

Service Manual

Level 3

Preliminary

MOTOROLA[™]

DIGITAL WIRELESS TELEPHONE



Model V710

CDMA 800MHz, 1900Mhz & Analog

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Introduction

Motorola® Inc. maintains a worldwide organization that is dedicated to provide responsive, full-service customer support. Motorola products are serviced by an international network of company-operated product-care centers as well as authorized independent service firms.

Available on a contract basis, Motorola Inc. offers comprehensive maintenance and installation programs that enable customers to meet requirements for reliable, continuous communications.

To learn more about the wide range of Motorola service programs, contact your local Motorola products representative or the nearest Customer Service Manager.

Product Identification

Motorola products are identified by the model number on the housing. Use the entire model number when inquiring about the product. Numbers are also assigned to chassis and kits. Use these numbers when requesting information or ordering replacement parts.

Product Names

Product names are listed on the front cover. Product names are subject to change without notice. Some product names, as well as some frequency bands, are available only in certain markets.

Regulatory Agency Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device may not cause any harmful interference
- This device must accept interference received, including interference that may cause undesired operation

This class B device also complies with all requirements of the Canadian Interference-Causing Equipment Regulations (ICES-003).

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Computer Program Copyrights

The Motorola products described in this manual may include Motorola computer programs stored in semiconductor memories or other media that are copyrighted with all rights reserved worldwide to Motorola. Laws in the United States and other countries preserve for Motorola, Inc. certain exclusive rights to the copyrighted computer programs, including the exclusive right to copy, reproduce, modify, decompile, disassemble, and reverse-engineer the Motorola computer programs in any manner or form without Motorola's prior written consent. Furthermore, the purchase of Motorola products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license or rights under the copyrights, patents, or patent applications of Motorola, except for a nonexclusive license to use the Motorola product and the Motorola computer programs with the Motorola product.

About this Service Manual

Using this service manual and the suggestions contained in it assures proper installation, operation, and maintenance. Refer questions about this manual to the nearest Customer Service Manager.

Audience

This service manual aids service personnel in testing and repairing V710 telephones. Service personnel should be familiar with electronic assembly, testing, and troubleshooting methods, and with the operation and use of associated test equipment.

Use of this manual assures proper installation, operation, and maintenance of Motorola products and equipment. It contains all service information required for the equipment described and is current as of the printing date.

Scope

This manual provides basic information relating to V710 telephones, and also to provides procedures and processes for repairing the units at Level 1 and 2 service centers including:

- Unit swap out
- Repairing of mechanical faults
- Basic modular troubleshooting
- Testing and verification of unit functionality
- Initiate warranty claims and send faulty modules to Level 3 or 4 repair centers

Conventions

The following special characters and typefaces are used in this manual to emphasize certain types of information.



Note: Emphasizes additional information pertinent to the subject matter.




Caution: Emphasizes information about actions that may result in equipment damage.



Warning: Emphasizes information about actions that may result in personal injury.



Keys to be pressed are represented graphically. For example, instead of “Press the Menu Key”, you will see “Press ”.

Information from a screen is shown in text as similar as possible to what displays on the screen. For example, `ALERTS` or `ALERTS` or `ALERTS`.

Information that you need to type is printed in **boldface type**.

Warranty Service Policy

The product is sold with the standard 12-month warranty terms and conditions. Accidental damage, misuse, and extended warranties offered by retailers are not supported under warranty. Non warranty repairs are available at agreed fixed repair prices.

Out-of-Box Failure Policy

The standard out of box failure criteria applies. Customer units that fail very early on after the date of sale, are to be returned to Manufacturing for root cause analysis, to guard against epidemic criteria. Manufacturing will bear the costs of early life failure.

Product Support

Customer's original units will be repaired but not refurbished as standard. Appointed Motorola Service Hubs will perform warranty and non-warranty field service for level 2 (assemblies) and level 3 (limited PCB component). The Motorola High Technology Centers will perform level 4 (full component) repairs.

Customer Support

Customer support is available through dedicated Call Centers and in-country help desks. Product Service training is available through the local Motorola Support Center.

Parts Replacement

When ordering replacement parts or equipment, include the Motorola part number and description used in the service manual or supplement.

When the Motorola part number of a component is not known, use the product model number or other related major assembly along with a description of the related major assembly and of the component in question.

In the U.S.A., to contact Motorola, Inc. on your TTY, call: 800-793-7834

Accessories and Aftermarket Division (AAD)

Order replacement parts, test equipment, and manuals from AAD.

U.S.A.

Phone: 800-422-4210

FAX: 800-622-6210

Outside U.S.A.

Phone: 847-538-8023

FAX: 847-576-3023

In EMEA call +49 461 803 1638.

In Asia call +65 648 62995.

Specifications

General Function	Specification
Frequency Range 1900 MHz PCS	1931.250 -1988.750 MHz Rx 1851.250 -1908.750 MHz Tx
Frequency Range 800 MHz CDMA/ AMPS	869.04 - 893.97 Rx 824.04 - 848.97 Tx
Channel Spacing	50 kHz PCS 30 kHz CDMA/AMPS
Channels	1200 PCS 832 CDMA/AMPS
Modulation	1M25D1W (1.25 MHz bandwidth) CDMA 3G1XRTT (1.25 MHz bandwidth) CDMA-1X F3 +12 kHz for 100% at 1 kHz AMPS
Transmitter Phase Accuracy?	5 Degrees RMS, 20 Degrees peak
Duplex Spacing	80 MHz PCS 45 MHz AMPS
Frequency Stability	± 300 Hz (CDMA) ± 2.5 ppm (AMPS)
Power Supply	3.6V Li Ion 750 mAh battery
Average Transmit Current	310 mA at +13 dBm)
Average Stand-by Current	3.40 mA
Dimensions (with 750 mAh Li ion battery)	94mmX49mmX23mm 3.7 in. x 1.9 in. x 0.9 in.
Size (Volume)	88 cc (5.37 in. ³) without antenna
Weight	≤100g (3.84 oz) with battery
Temperature Range	-30° C to +60° C (-22° F to +140° F)
Humidity	80% Relative Humidity at 50° C (122° F)
Battery Life, 750 mAh Li Ion Battery	Up to 180 minutes digital talk time (IS 95 A/B) Up to 90 minutes talk time (Analog) Up to 250 hours (IS 95 A/B) standby time Up to 350 hours (IS 2000) standby time Up to 15 hours standby time (Analog)
	All talk and standby times are approximate and depend on network configuration, signal strength, and features selected.

Transmitter Function	Specification
RF Power Output	0.20 watts -23 dBm into 50 ohms (CDMA nominal) .6 watts -27.0 dBm into 50 ohms (AMPS nominal)
Input/Output Impedance	50 ohms (nominal)
Transmit Audio Response	6 dBm/octave pre-emphasis
Modulation	1M25DIW (1.25 MHz bandwidth) CDMA
CDMA Transmit Waveform Quality (Rho)	0.94

Receiver Function	Specification
Receive Sensitivity	-116 dBm (AMPS, SINAD, C-MSG weighted) Sinad 12dB or greater -104 dBm (CDMA, 0.5% Static FER) 0.5% or less
Audio Distortion	Less than 5% at 1004 Hz, +/- 8 kHz peak frequency deviation (transmit and receive)

Receiver Function	Specification
Adjacent and Alternate Channel Desensitization	3% BER max at 107 dBm signal; -94 dBm/30 kHz, -65 dBm/60 kHz
IM (AMPS)	Greater than 65 dB

Product Overview

Motorola V710 mobile telephones feature Code Division Multiple Access (CDMA) technology. The mobile telephone uses a simplified icon and Graphical user interface (GUI) for easier operation, allow Short Message Service (SMS) text messaging, and include clock, alarm, datebook, calculator, and caller profiling personal management tools. The V710 also has a built in camera. The phone provides 32 Embedded ring tones including VibraCall vibrating alert and 32 Downloadable/Customizable iMelody ring tones. The V710 is a single band phone that allows roaming within the CDMA 800 MHz bands.

The V710 CDMA phone consists of a main housing assembly and a flip assembly. The phone has the main circuit board, battery, headset jack, and accessory connector in the main housing assembly. The display and camera are located in the hinged flip assembly.

The flip assembly contains the entire hinge mechanism. It is attached to the main housing by four screws. The main display is on the inside of the flip assembly and a one line LED display on the outside of the flip assembly. The main display is a 128 x160 pixel, 262K color TFT LCD. The external display is a 96x39 pixel, 4-color OLED. The camera is a 350K pixel, VGA CMOS Sensor Camera.

The main housing assembly includes a battery cover, chassis, main circuit board, keypad and plastic front housing.

The main circuit board contains the Receiver, Transmitter, Synthesizer and Control Logic Circuitry which together comprise the dual band tri-mode phone electronics.

The telephones are made of polycarbonate plastic with a metal enclosure. The display and speaker, as well as the 18-key keypad, transceiver printed-circuit board (PCB), microphone, charger and headphone connectors, and power button are contained within the flip form-factor housing. The 750 mAh Lithium Ion (Li Ion) battery provides up to 178 minutes of talk time in CDMA mode with up to 264 hours of standby time¹.

Features

V710 telephones use advanced, self-contained, sealed, custom integrated circuits to perform the complex functions required for CDMA communication. Aside from the space and weight advantage, microcircuits enhance basic reliability, simplify maintenance, and provide a wide variety of operational functions.

Features available in this family of telephones include:

- 1.3 M-pixel Camera with Integrated Flash
- Multi-Media Messaging (MMS)
- Video clips capture & playback
- Self Portrait Viewfinder External Display
- 64 Polyphonic, 18mm Office Quality Speaker Phone, Stereo Headset Support
- Integrated MP3 Player, MP3 and MIDI Ringers
- 10 MB User Storage
- Picture Caller ID on External & Internal Display
- Digital Camera Features: Photo Album, Slide Show Viewer, 4X Digital Zoom, Auto timer, Shutter Tones, Adjustable Resolution, Adjustable Lighting Condi-

1. All talk and standby times are approximate and depend on network configuration, signal strength, and features selected. Standby times are quoted as a range from DRX=2 to DRX=9. Talk times are quoted as a range from DTX off to DTX on.

tions, Exposure Settings, 4 Image Styles.

- Digital Camcorder Features: Adjustable video length for up to 3 minutes, Recording sound on/off option, Flash light, Adjustable video quality, Adjustable lighting conditions and exposure settings,
- SD compatible T-Flash Memory Expansion Slot
- Connectivity via Bluetooth™ and CE bus
- Speaker Independent Digit and Name Dialing
- 5-way Navigation, Simultaneous button press for BREW Gaming
- PIM functionality, PC Sync with optional Mobile Phone Tools Software, Predictive Text (iTAP), 500 Multi-fielded Phonebook Entries
-
- TTY compliant
- Hearing Aid Telephone Interconnection System (HATIS) support
- AFLT/aGPS location services²

Simplified Text Entry

iTAP™ predictive text entry. Press a key to generate a character and a dynamic dictionary uses this to build and display a set of word or name options. The iTAP™ feature may not be available in all languages.

Personal Information Management

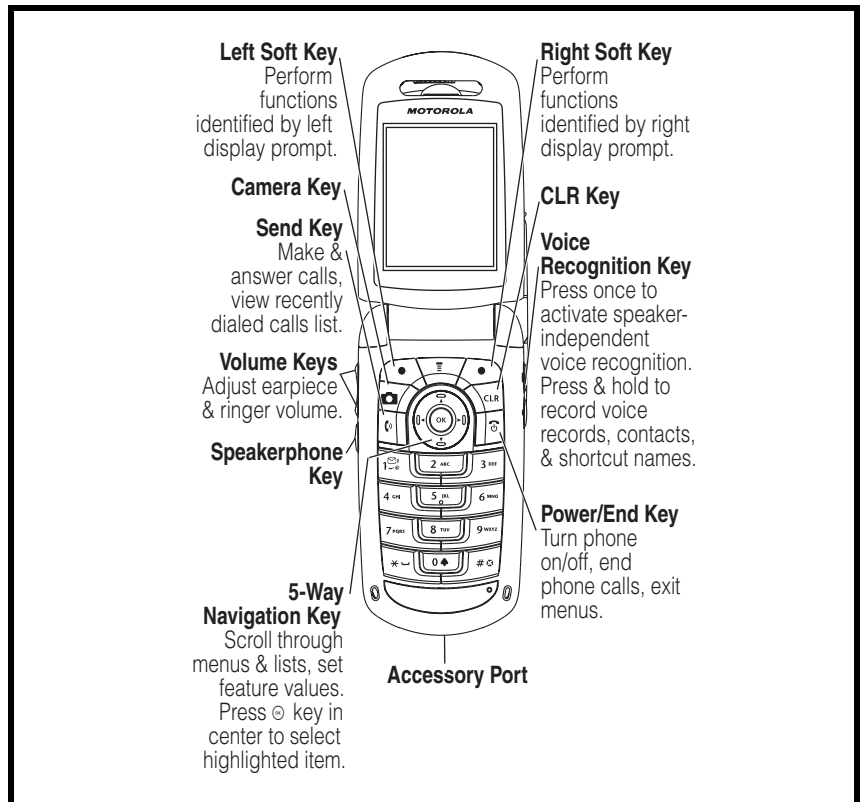
The V710 telephone contains a built in date book with alarm reminders message center and a 100 number capacity phonebook.

2. Network, subscription or service provider dependent feature. Not available in all areas.

General Operation

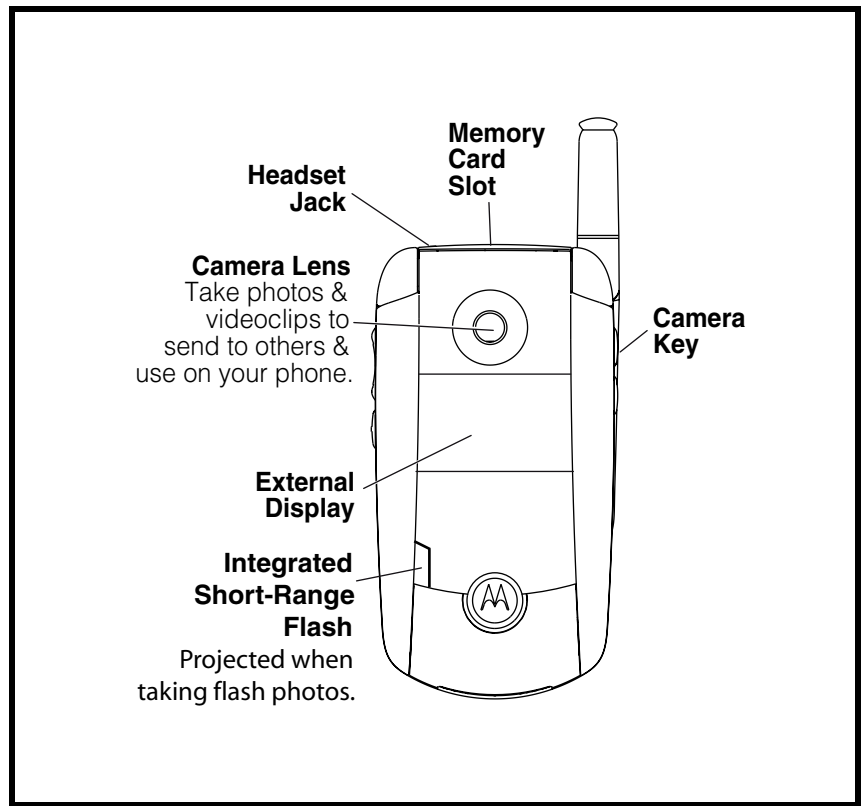
Controls, Indicators, and Input/Output (I/O) Connectors

The V710 telephones' controls are on the front and side of the device, and on the keyboard as shown in Figure 1. Other hardware features are shown in Figure 2.



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Figure 1. Controls and Indicators Locations



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Figure 2. Hardware Features Locations

Menu Navigation

V710 telephones have a simple icon and GUI. The phone also features a user-definable Quick Access menu accessed by holding down the Menu key. A 5-way navigation key allows you to move easily through menus.

Color Display

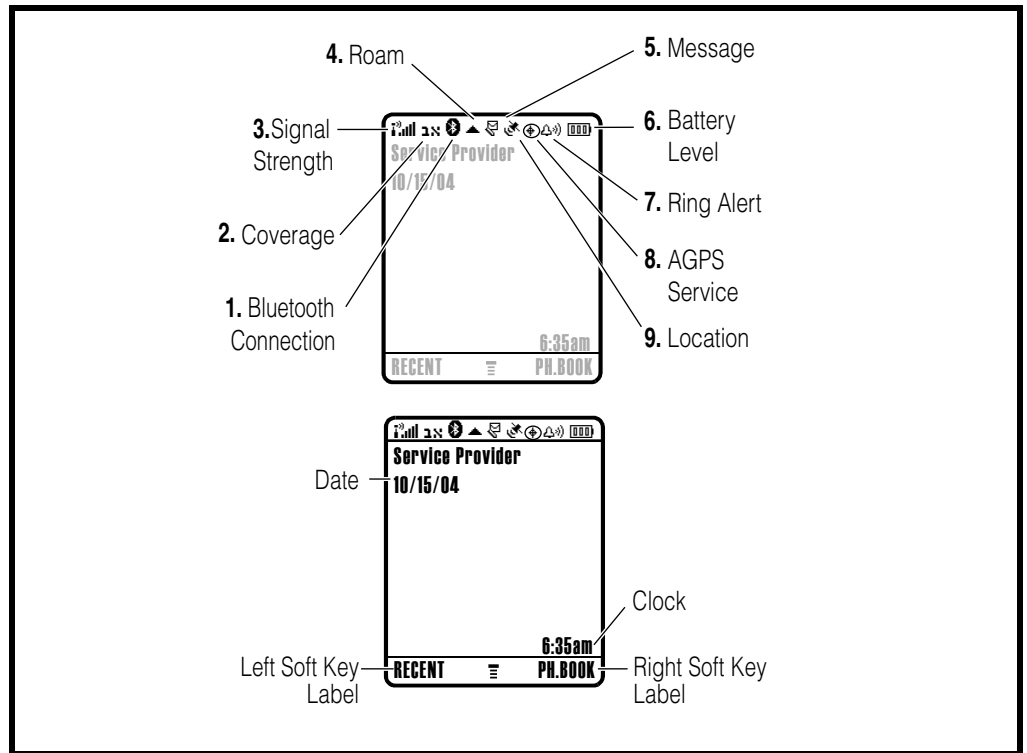
The V710 phone features a 128 x160 pixel, 262K color display. The display provides constant graphical representations of battery capacity and signal strength, as well as the real-time clock.

Display animation makes the phone's icon menu move smoothly as the user scrolls up and down.



Whether a phone displays all indicators depends on the programming and services to which the user subscribes.

Figure 2 shows some common icons displayed on the LCD.



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Figure 3. V710 Display Icon Indicators

Alert Settings

In addition to preset ring tones, V710 telephones allow the user to download additional ring tones. (Availability is carrier and Network dependant).

Motorola V710 phones incorporate the VibraCall[®] discreet vibrating alert that avoids disturbing others when a ringing phone is unacceptable.

Alerts can be set to ring only, vibrate only, vibrate then ring, or no ring or vibrate.

Additionally, the profiling feature allows users to identify incoming calls by a specific ringer tone.

Battery Function

Battery Charge Indicator

The telephone displays a battery charge indicator icon in the idle screen to indicate the battery charge level. The gauge shows four levels: 100%, 66%, 33%, and Low Battery.

Battery Removal

Removing the battery causes the device to shut down immediately and lose any pending work (partially entered phone book entries or outgoing messages, for example).



All batteries can cause property damage and/or bodily injury such as burns if a conductive material such as jewelry, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.



If the battery is removed while receiving a message, the message is lost.



To ensure proper memory retention, turn the phone OFF before removing the battery. Immediately replace the old battery with a fresh battery.

Operation

For detailed operating instructions, refer to the appropriate User Guide listed in the Related Publications section toward the end of this manual.

V710 Theory of Operation

MSM6100 System Overview

QCT's MSM6100 solution, part of QCT's MSM6xxx Mobile Station Modem (MSM™) family of chipsets and system software uses QCT's revolutionary radioOne™ Zero Intermediate Frequency (ZIF), or direct conversion, architecture. It is optimized to support voice and multimedia data applications while enabling CDMA2000 1X network benefits. The MSM6100 solution provides a seamless migration path from 2G to 3G services and applications, and increases voice capacity for CDMA2000 1X networks. It will also enable CDMA developers to quickly develop 3G CDMA2000 1X handsets that exceed the specifications of mobile stations for worldwide cdma-One™ and 3G 1xMC systems, including those based on IS-95A/B and IS-2000 standards.

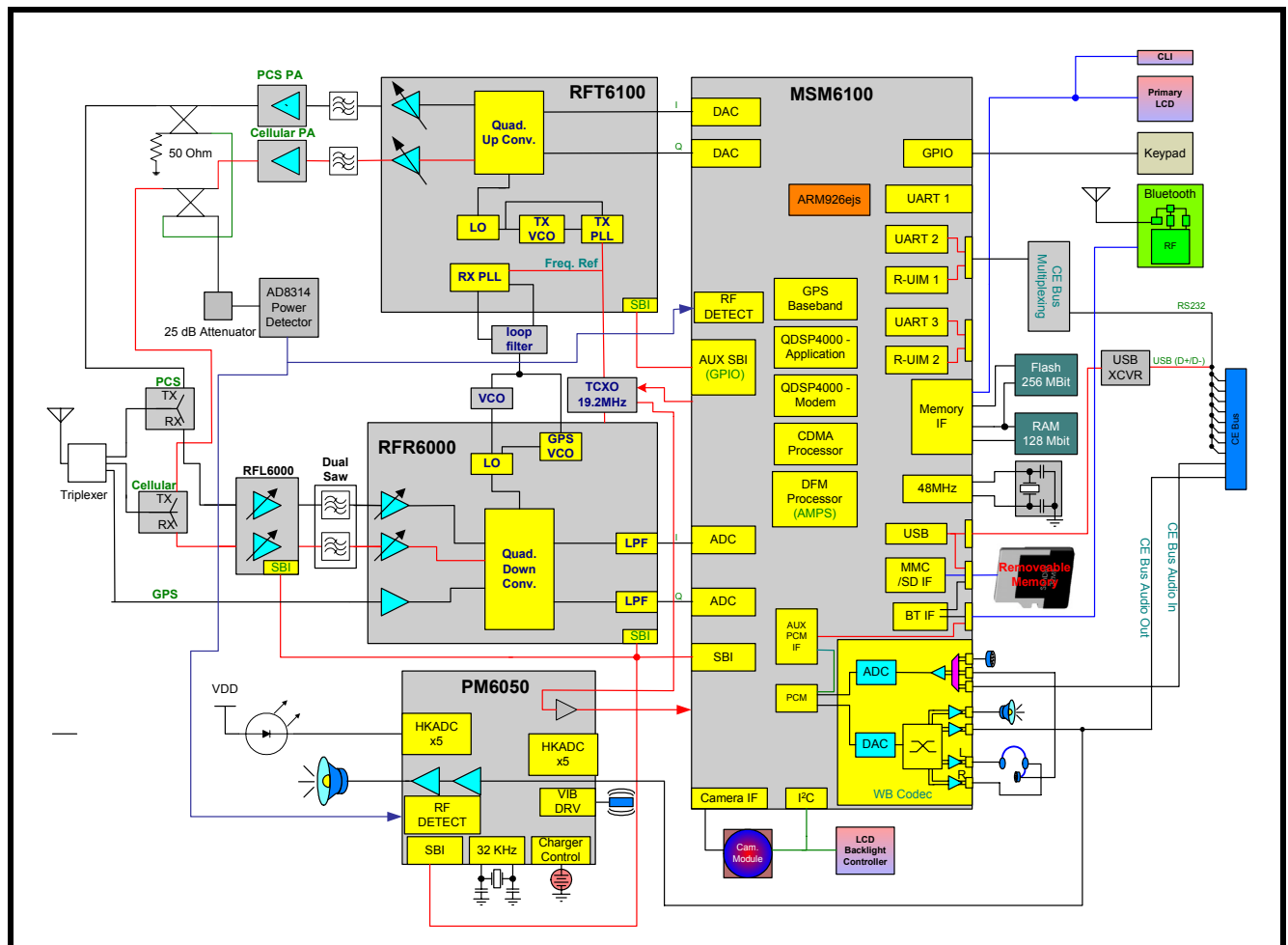


Figure 4. Motorola MSM6100 System Block Diagram

The MSM6100 chipset solution (See Figure 4) consists of the MSM6100 Baseband processor, direct conversion RFL6000™ and RFR6000™ receive devices, the

direct conversion RFT6100™ transmit device, PM6050™ power management device and a compatible power amplifier device. These devices perform all of the signal processing and power management in the subscriber unit.

The 3G CDMA2000 1X MSM6100 chipset and system software features radioOne direct conversion architecture and incorporates a low-power, high-performance RISC microprocessor core featuring the ARM926EJ-S™ CPU and Jazelle™ accelerator circuit for advanced Java applications from ARM® Limited. The MSM6100 solution integrates two, low-power, high-performance QDSP4000™ digital signal processor (DSP) cores. Use of the ARM926EJ-S™ CPU and QDSP4000 DSP eliminates the need for the multimedia companion processor(s) normally required for video-based applications, playing MP3 music files and MIDI synthesizer/CMX functions.

The MSM6100 chipset and system software incorporates the advanced feature set of QCT's Wireless Internet Launchpad™ suite of technologies, integrated MPEG-4 video decoding/encoding, MP3 audio decoding, a 2D/3D graphics accelerator for advanced gaming applications, a Compact Media Extension (CMX™)/MIDI synthesizer, a digital camera interface, an enhanced LCD interface, and JPEG encoding/decoding.

The MSM6100 solution supports QUALCOMM's gpsOne™ position location technology, including standalone mode in which the handset can act as a GPS receiver. The gpsOne solution, featuring SnapTrack™ technology, offers robust data availability under the most challenging conditions, whether in concrete-and-steel high-rises, convention centers, shopping malls, or urban canyons. Using a hybrid approach that utilizes signals from both the GPS satellite constellation and from CDMA cell sites, the gpsOne solution enhances location services availability, accelerates the location determination process and provides better accuracy for callers, whether during emergency situations or while using GPS-enabled commercial applications. The MSM6100 solution also supports the Wireless Internet Launchpad's VectorOne™ compass capability.

The MSM6100 chipset reduces radio bill-of-materials (BOM) by the introduction of RadioOne RF devices. System BOM is further reduced by supporting interfaces to next generation memories architectures such as; NAND FLASH, Pseudo SRAM (PSRAM), Page and Burst mode NOR FLASH and low power SDRAM (LP-SDRAM).

QCT provides a complete software suite, Dual-Mode Subscriber (DMSS) software, for building handsets around the MSM6100 chipset. DMSS software is designed to run on a Subscriber Unit Reference (SURF) phone platform, an optional development platform optimized to assist in evaluating, testing and debugging DMSS software.

The MSM6100 device is offered in a 341-ball, 0.5mm pitch Chip Scale Package (CSP) production package. Additionally, the MSM6100 solution supports QUALCOMM's Binary Run-time Environment for Wireless™ (BREW™) applications development platform.

The MSM6100 device interfaces directly with QCT's new radioOne RF ASICs. radioOne is a revolutionary technology for CDMA transceivers that uses Zero Intermediate Frequency (ZIF), or direct conversion, architecture for the wireless handset market. This direct conversion eliminates the need for large IF Surface Acoustic Wave (SAW) filters and additional IF circuitry, which significantly reduces the handset BOM parts count, facilitating multiband and multimode handsets that can be produced in smaller form factors. radioOne technology also incorporates the frequency synthesis and passive elements used in converting Baseband signals to and from RF. A single external local oscillator is used for the CDMA receiver, which

will provide the capabilities needed to operate on systems around the world and will simplify the procurement of parts and the cost of designing CDMA handsets.

PM6050 Device Description

The PM6050 device (Figure 5) integrates all wireless handset power management, general housekeeping, and user interface support functions into a single mixed signal IC. Its versatile design is suitable for CDMA and non-CDMA handsets, as well as other wireless products such as PC cards, modems, PDAs, etc. The power management portion accepts power from all the most common sources – battery, external charger, adapter, coin cell back-up – and generates all the regulated voltages needed to power the appropriate handset electronics. It monitors and controls the power sources, detecting which sources are applied, verifying that they are within acceptable operational limits, and coordinates battery and coin cell recharging while maintaining the handset electronics supply voltages. Eight programmable output voltages are generated using low dropout voltage regulators, all derived from a common trimmed voltage reference.

The device's general housekeeping functions include a 10-bit ADC whose input is selected by a 10-position analog multiplexer having five internal and five external connections. The internal connections are used to monitor voltage sources, charging status, and current flow. The five external connections are available to monitor system parameters such as temperature, RF output power, and battery ID. Various oscillator, clock, and counter circuits are provided to initialize and maintain valid pulse waveforms and measure time intervals for higher-level handset functions. A dedicated controller manages the TCXO warm-up and signal buffering, and key parameters (under-voltage lockout and crystal oscillator signal presence) are monitored to protect against detrimental conditions. Handset-level user interfaces are also supported. The IC includes four backlight or LED drivers with brightness (current) control that could be used for the keypad, the LCD, and two user definable general-purpose drivers. Independent vibrator and ringer/buzzer drivers alert handset users of incoming calls; these independent drivers can be used simultaneously for dual-function applications. A speaker driver with volume control supports speakerphone and melody-ringer applications. The speaker and ringer/buzzer drivers share common PM6050 circuitry, so only one can be used at a time.

An MSM device controls and statuses the PM6050 IC using a three-line Serial Bus Interface (SBI) supplemented by an Interrupt Manager for time-critical information. Another dedicated IC interface circuit monitors multiple trigger events and controls the power-on sequence. The PM6050 is a mixed signal BiCMOS device and is available in the 56-pad Bump Chip Carrier (56 BCCP) package that includes a large center slug for electrical ground and thermal relief. Since the PM6050 IC includes so many diverse functions, its operation is more easily understood by considering major functional blocks individually. Therefore, the PM6050 document set is organized according to the following device functionality:

- Input Power Management
- Output Voltage Regulation
- General Housekeeping
- User Interfaces
- IC Interfaces

Most of the information contained in this Device Specification is organized accordingly – including the circuit groupings within the block diagram and detailed electrical specifications (Section 4). To begin, introductory descriptions of all the PM6050 device's circuits are provided in the following subsections.

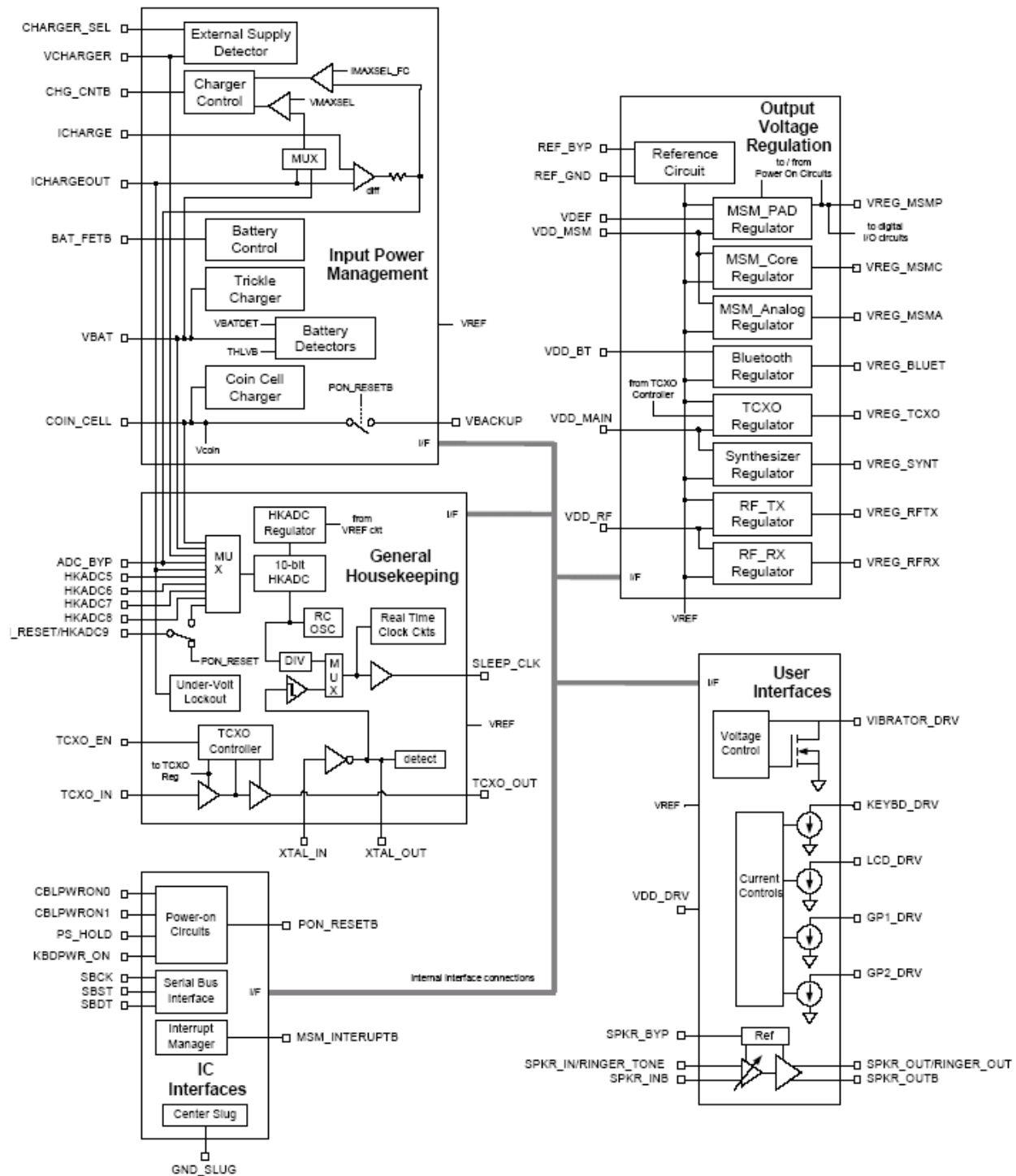


Figure 5. PM6050 Block Diagram

RFT6100 Overview

The RFT6100 is a Baseband-to-RF transmitter IC, an integral component of QUALCOMM's radioOne™ Zero-IF chipset. All radioOne ICs are highly integrated and fulfill specific functions; functional requirements are partitioned between the ICs to yield complete, optimal transceiver implementations. Overall radioOne performance depends on the combined, complementary performance of all the ICs in the chipset. The RFT6100 IC (Figure 6) provides the Zero-IF transmitter signal path, from analog Baseband to RF driver amplifiers, for multi-band multi-mode handsets including combinations of the following:

- Bands
 - Cellular bands
 - PCS bands
- Modes
 - AMPS-FM
 - CDMA (known as IS-95, cdmaOne, IS-98, cdma2000, 1x, 1x EV-DO, etc.)

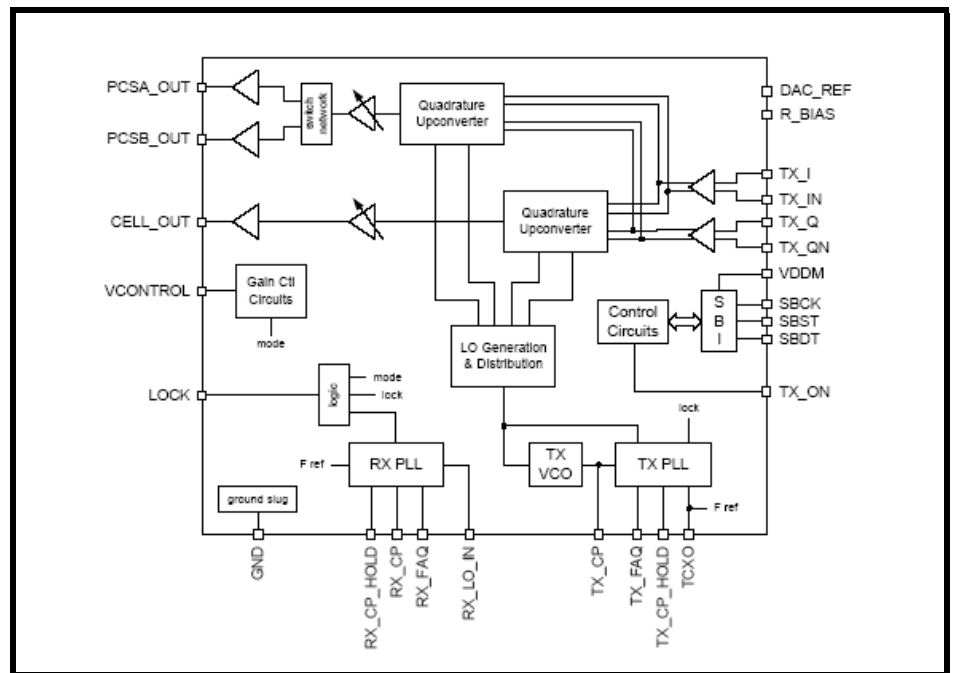


Figure 6. RFT6100 Block Diagram

Numerous secondary functions are integrated on-chip as well: the signal reference for the transmit DACs, two phase-locked loop circuits (Tx LO and Rx LO), the Tx VCO circuit, Tx LO generation and distribution circuits, and various interface, control, and status circuits. The RFT6100 Zero-IF architecture and highly integrated implementation greatly reduces handset PCB size and material costs compared to earlier generation ICs. Major RFT6100 functional blocks are described in this chapter's subsections.

The RFT6100 IC interfaces with one of QUALCOMM's Mobile Station Modem (MSM6XXX) devices for its analog Baseband inputs as well as status and control signaling. Power reduction features controlled by the MSM (such as selective circuit

power-down, gain control, and transmit puncturing) extend handset talk-time. Sophisticated Tx LO circuits provide frequency plan flexibility and are completely implemented on-chip except for the loop filter (two resistors and two capacitors). The RFT6100 integrates the Rx PLL as well (compatible with the RFR6000 receiver IC), fulfilling all handset PLL requirements without an additional PLL IC. Most transmit LO signals are generated using on-chip VCO circuits – only one Rx VCO is needed off-chip to support all receiver bands.

The device is fabricated using an advanced SiGe BiCMOS process that accommodates high-frequency, high-precision analog circuits as well as low-power CMOS functions. Designed to operate with 2.7 to 3.0 Volt power supplies, it is compatible with single-cell Li-Ion batteries. Although the MSM operates at lower voltages, compatibility is assured and latch-up is prevented by RFT6100 input and output buffers when its VDDM (pin 1) is connected to the MSM pad voltage.

The RFT6100 IC is available in the 40-pin bump chip carrier (40 BCCP) package that includes a large center ground slug for improved RF grounding, mechanical strength, and thermal continuity.

RFR6000 Overview

The RFR6000 (see Figure 7) is an RF-to-Baseband receiver IC, an integral component of QUALCOMM's radioOne™ Zero-IF chipset. All radioOne ICs are highly integrated and fulfill specific functions; functional requirements are partitioned between the ICs to yield complete, optimal transceiver implementations. Overall radioOne performance depends on the combined, complementary performance of all the ICs in the chipset.

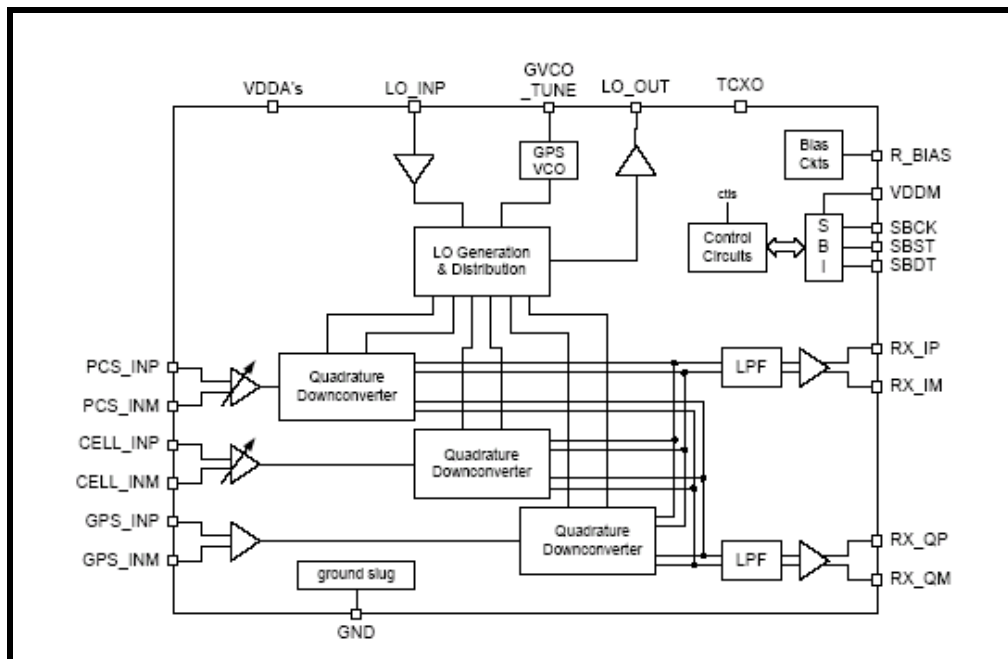


Figure 7. RFR6000 Block Diagram

The RFR6000 IC provides the zero-IF receiver signal path, from RF to analog Baseband, for multi-band, multi-mode handsets including combinations of the following:

- Bands
 - Cellular bands
 - PCS bands
 - GPS band
- Modes
 - AMPS-FM
 - CDMA (known as IS-95, cdmaOne, IS-98, cdma2000, 1x EV-DO)
 - gpsOne™

Numerous secondary functions are integrated on-chip as well: the Rx LO generation and distribution circuits; the GPS VCO circuit; and various interface, control, and status circuits. The RFR6000 Zero-IF architecture and highly integrated implementation greatly reduces handset PCB size and material costs compared to earlier-generation RFICs. Major RFR6000 functional blocks are described in this chapter's subsections.

The RFR6000 IC accepts as many as three inputs from the handset RF front-end design (PCS, Cellular, and GPS). The analog Baseband outputs interface with one of QUALCOMM's Mobile Station Modem (MSM6XXX) devices that also provide status and control signaling. Power reduction features controlled by the MSM (such as selective circuit power-down, gain control, and bias control) extend handset standby time. Integrated Rx LO circuits, ideally supplemented by the RFT6100 transmitter IC, provide frequency plan flexibility and further reduce PCB parts count.

The device is fabricated using an advanced SiGe BiCMOS process that accommodates high-frequency, high-precision analog circuits as well as low-power CMOS functions and is designed to operate with 2.7 to 3.0 volt power supplies. Although the MSM operates at lower voltages, compatibility is assured and latch-up is prevented by RFR6000 input and output buffers when its VDDM (pin 23) is connected to the MSM pad voltage.

The RFR6000 IC is available in the 40-pin bump chip carrier (40 BCCP) package that includes a large center ground slug for improved RF grounding, mechanical strength, and thermal continuity.

RFL6000 Overview

The RFL6000 is a dual LNA IC, an integral component of QUALCOMM's radioOne Zero-IF chipset. All radioOne ICs are highly integrated and fulfill specific functions; functional requirements are partitioned between the ICs to yield complete, optimal transceiver implementations. Overall radioOne performance depends on the combined, complementary performance of all the ICs in the chipset.

The RFL6000 IC (see Figure 8) includes two LNA circuits, one optimized for the Cellular band and one for PCS. The LNAs are separated from all other receive functions contained within the RFR6000 receiver IC to improve mixer LO to RF isolation – a critical parameter in the Zero-IF architecture. Isolation is further improved using high reverse isolation circuits in the LNA designs.

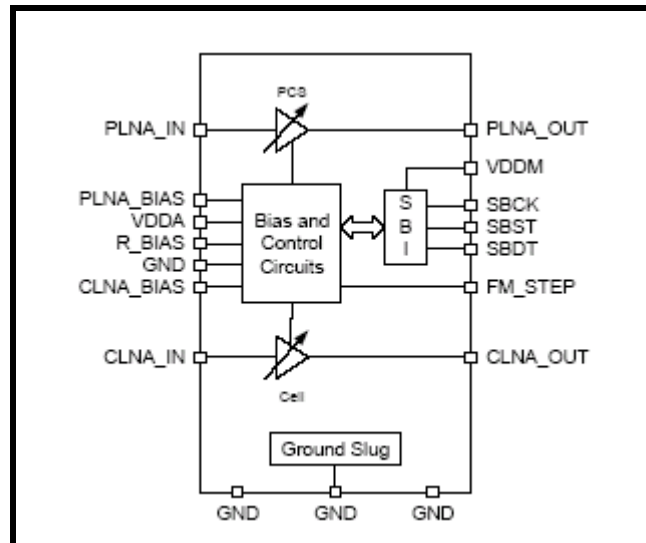


Figure 8. RFL6000 Block Diagram

The RFL6000 is a multi-band multi-mode IC:

- Bands
 - Cellular bands
 - PCS bands
- Modes
 - AMPS-FM
 - CDMA (known as IS-95, cdmaOne, IS-98, cdma2000, 1xEVDO)

The two LNAs are dedicated to different frequency bands; the CLNA supports Cellular bands while the PLNA supports PCS bands. The PLNA gain is always controlled via the Serial Bus Interface (SBI) with three valid settings: Max, Mid, and Low. Three CLNA gain states are also controlled via the SBI for CDMA signal reception, but only two gain states are available for FM operation (Max and Low). When operating in the Cellular-FM mode, the CLNA gain is controlled by a dedicated MSM signal applied to pin 6 (FM_STEP) rather than the SBI.

The IC operating mode and LNA bias currents are automatically adjusted via software to minimize DC power consumption. The IC is placed in Sleep, Rx, and Rx/Tx modes depending upon the handset's status, with LNA bias current also adjusted to meet RF performance requirements with minimal power dissipation when active.

The device is fabricated using a SiGe BiCMOS process ideally suited for high-performance RF circuits and digital I/O functions. All analog/RF functions operate off a common supply voltage (VDDA), with the digital I/O circuits operating off a separate supply (VDDM). VDDM is connected to the MSM_PAD voltage to assure compatibility across the digital interface and prevent latch-up conditions.

The RFL6000 IC is packaged in a very small 16-pin bump chip carrier (16 BCCP) that includes a center slug for soldering directly to PCB ground. This provides excellent RF grounding, mechanical strength, and a solid thermal path.

Tools and Test Equipment

The following table lists tools and test equipment recommended for disassembly and reassembly of V710 telephones. Use either the listed items or equivalents.

Table 1. General Test Equipment and Tools

Motorola Part Number ¹	Description	Application
RSX4043-A	Torque Driver	Used to remove and replace screws
—	Torque Driver Bit T-6 Plus, Apex 440-6IP Torx Plus or equivalent	Used with torque driver
See Table 7	Rapid Charger	Used to charge battery and power phone
0180386A82	Antistatic Mat Kit (includes 66-80387A95 antistatic mat, 66-80334B36 ground cord, and 42-80385A59 wrist band)	Provides protection from damage to device caused by electrostatic discharge (ESD)
6680388B67	Disassembly tool, plastic with flat and pointed ends (manual opening tool)	Used during assembly/disassembly of phone
6680388B01	Tweezers, plastic	Used during assembly/disassembly
—	Digital Multimeter, HP34401A ²	Used to measure battery voltage
6688054N01	Flip disassembly tool	Used to disassembly the flip assembly

1. To order in North America, contact Motorola Aftermarket and Accessories Division (AAD) at (800) 422-4210 or FAX (800) 622-6210; Internationally, AAD can be reached by calling (847) 538-8023 or by fax (847) 576-3023.

2. Not available from Motorola. To order, contact Hewlett Packard at (800) 452-4844.

Disassembly

The procedures in this section provide instructions for the disassembly of a V710 telephone. Tools and equipment used for the phone are listed in Table 1, preceding.



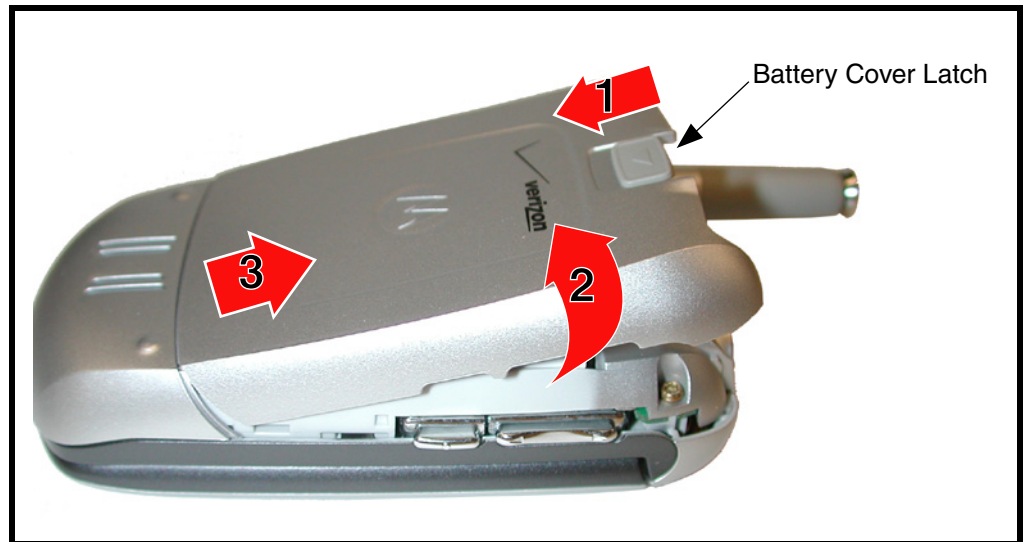
Many of the integrated devices used in this phone are vulnerable to damage from electrostatic discharge (ESD). Ensure adequate static protection is in place when handling, shipping, and servicing the internal components of this equipment.



Avoid stressing the plastic in any way to avoid damage to either the plastic or internal components.

Removing the Battery Cover

1. Ensure the phone is turned off.
2. Slide the battery cover latch as shown in Figure 9.
3. Gently lift the top end of the battery cover away from the phone.
4. Lift the battery cover away from the phone.



0403350

Figure 9. Removing the Battery Cover

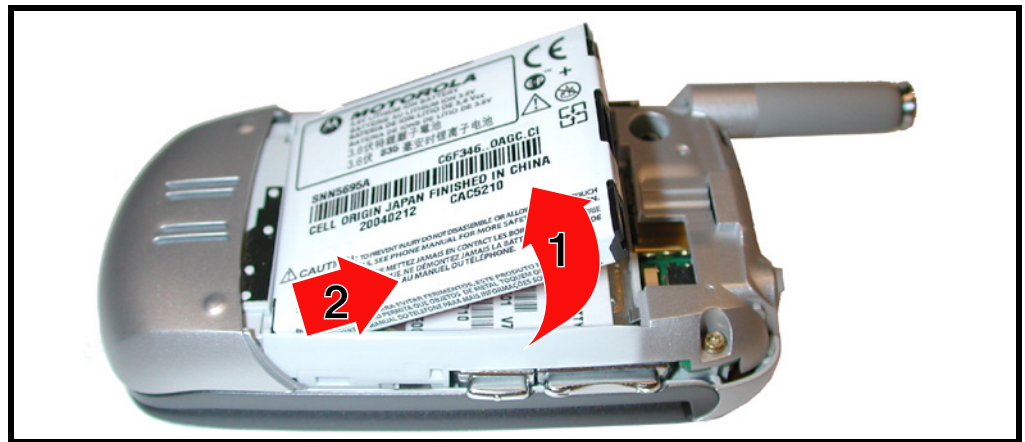
5. To replace, align the battery cover to the phone.
6. Slide the bottom end of the battery cover into the phone.
7. Lower the top end of the battery cover onto the phone until battery cover latch snaps into place.

Removing and Replacing the Battery



All batteries can cause property damage and / or bodily injury such as burns if a conductive material such as jewelry, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

1. Ensure the phone is turned off.
2. Remove the battery cover as described in the procedures.
3. Lift the top of the battery near the antenna out of the battery compartment as shown in Figure 10.
4. Lift the battery out of the phone.



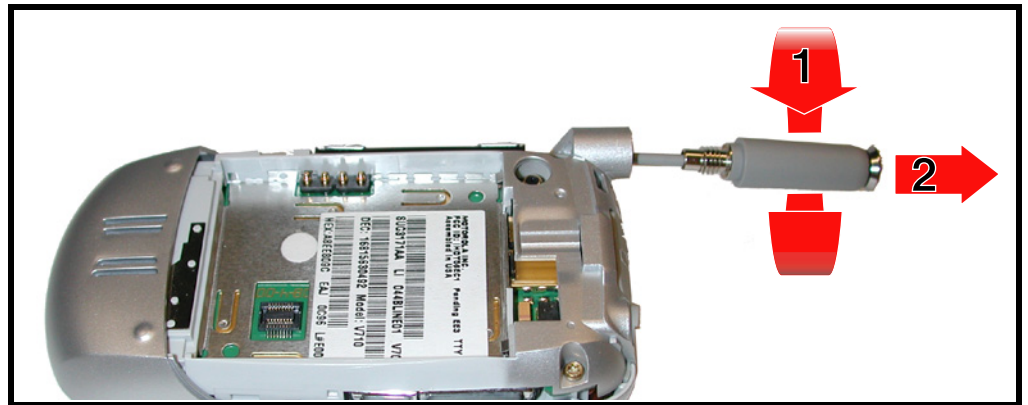
0403360

Figure 10. Removing the Battery

5. To replace, align the battery with the battery compartment so the contacts on the battery match the battery contacts in the phone.
6. Insert the battery, printed arrow first, into the battery compartment and push down.
7. Insert the ridge at the bottom of the housing into the base of the phone, then push the battery down and snap it into place.

Removing and Replacing the Antenna

1. Remove the battery cover, and battery as described in the procedures.
2. By hand, rotate the antenna base counterclockwise, as indicated by the red arrows until loose.
3. When the antenna threads are completely disengaged, slide the antenna out of the housing. See Figure 11.



03222130

Figure 11. Removing the Antenna

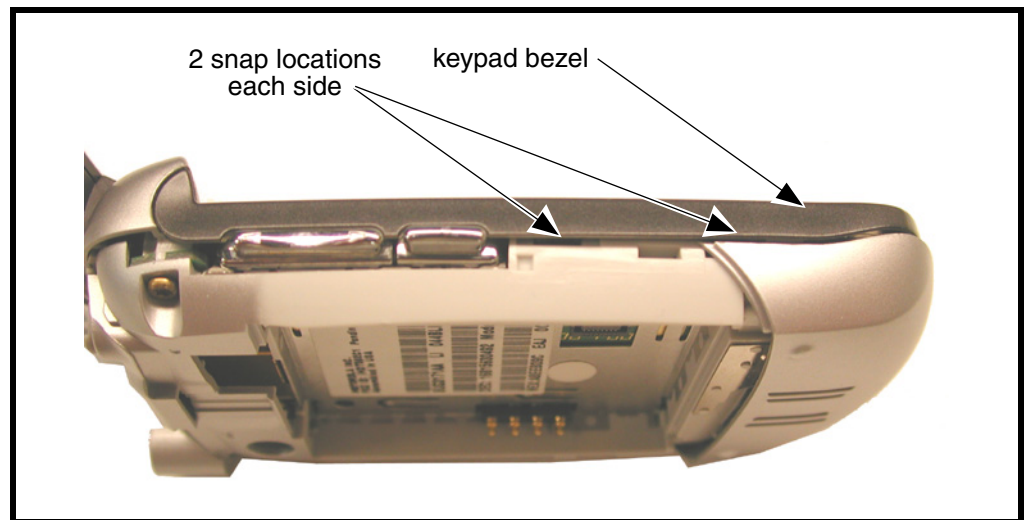


Ensure antenna threads are properly engaged before tightening to prevent damage to the antenna or housing.

4. To replace, insert the threaded end of the antenna carefully into the housing and, after ensuring the threads are properly engaged, rotate clockwise. Tighten firmly by hand.
5. Replace the battery, and battery cover as described in the procedures.

Removing and Replacing the Keypad Bezel

1. Remove the battery cover, battery, and antenna, as described in the procedures.
2. Turn the phone over and carefully insert the disassembly tool under the keypad bezel and gently bend the bezel outward from the rear housing to release the 2 snaps on the side of the housing (See Figure 12).



0403460

Figure 12. Removing the Keypad Bezel

3. Repeat step 2 for the other side of phone.
4. When all four snaps have been released, carefully lift the keypad bezel away from the phone.
5. To replace, align the keypad bezel with the phone housing.
6. Carefully press the keypad bezel into the phone housing until the snaps engage.
7. Replace the antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Speaker Cover

1. Remove the battery cover, battery, antenna, and keypad bezel as described in the procedures.
2. Insert the disassembly tool under the outer edges of the speaker cover to release the latches on each side.
3. Slide the speaker cover toward the antenna to remove.

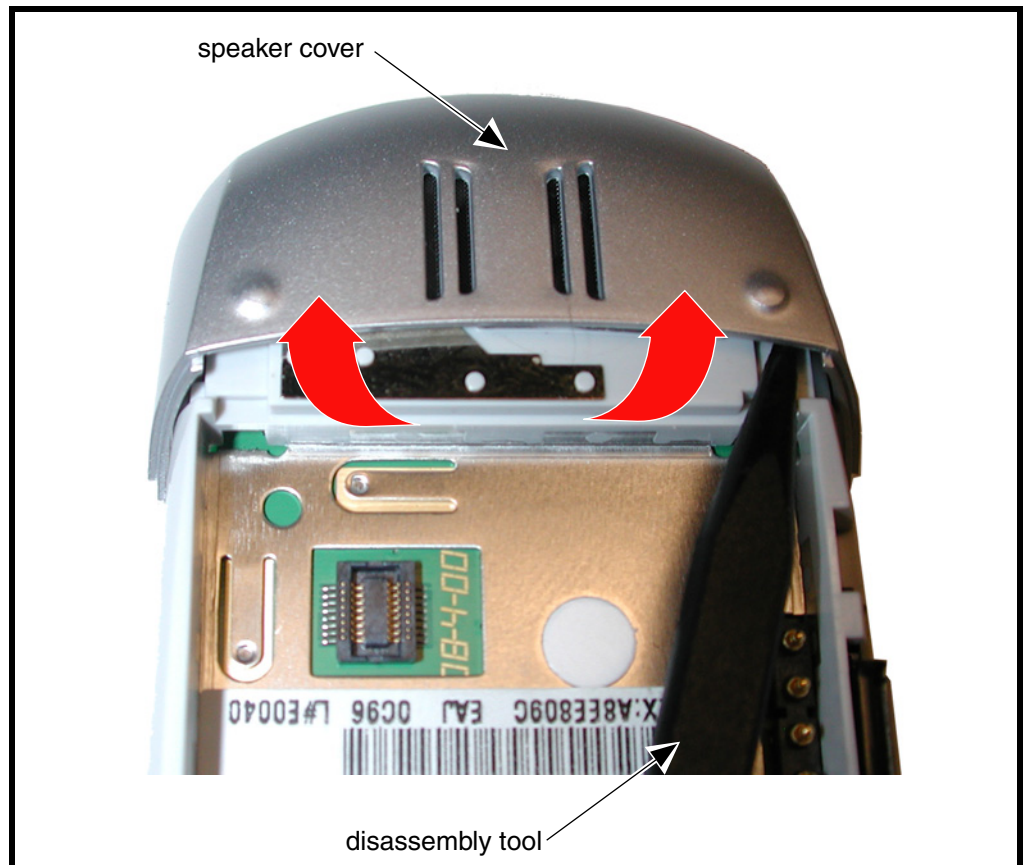


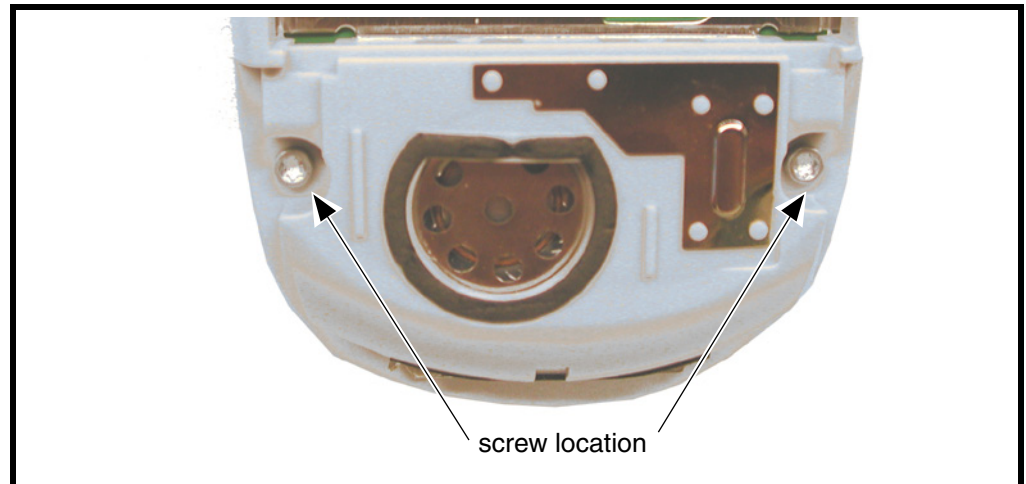
Figure 13. Removing the Speaker Cover

0403470

4. To replace, slide the speaker cover onto the phone.
5. Gently press down on the sides of the speaker cover to engage the latches.
6. Replace the keypad bezel, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Keyboard Stiffener

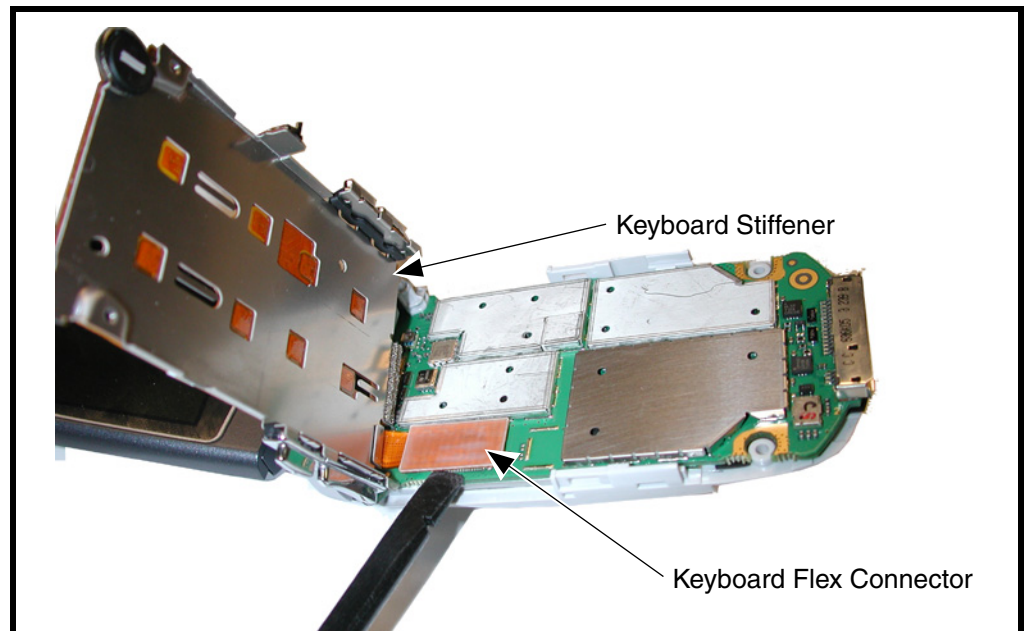
1. Remove the battery cover, battery, antenna, keypad bezel, and speaker cover as described in the procedures.
2. Remove the two screws at the bottom of the phone near the polyphonic speaker (See Figure 14)..



0322160

Figure 14. Removing the rear housing bottom screws

3. Lift the bottom end of the keyboard stiffener toward the flip knuckles.
4. Use the disassembly tool to disconnect the keypad flex connector (See Figure 15).



0322160

Figure 15. Removing the Keyboard Flex Connector

5. Lift the keyboard stiffener away from the phone.
6. To replace, align the keyboard stiffener to the transceiver board.
7. Connect the keyboard flex connector to its socket on the transceiver board.
8. Lower the keyboard stiffener onto the transceiver board.
9. Insert and tighten two screws near the polyphonic speaker assembly.
10. Replace the speaker cover, keypad bezel, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Flip Assembly and Transceiver Board

1. Remove the battery cover, battery, antenna, keypad bezel, speaker cover, and keyboard stiffener as described in the procedures.
2. Use the disassembly tool to disconnect the flip assembly flex connector. (See Figure 16).

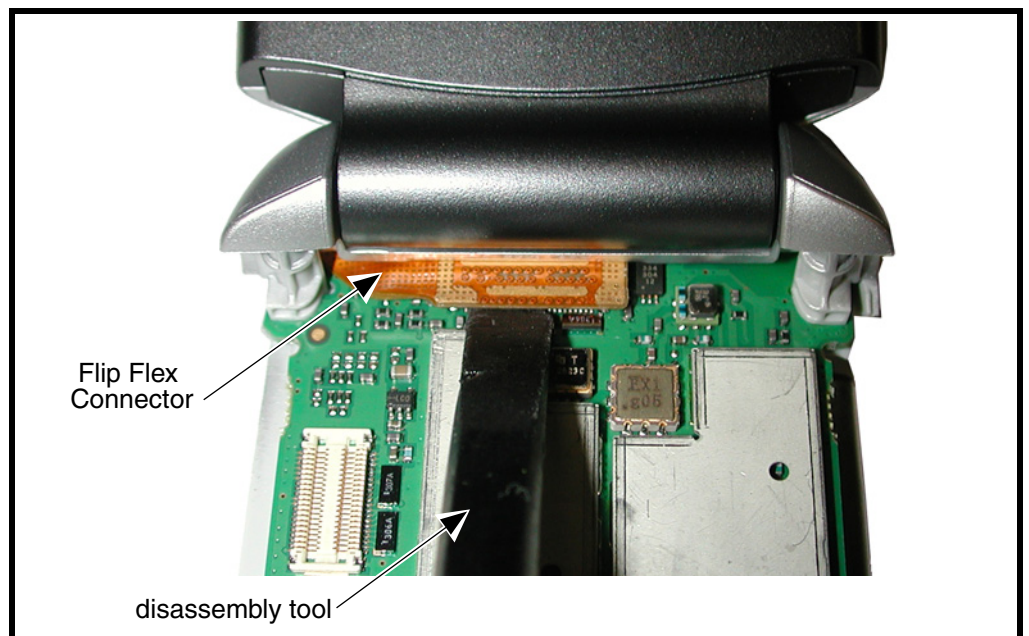


Figure 16. Removing the Flip Assembly Flex Connector

032216o

3. Use the T6 driver to remove the two flip assembly screws. Set the screws aside for reuse (See Figure 17).

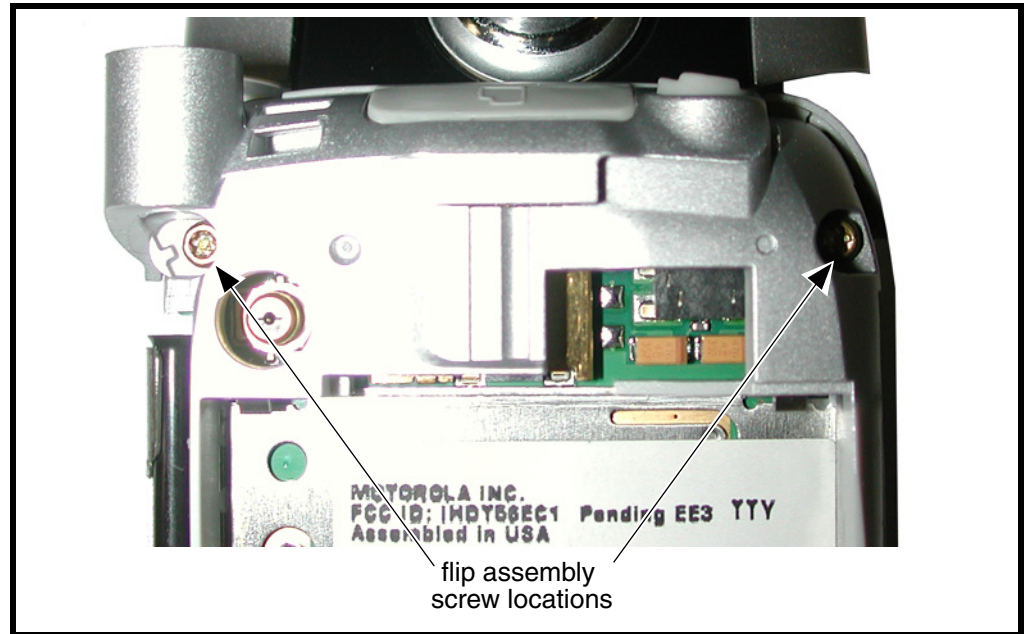


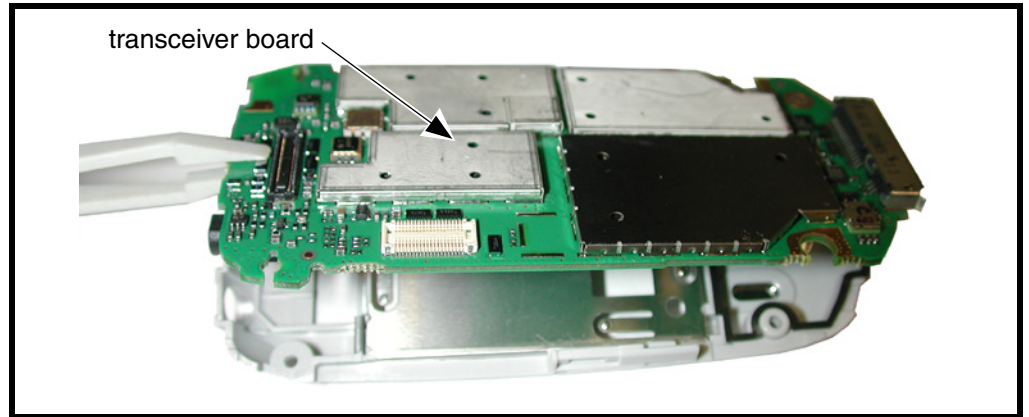
Figure 17. Removing the Flip Assembly Screws

4. Carefully separate the flip assembly from the transceiver board and rear housing assembly.



This product contains static-sensitive devices. Use anti-static handling procedures to prevent electrostatic discharge (ESD) and component damage.

5. Turn the transceiver board and rear assembly over and lift the transceiver board away from the rear housing..



0322160

Figure 18. Removing the Transceiver Board

6. To replace, align the transceiver board to the rear housing assembly and lower it into place on the rear housing.
7. With the flip assembly knuckles in the "flip open" position, align the flip assembly flex connector to the transceiver board.
8. Connect the flip assembly flex connector to its socket on the transceiver board.
9. Align the flip assembly screw bosses to the screw holes on the transceiver board.
10. Hold the assembly together and insert the flip assembly screws into the rear housing assembly and tighten to 1.25 inch-pounds.
11. Replace the keyboard stiffener, speaker cover, keypad bezel, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Flip Display Lens

1. Remove the battery cover, battery, antenna, keypad bezel, speaker cover, keyboard stiffener, flip assembly, and transceiver board as described in the procedures.
2. Insert a small knife blade into the seam between the main lens and the flip sleeve edge and pry up the main lens edge (see Figure 19).



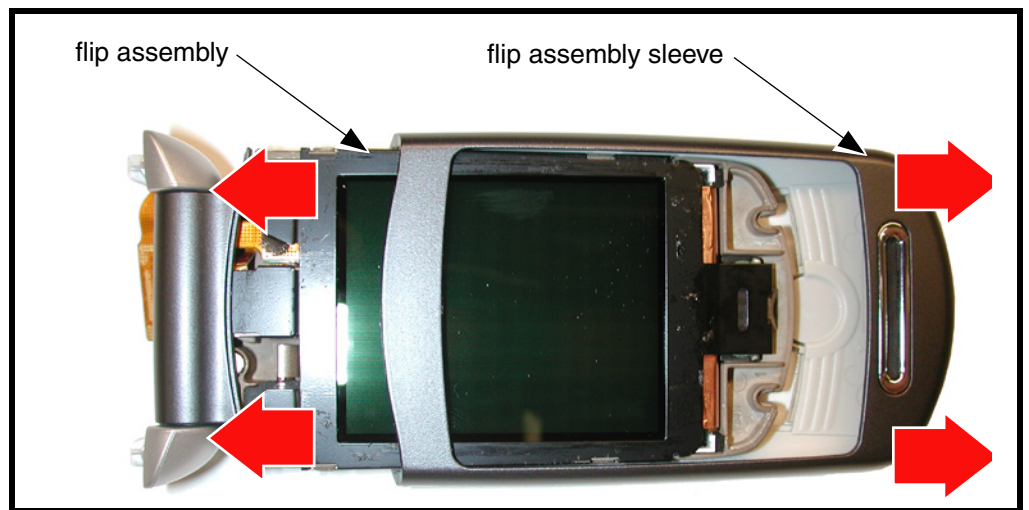
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Figure 19. Removing the Flip Display Lens

3. Insert the flat end of the disassembly tool into the gap created by the knife blade and separate the display lens from the flip assembly.
4. To replace, align the display lens to the flip assembly. Expose the display lens adhesive. Carefully press the display lens into position on the flip assembly.
5. Replace the transceiver board and flip assembly, keypad stiffener, speaker cover, keypad bezel, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Flip Assembly Sleeve

1. Remove the battery cover, battery, antenna, keypad bezel, speaker cover, keyboard stiffener, flip assembly, transceiver board, and flip display lens as described in the procedures.
2. Grasp the flip assembly and pull firmly as indicated by the red arrows to remove the flip assembly sleeve (See Figure 20).



0403690

Figure 20. Removing the Flip Assembly Sleeve.

3. To replace, insert the flip assembly into the flip assembly sleeve and push firmly until the flip assembly is fully inserted into the flip assembly sleeve.
4. Replace the flip display lens, transceiver board, flip assembly, keyboard stiffener, speaker cover, keypad bezel, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Flip Knuckle

1. Remove the battery cover, battery, antenna, keypad bezel, speaker cover, keyboard stiffener, flip assembly, transceiver board, flip display lens, and flip assembly sleeve as described in the procedures.



The flexible printed cable (FPC) (flex) is easily damaged. Exercise extreme care when handling.

2. Remove the knuckle by removing the hinge assembly side followed by the side where the flex is routed.
3. Carefully slide the display flex through the knuckle. Avoid damage to the display flex (see Figure 21).



040371o

Figure 21. Removing the Knuckle.

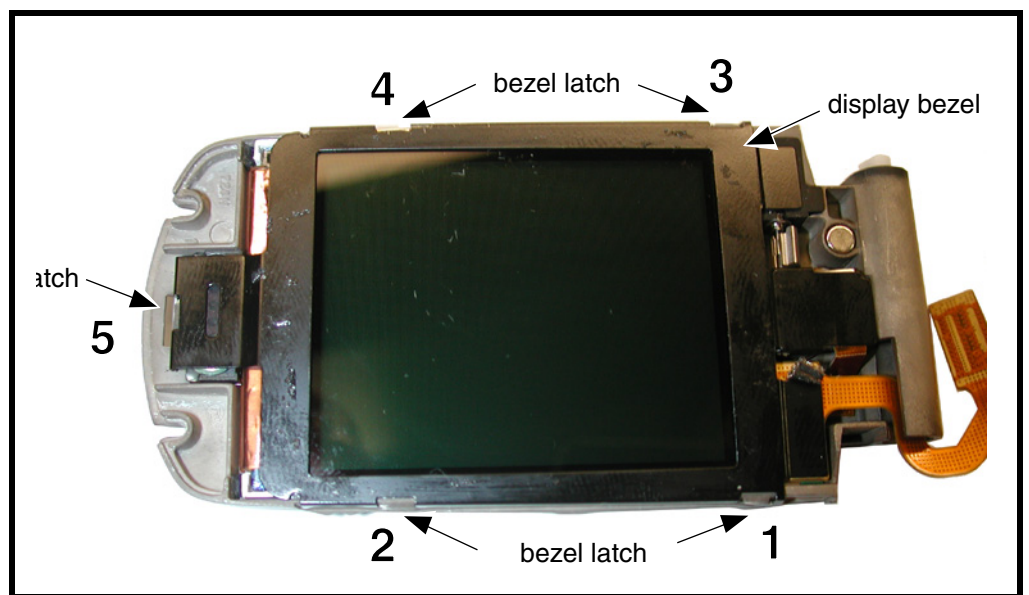
Removing the Display Bezel

1. Remove the battery cover, battery, antenna, keypad bezel, speaker cover, keyboard stiffener, flip assembly, transceiver board, flip display lens, flip assembly, flip assembly sleeve, and flip knuckle as described in the procedures.



The flexible printed cable (FPC) (flex) is easily damaged. Exercise extreme care when handling.

2. Use the metal tweezers to release the five latches in the sequence shown (see Figure 22).



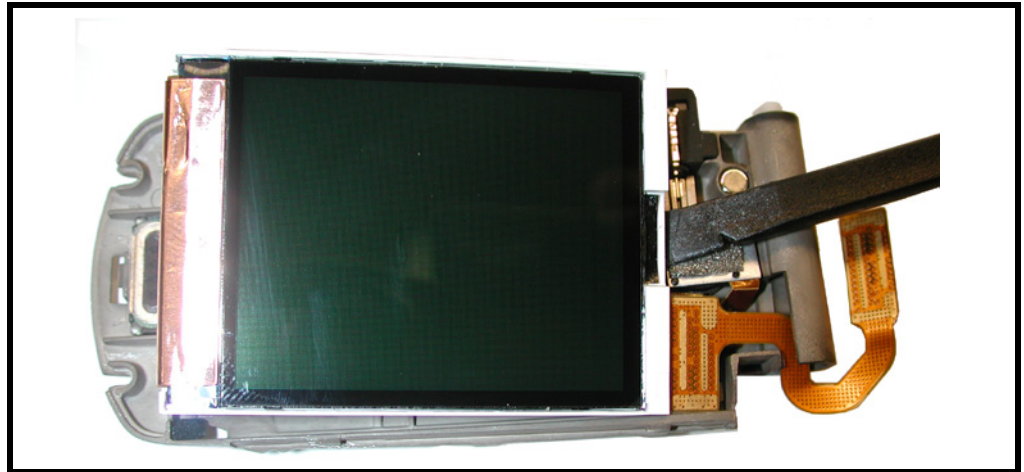
0322180

Figure 22. Removing the Display Bezel

3. To replace, align the connector with its socket on the transceiver board.
4. Gently press the flex connector into position onto the flex connector socket.
5. Lower the display bezel over the display module. Gently and firmly press the latches into position. Ensure all the latches are engaged.
6. Replace the flip knuckle, flip assembly sleeve, flip assembly, flip display lens, transceiver board, flip assembly, keyboard stiffener, speaker cover, keypad bezel, antenna, battery, and battery cover as described in the procedures.

Removing the Display Module

1. Remove the battery cover, battery, antenna, keypad bezel, speaker cover, keyboard stiffener, flip assembly, transceiver board, flip display lens, flip assembly, flip assembly sleeve, flip knuckle, and display module as described in the procedures.
2. Use the disassembly tool to disconnect the flex connector from the display module assembly (see Figure 23).
3. Carefully, lift the display module up and away from the remainder of the flip assembly.



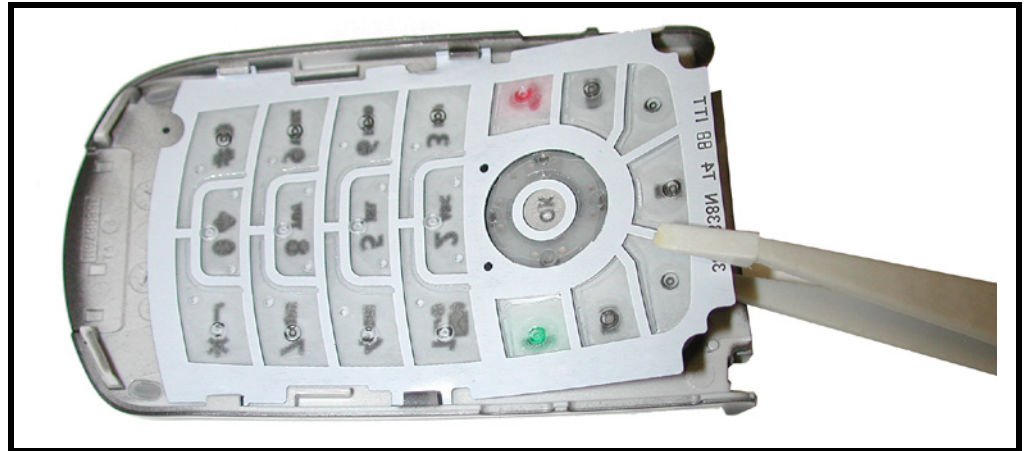
0322330

Figure 23. Removing the Display Module

4. To replace, seat the display module back into the flip assembly.
5. Carefully re-connect the flex connector.
6. Replace the display bezel, flip knuckle, flip assembly sleeve, flip assembly, flip display lens, transceiver board, flip assembly, keyboard stiffener, speaker cover, keypad bezel, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Keypad

1. Remove the antenna, battery cover, battery, rear housing assembly, flex connector, and transceiver board assembly as described in the procedures.
2. Use the plastic tweezers to lift the keypad from the front housing as shown in Figure 24.



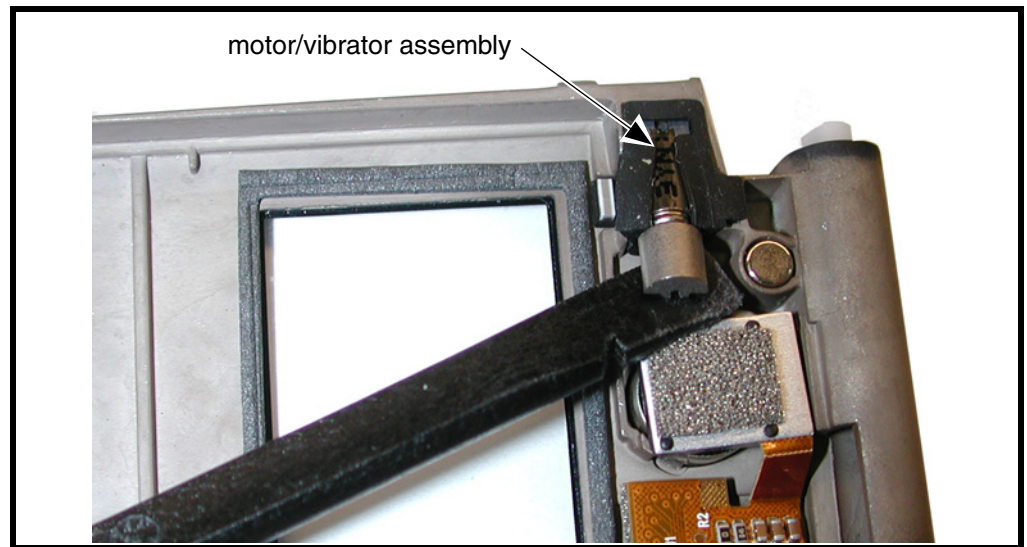
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Figure 24. Removing the Keypad

3. To replace, insert the keypad into the front housing, ensuring the keys align properly with the openings in the front housing.
4. Replace the transceiver board, rear housing assembly, antenna, battery, and battery housing as described in the procedures.

Removing the Motor/Vibrator Assembly

1. Remove the battery cover, battery, antenna, keypad bezel, speaker cover, keyboard stiffener, keypad flex, flip flex connector, transceiver board, flip assembly, flip display lens, flip sleeve, flip display bezel, display module assembly as described in the procedures.
2. Use the flat edge of the disassembly tool to remove the motor/vibrator assembly from the flip housing (see Figure 25).



0322320

Figure 25. Removing the Motor/Vibrator Assembly

- 3.

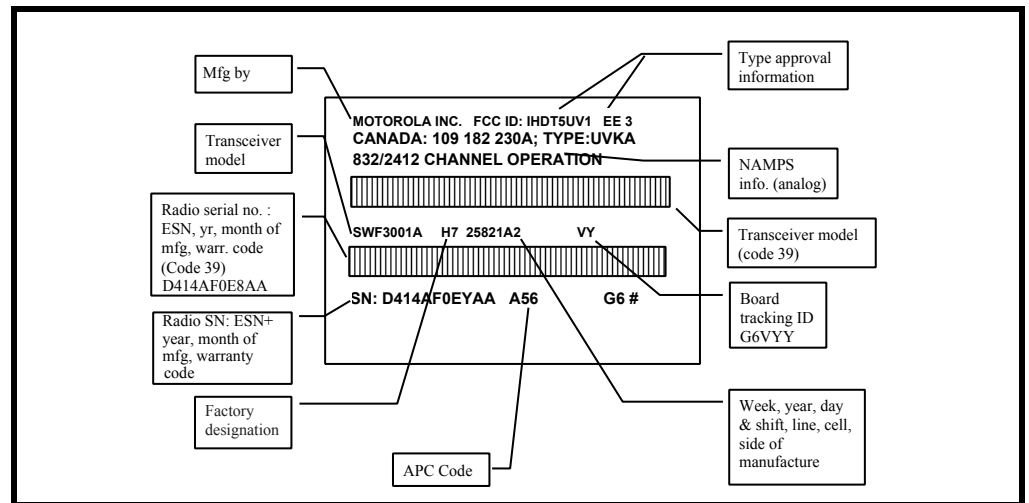
Phone Identification

Personality Transfer

A personality transfer is required when a phone is express exchanged or when the main board is replaced. Personality transfers reproduce the customer's original personalized details such as menu and stored memory such as phone books, or even just program a unit with basic user information such as language selection.

Identification

Each Motorola CDMA phone is labeled with a variety of identifying numbers. Figure 26 describes the current identifying labels.



020463o

Figure 26. CDMA Telephone Identification Label

Troubleshooting

Table 2. V710 Telephone: Level 1 and 2 Troubleshooting Chart

Symptom	Probable Cause	Verification and Remedy
1. Telephone will not turn on or stay on.	a) Battery either discharged or defective.	Measure battery voltage across a 50 ohm (>1 Watt) load. If the battery voltage is <3.25 Vdc, recharge the battery using the appropriate battery charger. If the battery will not recharge, replace the battery. If battery is not at fault, proceed to b.
	b) Battery connectors open or misaligned.	Visually inspect the battery connectors on both the battery and the telephone. Realign and, if necessary, either replace the battery or refer to a Level 3 Service Center for the battery connector replacement. If battery connectors are not at fault, proceed to c.
	c) Transceiver board defective.	Remove the transceiver board. Substitute a known good transceiver board and temporarily reassemble the unit. Press the PWR button; if unit turns on and stays on, disconnect the dc power source and reassemble the telephone with the new transceiver board. Verify that the fault has been cleared. If the fault has not been cleared then proceed to d.
	d) keyboard assembly failure.	Replace the keyboard assembly. Temporarily connect a +3.6 Vdc supply to the battery connectors. Depress the PWR button. If unit turns on and stays on, disconnect the dc power source and reassemble with the new keyboard assembly.
2. Telephone exhibits poor reception or erratic operation such as calls frequently dropping or weak or distorted audio.	a) Antenna assembly defective.	Check to make sure that the antenna pin is properly connected to the transceiver board assembly. If connected properly, substitute a known good antenna. If the fault is still present, proceed to b.
	b) Transceiver board defective.	Replace the transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board.
3. Display is erratic, or provides partial or no display.	a) Connections to or from transceiver board defective.	Check general condition of flex and flex connector. If the flex and connector are good, check that the flex connector is fully connected. If not, check connector to transceiver board connections. If faulty connector, replace the transceiver board. If connector is not at fault, proceed to b.
	b) Flip assembly defective.	Temporarily replace the flip assembly with a known good assembly. If fault has been cleared, reassemble with the new flip assembly. If fault not cleared, proceed to c.
	c) Transceiver board assembly defective.	Replace the transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board.
4. Incoming call alert transducer audio distorted or volume is too low.	Faulty transceiver board assembly.	Replace the transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board.
5. Telephone transmit audio is weak. (usually indicated by called parties complaining of difficulty in hearing voice).	a) Microphone connections to the transceiver board assembly defective.	Gain access to the microphone as described in the procedures. Check connections. If connector is faulty proceed to c; if the connector is not at fault, proceed to b.

Table 2. V710 Telephone: Level 1 and 2 Troubleshooting Chart (Continued)

Symptom	Probable Cause	Verification and Remedy
	b) Microphone defective.	Gain access to microphone. Disconnect and substitute a known good microphone. Place a call and verify improvement in transmit signal as heard by called party. If good, reassemble with new microphone. If microphone is not at fault, reinstall original microphone and proceed to c.
	c) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
6. Receive audio from earpiece speaker is weak or distorted.	a) Connections to or from transceiver board assembly defective.	Gain access to the transceiver board assembly as described in the procedures. Check flex and the flex connector from the flip assembly to the transceiver board assembly. If flex is at fault, replace flip assembly. If flex connector is at fault, proceed to d. If connection is not at fault, proceed to b.
	b) Flip assembly defective.	Temporarily replace the flip assembly with a known good assembly. If fault has been cleared, reassemble with the new flip assembly. If fault not cleared, proceed to c.
	c) Antenna assembly defective.	Check to make sure the antenna is installed correctly. If the antenna is installed correctly, substitute a known good antenna assembly. If this does not clear the fault, reinstall the original antenna assembly and proceed to d.
	d) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble with the new transceiver board assembly.
7. Phone does not sense when flip is opened or closed (usually indicated by inability to answer incoming calls by opening the flip, or inability to make outgoing calls).	a) Flip assembly defective.	Temporarily replace the flip assembly with a known good assembly. If fault has been cleared, reassemble with the new flip assembly. If fault not cleared, proceed to b.
	b) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
8. Vibrator feature not functioning.	Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
9. Internal Charger not working.	Faulty charger circuit on transceiver board assembly.	Test a selection of batteries in the rear pocket of the desktop charger. Check LED display for the charging indications. If these are charging properly, then the internal charger is at fault. Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
11. No or weak audio when using headset.	a) Headset not fully pushed home.	Ensure the headset plug is fully seated in the jack socket. If fault not cleared, proceed to b.
	b) Faulty jack socket on transceiver board assembly.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.

Programming: Software Upgrade and Flexing

Contact your local technical support engineer for information about equipment and procedures for flashing and flexing.

Related Publications

Motorola V710 CDMA User Guide, English/Spanish SJJN5286A (6809467A43)

Exploded View Diagram

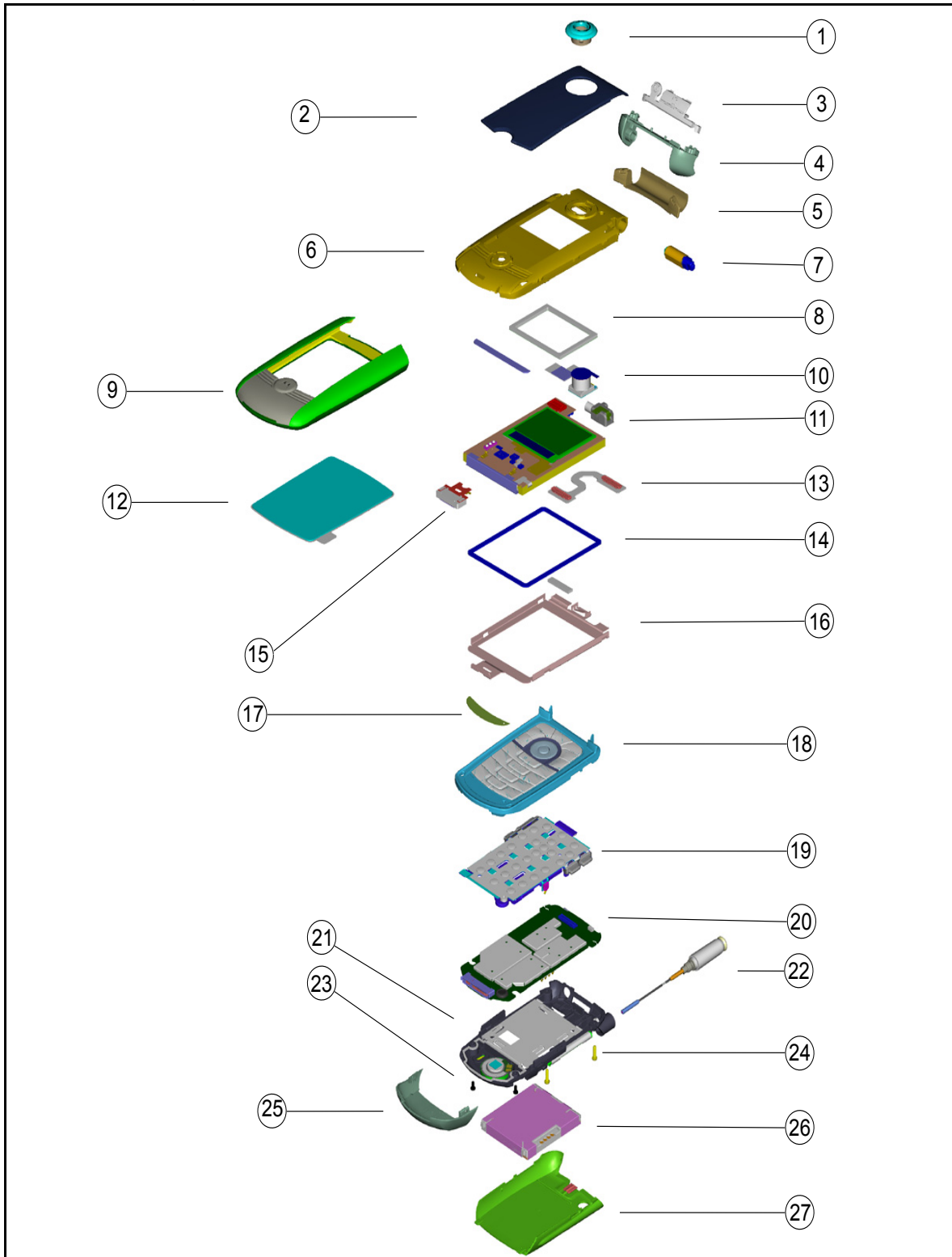


Figure 27. Exploded View

Exploded View Parts List

Table 3. Exploded View Parts List

Item Number	Motorola Part Number	Description
1	1389819N03	camera bezel
2	6189691N02	CLI lens
3	7589314N02	flip stop grommet
4	1589315N04	knuckles
5	1589875N04	Barrel cover
6	0789724N01	Magnesium frame
7	5587736N01	Hinge assembly
8	3289412N02	CLI display gasket
9	1589700N04	Flip sleeve assembly
10	8489850N02	Camera assy
11	5989943N01	Vibrator motor assy
12	7289424N01	Display module
13	6189690N05	Main lens
14	8489450N02	Hinge flex
15	8490009N01	Speaker assy
16	3289413N04	Main display gasket
17	0789918N02	Display bezel
18	5402393T02	Label
19	1589331N02	Keypad bezel assy
20	0187521Y03	keyboard assembly
21		transceiver PC Board Assy
22	0789414N02	Rear endo assy
23	8587488Y01	Antenna
24	0389469N02	Screw, stiffener
25	0387791L01	Screw, knuckle
26	1589318N03	Speaker cover
27	SNN5695A SNN5615	battery 720 mAh battery 1140 mAh
28	1589333N04	battery cover



There is a danger of explosion if the Lithium Ion battery pack is replaced incorrectly. Replace only with the same type of battery or equivalent as recommended by the battery manufacturer. Dispose of used batteries according to the manufacturer's instructions.

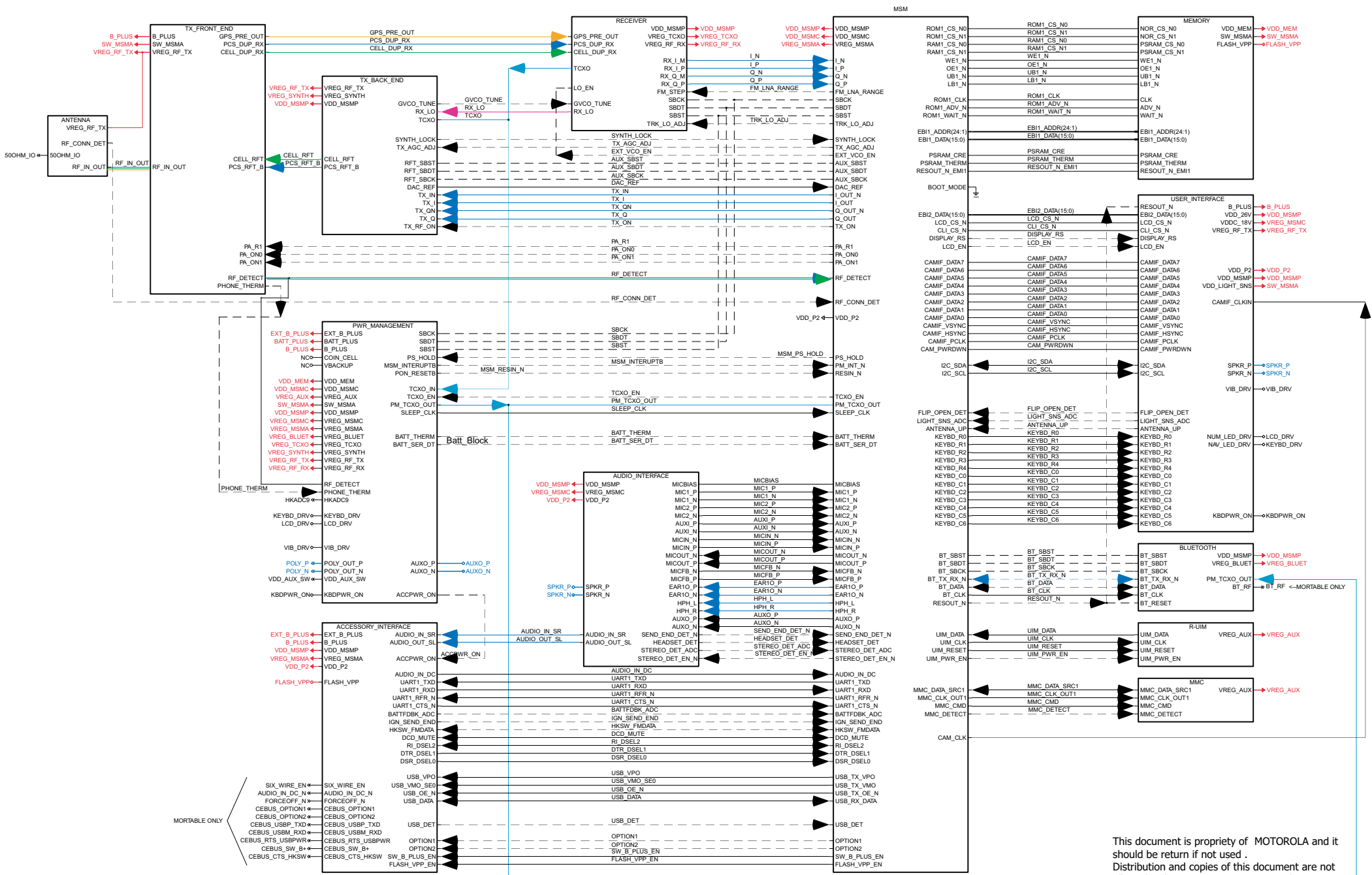
Accessories

Table 4. Accessories

Description	Part Number
Power Solutions	
Battery Slim Lilon (720mAh)	TBD
Battery High Performance (1440mAh)	SNN5615A
Travel Charger Linear U.S.	SPN4992
Travel Charger Mid Rate U.S. New ID	SPN5037
Travel Charger Rapid U.S. (non-leakage)	SPN5049
In-Vehicle Solutions	
Bluetooth Car Kit	S9642
Self Install HF Retractable (Razorbill)	SYN0613
Professional Install Car Kit (Junction Box Only)	S9950
HUC for PCC	TBD
Low Tier VPA Mid rate	
VPA Verizon Exclusive Rapid	SYN9901
Vehicle Power Adapter, New ID Rapid	SYN0707
Audio & Connectivity	
Paladin Bluetooth Headset	SYN9826A
Caller ID Bluetooth Headset	TBD
Quadrant Bluetooth Speaker	TBD
Qwerty Bluetooth Keyboard	TBD
Platform Stereo Headset	TBD
FM Stereo Headset	SYN8609
Retractable Headset (new customizable)	SYN9050
One Touch Headset (new customizable)	SYN9351
Mono Headset Black	SYN8390B
Mono Headset Silver	AAYN4264A
Mono Headset (new customizable)	SYN9350
Over the Ear Headset	SYN8908
Neck Loop headset	SYN7875
T-Flash Card 16 meg	SYN0940
T-Flash Card 32 Meg	SYN0941
T-Flash Card 64 meg	SYN0942
T-Flash card 128 meg	SYN0943
T-Flash Card (32 Meg) and T-Flash to SD Adaptor in Jewel Case	SYN0941A
T-Flash to SD adaptor	SYN0893A
USB 2.0 Card Reader	SYN1045A
Mobile Phone Tools Phase II - USB	S9752B
Mobile Phone Tools Phase II - CD ROM	SVN4776B
Consumer Personalization	
Carry Cases	TBD
Lanyard	SYN9490A
Holster	TBD
Belt Clip	SYN8763

BLOCK DIAGRAM

V710

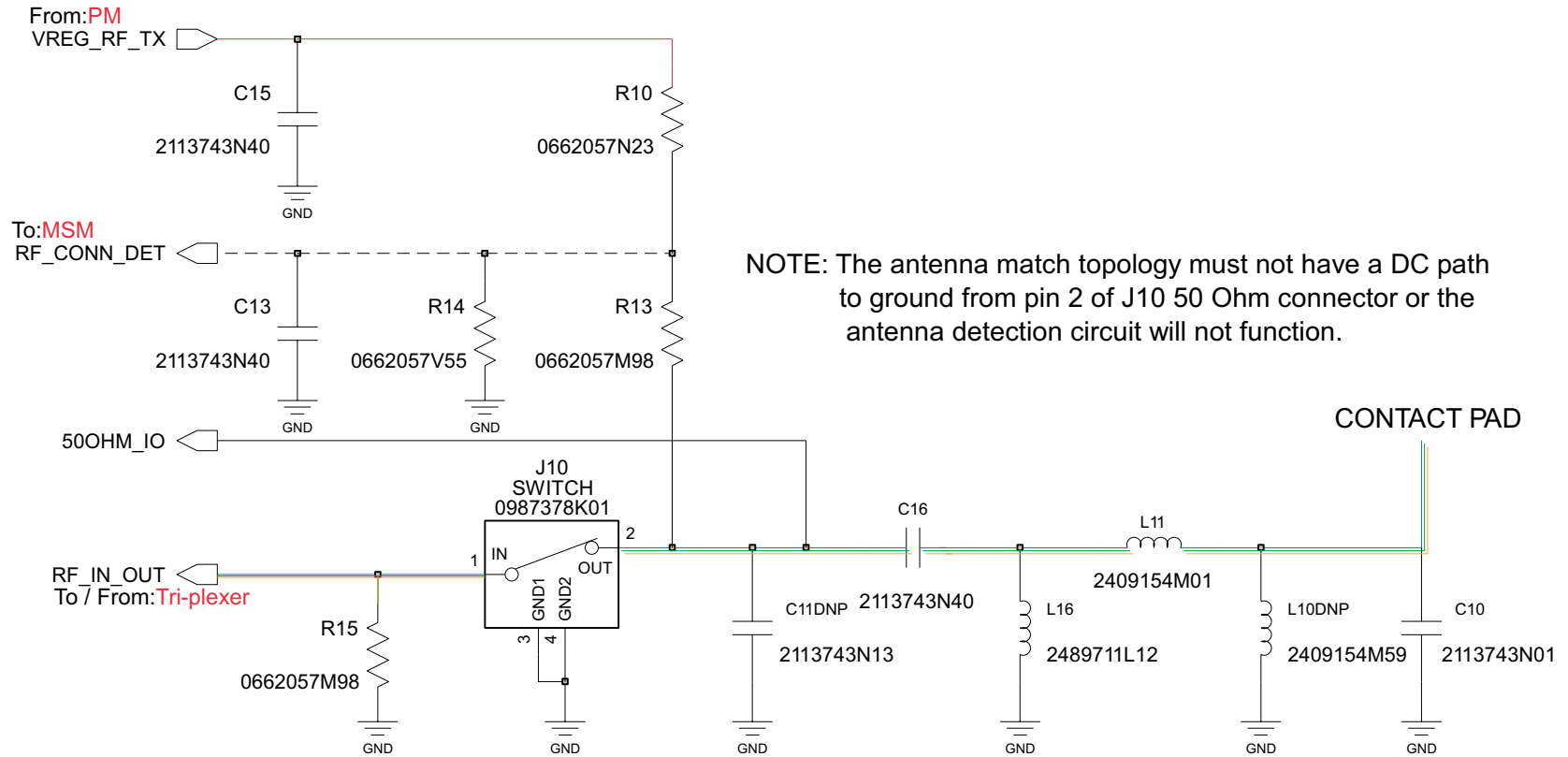


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BOARD - P3

ANTENNA REF 10-20

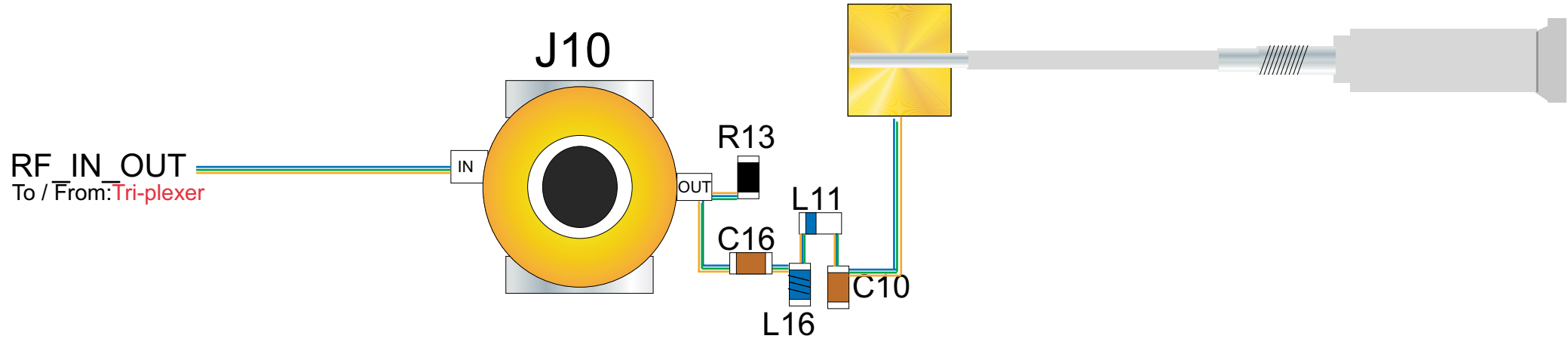
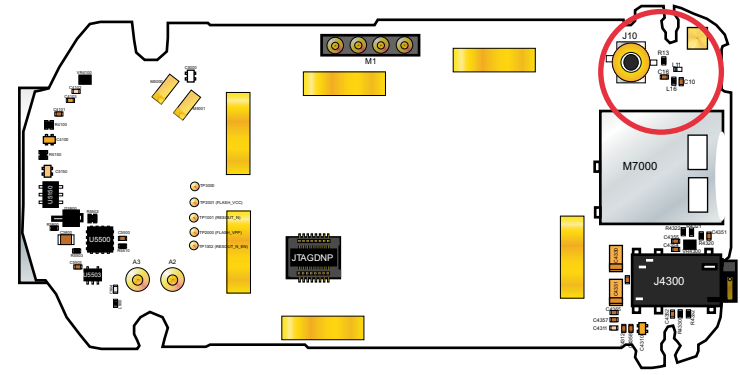


J10 Switch is actually SPDT with throw connecting to 50-ohm coaxial path NOT shown. Antenna sense circuit output is a logic LOW when the internal antenna (A1) is used, with a DC path to ground through R15 existing. When the RF connector path is selected, the output is a logic high, since the DC path to L15 is broken.

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ANTENNA CIRCUIT

V710



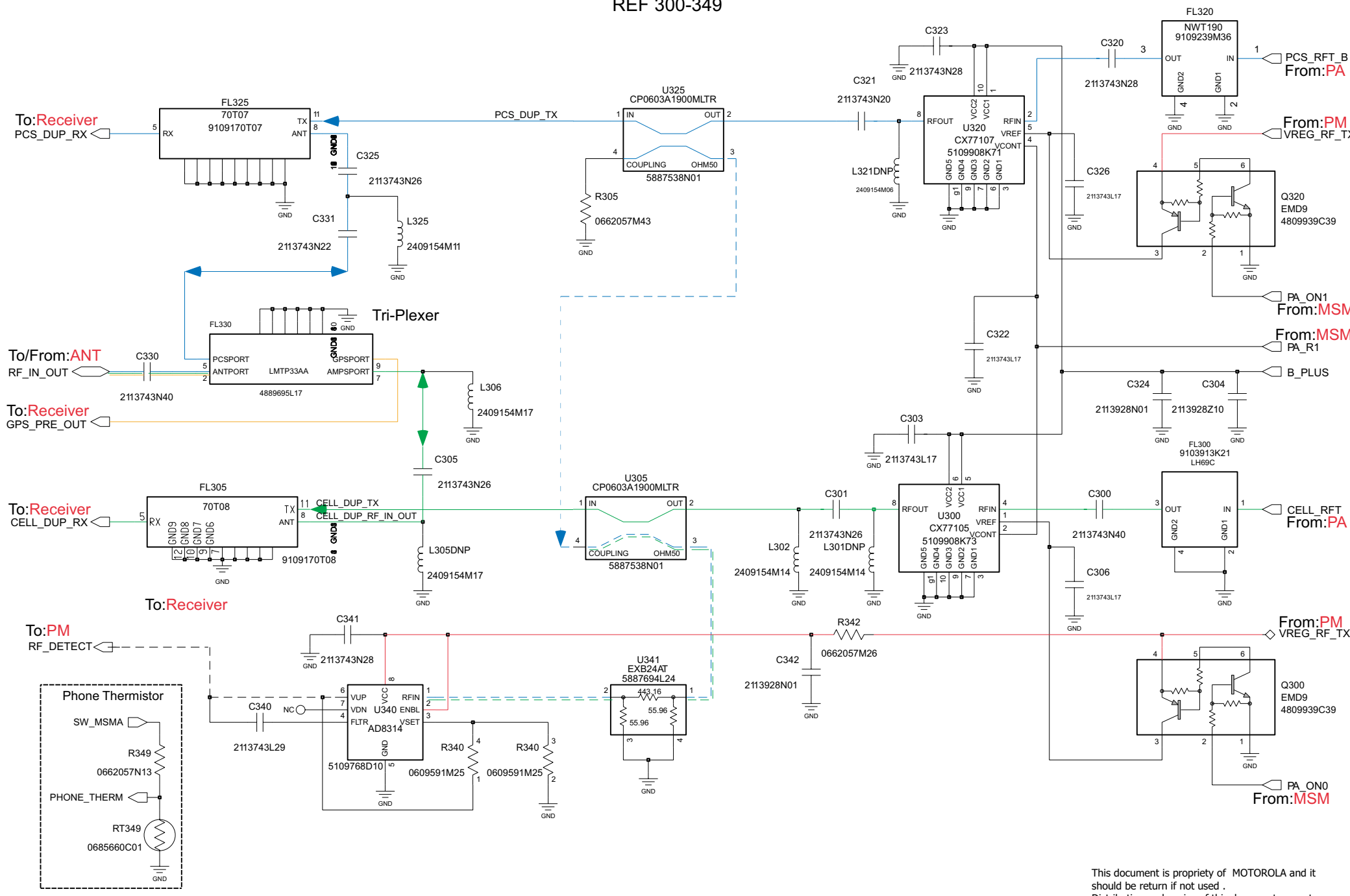
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BOARD - P3

TX FRONT END SCHEM

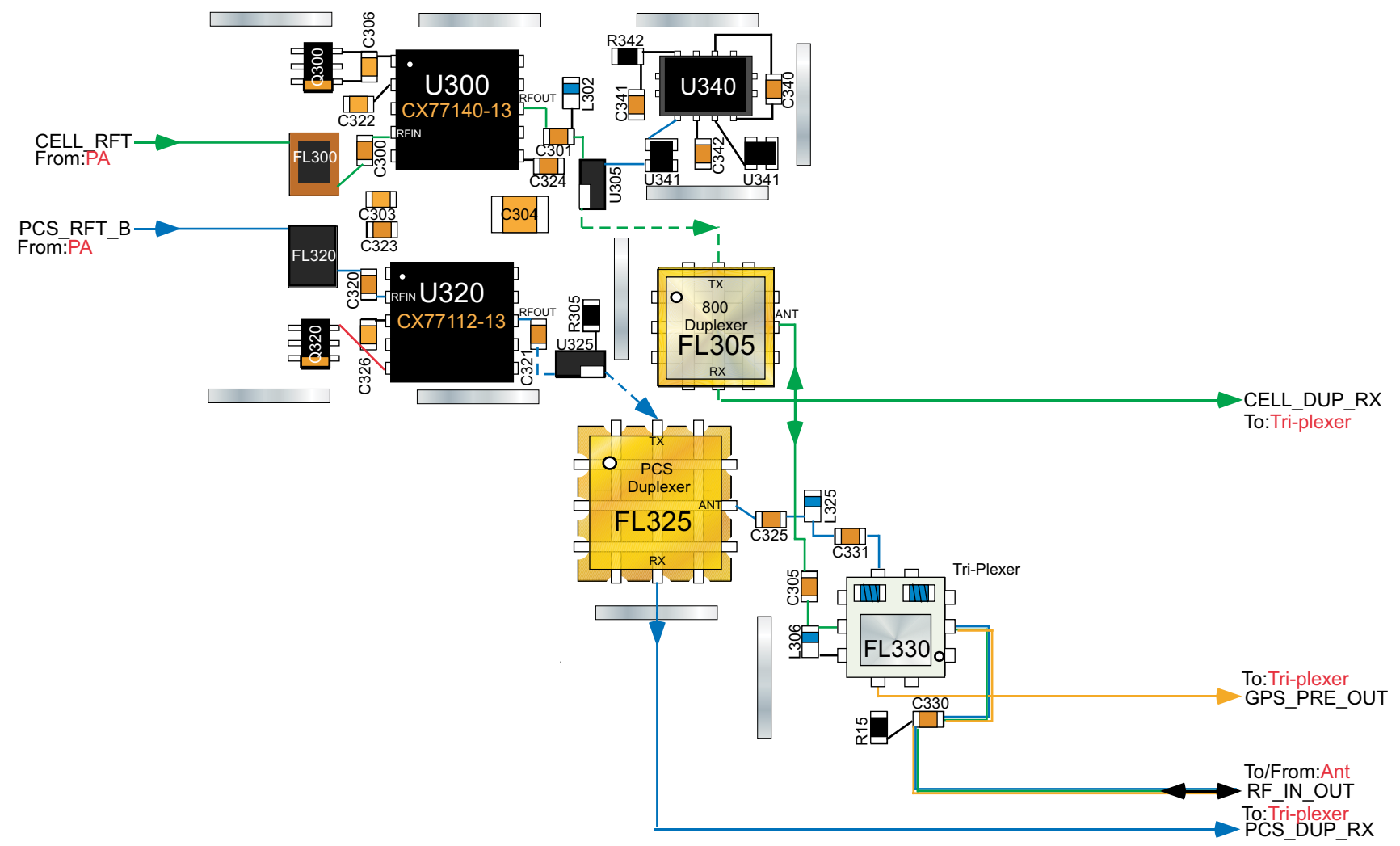
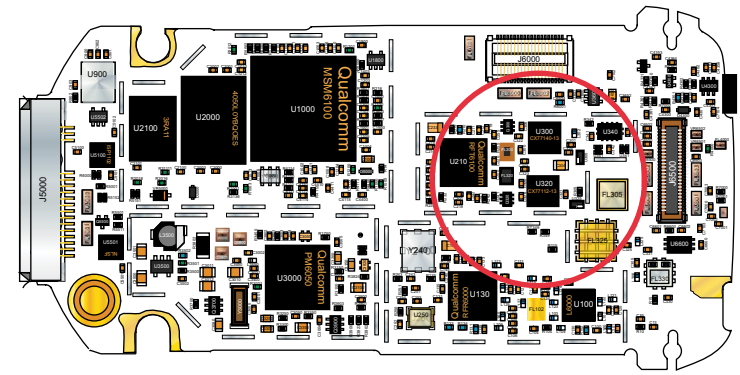
V710

TX FRONT END
REF 300-349



TX FRONT END CIRCUIT

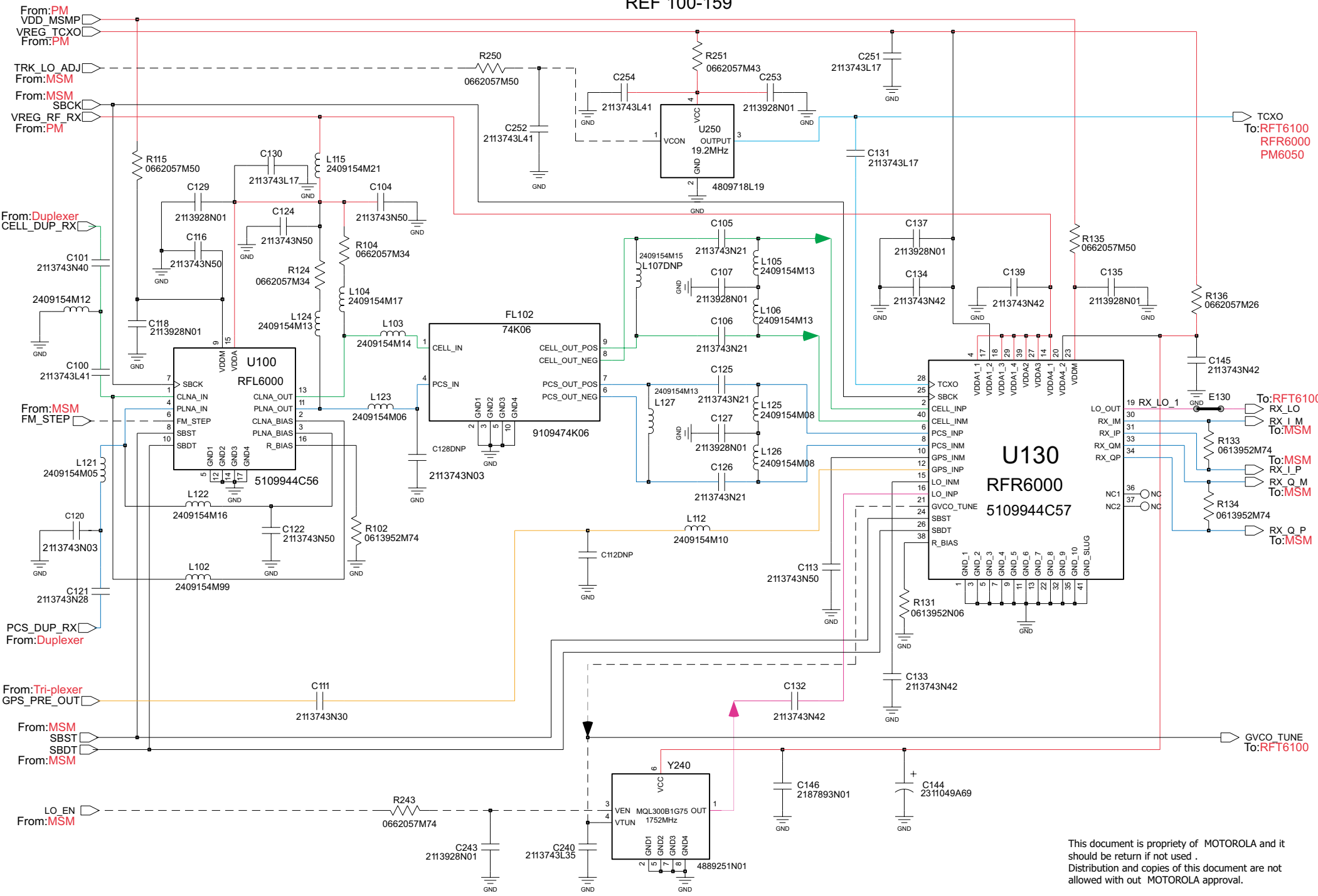
V710



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RECEIVER SCHEM

V710 RECEIVER REF 100-159



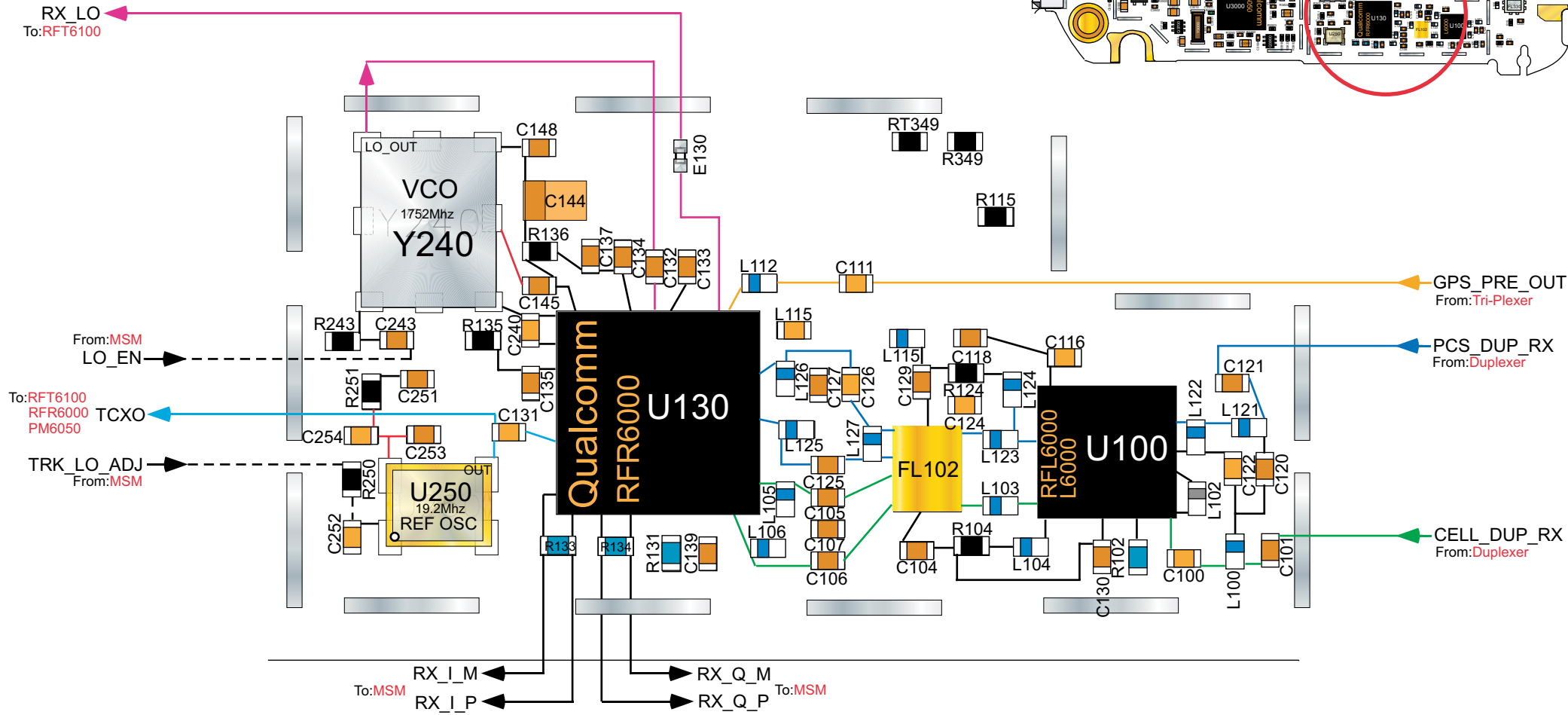
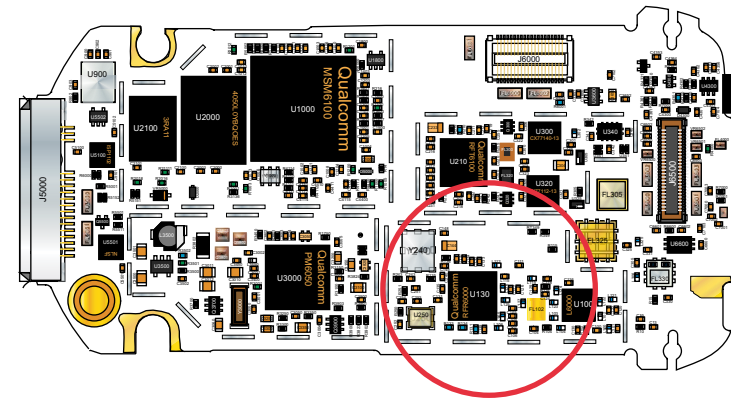
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BOARD - P3

RECEIVER CIRCUIT

V710



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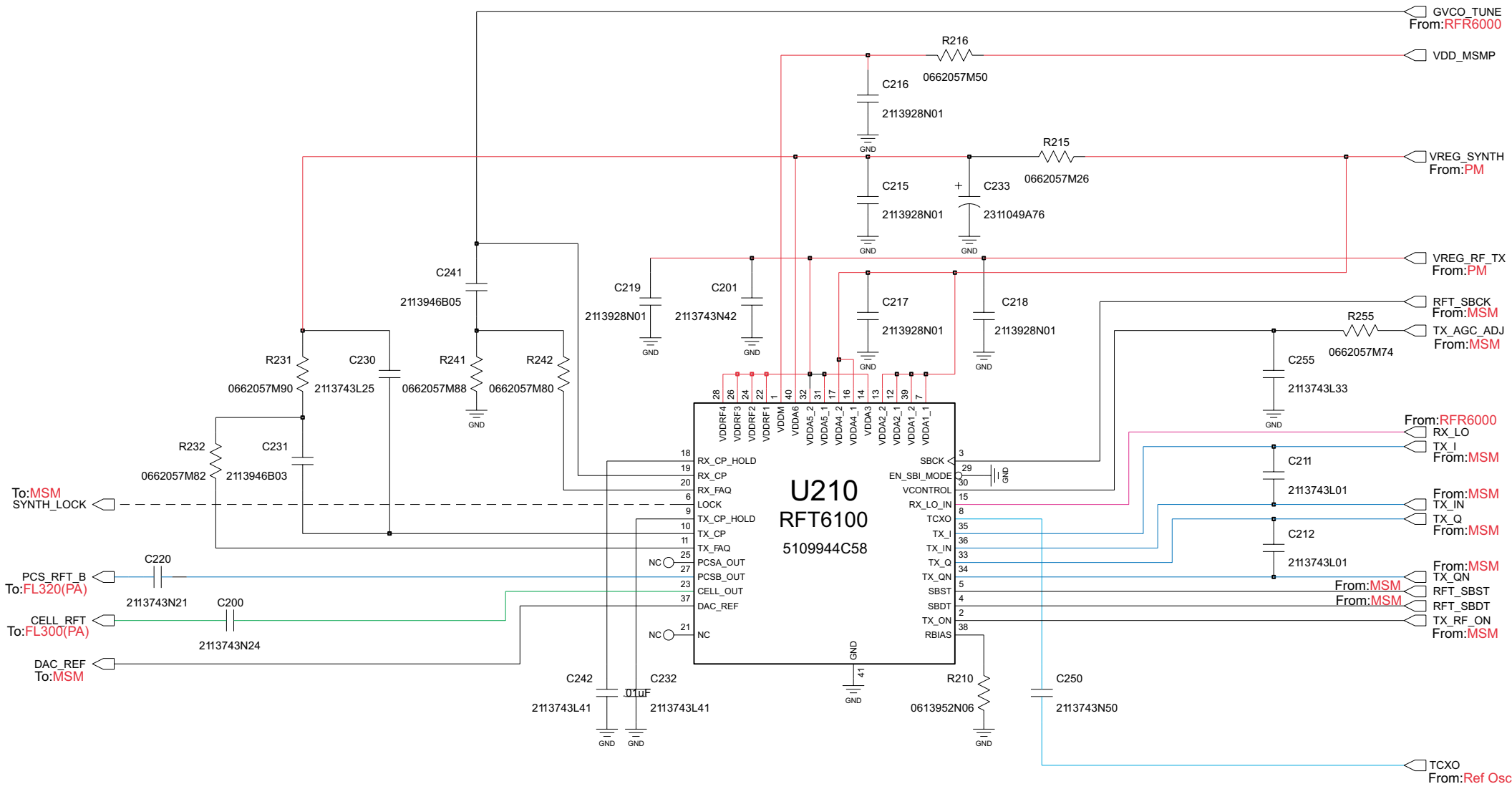
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BOARD - P3

TX BACK END SCHEM

V710

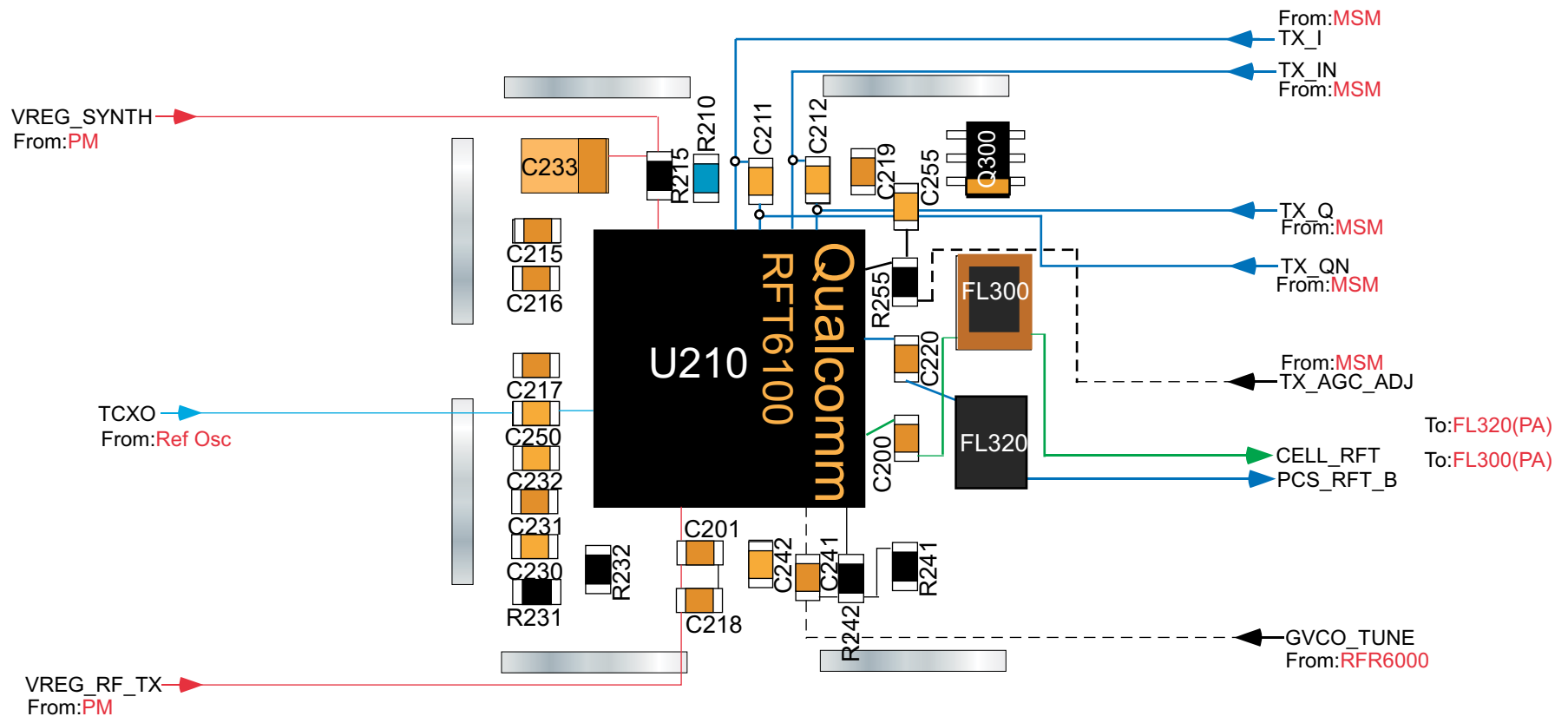
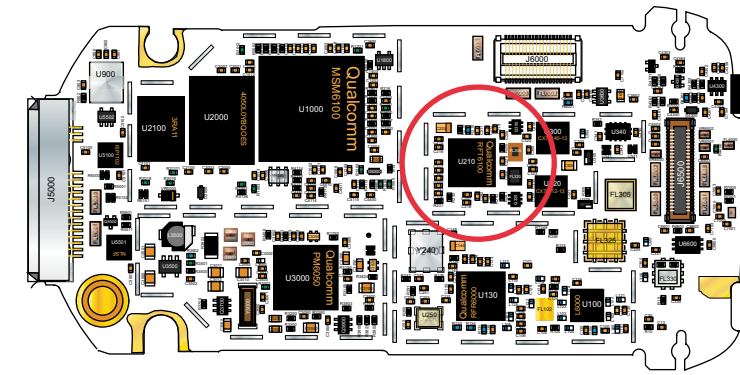
TX BACK END
REF 200-259



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TX BACK END CIRCUIT

V710



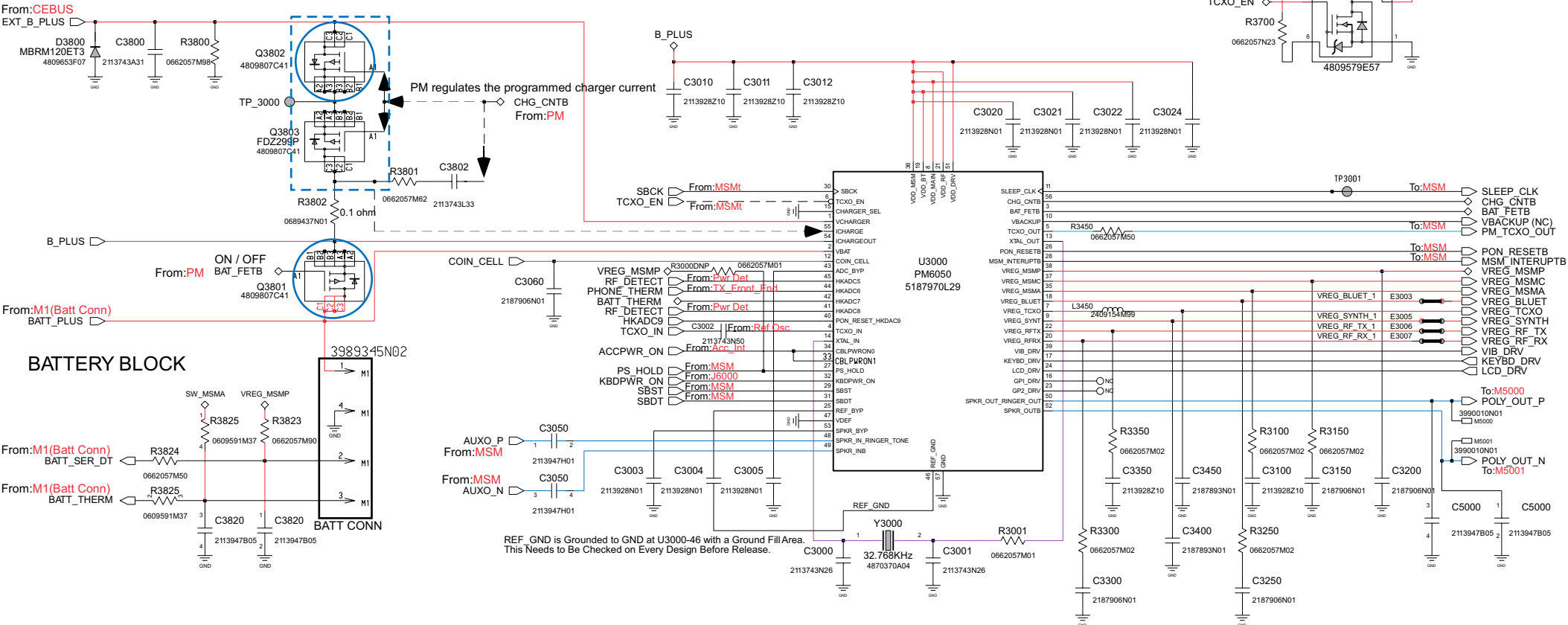
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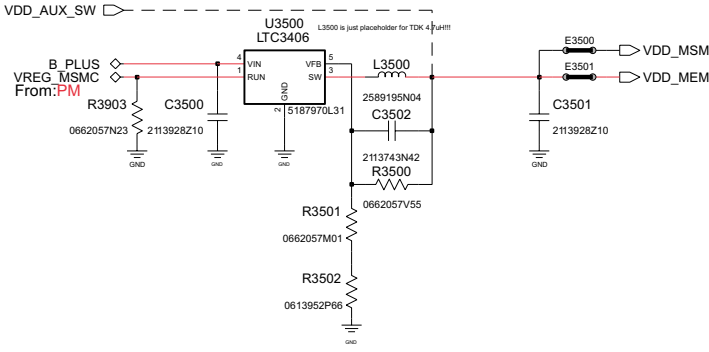
BOARD - P3

POWER_MANAGEMENT REF 3000-3999

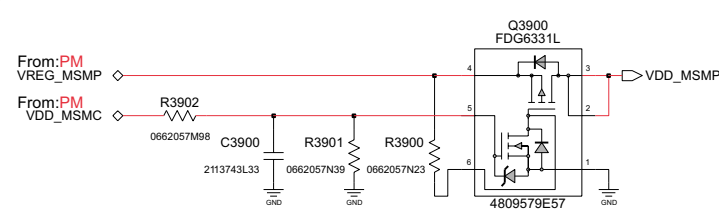
Switched MSMA for Thermistors/Light Sensor



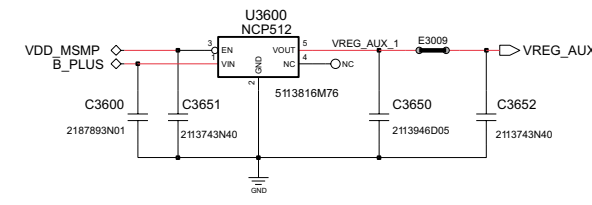
1.85V SMPS Regulator



VREG_MSMP Start-Up Delay Circuit



2.8V Linear Regulator

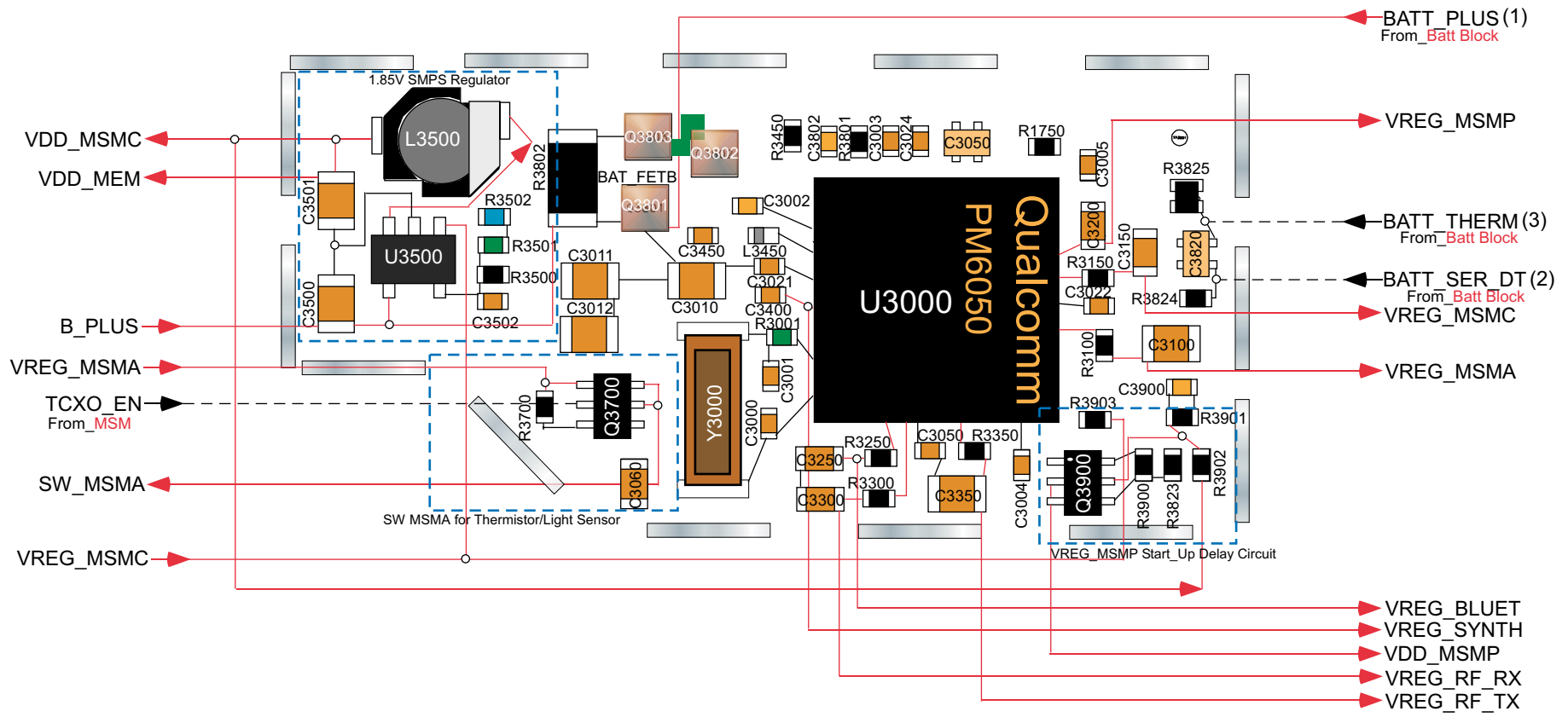
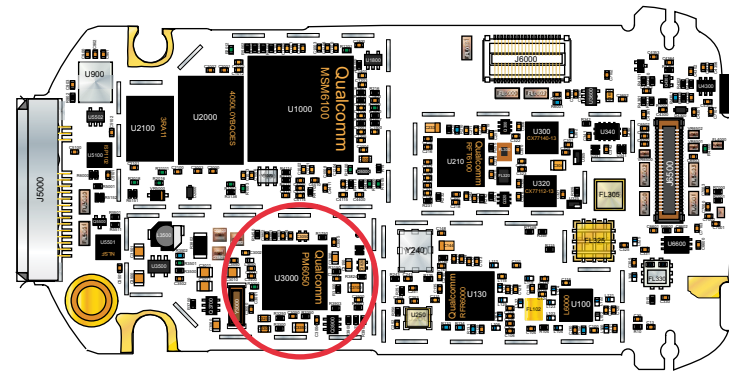


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Event	Q3801	Q3802	Q3803	Comments
Battery Powered (phone not transmitting)	ON	OFF	OFF	Default State of current limit is 150mA.
Charger Present (not fast charging, trickle charging)	OFF	ON	ON	Default to fast current limit when charger is detected and fast charging disabled, or trickle charge enabled for batt < 3.0V. PM6050 has internal trickle charge path to battery. VDD (B+) set at 4.2V.
Fast Charging (not transmitting)	ON	ON	ON	Current limit Set to 900mA. Q3802 and Q3803 in current/voltage regulation mode.
Fast Charging (transmitting)	OFF	ON	ON	Disable charging and set current Limit to max to support no battery/dead battery operation. VDD (B+) set at 4.2V.
Midrate Charging (not transmitting or transmitting)	ON	ON	ON	Current Limit set to 600mA to collapse 400mA midrate charger. Charge current will be whatever the power supply can source (up to 425mA) minus the radio current. Q3802 and Q3803 in current/voltage regulation mode.
Overvoltage EXT_B+	OFF	ON	ON	Chargin is disabled whenever EXT_B+ > 6.5V. Current limit is set to 150ma to minimize

PM CIRCUIT

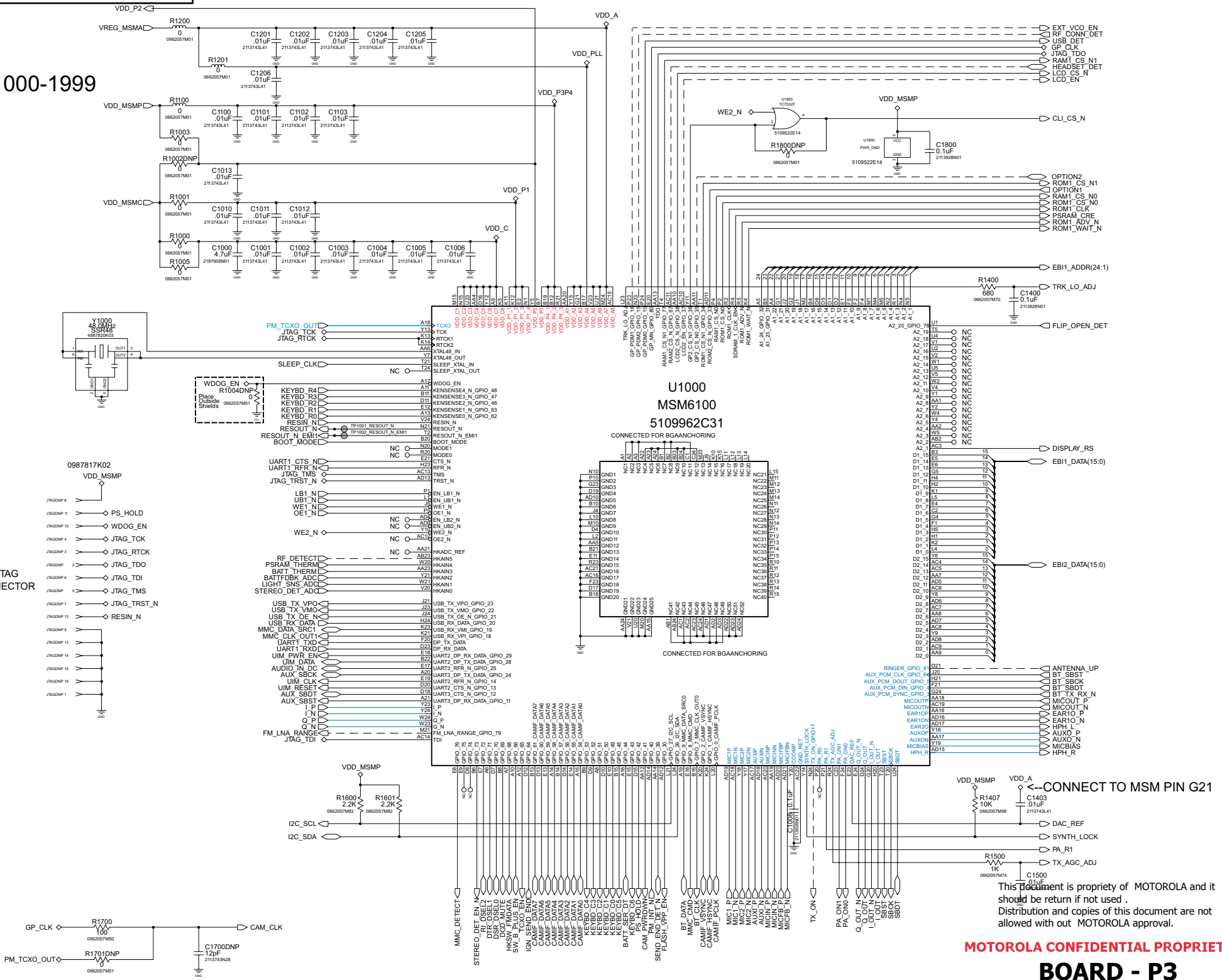
V710



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MSM
REF 1000-1999

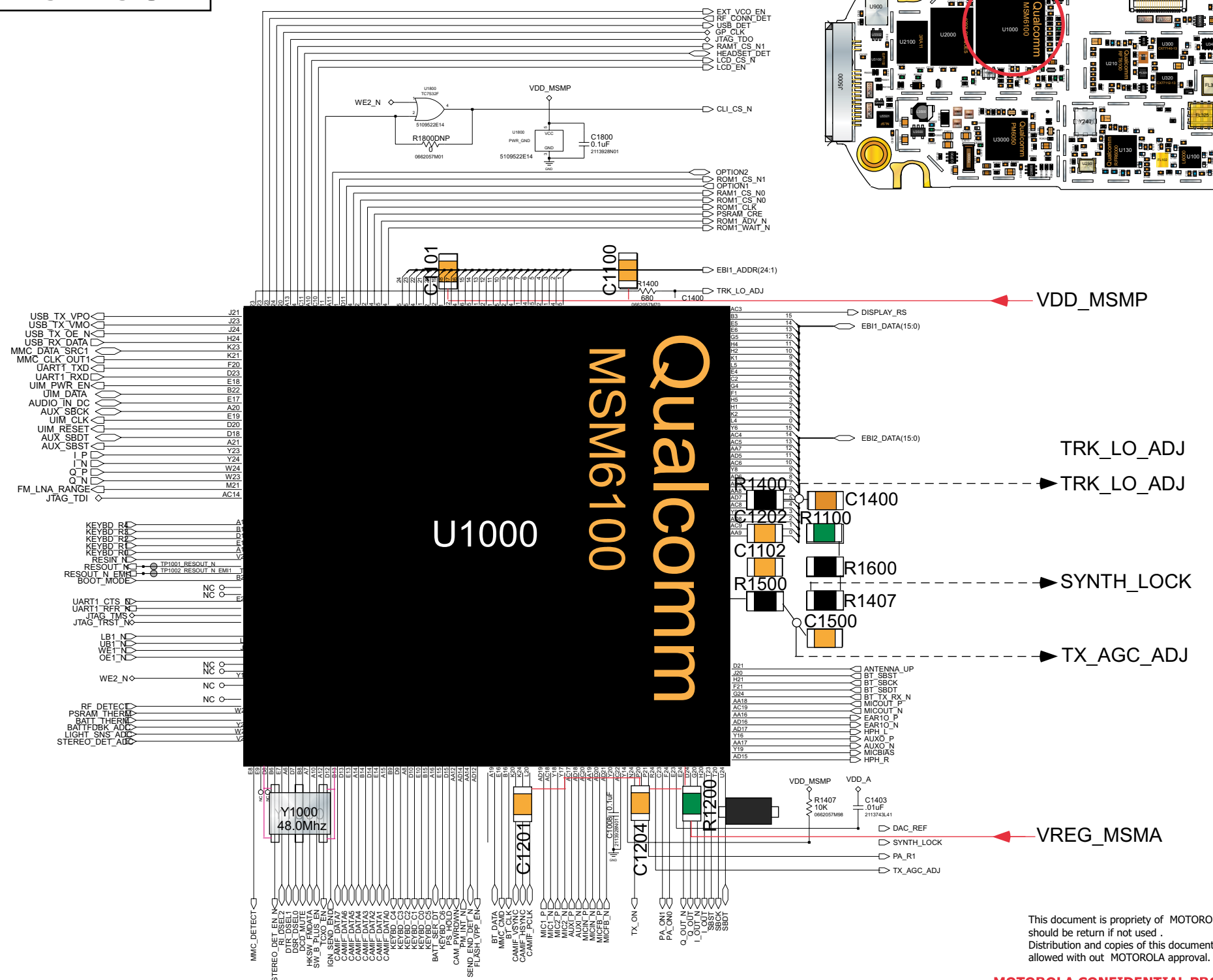
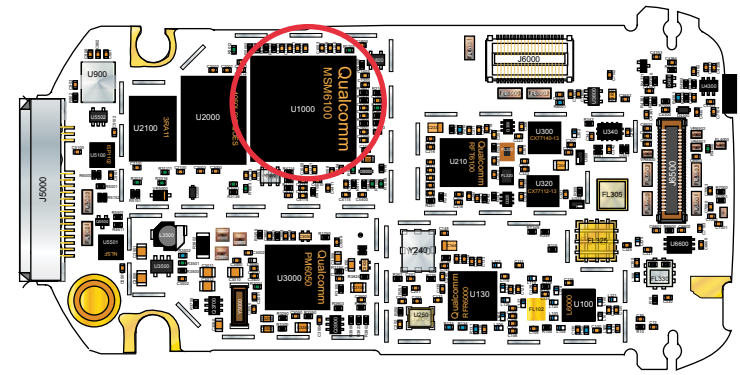
JTAG CONNECTOR



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BOARD - P3



VDD_MSMP

TRK_LO_ADJ
TRK_LO_ADJ
TRK_LO_ADJ
TRK_LO_ADJ
TX_AGC_ADJ

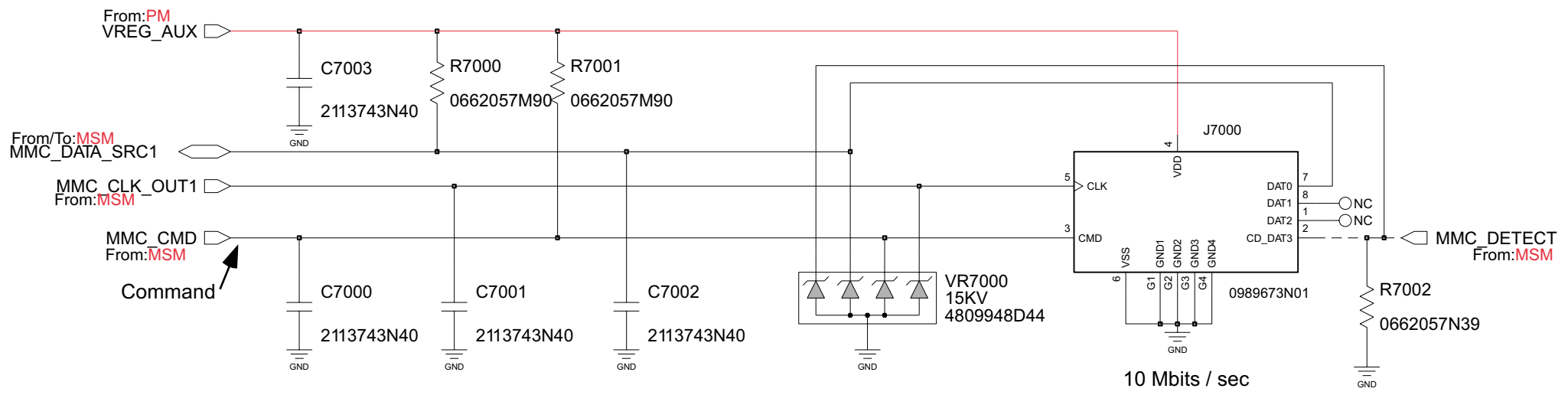
VREG_MSMA

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MMC SCHEM

V710

MMC
REF 7000-7009



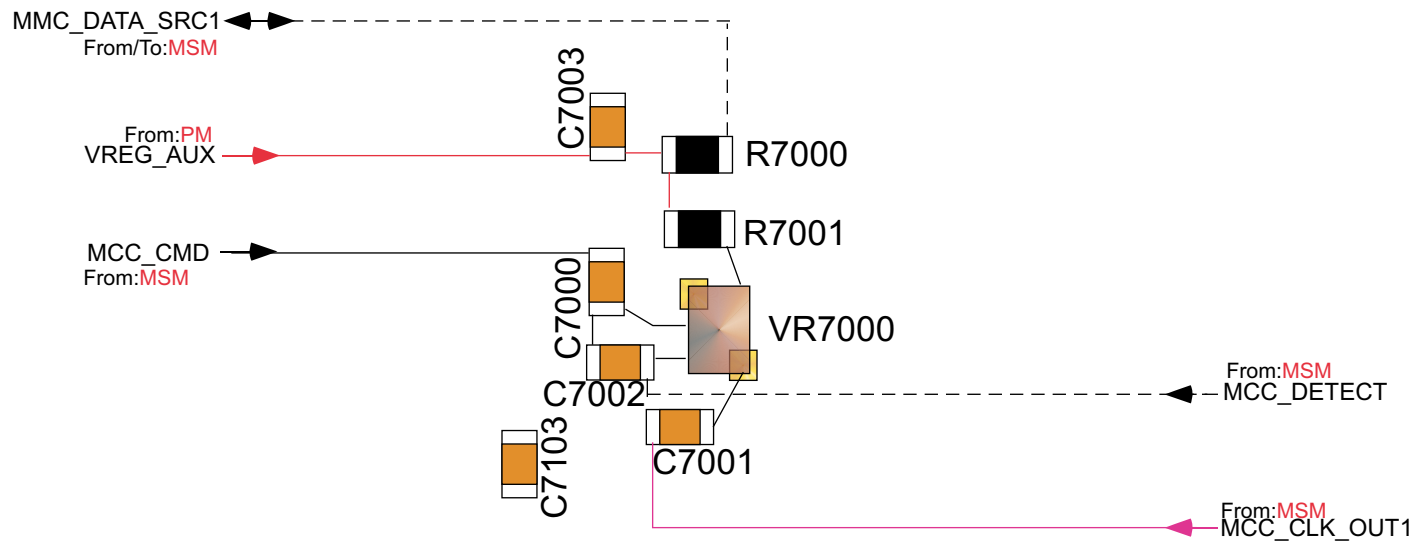
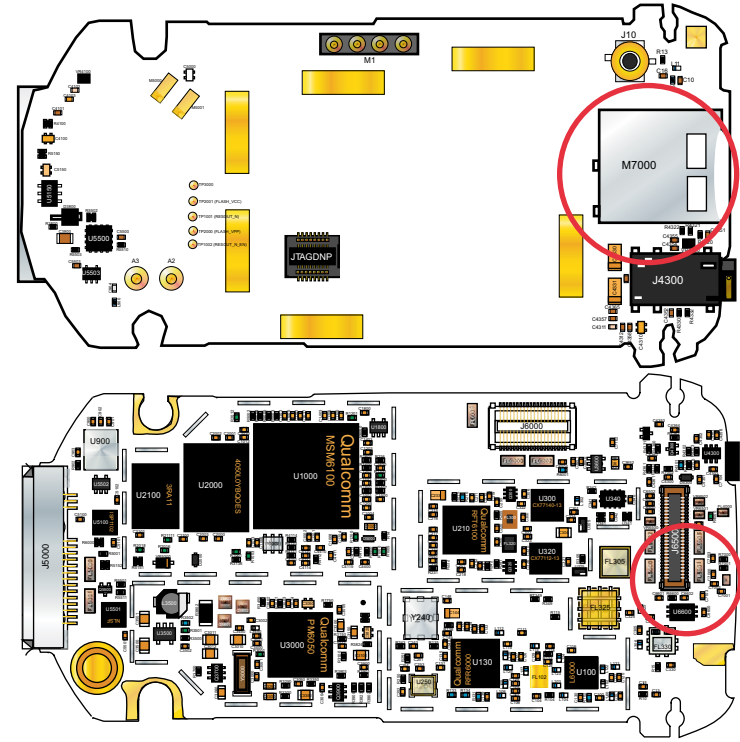
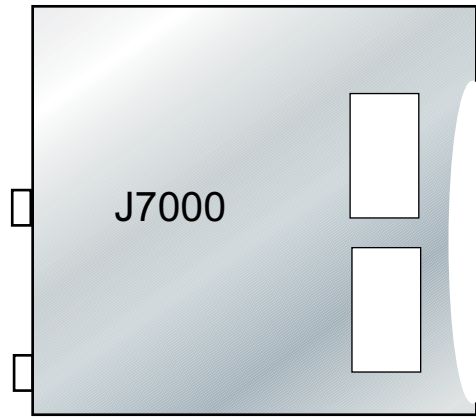
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BOARD - P3

MMC CIRCUIT

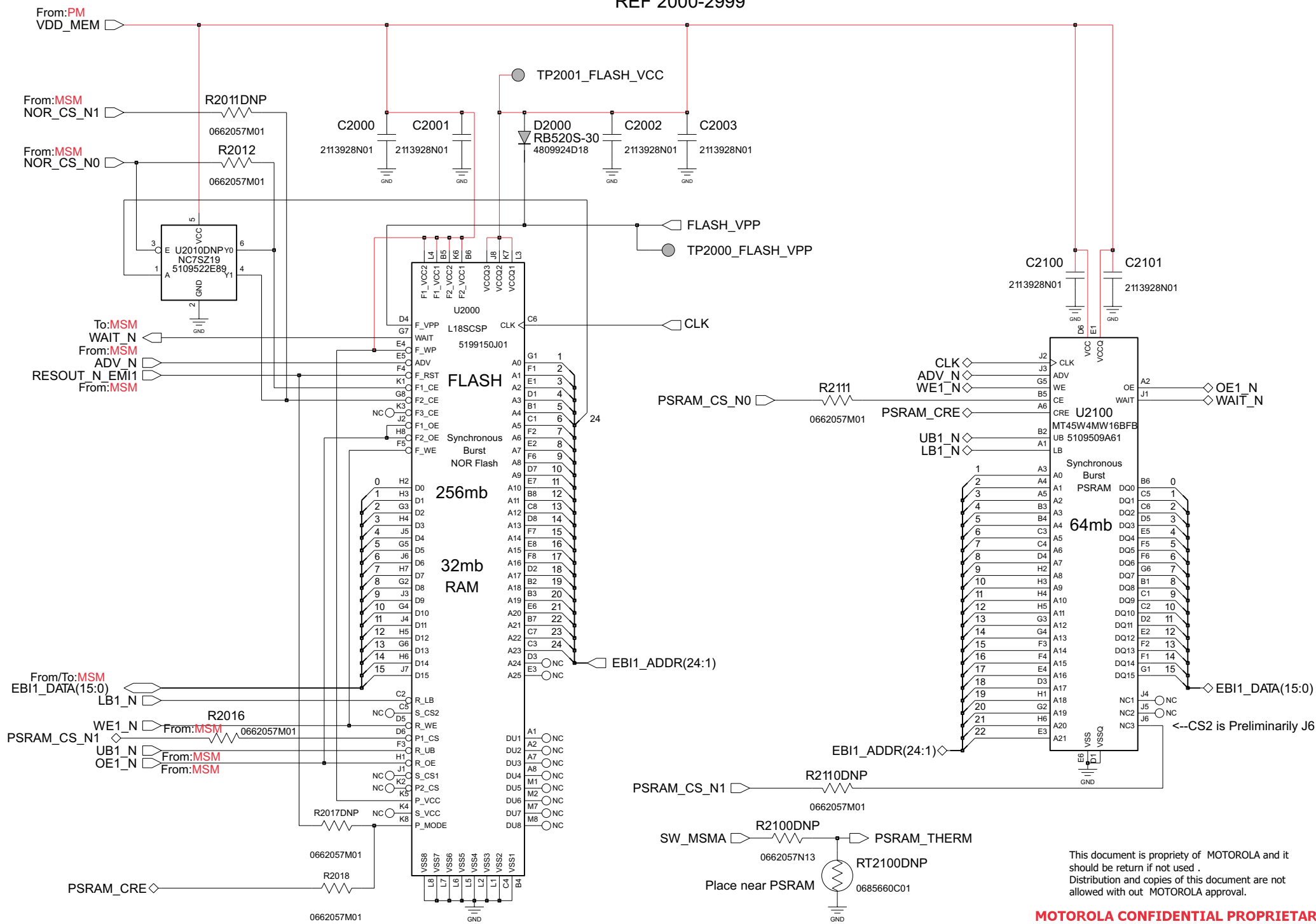
V710



MOTOROLA CONFIDENTIAL PROPRIETARY
BOARD - P3

MEMORY SCHEM

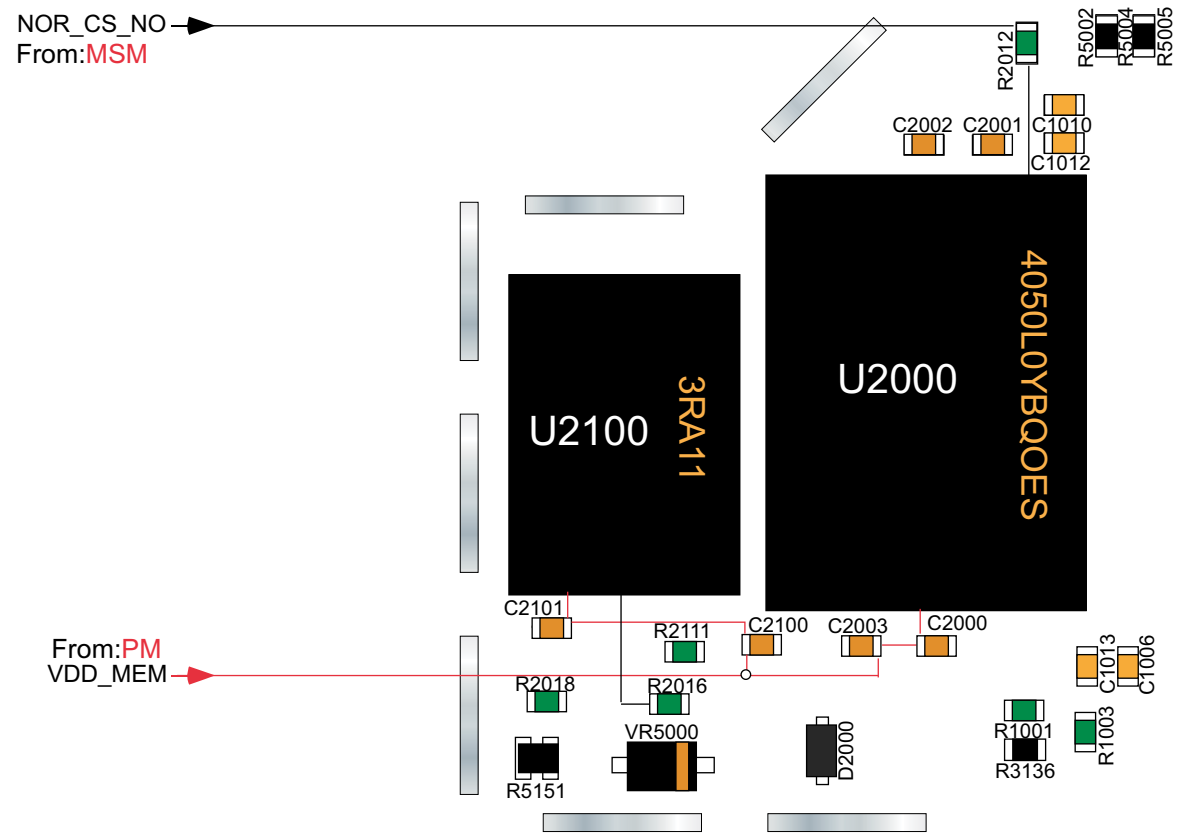
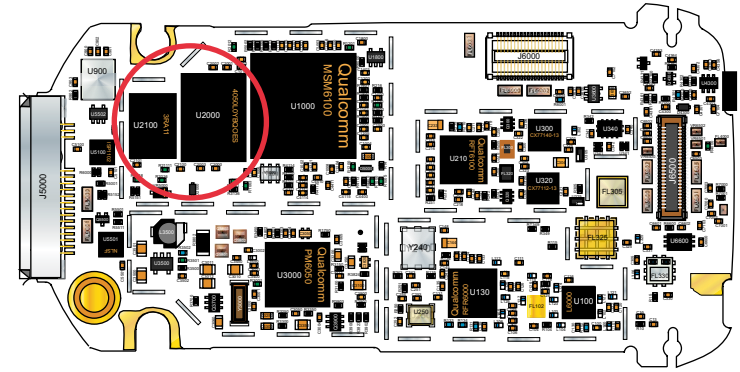
V710 MEMORY REF 2000-2999



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MEMORY CIRCUIT

V710



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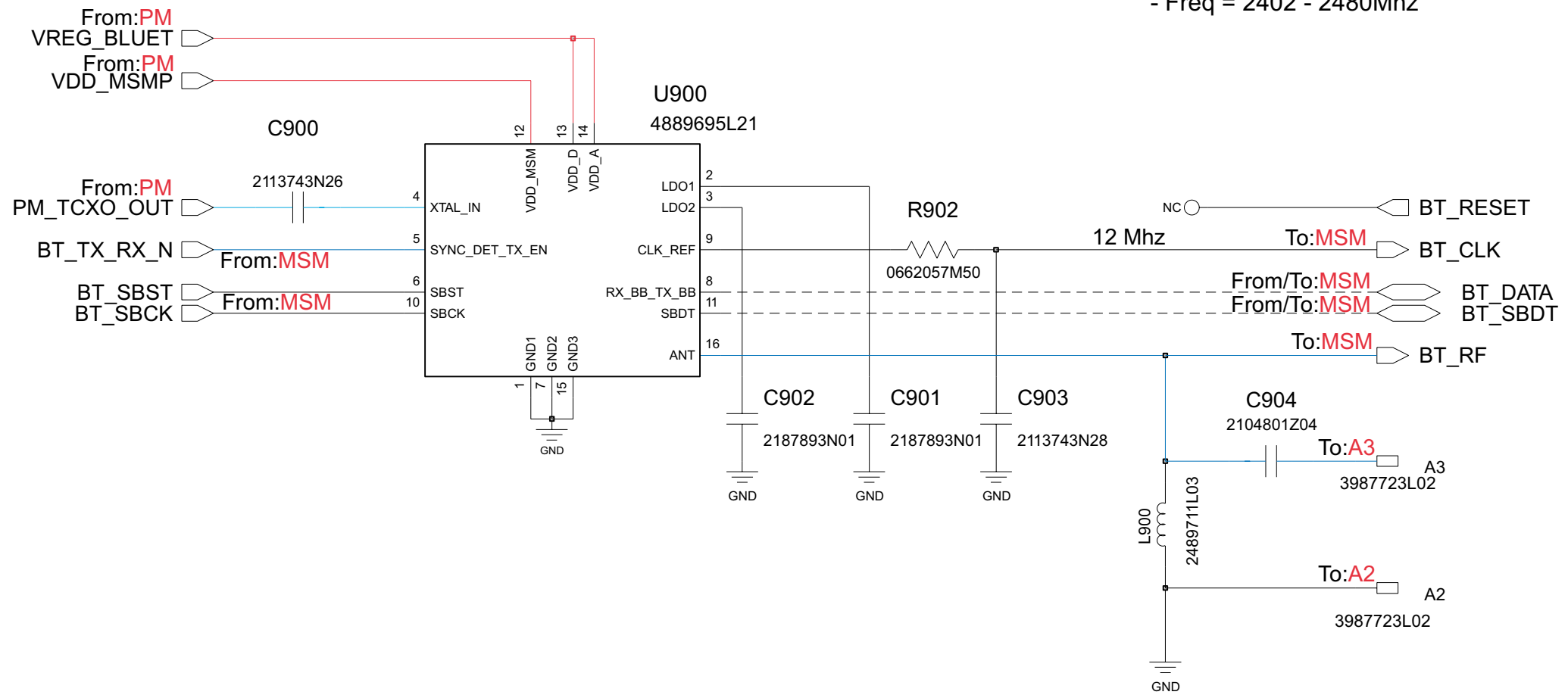
MOTOROLA CONFIDENTIAL PROPRIETARY
BOARD - P3

BLUETOOTH SCHEM

V710

BLUETOOTH REF 900-999

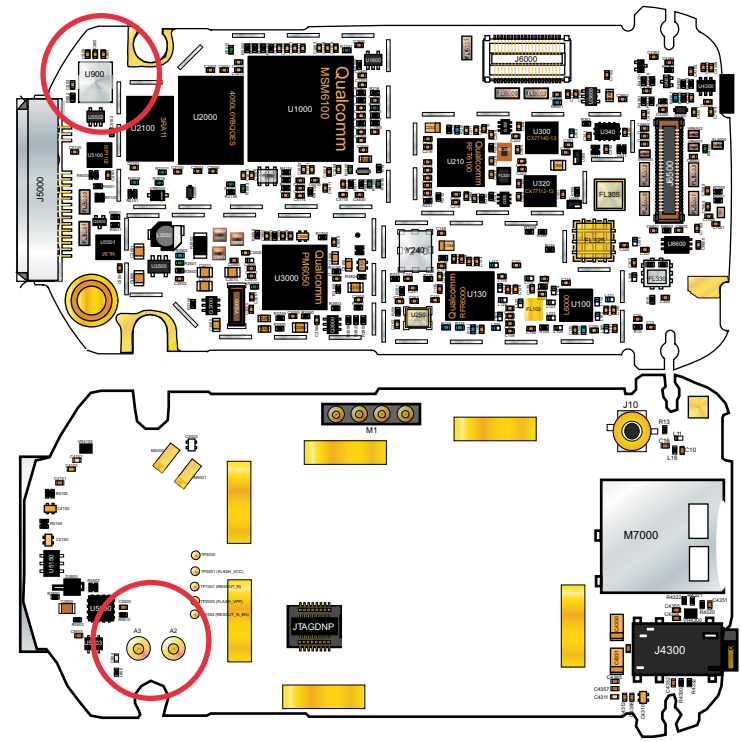
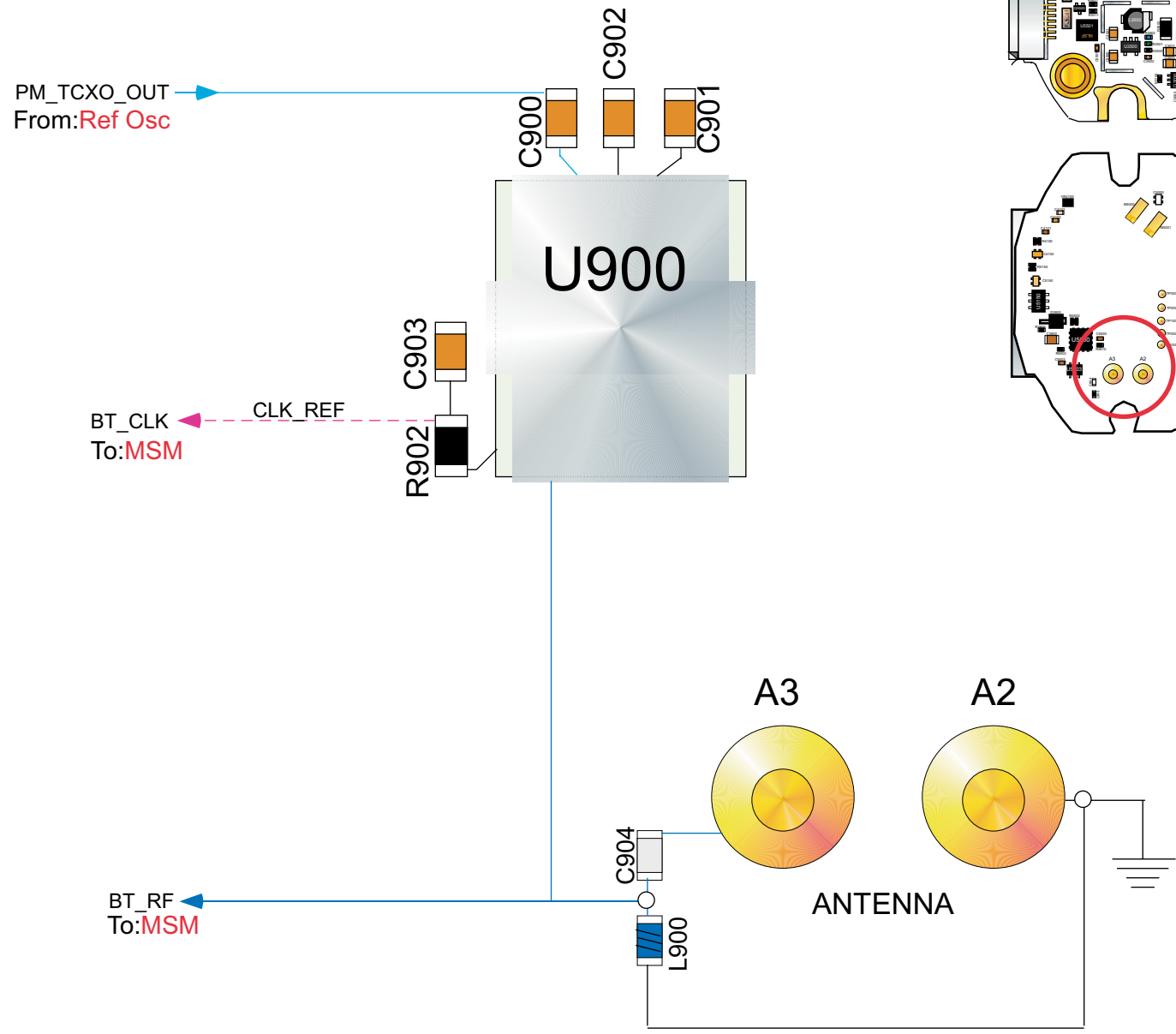
- 79 Channels
- BW = 1 Mhz
- 10 meter range
- Freq = 2402 - 2480Mhz



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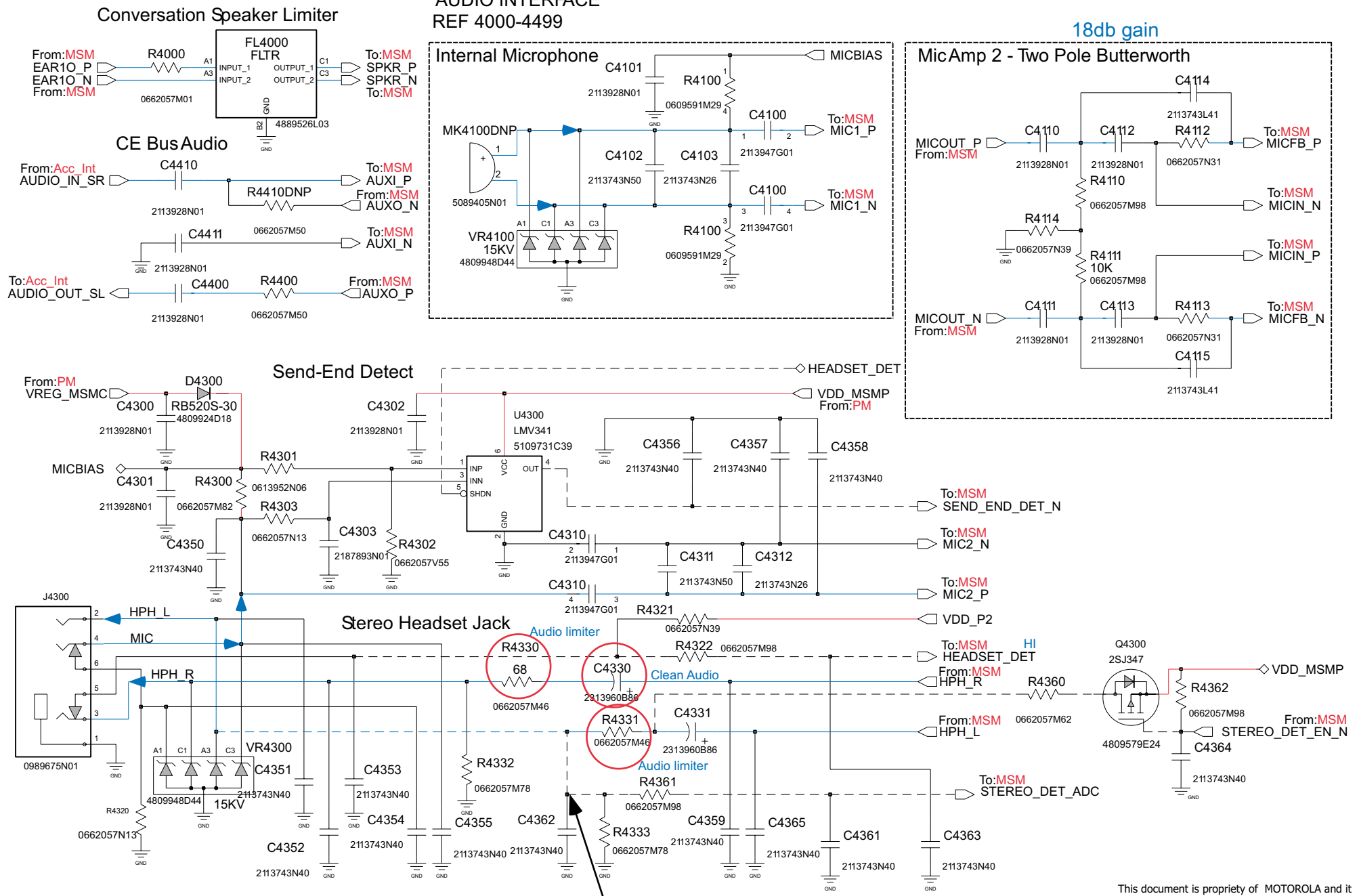
BLUETOOTH CIRCUIT

V710



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AUDIO INTERFACE REF 4000-4499

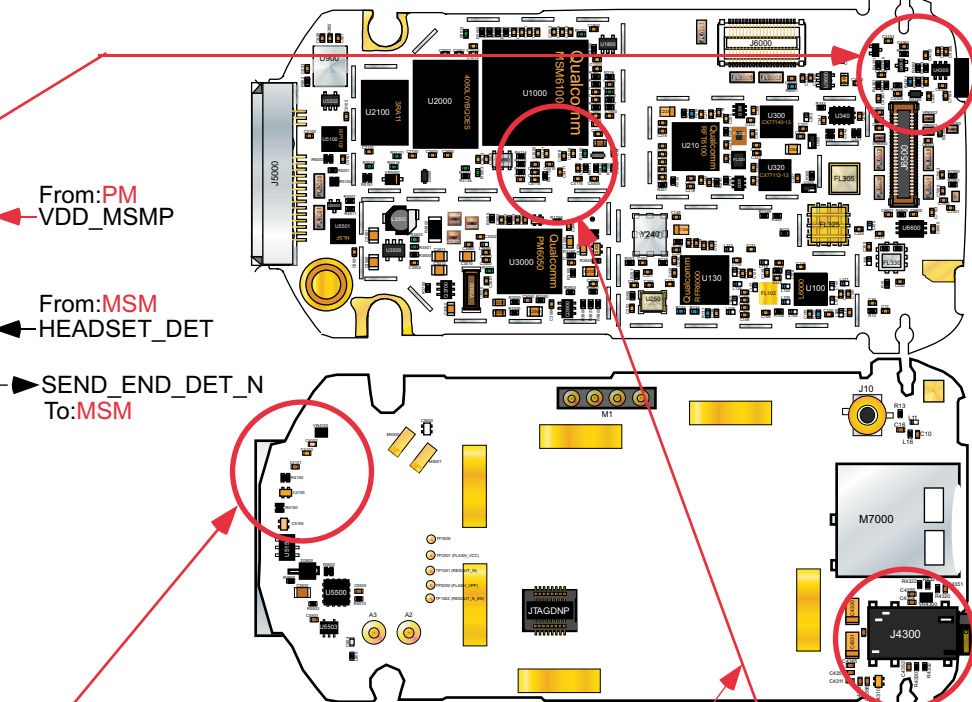
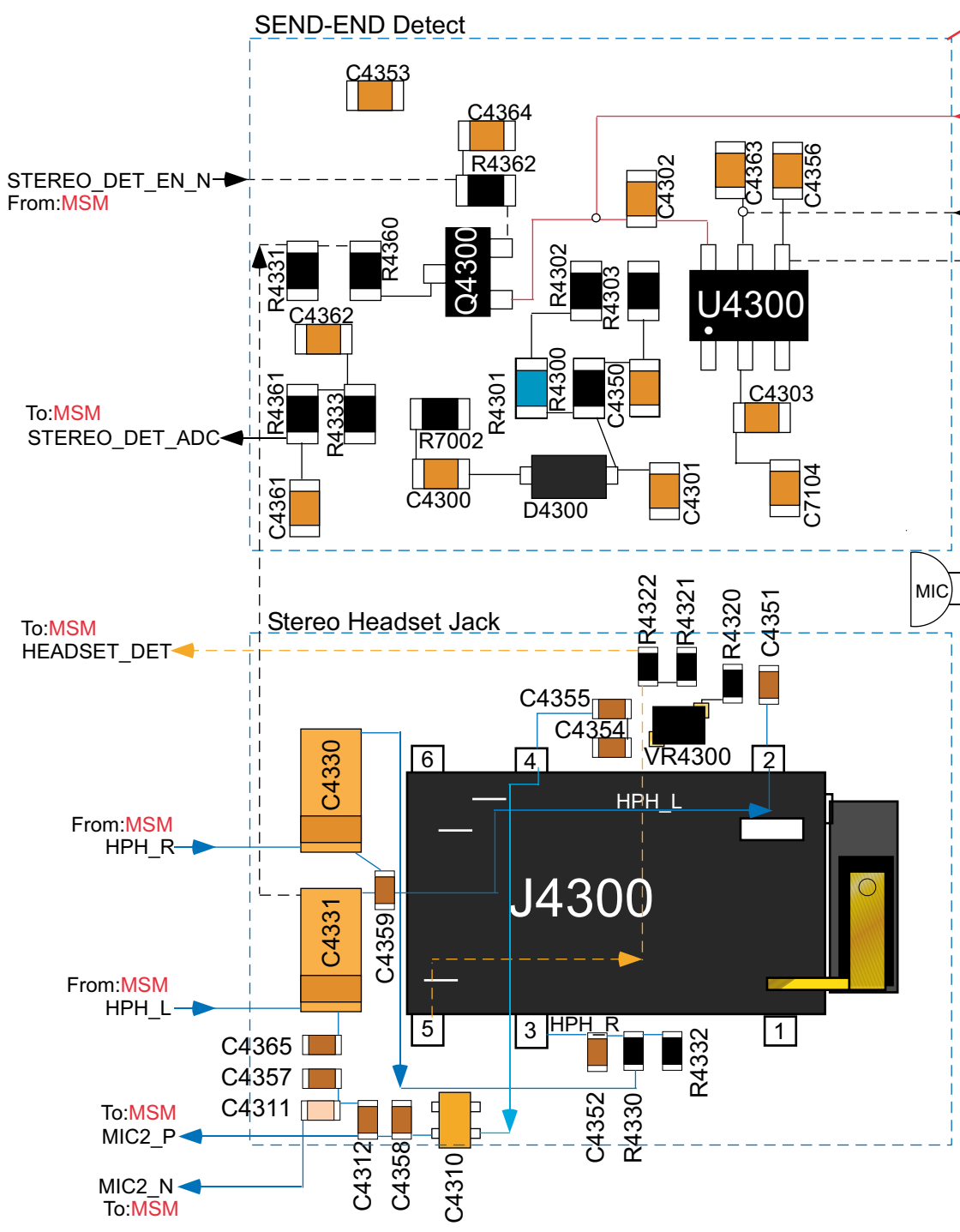


0 ohm = mono
32 ohm = stereo

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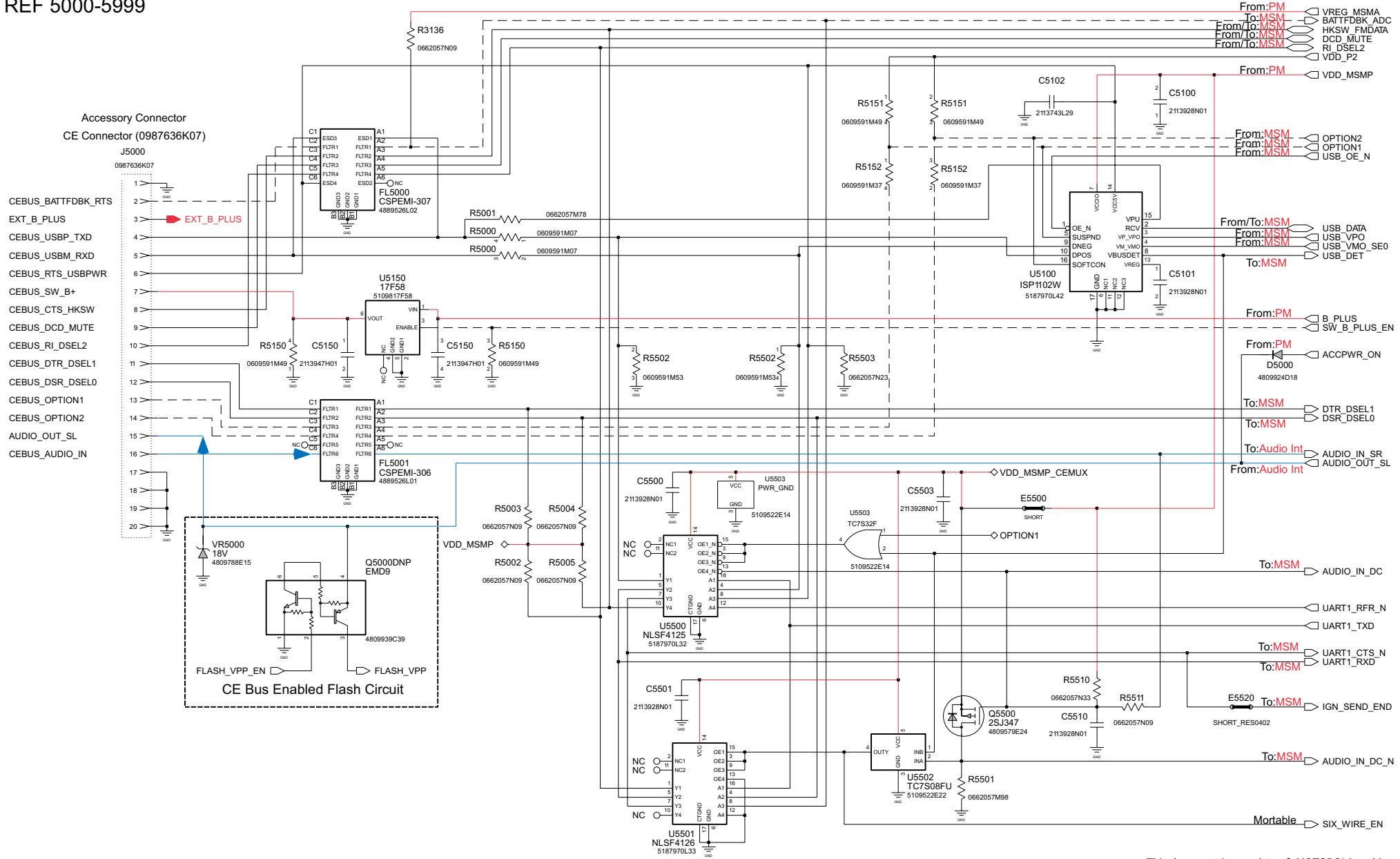
AUDIO INTER CIRCUIT

V710



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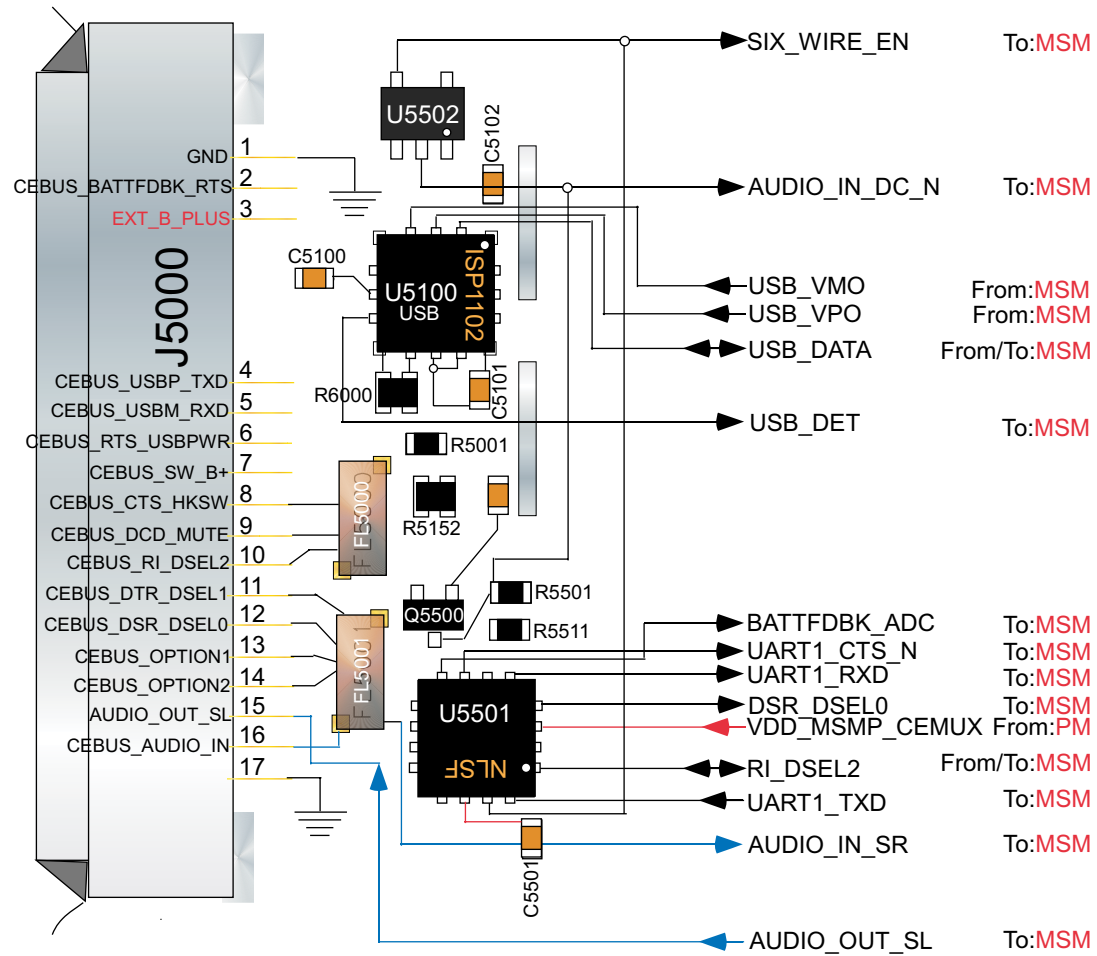
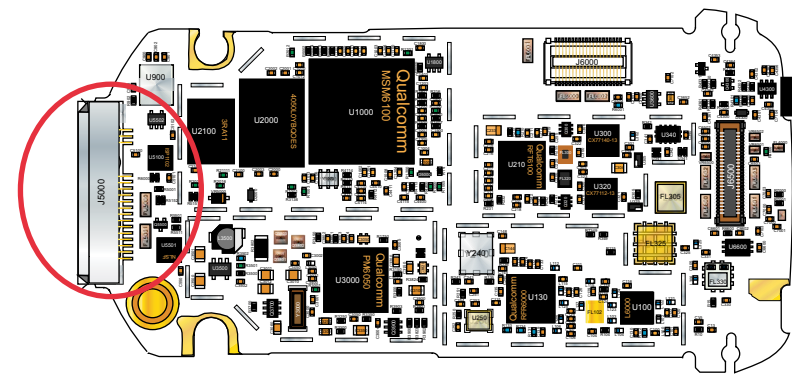
ACCESSORY_INTERFACE REF 5000-5999



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ACCESSORY CIRCUIT

V710

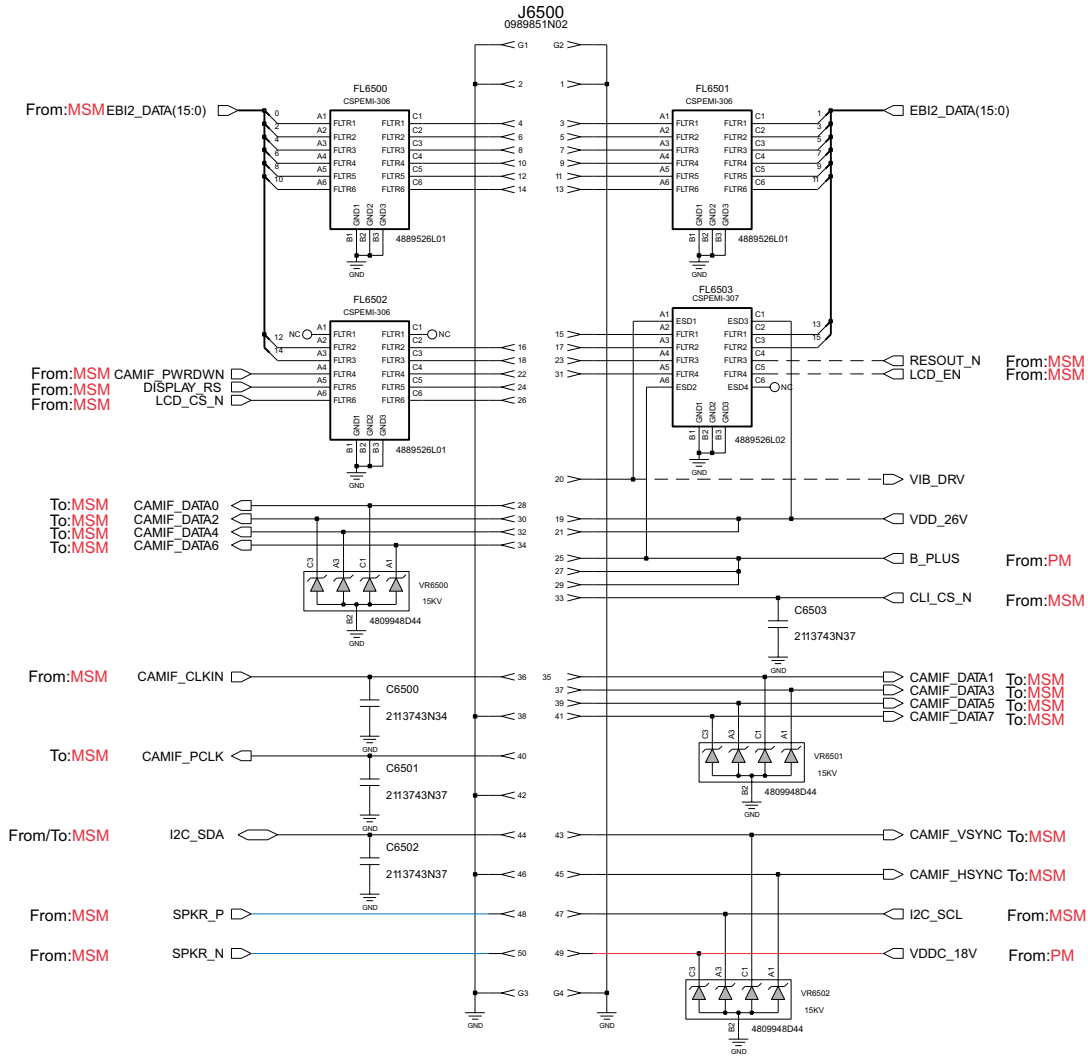


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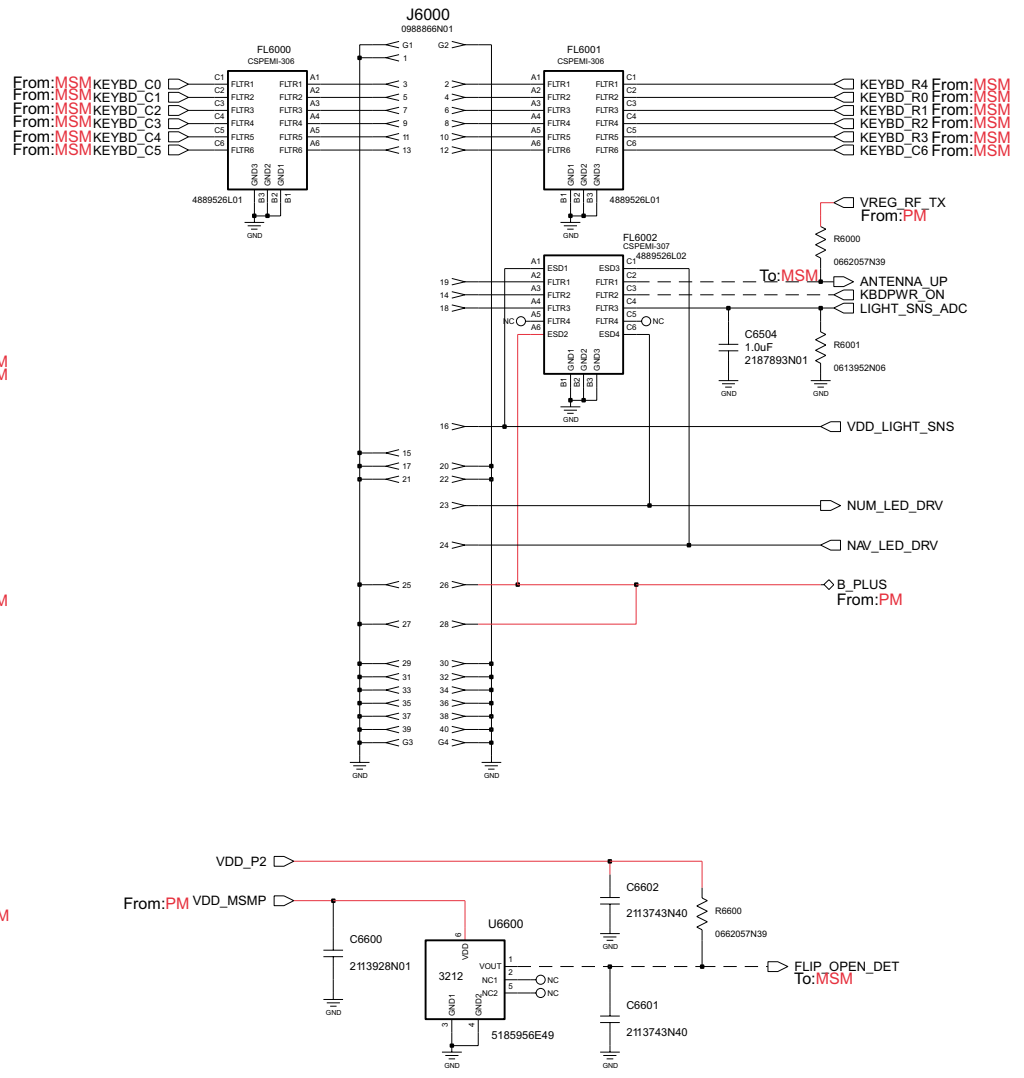
USER INTER SCHEM

V710

USER INTERFACE
REF 6000-6999



From:MSM EBI2_DATA(15:0)
From:MSM CAMIF_PWRDWN
From:MSM DISPLAY_RS
From:MSM LCD_CS_N
To:MSM CAMIF_DATA0
To:MSM CAMIF_DATA2
To:MSM CAMIF_DATA4
To:MSM CAMIF_DATA6
From:MSM CAMIF_CLKIN
To:MSM CAMIF_PCLK
From/To:MSM I2C_SDA
From:MSM SPKR_P
From:MSM SPKR_N
From:MSM RESOUT_N
From:MSM LCD_EN
From:MSM VIB_DRV
From:PM VDD_26V
From:PM B_PLUS
From:MSM CLI_CS_N
To:MSM CAMIF_DATA1
To:MSM CAMIF_DATA3
To:MSM CAMIF_DATA5
To:MSM CAMIF_DATA7
To:MSM I2C_SCL
From:MSM I2C_SCL
From:PM VDDC_18V



From:MSM KEYBD_C0
From:MSM KEYBD_C1
From:MSM KEYBD_C2
From:MSM KEYBD_C3
From:MSM KEYBD_C4
From:MSM KEYBD_C5
From:MSM KEYBD_R4
From:MSM KEYBD_R0
From:MSM KEYBD_R1
From:MSM KEYBD_R2
From:MSM KEYBD_R3
From:MSM KEYBD_C6
From:PM VREG_RF_TX
To:MSM ANTENNA_UP
To:MSM KBDPWR_ON
To:MSM LIGHT_SNS_ADC
VDD_LIGHT_SNS
NUM_LED_DRV
NAV_LED_DRV
From:PM B_PLUS
From:PM VDD_P2
From:PM VDD_MSM
To:MSM FLIP_OPEN_DET

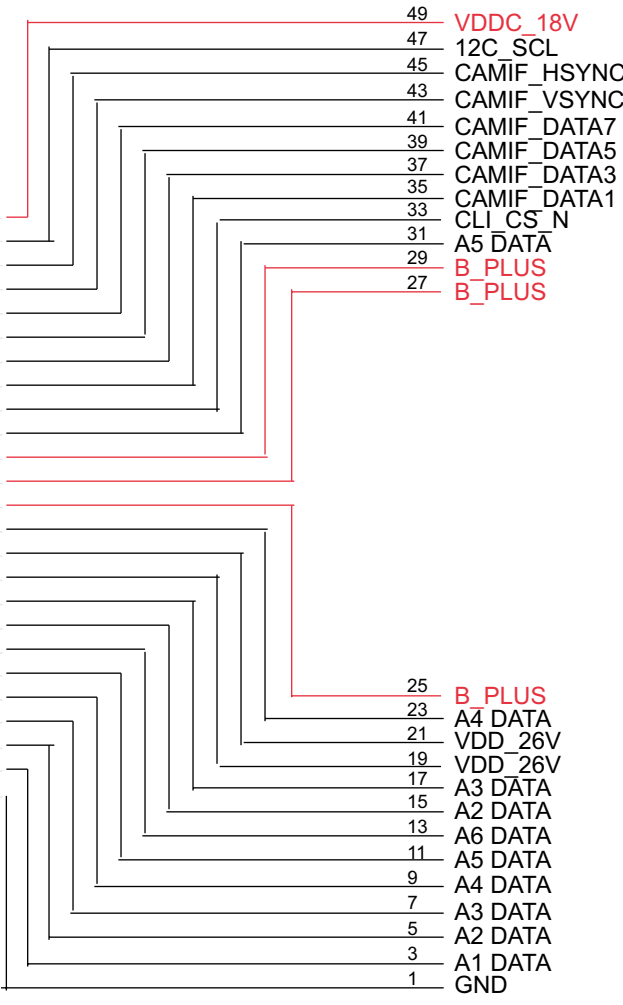
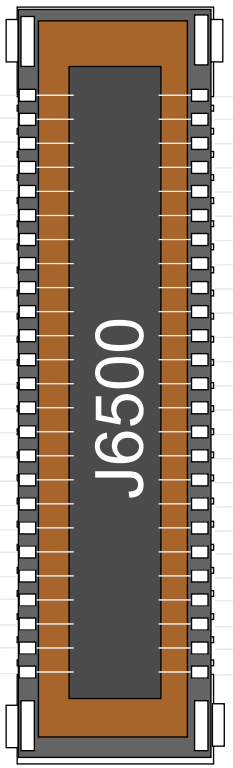
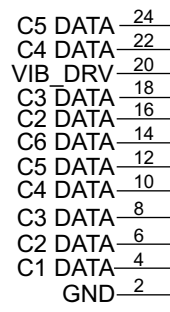
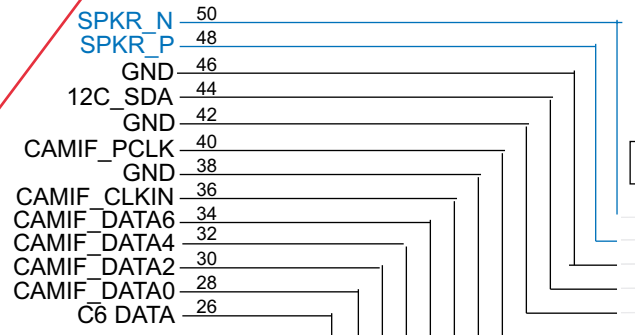
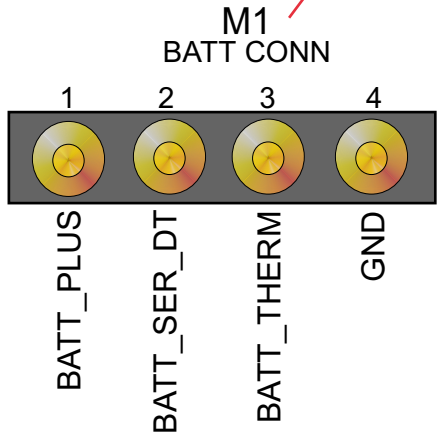
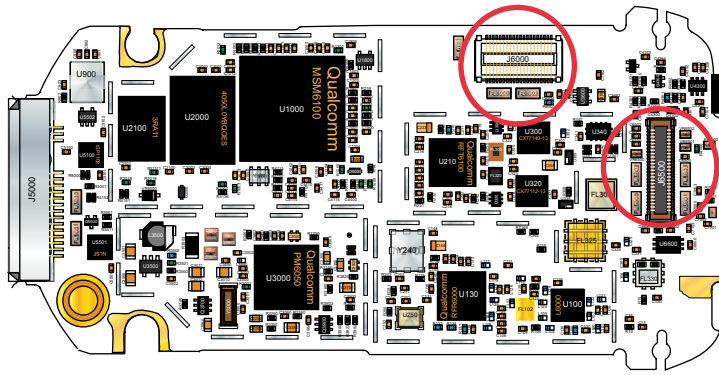
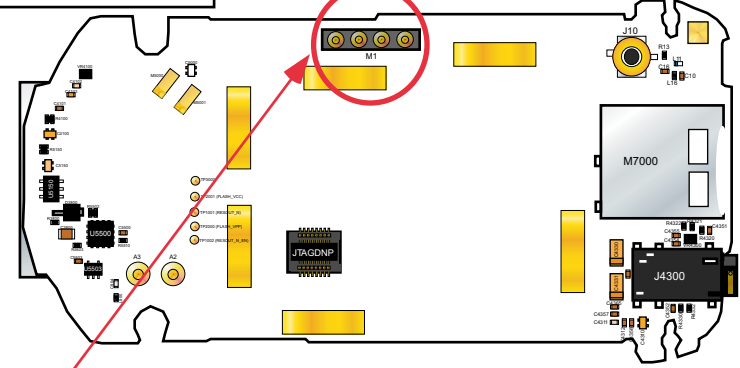
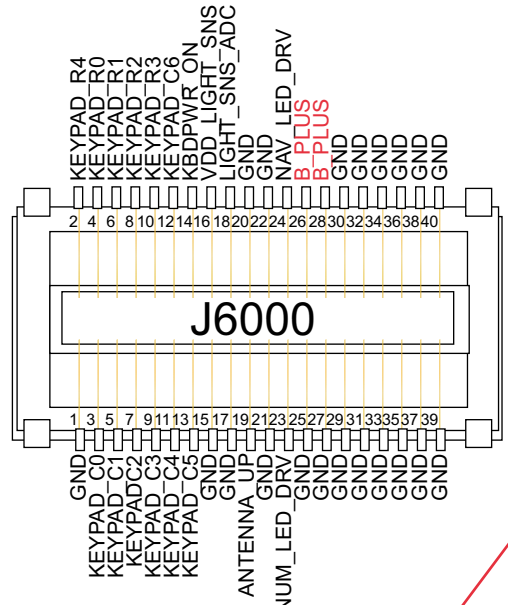
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BOARD - P3

USER INTERFACE CIRCUIT

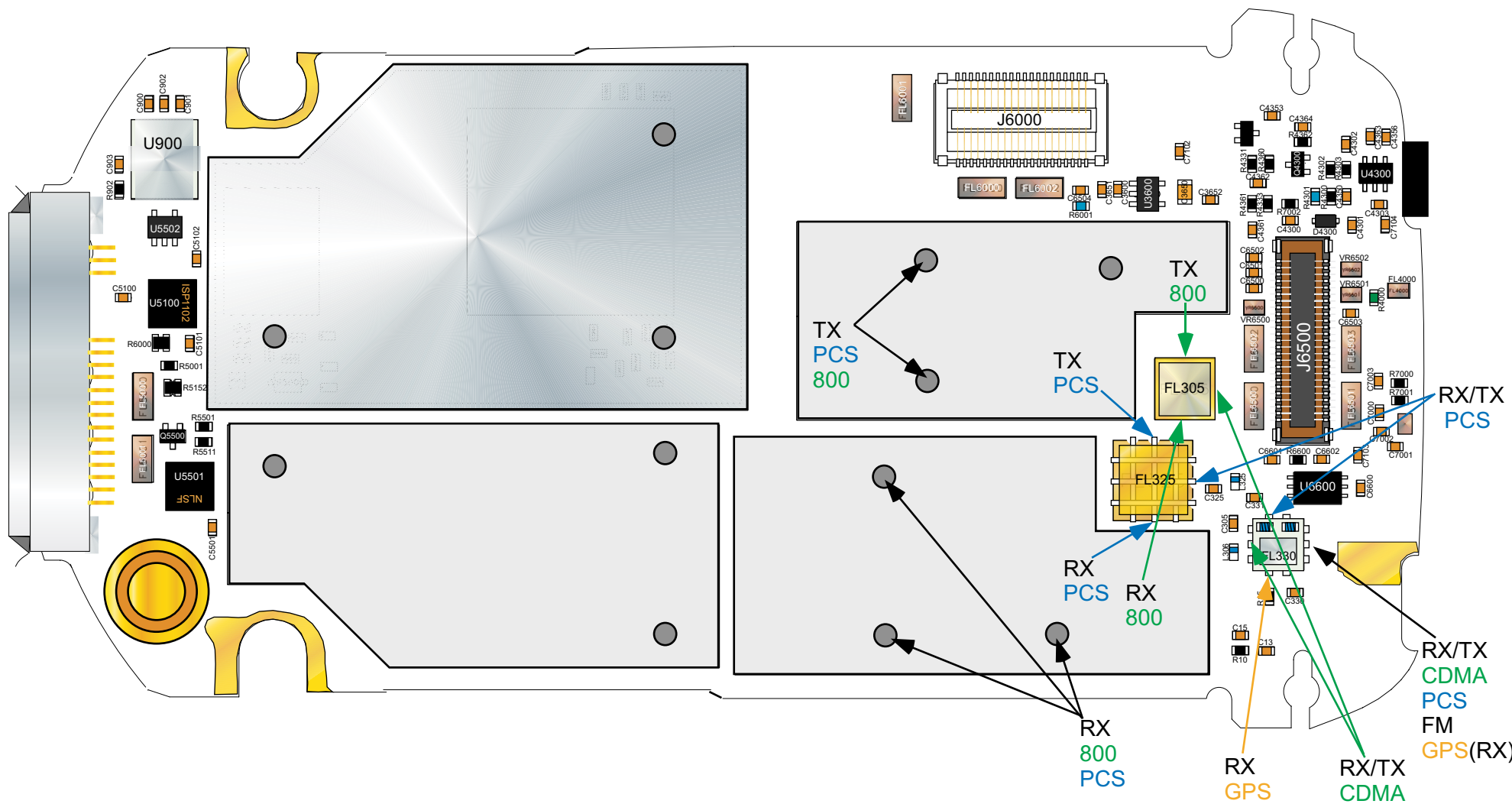
V710



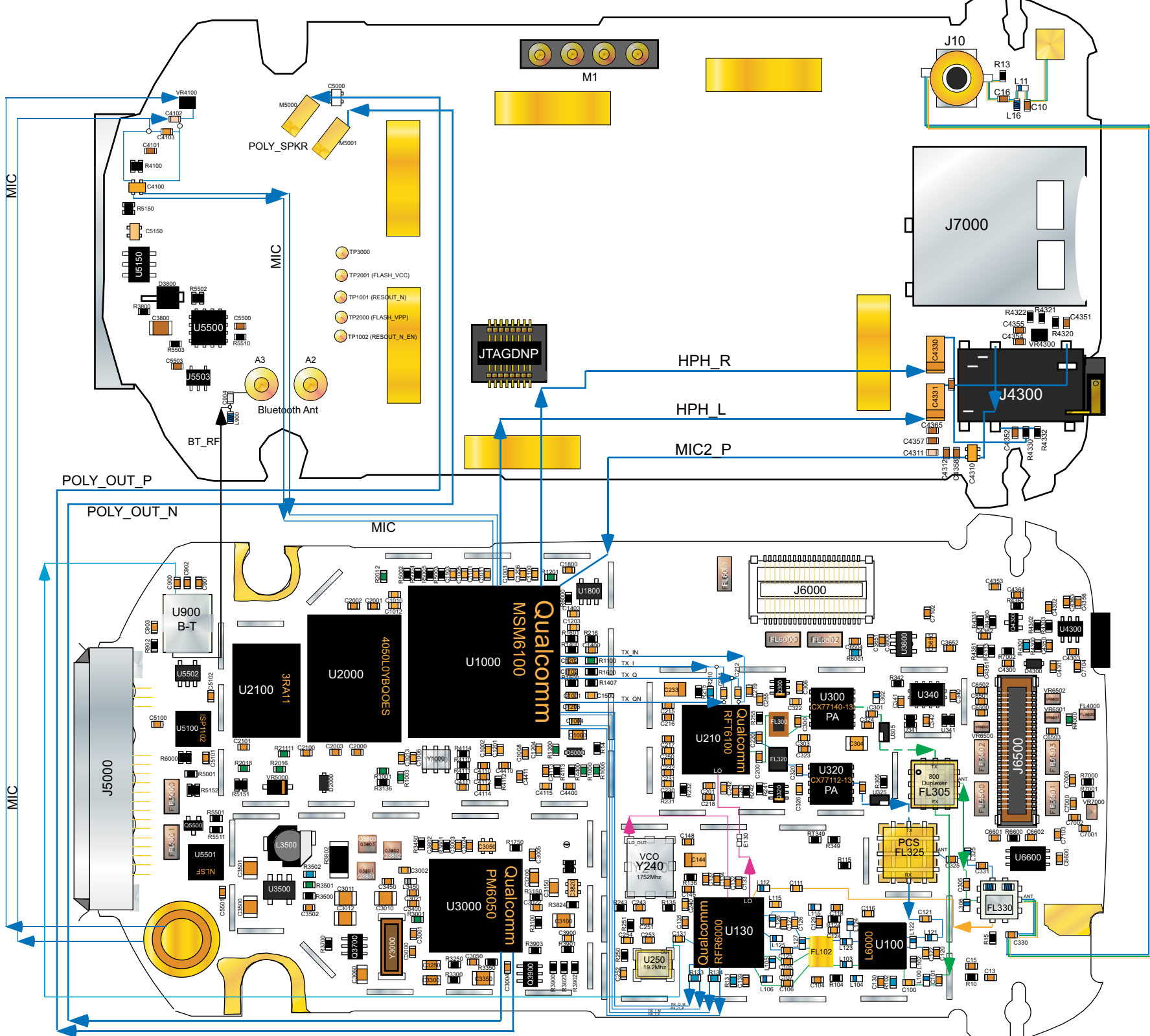
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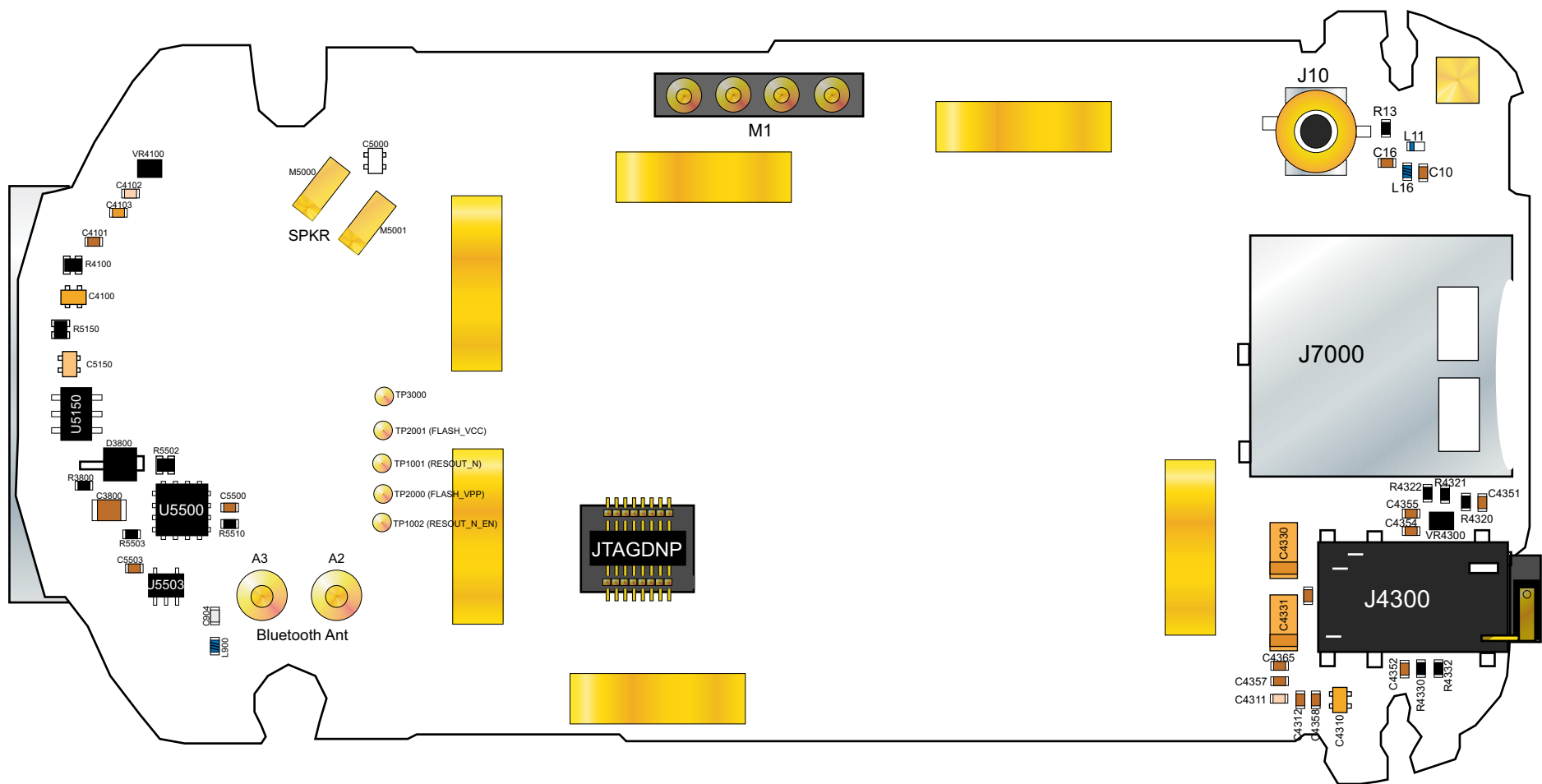
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BOARD - P3

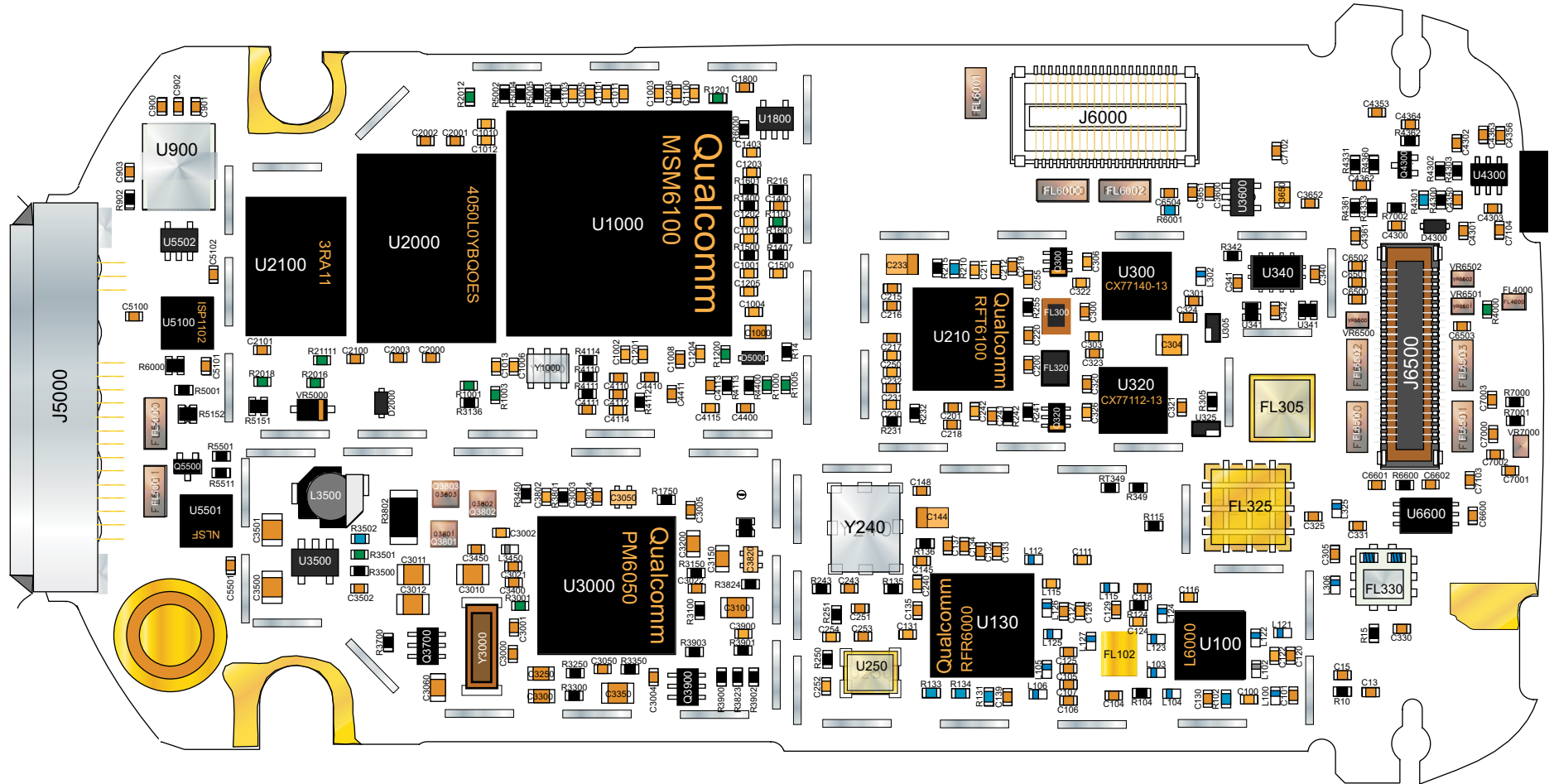


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BOARD - P3

Mechanical Parts	
CDMA	V710
Part #	Description
6189690N05	lens main
1589700N04	Flip housing sleeve-silver/ dark metallic grey
0789918N02	display bracket
7289424N01	display
0789724N02	flip chassis
6189953N02	CLI lens
1589315N04	knuckle assy.
8587488Y01	antenna
1589331N02	front housing-dark metallic grey
3889338N03	keypad
0187521Y02	keyboard assy
0789414N02	back housing-silver
1589318N03	back hsg cover.
8490009N01	speaker
5089405N01	mic
5989943N01	ALERT DEVICE,VIBR,,,,,,MOTOR
1589333N04	battery door -silver.
0389469N02	screw
8489850N02	camera assy
0589944n02	rf grommet
8489450N02	flip flex assy
5587736N01	hinge assy
0387791L01	screw
1389819N03	BEZEL ASSEMBLY,,,,MPX CAMR V710 DEC
7589314N02	GROM,,RUB,/FLIPSTOP V700 CDMA
5402393T02	LABEL VADER Escutheon

Programming Kits and Software	
Part #	Description
0109742L73	External Security Key for Flashing
NNTN4250BP	Rapid Power Supply
RLN5244A	Serial Port Connectivity Kit.
SKN4996A	Power Supply Cable
SKN6304B	Radio Cable
SKN6311B	USB Data Cable
SKN6315A	Serial Port Data Cable
SYN0279B	Cable Head for Serial Port Data Cable
SYN8400A	Junior Board

Tools & Service Aids	
Part #	Description
6680387A95	Anti-Static Mat (Part of anti-static mat kit)
6680334B36	Ground Cord (Part of anti-static mat kit)
4280385A59	Wristband (Part of anti-static mat kit)
6680321B91	Magnetic Screwdriver
6680387A70	TORX T6 Screwdriver Bit
SLN7223A	TOOL FIELD SERVICE MICROTAC

Electrical Parts		V710
CDMA		
Part #	Part Description	Reference Designator
0609591M37	RES CHIP DUAL 10K 5% 0.63W	R5152
0609591M37	RES CHIP DUAL 10K 5% 0.63W	R3825
0662057M01	RES. CHIP 0 5% 20X40	R1001
0662057M01	RES. CHIP 0 5% 20X40	R2012
0662057M01	RES. CHIP 0 5% 20X40	R1000
0662057M01	RES. CHIP 0 5% 20X40	R2018
0662057M01	RES. CHIP 0 5% 20X40	R1200
0662057M01	RES. CHIP 0 5% 20X40	R3501
0662057M01	RES. CHIP 0 5% 20X40	R1201
0662057M01	RES. CHIP 0 5% 20X40	R1005
0662057M01	RES. CHIP 0 5% 20X40	R3001
0662057M01	RES. CHIP 0 5% 20X40	R1003
0662057M01	RES. CHIP 0 5% 20X40	R2111
0662057M01	RES. CHIP 0 5% 20X40	R1100
0662057M01	RES. CHIP 0 5% 20X40	R2016
0662057M01	RES. CHIP 0 5% 20X40	R4000
0662057M02	RES. CHIP 1.0 5% 20X40	R3350
0662057M02	RES. CHIP 1.0 5% 20X40	R3100
0662057M02	RES. CHIP 1.0 5% 20X40	R3300
0662057M02	RES. CHIP 1.0 5% 20X40	R3150
0662057M02	RES. CHIP 1.0 5% 20X40	R3250
0662057M46	RES. CHIP 68 5% 20X40	R4331
0662057M46	RES. CHIP 68 5% 20X40	R4330
0662057M50	RES. CHIP 100 5% 20X40	R216
0662057M50	RES. CHIP 100 5% 20X40	R1700
0662057M50	RES. CHIP 100 5% 20X40	R250
0662057M50	RES. CHIP 100 5% 20X40	R4400
0662057M50	RES. CHIP 100 5% 20X40	R3450
0662057M50	RES. CHIP 100 5% 20X40	R3824
0662057M50	RES. CHIP 100 5% 20X40	R115
0662057M50	RES. CHIP 100 5% 20X40	R902
0662057M50	RES. CHIP 100 5% 20X40	R135
0662057M62	RES. CHIP 330 5% 20X40	R3801
0662057M62	RES. CHIP 330 5% 20X40	R4360
0662057M70	RES. CHIP 680 5% 20X40	R1400
0662057M74	RES. CHIP 1000 5% 20X40	R243
0662057M74	RES. CHIP 1000 5% 20X40	R255
0662057M74	RES. CHIP 1000 5% 20X40	R1500
0662057M78	RES. CHIP 1500 5% 20X40	R4333
0662057M78	RES. CHIP 1500 5% 20X40	R5001
0662057M78	RES. CHIP 1500 5% 20X40	R4332
0662057M90	RES. CHIP 4700 5% 20X40	R231
0662057M90	RES. CHIP 4700 5% 20X40	R3823
0662057M98	RES. CHIP 10K 5% 20X40	R4110
0662057M98	RES. CHIP 10K 5% 20X40	R4111
0662057M98	RES. CHIP 10K 5% 20X40	R15
0662057M98	RES. CHIP 10K 5% 20X40	R5501

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Part #	Part Description	Reference Designator
0662057M98	RES. CHIP 10K 5% 20X40	R4361
0662057M98	RES. CHIP 10K 5% 20X40	R1407
0662057M98	RES. CHIP 10K 5% 20X40	R4362
0662057M98	RES. CHIP 10K 5% 20X40	R3902
0662057M98	RES. CHIP 10K 5% 20X40	R4322
0662057M98	RES. CHIP 10K 5% 20X40	R13
0662057M98	RES. CHIP 10K 5% 20X40	R3800
0662057N09	RES. CHIP 27K 5% 20X40	R5004
0662057N09	RES. CHIP 27K 5% 20X40	R5511
0662057N09	RES. CHIP 27K 5% 20X40	R5002
0662057N09	RES. CHIP 27K 5% 20X40	R5005
0662057N09	RES. CHIP 27K 5% 20X40	R5003
0662057N09	RES. CHIP 27K 5% 20X40	R3136
0662057N13	RES. CHIP 39K 5% 20X40	R4303
0662057N13	RES. CHIP 39K 5% 20X40	R349
0662057N13	RES. CHIP 39K 5% 20X40	R4320
0662057N23	RES. CHIP 100K 5% 20X40	R7001
0662057N23	RES. CHIP 100K 5% 20X40	R7000
0662057N23	RES. CHIP 100K 5% 20X40	R3900
0662057N23	RES. CHIP 100K 5% 20X40	R3700
0662057N23	RES. CHIP 100K 5% 20X40	R3903
0662057N23	RES. CHIP 100K 5% 20X40	R10
0662057N23	RES. CHIP 100K 5% 20X40	R5503
0662057N33	RES. CHIP 270K 5% 20X40	R5510
0685660C01	THERMISTOR 3% 0402	RT349
0987378K01	CONN RF MOD3	J10
0987636K07	CONN,RCPT,17CONT,,SM,I/O,F,,I/	J5000
2113743A31	CAP CHIP 1.0 UF 10% X7R	C3800
2113743L17	CAP CHIP 1000 PF 10% X7R	C130
2113743L17	CAP CHIP 1000 PF 10% X7R	C131
2113743L17	CAP CHIP 1000 PF 10% X7R	C303
2113743L17	CAP CHIP 1000 PF 10% X7R	C306
2113743L17	CAP CHIP 1000 PF 10% X7R	C322
2113743L17	CAP CHIP 1000 PF 10% X7R	C326
2113743L17	CAP CHIP 1000 PF 10% X7R	C251
2113743L25	CAP CHIP 2200 PF 10% X7R	C230
2113743L29	CAP CHIP 3300 PF 10% X7R	C340
2113743L29	CAP CHIP 3300 PF 10% X7R	C5102
2113743L33	CAP CHIP 4700 PF 10% X7R	C255
2113743L33	CAP CHIP 4700 PF 10% X7R	C3900
2113743L33	CAP CHIP 4700 PF 10% X7R	C3802
2113743L41	CAP CHIP 10000 PF 10% X7R	C1102
2113743L41	CAP CHIP 10000 PF 10% X7R	C1202
2113743L41	CAP CHIP 10000 PF 10% X7R	C1101
2113743L41	CAP CHIP 10000 PF 10% X7R	C1013
2113743L41	CAP CHIP 10000 PF 10% X7R	C1206
2113743L41	CAP CHIP 10000 PF 10% X7R	C1500
2113743L41	CAP CHIP 10000 PF 10% X7R	C1103
2113743L41	CAP CHIP 10000 PF 10% X7R	C100

Electrical Parts		V710
CDMA		
Part #	Part Description	Reference Designator
2113743L41	CAP CHIP 10000 PF 10% X7R	C252
2113743L41	CAP CHIP 10000 PF 10% X7R	C1001
2113743L41	CAP CHIP 10000 PF 10% X7R	C1204
2113743L41	CAP CHIP 10000 PF 10% X7R	C254
2113743L41	CAP CHIP 10000 PF 10% X7R	C1100
2113743L41	CAP CHIP 10000 PF 10% X7R	C1003
2113743L41	CAP CHIP 10000 PF 10% X7R	C1002
2113743L41	CAP CHIP 10000 PF 10% X7R	C1203
2113743L41	CAP CHIP 10000 PF 10% X7R	C1005
2113743L41	CAP CHIP 10000 PF 10% X7R	C1201
2113743L41	CAP CHIP 10000 PF 10% X7R	C232
2113743L41	CAP CHIP 10000 PF 10% X7R	C4115
2113743L41	CAP CHIP 10000 PF 10% X7R	C1006
2113743L41	CAP CHIP 10000 PF 10% X7R	C4114
2113743L41	CAP CHIP 10000 PF 10% X7R	C1010
2113743L41	CAP CHIP 10000 PF 10% X7R	C1205
2113743L41	CAP CHIP 10000 PF 10% X7R	C1004
2113743L41	CAP CHIP 10000 PF 10% X7R	C1012
2113743L41	CAP CHIP 10000 PF 10% X7R	C1011
2113743L41	CAP CHIP 10000 PF 10% X7R	C1403
2113743L41	CAP CHIP 10000 PF 10% X7R	C242
2113743N03	CAP CHIP 1.0 PF +/- .25PF COG	C120
2113743N20	CAP CHIP 5.6 PF + -.5PF COG	C321
2113743N21	CAP CHIP 6.2 PF + -.5PF COG	C220
2113743N21	CAP CHIP 6.2 PF + -.5PF COG	C125
2113743N21	CAP CHIP 6.2 PF + -.5PF COG	C126
2113743N21	CAP CHIP 6.2 PF + -.5PF COG	C105
2113743N21	CAP CHIP 6.2 PF + -.5PF COG	C106
2113743N22	CAP CHIP 6.8 PF + -.5PF COG	C331
2113743N24	CAP CHIP 8.2 PF + -.5PF COG	C200
2113743N26	CAP CHIP 10.0 PF 5% COG	C3000
2113743N26	CAP CHIP 10.0 PF 5% COG	C301
2113743N26	CAP CHIP 10.0 PF 5% COG	C325
2113743N26	CAP CHIP 10.0 PF 5% COG	C900
2113743N26	CAP CHIP 10.0 PF 5% COG	C3001
2113743N26	CAP CHIP 10.0 PF 5% COG	C305
2113743N26	CAP CHIP 10.0 PF 5% COG	C4103
2113743N26	CAP CHIP 10.0 PF 5% COG	C4312
2113743N34	CAP CHIP 22.0 PF 5% COG	C6500
2113743N37	CAP CHIP 30.0 PF 5% COG	C6501
2113743N37	CAP CHIP 30.0 PF 5% COG	C6503
2113743N37	CAP CHIP 30.0 PF 5% COG	C6502
2113743N40	CAP CHIP 39.0 PF 5% COG	C4350
2113743N40	CAP CHIP 39.0 PF 5% COG	C330
2113743N40	CAP CHIP 39.0 PF 5% COG	C3652
2113743N40	CAP CHIP 39.0 PF 5% COG	C6601
2113743N40	CAP CHIP 39.0 PF 5% COG	C3651
2113743N40	CAP CHIP 39.0 PF 5% COG	C4364
2113743N40	CAP CHIP 39.0 PF 5% COG	C4361

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CDMA		
Part #	Part Description	Reference Designator
2113743N40	CAP CHIP 39.0 PF 5% COG	C4363
2113743N40	CAP CHIP 39.0 PF 5% COG	C4362
2113743N40	CAP CHIP 39.0 PF 5% COG	C7104
2113743N40	CAP CHIP 39.0 PF 5% COG	C15
2113743N40	CAP CHIP 39.0 PF 5% COG	C7103
2113743N40	CAP CHIP 39.0 PF 5% COG	C4356
2113743N40	CAP CHIP 39.0 PF 5% COG	C13
2113743N40	CAP CHIP 39.0 PF 5% COG	C7102
2113743N40	CAP CHIP 39.0 PF 5% COG	C7000
2113743N40	CAP CHIP 39.0 PF 5% COG	C6602
2113743N40	CAP CHIP 39.0 PF 5% COG	C101
2113743N40	CAP CHIP 39.0 PF 5% COG	C7001
2113743N40	CAP CHIP 39.0 PF 5% COG	C7101
2113743N40	CAP CHIP 39.0 PF 5% COG	C7003
2113743N40	CAP CHIP 39.0 PF 5% COG	C7002
2113743N40	CAP CHIP 39.0 PF 5% COG	C4353
2113743N40	CAP CHIP 39.0 PF 5% COG	C300
2113743N40	CAP CHIP 39.0 PF 5% COG	C4357
2113743N40	CAP CHIP 39.0 PF 5% COG	C4351
2113743N40	CAP CHIP 39.0 PF 5% COG	C4365
2113743N40	CAP CHIP 39.0 PF 5% COG	C4359
2113743N40	CAP CHIP 39.0 PF 5% COG	C4358
2113743N40	CAP CHIP 39.0 PF 5% COG	C16
2113743N40	CAP CHIP 39.0 PF 5% COG	C4355
2113743N40	CAP CHIP 39.0 PF 5% COG	C4354
2113743N40	CAP CHIP 39.0 PF 5% COG	C4352
2113743N50	CAP CHIP 100 PF 5% COG	C104
2113743N50	CAP CHIP 100 PF 5% COG	C113
2113743N50	CAP CHIP 100 PF 5% COG	C250
2113743N50	CAP CHIP 100 PF 5% COG	C124
2113743N50	CAP CHIP 100 PF 5% COG	C116
2113743N50	CAP CHIP 100 PF 5% COG	C3002
2113743N50	CAP CHIP 100 PF 5% COG	C122
2113743N50	CAP CHIP 100 PF 5% COG	C4102
2113743N50	CAP CHIP 100 PF 5% COG	C4311
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C135
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C5510
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C219
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C1400
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C218
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C137
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4110
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4300
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C243
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C127
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C342
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4302
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C3003
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4301

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Part #	Part Description	Reference Designator
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4112
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C3005
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4111
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C3004
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C129
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C118
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4113
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C253
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C6600
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C2002
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C2001
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C5101
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C2000
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C2100
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C1008
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C5501
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C2003
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C3022
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C3024
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C2101
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4411
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C217
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C1800
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C3020
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C216
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4410
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C215
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C3021
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C5100
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4400
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C324
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C107
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C5500
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C5503
2113928N01	CAP CER CHIP 0.1UF 10% 6.3	C4101
2311049A69	CAP TANT CHIP 10.0 UF 20% 6.3V	C144
2311049A76	CAP TANT CHIP 2.2UF 10% 6V	C233
2409154M01	FIXED INDUCTOR,CHIP,1NH,5%,300	L11
2409154M08	FIXED INDUCTOR,CHIP,3.9NH,,.2	L125
2409154M11	FIXED INDUCTOR,CHIP,6.8NH,5%,.	L325
2409154M12	FIXED INDUCTOR,CHIP,8.2NH,5%,.	L100
2409154M13	FIXED INDUCTOR,CHIP,10NH,5%,.	L124
2409154M13	FIXED INDUCTOR,CHIP,10NH,5%,.	L105
2409154M13	FIXED INDUCTOR,CHIP,10NH,5%,.	L127
2409154M13	FIXED INDUCTOR,CHIP,10NH,5%,.	L106
2409154M14	FIXED INDUCTOR,CHIP,12NH,5%,.	L103
2409154M14	FIXED INDUCTOR,CHIP,12NH,5%,.	L302
2409154M17	FIXED INDUCTOR,CHIP,22NH,5%,.	L306
2409154M17	FIXED INDUCTOR,CHIP,22NH,5%,.	L104

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Part #	Part Description	Reference Designator
4809653F07	RECT SCHTTKY 1A MBRM120ET3	D3800
4809924D18	DIODE,SHTK,EMD2SC79,,,,30UA,30	D5000
4809924D18	DIODE,SHTK,EMD2SC79,,,,30UA,30	D4300
4809924D18	DIODE,SHTK,EMD2SC79,,,,30UA,30	D2000
4809939C39	XSTR,GEN PURPOSE SMALL SIG,,NP	Q320
4809939C39	XSTR,GEN PURPOSE SMALL SIG,,NP	Q300
4809948D44	4 CHANNEL ESD ARRAY 5-PIN CHIP	VR6500
4809948D44	4 CHANNEL ESD ARRAY 5-PIN CHIP	VR7000
4809948D44	4 CHANNEL ESD ARRAY 5-PIN CHIP	VR6502
4809948D44	4 CHANNEL ESD ARRAY 5-PIN CHIP	VR6501
4809948D44	4 CHANNEL ESD ARRAY 5-PIN CHIP	VR4100
4809948D44	4 CHANNEL ESD ARRAY 5-PIN CHIP	VR4300
4887820K03	RESON,NON-QUARTZ,48MHZ,+/-500,	Y1000
4889526L01	IPD ESD FLTR 6CH 3X1.3MM 15CSP	FL6001
4889526L01	IPD ESD FLTR 6CH 3X1.3MM 15CSP	FL6000
4889526L01	IPD ESD FLTR 6CH 3X1.3MM 15CSP	FL5001
4889526L01	IPD ESD FLTR 6CH 3X1.3MM 15CSP	FL6502
4889526L01	IPD ESD FLTR 6CH 3X1.3MM 15CSP	FL6501
4889526L01	IPD ESD FLTR 6CH 3X1.3MM 15CSP	FL6500
4889526L02	IPD ESD FLTR 4CH 3X1.3MM 15CSP	FL6002
4889526L02	IPD ESD FLTR 4CH 3X1.3MM 15CSP	FL5000
4889526L02	IPD ESD FLTR 4CH 3X1.3MM 15CSP	FL6503
4889526L03	FLTR,EMI FILTER,HP,1.45GHZMAX,	FL4000
5109522E14	IC 2-INPUT OR GATE TC7S32FU	U1800
5109522E14	IC 2-INPUT OR GATE TC7S32FU	U5503
5109522E22	IC SNGL AND GATE TC7S08FU	U5502
5109768D10	IC PWR DETECTOR 2X3MM SMD	U340
5109817F58	IC CURRENT LIM SW SOT23-6	U5150

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