

MOTOTRBO™ MTR3000

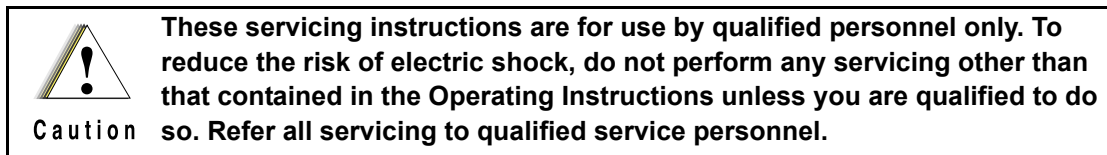
Base Station/Repeater

Detailed Service Manual



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!



Caution

Compliance with FCC guidelines for human exposure to Electromagnetic Energy (EME) at Transmitter Antenna sites generally requires that Personnel working at 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, using standard operating procedures (work practices), wearing personal protective equipment, or limiting the duration of exposure. For more details and specific guidelines, see Appendix A of the R56 Standards and Guidelines for Communications Sites (6881089E50) manual.

Observe the following general safety precautions during all phases of operation, service and repair of the equipment described in this manual. Follow the safety precautions listed below and all other warnings and cautions necessary for the safe operation of all equipment. Refer to the appropriate section of the product service manual for additional pertinent safety information. Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modifications of equipment.

The installation process requires preparation and knowledge of the site before installation begins. Review installation procedures and precautions in the Motorola R56 manual Standards and Guidelines for Communications Sites (6881089E50) before performing any site or component installation.

Always follow all applicable safety procedures, such as Occupational Safety and Health Administration (OSHA) requirements, National Electrical Code (NEC) requirements, local code requirements, safe working practices, and good judgment must be used by personnel. General safety precautions include the following:

- Read and follow all warning notices and instructions marked on the product or included in this manual before installing, servicing, or operating the equipment. Retain these safety instructions for future reference.
- If troubleshooting the equipment while power is on, be aware of the live circuits.
- 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 manual Standards and Guidelines for Communications Sites (6881089E50) 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.
- Only a qualified technician familiar with similar electronic equipment should service equipment.
- 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.

- Have personnel call in with their travel routes to help ensure their safety while traveling between remote sites.
- Institute a communications routine during certain higher risk procedures where the on-site technician continually updates management or safety personnel of the progress so that help can be dispatched if needed.
- Never store combustible materials in or near equipment racks. The combination of combustible material, heat and electrical energy increases the risk of a fire safety hazard.
- Equipment shall be installed in a site that meets the requirements of a “restricted access location,” per UL60950-1, 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. The warning label for hot surfaces is shown on the right.



RF energy burn hazard. Disconnect power in the cabinet to prevent injury while disconnecting and connecting antennas.



All Tx and Rx RF cables' outer shields must be grounded per Motorola R56 requirements.



DC input voltage shall be no higher than 60VDC. 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. Failure to follow this guideline may result in electric shock.



All Tx and Rx RF cables shall be connected to a surge protection device according to Motorola R56 documents. Do not connect Tx and Rx RF cables directly to an outside antenna.

IMPORTANT: All equipment must be serviced by Motorola trained personnel.

Notes

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.

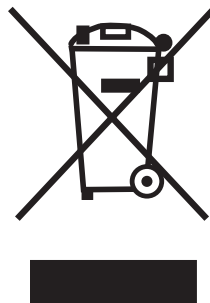
Disposal of your Electronic and Electric Equipment

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.



Notes

Document History

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

Edition	Description	Date
68007024097-A	Initial Release	January 2010

Notes

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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 band 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
			8475374H02 (Controller Board)	B	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

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	25 W–100 W	8475374H02 (Controller Board)	B	4
			84009273002 (Receiver Board)	B	6
			84009272002 (Exciter Board)	B	7
	435–470 MHz	25 W–100 W	8475374H02 (Controller Board)	B	4
			84009273002 (Receiver Board)	B	6
			84009272002 (Exciter Board)	B	7

Notes

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.

Notes

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 note and caution 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 that is important.



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 Conventional (MOTOTRBO)
 - MOTOTRBO DMR Tier 2 Conventional – Single Site
 - MOTOTRBO DMR Tier 2 Conventional – IP Site Connect
 - MOTOTRBO Capacity Plus Trunking
 - MOTOTRBO Connect Plus Trunking
- 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.

Note At any given time, the base station/repeater either operates as a digital repeater or as an analog 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.

Currently, the MTR2000 MOTOTRBO Digital Upgrade is limited to the high power (100 W) UHF. Additionally, once the upgrade is performed, the wireline and Auxiliary I/O board functionality will no longer be supported.

A MTR2000 MOTOTRBO Digital Upgrade comprises the following:

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

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.

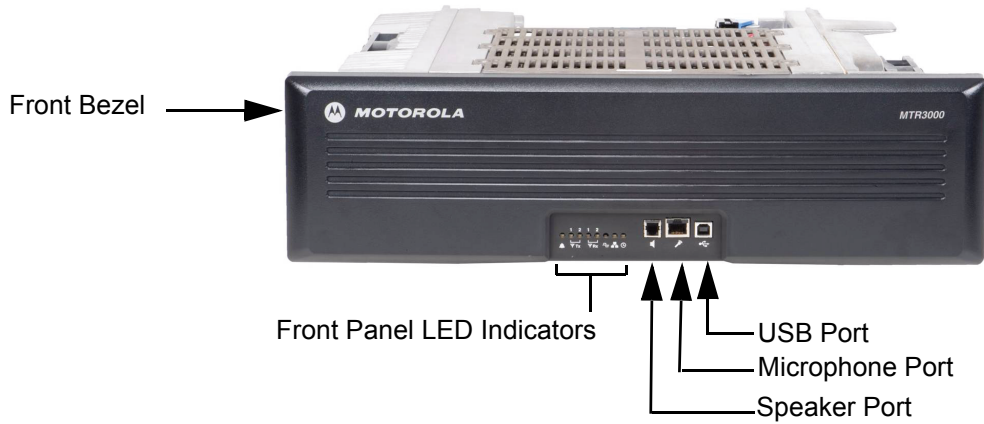


Figure 1-1 Front view (with front bezel) of MTR3000 Base Station/Repeater

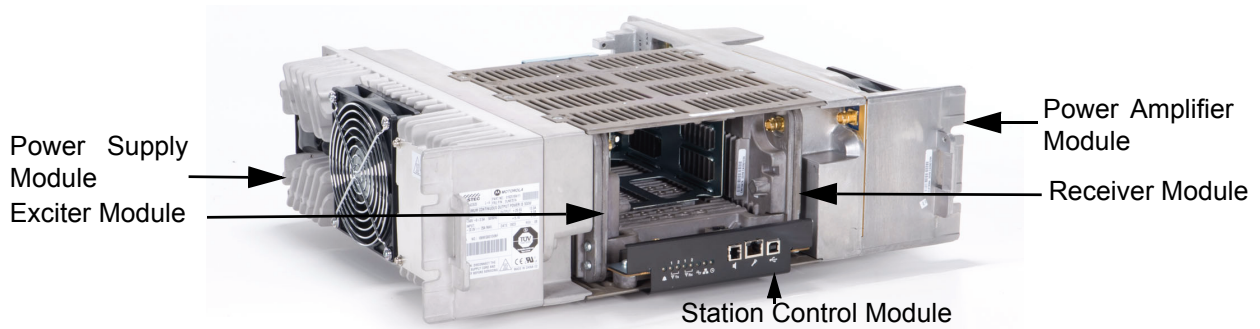


Figure 1-2 Front view (without front bezel) of MTR3000 Base Station/Repeater

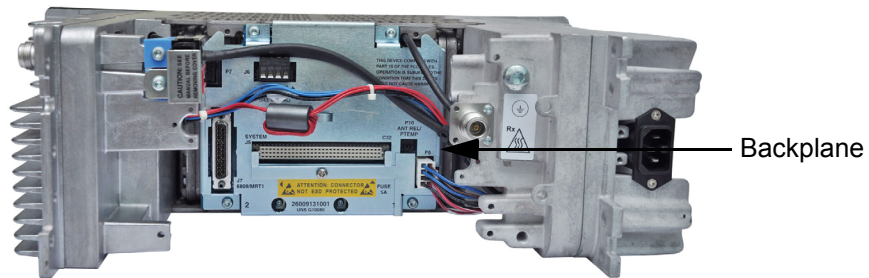


Figure 1-3 Rear view of MTR3000 Base Station/Repeater

The MTR3000 model ships preconfigured 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 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 these TIA603D, ETSI 086, ETSI 113 requirements
 - 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)
- External Reference 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
- 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 for

- 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 station may be configured with

- External Pre-selector
- Antenna Relay
- Duplexer
- External Dual Circulator Tray

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 Priority – Factory Programmed to Repeat Path

1.2.2 Features not offered

Please disregard any references to the following items, as they are not available for the MTR3000 first release (T3000A).

- Wireline Interface Board
- Auxiliary I/O Option Board
- Peripheral temperature sensing device
- Voting or standalone Receiver
- RSSI Output (via RDAC only)
- Simplex operation (Tx=Rx)
- Integrated Tone Remote Control.

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 Frequency Ranges and Power Levels

Frequency Band	Bandwidth	Power Level
UHF	403–470 MHz	8–100 W
	470–524 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	25–100 W
	435–470 MHz	25–100 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	28.6 VDC (25.7–30.7 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)
Industry Canada <ul style="list-style-type: none"> • IC certification / registration number • IC model number • Tx / Rx Frequency range 	109AB-T3000 T3000-UHF R1 406.1–430 MHz, 450–470 MHz

Table 1-4 MTR3000 Base Station/Repeater Specifications

Parameter	Specifications
	UHF
Input Power (All Modulations)	
100 W Standby (AC Line 117 V / 220 V)	0.4 A / 0.2 A
100 W Transmit at Rated Power (AC Line 117 V / 220 V)	3.3 A / 1.8 A
100 W Standby (28 VDC)	0.8 A
100 W Transmit at Rated Power (28 VDC)	11.5 A
Frequency Reference	
Internal Frequency Stability (PPM)	1.5 PPM
External Reference Capable	Yes
Frequency Bands	
Electronic Bandwidth	403–470 MHz (UHF R1), 470–524 MHz (UHF R2)
Receiver	
Selectivity* 25 kHz / 12.5 kHz	80 dB / 75 dB
Sensitivity [†] (12 dB Sinad)	0.3 μ V
Sensitivity ^{†**} (5% BER)	0.3 μ V
Sensitivity with External Peripherals (Antenna Relay and/or Preselector)	0.35 μ V
Intermodulation Rejection 25 kHz / 12.5 kHz	85 dB
Spurious Rejection	85 dB (without External Preselector)
Spurious and Image Response Rejection with Narrow Preselector (Optional)	90 dB
Audio Distortion	<3%
FM Hum and Noise 25 kHz / 12.5 kHz	50 dB / 45 dB
FCC Designation	ABZ89FR4824 (UHF R1) or ABZ89FR4826 (UHF R2)
Transmitter	
Rated Output Power (Continuous Duty)	8–100 W
Intermodulation Attenuation	55 dB
Adjacent Channel Power 25 kHz / 12.5 kHz	75 dB / 60 dB
Wideband Noise (1 MHz)	-152 dBc/Hz
RSD 25 kHz / 12.5 kHz	5 kHz / 2.5 kHz
Spurious Harmonics and Emissions	-90 dBc

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

Parameter	Specifications
	UHF
Audio Distortion	<3%
FM Hum and Noise 25 kHz / 12.5 kHz	50 dB / 45 dB
FCC Designation	ABZ89FC4823 (403–470 MHz) or ABZ89FC4825 (470–524 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 in the link: <http://ecat.comm.mot.com/ecat/pricebooks/dup/MTR3000.htm>.

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 needed for 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. Additionally, the Exciter also provides its own metering and diagnostics via software, as well as a self-contained calibration (no field tuning needed for 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 needed for 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's diagnostic screen.

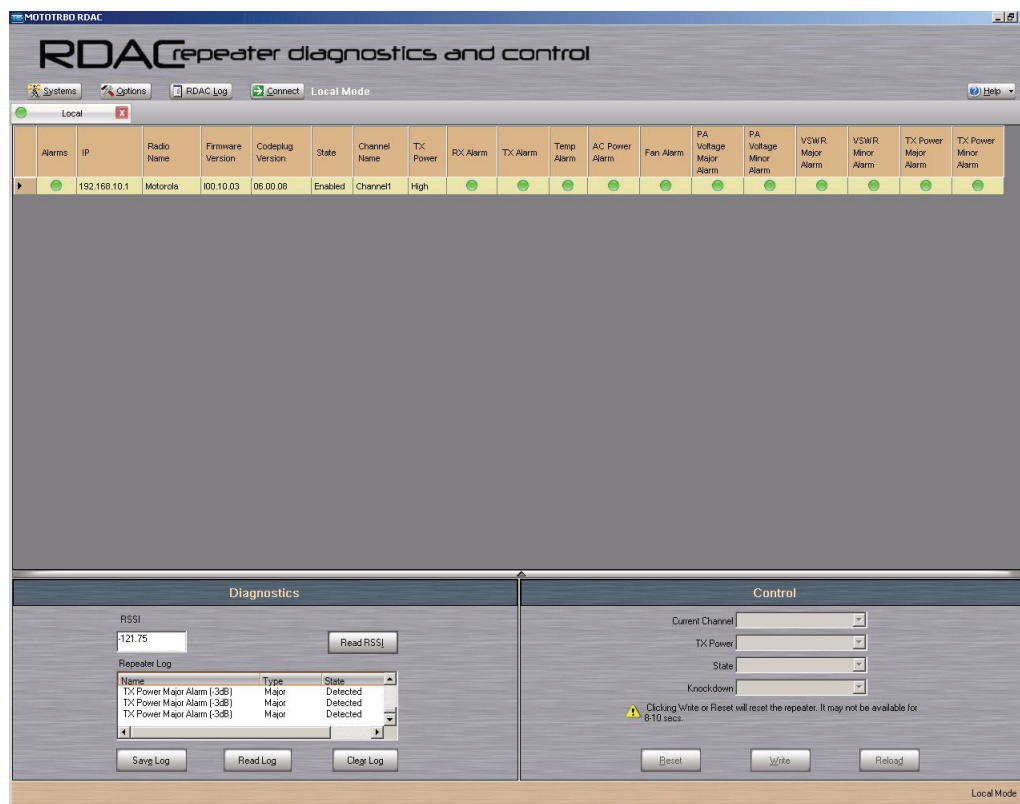


Figure 1-4. RDAC's Diagnostic Screen

The station operator can 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) flashes 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 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	Amber	Flashing	Station booting up
Mode	Blue		

Table 1-6. MTR3000 Software and Hardware Controlled LEDs (Continued)

LED Function Name	LED Color	LED State	Status Indication
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)
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 one minute after 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 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.	Local Dealer: Replace Receiver FRU Motorola Repair Depot: 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.	Local Dealer: Replace Receiver FRU Motorola Repair Depot: 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.	Local Dealer: Replace Receiver FRU Motorola Repair Depot: Recalibrate the Receiver FRU

Table 1-7 MTR3000 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>Local Dealer: Replace Exciter FRU</p> <p>Motorola Repair Depot: Repair/recalibrate or replace the Exciter FRU</p>
	Fan Alarm	Minor	Yes	Yes	The PA fan has failed.	<p>Local Dealer: Replace PA fan</p> <p>Motorola Repair Depot: 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 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>Local Dealer: 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>Motorola Repair Depot: 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>Local Dealer: Replace PA FRU</p> <p>Motorola Repair Depot: 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>Local Dealer: Attend to the primary alarms (see appropriate remedies at the relevant alarm sections)</p> <p>Motorola Repair Depot: Attend to the primary alarms (see appropriate remedies at the relevant alarm sections)</p>

Table 1-7 MTR3000 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.	Motorola Repair Depot: 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	Local Dealer: Replace PA FRU Motorola Repair Depot: 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 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	<p>The PA EEPROM has incurred non-recoverable corruption in a critical memory location.</p> <p>Note : Alarm is not applicable to the MTR2000 MOTOTRBO Digital Upgrade, as the MTR2000 Power Amplifier (PA) does not have an EEPROM</p>	<p>Local Dealer: Replace PA FRU</p> <p>Motorola Repair Depot: Recalibrate the PA FRU</p>
	Exciter EEPROM Corruption Type 1	Minor	No	Yes	The Exciter EEPROM has incurred non-recoverable corruption in a semi-critical memory location.	<p>Local Dealer: Replace Exciter FRU</p> <p>Motorola Repair Depot: Recalibrate the Exciter FRU</p>
	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.	<p>Local Dealer: Replace Exciter FRU</p> <p>Motorola Repair Depot: Recalibrate the Exciter FRU</p>

Table 1-7 MTR3000 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>Local Dealer: 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>Motorola Repair Depot: 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>
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>Local Dealer: 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>

Table 1-7 MTR3000 Alarm Diagnosis Table (Continued)

Sub-system	Alarm Name	Alarm Class	Diag. View	Diag. Repeater Log	Diagnosis	Probable Remedy
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.	Local Dealer: 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)".
	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.	Local Dealer: 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.
	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.	Local Dealer: 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.

Table 1-7 MTR3000 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.	Local Dealer: 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.	Local Dealer: 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.	Local Dealer: 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.	Local Dealer: Correct the invalid MTR2000 sticker code with the Tuner application.

Table 1-7 MTR3000 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>Local Dealer: 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>Motorola Repair Depot: 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 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>Local Dealer: 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>Motorola Repair Depot: 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>Local Dealer: 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>Motorola Repair Depot: Replace/repair/recalibrate the PA FRU.</p>

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

Equipment	Characteristic	Example	Application
Service Monitor	Can be used as a substitute for items marked with an asterisk (*)	Aeroflex 3900 Series (www.aeroflex.com), Aeroflex 3900 Series Communications System Analyzer, Aeroflex Option 400 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 μ V to 300V 5 Hz to 1 MHz 10 Meg Ω Impedance	Fluke 179 or equivalent (www.fluke.com)	AC/DC voltage and current measurements. Audio voltage measurements
Oscilloscope*	2 Channel 100 MHz Bandwidth 5 mV/div to 20V/div	Leader LS8050 (www.leaderusa.com), Tektronix TDS1001b (www.tektronix.com), or equivalent	Waveform measurements
Power Meter and Sensor*	5% Accuracy 100 MHz to 500 MHz 50 Watts	Bird 43 Thruline Watt Meter (www.bird-electronic.com) 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 (www.boonton.com) 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
CLN8665A	–	Standard Type "A" to Type "B" USB Programming cable	Connects the Base Station/Repeater's front connector to a 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).

Notes

Chapter 3 MTR3000 Power Amplifier

3.1 Overview

This section provides an overview, detailed Theory of Operation and troubleshooting information for the Power Amplifier (PA) Module. The block diagrams, schematic diagrams, overlays, and parts lists are provided on foldout sheets. Each block diagram shows the location and reference designation for all electrical components. 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.

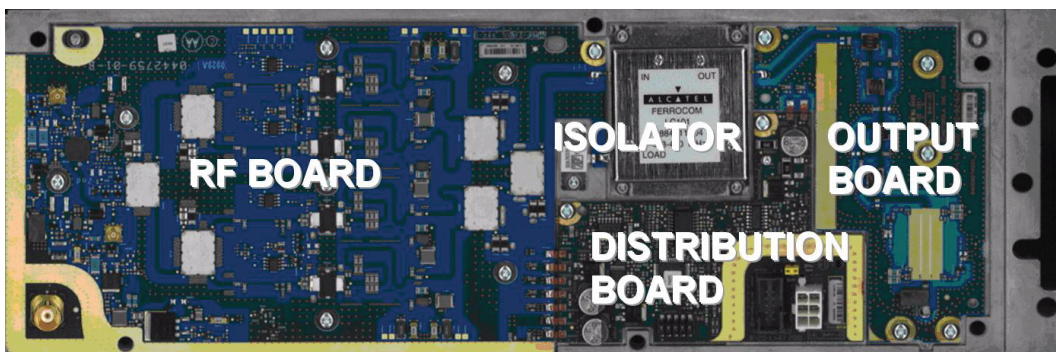


Figure 3-1 PA sub-modules

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.

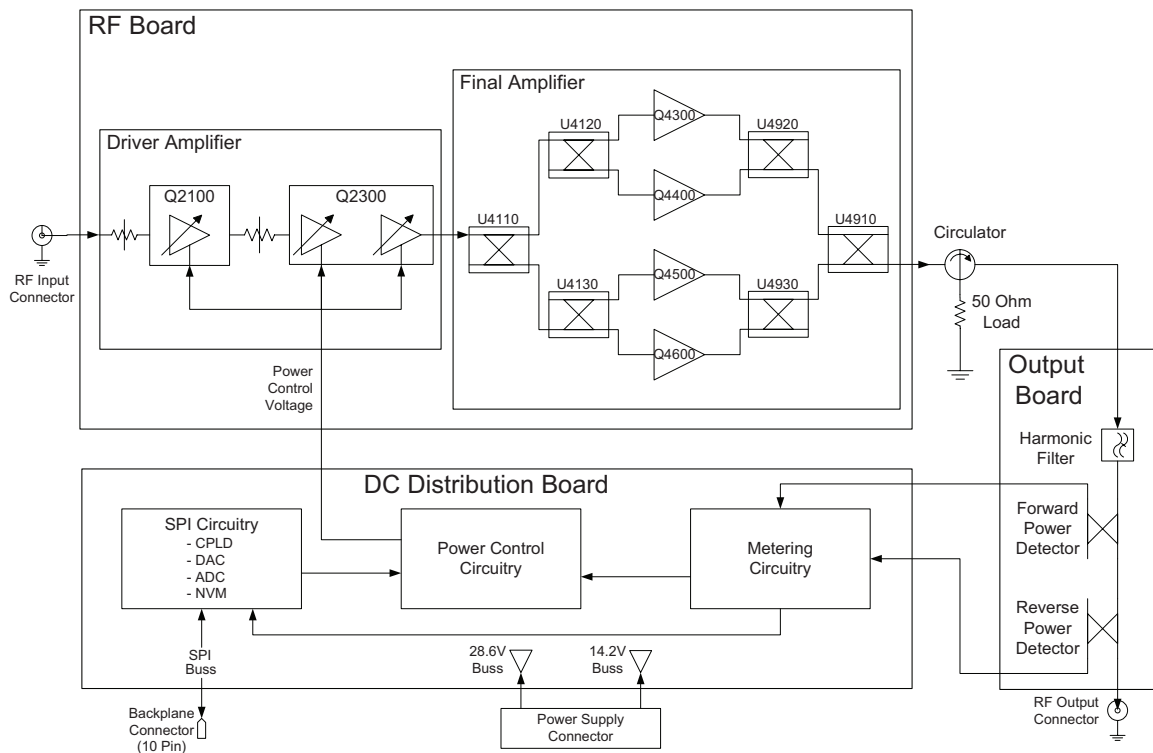


Figure 3-2 PA Functional Block Diagram

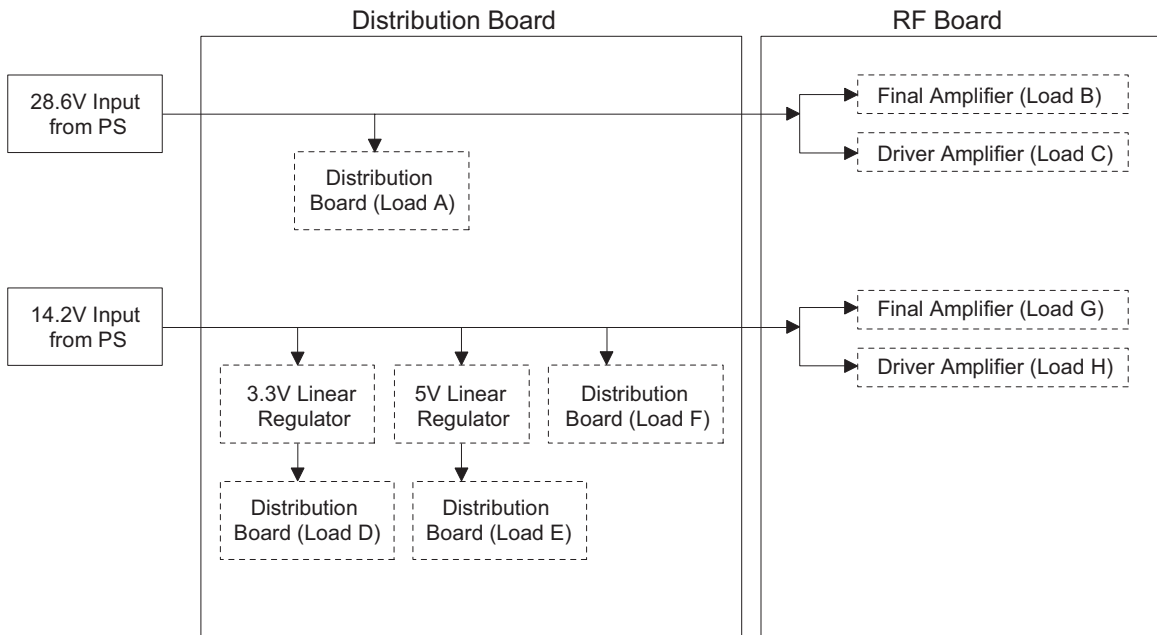


Figure 3-3 PA DC Power Structure

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
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.

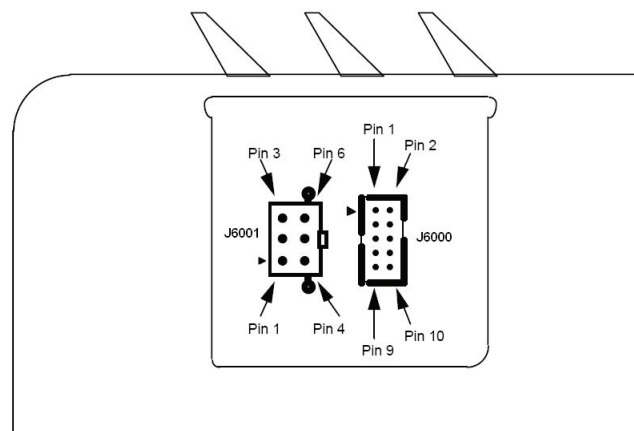


Figure 3-4 PA Signal Connectors

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.

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

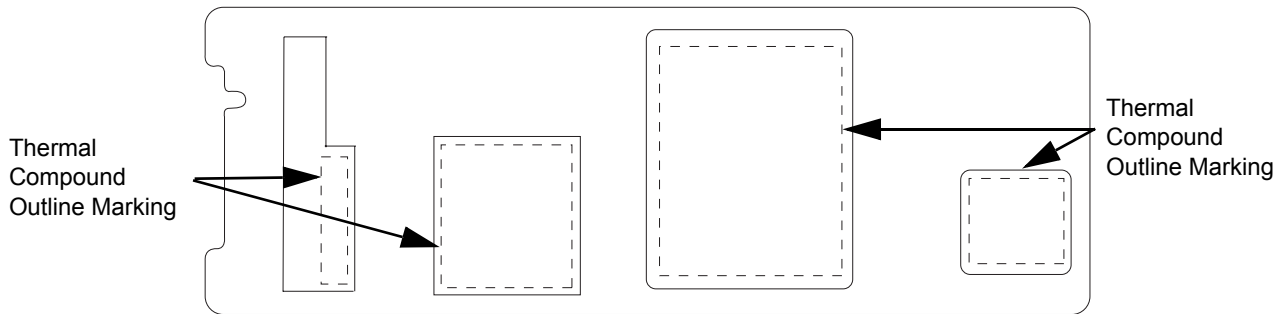


Figure 3-5 Areas to apply thermal grease on the PA metal casting

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 (M3.5, Tx15) 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 (M3.5, Tx15 at 15 in-lbs) according to the order shown in Figure 3-6.

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

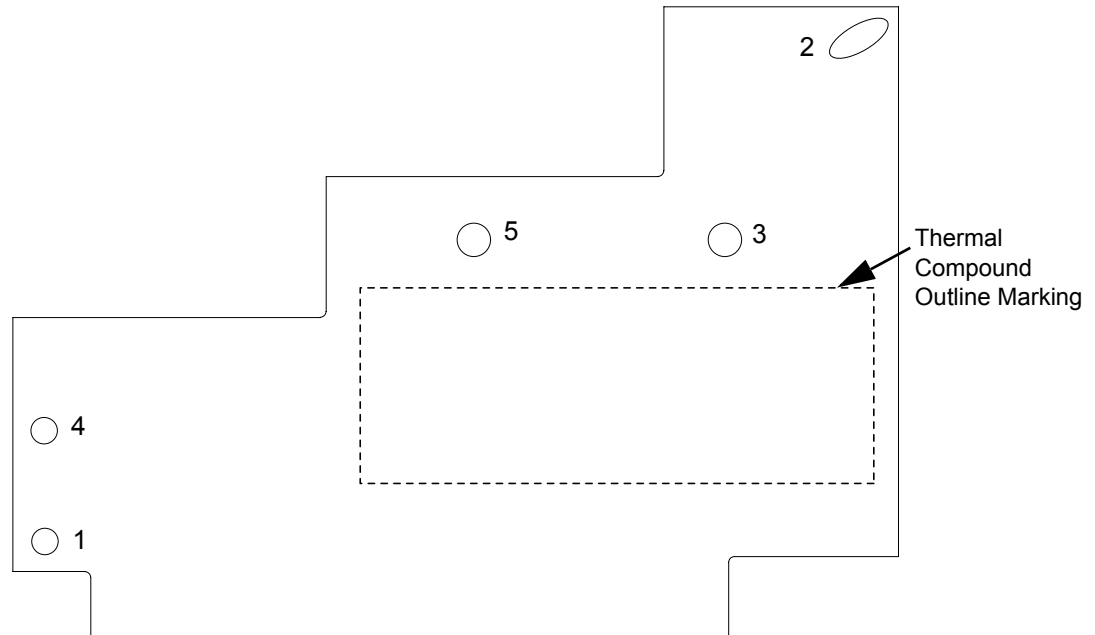



Figure 3-6 Sequence to tighten back screws on the output board

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	<p>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.</p>
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3.3.2.2.1 Disassembly

1. Remove the 2 screws (M3.5, Tx15) 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 (M3.5, Tx15 at 15 in-lbs) according to the order shown in Figure 3-7.

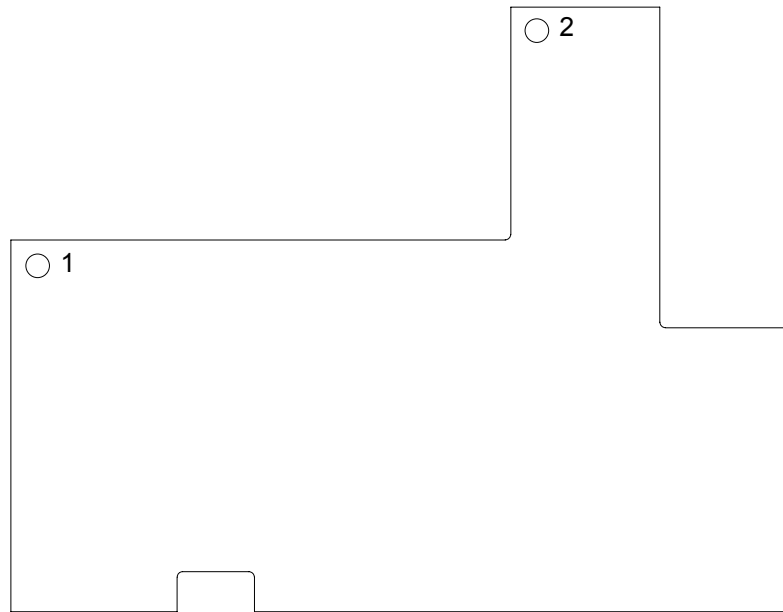


Figure 3-7 Sequence to tighten back screws on the distribution board

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 (M3.5, Tx15) 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 (M3.5, Tx15 at 15 in-lbs) according to the order shown in Figure 3-8.

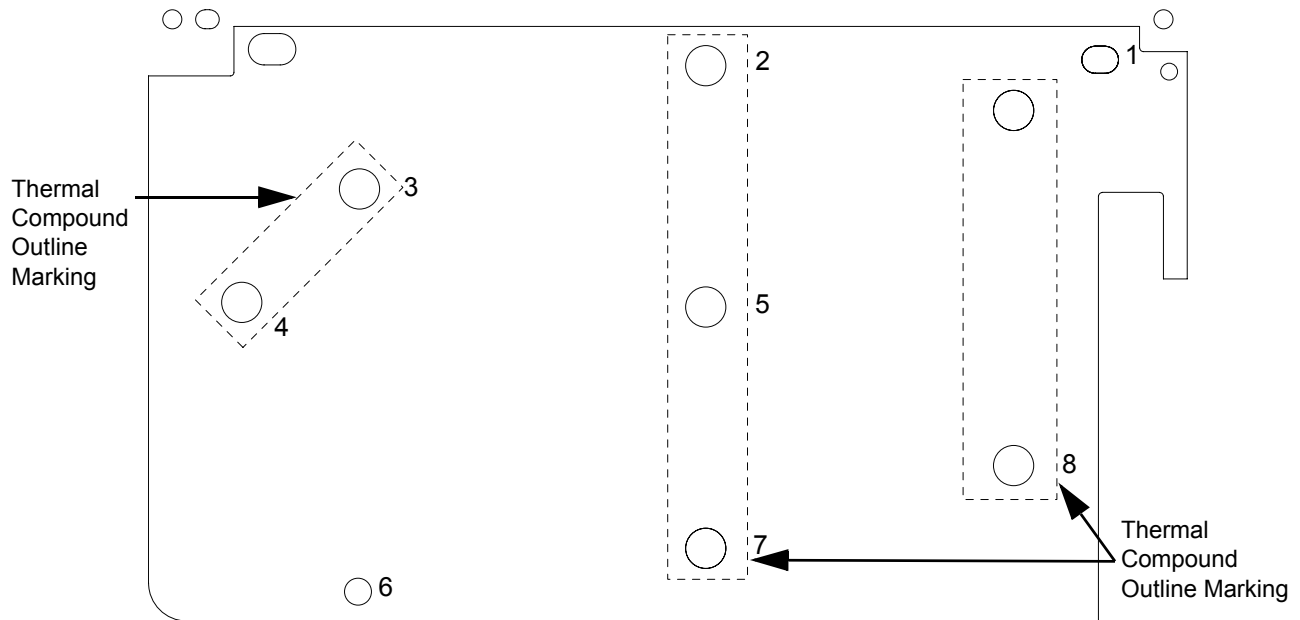


Figure 3-8 Sequence to tighten back screws on the RF board

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 (M3, Tx10) 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 (M3, Tx10 at 10 in-lbs) 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 (M3, Tx10) 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 (M3, Tx10 at 10 in-lbs) 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.

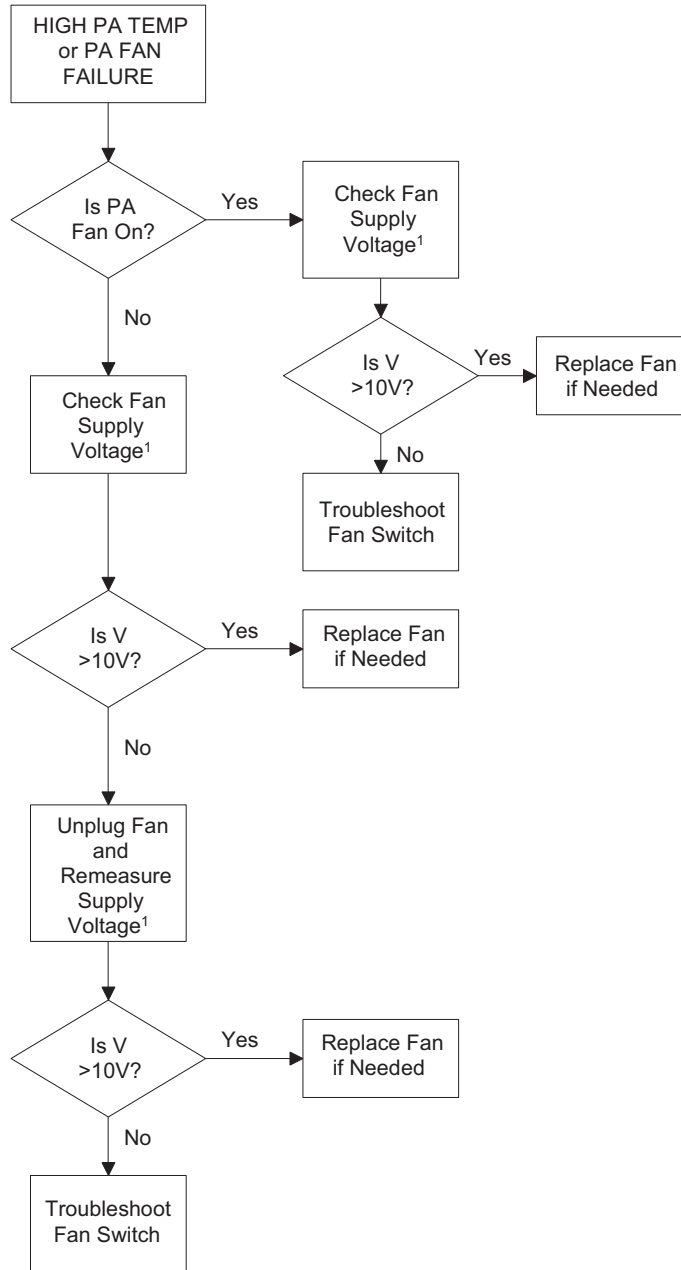


Figure 3-9 Fan Troubleshooting Flow Chart (PA)

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

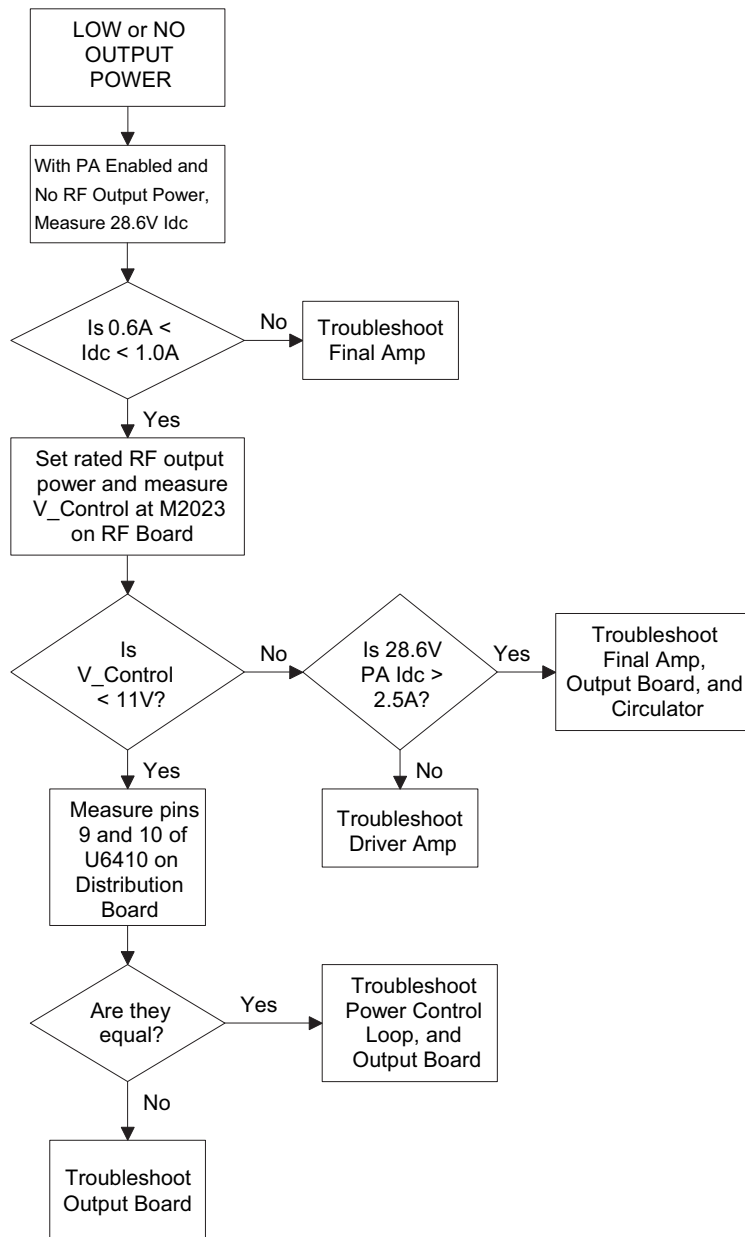


Figure 3-10 Power Troubleshooting Flow Chart (PA)

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

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.



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.

3.3.4.2.1 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.

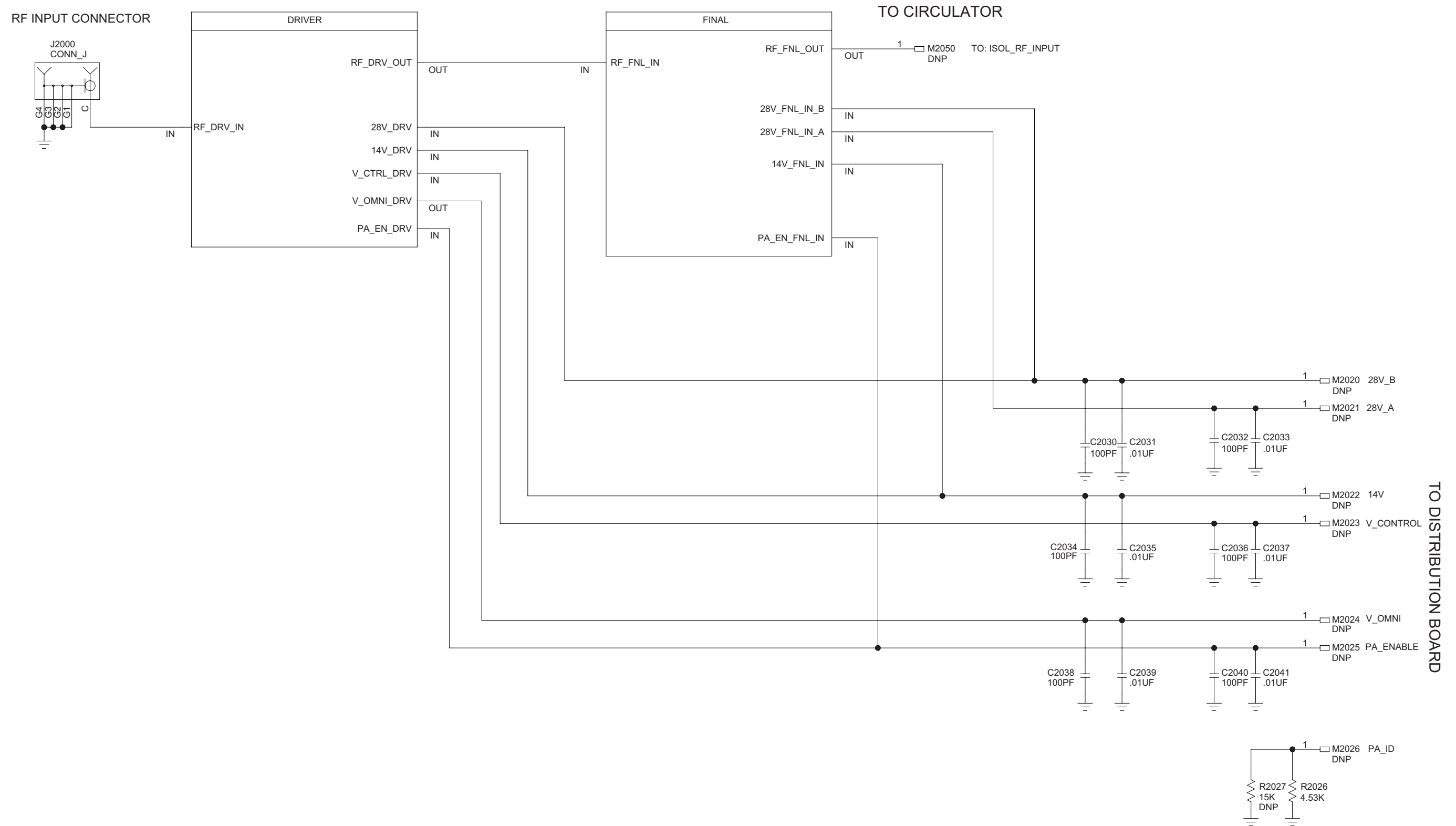
1. Inspect load for signs of arcing at the I/Os of the Circulator. If found, replace the Circulator and retest the PA to verify if this corrected the issue.
2. Perform DC continuity testing between the I/Os of the Circulator. For UHF, the result should be high impedance to ground and near 0Ω between 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

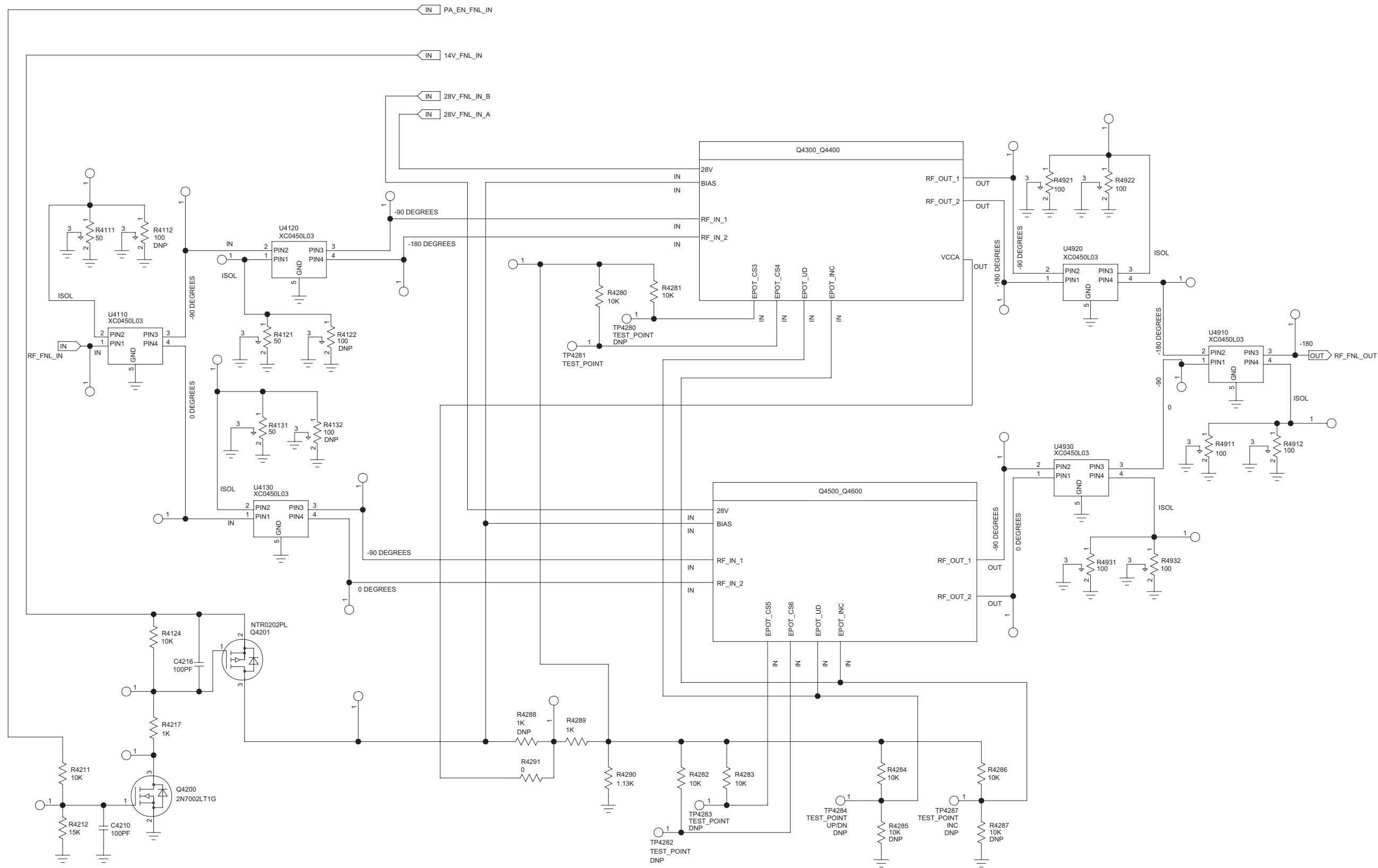
If the individual pieces of the PA are working properly, the power control loop response should be verified. For this, the entire loop will be checked to make sure it is working properly.

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_{Forward} at M8003; it should increase with output power to several volts at rated P_{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.

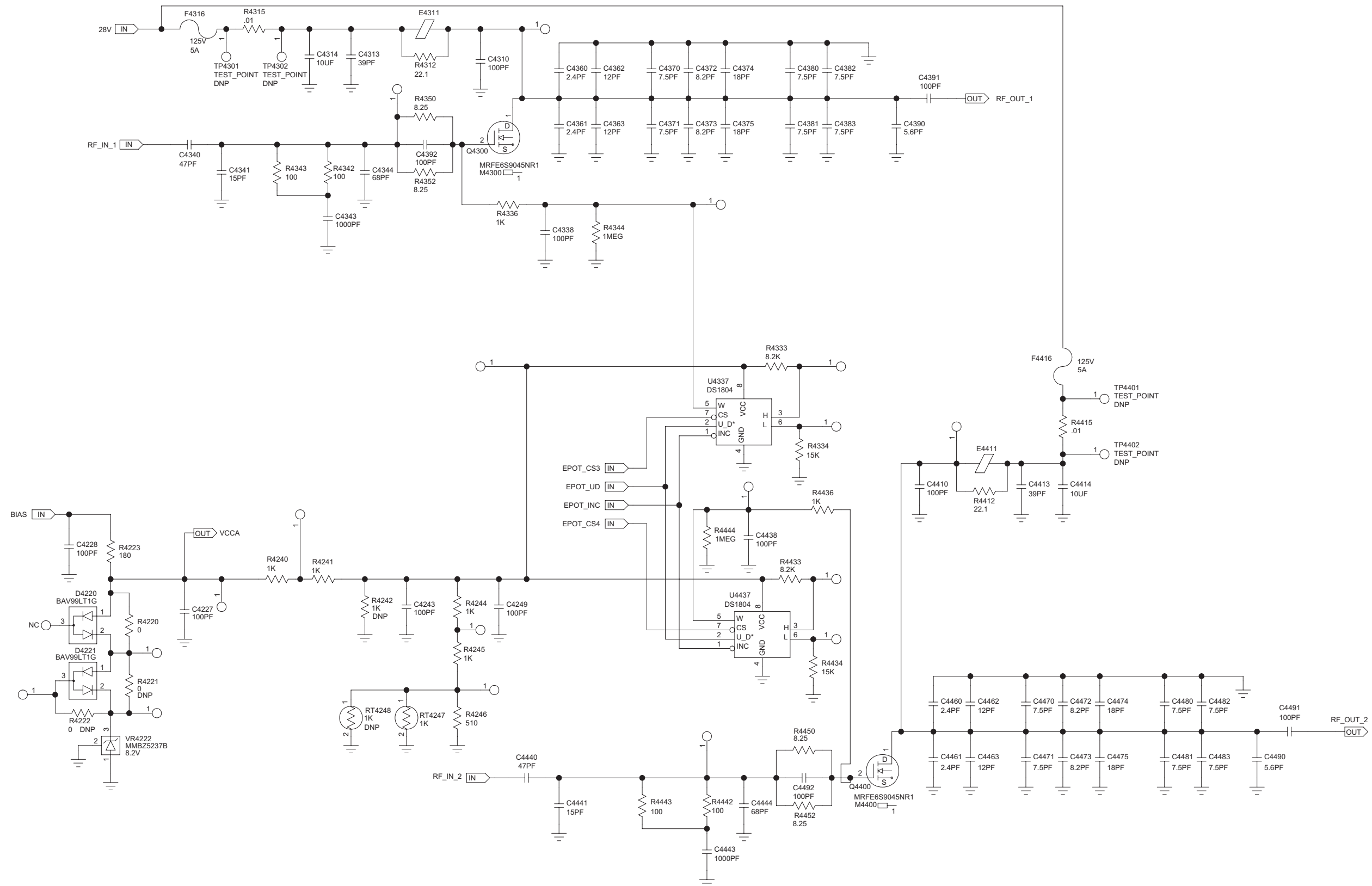
3.4 Power Amplifier (PA) Schematics (UHF)



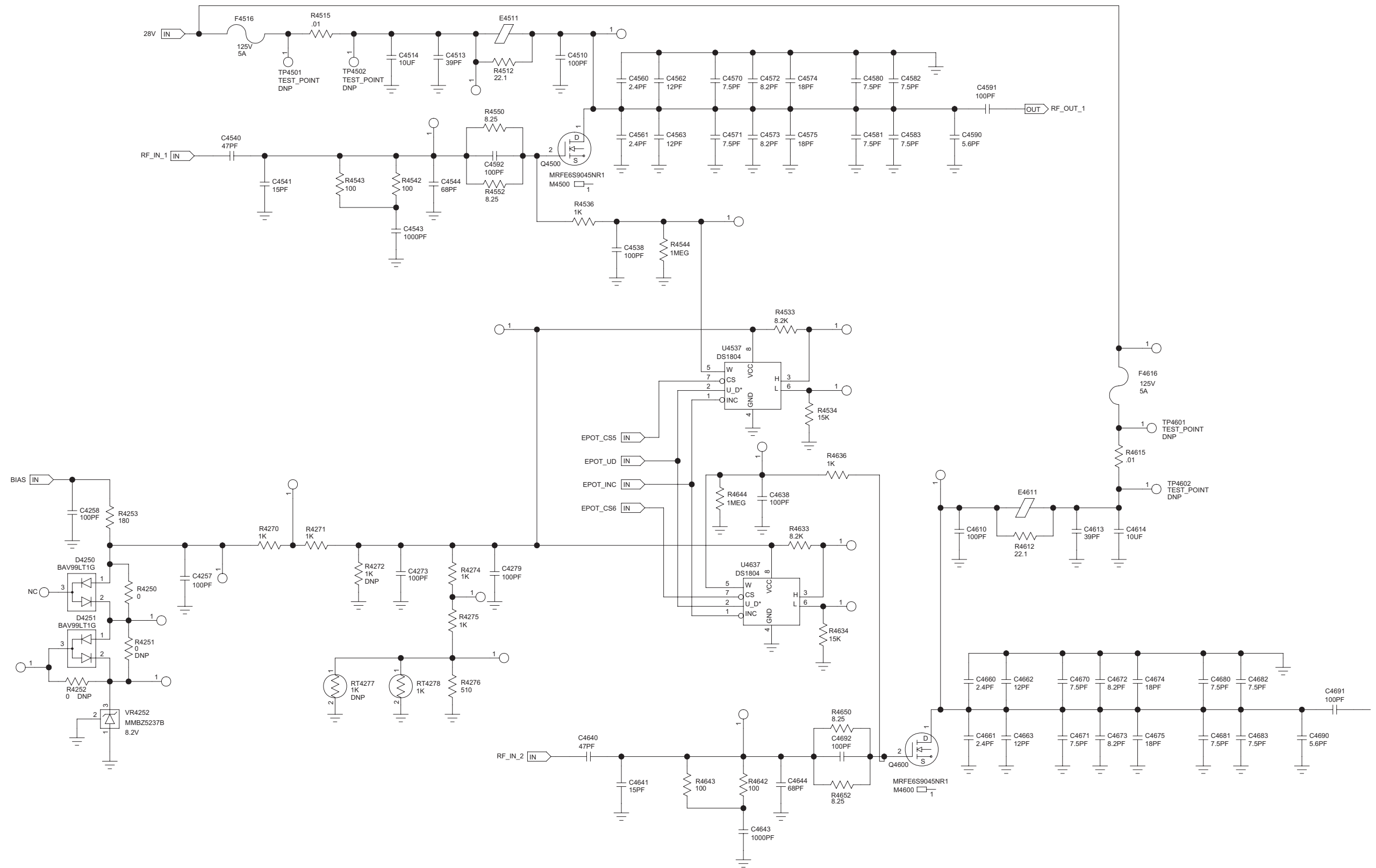
Power Amplifier – RF Board Root Schematic Diagram (Kit No. CLE6215)



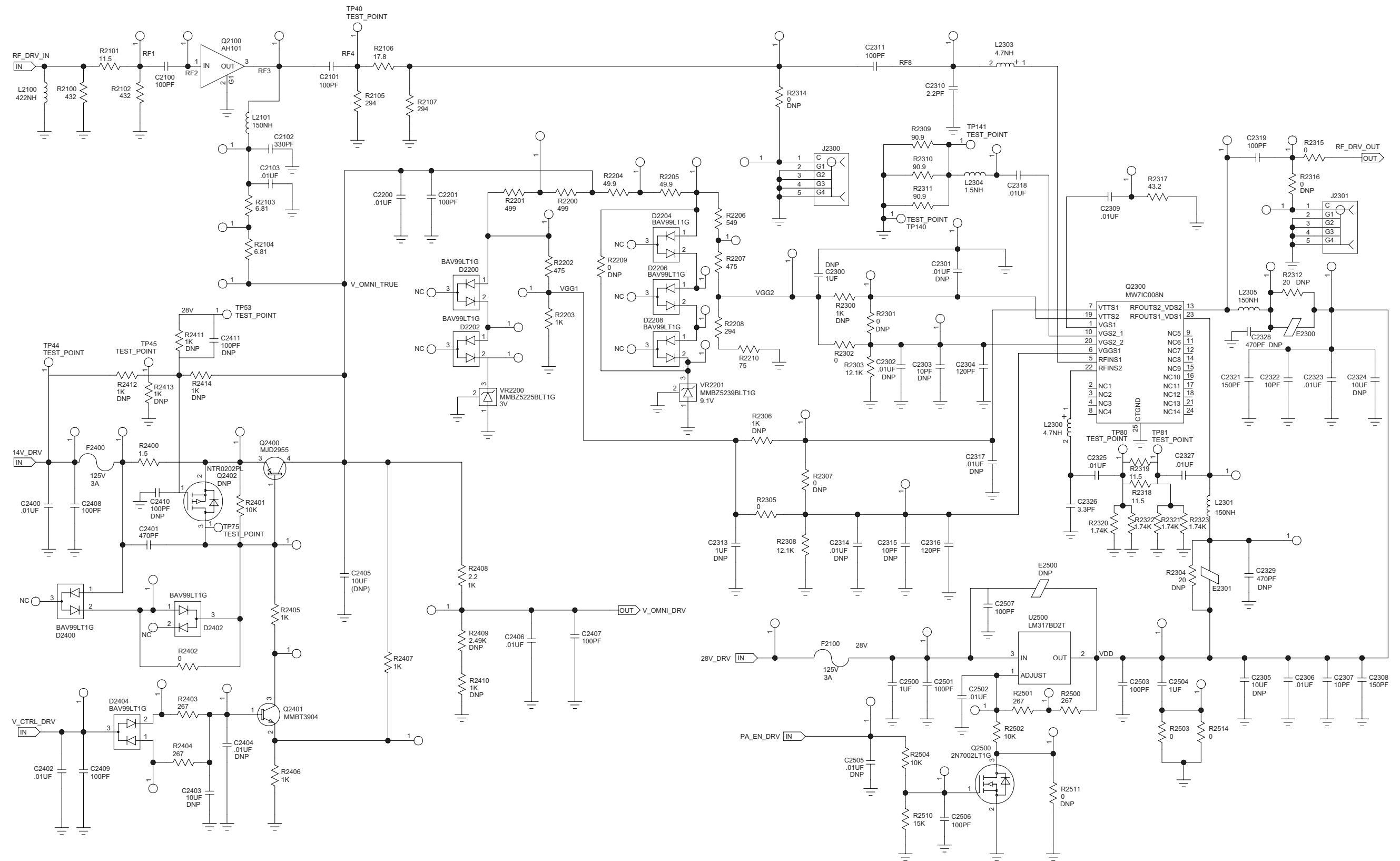
Power Amplifier – Final Amplifier Main Schematic Diagram (Kit No. CLE6215)



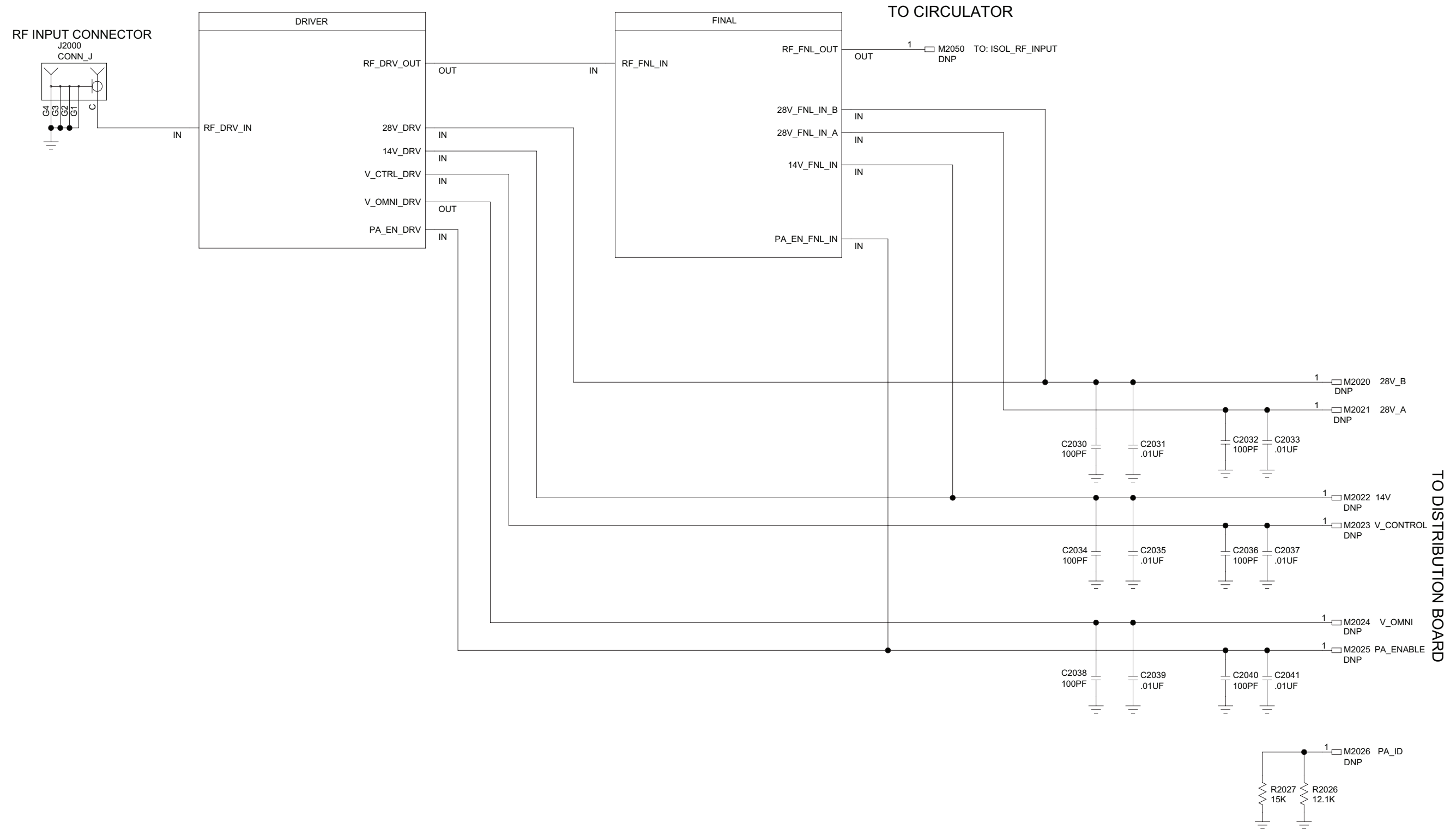
Power Amplifier – Final Amplifier Q4300, Q4400 Circuit Schematic Diagram (Kit No. CLE6215)



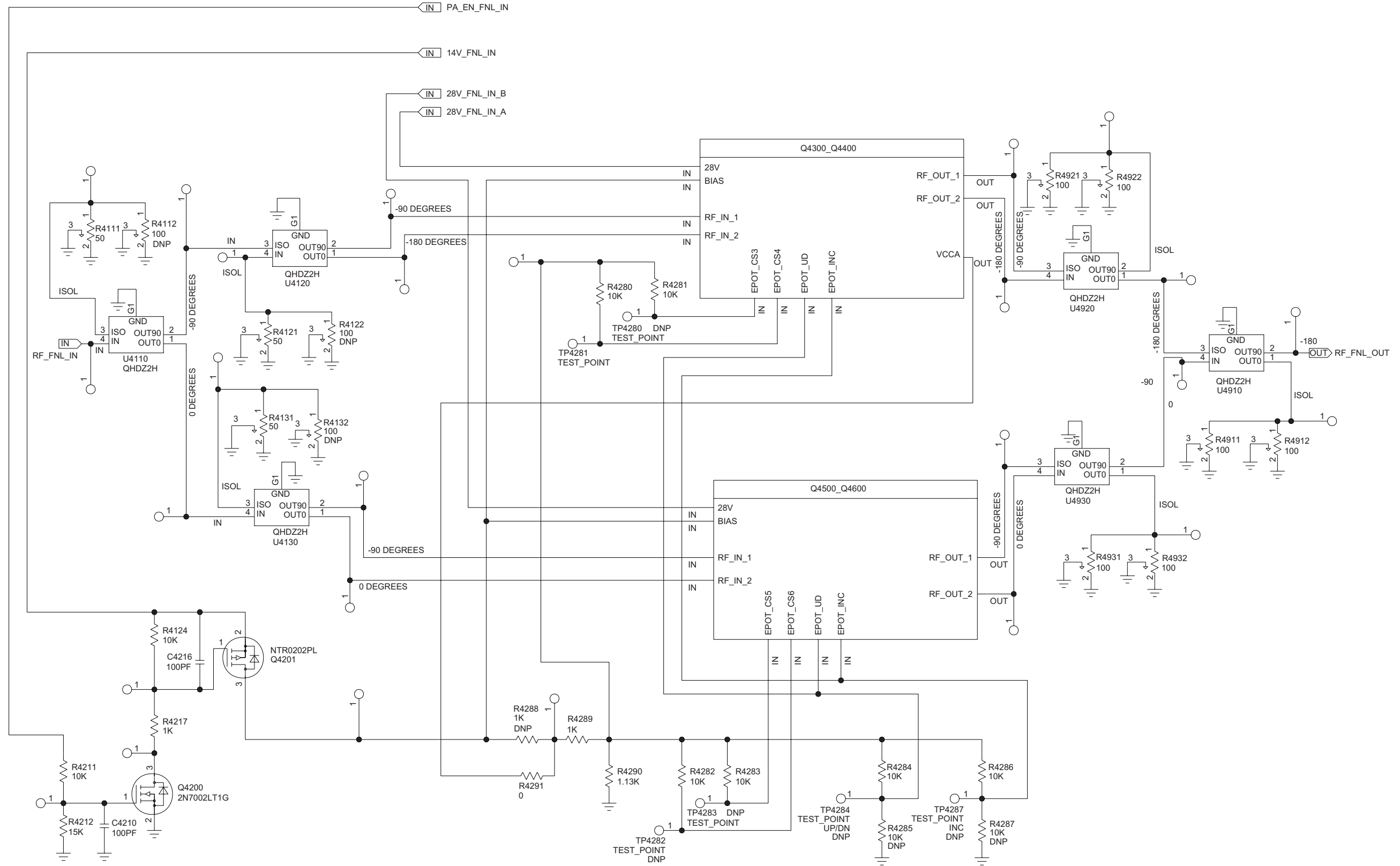
Power Amplifier – Final Amplifier Q4500, Q4600 Circuit Schematic Diagram (Kit No. CLE6215)



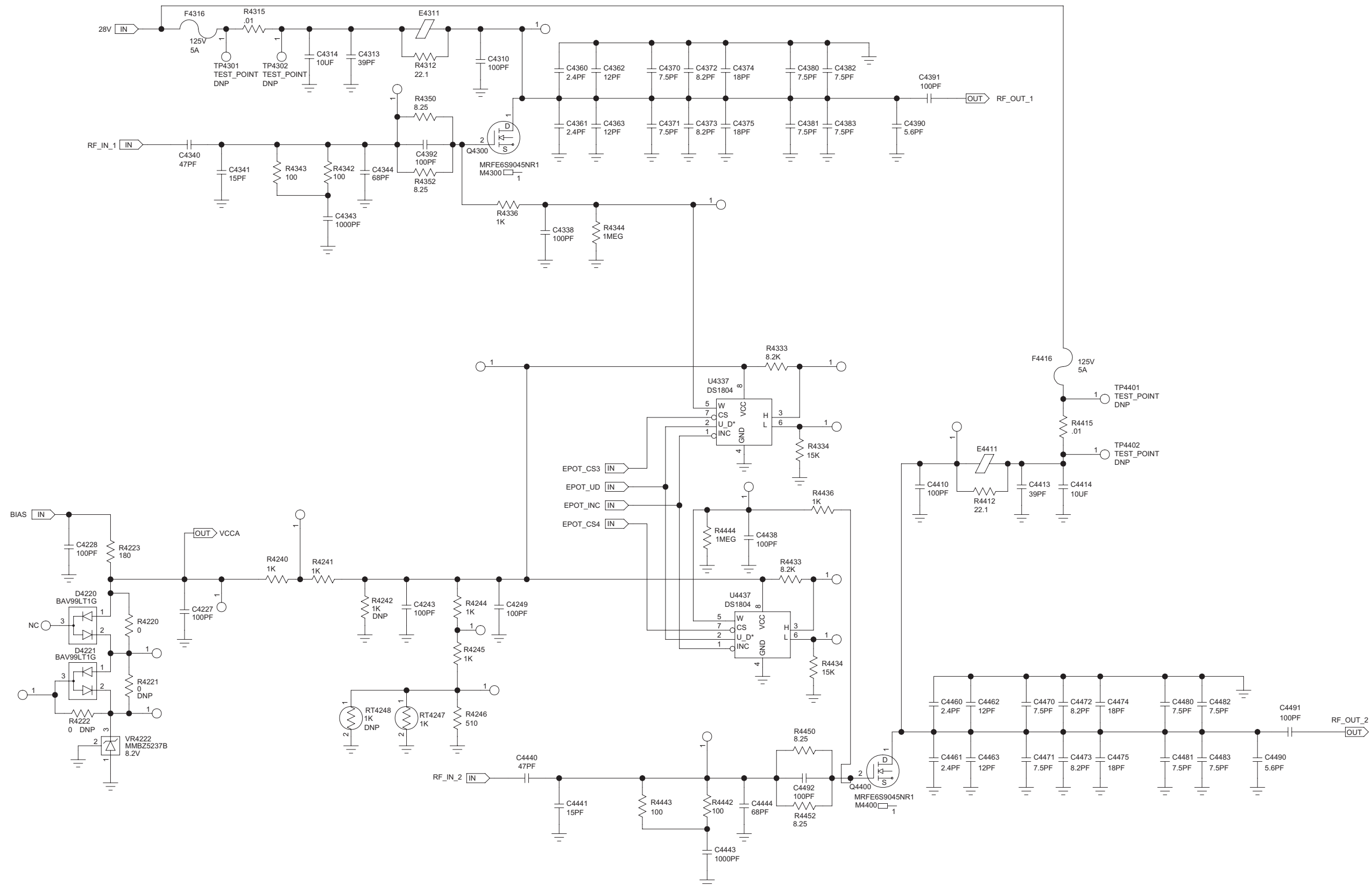
Power Amplifier – Driver Amplifier Schematic Diagram (Kit No. CLE6215)



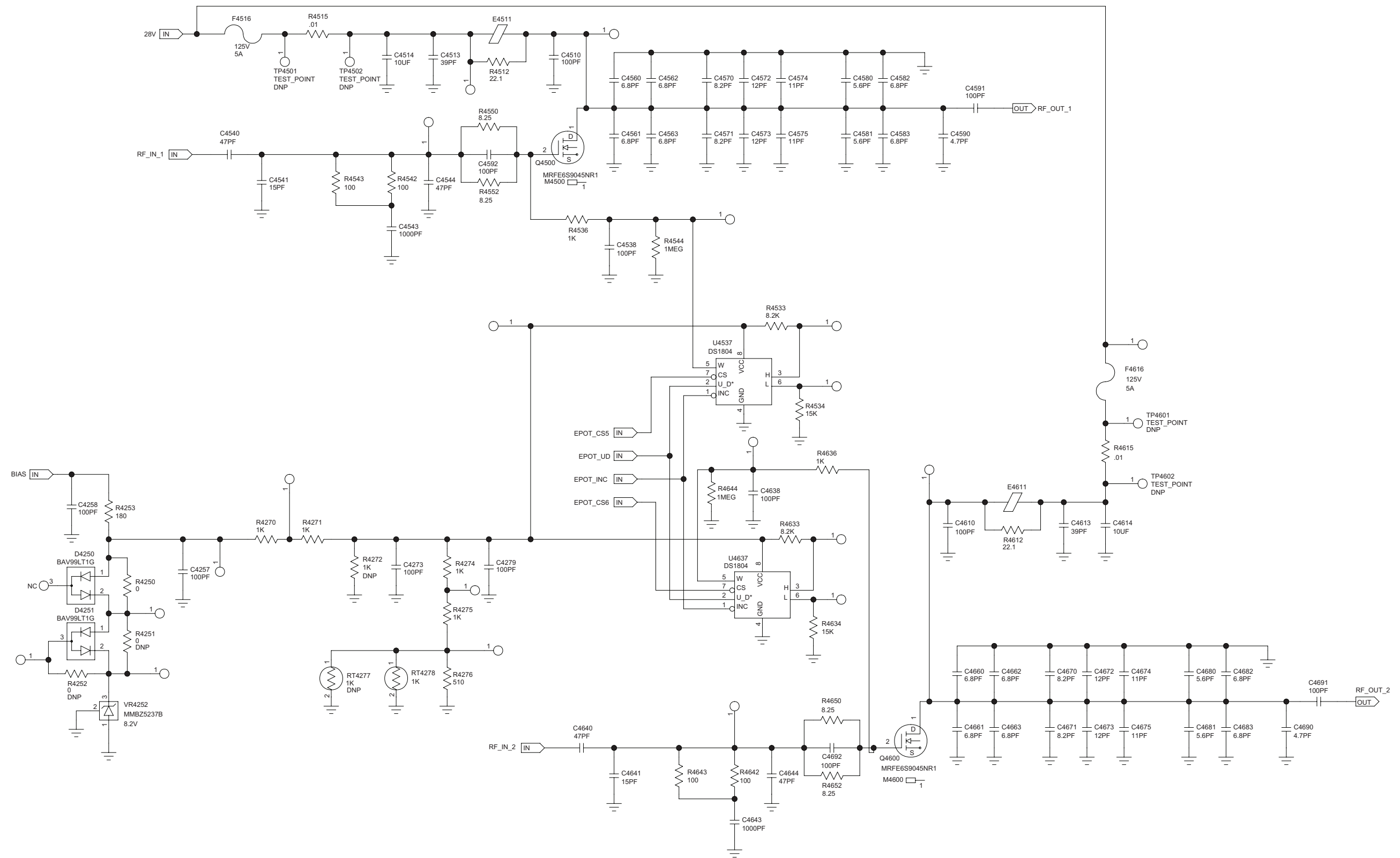
Power Amplifier – RF Board Root Schematic Diagram (Kit No. CLE6216)



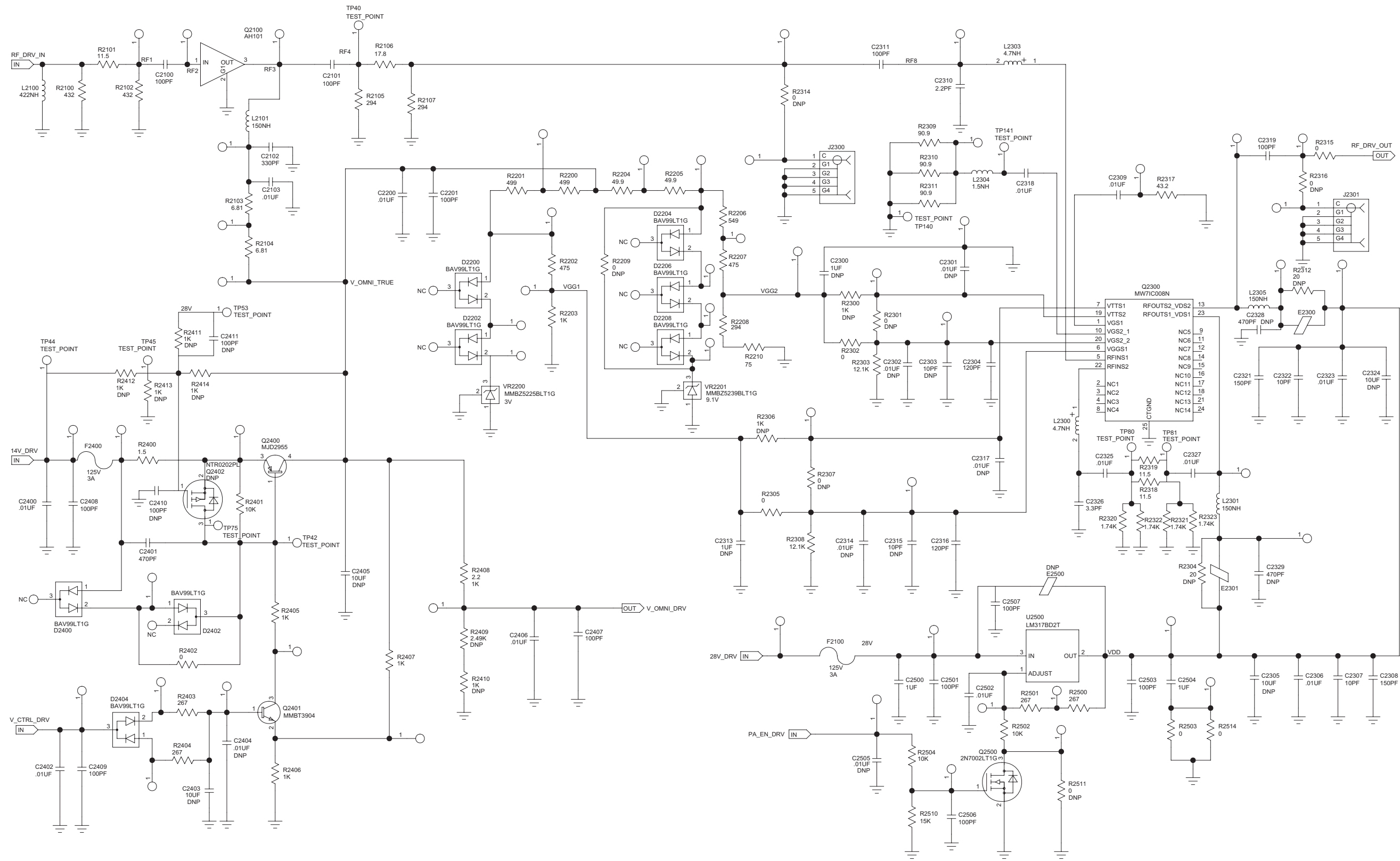
Power Amplifier – Final Amplifier Main Schematic Diagram (Kit No. CLE6216)



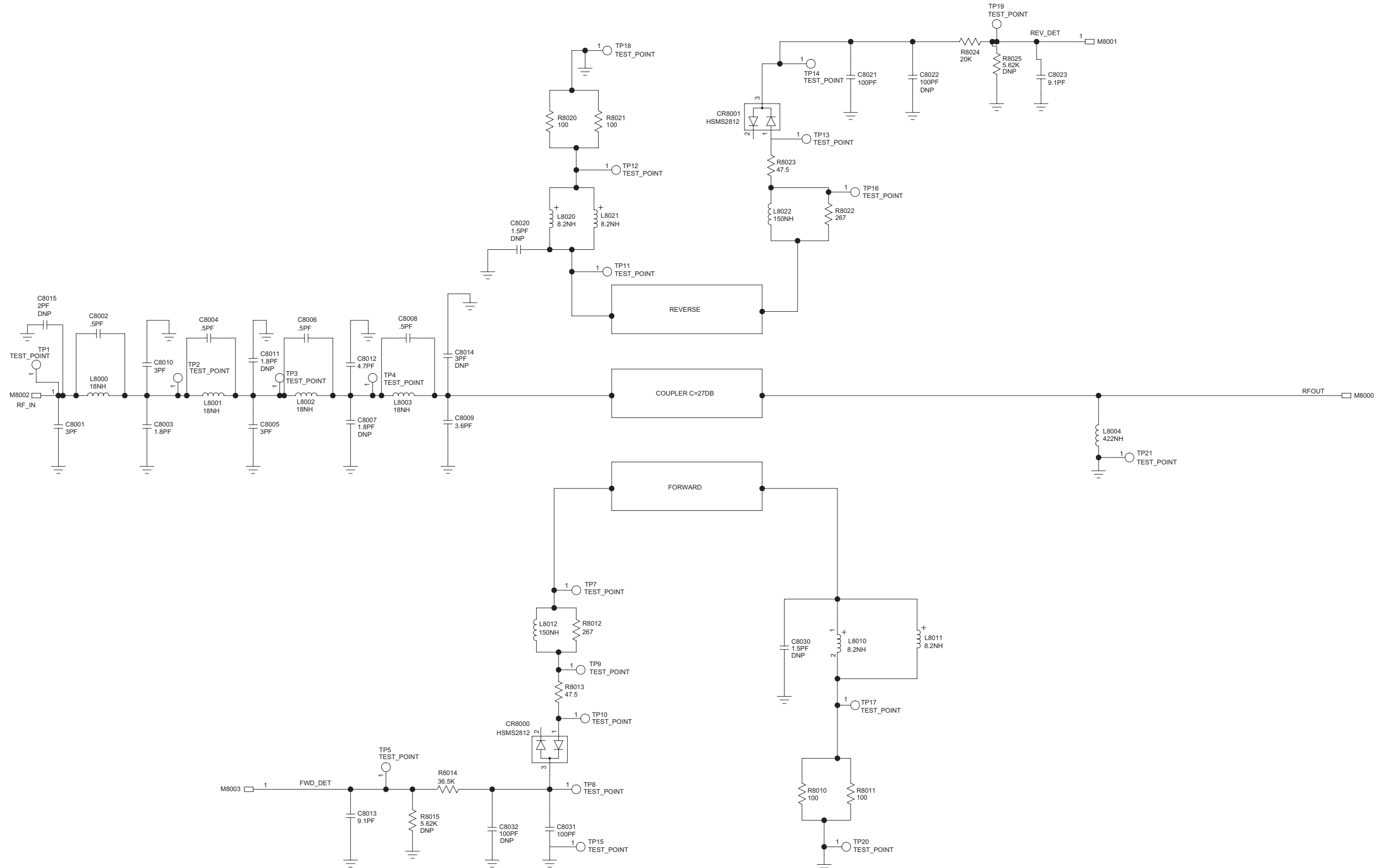
Power Amplifier – Final Amplifier Q4300, Q4400 Circuit Schematic Diagram (Kit No. CLE6216)



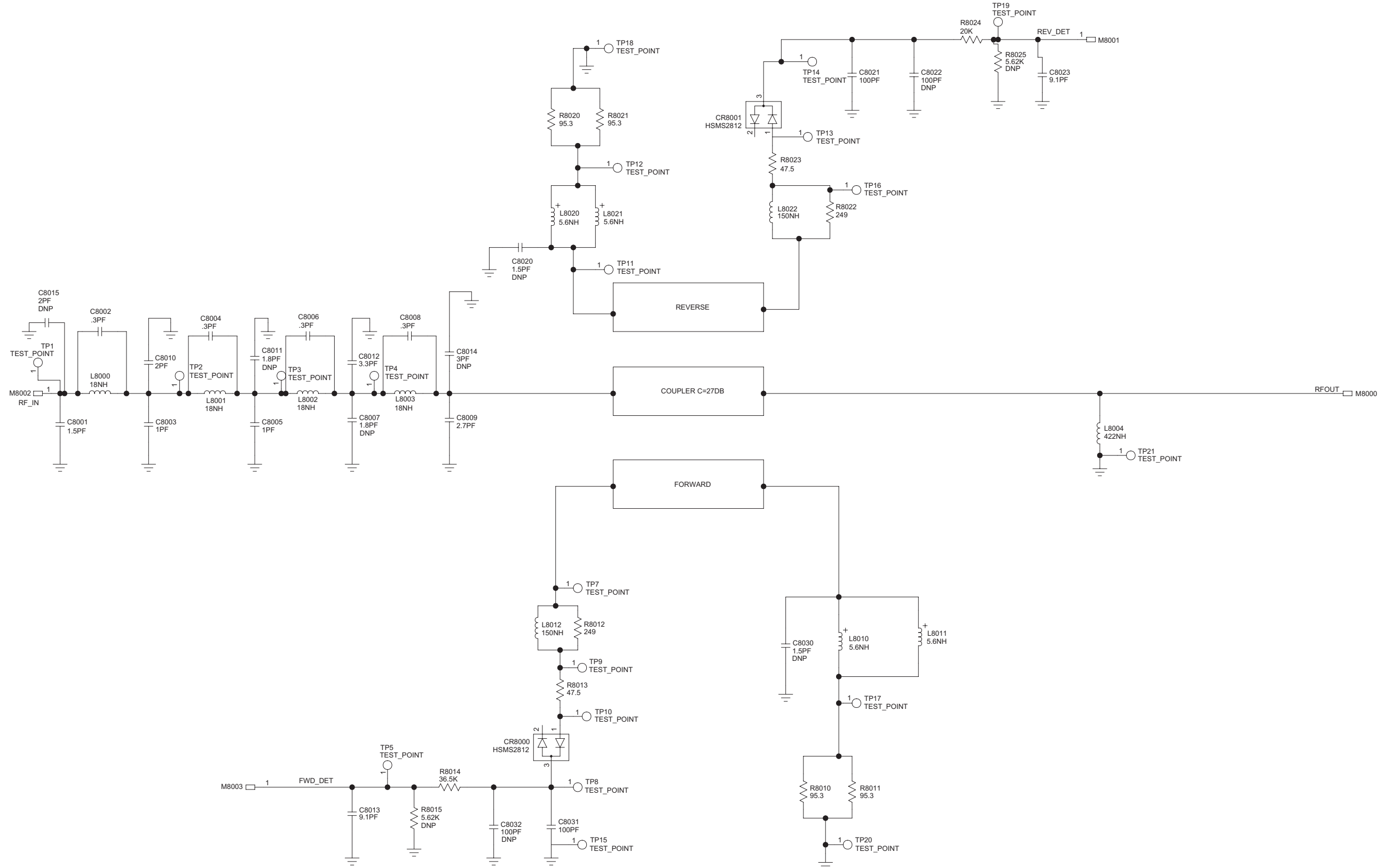
Power Amplifier – Final Amplifier Q4500, Q4600 Circuit Schematic Diagram (Kit No. CLE6216)



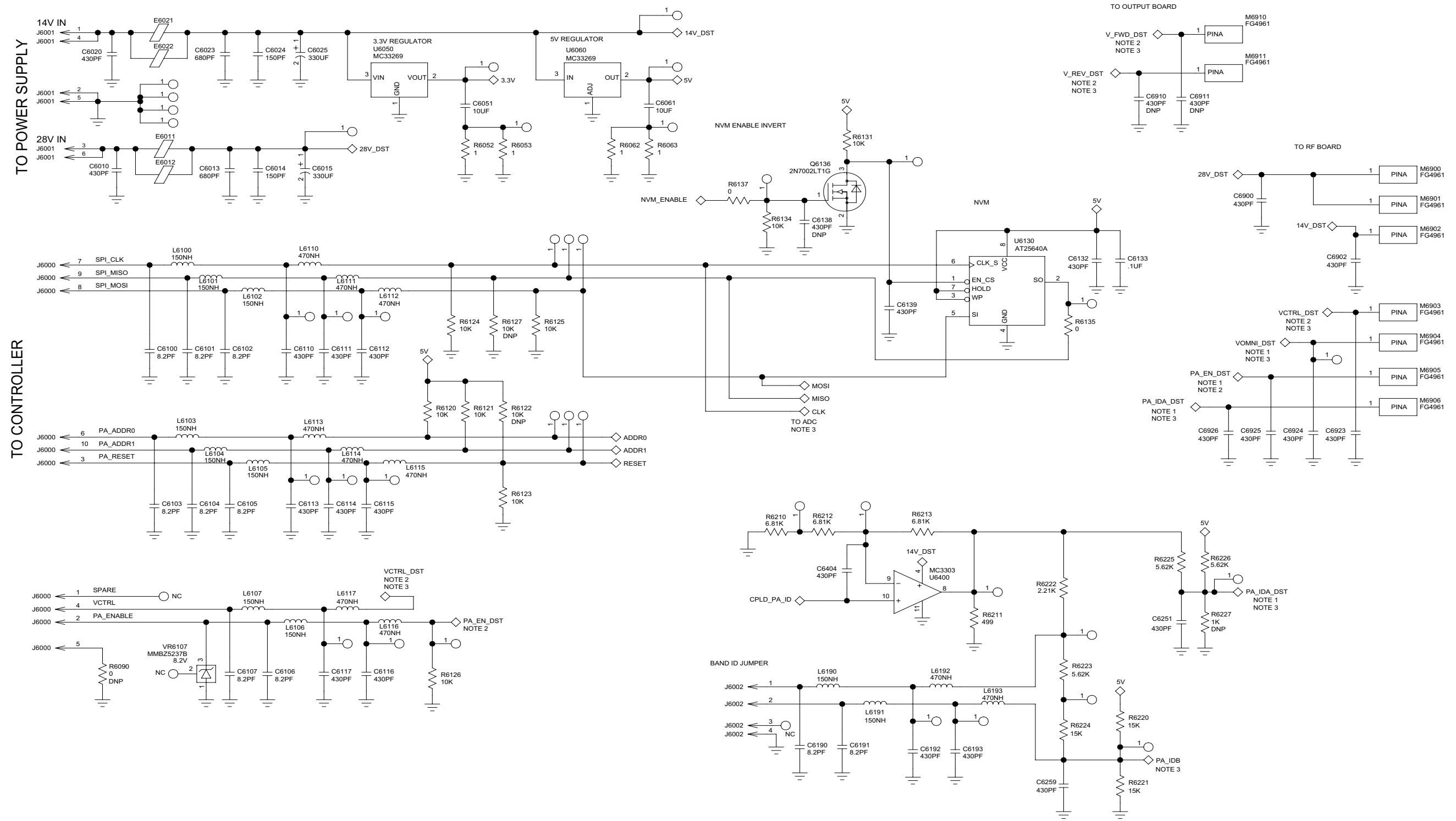
Power Amplifier – Driver Schematic Diagram (Kit No. CLE6216)



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

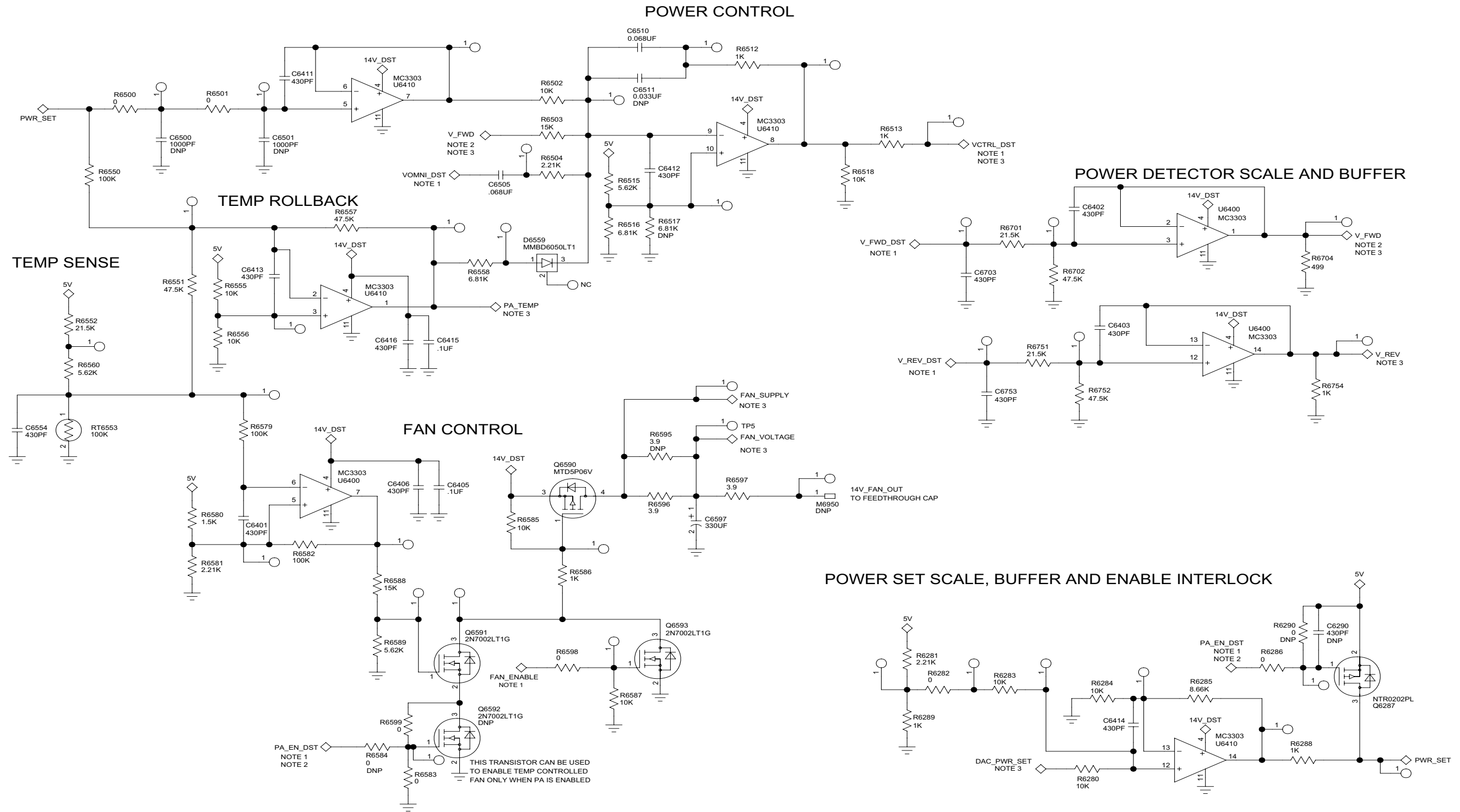


Power Amplifier – Output Board Schematic Diagram (Kit No. CLE6218)



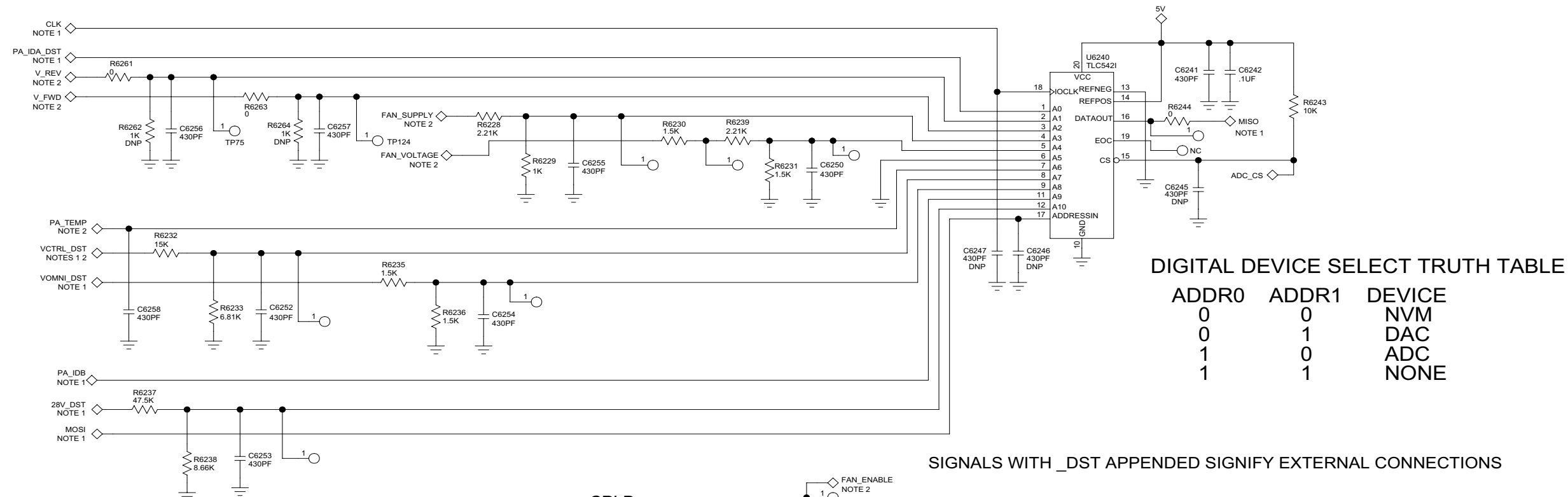
NOTE 1 : DC Distribution Board I/O, NVM (Kit No. CLE6219)
 NOTE 2 : DC Distribution Board Power Control (Kit No. CLE6219)
 NOTE 3 : DC Distribution Board ADC, CPLD, DAC (Kit No. CLE6219)

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

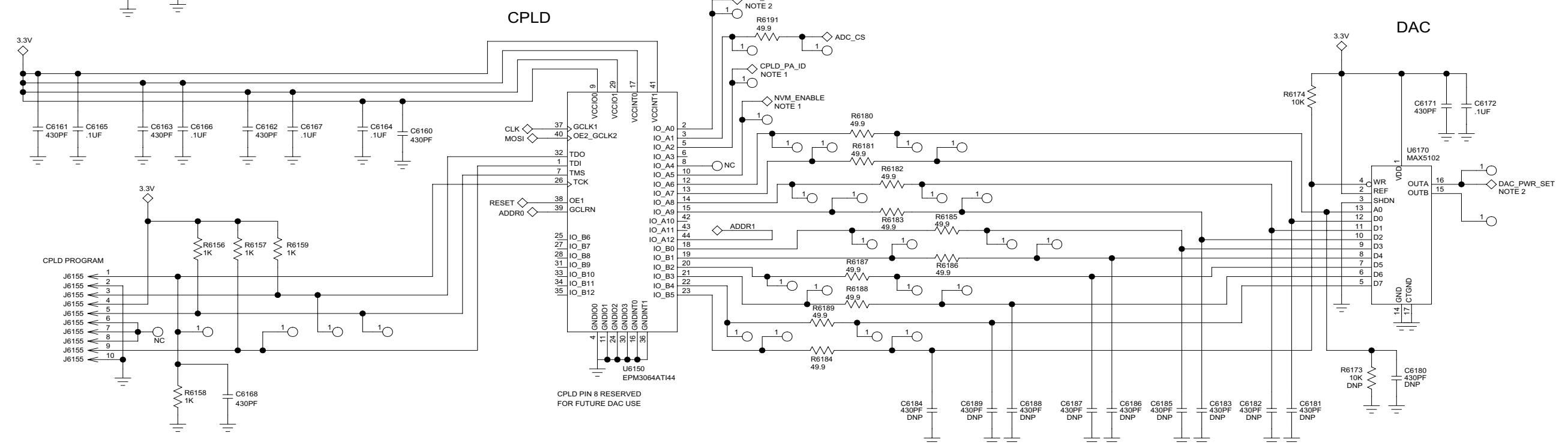


NOTE 1 : DC Distribution Board I/O,NVM (Kit No.CLE6219)
 NOTE 2 : DC Distribution Board Power Control (Kit No.CLE6219)
 NOTE 3 : DC Distribution Board ADC,CPLD,DAC (Kit No.CLE6219)

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

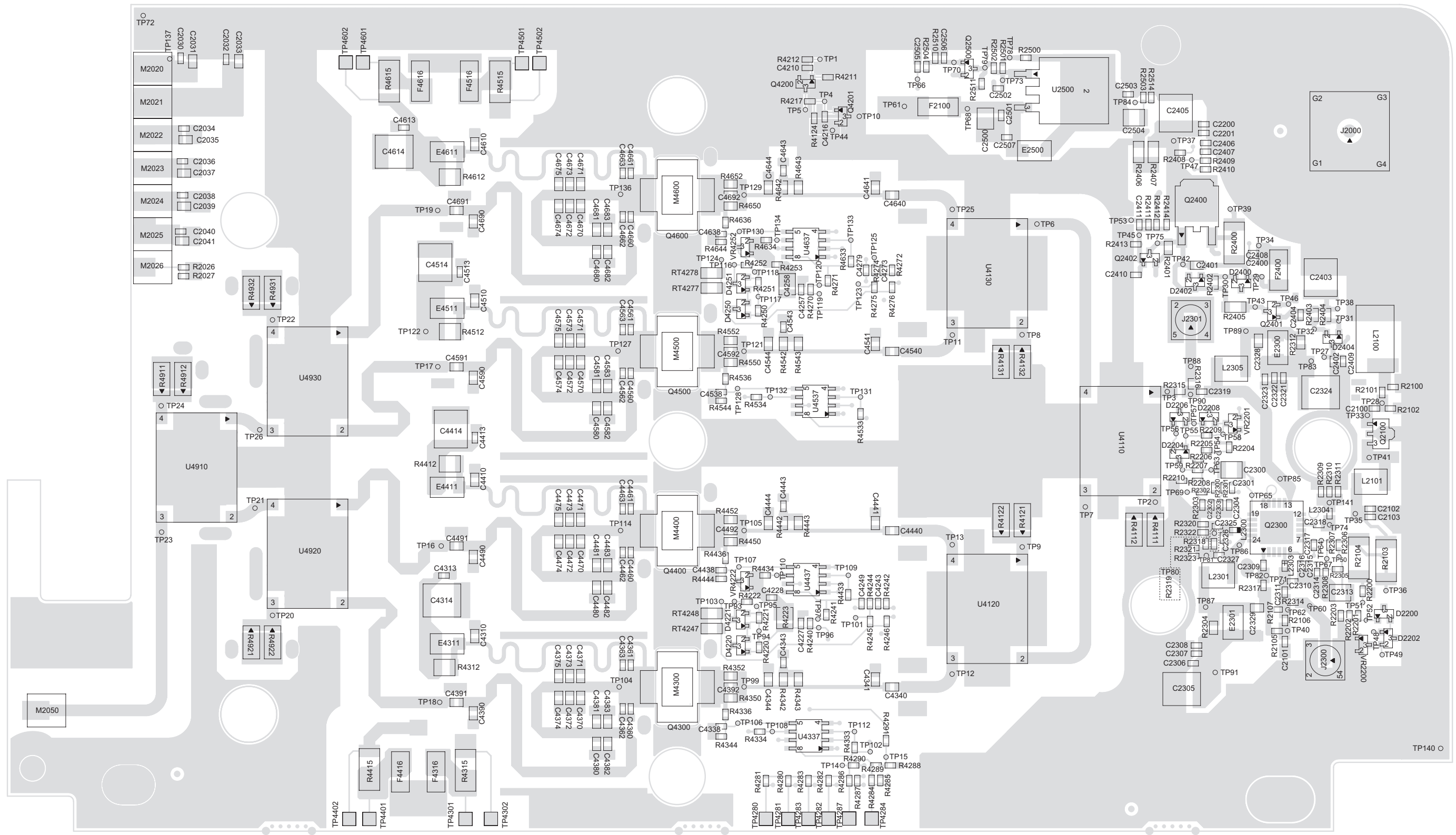


SIGNALS WITH _DST APPENDED SIGNIFY EXTERNAL CONNECTIONS

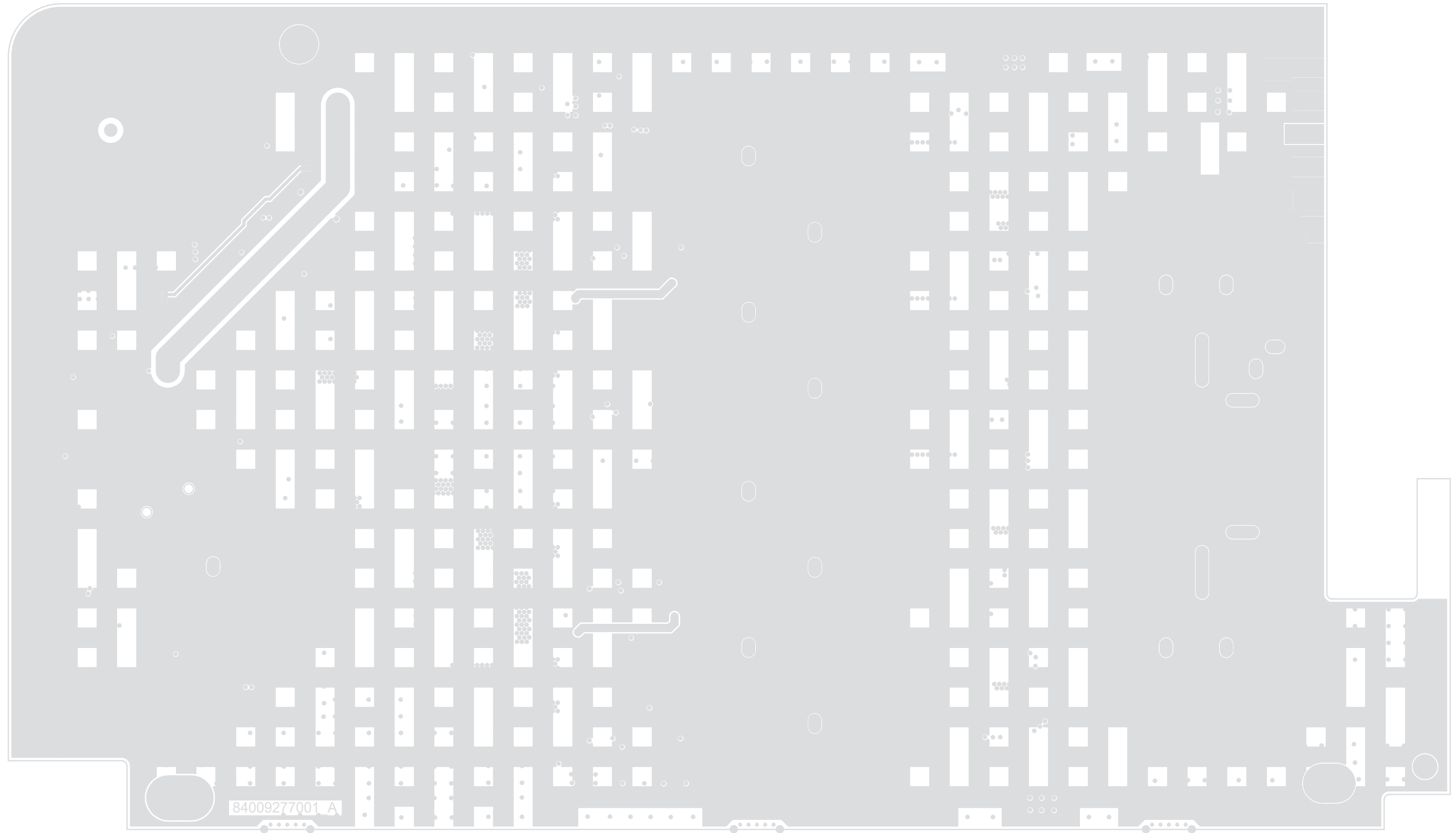


NOTE 1 : DC Distribution Board I/O, NVM (Kit No. CLE6219)
 NOTE 2 : DC Distribution Board Power Control (Kit No. CLE6219)
 NOTE 3 : DC Distribution Board ADC, CPLD, DAC (Kit No. CLE6219)

3.5 Power Amplifier (PA) PCB (UHF)

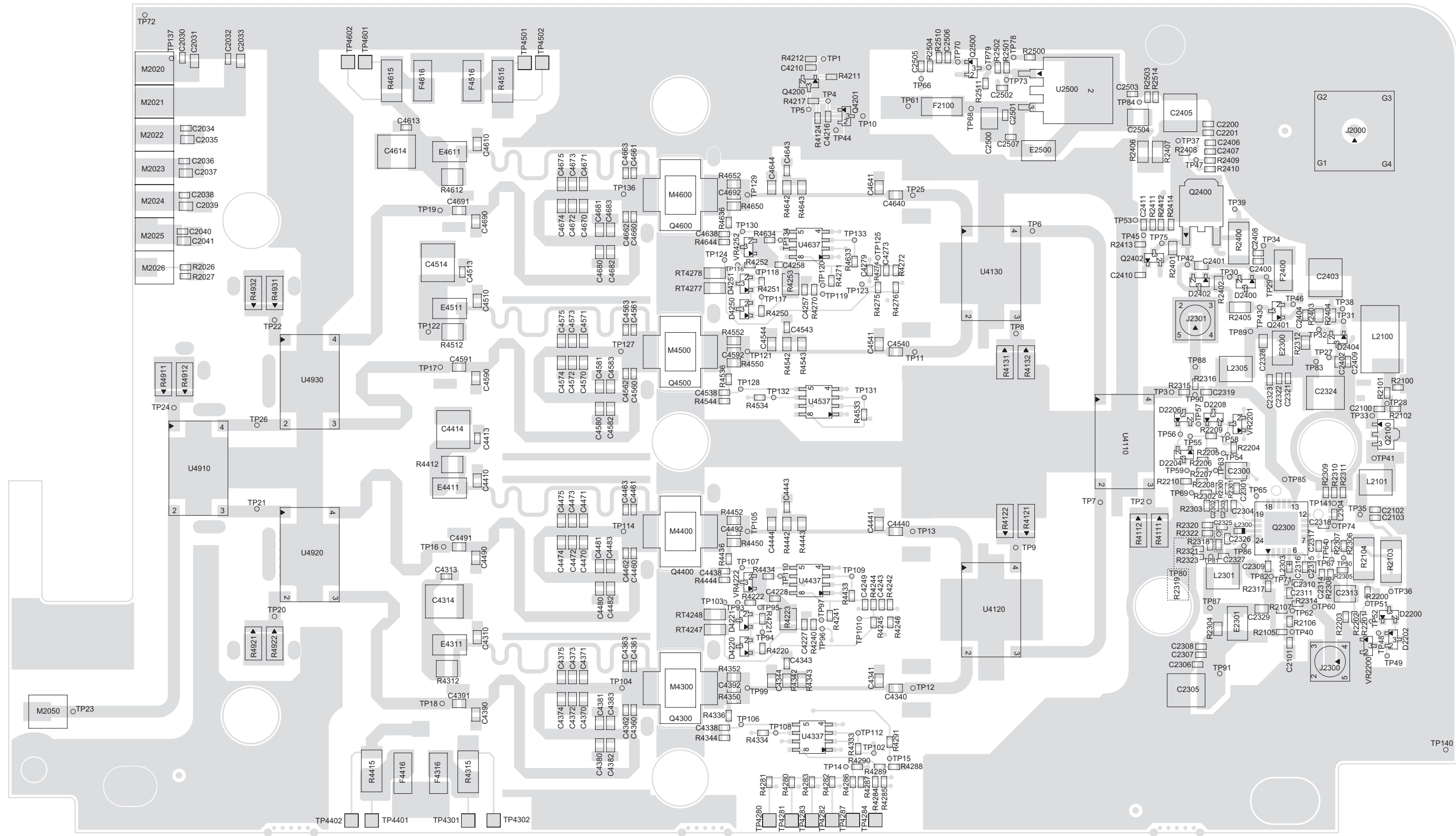


RF Board PCB – Top View (PCB No. 84009277001)

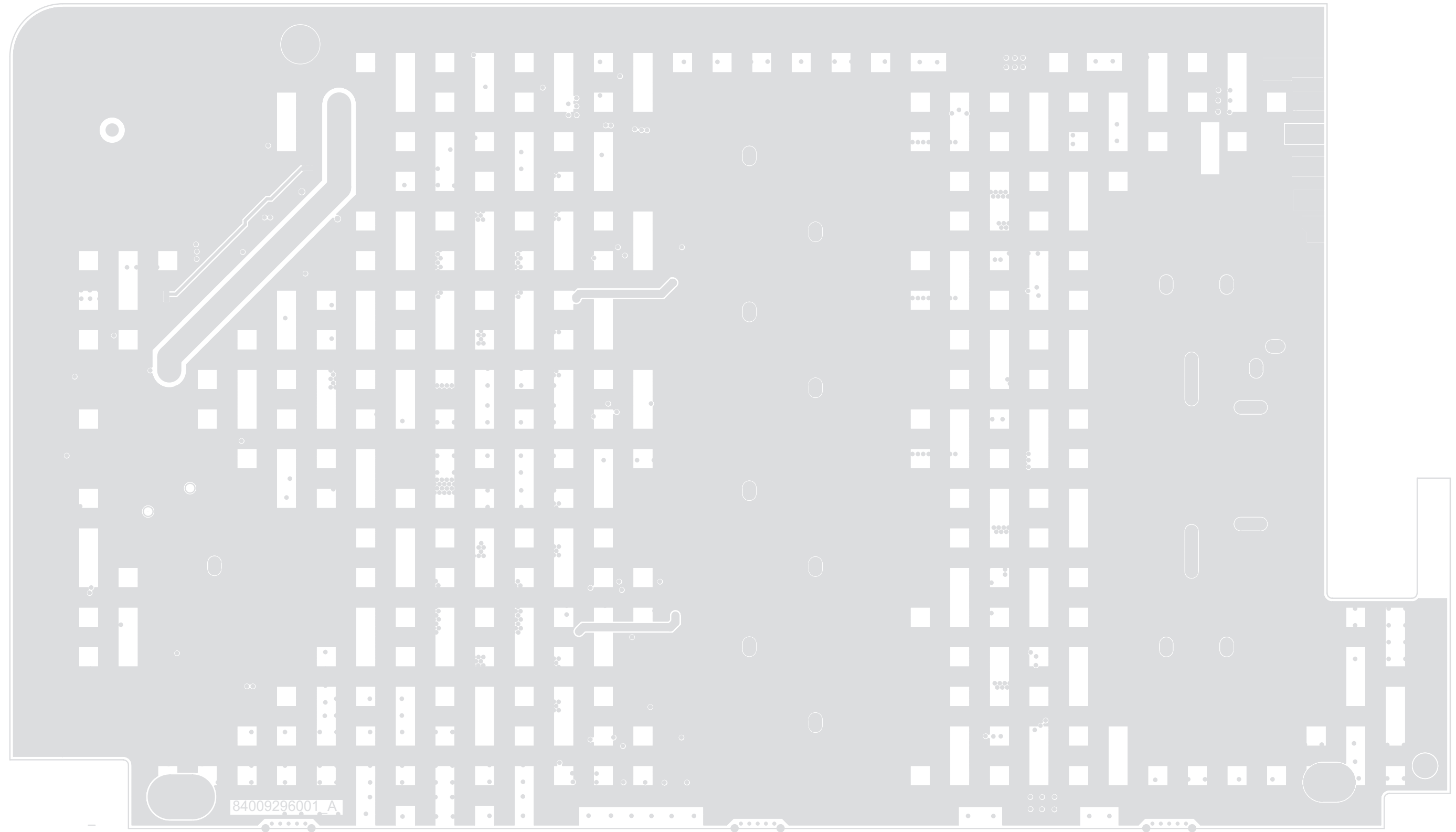


84009277001 A

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

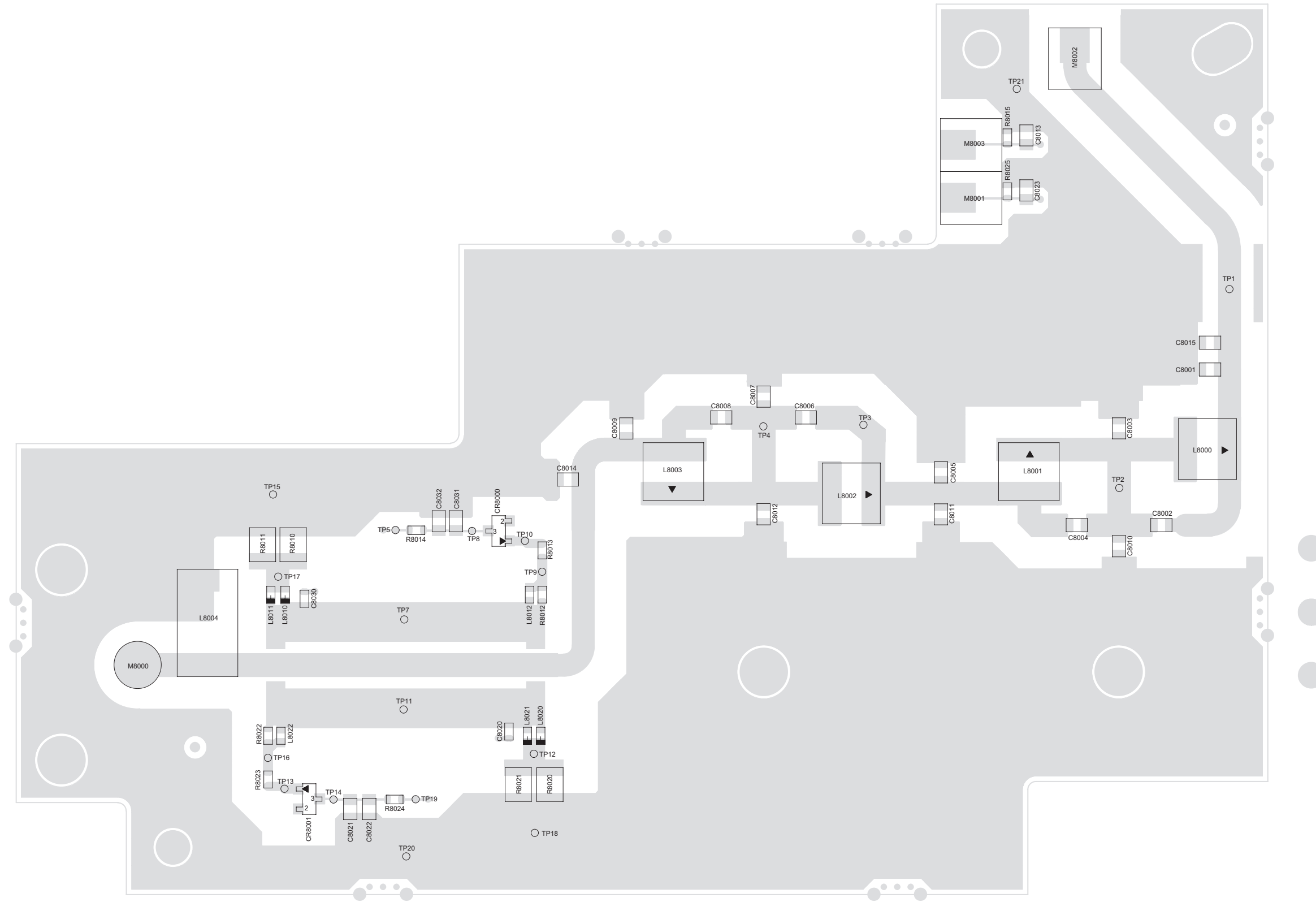


RF Board PCB – Top View (PCB No. 84009296001)



84009296001_A

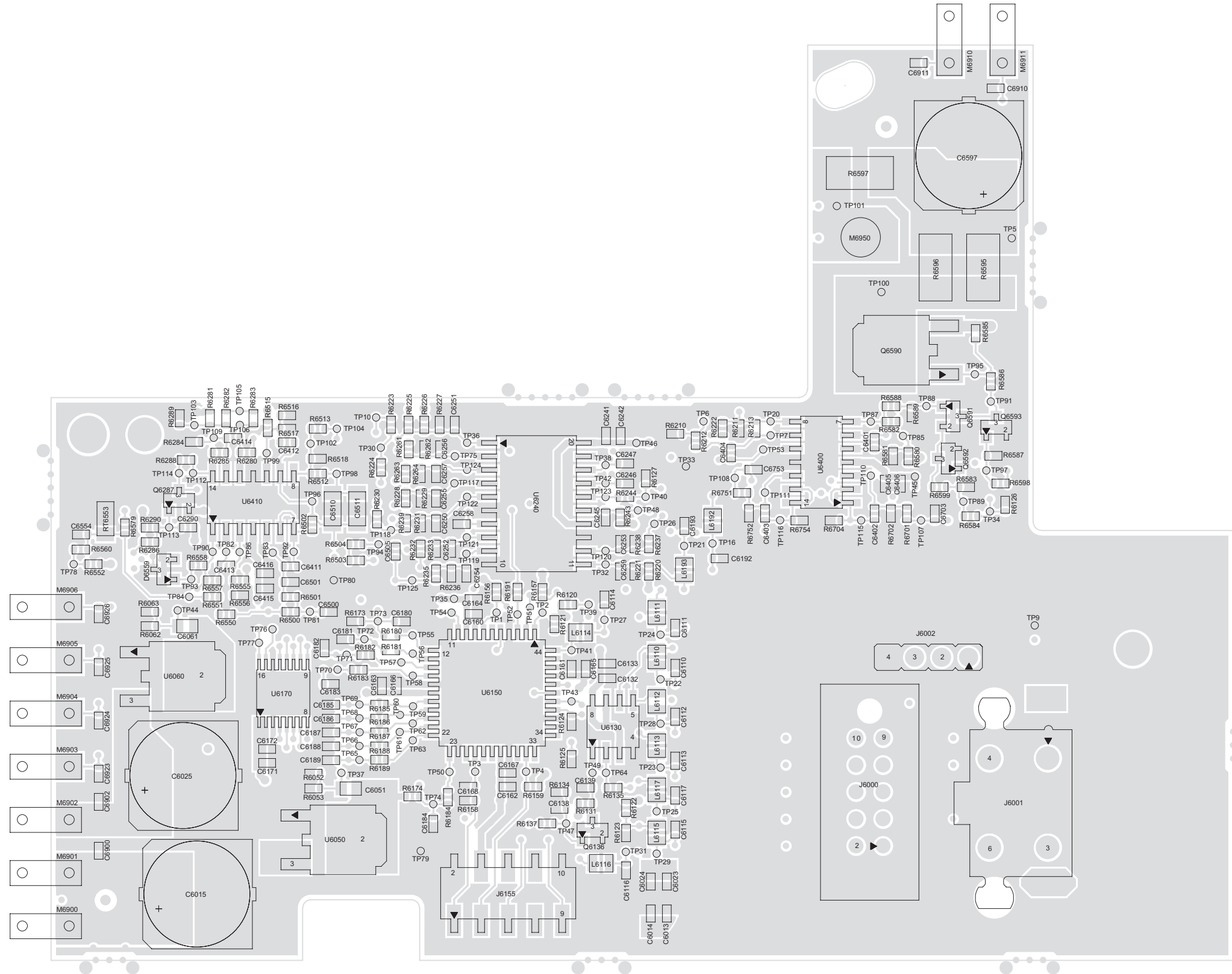
RF Board PCB – Bottom View (PCB No. 84009296001)



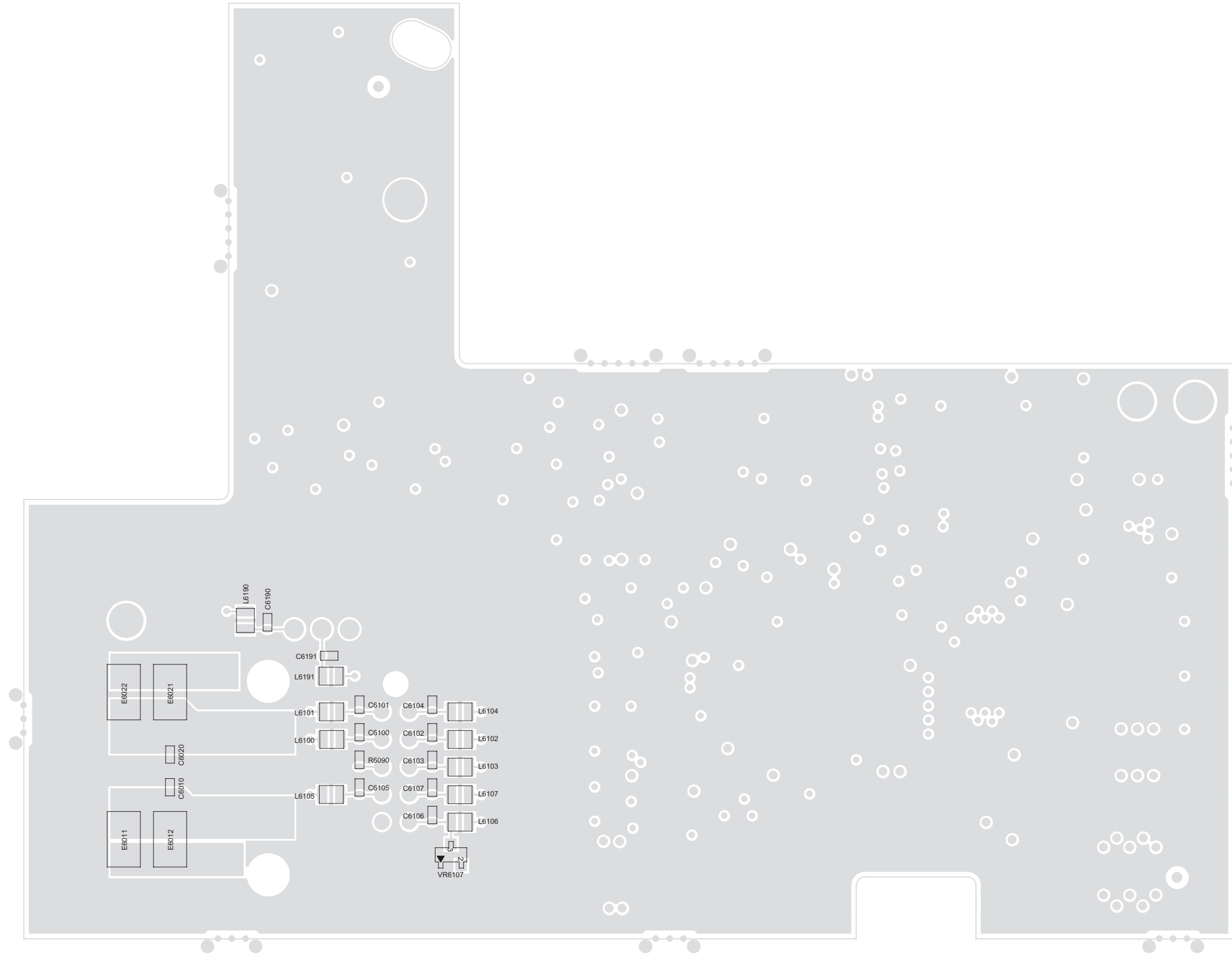
Output Board PCB – Top View (PCB No. 84009274001)



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 403–470MHZ
*	CLE6217	PA OUTPUT UHF 403–470MHZ
*	CLE6219	PA DIST UHF 403–527MHZ
*	CLN8504	PA HDWR HIGH POWER MTR3000

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

Circuit Ref	Motorola Part No	Description
*	5884911T18	UHF CIRCULATOR 470–524MHZ
*	CLE6216	PA RF BRD UHF 450–527MHZ
*	CLE6218	PA OUTPUT UHF 450–527MHZ
*	CLE6219	PA DIST UHF 403–527MHZ
*	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,1 0A,2MHZ,P
Q2401	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300MHZ
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,2MHZ,P
Q2401	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA,300MHZ
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 435-524MHZ 3 DB HYBRID
U4120	5871224H02	COUPLER 435-524MHZ 3 DB HYBRID
U4130	5871224H02	COUPLER 435-524MHZ 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 435-524MHZ 3 DB HYBRID
U4920	5871224H02	COUPLER 435-524MHZ 3 DB HYBRID
U4930	5871224H02	COUPLER 435-524MHZ 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,550MHZ 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,550MHZ SRF,SM,0603
PWB	84009274001	PA OUTPUT PCB 403 - 470MHZ
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,550MHZ 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,550MHZ 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

Chapter 4 MTR3000 Station Control Module

4.1 Overview

This section provides an overview, detailed Theory of Operation and troubleshooting information for the Station Control Module (SCM). The block diagrams, schematic diagrams, overlays, and parts lists are provided on foldout sheets. Each block diagram shows the location and reference designation for all electrical components. 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

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

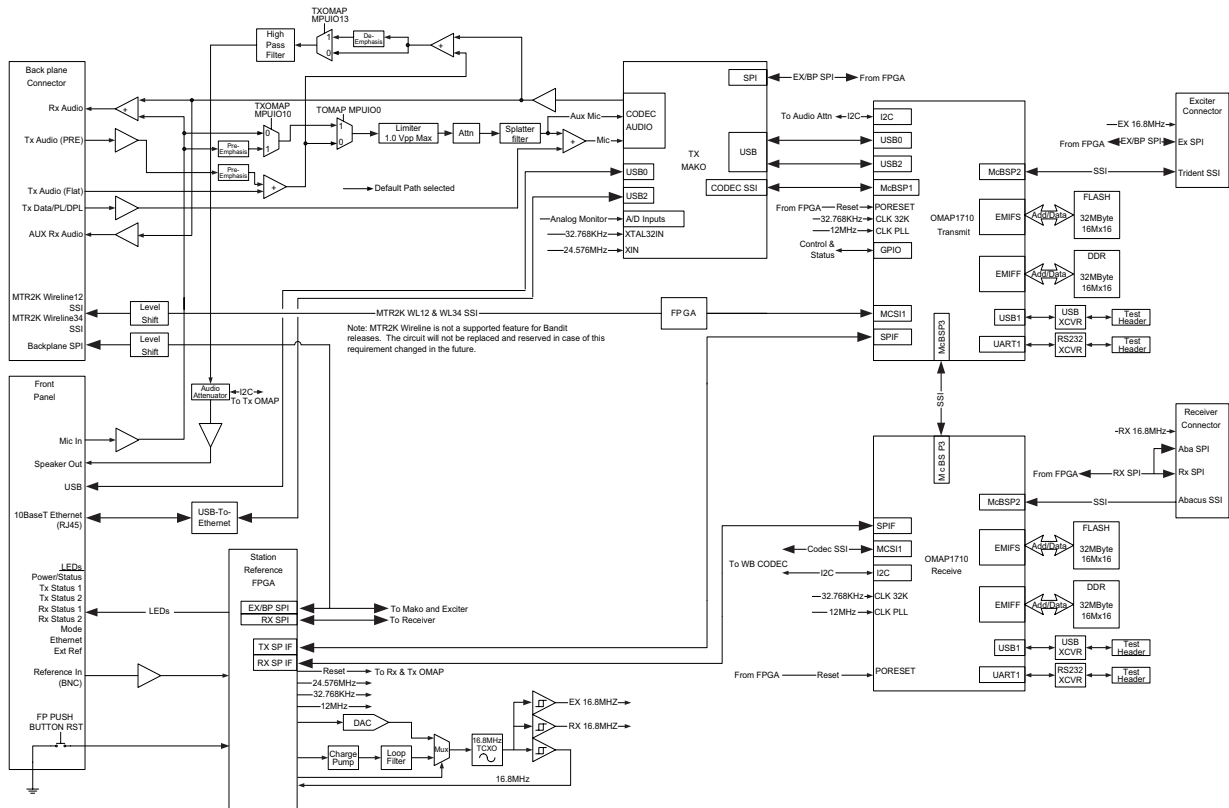


Figure 4-1 MTR3000 Controller Block Diagram

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 KBytes Bottom Boot Sectors
- 128 KBytes main blocks (254 for 256 Mbit part, 514 for 512 Mbit 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

Table 4-1 SPI decoding truth table (Continued)

Signal Name	Section	Device CS (DCS4:DCS1)	SPI Address (A2:A0)	OMAP GPIO16	OMAP SPI_NCS3x
				Enable	Enable
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 ¹	Exciter	1001	011	x	0
EX_STANDBY ¹	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 ¹	RCVR	xxxx	011	0	1
Abacus	RCVR	xxxx	100	1	0
RX_STANDBY ¹	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.

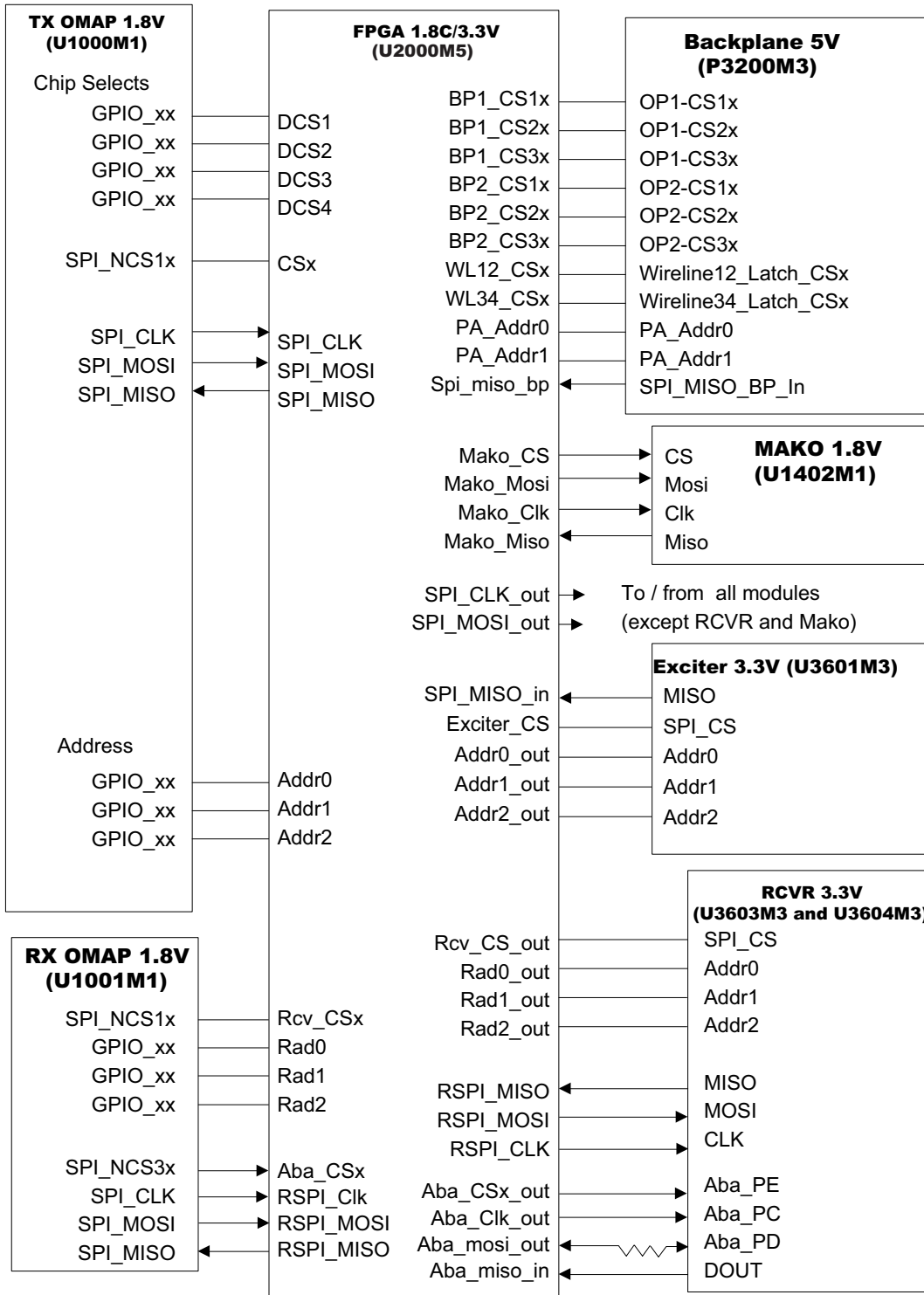


Figure 4-2 MTR3000 Controller SPI connection

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 ³	2 MHz	50 ns	50 ns
	Trident IC	Low	rising	24 bits	20 MHz/ 10 MHz ¹	10 ns/ 20 ns ¹	0 ns
	Metering ADC (Maxim Max149B)	Low	rising	24 bits	1.8 MHz	100 ns	0 ns
PA	EEPROM (AT25640)	Low	rising	32 bits ³	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 ²	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 ¹	10 ns/ 20 ns ¹	0 ns
	EEPROM (AT25640)	Low	rising	32 bits ³	2 MHz	50 ns	50 ns
	Abacus	Low	rising	16 bits ³	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 ± 0.5 ppm over temperature (-30°C to $+85^{\circ}\text{C}$) with an aging rate of ± 1.0 ppm per year and ± 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 ± 50 ppb over temperature (-30°C to $+80^{\circ}\text{C}$) with an aging rate of ± 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	Ext Ref Required	5 years
0.1	Ext Ref Required	1 year

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.

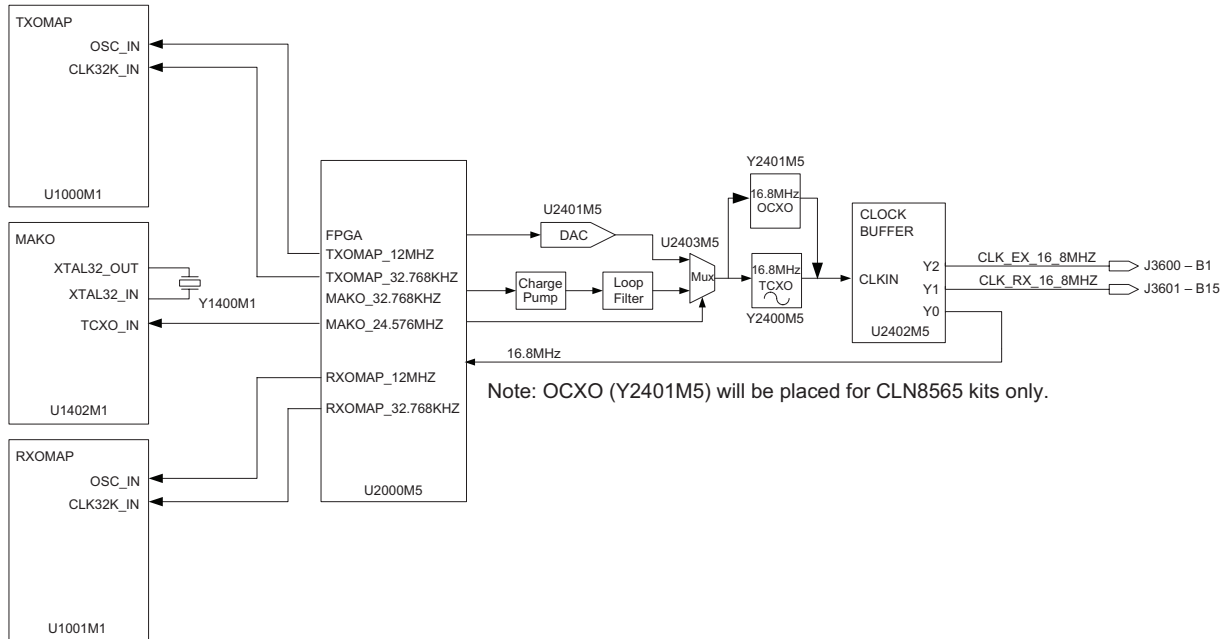


Figure 4-3 MTR3000 Controller Clock Configuration

Note For the OXCO kit, the controller must be warmed up for a minimum of 15 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.

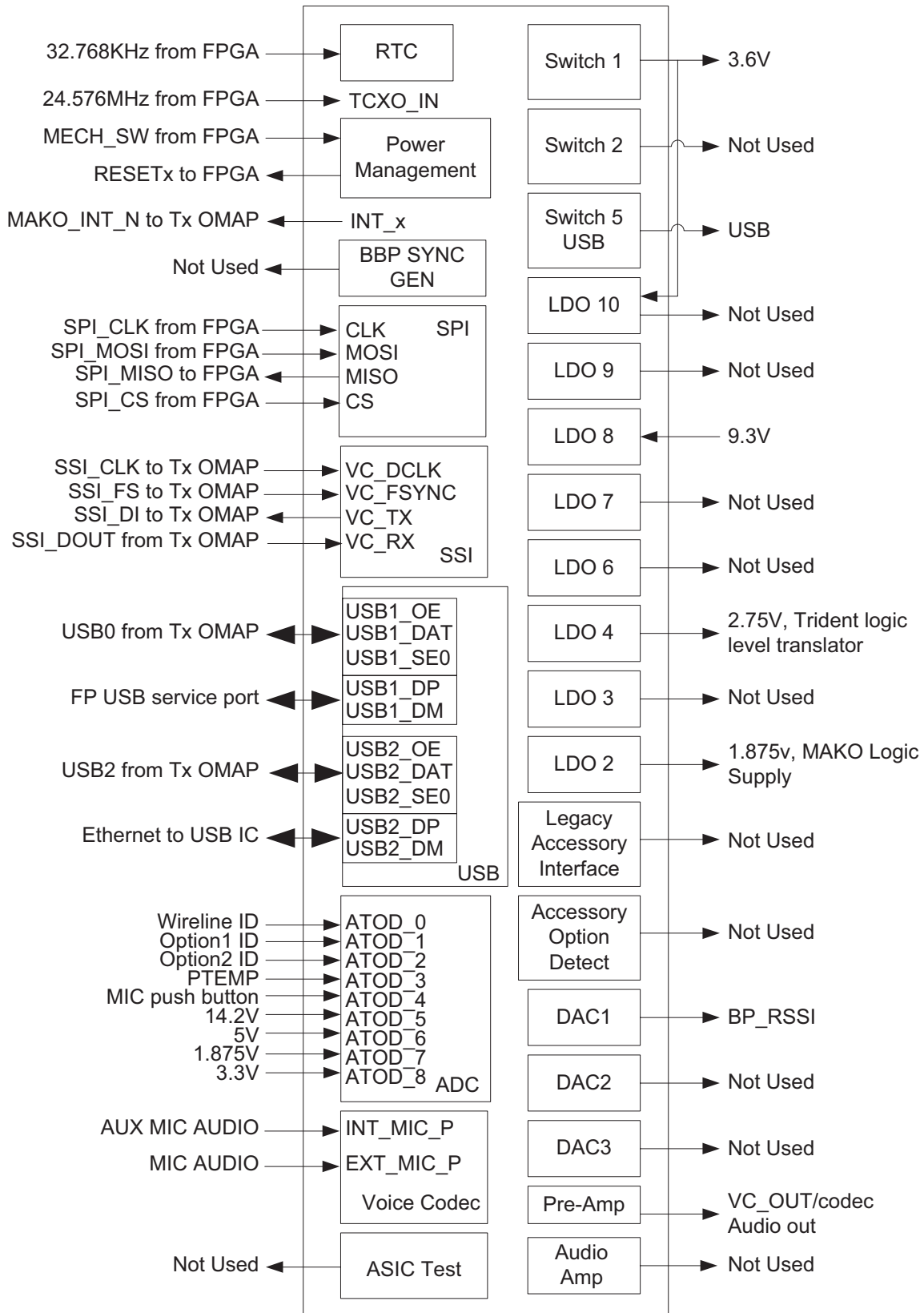


Figure 4-4 MAKO Block Diagram and usage of MTR3000 Controller

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	0.373	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	0x25C	For factory to check PS 14.2 V voltage level.
6	5V	Control	1.55	0x20B	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	0x324	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.

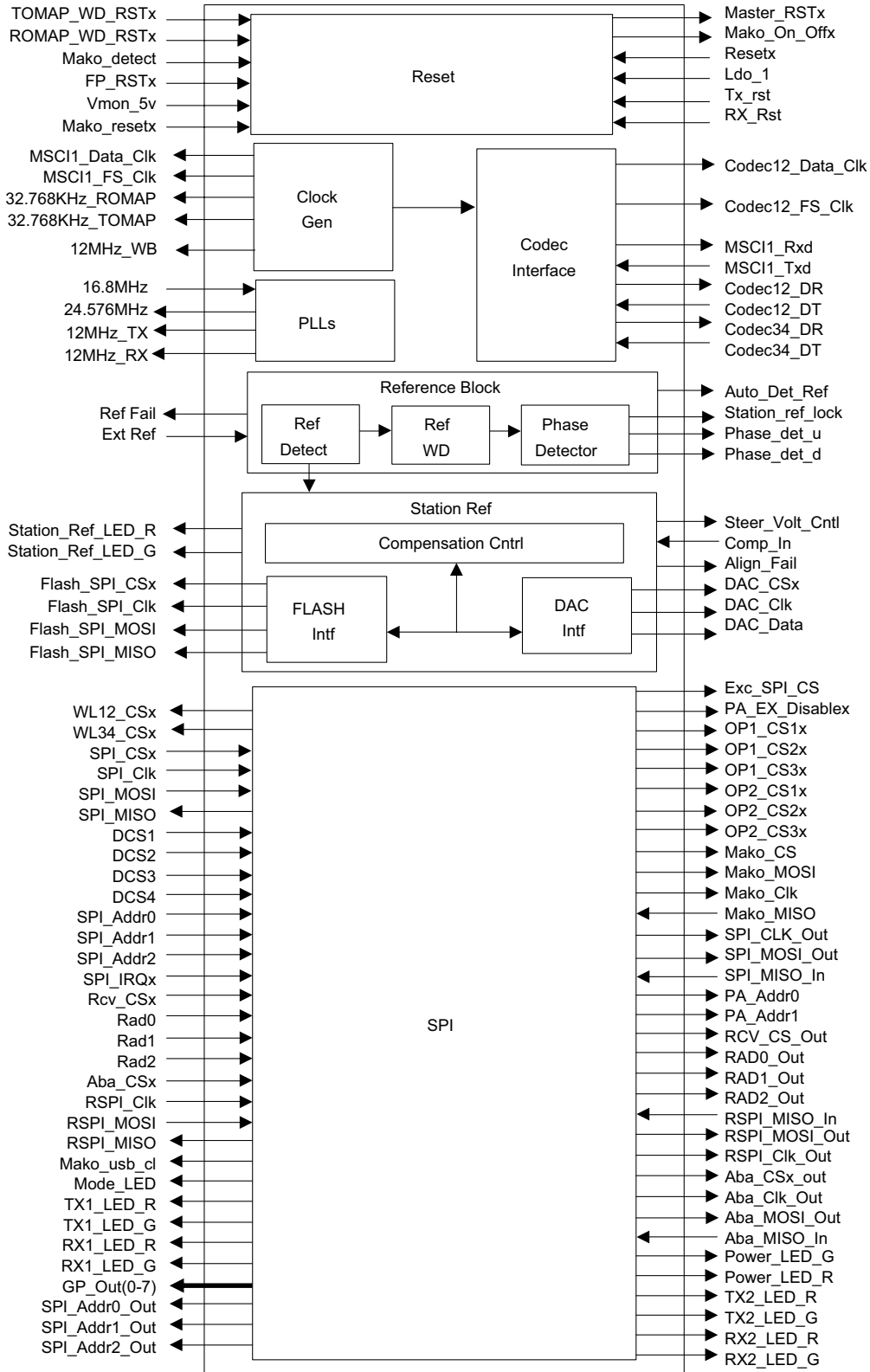


Figure 4-5 MTR3000 Controller FPGA Block Diagram

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.

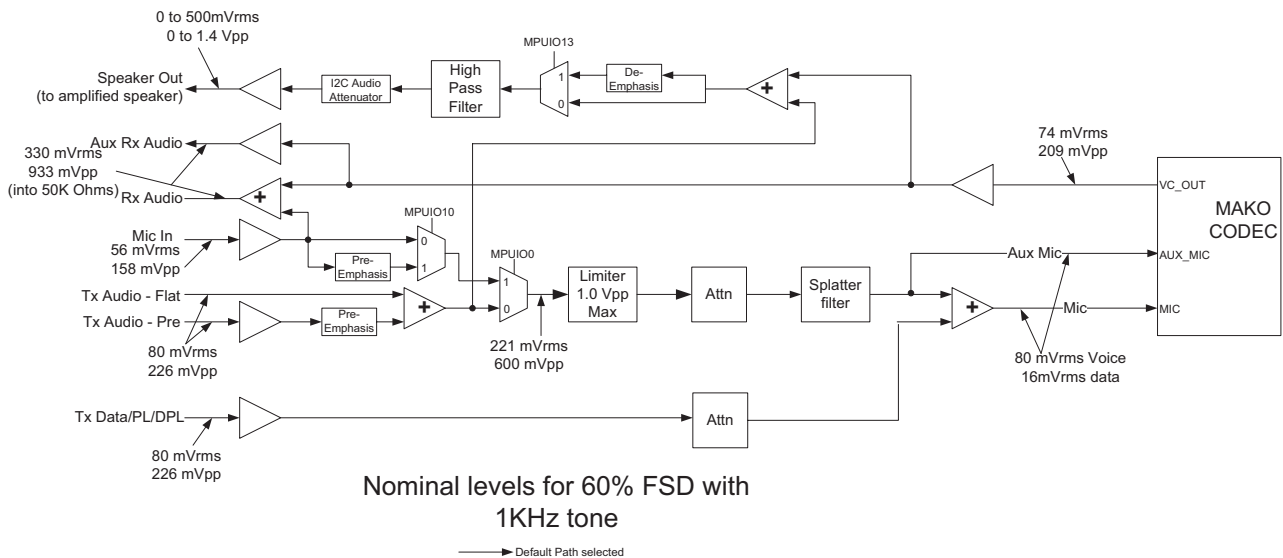


Figure 4-6 Station Control Module (SCM) Audio Path

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 hardware pre-emphasis. The nominal level of 80 mVrms (158 mVpp) produces 60% Relative Standard Deviation (RSD).
Tx Audio-Pre	The Tx Audio-Pre input provides a hardware pre-emphasis network. The nominal level of 80 mVrms (158 mVpp) produces 60% RSD.
Tx Data	Transmit data, PL or DPL signaling. The nominal level of 80 mVrms (158 mVpp) produces 12% RSD.
Mic	Local microphone input. Use microphone type GMN6147 (older model) or GMMN4063. Modulation sensitivity for 60% system deviation is typically 56 mVrms (158 mVpp). 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.
Aux Rx Audio	An RF input signal with 60% RSD provides an Rx Audio output of 330 mVrms into 50 k Ω . Also a microphone input of 56 mVrms provides an Aux Rx Audio output of 330 mVrms into 50 k Ω . The Rx Audio output has DC bias of 2.5 VDC.
Rx Audio	An RF input signal with 60% RSD provides an Rx Audio output of 330 mVrms into 50 k Ω . The Rx Audio output has a DC bias of 2.5 VDC.
Speaker	Output to Powered Voice speaker. Adjustable between 0 to 500 mVrms (1.4 Vpp) across 1 k Ω @ 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. Note : The Speaker port is only supported in analog mode regardless of the speaker used.

Note When using third party controllers, refer to MTR3000 Third Party Controllers (Appendix G) 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 KBytes 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.

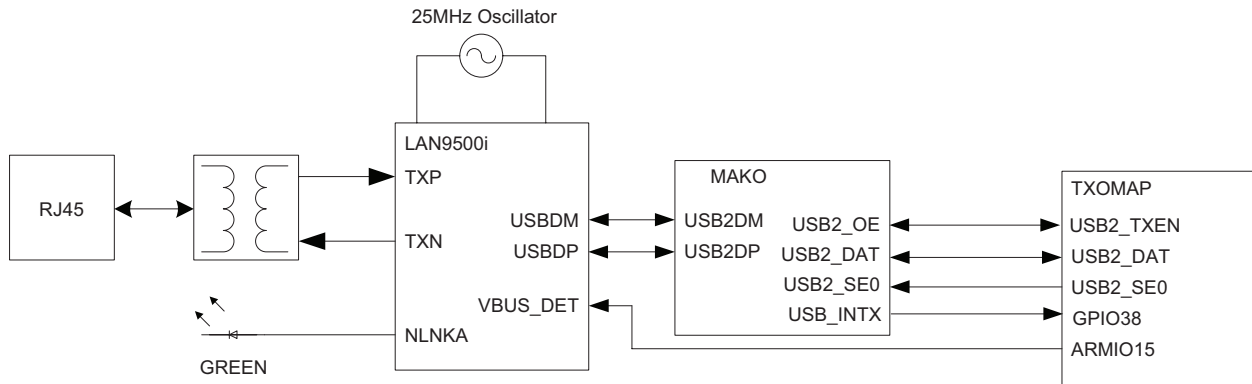


Figure 4-7 MTR3000 Controller Ethernet Connection

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. ^{1, 2}
PORT_SWAP	PD	0 = USBDP maps to the USB D+ line and USBDM maps to the USB D- line. ¹
RMT_WKP	PD	0 = Remote wakeup is not supported. ¹
EEP_DISABLE	PD	0 = EEPROM is recognized if present. ¹
AUTOMDIX_EN	PU	1 = Auto-MDIX is enabled. ¹
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 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_8MHZ	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
B6	NC			No Connect on Controller

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

Pin	Signal Name	Description	Signal Level	Controller Connection
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
A14	RX_ATTEN	Rx Attenuation Control	3.3 V	Rx OMAP GPIO18

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

Pin	Signal Name	Description	Signal Level	Controller Connection
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_8MHZ	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.

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.

Table 4-10 SCM FP Connectors (Continued)

Connector Name	Connector Type	Purpose
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 5VDC 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

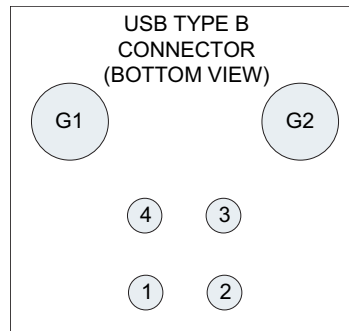


Figure 4-8 USB connector pin-out

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
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

Table 4-15 SCM FP External Reference Connector Pin-out (Continued)

Pin Number	Pin Name	I/O	Voltage Level	Pin Description
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 1-11.

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:

- +14.2V 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.
- +5.1V 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 power up block diagram.

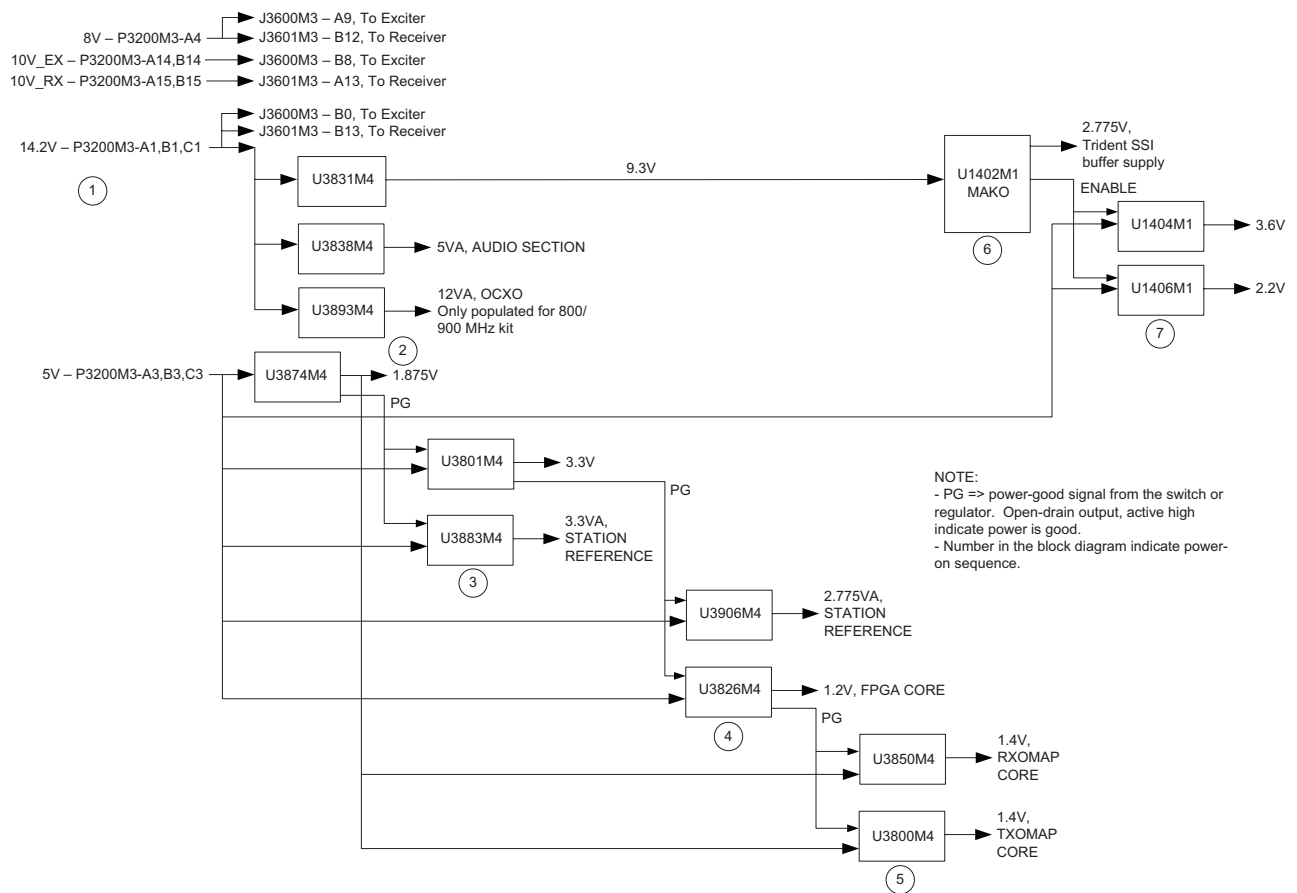


Figure 4-9 MTR3000 power up block diagram

4.3 Troubleshooting

4.3.14 Disassembly and Reassembly Procedures

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.

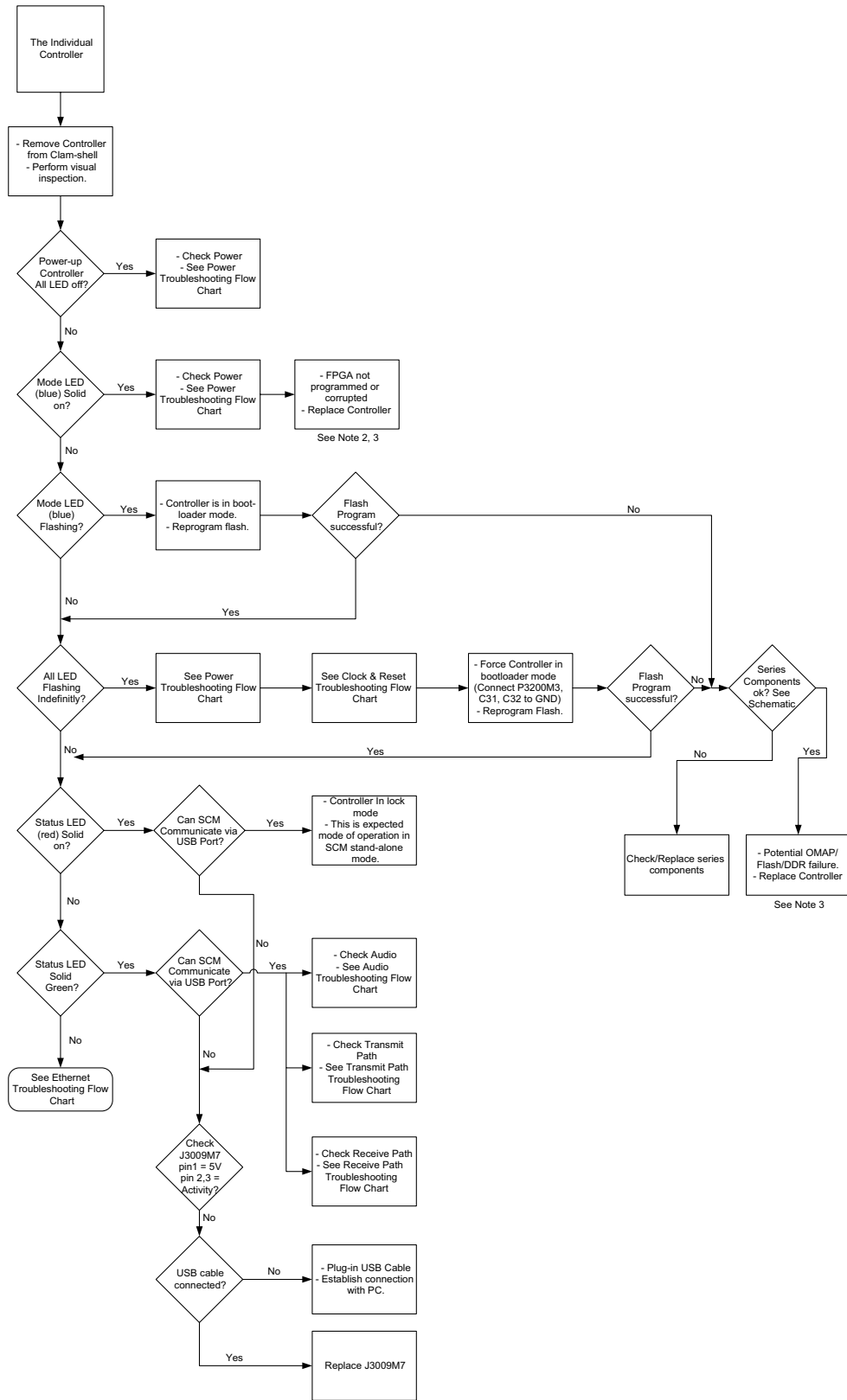


Figure 4-10 Controller Troubleshooting Flow Chart

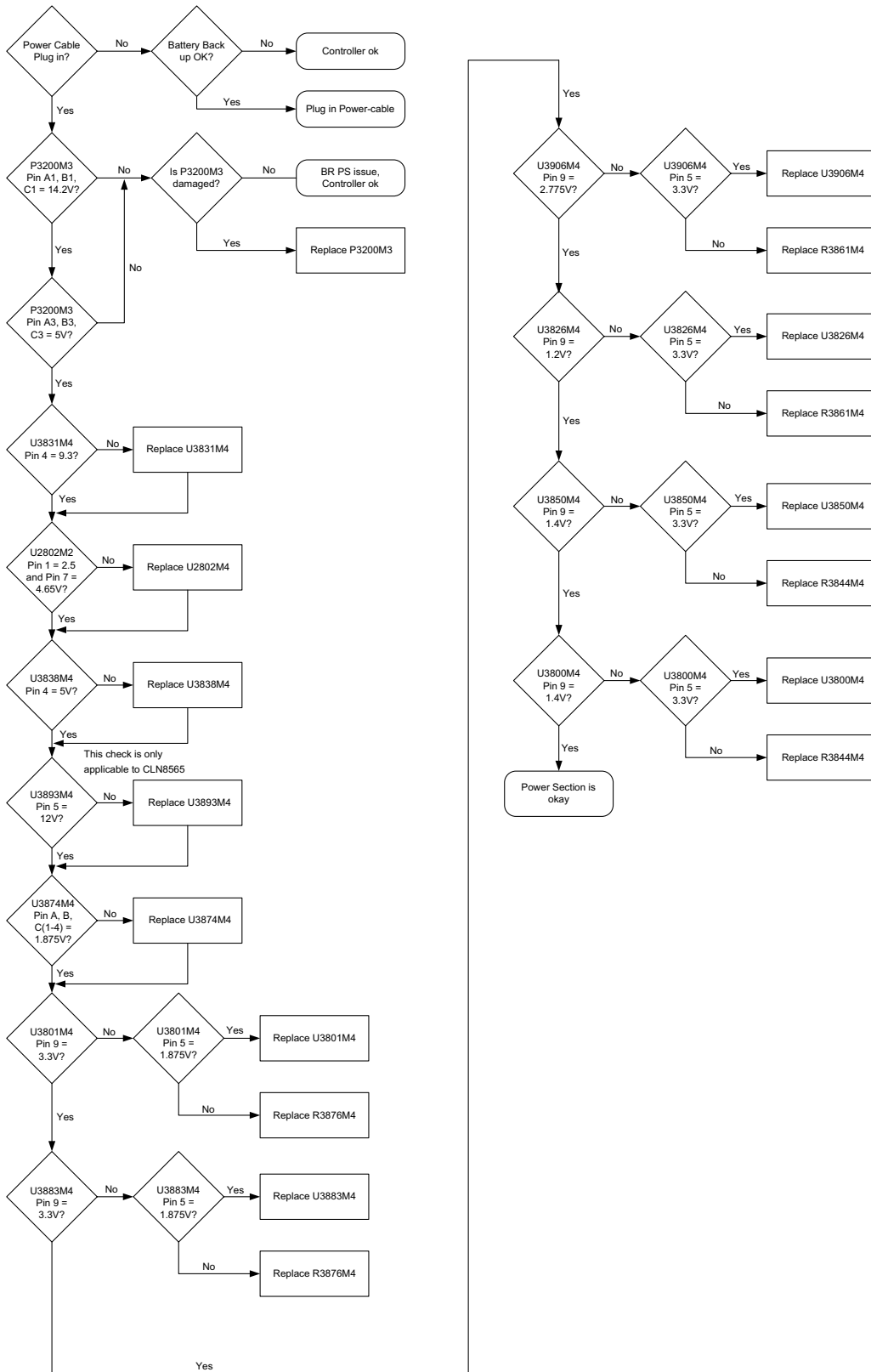


Figure 4-11 Power Troubleshooting Flow Chart (Controller)

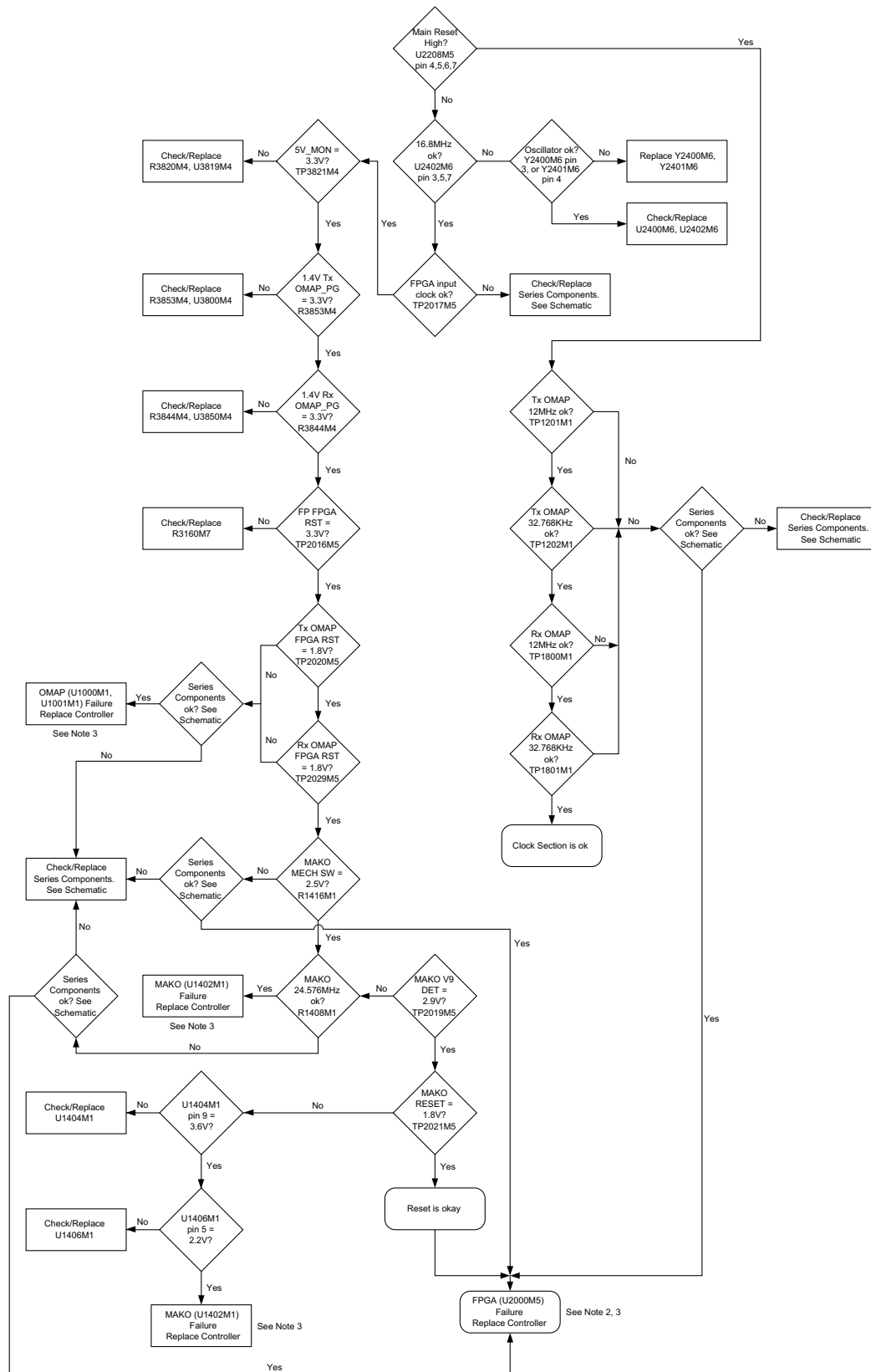


Figure 4-12 Clock and Reset Troubleshooting Flow Chart (Controller)

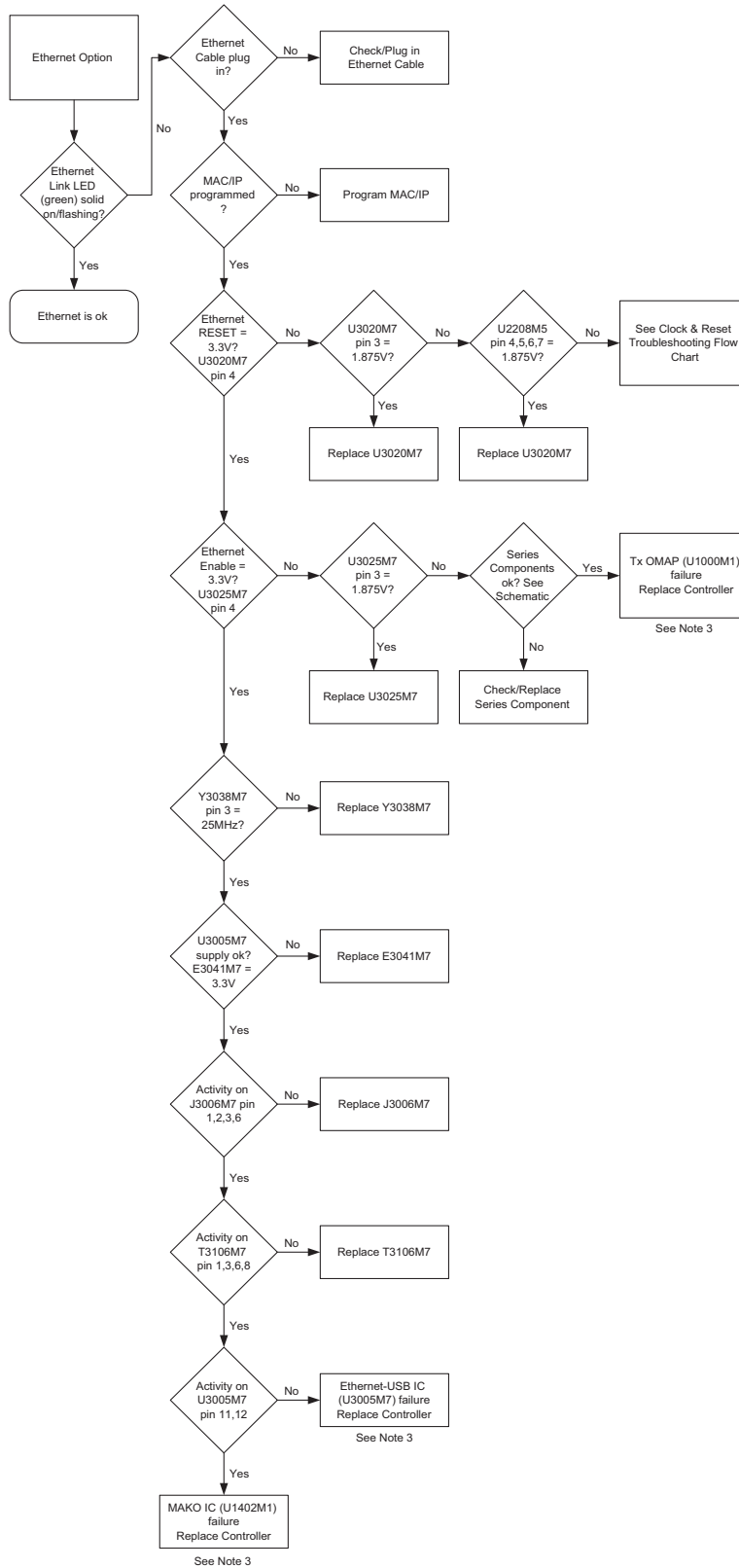


Figure 4-13 Ethernet Troubleshooting Flow Chart (Controller)

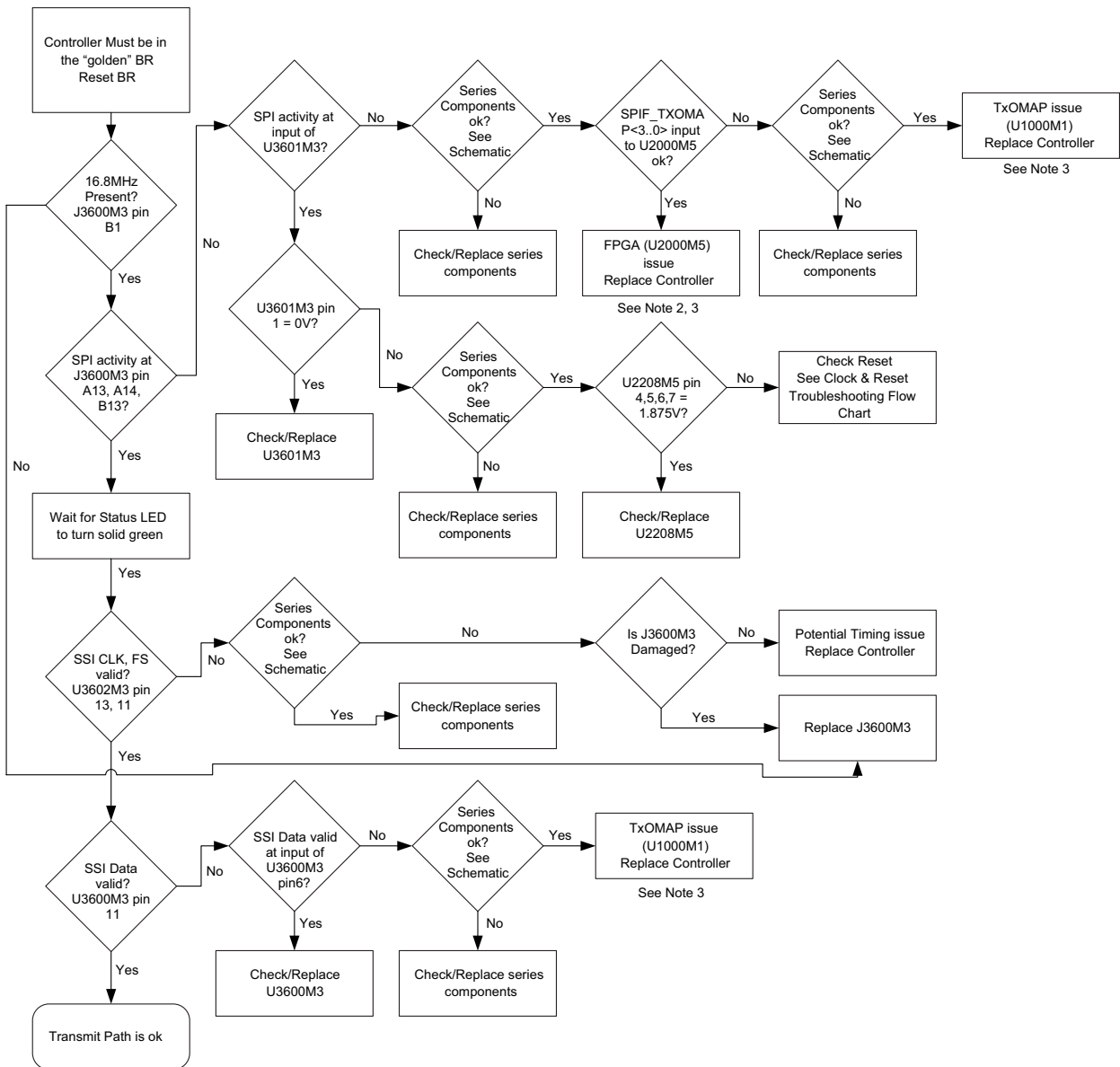


Figure 4-14 Transmit Path Troubleshooting Flow Chart (Controller)

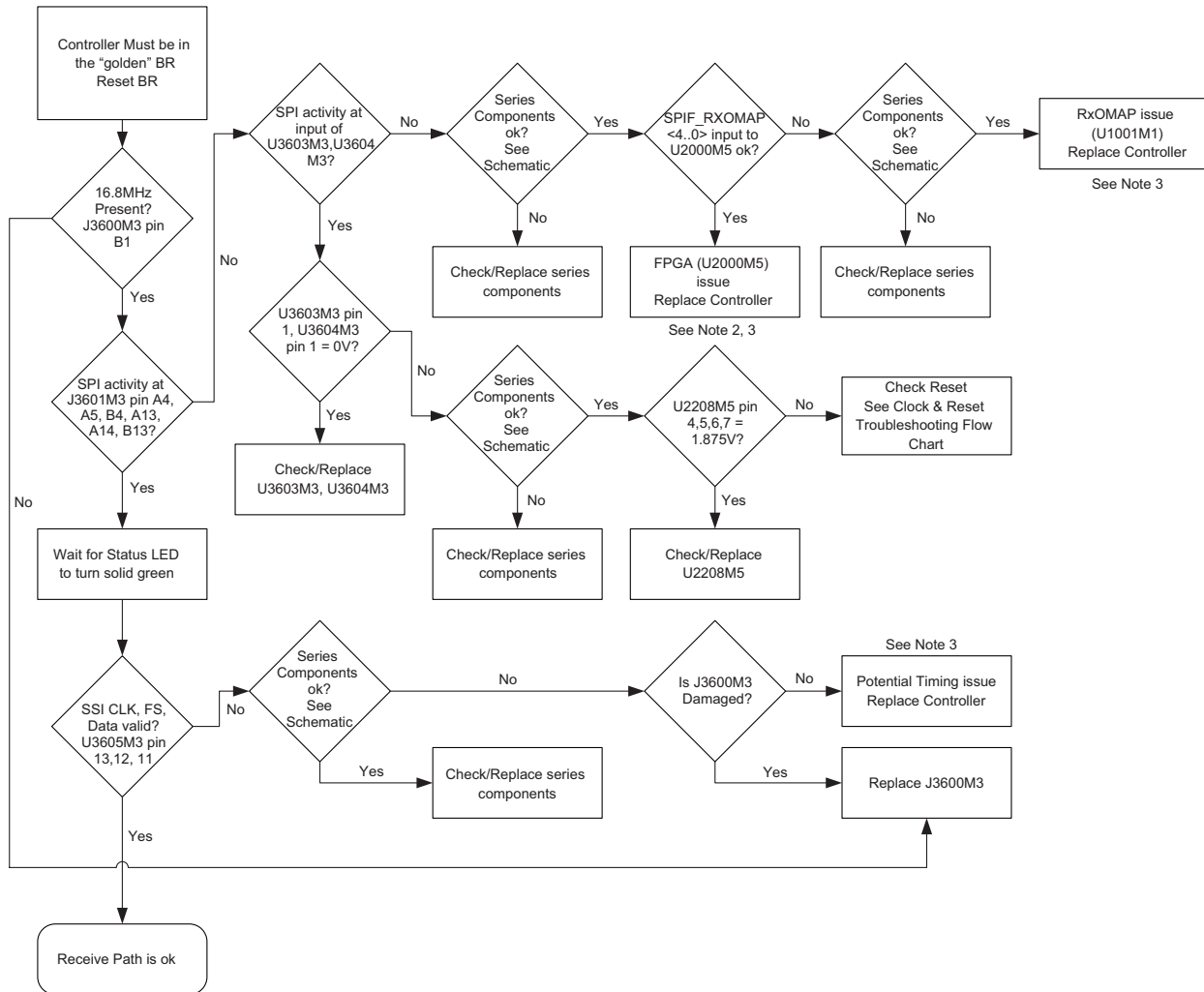


Figure 4-15 Receive Path Troubleshooting Flow Chart (Controller)

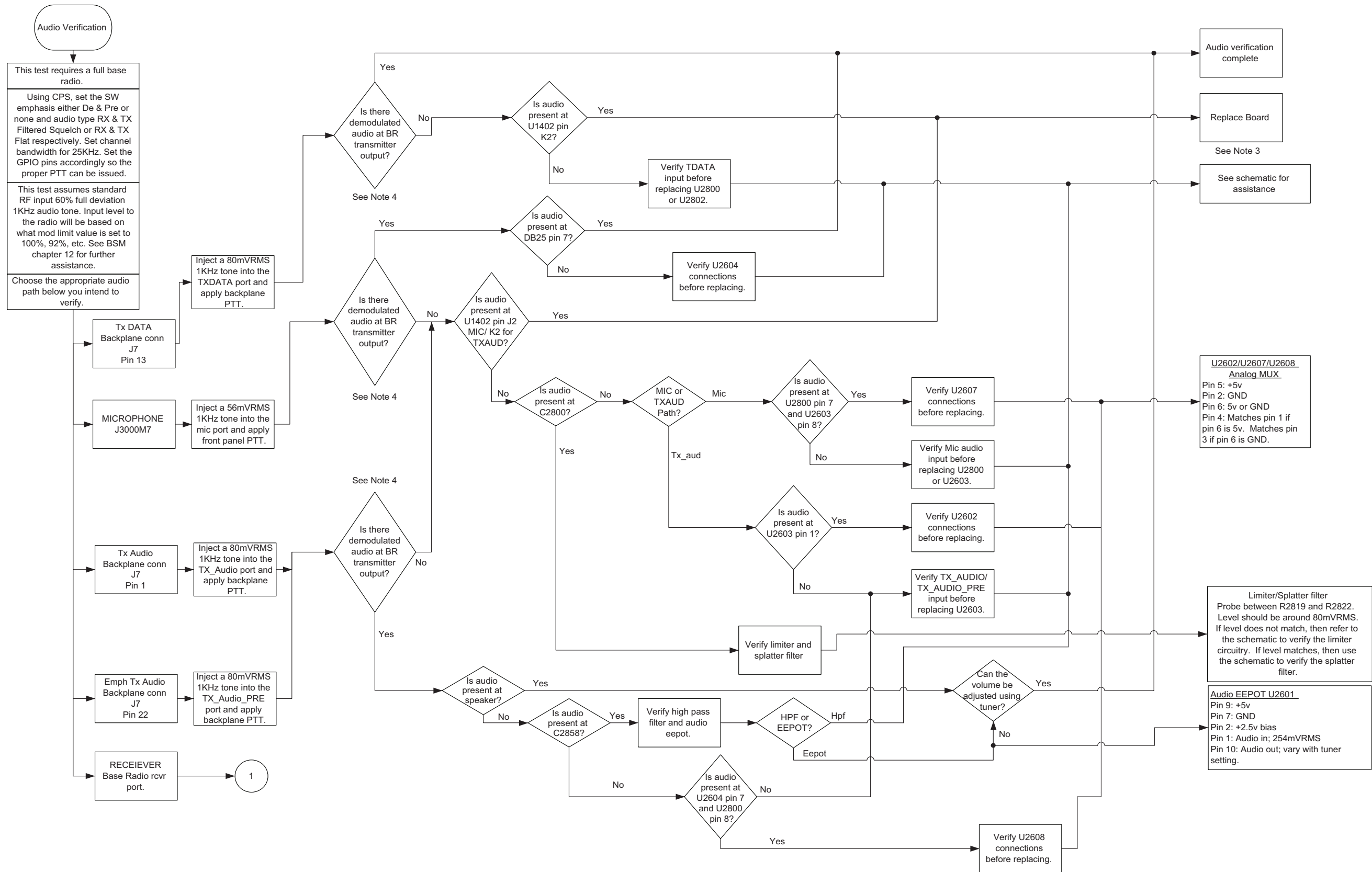


Figure 4-16 Audio Troubleshooting Flow Chart (Sheet 1 of 2)

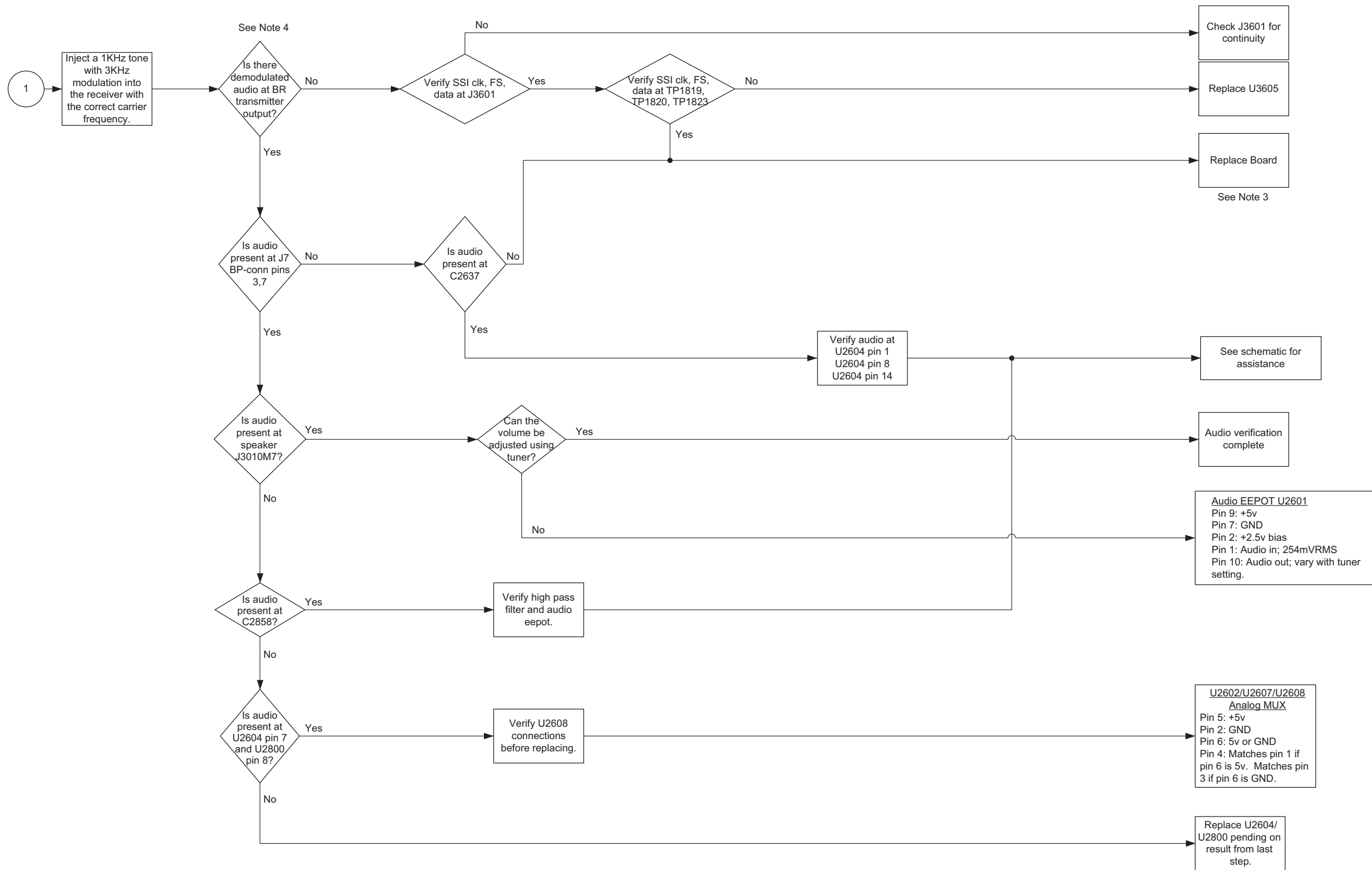


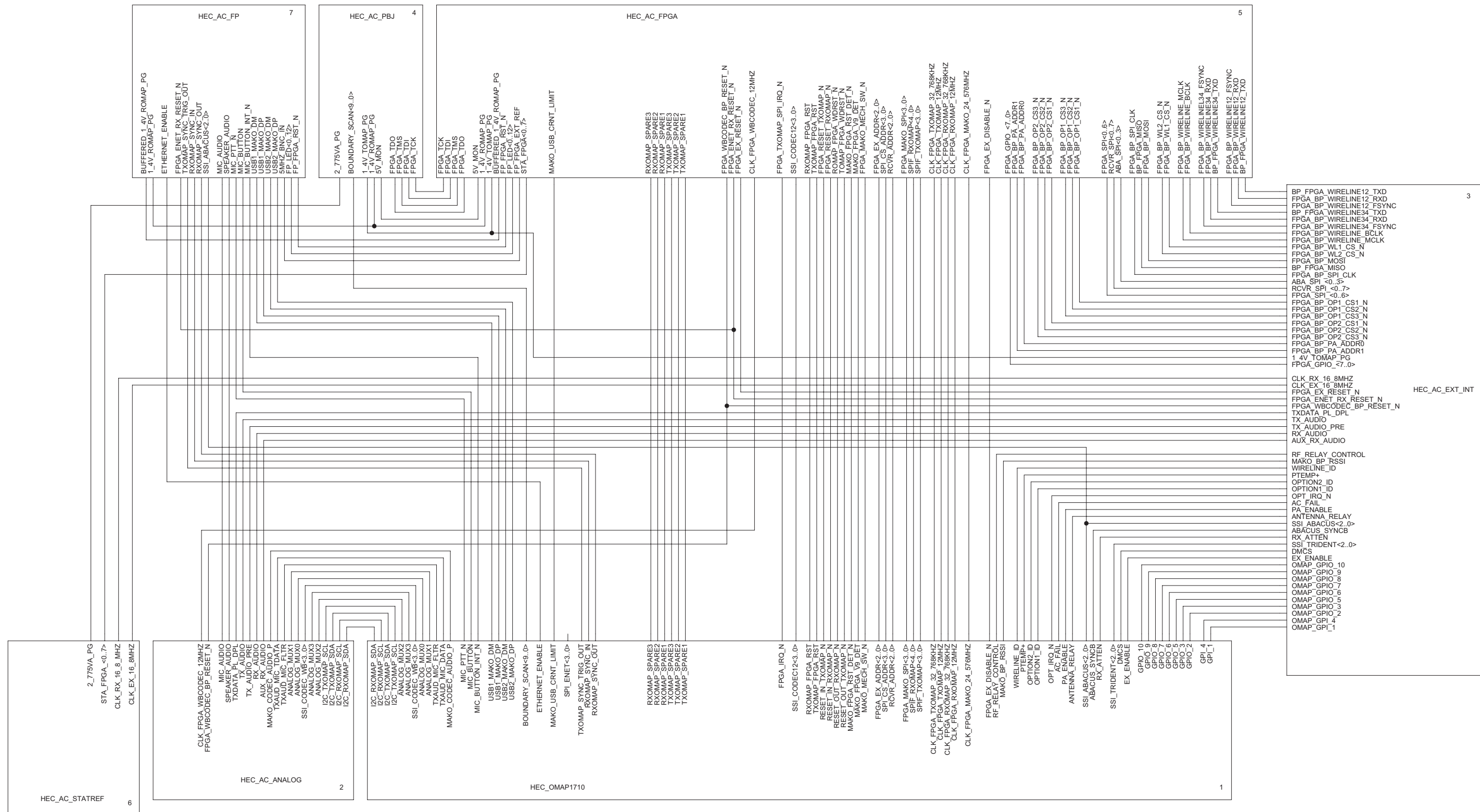
Figure 4-17 Audio Troubleshooting Flow Chart (Sheet 2 of 2)

4.3.16 Calibration Procedure

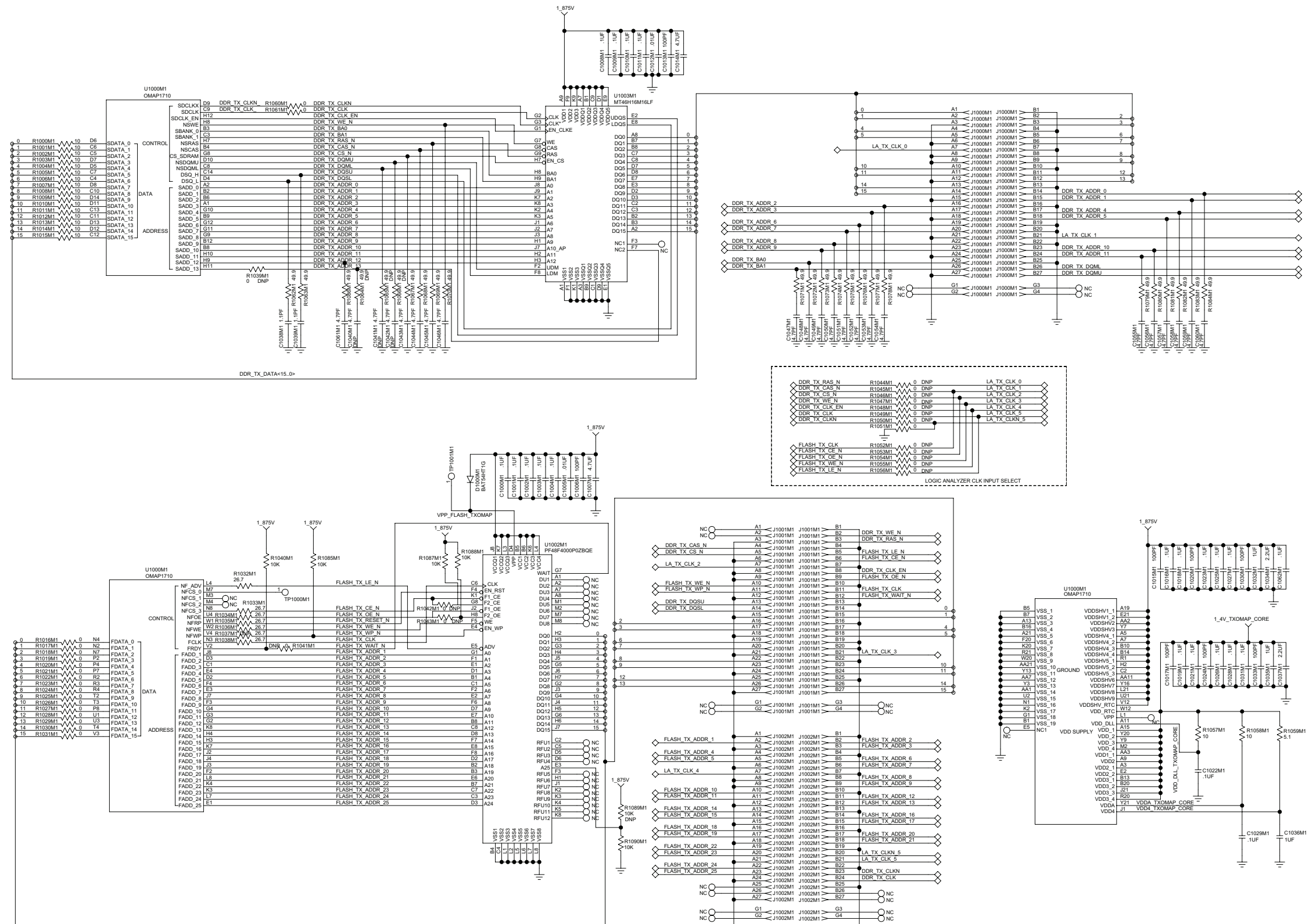
Note For the OCXO kit, the controller must be power-up for a minimum of 15 minutes before the execution of the following calibration procedures.

1. Remove the base station/repeater's front bezel from its chassis.
2. Power-up the base station/repeater and allow it to boot up normally.
3. Plug in the External Reference to J3008M7 on the SCM. The SCM accepts 5/10 MHz Sine/Square wave with amplitude of 3.3 Vpp.
4. Monitor the station reference LED. The LED will stay solid amber to indicate that the station is locked to external reference and is in alignment process.
5. When the station completes the alignment, the station reference LED will turn solid green.
6. Power down the base station/repeater and remove the External Reference.
7. Replace the base station/repeater's front bezel and power-up the base station/repeater.

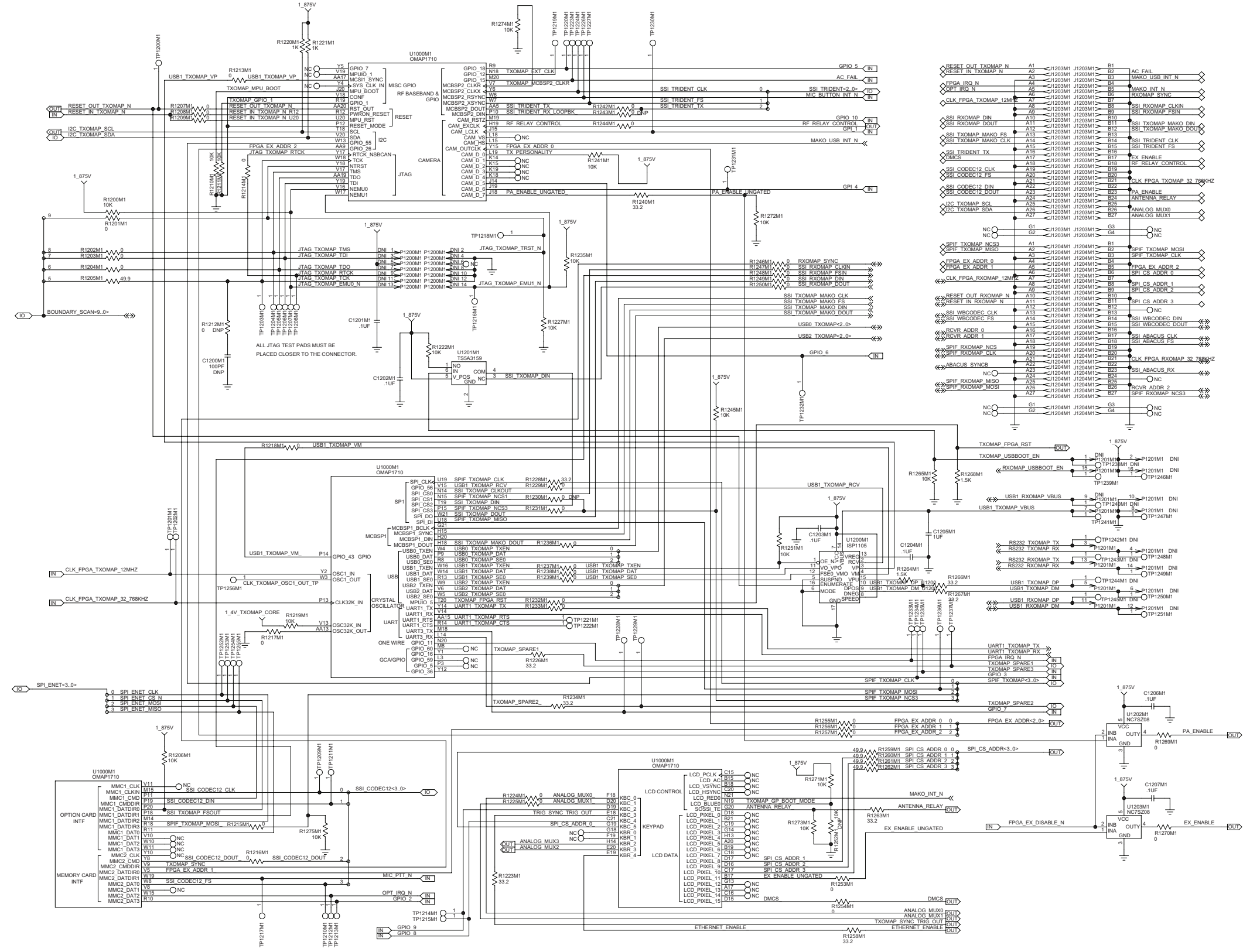
4.4 Controller Schematics (UHF)



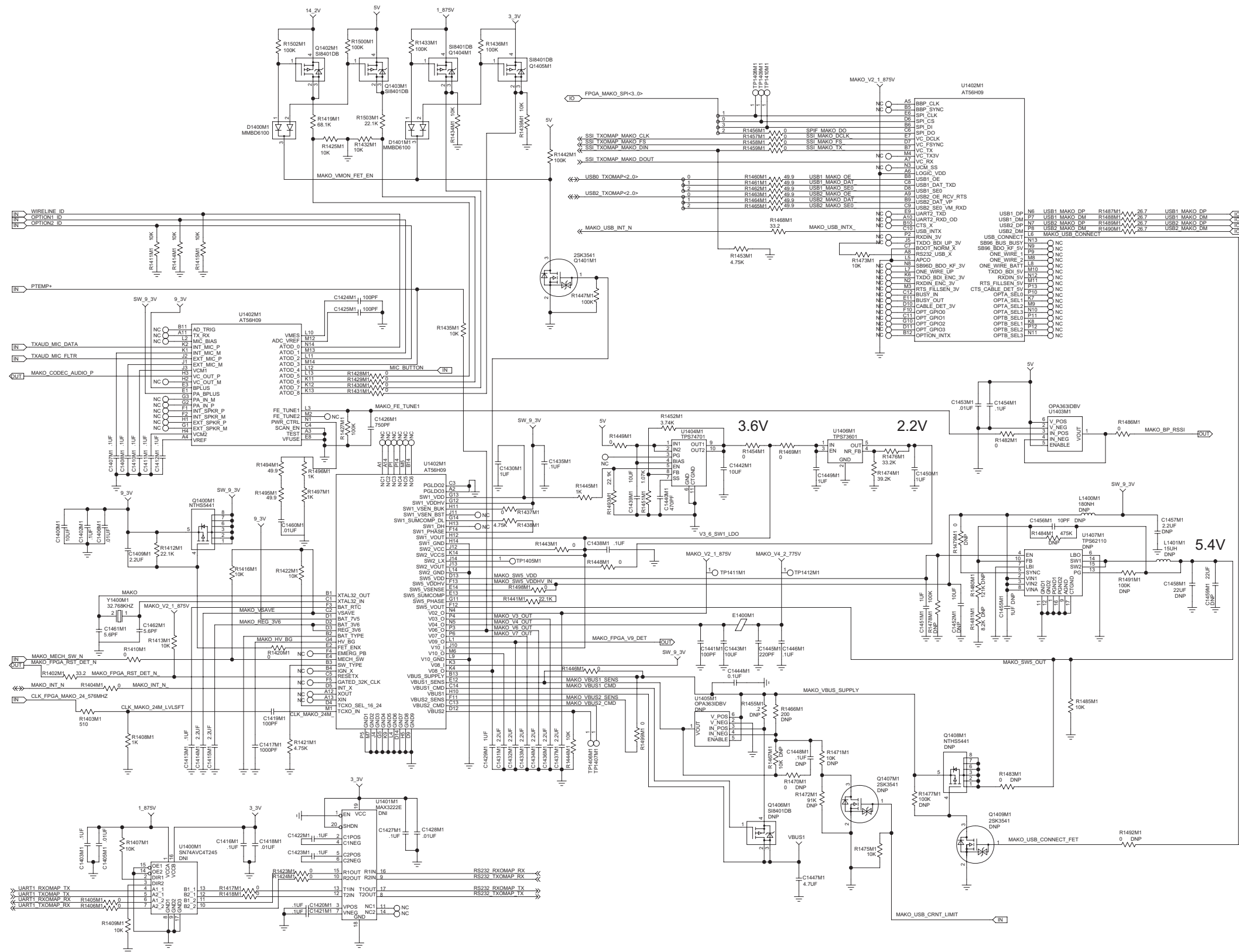
Controller – Main Schematic Diagram (Kit No. CLN8502)



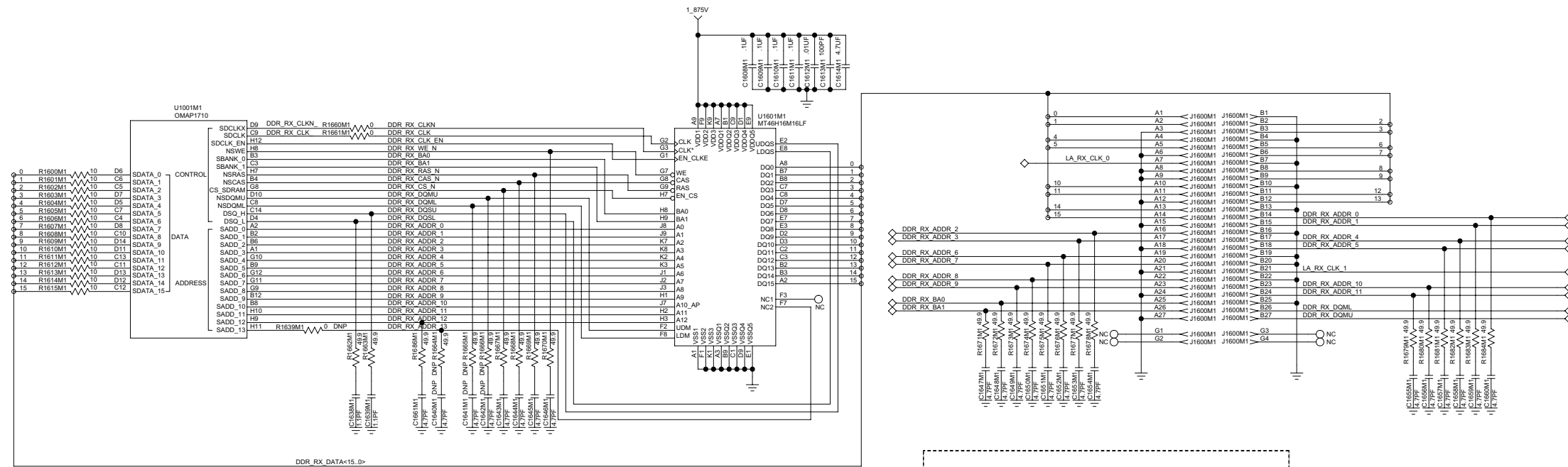
Controller – Tx OMAP Memory Schematic Diagram (Kit No. CLN8502)



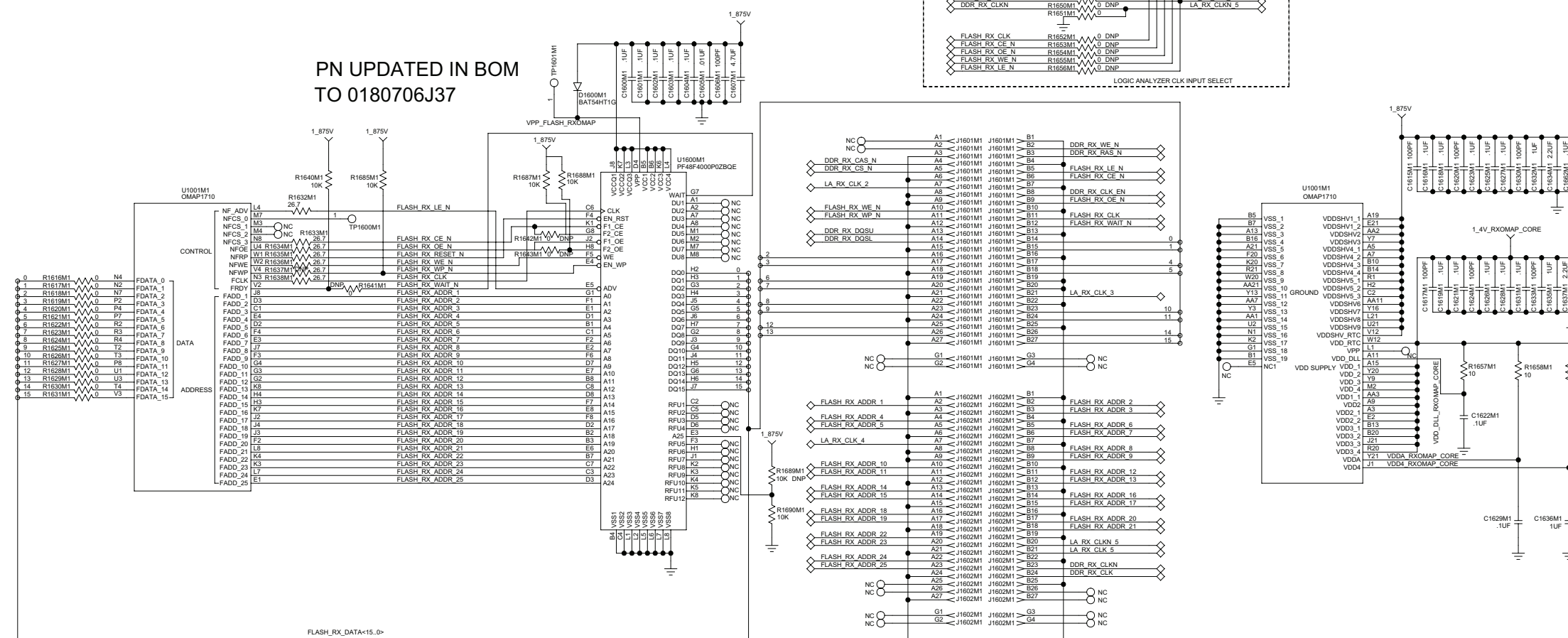
Controller – Tx OMAP Schematic Diagram (Kit No. CLN8502)



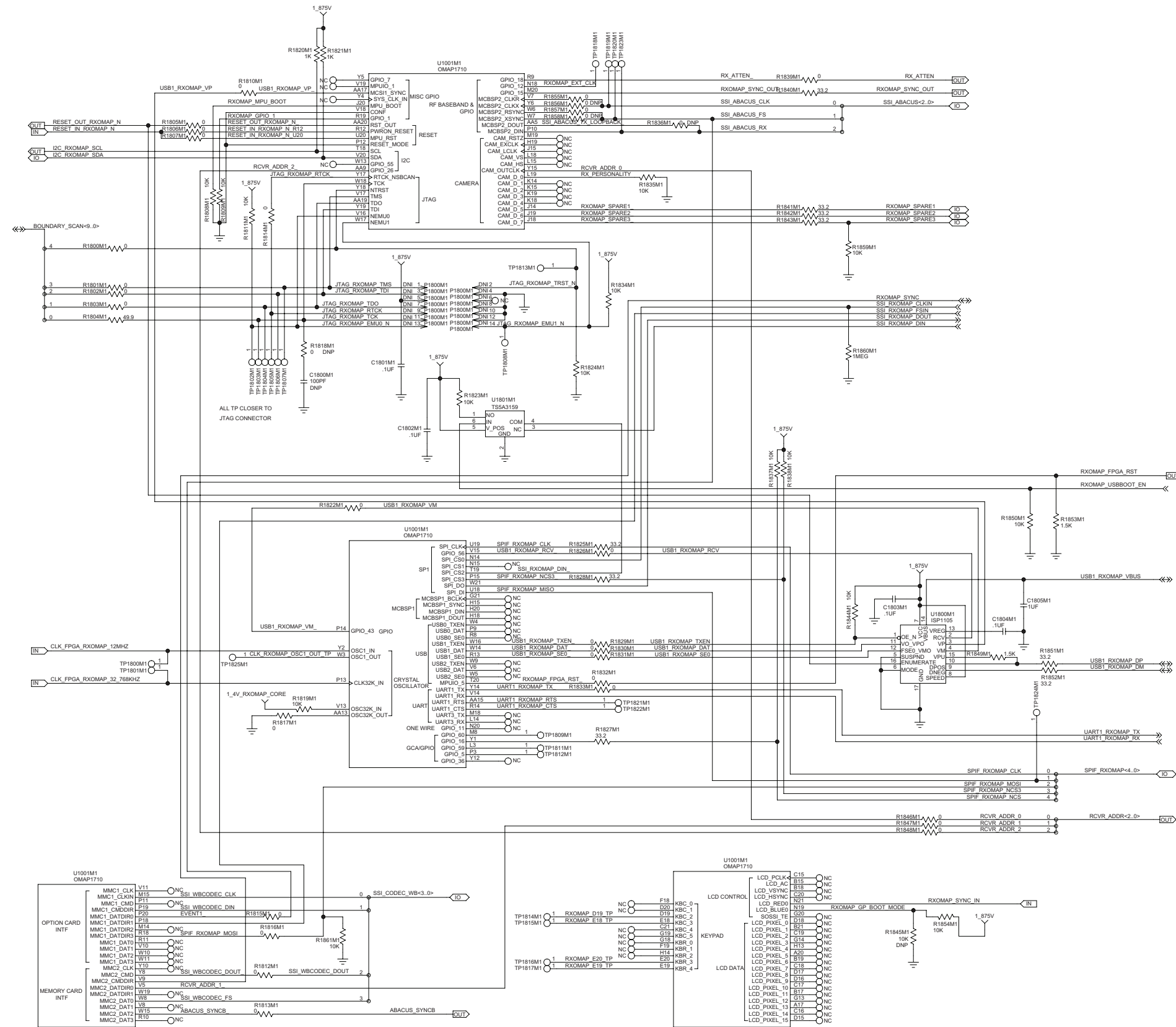
Controller – MAKO Schematic Diagram (Kit No. CLN8502)



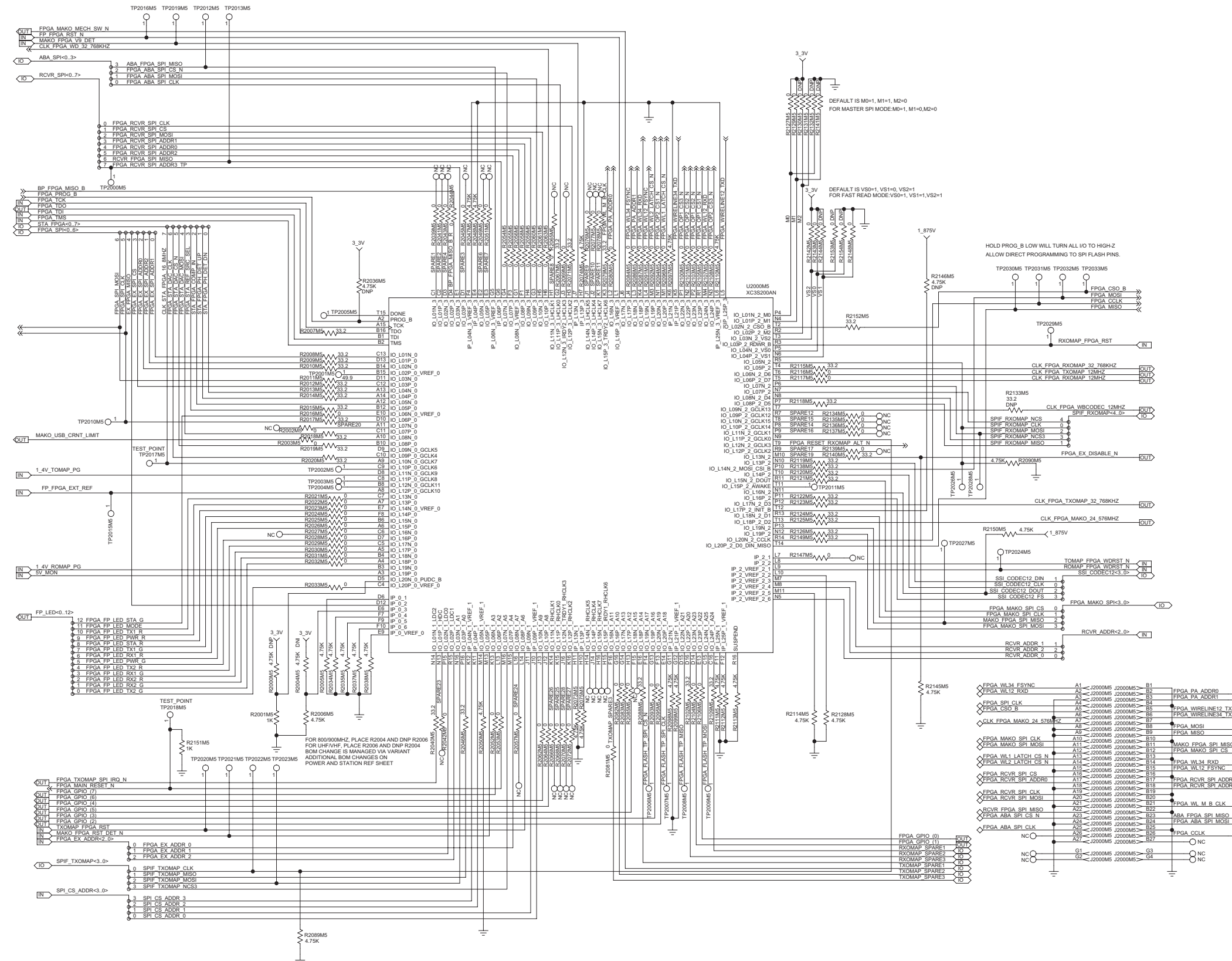
PN UPDATED IN BOM TO 0180706J37



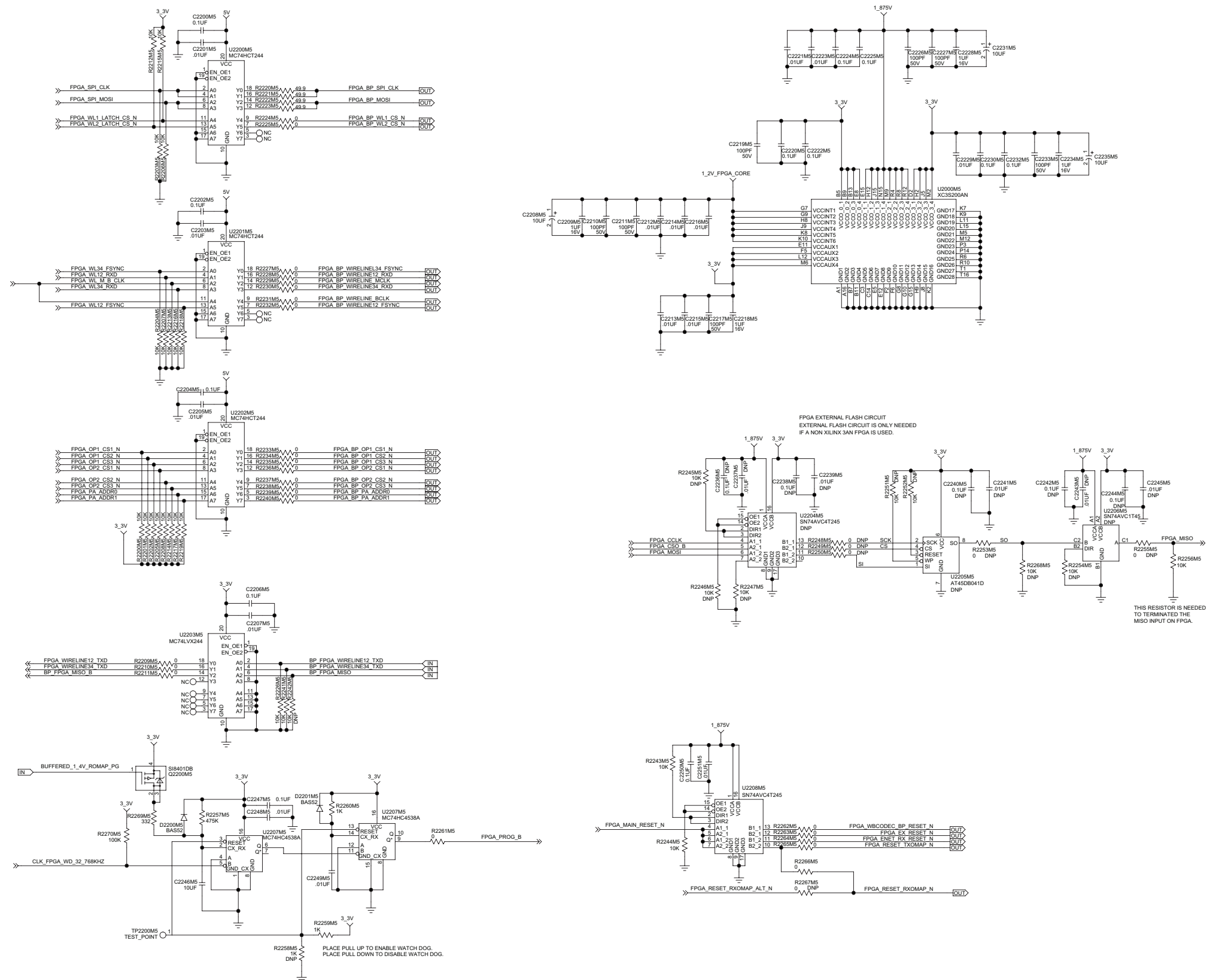
Controller – Rx OMAP Memory Schematic Diagram (Kit No. CLN8502)



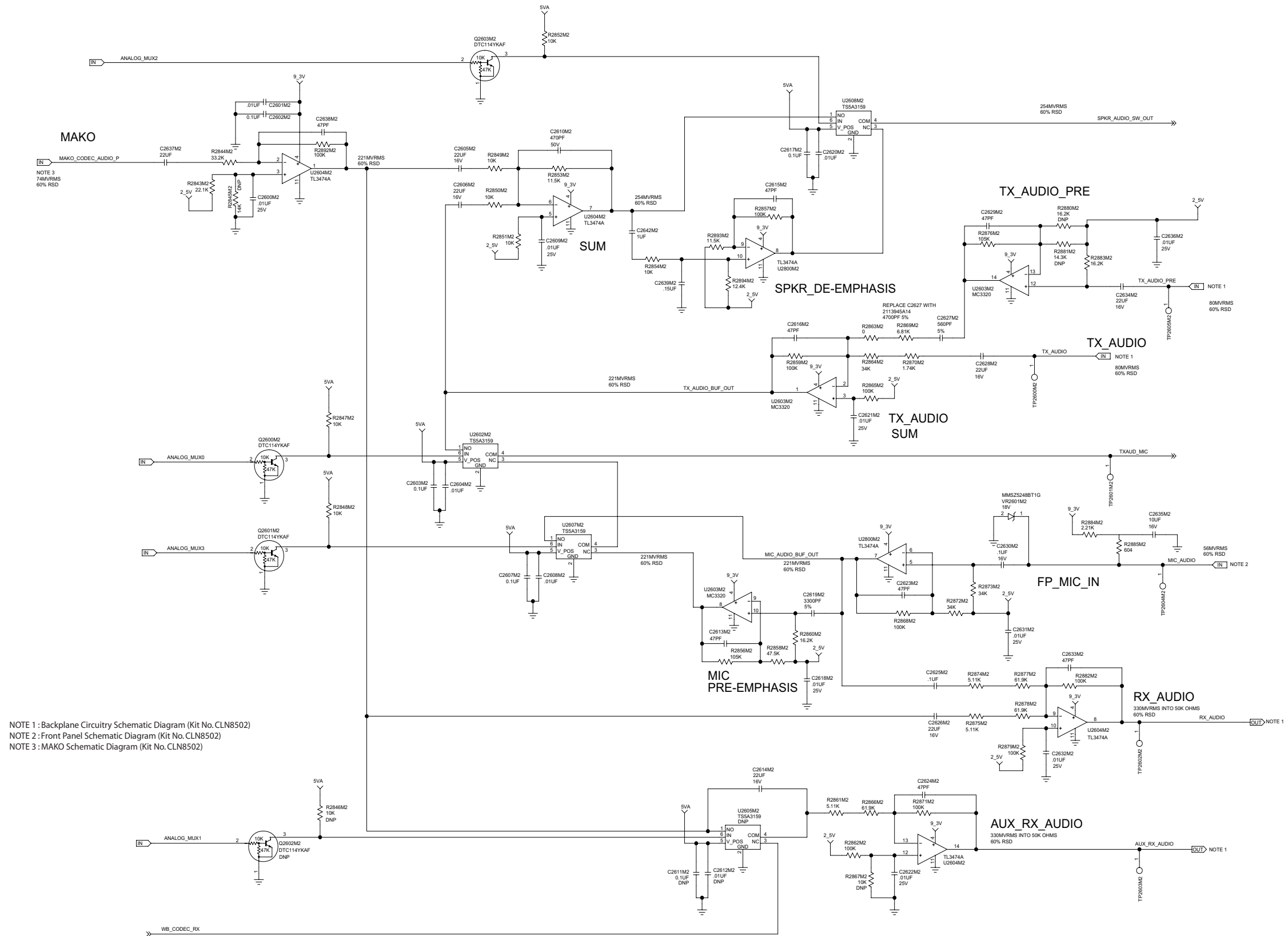
Controller – Rx OMAP Schematic Diagram (Kit No. CLN8502)



Controller – FPGA Schematic Diagram (Kit No. CLN8502)

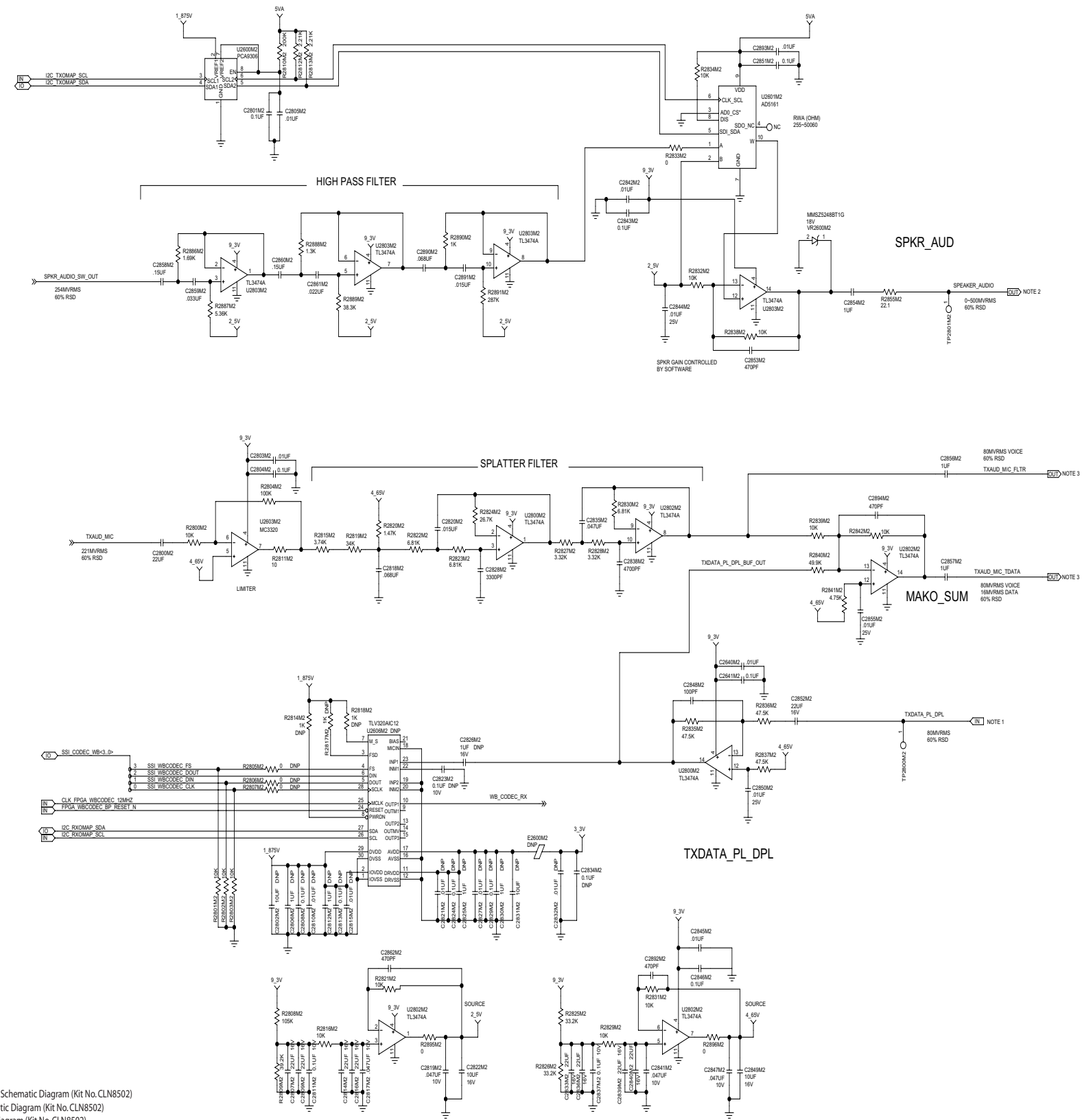


Controller – FPGA Logic Schematic Diagram (Kit No. CLN8502)

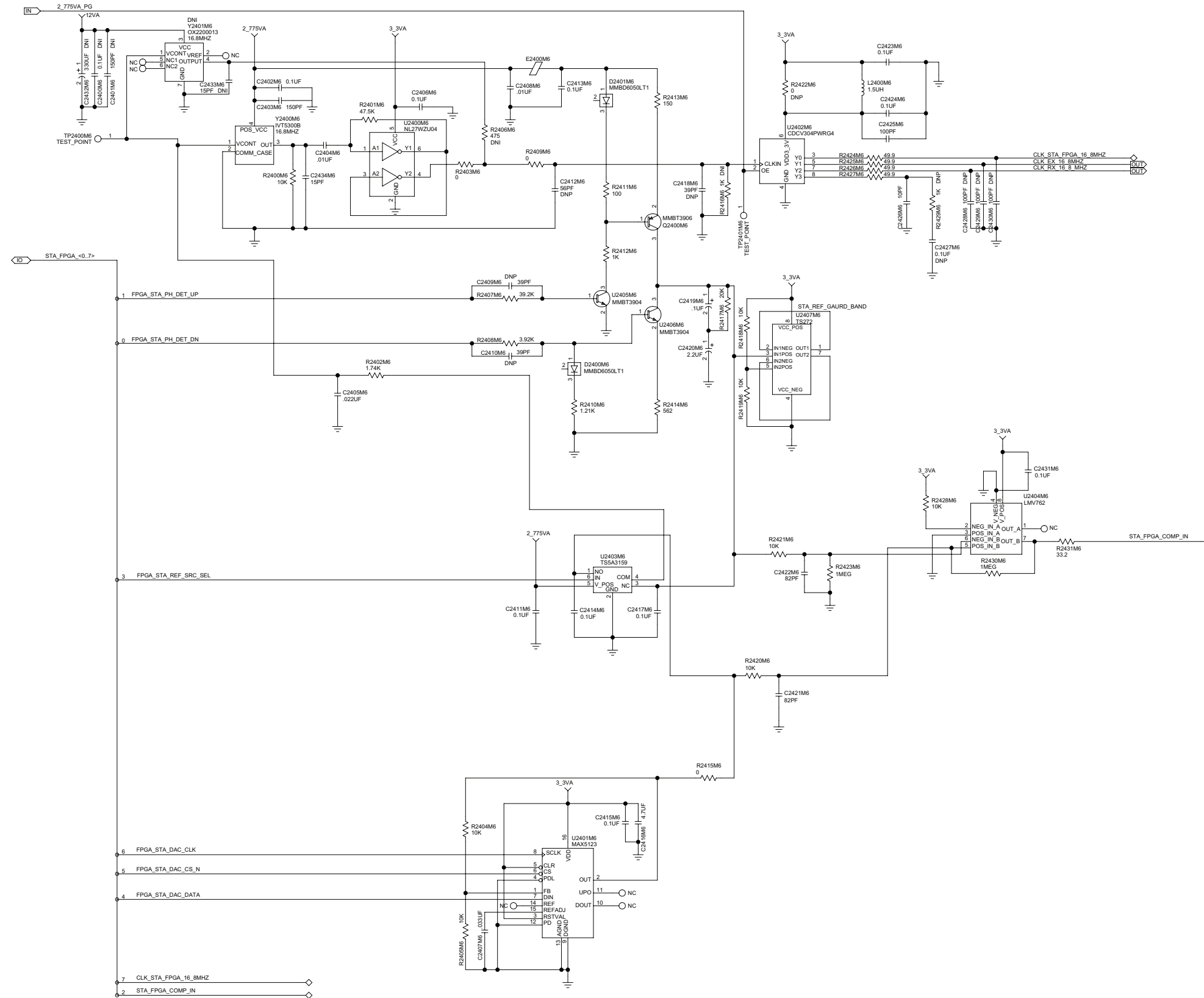


NOTE 1 : Backplane Circuitry Schematic Diagram (Kit No. CLN8502)
 NOTE 2 : Front Panel Schematic Diagram (Kit No. CLN8502)
 NOTE 3 : MAKO Schematic Diagram (Kit No. CLN8502)

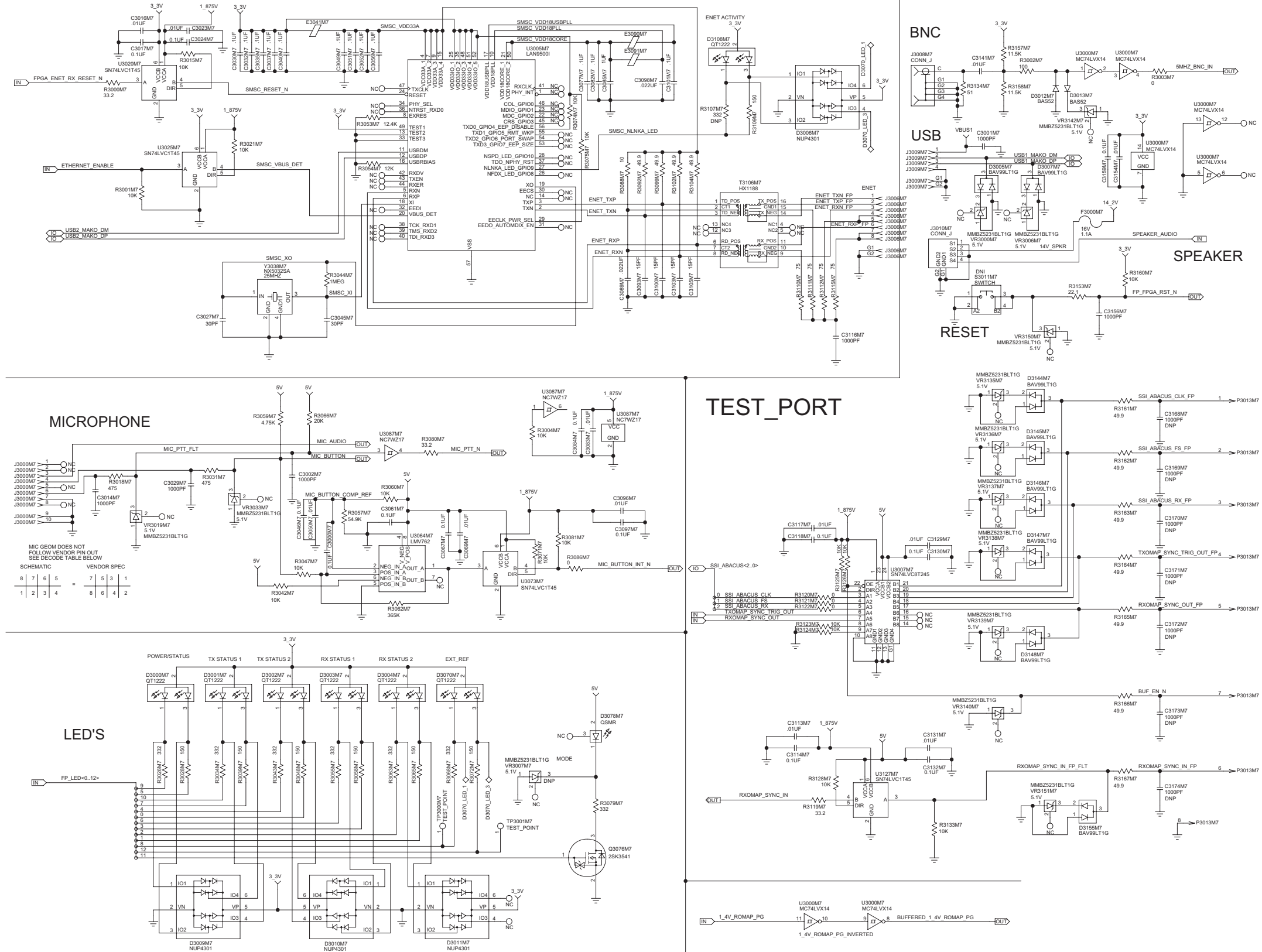
Controller – Analog 1 Schematic Diagram (Kit No. CLN8502)



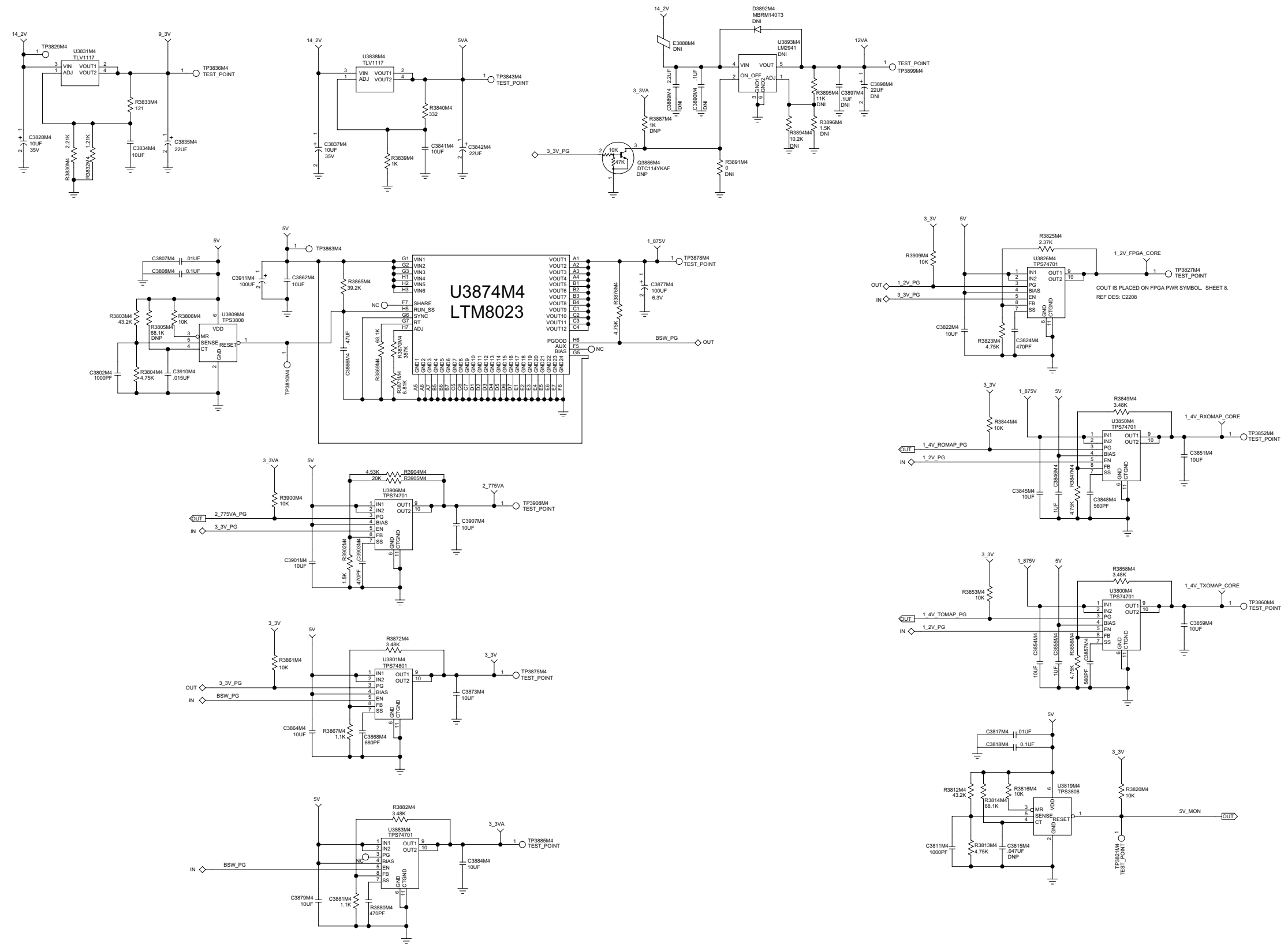
NOTE 1: Backplane Circuitry Schematic Diagram (Kit No. CLN8502)
 NOTE 2: Front Panel Schematic Diagram (Kit No. CLN8502)
 NOTE 3: MAKO Schematic Diagram (Kit No. CLN8502)



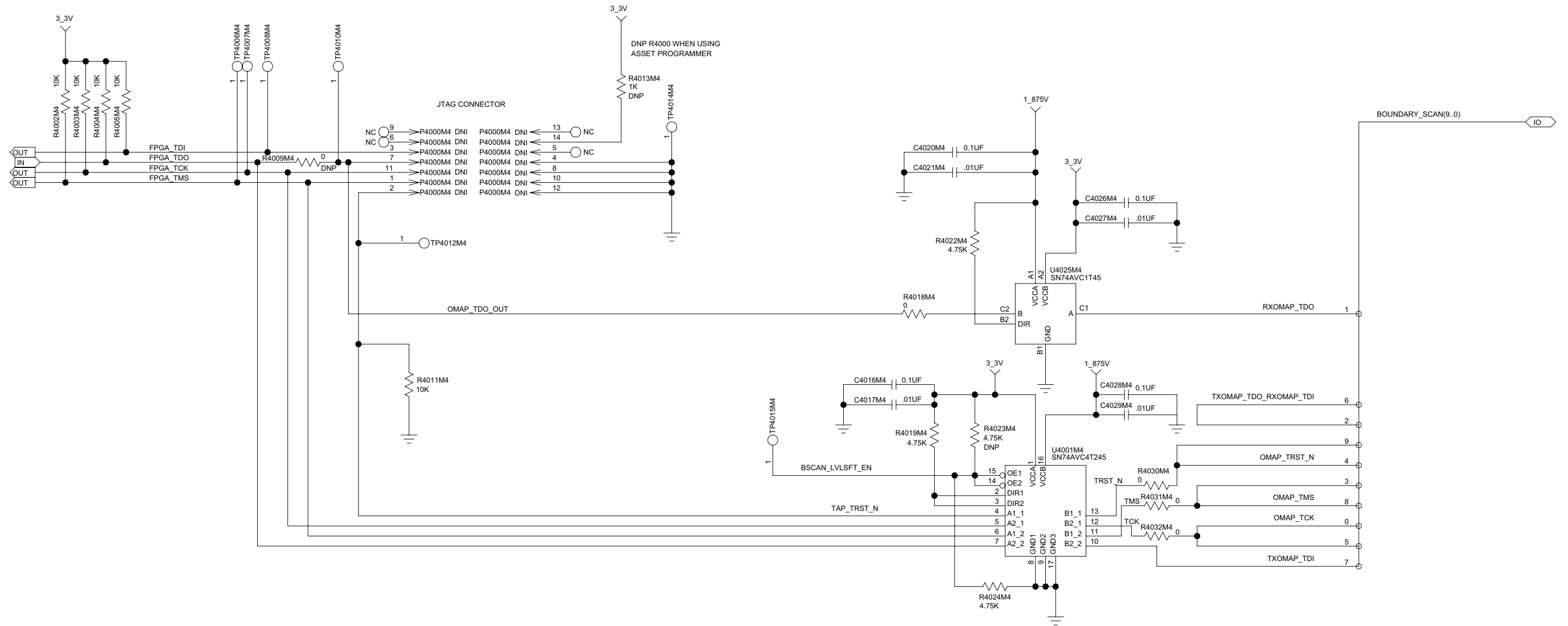
Controller – Station Reference Schematic Diagram (Kit No. CLN8502)



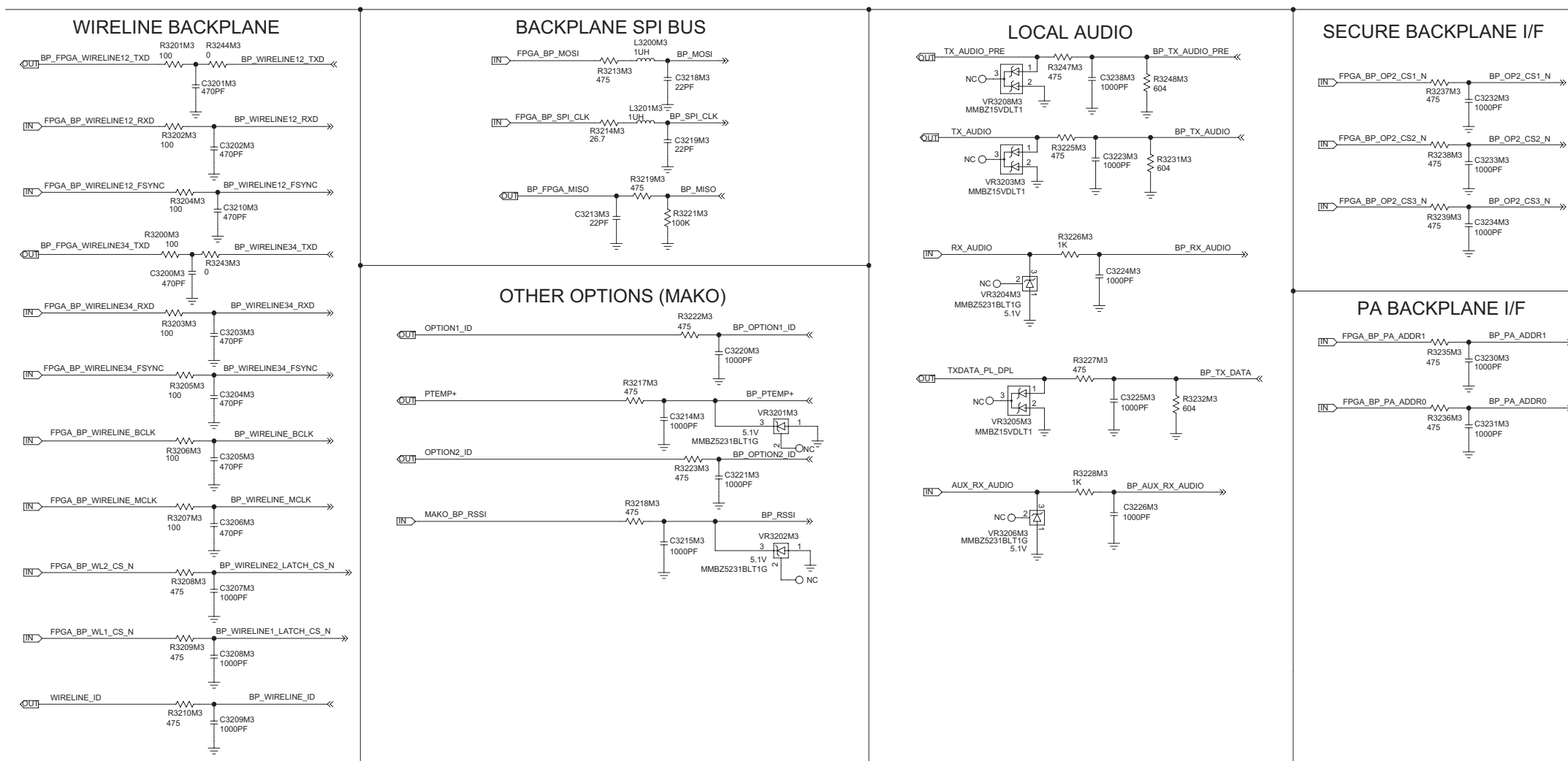
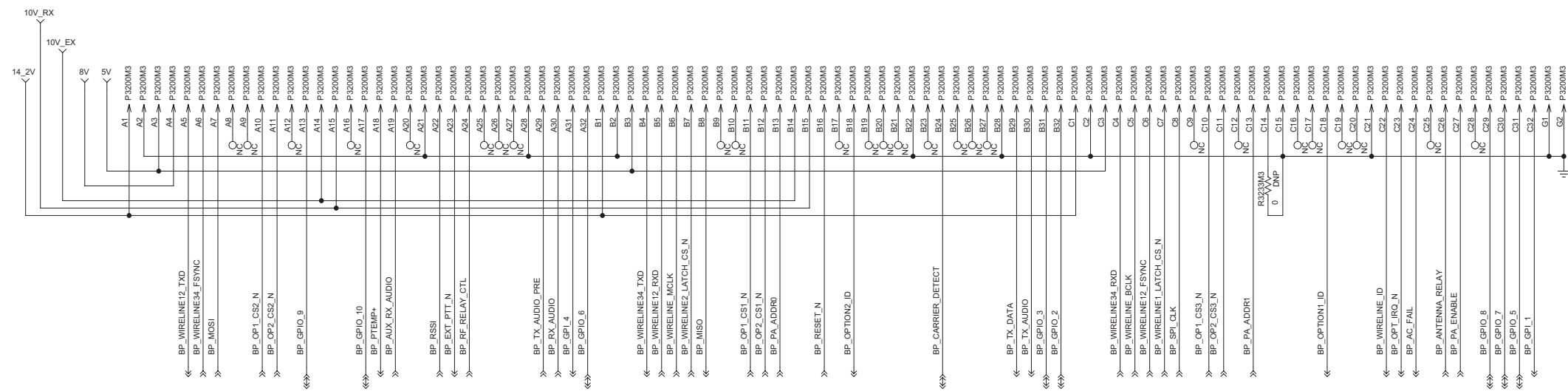
Controller – Front Panel Schematic Diagram (Kit No. CLN8502)



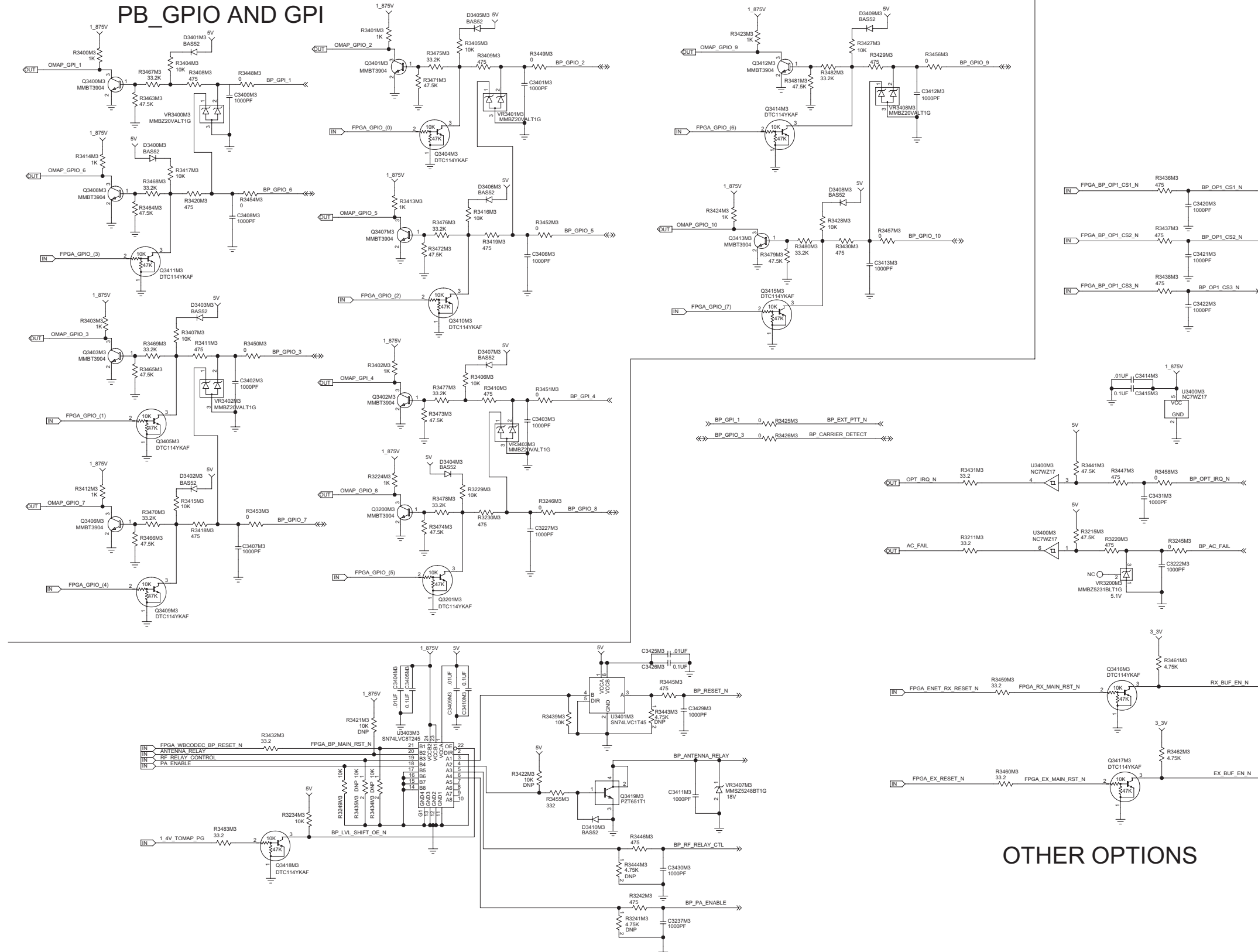
Controller – Power Schematic Diagram (Kit No. CLN8502)



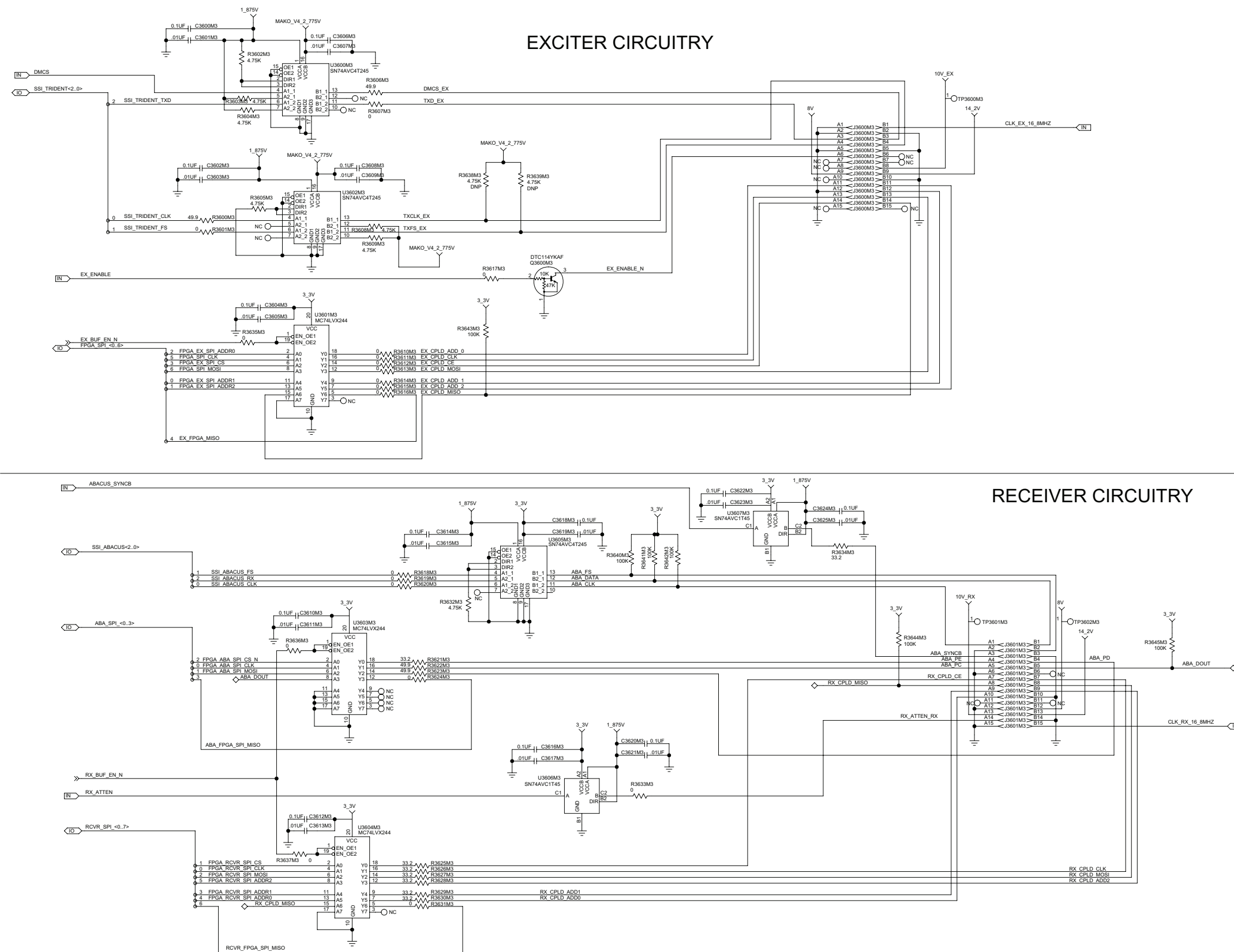
Controller – JTAG Schematic Diagram (Kit No. CLN8502)



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

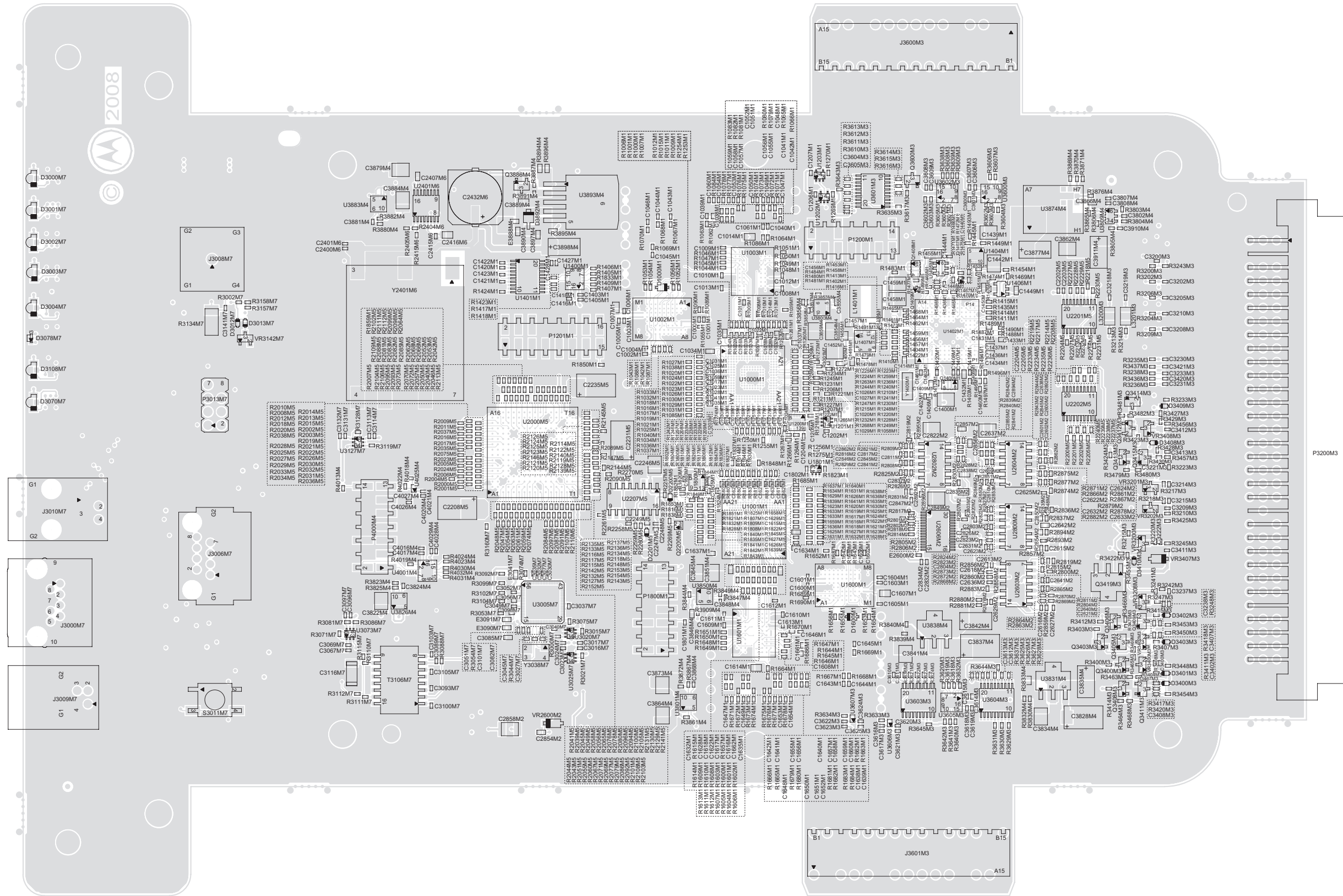


Controller – Trunking/Options Schematic Diagram (Kit No. CLN8502)

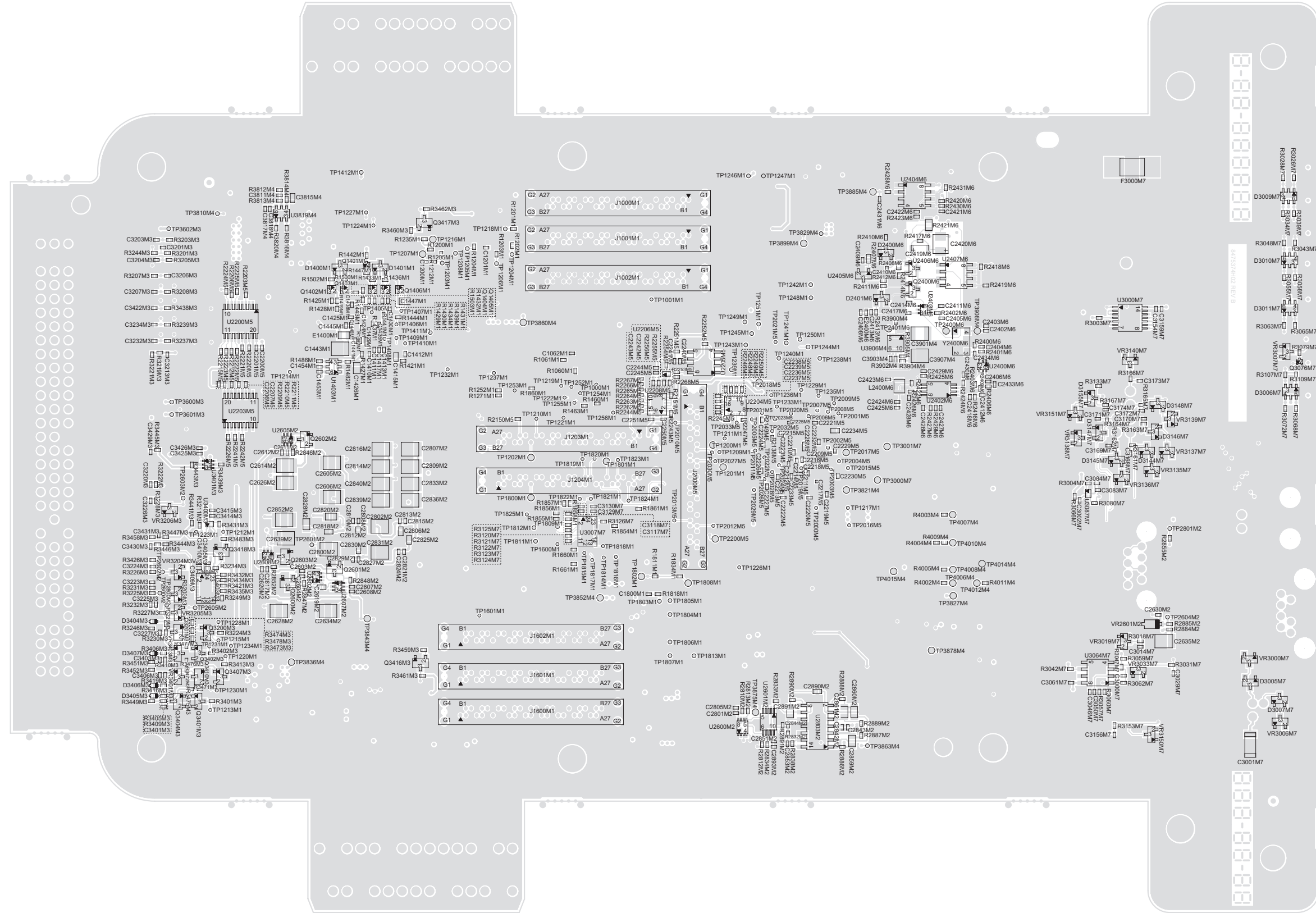


Controller – Exciter and Receiver Schematic Diagram (Kit No. CLN8502)

4.5 Controller PCB (UHF)



Controller PCB – Top View (PCB No. 8475374H02)



Controller PCB – Bottom View (PCB No. 8475374H02)

4.6 Controller Parts List (UHF)

Circuit Ref	Motorola Part No	Description
*	PC512F00W000 010000	MTR3000 FPGA FIRMWARE
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

Circuit Ref	Motorola Part No	Description
C1011M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
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%

Circuit Ref	Motorola Part No	Description
C1025M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
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

Circuit Ref	Motorola Part No	Description
C1043M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
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

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C1062M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1407M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1420M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1434M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1201M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1408M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1421M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1435M1	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	C1409M1	2113956B33	CAP,FXD,2.2UF,+10%,-10%,16V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX	C1422M1	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
C1203M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1410M1	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	C1437M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1204M1	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	C1424M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1438M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1205M1	2113946S35	CAP CER CHP 1.0UF 16V 10%	C1412M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1425M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1439M1	2113946J03	CAP CER CHP 10.0UF 16V 10%
C1206M1	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	C1426M1	2113944F81	CAP,FXD,750PF,+5%,-5%,50V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX,P	C1440M1	2113945A05	CAP CER CHP 470PF 50V 10%
C1207M1	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	C1427M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1441M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1400M1	2113956E91	CAP,FXD,10UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX,P	C1415M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA	C1428M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1442M1	2113946J03	CAP CER CHP 10.0UF 16V 10%
C1402M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1416M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1429M1	2113946S35	CAP CER CHP 1.0UF 16V 10%	C1443M1	2113956E91	CAP,FXD,10UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX,P
C1403M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1417M1	2113945A09	CAP CER CHP 1000PF 50V 10%	C1430M1	2113946S35	CAP CER CHP 1.0UF 16V 10%	C1444M1	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1405M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1418M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1431M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA	C1445M1	2113944A44	CAP CER CHP 220.0 PF 50V 5%
C1406M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1419M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1432M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA	C1446M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
						C1433M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA	C1447M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
									C1449M1	2113946S35	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
C1450M1	2113946S35	CAP CER CHP 1.0UF 16V 10%	C1608M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1621M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1634M1	2113946D05	CAP,CHIP,2.2UF,+10%,-10%,6.3V-DC,0603,X5R,-55DEG CMIN,85DEG CMA
C1451M1	2113946S35	CAP CER CHP 1.0UF 16V 10%				C1609M1	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
C1453M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1610M1	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	C1636M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1454M1	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	C1624M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1460M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1612M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1625M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1638M1	2113944A01	CAP CER CHP 1.1PF 50V +/- 0.25PF
C1461M1	2113944A19	CAP CER CHP 5.6PF 50V +/- 0.5PF				C1613M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1626M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C1462M1	2113944A19	CAP CER CHP 5.6PF 50V +/- 0.5PF	C1614M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX	C1627M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1643M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1600M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX				C1615M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1628M1	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	C1616M1	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	C1645M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1602M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX				C1617M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1630M1	2113944A40	CAP CER CHP 100.0PF 50V 5%
C1603M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1618M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1631M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C1647M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1604M1	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	C1632M1	2113946S35	CAP CER CHP 1.0UF 16V 10%
C1605M1	2113945B02	CAP CER CHP 10,000PF 25V 10%	C1620M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1633M1	2113944A40	CAP CER CHP 100.0PF 50V 5%	C1649M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF
C1606M1	2113944A40	CAP CER CHP 100.0PF 50V 5%				C1607M1	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX			
									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
									C1655M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
C1656M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF	C2204M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2223M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2402M6	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1657M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF	C2205M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2224M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2403M6	2113944A42	CAP CER CHP 150.0PF 50V 5%
C1658M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF	C2206M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2225M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2404M6	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1659M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF	C2207M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2226M5	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2405M6	2113945B04	CAP,FXD,.022UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C1660M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF	C2208M5	2313960G32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,387MA	C2227M5	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2406M6	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1661M1	2113944A17	CAP CER CHP 4.7PF 50V +/- 0.25PF	C2209M5	2113946S35	CAP CER CHP 1.0UF 16V 10%	C2228M5	2113946S35	CAP CER CHP 1.0UF 16V 10%	C2407M6	2113945D01	CAP CER CHP 33,000PF 25V 10%
C1662M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C2210M5	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2229M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2408M6	2113945B02	CAP CER CHP 10,000PF 25V 10%
C1801M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C2211M5	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2230M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2411M6	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1802M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C2212M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2231M5	2313960G32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,387MA	C2413M6	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1803M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C2213M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2232M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2414M6	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1804M1	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C2214M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2233M5	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2415M6	2113946B04	CAP CER CHP 0.10UF 10V 10%
C1805M1	2113946S35	CAP CER CHP 1.0UF 16V 10%	C2215M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2234M5	2113946S35	CAP CER CHP 1.0UF 16V 10%	C2416M6	2113956C35	CAP,FXD,4.7UF,+10%,-10%,16V-DC,0805,X5R,-55DEG CMIN,85DEG CMAX
C2200M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2216M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2235M5	2313960G32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,387MA	C2417M6	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2201M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2217M5	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2246M5	2113946J03	CAP CER CHP 10.0UF 16V 10%	C2419M6	2313960A26	CAP,FXD,.1UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,61MA,E
C2202M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2218M5	2113946S35	CAP CER CHP 1.0UF 16V 10%	C2247M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2420M6	2313960C78	CAP,FXD,2.2UF,+10%,-10%,20V-DC,SM,-55DEG CMIN,125DEG CMAX,156MA
C2203M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2219M5	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2248M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2421M6	2113944A38	CAP CER CHP 82.0PF 50V 5%
			C2220M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2249M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2422M6	2113944A38	CAP CER CHP 82.0PF 50V 5%
			C2221M5	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2250M5	2113946B04	CAP CER CHP 0.10UF 10V 10%			
			C2222M5	2113946B04	CAP CER CHP 0.10UF 10V 10%	C2251M5	2113945B02	CAP CER CHP 10,000PF 25V 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
C2848M2	2113944A40	CAP CER CHP 100.0PF 50V 5%	C2892M2	2113945A05	CAP CER CHP 470PF 50V 10%	C3040M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3085M7	2113946S35	CAP CER CHP 1.0UF 16V 10%
C2849M2	2113946J03	CAP CER CHP 10.0UF 16V 10%	C2893M2	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3045M7	2115153H44	CAP, CERAMIC, COG	C3089M7	2113945B04	CAP,FXD,.022UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2850M2	2113945B02	CAP CER CHP 10,000PF 25V 10%	C2894M2	2113945A05	CAP CER CHP 470PF 50V 10%	C3046M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3093M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2851M2	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3000M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3049M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3096M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2852M2	2113946J04	CAP CER CHP 22.0UF 16V 10%	C3001M7	2188473T01	CAP,CER CHIP,1000PF,10PF+/-,2000V-DC,-55DEG CMIN,125DEG CMAX	C3050M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3097M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2853M2	2113945A05	CAP CER CHP 470PF 50V 10%	C3002M7	2113945A09	CAP CER CHP 1000PF 50V 10%	C3051M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3098M7	2113945B04	CAP,FXD,.022UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2854M2	2113946S35	CAP CER CHP 1.0UF 16V 10%	C3014M7	2113945A09	CAP CER CHP 1000PF 50V 10%	C3052M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3100M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2855M2	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3016M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3056M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3101M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX
C2856M2	2113946S35	CAP CER CHP 1.0UF 16V 10%	C3017M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3061M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3103M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2857M2	2113946S35	CAP CER CHP 1.0UF 16V 10%	C3023M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3067M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3105M7	2113944A27	CAP CER CHP 15.0PF 50V 5%
C2858M2	2113945J21	CAP,FXD,.15UF,+5%,-5%,50V-DC,1210,X7R,-55DEG CMIN,125DEG CMAX,P	C3024M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3069M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3113M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2859M2	2113945G57	CAP,FXD,.033UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C3027M7	2115153H44	CAP, CERAMIC, COG	C3077M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3114M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2860M2	2113945G93	CAP,FXD,.15UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C3029M7	2113945A09	CAP CER CHP 1000PF 50V 10%	C3082M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3116M7	2188473T01	CAP,CER CHIP,1000PF,10PF+/-,2000V-DC,-55DEG CMIN,125DEG CMAX
C2861M2	2113944F15	CAP,CHIP,.022UF,+5%,-5%,50V-DC,0805,C0G,-55DEG CMIN,125DEG CMAX	C3030M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3083M7	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3117M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2862M2	2113945A05	CAP CER CHP 470PF 50V 10%	C3032M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX	C3084M7	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3118M7	2113946B04	CAP CER CHP 0.10UF 10V 10%
C2890M2	21009275001	68000 PF CAPACITOR	C3035M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX				C3129M7	2113945B02	CAP CER CHP 10,000PF 25V 10%
C2891M2	2113945G49	CAP,FXD,.015UF,+5%,-5%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX	C3037M7	2113945Y02	CAP,FXD,.1UF,+10%,-10%,16V-DC,0402,X7R,-55DEG CMIN,125DEG CMAX				C3130M7	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
C3131M7	2113945B02	CAP CER CHP 10,000PF 25V 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%
C3132M7	2113946B04	CAP CER CHP 0.10UF 10V 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%
C3141M7	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%
C3154M7	2113945B02	CAP CER CHP 10,000PF 25V 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%
C3156M7	2113945A09	CAP CER CHP 1000PF 50V 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%
C3159M7	2113946B04	CAP CER CHP 0.10UF 10V 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%
C3200M3	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%
C3201M3	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%
C3202M3	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%
C3203M3	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%
C3204M3	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%
C3205M3	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%
C3206M3	2113945A05	CAP CER CHP 470PF 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%
C3207M3	2113945A09	CAP CER CHP 1000PF 50V 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%
C3208M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3234M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3421M3	2113945A09	CAP CER CHP 1000PF 50V 10%	C3613M3	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%	C3614M3	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%	C3615M3	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%	C3616M3	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%	C3617M3	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%	C3618M3	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
C3619M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3837M4	2313960G32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,387MA	C3881M4	2113945A05	CAP CER CHP 470PF 50V 10%	D2201M5	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
C3620M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3841M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C3884M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	D2400M6	4813978P10	DIODE,SWG,MMBD6050, SM,SOT-23,200MA,70V,.225W,PB-FREE
C3621M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3842M4	2314030F03	CAP,FXD,22UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,561MA	C3901M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	D2401M6	4813978P10	DIODE,SWG,MMBD6050, SM,SOT-23,200MA,70V,.225W,PB-FREE
C3622M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3845M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C3903M4	2113945A05	CAP CER CHP 470PF 50V 10%	D3000M7	4885062E01	LED RE/GRN SIDELOOKER
C3623M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3846M4	2113946S35	CAP CER CHP 1.0UF 16V 10%	C3907M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	D3001M7	4885062E01	LED RE/GRN SIDELOOKER
C3624M3	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3848M4	2113945A06	CAP CER CHP 560PF 50V 10%	C3910M4	2113946A01	CAP CER CHP 0.015UF 16V 10%	D3002M7	4885062E01	LED RE/GRN SIDELOOKER
C3625M3	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3851M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C3911M4	2382983Y07	CAP,TANT,100UF,20%, 6.3V,SM	D3003M7	4885062E01	LED RE/GRN SIDELOOKER
C3802M4	2113945A09	CAP CER CHP 1000PF 50V 10%	C3854M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C4016M4	2113946B04	CAP CER CHP 0.10UF 10V 10%	D3003M7	4885062E01	LED RE/GRN SIDELOOKER
C3807M4	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3855M4	2113946S35	CAP CER CHP 1.0UF 16V 10%	C4017M4	2113945B02	CAP CER CHP 10,000PF 25V 10%	D3004M7	4885062E01	LED RE/GRN SIDELOOKER
C3808M4	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3857M4	2113945A06	CAP CER CHP 560PF 50V 10%	C4020M4	2113946B04	CAP CER CHP 0.10UF 10V 10%	D3005M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
C3811M4	2113945A09	CAP CER CHP 1000PF 50V 10%	C3859M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C4021M4	2113945B02	CAP CER CHP 10,000PF 25V 10%	D3006M7	4813979B23	DIODE ARRAY,SUPR,SM,TSOP6, 200MA,70V,8,PB-FREE
C3817M4	2113945B02	CAP CER CHP 10,000PF 25V 10%	C3862M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C4026M4	2113946B04	CAP CER CHP 0.10UF 10V 10%	D3007M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-
C3818M4	2113946B04	CAP CER CHP 0.10UF 10V 10%	C3864M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C4027M4	2113945B02	CAP CER CHP 10,000PF 25V 10%	D3009M7	4813979B23	DIODE ARRAY,SUPR,SM,TSOP6, 200MA,70V,8,PB-FREE
C3822M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C3866M4	2113946C08	CAP,FXD,.47UF,+10%,-10%,10V-DC,0603,X5R,-55DEG CMIN,85DEG CMAX	C4028M4	2113946B04	CAP CER CHP 0.10UF 10V 10%	D3010M7	4813979B23	DIODE ARRAY,SUPR,SM,TSOP6, 200MA,70V,8,PB-FREE
C3824M4	2113945A05	CAP CER CHP 470PF 50V 10%	C3868M4	2113945A07	CAP CER CHP 680PF 50V 10%	C4029M4	2113945B02	CAP CER CHP 10,000PF 25V 10%	D3011M7	4813979B23	DIODE ARRAY,SUPR,SM,TSOP6, 200MA,70V,8,PB-FREE
C3828M4	2313960G32	CAP,FXD,10UF,+10%,-10%,35V-DC,SM,-55DEG CMIN,125DEG CMAX,387MA	C3873M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	D1000M1	4813978A25	SCHOTTKY 30V SOD-323 T&R PB FREE	D3012M7	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT
C3834M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	C3877M4	2382983Y07	CAP,TANT,100UF,20%, 6.3V,SM	D1400M1	4813978C02	PB FREE, NOT COMPLETELY ENRICHED			
C3835M4	2314030F03	CAP,FXD,22UF,+10%,-10%,16V-DC,SM,-55DEG CMIN,125DEG CMAX,561MA	C3879M4	2113946J03	CAP CER CHP 10.0UF 16V 10%	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			

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D3013M7	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	D3404M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3010M7	09009263001	Modular Jack,R/ A,Shld,4x4	Q2600M2	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
D3070M7	4885062E01	LED RE/GRN SIDELOOKER	D3405M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3600M3	09009147002	RECEPT 30 PIN RA	Q2601M2	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
D3078M7	4885102C29	INDCTR,LED,BLUE,LED SIDE FIRING	D3406M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3601M3	09009147002	RECEPT 30 PIN RA	Q2603M2	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
D3108M7	4885062E01	LED RE/GRN SIDELOOKER	D3407M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	L2400M6	2485364Y24	CHIP IND 1500 NH 5% EPP	Q3076M7	4809579E77	FET, NCH MOS FET, 1.2MM X 1.2MM PACKAGE, SMD, W18 COMPLIANT
D3144M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-	D3408M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	L3200M3	2414032D30	IDCTR,WW,1UH,5%,320M A,2.8Ω,CER,28 Q,340MHZ SRF,SM,LEAD-FR	Q3200M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300MHZ
D3145M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-	D3409M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	L3201M3	2414032D30	IDCTR,WW,1UH,5%,320M A,2.8Ω,CER,28 Q,340MHZ SRF,SM,LEAD-FR	Q3201M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
D3146M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-	D3410M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	P3013M7	28009146005	HEADER 8 POSN,DOUBLE ROW,VERTICAL	Q3400M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300MHZ
D3147M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-	E1400M1	2485410Y02	MIN CHIP FERRITE BEAD 30Ω W18	P3200M3	2886267Y04	PLUG, EUROCARD 96 PIN R A	Q3401M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300MHZ
D3148M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-	E2400M6	2485449Y01	SURFACE MOUNT FERRITE BEAD W18	PWB	8475374H02	MID-TIER CONV CONTRL PCB	Q3402M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300MHZ
D3155M7	4813978P05	DIODE ARRAY,SIGNL/ SWG,BAV99,SM,SOT-23,215MA,70V,.225W,SHT K,2,PB-	E3041M7	7686949J15	FLTR,FERR,2A,SM,0603	Q1400M1	4813970A62	XSTR,FET GP PWR,MOSFET,P-CH,ENHN,CF,-20V,1.3W,PB-FREE	Q3403M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300MHZ
D3400M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	E3090M7	7686949J15	FLTR,FERR,2A,SM,0603	Q1401M1	4809579E77	FET, NCH MOS FET, 1.2MM X 1.2MM PACKAGE, SMD, W18 COMPLIANT	Q3404M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
D3401M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	E3091M7	7686949J15	FLTR,FERR,2A,SM,0603	Q1402M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE	Q3405M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN
D3402M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	F3000M7	6585677Y04	FUSE,RESET,PTC,1.1A,18 12	Q1403M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE	Q3406M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT-23,SMT,40V,.225W,200MA ,300MHZ
D3403M3	4809924D29	DIODE, SCHOTTKY, LOW LEAKAGE,SC79, SMD, W18 COMPLIANT	J3000M7	0915930H01	RJ-45, CAT5 SHIELDED, ONE PORT	Q1404M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE			
			J3006M7	0975079B01	MODULAR JACK,VERTICAL, RJ45,W/LED'S	Q1405M1	4805585Q23	XSTR,FET GEN PURP,PB-FREE			
			J3008M7	0982492W01	BNC CONN PCB VERTICAL RECEPT	Q2200M5	4805585Q23	XSTR,FET GEN PURP,PB-FREE			
			J3009M7	0989742V01	CONN USB,2 ROW,RCPT,4CONT,GLD,P CB - THRU-HOLE,PB-FREE	Q2400M6	4813973A13	XSTR,GEN PURPOSE SMALL SIG,PNP,MMBT3906L,TO-236,4, 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
Q3407M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT- 23,SMT,40V,.225W,200MA ,300MHZ	Q3600M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1019M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1051M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
Q3408M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT- 23,SMT,40V,.225W,200MA ,300MHZ	R1000M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1020M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1057M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402
Q3409M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1001M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1021M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1058M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402
Q3410M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1002M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1022M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1059M1	0613952Q18	CER CHIP RES 5.1Ω 5% 0402
Q3411M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1003M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1023M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1060M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
Q3412M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT- 23,SMT,40V,.225W,200MA ,300MHZ	R1004M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1024M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1061M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
Q3413M3	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT- 23,SMT,40V,.225W,200MA ,300MHZ	R1005M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1025M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1062M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
Q3414M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1006M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1026M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1063M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
Q3415M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1007M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1027M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1067M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
Q3416M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1008M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1028M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1068M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
Q3417M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1009M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1029M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1069M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
Q3418M3	4815261H01	TRANSISTOR,BIP GENERAL PURPOSE SMALL NPN	R1010M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1030M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1070M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
Q3419M3	4813973B04	XSTR,BIP GP SS,NPN,T651,SM,SOT- 223,SMT,60V,.8W,2A,75M HZ,PB-FRE	R1011M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1031M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1071M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
			R1012M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1032M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1072M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
			R1013M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1033M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1073M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
			R1014M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1034M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1074M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
			R1015M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1035M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1075M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
			R1016M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1036M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1076M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
			R1017M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1038M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1077M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
			R1018M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1040M1	0613952N01	CER CHIP RES 10.0KΩ 1 0402	R1078M1	0613952K68	CER CHIP RES 49.9Ω 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
R1079M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1209M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1231M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1253M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1080M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1210M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1232M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1254M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1081M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1211M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1233M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1255M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1082M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1213M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1234M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1256M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1083M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1214M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1235M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1257M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1084M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1215M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1236M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1258M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1085M1	0613952N01	CER CHIP RES 10.0KΩ 1 0402	R1216M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1237M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1259M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1086M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1217M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1238M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1260M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1087M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1218M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1239M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1261M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1088M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1219M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1240M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1262M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1090M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1220M1	0613952M01	CER CHIP RES 1000Ω 1% 0402	R1241M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1263M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1200M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1221M1	0613952M01	CER CHIP RES 1000Ω 1% 0402	R1242M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1264M1	0613952M18	CER CHIP RES 1500Ω 1% 0402
R1201M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1222M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1244M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1265M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1202M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1223M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1245M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1266M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1203M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1224M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1246M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1267M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1204M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1225M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1247M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1268M1	0613952M18	CER CHIP RES 1500Ω 1% 0402
R1205M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1226M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1248M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1269M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1206M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1227M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1249M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1270M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1207M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1228M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1250M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1271M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1208M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1229M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1251M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1272M1	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
R1273M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1419M1	0613952N81	CER CHIP RES 68.1KΩ 1% 0402	R1441M1	0613952N34	CER CHIP RES 22.1KΩ 1% 0402	R1463M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1274M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1420M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1442M1	0613952P01	CER CHIP RES 100KΩ 1% 0402	R1464M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1275M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1421M1	0613952M66	CER CHIP RES 4750Ω 1% 0402	R1443M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1465M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1402M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1422M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1444M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1468M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1403M1	0613952Q66	CER CHIP RES 510Ω 5% 0402	R1423M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1445M1	0613952M01	CER CHIP RES 1000Ω 1% 0402	R1469M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1404M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1424M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1446M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1473M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1405M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1425M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1447M1	0613952P01	CER CHIP RES 100KΩ 1% 0402	R1474M1	0613952N58	CER CHIP RES 39.2KΩ 1% 0402
R1406M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1427M1	0613952P01	CER CHIP RES 100KΩ 1% 0402	R1448M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1475M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1407M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1428M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1449M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1476M1	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R1408M1	0613952M01	CER CHIP RES 1000Ω 1% 0402	R1429M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1451M1	0613952M04	CER CHIP RES 1070Ω 1% 0402	R1482M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1409M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1430M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1452M1	0613952M56	CER CHIP RES 3740Ω 1% 0402	R1485M1	0613952N01	CER CHIP RES 10.0KΩ 1 0402
R1410M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1431M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1453M1	0613952M66	CER CHIP RES 4750Ω 1% 0402	R1486M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1411M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1432M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1454M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1487M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402
R1412M1	0613952N34	CER CHIP RES 22.1KΩ 1% 0402	R1433M1	0613952P01	CER CHIP RES 100KΩ 1%0402	R1456M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1488M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402
R1413M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1434M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1457M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1489M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402
R1414M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1435M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1458M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1490M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402
R1415M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1436M1	0613952P01	CER CHIP RES 100KΩ 1% 0402	R1459M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1493M1	0613952N34	CER CHIP RES 22.1KΩ 1 0402
R1416M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1437M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1460M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1494M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1417M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1438M1	0613952M66	CER CHIP RES 4750Ω 1% 0402	R1461M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1495M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1418M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1439M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1462M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1496M1	0613952M01	CER CHIP RES 1000Ω 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
R1497M1	0613952M01	CER CHIP RES 1000Ω 1% 0402	R1614M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1634M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1674M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1498M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1615M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1635M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1675M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1499M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1616M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1636M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1676M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1500M1	0613952P01	CER CHIP RES 100KΩ 1% 0402	R1617M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1638M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1677M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1502M1	0613952P01	CER CHIP RES 100KΩ 1% 0402	R1618M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1640M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1678M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1503M1	0613952N34	CER CHIP RES 22.1KΩ 1% 0402	R1619M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1651M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1679M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1600M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1620M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1657M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1680M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1601M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1621M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1658M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1681M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1602M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1622M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1659M1	0613952Q18	CER CHIP RES 5.1Ω 5 0402	R1682M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1603M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1623M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1660M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1683M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1604M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1624M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1661M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1684M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1605M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1625M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1662M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1685M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1606M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1626M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1663M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1686M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1607M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1627M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1667M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1687M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1608M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1628M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1668M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1688M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1609M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1629M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1669M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1690M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R1610M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1630M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1670M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1800M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1611M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1631M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1671M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1801M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1612M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1632M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1672M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1802M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1613M1	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R1633M1	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R1673M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1803M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R1804M1	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R1825M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1847M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2009M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1805M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1826M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1848M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2010M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1806M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1827M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1849M1	0613952M18	CER CHIP RES 1500Ω 1% 0402	R2011M5	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R1807M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1828M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R1850M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2012M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1808M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1829M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1851M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2013M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1809M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1830M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1852M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2014M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1810M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1831M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1853M1	0613952M18	CER CHIP RES 1500Ω 1% 0402	R2015M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1811M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1832M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1854M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2016M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1812M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1833M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1855M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2017M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1813M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1834M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1857M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2018M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1814M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1835M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1859M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2019M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1815M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1837M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1860M1	0613952P97	CER CHIP RES 1.0MΩ 1% 0402	R2020M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R1816M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1838M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1861M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2021M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1817M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1839M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2001M5	0613952M01	CER CHIP RES 1000Ω 1% 0402	R2022M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1819M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1840M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2002M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2023M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1820M1	0613952M01	CER CHIP RES 1000Ω 1% 0402	R1841M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2003M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2024M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1821M1	0613952M01	CER CHIP RES 1000Ω 1% 0402	R1842M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2005M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2025M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1822M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R1843M1	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2006M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2026M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1823M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1844M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2007M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2027M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R1824M1	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R1846M1	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2008M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2028M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω

Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
R2110M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2131M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2203M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2223M5	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R2111M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2134M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2204M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2224M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2112M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2135M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2205M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2225M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2113M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2136M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2206M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2226M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2114M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2137M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2207M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2227M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2115M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2138M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2208M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2228M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2116M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2139M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2209M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2229M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2117M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2140M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2210M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2230M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2118M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2142M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2211M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2231M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2119M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2143M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2212M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2232M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2120M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2145M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2213M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2233M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2121M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2147M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2214M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2234M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2122M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2148M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2215M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2235M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2123M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2149M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2216M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2236M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2124M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2150M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2217M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2237M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2125M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2151M5	0613952M01	CER CHIP RES 1000Ω 1% 0402	R2218M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2238M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2126M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2152M5	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2219M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2239M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2127M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2200M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2220M5	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R2240M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2128M5	0613952M66	CER CHIP RES 4750Ω 1% 0402	R2201M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2221M5	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R2241M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2129M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2202M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2222M5	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R2243M5	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
R2244M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2408M6	0613952D58	CER CHIP RES 3920Ω 1% 0603	R2431M6	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R2825M2	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R2256M5	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2409M6	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2800M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2826M2	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R2257M5	0613952P66	CER CHIP RES 475KΩ 1% 0402	R2410M6	0613952M09	CER CHIP RES 1210Ω 1% 0402	R2801M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2827M2	0613952M51	CER CHIP RES 3320Ω 1% 0402
R2259M5	0613952M01	CER CHIP RES 1000Ω 1% 0402	R2411M6	0613952L01	CER CHIP RES 100Ω 1% 0402	R2802M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2828M2	0613952M51	CER CHIP RES 3320Ω 1% 0402
R2260M5	0613952M01	CER CHIP RES 1000Ω 1% 0402	R2412M6	0613952M01	CER CHIP RES 1000Ω 1% 0402	R2803M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2829M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2261M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2413M6	0613952L18	CER CHIP RES 150Ω 1% 0402	R2804M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2830M2	0613952M81	CER CHIP RES 6810Ω 1% 0402
R2262M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2414M6	0613952L73	CER CHIP RES 562Ω 1% 0402	R2808M2	0613952P03	CER CHIP RES 105KΩ 1% 0402	R2831M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2263M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2415M6	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2809M2	0613952N58	CER CHIP RES 39.2KΩ 1% 0402	R2832M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2264M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2417M6	0613952N30	CER CHIP RES 20.0KΩ 1% 0402	R2810M2	0613952P30	CER CHIP RES 200KΩ 1% 0402	R2833M2	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R2265M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2418M6	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2811M2	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R2834M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2266M5	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2419M6	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2812M2	0613952M34	CER CHIP RES 2210Ω 1% 0402	R2835M2	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R2269M5	0613952L51	CER CHIP RES 332Ω 1% 0402	R2420M6	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2813M2	0613952M34	CER CHIP RES 2210Ω 1% 0402	R2836M2	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R2270M5	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2421M6	0613958E01	CER CHIP RES 10.0KΩ 1% 0805	R2815M2	0613952M56	CER CHIP RES 3740Ω 1% 0402	R2837M2	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R2400M6	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2423M6	0613952P97	CER CHIP RES 1.0MΩ 1% 0402	R2816M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2838M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2401M6	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R2424M6	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R2819M2	0613952N52	CER CHIP RES 34.0KΩ 1% 0402	R2839M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2402M6	0613952M24	CER CHIP RES 1740Ω 1% 0402	R2425M6	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R2820M2	0613952M17	CER CHIP RES 1470Ω 1% 0402	R2840M2	0613952N68	CER CHIP RES 49.9KΩ 1% 0402
R2403M6	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2426M6	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R2821M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2841M2	0613952M66	CER CHIP RES 4750Ω 1% 0402
R2404M6	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2427M6	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R2822M2	0613952M81	CER CHIP RES 6810Ω 1% 0402	R2842M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2405M6	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2428M6	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2823M2	0613952M81	CER CHIP RES 6810Ω 1% 0402	R2843M2	0613952N34	CER CHIP RES 22.1KΩ 1% 0402
R2407M6	0613952E58	CER CHIP RES 39.2KΩ 1% 0603	R2430M6	0613952P97	CER CHIP RES 1.0MΩ 1% 0402	R2824M2	0613952N42	CER CHIP RES 26.7KΩ 1% 0402	R2844M2	0613952N51	CER CHIP RES 33.2KΩ 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
R2847M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2868M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2890M2	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3042M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2848M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2869M2	0613952M81	CER CHIP RES 6810Ω 1% 0402	R2891M2	0613952P45	CER CHIP RES 287KΩ 1% 0402	R3043M7	0613952L51	CER CHIP RES 332Ω 1% 0402
R2849M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2870M2	0613952M24	CER CHIP RES 1740Ω 1% 0402	R2892M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3044M7	0613952P97	CER CHIP RES 1.0MΩ 1 0402
R2850M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2871M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2893M2	0613952N07	CER CHIP RES 11.5KΩ 1% 0402	R3047M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2851M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2872M2	0613952N52	CER CHIP RES 34.0KΩ 1% 0402	R2894M2	0613952N10	CER CHIP RES 12.4KΩ 1% 0402	R3048M7	0613952L18	CER CHIP RES 150Ω 1% 0402
R2852M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2873M2	0613952N52	CER CHIP RES 34.0KΩ 1% 0402	R2895M2	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3053M7	0613952N10	CER CHIP RES 12.4KΩ 1% 0402
R2853M2	0613952N07	CER CHIP RES 11.5KΩ 1% 0402	R2874M2	0613952M69	CER CHIP RES 5110Ω 1% 0402	R2896M2	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3054M7	0613952Z55	RES,MF,12KΩ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2854M2	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R2875M2	0613952M69	CER CHIP RES 5110Ω 1% 0402	R3000M7	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3055M7	0613952L51	CER CHIP RES 332Ω 1% 0402
R2855M2	0613952K34	CER CHIP RES 22.1Ω 1% 0402	R2876M2	0613952P03	CER CHIP RES 105KΩ 1% 0402	R3001M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3057M7	0613952N72	CER CHIP RES 54.9KΩ 1% 0402
R2856M2	0613952P03	CER CHIP RES 105KΩ 1% 0402	R2877M2	0613952N77	CER CHIP RES 61.9KΩ 1% 0402	R3002M7	0613952L01	CER CHIP RES 100Ω 1% 0402	R3058M7	0613952L18	CER CHIP RES 150Ω 1% 0402
R2857M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2878M2	0613952N77	CER CHIP RES 61.9KΩ 1% 0402	R3003M7	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3059M7	0613952M66	CER CHIP RES 4750Ω 1% 0402
R2858M2	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R2879M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3004M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3060M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2859M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2882M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3015M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3062M7	0613952P55	CER CHIP RES 365KΩ 1% 0402
R2860M2	0613952N21	CER CHIP RES 16.2KΩ 1% 0402	R2883M2	0613952N21	CER CHIP RES 16.2KΩ 1% 0402	R3018M7	0613952L66	CER CHIP RES 475Ω 1% 0402	R3063M7	0613952L51	CER CHIP RES 332Ω 1% 0402
R2861M2	0613952M69	CER CHIP RES 5110Ω 1% 0402	R2884M2	0613952M34	CER CHIP RES 2210Ω 1% 0402	R3021M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3065M7	0613952L18	CER CHIP RES 150Ω 1% 0402
R2862M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2885M2	0613952L76	CER CHIP RES 604Ω 1% 0402	R3026M7	0613952L51	CER CHIP RES 332Ω 1% 0402	R3066M7	0613952N30	CER CHIP RES 20.0KΩ 1% 0402
R2863M2	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R2886M2	0613952M23	CER CHIP RES 1690Ω 1% 0402	R3028M7	0613952L18	CER CHIP RES 150Ω 1% 0402	R3068M7	0613952L51	CER CHIP RES 332Ω 1% 0402
R2864M2	0613952N52	CER CHIP RES 34.0KΩ 1% 0402	R2887M2	0613952M71	CER CHIP RES 5360Ω 1% 0402	R3031M7	0613952L66	CER CHIP RES 475Ω 1% 0402	R3071M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R2865M2	0613952P01	CER CHIP RES 100KΩ 1% 0402	R2888M2	0613952M12	CER CHIP RES 1300Ω 1% 0402	R3034M7	0613952L51	CER CHIP RES 332Ω 1% 0402	R3072M7	0613952L18	CER CHIP RES 150Ω 1% 0402
R2866M2	0613952N77	CER CHIP RES 61.9KΩ 1% 0402	R2889M2	0613952N57	CER CHIP RES 38.3KΩ 1% 0402	R3039M7	0613952L18	CER CHIP RES 150Ω 1% 0402	R3074M7	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
R3075M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3124M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3203M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3225M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3079M7	0613952L51	CER CHIP RES 332Ω 1% 0402	R3125M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3204M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3226M3	0613952M01	CER CHIP RES 1000Ω 1% 0402
R3080M7	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3126M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3205M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3227M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3081M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3128M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3206M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3228M3	0613952M01	CER CHIP RES 1000Ω 1% 0402
R3086M7	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3133M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3207M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3229M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R3088M7	0613952K01	CER CHIP RES 10.0Ω 1% 0402	R3134M7	0613959Q42	CER CHIP RESΩ 5% 2010	R3208M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3230M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3092M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3153M7	0613952K34	CER CHIP RES 22.1Ω 1% 0402	R3209M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3231M3	0613952L76	CER CHIP RES 604Ω 1% 0402
R3099M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3157M7	0613952N07	CER CHIP RES 11.5KΩ 1% 0402	R3210M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3232M3	0613952L76	CER CHIP RES 604Ω 1% 0402
R3102M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3158M7	0613952N07	CER CHIP RES 11.5KΩ 1% 0402	R3211M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3234M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R3104M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3160M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3213M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3235M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3109M7	0613952L18	CER CHIP RES 150Ω 1% 0402	R3161M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3214M3	0613952K42	CER CHIP RES 26.7Ω 1% 0402	R3236M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3110M7	0613952K85	CER CHIP RES 75.0Ω 1% 0402	R3162M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3215M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R3237M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3111M7	0613952K85	CER CHIP RES 75.0Ω 1% 0402	R3163M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3217M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3238M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3112M7	0613952K85	CER CHIP RES 75.0Ω 1% 0402	R3164M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3218M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3239M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3115M7	0613952K85	CER CHIP RES 75.0Ω 1% 0402	R3165M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3219M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3242M3	0613952L66	CER CHIP RES 475Ω 1% 0402
R3119M7	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3166M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3220M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3243M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R3120M7	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3167M7	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3221M3	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3244M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R3121M7	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3200M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3222M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3245M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R3122M7	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3201M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3223M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3246M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R3123M7	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3202M3	0613952L01	CER CHIP RES 100Ω 1% 0402	R3224M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3247M3	0613952L66	CER CHIP RES 475Ω 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
R3248M3	0613952L76	CER CHIP RES 604Ω 1% 0402	R3418M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3447M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3467M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3249M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3419M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3448M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3468M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3400M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3420M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3449M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3469M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3401M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3423M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3450M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3470M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3402M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3424M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3451M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3471M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R3403M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3425M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3452M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3472M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R3404M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3426M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3453M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3473M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R3405M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3427M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3454M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3474M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R3406M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3428M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3455M3	0613952L51	CER CHIP RES 332Ω 1% 0402	R3475M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3407M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3429M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3456M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3476M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3408M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3430M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3457M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3477M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3409M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3431M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3458M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3478M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3410M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3432M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3459M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3479M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R3411M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3436M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3460M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3480M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3412M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3437M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3461M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3481M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402
R3413M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3438M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3462M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3482M3	0613952N51	CER CHIP RES 33.2KΩ 1% 0402
R3414M3	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3439M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3463M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R3483M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402
R3415M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3441M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R3464M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R3600M3	0613952K68	CER CHIP RES 49.9Ω 1% 0402
R3416M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3445M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3465M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R3601M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω
R3417M3	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3446M3	0613952L66	CER CHIP RES 475Ω 1% 0402	R3466M3	0613952N66	CER CHIP RES 47.5KΩ 1% 0402	R3602M3	0613952M66	CER CHIP RES 4750Ω 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
R3603M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3623M3	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3645M3	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3856M4	0613952M66	CER CHIP RES 4750Ω 1% 0402
R3604M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3624M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3803M4	0613952N62	CER CHIP RES 43.2KΩ 1% 0402	R3858M4	0613952M53	CER CHIP RES 3480Ω 1% 0402
R3605M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3625M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3804M4	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3861M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R3606M3	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3626M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3806M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3865M4	0613952N58	CER CHIP RES 39.2KΩ 1% 0402
R3607M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3627M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3812M4	0613952N62	CER CHIP RES 43.2KΩ 1% 0402	R3867M4	0613952M05	CER CHIP RES 1100Ω 1% 0402
R3608M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3628M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3813M4	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3869M4	0613952N81	CER CHIP RES 68.1KΩ 1% 0402
R3609M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3629M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3814M4	0613952N81	CER CHIP RES 68.1KΩ 1% 0402	R3870M4	0613952P54	CER CHIP RES 357KΩ 1% 0402
R3610M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3630M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3816M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3871M4	0613952M81	CER CHIP RES 6810Ω 1% 0402
R3611M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3631M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3820M4	0613952N01	CER CHIP RES 10.0KΩ 1 0402	R3872M4	0613952M53	CER CHIP RES 3480Ω 1% 0402
R3612M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3632M3	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3823M4	0613952M66	CER CHIP RES 4750Ω 1% 0402	R3876M4	0613952M66	CER CHIP RES 4750Ω 1% 0402
R3613M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3633M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3825M4	0613952M37	CER CHIP RES 2370Ω 1% 0402	R3880M4	0613952M05	CER CHIP RES 1100Ω 1% 0402
R3614M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3634M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3830M4	0613952M34	CER CHIP RES 2210Ω 1% 0402	R3882M4	0613952M53	CER CHIP RES 3480Ω 1% 0402
R3615M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3635M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3832M4	0613952M09	CER CHIP RES 1210Ω 1% 0402	R3900M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R3616M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3636M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3833M4	0613952C09	CER CHIP RES 121Ω 1% 0603	R3902M4	0613952M18	CER CHIP RES 1500Ω 1% 0402
R3617M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3637M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3839M4	0613952M01	CER CHIP RES 1000Ω 1% 0402	R3904M4	0613952M64	CER CHIP RES 4530Ω 1% 0402
R3618M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3640M3	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3840M4	0613952L51	CER CHIP RES 332Ω 1% 0402	R3905M4	0613952N30	CER CHIP RES 20.0KΩ 1% 0402
R3619M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3641M3	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3844M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R3909M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R3620M3	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	R3642M3	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3847M4	0613952M66	CER CHIP RES 4750Ω 1% 0402	R4002M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R3621M3	0613952K51	CER CHIP RES 33.2Ω 1% 0402	R3643M3	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3849M4	0613952M53	CER CHIP RES 3480Ω 1% 0402	R4003M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402
R3622M3	0613952K68	CER CHIP RES 49.9Ω 1% 0402	R3644M3	0613952P01	CER CHIP RES 100KΩ 1% 0402	R3853M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	R4004M4	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
R4005M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	U1403M1	5171674H01	OP AMP	U2405M6	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT- 23,SMT,40V,.225W,200MA ,300MHZ	U3025M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DCKR G4,LVCMOS,SOT-353/SC- 88A,SC70
R4011M4	0613952N01	CER CHIP RES 10.0KΩ 1% 0402	U1404M1	5114610F01	500MA LDO 0.8V TO 5.5V INPUT/OUTPUT	U2406M6	4813973M07	XSTR,BIP GP SS,NPN,T3904,SM,SOT- 23,SMT,40V,.225W,200MA ,300MHZ	U3064M7	5184937Y01	PRECISION COMPARATOR
R4018M4	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	U1406M1	5184790Y04	IC,400MA ADJ VREG LDO,SOT23	U2407M6	5185183Y01	HI PERF DUAL CMOS OPAMP W18	U3073M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DCKR G4,LVCMOS,SOT-353/SC- 88A,SC70
R4019M4	0613952M66	CER CHIP RES 4750Ω 1% 0402	U1600M1	0180706J37	IC, FLASH, PREPROGRAMMED	U2600M2	5164852H47	IC, I2C LEVEL TRANSLATOR	U3087M7	5109522E84	IC DUAL SCHMITT TRIG MICRO PAK
R4022M4	0613952M66	CER CHIP RES 4750Ω 1% 0402	U1601M1	51012031001	32MB DIE SHRINK DDR SDRAM IC	U2601M2	5115368H01	I2C AUDIO ATTENUATOR	U3127M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DCKR G4,LVCMOS,SOT-353/SC- 88A,SC70
R4024M4	0613952M66	CER CHIP RES 4750Ω 1% 0402	U1800M1	5187970L07	IC ADV USB TRANSCEIVER 3.1X3.1	U2602M2	5171779H01	SPDT ANALOG SWITCH	U3400M3	5109522E84	IC DUAL SCHMITT TRIG MICRO PAK
R4030M4	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	U1801M1	5171779H01	SPDT ANALOG SWITCH	U2603M2	5114016A12	IC,OP AMP,4PER PKG,LVOLT,SM,SO- 14,PB-FREE	U3401M3	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DCKR G4,LVCMOS,SOT-353/SC- 88A,SC70
R4031M4	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	U2000M5	5114698D01	IC,FPGA,FTBGA256,SPA RTAN 3AN FPGA	U2604M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY	U3600M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
R4032M4	0613952R66	CER CHIP RES 0.0 +/- 0.050Ω	U2200M5	5114000C01	IC,BFR,8PER PKG,74VHCT244,3ST,SM, TSSOP20,PB-FREE	U2607M2	5171779H01	SPDT ANALOG SWITCH	U3601M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOLATGE,3ST,SM,TSSOP 20,PB-FREE
T3106M7	2489647C01	XFMR,1:1,SM,10BASE- T_XFMR, ENET TRANSFORMER, HALO, TG110-SO	U2201M5	5114000C01	IC,BFR,8PER PKG,74VHCT244,3ST,SM, TSSOP20,PB-FREE	U2608M2	5171779H01	SPDT ANALOG SWITCH	U3602M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U1000M1	5102495J13	IC,MICROP,P1710ZZGE,B GA,,,12MHZ,32BITS	U2202M5	5114000C01	IC,BFR,8PER PKG,74VHCT244,3ST,SM, TSSOP20,PB-FREE	U2800M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY	U3603M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOLATGE,3ST,SM,TSSOP 20,PB-FREE
U1001M1	5102495J13	IC,MICROP,P1710ZZGE,B GA,,,12MHZ,32BITS	U2203M5	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOLATGE,3ST,SM,TSSOP 20,PB-FREE	U2802M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY	U3604M3	5114019M13	IC,BFR,8PER PKG,74LVX244,LOW VOLATGE,3ST,SM,TSSOP 20,PB-FREE
U1002M1	0180706J37	IC, FLASH, PREPROGRAMMED	U2207M5	5114000M42	IC,MONOSTABLE MULTIVIBRATOR,2PER PKG,74HC4538,DUAL PRECISION,SM	U2803M2	5184334Y01	IC HIGH PERFORMANCE SING SPLY	U3605M3	5185941F86	IC, 4- BIT BUS TRANSCEIVER
U1003M1	51012031001	32MB DIE SHRINK DDR SDRAM IC	U2208M5	5185941F86	IC, 4- BIT BUS TRANSCEIVER	U3000M7	5114019M05	IC,INVTR,SCHMITT,74LVX 14,6PER PKG,SM,TSSOP14,PB- FREE	U3606M3	5115865H01	SINGLE-BIT BUS TRANSCEIVER
U1200M1	5187970L07	IC ADV USB TRANSCEIVER 3.1X3.1	U2400M6	5115001H02	NL27WZU04DFT2G INVERTER (EPP)	U3005M7	51009265001	USB 2.0 TO 10/100 USB CONTROLLER			
U1201M1	5171779H01	SPDT ANALOG SWITCH	U2401M6	5185096Y01	12-BIT DAC W OUTPUT AMPLF W18	U3007M7	5175422H01	8-BIT DUAL SUPPLY BUS TXCVR			
U1202M1	5188540T01	IC,AND,NC7SZ08,1PER PKG,SC70,SC70,PB- FREE	U2402M6	5184936Y01	CLOCK BUFFER	U3020M7	5189995T01	IC,XCVR,1PER PKG,SN74LVC1T45DCKR G4,LVCMOS,SOT-353/SC- 88A,SC70			
U1203M1	5188540T01	IC,AND,NC7SZ08,1PER PKG,SC70,SC70,PB- FREE	U2403M6	5171779H01	SPDT ANALOG SWITCH						
U1402M1	5185143E77	IC, MAKO ASIC, CMOS PWR MGMT	U2404M6	5184937Y01	PRECISION COMPARATOR						

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 PS, 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

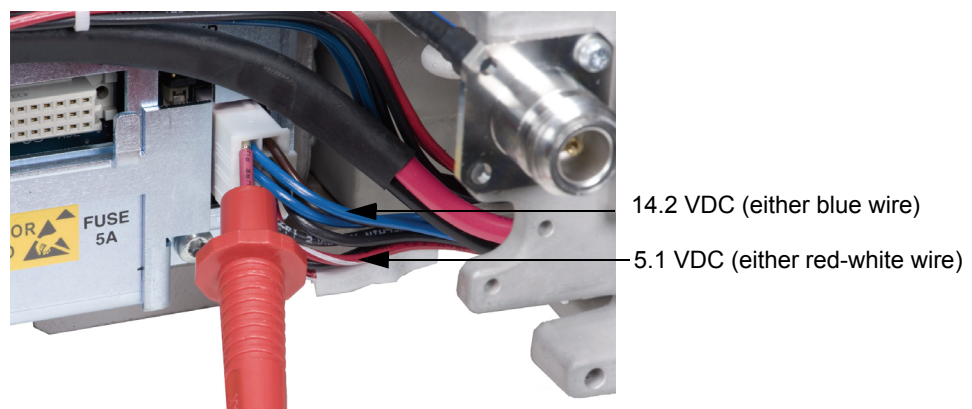


Figure 5-1 Measuring 14.2 VDC and 5.1 VDC (other voltmeter probe to chassis)

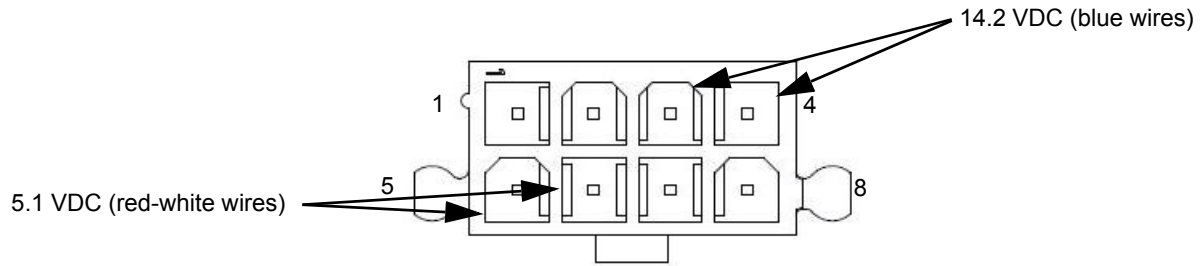


Figure 5-2 Pin-out of connector (measuring 14.2 VDC and 5.1 VDC)

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

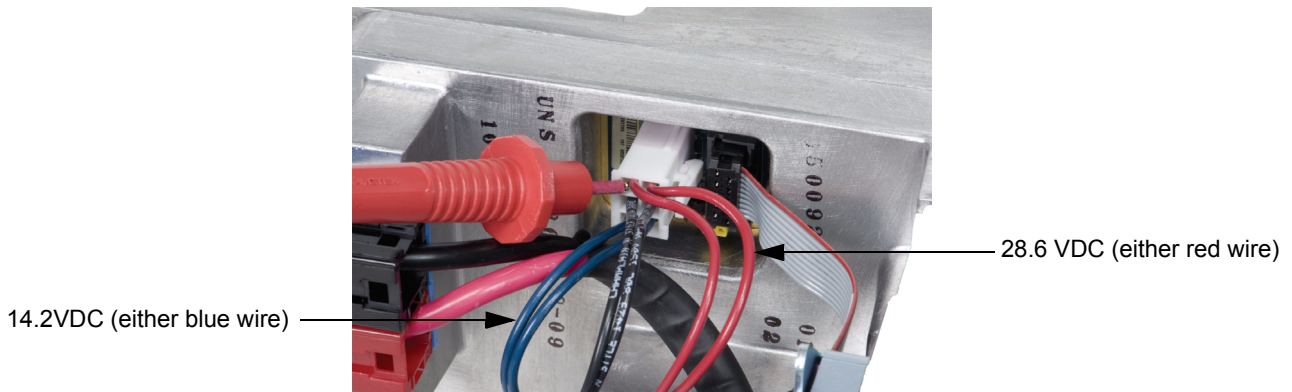


Figure 5-3 Measuring 14.2 VDC and 28.6 VDC (other voltmeter probe to chassis)

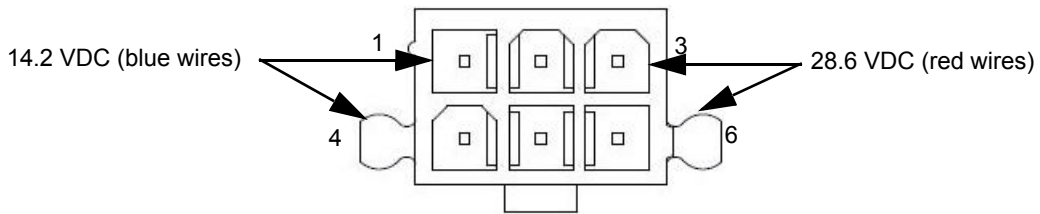


Figure 5-4 Pin-out of connector (measuring 14.2 VDC and 28.6 VDC)

If it is determined that the PSU 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.

Chapter 6 MTR3000 Receiver Module

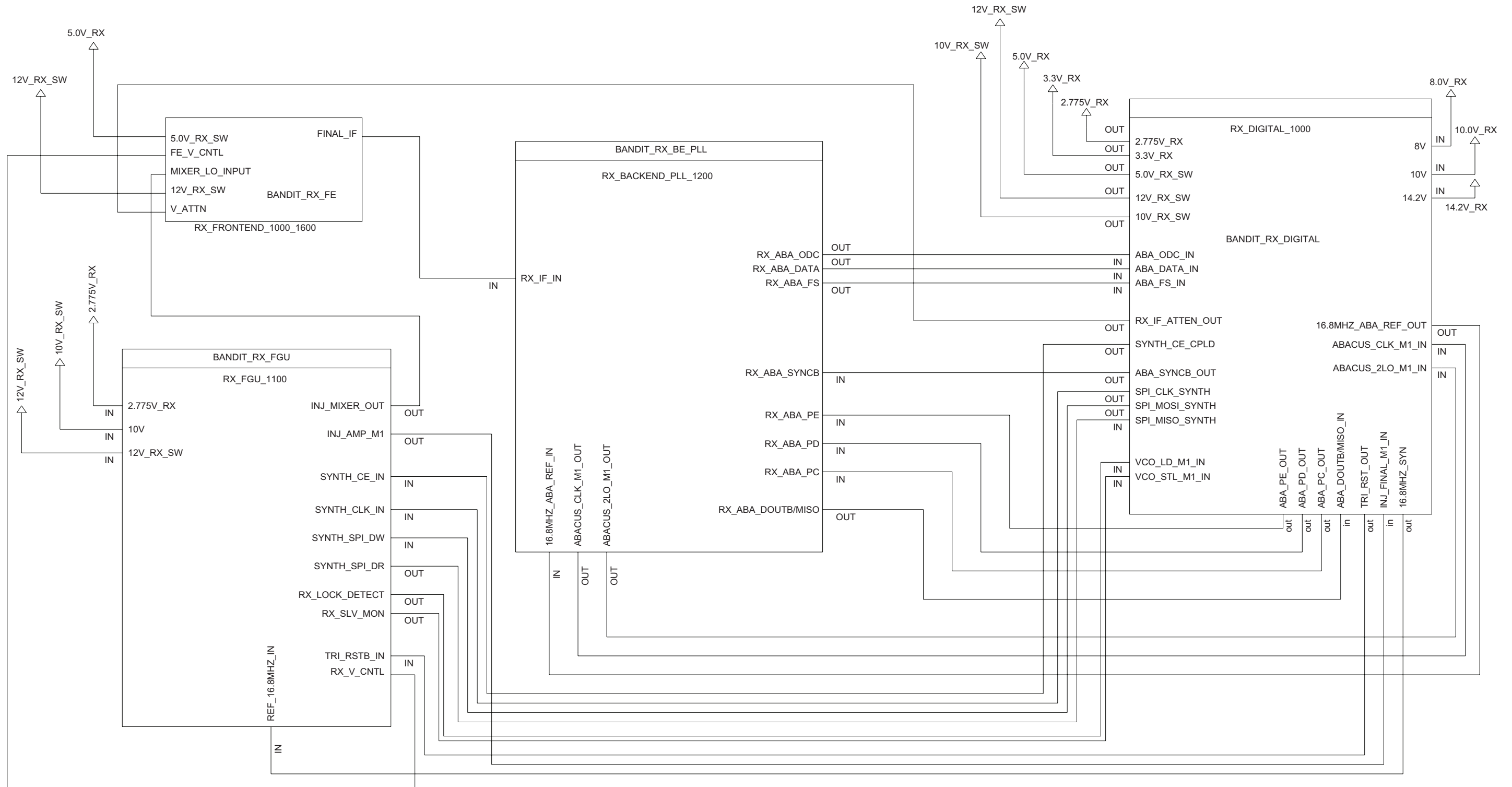
6.1 Overview

Refer to Section 6.2, Section 6.3, Section 6.4 and Section 6.5 for the schematic diagrams, overlays, and parts lists of the MTR3000 Receiver Module. A complete list of all parts is provided with the parts ordered according to the schematic reference number.

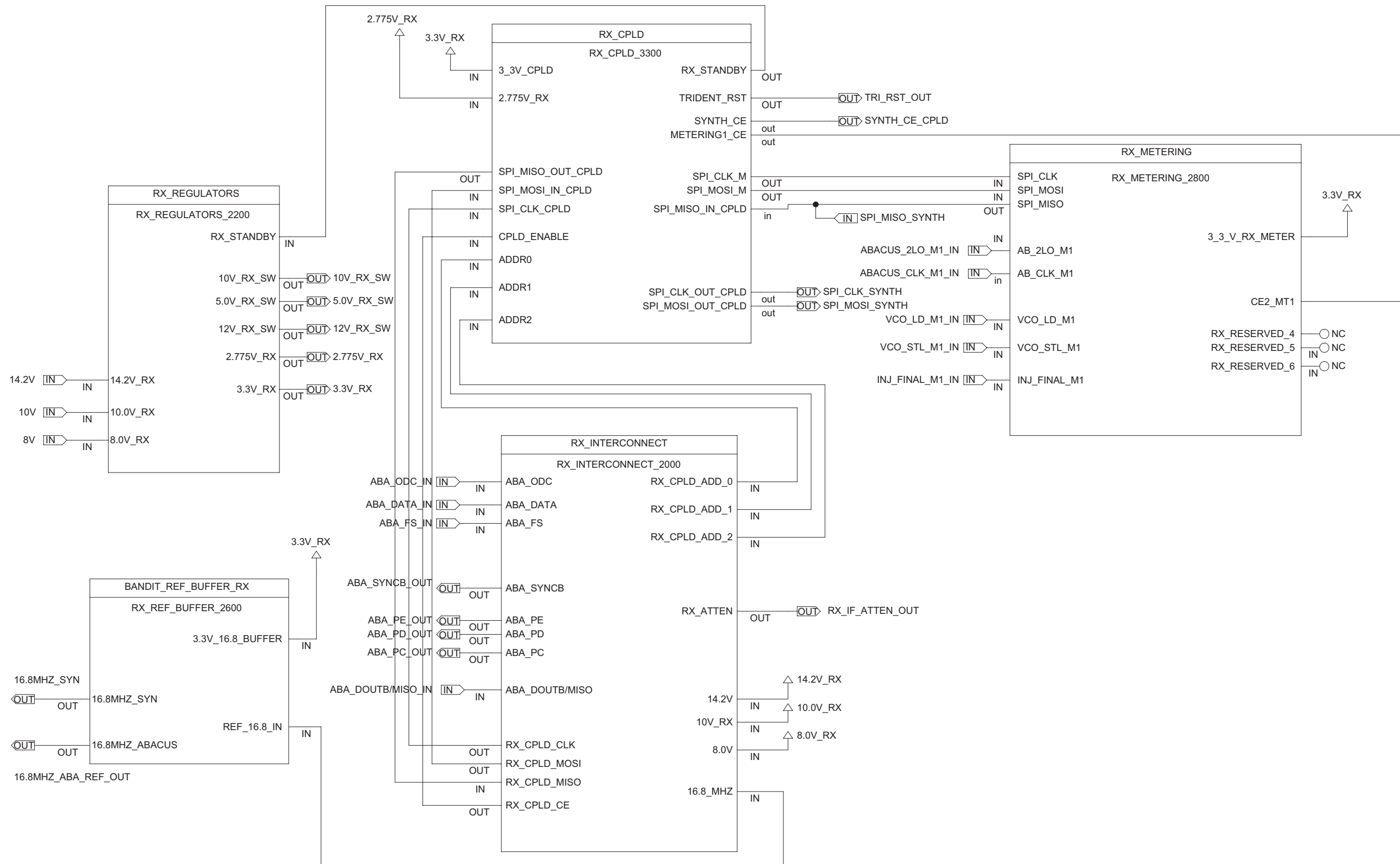
For the Theory of Operation, Specifications, Block Diagrams and troubleshooting procedures of the Receiver Module, refer to the MOTOTRBO™ MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

Notes

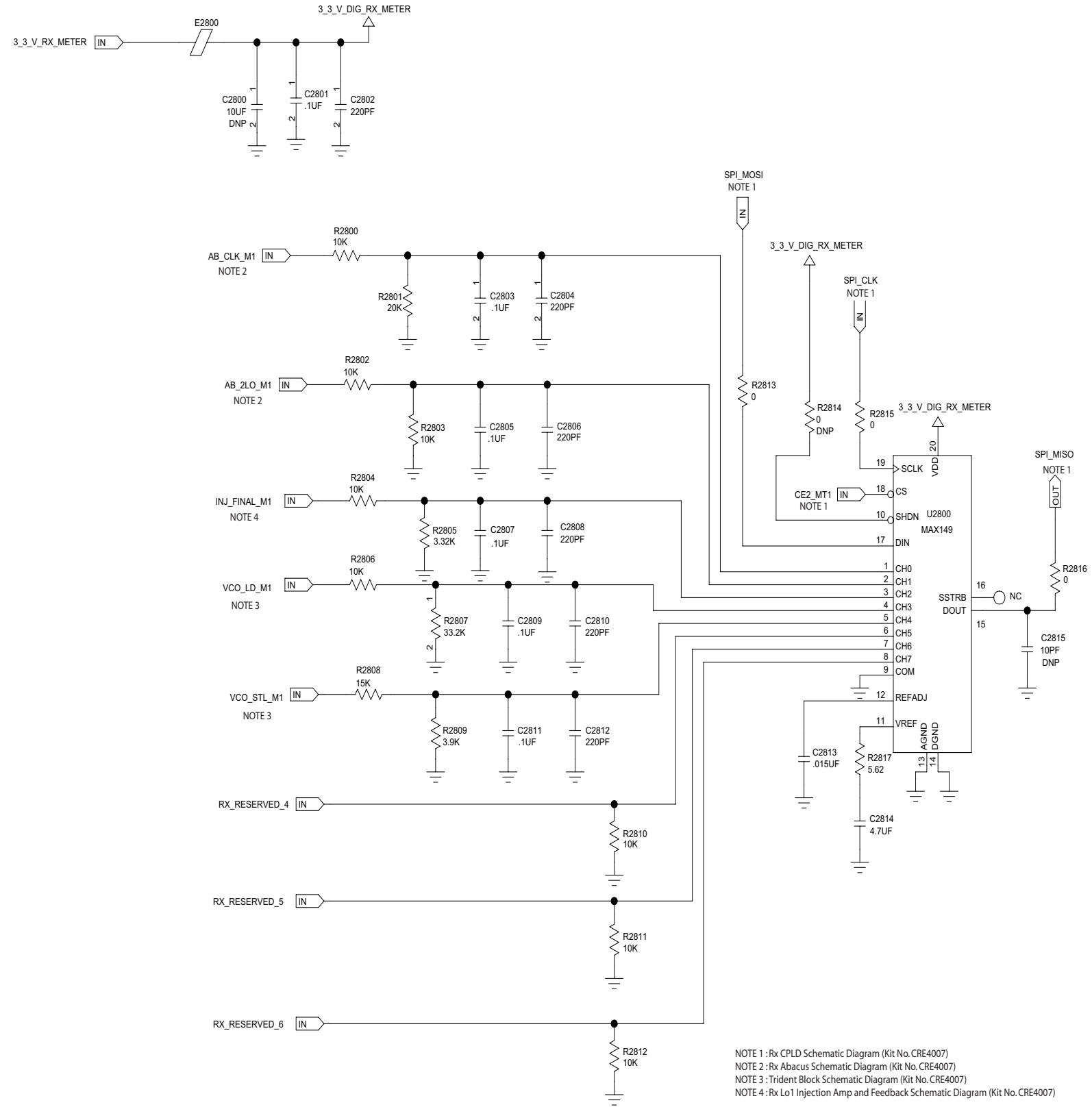
6.2 Receiver Schematics (UHF)



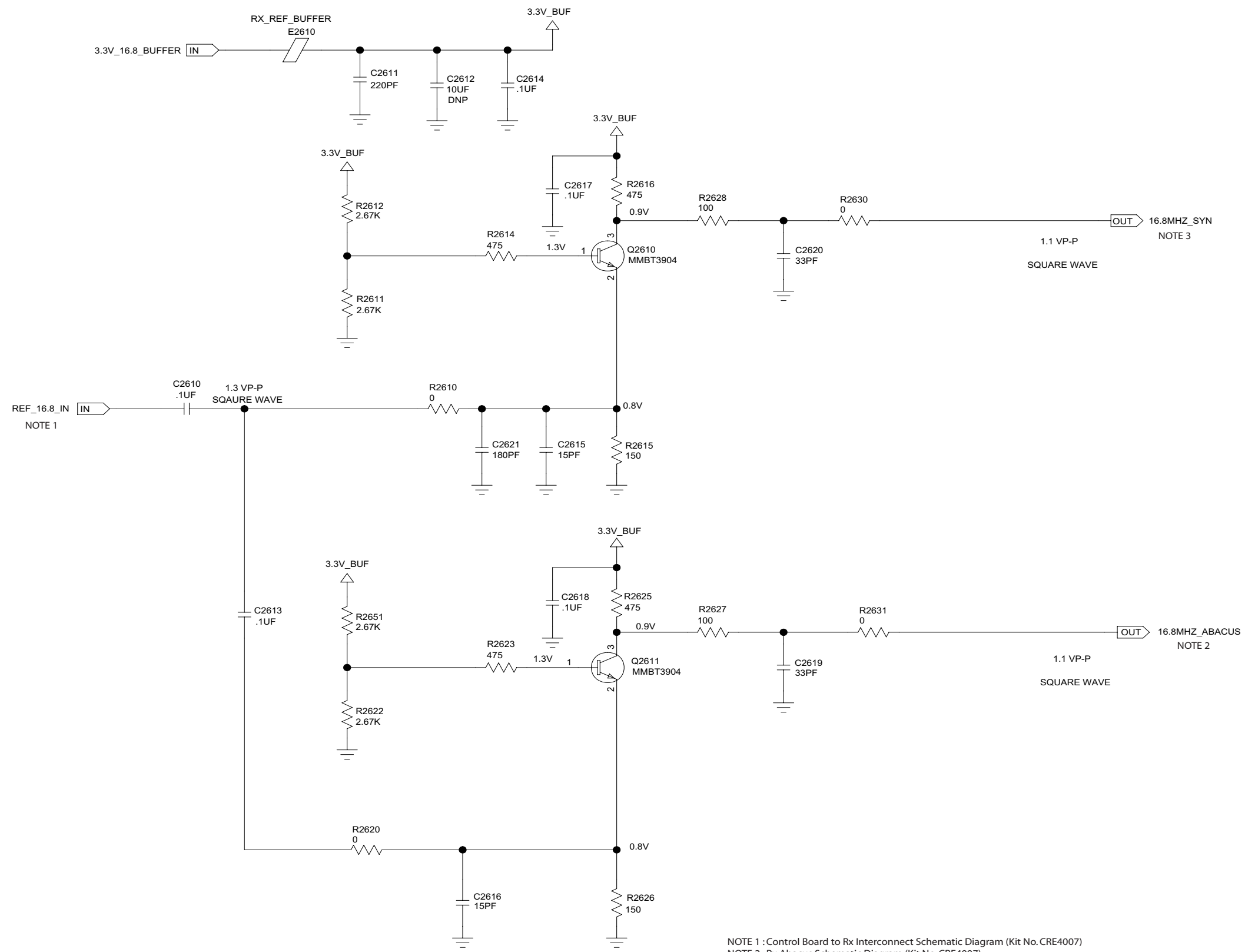
Receiver – Main Schematic Diagram (Kit No. CRE4007)



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

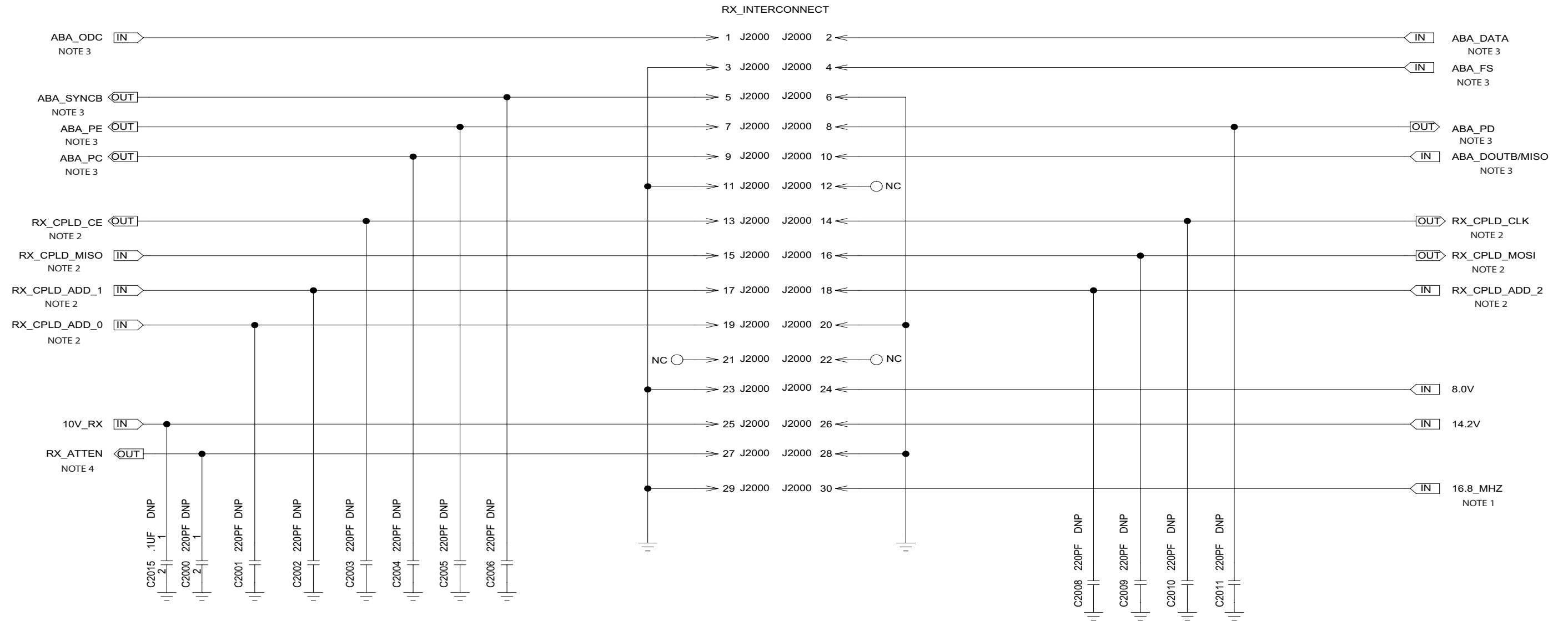


Receiver – Rx Metering Schematic Diagram (Kit No. CRE4007)



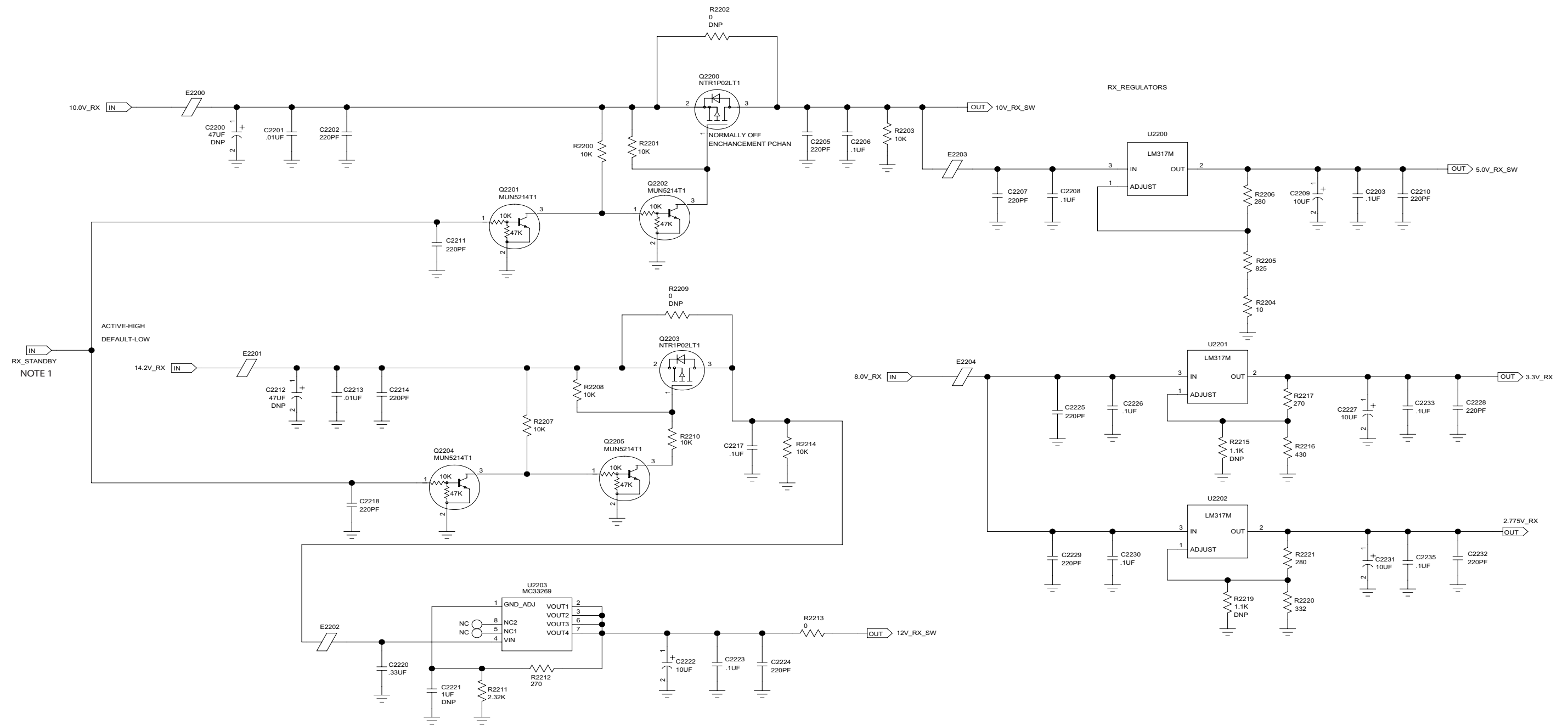
NOTE 1 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Rx Abacus Schematic Diagram (Kit No. CRE4007)
 NOTE 3 : Trident Block Schematic Diagram (Kit No. CRE4007)

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



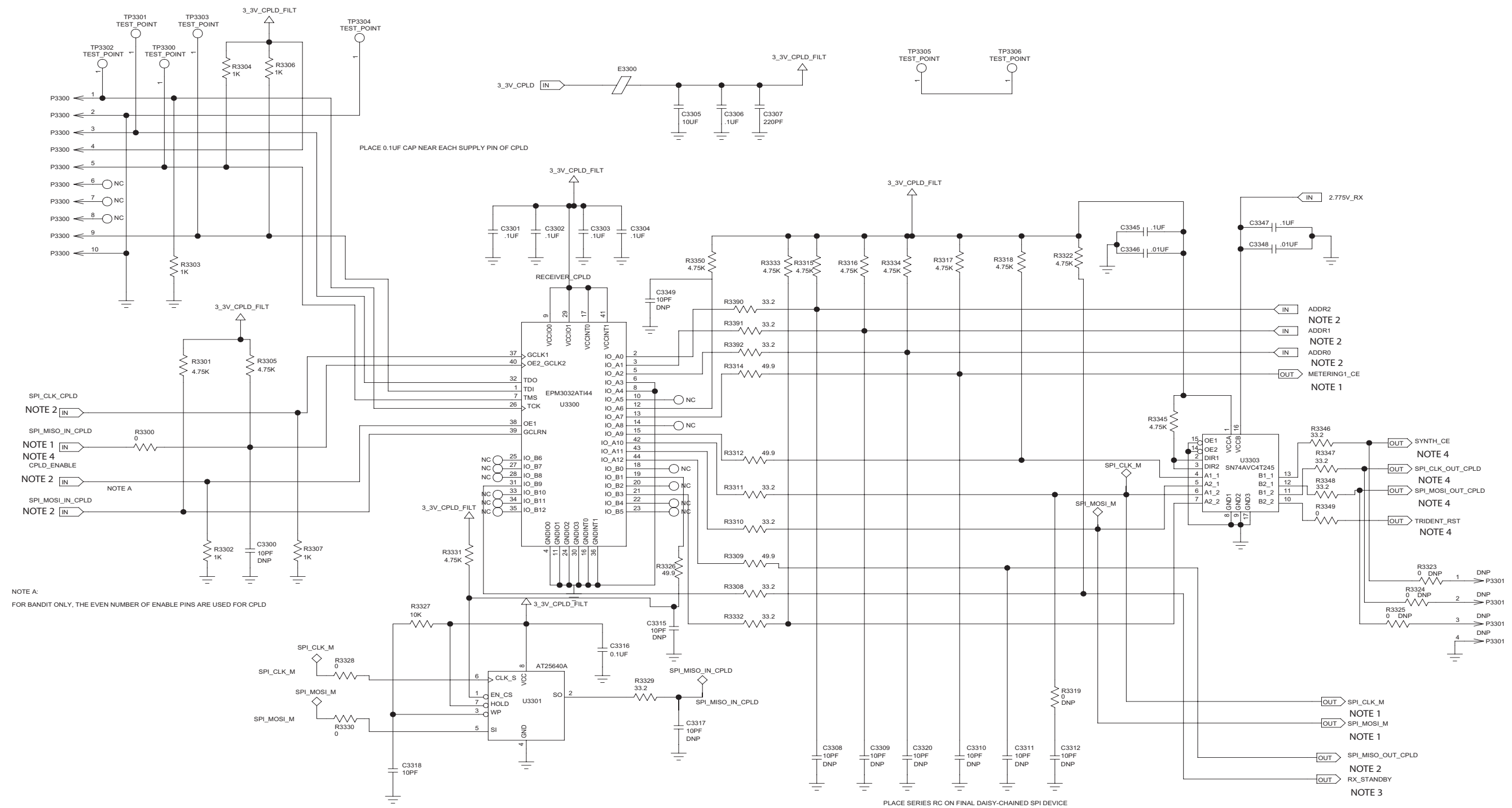
NOTE 1 : Rx 16.8MHz Ref Buffer Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Rx CPLD Schematic Diagram (Kit No. CRE4007)
 NOTE 3 : Rx Abacus Schematic Diagram (Kit No. CRE4007)
 NOTE 4 : Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)

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



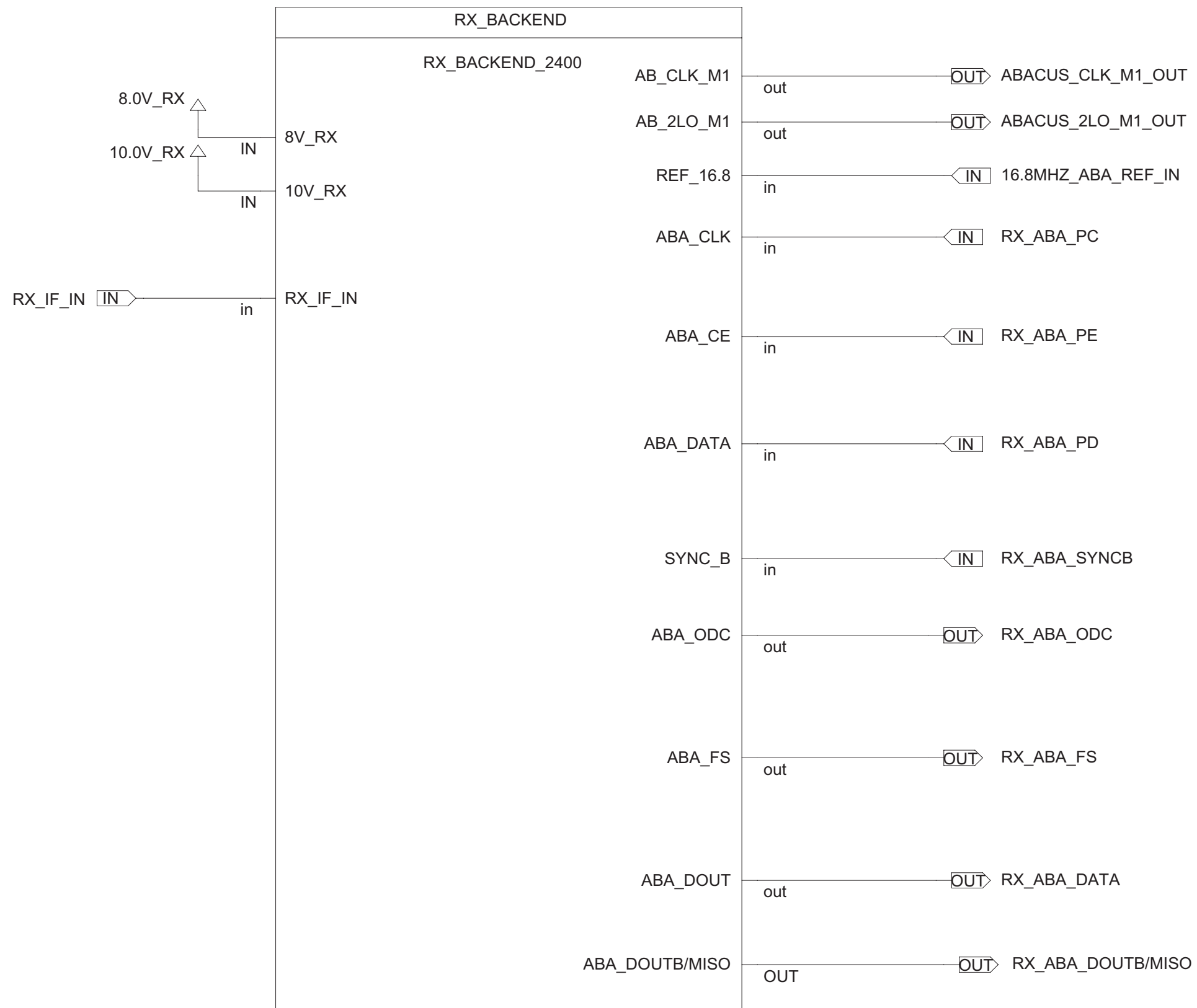
NOTE 1 : Rx CPLD Schematic Diagram (Kit No. CRE4007)

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

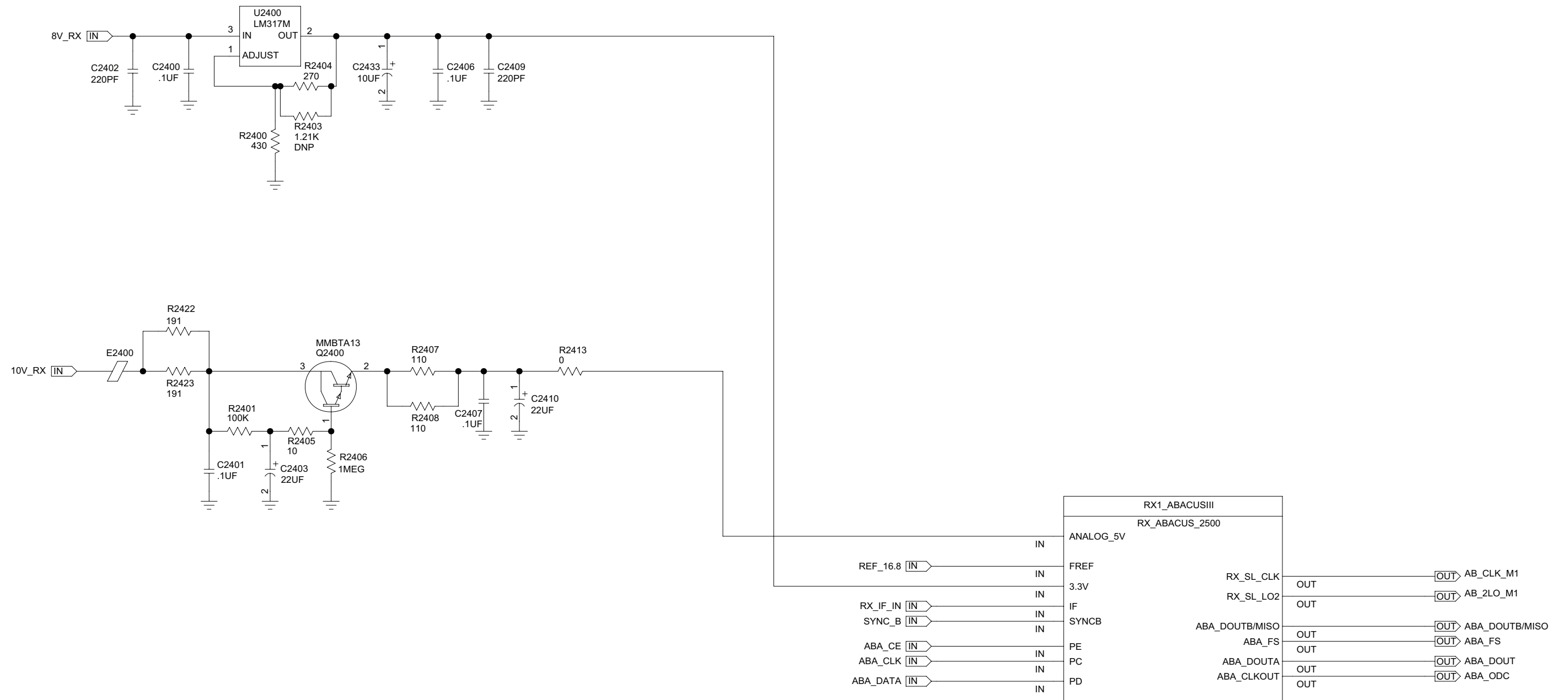


NOTE 1 : Rx Metering Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)
 NOTE 3 : Rx Voltage Regulators Schematic Diagram (Kit No. CRE4007)
 NOTE 4 : Trident Block Schematic Diagram (Kit No. CRE4007)

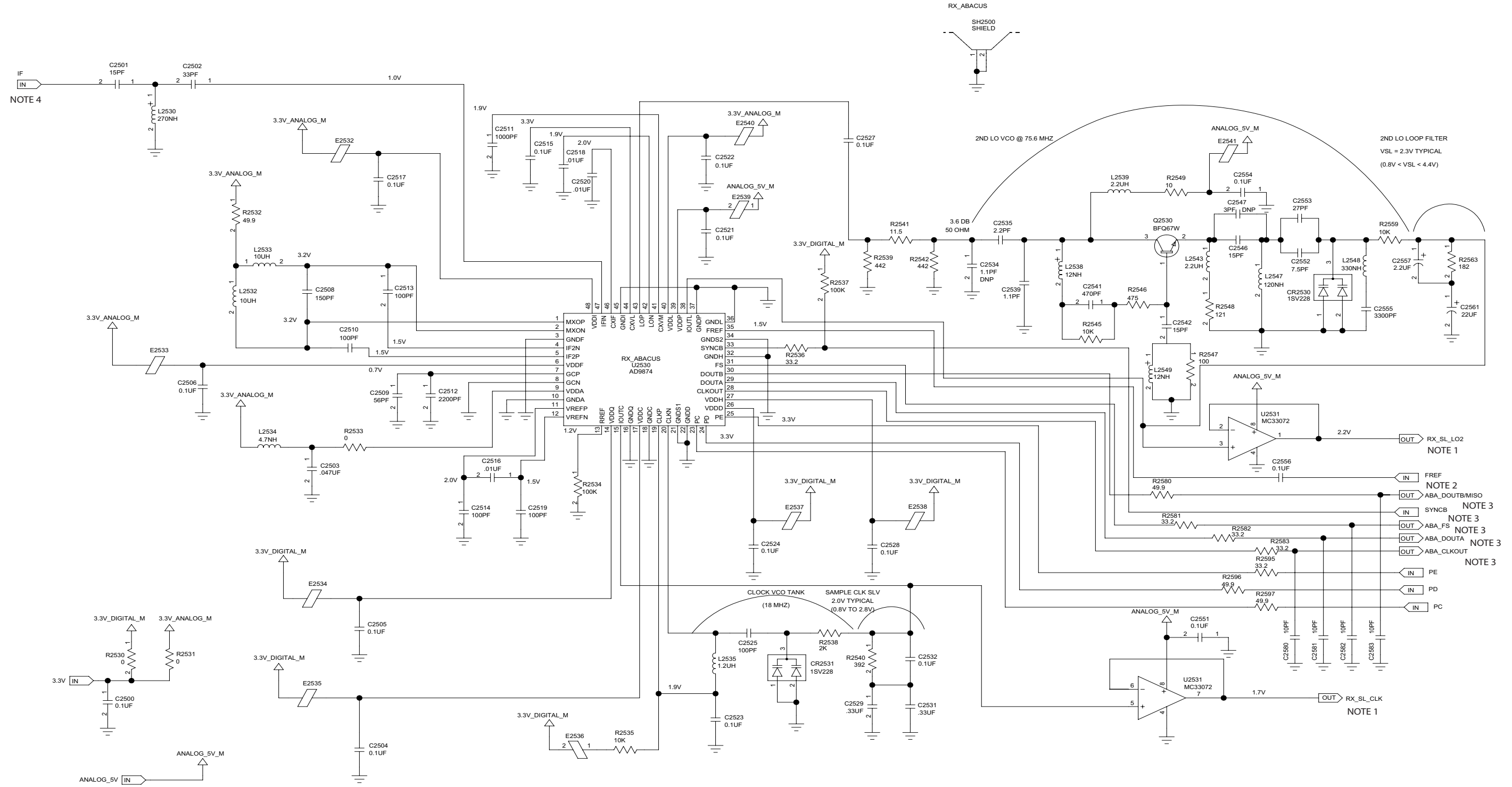
Receiver – Rx CPLD Schematic Diagram (Kit No. CRE4007)



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

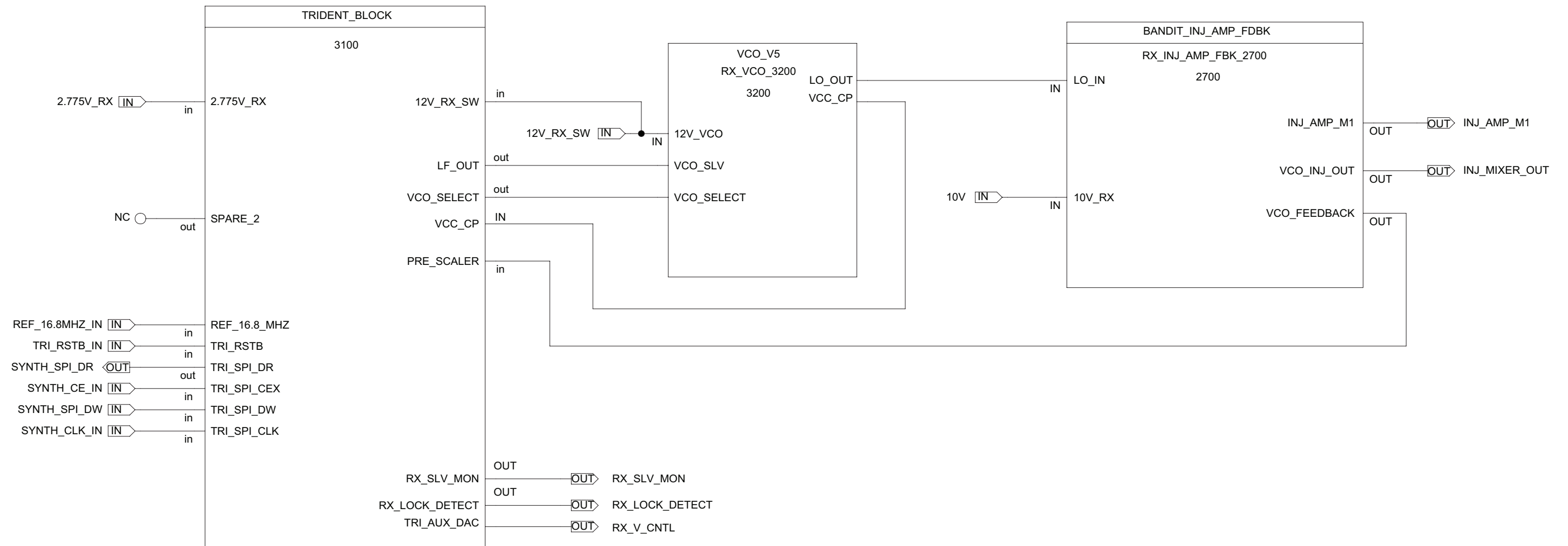


Receiver – Rx Backend Schematic Diagram (Kit No. CRE4007)

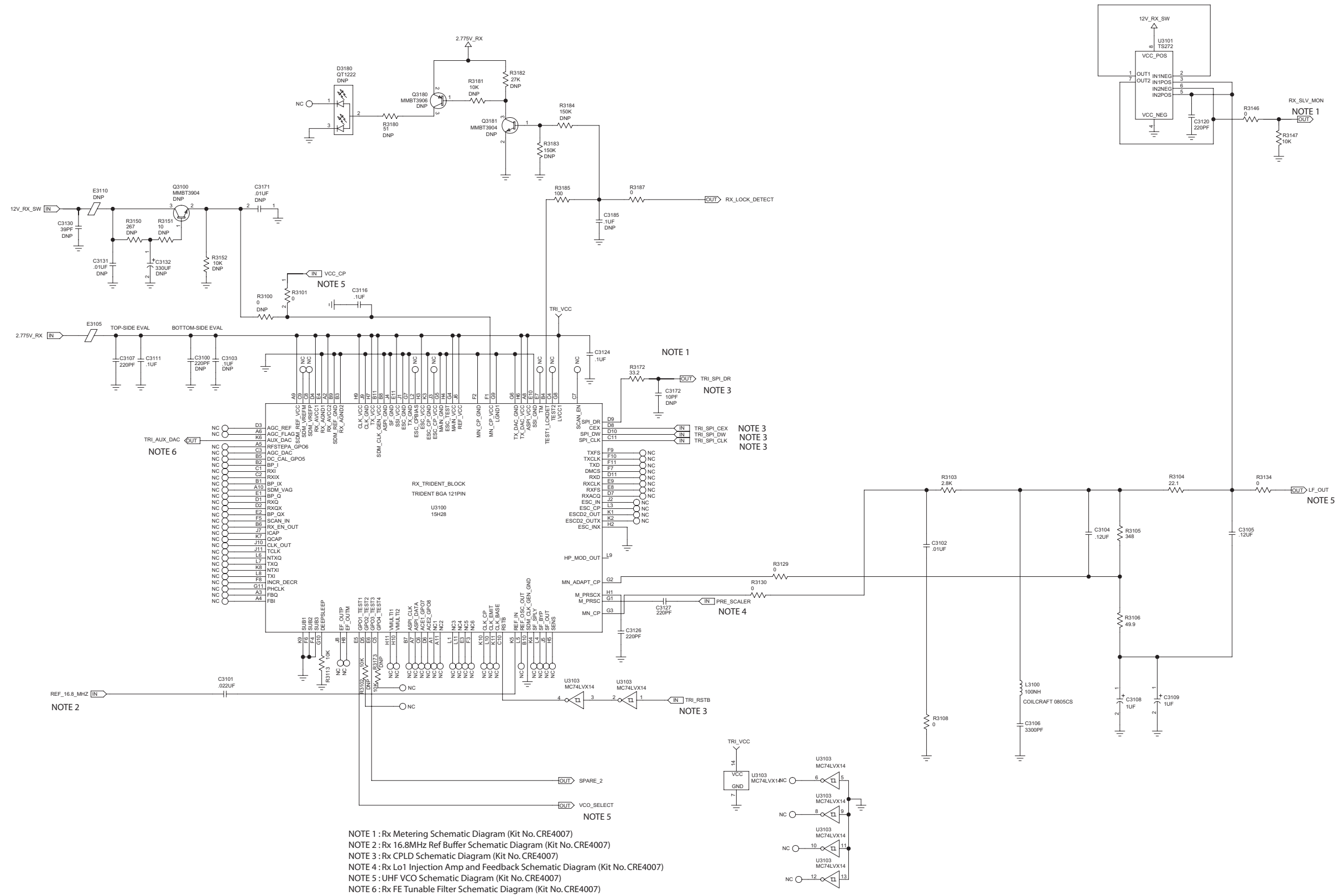


- NOTE 1 : Rx Metering Schematic Diagram (Kit No. CRE4007)
- NOTE 2 : Rx 16.8MHz Ref Buffer Schematic Diagram (Kit No. CRE4007)
- NOTE 3 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)
- NOTE 4 : Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)

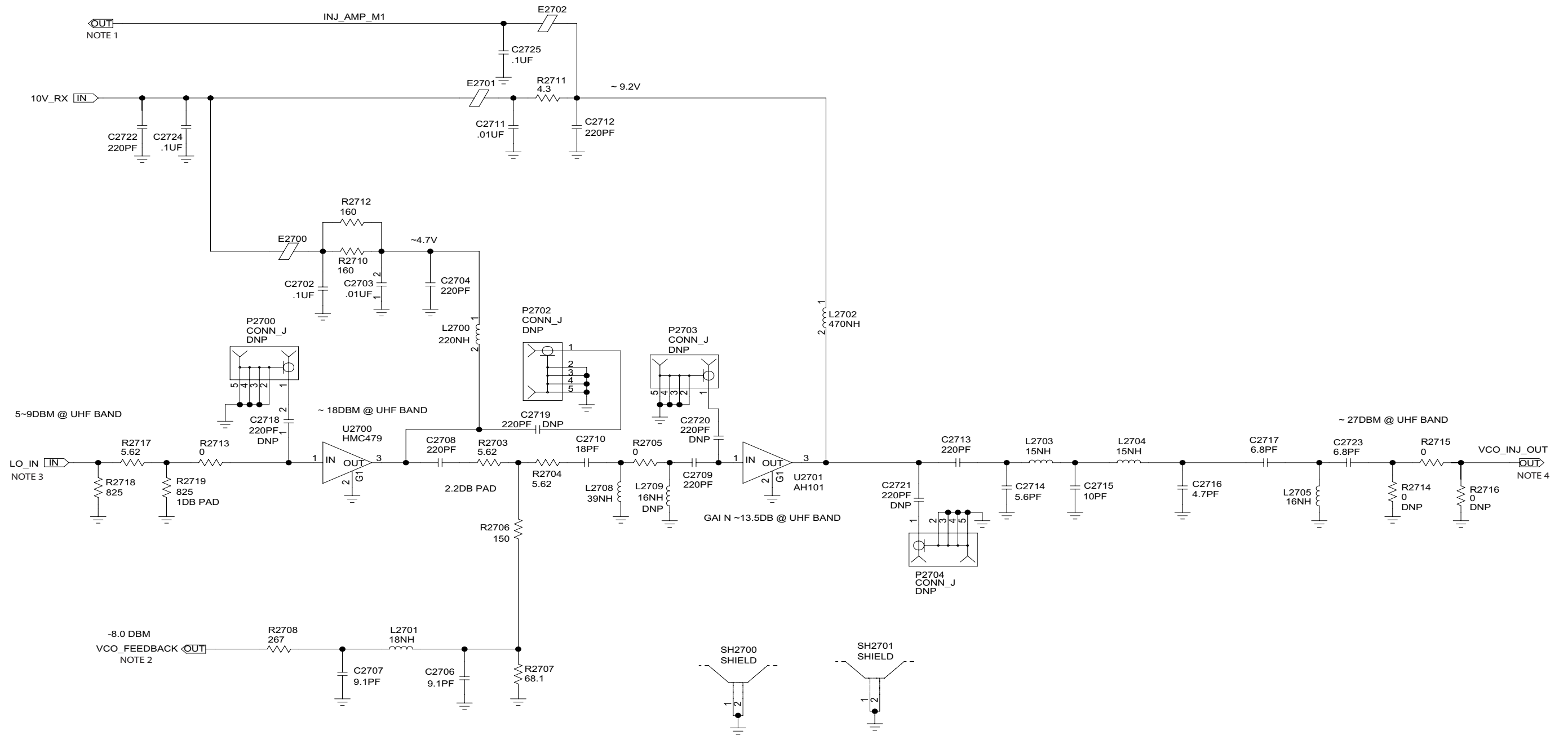
Receiver – Rx Abacus Schematic Diagram (Kit No. CRE4007)



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

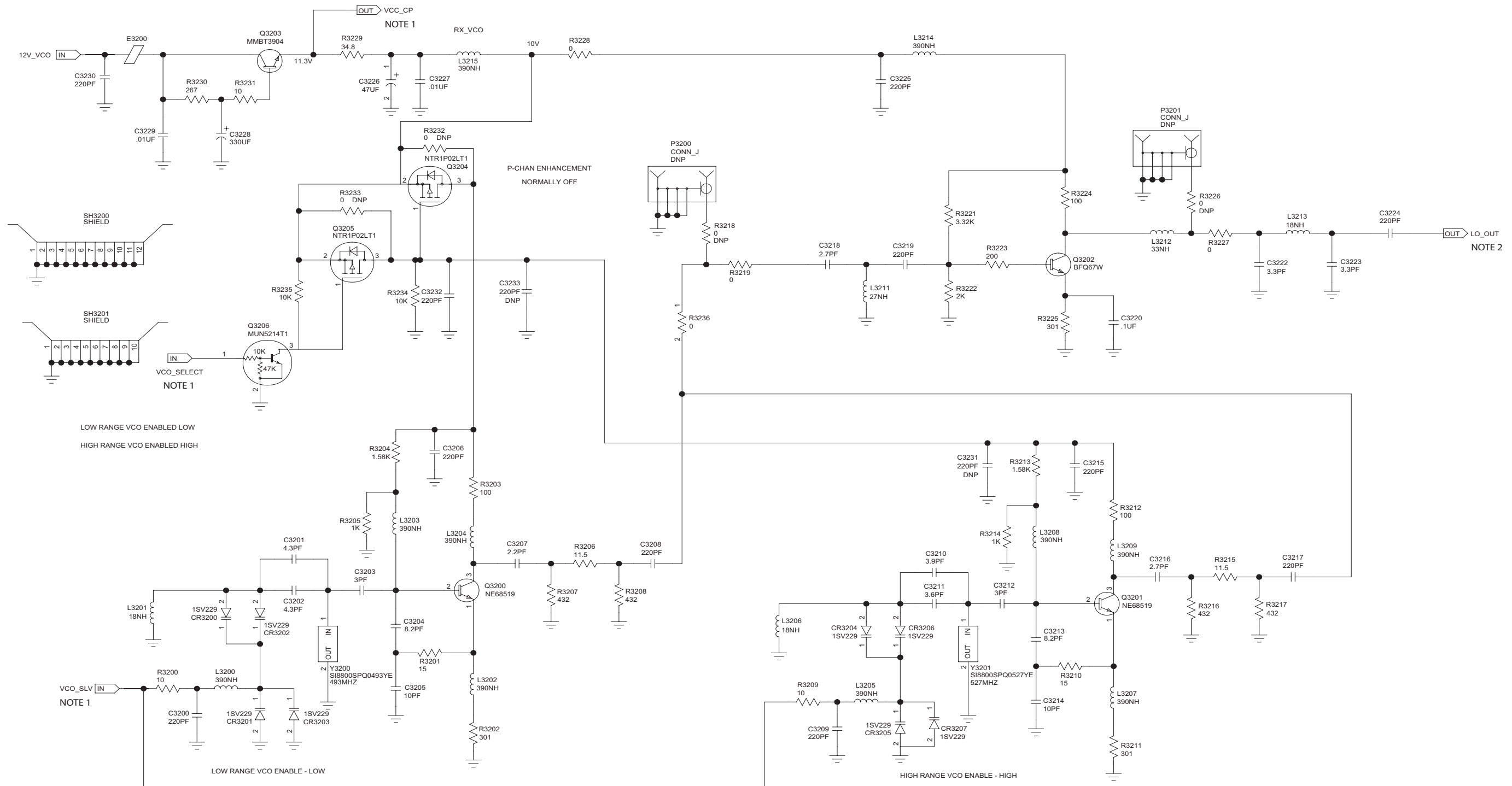


Receiver – Trident Block Schematic Diagram (Kit No. CRE4007)



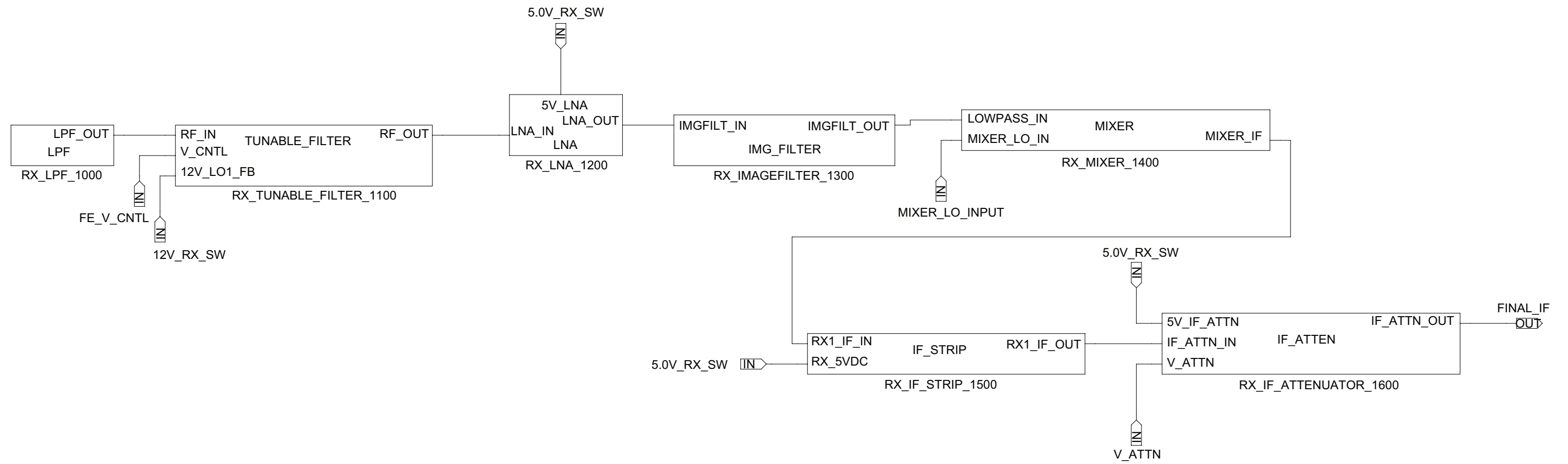
NOTE 1 : Rx Metering Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Trident Block Schematic Diagram (Kit No. CRE4007)
 NOTE 3 : UHF VCO Schematic Diagram (Kit No. CRE4007)
 NOTE 4 : Mixer Schematic Diagram (Kit No. CRE4007)

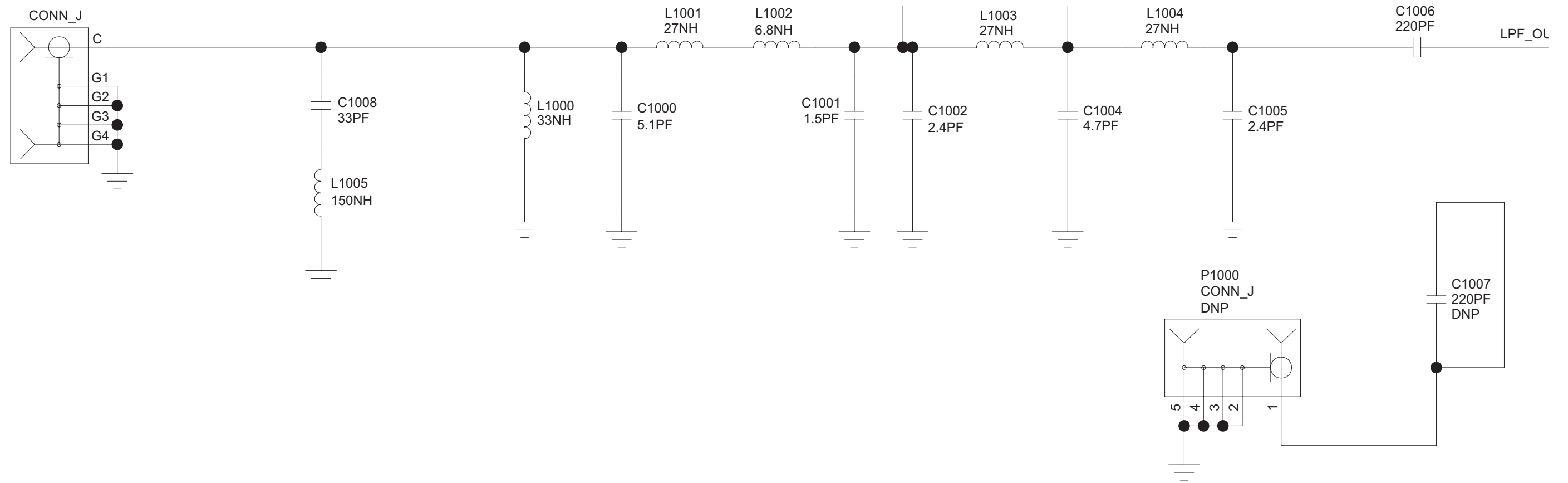
Receiver – Rx Lo1 Injection Amp and Feedback Schematic Diagram (Kit No. CRE4007)



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

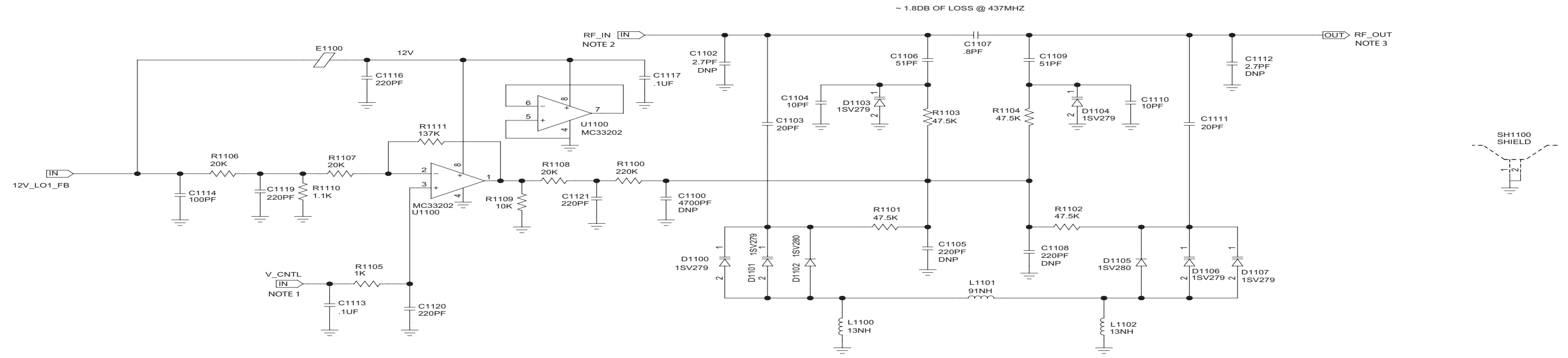
Receiver – UHF VCO Schematic Diagram (Kit No. CRE4007)





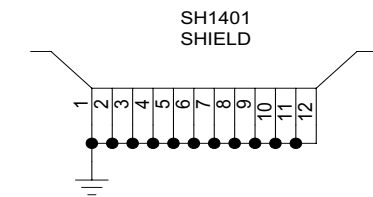
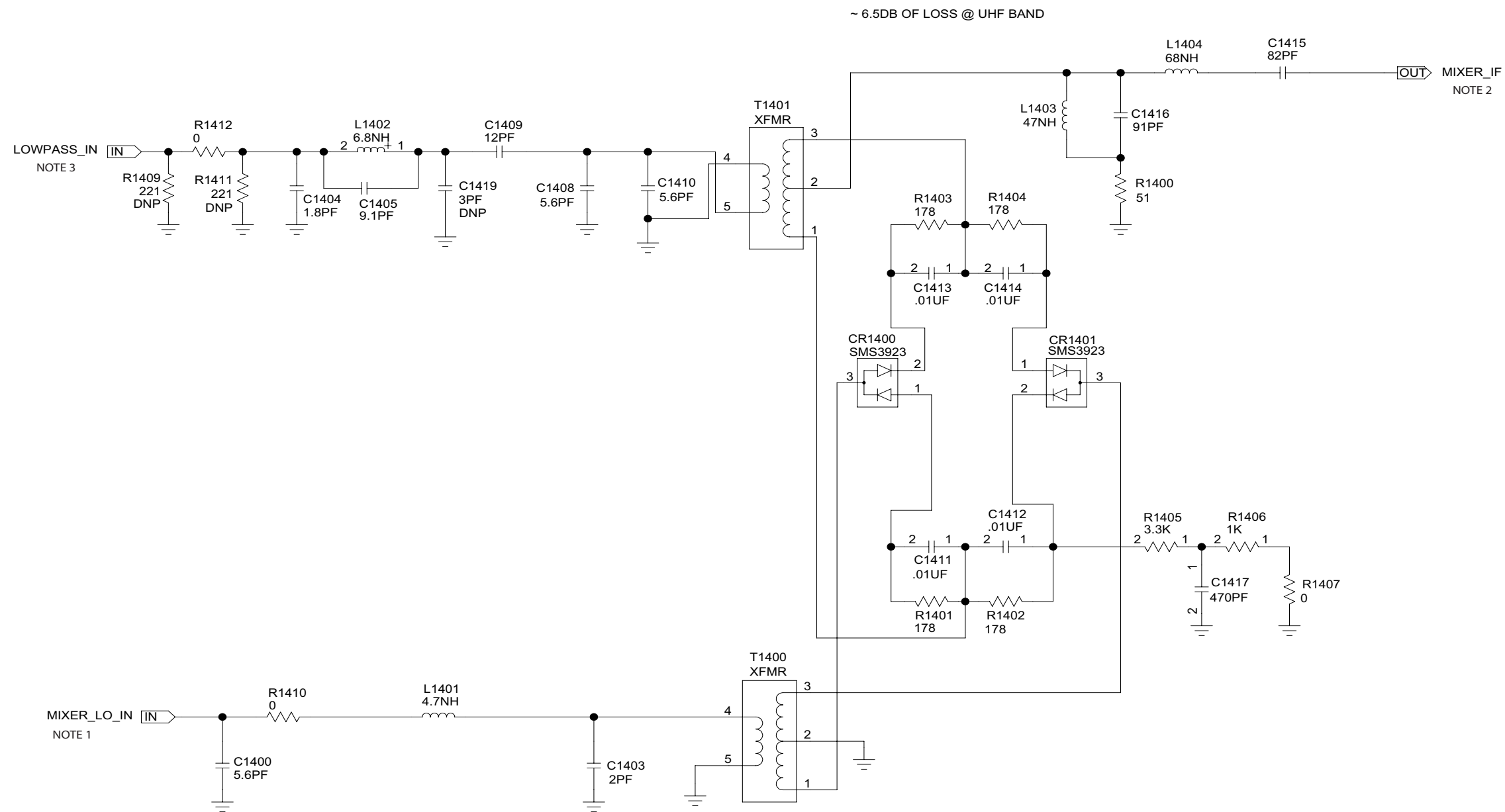
NOTE 1 : Rx FE Tunable Filter Schematic Diagram (Kit No. CRE4007)

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



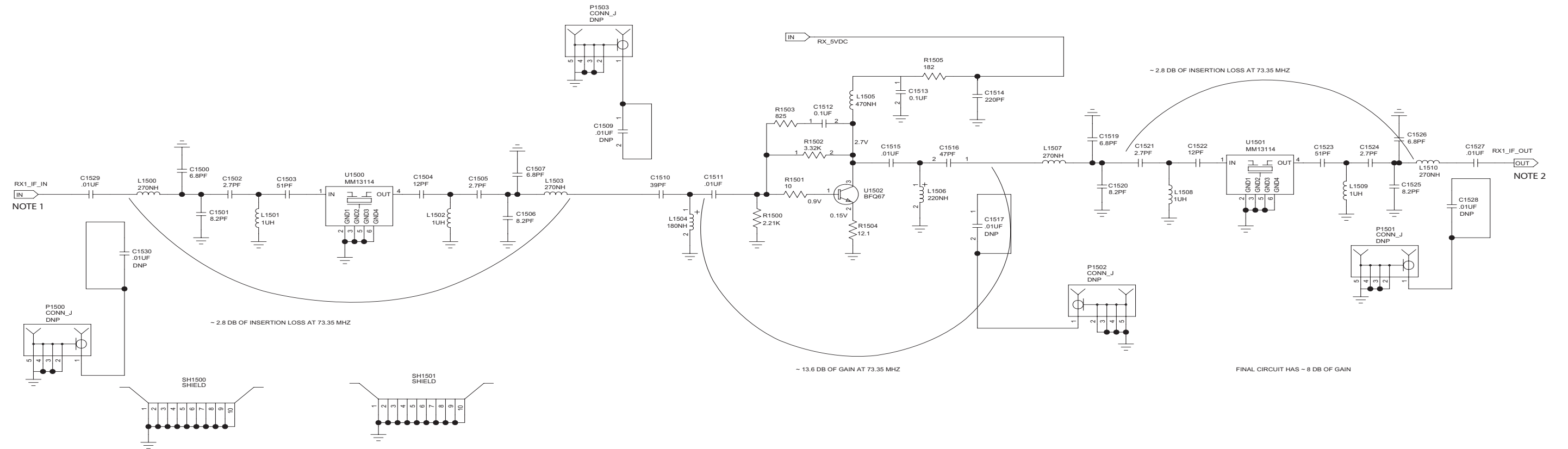
NOTE 1 : Trident Block Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Rx Low Pass Filter Schematic Diagram (Kit No. CRE4007)
 NOTE 3 : LNA Schematic Diagram (Kit No. CRE4007)

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

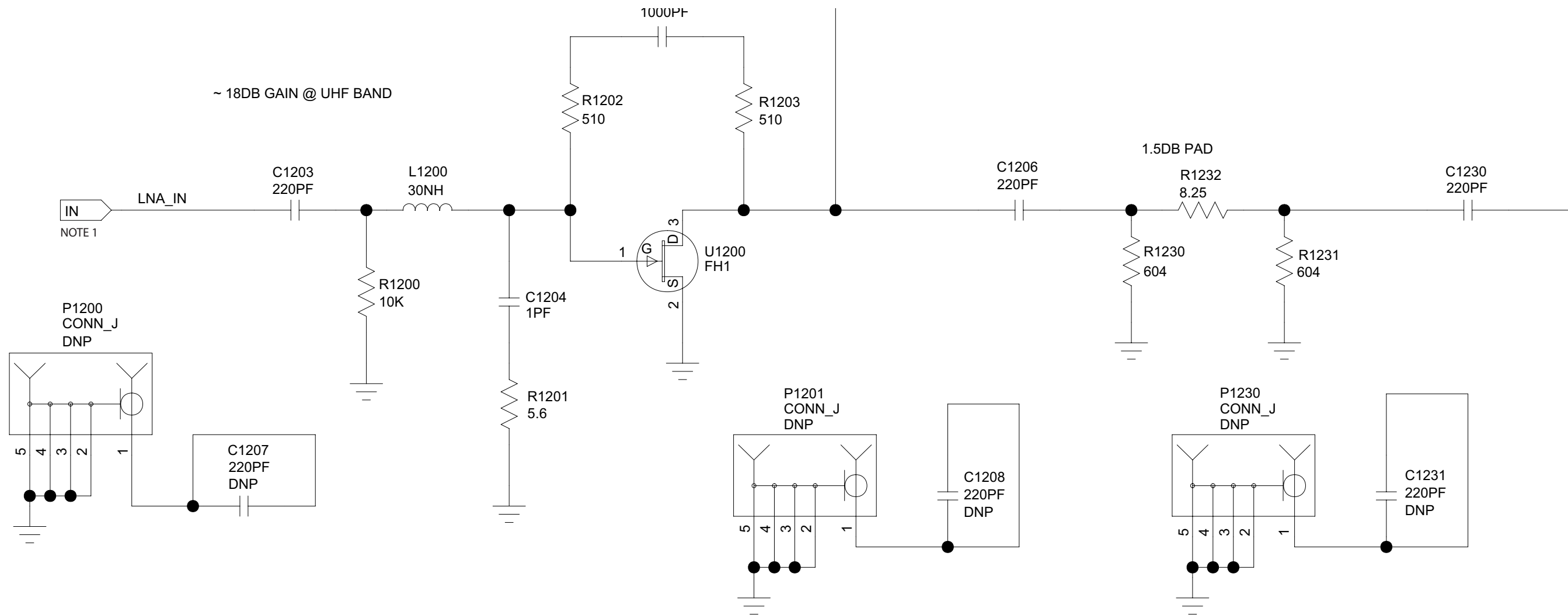


NOTE 1 : Rx Lo1 Injection Amp and Feedback Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : IF Strip Schematic Diagram (Kit No. CRE4007)
 NOTE 3 : Image Filter Schematic Diagram (Kit No. CRE4007)

Receiver – Mixer Schematic Diagram (Kit No. CRE4007)

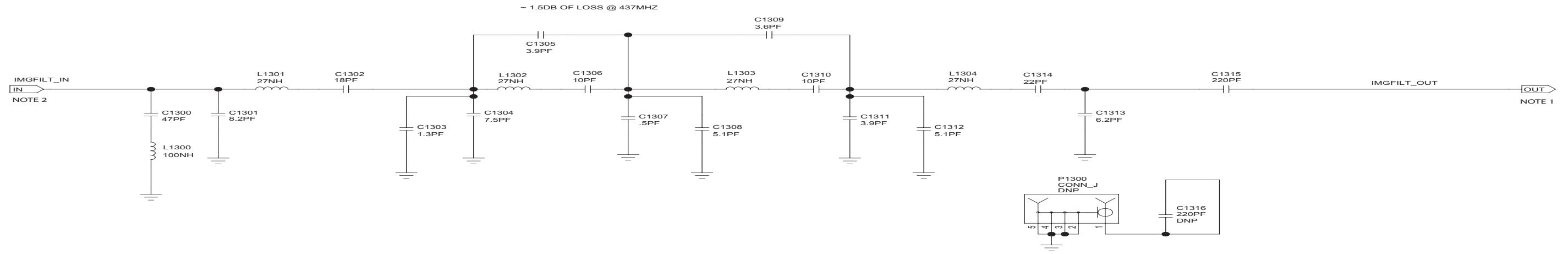


NOTE 1 : Mixer Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)

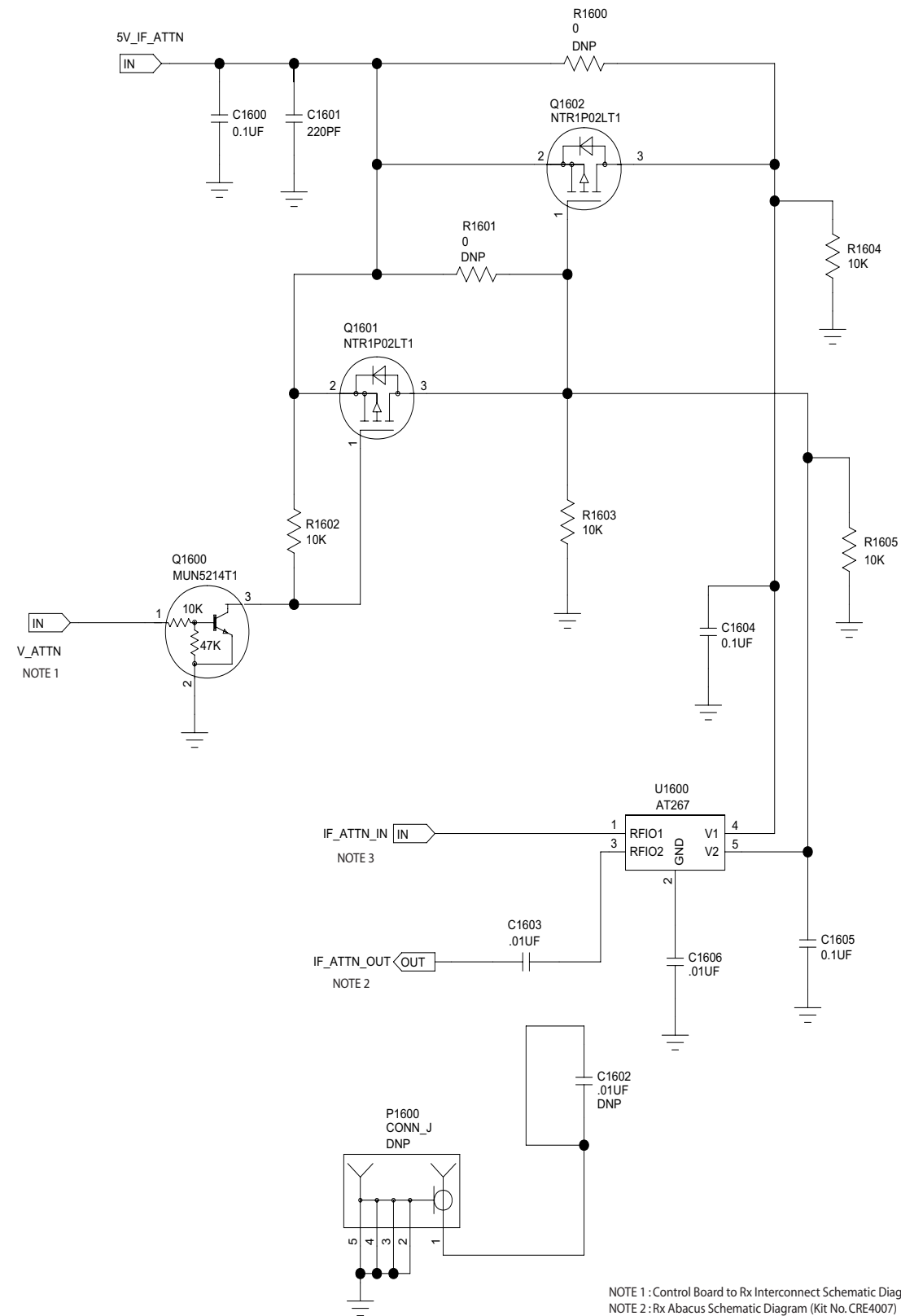


NOTE 1 : Rx FE Tunable Filter Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Image Filter Schematic Diagram (Kit No. CRE4007)

Receiver – LNA Schematic Diagram (Kit No. CRE4007)

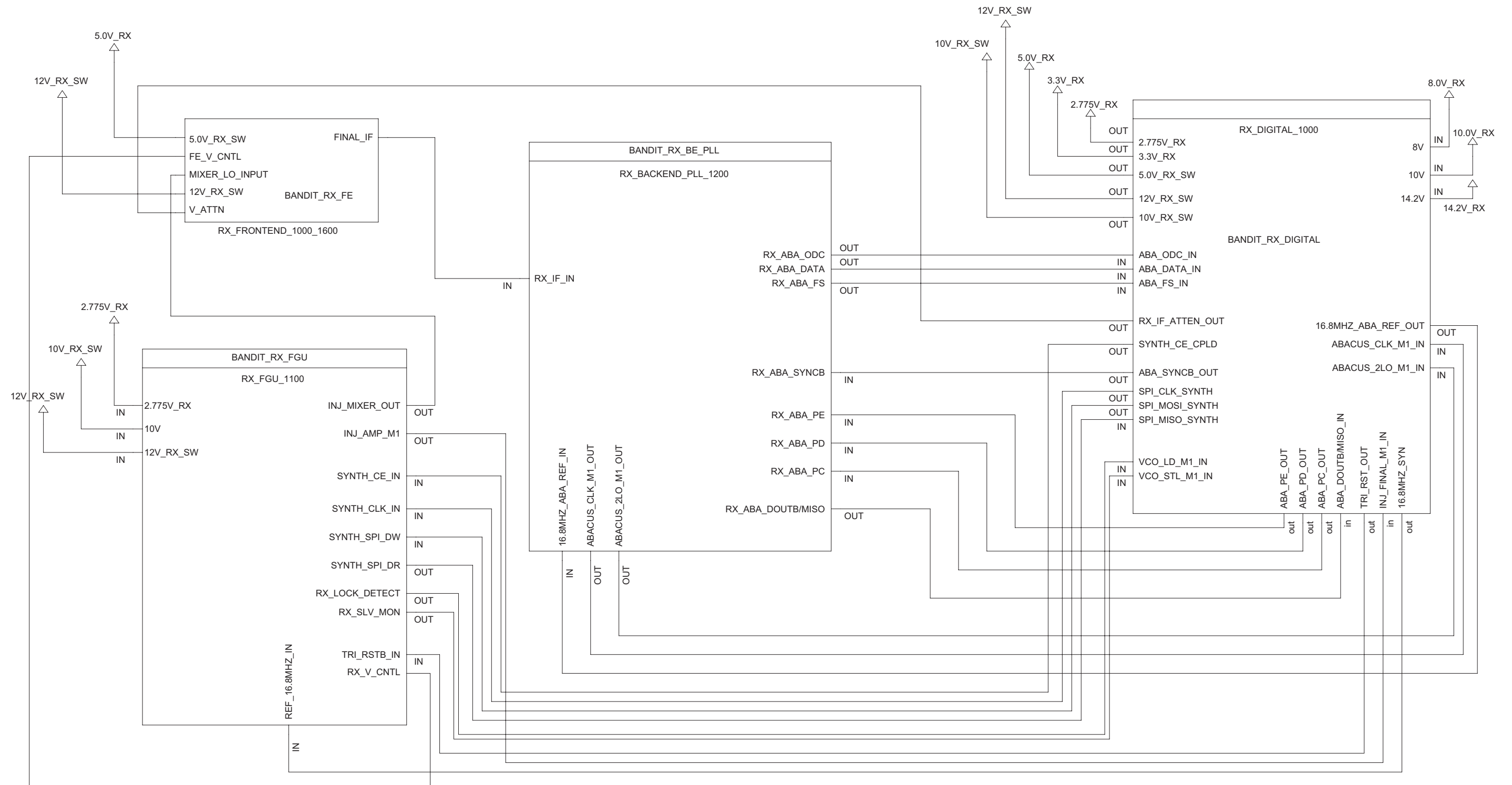


NOTE 1 : Mixer Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : LNA Schematic Diagram (Kit No. CRE4007)

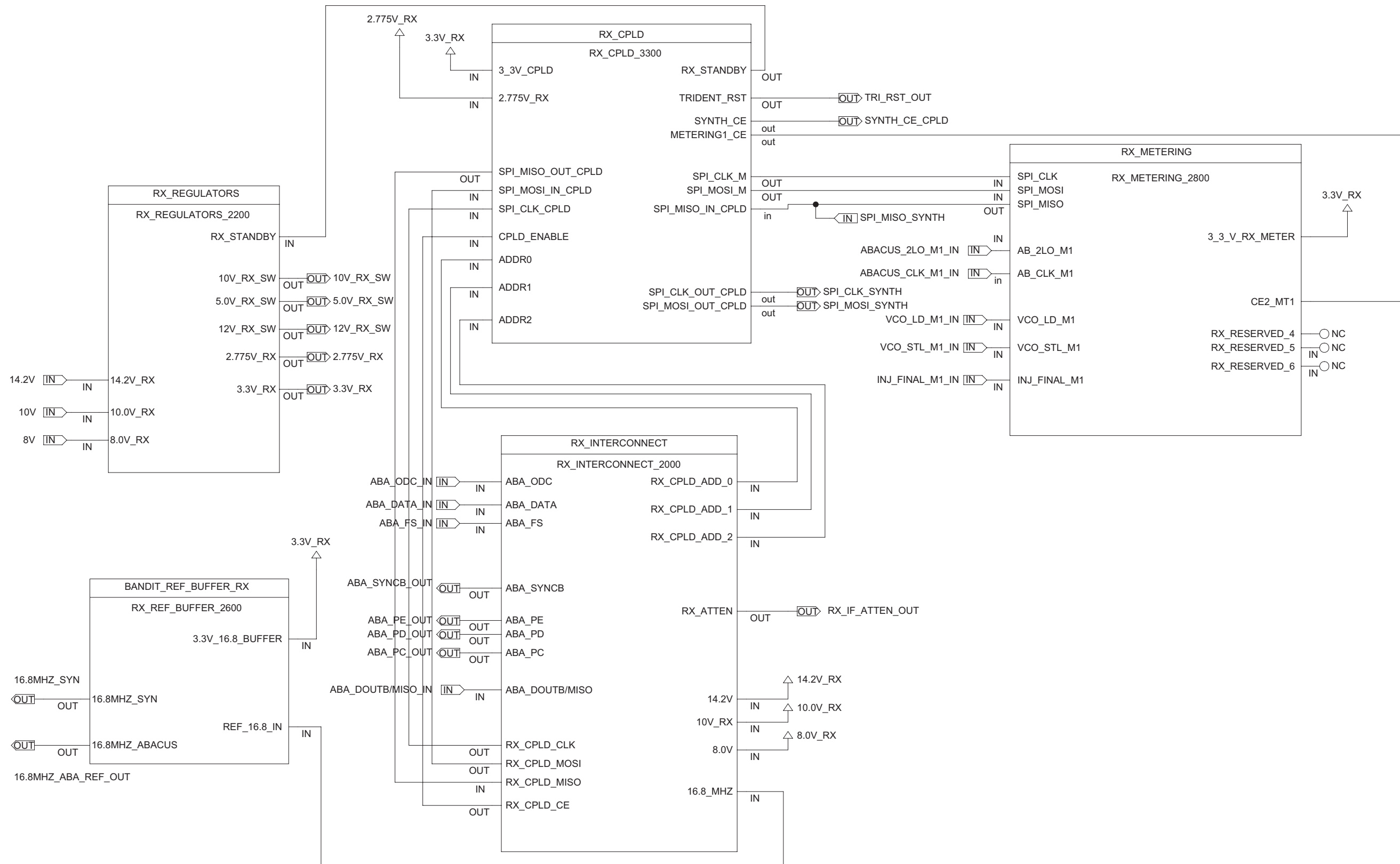


NOTE 1 : Control Board to Rx Interconnect Schematic Diagram (Kit No. CRE4007)
 NOTE 2 : Rx Abacus Schematic Diagram (Kit No. CRE4007)
 NOTE 3 : IF Strip Schematic Diagram (Kit No. CRE4007)

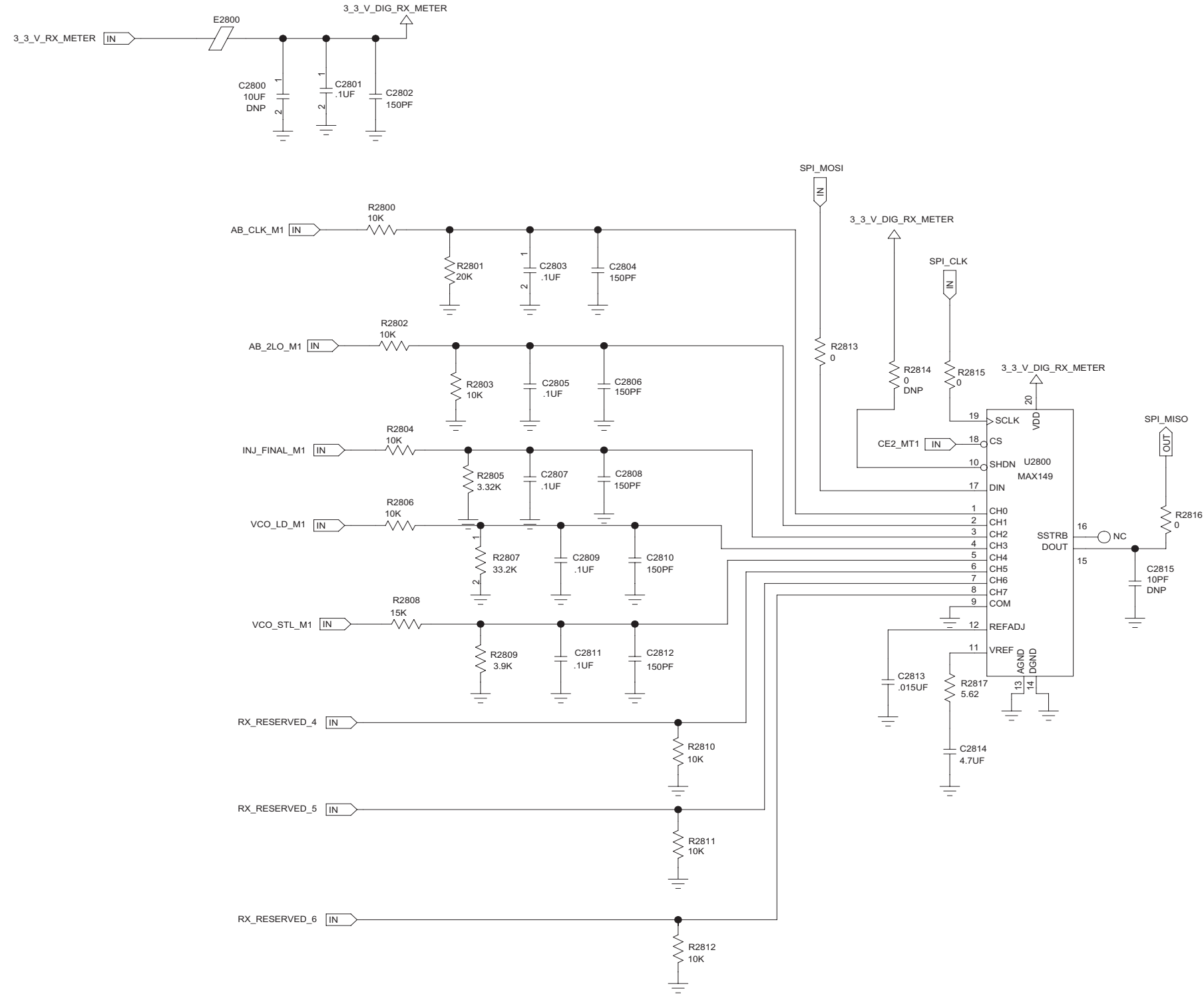
Receiver – Rx IF Attenuator Schematic Diagram (Kit No. CRE4007)



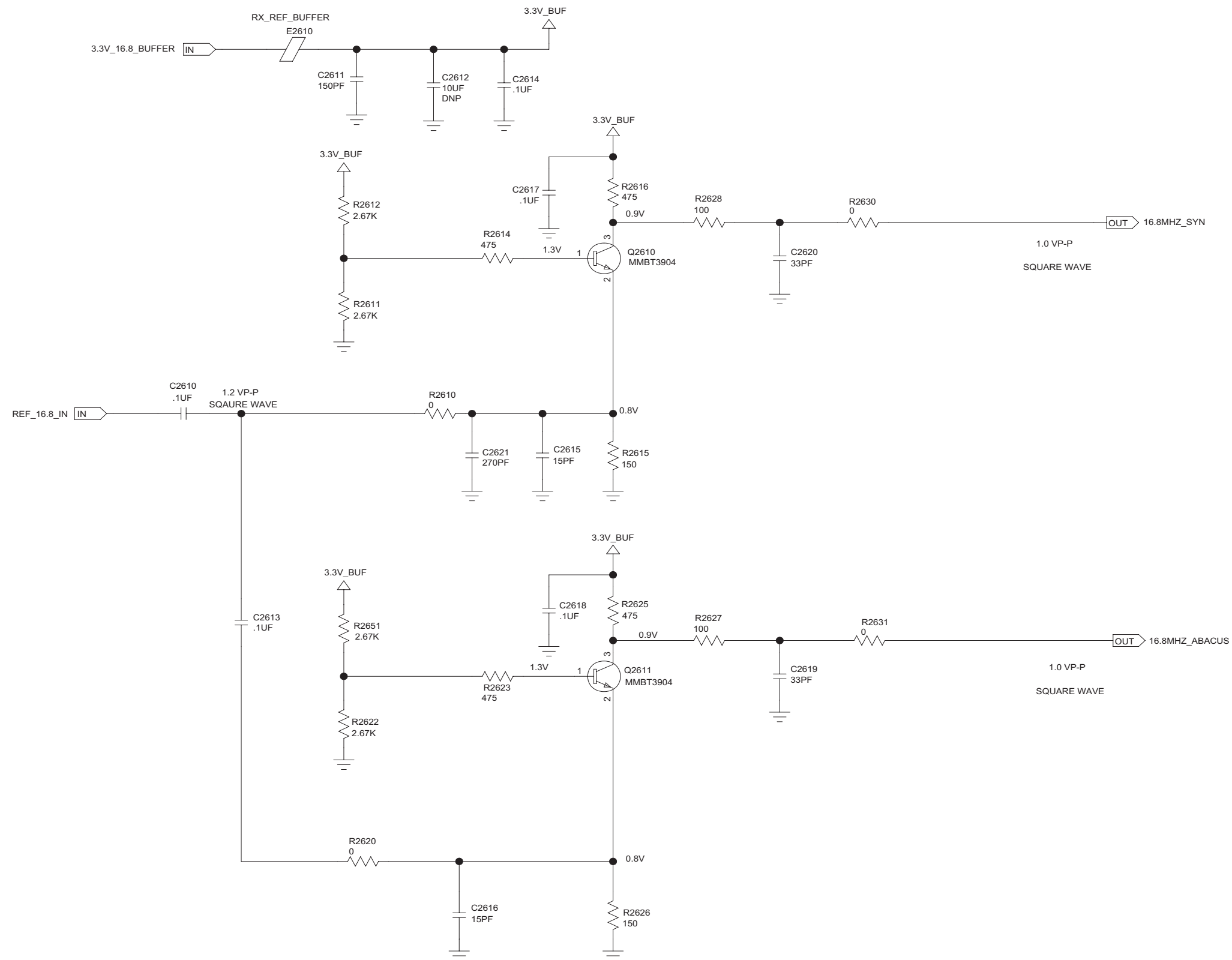
Receiver – Main Schematic Diagram (Kit No. CRE4008)



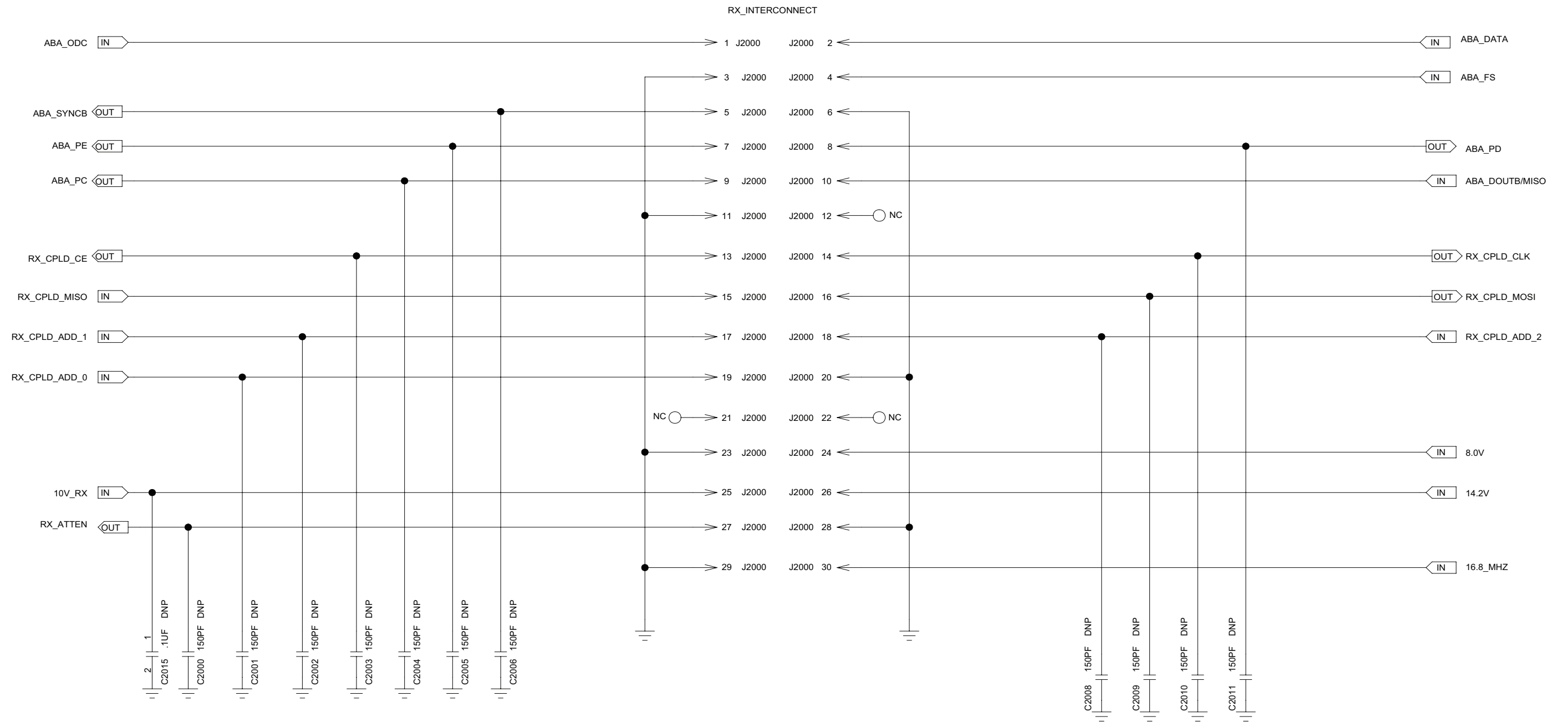
Receiver – General Rx Digital Section Schematic Diagram (Kit No. CRE4008)



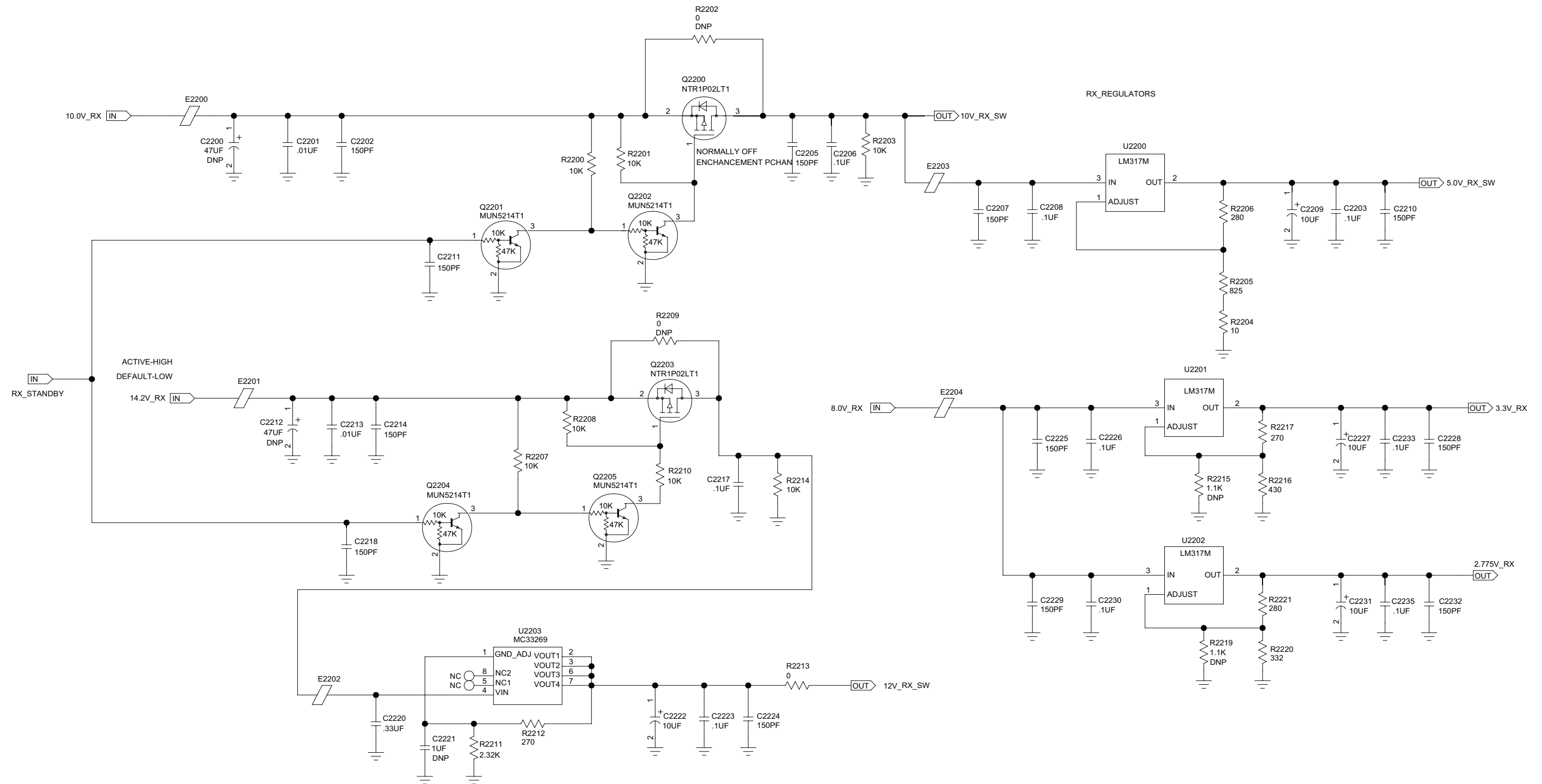
Receiver – Rx Metering Schematic Diagram (Kit No. CRE4008)



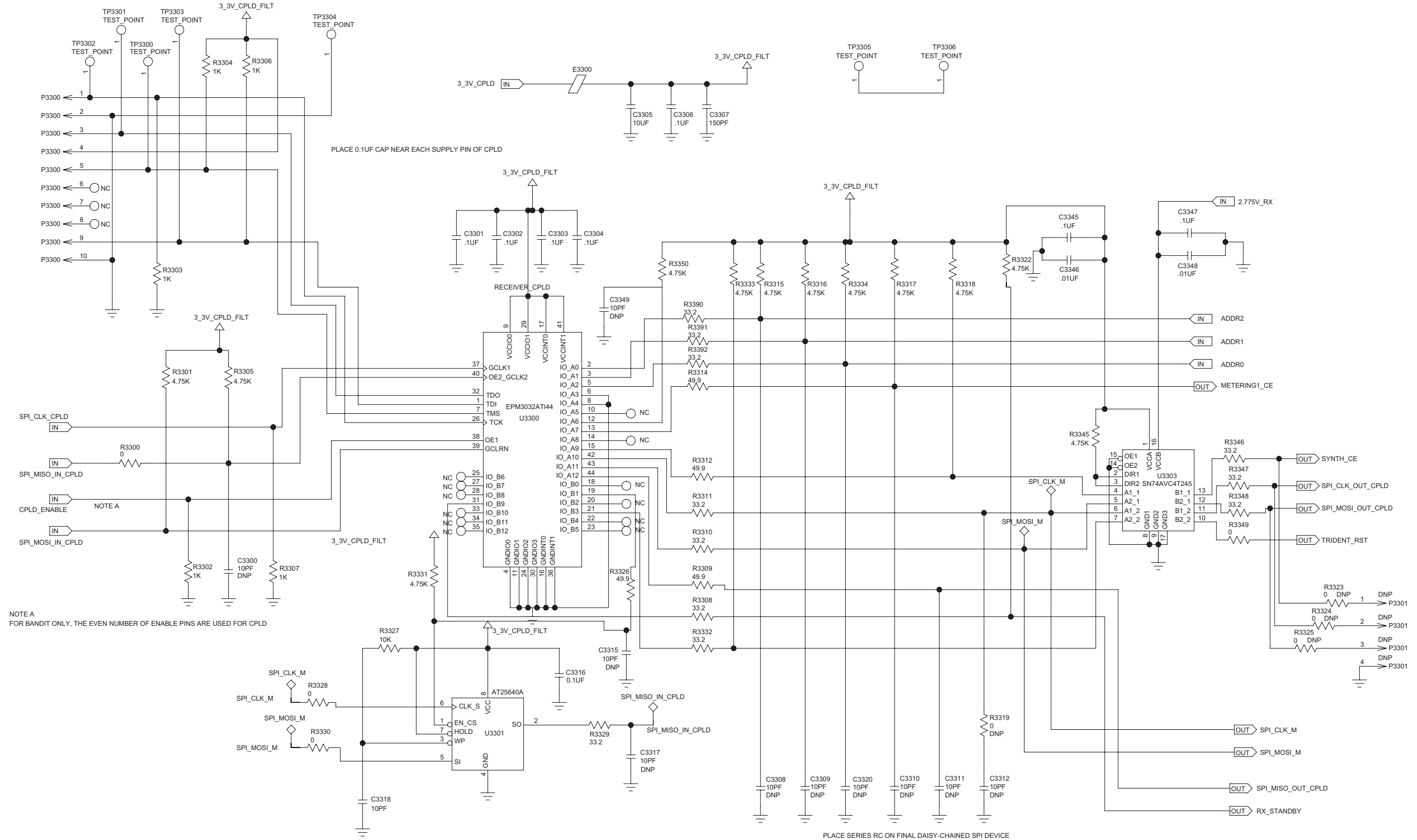
Receiver – Rx 16.8MHz Ref Buffer Schematic Diagram (Kit No. CRE4008)



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

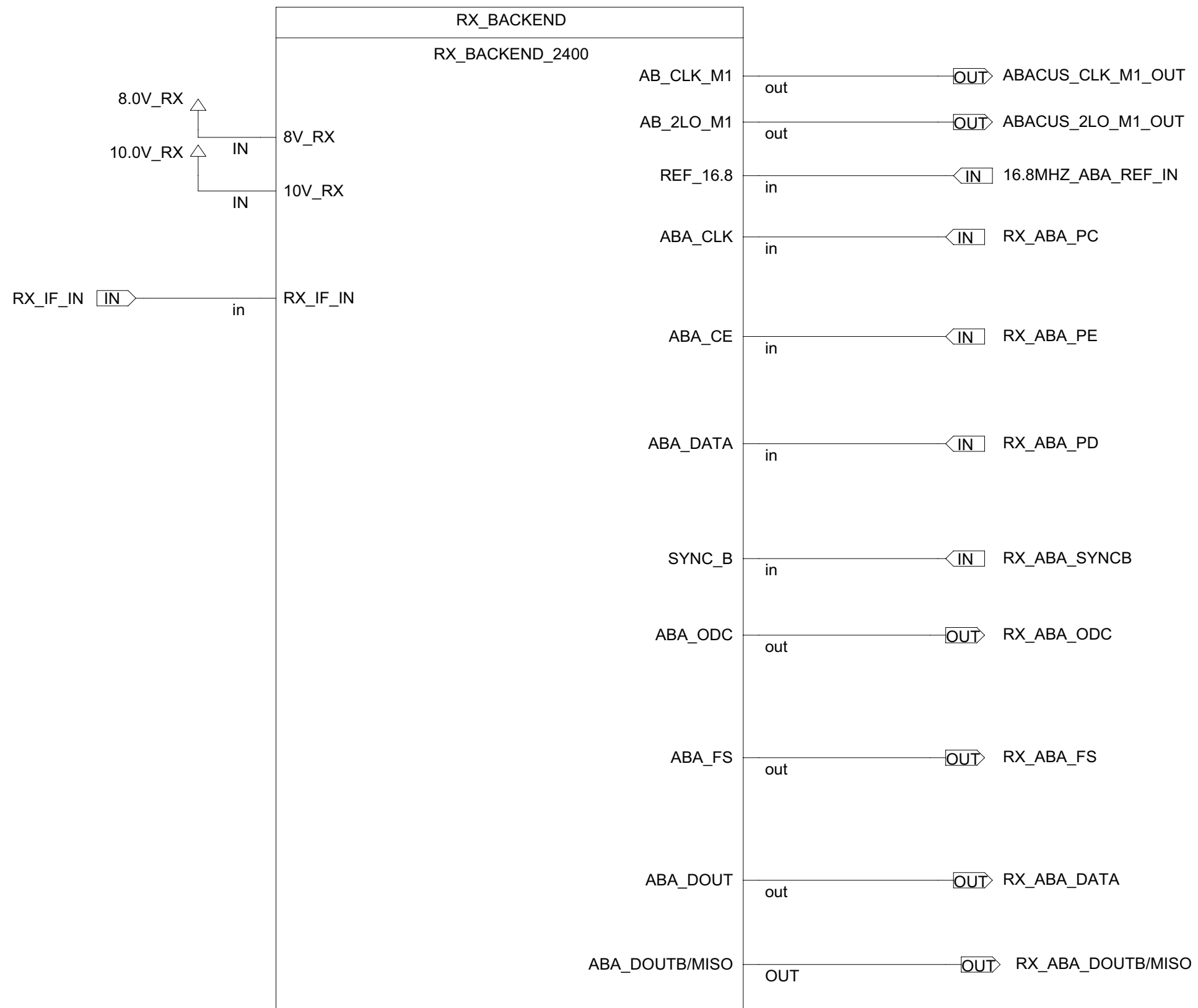


Receiver – Rx Voltage Regulators Schematic Diagram (Kit No. CRE4008)

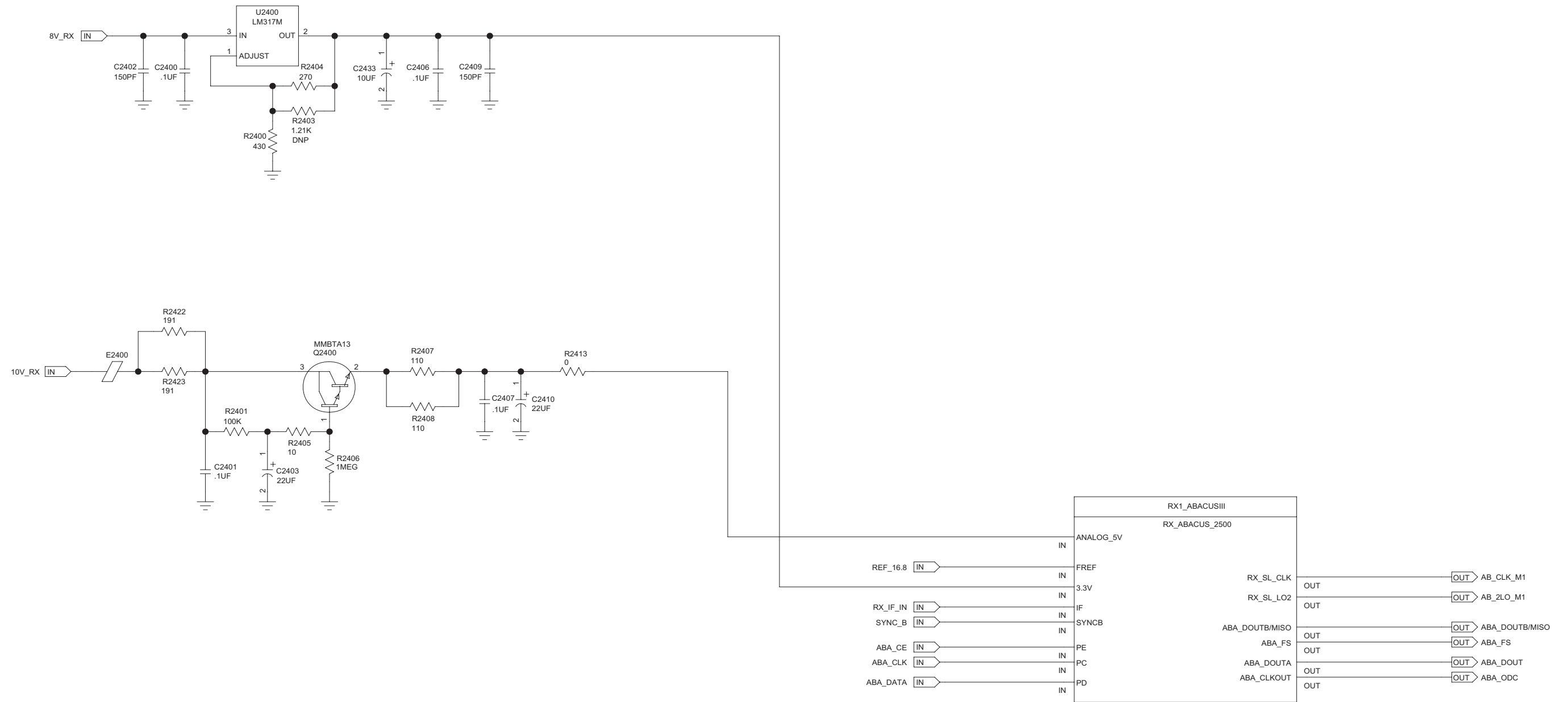


NOTE A
FOR BANDIT ONLY, THE EVEN NUMBER OF ENABLE PINS ARE USED FOR CPLD

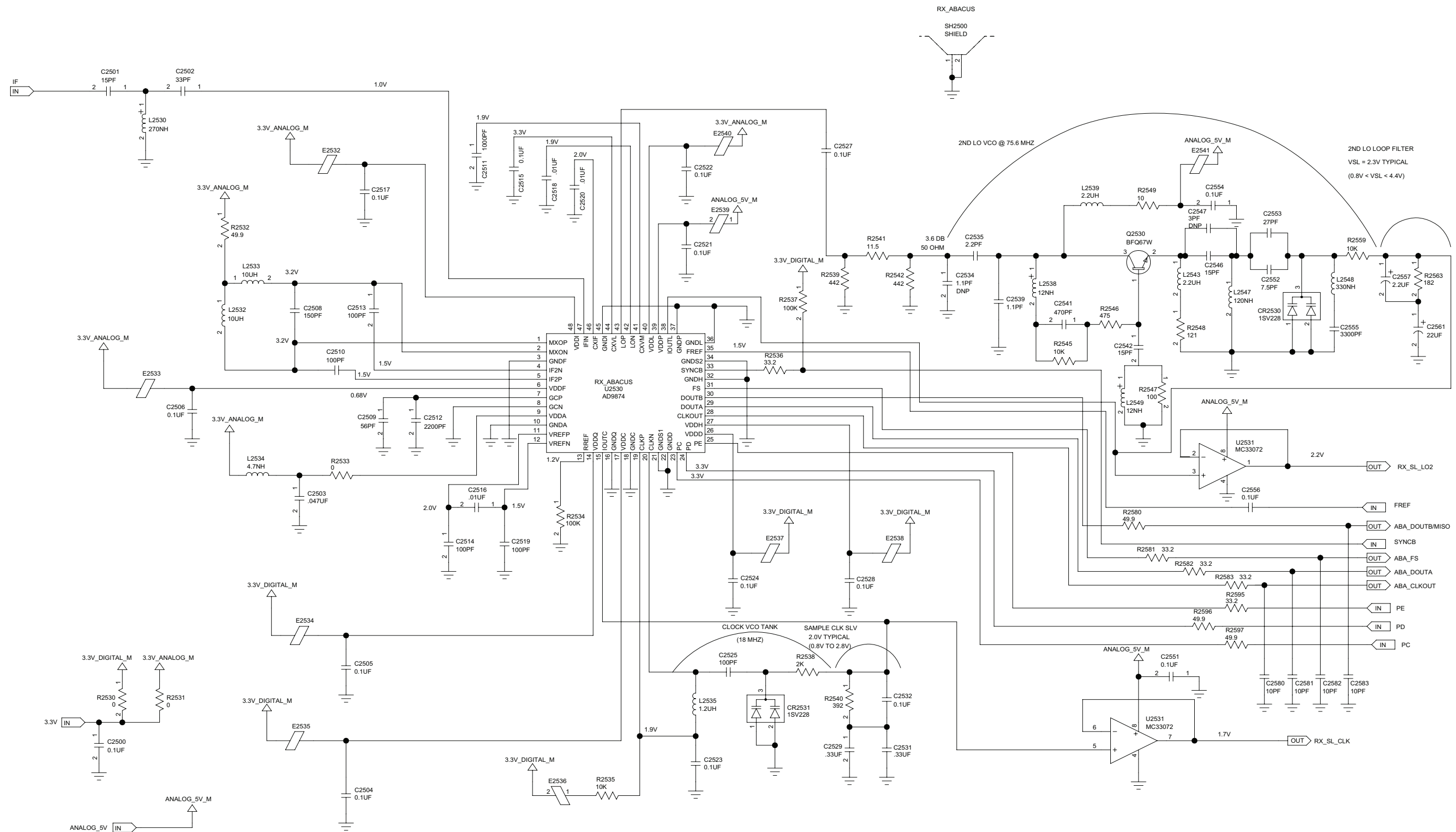
Receiver - Rx CPLD Schematic Diagram (Kit No. CRE4008)



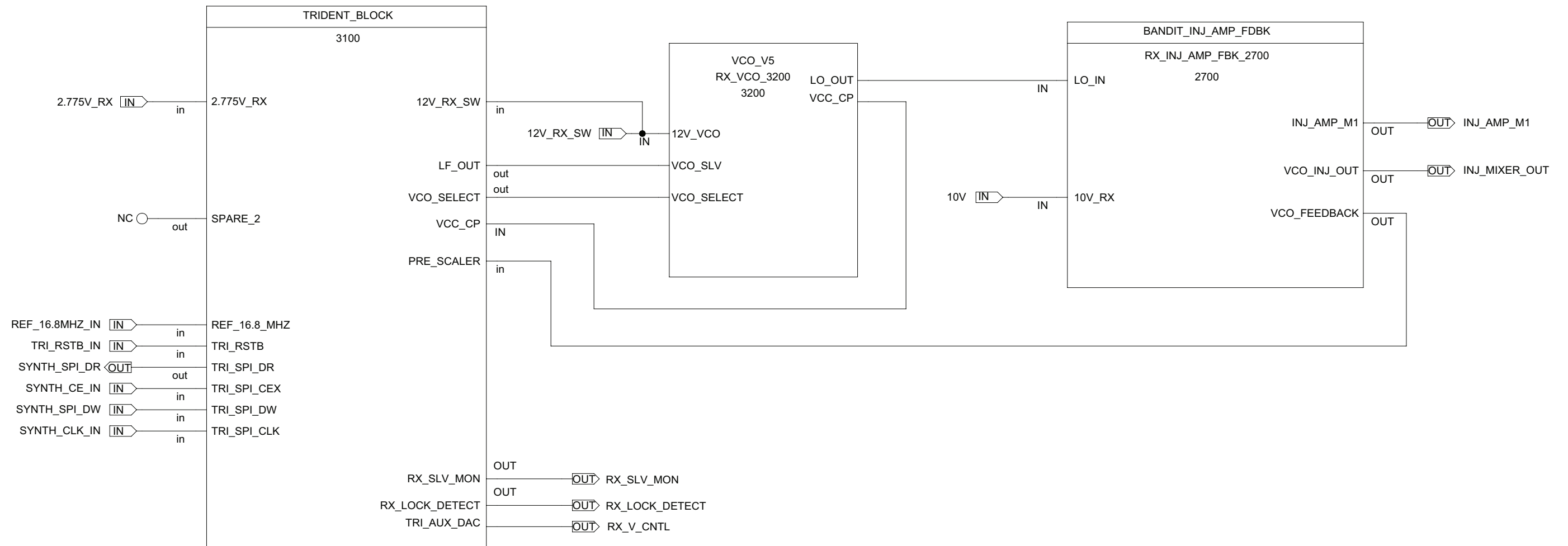
Receiver – Rx Backend PLL Schematic Diagram (Kit No. CRE4008)



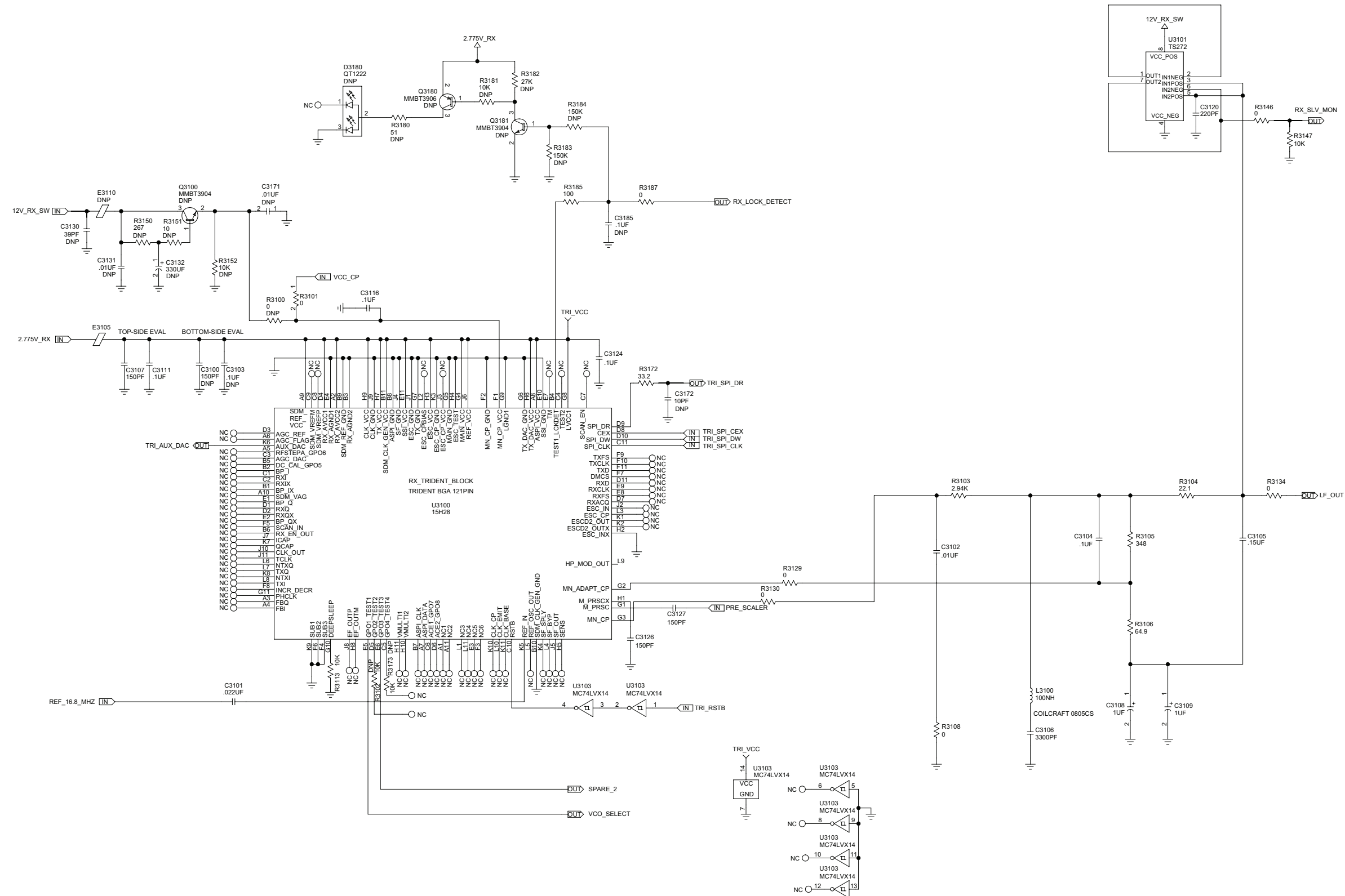
Receiver – Rx Backend Schematic Diagram (Kit No. CRE4008)



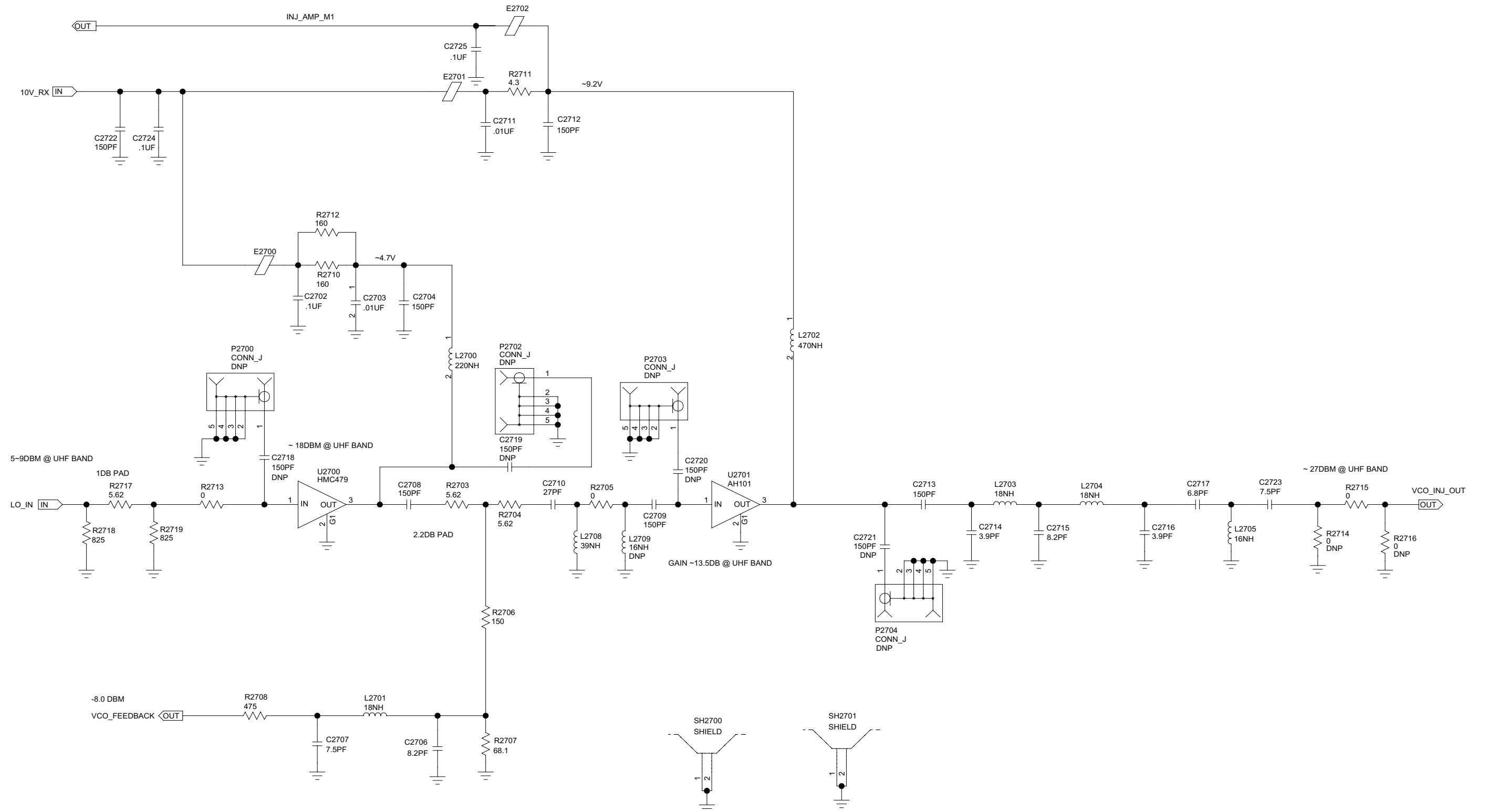
Receiver – Rx Abacus Schematic Diagram (Kit No. CRE4008)



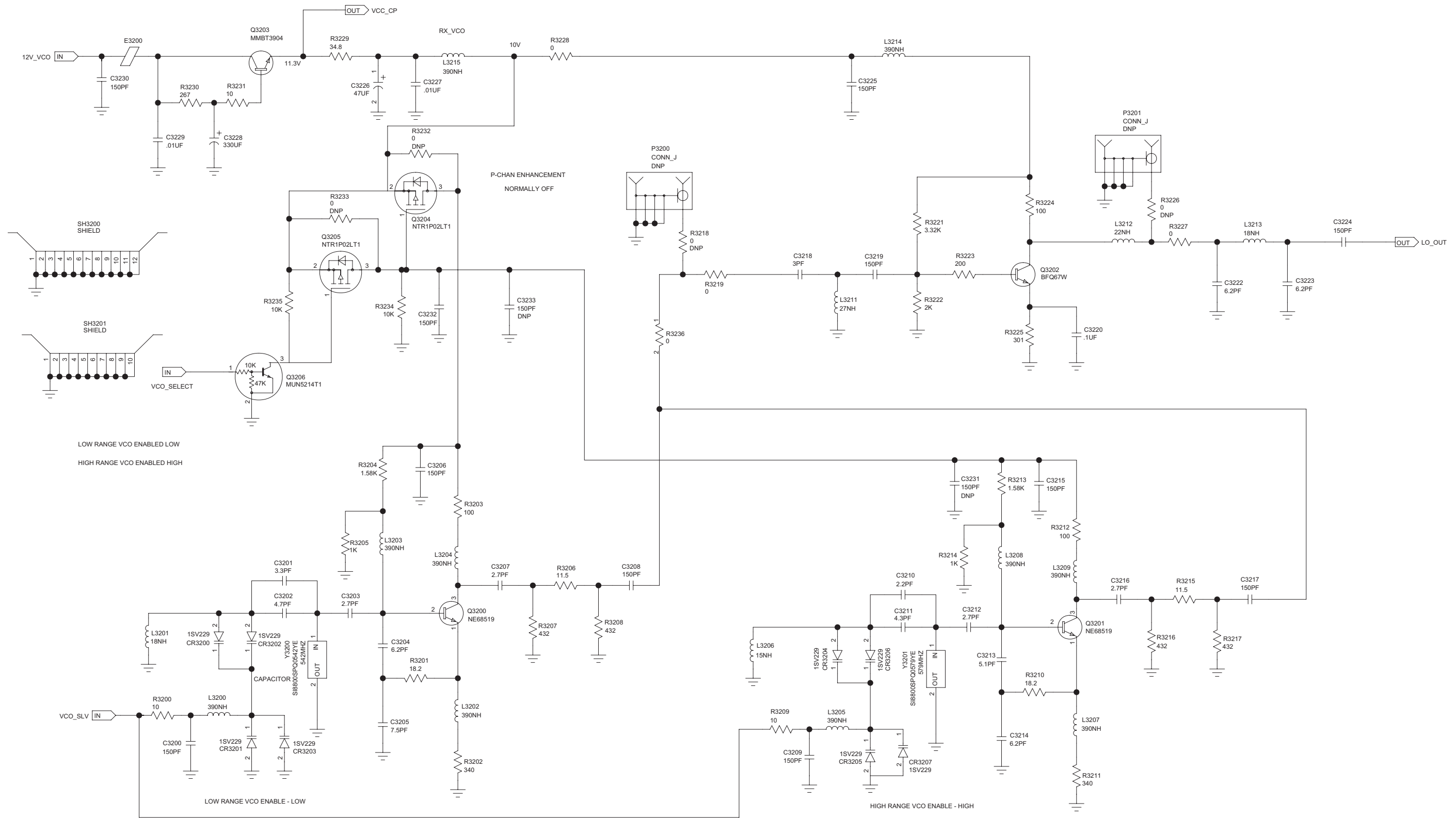
Receiver – Rx Frequency Generation Unit (FGU) Schematic Diagram (Kit No. CRE4008)



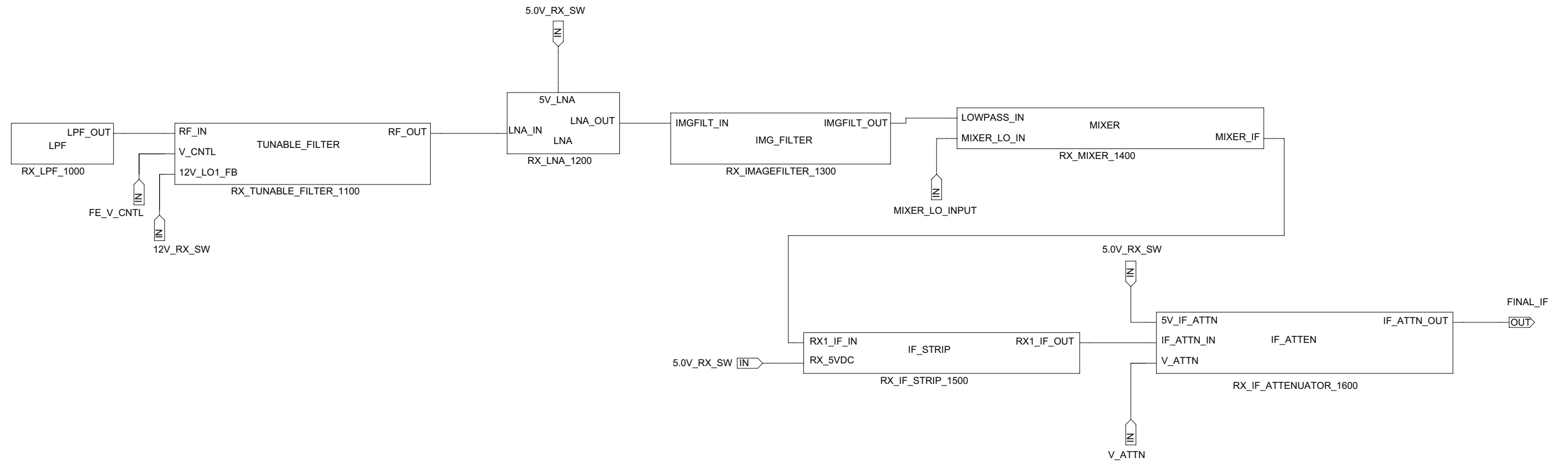
Receiver - Trident Block Schematic Diagram (Kit No. CRE4008)

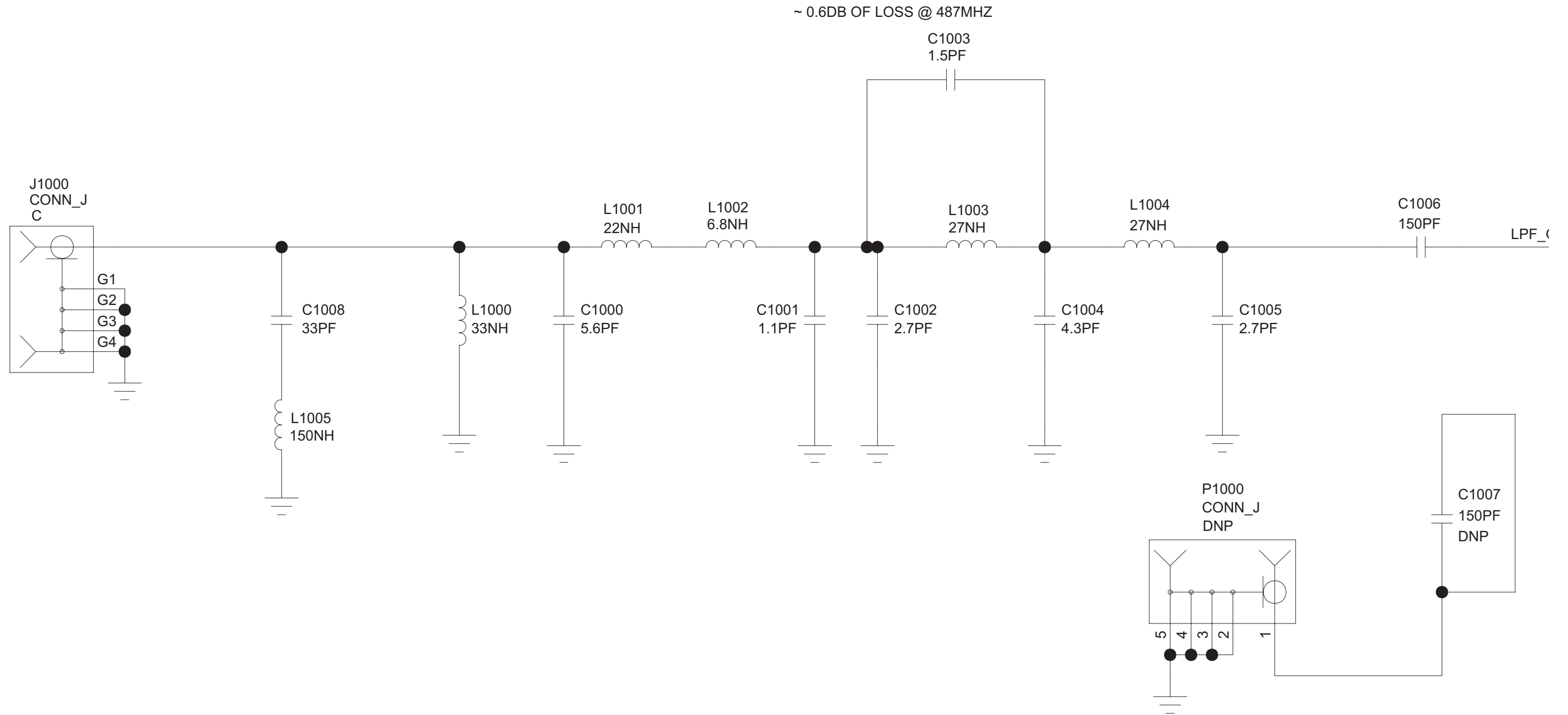


Receiver – Rx Lo1 Injection Amp and Feedback Schematic Diagram (Kit No. CRE4008)

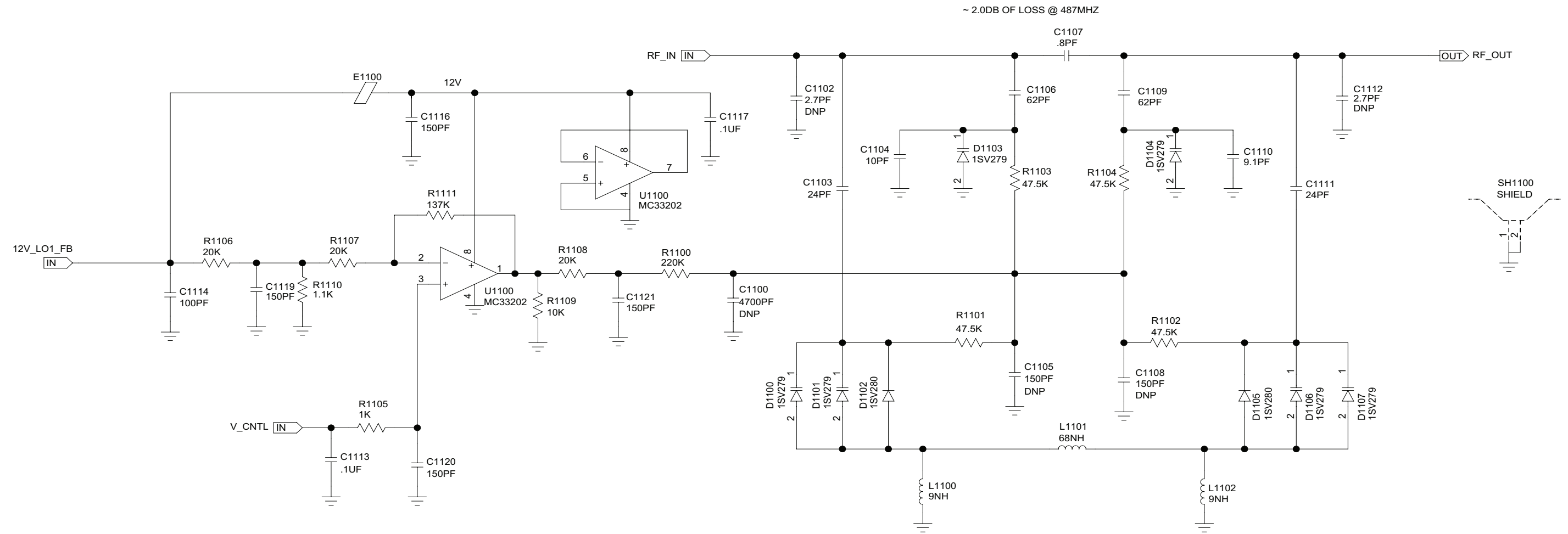


Receiver – UHF VCO Schematic Diagram (Kit No. CRE4008)

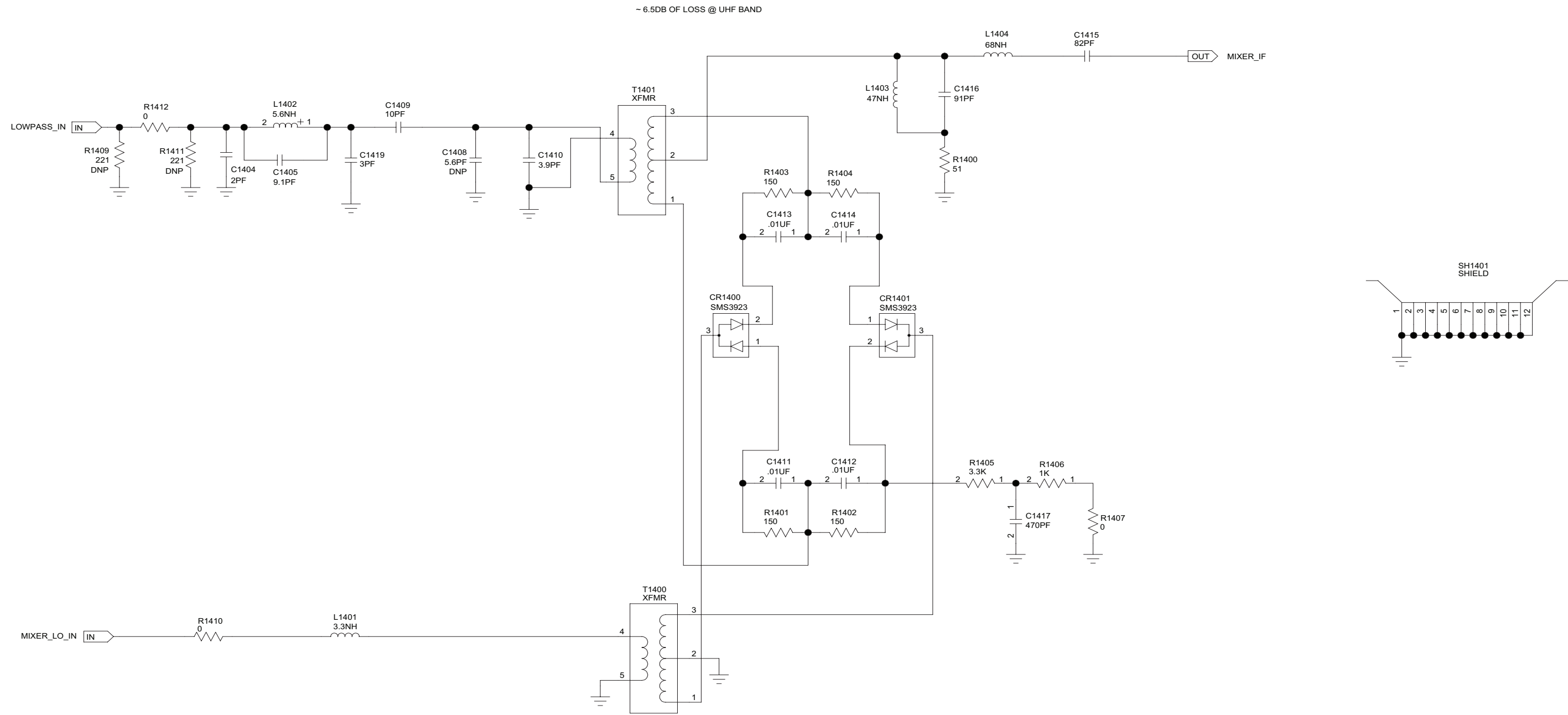




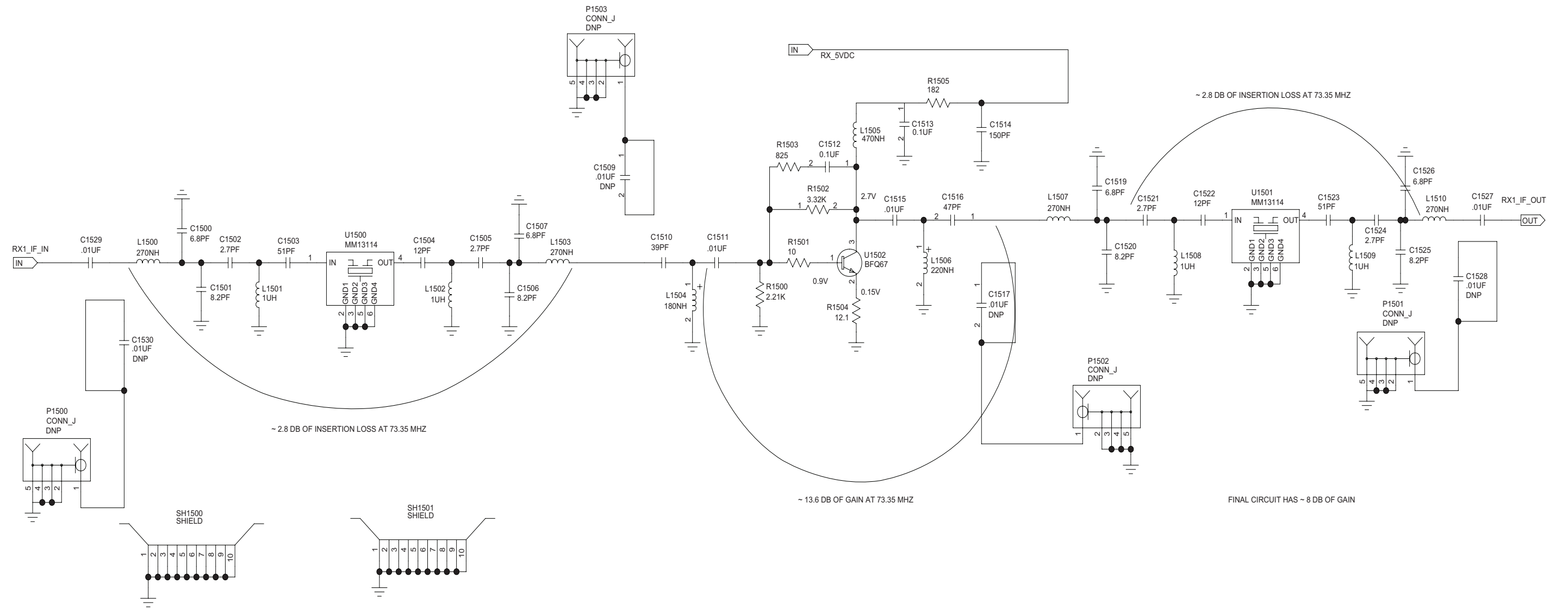
Receiver – Rx Low Pass Filter Schematic Diagram (Kit No. CRE4008)



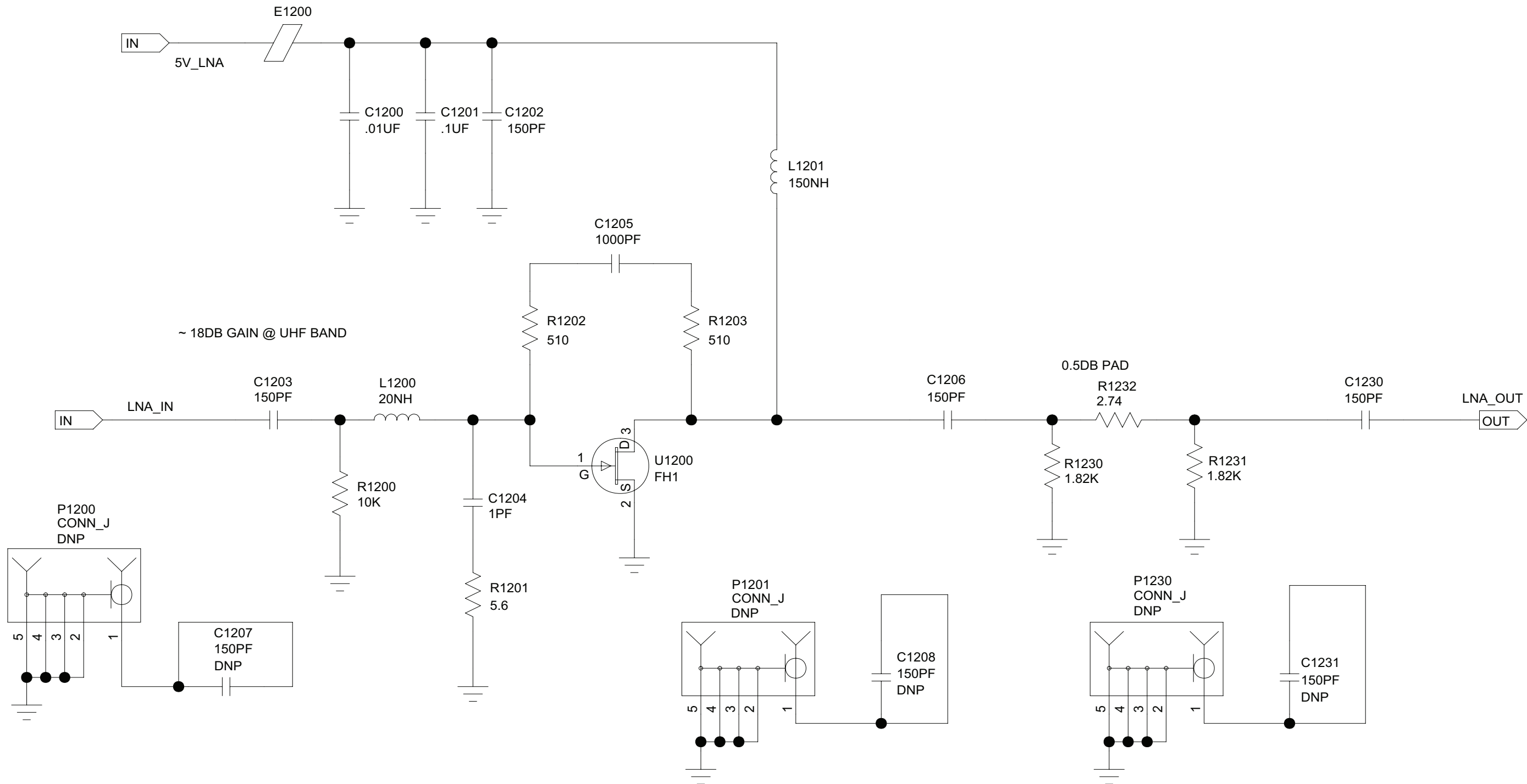
Receiver – Rx FE Tunable Filter Schematic Diagram (Kit No. CRE4008)



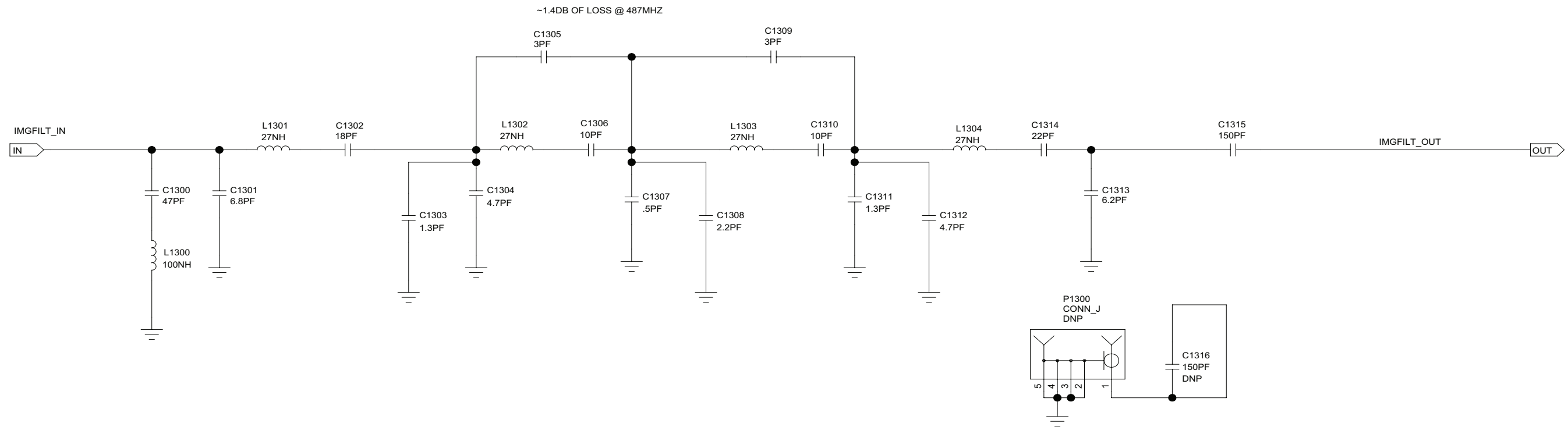
Receiver – Mixer Schematic Diagram (Kit No. CRE4008)



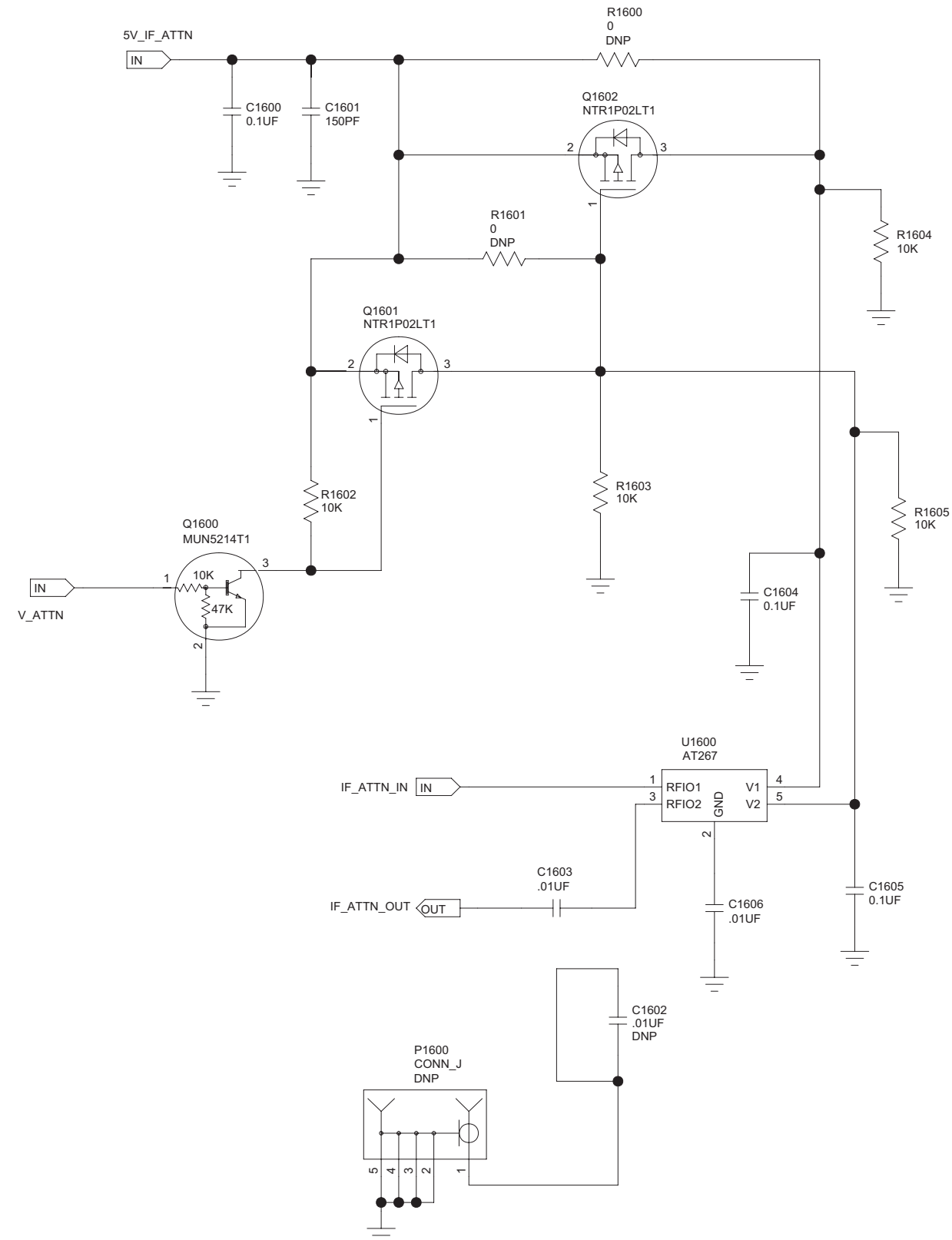
Receiver – IF Strip Schematic Diagram (Kit No. CRE4008)



Receiver – LNA Schematic Diagram (Kit No. CRE4008)

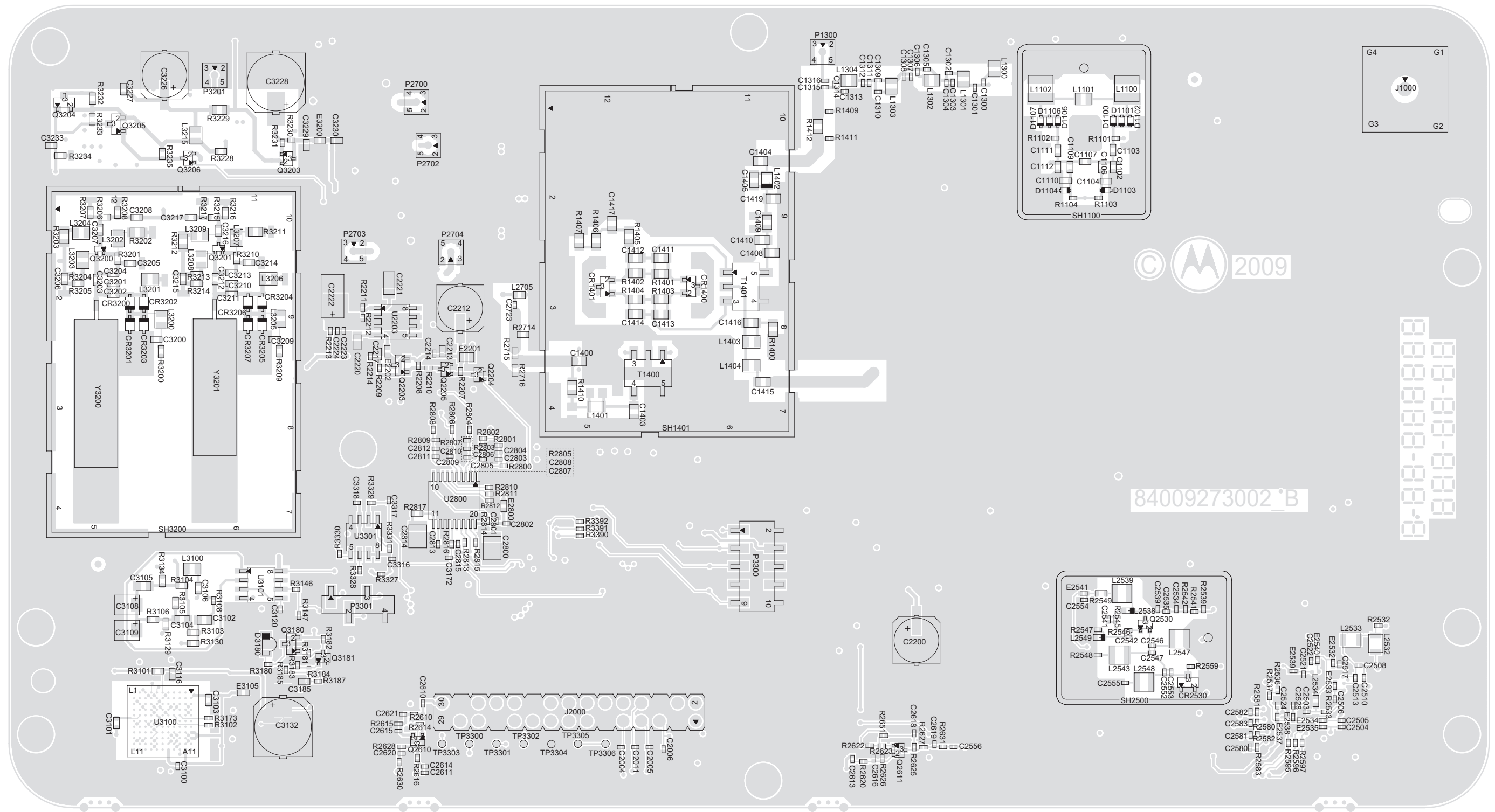


Receiver – Image Filter Schematic Diagram (Kit No. CRE4008)

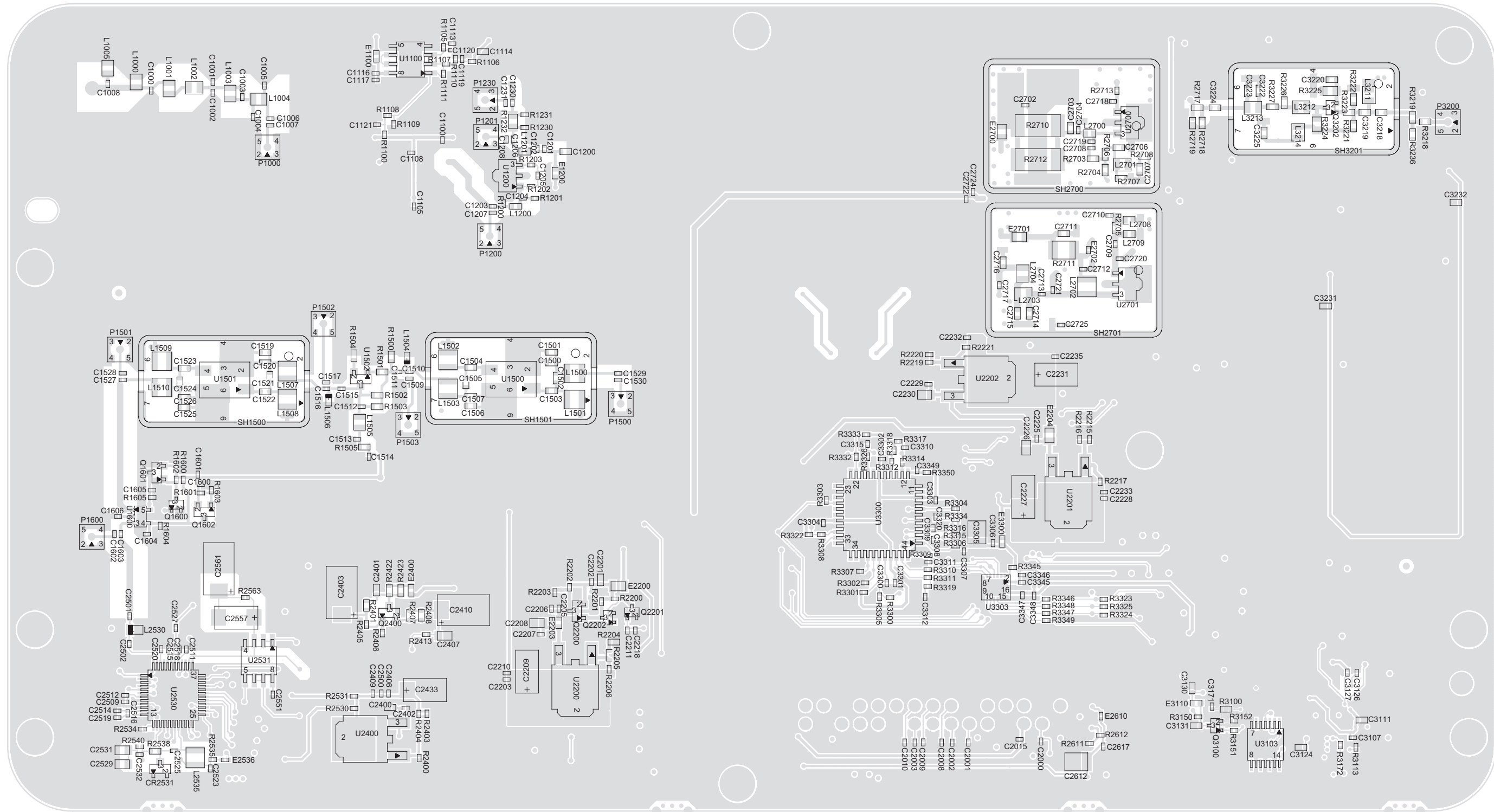


Receiver – Rx IF Attenuator Schematic Diagram (Kit No. CRE4008)

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
C2512	2113945A11	CAP,CHIP,2200PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CM
C2513	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2514	2113944A40	CAP,CHIP,100PF,+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
C2516	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2517	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2518	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2519	2113944A40	CAP,CHIP,100PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2520	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2521	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2522	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2523	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX

Circuit Ref	Motorola Part No	Description
C2524	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2525	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
C2528	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
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,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
C2539	2113944A01	CAP,CHIP,1.1PF,.25PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMA
C2541	2113945A05	CAP,CHIP,470PF,+10%,-10%,50V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
C2542	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C2546	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2551	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
C2553	2113944A30	CAP,CHIP,27PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2554	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
C2556	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX
C2557	2.31E+34	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,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2581	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2582	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C2583	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2610	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2611	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2613	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2614	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2615	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2616	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2617	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2618	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2619	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2620	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P

Circuit Ref	Motorola Part No	Description
C2621	2113944A43	CAP,CHIP,180PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2702	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2703	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA
C2704	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2706	2113951C33	CAP,FXD,9.1PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2707	2113951C33	CAP,FXD,9.1PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2708	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2709	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2710	2113944A28	CAP,CHIP,18PF,+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
C2712	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C2713	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2714	2113951C28	CAP,FXD,5.6PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2715	2113951C34	CAP,FXD,10PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C2716	2113951C26	CAP,FXD,4.7PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2717	2115153H23	CAP,CER CHIP,6.8PF,.1PF+/-,.1%,-.1%,50V-DC,0402,C0G,CAP, CERA
C2722	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
C2724	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2725	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2801	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2802	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C2803	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2804	2113944A44	CAP,CHIP,220PF,+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
C2806	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2807	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2808	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2809	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
C2811	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
C2813	2113946A01	CAP,CHIP,.015UF,+10%,-10%,16V-DC,0402,X5R,-55DEG CMIN,85DEG CMA
C2814	2113946J02	CAP,CHIP,4.7UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX

Circuit Ref	Motorola Part No	Description
C3101	2113945C04	CAP,CHIP,.022UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CM
C3102	2113945G78	CAP,FXD,.01UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C3104	2113945G92	CAP,FXD,.12UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C3105	2113945G92	CAP,FXD,.12UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C3106	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3107	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
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,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3116	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3120	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG 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

Circuit Ref	Motorola Part No	Description
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,.34Ω,CER,40 Q,1.3GHZ SRF,SM,0805,P
L1001	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1002	2414032F21	IDCTR,WW,6.8NH,5%,600 MA,.11Ω,CER,50 Q,3GHZ SRF,SM,PB-FREE
L1003	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1004	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1005	2414015B06	IDCTR,FXD,150NH,2%,40 0MA,.56Ω,CER,35 Q,780MHZ SRF,SM,0805
L1100	2471968L11	IDCTR,AW,13NH,2%,4A,.0 039Ω,AIR,5 TURNS,100 Q,3GHZ SRF,SM,1
L1101	524669-029-00	IDCTR,WW,91NH,2%,400 MA,.48Ω,CER,65 Q,1.33GHZ SRF,SM,0805,L
L1102	2471968L11	IDCTR,AW,13NH,2%,4A,.0 039Ω,AIR,5 TURNS,100 Q,3GHZ SRF,SM,1
L1200	24012009005	IDCTR,WW,30NH,2%,600 MA,CER,PACKAGED,CHI P IDCTR - 0603CT
L1201	2478057A28	IDCTR,WW,150NH,2%,390 MA,CER,PACKAGED,CHI P IDCTR - 0603HP
L1300	2414015B04	IDCTR,FXD,100NH,2%,40 0MA,.46Ω,CER,40 Q,1250MHZ SRF,SM,0805
L1301	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,CER,55 Q,2.5GHZ SRF,SM,0805,P

Circuit Ref	Motorola Part No	Description
L1302	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1303	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,CER,55 Q,2.5GHZ SRF,SM,0805,P
L1304	2414015B16	IDCTR,FXD,27NH,2%,500 MA,.25Ω,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,.31Ω,CER,40 Q,1.4GHZ SRF,SM,PB-FRE
L1404	2414032F32	IDCTR,FXD,68NH,5%,500 MA,.38Ω,CER,40 Q,1.2GHZ SRF,SM,0805,P
L1500	2414015A09	IDCTR,FXD,270NH,2%,69 0MA,.91Ω,CER,28 Q,550MHZ SRF,SM,1008
L1501	2489917V05	IDCTR,RF,1UH,1%,370MA ,1.75Ω,290MHZ SRF,SM,1008,PB FREE
L1502	2489917V05	IDCTR,RF,1UH,1%,370MA ,1.75Ω,290MHZ SRF,SM,1008,PB FREE
L1503	2414015A09	IDCTR,FXD,270NH,2%,69 0MA,.91Ω,CER,28 Q,550MHZ SRF,SM,1008
L1504	2414017N27	IDCTR,CHIP,180NH,5%,15 0MA,2.7Ω,CER,11 Q,500MHZ SRF,SM,0603
L1505	2485364Y21	IDCTR,470NH, 5%, 0805, SMT
L1506	2414017N28	IDCTR,CHIP,220NH,5%,15 0MA,3Ω,CER,11 Q,400MHZ SRF,SM,0603,P

Circuit Ref	Motorola Part No	Description
L1507	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Ω,CER,28 Q,550MHZ SRF,SM,1008
L1508	2489917V05	IDCTR,RF,1UH,1%,370MA,1.75Ω,290MHZ SRF,SM,1008,PB FREE
L1509	2489917V05	IDCTR,RF,1UH,1%,370MA,1.75Ω,290MHZ SRF,SM,1008,PB FREE
L1510	2414015A09	IDCTR,FXD,270NH,2%,690MA,.91Ω,CER,28 Q,550MHZ SRF,SM,1008
L2530	2414017K28	IDCTR,CHIP,270NH,5%,200MA,1.3Ω,CER,11 Q,270MHZ 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,200MHZ 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,140MHZ SRF,SM,PB-FR
L2543	2414032B72	IDCTR,WW,2.2UH,5%,380MA,2.8Ω,CER,20 Q,140MHZ SRF,SM,PB-FR
L2543	2414032B72	IDCTR,WW,2.2UH,5%,380MA,2.8Ω,CER,20 Q,140MHZ SRF,SM,PB-FR
L2547	2414015A05	IDCTR,FXD,120NH,2%,800MA,.63Ω,CER,25 Q,900MHZ SRF,SM,1008
L2548	2414015A10	IDCTR,FXD,330NH,2%,660MA,1.05Ω,CER,30 Q,500MHZ 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,425MHZ 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,950MHZ SRF,SM,PB-FR
L3200	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L3203	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L3204	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L3205	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L3208	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L3209	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L3215	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ 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 ,125MHZ,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,300MHZ,PB
Q2611	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300MHZ,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,300MHZ,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,S M,0402,200,PB-FREE

Circuit Ref	Motorola Part No	Description
R1101	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1102	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1103	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1104	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1105	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/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,SM,0402,200PPM/CEL,PB-FREE
R1200	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1201	0613952Q19	RES,MF,5.6Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1202	0613952Q66	RES,MF,510Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R1203	0613952Q66	RES,MF,510Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1230	0613952L76	RES,MF,604Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1231	0613952L76	RES,MF,604Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1232	0613958A89	RES,MF,8.25Ω,1%,.125W,SM,0805,400PPM/CEL,PB-FREE
R1400	0613958H42	RES,MF,51Ω,5%,.125W,SM,0805,200PPM/CEL,PB-FREE
R1401	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R1402	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R1403	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R1404	0613958C25	RES,MF,178Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R1405	0613958H85	RES,MF,3.3KΩ,5%,.125W,SM,0805,200PPM/CEL,PB-FREE
R1406	0613958H73	RES,MF,1KΩ,5%,.125W,SM,0805,200PPM/CEL,PB-FREE
R1407	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE
R1410	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE
R1412	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE
R1500	0613952D34	RES,MF,2.21KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R1501	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R1502	0613952D51	RES,MF,3.32KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R1503	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R1504	0613952B09	RES,MF,12.1Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R1505	0613952C26	RES,MF,182Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R1602	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1603	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1604	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1605	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2200	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2201	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2203	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2204	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2205	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R2206	0613952L44	RES,MF,280Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2207	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2208	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2210	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2211	0613952M36	RES,MF,2.32KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2212	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2213	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R2214	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
R2217	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2220	0613952L51	RES,MF,332Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2221	0613952L44	RES,MF,280Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2400	0613952Q64	RES,MF,430Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2401	0613952F01	RES,MF,100KΩ,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
R2405	0613952K01	RES,MF,10Ω,1%,.0625W,S M,0402,200PPM/CEL,PB- FREE
R2406	0613952P97	RES,MF,1MΩ,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2407	0613952C05	RES,MF,110Ω,1%,.1W,SM, 0603,100PPM/CEL,PB- FREE
R2408	0613952C05	RES,MF,110Ω,1%,.1W,SM, 0603,100PPM/CEL,PB- FREE
R2413	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2422	0613952C26	RES,MF,182Ω,1%,.1W,SM, 0603,100PPM/CEL,PB- FREE
R2423	0613952C28	RES,MF,191Ω,1%,.1W,SM, 0603,100PPM/CEL,PB- FREE
R2530	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2531	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2532	0613952K68	RES,MF,49.9Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2533	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2534	0613952P01	RES,MF,100KΩ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE
R2535	0613952N01	RES,MF,10KΩ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2536	0613952K51	RES,MF,33.2Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2537	0613952P01	RES,MF,100KΩ,1%,.0625 W,SM,0402,200PPM/ CEL,PB-FREE
R2538	0613952D30	RES,MF,2KΩ,1%,.1W,SM, 0603,100PPM/CEL,PB- FREE

Circuit Ref	Motorola Part No	Description
R2539	0613952L63	RES,MF,442Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2540	0613952L58	RES,MF,392Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2541	0613952K07	RES,MF,11.5Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2542	0613952L63	RES,MF,442Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2545	0613952N01	RES,MF,10KΩ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2546	0613952L66	RES,MF,475Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2547	0613952L01	RES,MF,100Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2548	0613952L09	RES,MF,121Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2549	0613952B01	RES,MF,10Ω,1%,.1W,SM,0 603,100PPM/CEL,PB- FREE
R2559	0613952N01	RES,MF,10KΩ,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2563	0613952L26	RES,MF,182Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2580	0613952K68	RES,MF,49.9Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2581	0613952K51	RES,MF,33.2Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2582	0613952K51	RES,MF,33.2Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R2583	0613952K51	RES,MF,33.2Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2595	0613952K51	RES,MF,33.2Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2596	0613952K68	RES,MF,49.9Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2597	0613952K68	RES,MF,49.9Ω,1%,.0625W ,SM,0402,200PPM/ CEL,PB-FREE
R2610	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2611	0613952M42	RES,MF,2.67KΩ,1%,0.062 5W,SM,0402,200PPM/ CEL,PB-FREE
R2612	0613952M42	RES,MF,2.67KΩ,1%,0.062 5W,SM,0402,200PPM/ CEL,PB-FREE
R2614	0613952L66	RES,MF,475Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2615	0613952L18	RES,MF,150Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2616	0613952L66	RES,MF,475Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2620	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2622	0613952M42	RES,MF,2.67KΩ,1%,0.062 5W,SM,0402,200PPM/ CEL,PB-FREE
R2623	0613952L66	RES,MF,475Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2625	0613952L66	RES,MF,475Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2626	0613952L18	RES,MF,150Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE

Circuit Ref	Motorola Part No	Description
R2627	0613952L01	RES,MF,100Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2628	0613952L01	RES,MF,100Ω,1%,.0625W, SM,0402,200PPM/ CEL,PB-FREE
R2630	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2631	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2651	0613952M42	RES,MF,2.67KΩ,1%,0.062 5W,SM,0402,200PPM/ CEL,PB-FREE
R2703	0613952A73	RES,MF,5.62Ω,1%,.1W,SM ,0603,400PPM/CEL,PB- FREE
R2704	0613952A73	RES,MF,5.62Ω,1%,.1W,SM ,0603,400PPM/CEL,PB- FREE
R2705	0613952G67	RES,MF,0,1,.1,SM,0603,P B-FREE
R2706	0613952C18	RES,MF,150Ω,1%,.1W,SM, 0603,100PPM/CEL,PB- FREE
R2707	0613952B81	RES,MF,68.1Ω,1%,.1W,SM ,0603,100PPM/CEL,PB- FREE
R2708	0613952C42	RES,MF,267Ω,1%,.1W,SM, 0603,100PPM/CEL,PB- FREE
R2710	0613959Y54	RES,MF,160Ω,5%,1W,SM, 2512,100PPM/CEL,PB- FREE
R2711	0613959G16	RES,MF,4.3Ω,5%,.33W,SM ,1210,400PPM/CEL,PB- FREE
R2712	0613959Y54	RES,MF,160Ω,5%,1W,SM, 2512,100PPM/CEL,PB- FREE
R2713	0613952R66	RES,MF,0Ω,5%,.0625W,S M,0402,PB-FREE
R2715	0613952G67	RES,MF,0,1,.1,SM,0603,P B-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
R3229	0613958B53	RES,MF,34.8Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R3230	0613952L42	RES,MF,267Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3231	0613952K01	RES,MF,10Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3234	6139520	RES,MF,10KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3235	6139520	RES,MF,10KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R3236	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R3300	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R3301	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3302	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3303	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3304	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3305	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3306	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3307	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/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,SM,0402,200PPM/CEL,PB-FREE
R3316	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3317	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3318	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3322	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,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,0402,PB-FREE
R3329	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3330	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE

Circuit Ref	Motorola Part No	Description
R3331	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3332	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3333	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3334	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R3345	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,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,0402,PB-FREE
R3350	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,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

Circuit Ref	Motorola Part No	Description
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
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,73.35MHZ MAX,SM,73.35MHZ XTAL FILTER, 3-POLE
U1501	91012005001	FLTR,73.35MHZ MAX,SM,73.35MHZ 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,0-2000MHZFREQ,50Ω,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,493MHZ
Y3201	9171848H10	RESON,CER,SMD,12.14N H,527MHZ

6.5 Receiver Parts List (UHF) – CRE4008

Circuit Ref	Motorola Part No	Description
C1000	2115153H21	CAP,FXD,5.6PF,.1PF+/-,50V-DC,0402,C0G,CAP, CERAMIC, COG
C1001	2115153H04	CAP,CERAMIC CHIP,1.1PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G,CAP,
C1002	2115153H13	CAP,FXD,2.7PF,.1PF+/-,+3.7%,-3.7%,50V-DC,0402,C0G,CAP, CERAMIC
C1003	2115153H07	CAP,FXD,1.5PF,.1PF+/-,+6.67%,-6.67%,50V-DC,0402,C0G
C1004	2115153H18	CAP,CER CHIP,4.3PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G,CAP, CERA
C1005	2115153H13	CAP,FXD,2.7PF,.1PF+/-,+3.7%,-3.7%,50V-DC,0402,C0G,CAP, CERAMIC
C1006	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1008	2115153H45	CAP,CERAMIC CHIP,33PF,+1%,-1%,50V-DC,0402,C0G
C1103	2113951C41	CAP,FXD,24PF,+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	2113951C51	CAP,FXD,62PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1107	2113951C08	CAP,FXD,.8PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX
C1109	2113951C51	CAP,FXD,62PF,+1%,-1%,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX,P
C1110	2113951C33	CAP,FXD,9.1PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C1111	2113951C41	CAP,FXD,24PF,+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	2113944A42	CAP,CHIP,150PF,+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	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1120	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1121	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
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	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1203	2113944A42	CAP,CHIP,150PF,+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	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1230	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C1300	2115153H49	CAP,FXD,47PF,+1%,-1%,50V-DC,0402,C0G
C1301	2115153H23	CAP,CER CHIP,6.8PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G,CAP, CERA
C1302	2115153H39	CAP,FXD,18PF,50V-DC,0402,C0G
C1303	2115153H06	CAP,FXD,1.3PF,.1PF+/-,50V-DC,0402,C0G
C1304	2115153H19	CAP,FXD,4.7PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G
C1305	2115153H14	CAP,CERAMIC CHIP,3PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G,CAP, CE
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	2115153H11	CAP,FXD,2.2PF,.1PF+/-,+1%,-1%,50V-DC,0402,C0G
C1309	2115153H14	CAP,CERAMIC CHIP,3PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G,CAP, CE
C1310	2115153H27	CAP,FXD,10PF,.1PF+/-,+1%,-1%,50V-DC,0402,C0G,CAP, CERAMIC, COG
C1311	2115153H06	CAP,FXD,1.3PF,.1PF+/-,50V-DC,0402,C0G
C1312	2115153H19	CAP,FXD,4.7PF,.1PF+/-,+1%,-.1%,50V-DC,0402,C0G
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	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C1404	2113901A11	CAP,CHIP,2PF,.25PF+/-,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1405	2113901A28	CAP,CHIP,9.1PF,.5PF+/-,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1409	2113901A29	CAP,CHIP,10PF,.5PF+/-,200V-DC,0805,-55DEG CMIN,125DEG CMAX
C1410	2113901A19	CAP,CHIP,3.9PF,.25PF+/-,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
C1419	2113901A16	CAP,CHIP,3PF,.25PF+/-,200V-DC,0805,-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	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description	Circuit Ref	Motorola Part No	Description
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
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	C2233	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG 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
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
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	C2582	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C2583	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2610	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2611	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2613	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2614	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2615	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2616	2113944A27	CAP,CHIP,15PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2617	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2618	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2619	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2620	2113944A31	CAP,CHIP,33PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX,P
C2621	2113944A45	CAP,CHIP,270PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2702	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2703	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA

Circuit Ref	Motorola Part No	Description
C2704	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2706	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2707	2113951C31	CAP,FXD,7.5PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2708	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2709	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2710	2113944A30	CAP,CHIP,27PF,+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
C2712	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2713	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2714	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2715	2113951C32	CAP,FXD,8.2PF,.25PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2716	2113951C24	CAP,FXD,3.9PF,.05PF+/-,250V-DC,0603,C0G,-55DEG CMIN,125DEG CMA
C2717	2115153H23	CAP,CER CHIP,6.8PF,1PF+/-,+1%,-1%,50V-DC,0402,C0G,CAP, CERA
C2722	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

Circuit Ref	Motorola Part No	Description
C2723	2115153H24	CAP,CER CHIP,7.5PF,.1PF+/-,+1%,-1%,50V-DC,0402,C0G,CAP, CERA
C2724	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2725	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2801	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2802	2113944A42	CAP,CHIP,150PF,+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
C2804	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
C2806	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2807	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2808	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
C2809	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX
C2810	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

Circuit Ref	Motorola Part No	Description
C2812	2113944A42	CAP,CHIP,150PF,+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
C2814	2113946J02	CAP,CHIP,4.7UF,+10%,-10%,16V-DC,1210,X5R,-55DEG CMIN,85DEG CMAX
C3101	2113945C04	CAP,CHIP,.022UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CM
C3102	2113945G78	CAP,FXD,.01UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C3104	2113945G91	CAP,FXD,.1UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C3105	2113945G93	CAP,FXD,.15UF,+10%,-10%,50V-DC,0805,X7R,-55DEG CMIN,125DEG CMAX
C3106	2113945L37	CAP,FXD,3300PF,+5%,-5%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3107	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX
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,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3116	2113945D04	CAP,CHIP,.1UF,+10%,-10%,25V-DC,0603,X7R,-55DEG CMIN,125DEG CMAX
C3120	2113944A44	CAP,CHIP,220PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX

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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	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
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	C3228	2385170Y08	CAP,AL EL,330UF,25V-DC	C3348	2113945B02	CAP,CHIP,.01UF,+10%,-10%,25V-DC,0402,X7R,-55DEG CMIN,125DEG CMA
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	C3229	2113945C02	CAP,CHIP,.01UF,+10%,-10%,50V-DC,0603,X7R,-55DEG CMIN,125DEG CMA	CR1400	48009262001	DIODE,SUR MT MXR SHTK DIODE
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	C3230	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	CR1401	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	C3232	2113944C47	CAP,CHIP,150PF,+5%,-5%,50V-DC,0603,C0G,-55DEG CMIN,125DEG CMAX	CR2530	4885094Y01	DIODE,VCTR, 15V
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	C3301	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR2531	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	C3302	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3200	4885055Y01	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	C3303	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3201	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	C3304	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3202	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	C3306	2113946K02	CAP,CHIP,.1UF,+80%,-20%,16V-DC,0402,Y5V,-30DEG CMIN,85DEG CMAX	CR3203	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	C3307	2113944A42	CAP,CHIP,150PF,+5%,-5%,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	CR3204	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	C3316	2113946B04	CAP,CHIP,.1UF,+10%,-10%,10V-DC,0402,X5R,-55DEG CMIN,85DEG CMAX	CR3205	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	C3318	2113944A25	CAP,CHIP,10PF,.5PF+/-,50V-DC,0402,C0G,-55DEG CMIN,125DEG CMAX	CR3206	4885055Y01	DIODE,VCTR, 15V
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	CR3207	4885055Y01	DIODE,VCTR, 15V
			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	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,VACTOR,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,VACTOR,15V
									D1106	4805656W87	DIODE,VCTR, @ 15V,1SV279,SOD-523/SC-79,SOD-523/SC-79

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L2704	2414032F25	IDCTR,WW,18NH,5%,600MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE	L3212	2414032F26	IDCTR,WW,22NH,5%,500MA,.22Ω,CER,45 Q,2.2GHZ SRF,SM,PB-FRE	Q2611	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300MHZ,PB	R1111	0613952P14	RES,MF,137KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
L2705	2415429H19	IDCTR,WW,16NH,5%,700MA,CER,104KHZ SRF,SM,0603,CHIP	L3213	2414032F25	IDCTR,WW,18NH,5%,600MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE	Q3200	4885061Y01	XSTR,BIP RF SMALL SIGNAL	R1200	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
L2708	2415429H28	IDCTR,WW,39NH,5%,600MA,CER,SM,CHIP	L3214	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q3201	4885061Y01	XSTR,BIP RF SMALL SIGNAL	R1201	0613952Q19	RES,MF,5.6Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
L3100	2414032F34	IDCTR,WW,100NH,5%,400MA,.46Ω,CER,40 Q,950MHZ SRF,SM,PB-FR	L3215	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q3202	4805218N63	XSTR,GEN PURPOSE SMALL SIG,SOT-323,BROADBAND AND XSTR	R1202	0613952Q66	RES,MF,510Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
L3200	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q1600	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE	Q3203	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300MHZ,PB	R1203	0613952Q66	RES,MF,510Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE
L3201	2414032F25	IDCTR,WW,18NH,5%,600MA,.2Ω,CER,45 Q,2.4GHZ SRF,SM,PB-FREE	Q1601	4885065Y01	XSTR,FET GP PWR	Q3204	4885065Y01	XSTR,FET GP PWR	R1230	0613952M26	RES,MF,1.82KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
L3202	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q1602	4885065Y01	XSTR,FET GP PWR	Q3205	4885065Y01	XSTR,FET GP PWR	R1231	0613952M26	RES,MF,1.82KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
L3203	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q2200	4885065Y01	XSTR,FET GP PWR	Q3206	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE	R1232	0613958A43	RES,MF,2.74Ω,1%,.125W,SM,0805,400PPM/CEL,PB-FREE
L3204	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q2201	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	R1400	0613958H42	RES,MF,51Ω,5%,.125W,SM,0805,200PPM/CEL,PB-FREE
L3205	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q2202	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE	R1101	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1401	0613958C18	RES,MF,150Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
L3206	2414032F24	IDCTR,WW,15NH,5%,600MA,.17Ω,CER,45 Q,2.5GHZ SRF,SM,PB-FRE	Q2203	4885065Y01	XSTR,FET GP PWR	R1102	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1402	0613958C18	RES,MF,150Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
L3207	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q2204	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE	R1103	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1403	0613958C18	RES,MF,150Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
L3208	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q2205	4813973A34	XSTR,BIP GP SS,NPN,SM,SC-70,SMT,50V,.202W,100MA,PB-FREE	R1104	0613952N66	RES,MF,47.5KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1404	0613958C18	RES,MF,150Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
L3209	2414032F59	IDCTR,WW,390NH,5%,290MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR	Q2400	4813973A04	XSTR,BIP GP SS,NPN,TA13,SM,SOT-23,SMT,30V,.225W,300MA,125MHZ,P	R1105	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1405	0613958H85	RES,MF,3.3KΩ,5%,.125W,SM,0805,200PPM/CEL,PB-FREE
L3211	2414032F27	IDCTR,FXD,27NH,5%,500MA,.25Ω,CER,45 Q,2GHZ SRF,SM,0805,PB-	Q2530	4805218N63	XSTR,GEN PURPOSE SMALL SIG,SOT-323,BROADBAND AND XSTR	R1106	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1406	0613958H73	RES,MF,1KΩ,5%,.125W,SM,0805,200PPM/CEL,PB-FREE
			Q2610	4813973A54	XSTR,BIP GP SS,NPN,T3904,SM,SC-70,SMT,40V,.15W,200MA,300MHZ,PB	R1107	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1407	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE
						R1108	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1410	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE
						R1109	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1412	0613958J74	RES,MF,0Ω,5%,.125W,SM,0805,PB-FREE
						R1110	0613952M05	RES,MF,1.1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R1500	0613952D34	RES,MF,2.21KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
									R1501	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE

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R1502	0613952D51	RES,MF,3.32KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2214	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2535	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2596	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1503	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2216	0613952Q64	RES,MF,430Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2536	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2597	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1504	0613952B09	RES,MF,12.1Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2217	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2537	0613952P01	RES,MF,100KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2610	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R1505	0613952C26	RES,MF,182Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2220	0613952L51	RES,MF,332Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2538	0613952D30	RES,MF,2KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2611	0613952M42	RES,MF,2.67KΩ,1%,0.0625W,SM,0402,200PPM/CEL,PB-FREE
R1602	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2221	0613952L44	RES,MF,280Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2539	0613952L63	RES,MF,442Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2612	0613952M42	RES,MF,2.67KΩ,1%,0.0625W,SM,0402,200PPM/CEL,PB-FREE
R1603	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2400	0613952Q64	RES,MF,430Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2540	0613952L58	RES,MF,392Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2614	0613952L66	RES,MF,475Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1604	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2401	0613952F01	RES,MF,100KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2541	0613952K07	RES,MF,11.5Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2615	0613952L18	RES,MF,150Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R1605	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2404	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2542	0613952L63	RES,MF,442Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2616	0613952L66	RES,MF,475Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2200	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2405	0613952K01	RES,MF,10Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2545	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2620	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R2201	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2406	0613952P97	RES,MF,1MΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2546	0613952L66	RES,MF,475Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2622	0613952M42	RES,MF,2.67KΩ,1%,0.0625W,SM,0402,200PPM/CEL,PB-FREE
R2203	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2407	0613952C05	RES,MF,110Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2547	0613952L01	RES,MF,100Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2623	0613952L66	RES,MF,475Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2204	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2408	0613952C05	RES,MF,110Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2548	0613952L09	RES,MF,121Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2625	0613952L66	RES,MF,475Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2205	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2413	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R2549	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2626	0613952L18	RES,MF,150Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2206	0613952L44	RES,MF,280Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2422	0613952C28	RES,MF,191Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2559	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2627	0613952L01	RES,MF,100Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2207	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2423	0613952C28	RES,MF,191Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2563	0613952L26	RES,MF,182Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2628	0613952L01	RES,MF,100Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2208	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2530	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R2580	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2630	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R2210	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2531	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R2581	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2631	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE
R2211	0613952M36	RES,MF,2.32KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2532	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2582	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2651	0613952M42	RES,MF,2.67KΩ,1%,0.0625W,SM,0402,200PPM/CEL,PB-FREE
R2212	0613952Q59	RES,MF,270Ω,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2533	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R2583	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2703	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE
R2213	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R2534	0613952P01	RES,MF,100KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2595	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R2703	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,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
R2704	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE	R2805	0613952M51	RES,MF,3.32KΩ,1%,0.0625W,SM,0402,200PPM/CEL,PB-FREE	R3129	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE	R3212	0613958C01	RES,MF,100Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R2704	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE	R2806	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3130	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE	R3213	0613952D20	RES,MF,1.58KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2705	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE	R2807	0613952N51	RES,MF,33.2KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3134	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE	R3214	0613952D01	RES,MF,1KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2706	0613952C18	RES,MF,150Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2808	0613952N18	RES,MF,15KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3146	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R3215	0613952B07	RES,MF,11.5Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2707	0613952B81	RES,MF,68.1Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2809	0613952Z46	RES,MF,3.9KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3147	0613952R01	RES,MF,10KΩ,5%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3216	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2708	0613952C66	RES,MF,475Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R2810	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3172	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3217	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2710	0613959Y54	RES,MF,160Ω,5%,.1W,SM,2512,100PPM/CEL,PB-FREE	R2811	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3185	0613952L01	RES,MF,100Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3219	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R2711	0613959G16	RES,MF,4.3Ω,5%,.33W,SM,1210,400PPM/CEL,PB-FREE	R2812	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3187	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R3221	0613952D51	RES,MF,3.32KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2712	0613959Y54	RES,MF,160Ω,5%,.1W,SM,2512,100PPM/CEL,PB-FREE	R2813	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R3200	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3222	0613952D30	RES,MF,2KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2713	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R2815	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R3201	0613952B26	RES,MF,18.2Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3223	0613952C30	RES,MF,200Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2715	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE	R2816	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R3202	0613958C52	RES,MF,340Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE	R3224	0613958C01	RES,MF,100Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R2717	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE	R2817	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE	R3203	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
R2717	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE	R2817	0613952A73	RES,MF,5.62Ω,1%,.1W,SM,0603,400PPM/CEL,PB-FREE	R3204	0613952D20	RES,MF,1.58KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3227	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R2718	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3101	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE	R3205	0613952D01	RES,MF,1KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3228	0613952G67	RES,MF,0,1,.1,SM,0603,PB-FREE
R2719	0613952C89	RES,MF,825Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3103	0613952D46	RES,MF,2.94KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3206	0613952B07	RES,MF,11.5Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3229	0613958B53	RES,MF,34.8Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE
R2800	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3104	0613952B34	RES,MF,22.1Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3207	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3230	0613952L42	RES,MF,267Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2801	0613952N30	RES,MF,20KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3105	0613952C53	RES,MF,348Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3208	0613952C62	RES,MF,432Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3231	0613952K01	RES,MF,10Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE
R2802	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3106	0613952B79	RES,MF,64.9Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3209	0613952B01	RES,MF,10Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3234	6139520	RES,MF,10KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2803	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3108	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402,PB-FREE	R3210	0613952B26	RES,MF,18.2Ω,1%,.1W,SM,0603,100PPM/CEL,PB-FREE	R3235	6139520	RES,MF,10KΩ,1%,.1W,SM,0603,100PPM/CEL,PB-FREE
R2804	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3113	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3211	0613958C52	RES,MF,340Ω,1%,.125W,SM,0805,100PPM/CEL,PB-FREE	R3236	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
R3300	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402 ,PB-FREE	R3327	0613952N01	RES,MF,10KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	SH1501	2685668Y01	SHLD,CORRAL,NI-AG,24MMLG,13MMW,3.28MM	U2203	5114014A20	IC,LNR V REGLTR,ADJUST-ABLE,1.35V TO ,10V,800MA,SM,SO-8,PB-FREE
R3301	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3328	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402 ,PB-FREE	SH2500	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO	U2400	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE
R3302	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3329	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	SH2700	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO	U2530	5185963A85	IC-ABACUS III-LP
R3303	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3330	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402 ,PB-FREE	SH2701	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO	U2531	5114005A19	IC,OP AMP,2PER PKG,HISPD,SM,SO-8,SING SPLY, PB-FREE
R3304	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3331	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	SH3200	1583004X05	SHLD,SHIELD, VCO	U2700	5171183H01	AMP MDL,GAIN BLCK MMIC AMP
R3305	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3332	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	SH3201	2685668Y01	SHLD,CORRAL,NI-AG,24MMLG,13MMW,3.28MM	U2701	5185337Y01	AMP
R3306	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3333	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	T1400	2585040Y01	XFMR,BALUN	U2800	5184998Y01	IC,LOW-POWER,8CHANNEL,SERIAL 10-BIT ADCS
R3307	0613952M01	RES,MF,1KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3334	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	T1401	2585040Y01	XFMR,BALUN	U3100	5164015H28	IC,CUST,MULTI PROTOCOL/BAND TRANSCVR IC,SM,BGA,TRIDENT, INTEG
R3308	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3345	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	U1100	5114005M13	IC,OP AMP,2PER PKG,LVOLT,SM,SOIC8,PB-FREE	U3101	5185183Y01	IC,OP AMP,SO-8
R3309	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3346	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	U1200	5185481Y01	XSTR	U3103	5114019M05	IC,INVTR,SCHMITT,74LVX14,6PER PKG,SM,TSSOP14,PB-FREE
R3310	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	U1500	91012005001	FLTR,73.35MHZ MAX,SM,73.35MHZ XTAL FILTER, 3-POLE	U3300	5185130Y01	IC,PLD,TQFP
R3311	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	U1501	91012005001	FLTR,73.35MHZ MAX,SM,73.35MHZ XTAL FILTER, 3-POLE	U3301	5184943Y01	IC,EEPROM,64 KB,SOIC,AT25640AN-10SU-2.7
R3312	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3349	0613952R66	RES,MF,0Ω,5%,.0625W,SM,0402 ,PB-FREE	U1502	4805218N55	XSTR,BIP RF SMALL SIGNAL,SLCN,NPN,BFQ67,SM,SOT-23,SMT,10V,.3W,5	U3303	5185941F86	IC,XCVR,0PER PKG,PQFP,PQFP16,IC, 4-BIT BUS XCVR
R3314	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3350	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	U1600	5185941F45	ATTEN,VAR,14.4DBMIN,15.6DB MAX,0-2000 MHZ-FREQ,50Ω,PCMT,SOT-25	Y3200	9171848H11	RESON,CER,SMD,11.53NH,542 MHZ
R3315	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3390	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	U2200	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE	Y3201	9171848H12	RESON,CER,SMD,10.90NH,579 MHZ
R3316	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3391	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	U2201	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE			
R3317	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	R3392	0613952K51	RES,MF,33.2Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	U2202	5114014A26	IC,LNR V REGLTR,ADJUST-ABLE,1.2V TO ,37V,500MA,SM,DPAK,PB-FREE			
R3318	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	SH1100	2685297D02	SHLD,CVR,NI-AG,STOCK FINISH,24.58MMLG,18.73MMW,4.45MM,VCO						
R3322	0613952M66	RES,MF,4.75KΩ,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	SH1401	1583004X05	SHLD,SHIELD, VCO						
R3326	0613952K68	RES,MF,49.9Ω,1%,.0625W,SM,0402,200PPM/CEL,PB-FREE	SH1500	2685668Y01	SHLD,CORRAL,NI-AG,24MMLG,13MMW,3.28MM						

Notes

Chapter 7 MTR3000 Exciter Module

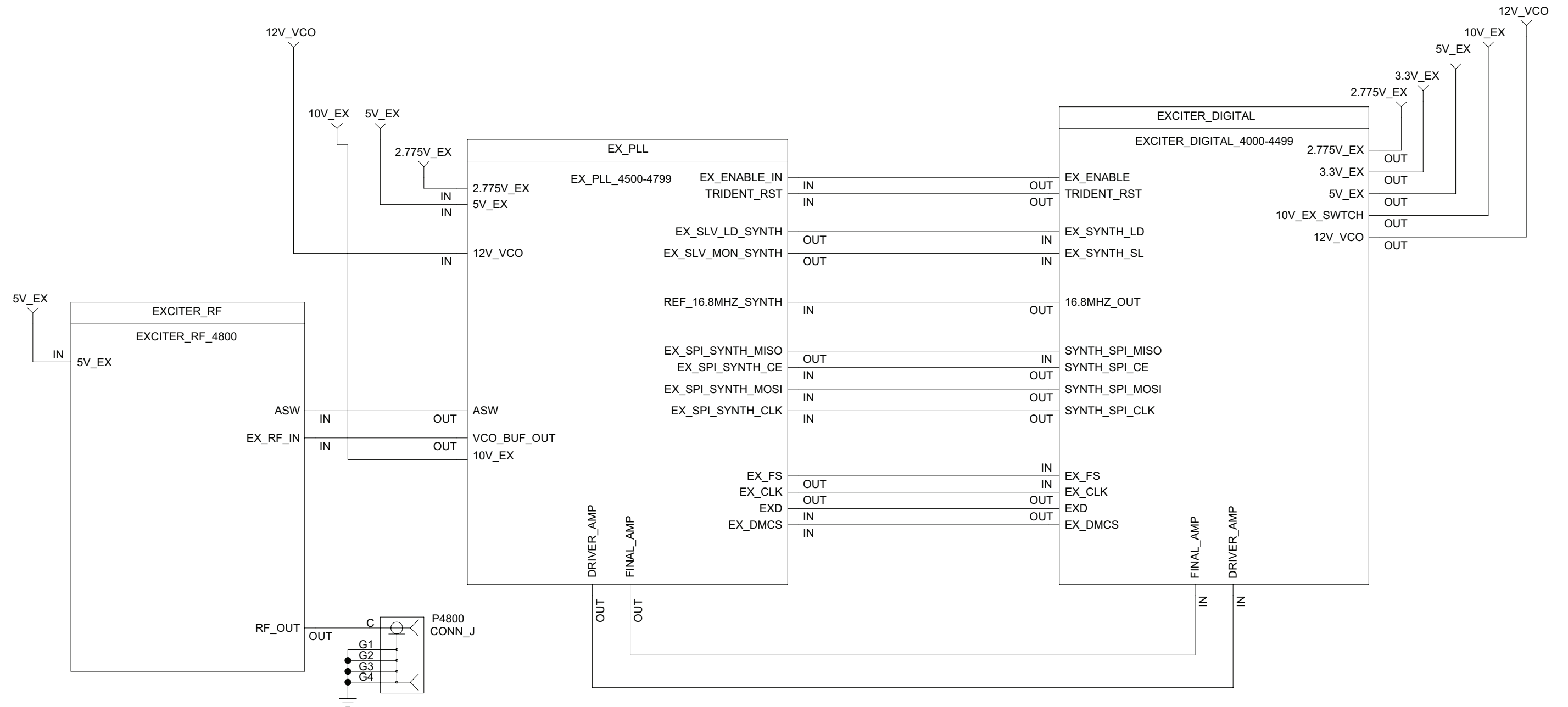
7.1 Overview

Refer to Section 7.2, Section 7.3, Section 7.4 and Section 7.5 for the schematic diagrams, overlays, and parts lists of the MTR3000 Exciter Module. A complete list of all parts is provided with the parts ordered according to the schematic reference number.

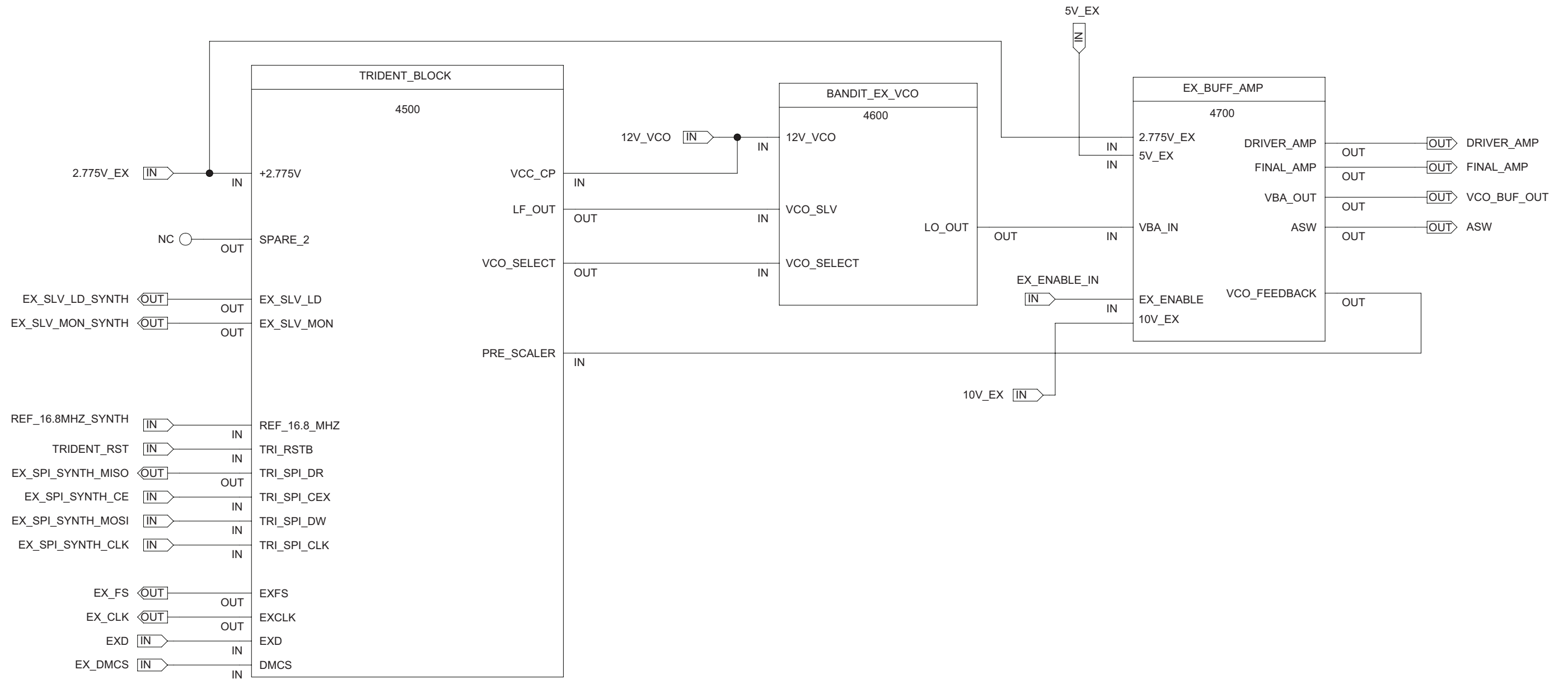
For the Theory of Operation, Specifications, Block Diagrams and troubleshooting procedures of the Exciter Module, refer to the MOTOTRBO™ MTR3000 Base Station/Repeater Basic Service Manual (68007024096).

Notes

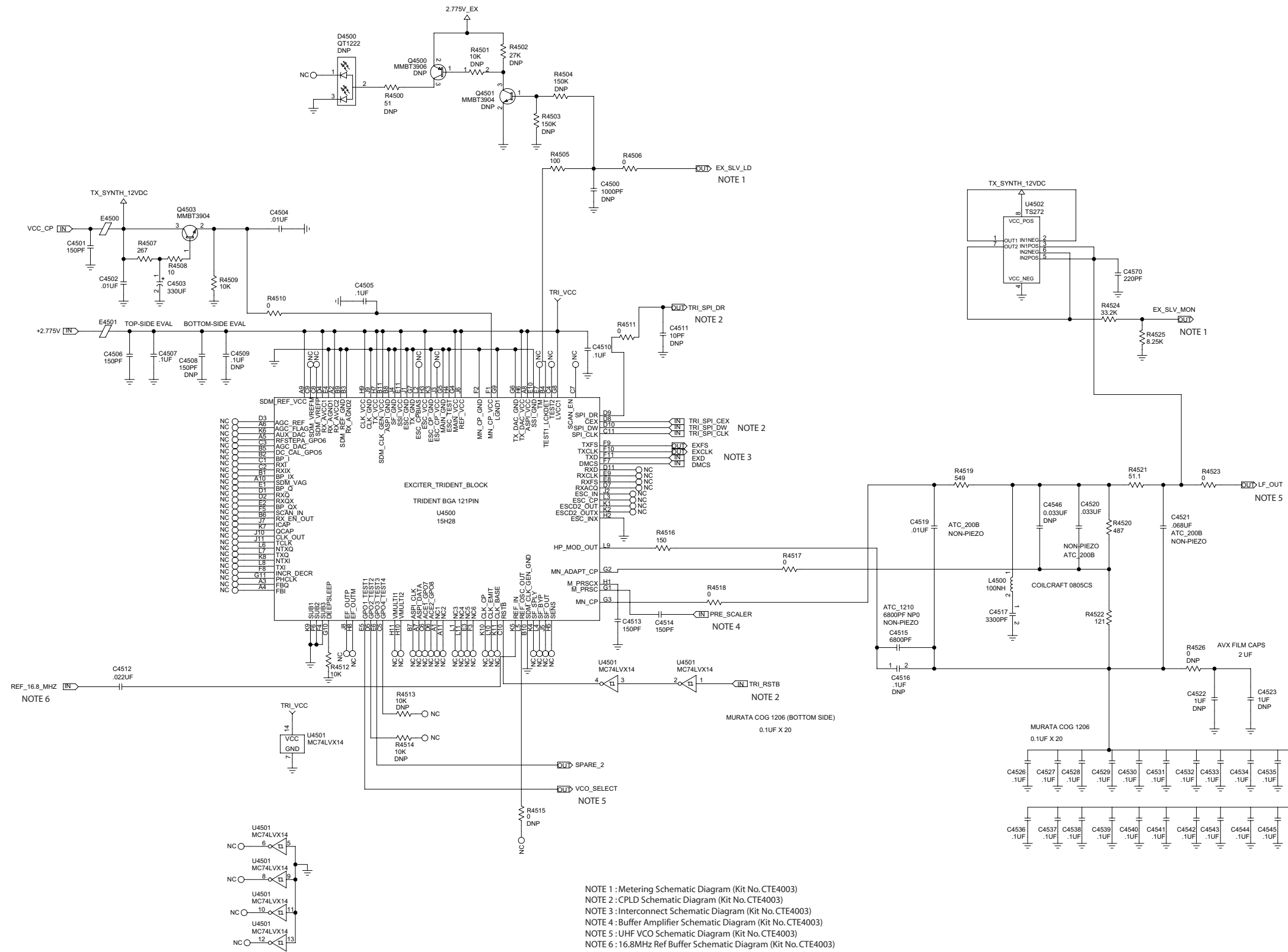
7.2 Exciter Schematics (UHF)



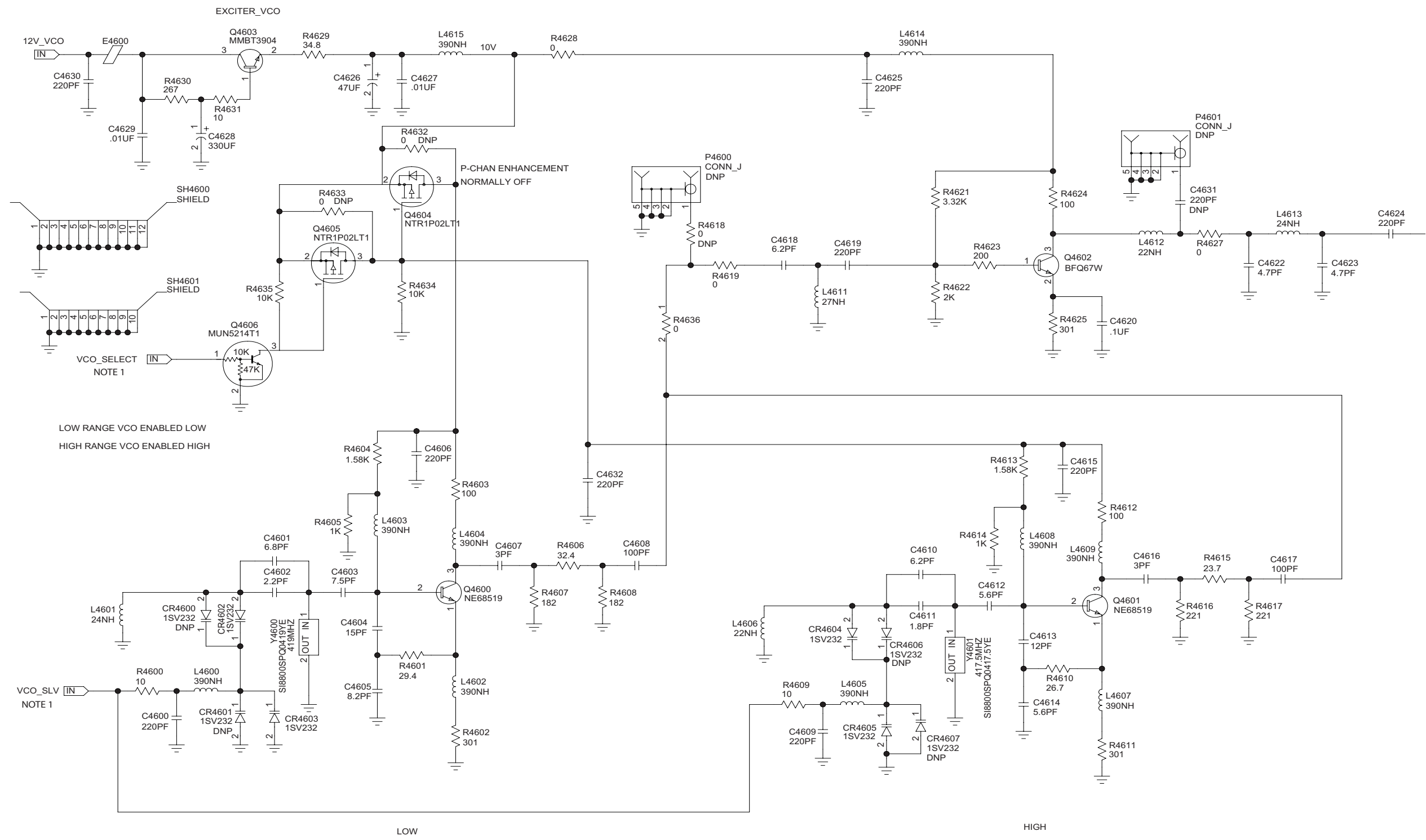
Exciter – Main Schematic Diagram (Kit No. CTE4003)



Exciter – Frequency Generation Unit (FGU) Schematic Diagram (Kit No.CTE4003)



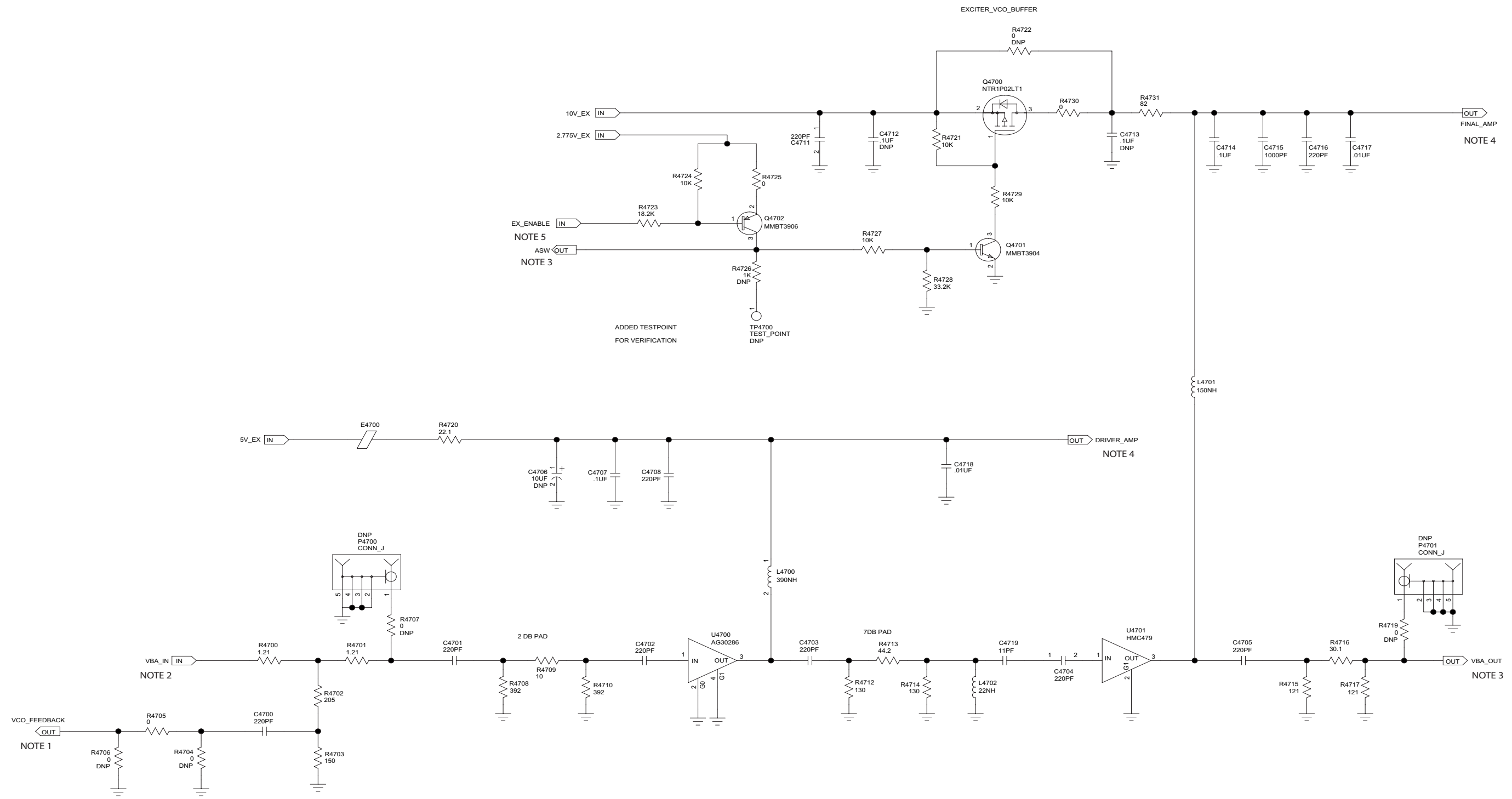
Exciter – Trident Block Schematic Diagram (Kit No. CTE4003)



LOW RANGE VCO ENABLED LOW
HIGH RANGE VCO ENABLED HIGH

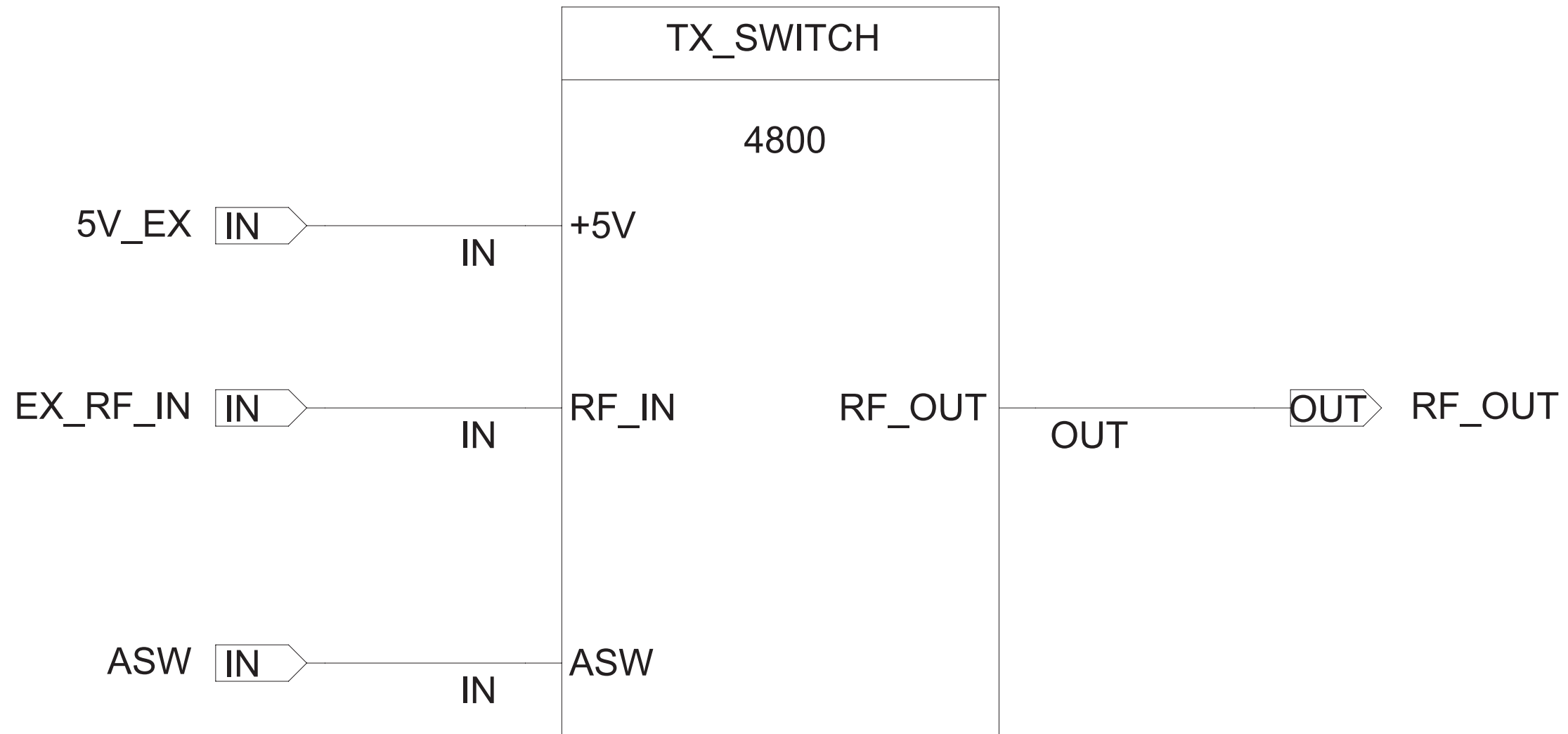
NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)
NOTE 2 : Buffer Amplifier Schematic Diagram (Kit No. CTE4003)

Exciter – UHF VCO Schematic Diagram (Kit No. CTE4003)

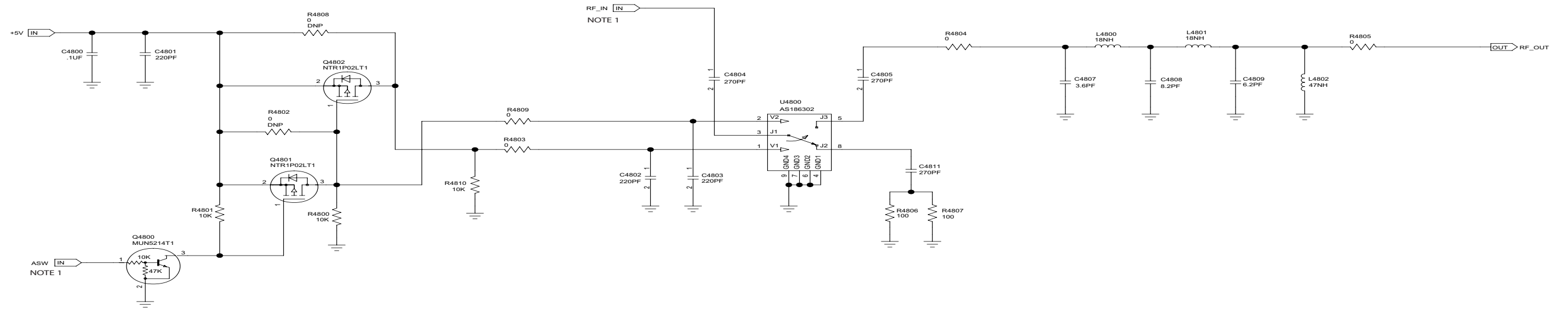


- NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)
- NOTE 2 : UHF VCO Schematic Diagram (Kit No. CTE4003)
- NOTE 3 : Switch Schematic Diagram (Kit No. CTE4003)
- NOTE 4 : Metering Schematic Diagram (Kit No. CTE4003)
- NOTE 5 : Interconnect Schematic Diagram (Kit No. CTE4003)

Exciter – Buffer Amplifier Schematic Diagram (Kit No. CTE4003)

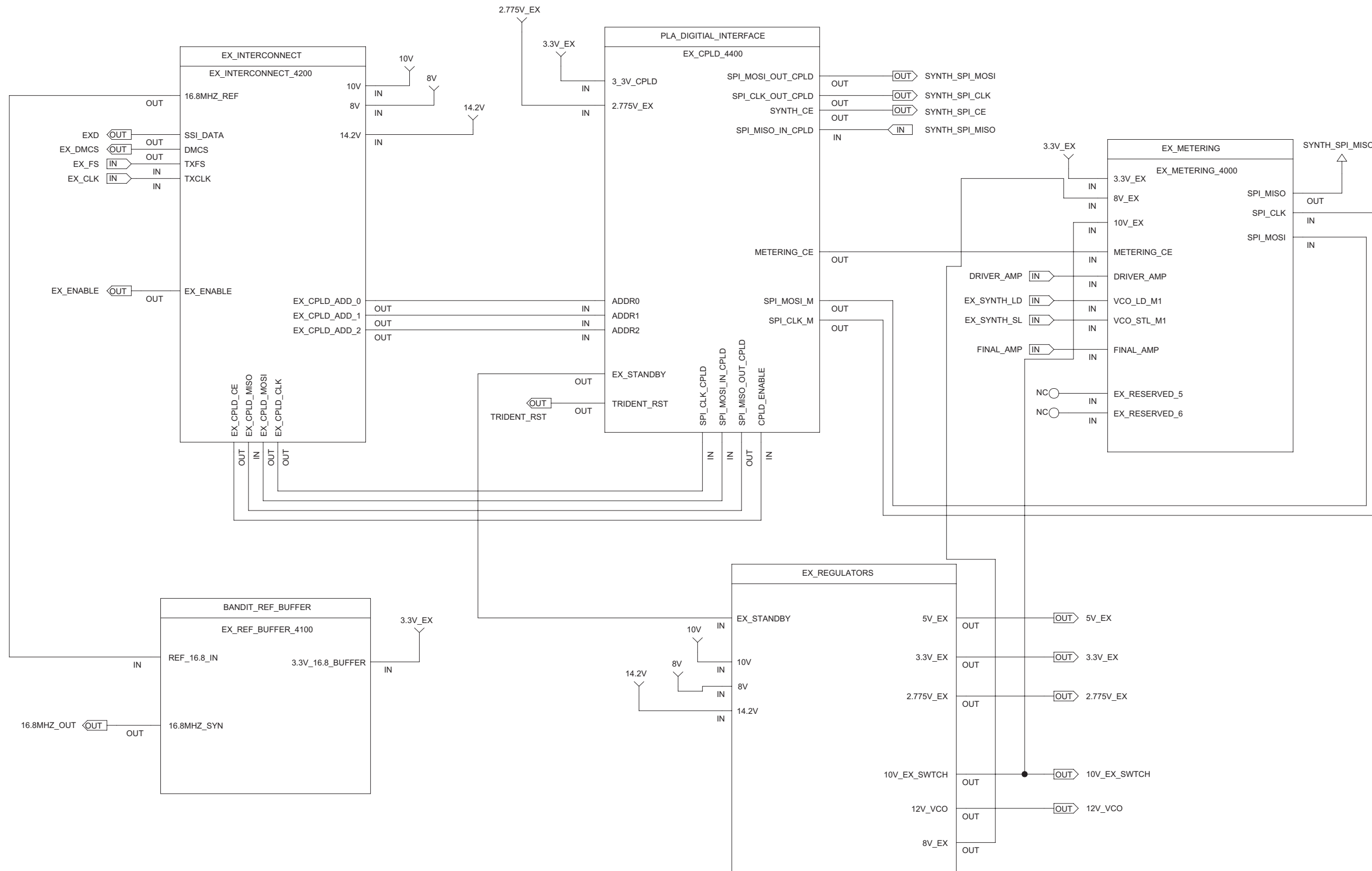


Exciter – RF Section Schematic Diagram (Kit No. CTE4003)

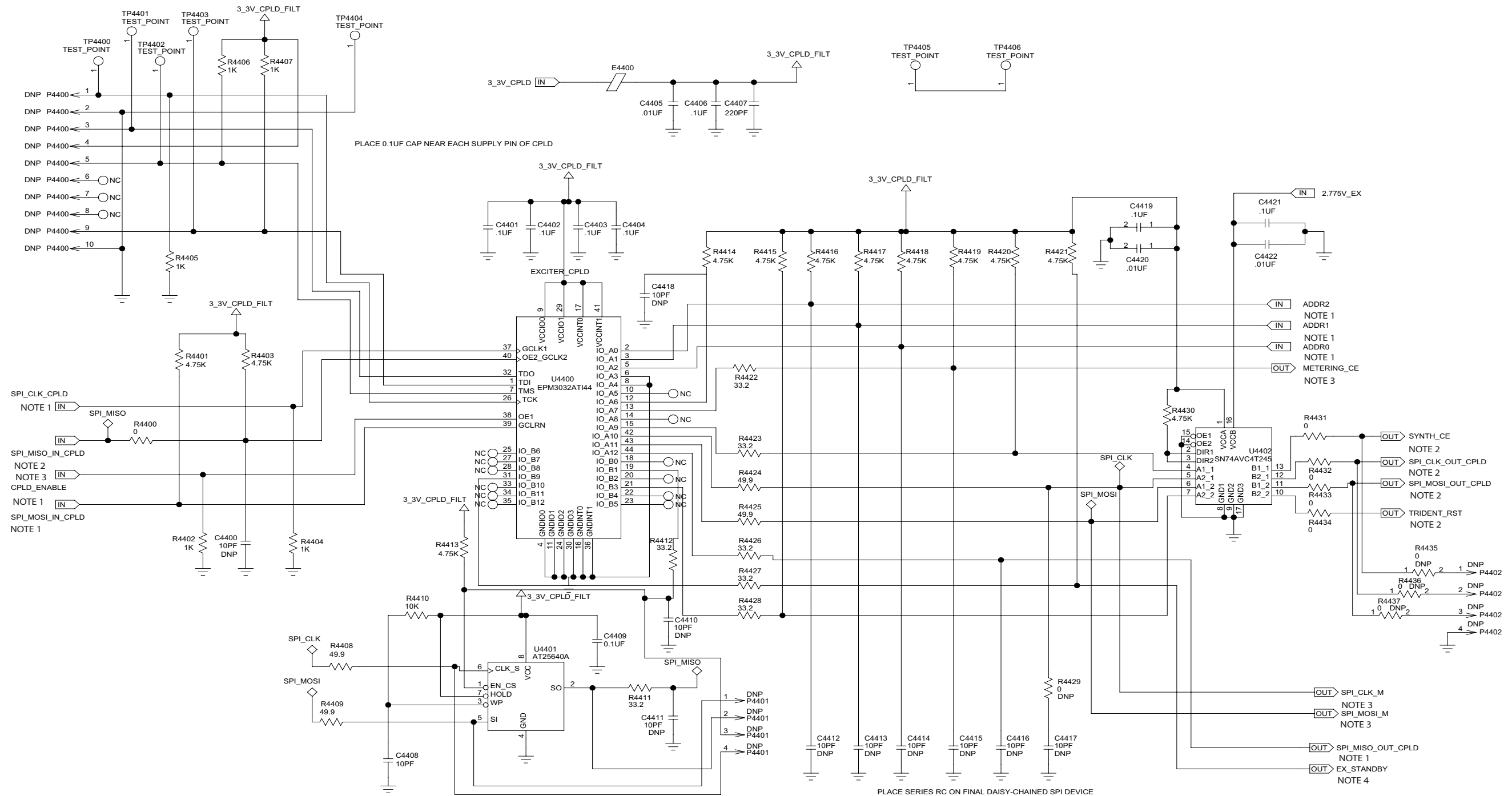


NOTE 1 : Exciter – Buffer Amplifier Schematic Diagram (Kit No. CTE4003)

Exciter – Switch Schematic Diagram (Kit No. CTE4003)

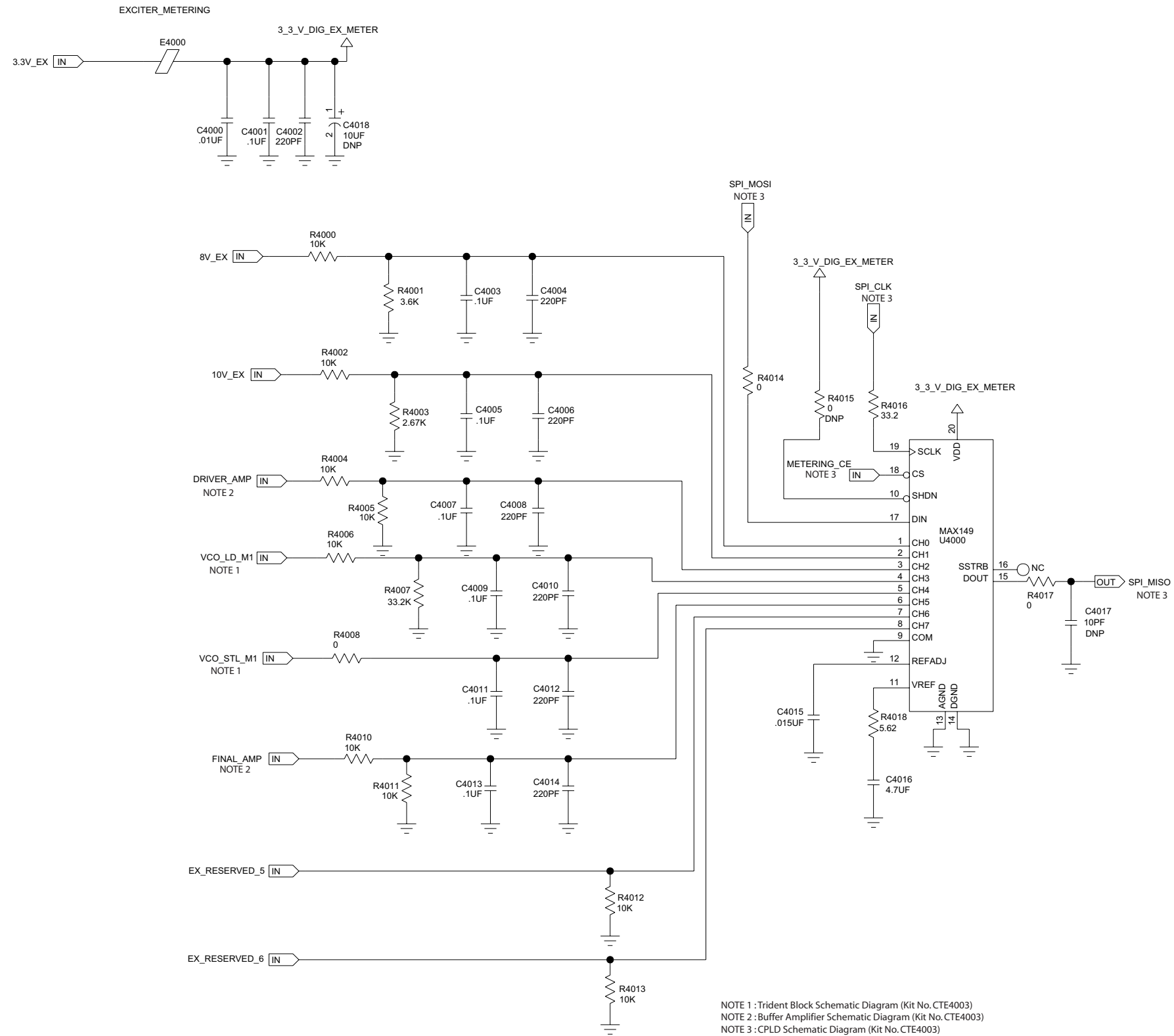


Exciter – Digital Section Schematic Diagram (Kit No. CTE4003)

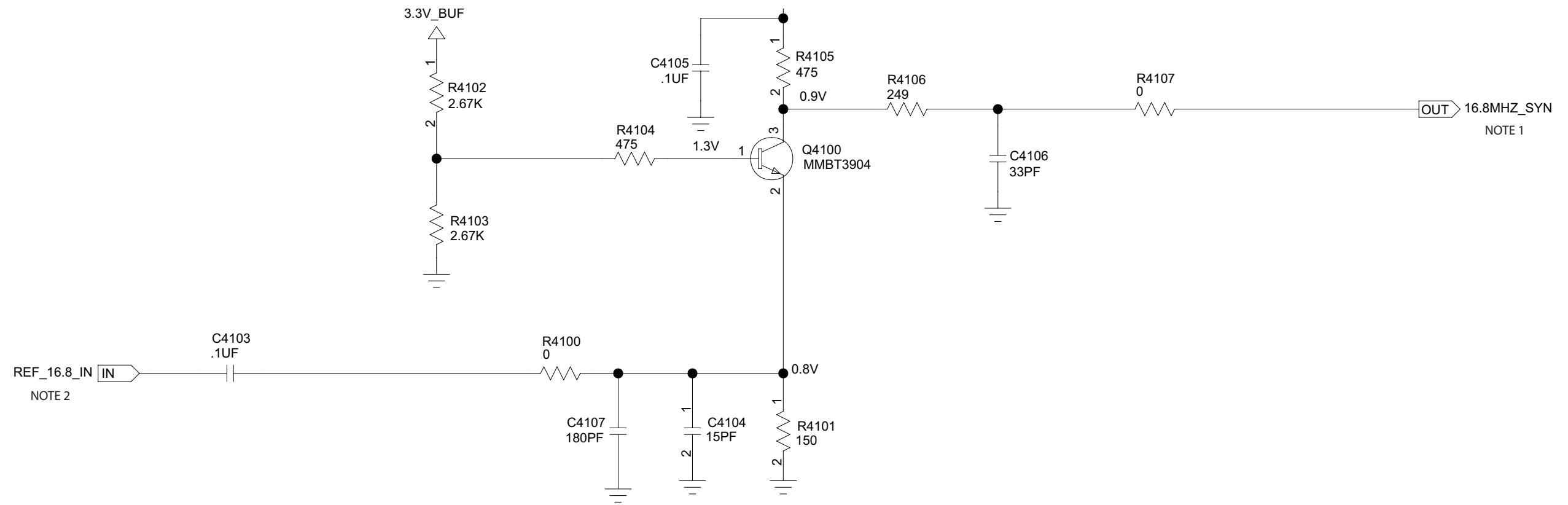


NOTE 1 : Interconnect Schematic Diagram (Kit No. CTE4003)
NOTE 2 : Trident Block Schematic Diagram (Kit No. CTE4003)
NOTE 3 : Metering Schematic Diagram (Kit No. CTE4003)
NOTE 4 : Regulators Schematic Diagram (Kit No. CTE4003)

Exciter – CPLD Schematic Diagram (Kit No. CTE4003)

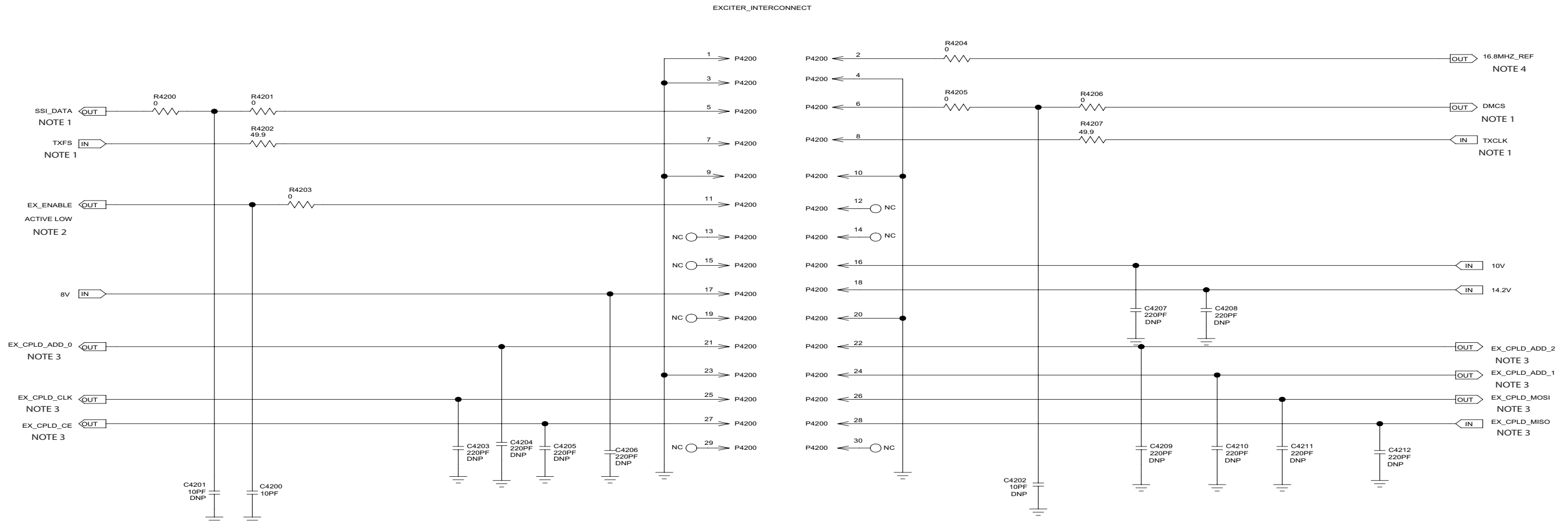


Exciter – Metering Schematic Diagram (Kit No. CTE4003)



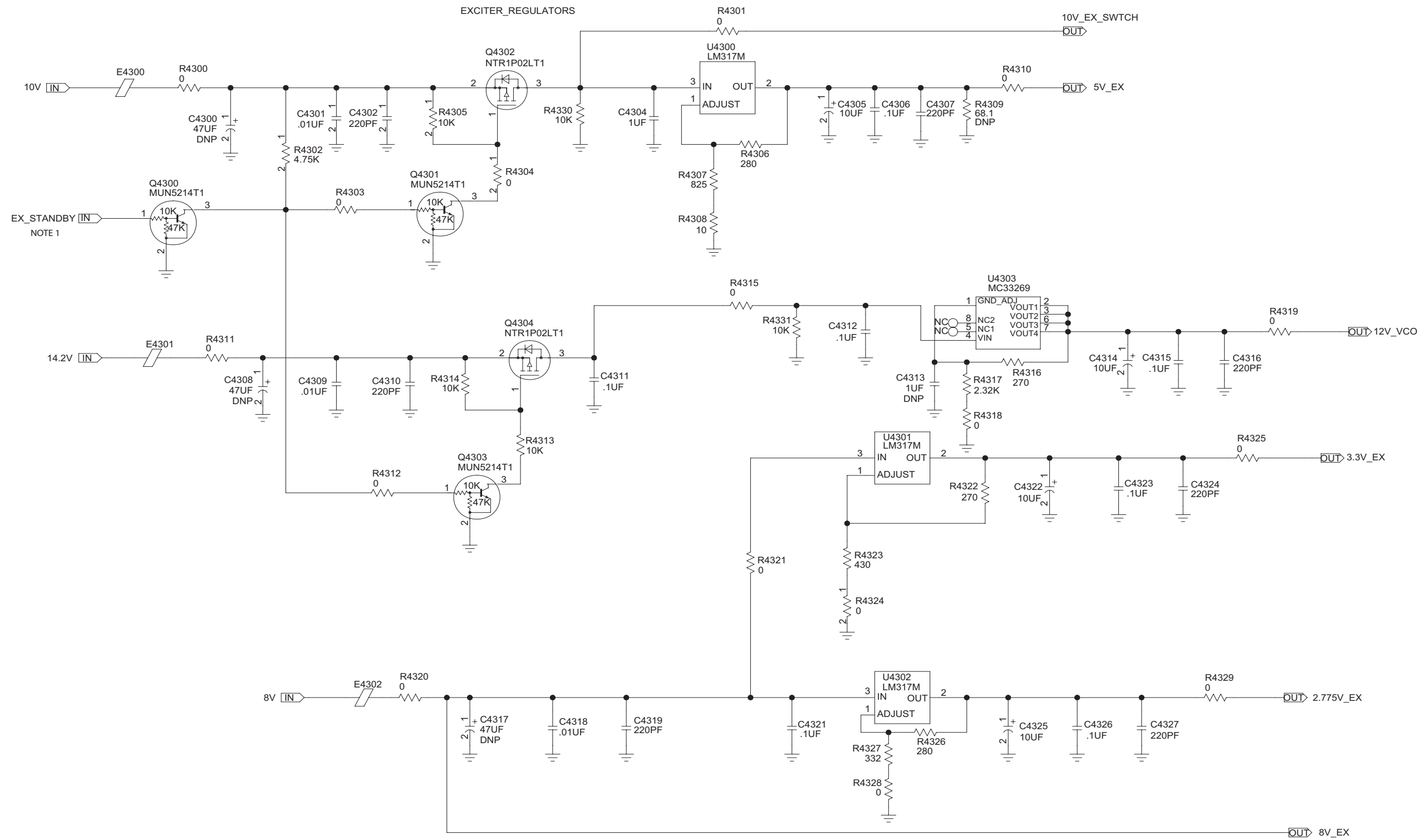
NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)
 NOTE 2 : Interconnect Schematic Diagram (Kit No. CTE4003)

Exciter – 16.8MHz Ref Buffer Schematic Diagram (Kit No. CTE4003)



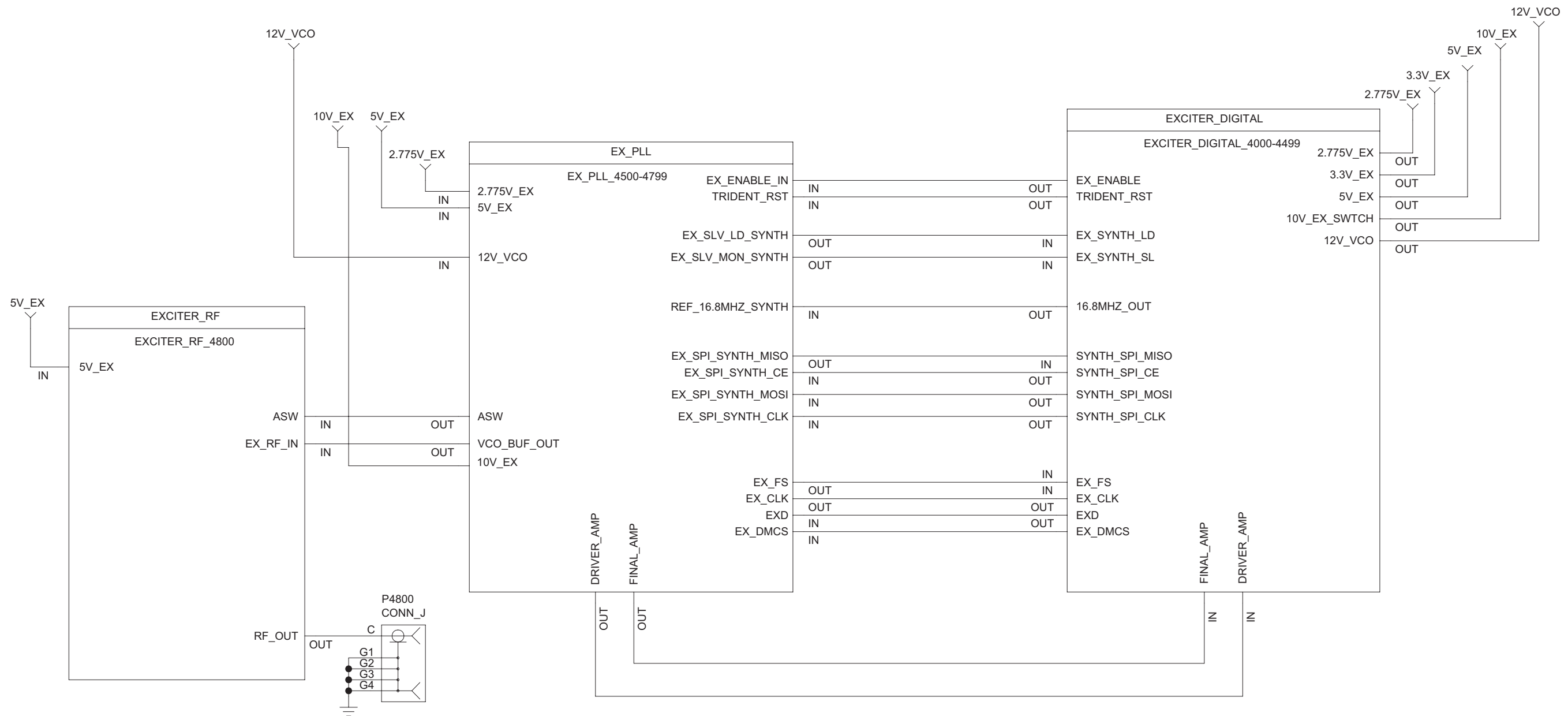
NOTE 1 : Trident Block Schematic Diagram (Kit No. CTE4003)
 NOTE 2 : Buffer Amplifier Schematic Diagram (Kit No. CTE4003)
 NOTE 3 : CPLD Schematic Diagram (Kit No. CTE4003)
 NOTE 4 : 16.8MHz Ref Buffer Schematic Diagram (Kit No. CTE4003)

Exciter – Interconnect Schematic Diagram (Kit No. CTE4003)

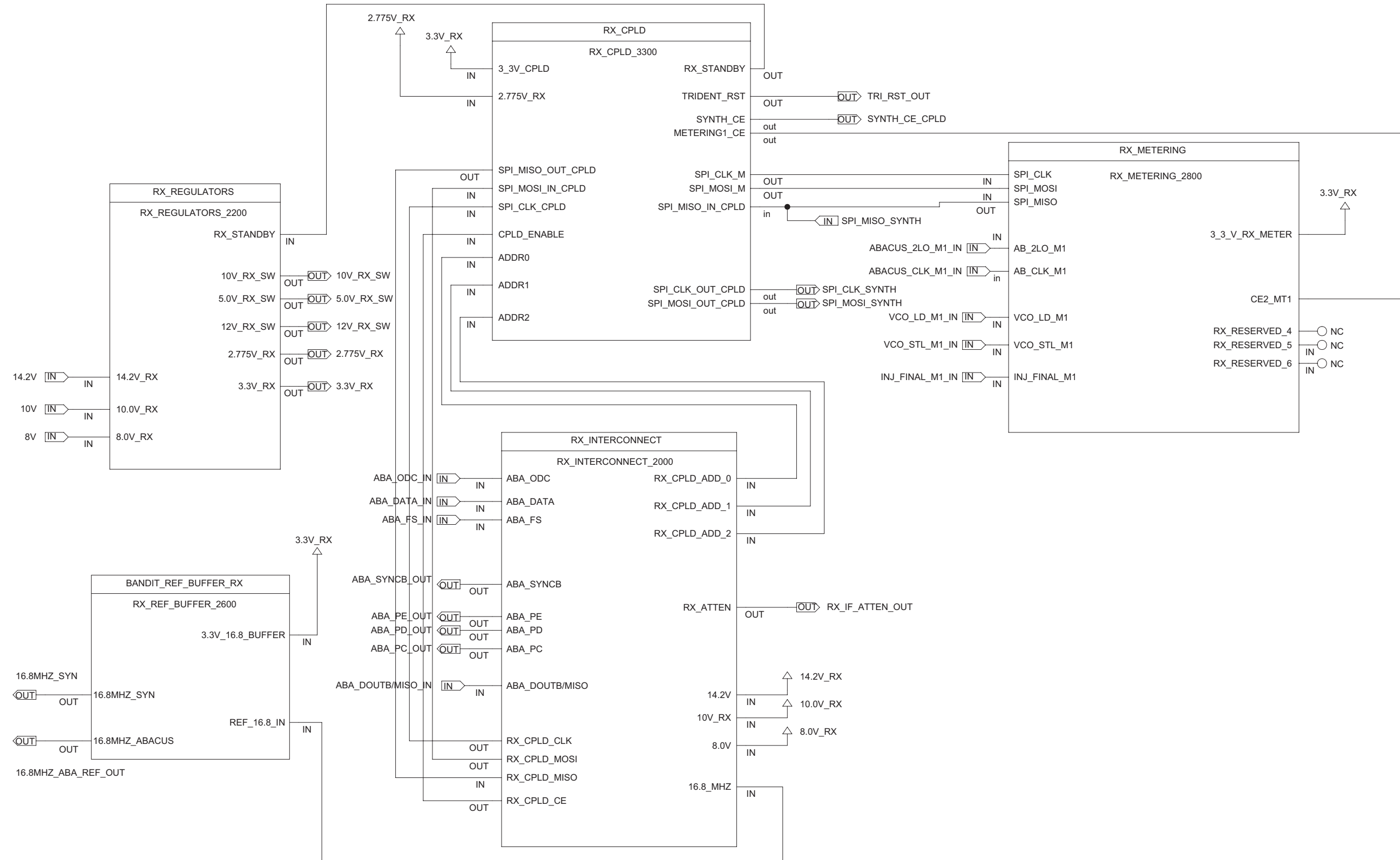


NOTE 1 : CPLD Schematic Diagram (Kit No. CTE4003)

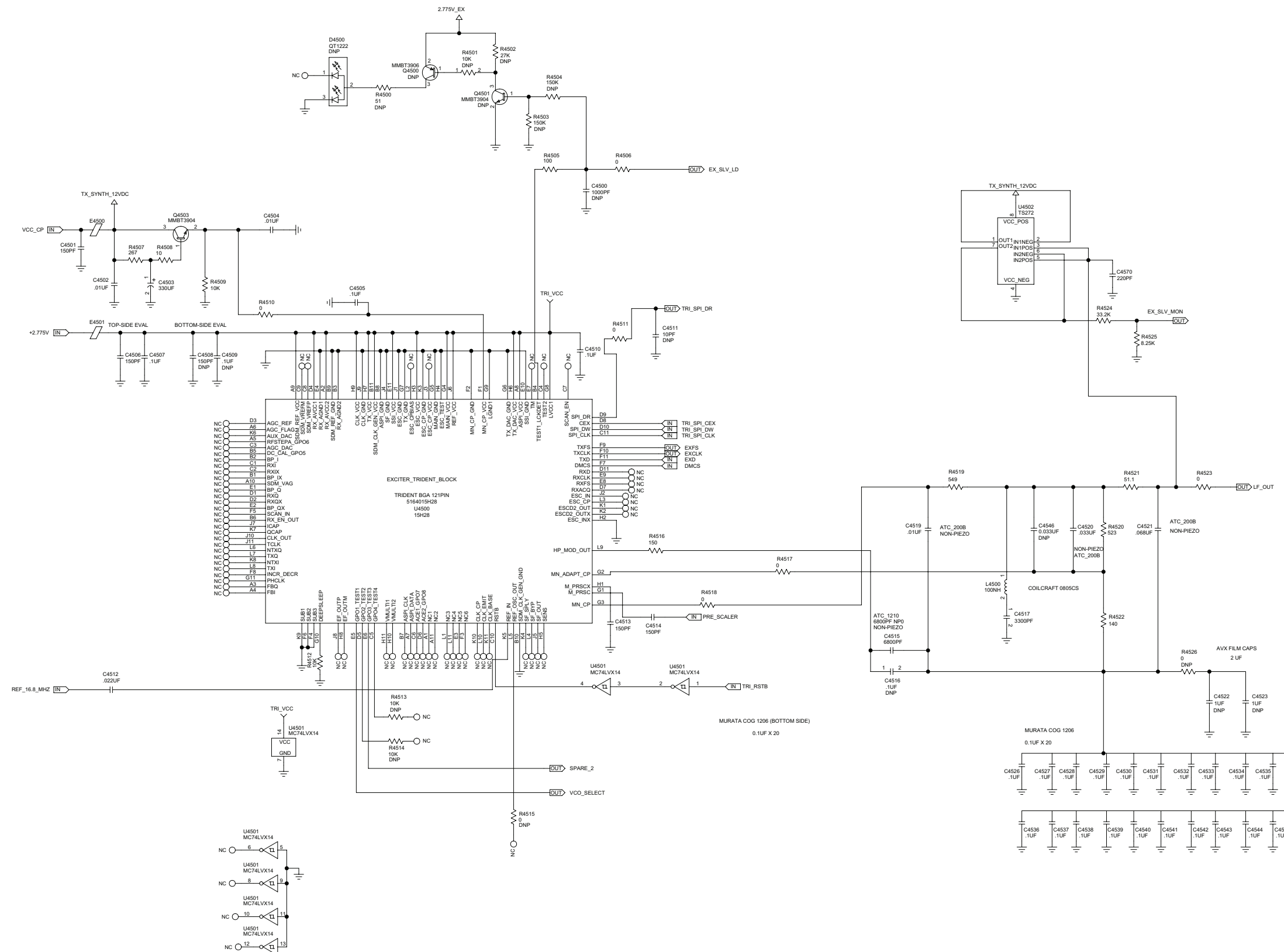
Exciter – Regulators Schematic Diagram (Kit No. CTE4003)



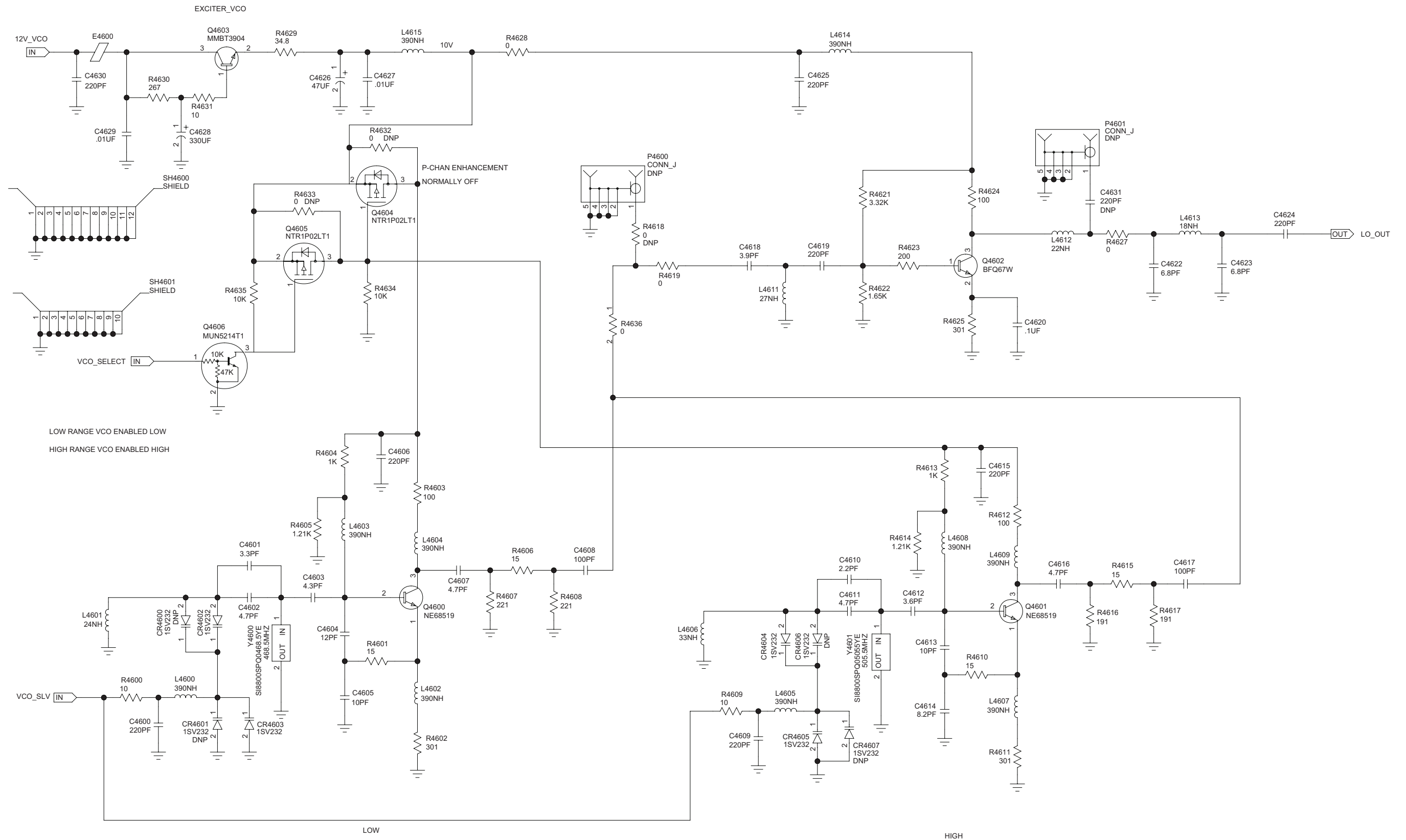
Exciter – Main Schematic Diagram (Kit No. CTE4004)



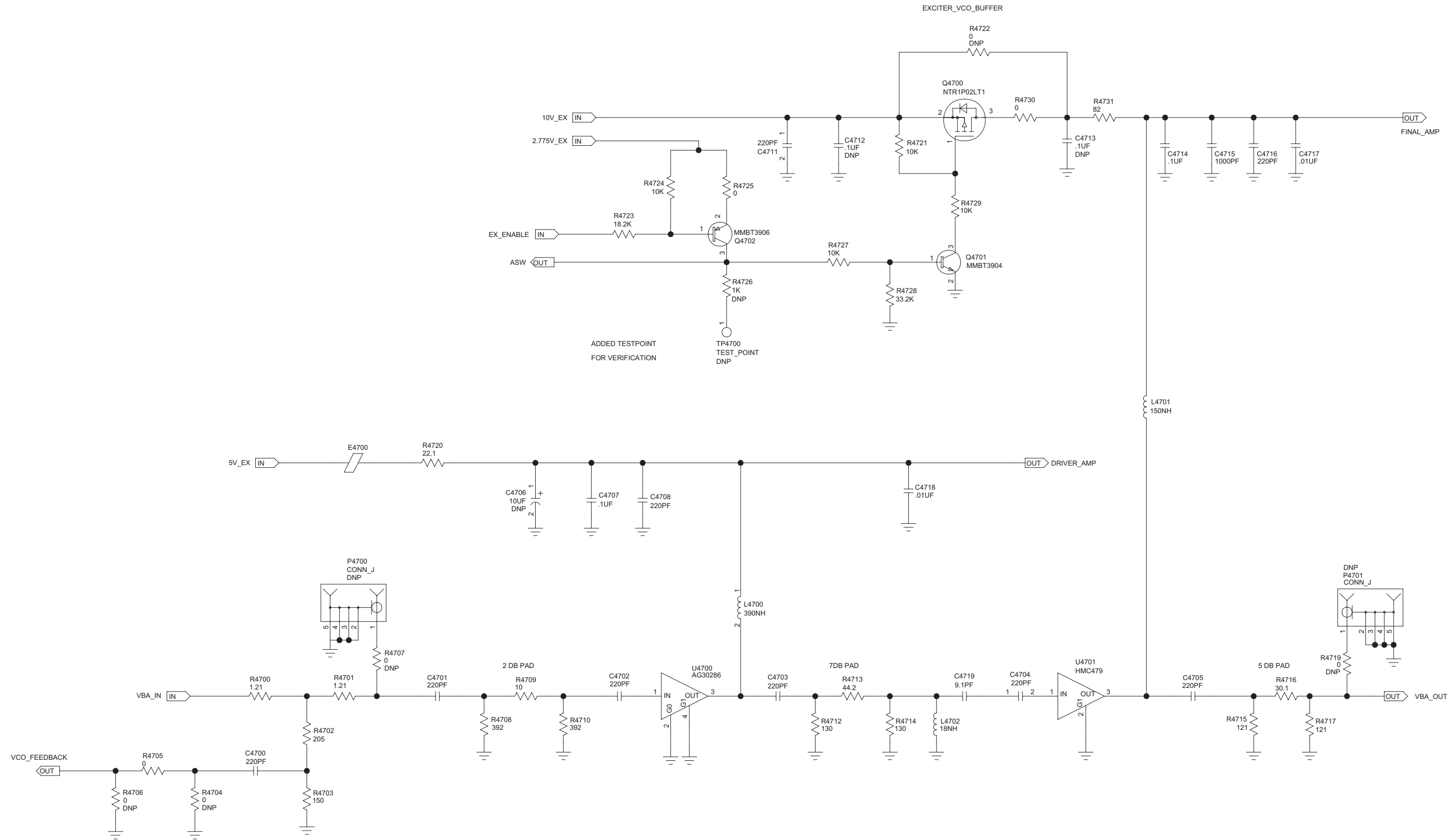
Exciter – Frequency Generation Unit (FGU) Schematic Diagram (Kit No. CTE4004)



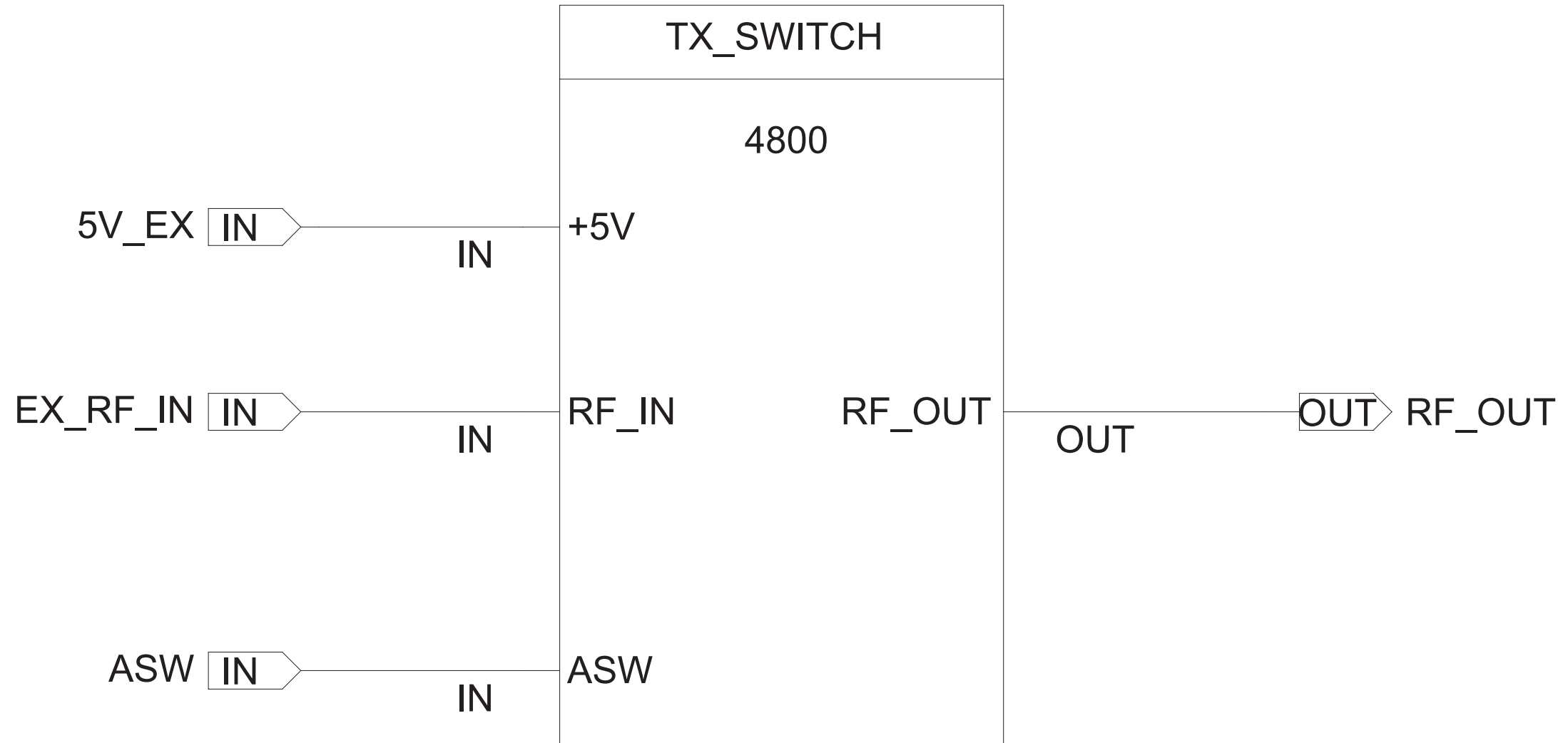
Exciter – Trident Block Schematic Diagram (Kit No. CTE4004)

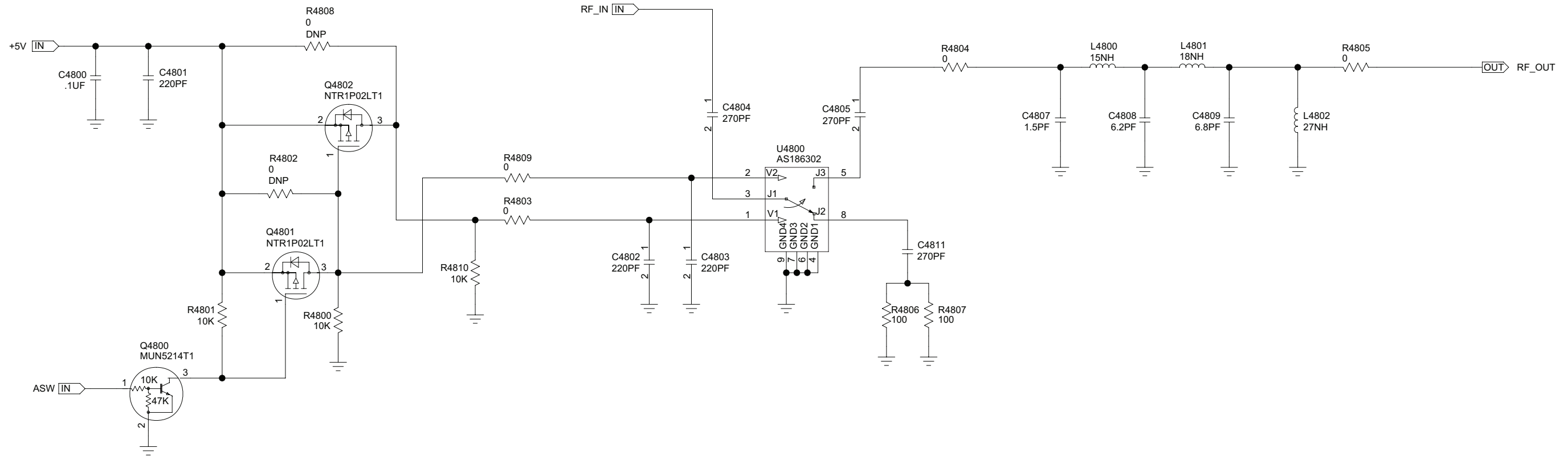


Exciter – UHF VCO Schematic Diagram (Kit No. CTE4004)

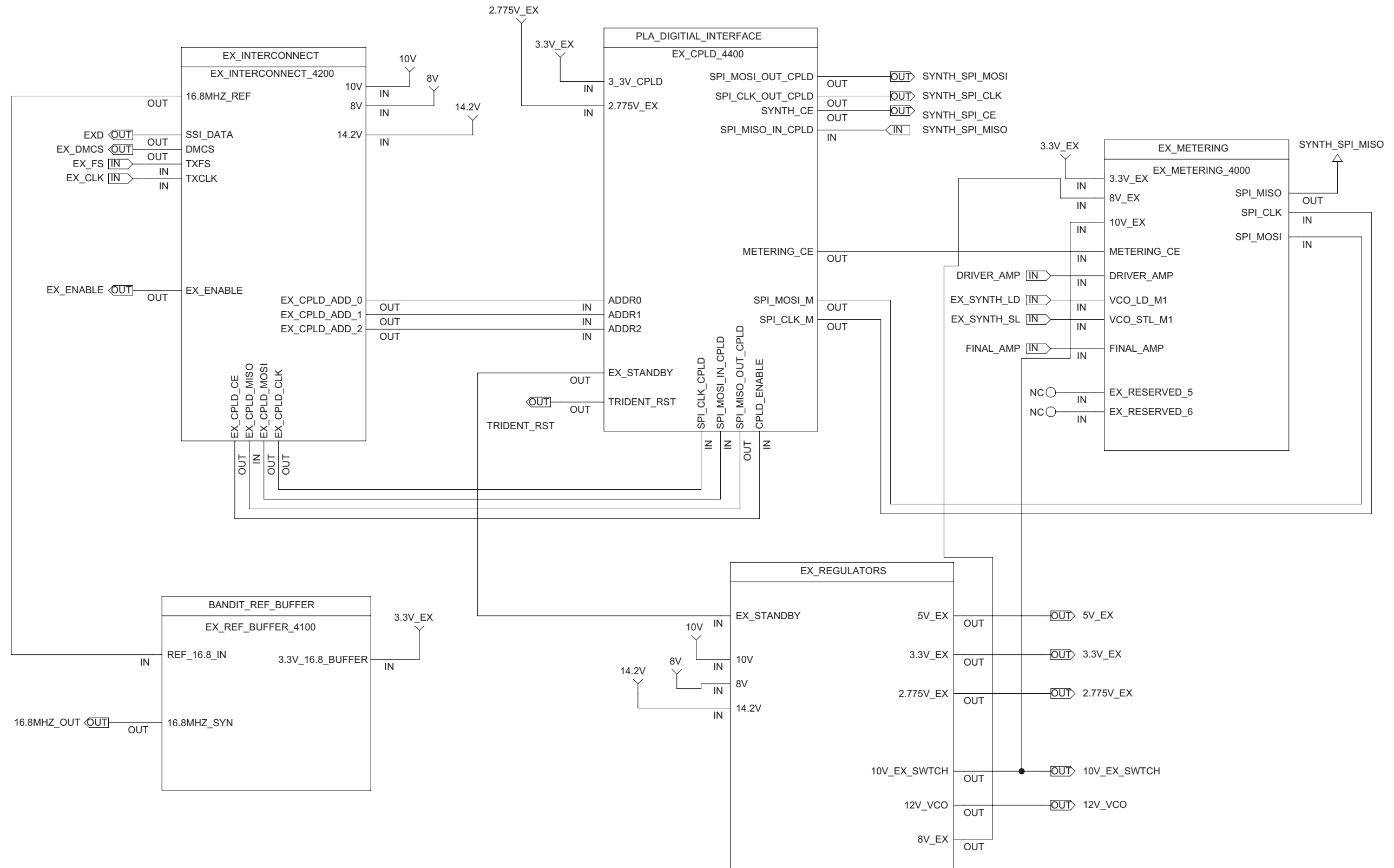


Exciter – Buffer Amplifier Schematic Diagram (Kit No. CTE4004)

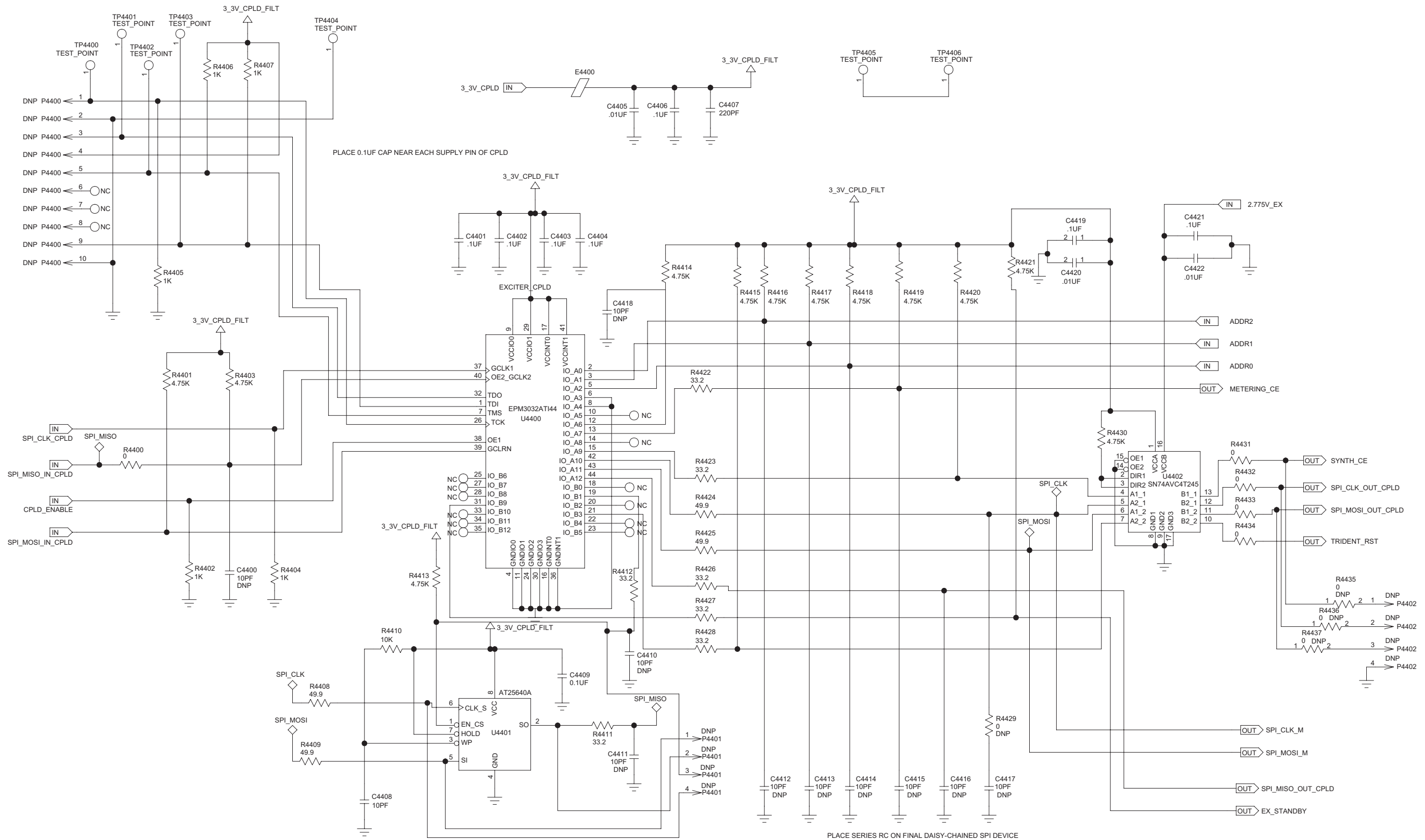




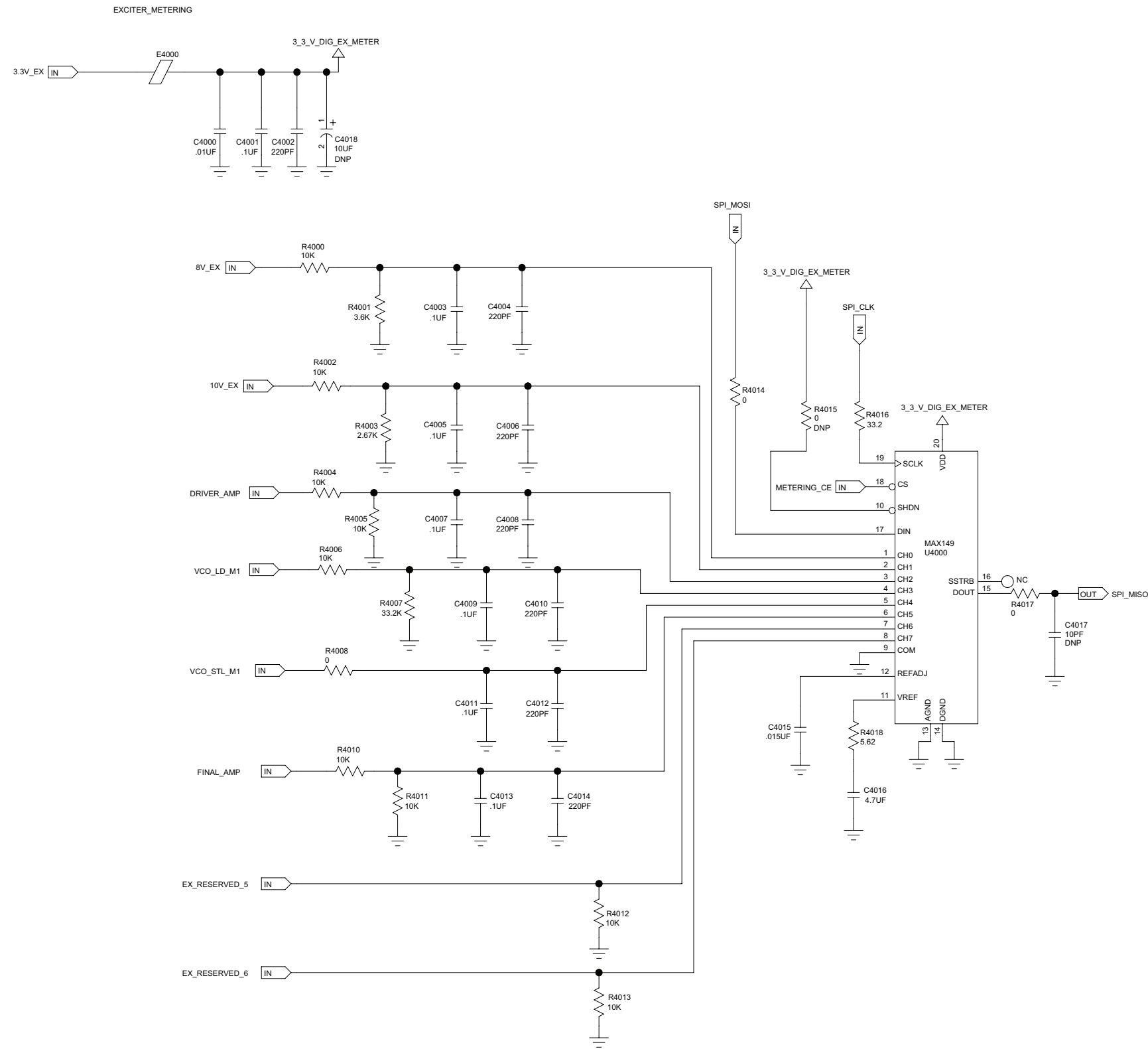
Exciter – Switch Schematic Diagram (Kit No. CTE4004)



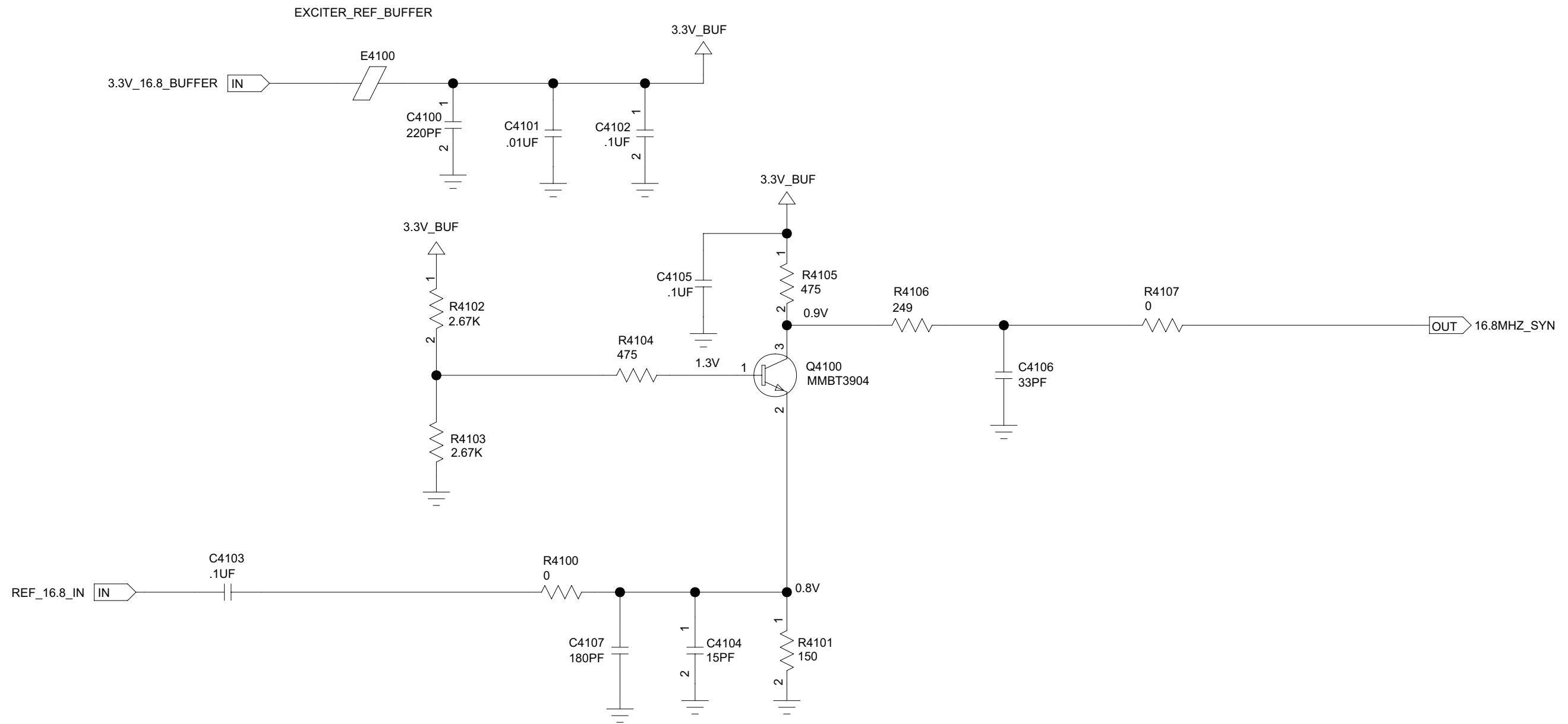
Exciter – Digital Section Schematic Diagram (Kit No. CTE4004)



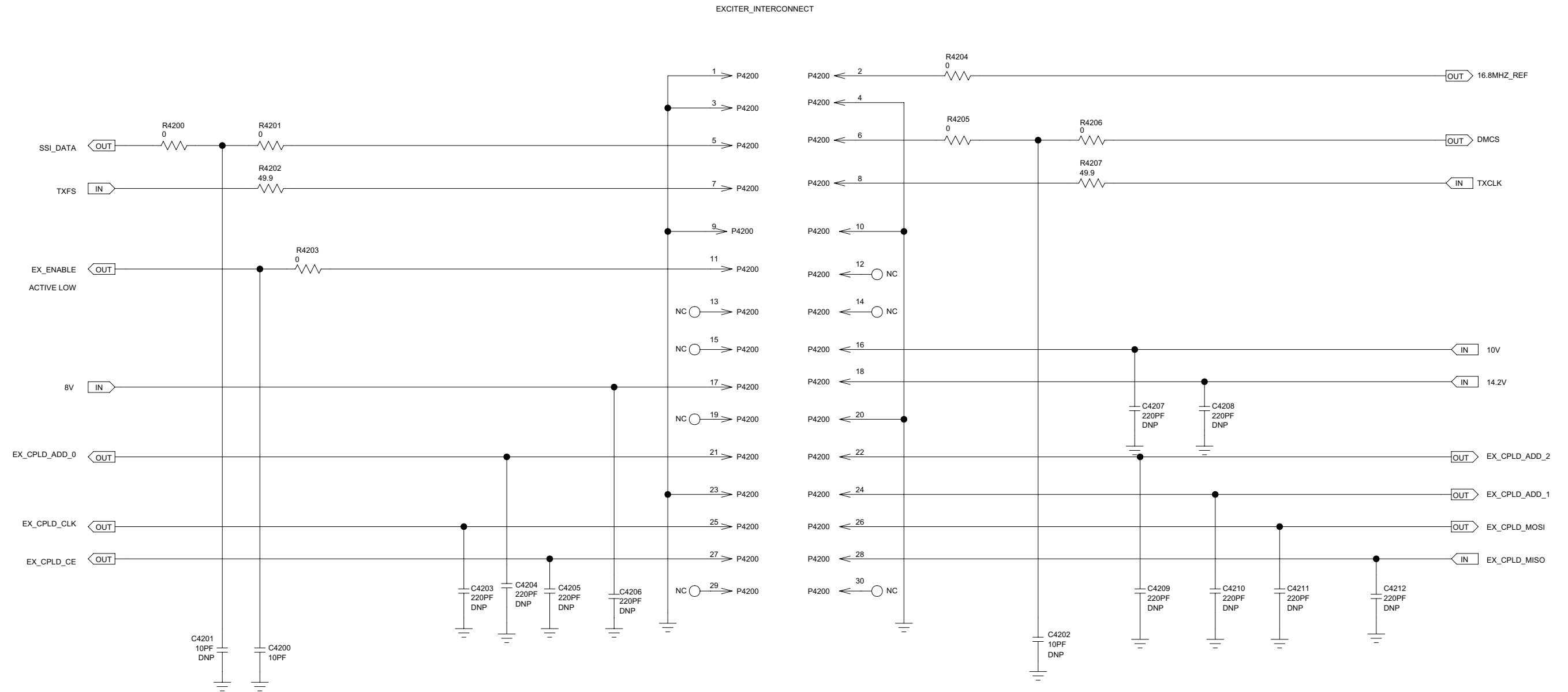
Exciter – CPLD Schematic Diagram (Kit No. CTE4004)



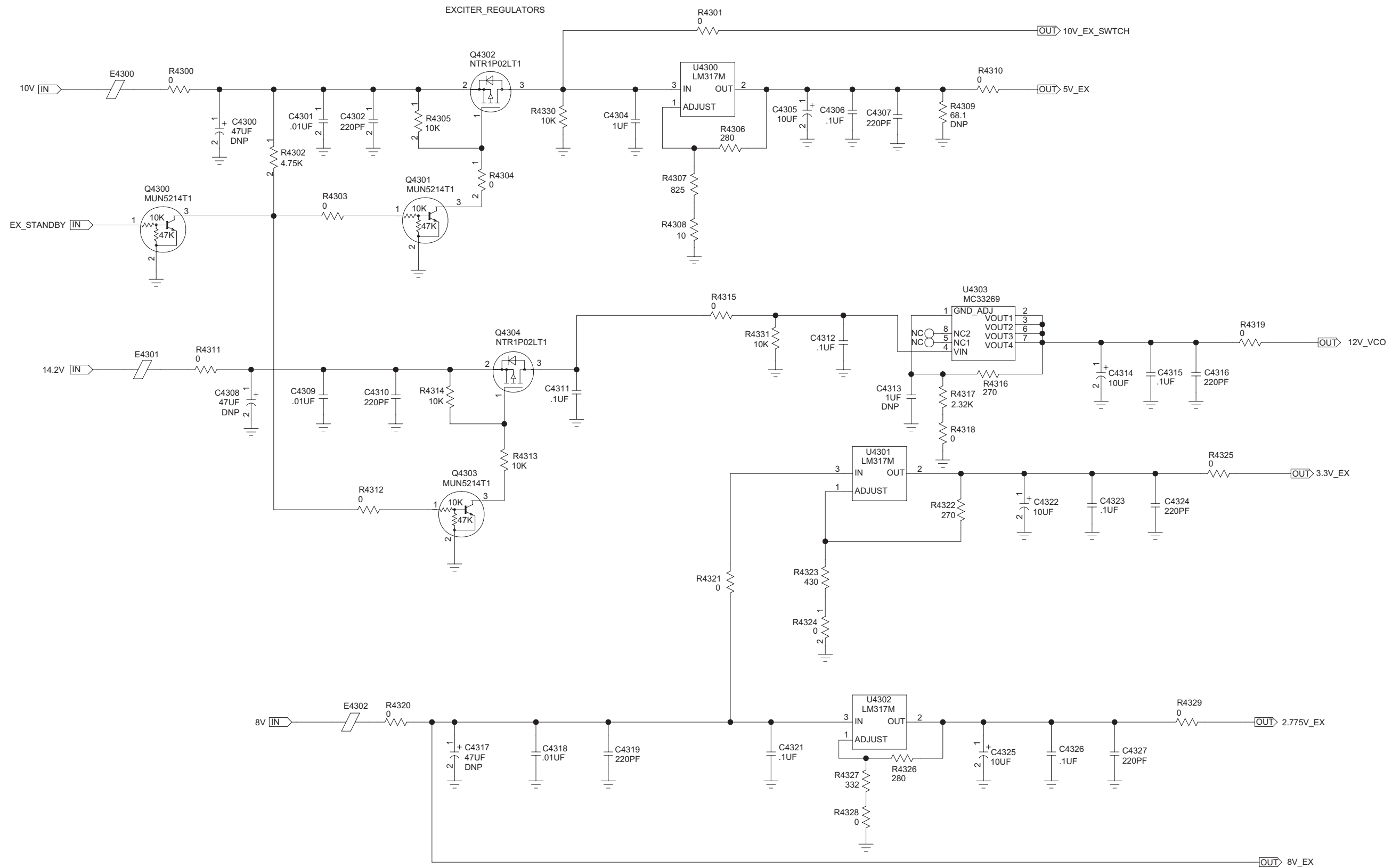
Exciter – Metering Schematic Diagram (Kit No. CTE4004)



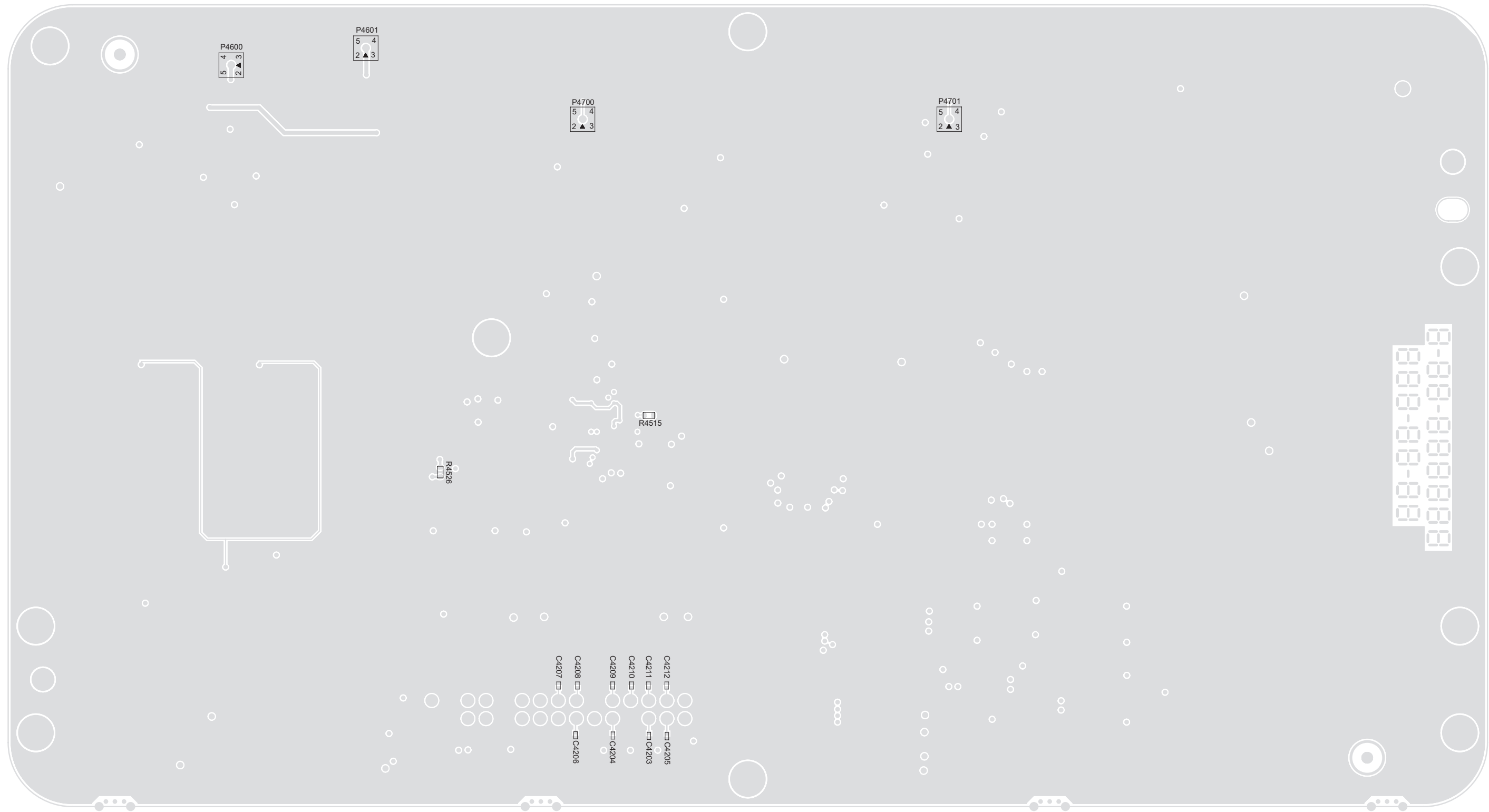
Exciter – 16.8MHz Ref Buffer Schematic Diagram (Kit No. CTE4004)



Exciter – Interconnect Schematic Diagram (Kit No. CTE4004)



Exciter – Regulators Schematic Diagram (Kit No. CTE4004)



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,950MHZ SRF,SM,PB-FR
L4600	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L4603	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L4604	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L4605	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L4608	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR

Circuit Ref	Motorola Part No	Description
L4609	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L4615	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L4700	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,300MHZ,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,300MHZ,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,300MHZ,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,300MHZ,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	0613952C67	CER CHIP RES 487Ω 1 0603
R4521	0613952B69	CER CHIP RES 51.1Ω 1% 0603
R4522	0613952C09	CER CHIP RES 121Ω 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	0613952B46	CER CHIP RES 29.4Ω 1% 0603
R4602	0613958C47	CER CHIP RES 301Ω 1% 0805
R4603	0613958C01	CER CHIP RES 100Ω 1% 0805
R4604	0613952D20	CER CHIP RES 1580Ω 1 0603
R4605	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4606	0613952B50	CER CHIP RES 32.4Ω 1% 0603
R4607	0613952C26	CER CHIP RES 182Ω 1% 0603
R4608	0613952C26	CER CHIP RES 182Ω 1% 0603
R4609	0613952B01	CER CHIP RES 10.0Ω 1% 0603
R4610	0613952B42	CER CHIP RES 26.7Ω 1% 0603
R4611	0613958C47	CER CHIP RES 301Ω 1% 0805
R4612	0613958C01	CER CHIP RES 100Ω 1% 0805
R4613	0613952D20	CER CHIP RES 1580Ω 1 0603
R4614	0613952D01	CER CHIP RES 1000Ω 1% 0603
R4615	0613952B37	CER CHIP RES 23.7Ω 1% 0603
R4616	0613952C34	CER CHIP RES 221Ω 1% 0603
R4617	0613952C34	CER CHIP RES 221Ω 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	0613952D30	CER CHIP RES 2000Ω 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	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,950MHZ SRF,SM,PB-FR
L4600	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L4603	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L4604	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L4605	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L4608	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR

Circuit Ref	Motorola Part No	Description
L4609	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,560MHZ SRF,SM,PB-FR
L4615	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ SRF,SM,PB-FR
L4700	2414032F59	IDCTR,WW,390NH,5%,290 MA,1.5Ω,CER,48 Q,560MHZ 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,300MHZ,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,300MHZ,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,300MHZ,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,300MHZ,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,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

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

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

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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

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- 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.
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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

45D Butterfield Trail
El Paso, TX 79906
Tel: 1-800-227-6772

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

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
AGC	Automatic Gain Control
Alert tone	Audio signal produced by the station, providing feedback to the user.
Analog	Refers to a continuously variable signal or a circuit or device designed to handle such signals.
ASIC	Application Specific Integrated Circuit
AUX	Auxiliary
Band	Frequencies allowed for a specific purpose.
CCI	Control Channel Indicate
CDCSS	Continuous Digital-Controlled Squelch Systems (DPL)
CTCSS	Continuous Tone-Controlled Squelch Systems (PL)
CIT	Central Interconnect Terminal. Used to provide telephone interconnect capability in a trunked station.
CIU	Console Interface Unit. Interface between operator console and station to provide encryption/decryption functions.
Clear	Channel modulation type in which voice information is transmitted over the channel using analog modulation.
Code detect	Traditional term used to indicate that a 12kbps CVSD signal is being received on the RF channel.
Conventional	Term used for standard non-trunked radio system (usually using TRC/DC console).
CPI	Console Priority Interface - option allowing console control of a trunked station.
CPS	Customer Programming Software: Software with a graphical user interface containing the feature set of a radio.
DDM	Dual Device Module
Default	A pre-defined set of parameters.
Digital	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.
DPL	Digital Private Line (See PL)

Term	Definition
DSP	Digital Signal Processor, microprocessor specifically designed to perform digital signal processing algorithms.
DVP	Digital Voice Protection, or Digital Voice Privacy, applies to the Vulcan encryption algorithm and the Motorola product in which it is sold.
EIA	Electronic Industries Association
E/M	Telephone circuit signalling lines (Ear/Mouth, Ernie/Mary)
EOM	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.
ESD	Electro Static Discharge
ETS	European Telecommunications Standards
EU	European Union
Failsoft	Trunked station mode entered when central controller fails
FCC	Federal Communications Commission.
FFSK	Fast FSK
FM	Frequency Modulation
Frequency	Number of times a complete electromagnetic-wave cycle occurs in a fixed unit of time (usually one second).
FRU	Field Replaceable Unit
FSK	Frequency Shift Keying
GPI	General Purpose Input
GPO	General Purpose Output
HLGT	High Level Guard Tone
IC	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.
IF	intermediate frequency
I/O	Input or Output
IRB	Inbound Recovery Board used with the Trunking Controller
IRQ	Interrupt Request.
kHz	kilohertz: One thousand cycles per second. Used especially as a radio-frequency unit.
LCD	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
LED	Light Emitting Diode: An electronic device that lights up when electricity is passed through it.
LLGT	Low Level Guard Tone
MAN_CS	Manual Channel Select.
MDC	Motorola Data Communications. 1200 or 4800 baud data signalling scheme.
MHz	Megahertz: One million cycles per second. Used especially as a radio-frequency unit.
MISO	Master In, Slave Out.
MON	Monitor.
MOSI	Master Out, Slave In.
MRTI	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).
MSK	Minimum Shift Keying
OSW	Outbound Signalling Word, data packet transmitted on the outbound Trunking control channel by the central controller that contains call assignment information for the subscriber.
PA	Power Amplifier that transmits final RF signal to transmit antenna
Paging	One-way communication that alerts the Receiver to retrieve a message.
PC Board	Printed Circuit Board. Also referred to as a PCB.
PFC	Power Factor Correction
PL	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.
PLL	Phase locked loop; a circuit in which an oscillator is kept in phase with a reference, usually after passing through a frequency divider.
Programming Cable	A cable that allows the CPS to communicate directly with the radio using RS232.
PSTN	Public Switched Telephone Network
PTT	Push-to-talk; the switch located on the left side of the radio which, when pressed causes the radio to transmit.
RA/RT	Remote Access/Remote Transmit
RAC	Repeater Access Control

Term	Definition
RdStat	Receiver Data Status
Receiver	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.
Repeater	Remote transmit/receive facility that retransmits received signals in order to improve communications range and coverage.
RF	Radio Frequency, The portion of the electromagnetic spectrum between audio sound and infrared light (approximately 10 kHz to 10 GHz).
RSS	Radio Service Software; the software application used to program and service the station.
RSSI	Received Signal Strength Indicator; a dc voltage proportional to the received RF signal strength.
Rx	Receive.
SCM	Station Control Module; station controller.
Signal	An electrically transmitted electromagnetic wave.
SINAD	Acronym for the ratio of signal plus noise plus distortion and noise plus distortion.
SMR	Schaumburg Manual Revision
Smart Repeater	Trunking system in which channel control is distributed among several repeaters.
Spectra-TAC	Analog Total Area Coverage voting comparator used to select wide area receivers.
Spectrum	Frequency range within which radiation has specific characteristics.
SPI	Serial Peripheral Interface (clock and data lines); simple synchronous serial interface for data transfer between processors and peripheral ICs.
Squelch	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.
SRAM	Static RAM, memory chip used for scratchpad memory.
TCC	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).
TOC	Turn Off Code; alternating binary pattern used by DPL signalling to provide fast muting of the receiving radio.
TOT	Time-out Timer: A timer that limits the length of a transmission.
TPL	Tone Private Line.

Term	Definition
Transceiver	Transmitter-Receiver. A device that both transmits and receives analog or digital signals. Also abbreviated as XCVR.
Transmitter	Electronic equipment that generates and amplifies an RF carrier signal, modulates the signal, and then radiates it into space.
TRC	Tone Remote Control
Trunking	Radio control system which permits efficient frequency utilization and enhanced control features.
Tx	Transmit.
Type II Trunking	Motorola trunking system which provides extended features.
UHF	Ultra High Frequency
USB	Universal Serial Bus: An external bus standard that supports data transfer rates of 12 Mbps.
VCO	Voltage-Controlled Oscillator; an oscillator whereby the frequency of oscillation can be varied by changing a control voltage.
VHF	Very High Frequency
VIP	Vehicle Interface Port.
VOX	Voice Operated Switch; Used with MRTI.
VSWR	Voltage Standing Wave Ratio.
WCI	Wildcard Input
WCO	Wildcard Output
WFI	Word Frame Interrupt; used to synchronize trunking data messages in a Smart Repeater system.
Wide Area	Wide area systems allow expanded radio coverage by using multiple receivers and/or transmitters.
WL	Wireline
WL Rx	Wireline Receive; information from station RF Receiver sent to wireline equipment.
WL Tx	Wireline Transmit; information from wireline equipment sent to station RF transmitter.
XPR	Refers to Digital Professional Repeater model names in the MOTOTRBO Professional Digital Two-Way Radio System.



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