Features of AX300

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 = 0.251W
PCS = 0.240W

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	AWT6321R	4.2V	600mA	0.251W
PCS	AWT6321R	4.2V	600mA	0.240W

6. Functions of Major Semi-Conductors

Classification	Function
QSC6055	Terminal operation control and digital signal processing Converts RF signal to baseband signal Converts baseband signal to RF signal
MCP (K5E1H12ACM-D075)	NAND (1Gbit) + DDR (512Mbit) Storing of terminal operation program

7. Frequency Stability

- CELLULAR : ±0.5PPM
- PCS : ±0.1PPM

CDMA Mobile Subscriber Unit
A X 300

SERVICE MANUAL

TRIPLE BAND, TRIPLE MODE
[PCS/GPS/CELLULAR]
CDMA MOBILE PHONE

Table of Contents

General Introduction

The AX300 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 LG300 support GPS Mode, we usually call it tri-band phone. We call it tri-mode phone. If one of the Cellular and 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 ANSI J-STD-008	Protocol between MS and BTS for Cellular & AMPS Protocol between MS and BTS for PCS
Network	TIA/EIA/IS-634 TIA/EIA/IS/651 TIA/EIA/IS-41-C TIA/EIA/IS-124	MAS-BS PCSC-RS Intersystem operations Nom-signaling data comm.
Service	TIA/EIA/IS-96-B TIA/EIA/IS-99 TIA/EIA/IS-637 TIA/EIA/IS-657	Speech CODEC Assign data and fax Short message service Packet data
Performance	TIA/EIA/IS-97 TIA/EIA/IS-98 ANSI J-STD-018 ANSI J-STD-019 TIA/EIA/IS-125	Cellular base station Cellular mobile station PCS personal station PCS base station Speech CODEC

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

Chapter 1. System Introduction

1. 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. The analog cellular systems are classified further into an AMPS system, E-AMPS System, NMT system, ETACS system, and JTACS system depending on technologies used.

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. Structure and Functions of tri-band CDMA Mobile Phone

The hardware structure of CDMA mobile phone is made up of radio frequency (RF) part and logic part. The RF part is composed of Receiver part (Rx), Transmitter part (Tx) and Local part (LO). For the purpose of operating on tri-band, It is necessary dual Tx path, tri Rx path, dual PLL and switching system for band selection. The mobile phone antenna is connected with quintplexer which divides antenna input/output signals between cellular frequency band (824~894 MHz) and PCS frequency band (1850~1990MHz). Quintplexer carrys out seperating Rx band and Tx band. The Rx signals from the antenna are directly converted into baseband signal by the frequency synthesizer and frequency down converter. And then, are converted into digital signals via Analog-to-Digital Converter (ADC). In front of the ADC, switching system is required to choose which band path should be open. The digital signals send to 5 correlators in each CDMA de-modulator. Of these, one is called a searcher whereas the remaining 4 are called data receivers (fingers). Digitalized signals include a great number of call signals that have been sent out by the adjacent cells. These signals are detected with pseudo-noise sequence (PN Sequence). Signal to interference ratio (C/I) on signals that match the desired PN sequence are increased through this type of correlation detection process, but other signals obtain processing gain by not increasing the ratio. The carrier wave of pilot channel from the cell site most adjacently located is demodulated in order to obtain the sequence of encoded data symbols. During the operation with one cell site, the searcher searches out multi-paths in accordance with terrain and building reflections. On three data receivers, the most powerful 3 paths are allocated for the parallel tracing and receiving. Fading resistance can be improved a great deal by obtaining the diversity combined output for de-modulation. Moreover, the searcher can be used to determine the most powerful path from the cell sites even during the soft handoff between the two cell sites. Moreover, 3 data receivers are allocated in order to carry out the de-modulation of these paths. Output data that has been demodulated changes the data string in the combined data row as in the case of original signals(deinterleaving), and then, are demodulated by the forward error correction decoder which uses the Viterbi algorithm.

Mobile station user information send out from the mobile station to the cell site pass through the digital voice encoder via a mike. Then, they are encoded and forward errors are corrected through the use of convolution encoder. Then, the order of code rows is changed in accordance with a certain regulation in order to remove any errors in the interleaver. Symbols made through the above process are spread after being loaded onto PN carrier waves. At this time, PN sequence is selected by each address designated in each call.

Signals that have been code spread as above are digital modulated (QPSK) and then, power controlled at the automatic gain control amplifier (AGC Amp). Then, they are converted into RF band by the frequency synthesizer synchronizing these signals to proper output frequencies.

Transmit signals obtained pass through the quintplexer filter and then, are sent out to the cell site via the antenna.

4. Specification

4.1 General Specification

4.1.1 Transmit/Receive Frequency Interval

1) CELLULAR : 45 MHz

2) PCS : 80 MHz

4.1.2 Number of Channels (Channel Bandwidth)

1) CELLULAR : 20 Channels

2) PCS : 48 Channels

4.1.3 Operating Voltage

DC 3.3~4.2V

4.1.4 Battery Power Consumption

DC 3.7V

	SLEEP	IDLE	MAX POWER
CELLULAR	1.0 mA	90~120mA	650 mA (24.0 dBm)
PCS	1.5 mA	90~120 mA	650 mA (23.8 dBm)

4.1.5 Operating Temperature

-30°C ~ +60°C

4.1.6 Frequency Stability

1) CDMA : ±0.5PPM

2) PCS : ±0.1PPM

4.1.7 Antenna

Fixed Type (External Antenna), 50 Ω

4.1.8 Size and Weight

1) Size : W x H x D : 91.5 x 47.5 x 18.2 mm (1.87 x 3.60 x 0.72 inch)

2) Weight : 81.2g

4.1.9 Channel Spacing

1) CELLULAR : 1.25MHz

2) PCS: 1.25 MHz

4.1.10 Battery Type, Capacity and Orerating Time

Unit = Hours, Minutes

		Standard (800mAh)
Stand-by Time	PCS(Slot Cycle 1)	About 150 Hrs (SCI=1)
	Celluar (Slot Cycle 1)	About 160 Hrs (SCI=1)
Talk Time	PCS(Slot Cycle 1)	About 180 Min.(typical quintplexer, -92dBm Input)
	Celluar (Slot Cycle 1)	About 180 Min.(typical quintplexer, -92dBm Input)

4.2 Receive Specification

4.2.1 Frequency Range

1) CELLULAR : 869.820 MHz ~ 893.190 MHz

2) PCS : 1930 MHz ~ 1990 MHz

3) GPS : 1575.42 MHz

4.2.2 Local Oscillating Frequency Range

1) CELLULAR : 1738.08MHz ~ 1787.94MHz

2) PCS : 1715.56MHz ~ 1768.89MHz

3) GPS : 3150.84MHz

4.2.3 Sensitivity

1) CELLULAR : -104dBm (C/N 12dB or more)

2) PCS : -104dBm (C/N 12dB or more)

3) GPS : -148.5dBm

4.2.4 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)

4.2.5 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

4.2.6 Spurious Wave Suppression

Maximum of -80dB

4.2.7 CDMA Input Signal Range

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

4.3 Transmit Specification

4.3.1 Frequency Range

1) CELLULAR : 824.820MHz ~ 848.190MHz

2) PCS : 1850 MHz ~ 1910 MHz

4.3.2 Local Oscillating Frequency Range

1) CELLULAR : 1738.08MHz ~ 1787.94MHz

2) PCS : 1715.56MHz ~ 1768.89MHz

4.3.3 Intermediate Frequency

Direct Conversion

4.3.4 Output Power

1) CELLULAR : 0.251W

2) PCS: 0.240W

4.3.5 CDMA TX Frequency Deviation

1) CELLULAR: +300Hz or less

2) PCS: ± 150Hz

4.3.6 CDMA TX Conducted Spurious Emissions

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

1.98MHz : - 54 dBc/30kHz below

2) PCS : -42 dBc / 30KHz below

4.3.7 CDMA Minimum TX Power Control

1) CELLULAR : - 50dBm below

2) PCS: -50dBm below

4.4 MS (Mobile Station) Transmitter Frequency

4.4.1 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

4.4.2 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

4.5 MS (Mobile Station) Receiver Frequency

4.5.1 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

4.5.2 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

4.5.3 GPS mode : 1575.42MHz

4.6 AC Adaptor

See Appendix

4.7 Cigar Lighter Charger

See Appendix

4.8 Hands-Free Kit

See Appendix

5. Installation

5.1 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.

5.2 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 jack into the phone with the installed battery pack. Red light indicates battery is being charged.. Green light indicates battry is fully charged.

5.3 For Mobile Mount

5.3.1 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.

5.3.2 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.

5.3.3 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.

5.3.4. 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).

5.3.5 Cable Connections

5.3.5.1 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.

5.3.5.2 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)

NAM Programming Method and Telephone Number Input Method

PREPARATION

STEP	ACTION
1	Press OK key – Press 0 key – Input 000000 for Service Code.
2	Press 1 for Service Programming (Service Prg.)

PROGRAMMING STEPS

	ITEM	Default	Action
1	ESN	xxxxxxxxxxxxxx / 80xxxxxx	ESN Information (Read Only)
2	Phone Number(MDN)	000000xxxx	Enter the Phone Number(Mobile Directory Number) [OK]
3	Phone Number(MIN)	000000xxxx	Enter the Phone Number(Mobile Identification Number) [OK]
4	Home SID	0	Enter Home SID
5	Name	NAM1	Edit NAM Name
6	Completed		Press [More]
7	Service Code	000000	Service Programming code
8	MCC	310	Enter the 3 digits Mobile Country Code [OK]
9	NMSID	00000000xxxx	Enter 00 + the 10 digits Mobile Phone Number (National Mobile Station Identity) [OK]
10	True IMSI MCC	000	Enter the True IMSI Mobile Country Code (International Mobile Station Identity) [OK]
11	True IMSI NMSID	00000000xxxx	Enter 00 + the 10 digits Mobile Phone Number [OK]
12	PRL Enabled	Enabled	PRL enabled (preset)
13	CDMA Home SID/NID	0/65535	Enter CDMA Home SID/NID.
14	CDMA Pri. CH A	283	Enter CDMA Primary CH A (preset)
15	CDMA Sec. CH A	691	Enter CDMA Secondary CH A (preset)

16	CDMA Pri. CH B	384	Enter CDMA Primary CH B (preset)
17	CDMA Sec. CH B	777	Enter CDMA Secondary CH B (preset)
18	Lockout SID/NID	0/65535	Enter Lockout SID/NID.[OK]
19	Home Sys Reg	Yes	Enter Yes or No to enable/disable Home System Registration [OK]
20	Forn SID Reg	Yes	Enter Yes or No to enable/disable Foreign System ID Registration [OK]
21	Forn NID Reg	Yes	Enter Yes or No to enable/disable Foreign Network ID Registration [OK]
22	Acc Ovld Class	x	Enter ACCOLC[OK]
23	Slot Cycle Index	2	Enter the Slot Cycle Index (x = 0 ~ 7, commonly 1 or 2) [OK]

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 824.04~848.97MHz and 869.04~893.97MHz for cellular and 1850~1910MHz and 1930~1990MHz for PCS. The block diagram is shown in Page 71. RF signals received through the antenna are seperated by quintplexer. RF Signal fed into the low noise amplifier (in QSC6055) through the quintplexer. Then, they are combined with the signals of local oscillator (VCO) at the down conversion mixer(in QSC6055) in order to create Base-band frequency. 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 QSC(Qualcomm Single Chip)6055 processes the data from ADC. The digital processing part is a demodulator.

In the case of transmission, RF Transmitter(in QSC6055) receives QPSK-modulated anlog signal from the QSC6055. In QSC6055, 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 coupler and quintplexer.

1.2 Description of Rx Part Circuit

1.2.1 Quintplexer (DP100)

The ACFM-7102 is a quintplexer that combines a US PCS duplexer, a cellular band duplexer and a S-GPS band filter into a single, miniature package with a single antenna port.

The main function of quintplexer 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 LG300 quintplexer is described below:

ACFM-7102 Electrical Specifications, Z_0=50 Ω, T_C [1] [2] as indicated

			– 30°C			+25°C			+85°C		
Symbol	Parameter	Units	Min	Typ [3]	Max	Min	Typ [3]	Max	Min	Typ [3]	Max
GPS Filter Performance											
	Antenna Port to GPS Receive Port										
S41	Insertion Loss in GPS Band (1574.42–1576.42 MHz)	dB			1.9		1.5	1.9			2.0
S41	Insertion Loss Ripple (p-p) in GPS Band	dB			1.0			1.0			1.0
S44	Return Loss of GPS Port in GPS Band	dB	9			9			9		
S11	Return Loss of Antenna Port in GPS Band	dB	9			9			9		
	Isolation – Cellular Transmit Port to GPS Port										
S45	Isolation in Cellular Tx Band (824–849 MHz)	dB	50			50			50		
S45	Isolation in GPS Band (1574.42–1576.42 MHz)	dB	38			38	40		38		
	Isolation – PCS Transmit Port to GPS Port										
S42	Isolation in PCS Tx Band (1850.5 – 1909.5 MHz)	dB	45			45			45		
S42	Isolation in GPS Band (1574.42–1576.42 MHz)	dB	40			40			40		
Cellular Duplexer Performance											
	Antenna Port to Cellular Receive Port										
S61	Insertion Loss in Rx band (869–894 MHz)	dB			3.6			3.4			3.6
S61	Insertion Loss Ripple (p-p) in Rx Band	dB			1.8			1.8			1.8
S61	Attenuation in Tx band (824–849 MHz)	dB	55			55			50		
S61	Attenuation 0–804 MHz	dB	25			25			25		
S61	Attenuation in Tx 2nd harmonic band (1648–1698 MHz)	dB	30			30			30		
S61	Attenuation in Tx 3rd harmonic band (2472–2547 MHz)	dB	19			19			19		
S66	Return Loss of Rx Port in Rx Band (869–894 MHz)	dB	9			9			9		
S11	Return Loss of Antenna Port in Rx Band (869–894 MHz)	dB	9	12		9	12		9	12	

ACFM-7102 Electrical Specifications, Z_0=50 Ω, Tc [1] [2] as indicated (cont)

Symbol	Parameter	Units	– 30°C			+25°C			+85°C		
			Min	Typ [3]	Max	Min	Typ [3]	Max	Min	Typ [3]	Max
	Cellular Transmit Port to Antenna Port										
S51	Insertion Loss in Tx band (824–849 MHz)	dB			2.6			2.6			2.6
S21	Insertion Loss Ripple (p-p) in Tx Band	dB			1.6			1.6			1.6
S51	Attenuation in Rx band (869–894 MHz)	dB	39			40			37		
S51	Attenuation 0–804 MHz	dB	20			20			20		
S51	Attenuation in GPS band (1574.42–1576.42 MHz)	dB	37			37			37		
S51	Attenuation in Tx 2nd harmonic band (1648–1698 MHz)	dB	20			20			20		
S51	Attenuation in Tx 3rd harmonic band (2472–2547 MHz)	dB	8			8			8		
S55	Return Loss of Tx Port in Tx band (824–849 MHz)	dB	9			9			9		
S11	Return Loss of Antenna port in Tx Band (824–849 MHz)	dB	9	12		9	12		9	12	
	Isolation, Cellular Transmit Port to Cellular Receive Port										
S65	Isolation, Tx to Rx port in Rx Band (869–894 MHz)	dB	40			40			40		
S65	Isolation, Tx to Rx port in Tx Band (824–849 MHz)	dB	55			55			55		
PCS Duplexer Performance											
	Antenna Port to PCS Receive Port										
S31	Insertion Loss in Rx Band (1930.5–1989.5 MHz)	dB			4.4			4.2			4.4
S31	Insertion Loss Ripple (p-p) in Rx Band	dB						3.0			3.0
S31	Attenuation in Tx Band (1850.5–1909.5 MHz)	dB	50			50			50		
S31	Attenuation 0.03–1770 MHz	dB	20			20			20		
S31	Attenuation 2020–3700 MHz	dB	30			30			30		
S31	Attenuation 3820–4000 MHz	dB	30			30			30		
S33	Return Loss of Rx Port in Rx Band (1930.5–1989.5 MHz)	dB	9			9			9		
S11	Return Loss of Antenna Port in Rx Band (1930.5–1989.5 MHz)	dB	9	12		9	12		9	12	
	PCS Transmit Port to Antenna Port										
S21	Insertion Loss in Tx Band (1850.5–1909.5 MHz)	dB			3.9			3.9			3.9
S21	Insertion Loss Ripple (p-p) in Tx Band	dB			2.8			2.8			2.8
S21	Attenuation in Rx Band (1930.5–1989.5 MHz)	dB	40			40			40		
S21	Attenuation 0.03–1570 MHz	dB	20			20			20		
S21	Attenuation in GPS Band (1574.42–1576.42 MHz)	dB	37			37			37		
S21	Attenuation 1580 – 1700 MHz	dB	25			25			25		
S21	Attenuation in Tx 2nd harmonic band (3701–3819 MHz)	dB	10			10			10		
S21	Attenuation in Tx 3rd harmonic band (5551.5–5728.5 MHz)	dB	8			8			8		
S22	Return Loss of Tx Port in Tx band (1850.5–1909.5 MHz)	dB	9.5			9.5			9.5		
S11	Return Loss of Antenna port in Tx Band (1850.5–1909.5 MHz)	dB	9	12		9	12		9	12	
	Isolation, PCS Transmit Port to PCS Receive Port										
S32	Isolation, Tx to Rx port in Rx Band (1930.5–1909.5 MHz)	dB	40			40			40		
S32	Isolation, Tx to Rx port in Tx Band (1850.5–1855 MHz) (1855–1909.5 MHz)	dB	53 54			53 54			53 54		

1.2.2 LNAs (U200)

The QSC6055 has cellular and PCS LNAs, 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 LG300 LNAs are described below:

1.2.2.1 **Cellular CDMA LNA performance specifications**

Parameter	Comments	Min	Typ	Max	Unit
Input frequency range		869		894	MHz
Input VSWR (in-band)	50-Ω with external match		2:1		–
Output VSWR (in-band)	50-Ω with external match		2:1		–
Gain mode 0 (G0)					
Power gain			16.0		dB
Noise figure	Small signal		1.4		dB
Input IP3	Jammers at -43 dBm	-2.0			dBm
Gain mode 1 (G1)					
Power gain			4.0		dB
Noise figure			5.0		dB
Input IP3	Jammers at -32 dBm	+5.0			dBm
Gain mode 2 (G2)					
Power gain			-6.0		dB
Noise figure			8.0		dB
Input IP3	Jammers at -20 dBm	+12			dBm
Gain mode 3 (G3)					
Power gain			-20		dB
Noise figure			20		dB
Input IP3	Jammers at -10 dBm	+10			dBm

1.2.2.2 **PCS CDMA LNA performance specifications**

Parameter	Comments	Min	Typ	Max	Unit
Input frequency range		1930		1990	MHz
Input VSWR (in-band)	50-Ω with external match		2:1		–
Output VSWR (in-band)	50-Ω with external match		2:1		–
Gain mode 0 (G0)					
Power gain			16.0		dB
Noise figure	Small signal		1.6		dB
Input IP3	Jammers at -43 dBm	-2.0			dBm
Gain mode 1 (G1)					
Power gain			-3.0		dB
Noise figure			4.0		dB
Input IP3	Jammers at -20 dBm	+10			dBm
Gain mode 2 (G2)					
Power gain			-20		dB
Noise figure			20		dB
Input IP3	Jammers at -12 dBm	+10			dBm

1.2.3 GPS LNA (U101)

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 LG300 GPS LNA is described below

Symbol	Parameter and Test Condition	Units	Min.	Typ	Max.
G	Gain	dB	11	12.7	-
NF[6]	Noise Figure	dB	-	0.85	1.1
IP1dB	Input 1dB Compressed Power	dBm	-	3.2	-
IIP3[8]	Input 3rd Order Intercept Point (2-tone @ Fc +/- 2.5MHz)	dBm	-	7.0	-
S11	Input Return Loss	dB	-	-9.0	-
S22	Output Return Loss	dB	-	-10	-
S12	Reverse Isolation	dB	-	-24	-
Cell Band Rejection	Relative to 1.575GHz @ 827.5MHz	dBc	45	59	-
PCS Band Rejection	Relative to 1.575GHz @ 1885MHz	dBc	45	55	-
Idd	Supply DC current at Shutdown (SD) voltage Vsd=2.6V	mA	-	8	13
Ish	Shutdown Current @ VSD = 0V	uA	-	0.1	-

1.2.4 Down-converter Mixers

The QSC6055 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 baseband signals. The three downconverting Mixers (Cellular, PCS and GPS), and an LO Buffer Amplifier to buffer the RF VCO to the RF Transmit Upconverter. 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-98C and J-STD-018 specifications for Sensitivity, Two-Tone Intermodulation, and Single-tone Desense.

Operation modes and band selection are specially controlled from the Qualcomm Single Chip QSC6055.

1.2.5 Rx RF SAW Filters (F100/F104)

The main function of Rx RF SAW filter is to attenuate mobile phone spurious frequency, attenuate direct RF frequency pick up, attenuate noise at the image frequency originating in or amplified by the LNA and suppress second harmonic originating in the LNA. The Rx RF SAW filter usually called image filter.

1.2.6 RF Receiver (U200)

The circuit functions of the RF Receiver(in QSC6055) include Rx Automatic Gain Controller (AGC) with 90 dB dynamic range, quadrature RF mixers, down-conversion mixer from RF to base-band, low pass filters and Analog to Digital Converters (ADC) for converting to digital base-band. The RFR includes clock generators that drive the digital processor and a VCO which generates the LO frequency for base-band down-conversion.

Switching system is located in front of the RFR RX_IN_C_LB and RX_IN_C_HB terminal and is for band selection between cellular and PCS. The Rx AGC either amplifies or attenuates the received CDMA RF signal to provide a constant-amplitude signal to the I/Q down-converter. The RF output of the Rx AGC amplifier separate into I-channel and Q-channel base-band components and down-converted by mixer with quadrature LO. LO signals are generated by a Voltage Controlled Oscillator (VCO) and frequency stabilized by external varactor-tuned resonant tank circuit. The I/Q down converter outputs the CDMA signals at baseband frequency. Low-pass filtering enables the receiver to select the desired baseband signals from the effects of unwanted noise or adjacent-channel interference. I/Q base band components are converted to digital signals by two identical 4-bit ADCs.

1.3 Description of Transmit Part Circuit

1.3.1 RF Transmitter (U200)

The RF Transmitter(in QSC6055, base-band-to-RF Transmit Processor) performs all Tx signal-processing functions required between digital base-band and the Power Amplifier Module (PAM). The base-band quadrature signals are up-converted to the Cellular or PCS frequency bands and amplified to provide signal drive capability to the PAM. The RFT includes an RF mixer for upconverting analog baseband to RF, a programmable PLL for generating Tx LO frequency, two cellular and two PCS driver amplifiers and Tx power control through an 85 dB VGA. As added benefit, the single sideband upconversion eliminates the need for a band pass filter normally required between the upconverter and driver amplifier.

I, I/, Q and Q/ signals proceed from the QSC6055 are analog signal. In CDMA mode, These signals are modulated by Quadrature Phase Shift King (QPSK). I and Q are 90 deg. out of phase, and I and I/ are 180 deg. Tx IF signal can be obtained by mixing analog signal with 228.6MHz(Cellular)/263.6(PCS) 1st local osillator frequency which is generated by Tx VCO. The Tx IF signal is amplified by AGC controlled by QSC6055. The second mixer on RFT converts IF signals into RF signals. After passing through the upconverter , RF signal is inputted into the Power Amplifier Module.

1.3.1.1 Cellular CDMA transmit signal path performance specifications

Parameter	Comments	Min	Typ	Max	Unit
RF outputs					
Output frequency range		824		849	MHz
Output power	Average channel power	7			dBm
Minimum output power	Average channel power			-75	dBm
Isolation between cellular outputs		21			dB
Isolation: TX_OUT to PWR_DET_IN		30			dB
Output VSWR	50-Ω system		2.5:1		–

Baseband-to-RF signal path					
Gain flatness over frequency		-1.5		+1.5	dB
ACPR 885 kHz offsets 1.98 MHz offsets	 $P_{OUT} \le +7$dBm $P_{OUT} > +7$dBm $P_{OUT} \le +7$dBm $P_{OUT} >+7$dBm			 -48.0 -42.5 -63.0 -54.5	 dBc/30 kHz dBc/30 kHz dBc/30 kHz dBc/30 kHz
In-band spurious signals	100 kHz bandwidth; offset > 4 MHz			-43	dBm
Harmonics ($2f_0$, $3f_0$)	PA mode			-10	dBc
Out-of-band noise power	PA mode F_{TX} + 45 MHz 1574 to 1577 MHz		Figure 3-43		
Carrier leakage At maximum P_{out} At minimum P_{out}	PA mode			 -24 -5.0	 dBc dBc
In-band image leakage At maximum P_{out} At minimum P_{out}	PA mode			 -24 -12	 dBc dBc

1.3.1.2 PCS CDMA transmit signal path performance specifications

Parameter	Comments	Min	Typ	Max	Unit
RF outputs					
Output frequency range (PCS)		1850		1910	MHz
Output frequency range (AWS)		1710		1755	MHz
Output power	Average channel power	7			dBm
Minimum output power	Average channel power			-75	dBm
Isolation between PCS outputs		21			dB
Isolation: TX_OUT to PWR_DET_IN		30			dB
Output VSWR	50-Ω system		2.5:1		–
Baseband-to-RF signal path					
Gain flatness over frequency		-1.5		+1.5	dB
ACPR 1.25 MHz offsets 1.98 MHz offsets	 $P_{OUT} \le$ +7dBm P_{OUT} > +7dBm $P_{OUT} \le$ +7dBm P_{OUT} > +7dBm			 -48.0 -42.5 -57 -50.5	 dBc/30 kHz dBc/30 kHz dBc/30 kHz dBc/30 kHz
In-band spurious signals	1 MHz bandwidth; offset > 4 MHz			-43	dBm
Harmonics ($2f_0$, $3f_0$)	At P_{rated}			-10	dBc
Out-of-band noise power	PA mode F_{TX} + 80 MHz 1574 to 1577 MHz		Figure 3-43		
Carrier leakage At maximum P_{out} At minimum P_{out}	PA mode		 -24 -5.0		 dBc dBc
In-band image leakage At maximum P_{out} At minimum P_{out}	PA mode		 -24 -12		 dBc dBc

1.3.2 Dual Power Amplifier (U105)

The 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 +10dBm and conversion gain is about 28dB. RF transmit signals that have been amplified through the power amplifier are sent to the quintplexer.

1.4 Description of Frequency Synthesizer Circuit

1.4.1 Voltage Control Temperature Compensation Crystal Oscillator

(VCTCXO, U106)

The temperature variation of mobile phone can be compensated by TCXO. The reference frequency of a mobile phone is -30~+85 °C. The receives frequency tuning signals called TRK_LO_ADJ from QSC6055 as 0.5V~2.5V DC via R and C filter in order to generate the reference frequency of 19.2MHz and input it into the frequency synthesizer of UHF band. 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, modem part, memory part, and power supply part.

2.2 Configuration

2.2.1 Keypad/LED and Receptacle Part

This is used to transmit keypad signals to QSC6055. 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 QSC6055, and amplifying part that amplifies signals coming out from MIC and transferring them to the audio processor.

2.2.3 QSC6055 Part

QSC6055 (Qualcomm Single Chip) 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 DDR/NAND memory.

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 QSC6055 for processing. In addition, when the key is pressed, the keypad lights up through the use of 10 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

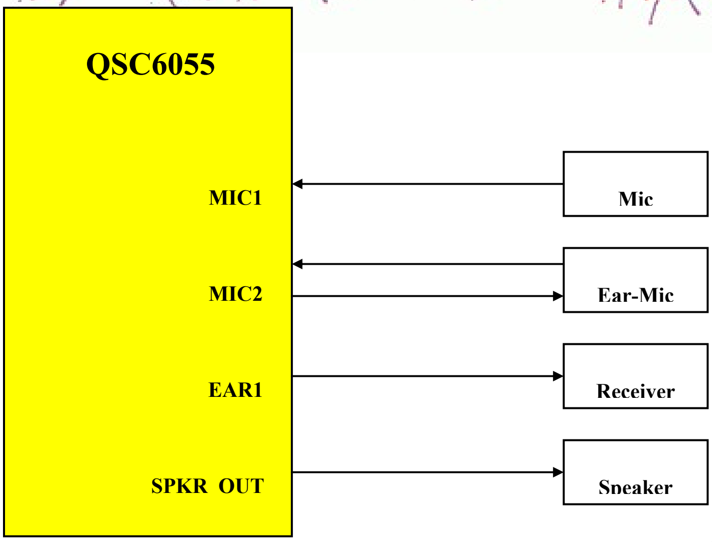
MIC signals are inputted into the audio codec(included in QSC6055) and converted into digital signals. Oppositely, digital audio signals are converted into analog signals after going through the audio codec. These signals are amplified at the audio amplifier and transmitted to the ear-piece. The signals from QSC6055 activate the ringer by using signals generated in the timer in QSC6055.

2.3.3 MODEM Part

QSC6055 is the core element of CDMA system terminal that includes ARM926 EJS microprocessor core. It supports both CDMA and GPS, operating in both the cellular and PCS spectrums. The subsystems within the QSC6055 include a CDMA processor, a multi-standard Vocoder, an integrated CODEC with earpiece and microphone amplifiers, general-purpose ADC for subsytem monitoring, an ARM926 EJS microprocessor, and both Universal Serial Bus(USB) and an RS-232 serial interfaces supporting forward and reverse link data communications of 307.2 Kbps simultaneously. And it also contains complete digital modulation and demodulation systems for CDMA standards, as specified in IS-95-A/B/C.

In QSC, 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 1 Gbits NAND flash memory and 512 Mbits DDR SRAM. In the Flash Memory part of MCP are programs used for terminal operation. The programs can be changed through down loading 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, the power-up circuitry in PM (power management) circuit(in QSC6055) is activated by the PWR_ON_SW/ signal, and then the LDO regulators embedded in PM circuit are operated and +1.3V_MSMC, +2.6V_MSMP, +1.8V_MSME and +2.1V_MSMA are generated.

The Rx part (+2.1V_RFRX) and Tx part voltage (+2.1V_RFTX) are regulated by QSC6055

2.3.6 Logic Part

The logic part consists of internal CPU of QSC, RAM, MCP. The QSC6055 receives TCXO (=19.2MHz) from U106 and controls the phone in both CDMA and GPS modes. The major components are as follows:

- **CPU**

The ARM926 EJS 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**

Flash ROM 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[0][1][2][3][4][9][11][13][15][17][19] signal from QSC. 10 LEDs and backlight circuitry are included in the keypad for easy operation in the dark.

- **LCD MODULE**

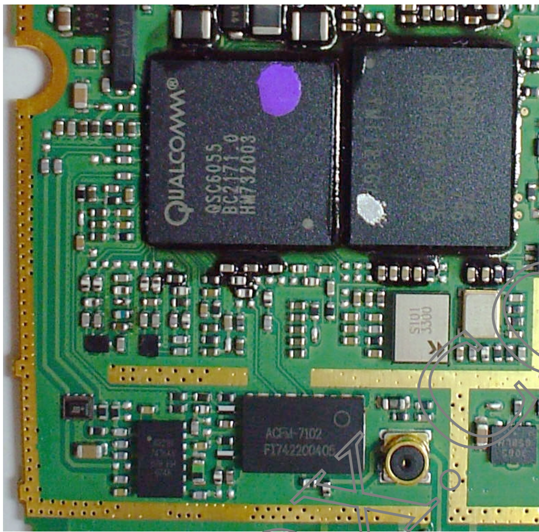
LCD module contains a controller which will display the information onto the LCD by 16-bit data from the QSC6055.

Chapter 4. Trouble Shooting

1. Rx Part Trouble

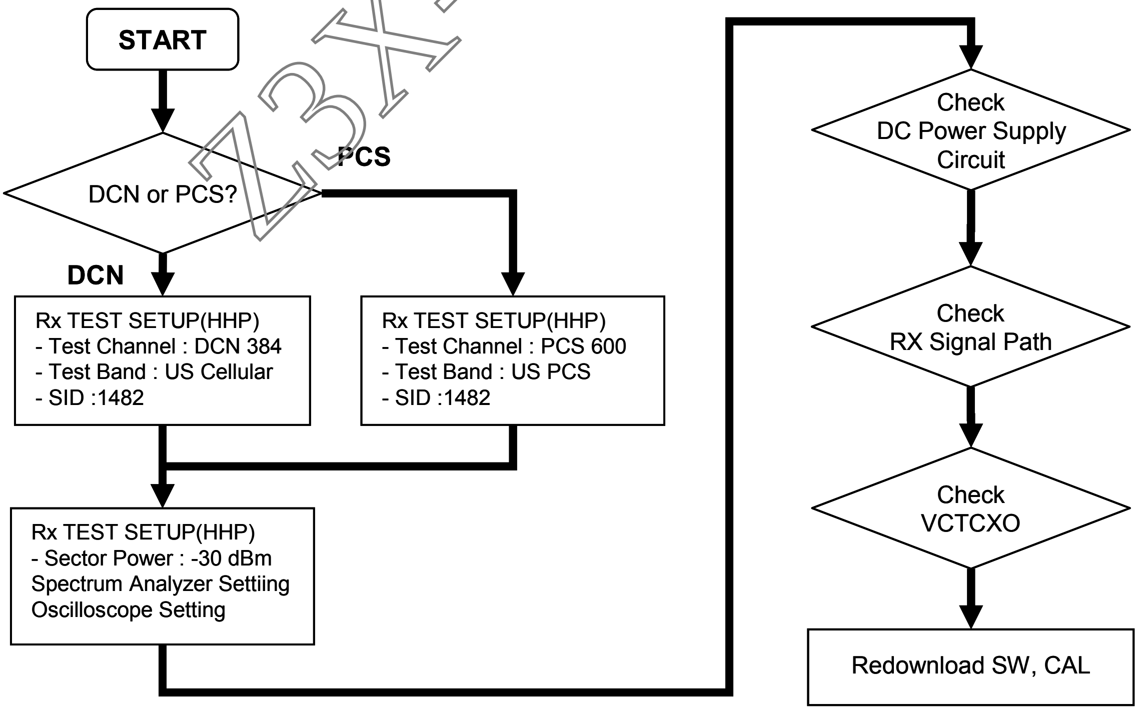
1.1 DCN & PCS Rx Trouble

Test Point



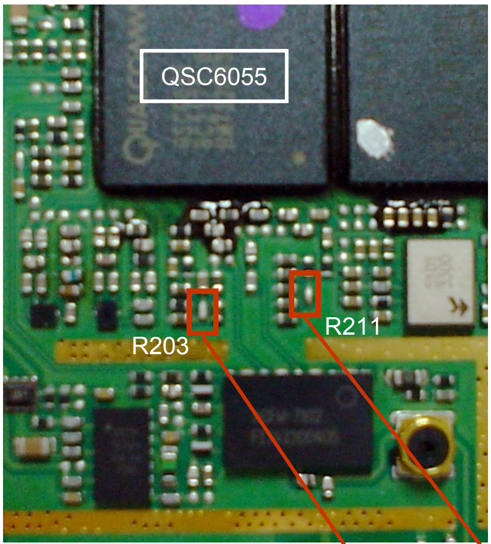
[Figure 4-1-1] DCN & PCS Rx Part

Checking Flow



1.1.1 Checking DC Power Supply Circuit

Test Point

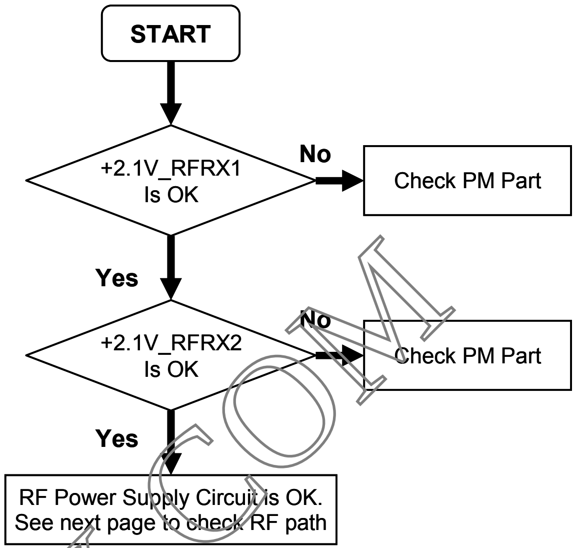


[Figure 4-1-1-1]

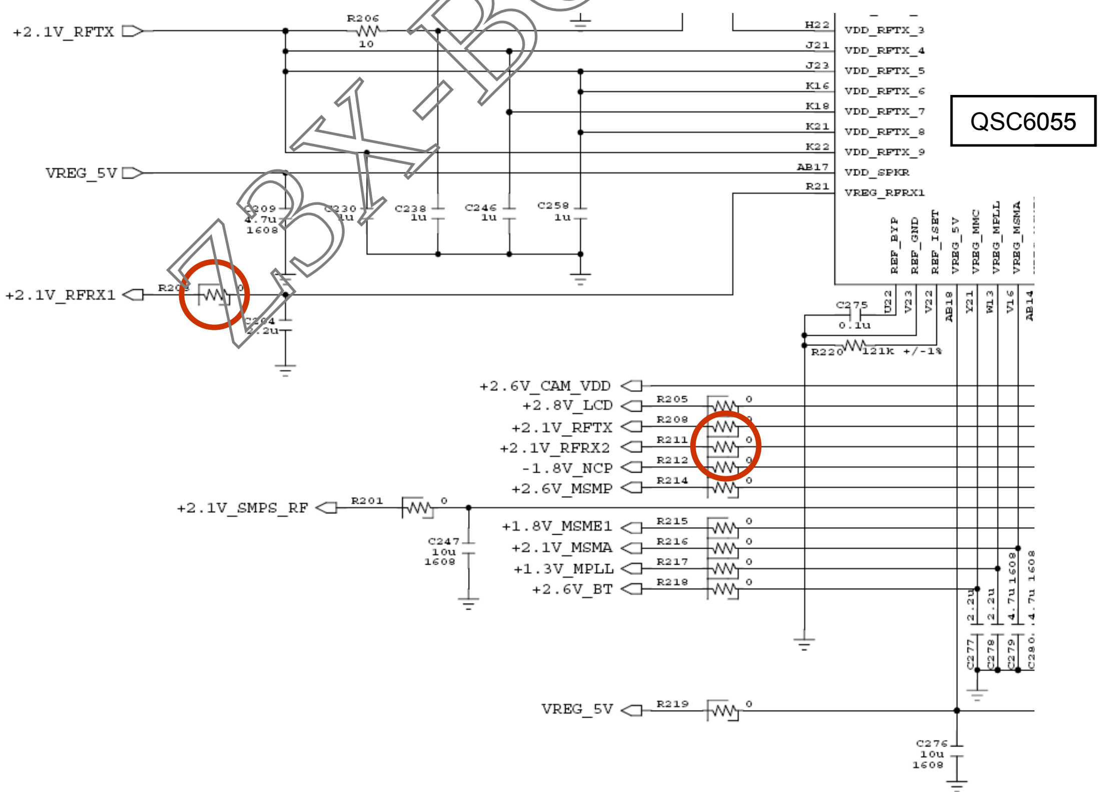
+2.1V_RFRX2

+2.1V_RFRX1

Checking Flow

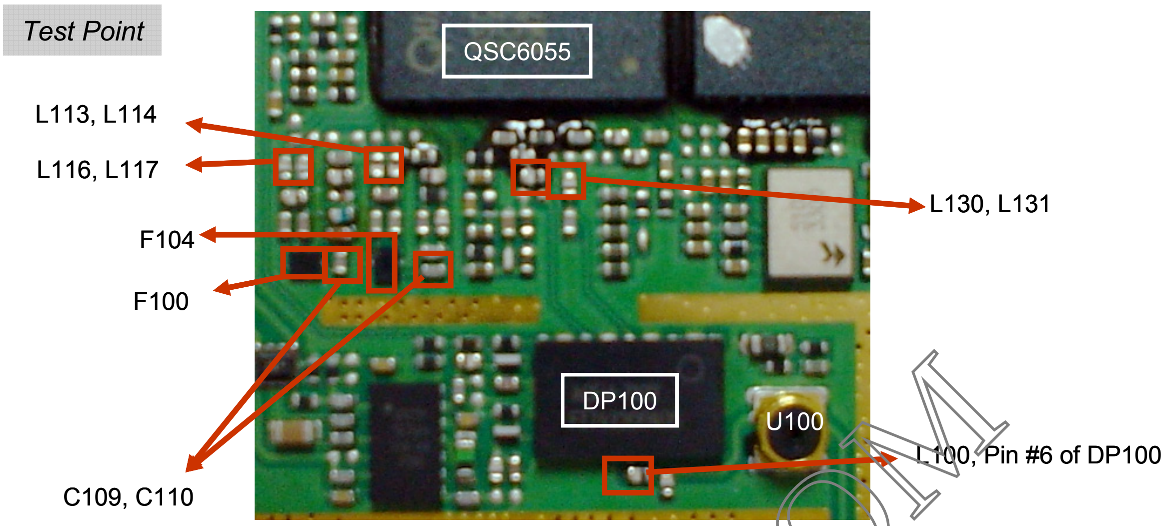


Circuit Diagram



1.1.2 Checking Rx Signal Path

Test Point



[Figure 4-1-1-2]

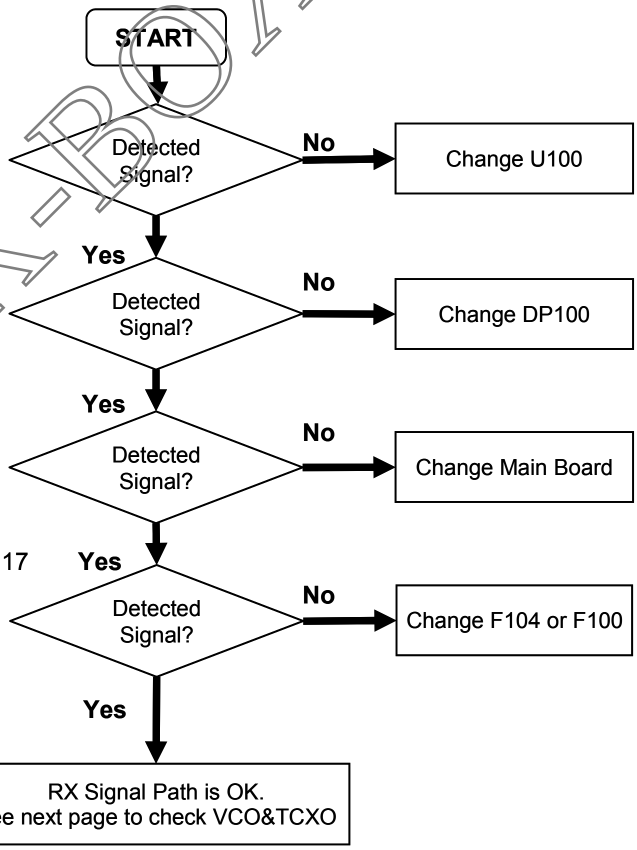
Checking Flow

1. Check L100
If there is any major difference
with Graph 1-1-2-1

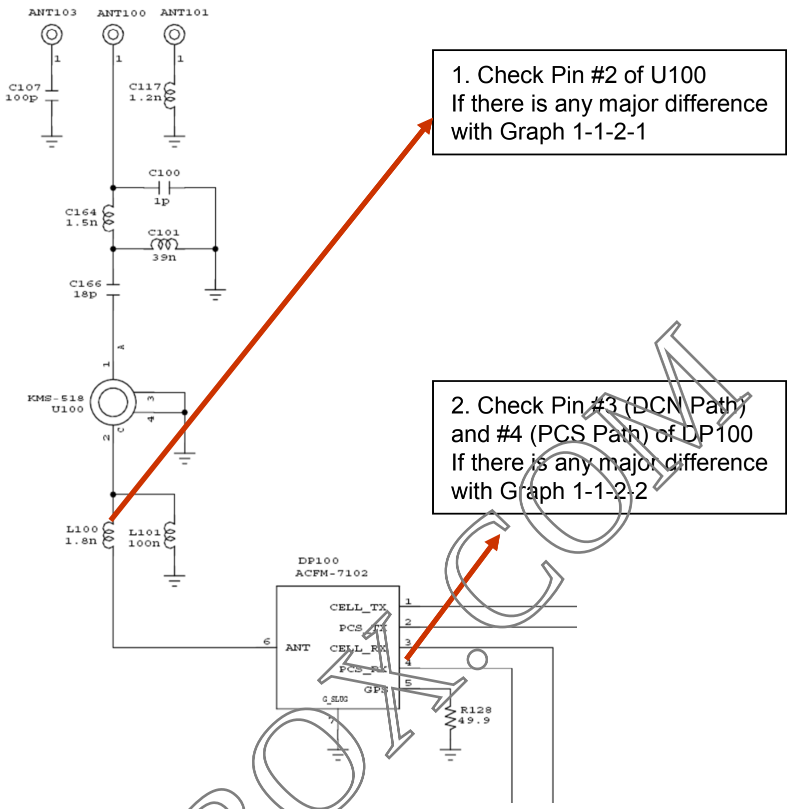
2. Check L130, L131
If there is any major difference
with Graph 1-1-2-2

3. Check C109, C110
If there is any major difference
with Graph 1-1-2-3

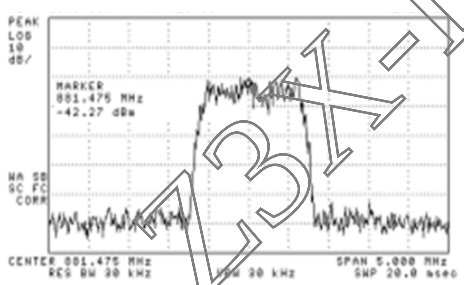
4. Check L113, L114 or L116, L117
If there is any major difference
With Graph 1-1-2-3

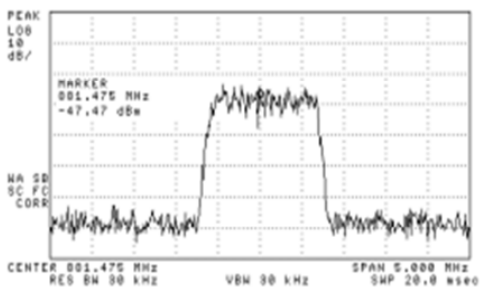


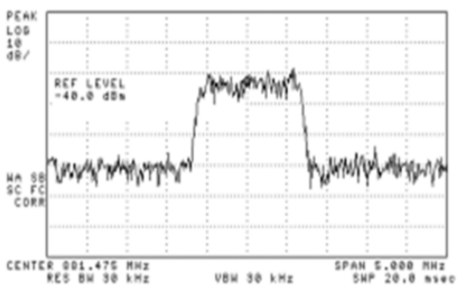
Circuit Diagram

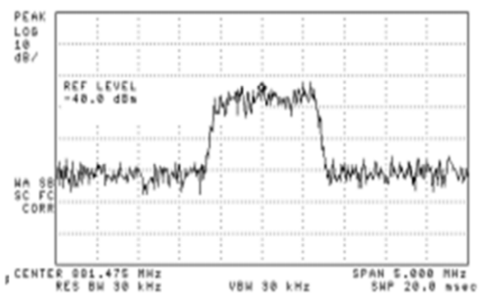


Waveform

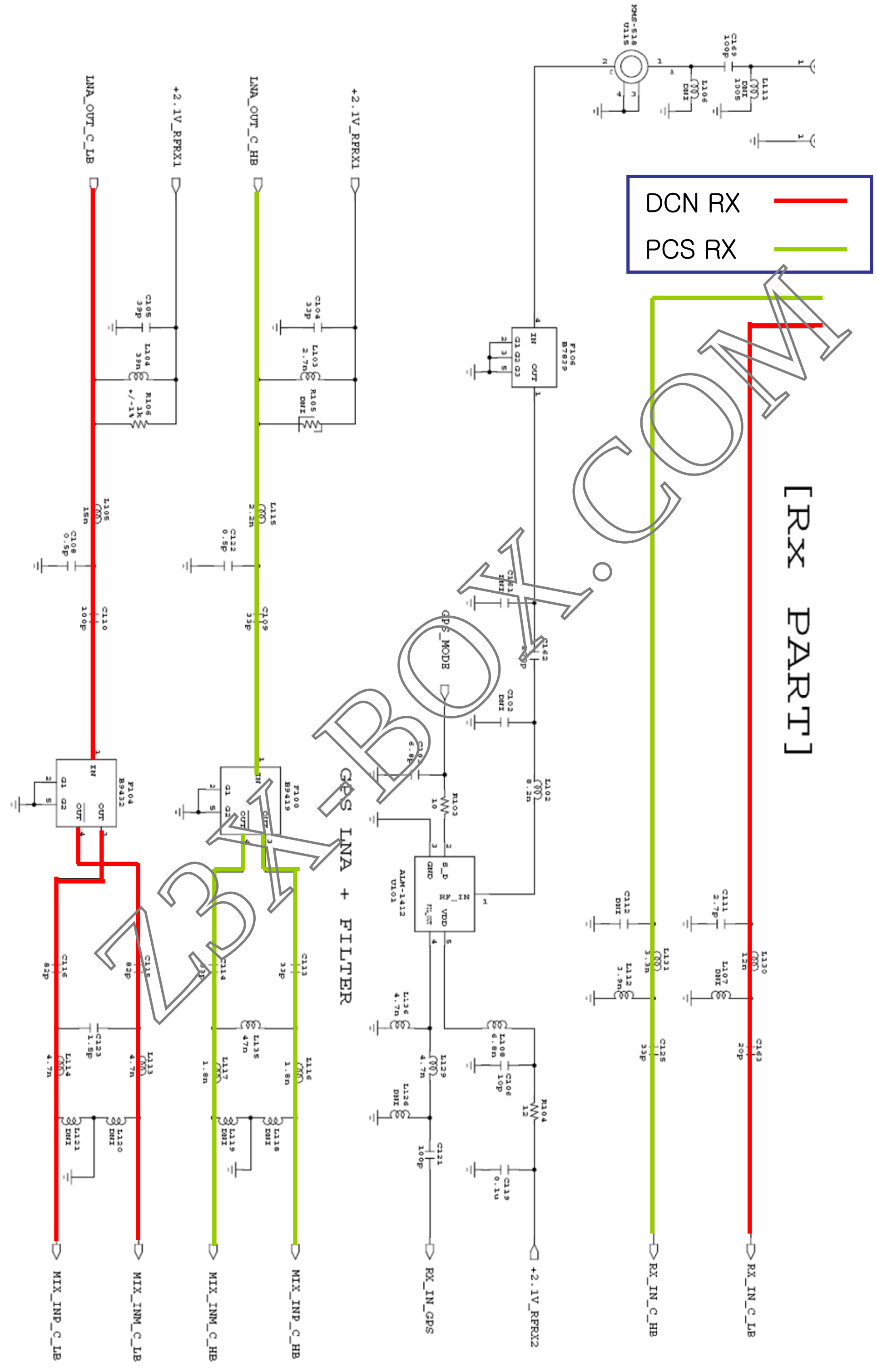

Graph 1-1-2-1


Graph 1-1-2-2


Graph 1-1-2-3 (a)

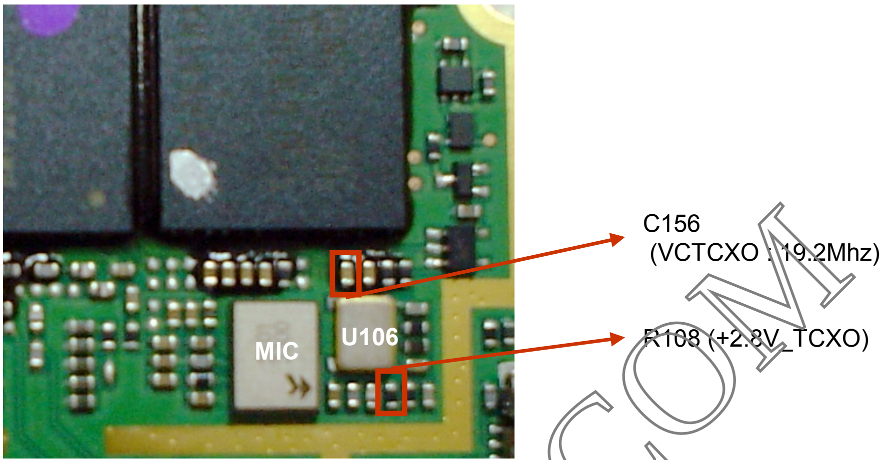

Graph 1-1-2-3 (a)

Circuit Diagram



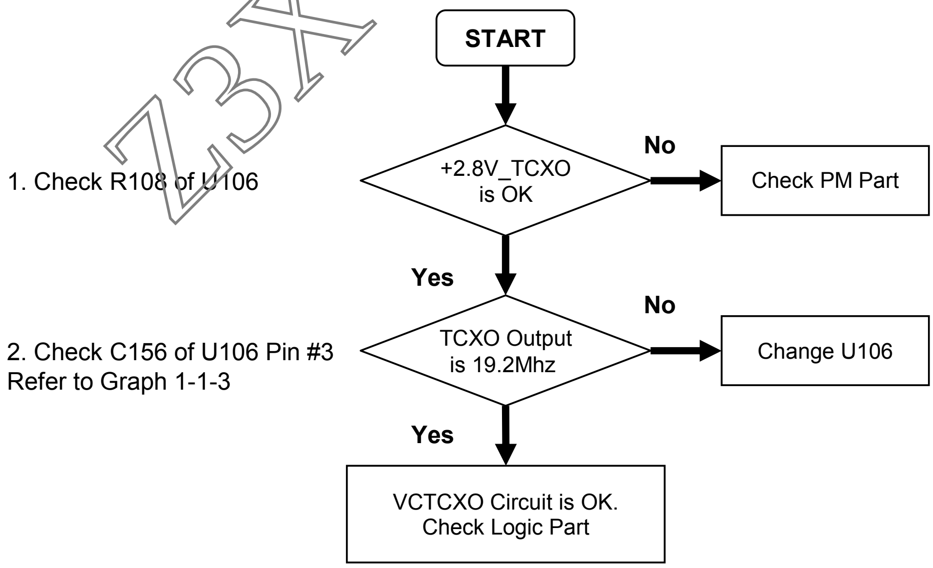
1.1.3 Checking VCTCXO Circuit

Test Point

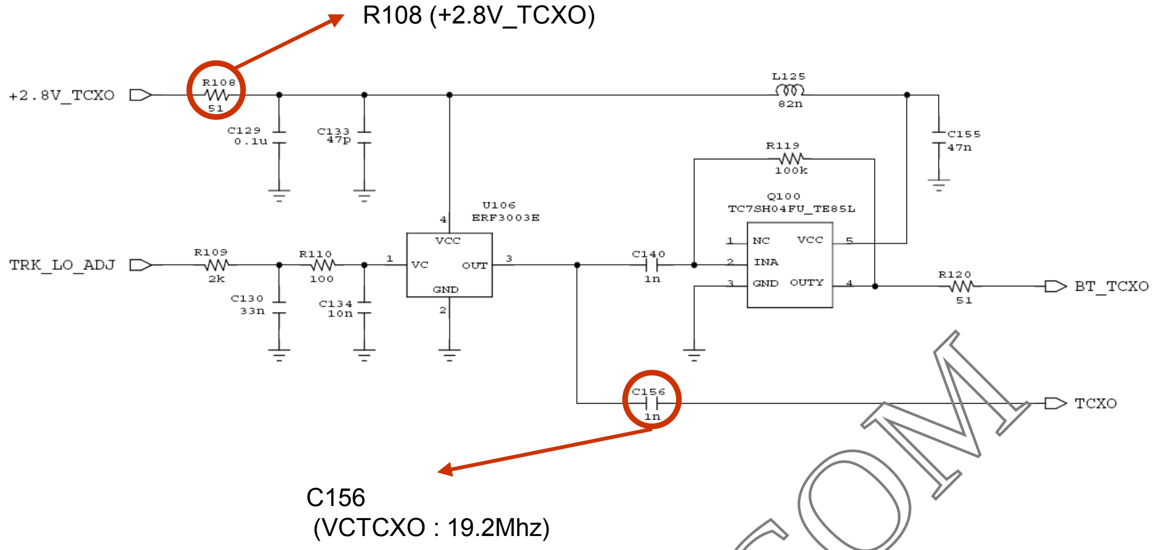


[Figure 4-1-1-3]

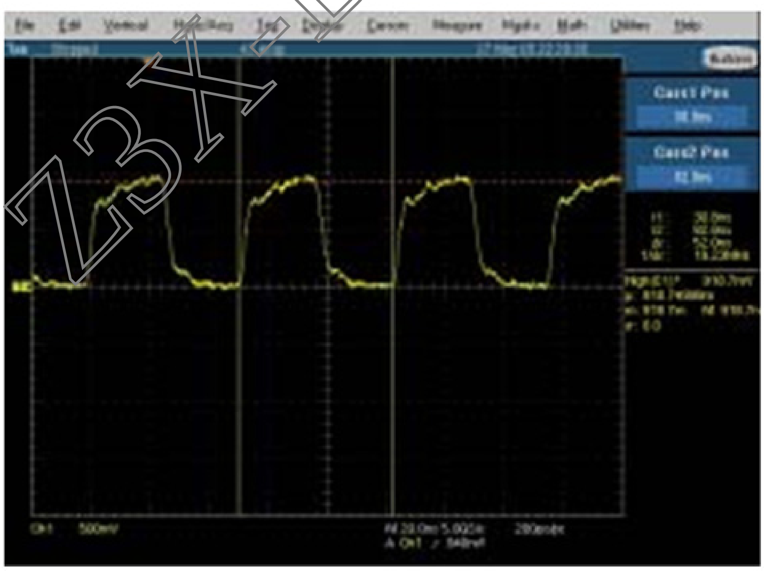
Checking Flow



Circuit Diagram



Waveform

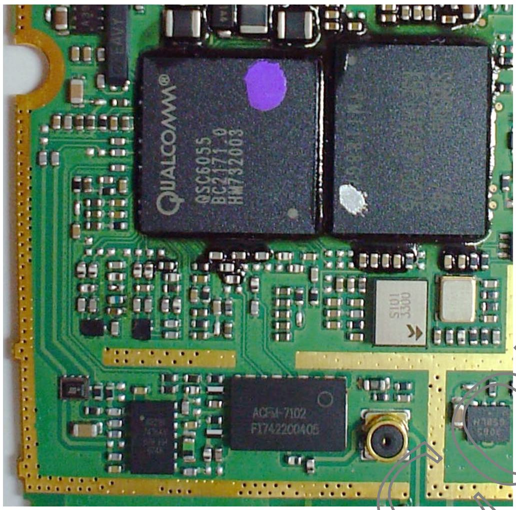


Graph 1-1-3

2. Tx Part Trouble

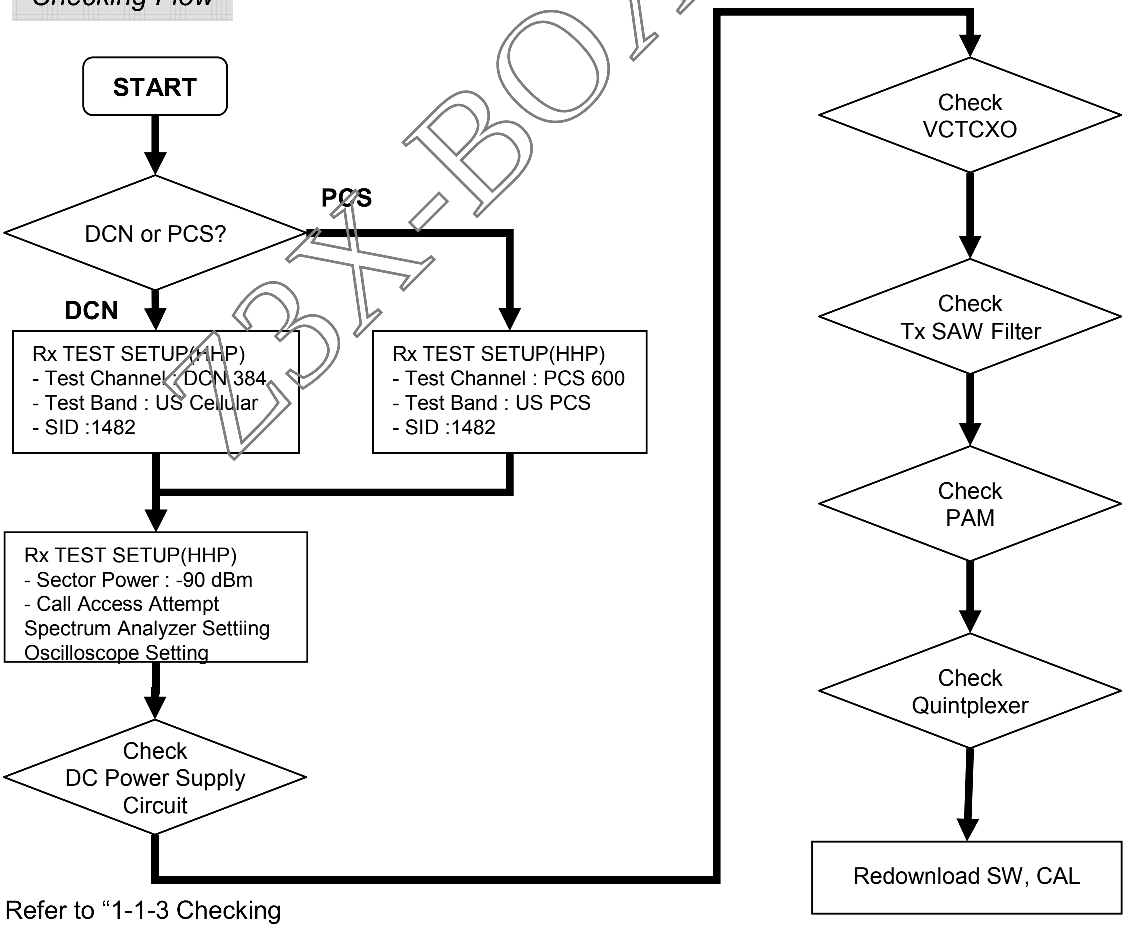
2.1 DCN & PCS Tx Trouble

Test Point



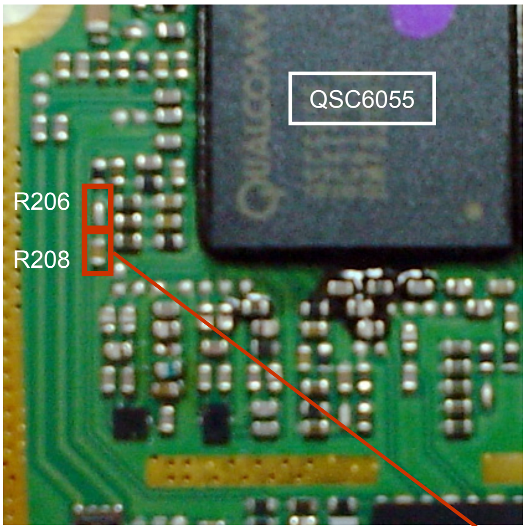
[Figure 4-2-1] DCN & PCS Tx Part

Checking Flow



◆ Refer to "1-1-3 Checking VCTCXO Circuit"

Test Point



[Figure 4-2-1-1]

+2.1V_RFTX

Checking Flow

START

↓

Rx TEST SETUP(HHP)
- Sector Power : -90 dBm
- Call Access Attempt
Oscilloscope Setting

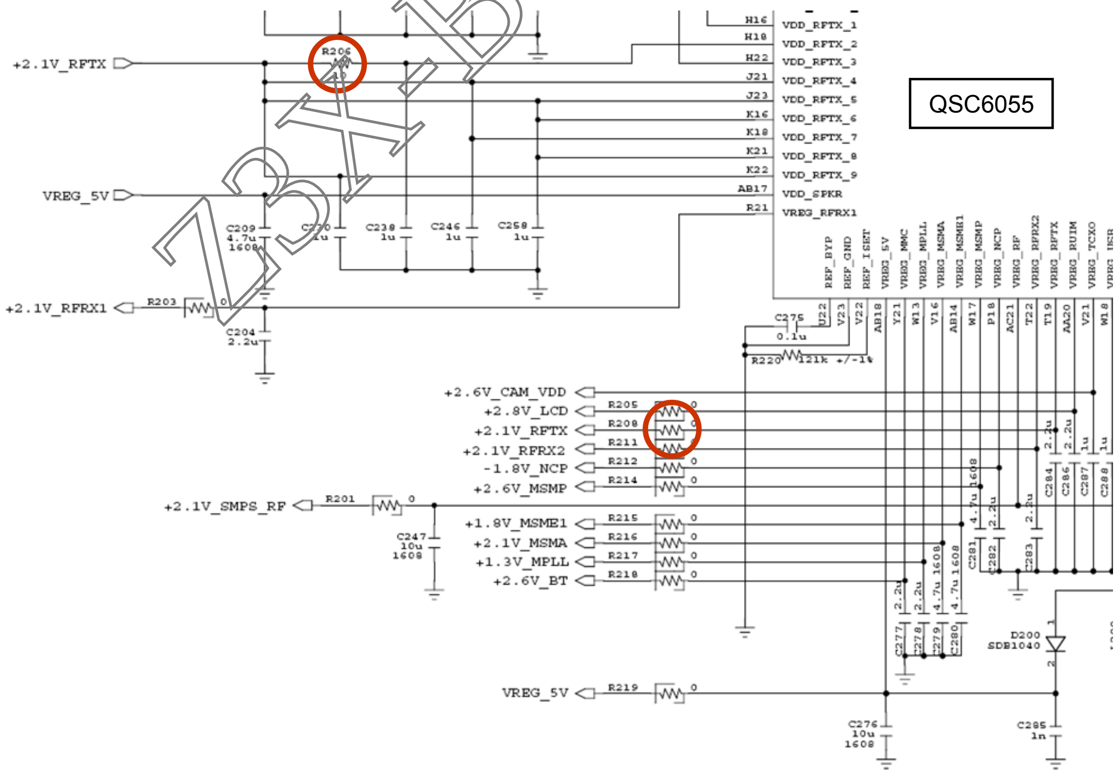
↓

+2.1V_RFTX is OK — No → Check PM Part

Yes ↓

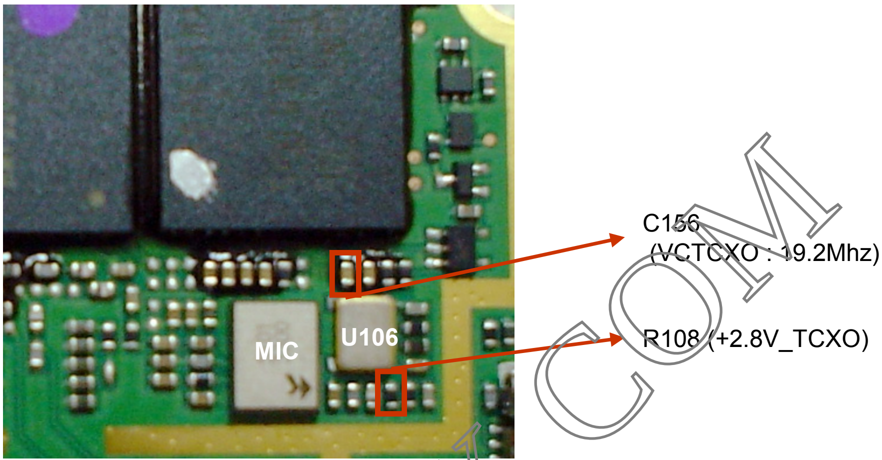
RF Power Supply Circuit is OK.
See next page to check TX path

Circuit Diagram



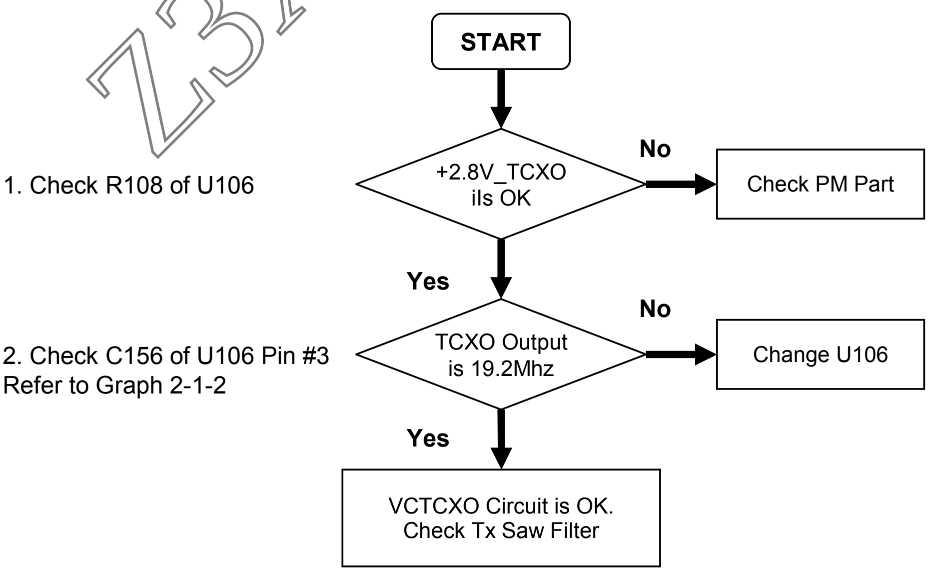
2.1.2 Checking VCTCXO Circuit

Test Point

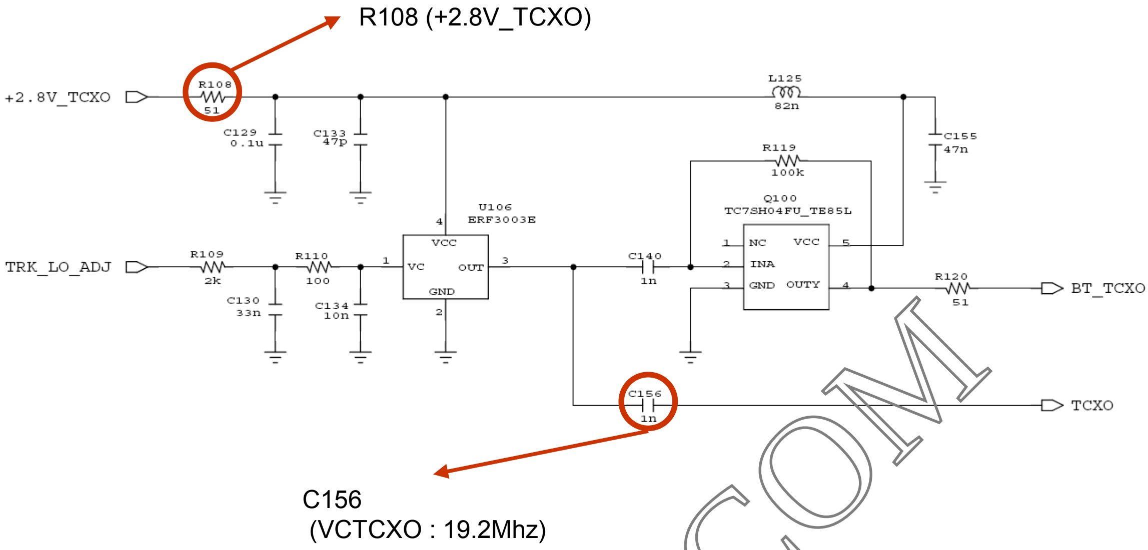


[Figure 4-2-1-2]

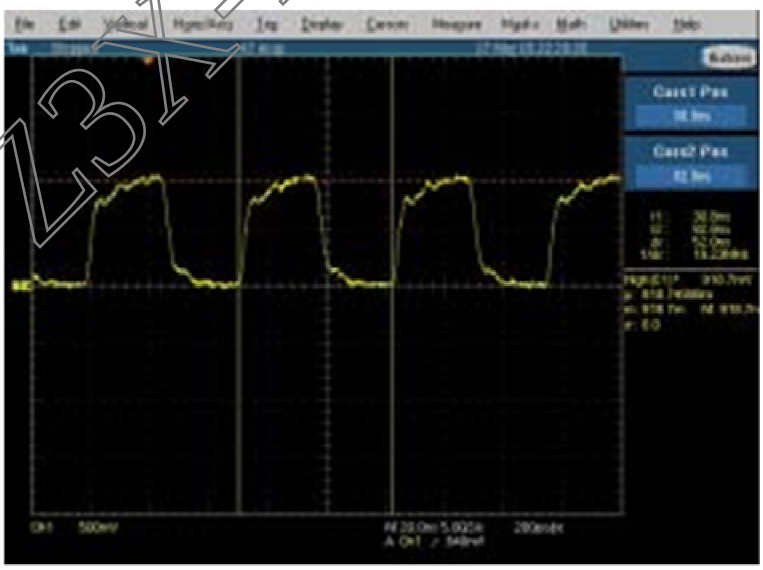
Checking Flow



Circuit Diagram



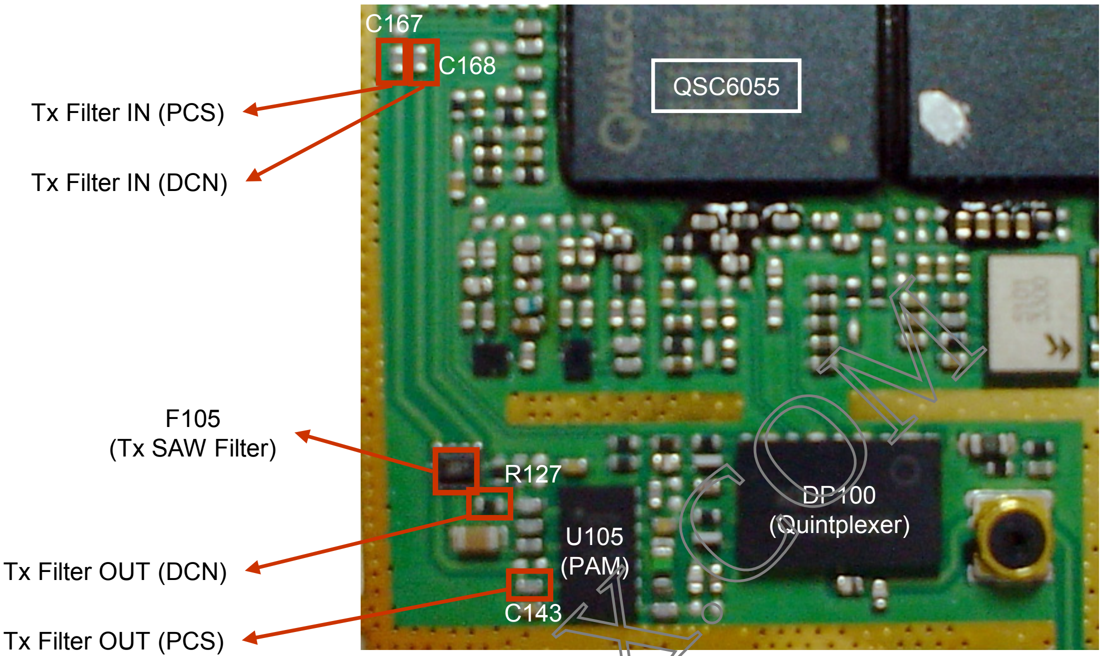
Waveform



Graph 2-1-2

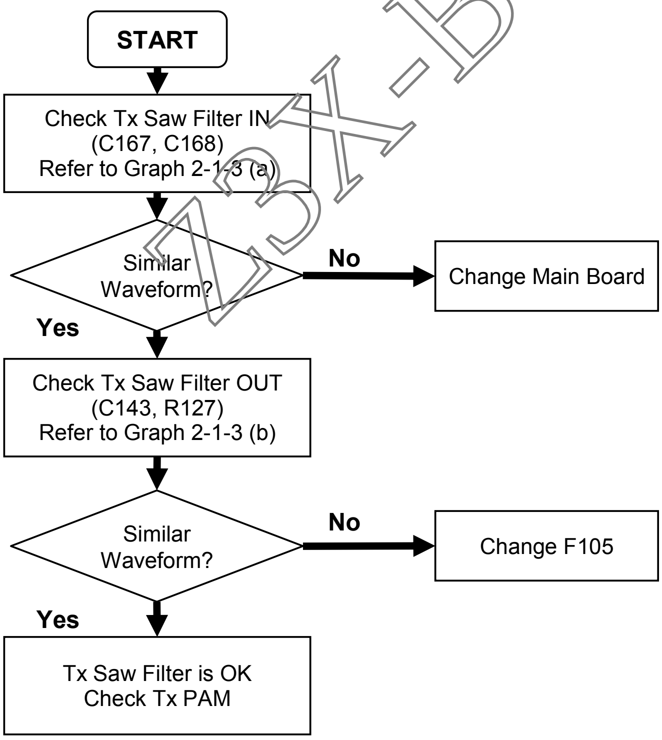
2.1.3 Checking Tx SAW Filter IN/OUT

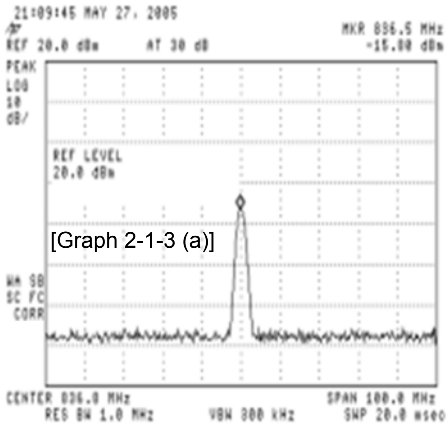
Test Point

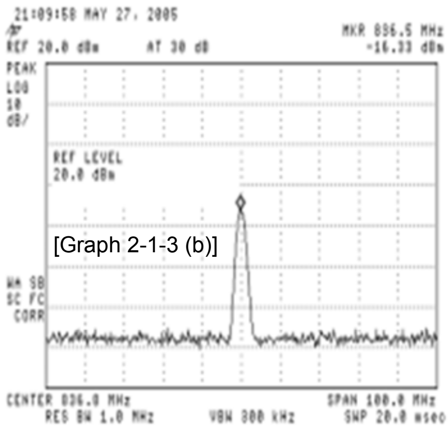


[Figure 4-2-1-3]

Checking Flow

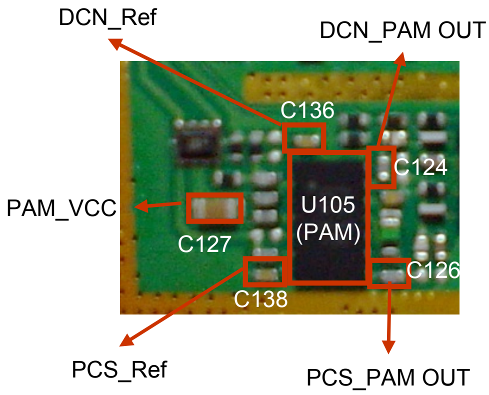






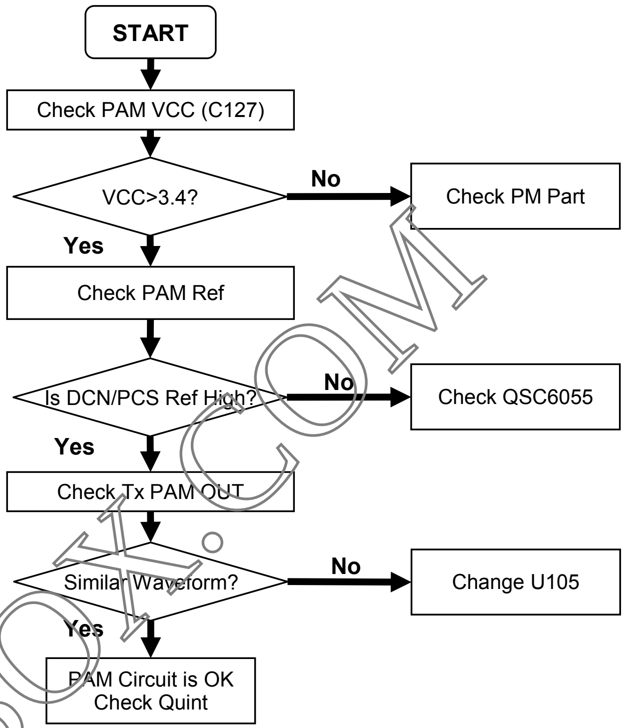
2.1.4 Checking Tx Dual PAM

Test Point

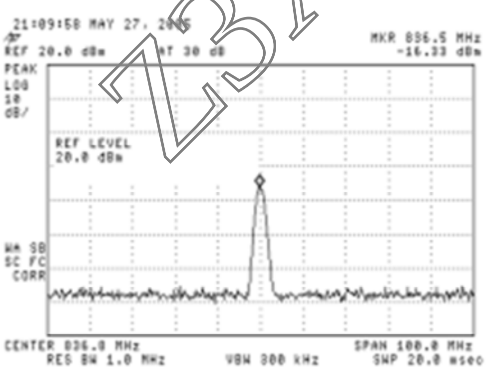


[Figure 4-2-1-4]

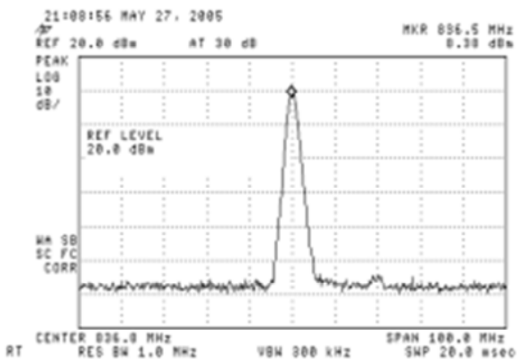
Checking Flow



Waveform

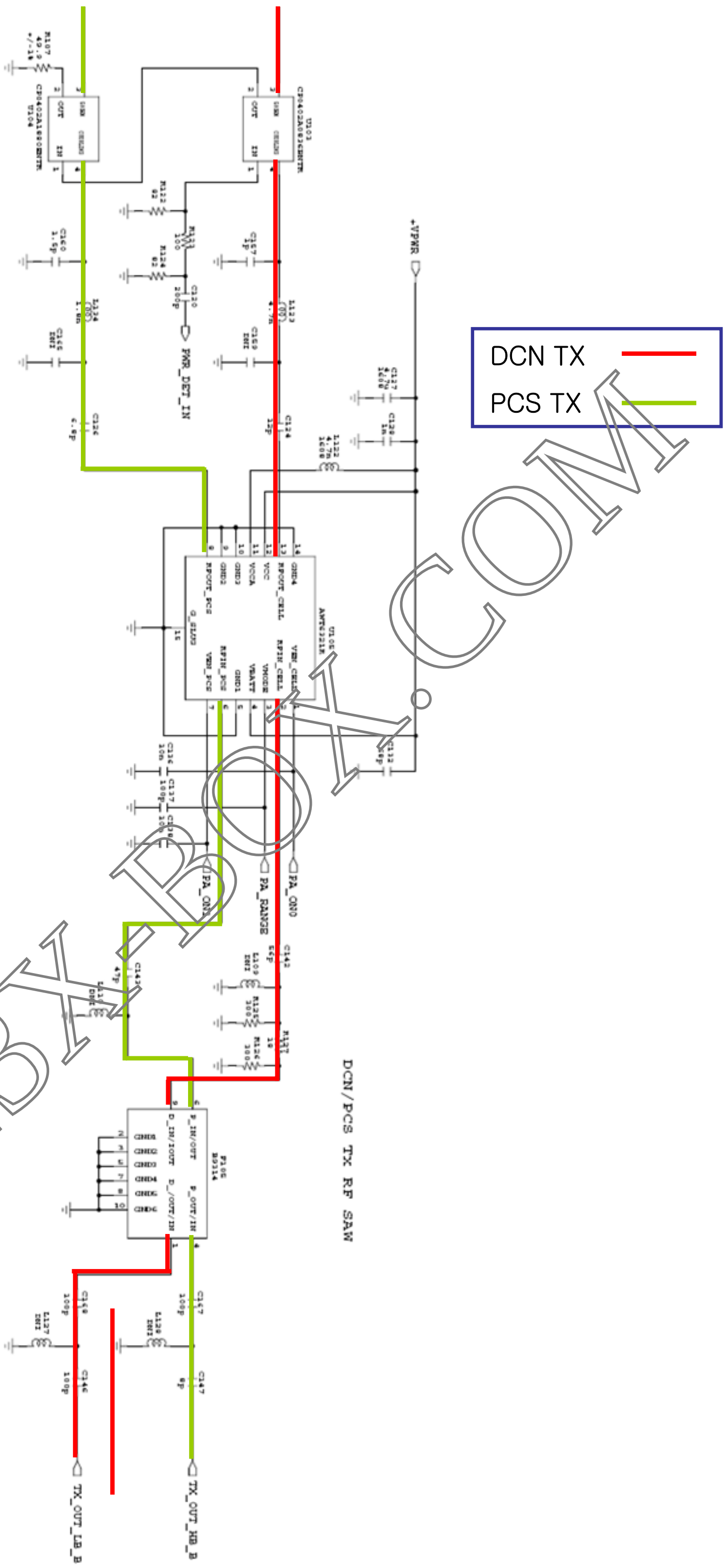


[Graph 2-1-4 (a)]
Tx PAM IN



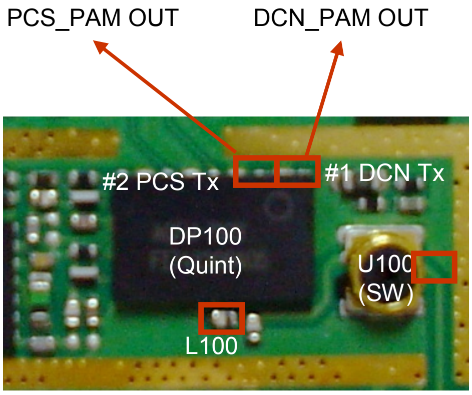
[Graph 2-1-4 (b)]
Tx PAM OUT

Circuit Diagram



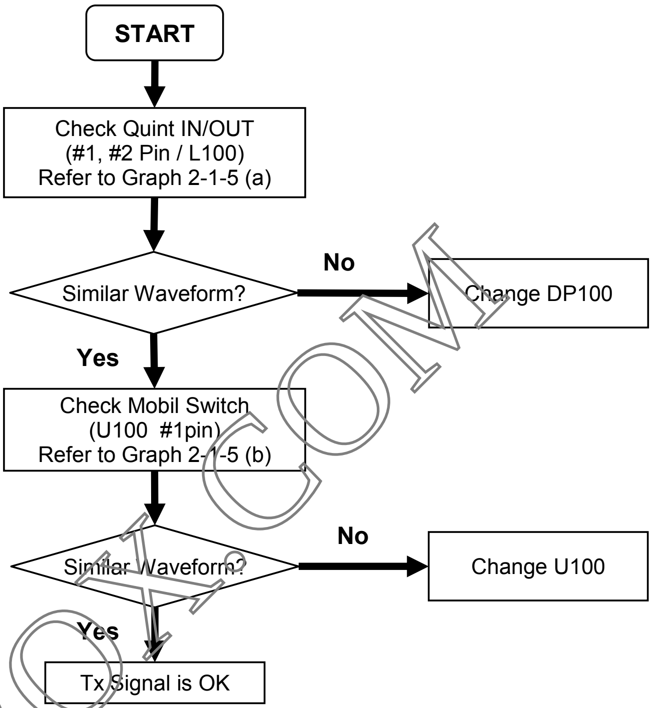
2.1.5 Checking Quintplexer and Mobile Switch

Test Point

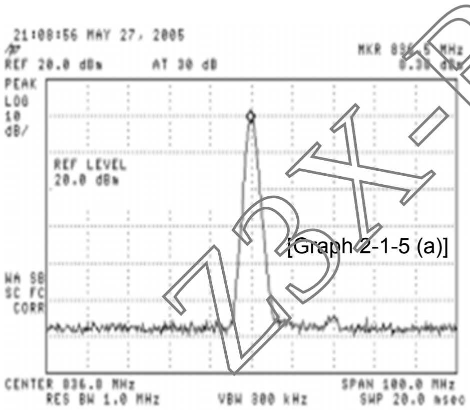


[Figure 4-2-1-5]

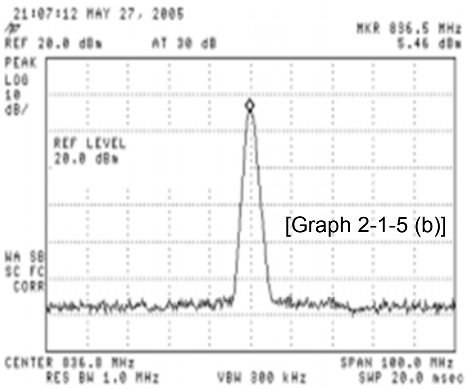
Checking Flow



Waveform

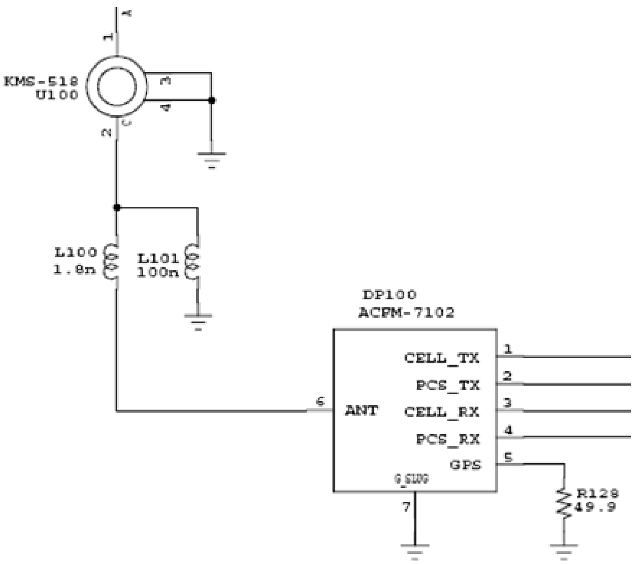


[Graph 2-1-5 (a)]



[Graph 2-1-5 (b)]

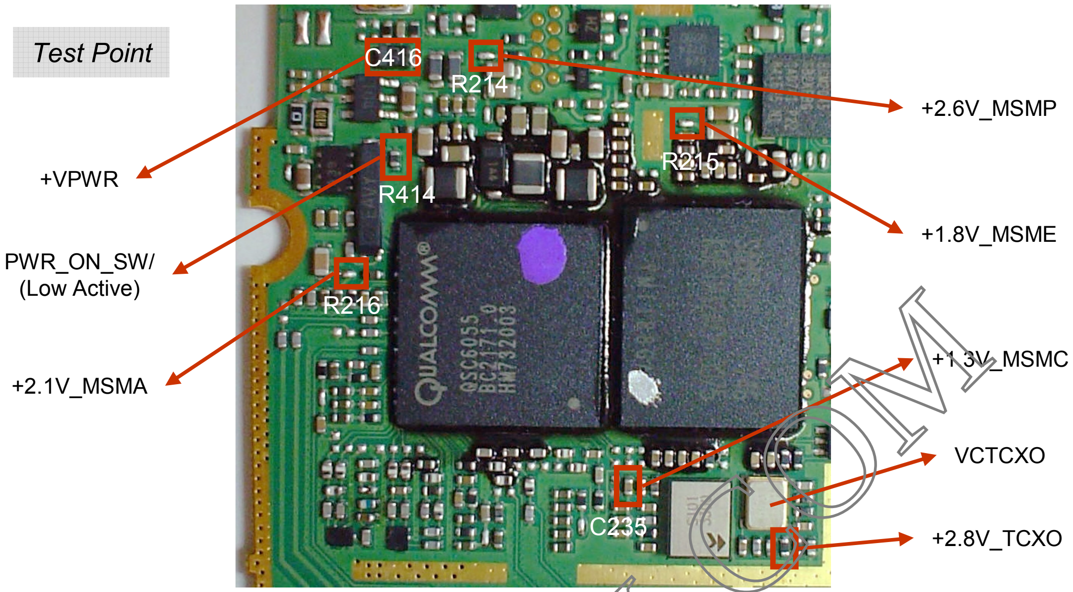
Circuit Diagram



3. Power

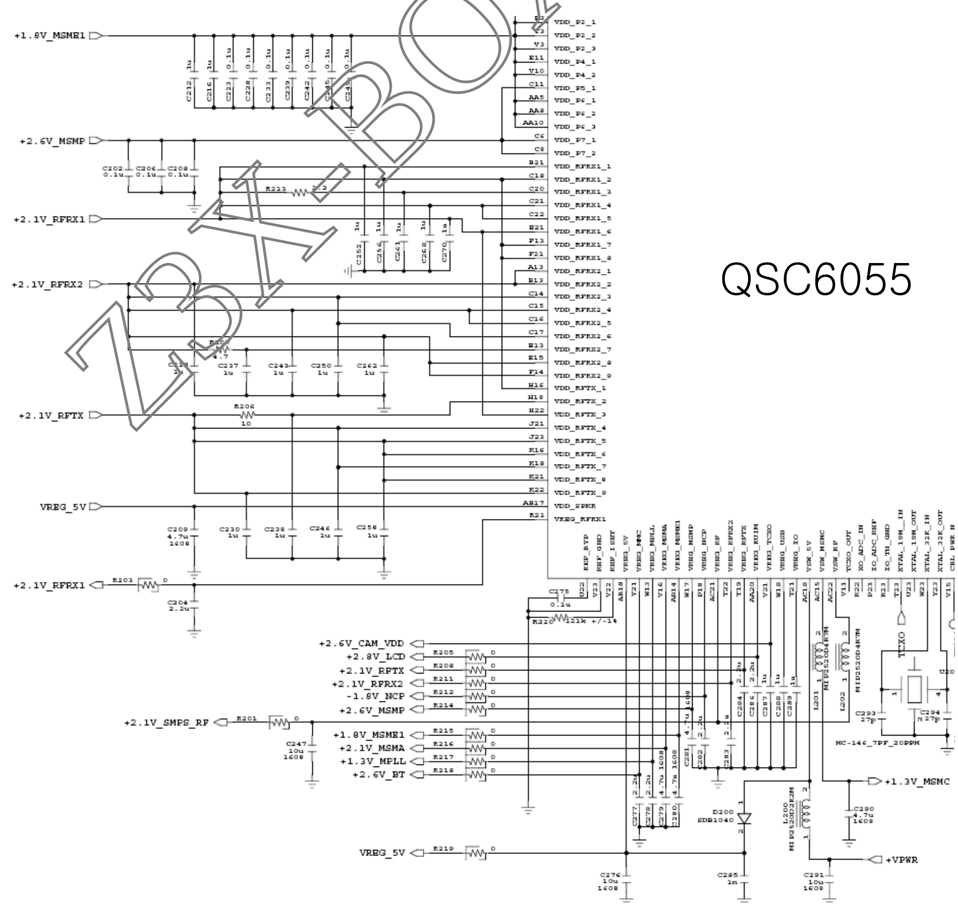
3.1 Power On Trouble

Test Point

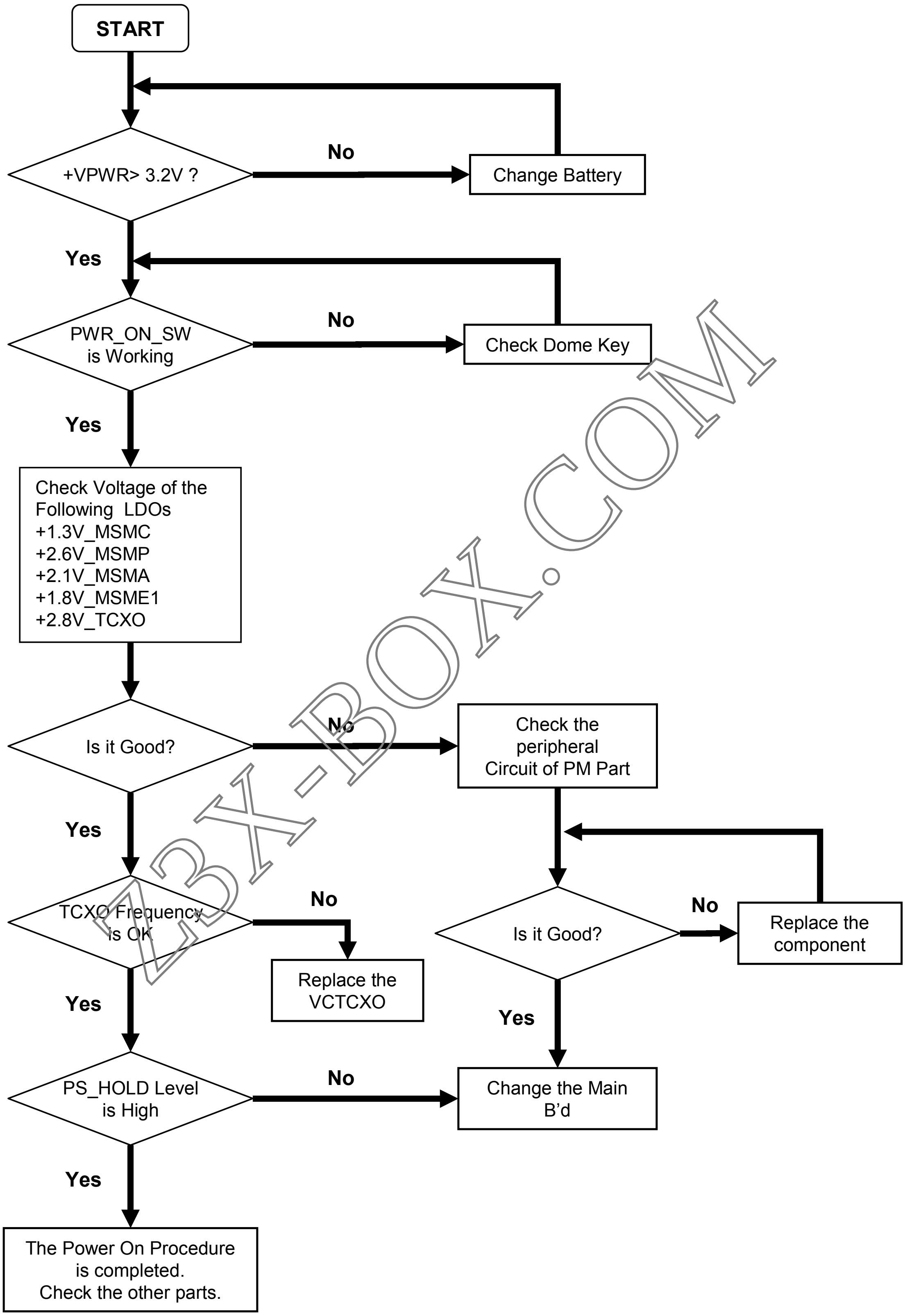


[Figure 4-3-1] PM part

Circuit

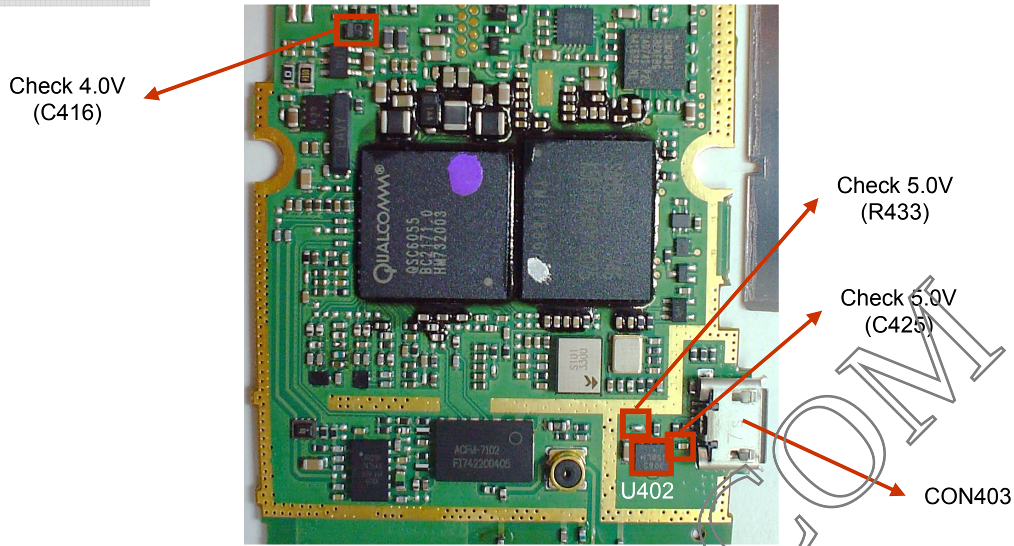


Checking Flow



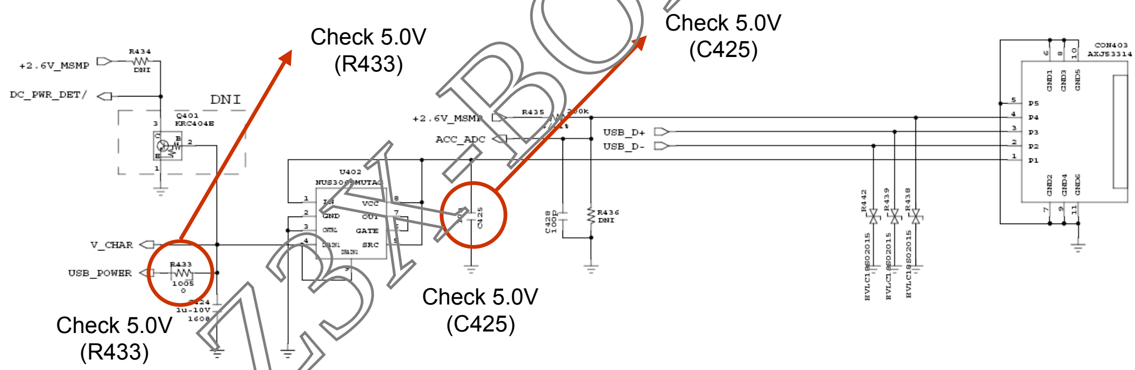
3.2 Charging Trouble

Test Point

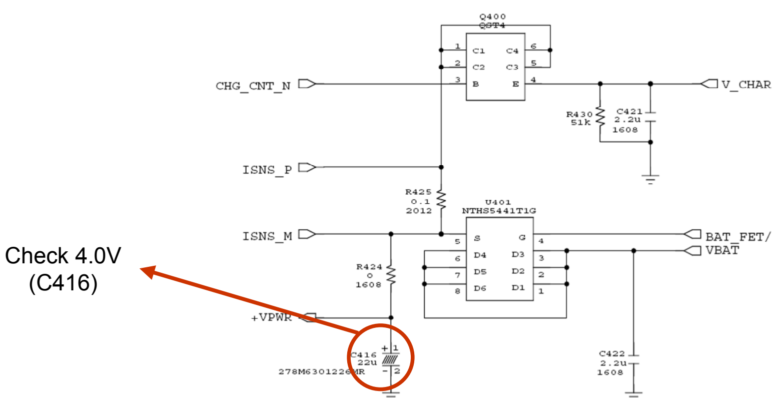


[Figure 4-3-2] Charging part

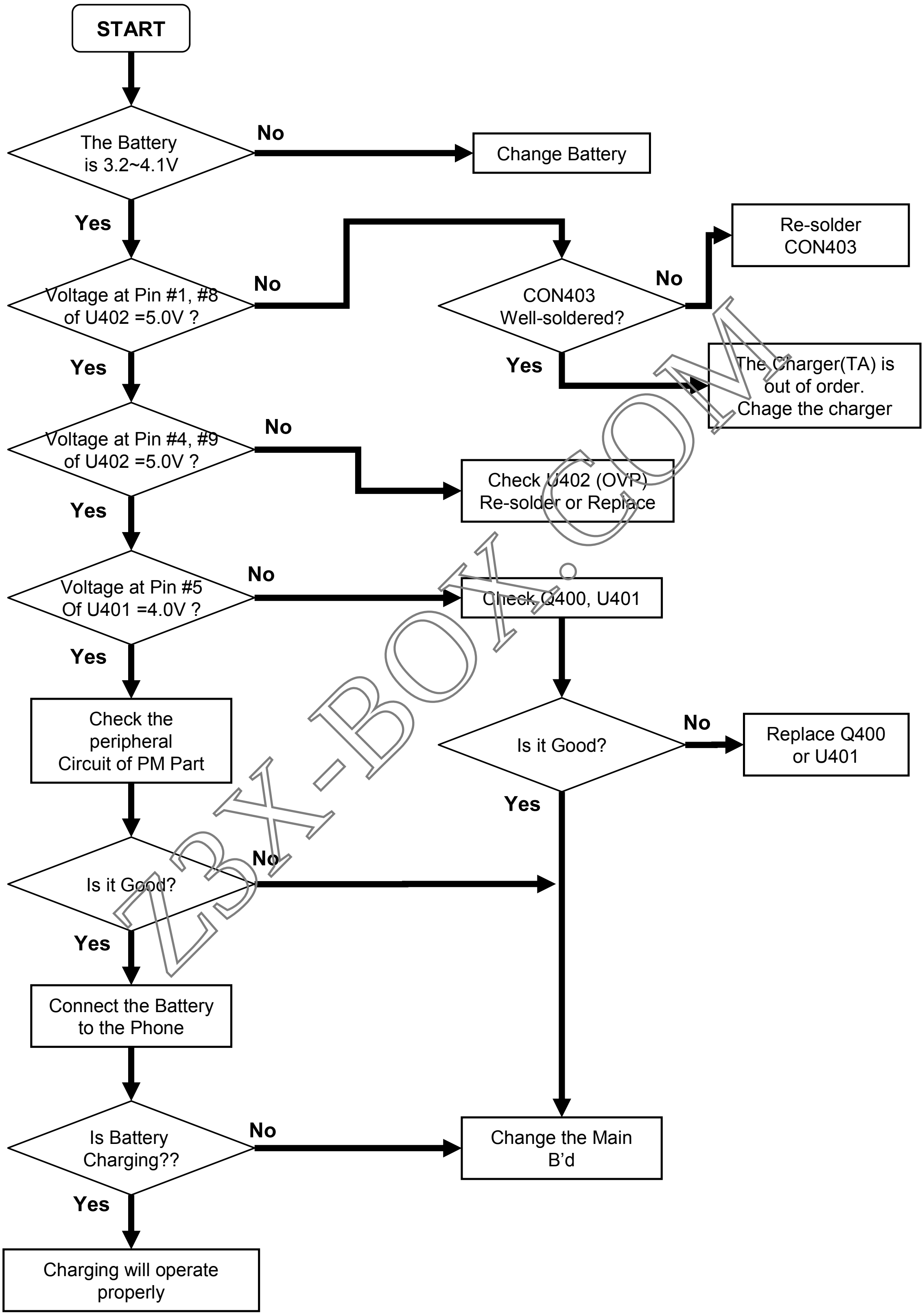
Circuit



<charging circuit>



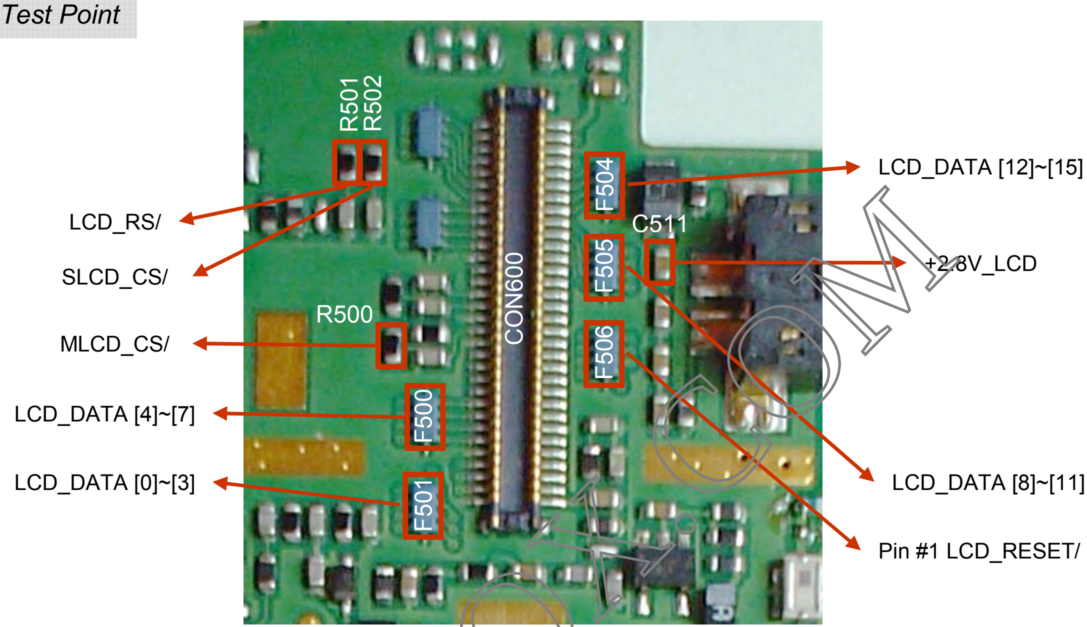
Checking Flow



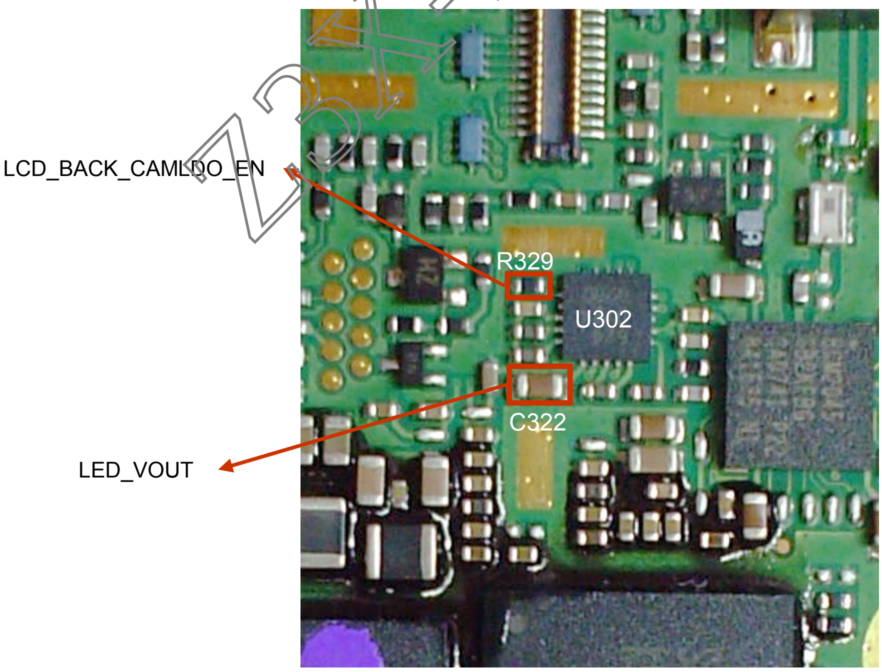
4. Logic Part Trouble

4.1 LCD Trouble

Test Point

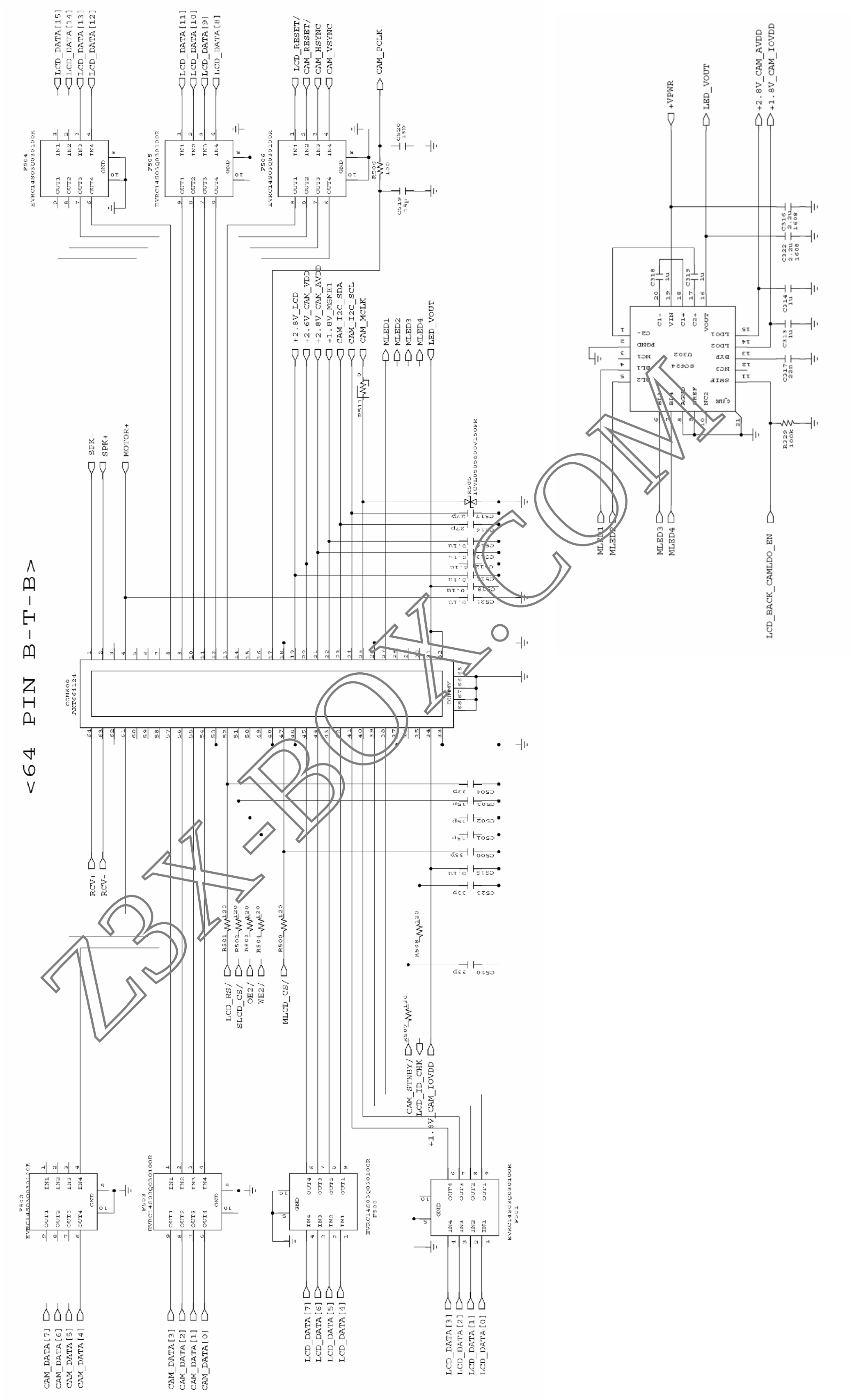


[Figure 4-4-1 (a)] LCD part

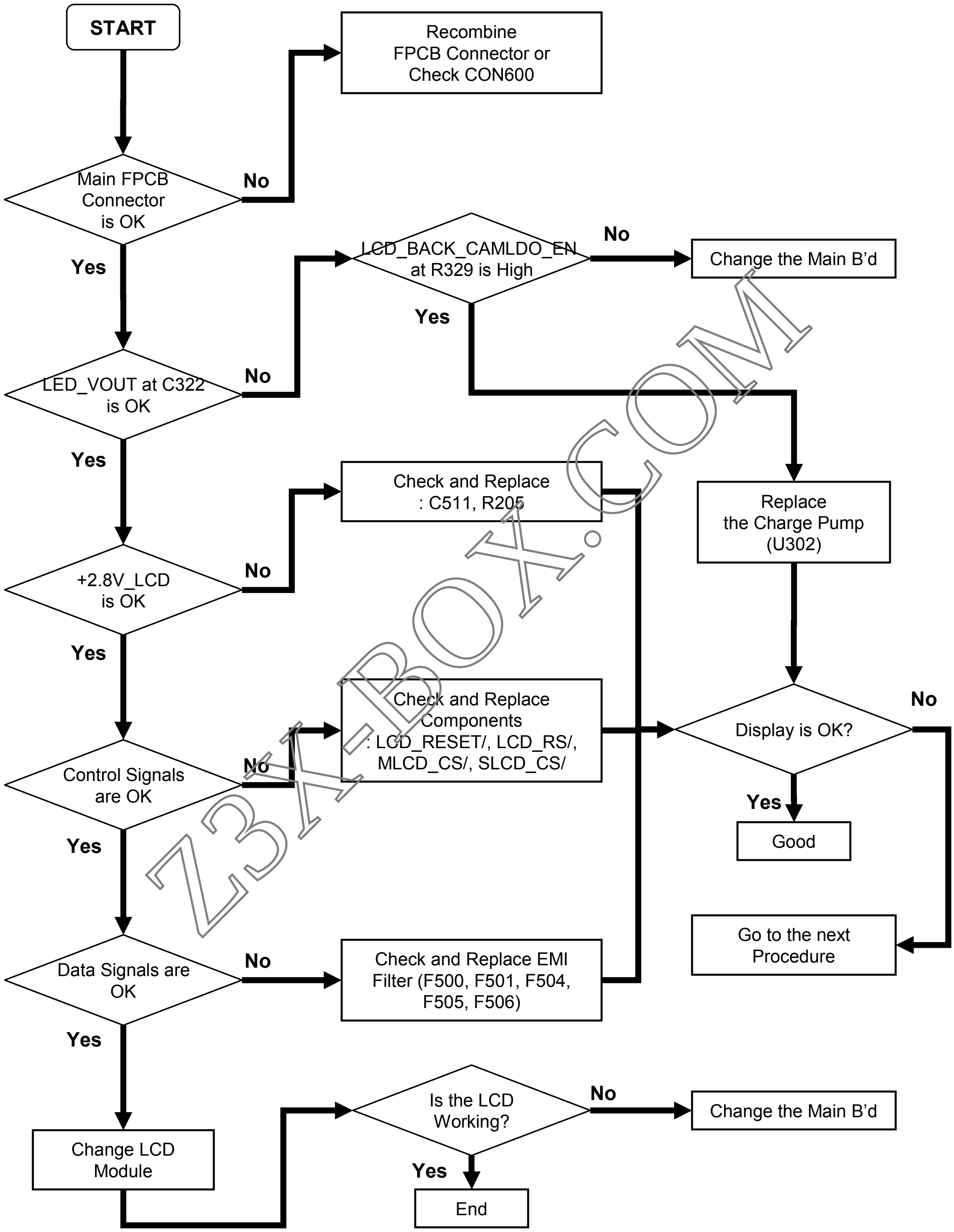


[Figure 4-4-1 (b)] Charge Pump
for LCD Backlight & Camera

Circuit

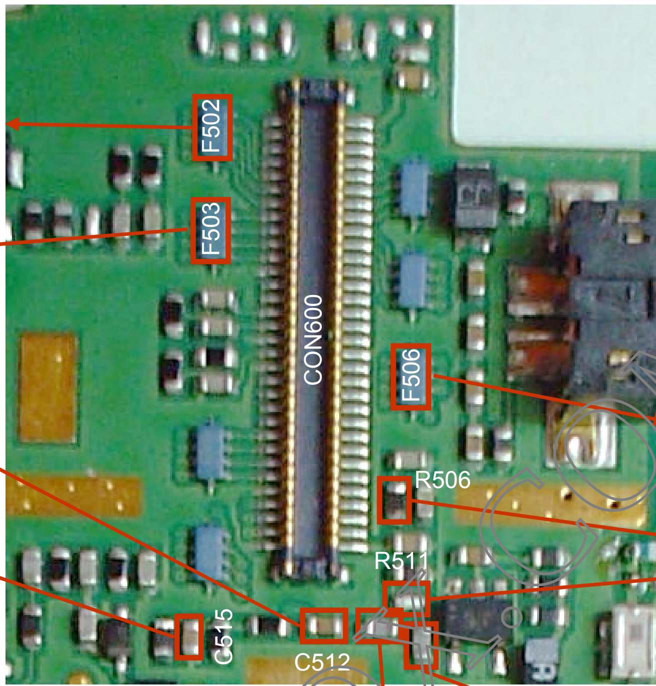

<64 PIN B-T-B>
LCD_DATA[15]
LCD_DATA[14]
LCD_DATA[13]
LCD_DATA[12]
LCD_DATA[11]
LCD_DATA[10]
LCD_DATA[9]
LCD_DATA[8]
LCD_RESET/
CAM_RESET/
CAM_HSYNC
CAM_VSYNC
CAM_PCLK
+VPWR
LED_VOUT
+2.8V_CAM_AVDD
+1.8V_CAM_IOVDD
SPK-
SPK+
MOTOR+
+2.8V_LCD
+2.6V_CAM_VDD
+2.8V_CAM_AVDD
CAM_I2C_SDA
CAM_I2C_SCL
CAM_MCLK
MLED1
MLED2
MLED3
MLED4
LED_VOUT
LCD_BACK_CAMLDO_EN
RCV+
RCV-
LCD_RS/
SLCD_CS/
OE2/
WE2/
MLCD_CS/
CAM_STNBY/
LCD_ID_CHK
+1.8V_CAM_IOVDD
CAM_DATA[7]
CAM_DATA[6]
CAM_DATA[5]
CAM_DATA[4]
CAM_DATA[3]
CAM_DATA[2]
CAM_DATA[1]
CAM_DATA[0]
LCD_DATA[7]
LCD_DATA[6]
LCD_DATA[5]
LCD_DATA[4]
LCD_DATA[3]
LCD_DATA[2]
LCD_DATA[1]
LCD_DATA[0]

Checking Flow

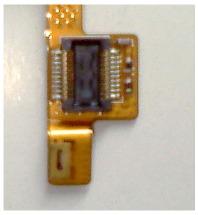


4.2. Camera Trouble

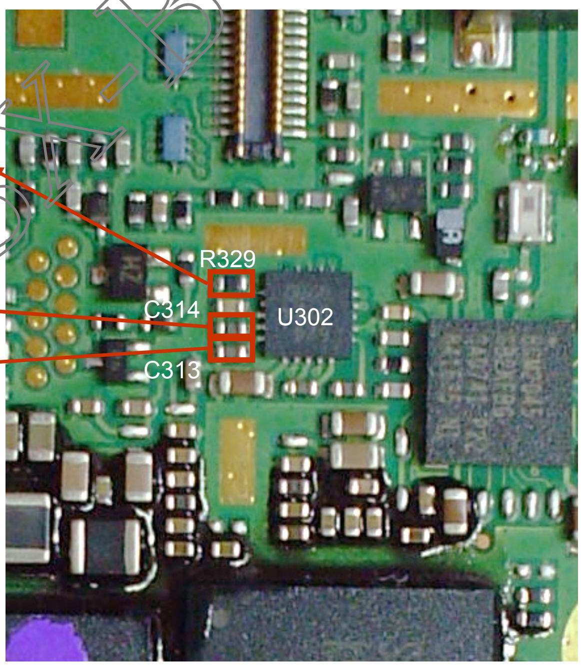
Test Point



[Figure 4-4-2-1 (a)] Camera part

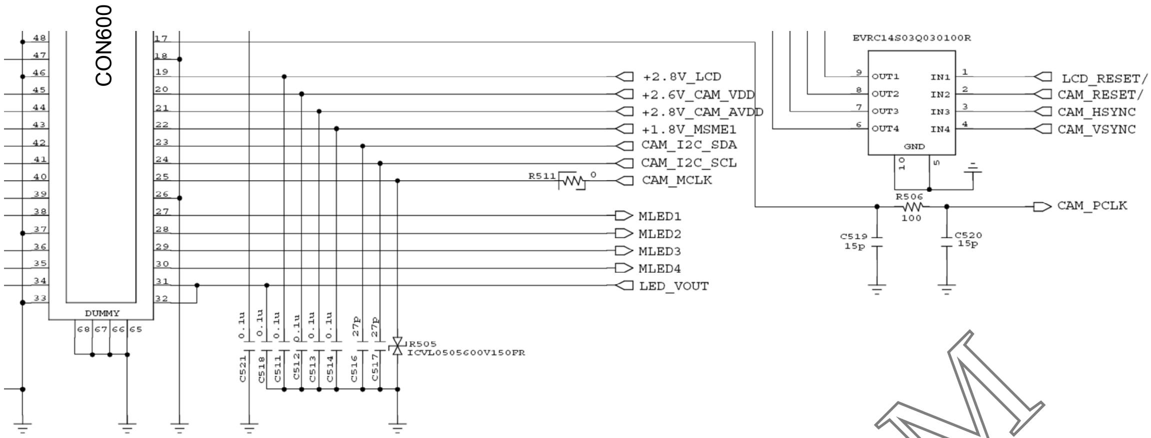


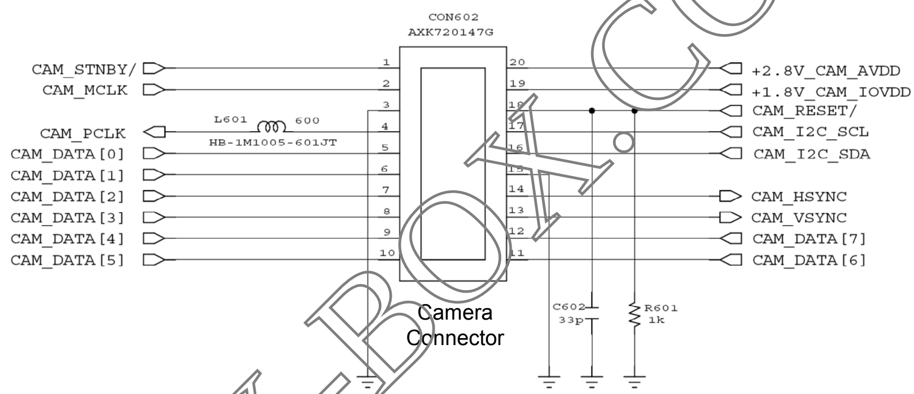
[Fig 4-4-2-2]
Camera FPCB Connector



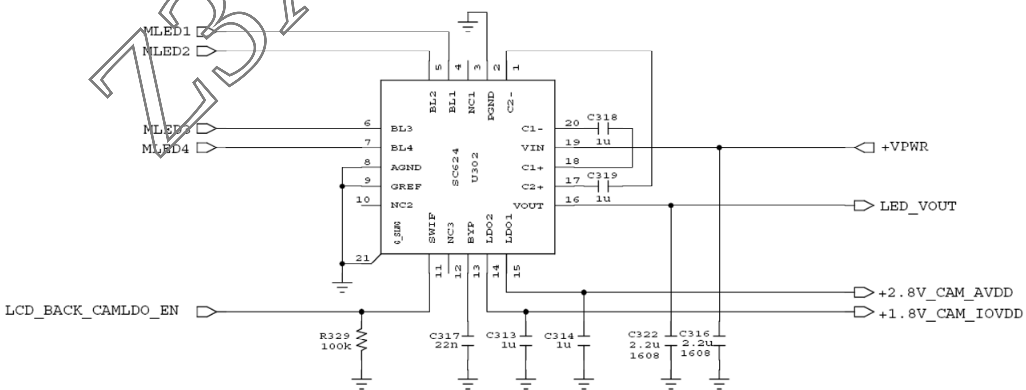
[Figure 4-4-2-1 (b)] Charge Pump
for LCD Backlight & Camera

Circuit



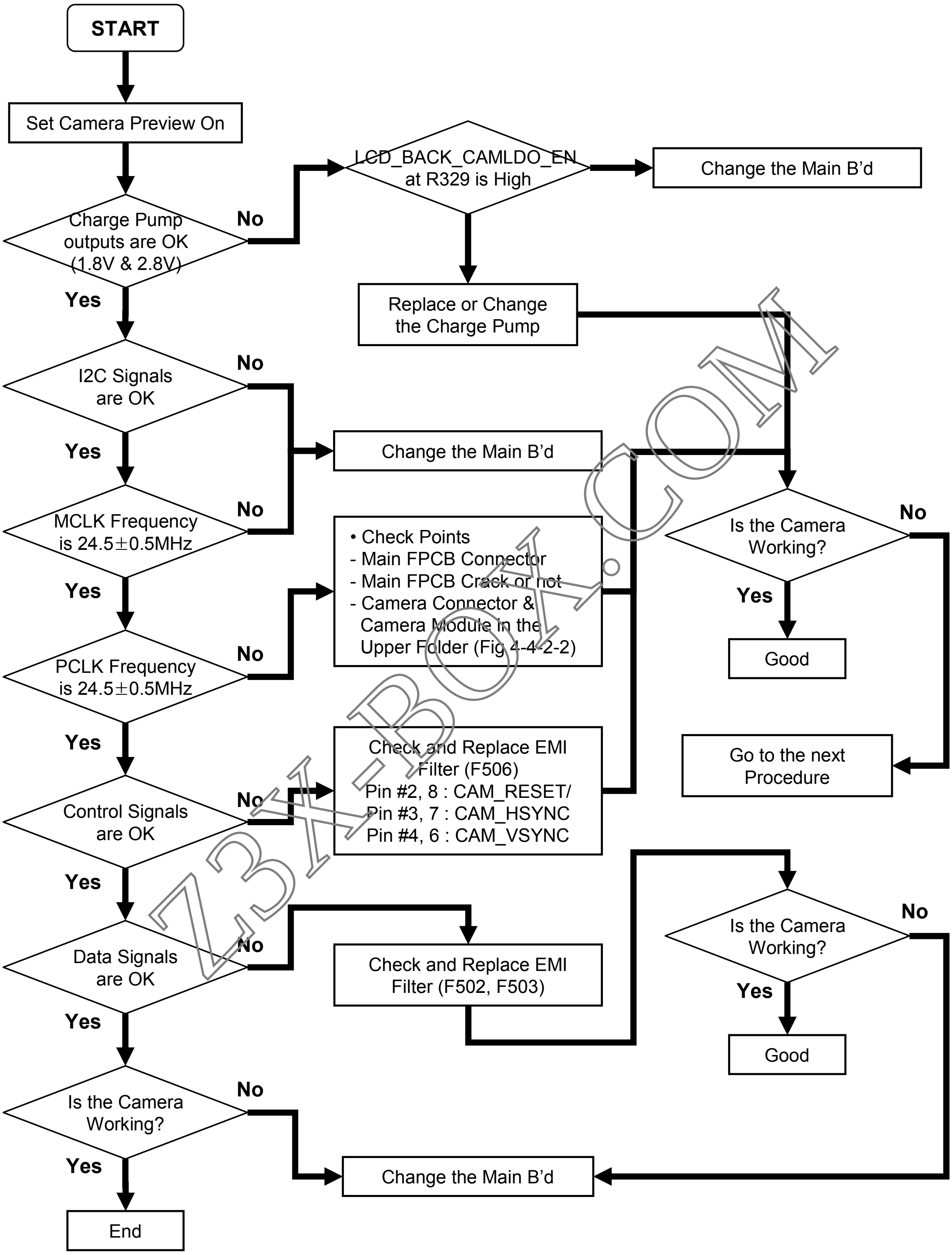


Camera Connector



Charge Pump

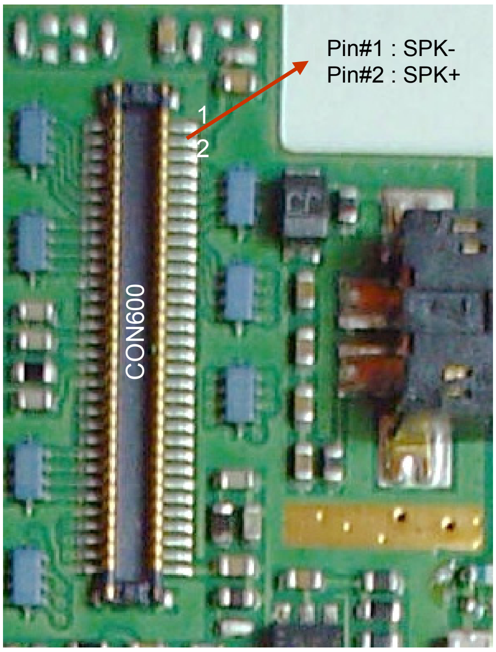
Checking Flow



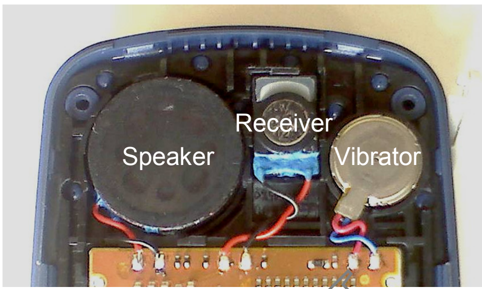
4.3 Audio Trouble

4.3.1 Speaker Trouble

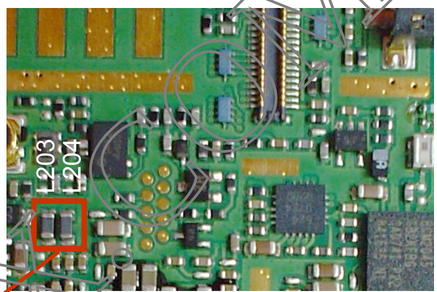
Test Point



[Figure 4-4-3-1 (a)] Audio part



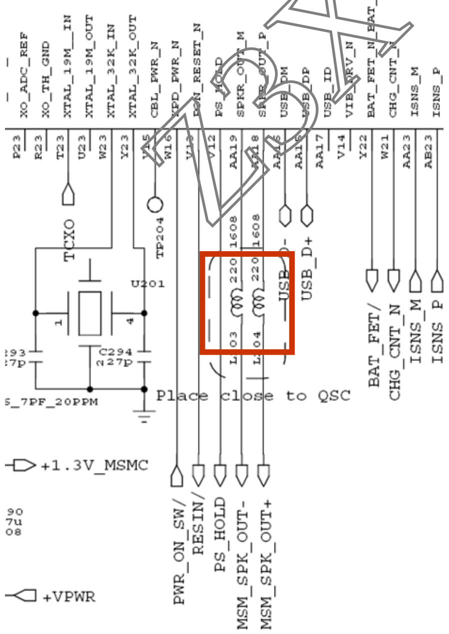
[Fig 4-4-3-1 (b)] Upper Folder



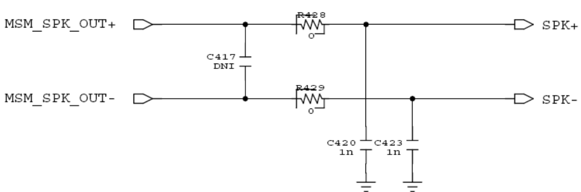
[Fig 4-4-3-1 (c)]

L203 : MSM_SPK_OUT-
L204 : MSM_SPK_OUT+

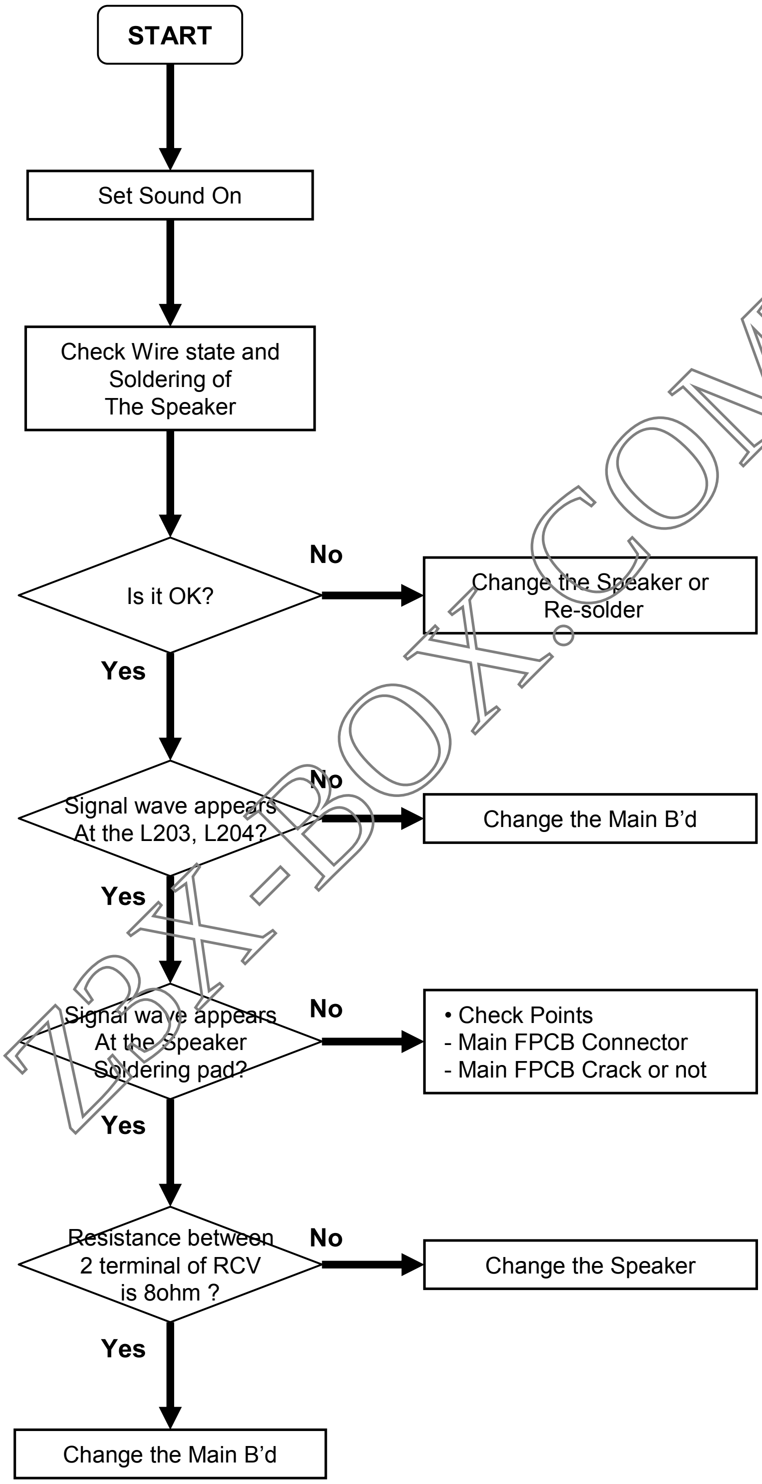
Circuit



<SPEAKER OUT>



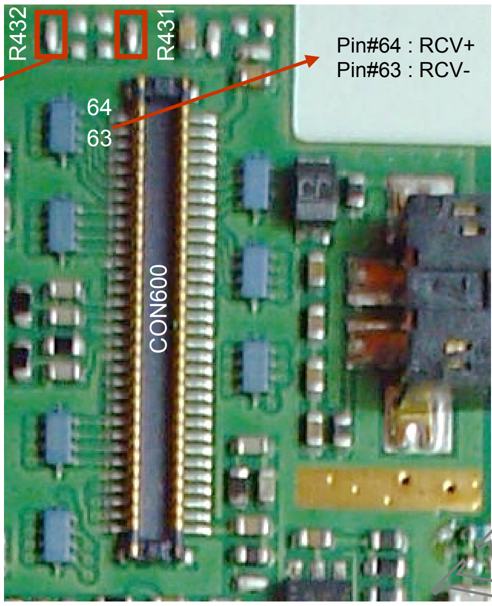
Checking Flow



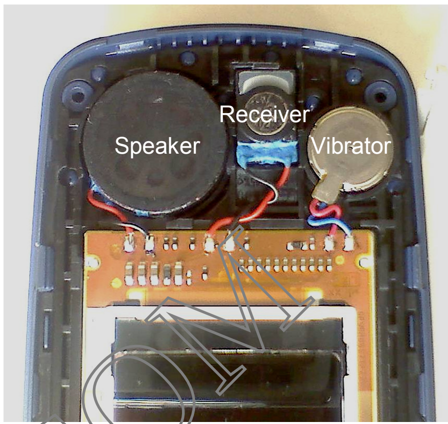
4.3.2 Receiver Trouble

Test Point

R431 : RCV+
R432 : RCV-



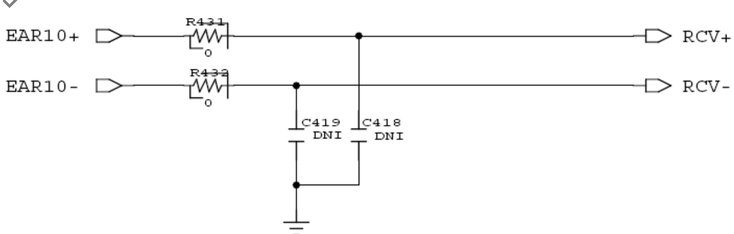
[Figure 4-4-3-2 (a)] Audio part



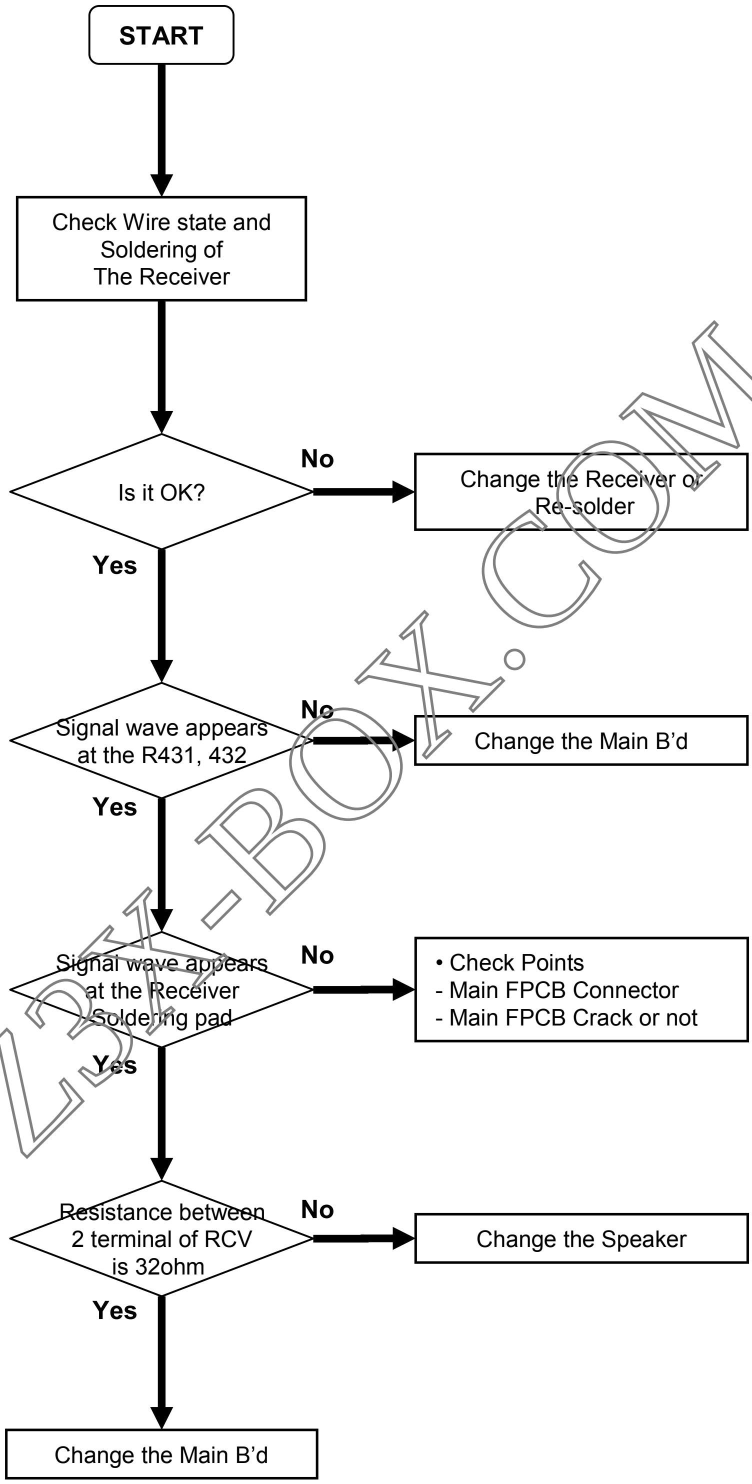
[Fig 4-4-3-2 (b)] Upper Folder

Circuit

<EARPIECE>

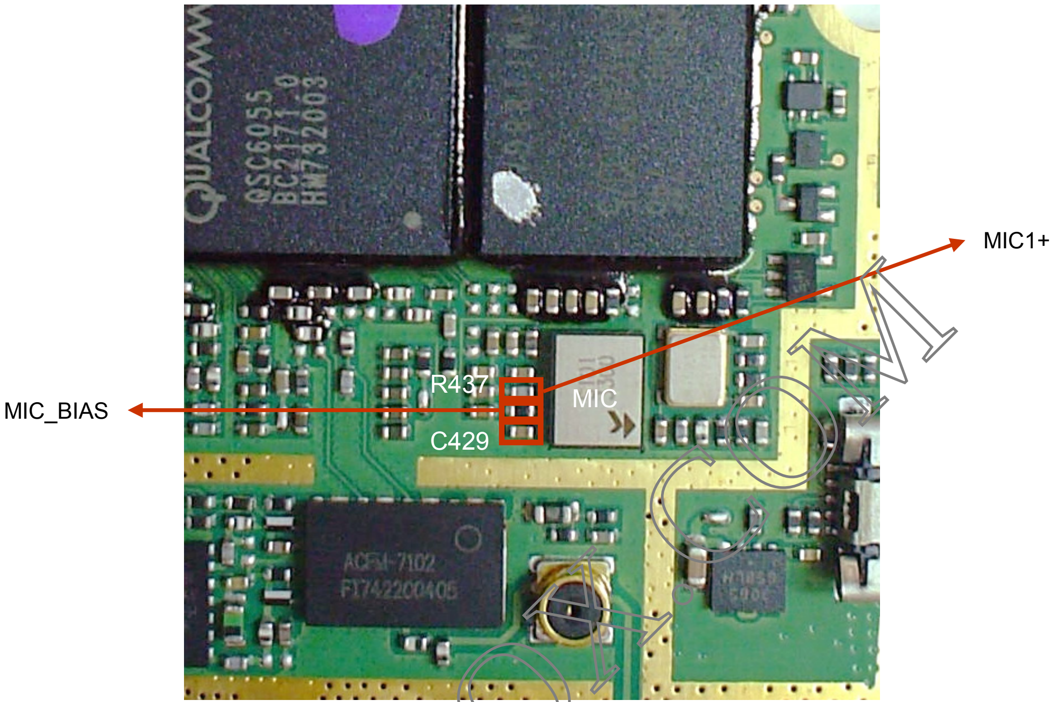


Checking Flow



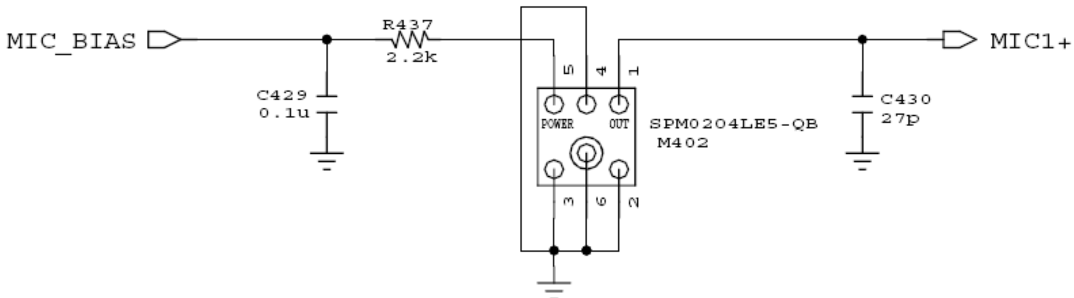
4.3.3 MIC Trouble

Test Point

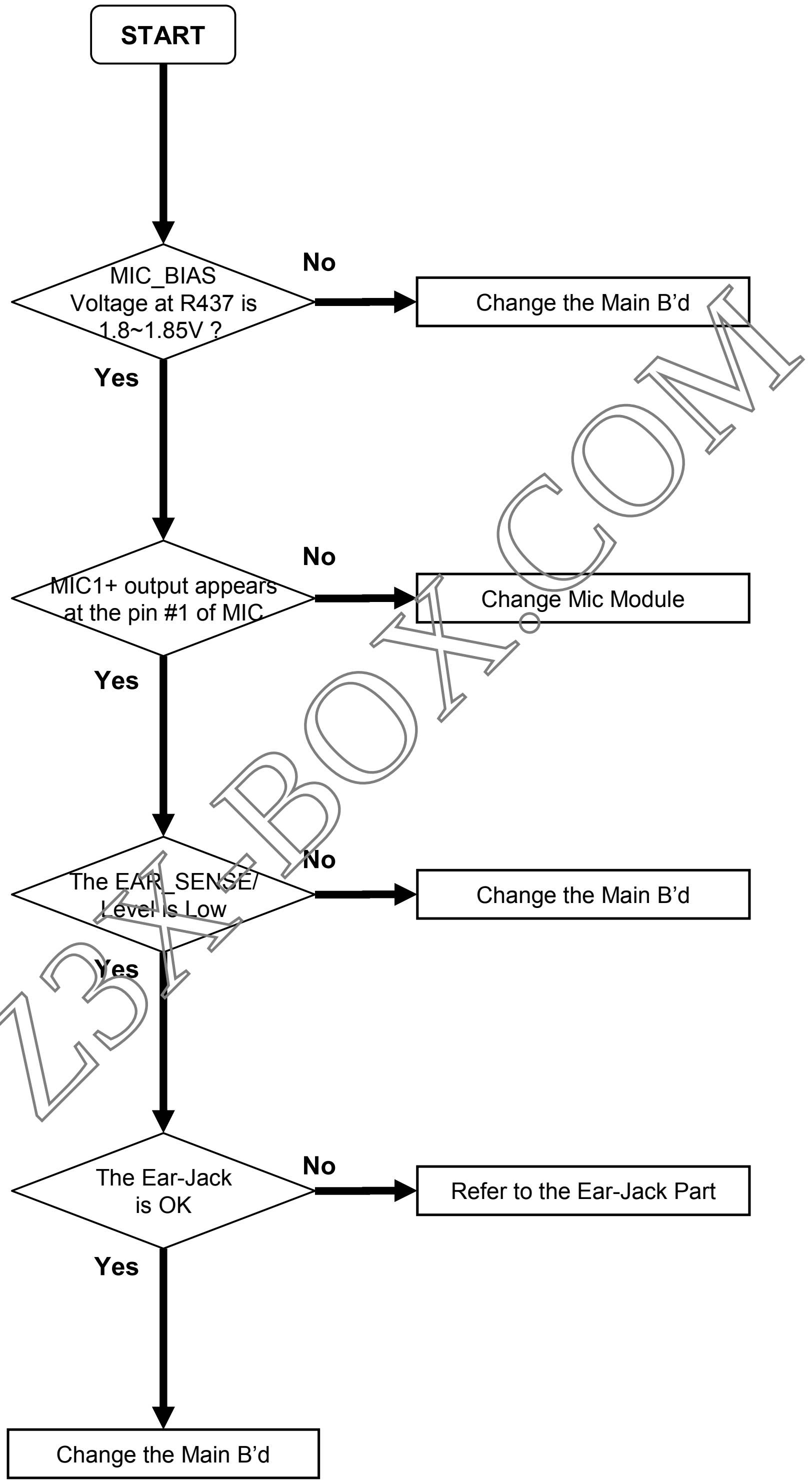


[Figure 4-4-3-3] Mic part

Circuit

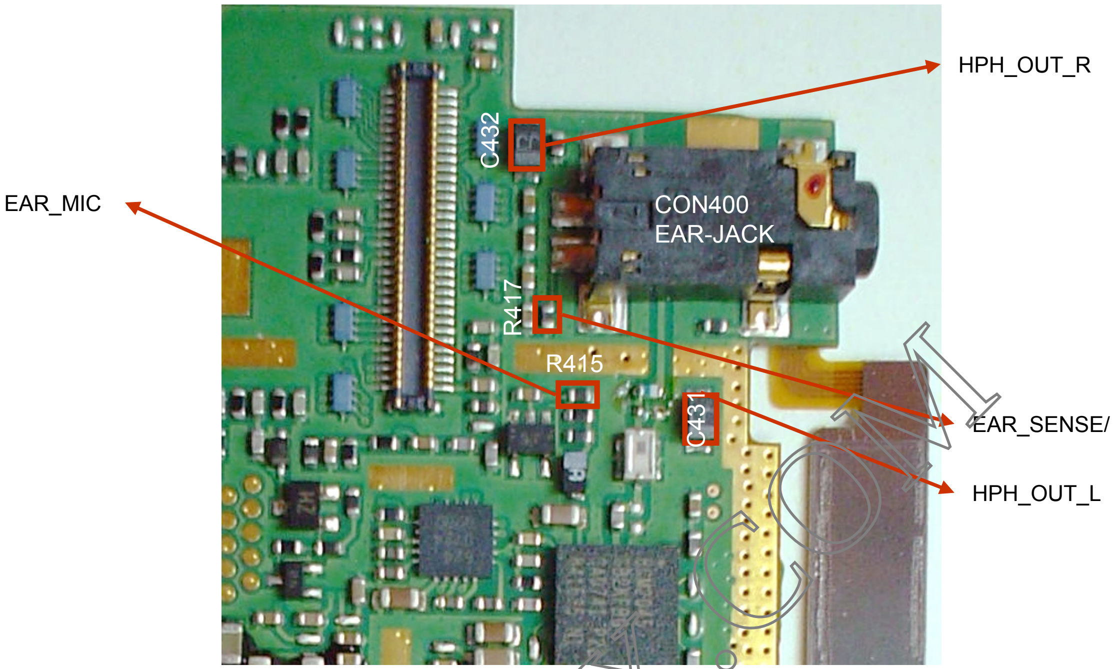


Checking Flow



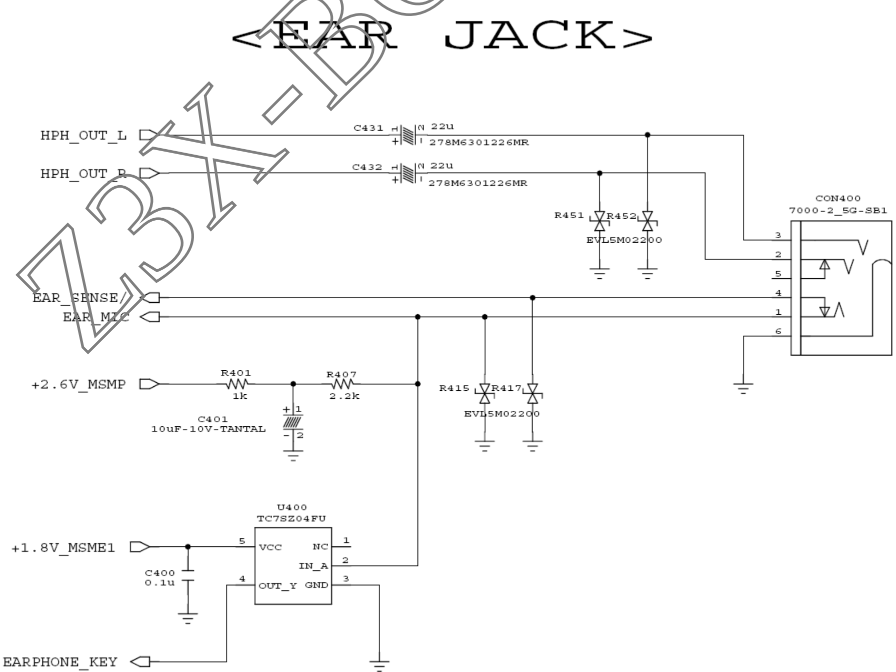
4.3.4 Ear-Jack Trouble

Test Point

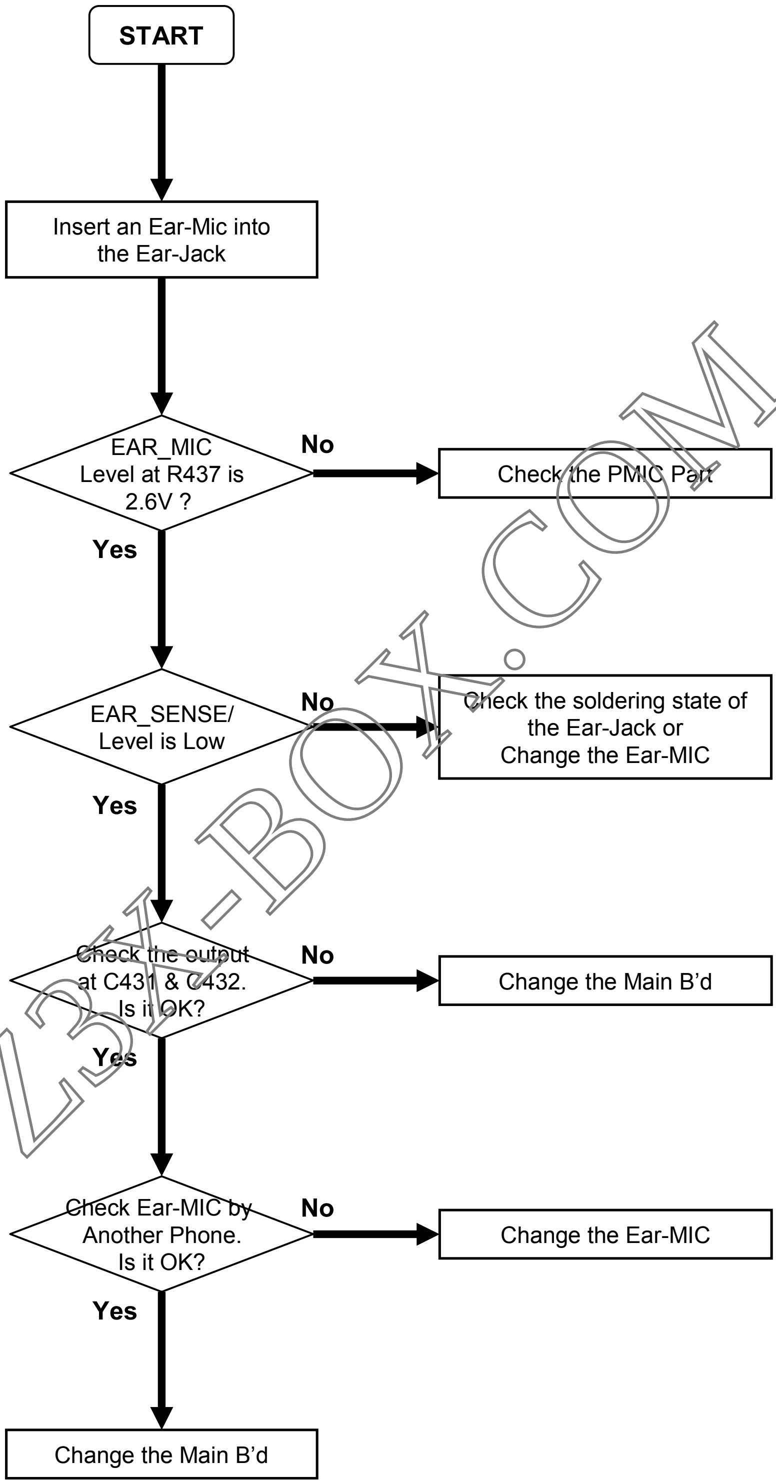


[Figure 4-4-3-4] Mic part

Circuit

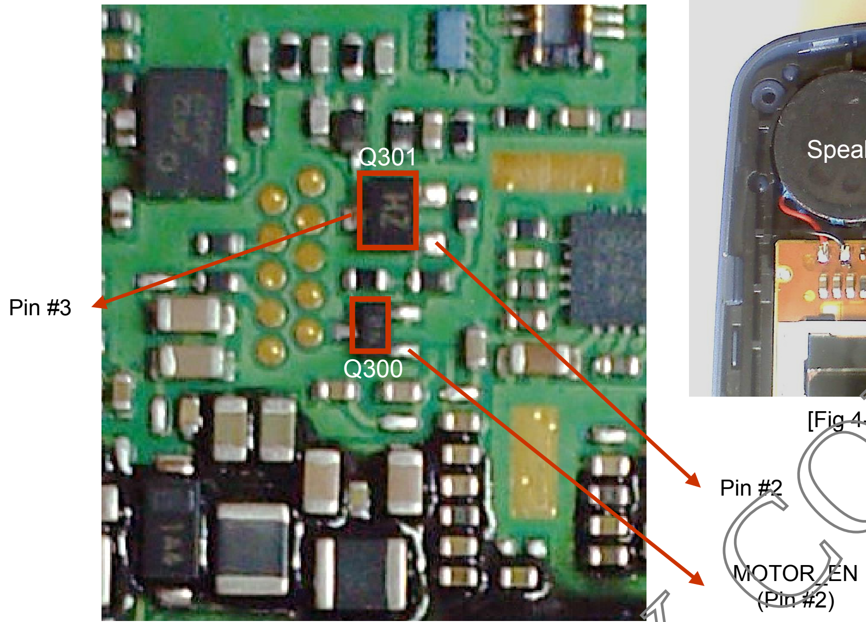


Checking Flow

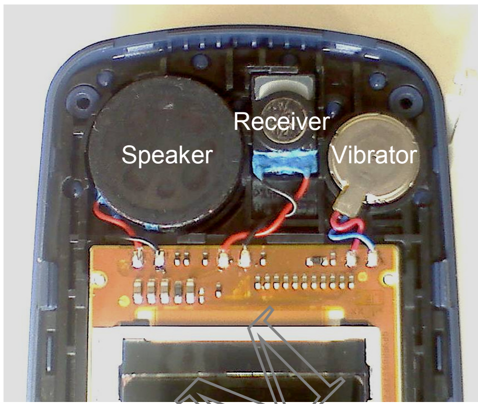


4.4 Vibrator Trouble

Test Point

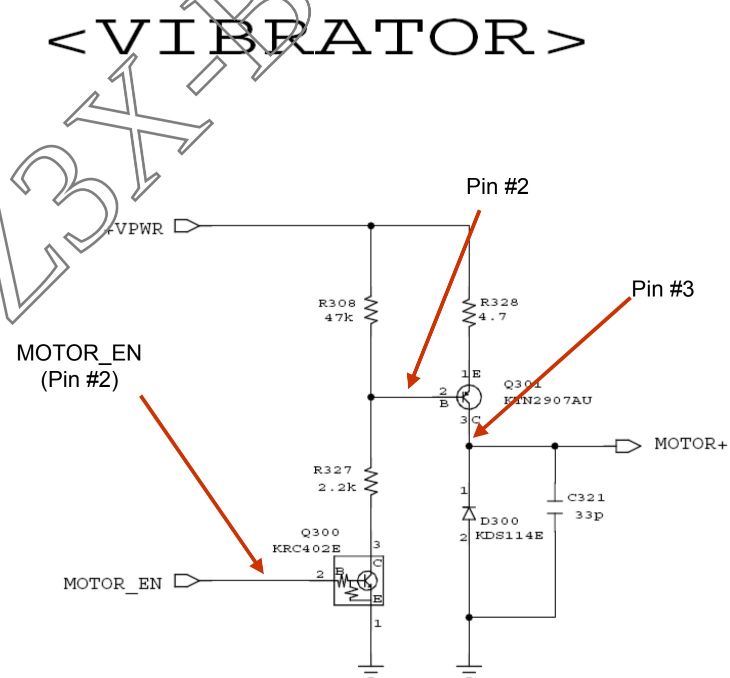


[Figure 4-4-4 (a)] Vibrator part

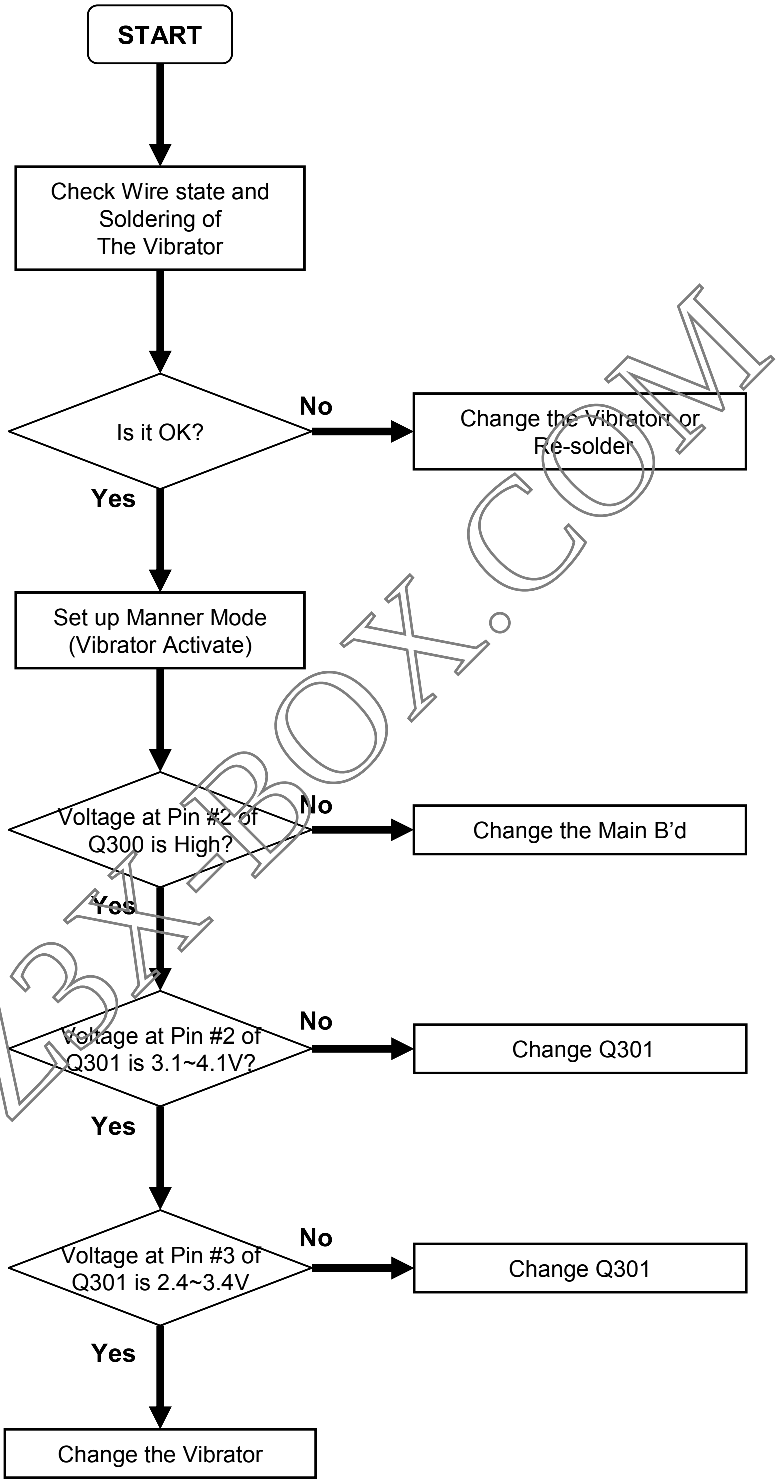


[Fig 4-4-4 (b)] Upper Folder

Circuit

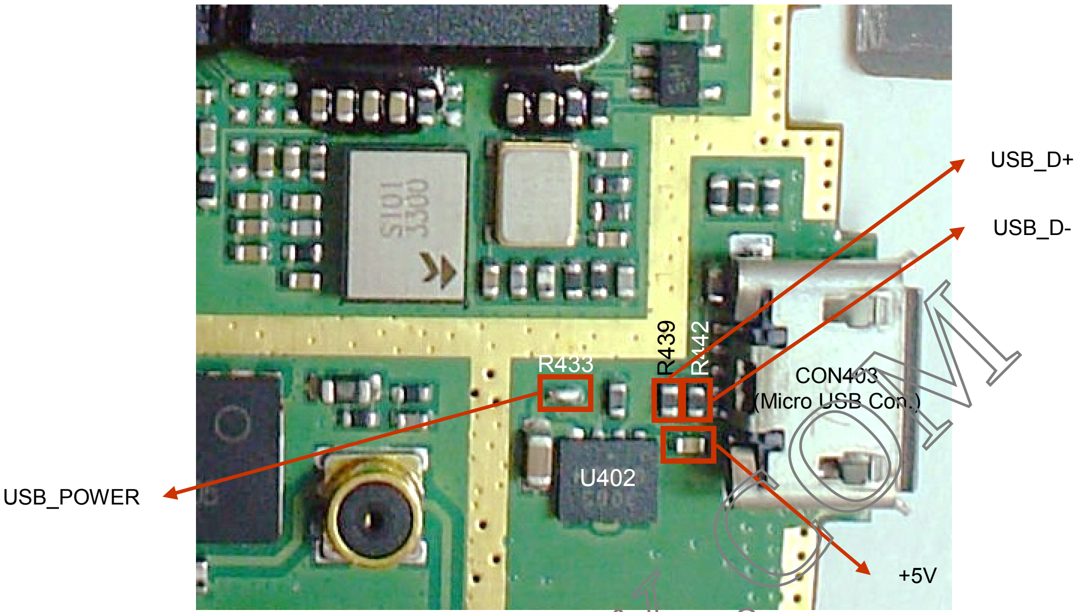


Checking Flow



4.5 USB Trouble

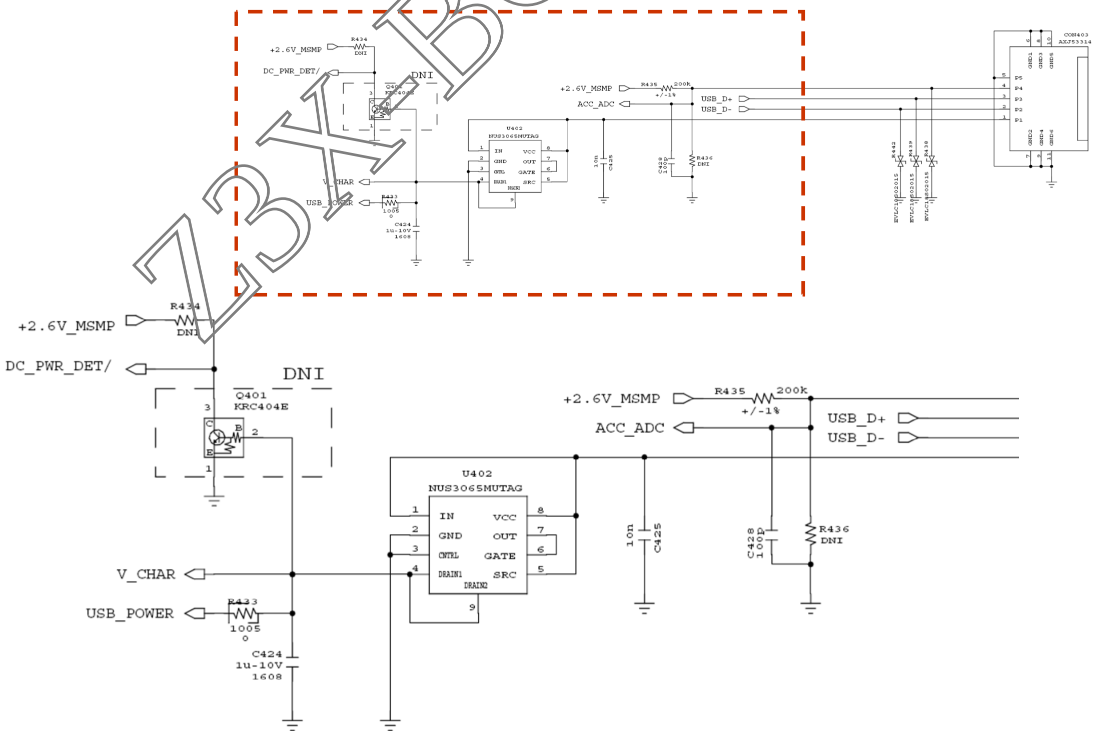
Test Point



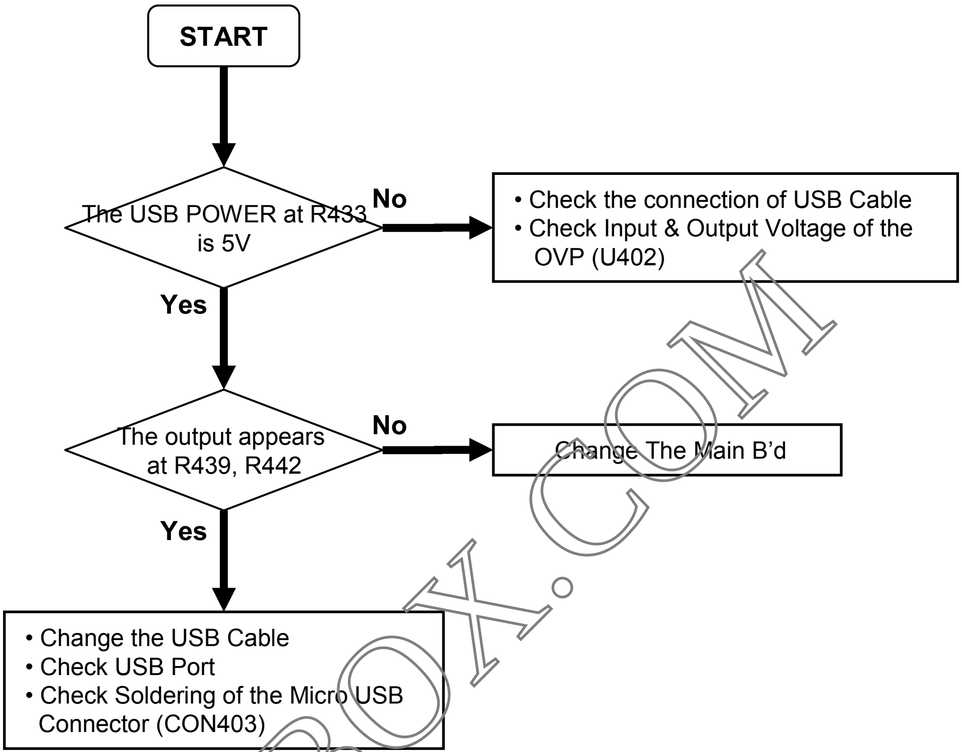
[Figure 4-4-5] USB part

Circuit

<MICRO USB CONNECTOR>

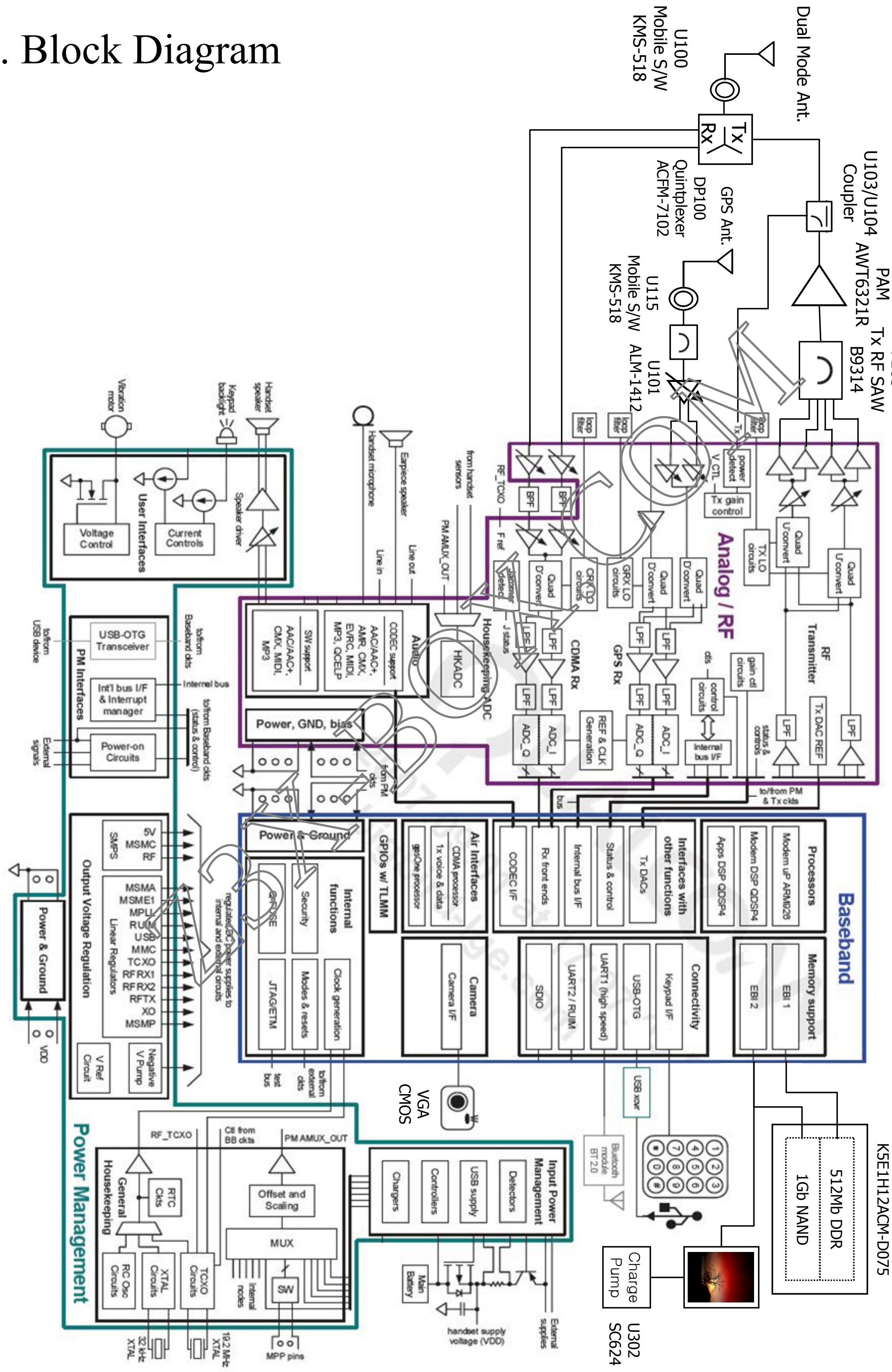


Checking Flow



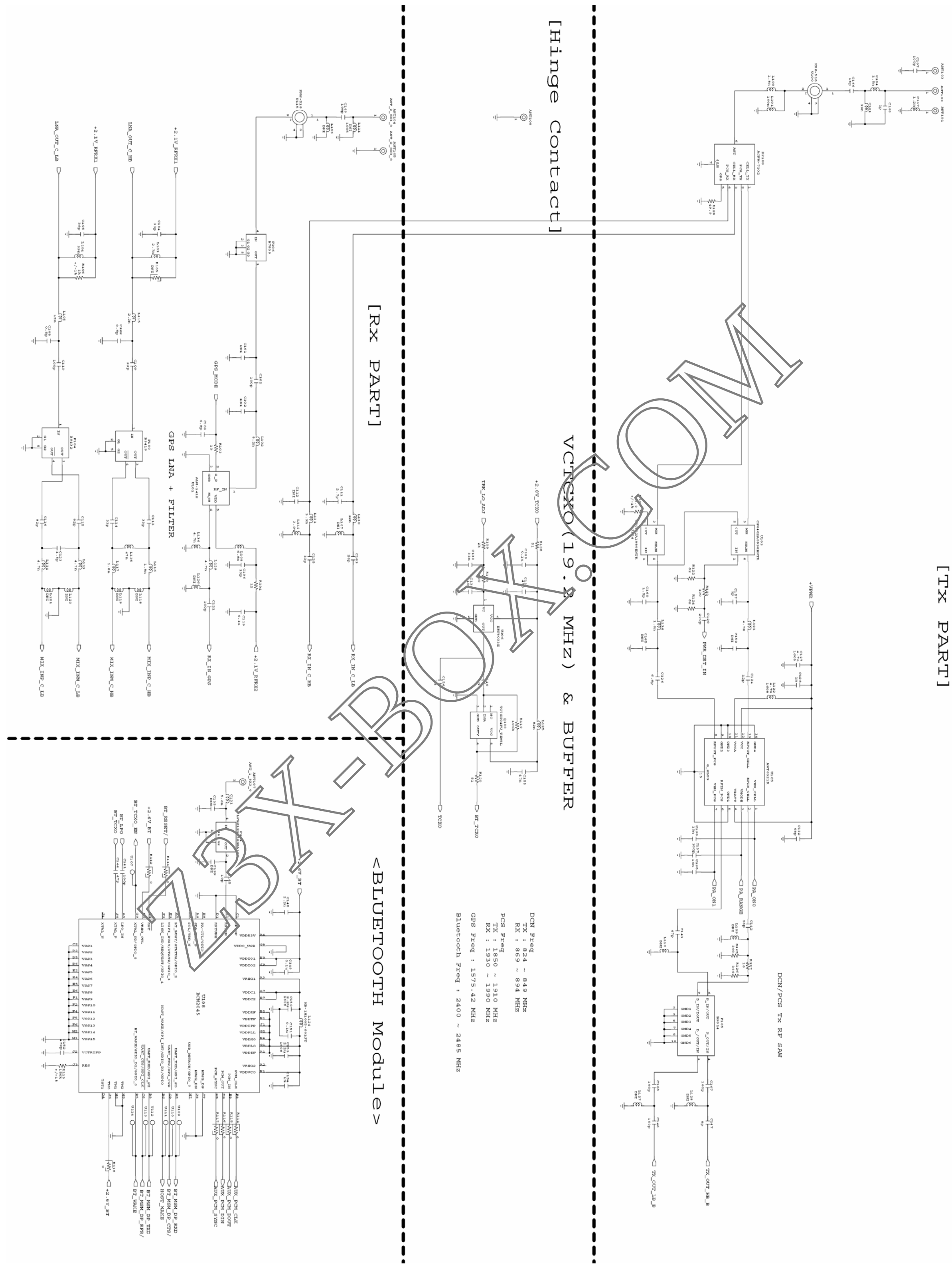
Chapter 5. Drawing & Part Lists

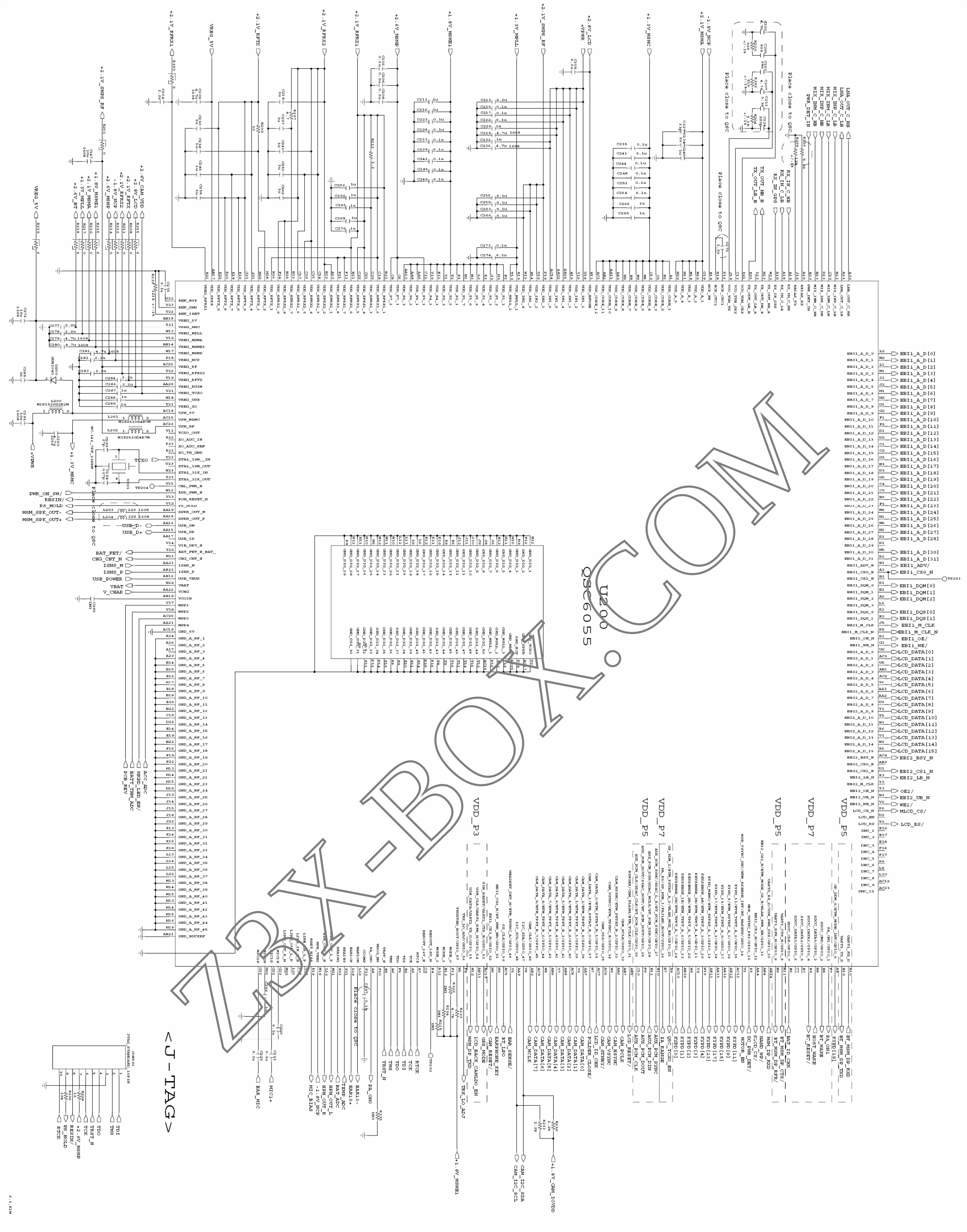
1. Block Diagram

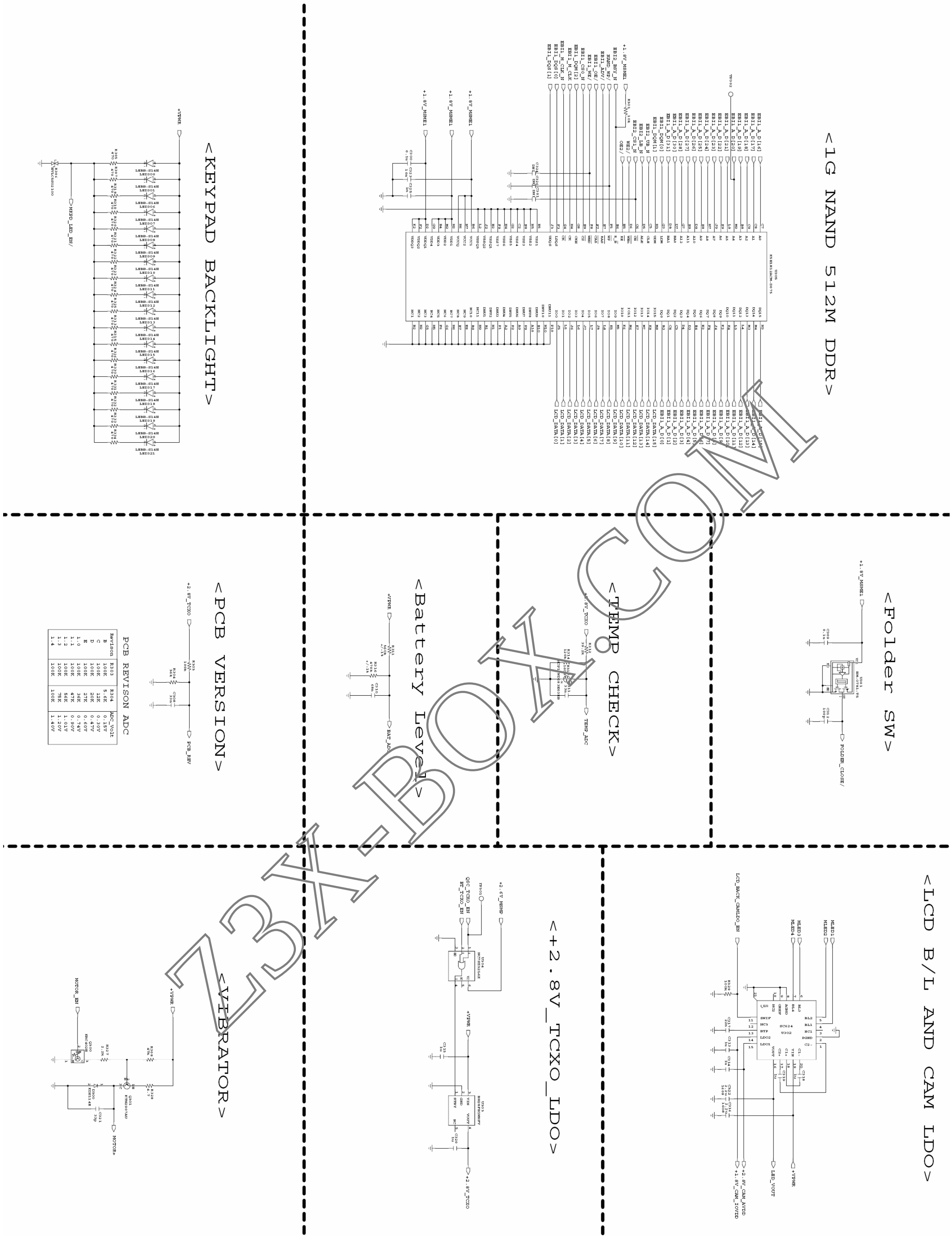


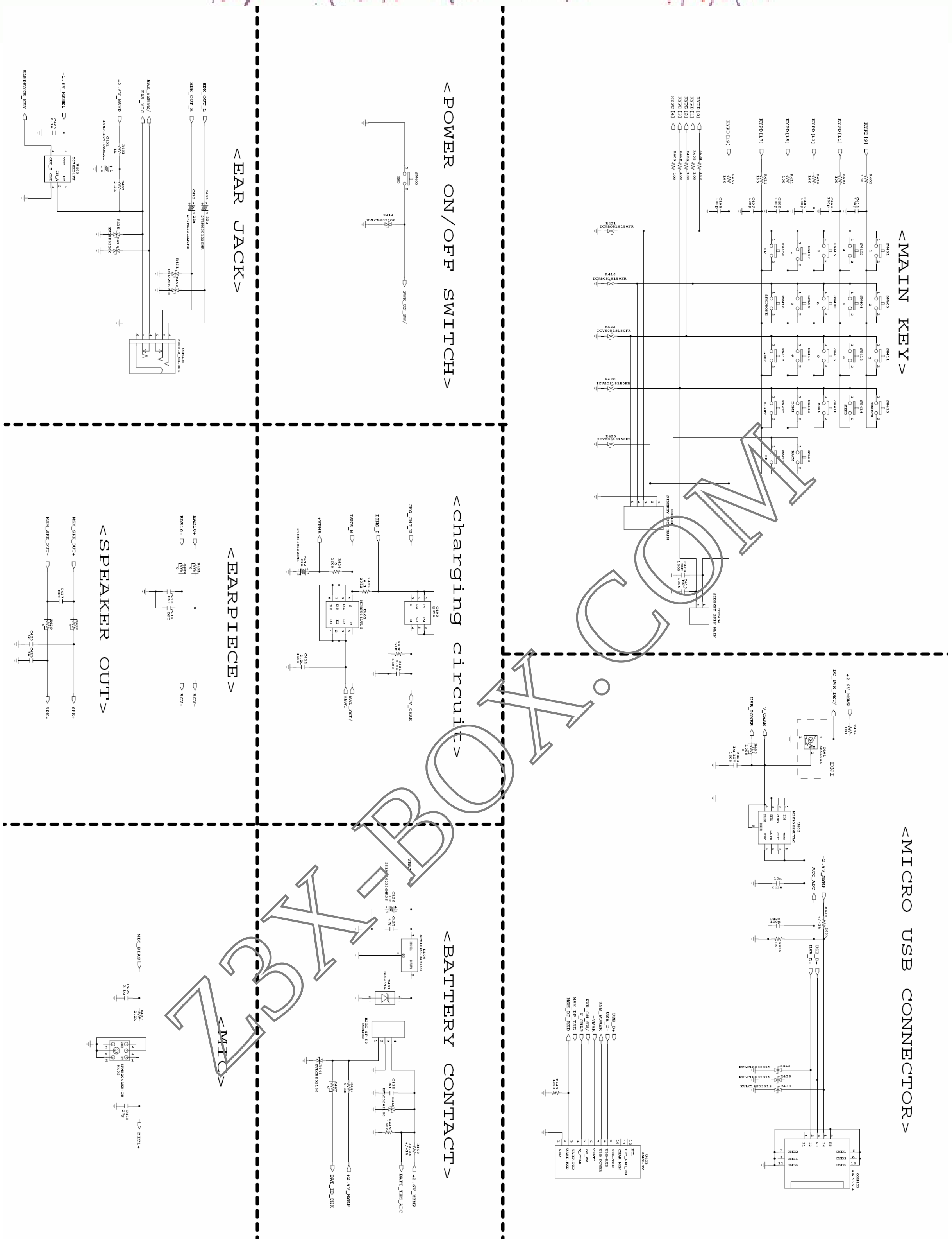
2. Circuit Drawing

2.1 Main PCB

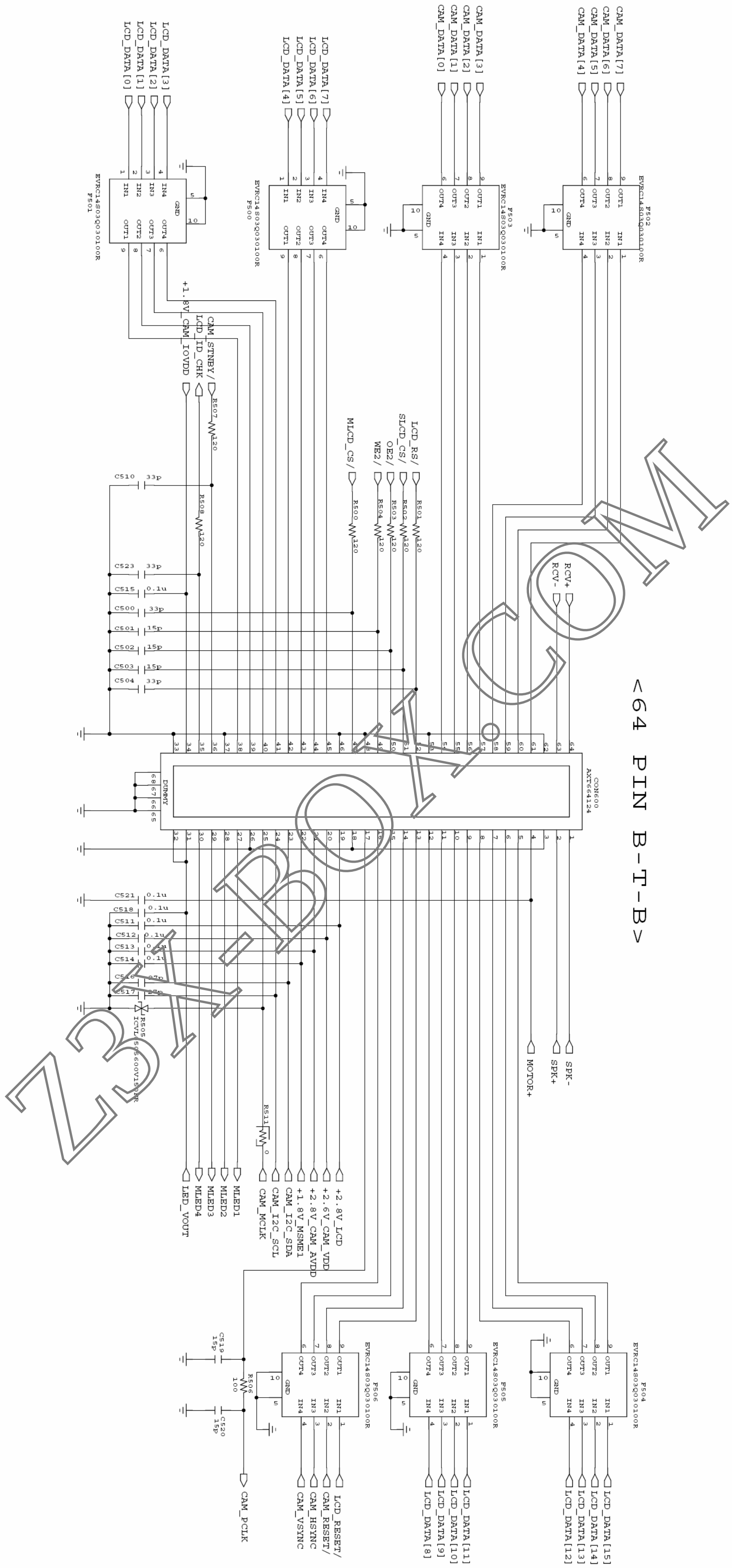



U200
QSC6055
<J-TAG>
Z3X-BOX.COM


<KEYPAD BACKLIGHT>
<1G NAND 512M DDR>
<PCB VERSION>
PCB REVISON ADC
<Battery Level>
<TEMP CHECK>
<Folder SW>
<VIBRATOR>
<+2.8V_TCXO_LDO>
<LCD B/L AND CAM LDO>

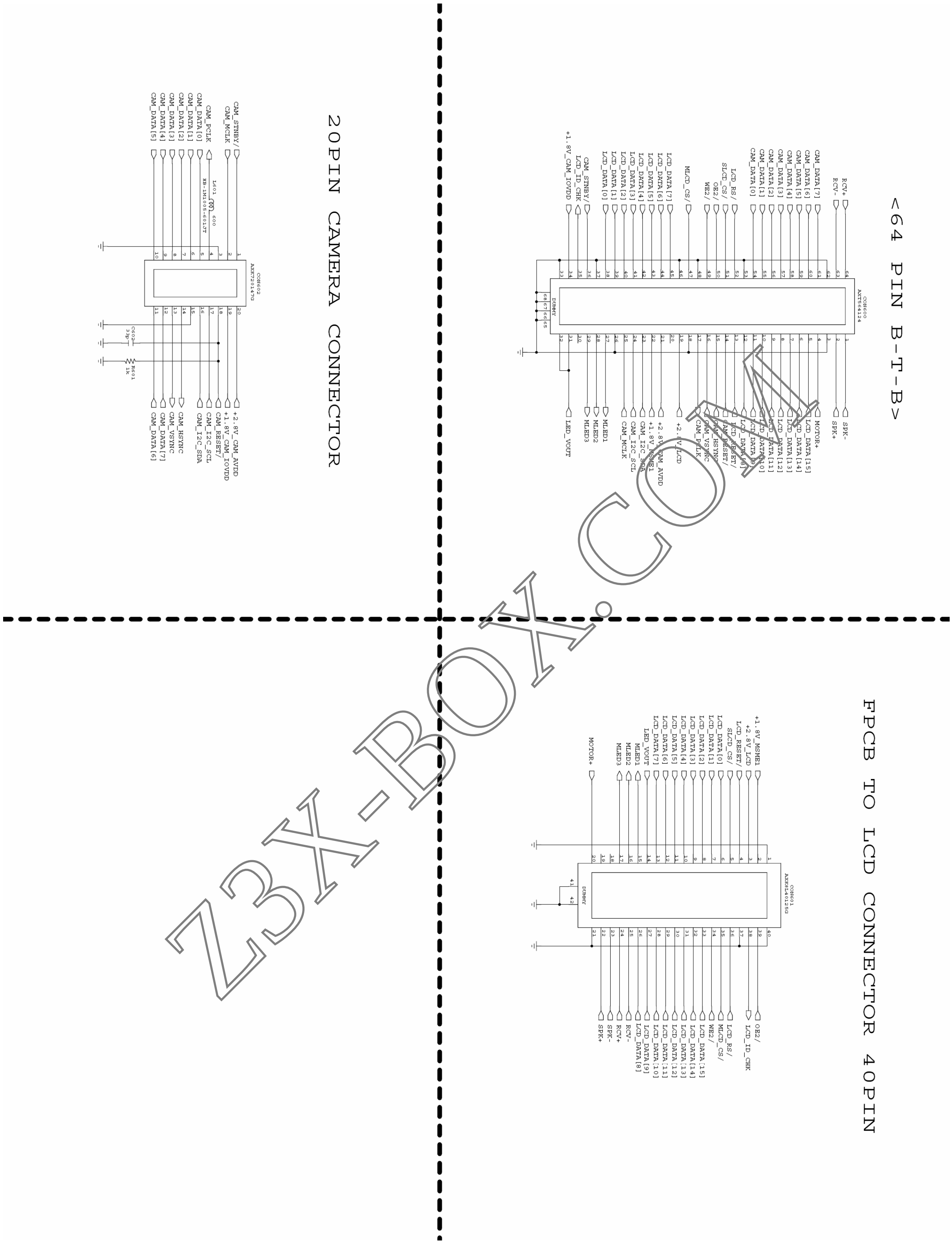


<EAR JACK>
<POWER ON/OFF SWITCH>
<MAIN KEY>
<SPEAKER OUT>
<EARPIECE>
<charging circuit>
<MICRO USB CONNECTOR>
<MIC>
<BATTERY CONTACT>
Z3X-BOX.COM



<64 PIN B-T-B>
CON600
AXT664124
DUMMY
EVRC14S03Q030100R
F500
F501
F502
F503
F504
F505
F506
LCD_DATA[0]
LCD_DATA[1]
LCD_DATA[2]
LCD_DATA[3]
LCD_DATA[4]
LCD_DATA[5]
LCD_DATA[6]
LCD_DATA[7]
CAM_DATA[0]
CAM_DATA[1]
CAM_DATA[2]
CAM_DATA[3]
CAM_DATA[4]
CAM_DATA[5]
CAM_DATA[6]
CAM_DATA[7]
+1.8V_CAM_IOVDD
LCD_ID_CHK
CAM_STNBY/
LCD_RS/
SLCD_CS/
OE2/
WE2/
MLCD_CS/
RCV+
RCV-
SPK-
SPK+
MOTOR+
+2.8V_LCD
+2.6V_CAM_VDD
+2.8V_CAM_AVDD
+1.8V_MSME1
CAM_I2C_SDA
CAM_I2C_SCL
CAM_MCLK
MLED1
MLED2
MLED3
MLED4
LED_VOUT
LCD_RESET/
CAM_RESET/
CAM_HSYNC
CAM_VSYNC
CAM_PCLK
LCD_DATA[8]
LCD_DATA[9]
LCD_DATA[10]
LCD_DATA[11]
LCD_DATA[12]
LCD_DATA[13]
LCD_DATA[14]
LCD_DATA[15]
R500
R501
R502
R503
R504
R505
R506
R507
R508
R511
C500
C501
C502
C503
C504
C510
C511
C512
C513
C514
C515
C516
C517
C518
C519
C520
C521
C523
120
33p
15p
0.1u
27p
15p
100
Z3X-BOX.COM

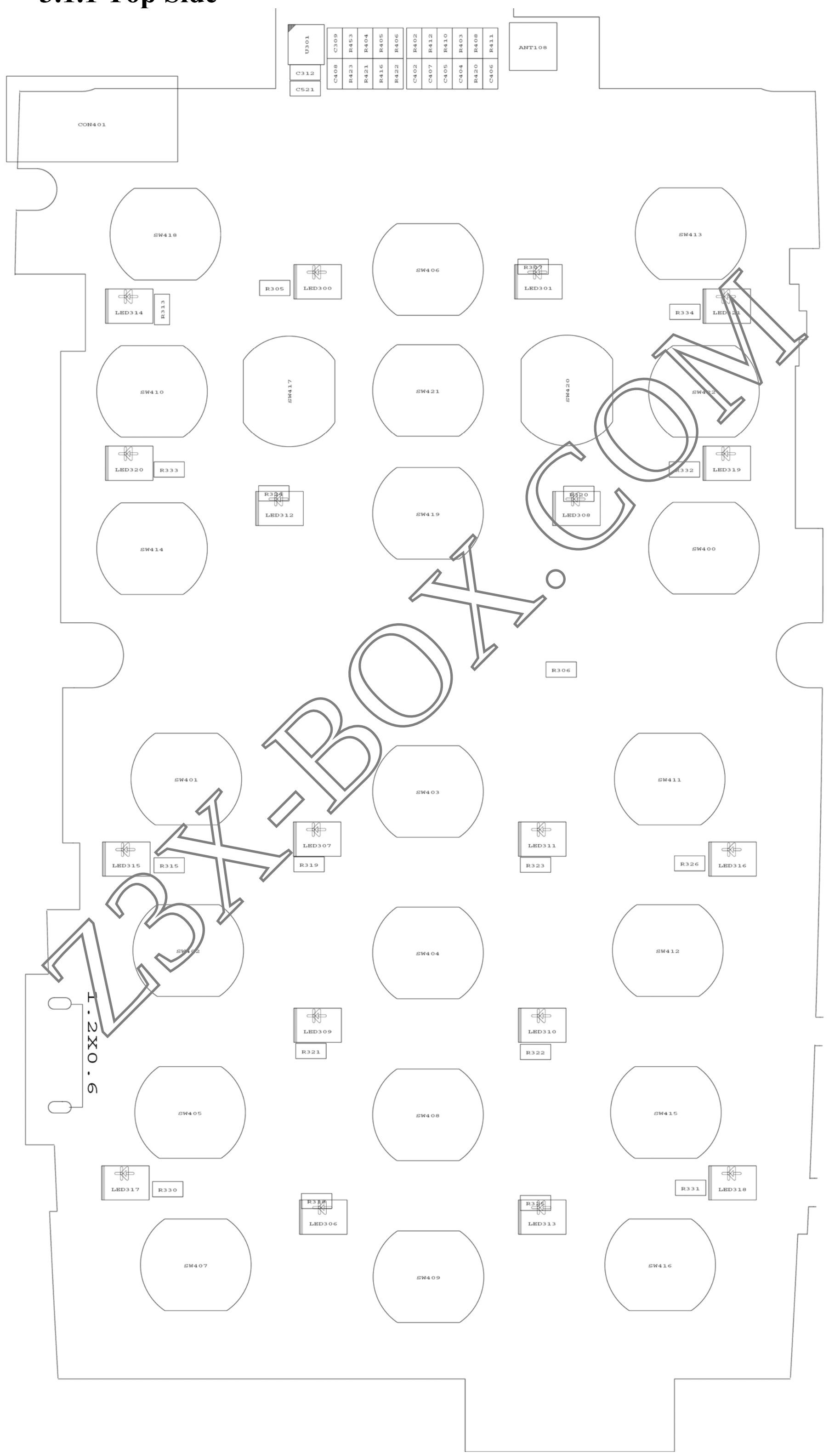
2.2 F-PCB


20PIN CAMERA CONNECTOR
<64 PIN B-T-B>
FPCB TO LCD CONNECTOR 40PIN

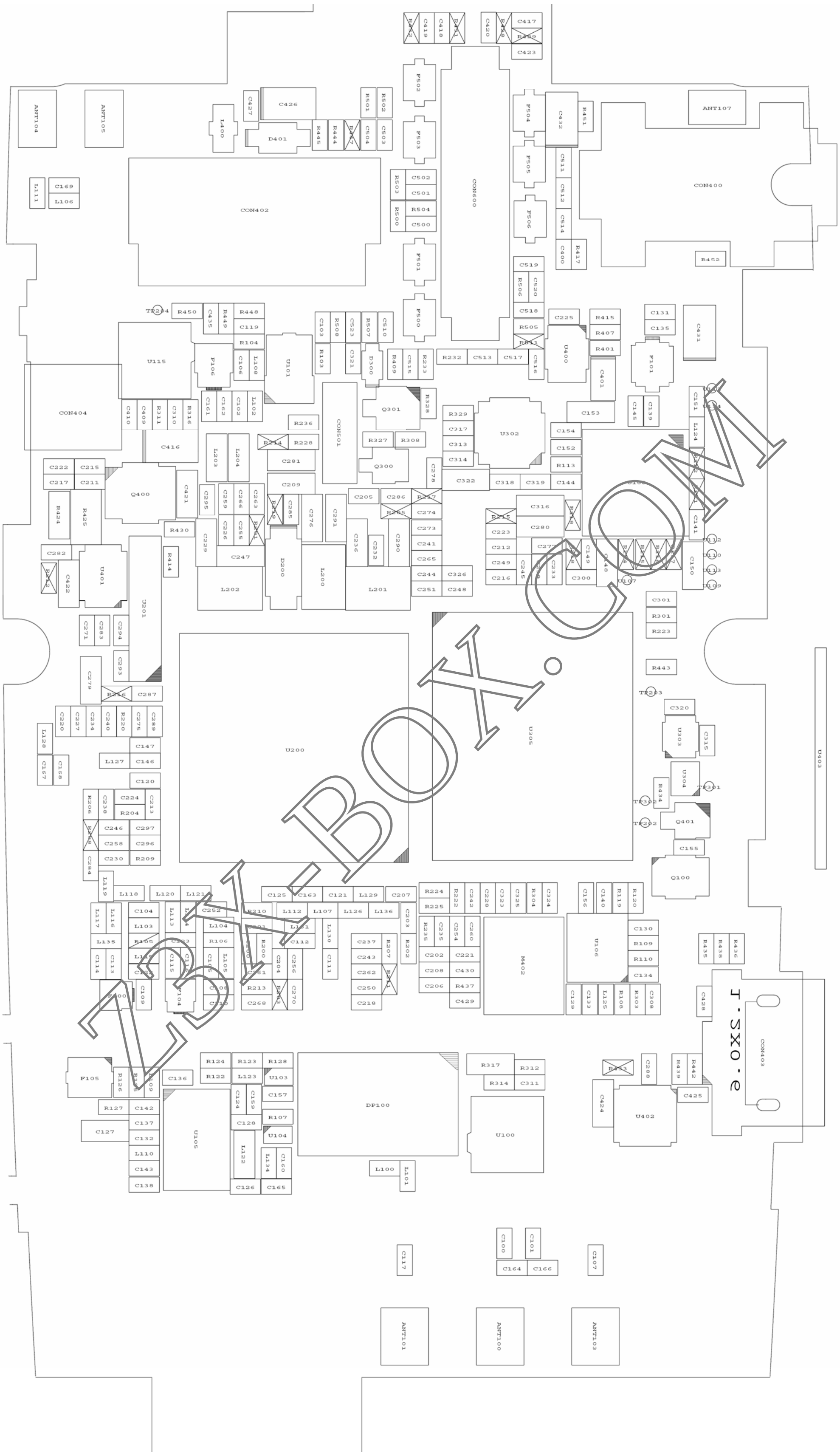
3. PCB Layout

3.1 Main PCB

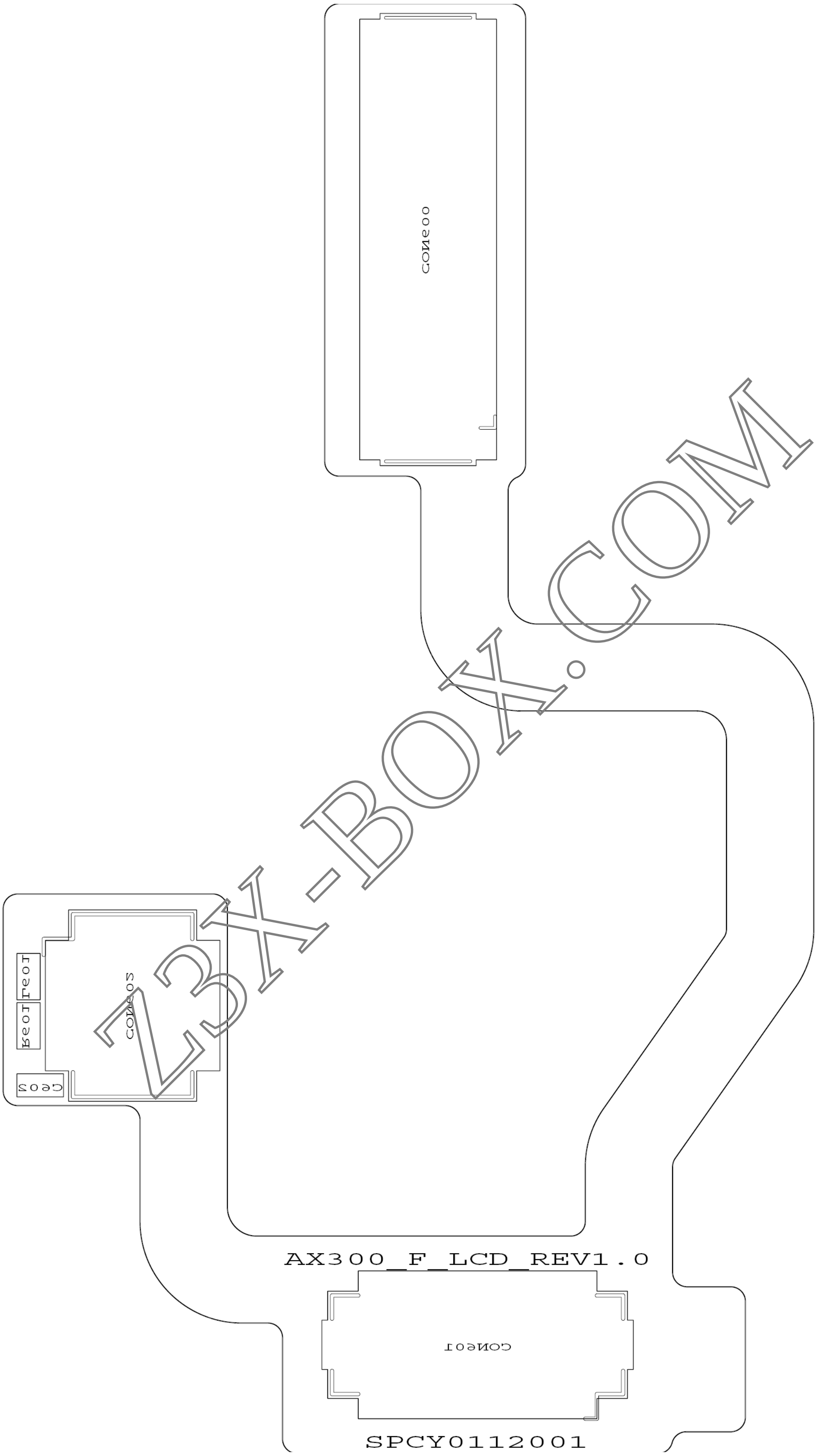
3.1.1 Top Side



3.1.2 Bottom Side



3.2 F-PCB



4. Part Lists

4.1 Main PCB Top

No	Maker P/N	Ref No	Q'ty	Part Name	Part Number	Spec
1	C1005C0G1H101JT	C312, C402, C404, C405, C406, C407, C408	7	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
2	EM-0781-T5	U301	1	IC	EUSY0313401	QFN ,4 PIN,R/TP ,1.8X1.2X0.5 size wide input voltage Hall Switch
3	EVLC5S02100	R306	1	VARISTOR	SEVY0005202	5.5 V,+-30 ,SMD ,1005, 100 pF, Pb free
4	GRM36X7R104K10PT	C309, C521	2	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP
5	ICVS0518150FR	R416, R420, R421, R422, R423	5	VARISTOR	SEVY0005401	18 V, ,SMD ,15pF,1005
6	LEBB-S14E	LED300, LED301, LED306, LED307, LED308, LED309, LED310, LED311, LED312 ,LED313, LED314, LED315, LED316, LED317, LED318, LED319, LED320, LED321	18	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,
7	MCR01MZSJ101	R402, R403, R404, R405, R406, R408, R410, R411, R412, R453	10	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP
8	MCR01MZSJ471	R305, R307, R313, R315, R318, R319, R320, R321, R322, R323, R324, R325, R326, R330, R331, R332, R333, R334	18	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP

4.2 Main PCB Bottom

No	Maker P/N	Ref No	Q'ty	Part Name	Part Number	Spec
1	MCH155A080DK	C147	1	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP
2	MCH155A100D	C106, C145	2	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP
3	MCH155C150J	C501, C502, C503, C519, C520	5	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP
4	MCH155A180J	C166	1	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP
5	MCH155C270J	C293, C294, C430, C516, C517	5	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP
6	MCH155A390J	C105	1	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP
7	MCH155A470JK	C133, C143, C144, C427	4	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP
8	MCH155A820J	C115, C116	2	CAP,CERAMIC,CHIP	ECCH0000127	82 pF,50V,J,NP0,TC,1005,R/TP
9	MCH155CN102KK	C128, C140, C154, C156, C226, C232, C285, C325, C420, C423	10	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP
10	MCH155CN332KK	C213	1	CAP,CERAMIC,CHIP	ECCH0000149	3.3 nF,50V,K,X7R,HD,1005,R/TP
11	MCH152CN472KK	C200, C207	2	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP
12	MCH153CN103KK	C134, C136, C138, C323, C425	5	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP

13	MCH153CN333KK	C130, C308, C311	3	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP
14	C1005X5R473KDT	C155	1	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP
15	1005,50V,2.7PF,B	C111	1	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP
16	GRM36X5R223K16PT	C317	1	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP
17	CL05A225MQ5NNNC	C204, C211, C271, C277, C278, C282, C283, C284, C286	9	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP
18	C1005COG1H6R8DT	C103, C126	2	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP
19	GRM155R60J105KE19D	C212, C216, C218, C230, C234, C237, C238, C240, C243, C246, C250, C252, C256, C258, C260, C261, C262, C265, C268, C270, C287, C288, C289, C313, C314, C315, C318, C319, C320	29	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP
20	GRM39X5R225K10	C148, C150, C153, C316, C322, C421, C422	7	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP
21	GRM188R60J106ME47D	C247C276C291	3	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP
22	C1608X5R0J475KT	C127, C209, C229, C236, C279, C280, C281, C290	8	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP
23	251M1002336MR3S	C426	1	CAP,TANTAL,CHIP	ECTH0005704	33 uF,10V ,M ,L_ESR ,2012 ,R/TP
24	251M1002106MRM	C401	1	CAP,TANTAL,CHIP	ECTH0005707	10 uF,10V ,M ,L_ESR ,1608 ,R/TP
25	278M6301226MR	C416, C431, C432	3	CAP,TANTAL,CHIP	ECTH0005801	22 uF,6.3V ,M ,L_ESR ,2012 ,R/TP
26	C1005C0G1C221JT	C224	1	CAP,CHIP,MAKER	ECZH0000801	220 pF,16V ,J ,NP0 ,TC ,1005 ,R/TP
27	C1005C0G1H010CT	C100, C157	2	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP
28	C1005C0G1H101JT	C107, C110, C121, C137, C141, C145, C162, C167, C168, C169, C428	11	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
29	C1005C0G1H120JT	C124	1	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
30	C1005C0G1H1R5CT	C123, C160	2	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP
31	C1005C0G1H200JT	C163	1	CAP,CHIP,MAKER	ECZH0000824	20 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
32	C1005C0G1H330JT	C104, C109, C113, C114, C125, C227, C321, C500, C504, C510, C523	11	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
33	C1005C0G1H560JT	C142	1	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
34	C1005C0G1H680JT	C132	1	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
35	C1005C0G1H201JT	C120	1	CAP,CHIP,MAKER	ECZH0000849	200 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP
36	C1005CH1H0R5BB	C108, C122	2	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP
37	C1005X7R1H471KT	C152	1	CAP,CHIP,MAKER	ECZH0001121	470 pF,50V ,K ,X7R ,HD ,1005 ,R/TP

38	C1608X5R1A105KT	C424	1	CAP,CHIP,MAKER	ECZH0001420	1 uF,10V ,K ,X5R ,HD ,1608 ,R/TP
39	GRM36X7R104K10PT	C119, C129, C149, C151, C202, C205, C206, C208, C215, C217, C220, C221, C222, C223, C225, C228, C233, C235, C239, C241, C242, C244, C245, C248, C249, C251, C254, C255, C259, C263, C266, C273, C274, C275, C296, C297, C300, C400, C429, C511, C512, C513, C514, C515, C518	45	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP
40	GRM36X7R683K16PT	C203, C310	2	CAP,CHIP,MAKER	ECZH0003124	68 nF,16V ,K ,X7R ,HD ,1005 ,R/TP
41	GRM36X7R823K16	C201	1	CAP,CHIP,MAKER	ECZH0003125	82000 pF,16V ,K ,X7R ,HD ,1005 ,R/TP
42	KDS114E	D300	1	DIODE,SWITCHING	EDSY0010501	ESC ,30 V,100 mA,R/TP ,SWITCH DIODE
43	SDB1040	D200	1	DIODE,SWITCHING	EDSY0017701	SOD-123 ,40 V,1 A,R/TP , ,; , , , , , , ,[empty] ,[empty] ,2P ,1
44	SD12T1G	D401	1	DIODE,TVS	EDTY0007401	SMD ,12 V,350 W,R/TP ,
45	LQG18HN4N7S00	L122	1	INDUCTOR,CHIP	ELCH0003812	4.7 nH,S ,1608 ,R/TP ,COIL TYPE
46	1005GC2T12NJ00	L130	1	INDUCTOR,CHIP	ELCH0004701	12 nH,J ,1005 ,R/TP ,
47	1005GC2T4N7S00	C131, L113, L114, L123, L129, L136	6	INDUCTOR,CHIP	ELCH0004704	4.7 nH,S ,1005 ,R/TP ,
48	1005GC2T8N2J00	L102	1	INDUCTOR,CHIP	ELCH0004705	8.2 nH,J ,1005 ,R/TP ,
49	1005GC2T2N7S00	L103	1	INDUCTOR,CHIP	ELCH0004708	2.7 nH,S ,1005 ,R/TP ,
50	1005GC2T3N3S00	L131	1	INDUCTOR,CHIP	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,
51	1005GC2T15NJ00	L105	1	INDUCTOR,CHIP	ELCH0004710	15 nH,J ,1005 ,R/TP ,
52	1005GC2T3N9S00	L112	1	INDUCTOR,CHIP	ELCH0004712	3.9 nH,S ,1005 ,R/TP ,
53	1005GC2T6N8J00	L108	1	INDUCTOR,CHIP	ELCH0004713	6.8 nH,J ,1005 ,R/TP ,
54	1005GC2T39NJ00	C101, L104	2	INDUCTOR,CHIP	ELCH0004716	39 nH,J ,1005 ,R/TP ,
55	1005GC2T82NJ00	L125	1	INDUCTOR,CHIP	ELCH0004717	82 nH,J ,1005 ,R/TP ,
56	1005GC2T1N2S00	C117	1	INDUCTOR,CHIP	ELCH0004720	1.2 nH,S ,1005 ,R/TP ,
57	1005GC2T2N2S00	L115	1	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,
58	1005GC2T47NJ00	L135	1	INDUCTOR,CHIP	ELCH0004722	47 nH,J ,1005 ,R/TP ,
59	1005GC2T1N8S00	L100, L116, L117, L134	4	INDUCTOR,CHIP	ELCH0004723	1.8 nH,S ,1005 ,R/TP ,
60	1005GC2T1N5S00	C164	1	INDUCTOR,CHIP	ELCH0004726	1.5 nH,J ,1005 ,R/TP ,
61	1005GC2TR10J00	L101	1	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,
62	MIP2520D4R7M	L201, L202	2	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,
63	MIP2520D2R2M	L200	1	INDUCTOR,SMD,POWER	ELCP0008002	2.2 uH,M ,2.5*2.0*1.0 ,R/TP ,
64	AXT664124	CON600	1	CONNECTOR,BOARD TO BOARD	ENBY0042201	64 PIN, mm,STRAIGHT , , ,; , ,0.40MM , STRAIGHT ,MALE ,SMD ,P/TR , ,
65	7000-2.5G-SB1	CON400	1	CONN,JACK/PLUG, EARPHONE	ENJE0003101	4 , PIN,
66	AXJ53314	CON403	1	CONNECTOR,I/O	ENRY0007201	5 PIN,0.4 mm,STRAIGHT , , ,; , ,0.30MM , STRAIGHT ,[empty] ,[empty] ,[empty] ,

67	KMS-518	U100, U115	2	CONN,RF SWITCH	ENWY0005301	,SMD , dB,H=1.85 ,; ,3.00MM ,STRAIG HT ,RF ADAPTER ,SMD ,R/TP ,AU , ,
68	KRC402E	Q300	1	TR,BJT,NPN	EQBN0012401	ESM ,100 mW,R/TP ,NPN TRANSISTOR
69	KTN2907AU	Q301	1	TR,BJT,PNP	EQBP0004102	USM ,100 mW,R/TP ,
70	QST4	Q400	1	TR,BJT,PNP	EQBP0009901	TSMT6 ,0.5 W,R/TP ,Vceo=-12V, Ic=-3A, hFE=270~680
71	NTHS5441T1G	U401	1	TR,FET,P-CHANNEL	EQFP0006301	chipFET ,1.3 W,-20 V,3.9 A,R/TP ,8 PIN (Pb-free)
72	MCR01MZSF1001	R106	1	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP
73	MCR01MZSJ101	R110, R123, R409, R506	4	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP
74	MCR01MZSF10R0	R206	1	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP
75	MCR01MZSF1202	R209	1	RES,CHIP,MAKER	ERHZ0000212	12 Kohm,1/16W ,F ,1005 ,R/TP
76	MCR01MZSF1203	R314	1	RES,CHIP,MAKER	ERHZ0000213	120 Kohm,1/16W ,F ,1005 ,R/TP
77	MCR01MZSF1503	R113, R449	2	RES,CHIP,MAKER	ERHZ0000222	150 Kohm,1/16W ,F ,1005 ,R/TP
78	MCR01MZSF2001	R109	1	RES,CHIP,MAKER	ERHZ0000236	2000 ohm,1/16W ,F ,1005 ,R/TP
79	MCR01MZSF2003	R435	1	RES,CHIP,MAKER	ERHZ0000238	200 Kohm,1/16W ,F ,1005 ,R/TP
80	MCR01MZSF3922	R312, R450	2	RES,CHIP,MAKER	ERHZ0000281	39.2 Kohm,1/16W ,F ,1005 ,R/TP
81	MCR01MZSF4703	R316	1	RES,CHIP,MAKER	ERHZ0000288	470 Kohm,1/16W ,F ,1005 ,R/TP
82	MCR01MZSF49R9	R107, R128	2	RES,CHIP,MAKER	ERHZ0000291	49.9 ohm,1/16W ,F ,1005 ,R/TP
83	MCR01MZSF5100	R202	1	RES,CHIP,MAKER	ERHZ0000293	510 ohm,1/16W ,F ,1005 ,R/TP
84	MCR01MZSF5101	R204, R210	2	RES,CHIP,MAKER	ERHZ0000294	5100 ohm,1/16W ,F ,1005 ,R/TP
85	MCR01MZSF5600	R200	1	RES,CHIP,MAKER	ERHZ0000298	560 ohm,1/16W ,F ,1005 ,R/TP
86	MCR01MZSF5603	R311	1	RES,CHIP,MAKER	ERHZ0000301	560 Kohm,1/16W ,F ,1005 ,R/TP
87	MCR01MZSJ100	R103, R228	2	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP
88	MCR01MZSJ102	R401	1	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP
89	MCR01MZSJ103	R236, R301	2	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP
90	MCR01MZSJ104	R119, R303, R320, R443	4	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP
91	MCR01MZSJ120	R104	1	RES,CHIP,MAKER	ERHZ0000410	12 ohm,1/16W ,J ,1005 ,R/TP
92	MCR01MZSJ121	R500, R501, R502, R503, R504, R507, R508	7	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP
93	MCR01MZSJ180	R127	1	RES,CHIP,MAKER	ERHZ0000428	18 ohm,1/16W ,J ,1005 ,R/TP
94	MCR01MZSJ222	R232, R233, R327, R407, R437	5	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP
95	MCR01MZSJ2R2	R213	1	RES,CHIP,MAKER	ERHZ0000456	2.2 ohm,1/16W ,J ,1005 ,R/TP
96	MCR01MZSJ301	R125, R126	2	RES,CHIP,MAKER	ERHZ0000458	300 ohm,1/16W ,J ,1005 ,R/TP
97	MCR01MZSJ363	R304	1	RES,CHIP,MAKER	ERHZ0000472	36 Kohm,1/16W ,J ,1005 ,R/TP
98	MCR01MZSJ472	R223	1	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP
99	MCR01MZSJ473	R308	1	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP
100	MCR01MZSJ4R7	R207, R328	2	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP
101	MCR01MZSJ510	R108, R120	2	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP
102	MCR01MZSJ5	R430	1	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP

	13					
103	MCR01MZSJ562	R445	1	RES,CHIP,MAKER	ERHZ0000499	5600 ohm,1/16W ,J ,1005 ,R/TP
104	MCR01MZSJ820	R122, R124	2	RES,CHIP,MAKER	ERHZ0000512	82 ohm,1/16W ,J ,1005 ,R/TP
105	MCR03EZHJ000	R424	1	RES,CHIP,MAKER	ERHZ0000701	0 ohm,1/10W ,J ,1608 ,R/TP
106	MCR10EZHFLR100	R425	1	RES,CHIP,MAKER	ERHZ0003901	0.1 ohm,1/4W ,F ,2012 ,R/TP ,; ,0.1 ,1% ,1/4W ,2012 ,R/TP
107	MCR01MZSF1213	R220	1	RES,CHIP,MAKER	ERHZ0004201	121000 ohm,1/16W ,F ,1005 ,R/TP
108	TC7SH04FU	Q100	1	IC	EUSY0073401	SSOP5-P-0.65A ,5 PIN,R/TP ,INVERTER, Pb Free
109	TC7SZ04FU	U400	1	IC	EUSY0140902	SSOP ,5 PIN,R/TP ,Inverter(2x2.1)
110	BH28FB1WHFV	U303	1	IC	EUSY0223002	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 2.8V
111	SC624ULTRT	U302	1	IC	EUSY0263105	QFN ,20 PIN,R/TP ,SUB-PMIC4Ch+2LDO ,; ,IC,Charge Pump
112	BCM2045SB2KFBG	U108	1	IC	EUSY0300201	FBGA ,65 PIN,R/TP ,Bluetooth Single chip(5x5x1.2)
113	NC7SZ32L6X	U304	1	IC	EUSY0300601	Micropak ,6 PIN,R/TP ,OR Gate, Pb Free
114	NUS3065MUTAG	U402	1	IC	EUSY0333701	TLLGA ,8 PIN,R/TP ,OVP
115	K5E1H12ACM-D075	U305	1	IC	EUSY0335803	FBGA ,107 PIN,ETC ,FULLY 1.8V 1G(LB/64Mx16) NAND+512M(DDR/8Mx4x16) SDRAM ,; ,IC,MCP
116	QSC6055	U200	1	IC	EUSY0336201	CSP ,424 PIN,R/TP ,CDMA 1X Onechip BB, BB/RF/PM
117	ERF3003E	U106	1	VCTCXO	EXSK0004802	19.2 MHz,1.5 PPM,10 pF,SMD ,3.2*2.5*1.2 , ,; ,19.2 Mhz ,1.5PPM ,2.8V ,3.2 ,2.5 ,1.2 , ,SMD ,P/TP
118	MC-146(7PF,+/-20PPM)	U201	1	X-TAL	EXXY0004601	.032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,
119	CP0402A0836BNTR	U103	1	COUPLER,RF DIRECTIONAL	SCDY0003401	-22 dB,-0.2 dB,-37 dB,1.0*0.58*0.35 ,SMD ,824M ~ 849M, 4pin, Pb Free
120	CP0402A1880ENTR	U104	1	COUPLER,RF DIRECTIONAL	SCDY0003402	-20 dB,-0.25 dB,-35 dB,1.0*0.58*0.35 ,SMD ,1850M ~ 1910M, 4pin, Pb Free
121	NCP18WD683E03RB	R317	1	THERMISTOR	SETY0001401	NTC ,68 Kohm,SMD ,
122	ICVL0505600V150FR	R505	1	VARISTOR	SEVY0003602	5.6 V, ,SMD ,1005, 60pF
123	EVLC18S02015	R438, R439, R442	3	VARISTOR	SEVY0003801	18 V, ,SMD ,
124	EVL5M02200	R415, R417, R451, R452	4	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005
125	EVLC5S02100	R414, R444, R448	3	VARISTOR	SEVY0005202	5.5 V,+-30 ,SMD ,1005, 100 pF, Pb free
126	HB-1M1005-601JT	L124	1	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,
127	MPZ1608S221A	L203, L204	2	FILTER,BEAD,CHIP	SFBH0009201	220 ohm,1608 ,
128	LFB212G45SG8A166	F101	1	FILTER,CERAMIC	SFCY0000901	2450 MHz,2.00*1.25*0.95 ,SMD ,Bluetooth Band Pass Filter
129	EVRC14S03Q030100R	F500, F501, F502, F503, F504, F505, F506	7	FILTER,EMI/POWER	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm
130	NFM18PC104R1C3	L400	1	FILTER,EMI/POWER	SFEY0015301	SMD ,Pb-free_Bais ,; ,Filter,LCR

131	B9314	F105	1	FILTER,SAW,DUAL	SFSB0001601	836.5 MHz,25 MHz,2.2 dB,40 dB,1880 MHz,58.75 MHz,4 dB,30 dB,2.0*1.6*0.68 ,SMD ,824M~849M,1850.625M~1909.375M,10p,B,50,50,DCN+USPCS Tx,BIDIR ,; ,836.5, 1880 ,2.0*1.6*0.68 ,SMD ,R/TP
132	B7839	F106	1	FILTER,SAW	SFSY0028801	1575.42 MHz,2.0*1.4*0.68 ,SMD ,1574.42M~1576.42M, IL 1.1, 5pin, U-U, 50-50, GPS BPF , ,1575.42 ,2.0*1.4*0.68 ,SMD ,R/TP
133	B9432	F104	1	FILTER,SAW	SFSY0034801	881.5 MHz,1.4*1.1*0.4 ,SMD ,869M~894M, IL 2.5, 5pin, U-B, 50-100, DCN Rx ,; ,881.5 ,1.4*1.1*0.4 ,SMD , R/TP
134	B9419	F100	1	FILTER,SAW	SFSY0034901	1960 MHz,1.4*1.1*0.45 ,SMD ,1930.6M~1989.4M, IL 3.5, 5pin, U-B, 50-100_30, USPCS Rx ,; ,1960 ,1.4*1.1*0.45 ,SMD ,R/TP
135	AWT6321R	U105	1	PAM	SMPY0015801	28 dBm,39 %, A, dBc, dB,3x5x1 ,SMD ,HELP3 Dual PAM ,; , , , , , , , ,R/TP ,R/TP ,14
136	ACFM-7102	DP100	1	MODULE,ETC	SMZY0014701	CDMA+US-PCS+S-GPS, 8.0*5.0*1.3
137	ALM-1412	U101	1	MODULE,ETC	SMZY0016501	LNA Module(GPS LNA+B/P Filter) ,: ,RF Module
138	SPM0204LE5-QB	M402	1	MICROPHONE	SUMY0010604	UNIT ,-38 dB,4.72*3.76 ,1.25T Bottom Silicon type ,; , , ,UNI ,1.5V , ,SMD

4.3 Full BOM List

NO	Lv	Ref No	Part Name	Part Number	QTY	Spec	Maker P/N
1	1		PRODUCT(FOLDER)	TPFA0087901	1		
2	2	AAAY00	ADDITION	AAAY0248401	1		
3	3	AMBA	MANUAL ASSY,OPERATION	AMBA0110501	1	LG300 Manual Assy	AMBA0110501
4	4	MMBB00	MANUAL,OPERATION	MMBB0272301	1	PRINTING, (empty), , , , ,	MMBB0272301
5	4	MSAB00	SHEET,OPERATING	MSAB0022401	1	PRINTING, (empty), , , , ,	MSAB0022401
6	4	MSAB01	SHEET,OPERATING	MSAB0022501	1	PRINTING, (empty), , , , ,	MSAB0022501
7	3	MCJA00	COVER,BATTERY	MCJA0051202	1	MOLD, PC LUPOY SC-1004A, , , , ,	MCJA0051201
8	4	MTAB00	TAPE,PROTECTION	MTAB0237501	1	COMPLEX, (empty), , , , ,	MTAB0237501
9	3	SBPL00	BATTERY PACK,LI-ION	SBPL0086301	1	3.7 V,850 mAh,1 CELL,PRISMATIC ,ABCD PJT (AX275) Batt, IP, Whitout ID Chip, Pb-Free ,; ,3.7 ,850 ,0.2C ,PRISMAT IC ,46x34x46 , ,ALLTEL SILVER ,Innerpack ,America Label	TCD-AX275
11	3	SSAD00	ADAPTOR,AC-DC	SSAD0027601	1	100-240V ,5060 Hz,5.1 V,.7 A,UL ,Micro USB B type ,; , , , , , ,WALL 2P ,USB	STA-U32WD
14	2	APAY00	PACKAGE	APAY0062513	1	LG300_TR1	
15	3	APLY00	PALLET ASSY	APLY0001404	1	TR1 BPT North American STD.	
16	4	MCJZ00	COVER	MCJZ0030601	.004	1150*1000*105_TDR_VZW	
17	4	MPBZ00	PAD	MPBZ0036802	.008	Angle_TDR_VZW	
18	4	MPCY00	PALLET	MPCY0005201	.002	1000x1200x120 Verizon Export	
19	4	MSCY00	SLEEVE	MSCY0001001	.002	Deadspace Keeping Off_TDR_RLC	
20	3	MBAD00	BAG,VINYL(PE)	MBAD0005201	1	COMPLEX, (empty), , , , ,	MBAD0005201
21	3	MBEE00	BOX,MASTER	MBEE0051801	.1	BOX, TW, , , , ,	
22	3	MBEF00	BOX,UNIT	MBEF0096945	1	BOX, SW, 1.6, 131, 160, 65, 5 COLOR	
23	3	MLAC00	LABEL,BARCODE	MLAC0004502	1	UNIT BOX BARCODE LABEL(105*45)	
24	3	MLAC001	LABEL,BARCODE	MLAC0002010	.008	Reliance New Pallet Label	
25	3	MLAJ002	LABEL,MASTER BOX	MLAJ0004304	.1	GSM/CDMA ALL 180*95	MLAJ0004304
26	3	MLAJ004	LABEL,MASTER BOX	MLAJ0004201	.004	New_TDR_Shipping Label	
27	3	MPAD00	PACKING,SHELL	MPAD0005804	1	PRINTING, (empty), , , , ,	
28	2	APEY00	PHONE	APEY0462701	1		
29	3	ACGG00	COVER ASSY,FOLDER	ACGG0085402	1		ACGG0085401
30	4	ACGH00	COVER ASSY,FOLDER(LOWER)	ACGH0050602	1		ACGH0050601
31	5	MBFF00	BRACKET,LCD	MBFF0015501	1	COMPLEX, (empty), , , , ,	MBFF0015501
32	5	MCIB00	MCIB,CONTACT,HINGE	MCIB0000701	1	PRESS, BeCu, 0.15, , , ,	MCIB0000701
33	5	MCJH00	COVER,FOLDER(LOWER)	MCJH0040902	1		MCJH0040901
34	5	MFBB00	FILTER,RECEIVER	MFBB0023801	1	COMPLEX, (empty), 0.7, , , ,	MFBB0023801
35	5	MMAA00	MAGNET,SWITCH	MMAA0008201	1	COMPLEX, (empty), , , , ,	MMAA0008201
36	5	MPBJ00	PAD,MOTOR	MPBJ0047901	1	COMPLEX, (empty), , , , ,	MPBJ0047901
37	5	MPBN00	PAD,SPEAKER	MPBN0052201	1	COMPLEX, (empty), , , , ,	MPBN0052201
38	5	MTAB00	TAPE,PROTECTION	MTAB0232401	1	COMPLEX, (empty), , , , ,	MTAB0232401
39	5	MTAK00	TAPE,CAMERA	MTAK0004101	1	COMPLEX, (empty), , , , ,	MTAK0004101
40	4	ACGJ00	COVER ASSY,FOLDER(UPPER)	ACGJ0066402	1		ACGJ0066401
41	5	MCJJ00	COVER,FOLDER(UPPER)	MCJJ0050102	1	MOLD, PC LUPOY SC-1004A, , , , ,	MCJJ0050101
42	6	MICA00	INSERT,FRONT	MICA0023401	4	EXTRUSION, LDPE, , , , ,	MICA0023401
43	5	MFBC00	FILTER,SPEAKER	MFBC0034901	1	COMPLEX, (empty), , , , ,	MFBC0034901
44	5	MPBG00	PAD,LCD	MPBG0068301	1	COMPLEX, (empty), , , , ,	MPBG0068301
45	5	MPBG01	PAD,LCD	MPBG0074101	1	COMPLEX, (empty), , , , ,	MPBG0074101
46	5	MPBJ00	PAD,MOTOR	MPBJ0050601	1	COMPLEX, (empty), , , , ,	MPBJ0050601
47	5	MPBM00	PAD,RECEIVER	MPBM0020201	1	COMPLEX, (empty), , , , ,	MPBM0020201
48	5	MPBT00	PAD,CAMERA	MPBT0049001	1	COMPLEX, (empty), , , , ,	MPBT0049001
49	5	MPBU00	PAD,CONNECTOR	MPBU0012401	1	COMPLEX, (empty), , , , ,	MPBU0012401
50	5	MPBU01	PAD,CONNECTOR	MPBU0012501	1	COMPLEX, (empty), , , , ,	MPBU0012501
51	5	MTAB00	TAPE,PROTECTION	MTAB0196701	1	COMPLEX, (empty), , , , ,	MTAB0196701
52	5	MTAB01	TAPE,PROTECTION	MTAB0214901	1	COMPLEX, (empty), , , , ,	MTAB0214901
53	5	MTAE00	TAPE,WINDOW(SUB)	MTAE0032601	1	COMPLEX, (empty), , , , ,	MTAE0032601
54	5	MWAE00	WINDOW,CAMERA	MWAE0029301	1	CUTTING, PMMA MR 200, , , , ,	MWAE0029301

55	5	MWAF00	WINDOW,LCD(SUB)	MWAF0038901	1	COMPLEX, (empty), , , , ,	MWAF0038901
56	6	BFAA00	FILM,INMOLD	BFAA0077301	1.1	; , , ,	BFAA0077301
57	4	ACGK00	COVER ASSY,FRONT	ACGK0097002	1		ACGK0097001
58	5	MCIB00	MCIB CONTACT,HINGE	MCIB0000801	1	PRESS, BeCu, 0.15, , , ,	MCIB0000801
59	5	MCJK00	COVER,FRONT	MCJK0078602	1	MOLD, PC LUPOY SC-1004A, , , , ,	MCJK0078601
60	6	MICA00	INSERT,FRONT	MICA0023401	4	EXTRUSION, LDPE, , , , ,	MICA0023401
61	5	MSGB00	STOPPER,HINGE	MSGB0022702	1	MOLD, Urethane Rubber S190A, , , , ,	MSGB0022701
62	5	MSGC00	STOPPER,FOLDER	MSGC0001702	1	MOLD, Urethane Rubber S190A, , , , ,	MSGC0001701
63	4	AWAB00	WINDOW ASSY,LCD	AWAB0030902	1		AWAB0030901
64	5	MPBG00	PAD,LCD	MPBG0068201	1	COMPLEX, (empty), , , , ,	MPBG0068201
65	5	MTAD00	TAPE,WINDOW	MTAD0076001	1	COMPLEX, (empty), , , , ,	MTAD0076001
66	5	MWAC00	WINDOW,LCD	MWAC0086402	1	CUTTING, PMMA MR 200, , , , ,	MWAC0086401
67	4	GMEY00	SCREW MACHINE,BIND	GMEY0002001	4	1.4 mm,3 mm,MSWR3(BK) ,B ,+ ,HEAD t=0.6, HEAD d2.7	GMEY0002001
68	4	MCCH00	CAP,SCREW	MCCH0114802	4	COMPLEX, (empty), , , , ,	MCCH0114801
69	4	MHFD00	HINGE,FOLDER	MHFD0016301	1	COMPLEX, (empty), , , , ,	MHFD0016301
70	4	MKAG00	KEYPAD,MAIN	MKAG0002802	1	COMPLEX, (empty), , , , ,	MKAG0002801
71	4	MLAZ00	LABEL	MLAZ0038303	.1	PRINTING, (empty), , , , ,	MLAZ0038303
72	4	MSGB00	STOPPER,HINGE	MSGB0022801	1	COMPLEX, (empty), , , , ,	MSGB0022801
73	4	MTAB00	TAPE,PROTECTION	MTAB0196801	1	COMPLEX, (empty), , , , ,	MTAB0196801
74	4	MTAB01	TAPE,PROTECTION	MTAB0216301	1	COMPLEX, (empty), , , , ,	MTAB0216301
75	4	MTAB02	TAPE,PROTECTION	MTAB0232501	1	COMPLEX, (empty), , , , ,	MTAB0232501
76	4	MTAC00	TAPE,SHIELD	MTAC0062701	1	COMPLEX, (empty), , , , ,	MTAC0062701
77	4	MTAC01	TAPE,SHIELD	MTAC0062801	1	COMPLEX, (empty), , , , ,	MTAC0062801
78	4	SACY00	PCB ASSY,FLEXIBLE	SACY0072001	1		
79	5	SACB00	PCB ASSY,FLEXIBLE,INSERT	SACB0044301	1		
80	6	MPBF00	PAD,FLEXIBLE PCB	MPBF0030801	1	COMPLEX, (empty), , , , ,	MPBF0030801
81	5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0067001	1		SACE0050701
82	6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0044401	1		
83	7	C602	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
84	7	CON600	CONNECTOR,BOARD TO BOARD	ENBY0042101	1	64 PIN, mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,P/TR , ,	AXT564124
85	7	CON601	CONNECTOR,BOARD TO BOARD	ENBY0020201	1	40 PIN,0.4 mm,ETC , ,H=0.9, Header	AXK8L40125G
86	7	CON602	CONNECTOR,BOARD TO BOARD	ENBY0019501	1	20 PIN,.4 mm,ETC , ,H=1.5, Socket	AXK720147G
87	7	L601	FILTER,BEAD,CHIP	SFBH0000903	1	600 ohm,1005 ,	HB-1M1005-601JT
88	7	R601	RES,CHIP,MAKER	ERHZ0000404	1	1 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ102
89	6	SPCY00	PCB,FLEXIBLE	SPCY0112002	1	POLYI ,0.5 mm,MULTI-5 ,F-MAIN ,; , , , , , , , , ,	SPCY0112002
90	4	SJMY00	VIBRATOR,MOTOR	SJMY0006510	1	3 V,.08 A,10*3.45 ,12mm ,; ,3V , , ,12500 , , , ,	WHVM-1034A10
91	4	SURY00	RECEIVER	SURY0011302	1	ASSY ,103 dB,32 ohm,11*3.2 ,15mm HAC ,; , , , , , ,WIRE ,	KR-1107H-02WP
92	4	SUSY00	SPEAKER	SUSY0023501	1	ASSY ,8 ohm,90 dB,17 mm, ,; , , , , , , ,WIRE	17-8D-02W1P
93	4	SVCY00	CAMERA	SVCY0013401	1	CMOS ,VGA ,Magna 1/7.4"	CVFC-H131A
94	4	SVLM00	LCD MODULE	SVLM0027701	1	MAIN ,176*20(1.76") + 96*64(1.04") ,33.6*46.2*3.05(t) ,262 k ,TFT ,TM ,M:S6D0164,S:S6D0151 ,	LQ018B3UT03
95	3	ACGM00	COVER ASSY,REAR	ACGM0098702	1		ACGM0098701
96	4	ENZY00	CONNECTOR,ETC	ENZY0019901	1	3 PIN,3 mm,STRAIGHT , ,	HSBC-3P-58
97	4	MBJL00	BUTTON,SIDE	MBJL0046802	1		MBJL0046801
98	4	MCCC00	CAP,EARPHONE JACK	MCCC0050502	1		MCCC0050501
99	4	MCCE00	CAP,RECEPTACLE	MCCE0040702	1		MCCE0040701
100	4	MCJN00	COVER,REAR	MCJN0074302	1		MCJN0074301
101	4	MLAB00	LABEL,A/S	MLAB0000601	1	PRINTING, (empty), , , , ,	MLAB0000601
102	4	MLAN00	LABEL,QUALCOMM	MLAN0000603	1	White,95C	
103	4	MPBU00	PAD,CONNECTOR	MPBU0019901	1	COMPLEX, (empty), , , , ,	MPBU0019901
104	4	MTAB00	TAPE,PROTECTION	MTAB0196601	1	COMPLEX, (empty), , , , ,	MTAB0196601

105	4	SNMF00	ANTENNA,MOBILE,FIXED	SNMF0038001	1	5 ,-6 dB,Internal, Dual(DCN+US_PCS), Pb Free ,; ,DUAL , , ,	ACC-00061
106	4	SNMF01	ANTENNA,MOBILE,FIXED	SNMF0037901	1	5 ,-5 dB,Internal, Dual(Bluetooth+GPS), Pb Free ,; ,DUAL , , ,	ACB-00014
107	3	GMEY00	SCREW MACHINE,BIND	GMEY0011201	4	1.4 mm,3 mm,MSWR3(BK) ,N ,+ ,NYLOK	GMEY0011201
108	3	MCCH00	CAP,SCREW	MCCH0118502	2	MOLD, Silicone Rubber K-770, , , , ,	MCCH0118501
109	3	MLAA00	LABEL,APPROVAL	MLAA0002502	1	English	
110	3	SAFY00	PCB ASSY,MAIN	SAFY0234501	1		
111	4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0077901	1		
112	5	ACKA00	CAN ASSY,SHIELD	ACKA0006101	1		ACKA0006101
113	6	MCBA00	CAN,SHIELD	MCBA0023701	1	PRESS, STS, 0.3, , , ,	MCBA0023701
114	6	MPBL00	PAD,MSM	MPBL0006601	1	COMPLEX, (empty), , , , ,	MPBL0006601
115	5	ADCA00	DOME ASSY,METAL	ADCA0072501	1		ADCA0072501
116	6	MFBD00	FILTER,MIKE	MFBD0026801	1	COMPLEX, (empty), , , , ,	MFBD0026801
117	6	MTAB00	TAPE,PROTECTION	MTAB0234301	1	COMPLEX, (empty), , , , ,	MTAB0234301
118	5	MIDZ00	INSULATOR	MIDZ0156601	1	COMPLEX, (empty), , , , ,	MIDZ0156601
119	5	SPKY00	PCB,SIDEKEY	SPKY0054402	1	POLYI ,0.65 mm,DOUBLE ,F-SK ,; , , , , , , , ,	SPKY0054402
120	4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0153401	1		
121	5	MLAZ00	LABEL	MLAZ0038301	1	PID Label 4 Array	LG-VX6000
122	5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0099601	1		
123	6	C100	CAP,CHIP,MAKER	ECZH0000802	1	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H010CT
124	6	C101	INDUCTOR,CHIP	ELCH0004716	1	39 nH,J ,1005 ,R/TP ,	1005GC2T39NJ00
125	6	C103	CAP,CERAMIC,CHIP	ECCH0001001	1	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	C1005COG1H6R8DT
126	6	C104	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
127	6	C105	CAP,CERAMIC,CHIP	ECCH0000120	1	39 pF,50V,J,NP0,TC,1005,R/TP	MCH155A390J
128	6	C106	CAP,CERAMIC,CHIP	ECCH0000110	1	10 pF,50V,D,NP0,TC,1005,R/TP	MCH155A100D
129	6	C107	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
130	6	C108	CAP,CHIP,MAKER	ECZH0001002	1	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP	C1005CH1H0R5BB
131	6	C109	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
132	6	C110	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
133	6	C111	CAP,CERAMIC,CHIP	ECCH0000175	1	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP	1005,50V,2.7PF,B
134	6	C113	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
135	6	C114	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
136	6	C115	CAP,CERAMIC,CHIP	ECCH0000127	1	82 pF,50V,J,NP0,TC,1005,R/TP	MCH155A820J
137	6	C116	CAP,CERAMIC,CHIP	ECCH0000127	1	82 pF,50V,J,NP0,TC,1005,R/TP	MCH155A820J
138	6	C117	INDUCTOR,CHIP	ELCH0004720	1	1.2 nH,S ,1005 ,R/TP ,	1005GC2T1N2S00
139	6	C119	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
140	6	C120	CAP,CHIP,MAKER	ECZH0000849	1	200 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H201JT
141	6	C121	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
142	6	C122	CAP,CHIP,MAKER	ECZH0001002	1	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP	C1005CH1H0R5BB
143	6	C123	CAP,CHIP,MAKER	ECZH0000822	1	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H1R5CT
144	6	C124	CAP,CHIP,MAKER	ECZH0000816	1	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H120JT
145	6	C125	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
146	6	C126	CAP,CERAMIC,CHIP	ECCH0001001	1	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	C1005COG1H6R8DT
147	6	C127	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475KT
148	6	C128	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102KK

149	6	C129	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
150	6	C130	CAP,CERAMIC,CHIP	ECCH0000161	1	33 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN333KK
151	6	C131	INDUCTOR,CHIP	ELCH0004704	1	4.7 nH,S ,1005 ,R/TP ,	1005GC2T4N7S00
152	6	C132	CAP,CHIP,MAKER	ECZH0000844	1	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H680JT
153	6	C133	CAP,CERAMIC,CHIP	ECCH0000122	1	47 pF,50V,J,NP0,TC,1005,R/TP	MCH155A470JK
154	6	C134	CAP,CERAMIC,CHIP	ECCH0000155	1	10 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN103KK
155	6	C136	CAP,CERAMIC,CHIP	ECCH0000155	1	10 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN103KK
156	6	C137	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
157	6	C138	CAP,CERAMIC,CHIP	ECCH0000155	1	10 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN103KK
158	6	C140	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102KK
159	6	C141	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
160	6	C142	CAP,CHIP,MAKER	ECZH0000841	1	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H560JT
161	6	C143	CAP,CERAMIC,CHIP	ECCH0000122	1	47 pF,50V,J,NP0,TC,1005,R/TP	MCH155A470JK
162	6	C144	CAP,CERAMIC,CHIP	ECCH0000122	1	47 pF,50V,J,NP0,TC,1005,R/TP	MCH155A470JK
163	6	C145	CAP,CERAMIC,CHIP	ECCH0000110	1	10 pF,50V,D,NP0,TC,1005,R/TP	MCH155A100D
164	6	C146	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
165	6	C147	CAP,CERAMIC,CHIP	ECCH0000109	1	8 pF,50V,D,NP0,TC,1005,R/TP	MCH155A080DK
166	6	C148	CAP,CERAMIC,CHIP	ECCH0005603	1	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	GRM39X5R225K10
167	6	C149	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
168	6	C150	CAP,CERAMIC,CHIP	ECCH0005603	1	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	GRM39X5R225K10
169	6	C151	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
170	6	C152	CAP,CHIP,MAKER	ECZH0001121	1	470 pF,50V ,K ,X7R ,HD ,1005 ,R/TP	C1005X7R1H471KT
171	6	C153	CAP,CERAMIC,CHIP	ECCH0005603	1	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	GRM39X5R225K10
172	6	C154	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102KK
173	6	C155	CAP,CERAMIC,CHIP	ECCH0000163	1	47 nF,10V,K,X5R,HD,1005,R/TP	C1005X5R473KDT
174	6	C156	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102KK
175	6	C157	CAP,CHIP,MAKER	ECZH0000802	1	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H010CT
176	6	C160	CAP,CHIP,MAKER	ECZH0000822	1	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H1R5CT
177	6	C162	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
178	6	C163	CAP,CHIP,MAKER	ECZH0000824	1	20 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H200JT
179	6	C164	INDUCTOR,CHIP	ELCH0004726	1	1.5 nH,J ,1005 ,R/TP ,	1005GC2T1N5S00
180	6	C166	CAP,CERAMIC,CHIP	ECCH0000113	1	18 pF,50V,J,NP0,TC,1005,R/TP	MCH155A180J
181	6	C167	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
182	6	C168	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
183	6	C169	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
184	6	C200	CAP,CERAMIC,CHIP	ECCH0000151	1	4.7 nF,25V,K,X7R,HD,1005,R/TP	MCH152CN472KK
185	6	C201	CAP,CHIP,MAKER	ECZH0003125	1	82000 pF,16V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R823K16
186	6	C202	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
187	6	C203	CAP,CHIP,MAKER	ECZH0003124	1	68 nF,16V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R683K16PT
188	6	C204	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5NNNC

189	6	C205	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
190	6	C206	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
191	6	C207	CAP,CERAMIC,CHIP	ECCH0000151	1	4.7 nF,25V,K,X7R,HD,1005,R/TP	MCH152CN472KK
192	6	C208	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
193	6	C209	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475KT
194	6	C211	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5NNNC
195	6	C212	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
196	6	C213	CAP,CERAMIC,CHIP	ECCH0000149	1	3.3 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN332KK
197	6	C215	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
198	6	C216	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
199	6	C217	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
200	6	C218	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
201	6	C220	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
202	6	C221	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
203	6	C222	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
204	6	C223	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
205	6	C224	CAP,CHIP,MAKER	ECZH0000801	1	220 pF,16V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1C221JT
206	6	C225	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
207	6	C226	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102KK
208	6	C227	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
209	6	C228	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
210	6	C229	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475KT
211	6	C230	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
212	6	C232	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102KK
213	6	C233	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
214	6	C234	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
215	6	C235	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
216	6	C236	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475KT
217	6	C237	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
218	6	C238	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
219	6	C239	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
220	6	C240	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
221	6	C241	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
222	6	C242	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
223	6	C243	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J105KE19D
224	6	C244	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT

225	6	C245	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
226	6	C246	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
227	6	C247	CAP,CERAMIC,CHIP	ECCH0005604	1	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP	GRM188R60J10 6ME47D
228	6	C248	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
229	6	C249	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
230	6	C250	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
231	6	C251	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
232	6	C252	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
233	6	C254	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
234	6	C255	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
235	6	C256	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
236	6	C258	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
237	6	C259	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
238	6	C260	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
239	6	C261	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
240	6	C262	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
241	6	C263	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
242	6	C265	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
243	6	C266	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
244	6	C268	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
245	6	C270	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
246	6	C271	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5N NNC
247	6	C273	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
248	6	C274	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
249	6	C275	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
250	6	C276	CAP,CERAMIC,CHIP	ECCH0005604	1	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP	GRM188R60J10 6ME47D
251	6	C277	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5N NNC
252	6	C278	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5N NNC
253	6	C279	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475 KT
254	6	C280	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475 KT
255	6	C281	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475 KT
256	6	C282	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5N NNC
257	6	C283	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5N NNC
258	6	C284	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5N NNC
259	6	C285	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102K K

260	6	C286	CAP,CERAMIC,CHIP	ECCH0000198	1	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP	CL05A225MQ5N NNC
261	6	C287	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
262	6	C288	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
263	6	C289	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
264	6	C290	CAP,CERAMIC,CHIP	ECCH0006201	1	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP	C1608X5R0J475 KT
265	6	C291	CAP,CERAMIC,CHIP	ECCH0005604	1	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP	GRM188R60J10 6ME47D
266	6	C293	CAP,CERAMIC,CHIP	ECCH0000117	1	27 pF,50V,J,NP0,TC,1005,R/TP	MCH155C270J
267	6	C294	CAP,CERAMIC,CHIP	ECCH0000117	1	27 pF,50V,J,NP0,TC,1005,R/TP	MCH155C270J
268	6	C296	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
269	6	C297	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
270	6	C300	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
271	6	C308	CAP,CERAMIC,CHIP	ECCH0000161	1	33 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN333K K
272	6	C310	CAP,CHIP,MAKER	ECZH0003124	1	68 nF,16V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R683K 16PT
273	6	C311	CAP,CERAMIC,CHIP	ECCH0000161	1	33 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN333K K
274	6	C313	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
275	6	C314	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
276	6	C315	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
277	6	C316	CAP,CERAMIC,CHIP	ECCH0005603	1	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	GRM39X5R225K 10
278	6	C317	CAP,CERAMIC,CHIP	ECCH0000179	1	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP	GRM36X5R223K 16PT
279	6	C318	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
280	6	C319	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
281	6	C320	CAP,CERAMIC,CHIP	ECCH0004904	1	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP	GRM155R60J10 5KE19D
282	6	C321	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H33 0JT
283	6	C322	CAP,CERAMIC,CHIP	ECCH0005603	1	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	GRM39X5R225K 10
284	6	C323	CAP,CERAMIC,CHIP	ECCH0000155	1	10 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN103K K
285	6	C325	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102K K
286	6	C400	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K 10PT
287	6	C401	CAP,TANTAL,CHIP	ECTH0005707	1	10 uF,10V ,M ,L_ESR ,1608 ,R/TP ,; , , , ,	251M1002106M RM
288	6	C416	CAP,TANTAL,CHIP	ECTH0005801	1	22 uF,6.3V ,M ,L_ESR ,2012 ,R/TP ,; , , , ,	278M6301226M R
289	6	C420	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102K K
290	6	C421	CAP,CERAMIC,CHIP	ECCH0005603	1	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	GRM39X5R225K 10
291	6	C422	CAP,CERAMIC,CHIP	ECCH0005603	1	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP	GRM39X5R225K 10
292	6	C423	CAP,CERAMIC,CHIP	ECCH0000143	1	1 nF,50V,K,X7R,HD,1005,R/TP	MCH155CN102K K
293	6	C424	CAP,CHIP,MAKER	ECZH0001420	1	1 uF,10V ,K ,X5R ,HD ,1608 ,R/TP	C1608X5R1A105 KT
294	6	C425	CAP,CERAMIC,CHIP	ECCH0000155	1	10 nF,16V,K,X7R,HD,1005,R/TP	MCH153CN103K K
295	6	C426	CAP,TANTAL,CHIP	ECTH0005704	1	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , , , ,	251M1002336M R3S
296	6	C427	CAP,CERAMIC,CHIP	ECCH0000122	1	47 pF,50V,J,NP0,TC,1005,R/TP	MCH155A470JK

297	6	C429	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
298	6	C430	CAP,CERAMIC,CHIP	ECCH0000117	1	27 pF,50V,J,NP0,TC,1005,R/TP	MCH155C270J
299	6	C431	CAP,TANTAL,CHIP	ECTH0005801	1	22 uF,6.3V ,M ,L_ESR ,2012 ,R/TP ,; , , , ,	278M6301226MR
300	6	C432	CAP,TANTAL,CHIP	ECTH0005801	1	22 uF,6.3V ,M ,L_ESR ,2012 ,R/TP ,; , , , ,	278M6301226MR
301	6	C500	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
302	6	C501	CAP,CERAMIC,CHIP	ECCH0000112	1	15 pF,50V,J,NP0,TC,1005,R/TP	MCH155C150J
303	6	C502	CAP,CERAMIC,CHIP	ECCH0000112	1	15 pF,50V,J,NP0,TC,1005,R/TP	MCH155C150J
304	6	C503	CAP,CERAMIC,CHIP	ECCH0000112	1	15 pF,50V,J,NP0,TC,1005,R/TP	MCH155C150J
305	6	C504	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
306	6	C510	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
307	6	C511	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
308	6	C512	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
309	6	C513	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
310	6	C514	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
311	6	C515	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
312	6	C516	CAP,CERAMIC,CHIP	ECCH0000117	1	27 pF,50V,J,NP0,TC,1005,R/TP	MCH155C270J
313	6	C517	CAP,CERAMIC,CHIP	ECCH0000117	1	27 pF,50V,J,NP0,TC,1005,R/TP	MCH155C270J
314	6	C518	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
315	6	C519	CAP,CERAMIC,CHIP	ECCH0000112	1	15 pF,50V,J,NP0,TC,1005,R/TP	MCH155C150J
316	6	C520	CAP,CERAMIC,CHIP	ECCH0000112	1	15 pF,50V,J,NP0,TC,1005,R/TP	MCH155C150J
317	6	C523	CAP,CHIP,MAKER	ECZH0000830	1	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H330JT
318	6	CON400	CONN,JACK/PLUG,EARPHONE	ENJE0003101	1	4 , PIN,	7000-2.5G-SB1
319	6	CON403	CONNECTOR,I/O	ENRY0007201	1	5 ,0.65 mm,ANGLE , , ,; , ,0.64MM ,ANGLE ,	AXJ53314
320	6	CON600	CONNECTOR,BOARD TO BOARD	ENBY0042201	1	64 PIN, mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,P/TR , ,	AXT664124
321	6	D200	DIODE,SWITCHING	EDSY0017701	1	SOD-123 ,40 V,1 A,R/TP , ,; , , , , , , ,2P ,1	SDB1040
322	6	D300	DIODE,SWITCHING	EDSY0010501	1	ESC ,30 V,100 mA,R/TP ,SWITCH DIODE	KDS114E
323	6	D401	DIODE,TVS	EDTY0007401	1	SMD ,12 V,350 W,R/TP ,	SD12T1G
324	6	DP100	MODULE,ETC	SMZY0014701	1	CDMA+US-PCS+S-GPS, 8.0*5.0*1.3	ACFM-7102
325	6	F100	FILTER,SAW	SFSY0034901	1	1960 MHz,1.4*1.1*0.45 ,SMD ,1930.6M~1989.4M, IL 3.5, 5pin, U-B, 50-100_30, USPCS Rx ,; ,1960 ,1.4*1.1*0.45 ,SMD ,R/TP	B9419
326	6	F101	FILTER,CERAMIC	SFCY0000901	1	2450 MHz,2.00*1.25*0.95 ,SMD ,Bluetooth Band Pass Filter	LFB212G45SG8A166
327	6	F104	FILTER,SAW	SFSY0034801	1	881.5 MHz,1.4*1.1*0.4 ,SMD ,869M~894M , IL 2.5, 5pin, U-B, 50-100, DCN Rx ,; ,881.5 ,1.4*1.1*0.4 ,SMD ,R/TP	B9432
328	6	F105	FILTER,SAW,DUAL	SFSB0001601	1	836.5 MHz,25 MHz,2.2 dB,40 dB,1880 MHz,58.75 MHz,4 dB,30 dB,2.0*1.6*0.68 ,SMD ,824M~849M, 1850.625M~1909.375M,10p,B,50,50 ,DCN+USPCS Tx,BIDIR ,; ,836.5, 1880 ,2.0*1.6*0.68 ,SMD ,R/TP	B9314
329	6	F106	FILTER,SAW	SFSY0028801	1	1575.42 MHz,2.0*1.4*0.68 ,SMD ,1574.42M~1576.42M, IL 1.1, 5pin, U-U, 50-50, GPS BPF , ,1575.42 ,2.0*1.4*0.68 ,SMD ,	B7839

						R/TP	
330	6	F500	FILTER,EMI/POWER	SFEY0013201	1	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	EVRC14S03Q03 0100R
331	6	F501	FILTER,EMI/POWER	SFEY0013201	1	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	EVRC14S03Q03 0100R
332	6	F502	FILTER,EMI/POWER	SFEY0013201	1	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	EVRC14S03Q03 0100R
333	6	F503	FILTER,EMI/POWER	SFEY0013201	1	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	EVRC14S03Q03 0100R
334	6	F504	FILTER,EMI/POWER	SFEY0013201	1	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	EVRC14S03Q03 0100R
335	6	F505	FILTER,EMI/POWER	SFEY0013201	1	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	EVRC14S03Q03 0100R
336	6	F506	FILTER,EMI/POWER	SFEY0013201	1	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm	EVRC14S03Q03 0100R
337	6	L100	INDUCTOR,CHIP	ELCH0004723	1	1.8 nH,S ,1005 ,R/TP ,	1005GC2T1N8S 00
338	6	L101	INDUCTOR,CHIP	ELCH0004727	1	100 nH,J ,1005 ,R/TP ,	1005GC2TR10J0 0
339	6	L102	INDUCTOR,CHIP	ELCH0004705	1	8.2 nH,J ,1005 ,R/TP ,	1005GC2T8N2J0 0
340	6	L103	INDUCTOR,CHIP	ELCH0004708	1	2.7 nH,S ,1005 ,R/TP ,	1005GC2T2N7S 00
341	6	L104	INDUCTOR,CHIP	ELCH0004716	1	39 nH,J ,1005 ,R/TP ,	1005GC2T39NJ0 0
342	6	L105	INDUCTOR,CHIP	ELCH0004710	1	15 nH,J ,1005 ,R/TP ,	1005GC2T15NJ0 0
343	6	L108	INDUCTOR,CHIP	ELCH0004713	1	6.8 nH,J ,1005 ,R/TP ,	1005GC2T6N8J0 0
344	6	L112	INDUCTOR,CHIP	ELCH0004712	1	3.9 nH,S ,1005 ,R/TP ,	1005GC2T3N9S 00
345	6	L113	INDUCTOR,CHIP	ELCH0004704	1	4.7 nH,S ,1005 ,R/TP ,	1005GC2T4N7S 00
346	6	L114	INDUCTOR,CHIP	ELCH0004704	1	4.7 nH,S ,1005 ,R/TP ,	1005GC2T4N7S 00
347	6	L115	INDUCTOR,CHIP	ELCH0004721	1	2.2 nH,S ,1005 ,R/TP ,	1005GC2T2N2S 00
348	6	L116	INDUCTOR,CHIP	ELCH0004723	1	1.8 nH,S ,1005 ,R/TP ,	1005GC2T1N8S 00
349	6	L117	INDUCTOR,CHIP	ELCH0004723	1	1.8 nH,S ,1005 ,R/TP ,	1005GC2T1N8S 00
350	6	L122	INDUCTOR,CHIP	ELCH0003812	1	4.7 nH,S ,1608 ,R/TP ,COIL TYPE	LQG18HN4N7S0 0
351	6	L123	INDUCTOR,CHIP	ELCH0004704	1	4.7 nH,S ,1005 ,R/TP ,	1005GC2T4N7S 00
352	6	L124	FILTER,BEAD,CHIP	SFBH0000903	1	600 ohm,1005 ,	HB-1M1005-601J T
353	6	L125	INDUCTOR,CHIP	ELCH0004717	1	82 nH,J ,1005 ,R/TP ,	1005GC2T82NJ0 0
354	6	L129	INDUCTOR,CHIP	ELCH0004704	1	4.7 nH,S ,1005 ,R/TP ,	1005GC2T4N7S 00
355	6	L130	INDUCTOR,CHIP	ELCH0004701	1	12 nH,J ,1005 ,R/TP ,	1005GC2T12NJ0 0
356	6	L131	INDUCTOR,CHIP	ELCH0004709	1	3.3 nH,S ,1005 ,R/TP ,	1005GC2T3N3S 00
357	6	L134	INDUCTOR,CHIP	ELCH0004723	1	1.8 nH,S ,1005 ,R/TP ,	1005GC2T1N8S 00
358	6	L135	INDUCTOR,CHIP	ELCH0004722	1	47 nH,J ,1005 ,R/TP ,	1005GC2T47NJ0 0
359	6	L136	INDUCTOR,CHIP	ELCH0004704	1	4.7 nH,S ,1005 ,R/TP ,	1005GC2T4N7S 00
360	6	L200	INDUCTOR,SMD,POWER	ELCP0008002	1	2.2 uH,M ,2.5*2.0*1.0 ,R/TP ,	MIP2520D2R2M
361	6	L201	INDUCTOR,SMD,POWER	ELCP0008001	1	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,	MIP2520D4R7M
362	6	L202	INDUCTOR,SMD,POWER	ELCP0008001	1	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,	MIP2520D4R7M
363	6	L203	FILTER,BEAD,CHIP	SFBH0009201	1	220 ohm,1608 ,	MPZ1608S221A
364	6	L204	FILTER,BEAD,CHIP	SFBH0009201	1	220 ohm,1608 ,	MPZ1608S221A
365	6	L400	FILTER,EMI/POWER	SFEY0015301	1	SMD ,Pb-free_Bais ,; ,Filter,LCR	NFM18PC104R1 C3
366	6	M402	MICROPHONE	SUMY0010604	1	UNIT ,-38 dB,4.72*3.76 ,1.25T Bottom Silicon type ,; , , ,UNI ,1.5V , ,SMD	SPM0204LE5-Q B
367	6	Q100	IC	EUSY0073401	1	SSOP5-P-0.65A ,5 PIN,R/TP ,INVERTER, Pb Free	TC7SH04FU
368	6	Q300	TR,BJT,NPN	EQBN0012401	1	ESM ,100 mW,R/TP ,NPN TRANSISTOR	KRC402E

369	6	Q301	TR,BJT,PNP	EQBP0004102	1	USM ,100 mW,R/TP ,	KTN2907AU
370	6	Q400	TR,BJT,PNP	EQBP0009901	1	TSMT6 ,0.5 W,R/TP ,Vceo=-12V, Ic=-3A, hFE=270~680	QST4
371	6	R103	RES,CHIP,MAKER	ERHZ0000402	1	10 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ100
372	6	R104	RES,CHIP,MAKER	ERHZ0000410	1	12 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ120
373	6	R106	RES,CHIP	ERHY0003201	1	1000 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF100 1
374	6	R107	RES,CHIP,MAKER	ERHZ0000291	1	49.9 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF49 R9
375	6	R108	RES,CHIP,MAKER	ERHZ0000490	1	51 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ510
376	6	R109	RES,CHIP,MAKER	ERHZ0000236	1	2000 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF200 1
377	6	R110	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
378	6	R113	RES,CHIP,MAKER	ERHZ0000222	1	150 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF150 3
379	6	R119	RES,CHIP,MAKER	ERHZ0000406	1	100 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ104
380	6	R120	RES,CHIP,MAKER	ERHZ0000490	1	51 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ510
381	6	R122	RES,CHIP,MAKER	ERHZ0000512	1	82 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ820
382	6	R123	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
383	6	R124	RES,CHIP,MAKER	ERHZ0000512	1	82 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ820
384	6	R125	RES,CHIP,MAKER	ERHZ0000458	1	300 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ301
385	6	R126	RES,CHIP,MAKER	ERHZ0000458	1	300 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ301
386	6	R127	RES,CHIP,MAKER	ERHZ0000428	1	18 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ180
387	6	R128	RES,CHIP,MAKER	ERHZ0000291	1	49.9 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF49 R9
388	6	R200	RES,CHIP,MAKER	ERHZ0000298	1	560 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF560 0
389	6	R202	RES,CHIP,MAKER	ERHZ0000293	1	510 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF510 0
390	6	R204	RES,CHIP,MAKER	ERHZ0000294	1	5100 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF510 1
391	6	R206	RES,CHIP,MAKER	ERHZ0000206	1	10 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF10 R0
392	6	R207	RES,CHIP,MAKER	ERHZ0000488	1	4.7 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ4R7
393	6	R209	RES,CHIP,MAKER	ERHZ0000212	1	12 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF120 2
394	6	R210	RES,CHIP,MAKER	ERHZ0000294	1	5100 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF510 1
395	6	R213	RES,CHIP,MAKER	ERHZ0000456	1	2.2 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ2R2
396	6	R220	RES,CHIP,MAKER	ERHZ0004201	1	121000 ohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF121 3
397	6	R223	RES,CHIP,MAKER	ERHZ0000485	1	4700 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ472
398	6	R228	RES,CHIP,MAKER	ERHZ0000402	1	10 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ100
399	6	R232	RES,CHIP,MAKER	ERHZ0000443	1	2200 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ222
400	6	R233	RES,CHIP,MAKER	ERHZ0000443	1	2200 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ222
401	6	R236	RES,CHIP,MAKER	ERHZ0000405	1	10 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ103
402	6	R301	RES,CHIP,MAKER	ERHZ0000405	1	10 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ103
403	6	R303	RES,CHIP,MAKER	ERHZ0000406	1	100 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ104
404	6	R304	RES,CHIP,MAKER	ERHZ0000472	1	36 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ363
405	6	R308	RES,CHIP,MAKER	ERHZ0000486	1	47 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ473
406	6	R311	RES,CHIP,MAKER	ERHZ0000301	1	560 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF560 3
407	6	R312	RES,CHIP,MAKER	ERHZ0000281	1	39.2 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF392 2
408	6	R314	RES,CHIP,MAKER	ERHZ0000213	1	120 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF120 3
409	6	R316	RES,CHIP,MAKER	ERHZ0000288	1	470 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF470 3
410	6	R317	THERMISTOR	SETY0001401	1	NTC ,68 Kohm,SMD ,	NCP18WD683E0 3RB
411	6	R327	RES,CHIP,MAKER	ERHZ0000443	1	2200 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ222
412	6	R328	RES,CHIP,MAKER	ERHZ0000488	1	4.7 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ4R7
413	6	R329	RES,CHIP,MAKER	ERHZ0000406	1	100 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ104
414	6	R401	RES,CHIP,MAKER	ERHZ0000404	1	1 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ102
415	6	R407	RES,CHIP,MAKER	ERHZ0000443	1	2200 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ222
416	6	R409	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
417	6	R414	VARISTOR	SEVY0005202	1	5.5 V,+-30 ,SMD ,1005, 100 pF, Pb free	EVLC5S02100
418	6	R415	VARISTOR	SEVY0003901	1	5.5 V, ,SMD ,480pF, 1005	EVL5M02200
419	6	R417	VARISTOR	SEVY0003901	1	5.5 V, ,SMD ,480pF, 1005	EVL5M02200
420	6	R424	RES,CHIP,MAKER	ERHZ0000701	1	0 ohm,1/10W ,J ,1608 ,R/TP	MCR03EZHJ000
421	6	R425	RES,CHIP,MAKER	ERHZ0003901	1	0.1 ohm,1/4W ,F ,2012 ,R/TP ,; ,0.1 ,1% ,1/4W ,2012 ,R/TP	MCR10EZHFLR1 00
422	6	R430	RES,CHIP,MAKER	ERHZ0000493	1	51 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ513

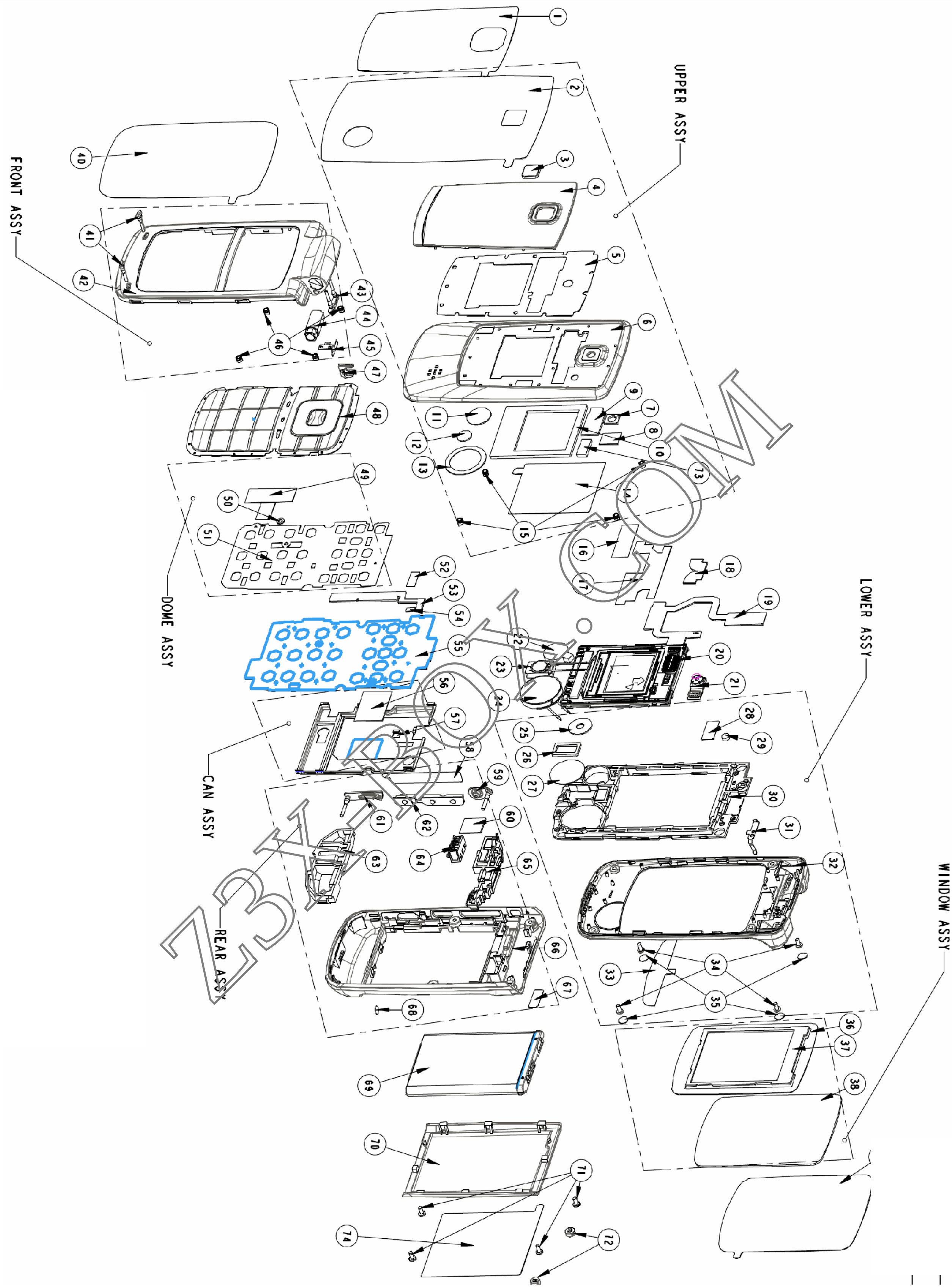
423	6	R435	RES,CHIP,MAKER	ERHZ0000238	1	200 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF2003
424	6	R437	RES,CHIP,MAKER	ERHZ0000443	1	2200 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ222
425	6	R438	VARISTOR	SEVY0003801	1	18 V, ,SMD ,	EVLC18S02015
426	6	R439	VARISTOR	SEVY0003801	1	18 V, ,SMD ,	EVLC18S02015
427	6	R442	VARISTOR	SEVY0003801	1	18 V, ,SMD ,	EVLC18S02015
428	6	R443	RES,CHIP,MAKER	ERHZ0000406	1	100 Kohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ104
429	6	R444	VARISTOR	SEVY0005202	1	5.5 V,+-30 ,SMD ,1005, 100 pF, Pb free	EVLC5S02100
430	6	R445	RES,CHIP,MAKER	ERHZ0000499	1	5600 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ562
431	6	R448	VARISTOR	SEVY0005202	1	5.5 V,+-30 ,SMD ,1005, 100 pF, Pb free	EVLC5S02100
432	6	R449	RES,CHIP,MAKER	ERHZ0000222	1	150 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF1503
433	6	R450	RES,CHIP,MAKER	ERHZ0000281	1	39.2 Kohm,1/16W ,F ,1005 ,R/TP	MCR01MZSF3922
434	6	R451	VARISTOR	SEVY0003901	1	5.5 V, ,SMD ,480pF, 1005	EVL5M02200
435	6	R452	VARISTOR	SEVY0003901	1	5.5 V, ,SMD ,480pF, 1005	EVL5M02200
436	6	R500	RES,CHIP,MAKER	ERHZ0000411	1	120 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ121
437	6	R501	RES,CHIP,MAKER	ERHZ0000411	1	120 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ121
438	6	R502	RES,CHIP,MAKER	ERHZ0000411	1	120 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ121
439	6	R503	RES,CHIP,MAKER	ERHZ0000411	1	120 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ121
440	6	R504	RES,CHIP,MAKER	ERHZ0000411	1	120 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ121
441	6	R505	VARISTOR	SEVY0003602	1	5.6 V, ,SMD ,1005, 60pF	ICVL0505600V150FR
442	6	R506	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
443	6	R507	RES,CHIP,MAKER	ERHZ0000411	1	120 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ121
444	6	R508	RES,CHIP,MAKER	ERHZ0000411	1	120 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ121
445	6	U100	CONN,RF SWITCH	ENWY0005301	1	,SMD , dB,H=1.85 ,; ,3.00MM ,STRAIGHT , RF ADAPTER ,SMD ,R/TP ,AU , ,	KMS-518
446	6	U101	MODULE,ETC	SMZY0016501	1	LNA Module(GPS LNA+B/P Filter) ,: ,RF Module	ALM-1412
447	6	U103	COUPLER,RF DIRECTIONAL	SCDY0003401	1	-22 dB,-0.2 dB,-37 dB,1.0*0.58*0.35 ,SMD ,824M ~ 849M, 4pin, Pb Free	CP0402A0836BNTR
448	6	U104	COUPLER,RF DIRECTIONAL	SCDY0003402	1	-20 dB,-0.25 dB,-35 dB,1.0*0.58*0.35 ,SMD ,1850M ~ 1910M, 4pin, Pb Free	CP0402A1880ENTR
449	6	U105	PAM	SMPY0015801	1	28 dBm,39 %, A, dBc, dB,3x5x1 ,SMD ,HELP3 Dual PAM ,; , , , , , , , ,R/TP ,R/TP ,14	AWT6321R
450	6	U106	VCTCXO	EXSK0004802	1	19.2 MHz,1.5 PPM,10 pF,SMD ,3.2*2.5*1.2 , ,; ,19.2 Mhz ,1.5PPM ,2.8V ,3.2 ,2.5 ,1.2 , ,SMD ,P/TP	ERF3003E
451	6	U108	IC	EUSY0300201	1	FBGA ,65 PIN,R/TP ,Bluetooth Single chip(5x5x1.2)	BCM2045SB2KFBG
452	6	U115	CONN,RF SWITCH	ENWY0005301	1	,SMD , dB,H=1.85 ,; ,3.00MM ,STRAIGHT , RF ADAPTER ,SMD ,R/TP ,AU , ,	KMS-518
453	6	U200	IC	EUSY0336201	1	CSP ,424 PIN,R/TP ,CDMA 1X Onechip BB, BB/RF/PM	QSC6055
454	6	U201	X-TAL	EXXY0004601	1	.032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,	MC-146(7PF,+/-20PPM)
455	6	U302	IC	EUSY0263105	1	QFN ,20 PIN,R/TP ,SUB-PMIC4Ch+2LDO ,; ,IC,Charge Pump	SC624ULTRT
456	6	U303	IC	EUSY0223002	1	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 2.8V	BH28FB1WHFV
457	6	U304	IC	EUSY0300601	1	Micropak ,6 PIN,R/TP ,OR Gate, Pb Free	NC7SZ32L6X
458	6	U305	IC	EUSY0335803	1	FBGA ,107 PIN,ETC ,FULLY 1.8V 1G(LB/64Mx16) NAND+512M(DDR/8Mx4x16) SDRAM ,; ,IC,MCP	K5E1H12ACM-D075
459	6	U400	IC	EUSY0140902	1	SSOP ,5 PIN,R/TP ,Inverter(2x2.1)	TC7SZ04FU
460	6	U401	TR,FET,P-CHANNEL	EQFP0006301	1	chipFET ,1.3 W,-20 V,3.9 A,R/TP ,8 PIN (Pb-free)	NTHS5441T1G
461	6	U402	IC	EUSY0333701	1	TLLGA ,8 PIN,R/TP ,OVP	NUS3065MUTAG
462	5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0098801	1		

463	6	C309	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
464	6	C312	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
465	6	C402	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
466	6	C404	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
467	6	C405	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
468	6	C406	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
469	6	C407	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
470	6	C408	CAP,CHIP,MAKER	ECZH0000813	1	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP	C1005C0G1H101JT
471	6	C521	CAP,CHIP,MAKER	ECZH0003103	1	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP	GRM36X7R104K10PT
472	6	LED300	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
473	6	LED301	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
474	6	LED306	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
475	6	LED307	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
476	6	LED308	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
477	6	LED309	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
478	6	LED310	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
479	6	LED311	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
480	6	LED312	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
481	6	LED313	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
482	6	LED314	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
483	6	LED315	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
484	6	LED316	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
485	6	LED317	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
486	6	LED318	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
487	6	LED319	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
488	6	LED320	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
489	6	LED321	DIODE,LED,CHIP	EDLH0004501	1	BLUE ,1608 ,R/TP ,	LEBB-S14E
490	6	R305	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
491	6	R306	VARISTOR	SEVY0005202	1	5.5 V,+-30 ,SMD ,1005, 100 pF, Pb free	EVLC5S02100
492	6	R307	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
493	6	R313	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
494	6	R315	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
495	6	R318	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
496	6	R319	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
497	6	R320	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
498	6	R321	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
499	6	R322	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
500	6	R323	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
501	6	R324	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
502	6	R325	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
503	6	R326	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
504	6	R330	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
505	6	R331	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
506	6	R332	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
507	6	R333	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
508	6	R334	RES,CHIP,MAKER	ERHZ0000484	1	470 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ471
509	6	R402	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
510	6	R403	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
511	6	R404	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
512	6	R405	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
513	6	R406	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
514	6	R408	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
515	6	R410	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
516	6	R411	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
517	6	R412	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
518	6	R416	VARISTOR	SEVY0005401	1	18 V, ,SMD ,15pF,1005	ICVS0518150FR
519	6	R420	VARISTOR	SEVY0005401	1	18 V, ,SMD ,15pF,1005	ICVS0518150FR
520	6	R421	VARISTOR	SEVY0005401	1	18 V, ,SMD ,15pF,1005	ICVS0518150FR
521	6	R422	VARISTOR	SEVY0005401	1	18 V, ,SMD ,15pF,1005	ICVS0518150FR

522	6	R423	VARISTOR	SEVY0005401	1	18 V, ,SMD ,15pF,1005	ICVS0518150FR
523	6	R453	RES,CHIP	ERHY0003301	1	100 ohm,1/16W ,J ,1005 ,R/TP	MCR01MZSJ101
524	6	SPFY00	PCB,MAIN	SPFY0161302	1	FR-4 ,0.8 mm,STAGGERED-8 ,MAIN ,; , , , , , , , , ,	SPFY0161302
525	6	U301	IC	EUSY0313401	1	QFN ,4 PIN,R/TP ,1.8X1.2X0.5 size wide input voltage Hall Switch	EM-0781-T5

5. Assembly Diagram

NO	DESCRIPTION	DRAWING No.	QTY	NO	DESCRIPTION	DRAWING No.	QTY
1	TAPE,PROTECTION	MTAB0216301	1	38	WINDOW,LCD	MWAC0086402	1
2	TAPE,PROTECTION	MTAB0196701	1	39	TAPE,PROTECTION	MTAB0196801	1
3	WINDOW,CAMERA	MWAE0029301	1	40	TAPE,PROTECTION	MTAB0232501	1
4	WINDOW,LCD(SUB)	MWAF0038901	1	41	STOPPER,FOLDER	MSGC0001702	1
5	TAPE,WINDOW(SUB)	MTAE0032601	1	42	COVER,FRONT	MCJK0078602	1
6	COVER, UPPER	MCJJ0050102	1	43	STOPPER,HINGE	MSGB0022702	1
7	PAD,CAMERA	MPBT0049001	1	44	HINGE,FOLDER	MHFD0016301	1
8	PAD,CONNECTOR	MPBU0012401	1	45	MCIB CONTACT,HINGE	MCIB0000801	1
9	PAD,CONNECTOR	MPBU0012501	1	46	INSERT,FRONT	MICA0023401	4
10	PAD,LCD	MPBG0068301	1	47	STOPPER,HINGE	MSGB0022801	1
11	PAD,MOTOR	MPBJ0050601	1	48	KEYPAD,MAIN	MKAG0002802	1
12	PAD,RECEIVER	MPBM0020201	1	49	TAPE,PROTECTION	MTAB0234301	1
13	FILTER,SPEAKER	MFBC0034901	1	50	FILTER,MIKE	MFBD0026801	1
14	TAPE,PROTECTION	MTAB0214901	1	51	DOME ASSY,METAL	ADCA0072501	1
15	INSERT,FRONT	MICA0023401	4	52	INSULATOR	MIDZ0156601	1
16	TAPE,SHIELD	MTAC0062701	1	53	FPCB SIDEKEY	SAKY0006901	1
17	TAPE,SHIELD	MTAC0062801	1	54	TAPE SHIELD	MTAC0064101	1
18	PAD,FLEXIBLE PCB	MPBF0030801	1	55	PCB,MAIN	SPFY0161302	1
19	FPCB, LCD	SACY0072001	1	56	PAD,MSM	MPBL0006601	1
20	LCD MODULE	SVLM0027701	1	57	CAN,SHIELD	MCBA0023701	1
21	CAMERA	SVCY0013401	1	58	TAPE,PROTECTION	MTAB0196601	1
22	VIBRATOR,MOTOR	SJMY0006510	1	59	CAP,EARPHONE JACK	MCCC0050502	1
23	RECEIVER	SURY0011302	1	60	PAD,CONNECTOR	MPBU0019901	1
24	SPEAKER	SUSY0023501	1	61	CAP,RECEPTACLE	MCCE0040702	1
25	PAD,MOTOR	MPBJ0047901	1	62	BUTTON,SIDE	MBJL0046802	1
26	FILTER,RECEIVER	MFBB0023801	1	63	ANTENNA,MOBILE,FIXED	SNMF0037901	1
27	PAD,SPEAKER	MPBN0052201	1	64	CONNECTOR,ETC	ENZY0019901	1
28	TAPE,CAMERA	MTAK0004101	1	65	ANTENNA,MAIN	SNMF0038001	1
29	MAGNET,SWITCH	MMAA0008201	1	66	COVER,REAR	MCJN0074302	1
30	BRACKET,LCD	MBFF0015501	1	67	LABEL,QUALCOMM	MLAN0000603	1
31	MCIB CONTACT,HINGE	MCIB0000701	1	68	LABEL,A/S	MLAB0000601	1
32	COVER,FOLDER(LOWER)	MCJH0040902	1	68	CAP,SCREW	MCCH0118502	2
33	TAPE,PROTECTION	MTAB0232401	1	69	BATTERY PACK,LI-ION	SBPL0086301	1
34	SCREW MACHINE,BIND	GMEY0002001	4	70	COVER,BATTERY	MCJA0051202	1
35	CAP,SCREW	MCCH0114802	4	73	PAD,LCD	MPBG0074101	1
36	TAPE,WINDOW	MTAD0076001	1	74	TAPE,PROTECTION	MTAB0237501	1


UPPER ASSY
FRONT ASSY
DOME ASSY
CAN ASSY
LOWER ASSY
REAR ASSY
WINDOW ASSY

Chapter 6. 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 7. 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