



Level III Service Manual

Product Family B58 Tri-Band Mobile Telephone



Timeport™ 280
GSM 900/1800/1900 MHz & GPRS Technologies

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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 which 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 included in Product Family B58 (PF B58) telephones 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.

Product Changes

When electrical, mechanical or production changes are incorporated into Motorola products, a revision letter is assigned to the chassis or kit affected, for example; -A, -B, or -C, and so on.

The chassis or kit number, complete with revision number is imprinted during production. The revision letter is an integral part of the chassis or kit number and is also listed on schematic diagrams and printed circuit board layouts.

Regulatory Agency Compliance

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

1. This device may not cause any harmful interference, and
2. 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 of PF B58 telephones. Refer questions about this manual to the nearest Customer Service Manager.

A product family is the group of products having the same Account Product Code (APC). To locate the APC on a device, refer to "Mechanical Serial Number (MSN)" later in this manual.

Audience

This document aids service personnel in testing and repairing PF B58 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 document 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

The scope of this document is to provide the reader with basic information relating to PF B58 telephones, and also to provide 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

Special characters and typefaces, listed and described below, are used in this publication to emphasize certain types of information.



Note: Emphasizes additional information pertinent to the subject matter.



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



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



Keys to be pressed are represented graphically. For example, instead of "Press the Enter Key", you will see "Press ".

Information from a screen is shown in text as similar as possible to what appears in the display. For example, **ALERTS** or **ALERTS** or **ALERTS**.

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

Revisions

Any changes that occur after manuals are printed are described in publication revision bulletins (*PMRs*). These bulletins provide change information that can include new parts listing data, schematic diagrams, and printed board layouts.

Warranty Service Policy

The product will be sold with the standard 12 months 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 to 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 HTC 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 should be arranged through the local Motorola Support Center.

Ordering Replacement Parts

Only centers authorized to carry out repairs can purchase spare parts. Orders for spare parts from hubs and Hi-Tech Centers should be placed with the regional Motorola Parts Distribution Center.

Specifications

General Function	Specification
Frequency Range GSM	880-915 MHz Tx (with EGSM) 925-960 MHz Rx
Frequency Range DCS	1710-1785 MHz Tx 1805-1880 MHz Rx
Frequency Range PCS	1850.2-1909.8 MHz Tx 1930.2-1989.8 MHz Rx
Channel Spacing	200 kHz
Channels	174 EGSM, 374 DCS, 274 PCS carriers with 8 ch. per carrier
Modulation	GMSK at BT = 0.3
Transmitter Phase Accuracy	5 Degrees RMS, 20 Degrees peak
Duplex Spacing	45 MHz GSM, 95 MHz DCS, 80 MHz PCS
Frequency Stability	± 0.10 ppm of the downlink frequency (Rx)
Operating Voltage	+3.0V dc to +5.1V dc (battery) +4.4V dc to +6.5V dc (external connector)
Transmit Current	185 - 250 mA average talk current drain
Stand-by Current	Typically 4.95 mA (DRX2), 3 mA (DXR9)
Dimensions, with 500 mAh LI Ion batt	49 mm x 24 mm x 125 mm (1.9 inches X 0.9 inches X 4.8 inches)
Size (Volume)	98.5 cc (5.9 in ³), with 500 mAh battery 104.5 cc (6.3 in ³), with 800 mAh battery
Weight	109 gm (3.9 oz), with 500 mAh battery 119 gm (4.2 oz), with 800 mAh battery
Temperature Range	-10° C to +55° C (+15° F to +130° F)
Battery Life, 500 mAh LI Ion Battery	Talk Time 120 to 162 minutes Standby 96 to 158 hours
Battery Life, 800 mAh LI Ion Battery	Talk Time 192 to 259 minutes Standby 153 to 253 hours

Transmitter Function	Specification
RF Power Output	33 dBm nominal GSM, 30 dBm nominal DCS / PCS
Output Impedance	50 ohms nominal
Spurious Emissions	-36 dBm from 0.1 to 1 GHz, -30 dBm from 1 to 4 GHz

Receiver Function	Specification
Receive Sensitivity	Better than -105 dBm GSM / DCS / PCS
RX bit error rate (100k bits) Type II	< 2%
Channel Hop Time	500 microseconds
Time to Camp	Approximately 5-10 seconds

Speech Coding Function	Specification
Speech Coding Type	Regular pulse excitation / linear predictive coding with long term prediction (RPE LPC with LTP)
Bit Rate	13.0 kbps
Frame Duration	20 ms
Block Length	260 bits
Classes	Class 1 bits = 182 bits; Class 2 bits = 78 bits
Bit Rate with FEC Encoding	22.8 kbps

Product Overview

Motorola PF B58 mobile telephones feature global system for mobile communications (GSM) air interface, general packet radio service (GPRS) transport technology, and wireless application protocol (WAP) Internet browser. The PF B58 incorporates a new user interface (UI) for easier operation, allows short message service (SMS) text messaging, and includes personal information manager (PIM) functionality. It is a tri-band phone that allows roaming within the GSM 900 MHz, digital cellular system (DCS) 1800 MHz, and personal communications services (PCS) 1900 MHz bands.

PF B58 telephones support GPRS and SMS in addition to traditional circuit switched transport technologies. GPRS, where available, provides substantial increases in mobile data communications performance and the efficient use of radio spectrum. Data transmission rates for GSM networks can potentially increase from the current rate of 9.6 kbps up to a theoretical maximum of 171.2 kbps. An increased data rate is by no means the only benefit provided by GPRS. A key advantage is the provision of a permanent virtual connection to the network. This “always on” connection is possible because GPRS uses packet data transfer so that, for example, email can be downloaded in “background mode.” There is no need for the user to re-connect before requesting a service, eliminating connection set-up delays and adding convenience and immediacy to data services access. The “virtual” nature of this connection means that network resources are not consumed during periods when a user is not actually sending or receiving data.

PF B58 telephones are made of a polycarbonate plastic. The display and speaker, as well as the keypad, transceiver printed circuit board (PCB), microphone, external accessory connector, volume buttons, power button, and voice button, are contained within the flat form-factor housing. There are two types of batteries and battery doors to provide standard and extended operation. The phone accepts both 3V and 5V mini subscriber identity module (SIM) cards which fit into the SIM holder underneath the battery. The antenna is a fixed stub type antenna.

Features

The PF B58 telephone uses advanced, self-contained, sealed, custom integrated circuits to perform the complex functions required for GSM GPRS 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:

- Lower voltage technology that provides increased standby and talk times
- Extended GSM (EGSM) channels
- Tri-coder/decoder (CODEC) that allows full rate, half rate, and enhanced full rate modes of transmission
- Supports SMS, concatenated SMS, and cell broadcast messages
- Supports GPRS, circuit switched, and SMS networks
- WAP 1.1 compliant
- 128 X 100 pixel white holographic film graphical display
- Display zoom
- Display animation
- VibraCall® vibrating alert
- Voice recorder personal memo feature
- Voice activation for phone book entries and menu shortcuts
- Simplified text entry using iTAP™ predictive text entry

- Supports calling name presentation
- Supports call forwarding for incoming voice, fax, and data calls
- Supports 3V and 5V SIM cards
- SIM Toolkit (STK), Class II
- USB and RS-232 connectivity
- Supports TrueSync® synchronization
- Unique joy stick navigation key
- Bluetooth™ smart module

Speaker Dependant Voice Recognition and Voice Note Recording

This feature allows voice tags to be used for voice dialing up to 20 phone numbers in the phone book and for creating up to 5 voice shortcuts for menu items. The phone must be “trained” by the voice tag being read into the phone’s memory twice before it is recognized.

Voice tags can be added to the phone’s memory using the usual name addition methods (i.e., via the phone book menu structure or with the shortcut editor).



The user cannot place or receive calls while adding voice tags to the phone’s memory.



Because the GSM standard does not provide the option to store voice tags onto the SIM card, voice tags are added to the phone’s memory.

PF B58 telephones also include a voice note recorder that allows up to 2 minutes of personal messages to be recorded. This feature has a complete set of record, playback, and management tools that make it easy to store and maintain a list of personal memos.

Wireless Access Protocol (WAP) 1.1 Compliancy

In the WAP environment, access to the Internet is initiated in wireless markup language (WML), which is derived from hypertext markup language (HTML). The request is passed to a WAP gateway which retrieves the information from the server in standard HTML (subsequently filtered to WML) or directly in WML if available. The information is then passed to the mobile subscriber via the mobile network.

The PF B58’s microbrowser can be configured for baud, idle timeout, line type, phone number, and connection type.



Bitmap image data will download as text. If the image is larger than the screen, only part of the image will display.



If the user receives a call while in browser mode, the browser will pause and allow the user to resume after completing the call.

Simplified Text Entry

There are three different ways to enter text using the phone keypad:

-
- 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 on the phone in all languages.
 - Tap. Press a key to generate a character.
 - Numeric. The keypad produces numeric characters only. For some text areas this is the only method available; for example, phone numbers.

Caller Line Identification

Upon receipt of a call, the calling party's phone number is compared to the phone book. If the number matches a phone book entry, that name will be displayed. If there is no phone book entry, the incoming phone number will be displayed. In the event that no caller identification information is available, the message INCOMING CALL is displayed.



User must subscribe to a caller line identification service through their service provider.

Call Forwarding

Call forwarding is a network feature that diverts incoming calls to another phone number if the user or phone is unavailable, or the user does not wish to receive calls. This option can be used to:

- Divert all incoming voice calls unconditionally
- Divert incoming voice calls whenever the phone is unavailable, busy, not reachable, or not answered
- Divert incoming fax calls
- Divert incoming data calls
- Allow all calls through to the phone.

Detailed operating instructions for these and the other PF B58 features can be found in the appropriate PF B58 telephone user's guide listed in the "Related Publications" section toward the end of this manual.

General Operation

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

The PF B58 telephone's controls are located on the top and side of the device, and on the keyboard. Indicators, in the form of icons, are displayed on the LCD (see Figure 2).

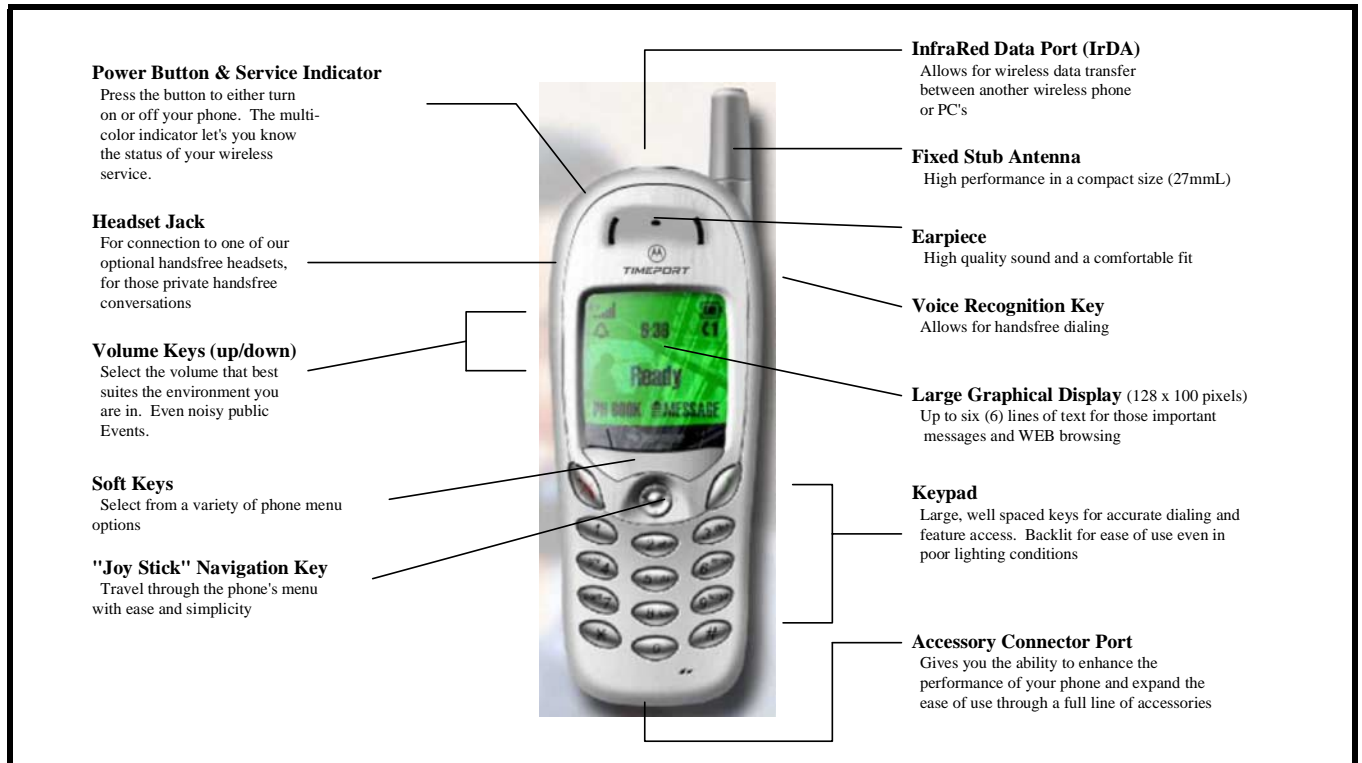



Figure 1. PF B58 Telephone Controls and Indicators Locations

Menu Navigation

PF B58 telephones are equipped with a new user-friendly interface that employs soft keys and a 4-way navigation key to access phone functions and features. See Figure 1.

“Soft keys” refer to non-labeled keys that correspond to text options displayed on the screen. The left and right soft keys perform the function shown in the corners of the display. The left key will usually select an option whereas the right key will usually exit a function or return to a previous screen.

The menu key opens the initial menu structure, or allows access to a submenu whenever  appears on the screen. See Figure 3 for details of the PF B58 menu structure.

Liquid Crystal Display (LCD)

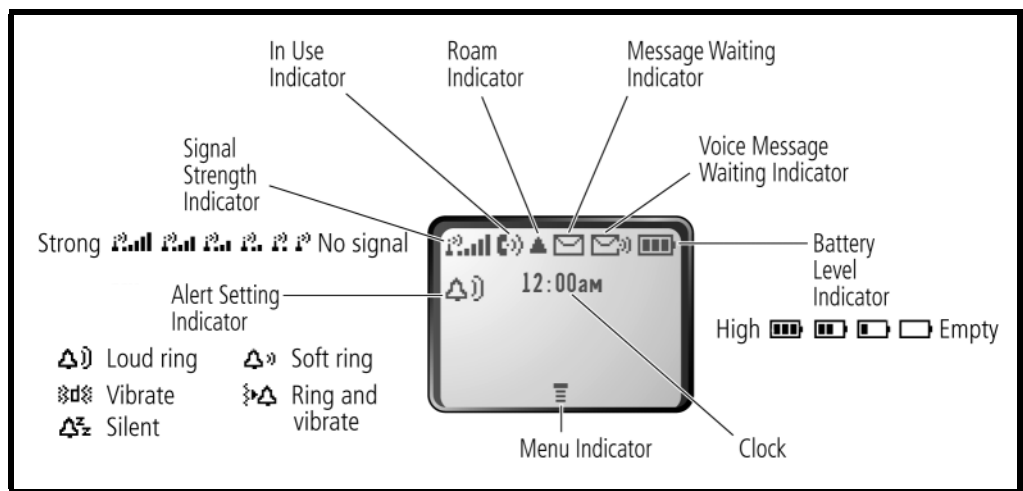
The LCD provides a high contrast backlit display for easy readability in all light conditions. The large bit-mapped 128 x 100 white holographic display includes up to 6 lines of text.

Display animation makes the phone's menus move smoothly as the user scrolls up and down. Turn animation off to conserve the battery.



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 2. PF B58 Icon Indicators

- **Signal Strength Indicator.** Shows the strength of the phone's connection with the network. Calls cannot be sent or received when the "no signal" indicator is displayed.
- **In Use Indicator.** Appears when a call is in progress.
- **Roam Indicator.** Appears when the phone uses another network system outside the user's home network. When leaving the home network area, the phone roams, or seeks, another network.
- **Message Waiting Indicator.** Appears when the phone receives a text message. This is a network-dependent feature.
- **Voice Message Waiting Indicator.** Appears when a voicemail message is received. This is a network-dependent feature.
- **Battery Level Indicator.** Shows the amount of charge left in the battery. The more segments visible, the greater the charge. Recharge the battery as soon as possible when the Low Battery warning message appears.
- **Clock.** Shows the current time. This is a network-dependent feature.
- **Menu Indicator.** Indicates the user can press the menu soft key to open a menu.
- **Alert Setting Indicator.** Shows the current selected alert. The default alert setting is a ringer.

User Interface Menu Structure

Figure 3 shows the PF B58 telephone menu structure.

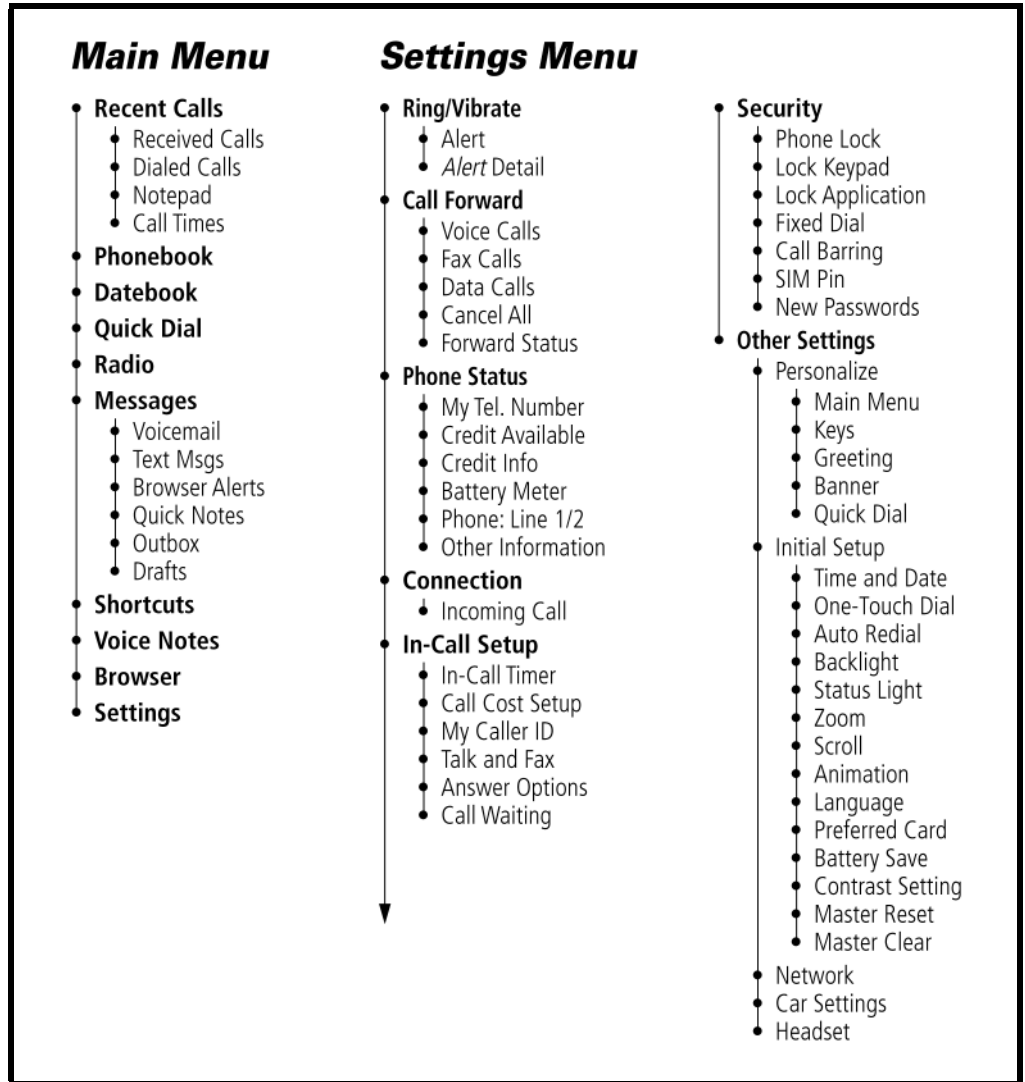


Figure 3. PF B58 Menu Structure

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Alert Settings

PF B58 telephones include up to 32 preset alert tones and vibrations that can be applied individually to specific alert events or to all events at the same time.



Pressing either volume key will mute the alert.

Battery Function

Battery Gauge

The telephone displays a battery level 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 immediately shut down and any pending work (for example, partially entered phone book entries or outgoing messages) is lost.



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



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

Operation

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

Tools and Test Equipment

The following tables list the tools and test equipment used on the PF B58 telephone. Use either the listed items or equivalents.

Table 1. General Test Equipment and Tools

Motorola Part Number ¹	Description	Application
SPN4726A	Rapid Charger	Used to charge battery and to power device
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 device
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
6680388B01	Tweezers, plastic	Used during assembly/disassembly
—	Pliers, long-nose	Used during assembly/disassembly
HP34401A ²	Digital Multimeter	Used to measure battery voltage

1. To order in North America, contact Motorola Aftermarket and Accessories Division (AAD) at (847) 538-8000; Internationally, AAD can be reached by calling (847) 538-8023 or faxing (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 PF B58 telephone. Tools and equipment used for the phone are listed in Table 1, preceding.



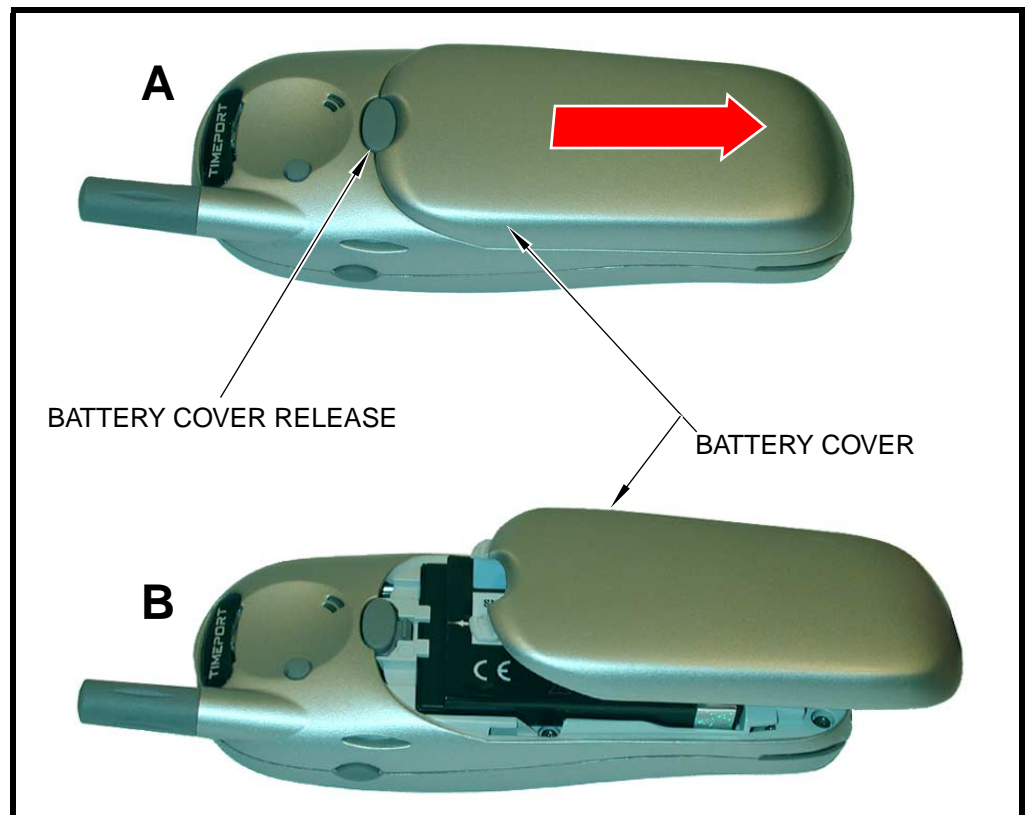
Many of the integrated devices used in this equipment are vulnerable to damage from electrostatic discharge (ESD). Ensure adequate static protection is in place when handling, shipping, and servicing the internal components of this equipment.



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

Removing and Replacing the Battery Cover and Battery

1. Ensure the phone is turned off.
2. Depress the battery cover release and slide the battery cover in the direction of the arrow (see Figure 4A).



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Figure 4. Removing the battery cover

- Lift the battery cover from the phone and remove it completely as shown in Figure 4B.

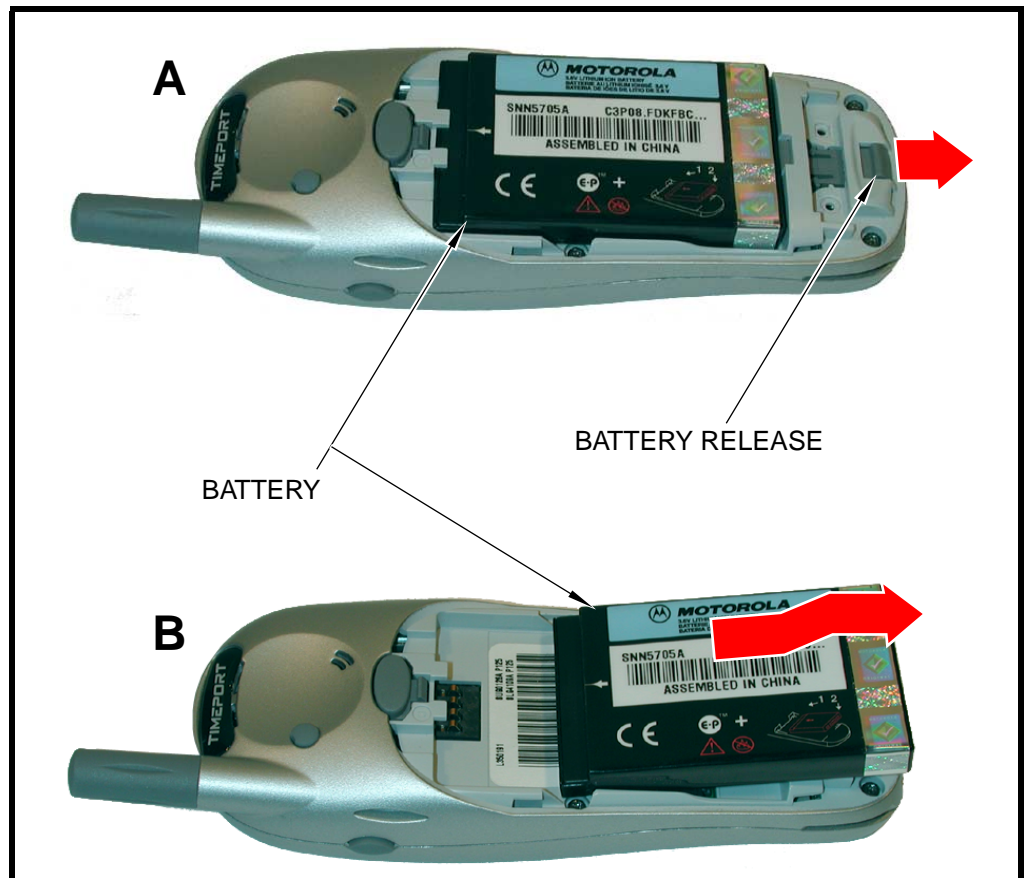


Figure 5. Removing the battery

- Pull the battery release in the direction shown in Figure 5A, then remove the battery by lifting its end from the battery compartment and sliding it down and away from the compartment as shown in Figure 5B.



There is a danger of explosion if the Lithium Ion battery 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.

- To replace, align the battery with the battery compartment so the contacts on the battery match the battery contacts in the phone.
- Slide the top of the battery into the receptacle molded into the housing, then press the bottom end of the battery securely into the battery compartment until it locks into place.
- Line up the battery cover with the rear housing then push it forward until it snaps firmly in place.

Removing and Replacing the SIM Card

1. Remove the battery cover and battery as described in the procedures.
2. As shown in Figure 6A, slide the SIM holder in the direction of arrow to unlock.
3. Rotate the SIM holder upward and slide out the SIM card as shown in Figure 6B.

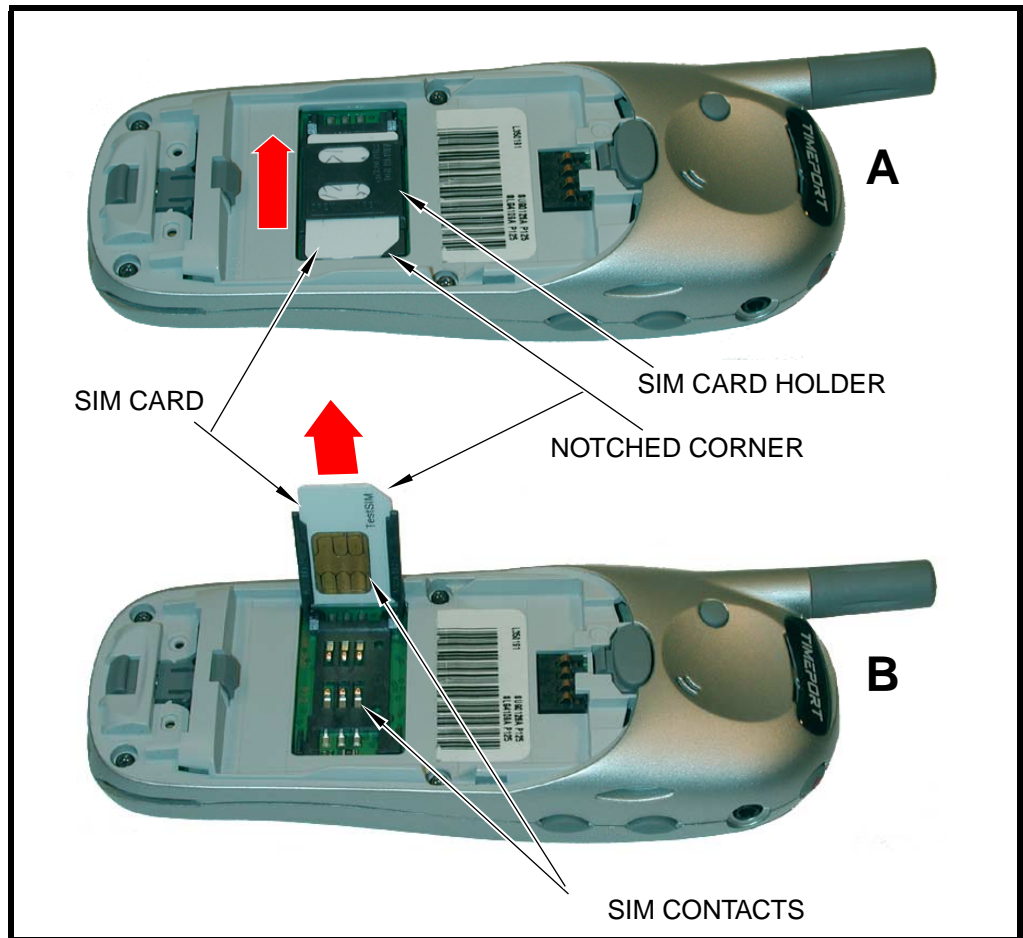


Figure 6. Removing the SIM card

4. To replace, carefully insert the SIM card into the slot in the holder. Be sure the SIM is correctly positioned to contact the terminals when closed.
5. Close the holder and slide to lock in place.
6. Replace the battery and battery cover as described in the procedures.

Removing and Replacing the Antenna

1. Remove the battery cover and battery as described in the procedures.
2. Rotate the antenna by hand counterclockwise until loose (See Figure 7).

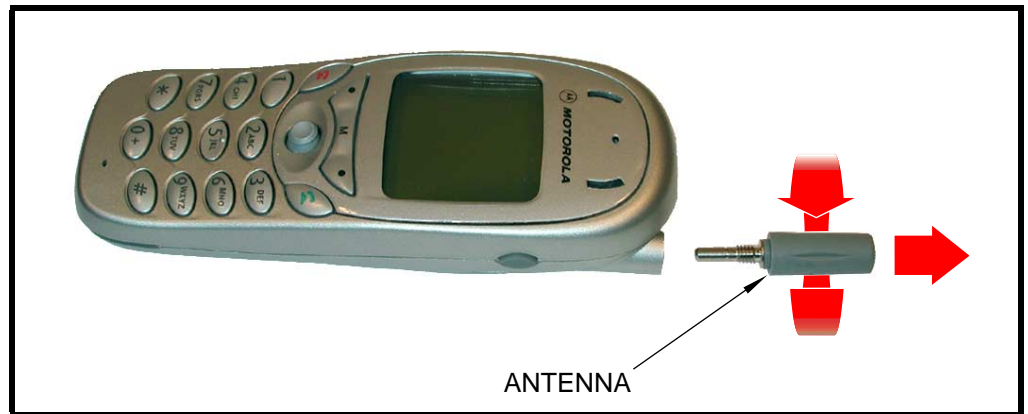


Figure 7. Removing the antenna

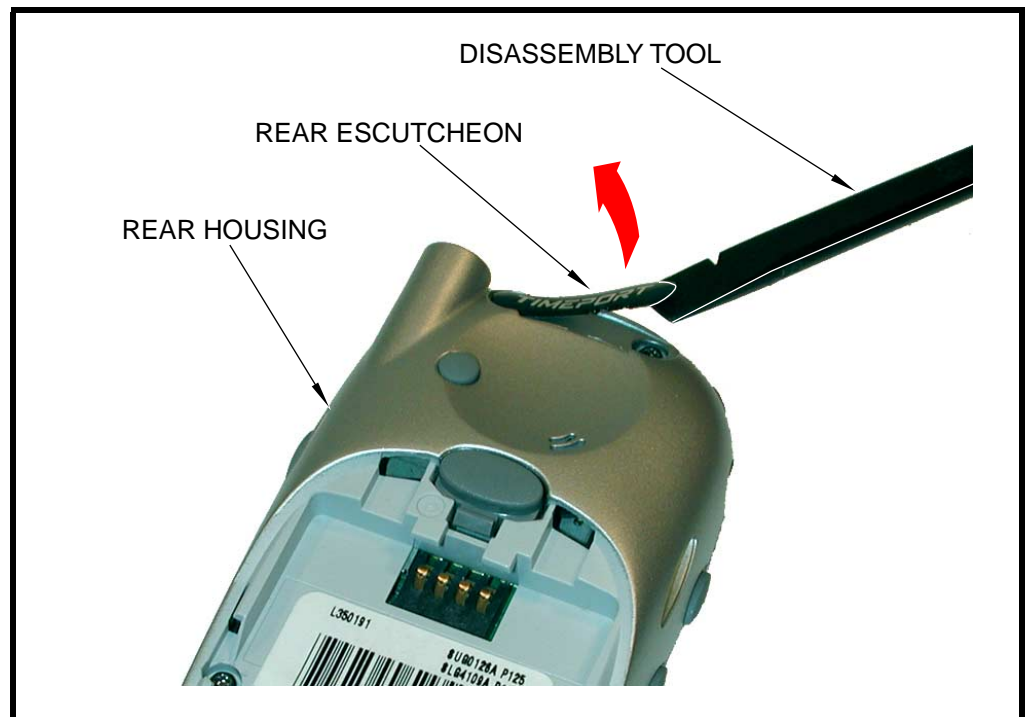
3. When the antenna threads are completely disengaged, pull the antenna straight out of the phone housing to remove.



To prevent damage to antenna or housing, ensure antenna threads are properly engaged before tightening.

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

Removing and Replacing the Rear Escutcheon



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Figure 8. Removing the rear escutcheon

1. Remove the battery cover, battery, and antenna as described in the procedures.
2. Using the flat end of the disassembly tool, carefully pry the escutcheon from the rear housing to expose the two housing screws located beneath. See Figure 8.
3. To replace, remove the protective paper backing from the new escutcheon and carefully align the escutcheon with the cavity molded into the rear housing.
4. Press the escutcheon firmly into place making sure pressure is applied evenly across the entire surface to ensure a tight bond.
5. Replace the antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Rear Housing



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



The housing is fastened with plastic catches. These are delicate and should be parted using utmost care.

1. Remove the battery cover, battery, SIM card, antenna, and rear escutcheon as described in the procedures.
2. Locate the 6 screws holding the front housing to the rear housing. See Figure 9A.

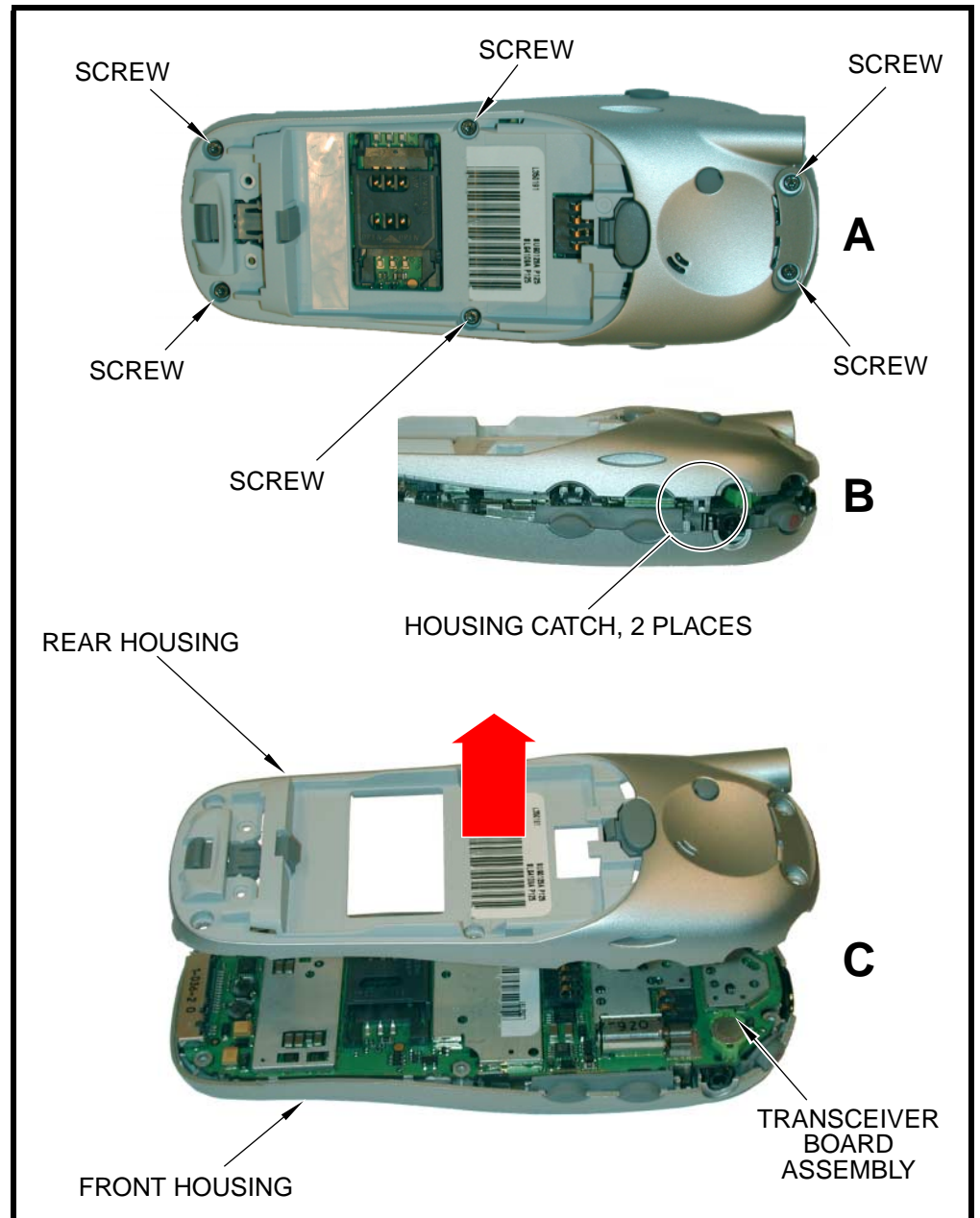


Figure 9. Removing the Rear Housing

3. Using the Torx driver with a T6 bit, remove the 6 screws and set aside for reuse.

4. Using the flat end of the disassembly tool, carefully disengage the catches on both sides of the housing (see Figure 9B) and separate the rear housing from the front housing.
5. Lift the rear housing from the front housing as shown in Figure 9C.
6. To replace, align the front housing with the rear housing then firmly press together until the catches engage and the housings are properly assembled.
7. Replace the 6 screws and tighten firmly. Do not over tighten.



Check the volume, voice, and power buttons to ensure proper operation.

8. Replace the rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.

Removing and Replacing the RF Grommet and the Alert Transducer

1. Remove the battery cover, battery, SIM card, antenna, rear escutcheon, and rear housing as described in the procedures.
2. Using the flat end of the disassembly tool, carefully loosen the RF grommet and pull straight out of the rear housing as shown in Figure 10A.

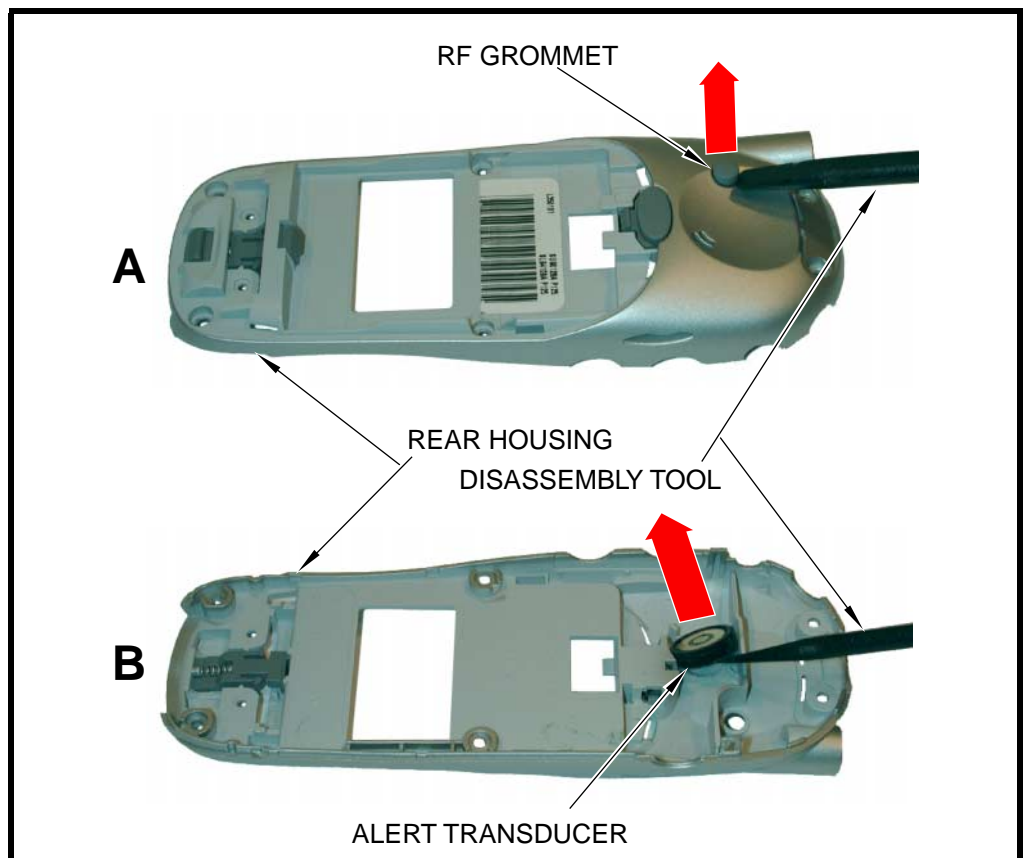


Figure 10. Removing the RF grommet and the alert transducer

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3. To replace the RF grommet, press it firmly into place in the rear housing until completely seated.
4. To remove the alert transducer, use the flat end of the disassembly tool to carefully pry the transducer from its cavity in the rear housing. See Figure 10B.

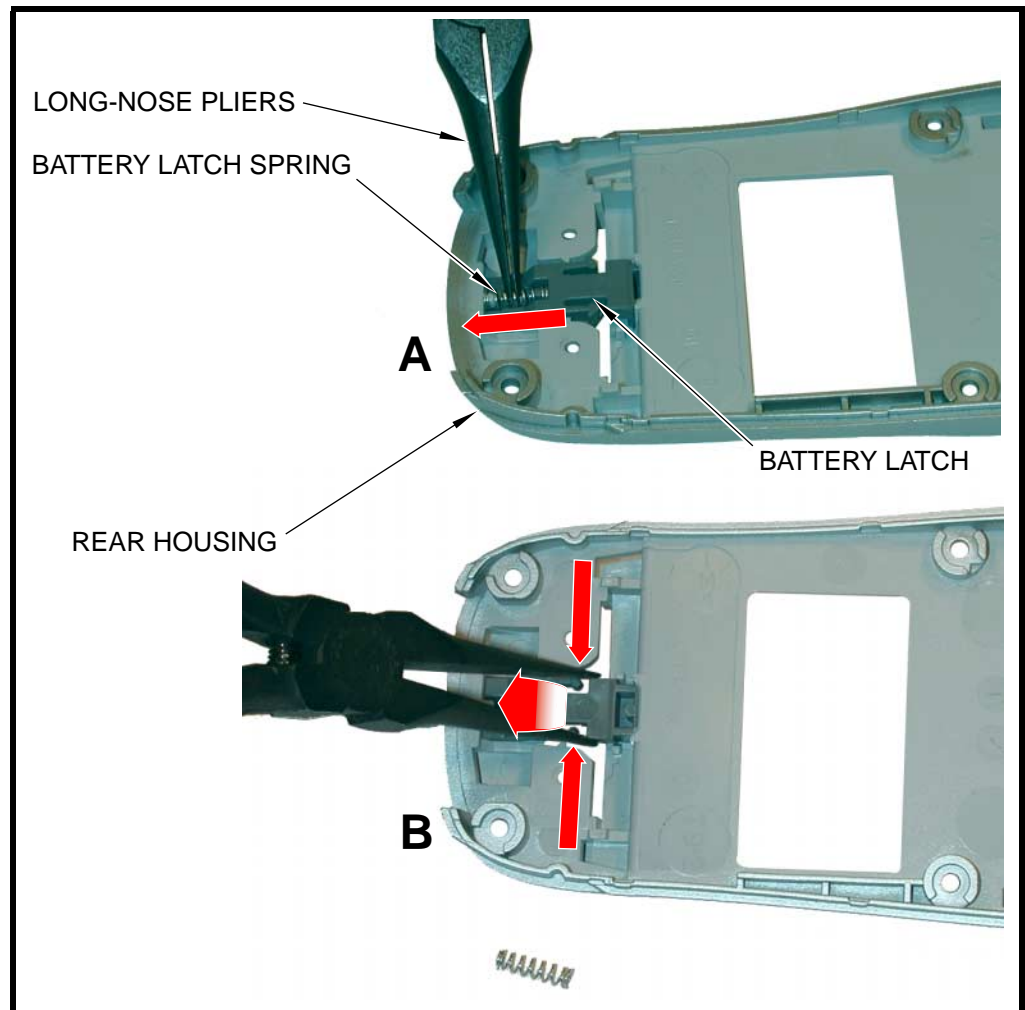


The alert transducer is fastened to the rear housing with adhesive. Exercise care when removing to prevent damage to the rear housing.

5. To replace the alert transducer, remove the protective backing from the new transducer, then press the transducer into place in the rear housing cavity. Be sure the transducer is straight and fully seated in the cavity.
6. Replace the rear housing, rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.

Removing and Replacing the Battery Latch

1. Remove the battery cover, battery, SIM card, antenna, rear escutcheon, and rear housing as described in the procedures.



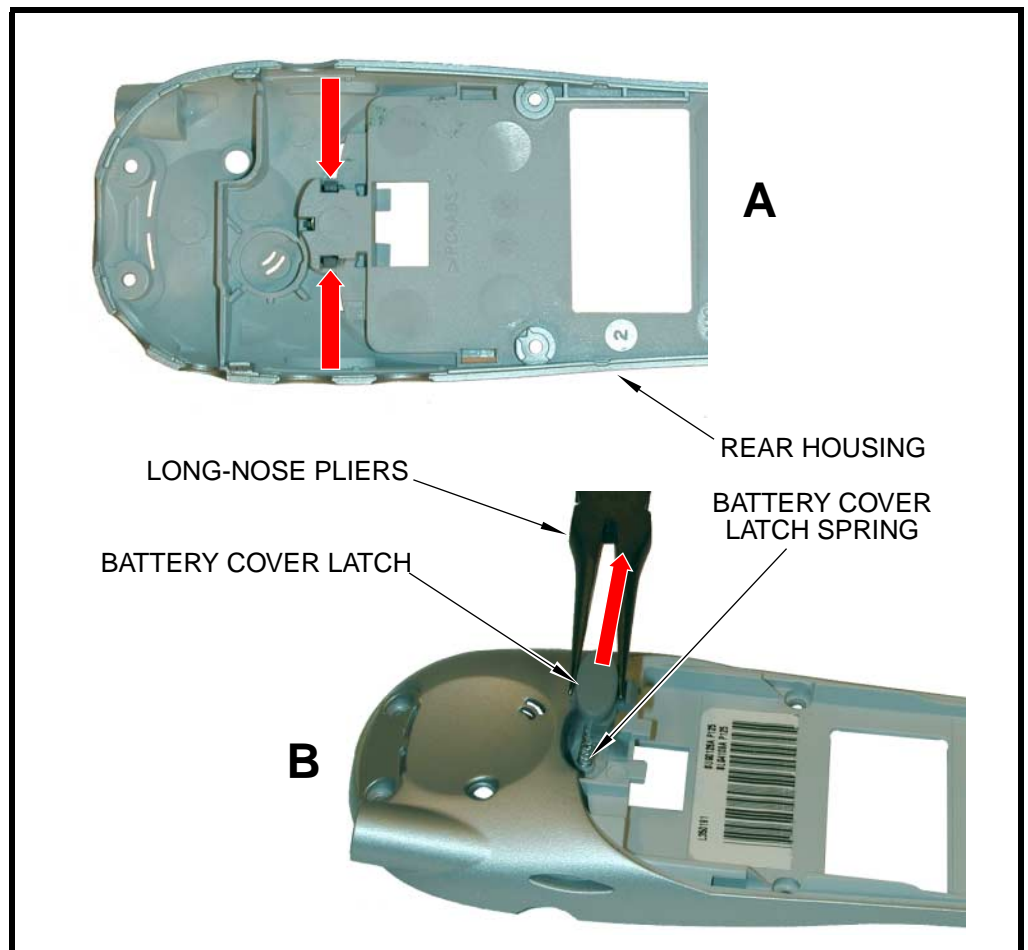
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Figure 11. Removing the battery latch

2. Using long-nose pliers, carefully depress the battery latch spring and remove from the assembly. Set the spring aside for reuse. See Figure 11A.
3. With the long-nose pliers, squeeze the 2 battery latch catches inward to release the battery latch from the housing. Slide the latch downward and lift from the housing as shown in Figure 11B.
4. To replace, slide the latch into the housing until it locks into place.
5. Carefully reinstall the spring and verify proper operation of the latch by temporarily inserting a battery into the housing.
6. Replace the rear housing, rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.

Removing and Replacing the Battery Cover Latch

1. Remove the battery cover, battery, SIM card, antenna, rear escutcheon, and rear housing as described in the procedures.
2. Using long-nose pliers, carefully squeeze the battery cover latch catches together to release the battery cover latch from the rear housing. See Figure 12A.



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Figure 12. Removing the battery cover latch

3. Remove the battery cover latch spring from the housing. Set aside for reuse.
4. To replace, set the battery cover latch spring on its post in the rear housing then insert the latch into its rear housing cavity until it snaps into place. Verify proper operation of the latch by temporarily installing a battery cover.
5. Replace the rear housing, rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.

Removing and Replacing the RTC Battery

1. Remove the battery cover, battery, SIM card, antenna, rear escutcheon, and rear housing as described in the procedures.
2. Use the flat end of the disassembly tool to pry the real time clock (RTC) battery from its holder on the transceiver board as shown in Figure 13.



Dispose of used batteries according to the manufacturer's instructions.

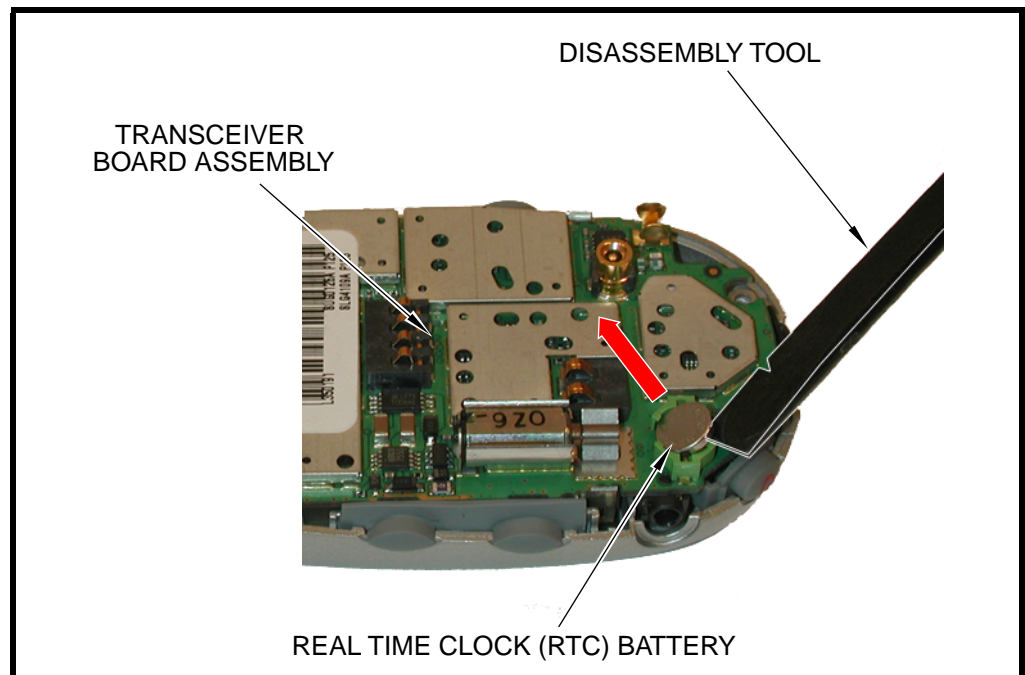


Figure 13. Removing the RTC battery

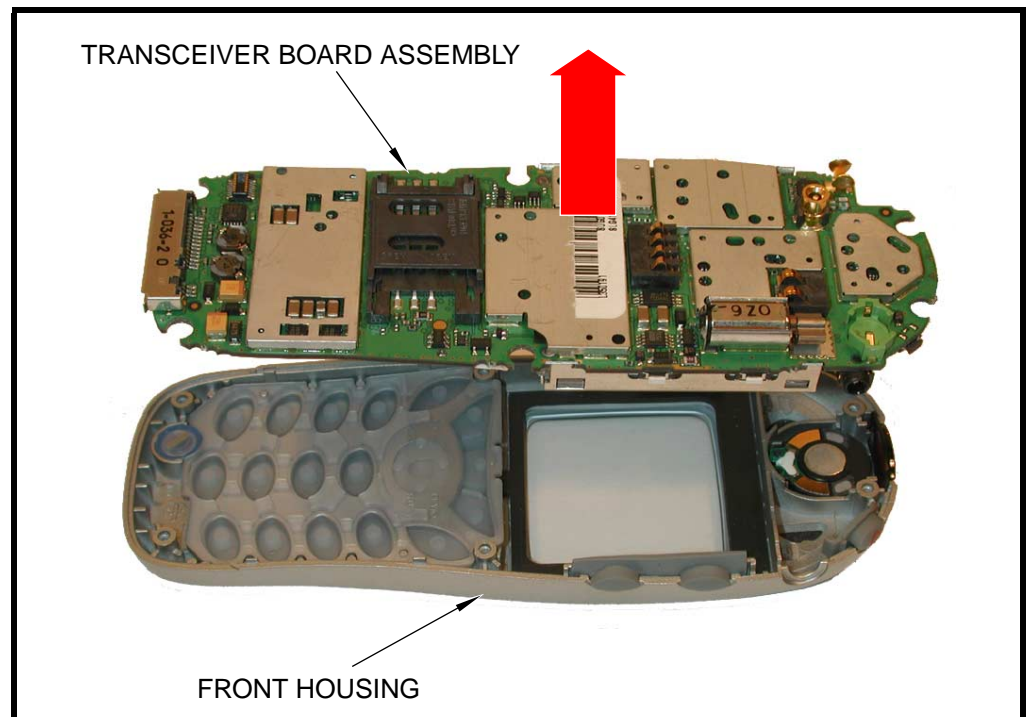
3. To replace, align the new RTC battery with the holder so its positive contact is facing upward, then snap the battery in place until it is completely seated in the holder.
4. Replace the rear housing, rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.

Removing and Replacing the Transceiver Board



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

1. Remove the battery cover, battery, antenna, rear escutcheon, and rear housing as described in the procedures.
2. Using the flat end of the disassembly tool, carefully loosen the transceiver board from the front housing.



0104030

Figure 14. Removing the transceiver board

3. Lift the transceiver board from the front housing as shown in Figure 14.
4. To replace, align the transceiver board with the front housing and gently press into place.



Ensure the keypad and the volume, voice, and power buttons are correctly positioned in the front housing relative to the transceiver board. Verify operation of the buttons after replacing the transceiver board.

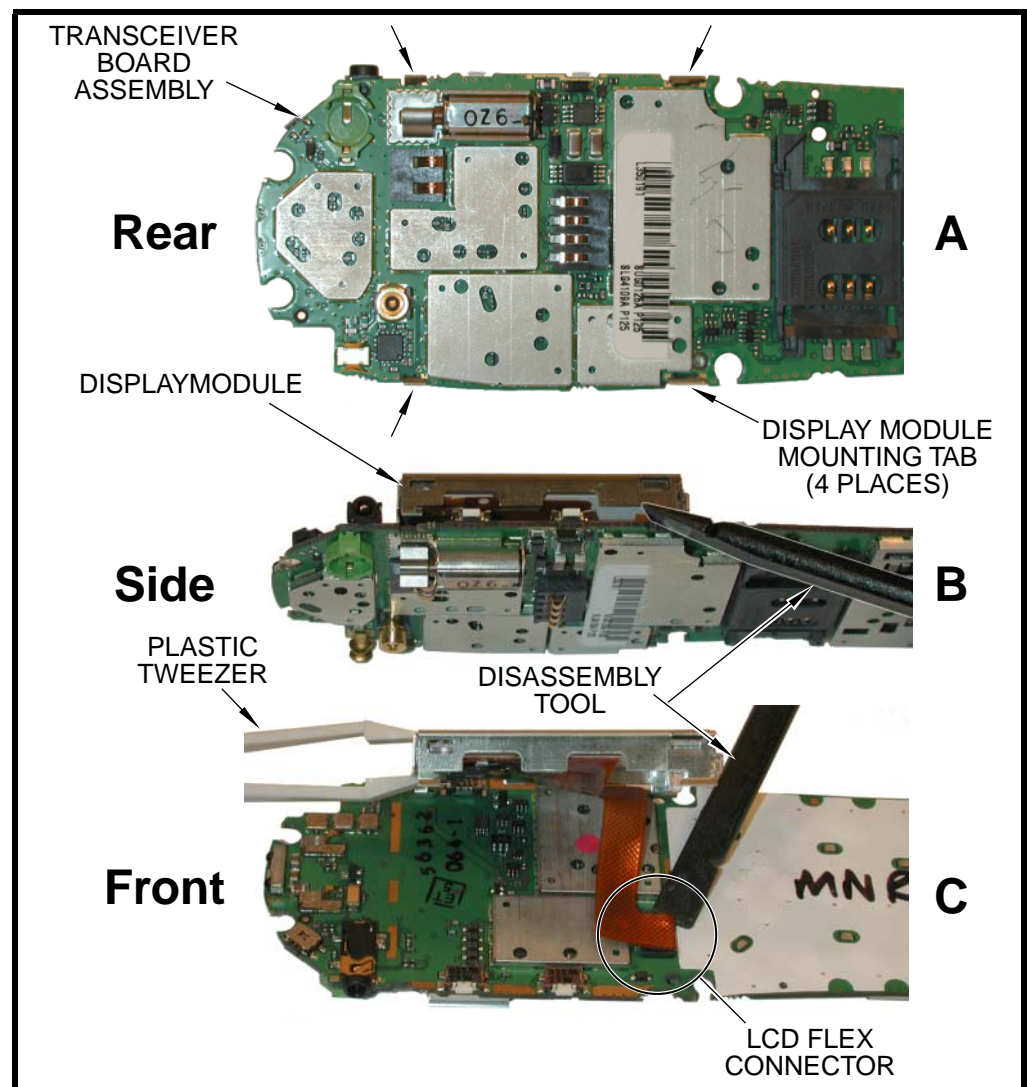
5. Replace the rear housing, rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.

Removing and Replacing the Display Module Assembly



The flex cable connecting the display module to the transceiver board is easily damaged. Exercise care when handling.

1. Remove the battery cover, battery, antenna, rear escutcheon, rear housing, and transceiver board as described in the procedures.
2. Locate the 4 display module mounting tabs shown in Figure 15A.



010404o

Figure 15. Removing the display module assembly

- Using the flat end of the disassembly tool, gently pry the tabs away from the transceiver board to release the display module from the transceiver board. See Figure 15B.



To prevent damage to the display module, do not bend the display module tabs.

- While holding the display module slightly away from the transceiver board, use the flat end of the disassembly tool to gently disconnect the display module flex connector. See Figure 15C.
- Lift the display module away from the transceiver board.
- To replace, connect the display module flex connector to the transceiver board. Align the connectors and press together firmly until completely seated.
- Align the display module mounting tabs with the corresponding cut-outs in the transceiver board, then press together until the display module snaps into place.
- Replace the transceiver board, rear housing, rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.

Removing and Replacing the Keypad Switch Dome Array

- Remove the battery cover, battery, antenna, rear escutcheon, rear housing, transceiver board, and display module as described in the procedures.

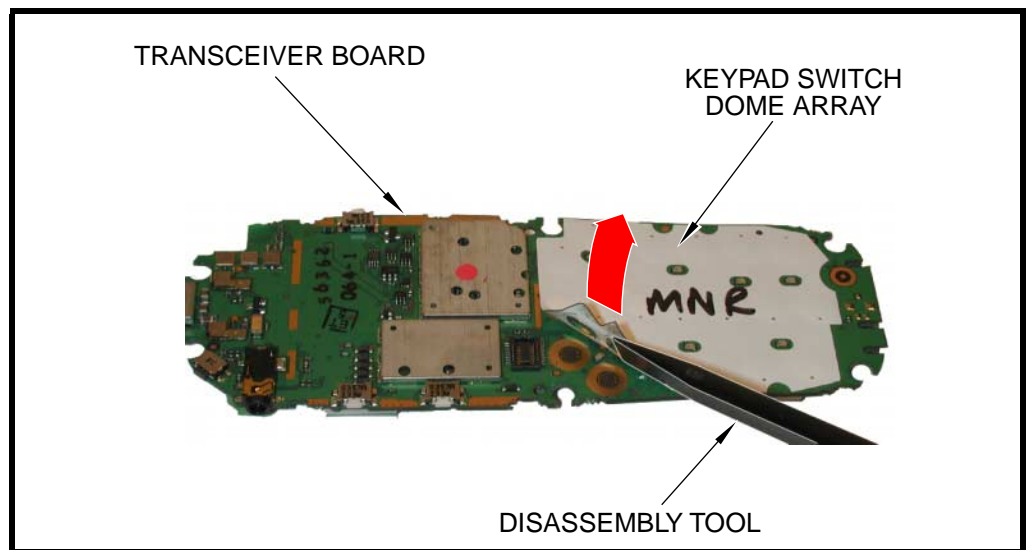


Figure 16. Removing the keypad switch dome array

- While holding the transceiver board stationary, carefully work the flat end of the disassembly tool under a corner of the keypad switch dome array as shown in Figure 16.

3. Slowly peel the keypad switch dome array from the transceiver board to remove. Discard the keypad switch dome array just removed.



Do not touch the adhesive on the back of the keypad switch dome array or poor adhesion and improper operation may result.

4. To replace, remove the protective backing from a new keypad switch array.
5. Align the new keypad switch dome array with the transceiver board. Use the alignment holes to ensure the switch dome array is correctly positioned on the transceiver board as shown in Figure 17.

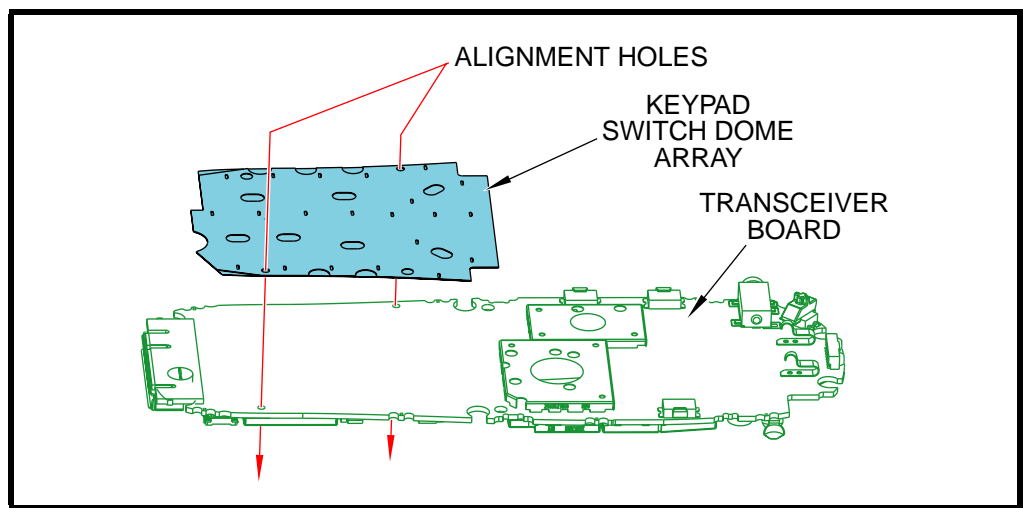
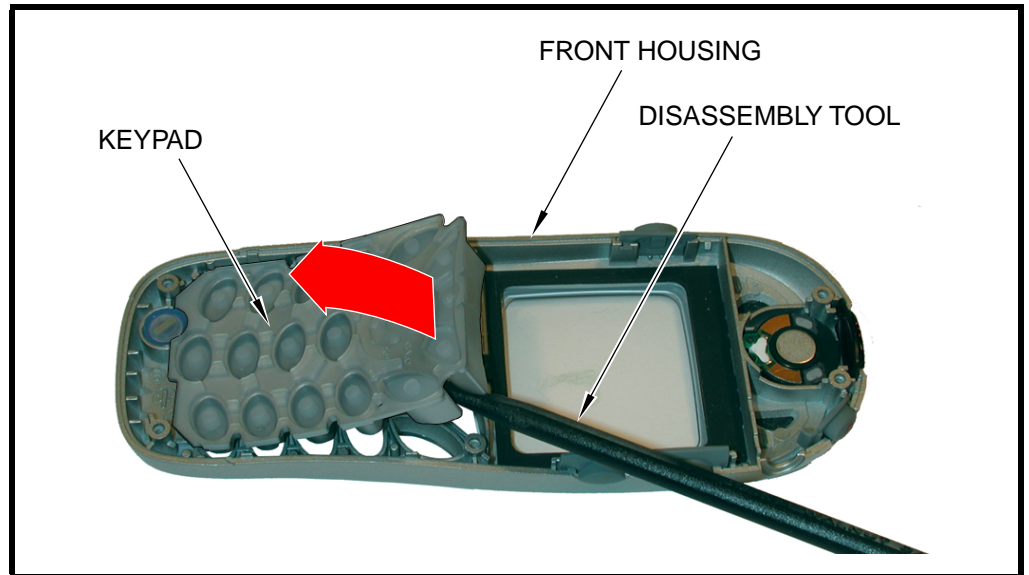


Figure 17. Replacing the keypad switch dome array

6. Apply even pressure across the entire surface of the switch dome array to ensure proper adhesion.
7. Replace the display module, transceiver board, rear housing, rear escutcheon, antenna, SIM card, battery, and battery cover as described in the procedures.
8. Verify correct operation.

Removing and Replacing the Keypad

1. Remove the battery cover, battery, antenna, rear escutcheon, rear housing, and transceiver board as described in the procedures.
2. Lift the keypad from the front housing as shown in Figure 18.



010407o

Figure 18. Removing the keypad

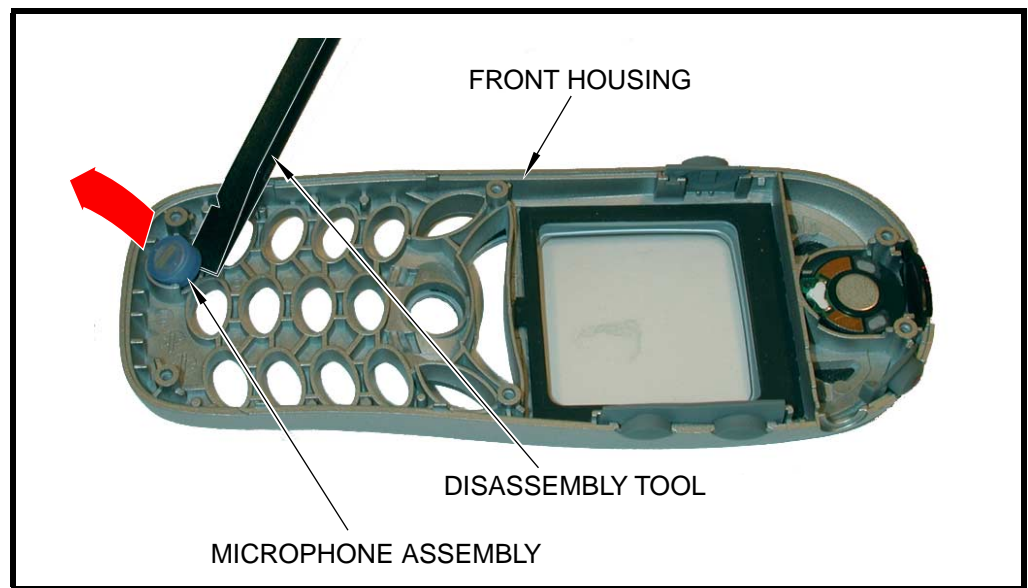
3. To replace, insert the keypad into the front housing, ensuring the keys align properly with the openings in the front housing.
4. Replace the transceiver board, rear housing, rear escutcheon, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Microphone Assembly



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

1. Remove the battery cover, battery, antenna, rear escutcheon, rear housing, transceiver board, and keypad as described in the procedures.



010408o

Figure 19. Removing the microphone assembly

2. Using the flat end of the disassembly tool, carefully pry the microphone assembly from its cavity in the front housing as shown in Figure 19. The microphone assembly should come out of its cavity easily.
3. To replace, align the microphone assembly with the microphone cavity. Be sure the open end of the microphone is facing the front housing. Press the microphone assembly firmly into place, ensuring it is straight and completely seated in its cavity.

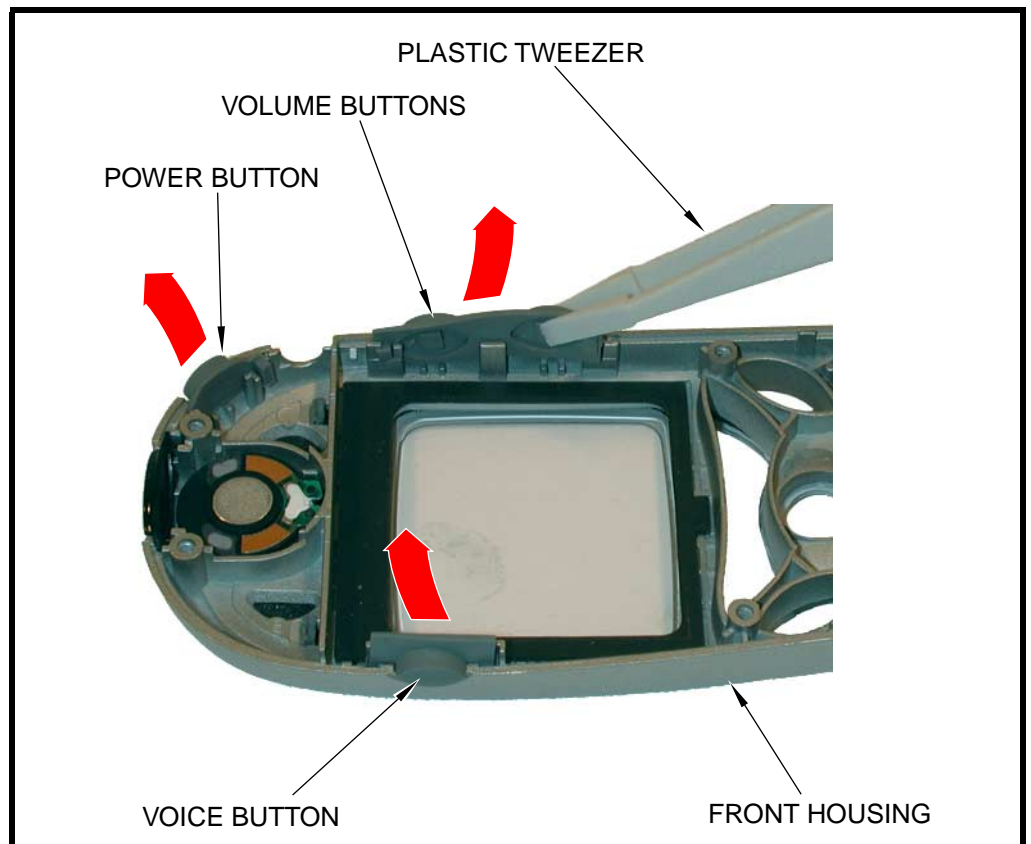


The microphone assembly uses conductive elastomer to make contact with the transceiver board pads.

4. Replace the keypad, transceiver board, rear housing, rear escutcheon, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Volume, Voice, and Power Buttons

1. Remove the battery cover, battery, antenna, rear escutcheon, rear housing, and transceiver board as described in the procedures.
2. Lift the volume buttons, the power button, and the voice button from the front housing. The plastic tweezers may be useful when removing the buttons. See Figure 20.



010409o

Figure 20. Removing the volume, voice, and power buttons

3. To replace, insert the buttons into their respective front housing cavities, ensuring each button is properly aligned and seated within the housing.
4. Replace the transceiver board, rear housing, rear escutcheon, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Infrared Port Lens

1. Remove the battery cover, battery, antenna, rear escutcheon, rear housing, and transceiver board as described in the procedures.
2. Using the flat end of the disassembly tool, gently pry the infrared (IR) port lens from its cavity in the front housing as shown in Figure 21. The IR port lens should come away from the housing easily.

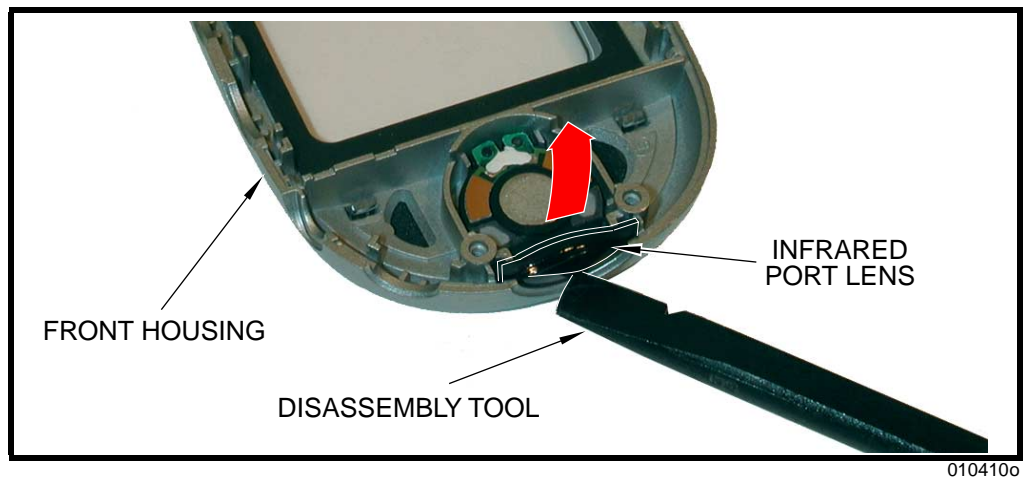


Figure 21. Removing the infrared port lens

3. To replace, insert the IR port lens into its front housing cavity. Be sure the lens is properly aligned and fully seated within the front housing.
4. Replace the transceiver board, rear housing, rear escutcheon, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Speaker

1. Remove the battery cover, battery, antenna, rear escutcheon, rear housing, transceiver board, and IR port lens as described in the procedures.

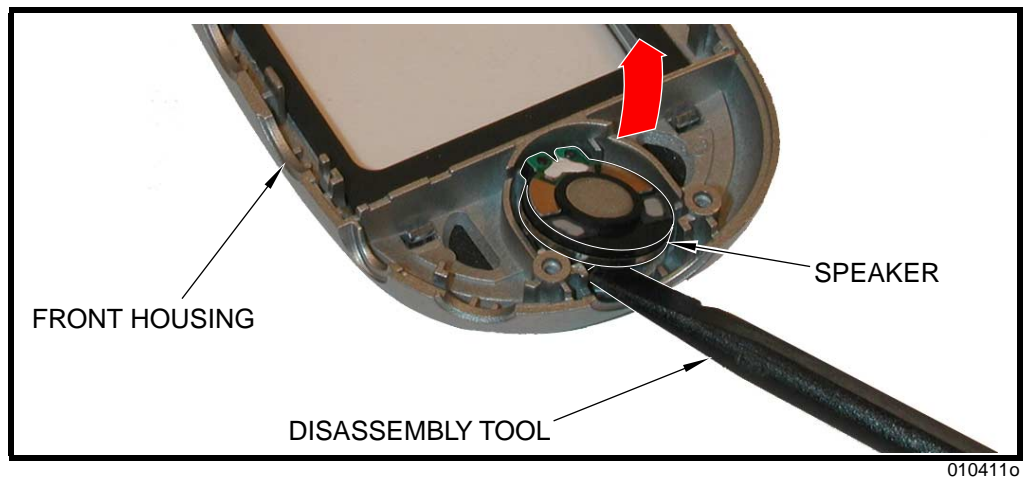


Figure 22. Removing the speaker

- Using the flat end of the disassembly tool, pry the speaker from its cavity in the front housing.

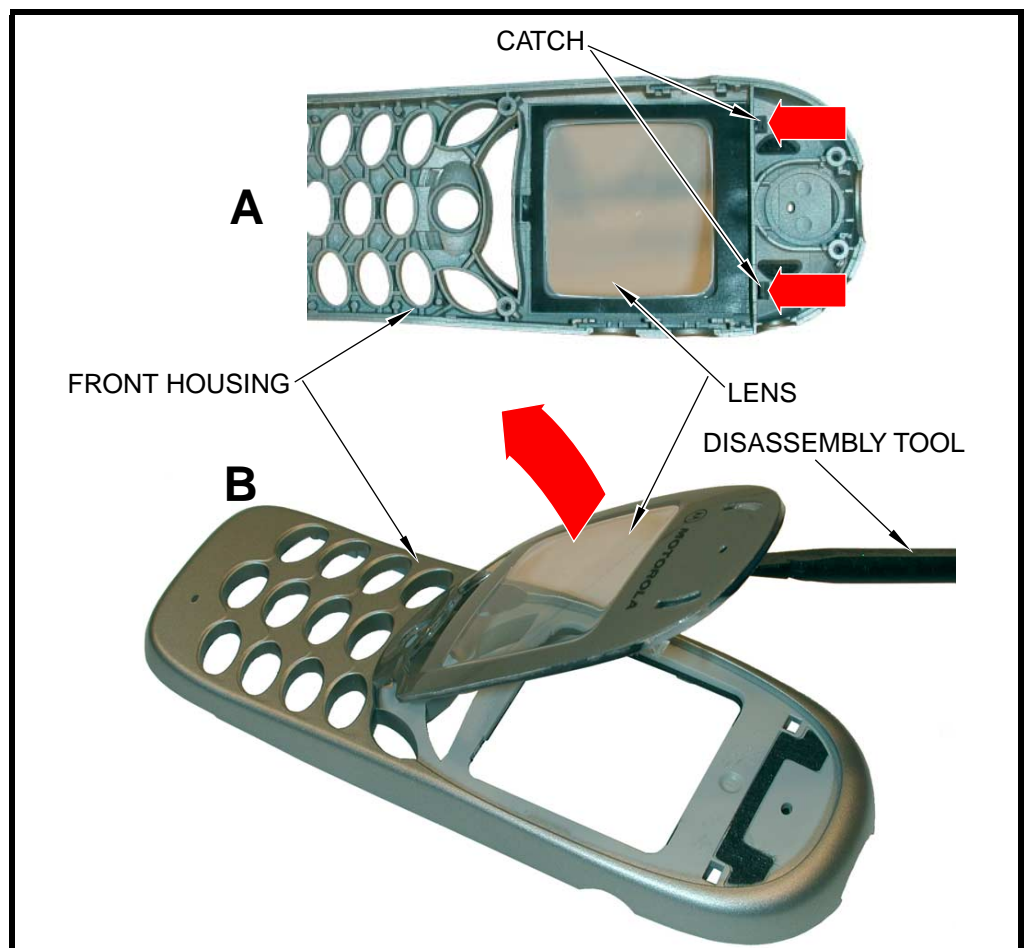


The speaker is fastened to the front housing with adhesive. Exercise care when removing to prevent damage to the front housing.

- To replace the speaker, remove the protective backing from the new speaker, then press the speaker into place in the front housing cavity. Be sure the speaker is straight and fully seated within the cavity.
- Replace the IR port lens, transceiver board, rear housing, rear escutcheon, antenna, battery, and battery cover as described in the procedures.

Removing and Replacing the Lens

- Remove the battery cover, battery, antenna, rear escutcheon, rear housing, transceiver board, keypad, microphone, volume buttons, voice button, power button, IR port lens, and speaker as described in the procedures.



010412c

Figure 23. Removing the lens

-
2. Disengage the lens catches by pushing toward the bottom of the housing as shown in Figure 23A.



The lens is fastened to the front housing with adhesive. Exercise care when removing to prevent damage to the front housing.

3. While holding the catches in the disengaged position, use the flat end of the disassembly tool to pry the lens from the front housing as shown in Figure 23B.
4. Rotate the lens upward and lift from the housing.



Do not remove the transparent protective film from the front of the new lens. This film prevents damage to the lens during service and handling. It is to be removed only by the end user.

5. To replace, remove the protective backing from the adhesive on back of the new lens. Be careful not to touch the adhesive.
6. Insert the lens' 2 bottom catches into the mating slots in the front housing.
7. Carefully align the lens with the front housing and rotate the lens downward to engage the lens top catches.
8. Apply even pressure across the adhesive area of the lens to bond it to the housing. Ensure the lens is straight and flush with the front housing.
9. Replace the speaker, IR port lens, voice button, power button, volume buttons, microphone, keypad, transceiver board, rear housing, rear escutcheon, antenna, battery, and battery cover as described in the procedures.

SIM Card and Identification

SIM Card

A SIM (Subscriber Identity Module) card is required to access the existing local GSM network, or remote networks when traveling (if a roaming agreement has been made with the provider).

The SIM card contains:

- All the data necessary to access GSM services
- The ability to store user information such as phone numbers.
- All information required by the network provider to provide access to the network.

Identification

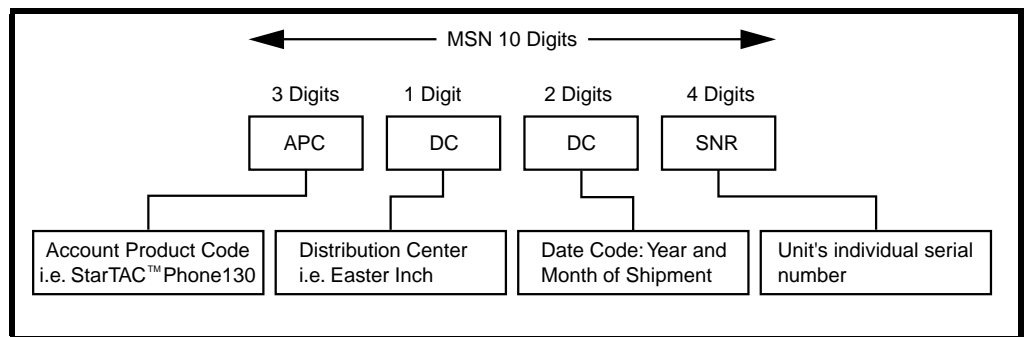
Each Motorola GSM device is labelled with a variety of identifying numbers. The following information describes the current identifying labels.

Mechanical Serial Number (MSN)

The Mechanical Serial Number (MSN) is an individual unit identity number and remains with the unit throughout the life of the unit.

The MSN can be used to log and track a unit on Motorola's Service Center Database.

The MSN is divided into 4 sections as shown in Figure 24.

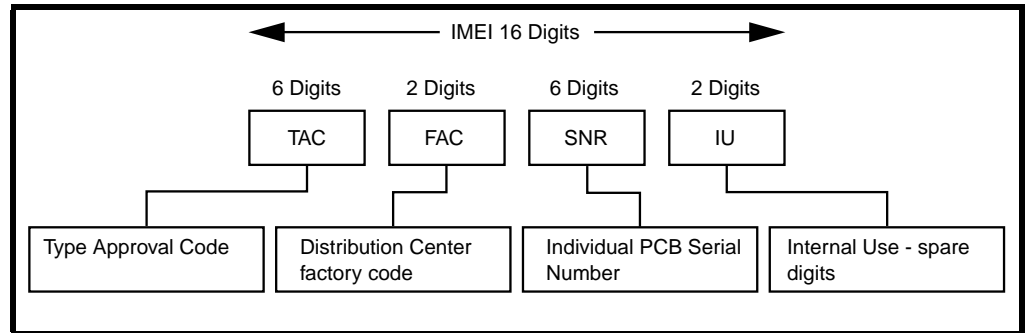


000807-A

Figure 24. MSN Label Breakdown

International Mobile Station Equipment Identity (IMEI)

The International Mobile station Equipment Identity (IMEI) number is an individual number unique to the PCB and is stored within the unit's memory. The following diagram illustrates the various parts of this number.



000808-O

Figure 25. IMEI Label Breakdown

Other label number configurations present are:

- **TRANSCIVER NUMBER:** Identifies the product type. Normally the SWF number. (i.e. V100).
- **PACKAGE NUMBER:** Identifies the equipment type, mode, and language in which the product is shipped.

Troubleshooting

Manual Test Mode

Motorola PF B58 telephones are equipped with a manual test mode capability. This allows service personnel to verify functionality and perform fault isolation by entering keypad commands.

To enter the manual test command mode, a GSM / DCS test SIM must be used.

1. Press **Ⓞ** to turn the phone OFF.
2. Remove the battery as described in the procedures.
3. Remove the customer's SIM card from the phone as described in the procedures.
4. Insert the test SIM into the SIM slot.
5. Replace the battery as described in the procedures.
6. Press **Ⓞ** to turn the phone ON.

Manual Test Mode Commands

Table 2. Manual Test Commands

Key Sequence	Test Function/Name	Remarks
<Menu>048263*	Enter manual test mode	
"End" Key	Exit manual test mode	
54*	Suspend	Required for all Test Mode Operations
0*0*0	Select tone 0	
0*0*1	Select tone 1	
0*0*2	Select tone 2	
0*0*3	Select tone 3	
0*0*4	Select tone 4	
0*0*5	Select tone 5	
0*0*6	Select tone 6	
0*0*7	Select tone 7	
0*0*8	Select tone 8	
0*0*9	Select tone 9	
0*1*X	Disable tone X	
3*0*1	Enable vibrator	
3*0*0	Disable vibrator	
5*0*0	Set audio level 0	
5*0*1	Set audio level 1	
5*0*2	Set audio level 2	
5*0*3	Set audio level 3	
5*0*4	Set audio level 4	
5*0*5	Set audio level 5	
5*0*6	Set audio level 6	
5*0*7	Set audio level 7	

Table 2. Manual Test Commands (Continued)

Key Sequence	Test Function/Name	Remarks
5*0*8	Set audio level 8	
5*0*9	Set audio level 9	
5*0*10	Set audio level 10	
5*0*11	Set audio level 11	
5*0*12	Set audio level 12	
5*0*13	Set audio level 13	
5*0*14	Set audio level 14	
5*0*15	Set audio level 15	
6*2*2*0*0	Set Audio Path. Int Mic, IntSpk, RX unmute, TX unmute	
6*4*6*0*0	Set Audio Path. Boom Mic, Boom Spk, RX unmute, TX unmute	
10*0*3	Set band GSM 900	
10*0*4	Set band DCS 1800	
10*0*5	Set band PCS 1900	
10*0*6	Set dual band GSM 900 / 1800	
10*1*0	Read band	3= GSM 4= DCS 5= PCS 6 =GSM/DCS
18*0	Initialize non-volatile memory (Master Reset)	
18*1	Initialize Non-volatile memory (Master Clear)	
55*2*001	Test Display. All pixels ON	
55*2*000	Test Display. All pixels OFF	
55*2*002	Test Display. Checkerboard pattern A	
55*2*003	Test Display. Checkerboard pattern B	
55*2*004	Test Display. Border pixels ON	
*#06#	IMEI Check	No Test Mode Required
Phone Set up --> Phone Status --> Other Information	Flex Version / Technology / S-W Version / Readiness Status	No Test Mode Required

Troubleshooting Chart

Table 3. PF B58 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 assembly defective.	Remove the transceiver board assembly. Substitute a known good assembly and temporarily reassemble the unit. Depress the PWR button; if unit turns on and stays on, disconnect the dc power source and reassemble the telephone with the new transceiver board assembly. Verify that the fault has been cleared.
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 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.
3. Display is erratic, or provides partial or no display.	a) Mating connections to or from transceiver board faulty.	Remove rear housing from unit, check general condition of flex connector if the flex connector is good, check that the connector is fully pressed down. If faulty connector, replace the transceiver board assembly. If connector is not at fault, 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.
4. Incoming call alert transducer audio distorted or volume is too low.	a) Faulty 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.
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.
	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.

Table 3. PF B58 Telephone: Level 1 and 2 Troubleshooting Chart (Continued)

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
	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 connection from the earpiece to the transceiver board assembly. If connection is not at fault, proceed to b.
	b) Earpiece speaker defective.	Remove the transceiver board and insert into known good speaker. Ensure good connection. Place a call and verify improvement in earpiece audio. If fault is cleared, reassemble the phone with the good speaker. If fault is 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. Telephone will not recognize or accept SIM card.	a) SIM card defective.	Check the SIM card contacts for dirt. Clean if necessary, and check if fault has been cleared. If the contacts are clean, insert a known good SIM card into the telephone. Power up the unit and confirm that the card has been accepted. If the fault no longer exists, replace the defective SIM card. If the SIM card is not at fault, 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.	a) 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.	a) 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.
10. Real Time Clock resetting when standard battery is removed.	a) RTC battery in the transceiver board.	Replace RTC battery according to the procedures.
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.
	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.

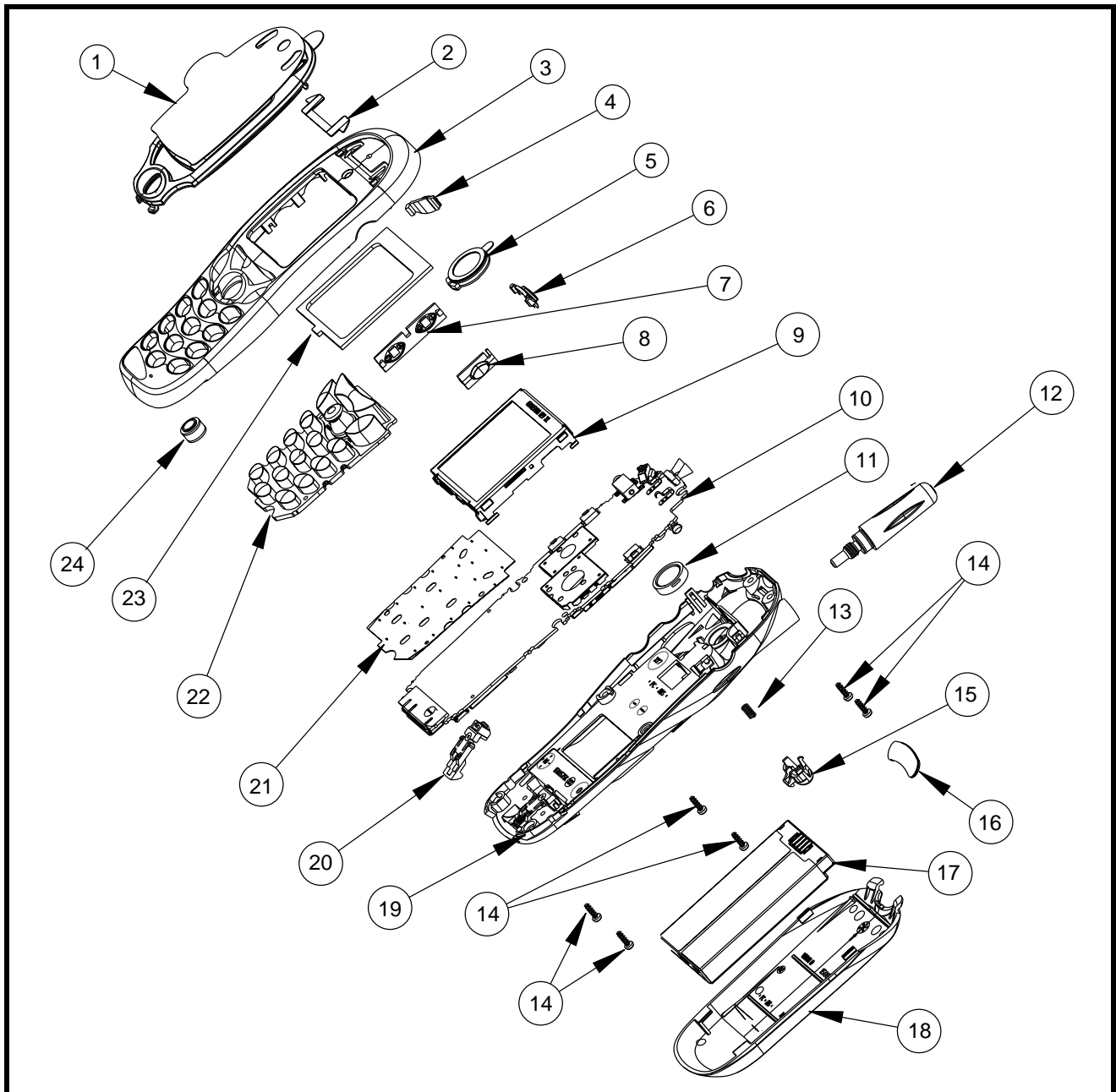
Programming: Software Upgrade and Flexing

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

Part Number Charts

The following charts are provided as a reference for the parts associated with PF B58 telephones.

Exploded View Diagram



010249-0

Figure 26. Exploded View Diagram

Exploded View Parts List

Table 4. Exploded View Parts List

Item Number	Motorola Part Number	Description
1	6188612K03	Lens
2	3589002K01	Speaker Felt
3	See Table 5	Front Housing, Painted
4	3888884K02	Power Button
5	5087975K02	Speaker 15Dx2.7 Tall w/ Pads
6	6188925K01	Lens, IRDA
7	3888923K01	Volume Button
8	3888924K01	Voice Activation Button
9	7289437K04	Display Module Assembly
10	See Note 1	Transceiver Board Assembly
11	5089001K01	Alert
12	8586336P01	Antenna, Jade
13	4109494U03	Spring, Battery Door Button
14	0309315B07	Screw, Torx 6, 1.8 (6)
15	1588617K02	Panther 2 Battery Door Button
16	See Table 5	Rear Escutcheon
17	See Table 6	Battery

Item Number	Motorola Part Number	Description
18	See Table 5	Battery Door, Painted
19	See Table 5	Rear Housing, Painted
20	1587622L02	Battery Latch
21	4088922K01	Switch Dome Metal Array
22	3888550L	Keypad
23	3288588K01	Dust Gasket
24	5085600J01	Microphone
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		

Notes: 1. Not available as spares in EMEA Service markets.



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.

Model-dependent Part Numbers

Table 5. Model-dependent Part Numbers

Item Number	Part Description	Part Number
3	Front Housing, painted, Matte Silver	1588113L10
3	Front Housing, Painted, Marine Silver	1588113L10
3	Front Housing, Painted, Smoked Silver	1588113L12
3	Front Housing, Painted, Graphite	1588113L19
16	Rear Escutcheon, Black w/ White Text, 280	1388836K03
16	Rear Escutcheon, Black w/ White Text, Timeport	1388836K04
18	Battery Door, Painted, Matte Silver, 800mAh	1588098L02
18	Battery Door, Painted, Marine Silver, 800mAh	1588098L03
18	Battery Door, Painted, Smoked Silver, 800mAh	1588098L04
18	Battery Door, Painted, Graphite, 800mAh	1588098L09
18	Battery Door, Painted, Matte Silver, 500mAh	1588097L02
18	Battery Door, Painted, Marine Silver, 500mAh	1588097L03
18	Battery Door, Painted, Smoked Silver, 500mAh	1588097L04
18	Battery Door, Painted, Graphite, 500mAh	1588097L09
19	Rear Housing, Painted, Matte Silver	1588144L10
19	Rear Housing, Painted, Marine Silver	1588144L11
19	Rear Housing, Painted, Smoked Silver	1588144L12
19	Rear Housing, Painted, Graphite	1588144L19

Accessories

Table 6. Accessories

Part Description	Part Number
Battery, Slim, Lithium Polymer, 500 mAh	SNN5717
Battery, Lithium Polymer, 800 mAh	SNN5705
Travel Charger, Rapid, Universal, US Flip	SPN4716
Travel Charger, Rapid, Universal, Argentina	SPN4735
Travel Charger, Rapid, Universal, China	SPN4743
Travel Charger, Rapid, Universal, Hong Kong	SPN4737
Travel Charger, Rapid, Universal, Korea	SPN4736
Travel Charger, Rapid, Universal, Brazil	SPN4738
Adapter, Euro Plug	SPN4940
Adapter, UK Plug	SPN4739
Adapter, Aus / NZ Plug	SPN4741
Adapter, India Plug	SPN4744
Adapter, Korea Plug	SPN4756
Dual-Pocket Desktop Charger Base - English Label	SPN4772
Dual-Pocket Desktop Charger Base - Chinese Label	SPN4773
Vehicle Power Adapter	SYN7818
Easy-Install Hands Free Car Kit (analog audio)	SYN8597
Headset (Jewel Case)	SYN7453
Headset with Boom Microphone	SYN8146
Bluetooth Clip In Module	SYN8640
Bluetooth PCMCIA Card	SYN8625
USB Cable	SKN2101
RS-232 Data Cable (Head only)	SYN0279
RS-232 Data Cable (Cable only)	SKN2102

Related Publications

Motorola Timeport 280 Wireless Phone User Guide, English	9888873L01
Motorola Timeport 280 Wireless Phone Reference Guide, English	6809435A65

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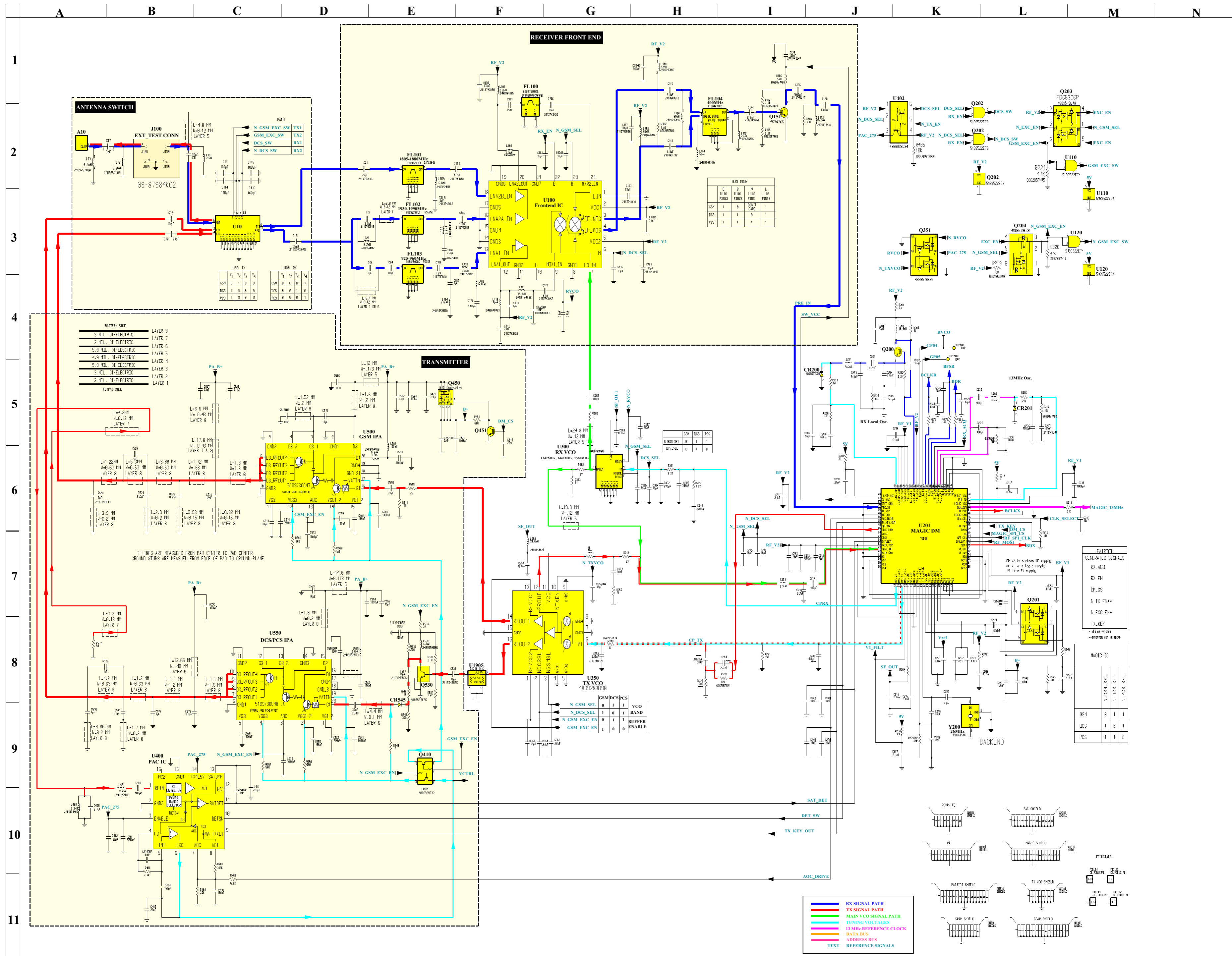
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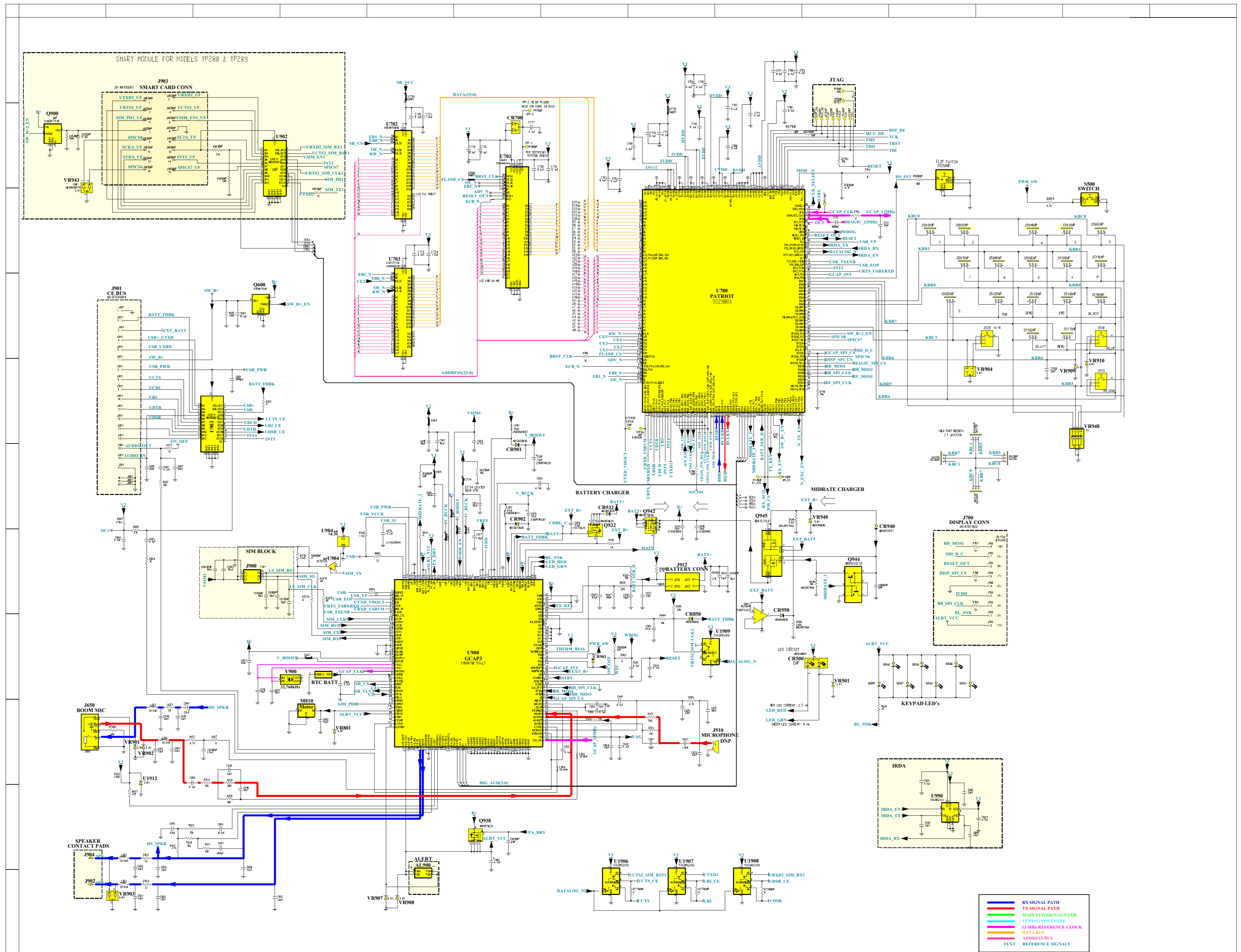
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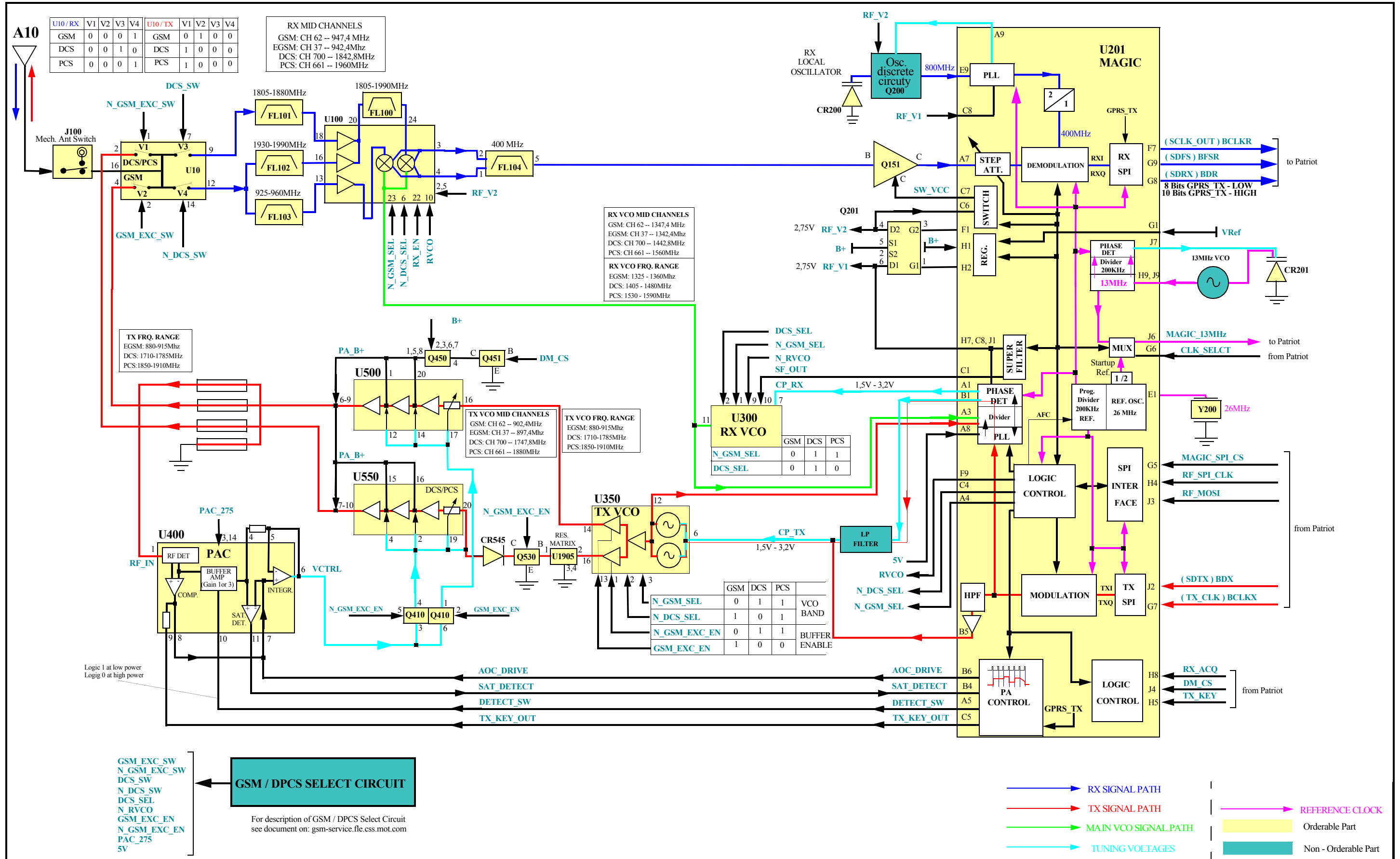
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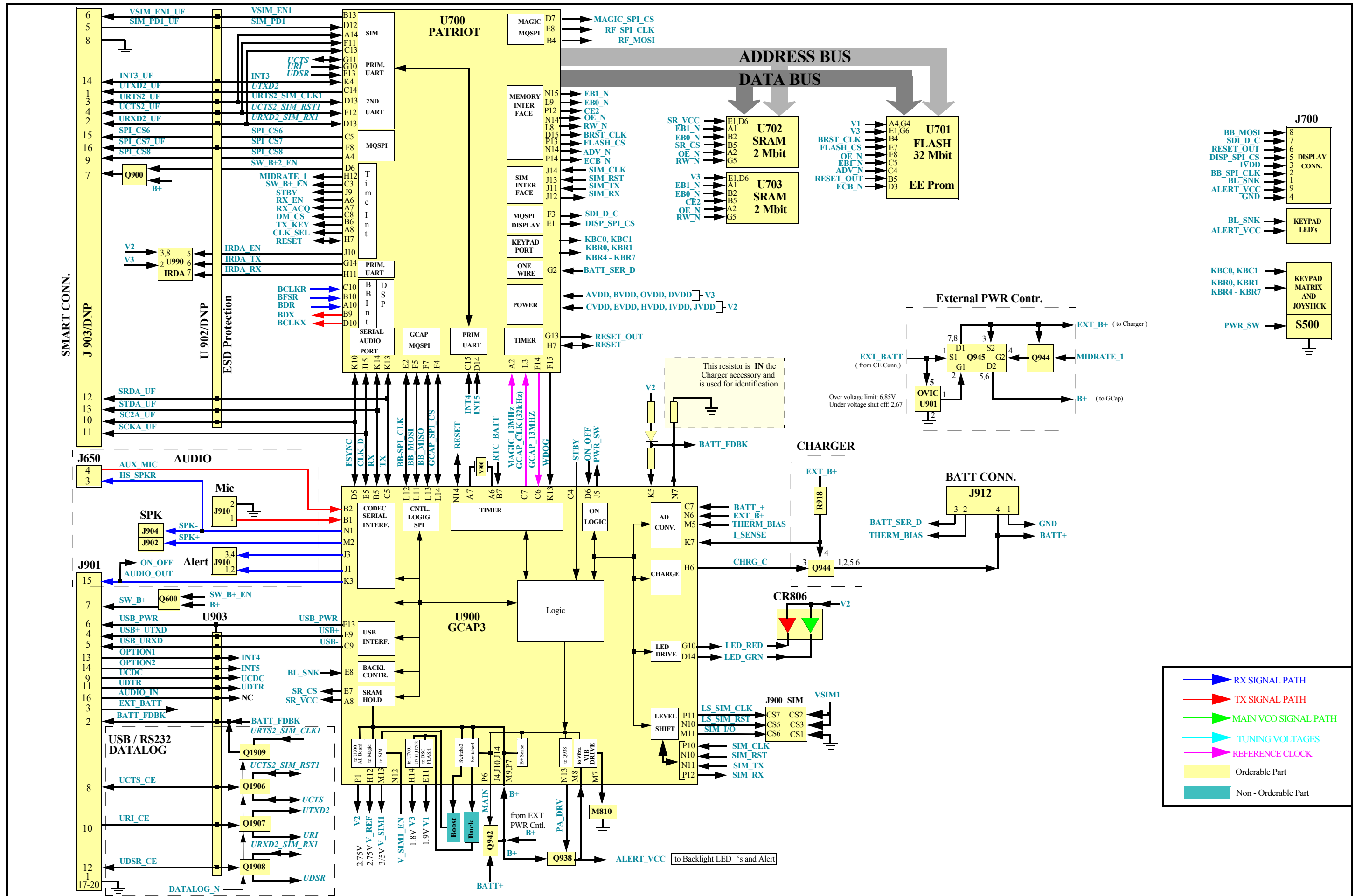
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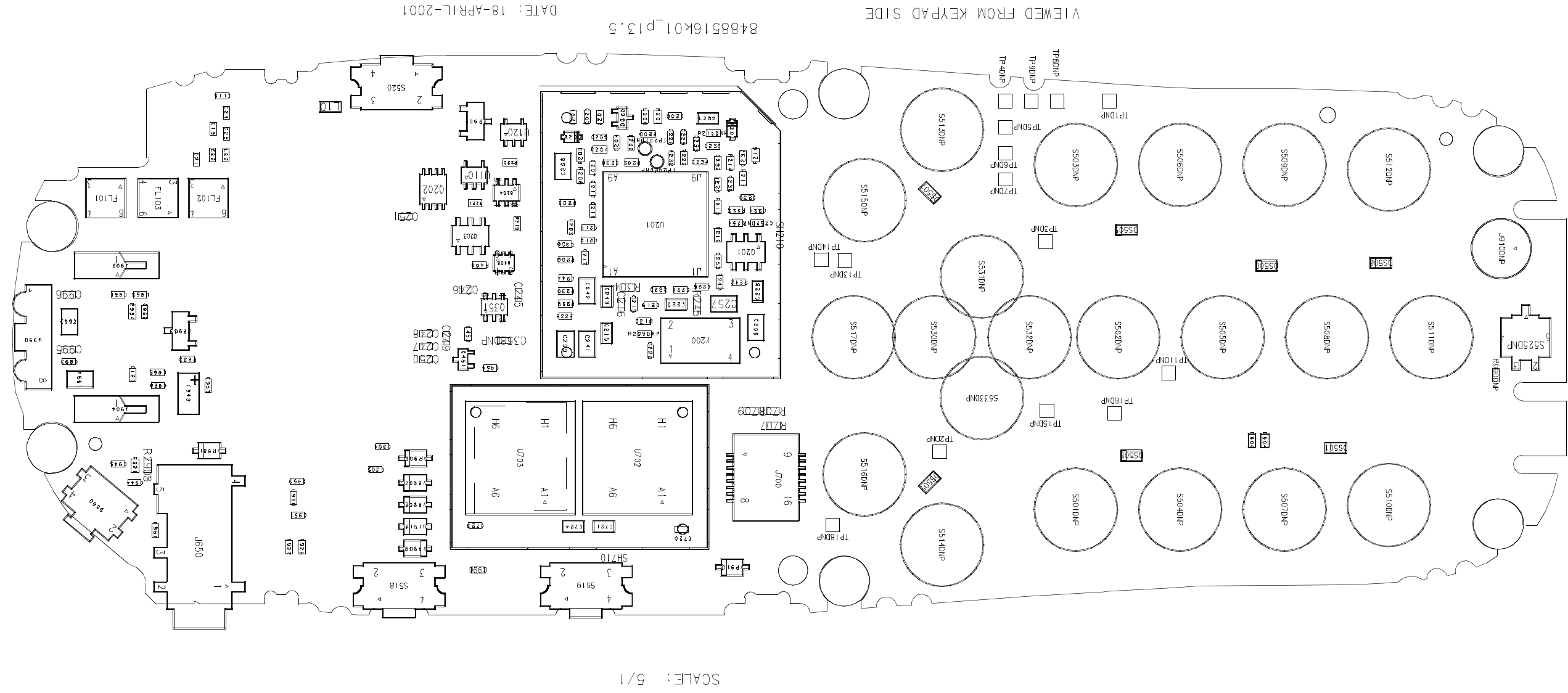
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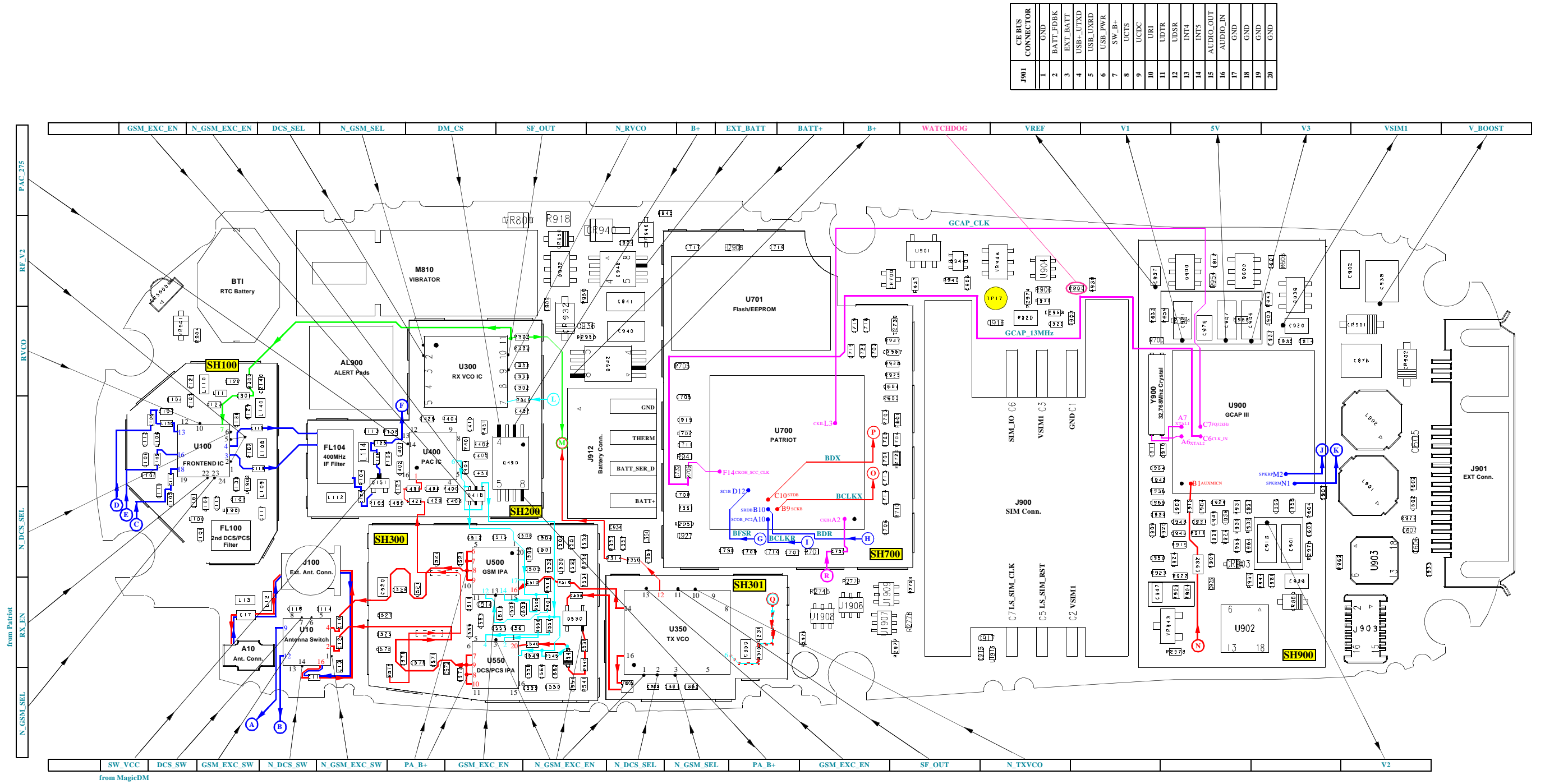
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P280 - SIGNAL FLOW - PAGE 1/2

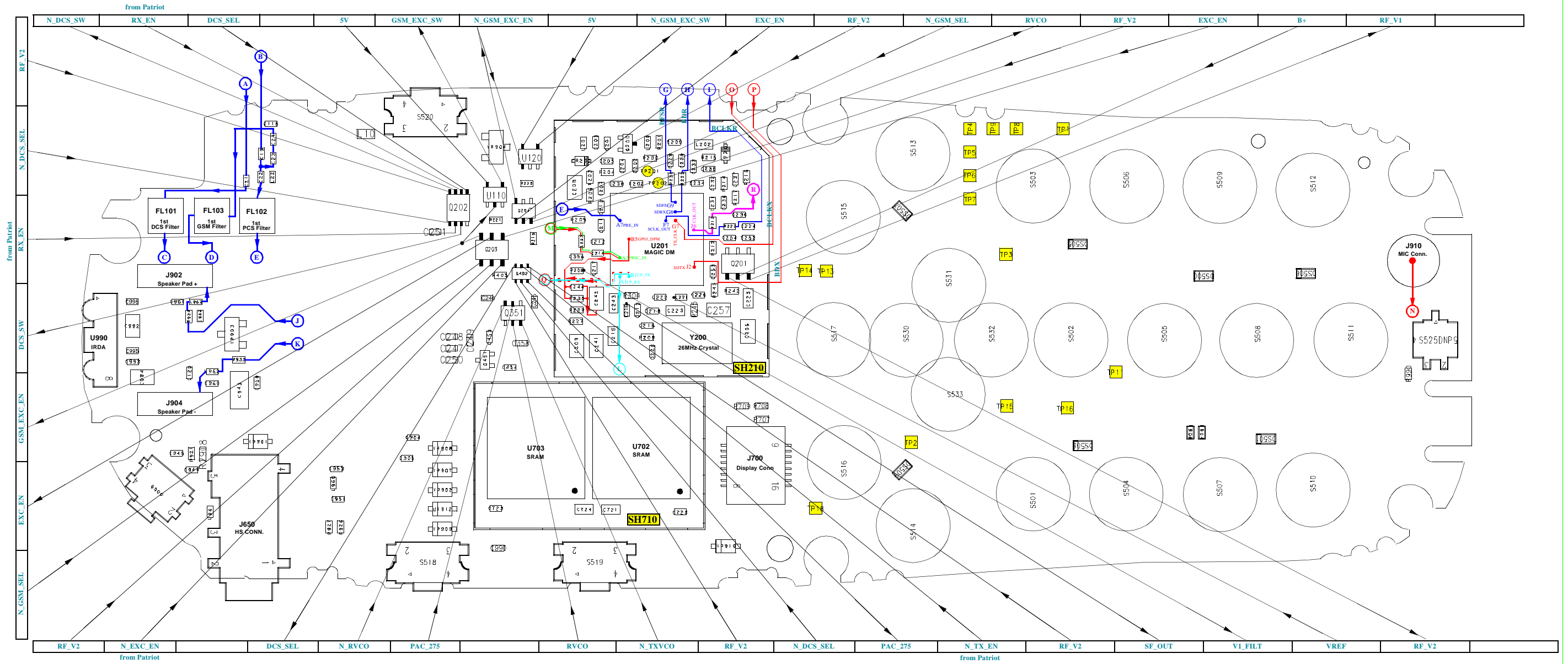


J901	CE BUS CONNECTOR
1	GND
2	BATT_FDBK
3	EXT_BATT
4	USB_UTXD
5	USB_USRD
6	USB_PWR
7	SW_B+
8	UCTS
9	UCDC
10	URI
11	UDTR
12	UDSR
13	INT4
14	INT5
15	AUDIO_OUT
16	AUDIO_IN
17	GND
18	GND
19	GND
20	GND

TP	
TP1	GND
TP2	RESET
TP3	TD1
TP4	TDO
TP5	TRST
TP6	TMS
TP7	TCK
TP8	MCU_DE
TP9	DSP_DE
TP11	GCAP_CLK
TP13	DM_CS
TP14	RX_ACQ
TP15	UTXD
TP16	URXD
TP17	VPP-2
TP18	VPP-1
TP201	RVCO
TP202	OP05

(A)	DCS RX ANTENNA SIGNAL
(B)	GSM/PCS RX ANTENNA SIGNAL
(C)	FILTERED DCS RX ANTENNA SIGNAL
(D)	FILTERED GSM RX ANTENNA SIGNAL
(E)	FILTERED PCS RX ANTENNA SIGNAL
(F)	AMPLIFIED IF-600MHZ
(G)	RFER SIGNAL TO PATRIOT
(H)	BDR SIGNAL TO PATRIOT
(I)	BCLKR SIGNAL TO PATRIOT
(J)	RX SPEAKER LINE-+
(K)	RX SPEAKER LINE-
(L)	RX VCO TUNING VOLTAGE
(M)	RX/TX VCO FEEDBACK LINE TO MAGIC
(N)	TX MIC LINE
(O)	BCLKX SIGNAL TO MAGIC
(P)	BDX SIGNAL TO MAGIC
(Q)	TX VCO TUNING VOLTAGE
(R)	MAGIC_13MHz TO PATRIOT

P280 - SIGNAL FLOW - PAGE 2/2



TP	Signal
TP1	GNDD
TP2	RESET
TP3	TDI
TP4	TD0
TP5	TRST
TP6	TMS
TP7	TCK
TP8	MCU DE
TP9	DSP DE
TP10	GCAP-CLK
TP11	DM_CS
TP12	DM_CS
TP13	DM_CS
TP14	DM_CS
TP15	DM_CS
TP16	DM_CS
TP17	DM_CS
TP18	DM_CS
TP19	DM_CS
TP20	DM_CS
TP21	DM_CS
TP22	DM_CS
TP23	DM_CS
TP24	DM_CS
TP25	DM_CS
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TP27	DM_CS
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TP76	DM_CS
TP77	DM_CS
TP78	DM_CS
TP79	DM_CS
TP80	DM_CS
TP81	DM_CS
TP82	DM_CS
TP83	DM_CS
TP84	DM_CS
TP85	DM_CS
TP86	DM_CS
TP87	DM_CS
TP88	DM_CS
TP89	DM_CS
TP90	DM_CS
TP91	DM_CS
TP92	DM_CS
TP93	DM_CS
TP94	DM_CS
TP95	DM_CS
TP96	DM_CS
TP97	DM_CS
TP98	DM_CS
TP99	DM_CS
TP100	DM_CS

J700	Display Connector
1	BL_SNK
2	BR_SPL_CLK
3	I2VDD
4	GNDD
5	DISP_SPL_CS
6	RESET_OUT
7	SDI_D_e
8	BB_MOSI
9	ALERT_VCC

Signal	Description
(A)	DCS RX ANTENNA SIGNAL
(B)	GSM PCS RX ANTENNA SIGNAL
(C)	FILTERED DCS RX ANTENNA SIGNAL
(D)	FILTERED GSM RX ANTENNA SIGNAL
(E)	FILTERED PCS RX ANTENNA SIGNAL
(F)	AMPLIFIED IF 400MHz
(G)	BDR SIGNAL TO PATRIOT
(H)	BCLKR SIGNAL TO PATRIOT
(I)	BDR SIGNAL TO PATRIOT
(J)	RX SPEAKER LINE +
(K)	RX SPEAKER LINE -
(L)	RX VCO TUNING VOLTAGE
(M)	RX TX VCO FEEDBACK LINE TO MAGIC
(N)	TX MIC LINE
(O)	BCLKX SIGNAL TO MAGIC
(P)	BDR SIGNAL TO MAGIC
(Q)	TX VCO TUNING VOLTAGE
(R)	MAGIC_1MHz TO PATRIOT

T280 L3 Parts List

Component Ref.	Part Number	Description	Component Ref.	Part Number	Description
A10	3909155T04	CONTACT	Q942	4809579E49	S16467DQ
AL900	3989402K01	CONTACT	Q944	4809939C39	EMD9
CR200	4809877C09	BB555	Q945	4887611L01	IFR7555
CR201	4809877C10	BB659	S500	4070354A01	SWITCH
CR545	4809948D12	BAR 63-02W	S518	4009368L08	SWITCH
CR700	4809606E02	DAN222T	S519	4009368L08	SWITCH
CR850	4809948D42	RB751V40	S520	4009368L08	SWITCH
CR901	4813833B10	MBR0530T1			
CR902	4813833B10	MBR0530T1	SH100	2688524K01	SHIELD
CR903	4809924D18	RB520S-30	SH200	2688525K01	SHIELD
CR932	4813833B10	MBR0530T1	SH210	2688527K01	SHIELD
CR940	4809653F07	MBRM120ET3	SH300	2688526K01	SHIELD
CR950	4809948D42	RB751V40	SH301	2688530K01	SHIELD
DS500	4809496B11	QSMG-H799	SH700	2688528K01	SHIELD
DS501	4809496B11	QSMG-H799	SH710	2688529K01	SHIELD
DS505	4809496B11	QSMG-H799	SH900	2688531K01	SHIELD
DS506	4809496B11	QSMG-H799	U10	5109572E38	AC_717
DS507	4809496B11	QSMG-H799	U100	5109944C42	MC13709
DS508	4809496B11	QSMG-H799	U110	5109522E74	NC7ST08
DS509	4809496B11	QSMG-H799	U120	5109522E74	NC7ST08
FL100	9103769S05	LFSN25N19C1897B	U1901	2113743N38	CAP, 33pF
FL101	9109069E04	SAFC1842	U1902	2113743N38	CAP, 33pF
FL102	9109239M12	855850	U1905	5885924L07	RAC10-1A-6
FL103	9109450C06	50C06	U1906	5162852A59	MAX4599EXT
FL104	9109487U02	400MHZ	U1907	5162852A59	MAX4599EXT
J100	0987984K02	CONN_J	U1908	5162852A59	MAX4599EXT
J650	0987837L01	CONN_J	U1909	5162852A59	MAX4599EXT
J700	0987817K02	CONN_J	U1912	4809788E06	UDZTE-176.8B
J900	3909426M04	C707	U201	5109879E50	79E50
J901	0987636K06	CONN_J	U300	4809283D80	ATXN1007T
J902	3988929K01	CONTACT	U350	4809283D90	ATXN1000B
J904	3988929K01	CONTACT	U400	5109923D50	23D50
J912	3989331K01	CONN_J	U402	4809939C34	EMB10
M810	5909382K05	MOTOR	U500	5109730C47	UPG2117K, GSM
Q151	4809527E30	27E30	U550	5109730C48	UPG2118K, DCS
Q200	4809527E24	27E24	U700	5195015D07	SC29803
Q201	4809579E48	FDC6306P	U701	5199443A01	43A01
Q202	5109522E73	NC7WZ08K	U702	5109509A36	KM616FR4010
Q203	4809579E48	FDC6306P	U703	5109509A39	CY62137V18
Q204	4809579E39	FDG6323L	U900	5109879E82	79E82
Q351	4809579E35	FDG6301N	U901	5109731C32	MC33645
Q410	4809939C32	EMH4	U903	4809606E12	EMIF11
Q450	4809579E49	S16467DQ	U990	5162852A33	HSDL3202
Q451	4809940E02	DTC114YE	VR501	4809788E06	UDZTE-176.8B
Q530	4809527E26	2SC5081	VR801	4809788E06	UDZTE-176.8B
Q600	5109817F45	BPLUS_SWITCH	VR901	4809788E06	UDZTE-176.8B
Q932	4809579E29	S13443	VR902	4809788E06	UDZTE-176.8B
Q938	4809579E29	S13443	VR903	4813830M74	MMBZ6V8ALT1
			VR904	4813830M74	MMBZ6V8ALT1
			VR907	4809788E06	UDZTE-176.8B
			VR908	4809788E06	UDZTE-176.8B
			VR909	4809788E06	UDZTE-176.8B
			VR910	4809788E06	UDZTE-176.8B
			VR940	4809788E06	UDZTE-176.8B
			VR948	4809948D18	SMS05
			Y200	4809612J42	12J42
			Y900	4809995L09	MC146

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