MURS160,S M,SMB,1A,600V,PB-FREE
D17	4813978B09	PB FREE, NOT COMPLETELY ENRICHED
D18	4813978B09	PB FREE, NOT COMPLETELY ENRICHED
D19	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D20	4813978B09	PB FREE, NOT COMPLETELY ENRICHED
D21	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
D22	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
DS1	5185043Y01	IC, DUAL CHANNEL OPTOCOUPLER ROHS
DS2	5185043Y01	IC, DUAL CHANNEL OPTOCOUPLER ROHS
E1	2485410Y02	MIN CHIP FERRITE BEAD 30 $\Omega$ W18
E2	2485410Y01	MIN CHIP FERRITE BEAD
E3	7686949J15	FLTR,FERR,,,,2A,,,,SM,06 03

Circuit Ref	Motorola Part No	Description
E4	7686949J15	FLTR,FERR,,,,2A,,,,SM,06 03
F1	6589670C01	FUSE, ROHS COMPLIANT.
F2	6589670C01	FUSE, ROHS COMPLIANT.
J4	09009327001	CONN,RJ45, 8POS, RIGHT ANGLE
P3	2883360Y05	HDR .1 VERT DUAL ROW SM 14 POS W18
P4	2886267Y04	PLUG, EUROCARD 96 PIN R A
P8	2883360Y03	HDR.1 VERT DUAL ROW SM 8 POS W18
Q1	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q2	4815263H01	DBRT DTC144EKAF
Q3	4815263H01	DBRT DTC144EKAF
Q4	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q5	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q6	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q7	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q8	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q9	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q10	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN

Circuit Ref	Motorola Part No	Description
Q11	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q12	4813973A14	XSTR,BIP GP SS,PNP,T4403,SM,SOT-23,SMT,-40V,.225W,-600MA,200MH
Q13	4813973A14	XSTR,BIP GP SS,PNP,T4403,SM,SOT-23,SMT,-40V,.225W,-600MA,200MH
Q14	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q15	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q16	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q17	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q18	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q19	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q20	4885391Y01	XTOR,PWR MOS-FET,30V,10A,SO-8
Q21	4813972A24	PB-FREE,NOT COMPLETELY ENRICHED
Q22	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q23	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q24	4815263H01	DBRT DTC144EKAF
Q25	4815263H01	DBRT DTC144EKAF
Q26	4813972A24	PB-FREE,NOT COMPLETELY ENRICHED

Circuit Ref	Motorola Part No	Description
Q27	4813973A08	XSTR,BIP GP SS,NPN,T2222,SM,SOT-23,SMT,40V,.225W,600MA,300 MHZ
Q28	4813973A08	XSTR,BIP GP SS,NPN,T2222,SM,SOT-23,SMT,40V,.225W,600MA,300 MHZ
Q29	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
Q30	4815263H01	DBRT DTC144EKAF
R1	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R2	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R3	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603
R6	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R7	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R8	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R9	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R10	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R11	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603
R12	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603
R13	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603
R14	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603
R17	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603
R18	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603
R19	0613952H73	CER CHIP RES 1000 $\Omega$ 5% 0603

Circuit Ref	Motorola Part No	Description
R20	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R21	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R22	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R23	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R24	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R25	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R27	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R28	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R29	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R30	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R31	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R33	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R36	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R37	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R38	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R39	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R40	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R41	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R42	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R47	0613952E01	CER CHIP RES 10.0K Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R49	0613952H61	CER CHIP RES 330 Ω 5 0603
R50	0613952H53	CER CHIP RES 150 Ω 5% 0603
R51	0613952H61	CER CHIP RES 330 Ω 5 0603
R52	0613952H53	CER CHIP RES 150 Ω 5% 0603
R53	0613952H61	CER CHIP RES 330 Ω 5 0603
R54	0613952H53	CER CHIP RES 150 Ω 5% 0603
R55	0613952C01	CER CHIP RES 100 Ω 1% 0603
R56	0613952C01	CER CHIP RES 100 Ω 1% 0603
R57	0613952C01	CER CHIP RES 100 Ω 1% 0603
R58	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R59	0613952C01	CER CHIP RES 100 Ω 1% 0603
R61	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R62	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R63	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R64	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R65	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R66	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R67	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R68	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R69	0613952B42	CER CHIP RES 26.7 Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R70	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R71	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R72	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R73	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R74	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R75	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R76	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R77	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R78	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R79	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R80	0613952H53	CER CHIP RES 150 Ω 5% 0603
R81	0613952H61	CER CHIP RES 330 Ω 5 0603
R82	0613952H53	CER CHIP RES 150 Ω 5% 0603
R83	0613952H61	CER CHIP RES 330 Ω 5 0603
R84	0613952H53	CER CHIP RES 150 Ω 5% 0603
R85	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R86	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R87	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R88	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R89	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R90	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R91	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R92	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R93	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R94	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R95	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R96	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R97	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R98	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R99	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R100	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R103	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R104	0613952J17	CER CHIP RES 47K Ω 5% 0603
R105	0613952J25	CER CHIP RES 100K Ω 5% 0603
R106	0613952J25	CER CHIP RES 100K Ω 5% 0603
R107	0613952H81	CER CHIP RES 2200 Ω 5% 0603
R108	0613952J25	CER CHIP RES 100K Ω 5% 0603
R109	0613952J25	CER CHIP RES 100K Ω 5% 0603
R110	0613952J17	CER CHIP RES 47K Ω 5% 0603
R111	0613952H81	CER CHIP RES 2200 Ω 5% 0603

Circuit Ref	Motorola Part No	Description
R112	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R113	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R114	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R116	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R117	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R118	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R119	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R120	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R121	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R122	0613952B68	CER CHIP RES 49.9 $\Omega$ 1% 0603
R123	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R124	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R125	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R126	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R127	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R128	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R129	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R130	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R131	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R132	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R133	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R134	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R135	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R136	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R137	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R138	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R139	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R141	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R142	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R145	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R147	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R148	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R149	0613952H81	CER CHIP RES 2200 $\Omega$ 5% 0603
R150	0613952H81	CER CHIP RES 2200 $\Omega$ 5% 0603
R151	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R152	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R156	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R157	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R158	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603
R159	0613952B42	CER CHIP RES 26.7 $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R160	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R161	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R162	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R163	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R164	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R165	0613952G67	CER CHIP RES 0.0 +/- 0.050 $\Omega$
R166	0613952H61	CER CHIP RES 330 $\Omega$ 5 0603
R168	0613952E09	CER CHIP RES 12.1K $\Omega$ 1 0603
R169	0613952E09	CER CHIP RES 12.1K $\Omega$ 1 0603
R170	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R171	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R172	0613952E51	CER CHIP RES 33.2K $\Omega$ 1 0603
R173	0613952E51	CER CHIP RES 33.2K $\Omega$ 1 0603
R174	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R175	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R176	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R177	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R178	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R179	0613952D18	CER CHIP RES 1500 $\Omega$ 1% 0603
R180	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R181	0613952C66	CER CHIP RES 475 $\Omega$ 1% 0603
R182	0613952C66	CER CHIP RES 475 $\Omega$ 1% 0603
R183	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R184	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R185	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R186	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R187	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R188	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R189	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R190	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R191	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R192	0613952D51	CER CHIP RES 3320 $\Omega$ 1% 0603
R193	0613952D82	CER CHIP RES 6980 $\Omega$ 1% 0603
R194	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R195	0613952D84	CER CHIP RES 7320 $\Omega$ 1 0603
R196	0613952E10	CER CHIP RES 12.4K $\Omega$ 1 0603
R197	0613952E34	CER CHIP RES 22.1K $\Omega$ 1% 0603
R198	0613952E34	CER CHIP RES 22.1K $\Omega$ 1% 0603
R199	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R200	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603

Circuit Ref	Motorola Part No	Description
R201	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R202	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R203	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R204	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R205	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R206	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R207	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R208	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R209	0613952C27	CER CHIP RES 187 Ω 1% 0603
R210	0613952C57	CER CHIP RES 383 Ω 1% 0603
R211	0613952C57	CER CHIP RES 383 Ω 1% 0603
R212	0613952C55	CER CHIP RES 365 Ω 1% 0603
R213	0613952C47	CER CHIP RES 301 Ω 1% 0603
R214	0613952C70	CER CHIP RES 523 Ω 1 0603
R215	0613952C01	CER CHIP RES 100 Ω 1% 0603
R216	0613952C01	CER CHIP RES 100 Ω 1% 0603
R217	0613952C58	CER CHIP RES 392 Ω 1% 0603
R218	0613952C91	CER CHIP RES 866 Ω 1 0603
R219	0613952C91	CER CHIP RES 866 Ω 1 0603
R220	0613952C91	CER CHIP RES 866 Ω 1 0603

Circuit Ref	Motorola Part No	Description
R221	0613952C81	CER CHIP RES 681 Ω 1% 0603
R222	0613952D12	CER CHIP RES 1300 Ω 1% 0603
R223	0613952C38	CER CHIP RES 243 Ω 1% 0603
R224	0613952E68	CER CHIP RES 49.9K Ω 1 0603
R225	0613952E18	CER CHIP RES 15.0K Ω 1 0603
R226	0613952E62	CER CHIP RES 43.2K Ω 1 0603
R227	0613952E62	CER CHIP RES 43.2K Ω 1 0603
R228	0613952E62	CER CHIP RES 43.2K Ω 1 0603
R229	0613952E62	CER CHIP RES 43.2K Ω 1 0603
R230	0613952J29	CER CHIP RES 150K Ω 5% 0603
R231	0613952J29	CER CHIP RES 150K Ω 5% 0603
R233	0613952E68	CER CHIP RES 49.9K Ω 1 0603
R234	0613952E18	CER CHIP RES 15.0K Ω 1 0603
R235	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R236	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R237	0614033F68	RES,MF,4.99KΩ,.1%,.063 W,SM,0603,50PPM/CEL,PB-FREE
R238	0614033G05	RES,MF,11KΩ,.1%,.063W, SM,0603,50PPM/CEL,PB-FREE
R239	0613952E68	CER CHIP RES 49.9K Ω 1 0603
R240	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R241	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R242	0613952F09	CER CHIP RES 121K Ω 1 0603
R243	0614033H15	RES,MF,140KΩ,.1%,.063W ,SM,0603,50PPM/CEL,PB-FREE
R244	0613952E21	CER CHIP RES 16.2K Ω 1 0603
R245	0685524Y01	RES,ZERO Ω,0805
R246	0685524Y01	RES,ZERO Ω,0805
R248	0685524Y01	RES,ZERO Ω,0805
R249	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R250	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R251	0613952J29	CER CHIP RES 150K Ω 5% 0603
R252	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R253	0685524Y01	RES,ZERO Ω,0805
R254	0613952J25	CER CHIP RES 100K Ω 5% 0603
R255	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R256	0613952J25	CER CHIP RES 100K Ω 5% 0603
R257	0613952D73	CER CHIP RES 5620 Ω 1% 0603
R258	0614033F30	RES,MF,2KΩ,.1%,.063W,S M,0603,50PPM/CEL,PB-FREE
R259	0614033F18	RES,MF,1.5KΩ,.1%,.063W, SM,0603,50PPM/CEL,PB-FREE
R261	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R263	0613952E62	CER CHIP RES 43.2K Ω 1 0603

Circuit Ref	Motorola Part No	Description
R264	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R265	0613952E62	CER CHIP RES 43.2K Ω 1 0603
R266	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R267	0613952J29	CER CHIP RES 150K Ω 5% 0603
R268	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R269	0614033F68	RES,MF,4.99KΩ,.1%,.063 W,SM,0603,50PPM/CEL,PB-FREE
R270	0614033F65	RES,MF,4.64KΩ,.1%,.063 W,SM,0603,50PPM/CEL,PB-FREE
R271	0613952D81	CER CHIP RES 6810 Ω 1% 0603
R272	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R274	0614033G05	RES,MF,11KΩ,.1%,.063W, SM,0603,50PPM/CEL,PB-FREE
R275	0614033F30	RES,MF,2KΩ,.1%,.063W,S M,0603,50PPM/CEL,PB-FREE
R276	0685524Y01	RES,ZERO Ω,0805
R277	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R278	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R279	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R280	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R282	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R283	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R284	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω

Circuit Ref	Motorola Part No	Description
R285	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R286	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R287	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R288	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R289	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R290	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R291	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R292	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R293	0613952G67	CER CHIP RES 0.0 +/- 0.050 Ω
R294	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R295	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R296	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R297	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R298	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R299	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R300	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R301	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R302	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R303	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R304	0613952E01	CER CHIP RES 10.0K Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R305	0613952C47	CER CHIP RES 301 Ω 1% 0603
R306	0613952C49	CER CHIP RES 316 Ω 1% 0603
R307	0613952C76	CER CHIP RES 604 Ω 1 0603
R308	0613952C76	CER CHIP RES 604 Ω 1 0603
R309	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R310	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R311	0613952B42	CER CHIP RES 26.7 Ω 1% 0603
R312	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R313	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R314	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R315	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R316	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R317	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R318	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R321	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R322	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R323	0613952H81	CER CHIP RES 2200 Ω 5% 0603
R324	0613952C76	CER CHIP RES 604 Ω 1 0603
R325	0685524Y01	RES,ZERO Ω,0805
R326	0613952E01	CER CHIP RES 10.0K Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R327	0613952C27	CER CHIP RES 187 Ω 1% 0603
R328	0613952C57	CER CHIP RES 383 Ω 1% 0603
R329	0613952C57	CER CHIP RES 383 Ω 1% 0603
R330	0613952C55	CER CHIP RES 365 Ω 1% 0603
R331	0613952C47	CER CHIP RES 301 Ω 1% 0603
R332	0613952C70	CER CHIP RES 523 Ω 1 0603
R333	0613952C47	CER CHIP RES 301 Ω 1% 0603
R334	0613952C49	CER CHIP RES 316 Ω 1% 0603
R335	0613952E01	CER CHIP RES 10.0K Ω 1% 0603
R336	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R337	0613952B93	CER CHIP RES 90.9 Ω 1
R338	0613952B93	CER CHIP RES 90.9 Ω 1
R339	0613952B76	CER CHIP RES 60.4 Ω 1% 0603
R340	0613952B84	CER CHIP RES 73.2 Ω 1% 0603
R341	0613952B51	CER CHIP RES 33.2 Ω 1% 0603
R342	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R343	0613952B93	CER CHIP RES 90.9 Ω 1
R344	0613952B93	CER CHIP RES 90.9 Ω 1
R345	0613952B76	CER CHIP RES 60.4 Ω 1% 0603
R346	0613952B84	CER CHIP RES 73.2 Ω 1% 0603
R347	0613952B51	CER CHIP RES 33.2 Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R348	0613952C01	CER CHIP RES 100 Ω 1% 0603
R349	0613952C23	CER CHIP RES 169 Ω 1
R350	0613952C30	CER CHIP RES 200 Ω 1% 0603
R351	0613952C01	CER CHIP RES 100 Ω 1% 0603
R352	0613952C38	CER CHIP RES 243 Ω 1% 0603
R353	0613952C30	CER CHIP RES 200 Ω 1% 0603
R354	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R355	0685524Y01	RES,ZERO Ω,0805
R356	0613952B68	CER CHIP RES 49.9 Ω 1% 0603
R357	0685524Y01	RES,ZERO Ω,0805
R358	0613952D47	CER CHIP RES 3010 Ω 1% 0603
R359	0613952H73	CER CHIP RES 1000 Ω 5% 0603
R360	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R361	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R362	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R363	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R364	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R365	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R366	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R367	0613952D51	CER CHIP RES 3320 Ω 1% 0603
R368	0613952E01	CER CHIP RES 10.0K Ω 1% 0603

Circuit Ref	Motorola Part No	Description
R369	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
R370	0613952E01	CER CHIP RES 10.0K $\Omega$ 1% 0603
SD1	51009685001	SIDAC,SM,DO-214AA,190V,50MA
SD2	4885585Y01	DIO,SIDAC-TOR,25V,50MA,DO-214AA
SD3	51009685001	SIDAC,SM,DO-214AA,190V,50MA
SD4	51009685001	SIDAC,SM,DO-214AA,190V,50MA
SD5	4885585Y01	DIO,SIDAC-TOR,25V,50MA,DO-214AA
SD6	51009685001	SIDAC,SM,DO-214AA,190V,50MA
T1	2584422T02	XFMR LIME MATCHING
T2	2584422T02	XFMR LIME MATCHING
U1	5185306Y01	IC, TRANSCEIVER, RS-232, AUTOSHUTDOWN
U2	569575-001-00	IC,SER FLSH,64MBIT,SM,SO16,S PI BUSS,LEAD-FREE/ ROHS COMPLIANT
U4	5114019M05	IC,INVTR,SCHMITT,74LVX 14,6PER PKG,SM,TSSOP14,PB- FREE
U5	51010132001	CYCLONE_III, FPGA,PB FREE,484
U6	5175190H01	LOW POWER STEREO CODEC ROHS
U7	5114005M13	IC DL OP AMP RAIL TO RAIL 8 PI
U8	5114005M13	IC DL OP AMP RAIL TO RAIL 8 PI
U9	5114005M13	IC DL OP AMP RAIL TO RAIL 8 PI
U10	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL- ATGE,3ST,SM,TSSOP20,P B-FREE

Circuit Ref	Motorola Part No	Description
U11	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOL- ATGE,3ST,SM,TSSOP20,P B-FREE
U12	5189906C01	IC SW ANAL SPST MAX4514EUK
U13	5189906C01	IC SW ANAL SPST MAX4514EUK
U14	5114005M13	IC DL OP AMP RAIL TO RAIL 8 PI
U15	5114005M13	IC DL OP AMP RAIL TO RAIL 8 PI
U16	5189906C01	IC SW ANAL SPST MAX4514EUK
U17	5189906C01	IC SW ANAL SPST MAX4514EUK
U18	5189906C01	IC SW ANAL SPST MAX4514EUK
U19	5189906C01	IC SW ANAL SPST MAX4514EUK
U20	5189906C01	IC SW ANAL SPST MAX4514EUK
U21	5189906C01	IC SW ANAL SPST MAX4514EUK
U22	5189906C01	IC SW ANAL SPST MAX4514EUK
U23	5189906C01	IC SW ANAL SPST MAX4514EUK
U24	5189906C01	IC SW ANAL SPST MAX4514EUK
U25	5189906C01	IC SW ANAL SPST MAX4514EUK
U26	5189906C01	IC SW ANAL SPST MAX4514EUK
U27	5189906C01	IC SW ANAL SPST MAX4514EUK
U28	5185307Y01	IC,VOLTAGE DETEC- TOR,LOW POWER
U29	5185196Y01	IC 400MA ADJ VREG LDO W18

Circuit Ref	Motorola Part No	Description
U30	5185196Y01	IC 400MA ADJ VREG LDO W18
U31	5189906C01	IC SW ANAL SPST MAX4514EUK
U32	5189906C01	IC SW ANAL SPST MAX4514EUK
U33	5114014A29	IC,LNR V REGLTR,ADJUST- ABLE,1.23V TO 30V,100MA,SM,SOIC8,PB- FREE
U34	5185196Y01	IC 400MA ADJ VREG LDO W18
U35	5114014A29	IC,LNR V REGLTR,ADJUST- ABLE,1.23V TO 30V,100MA,SM,SOIC8,PB- FREE
U36	5189906C01	IC SW ANAL SPST MAX4514EUK
U37	5189906C01	IC SW ANAL SPST MAX4514EUK
U38	5189906C01	IC SW ANAL SPST MAX4514EUK
U39	5189906C01	IC SW ANAL SPST MAX4514EUK
U40	5189906C01	IC SW ANAL SPST MAX4514EUK
U41	5189906C01	IC SW ANAL SPST MAX4514EUK
U42	5189906C01	IC SW ANAL SPST MAX4514EUK
U43	5189906C01	IC SW ANAL SPST MAX4514EUK
U44	5189906C01	IC SW ANAL SPST MAX4514EUK
U45	5189906C01	IC SW ANAL SPST MAX4514EUK
U5000	5163316A09	IC SWITCHING REGULA- TOR

Circuit Ref	Motorola Part No	Description
VR4	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB- FREE
VR5	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB- FREE
VR6	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB- FREE
VR7	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB- FREE
VR8	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB- FREE
VR9	4813979C08	DIODE,SUPR,.225W,MMB Z15,SM,SOT-23,ZEN,PB- FREE
VR10	4813979C08	DIODE,SUPR,.225W,MMB Z15,SM,SOT-23,ZEN,PB- FREE
VR11	4813977M16	DIODE,ZEN,MBZ5237,SM, SOT- 23,8.2V,10MA,.225W,ZEN, PB-FREE
VR12	4813977M14	DIODE,ZEN,MBZ5235,SM, SOT- 23,6.8V,10MA,.225W,ZEN, PB-FREE
VR13	4813977A48	DIODE ARRAY,SUPR,SM,SOT- 23,17V,.225W,ZEN,2,PB- FREE
VR14	4813977A43	PB-FREE, NOTCOM- PLETLYENRICHED
VR15	4813977A43	PB-FREE, NOTCOM- PLETLYENRICHED
VR16	4813977A43	PB-FREE, NOTCOM- PLETLYENRICHED

Circuit Ref	Motorola Part No	Description
VR17	4813977A43	PB-FREE, NOTCOMPLETELYENRICHED
VR18	4813977A43	PB-FREE, NOTCOMPLETELYENRICHED
VR19	4813977A67	DIODE ARRAY,TRNSNT PROT,SM,SOT-23,10V,.225W,ZEN,2,PB-FREE
VR20	4813977A67	DIODE ARRAY,TRNSNT PROT,SM,SOT-23,10V,.225W,ZEN,2,PB-FREE
VR21	4813977A43	PB-FREE, NOTCOMPLETELYENRICHED
VR22	4813977A43	PB-FREE, NOTCOMPLETELYENRICHED
VR23	4813977A43	PB-FREE, NOTCOMPLETELYENRICHED
Y1	4885021Y02	16.384 MHZ CLK OSC, +/-25PPM, 3.3V



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# Appendix A EMEA Warranty, Service and Technical Support

## A.1 Warranty and Service Support

Motorola offers long term support for its products. This support includes full exchange and/or repair of the product during the warranty period, and service/repair or spare parts support out of warranty. Any "return for exchange" or "return for repair" by an authorized Motorola Dealer must be accompanied by a Warranty Claim Form. Warranty Claim Forms are obtained by contacting an Authorized Motorola Dealer.

### A.1.1 Warranty Period and Return Instructions

The terms and conditions of warranty are defined fully in the Motorola Dealer or Distributor or Reseller contract. These conditions may change from time to time and the following notes are for guidance purposes only.

In instances where the product is covered under a "return for replacement" or "return for repair" warranty, a check of the product should be performed prior to shipping the unit back to Motorola. This is to ensure that the product has been correctly programmed or has not been subjected to damage outside the terms of the warranty.

Prior to shipping any radio back to the appropriate Motorola warranty depot, please contact Customer Resources (Please see page A-3). All returns must be accompanied by a Warranty Claim Form, available from your Customer Services representative. Products should be shipped back in the original packaging, or correctly packaged to ensure no damage occurs in transit.

### A.1.2 After Warranty Period

After the Warranty period, Motorola continues to support its products in two ways.

1. Motorola's Managed Technical Services (MTS) offers a repair service to both end users and dealers at competitive prices.
2. MTS supplies individual parts and modules that can be purchased by dealers who are technically capable of performing fault analysis and repair.

## A.2 European Radio Support Centre (ERSC)

The ERSC Customer Information Desk is available through the following service numbers:

Austria:	08 00 29 75 41	Italy:	80 08 77 387
Belgium:	08 00 72 471	Luxemburg:	08 00 23 27
Denmark:	80 88 05 72	Netherlands:	08 00 22 45 13
Finland:	08 00 11 49 910	Norway:	80 01 11 15
France:	08 00 90 30 90	Portugal:	08 00 84 95 70
Germany:	08 00 18 75 240	Spain:	90 09 84 902
Greece:	00 80 04 91 29 020	Sweden:	02 07 94 307
UK :	08 00 96 90 95	Switzerland:	08 00 55 30 82
Ireland:	18 00 55 50 21	Iceland:	80 08 147

Or dial the European Repair and Service Centre:  
Tel: +49 30 6686 1555

Please use these numbers for repair enquiries only.

## A.3 Piece Parts

Some replacement parts, spare parts, and/or product information can be ordered directly. If a complete Motorola part number is assigned to the part, it is available from Motorola Radio Products and Solutions Organization (RPSO). If no part number is assigned, the part is not normally available from Motorola. If the part number is appended with an asterisk, the part is serviceable by Motorola Depot only. If a parts list is not included, this generally means that no user-serviceable parts are available for that kit or assembly.

Orders for replacement parts, kits and assemblies should be placed directly on Motorola's local distribution/dealer organisation or via Motorola Online at: <http://www.motorola.com/emeaonline>

\* The Radio Products and Solutions Organization (RPSO) was formerly known as the Radio Products Services Division (RPSD) and/or the Accessories and Aftermarket Division (AAD).

## A.4 Technical Support

Motorola Product Services is available to assist the dealer/distributors in resolving any malfunctions which may be encountered.

**North Europe** - Stephen Woodrow  
Telephone: +44 (0) 1256 488 082  
Fax: +44 01256 488 080  
Email: CSW066@motorola.com

**Central and East Europe** - Siggy Punzenberger  
Telephone: +49 (0) 6128 70 2342  
Fax: +49 (0) 6128 95 1096  
Email: TFG003@email.mot.com

**Russia and Belarus** - Andrey Nagornykh  
Telephone: +7 495 787 8910  
Fax: +7 495 785 0185  
Email: MWCB47@email.mot.com

**Germany** - Customer Connect Team  
Telephone: +49 (0) 30 6686 1539  
Fax: +49 (0) 30 6686 1916  
Email: cgiss.emea@europe.mot.com

**Middle East and Africa** - Wayne Holmes  
Telephone: +49 (0)6126 957 6237  
Fax: +49 (0)6126 957 6826  
Email: wayne.holmes@motorola.com

**Italy** - Ugo Gentile  
Telephone: +39 0 2822 0325  
Fax: +39 0 2822 0334  
Email: C13864@email.mot.com

**France** - Armand Roy  
Telephone: +33 1 6935 7868  
Fax: +33 1 6935 7808  
Email: armand.roy@motorola.com

**France** - Laurent Irrmann  
Telephone: +33 1 6935 7866  
Fax: +33 1 6935 7808  
Email: laurent.irrmann@motorola.com

## A.5 Further Assistance From Motorola

You can also contact the Customer Help Desk through the following web address.  
<http://www.motorola.com/governmentandenterprise/contactus>

## **Notes**

## Appendix B LACR Replacement Parts Ordering and Motorola Service Centers

### B.1 Commercial Warranty

#### Limited Warranty

#### MOTOROLA COMMUNICATION PRODUCTS

##### I. What This Warranty Covers And For How Long

MOTOROLA INC. ("MOTOROLA") warrants the MOTOROLA manufactured Communication Products listed below ("Product") against material defects in material and workmanship under normal use and service for the period of time from the date of purchase as scheduled below:

Base Station/Repeater	Two (2) Years
Product Accessories	One (1) Year

Motorola will at its option and at no charge either repair the defective Product (with new or reconditioned parts), replace it (with a new or reconditioned Product), or refund the purchase price of the defective Product during the warranty period provided it is returned before the expiration of the warranty period and in accordance with the terms of this warranty. Replaced Product, parts or boards are warranted for the balance of the original applicable warranty period. All replaced Product, parts of boards shall become the property of MOTOROLA.

This express limited warranty is extended by MOTOROLA to the original end user purchasing the Product for commercial, industrial or governmental use only and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by MOTOROLA. MOTOROLA assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an officer of MOTOROLA. Unless made in a separate agreement between MOTOROLA and the original purchaser, MOTOROLA does not warrant the installation, maintenance or service of the Product.

MOTOROLA is not responsible in any way for any ancillary equipment not furnished by MOTOROLA which is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. Because each system which may use the Product is unique, MOTOROLA disclaims liability for range, coverage, or operation of the system in part or as a whole under this warranty.

## II. General Provisions

This warranty sets forth the full extent of MOTOROLA'S responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at MOTOROLA'S option, is the exclusive remedy. THIS WARRANTY IS THE COMPLETE WARRANTY FOR THE PRODUCT AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES. MOTOROLA DISCLAIMS ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY COMMERCIAL LOSS; INCONVIENCE; LOSS OF USE, TIME, DATA, GOOD WILL, REVENUES, PROFITS OR SAVINGS; OR OTHER SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO OR ARISING FROM THE SALE OR USE OF THE PRODUCT.

## III. How To Get Warranty Service

You must provide proof of purchase (bearing the date of purchase and Product item serial number) in order to receive warranty service and deliver or send the Product item, transportation and insurance prepaid, to an authorized warranty service location before the expiration of the warranty period. Warranty service will be provided by Motorola through one of its authorized warranty service locations. If you first contact the company which sold you the Product, it can facilitate your obtaining warranty service. You can also open a *Contact Us* case on Motorola Online (<http://www.motorola.com/businessonline>).

## IV. What This Warranty Does Not Cover

This warranty does not cover:

- A. Defects or damage resulting from use of the Product in other than its normal customary or authorized manner.
- B. Defects or damage from misuse, accident, liquid, lightning, neglect or act of God.
- C. Defects or damage from testing, maintenance, installation, alteration, modification, or adjustment not provided or authorized in writing by MOTOROLA.
- D. Breakage or damage to antennas unless caused directly by defects in material or workmanship.
- E. A Product subjected to unauthorized Product modifications, disassemblies or repairs (including, without limitation, the addition to the Product of non-Motorola supplied equipment) which adversely affect performance of the Product or interfere with Motorola's normal warranty inspection and testing of the Product to verify any warranty claim.
- F. Product which has had the serial number removed or made illegible.
- G. Freight costs to ship the product to the repair depot.
- H. Batteries (because they carry their own separate limited warranty) or consumables.
- I. Customer's failure to comply with all applicable industry and OSHA standards.
- J. A Product which, due to illegal or unauthorized alteration of the software/firmware in the Product, does not function in accordance with MOTOROLA's published specifications or the FCC type acceptance labeling in effect for the Product at the time the Product was initially distributed from MOTOROLA.
- K. Scratches or other cosmetic damage to Product surfaces that does not affect the operation of the Product.
- L. Normal and customary wear and tear.

## V. Governing Law

This Warranty is governed by the laws of the State of Illinois, USA.

## B.2 Replacement Parts Ordering

### B.2.1 Basic Ordering Information

When ordering replacement parts or equipment information, the complete identification number should be included. This applies to all components, kits, and chassis. If the component part number is not known, the order should include the number of the chassis or kit of which it is a part, and sufficient description of the desired component to identify it.

### B.2.2 Motorola Online

Motorola Online users can access our online catalog at <http://www.motorola.com/businessonline>

To register for online access:

- Have your Motorola Customer number available.
- Please go to <http://www.motorola.com/businessonline> and click on "Sign Up Now."
- Complete form and submit it.
- Contact your BDM to complete set-up and it will be done within 24 to 48 hours.

## B.3 Motorola Service Centers

### B.3.1 Servicing Information

If a unit requires further complete testing, knowledge and/or details of component level troubleshooting or service than is customarily performed at the basic level, please send the radio to a Motorola Service Center as listed below.

### B.3.2 Motorola de México, S.A.

Bosques de Alisos 125  
Col. Bosques de las Lomas CP 05120  
México D.F.  
México  
Tel: (5) 257-6700

### B.3.3 Motorola de Colombia, Ltd.

Carrera 7 No. 71-52  
Bogota - Colombia  
Tel: (571) 376-6990

## Notes



# Appendix C NAG Replacement Parts Ordering and Motorola Service Centers

## C.1 Commercial Warranty

### Limited Warranty

#### MOTOROLA COMMUNICATION PRODUCTS

##### I. What This Warranty Covers And For How Long

MOTOROLA INC. ("MOTOROLA") warrants the MOTOROLA manufactured Communication Products listed below ("Product") against material defects in material and workmanship under normal use and service for the period of time from the date of purchase as scheduled below:

Base Station/Repeater	Two (2) Years
Product Accessories	One (1) Year

Motorola will at its option and at no charge either repair the defective Product (with new or reconditioned parts), replace it (with a new or reconditioned Product), or refund the purchase price of the defective Product during the warranty period provided it is returned before the expiration of the warranty period and in accordance with the terms of this warranty. Replaced Product, parts or boards are warranted for the balance of the original applicable warranty period. All replaced Product, parts of boards shall become the property of MOTOROLA.

This express limited warranty is extended by MOTOROLA to the original end user purchasing the Product for commercial, industrial or governmental use only and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by MOTOROLA. MOTOROLA assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an officer of MOTOROLA. Unless made in a separate agreement between MOTOROLA and the original purchaser, MOTOROLA does not warrant the installation, maintenance or service of the Product.

MOTOROLA is not responsible in any way for any ancillary equipment not furnished by MOTOROLA which is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. Because each system which may use the Product is unique, MOTOROLA disclaims liability for range, coverage, or operation of the system in part or as a whole under this warranty.

## II. General Provisions

This warranty sets forth the full extent of MOTOROLA'S responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at MOTOROLA'S option, is the exclusive remedy. THIS WARRANTY IS THE COMPLETE WARRANTY FOR THE PRODUCT AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES. MOTOROLA DISCLAIMS ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY COMMERCIAL LOSS; INCONVIENCE; LOSS OF USE, TIME, DATA, GOOD WILL, REVENUES, PROFITS OR SAVINGS; OR OTHER SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO OR ARISING FROM THE SALE OR USE OF THE PRODUCT.

## III. How To Get Warranty Service

You must provide proof of purchase (bearing the date of purchase and Product item serial number) in order to receive warranty service and deliver or send the Product item, transportation and insurance prepaid, to an authorized warranty service location before the expiration of the warranty period. Warranty service will be provided by Motorola through one of its authorized warranty service locations. If you first contact the company which sold you the Product, it can facilitate your obtaining warranty service. You can also open a *Contact Us* case on Motorola Online (<http://www.motorola.com/businessonline>).

## IV. What This Warranty Does Not Cover

This warranty does not cover:

- A. Defects or damage resulting from use of the Product in other than its normal customary or authorized manner.
- B. Defects or damage from misuse, accident, liquid, lightning, neglect or act of God.
- C. Defects or damage from testing, maintenance, installation, alteration, modification, or adjustment not provided or authorized in writing by MOTOROLA.
- D. Breakage or damage to antennas unless caused directly by defects in material or workmanship.
- E. A Product subjected to unauthorized Product modifications, disassemblies or repairs (including, without limitation, the addition to the Product of non-Motorola supplied equipment) which adversely affect performance of the Product or interfere with Motorola's normal warranty inspection and testing of the Product to verify any warranty claim.
- F. Product which has had the serial number removed or made illegible.
- G. Freight costs to ship the product to the repair depot.
- H. Batteries (because they carry their own separate limited warranty) or consumables.
- I. Customer's failure to comply with all applicable industry and OSHA standards.
- J. A Product which, due to illegal or unauthorized alteration of the software/firmware in the Product, does not function in accordance with MOTOROLA's published specifications or the FCC type acceptance labeling in effect for the Product at the time the Product was initially distributed from MOTOROLA.
- K. Scratches or other cosmetic damage to Product surfaces that does not affect the operation of the Product.
- L. Normal and customary wear and tear.

## V. Governing Law

This Warranty is governed by the laws of the State of Illinois, USA.

## C.2 Replacement Parts Ordering

### C.2.1 Basic Ordering Information

When ordering replacement parts or equipment information, the complete identification number should be included. This applies to all components, kits, and chassis. If the component part number is not known, the order should include the number of the chassis or kit of which it is a part, and sufficient description of the desired component to identify it.

### C.2.2 Motorola Online

Motorola Online users can access our online catalog at

<http://motorola.com/businessonline>

To register for online access, please call 1-800-422-4210 (for U.S. and Canada Service Centers only). International customers can obtain assistance at <http://motorola.com/businessonline>

### C.2.3 Mail Orders

Mail orders are only accepted by the US Federal Government Markets Division (USFGMD).

Motorola  
7031 Columbia Gateway Drive  
3rd Floor - Order Processing  
Columbia, MD 21046  
U.S.A.

### C.2.4 Telephone Orders

Radio Products and Solutions Organization\*  
(United States and Canada)  
7:00 AM to 7:00 PM (Central Standard Time)  
Monday through Friday (Chicago, U.S.A.)  
1-800-422-4210  
1-847-538-8023 (United States and Canada)

U.S. Federal Government Markets Division (USFGMD)  
1-877-873-4668  
8:30 AM to 5:00 PM (Eastern Standard Time)

### C.2.5 Fax Orders

Radio Products and Solutions Organization\*  
(United States and Canada)  
1-800-622-6210  
1-847-576-3023 (United States and Canada)

USFGMD  
(Federal Government Orders)  
1-800-526-8641 (For Parts and Equipment Purchase Orders)

## **C.2.6 Parts Identification**

Radio Products and Solutions Organization\*  
(United States and Canada)  
1-800-422-4210

## **C.2.7 Product Customer Service**

Radio Products and Solutions Organization (United States and Canada)  
1-800-927-2744

\* The Radio Products and Solutions Organization (RPSO) was formerly known as the Radio Products Services Division (RPSD) and/or the Accessories and Aftermarket Division (AAD).

## **C.3 Motorola Service Centers**

### **C.3.1 Servicing Information**

If a unit requires further complete testing, knowledge and/or details of component level troubleshooting or service than is customarily performed at the basic level, please send the repeater to a Motorola Service Center as listed below.

### **C.3.2 Motorola Service Center**

Motorola Repair  
2214 Galvin Drive  
Elgin, IL 60123  
Tel: 1-800-221-7144

### **C.3.3 Motorola Federal Technical Center**

4395 Nicole Drive  
Lanham, MD 20706  
Tel: 1-800-969-6680  
Fax: 1-800-784-4133

### **C.3.4 Motorola Canadian Technical Logistics Center**

Motorola Canada Ltd.  
8133 Warden Avenue  
Markham, Ontario, L6G 1B3  
Tel: 1-800-543-3222  
Fax: 1-888-331-9872 or 1-905-948-5970

## Appendix D MOTOTRBO Base Station/Repeater – EME ASSESSMENT

### D.1 Executive Summary

The Electromagnetic Energy (EME) compliance boundaries in a typical system configuration of the Motorola MOTOTRBO MTR3000 Base Station/Repeater described in the following are derived.

Compliance is established with respect to the applicable limits defined in the ICNIRP guidelines [1], the United States regulations [2]-[3], and in the CENELEC Standards EN50384:2002 [5] and EN50385:2002 [6]. These standards and regulations apply to *occupational* and *general public* EME exposure.

The assessment was carried out using a computational method described in the CENELEC Standard EN50383:2002 [4], which is referenced by the EN50385:2002, and this report has been drafted in accordance with its requirements. Thus the assessment and report address the European Radio and Telecommunications Terminal Equipment (R&TTE) Directive requirements concerning EME exposure.

The following table provides the compliance distances for *general public* and *occupational-type* exposure, for the antenna considered in this analysis, based on a typical system configuration:

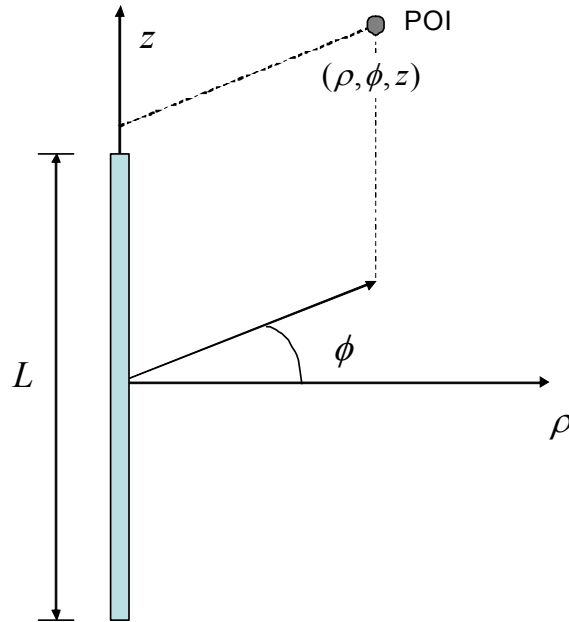
Compliance distances	Antenna front (Andrew mod. DB408)	Ground level (20 m below antenna)
General public exposure	6 m	Always compliant
Occupational-type exposure	1.2 m	Always compliant

### D.2 Exposure Prediction Model

#### D.2.1 Exposure in Front of the Antenna

The cylindrical-wave model defined in Clause 8.3.4 of the EN50383:2002 standard is applied to determine the compliance boundaries for workers and general public for a typical system configuration of the MOTOTRBO MTR3000 Base Station/Repeater.

Figure D-1. Reference frame for the point of interest (POI) cylindrical co-ordinates



Per the reference frame in Figure D-1, the cylindrical-wave model is applicable in the volume described in cylindrical co-ordinates  $(\rho, \phi, z)$  as follows:

$$\lambda/4 \leq \rho \leq \min\{r_c, 2L^2/\lambda\}, \quad |\phi| \leq \delta/2, \quad |z| \leq L/2,$$

where  $\lambda$  is the wavelength in  $m$ ,  $L$  is the antenna largest dimension in  $m$ ,  $\delta$  is the angle in degrees defining the -3 dB beamwidth of a directional antenna (for an omni-directional antenna  $\delta$  is equal to 360 degrees), and

$$r_c = G_A \cdot L \cdot \delta / 720$$

where  $G_A$  is the antenna maximum gain relative to an isotropic antenna. The power flux density ( $S$ ), expressed in  $W/m^2$ , is calculated as follows:

$$S_{cyl} = \frac{P}{\pi L \rho} \frac{180}{\delta} \quad (1)$$

where  $P$  is the input power to the antenna. In the region where,

$$\lambda/4 \leq r_c \leq 2L^2/\lambda$$

the power flux density is calculated as the maximum between the cylindrical and spherical-wave models, where the latter is expressed as follows:

$$S_{sph} = \frac{PG_A}{4\pi\rho^2} \quad (2)$$

Spatial power density averaging, which is required by some regulations, is embedded in the cylindrical-wave model formulation, therefore it does not require additional considerations.

## D.2.2 Exposure at Ground Level

Several methods can be employed to determine the EME exposure at ground level. Such an assessment is not necessary if the mounting height of the antenna is larger than the compliance distance *in front* of the antenna, computed using the EN50383:2002 methodology outlined in D.2.1. If this is not feasible, then the following approach can be employed.

At ground level exposure occurs in the antenna far-field. The antenna phase center is assumed to be the mounting height. The resulting predictive equation for the power density is:

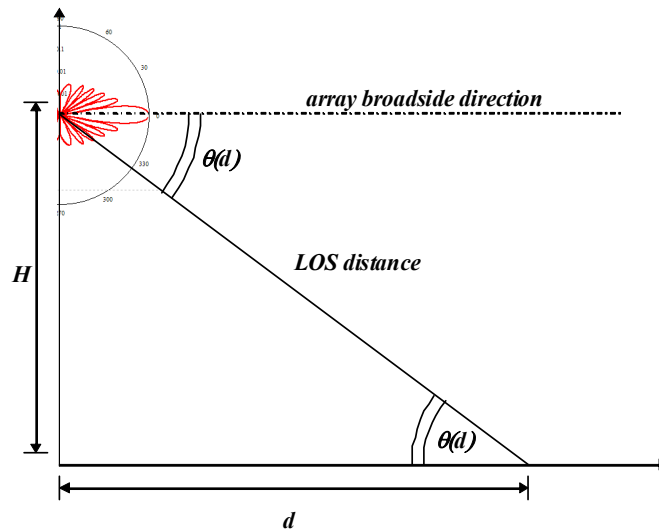
$$S(d) = (2.56) \frac{P \cdot G(\theta)}{4\pi(H^2 + d^2)} \quad (3)$$

where  $G(\theta)$  is the elevation gain pattern, which is approximated by the following expression:

$$G(\theta) = G_A \left| \frac{\sin\left(\frac{k_0 L}{2} \sin\theta\right)}{\frac{k_0 L}{2} \sin\theta} \right|^2 \quad (4)$$

where  $k_0 = 2\pi / \lambda$  is the free-space wavenumber and  $L$  is the *effective* antenna length yielding the appropriate vertical beamwidth, while  $H$  is the antenna height above ground and  $d$  is the *point of interest* (POI) distance from the vertical antenna projection to ground (see Figure D-2). The multiplicative factor 2.56 is introduced to enforce near-perfect, in-phase ground reflection as recommended in [2]. In this case, spatial averaging is not carried out to make the EME exposure assessment more conservative.

Figure D-2. Schematic of the ground-level exposure model adopted for the assessment



### D.3 Typical System Configuration

The MOTOTRBO MTR3000 Base Station/Repeater operates in the frequency ranges 403–470 MHz and 470–524 MHz, with up to five channels transmitting 100 W radio frequency (RF) power. The typical system configuration comprises an omnidirectional array antenna featuring 6–10 dBd gain, installed at or above 20 m from ground level, and fed by the MTR3000 Base Station/Repeater through a combiner characterized by a typical 3 dB transmission loss, and a 30 m 7/8" coaxial cable characterized by a typical 2.7 dB/100m loss at 400 MHz, resulting in a total 3.9 dB transmission loss. Based on these characteristics, the RF power at the antenna input is about 200 W.

Since shorter antennas provide a conservative EME exposure assessment from equation (1), the parameters of a typical 6.6 dBd antennas are employed. Such an antenna (e.g., Andrew DB408) would exhibit a typical elevation beamwidth of about 14 degrees.

### D.4 Exposure Limits

Based on the MTR3000 Base Station/Repeater operating frequency range, the most conservative power density limits are those defined in the ICNIRP guidelines [1]. They are  $10.1 \text{ W/m}^2$  for occupational exposure, and  $2.02 \text{ W/m}^2$  for general public exposure. They will be used for the EME exposure assessment.

### D.5 EME Exposure Evaluation

#### D.5.1 Exposure in Front of the Antenna

The assessment is based on the following characteristics of the Andrew DB408 antenna:

$$G_A = 10^{\frac{6.6+2.15}{10}} = 7.5 \quad P = 200 \text{ W} \quad \delta = 360^\circ \quad L = 2.7 \text{ m}$$

The compliance boundary distance is computed, from equation (1), as follows:

$$\rho = \frac{P}{\pi L S_{\text{lim}}} \frac{180}{\delta}$$

where  $S_{\text{lim}}$  is the applicable power density limit. For occupational exposure, this equation gives:

$$\rho_{\text{OCC}} = \frac{200 \text{ W}}{\pi \cdot 2.7 \text{ m} \cdot 10.1 \text{ W/m}^2} \frac{180}{360} = 1.2 \text{ m}$$

while for general public exposure it gives:

$$\rho_{\text{GP}} = \frac{200 \text{ W}}{\pi \cdot 2.7 \text{ m} \cdot 2.02 \text{ W/m}^2} \frac{180}{360} = 6 \text{ m}$$

#### D.5.2 Exposure at Ground Level

Since the antenna installation height above ground level in the typical system configuration (20 m) is larger than either of the compliance boundaries determined in D.5.1, the EME exposure at ground level is always compliant with the exposure limits defined in the ICNIRP guidelines.



## D.6 Compliance Boundary Description

Based on the analysis in section D.5, the compliance boundaries for *occupational* and *general public* exposure are defined as cylinders enclosing the antenna (see Figure D-3.), extending 75 cm (one wavelength) above and below the physical antenna, with radii:

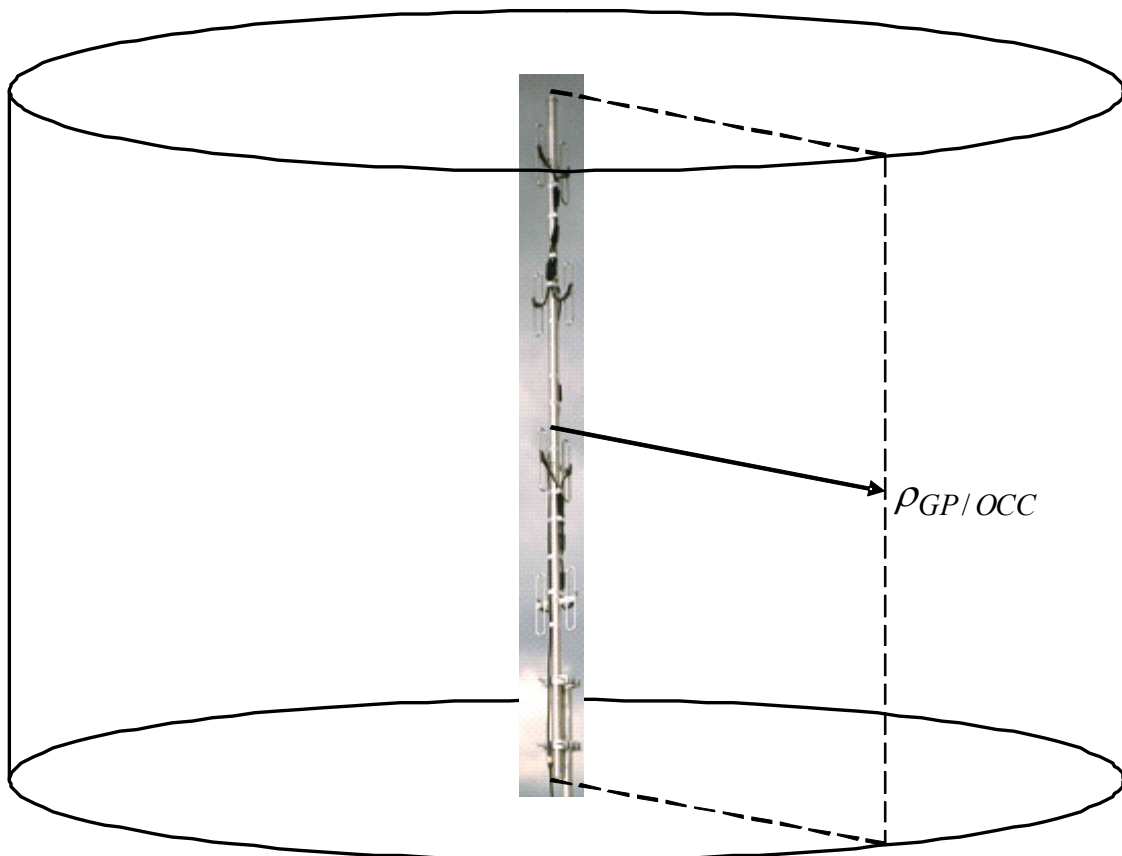
Occupational exposure:

$$\rho_{OCC} = 1.2 \text{ m}$$

General Public exposure:

$$\rho_{GP} = 6 \text{ m}$$

Figure D-3. Compliance boundary for general public (GP) and occupational (OCC) exposure



## D.7 References

1. International Commission on Non-Ionizing Radiation Protection (ICNIRP), "Guideline for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields," Health Physics, vol. 74, no. 4, pp. 494-522, April 1998.
2. United States Federal Communication Commission, "Evaluating compliance with FCC guidelines for human exposure to radio frequency electromagnetic fields," OET Bulletin 65, Ed. 97-01, Section 2 (Prediction Methods), August 1997.
3. US Code of Federal Regulations, Title 47, Volume 1, Sec. 1.1310 Radio frequency radiation exposure limits (Revised as of October 1, 2003).  
[http://edocket.access.gpo.gov/cfr\\_2003/octqtr/47cfr1.1310.htm](http://edocket.access.gpo.gov/cfr_2003/octqtr/47cfr1.1310.htm).

4. EN 50383:2002. Basic standard for the calculation and measurement of electromagnetic field strength and SAR related to human exposure from radio base stations and fixed terminal stations for wireless telecommunications system (110 MHz - 40 GHz). CENELEC (European Committee for Electrotechnical Standardization).
5. EN 50384:2002. Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110 MHz - 40 GHz). Occupational. CENELEC (European Committee for Electrotechnical Standardization).
6. EN 50385:2002. Product standard to demonstrate the compliances of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110 MHz - 40 GHz). General public. CENELEC (European Committee for Electrotechnical Standardization).

## Glossary of Terms and Acronyms

This glossary contains an alphabetical listing of terms and their definitions that are applicable to portable and mobile subscriber radio products. All terms do not necessarily apply to all radios, and some terms are merely generic in nature.

Term	Definition
<b>AGC</b>	Automatic Gain Control
<b>Alert tone</b>	Audio signal produced by the station, providing feedback to the user.
<b>Analog</b>	Refers to a continuously variable signal or a circuit or device designed to handle such signals.
<b>ASIC</b>	Application Specific Integrated Circuit
<b>AUX</b>	Auxiliary
<b>Band</b>	Frequencies allowed for a specific purpose.
<b>CCI</b>	Control Channel Indicate
<b>CDCSS</b>	Continuous Digital-Controlled Squelch Systems (DPL)
<b>CTCSS</b>	Continuous Tone-Controlled Squelch Systems (PL)
<b>CIT</b>	Central Interconnect Terminal. Used to provide telephone interconnect capability in a trunked station.
<b>CIU</b>	Console Interface Unit. Interface between operator console and station to provide encryption/decryption functions.
<b>Clear</b>	Channel modulation type in which voice information is transmitted over the channel using analog modulation.
<b>Code detect</b>	Traditional term used to indicate that a 12kbps CVSD signal is being received on the RF channel.
<b>Conventional</b>	Term used for standard non-trunked radio system (usually using TRC/DC console).
<b>CPI</b>	Console Priority Interface - option allowing console control of a trunked station.
<b>CPS</b>	Customer Programming Software: Software with a graphical user interface containing the feature set of a radio.
<b>DDM</b>	Dual Device Module
<b>Default</b>	A pre-defined set of parameters.
<b>Digital</b>	Refers to data that is stored or transmitted as a sequence of discrete symbols from a finite set; most commonly this means binary data represented using electronic or electromagnetic signals.
<b>DPL</b>	Digital Private Line (See PL)

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Term	Definition
<b>DSP</b>	Digital Signal Processor, microprocessor specifically designed to perform digital signal processing algorithms.
<b>DVP</b>	Digital Voice Protection, or Digital Voice Privacy, applies to the Vulcan encryption algorithm and the Motorola product in which it is sold.
<b>EIA</b>	Electronic Industries Association
<b>E/M</b>	Telephone circuit signalling lines (Ear/Mouth, Ernie/Mary)
<b>EOM</b>	End-Of-Message, 6 kHz signal transmitted at the end of a 12 kbps CVSD signal that is used by the receiving unit for fast muting of the speaker audio for squelch tail elimination.
<b>ESD</b>	Electro Static Discharge
<b>ETS</b>	European Telecommunications Standards
<b>EU</b>	European Union
<b>Failsoft</b>	Trunked station mode entered when central controller fails
<b>FCC</b>	Federal Communications Commission.
<b>FFSK</b>	Fast FSK
<b>FM</b>	Frequency Modulation
<b>Frequency</b>	Number of times a complete electromagnetic-wave cycle occurs in a fixed unit of time (usually one second).
<b>FRU</b>	Field Replaceable Unit
<b>FSK</b>	Frequency Shift Keying
<b>GPI</b>	General Purpose Input
<b>GPO</b>	General Purpose Output
<b>HLGT</b>	High Level Guard Tone
<b>IC</b>	Integrated Circuit, An assembly of interconnected components on a small semiconductor chip, usually made of silicon. One chip can contain millions of microscopic components and perform many functions.
<b>IF</b>	intermediate frequency
<b>I/O</b>	Input or Output
<b>IRB</b>	Inbound Recovery Board used with the Trunking Controller
<b>IRQ</b>	Interrupt Request.
<b>kHz</b>	kilohertz: One thousand cycles per second. Used especially as a radio-frequency unit.
<b>LCD</b>	Liquid-Crystal Display: An LCD uses two sheets of polarizing material with a liquid-crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them.

Term	Definition
<b>LED</b>	Light Emitting Diode: An electronic device that lights up when electricity is passed through it.
<b>LLGT</b>	Low Level Guard Tone
<b>MAN_CS</b>	Manual Channel Select.
<b>MDC</b>	Motorola Data Communications. 1200 or 4800 baud data signalling scheme.
<b>MHZ</b>	Megahertz: One million cycles per second. Used especially as a radio-frequency unit.
<b>MISO</b>	Master In, Slave Out.
<b>MON</b>	Monitor.
<b>MOSI</b>	Master Out, Slave In.
<b>MRTI</b>	Microprocessor Radio-Telephone Interconnect; a Motorola system that provides a repeater connection to the telephone network (The MRTI allows the radio to access the telephone network when the proper access code is received).
<b>MSK</b>	Minimum Shift Keying
<b>OSW</b>	Outbound Signalling Word, data packet transmitted on the outbound Trunking control channel by the central controller that contains call assignment information for the subscriber.
<b>PA</b>	Power Amplifier that transmits final RF signal to transmit antenna
<b>Paging</b>	One-way communication that alerts the Receiver to retrieve a message.
<b>PC Board</b>	Printed Circuit Board. Also referred to as a PCB.
<b>PFC</b>	Power Factor Correction
<b>PL</b>	Private-Line tone squelch; a continuous subaudible tone that is transmitted along with the carrier (A radio that has PL on the receive frequency will require both the presence of carrier and the correct PL tone before it will unmute). Also, if there is PL on the transmit frequency, all transmissions by the radio will be modulated with the PL tone. Modulation will be continuous.
<b>PLL</b>	Phase locked loop; a circuit in which an oscillator is kept in phase with a reference, usually after passing through a frequency divider.
<b>Programming Cable</b>	A cable that allows the CPS to communicate directly with the radio using RS232.
<b>PSTN</b>	Public Switched Telephone Network
<b>PTT</b>	Push-to-talk; the switch located on the left side of the radio which, when pressed causes the radio to transmit.
<b>RA/RT</b>	Remote Access/Remote Transmit
<b>RAC</b>	Repeater Access Control

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<b>Term</b>	<b>Definition</b>
<b>RdStat</b>	Receiver Data Status
<b>Receiver</b>	Electronic device that amplifies RF signals. A Receiver separates the audio signal from the RF carrier, amplifies it, and converts it back to the original sound waves.
<b>Repeater</b>	Remote transmit/receive facility that retransmits received signals in order to improve communications range and coverage.
<b>RF</b>	Radio Frequency, The portion of the electromagnetic spectrum between audio sound and infrared light (approximately 10 kHz to 10 GHz).
<b>RSS</b>	Radio Service Software; the software application used to program and service the station.
<b>RSSI</b>	Received Signal Strength Indicator; a dc voltage proportional to the received RF signal strength.
<b>Rx</b>	Receive.
<b>SCM</b>	Station Control Module; station controller.
<b>Signal</b>	An electrically transmitted electromagnetic wave.
<b>SINAD</b>	Acronym for the ratio of signal plus noise plus distortion and noise plus distortion.
<b>SMR</b>	Schaumburg Manual Revision
<b>Smart Repeater</b>	Trunking system in which channel control is distributed among several repeaters.
<b>Spectra-TAC</b>	Analog Total Area Coverage voting comparator used to select wide area receivers.
<b>Spectrum</b>	Frequency range within which radiation has specific characteristics.
<b>SPI</b>	Serial Peripheral Interface (clock and data lines); simple synchronous serial interface for data transfer between processors and peripheral ICs.
<b>Squelch</b>	Muting of audio circuits when received signal levels fall below a pre-determined value. With carrier squelch, all channel activity that exceeds the radio's preset squelch level can be heard.
<b>SRAM</b>	Static RAM, memory chip used for scratchpad memory.
<b>TCC</b>	Trunking Central Controller; main control unit of the trunked dispatch system; handles ISW and OSW messages to and from radios in the field (See ISW and OSW).
<b>TOC</b>	Turn Off Code; alternating binary pattern used by DPL signalling to provide fast muting of the receiving radio.
<b>TOT</b>	Time-out Timer: A timer that limits the length of a transmission.
<b>TPL</b>	Tone Private Line.

Term	Definition
<b>Transceiver</b>	Transmitter-Receiver. A device that both transmits and receives analog or digital signals. Also abbreviated as XCVR.
<b>Transmitter</b>	Electronic equipment that generates and amplifies an RF carrier signal, modulates the signal, and then radiates it into space.
<b>TRC</b>	Tone Remote Control
<b>Trunking</b>	Radio control system which permits efficient frequency utilization and enhanced control features.
<b>Tx</b>	Transmit.
<b>Type II Trunking</b>	Motorola trunking system which provides extended features.
<b>UHF</b>	Ultra High Frequency
<b>USB</b>	Universal Serial Bus: An external bus standard that supports data transfer rates of 12 Mbps.
<b>VCO</b>	Voltage-Controlled Oscillator; an oscillator whereby the frequency of oscillation can be varied by changing a control voltage.
<b>VHF</b>	Very High Frequency
<b>VIP</b>	Vehicle Interface Port.
<b>VOX</b>	Voice Operated Switch; Used with MRTI.
<b>VSWR</b>	Voltage Standing Wave Ratio.
<b>WCI</b>	Wildcard Input
<b>WCO</b>	Wildcard Output
<b>WFI</b>	Word Frame Interrupt; used to synchronize trunking data messages in a Smart Repeater system.
<b>Wide Area</b>	Wide area systems allow expanded radio coverage by using multiple receivers and/or transmitters.
<b>WL</b>	Wireline
<b>WL Rx</b>	Wireline Receive; information from station RF Receiver sent to wireline equipment.
<b>WL Tx</b>	Wireline Transmit; information from wireline equipment sent to station RF transmitter.
<b>XPR</b>	Refers to Digital Professional Repeater model names in the MOTOTRBO Professional Digital Two-Way Radio System.







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