



PORTABLE CELLULAR TELEPHONE SCH-A310

SERVICE Manual

PORTABLE CELLULAR TELEPHONE



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1. General Introduction

The SCH-A310 DBDM(Dual Band Dual Mode) phone functions as both analog phone working in AMPS (Advanced Mobile Phone Service) mode and digital phone working in PCS (Personal Communication Service) and GPS modes.

The following standards and minimum performance standards shall be met or exceeded by each subscriber unit.

Air Interface

The Subscriber Unit shall be Dual mode and Dual band in compliance with ANSI J-STD-008 and TIA/EIA IS-95A(Analog).

ANSI J-STD-008 : Personal Station-Base Station Compatibility Requirements for 1.8 to 2.0 GHz CDMA PCS.

ANSI J-STD-018 : Recommended Minimum Performance Requirements for 1.8 to 2.0 GHz CDMA Personal Stations.

CDG Ref. Document #27 : High Rate Speech Service Option for Wideband Spread Spectrum System.

TIA/EIA IS-96A : Speech Service Option 1 Standard for Dual mode Wideband Spread Spectrum Cellular Systems.

TIA/EIA IS-125 : Recommended Minimum Performance standards for Digital Cellular Wideband Spread Spectrum Speech Service Option1.

TIA/EIA IS-126-A : Mobile Station Loop back Service Option standard.

TIA/EIA IS-95B : Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular Systems;for the analog air interface.

TIA/EIA IS-98C : Recommended Minimum Performance Standard for Dual-Mode Wideband Spread PCS Cellular Systems. Both Analog and CDMA sections apply.

TIA/EIA IS-801-1 : Position Determination Service standards for Dual Mode Spread Spectrum System.

CDMA Receiver/Transmitter Specifications and Requirements

The Subscriber Unit shall comply with ANSI J-STD-008 and meet or exceed TIA/EIA IS-98C. The Subscriber Unit shall comply with Personal Station Class II.

Analog Receiver/Transmitter Specifications and Requirements

The Subscriber Unit shall comply with TIA/EIA IS-95B and meet or exceed TIA/EIA IS-95. The Subscriber Unit shall comply with Mobile Station Power Class III (600 mW).

2. Specification

2-1 General

Item	US PCS	CDMA	AMPS	GPS
Tx Freq. range	1851.25~1908.75MHz	824.70~848.31MHz	824.04~848.97MHz	-
Rx Freq. range	1931.25~1988.75MHz	869.70~893.31MHz	869.04~893.97MHz	1574~1576MHz
Channel Bandwidth	1.23MHz	1.23MHz	30KHz	
Channel Spacing	50KHz	30KHz	30KHz	-
Number of Channel	1200	20FA	832	-
Duplex Separation	80MHz	45MHz	45MHz	-
Type of Emission	1M25F9W	1M25F9W	40K0F8W, 40K0F1D	-
In/Output Impdance	50Ω	50Ω	50Ω	-
Tx Intermediate Frequency	263.6MHz	228.6MHz	228.6MHz	-
Rx Intermediate Frequency	183.6MHz	183.6MHz	183.6MHz	-
Tx Local Frequency	1st(F _{TX} +263.6MHz) 2nd(527.2MHz)	1st(F _{TX} +228.6MHz) 2nd(457.2MHz)	1st(F _{TX} +228.6MHz) 2nd(457.2MHz)	-
Rx Local Frequency	1st(F _{RX} +183.6MHz) 2nd(367.2MHz)	1st(F _{RX} +183.6MHz) 2nd(367.2MHz)	1st(F _{RX} +183.6MHz) 2nd(367.2MHz)	-
TCXO Frequency	19.2MHz	19.68MHz	19.68MHz	-
Freq. Stability	(F _{RX} - 80 MHz) ± 150 Hz	(F _{RX} - 45 MHz) ± 300Hz	± 2.5ppm	-
Operating Temperature	-30 °C ~ +60 °C	-30 °C ~ +60 °C	-30 °C ~ +60 °C	-
Supply Voltage	3.80V			
Size and Weight	STD : 113 * 47 * 22mm, 900mAh			

2-2 1.9GHz CDMA(US PCS)

GENERAL

Frequency Range	
. Transmitter	: 1851.25 ~ 1908.75MHz
. Receiver	: 1931.25 ~ 1988.75MHz
Channel Bandwidth	: 1.23MHz
Channel Spacing	: 50kHz
Number of Channels	: 1200
Duplex Separation	: 80 MHz
Type of Emission	: 1M25F9W
Input/Output Impedance	: 50 ohms
Intermediate Frequency	
. Transmitter	: 263.6MHz
. Receiver	: 183.6MHz
Local Frequency	
. Transmitter	: 1st(FTX +263.6MHz), 2nd(527.2MHz)
. Receiver	: 1st(FRX +183.6MHz), 2nd(367.2MHz)
TCXO Frequency	: 19.2MHz
Frequency Stability	: (FRX-80MHz) +/- 150Hz
Operation Temperature	: -30deg ±60deg
Supply Voltage	: +3.8V

TRANSMITTER

Waveform Quality	: 0.944 or more
Open Loop Power Control Range	
. -25dBm	: -60.5dBm ~ -41.5dBm
. -65dBm	: -20.5dBm ~ +1.5dBm
. -104dBm	: +15.0dBm ~ +25.5dBm
Minimum Tx Power Control	: below -50dBm
Closed Loop Power Control Range	: +/-24dB
Maximum RF Output Power	: 25.5dBm
Occupied Bandwidth	: 1.23MHz
Conducted Spurious Emission @1.25 MHz	: -42dBc/30kHz

RECEIVER

Rx Sensitivity and Dynamic Range	: -104dBm, FER=0.5% or less : -25dBm, FER=0.5% or less
Conducted Spurious Emission	
. 1930~1990 MHz	: <-81dBm
. 1850~1910 MHz	: <-61dBm
. All Other Frequencies	: <-47dBm
Single Tone Desensitization	: lower than 1 %
. Rx power level = -101dBm	
. Tone power level = -30dBm	
. Tone offset from carrier = +/-1.25 MHz	
Intermodulation Spurious Response Attenuation	: lower than 1 %
. Rx power = -101dBm	
. Tone 1 power = -43dBm	
. Tone 1 power = -43dBm	
. Tone 1 offset from carrier = +/-1.25 MHz	
. Tone 2 offset from carrier = +/-2.05 MHz	

2-3 800MHz CDMA

GENERAL

Frequency Range	
. Transmitter	: 824.70 ~ 848.31MHz
. Receiver	: 869.70 ~ 893.31MHz
Channel Bandwidth	: 1.23MHz
Channel Spacing	: 30kHz
Number of Channels	: 20FA
Duplex Separation	: 45 MHz
Type of Emission	: 1M25F9W
Input/Output Impedance	: 50 ohms
Intermediate Frequency	
. Transmitter	: 228.6MHz
. Receiver	: 183.6MHz
Local Frequency	
. Transmitter	: 1st(FTX +228.6MHz), 2nd(457.2MHz)
. Receiver	: 1st(FRX +183.6MHz), 2nd(367.2MHz)
TCXO Frequency	: 19.2MHz
Frequency Stability	: (FRX-45MHz) +/- 300Hz
Operation Temperature	: -30deg ~ 60deg
Supply Voltage	: +3.8V

TRANSMITTER

Waveform Quality	: 0.944 or more
Open Loop Power Control Range	
. -25dBm	: -57.5dBm ~ -38.5dBm
. -65dBm	: -17.5dBm ~ +1.5dBm
. -104dBm	: +18.0dBm ~ +30dBm

Minimum Tx Power Control	: below -50dBm
Closed Loop Power Control Range	: +/-24dB
Maximum RF Output Power	: 26dBm
Occupied Bandwidth	: 1.23MHz
Conducted Spurious Emission @900 KHz @1.25 MHz	: -42dBc/30kHz : -54dBc/30kHz

RECEIVER

Rx Sensitivity and Dynamic Range	: -104dBm, FER=0.5% or less : -25dBm, FER=0.5% or less
Conducted Spurious Emission . 869~894 MHz . 824~849 MHz	: <-81dBm : <-61dBm
All Other Frequencies	: <-47dBm
Single Tone Desensitization . Rx power level = -101dBm . Tone power level = -30dBm . Tone offset from carrier = +/-900KHz	: lower than 1 %
Intermodulation Spurious Response Attenuation . Tone 1 offset from carrier = +/-900KHz . Tone 2 offset from carrier = +/-1.700MHz	: lower than 1 %
- Test 1, 2 Rx power = -101dBm Tone 1 power = -43dBm Tone 2 power = -43dBm	
- Test 3, 4 Rx power = -90dBm Tone 1 power = -32dBm Tone 2 power = -32dBm	
- Test 5, 6 Rx power = -79dBm Tone 1 power = -21dBm Tone 2 power = -21dBm	

2-4 800MHz AMPS

GENERAL

Frequency Range	
. Transmitter	: 824.04°≠848.97 MHz
. Receiver	: 869.04°≠893.97 MHz
Channel Spacing	: 30kHz
Number of Channels	: 832
Duplex Spacing	: 45MHz
Frequency Stability	: +/-2.5ppm(-30deg°≠ 60deg, -22°F °≠140°F)
Modulation/Demodulation	
. Voice	: FM
. Data	: PM
Operating Temperature	: -30deg°≠ 60deg, -22°F °≠ 140°F
Supply Voltate	: 3.8V

TRANSMITTER

RF output power	: 27dBm
Carrier ON/OFF conditions	
. "ON" Condition	: within +/-3dB of specification output(in 2 ms)
. "OFF" Condition	: below -60dBm(in 2ms)
Compressor	
. Compression Rate	: 2 : 1
. Attack Time	: 3ms
. Recovery Time	: 13.5ms
. Reference Input	: input power level for producing a nominal +/-2.9kHz : peak frequency deviation of transmitted carrier
Preamphasis	: 6dB/OCT within 0.3 °≠ 3 kHz

Maximum Frequency Deviation

- . F3 of G3 : +/-12 kHz
- . Supervisory Audio Tone : +/-2 kHz(+/-10%)
- . Signaling Tone : +/-8 kHz(+/-10%)
- . Wideband Data : +/-8 kHz(+/-10%)

Post Deviation Limiter Filter

- . 3.0 ~ 5.9 kHz : above 40 LOG(F/3000)dB
- . 5.9 ~ 6.1 kHz : above 35dB
- . 6.1 ~ 15 kHz : above 40 LOG(F/3000)dB
- . Over 15 kHz : above 28 dB

Spectrum Noise Suppression

- . For all modulation
fo +20 kHz $\neq$ fo + 45 kHz : above 26dB
- . For modulation by voice and SAT
fo + 45 kHz : above 63dB+10LOG(PY)dB
- . For modulation by WBD(without SAT) and ST(with SAT)
 - fo + 45 kHz ~ fo + 60 kHz : above 45 dB
 - fo + 60 kHz ~ fo + 90 kHz : above 65 dB
 - fo + 90 kHz ~ 2 fo : above 63 dB + 10 LOG(PY) dB
(where fo = carrier frequency
PY=mean output power in watts)

Harmonic and conducted Spurious Emissions : below 43 + 10 LOG(PY) dB

RECEIVER

De-emphasis : -6dB/OCT within 0.3 ~ 3 kHz

Expander

- . Expander Rate : 1 : 2
- . Attack time : within 3 ms
- . Recovery Time : within 13.5 ms
- . Reference input : output power level to a 1000Hz tone from a carrier within +/-2.9 kHz peak frequency deviation

Sensitivity : 12 dB SINAD/-116dBm

Intermodulation Spurious Response Attenuation : above 65dB

RSSI Range : above 60dB

Protection Against Spurious Response Interference : above 60dB

In Band Conducted Spurious Emission

- . Transmit Band : below -60 dBm
- . Receive Band : below -80 dBm

Out of Band Conducted Spurious Emissions : below -47dBm**. Radiated Spurious Emission**

- Frequency Range : Maximum Allowable EIRP
- 25 ~ 70MHz : -45dBm
- 70 ~ 130MHz : -41dBm
- 130 ~ 174 MHz : -41 ~ -32dBm
- 174 ~ 260 MHz : -32 dBm
- 260 ~ 470 MHz : -32 ~ -26 dBm
- 470 ~ 1G MHz : -21 dBm

2-5 1500MHz GPS

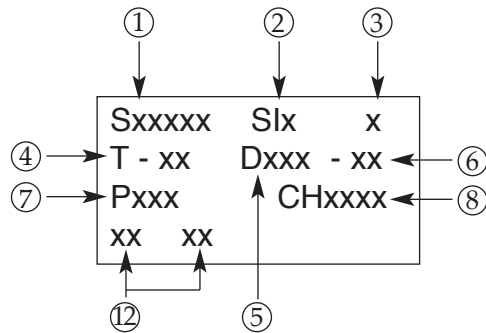
GENERAL

Frequency Range : 1574~1576 MHz

2-6 PCS Debug Display Information

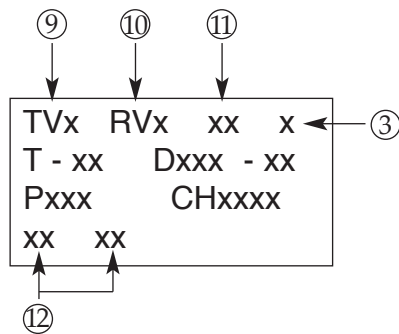
To select debug display mode : Press [MENU] + [0] + [0], and press [0] + [4] + [0] + [7] + [9] + [3], and press [1].

IN IDLE MODE



- ① Sxxxxx : SID (System Identification) toggle
Nxxxxx : NID (Network Identification) toggle
- ② Slx : Slot cycle index (lowest between the system and the phone will be used)
 - 1. SI0 : Slot Index 0
 - 2. SI1 : Slot Index 1
 - 3. SI2 : Slot Index 2
- ③ Handset Status : 0 - NO SVC
 - 1 - Synchronization
 - 2 - Paging (Idle)
 - 3 - Reg. Access state
 - 4 - Traffic Initialization
 - 5 - Waiting for order
 - 6 - Waiting for answer
 - 7 - Conversation state
 - 8 - Exit

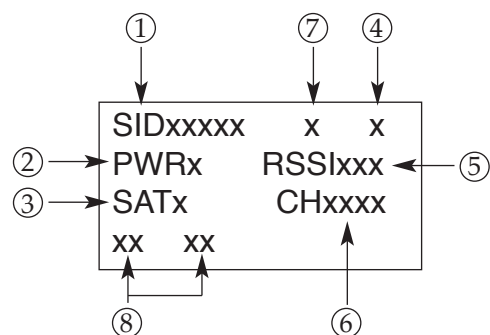
IN CONVERSATION MODE



- ④ T-xx : Tx adjust, Value ranges from -63~+63dB
- ⑤ Dxxx : Sector power in dBm
- ⑥ -xx : e_c/I_o
- ⑦ Pxxx : PN offset
- ⑧ CHxxxx : Channel number
- ⑨ TV : Tx vocoder rate (8 is full rate, 1 is 1/8th rate)
- ⑩ RV : Rx vocoder rate (8 is full rate, 1 is 1/8th rate)
- ⑪ xx : Walsh code used in traffic channel
- ⑫ System acquisition state

2-7 AMPS Debug Display Information

To select debug display mode : Press [MENU] + [0] + [0], and press [0] + [4] + [0] + [7] + [9] + [3], and press [1].



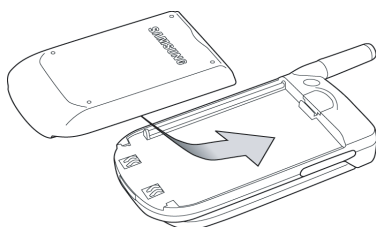
- ① SIDxxxxx : AMPS Home System ID
- ② PWRx : Power Level 0 ~ 7
- ③ SATx : Supervisory Audio Tone code (0 ~ 2)
- ④ x (Using Frequency Band) : A Band or B Band
- ⑤ RSSIxxx : RSSI value
- ⑥ CHxxx : Channel number
- ⑦ Handset Status : 1 - Initialization state
2 - Idle state
3 - System Access state
4 - Voice channel state
- ⑧ System acquisition state

3. Installation

3-1 Installing the Battery

To attach the battery to your phone:

1. Gently place the battery into the provided slots on the underside of the phone.
2. Slide the top end of the battery up (The top end of the battery displays the word Samsung in raised letters.) until you hear it click into place.



To remove the battery from your phone:

1. Turn the phone off (by pressing and holding [PWR] until the closing animation begins).
2. On the back side of the phone, hold the button down and push the battery toward the bottom edge of the phone. The battery will then lift or fall away from the phone.

3-2 Using the travel adaptor

1. With the battery in position in the phone, attach the cord from the travel adaptor by plugging it into the adaptor outlet at the bottom of the phone.
2. Connect the adaptor to a standard 110/220 free volt AC wall outlet. The battery will begin charging immediately, and the LED (located at the top of your phone) will light and remain red while the battery icon animates, the icon will remain animated, even if the phone is turned off during charging.
3. The LED indicates the status of the battery being charged.
 - Red indicates that the battery is charging.
 - Green indicates that the battery is fully charged.
 - Yellow indicates (1) the battery is not seated correctly in the phone, (2) the adaptor is not plugged in correctly, or (3) the battery is inoperable. Please check the adaptor and/or battery.
4. You can make a phone call when the phone is plugged into the travel adaptor. The adaptor will continue to charge the battery even when you are making the call.

Specifications using DTC (Desk Top Charger)

Battery Type	Standard Battery (Li-ion, 900mAh)
Charging Time	2:30 hours
SEC Code	GH43-00545A

3-3 For Mobile Mount

3-3-1 Cradle

1. Choose a location where it is easy to reach and does not interfere with the driver's safe operation of the car.
2. Separate the two halves of the clamshell by removing the two large slotted screws. See the figure 3-2.
3. Drill holes and mount the lower half of the clamshell by using the screws.
4. Place the cradle onto the remaining half of the clamshell and assemble them by using the screws.
5. Reassemble the two halves of the clamshell together. Adjust the mounting angle and tighten the two slotted screws.

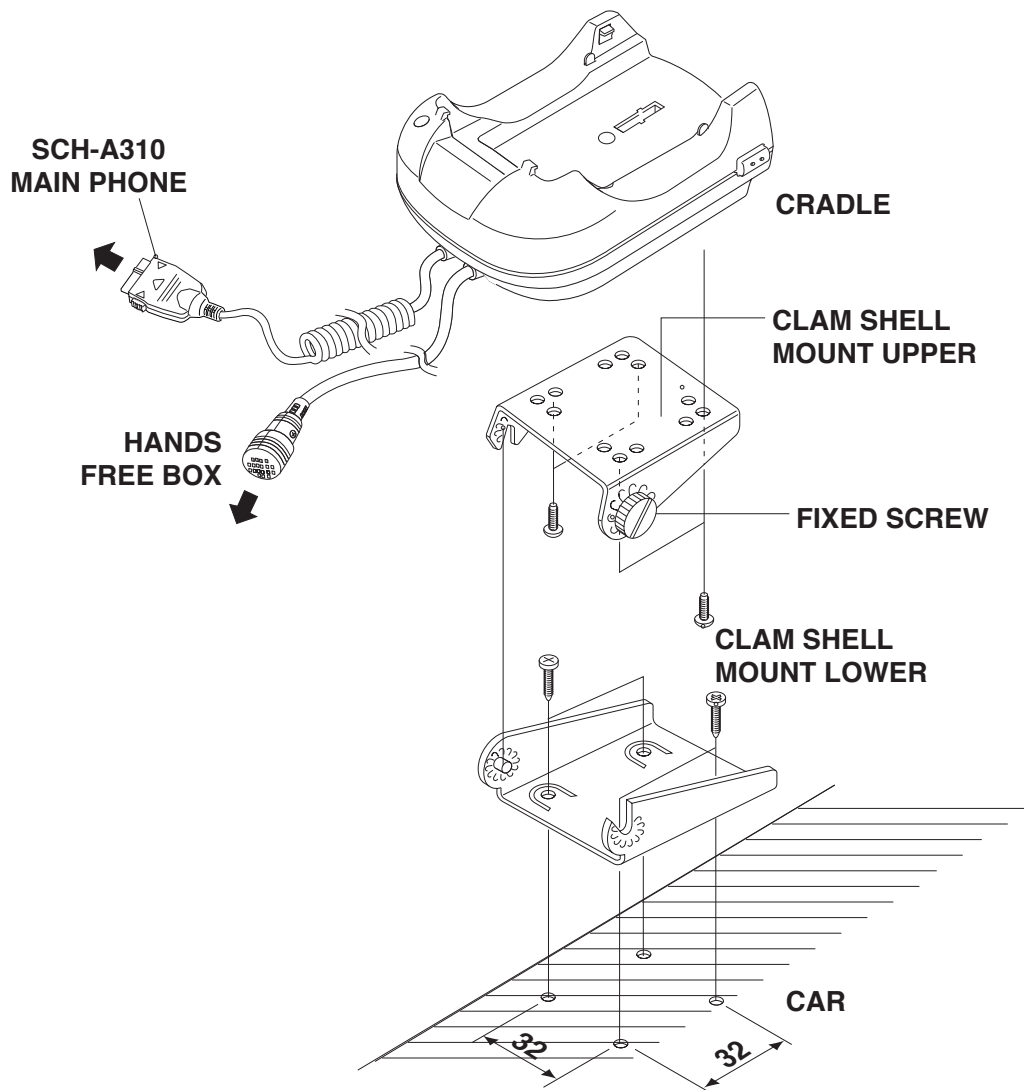


Figure 3-2 Cradle Installation

3-3-2 Hands-Free Box

1. Drill holes in a proper location for the hands-free box, attach the mounting bracket by using the screws. See the figure 3-3.
2. Install the hands-free box into the bracket.

3-3-3 Speaker

1. Install the speaker into the appropriate position.

3-3-4 Hands-Free Microphone

1. It is recommended to install the microphone where it is 30-45 cm (12-18") away from the driver. Choose the location where is least susceptible to interference caused by external noise sources, ie, adjacent windows, car audio speakers, etc. Normal place is the sun visor.
2. Once the microphone has been correctly positioned, connect the microphone wire to the **MIC** jack on the hands-free box.

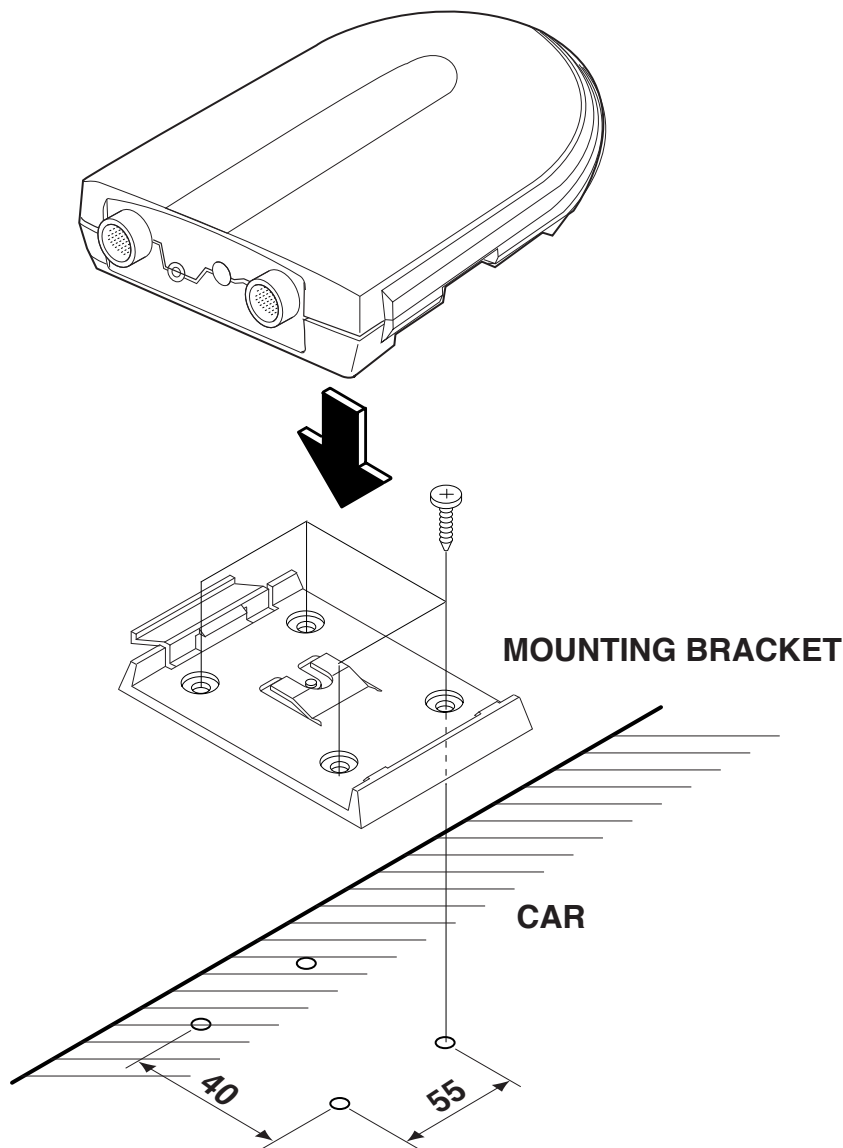


Figure 3-3 Hands-Free Box Installation

3-3-5 Cables

1. Connect the cradle and the hands-free box with the data cable.
2. Connect the red wire to the battery (+) terminal, black wire to the vehicle chassis, brown wire to the Car Audio Mute port and orange wire to the ignition port in the key box of vehicle or battery (+) terminal.
3. Connect the other end of the power cable to the PWR jack of the hands-free box.

Notes:

- It is recommended to connect the power cable directly to the battery to avoid power noise.
- Make sure the connection between the battery (-) terminal and vehicle chassis is made correctly.
- Make sure the fuse having a proper capacity is used on the power cable.
- Make sure the cables do not pass over any sharp metal edge that may damage it.

4. NAM Programming

4-1 NAM programming

Programming of all NAM parameters, e.g. Service Security Code, MCC, MNC, MIN#, CDMA Channel#, vocoder rate, MOB_TERM, SID, SID/NID pairs, Slot Cycle Index, etc.

- 1) Press "Menu 6, *" Enter SPC Code "000000" Use Right navigation key to select items to program.
- 2) You can select MORE (Menu) when "Basic NAM 1 programming is complete." displays. Select if you want to program more detailed items than shown in basic NAM programming. Press OK to save or Right navigation key to proceed to next item.
-> MORE programming not a required for NAM programming.
- 3) To toggle between settings, e.g. Home SID/NID pairs or selecting between Yes/No, use the Up/Down navigation key:
 - A. For changing Home SID/NID pairs, select from SID/NID pair numbers 01 to 20 by pressing Up navigation key Press [edit] by pressing Menu key to change setting Press OK key to save setting.
 - B. For changing Forn SID or NID Registration, Home Sys. Registration, etc. press Up/Down navigation key to select between Yes or No. Press OK key to save setting.
- 4) Press End Key to save & exit NAM programming.

4-2 Field Debug Screen and Test Calls

- 1) Press "Menu 0, *" Enter "000000" ;
1 ; Debug Screen
2 : Test Calls:
Markov New 8K, Markov New 13K, Loop Back 8K, Loopback 13K,
TDSO Call Simple, TDSO Full
- 2) Repeat above 1) to exit Debug screen

4-3 A-Key programming via Keypad

- 1) Press "Menu 6, *" Enter SPC Code "000000" Menu (Soft key) - then you will see "Press[AKEY] to continue AKEY: " Menu ([AKEY]) Enter the 20-digit AKEY. Press "OK" Key to save value.

4-4 Channel Preset mode

- 1) Press "4 7 * 6 8 # 1 3 5 8 0" in idle mode **001 021** and then:
 for PRL based system selection enter **00000** and save(OK key).
 for AMPS ; **10000** for System A, **10001** for System B
 for 800MHz CDMA ; **2XXXX** (XXXX is CDMA channel number)
 for 1.9GHz CDMA ; **3XXXX** (XXXX is PCS Channel number)
- 2) Press OK or "* Shift" key to save mode/channel value.
- 3) When "Saved" displays briefly, press **002** to exit test mode programming

4-5 MRU Table Review and Reset

You can review upto 12 system and channel information from the MRU Table, or reset the entire MRU table as follows:

- 1) Press "4 7 * 6 8 # 1 3 5 8 0" in idle mode **001 031 (MRU2 TABLE)**, then:
 "MRU00: yzxxxx" where "y" is Mode definition(1; Analog, 2:Digital),
 "z" is Band Class (0; 800MHz, 1; 1.9GHz), and
 "xxxx" is Channel number, or A or B band for AMPS.
 "MRU00" to "MRU11", total of 12 MRU entries available.
 Ex) for CDMA 800MHz Channel 384 in 4th MRU entry order:
 "MRU03: 200384" will display.
 Ex) for PCS 1.9GHz Channel 150 in 7th MRU entry order:
 "MRU06: 210150" will display.
 Ex) for AMPS A-band in 1st MRU entry order: "MRU00: 100000" will display.
 for AMPS B-band in 2nd entry order: "MRU01: 100001" will display.
- 2) To toggle up and down the MRU entry numbers from 00 to 11, press Up or Down navigation key.
- 3) To reset entire MRU table (00 to 11), enter "000000" at "MRU00:" setting, then press OK or "* Shift" key.
- 4) When "Saved" displays briefly, press **002** to exit test mode programming

4-6 Using DM Data (over-the-air messaging)

- 1) Press "Menu, 0, *" in idle mode Enter SPC Code "000000" Press "5" Port Map.
- 2) Select "U1:DM&DL, U2:NULL" for Samsung DM, or "U1:QC_DM, U2:NULL" for Qualcomm DM.
- 3) If "U1:QC_DM, U2:NULL" is selected, the Qualcomm DM COM port must be set to COM1 and Baud rate to 38400.
 (Note) U1: UART 1, U2: UART 2
 DM& DL : DM and Download Mode
 (Please set this mode when you take a logging.)
 DS & HF : Handsfree Mode
 QC_DM : Qualcomm DM Mode

4-7 Making Markov Test Calls

- 1) Originate a desired phone number in normal idle mode to create an outgoing call list.
- 2) Press "Menu 0, *" Enter SPC Code "000000" Press "2"
- 3) Make a Markov Call by selecting "Markov New 13k".
- 4) The MS will originate the Markov call using the first entry in the outgoing call list.
- 5) If the outgoing call list is empty(no outgoing call made), the MS will originate to a default number of '1234567'.

4-8 Fax & Data Calls:

- 1) Press "Menu 8, 7" in idle mode
- 2) Toggle among "Data/Fax Off", "Fax for Next Call", "Fax until Powered Off", "Modem for Next Call", "Modem until Powered Off" using Navigation Up/Down Key.
- 3) If "Fax/Data Off" is selected, phone will display "No incoming data/fax calls can be received".
- 4) If "Fax for Next Call" is selected, phone will display "Waiting for fax call (no voice) for 10min".
- 5) If "Fax until Powered Off" is selected, phone will display "No incoming voice calls can be received".
- 6) If "Modem for Next Call" is selected, phone will display "Waiting for data call (no voice) for 10min".
- 7) If "Modem until Powered Off" is selected, phone will display "No incoming voice calls can be received".

- 8) Text notification of “*Data Only*” or “*Fax Only*” will be displayed.
- 9) Outgoing Fax/Data Calls: Using a computing device application software, originate calls in any state in idle mode. (For details, refer to the Draft User Manual enclosed)

4-9 8K/13K Mobile Originated SMS

- 1) Set Vocoder Rate(8K EVRC, 13K) via NAM Programming
Enter [Menu], 9, *, “000000”, “4: Voice SO “
Then Choose desired vocoder rate from “Default”, “EVRC Call”, and “13k Call”.
Press OK key to save setting, then press END key to exit.
- 2) In idle mode, press “OK” Key to select from “1: New Messages”, “2: Voice”, “3: Text Inbox”, or “4: Text Outbox”.
- 3) Select “1: New Messages” for Mobile Originated SMS messaging.
- 4) Press Destination mobile number or e-mail address thru the keypad then press OK key.
- 5) Enter text message at “2:Message” then press OK key to store. Press Menu key to select from ABC, Number, T-9 Word, or Symbol mode.
- 6) Enter Call back number at “3:Call Back” then press OK key to store.
- 7) At “4: Options”, scroll using Up/Down navigation key, and select from options using Left/Right navigation key for the “Priority” level, “Validity” Period, “Send Later” option, “Delivery Ack” On or Off, or “Save Message” option.
- 8) At “5: Action”, press SEND key to transmit message, OK key to save message to Filed folder (**not implemented yet**), “C” key to cancel MO messaging, or END key to quit.
- 9) If Save Message is set to “Auto Save”, the sent message is stored in the Txt Outbox.

4-10 Voice Privacy

- 1) In idle mode, press “Menu, 0” Enter “WXYZ” (where WXYZ is the last 4 digits of the MIN number) Press “8” (Voice Privacy) Select from “**standard**” or “**enhanced**” using the Up/Down navigation key down then press OK key to save value.
- 2) In conversation mode, press “Menu, 8”
Select from “**standard**” or “**enhanced**” using the Up/Down navigation key down then press OK key to save value.

4-11 Phone.com Browser IP Address & Port, Linger Timer Setting

1) IP Address

- Press "Menu, 3, 0" Enter "WXYZ" (where WXYZ is the last 4 digits of the MIN#)
- Press "1: Gateway", then select "1: Address" for IP Address setting change. Select from Address 1, 2, or 3, then scroll between IP "A", "B", or "C" using navigation key.
- Press OK key to access IP "A", "B", or "C", enter new IP setting, then press OK key to store.

2) Port

- Press "Menu, 3, 0" Enter "WXYZ" (where WXYZ is the last 4 digits of the MIN#)
- Press "1: Gateway", then select "2: Port" for port number setting change. Select from Port 1, 2, or 3 for IP Address 1, 2, or 3, then select from Port A, Port B, or Port C.
- Press OK key to access Port A, B, or C, enter new Port number, then press OK key to store.

3) Linger Timer

- Press "Menu, 3, 0" Enter "WXYZ" (where WXYZ is the last 4 digits of the MIN#)
- Press "2: LingerTime", then press [OK/Message] once.
- Enter the Default Linger Timer value ranging from 0 to 180 seconds, then press [OK/Message] to save setting.

4-12 Auto Answer

1) Press "Menu, 8, 2" for Auto Answer.

2) Toggle using the navigation keys between, Off, after 1 ring, after 3 rings, and after 5 rings.

3) Press [OK/Message] to save setting. The mobile will automatically answer the incoming call after the preset number of ring tones. (Useful feature for automatic equipment testing)

5. Product Support Tools

5-1 General

IMPORTANT INFORMATION

Purpose

The Product Support Tool (PST) offers you the ability to interface with the SAMSUNG DBDM telephone using a PC. With this tool you can program the phones network system requirements and functionality, swap phone data, and download software upgrades. This document supports UniPST version x.xx.

NOTE: This software must be executed in the Windows95/98 mode.

EQUIPMENT REQUIRED

Make sure you have the following equipment setup:

1. Minimum PC configuration: 586 CPU, 16MB RAM, Windows95/98, 5MB of disk space free for software upgrade.
2. PST Software with appropriate cable (DM Cable for SAMSUNG DBDM phone).
3. Serial Port (16550 Serial Interface Card).
4. Power Supply (3.8 V) or Battery.

INSTALLATION

Software

1. Insert the PST floppy disk into drive (A:\).
2. Create an appropriate directory on the C:\ drive for PST software, Execute Setup.exe file, The installation program creates folder and task bar on the windows95/98 start bar.

SAMSUNG DBDM Phone

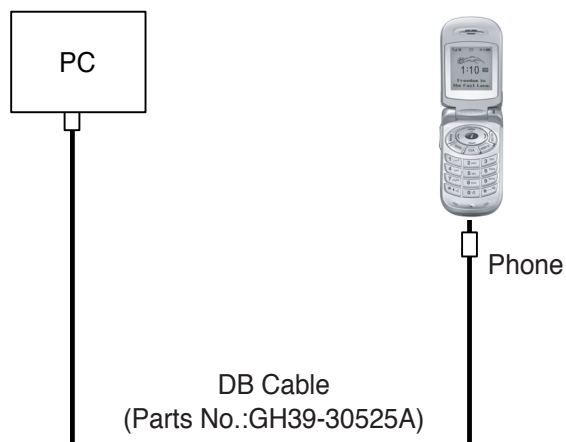
The serial port should be configured to COM1 or COM2.

Use the following procedure to connect the phone, cable, and PC .

Plug the female end of the DM Cable into the 16550 card.

Pull the black rubber connector away from the socket at the base of the phone.

Plug the special connector on the cable into the socket at the base of the phone.



5-2. PST (Product Support Tool)

5-2-1 Getting Started

MAIN MENU SCREEN

1. At the Windows95/98, Double Click "UniPst.exe".
2. The Main Menu Screen will be displayed.
The Main Menu Screen shows the basic tasks that are available.

CAUTION: DO NOT attempt to program phone with a low battery.

PST SETUP

UniPst supports SAMSUNG DBDM portable telephone. You can select serial port COM1 or COM2.

5-2-2 Operation Procedure

Service Programming

The Service Programming screens enable you to set and change the service activation parameters of the phones. These items can be changed individually or as a group via the "Edit Items" Property Sheet of the PST. There are several pages on the Service Programming Property Sheet (See below Figure).

Read Data from File

Click "open" icon to select the name of a file whose extension is "mmc". The values will be read from the named file, and will initialize the parameter values seen on the Service programming screen

Read Data from Phone

Click Read from the Phone icon to upload the current programmable parameters of the phone. The values are read from the phone, so the phone must have the power ON and be properly connected to the PST.

NOTE: To actually view the data you need to go to the Edit Items screens.

Edit Items

Click this icon to edit Number Assignment Module (NAM) items or UI items.

There are two types of screens:

1. Parameters associated with a particular Number Assignment Module (NAM)
2. UI items settings

Phone Book

Click this icon to edit Phone Book.

While you edit cell, you can use <Enter> and <UP, DOWN, LEFT, RIGHT Arrow> and <SPACE> key. If you want to edit phone number or name, you must move rectangle box to cell where you want to edit, Write it down. If <UP and DOWN Arrow> key is pressed, the cursor moves to next cell or previous cell.

Save Data to File

Click this icon to save the current parameters to a file. Once you enter a filename, Click <OK> button to write all current parameters to that file. This way the same information can be downloaded into multiple phones.

Write to Phone

Click this icon to write the selected parameter values to the phone. Writing the selected values to the phone may take up to a minute.

If there are dependencies in a field you can make all the changes in the proper fields and download the information all together.

If you intend to use this "Write to Phone" feature, it is recommended that you do a "Read Data from Phone" first, and then make the changes, so that nothing gets inadvertently overwritten.

NOTE: DO NOT TOUCH THE PHONE WHILE WRITING IS IN PROGRESS.

Software Download and Upgrade Screen

To begin a software upgrade or download, perform the following steps:

1. From the main menu screen choose DOWNLOAD MODE?
Click open icon to choose a BIN file of the new software to be loaded. Choose the appropriate BIN file, then Click <Open> (see below figure).
2. Click Download? to begin downloading the file. You will notice various messages and a progress bar that informs the user what percentage of the downloading has already occurred.
3. Click Mode Select box, then Select SERVICE MODE?to return to the Service Mode Screen.

NOTE: DO NOT POWER OFF WHILE THE PHONE IS BEING DOWNLOADED!

6. Circuit Description

6-1 Logic Section

6-1-1 Power Supply

To power on the phone, Pressing the PWR key with the battery installed will short the V_BAT and ON_SW signal. The V_DC, which is connected with V_BAT, will be turned on simultaneously, The V_PD and V_IF LDOs outputs of Regulator(U201, U322) are turned on assuming V_BAT is greater than 2.85V.

Pressing the PWR key() of the keypad for a few seconds, The V_BAT voltage is applied to the ON_SW, the ON_SW signal will transition high when the PWR_HOLD signal is high.

The low state ONO\signal will be detected by the MSM, when PWR_HOLD signal is high, to set the PWR_HOLD signal low and power off the phone.

Once the PWR_HOLD signal is low all the LDOs output of the Regulator(U201, U322) will be powered off after typically 60ms delay and all the logic of the PMIC will be reset to the shutdown condition.

The V_PD output voltage of Regulator(U201) is connected with V_MEM(used in memory), V_LCD(used in LCD), V_MSMD(used in the digital parts of MSM).

6-1-2 Inner Charging Circuit Part

The most important function of the charger shall be done in the LTC1734(U240).

When the phone attached a battery is connected with travel charging adapter, the inner charging circuit of the LTC1734(U240) will charge by the constant fast charge current.

When battery reaches regulation voltage of 4.2V (default charging voltage for Li+mode), the charge current drops quickly to 0mA by the programmed data of the LTC1734 controlled from the MSM.

-Input voltage range : 4.75~8V

-Charging Temperature : 0°C~40°C

-Charging Method : Constant Voltage/Current

-Charging Current : Max 550mA

-Charging Time : Standard (550mAh) 1.5 ~ 2 Hrs
Extended (900mAh) 3 ~ 3.5 Hrs

-Charging Mode : 1. Charging - RED Lamp
2. Completion -GREEN Lamp

-Charging Battery Regulation Voltage

1. Min 4.158V, Typical 4.2V, Max 4.242V
(at T_A : 0°C to +85°C)

2. Min 4.137V, Typical 4.2V, Max 4.263V
(at T_A : -40°C to +85°C)

-Over Battery Protection Voltage : Typical 5.2V

Universal Serial Bus Interface(U250)

SCH-A310 supports a Universal Serial Bus(USB) interface, by the MSM 5100, to provide an efficient interconnection between the mobile phone and a Personal Computer(PC).

The MSM 5100's USB interface is designed to comply with the Universal Serial Bus Specification, Revision 1.1.

The USB interface of SCH-A310 and can be used to transfer over-the-air data, or voice PCM samples between the mobile phone and the USB host.

An external USB transceiver(U250) and 48MHz crystal oscillator(OSC110) are required to implement the USB interface.

6-1-3 Logic Part

The logic part consists of MSM, FROM, SRAM, EEPROM, LCD and other input and output peripherals.

MOBILE SYSTEM MODEM(U100:MSM5100)

The MSM5100 is designed to the IS-2000 standard and enables up to a doubling of overall IS-95A/B voice capacity and new, higher-data rate services. The MSM5100 can support 153.6 kilobits per second(kbps), providing manufacturers worldwide ability to develop consumer products that provide voice, high-speed data and video over wireless networks. The MSM5100 chipset and system software can support the phase1 1st MC of the 3G CDMA Multi Carrier IS-2000 standard, Release 0.

The MSM5100 device is available in the same 208-pin FBGA production package allowing significant reuse of existing MSM3100 chipset designs. The MSM5100 integrates functions that support a tri-mode CDMA/FM subscriber unit. Subsystems within the MSM5100 device include a CDMA processor, a Digital FM(DFM) processor, a QDSP for voice compression, an ARM7TDMI microprocessor. Also integrated in the MSM5100 device are analog functions such as an audio voice codec, PLL, transmit DACS, ADCS, memories, USB controller, peripheral interfaces, and an enhanced clock. It is one of the most important components of the CDMA cellular phone. The interface circuitry consists of reset circuit, address bus (A0-A21), data bus(D0-D15), and memory controls. The TCXO clock of 19.68Mhz is used as the clock of SCH-A310 model.

FLASH ROM AND STATIC RAM (U120)

One 32MBIT Flash ROMs and 8MBIT Flash ROM(U120) is used to store the cellular phone's executable program and necessary data files and a temporary data space to store the internal flag informations, call processing data, timer data, and other temporary data.

EEPROM(U190)

A 256KBIT EEPROM(U190) is used to store ESN, NAM information, telephone directory, SMS messages and other important information of the phone.

KEYPAD

A key pad is used for the user interface function. For key recognition, key matrix is operated by using signals SCAN0-5 and KEY0-3 of the MSM.

LCD MODULE

The LCD module is a 128 X 128 dots graphic LCD with one line of ICONS. Watch LCD is a 96 X 32 dots graphic LCD. The LCD contains a controller which will display the information by 8-bit data from the MSM. An external backlight circuitry is used for easy operation in the dark.

6-1-4 RF Interface Part

CDMA, FM DATA INTERFACE

- I_OUT, I_OUT_N, Q_OUT, Q_OUT_N: TX analog signal used during both CDMA and FM mode.
- C_RX_IDATA0-3 and C_RX_QDATA0-3: RX data bus used during CDMA mode.
- FM_RX_IDATA and FM_RX_QDATA: RX data bus used during FM mode.

CLOCK

TCXO_CLK: Reference clock used for generation of CHIPX8. OSC141 : 32.768KHz sleep crystal. Clock used during SLEEP.

ADC INTERFACE

Eight HK ADC are internally placed in the MSM. These ADCs are used to read battery voltage, battery type and temperature.

RF INTERFACE

TX: TX_AGC_ADJ port is used to control the TX power level and PA_ON signal is used to control the power amplifier.
RX: RX_AGC_ADJ port is used to control the RX gain and TRK_LO_ADJ is used to compensate the TCXO module.

6-1-5 Audio Part

Internal CODEC in the MSM contains software controlled amplifier for both the receiving and transmitting sections. Also, the vocoding schemes used will be 13kbps QCELP or 8K EVRC. Both QCELP and EVRC vocoding are performed by the MSM.

DIGITAL FM BLOCK

The digital FM processor is included in the Mobile Station Modem(MSM) and brief descriptions of each block are as follows :

FM TRANSMIT PROCESSOR

Pre-Emphasis Circuit

This part features +6dB/oct to reduce signal loss and noise in Tx path.

Compressor

The compressor features 2:1 level compressor to reduce signal loss and noise in Tx path. The zero crossing level of the compressor is ± 2.9 kHz/dev, attack time is 3mS, and release time is 13.5mS.

Limiter

The limiter performs to cut ± 0.53 Vp-p or higher audio signal level so that the FM frequency deviation is not over ± 12 kHz/dev. The function is used to avoid confusion over phone line. LPF is used to reduce a specific high frequency of limited signal.

FM RECEIVE AUDIO PATH

De-Emphasis Circuit

This part features -6dB/oct filter to reduce signal loss and noise in Rx path.

Expander

The expander features 1:2 level increaser to reduce signal loss and noise in Rx path. The zero crossing level of the compressor is ± 2.9 kHz/dev, attack time is 3 mS, and release time is 13.5 mS.

6-1-6 TX WBD, ST, and SAT

The WBD and ST are generated by the MSM but the SAT is transponded by the MSM. The modulation level of TX WBD and ST is ± 8 kHz/dev, and SAT is ± 2 kHz/dev.

6-1-7 ALERT TONE GENERATION

A buzzer is a component which converts signals to audio alert tones. The internal buzzer generator in the MSM will generate PWM signal which will drive transistors(Q251) to generate the tones. The volume of the alert tone is controlled by the width of PWM and the different periods.

6-2 PCS Section

6-2-1 Receiver

LOW NOISE AMPLIFIER & DOWN CONVERTER (U300)

U300 includes LNA and Down Converter and supports Quad_mode CDMA & AMPS,GPS,PCS. The low noise amplifier featuring 1.8dB Noise Figure and 18dB gain amplifies a weak signal received from the base station to obtain the optimum signal level. The Gps RF signal is downconverted from 1575.42 MHz to the common receive IF of 183.6 MHz .Its LO is generated by a dual-band VCO and PLL circuit whose other narrowband tuning range supports both PCS and Cellialr operation.

RF BAND PASS FILTER (F300,F302,F305)

The RF BPF accepts only a specific frequency (869.04~893.97MHz,1930~1990MHz,1575.42MHz)) from the signal received from the mobile station.

IF SAW BAND PASS FILTER FOR CDMA,FM (F304,F301)

IF SAW BPF is used for CDMA system having 1.23 MHz wide band and ± 630 kHz band width. The filter also eliminates the image product generated at the mixer.F301 is IF saw band psaa filter for FM

VOLTAGE CONTROLLED OSCILLATOR(U382)

A dual-band VCO generates 1391.82MHz LO and PLL circuit whose other narrowband tuning range supports both PCS and Cellialr operation.

PHASE LOCKED LOOP (U340)

Input reference frequency is generated at VCTCXO (U380) and the divided signal is generated at VCO. The PLL compares the two signals and generates the desired signal with a pre-programmed counter which controls voltage.

VOLTAGE CONTROLLED TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR (U390)

It provides 19.68Hz reference frequency to PLL (U340), RFT3100(U400), and IFR3300(U300). A correct frequency tuning is made by the voltage control.

6-2-2 Transmitter

RFT3100 (U400)

The RFT3100 contains Up converter, Automatic gain control amplifier(AGC),and Driver Amplifier. RFT3100 accepts analog data signal, so there is no need for additional Modulation Circuit. Up Converter and Driver Amplifier's gain are controlled through the Serial Bus Interface(SBI).

RF BAND PASS FILTER (F441)

RF BPF accepts only a specific frequency (1850~1910MHz)from the signal received from the RFT3100.

POWER AMP MODULE (U441)

Power amp module amplifies RF signal and send it to base station through the antenna.

ISOLATOR (U441)

Isolator is used to reduce a reflected signal to protect the power amp module from being damaged.

DUPLEXER (F440)

Duplexer controls to transmit through the antenna only the signals within acceptable TX frequency range ($1880\pm 30\text{MHz}$) and to receive through the antenna only the signals within acceptable RX frequency range ($1960\pm 30\text{MHz}$).

It also matches LNA input in receiving part and Power Amplifier output in transmitter part with the antenna.

6-3 CDMA Section

6-3-1 Receiver

LOW NOISE AMPLIFIER & DOWN CONVERTER (U300)

U300 includes LNA and Down Converter and supports Tri_mode CDMA & AMPS LNA/DOWN Converter.

The low noise amplifier featuring 1.4dB Noise Figure and 15.7dB gain amplifies a weak signal received from the base station to obtain the optimum signal level.

First local signal is applied to this down converter. The down converter transfers the signal amplified at the LNA into 183.6 MHz IF signal. 183.6MHz IF signal is made by subtracting 881.5 ± 12.5 MHz RF signal from 1065.1 ± 12.5 MHz first local signal.

IF AUTOMATIC GAIN CONTROLLER(AGC) AMP

183.6MHz IF signal is applied to IF AGC amplifier(in IFR3000), AGC output level is applied to next stage in IFR3000.. The AGC amp keeps the signal at a constant level by controlling the gain. Dynamic range is 90 dB, and its control voltage varies from 0.2V to 2.5V.

RF BAND PASS FILTER (F300)

The RF BPF passes only a specific frequency (881.49 ± 12.5 MHz) from the mobile station. The width is 25 MHz.

IF SAW BAND PASS FILTER (F304)

If SAW BPF is used for CDMA system having 1.23MHz wide band. The filter also eliminates the image product generated at the mixer.

VOLTAGE CONTROLLED OSCILATOR(U382)

A dual-band VCO generates 1391.82MHz LO and PLL circuit whose other narrowband tuning range supports both PCS and Cellialr operation.

PHASE LOCKED LOOP(PLL) (U340)

Input reference frequency is generated at VCTCXO (U380) and the divided signal is generated at VCO. The PLL compares the two signals and generates the desired signal with a pre-programmed counter which controls voltage.

VOLTAGE CONTROLLED TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR (U390)

It provides 19.68Hz reference frequency to PLL (U340), RFT3100(U400), and IFR3300(U300).

A correct frequency tuning is made by the voltage control.

6-3-2 Transmitter

RFT3100 (U400)

The RFT3100 contains Up converter, Automatic gain control amplifier(AGC),and Driver Amplifier.

RFT3100 accepts analog data signal, so there is no need for additional Modulation Circuit.

Up Converter and Driver Amplifier's gain are controlled through the Serial Bus Interface(SBI).

RF BANDPASS FILTER(F300)

The Bandpass Filter(BPF) accepts only a specific frequency(836 ± 12.5 MHz) to send it to next RF stage. The band width is 25MHz.

POWER AMP MODULE (U444)

Power amp module amplifies RF signal and send it to base station through the antenna.

ISOLATOR (F445)

Isolator is used to reduce a reflected signal to protect the power amp module from being damaged.

DUPLEXER(F446)

Duplexer allows Rx frequency range(881.49 ± 12.5 MHz) and Tx frequency range(836.03 ± 12.5 MHz) from the antenna to pass through LNA. It also matches LNA input in receiving part and Power Amplifier output in transmitter part with the antenna.

6-4 AMPS Section

6-4-1 Receiver

LOW NOISE AMPLIFIER & DOWN CONVERTER (U300)

U300 includes LNA and Down Converter and supports Tri_mode CDMA & AMPS LNA/DOWN Converter.

The low noise amplifier featuring 1.4dB Noise Figure and 15.7dB gain amplifies a weak signal received from the base station to obtain the optimum signal level.

First local signal is applied to this down converter.

The down converter transfers the signal amplified at the LNA into 183.6 MHz IF signal. 183.6MHz IF signal is made by subtracting 881.5 ± 12.5 MHz RF signal from 1065.1 ± 12.5 MHz first local signal.

IF AUTOMATIC GAIN CONTROLLER(AGC) AMP

183.6MHz IF signal is applied to IF AGC amplifier(in IFR3000), AGC output level is applied to next stage in IFR3000. The AGC amp keeps the signal at a constant level by controlling the gain. Dynamic range is 90 dB, and its control voltage varies from 0.2V to 2.5V.

RF BAND PASS FILTER (F300)

The RF BPF passes only a specific frequency (881.49 ± 12.5 MHz) from the mobile station. The width is 25 MHz.

IF SAW BAND PASS FILTER (F301)

If SAW BPF is used for AMPS system having 30KHz narrow band. The filter also eliminates the image product generated at the mixer.

VOLTAGE CONTROLLED OSCILLATOR(U382)

A dual-band VCO generates 1391.82MHz LO and PLL circuit whose other narrowband tuning range supports both PCS and Cellular operation.

PHASE LOCKED LOOP(PLL) (U340)

Input reference frequency is generated at VCTCXO (U380) and the divided signal is generated at VCO. The PLL compares the two signals and generates the desired signal with a pre-programmed counter which controls voltage.

VOLTAGE CONTROLLED TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR (U390)

It provides 19.68Hz reference frequency to PLL (U340), RFT3100(U400), and IFR3300(U300).

A correct frequency tuning is made by the voltage control.

6-4-2 Transmitter

VOLTAGE CONTROLLED TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR(U390)

It provides 19.2MHz reference frequency to PLL(U370), RFT3100(U400), and IFR3000(U340).

A correct frequency tuning is made by the voltage control.

DUPLEXER

Duplexer(F446) allows Rx frequency range(881.49 ± 12.5 MHz) and Tx frequency range(836.49 ± 12.5 MHz) from the antenna to pass through LNA. It also matches LNA input in receiving part and Power Amplifier output in transmitter part with the antenna.

6-5 Test Command Table

To change the phone from normal mode to test mode, you should enter the following keys :
Press [4 7 * 6 8 # 1 3 5 8 0]

Command No. (OP, AB, RB)	Command SW Name	Description
001 (1F,0,0)	T_SUSPEND_I	Enter to test menu
002 (3F,0,0)	T_RESTART_I	Escape from test menu
003 (FD,0,0)	T_SAVE_VAL_I	Save values in e2prom only in auto test
004 (1D,0,1)	T_GET_MODE_I	Get mode CDMA/FM AUTO TEST
005 (1C,2,0)	T_SET_MODE_I	Set mode CDMA/FM AUTO TEST
006 (1E,0,0)	T_WRITE_NV_I	Write the EEPROM item
007 (81,0,0)	T_CARRIERON_I	Turn on the carrier
008 (82,0,0)	T_CARRIEROFF_I	Turn on the carrier
009 (83,4,0)	T_LOADSYN_I	Load the synthesizer for locking
010 (84,1,0)	T_PWRLEVEL_I	Change RF power level
011 (85,0,0)	T_RXMUTE_I	Mute rx audio
012 (86,0,0)	T_RXUNMUTE_I	Unmute rx audio
013 (87,0,0)	T_TXMUTE_I	Mute tx audio
014 (88,0,0)	T_TXUNMUTE_I	Unmute tx audio
016 (8F,0,0)	T_STON_I	Turn on ST
017 (90,0,0)	T_STOFF_I	Turn off ST
018 (92,2,0)	T_LCD_CONTRAST_I	LCD contrast ADJ
019 (9B,2,0)	T_FM_AGC_MIN_ADJ_I	ADJ FM AGC MIN
020 (9E,3,0)	T_LNA_GAIN_WR_I	Write LNA gain for IMD test
021 (94,5,0)	T_TEST_SYS_I	Set TEST_SYS
022 (91,96,96)	T_SNDNAM_I	Send NAM Information
023 (95,32,32)	T_SNDVERSION_I	Send Software Version
024 (9F,7,8)	T_SNDESN_I	Send ESN
025 (99,0,0)	T_BACKLIGHT_ON_I	Backlight on
026 (1A,0,0)	T_BACKLIGHT_OFF_I	Backlight off

Command No. (OP, AB, RB)	Command SW Name	Description
027 (96,0,0)	T_LAMP_ON_I	LAMP on
028 (97,0,0)	T_LAMP_OFF_I	LAMP off
029 (9A,0,0)	T_REBUILD_I	Rebuilding EEPROM
031 (B7,6,0)	T_MRU2_TABLE_I	MRU reset
032 (A0,1,0)	T_SATON_I	Turn on SAT
033 (A1,0,0)	T_SATOFF_I	Turn off SAT
034 (A2,0,0)	T_CDATA_I	Continuously send TX Control data
035 (A3,3,0)	T_VOLUME_UP_I	Electric Volume Up
036 (A4,3,0)	T_VOLUME_DOWN_I	Electric Volume Down
037 (A5,0,0)	T_CLR_LIFETIME_I	Clear Life Time
042 (AA,1,0)	T_DTMFON_I	Turn on DTMF
043 (AB,0,0)	T_DTMFOFF_I	Turn off DTMF
044 (B0,0,0)	T_COMPANDORON_I	Turn on compandor
046 (B2,0,0)	T_FM_VCLINE_I	Enetr FM voice state
048 (B4,0,0)	T_VIBRATOR_ON_I	Activate a vibrator
049 (B5,0,0)	T_VIBRATOR_OFF_I	Inactivate a vibrator
050 (B6,0,4)	T_BATT_TYPE_I	Battery Type
051 (B7,3,0)	T_FM_TEMPComp_I	FM Temp Compansation
052 (B8,3,0)	T_CDMA_TEMPComp_I	CDMA Temp Compansation
053 (B9,3,0)	T_PCS_TEMPComp_I	PCS Temp Compansation
054 (98,2,0)	T_CARRIER_I	Carrier selection
055 (AC,1,0)	T_SET_EXT_AUDIO_I	External Audio Path On/Off
056 (AD,0,0)	T_LOOPBACK_I	Vocoders encoder and decoder interrupt
059 (BE,0,0)	T_ALLPATH_I	Tune on the all audio path
060 (BF,4,0)	T_FM_CHAN_FLAT_I	Fm channel flatness
063 (C2,5,0)	T_TX_LIMITER_I	AMPS Tx Limiter Gain Control
064 (C3,5,0)	T_FM_SAT_LEVEL_I	AMPS Tx SAT Level Control
065 (C4,2,0)	T_FM_FREQ_SGAIN_I	AMPS Tx Master Gain Control

Command No. (OP, AB, RB)	Command SW Name	Description
066 (C5,2,0)	T_FM_ST_GAIN_I	AMPS Tx ST Gain Control
067 (C6,3,6)	T_READ_BATT_I	Saved Low battery value read
068 (C8,0,3)	T_VBATT1_I	Set the low battery position in the standby
069 (C9,0,3)	T_VBATT2_I	Set the low battery position in the talking
070 (CA,3,0)	T_WRITE_BATT_I	Write a BATT
071 (D1,3,0)	T_CDMA_TXADJ_I	Sets tx_agc_adj for cdma mode
072 (D2,3,0)	T_FM_TXADJ_I	Sets tx_agc_adj for fm mode
073 (89,0,0)	T_CLEAR_ALL_I	Clear All Statuses
074 (D4,0,2)	T_FM_AGC_MIN_AUTO_I	FM AGC MIN ADJ in AUTO
075 (D5,0,3)	T_READ_RSSI_I	Read a RSSI
076 (D6,0,3)	T_PCS_RSSI_I	Adj RXRAS in PCS
077 (D7,0,3)	T_THERM_READ_I	Read a Thermister
078 (D8,0,3)	T_RXRAS_AUTO_I	Read a Thermister
079 (EE,0,0)	T_BACKUP_CAL_DATA_I	Backup Calculated Data
080 (EF,0,0)	T_RESTORE_CAL_DATA_I	Restore Calculated Data
081 (E3,0,0)	T_VOC_PCMLPON_I	Turn on to play a PCM LOOP BACK
082 (E4,0,0)	T_VOC_PCMLPOFF_I	Turn off to play a PCM LOOP BACK
083 (E5,5,0)	T_CDMA_PWR_LIMIT_I	CDMA Tx pwr limit
084 (E6,5,0)	T_PCS_PWR_LIMIT_I	PCS Tx pwr limit
088 (EA,3,0)	T_TRK_ADJ_I	TRK LOCAL ADJUST
089 (EB,3,0)	T_CDTRK_ADJ_I	FM loop back
090 (F0,4,0)	T_PCS_TXRAS_ADJ_I	PCS TX RAS adj = TXRAS offset array
091 (F1,5,0)	T_PCS_RXRAS_ADJ_I	PCS RX RAS adj = RXRAS offset array
092 (F2,4,0)	T_TXRAS_ADJ_I	TX RAS adj = TXRAS offset array
093 (F3,5,0)	T_RXRAS_ADJ_I	TX RAS adj = TXRAS offset array
094 (F4,5,0)	T_LNARAS_ADJ_I	LNA RAS adj= LNARAS offset array
095 (F5,4,0)	T_PCS_CH_FLATNESS_I	Adjust PCS Channel Flatness
096 (F6,4,0)	T_CH_FLATNESS_I	Tx Pwr : 23dBm

Command No. (OP, AB, RB)	Command SW Name	Description
097 (F7,4,0)	T_FM_TX_PWR_I	Setting the volume for Power Level 2 - 7
098 (FB,1,0)	T_PCM_FORMAT_I	Format Pulse Code Modulation
099 (FC,3,0)	T_SND_VOC_CAL_I	Control Sound
100 (20,0,0)	T_SIO_TO_DM_I	Write NV_SIO_I

- 1) The AB (Input Argument Byte Number) values of these commands are used only in the manual test. In automatic test mode, the AB is regarded as 0.
- 2) You can assign the value for these commands. If the AB value is assigned without argument, the test is achieved with the value stored in EEPROM.
- 3) After you get a desired test value by performing these commands, if you want to save the value into EEPROM, use T-SAVE-VAL-I command to store the test value into the corresponding position.

*OP: Operation Command Number

AB: Input Argument Byte Number

RB: Return Byte Number

*SAT 32, 33 are not operating in MSM2 CHIP test

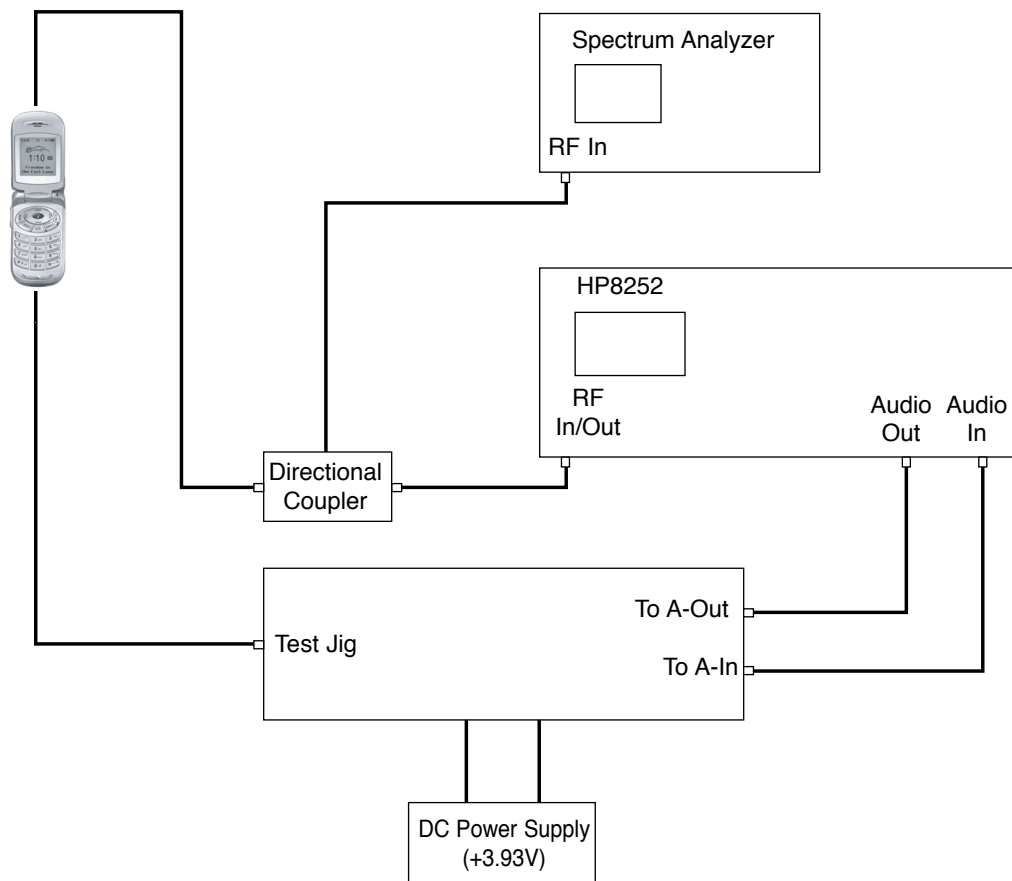
*46 command is required in Rx, and Tx path test at AMPS mode.

7. Test Procedure

7-1 List of Equipment

- DC Power Supply
- Test Jig
- Test Cable
- CDMA Mobile Station Test Set HP8285, HP8960, CMD-80, etc
- Spectrum Analyzer(include CDMA Test Mode) HP8596E

7-2 Configuration of Test



- CAUTION : The test jig and data cable has a voltage drop of 0.18V at FM Max power output, you'd better set the DC power supply to 3.93V for normal test condition. (Nominal voltage of battery is 3.75V at cellular phone)

7-3 Test Procedure

7-3-1 Change the test mode

A. To change the phone's state from Normal Mode to Test Mode, You should enter the following keys.

: Press [menu 6 #]

B. The command "021" is mode and channel change.
"10000" or "10001" : AMPS's Sytem A or Sytem B

"2 0 3 8 4"


"3 0 6 0 0"


and Push "OK" key to save.

C. The command "0 0 1" is Suspend.

D. To finish the Test Mode, You should enter the command "0 0 2".

7-3-2 Channel selection and Tx power output level control

AMPS(FM)

A. Enter to Test Mode [4 7 * 6 8 # 1 3 5 8 0]

B. The command "21" is mode and channel change
"10000" or "10001" : AMPS's Sytem A or Sytem B
and Push "OK" key to save.

C. To finish the Test Mode, You should enter the command "0 0 2".

D. Enter to test mode [4 7 * 6 8 # 1 3 5 8 0]

E. "0 0 1" : Suspend.

F. "0 4 6" : Vocoder initial to Analog mode.

G. "0 0 9 0 3 6 3 #" : Set to '0363' channel.

H. "0 0 9 7 * * #" : Output RF power level is set as power level 2

"* * #" means AGC level and AGC level range is from 0 to 255.

I. "1 0 2" : RF Power level control, 2(0~7) means power level .

J. To finish the Test Mode, you should enter the command "0 0 2".

• For AMPS Audio Test

=> To enable AMPS External Audio, you should enter the command "0 5 5" and then press the OK key

CDMA

A. Enter to Test Mode [4 7 * 6 8 # 1 3 5 8 0]

B. The command "21" is mode and channel change

"2 0 3 8 4"


Push the Navigation key to save.

C. "0 0 1" : Suspend.

D. "0 9 0 3 8 4 #" : Set to '0384' channel.

E. "0 0 7" : Carrier On.

F. "0 3 4" : Spread spectrum to 1.23MHz band width.

G. "0 0 9 2 * * #" : Adjust RF power level.
" * * #" means AGC level and AGC level range is from 000 to 511.

H. To finish the Test Mode, You should enter the command "0 0 2".

PCS

A. Enter to Test Mode [4 7 * 6 8 # 1 3 5 8 0]

B. The command "21" is mode and channel change

"3 0 6 0 0"
└─┬─┐
 └─┘ Channel number
 └─┘ Mode:CDMA

Push the Navigation key to save.

C. "0 0 1" : Suspend.

D. "0 0 9 0 0 0 0 #" : Set to '0384' channel.

E. "0 0 7" : Carrier On.

F. "0 3 4" : Spread spectrum to 1.23MHz band width.

G. "0 0 9 2 * * *" : Adjust RF power level.
" * * *" means AGC level and AGC
level range is from 000 to 511.

H. To finish the Test Mode, You should enter the
command "0 0 2".

7-4 AMPS(FM)

TEST ITEMS	PROCEDURE														
1. PREPARATION	Set test equipments up. "4 7 * 6 8 # 1 3 5 8 0" : Enter the Test Mode "0 0 1" : Suspend "0 0 4" : Current Mode Check Confirm that the phone is in the "AMPS Mode". (If not AMPS Mode, Use Test Command "21", "10000" or "10001" and Enter "0 0 2" to restart) "0 4 6" : Initialize Vocoder in Analog mode If a wrong key would be selected, press "#", and then enter new command. To exit the Test Mode at any time, just press "0 0 2". "0 5 5" : To enable AMPS External Audio, You should enter the command "0 5 5" and then press the OK key														
2. RF POWER	"0 0 1" : Suspend. "0 4 6" : Initialize Vocoder in Analog mode. "0 0 9 0 3 6 3 #" : Set channel to 363. "1 0 2" : RF Power level selection, "2" means one of the power levels (0~7). Measurement of the Power Output Levels <table> <tr> <th>Level</th><th>RF Power</th></tr> <tr> <td>0 ~ 2</td><td>+ 27 dBm +0.22/-3 dB</td></tr> <tr> <td>3</td><td>+ 24 dBm +2/-4 dB</td></tr> <tr> <td>4</td><td>+ 20 dBm +2/-4 dB</td></tr> <tr> <td>5</td><td>+ 16 dBm +2/-4 dB</td></tr> <tr> <td>6</td><td>+ 12 dBm +2/-4 dB</td></tr> <tr> <td>7</td><td>+ 8 dBm +2/-4 dB</td></tr> </table> Note 1 : In case of using the antenna cable, compensation for the cable loss should be added (about 1.4dB for AMPS/CDMA). Note 2 : To prevent phones from being damaged, they must be measured only by calibrated test equipments. Warning ! Adjustments without calibrated equipments can cause phones to be heated excessively and would void the warranty.	Level	RF Power	0 ~ 2	+ 27 dBm +0.22/-3 dB	3	+ 24 dBm +2/-4 dB	4	+ 20 dBm +2/-4 dB	5	+ 16 dBm +2/-4 dB	6	+ 12 dBm +2/-4 dB	7	+ 8 dBm +2/-4 dB
Level	RF Power														
0 ~ 2	+ 27 dBm +0.22/-3 dB														
3	+ 24 dBm +2/-4 dB														
4	+ 20 dBm +2/-4 dB														
5	+ 16 dBm +2/-4 dB														
6	+ 12 dBm +2/-4 dB														
7	+ 8 dBm +2/-4 dB														

TEST ITEMS	PROCEDURE
3. TX FREQUENCY	"0 0 1" : Suspend. "0 4 6" : Initialize Vocoder in Analog mode. "0 0 9 0 <u>3</u> <u>6</u> <u>3</u> #" : Set channel to 363. Measure the TX frequency : 835.89 MHz$\pm$2.5ppm.
4. VOICE DEVIATION	"0 0 1" : Suspend. "0 4 6" : Initialize Vocoder in Analog mode. "0 0 9 0 3 6 3 #" : Set channel to 363. "0 1 4" : TX Audio unmute. Set the audio generator output to 1kHz, 1.0Vrms. Measure the Tx voice deviation by using the HPF of 20Hz and the LPF of 99kHz (spec : less than $\pm$12kHz).
5. ST DEVIATION	"0 0 1" : Suspend. "0 4 6" : Initialize Vocoder in Analog mode. "0 0 9 0 <u>3</u> <u>6</u> <u>3</u> #" : Set channel to 363. "0 1 6" : ST on. Measure the Tx ST deviation by using the HPF of 50Hz (spec : 8kHz$\pm$10%). "0 1 7" : ST off.

TEST ITEMS	PROCEDURE
6. SAT DEVIATION	"0 0 1" : Suspend. "0 4 6" : Initialize Vocoder in Analog mode. "0 0 9 0 3 6 3 #" : Set channel to 363. "0 3 2" : SAT on. Set the equipment as following. RF frequency : 880.89MHz Input RF level : -80dBm Modulation frequency : 6kHz Frequency deviation : 2kHz Measure the Tx SAT deviation by using the HPF of 50Hz and the LPF of 6kHz (spec : 2kHz±10%). "0 3 3" : SAT off.
7. WBD DEVIATION	"0 0 1" : Suspend. "0 4 6" : Initialize Vocoder in Analog mode. "0 0 9 0 3 6 3 #" : Set channel to 363. "0 3 4" : WBD on. Measure the WBD deviation by using the HPF of 50Hz and the LPF of 20kHz (spec : 8kHz±10%).
8. RX AUDIO	"0 0 1" : Suspend. "0 4 6" : Initialize Vocoder in Analog mode. "0 0 9 0 3 6 3 #" : Set channel to 363. "0 1 2" : RX Audio unmute. Set the equipment as following. RF frequency : 880.89MHz Input RF level : -80dBm Modulation frequency : 1kHz Frequency deviation : ±8kHz Measure audio AC level.

7-5 CDMA

TEST ITEMS	PROCEDURE
1. PREPARATION	Set test equipments up. "4 7 * 6 8 # 1 3 5 8 0 " : Enter the Test Mode "0 0 1" : Suspend "0 0 4" : Current Mode Check Confirm that the phone is in the "CDMA Mode". (If not CDMA Mode, Use Test Command "21""2XXXX" and press the OK key and enter "0 2" to restart) If you select a wrong key, press "#", then enter new command. To exit the Test Mode at any time, just press [0 2].
2. FREQUENCY ACCURACY	"0 0 1" : Suspend. "0 0 9 0 3 8 4 #" : Set channel to 384. "0 0 7" : Carrier On. "0 3 4" : Spread spectrum. "0 7 1 3 6 0 #" : Set AGC level. Measure the TX frequency : 835.89MHz±300Hz.
3. OCCUPIED CDMA BANDWIDTH	"0 0 1" : Suspend. "0 0 9 0 3 8 4 #" : Set channel to 384. "0 0 7" : Carrier On. "0 3 4" : Spread spectrum. "0 7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power. Measure the bandwidth (spec: 1.23MHz).

TEST ITEMS	PROCEDURE
4. LIMITATIONS ON EMISSIONS	"0 0 1" : Suspend. "0 0 9 0 3 8 4 #" : Set channel to 384. "0 0 7" : Carrier On. "0 3 4" : Spread spectrum. "0 7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power. Measure the spurious at $F_c \pm 900\text{kHz}$, $F_c \pm 1.98\text{MHz}$, $2F_c$, $3F_c$, $1/2F_c$. spec: $F_c \pm 900\text{kHz}$ below 42dBc/30kHz $F_c \pm 1.98\text{MHz}$ below 54dBc/30kHz Outside Receive Band $43+10\log(PY)$ PY: Mean Output Power in watts
5. GATED POWER & TIME	Set the service option 9. Set the data rate Eighth (1200bps). Registering: HHP -> HP8924C. Call : HP8924C -> HHP. Measure the Gated Power & Time. spec : Gated Power - at least 20dB Gated Time - Rising Time : below 6μs Falling Time : below 6μs Burst Time : below 1.25ms

7-6 PCS

TEST ITEMS	PROCEDURE
1. PREPARATION	Set test equipments up. "4 7 * 6 8 # 1 3 5 8 0 " : Enter the Test Mode "0 0 1" : Suspend "0 0 4" : Current Mode Check Confirm that the phone is in the "PCS Mode". (If not PCS Mode, Use Test Command "21""3XXXX" and Push the Navigation Key to "OK", and enter "0 2" to restart) If you select a wrong key, press "#", then enter new command. To exit the Test Mode at any time, just press [0 2].
2. FREQUENCY ACCURACY	"0 0 1" : Suspend. "0 0 9 0 6 0 0 #" : Set channel to 600. "0 0 7" : Carrier On. "0 3 4" : Spread spectrum. "0 7 1 3 6 0 #" : Set AGC level. Measure the TX frequency : 1880.00MHz±300Hz.
3. OCCUPIED CDMA BANDWIDTH	"0 1" : Suspend. "0 9 0 6 0 0 #" : Set channel to 600. "0 0 7" : Carrier On. "0 3 4" : Spread spectrum. "7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power. Measure the bandwidth (spec: 1.23MHz).

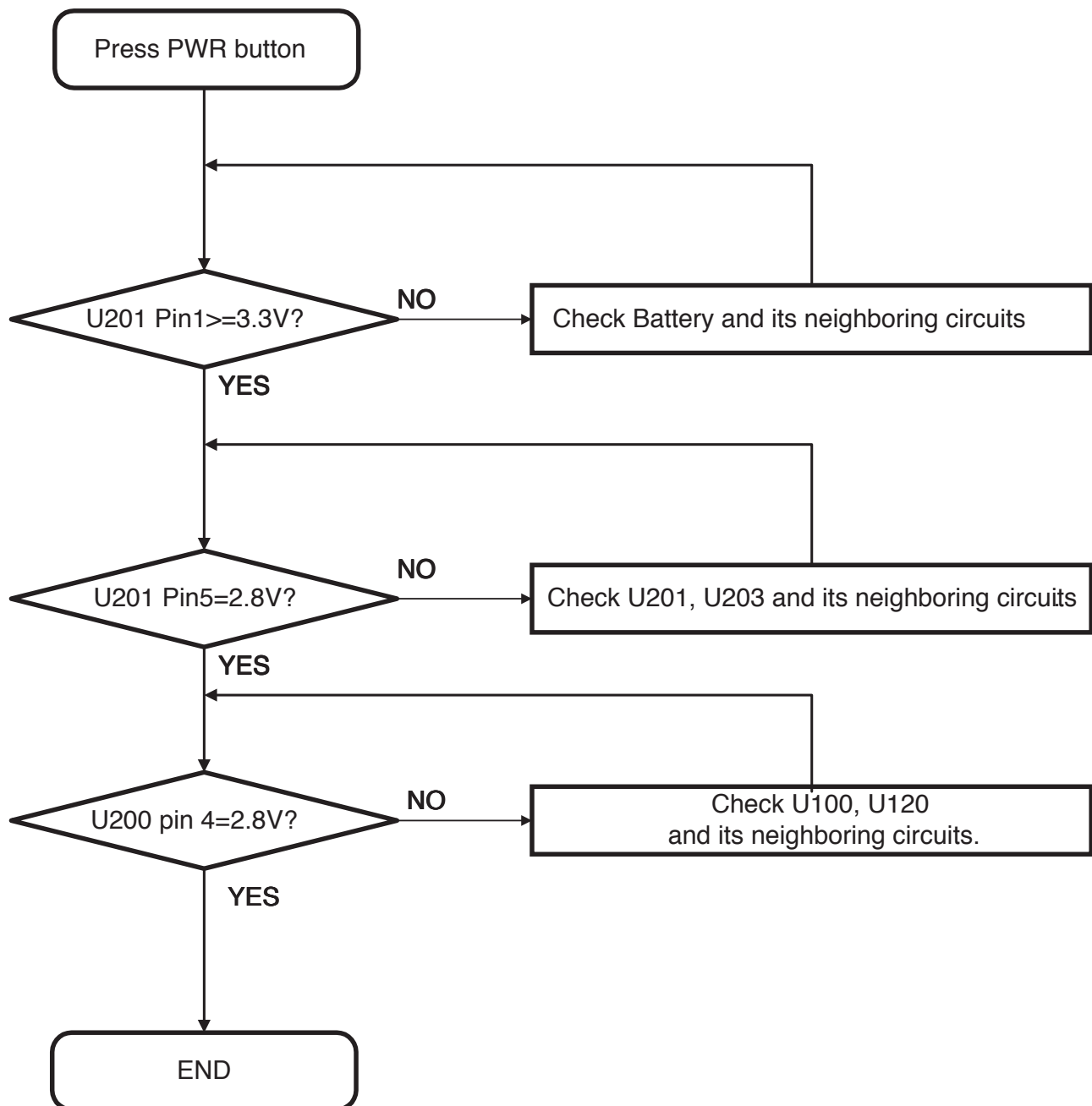
TEST ITEMS	PROCEDURE
4. LIMITATIONS ON EMISSIONS	"0 0 1" : Suspend. "0 0 9 0 6 0 0 #" : Set channel to 600. "0 0 7" : Carrier On. "0 3 4" : Spread spectrum. "0 7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power. Measure the spurious at $F_c \pm 1.25\text{MHz}$ spec: $F_c \pm 1.25\text{MHz}$ below 42dBc/30kHz
5. GATED POWER & TIME	Set the service option 9. Set the data rate Eighth (1200bps). Registering: HHP -> HP8924C. Call : HP8924C -> HHP. Measure the Gated Power & Time. spec : Gated Power - at least 20dB Gated Time - Rising Time : below 6μs Falling Time : below 6μs Burst Time : below 1.247ms

Note 1 : In case of using the antenna cable, compensation for the cable loss should be added (about 2.3dB for PCS).

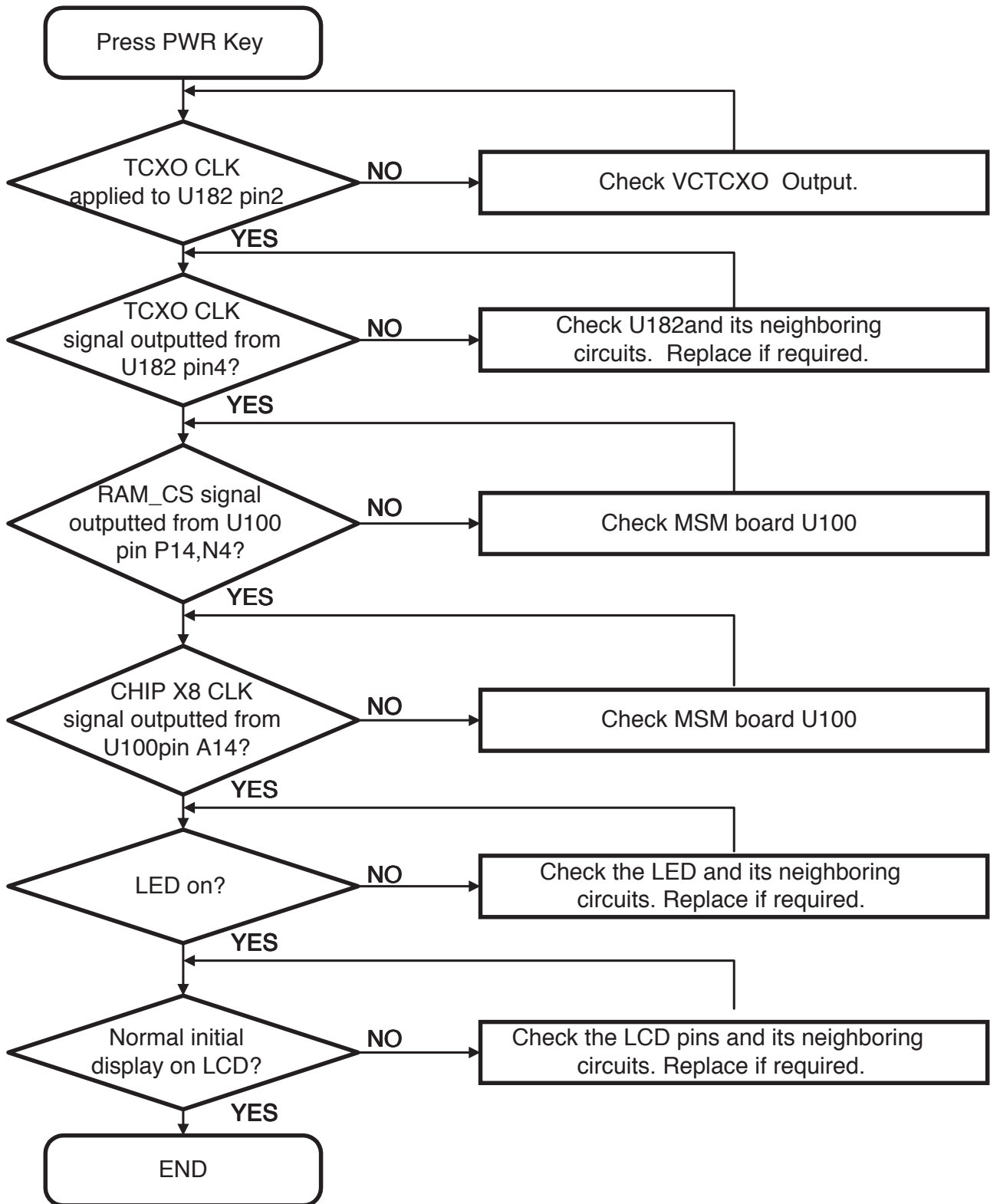
8. Trouble Shooting

8-1 Logic Section

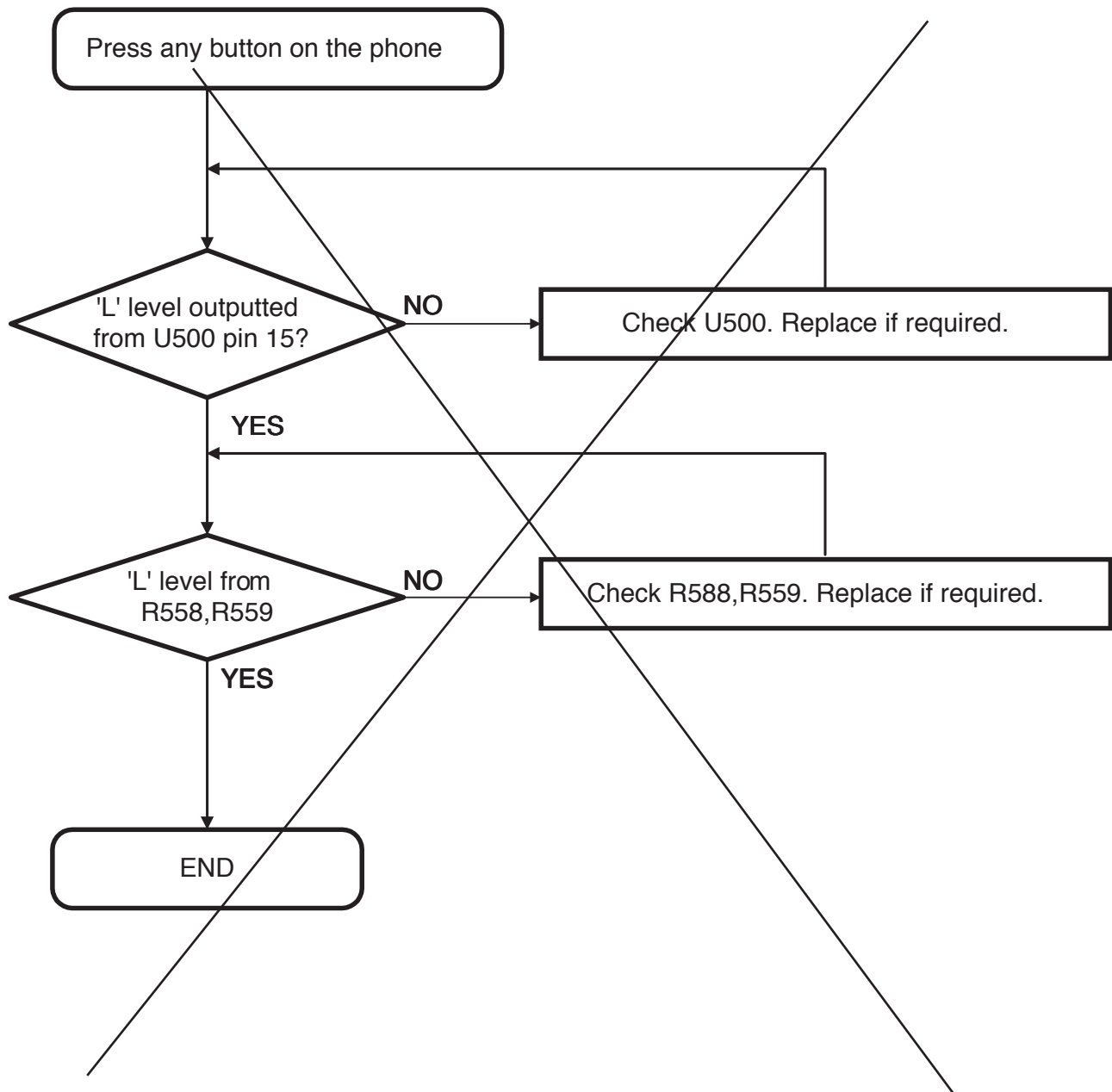
8-1-1 No Power



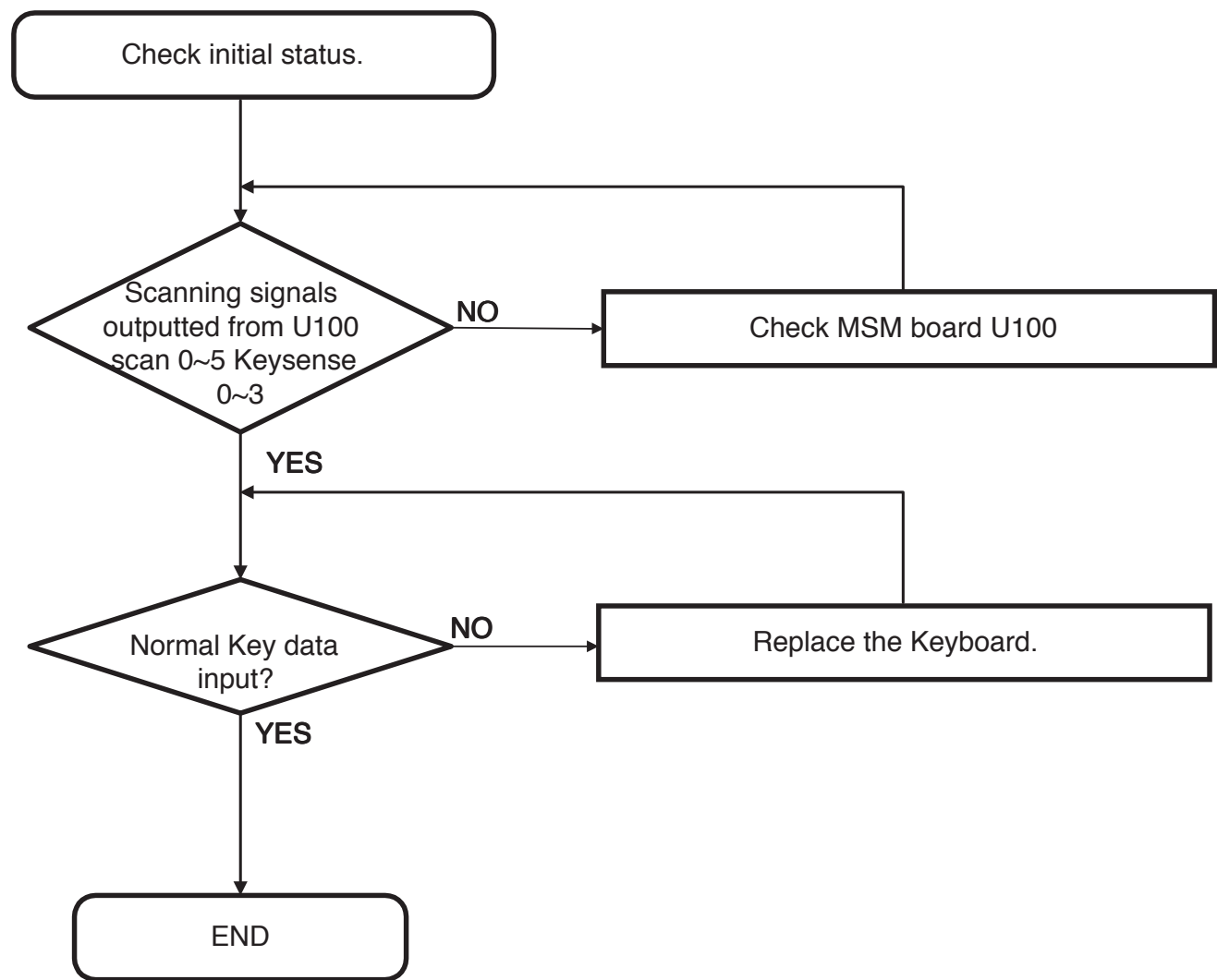
8-1-2 Abnormal initial operation (Normal +2.8V voltage source)



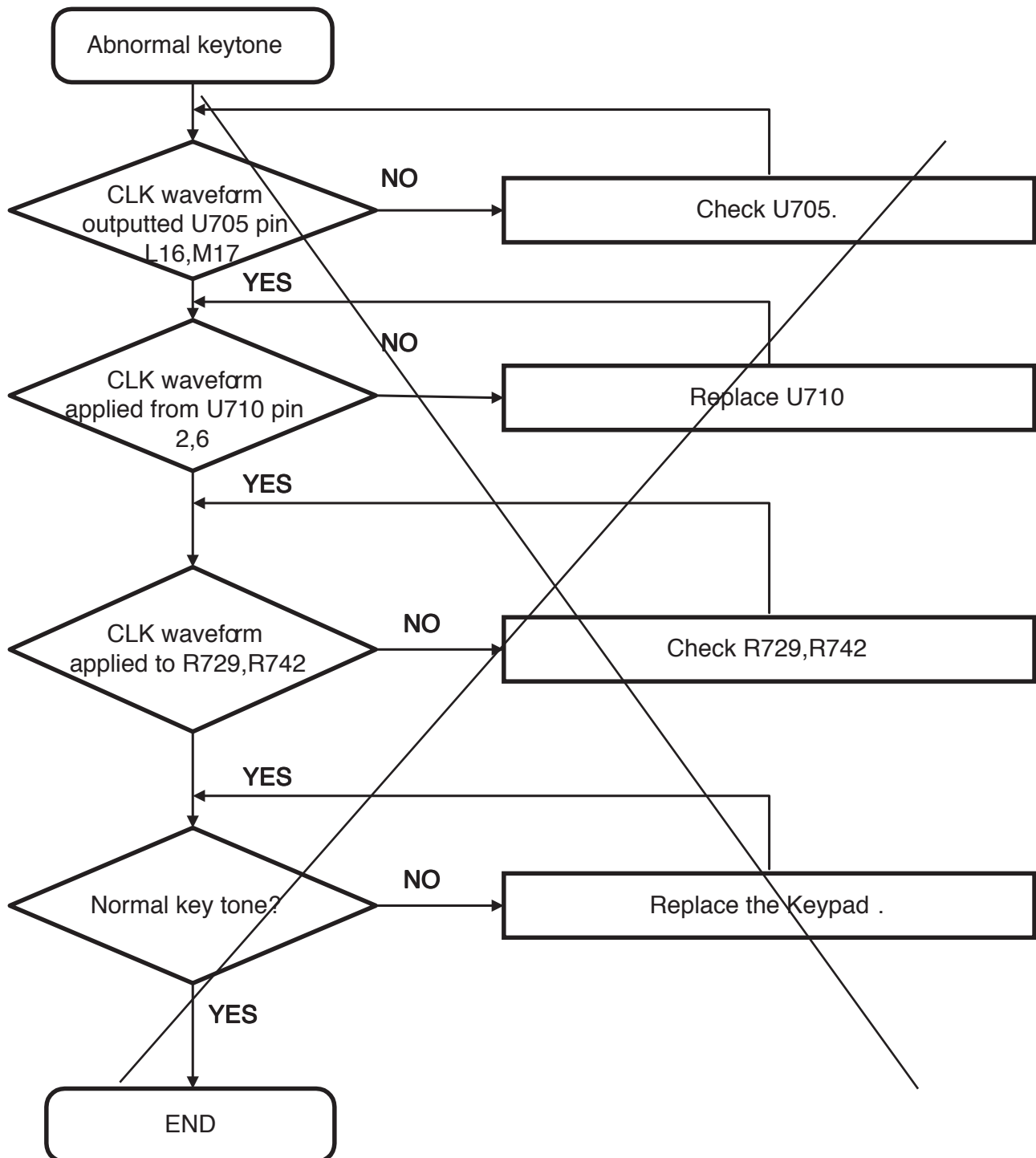
8-1-3 Abnormal Backlight Operation



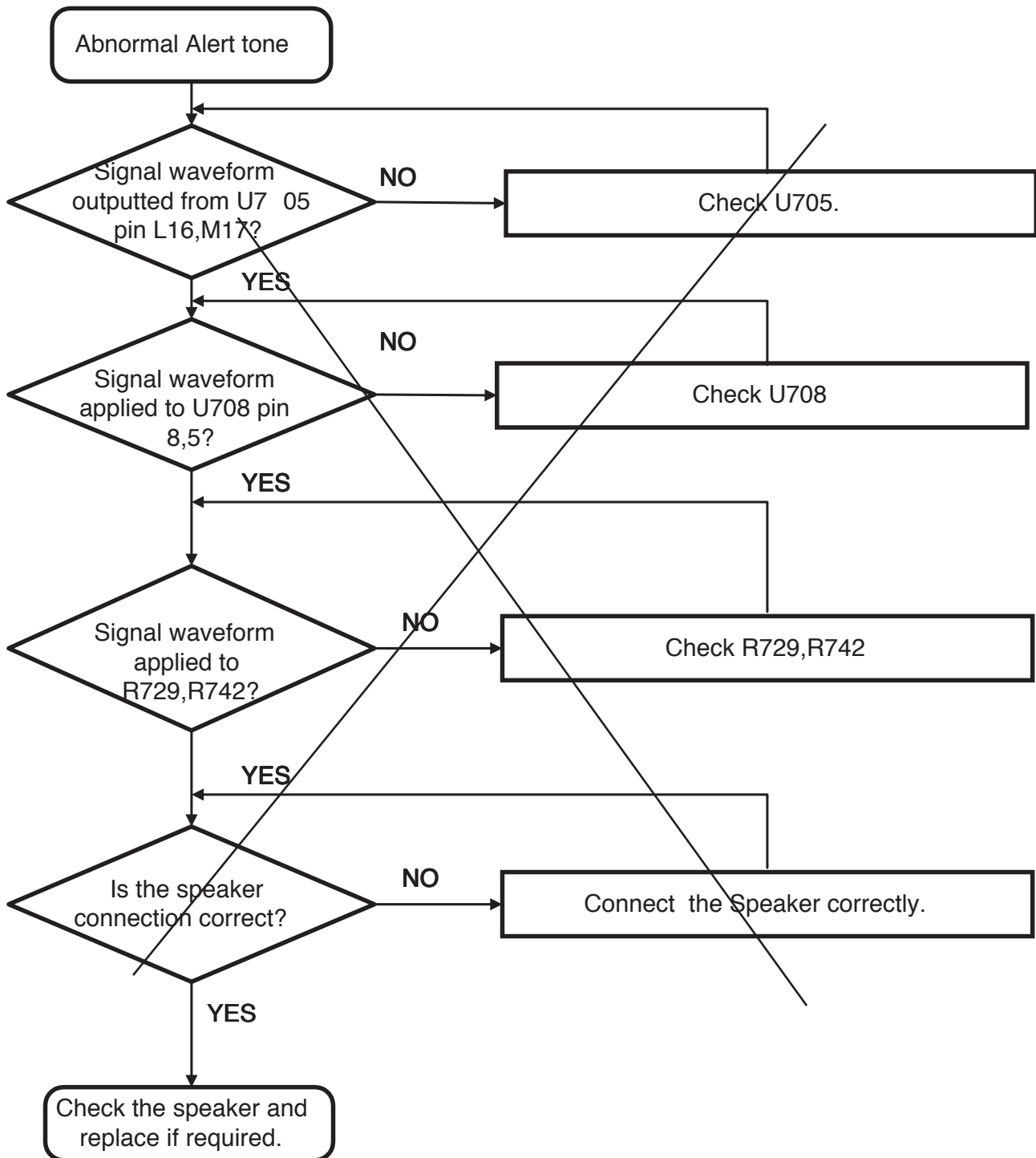
8-1-4 Abnormal Key Data Input



8-1-5 Abnormal Key tone

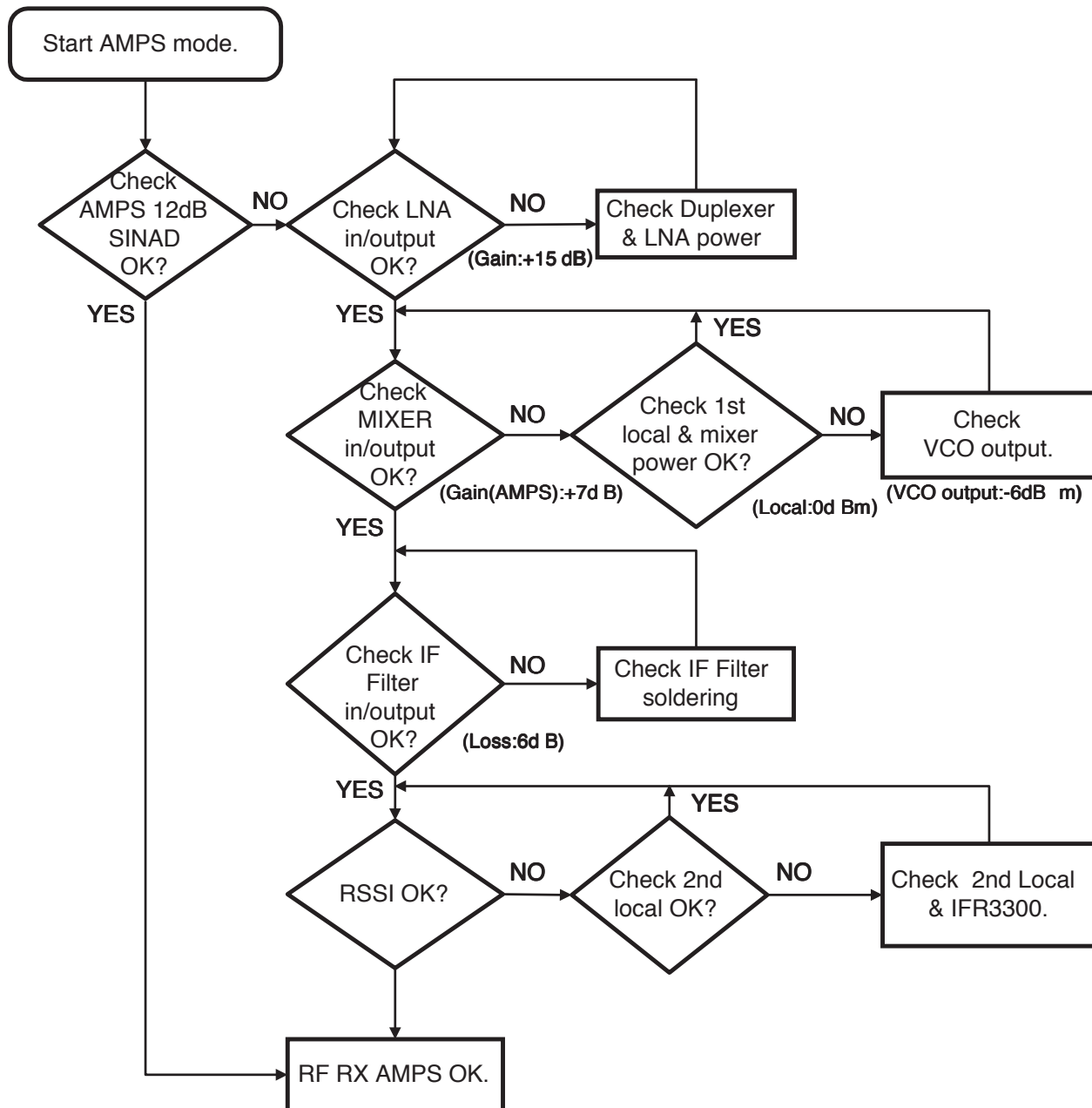


8-1-6 Abnormal Alert Tone

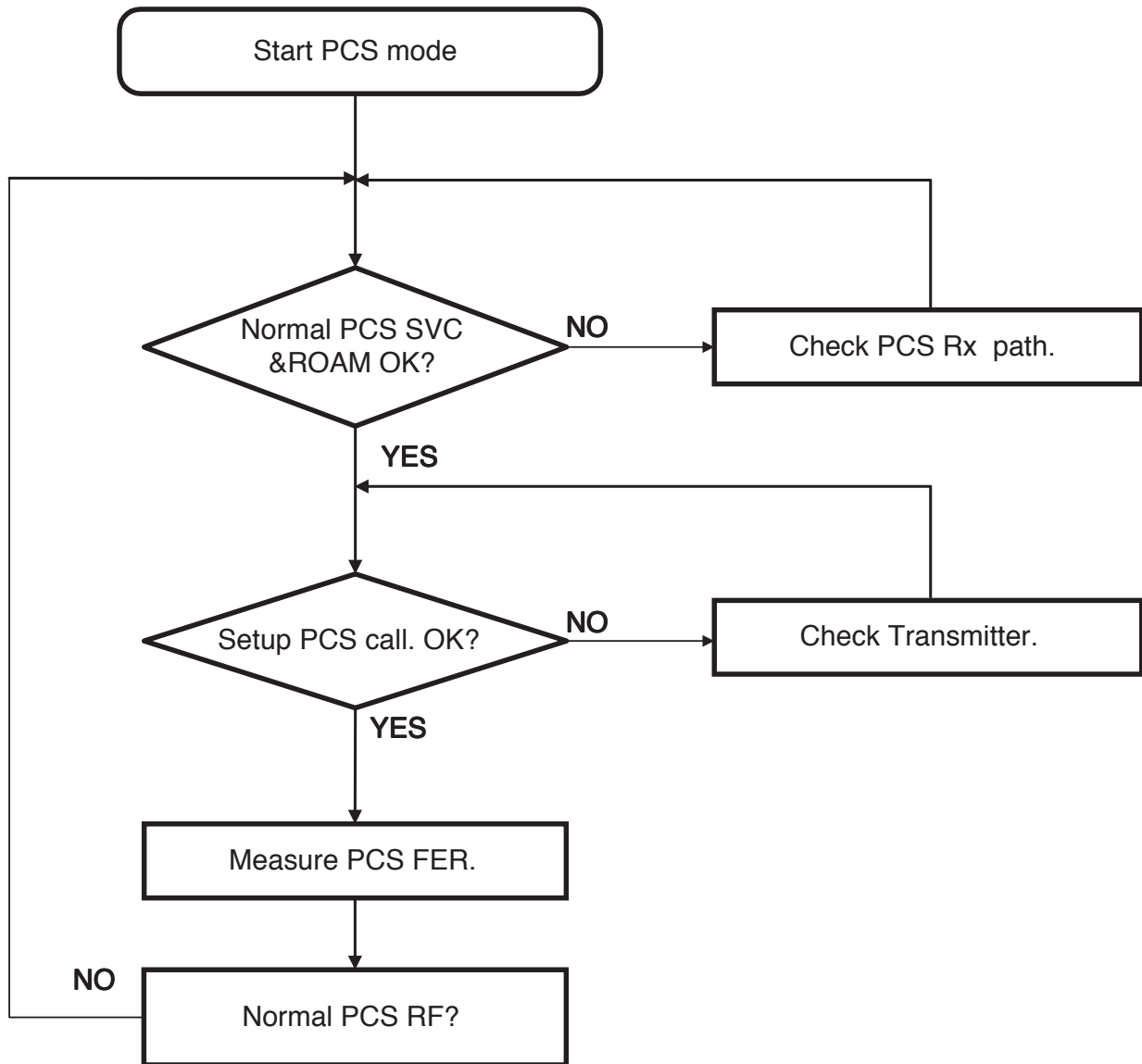


8-2 Receiver Section

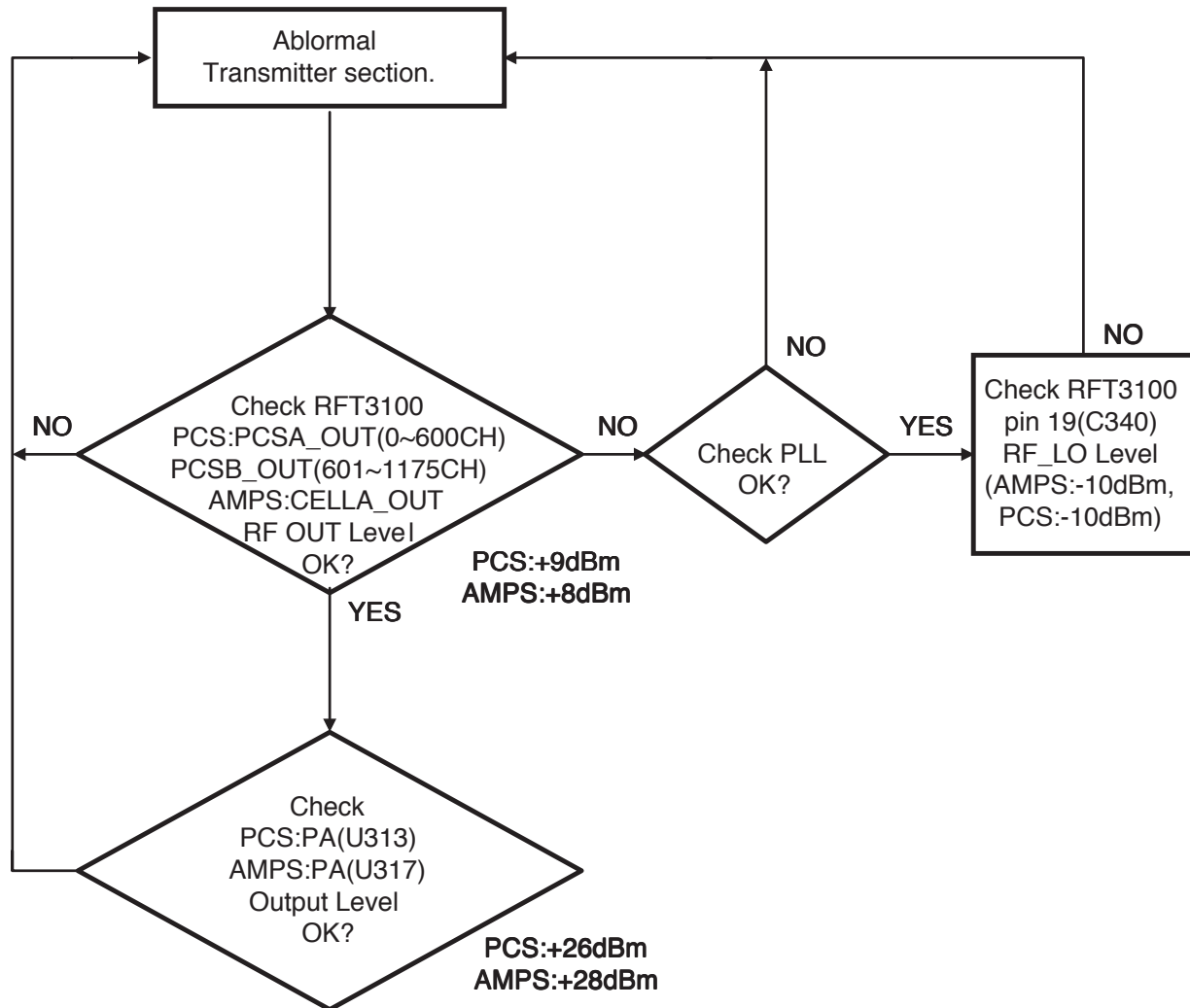
8-2-1 AMPS mode



8-2-2 PCS mode

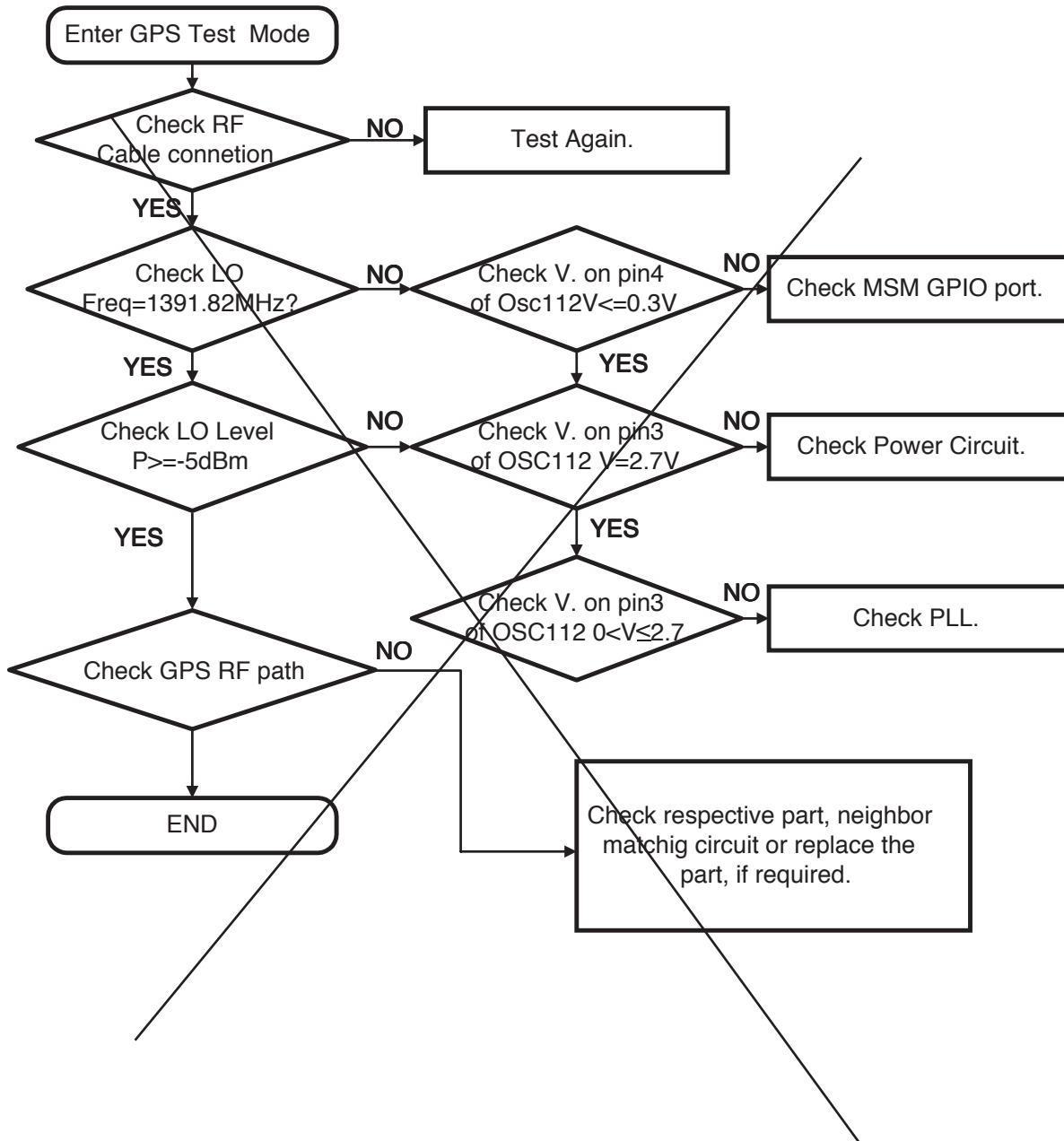


8-3 Transmitter Section



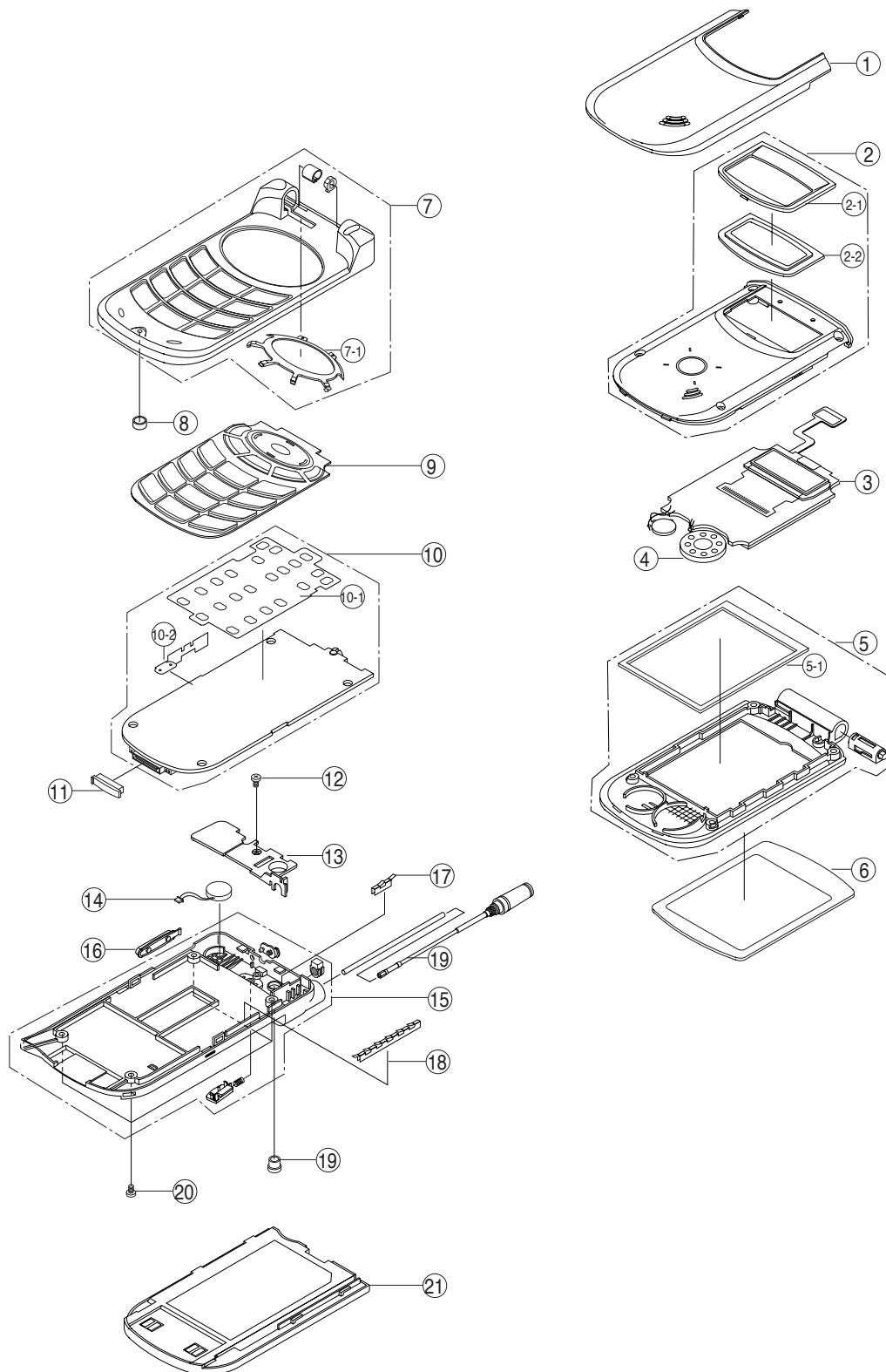
8-4 GPS mode

8-4-1 Low Sensitivity



9. Exploded View and Parts List

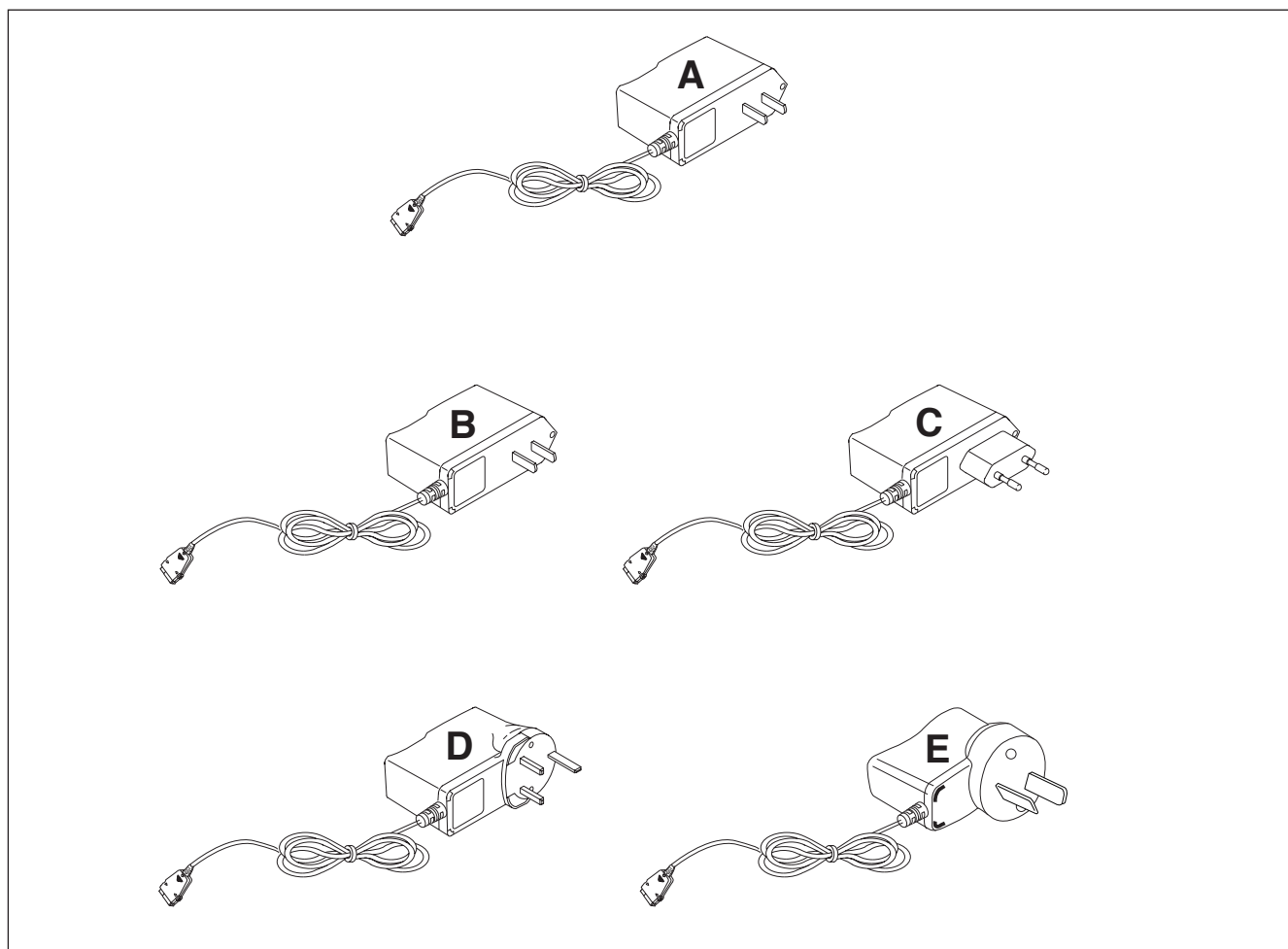
9-1 SCH-A310SS/XAR Main



9-2 SPH-A310SS/XAR Parts List

Location No.		Description	SEC CODE	Remark
1		FOLDER UPPER TOP	GH72-03806A	SA
2		FOLDER UPPER	GH75-01708A	SA
	2-1	WINDOW DUMMY	GH71-00872A	SNA
	2-2	WINDOW DUAL LCD	GH72-04681A	SA
3		LCD	GH07-00155A	SA
4		SPEAKER	3001-001308	SA
5		FOLDER LOWER	GH75-01709A	SA
	5-1	SPONGE	GH74-02199A	SNA
6		WINDOW LCD	GH72-03815A	SA
7		FRONT COVER	GH75-01711A	SA
	7-1	KEY DUMMY	GH71-00686A	SNA
8		MIC	GH59-00240B	SA
9		KEYPAD	GH75-01712A	SA
10		MAIN PBA	GH92-01281A	SA
	10-1	DOME SHEET	GH59-00413A	SA
	10-2	VOL KEY	GH59-00414A	SA
11		CONNECTOR COVER	GH73-01367A	SA
12		SCREW	6001-001285	SA
13		REAR BRACKET	GH75-02225A	SA
14		MOTOR	3101-001301	SA
15		REAR COVER	GH75-01713A	SA
16		KNOB-VOLUME	GH75-01714A	SA
17		SHIELD STRIP	GH71-00004A	SA
18		STRIP FINGER	GH71-00084A	SA
19		MOBILE CAP	GH73-01017A	SA
20		SCREW	6001-001155	SA
21		BATTERY	GH43-00546A	SA

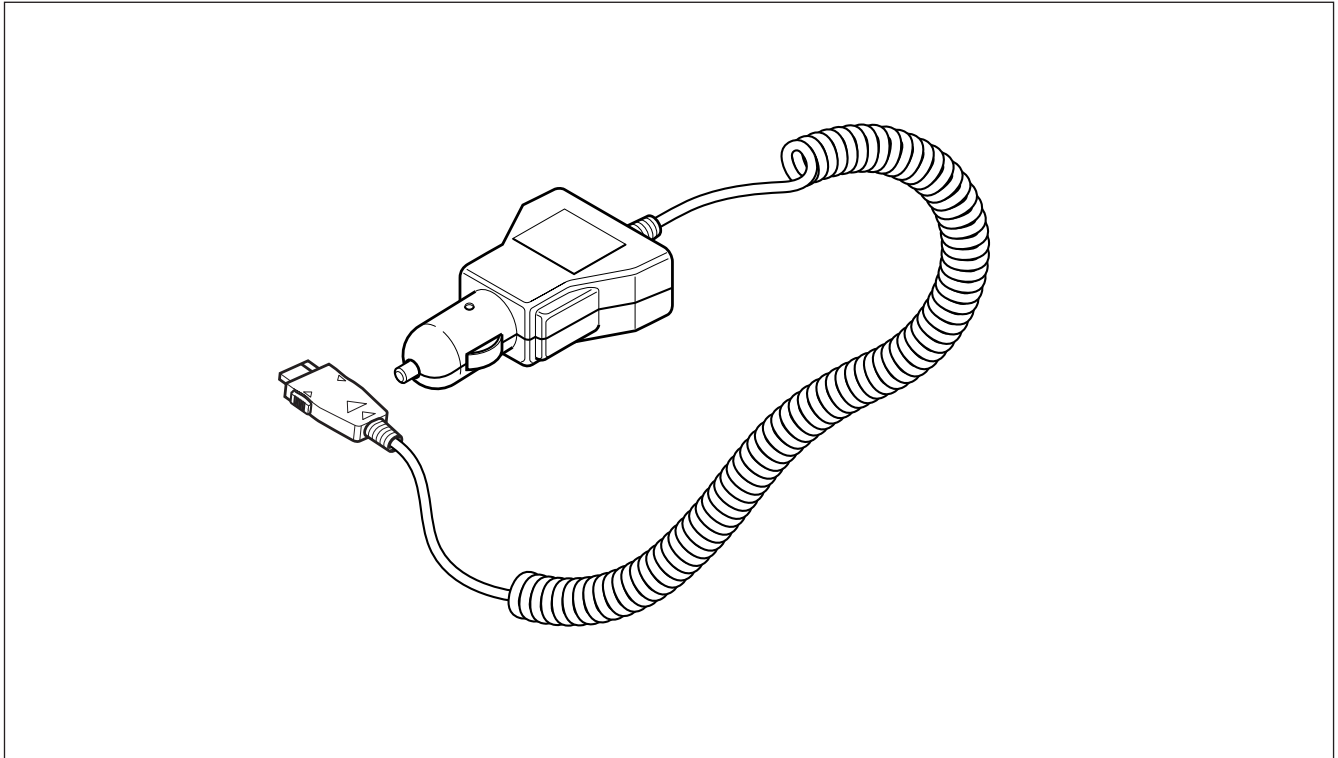
9-3 Travel Adapter



9-4 Travel Adapter Parts List

TYPE	SEC CODE	REMARK
A	GH44-00171A	CHINA
B	GH44-00171A	TAIWAN
C	GH44-00171A	EUROPE
D	GH44-00171A	UNITED KINGDOM
E	GH44-00171A	AUSTALIA

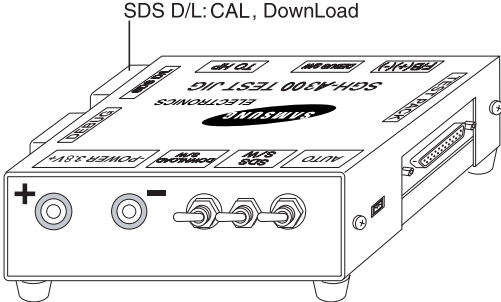
9-5 Cigarette Lighter Adaptor

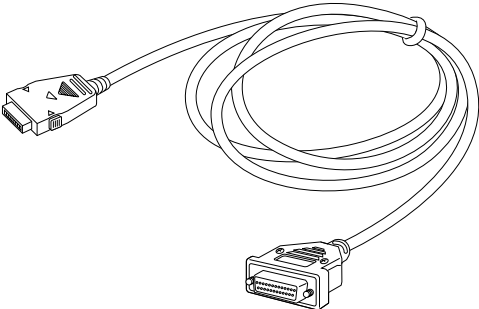


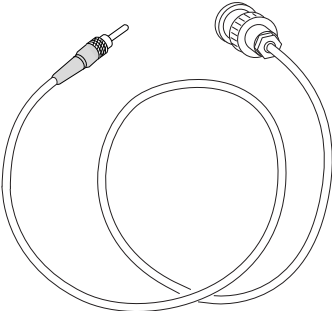
9-6 Cigarette Lighter Adapter Parts List

DESCRIPTION	SEC CODE	REMARK
Cigarette Lighter Adapter code	GH44-00171A	CHINA

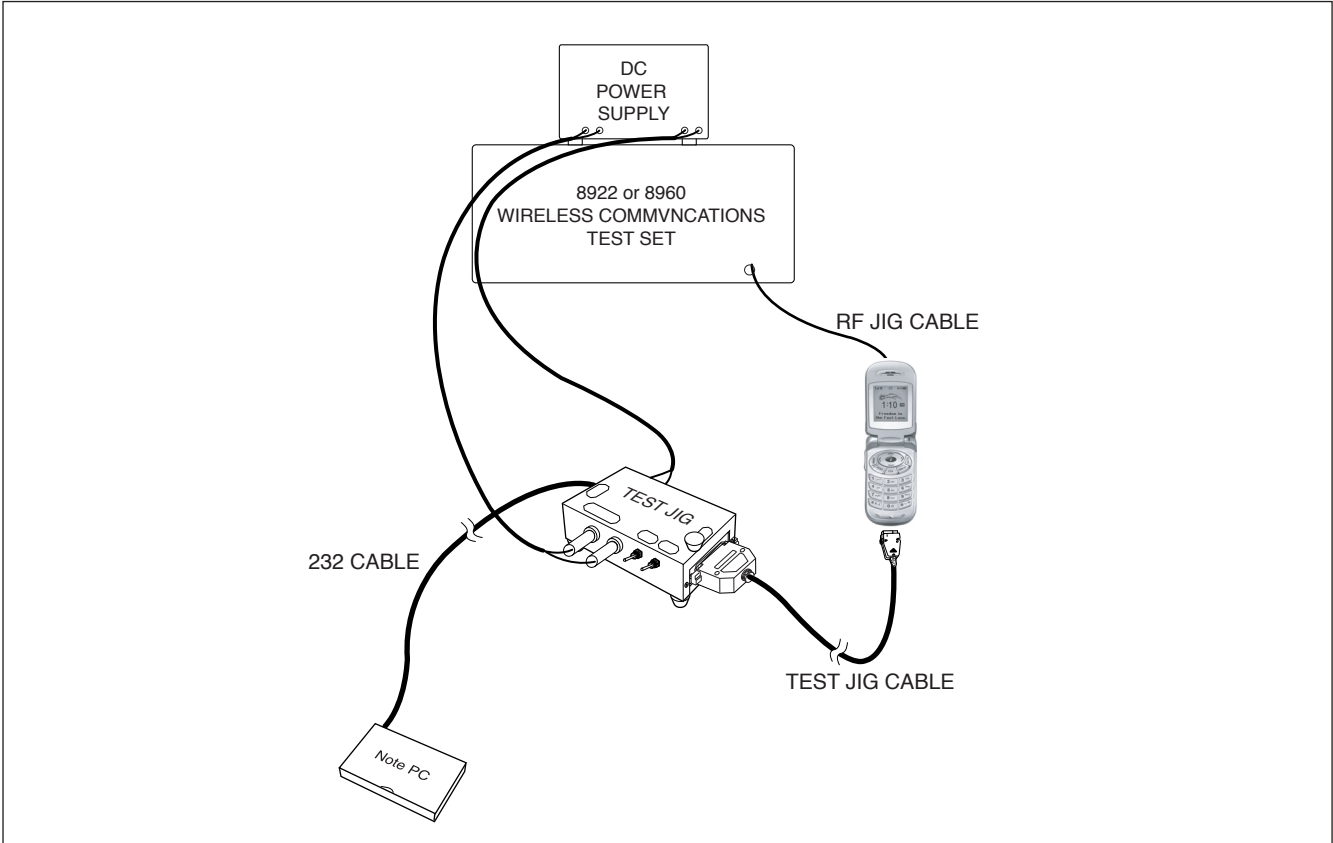
9-7 Test Jig

	
TEST JIG	GH80-10508A

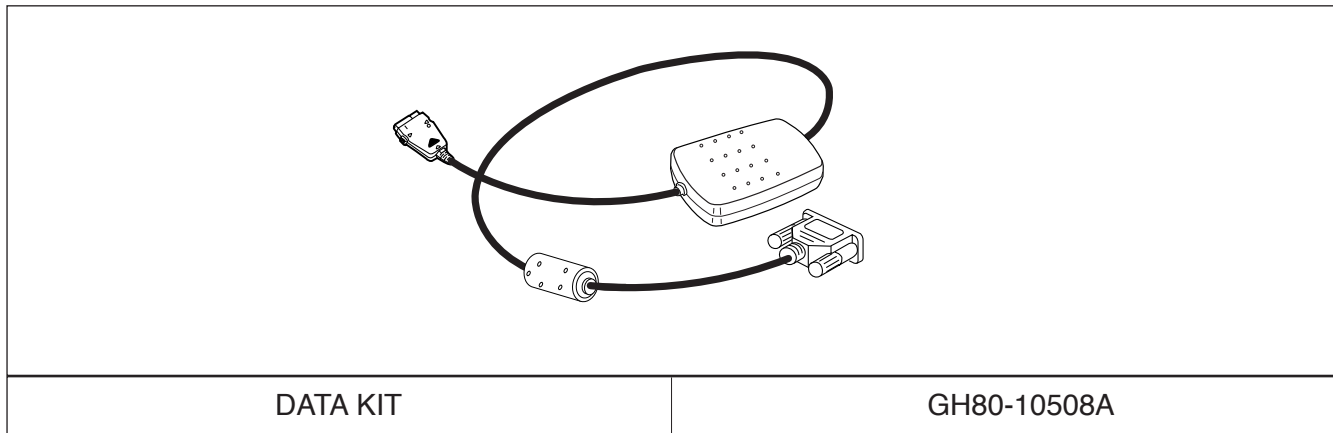
	
TEST JIG CABLE	GH80-10508A

	
RF JIG CABLE	GH80-10508A

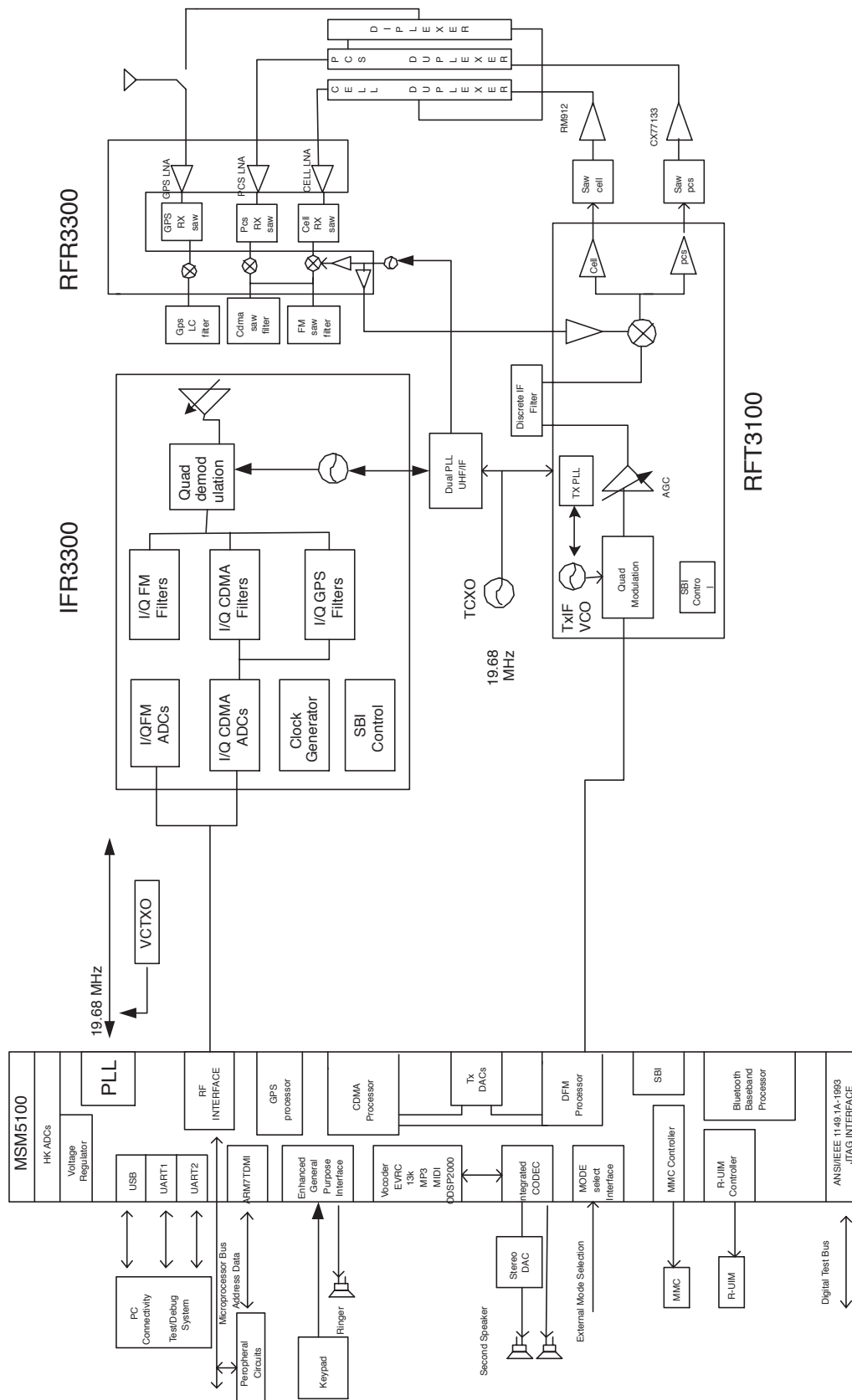
9-8 The connection of Test Jig



9-7 Data Kit



10. Block Diagram



11. Electrical Parts List

Level	SEC CODE	Design LOC	DESCRIPTIONS
0			SCH-A310SA/XAR
1	6001-001155		PH(PI2.5),+,M1.4,L3.5,ZPC(BLK)
1	GH42-00206A		NSB155-A2S0800-SS149,SCH-A310,824-849MHZ,-,50OHM,-,90MM,-,VERTICAL,3:1
1	GH43-00545A		BST1019SEB/STD,SCHA310,LI-ION,900MAH,1CELL, 4.2V,-,3.6V,0TO+45C,-,8.3X33.9X48MM,-
1	GH44-00184G		TAD037JBE,SGH-R225,100~240V,50~60HZ,5.1V,0.73A,-,AC/DC,0TO+50C,-,-
1	GH68-02483A		SCH-T300,VINYL,0.2,18,10,-,TRP,-,-,-
1	GH68-02555A		SCH-A310,POLYESTER,T0.05,27.8,44.8,USA,SIL,-,-,-
1	GH68-02966A		SCH-A310,-,VINYL,T0.025,22X13,-,TRP,-,-,-
1	GH68-11057A		SCH-1900,ART,100X155,T0.1,WHT
1	GH68-30937A		SCH-1011,POLYESTER,61X71,T0.1,
1	GH73-01017A		SCH-A310,CR RUBBER,-,PI5.9,5.2,SIL,-,-,-,-
1	GH73-01367A		SCH-A310,RUBBER,14.3X3.4X5.4,-,-,SIL,-,-,-,-
1	GH74-02600B		SPH-X7000,VINYL,T0.1,-,-,-,ELECTROSTATIC
1	GH74-02807A		SCH-A310,VINYL,43.5X52XT0.2,TRP,-,-,-,-
1	GH75-00223V		SGH-R210,-,-,-,D/SIL,-,-,-
1	GH75-01714A		SCH-A310,USA,-,-,-,-,-
2	GH72-03832A		SCH-A310,ABS,SIL,-,-,-,-,-
2	GH73-01016A		SCH-A310,CR RUBBER,T2.6,2.5,24,BLK,-,-,-,-
1	GH92-01281A		SCH-A310,SAMSUNG,USA,MAIN PBA,-,-,-,-,-
2	0404-000161	D440	1SS315,5V,30mA,USC,TP
2	0404-000161	D480	1SS315,5V,30mA,USC,TP
2	0405-001035	D360	1SV279,15V,3nA,USC,TP
2	0405-001035	D361	1SV279,15V,3nA,USC,TP
2	0405-001074	D404	1SV305,10V,3nA,ESC,TP
2	0405-001074	D405	1SV305,10V,3nA,ESC,TP
2	0406-001084	D250	SMF05,6/-/-V,200W,-
2	0406-001084	U503	SMF05,6/-/-V,200W,-
2	0406-001084	ZD190	SMF05,6/-/-V,200W,-
2	0407-001002	D300	DAN222,80V,300mA,CA2-3,EM3,TP
2	0407-001007	U200	UMN1,80V,25mA,CA4-2,UM5,TR
2	0407-001038	U251	USBUF01W6,-,-,-,SOT-323-6L,-
2	0409-001016	D420	BAR63-02W,50V,100mA,SCD-80,TP
2	0501-000162	Q480	2SA1576,PNP,200MW,SOT-323,TP,180-390
2	0501-000225	Q213	2SC4617,NPN,200mW,EM3,TP,120-5
2	0501-002202	Q209	MMBT2222AWT1,NPN,150mW,SOT-323
2	0502-001201	Q220	ZXT13P20DE6,PNP,1100MW,SOT-23-6,TP,300-900

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	0504-000168	Q202	RN1104,NPN,100MW,47K/47K,SSM,TP
2	0504-000168	Q203	RN1104,NPN,100MW,47K/47K,SSM,TP
2	0504-000168	Q211	RN1104,NPN,100MW,47K/47K,SSM,TP
2	0504-000168	Q440	RN1104,NPN,100MW,47K/47K,SSM,TP
2	0504-000172	Q204	RN2104,PNP,100MW,47K/47K,SSM,TP
2	0504-000172	Q206	RN2104,PNP,100MW,47K/47K,SSM,TP
2	0505-001165	Q201	SI3443DV,P,-20V,+3.5mA,65mohm
2	0506-001004	Q301	UMC5N,NPN/PNP,2,50V,-,-100mA,3
2	0506-001004	Q302	UMC5N,NPN/PNP,2,50V,-,-100mA,3
2	0506-001004	Q410	UMC5N,NPN/PNP,2,50V,-,-100mA,3
2	0506-001004	Q420	UMC5N,NPN/PNP,2,50V,-,-100mA,3
2	0601-001094	LED211	CHIP,Y-GRN,0.8x1.1mm,570nm
2	0601-001226	LED210	CHIP,RED,1.2x0.8mm,660nm
2	0601-001547	D210	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D211	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D212	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D213	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D214	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D215	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D216	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D217	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D218	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D219	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D221	CHIP,BLUE,1.1X0.8MM,468NM
2	0601-001547	D222	CHIP,BLUE,1.1X0.8MM,468NM
2	0801-000796	U482	7S32,OR GATE,SOT-353,5P,51MIL,SINGLE,TP,PLASTIC, -,-,0.26V,-40TO+85C,200MW,4.2V,2
2	0801-002345	U182	7S04,INVERTER,SOT-353,5P,49MIL,SINGLE,TP,PLASTIC, -,-,0.26V,-40TO+85C,200MW,4.2V,
2	1001-001145	U445	MAX4599EXT,-,SC70,6P,49MIL,SINGLE,5.5V, -40to+85C,PLASTIC,245mW,60ohm,25ns,30ns,0
2	1001-001151	U440	SW-437,-,SOT-363,6P,49MIL,SINGLE,8.5V, -40to+85C,PLASTIC,20nS,-,20nS,-,TP,-
2	1001-001194	U431	GN04022NOL,GAAS,SOT-363,6P,49MIL,-,8V,-30TO+90C,PLASTIC,-,-,-,9UA,TP,-
2	1009-001010	U290	A3212ELH-SAMSUNG,SC-59A,3P,82MIL, TP,BICMOS,PLASTIC,3.5V,2MA,-40TO+85C,-,-,-,340K
2	1103-001184	U190	24C256,32Kx8Bit,dBGA,8P,92MIL,-,2.7V,-,PLASTIC,-40to+85C,0.5uA,CMOS,TR

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	1109-001210	U120	42587,32MX8MBIT,FBGA,-,-,85NS,3V,10%, PLASTIC,-25TO+85CC,12UA,CMOS,BK
2	1201-001348	U446	821,SOT23-5,5P,63MIL,SINGLE,-,
2	1201-001348	U481	821,SOT23-5,5P,63MIL,SINGLE,-,
2	1201-001491	U444	912,LCC,7P,226MIL,SINGLE,28dB,PLASTIC,4.2V,-,-30to+85C,-,-,-,-
2	1201-001725	U230	4890,MSOP,8P,118MIL,-,66dB,PLASTIC,5.5V,1W,-40to+85C,-,-,-,-,TP
2	1201-001783	U441	-,LCC,6P,-,SINGLE,24.5DB,LAMINATE,6V,-,-30TO+85C,-,-,-,-
2	1202-001036	U220	75W56,SSOP,8P,90MIL,DUAL,+,-7V,CMOS,PLASTIC,7V, 200MW,-40TO+85C,7V,7V,1PA,1PA,60NS
2	1203-001285	U204	5205,SOT-23,5P,150MIL,PLASTIC,
2	1203-001285	U480	5205,SOT-23,5P,150MIL,PLASTIC,
2	1203-001511	U202	809,SOT-23,3P,-,PLASTIC,0.3/6.
2	1203-002127	U240	1734,SOT-23,6P,150MIL,PLASTIC,4.7/5.3V,-,0to+70C,1A,-,TP
2	1203-002555	U203	R1160N,SOT-23-5,5P,-,PLASTIC,2.5V,250MW,-45TO+85C,200MA,-,TP
2	1203-002556	U201	R1160N,SOT-23-5,5P,-,PLASTIC,2.8V,250MA,-45TO+85C,200MA,-,TP
2	1203-002557	U322	R1160N,SOT-23-5,5P,-,PLASTIC,3V,250MW,-45TO+85C,200MA,-,TP
2	1204-001682	U400	RFT3100,BCC,32P,196MIL,PLASTIC,3.3V,-,-30TO+85C,TP,-
2	1205-002053	U300	RFR3300,BCCP,32P,-,PLASTIC,3.6V,-,-30TO+85C,TP,-
2	1205-002054	U360	IFR3300,BCC,48P,-,PLASTIC,3.6V,-,-30TO+85C,TP,-
2	1205-002099	U100	MSM5100-208FBGA,FBGA,208P,15X15MM,PLASTIC,3V,-,-40TO+85C,TP,-
2	1205-002130	U250	ISP1105W,HBCC16,16P,3X3MM,PLASTIC,5.5V,-,-40TO+85C,TP,-
2	1209-001341	U340	LMX2354SLBX,CSP,24P,-,PLASTIC,5.5V,-,-40to+85C,TP
2	1404-001152	TH100	10KOHM,5%,3380K,1MW/C,TP
2	2007-000138	R107	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R148	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R150	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R225	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R312	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R314	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R329	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R409	100ohm,5%,1/16W,DA,TP,1005
2	2007-000138	R421	100ohm,5%,1/16W,DA,TP,1005
2	2007-000139	R307	220ohm,5%,1/16W,DA,TP,1005
2	2007-000140	R124	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R125	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R131	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R134	1Kohm,5%,1/16W,DA,TP,1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2007-000140	R135	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R138	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R145	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R146	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R147	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R207	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R303	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R305	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R401	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R405	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000140	R417	1Kohm,5%,1/16W,DA,TP,1005
2	2007-000141	R149	2.2Kohm,5%,1/16W,DA,TP,1005
2	2007-000141	R154	2.2Kohm,5%,1/16W,DA,TP,1005
2	2007-000141	R224	2.2Kohm,5%,1/16W,DA,TP,1005
2	2007-000141	R245	2.2Kohm,5%,1/16W,DA,TP,1005
2	2007-000142	R217	2.7Kohm,5%,1/16W,DA,TP,1005
2	2007-000143	R117	4.7Kohm,5%,1/16W,DA,TP,1005
2	2007-000143	R213	4.7Kohm,5%,1/16W,DA,TP,1005
2	2007-000143	R214	4.7Kohm,5%,1/16W,DA,TP,1005
2	2007-000143	R325	4.7Kohm,5%,1/16W,DA,TP,1005
2	2007-000144	R127	5.1Kohm,5%,1/16W,DA,TP,1005
2	2007-000146	R333	6.8Kohm,5%,1/16W,DA,TP,1005
2	2007-000146	R427	6.8Kohm,5%,1/16W,DA,TP,1005
2	2007-000147	R102	8.2Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R128	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R129	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R130	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R139	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R141	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R159	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R208	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R218	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R321	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R323	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R327	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R330	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R334	10Kohm,5%,1/16W,DA,TP,1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2007-000148	R410	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R419	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000148	R426	10Kohm,5%,1/16W,DA,TP,1005
2	2007-000149	R326	12Kohm,5%,1/16W,DA,TP,1005
2	2007-000152	R406	20Kohm,5%,1/16W,DA,TP,1005
2	2007-000153	R143	22Kohm,5%,1/16W,DA,TP,1005
2	2007-000153	R144	22Kohm,5%,1/16W,DA,TP,1005
2	2007-000156	R156	30Kohm,5%,1/16W,DA,TP,1005
2	2007-000157	R202	47Kohm,5%,1/16W,DA,TP,1005
2	2007-000157	R232	47Kohm,5%,1/16W,DA,TP,1005
2	2007-000157	R317	47Kohm,5%,1/16W,DA,TP,1005
2	2007-000157	R420	47Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R151	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R201	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R209	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R211	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R220	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R223	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R236	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R243	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000162	R402	100Kohm,5%,1/16W,DA,TP,1005
2	2007-000164	R412	150Kohm,5%,1/16W,DA,TP,1005
2	2007-000164	R423	150Kohm,5%,1/16W,DA,TP,1005
2	2007-000165	R227	200Kohm,5%,1/16W,DA,TP,1005
2	2007-000168	R219	470Kohm,5%,1/16W,DA,TP,1005
2	2007-000169	R140	510Kohm,5%,1/16W,DA,TP,1005
2	2007-000172	R237	10ohm,5%,1/16W,DA,TP,1005
2	2007-000172	R238	10ohm,5%,1/16W,DA,TP,1005
2	2007-000172	R239	10ohm,5%,1/16W,DA,TP,1005
2	2007-000172	R240	10ohm,5%,1/16W,DA,TP,1005
2	2007-000172	R241	10ohm,5%,1/16W,DA,TP,1005
2	2007-000172	R242	10ohm,5%,1/16W,DA,TP,1005
2	2007-000173	R322	22ohm,5%,1/16W,DA,TP,1005
2	2007-000775	R158	33Kohm,5%,1/16W,DA,TP,1005
2	2007-000775	R204	33Kohm,5%,1/16W,DA,TP,1005
2	2007-000982	R157	5.6Kohm,5%,1/16W,DA,TP,1005
2	2007-001156	R411	750ohm,5%,1/16W,DA,TP,1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2007-001156	R413	750ohm,5%,1/16W,DA,TP,1005
2	2007-001292	R222	33ohm,5%,1/16W,DA,TP,1005
2	2007-001298	R301	51ohm,5%,1/16W,DA,TP,1005
2	2007-001298	R407	51ohm,5%,1/16W,DA,TP,1005
2	2007-001305	R221	120ohm,5%,1/16W,DA,TP,1005
2	2007-001313	R428	330ohm,5%,1/16W,DA,TP,1005
2	2007-001319	R103	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R105	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R108	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R109	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R111	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R113	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R114	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R115	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R116	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R118	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R121	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001319	R231	1.2Kohm,5%,1/16W,DA,TP,1005
2	2007-001323	R418	3Kohm,5%,1/16W,DA,TP,1005
2	2007-001333	R106	18Kohm,5%,1/16W,DA,TP,1005
2	2007-001339	R137	180Kohm,5%,1/16W,DA,TP,1005
2	2007-001339	R142	180Kohm,5%,1/16W,DA,TP,1005
2	2007-002796	R101	510ohm,5%,1/16W,DA,TP,1005
2	2007-002965	R328	15OHM,5%,1/16W,DA,TP,1005
2	2007-003001	R246	12OHM,5%,1/16W,DA,TP,1005
2	2007-003001	R247	12OHM,5%,1/16W,DA,TP,1005
2	2007-003013	R308	2.4KOHM,5%,1/16W,DA,TP,1005
2	2007-003013	R309	2.4KOHM,5%,1/16W,DA,TP,1005
2	2007-007014	R415	51KOHM,5%,1/16W,DA,TP,1005
2	2007-007021	R235	75KOHM,5%,1/16W,DA,TP,1005
2	2007-007021	R422	75KOHM,5%,1/16W,DA,TP,1005
2	2007-007107	R119	100Kohm,1%,1/16W,DA,TP,1005
2	2007-007107	R425	100Kohm,1%,1/16W,DA,TP,1005
2	2007-007142	R229	10Kohm,1%,1/16W,DA,TP,1005
2	2007-007307	R416	150ohm,1%,1/16W,DA,TP,1005
2	2007-007309	R404	12Kohm,1%,1/16W,DA,TP,1005
2	2007-007310	R319	8.2Kohm,1%,1/16W,DA,TP,1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2007-007312	R228	20Kohm,1%,1/16W,DA,TP,1005
2	2007-007312	R230	20Kohm,1%,1/16W,DA,TP,1005
2	2007-007312	R233	20Kohm,1%,1/16W,DA,TP,1005
2	2007-007312	R234	20Kohm,1%,1/16W,DA,TP,1005
2	2007-007315	R318	3.9Kohm,1%,1/16W,DA,TP,1005
2	2007-007529	R110	91Kohm,1%,1/16W,DA,TP,1005
2	2007-007588	R408	1.8Kohm,1%,1/16W,DA,TP,1005
2	2007-007589	R424	68Kohm,1%,1/16W,DA,TP,1005
2	2007-007766	R414	2KOHM,1%,1/16W,DA,TP,1005
2	2007-007771	R104	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R112	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R120	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R122	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R123	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R132	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R133	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R152	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R153	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R155	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R160	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R161	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R162	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R205	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R212	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R215	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R216	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R244	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R302	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R304	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R306	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R310	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R313	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R316	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R324	0OHM,5%,1/16W,DA,TP,1005
2	2007-007771	R403	0OHM,5%,1/16W,DA,TP,1005
2	2203-000138	C386	1.5nF,10%,50V,X7R,TP,1005,-
2	2203-000138	C393	1.5nF,10%,50V,X7R,TP,1005,-

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2203-000138	C395	1.5nF,10%,50V,X7R,TP,1005,-
2	2203-000233	C105	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C152	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C226	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C304	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C318	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C325	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C330	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C338	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C339	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C342	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C343	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C344	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C345	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C365	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C381	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C388	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C399	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C400	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C401	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C406	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C407	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C412	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C413	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C419	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C424	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C438	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C442	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C443	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C446	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C449	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C461	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C467	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C468	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C473	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C474	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	C475	0.1nF,5%,50V,NP0,TP,1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2203-000233	C476	0.1nF,5%,50V,NP0,TP,1005
2	2203-000233	L327	0.1nF,5%,50V,NP0,TP,1005
2	2203-000254	C104	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C107	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C127	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C131	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C133	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C136	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C138	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C140	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C143	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C145	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C147	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C149	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C154	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C157	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C168	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C175	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C176	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C235	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C301	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C305	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C306	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C310	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C312	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C314	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C316	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C323	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C324	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C331	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C334	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C350	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C356	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C383	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C394	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C402	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C403	10nF,10%,16V,X7R,TP,1005,-

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2203-000254	C409	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C411	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C414	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C448	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C452	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C453	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C466	10nF,10%,16V,X7R,TP,1005,-
2	2203-000254	C477	10nF,10%,16V,X7R,TP,1005,-
2	2203-000278	C371	0.01nF,0.5pF,50V,NP0,TP,1005
2	2203-000278	C372	0.01nF,0.5pF,50V,NP0,TP,1005
2	2203-000359	C125	0.15nF,5%,50V,NP0,TP,1005
2	2203-000386	C360	0.015nF,5%,50V,NP0,TP,1005
2	2203-000386	C389	0.015nF,5%,50V,NP0,TP,1005
2	2203-000438	C234	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C239	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C244	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C272	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C273	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C274	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C275	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C276	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C277	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C278	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C279	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C280	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C281	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C307	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C311	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C313	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C315	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C317	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C319	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C320	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C322	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C328	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C329	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C332	1nF,10%,50V,X7R,TP,1005,-

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2203-000438	C340	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C341	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C346	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C349	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C355	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C357	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C358	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C366	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C368	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C396	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C397	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C417	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C418	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C430	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C435	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C459	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	C471	1nF,10%,50V,X7R,TP,1005,-
2	2203-000438	L328	1nF,10%,50V,X7R,TP,1005,-
2	2203-000489	C230	2.2nF,10%,50V,X7R,TP,1005,-
2	2203-000489	C232	2.2nF,10%,50V,X7R,TP,1005,-
2	2203-000550	C464	0.02nF,5%,50V,NP0,TP,1005
2	2203-000550	C469	0.02nF,5%,50V,NP0,TP,1005
2	2203-000628	C384	0.022nF,5%,50V,NP0,TP,1005
2	2203-000628	C391	0.022nF,5%,50V,NP0,TP,1005
2	2203-000679	C101	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C102	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C108	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C109	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C110	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C111	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C112	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C113	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C114	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C115	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C116	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C118	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C119	0.027nF,5%,50V,NP0,TP,1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2203-000679	C120	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C122	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C123	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	C170	0.027nF,5%,50V,NP0,TP,1005
2	2203-000679	R311	0.027nF,5%,50V,NP0,TP,1005
2	2203-000696	C369	0.002nF,0.25pF,50V,NP0,TP,1005
2	2203-000696	C454	0.002nF,0.25pF,50V,NP0,TP,1005
2	2203-000696	C463	0.002nF,0.25pF,50V,NP0,TP,1005
2	2203-000714	U501	3.3nF,10%,50V,X7R,TP,1005,-
2	2203-000714	U502	3.3nF,10%,50V,X7R,TP,1005,-
2	2203-000812	C142	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C205	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C206	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C207	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C212	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C216	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C217	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C222	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C236	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C240	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C242	0.033nF,5%,50V,NP0,TP,1005
2	2203-000812	C243	0.033nF,5%,50V,NP0,TP,1005
2	2203-000854	C121	0.039nF,5%,50V,NP0,TP,1005
2	2203-000854	C241	0.039nF,5%,50V,NP0,TP,1005
2	2203-000854	C421	0.039nF,5%,50V,NP0,TP,1005
2	2203-000854	C429	0.039nF,5%,50V,NP0,TP,1005
2	2203-000870	C351	0.003nF,0.25pF,50V,NP0,TP,1005
2	2203-000870	C478	0.003nF,0.25pF,50V,NP0,TP,1005
2	2203-000885	C128	4.7nF,10%,25V,X7R,TP,1005,-
2	2203-000885	C333	4.7nF,10%,25V,X7R,TP,1005,-
2	2203-000885	C398	4.7nF,10%,25V,X7R,TP,1005,-
2	2203-000885	C433	4.7nF,10%,25V,X7R,TP,1005,-
2	2203-000885	C434	4.7nF,10%,25V,X7R,TP,1005,-
2	2203-000885	C444	4.7nF,10%,25V,X7R,TP,1005,-
2	2203-000940	C225	470pF,10%,50V,X7R,TP,1005,-
2	2203-000940	C385	470pF,10%,50V,X7R,TP,1005,-
2	2203-000940	C415	470pF,10%,50V,X7R,TP,1005,-

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2203-000940	C416	470pF,10%,50V,X7R,TP,1005,-
2	2203-000940	C425	470pF,10%,50V,X7R,TP,1005,-
2	2203-000940	C428	470pF,10%,50V,X7R,TP,1005,-
2	2203-000940	C441	470pF,10%,50V,X7R,TP,1005,-
2	2203-000995	C223	0.047nF,5%,50V,NP0,TP,1005
2	2203-000995	C337	0.047nF,5%,50V,NP0,TP,1005
2	2203-000995	C347	0.047nF,5%,50V,NP0,TP,1005
2	2203-000995	C439	0.047nF,5%,50V,NP0,TP,1005
2	2203-000995	C465	0.047nF,5%,50V,NP0,TP,1005
2	2203-001017	C422	0.004nF,0.25pF,50V,NP0,TP,1005
2	2203-001017	C450	0.004nF,0.25pF,50V,NP0,TP,1005
2	2203-001033	C153	5.6nF,10%,25V,X7R,TP,1005,-
2	2203-001072	C451	0.056nF,5%,50V,NP0,TP,1005
2	2203-001103	C457	6.8nF,10%,50V,X7R,TP,1608,-
2	2203-001153	C374	0.068nF,5%,50V,NP0,TP,1005
2	2203-001153	C377	0.068nF,5%,50V,NP0,TP,1005
2	2203-001153	C455	0.068nF,5%,50V,NP0,TP,1005
2	2203-001201	C440	0.007nF,0.5pF,50V,NP0,TP,1005
2	2203-001239	C348	0.082nF,5%,50V,NP0,TP,1005
2	2203-001239	C354	0.082nF,5%,50V,NP0,TP,1005
2	2203-001259	C458	0.008nF,0.5pF,50V,NP0,TP,1005
2	2203-001385	C370	0.0015nF,0.25pF,50V,NP0,TP,1005
2	2203-001385	C460	0.0015nF,0.25pF,50V,NP0,TP,1005
2	2203-001389	C162	12nF,10%,50V,X7R,TP,1608,1.6mm
2	2203-001389	C163	12nF,10%,50V,X7R,TP,1608,1.6mm
2	2203-001405	C158	22nF,+80-20%,25V,Y5V,TP,1005
2	2203-001405	C169	22nF,+80-20%,25V,Y5V,TP,1005
2	2203-001405	C171	22nF,+80-20%,25V,Y5V,TP,1005
2	2203-001405	C172	22nF,+80-20%,25V,Y5V,TP,1005
2	2203-001405	C364	22nF,+80-20%,25V,Y5V,TP,1005
2	2203-001405	C387	22nF,+80-20%,25V,Y5V,TP,1005
2	2203-001432	C470	47nF,+80-20%,16V,Y5V,TP,1005
2	2203-001598	C431	2200nF,+80-20%,16V,Y5V,TP,2012
2	2203-002668	C303	0.0005nF,0.1pF,50V,NP0,TP,1005
2	2203-002668	C427	0.0005nF,0.1pF,50V,NP0,TP,1005
2	2203-002668	C437	0.0005nF,0.1pF,50V,NP0,TP,1005
2	2203-005050	C352	0.0018nF,0.25pF,50V,NP0,TP,1005

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2	2203-005052	C362	0.0033nF,0.25pF,50V,NP0,TP,1005
2	2203-005061	C124	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C129	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C130	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C132	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C134	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C135	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C137	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C139	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C141	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C144	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C146	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C148	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C150	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C155	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C156	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C159	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C160	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C161	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C164	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C165	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C166	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C174	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C177	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C201	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C204	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C208	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C224	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C227	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C231	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C233	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C237	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C308	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C376	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C378	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C380	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C390	100nF,+80-20%,16V,Y5V,TP,1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2203-005061	C405	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C408	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C456	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	C472	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005061	U500	100nF,+80-20%,16V,Y5V,TP,1005
2	2203-005065	C167	1000nF,+80-20%,10V,Y5V,TP,1608
2	2203-005065	C213	1000nF,+80-20%,10V,Y5V,TP,1608
2	2203-005065	C228	1000nF,+80-20%,10V,Y5V,TP,1608
2	2203-005065	C229	1000nF,+80-20%,10V,Y5V,TP,1608
2	2203-005065	C436	1000nF,+80-20%,10V,Y5V,TP,1608
2	2203-005065	C445	1000nF,+80-20%,10V,Y5V,TP,1608
2	2203-005171	C219	1uF,10%,16V,X7R,TP,2012,-
2	2203-005393	C106	0.005nF,0.1pF,50V,NP0,TP,1005
2	2203-005393	C126	0.005nF,0.1pF,50V,NP0,TP,1005
2	2203-005393	C321	0.005nF,0.1pF,50V,NP0,TP,1005
2	2203-005393	C326	0.005nF,0.1pF,50V,NP0,TP,1005
2	2203-005393	C367	0.005nF,0.1pF,50V,NP0,TP,1005
2	2203-005482	C210	100nF,10%,10V,X5R,TP,1005,-
2	2203-005482	C220	100nF,10%,10V,X5R,TP,1005,-
2	2203-005483	C103	68nF,10%,10V,X5R,TP,1005,-
2	2203-005552	C302	0.0022nF,0.1pF,50V,NP0,TP,1005
2	2203-005552	C335	0.0022nF,0.1pF,50V,NP0,TP,1005
2	2404-001020	C218	10uF,20%,10V,GP,TP,3216,3.2
2	2404-001100	C151	33uF,20%,6.3V,GP,TP,3719,-
2	2404-001100	C173	33uF,20%,6.3V,GP,TP,3719,-
2	2404-001100	C202	33uF,20%,6.3V,GP,TP,3719,-
2	2404-001100	C309	33uF,20%,6.3V,GP,TP,3719,-
2	2404-001100	C375	33uF,20%,6.3V,GP,TP,3719,-
2	2404-001105	C203	10UF,20%,6.3V,GP,TP,2012
2	2404-001105	C209	10UF,20%,6.3V,GP,TP,2012
2	2404-001105	C214	10UF,20%,6.3V,GP,TP,2012
2	2404-001105	C215	10UF,20%,6.3V,GP,TP,2012
2	2404-001105	C379	10UF,20%,6.3V,GP,TP,2012
2	2404-001105	C382	10UF,20%,6.3V,GP,TP,2012
2	2404-001105	C404	10UF,20%,6.3V,GP,TP,2012
2	2404-001105	C410	10UF,20%,6.3V,GP,TP,2012
2	2703-001180	L420	15nH,5%,1x0.5x0.5mm

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2	2703-001180	L421	15nH,5%,1x0.5x0.5mm
2	2703-001409	L409	12nH,10%,1x0.5x0.5mm
2	2703-001409	L414	12nH,10%,1x0.5x0.5mm
2	2703-001514	L331	68nH,5%,1.8x1.12x1.02mm
2	2703-001514	L332	68nH,5%,1.8x1.12x1.02mm
2	2703-001729	L314	1.8nH,0.3nH,1x0.5x0.5mm
2	2703-001729	L323	1.8nH,0.3nH,1x0.5x0.5mm
2	2703-001729	L407	1.8nH,0.3nH,1x0.5x0.5mm
2	2703-001729	L412	1.8nH,0.3nH,1x0.5x0.5mm
2	2703-001731	L334	22nH,5%,1.8x1.12x1.02mm
2	2703-001733	L303	8.2nH,5%,1x0.5x0.5mm
2	2703-001734	L317	6.8nH,5%,1x0.5x0.5mm
2	2703-001747	C361	4.7nH,0.3nH,1.0x0.5x0.5mm
2	2703-001747	L419	4.7nH,0.3nH,1.0x0.5x0.5mm
2	2703-001748	L311	5.6nH,0.3nH,1.0x0.5x0.5mm
2	2703-001750	L411	2.2NH,0.3NH,1.0X0.5X0.5MM
2	2703-001751	C363	3.9nH,0.3nH,1.0x0.5x0.5mm
2	2703-001751	L422	3.9nH,0.3nH,1.0x0.5x0.5mm
2	2703-001752	L322	39nH,5%,1.0x0.5x0.5mm
2	2703-001752	L324	39nH,5%,1.0x0.5x0.5mm
2	2703-001786	L305	10NH,5%,1.0X0.5X0.5MM
2	2703-001786	L325	10NH,5%,1.0X0.5X0.5MM
2	2703-001790	C359	3.3NH,0.3NH,1.0X0.5X0.5MM
2	2703-001791	L315	15NH,5%,1.8X1.12X1.02MM
2	2703-001791	L316	15NH,5%,1.8X1.12X1.02MM
2	2703-001868	L312	82NH,5%,1005
2	2703-001868	L313	82NH,5%,1005
2	2703-001868	L329	82NH,5%,1005
2	2703-001938	L310	56nH,5%,1.0x0.5x0.5mm
2	2703-001938	L320	56nH,5%,1.0x0.5x0.5mm
2	2703-001943	L416	10nH,5%,1.0x0.5x0.5mm
2	2703-002155	L302	47nH,5%,1.0x0.5x0.5mm
2	2703-002155	L307	47nH,5%,1.0x0.5x0.5mm
2	2703-002155	L308	47nH,5%,1.0x0.5x0.5mm
2	2703-002155	L426	47nH,5%,1.0x0.5x0.5mm
2	2703-002207	L326	3.3NH,0.3NH,1.0X0.5X0.5MM
2	2703-002267	L406	4.7NH,0.3NH,1.0X0.5X0.5MM

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	2703-002267	L408	4.7NH,0.3NH,1.0X0.5X0.5MM
2	2703-002267	L413	4.7NH,0.3NH,1.0X0.5X0.5MM
2	2703-002267	L415	4.7NH,0.3NH,1.0X0.5X0.5MM
2	2703-002291	L425	18NH,°æ2%,1.6X1.0X0.9MM
2	2703-002320	L321	100NH,5%,1.0X0.5X0.5MM
2	2703-002320	L330	100NH,5%,1.0X0.5X0.5MM
2	2801-003856	OSC100	0.032768MHZ,20PPM,28-ACP,7PF,65KOHM,TP
2	2802-001182	OSC110	48MHZ,0.1%,BK,2.5X2X1MM
2	2806-001289	U382	1390.5/2139.MHZ,-,50OHM,TP,2.8V,1MA
2	2809-001248	U380	19.68MHZ,-,10Kohm//10pF,TP,2.8V,2mA
2	2903-001277	F303	-,1.575GHZ,-,0.8DB,0.2DB,TP
2	2904-001021	F302	1.96GHZ,60MHz,+-30MHz/2dB,-,+30MHz/3.5dB,0-1850MHz/20dB
2	2904-001304	F441	1.865GHZ,-,-,TP,1770MHZ/25DB,1930-1960MHZ/35DB
2	2904-001319	F444	836.5MHZ,-,1.6DB,TP,3.5DB,-
2	2904-001346	F300	881.5MHZ,-,1.1DB,TP,2.7DB,-
2	2904-001356	F301	183.6MHZ,0.013MHZ,1.0DB,TP,4.5DB,-
2	2904-001381	F304	183.6MHZ,1.25MHZ,0.4DB,TP,-,-
2	2904-001384	F305	1.57542GHZ,-,0.1DB,TP,2.4DB,-
2	2909-001157	F446	836.5MHZ,881.5MHZ,3.0/2.1DB,TP,-,-
2	2909-001170	F440	1.96GHZ,1.88GHZ,2.2/1.8DB,TP,-,-
2	3301-001105	L306	AB,1.6x0.8x0.8mm,-,-
2	3301-001105	L402	AB,1.6x0.8x0.8mm,-,-
2	3301-001120	L410	AB,30ohm,2x1.25x0.85mm,3000mA,TP,FERRITE,0.015ohm
2	3301-001120	L418	AB,30ohm,2x1.25x0.85mm,3000mA,TP,FERRITE,0.015ohm
2	3301-001341	L424	AB,120OHM,1X0.5X0.5MM,150MA,TP,M,0.4OHM
2	3301-001342	L101	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L201	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L301	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L304	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L333	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L335	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L336	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L337	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L401	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L403	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	L404	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM
2	3301-001342	R291	AB,1.5KOHM,1X0.5X0.5MM,100MA,TP,M,1.4OHM

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	3705-001255	CN450	-,JACK,-,-,-
2	3710-001105	CN204	2P,1R,1.27mm,SMD-S,AU
2	3710-001599	CN200	18P,1R,0.5mm,SMD-A,AUF
2	3711-004980	CN102	NO,26P,2R,0.5MM,SMD-S,AU,NTR
2	3722-001456	EARJ1	2P,2.6PI,AUF,BLK,-
2	4709-001202	F445	824~849 MHz,12dB,0.65dB,1.5
2	4709-001257	F442	824-894MHZ,1850-1990MHZ,0.55DB,10DB,-40TO+85C,50OHM
2	4709-001283	U430	1850-1910MHZ,14DB,0.6DB,1.5
2	GH41-00262A	L405	SCH-A310,FR-4,8L,-,1.0T,110X158MM,-,3,-,-
2	GH61-00019A		SGH-N105,BE-CU,-,-,-,-,-,GLD,-,-
2	GH96-01175A		SCH-A310,XAR,BRAZ,KEY PAD ALL ASSEMBLE,-,-,-
3	GH59-00413A		SCH-A310,SCH-A310METAL DOME ,-,METAL DOME,-,-,-,-,-,-
3	GH59-00414A		SCH-A310,KBSCHA310,-,VOLUME KEY ASS'Y,-,-,-,-,-,-
1	GH97-02302A		SCH-A310,VERIZON,USA,SIL,-,-,-
2	3001-001308		0.05W,32OHM,116DB,-
2	6001-001577		CH,TORX,M1.7,L2.5,NI PLT,SWRCH18A,FP,P0.35
2	GH07-00155A		UG-12D72-FLHTX-A,SCH-A310,-,37.4X55.21X4.6MM, 4GRY/BLK,-,0.225X0.225MM,-20TO+60C,
2	GH59-00240B		SGH-R210,OBG-15S42-C1033 R210,-,MIC ASS'Y, SGH-R210/R220/R208,-,-,-,-,-
2	GH59-00415A		SCH-A310,SM16G02BMA,-,SPEAKER,FPCB ,-,,-,-,-,-
2	GH59-00416A		SCH-A310,KBSCHA310C,-,CONNECTOR,FPC,-,-,-,-,-
2	GH72-03806A		SCH-A310,PC,SIL,-,-,-,-,-
2	GH72-03815A		SCH-A310,ACRYL,TRP,-,-,-,-,-
2	GH73-01350A		SCH-A310,CR RUBBER,28X3XT1.0,-,-,BLK,-,-,-,-
2	GH73-01351A		SCH-A310,CR RUBBER,6.5X2XT1.4,-,-,BLK,-,-,-,-
2	GH74-02788A		SCH-A310,PORON,20X7XT2.0,BLK,-,-,-,-
2	GH74-02790A		SCH-A310,PORON,8X5XT3.0,BLK,-,-,-,-
2	GH74-02791A		SCH-A310,RUBBER SPONGE,10X6XT2.0,BLK,-,-,-,-
2	GH74-02804A		SCH-A310,PORON,PI11XT2.0,BLK,-,-,-,-
2	GH74-02806A		SCH-A310,VINYL,46X73XT0.2,TRP,-,-,-,-
2	GH74-02807A		SCH-A310,VINYL,43.5X52XT0.2,TRP,-,-,-,-
2	GH74-02807B		SCH-A310,3M4187C,43.5X52XT0.1,TRP,-,-,-,-
2	GH74-02926A		SCH-A310,VINYL TAPE,21X7XT0.05,WHT,-,-,-,-
2	GH74-03265A		SCH-A310,CU TAPE,15X4XT0.1,GLD,-,-,-,-
2	GH75-01708A		SCH-A310,USA,-,-,SIL,-,-,-
3	GH71-00822A		-,SCH-A310,MG,-,47X73X8,-,-,-,-,SIL,-

Level	SEC CODE	Design LOC	DESCRIPTIONS
3	GH71-00872A		-,SCH-A310,ZN,-,33,23,T1.4,-,-,SIL,-
3	GH72-04681A		SCH-A310,ACRYL,TRP,-,-,-,-,-
3	GH74-02197A		SCH-A310,TESA,T0.1,TRP,-,-,-,-
3	GH74-02198A		SCH-A310,PORON SRS,T0.5,BLK,-,-,-,-
3	GH74-02600A		SPH-X7000,VINYL,T0.1,-,-,-,-,3M4187
3	GH74-02927A		SCH-A310,VINYL TAPE,20X4XT0.05,WHT,-,-,-,-
3	GH74-03257A		SCH-A310,PET,3X3XT0.05,BLK,-,-,-,-
3	GH74-03339A		SCH-A310,VINYL TAPE ,5X7XT0.05,WHT,-,-,-,-
2	GH75-01709A		SCH-A310,USA,-,-,SIL,-,-,-
3	GH70-00039A		SCH-A2000,NDFEB,-,-,-,-,PI3.0X2.0,-,-
3	GH71-00683A		-,SCH-A310,SUS304,-,4.4,20,T0.4,-,-,SIL,-
3	GH71-00684A		-,SCH-A310,SUS304,-,4.4,20,T0.4,-,-,SIL,-
3	GH71-00824A		-,SCH-A310,NI,-,18X2X1,-,-,-,-,CR PLATE,-
3	GH72-03808A		SCH-A310,PC,SIL,-,-,-,-,-
3	GH72-03809A		SCH-A310,ABS,SIL,-,-,-,-,-,CR PLT
3	GH74-02199A		SCH-A310,PORON SRS,T0.7,BLK,-,-,-,-
3	GH74-02200A		SCH-A310,TESA,T0.1,TRP,-,-,-,-
3	GH74-02607A		SCH-A310,TESA,17X1.2XT0.4,TRP,-,-,-,-
3	GH74-02801A		SCH-A310,PORON,4X2XT2.0,BLK,-,-,-,-
3	GH74-02847A		SCH-A310,TESA,7X9XT0.15,TRP,-,-,-,-
3	GH75-00764A		SCH-8500,-,ASS`Y,-,BLK,-,-
4	GH70-00073A		SCH-8500,SUS,-,PI4.9X10,-,-,-,-,-
4	GH71-00316A		SCH-8500,ZNDC,-,NI PLT,-
4	GH72-00291A		SCH-A100,POM,BLK,-,-
4	GH72-01863A		SCH-8500,-,POM,BLK,-,-,-
2	GH75-01711A		SCH-A310,USA,-,-,SIL,-,-,-
3	GH71-00620A		-,SPH-X4700,ZN,R3X6,-,-,-,-,-,SIL,-
3	GH71-00686A		-,SCH-A310,SUS304,41X29XT1.2,-,-,-,-,-,SIL,-
3	GH72-03816A		SCH-A310,PC,SIL,-,-,-,-,-
3	GH72-03817A		SCH-A310,ACRYL,TRP,-,-,-,-,-
3	GH72-03818A		SCH-A310,POM,SIL,-,-,-,-,-
3	GH73-01013A		SCH-A310,CR RUBBER,T8.7,4,1.5,BLK,-,-,-,-
3	GH73-01368A		SCH-A310,RUBBER,8.6X10.7X9.8,-,-,-,SIL,-,-,-,-
2	GH75-01712A		SCH-A310,USA,-,-,-,-,-
3	GH72-03826A		SCH-A310,PC,SIL,-,-,-,-,-
3	GH72-03827A		SCH-A310,PC,SIL,-,-,-,-,-
3	GH72-03828A		SCH-A310,ABS,SIL,-,-,-,-,-

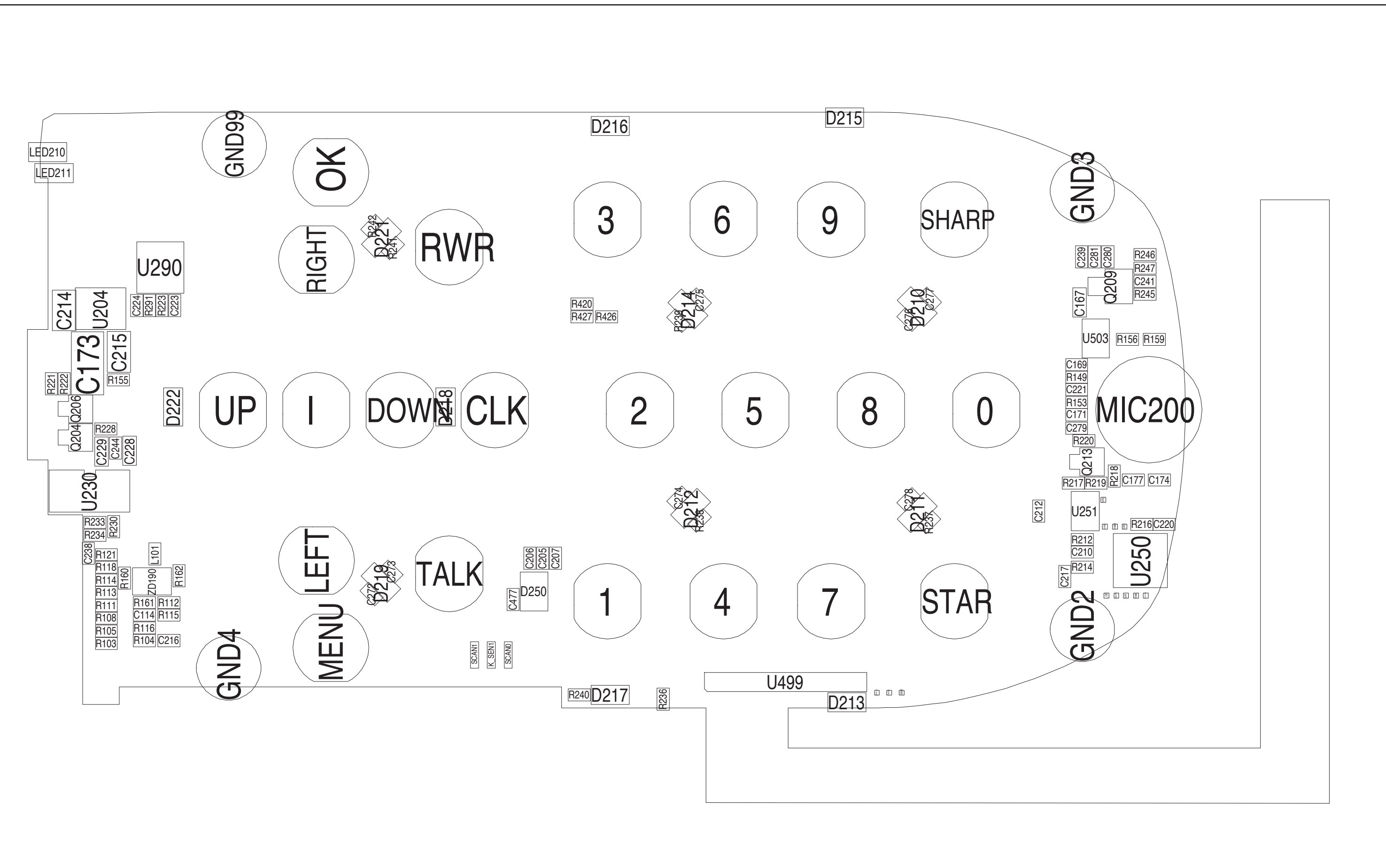
Level	SEC CODE	Design LOC	DESCRIPTIONS
3	GH72-03829A		SCH-A310,PC,SIL,-,-,-,-,-
3	GH73-01014A		SCH-A310,SI RUBBER,T0.6,42,65.8,TRP,-,-,-,-
1	GH97-02303A		SCH-A310,VERIZON,USA,SIL,-,-,-
2	3101-001301		15000RPM,-,3V,90MA
2	6001-001285		PH,+,M1.4,L3,ZPC(BLK),SWRCH18A,FP
2	GH71-00004A		SCH-800B,C5210-1/2H,T0.1,-
2	GH71-00084A		SPH-A1000,C5210P-H,T0.1,AU
2	GH74-02802A		SCH-A310,PORON,6X3XT4.2,GLD,-,-,-,-
2	GH75-01713A		SCH-A310,USA,-,-,-,-,-
3	GH61-00020A		SPH-A330,SUS304WP,-,-,PI3.1X4.5,-,-,-,-,-
3	GH68-00973B		SCH-A300,VINYL,T0.12,10,4,-,TRP,-,-,-
3	GH71-00823A		-,SCH-A310,ZN,-,5.4X7.2X3.2,-,-,-,-,GLD PLATE,-
3	GH72-04415A		SCH-A310,PC,L/GRY,-,-,-,-,-
3	GH72-04416A		SCH-A310,PC,SIL,-,-,-,-,-
3	GH72-05356A		SCH-A310,ELASTOMER,GRY,10X6.2XT9.0,-,-,-,-,-
3	GH73-01352A		SCH-A310,CR RUBBER,14.1X14.1XT1.0,-,-,BLK,-,-,-,-
3	GH74-02929A		SCH-A310,3M 1350,5X5XT0.1,BLK,-,-,-,-
3	GH74-03256A		SCH-A310,PET,5X3XT0.05,BLK,-,-,-,-
2	GH75-02225A		SCH-A310,-,-,-,SIL,-,-,-
3	GH72-04672A		SCH-A310,PC,SIL,-,-,-,-,-
3	GH74-03092A		SCH-A310,PORON SRS,5X3XT0.05,BLK,-,-,-,-
1	GH99-02735A		SCH-A310,XAR,U.S.A,MANUAL,-,-
2	GH68-01897A		SCH-T300,SAMSUNG,ENG,STA,-,-,-,-,-,-,-
2	GH68-02616A		SCH-A310,VERIZON,ENGLSIH,USA,-,-,-,-,-,-,-
2	GH68-02618A		SCH-A310,VERIZON,ENGLISH/SPANISH,USA,-,-,-,-,-,-,-,-
2	GH68-02619A		SCH-A310,VERIZON,ENGLISH,USA,-,-,-,-,-,-,-,-
2	GH68-02620A		SCH-A310,VERIZON,ENGLISH,USA,-,-,-,-,-,-,-,-
2	GH68-02778A		SCH-A310,VERIZON,ENGLISH,USA,-,-,-,-,-,-,-,-
2	GH68-03005A		SCH-A310,VERIZON,ENGLISH,USA,-,-,-,-,QRC CARD
2	GH68-03023A		SCH-A310,VERIZON,ENGLISH,USA,-,-,-,-,CARD
2	GH69-30518A		PP,T0.06,125*280,SCH-1011
1	GH99-02739A		SCH-A310,VERIZON,USA,-,-,-
2	GH68-02967A		SCH-A310,-,ART PAPER,-,PI20,-,BLU,-,-,-
2	GH68-03029A		SCH-A310,-,ART PAPER,-,35X13.5,-,YEL,-,-,-
2	GH69-00910A		SPH-N200,VINYL,T0.06,130,80,-,-
2	GH69-00941A		SPH-N200,LDPE,T0.06,206,100,-,-
2	GH69-01055A		SCH-A310,IVORY(#300),-,-,-,-,135X79X192,-

Electrical Parts List

Level	SEC CODE	Design LOC	DESCRIPTIONS
2	GH69-01056A		SCH-A310,PS,132X134XT0.5,-,-,-,WHT,-
2	GH69-11279A		CHINA,SGH-600,SW-3,530X510X187

12. PCB Diagram

12-1 Main PCB Top Diagram

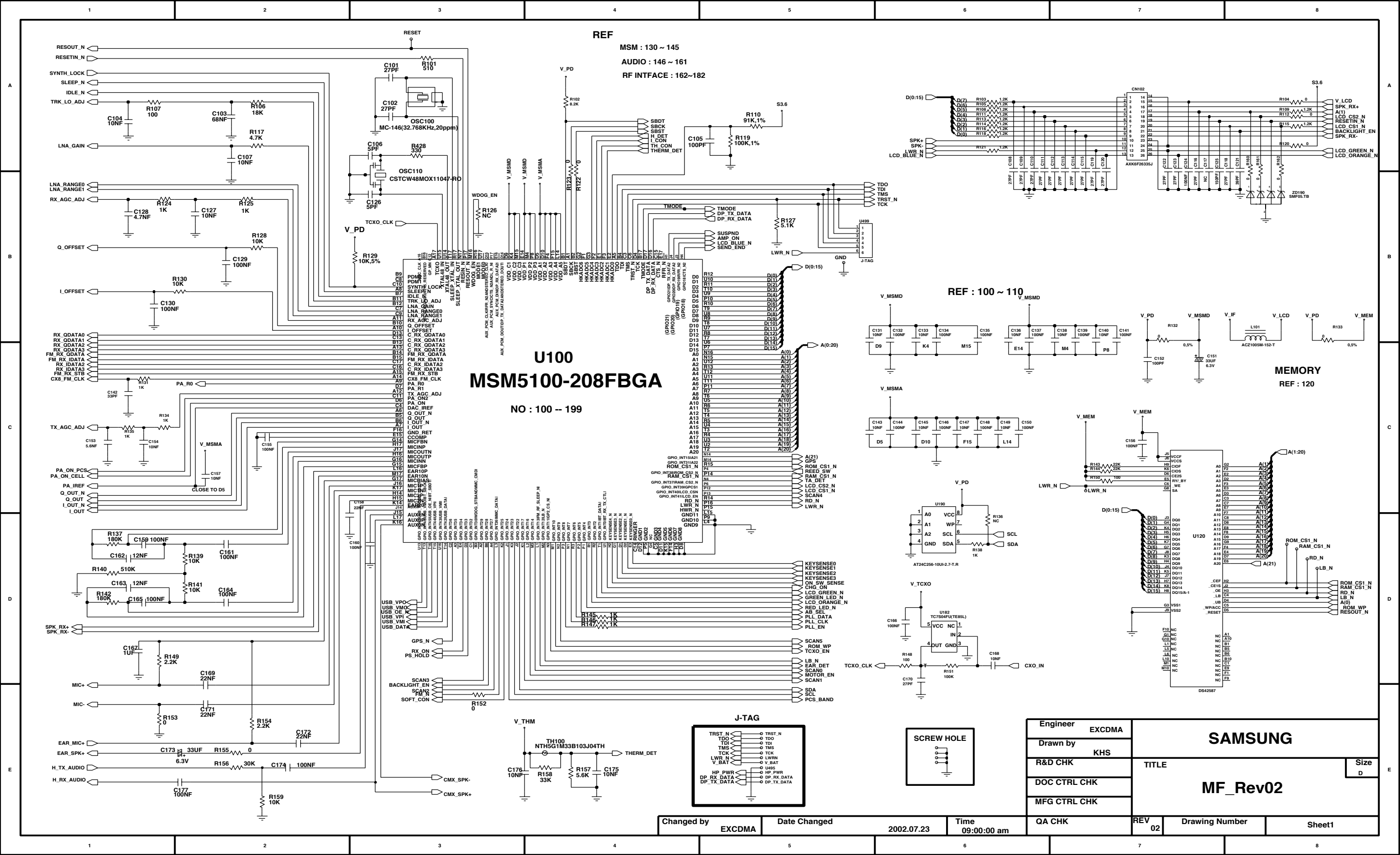


12-2 Main PCB Bottom Diagram

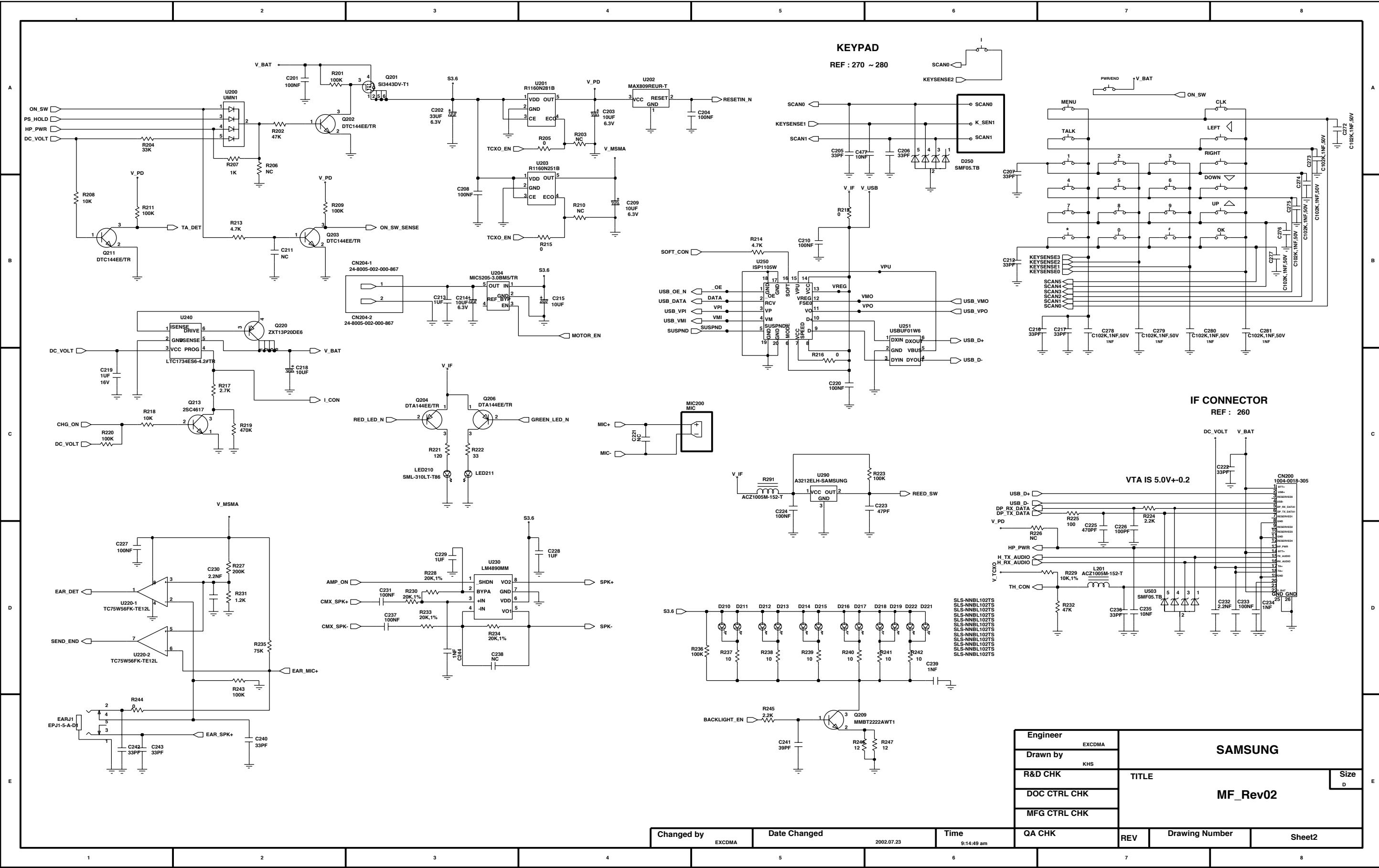


13. Circuit Diagrams

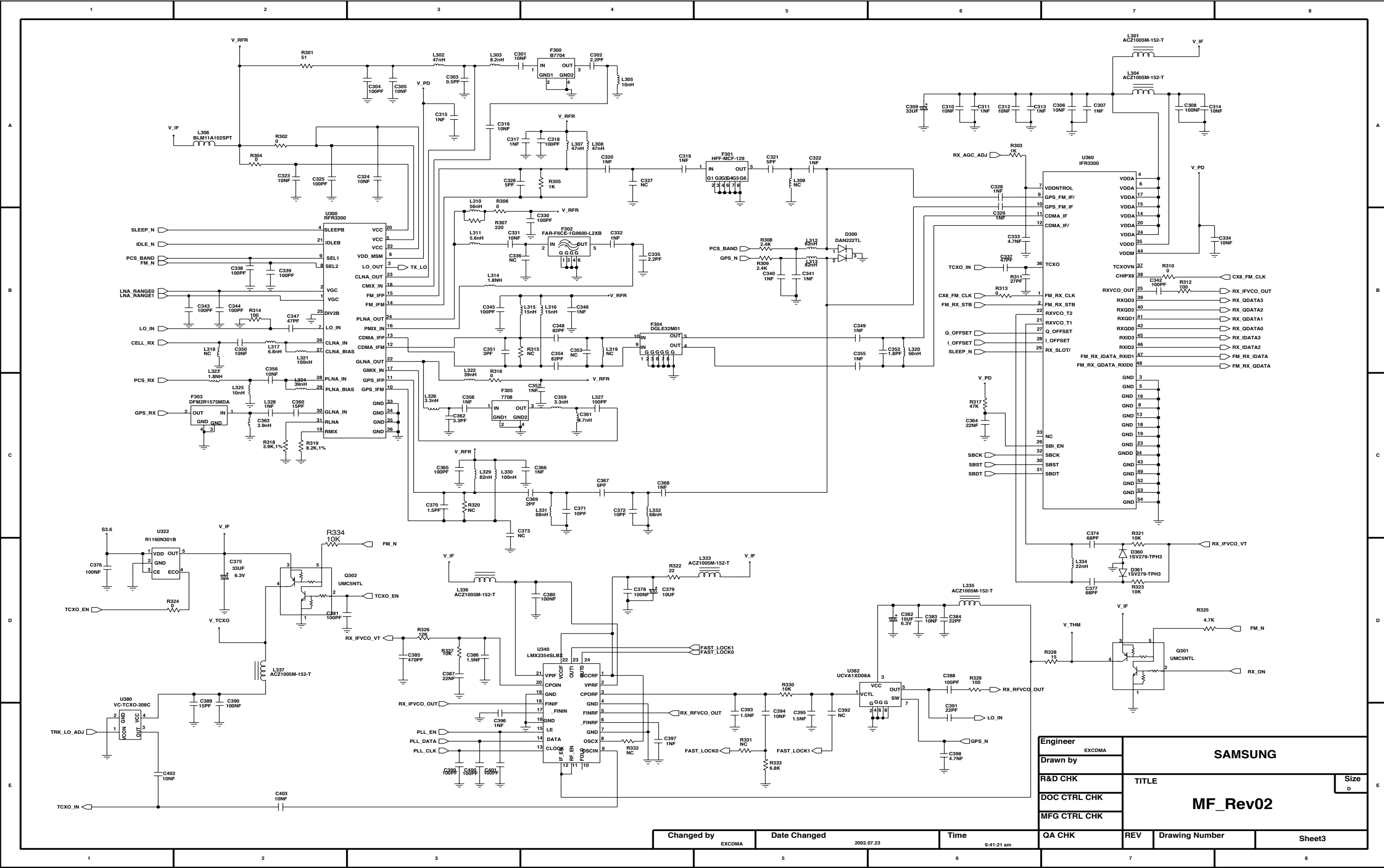
13-1 Logic Circuit Diagram 1



13-2 LOGIC Circuit Diagram 2



13-3 RF Circuit Diagram 1



13-4 RF Circuit Diagram 2

