Features of PX8700

1. Wave Type

- CELLULAR : G7W
- PCS : G7W

2. Frequency Scope

Transmit Frequency (MHz)		Receive Frequency (MHz)		
CELLULAR	**PCS**	**CELLULAR**	**PCS**	**GPS**
824.82 ~ 848.19	1850~1910	869.82~893.19	1930~1990	1575.42

3. Rated Output Power : CELLULAR = 0.20W
PCS = 0.20W

4. Output Conversion Method : This is possible by correcting the key board channel.

5. Voltage and Current Value of Termination Part Amplifier (Catalogue included)

MODE	Part Name	Voltage	Current	Power
CELLULAR	AWT6310R	4.2V	600mA	0.20W
PCS	AWT6310R	4.2V	600mA	0.20W

6. Functions of Major Semi-Conductors

Classification	Function
MSM6550	Terminal operation control and digital signal processing
Memory MCP (HYI0UGG0MF1P-6SS0E)	Flash Memory (1Mbit) + SDRAM (512Mbit) Storing of terminal operation program
RFR6500	Converts Rx RF signal to baseband signal
RFT6150	Converts baseband signal to Tx RF signal

7. Frequency Stability

- CELLULAR : ±0.5PPM
- PCS : ±0.1PPM

CDMA Mobile Subscriber Unit
PX8700

SERVICE MANUAL

TRI BAND CDMA
[PCS/Cellular/GPS]
CDMA MOBILE PHONE

Table of Contents

General Introduction

The PX8700 phone has been designed to operate on the latest digital mobile communication technology, Code Division Multiple Access (CDMA). This CDMA digital technology has greatly enhanced voice clarity and can provide a variety of advanced features. Currently, CDMA mobile communication technology has been commercially used in Cellular and Personal Communication Service (PCS). The difference between them is the operating frequency spectrum. Cellular uses 800MHz and PCS uses 1.9GHz. The PX8700 support GPS Mode, we usually call it tri-band phone. Also, PX8700 works on Advanced Mobile Phone Service (S-GPS). We call it dual-mode phone. If one of the Cellular, PCS base stations is located nearby, Call fail rate of triple-mode phone is less than dual-mode phone or single-mode phone.

The CDMA technology adopts DSSS (Direct Sequence Spread Spectrum). This feature of DSSS enables the phone to keep communication from being crossed and to use one frequency channel by multiple users in the same specific area, resulting that it increases the capacity 10 times more compared with that in the analog mode currently used. Soft/Softer Handoff, Hard Handoff, and Dynamic RF power Control technologies are combined into this phone to reduce the call being interrupted in a middle of talking over the phone.

Cellular and PCS CDMA network consists of MSO (Mobile Switching Office), BSC (Base Station Controller), BTS (Base station Transmission System), and MS (Mobile Station). The following table lists some major CDMA Standards.

CDMA Standard	Designator	Description
Basic air interface	TIA/EIA/IS-95-A/B/C	Protocol between MS and BTS for Cellular & AMPS
	ANSI J-STD-008	Protocol between MS and BTS for PCS
Network	TIA/EIA/IS-634	MAS-BS
	TIA/EIA/IS/651	PCSC-RS
	TIA/EIA/IS-41-C	Intersystem operations
	TIA/EIA/IS-124	Nom-signaling data comm.
Service	TIA/EIA/IS-96-B	Speech CODEC
	TIA/EIA/IS-99	Assign data and fax
	TIA/EIA/IS-637	Short message service
	TIA/EIA/IS-657	Packet data
Performance	TIA/EIA/IS-97	Cellular base station
	TIA/EIA/IS-98	Cellular mobile station
	ANSI J-STD-018	PCS personal station
	ANSI J-STD-019	PCS base station
	TIA/EIA/IS-125	Speech CODEC

* TSB –74: Protocol between an IS-95A system and ANSI J-STD-008

Chapter1. System Introduction

1.1 CDMA Abstract

The CDMA mobile communication system has a channel hand-off function that is used for collecting the information on the locations and movements of mobile telephones from the cell site by automatically controlling several cell site through the setup of data transmission routes, and then enabling one switching system to carry out the automatic remote adjustment. This is to maintain continuously the call state through the automatic location confirmation and automatic radio channel conversion when the busy subscriber moves from the service area of one cell site to that of another by using automatic location confirmation and automatic radio channel conversion functions. The call state can be maintained continuously by the information exchange between switching systems when the busy subscriber moves from one Cellular system area to the other Cellular system area.

In the Cellular system, the cell site is a small-sized low output type and utilizes a frequency allocation system that considers mutual interference, in an effort to enable the re-use of corresponding frequency from a cell site separated more than a certain distance.

Unlike the time division multiple access (TDMA) or frequency division multiple access (FDMA) used in the band limited environment, the Code Division Multiple Access (CDMA) system which is one of digital Cellular systems is a multi-access technology under the interference limited environment. It can process more number of subscribers compared to other systems (TDMA system has the processing capacity three times greater than the existing FDMA system whereas CDMA system, about 12~15 times of that of the existing system).

CDMA system can be explained as follows; TDMA or CDMA can be used to enable each person to talk alternately or provide a separate room for each person when two persons desire to talk with each other at the same time, whereas FDMA can be used to enable one person to talk in soprano, whereas the other in bass (one of the two talkers can carry out synchronization for hearing in case there is a bandpass filter function in the area of the hearer). Another available method is to make two persons to sing in different languages at the same time, space, and frequency when wishing to let the audience hear the singing without being confused. This is the characteristic of CDMA.

On the other hand, when employing the CDMA technology, each signal has a different pseudo-random binary sequence used to spread the spectrum of carrier. A great number of CDMA signals share the same frequency spectrum. In the perspective of frequency area or time area, several CDMA signals are overlapped. Among these types of signals, only desired signal energy is selected and received through the use of pre-determined binary sequence; desired signals can be separated, and then received with the correlator used for recovering the spectrum into its original state. At this time, the spectrums of other signals that have different codes are not recovered into its original state, and appears as the self-interference of the system.

2. Features and Advantages of CDMA Mobile Phone

2.1 Various Types of Diversities

When employing the narrow band modulation (30kHz band) that is the same as the analog FM modulation system used in the existing Cellular system, the multi-paths of radio waves create a serious fading. However, in the CDMA broadband modulation (1.25MHz band), three types of diversities (time, frequency, and space) are used to reduce serious fading problems generated from radio channels in order to obtain high-quality calls.

Time diversity can be obtained through the use of code interleaving and error correction code whereas frequency diversity can be obtained by spreading signal energy to wider frequency band. The fading related to normal frequency can affect the normal 200~300KHz among signal bands and accordingly, serious effect can be avoided. Moreover, space diversity (also called path diversity) can be realized with the following three types of methods.

First, it can be obtained by the duplication of cell site receive antenna. Second, it can be obtained through the use of multi-signal processing device that receives a transmit signal having each different transmission delay time and then, combines them. Third, it can be obtained through the multiple cell site connection (Soft Handoff) that connects the mobile station with more than two cell sites at the same time.

2.2 Power Control

The CDMA system utilizes the forward (from a base station to mobile stations) and backward (from the mobile station to the base station) power control in order to increase the call processing capacity and obtain high-quality calls. In case the originating signals of mobile stations are received by the cell site in the minimum call quality level (signal to interference) through the use of transmit power control on all the mobile stations, the system capacity can be maximized.If the signal power of mobile station is received too strong, the performance of that mobile station is improved. However, because of this, the interference on other mobile stations using the same channel is increased and accordingly, the call quality of other subscribers is reduced unless the maximum accommodation capacity is reduced.

In the CDMA system, forward power control, backward open loop power control, and closed loop power control methods are used. The forward power control is carried out in the cell site to reduce the transmit power on mobile stations less affected by the multi-path fading and shadow phenomenon and the interference of other cell sites when the mobile station is not engaged in the call or is relatively nearer to the corresponding cell site. This is also used to provide additional power to mobile stations having high call error rates, located in bad reception areas or far away from the cell site.

The backward open loop power control is carried out in a corresponding mobile station; the mobile station measures power received from the cell site and then, reversely increases/decreases transmit power in order to compensate channel changes caused by the forward link path loss and terrain characteristics in relation to the mobile station in the cell site. By doing so, all the mobile transmit signals received by the base station have same strength.

Moreover, the backward closed loop power control used by the mobile station is performed to control power using the commands issued out by the cell site. The cell site receives the signal of each corresponding mobile station and compares this with the pre-set threshold value and then, issues out power increase/decrease commands to the corresponding mobile station every 1.25msec (800 times per second). By doing so, the gain tolerance and the different radio propagation loss on the forward/backward link are complemented.

2.3 Voice Encoder and Variable Data Speed

The bi-directional voice service having variable data speed provides voice communication which employs voice encoder algorithm having power variable data rate between the base station and the mobile station. On the other hand, the transmit voice encoder performs voice sampling and then, creates encoded voice packets to be sent out to the receive voice encoder, whereas the receive voice encoder demodulates the received voice packets into voice samples.

One of the two voice encoders described in the above is selected for use depending on inputted automatic conditions and message/data; both of them utilize four-stage frames of 9600, 4800, 2400, and 1200 bits per second for Cellular and 14400,7200,3600,1800 bits per second for PCS, so PCS provide relatively better voice quality (almost twice better than the existing celluar system). In addition, this type of variable voice encoder utilizes adaptive threshold values on selecting required data rate. It is adjusted in accordance with the size of background noise and the data rate is increased to high rate only when the voice of caller is inputted.

Therefore, background noise is suppressed and high-quality voice transmission is possible under the environment experiencing serious noise. In addition, in case the caller does not talk, data transmission rate is reduced so that the transmission is carried out in low energy. This will reduce the interference on other CDMA signals and as a result, improve system performance (capacity increased by about two times).

2.4 Protecting Call Confidentiality

Voice privercy is provided in the CDMA system by means of the private long code mask used for PN spreading. Voice privacy can ve applied on the traffic channels only. All calls are initiated using the public long code mask for PN spreading. The mobile station user may request voice privacy during call setup using the origination message or page response message, and during traffic channel operation using the long code transition request order.

The Transition to private long code mask will not be performed if authentication is not performed. To initiate a transition to the private or public long code mask, either the base station or the mobile station sends a long code transition request order on the traffic channel.

2.5 Soft Handoff

A handoff in which the mobile station commences communications with a new base station without interrupting communications with the old base station. Soft handoff can only be used between CDMA channels having identical freqeuncy assignments.

2.6 Frequency Re-Use and Sector Segmentation

Unlike the existing analog Cellular system, the CDMA system can reuse the same frequency at the adjacent cell. there is no need to prepare a separate frequency plan. Total interference generated on mobile station signals received from the cell site is the sum of interference generated from other mobile stations in the same cell site and interference generated from the mobile station of adjacent cell site. That is, each mobile station signal

generates interference in relation to the signals of all the other mobile stations.

Total interference from all the adjacent cell sites is the ratio of interference from all the cell sites versus total interference from other mobile stations in the same cell site (about 65%). In the case of directional cell site, one cell normally uses a 120 ° sector antenna in order to divide the sector into three. In this case, each antenna is used only for 1/3 of mobile stations in the cell site and accordingly, interference is reduced by 1/3 on the average and the capacity that can be supported by the entire system is increased by three times.

2.7 Soft Capacity

The subscriber capacity of the CDMA system is flexible depending on the relation between the number of users and service classes. For example, the system operator can increase the number of channels available for use during the busy hour despite the drop in call quality. This type of function requires 40% of normal call channels in the standby mode during the handoff, in an effort to avoid call disconnection resulting from the lack of channels.

In addition, in the CDMA system, services and service charges are classified further into different classes so that more transmit power can be allocated to high class service users for easier call set-up; they can also be given higher priority of using hand-off function than the general users.

3. Specification

3.1 General Specification

3.1.1 Transmit/Receive Frequency Interval :

1) CELLULAR : 45 MHz
2) PCS : 80 MHz

3.1.2 Number of Channels (Channel Bandwidth)

1) CELLULAR : 20 Channels
2) PCS : 48 Channels

3.1.3 Operating Voltage : DC 3.3~4.2V

3.1.4 Battery Power Consumption : DC 3.7V

	SLEEP	IDLE	MAX POWER
CELLULAR	1 mA	110~140mA	700 mA (24 dBm)
PCS	1 mA	120~150 mA	700 mA (24 dBm)

3.1.5 Operating Temperature : -20°C ~ +60°C

3.1.6 Frequency Stability

1) CDMA : ±0.5PPM
2) PCS : ±0.1PPM

3.1.7 Antenna : Intenna Type, 50 Ω

3.1.8 Size and Weight

1) Size : 97(H) * 49.5(W) * 13.6(D) mm
2) Weight : 110 g (Approximately with standard battery)

3.1.9 Channel Spacing

1) CELLULAR : 1.25MHz
2) PCS: 1.25 MHz

3.1.10 Battery Type, Capacity and Operating Time.

Unit = Hours : Minutes

		Standard (1,100mAh)
Standby Time	CELLULAR	About 380 Hours (SCI=2)
	PCS	About 380 Hours (SCI=2)
Talk time	CELLULAR	230 Minutes (-92dBm input)
	PCS	230 Minutes (-92dBm input)

3.2 Receive Specification

3.2.1 Frequency Range

1) CELLULAR : 869.820 MHz ~ 893.190 MHz
2) PCS : 1930 MHz ~ 1990 MHz
3) GPS : 1575.42 MHz

3.2.2 Local Oscillating Frequency Range :

1) CELLULAR : 1738.08MHz ~ 1787.94MHz
2) PCS : 1715.56MHz ~ 1768.89MHz
3) GPS : 3150.84MHz

3.2.3 Sensitivity

1) CELLULAR : -104dBm (C/N 12dB or more)
2) PCS : -104dBm (C/N 12dB or more)
3) GPS : -148.5dBm (without SA mode)

3.2.4 Selectivity

1) CELLULAR : 3dB C/N Degration (With Fch±1.25 kHz : -30dBm)
2) PCS : 3dB C/N Degration (With Fch±1.25 kHz : -30dBm)

3.2.5 Spurious Wave Suppression : Maximum of -80dB

3.2.6 CDMA Input Signal Range

- Dynamic area of more than -104~ -25 dB: 79dB at the 1.23MHz band.

3.3 Transmit Specification

3.3.1 Frequency Range

1) CELLULAR : 824.820MHz ~ 848.190MHz
2) PCS : 1850 MHz ~ 1910 MHz

3.3.2 Output Power

1) CELLULAR : 0.224W
2) PCS: 0.224W

3.3.3 Interference Rejection

1) Single Tone : -30dBm at 900 kHz (CELLULAR), -30dBm at 1.25MHz(PCS)
2) Two Tone : -43dBm at 900 kHz & 1700kHz(CELLULAR), -43dBm at 1.25 MHz & 2.05 MHz (PCS)

3.3.11 CDMA TX Frequency Deviation :

1) CELLULAR: ±300Hz or less

2) PCS: ± 150Hz

3.3.12 CDMA TX Conducted Spurious Emissions

1) CELLULAR : 900kHz : - 42 dBc/30kHz below
1.98MHz : - 54 dBc/30kHz below

2) P C S : 1.25MHz : - 42 dBc/30kHz below
1.98MHz : - 50 dBc/30kHz below

3.3.13 CDMA Minimum TX Power Control

1) CELLULAR : - 50dBm below

2) P C S : -50dBm below

3.4 MS (Mobile Station) Transmitter Frequency

3.4.1 CELLULAR mode

Ch #	Center Freq. (MHz)	Ch #	Center Freq. (MHz)
1011	824.640	404	837.120
29	825.870	445	838.350
70	827.100	486	839.580
111	828.330	527	840.810
152	829.560	568	842.040
193	830.790	609	843.270
234	832.020	650	844.500
275	833.250	697	845.910
316	834.480	738	847.140
363	835.890	779	848.370

3.4.2 PCS mode

Ch #	Center Freq (MHz)	Ch #	Center Freq (MHz)	Ch #	Center Freq (MHz)
25	1851.25	425	1871.25	825	1891.25
50	1852.50	450	1872.50	850	1892.50
75	1853.75	475	1873.75	875	1893.75
100	1855.00	500	1875.00	900	1895.00
125	1856.25	525	1876.25	925	1896.25
150	1857.50	550	1877.50	950	1897.50

175	1858.75	575	1878.75	975	1898.75
200	1860.00	600	1880.00	1000	1900.00
225	1861.25	625	1881.25	1025	1901.25
250	1862.50	650	1882.50	1050	1902.50
275	1863.75	675	1883.75	1075	1903.75
300	1865.00	700	1885.00	1100	1905.00
325	1866.25	725	1886.25	1125	1906.25
350	1867.50	750	1887.50	1150	1907.50
375	1868.75	775	1888.75	1175	1908.75

3.5 MS (Mobile Station) Receiver Frequency

3.5.1 CELLULAR mode

Ch. #	Center Freq. (MHz)	Ch. #	Center Freq. (MHz)
1011	869.640	404	882.120
29	870.870	445	883.350
70	872.100	486	884.580
111	873.330	527	885.810
152	874.560	568	887.040
193	875.790	609	888.270
234	877.020	650	889.500
275	878.250	697	890.910
316	879.480	738	892.140
363	880.890	779	893.370

3.5.2 PCS mode

Ch #	Center Freq (MHz)	Ch #	Center Freq (MHz)	Ch #	Center Freq (MHz)
25	1931.25	425	1951.25	825	1971.25
50	1932.50	450	1952.50	850	1972.50
75	1933.75	475	1953.75	875	1973.75
100	1935.00	500	1955.00	900	1975.00
125	1936.25	525	1956.25	925	1976.25
150	1937.50	550	1957.50	950	1977.50
175	1938.75	575	1958.75	975	1978.75
200	1940.00	600	1960.00	1000	1980.00

225	1941.25	625	1961.25	1025	1981.25
250	1942.50	650	1962.50	1050	1982.50
275	1943.75	675	1963.75	1075	1983.75
300	1945.00	700	1965.00	1100	1985.00
325	1946.25	725	1966.25	1125	1986.25
350	1947.50	750	1967.50	1150	1987.50
375	1948.75	775	1968.75	1175	1988.75

3.5.3 GPS mode : 1575.42 MHz

3.5.4 Bluetooth mode : 2400 MHz ~ 2483.5 MHz

3.6 AC Adaptor : See Appendix

3.7 Cigar Lighter Charger : See Appendix

3.7 Hands – Free Kit : See Appendix

4. Installation

4.1 Installing a Battery Pack

1) The Battery pack is keyed so it can only fit one way. Align the groove in the battery pack with the rail on the back of the phone until the battery pack rests flush with the back of the phone.
2) Slide the battery pack forward until you hear a “click”, which locks the battery in place.

4.2 For Adapter Use

1) Plug the adapter into a wall outlet. The adapter can be operated from a 110V source. When AC power is connected to the adapter.
2) Insert the adapter IO plug into the phone with the installed battery pack.
   Red light indicates battery is being charged.. Green light indicates battry is fully charged.

4.3 For Mobile Mount

4.3.1 Installation Position

In order to reduce echo sound when using the Hands-Free Kit, make sure that the speaker and microphone are not facing each other and keep microphone a generous distance from the speaker.

4.3.2 Cradle Installation

Choose an appropriate flat surface where the unit will not interface with driver’s movement or passenger’s comfort. The driver/user should be able to access the phone with ease. Using the four self-tapping screws provided, mount the supplied braket on the selected area. Then with the four machine screws provided, mount the counterpart on the reverse side of the reverse side of the cradle. Secure the two brackets firmly together by using the two bracket joint screws provide. The distance between the cradle and the interface box must not exceed the length of the main cable.

4.3.3 Interface Box

Choose an appropriate flat surface (somewhere under the dash on the passenger side is preferred) and mount the IB bracket with the four self-tapping screws provided. Clip the IB into the IB bracket.

4.3.4. Microphone Installation

Install the microphone either by cliiping I onto the sunvisor (driver’s side) or by attaching it to door post (driver’s side), using a velcno adhesive tape (not included).

4.3.5 Cable Connections

4.3.5.1 Power and Ignition Cables

Connect the red wire to the car battery positive terminal and the black wire to the car ground. Connect the green wire to the car ignition sensor terminal. (In order to operate HFK please make sure to connect green wire to ignition sensor terminal.) Connect the kit's power cable connector to the interface box power receptacle.

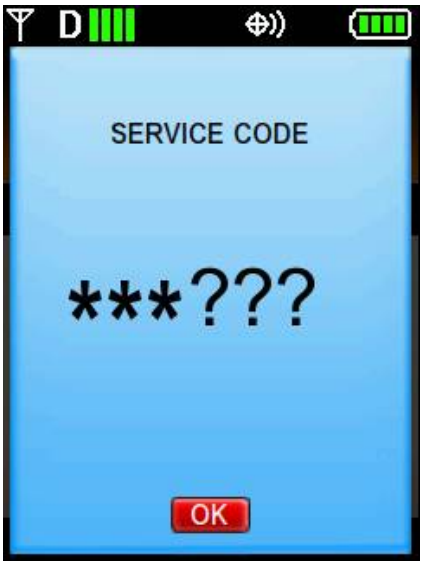
4.3.5.2 Antenna Cable Connection

Connect the antenna coupler cable connector from the cradle to the external antenna connector. (Antenna is not included.)

CHAPTER 2. NAM Input Method (Inputting of telephone numbers included)

1. NAM Program Method and Telephone Number Inputting Method

1. Press ‘menu’ + 0 + “000000”



2. Press ‘1’ key for entering **‘Service Prg**.’

- **Usually pressing ‘Soft Key 1’ will save the change.**
- **To exit Service Program, press ‘END’ key.**

2-1) **ESN**

You can see the ESN number.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to exit Service Programming’.

2-2) **NAM1 Phone Number (MDN)**

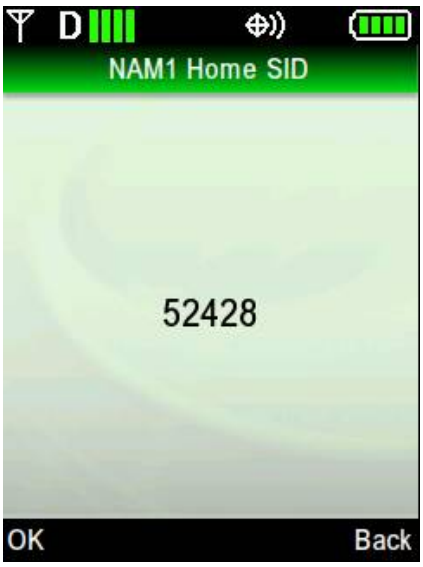
You can edit NAM1 Phone Number(MDN).
Press soft key 1 to edit more NAM1 items.
Press soft key 2 to edit previous NAM1 items.

2-3) **NAM1 Phone Number (MIN)**

You can edit NAM1 Phone Number(MIN).
Press soft key 1 to edit more NAM1 items.
Press soft key 2 to edit previous NAM1 items.

2-4) **NAM1 Home SID**

You can edit NAM1 Home SID.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.



2-5) **NAM1 Name**

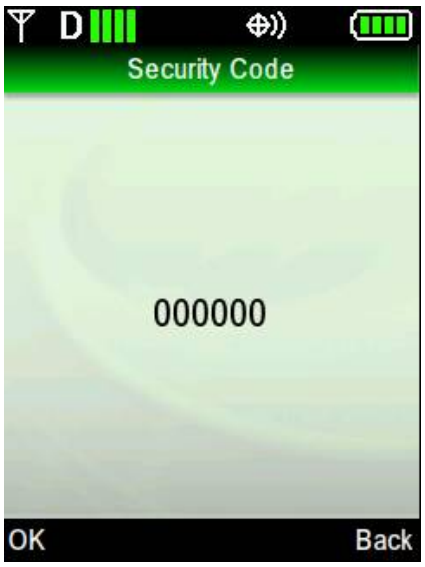
You can edit NAM1 Name.
Press ‘OK’ to edit more NAM1 items.
Press ‘Soft Key 1’ to edit NAM1 Name.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-6) **More NAM1 Programming**

You can decide to edit more NAM1 items.
Press ‘Soft Key 1’ to exit Service Programming.
Press ‘Soft Key 2’ to edit more advanced NAM1 items.

2-7) **Service Code**

You can edit Service Code.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

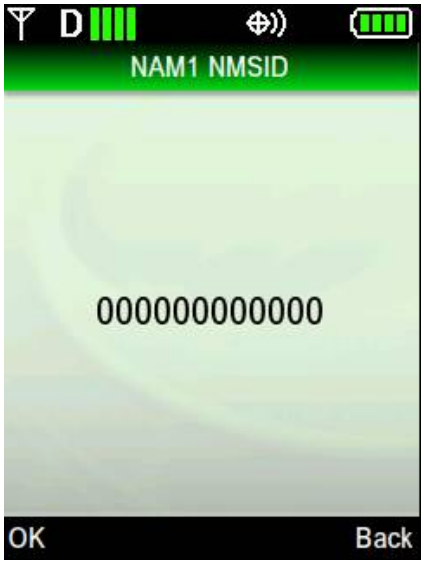


2-8) **NAM1 MCC**

You can edit NAM1 Mobile Country Code.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

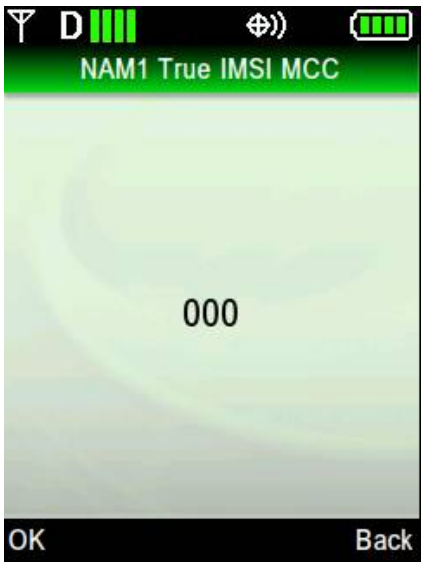
2-9) **NAM1 NMSID**

You can edit NAM1 NMSID.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.



2-10) **NAM1 True IMSI MCC**

You can edit NAM1 True IMSI MCC.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

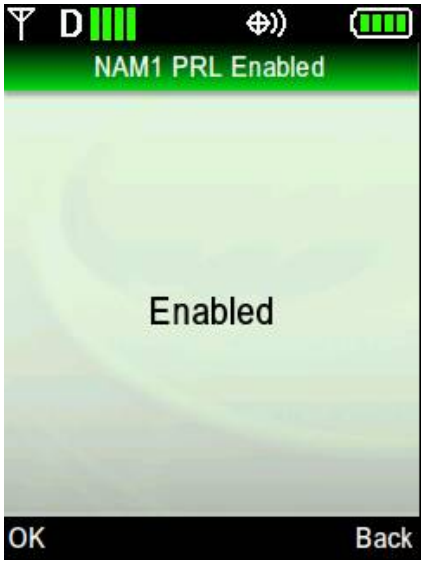


2-11) **NAM1 True IMSI NMSID**

You can edit NAM1 True IMSI NMSID.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-12) **NAM1 PRL Enabled**

You can see NAM1 PRL Enabled.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.



2-13) **CDMA Home SID/NID**

You can edit NAM1 Home SID/NID Pairs.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-14) **NAM1 CDMA Pri. CH A**

You can edit NAM1 CDMA Primary Channel A.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-15) **NAM1 CDMA Sec. CH A**

You can edit NAM1 CDMA Secondary Channel A.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-16) **NAM1 CDMA Pri. CH B**

You can edit NAM1 CDMA Primary Channel B.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-17) **NAM1 CDMA Sec. CH B**

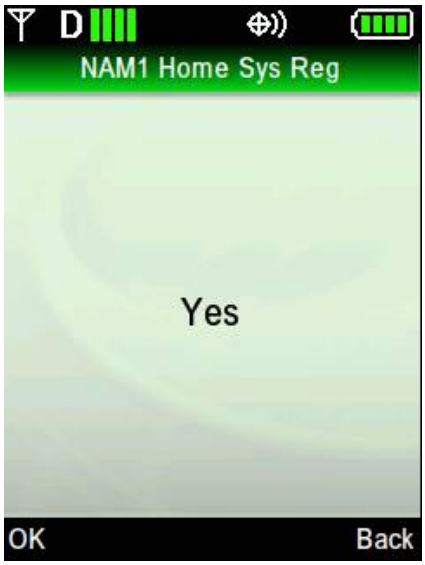
You can edit NAM1 CDMA Secondary Channel B.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-18) **Lockout SID/NID**

You can edit Lockout SID/NID Pairs.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-19) **NAM1 Home Sys Reg**

You can edit Home System Registration.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.
Press Left, Right, Up, Down key to toggle Yes/No.



2-20) **NAM1 Forn SID Reg**

You can edit NAM1 Foreign SID Registration.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.
Press Left, Right, Up, Down key to toggle Yes/No.

2-21) **NAM1 Forn NID Reg**

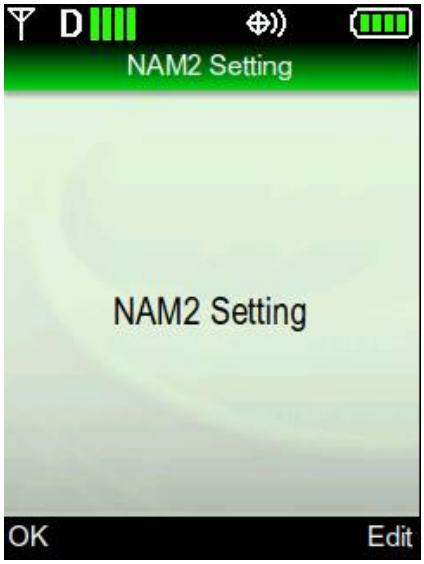
You can edit NAM1 Foreign NID Registration.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.
Press Left, Right, Up, Down key to toggle Yes/No.

2-22) **NAM1 Acc Ovld Class**

You can see NAM1 Access Overload Class.
Press ‘Soft Key 1’ to edit more NAM1 items.
Press ‘Soft Key 2’ to edit previous NAM1 items.

2-23) **NAM2 Setting**

You can decide to edit NAM2 items.
Press ‘Soft Key 1’ to skip NAM2 items settings.
Press ‘Soft Key 2’ to edit NAM2 related items.



2-24) **Phone Model**

You can see the Phone Model number.
Press ‘Soft Key 1’ to edit more items.
Press ‘Soft Key 2’ to edit previous items.

2-25) **Slot Cycle Index**

You can edit Slot Cycle Index
Press ‘Soft Key 1’ to save Slot Cycle Index.
Press ‘Soft Key 2’ to edit previous items.

2-26) **Powering Down**

Restart.

CHAPTER 3. Circuit Description

1. RF Transmit/Receive Part

1.1 Overview

The TX and RX part employs the Direct-Conversion system. The TX and RX frequencies are respectively 824.04~848.97 and 869.04~893.97 for cellular and 1850~1910 and 1930~1990 for PCS. The block diagram is shown in [Figure 1-1]. RF signals received through the antenna are seperated by the Triplexer.

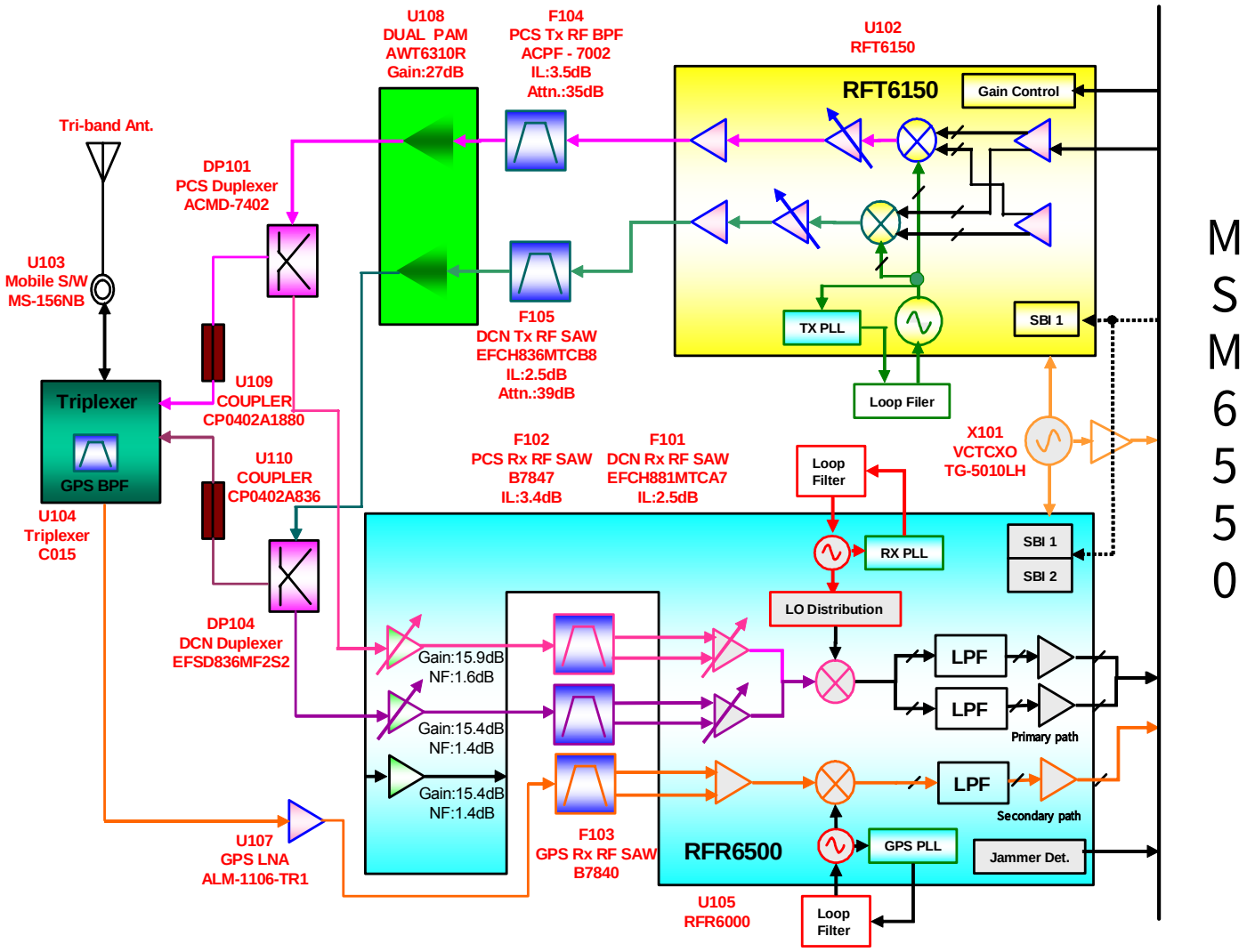
RF Signal fed into the low noise amplifier in RFR6500(LNA) through the duplexer. Then, they are fed into Mixer in RFR6500. In RFR6500, the RF signal is changed into baseband signal directly. Then, this signal is changed into digital signal by the analog to digital converter (ADC, A/D Converter), and the digital circuit part of the MSM(Mobile Station Modem) 6500 processes the data from ADC. The digital processing part is a demodulator.

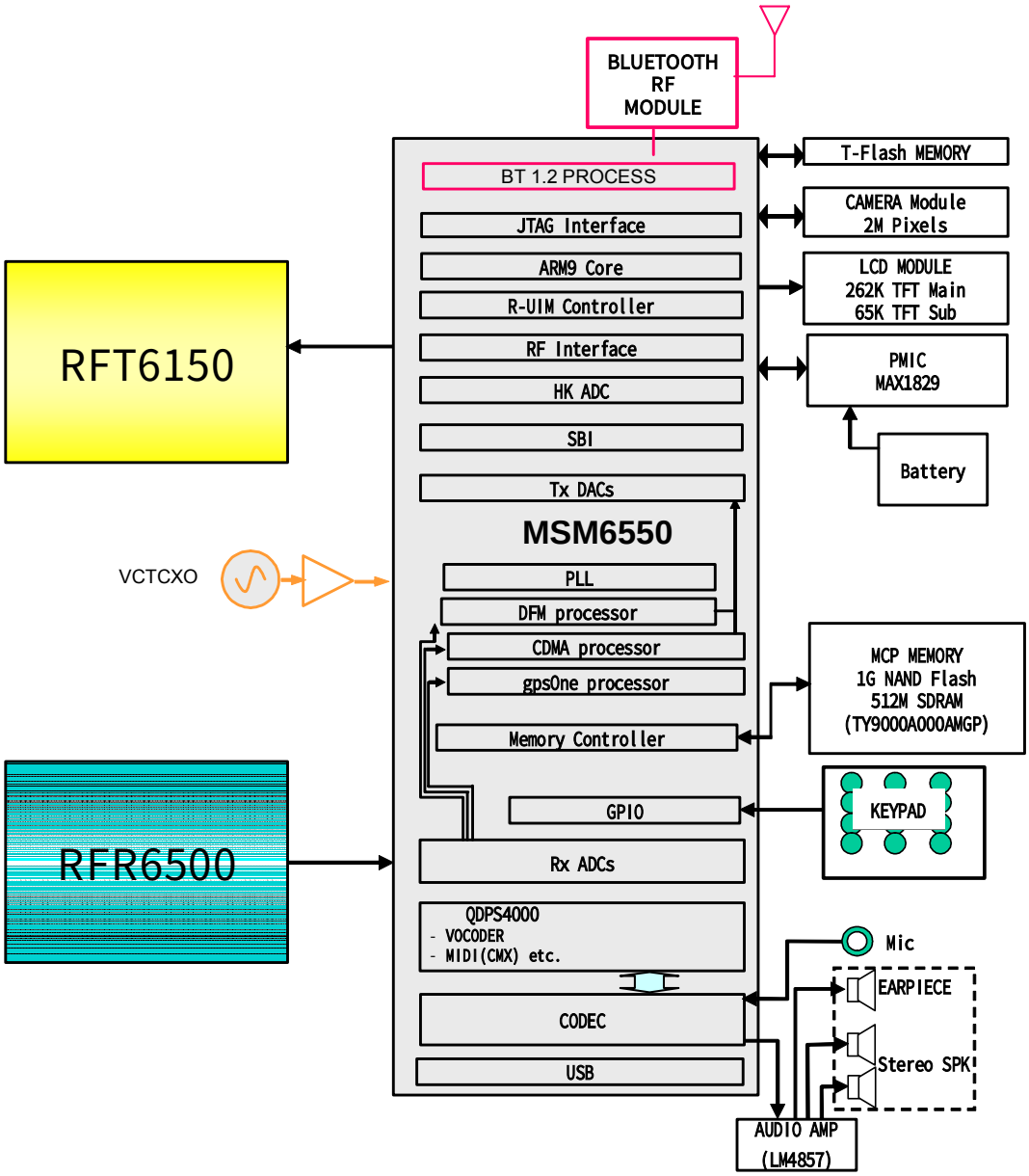
In the case of transmission, RFT6150 receives OQPSK-modulated anlaog signal from the MSM6550.

The RFT6150 connects directly with MSM6550 using an analog baseband interface. In RFT6150, the baseband quadrature signals are upconverted to the Cellular or PCS frequency bands and amplified to provide signal drive capability to the power amp.

After that, the RF signal is amplified by the Power Amp in order to have enough power for radiation. Finally, the RF signal is sent out to the cell site via the antenna after going through the duplexer.

[Figure 1-1] Block Diagram of PX8700




BLUETOOTH
RF
MODULE
BT 1.2 PROCESS
JTAG Interface
ARM9 Core
R-UIM Controller
RF Interface
HK ADC
SBI
Tx DACs
MSM6550
PLL
DFM processor
CDMA processor
gpsOne processor
Memory Controller
GPIO
Rx ADCs
QDPS4000
- VOCODER
- MIDI(CMX) etc.
CODEC
USB
T-Flash MEMORY
CAMERA Module
2M Pixels
LCD MODULE
262K TFT Main
65K TFT Sub
PMIC
MAX1829
Battery
MCP MEMORY
1G NAND Flash
512M SDRAM
(TY9000A000AMGP)
KEYPAD
Mic
EARPIECE
Stereo SPK
AUDIO AMP
(LM4857)
RFT6150
RFR6500
VCTCXO

1.2 Description of RX Part Circuit

1.2.1 Triplexer Filter (U104)

The main function of Triplexer is to prohibit the other band signals from flowing into the one band circuit and vice versa. RF designer can use common tri-band antenna regardless of frequency band (800, 1575 and 1900 MHz). The specification of PX8700 Triplexer is described below:

	Cellular	GPS	PCS
Frequency Range	824 – 894 MHz	1575.42 MHz	1850 – 1990 MHz
Insertion Loss to Common	1.0 dB Max (At +25 deg)	1.8 dB Max. (At +25 deg)	0.85 dB Max (At +25 deg)
Isolation	48.5dB (Cell TX)	32.9dB(GPS-Cell) 18.3(GPS-PCS)	53.1dB (PCS TX)
Temperature Range	-30 to +85 deg		

1.2.2 Duplexer (DP104, DP101)

The duplexer consists of the RX bandpass filter (BPF) and the TX BPF which has the function of separating TX and RX signals in the full duplex system for using the common antenna. The TX part BPF is used to suppress noises and spurious out of the TX frequency band. The RX BPF is used to receive only RX signal coming from the antenna, which is usually called preselector. It' s main function is to limit the bandwidth of spectrum reaching the LNA and mixer, attenuate receiver spurious response and suppress local oscillator energy. As a result frequency sensitivity and selectivity of mobile phone increase. The specification of PX8700 duplexer described below ;

- PCS duplexer:

	TX	RX	TX to RX (min)
Pass Band	1850~1910 MHz	1930~1990 MHz	
Insertion Loss	3.5dB max	3.0dB max	
Return Loss	8.0dB min	8.0dB min	
Attenuation	40dB min (1930~1990MHz)	50dB min (1850~1910MHz)	54dB (1850~1910MHz) 44dB (1930~1990MHz)

- Cellular duplexer

	TX	RX	TX to RX (min)
Pass Band	824~849 MHz	869~894 MHz	
Insertion Loss	2.5B max	3.5dB max	
VSWR	2.2 max	2.3 max	
Attenuation	40dB min (869~894MHz)	50dB min (824~849MHz)	54dB (824~849MHz) 43dB (869~894MHz)

1.2.3 LNA (U105)

The RFR6500 has cellular, and PCS LNA, respectively. The characteristics of Low Noise Amplifier (LNA) are low noise figure, high gain, high intercept point and high reverse isolation. The frequency selectivity characteristic of mobile phone is mostly determined by LNA.
The specification of PX8700 LNA is described below:

Parameter	Low gain		Middle gain		High gain		Units
	Cellular	PCS	Cellular	PCS	Cellular	PCS	
Gain	-19	-20	-2	-9	15.5	16	dB
Noise Figure	19	20	2	9	1.4	1.6	dB
Input IP3	25	25	20	20	6	8	dBm

1.2.4 GPS LNA(U107)

The characteristics of Low Noise Amplifier (LNA) are low noise figure, high gain, high intercept point and high reverse isolation. The frequency selectivity characteristic of mobile phone is mostly determined by LNA.
The specification of PX8700 GPS LNA is described below

Parameter	GPS Band	Units
Gain	14.8	dB
Noise Figure	0.85	dB
1dB compression point	0	dBm
IIP3	+5	dBm

1.2.5 RX RF SAW FILTER(F101, F102, F103)

The main function of RX RF SAW filter is to attenuate mobile phone spurious frequency, attenuate noise amplified by the LNA and suppress second harmonic originating in the LNA.

1.2.6 Down-converter Mixers (U105)

The RFR6500 device performs signal down-conversion for Cellular, PCS and GPS tri-band applications. It contains all the circuitry (with the exception of external filters) needed to support conversion of received RF signals to Base-band signals. The three down-converting Mixers (Cellular, PCS and GPS), and a programmable PLL for generating RX LO frequency and an RX LO Buffer Amplifier and RX Voltage Controlled Oscillator. The GPS LNA & mixers offer the most advanced and integrated CDMA RX solution designed to meet cascaded Noise Figure (NF) and Third-order Intercept Point (IIP3) requirements of IS-98D and J-STD-018 specifications for Sensitivity, Two-Tone Inter-modulation, and Single-tone Desensitization.
Operation modes and band selection are specially controlled from the Mobile Station Modem MSM6550.
The specification of PX8700 Mixers is described below:

Parameter	Low gain		High gain		Units
	Cellular	PCS	Cellular	PCS	
Noise Figure	27	27	11	11	dB
Input IP3	4	3	4	3	dBm
Input IP2	50	50	75	70	dBm

1.3 Description of Transmit Part Circuit

1.3.1 RFT6150 (U102)

The RFT6150 Base-band to RF Transmit Processor performs all TX signal-processing functions required between digital Base-band and the Power Amplifier Modulator (PAM). The Base-band quadrate signals are up-converted to the Cellular or PCS frequency bands and amplified to provide signal drive capability to the PAM. The RFT6100 includes an mixers for up-converting analog Base-band to RF, a programmable PLL for generating TX LO frequency an TX LO Buffer Amplifier and TX Voltage Controlled Oscillator, cellular and PCS driver amplifiers and TX power control through an 85 dB VGA. As added benefit, the single sideband up-conversion eliminates the need for a band pass filter normally required between the up-converter and driver amplifier.
I, I/, Q and Q/ signals proceed from the MSM6550 to RFT6150 are analog signal. In CDMA mode, These signals are modulated by Offset Quadrature Phase Shift King (OQPSK). I and Q are 90 deg. out of phase, and I and I/ are 180 deg. The mixers in RFT6150 converts baseband signals into RF signals. After passing through the upconverters, RF signal is inputted into the Power AMP.

- RFT6150 Cellular and PCS CDMA RF Specifications

Parameter	Condition	Min.	Type.	Max.	Units
Rated Output Power	Average CDMA Cellular Average CDMA PCS		8 10		dBm dBm
Min Output Power	Average CDMA Cellular Average CDMA PCS		-80 -78		dBm dBm
RX band noise power	CDMA Cellular CDMA PCS		-133 -132		dBm/Hz
ACPR	Cellular: Fc±885kHz PCS : Fc±1.25MHz		-56 -56		dBc/ 30kHz

1.3.2 Power Amplifier(U108)

The Dual power amplifier that can be used in the PCS and CDMA mode has linear amplification capability and high efficiency. For higher efficiency, it is made up of one MMIC (Monolithic Microwave Integrated Circuit) for which RF input terminal and internal interface circuit are integrated onto one IC after going through the AlGaAs/GaAs HBT (heterojunction bipolar transistor) process. The module of power amplifier is made up of an output end interface circuit including this MMIC. The maximum power that can be inputted through the input terminal is +17dBm and conversion gain is about 28dB. RF transmit signals that have been amplified through the power amplifier are sent to the duplexer.

.

1.4 Description of Frequency Synthesizer Circuit

1.4.1 Voltage Control Temperature Compensation Crystal Oscillator (VCTCXO, X101)

The temperature variation of mobile phone can be compensated by VCTCXO. The reference frequency of a mobile phone is 19.2 MHz. The receiver frequency tuning signals called TRK_LO_ADJ from MSM as 0.5 V~2.5 V DC via R and C filter in order to generate the reference frequency of 19.2 MHz and input it into the frequency synthesizer. Frequency stability depending on temperature is ±2.0 ppm.

2. Digital/Voice Processing Part

2.1 Overview

The digital/voice processing part processes the user's commands and processes all the digital and voice signal processing in order to operate in the phone. The digital/voice processing part is made up of a keypad/LCD, receptacle part, voice processing part, mobile station modem part, memory part, and power supply part.

2.2 Configuration

2.2.1 Keypad/LCD and Receptacle Part

This is used to transmit keypad signals to MSM6550. It is made up of a keypad backlight part that illuminates the keypad, LCD part that displays the operation status onto the screen, and a receptacle that receives and sends out voice and data with external sources.

2.2.2 Voice Processing Part

The voice processing part is made up of an audio codec used to convert MIC signals into digital voice signals and digital voice signals into analog voice signals, amplifying part for amplifying the voice signals and sending them to the ear piece, amplifying part that amplifies ringer signals coming out from MSM6550, and amplifying part that amplifies signals coming out from MIC and transferring them to the audio processor.

2.2.3 MSM (Mobile Station Modem) 6500 Part

MSM is the core elements of CDMA terminal and carries out the functions of CPU, encoder, interleaver, deinterleaver, Viterbi decoder, Mod/Demod, and vocoder.

2.2.4 Memory Part

The memory part is made up of a NAND Flash memory and a SDRAM for storing data.

2.2.5 Power Supply Part

The power supply part is made up of circuits for generating various types of power, used for the digital/voice processing part.

2.3 Circuit Description

2.3.1 Keypad/LCD and Receptacle Part

Once the keypad is pressed, the key signals are sent out to MSM6550 for processing. In addition, when the key is pressed, the keypad/LCD lights up through the use of 18 LEDs. The terminal status and operation are displayed on the screen for the user with the characters and icons on the LCD.

Moreover, it exchanges audio signals and data with external sources through the receptacle, and then receives power from the battery or external batteries.

2.3.2 Audio Processing Part

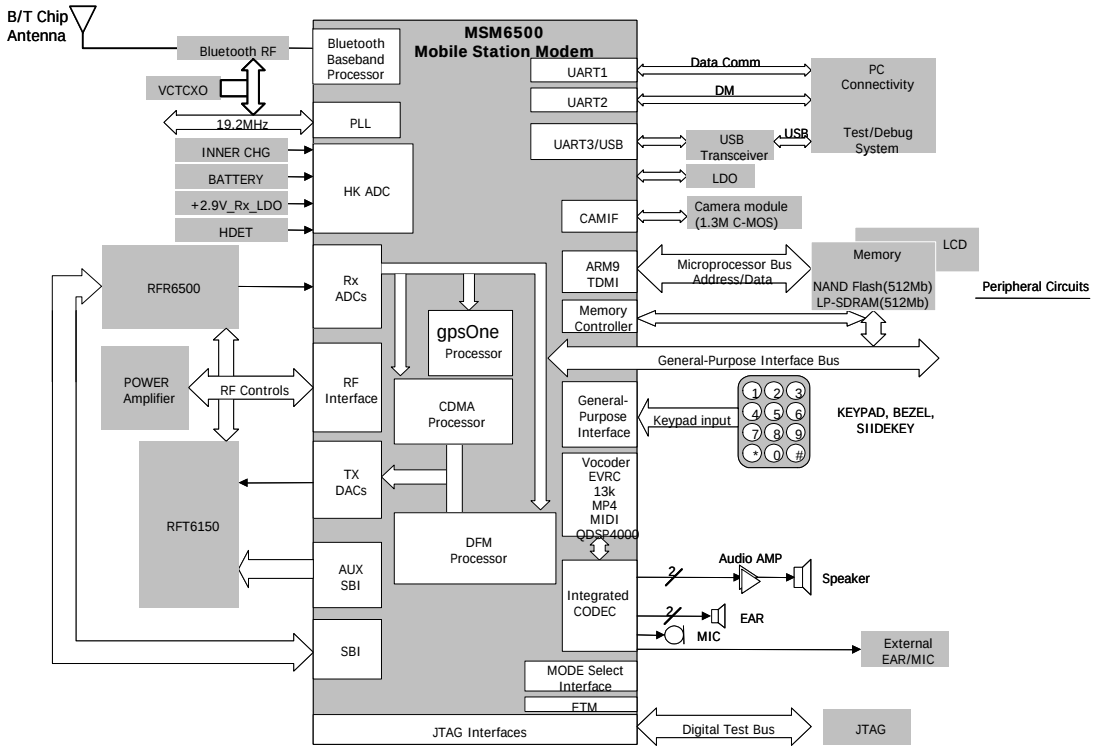
MIC signals are amplified through OP AMP, inputted into the audio codec(included in MSM6550) and converted into digital signals. Oppositely, digital audio signals are converted into analog signals after going through the audio codec. These signals are amplified at the audio amplifier and transmitted to the ear-piece. The signals from MSM6550 activate the ringer by using signals generated in the timer in MSM6550.

2.3.3 MSM Part

MSM6550 is the core element of CDMA system terminal that includes ARM926EJ-S microprocessor core. It supports both CDMA and Digital FM, operating in both the cellular and PCS spectrums. The subsystems within the MSM6550 include a CDMA processor, a DFM processor, a multi-standard Vocoder, an integrated CODEC with earpiece and microphone amplifiers, general-purpose ADC for subsytem monitoring, an ARM926EJ-S microprocessor, and an RS-232 serial interfaces supporting forward and reverse link MDR data communications of 230.4 Kbps simultaneously. And it also contains complete digital modulation and demodulation systems for both CDMA and AMPS cellular standards, as specified in IS-95-A/B/C.

In MSM, coded symbols are interleaved in order to cope with multi-path fading. Each data channel is scrambled by the long code PN sequence of the user in order to ensure the confidentiality of calls. Moreover, binary quadrature codes are used based on walsh functions in order to discern each channel. Data created thus are 4-phase modulated by one pair of Pilot PN code and they are used to create I and Q data.

When received, I and Q data are demodulated into symbols by the demodulator, and then de-interleaved in reverse to the case of transmission. Then, the errors of data received from viterbi decoder are detected and corrected. They are voice-decoded at the vocoder in order to output digital voice data.



[Figure 2-2] Block Diagram of Digital/Voice Processing Part

2.3.4 Memory Part

MCP contents 512Mbits NAND FLASH memory and 256Mbits SDRAM. In the NAND Flash Memory part of MCP are programs used for terminal operation. The programs can be changed through downloading after the assembling of terminals. On the SDRAM data generated during the terminal operation are stored temporarily.

2.3.5 Power Supply Part

When the battery voltage (+4.0V) is fed and the PWR key of keypad is pressed, U402(PMIC) is activated by the PWR_ON_SW signal, and The PWRON signal is held high, Buck and LDO1,2,3 are turned on; when LDO1 reaches 87% of its final value a 60ms reset timer is started at after which RESET\ is asserted high. Now the BB Processor is initialized and will assert PWRHOLD high. PWRHOLD maintains the power on.

The Buck/LDO1,2,3 are generating the +1.4V_MSMC, +2.6V_MSMA, +1.8V_MSMP1 and +2.8V_LCD respectively.

The Rx part LDO(Out5) is operated by the control signal SLEEP/ from MSM6550

The Tx part LDO(Out7) is operated by the control signal IDLE/ from MSM6550.

The TCXO part LDO(U403) is operated by the control signal TCXO_EN/ from MSM6550.

2.3.6 Logic Part

The logic part consists of internal CPU of MSM, RAM, MCP. The MSM6550 receives TCXO (=19.2MHz) from the X101 and controls the phone in CDMA modes. The major components are as follows:

- **CPU**

The ARM926J-S microprocessor includes a 3 stage pipelined RISC architecture, both 32-bit ARM and 16-bit THUMB instruction sets, a 32-bit address bus, and a 32-bit internal data bus. It has a high performance and low power consumption.

- **MCP**

NAND Flash is used to store the terminal's program. Using the down-loading program, the program can be changed even after the terminal is fully assembled.

SDRAM is used to store the internal flag information, call processing data, and timer data.

- **KEYPAD**

For key recognition, key matrix is setup using KYPD[1][3][5][7][9][11][13][15][17][19][21] signal from MSM6550. 18 LEDs and backlight circuitry are included in the keypad for easy operation in the dark.

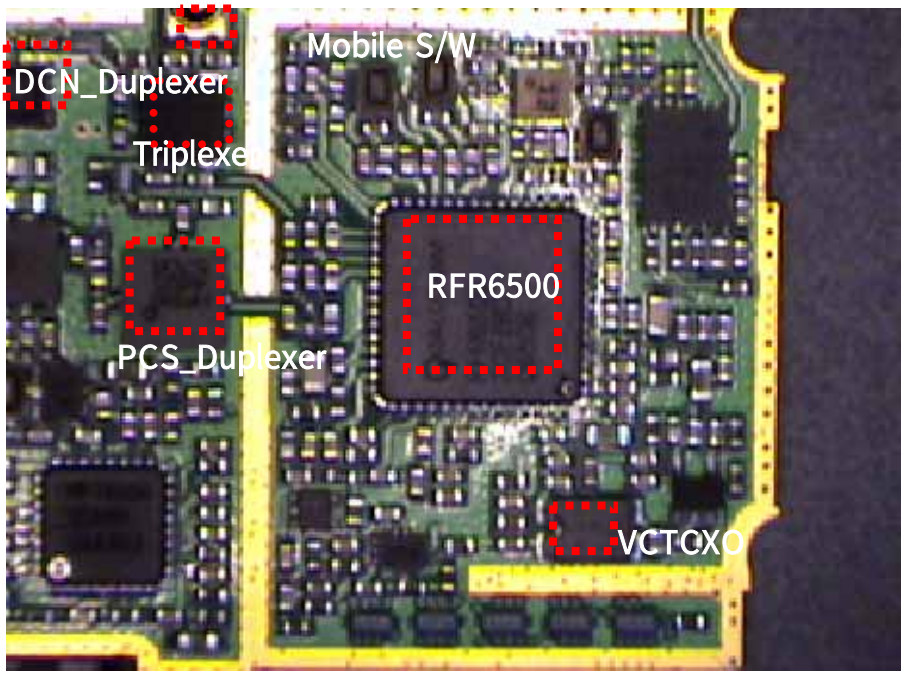
- **LCD MODULE**

LCD module contains a controller which will display the information onto the LCD by 16-bit data from the MSM6550. It is also supplied stable +2.8V_LCD by Out3 in U402 for fine view angle and LCD reflects to improve the display efficiency. 4 LEDs is used to display LCD backlight.

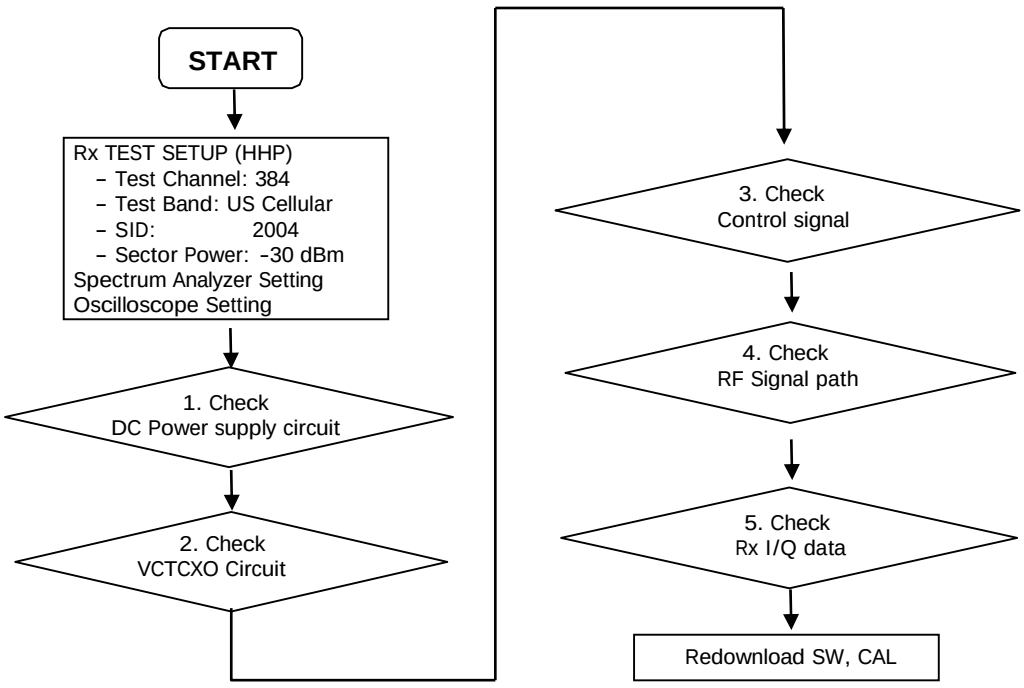
CHAPTER 4. Trouble Shooting

4.1.1 DCN Rx

Test Point



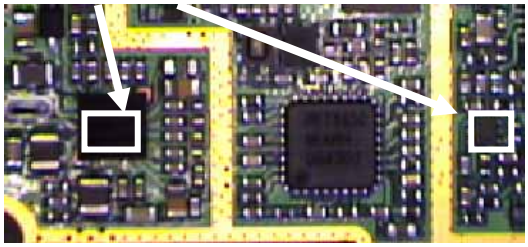
Checking Flow



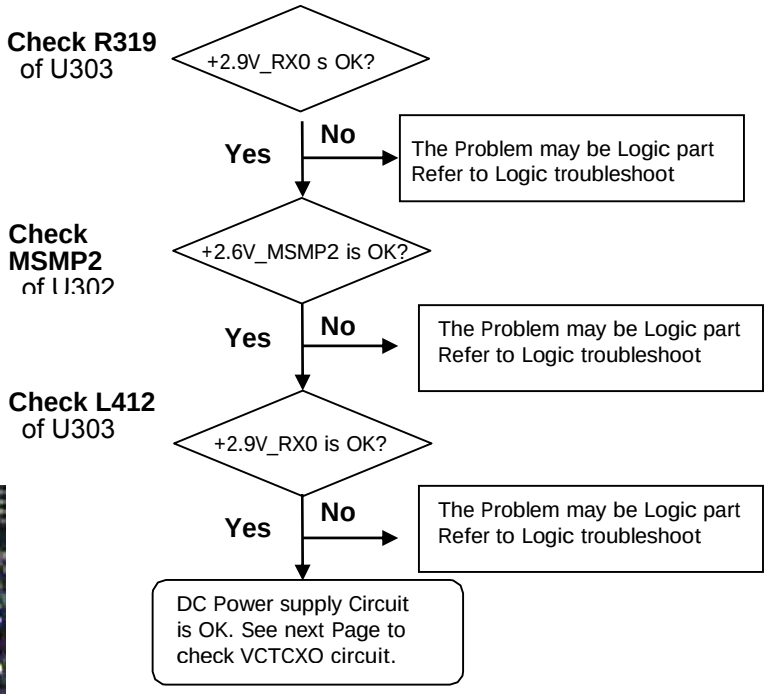
4.1.1.1 Checking DC Power supply Circuit (PMIC)

Test Point

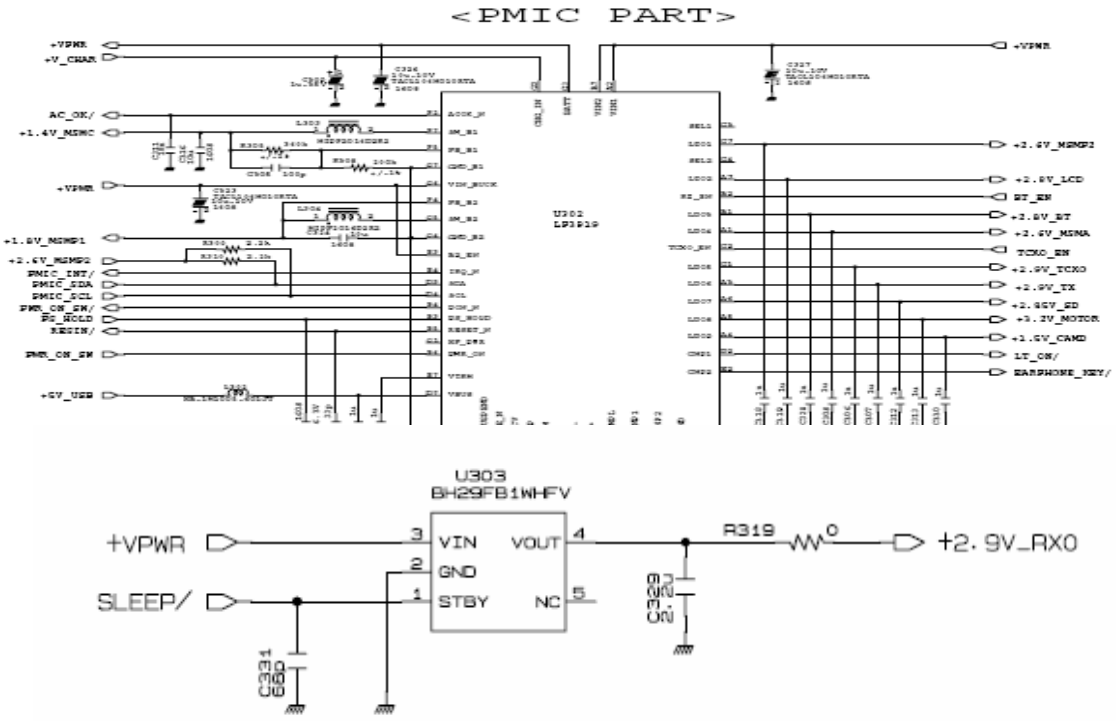
U302, U303



Checking Flow

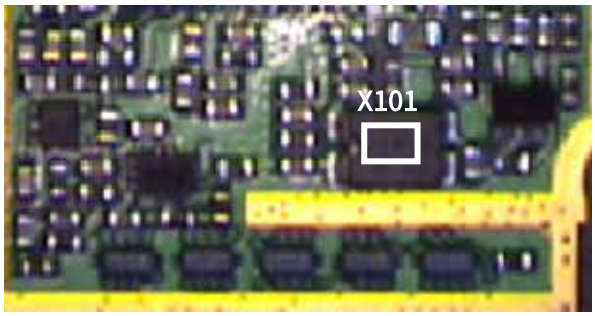


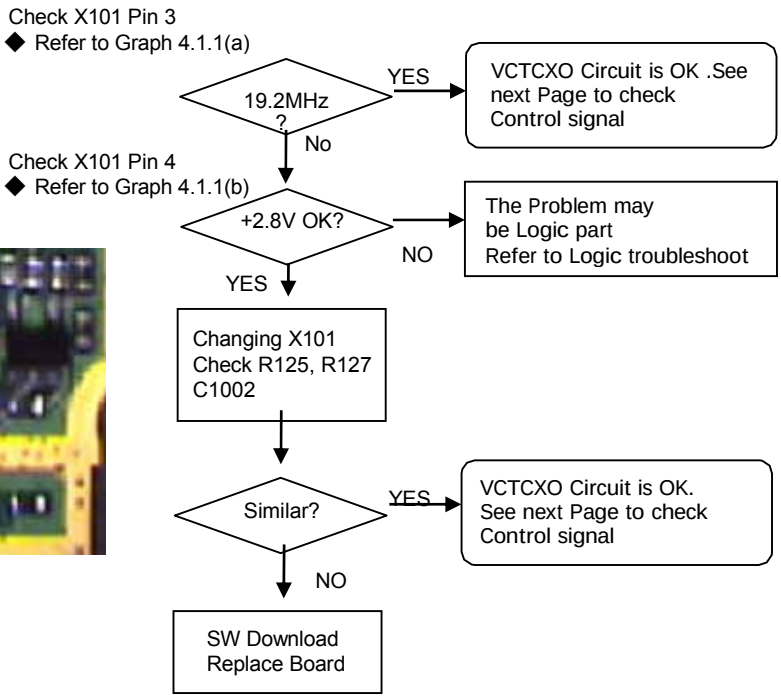
Circuit Diagram



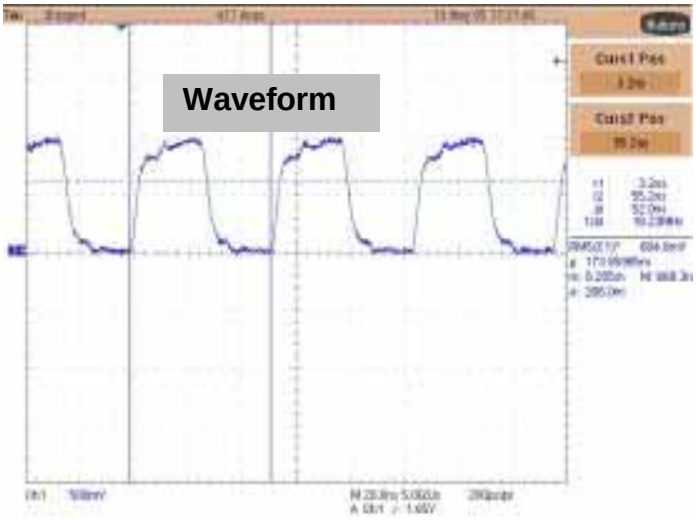
4.1.1.2 Checking VCTCXO Circuit

Checking Flow (VCTCXO)

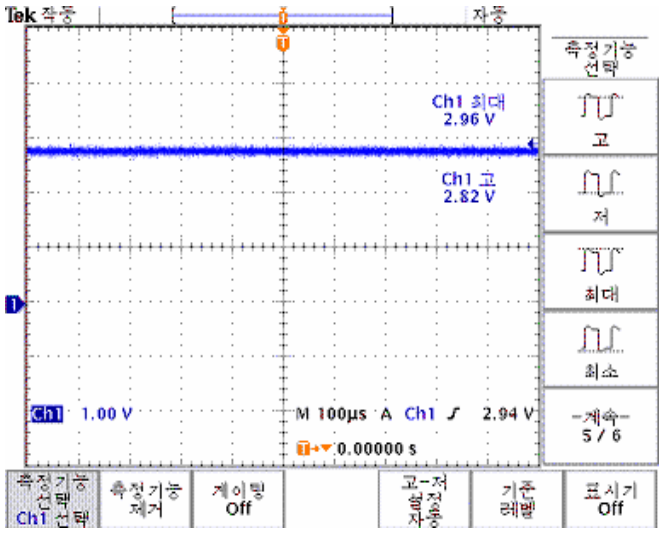




Waveform

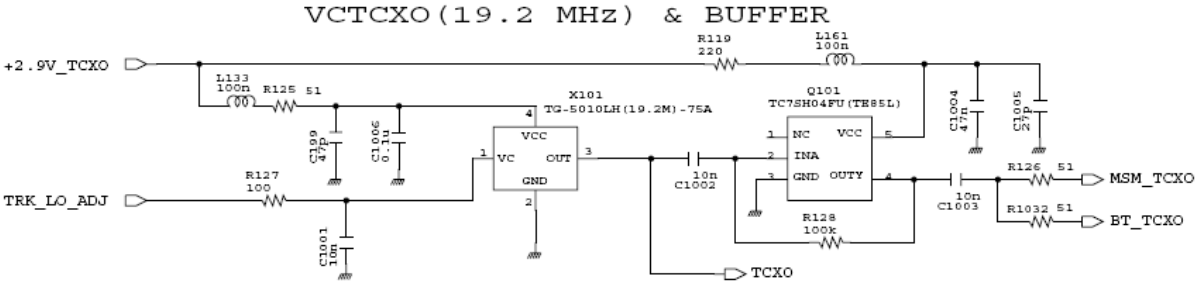


Graph



Graph

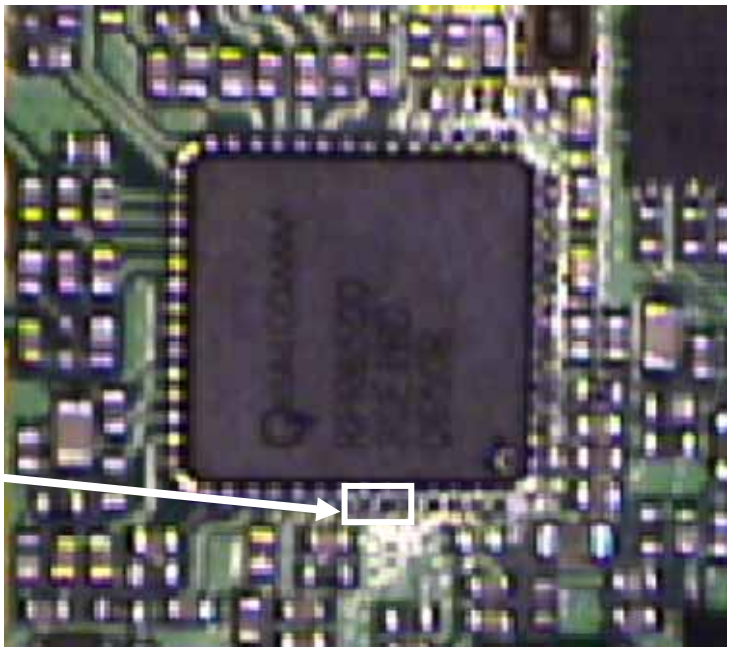
Circuit Diagram



4.1.1.3 Checking Control signal

Test Point

U105 Pin49 (SBST0)
Pin50 (SBDT0)
Pin51 (SBCK0)



Checking Flow

Check Pin 49(SBCK0),
Pin 50(SBST0)
Pin 51(SBDT0) of U105
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.1(c,d)

Similar? — YES → Control Signal is Ok See next Page to Check RF signal path

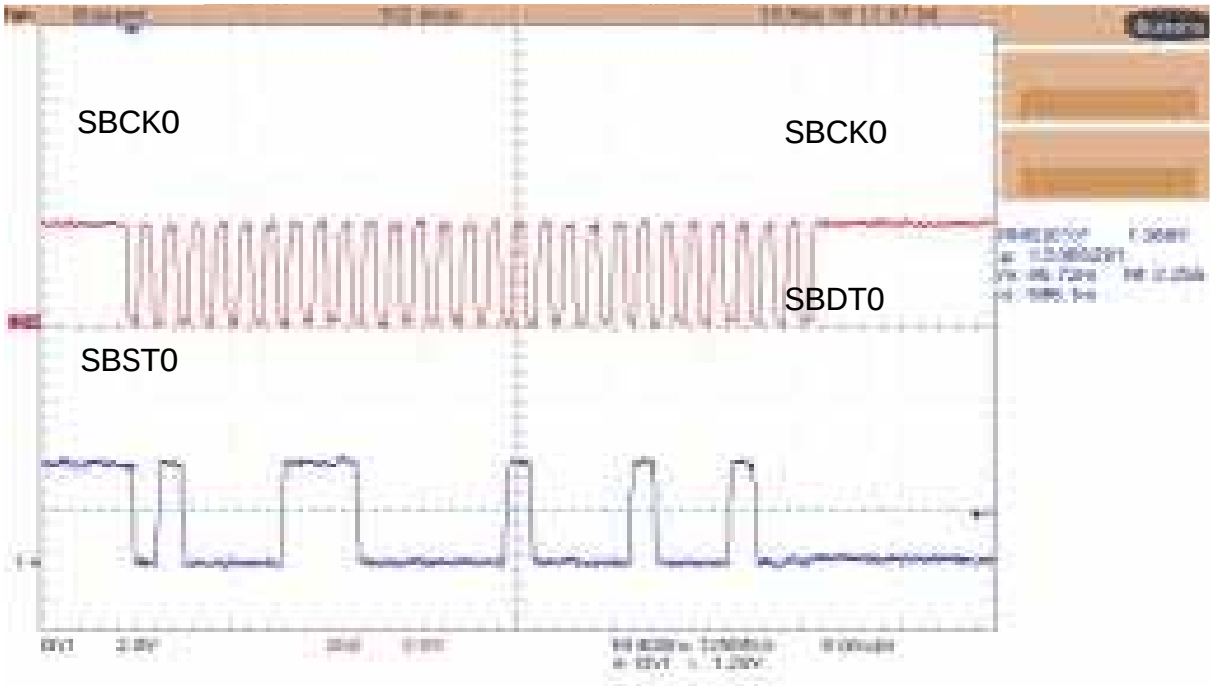
NO → Download the SW

Check Pin 49(SBCK0),
Pin 50(SBST0)
Pin 51(SBDT0) of U105
Check if there is
Any Major Difference
◆ Refer to Graph 4.1
.1(c,d)

Similar? — YES → Control Signal is Ok See next Page to Check RF signal path

NO → Replace Board

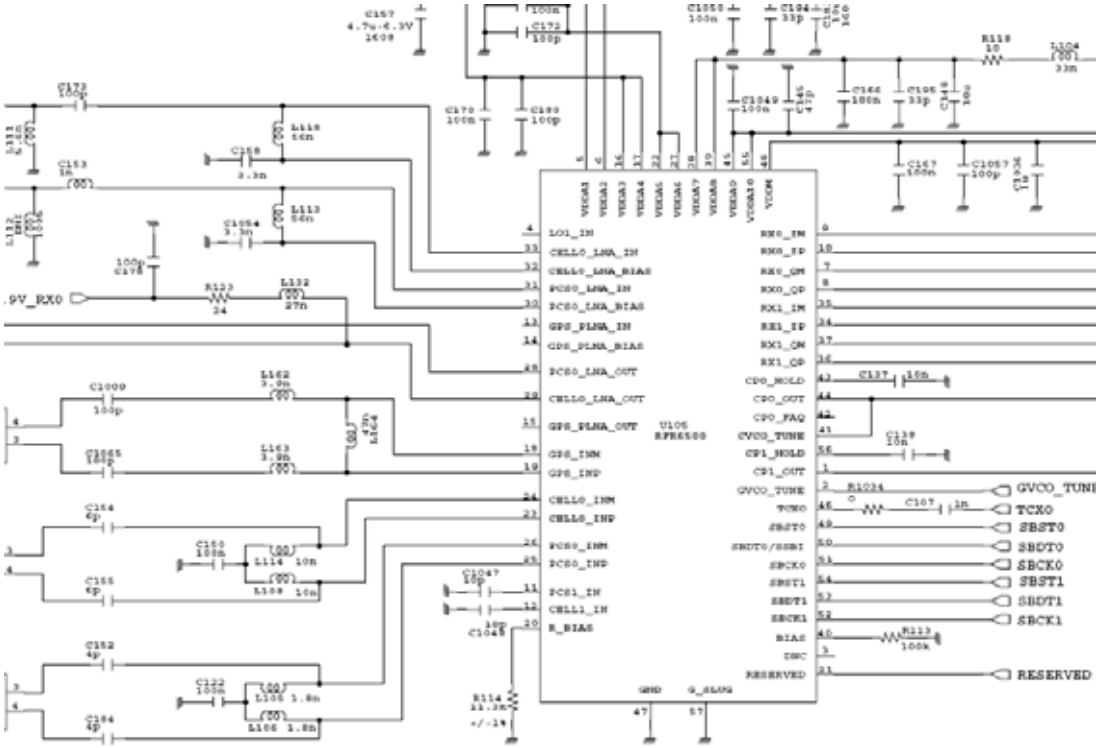
Waveform



Graph 4.1.1(c)

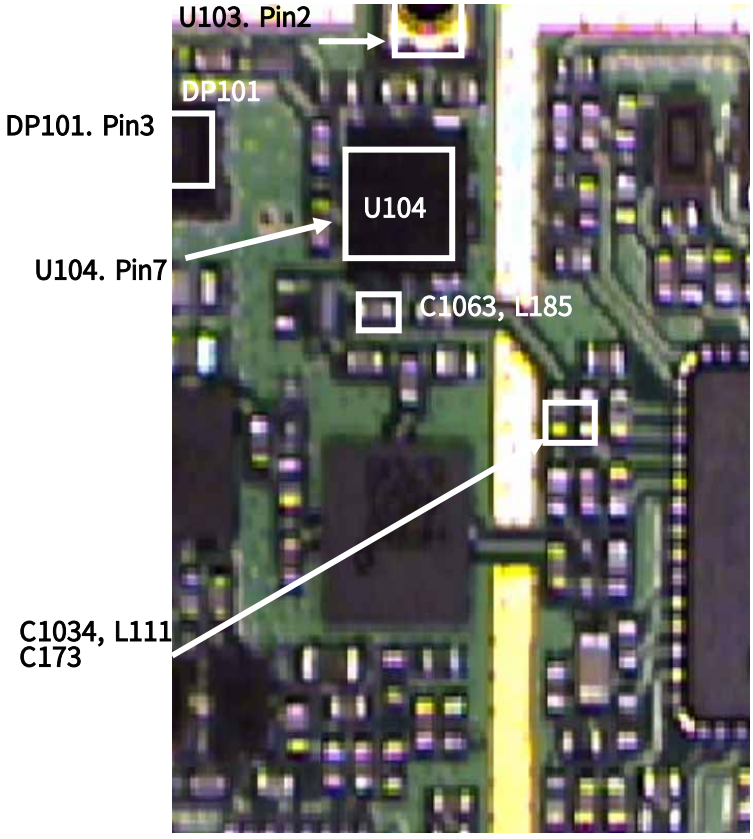
Graph 4.1.1(d)

Circuit Diagram

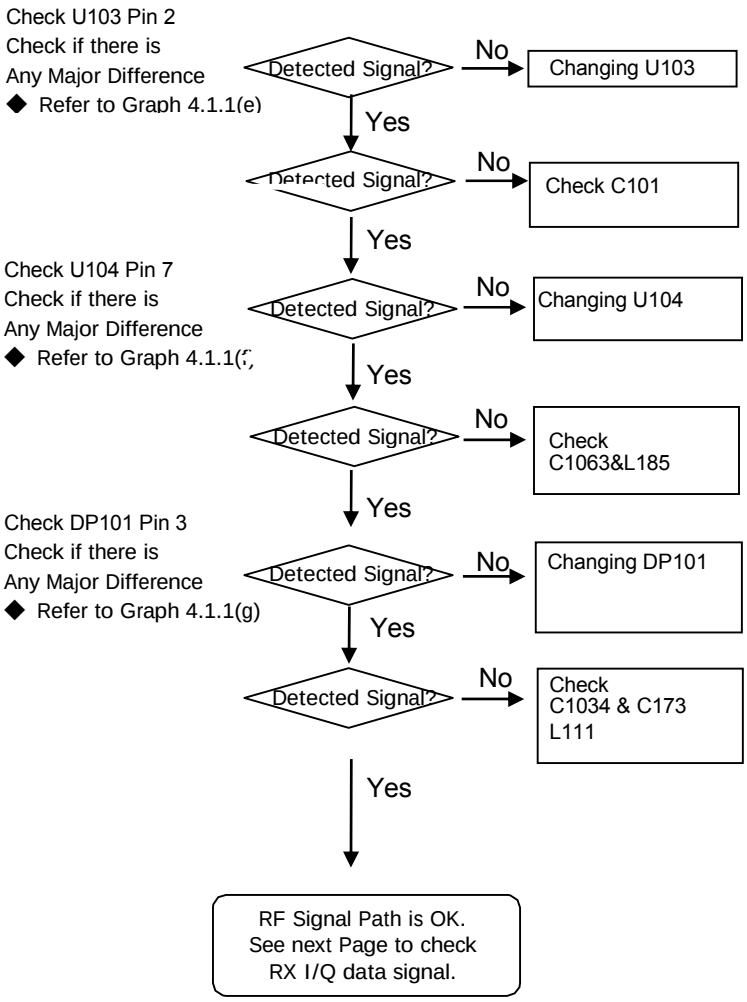


4.1.1.4 Checking RF Signal path (Mobile S/W, Triplexer, Duplexer)

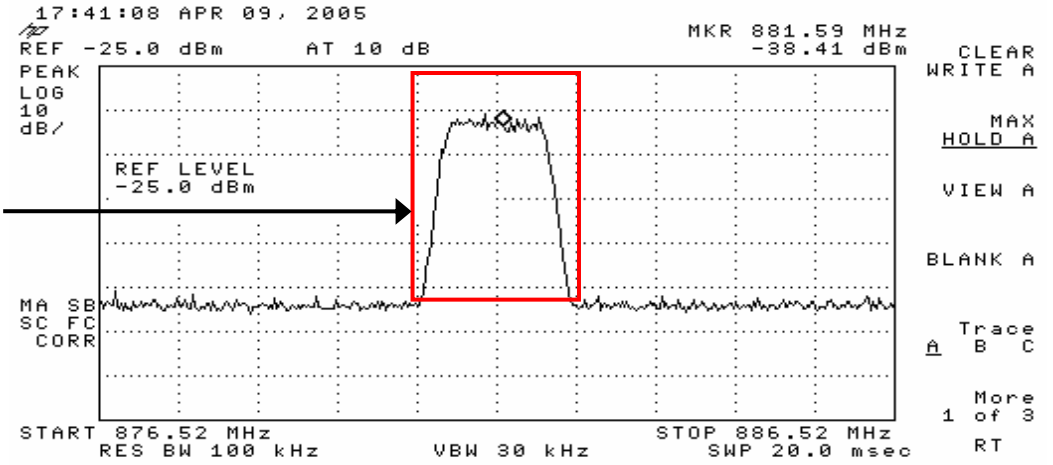
Test Point



Checking Flow

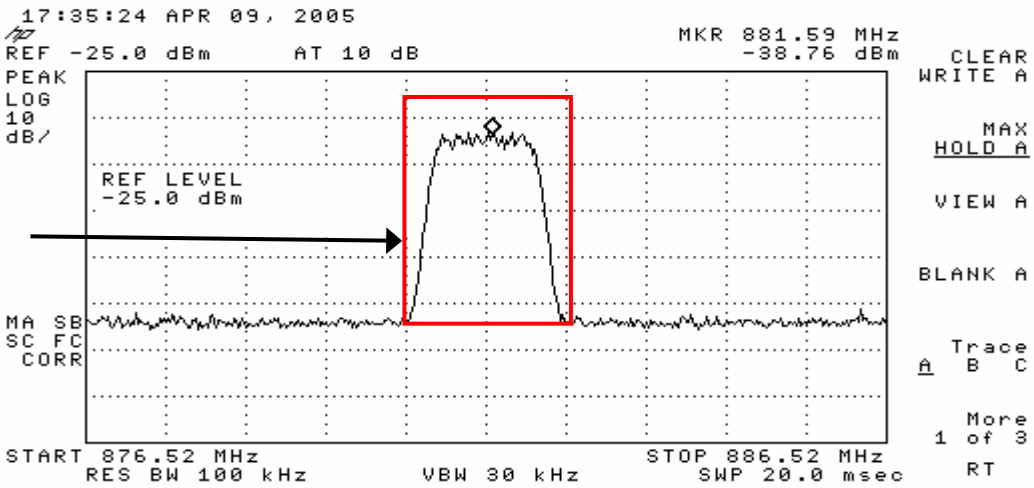


Waveform



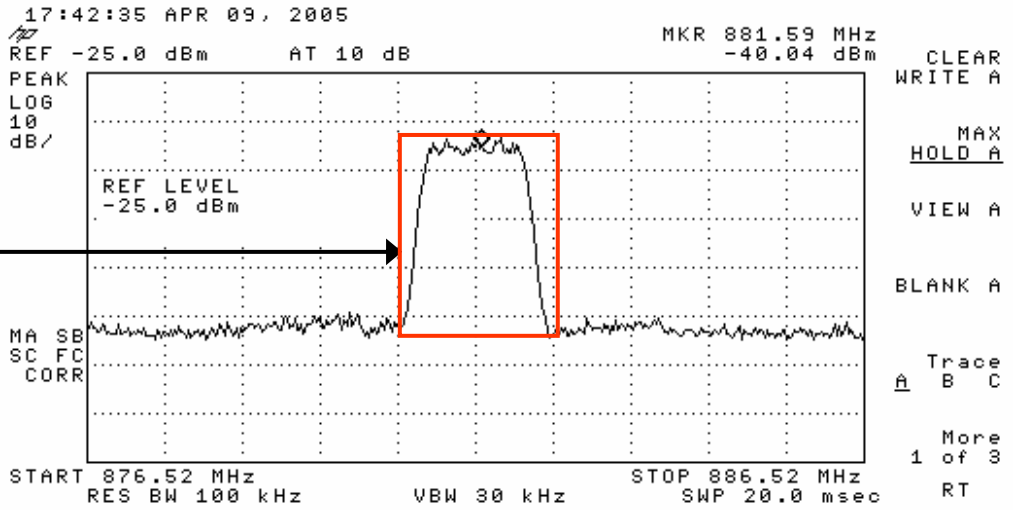
U103 Pin

Graph 4.1.1(e)



U104 Pin

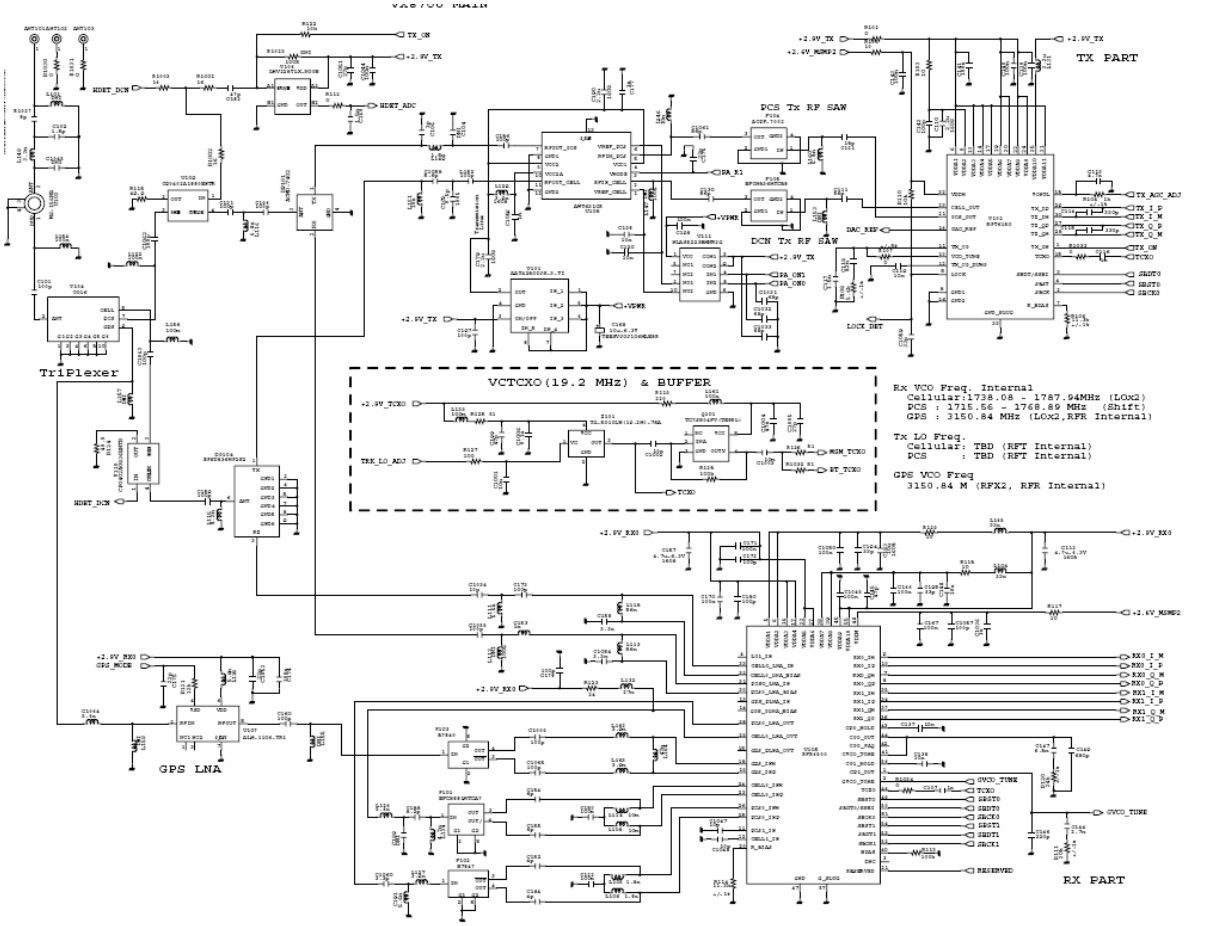
Graph 4.1.1(f)



DP101 Pin 3

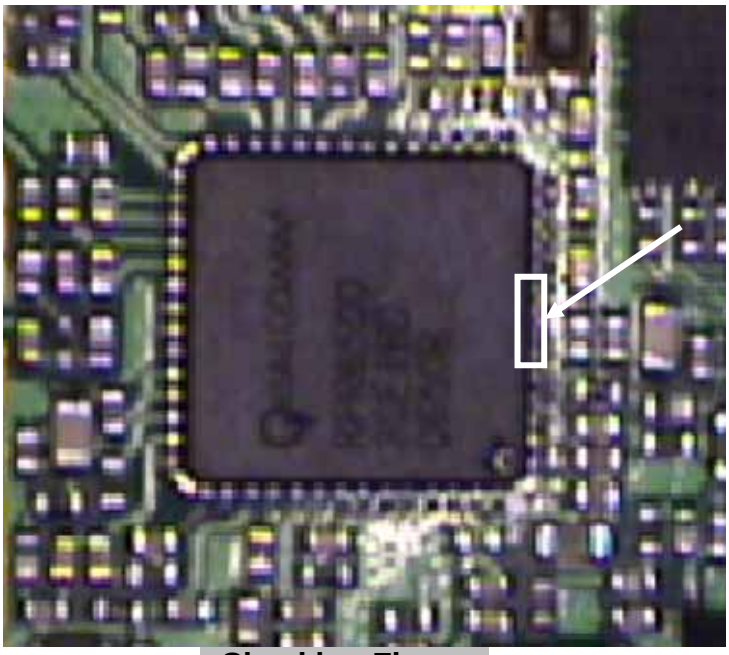
Graph 4.1.1(g)

Circuit


TX PART
PCS Tx RF SAW
DCN Tx RF SAW
Tri1Plexer
VCTCXO(19.2 MHz) & BUFFER
Rx VCO Freq. Internal
Cellular:1738.08 - 1787.94MHz (LOx2)
PCS : 1715.56 - 1768.89 MHz (Shift)
GPS : 3150.84 MHz (LOx2,RFR Internal)
Tx LO Freq.
Cellular: TBD (RFT Internal)
PCS : TBD (RFT Internal)
GPS VCO Freq
3150.84 M (RFX2, RFR Internal)
GPS LNA
RX PART

4.1.1.5 Checking Rx I/Q data

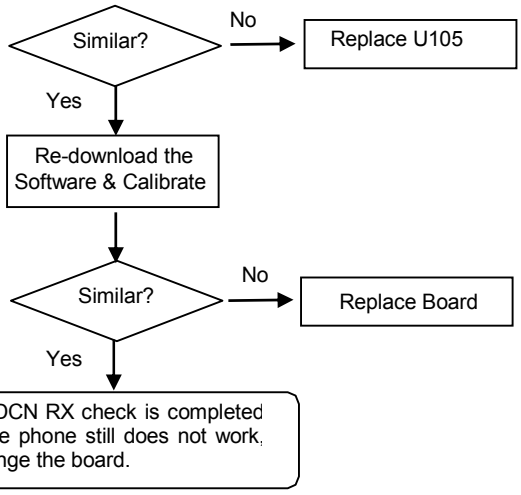
Test Point



U105 Pin7 (RX0_QM)
Pin8 (RX0_QP)
Pin9 (RX0_IM)
Pin10 (RX0_IP)

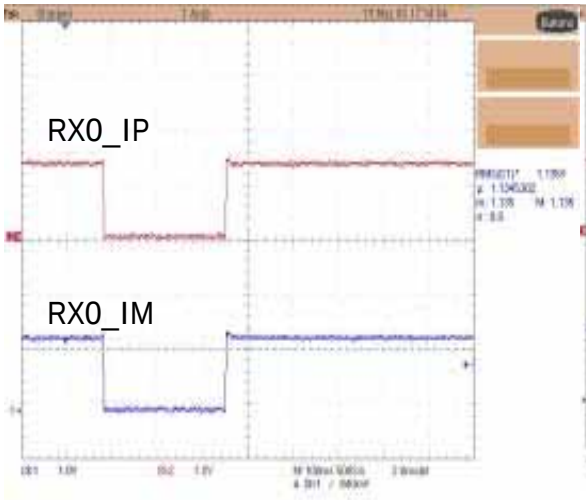
Checking Flow

Check Pin7 (RX0_QM)
Pin8 (RX0_QP)
Pin9 (RX0_IM)
Pin10 (RX0_IP)
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.1(h,i)

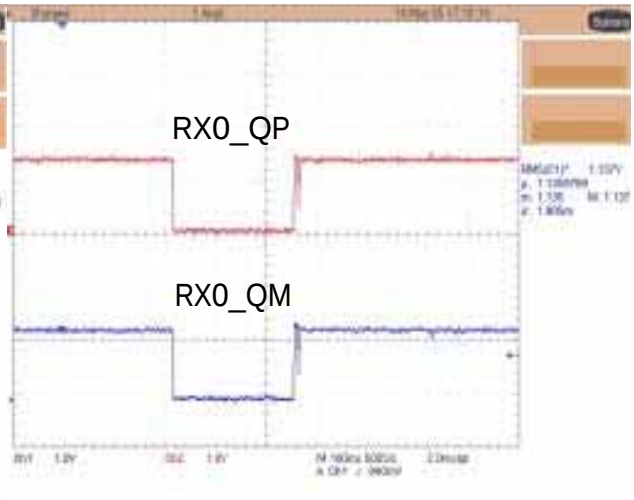


Check Pin7 (RX0_QM)
Pin8 (RX0_QP)
Pin9 (RX0_IM)
Pin10 (RX0_IP)
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.1(h,i)

Waveform

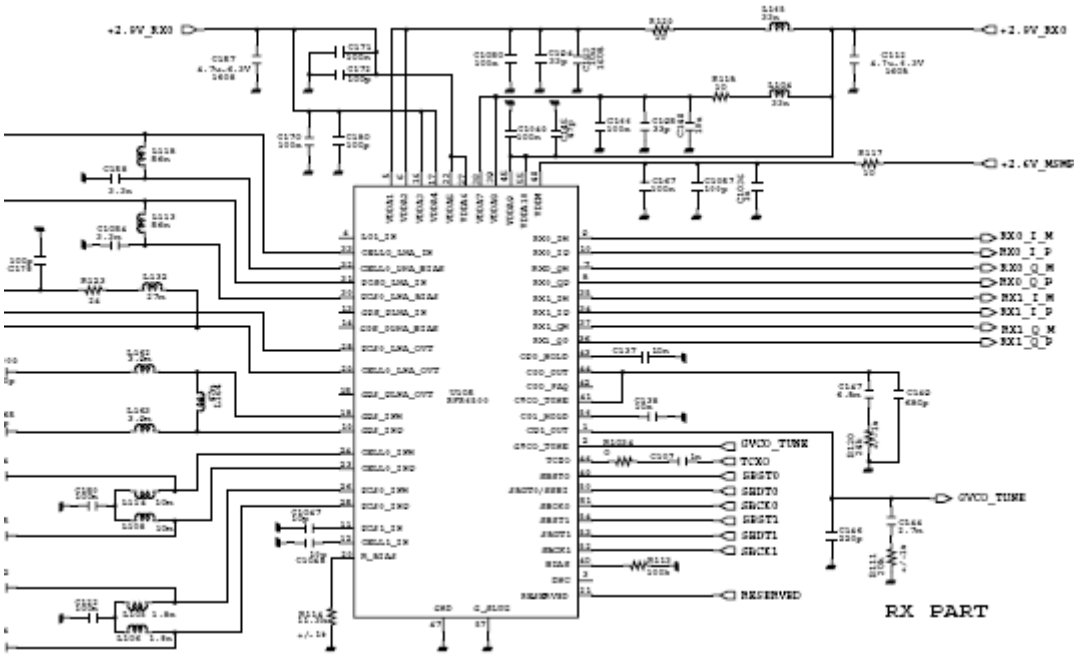


Graph 4.1.1(h)



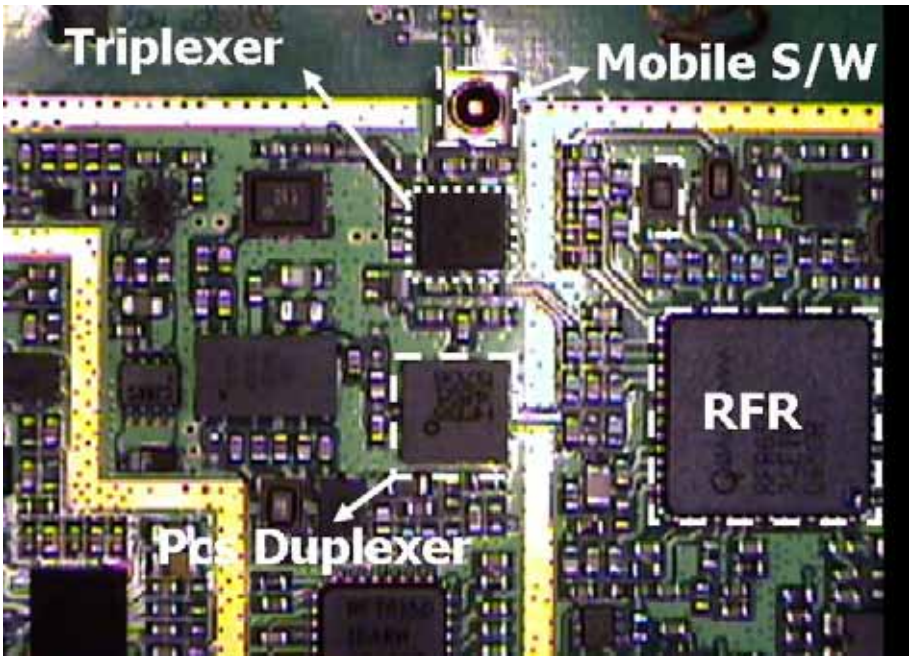
Graph 4.1.1(i)

Circuit

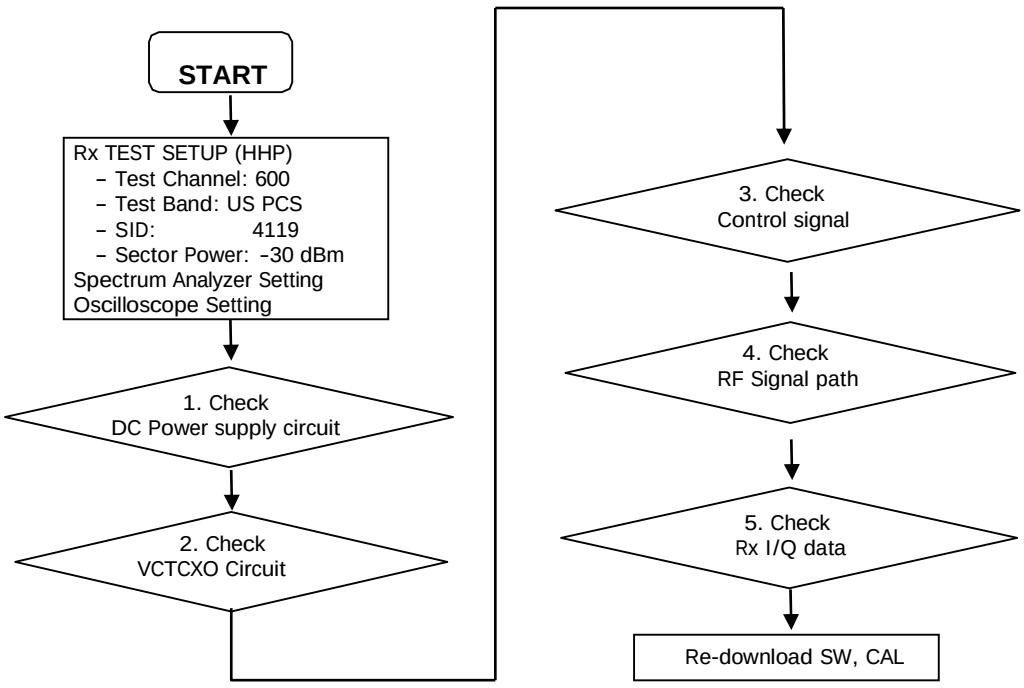


4.1.2 PCS RX

Test Point

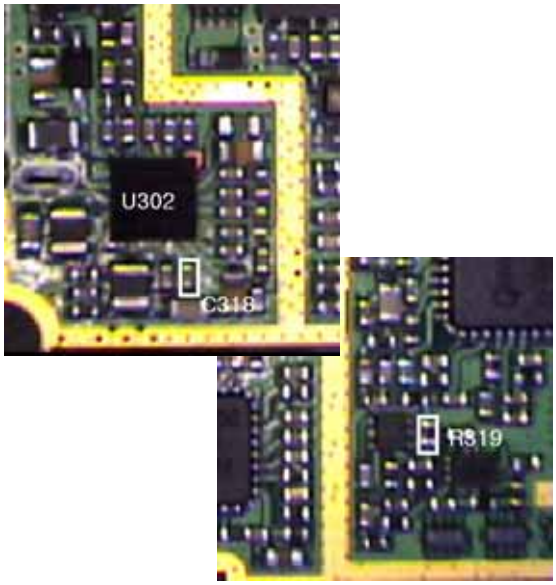


Checking Flow

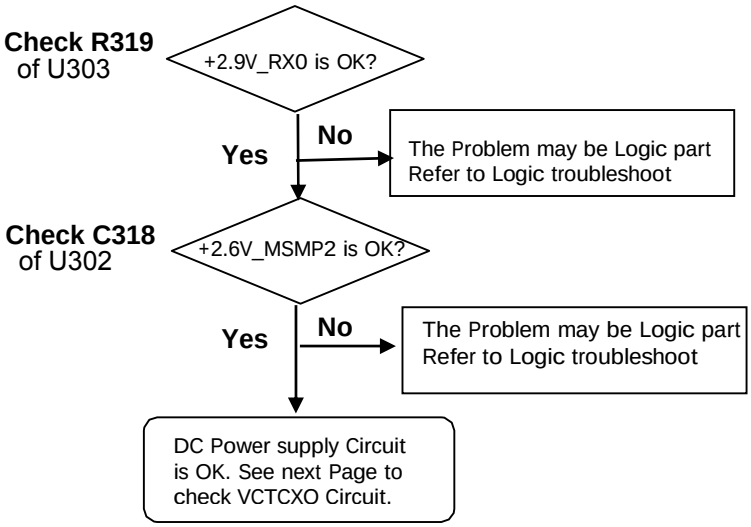


4.1.2.1 Checking DC Power supply Circuit (PMIC)

Test Point

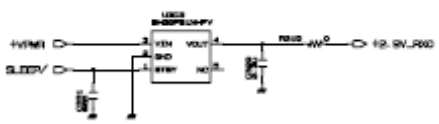


Checking Flow

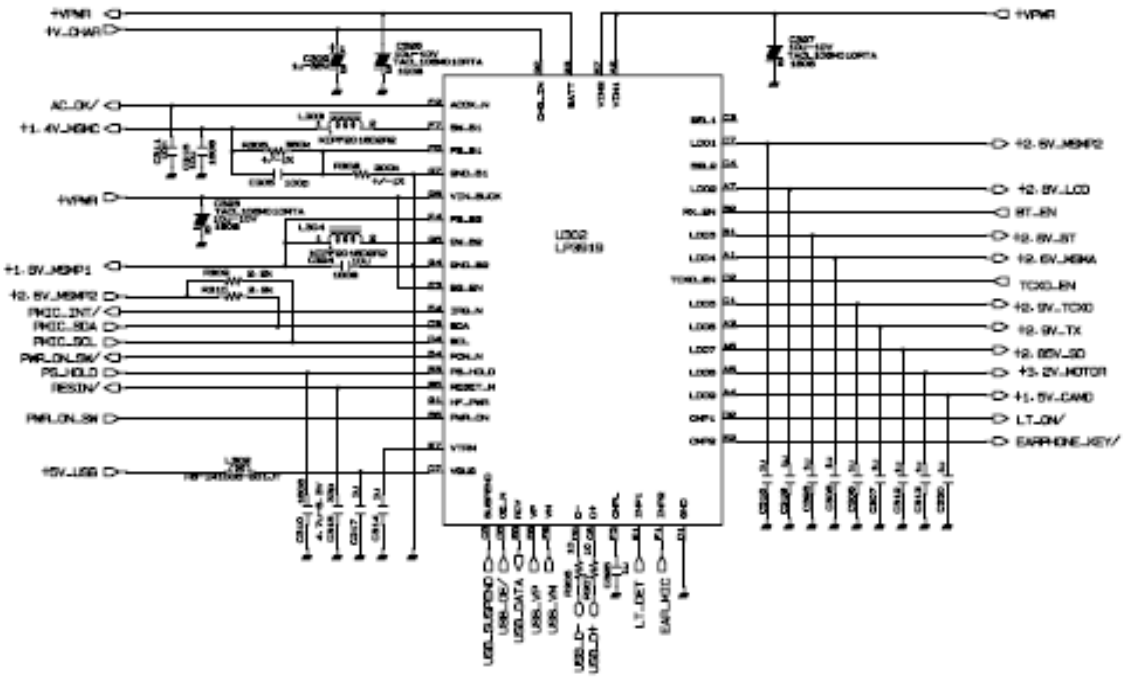


Circuit Diagram

<RX LDO>

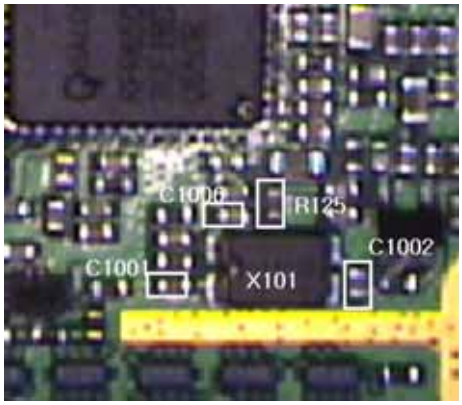


<PMIC PART>

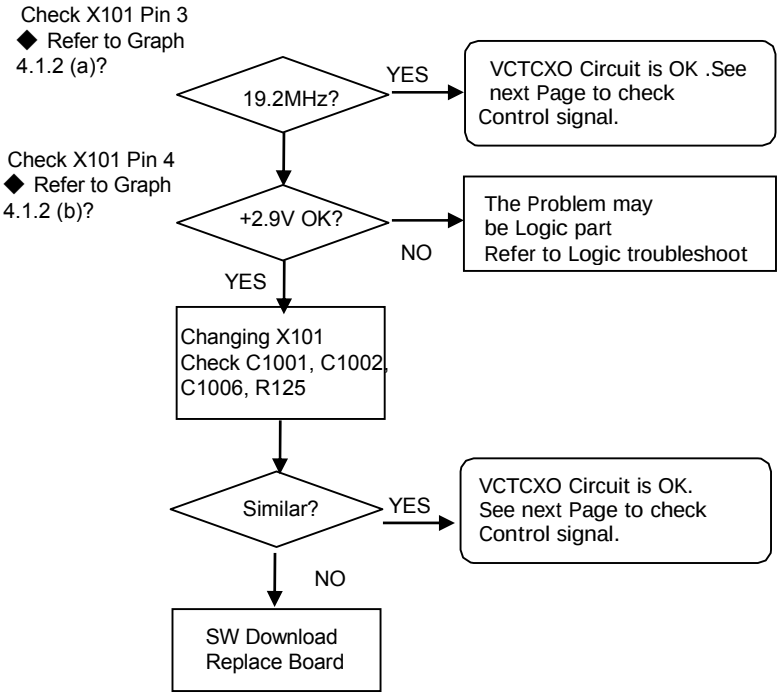


4.1.2.2 Checking VCTCXO Circuit

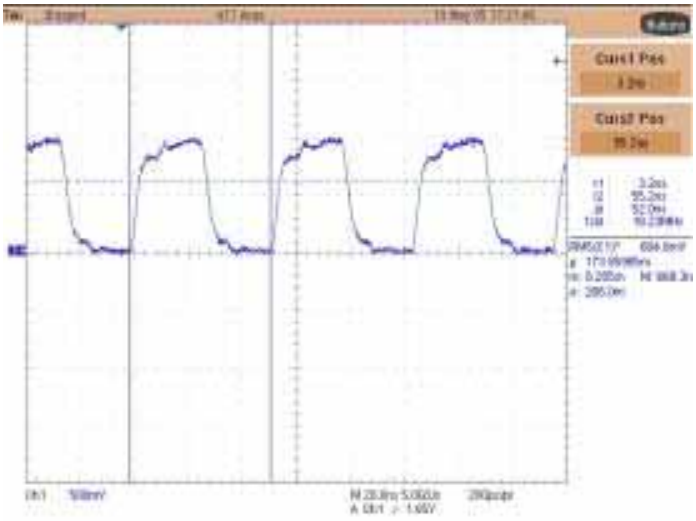
Test Point



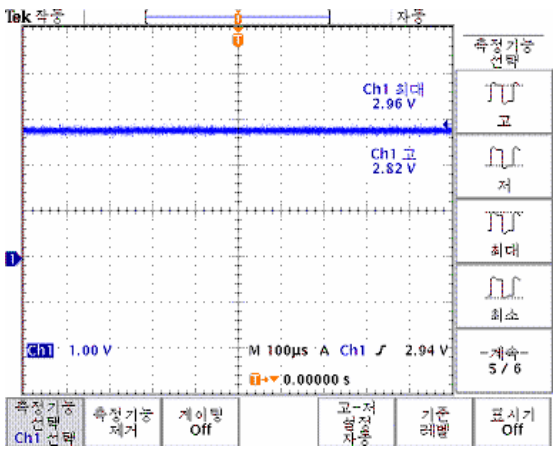
Checking Flow (VCTCXO)



Waveform

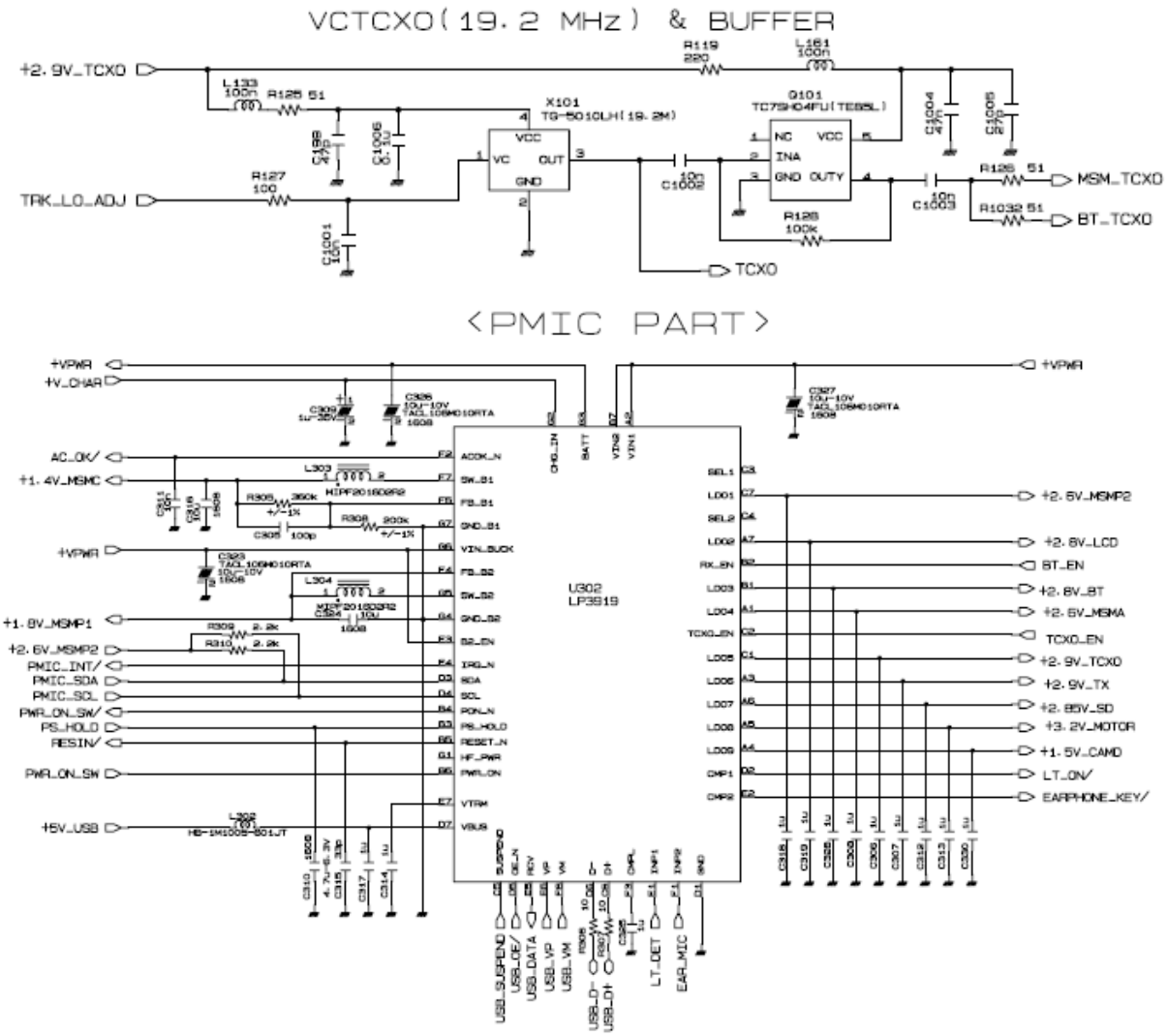


Graph



Graph

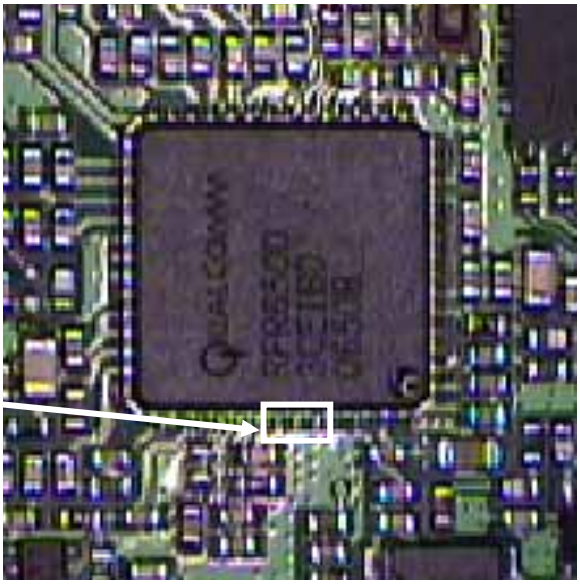
Circuit Diagram



4.1.2.3 Checking Control signal

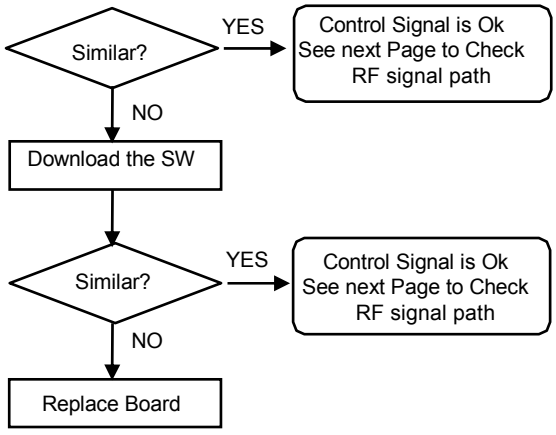
Test Point

U105 Pin49 (SBST0)
Pin50 (SBDT0)
Pin51 (SBCK0)



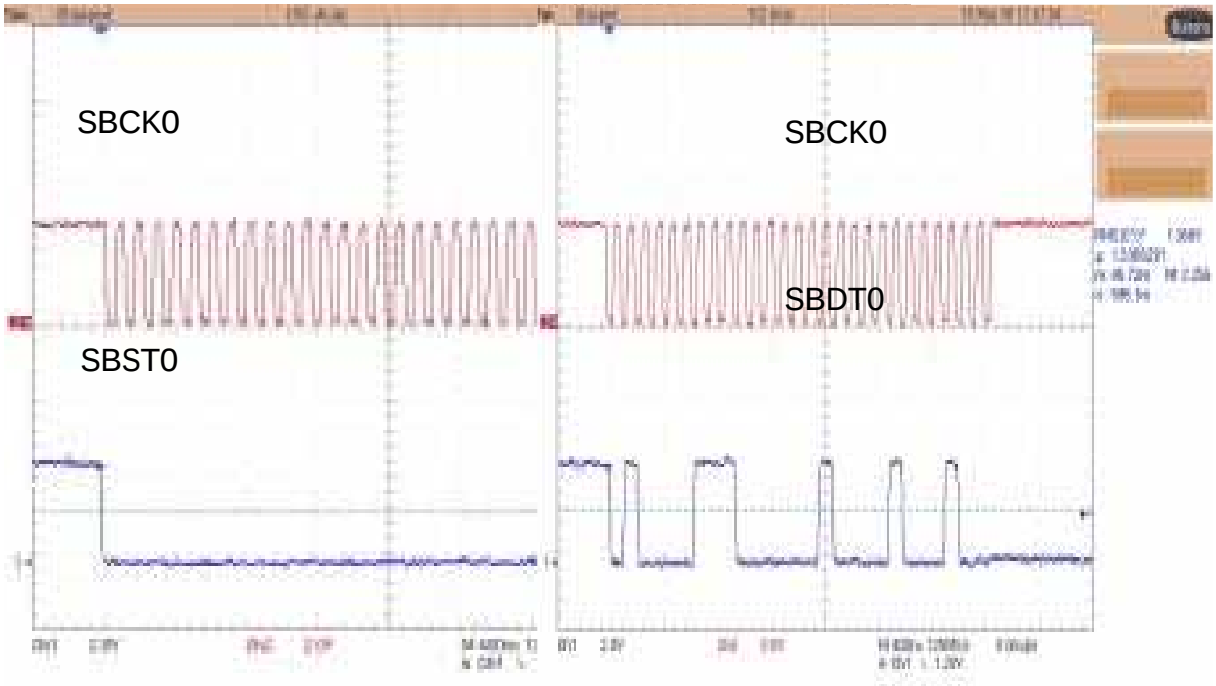
Checking Flow

Check Pin 49(SBCK0),
Pin 50(SBST0)
Pin 51(SBDT0) of U105
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.2(c,d)



Check Pin 49(SBCK0),
Pin 50(SBST0)
Pin 51(SBDT0) of U105
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.2(c,d)

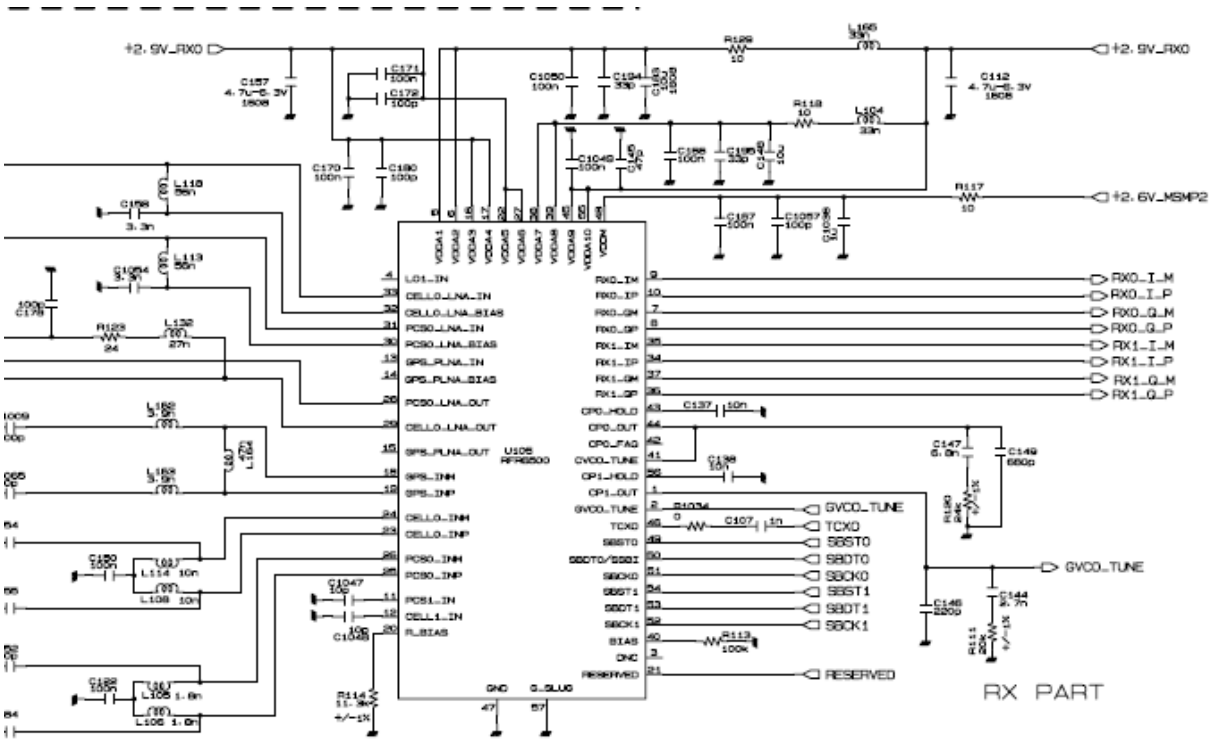
Waveform



Graph 4.1.2(c)

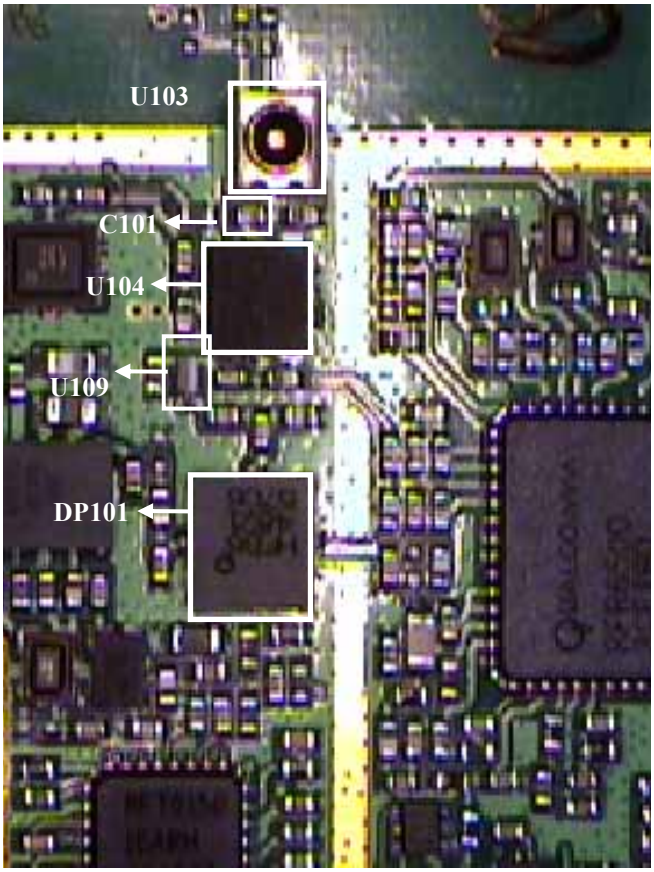
Graph 4.1.2(d)

Circuit Diagram



4.1.2.4 Checking RF Signal path (Mobile S/W, Triplexer, Duplexer)

Test Point



Checking Flow

Check U103 Pin 1
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.2(e)

Detected Signal? — No → Changing U107
Yes

Detected Signal? — No → Check C101
Yes

Check U104 Pin 7,
U109 Pin4
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.2(f)

Detected Signal? — No → Changing U104 or U109
Yes

Detected Signal? — No → Check C131&C192& C1062
Yes

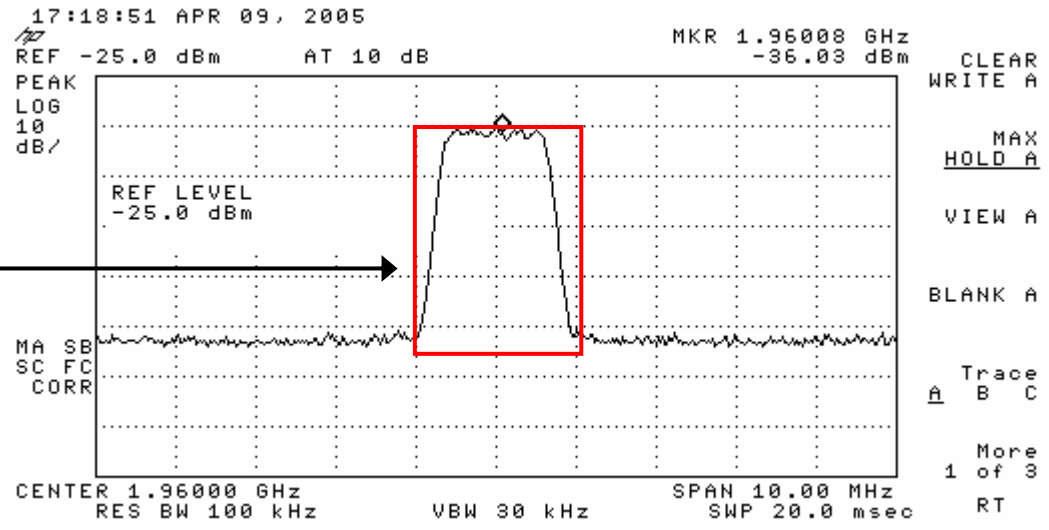
Check DP101 Pin 2
Check if there is
Any Major Difference
◆ Refer to Graph 4.1.2(g)

Detected Signal? — No → Changing DP101
Yes

Detected Signal? — No → Check C1055 & C153
Yes

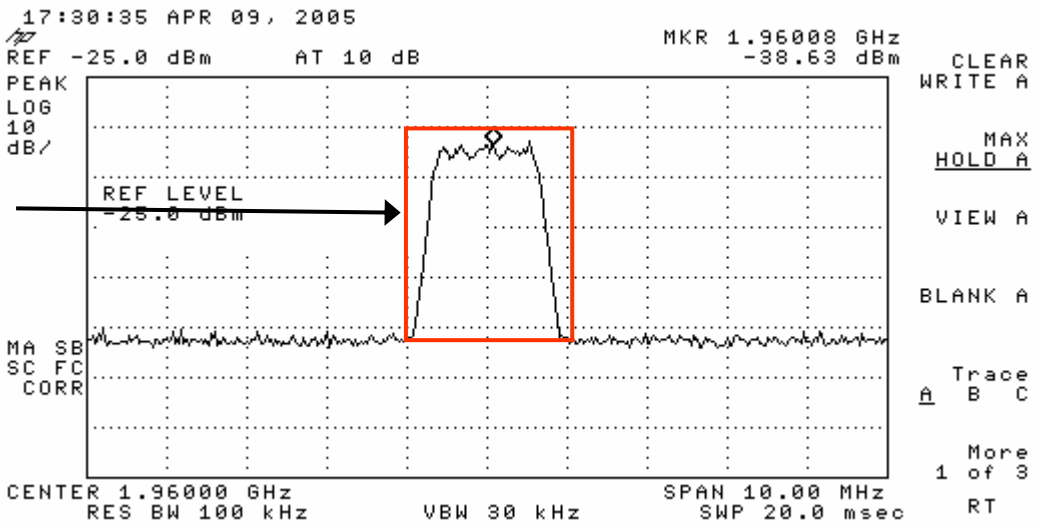
RF Signal Path is OK.
See next Page to check
RX I/Q data signal.

Waveform



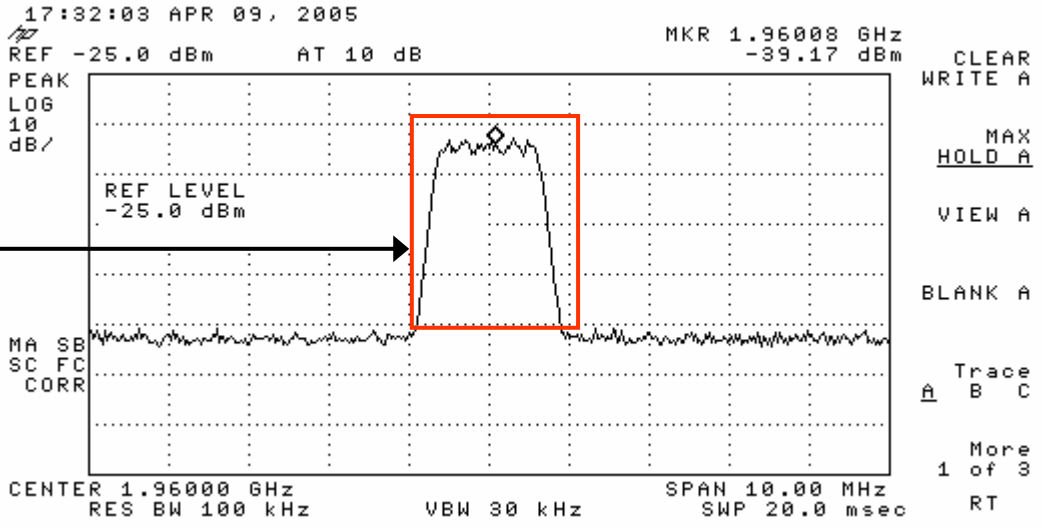
U103 Pin

Graph 4.1.2(e)



U104 Pin

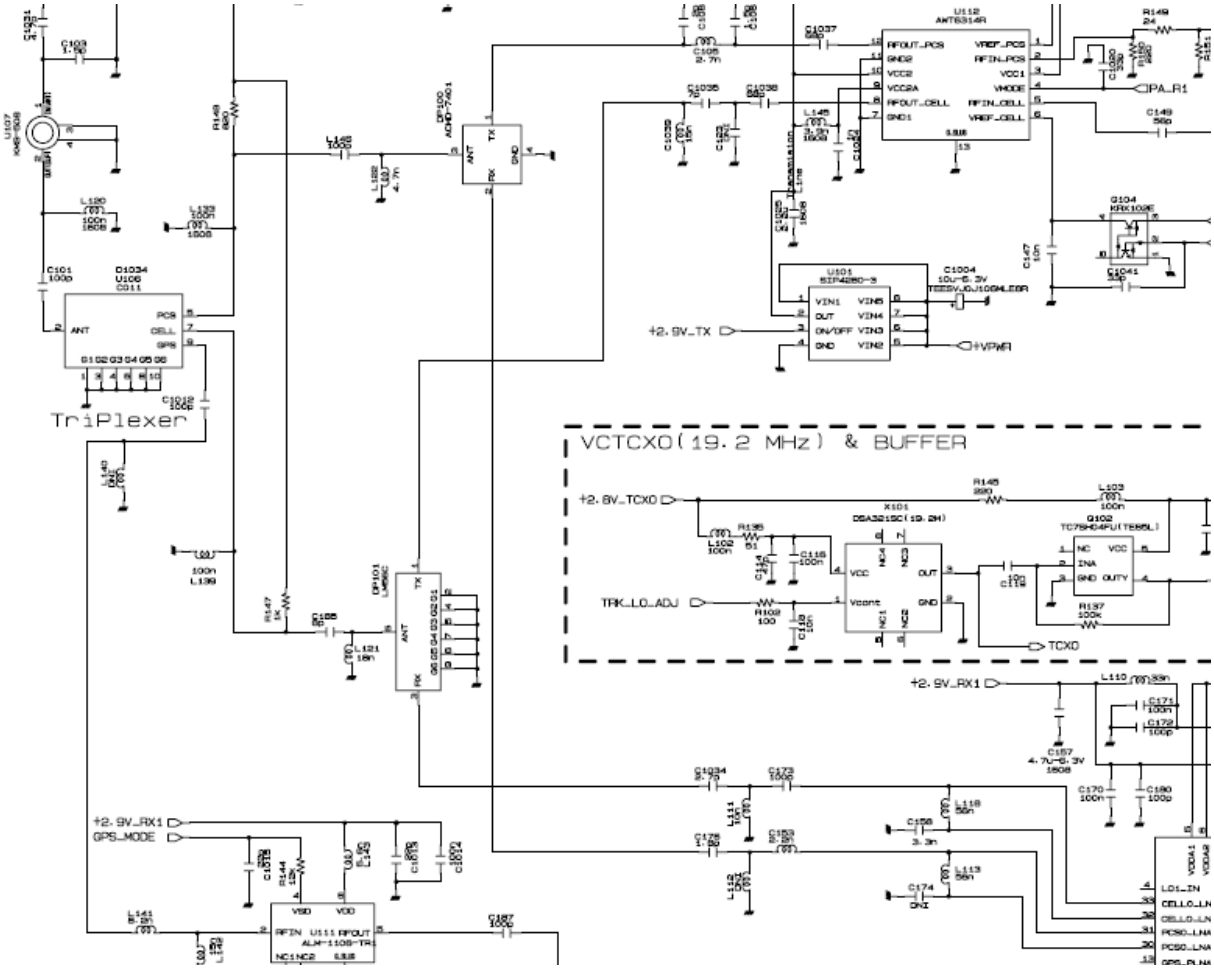
Graph 4.1.2(f)



DP101 Pin

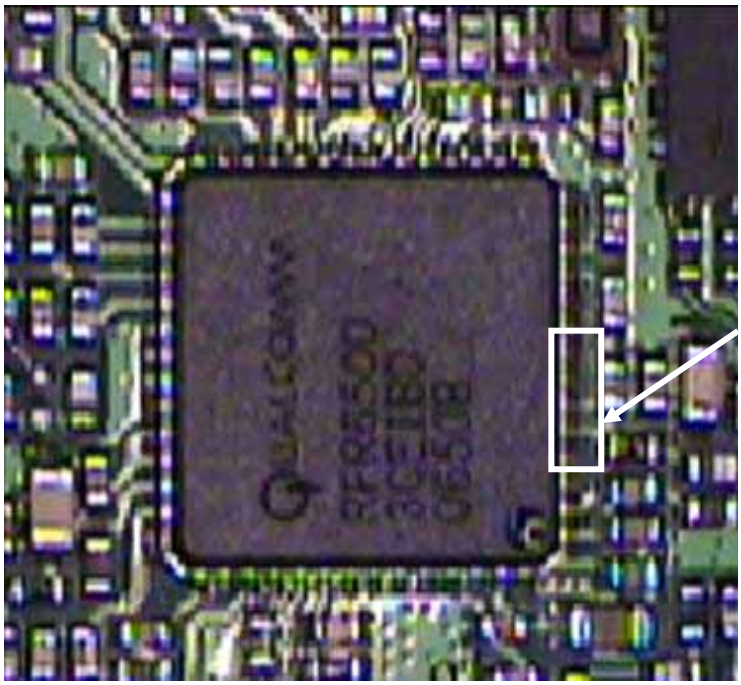
Graph 4.1.2(g)

Circuit

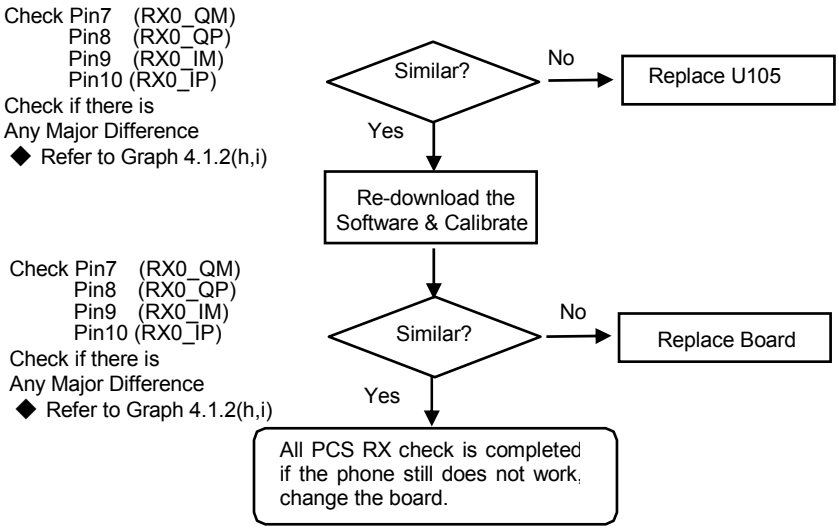

TriPlexer
VCTCXO(19.2 MHz) & BUFFER
+2.8V_TCXO
TRK_LO_ADJ
TCXO
+2.8V_RX1
GPS_MODE
+2.8V_TX
PA_R1
+VPWR

4.1.2.5 Checking Rx I/Q data

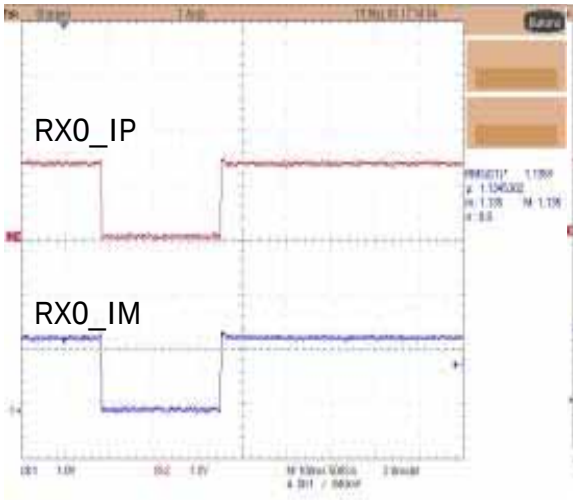
Test Point



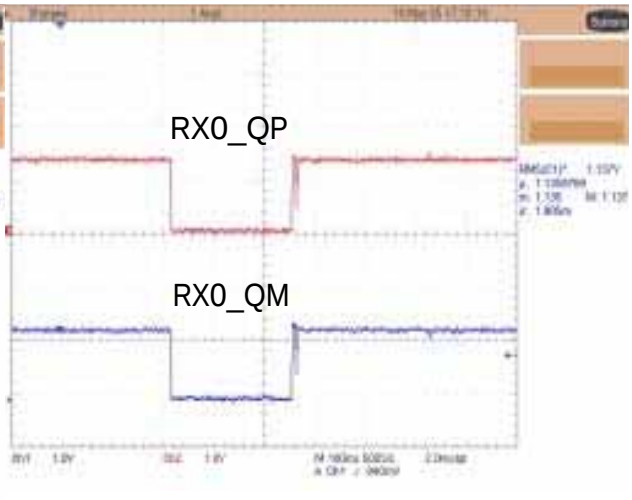
Checking Flow



Waveform

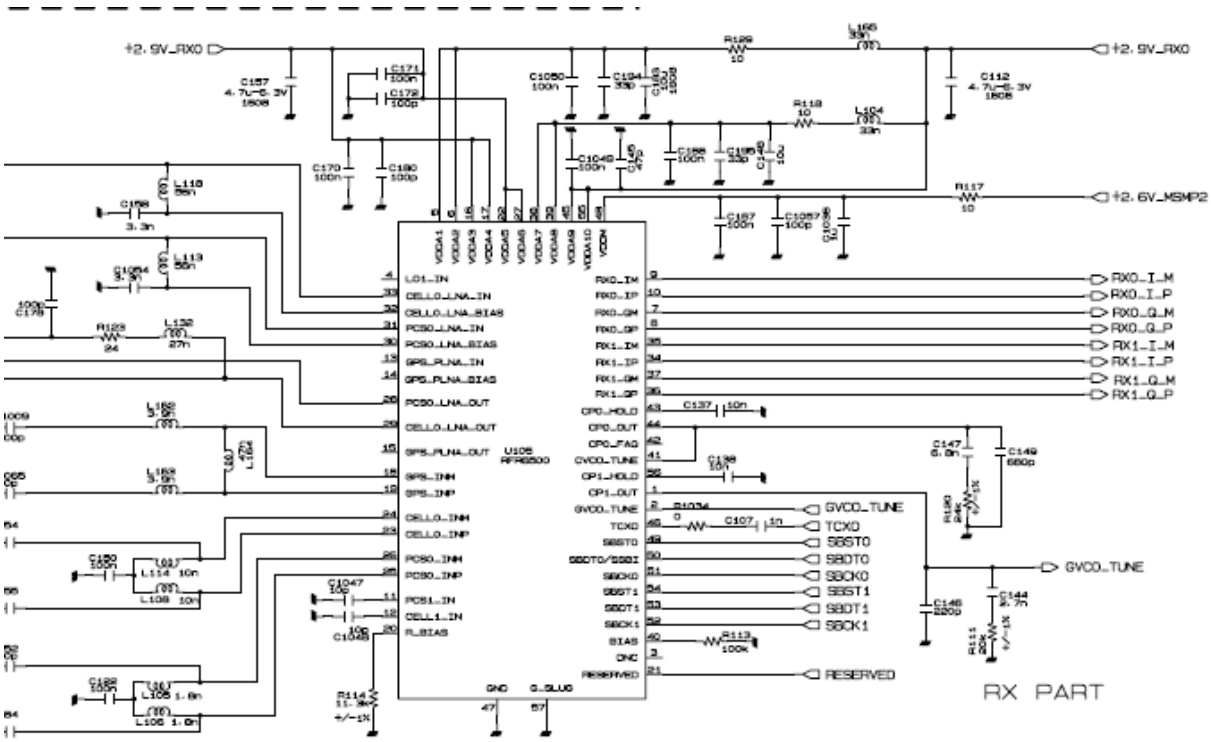


Graph 4.1.2(h)

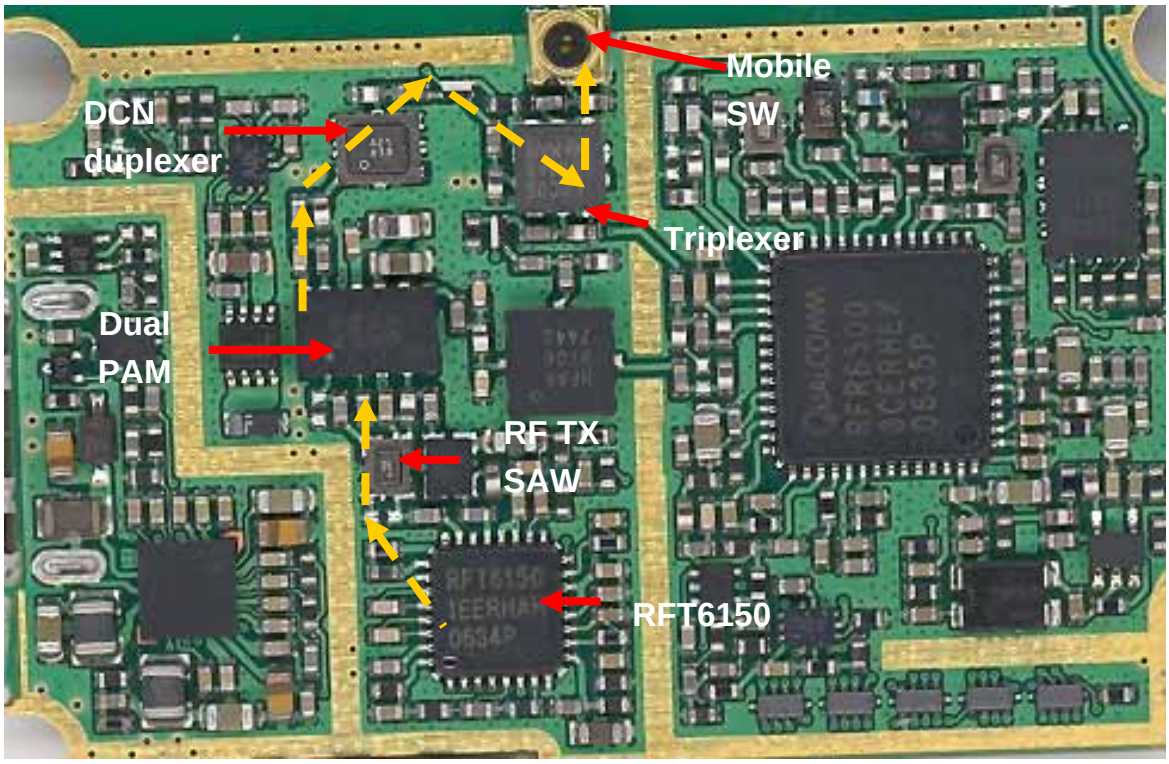


Graph 4.1.2(i)

Circuit

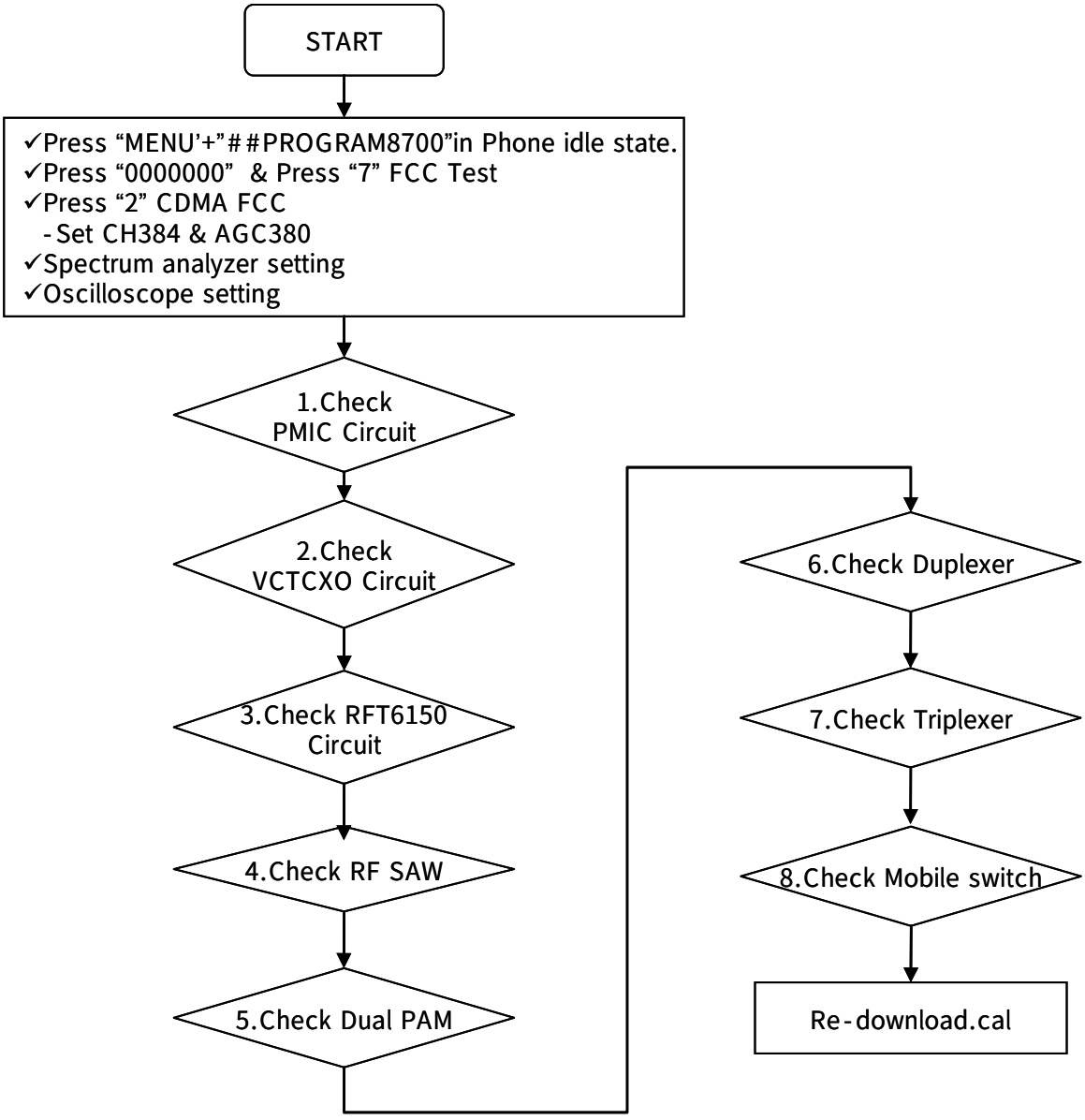


4.2 TX Part Trouble
4.2.1 DCN TX Trouble



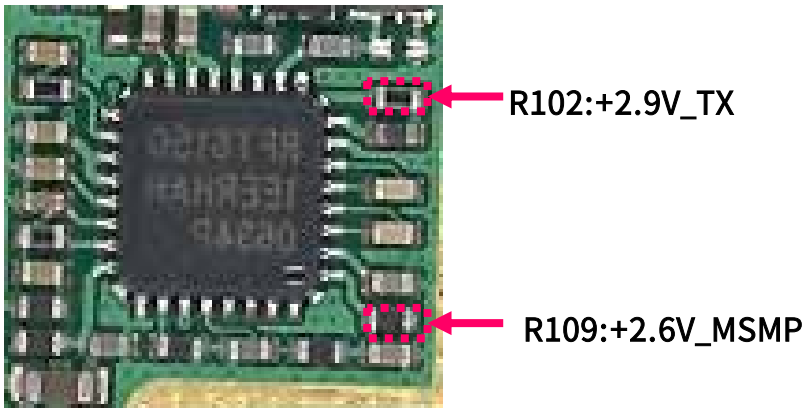
< PX8700 DCN TX Part >

Checking Flow

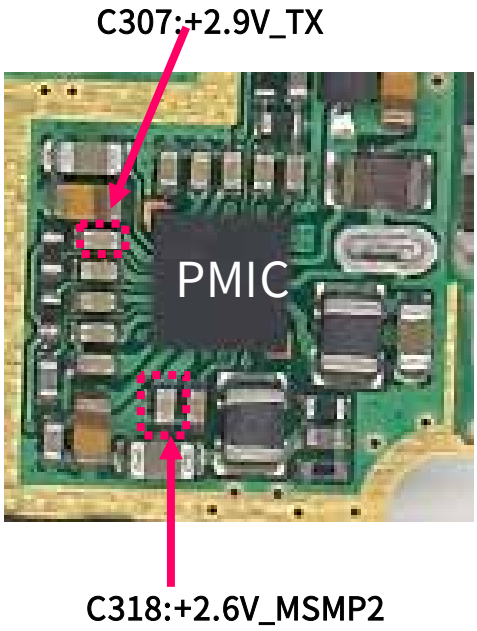


4.2.1.1. Check RFT Circuit

TEST POINT

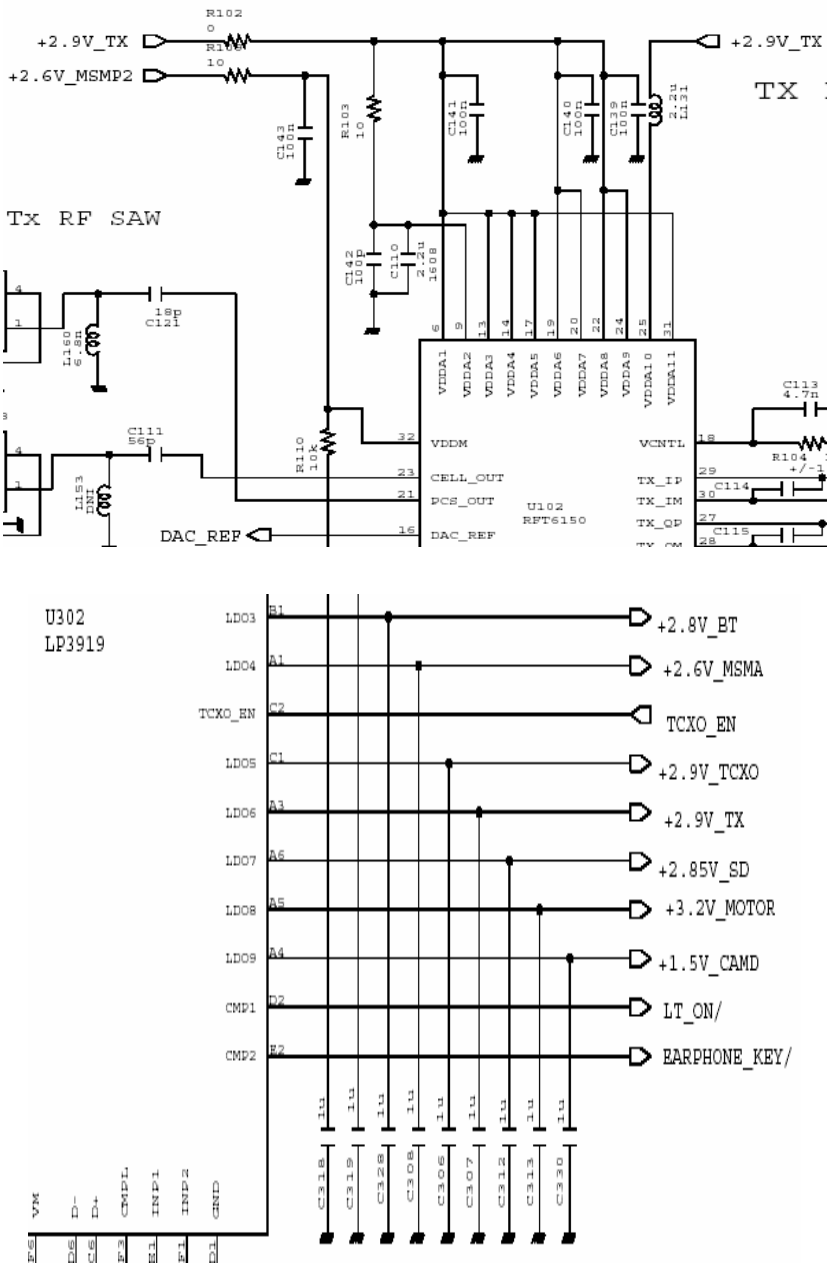


<RFT6150:+2.9V_TX, +2.6V_MSMP2>



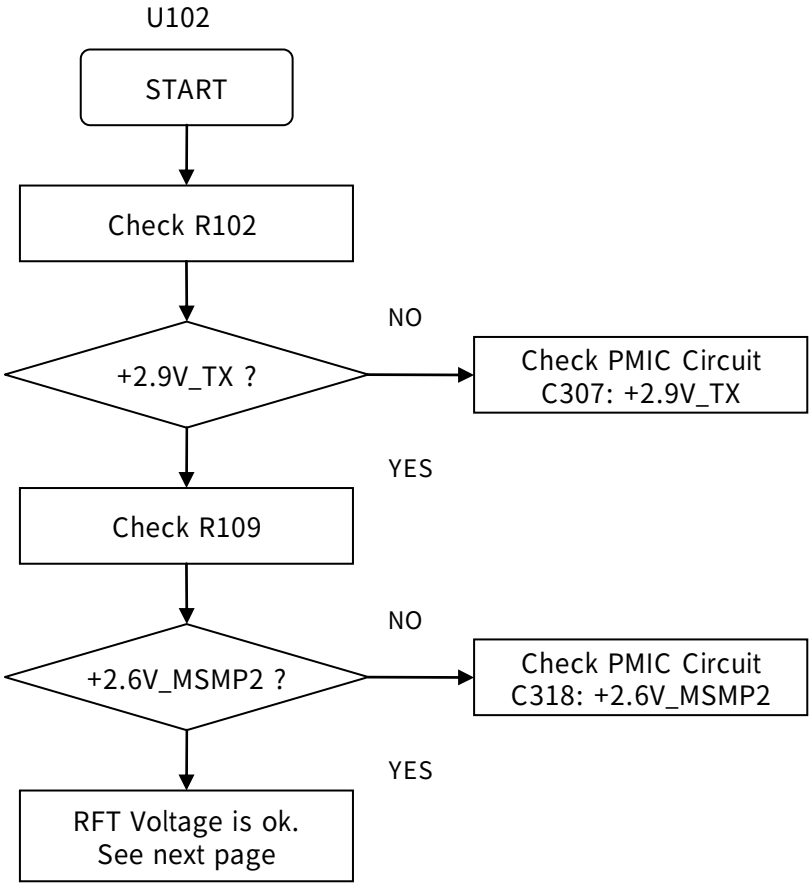
< PMIC :+2.9V_TX, +2.6V_MSMP2 >

Circuit Diagram



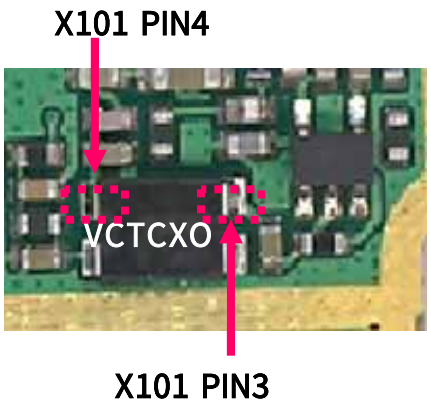
<RFT6150 & PMIC +2.9V_TX, +2.6V_MSMP2 circuit>

Checking Flow

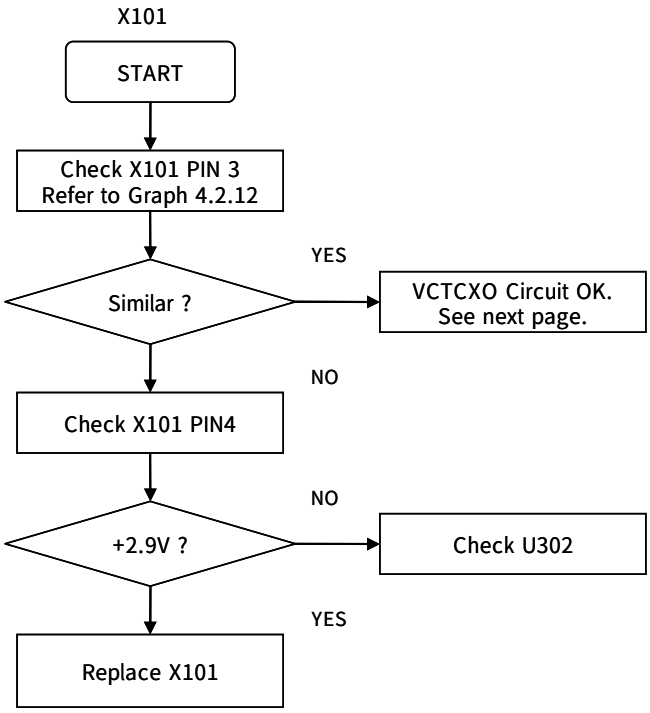


4.2.1.2. Check VCTCXO Circuit

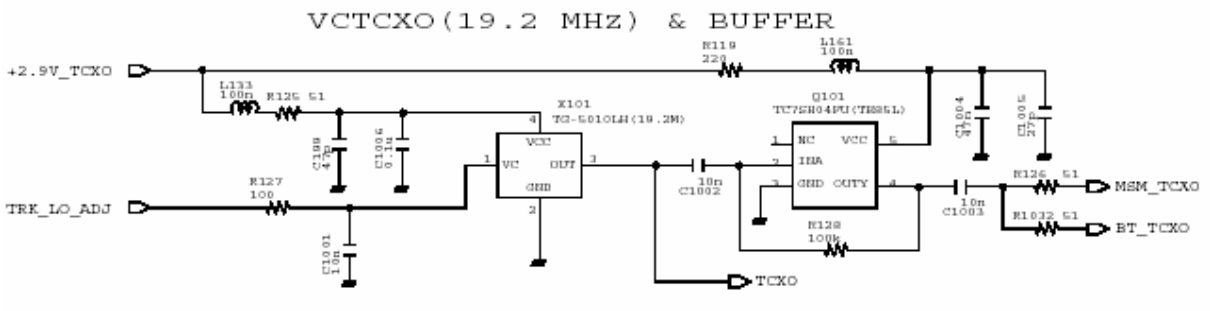
Test Point



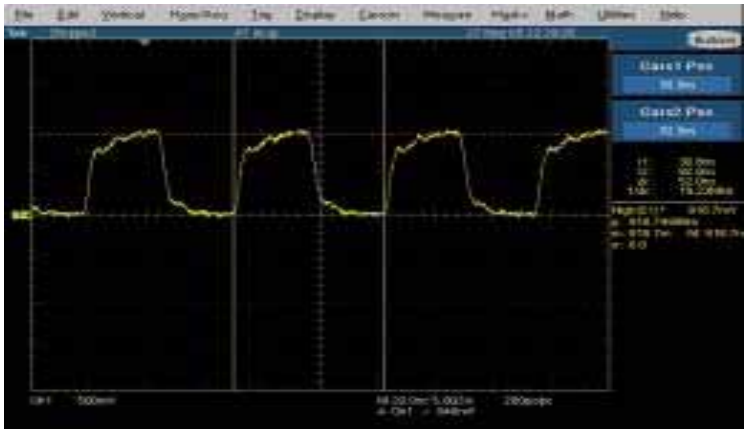
Checking Flow



Circuit Diagram

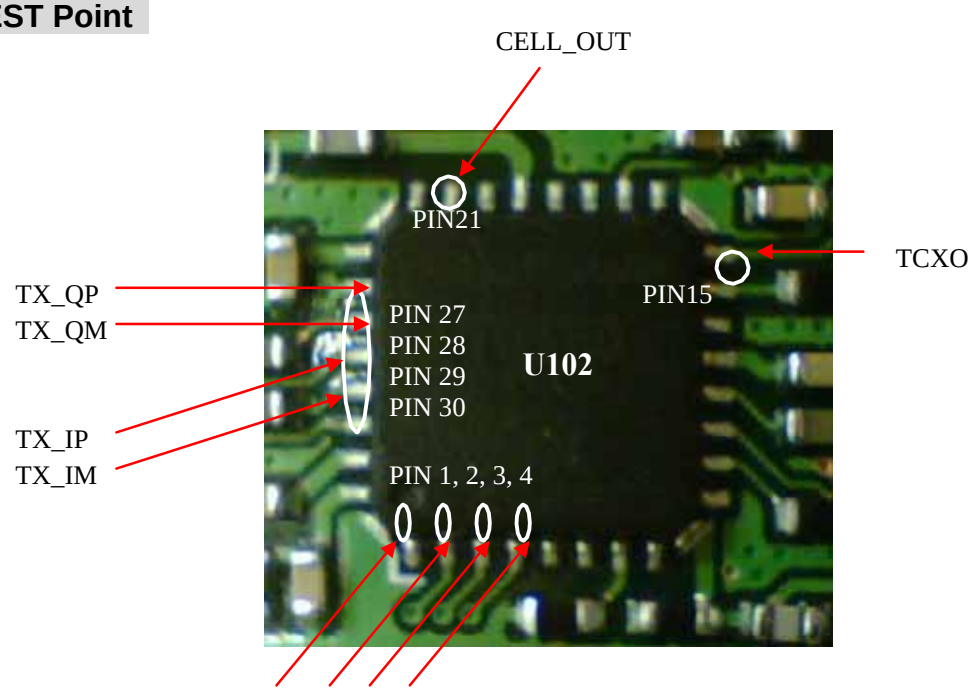


TCXO Waveform

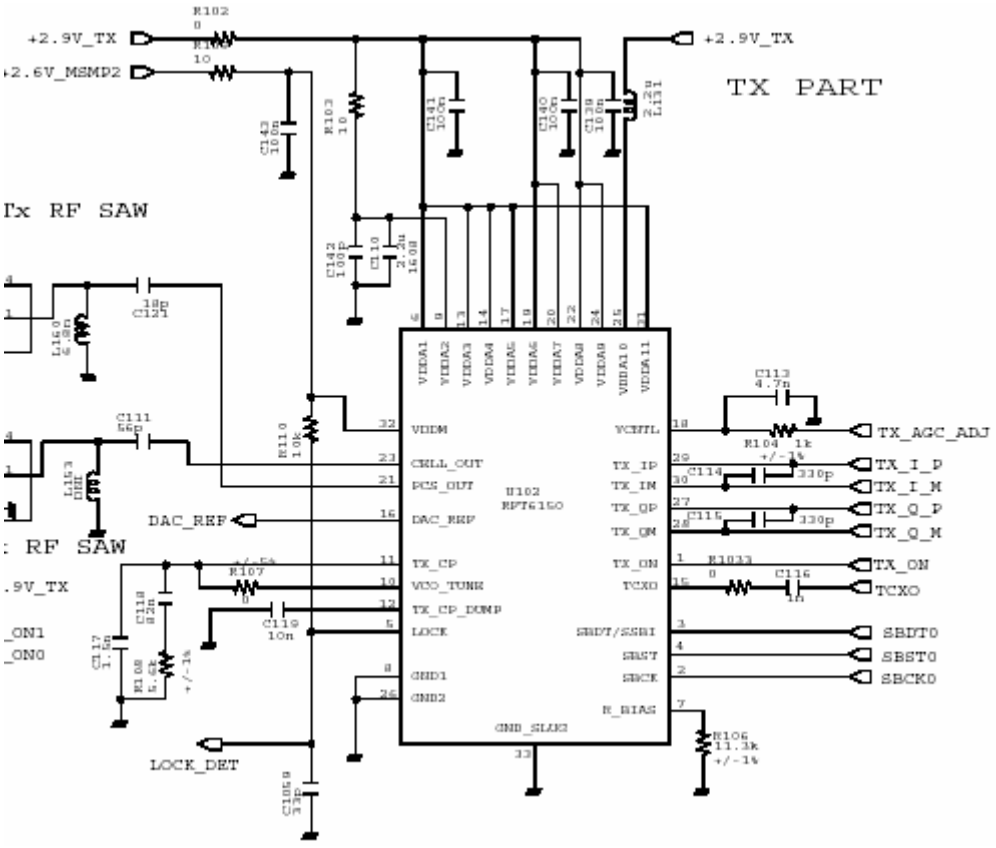


4.2.1.4. Check RFT Circuit

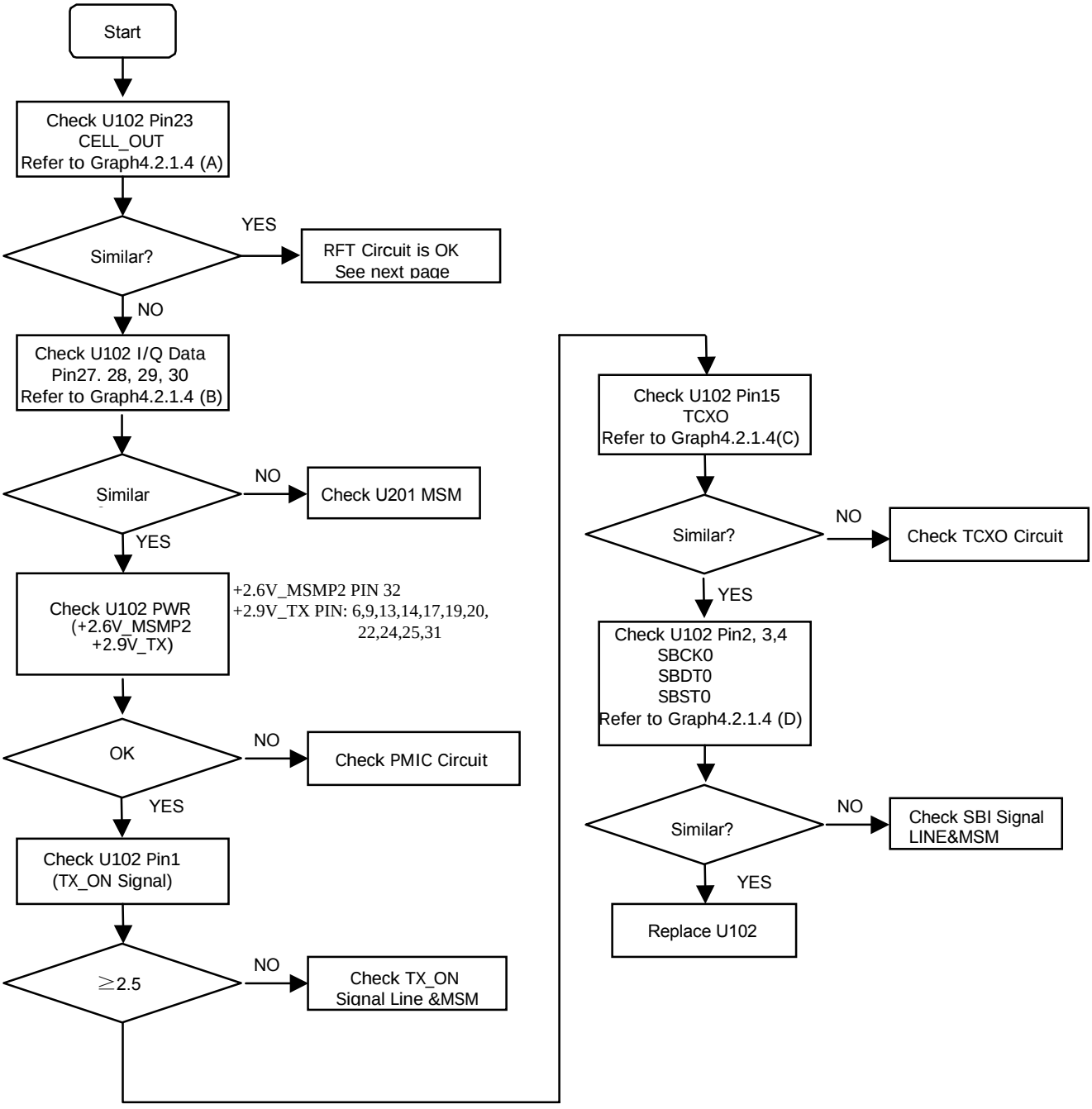
TEST Point



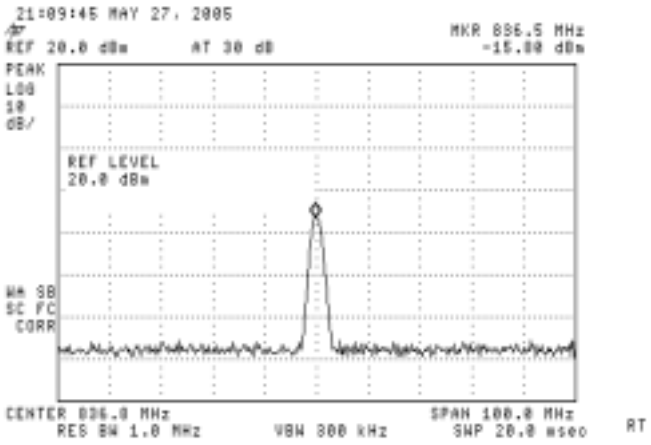
Circuit Diagram



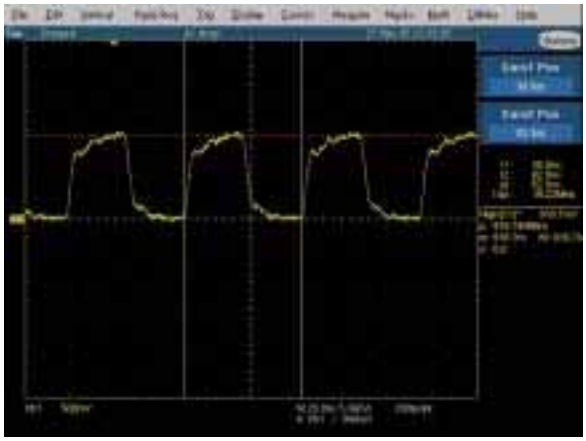
Checking Flow



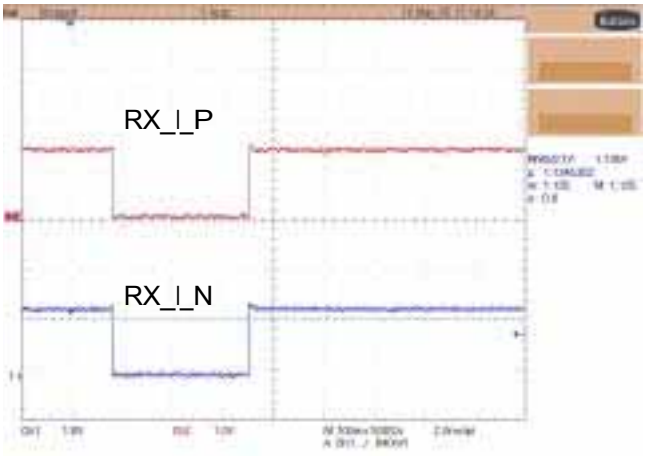
Waveform

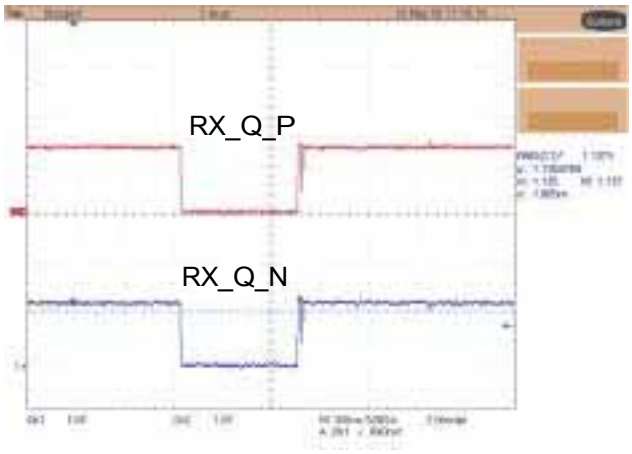


Graph 4.2.1.4(A)

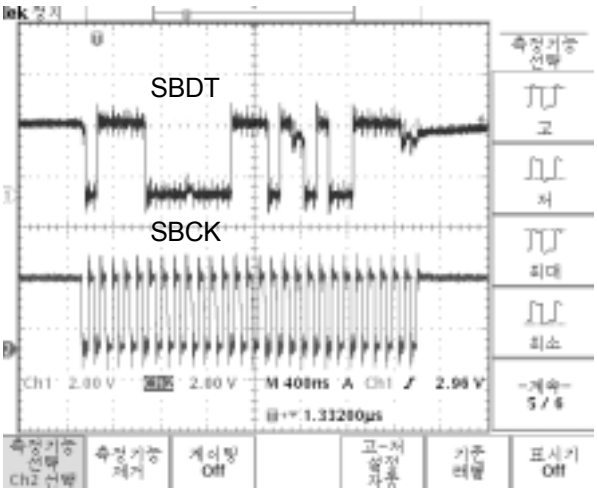


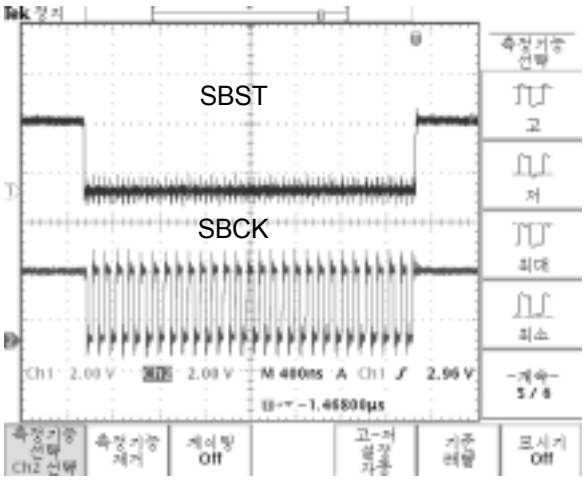
Graph 4.2.1.4(C)





Graph 4.2.1.4(B)

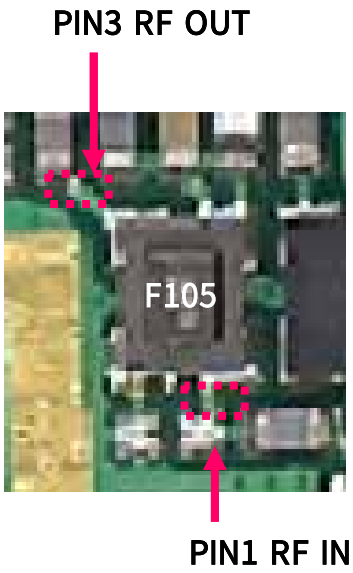




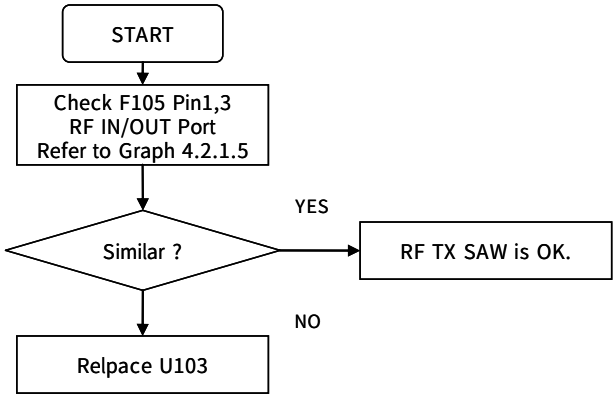
Graph 4.2.1.4(D)

4.2.1.5. Check DCN RF TX SAW

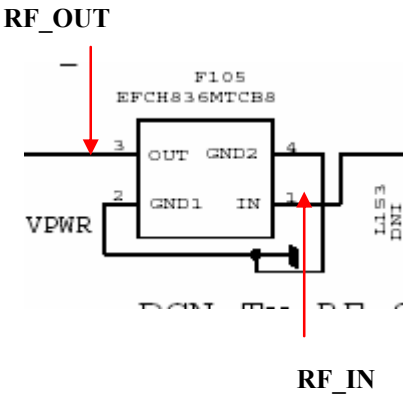
Test Point



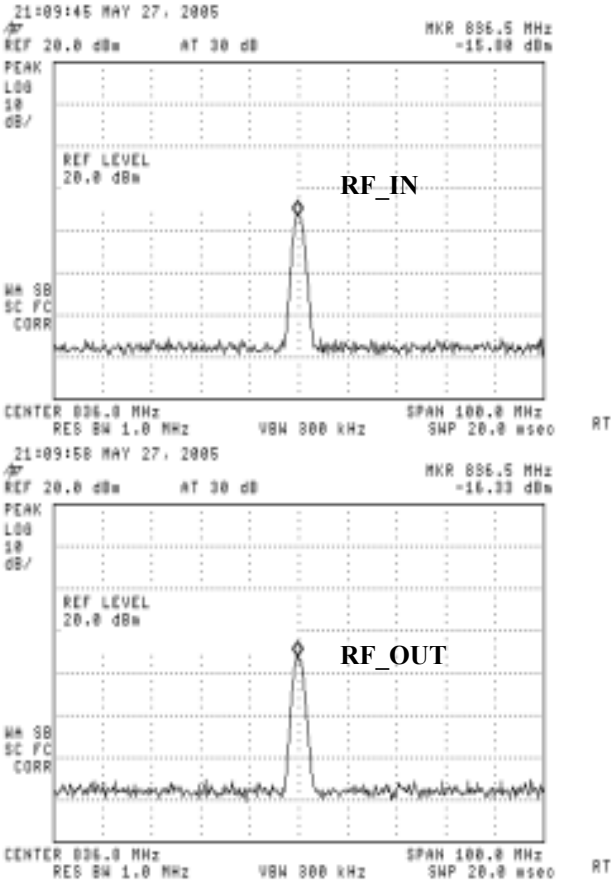
Checking Flow



Circuit Diagram

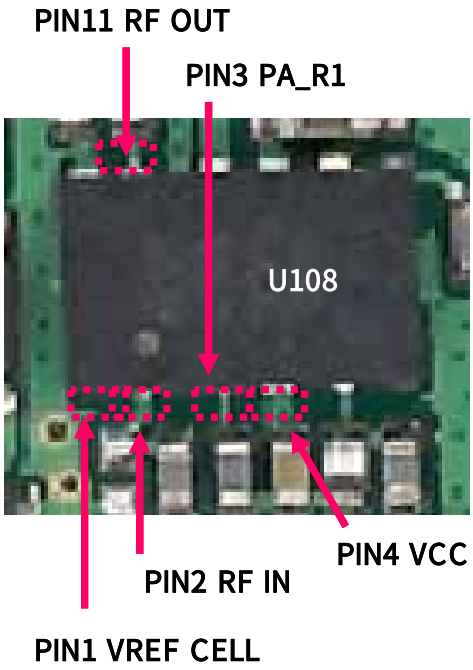


Waveform

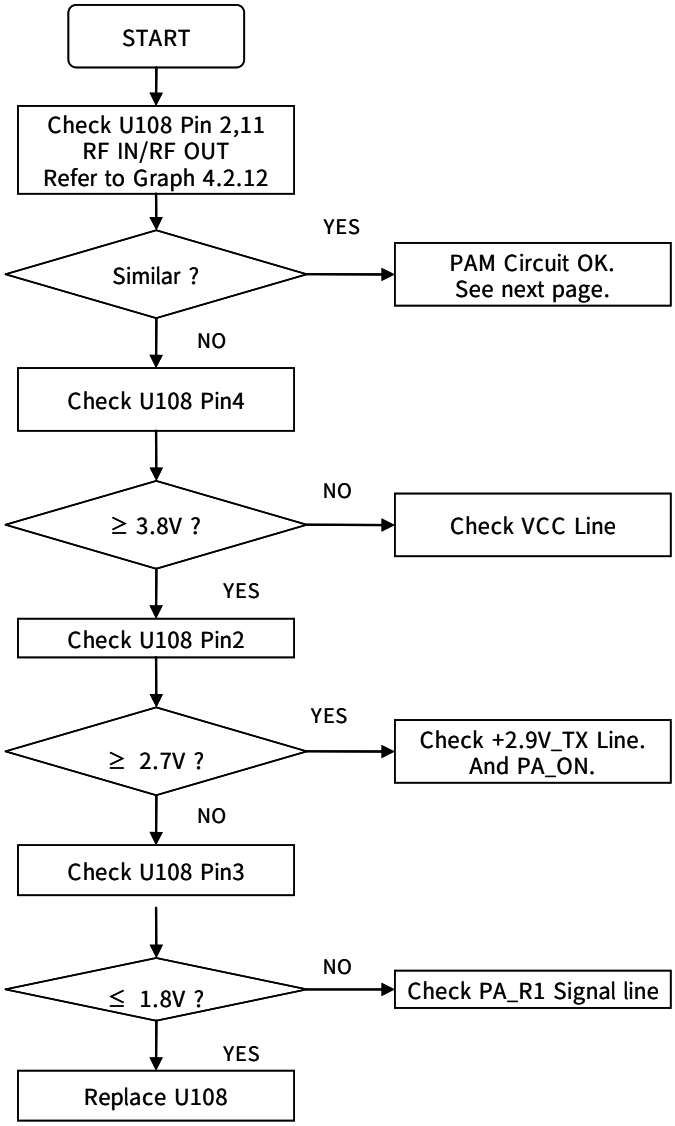


4.2.1.6. Check DCN PAM Circuit

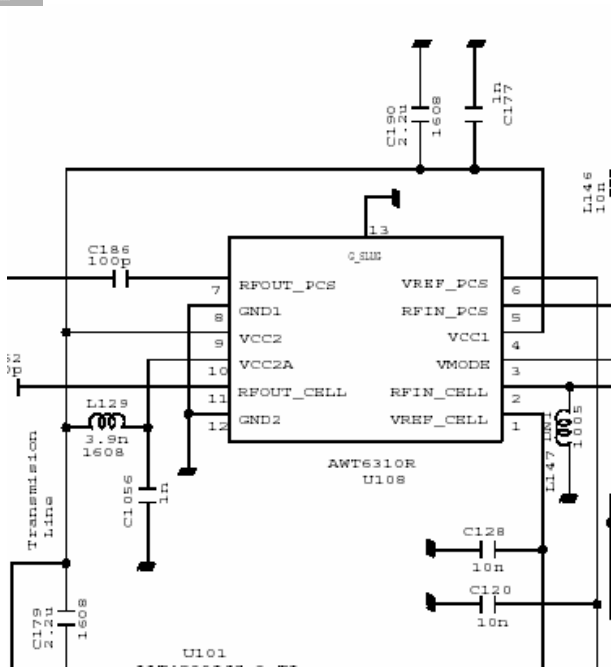
Test Point



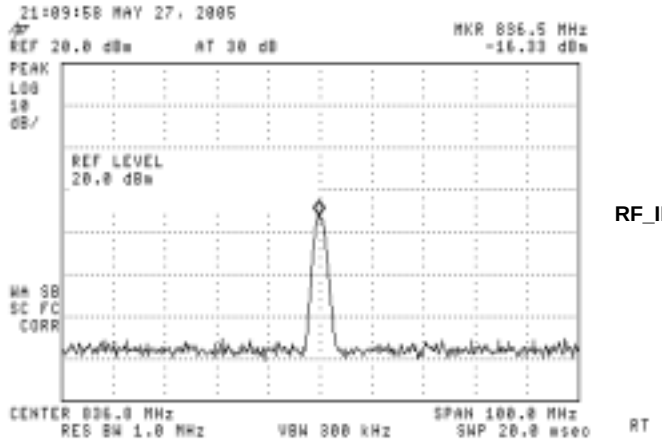
Checking Flow



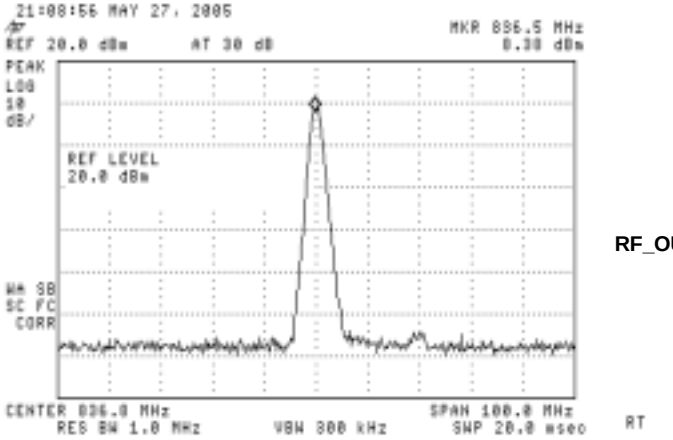
Circuit Diagram



Waveform



RF_IN

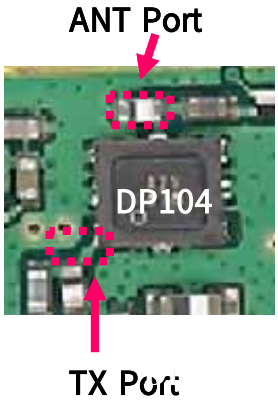


RF_OUT

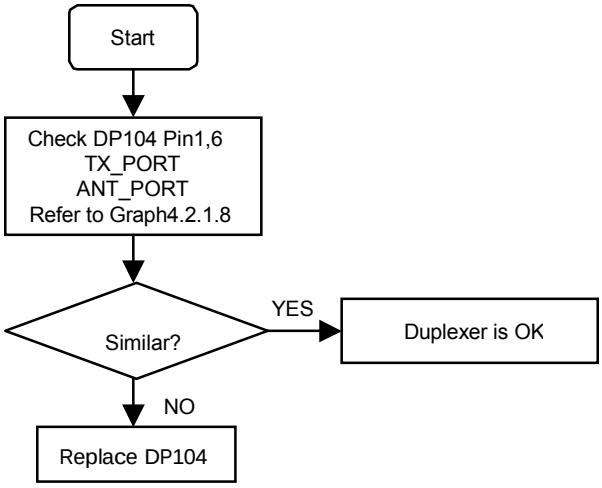
Graph 4.2.1.6

4.2.1.7. Check DCN Duplexer

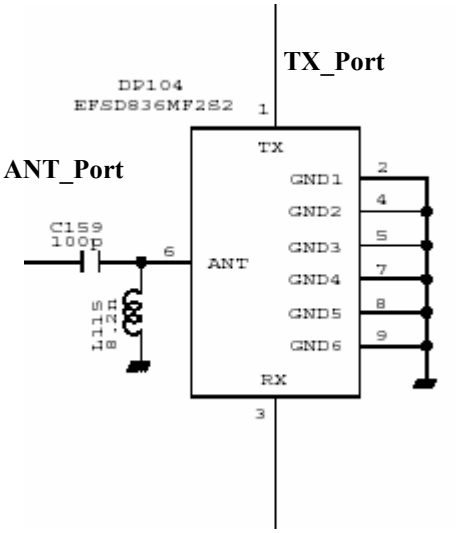
Test Point



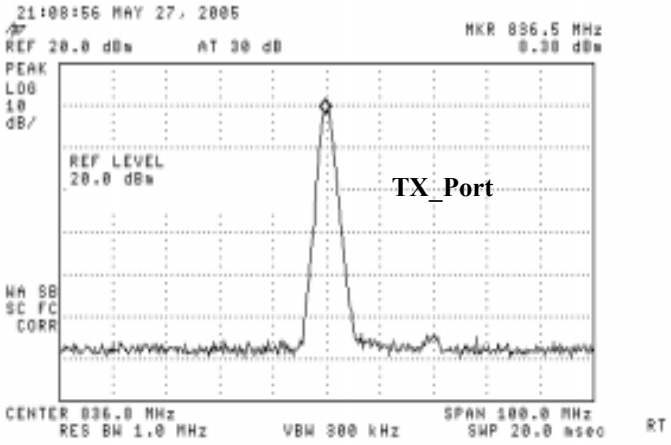
Checking Flow

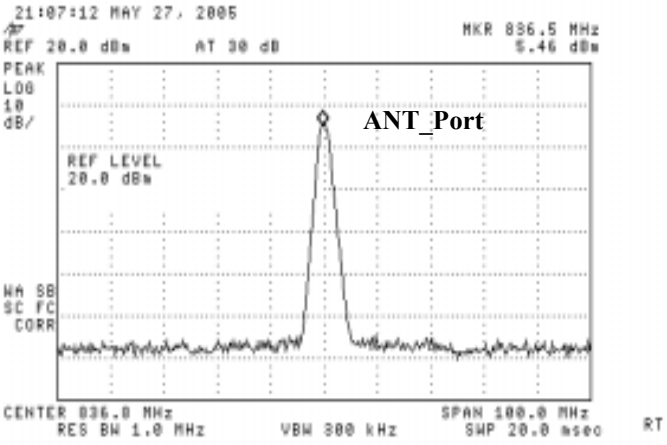


Circuit Diagram



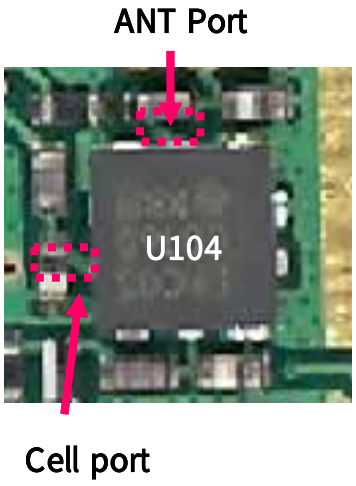
Waveform



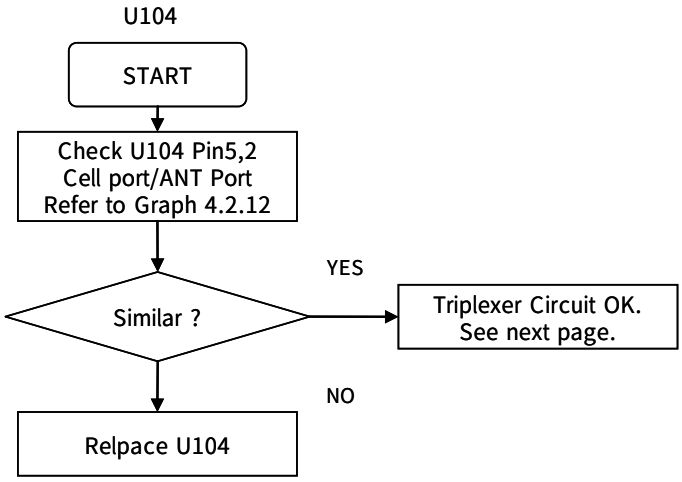


4.2.1.8 Chcek Triplexer

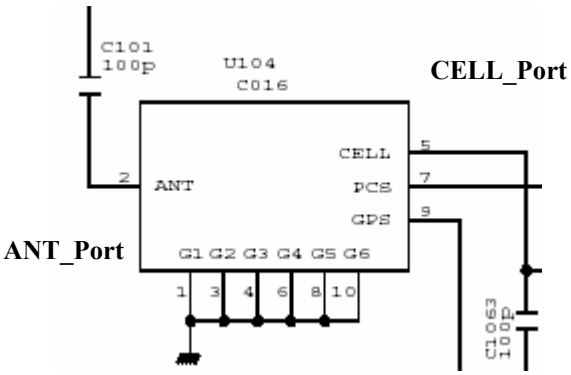
Test Point



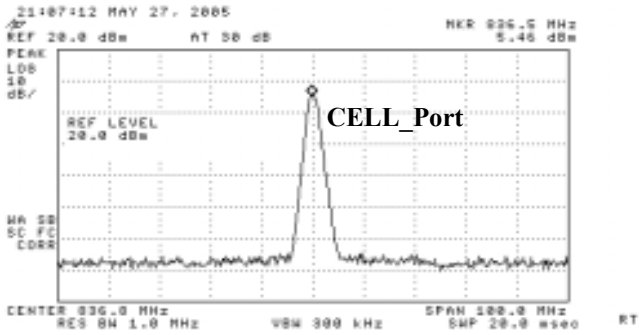
Checking Flow

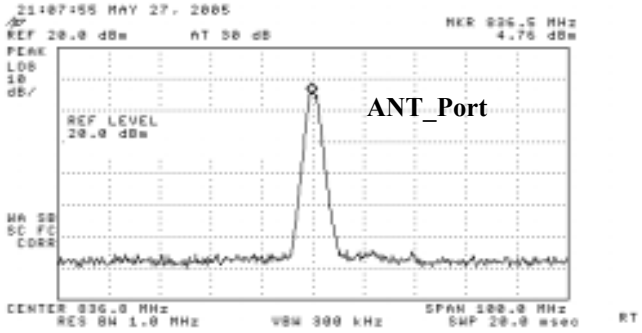


Circuit Diagram



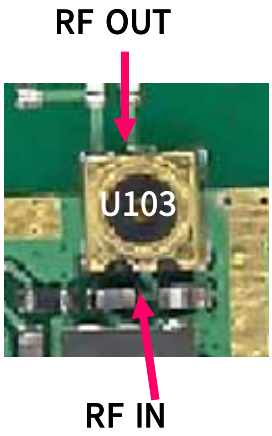
Waveform



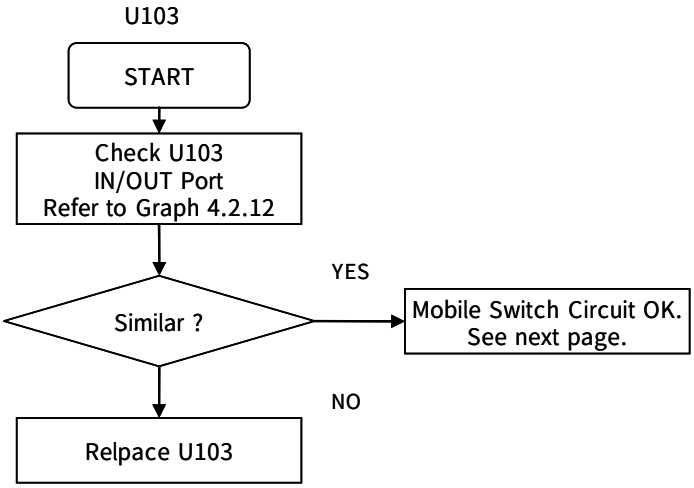


4.2.1.9 Chcek Mobile Switch

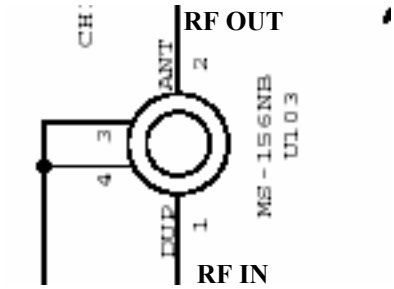
Test Point



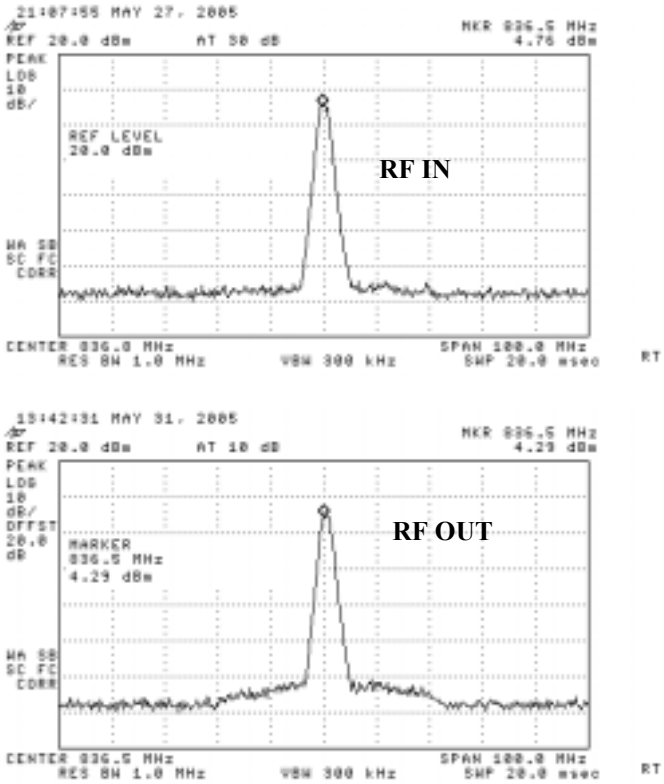
Checking Flow



Circuit Diagram



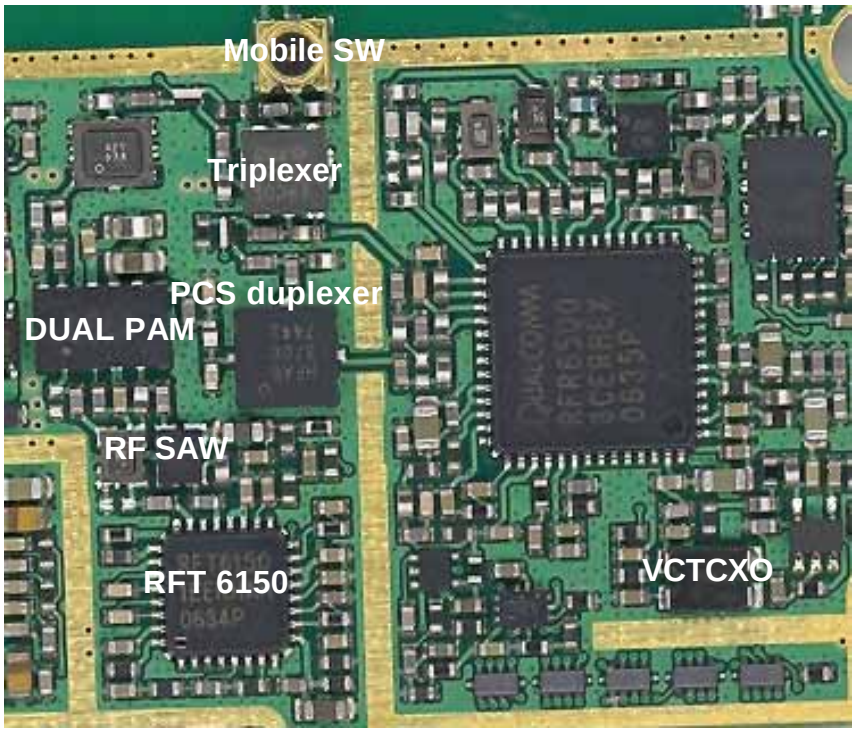
Waveform



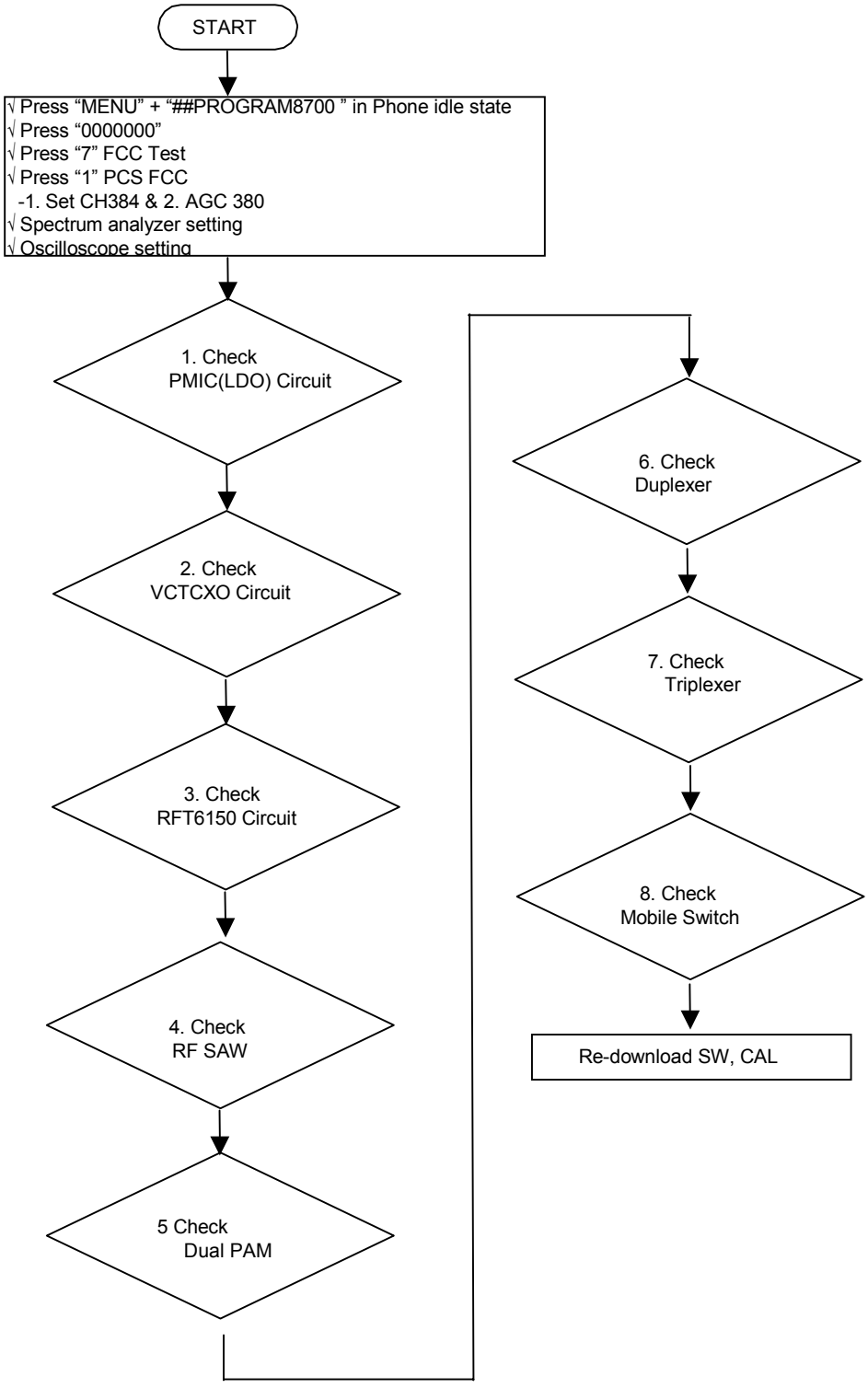
Graph 4.2.1.9

4.2.2 PCS TX Trouble

Test Point

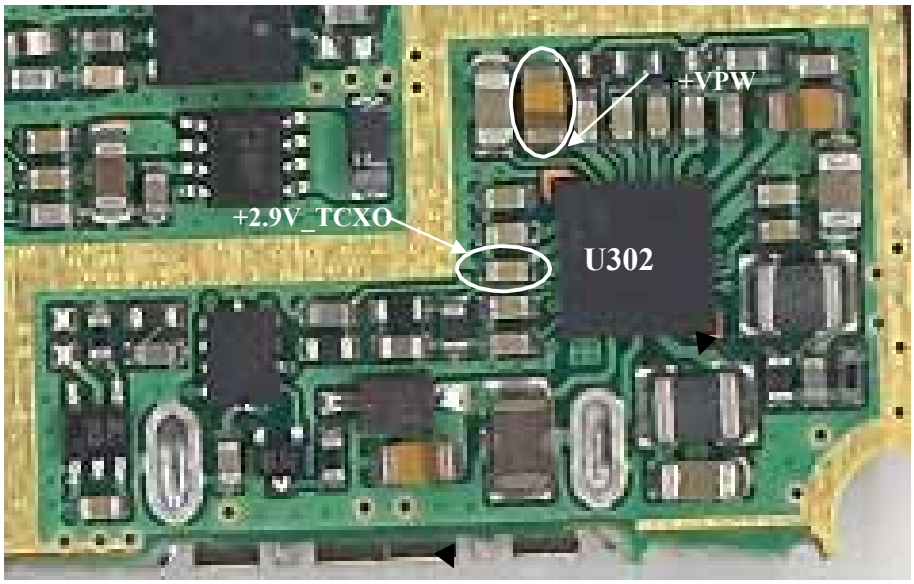


Checking Flow



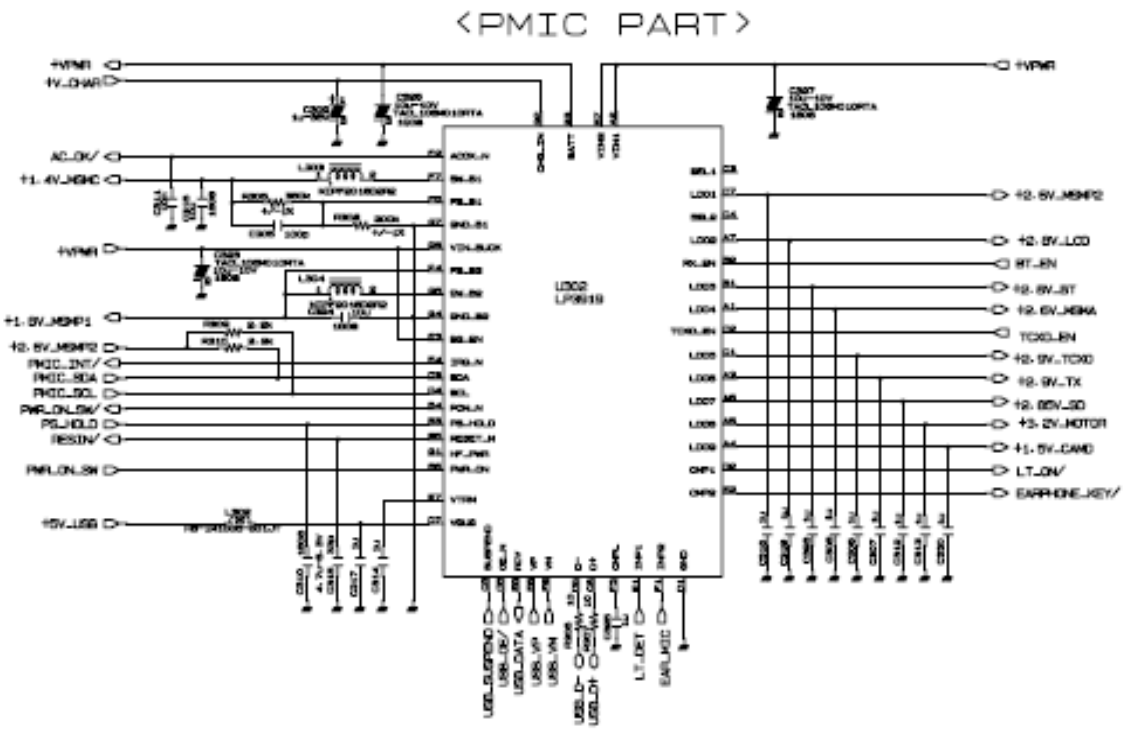
4.2.2.1. Check Regulator Circuit

TEST POINT

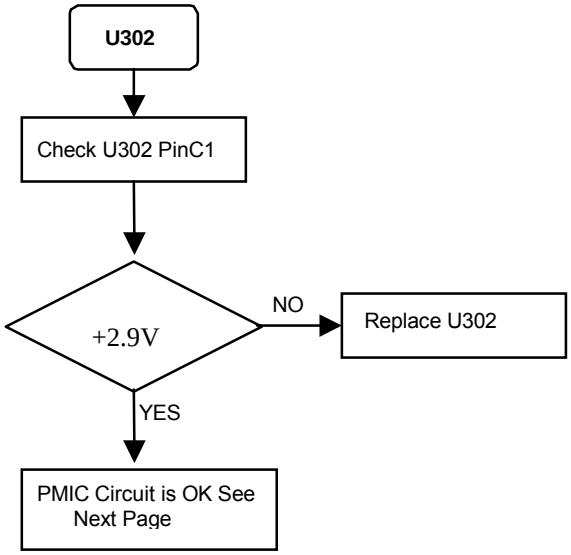


<+2.9V_TCXO>

Circuit Diagram

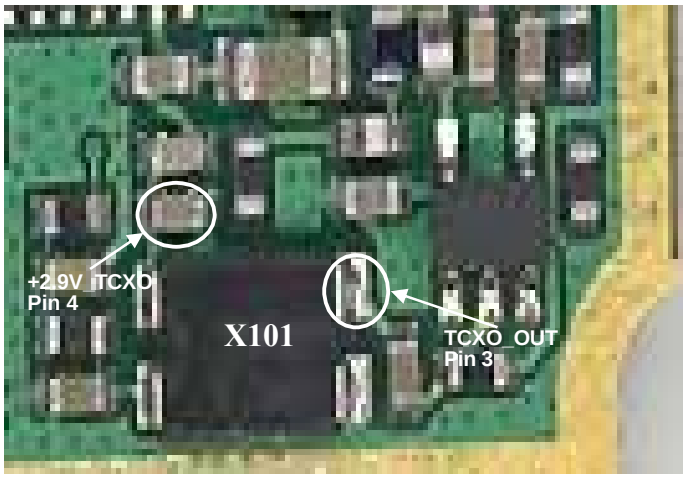


Checking Flow

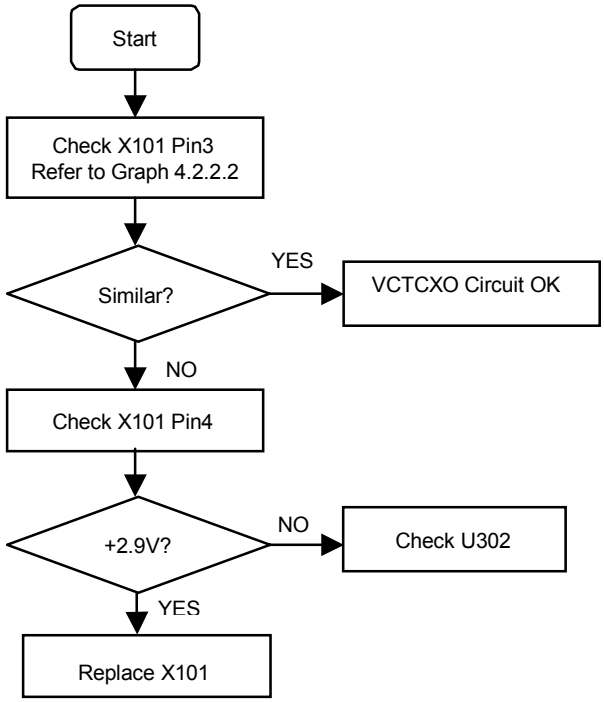


4.2.2.2. Check VCTCXO Circuit

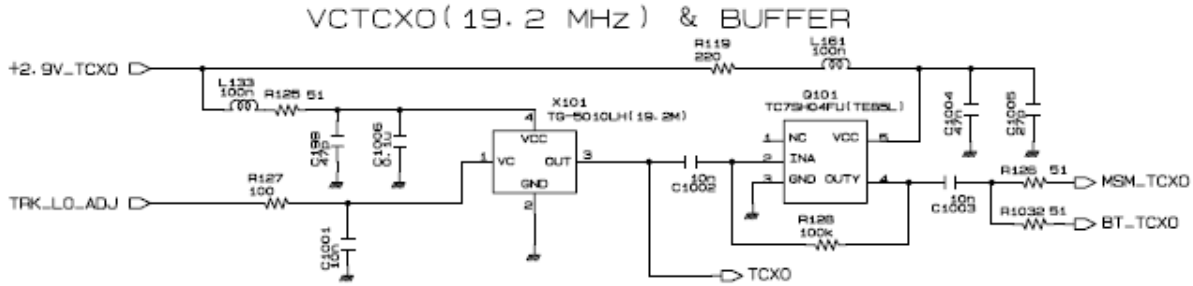
Test Point



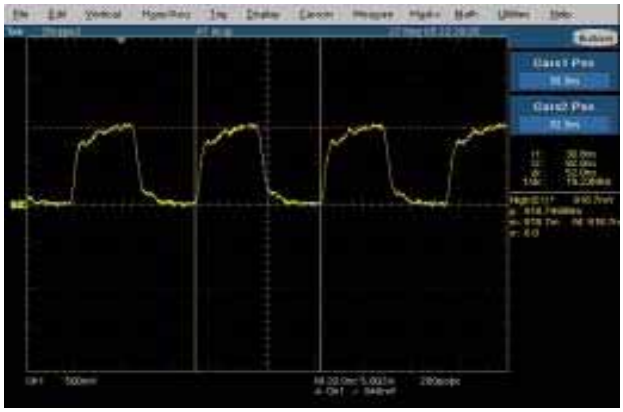
Checking Flow



Circuit Diagram



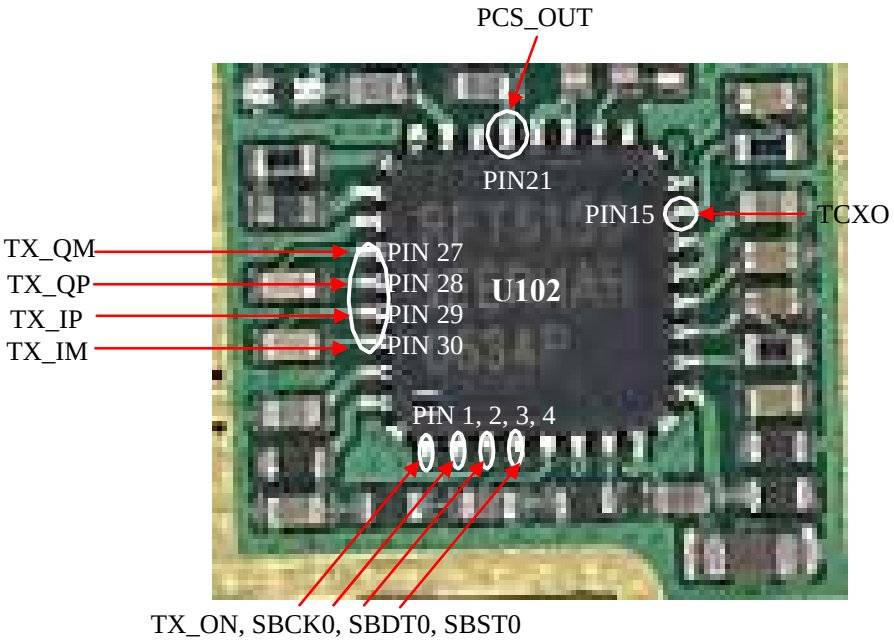
Waveform



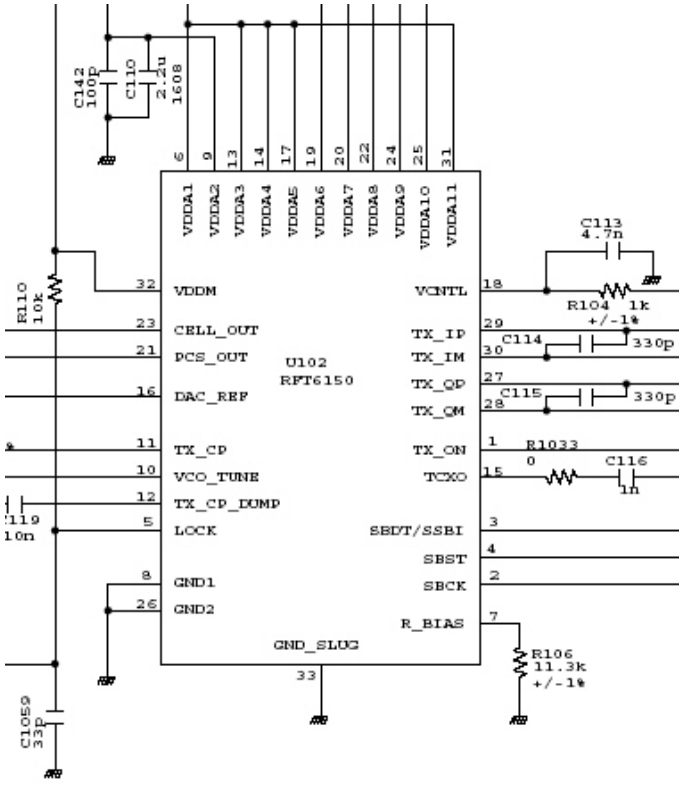
Graph 4.2.2.2

4.2.2.3. Check RFT6150 Circuit

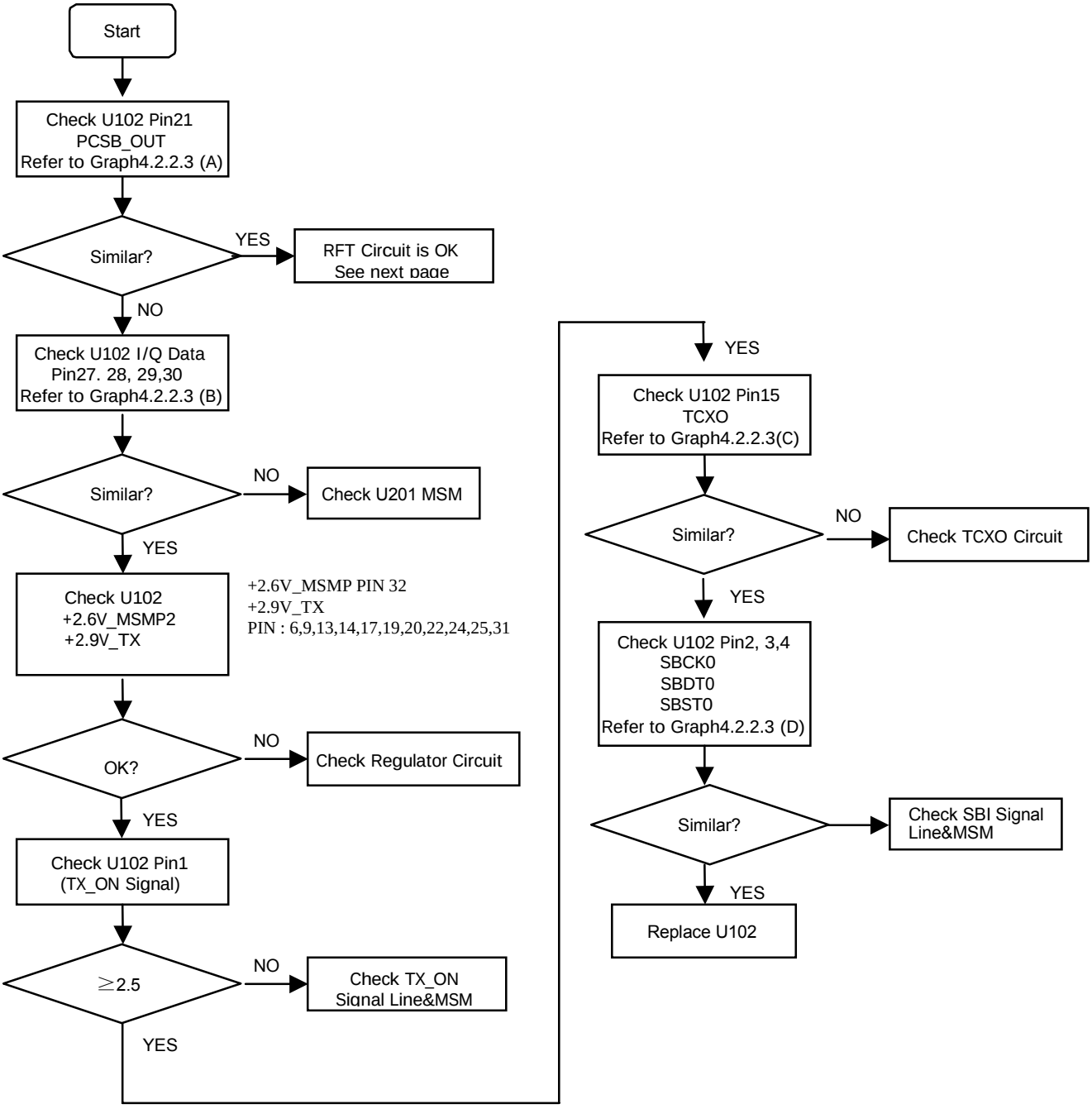
Test Point



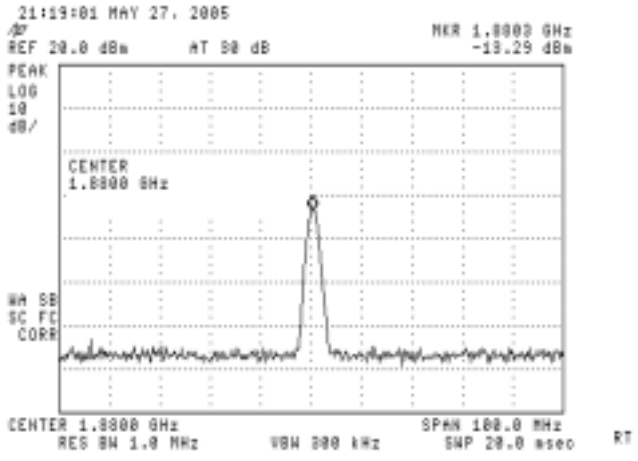
Circuit Diagram



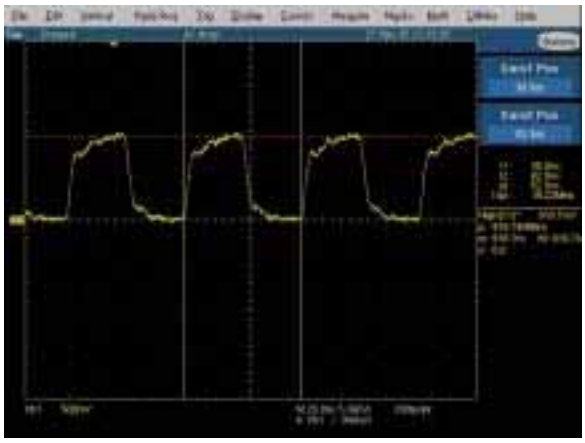
Checking Flow



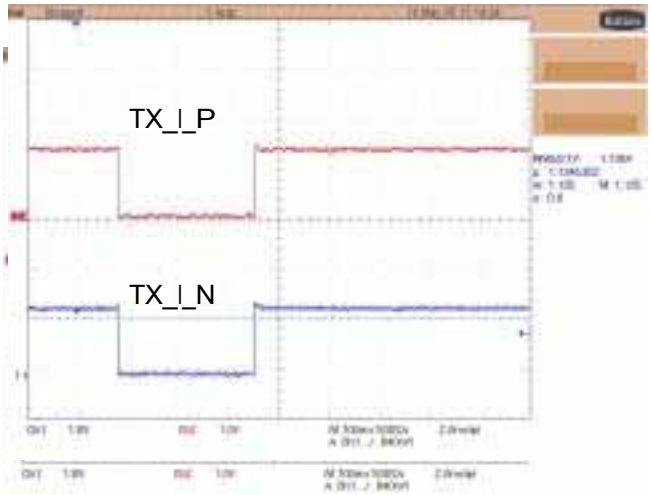
Waveform

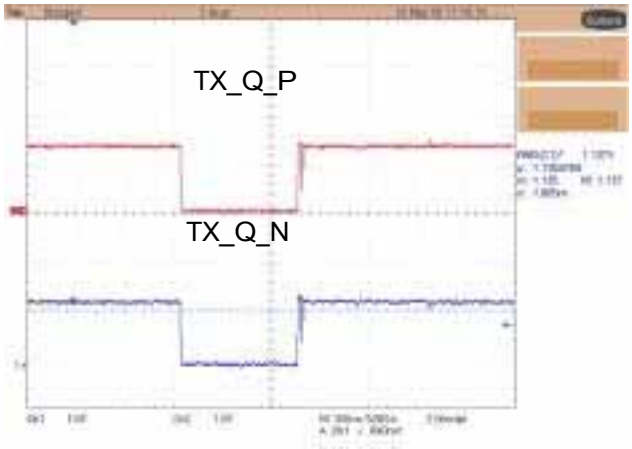


Graph 4.2.2.3(A)

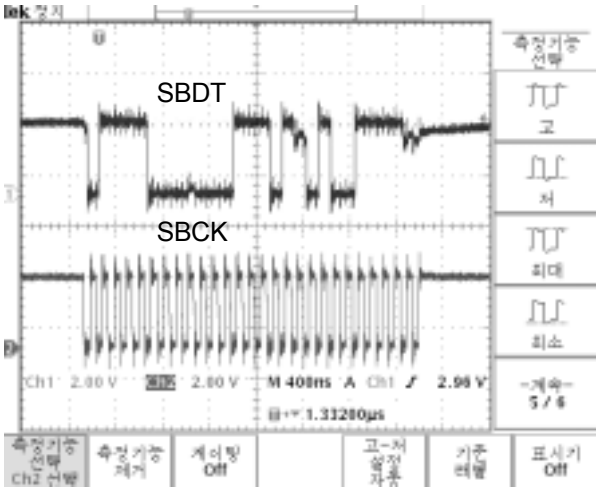


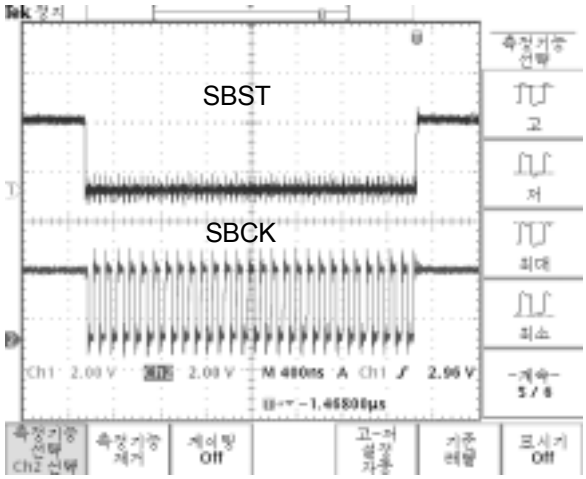
Graph 4.2.2.3(C)





Graph 4.2.2.3(B)



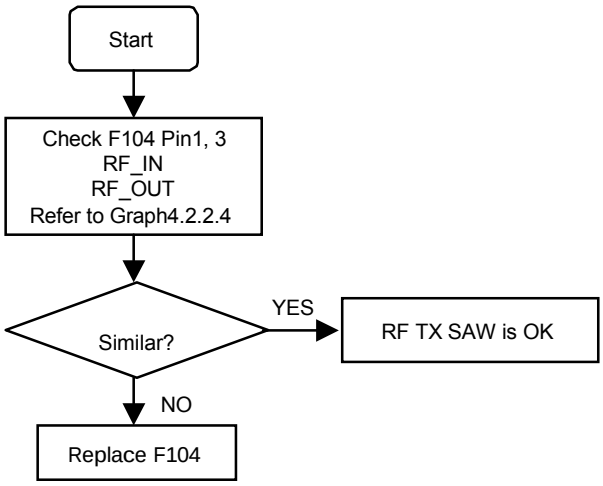


Graph 4.2.2.3(D)

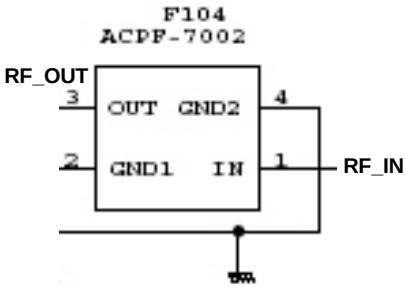
4.2.2.4. Check PCS RF TX SAW

Test Point

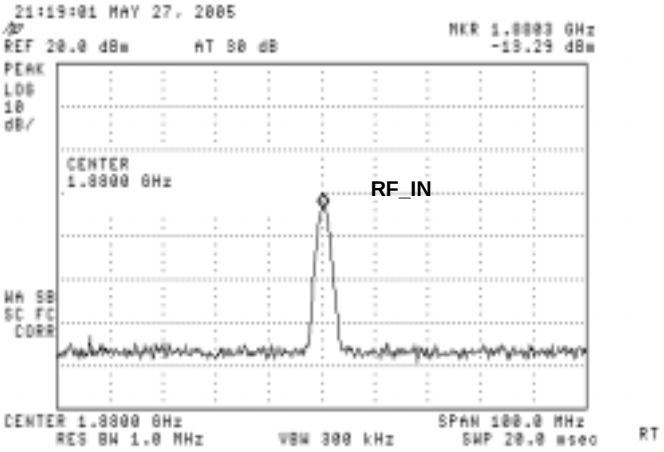
Checking Flow

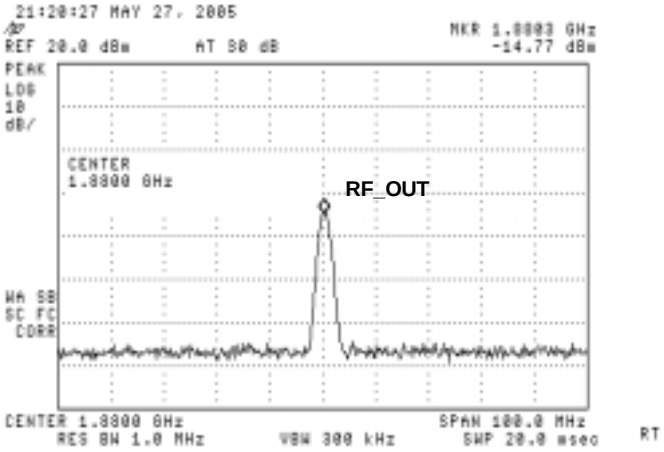


Circuit Diagram



Waveform

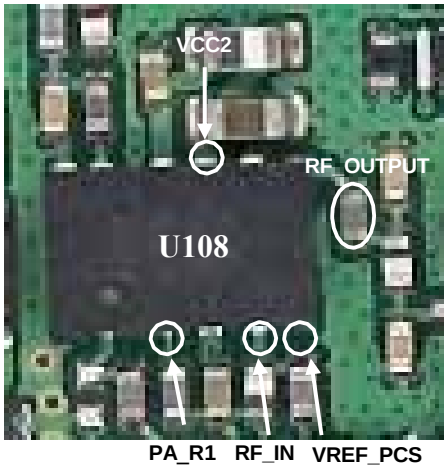




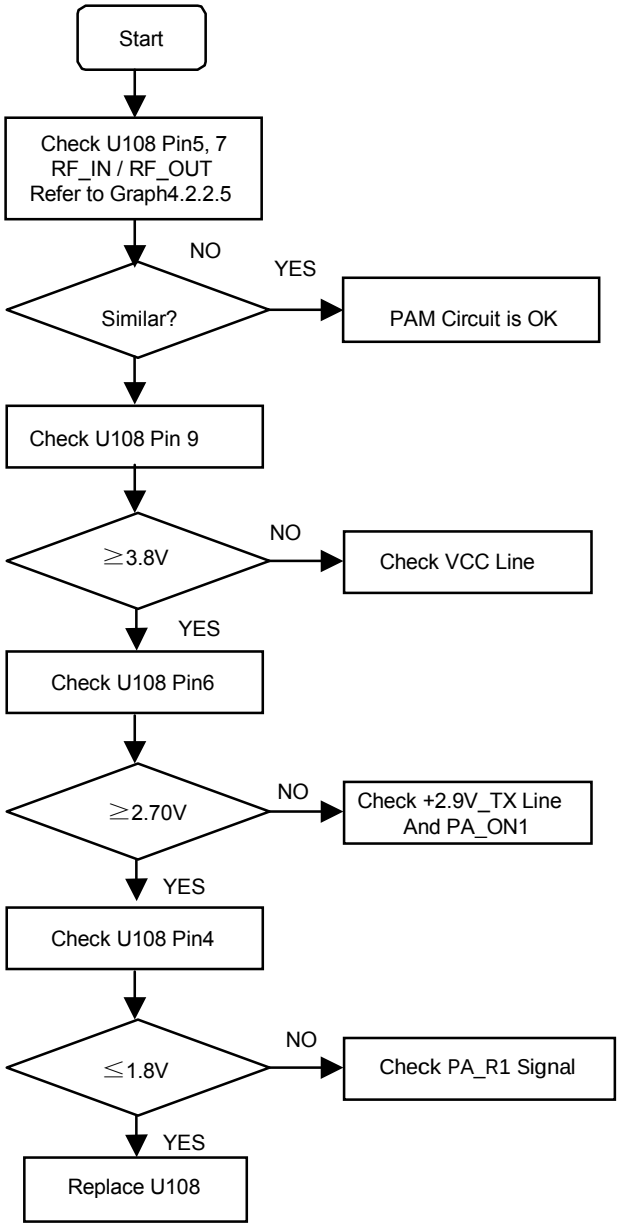
Graph4.2.2.4

4.2.2.5. Check PCS PAM Circuit

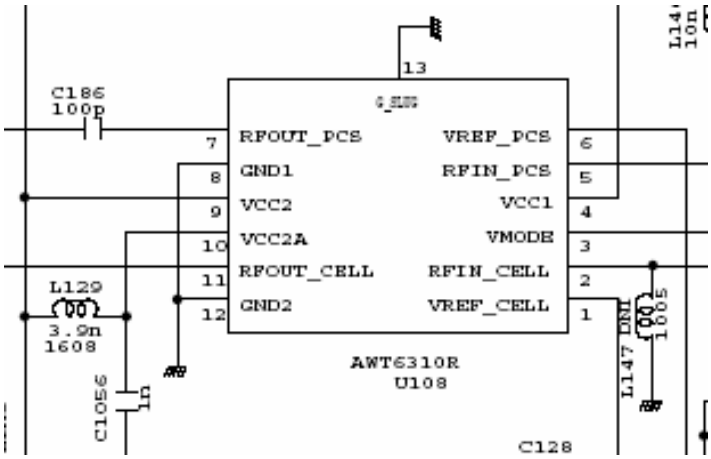
Test Point



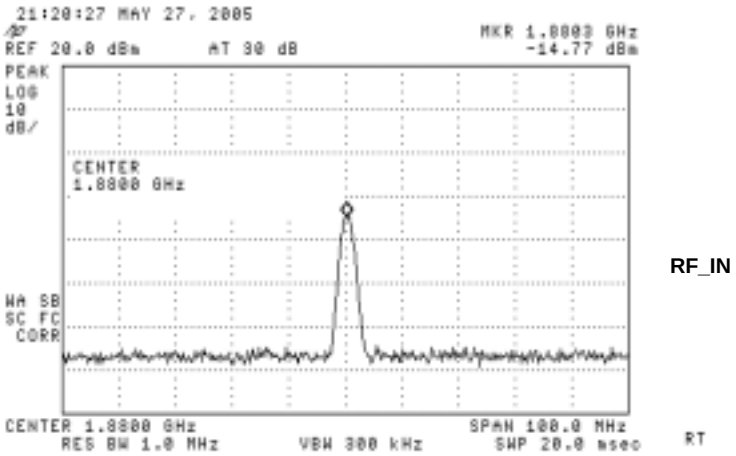
Checking Flow



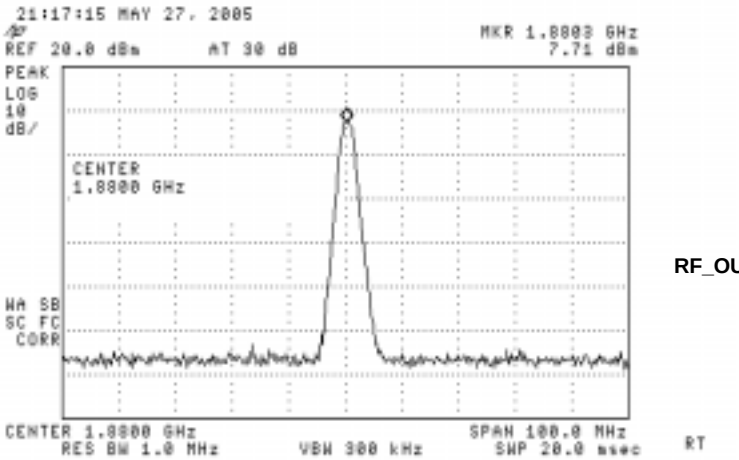
Circuit Diagram



Waveform



RF_IN

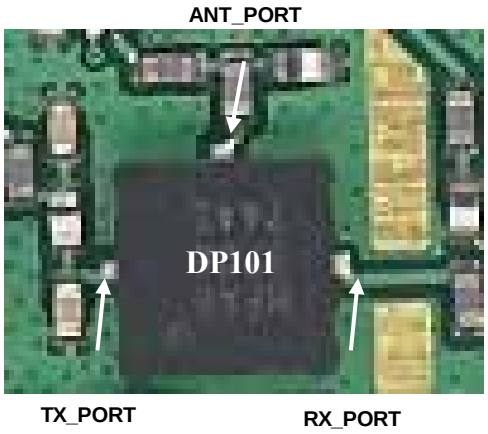


RF_OUT

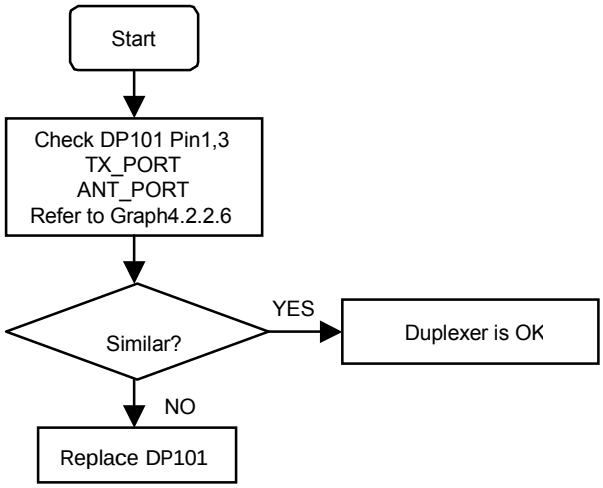
Graph 4.2.2.5

4.2.2.6. Check PCS Duplexer

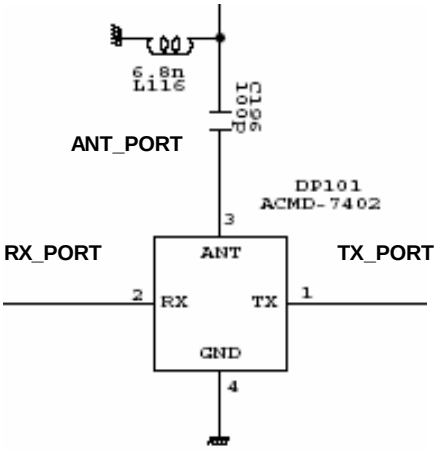
Test Point



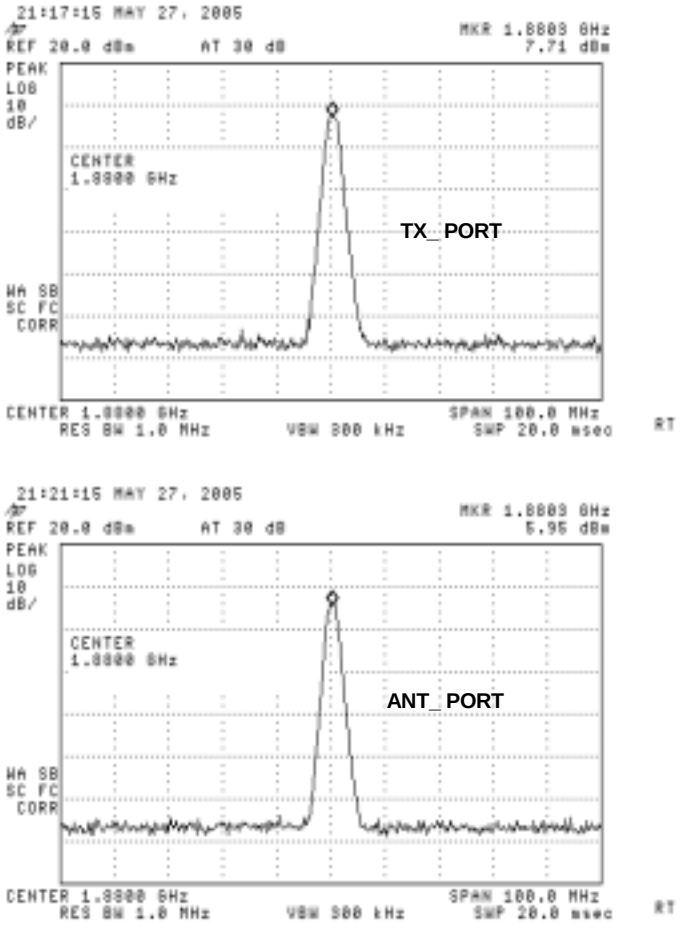
Checking Flow



Circuit Diagram



Waveform

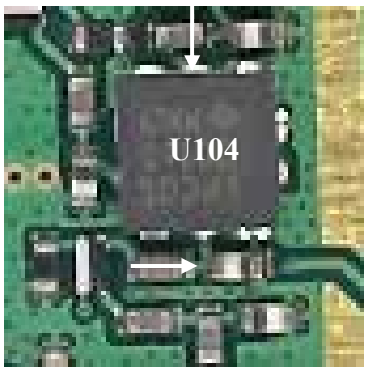


Graph4.2.2.6

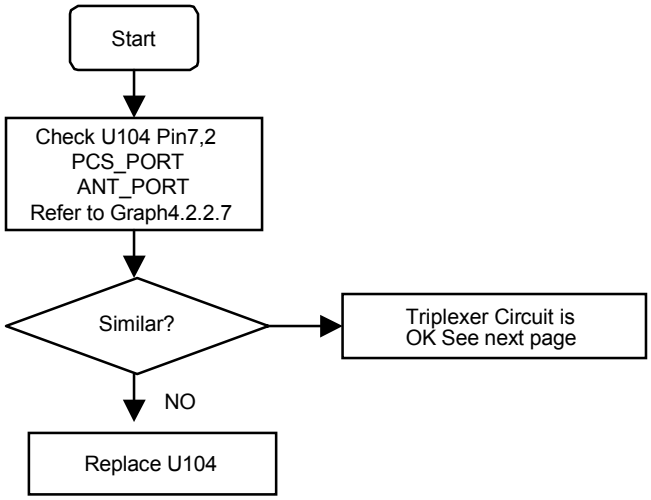
4.2.2.7. Check Triplexer

Test Point

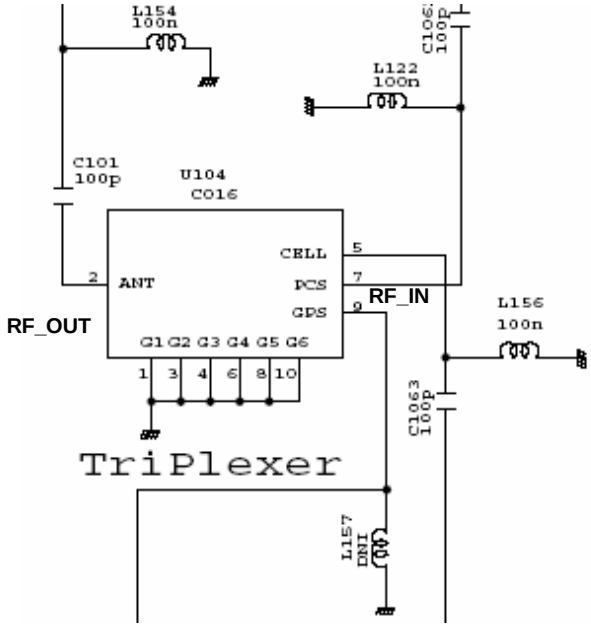
ANT PORT



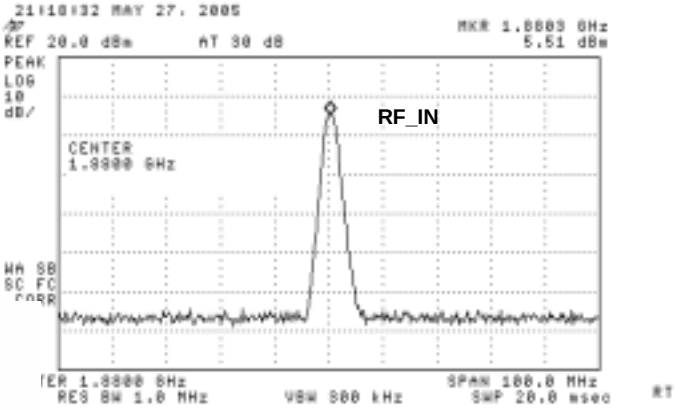
Checking Flow

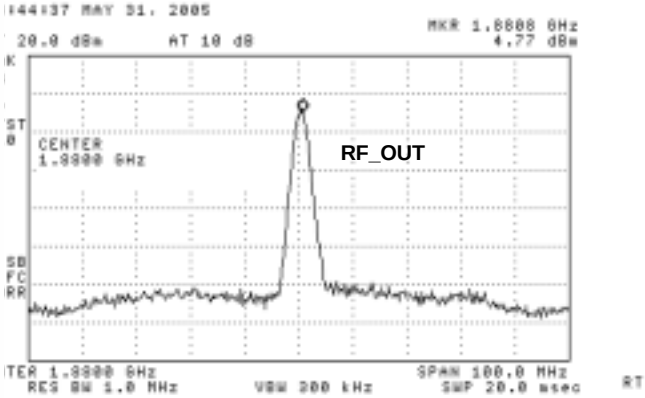


Circuit Diagram



Waveform

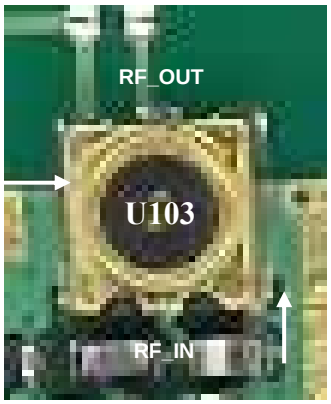




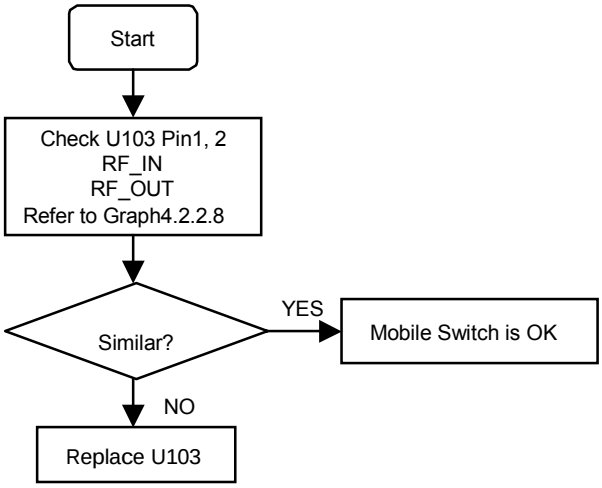
Graph4.2.2.7

4.2.2.8. Check Mobile Switch

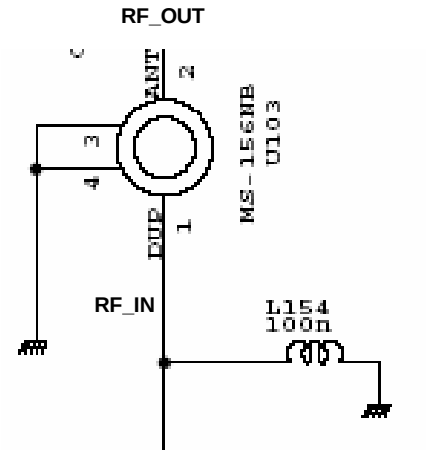
Test Point



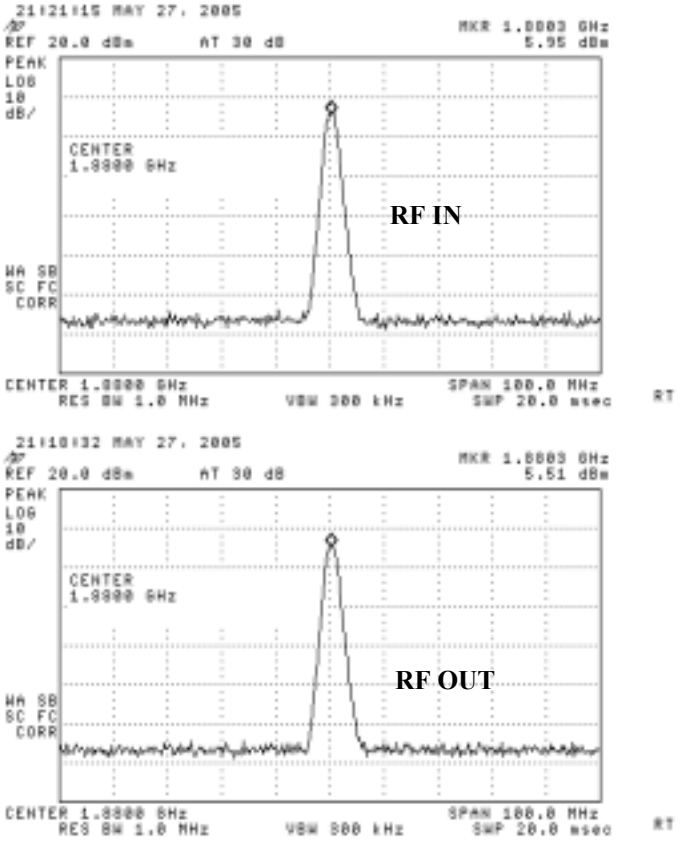
Checking Flow



Circuit Diagram



Waveform



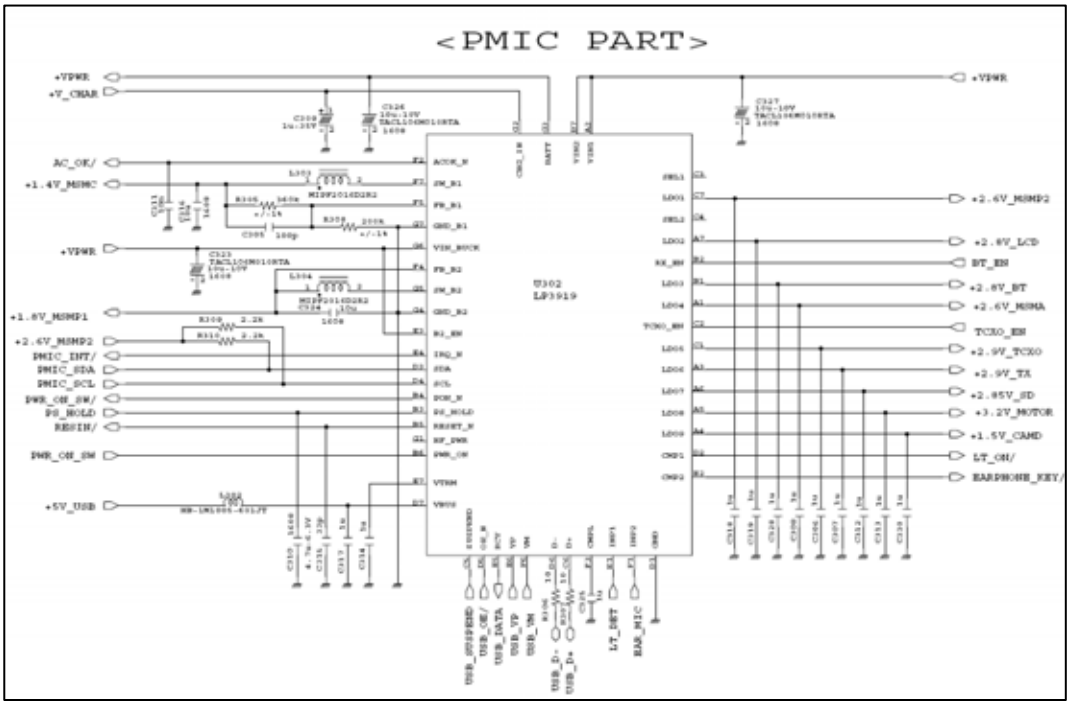
Graph 4.2.2.8

4.3 Logic Part Trouble

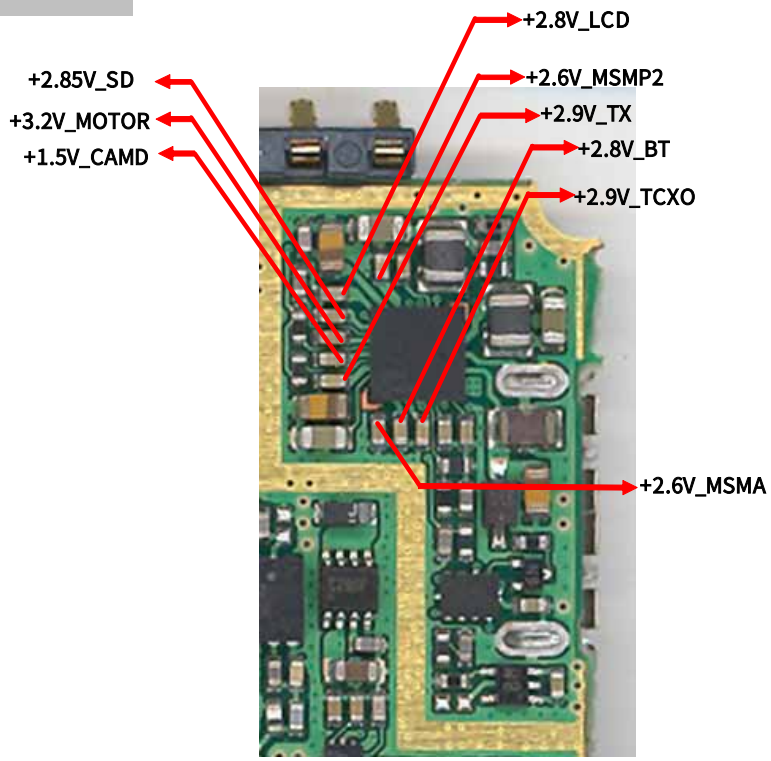
4.3.1 Power

4.3.1.1 Power-On Trouble

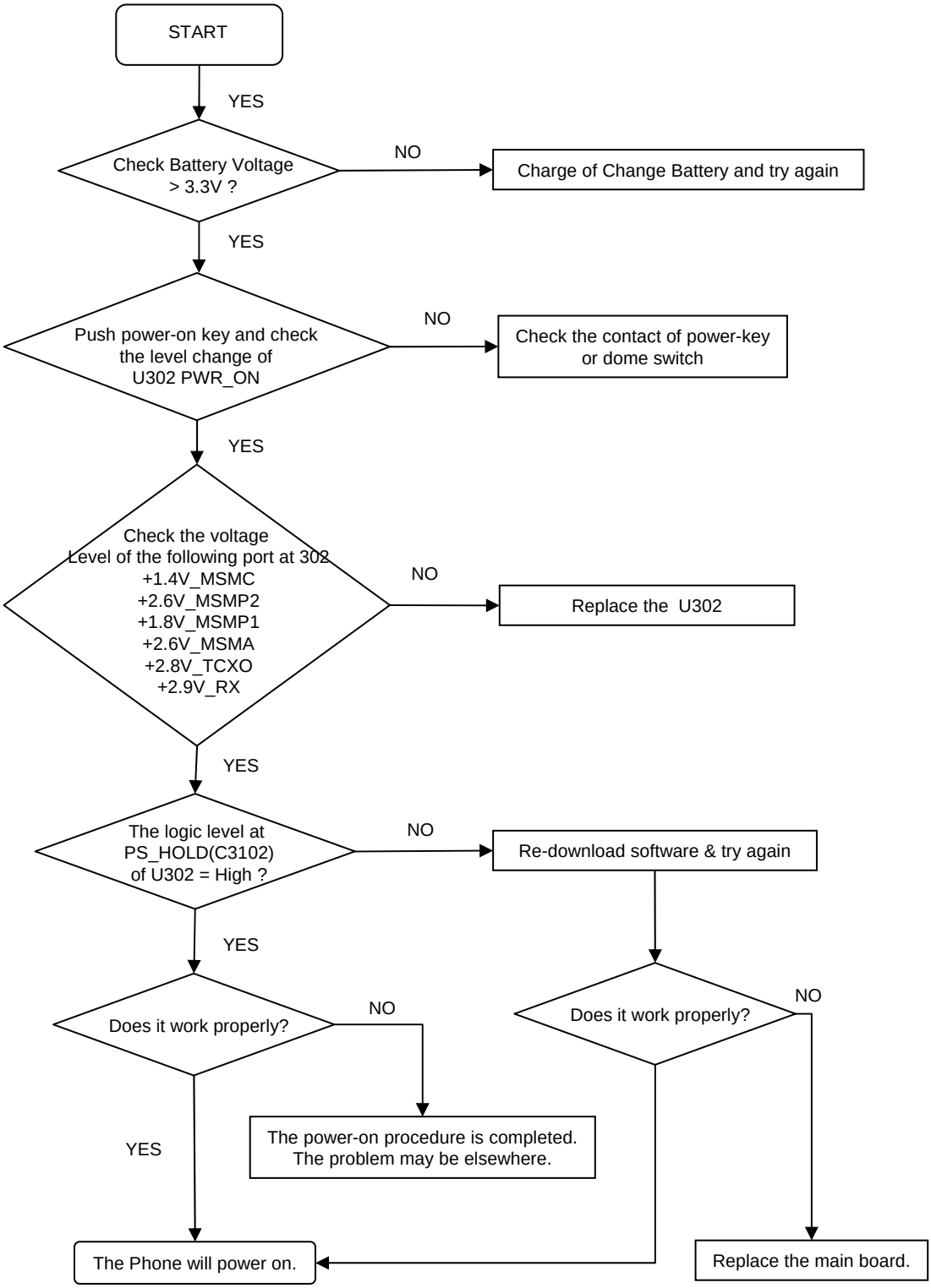
Circuit Diagram



Test Point

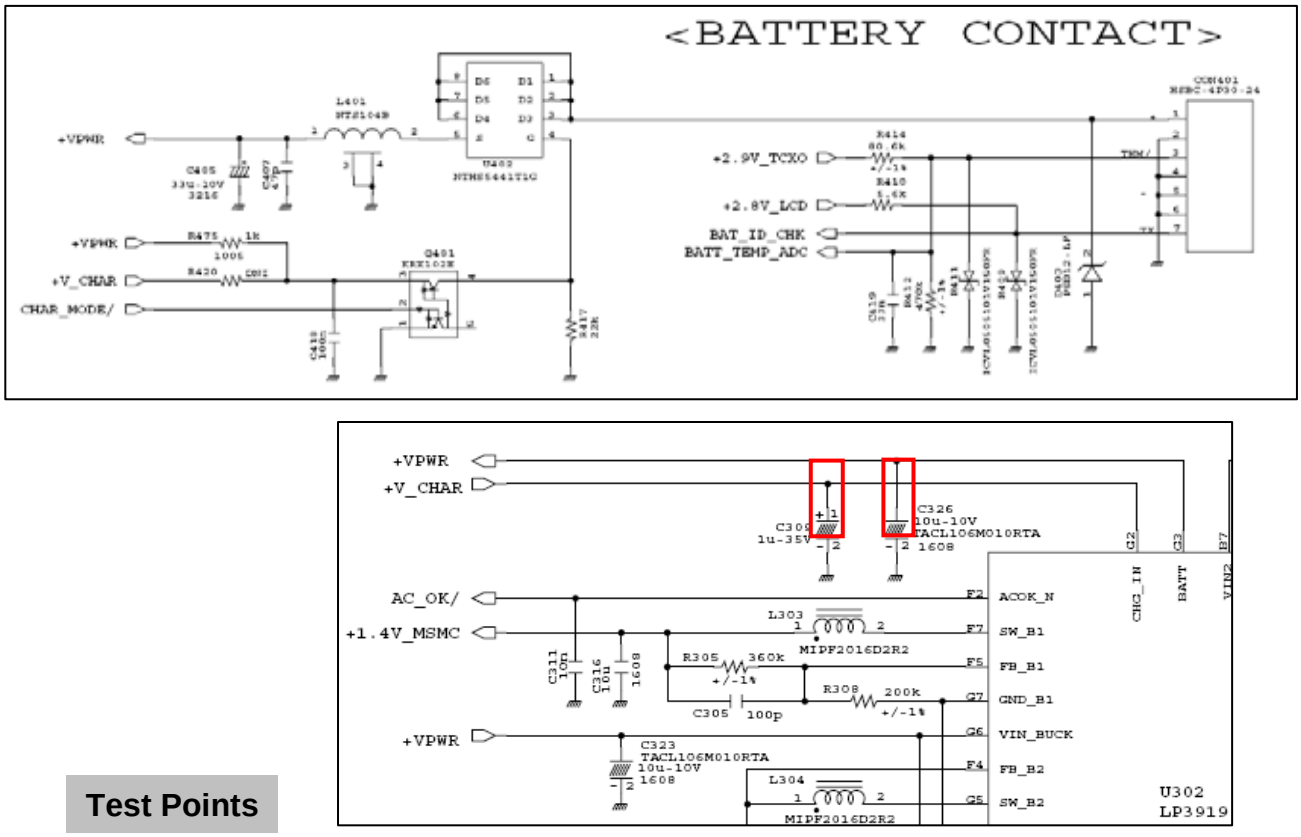


Checking Flow

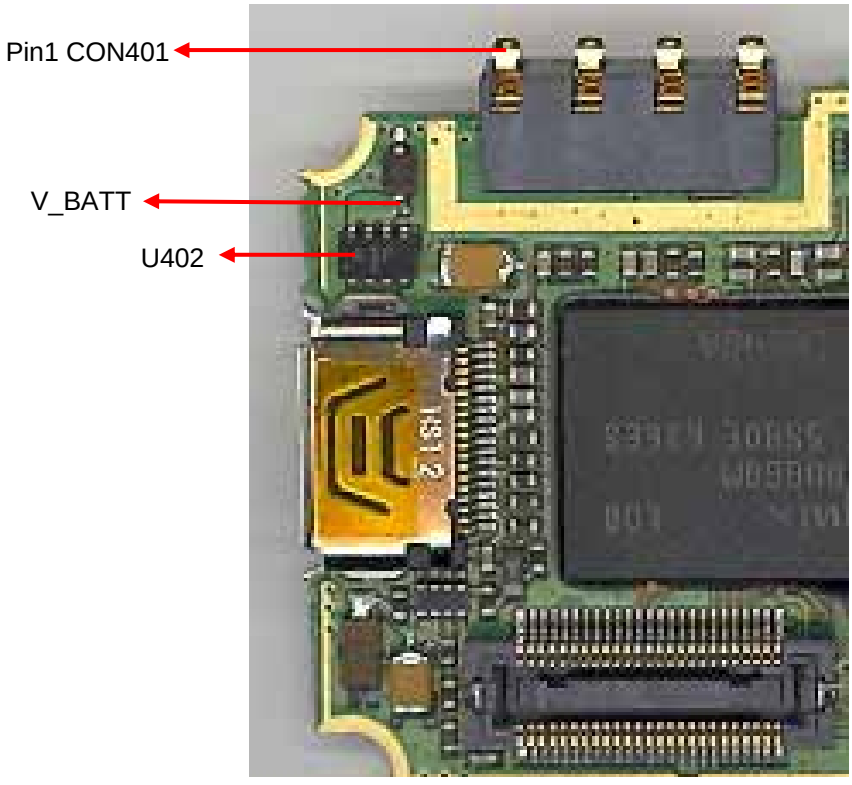


4.3.1.2 Charging Trouble

Circuit Diagram

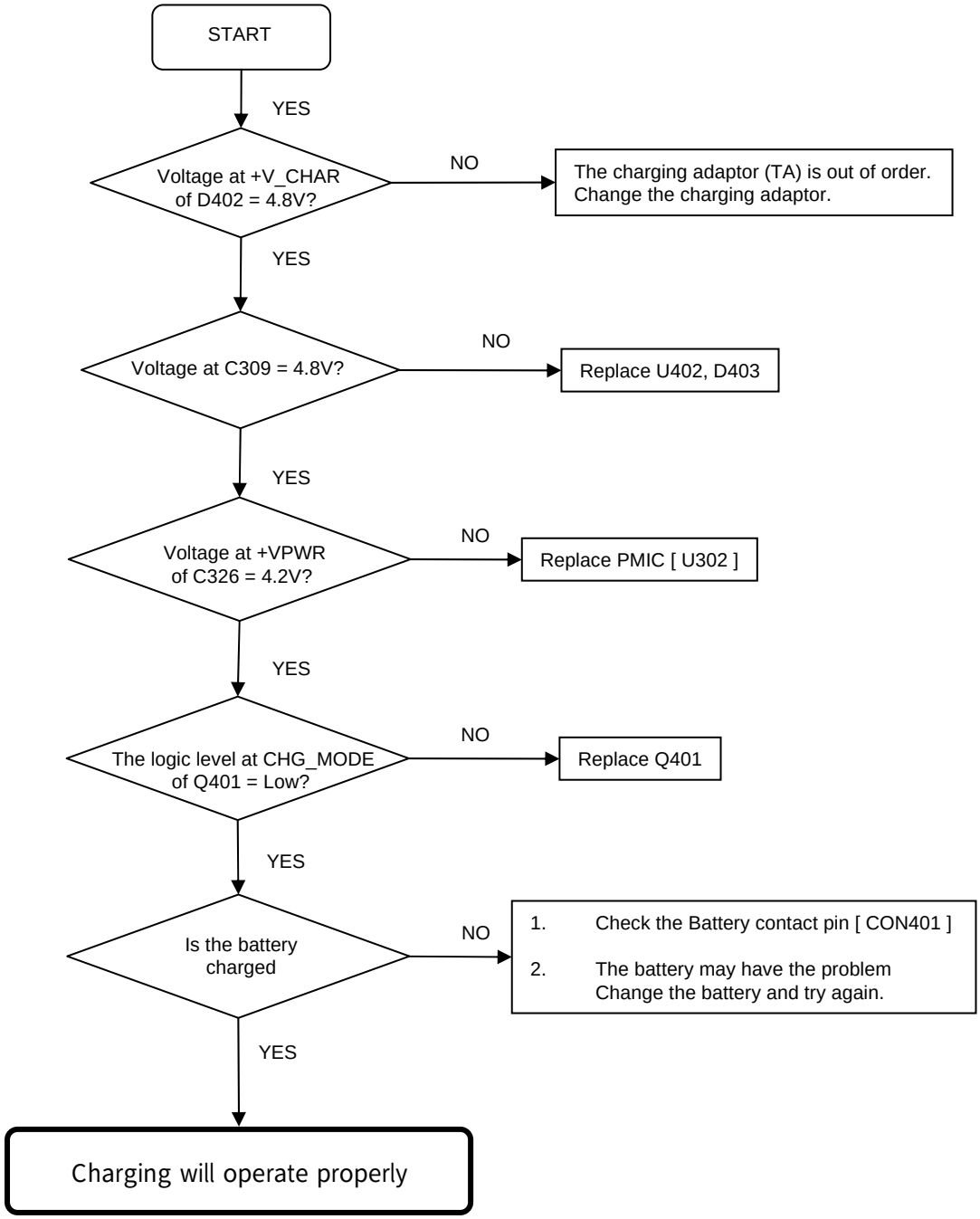


Test Points



Checking Flow

SETTING : Connect the battery and the charging adaptor (TA) to the phone



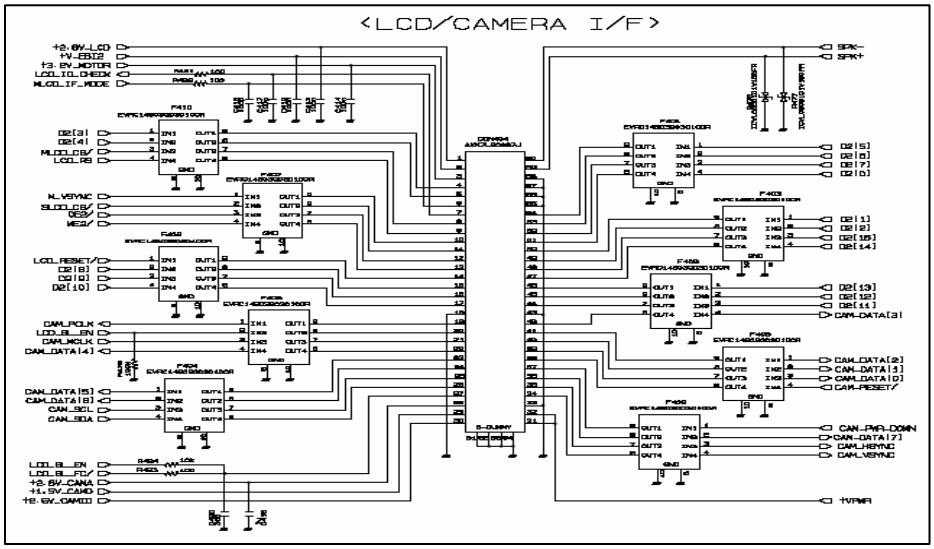
4.3.2 LCD

4.3.2.1 LCD Trouble

Circuit Diagram

• LCD Control signals

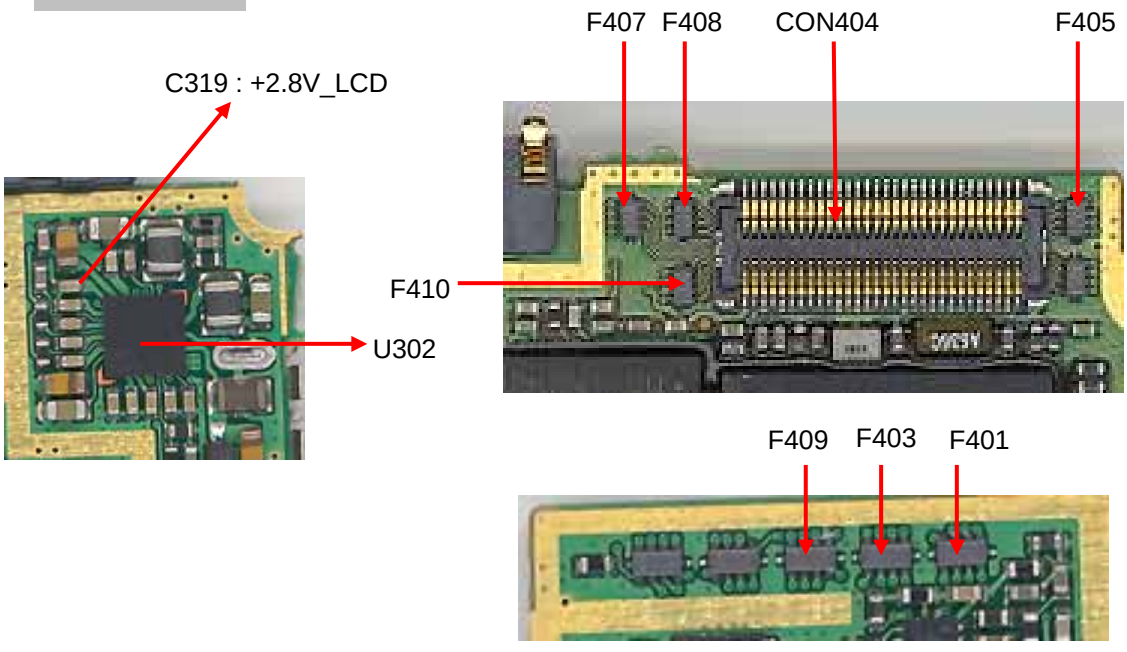
From MSM : D2[0:15], LCD_RESET/, SLCD_RESET/, MLCD_IF_MODE, LCD_RS, M_VSYNC, MLCD_CS/, SLCD_CS/, OE2/, WE2, LCD_BL_EN, LCD_BL_FC/



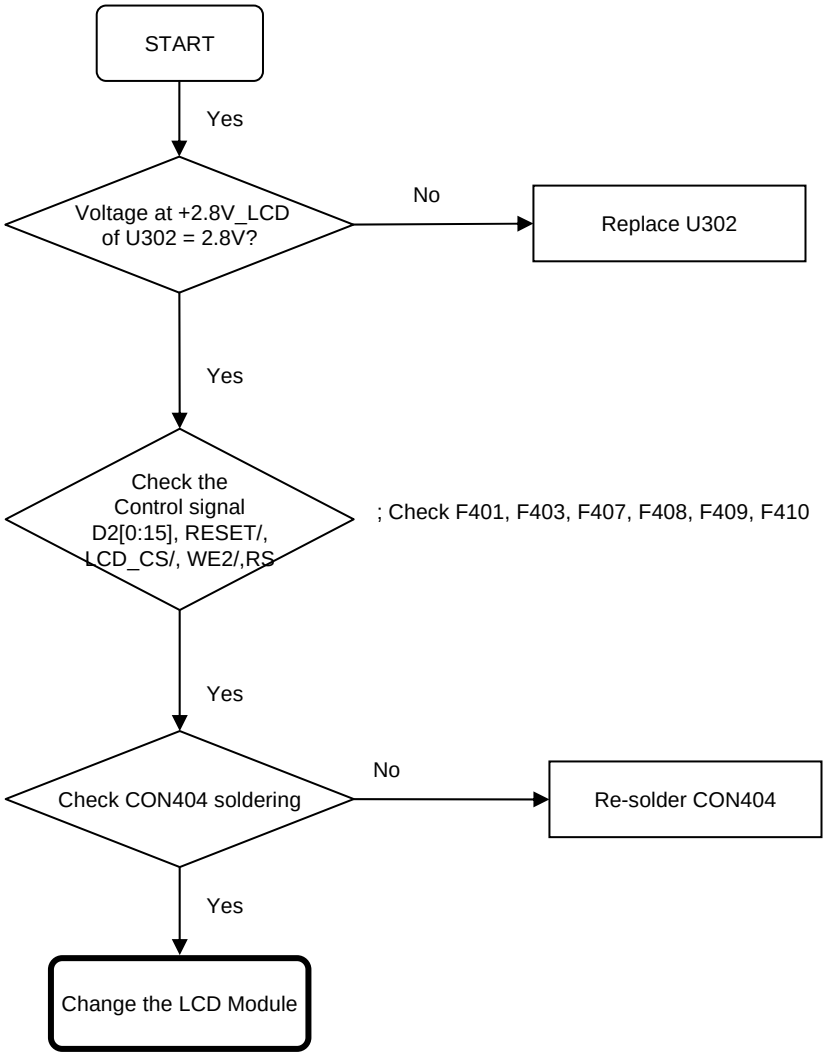
• Check point

- The assembly status of the LCD Module
- The status of Connector connection
- The Soldering of connector

Test Points



Checking Flow

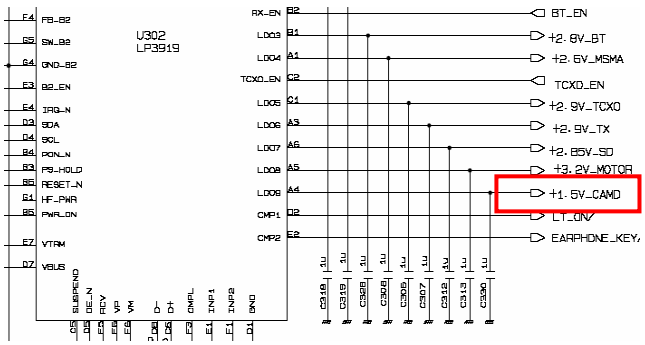


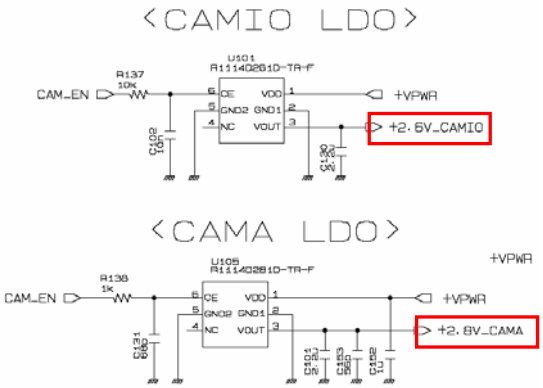
4.3.3 Camera

4.3.3.1 Camera Trouble

Circuit Diagram

Camera 1.5V Digital

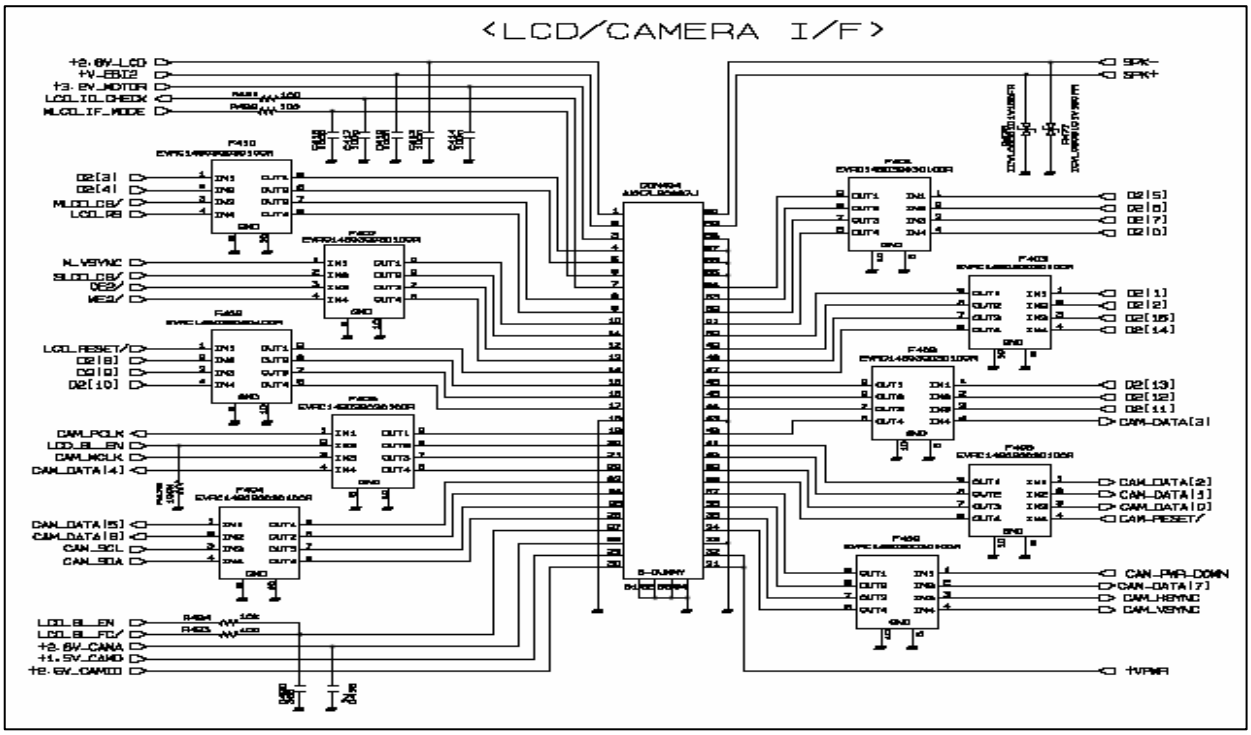




• Camera Control signals

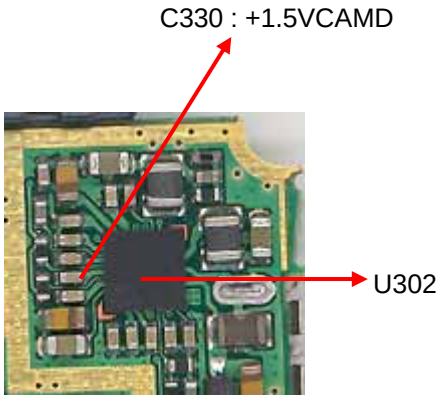
From MSM : CAM_RESET/,CAM_MCLK, CAM_SCL, CAM_SDA,

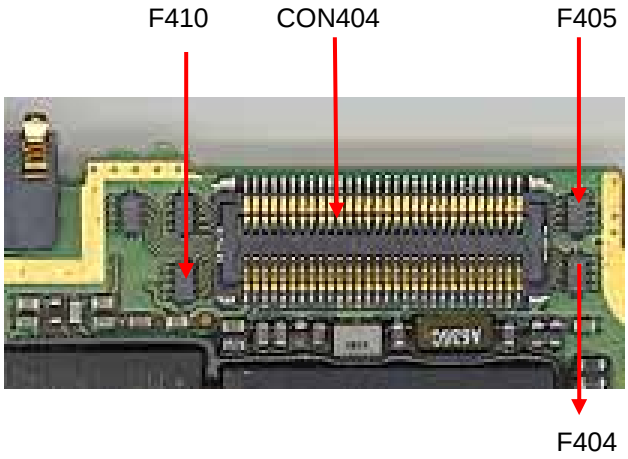
To MSM : CAM_PCLK, CAM_DATA[0:7], CAM_VSYNC, CAM_HSYNC

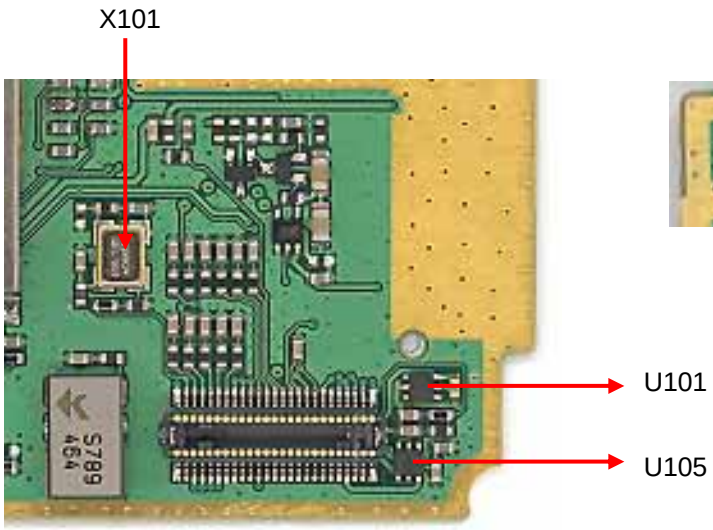


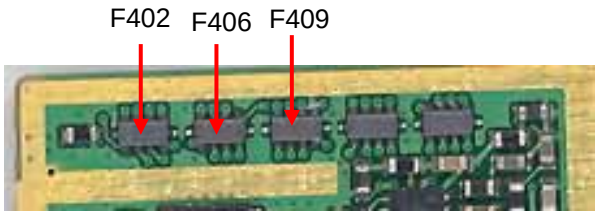
Test Points

- **Check point**
  - The assembly status of the Camera Module
  - The Soldering of connector





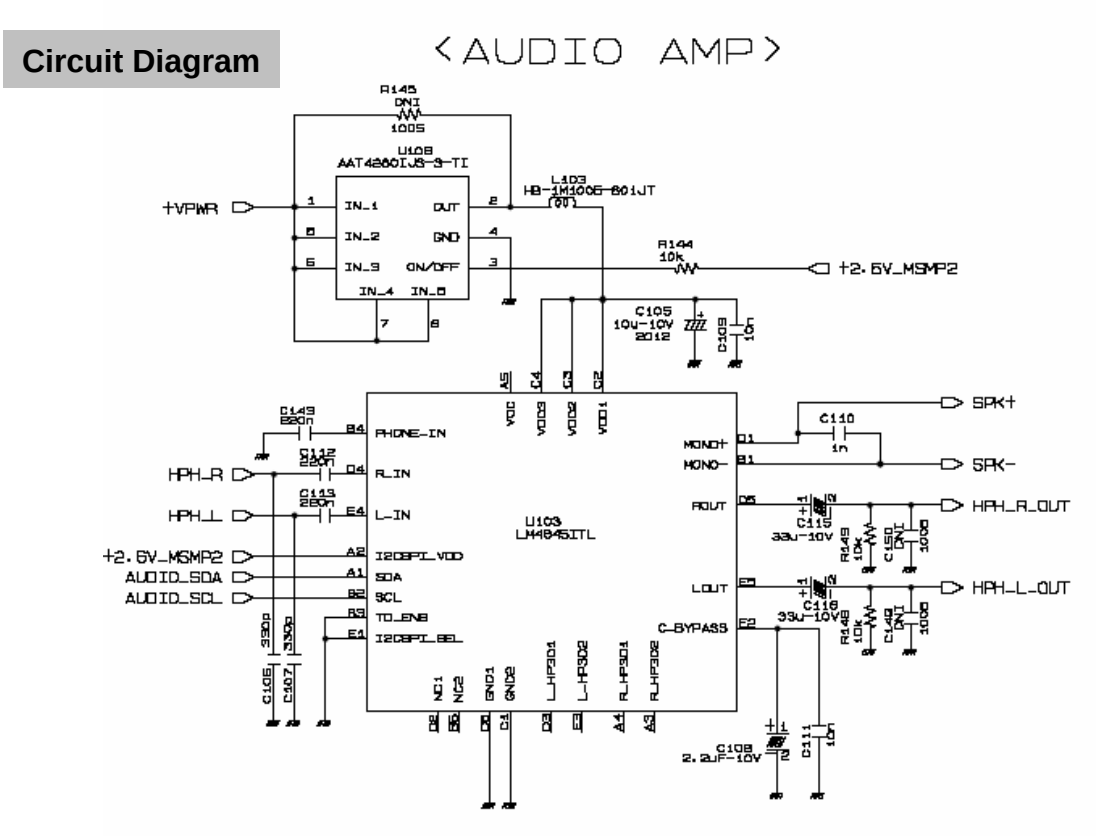




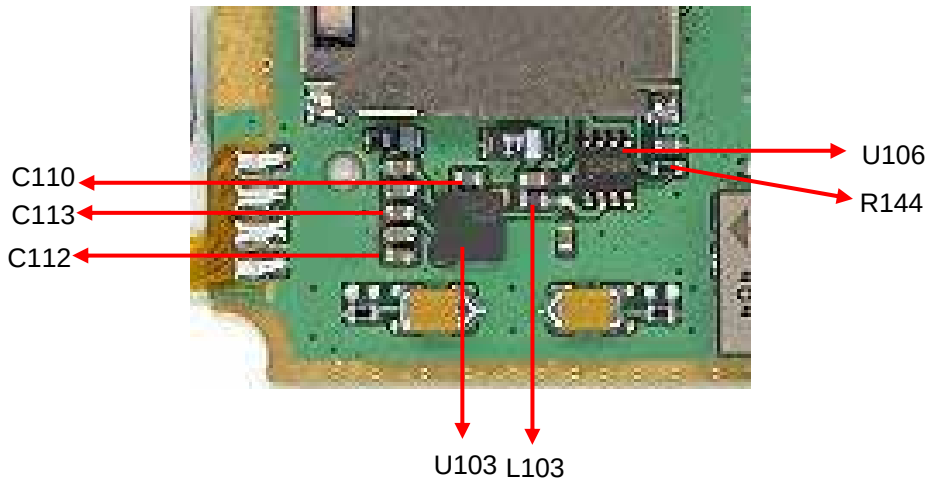
4.3.4 Audio

4.3.4.1 Speaker Trouble

Circuit Diagram

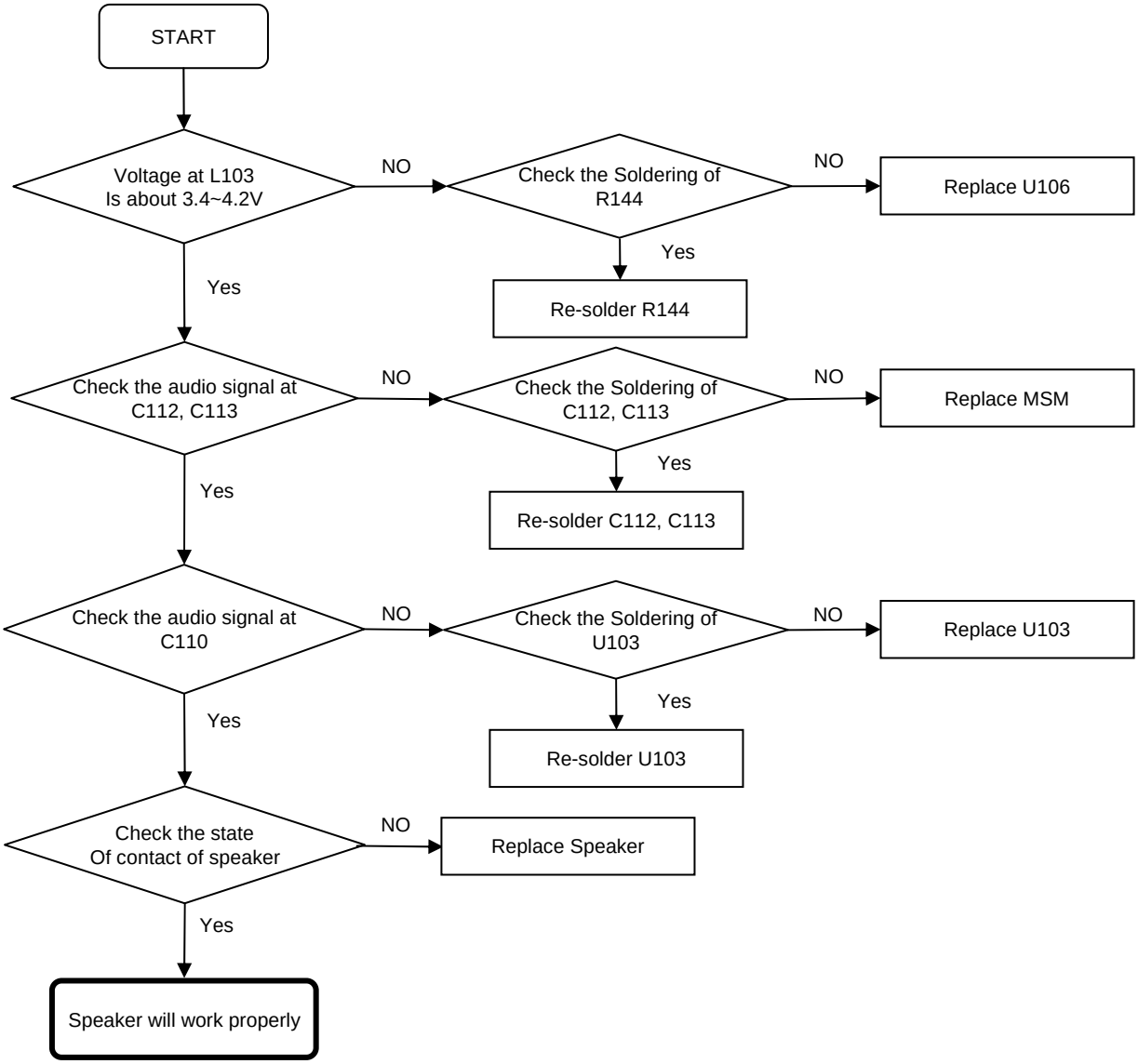


Test Points



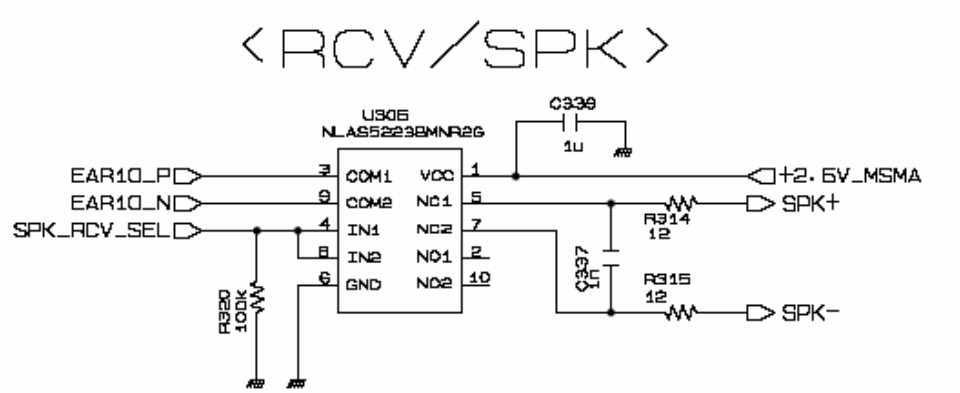
Checking Flow

SETTING : “Melody on” at sounds of test menu.



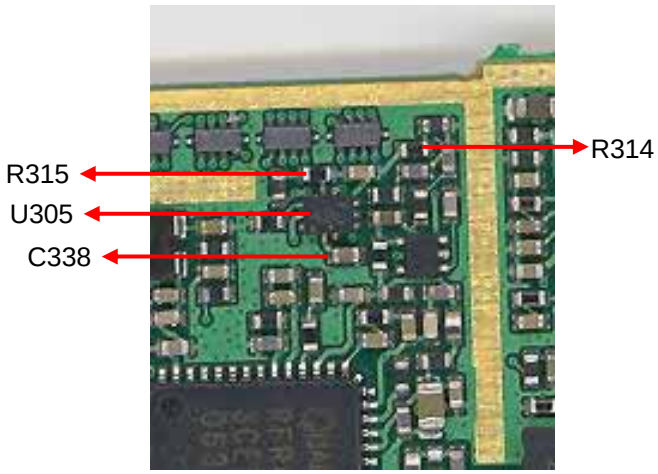
4.3.4.2 Receiver Trouble

Circuit Diagram

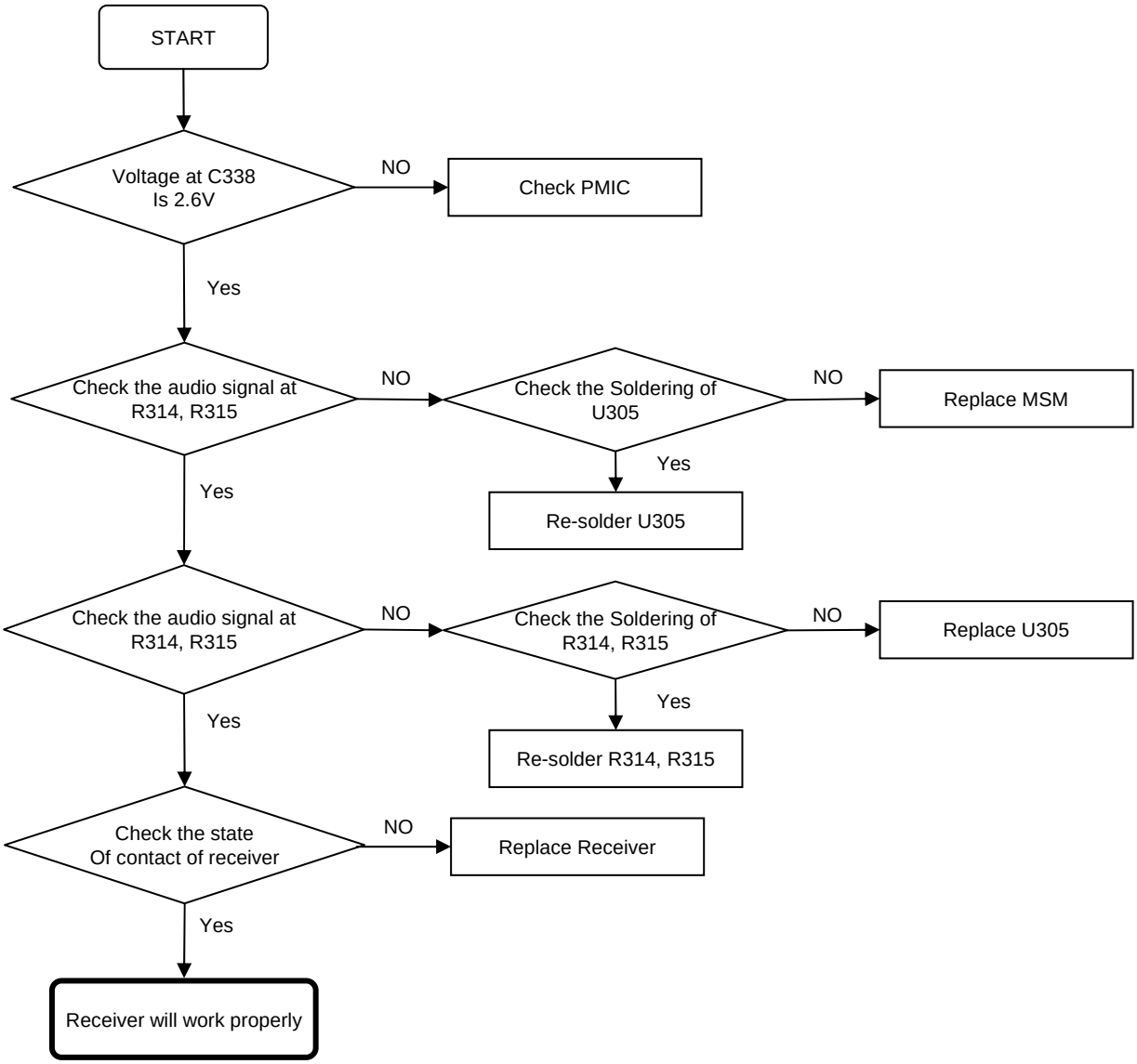


IN1, 2	NO1, 2	NC1, 2	Mode
0	OFF	ON	RCV
1	ON	OFF	SPK

Test Points

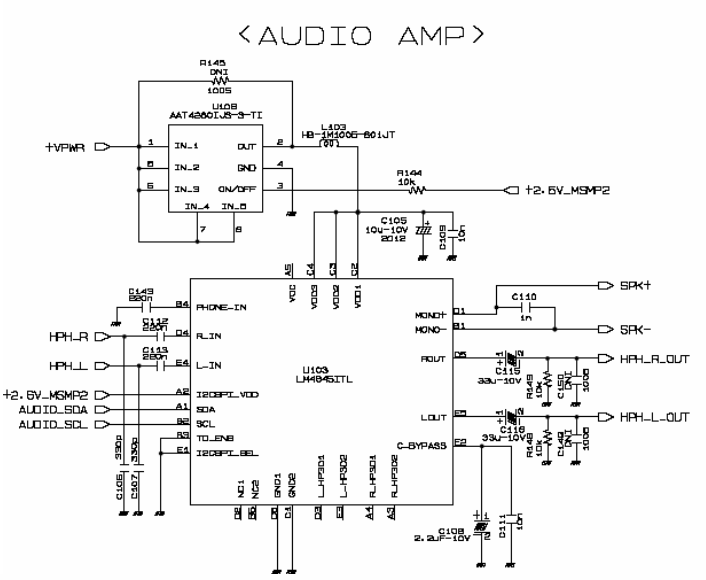


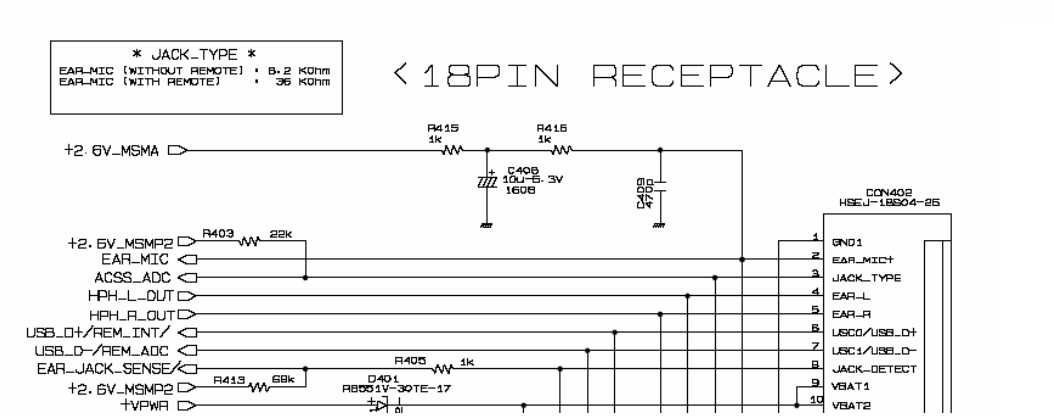
Checking Flow



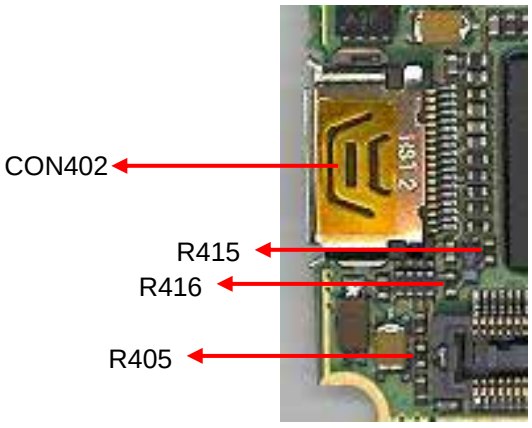
4.3.4.4 Headset Trouble

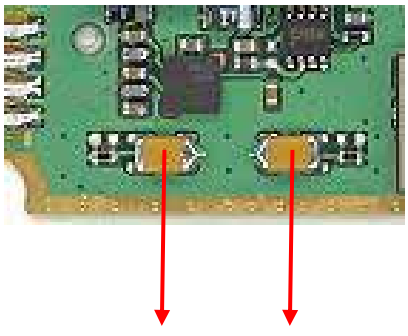
Circuit Diagram



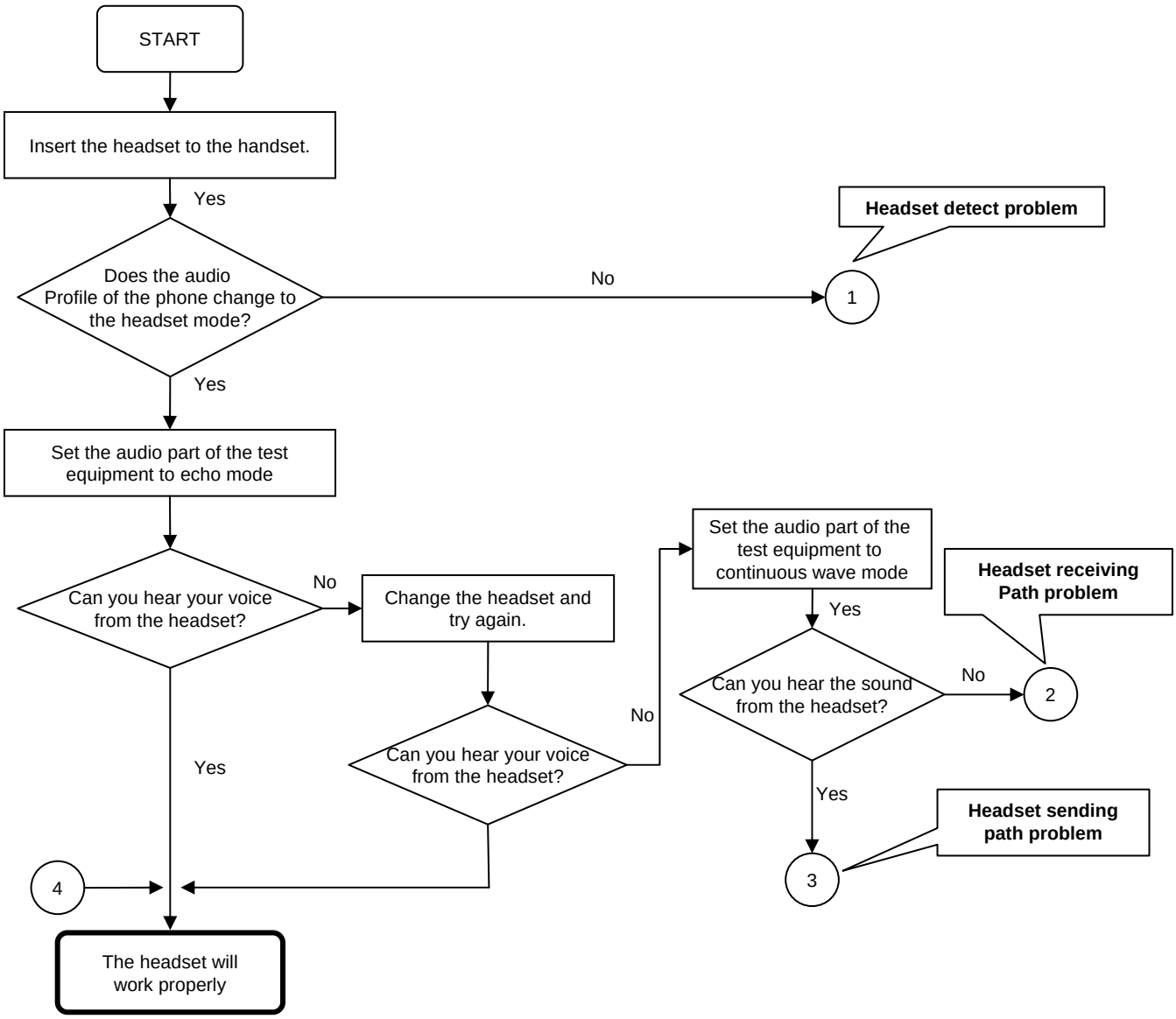


Test Points

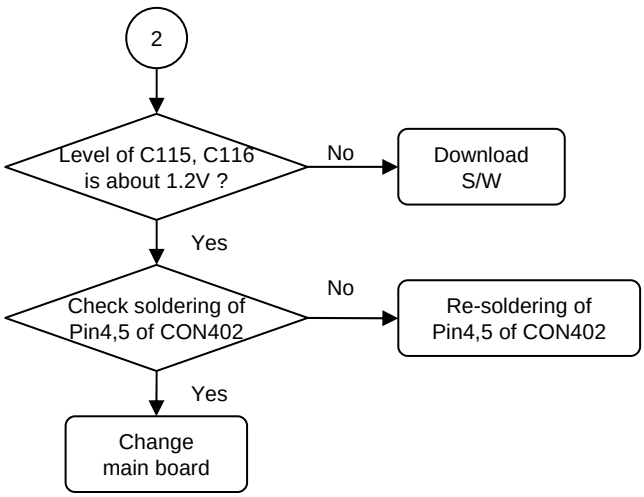




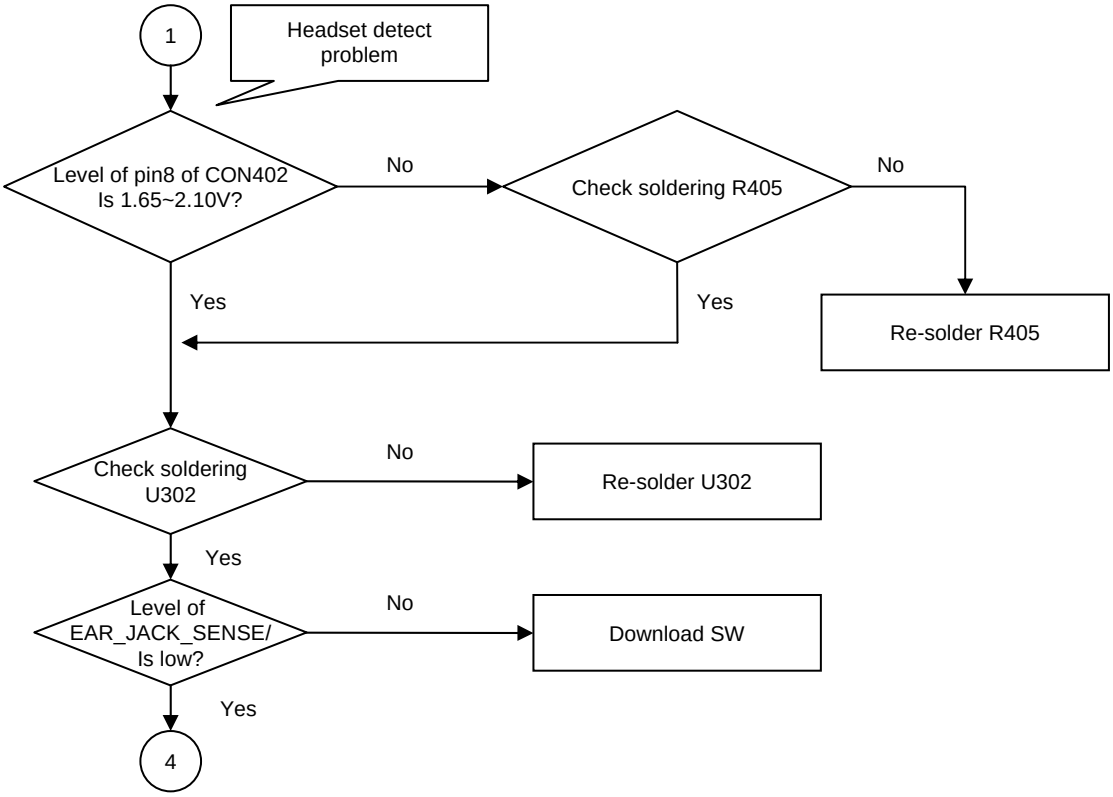
Checking Flow



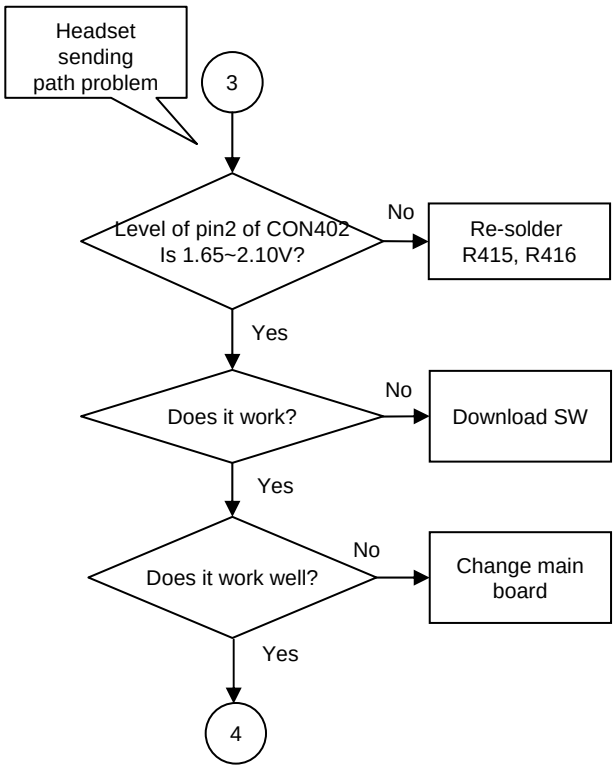
Headset receiving path problem



Headset detect problem

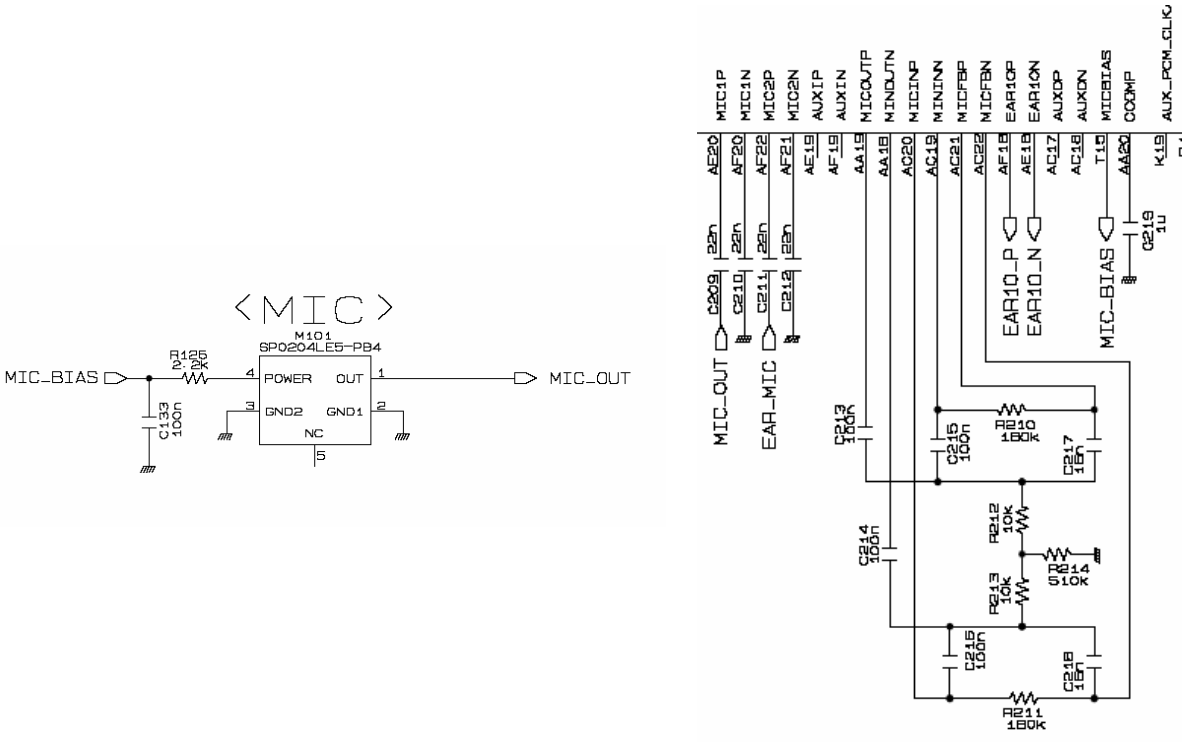


Headset sending path problem

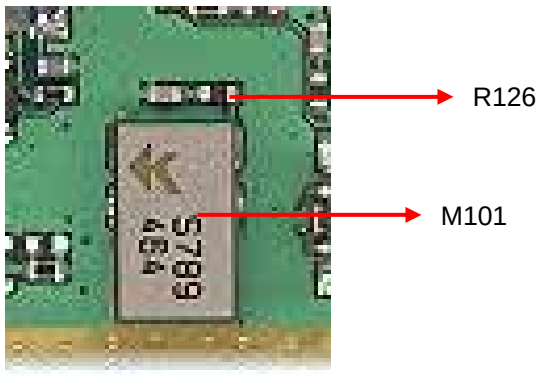


4.3.4.3 Mic Trouble

Circuit Diagram

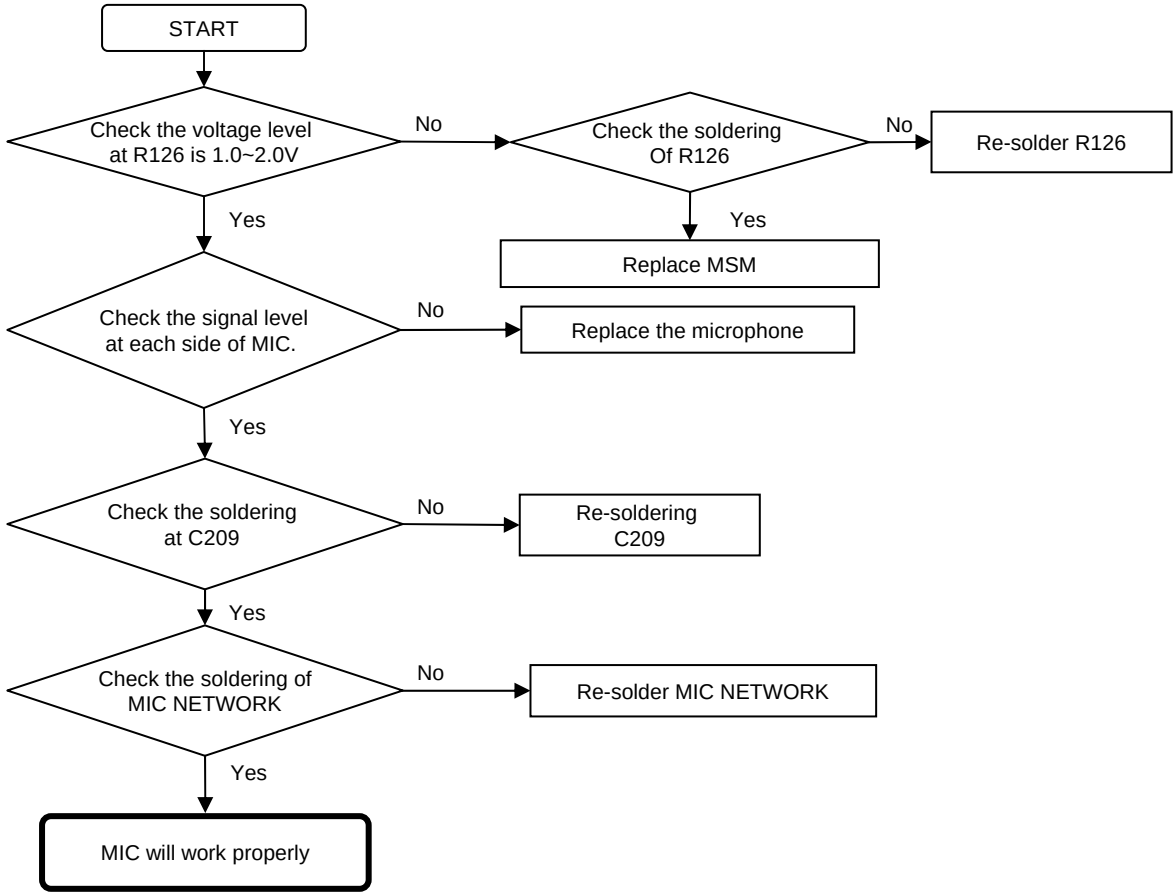


Test Points

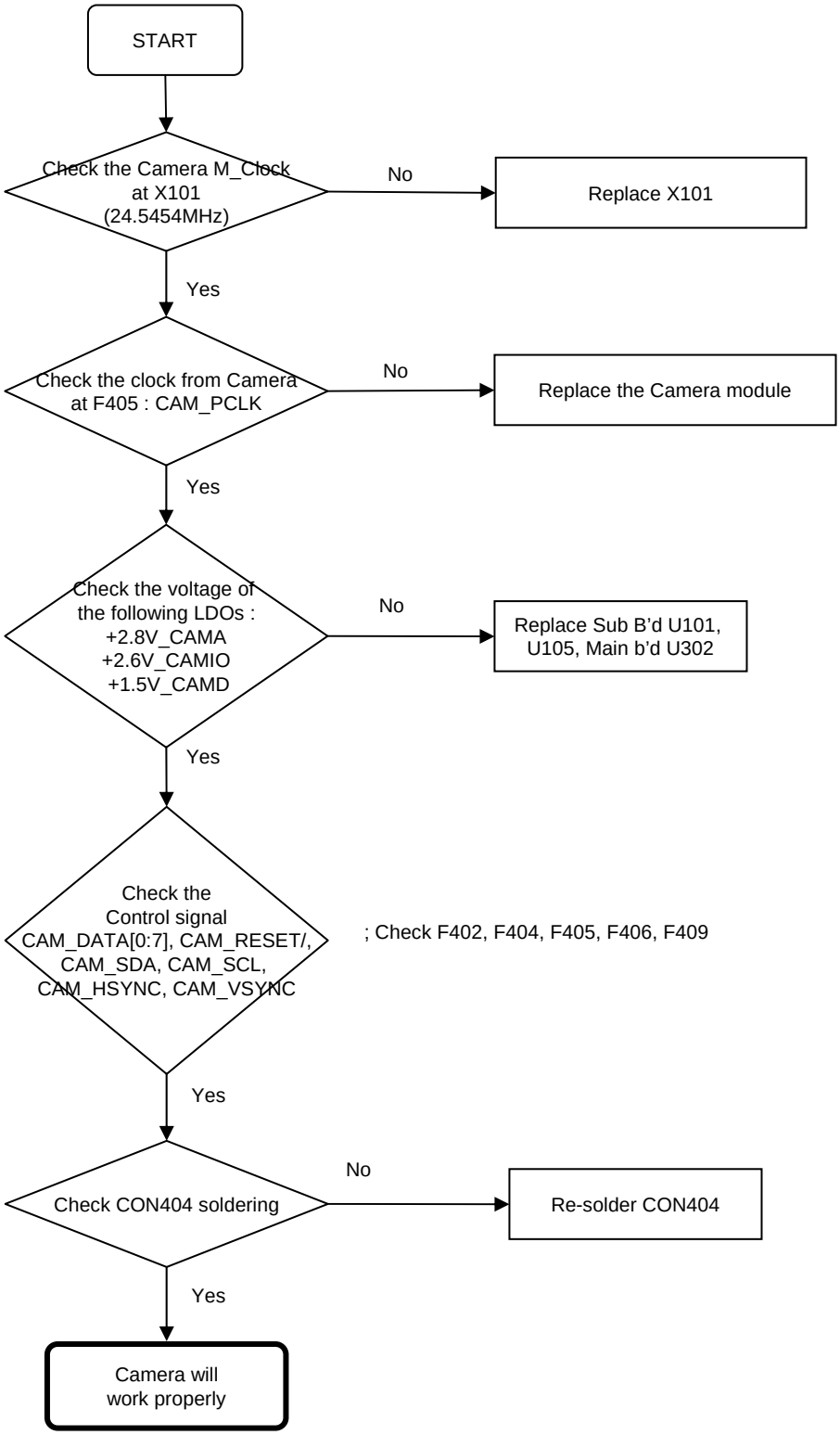


Checking Flow

SETTING : After initialize 5515C, Test Cellular



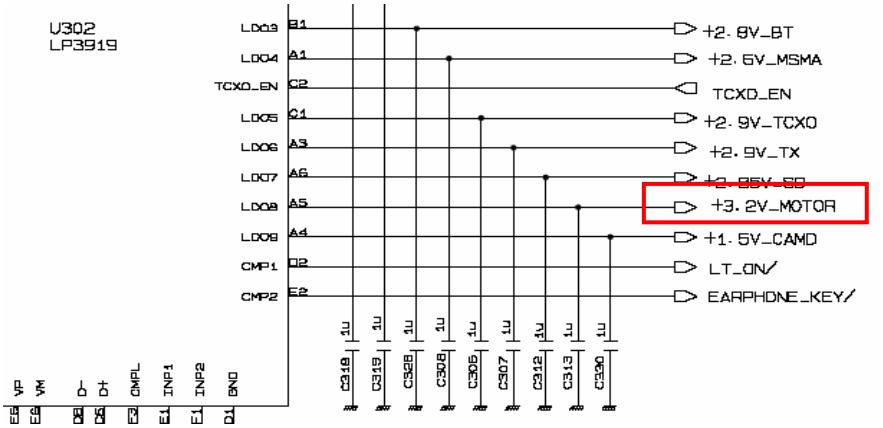
Checking Flow



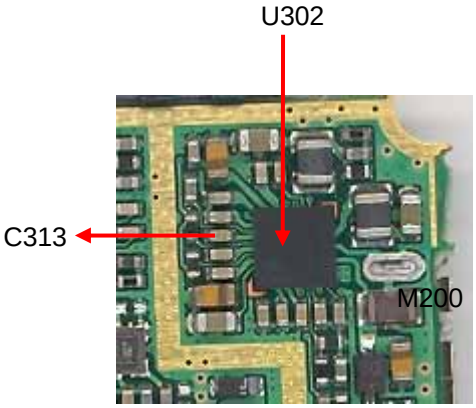
4.3.6 Vibrator, Micro SD Detect, and USB Interface

4.3.6.1 Vibrator

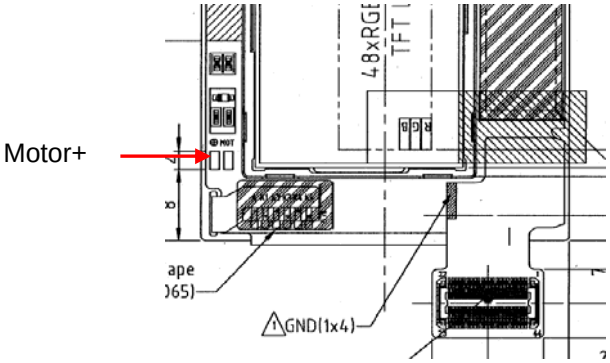
Circuit Diagram



Test Points

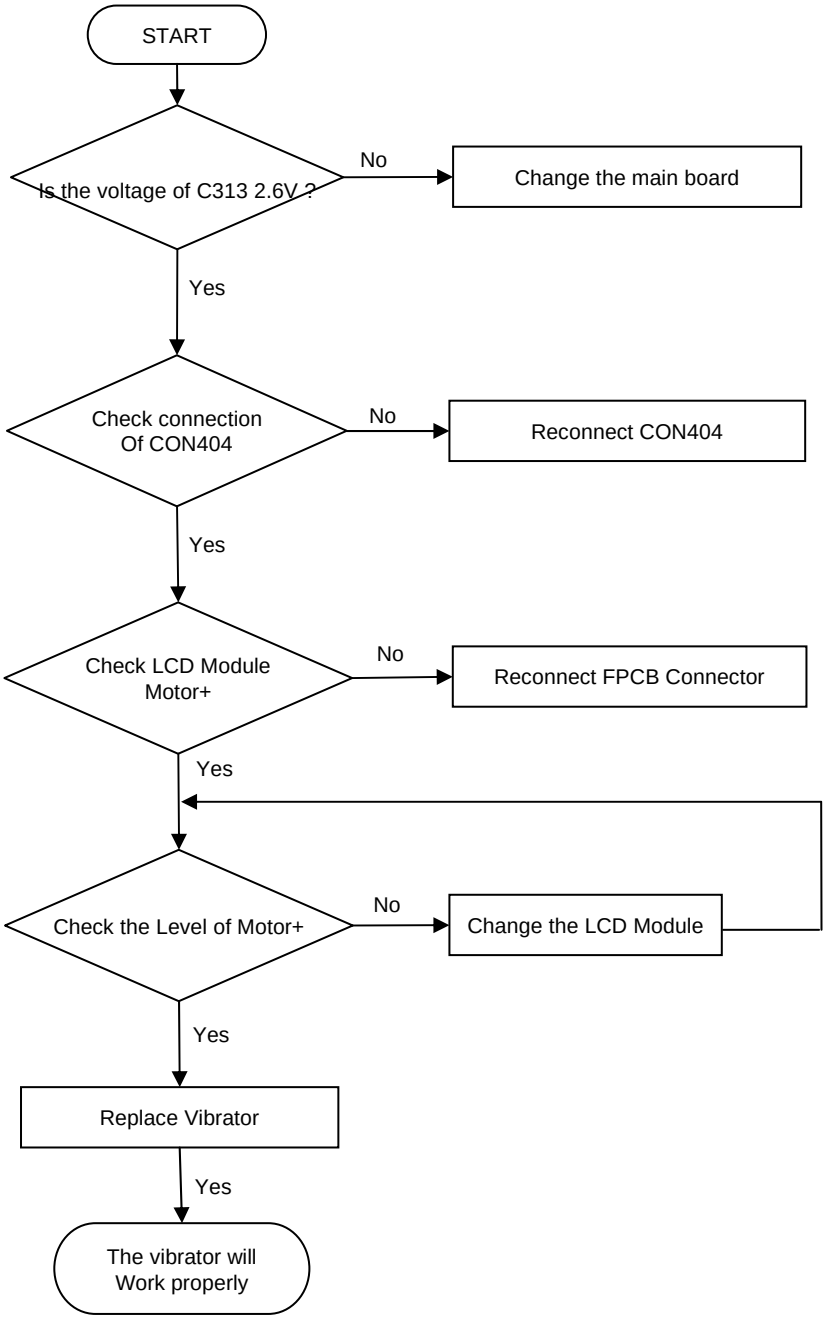


LCD Module



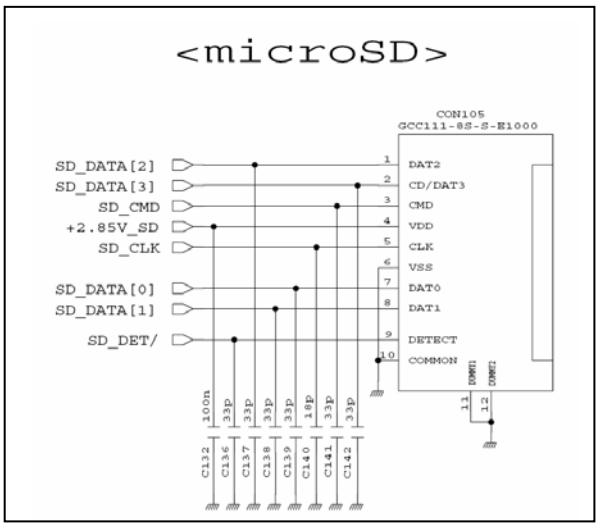
Checking Flow

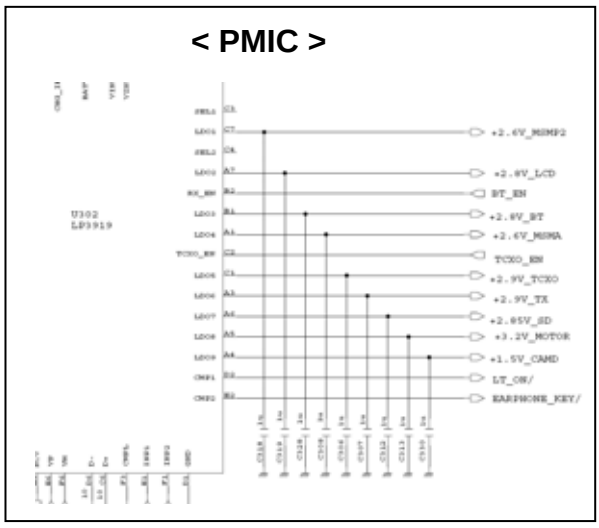
SETTING : “Vibrator on” at Sounds of test menu



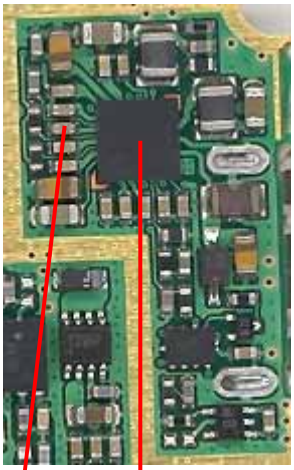
4.3.6.2 Micro SD Detect

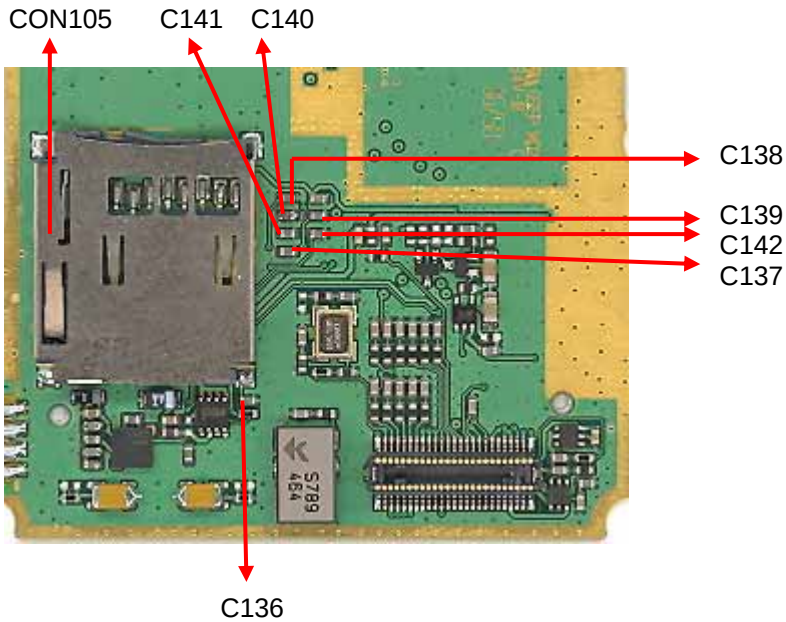
Circuit Diagram



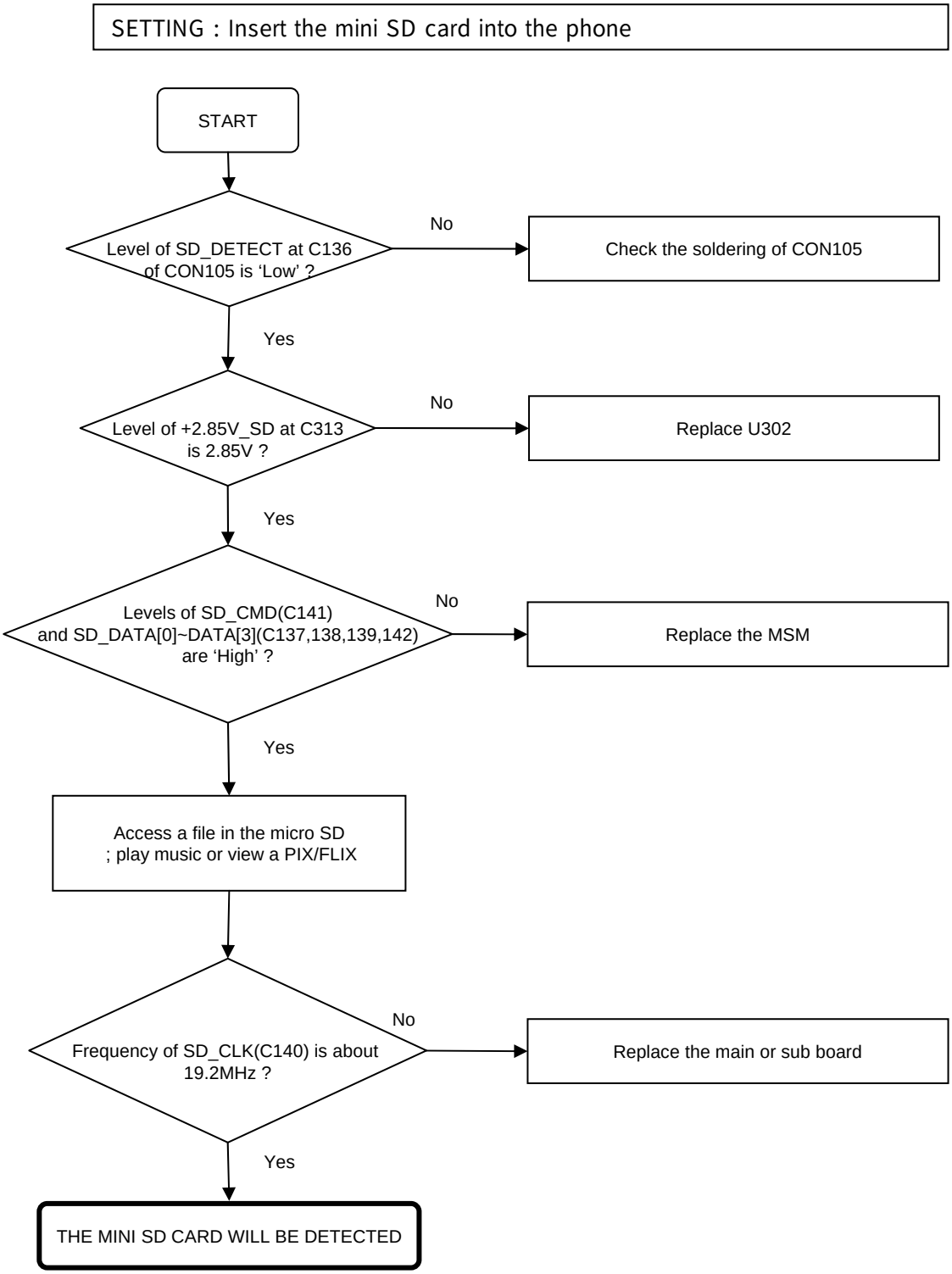


Test Points



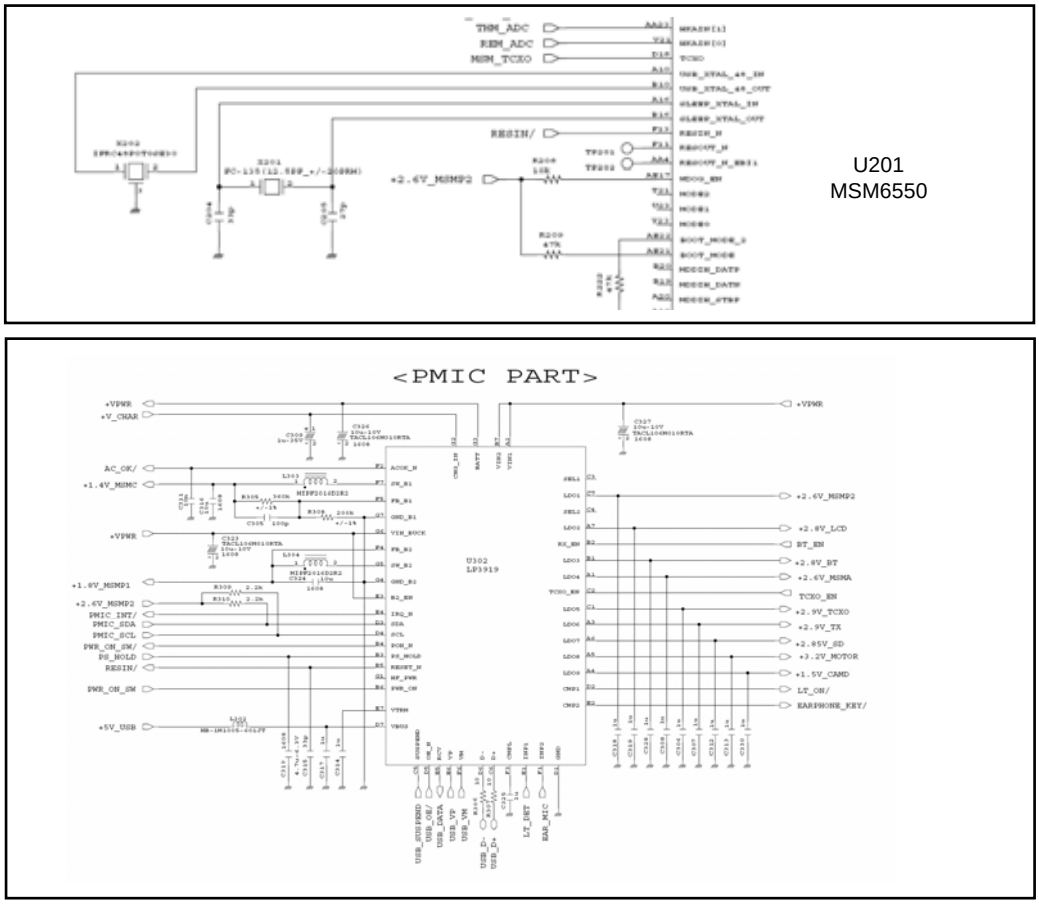


Checking Flow

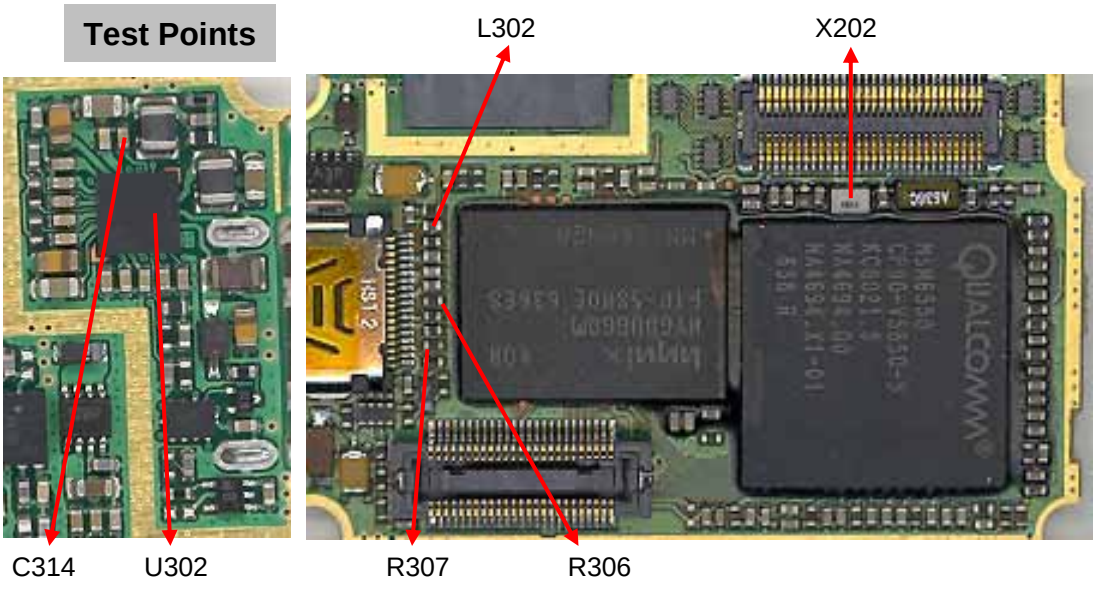


4.3.6.3 USB Interface

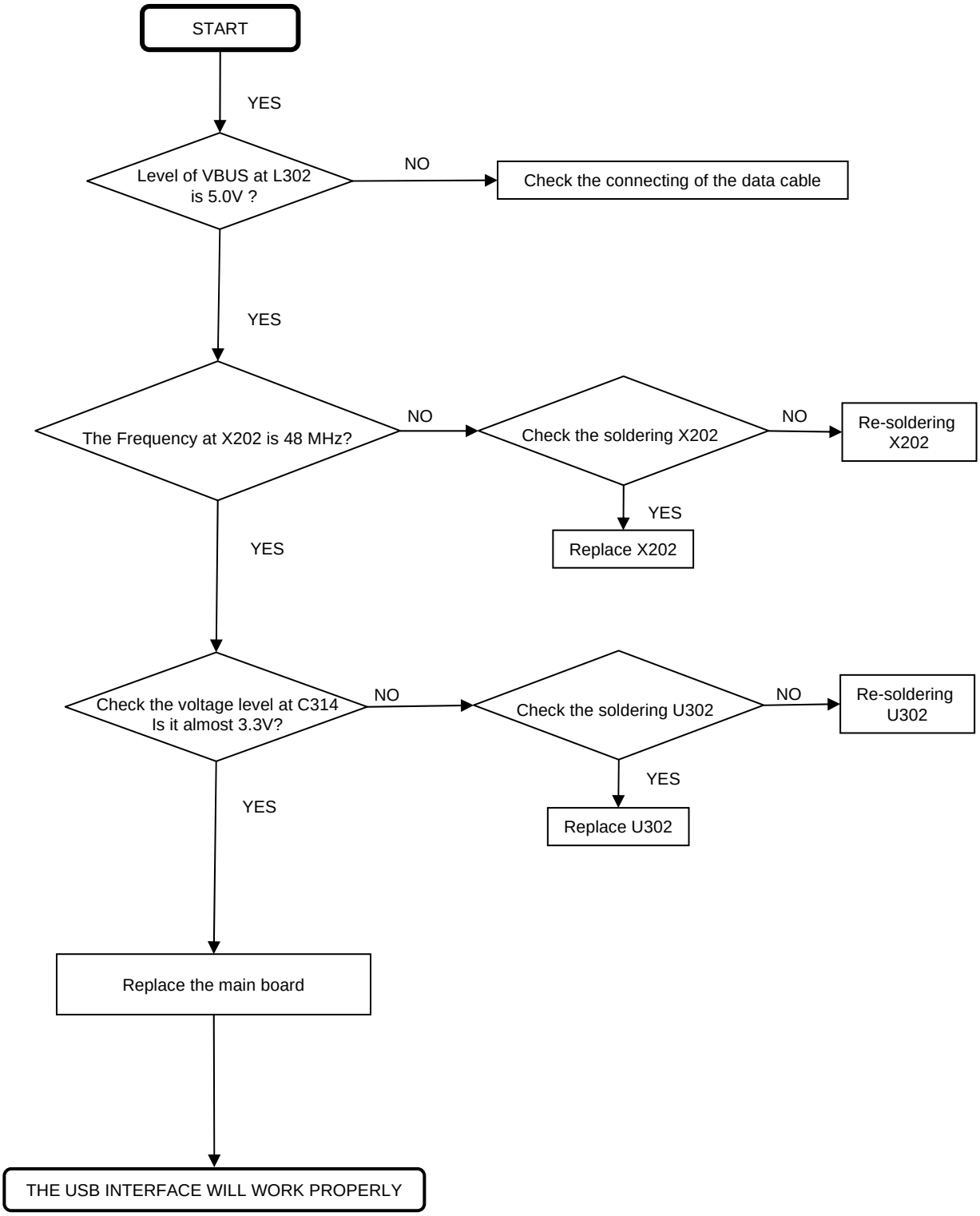
Circuit Diagram



Test Points



Checking Flow



CHAPTER 5. Safety

▣ IMPORTANT

Read This Information Before Using Your Hand-Held Portable Cellular Telephone

First introduction in 1984, the hand-held portable Cellular telephone is one of the most exciting and innovative electronic products ever developed.

With it you can stay in contact with your office, your home, emergency service, and others. For the safe and efficient operation of your phone, observe these guidelines.

Your Cellular phone is a radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) energy. The phone operates in the frequency range of 824 MHz to 894 MHz and employs commonly used frequency modulation (FM) techniques. When you use your phone, the Cellular system handling your calls controls the power level at which your phone transmits. The power level can range from 0.006 of a watt to .6 of a watt.

▣ Exposure to Radio Frequency Energy

In 1991 the Institute of Electrical and Electronics Engineers (IEEE), and in 1992 the American National Standards Institute (ANSI) updates the 1982 ANSI Standard for safety levels with respect to human exposure to RF energy. Over 120 scientists, engineers, and physicians from universities, government health agencies, and industry, after reviewing the available boy of research, developed this updated Standard. In March, 1993, the US Federal Communications Commission (FCC) proposed the adoption of this updated Standard.

The design of your phone complies with this updated Standard. Of course, if you want to limit RF exposure even further than the updated ANSI Standard, you may choose to control the duration of your calls and opration your phone in the most power efficient manner.

▣ Efficient Phone Operation

For your phone to operate at the lowest power level, consistent with satisfactory call quality, please observe the following guidelines:

If your phone has an extendable antenna, extend it fully. Some models allow you to place a call with the antenna retracted. However, your phone operates more efficiently with the antenna fully extended.

Hold the phone as you would any other telephone. While speaking directly into the mouthpiece, position the antenna up and over your shoulder.

Do not hold the antenna when the phone is “IN USE”. Holding the antenna affects call quality and may cause the phone to operated at a higher power level than needed.

▣ Antenna Care and Replacement

Do not use the phone with a damaged antenna. If a damaged antenna comes into contact with skin, a minor bum may result. Replace a damaged antenna immediately. Consult your manual to see if you may change your antenna yourself. If so, use only a manufacture approves antenna. Otherwise, take your phone to a qualifies service center for repair.

Use only the supplied or approved antenna. Non-approved antennas, modifications, or attachments, could impair call quality, damage the phone, and violate FCC egulations.

▣ Driving

Check the laws and regulations on the use of Cellular telephones in the areas where you drive. Always obey them. Also, when using your phone while driving, please:

Give full attention to the driving. Use hands-free operation, if available, and pull off the road and park before making or answering a call if driving conditions require.

▣ Electronic Devices

Most modem electronic equipment is shielded from RF energy. However, RF energy from Cellular telephones may affect inadequately shielded electronic equipment.

RF energy may effect improperly installed or inadequately shielded electronic operating and entertainment system in motor vehicles. Check with the manufacturer or its representative to determine if these systems are adequately shielded from external RF energy. You should check with the manufacturer of any equipment that has been added to your vehicle.

Consult the manufacturer of any personal medical devices (such as pacemakers, hearing aids, etc.) to determine if they are adequately shielded from external RF energy.

Turn your phone OFF in health care facilities. When any regulations posted in the areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

▣ Aircraft

Turn your phone OFF before boarding any aircraft.

Use it on the ground only with crew permission. Do not use it in the air.

To prevent possible interference with aircraft systems, US Federal Aviation Administration (FAA) regulations require you to have permission from a crew member to use your phone while the plane is on the ground. Using your phone while the plane is in the air.

▣ Children

Do not allow children to play with your phone. It is not a toy. Children could hurt themselves or others (by poking themselves or others in the eye with the antenna, for example). Children also could damage the phone, or make calls that increase your telephone bills.

▣ Blasting Areas

To avoid interfering with blasting operations, turn you unit OFF when in a “blasting area” or in areas posted “Turn off two-way radio”. Construction crews often use remote control RF devices to set off explosives.

▣ Potentially Explosive Atmospheres

Turn your phone OFF when in any area with a potentially explosive atmosphere. It is rare, but your phone or accessories could generate sparks. Sparks in such area could cause an explosion or fire resulting in bodily injury or even death.

Areas with a potentially explosive atmosphere are often, but not always, clearly marked. They include fueling areas such as gas station; below deck on boats; fuel or chemical transfer or storage facilities; areas where the air contains chemical or particles, such as grain, dust, or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

Do not transport or store flammable gas, liquid, or explosives in the compartment of your vehicle which contains your phone or accessories.

Vehicles using liquefied petroleum gas (such as propane or butane) must compl7y with the National Fire Protection Standard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association, One Battery march Park, Quincy, MA 02269, Attn: Publication Sales Division.

Rule of Thumb: Using common sense at all times when handling, installing or using the phone. Any questions should be directed to you nearest Service Center or authorized service technician or electrician.

CHAPTER 6. Glossary

General Terms

Abbreviated Alert. An abbreviated alert is used to remind the mobile station user that previously selected alternative routing features are still active.

AC. See Authentication Center.

Access Attempt. A sequence of one or more access probe sequences on the Access Channel containing the same message. See also Access Probe and Access Probe Sequence.

Access Channel. A Reserve CDMA Channel used by mobile stations for communicating to the base station. The Access Channel is used for short signaling message exchanges such as call origination's, responses to pages, and registrations. The Access Channel is a slotted random access channel.

Access Channel Message. The information part of an access probe consisting of the message body, length field, and CRC.

Access Channel Message Capsule. An Access Channel message plus the padding.

Access Channel Preamble. The preamble of an access probe consisting of a sequence of all-zero frames that is sent at the 4800bps rate.

Access Channel Request Message. An Access Channel message that is autonomously generated by the mobile station. See also Access Channel Response Message.

Access Channel Response Message. A message on the Access Channel generated to reply to a message received from the base station.

Access Channel Slot. The assigned time interval for an access probe. An Access Channel slot consists of an integer number of frames. The transmission of an access probe is performed within the boundaries of an Access Channel slot.

Access Probe. One Access Channel transmission consisting of a preamble and a message. The transmission is an integer number of frames in length and transmits one Access Channel message. See also Access Probe Sequence and Access Attempt.

Access Probe Sequence. A sequence of one or more access probes on the Access Channel. The same Access Channel message is transmitted in every access probe of an access attempt. See also Access Probe and Access Attempt.

Acknowledgement. A Layer 2 response by the mobile station or the base station confirming that a signaling message was received correctly.

Action Time. The time at which the action implied by a message should take effect.

Active Set. The set of pilots associated with the CDMA Channels containing Forward Traffic Channels assigned to a particular mobile station.

Aging. A mechanism through which the mobile station maintains in its Neighbor Set the pilots that have been recently sent to it from the base station and the pilots whose handoff drop timers have recently expired.

A-key. A secret, 64-bit pattern stored in the mobile station. It is used to generate update the mobile station's Shared Secret Data. The A-key is used in the mobile station authentication process.

Analog Access Channel. An analog control channel used by a mobile station to access a system to obtain

service.

Analog Color-Code. An analog signal (see Supervisory Audio Tone) transmitted by a base station on an analog voice channel and used to detect capture of a mobile station by an interfering base station or the capture of a base station by an interfering mobile station.

Analog Control Channel. An analog channel used for the transmission of digital control information from a base station to a mobile station or from a mobile station to a base station.

Analog Paging Channel. A forward analog control channel that is used to page mobile stations and send orders.

Analog Voice Channel. An analog channel on which a voice conversation occurs and on which brief digital messages may be sent from a base station to a mobile station or from a mobile station to a base station.

Authentication. A procedure used by a base station to validate a mobile station's identity.

Authentication Center (AC). An entity that manages the authentication information related to the mobile station.

Authentication Response (AUTHR). An 18-bit output of the authentication algorithm. It is used, for example, to validate mobile station registrations, origination and terminations. A method of registration in which the mobile station registers without an explicit command from the base station.

AWGN. Additive White Gaussian Noise.

Bad Frames. Frames classified as erasures (frame category 10) or9600bps frames, primary traffic only with bit errors (frame category 9). See also Good Frames.

Base Station. A station in the Domestic Public Cellular Radio Telecommunications Service, other than a mobile station, used for communicating with mobile stations. Depending upon the context, the term base station may refer to a cell, a sector within a cell, an MSC, or other part of the Cellular system. See also MSC.

Base Station Authentication Response (AUTHBS). An 18-bit pattern generated by the authentication algorithm. AUTHBS is used to confirm the validity of base station orders to update the Shared Secret Data.

Base Station Random Variable (RANDBS). A 32-bit random number generated by the mobile station for authenticating base station orders to update the Shared Secret Data.

BCH Code. See Bose-Chaudhuri-Hocquenghem Code.

Busy-Idle Bits. The portion of the data stream transmitted by a base station on a forward analog control channel that is used to indicate the current busy-idle status of the corresponding reverse analog control channel.

Call Disconnect. The process that releases the resources handling a particular call. The disconnect process beings either when the mobile station user indicates the end of the call by generating an on-hook condition or other call release mechanism, or when the base station initiates a release.

Call History Parameter(COUNT). A modulo-64 event counter maintained by the mobile station and Authentication Center that us used for clone detection.

Candidate Set. The set of pilots that have been received with sufficient strength by the mobile station to be successfully demodulated, but have not been placed in the Active Set by the base station. See also Active Set. Neighbor Set, and Remaining Set.

. See Code Division Multiple Access

CDMA Channel. The set of channels transmitted between the base station within a given CDMA frequency assignment. See also Forward CDMA Channel and Reverse CDMA Channel.

CDMA Channel Number. An 11-bit number corresponding to the center of the CDMA frequency assignment.

CDMA Frequency Assignment. A 1.23MHz segment of spectrum centered on one of the 30KHz channels of the existing analog system.

Code Channel. A subchannel of a Forward CDMA Channels. A Forward CDMA Channel contains 64 code channels. Code channel zero is assigned to the Pilot Channel. Code channels 1 through 7 may be assigned to the either Paging Channels or the Traffic Channels. Code Channel 32 may be assigned to either a Sync Channel or a Traffic Channel. The remaining code channels may be assigned to Traffic Channels.

Code Division Multiple Access (CDMA). A technique for spread-spectrum multiple-access digital communications that creates channels through the use of unique code sequences.

Code Symbol. The output of an error-correcting encoder. Information bits are input to the encoder and code symbols are output from the encoder. See Convolutional Code.

Continuous Transmission. A mode of operation in which Discontinuous Transmission is not permitted.

Control Mobile Attenuation Code(CMAC). A 3-bit field in the Control-Filler Message that specifies the maximum authorized power level for a mobile transmitting on an analog reverse control channels.

Convolution Code. A type of error-correcting code. A code symbol can be considered as the convolution of the input data sequence with the impulse response of a generator function.

CRC. See Cyclic Redundancy Code.

Cyclic Redundancy Code (CRC). A class of linear error detecting codes which generate parity check bits by finding the remainder of a polynomial division.

Data Burst Randomizer. The function that determines which power control groups within a frame are transmitted on the Reverse Traffic Channel when the data rate is lower than 9600 bps. The data burst randomizer determines, for each mobile station, the pseudo random position of the transmitted power control groups in the frame while guaranteeing that every modulation symbol is transmitted exactly once.

DBc. The ratio(in dB) of the sideband power of a signal, measured in a given bandwidth at a given frequency offset from the center frequency of the same signal, to the total inband power of the signal. For CDMA, the total inband power of the signal is measured in a 1.23MHz bandwidth around the center frequency of the CDMA signal.

DBm. A measure of power expressed in terms of its ration (in dB) to one milliwatt.

DBm/Hz. A measure of power spectral density. DBm/Hz is the power in one Hertz of bandwidth. Where power is expressed in units of dBm.

DBW. A measure of power expressed in terns of its ration (in dB) to one Watt.

Dedicated Control Channel. An analog conrtol channel used for the transmisson of digital control information from either a base station or a mobile station.

Deinterleaving. The process of unpermuting the symbols that were permuted by the interleaver..
Deinterleavering is performed on reveived symbols prior to decoding.

Digital Color Code(DCC). A digital signal transmitted by a base station on a forward analog control channel that is used to detect capture of a base station by an interfering mobile station.

Dim-and-Burst. A frame in which primary traffic is multiplexed with either secondary traffic or signaling traffic.

Discontinuous Transmission (DTX). A mode of operation in which a mobile station transmitter

autonomously switches between two transmitter power levels while the mobile station is in the conversation state on an analog voice channel.

Distance-Based Registration. An autonomous registration method in which the mobile station registers whenever it enters a cell whose distance from the cell in which the mobile station last registered exceeds a given threshold.

DTMF. See Dual Tone Multifrequency.

Dual-Tone Multifrequency(DTMF). Signaling by the simultaneous transmission of two tones, one from a group of low frequencies and another from a group of high frequencies. Each group of frequecies consists of four frequencies.

Eb. The energy of an information bit.

Ec/I0. The ratio in (dB) between the pilot energy accumulated over one PN chip period(Ec) to the power spectral density in the received bandwidth(Io).

Effective Radiated Power (ERP). The transmitted power multiplied by the antenna gain referenced to a half wave dipole.

Electronic Serial Number(ESN). A 32-bit number assigned by the mobile station manufacturer, uniquely identifying the mobile station equipment.

Encoder Tail Bits. A fixed sequence of bits added to the end of a block of data to reset the convolutional encoder to a known state.

ERP. See Effective Radiated Power.

ESN. See Electronic Serial Number.

Extended Protocol. An optional expansion of the signaling message between the base station and mobile station to allow for the addition of new system features and operational capabilities.

Fade Timer. A timer kept by the mobile station as a measure of Forward Traffic Channel continuity. If the Fade timer expires, the mobile station drops the call.

Flash. An indication sent on an analog voice channel or CDMA Traffic Channel indicating that the user Directed the mobile station to invoke special processing.

Foreign NID Roamer. A mobile station operating in the same system (SID) but a different network (NID)Form the one in which service was subscribed. See also Foreign SID Roamer and Roamer.

Foreign SID Roamer. A mobile station operating in a system (SID) other than the one from which service was subscribed. See also Foreign NID Roamer and Roamer.

Forward Analog Control Channel (FOCC). An analog voice channel used from a base station to a mobile station.

Forward Analog Voice Channel (FVC). An analog voice channel used from a base station to a mobile station.

Forward CDMA Channel. A CDMA Channel form a base station to mobile stations. The Forward CDMA Channel contains one or more code channels that are transmitted on a CDMA frequency assignment using a Particular pilot PN offset. The code channels are associated with the Pilot Channel, Sync Channel, Paging Channels, and Traffic Channels. The Forward CDMA Channel always carries a Pilot Channel and may carry up to one Sync Channel, up to seven Paging Channels, and up to 63 Traffic Channels, as long as the total number of channels, including the Pilot Channel, is no greater than 64.

Forward Traffic Channel. A code channel used to transport user and signaling traffic from the base station to the mobile station.

A basic timing interval in the system. For the Access Channel, Paging Channel, and Traffic Channel, a frame is 20 ms long. For the Sync Channel, a frame is 26.666…ms long.

Frame Category. A classification of a received Traffic Channel frame based upon transmission data rate, the Frame contents (primary traffic, secondary traffic, or signaling traffic), and whether there are detected error in the frame.

Frame Offset. A time skewing of Traffic Channel frames from System Time in integer multiples of 1.25 ms. The maximum frame offset is 18..75 ms..

Frame Quality Indicator. The CRC check applied to 9600 bps and 4800 bps Traffic Channel frames.

Global Positioning System (GPS). A US government satellite system that provides location and time Information to users. See Navstar GPS Space segment / Navigation User interfaces ICD-GPS-200 for Specifications.

Half Frame. A 10 ms interval on the paging Channel. Two half frames comprise a frame, the first half frame begins at the same time as the frame.

Handoff. The of transferring communication whth a station mobile station from one base station to another.

Hard Handoff. A handoff characterized by a temporary disconnection of the Traffic Channel. Hard handoffs Occur when the mobile station is transferred between disjoint Active Sets, the CDMA frequency assignment changes, the frame offset changes, or the mobile station is directed from a CDMA Traffic Channel to an analog voice channel, See also Soft Handoff.

Hash Function. A function used by the mobile station to select one out of N available resource. The hash function distributes the available resources uniformly among a random sample of mobile stations.

HLR. See Home Location Register.

Home Location Register (HLR). The location register to which a MIN is assigned for record purposes such as subscriber information.

Home System. The Cellular system in which the mobile station subscribes for service.

Idle Handoff. The act of transferring reception of the Paging Channel from one bass station to another, when the mobile station is in the ***Mobile Station Idle State.***

Implicit Registration. A registrationachieved by a successful transmission of an origination or page response on the Access Channel.

Interleaving. The process of permuting a sequence of symbols.

kHz. Kilohertz (10^3 Hertz).

ksps. Kilo-symbols per second (10^3 symbols per second).

Layer 1. See Physical Layer.

Layer 2. Layer 2 provides for the correct transmission and reception of signaling messages, including partial

duplicate detection. See also Layering and Layer 3.

Layer 3. Layer 3 provides the control of the Cellular telephone systems. Signaling messages originate and terminate at layer 3. See also Layering and Layer 2.

Local Control. An optional mobile station feature used to perform manufacturer-specific functions.

A PN sequence with period 24^2-1 that is used for scrambling on the Forward CDMA Channel and spreading on the Reverse CDMA Channel. The long code uniquely identifies a mobile station on both the Reverse Traffic Channel and the Forward Traffic Channel. The long code provides limited privacy. The long code also separates multiple Access Channels on the same CDMA channel. See also Public Long Code and Private Long Code.

Long Code Mask. A 42-bit binary number that creates the unique identity of the long code. See also Public Long Code, Private Long Code, Public Long Code Mask, and Private Long Code Mask.

LSB. Least significant bit.

Maximal Length Sequence (m-Sequence). A binary sequence of period 2n-1, n a positive integer, with no internal periodicities. A maximal length sequence can be generated by a tapped n-bit shift register with linear feedback.

Mcps. Megachips per second (10^6 chips per second).

Mean Input Power. The total received calorimetric power measured in a specified bandwidth at the antenna connector, including all internal and external signal and noise sources.

Mean Output Power. The total transmitted calorimetric power measured in a specified bandwidth at the antenna connector when the transmitter is active.

Message. A data structure that conveys control information or application information. A message consists of a length field (MSG_LENGTH), a message body (the part conveying the information), and a CRC.

Message Body. The part of the message contained between the length field (MSG_LENGTH) and the CRC field.

Message Capsule. A sequence of bits comprising a single message and padding. The padding always follows the message and may be of zero length.

Message CRC. The CRC associated with a message. See also Cyclic Redundancy Check.

Message Field. A basic named element in a message. A message field may consist of zero or more bits.

Message Record. An entry in a message consisting of one or more field that repeats in the message.

MHz. Megahertz.(10^6 Herz)

MIN. See Mobile Station Identification Number.

Mobile Protocol Capability Indicator (MPCI). A 2-bit field used to indicate 속 mobile station's capabilities.

Mobile Station. A station in the Domestic Public Cellular Radio Telecommunications Service intended to be used while in motion or during halts at unspecified points. Mobile station include portable units (e.g., handheld personal units) and units installed in vehicles.

Mobile Station Class. Mobile station classes define mobile station characteristics such as slotted operation and

transmission power.

Mobile Station Identification Number (MIN). The 34-bit number that is a digital representation of the 10-digit directory telephone number assigned to a mobile station.

Mobile Station Originated Call. A call originating from a mobile station.

Mobile Station Terminated Call. A call received by a mobile station (not to be confused with a disconnect or call release).

Mobile Switching Center (MSC). A configuration of equipment that provides Cellular radiotelephone service. Also called the Mobile Telephone Switching Office (MTSO)

Modulation Symbol. The output of the data modulator before spreading. On the Reverse Traffic Channel, 64-ary orthogonal modulation is used and six code symbol (when the data rate is 9600bps) or each repeated code symbol (when the data rate is less than 9600bps) is one modulation symbol.

Ms. Millisecond.

MSB. Most significant bit.

MSC. See Mobile Switching Center.

Multiplex Option. The ability of the multiplex sublayer and lower layer to be tailored to provide special capabilities. A multiplex option defines such characteristics as the frame format and the rate decision rules. See also Multiplex Sublayer.

Multiplex Sublayer. One of the conceptual layers of the system that multiplexes and demultiplexes primary traffic, secondary traffic, and signaling traffic.

NAM. See Number Assignment Module.

Narrow Analog. A type of voice channel that uses 10kHz channel spacing and subaudible signaling.

Neighbor Set. The set of pilots associated with the CDMA Channel that are probable candidates for handoff. Normally, the Neighbor Set consists of the pilots associated with CDMA Channel that cover geographical areas near the mobile station. See also Active Set, Candidate Set, and Remaining Set.

- A network is a subset of a Cellular system, such as an area-wide Cellular network, a private group of base stations, or a group of base stations set up to handle a special requirement. A network can be as small or as large as needed, as long as it is fully contained within a system. See also System.

Network Identification (NID). A number that uniquely identifies a network within a Cellular system. See also System Identification.

NID. See Network Identification.

Non-Autonomous Registration. A registration method in which the base station initiates registration. See also Autonomous Registration.

Non-Slotted Mode. An operation mode of the mobile station in which the mobile station continuously monitors the Paging Channel when in the Mobile Station Idle State.

Ns. Nanosecond.

NULL. Not having any value.

Null Traffic Channel Data. One or more frames of 16 ‘1’s followed by eight ‘0’s sent at the 1200bps rate. Null Traffic Channel data is sent when no service option is active and no signaling message is being sent. Null Traffic Channel data serves to maintain the connectivity between the mobile station and the base station.

Number Assignment Module (NAM). A set of MIN-related parameters stored in the mobile station.

Numeric Information. Numeric information consists of parameters that appear as numeric fields in message exchanged by the base station and the mobile station and information used to describe the operation of the mobile station.

OLC. See Overload Class (CDMA) or Overload Control (analog).

Optional Field. A field defined within a message structure that is optionally to the message recipient.

Order. A type of message that contains control codes for either the mobile station or the base station.

Ordered Registration. A registration method in which the base station orders the mobile station to send registration related parameters.

Overhead Message. A message sent by the base station on the Paging Channel to communicate base-station-specific and system-wide information to mobile station.

Overload Class. The means used to control system access by mobile stations, typically in emergency or other overload conditions. Mobile station are assigned one (or more) of sixteen overload classed, Access to the CDMA system can then be controlled on a per class basis by persistence values transmitted by the base station.

Overload Control (OLC). A means reverse analog control channel accesses by mobile stations. Mobile station are assigned one(or more) of sixteen control levels. Access is selectively restricted by a base station setting one or more OLC bits in the Overload Control Global Action Message.

Packet. The unit of information exchanged between the service option applications of the base station and the mobile station.

Padding. A sequence of bits used to fill from the end of a message to the end of a message capsule, typically to the end of the frame or half frame. All bits in the padding are '0'.

Paging. The act of seeking a mobile station when a call has been placed to that mobile station.

Paging Channel (Analog). See Analog Paging Channel.

Paging Channel (CDMA). A code channel in a Forward CDMA Channel used for transmission of control information and pages from a base station to a mobile station.

Paging Channel Slot. An 80ms interval on the Paging Channel. Mobile station operating in the slotted mode are assigned specific slots in which day monitor messages from the base station.

Parameter-Change Registration. A registration method in which the mobile station registers when certain of its stored parameters change.

Parity Check Bits. Bits added to a sequence of information bits to provide error detection, correction, or both.

Persistence. A probability measure used by the mobile station to determine if it should transmit in a given Access Channel Slot.

Physical Layer. The part of the communication protocol between the mobile station and the base station that is responsible for the transmission and reception of data. The physical layer in the transmitting station is presented a frame by the multiplex sublayer and transforms it into an over-the-air waveform. The physical layer in the receiving station transforms the waveform back into a frame and presents it to the multiplex sublayer above it.

Pilot Channel. An unmodulated, direct-sequence spread spectrum signal transmitted continuously by each CDMA base station. The Pilot Channel allows a mobile station to acquire the timing of the Forward CDMA Channel, provides a phase reference for coherent demodulation, and provides a means for signal strength comparisons between base station for determining when to handoff.

Pilot PN Sequence. A pair of modified maximal length PN sequences with period 2^{15} used to spread the

Foward CDMA Channel and the Reserve CDMA Channel. Different base station are identified by different pilot PN sequence offsets.

Pilot PN Sequence Offset Index. The PN offset in units of 64 PN chips of a pilot, relative to the zero offset pilot PN sequence.

PN Chip. One bit in the PN sequence.

PN Sequence. Pseudonoise sequence. A periodic binary sequence.

Power Control Bit. A bit sent in every 1.25ms interval on the Forward Traffic Channel to signal the mobile station to increase or decrease its transmit power.

Power Control Group. A 1.25ms interval on the Forward Traffic Channel and the Reverse Traffic Channel. See also Power Control Bit.

Power-Down Registration. Au autonomous registration method in which the mobile station registers on power up.

PPM. Parts per million.

Preamble. See Access Channel Preamble and Traffic Channel Preamble.

Primary CDMA Channel. A CDMA Channel at a pre-assigned frequency assignment used by the mobile station for initial acquisition. See also Secondary CDMA Channel.

Primary Paging Channel (CDMA). The default code channel (code channel 1) assigned for paging on a CDMA Channel.

Primary Traffic. The main traffic stream carried between the mobile station and the base station, supporting the active promaty service option, on the Traffic Channel. See also Secondary Traffic, Signaling Traffic, and Servic3e Option.

Private Long Code. The long code characterized by the private long code mask. See also Long Code.

Private Long Code Mask. The long code mask used to form the private long code. See also Public Long Code Mask and Long Code.

Public Long Code. The long code characterized by the public long code mask.

Public Long Code Mask. The long code mask used to form the private long code. The mask contains the ESN of the mobile station. See also Private Long Code Mask and Long Code.

Punctured Code. An error-correcting code generated from another error-correcting code by deleting (i.e., puncturing) code symbols from the code output.

Quick Repeats. Additional transmissions of identical copies of a message within a short interval to increase the probability that the message is received correctly.

Receive Objective Loudness Rating (ROLR). A perceptually weighted transducer gain of telephone receivers relating electrical excitation from a reference generator to sound pressure at the earphone. The receive objective loudness tating is normally specified in dB relative to one Pascal per millivolt. See IEEE Standard 269-1992, IEEE Standard 661-1979, CCITT Recommendation P.76, and CCITT Recommendation P.79.

Registration. The process by which a mobile station identifies its location and parameters to a base station.

Registration Zone. A collection of one or more base stations treated as a unit when determining whether a mobile station should perform zone-based registration.

Release. A process that the mobile station and base station use to inform each other of call disconnect.

The set of all allowable pilot offsets as determined by PILOT_INC, excluding the pilot offsets of the pilots in

the Active Set, Candidate Set, and Neighbor Set. See also Active Set, Candidate Set, and Neighbor Set.

Request. A layer 3 message generated by either the mobile station or the base station to retrieve information, ask for service, or command an action.

Response. A layer 3 message generated as a result of another message, typically a request.

Reverse Analog Control (RECC). The analog control channel used from a mobile station to a base station.

Reverse Analog Voice Channel (RVC). The analog voice channel used from a mobile station to a base station.

Reverse CDMA Channel. The CDMA Channel from the mobile station to the base station. From the base station's perspective, the Reverse CDMA Channel is the sum of all mobile station transmissions on a CDMA frequency assignment.

Reverse Traffic Channel. A Reverse CDMA Channel used to transport user and signaling traffic from a single mobile station to one or more base stations.

Roamer. A mobile station operating in a Cellular system (or network) other than the one from which service was subscribed. See also Foreign NID Roamer and Foreign SID Roamer.

ROLR. See Receive Objective Loudness Rating.

SAT. See Supervisory Audio Tone.

Scan of Channels. The procedure by which a mobile station examines the signal strength of each forward analog control channel.

SCI. Synchronized Capsule Indicator bit.

Search Window. The range of PN sequence offsets that a mobile station searches for a pilot.

Secondary CDMA Channel. A CDMA Channel at a preassigned frequency assignment used by the mobile station for initial acquisition. See also Primary CDMA Channel.

Secondary Traffic. An additional traffic stream that can be carried between the mobile station and the base station on the Traffic Channel. See also Primary Traffic and Signaling Traffic.

Seizure Precursor. The initial digital sequence transmitted by a mobile station to a base station on a reverse analog control channel.

Seizure Option. A service capability of the system. Service options may be applications such as voice, data, or facsimile.

Shard Secret Data (SSD). A 128-bit pattern stored in the mobile station (in semi-permanent memory) and known by the base station. SSD is a concatenation of two 64-bit subsets: SSD_A, which is used to support the authentication procedures and SSD_B, which serves as one of the inputs to the process generating the encryption mask and private long code.

Short Message Services (SMS). A suite of services which include SMS Text Delivery, Digital Paging (i.e., Call Back Number – CBN), and Voice Mail Notification (VMN).

SID. See System Identification.

Signaling Tone. A 10kHz tone transmitted by a mobile station on an analog voice channel to: 1) confirm orders, 2)signal flash requests, and 3) signal release requests.

Signal Traffic. Control message that are carried between the mobile station and base station on the Traffic Channel. See also Primary Traffic and Secondary Traffic.

Slot Cycle. A periodic interval at which a mobile station operating in the slotted monitors the Paging Channel.

Slotted Mode. An operation mode of the mobile station in which the mobile station monitors only selected slots

on the Paging Channel when in the Mobile Station Idle State.

Soft Handoff. A handoff occurring while the mobile station is in the Mobile Station Control on the Traffic Channel State. This handoff is characterized by commencing communications with a new base station on the same CDMA frequency assignment before terminating communications with the old base station. See also Hard Handoff.

SOM. Start-of-Message Bit.

SPS. Symbols per second.

- An identification of certain characteristics of a mobile station. Classes are defined in Table 2.3.3-1.

Status Information. The following status information is used to describe mobile station operation when using the analog system.

- Serving-System Status. Indicates whether a mobile station is turned to channels associated with System A or System B.
- First Registration ID Status. A status variable used by the mobile station in association with its processing of received Registration ID messages.
- First Location Area ID Status. A status variable used by the mobile station in association with its processing of received Location Area ID messages.
- Location Registration ID Status. A status variable used by the mobile station in association with its processing of power-up registration and location-based registration.
- First Idle ID Status. A status variable used by the mobile station in association with its processing of the Idle Task.
- Local Control Status. Indicates whether a mobile station must respond to local control messages.
- Roam Status. Indicates whether a mobile station is in its home system.
- Termination Status. Indicates whether a mobile station must terminate the call when it is on an analog voice channel.

Supervisory Audio Tone (SAT). One of three tones in the 6 kHz region that is transmitted on the forward analog voice channel by a base station and transponder on the reverse analog voice channel by as mobile station.

Supplementary Digital Color Code (SDCC1, SDCC2). Additional bits assigned to increase the number of color codes from four to sixty four, transmitted on the forward analog control channel.

Symbol. See Code Symbol and Modulation Symbol.

Sync Channel. Code channel 32 in the Forward CDMA Channel which transports the synchronization message to the mobile station.

Sync Channel Superframe. An 80ms interval consisting of three Sync Channel frames (each 26.666…ms in length).

System. A system is a Cellular telephone service that covers a geographic area such as a city. Metropolitan region, country, or group of countries. See also Network.

System Time. The time reference used by the system. System Time is synchronous to UTC time(except for leap seconds) and used the same time origin as GPS time. Offset by the propagation delay from the base station to the mobile station. See also Universal coordinated Time.

Timer-Based Registration. A registration method in which the mobile station registers whenever a counter reaches a predetermined value. The counter is incremented an average of once per 80 ms period.

Time Reference. A reference established by the mobile station that is synchronous with the earliest arriving multipath component used for demodulation.

TOLR. See Transmit Objective Loudness Rating.

Traffic Channel. A communication path between a mobile station and base station used for user and signaling traffic. The term Traffic Channel implies a Forward Traffic Channel and Reverse Traffic Channel pair. See also Forward Traffic Channel and Reverse Traffic Channel.

Traffic Channel Preamble. A sequence of all-zero frames that is sent at the 9600 bps rate by the mobile station on the Reverse Traffic Channel. The Traffic Channel preamble is sent during initialization of the Traffic Channel.

Transmit Objective Loudness Rating(TOLR). A perceptually weighted transducer gain of telephone transmitters relation sound pressure at the microphone to voltage at a reference electrical termination. It is normally specified in dB relative to one millivolt per Pascal. See IEEE Standard 269-1992, IEEE Standard 661-1979, CCITT Recommendation P.76 , and CCITT Recommendation. P.79

Unique Challenge-Response Procedure. An exchange of information between a mobile station and a base station for the purpose of confirming the mobile station's identity. The procedure is initiated by the base station and is characterized by the use of a challenge-specific random number(i.e., RANDU) instead of the random variable broadcast globally(RAND).

Unique Random Variable(RANDU). A 24-bit random number generated by the base station in support of the Unique Challenge-Response procedure.

Universal Coordinated Time(UTC). An internationally agreed-upon time scale maintained by the Bureau International de l'Heure(BIH) used as the time reference by nearly all commonly available time and frequency distribution systems i.e., WWW, WWVH, LORAN-C, Transit, Omega, and GPS.

UTC. Universal Temps Coordine. See Universal Coordinated Time.

Voice Channel. See Analog Voice Channel.

Voice Mobile Attenuation Code(VMAC). A 3-bit field in the Extended Address Word commanding the initial mobile power level when assigning a mobile station to an analog voice channel.

Voice Privacy. The process by which user voice transmitted over a CDMA Traffic Channel is a afforded a modest degree of protection against eavesdropping over the air.

Walsh Chip. The shortest identifiable component of a Walsh function. There are 2^N Walsh chips in one Walsh function where N is the order of the Walsh function. On the Forward CDMA channel one Walsh chip equals 1/1.2288MHz, or 813.802…ns. On the Reverse CDMA Channel, one Walsh chip equals 4/1.2288MHz, or 3.255…μs.

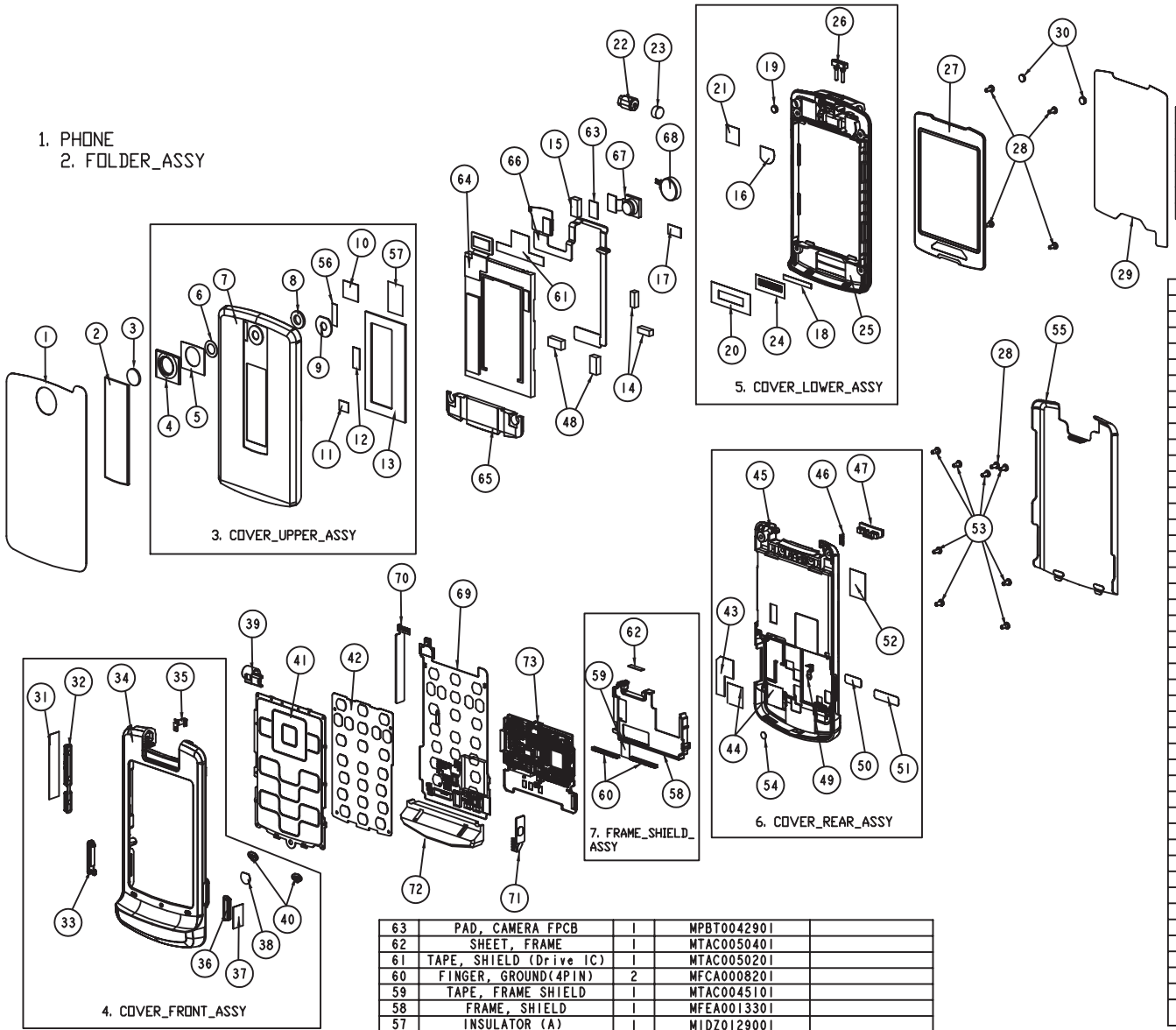
Walsh Function. One of 2^N time orthogonal binary functions (note that the functions are orthogonal after mapping '0' to 1 and '1' to –1).

Zone-Based Registration. An autonomous registration method in which the mobile station registers whenever it enters a zone that is not in the mobile station's zone list.

μs. Microsecond

Appendix

1. PHONE
2. FOLDER_ASSY



* ASSEMBLY

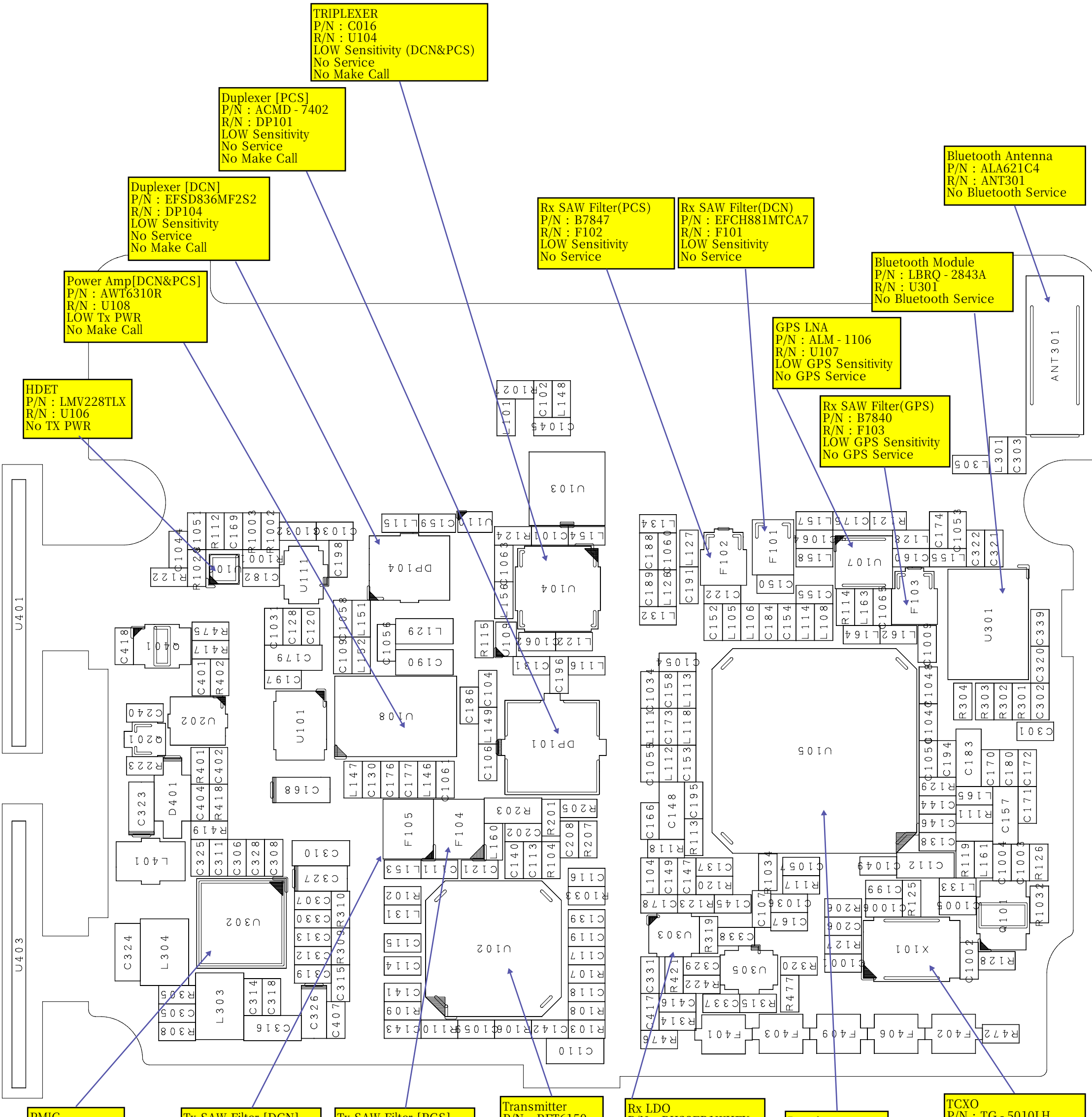
7	FRAME_SHIELD_ASSY	1	AFBA0006701	
6	COVER_ASSY_REAR	1	ACGM0080101	
5	COVER_ASSY_LOWER	1	ACGH0045401	
4	COVER_ASSY_FRONT	1	ACGK0080301	
3	COVER_ASSY_UPPER	1	ACGJ0059501	
2	COVER SUB ASSY FOLDER	1	ACHB0005001	
1	PHONE	1	APEY0348701	

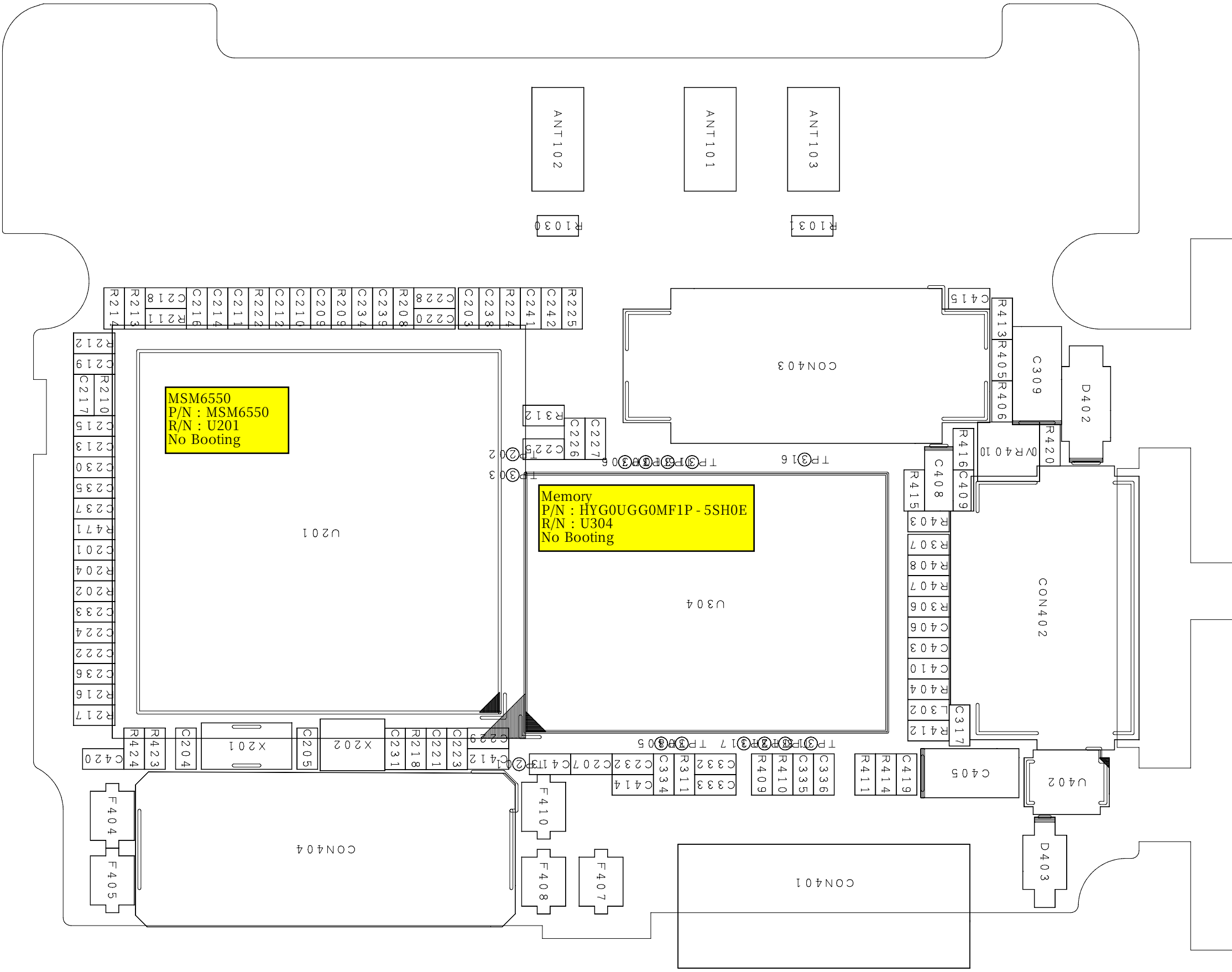
45	COVER,REAR	1	MCJN0059001	
44	INSULATOR(REAR_R)	2	MIDZ0120901	
43	INSULATOR(REAR_L)	1	MIDZ0117201	
42	DOME ASSY,METAL	1	ADCA0058201	
41	KEYPAD	1	MKAZ0033301	
40	BUMPER	2	MBHY0020301	
39	BUSHING, HINGE	1	MBIB0005202	
38	FILTER,MIKE	1	MFBD0018601	
37	TAPE, PROTECTION (SHUTTER)	1	MTAB0158101	
36	BUTTON,SHUTTER	1	MBJP0005801	
35	PLATE, GROUND	1	MPFD0003201	
34	COVER,FRONT	1	MCJK0064701	
33	CAP, EARPHONE JACK	1	MCCC0040101	
32	BUTTON,VOLUME	1	MBJN0010201	
31	TAPE, PROTECTION (VOLUME)	1	MTAB0158001	
30	CAP,SCREW	2	MCCH0101901	
29	TAPE, PROTECTION (WINDOW)	1	MTAB0165801	
28	SCREW	5	GMZZ0024201	
27	WINDOW,LCD	1	AWAB0027601	
26	STOPPER, FOLDER	1	MSGY0018201	
25	COVER,FOLDER(LOWER)	1	MCJH0036401	
24	FILTER,RECEIVER	1	MFBB0018601	
23	STOPPER,HINGE	1	MSGY0018201	
22	HINGE,FOLDER	1	MHFD0014601	
21	TAPE, LCD FPCB	1	MTAZ0182201	
20	INSULATOR, RECEIVER	1	MIDZ0123201	
19	MAGNET,SWITCH	1	MMAA0003001	
18	TAPE, FILTER SPK	1	MTAZ0173401	
17	TAPE, CAMERA	1	MTAZ0171001	
16	TAPE, MOTOR	1	MTAF0010201	
15	PAD,FPCB	1	MPBF0019701	
14	GASKET,SHEILD FORM	2	MGAD0134601	
13	PAD, LCD(SUB)	1	MPBQ0029801	
12	SHEET (UP)	1	MSAZ0047601	
11	SHEET (BTM)	1	MSAZ0045901	
10	PAD,CAMERA CONNECTOR	1	MPBZ0173301	
9	PAD,MOTOR(UPPER)	1	MPBJ0037101	
8	PAD, CAMERA	1	MPBT0036501	
7	COVER,FOLDER(UPPER)	1	MCJJ0045501	
6	TAPE,WINDOW(CAMERA)	1	MTAZ0153401	
5	TAPE,DECO(CAMERA)	1	MTAA0125501	
4	DECO,CAMERA	1	MDAD0030601	
3	WINDOW,CAMERA	1	MWAE0021001	
2	WINDOW, LCD(SUB)	1	MWAF0034401	
1	TAPE, PROTECTION (UPPER)	1	MTAB0158201	
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK

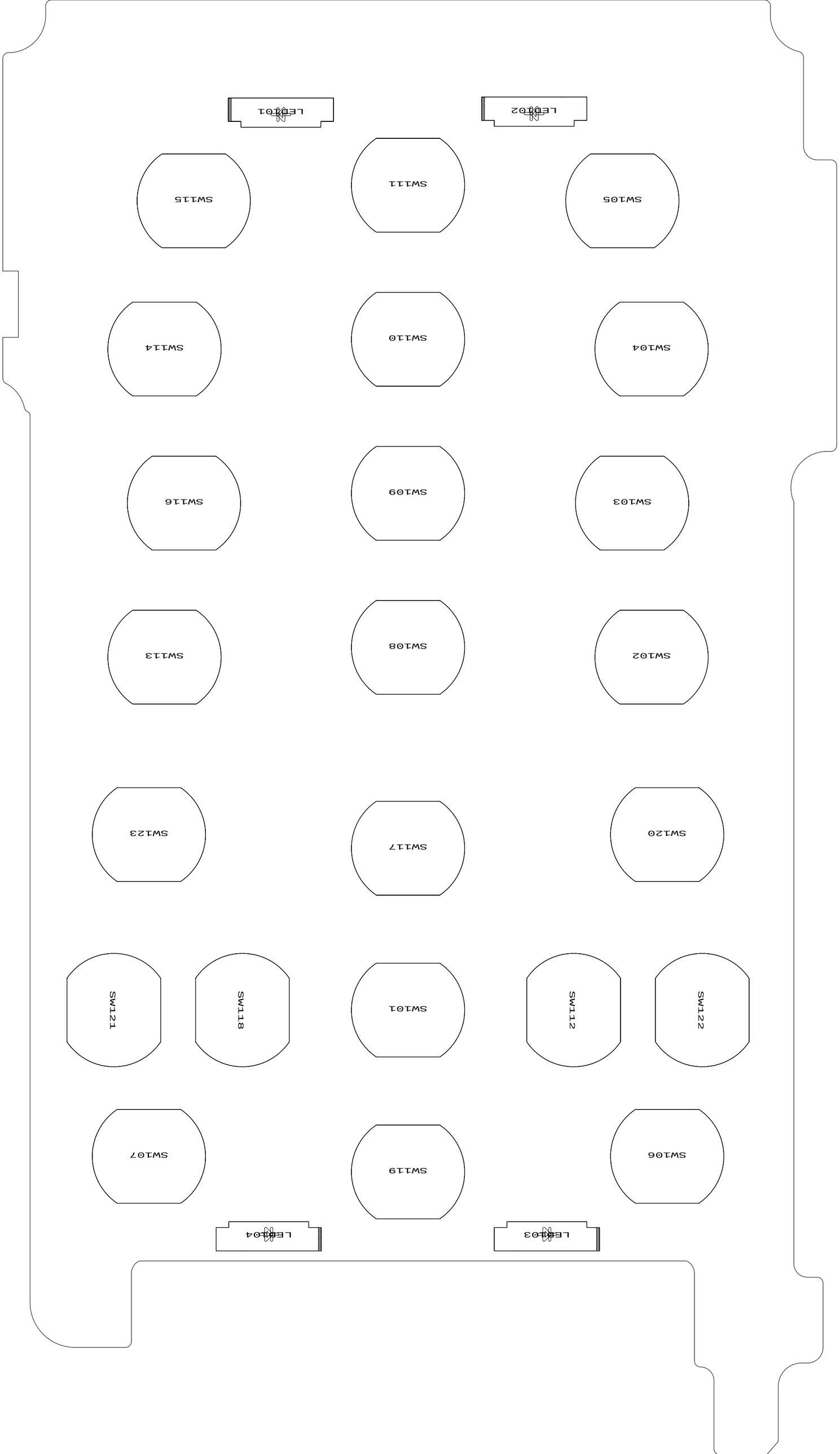
* HARDWARE

73	PCB, MAIN	1	SAFF0099401
72	ANTENNA	1	SNMF0028801
71	PCB, SIDEKEY(Shutter)	1	SPKY0041401
70	PCB, SIDEKEY(Volume)	1	SPKY0041501
69	PCB, SUB	1	SAJE0015201
68	MOTOR	1	SJMY0008402
67	CAMERA	1	SVCY0012701
66	FPCB, MAIN	1	SACY0054101
65	SPEAKER MODULE	1	SUSY0026001
64	LCD MODULE	1	SVLM0022701

63	PAD, CAMERA FPCB	1	MPBT0042901	
62	SHEET, FRAME	1	MTAC0050401	
61	TAPE, SHIELD (Drive IC)	1	MTAC0050201	
60	FINGER, GROUND(4PIN)	2	MFCA0008201	
59	TAPE, FRAME SHIELD	1	MTAC0045101	
58	FRAME, SHIELD	1	MFEA0013301	
57	INSULATOR (A)	1	MIDZ0129001	
56	INSULATOR (B)	1	MIDZ0129101	
55	COVER,BATTERY	1	MCJA0036701	
54	LABEL. A/S	1	MLAB0000601	
53	SCREW	8	GMEY0014301	
52	SHEET, REAR	1	MSAZ0047701	
51	LABEL, OTA	1	MLAZ0034702	
50	LABEL,QUALCOMM	1	MLAN0000603	
49	PLATE, GROUND(BATTERY)	1	MPFD0003601	
48	PAD, LCD	2	MPBG0060301	
47	LOCKER,BATTERY	1	MLEA0035201	
46	SPRING,LOCKER	1	MSDC0015501	
NO	DESCRIPTION	Q'TY	DRAWING NO	REMARK


TRIPLEXER
P/N : C016
R/N : U104
LOW Sensitivity (DCN&PCS)
No Service
No Make Call
Duplexer [PCS]
P/N : ACMD - 7402
R/N : DP101
LOW Sensitivity
No Service
No Make Call
Duplexer [DCN]
P/N : EFSD836MF2S2
R/N : DP104
LOW Sensitivity
No Service
No Make Call
Rx SAW Filter(PCS)
P/N : B7847
R/N : F102
LOW Sensitivity
No Service
Rx SAW Filter(DCN)
P/N : EFCH881MTCA7
R/N : F101
LOW Sensitivity
No Service
Bluetooth Antenna
P/N : ALA621C4
R/N : ANT301
No Bluetooth Service
Power Amp[DCN&PCS]
P/N : AWT6310R
R/N : U108
LOW Tx PWR
No Make Call
Bluetooth Module
P/N : LBRQ - 2843A
R/N : U301
No Bluetooth Service
GPS LNA
P/N : ALM - 1106
R/N : U107
LOW GPS Sensitivity
No GPS Service
HDET
P/N : LMV228TLX
R/N : U106
No TX PWR
Rx SAW Filter(GPS)
P/N : B7840
R/N : F103
LOW GPS Sensitivity
No GPS Service
PMIC
P/N : LP3919
R/N : U302
No Power
Tx SAW Filter [DCN]
P/N : EFCH836MTC88
R/N : F105
LOW Tx Power
No Make Call
Tx SAW Filter [PCS]
P/N : ACPF7002
R/N : F104
LOW Tx Power
No Make Call
Transmitter
P/N : RFT6150
R/N : U102
LOW Tx PWR
No Make Call
Rx LDO
P/N : BH29FB1WHFV
R/N : U303
No Service
No Make Call
Receiver
P/N : RFR6500
R/N : U105
LOW Sensitivity
No Service
No Make Call
TCXO
P/N : TG - 5010LH
R/N : X101
No POWERl


MSM6550
P/N : MSM6550
R/N : U201
No Booting
Memory
P/N : HYG0UGG0MF1P - 5SH0E
R/N : U304
No Booting
U201
U304
CON404
CON401
CON402
CON403
ANT101
ANT102
ANT103
X201
X202
C309
D402
D403
C405
C402
C317
F404
F405
F408
F407
F410


LED01
LED02
SW115
SW111
SW105
SW114
SW110
SW104
SW116
SW109
SW103
SW113
SW108
SW102
SW123
SW117
SW120
SW121
SW118
SW101
SW112
SW122
SW107
SW119
SW106
LED04
LED03

AUDIO AMP
P/N : LM4845ITL
R/N : U103
NO SOUND

CAMMERA OSCILLATOR
P/N : CSC6R245454BIVRSOO
R/N : X101
NO CAMERA

CON102
CON105
CON104
CON101
CON103
M101
X101
U103
U106
U105
U101
U102
Q102
Q103
D1
C104
C130
C131
C133
C134
C135
C136
C137
C138
C139
C140
C141
C142
C143
C144
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C148
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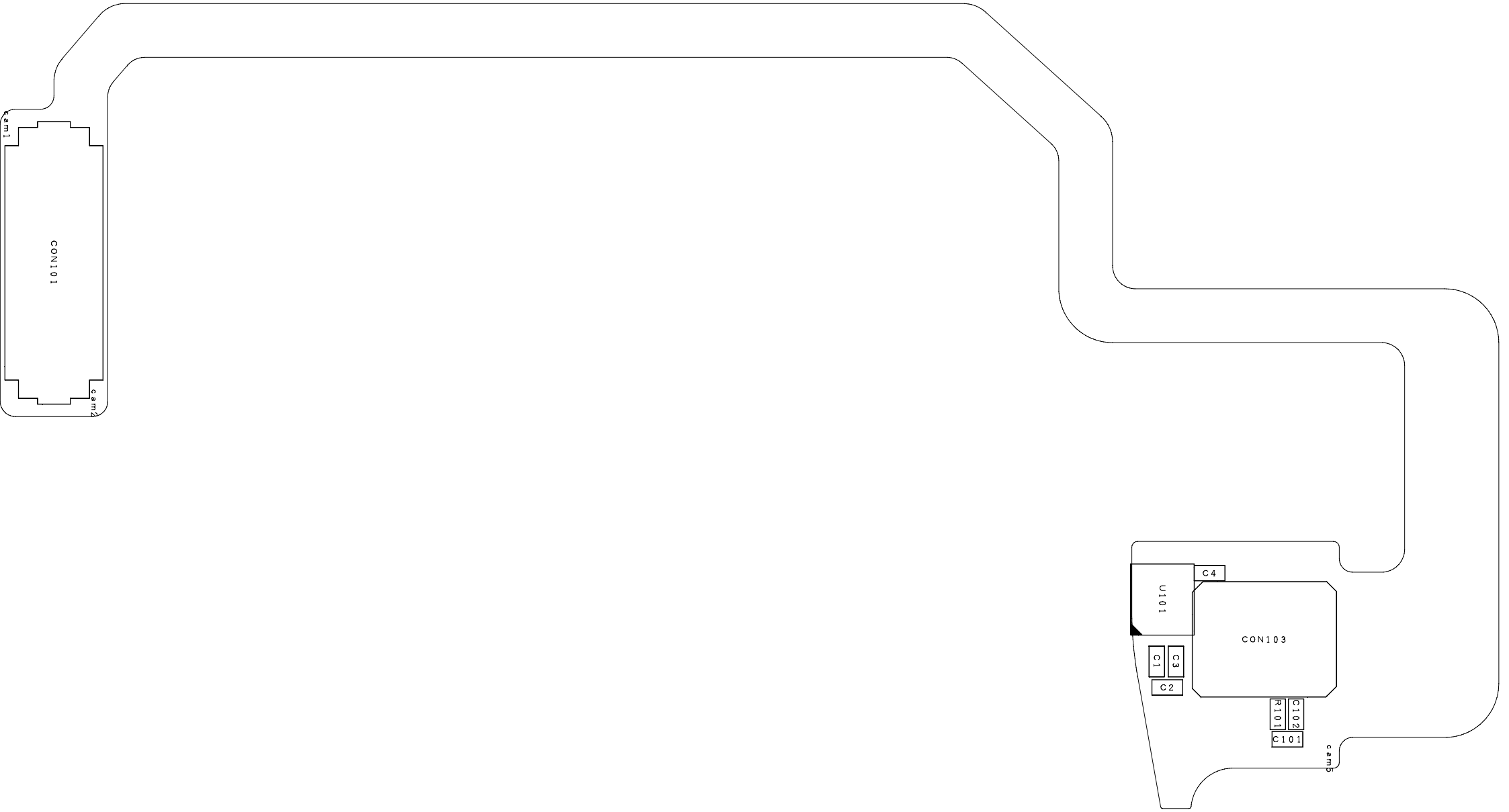
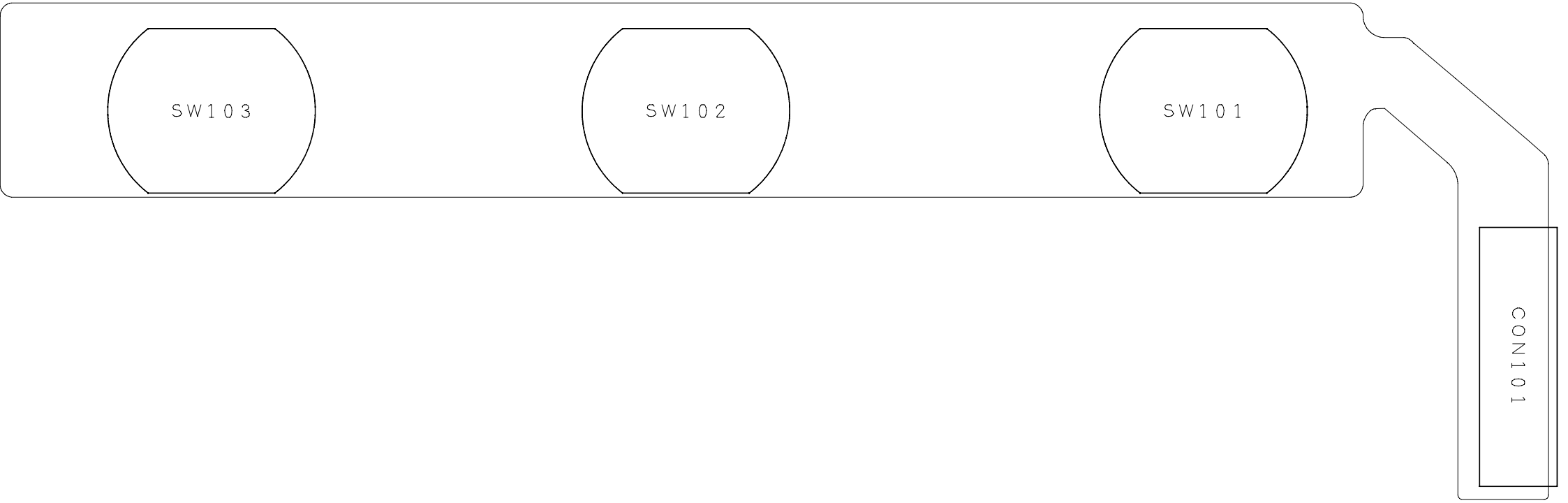
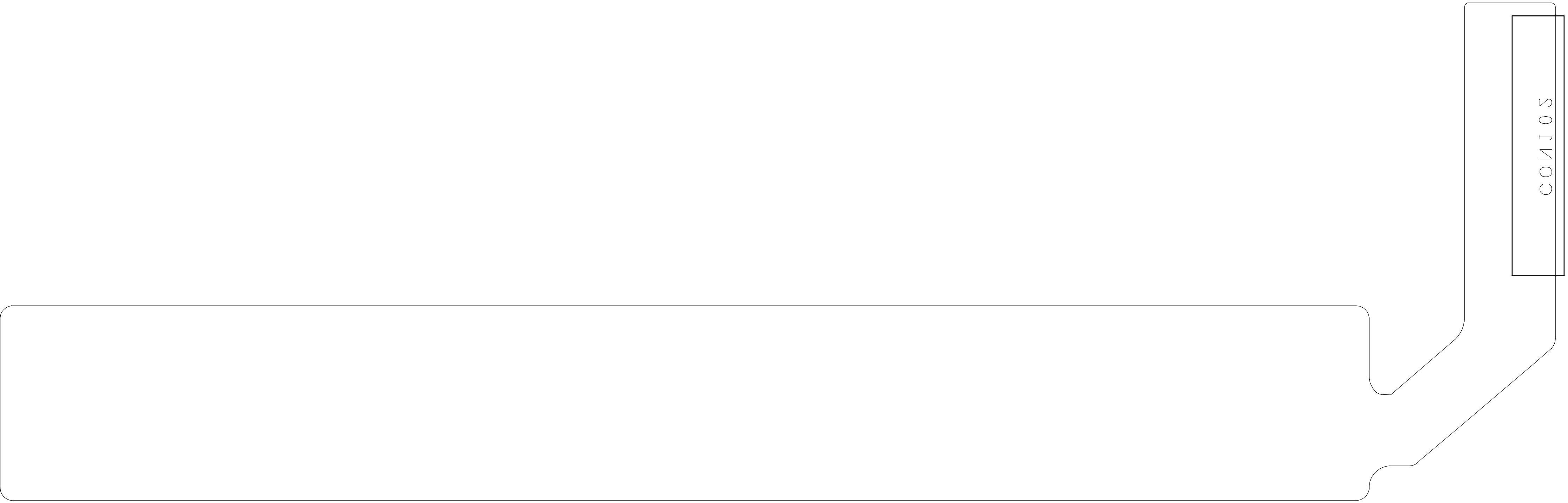
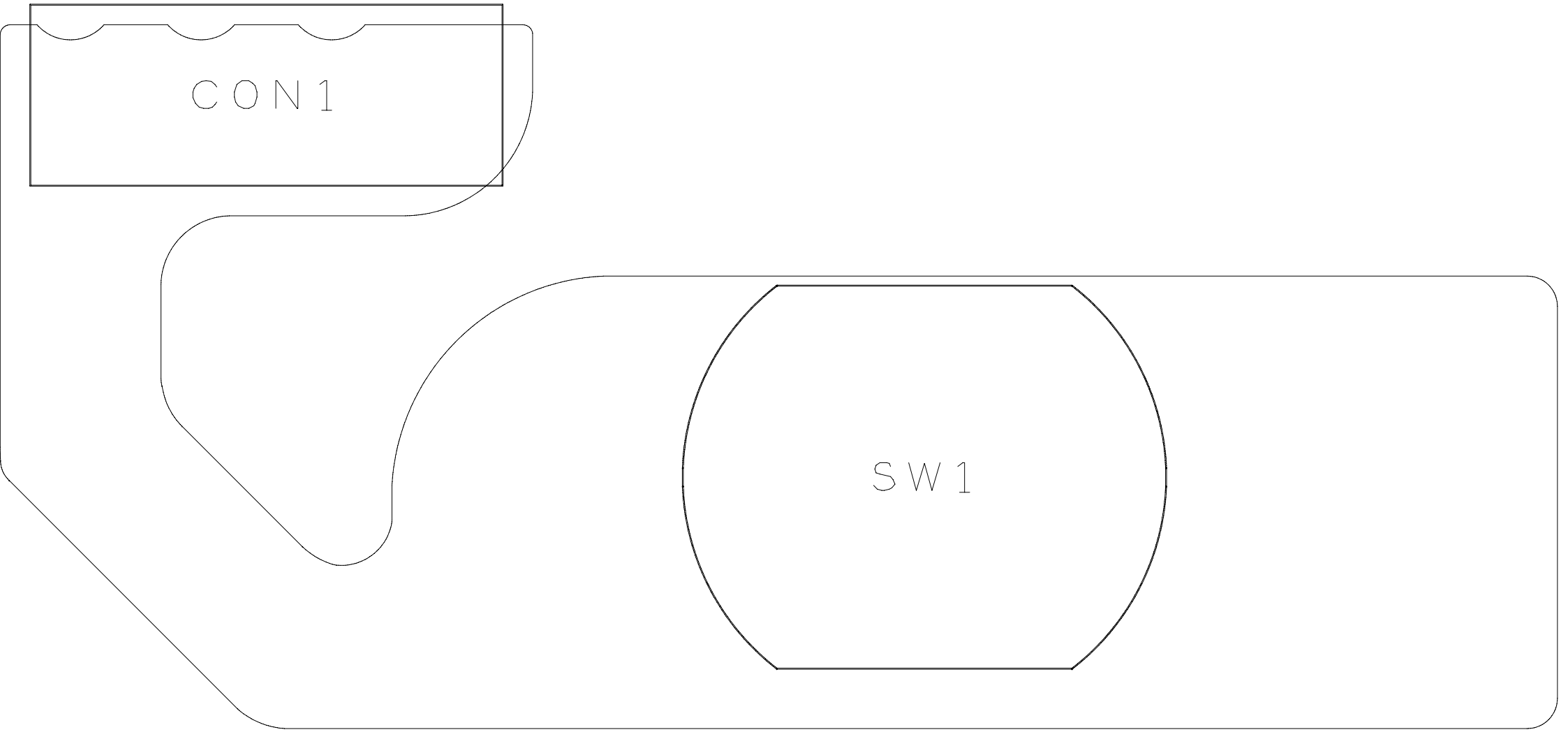
R150

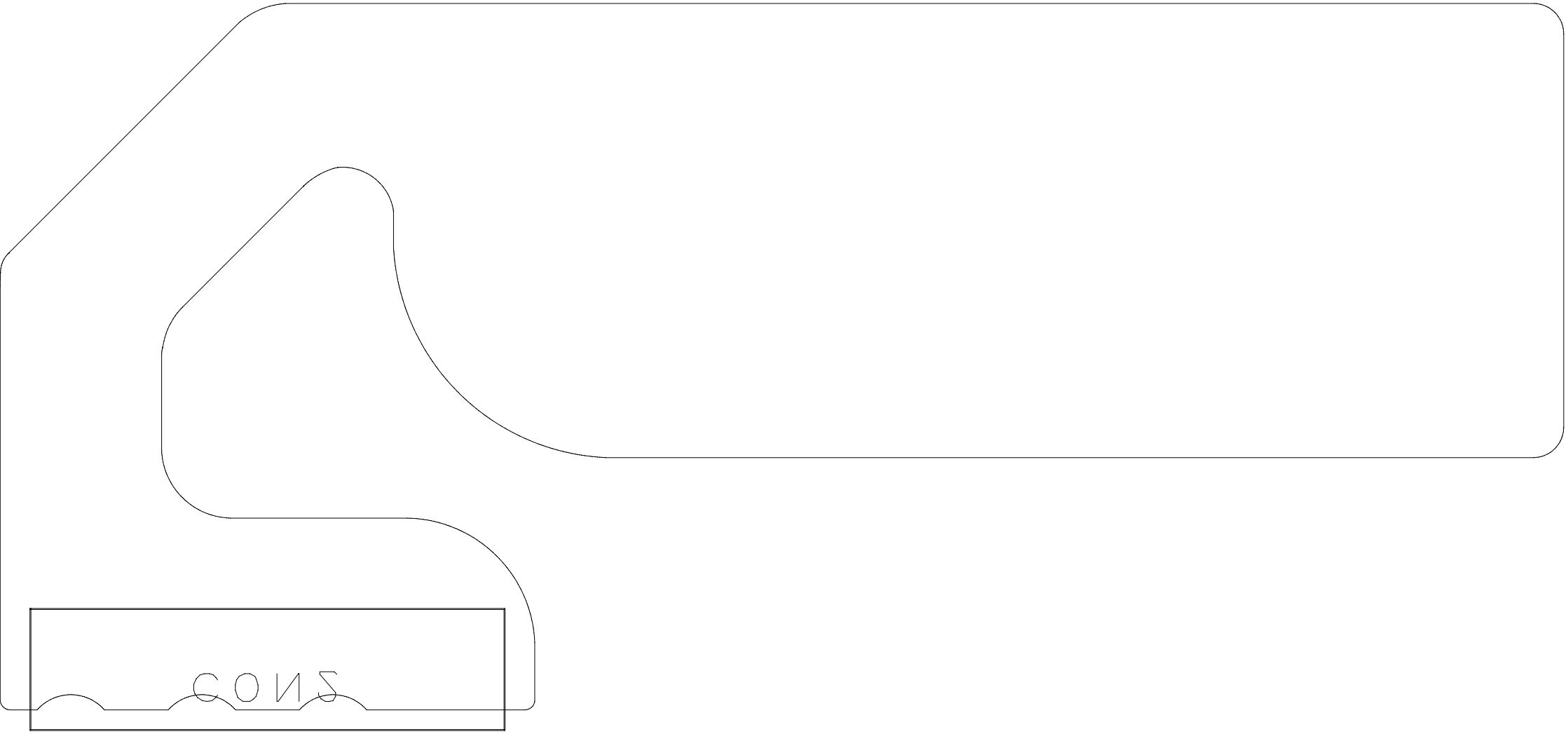

cam1
CON101
cam2
C4
U101
CON103
C1
C3
C2
R101
C102
C101
cam5


CON102


SW103
SW102
SW101
CON101


CON102

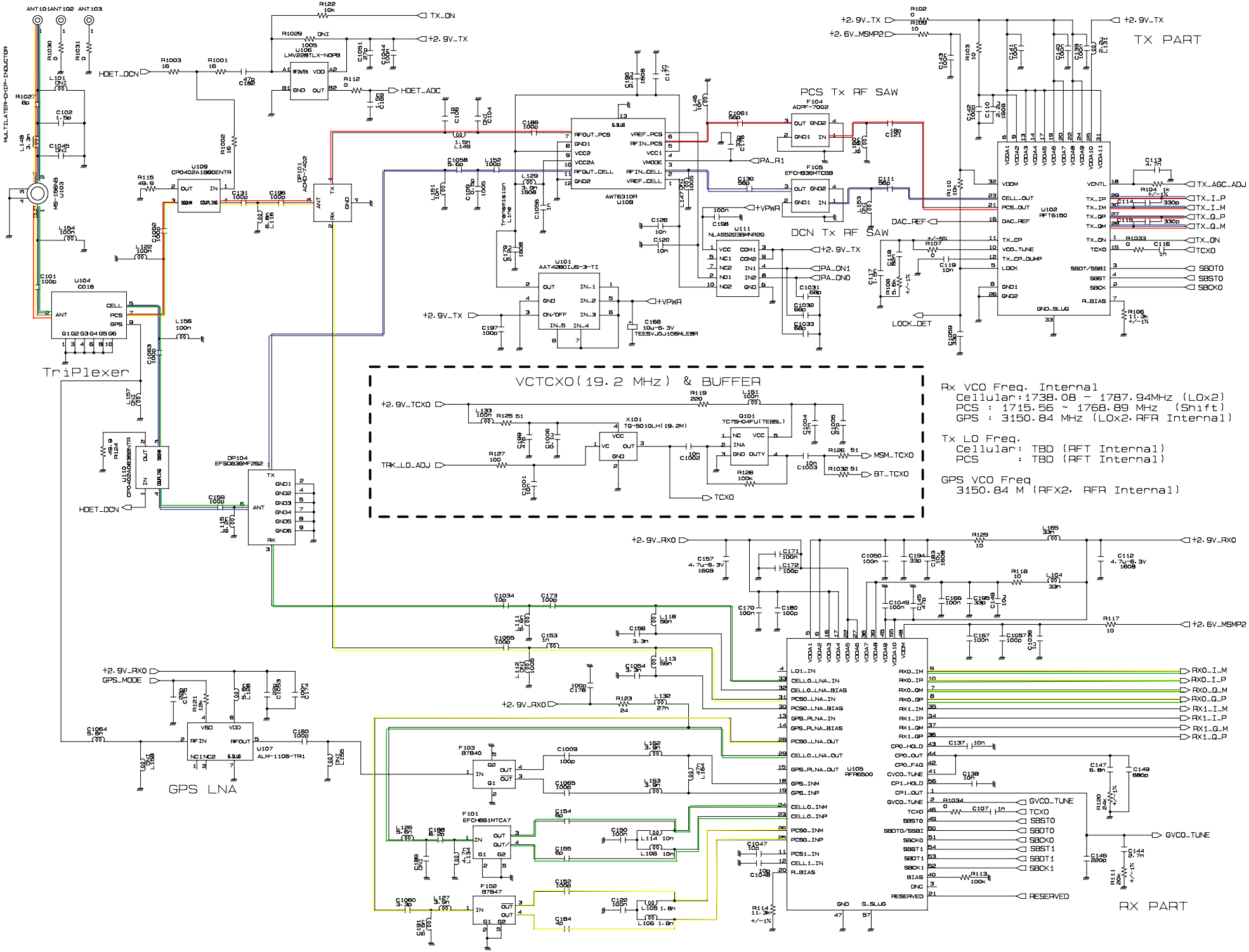

CON1
SW1


COVS

Doc. Name	VX8700 MAIN	Doc. Number	

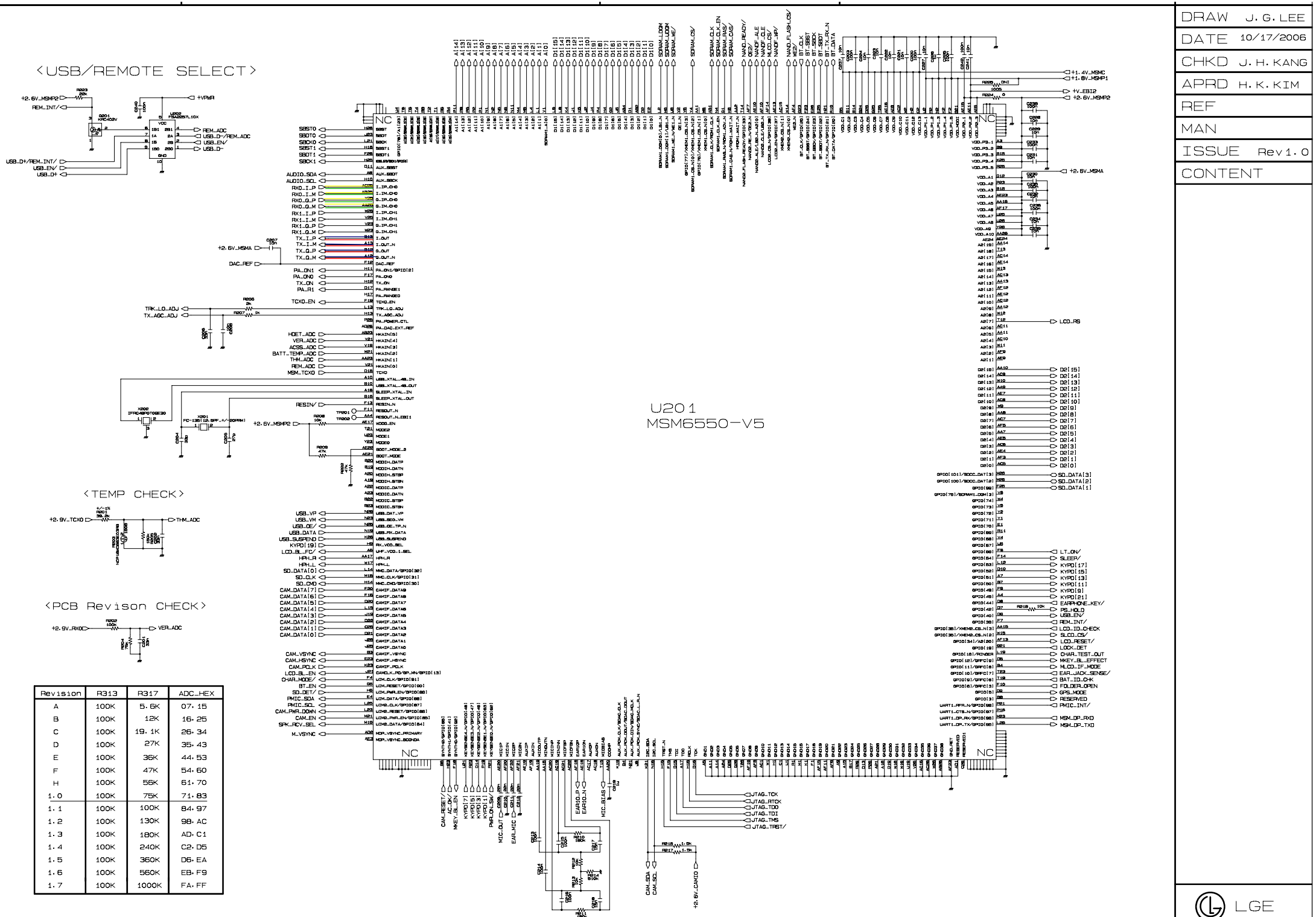
SHEET : 1 OF 4
DRAW :
DATE K.H.LEE
CHKD 10/25/2006
APRD J.H.SIM
REF H.K.KIM
MAN
ISSUE : Rev. 1.0
CONTENT :

DCN Tx
DCN Rx
PCS Tx
PCS Rx



2006.07.25 change list
AFR6185
PIN 12 NC -> GND
R1023 5.6 -> 20
C107 4.7u-6.3V -> DNI
R1012 910 -> DNI
L137 2.7n ->1.8n
C1009 82p ->12p

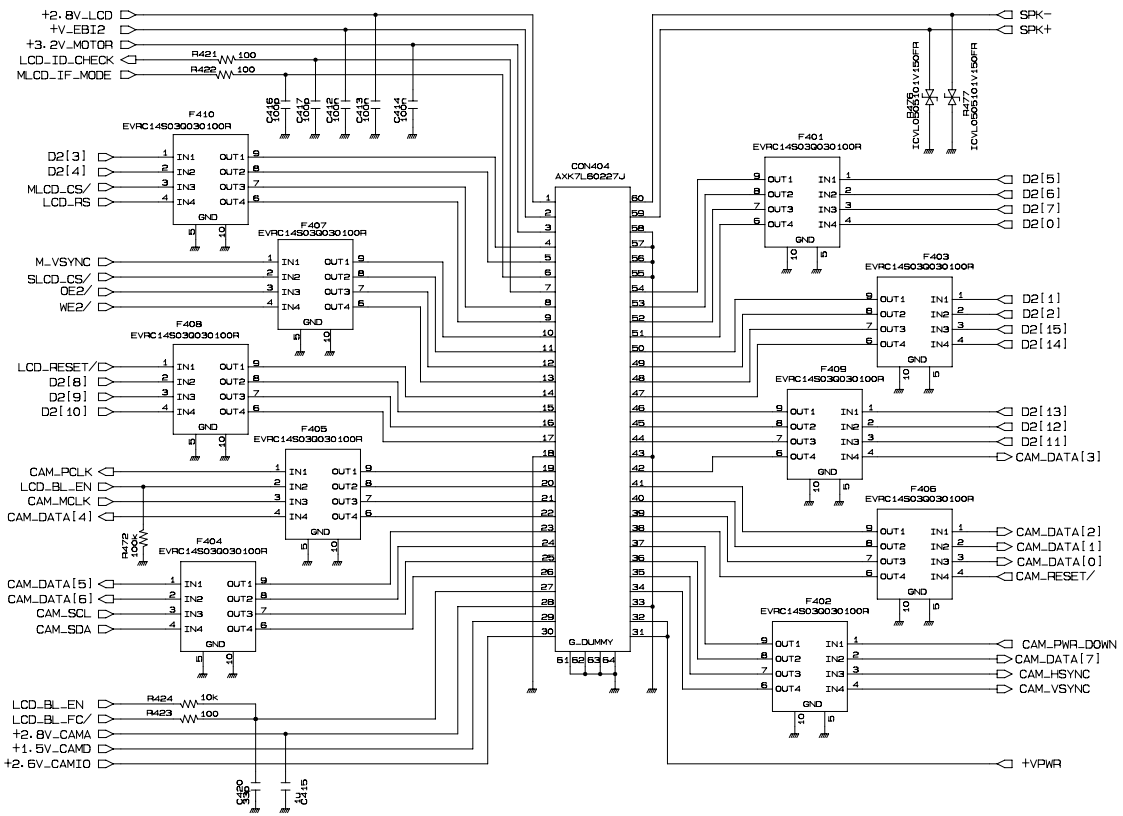
LGE

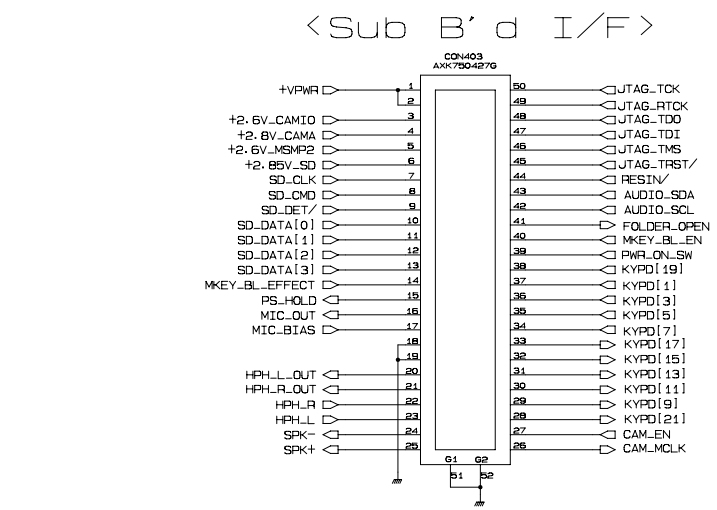


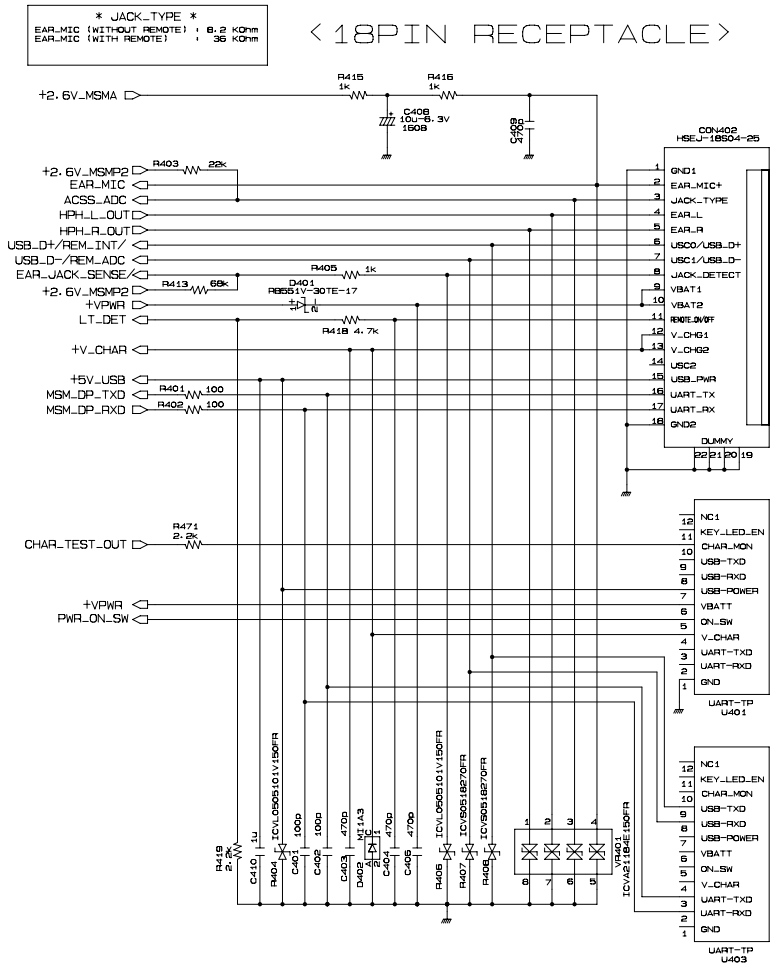
Revision	R313	R317	ADC_HEX
A	100K	5.6K	07. 15
B	100K	12K	16. 25
C	100K	19.1K	26. 34
D	100K	27K	35. 43
E	100K	36K	44. 53
F	100K	47K	54. 60
H	100K	56K	61. 70
1.0	100K	75K	71. 83
1.1	100K	100K	84. 97
1.2	100K	130K	98. AC
1.3	100K	180K	AD. C1
1.4	100K	240K	C2. D5
1.5	100K	360K	D6. EA
1.6	100K	560K	EB. F9
1.7	100K	1000K	FA. FF

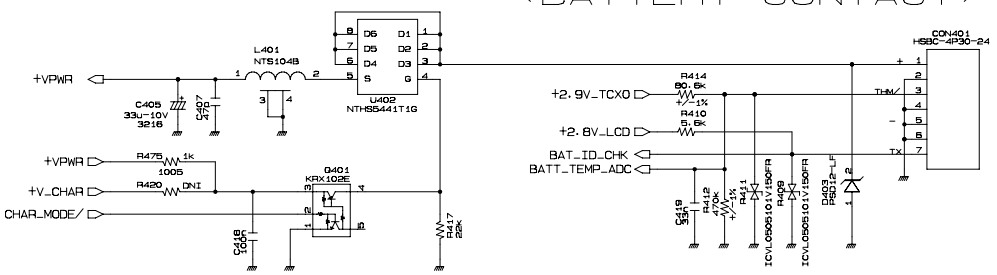
DRAW	J. G. LEE
DATE	10/17/2006
CHKD	J. H. KANG
APRD	H. K. KIM
REF	
MAN	
ISSUE	Rev1.0
CONTENT	

LGE





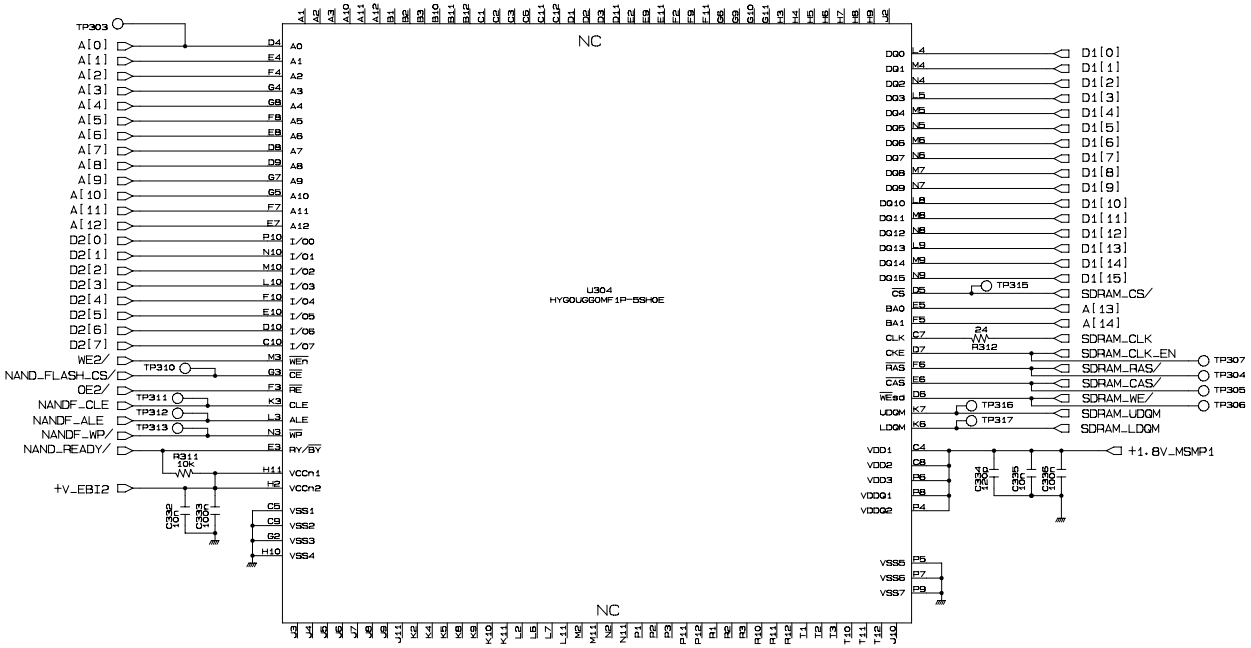




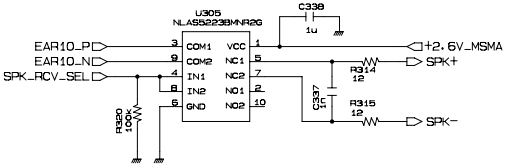
DRAW :J. G. LEE
DATE 10/17/2006
CHKD J. H. KANG
APRD H. K. KIM
REF
MAN
ISSUE : Rev1.0
CONTENT :

LGE

MCP (1Gbit NAND FLASH + 512Mbit SDRAM)



<RCV/SPK>



IN1.2	NO1.2	NC1.2	Mode
0	OFF	ON	RCV
1	ON	OFF	SPK

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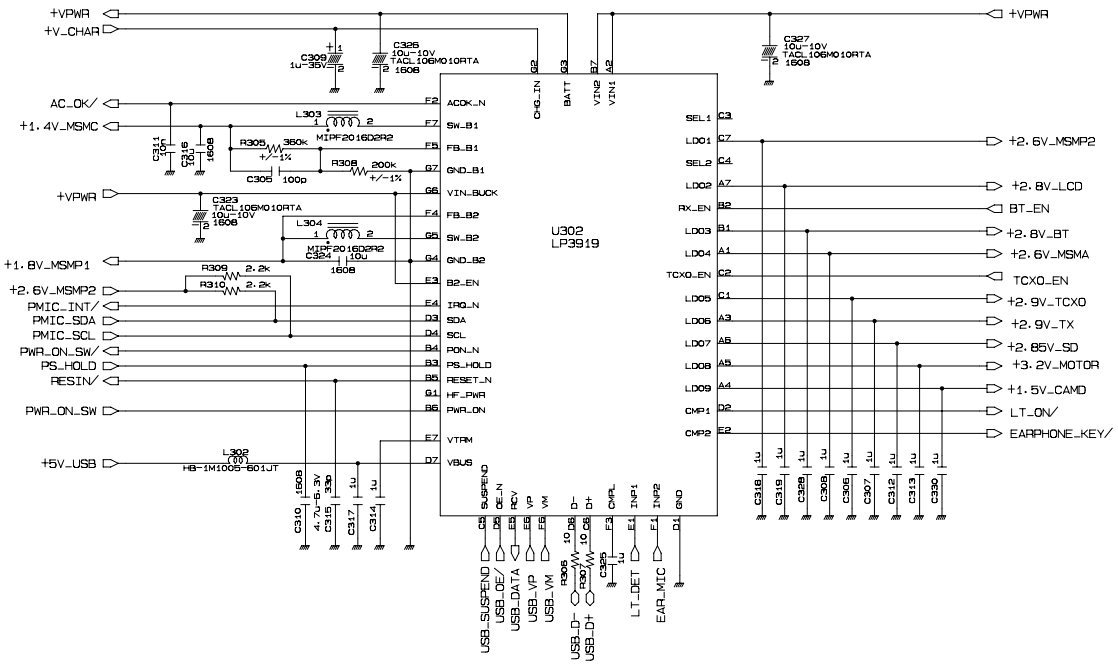

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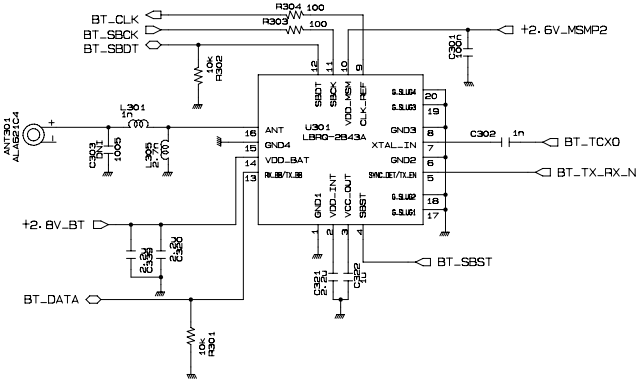

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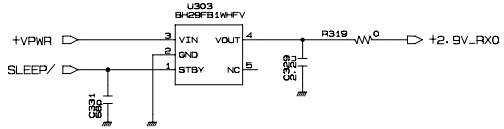

Delete
+2.9V_RX1
R320 0 ohm

DRAW	:J. G. LEE
DATE	10/17/2006
CHKD	J. H. KANG
APRD	H. K. KIM
REF	
MAN	
ISSUE	: Rev1.0
CONTENT	:

LGE

DRAW	: J. G. LEE
DATE	11/21/2006
CHKD	J. H. KANG
APRD	H. K. KIM
REF	
MAN	
ISSUE	: Rev1.3
CONTENT	:

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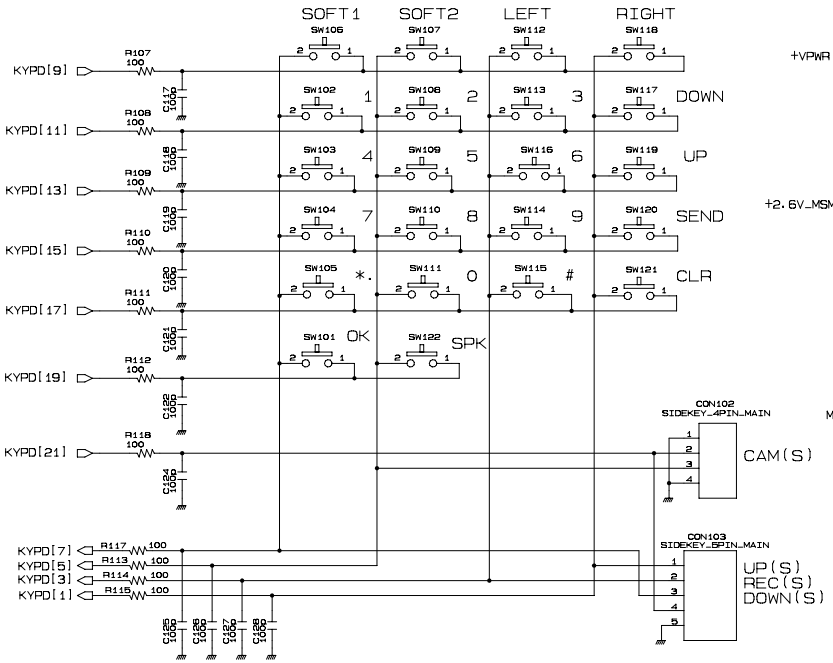

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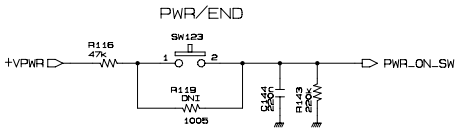
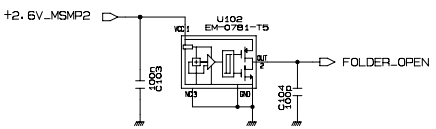
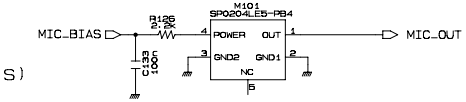


<FOLDER SENSOR>



	KEY7	KEY5	KEY3	KEY1
KEY9	SOFT1	SOFT2	LEFT	RIGHT
KEY11	1	2	3	DOWN
KEY13	4	5	6	UP
KEY15	7	8	9	SEND
KEY17	*	0	#	CLEAR
KEY19	OK	SPK		
KEY21	REC(S)	CAM(S)	DOWN(S)	UP(S)

<MIC>



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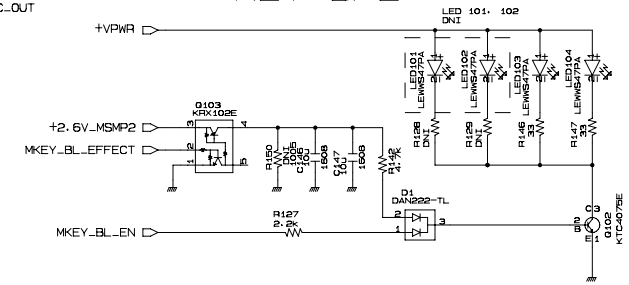

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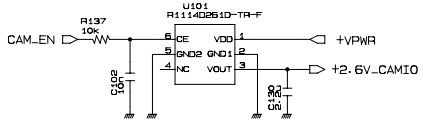
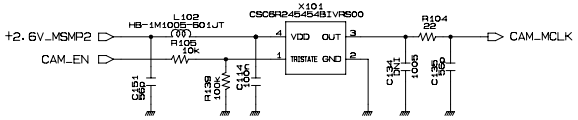


<CAMMERA OSC>



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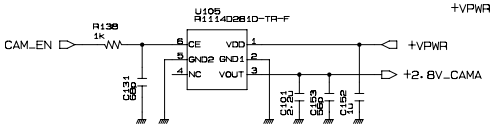

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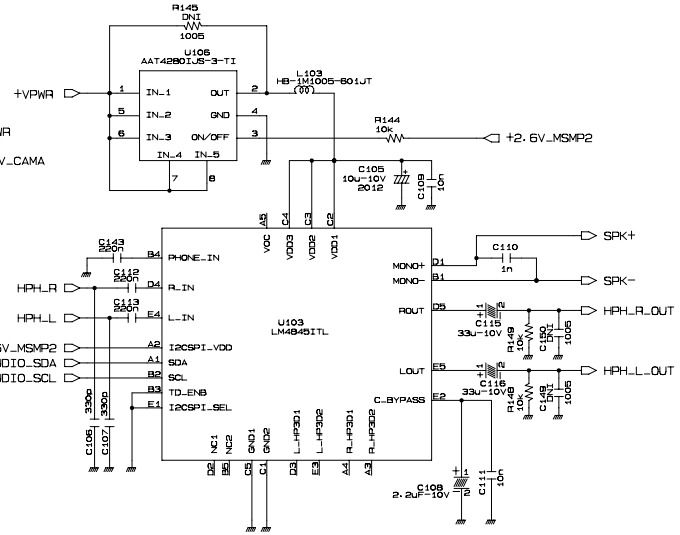

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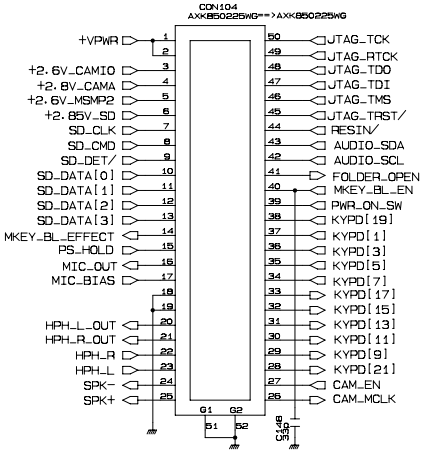

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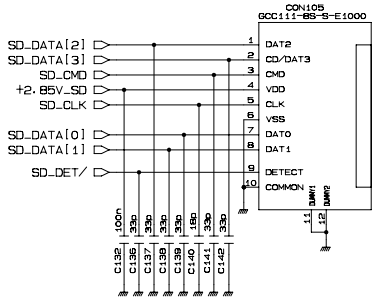

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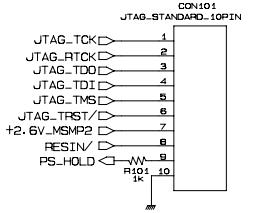

Doc. Name	VX8700 MAIN FPCB	Doc. Number	

SHEET : 1 of 1
DRAW : J. G. LEE
DATE 12/12/2006
CHKD J. H. KANG
APRD H. K. KIM
REF
MAN
ISSUE : Rev1.2
CONTENT :

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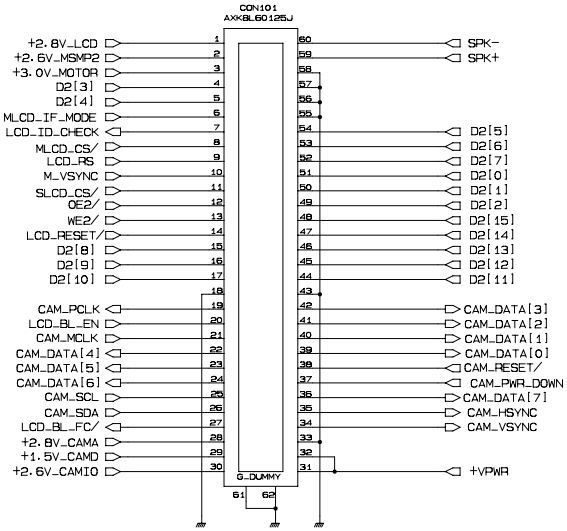

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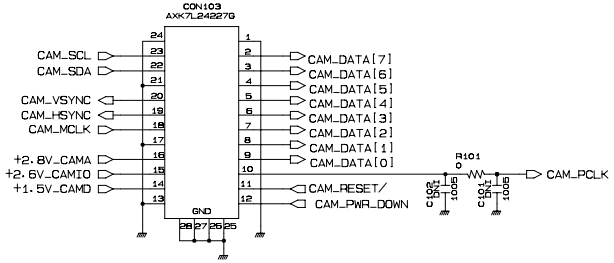

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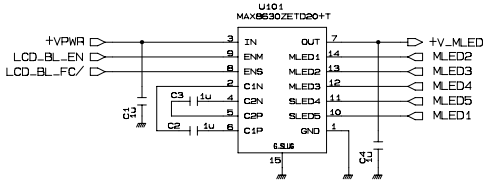

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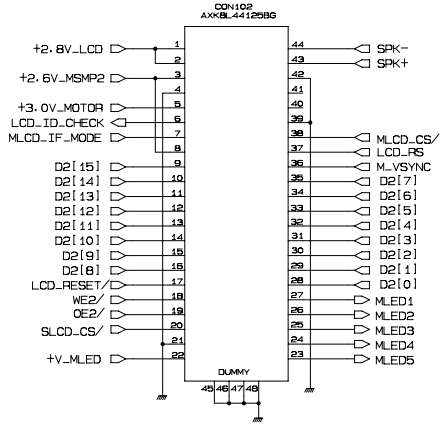

LGE

Doc. Name	VX8700 SDKEY3B	Doc. Number	

SHEET : 1 OF 1
DRAW : J.G.LEE
DATE 11/24/2006
CHKD J.H.KANG
APRD H.K.KIM
REF
MAN
ISSUE : Rev1.0
CONTENT :

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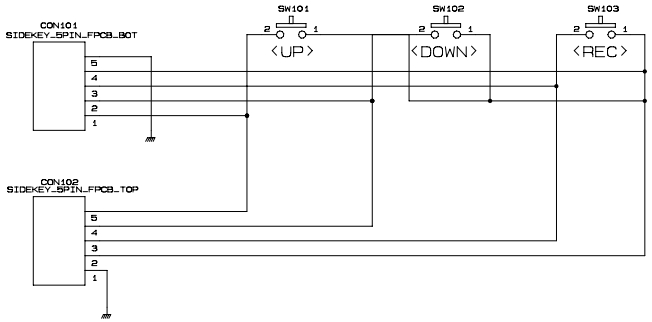

LGE

Doc. Name	VX8700 SDKEY1B	Doc. Number	

SHEET : 1 OF 1
DRAW : J.G.LEE
DATE 11/24/2006
CHKD J.H.KANG
APRD H.K.KIM
REF
MAN
ISSUE : Rev1.0
CONTENT :

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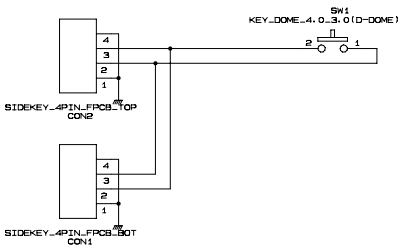

LGE

D-1. Accessories

Description	LG Part No	Q'ty	Remarks
TA	SSAD0020901	1	BASIC
Battery(Standard)	SBPL0085801	1	BASIC
Pouch	MPAC0004208	1	BASIC
MLA (Multi Link Adaptor)	SGDY0010801	1	BASIC
Battery(Extended)	SBPL0087901	1	OPTION
Cigarette Lighter Adapter	SGCC0002912	1	OPTION
Headset	SGEY0005516	1	OPTION
USB Data Cable	SGDY0010602	1	OPTION

D-2. PCB

Description	LG Part No	Q'ty	Remarks
PCB(MAIN:RF,PMIC,MSM)	SPFY0137301	1	
PCB(SUB PCB)	SPJY0034604	1	
FLEXIBLE PCB(SIDE)	SPKY0041501	1	
FLEXIBLE PCB(SIDE)	SPKY0041401	1	
FLEXIBLE PCB(LCD)	SPCY0091803	1	

D-3. Mechanical Parts

Design No	LG Part No	Description	QTY	Remarks
1	MTAB0158201	TAPE, PROTECTION (UPPER)	1	
2	MWAF0034401	WINDOW, LCD(SUB)	1	
3	MWAE0021001	WINDOW,CAMERA	1	
4	MDAD0026101	DECO,CAMERA	1	
5	MTAA0125501	TAPE,DECO(CAMERA)	1	
6	MTAZ0153401	TAPE,WINDOW(CAMERA)	1	
7	MCJJ0045501	COVER,FOLDER(UPPER)	1	
8	MPBT0036501	PAD, CAMERA	1	
9	MPBJ0037101	PAD,MOTOR(UPPER)	1	
10	MPBZ0173301	PAD,CAMERA CONNECTOR	1	
11	MSAZ0045901	SHEET (BTM)	1	
12	MSAZ0047601	SHEET (UP)	1	
13	MPBQ0029801	PAD, LCD(SUB)	1	
14	MGAD0134601	GASKET,SHEILD FORM	2	
15	MPBF0019701	PAD,FPCB	1	
16	MTAF0010201	TAPE, MOTOR	1	
17	MTAZ0171001	TAPE, CAMERA	1	
18	MTAZ0173401	TAPE, FILTER SPK	1	
19	MMAA0003001	MAGNET,SWITCH	1	
20	MIDZ0123201	INSULATOR, RECEIVER	1	
21	MTAZ0182201	TAPE, LCD FPCB	1	
22	MHFD0014601	HINGE,FOLDER	1	
23	MSGY0018201	STOPPER,HINGE	1	
24	MFBB0018601	FILTER,RECEIVER	1	
25	MCJH0036401	COVER,FOLDER(LOWER)	1	
26	MSGY0018201	STOPPER, FOLDER	1	
27	MWAC0072301	WINDOW,LCD	1	
28	GMZZ0017701	SCREW	5	
29	MTAB0165801	TAPE, PROTECTION (WINDOW)	1	
30	MCCH0101901	CAP,SCREW	2	
31	MTAB0158001	TAPE, PROTECTION (VOLUME)	1	
32	MBJN0010201	BUTTON,VOLUME	1	
33	MCCC0040101	CAP, EARPHONE JACK	1	
34	MCJK0064701	COVER,FRONT	1	
35	MPFD0003201	PLATE, GROUND	1	
36	MBJP0005801	BUTTON,SHUTTER	1	
37	MTAB0158101	TAPE, PROTECTION (SHUTTER)	1	
38	MFBD0018601	FILTER,MIKE	1	
39	MBIB0005202	BUSHING, HINGE	1	
40	MBHY0020301	BUMPER	2	
41	MKAZ0033301	KEYPAD	1	
42	ADCA0058201	DOME ASSY,METAL	1	
43	MIDZ0117201	INSULATOR(REAR_L)	1	
44	MIDZ0120901	INSULATOR(REAR_R)	2	
45	MCJN0059001	COVER,REAR	1	
46	MSDC0015501	SPRING,LOCKER	1	
47	MLEA0035201	LOCKER,BATTERY	1	
48	MPBG0060301	PAD, LCD	2	
49	MPFD0003601	PLATE, GROUND(BATTERY)	1	
50	MLAN0000603	LABEL,QUALCOMM	1	
51	MLAZ0034702	LABEL, OTA	1	
52	MSAZ0047701	SHEET, REAR	1	
53	GMEY0014301	SCREW	8	

54	MLAB0000601	LABEL. A/S	1	
55	MCJA0036701	COVER,BATTERY	1	
56	MIDZ0129101	INSULATOR (B)	1	
57	MIDZ0129001	INSULATOR (A)	1	
58	MFEA0013301	FRAME, SHIELD	1	
59	MTAC0045101	TAPE, FRAME SHIELD	1	
60	MFCA0008201	FINGER, GROUND(4PIN)	2	

D-4. MAIN PCB BOT

Ref No	LG Part No	Value	Description	QTY
C201	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C203	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C204	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C205	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C207	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C209	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C210	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C211	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C212	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C213	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C214	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C215	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C216	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C217	ECCH0000157	15 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C218	ECCH0000157	15 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C219	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C220	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C221	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C222	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C223	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C224	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C225	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C226	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C227	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C228	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C229	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C230	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C231	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C232	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C233	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C234	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C235	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C236	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C237	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C238	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C239	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C241	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C242	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C309	ECTZ0000407	1 uF,35V ,M ,STD ,3216 ,R/TP	CAP,TANTAL,CHIP,MA	1
C317	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C332	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C333	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C334	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C335	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C336	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C403	ECZH0001121	470 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C405	ECTZ0004206	33 uF,10V ,M ,L_ESR ,3216 ,R/TP	CAP,TANTAL,CHIP,MA	1
C406	ECZH0001121	470 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C408	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP	CAP,TANTAL,CHIP	1
C409	ECZH0001121	470 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C410	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C412	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C413	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C414	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C415	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C419	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C420	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1

CON401	ENZY0018201	4 PIN,3.0 mm,ETC , ,Hard Pack Vertical	CONNECTOR,ETC	1
CON402	ENRY0006001	18 PIN,0.4 mm,ETC , ,H=2.5	CONNECTOR,I/O	1
CON403	ENBY0040901	50 PIN, mm,ETC , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,R/TP ,3.5 ,	CONNECTOR,BOARD T	1
CON404	ENBY0020402	60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 0.9 / SOCKET FOR KEYPAD TC	CONNECTOR,BOARD T	1
D402	EDSY0010701	3.6*1.6*1.1 ,30 V,12 A,R/TP ,Schottky Barrier Diode	DIODE,SWITCHING	1
D403	EDTY0008602	SOD-323 ,13.3 V,400 W,R/TP ,PB-FREE	DIODE,TVS	1
F404	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F405	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F407	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F408	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F410	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
L302	SFBH0000903	600 ohm,1005 ,	FILTER,BEAD,CHIP	1
R1030	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R1031	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R202	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R204	ERHZ0000315	75 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R208	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R209	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R210	ERHZ0000231	180 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R211	ERHZ0000231	180 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R212	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R213	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R214	ERHZ0000296	510 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R216	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R217	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R218	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R222	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R224	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R306	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R307	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R311	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R312	ERHZ0000325	24 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R403	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R404	SEVY0003601	5.6 V, ,SMD ,100pF, 1005	VARISTOR	1
R405	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R406	SEVY0003601	5.6 V, ,SMD ,100pF, 1005	VARISTOR	1
R407	SEVY0005403	18 V,30% ,SMD ,27pF,1005	VARISTOR	1
R408	SEVY0005403	18 V,30% ,SMD ,27pF,1005	VARISTOR	1
R409	SEVY0003601	5.6 V, ,SMD ,100pF, 1005	VARISTOR	1
R410	ERHZ0000499	5600 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R411	SEVY0003601	5.6 V, ,SMD ,100pF, 1005	VARISTOR	1
R412	ERHZ0000288	470 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R413	ERHZ0000312	68 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R414	ERHZ0000318	80.6 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R415	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R416	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R423	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R424	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R471	ERHZ0000243	2200 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
U201	EUSY0216903	CSP ,409 PIN,R/TP ,CDMA EVDO BASE BAND	IC	1
U304	EUSY0259903	Memory, 1GND(70nm)+512SD(90nm), 2.8V ,149 PIN,R/TP ,10X14X1.4	IC	1
U402	EQFP0006301	chipFET ,1.3 W,-20 V,3.9 A,R/TP ,8 PIN (Pb-free)	TR,FET,P-CHANNEL	1
VR401	SEVY0006203	18 V, ,SMD ,PB-FREE(4 CH)	VARISTOR	1
X201	EXXY0018701	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,	X-TAL	1

D-5. MAIN PCB TOP

Ref No	LG Part No	Value	Description	QTY
ANT301	SNMF0014501	2.5 ,-1.5 dB,B/T Chip_6x2	ANTENNA,MOBILE,FIXED	1
C1001	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C1002	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C1003	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C1004	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1005	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1006	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1009	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C101	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C102	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1031	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1032	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1033	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1034	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C1036	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1044	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1047	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C1048	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C1049	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1050	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1051	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1053	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C1054	ECCH0000149	3.3 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C1055	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1056	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C1057	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1058	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1059	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C106	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1060	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C1061	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1062	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1063	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C1064	ELCH0004718	5.6 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
C1065	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C107	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C109	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C110	ECZH0001511	2.2 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP	CAP,CHIP,MAKER	1
C111	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C112	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C113	ECZH0001106	4700 pF,25V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C114	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C115	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C116	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C117	ECCH0000145	1.5 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C118	ECZH0003004	82 nF,10V ,K ,X5R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C119	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C120	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C121	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C122	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C128	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C130	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C131	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C137	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C138	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C139	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C140	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C141	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C142	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C143	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C144	ECZH0001117	2700 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C145	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C146	ECCH0000133	220 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C147	ECZH0001108	6800 pF,25V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C148	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C149	ECZH0001122	680 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C150	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C152	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C153	ELCH0004703	1 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
C154	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C155	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C157	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C158	ECCH0000149	3.3 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C159	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C160	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C166	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C167	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C168	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP	CAP,TANTAL,CHIP,MAKER	1
C169	ECCH0000145	1.5 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1

C170	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C171	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C172	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C173	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C174	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C175	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C176	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C177	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C178	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C179	ECZH0001511	2.2 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP	CAP,CHIP,MAKER	1
C180	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C182	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C183	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C184	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C186	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C188	ECZH0000853	8.2 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C190	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C191	ELCH0004718	5.6 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
C194	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C195	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C196	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C197	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C198	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C199	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C202	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C206	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C208	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C240	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C301	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C302	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C305	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C306	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C307	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C308	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C310	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C311	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C312	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C313	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C314	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C315	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C316	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C318	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C319	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C320	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C321	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C322	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C323	ECTH0004301	10 uF,10V ,M ,STD ,1608 ,R/TP	CAP,TANTAL,CHIP	1
C324	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C325	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C326	ECTH0004301	10 uF,10V ,M ,STD ,1608 ,R/TP	CAP,TANTAL,CHIP	1
C327	ECTH0004301	10 uF,10V ,M ,STD ,1608 ,R/TP	CAP,TANTAL,CHIP	1
C328	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C329	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C330	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C331	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C337	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C338	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C339	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C401	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C402	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C404	ECZH0001121	470 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CHIP,MAKER	1
C407	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C416	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C417	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C418	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
D401	EDSY0010001	UMD2 ,30 V,2 A,R/TP ,SCHOTTKY BARRIER DIODE	DIODE,SWITCHING	1
DP101	SDPY0002902	1880 MHz,1960 MHz,3.8 dB,3.5 dB,43 dB,52 dB,3.8*3.8*1.4 ,SMD ,FBAR	DUPLEXER,PCS	1
DP104	SDDY0004302	836.5 MHz,881.5 MHz,2.3 dB,3.5 dB,57 dB,45 dB,3.0*2.5*0.8 ,SMD ,SAW Duplexe	DUPLEXER,DCN	1
F101	SFSY0023401	881.5 MHz,2.0*1.4*0.8 ,SMD ,	FILTER,SAW	1
F102	SFSY0024901	1960 MHz,2.0*1.4*0.68 ,SMD ,5pin, Unbal-Bal, 50/100, B7834 Low Loss ver.	FILTER,SAW	1
F103	SFSY0018301	1575.42 MHz,2.0*1.4*0.78 ,SMD ,	FILTER,SAW	1
F104	SFSY0020301	1880 MHz,2.0*1.6*1.0 ,SMD ,	FILTER,SAW	1
F105	SFSY0023402	836.5 MHz,2.0*1.4*0.8 ,SMD ,DCN Tx Filter	FILTER,SAW	1
F401	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F402	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F403	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F406	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
F409	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	FILTER,EMI/POWER	1
L104	ELCH0004730	33 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L105	ELCH0004723	1.8 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L106	ELCH0004723	1.8 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L108	ELCH0004706	10 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1

L111	ELCH0004718	5.6 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L113	ELCH0004729	56 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L114	ELCH0004706	10 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L115	ELCH0004705	8.2 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L116	ELCH0004713	6.8 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L118	ELCH0004729	56 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L122	ELCH0004727	100 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L126	ELCH0004718	5.6 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L127	ELCH0004712	3.9 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L128	ELCH0004718	5.6 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L129	ELCH0004909	3.9 nH,S ,1608 ,R/TP ,	INDUCTOR,CHIP	1
L131	ELCH0010401	2.2 uH,M ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L132	ELCH0004715	27 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L133	ELCH0004727	100 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L134	ELCH0004704	4.7 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L146	ELCH0004706	10 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L148	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L149	ELCH0004726	1.5 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L151	ELCH0004706	10 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L152	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
L154	ELCH0004727	100 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L156	ELCH0004727	100 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L160	ELCH0004713	6.8 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L161	ELCH0004727	100 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L162	ELCH0004712	3.9 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L163	ELCH0004712	3.9 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L164	ELCH0004722	47 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L165	ELCH0004730	33 nH,J ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L301	ELCH0004703	1 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L303	ELCP0010001	2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI ,; , ,20% , , , , , ,NON SHIELD ,2.5X2X1MM ,	INDUCTOR,SMD,POWER	1
L304	ELCP0010001	2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI ,; , ,20% , , , , , ,NON SHIELD ,2.5X2X1MM ,	INDUCTOR,SMD,POWER	1
L305	ELCH0004708	2.7 nH,S ,1005 ,R/TP ,	INDUCTOR,CHIP	1
L401	SFEY0006001	SMD ,	FILTER,EMI/POWER	1
Q101	EUSY0073401	SSOP5-P-0.65A ,5 PIN,R/TP ,INVERTER, Pb Free	IC	1
Q201	EQBN0012402	VSM ,100 mW,R/TP ,EPITAXIAL PLANAR NPN TRANSISTOR	TR,BJT,NPN	1
Q401	EQBA0000602	TESV ,200 mW,R/TP ,EPITAXIAL PLANAR NPN/PNP TRANSISTOR	TR,BJT,ARRAY	1
R1001	ERHZ0000424	16 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R1002	ERHZ0000424	16 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R1003	ERHZ0000424	16 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R102	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R1027	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
R103	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R1032	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R1033	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R1034	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R104	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP	1
R106	ERHZ0003203	11.3 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R107	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R108	ERHZ0000299	5600 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R109	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R110	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R111	ERHZ0000237	20 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R112	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R113	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R114	ERHZ0003203	11.3 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R115	ERHZ0000291	49.9 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R117	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R118	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R119	ERHZ0000242	220 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R120	ERHZ0000328	24000 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R121	ERHZ0002401	12 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R122	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R123	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R124	ERHZ0000291	49.9 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R125	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R126	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R127	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R128	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R129	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R201	ERHZ0000281	39.2 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R203	SETY0001401	NTC ,68 Kohm,SMD ,	THERMISTOR	1
R205	ERHZ0000222	150 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R206	ERHZ0000236	2000 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R207	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP	1
R223	ERHZ0000444	22 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R301	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R302	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R303	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R304	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R305	ERHZ0000275	360 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R308	ERHZ0000238	200 Kohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R309	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1

R310	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R314	ERHZ0000410	12 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R315	ERHZ0000410	12 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R319	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R320	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R401	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R402	ERHZ0000326	330 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP	1
R417	ERHZ0000444	22 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R418	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R419	ERHZ0000243	2200 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R421	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R422	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R472	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R475	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R476	SEVY0003601	5.6 V, ,SMD ,100pF, 1005	VARISTOR	1
R477	SEVY0003601	5.6 V, ,SMD ,100pF, 1005	VARISTOR	1
SPFY00	SPFY0137301	FR-4 ,.8 mm,STAGGERED-10 ,MAIN ,; , , , , , , , , ,	PCB,MAIN	1
U101	EQFP0003501	SC70JW-8 ,714 mW,6 V,2.3 A,R/TP ,Slew Rate Controlled Load Switch	TR,FET,P-CHANNEL	1
U102	EUSY0257801	QFN ,32 PIN,R/TP ,No-lead, RF transmitter IC	IC	1
U103	ENWY0000107	RF CONN. ,ETC ,0.15 dB,HIROSE	CONN,RF SWITCH	1
U104	SFAD0000502	859 MHz,70 MHz,0.8 dB,20 dB,20 dB,42 dB,15 dB,1575.42 MHz,2 MHz,1.8 dB,42	FILTER,SEPERATOR,SP3T	1
U105	EUSY0257701	QFN ,56 PIN,R/TP ,No-lead, Dual RF Receiver IC	IC	1
U106	EUSY0186102	4-bump Micro SMD ,4 PIN,R/TP ,RF Power Detector for CDMA and WCDMA , -15 to +	IC	1
U107	EUSY0265501	2.0*2.0*1.1 ,6 PIN,R/TP ,LNA with Shutdown function	IC	1
U108	SMPY0012801	28 dBm, %, A, dBc, dB,3.0x5.0x1.0 ,SMD ,	PAM	1
U109	SCDY0003402	-20 dB,-0.25 dB,-35 dB,1.0*0.58*0.35 ,SMD ,1850M ~ 1910M, 4pin, Pb Free	COUPLER,RF DIRECTIONAL	1
U110	SCDY0003401	-22 dB,-0.2 dB,-37 dB,1.0*0.58*0.35 ,SMD ,824M ~ 849M, 4pin, Pb Free	COUPLER,RF DIRECTIONAL	1
U111	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free	IC	1
U202	EUSY0260001	Micropak ,10 PIN,R/TP ,Dual Analog switch, Pb Free	IC	1
U301	SMZY0012601	4.5x3.2x1.2 Bluetooth RF Module	MODULE,ETC	1
U302	EUSY0310101	Microfil ,49 PIN,R/TP ,3.5x3.5, PMIC	IC	1
U303	EUSY0223008	HVSOF5 ,5 PIN,R/TP ,150mA,2.9V,LDO	IC	1
U305	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free	IC	1
X101	EXSK0007802	19.2 MHz,1.5 PPM,10 pF,SMD ,3.3*2.5*1.0 , ,; , ,2PPM ,2.8V , , , ,SMD ,P/TP	VCTCXO	1

D-6. KEY PCB TOP

Ref No	LG Part No	Value	Description	QTY
LED103	EDLH0013403	WHITE ,ETC ,R/TP ,3.8*1.2*0.6T ,;	DIODE,LED,CHIP	1
LED104	EDLH0013403	WHITE ,ETC ,R/TP ,3.8*1.2*0.6T ,;	DIODE,LED,CHIP	1

D-7. KEY PCB BOT

Ref No	LG Part No	Value	Description	QTY
C101	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C102	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C103	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C104	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C105	ECTZ0001316	10 uF,10V ,M ,STD ,2012 ,R/TP	CAP,TANTAL,CHIP,MAKER	1
C106	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C107	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C108	ECTH0002701	2.2 uF,10V ,M ,STD ,1608 ,R/TP	CAP,TANTAL,CHIP	1
C109	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C110	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C111	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP	CAP,CERAMIC,CHIP	1
C112	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C113	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C114	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C115	ECTZ0000406	33 uF,10V ,M ,STD ,3216 ,R/TP	CAP,TANTAL,CHIP,MAKER	1
C116	ECTZ0000406	33 uF,10V ,M ,STD ,3216 ,R/TP	CAP,TANTAL,CHIP,MAKER	1
C117	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C118	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C119	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C120	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C121	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C122	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C124	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C125	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C126	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C127	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C128	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C130	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C131	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C132	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C133	ECCH0002001	100000 pF,6.3V ,K ,B ,HD ,1005 ,R/TP	CAP,CERAMIC,CHIP	1
C135	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C136	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C137	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C138	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C139	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C140	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP	CAP,CERAMIC,CHIP	1
C141	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C142	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C143	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C144	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C146	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C147	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP	CAP,CERAMIC,CHIP	1
C148	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C151	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C152	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
C153	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	CAP,CHIP,MAKER	1
CON104	ENBY0040801	50 PIN, mm,ETC , , ,; , ,0.40MM ,STRAIGI	CONNECTOR,BOARD TO BOARD	1
CON105	ENSY0018801	8 PIN,ETC , ,2.54 mm,Micro-SD Socket, I	CONN,SOCKET	1
D1	EDSY0000401	EMD3 ,80 V,.3 A,R/TP ,	DIODE,SWITCHING	1
L102	SFBH0000903	600 ohm,1005 ,	FILTER,BEAD,CHIP	1
L103	SFBH0000903	600 ohm,1005 ,	FILTER,BEAD,CHIP	1
M101	SUMY0010602	UNIT ,-42 dB,6.15*3.76*1.25 ,Silicon mi	MICROPHONE	1
Q102	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3	TR,BJT,NPN	1
Q103	EQBA0000602	TESV ,200 mW,R/TP ,EPITAXIAL PLANAI	TR,BJT,ARRAY	1
R101	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R104	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1

R105	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R107	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R108	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R109	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R110	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R111	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R112	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R113	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R114	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R115	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R116	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R117	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R118	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP	1
R126	ERHZ0000243	2200 ohm,1/16W ,F ,1005 ,R/TP	RES,CHIP,MAKER	1
R127	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R137	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R138	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R139	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R142	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R143	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R144	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R146	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R147	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R148	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
R149	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP	RES,CHIP,MAKER	1
U101	EUSY0294901	SON1612-6 ,6 PIN,R/TP ,2.6V 150mA L	IC	1
U102	EUSY0313401	QFN ,4 PIN,R/TP ,1.8X1.2X0.5 size wide	IC	1
U103	EUSY0243201	Micro SMD ,25 PIN,R/TP ,Output Capacit	IC	1
U105	EUSY0232812	SON1612-6 ,6 PIN,R/TP ,2.8V, 150mA L	IC	1
U106	EQFP0003501	SC70JW-8 ,714 mW,6 V,2.3 A,R/TP ,Sle	TR,FET,P-CHANNEL	1
X101	EXSY0021306	24.5454 MHz,50 PPM,15 pF,SMD ,3.2*2	OSCILLATOR	1