

Professional Digital Two-Way Radio System

MOTOTRBO™ Portable

Detailed Service Manual

DP 3400 Non-Display Portable

DP 3401 Non-Display Portable (with GPS)

DP 3600 Display Portable

DP 3601 Display Portable (with GPS)



Foreword

This manual covers all models of the DP Series Portable Radios, unless otherwise specified. It includes all the information necessary to maintain peak product performance and maximum working time, using levels 1 and 2 maintenance procedures. This level of service goes down to the board replacement level and is typical of some local service centers, Motorola Authorized Dealers, self-maintained customers, and distributors.

Product Safety and RF Exposure Compliance



Before using this product, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with your radio.

ATTENTION!

This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements. Before using this product, read the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with your radio (Motorola Publication part number 6864117B25) to ensure compliance with RF energy exposure limits.

For a list of Motorola-approved antennas, batteries, and other accessories, visit the following web site which lists approved accessories: <http://www.motorola.com/governmentandenterprise>

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Document History

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

Edition	Description	Date
6866574D35-A	Initial Release	June 2007
6866574D35-B	Updated front cover. Updated Maintenance chapter.	Oct. 2007
6866574D35-C	Added Controller Power Management Block schematic diagram for PCB 8486716Z08. Updated VCO Theory of Operation sections for UHF1 and VHF bands. Added PCB and parts list for 8486716Z07 board. Updated 8486716Z04 parts lists. Moved UHF1 and VHF controller schematics from RF section to Controller section. Added additional schematics for UHF1 band.	Jan. 2008

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Related Publications

IMPRES Adaptive Single-Unit Charger User Manual	6816787H01
IMPRES Adaptive Multi-Unit Charger User Manual	6816789H01
IMPRES Adaptive Multi-Unit Charger Service Manual	6871357L01
Remote Speaker Microphone User Manual	6871003L01
IMPRES Remote Speaker Microphone User Manual	6871004L01
Factory Mutual Approval Manual	6871532L01

Notes

Section 1

INTRODUCTION

1.0 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 essential to emphasize.



Caution

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

2.0 Radio Description

The DP series portable radios available in the following frequency ranges and power levels.

Table 1-1. Radio Frequency Ranges and Power Levels

Frequency Band	Bandwidth	Power Level
UHF R1	403–470 MHz	1 or 4 Watt
VHF	136–174 MHz	1 or 5 Watt

These digital radios are among the most sophisticated two-way radios available. They have a robust design for radio users who need high performance, quality, and reliability in their daily communications. This architecture provides the capability of supporting a multitude of legacy and advanced features resulting in a more cost-effective two-way radio communications solution.

Notes

Section 2

MAINTENANCE

1.0 Introduction

This chapter provides details about the following

- Preventive maintenance (inspection and cleaning).
- Safe handling of CMOS and LDMOS devices.
- Repair procedures and techniques

2.0 Preventive Maintenance

Periodic visual inspection and cleaning is recommended.

2.1 Inspection

Check that the external surfaces of the radio are clean, and that all external controls and switches are functional. It is not recommended to inspect the interior electronic circuitry.

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 radio. External surfaces include the front cover, housing assembly and battery case. These surfaces should be cleaned whenever a periodic visual inspection reveals the presence of smudges, grease, and/or grime.

NOTE Internal surfaces should be cleaned only when the radio is disassembled for service or repair.

The only recommended agent for cleaning the external radio surfaces is a 0.5% solution of a mild dishwashing detergent in water. The only factory recommended liquid for cleaning the printed circuit boards and their components is isopropyl alcohol (100% by volume).



Caution

The effects of certain chemicals and their vapors can have harmful results on certain plastics. Avoid using aerosol sprays, tuner cleaners and other chemicals.

Cleaning External Plastic Surfaces

Apply the 0.5% detergent-water solution sparingly with a stiff, non-metallic, short-bristled brush to work all loose dirt away from the radio. Use a soft, absorbent, lintless cloth or tissue to remove the

solution and dry the radio. Make sure that no water remains entrapped near the connectors, cracks, or crevices.

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 radio. 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. After completing of the cleaning process, use a soft, absorbent, lintless cloth to dry the area. Do not brush or apply any isopropyl alcohol to the frame, front cover or back cover.

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

2.3 Safe Handling of CMOS and LDMOS Devices

Complementary metal-oxide semiconductor (CMOS) devices are used in this family of radios, 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 radio without first referring to the following CAUTION statement.

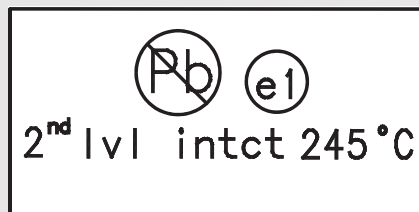
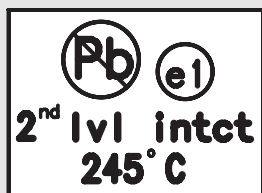
**Caution**

This radio contains static-sensitive devices. Do not open the radio 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 are 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.
- If at all 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.

3.0 Repair Procedures and Techniques — General

NOTE Environmentally Preferred Products (EPP) (refer to the marking on the printed circuit boards — examples shown below) were developed and assembled using environmentally preferred components and solder assembly techniques to comply with the European Union's **Restriction of Hazardous Substances (ROHS) Directive 2002/95/EC** and **Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC**. To maintain product compliance and reliability, use only the Motorola specified parts in this manual.



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 2-2. 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	RMA Version	2.7-3.2%	217C	52171	0.015"	1lb spool

Table 2-3. 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

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.

Rigid Circuit Boards

The family of radios 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 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.

4.0 Notes For All Schematics and Circuit Boards

* Component is frequency sensitive. Refer to the Electrical Parts List for value and usage.

1. Unless otherwise stated, resistances are in Ohms ($k = 1000$), and capacitances are in picofarads (pF) or microfarads (μF).
2. DC voltages are measured from point indicated to chassis ground using a Motorola DC multimeter or equivalent. Transmitter measurements should be made with a $1.2 \mu H$ choke in series with the voltage probe to prevent circuit loading.

3. Reference Designators are assigned in the following manner:

700/900 Series	=	Transmitter
000/200 Series	=	Frequency Generation
400/600 Series	=	Receiver
1000/2000/3000 Series	=	Controller
6000 Series	=	Keypad Board
8000 Series	=	GPS
9000 Series	=	Switches and User Interfaces

4. Interconnect Tie Point Legend:

UNSWB+	=	Unswitch Battery Voltage (7.5V)
SWB+	=	Switch Battery Voltage (7.5V)
R5	=	Receiver Five Volts
CLK	=	Clock
Vdda	=	Regulated 3.3 Volts (for analog)
Vddd	=	Regulated 3.3 Volts (for digital)
SYN	=	Synthesizer
DACRX	=	Digital to Analog Voltage (For Receiver Front End Filter)
VSF	=	Voltage Super Filtered (5 volts)
VR	=	Voltage Regulator

12-LAYER CIRCUIT BOARD DETAIL VIEWING COPPER STEPS IN PROPER LAYER SEQUENCE

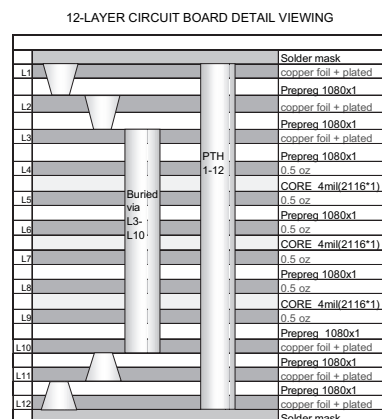


Figure 2-1: 12-Layer Circuit Board Detail Viewing

Section 3

TEST EQUIPMENT AND SERVICE AIDS

1.0 Recommended Test Equipment

The list of equipment contained in Table 3-1 includes most of the standard test equipment required for servicing Motorola portable radios.

Table 3-1. Recommended Test Equipment

Equipment	Characteristics	Example	Application
Service Monitor	Can be used as a substitute for items marked with an asterisk (*)	Aeroflex 2975 (www.aeroflex.com), Motorola R2670, or equivalent	Frequency/deviation meter and signal generator for wide-range troubleshooting and alignment
Digital RMS Multimeter *	100 μ V to 300 V 5 Hz to 1 MHz 10 Mega Ohm Impedance	Fluke 179 or equivalent (www.fluke.com)	AC/DC voltage and current measurements. Audio voltage measurements
RF Signal Generator *	100 MHz to 1 GHz -130 dBm to +10 dBm FM Modulation 0 kHz to 10 kHz Audio Frequency 100 Hz to 10 kHz	Agilent N5181A (www.agilent.com), Ramsey RSG1000B (www.ramseyelectronics.com), or equivalent	Receiver measurements
Oscilloscope *	2 Channel 50 MHz Bandwidth 5 mV/div to 20 V/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	Transmitter power output measurements
RF Millivolt Meter	100 mV to 3 V RF 10 kHz to 1 GHz	Boonton 92EA (www.boonton.com) or equivalent	RF level measurements
Power Supply	0 V to 32 V 0 A to 20 A	B&K Precision 1790 (www.bkprecision.com) or equivalent	Voltage supply

2.0 Service Aids

Table 3-2 lists the service aids recommended for working on the radio. 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 3-2. Service Aids

Motorola Part No.	Description	Application
RLN4460_	Portable Test Set	Enables connection to the audio/accessory jack. Allows switching for radio testing.
GMVN5141_	Customer Programming Software on CD-ROM	Allows servicer to program radio parameters, tune and troubleshoot radios.
PMKN4012_	Portable Programming Cable	This cable connects the radio to a USB port for radio programming and data applications.
PMKN4013_	Portable Programming, Testing & Alignment Cable	This cable connects the radio to a USB port for radio programming, testing and alignment.
PMNN4076_	7.5V Universal Battery Eliminator	Connects to radio via battery eliminator cable.
5880348B33	DMR SMA to BNC RF Adaptor	Adapts radio's antenna port to BNC cabling of test equipment.
PMHN4085_	Bench Test Housing Eliminator	Interconnects radio to power supply. Provides for troubleshooting of the radio when the housing is removed.
NLN9839_	Vacuum Pump Kit	Allows servicer to test for leakages.
NTN4265_	Pressure Pump Kit	Allows servicer to locate leakages.
5871134M01	Connector Fitting	This connector allows the vacuum hose to be connected to the radio chassis.
3271133M01	Fitting Seal	This seal secures the connector fitting to the radio chassis.

3.0 Programming, Testing and Alignment Cable

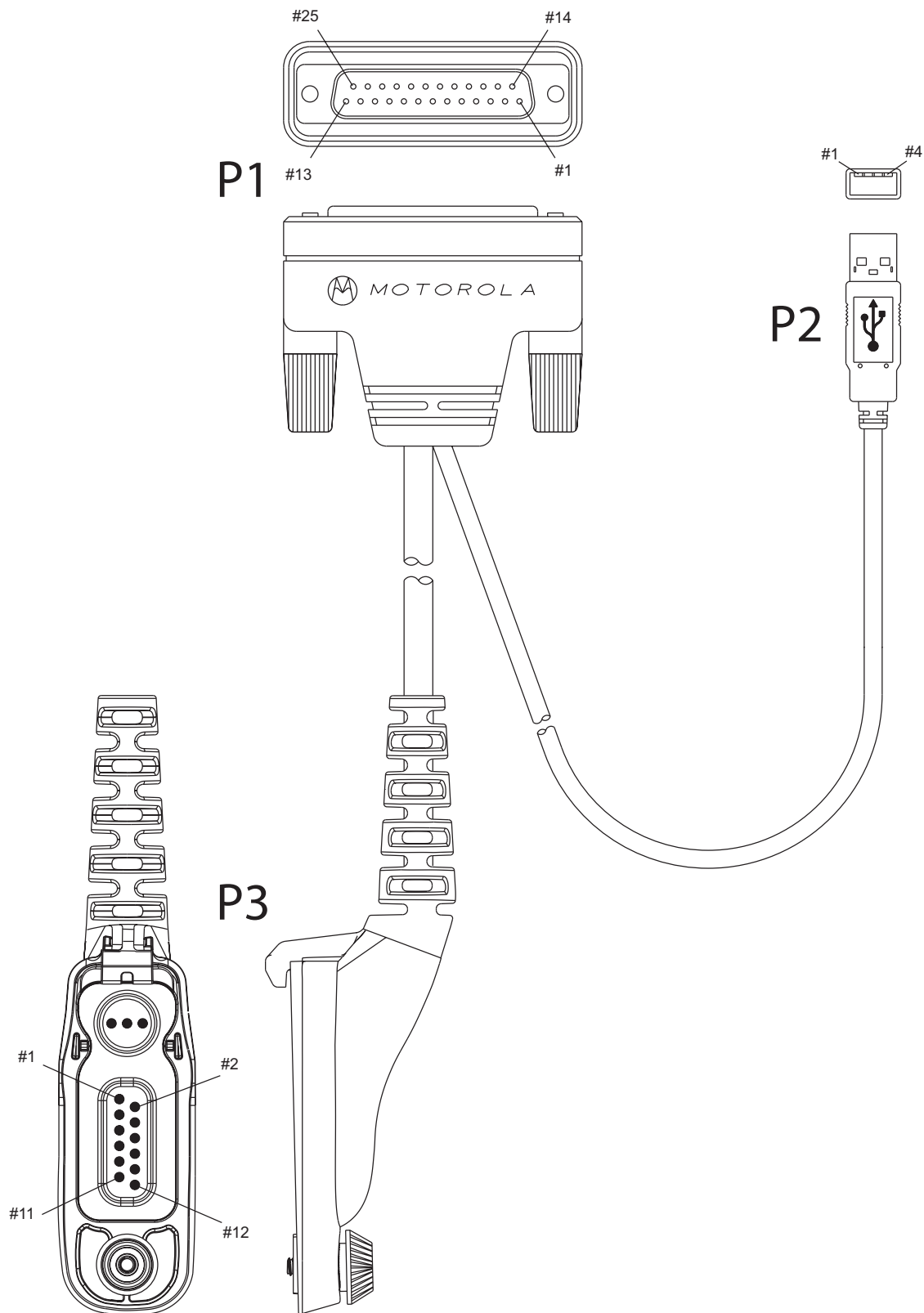


Figure 3-1. Programming, Testing and Alignment Cable

Table 3-3. Pin Configuration of Side Connector

CONNECTION			
P1	P2	P3	
Pin	Pin	Pin	Function
	1	3	VCC (5V)
	3	4	DATA +
	2	5	DATA -
16		6	GROUND
7		8	SPEAKER -
17		10	EXTERNAL MIC +
16		11	EXTERNAL MIC -
20		9	EXTERNAL PTT
1		7	SPEAKER +
	4	1 (Coax Connector)	GROUND

Section 4

POWER UP SELF-TEST

1.0 Power-Up Error Codes (Display Model only)

Upon powering up, the radio performs certain tests to determine if its basic electronics and software are in working order. Any error detected has an associated error code that is presented on the radio display. These error codes are intended to be used by a service technician when the radio generates the Self Test Fail Tone. If these tests are successfully completed, the radio will generate the Self Test Tone.

There are two classes of detectable errors, fatal and non-fatal. If it is considered as a fatal error, then the normal radio operation will be inhibited. Fatal errors include hardware errors detected by the microprocessor and certain memory errors. These memory errors include incorrect ROM checksum, incorrect RAM checksum, and incorrect checksums of codeplug (Persistent Storage) blocks that contain operating parameters. If the codeplug block operating parameters are corrupted, operation of the unit on the proper frequency, system, and group are in question. Attempts to use this information could provide the user with a false sense of security that others are receiving his messages. Corrupted codeplug blocks of call IDs, or their associated aliases are considered non-fatal errors. While the user may be inconvenienced, normal communication is still possible.

Table 4-4. Power-Up Error Codes

Error Code	Description	Error Type	Corrective Action
ERROR 01/02	Call ID or associated aliases codeplug block checksum is wrong.	Non-Fatal	Normal communication is still possible, but the user may be inconvenienced. Reprogram codeplug.
ERROR 01/22	Tuning Codeplug block checksum is wrong.	Non-Fatal	Normal communication is still possible.
FAIL 01/82	External Codeplug block checksum is wrong.	Fatal	Reprogram codeplug.
FAIL 01/92	Secure Codeplug checksum error	Fatal	Reprogram codeplug.
FAIL 01/A2	Tuning Codeplug block checksum is wrong.	Fatal	Reprogram codeplug.
FAIL 01/81	ROM Checksum is wrong.	Fatal	Reprogram FLASH Memory, then retest. If message reoccurs, replace main board or send radio to nearest Motorola Depot.
FAIL 01/88	Radio RAM Test Failure.	Fatal	Retest radio by turning it off and turning it on again. If message reoccurs, replace main board or send radio to nearest Motorola Depot.
FAIL 01/90 or FAIL 02/90	General hardware test failure.	Fatal	Retest radio by turning it off and turning it on again. If message reoccurs, replace main board or send radio to nearest Motorola Depot.

Table 4-4. Power-Up Error Codes (Continued)

Error Code	Description	Error Type	Corrective Action
FAIL 02/81	DSP ROM Checksum is wrong.	Fatal	Reprogram FLASH Memory, then retest. If message reoccurs, replace main board or send radio to nearest Motorola Depot.
FAIL 02/82	DSP RAM1 test failure.	Fatal	Retest radio by turning it off and turning it on again. If message reoccurs, replace main board or send radio to nearest Motorola Depot.
FAIL 02/84	DSP RAM2 test failure.	Fatal	Retest radio by turning it off and turning it on again. If message reoccurs, replace main board or send radio to nearest Motorola Depot.
FAIL 02/88	DSP RAM test failure.	Fatal	Retest radio by turning it off and turning it on again. If message reoccurs, replace main board or send radio to nearest Motorola Depot.
FAIL 02/C0	DSP ROM Checksum is wrong.	Fatal	Retest radio by turning it off and turning it on again. If message reoccurs, replace main board or send radio to nearest Motorola Depot.
No Display	Display module is not connected properly. Display module is damaged.	Fatal	Check connection between main board and display module. Replace with new display module.

NOTE A non-display radio emits only the Self Test Fail Tone if it fails the self-test.

2.0 Operational Error Codes

During radio operation, the radio performs dynamic tests to determine if the radio is working properly. Problems detected during these tests are presented as error codes on the radio's display. The presence of an error code should prompt a user that a problem exists and that a Motorola Authorized MOTOTRBO dealer should be contacted. Use Table 4-5. to aid in understanding particular operational error codes.

Table 4-5. Operational Error Codes

Error Code	Description	Error Type	Corrective Action
FAIL 001	Synthesizer Out-of-Lock	NON-FATAL	1. Reprogram the codeplug. 2. Refer to Detailed Service Manual.
FAIL 002	Personality checksum or system block error	NON-FATAL	Reprogram the codeplug.

Section 5

CONTROLLER INFORMATION

1.0 General Controller Block

The controller board is the central interface between the various subsystems of the radio. The controller section consists of 4 main ICs. These are the OMAP1710 Host/DSP Processor, Flash, SDRAM memories and the MAKO Audio/Power Management chip.

Figure 5-1 shows how the controller interfaces with the RF Section and the supporting controls, switches and display. The Controller, RF sections, volume port, frequency selection switch and the universal connector are placed on a single “Transceiver” board. LCD Display is mounted directly to the Transceiver board and keypad is designed on the flex. The Option Board is a separate board that hosts the line/connections to the flex keypad. The physical interface between the Transceiver board and keypad board is via flex through board to board connector on the option board.

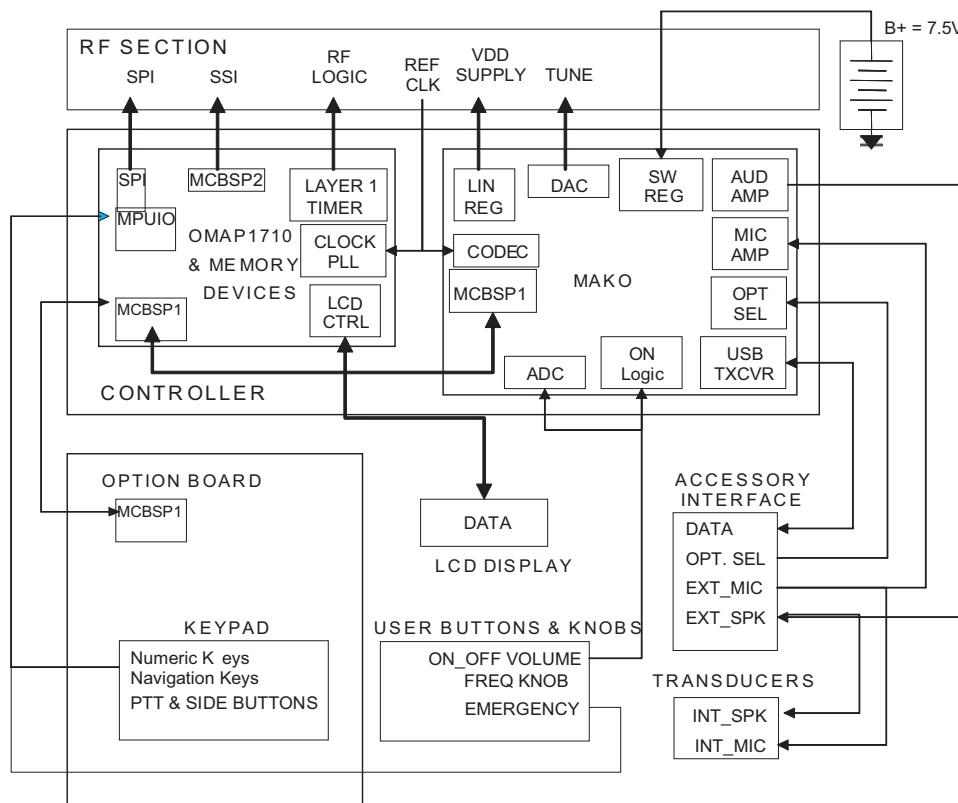


Figure 5-1: Controller Block Diagram

1.1 OMAP1710 Processor (U1000)

The OMAP processor (U1000) has a dual-core architecture which incorporates a TMS320C55x DSP core and a high-performance ARM926EJS core. The OMAP is supplied with two voltages: 1.4V for Core and 1.8V for Peripheral and I/O Interfaces.

The OMAP processor controls the operation of the transmitter, receiver, synthesizer and MAKO IC. It also uses Flash and SDRAM, both located externally.

1.2 Flash Memory (U2000)

The Flash memory IC is a 64Mbit CMOS device. It is supplied with 1.8V. The Flash memory has its 23 address lines and 16 data lines connected to the External Interface Module (EIM) of the OMAP IC through the EMIFS_ADDR(23:1) and EMIFS_DATA(15:0) busses. The Flash memory contains host firmware, DSP firmware, codeplug data, and tuning values.

1.3 SDRAM (U2001)

The Synchronous DRAM (SDRAM) is 128Mb high-speed CMOS device. It is designed to operate in 1.8V, low-power memory system. The SDRAM has 13 address lines and 16 data lines connected to the EIM of OMAP IC through SDRAM_ADDR(12:0) and SDRAM_DATA(15:0) busses.

1.4 MAKO IC (U3000)

The MAKO IC handles DC power distribution and audio processing (i.e. audio amplification and analog-to-digital/ digital-to-analog conversions). It contains Switching and Linear regulators, 1W audio amplifiers, 16-bit Voice CODEC, 11-channel 10-bit A/D Converter, 10 bit D/A Converter, support 2xUSB "OTG" transceivers, One-Wire Option Detect, and GCAI ports.

2.0 Controller Board

2.1 Radio Power Distribution

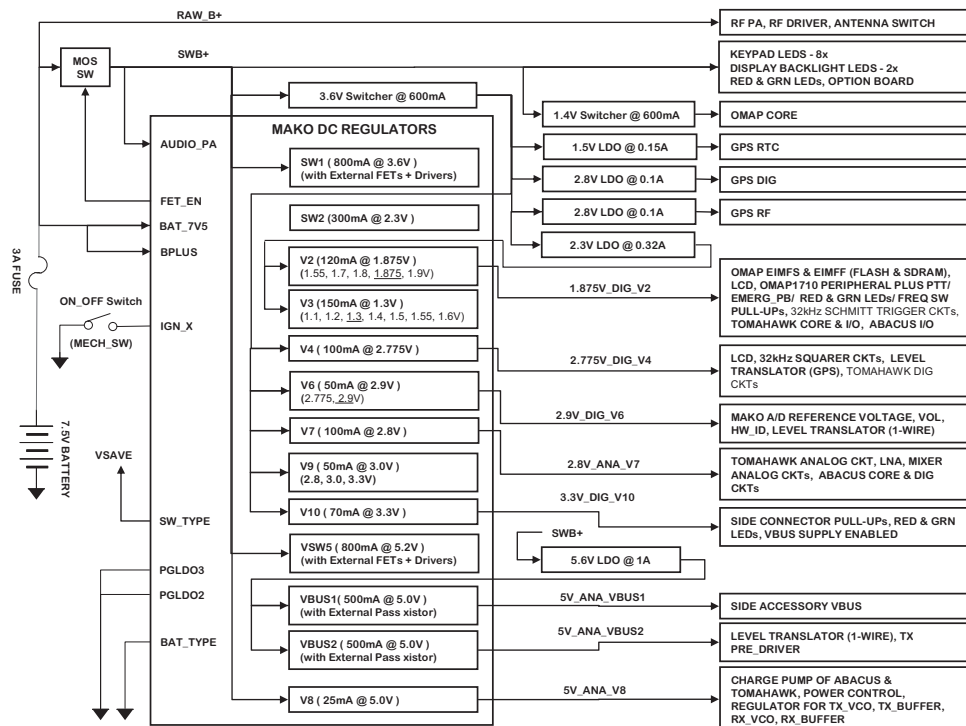


Figure 5-2: DC Power Distribution Block Diagram

Figure 5-2 illustrates the DC distribution to various ICs and devices in the radio. The power management architecture is centered on the MAKO IC (U3000). A battery supply is routed via a 3A fuse (F9000) which goes directly to the electronic ON/OFF control (PMOS power FET Q3003) as

RAWB+. When the radio is turned ON, MECH_SW (ON/OFF/volume control) will trigger the MAKO FET_ENX to low thus turning ON the PMOSFET device, and SWB+ is then distributed as shown in Figure 5-2. SWB+ will continue to support the whole board until the radio is turned OFF.

2.1.1 Voltage Regulation

- Switcher U3020

Switcher (U3020) in conjunction with the MAKO power management IC (U3000) is a highly efficient dc-dc buck converter. External components L3020 and C3202 are needed to filter out the dc-dc converter output. In this application, it is configured as a Pulse Skipping Mode (PSM) with maximum output current of 600mA. It generates an accurate 3.6V output, which supplies directly to the MAKO internal VSW2 switcher circuit as well as other MAKO internal LDOs.

- Switcher U3021

Switcher (U3021) is a highly efficient dc-dc buck converter and same as switcher U3020. It is used solely for OMAP processor core.

- Low Drop Out (LDO) Regulator U3008

LDO regulator (U3008) is an adjustable output voltage regulator which can supply 200mA load current. It has an excellent Ripple Rejection Ratio and Short Circuit Protection. In this application, LDO U3008 output is 2.3V which is set by the resistor divider R3028 and R3029. It supplies directly to MAKO internal LDOs.

- Low Drop Out (LDO) Regulator U3002

LDO regulator (U3002) is an adjustable output voltage regulator which can supply 1A load current. In this application, LDO U3002 generates an accurate 5.6V output which is set by the resistor divider R3017 and R3018. It supplies directly to both VBUS1 and VBUS2 supplies. Q3005 and Q3006 prevent internal voltage leakage onto VBUS_SUPPLY (U3002 pin 5).

- MAKO LDO VBUS1

VBUS1 is a voltage regulation module that can be used to provide 5V with either 50mA or 500mA load current suited for accessory and USB supply. Q3001 and Q3002 are used to control the low current limit (50mA) or high current limit (500mA) of Vbus1.

When USB_CONNECT is toggled LOW, the PMOSFET (Q3001) is disabled and this will limit the max load supply to 50mA. If a high current limit is desired, i.e. USB HOST mode, USB_CONNECT is toggled HIGH turning ON the PMOSFET (Q3001) through Q3002 inverter, and this will limit the max load supply to 500mA.

- MAKO LDO VBUS2

VBUS2 is a voltage regulation module that can be used to provide 5V and with only 500mA load current. This supply is used for PA Pre-driver.

- MAKO LDOs

The MAKO power management IC (U3000) provides eight more LDOs. Some LDOs are programmable to meet the requirement of various ASIC devices. V2, V3, and V9 are programmable via SPI while V4, V5, V6, V8, and V10 are fixed. See Figure 5-2 for details.

2.1.2 Power ON/OFF

The radio can be switched ON in only one condition:

1. MECH_SW turned ON

Turning the rotary switch (S9001) ON will cause MAKO (U3000) to turn ON SWB+. After application of power to SWB+, MAKO regulators are sequenced to turn ON power to all MAKO internal blocks and external system including OMAP processor (U1000), FLASH (U2000), SDRAM (U2001), and radio RF section.

Radio can be turned OFF in one of the three conditions:

1. MECH_SW turned OFF

If the radio is manually turned OFF, MAKO (U3000) will start a 125ms watchdog timer. The OMAP processor (U1000) may tickle the watchdog timer as needed to keep DC power ON as it shuts down the radio. Once the watchdog timer expires, MAKO turns OFF the DC regulators and SWB+.

2. Low Battery

While the radio is ON, if battery voltage drops to low level threshold, OMAP processor (U1000) will initiate a shutdown process. It will store the radio personality data to the FLASH (U2000) before turning OFF.

3. Thermal Shutdown

Hard and Soft limits for thermal shutdown are implemented into MAKO IC (U3000). When MAKO die temperature reaches Soft Thermal Limit (135 °C), microprocessor will be interrupted to begin shutdown procedures. If Hard Thermal Limit (155 °C) is reached before OMAP processor (U1000) can finish shutdown tasks, the radio will turn OFF immediately.

2.2 Clocks

Figure 5-3 illustrates the controller clocks used throughout the radio.

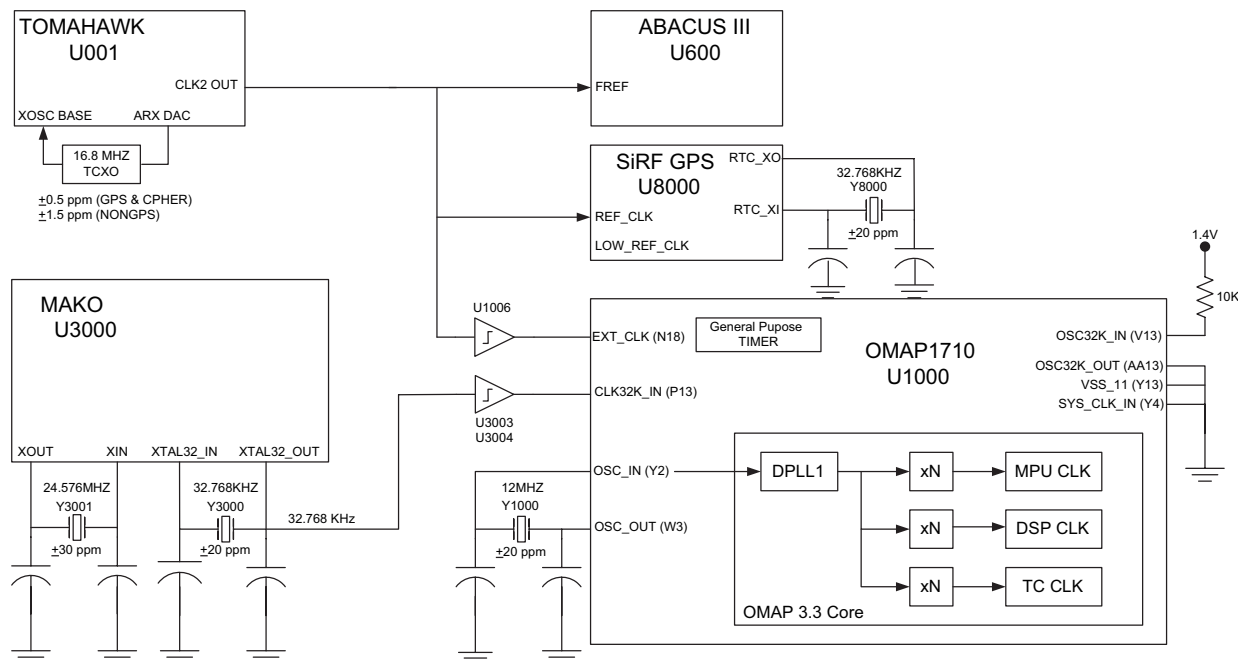


Figure 5-3: Clock Connections

The OMAP processor (U1000), which consists of an ARM and DSP core, needs three clocks for operation: a 32.768kHz square-wave, a 12MHz sine-wave, and a 16.8MHz square-wave clock.

The 16.8MHz clock source is provided from the Tomahawk TCXO routes to a squarer-circuit (U1006) and feed to EXT_CLK (U1000 pin N18).

The 32.768kHz clock is generated by the MAKO crystal (Y3000) oscillator, converted to a gated clock by U3003 and U3004 circuitry. It is then directly fed to OMAP CLK32_IN (U1000 pin P13). The OMAP processor needs the 32.768kHz to determine the input reference clock applied to OSC_IN (U1000 pin Y2). Without this 32kHz clock, the OMAP will potentially program all the wrong dividers for USB and UART booting. External pull-up on OSC32K_IN (U1000 pin V13) and grounding both OSC32K_OUT (pin AA13) and VSS_11 (pin Y13) indicates that an external 32kHz clock is used.

The 12MHz sine-wave is the main system reference clock for the OMAP which all the internal clocks are derived from.

The 24.576MHz crystal (Y3001) oscillator is the reference clock for MAKO CODEC and SSI clock.

2.3 Serial Peripheral Interface (SPI)

Figure 5-4 illustrates the controller SPI used throughout the radio.

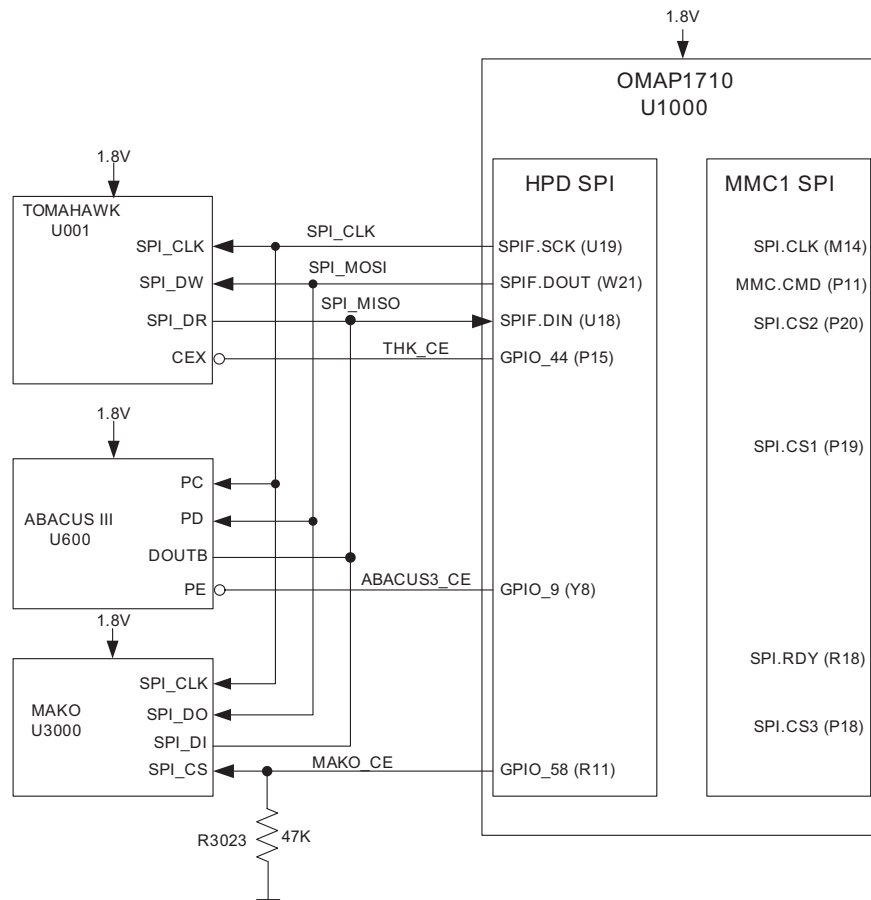


Figure 5-4: SPI Connections

The OMAP processor (U1000) has two SPI busses that it uses to communicate with the various peripheral IC's. The first is the High Performance Data (HPD) SPI bus and the second is the multi-media card (MMC) SPI.

The HPD SPI is a synchronous serial bus made up of four lines, SPI_CLK, SPI_MOSI, SPI_MISO, and chip select. The SPI_CLK line is used to control the speed of the data to/from the peripheral IC's and the OMAP processor. This clock can be adjusted to different speed based on the IC's specification.

HPD SPI module is used to interface to Tomahawk (U001), Abacus III (U600), and the MAKO (U3000). This interface operates at 1.875V logic level. SPI_MOSI, or commonly known as TRANSMIT Data, is a data string from OMAP while SPI_MISO or RECEIVE Data is data string to the OMAP.

The MMC SPI is not used in portable radio.

2.4 Serial Synchronous Interface (SSI)

Figure 5-5 illustrates the controller SSI used in the radio controller design.

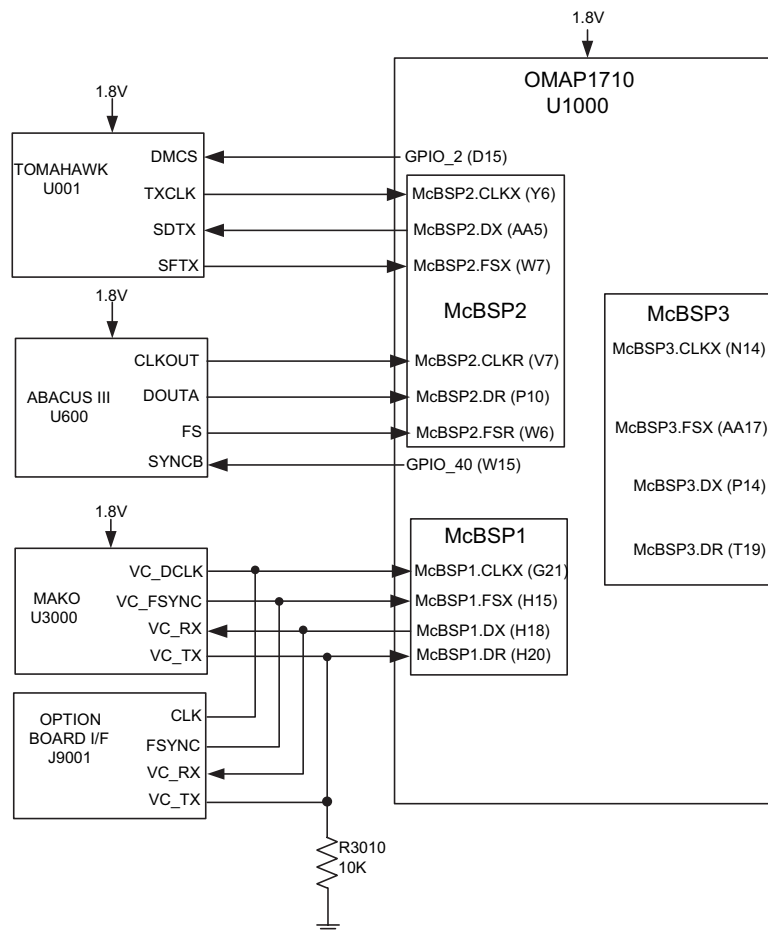


Figure 5-5: SSI Connections

The OMAP processor (U1000) has a total of three SSI or multi-channel buffer serial ports (McBSP) modules that are used to directly interface to the CODECs in the Tomahawk, Abacus, and MAKO, as well as command/ data connections to the Option Board, and between Tx and Rx radios within a Repeater.

As shown in Figure 5-5, McBSP1 is a 4-wire bus and interface to the MAKO CODEC as well as the Option Board. McBSP2 is 6-wire bus; 3-wire dedicated to the Tomahawk Tx audio and the other 3-

wire to Abacus Rx audio. McBSP3 is a 4-wire bus, and used primarily to interface between Tx and Rx radios within a Repeater.

2.5 ACC_ID Interface

Smart accessories use the Accessory ID (ACC_ID) Interface to help the radio determine which smart accessory, if any, are attached to the radio. Figure 5-6 illustrate the ACC_ID connections used within the radio.

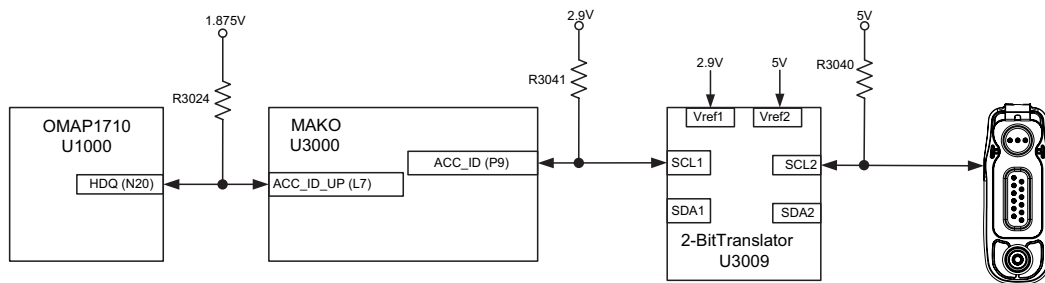


Figure 5-6: ACC_ID Interface Connections

2.6 USB Interface

The OMAP processor (U1000) supports two USB ports. The radio makes use of one USB port to communicate with smart accessories, and connection to a host computer for radio programming via CPS and tuning via Tuner Tool.

Note: The USB ports are designed to support Motorola accessories only and will not support third party “Plug-n-Play” USB devices.

Figure 5-7 shows the details of the HSSI connections within the radio.

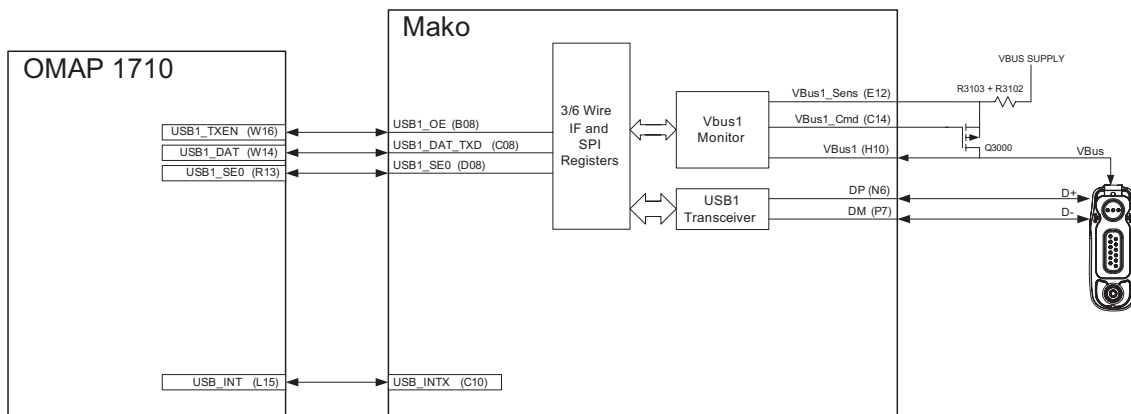


Figure 5-7: USB Interface Connections

The OMAP processor USB host controller communicates with accessories at either 1.5 Mbps or 12 Mbps data rates depending on the accessory. The USB port can be used as a host or a device.

In the portable radio, only one of the two MAKO USB transceivers is used to provide the physical layer signaling for the USB port. The transceiver generates and receives the DP and DM differential signals of the port. The MAKO transceiver interfaces to the OMAP processor through a three-wire interface consisting of two bi-directional signals (SE0 and DAT), and one uni-directional signal (TXEN). The MAKO also includes a Vbus monitor that senses the connection or removal of a device and determines whether or not to supply current to that device via Q3000 up to a high current limit of 500mA.

The USB host/device mode assignment is determined when a user attaches a USB device to the port. The accessory contains information about what the USB mode assignment should be, this information is sent to the radio via the ACC_ID. See section 2.5 on page 5-7 for more details on the ACC_ID implementation. When configured as a host, VBUS is turned ON by MAKO and set to high current limit, when configured as a device, VBUS will be shut OFF and the external host supplies the VBUS power.

2.7 Universal Connector (Side Connector)

The universal connector is located on the side of the radio. It is the external port of interface used for programming and interfacing to external accessories. The universal connector is connected to the main board via a flex through option board. This radio UC is a newly defined Motorola accessory port that contains audio, digital I/O, serial interfaces, and accessory supply lines; and is similar in function to Motorola's legacy microphone connectors. The multiplexing of these functions is handled by circuitry internal to the MAKO (U3000).

The UC includes 2 serial interfaces: an USB port and an ACC_ID interface. The USB port can be used as either a device (radio is device) or as a host (radio is host). When configured as a device, the radio can be programmed using the MOTOTRBO CPS or tuned using the Tuner software. When configured as a host, various smart accessories can be used with the radio. See section 2.6 on page 5-7 for more information on the USB interface.

The ACC_ID interface is used by accessories to provide the radio with information needed to configure the interface for that accessory. See section 2.5 on page 5-7 for more information on the ACC_ID interface.

Note: The USB port is designed to support Motorola accessories only and will not support third part "Plug-n-Play" USB devices.

2.8 Keypad Module

The keypad module is connected to the main board through option board. This unit is not considered field-repairable. The keypad interface is a standard pulsed 4 row by 4 column configuration controlled directly by the OMAP processor (U1000). Each of the 4 column output lines is toggled high in sequence and the 4 row input lines are monitored to detect if a button has been pressed. The OMAP processor then decodes which button was pressed using the appropriate column and row stimulus and response information.

2.9 Display Module

This display is Film-compensated Super Twisted Nematic (FSTN), 132x34 pixel dot matrix with transfective mode and yellow-green LEDs backlighting Liquid Crystal Display (LCD) module custom to Motorola.

This display module is constructed of glass by sandwiched with polarizers, TAB (Tape Automated Bonding) IC driver, LED backlighting, display control circuitry flex with 16-lines receptacle connector connected to the main board display connector (P9000). The LED and backlights are controlled via serial connection with OMAP processor (U1000). The serial interface consists of clock, data, and chip select lines that are connected directly from the OMAP processor.

2.10 Audio

The audio circuitry consists of both analog and digital audio paths. Figure 5-8 shows the basic block diagram of the audio interconnections.

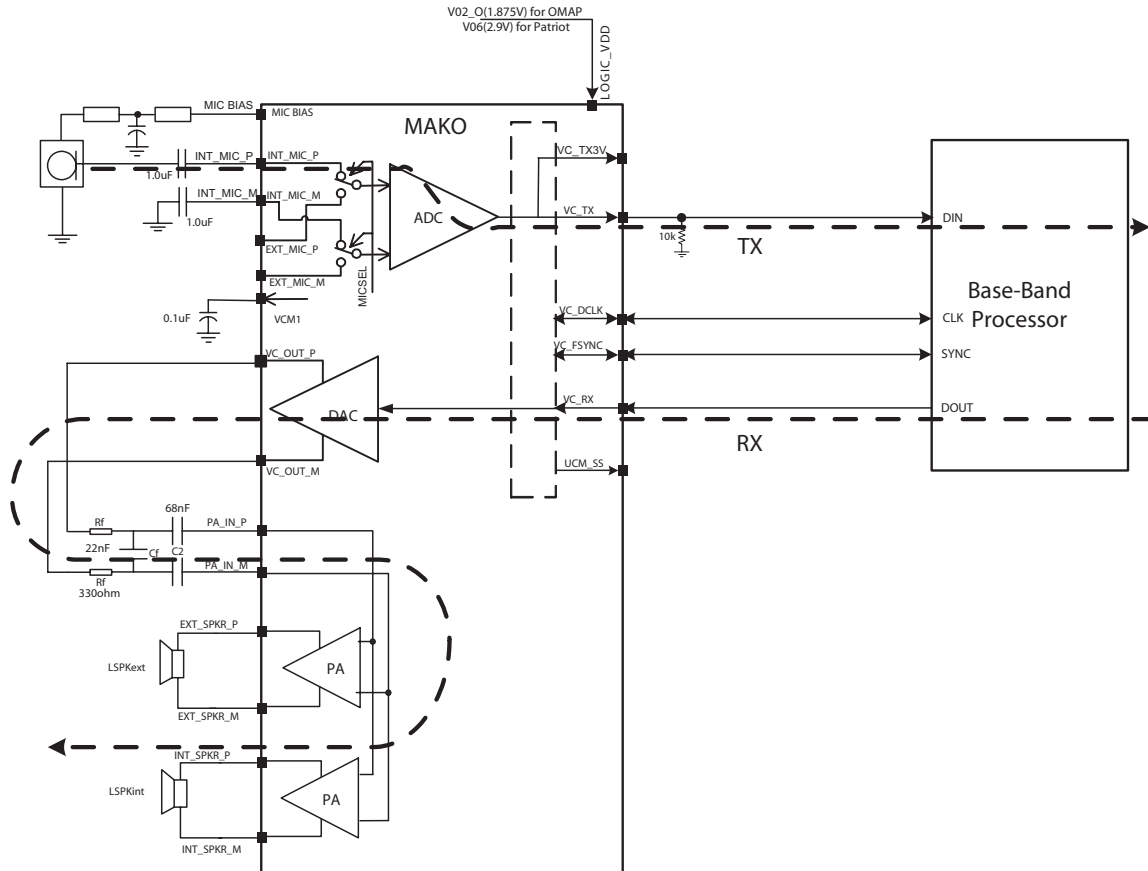


Figure 5-8: Audio Block Diagram

2.10.1 Receive Audio

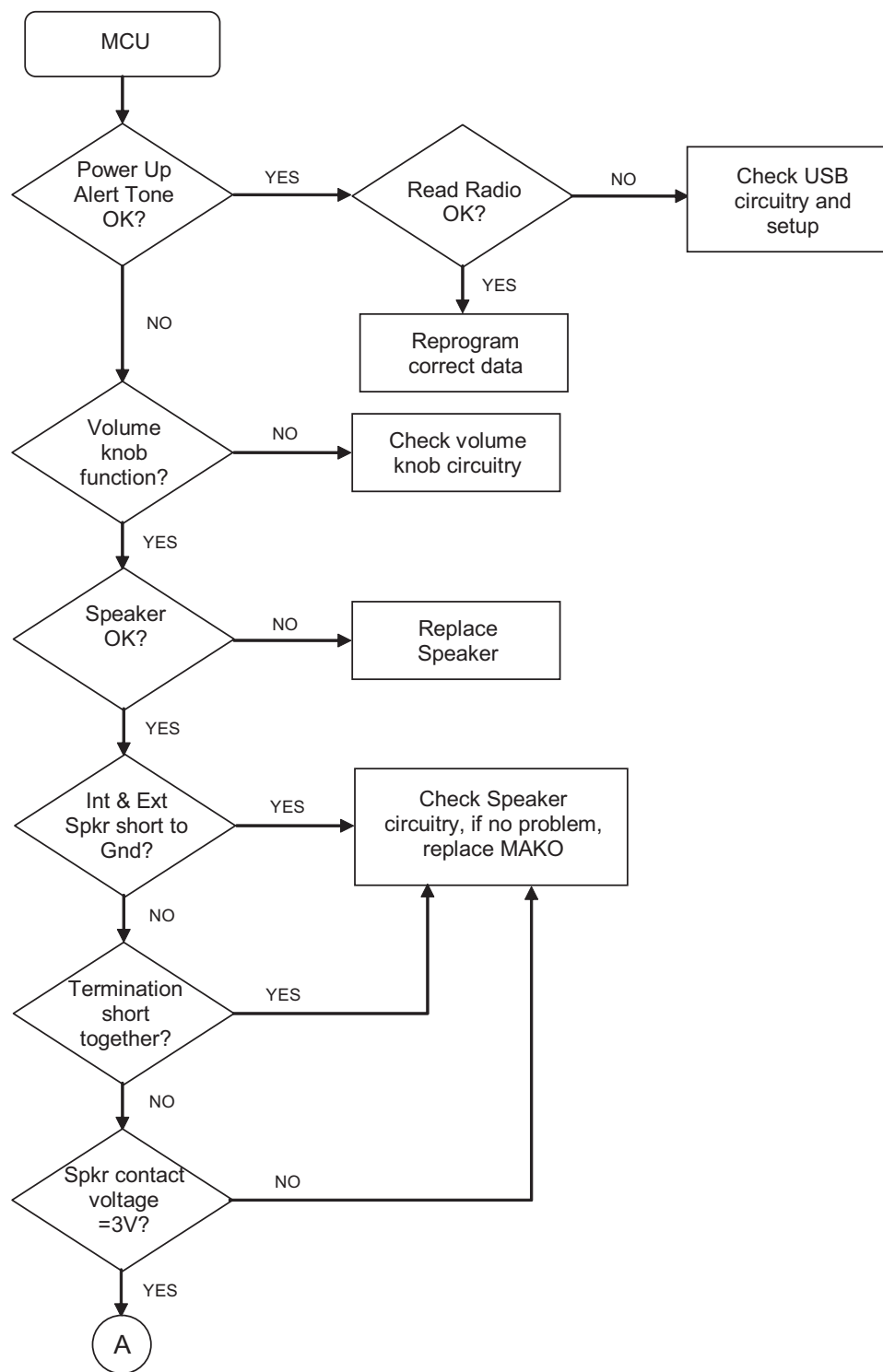
The receive audio data comes from the ABACUS III IC (U600) to the OMAP McBSP2 pin. The DSP decodes the data and sends it out through SSI lines to MAKO SSI pin. The SSI bus is comprised of four lines: clock, frame sync, Rx data, and Tx data. These four lines provide data to the MAKO (U3000) using a packet frame structure consisting of four slots. The actual audio data is transferred to the MAKO in the first slot of each frame using 16-bit pulse-code modulated PCM audio. The MAKO codec filters and converts the digital data into an analog audio signal, and this signal is sent to a programmable gain amplifier. The analog audio circuitry routes the audio to the internal or external port.

2.10.2 Transmit Audio

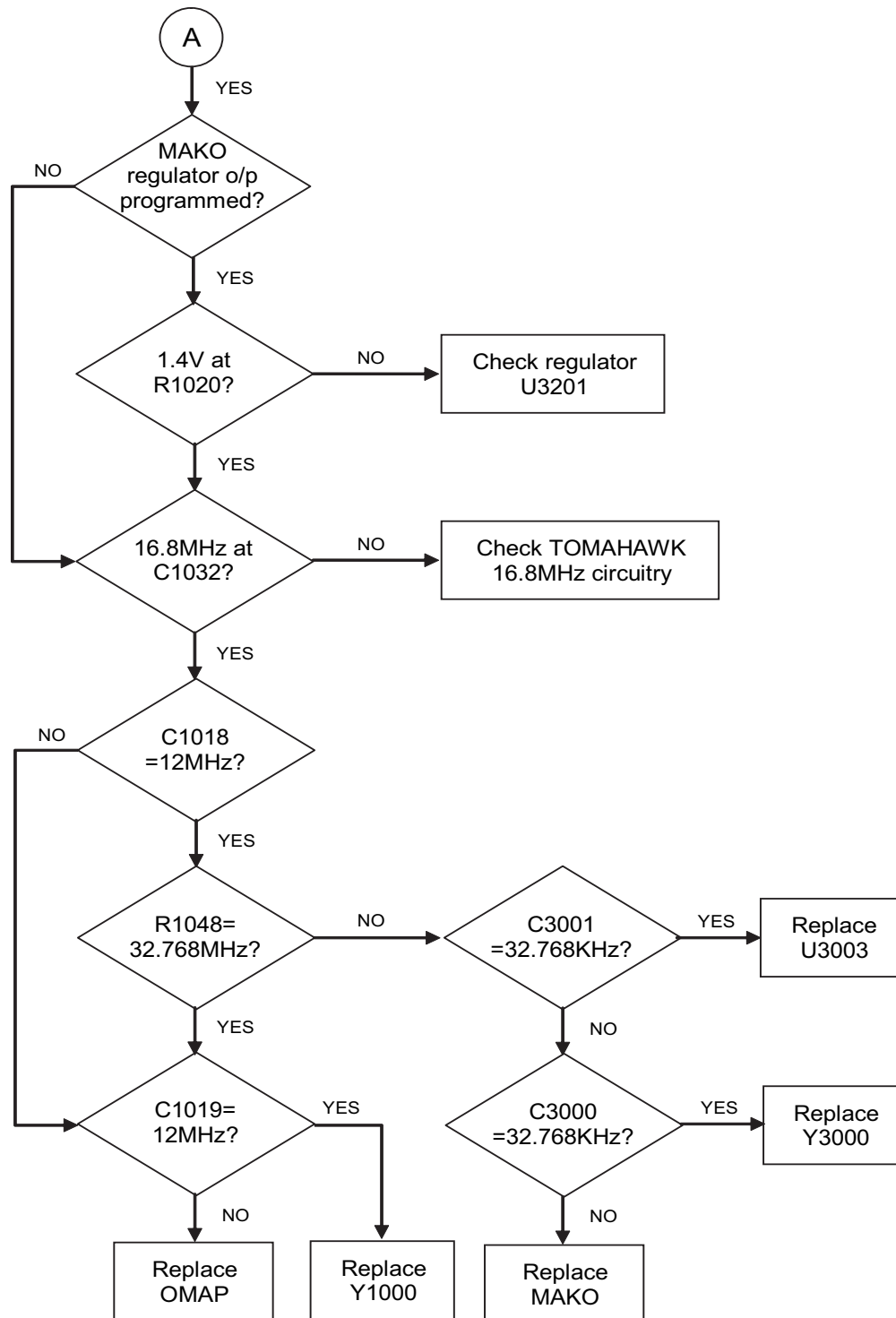
Transmit audio can be sourced from either internal or external microphone path. Both the internal and external microphone carries a 5V bias through a resistor to MAKO MIC_BIAS pin. The MAKO, through SPI, selects the appropriate microphone path to route to the necessary gain stages and converter that will send 16-bit PCM audio to the OMAP for signal processing via the SSI bus.

The transmit gain stages in the MAKO is calibrated based on an 8mV input under standard test conditions. The microphone sensitivity is programmable through the use of CPS.

2.11 Troubleshooting Charts

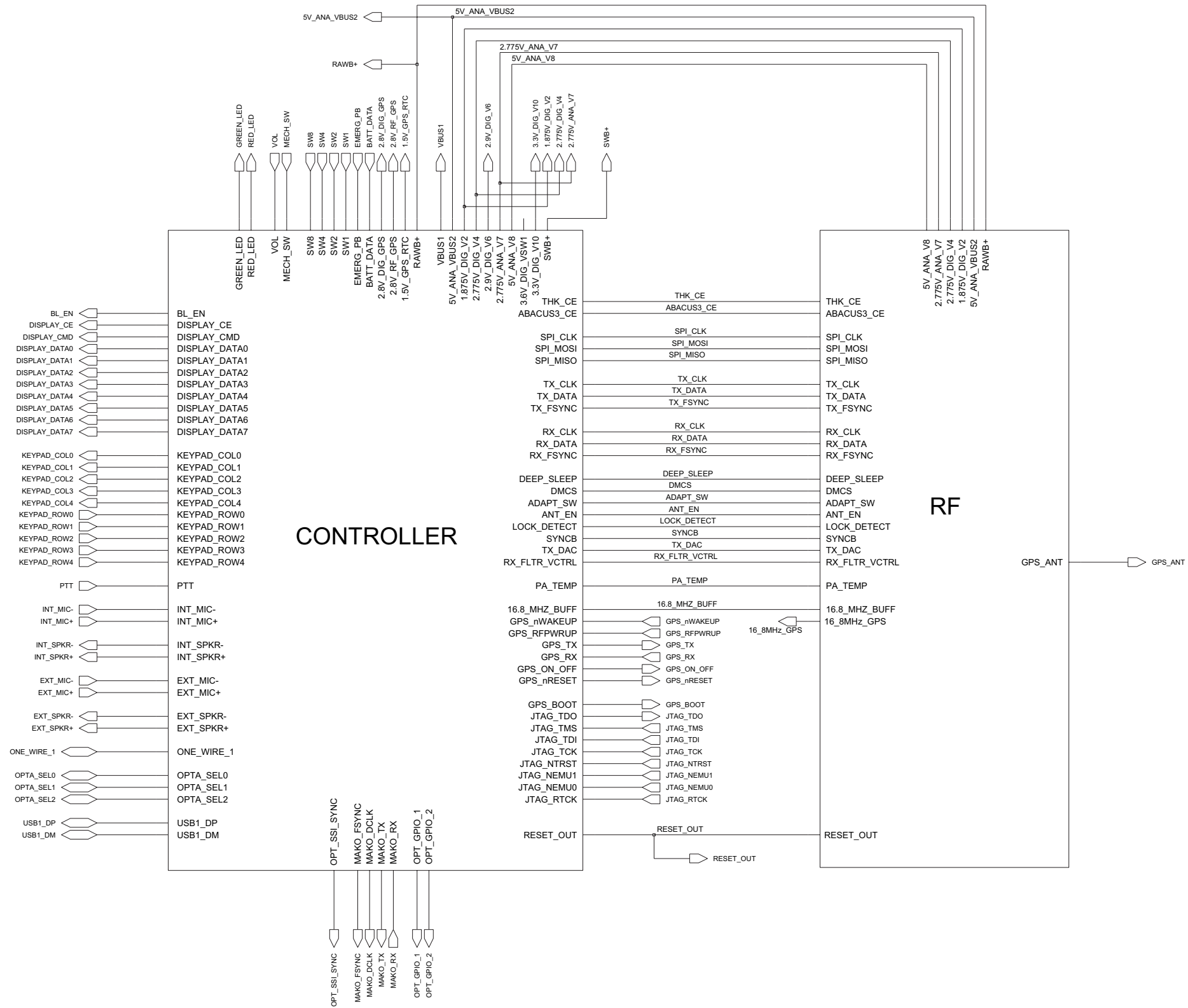


***Troubleshooting Flow Chart for Controller
(Sheet 1 of 2)***



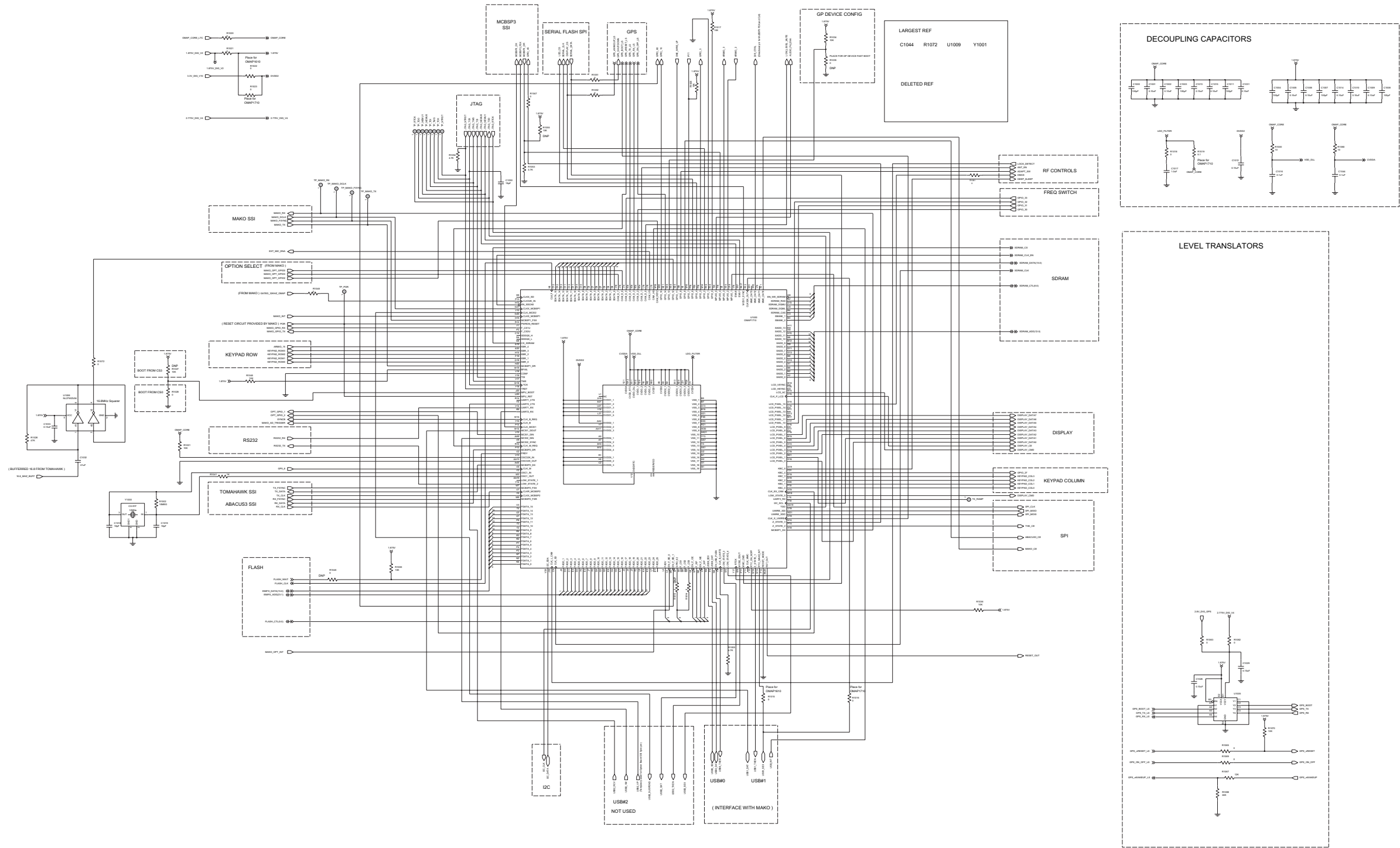
Troubleshooting Flow Chart for Controller
(Sheet 2 of 2)

2.12 Controller Schematics



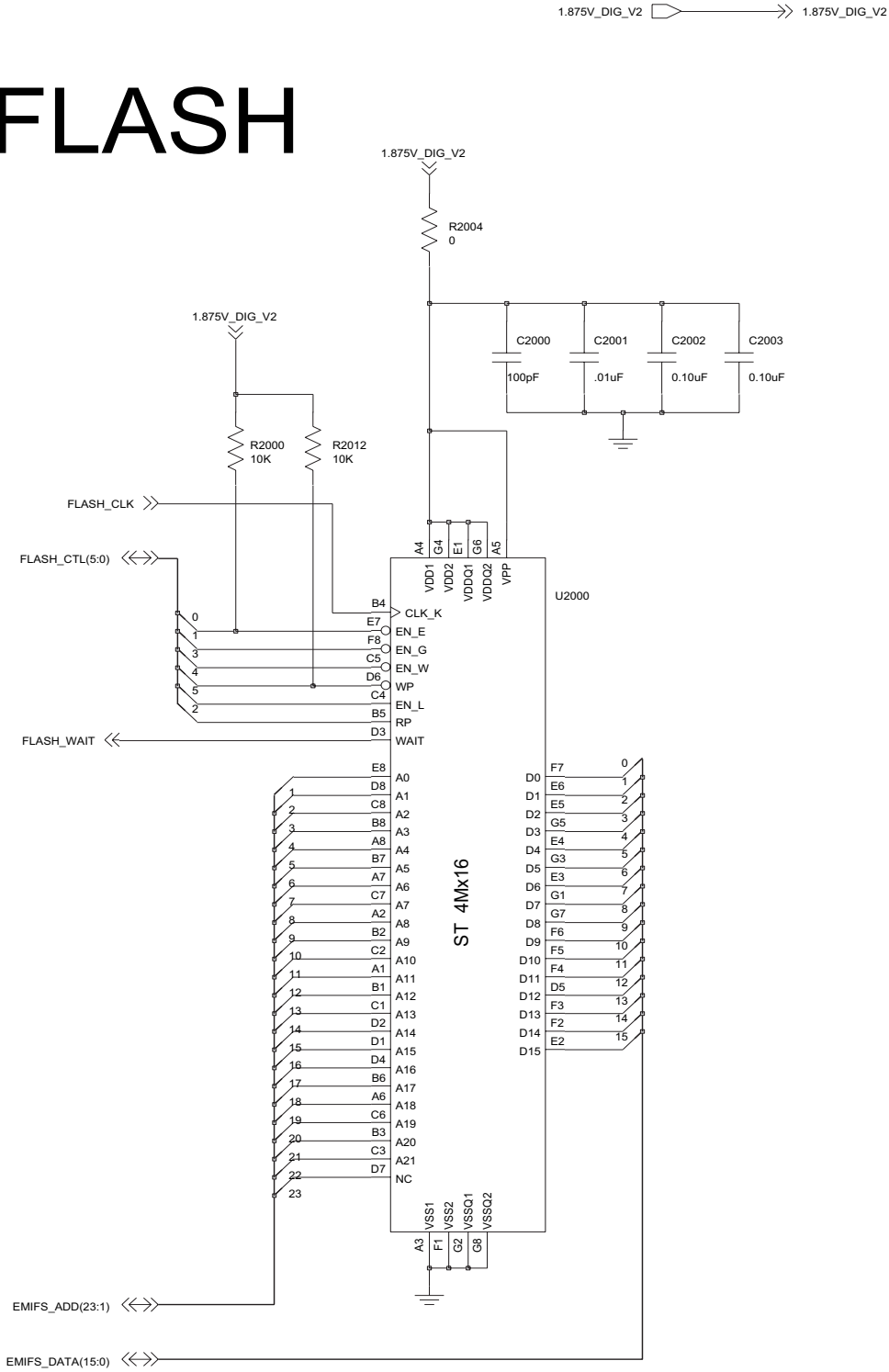
Complete Controller Schematic Diagram

OMAP1710 / 1610

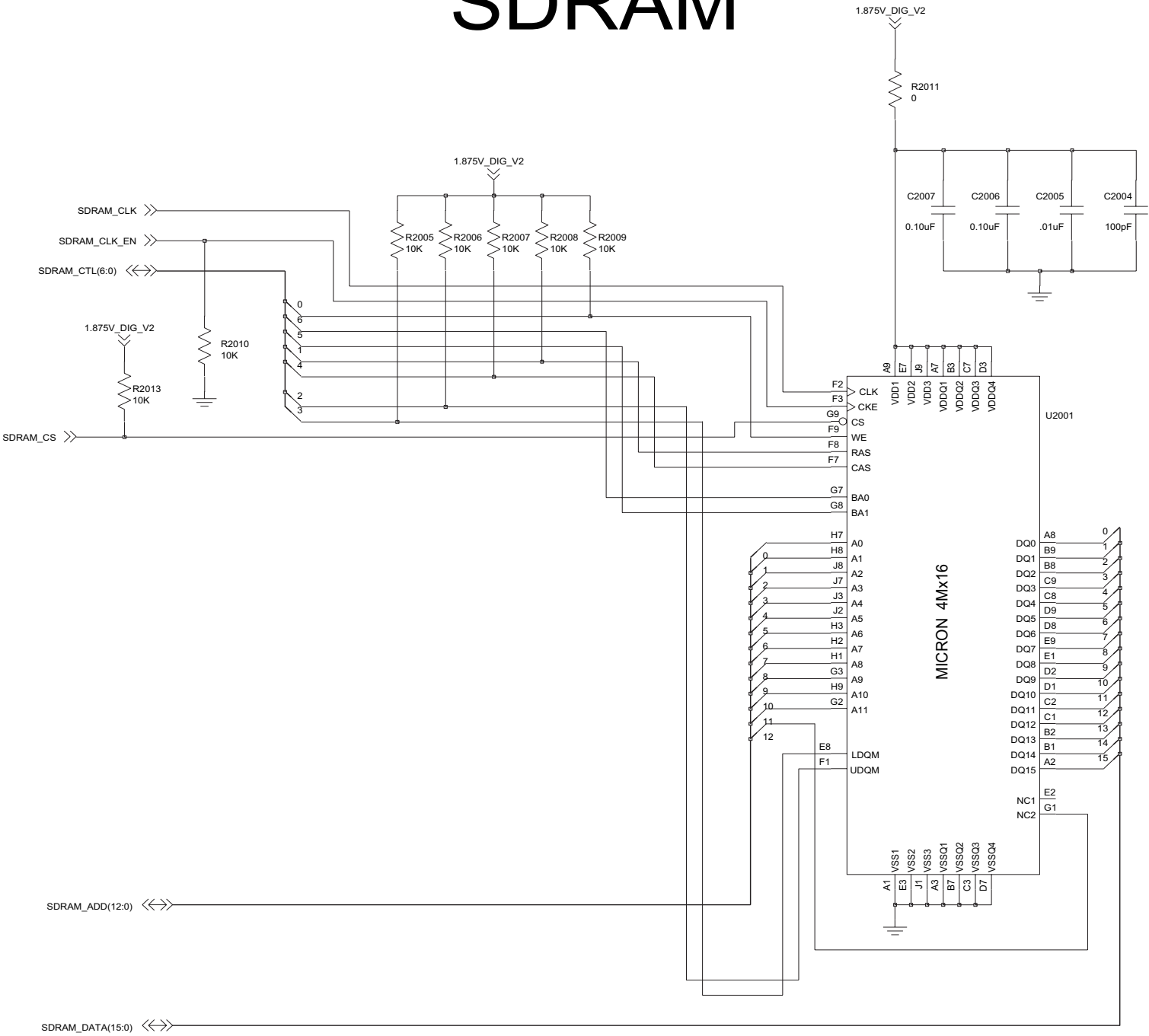


Complete Controller Microprocessor Schematic Diagram

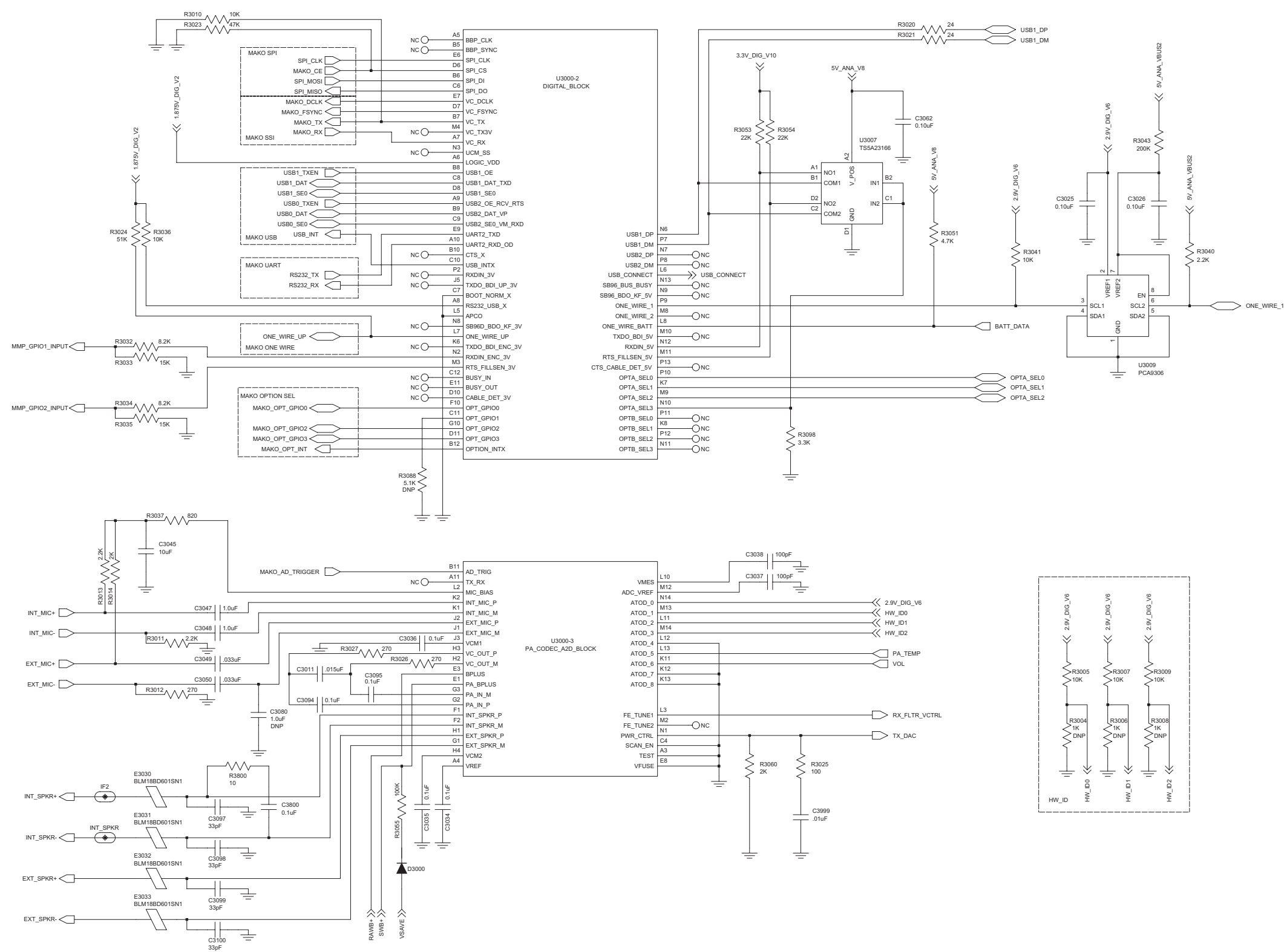
FLASH



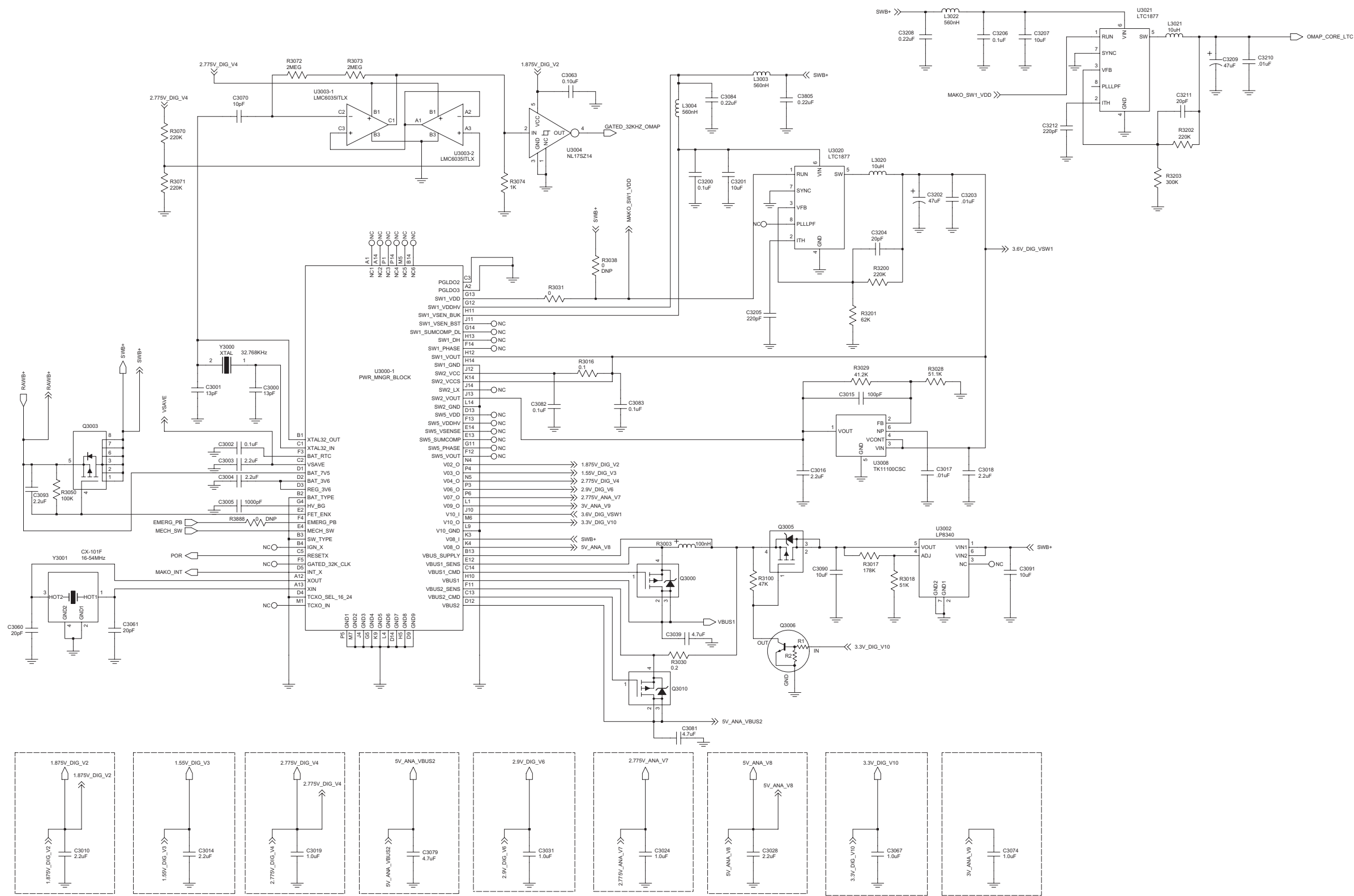
SDRAM



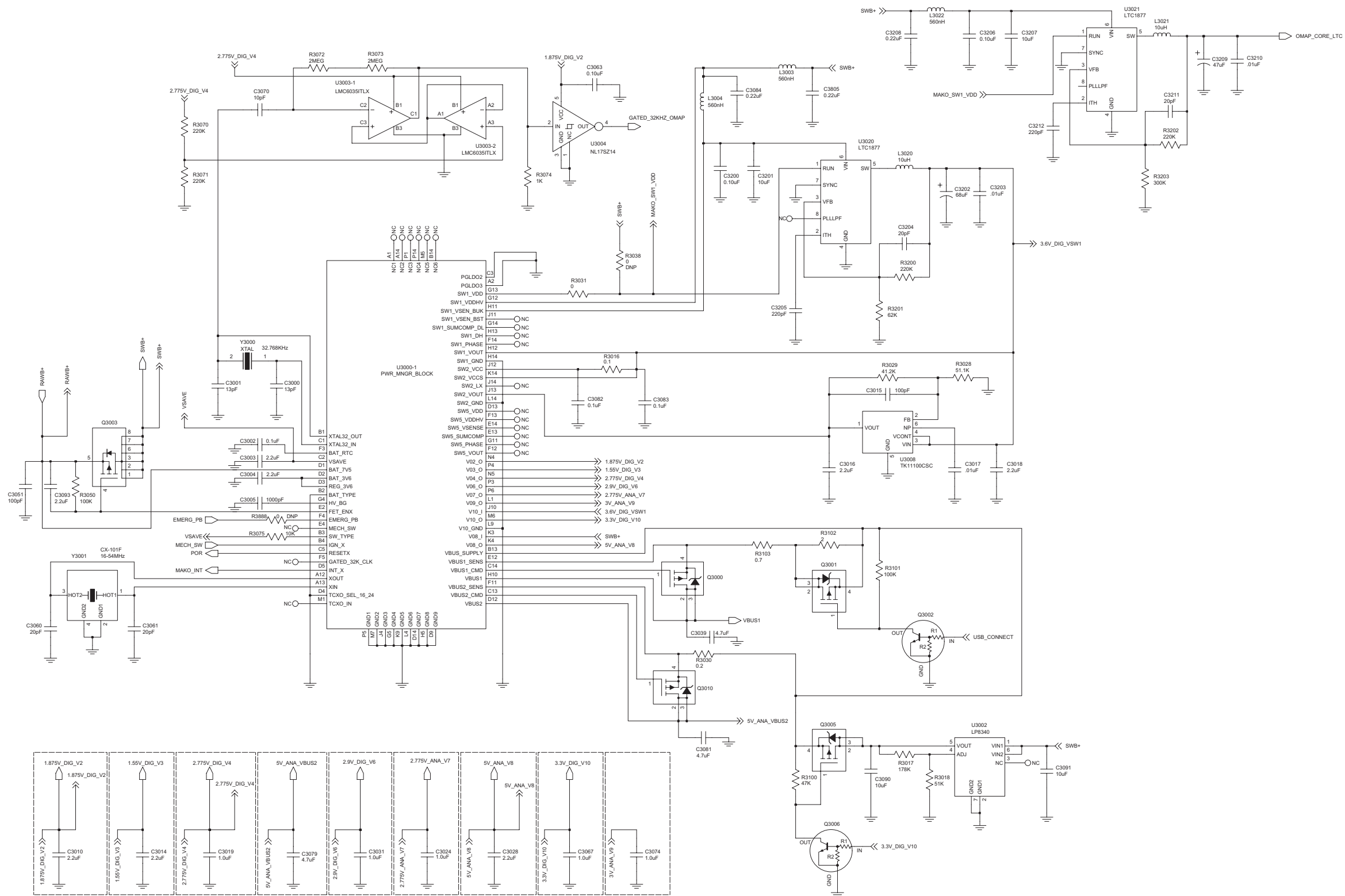
Controller Memory Schematic Diagram



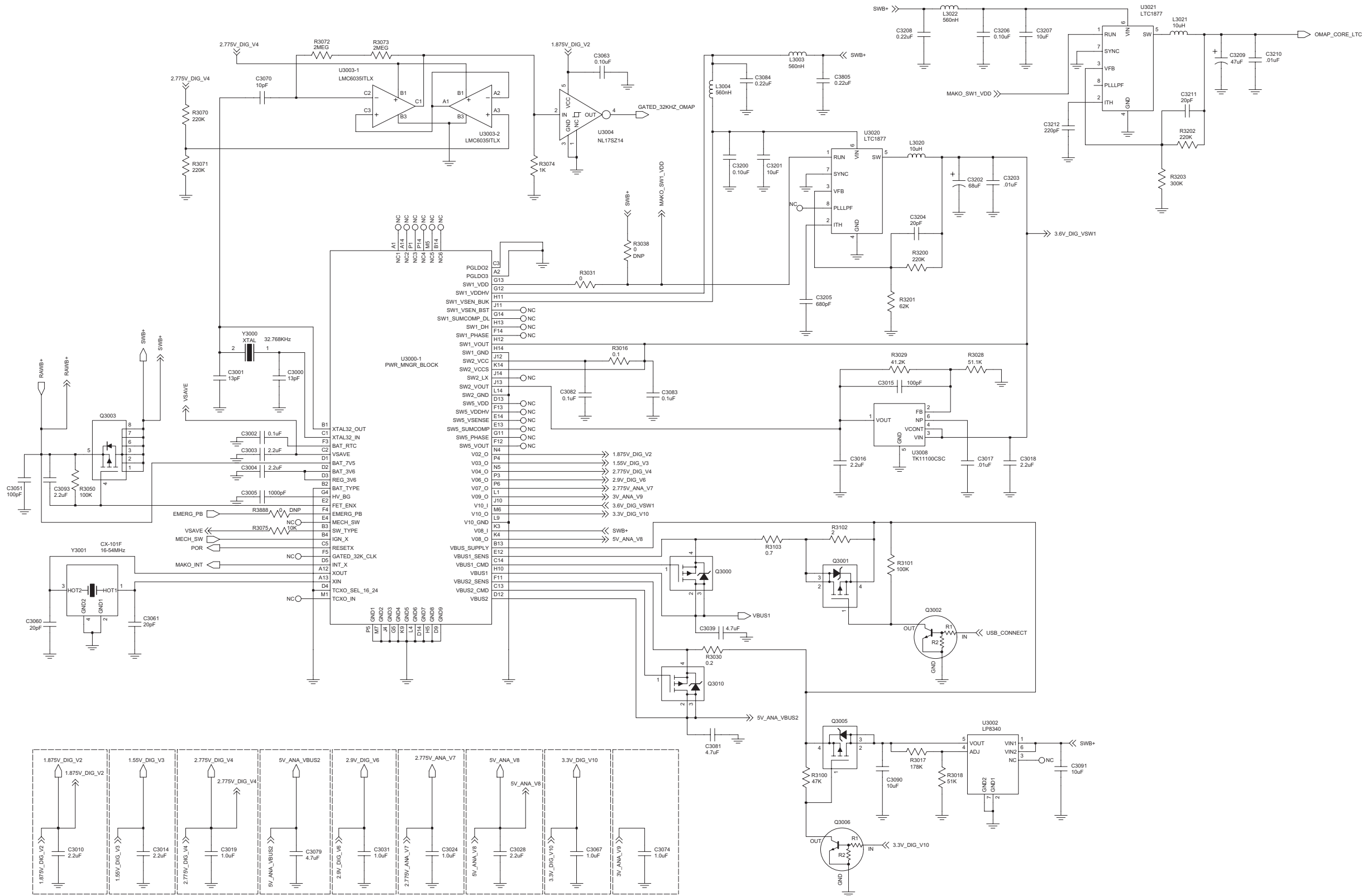
Controller Audio and Digital Interface Schematic Diagram (for 8415113H05)



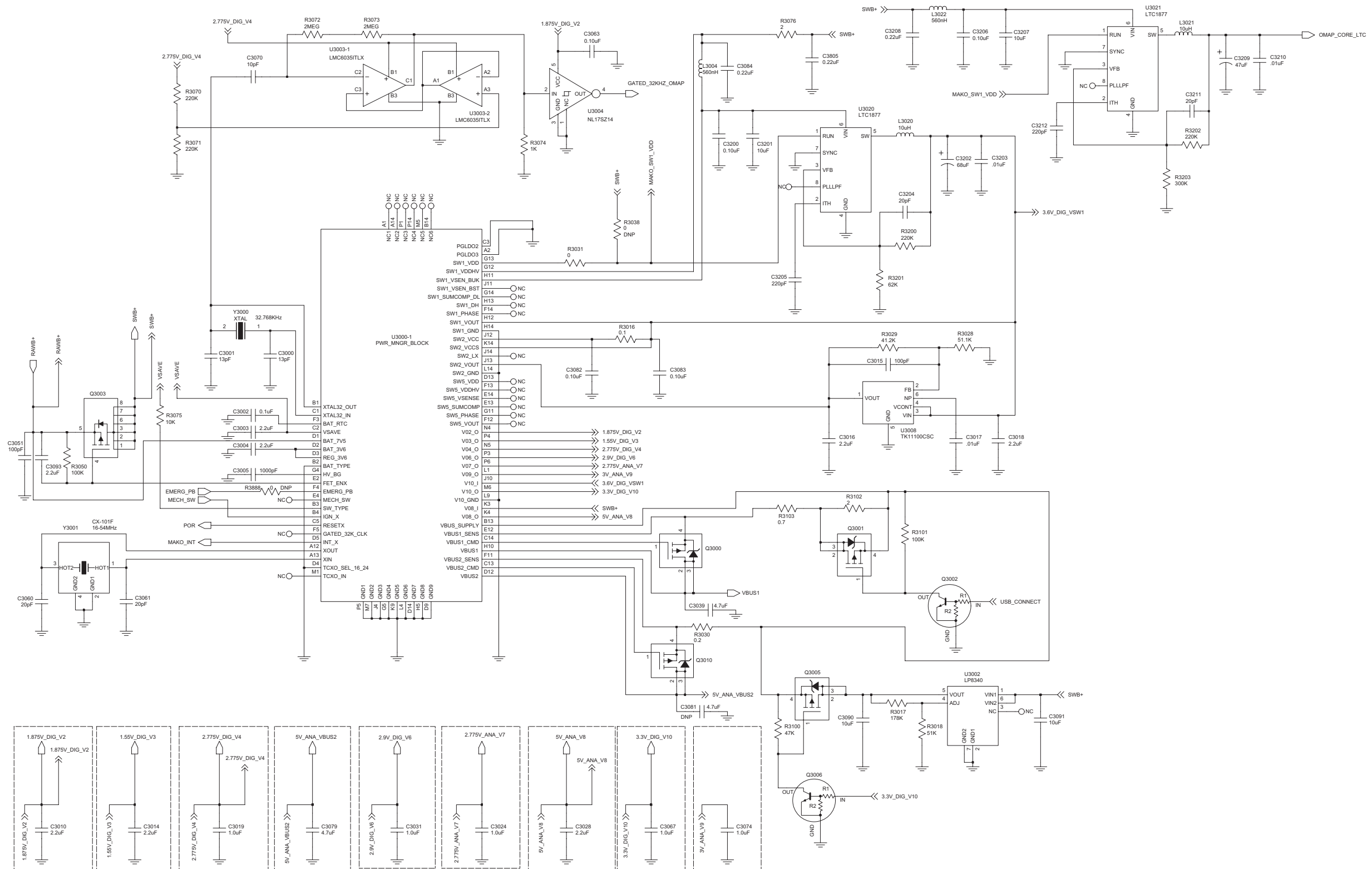
Controller Power Management Block Schematic Diagram (for 8486716Z04)



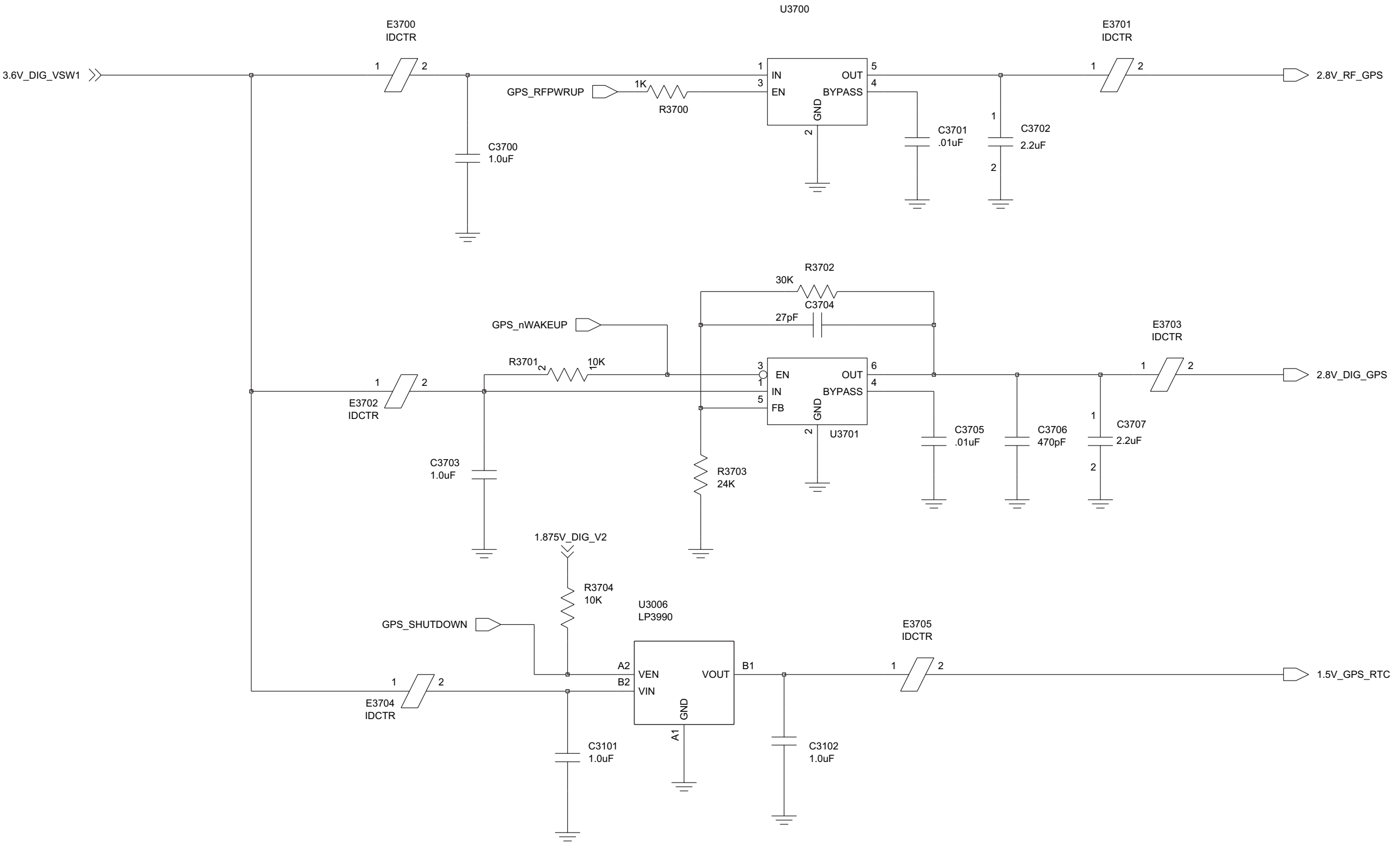
Controller Power Management Block Schematic Diagram (for 8486716Z07)



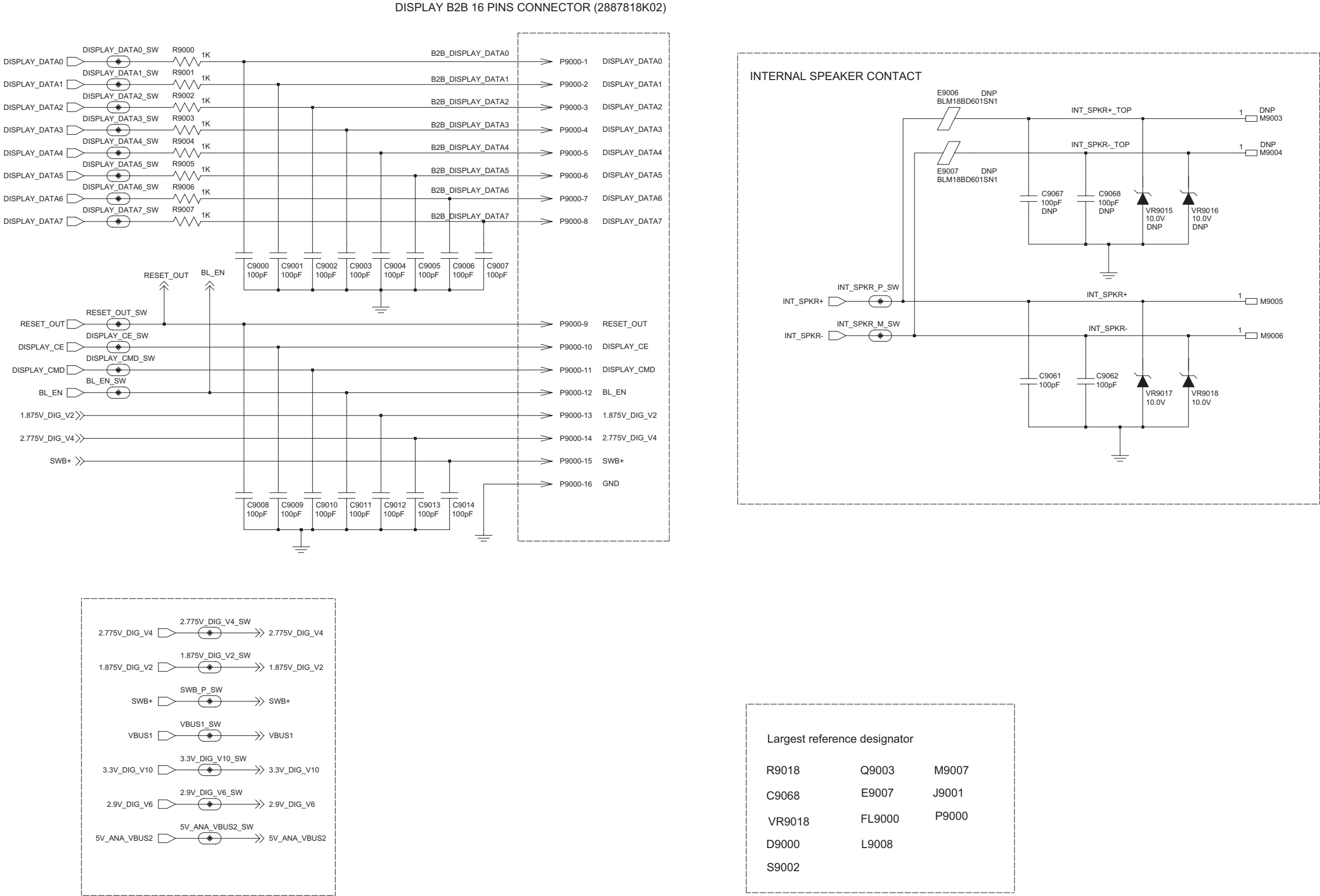
Controller Power Management Block Schematic Diagram (for 8486716Z08)



Controller Power Management Block Schematic Diagram (for 8415113H03)



Controller Line Regulators for GPS Schematic Diagram



Largest reference designator

R9018

C9068

VR9018

D9000

S9002

Q9003

E9007

FL9000

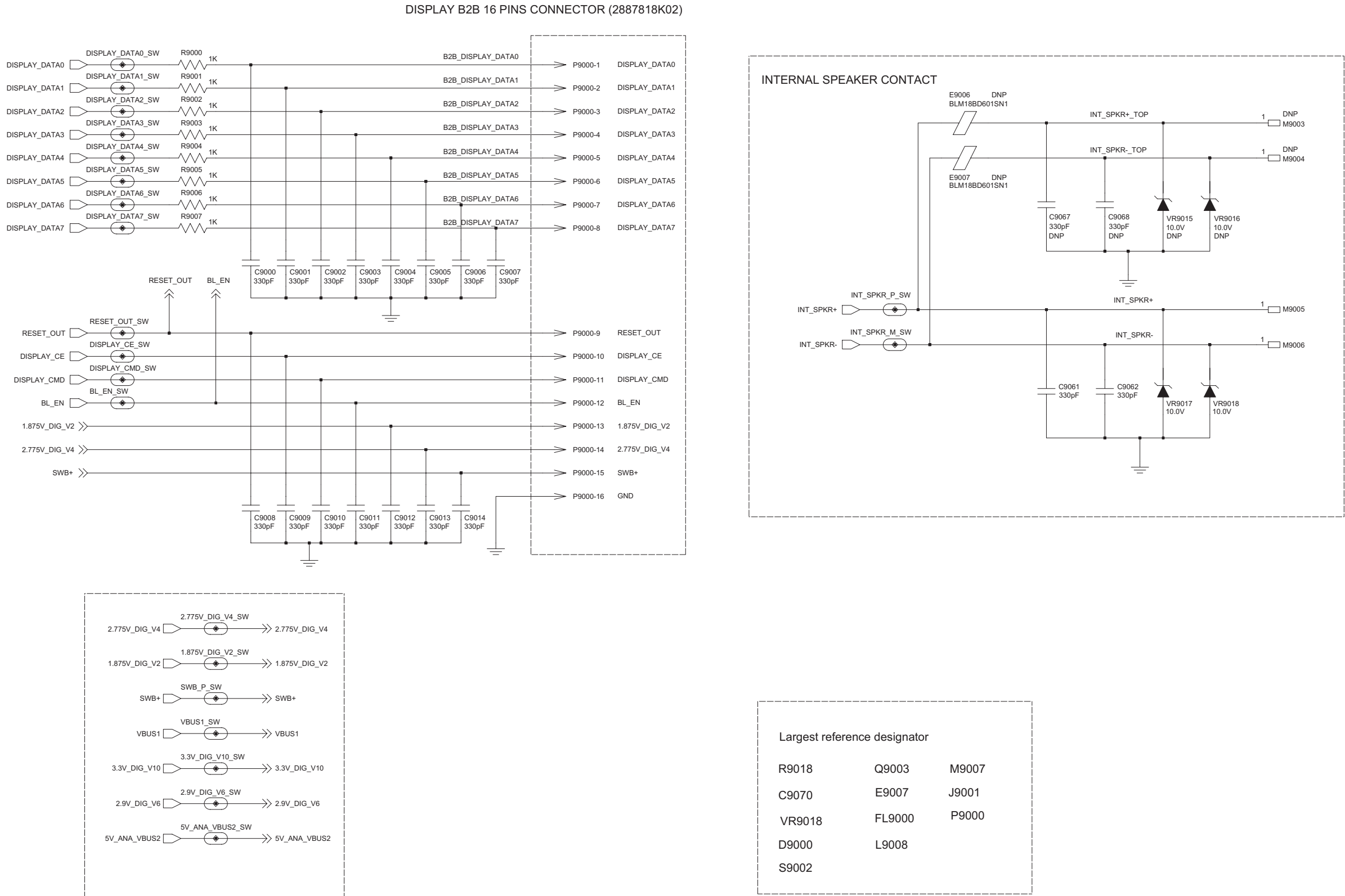
L9008

M9007

J9001

P9000

Controller LCD and Speaker Interface Schematic Diagram (for 8486716Z04, 8486716Z07 & 8486716Z08)



INTERNAL SPEAKER CONTACT

E9006

E9007

C9067

C9068

VR9015

VR9016

C9061

C9062

VR9017

VR9018

BLM18BD601SN1

BLM18BD601SN1

330pF

330pF

10.0V

10.0V

330pF

330pF

10.0V

10.0V

DNP

DNP

DNP

DNP

DNP

DNP

DNP

DNP

DNP

DNP

INT_SPKR+_TOP

INT_SPKR-_TOP

INT_SPKR+

INT_SPKR-

1

1

1

1

M9003

M9004

M9005

M9006

INT_SPKR_P_SW

INT_SPKR_M_SW

INT_SPKR+

INT_SPKR-

Largest reference designator

R9018

C9070

VR9018

D9000

S9002

Q9003

E9007

FL9000

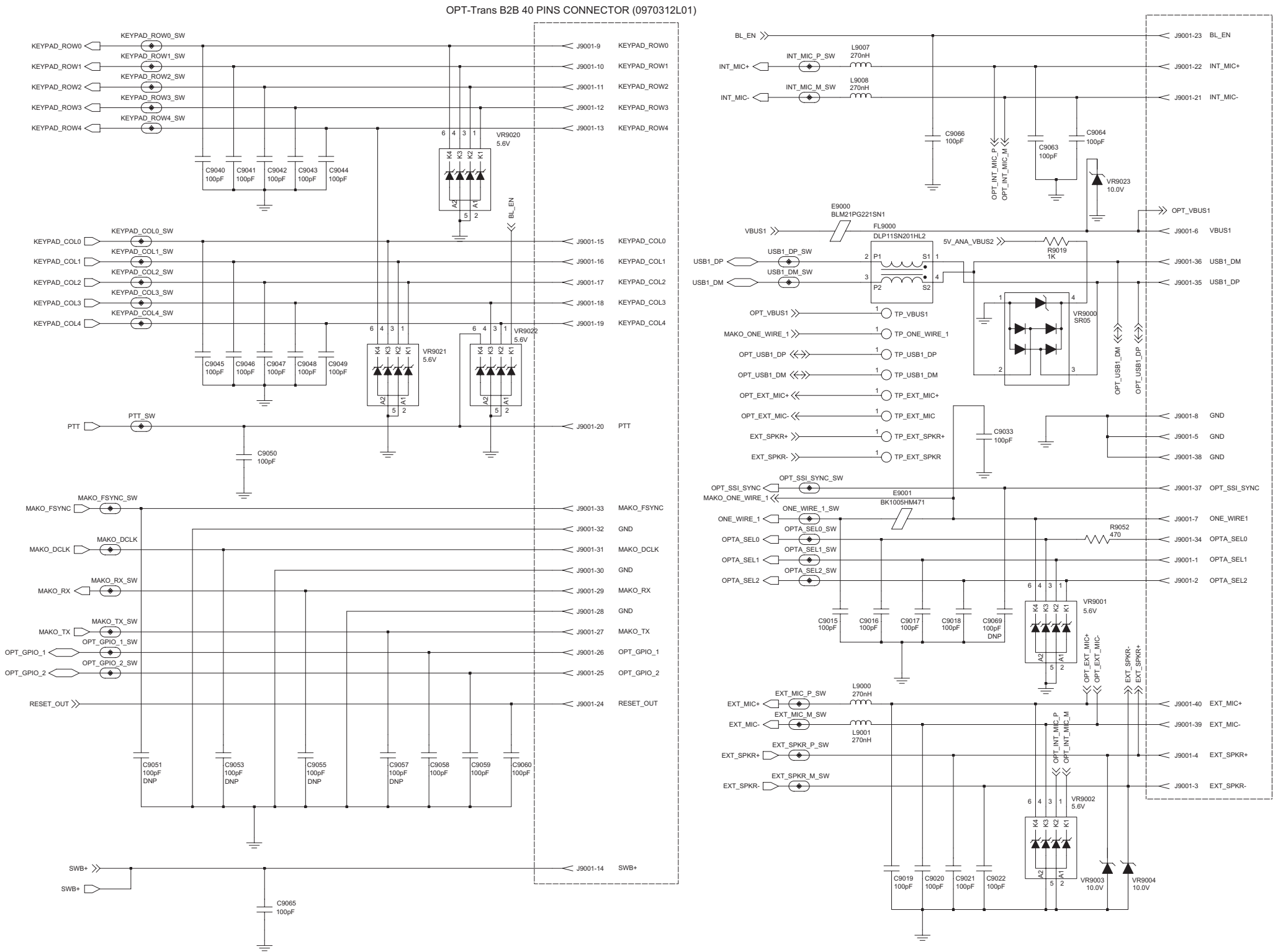
L9008

M9007

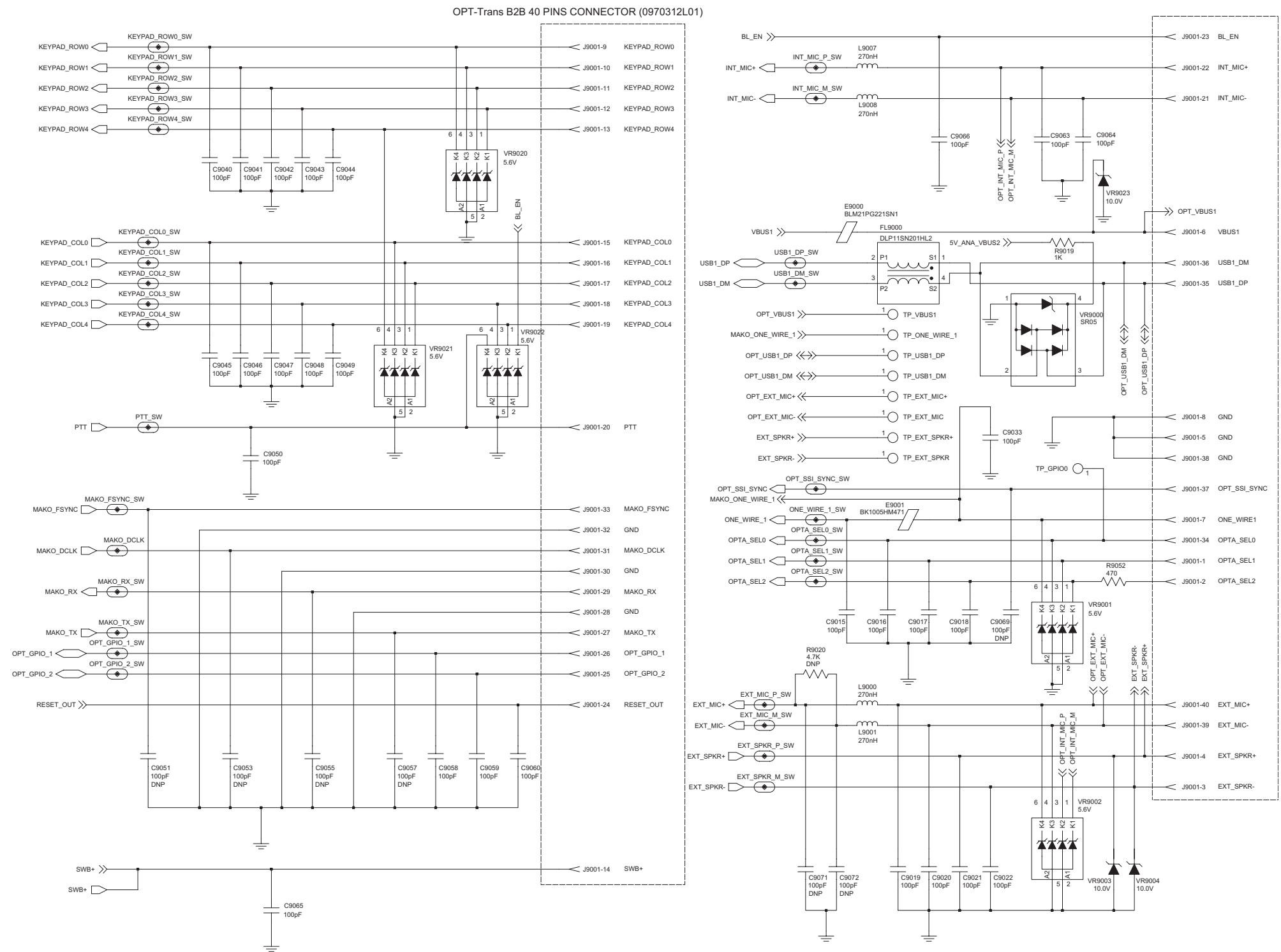
J9001

P9000

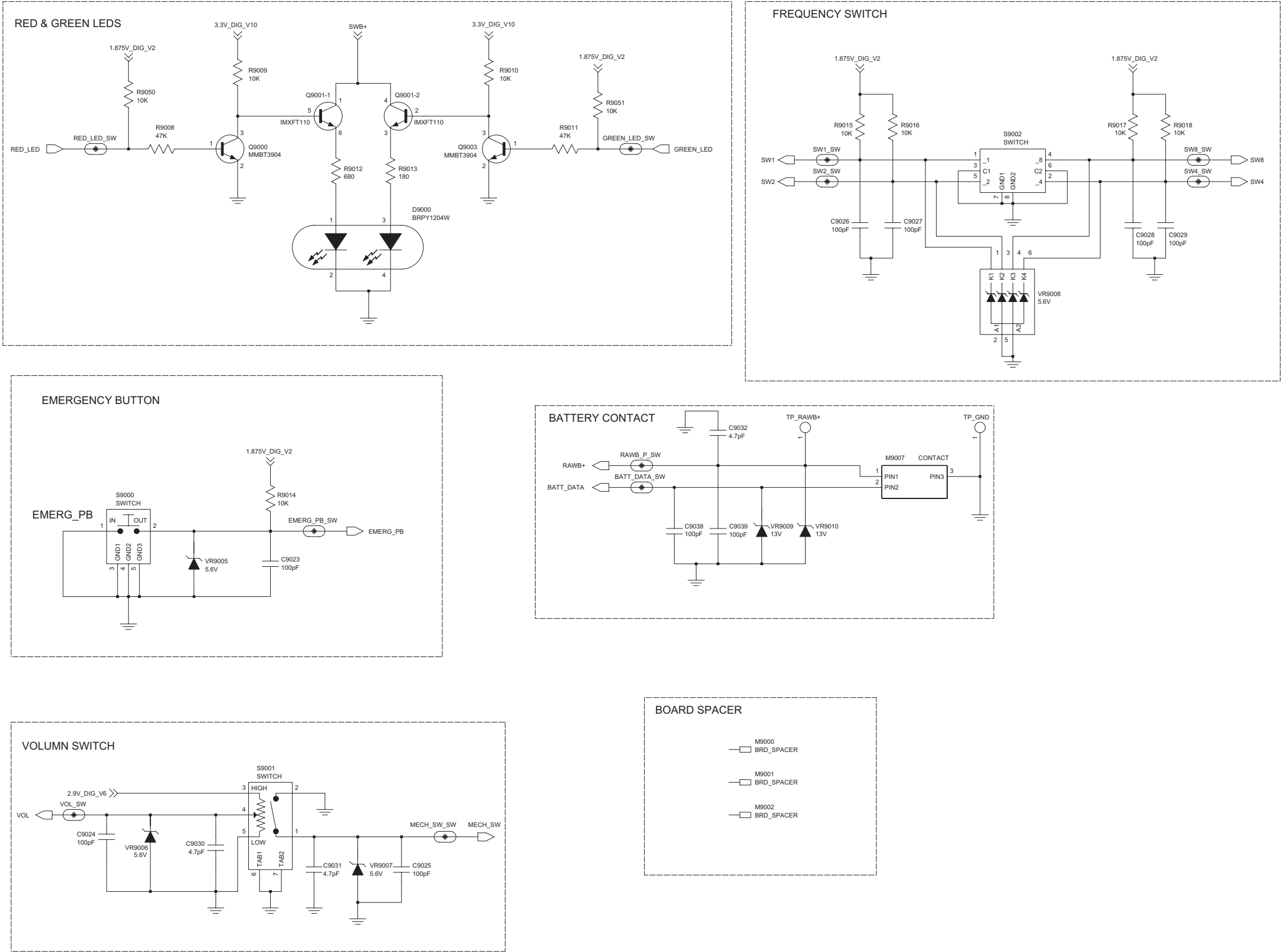
Controller LCD and Speaker Interface Schematic Diagram (for 8415113H03 & 8415113H05)



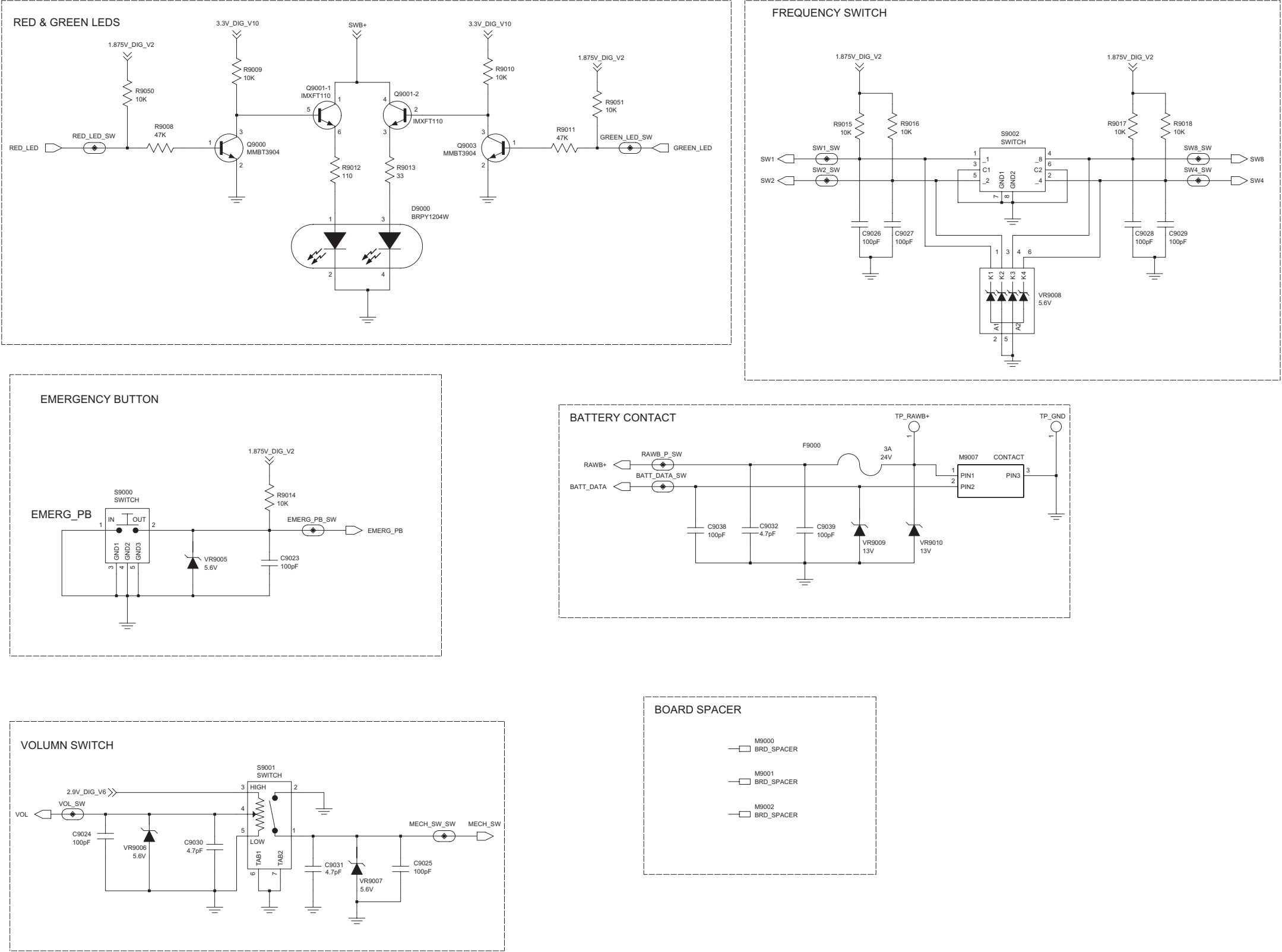
Controller UC Interface Schematic Diagram (for 8486716Z04 & 8486716Z07)



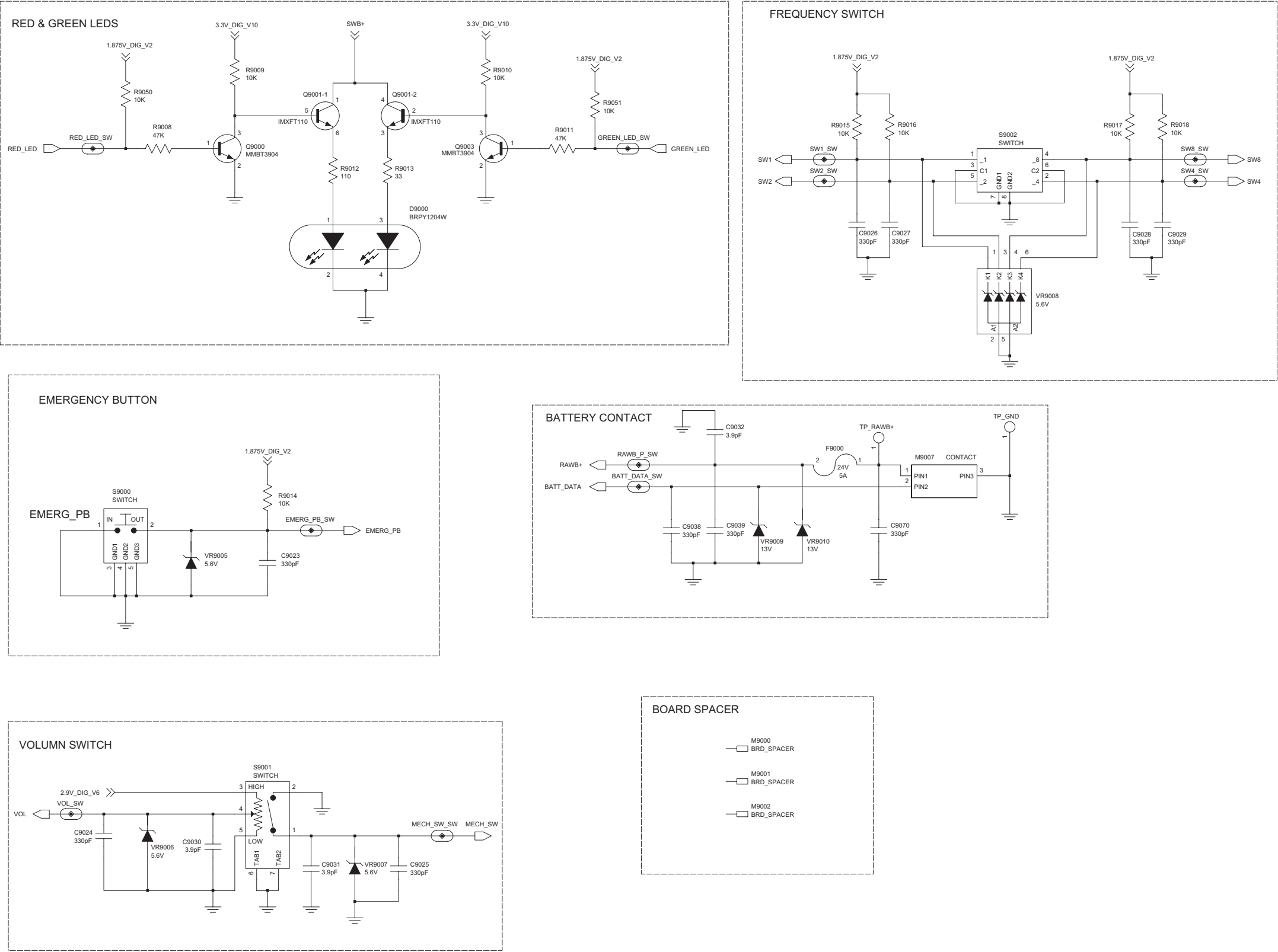
Controller UC Interface Schematic Diagram (for 8486716Z08)



Controls and Switches Schematic Diagram (for 8486716Z04)



Controls and Switches Schematic Diagram (for 8486716Z07 & 8486716Z08)



Controls and Switches Schematic Diagram (for 8415113H03 & 8415113H05)

Notes

Section 6

UHF1 (403-470 MHZ) INFORMATION

1.0 Transmitter

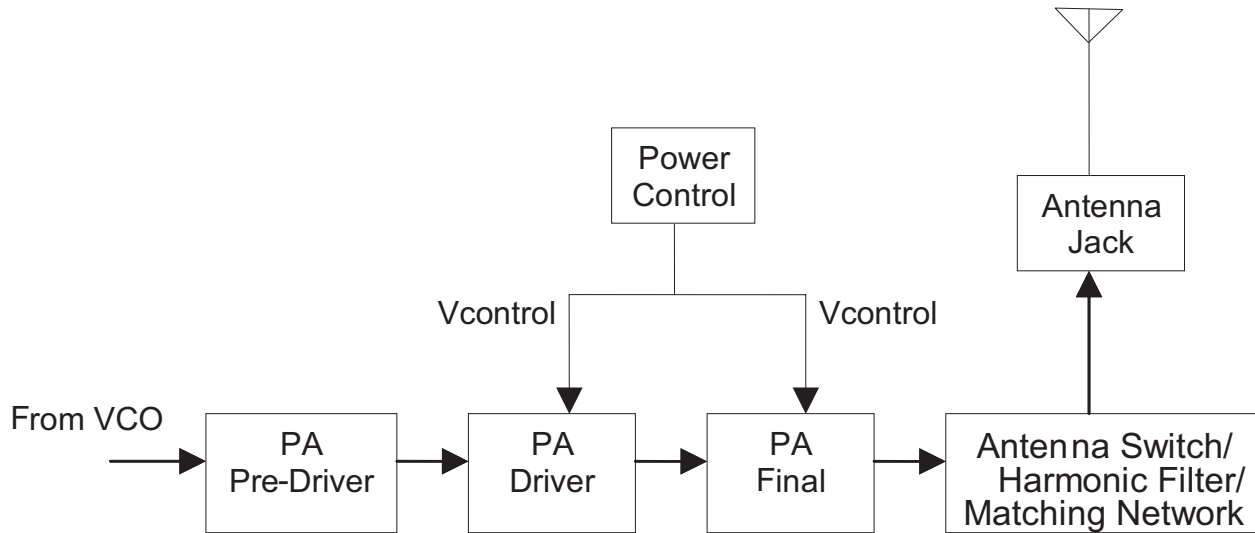


Figure 6-1: UHF Transmitter Block diagram

1.1 General

The UHF transmitter contains five basic circuits:

1. Power Amplifier
2. Antenna Switch
3. Harmonic Filter
4. Antenna Matching Network
5. Power Control

1.1.1 Power Amplifier

The power amplifier is a 3-stage discrete design consisting of:

1. Pre-driver, ADA4743 (U700)
2. Driver, RD01MUS1 (Q703)
3. Final PA, RD07MVS1 (Q704)

The pre-driver is a 50 Ohm gain block with a supply voltage of 5V. The supply is ramped to eliminate feed-through power due to the fixed gain of the device. The pre-driver is biased in Class A region with a typical current drain of 60mA and power gain of 16.5dB.

The driver is a 1W, LDMOS in a SOT-89 package. this stage typically drains 150mA of current at rated output power, 4W. The driver is biased in Class AB region and has a power gain of 14dB.

The final PA is a 7W, LDMOS device. The gate threshold of this device is very close to the driver. Hence, the traditional PA bias tuning is eliminated. The current drain would typically be 1400mA. The final PA is biased in Class AB region and has a power gain of 10dB.

1.1.2 Antenna Switch

The antenna switch comprises of 2 ports: standard port and remote port.

The antenna switch consist of:

1. Four PIN diodes:
 - a. CR902 and CR903 biased during standard and remote port operation.
 - b. CR900 and CR901 biased during remote port operation.
2. Six current limiting resistors:
 - a. R904, R905 and R9053 for standard and remote port operation.
 - b. R902, R903 and R9054 for remote port operation.
3. Two pi networks:
 - a. C915, L908, C916 to determine TX or RX mode.
 - b. C911, L906, C912 to determine standard port or remote port operation.

In the transmit mode of standard port operation, ANT_EN signal (from MAKO) turns on Q702 (bias Power Amplifier) and Q900(antenna switch circuit). RAWB+ bias is applied to the standard port antenna switch circuit to bias CR902 and CR903 "ON". Hence, the following occurs:

1. Shunt diode (CR903) shorts out the receiver port, and the pi network(C915, L908, C916), which operates as a quarter wave transmission line, transforms low impedance of the shunt diode to a high impedance at the input of the harmonic filter. In the receive mode, the diodes are "OFF" and hence, there exists a low attenuation path between the antenna and the receiver ports.
2. Both CR900 and CR901 is biased "OFF", and the pi network(C911, L906, C912), which operates as a quarter wave transmission line, transfers the 50ohm impedance of the harmonic filter to CR902 and hence, forces PA_OUT to take the standard port circuit path.

In the transmit mode of remote port operation, ANT_EN signal (from MAKO) turns on Q702(bias Power Amplifier) and Q900(antenna switch circuit) and GP02 signal (from TOMAHAWK) turns on Q901. RAWB+ bias is applied to the standard and remote port antenna switch circuit to bias CR900, CR901, CR902 and CR903 "ON". Hence, the following occurs:

1. Shunt diode(CR903) shorts out the receiver port, and the pi network(C915, L908, C916), which operates as a quarter wave transmission line, transforms low impedance of the shunt diode to a high impedance at the input of the harmonic filter. In the receive mode, the diodes are off and hence, there exists a low attenuation path between the antenna and the receiver ports.
2. Shunt diode(CR901) shorts out the standard port, and the pi network(C911, L906, C912), which operates as a quarter wave transmission line, transforms the low impedance of the shunt diode to a high impedance at the input of the standard port circuit and hence, forces PA_OUT to take the remote port circuit path.

1.1.3 Harmonic Filter

The harmonic filter consists of C906, C907, C908, L904 and L905. The design of the harmonic filter for UHF is a five pole Chebyshev design using lumped LC elements in order to realize greater attenuation in the stop band for a given ripple level. The harmonic filter insertion loss is typically less than 1.3dB.

1.1.4 Antenna Matching Network

A matching network which is made up of L911 is used to match the antenna's impedance to the harmonic filter. This will optimize the performance of the transmitter and receiver into an antenna.

1.1.5 Power Control

The transmitter power control uses discrete integrator approach, the current is sensing both PA stages namely, Driver Power Amplifier (Q703) and Final Power Amplifier (Q704).

The basic block diagram of the power control is shown in Figure 6-2. A single sensing resistor (R700) is tied to sense both PA stages current. The power control consists of 2 comparators, U701-1 and U701-2. U701 is a dual-package op-amp in SOT-8 package. The first stage is an I-V converter converts current drained by Power Amplifier Driver (Q703) and Power Amplifier Final (Q704) across R700 into a voltage drop and the second stage is an integrator used to shape the output Vcontrol to bias both PAs. The slope of the Vcontrol is controlled by the RC time constant of the integrator and also the ramping slope of reference signal, TX_DAC generated by MAKO IC. The final TX_DAC value determines the transmit power level and is a factory tuned parameter which is stored inside the codeplug.

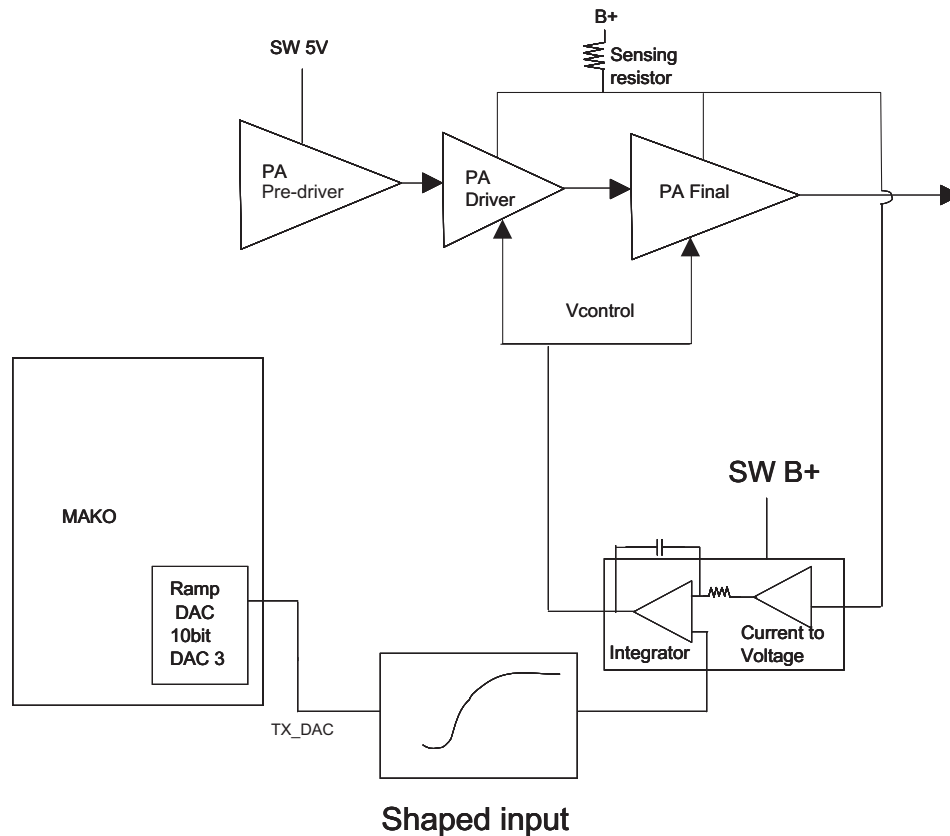


Figure 6-2: Power Control Scheme Basic Block Diagram

2.0 Receiver

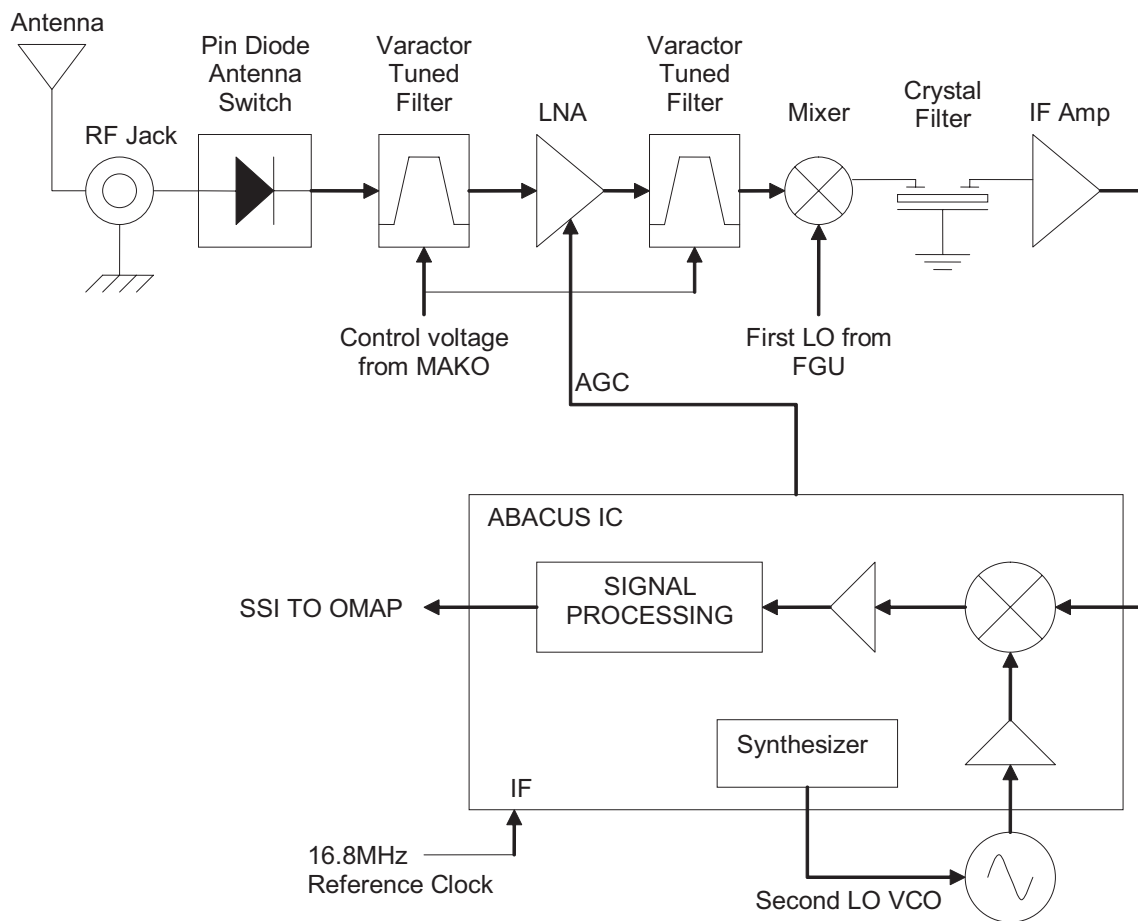


Figure 6-3: UHF Receiver Block Diagram

2.1 Receiver Front-End

The RF signal is received by the antenna and applied to a low-pass filter. For UHF, the filter consists of C906, C907, C908, L904 and L905. The filtered RF signal is passed through the antenna switch and then applied to a varactor tuned bandpass filter. The bandpass filter comprises of C400, C401, C402, C403, C404, C405, L400, L401, R400, R499, D400 and D401. C400 and C405 are 50ohm points. The bandpass filter is tuned by applying a control voltage to the varactor diodes D400 and D401.

The bandpass filter is electronically tuned by the MAKO DAC. Depending on the carrier frequency, the MAKO DAC will supply the tuned voltage to the varactor diodes in the filter. Wideband operation of the filter is achieved by shifting the bandpass filter across the band.

The output of the bandpass filter is passed through a RF step attenuator (D402) to limit the amount RF power fed into the LNA (U400). After being amplified, the RF signal is further filtered by a second varactor tuned bandpass filter. This bandpass filter is electronically tuned by the MAKO DAC and comprises of C419, C420, C421, C422, C423, C424, L408, L409, R405, R406, D403 and D404. C419 and C423 are 50 Ohm points.

The output of the second bandpass filter is passed to a mixer. The mixer is a passive double balanced quad diode mixer (D405) comprising of 2 transformers (T400 and T401). The 50 Ohm matching for

the mixer is provided by C426 and L410. After mixing with the first LO signal from the voltage control oscillator (VCO) using low side injection, the RF signal is down converted to the 73.35 MHz IF signal.

The IF signal coming out of the mixer is applied to the crystal filter (FL400) through a resistor pad and a diplexer (L411 and C427). Matching to the input of the crystal filter is provided by L412 and C428. The crystal filter provides the necessary adjacent channel selectivity and inter-modulation protection.

The output of the crystal filter (FL400) is matched to the input of the IF amplifier transistor by C432, C433, L415 and L416. Voltage supply to the IF amplifier is 5V_RX, taken from RX VCO. The IF amplifier provides a gain of 25 dB. The IF amplifier output is directly matched at the IF amplifier output to ABACUS (U600) pin 47 via C601.

2.2 Receiver Back-End

ABACUS (U600) is tuned via software at radio start-up. The IF signal applied to pin 47 of U600 is down-converted to a second IF of 2.25 MHz. The second IF of 2.25 MHz will then be fed into an ADC, generating the Is and Qs data. This data is in the form of SSI (Serial Synchronous Interface) at pin 29 of U600, which will then be sent to the DSP (OMAP1710) for further processing.

The second VCO is a Colpitts oscillator built around transistor Q602. The VCO has a varactor diode, D600 to adjust the VCO frequency. The second LO frequency could either be 71.1 MHz or 75.6 MHz, depending on the system requirement. The control signal is derived from a loop filter consisting of C617, C618, C619, R605 and R606. The RSSI circuitry is achieved via software programming.

3.0 Frequency Generation Circuitry

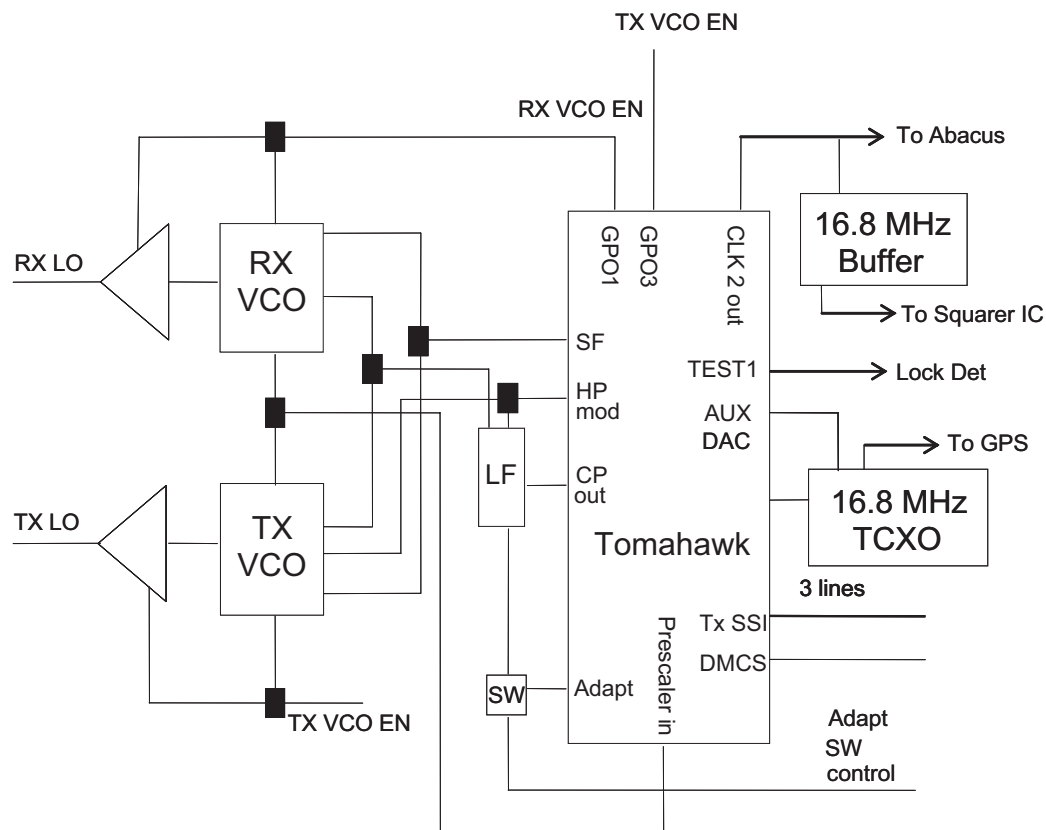


Figure 6-4: Frequency Generating Unit Block Diagram

The Frequency Generating Unit is centered on one main IC, Tomahawk (U001). The main synthesizer on the Tomahawk functions as a modulation interface to the DSP area via the 3 TX SSI lines. The

block diagram illustrates the interconnect and support circuitry used in the Frequency Generating Unit. Refer to the relevant schematics for the reference designators.

The synthesizer is powered by 2.8V ANA, 2.8V DIG, 1.875V DIG and 5V ANA supplied from the U3000-1. The synthesizer in turns generates a superfiltered 2.5V which powers up the TX VCO & RX VCO.

In addition to the VCO, the synthesizer interfaces with the microcontroller. Programming of the synthesizer is accomplished through the 4 lines; SPI_MISO, THK_CE, SPI_MOSI and SPI_CLK via pin D10, D8, D9 and D11 respectively. A 1.875 dc signal from the synthesizer lock detect line indicates to the microprocessor that the synthesizer is locked.

U001 has dual port modulation capability. The microprocessor supplies low port and high port words to pin F11 of U001. For high port modulation, the audio runs through an internal attenuator for modulation balancing purpose before it goes out to the VCO and loop filter via pin K8. For the low port modulation, the audio is fed into the main synthesizer, where it is summed with the main_num channel frequency word, then supplied to the accumulator of the Fractional-N synthesizer before going out to the VCO.

3.1 Synthesizer

U001 uses a 16.8 MHz crystal (Y001) to provide a reference for the system. The synthesizer further divides this to 8.4MHz for nominal frequencies and 5.6 MHz for alternate frequencies. Together with R006, R007, R008, C013, C014, C015 and C016, they build up the reference oscillator which is capable of 1.5ppm (non-GPS) / 0.5ppm (GPS) stability over temperature of -30°C to 85 °C. It also provides 16.8MHz at pin J11 of U001 to be used by ABACUS.

The loop filter which consists of R013, R014, R016, C024, C025, C026 and C027 provides the necessary dc steering voltage for the VCO and determines the amount of noise and spur passing through.

In achieving fast locking for the synthesizer, an internal adapt charge pump provides higher current (~10mA) at pin H1 and an additional 2mA from a current mirror (Q002, R010, R011 and R012). The required frequency is then locked by normal mode charge pump at pin G3. An external adapt switch (U002) is used to control the ON/OFF of the adapt mode. Both the normal and adapt charge pumps get their supply from the 5V ANA supplied by U3000-1.

3.2 VCO - Voltage Controlled Oscillator

The VCO in conjunction with the synthesizer generates RF in both the receive and transmit modes of operation.

The RX VCO comprises of a Colpitts oscillator built around Q200, a cascaded buffer, built up of a buffer IC, U200 cascaded with a discrete buffer built around Q208 and a 3dB resistive pad (R220, R221 and R222). Vcontrol is supplied to two pairs of back-to-back varactors (D200, D201, D202 and D203). The LC tank comprises of C203 and L202. The oscillator is supplied with a 2.5V superfiltered supply from the synthesizer, U001. The cascaded buffer is supplied with a 5V ANA supply from MAK0, U3000-1. The buffer IC in conjunction with the resistive pad provides sufficient isolation from the mixer whilst the discrete buffer provides sufficient gain for the first LO signal. The output of the cascaded buffer is match to the mixer by C216, C217, C241 and L207. The output power level of RX_1ST_LO_INJ is 6dB.

The TX VCO comprises of a Colpitts oscillator built around Q204 and a discrete buffer built around Q205. Vcontrol is supplied to two pairs of back-to-back varactors (D204, D205, D206 and D207). The LC tank comprises of C222 and L210. The oscillator is supplied with a 2.5V superfiltered supply from the synthesizer, U001. The discrete buffer is supplied with a 5V ANA supply from MAK0, U3000-1. The output of the discrete buffer is match to the mixer by C236, C237 and L215. The output power level of TX_BUFF is 3dB.

4.0 Global Positioning System (GPS) Receiver

The GPS device is an embedded receiver that provides the location of the subscriber in terms of latitude, longitude, velocity, direction and altitude.

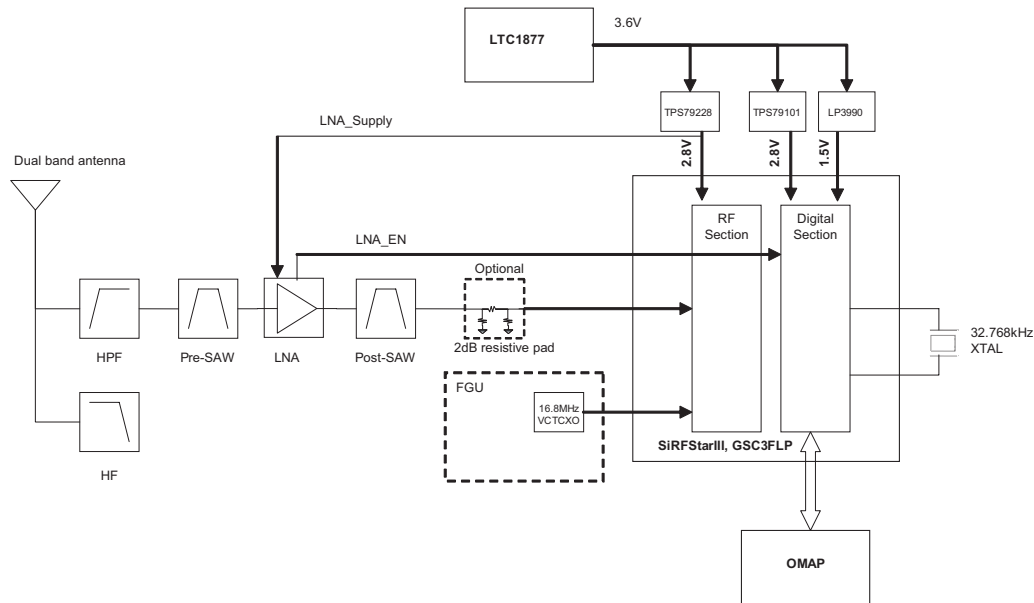


Figure 6-5: GPS Receiver Block Diagram

The RF signal is received by the antenna and applied to a high-pass filter. The filter consists of C924, C925, C926, L912 and L913. The filtered RF signal is then applied to a SAW filter, FL8001.

The output of the SAW filter is fed into the LNA (U8001). The LNA biasing is controlled by SIRF_LNA_EN (pin A4 of the GPS IC, U8000). The LNA input match comprises of C8013, C8014 and L8001. The LNA output match comprises of L8003 and C8017. After being amplified, the RF signal is further filtered by a second SAW filter, FL8002.

The output of the second SAW filter is passed to pin P6 of the GPS IC. The input match for pin P6 comprises of C8018, C8019 and L8004. The control and data lines for the GPS IC are GPS_nRESET, GPS_ON_OFF, GPS_TX, GPS_RX and GPS_BOOT. GPS_nWAKEUP line is fed into the microcontroller to indicate the state (full power or hibernate state) of the GPS IC so that the microcontroller will never trigger a GPS_ON_OFF when the GPS IC is in full power state.

A dedicated 32.768kHz quartz crystal oscillator (Y8000) is used to provide RTC clock to the RTC circuit inside the GPS IC. The second input frequency is a 16.8MHz reference, used by the StarIII to synthesize the internal LO. This reference will be supplied by a VCTCXO (Y001) located in the synthesizer block, which will be shared by the TOMAHAWK and ABACUS ICs.

The GPS IC is powered by 2.8V_DIG_GPS, 2.8V_RF_GPS and 1.5V_GPS_RTC supplied from 3 discrete external regulators (U3701, U3700 & U3006). The input of these regulators is sourced from a switching regulator (U3020) which regulates the SWB+ to 3.6V.

5.0 Allocation of Schematics and Circuit Boards

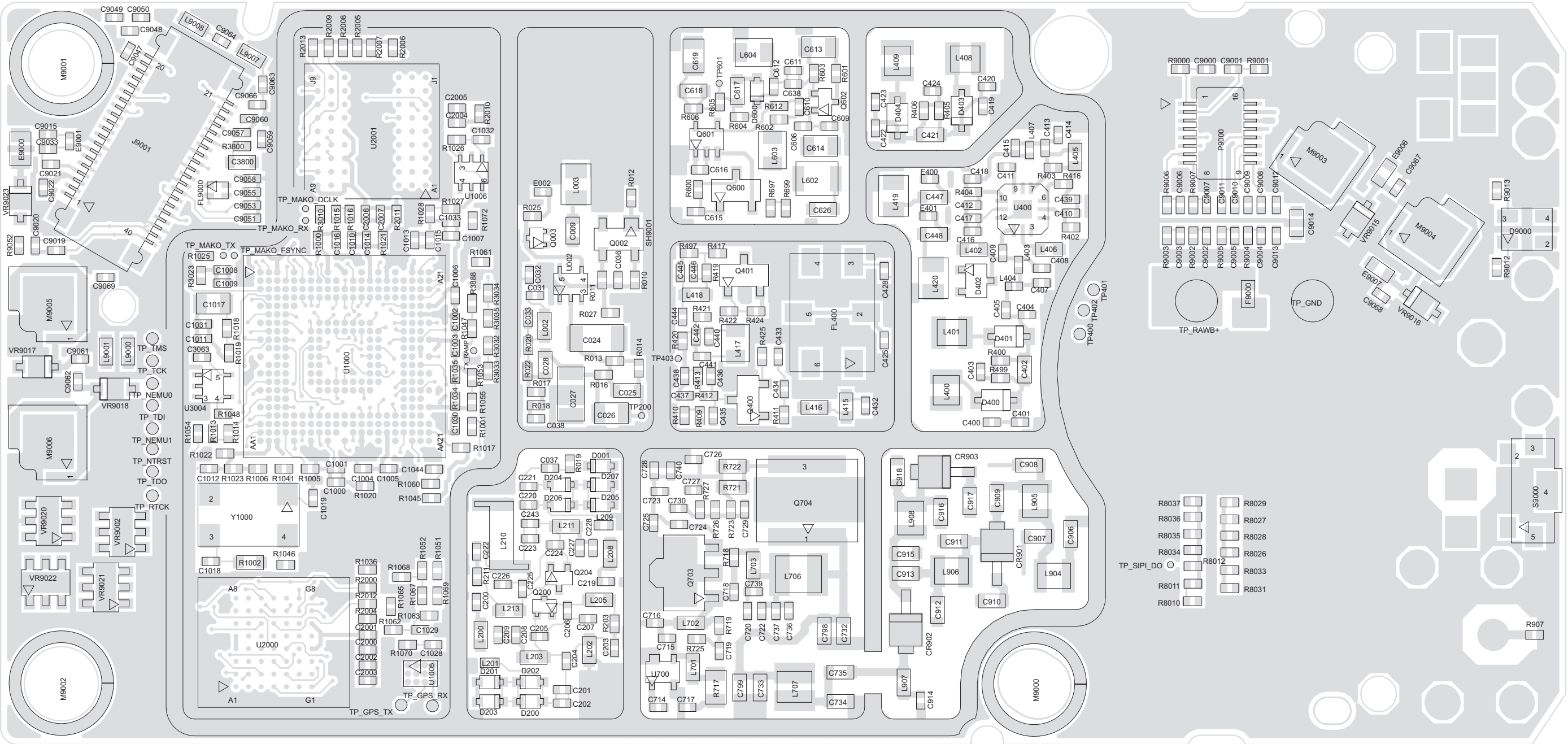
5.1 Controller Circuits

The UHF circuits are contained on the Printed Circuit Board (PCB) which also contains the Controller circuits. This Chapter shows the schematics for the UHF circuits only, refer to the Controller section for details of the related Controller circuits. The PCB component layouts in this Chapter show both the Controller and UHF circuit components. The UHF schematics and the related PCB and parts list are shown in the tables below.

Table 6-1. UHF1 Diagrams and Parts List

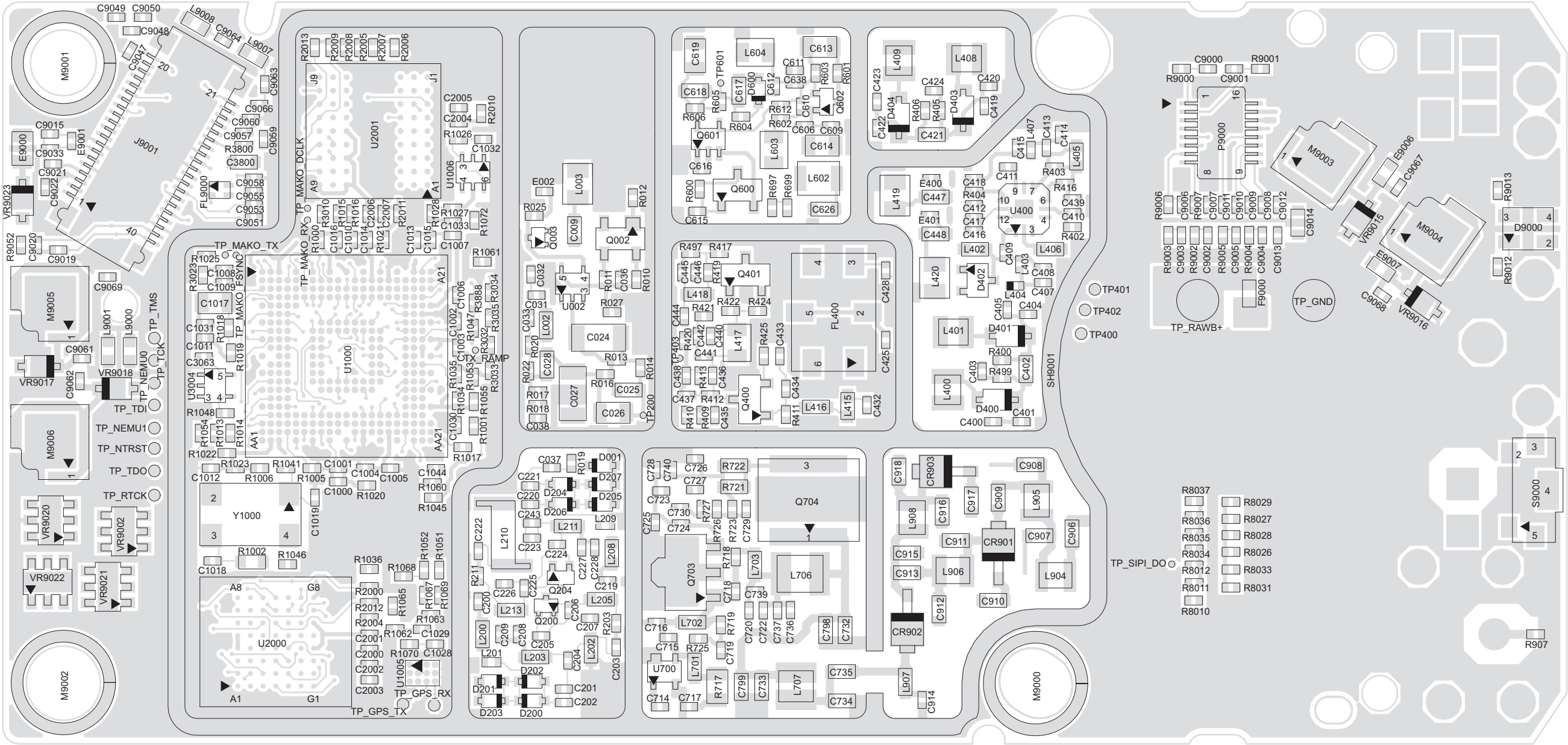
PCB: 8486716Z04 Main Board Top Side 8486716Z04 Main Board Bottom Side 8486716Z07 Main Board Top Side 8486716Z07 Main Board Bottom Side 8486716Z08 Main Board Top Side 8486716Z08 Main Board Bottom Side	Page 6-9 Page 6-10 Page 6-11 Page 6-12 Page 6-13 Page 6-14
SCHEMATICS Complete Radio Complete UHF1 RF Complete UHF1 Transmitter UHF1 Transmitter UHF1 Harmonic Filter and Antenna Switch Complete UHF1 Receiver UHF1 Receiver Front End UHF1 Receiver Back End Complete UHF1 Frequency Generating Unit UHF1 Synthesizer UHF1 Voltage Controlled Oscillator UHF1 GPS Block	Page 6-15 Page 6-16 Page 6-17 Page 6-18 Page 6-19 Page 6-20 Page 6-21 Page 6-22 Page 6-23 Page 6-24 Page 6-25 Page 6-26
Parts List 8486716Z04 8486716Z07 8486716Z08	Page 6-27 Page 6-33 Page 6-39

6.0 Circuit Board/Schematic Diagrams and Parts List

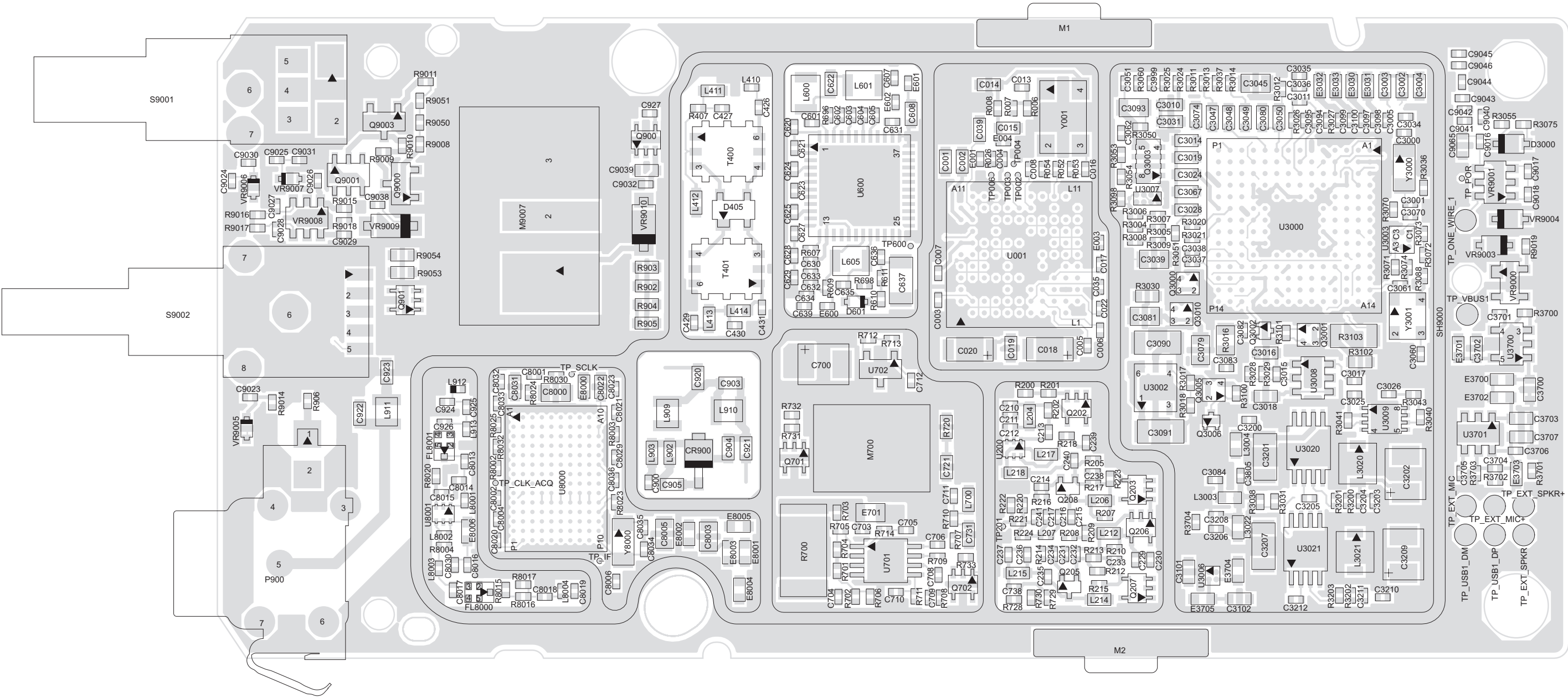


UHF1 (403-470MHz) Main Board Top Side PCB No. 8486716Z04





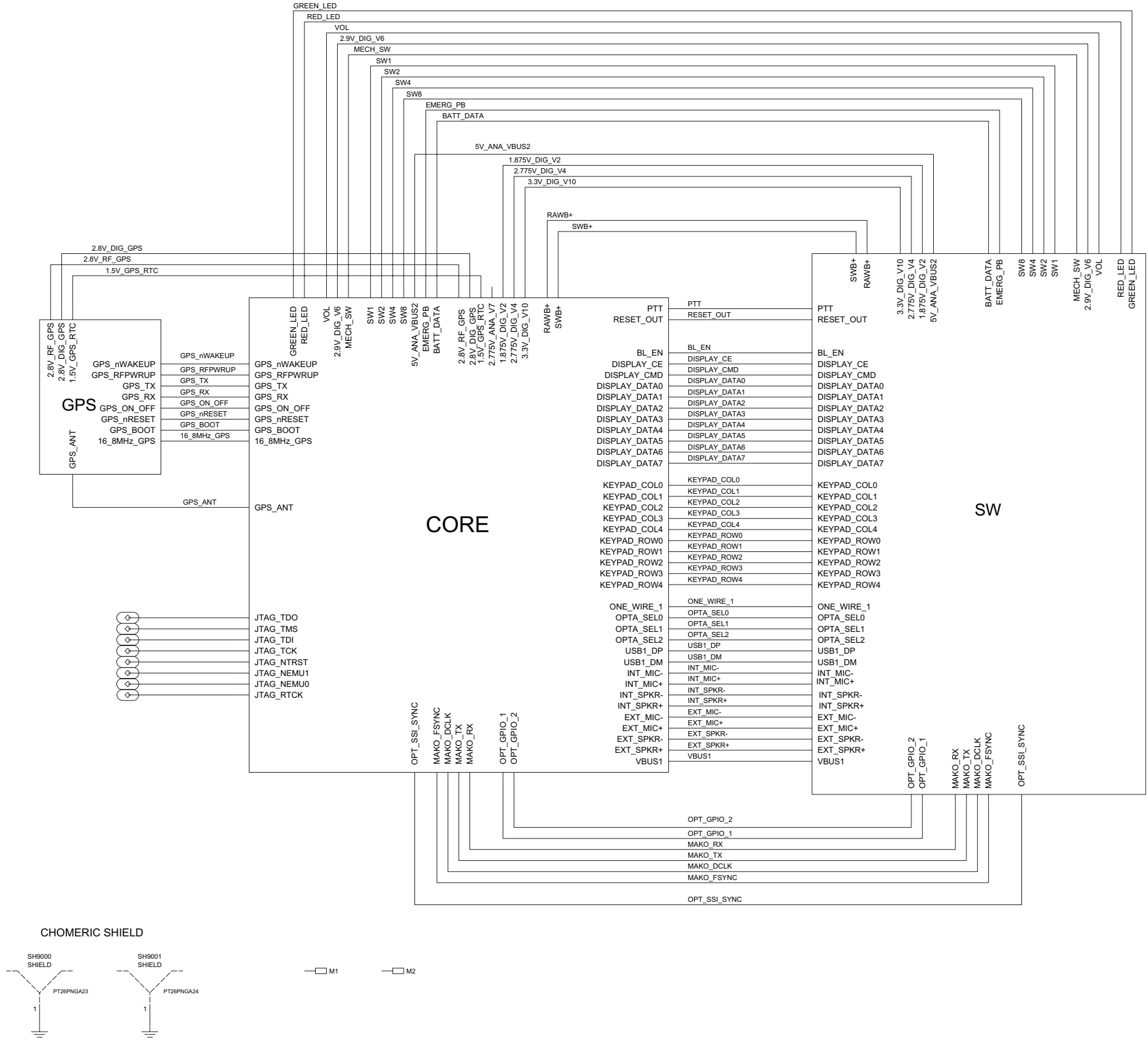
UHF1 (403-470MHz) Main Board Top Side PCB No. 8486716Z07



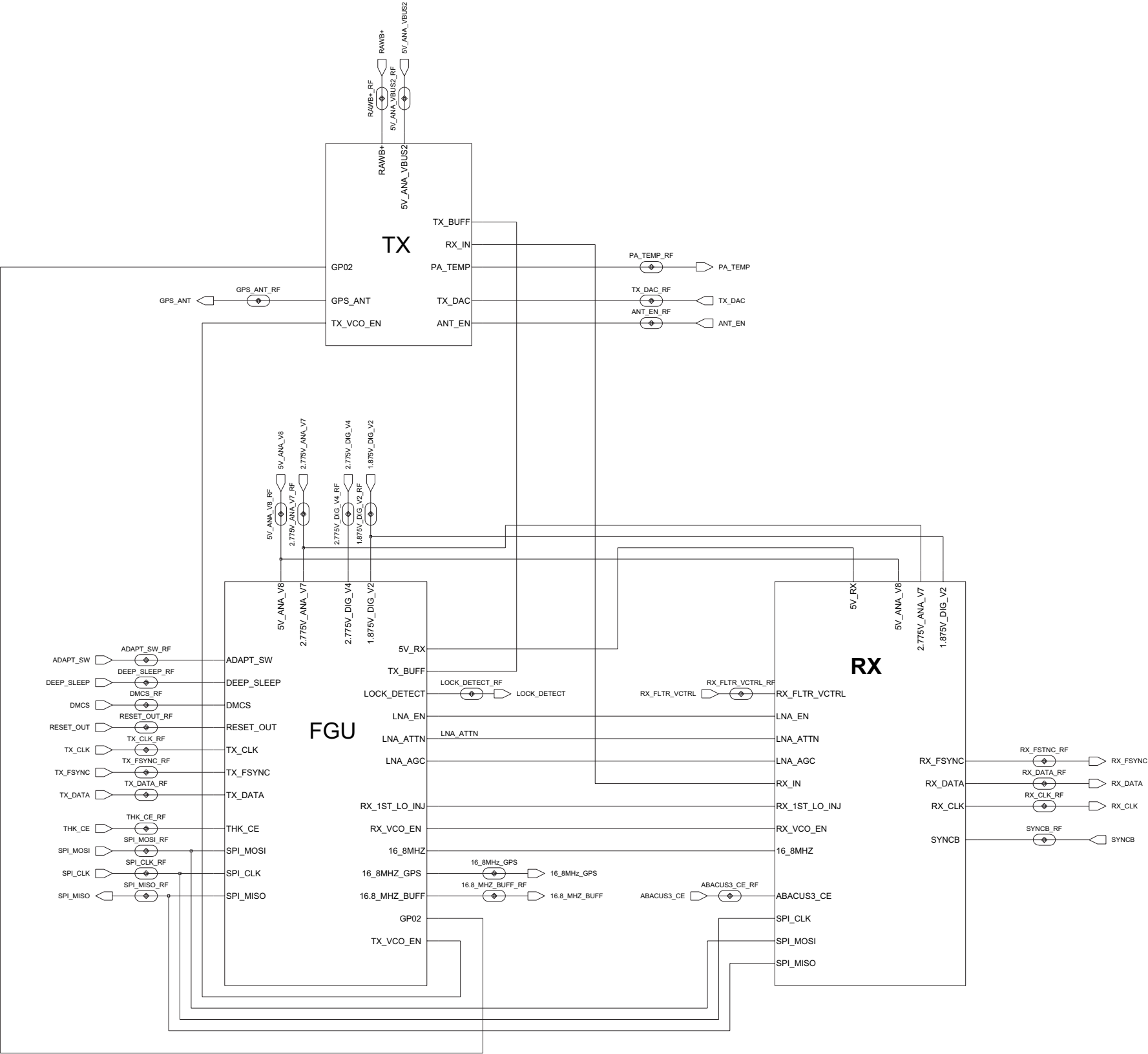
UHF1 (403-470MHz) Main Board Bottom Side PCB No. 8486716Z07



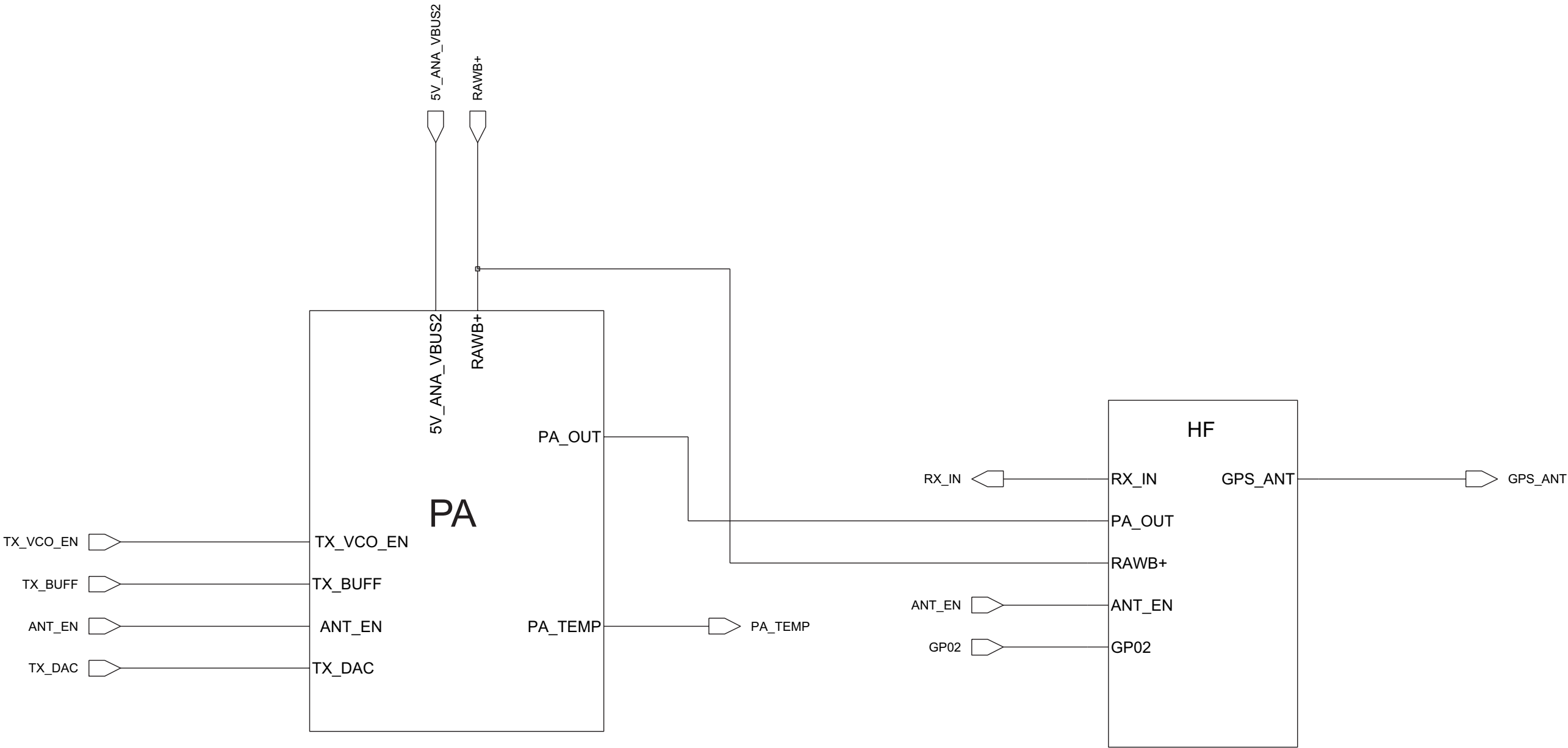




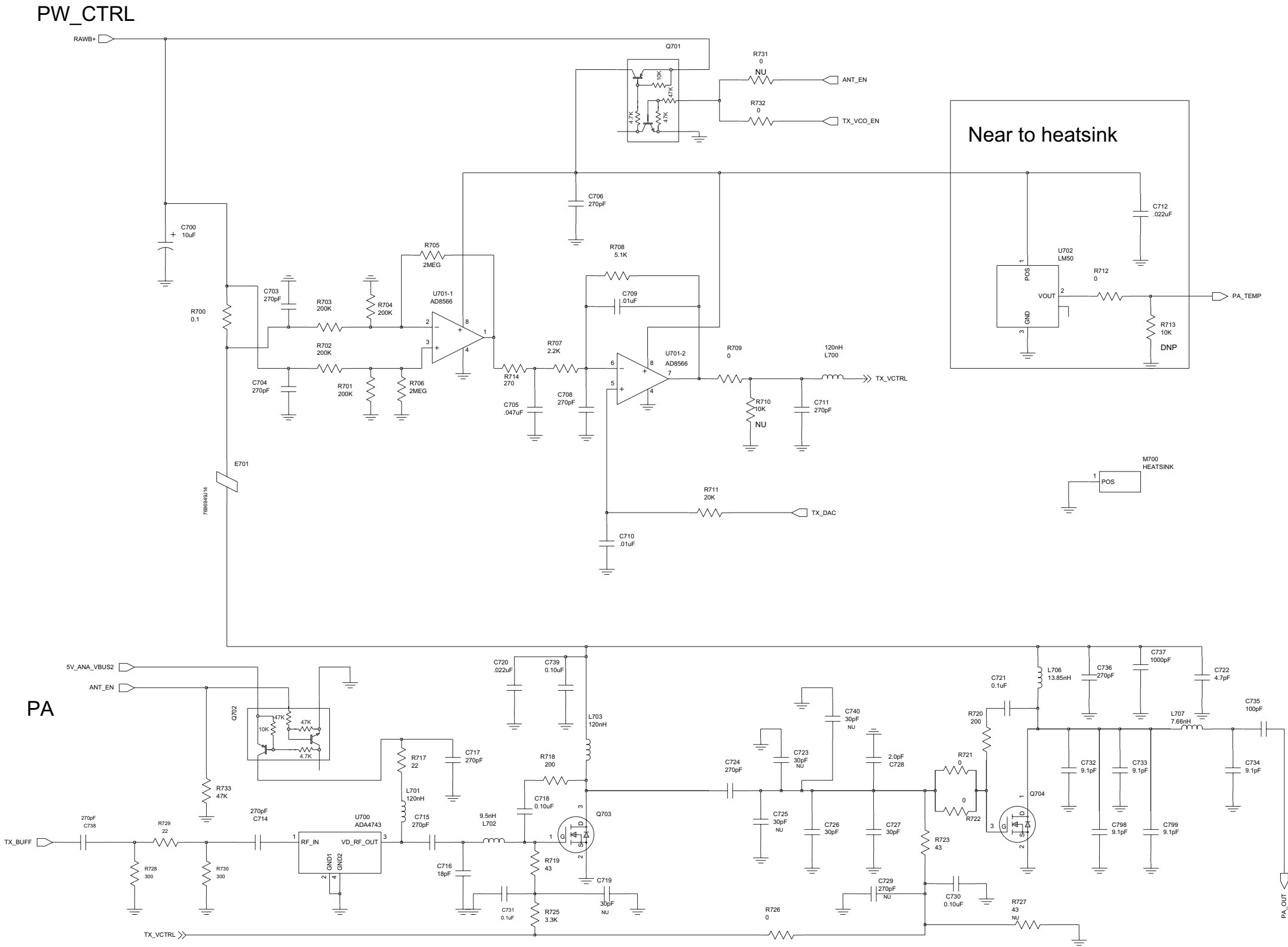
Complete Radio Schematic Diagram



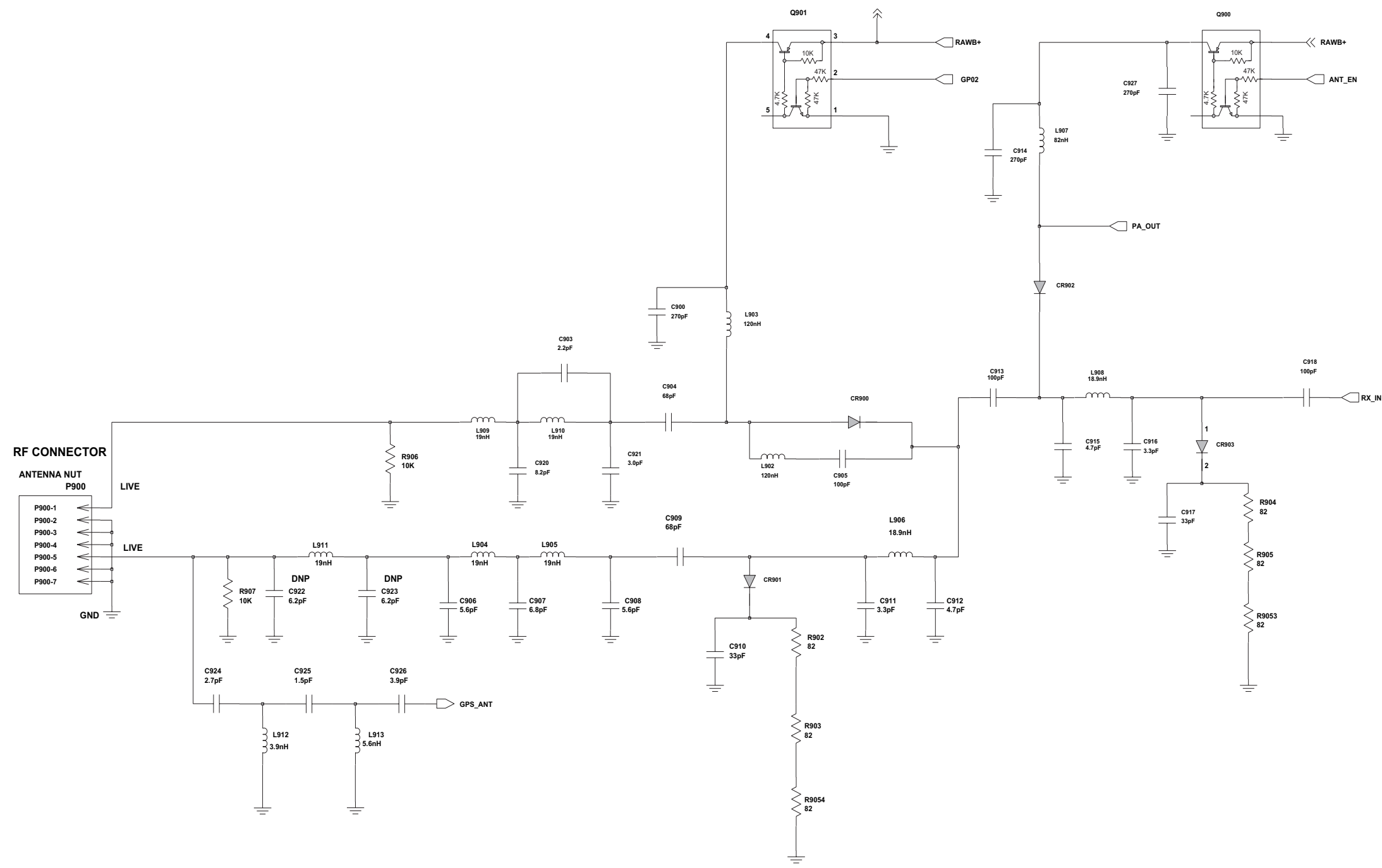
Complete UHF1 RF Schematic Diagram



Complete UHF1 Transmitter Schematic Diagram

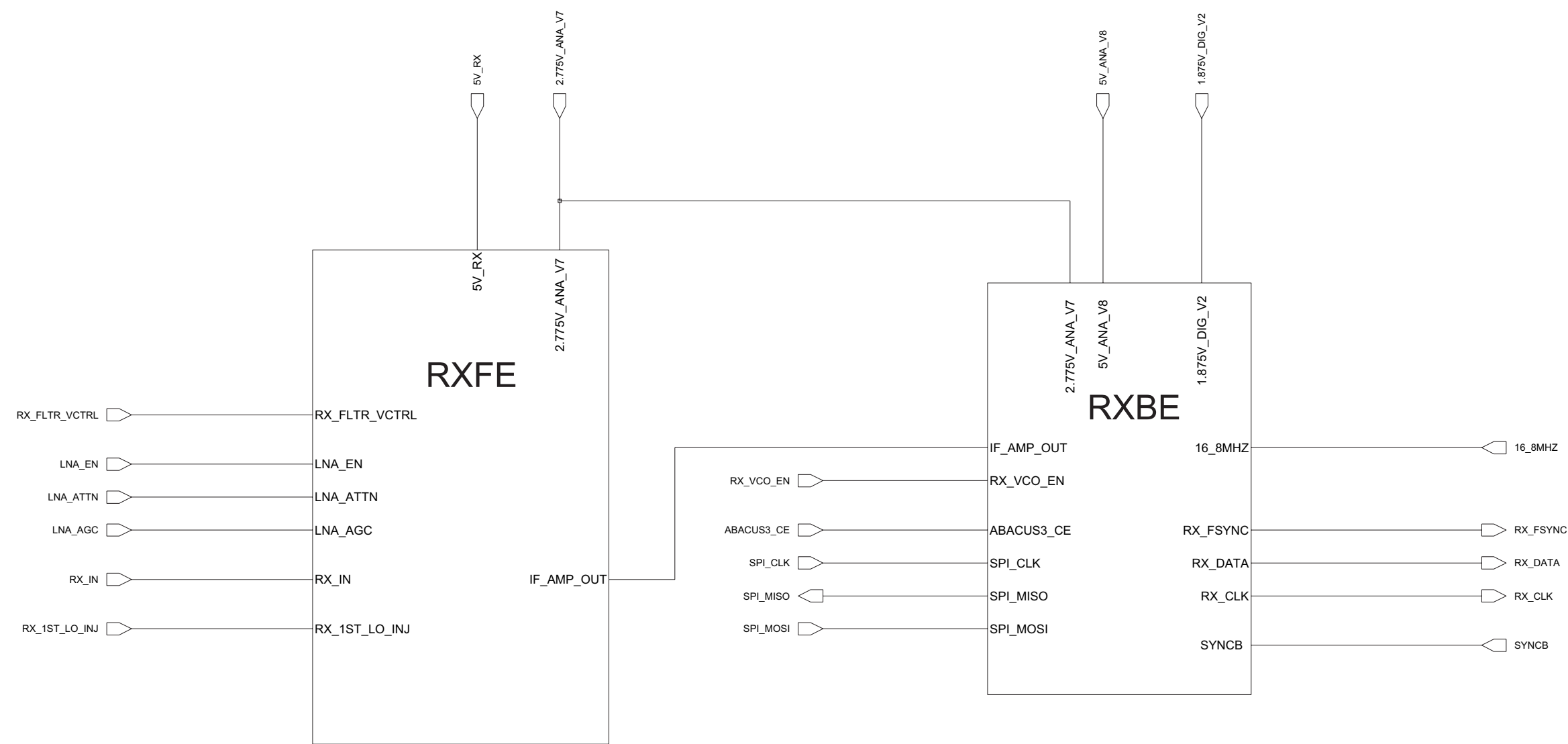


UHF1 Transmitter Schematic Diagram



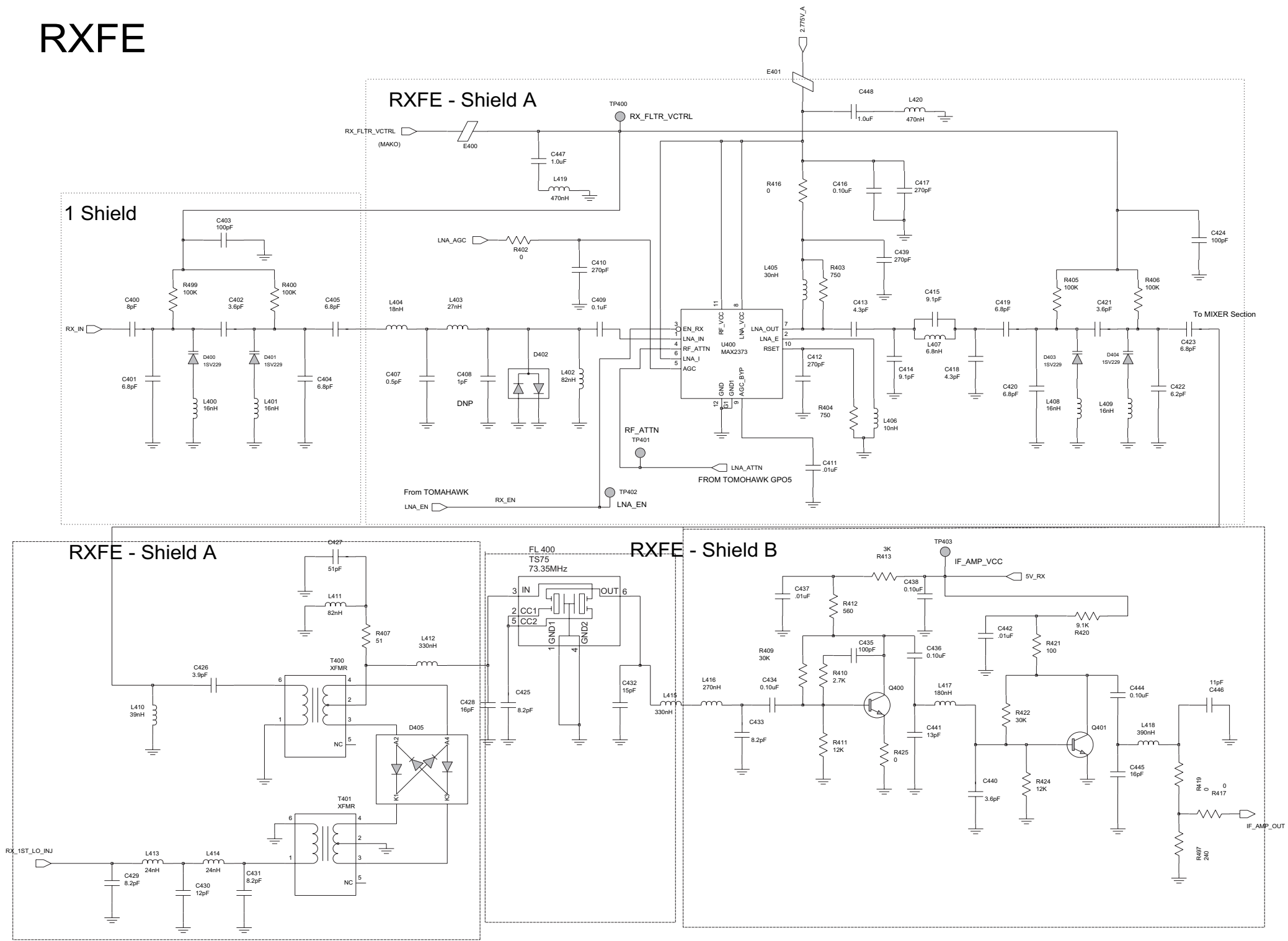
Q901	R907
P900	L913
M901	C927

UHF1 Harmonic Filter and Antenna Switch Schematic Diagram



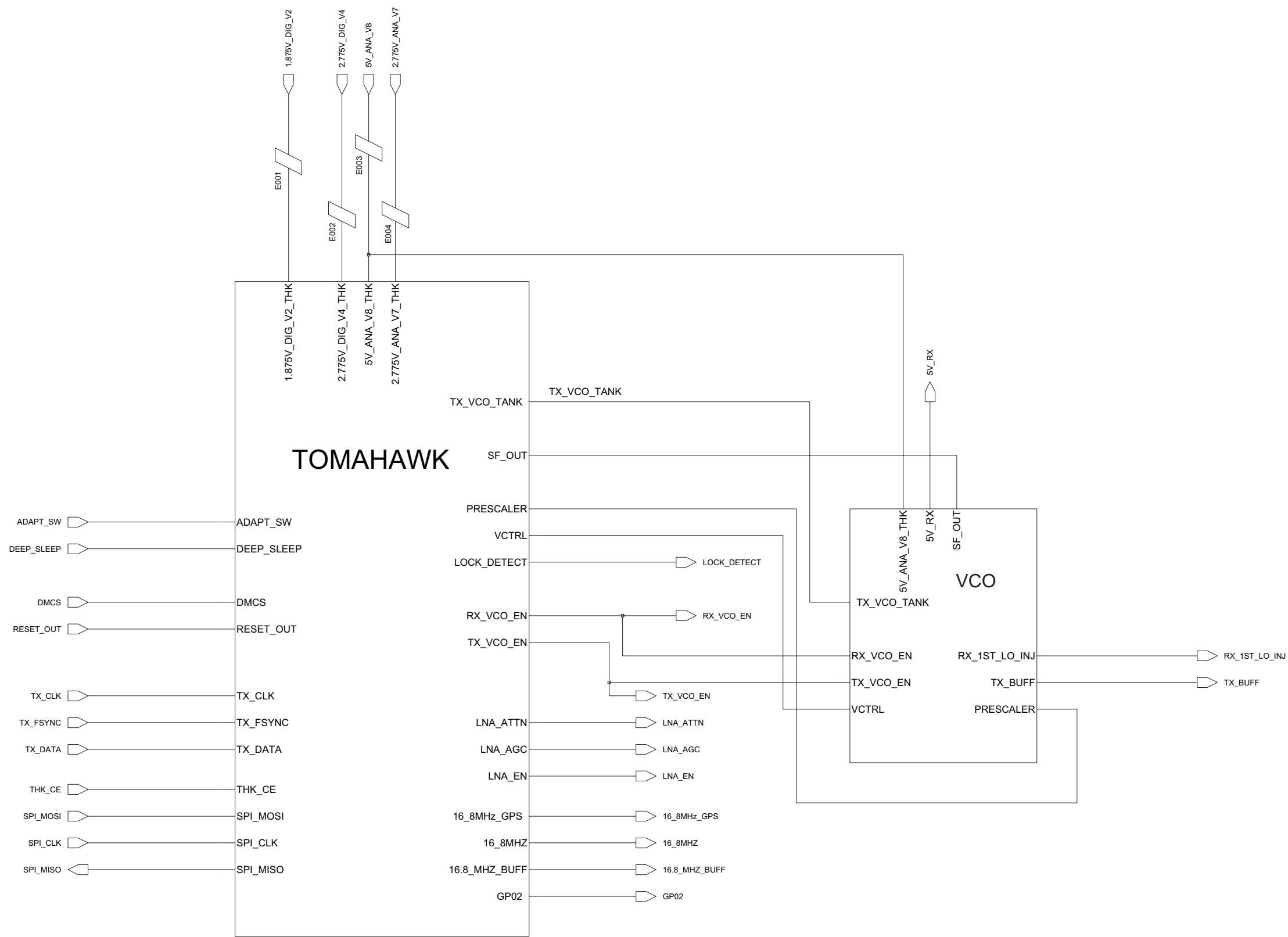
Complete UHF1 Receiver Schematic Diagram

RXFE



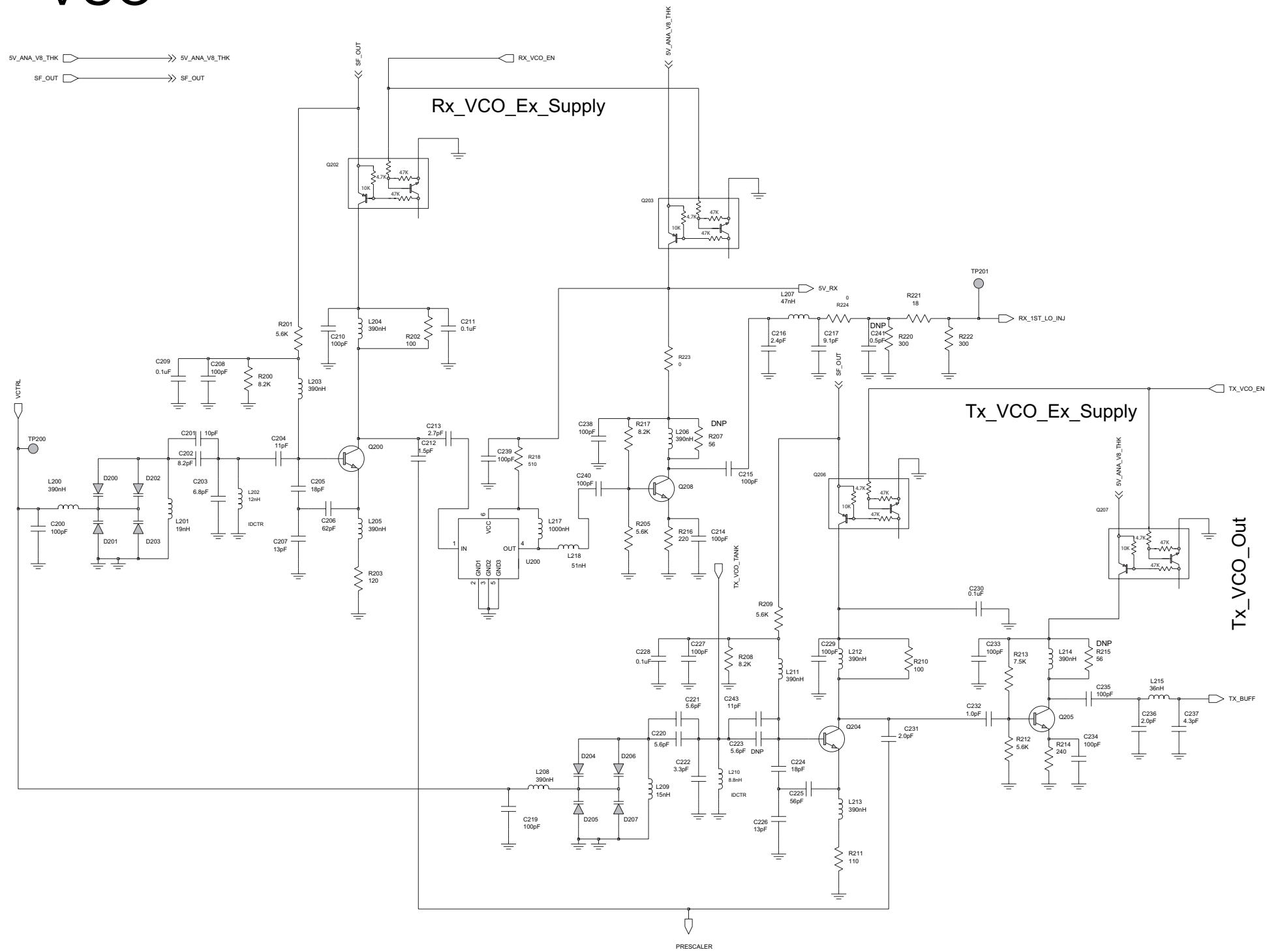
UHF1 Receiver Front End Schematic Diagram

UHF1 Receiver Back End Schematic Diagram



Complete UHF1 Frequency Generating Unit Schematic Diagram

VCO



UHF1 Voltage Controlled Oscillator Schematic Diagram

UHF1 GPS Block Schematic Diagram

UHF1 Radio Parts List (8486716Z04)

Circuit Ref	Motorola Part No.	Description
C001	2113946D02	CAP, 1.0uF
C002	2113946D02	CAP, 1.0uF
C003	2113946K02	CAP, 0.10uF
C004	2113946K02	CAP, 0.10uF
C005	2113946K02	CAP, 0.10uF
C006	2113946K02	CAP, 0.10uF
C007	2113946K02	CAP, 0.10uF
C008	2113946K02	CAP, 0.10uF
C009	NOTPLACED	NOTPLACED
C013	2113945A02	CAP, 270pF
C014	2113945L49	CAP,.01uF
C015	2113945L49	CAP,.01uF
C016	2113945A09	CAP, 1000pF
C017	2113946K02	CAP, 0.10uF
C018	2313960B57	CAPP, 10uF
C019	2113945L49	CAP,.01uF
C020	2313960B57	CAPP, 10uF
C022	2113946K02	CAP, 0.10uF
C024	2115358H17	CAP, 0.22uF
C025	2115358H07	CAP,.033uF
C026	2115358H15	CAP, 0.15uF
C027	2115358H25	CAP, 1uF
C028	2115358H01	CAP,.01uF
C031	2113944A40	CAP, 100pF
C032	2113944A17	CAP, 4.7pF
C033	2113944A05	CAP, 1.5pF
C035	2113946K02	CAP, 0.10uF
C036	2113946K02	CAP, 0.10uF
C037	2115153H08	CAP, 1.5pF
C038	NOTPLACED	NOTPLACED
C039	2113946D02	CAP, 1.0uF
C200	2113944A40	CAP, 100pF
C201	2115153H27	CAP, 10pF
C202	2115153H25	CAP, 8.2pF
C203	2115153H23	CAP, 6.8pF
C204	2115153H34	CAP, 11pF
C205	2115153H39	CAP, 18pF
C206	2115153H52	CAP, 62pF
C207	2115153H36	CAP, 13pF
C208	2113944A40	CAP, 100pF
C209	2113946B04	CAP, 0.1uF
C210	2113944A40	CAP, 100pF
C211	2113946B04	CAP, 0.1uF
C212	2115153H08	CAP, 1.5pF
C213	2115153H13	CAP, 2.7pF

Circuit Ref	Motorola Part No.	Description
C214	2113944A40	CAP, 100pF
C215	2113944A40	CAP, 100pF
C216	2115153H12	CAP, 2.4pF
C217	2115153H26	CAP, 9.1pF
C219	2113944A40	CAP, 100pF
C220	2115153H21	CAP, 5.6pF
C221	2115153H21	CAP, 5.6pF
C222	2115153H15	CAP, 3.3pF
C223	NOTPLACED	NOTPLACED
C224	2115153H39	CAP, 18pF
C225	2115153H51	CAP, 56pF
C226	2115153H36	CAP, 13pF
C227	2113944A40	CAP, 100pF
C228	2113946B04	CAP, 0.1uF
C229	2113944A40	CAP, 100pF
C230	2113946B04	CAP, 0.1uF
C231	2115153H10	CAP, 2.0pF
C232	2115153H03	CAP, 1.0pF
C233	2113944A40	CAP, 100pF
C234	2113944A40	CAP, 100pF
C235	2113944A40	CAP, 100pF
C236	2115153H10	CAP, 2.0pF
C237	2115153H18	CAP, 4.3pF
C238	2113944A40	CAP, 100pF
C239	2113944A40	CAP, 100pF
C240	2113944A40	CAP, 100pF
C241	NOTPLACED	NOTPLACED
C243	2115153H34	CAP, 11pF
C400	2113944A73	CAP, 8pF
C401	2113944A21	CAP, 6.8pF
C402	2113944M07	CAP, 3.6pF
C403	2113944A40	CAP, 100pF
C404	2113944A21	CAP, 6.8pF
C405	2113944A21	CAP, 6.8pF
C407	2113944A61	CAP, 0.5pF
C408	NOTPLACED	NOTPLACED
C409	2113946B04	CAP, 0.1uF
C410	2113945A02	CAP, 270pF
C411	2113945B02	CAP,.01uF
C412	2113945A02	CAP, 270pF
C413	2113944A16	CAP, 4.3pF
C414	2113944A24	CAP, 9.1pF
C415	2113944A24	CAP, 9.1pF
C416	2113946K02	CAP, 0.10uF
C417	2113945A02	CAP, 270pF
C418	2113944A16	CAP, 4.3pF

Circuit Ref	Motorola Part No.	Description
C419	2113944A21	CAP, 6.8pF
C420	2113944A21	CAP, 6.8pF
C421	2113944M07	CAP, 3.6pF
C422	2113944A20	CAP, 6.2pF
C423	2113944A21	CAP, 6.8pF
C424	2113944A40	CAP, 100pF
C425	2113944A20	CAP, 6.2pF
C426	0613952R66	RES,0
C427	2113944A85	CAP, 51pF
C428	2113944A78	CAP,13pF
C429	2113944A23	CAP, 8.2pF
C430	2113944A26	CAP, 12pF
C431	2113944A23	CAP, 8.2pF
C432	2113944A78	CAP,13pF
C433	2113944A21	CAP,6.8pF
C434	2113946K02	CAP, 0.10uF
C435	2113944A40	CAP, 100pF
C436	2113946K02	CAP, 0.10uF
C437	2113945B02	CAP,.01uF
C438	2113946K02	CAP, 0.10uF
C439	2113945A02	CAP, 270pF
C440	2113944A11	CAP,2.7pF
C441	2113944A16	CAP,4.3pF
C442	2113945B02	CAP,.01uF
C444	2113946K02	CAP, 0.10uF
C445	NOTPLACED	NOTPLACED
C446	2113944A77	CAP, 11pF
C447	NOTPLACED	NOTPLACED
C448	2113946S35	CAP, 1.0uF
C601	2113945B02	CAP,.01uF
C602	2113946B04	CAP, 0.1uF
C603	2113946B04	CAP, 0.1uF
C604	2113945B02	CAP,.01uF
C605	2113945B02	CAP,.01uF
C606	2113944A32	CAP, 39pF
C607	2113945B02	CAP,.01uF
C608	2113945D02	CAP,.047uF
C609	2115153H44	CAP,30pF
C610	2115153H44	CAP,30pF
C611	NOTPLACED	NOTPLACED
C612	2113944A25	CAP, 10pF
C613	2113945G91	CAP, 0.1uF
C614	2113946E02	CAP, 1.0uF
C615	2113946B04	CAP, 0.1uF
C616	2113944A32	CAP, 39pF
C617	2113945L37	CAP, 3300pF

Circuit Ref	Motorola Part No.	Description
C618	2113945C18	CAP,.012uF
C619	2115358H13	CAP, 0.1uF
C620	2113946B04	CAP, 0.1uF
C621	2113945B02	CAP,.01uF
C622	2113944C89	CAP, 200pF
C623	2113944A40	CAP, 100pF
C624	2113944A40	CAP, 100pF
C625	2113945A11	CAP, 2200pF
C626	2113945D02	CAP,.047uF
C627	2113944A40	CAP, 100pF
C628	2113945B02	CAP,.01uF
C629	2113944A40	CAP, 100pF
C630	2113945B02	CAP,.01uF
C631	2113945B02	CAP,.01uF
C632	2113946B04	CAP, 0.1uF
C633	2113946B04	CAP, 0.1uF
C634	2113945B02	CAP,.01uF
C635	2113944A85	CAP, 51pF
C636	2113946B04	CAP, 0.1uF
C637	2113946G04	CAP, 0.68uF
C638	2115153H38	CAP, 16pF
C639	2113946B04	CAP, 0.1uF
C700	2316410H03	CAPP, 10uF
C703	2113945A02	CAP, 270pF
C704	2113945A02	CAP, 270pF
C705	2113946B02	CAP,.047uF
C706	2113945A02	CAP, 270pF
C708	2113945A02	CAP, 270pF
C709	2113945B02	CAP,.01uF
C710	2113945B02	CAP,.01uF
C711	2113945A02	CAP, 270pF
C712	2113945B04	CAP,.022uF
C714	2113945A02	CAP, 270pF
C715	2113945A02	CAP, 270pF
C716	2113944A28	CAP, 18pF
C717	2113945A02	CAP, 270pF
C718	2113946K02	CAP, 0.10uF
C719	NOTPLACED	NOTPLACED
C720	2113945B04	CAP,.022uF
C721	2113945D04	CAP, 0.1uF
C722	2113944A17	CAP, 4.7pF
C723	NOTPLACED	NOTPLACED
C724	2113945A02	CAP, 270pF
C725	NOTPLACED	NOTPLACED
C726	2113944A82	CAP, 30pF
C727	2113944A82	CAP, 30pF

Circuit Ref	Motorola Part No.	Description
C728	2113944A08	CAP, 2.0pF
C729	NOTPLACED	NOTPLACED
C730	2113946K02	CAP, 0.10uF
C731	2113945D04	CAP, 0.1uF
C732	2116173H17	CAP,24pF
C733	2116636H04	CAP,20pF
C734	2116001H01	CAP,13pF
C735	2116173H17	CAP,24pF
C736	2113945A02	CAP, 270pF
C737	2113945A09	CAP, 1000pF
C738	2113945A02	CAP, 270pF
C739	2113946K02	CAP, 0.10uF
C740	NOTPLACED	NOTPLACED
C798	2116173H17	CAP,24pF
C799	2116636H04	CAP,20pF
C900	2113945A02	CAP, 270pF
C903	2113944C14	CAP, 2.2pF
C904	2113944C41	CAP, 68pF
C905	2113944C45	CAP, 100pF
C906	2113944C71	CAP, 5.6pF
C907	2113944C73	CAP, 6.8pF
C908	2113944C71	CAP, 5.6pF
C909	2113944C41	CAP, 68pF
C910	2113944M30	CAP, 33pF
C911	2113944C18	CAP, 3.3pF
C912	2113944C22	CAP, 4.7pF
C913	2113944C45	CAP, 100pF
C914	2113945A02	CAP, 270pF
C915	2113944C22	CAP, 4.7pF
C916	2113944C18	CAP, 3.3pF
C917	2113944M30	CAP, 33pF
C918	2113944C45	CAP, 100pF
C920	2113944C28	CAP, 8.2pF
C921	2113944C17	CAP, 3.0pF
C922	NOTPLACED	NOTPLACED
C923	NOTPLACED	NOTPLACED
C924	2113944A11	CAP, 2.7pF
C925	2113944V07	CAP, 1.5pF
C926	2113944A15	CAP, 3.9pF
C927	2113945A02	CAP, 270pF
C1000	2113944A40	CAP, 100pF
C1001	2113946K02	CAP, 0.10uF
C1002	2113946K02	CAP, 0.10uF
C1003	2113944A40	CAP, 100pF
C1004	2113944A40	CAP, 100pF
C1005	2113946K02	CAP, 0.10uF

Circuit Ref	Motorola Part No.	Description
C1006	2113946K02	CAP, 0.10uF
C1007	2113944A40	CAP, 100pF
C1008	2113944A40	CAP, 100pF
C1009	2113946K02	CAP, 0.10uF
C1010	2113946K02	CAP, 0.10uF
C1011	2113944A40	CAP, 100pF
C1012	2113946K02	CAP, 0.10uF
C1013	2113946K02	CAP, 0.10uF
C1014	2113946K02	CAP, 0.10uF
C1015	2113946K02	CAP, 0.10uF
C1016	2113946B04	CAP, 0.1uF
C1017	2113946E02	CAP, 1.0uF
C1018	2113944A28	CAP, 18pF
C1019	2113944A28	CAP, 18pF
C1028	2113946K02	CAP, 0.10uF
C1029	2113946K02	CAP, 0.10uF
C1030	2113944A28	CAP, 18pF
C1031	2113946K02	CAP, 0.10uF
C1032	2113945B02	CAP,.01uF
C1033	2113946K02	CAP, 0.10uF
C1044	2113946B04	CAP, 0.1uF
C2000	2113944A40	CAP, 100pF
C2001	2113945B02	CAP,.01uF
C2002	2113946K02	CAP, 0.10uF
C2003	2113946K02	CAP, 0.10uF
C2004	2113944A40	CAP, 100pF
C2005	2113945B02	CAP,.01uF
C2006	2113946K02	CAP, 0.10uF
C2007	2113946K02	CAP, 0.10uF
C3000	2113944A78	CAP, 13pF
C3001	2113944A78	CAP, 13pF
C3002	2113945D04	CAP, 0.1uF
C3003	2113946D05	CAP, 2.2uF
C3004	2113946D05	CAP, 2.2uF
C3005	2113945A09	CAP, 1000pF
C3010	2113946D05	CAP, 2.2uF
C3011	2113946A02	CAP,.022uF
C3014	2113946D05	CAP, 2.2uF
C3015	2115153H57	CAP, 100pF
C3016	2113946D05	CAP, 2.2uF
C3017	2113945B02	CAP,.01uF
C3018	2113946D05	CAP, 2.2uF
C3019	2113946D02	CAP, 1.0uF
C3024	2113946D02	CAP, 1.0uF
C3025	2113946K02	CAP, 0.10uF
C3026	2113946K02	CAP, 0.10uF

Circuit Ref	Motorola Part No.	Description
C3028	2113946D05	CAP, 2.2uF
C3031	2113946D02	CAP, 1.0uF
C3034	2113946B04	CAP, 0.1uF
C3035	2113946B04	CAP, 0.1uF
C3036	2113946B04	CAP, 0.1uF
C3037	2113944A40	CAP, 100pF
C3038	2113944A40	CAP, 100pF
C3039	2113946F03	CAP, 4.7uF
C3045	2113946F05	CAP, 10uF
C3047	2113946D02	CAP, 1.0uF
C3048	2113946D02	CAP, 1.0uF
C3049	2113743E10	CAP, 0.033uF
C3050	2113743E10	CAP, 0.033uF
C3051	2113944A40	CAP, 100pF
C3060	2113944A80	CAP, 20pF
C3061	2113944A80	CAP, 20pF
C3062	2113946K02	CAP, 0.10uF
C3063	2113946K02	CAP, 0.10uF
C3067	2113946D02	CAP, 1.0uF
C3070	2113944A25	CAP, 10pF
C3074	2113946D02	CAP, 1.0uF
C3079	2113946F03	CAP, 4.7uF
C3080	NOTPLACED	NOTPLACED
C3081	2113946F03	CAP, 4.7uF
C3082	2113946B04	CAP, 0.1uF
C3083	2113946B04	CAP, 0.1uF
C3084	2113946K03	CAP, 0.22uF
C3090	2113955D37	CAP, 10uF
C3091	2113955D37	CAP, 10uF
C3093	2113946N03	CAP, 2.2uF
C3094	2113946B03	CAP,.068uF
C3095	2113946B03	CAP,.068uF
C3097	2113944A31	CAP, 33pF
C3098	2113944A31	CAP, 33pF
C3099	2113944A31	CAP, 33pF
C3100	2113944A31	CAP, 33pF
C3101	2113946D02	CAP, 1.0uF
C3102	2113946D02	CAP, 1.0uF
C3200	2113945Y02	CAP, 0.10uF
C3201	2113955D37	CAP, 10uF
C3202	2371572L01	CAPP, 47uF
C3203	2113945B02	CAP,.01uF
C3204	2115153H40	CAP, 20pF
C3205	2113944A44	CAP, 220pF
C3206	2113945Y02	CAP, 0.10uF
C3207	2113955D37	CAP, 10uF

Circuit Ref	Motorola Part No.	Description
C3208	2113946K03	CAP, 0.22uF
C3209	2371572L01	CAPP, 47uF
C3210	2113945B02	CAP,.01uF
C3211	2115153H40	CAP, 20pF
C3212	2113944A44	CAP, 220pF
C3700	2113946D02	CAP, 1.0uF
C3701	2113945B02	CAP,.01uF
C3702	2113946D05	CAP, 2.2uF
C3703	2113946D02	CAP, 1.0uF
C3704	2113944A30	CAP, 27pF
C3705	2113945B02	CAP,.01uF
C3706	2113945A05	CAP, 470pF
C3707	2113946D05	CAP, 2.2uF
C3800	2113945D04	CAP, 0.1uF
C3805	2113946K03	CAP, 0.22uF
C3999	2113945B02	CAP,.01uF
C8000	2113946F05	CAP, 10uF
C8001	2113944A28	CAP, 18pF
C8002	2113944A52	CAP, 1000pF
C8003	2113946F05	CAP, 10uF
C8004	2113944A28	CAP, 18pF
C8005	2113946F05	CAP, 10uF
C8006	2113944A28	CAP, 18pF
C8013	2113944A08	CAP, 2.0pF
C8014	2113944A62	CAP, 0.75pF
C8015	2113946K02	CAP, 0.10uF
C8016	2113945A02	CAP, 270pF
C8017	2113944A28	CAP, 18pF
C8018	2113944A28	CAP, 18pF
C8019	2113944A11	CAP, 2.7pF
C8020	2113944A52	CAP, 1000pF
C8021	2113946K02	CAP, 0.10uF
C8022	2113946D05	CAP, 2.2uF
C8023	2113945B02	CAP,.01uF
C8029	2113944A52	CAP, 1000pF
C8030	2113944A28	CAP, 18pF
C8031	2113946D05	CAP, 2.2uF
C8032	2113945B02	CAP,.01uF
C8033	2113944A28	CAP, 18pF
C8034	2113944A28	CAP, 18pF
C8035	2113944A31	CAP, 33pF
C8036	2113944A52	CAP, 1000pF
C9000	2113944A40	CAP, 100pF
C9001	2113944A40	CAP, 100pF
C9002	2113944A40	CAP, 100pF
C9003	2113944A40	CAP, 100pF

Circuit Ref	Motorola Part No.	Description	Circuit Ref	Motorola Part No.	Description	Circuit Ref	Motorola Part No.	Description	Circuit Ref	Motorola Part No.	Description
C9004	2113944A40	CAP, 100pF	C9057	NOTPLACED	NOTPLACED	E3030	2409134J04	BLM18BD601SN1	L218	2415429H31	IDCTR, 51nH
C9005	2113944A40	CAP, 100pF	C9058	2113944A40	CAP, 100pF	E3031	2409134J04	BLM18BD601SN1	L400	2416201H01	IDCTR, 16nH
C9006	2113944A40	CAP, 100pF	C9059	2113944A40	CAP, 100pF	E3032	2409134J04	BLM18BD601SN1	L401	2416201H01	IDCTR, 16nH
C9007	2113944A40	CAP, 100pF	C9060	2113944A40	CAP, 100pF	E3033	2409134J04	BLM18BD601SN1	L402	2415429H35	IDCTR, 82nH
C9008	2113944A40	CAP, 100pF	C9061	2113944A40	CAP, 100pF	E3700	7686949J08	IDCTR	L403	2415427H34	IDCTR,27nH
C9009	2113944A40	CAP, 100pF	C9062	2113944A40	CAP, 100pF	E3701	7686949J08	IDCTR	L404	2415427H29	IDCTR,19nH
C9010	2113944A40	CAP, 100pF	C9063	2113944A40	CAP, 100pF	E3702	7686949J08	IDCTR	L405	2415429H25	IDCTR, 30nH
C9011	2113944A40	CAP, 100pF	C9064	2113944A40	CAP, 100pF	E3703	7686949J08	IDCTR	L406	2415429H10	IDCTR, 6.8nH
C9012	2113944A40	CAP, 100pF	C9065	2113944C45	CAP, 100pF	E3704	7686949J08	IDCTR	L407	2415427H16	IDCTR,7.5nH
C9013	2113944A40	CAP, 100pF	C9066	2113944A40	CAP, 100pF	E3705	7686949J08	IDCTR	L408	2416201H01	IDCTR, 16nH
C9014	2113944C45	CAP, 100pF	C9067	NOTPLACED	NOTPLACED	E8000	7686949J08	IDCTR	L409	2416201H01	IDCTR, 16nH
C9015	2113944A40	CAP, 100pF	C9068	NOTPLACED	NOTPLACED	E8001	7686949J08	IDCTR	L410	NOTPLACED	NOTPLACED
C9016	2113944A40	CAP, 100pF	C9069	NOTPLACED	NOTPLACED	E8002	7686949J08	IDCTR	L411	2415429H35	IDCTR, 82nH
C9017	2113944A40	CAP, 100pF	CR900	4815897H01	UPP9401E3	E8003	7686949J08	IDCTR	L412	2414017N29	IDCTR, 270nH
C9018	2113944A40	CAP, 100pF	CR901	4815897H01	UPP9401E3	E8004	7686949J08	IDCTR	L413	2415429H23	IDCTR, 24nH
C9019	2113944A40	CAP, 100pF	CR902	4815897H01	UPP9401E3	E8005	7686949J08	IDCTR	L414	2415429H23	IDCTR, 24nH
C9020	2113944A40	CAP, 100pF	CR903	4815897H01	UPP9401E3	E8006	7686949J08	IDCTR	L415	2415429H46	IDCTR, 330nH
C9021	2113944A40	CAP, 100pF	D001	4815059H01	1SV325	E9000	7686949J14	BLM21PG221SN1	L416	2414017N29	IDCTR, 270nH
C9022	2113944A40	CAP, 100pF	D200	4815096H01	1SV305	E9001	2480640Z01	BK1005HM471	L417	2415718H37	IDCTR, 820nH
C9023	2113944A40	CAP, 100pF	D201	4815096H01	1SV305	E9006	NOTPLACED	NOTPLACED	L418	2415429H47	IDCTR, 390nH
C9024	2113944A40	CAP, 100pF	D202	4815096H01	1SV305	E9007	NOTPLACED	NOTPLACED	L419	NOTPLACED	NOTPLACED
C9025	2113944A40	CAP, 100pF	D203	4815096H01	1SV305	F9000	6515076H01	FUSE	L420	2414032F42	IDCTR, 470nH
C9026	2113944A40	CAP, 100pF	D204	4815096H01	1SV305	FL400	9116854H01	-	L600	2466505A01	IDCTR, 10uH
C9027	2113944A40	CAP, 100pF	D205	4815096H01	1SV305	FL8000	9180310L38	B39162-B7829-C710	L601	2466505A01	IDCTR, 10uH
C9028	2113944A40	CAP, 100pF	D206	4815096H01	1SV305	FL8001	9180310L38	B39162-B7829-C710	L602	2415569H01	IDCTR, 4.7uH
C9029	2113944A40	CAP, 100pF	D207	4815096H01	1SV305	FL9000	2515003H02	DLP11SN201HL2	L603	2415718H37	IDCTR, 820nH
C9030	2113944A17	CAP, 4.7pF	D400	4885055Y01	1SV229	J9001	0970312L02	CONN_J	L604	2414015B26	IDCTR, 330nH
C9031	2113944A17	CAP, 4.7pF	D401	4885055Y01	1SV229	L002	2415429H26	IDCTR, 33nH	L605	2415569H01	IDCTR, 4.7uH
C9032	2113944A17	CAP, 4.7pF	D402	4813974A19	MMBD352	L003	NOTPLACED	NOTPLACED	L700	2414017N25	IDCTR, 120nH
C9033	2113944A40	CAP, 100pF	D403	4885055Y01	1SV229	L200	2415429H47	IDCTR, 390nH	L701	2414017N25	IDCTR, 120nH
C9038	2113944A40	CAP, 100pF	D404	4885055Y01	1SV229	L201	2415427H29	IDCTR, 19nH	L702	2415429H14	IDCTR, 9.5nH
C9039	2113944C45	CAP, 100pF	D405	4815923H01	HSMS2829	L202	2416540H13	IDCTR, 12nH	L703	2414017N25	IDCTR, 120nH
C9040	2113944A40	CAP, 100pF	D600	4815096H01	1SV305	L203	2415429H47	IDCTR, 390nH	L706	2460591E64	IDCTR, 30.51nH
C9041	2113944A40	CAP, 100pF	D601	4815096H01	1SV305	L204	2415429H47	IDCTR, 390nH	L707	2471406L02	IDCTR, 11.03nH
C9042	2113944A40	CAP, 100pF	D3000	4813978A25	BAT54HT1G	L205	2415429H47	IDCTR, 390nH	L902	2414017N25	IDCTR, 120nH
C9043	2113944A40	CAP, 100pF	D9000	4805729G49	BRPY1204W	L206	2415429H47	IDCTR, 390nH	L903	2414017N25	IDCTR, 120nH
C9044	2113944A40	CAP, 100pF	E001	2480640Z01	BK1005HM471	L207	2415427H42	IDCTR,51nH	L904	2416201H01	IDCTR,16nH
C9045	2113944A40	CAP, 100pF	E002	2480640Z01	BK1005HM471	L208	2415429H47	IDCTR, 390nH	L905	2416201H01	IDCTR,16nH
C9046	2113944A40	CAP, 100pF	E003	2480640Z01	BK1005HM471	L209	2415427H26	IDCTR, 15nH	L906	2416201H02	IDCTR,19nH
C9047	2113944A40	CAP, 100pF	E004	2480640Z01	BK1005HM471	L210	2415428H07	IDCTR, 8.8nH	L907	2415429H35	IDCTR, 82nH
C9048	2113944A40	CAP, 100pF	E400	2480640Z01	BK1005HM471	L211	2415429H47	IDCTR, 390nH	L908	2416201H02	IDCTR,19nH
C9049	2113944A40	CAP, 100pF	E401	2480640Z01	BK1005HM471	L212	2415429H47	IDCTR, 390nH	L909	2416201H01	IDCTR,16nH
C9050	2113944A40	CAP, 100pF	E600	2480640Z01	BK1005HM471	L213	2415429H47	IDCTR, 390nH	L910	2416201H01	IDCTR,16nH
C9051	NOTPLACED	NOTPLACED	E601	2480640Z01	BK1005HM471	L214	2415429H47	IDCTR, 390nH	L911	2416201H01	IDCTR,16nH
C9053	NOTPLACED	NOTPLACED	E602	2480640Z01	BK1005HM471	L215	2415429H27	IDCTR, 36nH	L912	2414017P08	IDCTR, 3.9nH
C9055	NOTPLACED	NOTPLACED	E701	7686949J14	BLM21PG221SN1	L217	2415347H01	IDCTR, 1000nH	L913	2414017P10	IDCTR, 5.6nH

Circuit Ref	Motorola Part No.	Description
L3003	2464675H01	IDCTR, 560nH
L3004	2464675H01	IDCTR, 560nH
L3020	2489846Y06	IDCTR, 10uH
L3021	2489846Y06	IDCTR, 10uH
L3022	2464675H01	IDCTR, 560nH
L8001	2414017P10	IDCTR, 5.6nH
L8002	2414017P17	IDCTR, 22nH
L8003	2414017P13	IDCTR, 10nH
L8004	2414017P10	IDCTR, 5.6nH
L9000	2415429H45	IDCTR, 270nH
L9001	2415429H45	IDCTR, 270nH
L9007	2415429H45	IDCTR, 270nH
L9008	2415429H45	IDCTR, 270nH
M1	4271321L01	RETAINER
M2	4271321L01	RETAINER
M700	2615193H01	HEATSINK
M9000	4371105L01	BRD_SPACER
M9001	4371105L01	BRD_SPACER
M9002	4371105L01	BRD_SPACER
M9003	NOTPLACED	NOTPLACED
M9004	NOTPLACED	NOTPLACED
M9005	3915478H01	CONTACT
M9006	3915478H01	CONTACT
M9007	0915184H01	CONTACT
P900	2815696H01	CONN_P
P9000	2887818K02	CONN_P
Q002	4815359H01	BCV62
Q003	4816134H01	DTC114YM
Q200	4815029H01	NE851M03
Q202	4815055H01	UMC5NT2G
Q203	4815055H01	UMC5NT2G
Q204	4885061Y01	NE68519
Q205	4885061Y01	NE68519
Q206	4815055H01	UMC5NT2G
Q207	4815055H01	UMC5NT2G
Q208	4885061Y01	NE68519
Q400	4816531H01	QSBT_0038
Q401	4816531H01	QSBT_0038
Q600	4813973A04	73A04
Q601	4815055H01	UMC5NT2G
Q602	4885061Y01	NE68519
Q701	4815055H01	UMC5NT2G
Q702	4815055H01	UMC5NT2G
Q703	4816547H01	RD01MUS1
Q704	4816548H01	RD07MVS1
Q900	4815055H01	UMC5NT2G

Circuit Ref	Motorola Part No.	Description
Q901	4815055H01	UMC5NT2G
Q3000	4805585Q23	SI8401DB
Q3001	4805585Q23	SI8401DB
Q3002	4816134H01	DTC114YM
Q3003	4813970A62	NTHS5441T1
Q3005	4805585Q23	SI8401DB
Q3006	4816134H01	DTC114YM
Q3010	4805585Q23	SI8401DB
Q9000	4813973M07	MMBT3904
Q9001	4815154H01	IMXFT110
Q9003	4813973M07	MMBT3904
R006	0613952Q93	RES, 6.8K
R007	0613952R01	RES, 10K
R008	0613952Q25	RES, 10
R010	0613952Q93	RES, 6.8K
R011	0613952Q49	RES, 100
R012	0613952R25	RES, 100K
R013	0613952Q46	RES, 75
R014	0613952Q42	RES, 51
R016	0613952Q33	RES, 22
R017	0613952Q64	RES, 430
R018	0613952Q96	RES, 9.1K
R019	0613952R01	RES, 10K
R020	0613952Q55	RES, 180
R022	0613952Q36	RES, 30
R025	0613952R13	RES, 33K
R026	0613952R01	RES, 10K
R027	0613952R66	RES, 0
R052	NOTPLACED	NOTPLACED
R053	0613952R66	RES, 0
R054	0613952R66	RES, 0
R200	0613952Q95	RES, 8.2K
R201	0613952Q91	RES, 5.6K
R202	0613952Q49	RES, 100
R203	0613952Q51	RES, 120
R205	0613952Q91	RES, 5.6K
R207	NOTPLACED	NOTPLACED
R208	0613952Q95	RES, 8.2K
R209	0613952Q91	RES, 5.6K
R210	0613952Q49	RES, 100
R211	0613952Q50	RES, 110
R212	0613952Q91	RES, 5.6K
R213	0613952Q94	RES, 7.5K
R214	0613952Q58	RES, 240
R215	NOTPLACED	NOTPLACED
R216	0613952Q57	RES, 220

Circuit Ref	Motorola Part No.	Description
R217	0613952Q95	RES, 8.2K
R218	0613952Q66	RES, 510
R220	0613952Q60	RES, 300
R221	0613952Q31	RES, 18
R222	0613952Q60	RES, 300
R223	0613952R66	RES, 0
R224	0613952R66	RES, 0
R400	0613952R25	RES, 100K
R402	0613952R66	RES, 0
R403	0613952Q70	RES, 750
R404	0613952Q72	RES, 910
R405	0613952R25	RES, 100K
R406	0613952R25	RES, 100K
R407	0613952Q42	RES, 51
R409	0613952R05	RES, 15K
R410	0613952Q83	RES, 2.7K
R411	0613952R19	RES, 56K
R412	0613952Q63	RES, 390
R413	0613952Q77	RES, 1.5K
R416	0613952R66	RES, 0
R417	0613952R66	RES, 0
R419	0613952R66	RES, 0
R420	0613952Q95	RES, 8.2K
R421	0613952Q49	RES, 100
R422	0613952R01	RES, 10K
R424	0613952R01	RES, 10K
R425	0613952R66	RES, 0
R497	NOTPLACED	NOTPLACED
R499	0613952R25	RES, 100K
R600	0613952R01	RES, 10K
R601	0613952Q55	RES, 180
R602	0613952Q61	RES, 330
R603	0613952R05	RES, 15K
R604	0613952Q90	RES, 5.1K
R605	0613952Q90	RES, 5.1K
R606	0613952Q75	RES, 1.2K
R607	0613952R25	RES, 100K
R609	0613952R01	RES, 10K
R610	0613952R01	RES, 10K
R611	0613952Q63	RES, 390
R612	0613952R08	RES, 20K
R696	0613952R66	RES, 0
R697	0613952R66	RES, 0
R698	0613952R01	RES, 10K
R699	0613952R25	RES, 100K
R700	0615043C01	RES, 0.1

Circuit Ref	Motorola Part No.	Description
R701	NOTPLACED	NOTPLACED
R702	0613952Z80	RES, 330K
R703	0613952Z80	RES, 330K
R704	NOTPLACED	NOTPLACED
R705	0613952R56	RES, 2MEG
R706	0613952R56	RES, 2MEG
R707	0613952Q81	RES, 2.2K
R708	0613952Q90	RES, 5.1K
R709	0613952R66	RES, 0
R710	NOTPLACED	NOTPLACED
R711	0613952R08	RES, 20K
R712	0613952R66	RES, 0
R713	NOTPLACED	NOTPLACED
R714	0613952Q59	RES, 270
R717	0613958H33	RES, 22
R718	0613952Q56	RES, 200
R719	0613952Q40	RES, 43
R720	0613952H56	RES, 200
R721	0613952G67	RES, 0
R722	0613952G67	RES, 0
R723	0613952Q40	RES, 43
R725	0613952Q85	RES, 3.3K
R726	0613952R66	RES, 0
R727	NOTPLACED	NOTPLACED
R728	0613952Q60	RES, 300
R729	0613952Q33	RES, 22
R730	0613952Q60	RES, 300
R731	NOTPLACED	NOTPLACED
R732	0613952R66	RES, 0
R733	0613952R17	RES, 47K
R902	0613952H47	RES, 82
R903	0613952H47	RES, 82
R904	0613952H47	RES, 82
R905	0613952H47	RES, 82
R906	0613952R01	RES, 10K
R907	0613952R01	RES, 10K
R1000	0613952Q25	RES, 10
R1001	0613952R01	RES, 10K
R1002	0613952J73	RES, 10MEG
R1005	0613952Q89	RES, 4.7K
R1006	0613952R01	RES, 10K
R1013	NOTPLACED	NOTPLACED
R1014	0613952R66	RES, 0
R1015	NOTPLACED	NOTPLACED
R1016	0613952R66	RES, 0
R1017	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
R1018	0613952R66	RES, 0
R1019	0613952Q18	RES, 5.1
R1020	0613952R66	RES, 0
R1021	0613952R66	RES, 0
R1022	NOTPLACED	NOTPLACED
R1023	0613952R66	RES, 0
R1025	0613952R01	RES, 10K
R1026	0613952R17	RES, 47K
R1027	NOTPLACED	NOTPLACED
R1028	0613952R66	RES, 0
R1034	0613952R01	RES, 10K
R1035	NOTPLACED	NOTPLACED
R1036	0613952R01	RES, 10K
R1041	0613952Q73	RES, 1K
R1045	0613952R01	RES, 10K
R1046	NOTPLACED	NOTPLACED
R1047	0613952R66	RES, 0
R1048	0613952R66	RES, 0
R1051	0613952R66	RES, 0
R1052	0613952R66	RES, 0
R1053	0613952Q89	RES, 4.7K
R1054	0613952Q89	RES, 4.7K
R1055	NOTPLACED	NOTPLACED
R1060	0613952Q25	RES, 10
R1061	0613952R66	RES, 0
R1062	0613952R66	RES, 0
R1063	NOTPLACED	NOTPLACED
R1065	0613952R66	RES, 0
R1067	0613952R03	RES, 12K
R1068	0613952R10	RES, 24K
R1069	0613952R66	RES, 0
R1070	0613952R01	RES, 10K
R1072	0613952R66	RES, 0
R2000	0613952R01	RES, 10K
R2004	0613952R66	RES, 0
R2005	0613952R01	RES, 10K
R2006	0613952R01	RES, 10K
R2007	0613952R01	RES, 10K
R2008	0613952R01	RES, 10K
R2009	0613952R01	RES, 10K
R2010	0613952R01	RES, 10K
R2011	0613952R66	RES, 0
R2012	0613952R01	RES, 10K
R2013	0613952R01	RES, 10K
R3004	NOTPLACED	NOTPLACED
R3005	0613952N01	RES, 10K

Circuit Ref	Motorola Part No.	Description
R3006	NOTPLACED	NOTPLACED
R3007	0613952N01	RES, 10K
R3008	NOTPLACED	NOTPLACED
R3009	0613952N01	RES, 10K
R3010	0613952N01	RES, 10K
R3011	0613952Q81	RES, 2.2K
R3012	0613952Q59	RES, 270
R3013	0613952Q81	RES, 2.2K
R3014	0613952M30	RES, 2K
R3016	0616416H01	RES, 0.1
R3017	0613952P25	RES, 178K
R3018	0613952R18	RES, 51K
R3020	0613952Q34	RES, 24
R3021	0613952Q34	RES, 24
R3023	0613952R17	RES, 47K
R3024	0613952Z67	RES, 51K
R3025	0613952Q49	RES, 100
R3026	0613952Q61	RES, 330
R3027	0613952Q61	RES, 330
R3028	0613952N69	RES, 51.1K
R3029	0613952N60	RES, 41.2K
R3030	0686135Z02	RES, 0.2
R3031	0613952R66	RES, 0
R3032	0613952Q95	RES, 8.2K
R3033	0613952R05	RES, 15K
R3034	0613952Q95	RES, 8.2K
R3035	0613952R05	RES, 15K
R3036	0613952N01	RES, 10K
R3037	0613952Q71	RES, 820
R3038	NOTPLACED	NOTPLACED
R3040	0613952Q81	RES, 2.2K
R3041	0613952N01	RES, 10K
R3043	0613952R32	RES, 200K
R3050	0613952R25	RES, 100K
R3051	0613952Q89	RES, 4.7K
R3053	0613952Z58	RES, 22K
R3054	0613952Z58	RES, 22K
R3055	0613952R25	RES, 100K
R3060	0613952M30	RES, 2K
R3070	0613952R33	RES, 220K
R3071	0613952R33	RES, 220K
R3072	0613952R56	RES, 2MEG
R3073	0613952R56	RES, 2MEG
R3074	0613952Q73	RES, 1K
R3075	0613952N01	RES, 10K
R3088	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
R3098	0613952Q85	RES, 3.3K
R3100	0613952R17	RES, 47K
R3101	0613952R25	RES, 100K
R3102	0613952A30	RES, 2
R3103	0615049H16	RES, 0.70
R3200	0613952R33	RES, 220K
R3201	0613952R20	RES, 62K
R3202	0613952R33	RES, 220K
R3203	0613952R36	RES, 300K
R3700	0613952Q73	RES, 1K
R3701	0613952R01	RES, 10K
R3702	0613952R12	RES, 30K
R3703	0613952R10	RES, 24K
R3704	0613952R01	RES, 10K
R3800	0613952Q25	RES, 10
R3888	NOTPLACED	NOTPLACED
R8002	0613952R25	RES, 100K
R8003	0613952R01	RES, 10K
R8004	0613952Q70	RES, 750
R8010	0613952R05	RES, 15K
R8011	0613952R25	RES, 100K
R8012	0613952R01	RES, 10K
R8015	NOTPLACED	NOTPLACED
R8016	0613952R66	RES, 0
R8017	NOTPLACED	NOTPLACED
R8020	0613952R66	RES, 0
R8023	0613952R66	RES, 0
R8024	0613952R25	RES, 100K
R8025	0613952R66	RES, 0
R8026	0613952R25	RES, 100K
R8027	0613952R25	RES, 100K
R8028	0613952R25	RES, 100K
R8029	0613952R25	RES, 100K
R8030	0613952R01	RES, 10K
R8031	0613952R25	RES, 100K
R8032	0613952R25	RES, 100K
R8033	0613952R25	RES, 100K
R8034	0613952R01	RES, 10K
R8035	0613952R01	RES, 10K
R8036	0613952R01	RES, 10K
R8037	0613952R01	RES, 10K
R9000	0613952Q73	RES, 1K
R9001	0613952Q73	RES, 1K
R9002	0613952Q73	RES, 1K
R9003	0613952Q73	RES, 1K
R9004	0613952Q73	RES, 1K

Circuit Ref	Motorola Part No.	Description
R9005	0613952Q73	RES, 1K
R9006	0613952Q73	RES, 1K
R9007	0613952Q73	RES, 1K
R9008	0613952R17	RES, 47K
R9009	0613952R01	RES, 10K
R9010	0613952R01	RES, 10K
R9011	0613952R17	RES, 47K
R9012	0613952Q50	RES, 110
R9013	0613952Q37	RES, 33
R9014	0613952R01	RES, 10K
R9015	0613952R01	RES, 10K
R9016	0613952R01	RES, 10K
R9017	0613952R01	RES, 10K
R9018	0613952R01	RES, 10K
R9019	0613952Q73	RES, 1K
R9050	0613952R01	RES, 10K
R9051	0613952R01	RES, 10K
R9052	0613952Q65	RES, 470
R9053	0613952H47	RES, 82
R9054	0613952H47	RES, 82
S9000	4086470Z01	SWITCH
S9001	4015186H01	SWITCH
S9002	4015203H01	SWITCH
SH9000	NOTPLACED	NOTPLACED
SH9001	NOTPLACED	NOTPLACED
T400	2515396H01	XFMR
T401	2515396H01	XFMR
U001	5104932K08	SC51650VF
U002	5114000B59	MC74VHC1GT66
U200	5116014H01	UPC8179TK
U400	5115443H01	MAX2373
U600	5102495J14	AD9864
U700	4802246J29	ADA4743
U701	5115147H01	AD8566
U702	5115022H01	LM50
U1000	5102495J13	OMAP1710
U1005	5116324H01	ADG3304
U1006	5115001H02	NL27WZU04
U2000	0104024J27	M58WR064FB
U2001	5171614M01	MT48H8M16LFB4-8
U3000	5185143E77	PWR_MNGR_BLOCK
U3002	5115616H01	LP8340
U3003	5115453H01	LMC6035ITLX
U3004	5114007A43	NL17SZ14
U3006	5115974H01	LP3990
U3007	5171395L01	TS5A23166

Circuit Ref	Motorola Part No.	Description
U3008	5115391H01	TK11100CSC
U3009	5164852H47	PCA9306
U3020	5171428L01	LTC1877
U3021	5171428L01	LTC1877
U3700	5116282H01	TPS79228
U3701	5116283H01	TPS79101
U8000	0104024J41	GSC3F/LP
U8001	5164015H55	UPC8211TK
VR9000	4866544A01	SR05
VR9001	4813979P10	MMQA5V6T1
VR9002	4813979P10	MMQA5V6T1
VR9003	4815040H01	MM3Z12VT1G
VR9004	4815040H01	MM3Z12VT1G
VR9005	4805656W76	MM5Z5V6
VR9006	4805656W76	MM5Z5V6
VR9007	4805656W76	MM5Z5V6
VR9008	4813979P10	MMQA5V6T1
VR9009	4813977C23	MMSZ5243
VR9010	4813977C23	MMSZ5243
VR9015	NOTPLACED	NOTPLACED
VR9016	NOTPLACED	NOTPLACED
VR9017	4815040H01	MM3Z12VT1G
VR9018	4815040H01	MM3Z12VT1G
VR9020	4813979P10	MMQA5V6T1
VR9021	4813979P10	MMQA5V6T1
VR9022	4813979P10	MMQA5V6T1
VR9023	4815040H01	MM3Z12VT1G
Y001	5116032H01	IVT5300B
Y1000	4809612J45	CX-91F
Y3000	4802582S80	XTAL
Y3001	4815028H01	CX-101F
Y8000	4802582S80	XTAL

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Circuit Ref	Motorola Part No.	Description
C001	2113946D02	CAP,1.0uF
C002	2113946D02	CAP,1.0uF
C003	2113946K02	CAP,0.10uF
C004	2113946K02	CAP,0.10uF
C005	2113946K02	CAP,0.10uF
C006	2113946K02	CAP,0.10uF
C007	2113946K02	CAP,0.10uF
C008	2113946K02	CAP,0.10uF
C009	NOTPLACED	NOTPLACED
C013	2113945A02	CAP,270pF
C014	2113945L49	CAP,.01uF
C015	2113945L49	CAP,.01uF
C016	2113945A09	CAP,1000pF
C017	2113946K02	CAP,0.10uF
C018	2313960B57	CAPP,10uF
C019	2113945L49	CAP,.01uF
C020	2313960B57	CAPP,10uF
C022	2113946K02	CAP,0.10uF
C024	2115358H17	CAP,0.22uF
C025	2115358H07	CAP,.033uF
C026	2115358H15	CAP,0.15uF
C027	2115358H25	CAP,1uF
C028	2115358H01	CAP,.01uF
C031	2113944A40	CAP,100pF
C032	2113944A17	CAP,4.7pF
C033	2113944A05	CAP,1.5pF
C035	2113946K02	CAP,0.10uF
C036	2113946K02	CAP,0.10uF
C037	2115153H08	CAP,1.5pF
C038	NOTPLACED	NOTPLACED
C039	2113946D02	CAP,1.0uF
C200	2113944A40	CAP,100pF
C201	2115153H27	CAP,10pF
C202	2115153H25	CAP,8.2pF
C203	2115153H23	CAP,6.8pF
C204	2115153H34	CAP,11pF
C205	2115153H39	CAP,18pF
C206	2115153H52	CAP,62pF
C207	2115153H36	CAP,13pF
C208	2113944A40	CAP,100pF
C209	2113946B04	CAP,0.1uF
C210	2113944A40	CAP,100pF
C211	2113946B04	CAP,0.1uF
C212	2115153H08	CAP,1.5pF
C213	2115153H13	CAP,2.7pF

Circuit Ref	Motorola Part No.	Description
C214	2113944A40	CAP,100pF
C215	2113944A40	CAP,100pF
C216	2115153H12	CAP,2.4pF
C217	2115153H26	CAP,9.1pF
C219	2113944A40	CAP,100pF
C220	2115153H21	CAP,5.6pF
C221	2115153H21	CAP,5.6pF
C222	2115153H15	CAP,3.3pF
C223	NOTPLACED	NOTPLACED
C224	2115153H39	CAP,18pF
C225	2115153H51	CAP,56pF
C226	2115153H36	CAP,13pF
C227	2113944A40	CAP,100pF
C228	2113946B04	CAP,0.1uF
C229	2113944A40	CAP,100pF
C230	2113946B04	CAP,0.1uF
C231	2115153H10	CAP,2.0pF
C232	2115153H03	CAP,1.0pF
C233	2113944A40	CAP,100pF
C234	2113944A40	CAP,100pF
C235	2113944A40	CAP,100pF
C236	2115153H10	CAP,2.0pF
C237	2115153H18	CAP,4.3pF
C238	2113944A40	CAP,100pF
C239	2113944A40	CAP,100pF
C240	2113944A40	CAP,100pF
C241	NOTPLACED	NOTPLACED
C243	2115153H34	CAP,11pF
C400	2113944A73	CAP,8pF
C401	2113944A21	CAP,6.8pF
C402	2113944M07	CAP,3.6pF
C403	2113944A40	CAP,100pF
C404	2113944A21	CAP,6.8pF
C405	2113944A21	CAP,6.8pF
C407	2113944A61	CAP,0.5pF
C408	NOTPLACED	NOTPLACED
C409	2113946B04	CAP,0.1uF
C410	2113945A02	CAP,270pF
C411	2113945B02	CAP,.01uF
C412	2113945A02	CAP,270pF
C413	2113944A16	CAP,4.3pF
C414	2113944A24	CAP,9.1pF
C415	2113944A24	CAP,9.1pF
C416	2113946K02	CAP,0.10uF
C417	2113945A02	CAP,270pF
C418	2113944A16	CAP,4.3pF

Circuit Ref	Motorola Part No.	Description
C419	2113944A21	CAP,6.8pF
C420	2113944A21	CAP,6.8pF
C421	2113944M07	CAP,3.6pF
C422	2113944A20	CAP,6.2pF
C423	2113944A21	CAP,6.8pF
C424	2113944A40	CAP,100pF
C425	2113944A20	CAP,6.2pF
C426	0613952R66	RES,0
C427	2113944A85	CAP,51pF
C428	2113944A78	CAP,13pF
C429	2113944A23	CAP,8.2pF
C430	2113944A26	CAP,12pF
C431	2113944A23	CAP,8.2pF
C432	2113944A78	CAP,13pF
C433	2113944A21	CAP,6.8pF
C434	2113946K02	CAP,0.10uF
C435	2113944A40	CAP,100pF
C436	2113946K02	CAP,0.10uF
C437	2113945B02	CAP,.01uF
C438	2113946K02	CAP,0.10uF
C439	2113945A02	CAP,270pF
C440	2113944A11	CAP,2.7pF
C441	2113944A16	CAP,4.3pF
C442	2113945B02	CAP,.01uF
C444	2113946K02	CAP,0.10uF
C445	NOTPLACED	NOTPLACED
C446	2113944A77	CAP,11pF
C447	2113946S35	CAP,1.0uF
C448	2113946S35	CAP,1.0uF
C601	2113945B02	CAP,.01uF
C602	2113946B04	CAP,0.1uF
C603	2113946B04	CAP,0.1uF
C604	2113945B02	CAP,.01uF
C605	2113945B02	CAP,.01uF
C606	2113944A32	CAP,39pF
C607	2113945B02	CAP,.01uF
C608	2113945D02	CAP,.047uF
C609	2115153H44	CAP,30pF
C610	2115153H44	CAP,30pF
C611	NOTPLACED	NOTPLACED
C612	2113944A25	CAP,10pF
C613	2113945G91	CAP,0.1uF
C614	2113946E02	CAP,1.0uF
C615	2113946B04	CAP,0.1uF
C616	2113944A32	CAP,39pF
C617	2113945L37	CAP,3300pF

Circuit Ref	Motorola Part No.	Description
C618	2113945C18	CAP,.012uF
C619	2115358H13	CAP,0.1uF
C620	2113946B04	CAP,0.1uF
C621	2113945B02	CAP,.01uF
C622	2113944C89	CAP,200pF
C623	2113944A40	CAP,100pF
C624	2113944A40	CAP,100pF
C625	2113945A11	CAP,2200pF
C626	2113945D02	CAP,.047uF
C627	2113944A40	CAP,100pF
C628	2113945B02	CAP,.01uF
C629	2113944A40	CAP,100pF
C630	2113945B02	CAP,.01uF
C631	2113945B02	CAP,.01uF
C632	2113946B04	CAP,0.1uF
C633	2113946B04	CAP,0.1uF
C634	2113945B02	CAP,.01uF
C635	2113944A85	CAP,51pF
C636	2113946B04	CAP,0.1uF
C637	2113946G04	CAP,0.68uF
C638	2115153H38	CAP,16pF
C639	2113946B04	CAP,0.1uF
C700	2316410H03	CAPP,10uF
C703	2113945A02	CAP,270pF
C704	2113945A02	CAP,270pF
C705	2113946B02	CAP,.047uF
C706	2113945A02	CAP,270pF
C708	2113945A02	CAP,270pF
C709	2113945B02	CAP,.01uF
C710	2113945B02	CAP,.01uF
C711	2113945A02	CAP,270pF
C712	2113945B04	CAP,.022uF
C714	2113945A02	CAP,270pF
C715	2113945A02	CAP,270pF
C716	2113944A28	CAP,18pF
C717	2113945A02	CAP,270pF
C718	2113946K02	CAP,0.10uF
C719	NOTPLACED	NOTPLACED
C720	2113945B04	CAP,.022uF
C721	2113945D04	CAP,0.1uF
C722	2113944A17	CAP,4.7pF
C723	NOTPLACED	NOTPLACED
C724	2113945A02	CAP,270pF
C725	NOTPLACED	NOTPLACED
C726	2113944A82	CAP,30pF
C727	2113944A82	CAP,30pF
C728	2113944A08	CAP,2.0pF

Circuit Ref	Motorola Part No.	Description
C729	NOTPLACED	NOTPLACED
C730	2113946K02	CAP,0.10uF
C731	2113945D04	CAP,0.1uF
C732	2116173H17	CAP,24pF
C733	2116636H04	CAP,20pF
C734	2116001H01	CAP,13pF
C735	2116173H17	CAP,24pF
C736	2113945A02	CAP,270pF
C737	2113945A09	CAP,1000pF
C738	2113945A02	CAP,270pF
C739	2113946K02	CAP,0.10uF
C740	NOTPLACED	NOTPLACED
C798	2116173H17	CAP,24pF
C799	2116636H04	CAP,20pF
C900	2113945A02	CAP,270pF
C903	2113944C14	CAP,2.2pF
C904	2113944C41	CAP,68pF
C905	2113944C45	CAP,100pF
C906	2113944C71	CAP,5.6pF
C907	2113944C73	CAP,6.8pF
C908	2113944C71	CAP,5.6pF
C909	2113944C41	CAP,68pF
C910	2113944M30	CAP,33pF
C911	2113944C18	CAP,3.3pF
C912	2113944C22	CAP,4.7pF
C913	2113944C45	CAP,100pF
C914	2113945A02	CAP,270pF
C915	2113944C22	CAP,4.7pF
C916	2113944C18	CAP,3.3pF
C917	2113944M30	CAP,33pF
C918	2113944C45	CAP,100pF
C920	2113944C28	CAP,8.2pF
C921	2113944C17	CAP,3.0pF
C922	NOTPLACED	NOTPLACED
C923	NOTPLACED	NOTPLACED
C924	2113944A11	CAP,2.7pF
C925	2113944V07	CAP,1.5pF
C926	2113944A15	CAP,3.9pF
C927	2113945A02	CAP,270pF
C1000	2113944A40	CAP,100pF
C1001	2113946K02	CAP,0.10uF
C1002	2113946K02	CAP,0.10uF
C1003	2113944A40	CAP,100pF
C1004	2113944A40	CAP,100pF
C1005	2113946K02	CAP,0.10uF
C1006	2113946K02	CAP,0.10uF

Circuit Ref	Motorola Part No.	Description
C1007	2113944A40	CAP,100pF
C1008	2113944A40	CAP,100pF
C1009	2113946K02	CAP,0.10uF
C1010	2113946K02	CAP,0.10uF
C1011	2113944A40	CAP,100pF
C1012	2113946K02	CAP,0.10uF
C1013	2113946K02	CAP,0.10uF
C1014	2113946K02	CAP,0.10uF
C1015	2113946K02	CAP,0.10uF
C1016	2113946B04	CAP,0.1uF
C1017	2113946E02	CAP,1.0uF
C1018	2113944A28	CAP,18pF
C1019	2113944A28	CAP,18pF
C1028	2113946K02	CAP,0.10uF
C1029	2113946K02	CAP,0.10uF
C1030	2113944A28	CAP,18pF
C1031	2113946K02	CAP,0.10uF
C1032	2113945B02	CAP,.01uF
C1033	2113946K02	CAP,0.10uF
C1044	2113946B04	CAP,0.1uF
C2000	2113944A40	CAP,100pF
C2001	2113945B02	CAP,.01uF
C2002	2113946K02	CAP,0.10uF
C2003	2113946K02	CAP,0.10uF
C2004	2113944A40	CAP,100pF
C2005	2113945B02	CAP,.01uF
C2006	2113946K02	CAP,0.10uF
C2007	2113946K02	CAP,0.10uF
C3000	2113944A78	CAP,13pF
C3001	2113944A78	CAP,13pF
C3002	2113945D04	CAP,0.1uF
C3003	2113946D05	CAP,2.2uF
C3004	2113946D05	CAP,2.2uF
C3005	2113945A09	CAP,1000pF
C3010	2113946D05	CAP,2.2uF
C3011	2113946A02	CAP,.022uF
C3014	2113946D05	CAP,2.2uF
C3015	2115153H57	CAP,100pF
C3016	2113946D05	CAP,2.2uF
C3017	2113945B02	CAP,.01uF
C3018	2113946D05	CAP,2.2uF
C3019	2113946D02	CAP,1.0uF
C3024	2113946D02	CAP,1.0uF
C3025	2113946K02	CAP,0.10uF
C3026	2113946K02	CAP,0.10uF
C3028	2113946D05	CAP,2.2uF

Circuit Ref	Motorola Part No.	Description
C3031	2113946D02	CAP,1.0uF
C3034	2113946B04	CAP,0.1uF
C3035	2113946B04	CAP,0.1uF
C3036	2113946B04	CAP,0.1uF
C3037	2113944A40	CAP,100pF
C3038	2113944A40	CAP,100pF
C3039	2113946F03	CAP,4.7uF
C3045	2113946F05	CAP,10uF
C3047	2113946D02	CAP,1.0uF
C3048	2113946D02	CAP,1.0uF
C3049	2113945C25	CAP,0.033uF
C3050	2113945C25	CAP,0.033uF
C3051	2113944A40	CAP,100pF
C3060	2113944A80	CAP,20pF
C3061	2113944A80	CAP,20pF
C3062	2113946K02	CAP,0.10uF
C3063	2113946K02	CAP,0.10uF
C3067	2113946D02	CAP,1.0uF
C3070	2113944A25	CAP,10pF
C3074	2113946D02	CAP,1.0uF
C3079	2113946F03	CAP,4.7uF
C3080	NOTPLACED	NOTPLACED
C3081	2113946F03	CAP,4.7uF
C3082	2113946B04	CAP,0.1uF
C3083	2113946B04	CAP,0.1uF
C3084	2113946K03	CAP,0.22uF
C3090	2113955D37	CAP,10uF
C3091	2113955D37	CAP,10uF
C3093	2113946N03	CAP,2.2uF
C3094	2113946B03	CAP,.068uF
C3095	2113946B03	CAP,.068uF
C3097	2113944A31	CAP,33pF
C3098	2113944A31	CAP,33pF
C3099	2113944A31	CAP,33pF
C3100	2113944A31	CAP,33pF
C3101	2113946D02	CAP,1.0uF
C3102	2113946D02	CAP,1.0uF
C3200	2113945Y02	CAP,0.10uF
C3201	2113955D37	CAP,10uF
C3202	2371572L02	CAPP,68uF
C3203	2113945B02	CAP,.01uF
C3204	2115153H40	CAP,20pF
C3205	2113944A44	CAP,220pF
C3206	2113945Y02	CAP,0.10uF
C3207	2113955D37	CAP,10uF
C3208	2113946K03	CAP,0.22uF

Circuit Ref	Motorola Part No.	Description
C3209	2371572L01	CAPP,47uF
C3210	2113945B02	CAP,.01uF
C3211	2115153H40	CAP,20pF
C3212	2113944A44	CAP,220pF
C3700	2113946D02	CAP,1.0uF
C3701	2113945B02	CAP,.01uF
C3702	2113946D05	CAP,2.2uF
C3703	2113946D02	CAP,1.0uF
C3704	2113944A30	CAP,27pF
C3705	2113945B02	CAP,.01uF
C3706	2113945A05	CAP,470pF
C3707	2113946D05	CAP,2.2uF
C3800	2113945D04	CAP,0.1uF
C3805	2113946K03	CAP,0.22uF
C3999	2113945B02	CAP,.01uF
C8000	2113946F05	CAP,10uF
C8001	2113944A28	CAP,18pF
C8002	2113944A52	CAP,1000pF
C8003	2113946F05	CAP,10uF
C8004	2113944A28	CAP,18pF
C8005	NOTPLACED	NOTPLACED
C8006	NOTPLACED	NOTPLACED
C8013	2113944A08	CAP,2.0pF
C8014	2113944A62	CAP,0.75pF
C8015	2113946K02	CAP,0.10uF
C8016	2113945A02	CAP,270pF
C8017	2113944A28	CAP,18pF
C8018	2113944A28	CAP,18pF
C8019	2113944A11	CAP,2.7pF
C8020	2113944A52	CAP,1000pF
C8021	2113946K02	CAP,0.10uF
C8022	2113946D05	CAP,2.2uF
C8023	2113945B02	CAP,.01uF
C8029	2113944A52	CAP,1000pF
C8030	2113944A28	CAP,18pF
C8031	2113946D05	CAP,2.2uF
C8032	2113945B02	CAP,.01uF
C8033	2113944A28	CAP,18pF
C8034	2113944A28	CAP,18pF
C8035	2113944A31	CAP,33pF
C8036	2113944A52	CAP,1000pF
C9000	2113944A40	CAP,100pF
C9001	2113944A40	CAP,100pF
C9002	2113944A40	CAP,100pF
C9003	2113944A40	CAP,100pF
C9004	2113944A40	CAP,100pF

Circuit Ref	Motorola Part No.	Description
C9005	2113944A40	CAP,100pF
C9006	2113944A40	CAP,100pF
C9007	2113944A40	CAP,100pF
C9008	2113944A40	CAP,100pF
C9009	2113944A40	CAP,100pF
C9010	2113944A40	CAP,100pF
C9011	2113944A40	CAP,100pF
C9012	2113944A40	CAP,100pF
C9013	2113944A40	CAP,100pF
C9014	2113944C45	CAP,100pF
C9015	2113944A40	CAP,100pF
C9016	2113944A40	CAP,100pF
C9017	2113944A40	CAP,100pF
C9018	2113944A40	CAP,100pF
C9019	2113944A40	CAP,100pF
C9020	2113944A40	CAP,100pF
C9021	2113944A40	CAP,100pF
C9022	2113944A40	CAP,100pF
C9023	2113944A40	CAP,100pF
C9024	2113944A40	CAP,100pF
C9025	2113944A40	CAP,100pF
C9026	2113944A40	CAP,100pF
C9027	2113944A40	CAP,100pF
C9028	2113944A40	CAP,100pF
C9029	2113944A40	CAP,100pF
C9030	2113944A17	CAP,4.7pF
C9031	2113944A17	CAP,4.7pF
C9032	2113944A17	CAP,4.7pF
C9033	2113944A40	CAP,100pF
C9038	2113944A40	CAP,100pF
C9039	2113944C45	CAP,100pF
C9040	2113944A40	CAP,100pF
C9041	2113944A40	CAP,100pF
C9042	2113944A40	CAP,100pF
C9043	2113944A40	CAP,100pF
C9044	2113944A40	CAP,100pF
C9045	2113944A40	CAP,100pF
C9046	2113944A40	CAP,100pF
C9047	2113944A40	CAP,100pF
C9048	2113944A40	CAP,100pF
C9049	2113944A40	CAP,100pF
C9050	2113944A40	CAP,100pF
C9051	NOTPLACED	NOTPLACED
C9053	NOTPLACED	NOTPLACED
C9055	NOTPLACED	NOTPLACED
C9057	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
C9058	2113944A40	CAP,100pF
C9059	2113944A40	CAP,100pF
C9060	2113944A40	CAP,100pF
C9061	2113944A40	CAP,100pF
C9062	2113944A40	CAP,100pF
C9063	2113944A40	CAP,100pF
C9064	2113944A40	CAP,100pF
C9065	2113944C45	CAP,100pF
C9066	2113944A40	CAP,100pF
C9067	NOTPLACED	NOTPLACED
C9068	NOTPLACED	NOTPLACED
C9069	NOTPLACED	NOTPLACED
CR900	4815897H01	UPP9401E3
CR901	4815897H01	UPP9401E3
CR902	4815897H01	UPP9401E3
CR903	4815897H01	UPP9401E3
D001	4815059H01	1SV325
D200	4815096H01	1SV305
D201	4815096H01	1SV305
D202	4815096H01	1SV305
D203	4815096H01	1SV305
D204	4815096H01	1SV305
D205	4815096H01	1SV305
D206	4815096H01	1SV305
D207	4815096H01	1SV305
D400	4885055Y01	1SV229
D401	4885055Y01	1SV229
D402	4813974A19	MMBD352
D403	4885055Y01	1SV229
D404	4885055Y01	1SV229
D405	4815923H01	HSMS2829
D600	4815096H01	1SV305
D601	4815096H01	1SV305
D3000	4813978A25	BAT54HT1G
D9000	4805729G49	BRPY1204W
E001	2480640Z01	BK1005HM471
E002	2480640Z01	BK1005HM471
E003	2480640Z01	BK1005HM471
E004	2480640Z01	BK1005HM471
E400	2480640Z01	BK1005HM471
E401	2480640Z01	BK1005HM471
E600	2480640Z01	BK1005HM471
E601	2480640Z01	BK1005HM471
E602	2480640Z01	BK1005HM471
E701	7686949J14	BLM21PG221SN1
E3030	2409134J04	BLM18BD601SN1

Circuit Ref	Motorola Part No.	Description
E3031	2409134J04	BLM18BD601SN1
E3032	2409134J04	BLM18BD601SN1
E3033	2409134J04	BLM18BD601SN1
E3700	7686949J08	IDCTR
E3701	7686949J08	IDCTR
E3702	7686949J08	IDCTR
E3703	7686949J08	IDCTR
E3704	7686949J08	IDCTR
E3705	7686949J08	IDCTR
E8000	7686949J08	IDCTR
E8001	7686949J08	IDCTR
E8002	NOTPLACED	NOTPLACED
E8003	7686949J08	IDCTR
E8004	7686949J08	IDCTR
E8005	7686949J08	IDCTR
E8006	7686949J08	IDCTR
E9000	7686949J14	BLM21PG221SN1
E9001	2480640Z01	BK1005HM471
E9006	NOTPLACED	NOTPLACED
E9007	NOTPLACED	NOTPLACED
F9000	6515076H01	FUSE
FL400	9116854H01	-
FL8000	9180310L38	B39162-B7829-C710
FL8001	9180310L38	B39162-B7829-C710
FL9000	2515003H02	DLP11SN201HL2
J9001	0970312L02	CONN_J
L002	2415429H26	IDCTR,33nH
L003	NOTPLACED	NOTPLACED
L200	2415429H47	IDCTR,390nH
L201	2415427H29	IDCTR,19nH
L202	2416540H13	IDCTR,12nH
L203	2415429H47	IDCTR,390nH
L204	2415429H47	IDCTR,390nH
L205	2415429H47	IDCTR,390nH
L206	2415429H47	IDCTR,390nH
L207	2415427H42	IDCTR,51nH
L208	2415429H47	IDCTR,390nH
L209	2415427H26	IDCTR,15nH
L210	2415428H07	IDCTR,8.8nH
L211	2415429H47	IDCTR,390nH
L212	2415429H47	IDCTR,390nH
L213	2415429H47	IDCTR,390nH
L214	2415429H47	IDCTR,390nH
L215	2415429H27	IDCTR,36nH
L217	2415347H01	IDCTR,1000nH
L218	2415429H31	IDCTR,51nH

Circuit Ref	Motorola Part No.	Description
L400	2416201H01	IDCTR,16nH
L401	2416201H01	IDCTR,16nH
L402	2415429H35	IDCTR,82nH
L403	2415427H34	IDCTR,27nH
L404	2415427H29	IDCTR,19nH
L405	2415429H25	IDCTR,30nH
L406	2415429H10	IDCTR,6.8nH
L407	2415427H16	IDCTR,7.5nH
L408	2416201H01	IDCTR,16nH
L409	2416201H01	IDCTR,16nH
L410	NOTPLACED	NOTPLACED
L411	2415429H35	IDCTR,82nH
L412	2414017N29	IDCTR,270nH
L413	2415429H23	IDCTR,24nH
L414	2415429H23	IDCTR,24nH
L415	2415429H46	IDCTR,330nH
L416	2414017N29	IDCTR,270nH
L417	2415718H37	IDCTR,820nH
L418	2415429H47	IDCTR,390nH
L419	2414032F42	IDCTR,470nH
L420	2414032F42	IDCTR,470nH
L600	2466505A01	IDCTR,10uH
L601	2466505A01	IDCTR,10uH
L602	2415569H01	IDCTR,4.7uH
L603	2415718H37	IDCTR,820nH
L604	2414015B26	IDCTR,330nH
L605	2415569H01	IDCTR,4.7uH
L700	2414017N25	IDCTR,120nH
L701	2414017N25	IDCTR,120nH
L702	2415429H14	IDCTR,9.5nH
L703	2414017N25	IDCTR,120nH
L706	2460591E64	IDCTR,30.51nH
L707	2471406L02	IDCTR,11.03nH
L902	2414017N25	IDCTR,120nH
L903	2414017N25	IDCTR,120nH
L904	2416201H01	IDCTR,16nH
L905	2416201H01	IDCTR,16nH
L906	2416201H02	IDCTR,19nH
L907	2415429H35	IDCTR,82nH
L908	2416201H02	IDCTR,19nH
L909	2416201H01	IDCTR,16nH
L910	2416201H01	IDCTR,16nH
L911	2416201H01	IDCTR,16nH
L912	2414017P08	IDCTR,3.9nH
L913	2414017P10	IDCTR,5.6nH
L3003	2464675H01	IDCTR,560nH

Circuit Ref	Motorola Part No.	Description
L3004	2464675H01	IDCTR,560nH
L3020	2489846Y06	IDCTR,10uH
L3021	2489846Y06	IDCTR,10uH
L3022	2464675H01	IDCTR,560nH
L8001	2414017P10	IDCTR,5.6nH
L8002	2414017P17	IDCTR,22nH
L8003	2414017P13	IDCTR,10nH
L8004	2414017P10	IDCTR,5.6nH
L9000	2415429H45	IDCTR,270nH
L9001	2415429H45	IDCTR,270nH
L9007	2415429H45	IDCTR,270nH
L9008	2415429H45	IDCTR,270nH
M1	4271321L01	RETAINER
M2	4271321L01	RETAINER
M700	2615193H01	HEATSINK
M9000	4371105L01	BRD_SPACER
M9001	4371105L01	BRD_SPACER
M9002	4371105L01	BRD_SPACER
M9003	NOTPLACED	NOTPLACED
M9004	NOTPLACED	NOTPLACED
M9005	3915478H01	CONTACT
M9006	3915478H01	CONTACT
M9007	0915184H01	CONTACT
P900	2815696H01	CONN_P
P9000	2887818K02	CONN_P
Q002	4815359H01	BCV62
Q003	4816134H01	DTC114YM
Q200	4815029H01	NE851M03
Q202	4815055H01	UMC5NT2G
Q203	4815055H01	UMC5NT2G
Q204	4885061Y01	NE68519
Q205	4885061Y01	NE68519
Q206	4815055H01	UMC5NT2G
Q207	4815055H01	UMC5NT2G
Q208	4885061Y01	NE68519
Q400	4816531H01	QSBT_0038
Q401	4816531H01	QSBT_0038
Q600	4813973A04	73A04
Q601	4815055H01	UMC5NT2G
Q602	4885061Y01	NE68519
Q701	4815055H01	UMC5NT2G
Q702	4815055H01	UMC5NT2G
Q703	4816547H01	RD01MUS1
Q704	4816548H01	RD07MVS1
Q900	4815055H01	UMC5NT2G
Q901	4815055H01	UMC5NT2G

Circuit Ref	Motorola Part No.	Description
Q3000	4805585Q23	SI8401DB
Q3001	4805585Q23	SI8401DB
Q3002	4816134H01	DTC114YM
Q3003	4813970A62	NTHS5441T1
Q3005	4805585Q23	SI8401DB
Q3006	4816134H01	DTC114YM
Q3010	4805585Q23	SI8401DB
Q9000	4813973M07	MMBT3904
Q9001	4815154H01	IMXFT110
Q9003	4813973M07	MMBT3904
R006	0613952Q93	RES,6.8K
R007	0613952R01	RES,10K
R008	0613952Q25	RES,10
R010	0613952Q93	RES,6.8K
R011	0613952Q49	RES,100
R012	0613952R25	RES,100K
R013	0613952Q46	RES,75
R014	0613952Q42	RES,51
R016	0613952Q33	RES,22
R017	0613952Q64	RES,430
R018	0613952Q96	RES,9.1K
R019	0613952R01	RES,10K
R020	0613952Q55	RES,180
R022	0613952Q36	RES,30
R025	0613952R13	RES,33K
R026	0613952R01	RES,10K
R027	0613952R66	RES,0
R052	NOTPLACED	NOTPLACED
R053	0613952R66	RES,0
R054	0613952R66	RES,0
R200	0613952Q95	RES,8.2K
R201	0613952Q91	RES,5.6K
R202	0613952Q49	RES,100
R203	0613952Q51	RES,120
R205	0613952Q91	RES,5.6K
R207	NOTPLACED	NOTPLACED
R208	0613952Q95	RES,8.2K
R209	0613952Q91	RES,5.6K
R210	0613952Q49	RES,100
R211	0613952Q50	RES,110
R212	0613952Q91	RES,5.6K
R213	0613952Q94	RES,7.5K
R214	0613952Q58	RES,240
R215	NOTPLACED	NOTPLACED
R216	0613952Q57	RES,220
R217	0613952Q95	RES,8.2K

Circuit Ref	Motorola Part No.	Description
R218	0613952Q66	RES,510
R220	0613952Q60	RES,300
R221	0613952Q31	RES,18
R222	0613952Q60	RES,300
R223	0613952R66	RES,0
R224	0613952R66	RES,0
R400	0613952R25	RES,100K
R402	0613952R66	RES,0
R403	0613952Q65	RES,470
R404	0613952Q72	RES,910
R405	0613952R25	RES,100K
R406	0613952R25	RES,100K
R407	0613952Q42	RES,51
R409	0613952R05	RES,15K
R410	0613952Q83	RES,2.7K
R411	0613952R19	RES,56K
R412	0613952Q63	RES,390
R413	0613952Q77	RES,1.5K
R416	0613952R66	RES,0
R417	0613952R66	RES,0
R419	0613952R66	RES,0
R420	0613952Q95	RES,8.2K
R421	0613952Q49	RES,100
R422	0613952R01	RES,10K
R424	0613952R01	RES,10K
R425	0613952R66	RES,0
R497	NOTPLACED	NOTPLACED
R499	0613952R25	RES,100K
R600	0613952R01	RES,10K
R601	0613952Q55	RES,180
R602	0613952Q61	RES,330
R603	0613952R05	RES,15K
R604	0613952Q90	RES,5.1K
R605	0613952Q90	RES,5.1K
R606	0613952Q75	RES,1.2K
R607	0613952R25	RES,100K
R609	0613952R01	RES,10K
R610	0613952R01	RES,10K
R611	0613952Q63	RES,390
R612	0613952R08	RES,20K
R696	0613952R66	RES,0
R697	0613952R66	RES,0
R698	0613952R01	RES,10K
R699	0613952R25	RES,100K
R700	0615043C01	RES,0.1
R701	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
R702	0613952Z80	RES,330K
R703	0613952Z80	RES,330K
R704	NOTPLACED	NOTPLACED
R705	0613952R56	RES,2MEG
R706	0613952R56	RES,2MEG
R707	0613952Q81	RES,2.2K
R708	0613952Q90	RES,5.1K
R709	0613952R66	RES,0
R710	NOTPLACED	NOTPLACED
R711	0613952R08	RES,20K
R712	0613952R66	RES,0
R713	NOTPLACED	NOTPLACED
R714	0613952Q59	RES,270
R717	0613958H33	RES,22
R718	0613952Q56	RES,200
R719	0613952Q40	RES,43
R720	0613952H56	RES,200
R721	0613952G67	RES,0
R722	0613952G67	RES,0
R723	0613952Q40	RES,43
R725	0613952Q85	RES,3.3K
R726	0613952R66	RES,0
R727	NOTPLACED	NOTPLACED
R728	0613952Q60	RES,300
R729	0613952Q33	RES,22
R730	0613952Q60	RES,300
R731	NOTPLACED	NOTPLACED
R732	0613952R66	RES,0
R733	0613952R17	RES,47K
R902	0613952H47	RES,82
R903	0613952H47	RES,82
R904	0613952H47	RES,82
R905	0613952H47	RES,82
R906	0613952R01	RES,10K
R907	0613952R01	RES,10K
R1000	0613952Q25	RES,10
R1001	0613952R01	RES,10K
R1002	0613952J73	RES,10MEG
R1005	0613952Q89	RES,4.7K
R1006	0613952R01	RES,10K
R1013	NOTPLACED	NOTPLACED
R1014	0613952R66	RES,0
R1015	NOTPLACED	NOTPLACED
R1016	0613952R66	RES,0
R1017	NOTPLACED	NOTPLACED
R1018	0613952R66	RES,0

Circuit Ref	Motorola Part No.	Description
R1019	0613952Q18	RES,5.1
R1020	0613952R66	RES,0
R1021	0613952R66	RES,0
R1022	NOTPLACED	NOTPLACED
R1023	0613952R66	RES,0
R1025	0613952R01	RES,10K
R1026	0613952R17	RES,47K
R1027	NOTPLACED	NOTPLACED
R1028	0613952R66	RES,0
R1034	0613952R01	RES,10K
R1035	NOTPLACED	NOTPLACED
R1036	0613952R01	RES,10K
R1041	0613952Q73	RES,1K
R1045	0613952R01	RES,10K
R1046	NOTPLACED	NOTPLACED
R1047	0613952R66	RES,0
R1048	0613952R66	RES,0
R1051	0613952R66	RES,0
R1052	0613952R66	RES,0
R1053	0613952Q89	RES,4.7K
R1054	0613952Q89	RES,4.7K
R1055	NOTPLACED	NOTPLACED
R1060	0613952Q25	RES,10
R1061	0613952R66	RES,0
R1062	0613952R66	RES,0
R1063	NOTPLACED	NOTPLACED
R1065	0613952R66	RES,0
R1067	0613952R03	RES,12K
R1068	0613952R10	RES,24K
R1069	0613952R66	RES,0
R1070	0613952R01	RES,10K
R1072	0613952R66	RES,0
R2000	0613952R01	RES,10K
R2004	0613952R66	RES,0
R2005	0613952R01	RES,10K
R2006	0613952R01	RES,10K
R2007	0613952R01	RES,10K
R2008	0613952R01	RES,10K
R2009	0613952R01	RES,10K
R2010	0613952R01	RES,10K
R2011	0613952R66	RES,0
R2012	0613952R01	RES,10K
R2013	0613952R01	RES,10K
R3004	NOTPLACED	NOTPLACED
R3005	0613952N01	RES,10K
R3006	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
R3007	0613952N01	RES,10K
R3008	NOTPLACED	NOTPLACED
R3009	0613952N01	RES,10K
R3010	0613952N01	RES,10K
R3011	0613952Q81	RES,2.2K
R3012	0613952Q59	RES,270
R3013	0613952Q81	RES,2.2K
R3014	0613952M30	RES,2K
R3016	0616416H01	RES,0.1
R3017	0613952P25	RES,178K
R3018	0613952R18	RES,51K
R3020	0613952Q34	RES,24
R3021	0613952Q34	RES,24
R3023	0613952R17	RES,47K
R3024	0613952Z67	RES,51K
R3025	0613952Q49	RES,100
R3026	0613952Q61	RES,330
R3027	0613952Q61	RES,330
R3028	0613952N69	RES,51.1K
R3029	0613952N60	RES,41.2K
R3030	0686135Z02	RES,0.2
R3031	0613952R66	RES,0
R3032	0613952Q95	RES,8.2K
R3033	0613952R05	RES,15K
R3034	0613952Q95	RES,8.2K
R3035	0613952R05	RES,15K
R3036	0613952N01	RES,10K
R3037	0613952Q71	RES,820
R3038	NOTPLACED	NOTPLACED
R3040	0613952Q81	RES,2.2K
R3041	0613952N01	RES,10K
R3043	0613952R32	RES,200K
R3050	0613952R25	RES,100K
R3051	0613952Q89	RES,4.7K
R3053	0613952Z58	RES,22K
R3054	0613952Z58	RES,22K
R3055	0613952R25	RES,100K
R3060	0613952M30	RES,2K
R3070	0613952R33	RES,220K
R3071	0613952R33	RES,220K
R3072	0613952R56	RES,2MEG
R3073	0613952R56	RES,2MEG
R3074	0613952Q73	RES,1K
R3075	0613952N01	RES,10K
R3088	NOTPLACED	NOTPLACED
R3098	0613952Q85	RES,3.3K

Circuit Ref	Motorola Part No.	Description
R3100	0613952R17	RES,47K
R3101	0613952R25	RES,100K
R3102	0613952A30	RES,2
R3103	0615049H16	RES,0.70
R3200	0613952R33	RES,220K
R3201	0613952R20	RES,62K
R3202	0613952R33	RES,220K
R3203	0613952R36	RES,300K
R3700	0613952Q73	RES,1K
R3701	0613952R01	RES,10K
R3702	0613952R12	RES,30K
R3703	0613952R10	RES,24K
R3704	0613952R01	RES,10K
R3800	0613952Q25	RES,10
R3888	NOTPLACED	NOTPLACED
R8002	0613952R25	RES,100K
R8003	0613952R01	RES,10K
R8004	0613952Q70	RES,750
R8010	0613952R05	RES,15K
R8011	0613952R25	RES,100K
R8012	0613952R01	RES,10K
R8015	NOTPLACED	NOTPLACED
R8016	0613952R66	RES,0
R8017	NOTPLACED	NOTPLACED
R8020	0613952R66	RES,0
R8023	0613952R66	RES,0
R8024	0613952R25	RES,100K
R8025	0613952R66	RES,0
R8026	0613952R25	RES,100K
R8027	0613952R25	RES,100K
R8028	0613952R25	RES,100K
R8029	0613952R25	RES,100K
R8030	0613952R01	RES,10K
R8031	0613952R25	RES,100K
R8032	0613952R25	RES,100K
R8033	0613952R25	RES,100K
R8034	0613952R01	RES,10K
R8035	0613952R01	RES,10K
R8036	0613952R01	RES,10K
R8037	0613952R01	RES,10K
R9000	0613952Q73	RES,1K
R9001	0613952Q73	RES,1K
R9002	0613952Q73	RES,1K
R9003	0613952Q73	RES,1K
R9004	0613952Q73	RES,1K
R9005	0613952Q73	RES,1K

Circuit Ref	Motorola Part No.	Description
R9006	0613952Q73	RES,1K
R9007	0613952Q73	RES,1K
R9008	0613952R17	RES,47K
R9009	0613952R01	RES,10K
R9010	0613952R01	RES,10K
R9011	0613952R17	RES,47K
R9012	0613952Q50	RES,110
R9013	0613952Q37	RES,33
R9014	0613952R01	RES,10K
R9015	0613952R01	RES,10K
R9016	0613952R01	RES,10K
R9017	0613952R01	RES,10K
R9018	0613952R01	RES,10K
R9019	0613952Q73	RES,1K
R9050	0613952R01	RES,10K
R9051	0613952R01	RES,10K
R9052	0613952Q65	RES,470
R9053	0613952H47	RES,82
R9054	0613952H47	RES,82
S9000	4086470Z01	SWITCH
S9001	4015186H01	SWITCH
S9002	4015203H01	SWITCH
SH9000	NOTPLACED	NOTPLACED
SH9001	NOTPLACED	NOTPLACED
T400	2515396H01	XFMR
T401	2515396H01	XFMR
U001	5104932K08	SC51650VF
U002	5114000B59	MC74VHC1GT66
U200	5116014H01	UPC8179TK
U400	5115443H01	MAX2373
U600	5102495J14	AD9864
U700	4802246J29	ADA4743
U701	5115147H01	AD8566
U702	5115022H01	LM50
U1000	5102495J13	OMAP1710
U1005	5171209L01	TXB0104ZXUR
U1006	5115001H02	NL27WZU04
U2000	0104024J27	M58WR064FB
U2001	5185941F17	MT48H4M16LF
U3000	5185143E77	PWR_MNGR_BLOCK
U3002	5115616H01	LP8340
U3003	5115453H01	LMC6035ITLX
U3004	5114007A43	NL17SZ14
U3006	5115974H01	LP3990
U3007	5171395L01	TS5A23166
U3008	5115391H01	TK11100CSC

Circuit Ref	Motorola Part No.	Description
U3009	5164852H47	PCA9306
U3020	5171428L01	LTC1877
U3021	5171428L01	LTC1877
U3700	5116282H01	TPS79228
U3701	5116283H01	TPS79101
U8000	0104024J41	GSC3F/LP
U8001	5164015H55	UPC8211TK
VR9000	4866544A01	SR05
VR9001	4813979P10	MMQA5V6T1
VR9002	4813979P10	MMQA5V6T1
VR9003	4815040H01	MM3Z12VT1G
VR9004	4815040H01	MM3Z12VT1G
VR9005	4805656W76	MM5Z5V6
VR9006	4805656W76	MM5Z5V6
VR9007	4805656W76	MM5Z5V6
VR9008	4813979P10	MMQA5V6T1
VR9009	4813977C23	MMSZ5243
VR9010	4813977C23	MMSZ5243
VR9015	NOTPLACED	NOTPLACED
VR9016	NOTPLACED	NOTPLACED
VR9017	4815040H01	MM3Z12VT1G
VR9018	4815040H01	MM3Z12VT1G
VR9020	4813979P10	MMQA5V6T1
VR9021	4813979P10	MMQA5V6T1
VR9022	4813979P10	MMQA5V6T1
VR9023	4815040H01	MM3Z12VT1G
Y001	5116032H01	IVT5300B
Y1000	4809612J45	CX-91F
Y3000	4802582S80	XTAL
Y3001	4815028H01	CX-101F
Y8000	4802582S80	XTAL

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Circuit Ref	Motorola Part No.	Description
C001	2113946D02	CAP, 1.0uF
C002	2113946D02	CAP, 1.0uF
C003	2113946K02	CAP, 0.10uF
C004	2113946K02	CAP, 0.10uF
C005	2113946K02	CAP, 0.10uF
C006	2113946K02	CAP, 0.10uF
C007	2113946K02	CAP, 0.10uF
C008	2113946K02	CAP, 0.10uF
C009	NOTPLACED	NOTPLACED
C013	2113945A02	CAP, 270pF
C014	2113945L49	CAP, .01uF
C015	2113945L49	CAP, .01uF
C016	2113945A09	CAP, 1000pF
C017	2113946K02	CAP, 0.10uF
C018	2313960B57	CAPP, 10uF
C019	2113945L49	CAP, .01uF
C020	2313960B57	CAPP, 10uF
C022	2113946K02	CAP, 0.10uF
C024	2115358H17	CAP, 0.22uF
C025	2115358H07	CAP, .033uF
C026	2115358H15	CAP, 0.15uF
C027	2115358H25	CAP, 1uF
C028	2115358H01	CAP, .01uF
C031	2113944A40	CAP, 100pF
C032	2113944A17	CAP, 4.7pF
C033	2113944A05	CAP, 1.5pF
C035	2113946K02	CAP, 0.10uF
C036	2113946K02	CAP, 0.10uF
C037	2115153H08	CAP, 1.5pF
C038	NOTPLACED	NOTPLACED
C039	2113946D02	CAP, 1.0uF
C200	2113944A40	CAP, 100pF
C201	2115153H27	CAP, 10pF
C202	2115153H25	CAP, 8.2pF
C203	2115153H23	CAP, 6.8pF
C204	2115153H34	CAP, 11pF
C205	2115153H39	CAP, 18pF
C206	2115153H52	CAP, 62pF
C207	2115153H36	CAP, 13pF
C208	2113944A40	CAP, 100pF
C209	2113946B04	CAP, 0.1uF
C210	2113944A40	CAP, 100pF
C211	2113946B04	CAP, 0.1uF
C212	2115153H08	CAP, 1.5pF
C213	2115153H13	CAP, 2.7pF

Circuit Ref	Motorola Part No.	Description
C214	2113944A40	CAP, 100pF
C215	2113944A40	CAP, 100pF
C216	2115153H12	CAP, 2.4pF
C217	2115153H26	CAP, 9.1pF
C219	2113944A40	CAP, 100pF
C220	2115153H21	CAP, 5.6pF
C221	2115153H21	CAP, 5.6pF
C222	2115153H15	CAP, 3.3pF
C223	NOTPLACED	NOTPLACED
C224	2115153H39	CAP, 18pF
C225	2115153H51	CAP, 56pF
C226	2115153H36	CAP, 13pF
C227	2113944A40	CAP, 100pF
C228	2113946B04	CAP, 0.1uF
C229	2113944A40	CAP, 100pF
C230	2113946B04	CAP, 0.1uF
C231	2115153H10	CAP, 2.0pF
C232	2115153H03	CAP, 1.0pF
C233	2113944A40	CAP, 100pF
C234	2113944A40	CAP, 100pF
C235	2113944A40	CAP, 100pF
C236	2115153H10	CAP, 2.0pF
C237	2115153H18	CAP, 4.3pF
C238	2113944A40	CAP, 100pF
C239	2113944A40	CAP, 100pF
C240	2113944A40	CAP, 100pF
C241	NOTPLACED	NOTPLACED
C243	2115153H34	CAP, 11pF
C400	2113944A73	CAP, 8pF
C401	2113944A21	CAP, 6.8pF
C402	2113944M07	CAP, 3.6pF
C403	2113944A40	CAP, 100pF
C404	2113944A21	CAP, 6.8pF
C405	2113944A21	CAP, 6.8pF
C407	2113944A61	CAP, 0.5pF
C408	NOTPLACED	NOTPLACED
C409	2113946B04	CAP, 0.1uF
C410	2113945A02	CAP, 270pF
C411	2113945B02	CAP, .01uF
C412	2113945A02	CAP, 270pF
C413	2113944A16	CAP, 4.3pF
C414	2113944A24	CAP, 9.1pF
C415	2113944A24	CAP, 9.1pF
C416	2113946K02	CAP, 0.10uF
C417	2113945A02	CAP, 270pF
C418	2113944A16	CAP, 4.3pF

Circuit Ref	Motorola Part No.	Description
C419	2113944A21	CAP, 6.8pF
C420	2113944A21	CAP, 6.8pF
C421	2113944M07	CAP, 3.6pF
C422	2113944A20	CAP, 6.2pF
C423	2113944A21	CAP, 6.8pF
C424	2113944A40	CAP, 100pF
C425	2113944A20	CAP, 6.2pF
C426	0613952R66	RES,0
C427	2113944A85	CAP, 51pF
C428	2113944A78	CAP,13pF
C429	2113944A23	CAP, 8.2pF
C430	2113944A26	CAP, 12pF
C431	2113944A23	CAP, 8.2pF
C432	2113944A78	CAP,13pF
C433	2113944A21	CAP,6.8pF
C434	2113946K02	CAP, 0.10uF
C435	2113944A40	CAP, 100pF
C436	2113946K02	CAP, 0.10uF
C437	2113945B02	CAP, .01uF
C438	2113946K02	CAP, 0.10uF
C439	2113945A02	CAP, 270pF
C440	2113944A11	CAP,2.7pF
C441	2113944A16	CAP,4.3pF
C442	2113945B02	CAP, .01uF
C444	2113946K02	CAP, 0.10uF
C445	NOTPLACED	NOTPLACED
C446	2113944A77	CAP, 11pF
C447	2113946S35	CAP, 1.0uF
C448	2113946S35	CAP, 1.0uF
C601	2113945B02	CAP, .01uF
C602	2113946B04	CAP, 0.1uF
C603	2113946B04	CAP, 0.1uF
C604	2113945B02	CAP, .01uF
C605	2113945B02	CAP, .01uF
C606	2113944A32	CAP, 39pF
C607	2113945B02	CAP, .01uF
C608	2113945D02	CAP, .047uF
C609	2115153H44	CAP,30pF
C610	2115153H44	CAP,30pF
C611	NOTPLACED	NOTPLACED
C612	2113944A25	CAP, 10pF
C613	2113945G91	CAP, 0.1uF
C614	2113946E02	CAP, 1.0uF
C615	2113946B04	CAP, 0.1uF
C616	2113944A32	CAP, 39pF
C617	2113945L37	CAP, 3300pF

Circuit Ref	Motorola Part No.	Description
C618	2113945C18	CAP, .012uF
C619	2115358H13	CAP, 0.1uF
C620	2113946B04	CAP, 0.1uF
C621	2113945B02	CAP, .01uF
C622	2113944C89	CAP, 200pF
C623	2113944A40	CAP, 100pF
C624	2113944A40	CAP, 100pF
C625	2113945A11	CAP, 2200pF
C626	2113945D02	CAP, .047uF
C627	2113944A40	CAP, 100pF
C628	2113945B02	CAP, .01uF
C629	2113944A40	CAP, 100pF
C630	2113945B02	CAP, .01uF
C631	2113945B02	CAP, .01uF
C632	2113946B04	CAP, 0.1uF
C633	2113946B04	CAP, 0.1uF
C634	2113945B02	CAP, .01uF
C635	2113944A85	CAP, 51pF
C636	2113946B04	CAP, 0.1uF
C637	2113946G04	CAP, 0.68uF
C638	2115153H38	CAP, 16pF
C639	2113946B04	CAP, 0.1uF
C700	2316410H03	CAPP, 10uF
C703	2113945A02	CAP, 270pF
C704	2113945A02	CAP, 270pF
C705	2113946B02	CAP, .047uF
C706	2113945A02	CAP, 270pF
C708	2113945A02	CAP, 270pF
C709	2113945B02	CAP, .01uF
C710	2113945B02	CAP, .01uF
C711	2113945A02	CAP, 270pF
C712	2113945B04	CAP, .022uF
C714	2113945A02	CAP, 270pF
C715	2113945A02	CAP, 270pF
C716	2113944A28	CAP, 18pF
C717	2113945A02	CAP, 270pF
C718	2113946K02	CAP, 0.10uF
C719	NOTPLACED	NOTPLACED
C720	2113945B04	CAP, .022uF
C721	2113945D04	CAP, 0.1uF
C722	2113944A17	CAP, 4.7pF
C723	NOTPLACED	NOTPLACED
C724	2113945A02	CAP, 270pF
C725	NOTPLACED	NOTPLACED
C726	2113944A82	CAP, 30pF
C727	2113944A82	CAP, 30pF
C728	2113944A08	CAP, 2.0pF

Circuit Ref	Motorola Part No.	Description
C729	NOTPLACED	NOTPLACED
C730	2113946K02	CAP, 0.10uF
C731	2113945D04	CAP, 0.1uF
C732	2116173H17	CAP,24pF
C733	2116636H04	CAP,20pF
C734	2116001H01	CAP,13pF
C735	2116173H17	CAP,24pF
C736	2113945A02	CAP, 270pF
C737	2113945A09	CAP, 1000pF
C738	2113945A02	CAP, 270pF
C739	2113946K02	CAP, 0.10uF
C740	NOTPLACED	NOTPLACED
C798	2116173H17	CAP,24pF
C799	2116636H04	CAP,20pF
C900	2113945A02	CAP, 270pF
C903	2113944C14	CAP, 2.2pF
C904	2113944C41	CAP, 68pF
C905	2113944C45	CAP, 100pF
C906	2113944C71	CAP, 5.6pF
C907	2113944C73	CAP, 6.8pF
C908	2113944C71	CAP, 5.6pF
C909	2113944C41	CAP, 68pF
C910	2113944M30	CAP, 33pF
C911	2113944C18	CAP, 3.3pF
C912	2113944C22	CAP, 4.7pF
C913	2113944C45	CAP, 100pF
C914	2113945A02	CAP, 270pF
C915	2113944C22	CAP, 4.7pF
C916	2113944C18	CAP, 3.3pF
C917	2113944M30	CAP, 33pF
C918	2113944C45	CAP, 100pF
C920	2113944C28	CAP, 8.2pF
C921	2113944C17	CAP, 3.0pF
C922	NOTPLACED	NOTPLACED
C923	NOTPLACED	NOTPLACED
C924	2113944A11	CAP, 2.7pF
C925	2113944V07	CAP, 1.5pF
C926	2113944A15	CAP, 3.9pF
C927	2113945A02	CAP, 270pF
C1000	2113944A40	CAP, 100pF
C1001	2113946K02	CAP, 0.10uF
C1002	2113946K02	CAP, 0.10uF
C1003	2113944A40	CAP, 100pF
C1004	2113944A40	CAP, 100pF
C1005	2113946K02	CAP, 0.10uF
C1006	2113946K02	CAP, 0.10uF

Circuit Ref	Motorola Part No.	Description
C1007	2113944A40	CAP, 100pF
C1008	2113944A40	CAP, 100pF
C1009	2113946K02	CAP, 0.10uF
C1010	2113946K02	CAP, 0.10uF
C1011	2113944A40	CAP, 100pF
C1012	2113946K02	CAP, 0.10uF
C1013	2113946K02	CAP, 0.10uF
C1014	2113946K02	CAP, 0.10uF
C1015	2113946K02	CAP, 0.10uF
C1016	2113946B04	CAP, 0.1uF
C1017	2113946E02	CAP, 1.0uF
C1018	2113944A28	CAP, 18pF
C1019	2113944A28	CAP, 18pF
C1028	2113946K02	CAP, 0.10uF
C1029	2113946K02	CAP, 0.10uF
C1030	2113944A28	CAP, 18pF
C1031	2113946K02	CAP, 0.10uF
C1032	2113945B02	CAP, .01uF
C1033	2113946K02	CAP, 0.10uF
C1044	2113946B04	CAP, 0.1uF
C2000	2113944A40	CAP, 100pF
C2001	2113945B02	CAP, .01uF
C2002	2113946K02	CAP, 0.10uF
C2003	2113946K02	CAP, 0.10uF
C2004	2113944A40	CAP, 100pF
C2005	2113945B02	CAP, .01uF
C2006	2113946K02	CAP, 0.10uF
C2007	2113946K02	CAP, 0.10uF
C3000	2113944A78	CAP, 13pF
C3001	2113944A78	CAP, 13pF
C3002	2113945D04	CAP, 0.1uF
C3003	2113946D05	CAP, 2.2uF
C3004	2113946D05	CAP, 2.2uF
C3005	2113945A09	CAP, 1000pF
C3010	2113946D05	CAP, 2.2uF
C3011	2113946A02	CAP, .022uF
C3014	2113946D05	CAP, 2.2uF
C3015	2115153H57	CAP, 100pF
C3016	2113946D05	CAP, 2.2uF
C3017	2113945B02	CAP, .01uF
C3018	2113946D05	CAP, 2.2uF
C3019	2113946D02	CAP, 1.0uF
C3024	2113946D02	CAP, 1.0uF
C3025	2113946K02	CAP, 0.10uF
C3026	2113946K02	CAP, 0.10uF
C3028	2113946D05	CAP, 2.2uF

Circuit Ref	Motorola Part No.	Description
C3031	2113946D02	CAP, 1.0uF
C3034	2113946B04	CAP, 0.1uF
C3035	2113946B04	CAP, 0.1uF
C3036	2113946B04	CAP, 0.1uF
C3037	2113944A40	CAP, 100pF
C3038	2113944A40	CAP, 100pF
C3039	2113946F03	CAP, 4.7uF
C3045	2113946F05	CAP, 10uF
C3047	2113946D02	CAP, 1.0uF
C3048	2113946D02	CAP, 1.0uF
C3049	2113945C25	CAP, 0.033uF
C3050	2113945C25	CAP, 0.033uF
C3051	2113944A40	CAP, 100pF
C3060	2113944A80	CAP, 20pF
C3061	2113944A80	CAP, 20pF
C3062	2113946K02	CAP, 0.10uF
C3063	2113946K02	CAP, 0.10uF
C3067	2113946D02	CAP, 1.0uF
C3070	2113944A25	CAP, 10pF
C3074	2113946D02	CAP, 1.0uF
C3079	2113946F03	CAP, 4.7uF
C3080	NOTPLACED	NOTPLACED
C3081	2113946F03	CAP, 4.7uF
C3082	2113946B04	CAP, 0.1uF
C3083	2113946B04	CAP, 0.1uF
C3084	2113946K03	CAP, 0.22uF
C3090	2113955D37	CAP, 10uF
C3091	2113955D37	CAP, 10uF
C3093	2113946N03	CAP, 2.2uF
C3094	2113946B03	CAP, .068uF
C3095	2113946B03	CAP, .068uF
C3097	2113944A31	CAP, 33pF
C3098	2113944A31	CAP, 33pF
C3099	2113944A31	CAP, 33pF
C3100	2113944A31	CAP, 33pF
C3101	2113946D02	CAP, 1.0uF
C3102	2113946D02	CAP, 1.0uF
C3200	2113945Y02	CAP, 0.10uF
C3201	2113955D37	CAP, 10uF
C3202	2371572L02	CAPP, 68uF
C3203	2113945B02	CAP, .01uF
C3204	2115153H40	CAP, 20pF
C3205	2113944A50	CAP, 680pF
C3206	2113945Y02	CAP, 0.10uF
C3207	2113955D37	CAP, 10uF
C3208	2113946K03	CAP, 0.22uF

Circuit Ref	Motorola Part No.	Description
C3209	2371572L01	CAPP, 47uF
C3210	2113945B02	CAP, .01uF
C3211	2115153H40	CAP, 20pF
C3212	2113944A44	CAP, 220pF
C3700	2113946D02	CAP, 1.0uF
C3701	2113945B02	CAP, .01uF
C3702	2113946D05	CAP, 2.2uF
C3703	2113946D02	CAP, 1.0uF
C3704	2113944A30	CAP, 27pF
C3705	2113945B02	CAP, .01uF
C3706	2113945A05	CAP, 470pF
C3707	2113946D05	CAP, 2.2uF
C3800	2113945D04	CAP, 0.1uF
C3805	2113946K03	CAP, 0.22uF
C3999	2113945B02	CAP, .01uF
C8000	2113946F05	CAP, 10uF
C8001	2113944A28	CAP, 18pF
C8002	2113944A52	CAP, 1000pF
C8003	2113946F05	CAP, 10uF
C8004	2113944A28	CAP, 18pF
C8005	2113946F05	CAP, 10uF
C8006	2113944A28	CAP, 18pF
C8013	2113944A08	CAP, 2.0pF
C8014	2113944A62	CAP, 0.75pF
C8015	2113946K02	CAP, 0.10uF
C8016	2113945A02	CAP, 270pF
C8017	2113944A28	CAP, 18pF
C8018	2113944A28	CAP, 18pF
C8019	2113944A11	CAP, 2.7pF
C8020	2113944A52	CAP, 1000pF
C8021	2113946K02	CAP, 0.10uF
C8022	2113946D05	CAP, 2.2uF
C8023	2113945B02	CAP, .01uF
C8029	2113944A52	CAP, 1000pF
C8030	2113944A28	CAP, 18pF
C8031	2113946D05	CAP, 2.2uF
C8032	2113945B02	CAP, .01uF
C8033	2113944A28	CAP, 18pF
C8034	2113944A28	CAP, 18pF
C8035	2113944A31	CAP, 33pF
C8036	2113944A52	CAP, 1000pF
C9000	2113944A40	CAP, 100pF
C9001	2113944A40	CAP, 100pF
C9002	2113944A40	CAP, 100pF
C9003	2113944A40	CAP, 100pF
C9004	2113944A40	CAP, 100pF

Circuit Ref	Motorola Part No.	Description
C9005	2113944A40	CAP, 100pF
C9006	2113944A40	CAP, 100pF
C9007	2113944A40	CAP, 100pF
C9008	2113944A40	CAP, 100pF
C9009	2113944A40	CAP, 100pF
C9010	2113944A40	CAP, 100pF
C9011	2113944A40	CAP, 100pF
C9012	2113944A40	CAP, 100pF
C9013	2113944A40	CAP, 100pF
C9014	2113944C45	CAP, 100pF
C9015	2113944A40	CAP, 100pF
C9016	2113944A40	CAP, 100pF
C9017	2113944A40	CAP, 100pF
C9018	2113944A40	CAP, 100pF
C9019	2113944A40	CAP, 100pF
C9020	2113944A40	CAP, 100pF
C9021	2113944A40	CAP, 100pF
C9022	2113944A40	CAP, 100pF
C9023	2113944A40	CAP, 100pF
C9024	2113944A40	CAP, 100pF
C9025	2113944A40	CAP, 100pF
C9026	2113944A40	CAP, 100pF
C9027	2113944A40	CAP, 100pF
C9028	2113944A40	CAP, 100pF
C9029	2113944A40	CAP, 100pF
C9030	2113944A17	CAP, 4.7pF
C9031	2113944A17	CAP, 4.7pF
C9032	2113944A17	CAP, 4.7pF
C9033	2113944A40	CAP, 100pF
C9038	2113944A40	CAP, 100pF
C9039	2113944C45	CAP, 100pF
C9040	2113944A40	CAP, 100pF
C9041	2113944A40	CAP, 100pF
C9042	2113944A40	CAP, 100pF
C9043	2113944A40	CAP, 100pF
C9044	2113944A40	CAP, 100pF
C9045	2113944A40	CAP, 100pF
C9046	2113944A40	CAP, 100pF
C9047	2113944A40	CAP, 100pF
C9048	2113944A40	CAP, 100pF
C9049	2113944A40	CAP, 100pF
C9050	2113944A40	CAP, 100pF
C9051	NOTPLACED	NOTPLACED
C9053	NOTPLACED	NOTPLACED
C9055	NOTPLACED	NOTPLACED
C9057	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
C9058	2113944A40	CAP, 100pF
C9059	2113944A40	CAP, 100pF
C9060	2113944A40	CAP, 100pF
C9061	2113944A40	CAP, 100pF
C9062	2113944A40	CAP, 100pF
C9063	2113944A40	CAP, 100pF
C9064	2113944A40	CAP, 100pF
C9065	2113944C45	CAP, 100pF
C9066	2113944A40	CAP, 100pF
C9067	NOTPLACED	NOTPLACED
C9068	NOTPLACED	NOTPLACED
C9069	NOTPLACED	NOTPLACED
C9071	NOTPLACED	NOTPLACED
C9072	NOTPLACED	NOTPLACED
CR900	4815897H01	UPP9401E3
CR901	4815897H01	UPP9401E3
CR902	4815897H01	UPP9401E3
CR903	4815897H01	UPP9401E3
D001	4815059H01	1SV325
D200	4815096H01	1SV305
D201	4815096H01	1SV305
D202	4815096H01	1SV305
D203	4815096H01	1SV305
D204	4815096H01	1SV305
D205	4815096H01	1SV305
D206	4815096H01	1SV305
D207	4815096H01	1SV305
D400	4885055Y01	1SV229
D401	4885055Y01	1SV229
D402	4813974A19	MMBD352
D403	4885055Y01	1SV229
D404	4885055Y01	1SV229
D405	4815923H01	HSMS2829
D600	4815096H01	1SV305
D601	4815096H01	1SV305
D3000	4813978A25	BAT54HT1G
D9000	4805729G49	BRPY1204W
E001	2480640Z01	BK1005HM471
E002	2480640Z01	BK1005HM471
E003	2480640Z01	BK1005HM471
E004	2480640Z01	BK1005HM471
E400	2480640Z01	BK1005HM471
E401	2480640Z01	BK1005HM471
E600	2480640Z01	BK1005HM471
E601	2480640Z01	BK1005HM471
E602	2480640Z01	BK1005HM471

Circuit Ref	Motorola Part No.	Description
E701	7686949J14	BLM21PG221SN1
E3030	2409134J04	BLM18BD601SN1
E3031	2409134J04	BLM18BD601SN1
E3032	2409134J04	BLM18BD601SN1
E3033	2409134J04	BLM18BD601SN1
E3700	7686949J08	IDCTR
E3701	7686949J08	IDCTR
E3702	7686949J08	IDCTR
E3703	7686949J08	IDCTR
E3704	7686949J08	IDCTR
E3705	7686949J08	IDCTR
E8000	7686949J08	IDCTR
E8001	7686949J08	IDCTR
E8002	7686949J08	IDCTR
E8003	7686949J08	IDCTR
E8004	7686949J08	IDCTR
E8005	7686949J08	IDCTR
E8006	7686949J08	IDCTR
E9000	7686949J14	BLM21PG221SN1
E9001	2480640Z01	BK1005HM471
E9006	NOTPLACED	NOTPLACED
E9007	NOTPLACED	NOTPLACED
F9000	6515076H01	FUSE
FL400	9116854H01	-
FL8000	9180310L38	B39162-B7829-C710
FL8001	9180310L38	B39162-B7829-C710
FL9000	2515003H02	DLP11SN201HL2
J9001	0970312L02	CONN_J
L002	2415429H26	IDCTR, 33nH
L003	NOTPLACED	NOTPLACED
L200	2415429H47	IDCTR, 390nH
L201	2415427H29	IDCTR, 19nH
L202	2416540H13	IDCTR, 12nH
L203	2415429H47	IDCTR, 390nH
L204	2415429H47	IDCTR, 390nH
L205	2415429H47	IDCTR, 390nH
L206	2415429H47	IDCTR, 390nH
L207	2415427H42	IDCTR, 51nH
L208	2415429H47	IDCTR, 390nH
L209	2415427H26	IDCTR, 15nH
L210	2415428H07	IDCTR, 8.8nH
L211	2415429H47	IDCTR, 390nH
L212	2415429H47	IDCTR, 390nH
L213	2415429H47	IDCTR, 390nH
L214	2415429H47	IDCTR, 390nH
L215	2415429H27	IDCTR, 36nH

Circuit Ref	Motorola Part No.	Description
L217	2415347H01	IDCTR, 1000nH
L218	2415429H31	IDCTR, 51nH
L400	2416201H01	IDCTR, 16nH
L401	2416201H01	IDCTR, 16nH
L402	2415429H35	IDCTR, 82nH
L403	2415427H34	IDCTR, 27nH
L404	2415427H29	IDCTR, 19nH
L405	2415429H25	IDCTR, 30nH
L406	2415429H15	IDCTR, 10nH
L407	2415427H16	IDCTR, 7.5nH
L408	2416201H01	IDCTR, 16nH
L409	2416201H01	IDCTR, 16nH
L410	NOTPLACED	NOTPLACED
L411	2415429H35	IDCTR, 82nH
L412	2414017N29	IDCTR, 270nH
L413	2415429H23	IDCTR, 24nH
L414	2415429H23	IDCTR, 24nH
L415	2415429H46	IDCTR, 330nH
L416	2414017N29	IDCTR, 270nH
L417	2415718H37	IDCTR, 820nH
L418	2415429H47	IDCTR, 390nH
L419	2414032F42	IDCTR, 470nH
L420	2414032F42	IDCTR, 470nH
L600	2466505A01	IDCTR, 10uH
L601	2466505A01	IDCTR, 10uH
L602	2415569H01	IDCTR, 4.7uH
L603	2415718H37	IDCTR, 820nH
L604	2414015B26	IDCTR, 330nH
L605	2415569H01	IDCTR, 4.7uH
L700	2414017N25	IDCTR, 120nH
L701	2414017N25	IDCTR, 120nH
L702	2415429H14	IDCTR, 9.5nH
L703	2414017N25	IDCTR, 120nH
L706	2460591E64	IDCTR, 30.51nH
L707	2471406L02	IDCTR, 11.03nH
L902	2414017N25	IDCTR, 120nH
L903	2414017N25	IDCTR, 120nH
L904	2416201H01	IDCTR, 16nH
L905	2416201H01	IDCTR, 16nH
L906	2416201H02	IDCTR, 19nH
L907	2415429H35	IDCTR, 82nH
L908	2416201H02	IDCTR, 19nH
L909	2416201H01	IDCTR, 16nH
L910	2416201H01	IDCTR, 16nH
L911	2416201H01	IDCTR, 16nH
L912	2414017P08	IDCTR, 3.9nH

Circuit Ref	Motorola Part No.	Description
L913	2414017P10	IDCTR, 5.6nH
L3003	2464675H01	IDCTR, 560nH
L3004	2464675H01	IDCTR, 560nH
L3020	2489846Y06	IDCTR, 10uH
L3021	2489846Y06	IDCTR, 10uH
L3022	2464675H01	IDCTR, 560nH
L8001	2414017P10	IDCTR, 5.6nH
L8002	2414017P17	IDCTR, 22nH
L8003	2414017P13	IDCTR, 10nH
L8004	2414017P10	IDCTR, 5.6nH
L9000	2415429H45	IDCTR, 270nH
L9001	2415429H45	IDCTR, 270nH
L9007	2415429H45	IDCTR, 270nH
L9008	2415429H45	IDCTR, 270nH
M1	4271321L01	RETAINER
M2	4271321L01	RETAINER
M700	2615193H01	HEATSINK
M9000	4371105L01	BRD_SPACER
M9001	4371105L01	BRD_SPACER
M9002	4371105L01	BRD_SPACER
M9003	NOTPLACED	NOTPLACED
M9004	NOTPLACED	NOTPLACED
M9005	3915478H01	CONTACT
M9006	3915478H01	CONTACT
M9007	0915184H01	CONTACT
P900	2815696H01	CONN_P
P9000	2887818K02	CONN_P
Q002	4815359H01	BCV62
Q003	4816134H01	DTC114YM
Q200	4815029H01	NE851M03
Q202	4815055H01	UMC5NT2G
Q203	4815055H01	UMC5NT2G
Q204	4885061Y01	NE68519
Q205	4885061Y01	NE68519
Q206	4815055H01	UMC5NT2G
Q207	4815055H01	UMC5NT2G
Q208	4885061Y01	NE68519
Q400	4816531H01	QSBT_0038
Q401	4816531H01	QSBT_0038
Q600	4813973A04	73A04
Q601	4815055H01	UMC5NT2G
Q602	4885061Y01	NE68519
Q701	4815055H01	UMC5NT2G
Q702	4815055H01	UMC5NT2G
Q703	4816547H01	RD01MUS1
Q704	4816548H01	RD07MVS1

Circuit Ref	Motorola Part No.	Description
Q900	4815055H01	UMC5NT2G
Q901	4815055H01	UMC5NT2G
Q3000	4805585Q23	SI8401DB
Q3001	4805585Q23	SI8401DB
Q3002	4816134H01	DTC114YM
Q3003	4813970A62	NTHS5441T1
Q3005	4805585Q23	SI8401DB
Q3006	4816134H01	DTC114YM
Q3010	4805585Q23	SI8401DB
Q9000	4813973M07	MMBT3904
Q9001	4815154H01	IMXFT110
Q9003	4813973M07	MMBT3904
R006	0613952Q93	RES, 6.8K
R007	0613952R01	RES, 10K
R008	0613952Q25	RES, 10
R010	0613952Q93	RES, 6.8K
R011	0613952Q49	RES, 100
R012	0613952R25	RES, 100K
R013	0613952Q46	RES, 75
R014	0613952Q42	RES, 51
R016	0613952Q33	RES, 22
R017	0613952Q64	RES, 430
R018	0613952Q96	RES, 9.1K
R019	0613952R01	RES, 10K
R020	0613952Q55	RES, 180
R022	0613952Q36	RES, 30
R025	0613952R13	RES, 33K
R026	0613952R01	RES, 10K
R027	0613952R66	RES, 0
R052	NOTPLACED	NOTPLACED
R053	0613952R66	RES, 0
R054	0613952R66	RES, 0
R200	0613952Q95	RES, 8.2K
R201	0613952Q91	RES, 5.6K
R202	0613952Q49	RES, 100
R203	0613952Q51	RES, 120
R205	0613952Q91	RES, 5.6K
R207	NOTPLACED	NOTPLACED
R208	0613952Q95	RES, 8.2K
R209	0613952Q91	RES, 5.6K
R210	0613952Q49	RES, 100
R211	0613952Q50	RES, 110
R212	0613952Q91	RES, 5.6K
R213	0613952Q94	RES, 7.5K
R214	0613952Q58	RES, 240
R215	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
R216	0613952Q57	RES, 220
R217	0613952Q95	RES, 8.2K
R218	0613952Q66	RES, 510
R220	0613952Q60	RES, 300
R221	0613952Q31	RES, 18
R222	0613952Q60	RES, 300
R223	0613952R66	RES, 0
R224	0613952R66	RES, 0
R400	0613952R25	RES, 100K
R402	0613952R66	RES, 0
R403	0613952Q70	RES, 750
R404	0613952Q72	RES, 910
R405	0613952R25	RES, 100K
R406	0613952R25	RES, 100K
R407	0613952Q42	RES, 51
R409	0613952R05	RES, 15K
R410	0613952Q83	RES, 2.7K
R411	0613952R19	RES, 56K
R412	0613952Q63	RES, 390
R413	0613952Q77	RES, 1.5K
R416	0613952R66	RES, 0
R417	0613952R66	RES, 0
R419	0613952R66	RES, 0
R420	0613952Q95	RES, 8.2K
R421	0613952Q49	RES, 100
R422	0613952R01	RES, 10K
R424	0613952R01	RES, 10K
R425	0613952R66	RES, 0
R497	NOTPLACED	NOTPLACED
R499	0613952R25	RES, 100K
R600	0613952R01	RES, 10K
R601	0613952Q55	RES, 180
R602	0613952Q61	RES, 330
R603	0613952R05	RES, 15K
R604	0613952Q90	RES, 5.1K
R605	0613952Q90	RES, 5.1K
R606	0613952Q75	RES, 1.2K
R607	0613952R25	RES, 100K
R609	0613952R01	RES, 10K
R610	0613952R01	RES, 10K
R611	0613952Q63	RES, 390
R612	0613952R08	RES, 20K
R696	0613952R66	RES, 0
R697	0613952R66	RES, 0
R698	0613952R01	RES, 10K
R699	0613952R25	RES, 100K

Circuit Ref	Motorola Part No.	Description
R700	0615043C01	RES, 0.1
R701	NOTPLACED	NOTPLACED
R702	0613952Z80	RES, 330K
R703	0613952Z80	RES, 330K
R704	NOTPLACED	NOTPLACED
R705	0613952R56	RES, 2MEG
R706	0613952R56	RES, 2MEG
R707	0613952Q81	RES, 2.2K
R708	0613952Q90	RES, 5.1K
R709	0613952R66	RES, 0
R710	NOTPLACED	NOTPLACED
R711	0613952R08	RES, 20K
R712	0613952R66	RES, 0
R713	NOTPLACED	NOTPLACED
R714	0613952Q59	RES, 270
R717	0613958H33	RES, 22
R718	0613952Q56	RES, 200
R719	0613952Q40	RES, 43
R720	0613952H56	RES, 200
R721	0613952G67	RES, 0
R722	0613952G67	RES, 0
R723	0613952Q40	RES, 43
R725	0613952Q85	RES, 3.3K
R726	0613952R66	RES, 0
R727	NOTPLACED	NOTPLACED
R728	0613952Q60	RES, 300
R729	0613952Q33	RES, 22
R730	0613952Q60	RES, 300
R731	NOTPLACED	NOTPLACED
R732	0613952R66	RES, 0
R733	0613952R17	RES, 47K
R902	0613952H47	RES, 82
R903	0613952H47	RES, 82
R904	0613952H47	RES, 82
R905	0613952H47	RES, 82
R906	0613952R01	RES, 10K
R907	0613952R01	RES, 10K
R1000	0613952Q25	RES, 10
R1001	0613952R01	RES, 10K
R1002	0613952J73	RES, 10MEG
R1005	0613952Q89	RES, 4.7K
R1006	0613952R01	RES, 10K
R1013	NOTPLACED	NOTPLACED
R1014	0613952R66	RES, 0
R1015	NOTPLACED	NOTPLACED
R1016	0613952R66	RES, 0

Circuit Ref	Motorola Part No.	Description
R1017	NOTPLACED	NOTPLACED
R1018	0613952R66	RES, 0
R1019	0613952Q18	RES, 5.1
R1020	0613952R66	RES, 0
R1021	0613952R66	RES, 0
R1022	NOTPLACED	NOTPLACED
R1023	0613952R66	RES, 0
R1025	0613952R01	RES, 10K
R1026	0613952R17	RES, 47K
R1027	NOTPLACED	NOTPLACED
R1028	0613952R66	RES, 0
R1034	0613952R01	RES, 10K
R1035	NOTPLACED	NOTPLACED
R1036	0613952R01	RES, 10K
R1041	0613952Q73	RES, 1K
R1045	0613952R01	RES, 10K
R1046	NOTPLACED	NOTPLACED
R1047	0613952R66	RES, 0
R1048	0613952R66	RES, 0
R1051	0613952R66	RES, 0
R1052	0613952R66	RES, 0
R1053	0613952Q89	RES, 4.7K
R1054	0613952Q89	RES, 4.7K
R1055	NOTPLACED	NOTPLACED
R1060	0613952Q25	RES, 10
R1061	0613952R66	RES, 0
R1062	0613952R66	RES, 0
R1063	NOTPLACED	NOTPLACED
R1065	0613952R66	RES, 0
R1067	0613952R03	RES, 12K
R1068	0613952R10	RES, 24K
R1069	0613952R66	RES, 0
R1070	0613952R01	RES, 10K
R1072	0613952R66	RES, 0
R2000	0613952R01	RES, 10K
R2004	0613952R66	RES, 0
R2005	0613952R01	RES, 10K
R2006	0613952R01	RES, 10K
R2007	0613952R01	RES, 10K
R2008	0613952R01	RES, 10K
R2009	0613952R01	RES, 10K
R2010	0613952R01	RES, 10K
R2011	0613952R66	RES, 0
R2012	0613952R01	RES, 10K
R2013	0613952R01	RES, 10K
R3004	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
R3005	0613952N01	RES, 10K
R3006	NOTPLACED	NOTPLACED
R3007	0613952N01	RES, 10K
R3008	NOTPLACED	NOTPLACED
R3009	0613952N01	RES, 10K
R3010	0613952N01	RES, 10K
R3011	0613952Q81	RES, 2.2K
R3012	0613952Q59	RES, 270
R3013	0613952Q81	RES, 2.2K
R3014	0613952M30	RES, 2K
R3016	0616416H01	RES, 0.1
R3017	0613952P25	RES, 178K
R3018	0613952R18	RES, 51K
R3020	0613952Q34	RES, 24
R3021	0613952Q34	RES, 24
R3023	0613952R17	RES, 47K
R3024	0613952Z67	RES, 51K
R3025	0613952Q49	RES, 100
R3026	0613952Q61	RES, 330
R3027	0613952Q61	RES, 330
R3028	0613952N69	RES, 51.1K
R3029	0613952N60	RES, 41.2K
R3030	0686135Z02	RES, 0.2
R3031	0613952R66	RES, 0
R3032	0613952Q95	RES, 8.2K
R3033	0613952R05	RES, 15K
R3034	0613952Q95	RES, 8.2K
R3035	0613952R05	RES, 15K
R3036	0613952N01	RES, 10K
R3037	0613952Q71	RES, 820
R3038	NOTPLACED	NOTPLACED
R3040	0613952Q81	RES, 2.2K
R3041	0613952N01	RES, 10K
R3043	0613952R32	RES, 200K
R3050	0613952R25	RES, 100K
R3051	0613952Q89	RES, 4.7K
R3053	0613952Z58	RES, 22K
R3054	0613952Z58	RES, 22K
R3055	0613952R25	RES, 100K
R3060	0613952M30	RES, 2K
R3070	0613952R33	RES, 220K
R3071	0613952R33	RES, 220K
R3072	0613952R56	RES, 2MEG
R3073	0613952R56	RES, 2MEG
R3074	0613952Q73	RES, 1K
R3075	0613952N01	RES, 10K

Circuit Ref	Motorola Part No.	Description
R3088	NOTPLACED	NOTPLACED
R3098	0613952Q85	RES, 3.3K
R3100	0613952R17	RES, 47K
R3101	0613952R25	RES, 100K
R3102	0613952A30	RES, 2
R3103	0615049H16	RES, 0.70
R3200	0613952R33	RES, 220K
R3201	0613952R20	RES, 62K
R3202	0613952R33	RES, 220K
R3203	0613952R36	RES, 300K
R3700	0613952Q73	RES, 1K
R3701	0613952R01	RES, 10K
R3702	0613952R12	RES, 30K
R3703	0613952R10	RES, 24K
R3704	0613952R01	RES, 10K
R3800	0613952Q25	RES, 10
R3888	NOTPLACED	NOTPLACED
R8002	0613952R25	RES, 100K
R8003	0613952R01	RES, 10K
R8004	0613952Q70	RES, 750
R8010	0613952R05	RES, 15K
R8011	0613952R25	RES, 100K
R8012	0613952R01	RES, 10K
R8015	NOTPLACED	NOTPLACED
R8016	0613952R66	RES, 0
R8017	NOTPLACED	NOTPLACED
R8020	0613952R66	RES, 0
R8023	0613952R66	RES, 0
R8024	0613952R25	RES, 100K
R8025	0613952R66	RES, 0
R8026	0613952R25	RES, 100K
R8027	0613952R25	RES, 100K
R8028	0613952R25	RES, 100K
R8029	0613952R25	RES, 100K
R8030	0613952R01	RES, 10K
R8031	0613952R25	RES, 100K
R8032	0613952R25	RES, 100K
R8033	0613952R25	RES, 100K
R8034	0613952R01	RES, 10K
R8035	0613952R01	RES, 10K
R8036	0613952R01	RES, 10K
R8037	0613952R01	RES, 10K
R9000	0613952Q73	RES, 1K
R9001	0613952Q73	RES, 1K
R9002	0613952Q73	RES, 1K
R9003	0613952Q73	RES, 1K

Circuit Ref	Motorola Part No.	Description
R9004	0613952Q73	RES, 1K
R9005	0613952Q73	RES, 1K
R9006	0613952Q73	RES, 1K
R9007	0613952Q73	RES, 1K
R9008	0613952R17	RES, 47K
R9009	0613952R01	RES, 10K
R9010	0613952R01	RES, 10K
R9011	0613952R17	RES, 47K
R9012	0613952Q50	RES, 110
R9013	0613952Q37	RES, 33
R9014	0613952R01	RES, 10K
R9015	0613952R01	RES, 10K
R9016	0613952R01	RES, 10K
R9017	0613952R01	RES, 10K
R9018	0613952R01	RES, 10K
R9019	0613952Q73	RES, 1K
R9020	NOTPLACED	NOTPLACED
R9050	0613952R01	RES, 10K
R9051	0613952R01	RES, 10K
R9052	0613952Q65	RES, 470
R9053	0613952H47	RES, 82
R9054	0613952H47	RES, 82
S9000	4086470Z01	SWITCH
S9001	4015186H01	SWITCH
S9002	4015203H01	SWITCH
SH9000	NOTPLACED	NOTPLACED
SH9001	NOTPLACED	NOTPLACED
T400	2515396H01	XFMR
T401	2515396H01	XFMR
U001	5104932K08	SC51650VF
U002	5114000B59	MC74VHC1GT66
U200	5116014H01	UPC8179TK
U400	5115443H01	MAX2373
U600	5102495J14	AD9864
U700	4802246J29	ADA4743
U701	5115147H01	AD8566
U702	5115022H01	LM50
U1000	5102495J13	OMAP1710
U1005	5116324H01	ADG3304
U1006	5115001H02	NL27WZU04
U2000	0104024J27	M58WR064FB
U2001	5171614M01	MT48H4M16LF
U3000	5185143E77	PWR_MNGR_BLOCK
U3002	5115616H01	LP8340
U3003	5115453H01	LMC6035ITLX
U3004	5114007A43	NL17SZ14

Circuit Ref	Motorola Part No.	Description
U3006	5115974H01	LP3990
U3007	5171395L01	TS5A23166
U3008	5115391H01	TK11100CSC
U3009	5164852H47	PCA9306
U3020	5171428L01	LTC1877
U3021	5171428L01	LTC1877
U3700	5116282H01	TPS79228
U3701	5116283H01	TPS79101
U8000	0104024J41	GSC3F/LP
U8001	5164015H55	UPC8211TK
VR9000	4866544A01	SR05
VR9001	4813979P10	MMQA5V6T1
VR9002	4813979P10	MMQA5V6T1
VR9003	4815040H01	MM3Z12VT1G
VR9004	4815040H01	MM3Z12VT1G
VR9005	4805656W76	MM5Z5V6
VR9006	4805656W76	MM5Z5V6
VR9007	4805656W76	MM5Z5V6
VR9008	4813979P10	MMQA5V6T1
VR9009	4813977C23	MMSZ5243
VR9010	4813977C23	MMSZ5243
VR9015	NOTPLACED	NOTPLACED
VR9016	NOTPLACED	NOTPLACED
VR9017	4815040H01	MM3Z12VT1G
VR9018	4815040H01	MM3Z12VT1G
VR9020	4813979P10	MMQA5V6T1
VR9021	4813979P10	MMQA5V6T1
VR9022	4813979P10	MMQA5V6T1
VR9023	4815040H01	MM3Z12VT1G
Y001	5116032H01	IVT5300B
Y1000	4809612J45	CX-91F
Y3000	4802582S80	XTAL
Y3001	4815028H01	CX-101F
Y8000	4802582S80	XTAL

Section 7

VHF (136-174 MHZ) INFORMATION

1.0 Transmitter

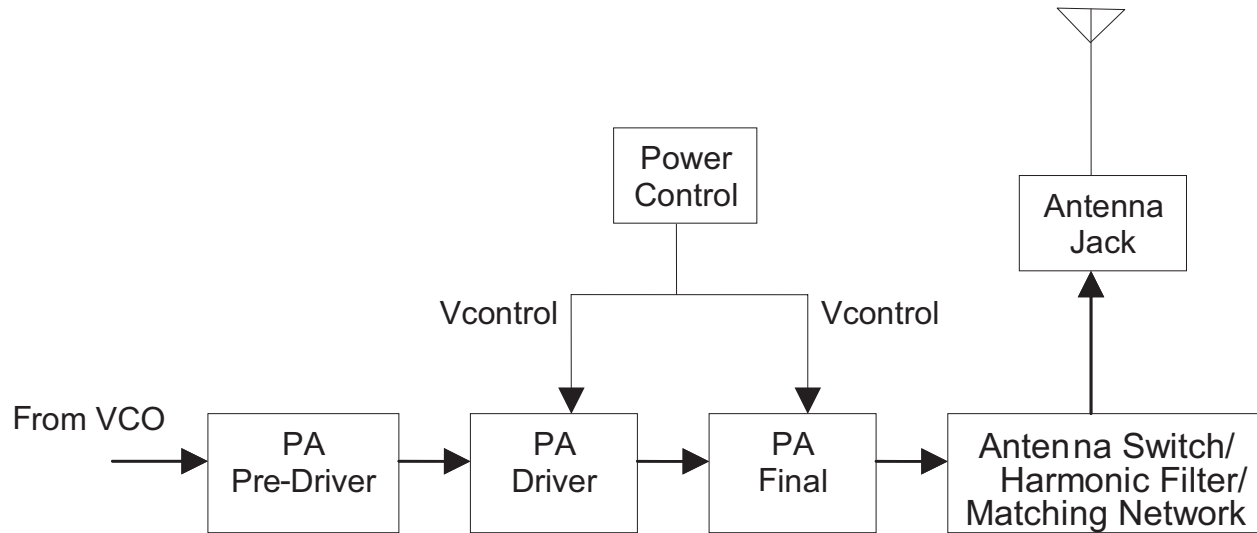


Figure 7-1: VHF Transmitter Block diagram

1.1 General

The VHF transmitter contains five basic circuits:

1. Power Amplifier
2. Antenna Switch
3. Harmonic Filter
4. Antenna Matching Network
5. Power Control

1.1.1 Power Amplifier

The power amplifier is a 3-stage discrete design consisting of:

1. Pre-driver, ADA4743 (U700)
2. Driver, RD01MUS1 (Q703)
3. Final PA, RD07MVS1 (Q704)

The pre-driver is a 50 Ohm gain block with a supply voltage of 5V. the supply is ramped to eliminate feed-through power due to the fixed gain of the device. The pre-driver is biased in Class A region with a typical current drain of 60mA and power gain of 16.5dB.

The driver is a 1W, LDMOS in a SOT-89 package. this stage typically drains 110mA of current at rated output power, 5W. The driver is biased in Class AB region and has a power gain of 14dB.

The final PA is a 7W, LDMOS device. The gate threshold of this device is very close to the driver. Hence, the traditional PA bias tuning is eliminated. The current drain would typically be 1600mA. The final PA is biased in Class AB region and has a power gain of 10dB.

1.1.2 Antenna Switch

The antenna switch comprises of 2 ports: standard port and remote port.

The antenna switch consist of:

1. Four PIN diodes:
 - c. CR902 and CR903 biased during standard port operation at transmit mode.
 - d. CR900 and CR901 biased during remote port operation at receive mode.
 - e. CR900, CR901, CR902 and CR903 biased during remote port operation at transmit mode.
2. Six current limiting resistors:
 - a. R904, R905 and R909 for standard port operation at transmit mode.
 - b. R902, R903 and R906 for remote port operation at receive mode.
 - c. R902, R903, R906, R904, R905 and R909 for remote port operation at transmit mode.
3. Two pi networks:
 - a. C915, L908, C916 to determine TX or RX mode.
 - b. C911, L906, C912 to determine standard port or remote port operation.

In the transmit mode of standard port operation, ANT_EN signal (from MAKO) turns on Q702(bias Power Amplifier) and Q900(antenna switch circuit). RAWB+ bias is applied to the standard port antenna switch circuit to bias CR902 and CR903 “on”. Hence, the following occurs:

1. Shunt diode (CR903) shorts out the receiver port, and the pi network(C915, L908, C916), which operates as a quarter wave transmission line, transforms low impedance of the shunt diode to a high impedance at the input of the harmonic filter. In the receive mode, the diodes are “off” and hence, there exists a low attenuation path between the antenna and the receiver ports.
2. Both CR900 and CR901 is biased “off”, and the pi network(C911, L906, C912), which operates as a quarter wave transmission line, transfers the 50ohm impedance of the harmonic filter to C902 and hence, forces PA_OUT to take the standard port circuit path.

In the transmit mode of remote port operation, ANT_EN signal (from MAKO) turns on Q702(bias Power Amplifier) and Q900(antenna switch circuit) and GP02 signal (from TOMAHAWK) turns on Q901. RAWB+ bias is applied to the standard and remote port antenna switch circuit to bias CR900, CR901, CR902 and CR903 “on”. Hence, the following occurs:

1. Shunt diode(CR903) shorts out the receiver port, and the pi network(C915, L908, C916), which operates as a quarter wave transmission line, transforms low impedance of the shunt diode to a high impedance at the input of the harmonic filter. In the receive mode, the diodes are off and hence, there exists a low attenuation path between the antenna and the receiver ports.
2. Shunt diode(CR901) shorts out the standard port, and the pi network(C911, L906, C912), which operates as a quarter wave transmission line, transforms the low impedance of the shunt diode to a high impedance at the input of the standard port circuit and hence, forces PA_OUT to take the remote port circuit path.

1.1.3 Harmonic Filter

The harmonic filter consists of C906, C907, C929, C931, L904 and L905. The design of the harmonic filter for VHF is a fourpole Elliptical design using lumped LC elements in order to realize greater attenuation in the stop band for a given ripple level. The harmonic filter insertion loss is typically less than 1.3dB.

1.1.4 Power Control

The transmitter power control uses discrete integrator approach, the current is sensing both PA stages namely, Driver Power Amplifier (Q703) and Final Power Amplifier (Q704).

The basic block diagram of the power control is shown in Figure 7-2. A single sensing resistor (R700) is tied to sense both PA stages current. The power control consists of 2 comparators, U701-1 and U701-2. U701 is a dual-package op-amp in SOT-8 package. The first stage is an I-V converter converts current drained by Power Amplifier Driver (Q703) and Power Amplifier Final (Q704) across R700 into a voltage drop and the second stage is an integrator used to shape the output Vcontrol to bias both PAs. The slope of the Vcontrol is controlled by the RC time constant of the integrator and also the ramping slope of reference signal, TX_DAC generated by MAKO IC. The final TX_DAC value determines the transmit power level and is a factory tuned parameter which is stored inside the codeplug.

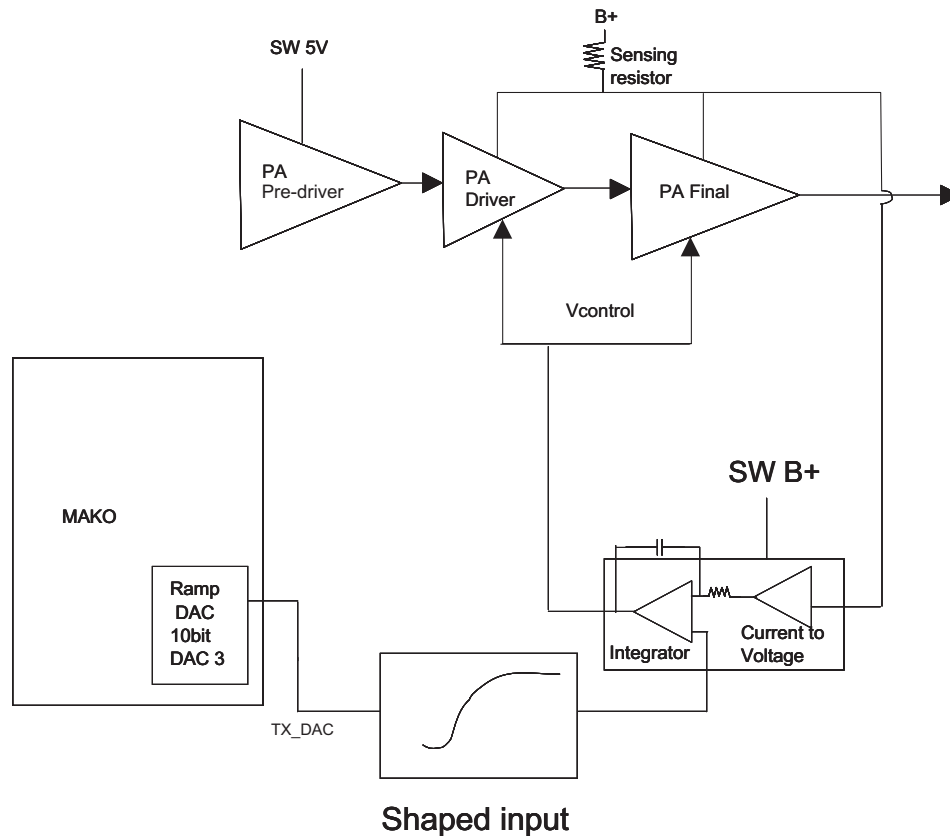


Figure 7-2: Power Control Scheme Basic Block Diagram

2.0 Receiver

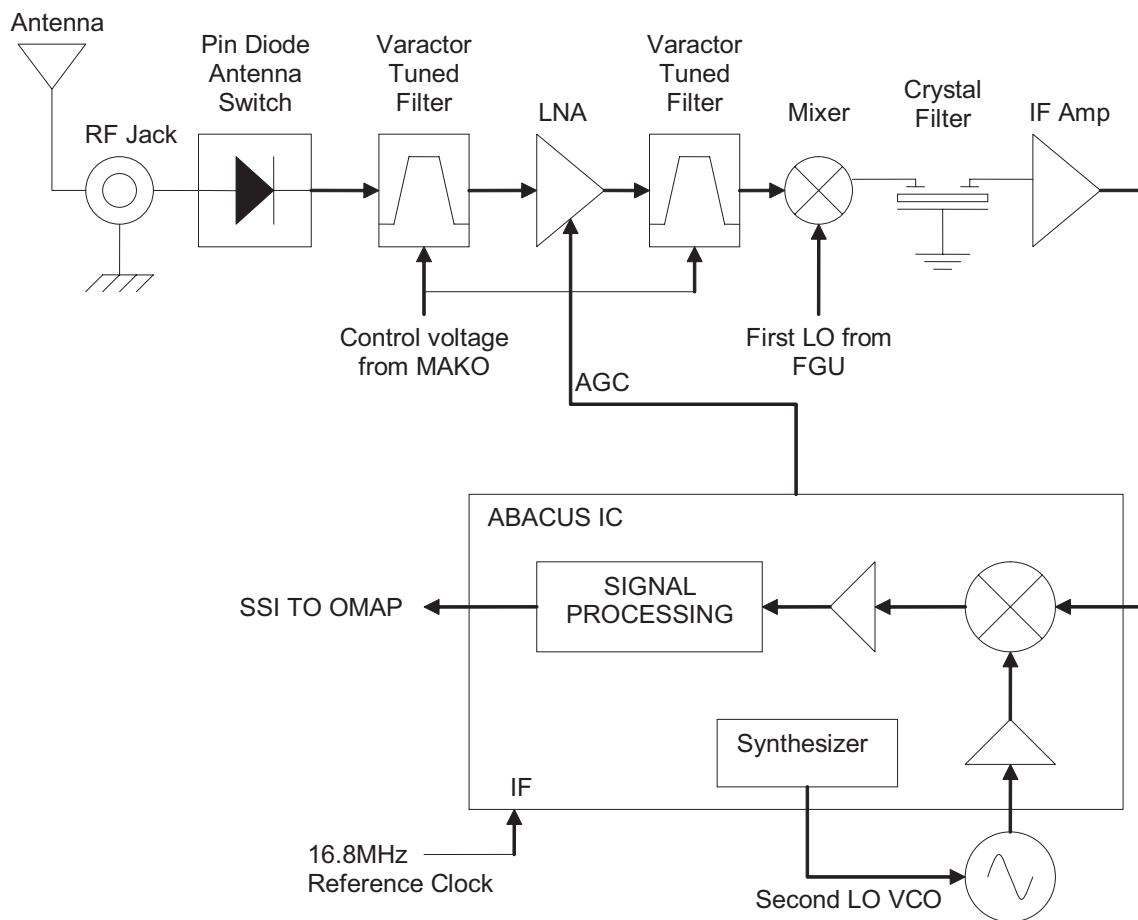


Figure 7-3: UHF Receiver Block Diagram

2.1 Receiver Front-End

The RF signal is received by the antenna and applied to a low-pass filter. For VHF, the filter consists of C906, C907, C908, L904 and L905. The filtered RF signal is passed through the antenna switch and then applied to a varactor tuned bandpass filter. The bandpass filter comprises of C400, C401, C402, C403, C404, C405, L400, L401, R400, R499, D400 and D401. C400 and C405 are 50ohm points. The bandpass filter is tuned by applying a control voltage to the varactor diodes D400 and D401.

The bandpass filter is electronically tuned by the MAKO DAC. Depending on the carrier frequency, the MAKO DAC will supply the tuned voltage to the varactor diodes in the filter. Wideband operation of the filter is achieved by shifting the bandpass filter across the band.

The output of the bandpass filter is passed through a RF step attenuator (D402) to limit the amount RF power fed into the LNA (U400). After being amplified, the RF signal is further filtered by a second varactor tuned bandpass filter. This bandpass filter is electronically tuned by the MAKO DAC and comprises of C419, C420, C421, C422, C423, C424, L408, L409, R405, R406, D403 and D404. C419 and C423 are 50 Ohm points.

The output of the second bandpass filter is passed to a mixer. The mixer is a passive double balanced quad diode mixer (D405) comprising of 2 transformers (T400 and T401). The 50 Ohm matching for the mixer is provided by C426 and L410. After mixing with the first LO signal from the voltage control oscillator (VCO) using high side injection, the RF signal is down converted to the 44.85 MHz IF signal.

The IF signal coming out of the mixer is applied to the crystal filter (FL400) through a resistor pad and a diplexer (L411 and C427). Matching to the input of the crystal filter is provided by L412 and C428. The crystal filter provides the necessary adjacent channel selectivity and inter-modulation protection.

The output of the crystal filter (FL400) is matched to the input of the IF amplifier transistor by C432, C433, L415 and L416. Voltage supply to the IF amplifier is 5V_RX, taken from RX VCO. The IF amplifier provides a gain of 19 dB minimum. The IF amplifier output is directly matched at the IF amplifier output to ABACUS (U600) pin 47 via C601.

2.2 Receiver Back-End

ABACUS (U600) is tuned via software at radio start-up. The IF signal applied to pin 47 of U600 is down-converted to a second IF of 2.25 MHz. The second IF of 2.25 MHz will then be fed into an ADC, generating the Is and Qs data. This data is in the form of SSI (Serial Synchronous Interface) at pin 29 of U600, which will then be sent to the DSP (OMAP1710) for further processing.

The second VCO is a Colpitts oscillator built around transistor Q602. The VCO has a varactor diode, D600 to adjust the VCO frequency. The second LO frequency could either be 42.6 MHz or 47.1 MHz, depending on the system requirement. The control signal is derived from a loop filter consisting of C617, C618, C619, R605 and R606. The RSSI circuitry is achieved via software programming.

3.0 Frequency Generation Circuitry

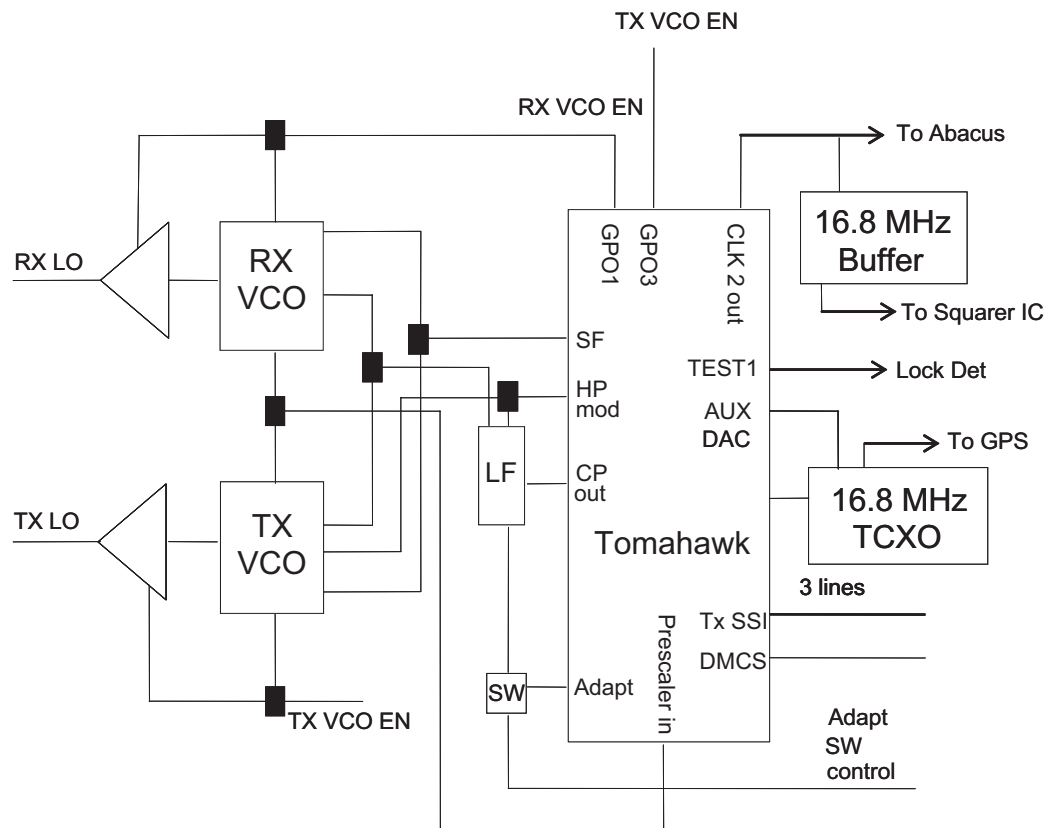


Figure 7-4: Frequency Generating Unit Block Diagram

The Frequency Generating Unit is centered on one main IC, Tomahawk (U001). The main synthesizer on the Tomahawk eases modulation interface to the DSP area via the 3 TX SSI lines. The block diagram illustrates the interconnect and support circuitry used in the Frequency Generating Unit. Refer to the relevant schematics for the reference designators.

The synthesizer is powered by 2.8V ANA, 2.8V DIG, 1.875V DIG and 5V ANA supplied from the U3000-1. The synthesizer in turns generates a superfiltered 2.5V which powers up the TX VCO & RX VCO.

In addition to the VCO, the synthesizer interfaces with the microcontroller. Programming of the synthesizer is accomplished through the 4 lines; SPI_MISO, THK_CE, SPI_MOSI and SPI_CLK via pin D10, D8, D9 and D11 respectively. A 1.875 dc signal from the synthesizer lock detect line indicates to the microprocessor that the synthesizer is locked.

U001 has dual port modulation capability. The microprocessor supplies low port and high port words to pin F11 of U001. For high port modulation, the audio runs through an internal attenuator for modulation balancing purpose before it goes out to the VCO and loop filter via pin K8. For the low port modulation, the audio is fed into the main synthesizer, where it is summed with the main_num channel frequency word, then supplied to the accumulator of the Fractional-N synthesizer before going out to the VCO.

3.1 Synthesizer

U001 uses a 16.8 MHz crystal (Y001) to provide a reference for the system. The synthesizer further divides this to 4.2 MHz for nominal frequencies and 3.36 MHz for alternate frequencies. Together with R006, R007, R008, C013, C014, C015 and C016, they build up the reference oscillator which is capable of 1.5ppm (non-GPS) / 0.5ppm (GPS) stability over temperature of -30°C to 85 °C. It also provides 16.8MHz at pin J11 of U001 to be used by ABACUS.

The loop filter which consists of R013, R014, R016, C024, C025, C026 and C027 provides the necessary dc steering voltage for the VCO and determines the amount of noise and spur passing through.

In achieving fast locking for the synthesizer, an internal adapt charge pump provides higher current (~10mA) at pin H1 and an additional 2mA from a current mirror (Q002, R010, R011 and R012). The required frequency is then locked by normal mode charge pump at pin G3. An external adapt switch (U002) is used to control the on/off of the adapt mode. Both the normal and adapt charge pumps get their supply from the 5V ANA supplied by U3000-1.

3.2 VCO - Voltage Controlled Oscillator

The VCO in conjunction with the synthesizer generates RF in both the receive and transmit modes of operation.

The RX VCO comprises of a Colpitts oscillator built around Q200, a cascaded buffer, built up of a buffer IC, U200 cascaded with a discrete buffer built around Q208 and a 3dB resistive pad (R220, R221 and R222). Vcontrol is supplied to two pairs of back-to-back varactors (D200, D201, D202 and D203). The LC tank comprises of C203 and L202. The oscillator is supplied with a 2.5V superfiltered supply from the synthesizer, U001. The cascaded buffer is supplied with a 5V ANA supply from MAKO, U3000-1. The buffer IC in conjunction with the resistive pad provides sufficient isolation from the mixer whilst the discrete buffer provides sufficient gain for the first LO signal. The output of the cascaded buffer is match to the mixer by C216, C217, C241 and L207. The output power level of RX_1ST_LO_INJ is 6dBm.

The TX VCO comprises of a Colpitts oscillator built around Q204 and a discrete buffer built around Q205. Vcontrol is supplied to two pairs of back-to-back varactors (D204, D205, D206 and D207). The LC tank comprises of C222 and L210. The oscillator is supplied with a 2.5V superfiltered supply from the synthesizer, U001. The discrete buffer is supplied with a 5V ANA supply from MAKO, U3000-1. The output of the discrete buffer is match to the PA by C236, C237 and L215. The output power level of TX_BUFF is 3dBm.

4.0 Global Positioning System (GPS) Receiver

The GPS device is an embedded receiver that provides the location of the subscriber in terms of latitude, longitude, velocity, direction and altitude.

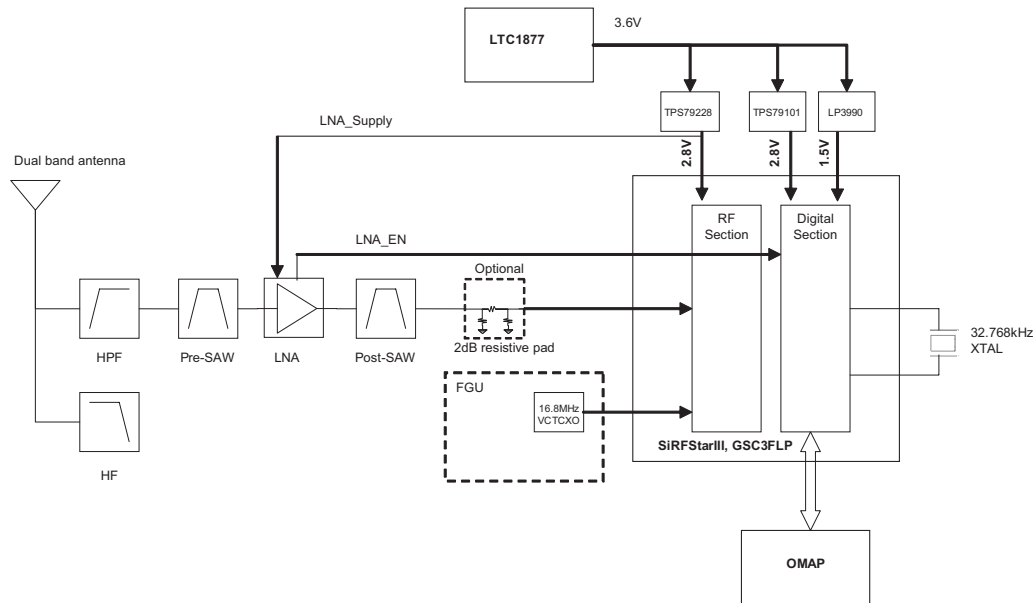


Figure 7-5: GPS Receiver Block Diagram

The RF signal is received by the antenna and applied to a high-pass filter. The filter consists of C924, C925, C926, L912 and L913. The filtered RF signal is then applied to a SAW filter, FL8001.

The output of the SAW filter is fed into the LNA (U8001). The LNA biasing is controlled by SIRF_LNA_EN (pin A4 of the GPS IC, U8000). The LNA input match comprises of C8013, C8014 and L8001. The LNA output match comprises of L8003 and C8017. After being amplified, the RF signal is further filtered by a second SAW filter, FL8000.

The output of the second SAW filter is passed to pin P6 of the GPS IC. The input match for pin P6 comprises of C8018, C8019 and L8004. The control and data lines for the GPS IC are GPS_nRESET, GPS_ON_OFF, GPS_TX, GPS_RX and GPS_BOOT. GPS_nWAKEUP line is fed into the microcontroller to indicate the state (full power or hibernate state) of the GPS IC so that the microcontroller will never trigger a GPS_ON_OFF when the GPS IC is in full power state.

A dedicated 32.768kHz quartz crystal oscillator (Y8000) is used to provide RTC clock to the RTC circuit inside the GPS IC. The second input frequency is a 16.8MHz reference, used by the StarIII to synthesize the internal LO. This reference will be supplied by a VCTCXO (Y001) located in the synthesizer block, which will be shared by the TOMAHAWK and ABACUS ICs.

The GPS IC is powered by 2.8V_DIG_GPS, 2.8V_RF_GPS and 1.5V_GPS_RTC supplied from 3 discrete external regulators (U3701, U3700 & U3006). The input of these regulators is sourced from a switching regulator (U3020) which regulates the SWB+ to 3.6V.

5.0 Allocation of Schematics and Circuit Boards

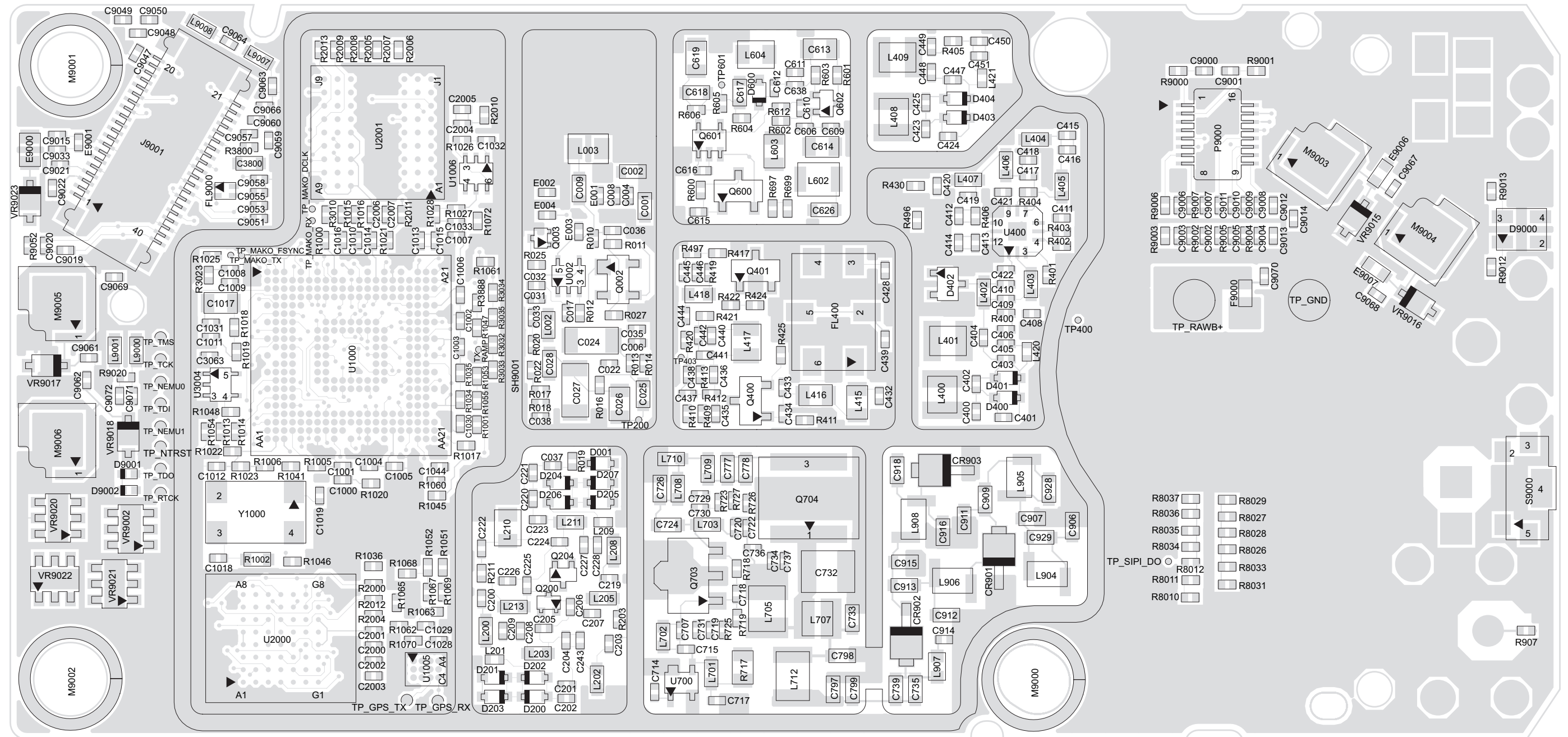
5.1 Controller Circuits

The VHF circuits are contained on the Printed Circuit Board (PCB) which also contains the Controller circuits. This Chapter shows the schematics for the VHF circuits only, refer to the Controller section for details of the related Controller circuits. The PCB component layouts in this Chapter show both the Controller and VHF circuit components. The VHF schematics and the related PCB and parts list are shown in the tables below.

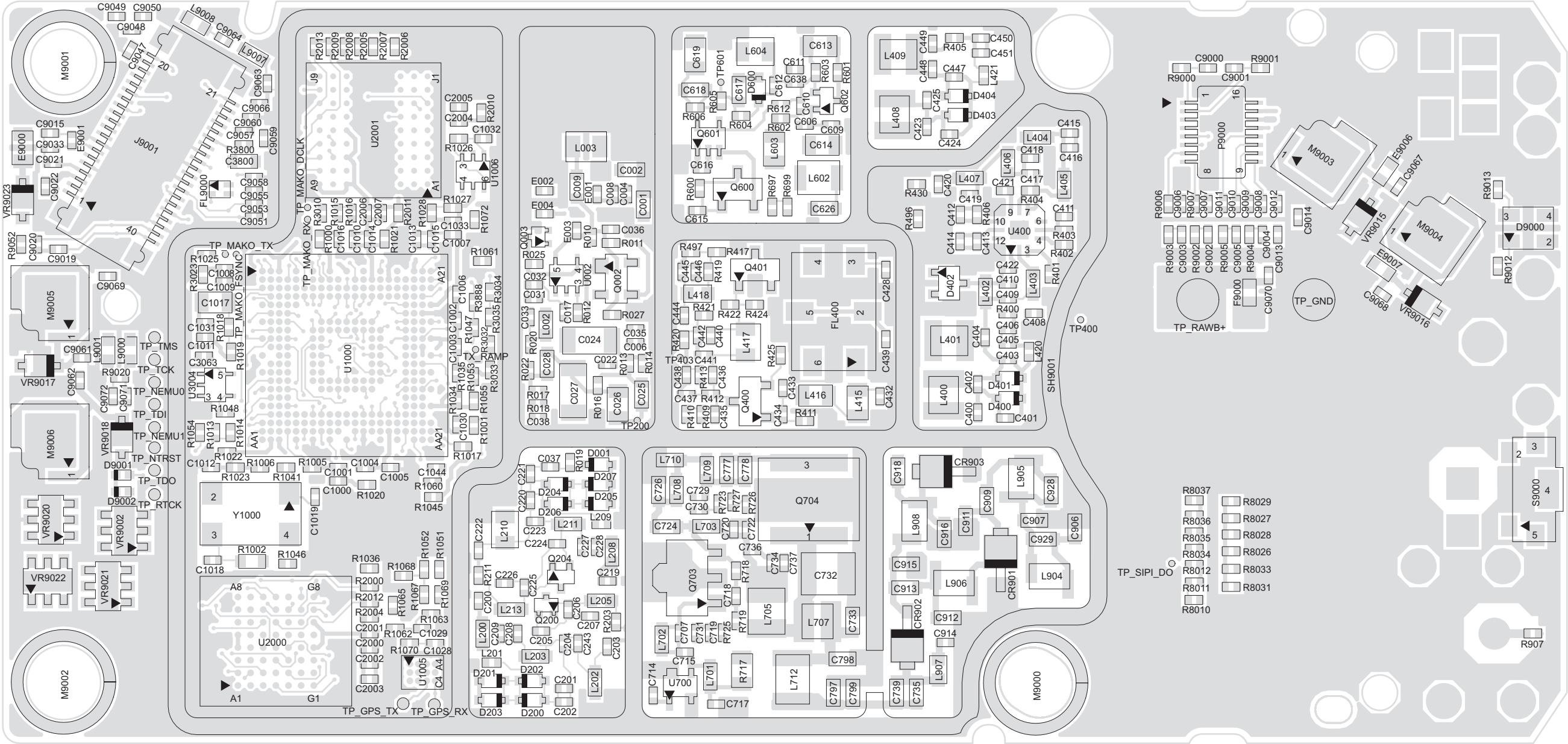
Table 7-6. VHF Diagrams and Parts List

PCB: 8415113H03 Main Board Top Side 8415113H03 Main Board Bottom Side 8415113H05 Main Board Top Side 8415113H05 Main Board Bottom Side	Page 7-9 Page 7-10 Page 7-11 Page 7-12
SCHEMATICS Complete Radio Complete VHF RF Complete VHF Transmitter VHF Transmitter VHF Harmonic Filter and Antenna Switch Complete UHF1 Receiver VHF Receiver Front End VHF Receiver Back End Complete UHF1 Frequency Generating Unit VHF Synthesizer VHF Voltage Controlled Oscillator VHF GPS Block	Page 7-13 Page 7-14 Page 7-15 Page 7-16 Page 7-17 Page 7-18 Page 7-19 Page 7-20 Page 7-21 Page 7-22 Page 7-23 Page 7-24
Parts List 8415113H03 8415113H05	Page 7-25 Page 7-31

6.0 Circuit Board/Schematic Diagrams and Parts List

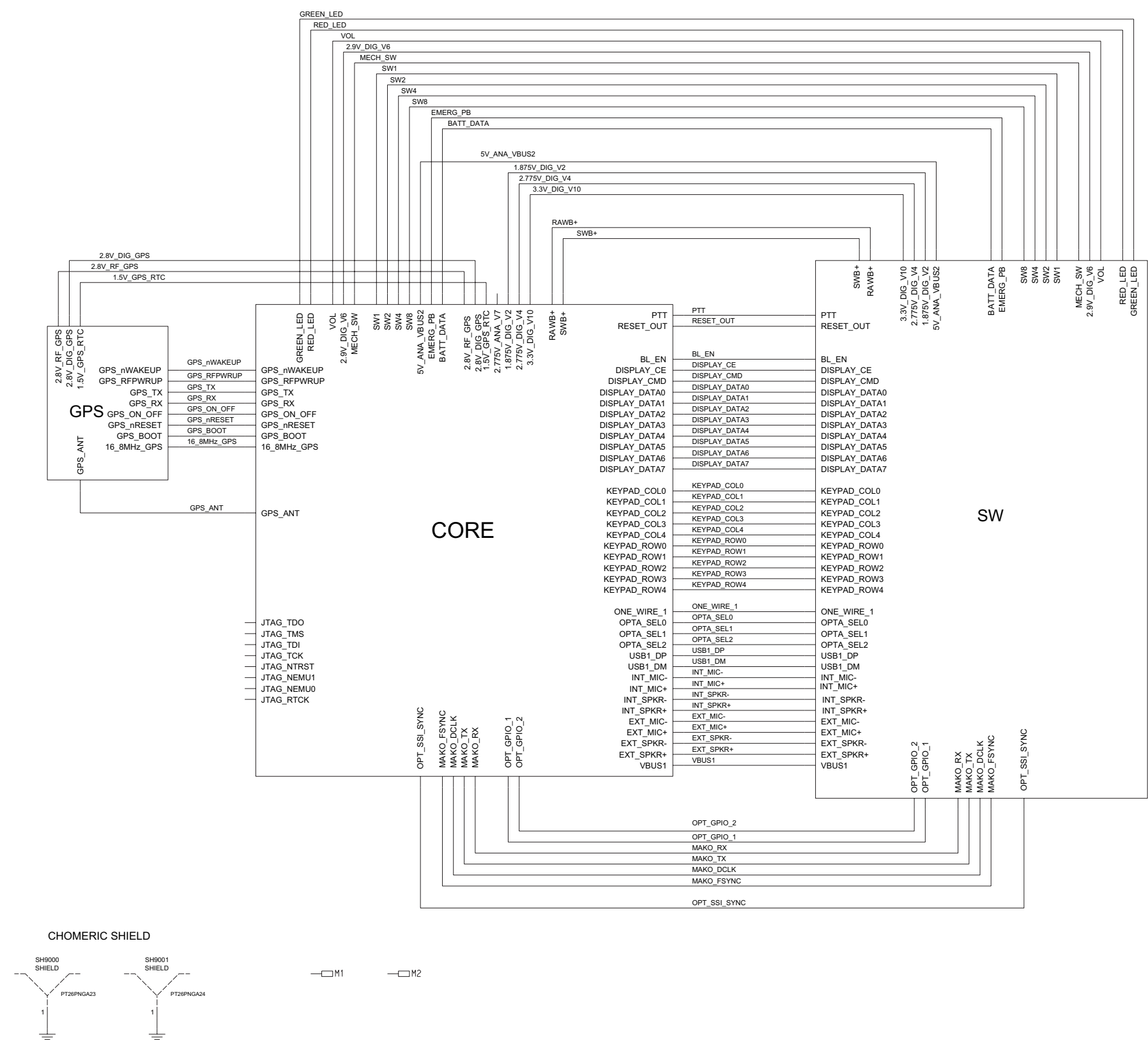




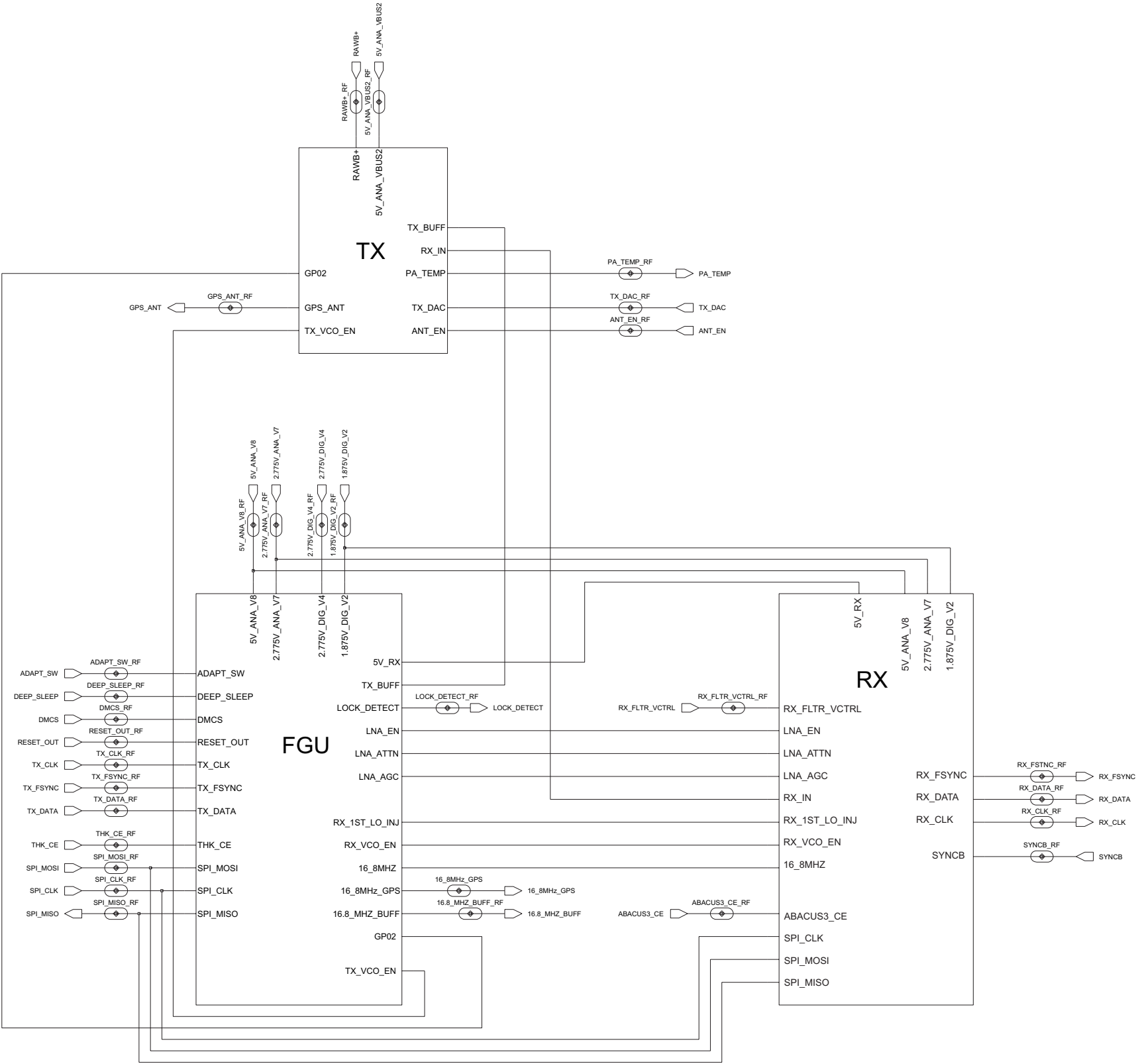


VHF (136-174MHz) Main Board Top Side PCB No. 8415113H05

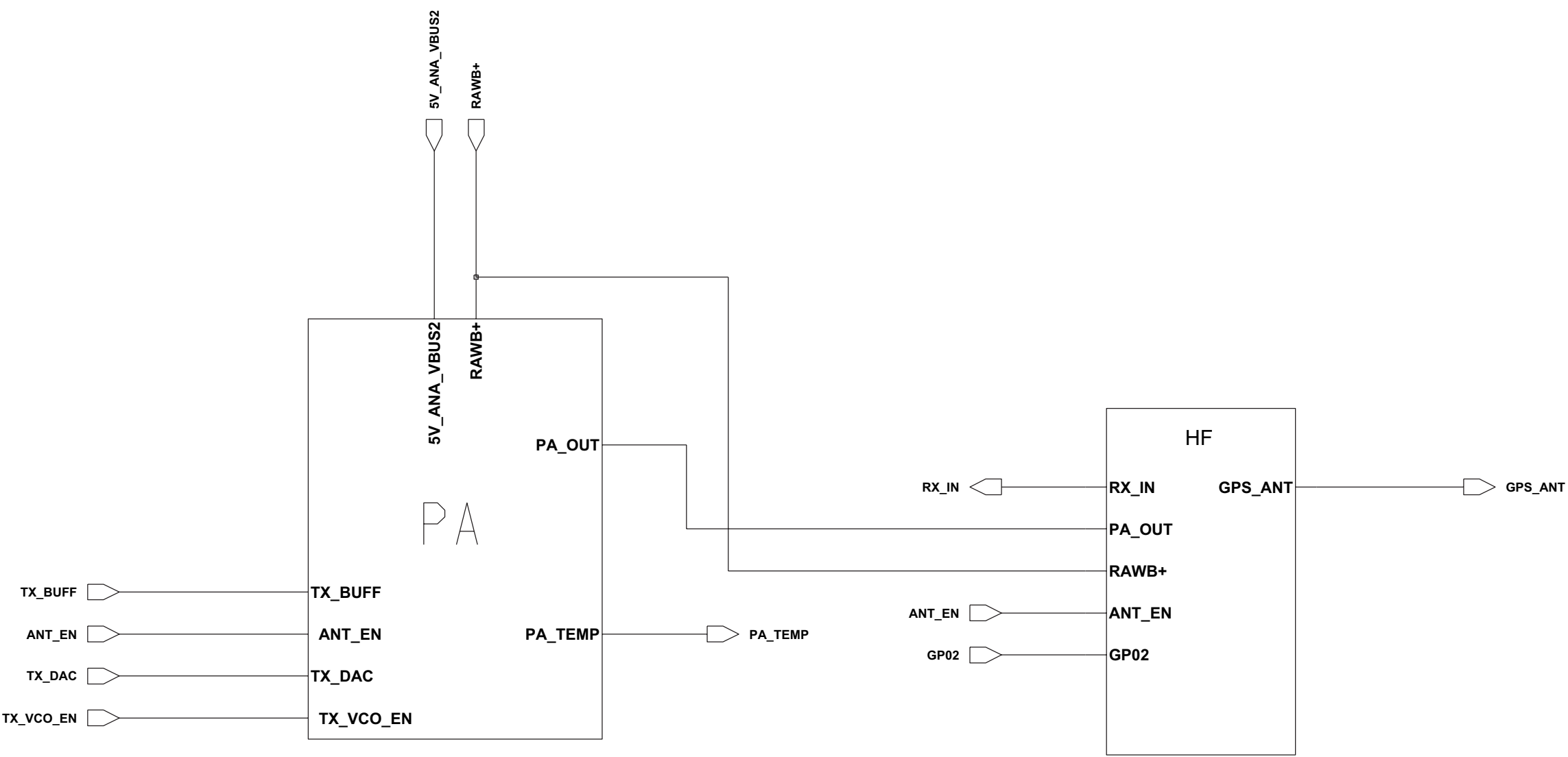




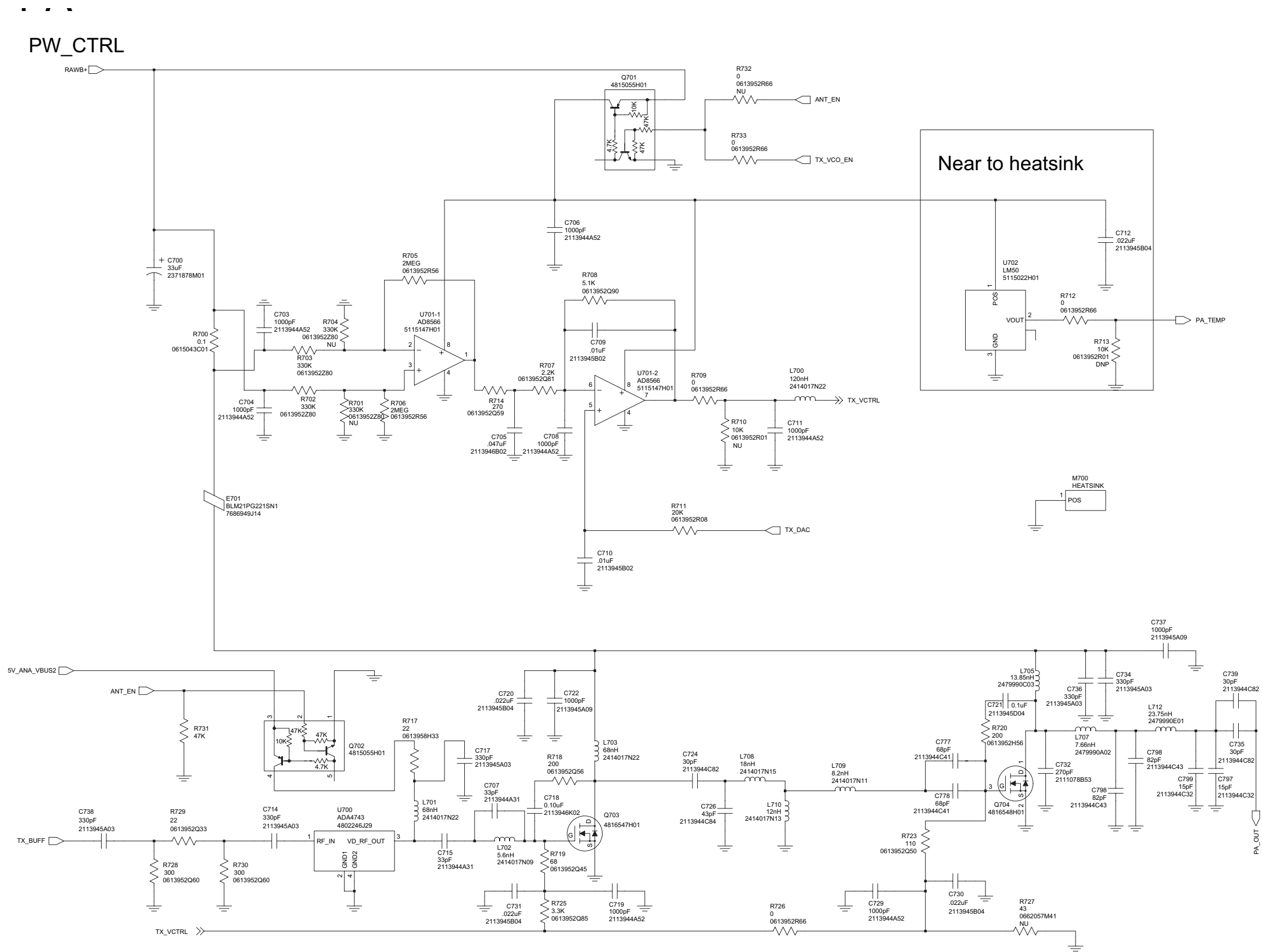
Complete Radio Schematic Diagram



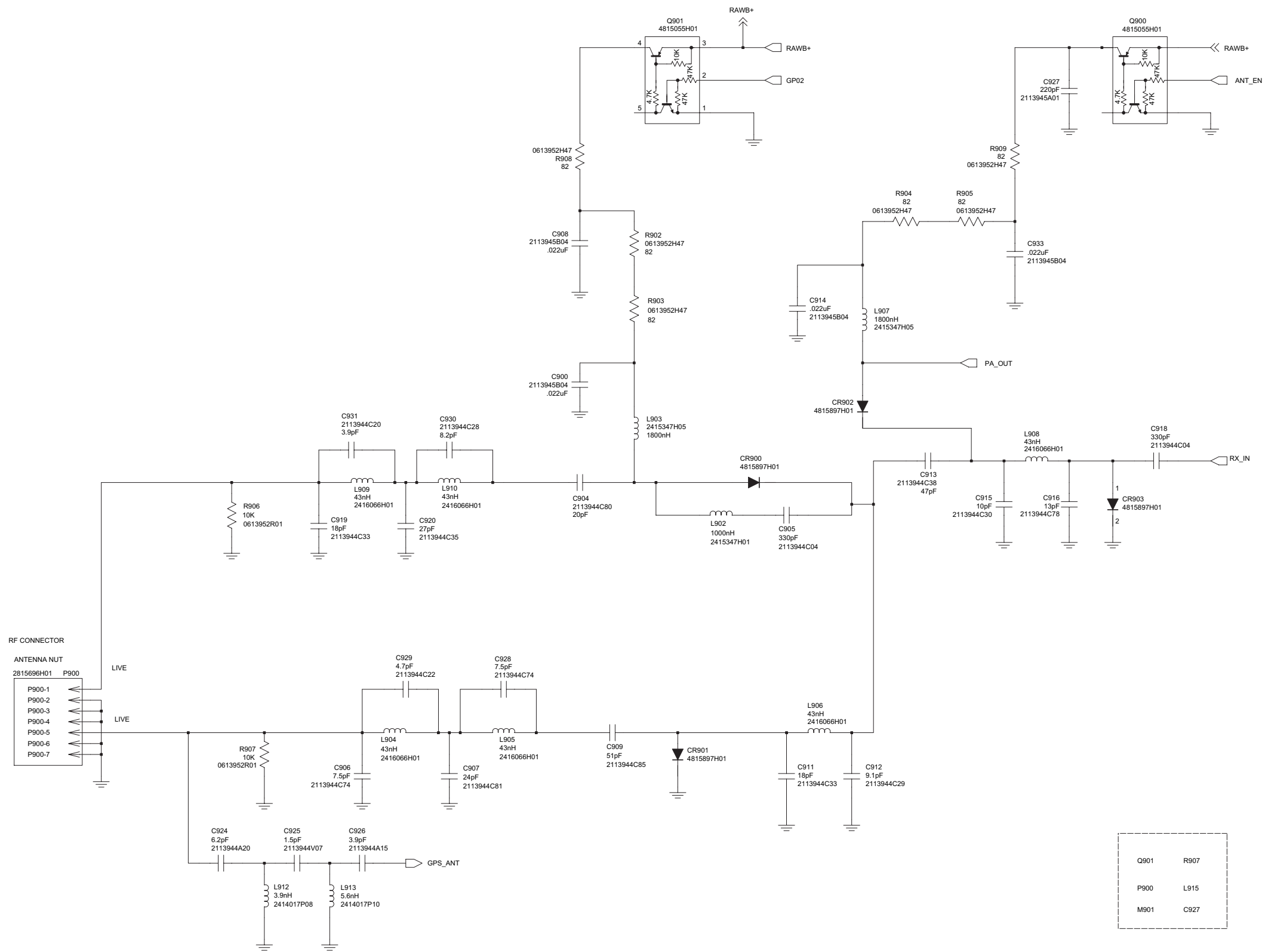
Complete VHF RF Schematic Diagram



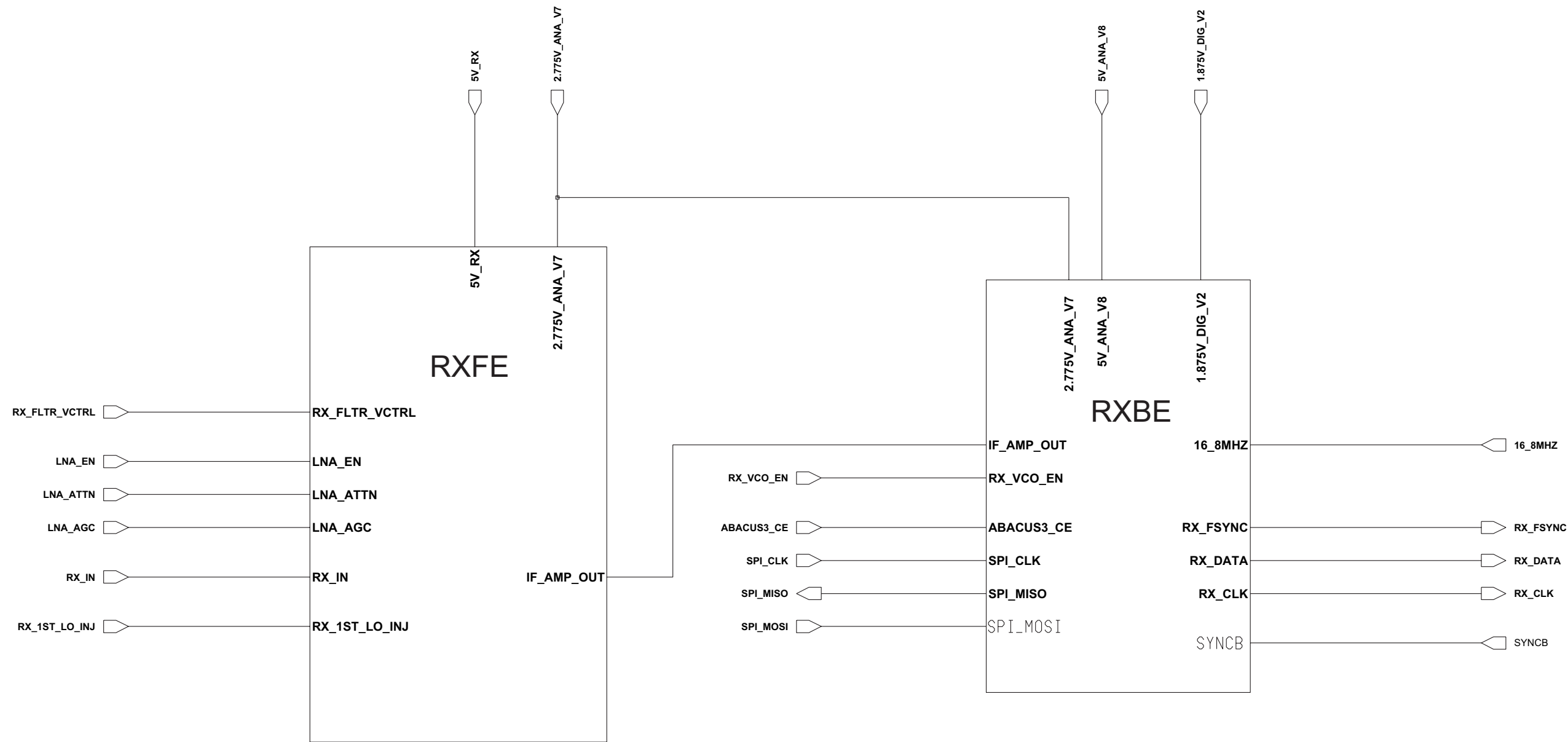
Complete VHF Transmitter Schematic Diagram



VHF Transmitter Schematic Diagram

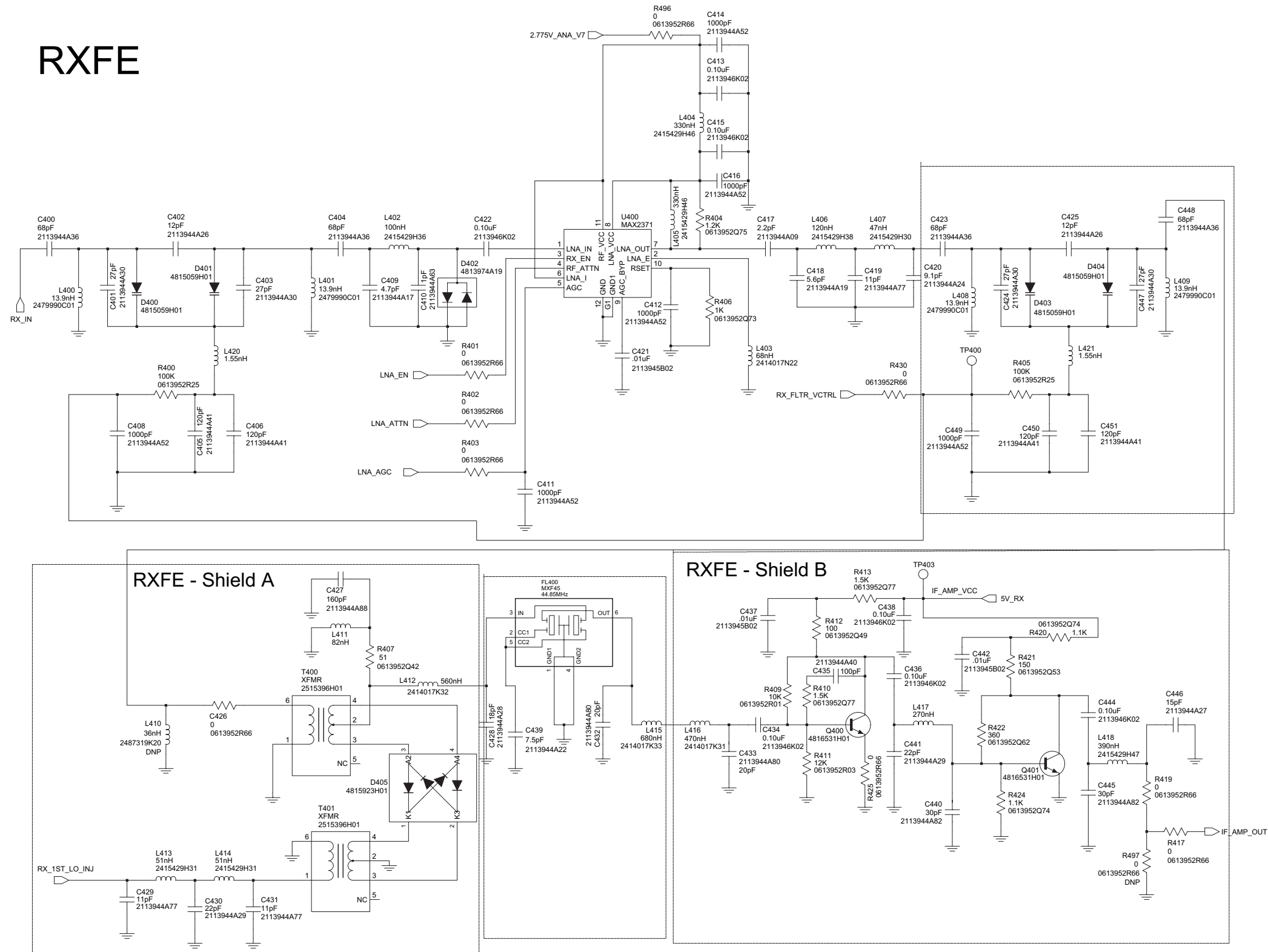


VHF Harmonic Filter and Antenna Switch Schematic Diagram

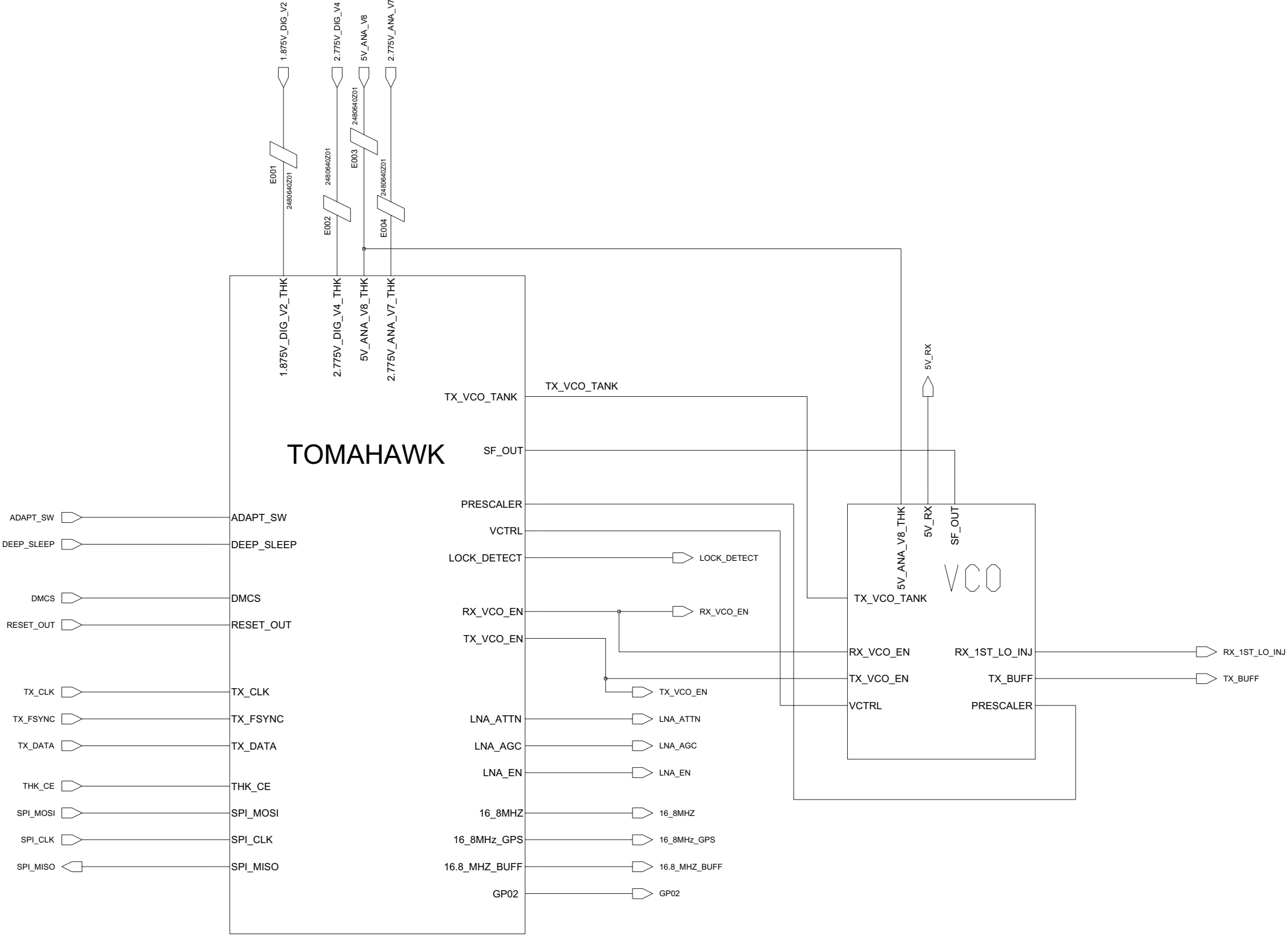


Complete VHF Receiver Schematic Diagram

RXFE

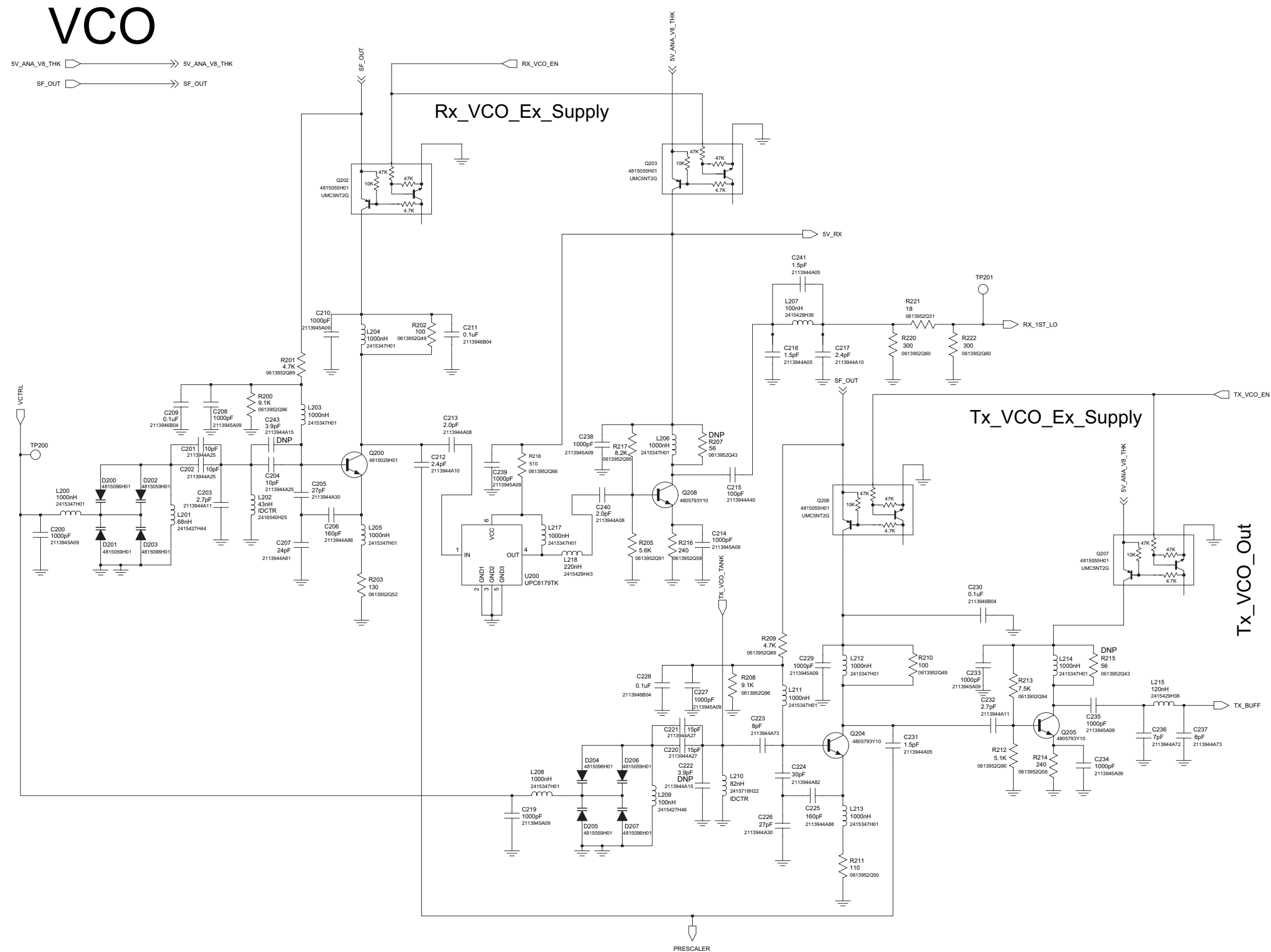


VHF Receiver Front End Schematic Diagram



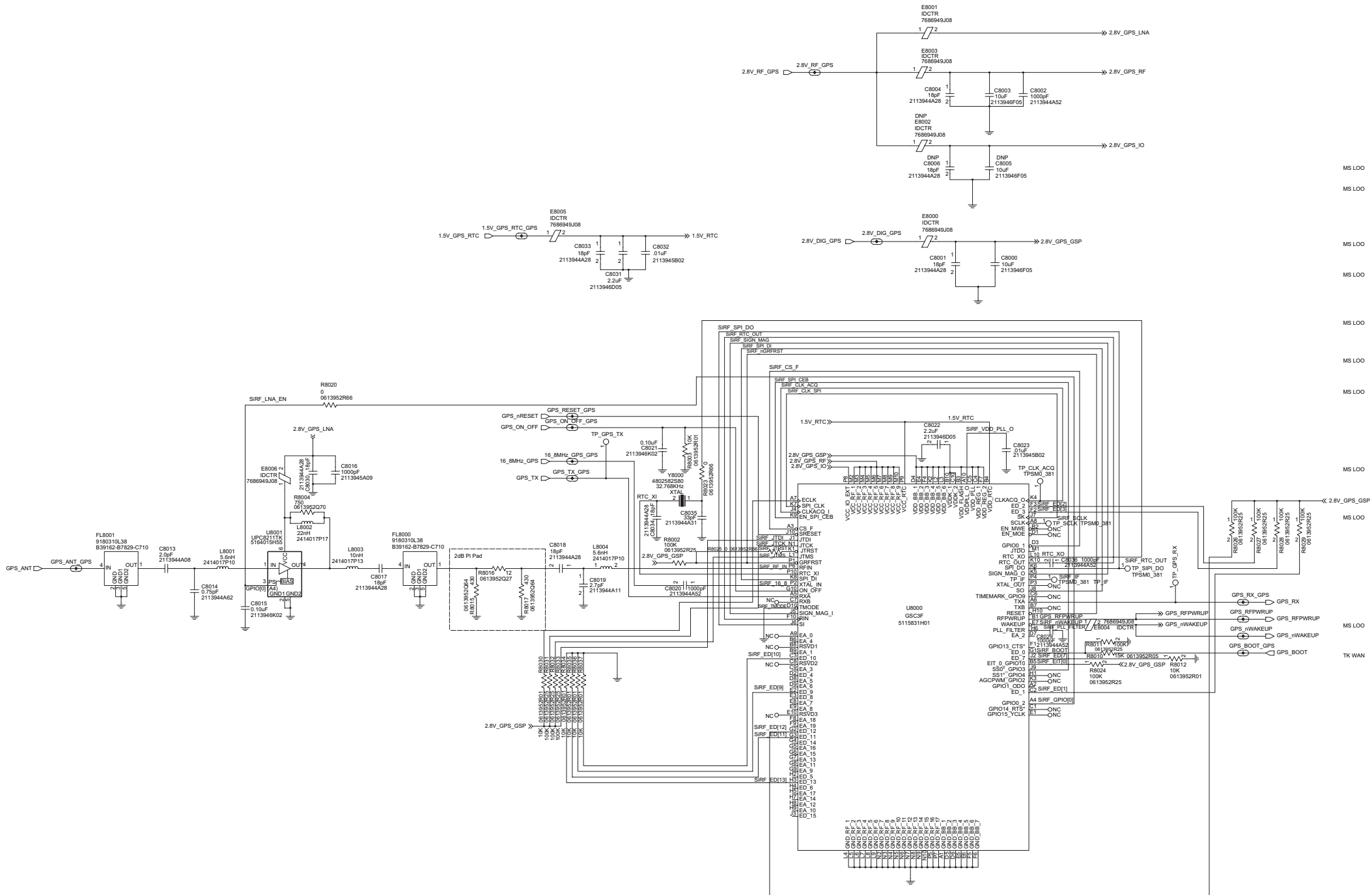
Complete VHF Frequency Generating Unit Schematic Diagram





VHF Voltage Controlled Oscillator Schematic Diagram

GPS Block



VHF GPS Block Schematic Diagram

VHF Radio Parts List (8415113H03)

Circuit Ref	Motorola Part No.	Description
C001	2113946D02	CAP, 1.0uF
C002	2113946D02	CAP, 1.0uF
C003	2113946K02	CAP, 0.10uF
C004	2113946K02	CAP, 0.10uF
C005	2113946K02	CAP, 0.10uF
C006	2113946K02	CAP, 0.10uF
C007	2113946K02	CAP, 0.10uF
C008	2113946K02	CAP, 0.10uF
C009	NOTPLACED	NOTPLACED
C010	2113946K02	CAP, 0.10uF
C011	2113946K02	CAP, 0.10uF
C012	2113946K02	CAP, 0.10uF
C013	2113945A02	CAP, 270pF
C014	2113945L49	CAP, .01uF
C015	2113945L49	CAP, .01uF
C016	2113945A09	CAP, 1000pF
C017	2113946K02	CAP, 0.10uF
C018	2313960B57	CAPP, 10uF
C019	2113945L49	CAP, .01uF
C020	2313960B57	CAPP, 10uF
C022	2113946K02	CAP, 0.10uF
C024	2115358H17	CAP, 0.22uF
C025	2115358H07	CAP, .033uF
C026	2115358H15	CAP, 0.15uF
C027	2115358H25	CAP, 1uF
C028	2115358H01	CAP, .01uF
C031	2113945A09	CAP, 1000pF
C032	2113944A25	CAP, 10pF
C033	2113944A21	CAP, 6.8pF
C035	2113946K02	CAP, 0.10uF
C036	2113946K02	CAP, 0.10uF
C037	2115153H06	CAP, 1.3pF
C038	NOTPLACED	NOTPLACED
C1000	2113945A03	CAP, 330pF
C1001	2113946K02	CAP, 0.10uF
C1002	2113946K02	CAP, 0.10uF
C1003	2113945A03	CAP, 330pF
C1004	2113945A03	CAP, 330pF
C1005	2113946K02	CAP, 0.10uF
C1006	2113946K02	CAP, 0.10uF
C1007	2113945A03	CAP, 330pF
C1008	2113945A03	CAP, 330pF
C1009	2113946K02	CAP, 0.10uF
C1010	2113946K02	CAP, 0.10uF
C1011	2113945A03	CAP, 330pF

Circuit Ref	Motorola Part No.	Description
C1012	2113946K02	CAP, 0.10uF
C1013	2113946K02	CAP, 0.10uF
C1014	2113946K02	CAP, 0.10uF
C1015	2113946K02	CAP, 0.10uF
C1016	2113946B04	CAP, 0.1uF
C1017	2113946E02	CAP, 1.0uF
C1018	2113944A28	CAP, 18pF
C1019	2113944A28	CAP, 18pF
C1028	2113946K02	CAP, 0.10uF
C1029	2113946K02	CAP, 0.10uF
C1030	2113944A28	CAP, 18pF
C1031	2113946K02	CAP, 0.10uF
C1032	2113945B02	CAP, .01uF
C1033	2113946K02	CAP, 0.10uF
C1044	2113946B04	CAP, 0.1uF
C200	2113945A09	CAP, 1000pF
C2000	2113945A03	CAP, 330pF
C2001	2113945B02	CAP, .01uF
C2002	2113946K02	CAP, 0.10uF
C2003	2113946K02	CAP, 0.10uF
C2004	2113945A03	CAP, 330pF
C2005	2113945B02	CAP, .01uF
C2006	2113946K02	CAP, 0.10uF
C2007	2113946K02	CAP, 0.10uF
C201	2113944A25	CAP, 10pF
C202	2113944A25	CAP, 10pF
C203	2113944A11	CAP, 2.7pF
C204	2113944A25	CAP, 10pF
C205	2113944A30	CAP, 27pF
C206	2113944A88	CAP, 160pF
C207	2113944A81	CAP, 24pF
C208	2113945A09	CAP, 1000pF
C209	2113946B04	CAP, 0.1uF
C210	2113945A09	CAP, 1000pF
C211	2113946B04	CAP, 0.1uF
C212	2113944A10	CAP, 2.4pF
C213	2113944A08	CAP, 2.0pF
C214	2113945A09	CAP, 1000pF
C215	2113944A40	CAP, 100pF
C216	2113944A05	CAP, 1.5pF
C217	2113944A10	CAP, 2.4pF
C219	2113945A09	CAP, 1000pF
C220	2113944A27	CAP, 15pF
C221	2113944A27	CAP, 15pF
C222	NOTPLACED	NOTPLACED
C223	2113944A73	CAP, 8pF

Circuit Ref	Motorola Part No.	Description
C224	2113944A82	CAP, 30pF
C225	2113944A88	CAP, 160pF
C226	2113944A30	CAP, 27pF
C227	2113945A09	CAP, 1000pF
C228	2113946B04	CAP, 0.1uF
C229	2113945A09	CAP, 1000pF
C230	2113946B04	CAP, 0.1uF
C231	2113944A05	CAP, 1.5pF
C232	2113944A11	CAP, 2.7pF
C233	2113945A09	CAP, 1000pF
C234	2113945A09	CAP, 1000pF
C235	2113945A09	CAP, 1000pF
C236	2113944A72	CAP, 7pF
C237	2113944A73	CAP, 8pF
C238	2113945A09	CAP, 1000pF
C239	2113945A09	CAP, 1000pF
C240	2113944A08	CAP, 2.0pF
C241	2113944A05	CAP, 1.5pF
C243	NOTPLACED	NOTPLACED
C3000	2113944A78	CAP, 13pF
C3001	2113944A78	CAP, 13pF
C3002	2113945D04	CAP, 0.1uF
C3003	2113946D05	CAP, 2.2uF
C3004	2113946D05	CAP, 2.2uF
C3005	2113945A09	CAP, 1000pF
C3010	2113946D05	CAP, 2.2uF
C3011	2113946A02	CAP, .022uF
C3014	2113946D05	CAP, 2.2uF
C3015	2115153H57	CAP, 100pF
C3016	2113946D05	CAP, 2.2uF
C3017	2113945B02	CAP, .01uF
C3018	2113946D05	CAP, 2.2uF
C3019	2113946D02	CAP, 1.0uF
C3024	2113946D02	CAP, 1.0uF
C3025	2113946K02	CAP, 0.10uF
C3026	2113946K02	CAP, 0.10uF
C3028	2113946D05	CAP, 2.2uF
C3031	2113946D02	CAP, 1.0uF
C3034	2113946B04	CAP, 0.1uF
C3035	2113946B04	CAP, 0.1uF
C3036	2113946B04	CAP, 0.1uF
C3037	2113944A40	CAP, 100pF
C3038	2113944A40	CAP, 100pF
C3039	2113946F03	CAP, 4.7uF
C3045	2113946F05	CAP, 10uF
C3047	2113946D02	CAP, 1.0uF

Circuit Ref	Motorola Part No.	Description
C3048	2113946D02	CAP, 1.0uF
C3049	2113945C25	CAP, .033uF
C3050	2113945C25	CAP, .033uF
C3051	2113944A40	CAP, 100pF
C3060	2113944A80	CAP, 20pF
C3061	2113944A80	CAP, 20pF
C3062	2113946K02	CAP, 0.10uF
C3063	2113946K02	CAP, 0.10uF
C3067	2113946D02	CAP, 1.0uF
C3070	2113944A25	CAP, 10pF
C3074	2113946D02	CAP, 1.0uF
C3079	2113946F03	CAP, 4.7uF
C3080	NOTPLACED	NOTPLACED
C3081	NOTPLACED	NOTPLACED
C3082	2113945Y02	CAP, 0.10uF
C3083	2113945Y02	CAP, 0.10uF
C3084	2113946K03	CAP, 0.22uF
C3090	2113955D37	CAP, 10uF
C3091	2113955D37	CAP, 10uF
C3093	2113946N03	CAP, 2.2uF
C3094	2113946B03	CAP, .068uF
C3095	2113946B03	CAP, .068uF
C3097	2113944A31	CAP, 33pF
C3098	2113944A31	CAP, 33pF
C3099	2113944A31	CAP, 33pF
C3100	2113944A31	CAP, 33pF
C3101	2113946D02	CAP, 1.0uF
C3102	2113946D02	CAP, 1.0uF
C3200	2113945Y02	CAP, 0.10uF
C3201	2113955D37	CAP, 10uF
C3202	2371572L02	CAPP, 68uF
C3203	2113945B02	CAP, .01uF
C3204	2115153H40	CAP, 20pF
C3205	2113944A44	CAP, 220pF
C3206	2113945Y02	CAP, 0.10uF
C3207	2113955D37	CAP, 10uF
C3208	2113946K03	CAP, 0.22uF
C3209	2371572L01	CAPP, 47uF
C3210	2113945B02	CAP, .01uF
C3211	2115153H40	CAP, 20pF
C3212	2113944A44	CAP, 220pF
C3700	2113946D02	CAP, 1.0uF
C3701	2113945B02	CAP, .01uF
C3702	2113946D05	CAP, 2.2uF
C3703	2113946D02	CAP, 1.0uF
C3704	2113944A30	CAP, 27pF

Circuit Ref	Motorola Part No.	Description
C3705	2113945B02	CAP, .01uF
C3706	2113945A05	CAP, 470pF
C3707	2113946D05	CAP, 2.2uF
C3800	2113945D04	CAP, 0.1uF
C3805	2113946K03	CAP, 0.22uF
C3999	2113945B02	CAP, .01uF
C400	2113944A36	CAP, 68pF
C401	2113944A30	CAP, 27pF
C402	2113944A26	CAP, 12pF
C403	2113944A30	CAP, 27pF
C404	2113944A36	CAP, 68pF
C405	2113944A41	CAP, 120pF
C406	2113944A41	CAP, 120pF
C408	2113944A52	CAP, 1000pF
C409	2113944A17	CAP, 4.7pF
C410	2113944A63	CAP, 1pF
C411	2113944A52	CAP, 1000pF
C412	2113944A52	CAP, 1000pF
C413	2113946K02	CAP, 0.10uF
C414	2113944A52	CAP, 1000pF
C415	2113946K02	CAP, 0.10uF
C416	2113944A52	CAP, 1000pF
C417	2113944A09	CAP, 2.2pF
C418	2113944A19	CAP, 5.6pF
C419	2113944A77	CAP, 11pF
C420	2113944A24	CAP, 9.1pF
C421	2113945B02	CAP, .01uF
C422	2113946K02	CAP, 0.10uF
C423	2113944A36	CAP, 68pF
C424	2113944A30	CAP, 27pF
C425	2113944A26	CAP, 12pF
C426	0613952R66	RES, 0
C427	2113944A88	CAP, 160pF
C428	2113944A28	CAP, 18pF
C429	2113944A77	CAP, 11pF
C430	2113944A29	CAP, 22pF
C431	2113944A77	CAP, 11pF
C432	2113944A80	CAP, 20pF
C433	2113944A80	CAP, 20pF
C434	2113946K02	CAP, 0.10uF
C435	2113944A40	CAP, 100pF
C436	2113946K02	CAP, 0.10uF
C437	2113945B02	CAP, .01uF
C438	2113946K02	CAP, 0.10uF
C439	2113944A22	CAP, 7.5pF
C440	2113944A82	CAP, 30pF

Circuit Ref	Motorola Part No.	Description
C441	NOTPLACED	NOTPLACED
C442	2113945B02	CAP, .01uF
C444	2113946K02	CAP, 0.10uF
C445	NOTPLACED	NOTPLACED
C446	2113944A27	CAP, 15pF
C447	2113944A30	CAP, 27pF
C448	2113944A36	CAP, 68pF
C449	2113944A52	CAP, 1000pF
C450	2113944A41	CAP, 120pF
C451	2113944A41	CAP, 120pF
C601	2113945B02	CAP, .01uF
C602	2113946B04	CAP, 0.1uF
C603	2113946B04	CAP, 0.1uF
C604	2113945B02	CAP, .01uF
C605	2113945B02	CAP, .01uF
C606	2113944A36	CAP, 68pF
C607	2113945B02	CAP, .01uF
C608	2113945D02	CAP, .047uF
C609	2115153H57	CAP, 100pF
C610	2115153H53	CAP, 68pF
C611	2115153H48	CAP, 43pF
C612	2115153H55	CAP, 82pF
C613	2113945G91	CAP, 0.1uF
C614	2113946E02	CAP, 1.0uF
C615	2113946B04	CAP, 0.1uF
C616	2113944A32	CAP, 39pF
C617	2113945L37	CAP, 3300pF
C618	2113945C18	CAP, .012uF
C619	2115358H13	CAP, 0.1uF
C620	2113946B04	CAP, 0.1uF
C621	2113945B02	CAP, .01uF
C622	2113944C89	CAP, 200pF
C623	2113944A40	CAP, 100pF
C624	2113944A40	CAP, 100pF
C625	2113945A11	CAP, 2200pF
C626	2113945D02	CAP, .047uF
C627	2113944A40	CAP, 100pF
C628	2113945B02	CAP, .01uF
C629	2113944A40	CAP, 100pF
C630	2113945B02	CAP, .01uF
C631	2113945B02	CAP, .01uF
C632	2113946B04	CAP, 0.1uF
C633	2113946B04	CAP, 0.1uF
C634	2113945B02	CAP, .01uF
C635	2113944A85	CAP, 51pF
C636	2113946B04	CAP, 0.1uF

Circuit Ref	Motorola Part No.	Description
C637	2113946G04	CAP, 0.68uF
C638	NOTPLACED	NOTPLACED
C639	2113946B04	CAP, 0.1uF
C700	2371878M01	CAPP, 33uF
C703	2113944A52	CAP, 1000pF
C704	2113944A52	CAP, 1000pF
C705	2113946B02	CAP, .047uF
C706	2113944A52	CAP, 1000pF
C707	2113944A31	CAP, 33pF
C708	2113944A52	CAP, 1000pF
C709	2113945B02	CAP, .01uF
C710	2113945B02	CAP, .01uF
C711	2113944A52	CAP, 1000pF
C712	2113945B04	CAP, .022uF
C714	2113945A03	CAP, 330pF
C715	2113944A31	CAP, 33pF
C717	2113945A03	CAP, 330pF
C718	2113946K02	CAP, 0.10uF
C719	2113944A52	CAP, 1000pF
C720	2113945B04	CAP, .022uF
C721	2113945D04	CAP, 0.1uF
C722	2113945A09	CAP, 1000pF
C724	2113944C82	CAP, 30pF
C726	2113944C84	CAP, 43pF
C729	2113944A52	CAP, 1000pF
C730	2113945B04	CAP, .022uF
C731	2113945B04	CAP, .022uF
C732	2111078B53	CAP, 270pF
C733	2113944C43	CAP, 82pF
C734	2113945A03	CAP, 330pF
C735	2113944C82	CAP, 30pF
C736	2113945A03	CAP, 330pF
C737	2113945A09	CAP, 1000pF
C738	2113945A03	CAP, 330pF
C739	2113944C82	CAP, 30pF
C777	2113944C41	CAP, 68pF
C778	2113944C41	CAP, 68pF
C797	2113944C32	CAP, 15pF
C798	2113944C43	CAP, 82pF
C799	2113944C32	CAP, 15pF
C8000	2113946F05	CAP, 10uF
C8001	2113944A28	CAP, 18pF
C8002	2113944A52	CAP, 1000pF
C8003	2113946F05	CAP, 10uF
C8004	2113944A28	CAP, 18pF
C8005	NOTPLACED	NOTPLACED

Circuit Ref	Motorola Part No.	Description
C8006	NOTPLACED	NOTPLACED
C8013	2113944A08	CAP, 2.0pF
C8014	2113944A62	CAP, 0.75pF
C8015	2113946K02	CAP, 0.10uF
C8016	2113945A09	CAP, 1000pF
C8017	2113944A28	CAP, 18pF
C8018	2113944A28	CAP, 18pF
C8019	2113944A11	CAP, 2.7pF
C8020	2113944A52	CAP, 1000pF
C8021	2113946K02	CAP, 0.10uF
C8022	2113946D05	CAP, 2.2uF
C8023	2113945B02	CAP, .01uF
C8029	2113944A52	CAP, 1000pF
C8030	2113944A28	CAP, 18pF
C8031	2113946D05	CAP, 2.2uF
C8032	2113945B02	CAP, .01uF
C8033	2113944A28	CAP, 18pF
C8034	2113944A28	CAP, 18pF
C8035	2113944A31	CAP, 33pF
C8036	2113944A52	CAP, 1000pF
C900	2113945B04	CAP, .022uF
C9000	2113945A03	CAP, 330pF
C9001	2113945A03	CAP, 330pF
C9002	2113945A03	CAP, 330pF
C9003	2113945A03	CAP, 330pF
C9004	2113945A03	CAP, 330pF
C9005	2113945A03	CAP, 330pF
C9006	2113945A03	CAP, 330pF
C9007	2113945A03	CAP, 330pF
C9008	2113945A03	CAP, 330pF
C9009	2113945A03	CAP, 330pF
C9010	2113945A03	CAP, 330pF
C9011	2113945A03	CAP, 330pF
C9012	2113945A03	CAP, 330pF
C9013	2113945A03	CAP, 330pF
C9014	2113945A03	CAP, 330pF
C9015	2113945A03	CAP, 330pF
C9016	2113945A03	CAP, 330pF
C9017	2113945A03	CAP, 330pF
C9018	2113945A03	CAP, 330pF
C9019	2113945A03	CAP, 330pF
C9020	2113945A03	CAP, 330pF
C9021	2113945A03	CAP, 330pF
C9022	2113945A03	CAP, 330pF
C9023	2113945A03	CAP, 330pF
C9024	2113945A03	CAP, 330pF

Circuit Ref	Motorola Part No.	Description
C9025	2113945A03	CAP, 330pF
C9026	2113945A03	CAP, 330pF
C9027	2113945A03	CAP, 330pF
C9028	2113945A03	CAP, 330pF
C9029	2113945A03	CAP, 330pF
C9030	2113944A15	CAP, 3.9pF
C9031	2113944A15	CAP, 3.9pF
C9032	2113944A15	CAP, 3.9pF
C9033	2113945A03	CAP, 330pF
C9038	2113945A03	CAP, 330pF
C9039	2113945A03	CAP, 330pF
C904	2113944C80	CAP, 20pF
C9040	2113945A03	CAP, 330pF
C9041	2113945A03	CAP, 330pF
C9042	2113945A03	CAP, 330pF
C9043	2113945A03	CAP, 330pF
C9044	2113945A03	CAP, 330pF
C9045	2113945A03	CAP, 330pF
C9046	2113945A03	CAP, 330pF
C9047	2113945A03	CAP, 330pF
C9048	2113945A03	CAP, 330pF
C9049	2113945A03	CAP, 330pF
C905	2113944C04	CAP, 330pF
C9050	2113945A03	CAP, 330pF
C9051	NOTPLACED	NOTPLACED
C9053	NOTPLACED	NOTPLACED
C9055	NOTPLACED	NOTPLACED
C9057	NOTPLACED	NOTPLACED
C9058	2113945A03	CAP, 330pF
C9059	2113945A03	CAP, 330pF
C906	2113944C74	CAP, 7.5pF
C9060	2113945A03	CAP, 330pF
C9061	2113945A03	CAP, 330pF
C9062	2113945A03	CAP, 330pF
C9063	2113945A03	CAP, 330pF
C9064	2113945A03	CAP, 330pF
C9065	2113945A03	CAP, 330pF
C9066	2113945A03	CAP, 330pF
C9067	NOTPLACED	NOTPLACED
C9068	NOTPLACED	NOTPLACED
C9069	NOTPLACED	NOTPLACED
C907	2113944C81	CAP, 24pF
C9070	2113945A03	CAP, 330pF
C9071	NOTPLACED	NOTPLACED
C9072	NOTPLACED	NOTPLACED
C908	2113945B04	CAP, .022uF

Circuit Ref	Motorola Part No.	Description
C909	2113944C85	CAP, 51pF
C911	2113944C33	CAP, 18pF
C912	2113944C29	CAP, 9.1pF
C913	2113944C38	CAP, 47pF
C914	2113945B04	CAP, .022uF
C915	2113944C30	CAP, 10pF
C916	2113944C78	CAP, 13pF
C918	2113944C04	CAP, 330pF
C919	2113944C33	CAP, 18pF
C920	2113944C35	CAP, 27pF
C924	2113944A20	CAP, 6.2pF
C925	2113944V07	CAP, 1.5pF
C926	2113944A15	CAP, 3.9pF
C927	2113945A01	CAP, 220pF
C928	2113944C74	CAP, 7.5pF
C929	2113944C22	CAP, 4.7pF
C930	2113944C28	CAP, 8.2pF
C931	2113944C20	CAP, 3.9pF
C933	2113945B04	CAP, .022uF
CR900	4815897H01	UPP9401E3
CR901	4815897H01	UPP9401E3
CR902	4815897H01	UPP9401E3
CR903	4815897H01	UPP9401E3
D001	4815059H01	1SV325
D200	4815096H01	1SV305
D201	4815059H01	1SV325
D202	4815059H01	1SV325
D203	4815096H01	1SV305
D204	4815096H01	1SV305
D205	4815059H01	1SV325
D206	4815059H01	1SV325
D207	4815096H01	1SV305
D3000	4813978A25	BAT54HT1G
D400	4815059H01	1SV325
D401	4815059H01	1SV325
D402	4813974A19	MMBD352
D403	4815059H01	1SV325
D404	4815059H01	1SV325
D405	4815923H01	HSMS2829
D600	4815096H01	1SV305
D601	4815096H01	1SV305
D9000	4805729G49	BRPY1204W
D9001	4871232L01	0402ESDA
D9002	4871232L01	0402ESDA
E001	2480640Z01	BK1005HM471
E002	2480640Z01	BK1005HM471

Circuit Ref	Motorola Part No.	Description
E003	2480640Z01	BK1005HM471
E004	2480640Z01	BK1005HM471
E3030	2409134J04	BLM18BD601SN1
E3031	2409134J04	BLM18BD601SN1
E3032	2409134J04	BLM18BD601SN1
E3033	2409134J04	BLM18BD601SN1
E3700	7686949J08	IDCTR
E3701	7686949J08	IDCTR
E3702	7686949J08	IDCTR
E3703	7686949J08	IDCTR
E3704	7686949J08	IDCTR
E3705	7686949J08	IDCTR
E600	2480640Z01	BK1005HM471
E601	2480640Z01	BK1005HM471
E602	2480640Z01	BK1005HM471
E701	7686949J14	BLM21PG221SN1
E8000	7686949J08	IDCTR
E8001	7686949J08	IDCTR
E8002	NOTPLACED	NOTPLACED
E8003	7686949J08	IDCTR
E8004	7686949J08	IDCTR
E8005	7686949J08	IDCTR
E8006	7686949J08	IDCTR
E9000	7686949J14	BLM21PG221SN1
E9001	2480640Z01	BK1005HM471
E9006	NOTPLACED	NOTPLACED
E9007	NOTPLACED	NOTPLACED
F9000	6515076H02	FUSE
FL400	9180022M11	MXF45
FL8000	9180310L38	B39162-B7829-C710
FL8001	9180310L38	B39162-B7829-C710
FL9000	2515003H02	DLP11SN201HL2
J9001	0970312L02	CONN_J
L001	2415375H09	IDCTR, 2.7uH
L002	2415429H38	IDCTR, 120nH
L003	NOTPLACED	NOTPLACED
L200	2415347H01	IDCTR, 1000nH
L201	2415427H44	IDCTR, 68nH
L202	2416540H25	IDCTR, 43nH
L203	2415347H01	IDCTR, 1000nH
L204	2415347H01	IDCTR, 1000nH
L205	2415347H01	IDCTR, 1000nH
L206	2415347H01	IDCTR, 1000nH
L207	2415429H36	IDCTR, 100nH
L208	2415347H01	IDCTR, 1000nH
L209	2415427H46	IDCTR, 100nH

Circuit Ref	Motorola Part No.	Description
L210	2415718H22	IDCTR, 82nH
L211	2415347H01	IDCTR, 1000nH
L212	2415347H01	IDCTR, 1000nH
L213	2415347H01	IDCTR, 1000nH
L214	2415347H01	IDCTR, 1000nH
L215	2415429H38	IDCTR, 120nH
L217	2415347H01	IDCTR, 1000nH
L218	2415429H43	IDCTR, 220nH
R3076	0613952A30	RES, 2
L3004	2464675H01	IDCTR, 560nH
L3020	2489846Y06	IDCTR, 10uH
L3021	2489846Y06	IDCTR, 10uH
L3022	2464675H01	IDCTR, 560nH
L400	2479990C01	IDCTR, 13.9nH
L401	2479990C01	IDCTR, 13.9nH
L402	2415429H36	IDCTR, 100nH
L403	2414017N22	IDCTR, 68nH
L404	2415429H46	IDCTR, 330nH
L405	2415429H46	IDCTR, 330nH
L406	2415429H38	IDCTR, 120nH
L407	2415429H30	IDCTR, 47nH
L408	2479990C01	IDCTR, 13.9nH
L409	2479990C01	IDCTR, 13.9nH
L410	NOTPLACED	NOTPLACED
L411	2415429H35	IDCTR, 82nH
L412	2414017K32	IDCTR, 560nH
L413	2415429H31	IDCTR, 51nH
L414	2415429H31	IDCTR, 51nH
L415	2414017K33	IDCTR, 680nH
L416	2414017K31	IDCTR, 470nH
L417	2415718H31	IDCTR, 270nH
L418	2415429H47	IDCTR, 390nH
L420	2415427H50	IDCTR, 1.55nH
L421	2415427H50	IDCTR, 1.55nH
L600	2466505A01	IDCTR, 10uH
L601	2466505A01	IDCTR, 10uH
L602	2415569H01	IDCTR, 4.7uH
L603	2414017Q51	IDCTR, 2.2uH
L604	2414015B27	IDCTR, 390nH
L605	2415569H01	IDCTR, 4.7uH
L700	2414017N22	IDCTR, 68nH
L701	2414017N22	IDCTR, 68nH
L702	2414017N09	IDCTR, 5.6nH
L703	2414017N22	IDCTR, 68nH
L705	2479990C03	IDCTR, 13.85nH
L707	2479990A02	IDCTR, 7.66nH

Circuit Ref	Motorola Part No.	Description
L708	2414017N15	IDCTR, 18nH
L709	2414017N11	IDCTR, 8.2nH
L710	2414017N13	IDCTR, 12nH
L712	2479990E01	IDCTR, 23.75nH
L8001	2414017P10	IDCTR, 5.6nH
L8002	2414017P17	IDCTR, 22nH
L8003	2414017P13	IDCTR, 10nH
L8004	2414017P10	IDCTR, 5.6nH
L9000	2471698M01	IDCTR, 3.3uH
L9001	2415429H45	IDCTR, 270nH
L9007	2415429H45	IDCTR, 270nH
L9008	2415429H45	IDCTR, 270nH
L902	2415347H01	IDCTR, 1000nH
L903	2415347H05	IDCTR, 1800nH
L904	2416066H01	IDCTR, 43nH
L905	2416066H01	IDCTR, 43nH
L906	2416066H01	IDCTR, 43nH
L907	2415347H05	IDCTR, 1800nH
L908	2416066H01	IDCTR, 43nH
L909	2416066H01	IDCTR, 43nH
L910	2416066H01	IDCTR, 43nH
L912	2414017P08	IDCTR, 3.9nH
L913	2414017P10	IDCTR, 5.6nH
M1	4271321L01	RETAINER
M2	4271321L01	RETAINER
M700	2615193H01	HEATSINK
M9000	4371105L01	BRD_SPACER
M9001	4371105L01	BRD_SPACER
M9002	4371105L01	BRD_SPACER
M9003	NOTPLACED	NOTPLACED
M9004	NOTPLACED	NOTPLACED
M9005	3915478H01	CONTACT
M9006	3915478H01	CONTACT
M9007	0915184H01	CONTACT
P900	2815696H01	CONN_P
P9000	2887818K02	CONN_P
Q001	4885061Y01	NE68519
Q002	4815359H01	BCV62
Q003	4816134H01	DTC114YM
Q200	4815029H01	NE851M03
Q202	4815055H01	UMC5NT2G
Q203	4815055H01	UMC5NT2G
Q204	4885061Y01	NE68519
Q205	4885061Y01	NE68519
Q206	4815055H01	UMC5NT2G
Q207	4815055H01	UMC5NT2G

Circuit Ref	Motorola Part No.	Description
Q208	4885061Y01	NE68519
Q3000	4805585Q23	SI8401DB
Q3001	4805585Q23	SI8401DB
Q3002	4816134H01	DTC114YM
Q3003	4813970A62	NTHS5441T1
Q3005	4805585Q23	SI8401DB
Q3006	4816134H01	DTC114YM
Q3010	4805585Q23	SI8401DB
Q400	4816531H01	QSBT_0038
Q401	4816531H01	QSBT_0038
Q600	4813973A04	73A04
Q601	4815055H01	UMC5NT2G
Q602	4885061Y01	NE68519
Q701	4815055H01	UMC5NT2G
Q702	4815055H01	UMC5NT2G
Q703	4816547H01	RD01MUS1
Q704	4816548H01	RD07MVS1
Q900	4815055H01	UMC5NT2G
Q9000	4813973M07	MMBT3904
Q9001	4815154H01	IMXFT110
Q9003	4813973M07	MMBT3904
Q901	4815055H01	UMC5NT2G
R001	0613952Q96	RES, 9.1K
R002	0613952Q41	RES, 47
R003	0613952Q91	RES, 5.6K
R004	0613952Q66	RES, 510
R005	0613952Q56	RES, 200
R006	0613952Q93	RES, 6.8K
R007	0613952R01	RES, 10K
R008	0613952Q25	RES, 10
R010	0613952Q93	RES, 6.8K
R011	0613952Q49	RES, 100
R012	0613952R25	RES, 100K
R013	0613952Q46	RES, 75
R014	0613952Q42	RES, 51
R016	0613952Q33	RES, 22
R017	0613952Q42	RES, 51
R018	0613952Q88	RES, 4.3K
R019	0613952R01	RES, 10K
R020	0613952Q55	RES, 180
R022	0613952Q58	RES, 240
R025	0613952R13	RES, 33K
R026	0613952R01	RES, 10K
R027	0613952R66	RES, 0
R052	NOTPLACED	NOTPLACED
R053	0613952R66	RES, 0

Circuit Ref	Motorola Part No.	Description
R054	NOTPLACED	NOTPLACED
R1000	0613952Q25	RES, 10
R1001	0613952R01	RES, 10K
R1002	0613952J73	RES, 10MEG
R1005	0613952Q89	RES, 4.7K
R1006	0613952R01	RES, 10K
R1013	NOTPLACED	NOTPLACED
R1014	0613952R66	RES, 0
R1015	NOTPLACED	NOTPLACED
R1016	0613952R66	RES, 0
R1017	NOTPLACED	NOTPLACED
R1018	0613952R66	RES, 0
R1019	0613952Q18	RES, 5.1
R1020	0613952R66	RES, 0
R1021	0613952R66	RES, 0
R1022	NOTPLACED	NOTPLACED
R1023	0613952R66	RES, 0
R1025	0613952R01	RES, 10K
R1026	0613952R17	RES, 47K
R1027	NOTPLACED	NOTPLACED
R1028	0613952R66	RES, 0
R1034	0613952R01	RES, 10K
R1035	NOTPLACED	NOTPLACED
R1036	0613952R01	RES, 10K
R1041	0613952Q73	RES, 1K
R1045	0613952R01	RES, 10K
R1046	NOTPLACED	NOTPLACED
R1047	0613952R66	RES, 0
R1048	0613952R66	RES, 0
R1051	0613952R66	RES, 0
R1052	0613952R66	RES, 0
R1053	0613952Q89	RES, 4.7K
R1054	0613952Q89	RES, 4.7K
R1055	NOTPLACED	NOTPLACED
R1060	0613952Q25	RES, 10
R1061	0613952R66	RES, 0
R1062	0613952R66	RES, 0
R1063	NOTPLACED	NOTPLACED
R1065	0613952R66	RES, 0
R1067	0613952R03	RES, 12K
R1068	0613952R10	RES, 24K
R1069	0613952R66	RES, 0
R1070	0613952R01	RES, 10K
R1072	0613952R66	RES, 0
R200	0613952Q96	RES, 9.1K
R2000	0613952R01	RES, 10K

Circuit Ref	Motorola Part No.	Description
R2004	0613952R66	RES, 0
R2005	0613952R01	RES, 10K
R2006	0613952R01	RES, 10K
R2007	0613952R01	RES, 10K
R2008	0613952R01	RES, 10K
R2009	0613952R01	RES, 10K
R201	0613952Q89	RES, 4.7K
R2010	0613952R01	RES, 10K
R2011	0613952R66	RES, 0
R2012	0613952R01	RES, 10K
R2013	0613952R01	RES, 10K
R202	0613952Q49	RES, 100
R203	0613952Q52	RES, 130
R205	0613952Q91	RES, 5.6K
R207	NOTPLACED	NOTPLACED
R208	0613952Q96	RES, 9.1K
R209	0613952Q89	RES, 4.7K
R210	0613952Q49	RES, 100
R211	0613952Q50	RES, 110
R212	0613952Q90	RES, 5.1K
R213	0613952Q94	RES, 7.5K
R214	0613952Q58	RES, 240
R215	NOTPLACED	NOTPLACED
R216	0613952Q58	RES, 240
R217	0613952Q95	RES, 8.2K
R218	0613952Q66	RES, 510
R220	0613952Q60	RES, 300
R221	0613952Q31	RES, 18
R222	0613952Q60	RES, 300
R3004	NOTPLACED	NOTPLACED
R3005	0613952N01	RES, 10K
R3006	NOTPLACED	NOTPLACED
R3007	0613952N01	RES, 10K
R3008	NOTPLACED	NOTPLACED
R3009	0613952N01	RES, 10K
R3010	0613952N01	RES, 10K
R3011	0613952Q81	RES, 2.2K
R3012	0613952Q59	RES, 270
R3013	0613952Q81	RES, 2.2K
R3014	0613952M30	RES, 2K
R3016	0616416H01	RES, 0.1
R3017	0613952P25	RES, 178K
R3018	0613952R18	RES, 51K
R3020	0613952Q34	RES, 24
R3021	0613952Q34	RES, 24
R3023	0613952R17	RES, 47K

Circuit Ref	Motorola Part No.	Description
R3024	0613952Z67	RES, 51K
R3025	0613952Q49	RES, 100
R3026	0613952Q61	RES, 330
R3027	0613952Q61	RES, 330
R3028	0613952N69	RES, 51.1K
R3029	0613952N60	RES, 41.2K
R3030	0686135Z02	RES, 0.2
R3031	0613952R66	RES, 0
R3032	0613952Q95	RES, 8.2K
R3033	0613952R05	RES, 15K
R3034	0613952Q95	RES, 8.2K
R3035	0613952R05	RES, 15K
R3036	0613952N01	RES, 10K
R3037	0613952Q71	RES, 820
R3038	NOTPLACED	NOTPLACED
R3040	0613952Q81	RES, 2.2K
R3041	0613952N01	RES, 10K
R3043	0613952R32	RES, 200K
R3050	0613952R25	RES, 100K
R3051	0613952Q89	RES, 4.7K
R3053	0613952Z58	RES, 22K
R3054	0613952Z58	RES, 22K
R3055	0613952R25	RES, 100K
R3060	0613952M30	RES, 2K
R3070	0613952R33	RES, 220K
R3071	0613952R33	RES, 220K
R3072	0613952R56	RES, 2MEG
R3073	0613952R56	RES, 2MEG
R3074	0613952Q73	RES, 1K
R3075	0613952N01	RES, 10K
R3088	NOTPLACED	NOTPLACED
R3098	0613952Q85	RES, 3.3K
R3100	0613952R17	RES, 47K
R3101	0613952R25	RES, 100K
R3102	0613952A30	RES, 2
R3103	0615049H16	RES, 0.7
R3200	0613952R33	RES, 220K
R3201	0613952R20	RES, 62K
R3202	0613952R33	RES, 220K
R3203	0613952R36	RES, 300K
R3700	0613952Q73	RES, 1K
R3701	0613952R01	RES, 10K
R3702	0613952R12	RES, 30K
R3703	0613952R10	RES, 24K
R3704	0613952R01	RES, 10K
R3800	0613952Q25	RES, 10

Circuit Ref	Motorola Part No.	Description
R3888	NOTPLACED	NOTPLACED
R400	0613952R25	RES, 100K
R401	0613952R66	RES, 0
R402	0613952R66	RES, 0
R403	0613952R66	RES, 0
R404	0613952Q75	RES, 1.2K
R405	0613952R25	RES, 100K
R406	0613952Q73	RES, 1K
R407	0613952Q42	RES, 51
R409	0613952R01	RES, 10K
R410	0613952Q77	RES, 1.5K
R411	0613952R03	RES, 12K
R412	0613952Q49	RES, 100
R413	0613952Q77	RES, 1.5K
R417	0613952R66	RES, 0
R419	0613952R66	RES, 0
R420	0613952Q74	RES, 1.1K
R421	0613952Q53	RES, 150
R422	0613952Q62	RES, 360
R424	0613952Q74	RES, 1.1K
R425	0613952R66	RES, 0
R430	0613952R66	RES, 0
R496	0613952R66	RES, 0
R497	NOTPLACED	NOTPLACED
R600	0613952R01	RES, 10K
R601	0613952Q62	RES, 360
R602	0613952Q68	RES, 620
R603	0613952R05	RES, 15K
R604	0613952Q90	RES, 5.1K
R605	0613952Q90	RES, 5.1K
R606	0613952Q73	RES, 1K
R607	0613952R25	RES, 100K
R609	0613952R01	RES, 10K
R610	0613952R01	RES, 10K
R611	0613952Q63	RES, 390
R612	0613952R08	RES, 20K
R696	0613952R66	RES, 0
R697	0613952R66	RES, 0
R698	0613952R01	RES, 10K
R699	0613952R25	RES, 100K
R700	0615043C01	RES, 0.1
R701	NOTPLACED	NOTPLACED
R702	0613952Z80	RES, 330K
R703	0613952Z80	RES, 330K
R704	NOTPLACED	NOTPLACED
R705	0613952R56	RES, 2MEG

Circuit Ref	Motorola Part No.	Description
R706	0613952R56	RES, 2MEG
R707	0613952Q81	RES, 2.2K
R708	0613952Q90	RES, 5.1K
R709	0613952R66	RES, 0
R710	NOTPLACED	NOTPLACED
R711	0613952R08	RES, 20K
R712	0613952R66	RES, 0
R713	NOTPLACED	NOTPLACED
R714	0613952Q59	RES, 270
R717	0613958H33	RES, 22
R718	0613952Q56	RES, 200
R719	0613952Q45	RES, 68
R720	0613952H56	RES, 200
R723	0613952Q50	RES, 110
R725	0613952Q85	RES, 3.3K
R726	0613952R66	RES, 0
R727	NOTPLACED	NOTPLACED
R728	0613952Q60	RES, 300
R729	0613952Q33	RES, 22
R730	0613952Q60	RES, 300
R731	0613952R17	RES, 47K
R732	NOTPLACED	NOTPLACED
R733	0613952R66	RES, 0
R8002	0613952R25	RES, 100K
R8003	0613952R01	RES, 10K
R8004	0613952Q70	RES, 750
R8010	0613952R05	RES, 15K
R8011	0613952R25	RES, 100K
R8012	0613952R01	RES, 10K
R8015	NOTPLACED	NOTPLACED
R8016	0613952R66	RES, 0
R8017	NOTPLACED	NOTPLACED
R8020	0613952R66	RES, 0
R8023	0613952R66	RES, 0
R8024	0613952R25	RES, 100K
R8025	0613952R66	RES, 0
R8026	0613952R25	RES, 100K
R8027	0613952R25	RES, 100K
R8028	0613952R25	RES, 100K
R8029	0613952R25	RES, 100K
R8030	0613952R01	RES, 10K
R8031	0613952R25	RES, 100K
R8032	0613952R25	RES, 100K
R8033	0613952R25	RES, 100K
R8034	0613952R01	RES, 10K
R8035	0613952R01	RES, 10K

Circuit Ref	Motorola Part No.	Description
R8036	0613952R01	RES, 10K
R8037	0613952R01	RES, 10K
R9000	0613952Q73	RES, 1K
R9001	0613952Q73	RES, 1K
R9002	0613952Q73	RES, 1K
R9003	0613952Q73	RES, 1K
R9004	0613952Q73	RES, 1K
R9005	0613952Q73	RES, 1K
R9006	0613952Q73	RES, 1K
R9007	0613952Q73	RES, 1K
R9008	0613952R17	RES, 47K
R9009	0613952R01	RES, 10K
R9010	0613952R01	RES, 10K
R9011	0613952R17	RES, 47K
R9012	0613952Q50	RES, 110
R9013	0613952Q37	RES, 33
R9014	0613952R01	RES, 10K
R9015	0613952R01	RES, 10K
R9016	0613952R01	RES, 10K
R9017	0613952R01	RES, 10K
R9018	0613952R01	RES, 10K
R9019	0613952Q73	RES, 1K
R902	0613952H47	RES, 82
R9020	0613952Q89	RES, 4.7K
R903	0613952H47	RES, 82
R904	0613952H47	RES, 82
R905	0613952H47	RES, 82
R9050	0613952R01	RES, 10K
R9051	0613952R01	RES, 10K
R9052	0613952Q65	RES, 470
R906	0613952R01	RES, 10K
R907	0613952R01	RES, 10K
R908	0613952H47	RES, 82
R909	0613952H47	RES, 82
S9000	4086470Z01	SWITCH
S9001	4015186H01	SWITCH
S9002	4015203H01	SWITCH
SH9000	NOTPLACED	NOTPLACED
SH9001	NOTPLACED	NOTPLACED
T400	2515396H01	XFMR
T401	2515396H01	XFMR
U001	5104932K08	SC51650VF
U002	5114000B59	MC74VHC1GT66
U1000	5102495J13	OMAP1710
U1005	5171209L01	TXB0104ZXUR
U1006	5115001H02	NL27WZU04

Circuit Ref	Motorola Part No.	Description
U200	5116014H01	UPC8179TK
U2000	0104024J27	M58WR064FB
U2001	5171614M01	MT48H4M16LF
U3000	5185143E77	PWR_MNGR_BLOCK
U3002	5115616H01	LP8340
U3003	5115453H01	LMC6035ITLX
U3004	5114007A43	NL17SZ14
U3006	5115974H01	LP3990
U3007	5171395L01	TS5A23166
U3008	5115391H01	TK11100CSC
U3009	5164852H47	PCA9306
U3020	5171428L01	LTC1877
U3021	5171428L01	LTC1877
U3700	5116282H01	TPS79228
U3701	5116283H01	TPS79101
U400	5115442H01	MAX2371
U600	5102495J14	AD9864
U700	4802246J29	ADA4743
U701	5115147H01	AD8566
U702	5115022H01	LM50
U8000	0104024J41	GSC3F/LP
U8001	5164015H55	UPC8211TK
VR9000	4866544A01	SR05
VR9001	4813979P10	MMQA5V6T1
VR9002	4813979P10	MMQA5V6T1
VR9003	4815040H01	MM3Z12VT1G
VR9004	4815040H01	MM3Z12VT1G
VR9005	4805656W76	MM5Z5V6
VR9006	4805656W76	MM5Z5V6
VR9007	4805656W76	MM5Z5V6
VR9008	4813979P10	MMQA5V6T1
VR9009	4813977C23	MMSZ5243
VR9010	4813977C23	MMSZ5243
VR9015	NOTPLACED	NOTPLACED
VR9016	NOTPLACED	NOTPLACED
VR9017	4815040H01	MM3Z12VT1G
VR9018	4815040H01	MM3Z12VT1G
VR9020	4813979P10	MMQA5V6T1
VR9021	4813979P10	MMQA5V6T1
VR9022	4813979P10	MMQA5V6T1
VR9023	4815040H01	MM3Z12VT1G
Y001	5116032H01	IVT5300B
Y1000	4809612J45	CX-91F
Y3000	4802582S80	XTAL
Y3001	4815028H01	CX-101F
Y8000	4802582S80	XTAL

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Circuit Ref	Motorola Part No.	Description
C001	2113946D02	CAP, 1.0uF
C002	2113946D02	CAP, 1.0uF
C003	2113946K02	CAP, 0.10uF
C004	2113946K02	CAP, 0.10uF
C005	2113946K02	CAP, 0.10uF
C006	2113946K02	CAP, 0.10uF
C007	2113946K02	CAP, 0.10uF
C008	2113946K02	CAP, 0.10uF
C009	NOTPLACED	NOTPLACED
C010	2113946K02	CAP, 0.10uF
C011	2113946K02	CAP, 0.10uF
C012	2113946K02	CAP, 0.10uF
C013	2113945A02	CAP, 270pF
C014	2113945L49	CAP, .01uF
C015	2113945L49	CAP, .01uF
C016	2113945A09	CAP, 1000pF
C017	2113946K02	CAP, 0.10uF
C018	2313960B57	CAPP, 10uF
C019	2113945L49	CAP, .01uF
C020	2313960B57	CAPP, 10uF
C022	2113946K02	CAP, 0.10uF
C024	2115358H17	CAP, 0.22uF
C025	2115358H07	CAP, .033uF
C026	2115358H15	CAP, 0.15uF
C027	2115358H25	CAP, 1uF
C028	2115358H01	CAP, .01uF
C031	2113945A09	CAP, 1000pF
C032	2113944A25	CAP, 10pF
C033	2113944A21	CAP, 6.8pF
C035	2113946K02	CAP, 0.10uF
C036	2113946K02	CAP, 0.10uF
C037	2115153H06	CAP,1.3pF
C038	NOTPLACED	NOTPLACED
C200	2113945A09	CAP, 1000pF
C201	2113944A25	CAP, 10pF
C202	2113944A25	CAP, 10pF
C203	2113944A11	CAP, 2.7pF
C204	2113944A25	CAP, 10pF
C205	2113944A30	CAP, 27pF
C206	2113944A88	CAP, 160pF
C207	2113944A81	CAP, 24pF
C208	2113945A09	CAP, 1000pF
C209	2113946B04	CAP, 0.1uF
C210	2113945A09	CAP, 1000pF
C211	2113946B04	CAP, 0.1uF

Circuit Ref	Motorola Part No.	Description
C212	2113944A10	CAP, 2.4pF
C213	2113944A08	CAP, 2.0pF
C214	2113945A09	CAP, 1000pF
C215	2113944A40	CAP, 100pF
C216	2113944A05	CAP, 1.5pF
C217	2113944A10	CAP, 2.4pF
C219	2113945A09	CAP, 1000pF
C220	2113944A27	CAP, 15pF
C221	2113944A27	CAP, 15pF
C222	NOTPLACED	NOTPLACED
C223	2113944A73	CAP, 8pF
C224	2113944A82	CAP, 30pF
C225	2113944A88	CAP, 160pF
C226	2113944A30	CAP, 27pF
C227	2113945A09	CAP, 1000pF
C228	2113946B04	CAP, 0.1uF
C229	2113945A09	CAP, 1000pF
C230	2113946B04	CAP, 0.1uF
C231	2113944A05	CAP, 1.5pF
C232	2113944A11	CAP, 2.7pF
C233	2113945A09	CAP, 1000pF
C234	2113945A09	CAP, 1000pF
C235	2113945A09	CAP, 1000pF
C236	2113944A72	CAP, 7pF
C237	2113944A73	CAP, 8pF
C238	2113945A09	CAP, 1000pF
C239	2113945A09	CAP, 1000pF
C240	2113944A08	CAP, 2.0pF
C241	2113944A05	CAP, 1.5pF
C243	NOTPLACED	NOTPLACED
C400	2113944A36	CAP, 68pF
C401	2113944A30	CAP, 27pF
C402	2113944A26	CAP, 12pF
C403	2113944A30	CAP, 27pF
C404	2113944A36	CAP, 68pF
C405	2113944A41	CAP, 120pF
C406	2113944A41	CAP, 120pF
C408	2113944A52	CAP, 1000pF
C409	2113944A17	CAP, 4.7pF
C410	2113944A63	CAP, 1pF
C411	2113944A52	CAP, 1000pF
C412	2113944A52	CAP, 1000pF
C413	2113946K02	CAP, 0.10uF
C414	2113944A52	CAP, 1000pF
C415	2113946K02	CAP, 0.10uF
C416	2113944A52	CAP, 1000pF

Circuit Ref	Motorola Part No.	Description
C417	2113944A09	CAP, 2.2pF
C418	2113944A19	CAP, 5.6pF
C419	2113944A77	CAP, 11pF
C420	2113944A24	CAP, 9.1pF
C421	2113945B02	CAP, .01uF
C422	2113946K02	CAP, 0.10uF
C423	2113944A36	CAP, 68pF
C424	2113944A30	CAP, 27pF
C425	2113944A26	CAP, 12pF
C426	0613952R66	RES, 0
C427	2113944A88	CAP, 160pF
C428	2113944A28	CAP, 18pF
C429	2113944A77	CAP, 11pF
C430	2113944A29	CAP, 22pF
C431	2113944A77	CAP, 11pF
C432	2113944A80	CAP, 20pF
C433	2113944A80	CAP, 20pF
C434	2113946K02	CAP, 0.10uF
C435	2113944A40	CAP, 100pF
C436	2113946K02	CAP, 0.10uF
C437	2113945B02	CAP, .01uF
C438	2113946K02	CAP, 0.10uF
C439	2113944A22	CAP, 7.5pF
C440	2113944A82	CAP, 30pF
C441	NOTPLACED	NOTPLACED
C442	2113945B02	CAP, .01uF
C444	2113946K02	CAP, 0.10uF
C445	NOTPLACED	NOTPLACED
C446	2113944A27	CAP, 15pF
C447	2113944A30	CAP, 27pF
C448	2113944A36	CAP, 68pF
C449	2113944A52	CAP, 1000pF
C450	2113944A41	CAP, 120pF
C451	2113944A41	CAP, 120pF
C601	2113945B02	CAP, .01uF
C602	2113946B04	CAP, 0.1uF
C603	2113946B04	CAP, 0.1uF
C604	2113945B02	CAP, .01uF
C605	2113945B02	CAP, .01uF
C606	2113944A36	CAP, 68pF
C607	2113945B02	CAP, .01uF
C608	2113945D02	CAP, .047uF
C609	2115153H57	CAP, 100pF
C610	2115153H53	CAP, 68pF
C611	2115153H48	CAP, 43pF
C612	2115153H55	CAP, 82pF

Circuit Ref	Motorola Part No.	Description
C613	2113945G91	CAP, 0.1uF
C614	2113946E02	CAP, 1.0uF
C615	2113946B04	CAP, 0.1uF
C616	2113944A32	CAP, 39pF
C617	2113945L37	CAP, 3300pF
C618	2113945C18	CAP, .012uF
C619	2115358H13	CAP, 0.1uF
C620	2113946B04	CAP, 0.1uF
C621	2113945B02	CAP, .01uF
C622	2113944C89	CAP, 200pF
C623	2113944A40	CAP, 100pF
C624	2113944A40	CAP, 100pF
C625	2113945A11	CAP, 2200pF
C626	2113945D02	CAP, .047uF
C627	2113944A40	CAP, 100pF
C628	2113945B02	CAP, .01uF
C629	2113944A40	CAP, 100pF
C630	2113945B02	CAP, .01uF
C631	2113945B02	CAP, .01uF
C632	2113946B04	CAP, 0.1uF
C633	2113946B04	CAP, 0.1uF
C634	2113945B02	CAP, .01uF
C635	2113944A85	CAP, 51pF
C636	2113946B04	CAP, 0.1uF
C637	2113946G04	CAP, 0.68uF
C638	NOTPLACED	NOTPLACED
C639	2113946B04	CAP, 0.1uF
C700	2316410H03	CAPP, 10uF
C703	2113944A52	CAP, 1000pF
C704	2113944A52	CAP, 1000pF
C705	2113946B02	CAP, .047uF
C706	2113944A52	CAP, 1000pF
C707	2113944A31	CAP, 33pF
C708	2113944A52	CAP, 1000pF
C709	2113945B02	CAP, .01uF
C710	2113945B02	CAP, .01uF
C711	2113944A52	CAP, 1000pF
C712	2113945B04	CAP, .022uF
C714	2113945A03	CAP, 330pF
C715	2113944A31	CAP, 33pF
C717	2113945A03	CAP, 330pF
C718	2113946K02	CAP, 0.10uF
C719	2113944A52	CAP, 1000pF
C720	2113945B04	CAP, .022uF
C721	2113945D04	CAP, 0.1uF
C722	2113945A09	CAP, 1000pF

Circuit Ref	Motorola Part No.	Description
C724	2113944C82	CAP, 30pF
C726	2113944C84	CAP, 43pF
C729	2113944A52	CAP, 1000pF
C730	2113945B04	CAP, .022uF
C731	2113945B04	CAP, .022uF
C732	2111078B53	CAP, 270pF
C733	2113944C43	CAP, 82pF
C734	2113945A03	CAP, 330pF
C735	2113944C82	CAP, 30pF
C736	2113945A03	CAP, 330pF
C737	2113945A09	CAP, 1000pF
C738	2113945A03	CAP, 330pF
C739	2113944C82	CAP, 30pF
C777	2113944C41	CAP, 68pF
C778	2113944C41	CAP, 68pF
C797	2113944C32	CAP, 15pF
C798	2113944C43	CAP, 82pF
C799	2113944C32	CAP, 15pF
C900	2113945B04	CAP, .022uF
C904	2113944C80	CAP, 20pF
C905	2113944C04	CAP, 330pF
C906	2113944C74	CAP, 7.5pF
C907	2113944C81	CAP, 24pF
C908	2113945B04	CAP, .022uF
C909	2113944C85	CAP, 51pF
C911	2113944C33	CAP, 18pF
C912	2113944C29	CAP, 9.1pF
C913	2113944C38	CAP, 47pF
C914	2113945B04	CAP, .022uF
C915	2113944C30	CAP, 10pF
C916	2113944C78	CAP, 13pF
C918	2113944C04	CAP, 330pF
C919	2113944C33	CAP, 18pF
C920	2113944C35	CAP, 27pF
C924	2113944A20	CAP, 6.2pF
C925	2113944V07	CAP, 1.5pF
C926	2113944A15	CAP, 3.9pF
C927	2113945A01	CAP, 220pF
C928	2113944C74	CAP, 7.5pF
C929	2113944C22	CAP, 4.7pF
C930	2113944C28	CAP, 8.2pF
C931	2113944C20	CAP, 3.9pF
C933	2113945B04	CAP, .022uF
C1000	2113945A03	CAP, 330pF
C1001	2113946K02	CAP, 0.10uF
C1002	2113946K02	CAP, 0.10uF

Circuit Ref	Motorola Part No.	Description
C1003	2113945A03	CAP, 330pF
C1004	2113945A03	CAP, 330pF
C1005	2113946K02	CAP, 0.10uF
C1006	2113946K02	CAP, 0.10uF
C1007	2113945A03	CAP, 330pF
C1008	2113945A03	CAP, 330pF
C1009	2113946K02	CAP, 0.10uF
C1010	2113946K02	CAP, 0.10uF
C1011	2113945A03	CAP, 330pF
C1012	2113946K02	CAP, 0.10uF
C1013	2113946K02	CAP, 0.10uF
C1014	2113946K02	CAP, 0.10uF
C1015	2113946K02	CAP, 0.10uF
C1016	2113946B04	CAP, 0.1uF
C1017	2113946E02	CAP, 1.0uF
C1018	2113944A28	CAP, 18pF
C1019	2113944A28	CAP, 18pF
C1028	2113946K02	CAP, 0.10uF
C1029	2113946K02	CAP, 0.10uF
C1030	2113944A28	CAP, 18pF
C1031	2113946K02	CAP, 0.10uF
C1032	2113945B02	CAP, .01uF
C1033	2113946K02	CAP, 0.10uF
C1044	2113946B04	CAP, 0.1uF
C2000	2113945A03	CAP, 330pF
C2001	2113945B02	CAP, .01uF
C2002	2113946K02	CAP, 0.10uF
C2003	2113946K02	CAP, 0.10uF
C2004	2113945A03	CAP, 330pF
C2005	2113945B02	CAP, .01uF
C2006	2113946K02	CAP, 0.10uF
C2007	2113946K02	CAP, 0.10uF
C3000	2113944A78	CAP, 13pF
C3001	2113944A78	CAP, 13pF
C3002	2113945D04	CAP, 0.1uF
C3003	2113946D05	CAP, 2.2uF
C3004	2113946D05	CAP, 2.2uF
C3005	2113945A09	CAP, 1000pF
C3010	2113946D05	CAP, 2.2uF
C3011	2113946A01	CAP, .015uF
C3014	2113946D05	CAP, 2.2uF
C3015	2115153H57	CAP, 100pF
C3016	2113946D05	CAP, 2.2uF
C3017	2113945B02	CAP, .01uF
C3018	2113946D05	CAP, 2.2uF
C3019	2113946D02	CAP, 1.0uF

Circuit Ref	Motorola Part No.	Description
C3024	2113946D02	CAP, 1.0uF
C3025	2113946K02	CAP, 0.10uF
C3026	2113946K02	CAP, 0.10uF
C3028	2113946D05	CAP, 2.2uF
C3031	2113946D02	CAP, 1.0uF
C3034	2113946B04	CAP, 0.1uF
C3035	2113946B04	CAP, 0.1uF
C3036	2113946B04	CAP, 0.1uF
C3037	2113944A40	CAP, 100pF
C3038	2113944A40	CAP, 100pF
C3039	2113946F03	CAP, 4.7uF
C3045	2113946F05	CAP, 10uF
C3047	2113946D02	CAP, 1.0uF
C3048	2113946D02	CAP, 1.0uF
C3049	2113945C25	CAP, .033uF
C3050	2113945C25	CAP, .033uF
C3051	2113944A40	CAP, 100pF
C3060	2113944A80	CAP, 20pF
C3061	2113944A80	CAP, 20pF
C3062	2113946K02	CAP, 0.10uF
C3063	2113946K02	CAP, 0.10uF
C3067	2113946D02	CAP, 1.0uF
C3070	2113944A25	CAP, 10pF
C3074	2113946D02	CAP, 1.0uF
C3079	2113946F03	CAP, 4.7uF
C3080	NOTPLACED	NOTPLACED
C3081	2113946F03	CAP, 4.7uF
C3082	2113945Y02	CAP, 0.10uF
C3083	2113945Y02	CAP, 0.10uF
C3084	2113946K03	CAP, 0.22uF
C3090	2113955D37	CAP, 10uF
C3091	2113955D37	CAP, 10uF
C3093	2113946N03	CAP, 2.2uF
C3094	2113946B04	CAP, .1uF
C3095	2113946B04	CAP, .1uF
C3097	2113944A31	CAP, 33pF
C3098	2113944A31	CAP, 33pF
C3099	2113944A31	CAP, 33pF
C3100	2113944A31	CAP, 33pF
C3101	2113946D02	CAP, 1.0uF
C3102	2113946D02	CAP, 1.0uF
C3200	2113945Y02	CAP, 0.10uF
C3201	2113955D37	CAP, 10uF
C3202	2371572L02	CAPP, 68uF
C3203	2113945B02	CAP, .01uF
C3204	2115153H40	CAP, 20pF

Circuit Ref	Motorola Part No.	Description
C3205	2113945A11	CAP, 2200pF
C3206	2113945Y02	CAP, 0.10uF
C3207	2113955D37	CAP, 10uF
C3208	2113946K03	CAP, 0.22uF
C3209	2316410H01	CAPP, 22uF
C3210	2113945B02	CAP, .01uF
C3211	2115153H40	CAP, 20pF
C3212	2113944A44	CAP, 220pF
C3700	2113946D02	CAP, 1.0uF
C3701	2113945B02	CAP, .01uF
C3702	2113946D05	CAP, 2.2uF
C3703	2113946D02	CAP, 1.0uF
C3704	2113944A30	CAP, 27pF
C3705	2113945B02	CAP, .01uF
C3706	2113945A05	CAP, 470pF
C3707	2113946D05	CAP, 2.2uF
C3800	2113945D04	CAP, 0.1uF
C3805	2113946K03	CAP, 0.22uF
C3999	2113945B02	CAP, .01uF
C8000	2113946F05	CAP, 10uF
C8001	2113944A28	CAP, 18pF
C8002	2113944A52	CAP, 1000pF
C8003	2113946F05	CAP, 10uF
C8004	2113944A28	CAP, 18pF
C8005	NOTPLACED	NOTPLACED
C8006	NOTPLACED	NOTPLACED
C8013	2113944A08	CAP, 2.0pF
C8014	2113944A62	CAP, 0.75pF
C8015	2113946K02	CAP, 0.10uF
C8016	2113945A09	CAP, 1000pF
C8017	2113944A28	CAP, 18pF
C8018	2113944A28	CAP, 18pF
C8019	2113944A11	CAP, 2.7pF
C8020	2113944A52	CAP, 1000pF
C8021	2113946K02	CAP, 0.10uF
C8022	2113946D05	CAP, 2.2uF
C8023	2113945B02	CAP, .01uF
C8029	2113944A52	CAP, 1000pF
C8030	2113944A28	CAP, 18pF
C8031	2113946D05	CAP, 2.2uF
C8032	2113945B02	CAP, .01uF
C8033	2113944A28	CAP, 18pF
C8034	2113944A28	CAP, 18pF
C8035	2113944A31	CAP, 33pF
C8036	2113944A52	CAP, 1000pF
C9000	2113945A03	CAP, 330pF

Circuit Ref	Motorola Part No.	Description
C9001	2113945A03	CAP, 330pF
C9002	2113945A03	CAP, 330pF
C9003	2113945A03	CAP, 330pF
C9004	2113945A03	CAP, 330pF
C9005	2113945A03	CAP, 330pF
C9006	2113945A03	CAP, 330pF
C9007	2113945A03	CAP, 330pF
C9008	2113945A03	CAP, 330pF
C9009	2113945A03	CAP, 330pF
C9010	2113945A03	CAP, 330pF
C9011	2113945A03	CAP, 330pF
C9012	2113945A03	CAP, 330pF
C9013	2113945A03	CAP, 330pF
C9014	2113945A03	CAP, 330pF
C9015	2113945A03	CAP, 330pF
C9016	2113945A03	CAP, 330pF
C9017	2113945A03	CAP, 330pF
C9018	2113945A03	CAP, 330pF
C9019	2113945A03	CAP, 330pF
C9020	2113945A03	CAP, 330pF
C9021	2113945A03	CAP, 330pF
C9022	2113945A03	CAP, 330pF
C9023	2113945A03	CAP, 330pF
C9024	2113945A03	CAP, 330pF
C9025	2113945A03	CAP, 330pF
C9026	2113945A03	CAP, 330pF
C9027	2113945A03	CAP, 330pF
C9028	2113945A03	CAP, 330pF
C9029	2113945A03	CAP, 330pF
C9030	2113944A15	CAP, 3.9pF
C9031	2113944A15	CAP, 3.9pF
C9032	2113944A15	CAP, 3.9pF
C9033	2113945A03	CAP, 330pF
C9038	2113945A03	CAP, 330pF
C9039	2113945A03	CAP, 330pF
C9040	2113945A03	CAP, 330pF
C9041	2113945A03	CAP, 330pF
C9042	2113945A03	CAP, 330pF
C9043	2113945A03	CAP, 330pF
C9044	2113945A03	CAP, 330pF
C9045	2113945A03	CAP, 330pF
C9046	2113945A03	CAP, 330pF
C9047	2113945A03	CAP, 330pF
C9048	2113945A03	CAP, 330pF
C9049	2113945A03	CAP, 330pF
C9050	2113945A03	CAP, 330pF

Circuit Ref	Motorola Part No.	Description
C9051	NOTPLACED	NOTPLACED
C9053	NOTPLACED	NOTPLACED
C9055	NOTPLACED	NOTPLACED
C9057	NOTPLACED	NOTPLACED
C9058	2113945A03	CAP, 330pF
C9059	2113945A03	CAP, 330pF
C9060	2113945A03	CAP, 330pF
C9061	2113945A03	CAP, 330pF
C9062	2113945A03	CAP, 330pF
C9063	2113945A03	CAP, 330pF
C9064	2113945A03	CAP, 330pF
C9065	2113945A03	CAP, 330pF
C9066	2113945A03	CAP, 330pF
C9067	NOTPLACED	NOTPLACED
C9068	NOTPLACED	NOTPLACED
C9069	NOTPLACED	NOTPLACED
C9070	2113945A03	CAP, 330pF
C9071	2113945A03	CAP, 330pF
C9072	2113945A03	CAP, 330pF
CR900	4815897H01	UPP9401E3
CR901	4815897H01	UPP9401E3
CR902	4815897H01	UPP9401E3
CR903	4815897H01	UPP9401E3
D001	4815059H01	1SV325
D200	4815096H01	1SV305
D201	4815059H01	1SV325
D202	4815059H01	1SV325
D203	4815096H01	1SV305
D204	4815096H01	1SV305
D205	4815059H01	1SV325
D206	4815059H01	1SV325
D207	4815096H01	1SV305
D400	4815059H01	1SV325
D401	4815059H01	1SV325
D402	4813974A19	MMBD352
D403	4815059H01	1SV325
D404	4815059H01	1SV325
D405	4815923H01	HSMS2829
D600	4815096H01	1SV305
D601	4815096H01	1SV305
D3000	4813978A25	BAT54HT1G
D9000	4805729G49	BRPY1204W
D9001	4871232L01	0402ESDA
D9002	4871232L01	0402ESDA
E001	2480640Z01	BK1005HM471
E002	2480640Z01	BK1005HM471

Circuit Ref	Motorola Part No.	Description
E003	2480640Z01	BK1005HM471
E004	2480640Z01	BK1005HM471
E600	2480640Z01	BK1005HM471
E601	2480640Z01	BK1005HM471
E602	2480640Z01	BK1005HM471
E701	7686949J14	BLM21PG221SN1
E3030	2409134J04	BLM18BD601SN1
E3031	2409134J04	BLM18BD601SN1
E3032	2409134J04	BLM18BD601SN1
E3033	2409134J04	BLM18BD601SN1
E3700	7686949J08	IDCTR
E3701	7686949J08	IDCTR
E3702	7686949J08	IDCTR
E3703	7686949J08	IDCTR
E3704	7686949J08	IDCTR
E3705	7686949J08	IDCTR
E8000	7686949J08	IDCTR
E8001	7686949J08	IDCTR
E8002	NOTPLACED	NOTPLACED
E8003	7686949J08	IDCTR
E8004	7686949J08	IDCTR
E8005	7686949J08	IDCTR
E8006	7686949J08	IDCTR
E9000	7686949J14	BLM21PG221SN1
E9001	2480640Z01	BK1005HM471
E9006	NOTPLACED	NOTPLACED
E9007	NOTPLACED	NOTPLACED
F9000	6515076H02	FUSE
FL400	9180022M11	MXF45
FL8000	9180310L38	B39162-B7829-C710
FL8001	9180310L38	B39162-B7829-C710
FL9000	2515003H02	DLP11SN201HL2
J9001	0970312L02	CONN_J
L001	2415375H09	IDCTR, 2.7uH
L002	2415429H38	IDCTR, 120nH
L003	NOTPLACED	NOTPLACED
L200	2415347H01	IDCTR, 1000nH
L201	2415427H44	IDCTR, 68nH
L202	2416540H25	IDCTR, 43nH
L203	2415347H01	IDCTR, 1000nH
L204	2415347H01	IDCTR, 1000nH
L205	2415347H01	IDCTR, 1000nH
L206	2415347H01	IDCTR, 1000nH
L207	2415429H36	IDCTR, 100nH
L208	2415347H01	IDCTR, 1000nH
L209	2415427H46	IDCTR, 100nH

Circuit Ref	Motorola Part No.	Description
L210	2415718H22	IDCTR, 82nH
L211	2415347H01	IDCTR, 1000nH
L212	2415347H01	IDCTR, 1000nH
L213	2415347H01	IDCTR, 1000nH
L214	2415347H01	IDCTR, 1000nH
L215	2415429H38	IDCTR, 120nH
L217	2415347H01	IDCTR, 1000nH
L218	2415429H43	IDCTR, 220nH
L400	2479990C01	IDCTR, 13.9nH
L401	2479990C01	IDCTR, 13.9nH
L402	2415429H36	IDCTR, 100nH
L403	2414017N22	IDCTR, 68nH
L404	2415429H46	IDCTR, 330nH
L405	2415429H46	IDCTR, 330nH
L406	2415429H38	IDCTR, 120nH
L407	2415429H30	IDCTR, 47nH
L408	2479990C01	IDCTR, 13.9nH
L409	2479990C01	IDCTR, 13.9nH
L410	NOTPLACED	NOTPLACED
L411	2415429H35	IDCTR, 82nH
L412	2414017K32	IDCTR, 560nH
L413	2415429H31	IDCTR, 51nH
L414	2415429H31	IDCTR, 51nH
L415	2414017K33	IDCTR, 680nH
L416	2414017K31	IDCTR, 470nH
L417	2415718H31	IDCTR, 270nH
L418	2415429H47	IDCTR, 390nH
L420	2415427H50	IDCTR, 1.55nH
L421	2415427H50	IDCTR, 1.55nH
L600	2466505A01	IDCTR, 10uH
L601	2466505A01	IDCTR, 10uH
L602	2415569H01	IDCTR, 4.7uH
L603	2414017Q51	IDCTR, 2.2uH
L604	2414015B27	IDCTR, 390nH
L605	2415569H01	IDCTR, 4.7uH
L700	2414017N22	IDCTR, 68nH
L701	2414017N22	IDCTR, 68nH
L702	2414017N09	IDCTR, 5.6nH
L703	2414017N22	IDCTR, 68nH
L705	2479990C04	IDCTR, 13.85nH
L707	2479990A04	IDCTR, 5.8nH
L708	2414017N15	IDCTR, 18nH
L709	2414017N11	IDCTR, 8.2nH
L710	2414017N13	IDCTR, 12nH
L712	2479990E02	IDCTR, 23.75nH
L902	2415347H01	IDCTR, 1000nH

Circuit Ref	Motorola Part No.	Description
L903	2415347H05	IDCTR, 1800nH
L904	2416066H01	IDCTR, 43nH
L905	2416066H01	IDCTR, 43nH
L906	2416066H01	IDCTR, 43nH
L907	2415347H05	IDCTR, 1800nH
L908	2416066H01	IDCTR, 43nH
L909	2416066H01	IDCTR, 43nH
L910	2416066H01	IDCTR, 43nH
L912	2414017P08	IDCTR, 3.9nH
L913	2414017P10	IDCTR, 5.6nH
L3003	2464675H01	IDCTR, 560nH
L3004	2464675H01	IDCTR, 560nH
L3020	2489846Y06	IDCTR, 10uH
L3021	2471189M01	IDCTR, 22uH
L3022	2464675H01	IDCTR, 560nH
L8001	2414017P10	IDCTR, 5.6nH
L8002	2414017P17	IDCTR, 22nH
L8003	2414017P13	IDCTR, 10nH
L8004	2414017P10	IDCTR, 5.6nH
L9000	2471698M01	IDCTR, 3.3uH
L9001	2415429H45	IDCTR, 270nH
L9007	2415429H45	IDCTR, 270nH
L9008	2415429H45	IDCTR, 270nH
M1	4271321L01	RETAINER
M2	4271321L01	RETAINER
M700	2615193H01	HEATSINK
M9000	4371105L01	BRD_SPACER
M9001	4371105L01	BRD_SPACER
M9002	4371105L01	BRD_SPACER
M9003	NOTPLACED	NOTPLACED
M9004	NOTPLACED	NOTPLACED
M9005	3915478H01	CONTACT
M9006	3915478H01	CONTACT
M9007	0915184H01	CONTACT
P900	2815696H01	CONN_P
P9000	2887818K02	CONN_P
Q001	4885061Y01	NE68519
Q002	4815359H01	BCV62
Q003	4816134H01	DTC114YM
Q200	4815029H01	NE851M03
Q202	4815055H01	UMC5NT2G
Q203	4815055H01	UMC5NT2G
Q204	4885061Y01	NE68519
Q205	4885061Y01	NE68519
Q206	4815055H01	UMC5NT2G
Q207	4815055H01	UMC5NT2G

Circuit Ref	Motorola Part No.	Description
Q208	4885061Y01	NE68519
Q400	4816531H01	QSBT_0038
Q401	4816531H01	QSBT_0038
Q600	4813973A04	73A04
Q601	4815055H01	UMC5NT2G
Q602	4885061Y01	NE68519
Q701	4815055H01	UMC5NT2G
Q702	4815055H01	UMC5NT2G
Q703	4816547H01	RD01MUS1
Q704	4816548H01	RD07MVS1
Q900	4815055H01	UMC5NT2G
Q901	4815055H01	UMC5NT2G
Q3000	4805585Q23	SI8401DB
Q3001	4805585Q23	SI8401DB
Q3002	4816134H01	DTC114YM
Q3003	4813970A62	NTHS5441T1
Q3005	4805585Q23	SI8401DB
Q3006	4816134H01	DTC114YM
Q3010	4805585Q23	SI8401DB
Q9000	4813973M07	MMBT3904
Q9001	4815154H01	IMXFT110
Q9003	4813973M07	MMBT3904
R001	0613952Q96	RES, 9.1K
R002	0613952Q41	RES, 47
R003	0613952Q91	RES, 5.6K
R004	0613952Q66	RES, 510
R005	0613952Q56	RES, 200
R006	0613952Q93	RES, 6.8K
R007	0613952R01	RES, 10K
R008	0613952Q25	RES, 10
R010	0613952Q93	RES, 6.8K
R011	0613952Q49	RES, 100
R012	0613952R25	RES, 100K
R013	0613952Q46	RES, 75
R014	0613952Q42	RES, 51
R016	0613952Q33	RES, 22
R017	0613952Q42	RES, 51
R018	0613952Q88	RES, 4.3K
R019	0613952R01	RES, 10K
R020	0613952Q55	RES, 180
R022	0613952Q58	RES, 240
R025	0613952R13	RES, 33K
R026	0613952R01	RES, 10K
R027	0613952R66	RES, 0
R052	NOTPLACED	NOTPLACED
R053	0613952R66	RES, 0

Circuit Ref	Motorola Part No.	Description
R054	NOTPLACED	NOTPLACED
R200	0613952Q96	RES, 9.1K
R201	0613952Q89	RES, 4.7K
R202	0613952Q49	RES, 100
R203	0613952Q52	RES, 130
R205	0613952Q91	RES, 5.6K
R207	NOTPLACED	NOTPLACED
R208	0613952Q96	RES, 9.1K
R209	0613952Q89	RES, 4.7K
R210	0613952Q49	RES, 100
R211	0613952Q50	RES, 110
R212	0613952Q90	RES, 5.1K
R213	0613952Q94	RES, 7.5K
R214	0613952Q58	RES, 240
R215	NOTPLACED	NOTPLACED
R216	0613952Q58	RES, 240
R217	0613952Q95	RES, 8.2K
R218	0613952Q66	RES, 510
R220	0613952Q60	RES, 300
R221	0613952Q31	RES, 18
R222	0613952Q60	RES, 300
R400	0613952R25	RES, 100K
R401	0613952R66	RES, 0
R402	0613952R66	RES, 0
R403	0613952R66	RES, 0
R404	0613952Q75	RES, 1.2K
R405	0613952R25	RES, 100K
R406	0613952Q73	RES, 1K
R407	0613952Q42	RES, 51
R409	0613952R01	RES, 10K
R410	0613952Q77	RES, 1.5K
R411	0613952R03	RES, 12K
R412	0613952Q49	RES, 100
R413	0613952Q77	RES, 1.5K
R417	0613952R66	RES, 0
R419	0613952R66	RES, 0
R420	0613952Q74	RES, 1.1K
R421	0613952Q53	RES, 150
R422	0613952Q62	RES, 360
R424	0613952Q74	RES, 1.1K
R425	0613952R66	RES, 0
R430	0613952R66	RES, 0
R496	0613952R66	RES, 0
R497	NOTPLACED	NOTPLACED
R600	0613952R01	RES, 10K
R601	0613952Q62	RES, 360

Circuit Ref	Motorola Part No.	Description
R602	0613952Q68	RES, 620
R603	0613952R05	RES, 15K
R604	0613952Q90	RES, 5.1K
R605	0613952Q90	RES, 5.1K
R606	0613952Q73	RES, 1K
R607	0613952R25	RES, 100K
R609	0613952R01	RES, 10K
R610	0613952R01	RES, 10K
R611	0613952Q63	RES, 390
R612	0613952R08	RES, 20K
R696	0613952R66	RES, 0
R697	0613952R66	RES, 0
R698	0613952R01	RES, 10K
R699	0613952R25	RES, 100K
R700	0615043C01	RES,0.1
R701	NOTPLACED	NOTPLACED
R702	0613952Z80	RES, 330K
R703	0613952Z80	RES, 330K
R704	NOTPLACED	NOTPLACED
R705	0613952R56	RES, 2MEG
R706	0613952R56	RES, 2MEG
R707	0613952Q81	RES, 2.2K
R708	0613952Q90	RES, 5.1K
R709	0613952R66	RES, 0
R710	NOTPLACED	NOTPLACED
R711	0613952R08	RES, 20K
R712	0613952R66	RES, 0
R713	NOTPLACED	NOTPLACED
R714	0613952Q59	RES, 270
R717	0613958H33	RES, 22
R718	0613952Q56	RES, 200
R719	0613952Q45	RES, 68
R720	0613952H56	RES, 200
R723	0613952Q50	RES, 110
R725	0613952Q85	RES, 3.3K
R726	0613952R66	RES, 0
R727	NOTPLACED	NOTPLACED
R728	0613952Q60	RES, 300
R729	0613952Q33	RES, 22
R730	0613952Q60	RES, 300
R731	0613952R17	RES, 47K
R732	NOTPLACED	NOTPLACED
R733	0613952R66	RES, 0
R902	0613952H47	RES, 82
R903	0613952H47	RES, 82
R904	0613952H47	RES, 82

Circuit Ref	Motorola Part No.	Description
R905	0613952H47	RES, 82
R906	0613952R01	RES, 10K
R907	0613952R01	RES, 10K
R908	0613952H47	RES, 82
R909	0613952H47	RES, 82
R1000	0613952Q25	RES, 10
R1001	0613952R01	RES, 10K
R1002	0613952J73	RES, 10MEG
R1005	0613952Q89	RES, 4.7K
R1006	0613952R01	RES, 10K
R1013	NOTPLACED	NOTPLACED
R1014	0613952R66	RES, 0
R1015	NOTPLACED	NOTPLACED
R1016	0613952R66	RES, 0
R1017	NOTPLACED	NOTPLACED
R1018	0613952R66	RES, 0
R1019	0613952Q18	RES, 5.1
R1020	0613952R66	RES, 0
R1021	0613952R66	RES, 0
R1022	NOTPLACED	NOTPLACED
R1023	0613952R66	RES, 0
R1025	0613952R01	RES, 10K
R1026	0613952R17	RES, 47K
R1027	NOTPLACED	NOTPLACED
R1028	0613952R66	RES, 0
R1034	0613952R01	RES, 10K
R1035	NOTPLACED	NOTPLACED
R1036	0613952R01	RES, 10K
R1041	0613952Q73	RES, 1K
R1045	0613952R01	RES, 10K
R1046	NOTPLACED	NOTPLACED
R1047	0613952R66	RES, 0
R1048	0613952R66	RES, 0
R1051	0613952R66	RES, 0
R1052	0613952R66	RES, 0
R1053	0613952Q89	RES, 4.7K
R1054	0613952Q89	RES, 4.7K
R1055	NOTPLACED	NOTPLACED
R1060	0613952Q25	RES, 10
R1061	0613952R66	RES, 0
R1062	0613952R66	RES, 0
R1063	NOTPLACED	NOTPLACED
R1065	0613952R66	RES, 0
R1067	0613952R03	RES, 12K
R1068	0613952R10	RES, 24K
R1069	0613952R66	RES, 0

Circuit Ref	Motorola Part No.	Description
R1070	0613952R01	RES, 10K
R1072	0613952R66	RES, 0
R2000	0613952R01	RES, 10K
R2004	0613952R66	RES, 0
R2005	0613952R01	RES, 10K
R2006	0613952R01	RES, 10K
R2007	0613952R01	RES, 10K
R2008	0613952R01	RES, 10K
R2009	0613952R01	RES, 10K
R2010	0613952R01	RES, 10K
R2011	0613952R66	RES, 0
R2012	0613952R01	RES, 10K
R2013	0613952R01	RES, 10K
R3004	NOTPLACED	NOTPLACED
R3005	0613952N01	RES, 10K
R3006	NOTPLACED	NOTPLACED
R3007	0613952N01	RES, 10K
R3008	NOTPLACED	NOTPLACED
R3009	0613952N01	RES, 10K
R3010	0613952N01	RES, 10K
R3011	0613952Q81	RES, 2.2K
R3012	0613952Q59	RES, 270
R3013	0613952Q81	RES, 2.2K
R3014	0613952M30	RES, 2K
R3016	0616416H01	RES, 0.1
R3017	0613952P25	RES, 178K
R3018	0613952R18	RES, 51K
R3020	0613952Q34	RES, 24
R3021	0613952Q34	RES, 24
R3023	0613952R17	RES, 47K
R3024	0613952Z67	RES, 51K
R3025	0613952Q49	RES, 100
R3026	0613952Q59	RES, 270
R3027	0613952Q59	RES, 270
R3028	0613952N69	RES, 51.1K
R3029	0613952N60	RES, 41.2K
R3030	0686135Z02	RES, 0.2
R3031	0613952R66	RES, 0
R3032	0613952Q95	RES, 8.2K
R3033	0613952R05	RES, 15K
R3034	0613952Q95	RES, 8.2K
R3035	0613952R05	RES, 15K
R3036	0613952N01	RES, 10K
R3037	0613952Q71	RES, 820
R3038	NOTPLACED	NOTPLACED
R3040	0613952Q81	RES, 2.2K

Circuit Ref	Motorola Part No.	Description
R3041	0613952N01	RES, 10K
R3043	0613952R32	RES, 200K
R3050	0613952R25	RES, 100K
R3051	0613952Q89	RES, 4.7K
R3053	0613952Z58	RES, 22K
R3054	0613952Z58	RES, 22K
R3055	0613952R25	RES, 100K
R3060	0613952M30	RES, 2K
R3070	0613952R33	RES, 220K
R3071	0613952R33	RES, 220K
R3072	0613952R56	RES, 2MEG
R3073	0613952R56	RES, 2MEG
R3074	0613952Q73	RES, 1K
R3075	0613952N01	RES, 10K
R3088	NOTPLACED	NOTPLACED
R3098	0613952Q85	RES, 3.3K
R3100	0613952R17	RES, 47K
R3101	0613952R25	RES, 100K
R3102	0613952A30	RES, 2
R3103	0615049H16	RES, 0.7
R3200	0613952R33	RES, 220K
R3201	0613952R20	RES, 62K
R3202	0613952R33	RES, 220K
R3203	0613952R36	RES, 300K
R3700	0613952Q73	RES, 1K
R3701	0613952R01	RES, 10K
R3702	0613952R12	RES, 30K
R3703	0613952R10	RES, 24K
R3704	0613952R01	RES, 10K
R3800	0613952Q25	RES, 10
R3888	NOTPLACED	NOTPLACED
R8002	0613952R25	RES, 100K
R8003	0613952R01	RES, 10K
R8004	0613952Q70	RES, 750
R8010	0613952R05	RES, 15K
R8011	0613952R25	RES, 100K
R8012	0613952R01	RES, 10K
R8015	NOTPLACED	NOTPLACED
R8016	0613952R66	RES, 0
R8017	NOTPLACED	NOTPLACED
R8020	0613952R66	RES, 0
R8023	0613952R66	RES, 0
R8024	0613952R25	RES, 100K
R8025	0613952R66	RES, 0
R8026	0613952R25	RES, 100K
R8027	0613952R25	RES, 100K

Circuit Ref	Motorola Part No.	Description
R8028	0613952R25	RES, 100K
R8029	0613952R25	RES, 100K
R8030	0613952R01	RES, 10K
R8031	0613952R25	RES, 100K
R8032	0613952R25	RES, 100K
R8033	0613952R25	RES, 100K
R8034	0613952R01	RES, 10K
R8035	0613952R01	RES, 10K
R8036	0613952R01	RES, 10K
R8037	0613952R01	RES, 10K
R9000	0613952Q73	RES, 1K
R9001	0613952Q73	RES, 1K
R9002	0613952Q73	RES, 1K
R9003	0613952Q73	RES, 1K
R9004	0613952Q73	RES, 1K
R9005	0613952Q73	RES, 1K
R9006	0613952Q73	RES, 1K
R9007	0613952Q73	RES, 1K
R9008	0613952R17	RES, 47K
R9009	0613952R01	RES, 10K
R9010	0613952R01	RES, 10K
R9011	0613952R17	RES, 47K
R9012	0613952Q50	RES, 110
R9013	0613952Q37	RES, 33
R9014	0613952R01	RES, 10K
R9015	0613952R01	RES, 10K
R9016	0613952R01	RES, 10K
R9017	0613952R01	RES, 10K
R9018	0613952R01	RES, 10K
R9019	0613952Q73	RES, 1K
R9020	0613952Q89	RES, 4.7K
R9050	0613952R01	RES, 10K
R9051	0613952R01	RES, 10K
R9052	0613952Q65	RES, 470
S9000	4086470Z01	SWITCH
S9001	4015186H01	SWITCH
S9002	4015203H01	SWITCH
SH9000	NOTPLACED	NOTPLACED
SH9001	NOTPLACED	NOTPLACED
T400	2515396H01	XFMR
T401	2515396H01	XFMR
U001	5104932K08	SC51650VF
U002	5114000B59	MC74VHC1GT66
U200	5116014H01	UPC8179TK
U400	5115442H01	MAX2371
U600	5102495J14	AD9864

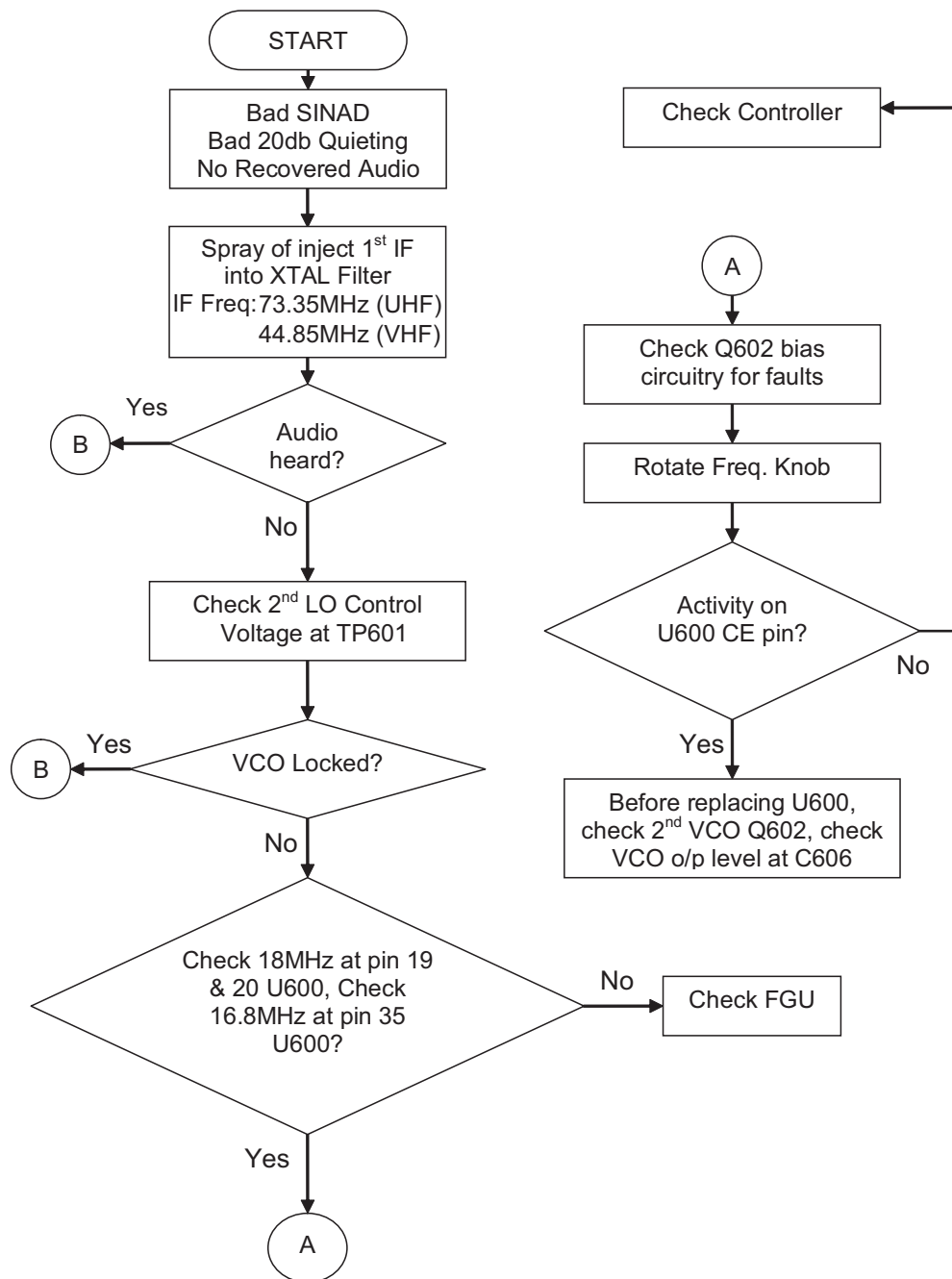
Circuit Ref	Motorola Part No.	Description
U700	4802246J29	ADA4743
U701	5115147H01	AD8566
U702	5115022H01	LM50
U1000	5102495J13	OMAP1710
U1005	5171209L01	TXB0104ZXUR
U1006	5115001H02	NL27WZU04
U2000	0104024J27	M58WR064FB
U2001	5171614M01	MT48H4M16LF
U3000	5185143E77	PWR_MNGR_BLOCK
U3002	5115616H01	LP8340
U3003	5115453H01	LMC6035ITLX
U3004	5114007A43	NL17SZ14
U3006	5115974H01	LP3990
U3007	5171395L01	TS5A23166
U3008	5115391H01	TK11100CSC
U3009	5164852H47	PCA9306
U3020	5171428L01	LTC1877
U3021	5171428L01	LTC1877
U3700	5116282H01	TPS79228
U3701	5116283H01	TPS79101
U8000	0104024J41	GSC3F
U8001	5164015H55	UPC8211TK
VR9000	4866544A01	SR05
VR9001	4813979P10	MMQA5V6T1
VR9002	4813979P10	MMQA5V6T1
VR9003	4815040H01	MM3Z12VT1G
VR9004	4815040H01	MM3Z12VT1G
VR9005	4805656W76	MM5Z5V6
VR9006	4805656W76	MM5Z5V6
VR9007	4805656W76	MM5Z5V6
VR9008	4813979P10	MMQA5V6T1
VR9009	4813977C23	MMSZ5243
VR9010	4813977C23	MMSZ5243
VR9015	NOTPLACED	NOTPLACED
VR9016	NOTPLACED	NOTPLACED
VR9017	4815040H01	MM3Z12VT1G
VR9018	4815040H01	MM3Z12VT1G
VR9020	4813979P10	MMQA5V6T1
VR9021	4813979P10	MMQA5V6T1
VR9022	4813979P10	MMQA5V6T1
VR9023	4815040H01	MM3Z12VT1G
Y001	5116032H01	IVT5300B
Y1000	4809612J45	CX-91F
Y3000	4802582S80	XTAL
Y3001	4815028H01	CX-101F
Y8000	4802582S80	XTAL

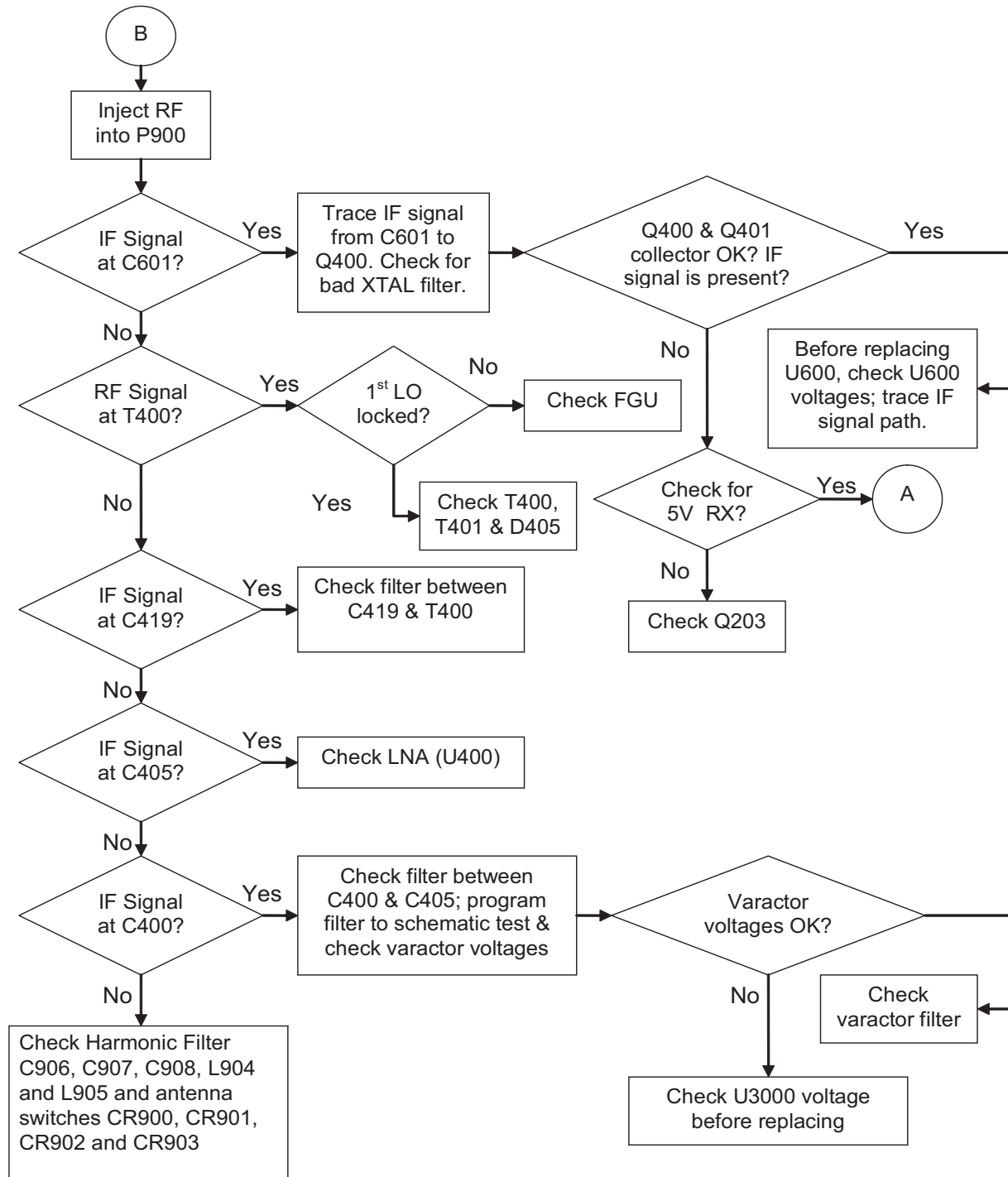
Notes

Section 8

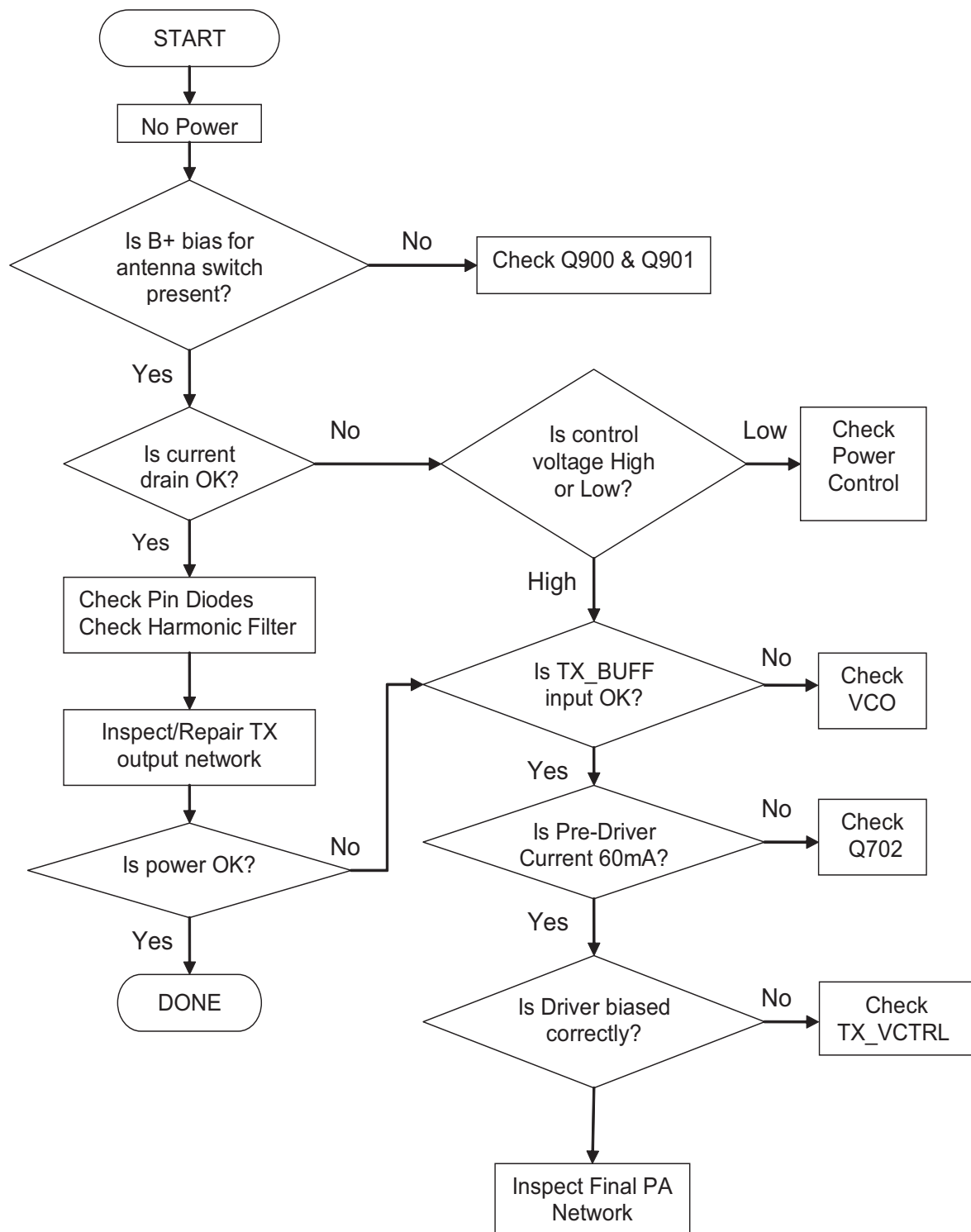
TROUBLESHOOTING CHARTS

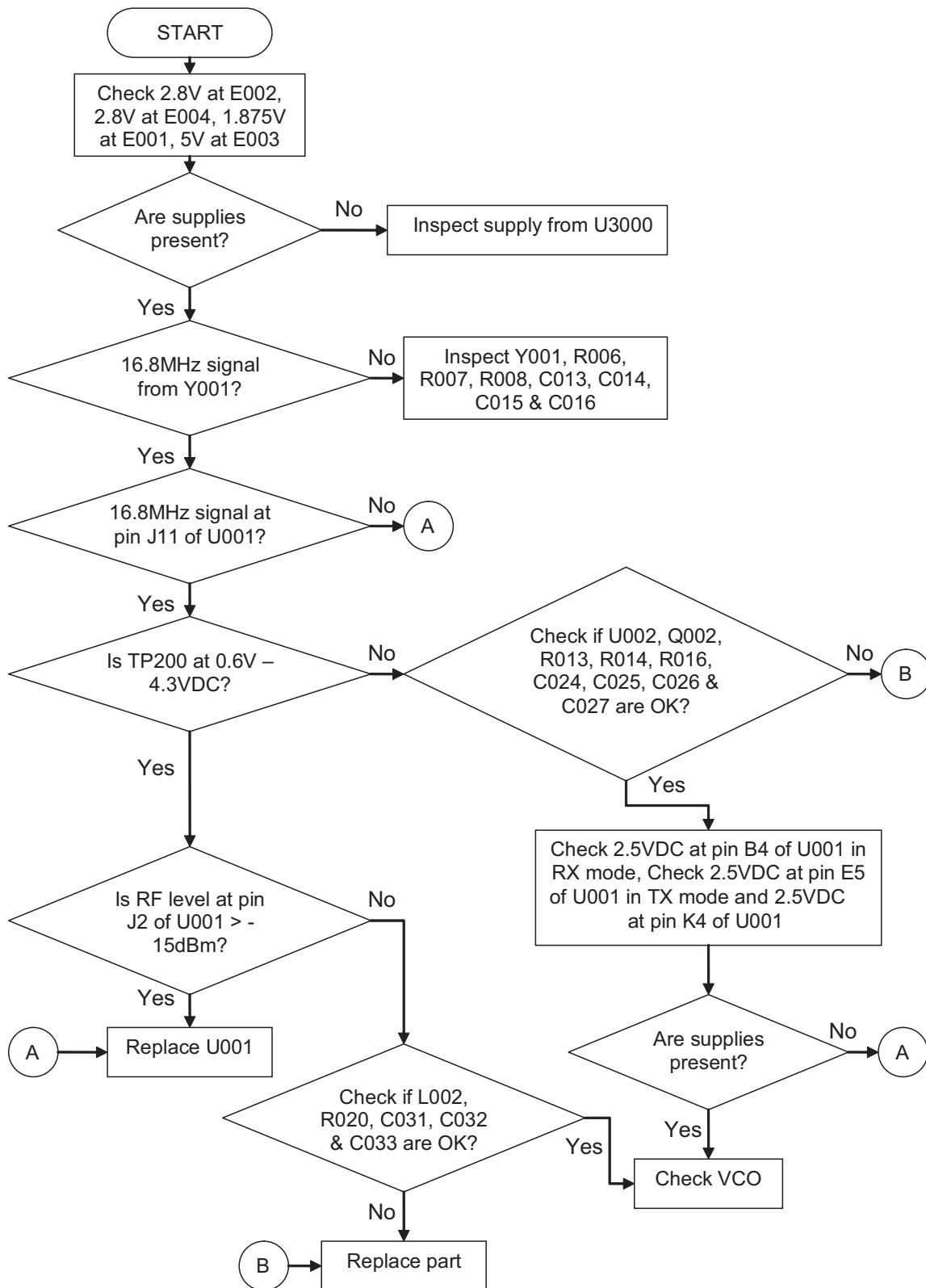
1.0 VHF and UHF1 Troubleshooting Charts



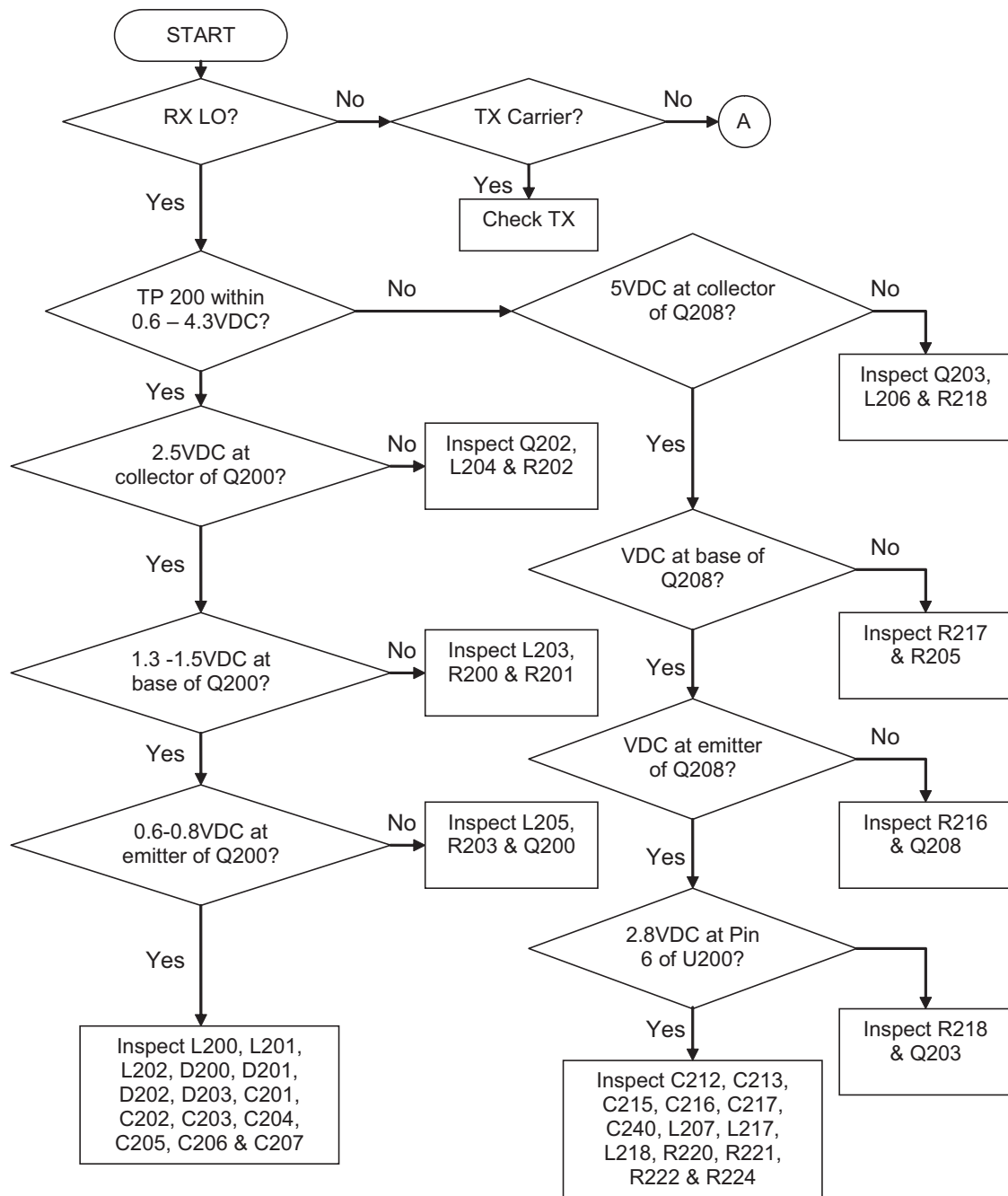


Troubleshooting Flow Chart for Receiver
(Sheet 2 of 2)

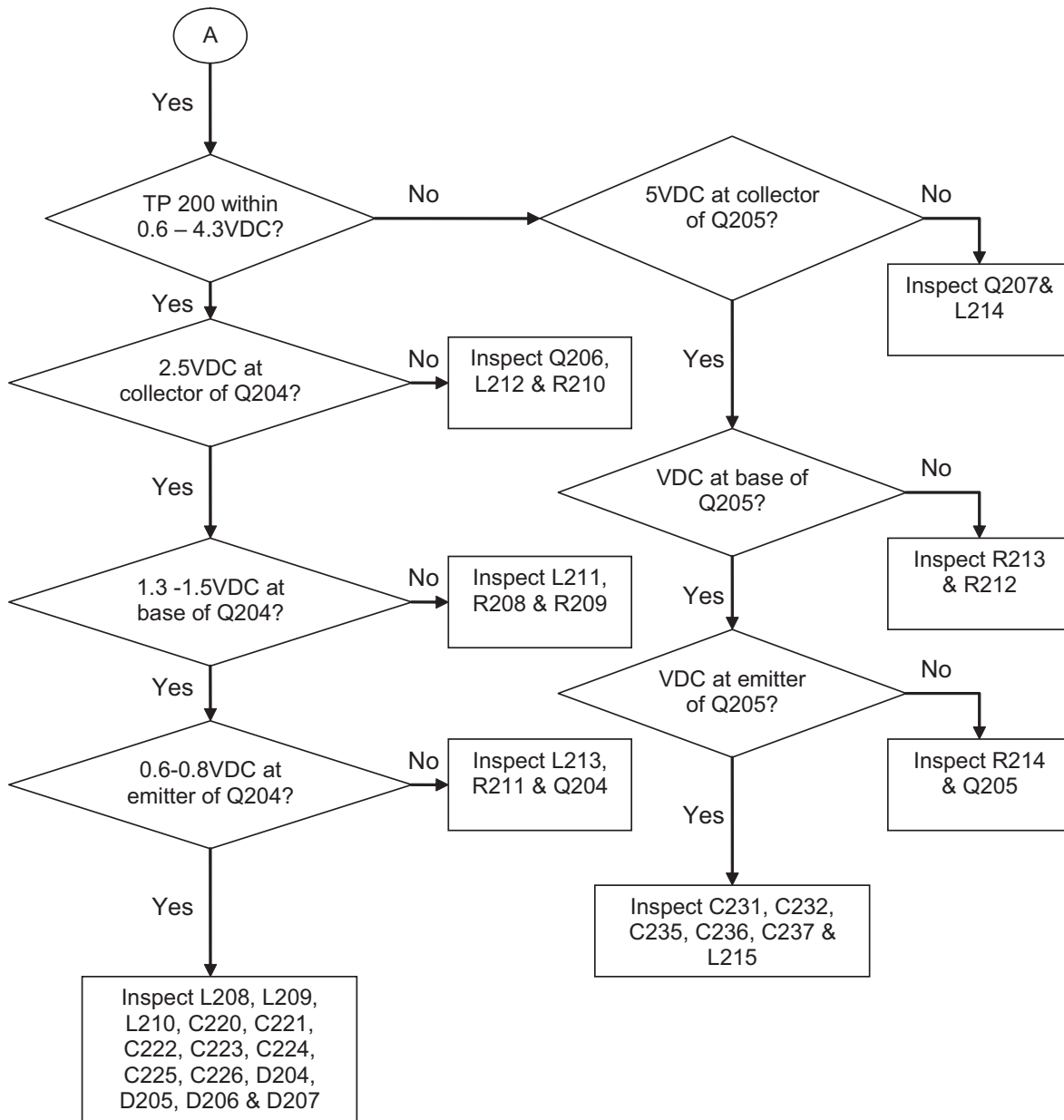
***Troubleshooting Flow Chart for Transmitter***



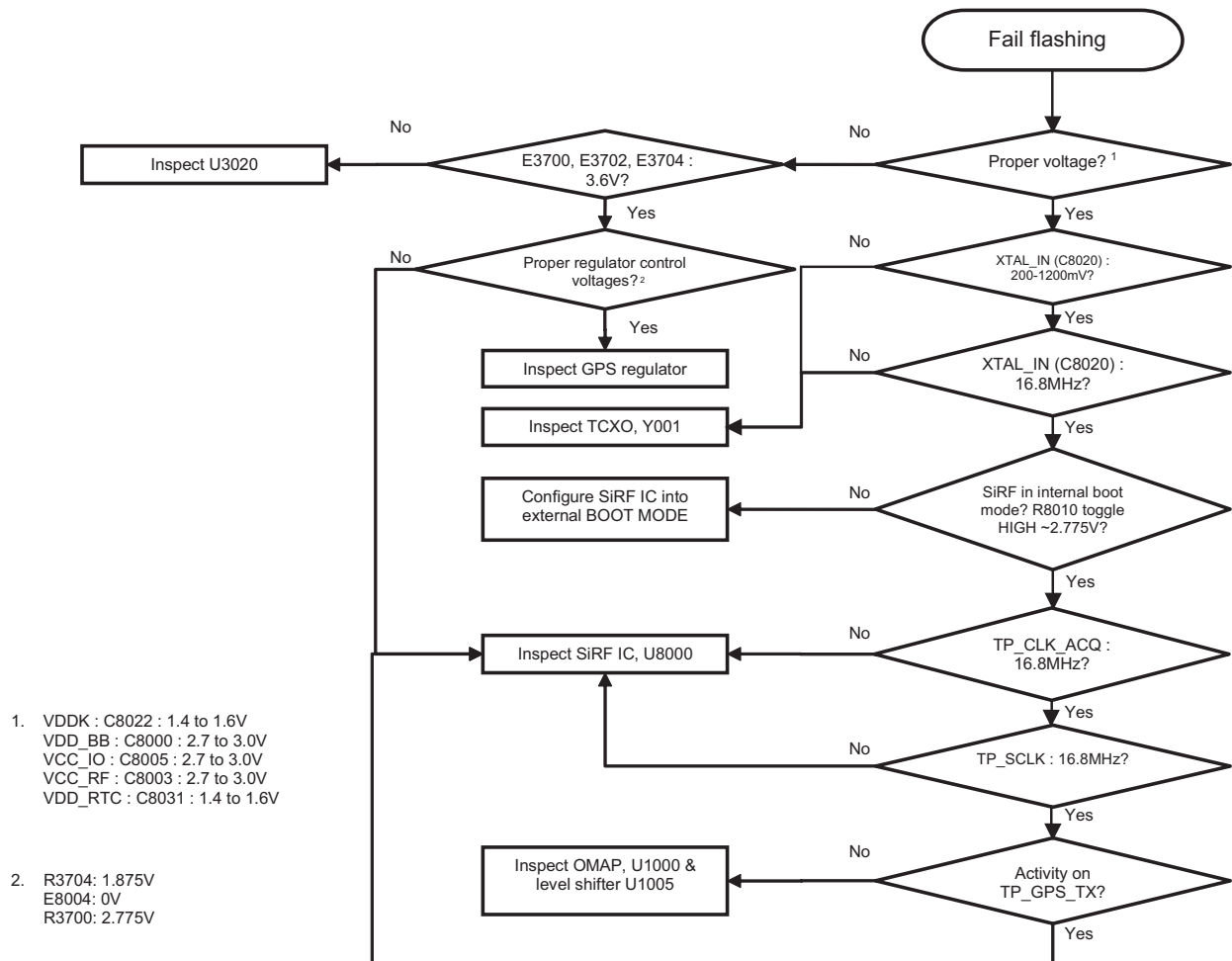
Troubleshooting Flow Chart for Synthesizer

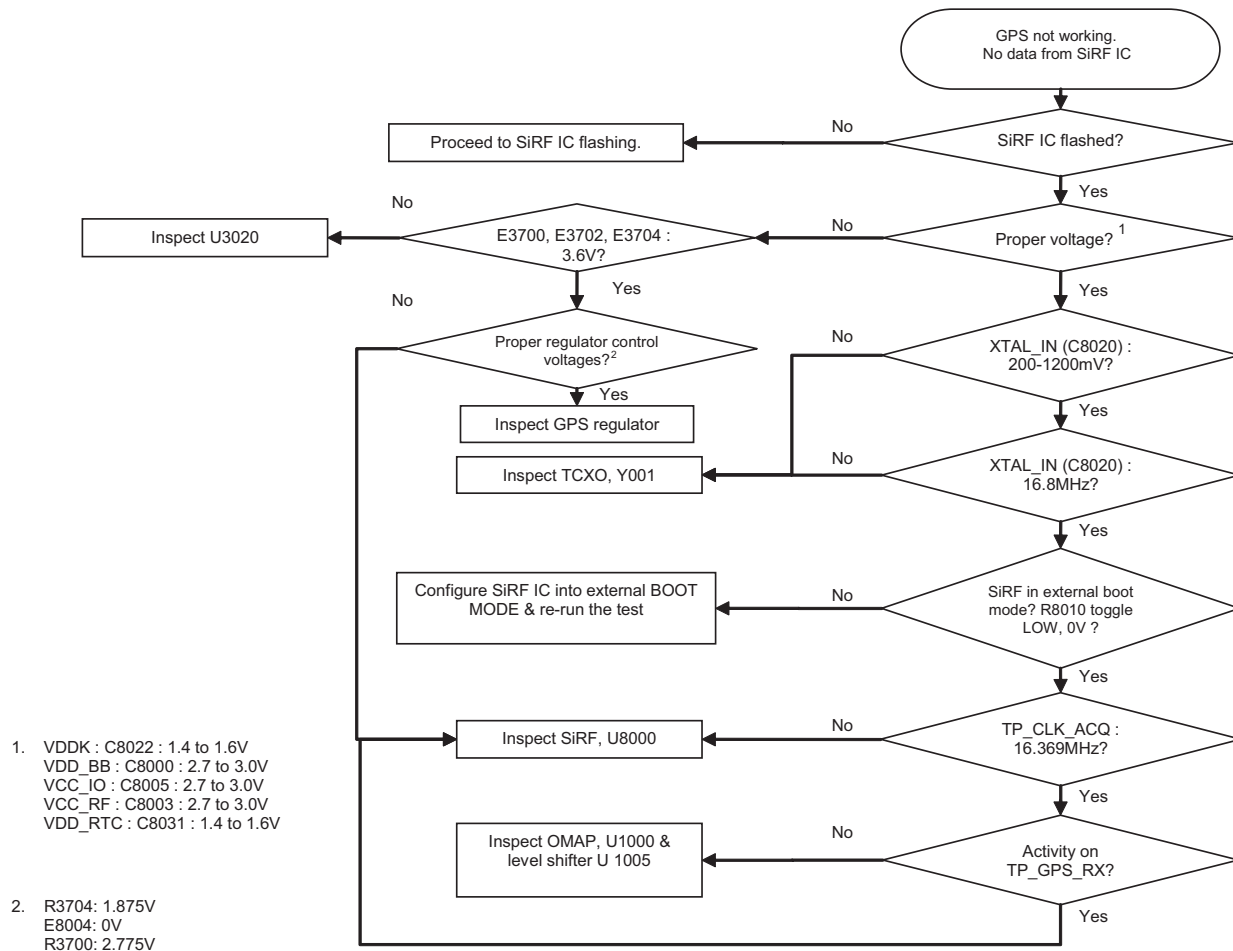


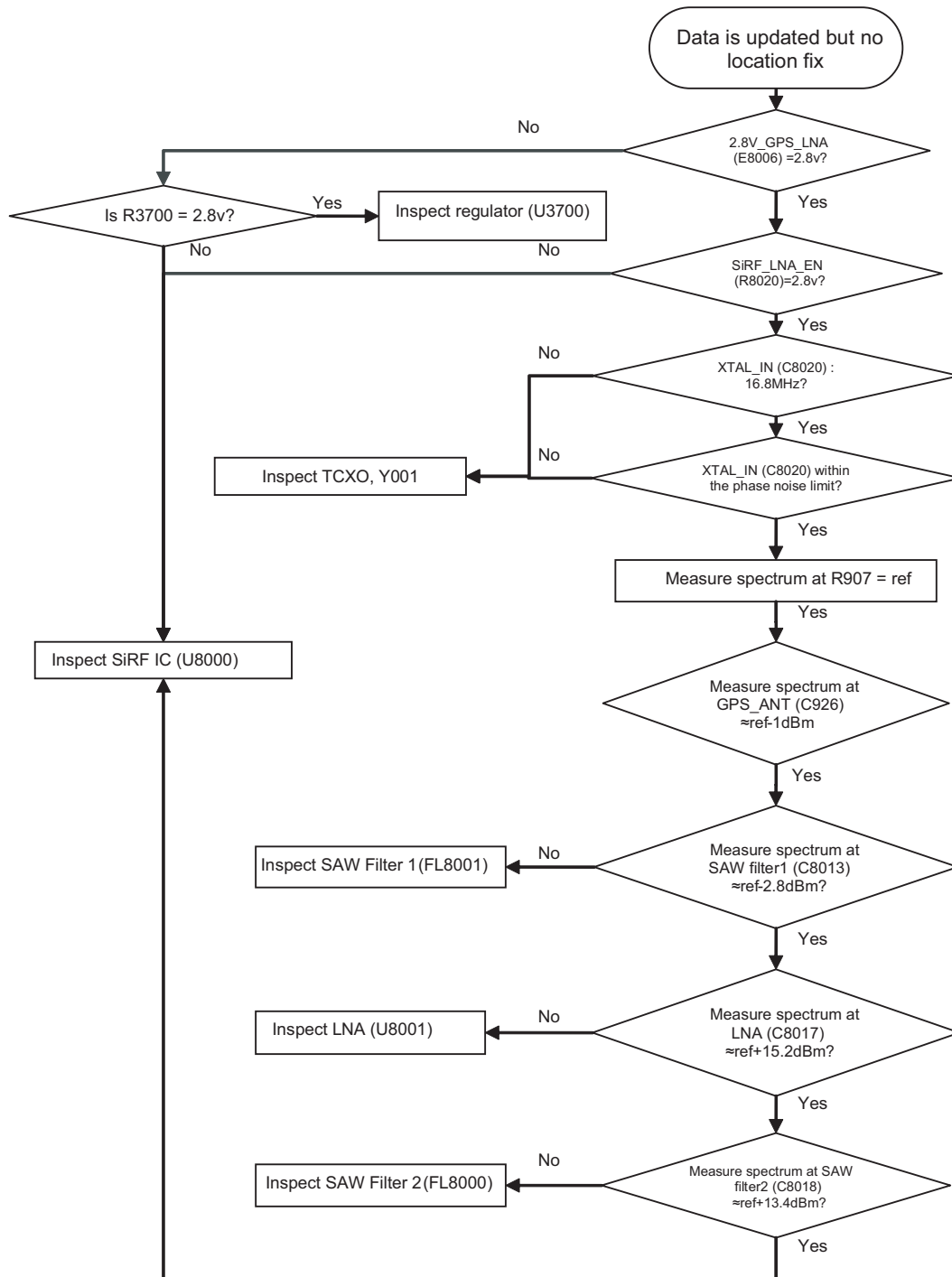
Troubleshooting Flow Chart for VCO
(Sheet 1 of 2)



Troubleshooting Flow Chart for VCO
(Sheet 2 of 2)







Notes

Section 9

OPTION BOARD INFORMATION

1.0 Option Board

The option board is an interface board between the main RF board and the keypad and Universal Connector. The option board interfaces signals on 40-pin connector on the main board with signals on keypad flex (keypad, side buttons, microphone, backlight control & supply, PTT) and UC flex/connector of radio side connector (data, USB, accessory device supply, speaker).

The option board also provides test point for each UC signal to allow communication and testing of radio during production testing. Zener diodes are placed on keypad, side buttons, microphone, PTT, data, USB, accessory device supply, speaker, lines for protection of radio from electrostatic discharge (ESD). A transistor is placed here as a switch for backlight LED's for keypad.

2.0 Board Layout/Schematic for Option Board

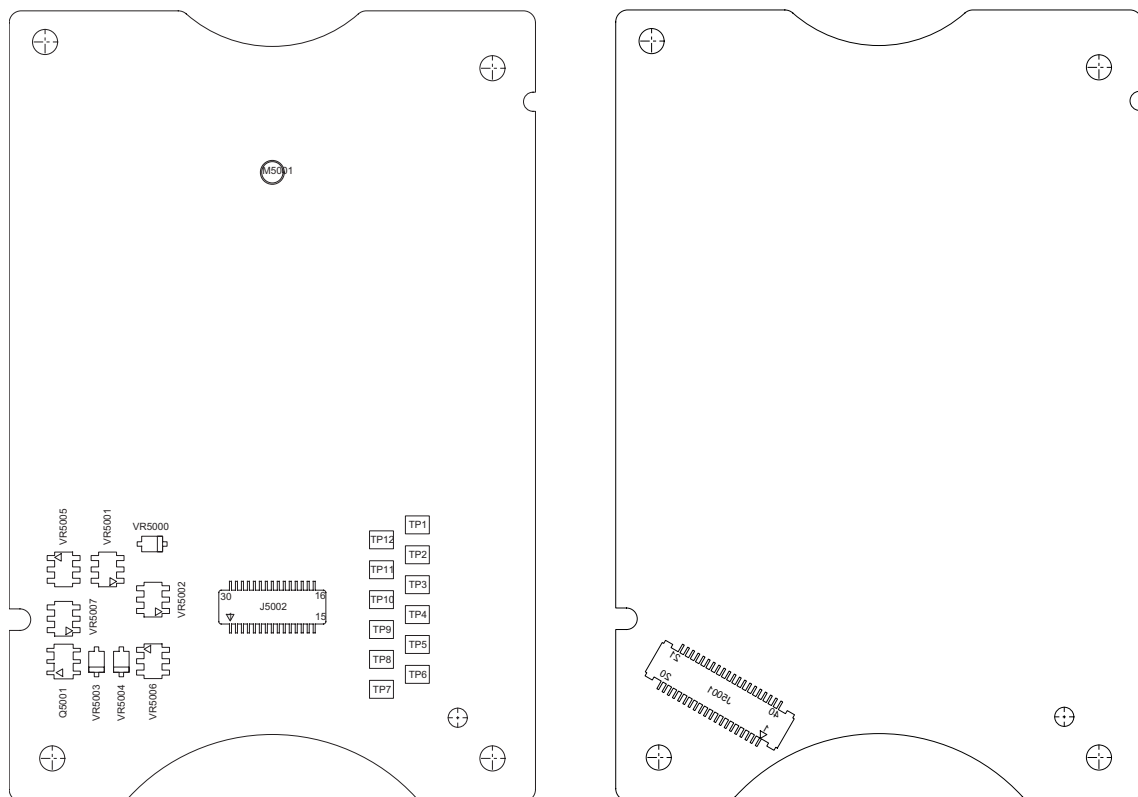


Figure 9-1: Option Board Layout

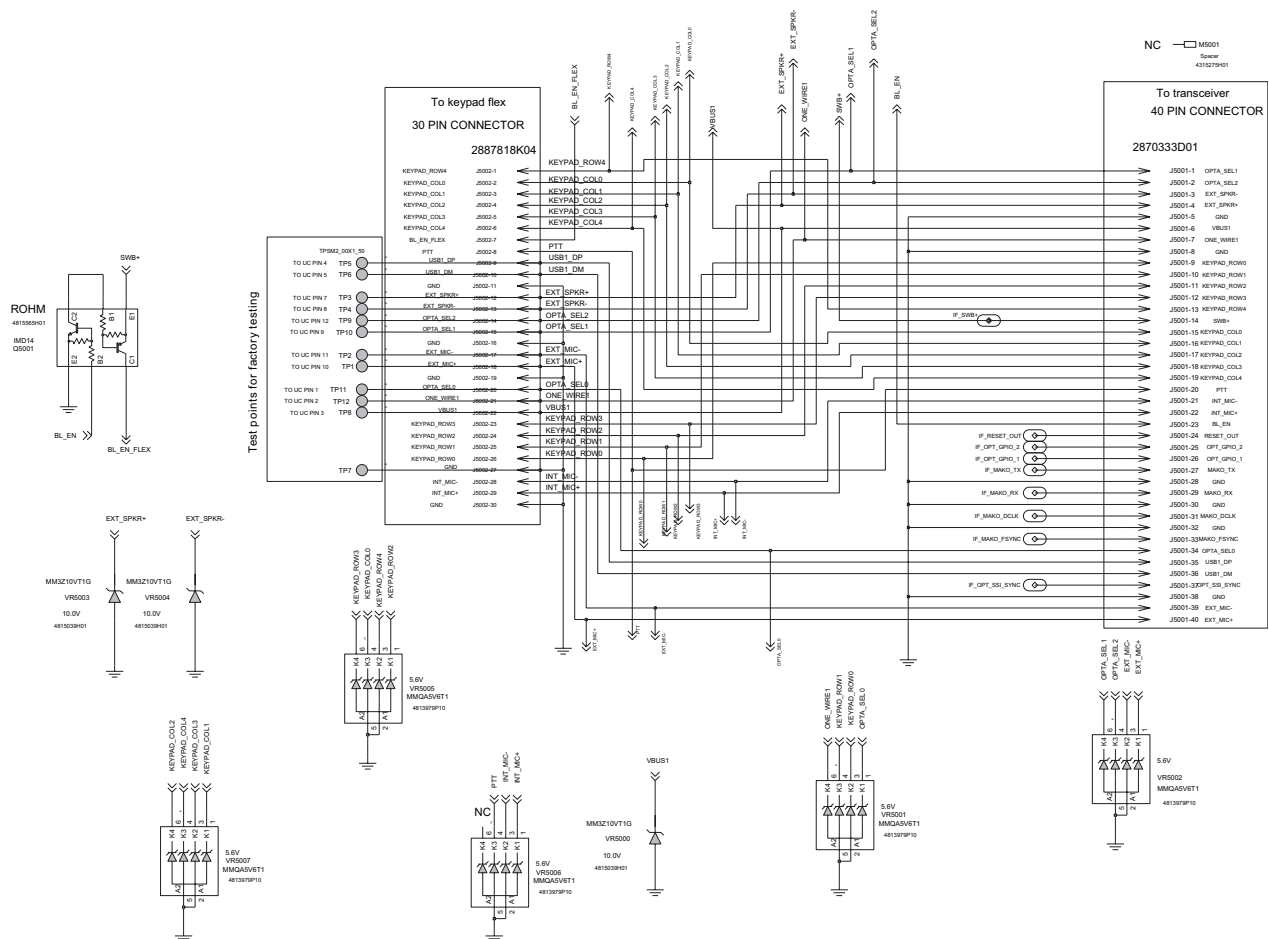


Figure 9-2: Option Board Schematic

2.1 Parts List for Option Board

Reference Symbol	Motorola Part No.	Description
J5002	2887818K04	30 pin board-to-board connector, connector_p
J5001	2871741C01	40 pin board-to-board connector, connector_p
Q5001	4815565H01	ROHM IMD14 transistor
VR5001	4813979P10	MMQA5V6T1
VR5002	4813979P10	MMQA5V6T1
VR5005	4813979P10	MMQA5V6T1
VR5006	4813979P10	MMQA5V6T1
VR5007	4813979P10	MMQA5V6T1
VR5003	4815040H01	MM3Z12VT1G
VR5004	4815040H01	MM3Z12VT1G
VR5000	4815040H01	MM3Z12VT1G
M5001	4315275H01	Spacer

Appendix A EMEA Regional Warranty, Service and Technical Support

1.0 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.

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.

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.

2.0 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.

3.0 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://emeaonline.motorola.com>

* 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).

4.0 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 - Oleg Machnev
Telephone: +7 495 785 0150
Fax: +7 495 785 0185
Email: CSA002@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: +27 11 800 7922
Fax: +27 11 800 7923
Email: radiosupport.za@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

5.0 Further Assistance From Motorola

You can also contact the Customer Help Desk through the following web address.
<http://www.motorola.com/governmentandenterprise/contactus>

Glossary

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
Analog	Refers to a continuously variable signal or a circuit or device designed to handle such signals.
Band	Frequencies allowed for a specific purpose.
CPS	Customer Programming Software: Software with a graphical user interface containing the feature set of a radio.
Default	A pre-defined set of parameters.
DP	Refers to Digital Professional Radio model names in the MOTOTRBO Professional Digital Two-Way Radio System.
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: A type of digital communications that utilizes privacy call, as well as memory channel and busy channel lock out to enhance communication efficiency.
FCC	Federal Communications Commission.
Frequency	Number of times a complete electromagnetic-wave cycle occurs in a fixed unit of time (usually one second).
GPIO	General-Purpose Input/Output: Pins whose function is programmable.
GPS	Global Positioning System
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.
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.
LED	Light Emitting Diode: An electronic device that lights up when electricity is passed through it.

Term	Definition
MDC	Motorola Digital Communications.
MHz	Megahertz: One million cycles per second. Used especially as a radio-frequency unit.
Paging	One-way communication that alerts the receiver to retrieve a message.
PC Board	Printed Circuit Board. Also referred to as a PCB.
PL	Private-Line Tone Squelch: A continuous sub-audible tone that is transmitted along with the carrier.
Programming Cable	A cable that allows the CPS to communicate directly with the radio using USB.
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 re-transmits received signals in order to improve communications range and coverage (conventional operation).
RF	Radio Frequency: The portion of the electromagnetic spectrum between audio sound and infrared light (approximately 10 kHz to 10 GHz).
RX	Receive.
Signal	An electrically transmitted electromagnetic wave.
Spectrum	Frequency range within which radiation has specific characteristics.
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.
TOT	Time-out Timer: A timer that limits the length of a transmission.
TPL	Tone Private Line
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.
TX	Transmit.
UHF	Ultra-High Frequency.
USB	Universal Serial Bus: An external bus standard that supports data transfer rates of 12 Mbps.
VIP	Vehicle Interface Port.



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