Service Manual

Model : F1200

LG

Service Manual

F1200

P/N : MMBD0045801

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REVISED HISTORY

DATE	ISSUE	CONTENTS OF CHANGES	S/W VERSION
JAN/2005	ISSUE1	Initial Release	

The information in this manual is subject to change without notice and should not be construed as a commitment by LGE Inc. Furthermore, LGE Inc. reserves the right, without notice, to make changes to equipment design as advances in engineering and manufacturing methods warrant.

This manual provides the information necessary to install, program, operate and maintain the F1200.

1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of F1200.

1.2 Regulatory Information

(1) Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that are resulted from such unauthorized use.

(2) Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

(3) Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

(4) Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

(5) Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

(6) Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

(7) Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

(8) Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the sign.

Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Rate
CC-CV	Constant Current – Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli watt
DSP	Digital Signal Processing
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop
PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave

SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Pseudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

2. PERFORMANCE

2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-Ion, 950mAh	
AVG TCVR Current	240mA	
Standby Current	< 5.2mA	
Talk time	Over 5 hour (@ GSM Tx Level 7)	
Standby time	Over 250 hour (@ Paging Period 9, RSSI : -85dBm)	
Charging time	3 hours	
RX Sensitivity	GSM900 : -105dBm, DCS/PCS : -105dBm	
TX output power	GSM, EGSM: 32dBm (Level 5) DCS/PCS: 29dBm (Level 0)	
GPRS compatibility	Class 12	
SIM card type	3.0V Only	
Display	Main : 128 x 160 TFT, Sub : 96 x 96 TFT	
Status Indicator	Key Pad (Main) : 0 ~ 9, #, *, Navigation Key, Up/Down Side Key, Camera Side Key, Confirm Key, Send Key, END/PWR Key Key Pad (Folder) : Rewind, Fasten Forward, Play	
ANT	Internal	
EAR Phone Jack	12-pin	
PC Synchronization	Yes	
Speech coding	EFR / FR	
Data and Fax	Yes	
Vibrator	Yes	
Buzzer	No	
Voice Recording	Yes	
C-Mic	Yes	
Receiver	Yes	
Travel Adapter	Yes	
Options	Hands-Free Kit, Data Kit	

2.2 Technical Specification

<table>
<tr><th>Item</th><th>Description</th><th colspan="6">Specification</th></tr>
<tr><td>1</td><td>Frequency Band</td><td colspan="6">GSM900
TX: 890 + n x 0.2 MHz (n=1 ~ 124)
890 + (n-1024) x 0.2 MHz (n=975 ~ 1023)
RX: TX + 45 MHz
DCS1800
TX: 1710 + (n-511) x 0.2 MHz (n = 512 x 885)
RX: TX + 95 MHz
PCS1900
TX: 1850 + (n-511) x 0.2 MHz
RX: 1930 + (n-511) x 02MHz (n = 512 x 810)</td></tr>
<tr><td>2</td><td>Phase Error</td><td colspan="6">RMS < 5 degrees
Peak < 20 degrees</td></tr>
<tr><td>3</td><td>Frequency Error</td><td colspan="6">< 0.1ppm</td></tr>
<tr><td rowspan="20">4</td><td rowspan="20">Power Level</td><td colspan="6">GSM900</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>5</td><td>33 dBm</td><td>±2dB</td><td>13</td><td>17 dBm</td><td>±3dB</td></tr>
<tr><td>6</td><td>31 dBm</td><td>±3dB</td><td>14</td><td>15 dBm</td><td>±3dB</td></tr>
<tr><td>7</td><td>29 dBm</td><td>±3dB</td><td>15</td><td>13 dBm</td><td>±3dB</td></tr>
<tr><td>8</td><td>27 dBm</td><td>±3dB</td><td>16</td><td>11 dBm</td><td>±5dB</td></tr>
<tr><td>9</td><td>25 dBm</td><td>±3dB</td><td>17</td><td>9 dBm</td><td>±5dB</td></tr>
<tr><td>10</td><td>23 dBm</td><td>±3dB</td><td>18</td><td>7 dBm</td><td>±5dB</td></tr>
<tr><td>11</td><td>21 dBm</td><td>±3dB</td><td>19</td><td>5 dBm</td><td>±5dB</td></tr>
<tr><td>12</td><td>19 dBm</td><td>±3dB</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">DCS1800/PCS1900</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>0</td><td>30 dBm</td><td>±2dB</td><td>8</td><td>14 dBm</td><td>±3dB</td></tr>
<tr><td>1</td><td>28 dBm</td><td>±3dB</td><td>9</td><td>12 dBm</td><td>±4dB</td></tr>
<tr><td>2</td><td>26 dBm</td><td>±3dB</td><td>10</td><td>10 dBm</td><td>±4dB</td></tr>
<tr><td>3</td><td>24 dBm</td><td>±3dB</td><td>11</td><td>8 dBm</td><td>±4dB</td></tr>
<tr><td>4</td><td>22 dBm</td><td>±3dB</td><td>12</td><td>6 dBm</td><td>±4dB</td></tr>
<tr><td>5</td><td>20 dBm</td><td>±3dB</td><td>13</td><td>4 dBm</td><td>±4dB</td></tr>
<tr><td>6</td><td>18 dBm</td><td>±3dB</td><td>14</td><td>2 dBm</td><td>±5dB</td></tr>
<tr><td>7</td><td>16 dBm</td><td>±3dB</td><td>15</td><td>0 dBm</td><td>±5dB</td></tr>
</table>

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	**GSM900**	
		Offset from Carrier (kHz)	Max. dBc
		100	+0.5
		200	–30
		250	–33
		400	–60
		600 ~ 1,200	–60
		1,200 ~ 1,800	–60
		1,800 ~ 3,000	–63
		3,000 ~ 6,000	–65
		6,000	–71
		DCS1800/PCS1900	
		Offset from Carrier (kHz)	Max. dBc
		100	+0.5
		200	–30
		250	–33
		400	–60
		600 ~ 1,200	–60
		1,200 ~ 1,800	–60
		1,800 ~ 3,000	–65
		3,000 ~ 6,000	–65
		6,000	–73
6	Output RF Spectrum (due to switching transient)	**GSM900**	
		Offset from Carrier (kHz)	Max. dBm
		400	–19
		600	–21
		1,200	–21
		1,800	–24
		DCS1800/PCS1900	
		Offset from Carrier (kHz)	Max. dBm
		400	–22
		600	–24
		1,200	–24
		1,800	–27
7	Spurious Emissions	Conduction, Emission Status	

2. PERFORMANCE

<table>
<tr><th>Item</th><th>Description</th><th colspan="3">Specification</th></tr>
<tr><td>8</td><td>Bit Error Rate</td><td colspan="3">GSM900
BER (Class II) < 2.439% @–102 dBm
DCS1800/PCS1900
BER (Class II) < 2.439% @–100 dBm</td></tr>
<tr><td>9</td><td>RX Level Report Accuracy</td><td colspan="3">±3 dB</td></tr>
<tr><td>10</td><td>SLR</td><td colspan="3">8 ±3 dB</td></tr>
<tr><td rowspan="10">11</td><td rowspan="10">Sending Response</td><td>Frequency (Hz)</td><td>Max. (dB)</td><td>Min. (dB)</td></tr>
<tr><td>100</td><td>–12</td><td>–</td></tr>
<tr><td>200</td><td>0</td><td>–</td></tr>
<tr><td>300</td><td>0</td><td>–12</td></tr>
<tr><td>1,000</td><td>0</td><td>–6</td></tr>
<tr><td>2,000</td><td>4</td><td>–6</td></tr>
<tr><td>3,000</td><td>4</td><td>–6</td></tr>
<tr><td>3,400</td><td>4</td><td>–9</td></tr>
<tr><td>4,000</td><td>0</td><td>–</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>12</td><td>RLR</td><td colspan="3">2 ±3 dB</td></tr>
<tr><td rowspan="11">13</td><td rowspan="11">Receiving Response</td><td>Frequency (Hz)</td><td>Max. (dB)</td><td>Min. (dB)</td></tr>
<tr><td>100</td><td>–12</td><td>–</td></tr>
<tr><td>200</td><td>0</td><td>–</td></tr>
<tr><td>300</td><td>2</td><td>–7</td></tr>
<tr><td>500</td><td>*</td><td>–5</td></tr>
<tr><td>1,000</td><td>0</td><td>–5</td></tr>
<tr><td>3,000</td><td>2</td><td>–5</td></tr>
<tr><td>3,400</td><td>2</td><td>–10</td></tr>
<tr><td>4,000</td><td>2</td><td></td></tr>
<tr><td colspan="3">* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>14</td><td>STMR</td><td colspan="3">13 ±5 dB</td></tr>
<tr><td>15</td><td>Stability Margin</td><td colspan="3">> 6 dB</td></tr>
<tr><td rowspan="9">16</td><td rowspan="9">Distortion</td><td colspan="2">dB to ARL (dB)</td><td>Level Ratio (dB)</td></tr>
<tr><td colspan="2">–35</td><td>17.5</td></tr>
<tr><td colspan="2">–30</td><td>22.5</td></tr>
<tr><td colspan="2">–20</td><td>30.7</td></tr>
<tr><td colspan="2">–10</td><td>33.3</td></tr>
<tr><td colspan="2">0</td><td>33.7</td></tr>
<tr><td colspan="2">7</td><td>31.7</td></tr>
<tr><td colspan="2">10</td><td>25.5</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>17</td><td>Side tone Distortion</td><td colspan="3">Three stage distortion < 10%</td></tr>
<tr><td>18</td><td><Change> System frequency (13 MHz) tolerance</td><td colspan="3">≤ 2.5 ppm</td></tr>
</table>

Item	Description	Specification	
19	<Change> 32.768KHz tolerance	≤ 30 ppm	
20	Power consumption	Standby - Normal, ≤5.2mA (Mix. power)	
21	Talk Time	GSM900/Lvl 7 (Battery Capacity 950mA): 321 min GSM900/Lvl 12 (Battery Capacity 950mA): 499 min	
22	Standby Time	Under conditions, at least 250 hours: 1. Brand new and full 950mAh battery 2. Full charge, no receive/send and keep GSM in idle mode. 3. Broadcast set off. 4. Signal strength display set at 3 level above. 5. Backlight of phone set off.	
23	Ringer Volume	At least 65 dB under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
24	Charge Voltage	Fast Charge : < 500 mA Slow Charge: < 60 mA	
25	Antenna Display	Antenna Bar Number	Power
		5	–85 dBm ~
		4	–90 dBm ~ –86 dBm
		3	–95 dBm ~ –91 dBm
		2	–100 dBm ~ –96 dBm
		1	–105 dBm ~ –101 dBm
		0	~ –105 dBm
26	Battery Indicator	0	3.62V±0.03V
		1	3.70V±0.03V
		2	3.78V±0.03V
		3	3.92V±0.03V
		4	3.93V±0.03V ↑
27	Low Voltage Warning	3.62V↓ ±0.03V (Call)	
		3.50V↓ ±0.03V (Standby)	
28	Forced shut down Voltage	3.35 ± 0.03 V	
29	Battery Type	1 Li-ion Battery Standard Voltage = 3.7V Battery full charge voltage = 4.2V Capacity : 950mAh	
30	Travel Charger	Switching-mode charger Input : 100 ~ 240V, 50/60 Hz Output : 5.2V, 600 mA	

3. TECHNICAL BRIEF

3.1 RF Transceiver General Description

The RF parts consist of a transmitter part, a receiver part, a frequency synthesizer part, a voltage supply part, and a DCXO part.

The SI4206[U102] is a triple band transceiver IC suitable for GSM 900, DCS 1800 and PCS 1900 GPRS class 12 applications. This device integrated a receiver based on a low IF (100KHz) architecture and a transmitter based on modulation loop architecture. And, the synthesizer part are included in the IC, a complete dual band synthesizer with built in VCOs.

The transceiver employed a 3 wire serial interface to allow an external system controller to write the control registers for dividers, receive path gain, power down setting, and other controls.

3.2 Receiver Part

The receiver part uses a low-IF receiver architecture that allows for the on-chip integration of the channel selection filters, eliminating the external RF image reject filters and the IF SAW filter required in conventional super-heterodyne architecture. The Si4206[U102] integrates three differential input LNAs that are matched to the 200 Ohm balanced-output SAW filters through external LC matching networks. A quadrature image-rejection mixer downconverts the RF signal to a 100kHz intermediate frequency (IF) with the RFLO. The mixer output is amplified with an analog programmable gain amplifier (PGA) and quadrature IF signal is digitized with high resolution A/D converters (ADCs). The Si4206[U102] downconverts the ADC output to baseband with a digital 100kHz quadrature LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. After channel selection, the digital output is scaled with digital PGA, which is controlled with the DGAIN[5:0] bits in register 05h.The amplified digital output signal go through with DACs that drive a differential analog signal onto the RXIP,RXIN,RXQP and RXQN pins to interface to standard analog ADC input baseband ICs.

	Antenna Bar Number	Power (dBm)
Antenna Display	5	≥ -85
	4	≥ -90
	3	≥ -95
	2	≥ -100
	2	≥ -105
	1	< -105

Table 1. Antenna (RSSI) Display

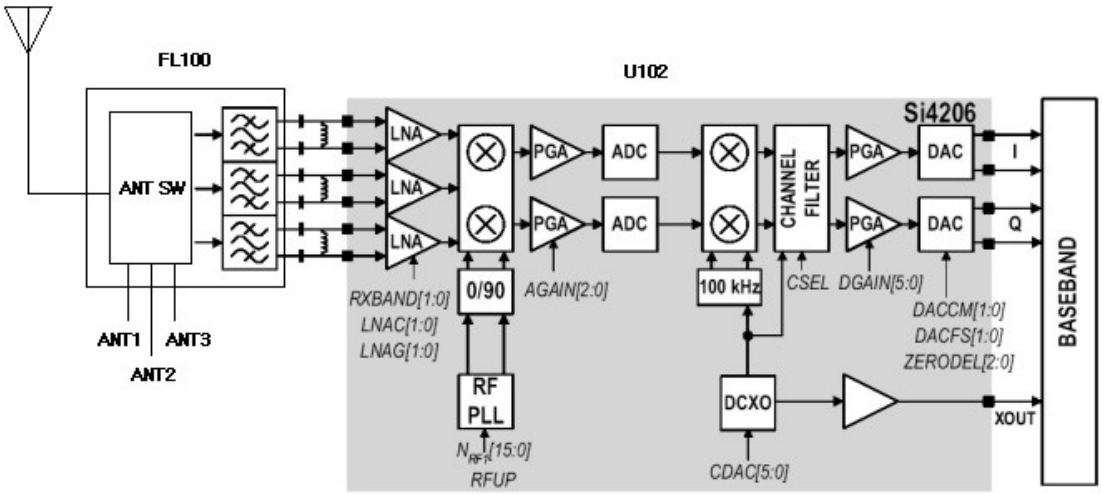


Figure 1. RECEIVER PART Block Diagram

(1) RF Front End

RF front end consists of Antenna Switch Module with SAW filter for triple band (FL100), triple band LNAs integrated in transceiver (U102).

The Received RF signals (EGSM 925MHz ~ 960MHz, DCS 1805MHz ~ 1880MHz, PCS 1850 ~ 1990MHz) are fed into the antenna or mobile switch. An antenna matching circuit is between the antenna and the mobile switch. The Antenna Switch (in FL100) is used for control the Rx and TX paths. And, the input signals ANT1, ANT2 and ANT3 of a FL100 are directly connected to baseband controller to switch either TX or RX path on and select bands. Ant S/W module (FL100) is an antenna switch module for dual band phone. The logic and current is given below.

Mode	ANT1	ANT2	ANT3
EGSM TX	H	L	L
DCS/PCS TX	L	H	H
EGSM RX	L	L	L
DCX RX	L	L	L
PCS RX	L	L	H

Table 2. BAND/RTX SELECTION

The receiver part uses a low-IF receiver architecture that allows for the on-chip integration of the channel selection filters, eliminating the external RF image reject filters and the IF SAW filter required in conventional super-heterodyne architecture. The Si4206[U102] integrates three differential input LNAs that are matched to the 200 ohm balanced-output SAW filters through external LC matching networks.

(2) Low IF

A quadrate image-rejection mixer downconverts the RF signal to a 100kHz intermediate frequency (IF) with the RFLO. The RFLO frequency is between 1849.8 and 1918.8 MHz, and is divided by two for EGSM modes. The RFLO frequency is between 1804.9 and 1879.9 MHz, and is divided by one for DCS modes. The RFLO frequency is between 1929.9 and 1989.9 MHz, and is divided by one for PCS modes. The mixer output is amplified with an analog programmable gain amplifier (PGA), which is controlled with the AGAIN[2:0] bits in register 05h. The quadrate IF signal is digitized with high resolution A/D converters (ADCs). The Si4206[U101] down-converts the ADC output to baseband with a digital 100kHz quadrate LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. The response of the IIR filter is programmable to a high selectivity setting (CSEL=0) or a low selectivity setting (CSEL=1). After channel selection, the digital output is scaled with digital PGA, which is controlled with the DGAIN[5:0] bits in register 05h.

(3) Demodulator and Baseband Processing

The amplified digital output signal go through with DACs that drive a differential analog signal onto the RXIP, RXIN, RXQP and RXQN pins to interface to standard analog ADC input baseband ICs. No special processing is required in the baseband for offset compensation or extended dynamic range. Compared to a direct-conversion architecture, the low-IF architecture has a much greater degree of immunity to dc offsets that can arise from RF local oscillator (RFLO) self-mixing, 2nd order distortion of blockers, and device 1/f noise.

3.3 Synthesizer Part

The Si4206[U101] integrates two complete PLLs including VCOs, varactors, resonators, loop filters, reference and VCO dividers, and phase detectors. The RF PLL uses two multiplexed VCOs. The RF1 VCO is used for receive mode, and the RF2 VCO is used for transmit mode. The IF PLL is used only during transmit mode. All VCO tuning inductors are also integrated. The IF and RF output frequencies are set by programming the N-Divider registers, N_{RF1}, N_{RF2}, and N_{IF}. Programming the N-Divider register for either RF1 or RF2 automatically selects the proper VCO. The output frequency of each PLL is as follows:

$$F_{OUT} = N \times f\Phi$$

A programmable divider in the input stage allows either a 13 or 26 MHz reference frequency depending on the choice of crystal. A 26 MHz reference clock can be divided by 2 using the DIV2 bit in Register 31h. The RF PLL phase detector update rate ($f\Phi$) can be programmed with the RFUP bit in register 31h to either $f\Phi$ = 100 kHz or $f\Phi$ = 200 kHz. The IF PLL always uses $f\Phi$ = 200 kHz. Receive mode should use $f\Phi$ = 100 kHz in DCS 1800 and PCS 1900 bands, and $f\Phi$ = 200 kHz in the E-GSM 900 bands. Transmit modes should always use $f\Phi$ = 200 kHz.

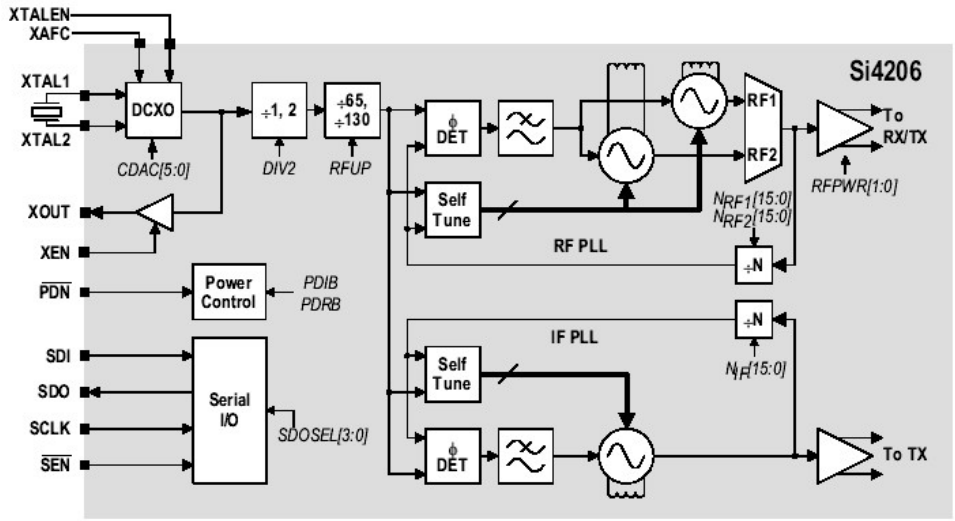


Figure 2. SYNTHESIZER PART Block Diagram

(1) DCXO

The Aero I+ transceiver integrates the DCXO circuitry required to generate a precise system reference clock using only an external crystal resonator. (See Figure 15.) An internal digitally programmable capacitor array (CDAC) provides a coarse method of adjusting the reference frequency in discrete steps. An integrated analog varactor (CVAR) allows for a fine and continuous adjustment of the reference frequency by an external control voltage (XAFC). This control voltage is supplied by the AFC DAC on the baseband IC. The complete DCXO solution effectively replaces TCVCXO modules typically required to provide a 13 or 26 MHz reference clock for the system.

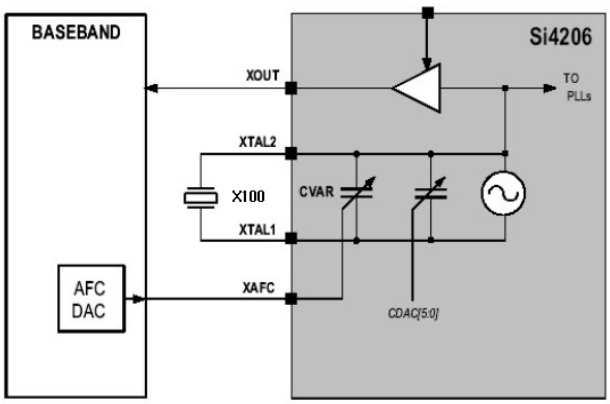


Figure 3. DCXO

3.4 Transmitter Part

The Transmitter part contains Si4206[U102] active parts, Power Amp Module[U100] and Antenna Switch Module[FL100]. The transmit section of Si4206[U102] consists of an I/Q baseband pconverter, an offset phaselocked loop (OPLL) and two 50 ohm output buffers that can drive external power amplifiers. The RF GMSK outputs from the transmit VCO are fed directly to the RF power amplifiers. The peak output power and the profile of the transmitted burst are controlled by means of incorporated power control circuits inside of PA and DAC output from the Baseband Controller. The PA outputs pass to the antenna connector via Antenna Switch Module.

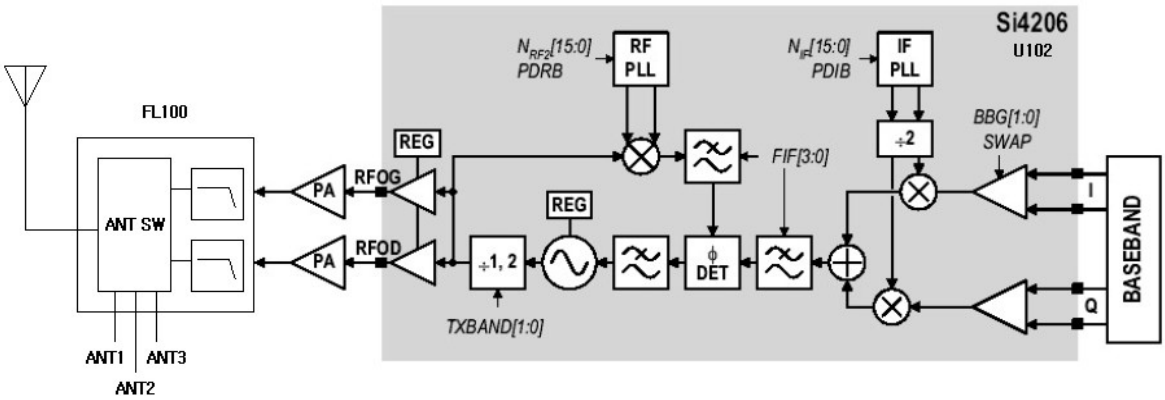


Figure 4. TRANSMITTER PART Block Diagram

(1) IF Modulator

The baseband converter (BBC) within the GSM chipset generates I and Q baseband signals for the Transmit vector modulator. The modulator provides more than 40dBc of carrier and unwanted sideband. Rejection and produces a GMSK modulated signal. The baseband software is able to cancel out differential DC offsets in the I/Q baseband signals caused by imperfections in the D/A converters. The TX-Modulator implements a quadrature modulator. A quadrature mixer upconverts the differential I/Q signals with the IFLO to generate a SSB IF signal, which is filtered and used as the reference input to the OPLL. The Si4206 [U102] generates the IFLO frequency. The IFLO is divided by two to generate the quadrature LO signals for the quadrature modulator.

(2) OPLL

The OPLL consists of a feedback mixer, a phase detector, a loop filter, and a fully integrated TXVCO. The TXVCO is centered between the DCS 1800 and PCS 1900 bands, and its output is divided by 2 for the E-GSM 900 bands. The Si4206 generates the RFLO frequency between 1327 and 1402 MHz. To allow a single VCO to be used for the RFLO, high-side injection is used for the E-GSM 900 bands, and low-side injection is used for the DCS 1800 and PCS 1900 bands. Low-pass filters before the OPLL phase detector reduce the harmonic content of the quadrature modulator and feedback mixer outputs. The cutoff frequency of the filters is programmable with the FIF[3:0] bits in register 04h. The OPLL requires no external duplexer to attenuate transmitter noise and spurious signals in the receive band. Additionally, the output of the transmit VCO (TXVCO) is a constant-envelope signal which reduces the problem of spectral spreading caused by non-linearity in the PA.

(3) Power Amplifier Module

The SKY77325[U100] is a triple-band GSM/DCS/PCS power amplifier module that incorporates an indirect closed loop method of power control. The indirect closed loop is fully self-contained and it does not require loop optimization. It can be driven directly from the DAC output in the baseband circuit. On-board power control provides typical 50 dB of control range with an analog voltage input (Vapc). Efficiency is 53% at GSM, DCS and PCS.

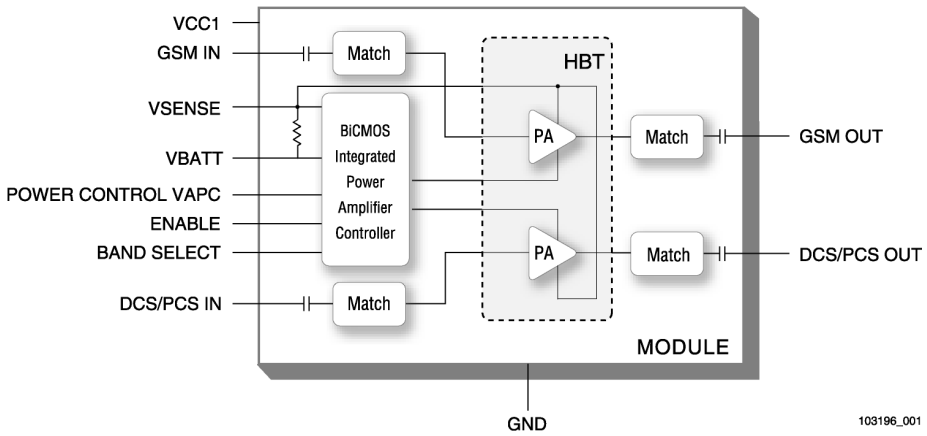


Figure 5. POWER AMP

(4) Power Supplies and Control Signals

An external regulator (U104) is used to provide DC power to RF part. Every RF component except power amp module uses this external regulator.

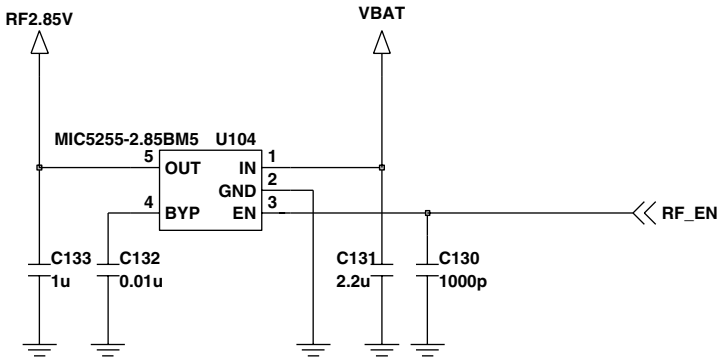


Figure 6. POWER SUPPLY & CONTROL

3.5 Digital Baseband

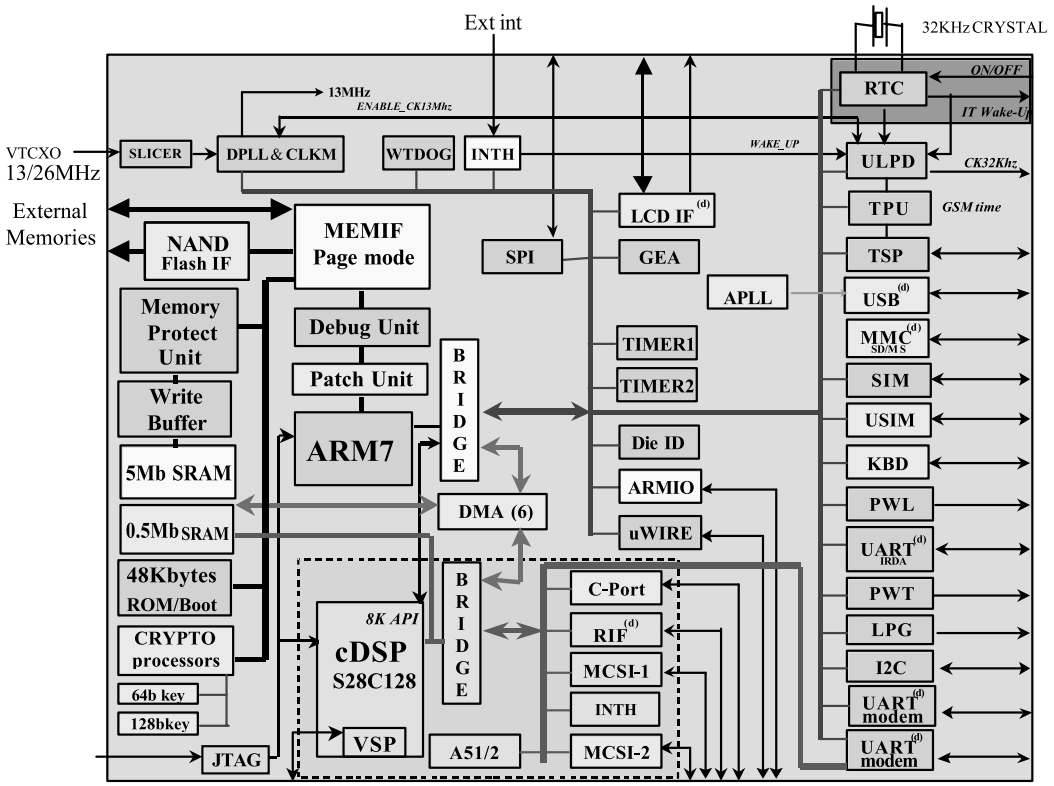


Figure 7. Top level block diagram of the Calypso-Plus

(1) General Description

Calypso-Plus device is an evolution of Calypso (C035) device integrating hardware enhancements targeting the implementation of a new range of user's applications. It supports the digital baseband processing of GSM radio signals in switching circuit mode and packet data mode up to class 12 in compliance with the ETSI specification of the GPRS protocol. The functional enhancement of the Calypso-Plus offer an increase computing performance of both ARM7 based MCU and C54x based DSP sub-system in addition to numerous new connectivity.

The enhanced computing performances mainly rely on :

[MCU Sub-system]

- 5.5Mbit Internal SRAM (with 0.5Mb shared with DSP)
- DMA to internal SRAM
- Page Mode Memory Interface
- Sizable 6 Chip-Select
- 2 Generic Purpose external interrupts
- Patch Unit

[DSP Sub-system]

- 0.5Mb Program/Data Memory Extension shared with MCU

The new connectivity peripherals are :

- LCD controller parallel physical interface (6800 & 8080 protocol)
- USB client (W2FC)
- Multi Media and Secure Digital Card (MMC/SD) interface
- Memory Stick (MS) interface (using exclusive with MMC/SD)
- Audio and Data interface for external Bluetooth Modem connection
- Audio Codec serial interface (I2S)
- Smart Card physical interface (ISO-7816)
- NAND-Flash Interface
- Enhanced Keyboard controller

(2) Memory Interface

Calypso-Plus has 6-sizable chip select port and can configure as follow :

In Mbytes	nCS0	nCS1	nCS2	nCS3	nCS4	nCS5
Config #1	8	8	8	16	16	64
Config #2	8	16	16	16	32	32
Config #3	4	8	16	32	32	32
Config #4	4	8	8	8	32	64

Table 3. Configuration of addressable ranges

F1200 applies configuration #1 as its external memory interface, the external devices are connected to as follow.

nCS	External Device	nCS	External Device
nCS0	32Mbit SRAM	nCS3	64Mbit NOR Flash
nCS1	64Mbit SRAM	nCS4	Camera (LCD) control IC
nCS2	MIDI (MP3/AAC) Chip	nCS5	128Mbit NOR Flash

Table 4. External Device Spec. connected to memory interface

Calypso-Plus has NAND Flash interface and it allows NAND EEPROM as a mass external storage facility.

The interface implements a 8-bit parallel data bus in addition to the control signals for selecting chip, writing/Reading, command and address latching, ready/busy status.

So, F1200 uses this interface as for NAND Flash memory and uses stacked memory (SRAM + NOR-Flash + NAND-Flash) as shown in (Figure 8.)

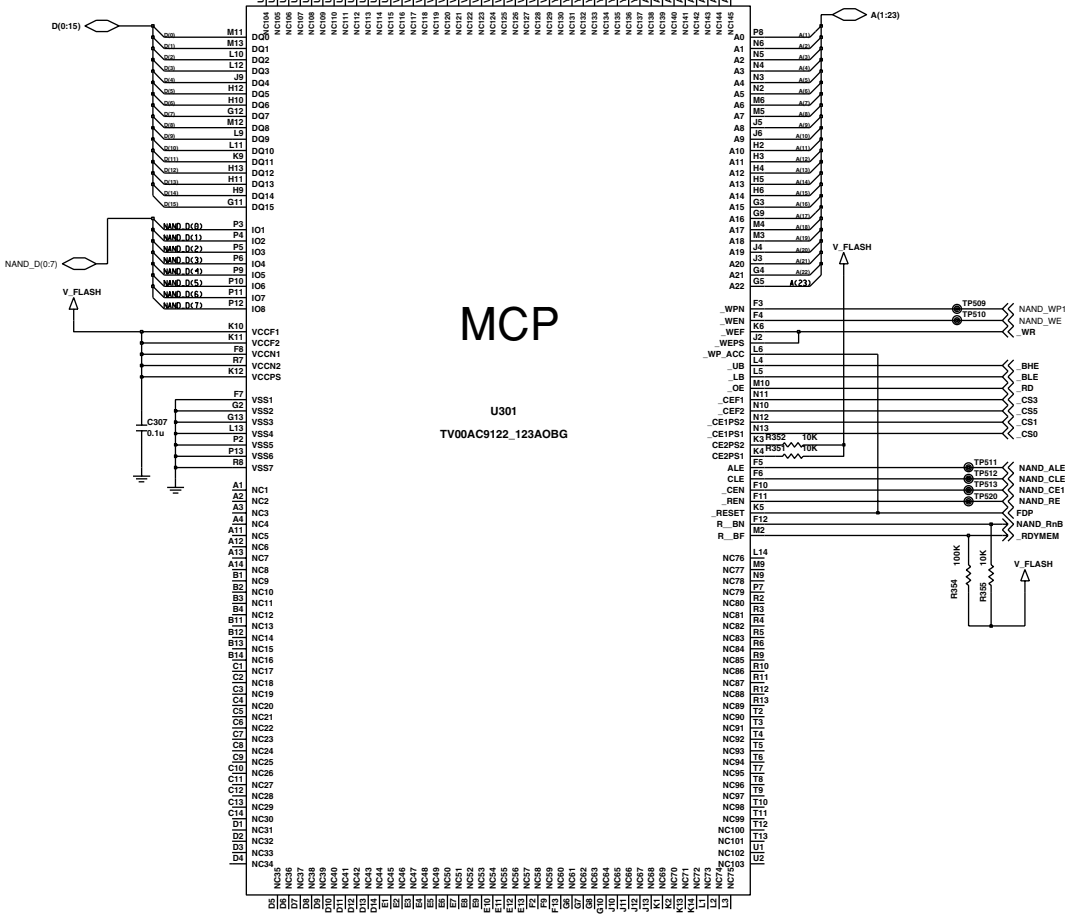


Figure 8. Memory interface scheme

(3) RF Interface (TPU, TSP block)

Calypso-Plus uses this interface to control ABB Processor and RF Processor with GSM Time Base.

TSP (Time Serial Port)		
Resource	**Interconnection**	**Description**
TSPDO	ABB & RF main Chip	Control Data
TSPEN0	ABB	ABB Control Data Enable Signal
TSPEN1	RF main Chip	RF Control Data Enable Signal
TPU (Time Processing Unit) Parallel Port		
TSPACT00	RESET_RF	RF main Chip Reset Signal
TSPACT01	PA_ON	Power Amp ON signal

Table 5. RF Interface Spec.

(4) SIM interface

SIM interface scheme is shown in (Figure 9.). SIM_IO, SIM_CLK, SIM_RST ports are used to communicate DBB with ABB and the Charge Pump in ABB enables 1.8V/3V SIM operation.

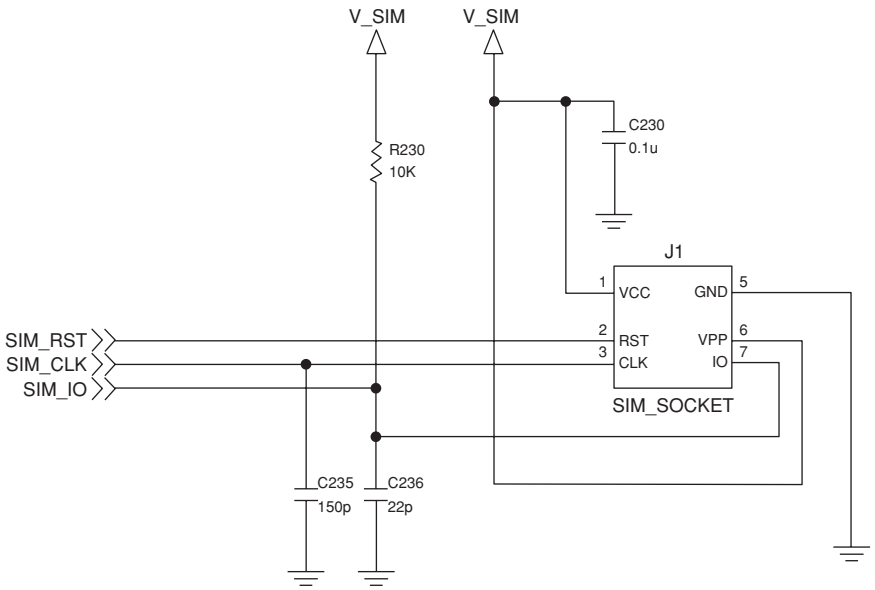


Figure 9. SIM Interface

SIM_CLK : SIM Card reference clock

SIM_RST : SIM Card async/sync reset

SIM_IO : SIM Card bi-directional data line

SIM_PWCTRL : SIM Card power activation

SIM_RnW : SIM Card data line direction

SIM_CD : SIM Card presence detection

(5) Serial Interface

Calypso-Plus has UART-IRDA and two UART Modem Drivers. (UART Modem2 is not used at F1200).

UART MODEM (UART1)		
Resource	**Interconnection**	**Description**
TX_MODEM1	TXD	Transmit Data
RX_MODEM1	RXD	Receive Data
CTS_MODEM1	CTS	Clear To Send
RTS_MODEM1	RTS	Request To Send
RTS_MODEM1	DSR	Data Set Ready
UART IRDA (UART -IRDA)		
TXIR_IRDA	TXIR_IRDA	Infra-Red Transmit Pulse
TX_IRDA	TX	Transmit Data (UART2)
RXIR_IRDA	RXIR_IRDA	Infra-Red Receive Pulse
RX_IRDA	RX	Receive Data (UART2)
SD_IRDA	SD_IRDA	IRDA transceiver Shut Down Mode

Table 6. UART Interface Spec.

(6) USB Interface

The USB_W2FC module supports the implementation of a “Full-Speed” device fully compliant to USB 1.1 standard. It provides an interface between the MCU and the USB device and handles USB transactions with minimal MCU intervention.

The USB_W2FC module supports one control endpoint (EP0), up-to fifteen (15) IN endpoints and up-to fifteen (15) OUT endpoints. The exact endpoint configuration is software programmable. The specific items configurable for each endpoint are the size in bytes, the direction (IN, OUT), the type (Bulk/Interrupt or ISO), and the associated endpoint number. The USB_W2FC module also supports three DMA channels for IN endpoints and three DMA channels for OUT endpoints for either Bulk/Interrupt or ISO transactions. In operation, the USB requires a 48MHz clock generated by a dedicated embedded DPLL upon request. The USB module interface is PVCI compliant. Therefore this module interfaces with the TI MCU RHEA bus via a RHEA-PVCI bridge.

Calypso-Plus integrates differential drivers to allow a glue-less connection with any host. The required 3.3V VDD is provided by the VBUS signal taken from the USB connector.

- USB_DP : USB differential (+) line.
- USB_DM : USB differential (-) line.
- USB_PU_EN : USB pull-up enable.

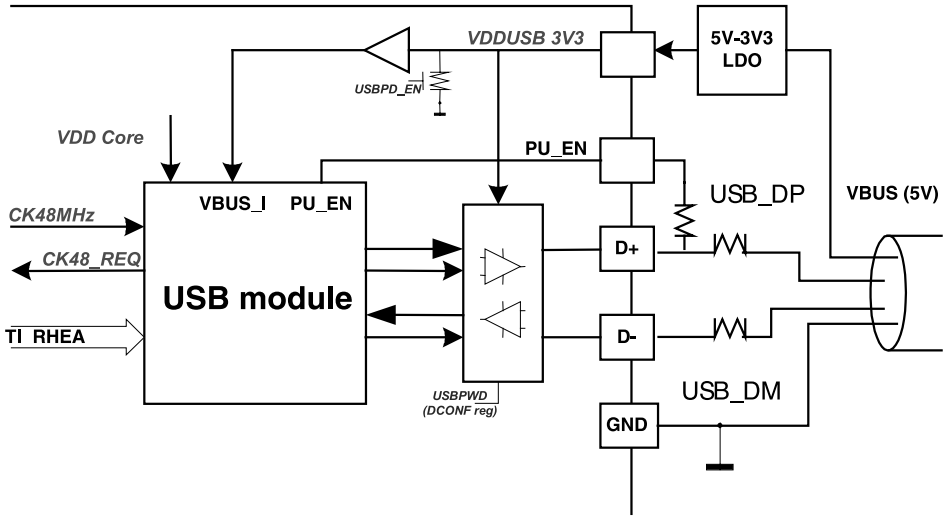


Figure 10. USB interface diagram

(7) Audio Circuits

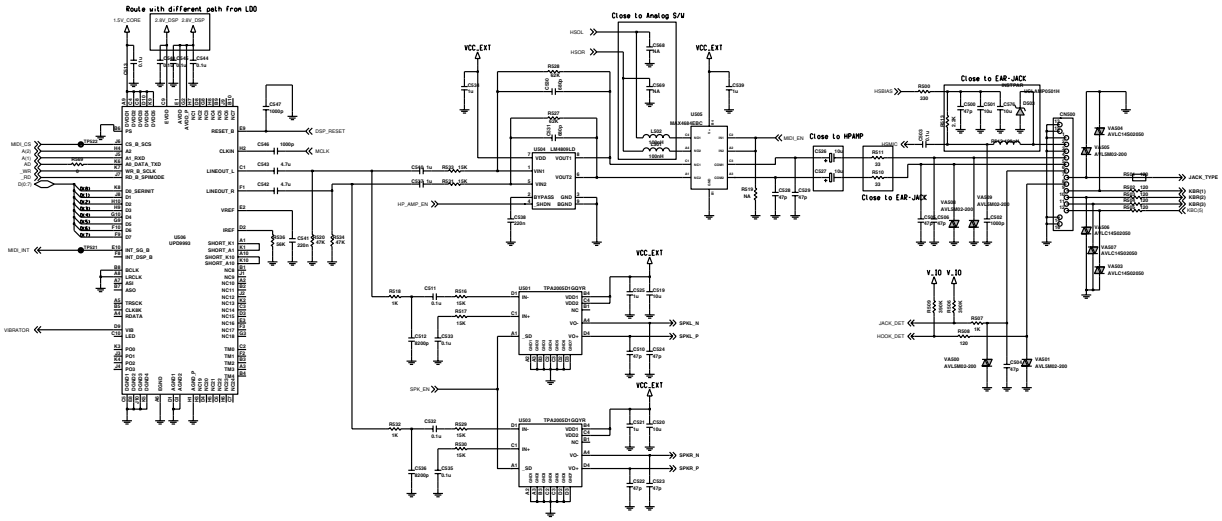


Figure 11. Audio Circuit Diagram

A. MIDI and MP3/AAC Decoder (NEC, uPD993)

NEC uPD9993 (U506) is the PCM sound generator and the MP3/AAC decoder LSI that includes an on-chip real-time wide surround function for mobile phones. The uPD9993 includes a 8-bit parallel host interface, a 3/4 serial peripheral interface (SPI), control ports for LED, Vibrator, and 4-general purpose I/Os. In F1200, uPD9993 is driven with 13MHz master clock from DBB (Calypso plus). Stereo Audio signals are transferred to next stage from stereo lineout ports of uPD9993. uPD9993 has internal analog volume stage. So volume control can be operated in uPD9993.

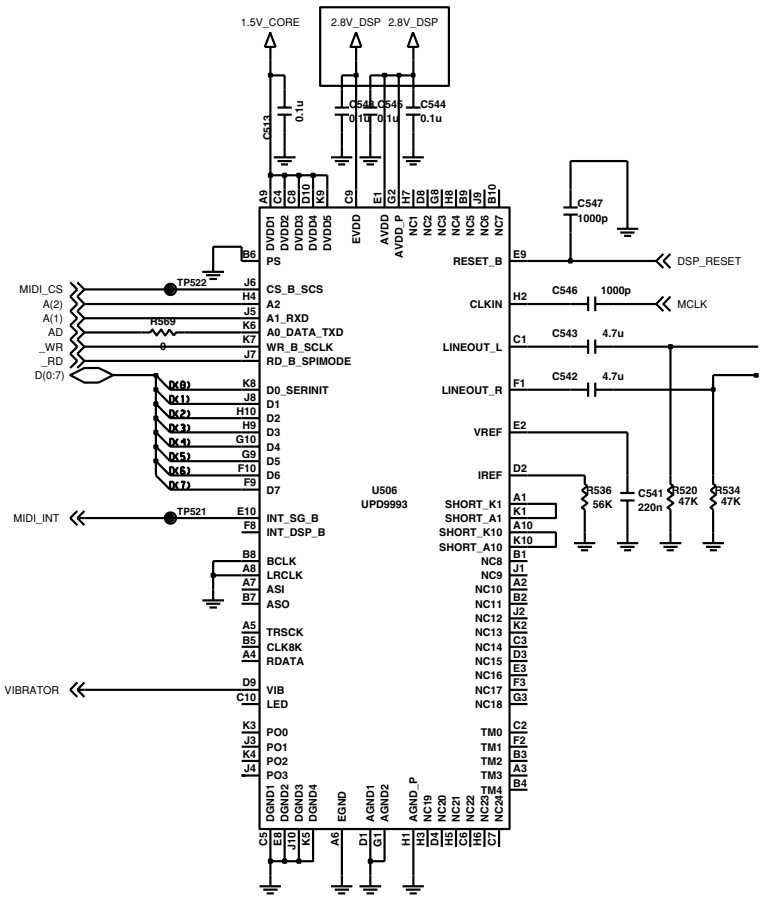


Figure 12. Audio Circuit Diagram

B. Speaker Amplifier (TPA2005)

TPA2005 is a mono power amplifier for loud speaker. Two amplifiers are used for stereo operation. It drives a speaker up to 1W power in full differential mode. In F1200, input signals are single-ended mode and output signals are differential mode. Speaker Amplifier is controlled with SPK_EN signal from DBB (Calypso plus) which can enable or disable the amplifiers.

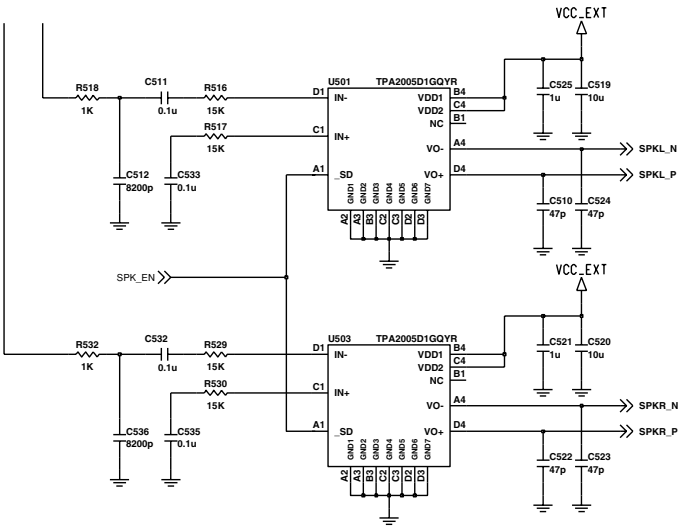


Figure 13. Speaker Amplifier circuits

C. Headphone Amplifier (LM4809LD)

LM4809LD is a stereo headphone amplifier. It includes two amplifiers, which can drive a ear-piece up to 70mW power. The LM4809LD operates in single-ended mode and controlled with HP_AMP_EN signal from DBB (Calypso plus).

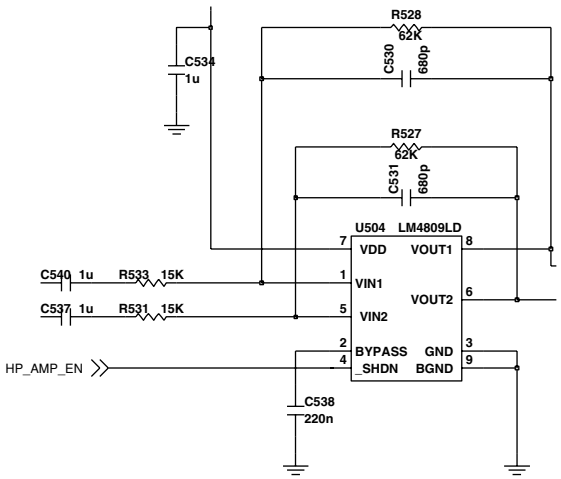


Figure 14. Headphone Amplifier circuits

D. Analog S/W

Analog S/W selects voice path or music (MP3/AAC) path according to the control signal of MIDI_EN from DBB (calypso plus). Two voice signals (HSOL, HSOR) are voice signal from ABB (Syren). And two music signals are from the headphone amplifier which amplify the music signals from MP3/AAC decoder (uPD9993). The output signals are connected to ear-set through the 12-pin ear-jack.

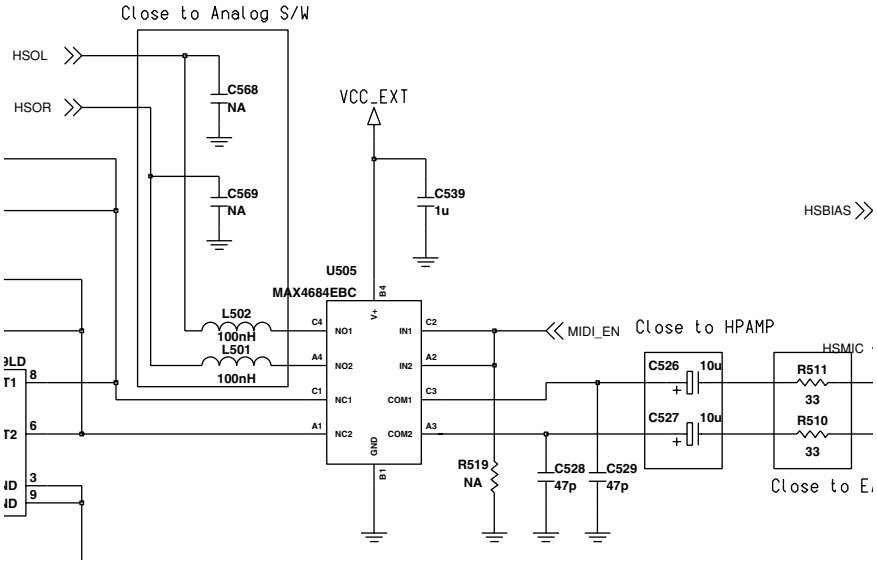


Figure 15. Analog S/W Circuits

E. Power Supply Circuits for uPD9993

The uPD9993 needs three power supply 1.5V for digital core, 2.8V for analog core, 2.8V for external interfaces. In F1200, the power supplies for analog core and external interfaces are combined with one supply. So dual LDO is used power supply for uPD9993. “1.5V_CORE” is for digital core of uPD9993 and “2.8V_DSP” is for analog core and external interfaces of uPD9993. The LDO is controlled with REGEN signal from ABB (SYREN).

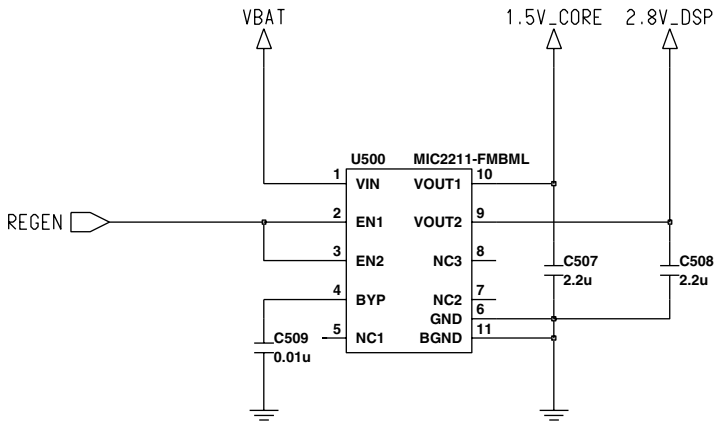


Figure 16. LDO Circuits for uPD9993

(8) Keypad Switching & Scanning

	KBC0	KBC1	KBC2	KBC3	KBC4	KBC5
KBR0	[◀]	[▶]	[▲]	[▼]	[OK]	F3
KBR1	[1]	[2]	[3]	SHUT	CLEAR	
KBR2	[4]	[5]	[6]	[F1]	[Vol Up]	
KBR3	[7]	[8]	[9]	[F2]	[Vol Down]	
KBR4	[*]	[0]	[#]	[SEND]		

Table 7. Keypad Map

DBB supports 6x6 keymap and Switch-ON Key is connected directly to ABB as (Figure 16.).

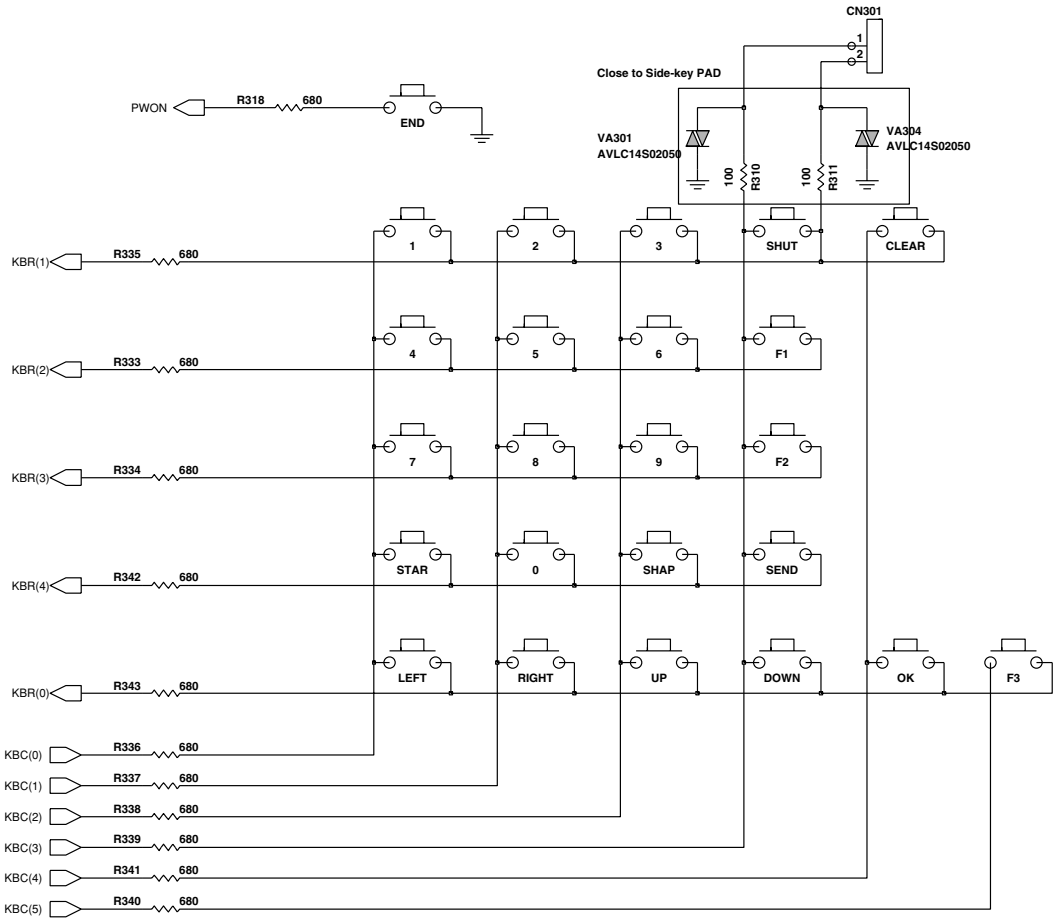


Figure 17. Keypad Scanning Scheme

(9) Keypad back-light Illumination

There are 12 Deep Blue LEDs in Main Board for Keypad Backlight. Keypad Back-light is driven by 'KEY_BACKLIGHT' (GPIO0) line from DBB.

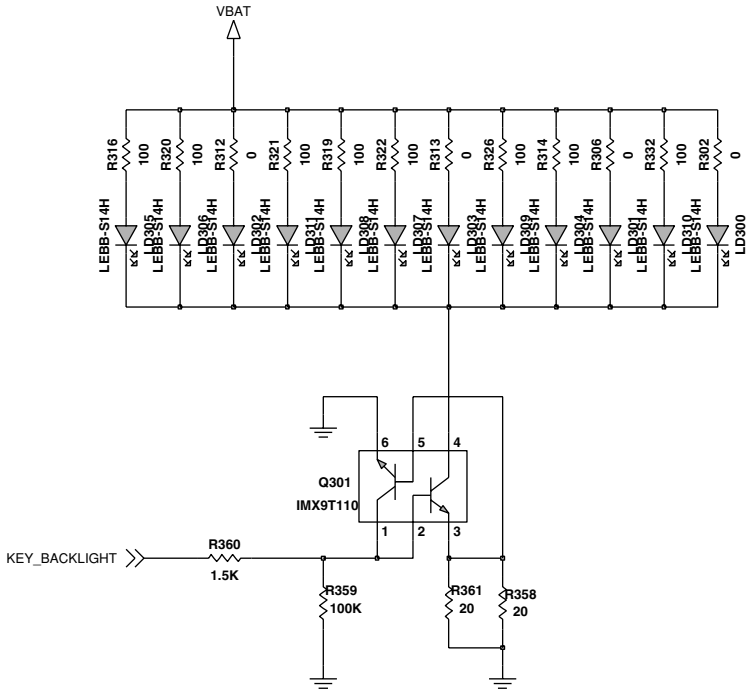


Figure 18. Keypad Back-light Scheme

(10) LCD Back-light Illumination

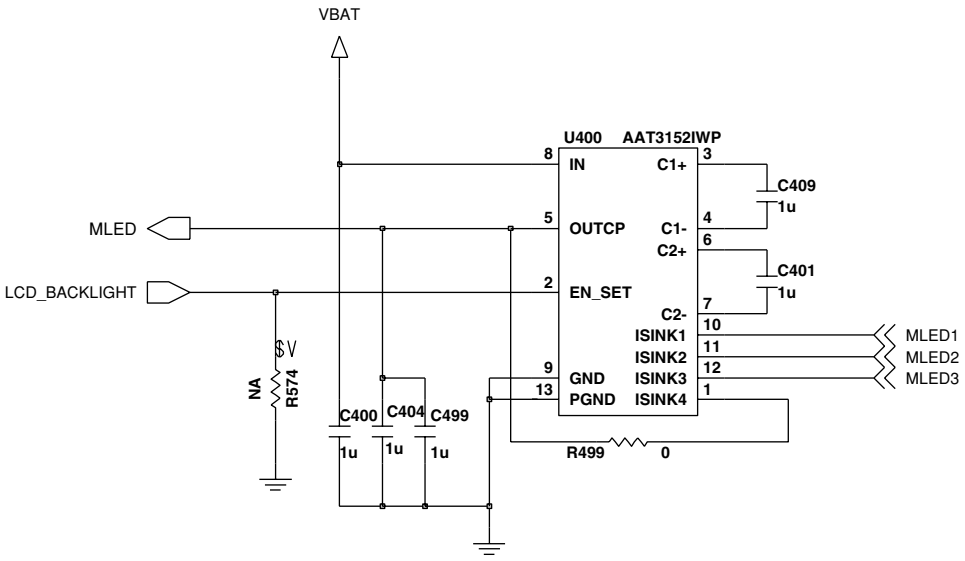


Figure 19. LCD Back-light driving scheme

EN_SET is the serial interface control pin connected to the GPIO of DBB. EN_SET sets the current sink magnitudes and allows independent group control: ISINK1~4. Four constant current sink inputs (ISINK1to ISINK4) can drive four individual LEDs with a maximum current of 20mA each. The unused sink inputs have to be connected to OUTCP (High), otherwise the part will operate only in 2x charge pump mode.

(11) Vibrator

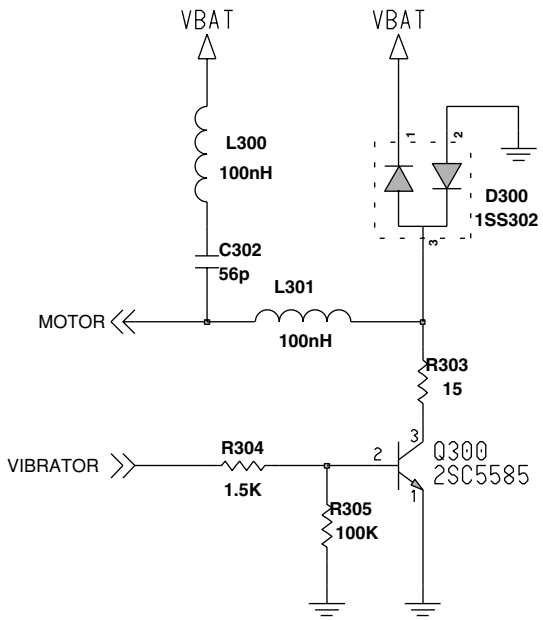


Figure 19. Vibrator control scheme

- Vibrator is controlled by MIDI Chip (U506)
- When VIBRATOR signal is high, the vibrator is enabled

(12) GPIO Map

In total 16 allowable resources, F1200 is using 16 full resources. G7200 GPIO (General Purpose Input/Output) Map, describing application, I/O state, and enable level, is shown in below table 8.

I/O #	Application	I/O	Resource State	Inactive State	Active State
I/O (0)	KEYBACKLIGHT	O	GPIO	Low	High
I/O (1)	USB_EN	O	GPIO	Low (Serial)	High (USB)
I/O (2)	LCD_BACKLIGHT	O	GPIO	Low	High
I/O (3)	F_KEY_BL	O	GPIO	Low	High
I/O (4)	MIDI_EN	O	GPIO	Low (MIDI)	High (Headset)
I/O (5)	HP_AMP_EN	O	GPIO	Low	High
I/O (6)	SPK_EN	O	GPIO	Low	High
I/O (7)	AD	O	GPIO	-	-
I/O (8)	FOLDER	I	GPIO	Low (Open)	High (Closed)
I/O (9)	LCD_ID	I	GPIO	-	-
I/O (10)	HOOK_DET	I	GPIO	High	Low
I/O (11)	JACK_DET	I	GPIO	High	Low
I/O (12)	HANDSFREE	I	GPIO	Low	High
I/O (13)	LCD_RST	O	GPIO	Low	High
I/O (14)	C_INT	I	GPIO	-	-
I/O (15)	C_HOLD	O	GPIO	High	Low

Table 8. GPIO Map

3.6 Analog Baseband

(1) General Description

Syren is Analog Baseband (ABB) Chip supports GSM900, DCS1800, PCS1900, GPRS Class 10 with Digital Baseband Chip. Syren processes GSM modulation/demodulation and power management operations.

Block Description

- Audio Signal Processing & Interface
- Baseband in-phase (I), quadrature (Q) Signal Processing
- Auxiliary RF converters
- Five-channel analog-to-digital converters (ADC)
- Six Low-dropout (LDO), linear voltage regulators targeted core, general I/O, memory I/O, SIM I/O
- LDO voltage regulators dedicated to the USB interface
- High voltage (20V) Li-Ion or Ni-MH battery charging control
- Voltage detectors (with power-off delay)
- Voice Codec

(2) Audio Signal Processing & Interface

Audio signal processing is divided Uplink path and downlink path. The uplink path amplifies the audio signal from MIC and converts this analog signal to digital signal and then transmit it to DBB Chip. This transmitted signal is reformed to fit in GSM Frame format and delivered to RF Chip. MICBIAS is 2.0V level.

The downlink path amplifies the signal from DBB chip and outputs it to Receiver (or Speaker).

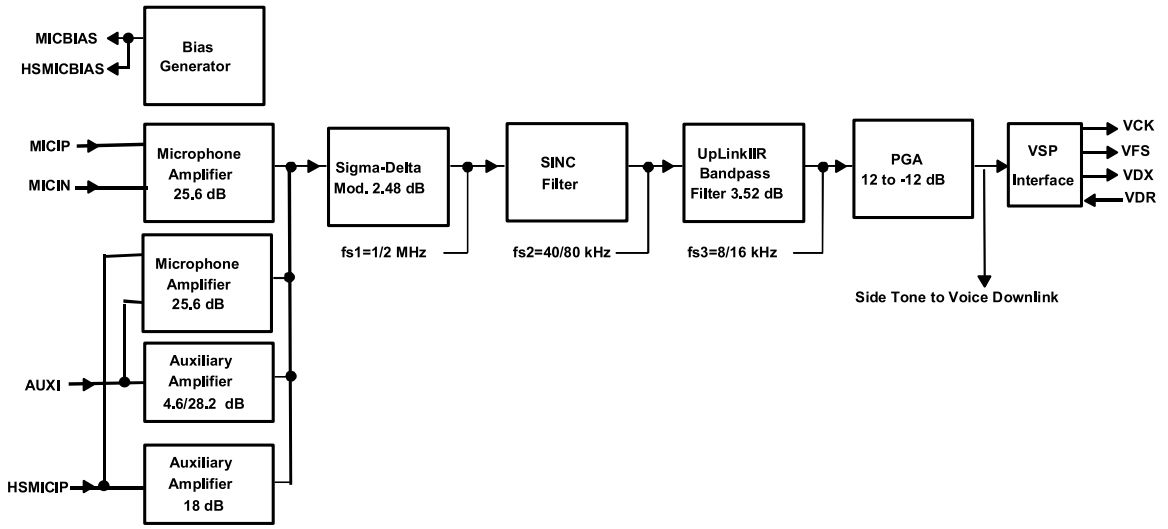


Figure 21. Voice Uplink path Block Diagram

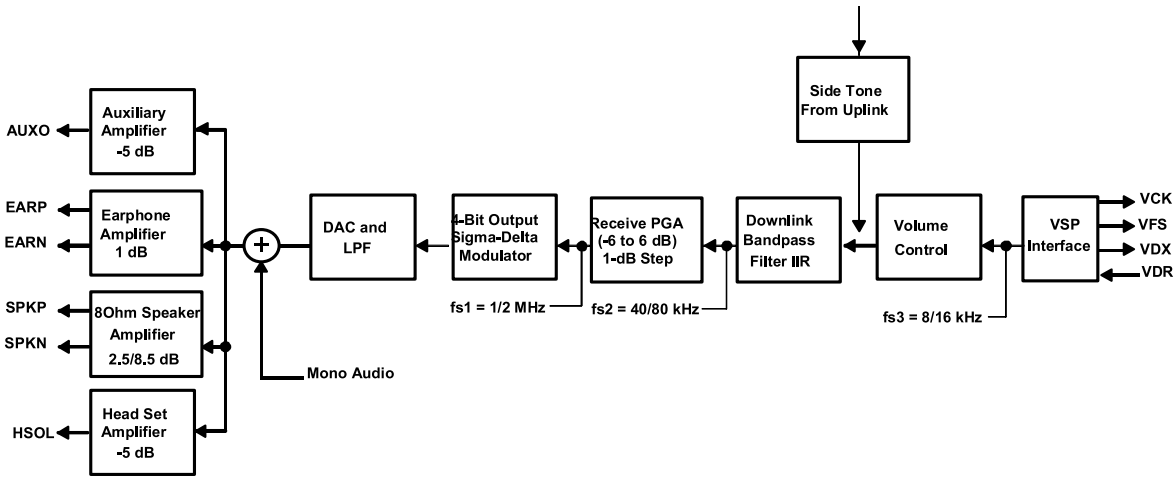


Figure 22. Voice Downlink path Block Diagram

(3) Baseband Codec (BBC)

Baseband codec is composed of baseband uplink path (BUL) and baseband downlink path (BDL). BUL makes GMSK (Gaussian Minimum Shift Keying) modulated signal which has In-phase (I) component and quadrature (Q) component with burst data from DBB. This modulated signal is transmitted through RF section via air. BDL process is opposite procedure of BUL. Namely, it performs GMSK demodulation with input analog I&Q signal from RF section, and then transmit it to DSP of DBB chip with 270.833kHz data rate through BSP.

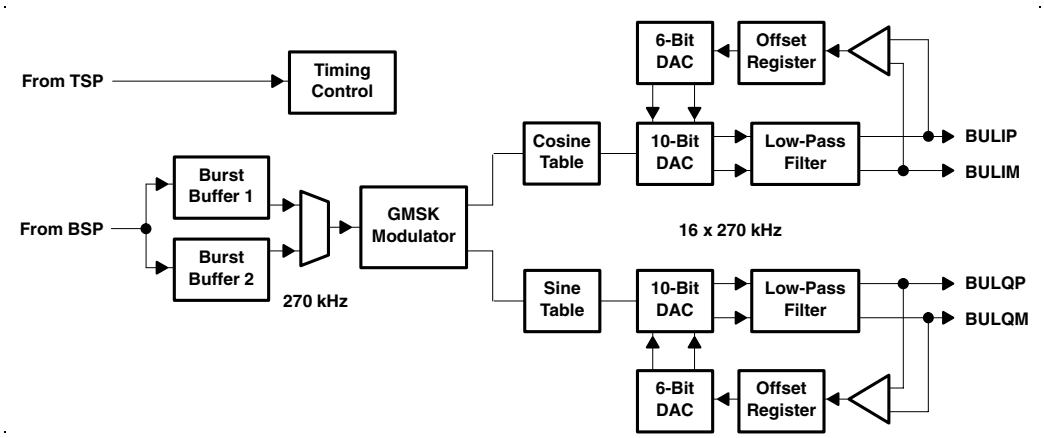


Figure 23. Baseband Codec Block Diagram

(4) Voltage Regulation (VREG)

There are 7 LDO (Low Drop Output) regulators in ABB chip. The output of these 7 LDOs are as following table.

	Output Voltage	Usage
VRDBB	1.5V	Digital Core of DBB
VRIO	2.8V	Peripheral devices
VRMEM	2.8V	External memory
VRRAM	2.8V	LCD & peripheral devices
VRABB	2.8V	Analog Block of ABB
VRSIM	2.85	SIM card driver
VRRTC	1.5V	RTC & 32kHz-crystal

Table 9. LDO Output Table

(Figure 24.) shows the power supply related blocks of DBB/ABB and their interfaces in F1200.

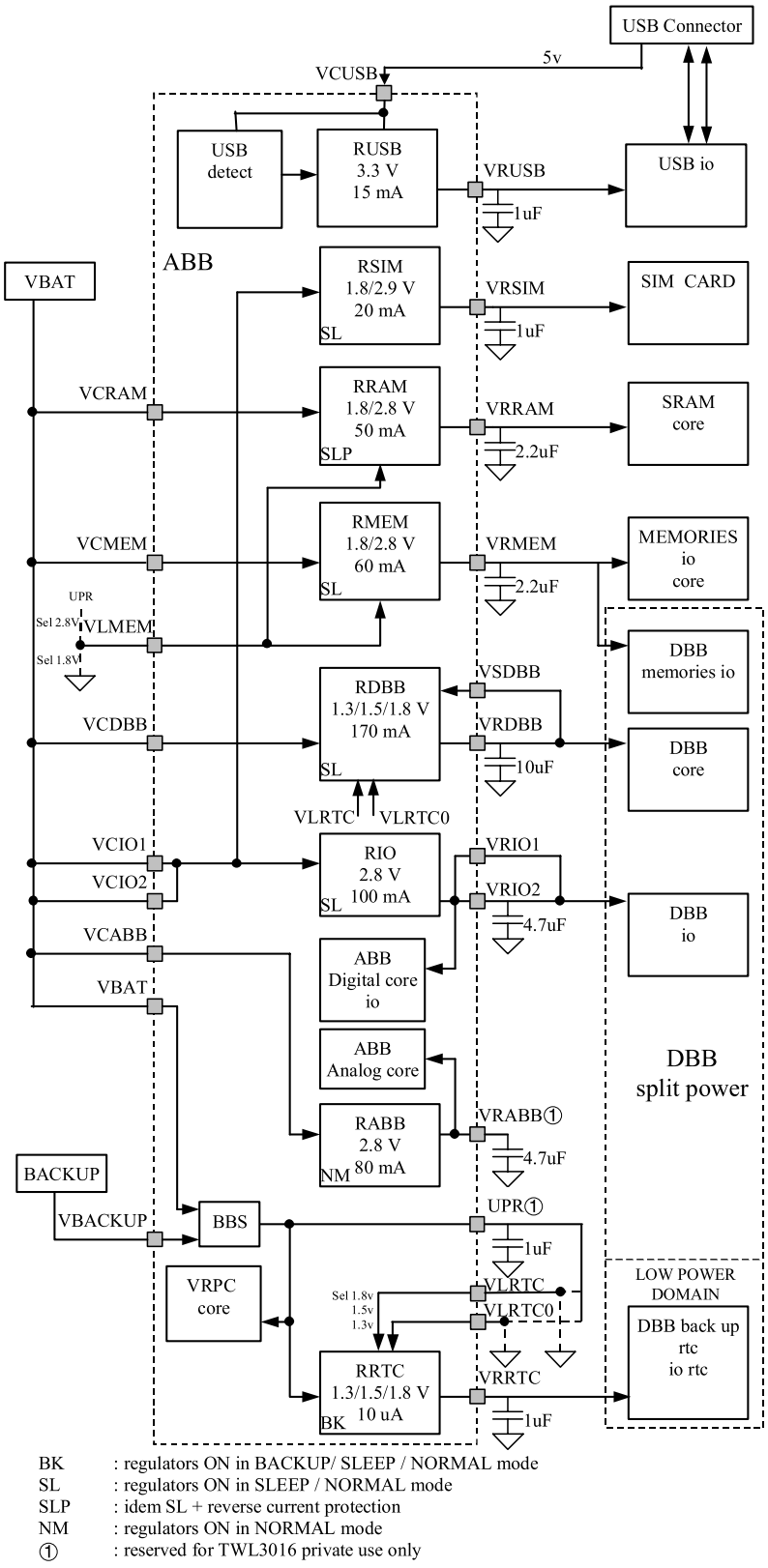


Figure 24. Power Supply Scheme

(5) ADC Channels

ABB ADC block is composed of 4 internal ADC (Analog to Digital Converter) channels and 4 external ADC channel. This block operates charging process and other related process by reading battery voltage and other analog values.

ADC 8 channels		
Resource	**Name**	**Description**
VCHG	VCHG	Charging Management
VBAT	VBAT	
ICTL	ICTL	
VBACKUP	VBACKUP	Backup Battery
ADIN1,4	N.U.	-
ADIN2	BATT_TEMP	Battery Detect
ADIN3	TEMPSENSE	Temperature Sensing
ADIN5	HOOK_DETECT	Hook Detect

Table 10. ADC Channel Spec.

(6) Switch ON/OFF

F1200 Power State : Defined 4 cases as follow

- **Power-ON :** mobile is powered by main battery or backup battery.
- **Power-OFF :** mobile isn't any battery.
- **Switch-ON :** mobile is powered and waken up from switch-off state.
- **Switch-OFF :** mobile is powered to maintain only the permanent function (ULPD).

To enter into Switch-ON state, one of following 4 condition is satisfied.

- **PWR-ON** pushed after a debouncing time of 30ms.
- **ON_REMOTE :** After debouncing, when a falling edges detected on RPWON pin.
- **IT_WAKE_UP :** When a rising edge is detected on RTC_ALARM pin.
- **CHARGER_IC :** When a charger voltage is above VBAT+0.4V on VCHG.

3.7 LCD & Camera Interface

(1) LCD Interface

In F1200, main & sub LCD is displayed by memory interface through Camera back-end-chip. The camera-back-end chip is bypass-mode and use LCD Access Port.

The module include:

LCD : Main = 128*160 dot

Sub = 96*96 dot (F1200 is 65,000 Color TFT LCD)

LCD module is connected to main board with 54 pin FPCB and the FPCB is also connected to Speaker, Receiver, Vibrator & Camera I/F.

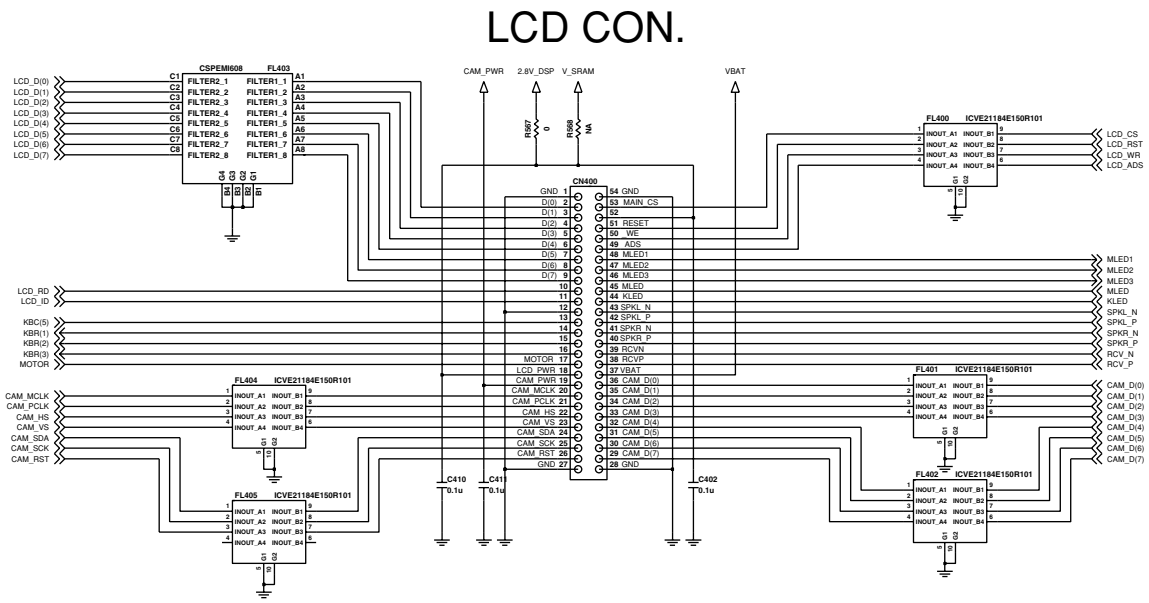


Figure 25. LCD connector scheme

(2) Camera Interface

In F1200, Camera Back-End-chip is applied for camera flow control and power control respectively.

The full scheme is shown in Figure 26.

CAMERA

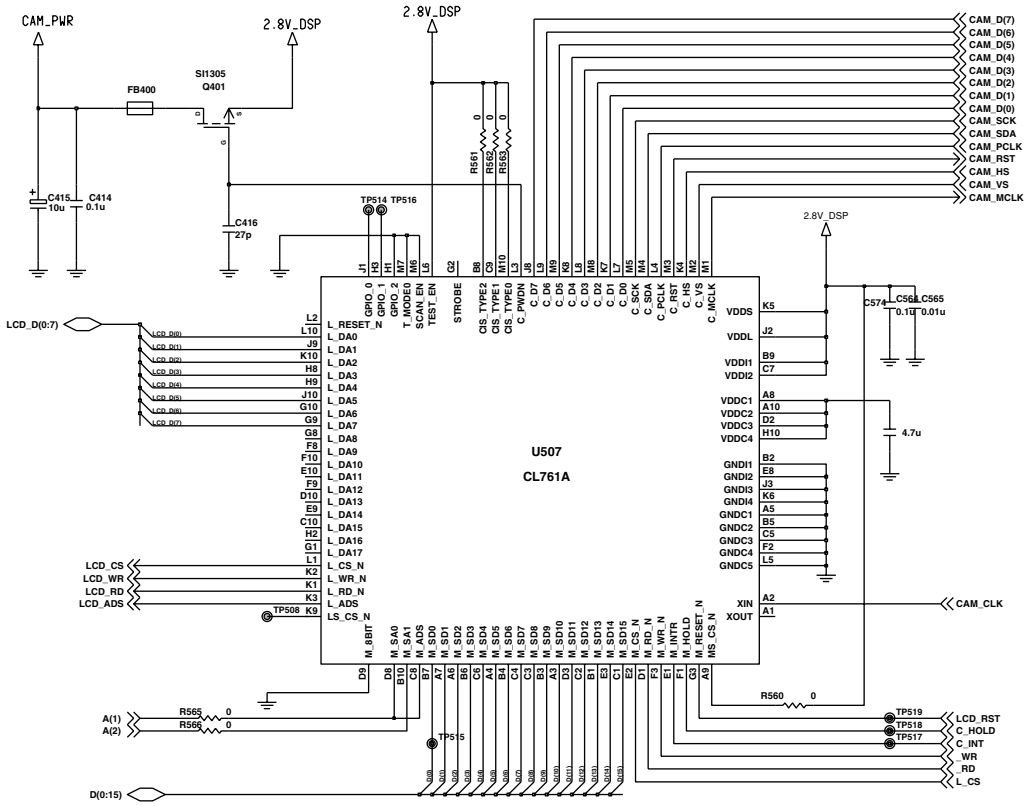


Figure 26. Camera Interface scheme

The U507 is Camera Application processor. (Corelogic's CL761A) It also supports 80-type LCD interface. It has 16-bit 80-type Parallel Host I/F and supports up to VGA resolution. If C_hold go to low, camera-system is operated. Camera-power is on and the initial setting and mode changing of camera module is done through I2C Bus by U507. Camera power system is controlled by the C_pwon pin of U507 which go to low and Operating Voltage is 2.8V.

4. TROUBLE SHOOTING

4.1 Baseband Part Troubleshooting

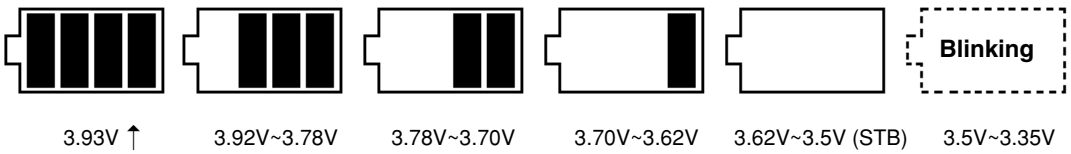
(1) Power-On Trouble

- **Power-On Sequence**
  - Connecting Battery
  - Power-On Key Detection
  - PWON signal goes to ABB and then ABB resets DBB by ONNOFF signal
  - ONNOFF turns low (0V) to High (2.8V) and it resets DBB (Calypso plus)
  - All LDOs (internal LDOs of ABB and external LDOs) are turned on
- **Check Points**
  - Battery Voltage
  - Power-On Key Detection (PWON signal)
  - Output of LDOs
- **Trouble Shooting Setup**
  - Connect PIF-UNION Jig to the phone
  - Set the TI-Remote switch at PIF-UNION Jig off
- **Trouble Shooting Procedure**
  - Check Battery Voltage
  - END Key Dome switch condition
  - Check the output voltage of all LDOs

(2) Charging Trouble

- **Charging method :** CC-CV
- **Charger Detection Voltage :** Over 4.0V
- **Charging Time :** About 3Hours
- **Charging Current :** 550mA
- **Cut-off Current :** 80mA
- **Low Battery Alarm**
  - Talk mode : 3.62V
  - Standby mode : 3.50V
- **Switch-Off Voltage**

- **Charging Temperature ADC Range**
  - ~ -20°C : No Charging operation
  - -20°C ~ 60°C : Charging
  - 60°C ~ : No Charging operation



STB : Standby mode (When talk mode, the battery icon starts blinking below 3.62V level)

Block Diagram

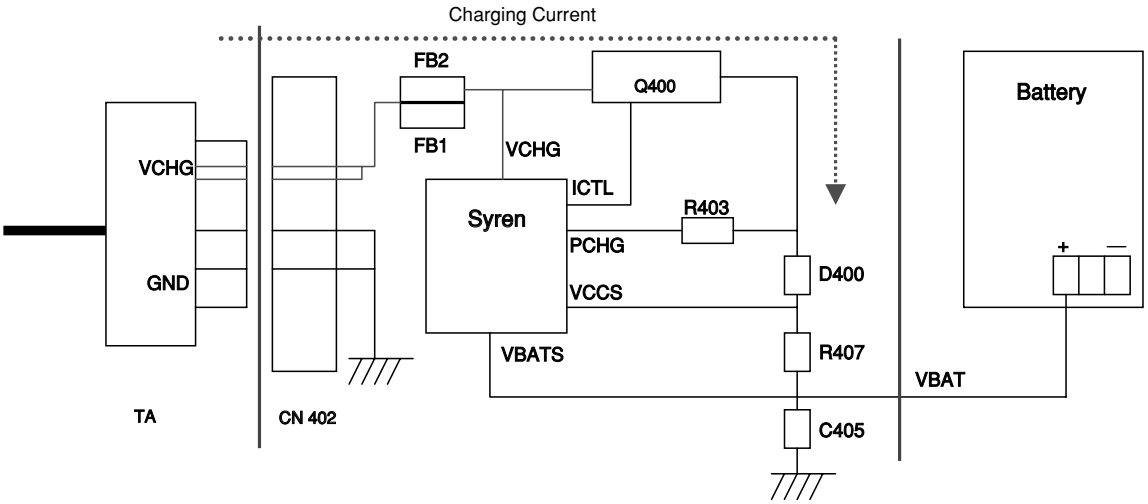
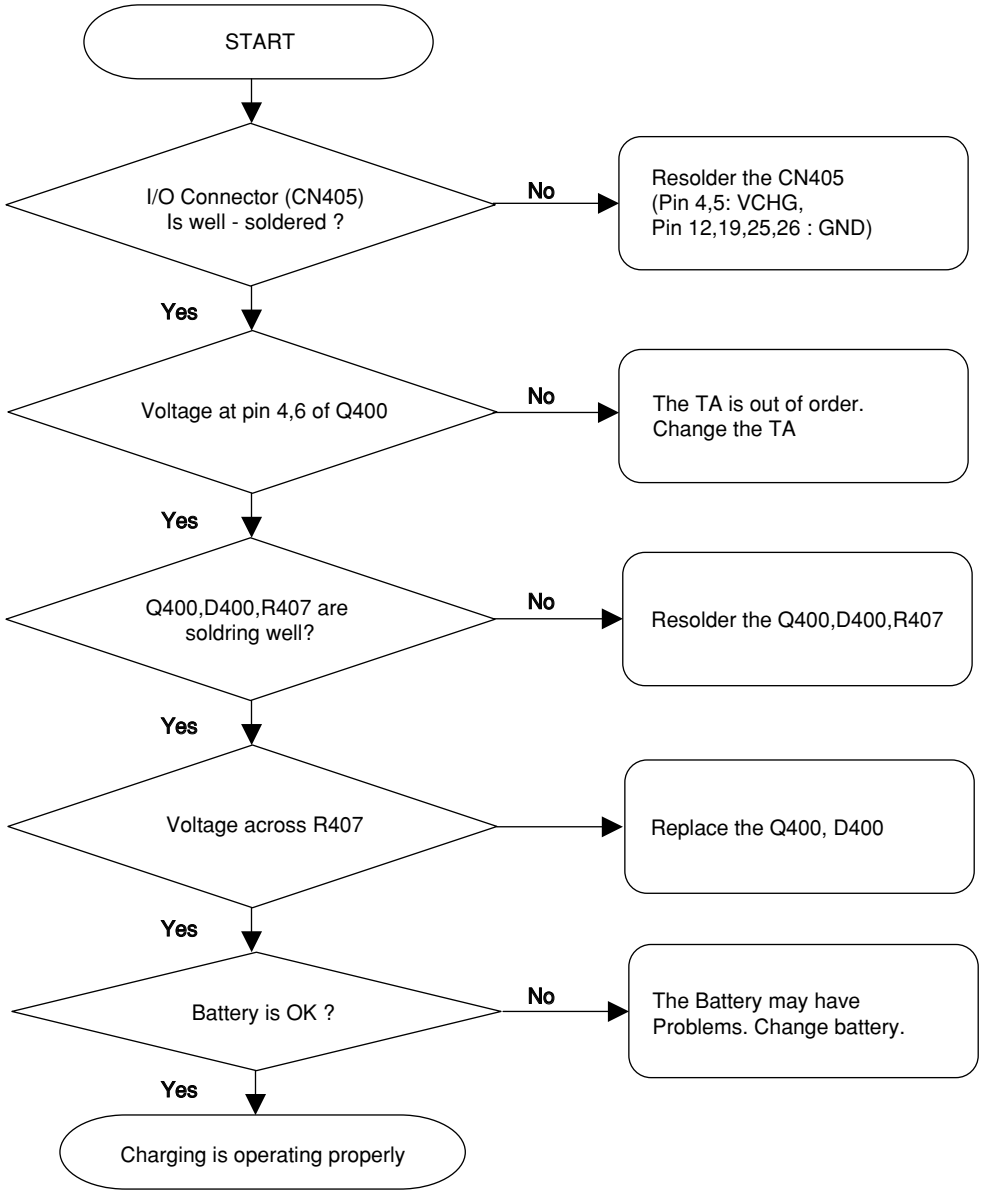


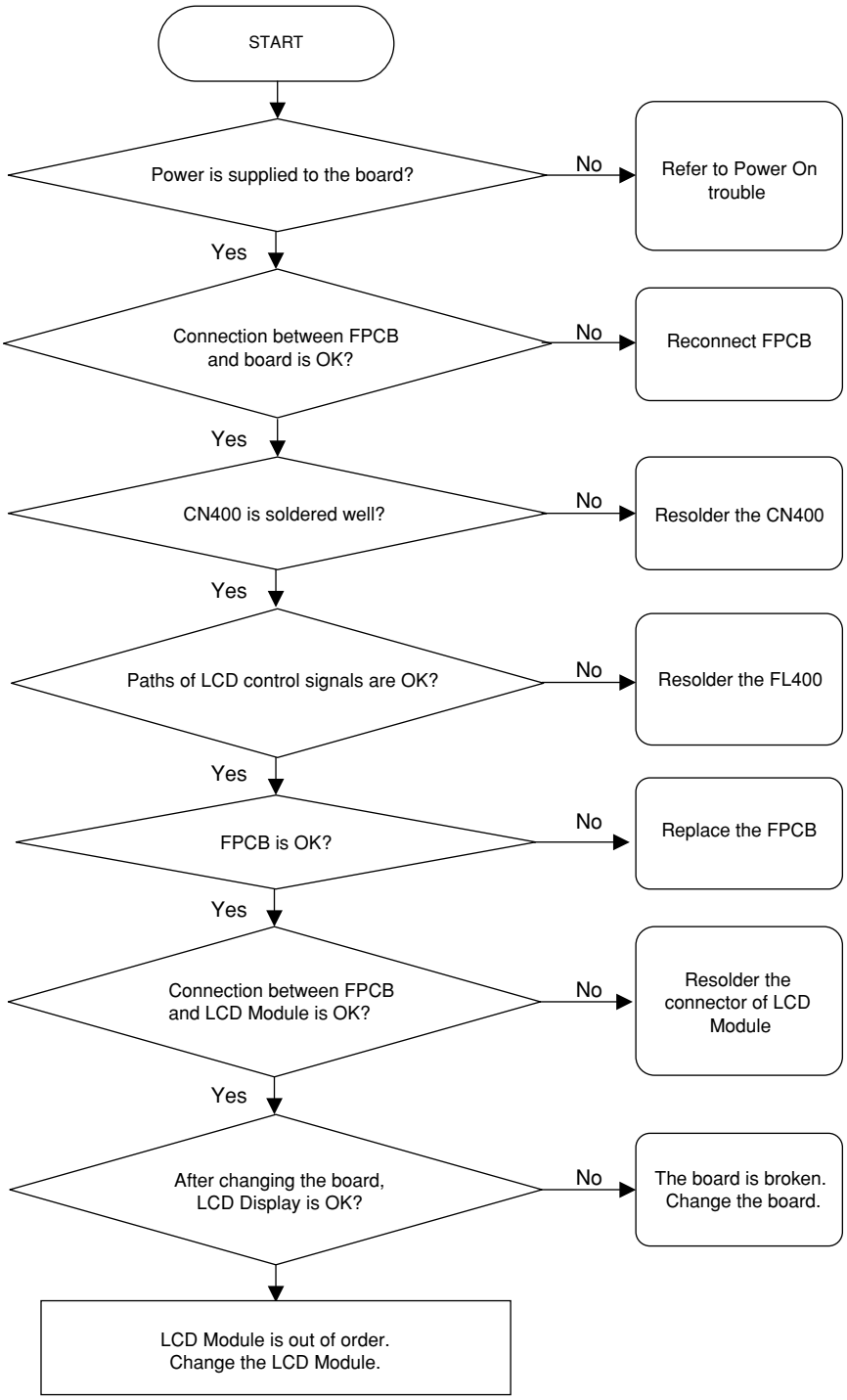
Figure 25. LCD connector scheme

- **Charging Procedure**
  - Connecting TA & Charger Detection
  - Control the charging Current by ABB
  - Charging Current flow into the Battery
- **Check Points**
  - Connection of TA
  - Charging Current Path
  - Battery
- **Trouble Shooting Setup**
  - Connect Battery & TA to the handset
- **Trouble Shooting Procedure**



(3) LCD Display Trouble

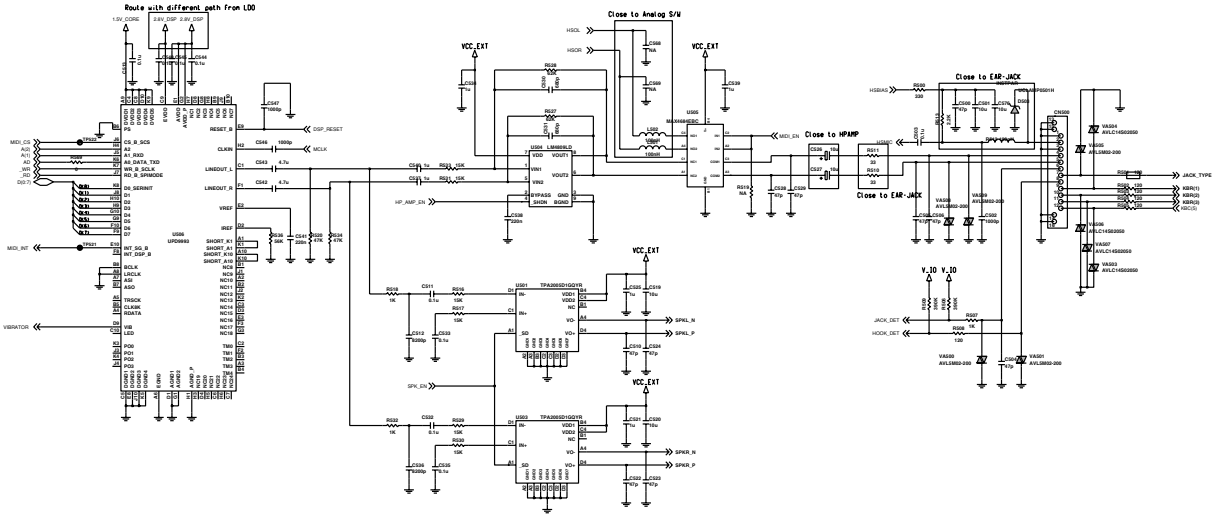
- **LCD Control signals from Main Board**
  - LCD_RST, LCD_CS, LCD WR, LCD_ADS, MLED, LCD_D(0)~LCD_D(7)
- **Check Points**
  - The Assembly status of the LCD Module
  - The Soldering of connector
  - The FPCB which connects the LCD Module
- **Trouble Shooting Setup**
  - Connect PIF Jig, and Power on



(Trouble Shooting Procedure Flow Chart)

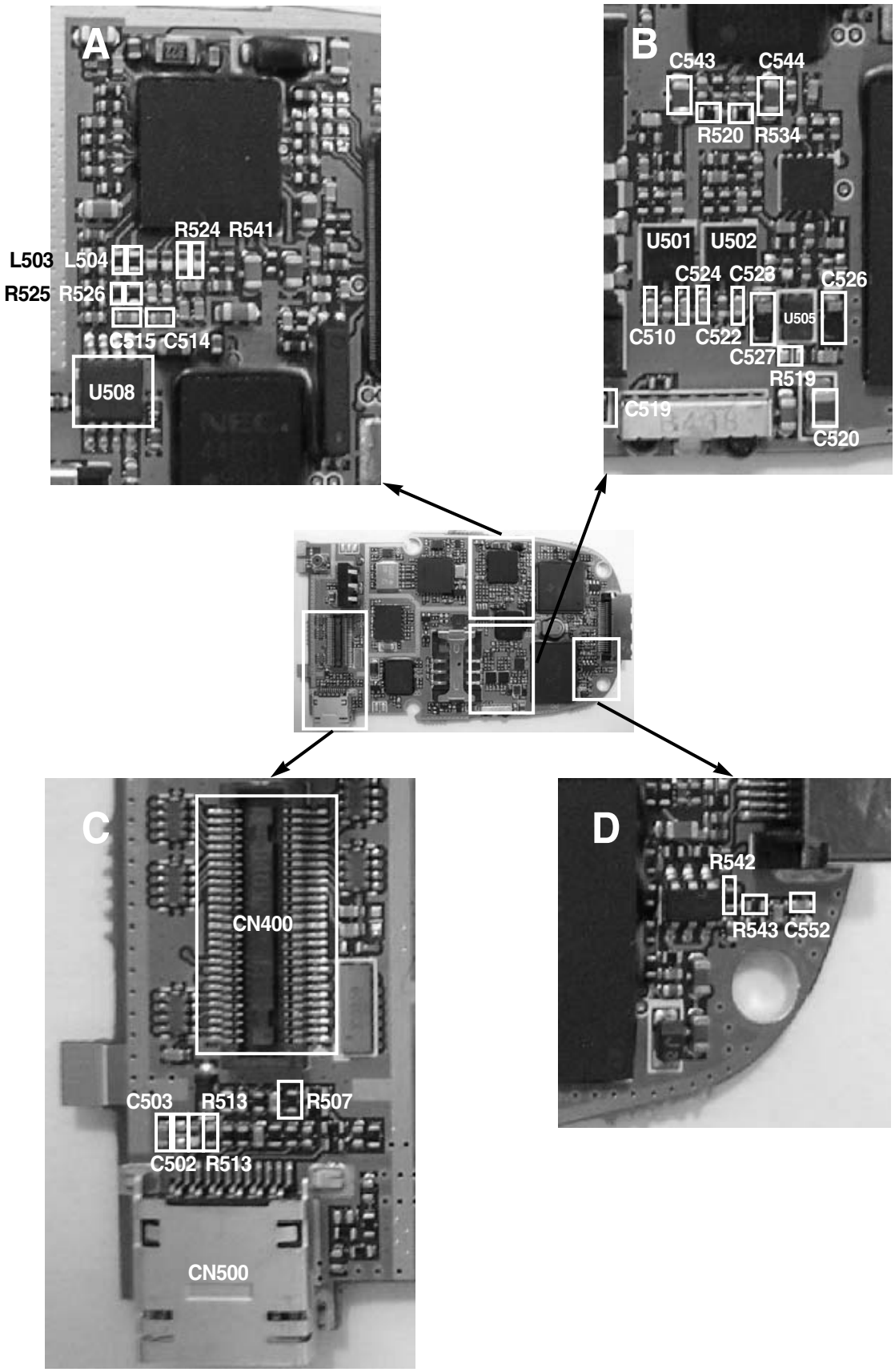
(4) Speaker/Receiver Trouble

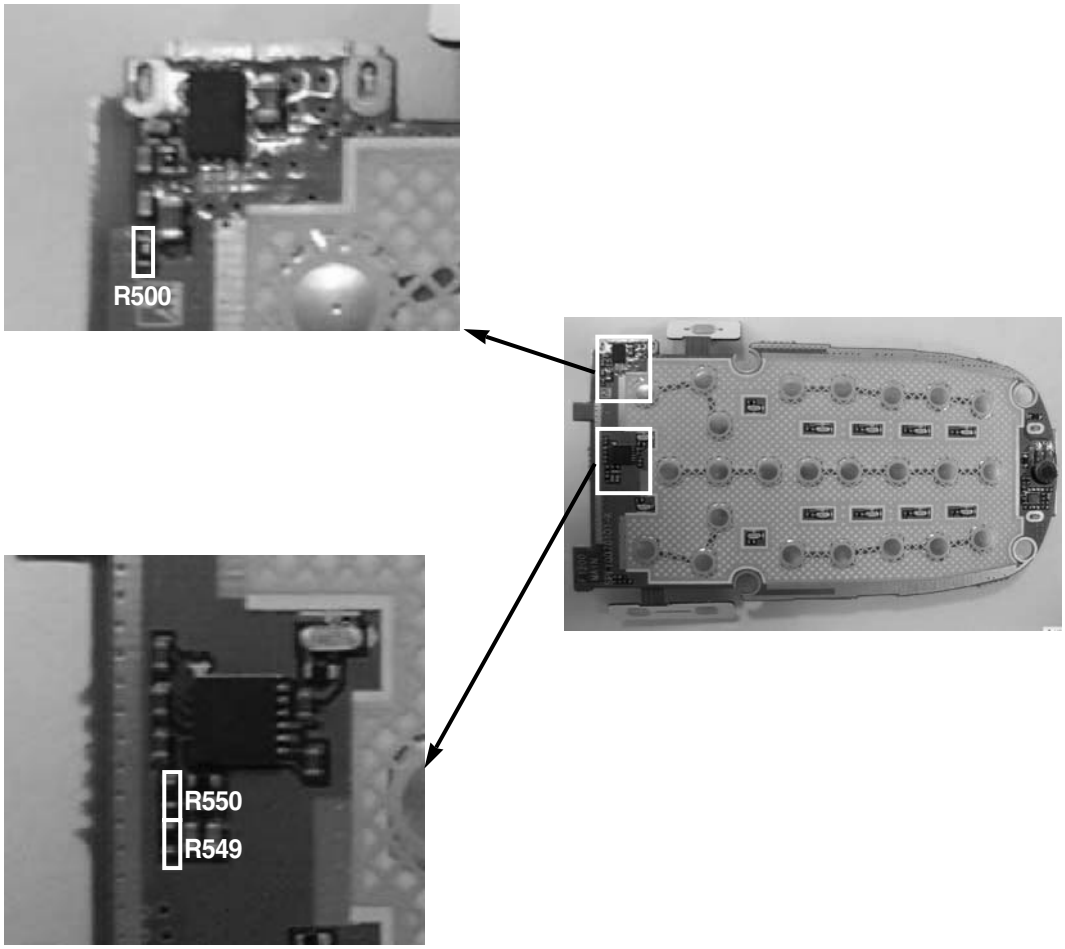
Circuit Diagram



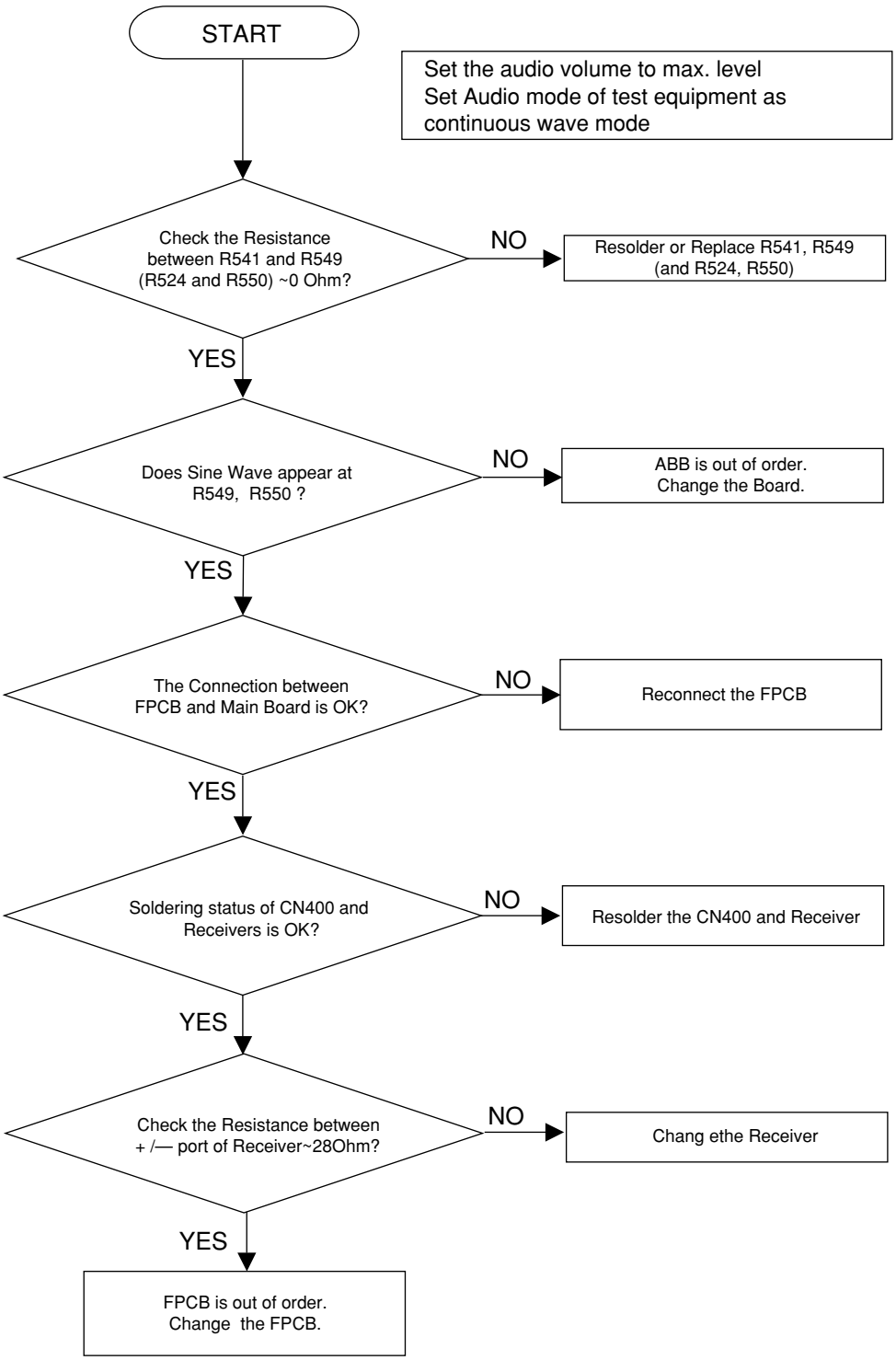
- **Signal to Receiver**
  - RCV_P, RCV_N from ABB (SYREN)
  - SPK_RCVP, SPK_RCVN to Receiver at LCD module through U505 (Analog switch IC) and LCD connector
- **Receiver Trouble shooting setup**
  - Initialize GSM MS Test equipment
  - Connect PIF-UNION Jig and Power on
  - Make a test call to 112
  - Set audio part at test equipment as PRBS or continuous wave, not echo
  - Set the audio volume Max
- **Trouble shooting Procedure**
  - Check the audio signal level at each points
  - Check the soldering of the connector
  - Check the soldering of the receiver

- **PCB picture (Main side)**

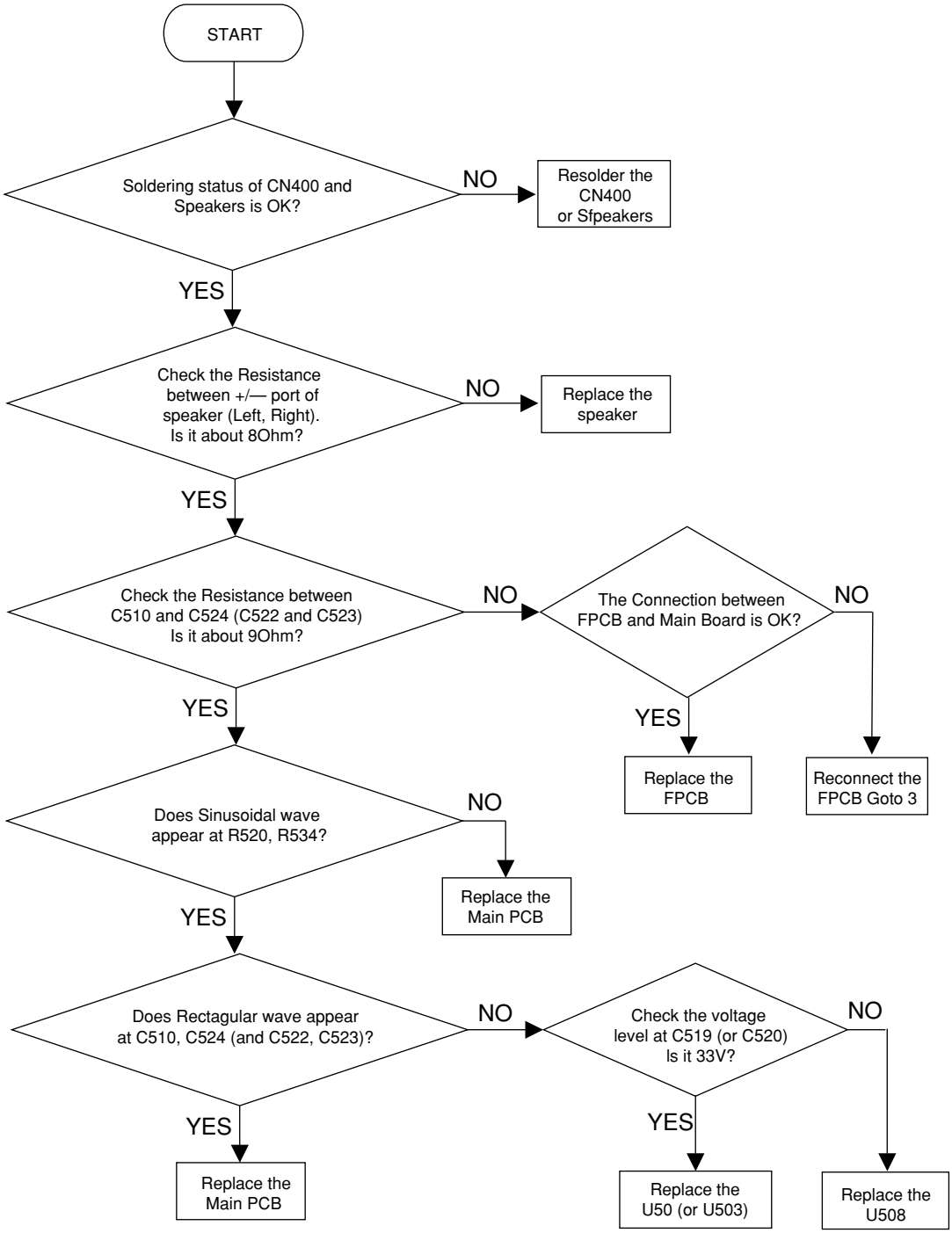



R500
R550
R549

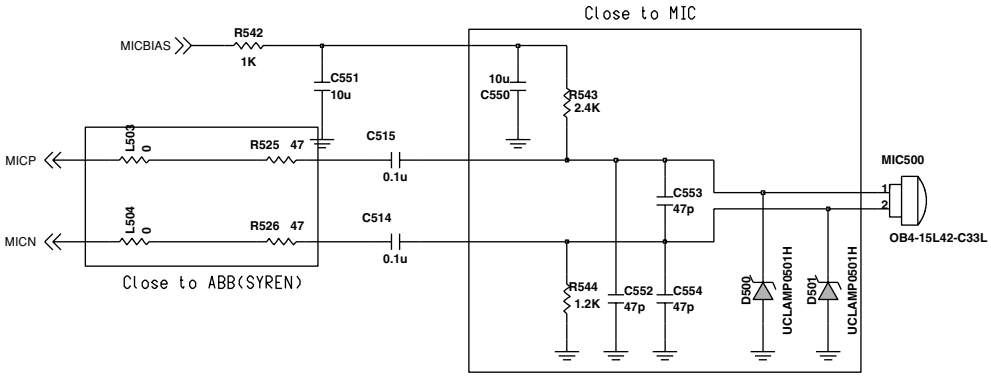
- **Receiver Trouble**



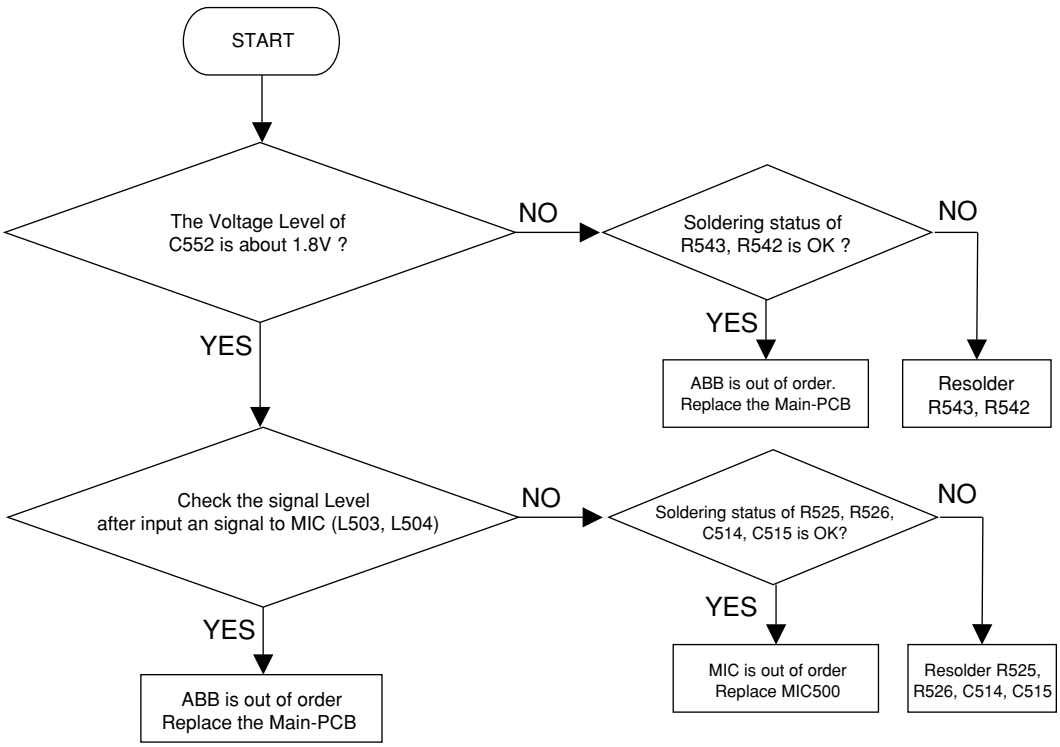
- **Speaker Trouble**



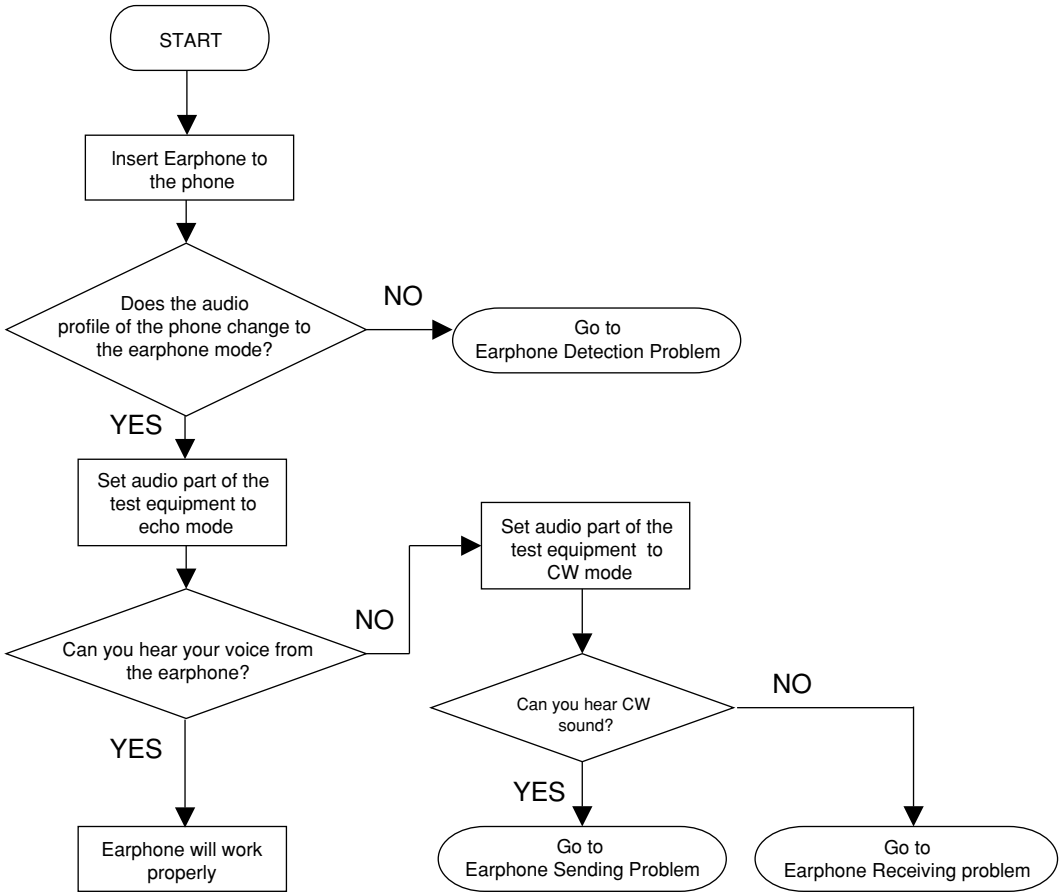
(5) Microphone Trouble

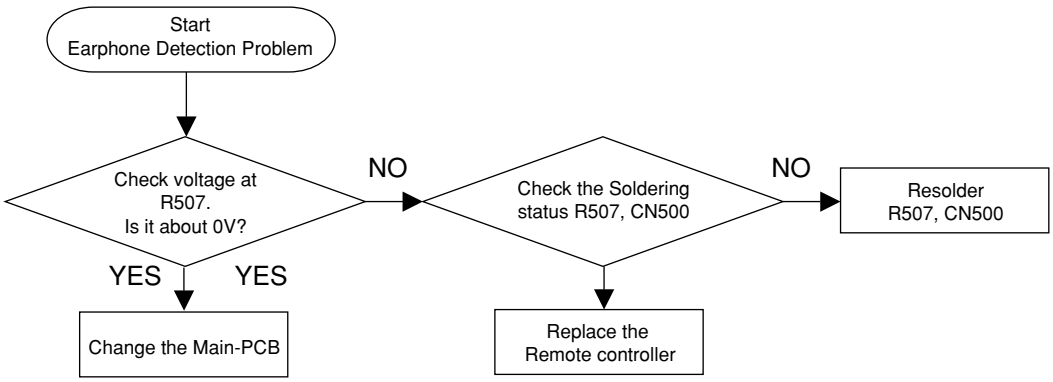


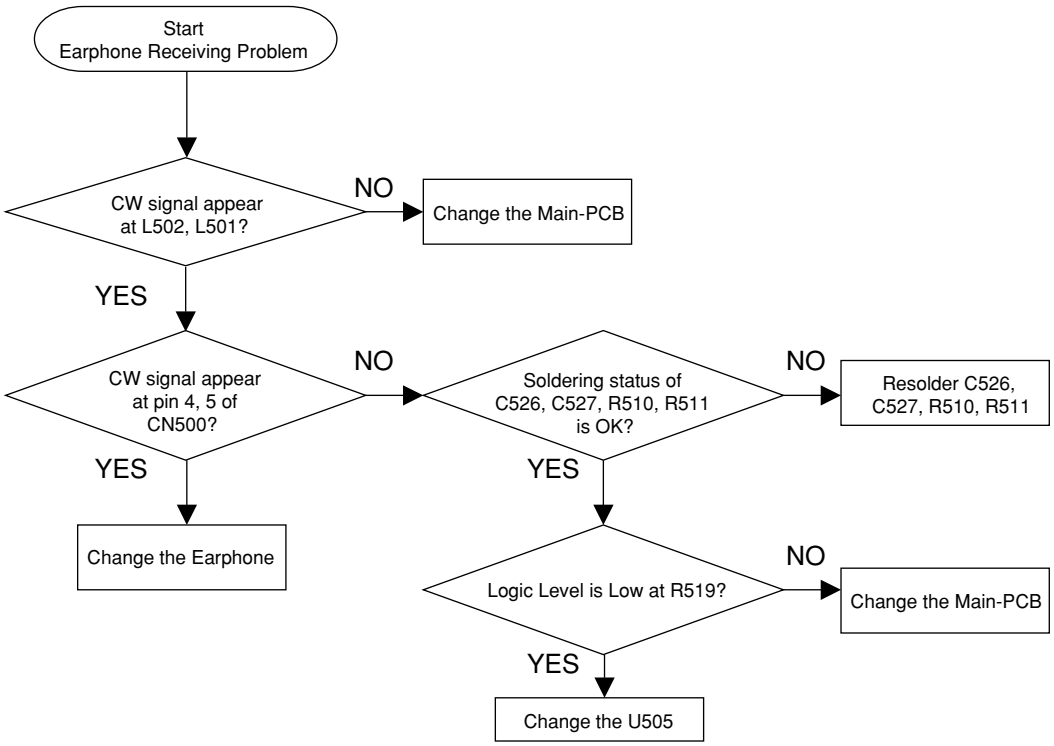
- **Microphone Signal Flow**
  - MIC is enabled by MICBIAS
  - MICBIAS is supplied from ABB (SYREN)
  - MICP, MICN signal to ABB (SYREN)
- **Check Points**
  - Microphone bias level
  - Audio signal level of the microphone
  - Soldering of components

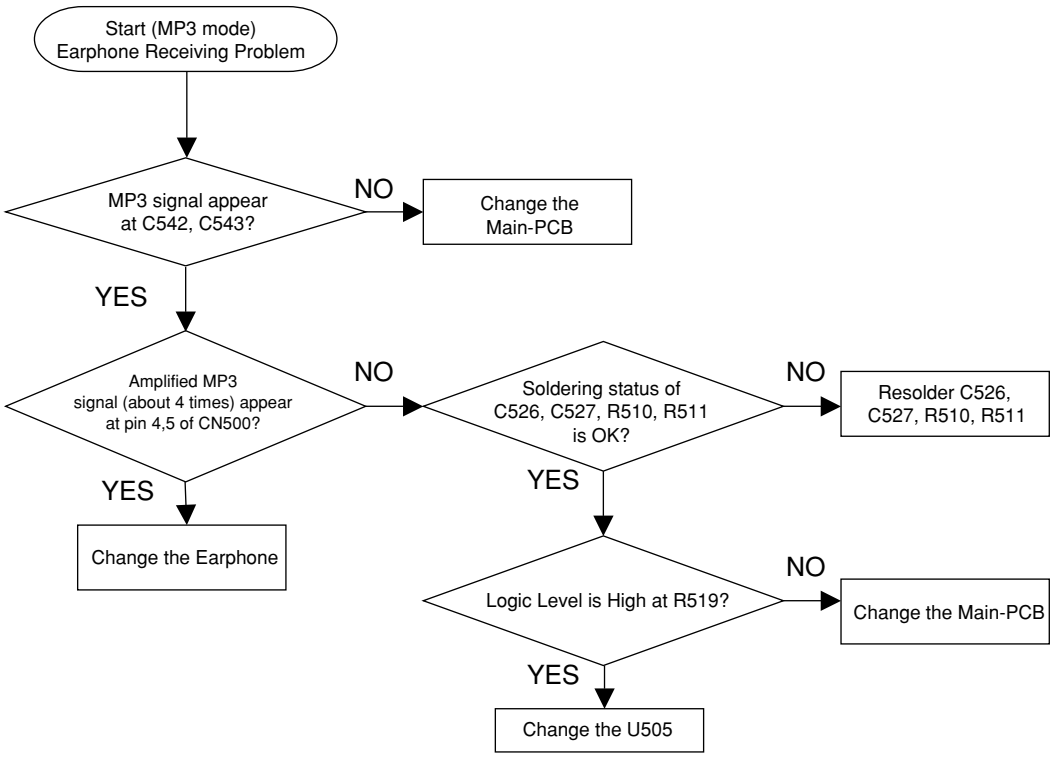


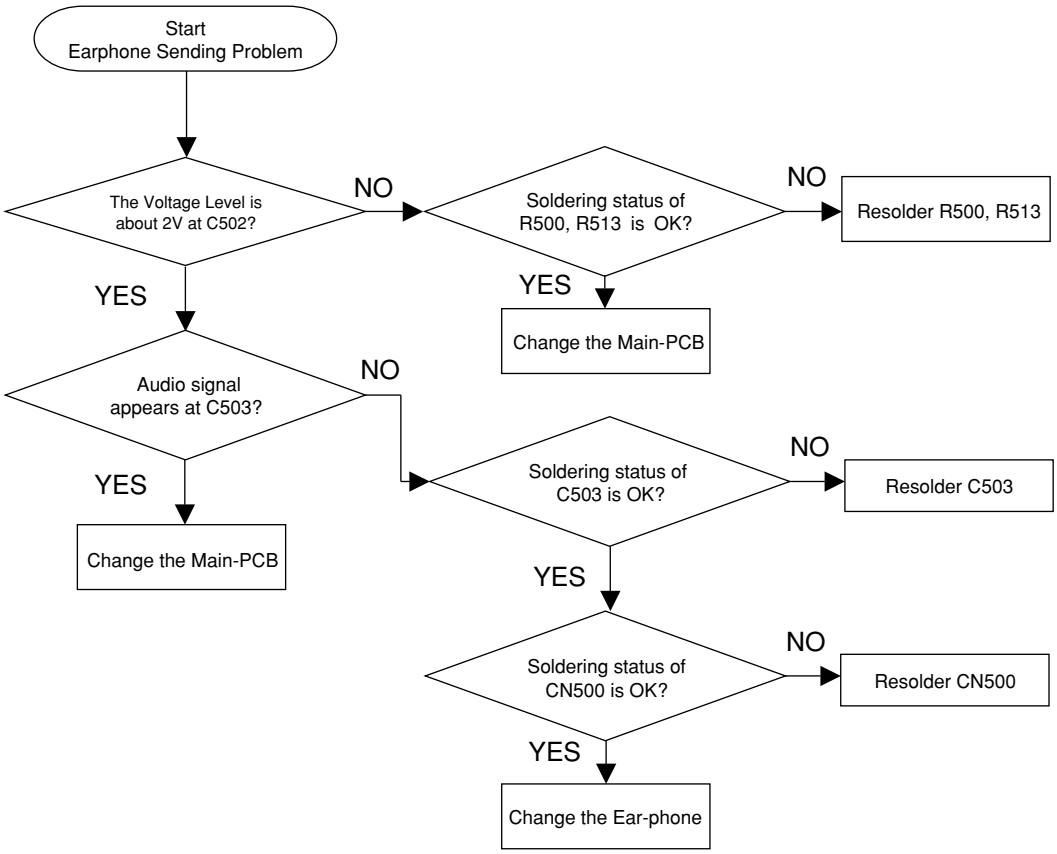
(6) Earphone Trouble





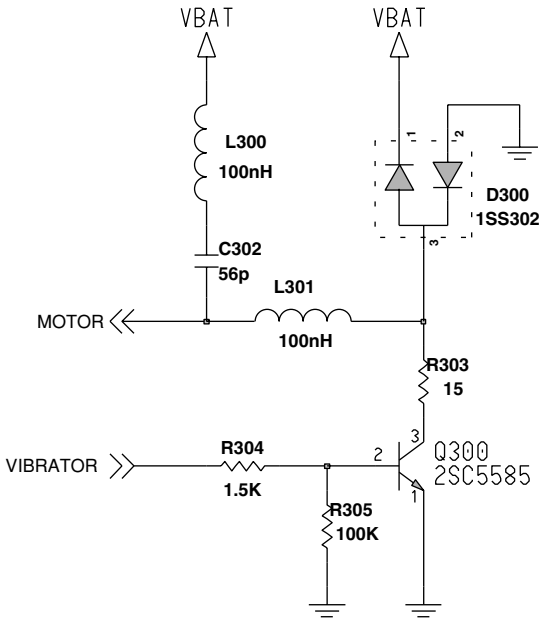

Start
Earphone Receiving Problem
CW signal appear at L502, L501?
NO
Change the Main-PCB
YES
CW signal appear at pin 4, 5 of CN500?
NO
Soldering status of C526, C527, R510, R511 is OK?
NO
Resolder C526, C527, R510, R511
YES
YES
Change the Earphone
Logic Level is Low at R519?
NO
Change the Main-PCB
YES
Change the U505


Start (MP3 mode)
Earphone Receiving Problem
MP3 signal appear at C542, C543?
NO
Change the Main-PCB
YES
Amplified MP3 signal (about 4 times) appear at pin 4,5 of CN500?
NO
Soldering status of C526, C527, R510, R511 is OK?
NO
Resolder C526, C527, R510, R511
YES
YES
Change the Earphone
Logic Level is High at R519?
NO
Change the Main-PCB
YES
Change the U505



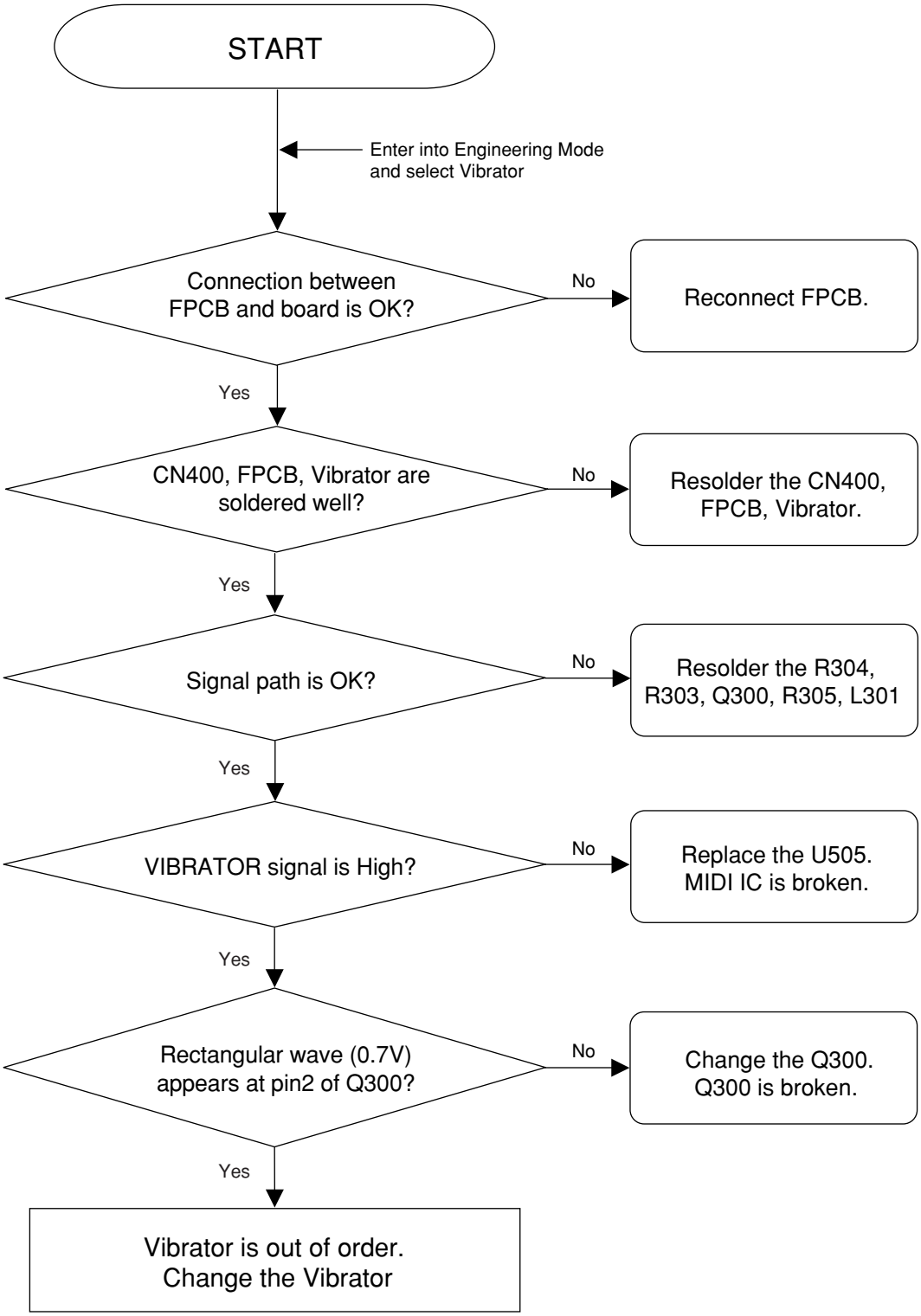
(7) Vibrator Trouble

Block Diagram



- **Vibrator Operation**
  - Vibrator is controlled by MIDI Chip (U506)
  - When vibrator signal is high, vibrator on LCD module is enabled
- **Check Points**
  - VCC lines of MIDI Chip
  - Vibrator signal path
  - The connection between the main board and LCD module
  - The soldering of components
  - The vibrator
- **Trouble Shooting Setup**
  - Connect PIF-UNION Jig to the phone, and Power on
  - Enter into Engineering mode
  - Go to menu “Baseband → Alert → Vibrator”
- **Trouble Shooting Procedure**
  - Check vibrator signal
  - Check soldering of components
  - Check Board-to-board connector
  - Check vibrator

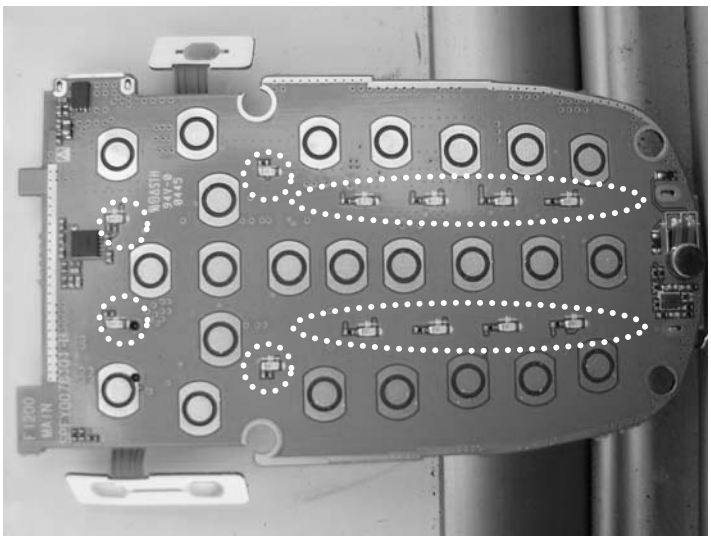
- **Vibrator Trouble**



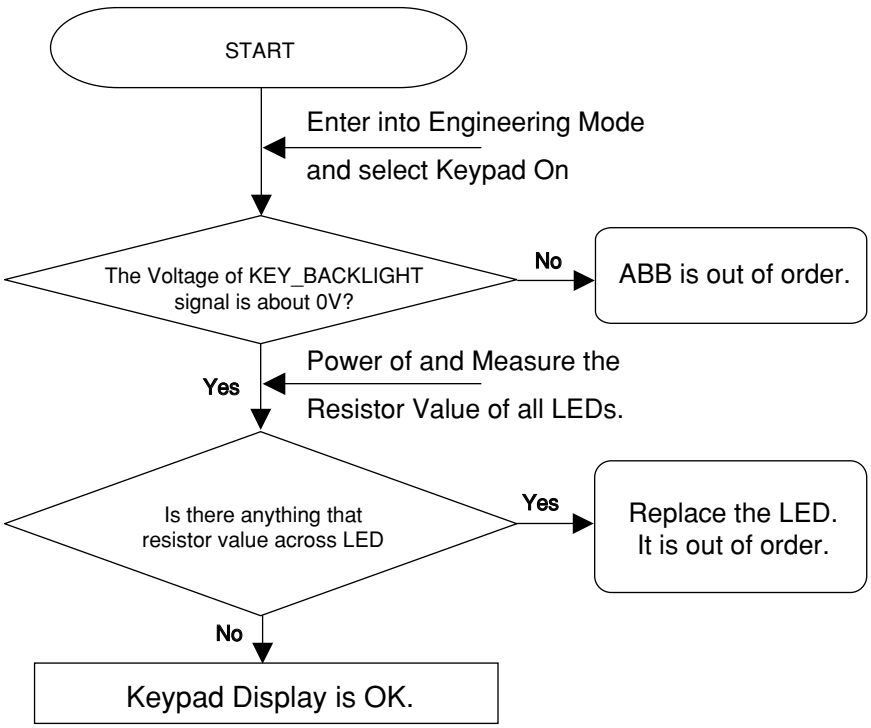
(8) Keypad Backlight Trouble

- **Backlight Operation**
  - The Keypad LED Backlight is controlled with KEY_BACKLIGHT signal from ABB (Syren)
  - The LEDs are forward biased and turned on
- **Check Points**
  - KEY_BACKLIGHT signal
  - LEDs
- **Trouble Shooting Setup**
  - Connect PIF-UNION Jig to the phone, and Power on
  - Enter Engineering mode
  - Go to menu “Baseband → Backlight → Keypad on”
- **Trouble Shooting Procedure**
  - Check the soldering of components
  - Check the KEY_BACKLIGHT signal
  - Check LEDs

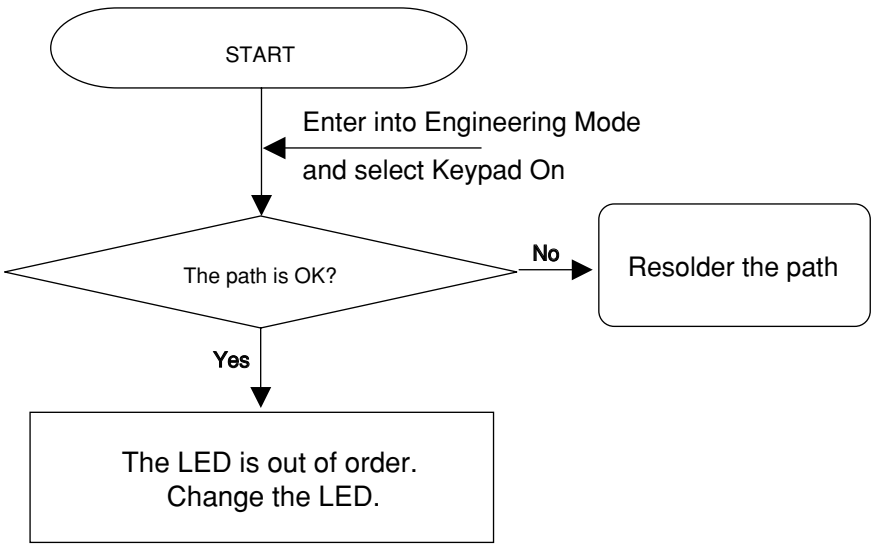
Check soldering !



- **Keypad Backlight Trouble (Case of all LEDs are not working)**

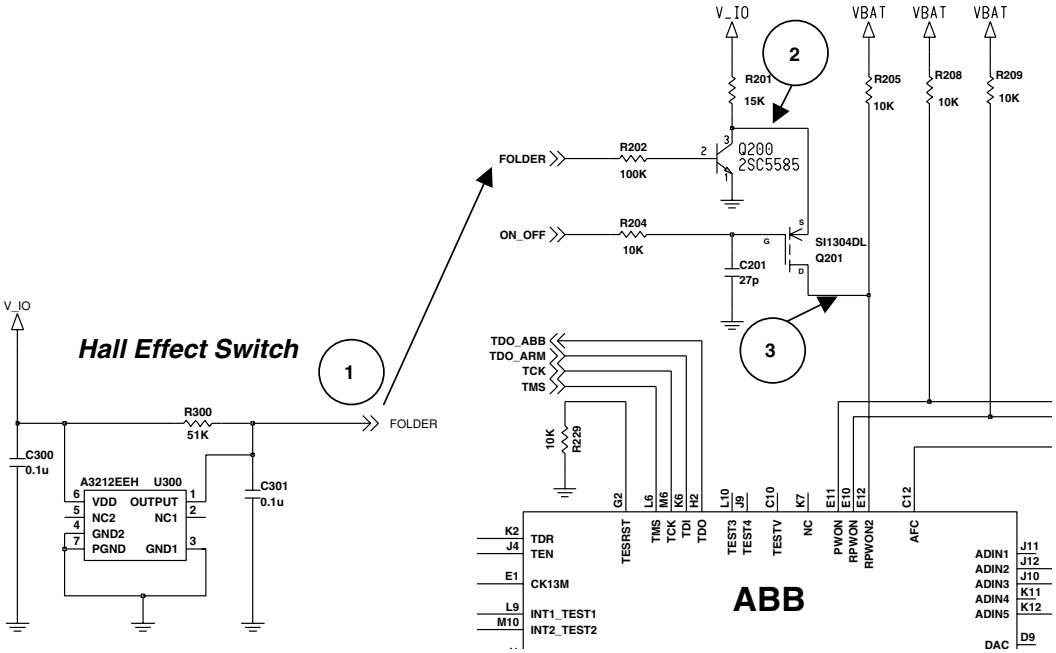


- **Keypad Backlight Trouble (Case of all LEDs are not working)**



(9) Folder On/Off and Trouble

Block Diagram (Folder On/Off)



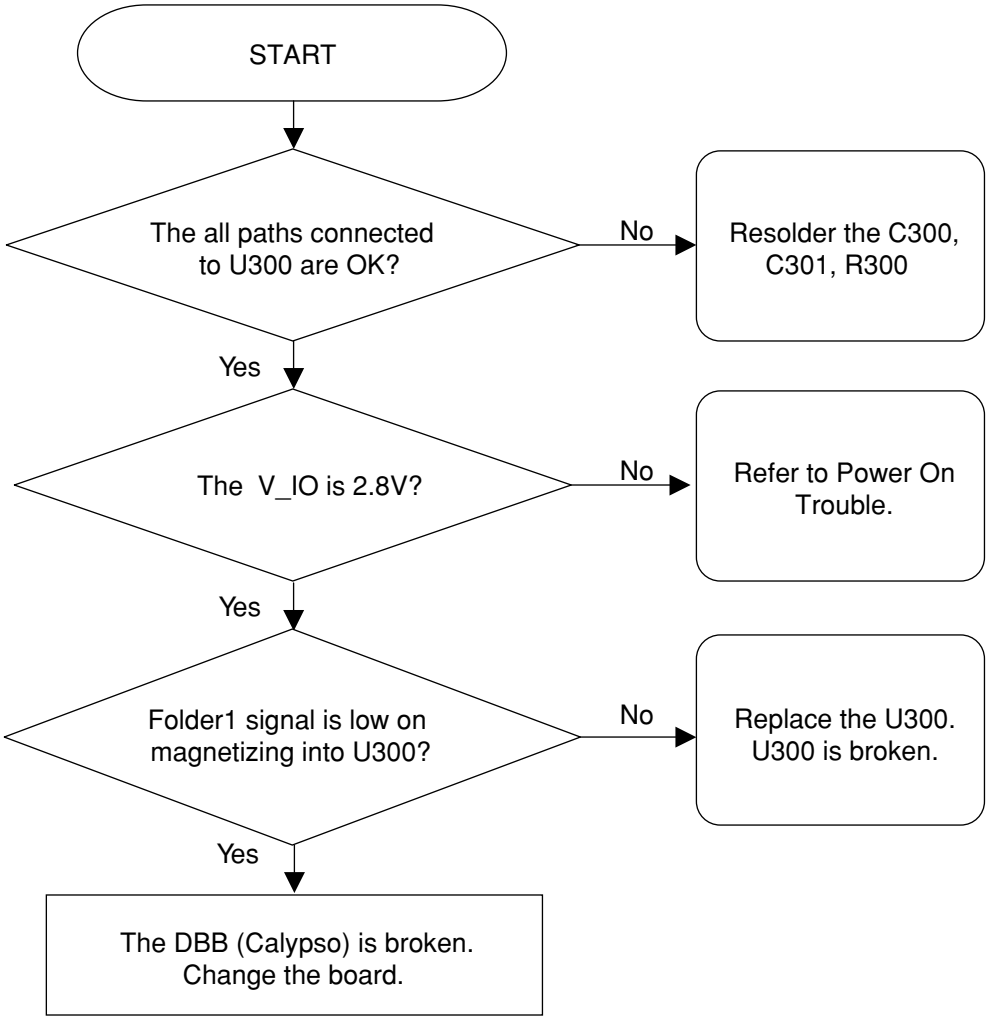
Folder Conditions

	1	2	3
Folder On Condition	High	Low	Low
Folder Off Condition	Low	High	High

- **Folder Operation (ON/OFF)**
  - There is a magnet to detect the folder status, opened or closed.
  - If a magnet is close to the hall-effect switch (U300) the voltage at pin 1 of U300 goes to 0V. Otherwise, 2.8V
  - If a folder signal (Folder) goes to 0V, RPWON2 signal goes to 2.8V. Otherwise, 0V.
  - This Folder signal is delivered to DBB, and the status of folder is reported.

- **Folder1 Signal Status**
  - L : Close (Magnetized) → Folder OFF
  - H : Open (Not magnetized) → Folder ON

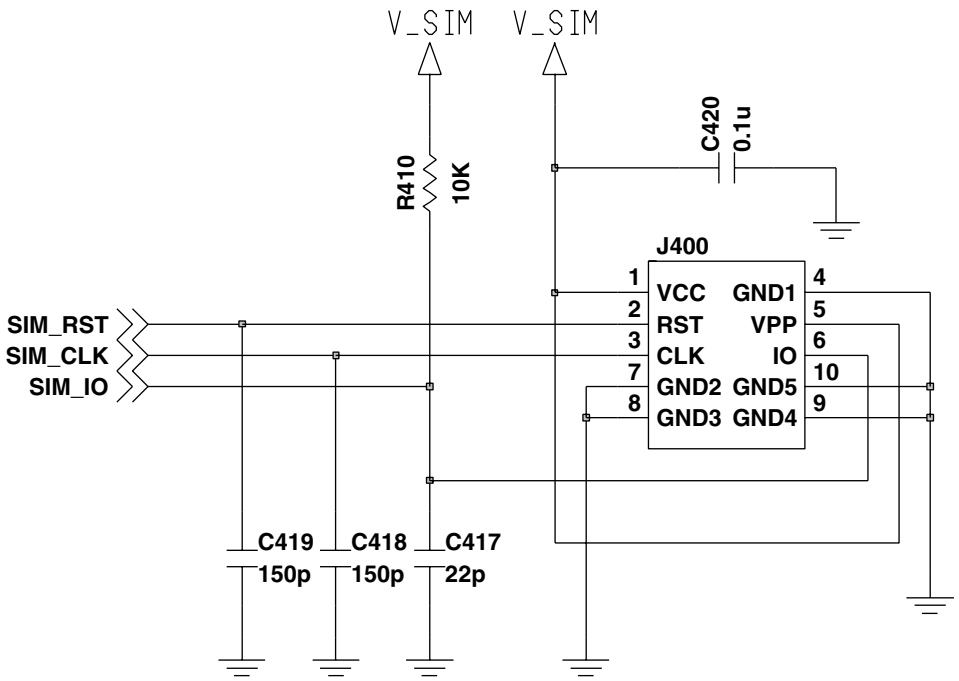
- **Folder Trouble (On/Off)**



(10) SIM Detect Trouble

SIM interface scheme is shown below.

SIM_IO, SIM_CLK, SIM_RST ports are used to communicate DBB with ABB and the Charge Pump in ABB enables 1.8V/3V SIM operation.



SIM_CLK : SIM Card reference clock

SIM_RST : SIM Card async/sync reset

SIM_IO : SIM Card bi-directional data line detection

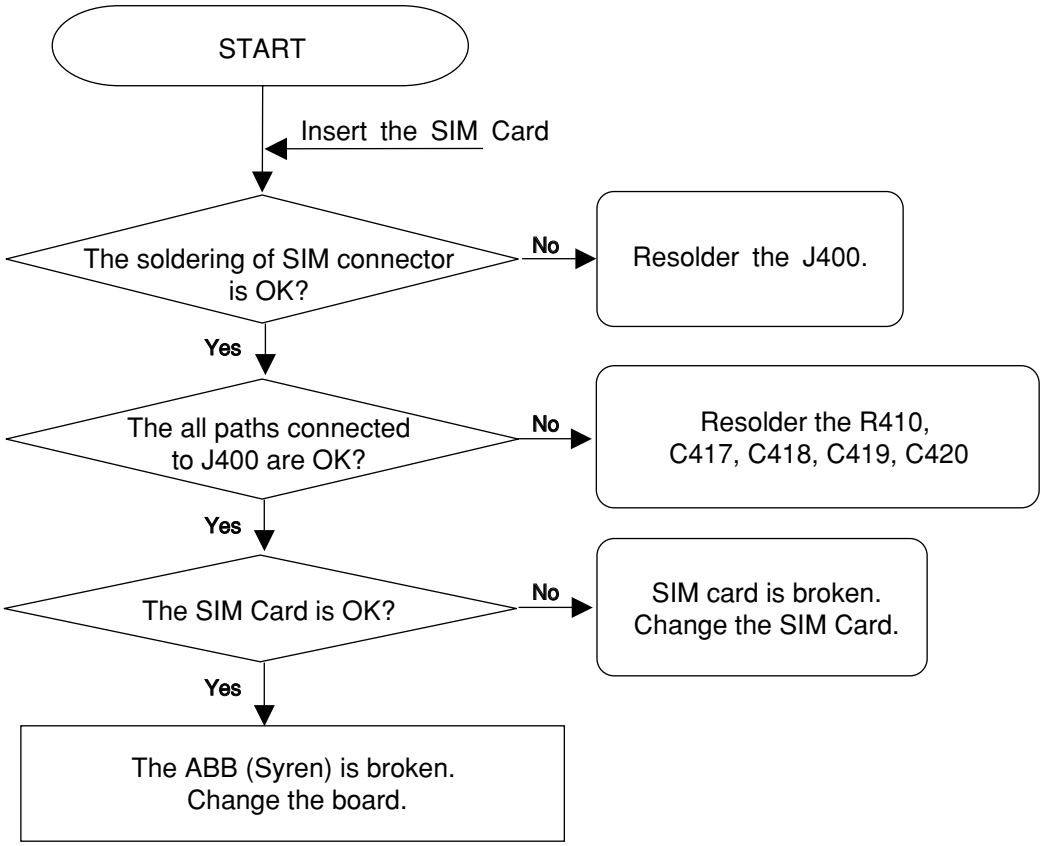
SIM_PWCTRL : SIM Card power activation

SIM_RnW : SIM Card data line direction

SIM_CD : SIM Card presence

- **Connection between SIM and DBB**
  - SIM_CLK, SIM_IO, SIM_RST
- **Check Points**
  - Contact between SIM and socket
  - Soldering of SIM socket

- **Trouble Shooting**
  - Insert the SIM into socket
  - Connect PIF_UNION Jig to the phone, and Power on
- **Trouble Shooting Procedure**
  - Check the power supply
  - Check the soldering of SIM socket
  - Check the SIM



(11) Camera Trouble

In F1200, Camera Back-End-chip is applied for camera flow control and power control respectively.

The full scheme is shown in Figure 26.

CAMERA

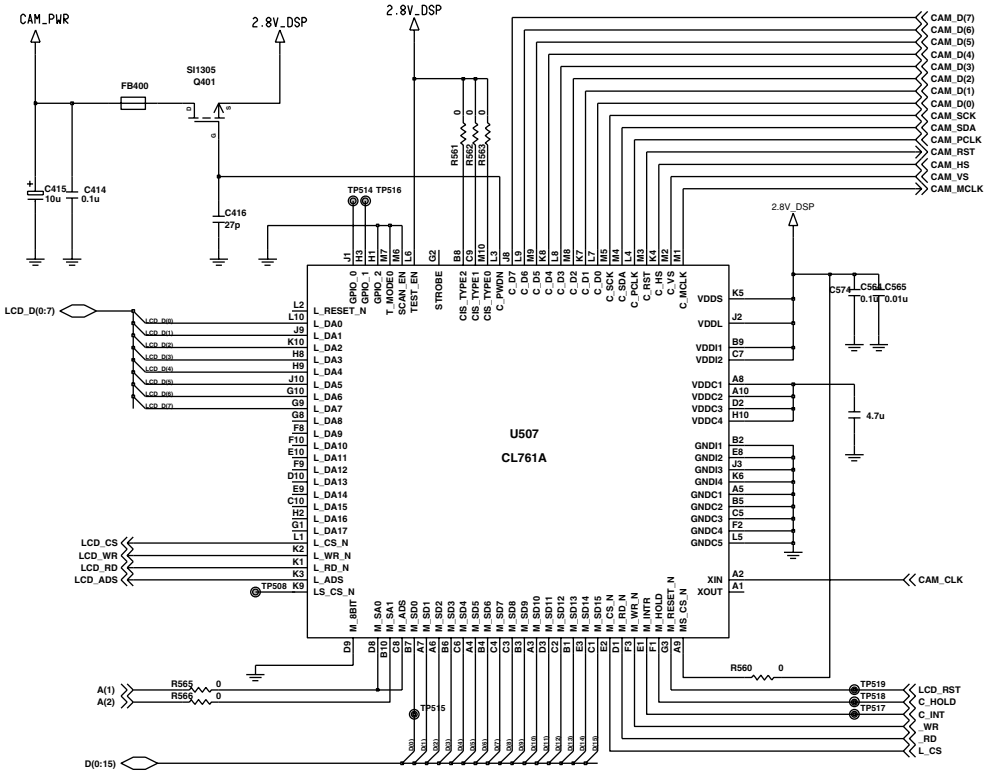
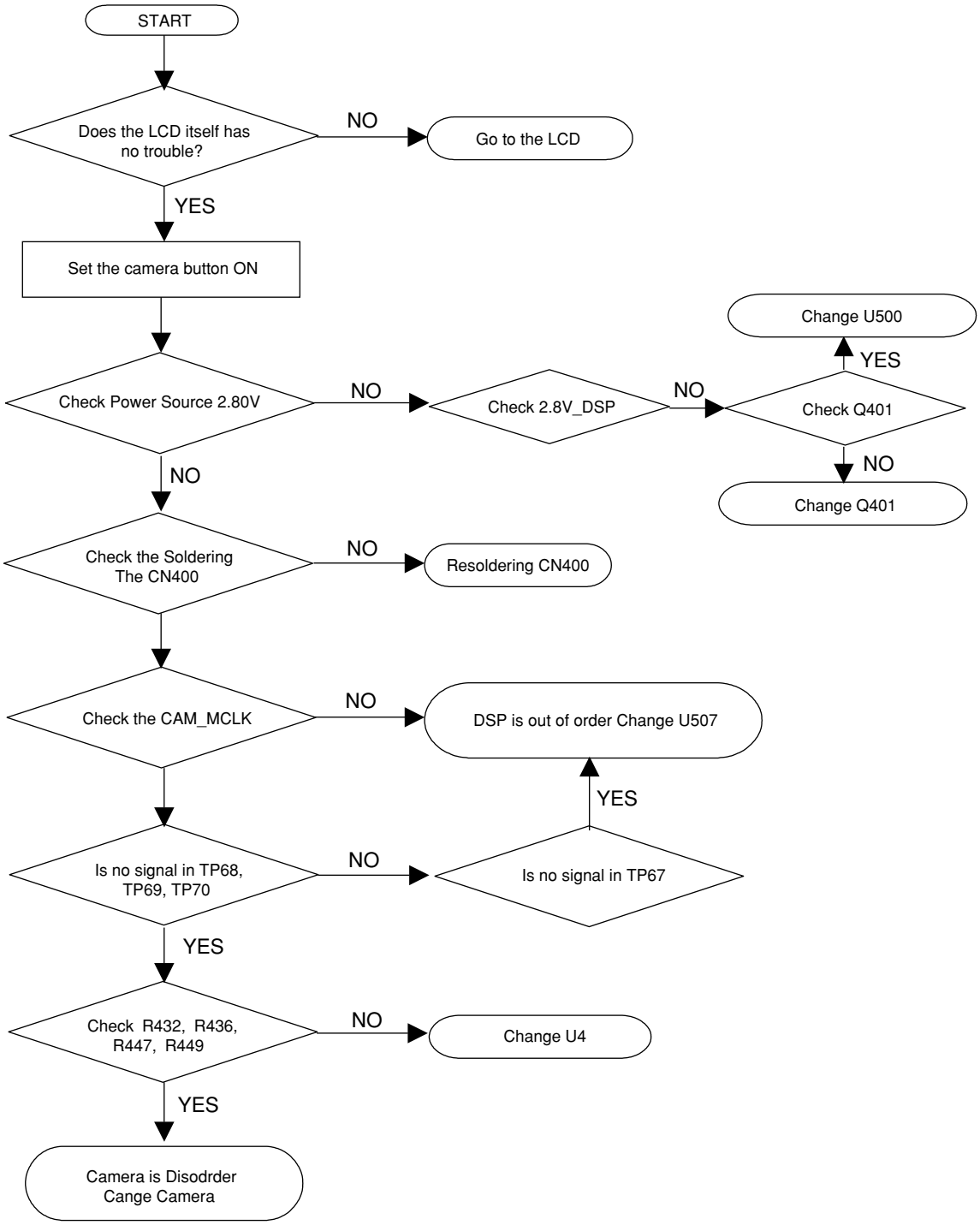


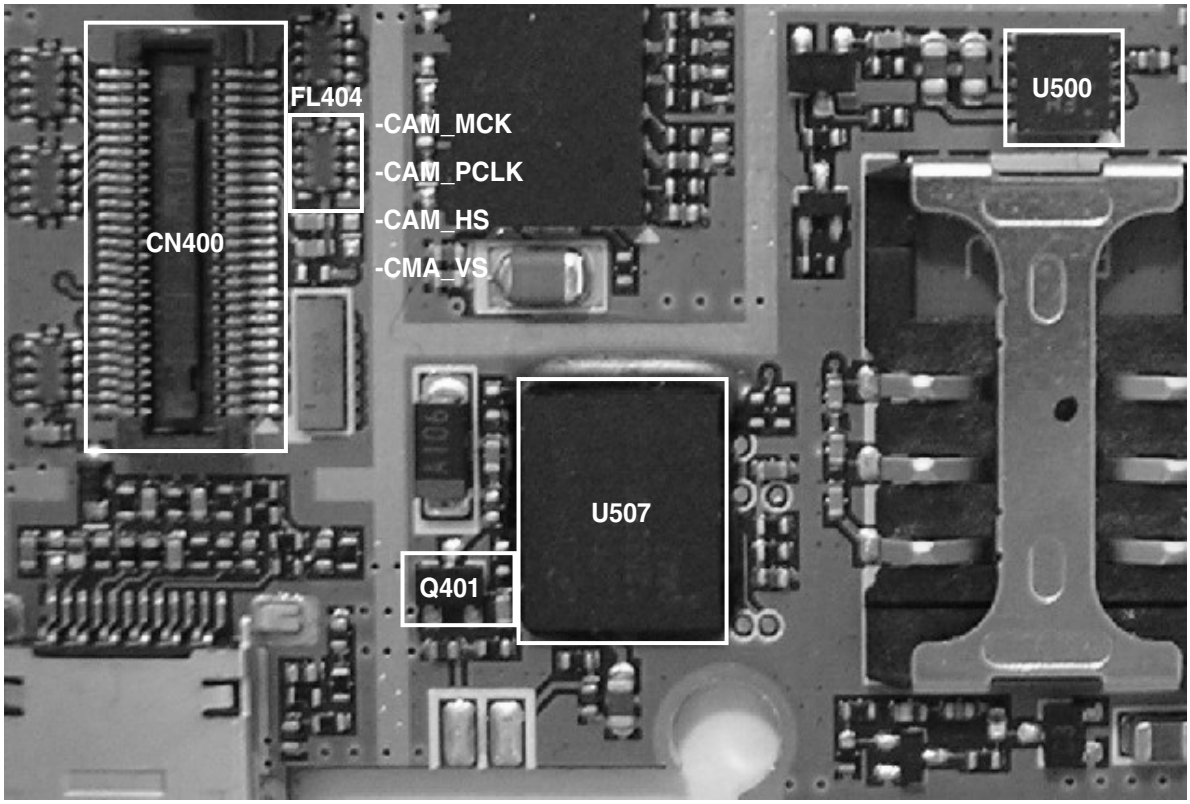
Figure 26.

The U507 is Camera Application processor. (Corelogic's CL761A) It also supports 80-type LCD interface. It has 16-bit 80-type Parallel Host I/F and supports up to VGA resolution. If C_hold go to low, camera-system is operated. Camera-power is on and the initial setting and mode changing of camera module is done through I2C Bus by U507. Camera power system is controlled by the C_pwon pin of U507 which go to low and Operating Voltage is 2.8V.

- **Check Points**
  - Check the power supply.
  - Check the soldering of Components
  - Check the CAMERA signals
- **Trouble Shooting Setup**
  - Enter the engineering mode.
  - Go to menu 'Baseband → Camera'

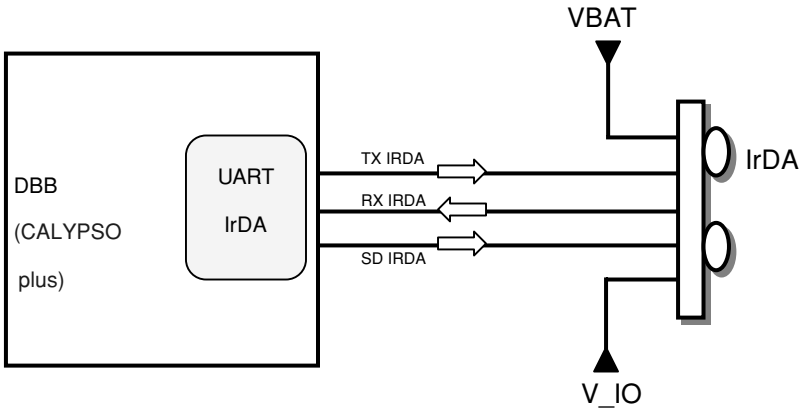
- **Camera Trouble**



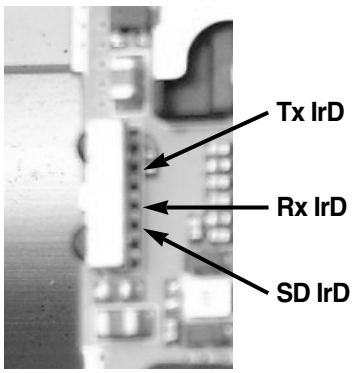

FL404
-CAM_MCK
-CAM_PCLK
-CAM_HS
-CMA_VS
CN400
U500
U507
Q401

(12) Infrared Data Association Trouble

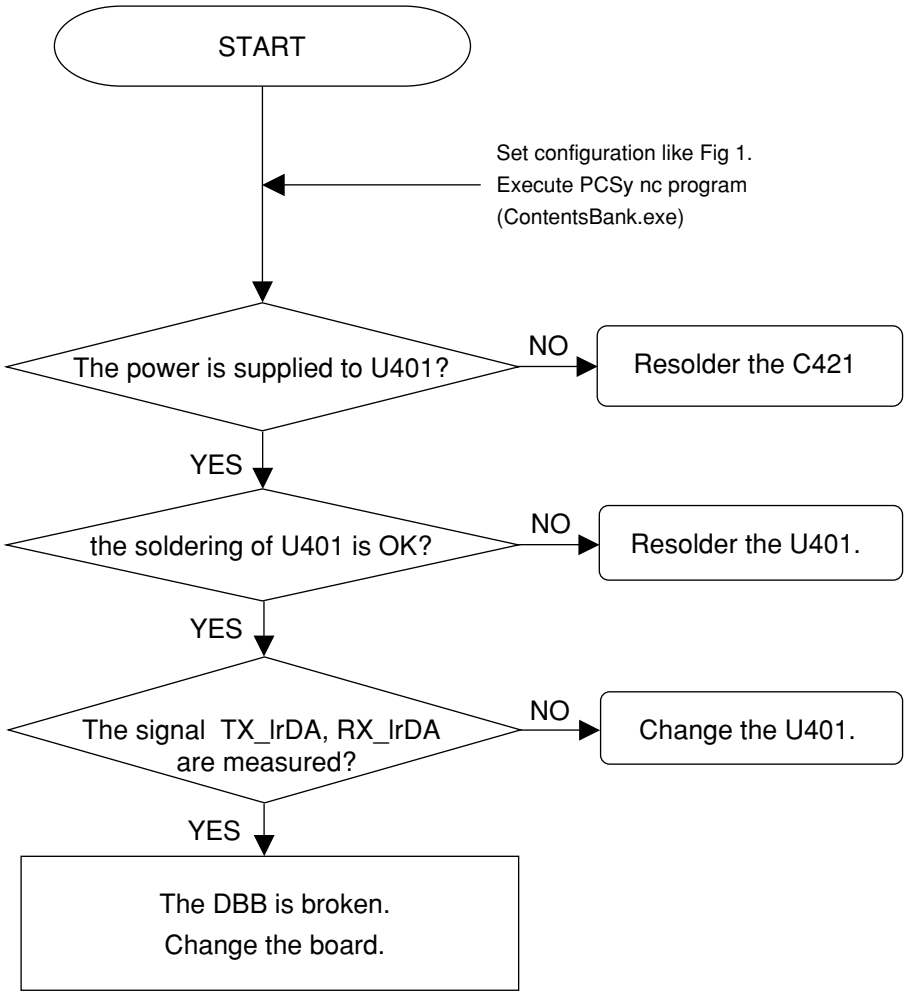
Block Diagram



- **Infrared Signal Flow**
  - Infrared is enable by SD
  - TX_IRDA,RX_IRDA,SD_IRDA signals from DBB
- **Check Points**
  - Check the power supply.
  - Check the soldering of Components
  - Check the IrDA Transceiver
- **Trouble Shooting Setup**
  - Enter the engineering mode.
  - Go to menu 'Baseband → IrDA Test'
- **Trouble Shooting Procedure**
  - Check the SD,TX, RX signal.
  - Check the soldering.
  - Check the IrDA Transceiver.



- **IrDA Trouble**



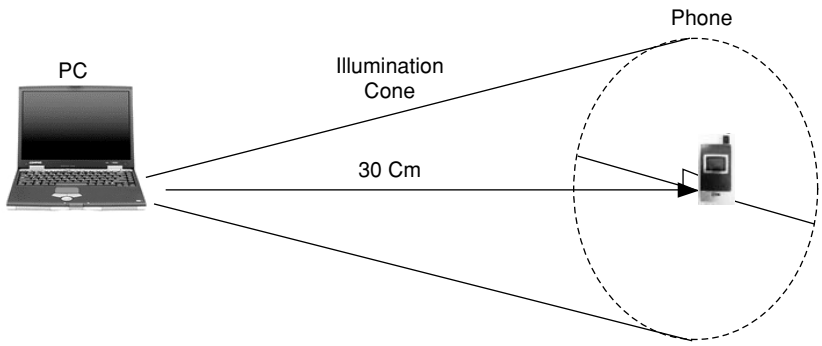
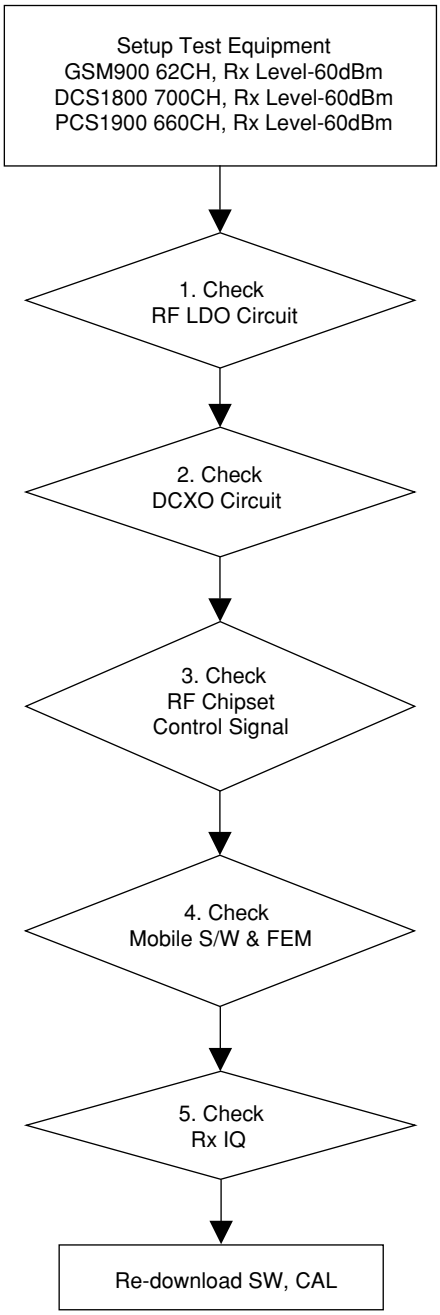


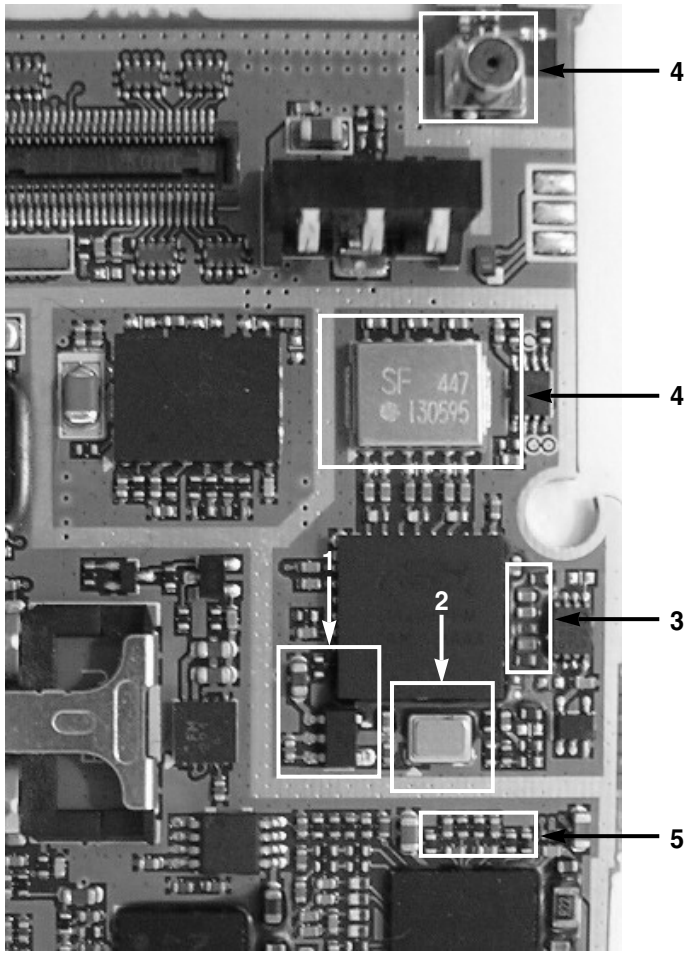
Figure 26.

4.2 Trouble Shooting of Receiver Part

Checking Flow

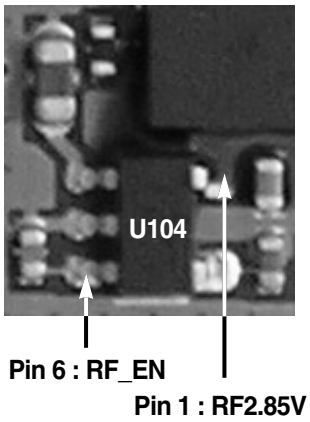


Checking Points

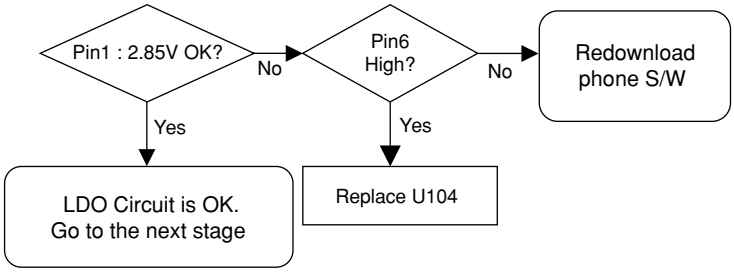


(1) Checking LDO Circuit

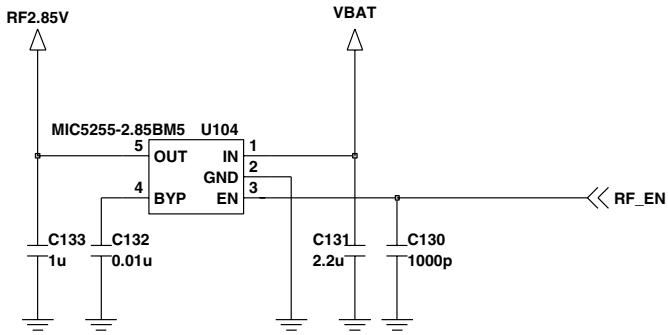
Checking Points



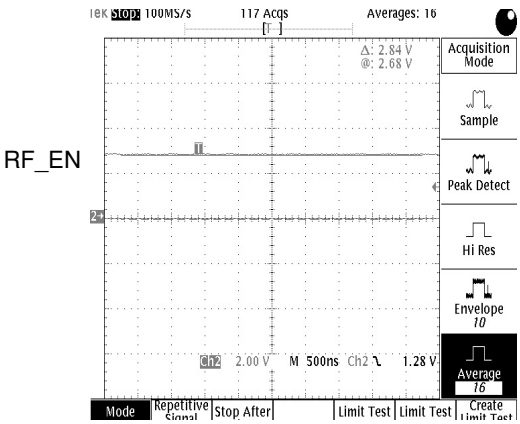
Checking Flow



LDO Circuit Diagram

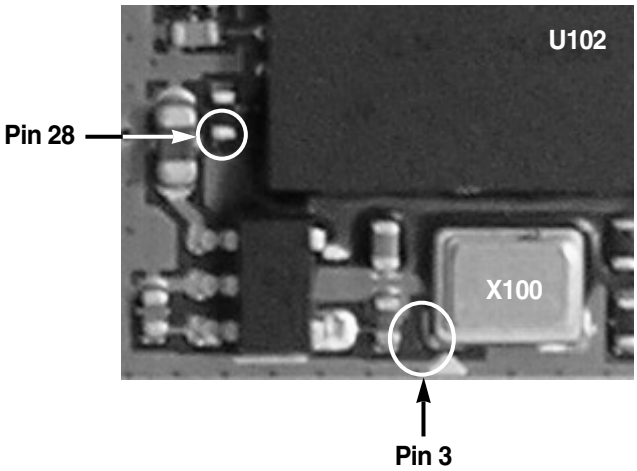


Waveform

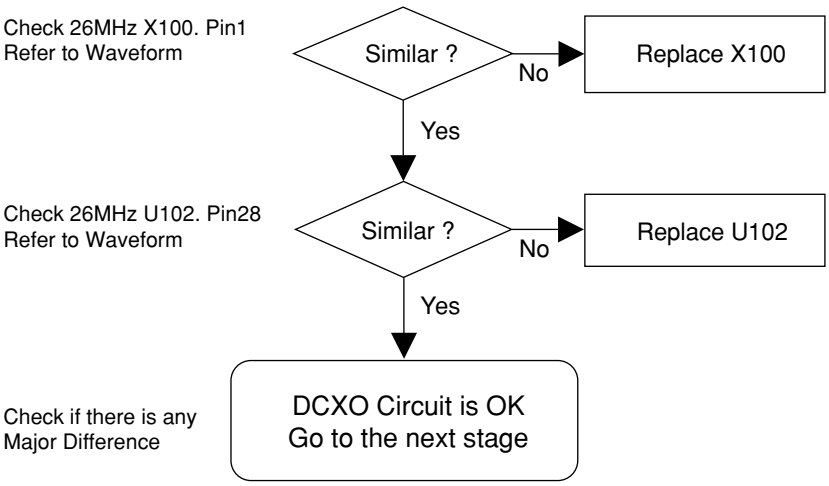


(2) Checking DCXO circuits

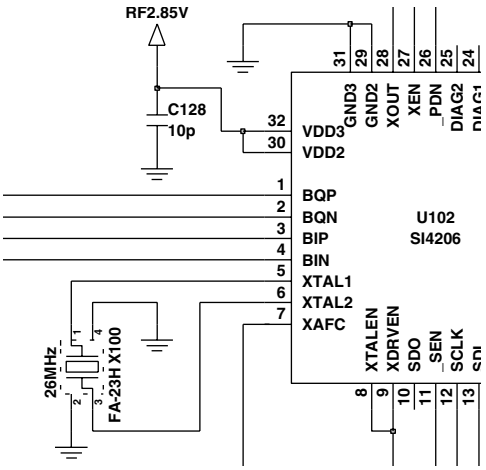
Checking Points



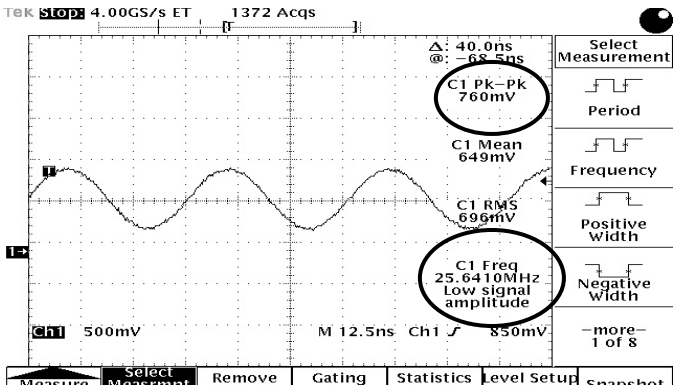
Checking Flow



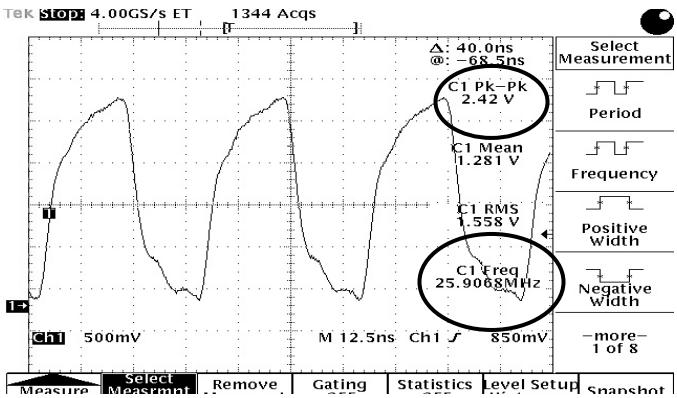
DCXO Circuit Diagram



Waveform



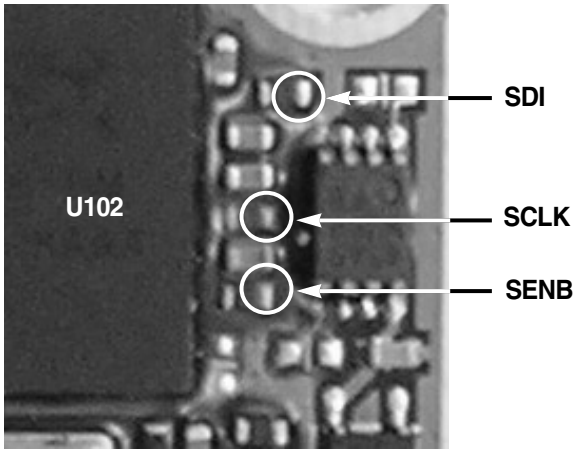
X100.Pin3.



U102.Pin28

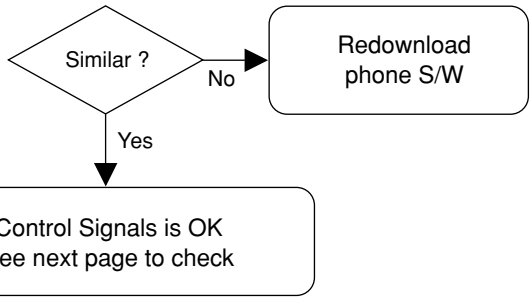
(3) Checking RF Chipset Control Signal

Checking Points



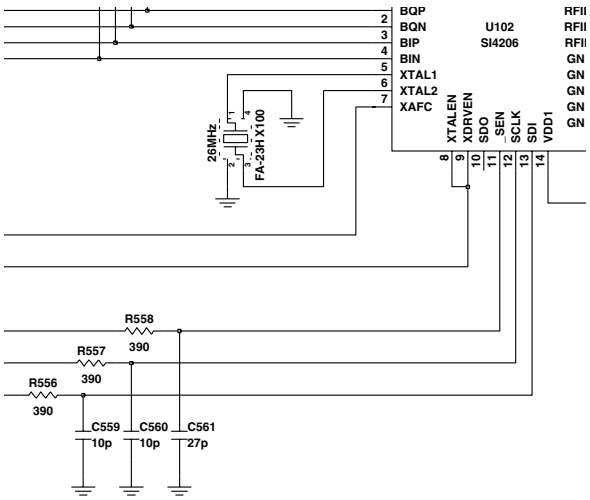
Checking Flow

Check SENB, SCLK, SDI
Refer to Waveform

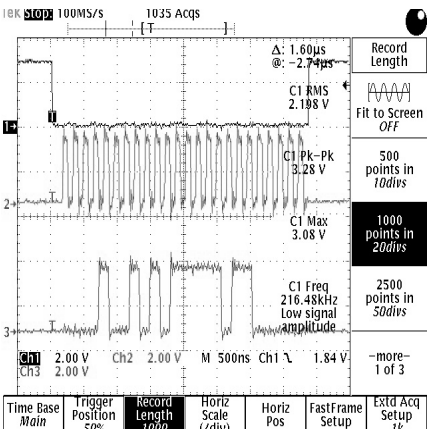


Check if there is any
Major Difference

Control Signal Circuit Diagram

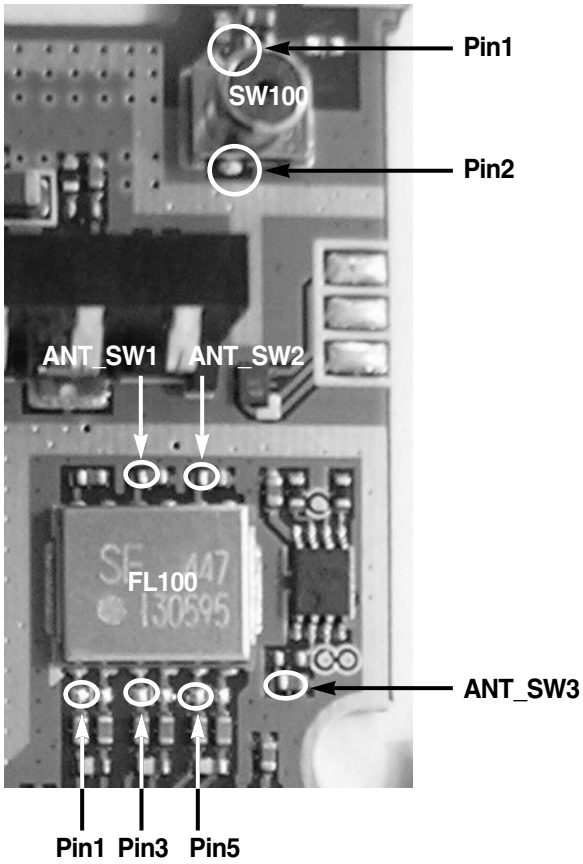


Waveform

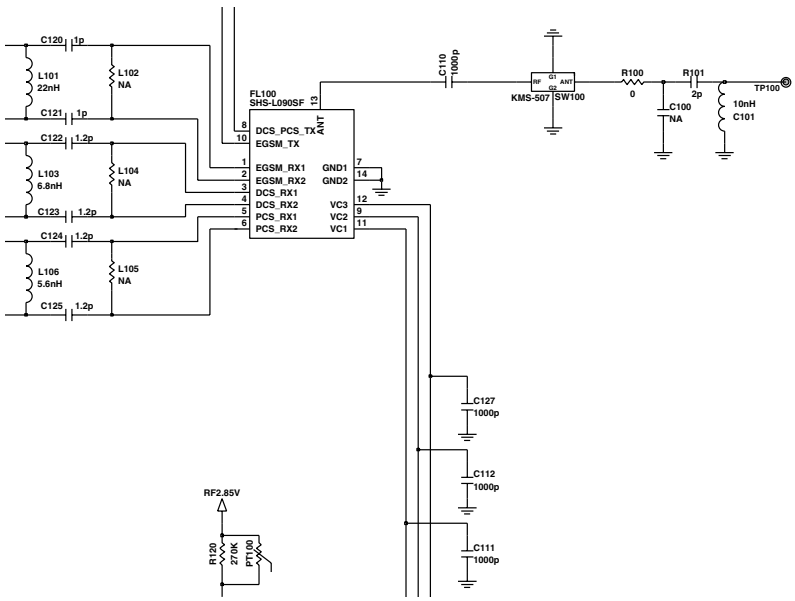


(4) Checking Mobile S/W and FEM Circuit

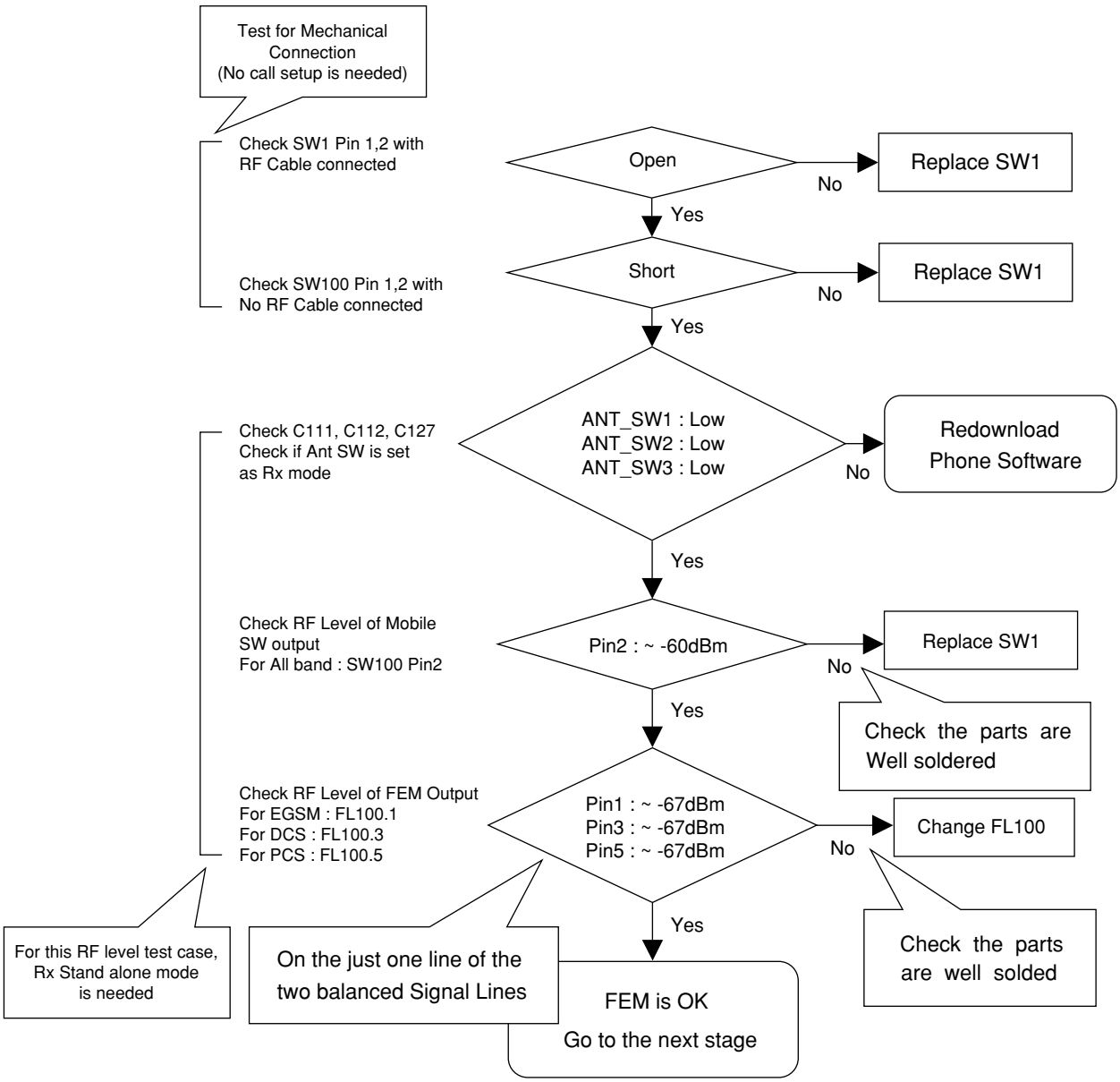
Checking Points



Mobile S/W & FEM Circuit Diagram

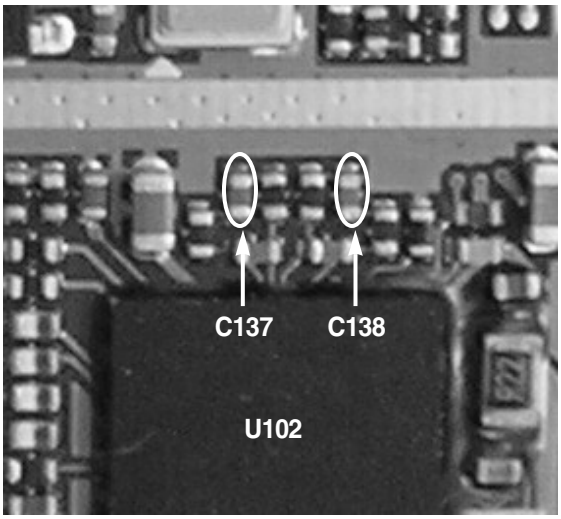


Checking Flow

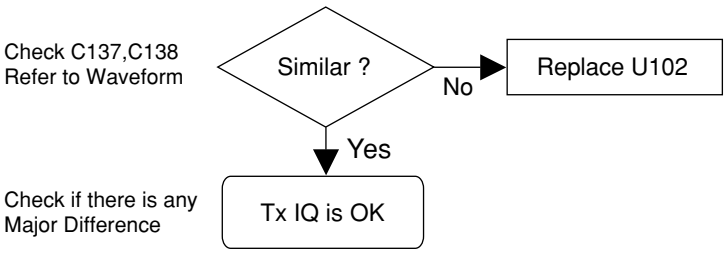


(5) Checking Rx IQ Circuit

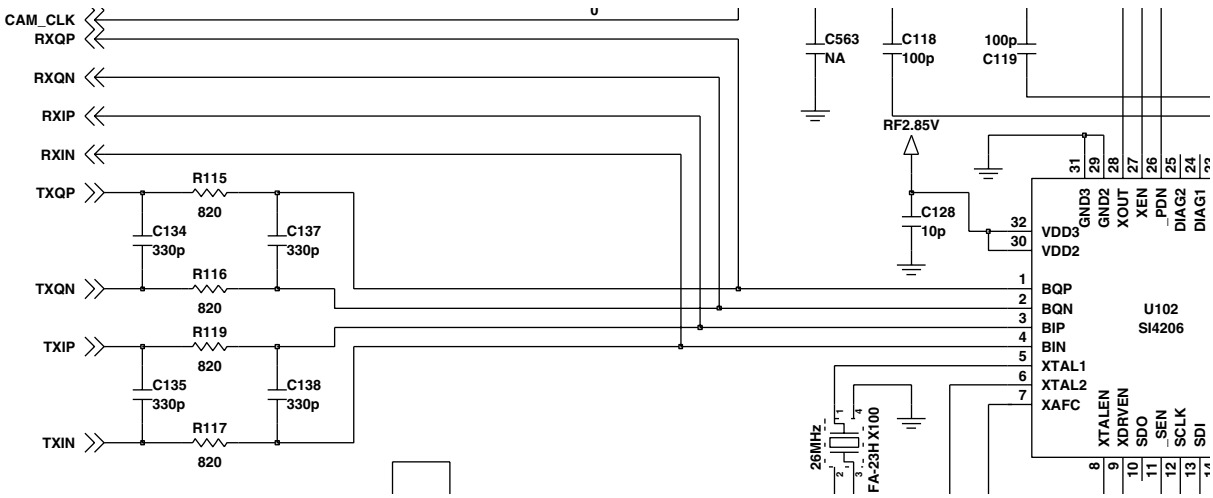
Checking Points



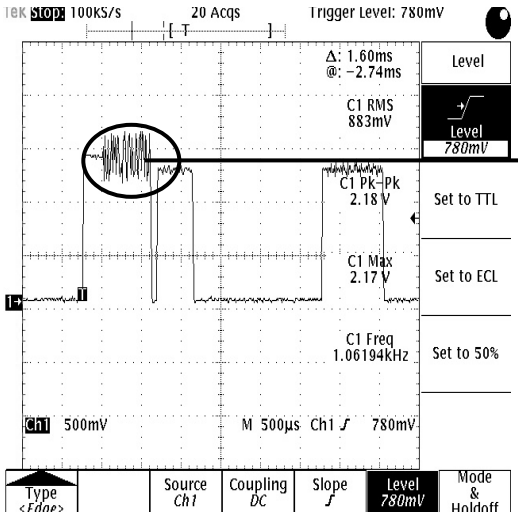
Checking Flow



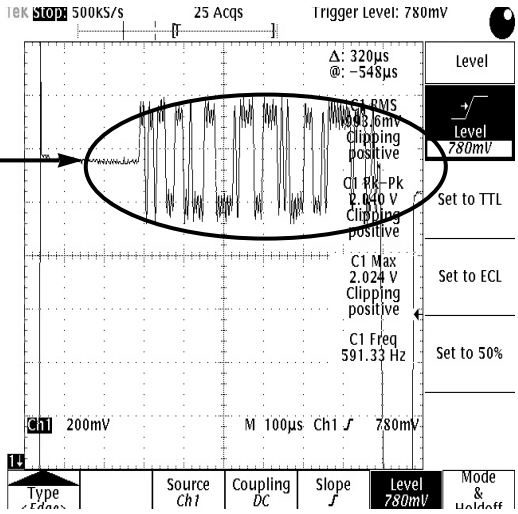
Rx IQ Circuit Diagram



Waveform



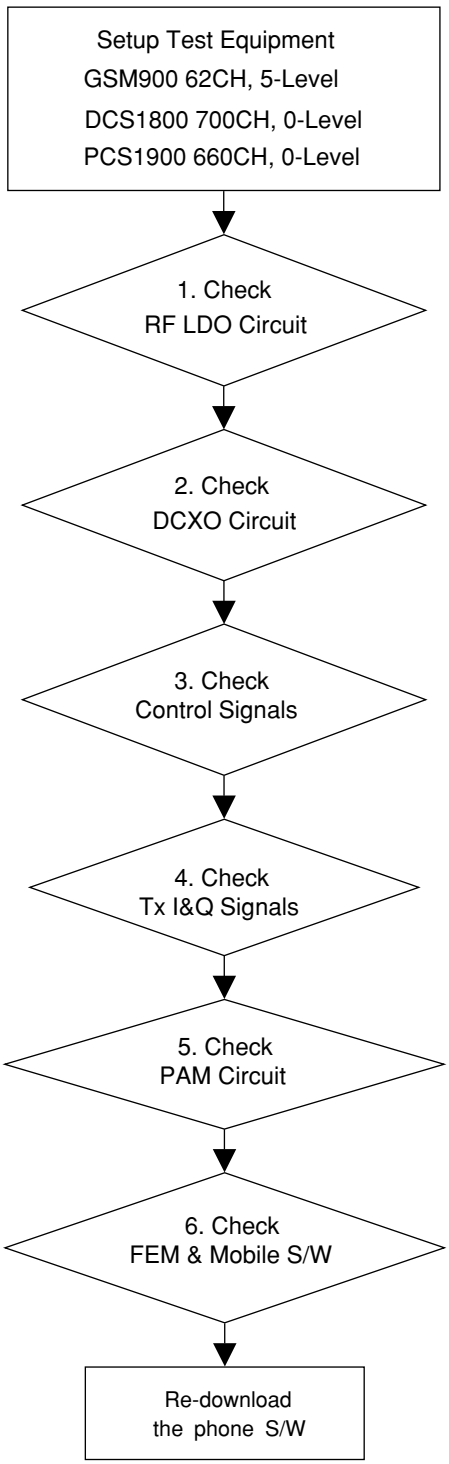
Tx Burst



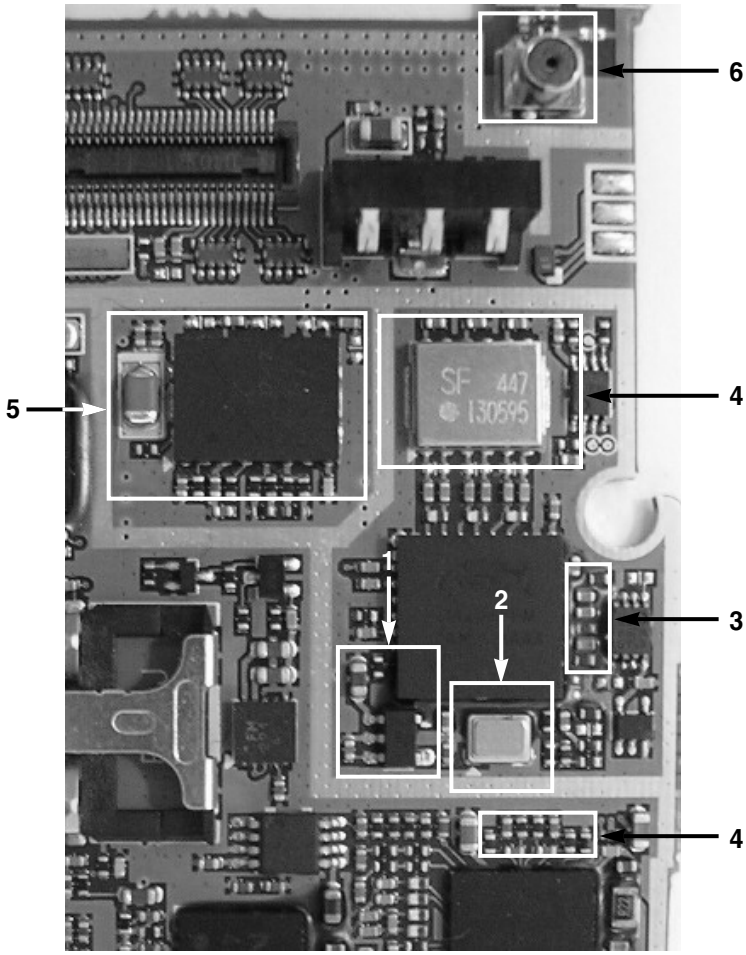
Tx IQ data

4.3 Trouble Shooting Transmitter Part

Checking Flow

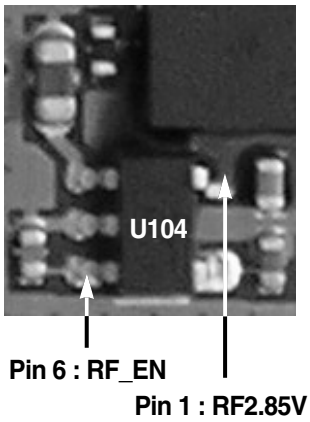


Checking Points

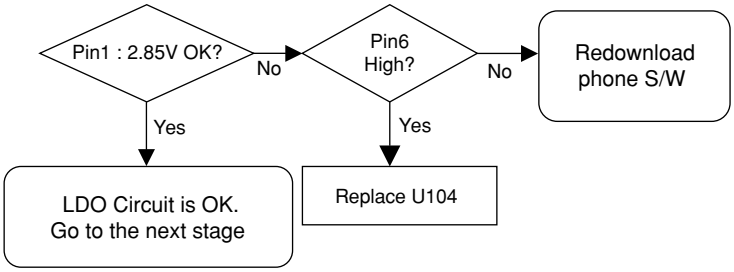


(1) Checking LDO Circuit

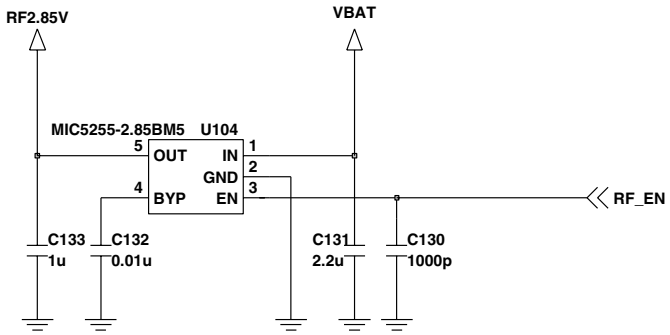
Checking Points



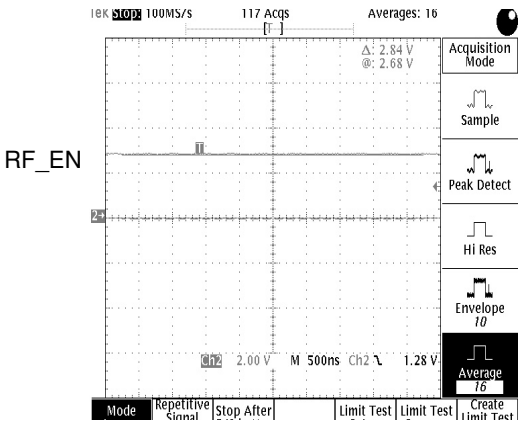
Checking Flow



LDO Circuit Diagram

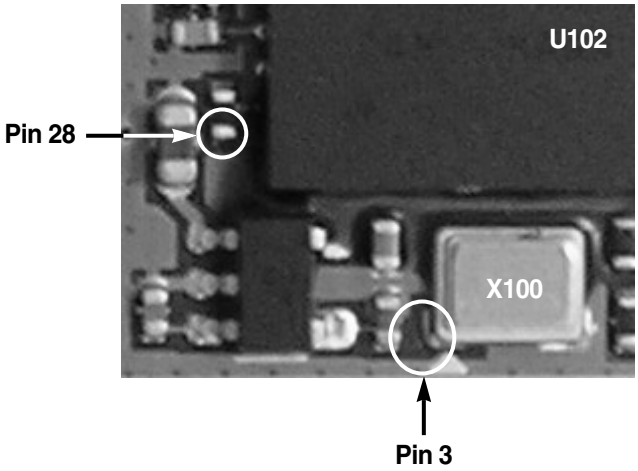


Waveform

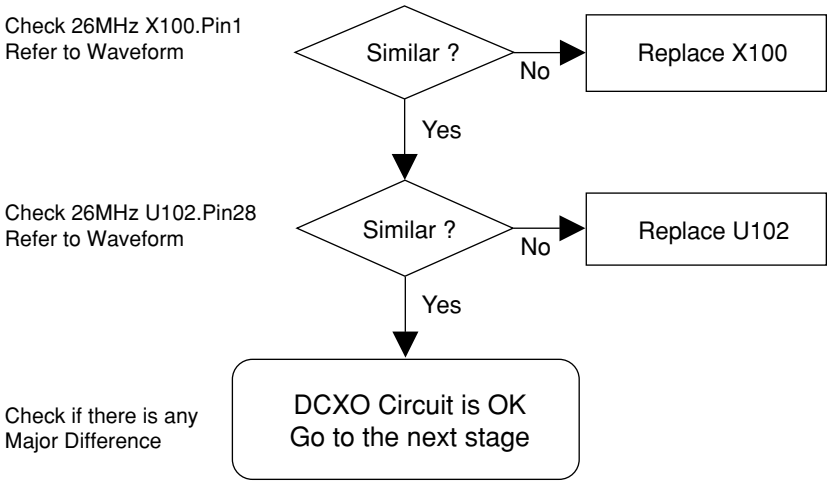


(2) Checking DCXO circuits

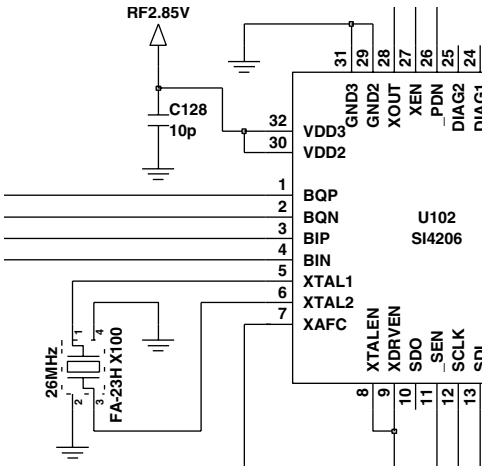
Checking Points



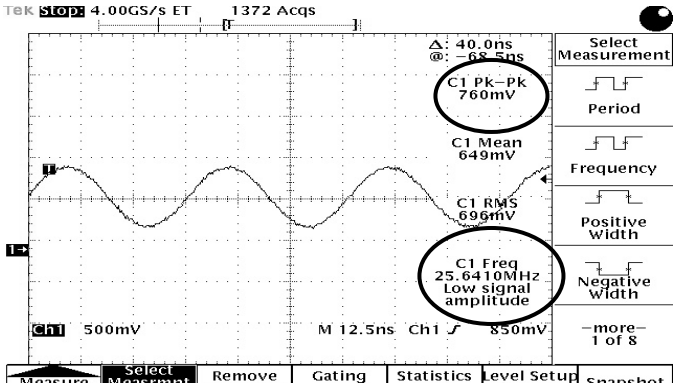
Checking Flow



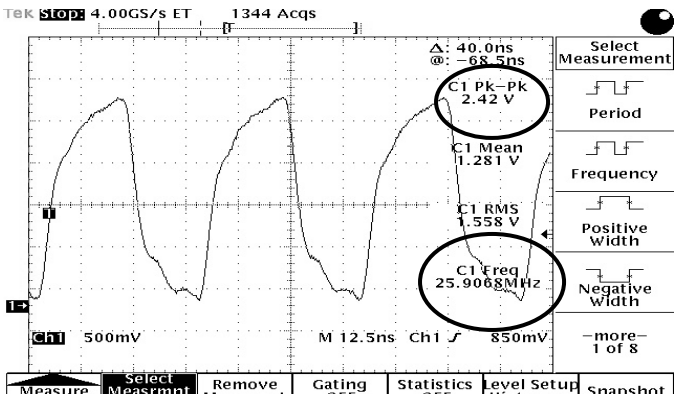
DCXO Circuit Diagram



Waveform



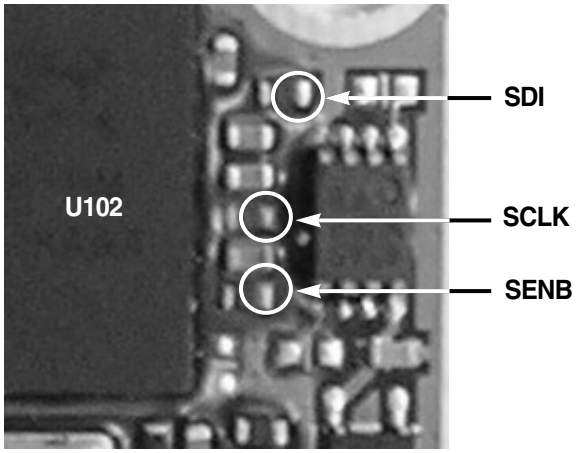
X100.Pin3.



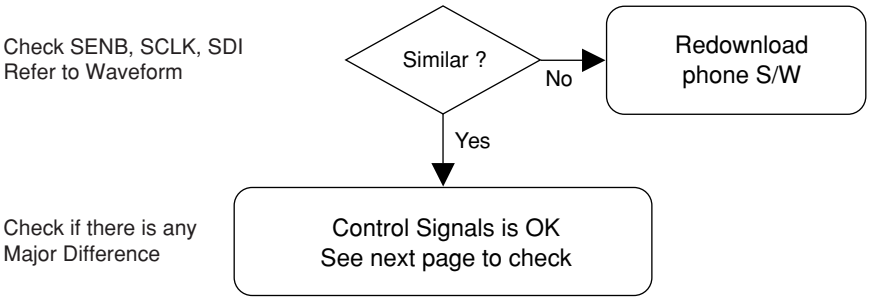
U102.Pin28

(3) Checking RF Chipset Control Signal

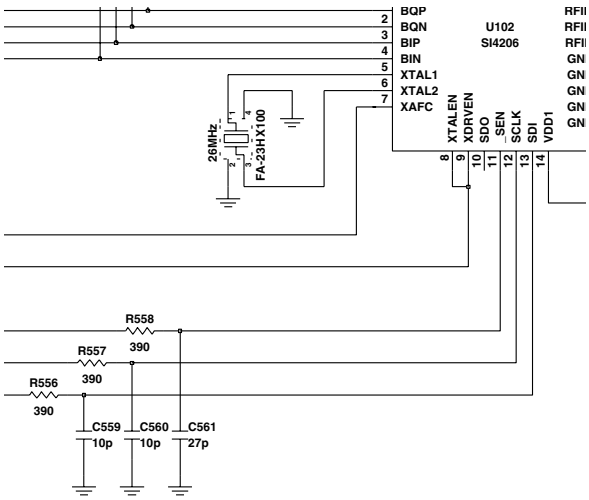
Checking Points



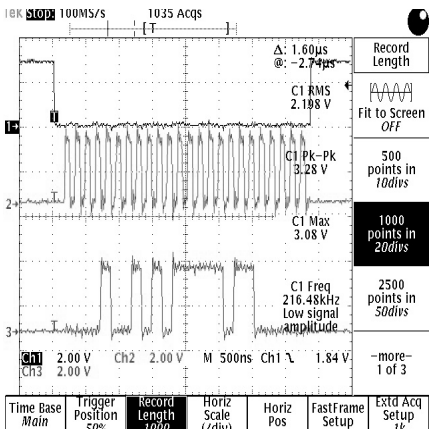
Checking Flow



Control Signal Circuit Diagram

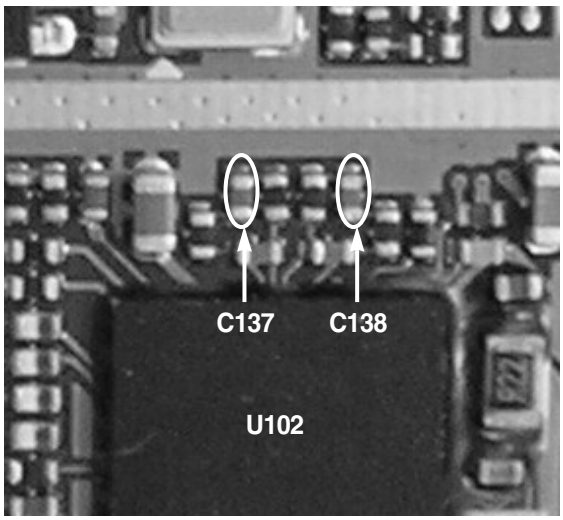


Waveform

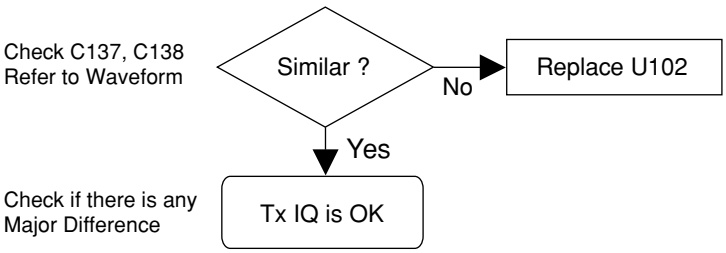


(4) Checking Tx IQ signals

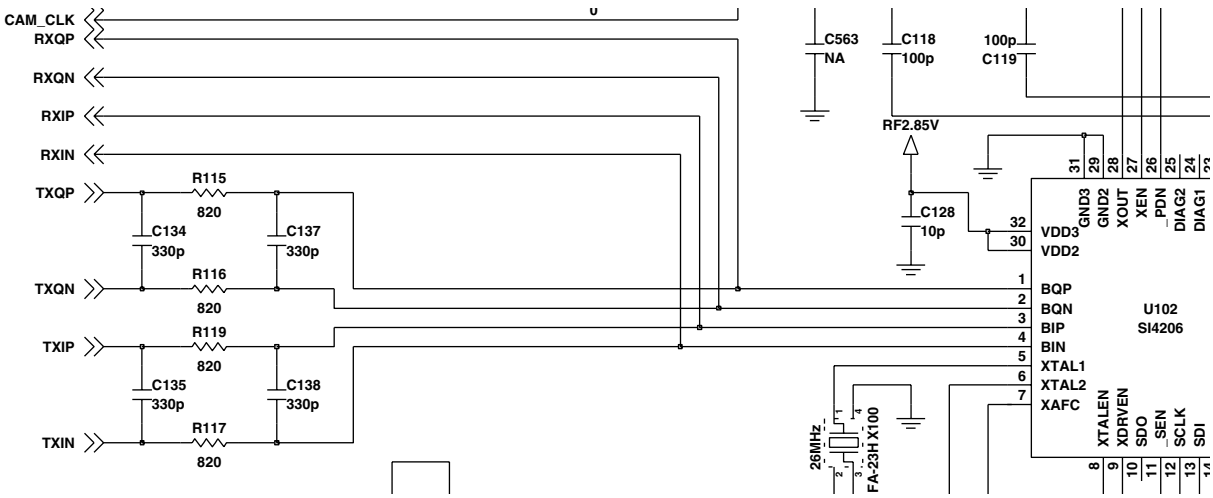
Checking Points



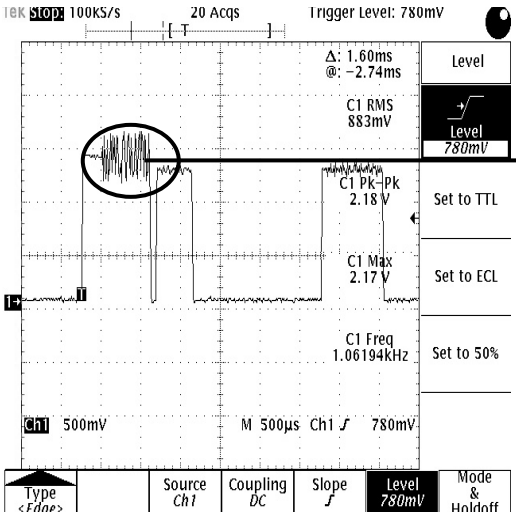
Checking Flow



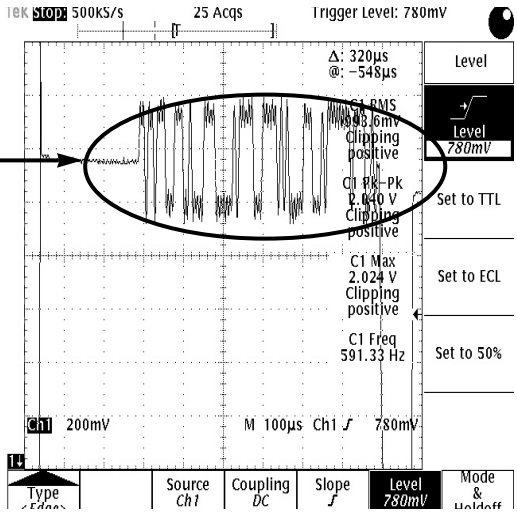
Rx IQ Circuit Diagram



Waveform



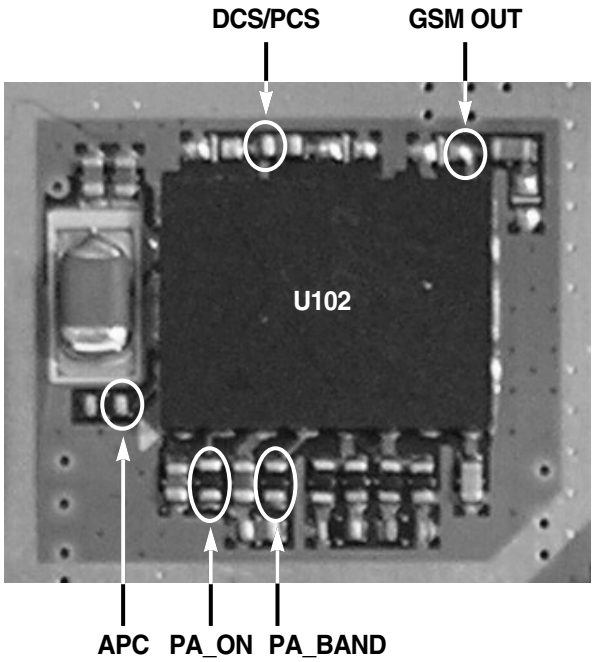
Tx Burst



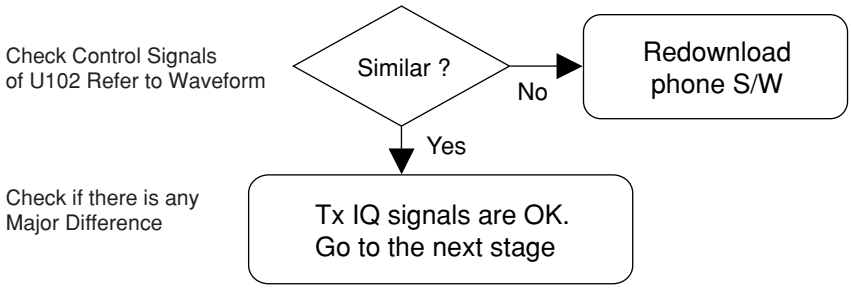
Tx IQ data

(5) Check Tx PAM circuits

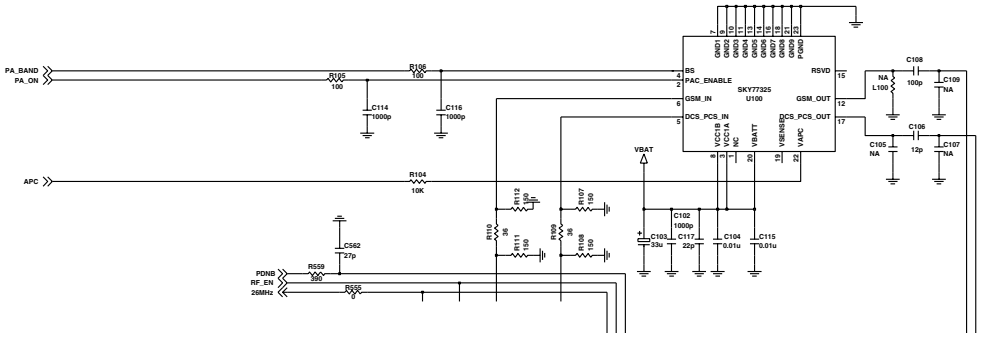
Checking Points



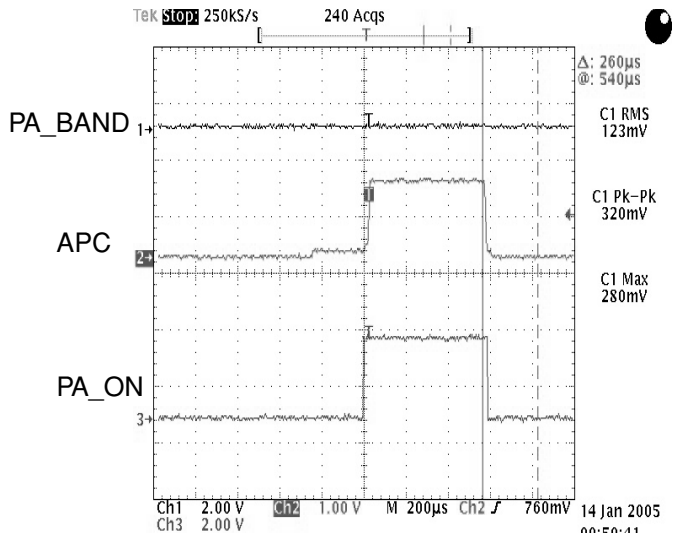
Checking Flow



Tx PAM Circuit Diagram

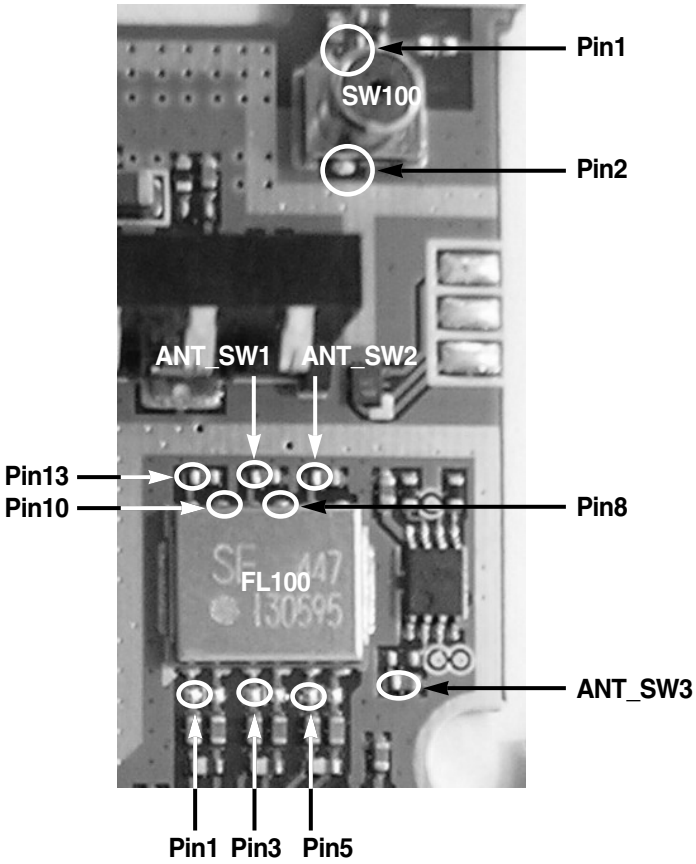


Waveform

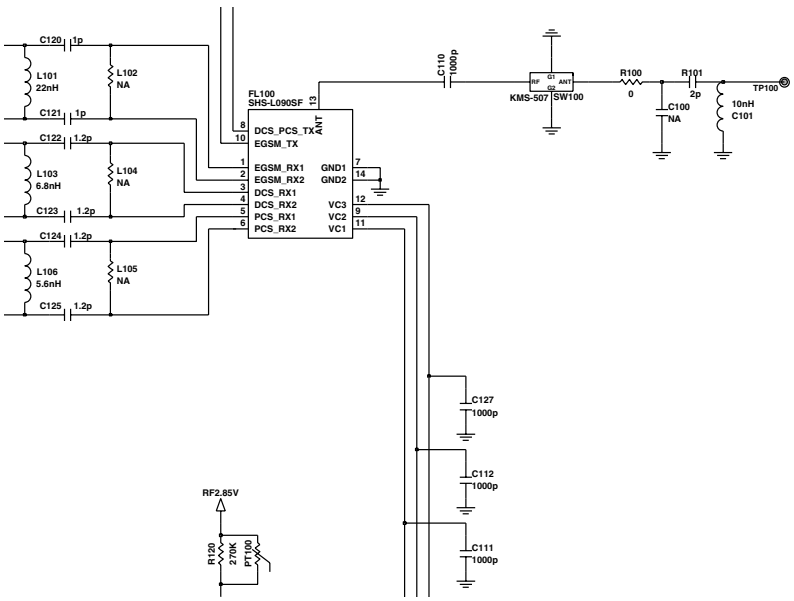


(6) Checking FEM & Mobile S/W circuits

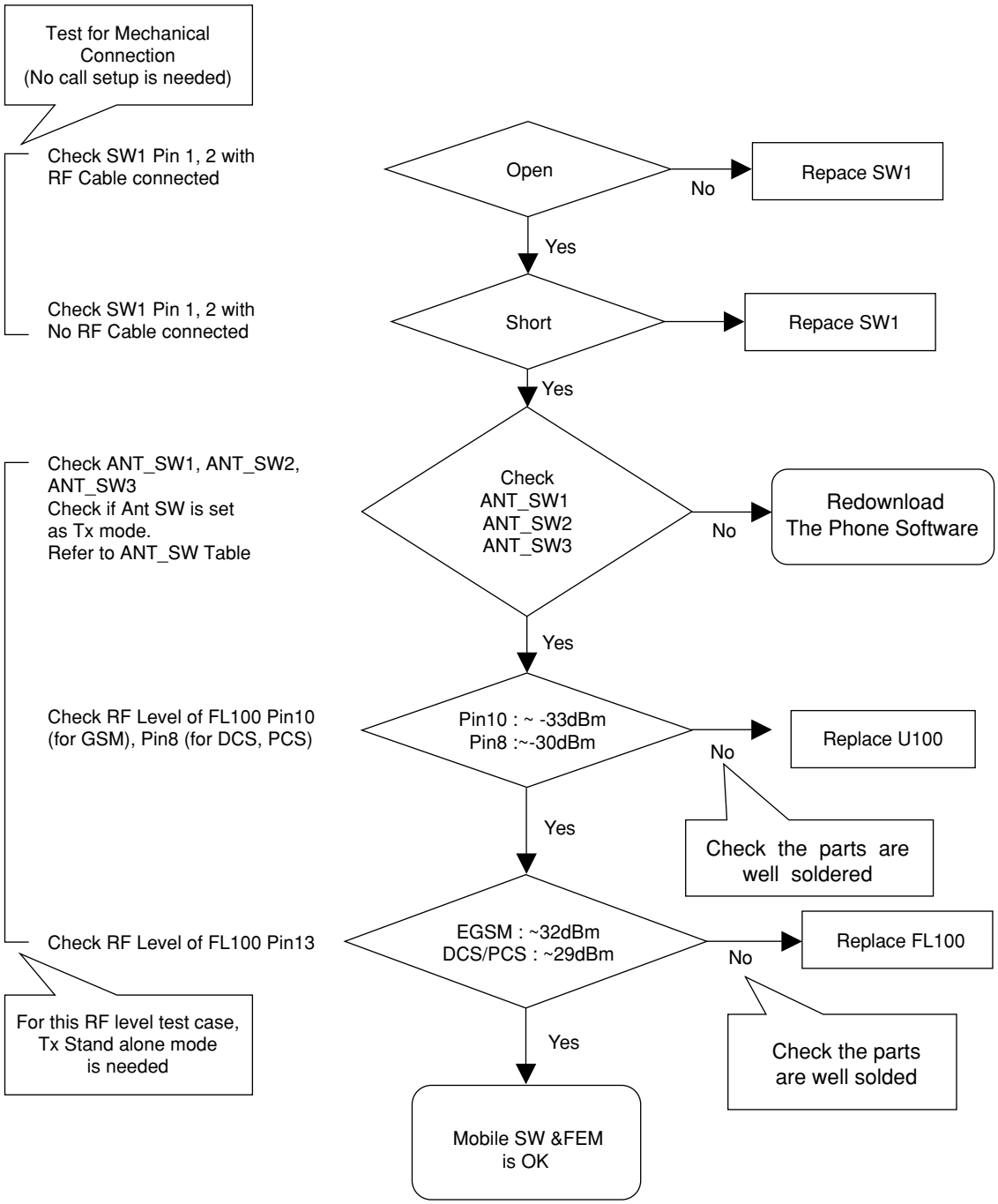
Checking Points



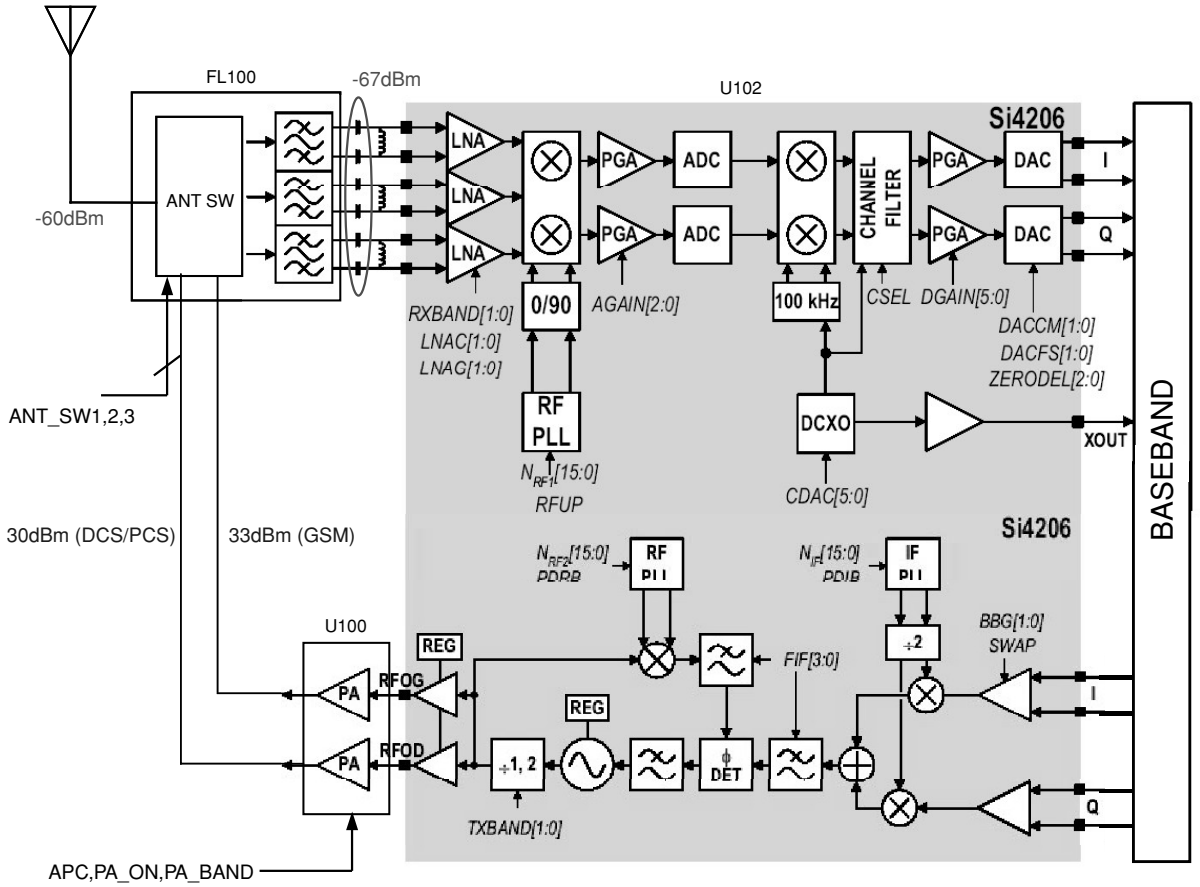
Mobile S/W & FEM Circuit Diagram



Checking Flow



4.4 RF Rx Tx signal flow on Test mode



Switch Mode	SW1	SW2	SW3
EGSM Tx	How	Low	Low
DCS/PCS Tx	Low	How	High
EGSM Rx	Low	Low	Low
DCS Rx	Low	Low	Low
PCS Rx	Low	Low	High

Tri Band Frequency [MHz] Table		
BAND	RX	TX
EGSM	925 ~ 960	880 ~ 915
DCS	1805 ~ 1880	1710 ~1785
PCS	1830 ~ 1990	1850 ~ 1910

5. DISASSEMBLY INSTRUCTION

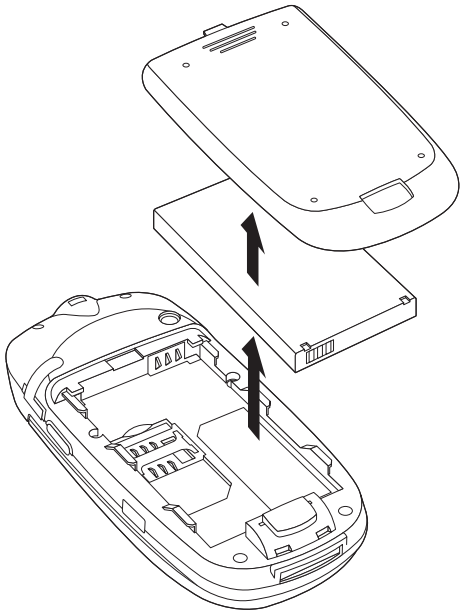


Figure 5-1.

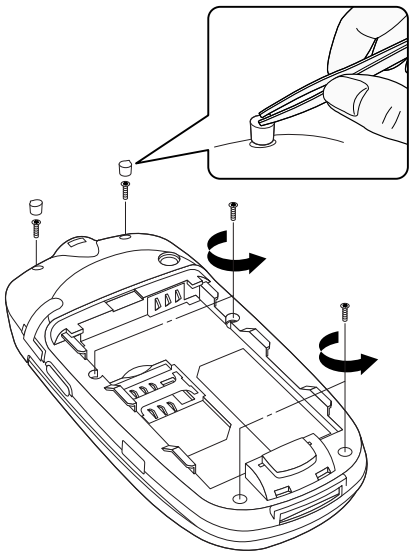


Figure 5-2.

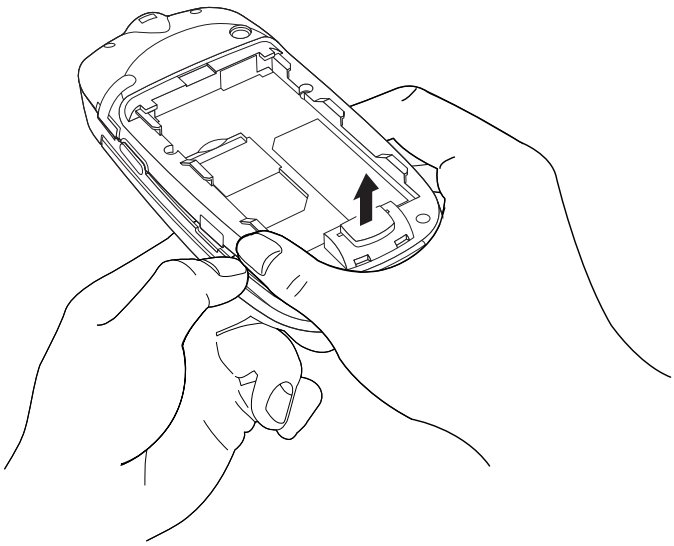


Figure 5-3.

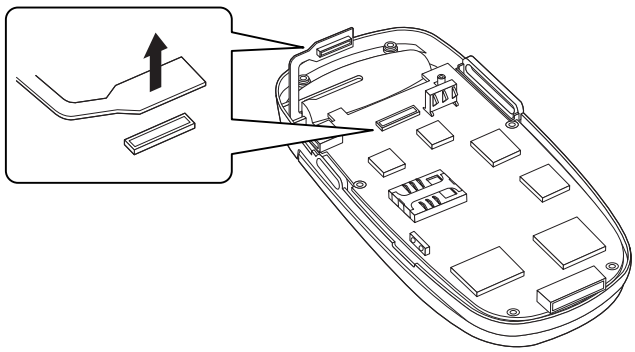


Figure 5-4.

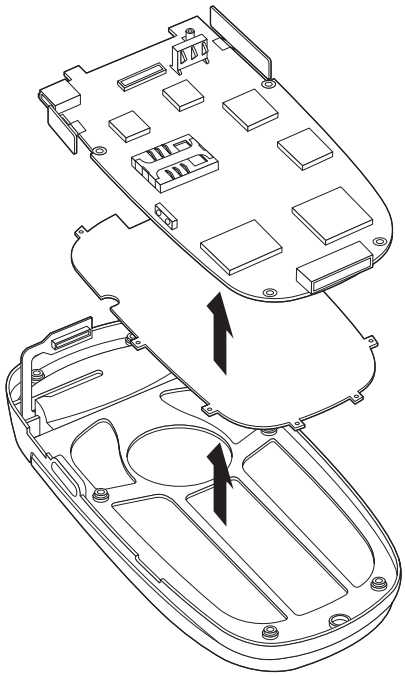


Figure 5-5.

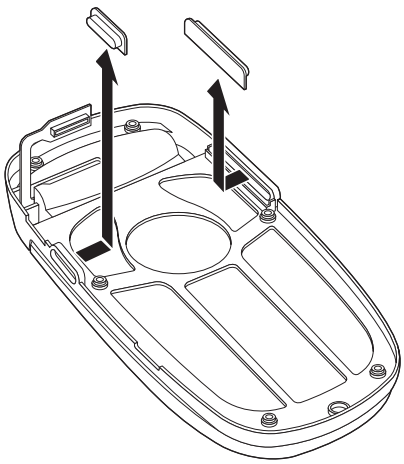


Figure 5-6.

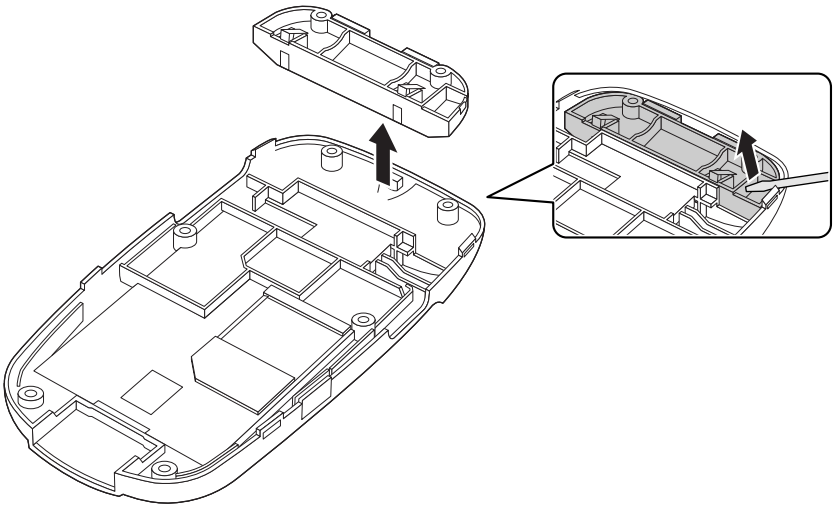


Figure 5-7.

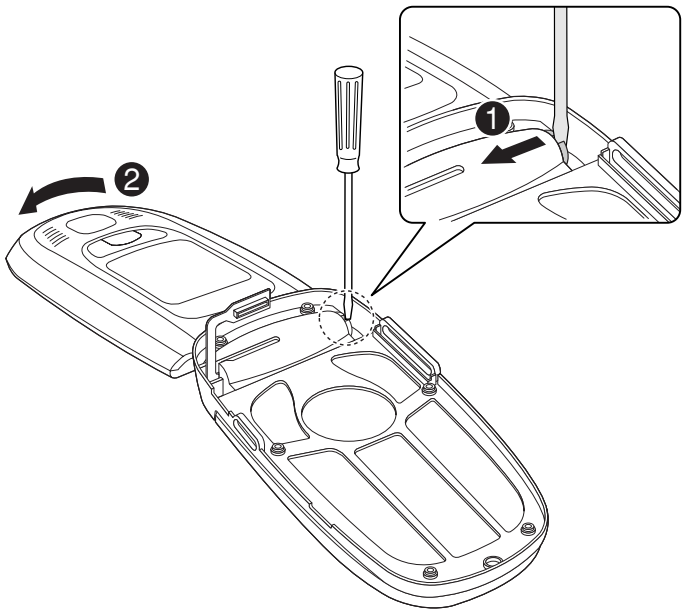


Figure 5-8.

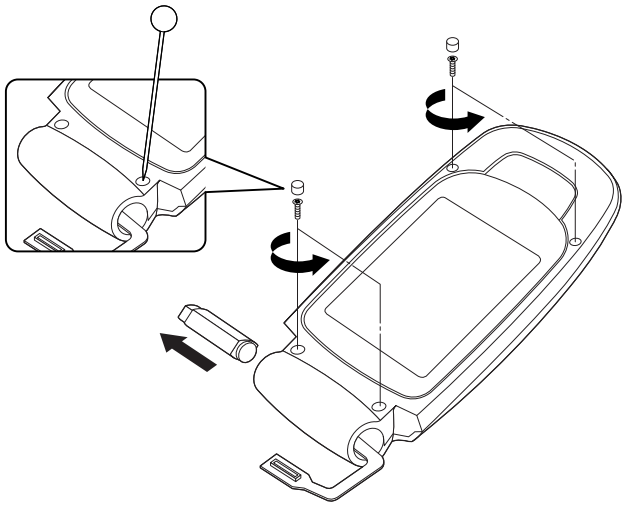


Figure 5-9.

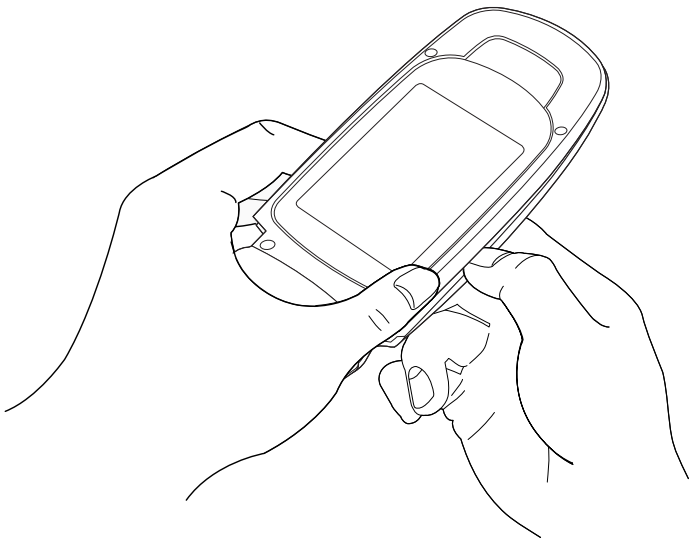


Figure 5-10.

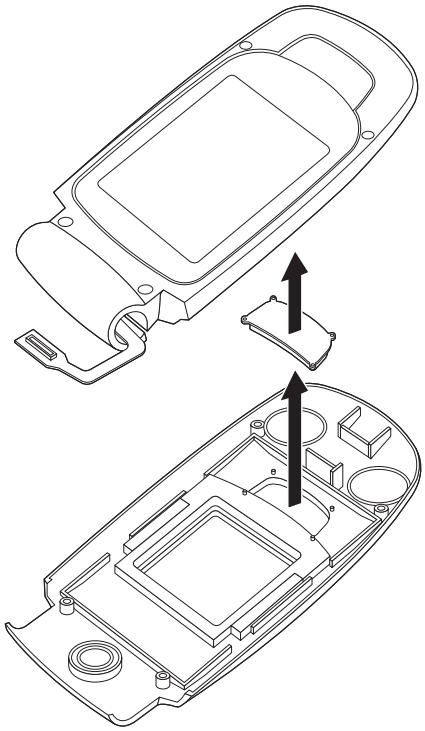


Figure 5-11.

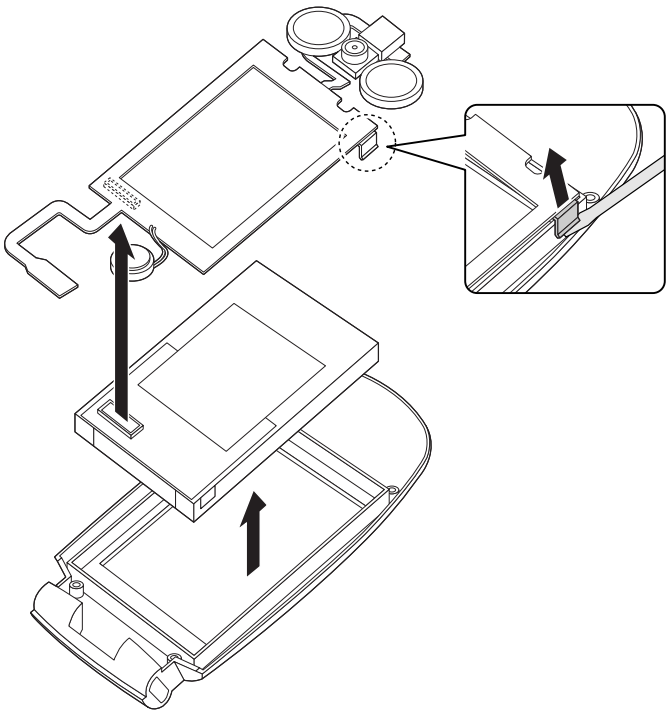


Figure 5-12.

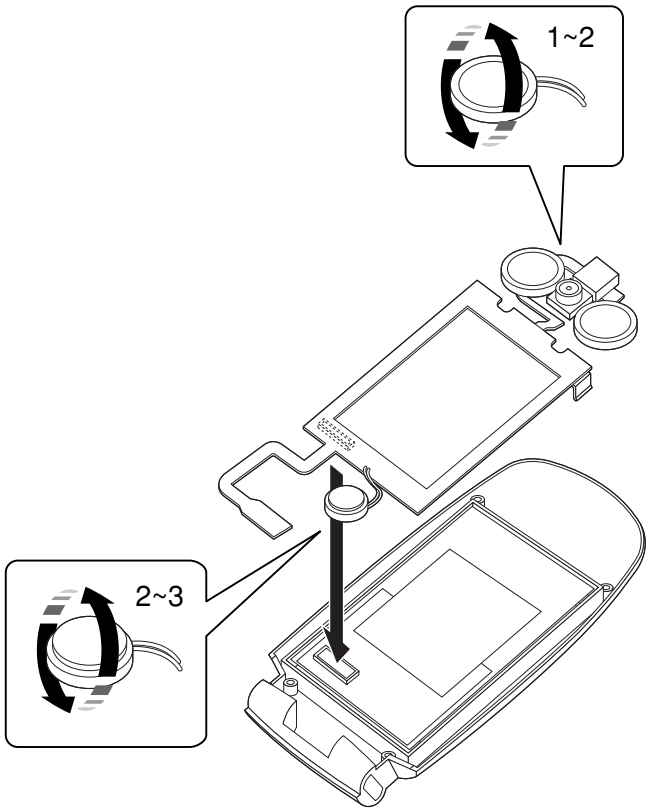


Figure 5-13.

6. DOWNLOAD AND CALIBRATION

6.1 Download

In case of using the PIF

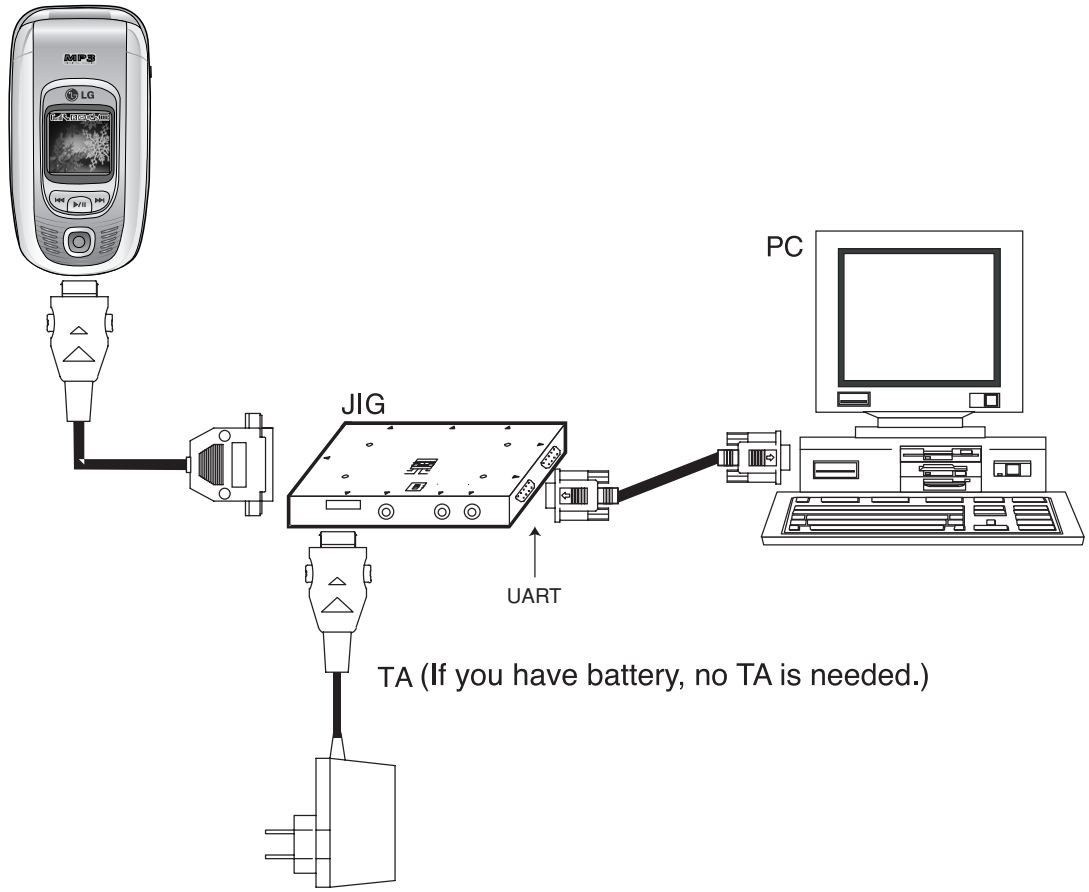


Figure 6-1. Download Setup

Preparation

· Target Handset (F1200)

· PIF

· RS-232 Cable and PIF-to-Phone interface Cable

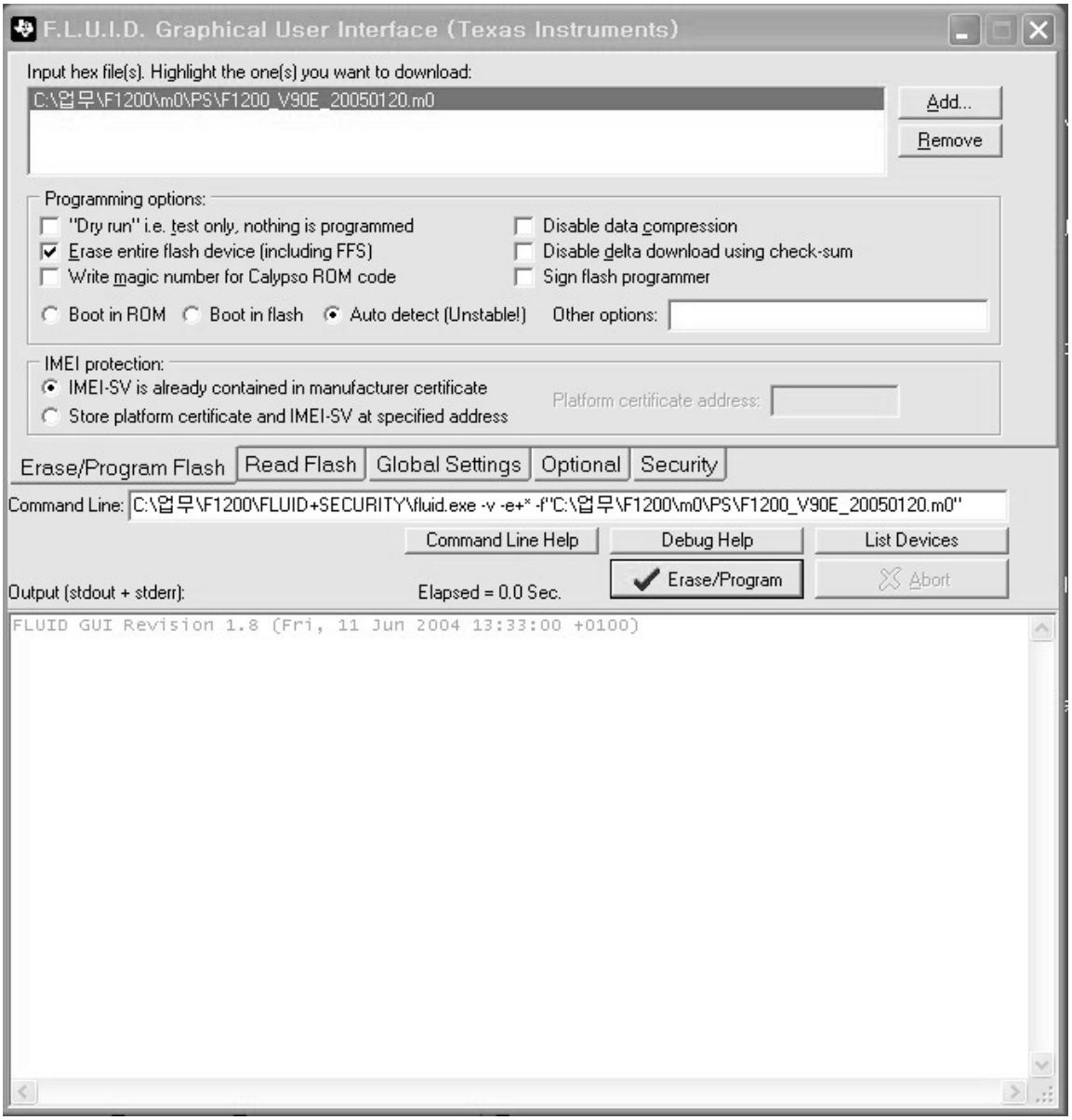
· TA/Power Supply or Battery

· IBM compatible PC supporting RS-232 with Windows 98 or 2000

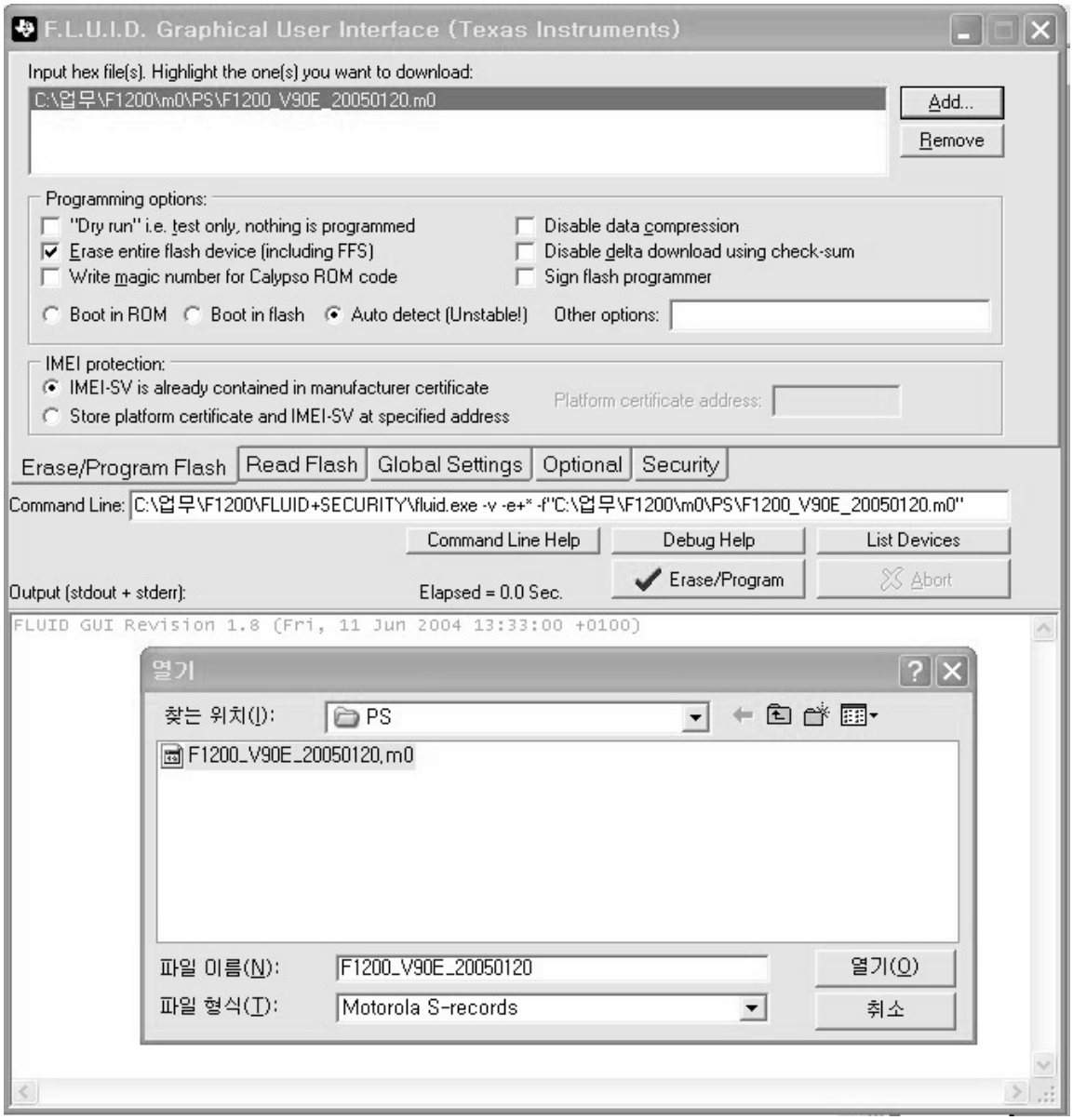
If you use battery, you should have a battery with the voltage above 3.7V.

6.2 Download Procedure

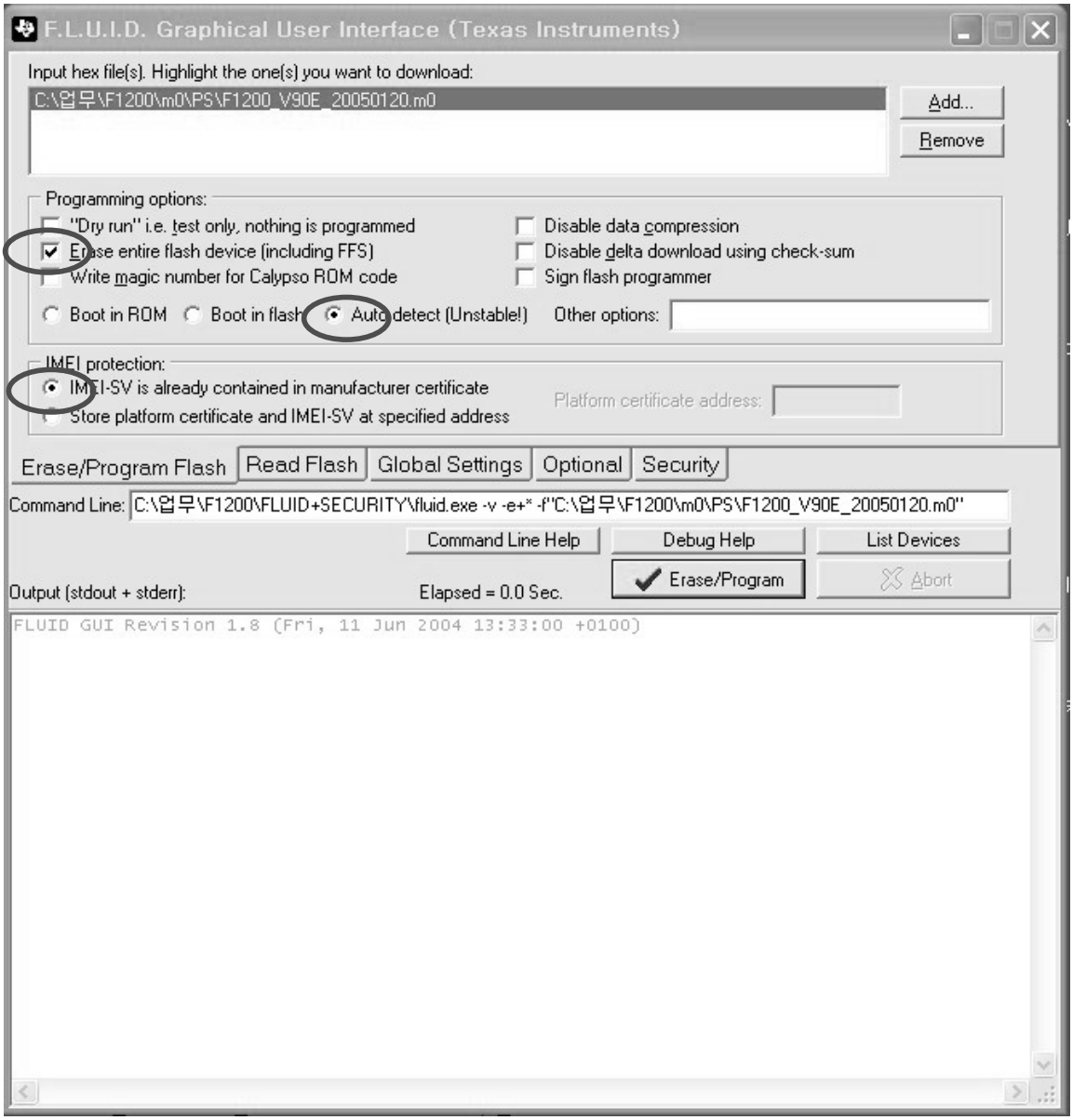
1. Execute Fluid_GUI.exe and select “Erase/Program flash” menu.



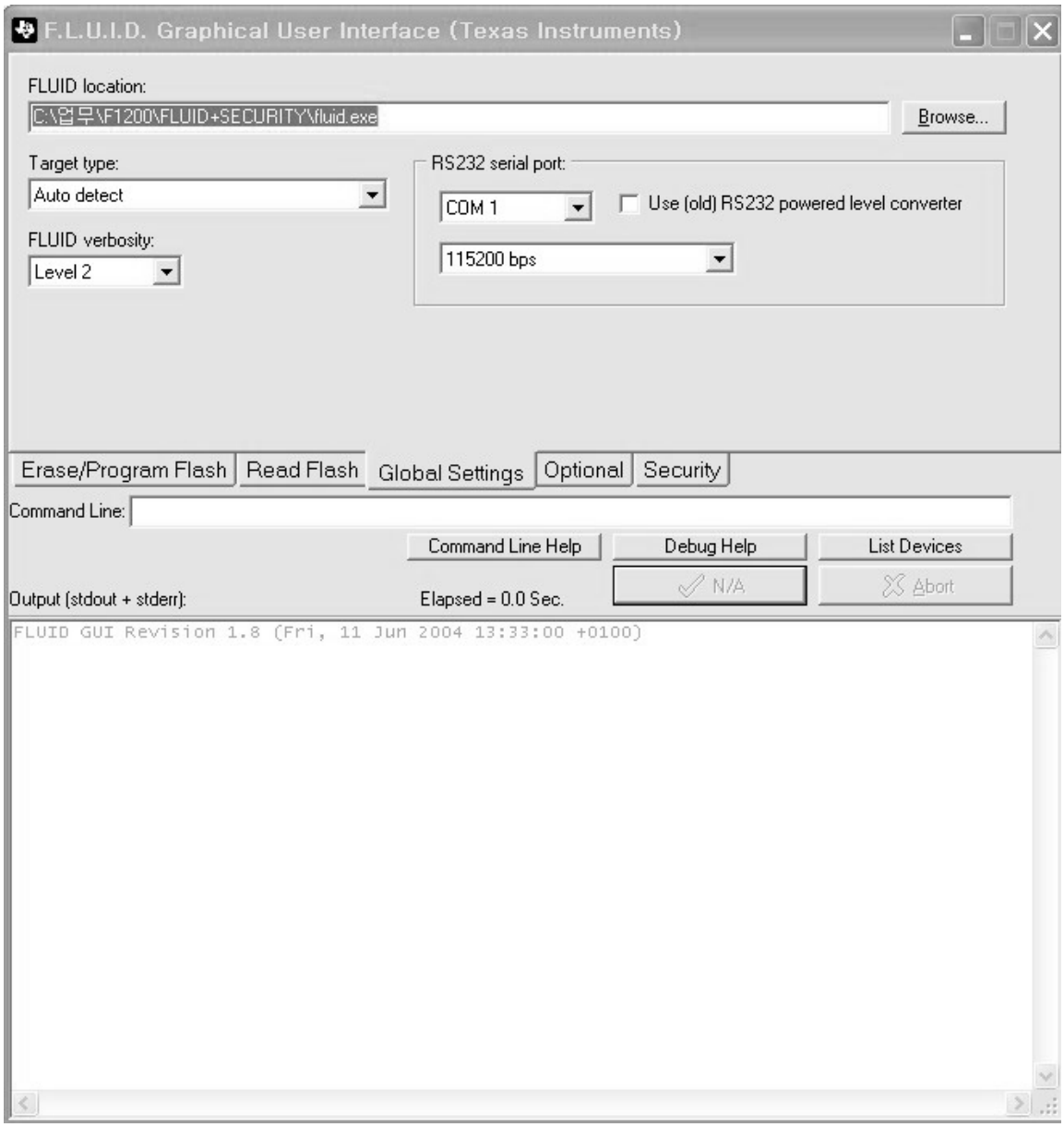
2. Click the “Add” button. Then, choose m0 file which is going to download.



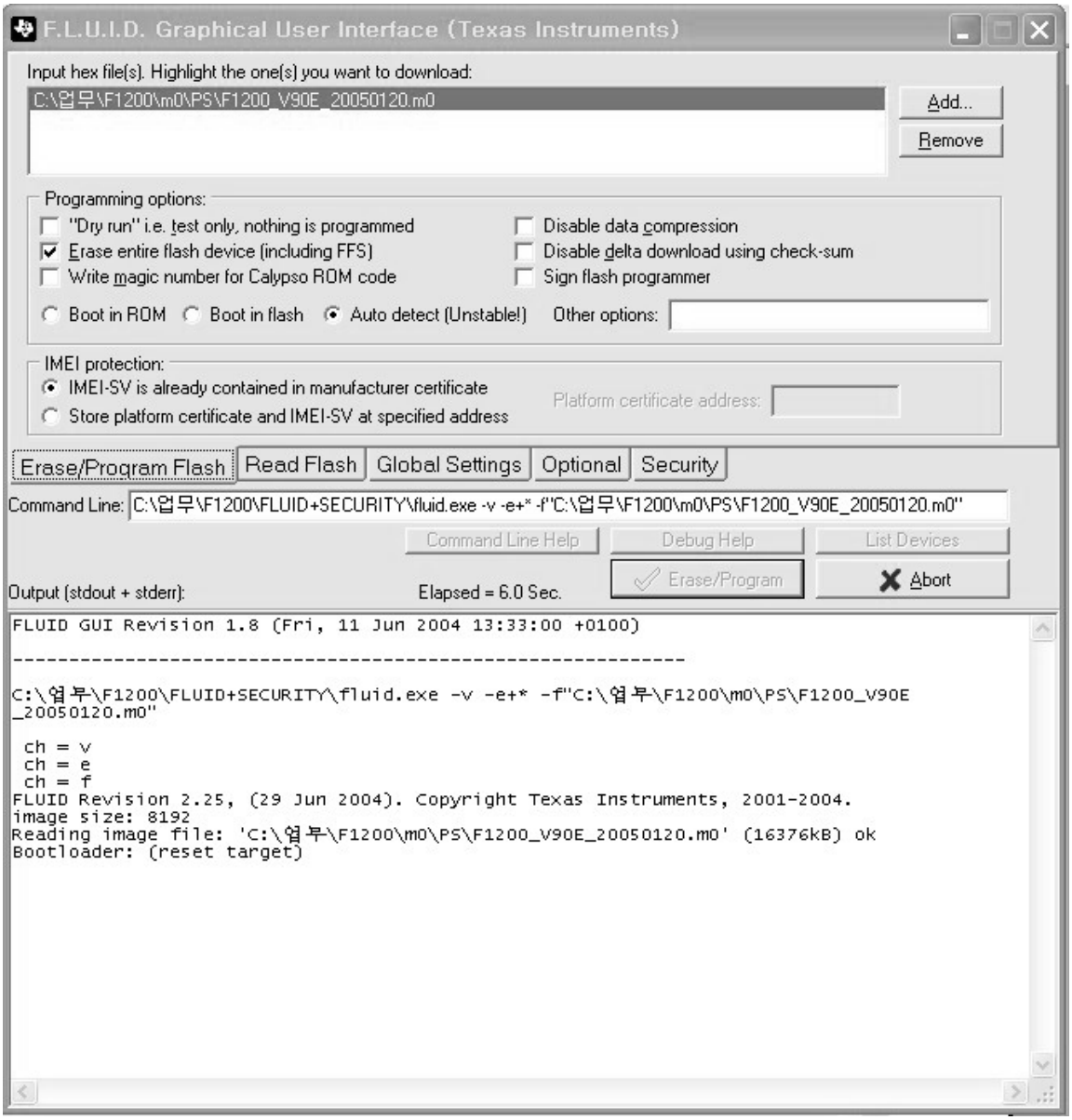
3. You must choose three programming options in programming options box.



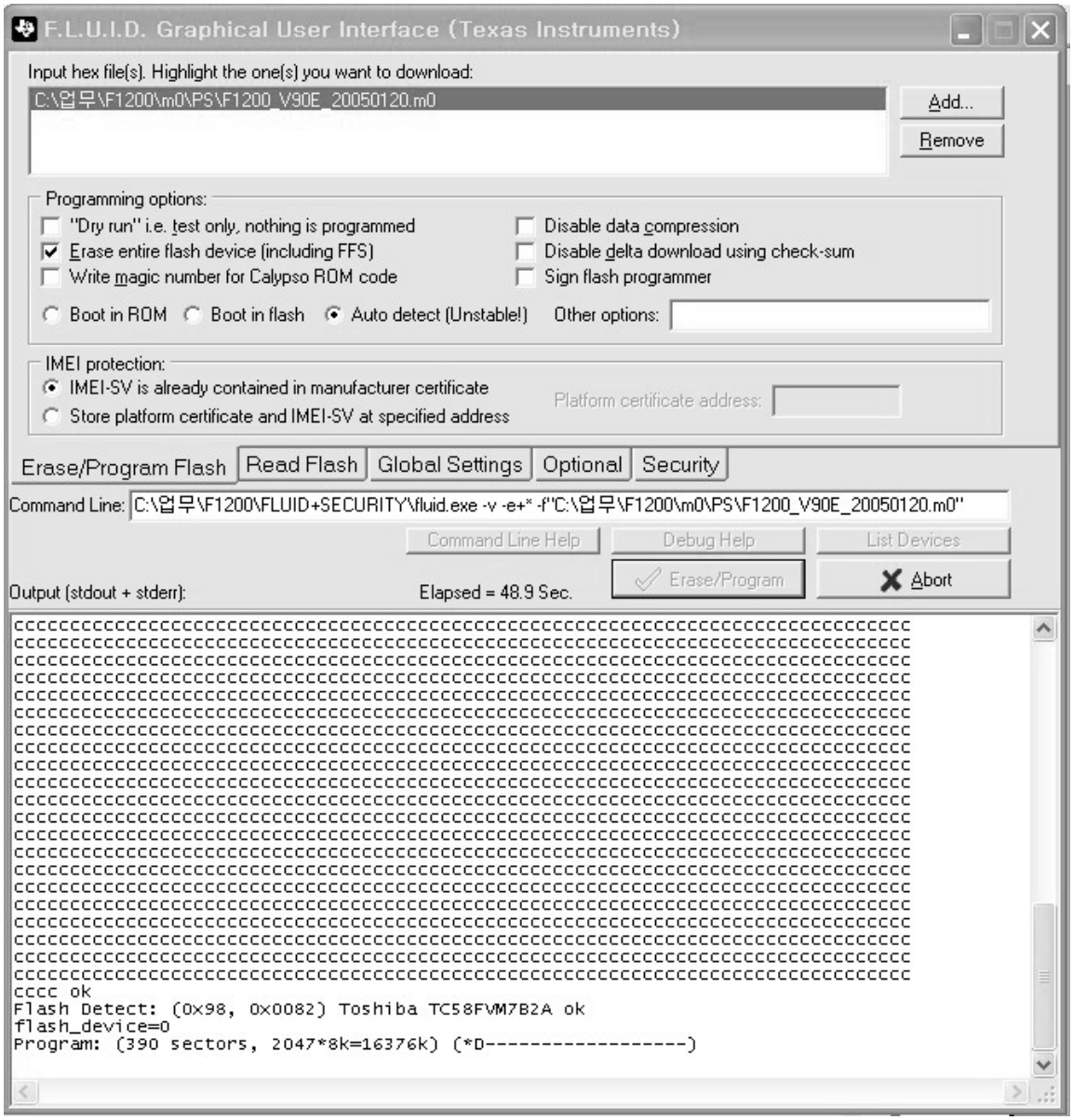
4. Press “Global Settings” menu. Choose a correct serial port and set the configuration as below.



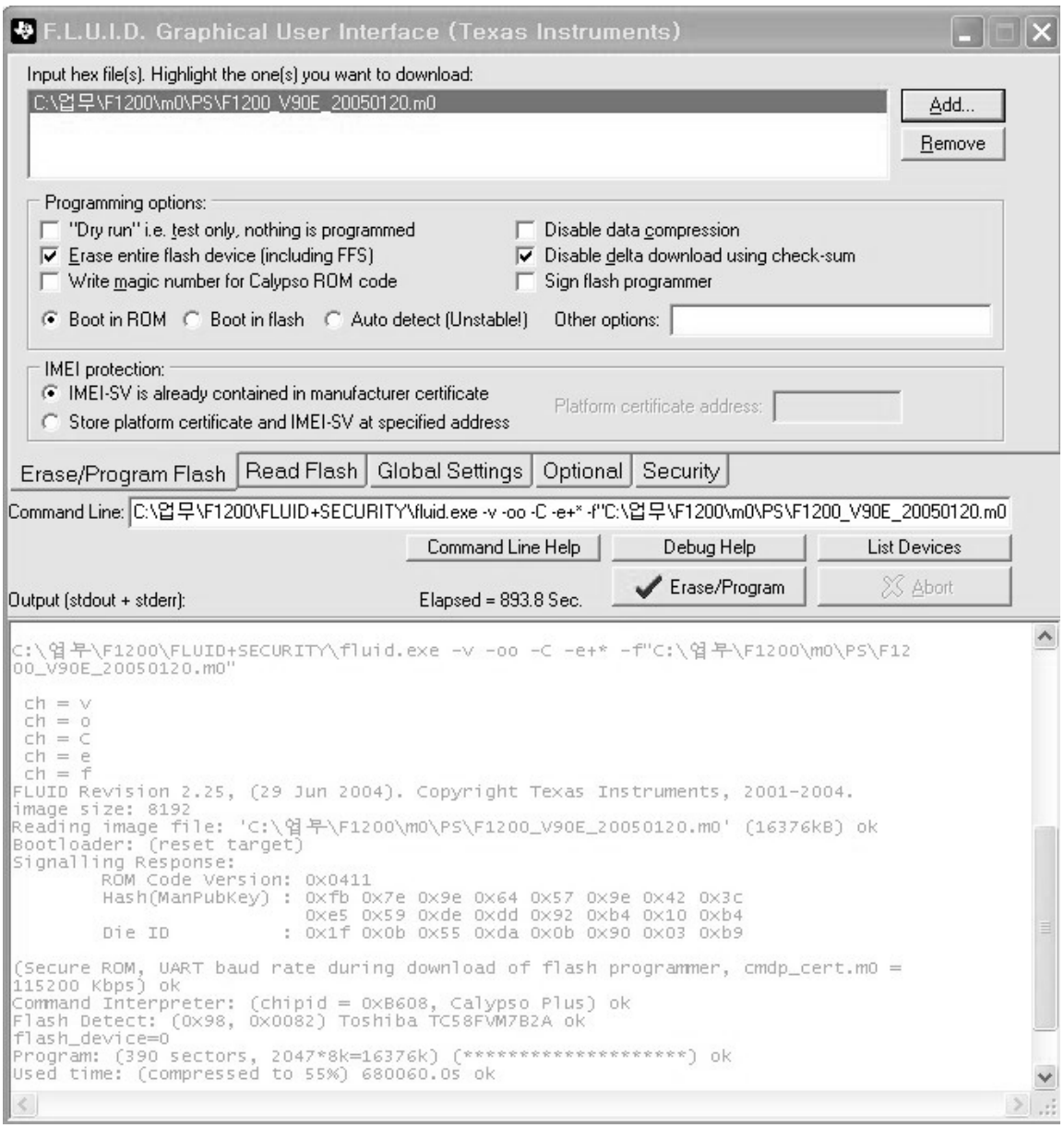
5. After checking programming options, Click “Erase/Program” button. If you click “Erase/Program” button, you will be able to see that “(reset target)” is displayed in the “Output” window. And then if you push shortly the “Power key” of the mobile, downloading will be started.



6. Wait for downloading to be finished.

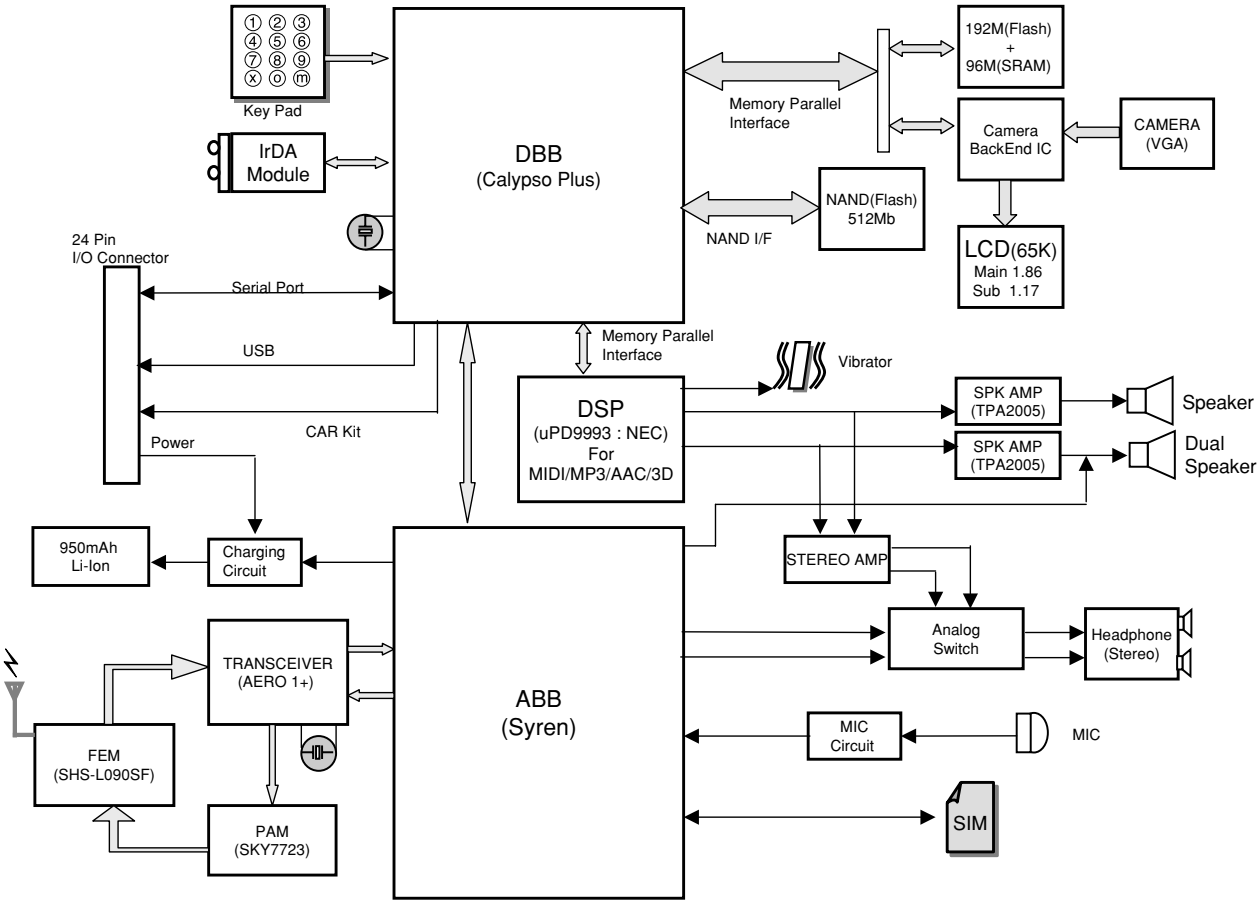


7. If downloading is finished, we can switch on the mobile. When you switch on the mobile first time after downloading, you must not remove the battery until switch-on procedure is completed. If you remove the battery before switch-on procedure is completed, we will not be able to save user data in the flash memory of the mobile.

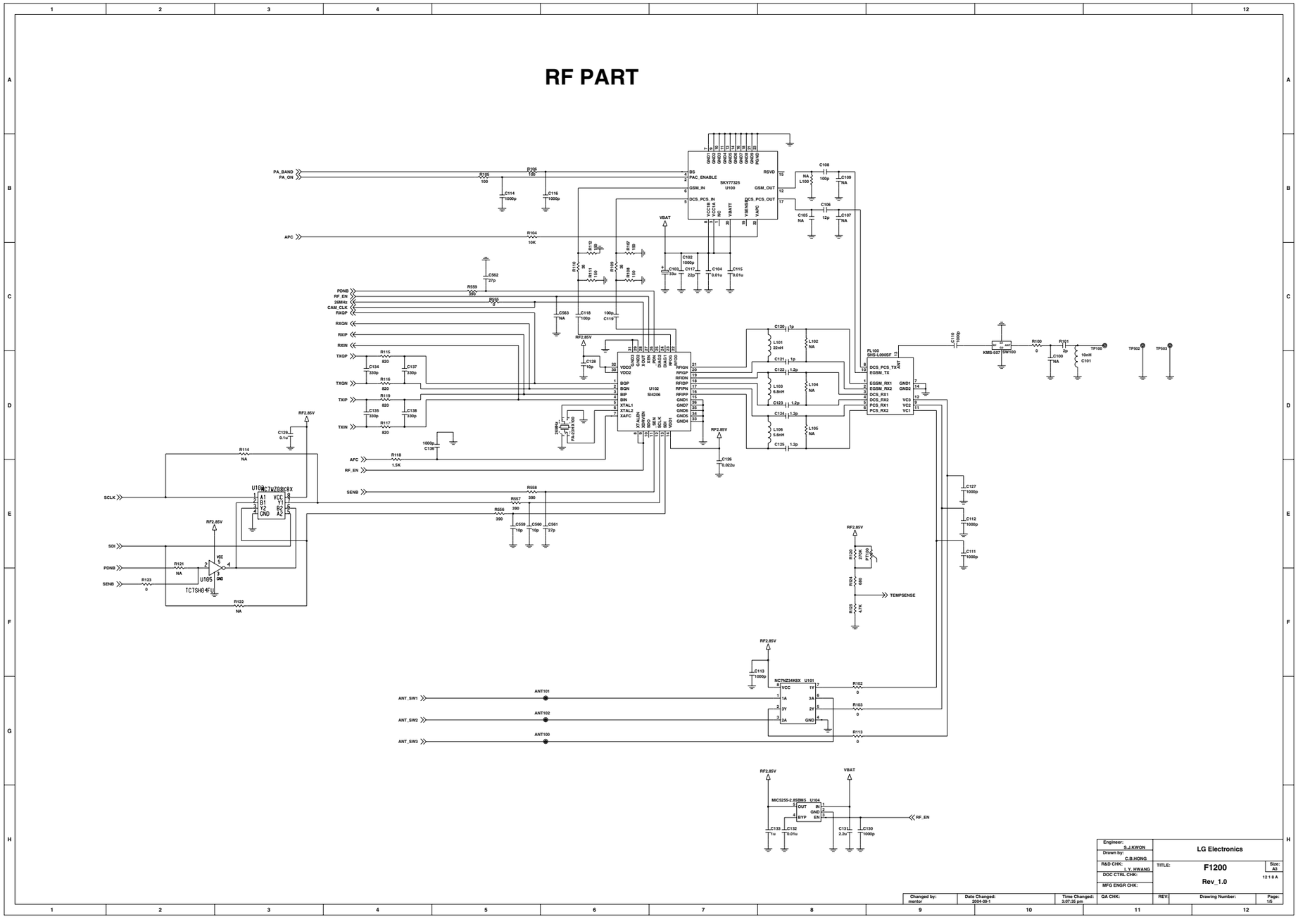


7. BLOCK DIAGRAM

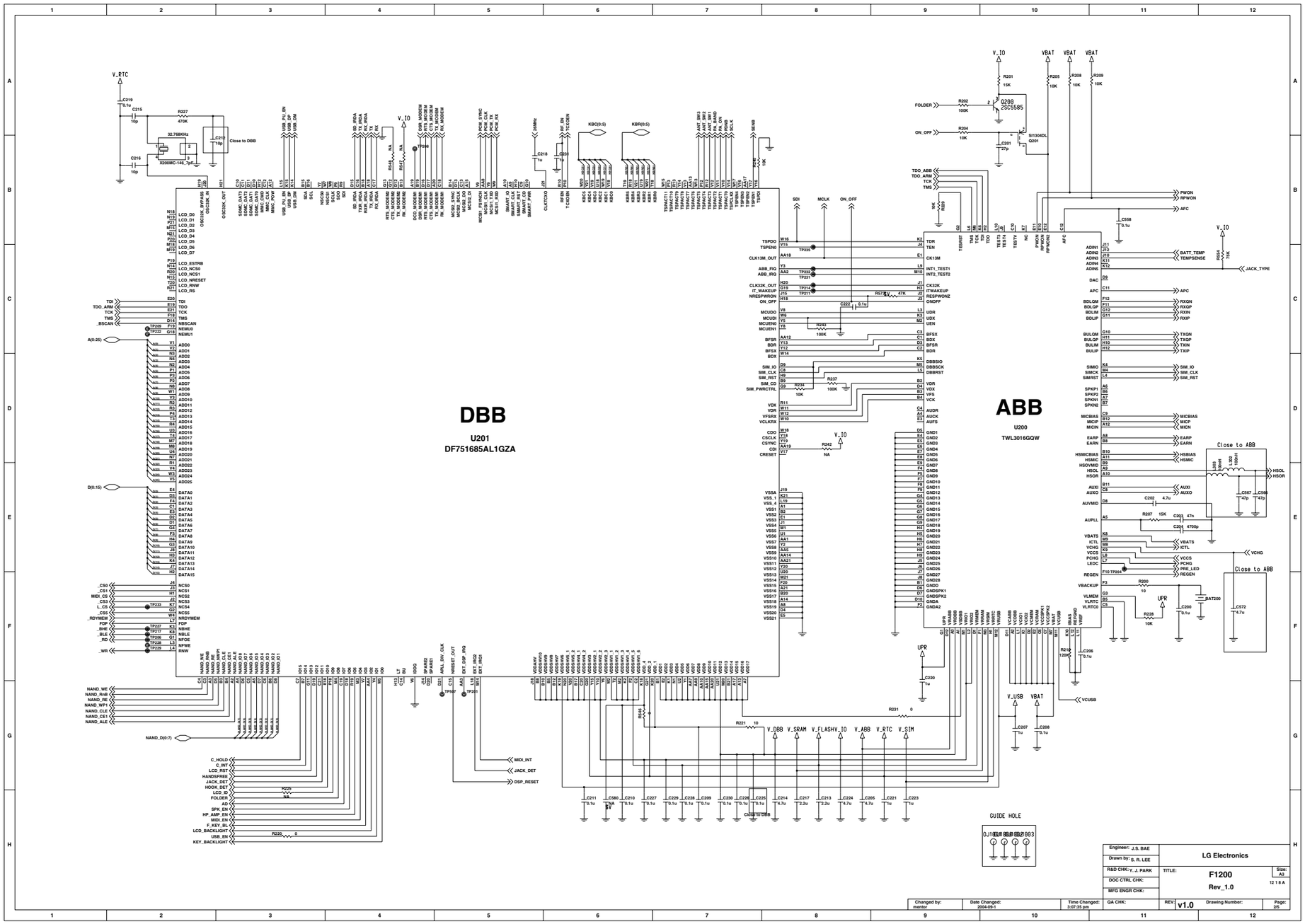
BLOCK DIAGRAM for F1200

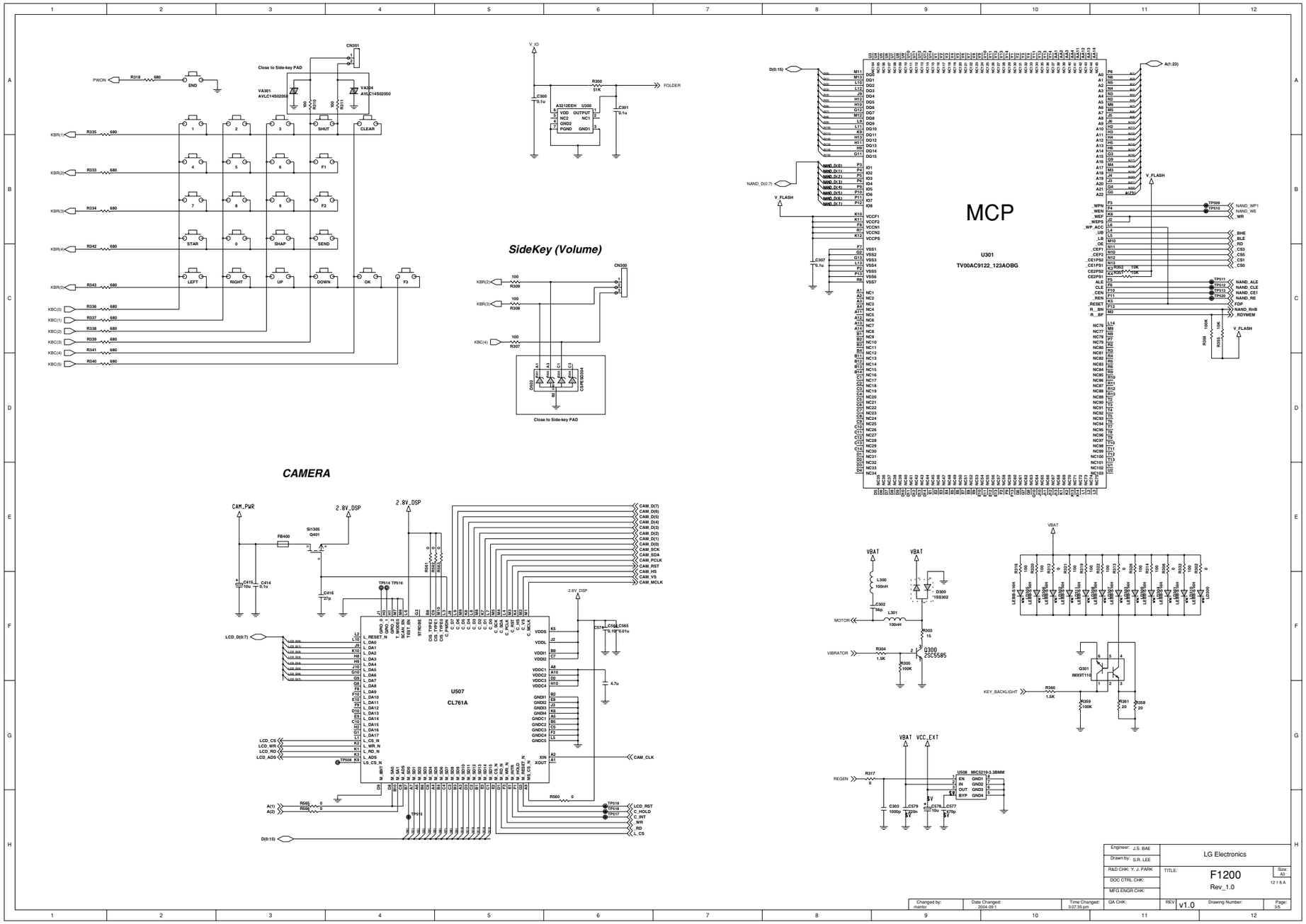


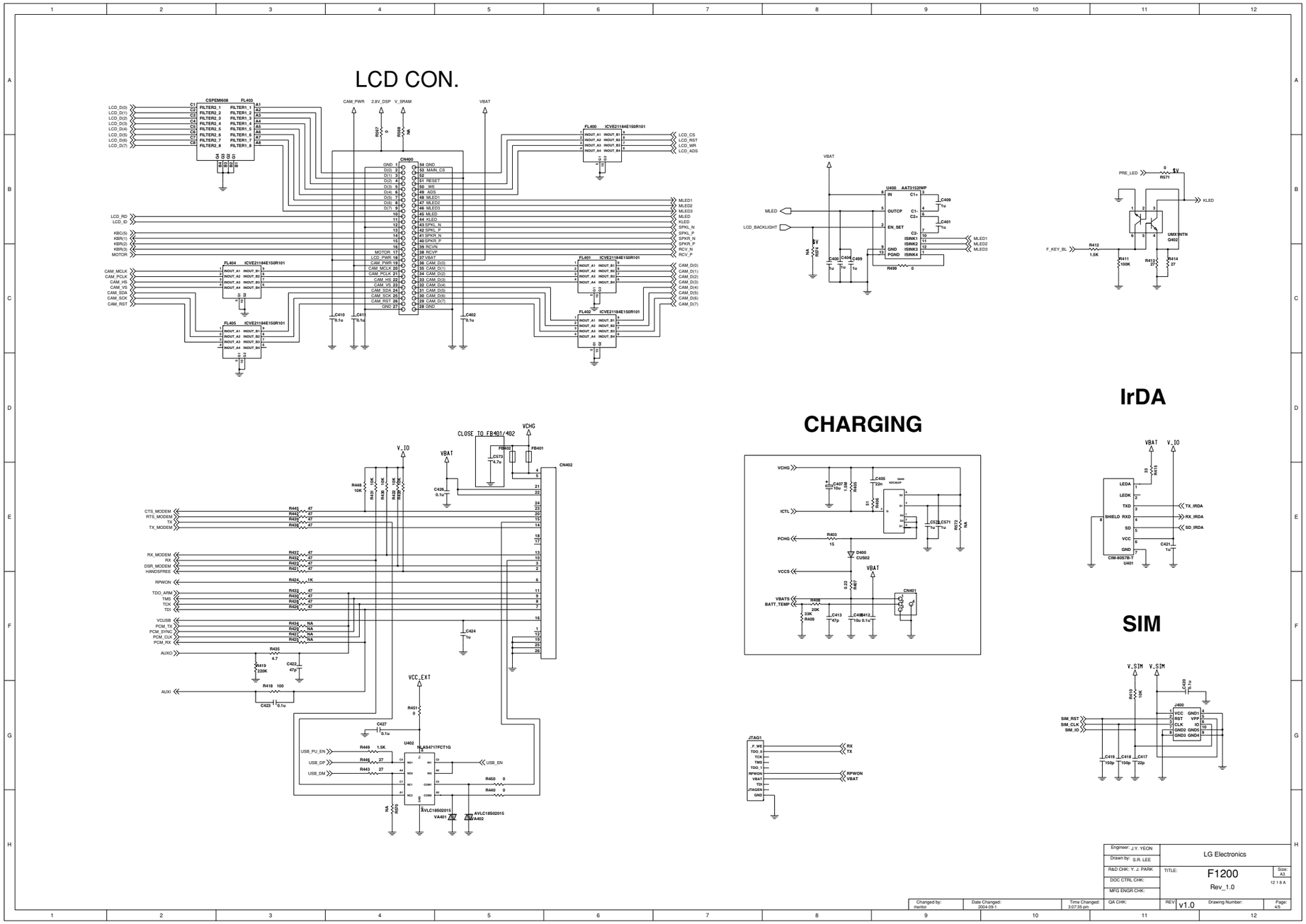
8. CIRCUIT DIAGRAM

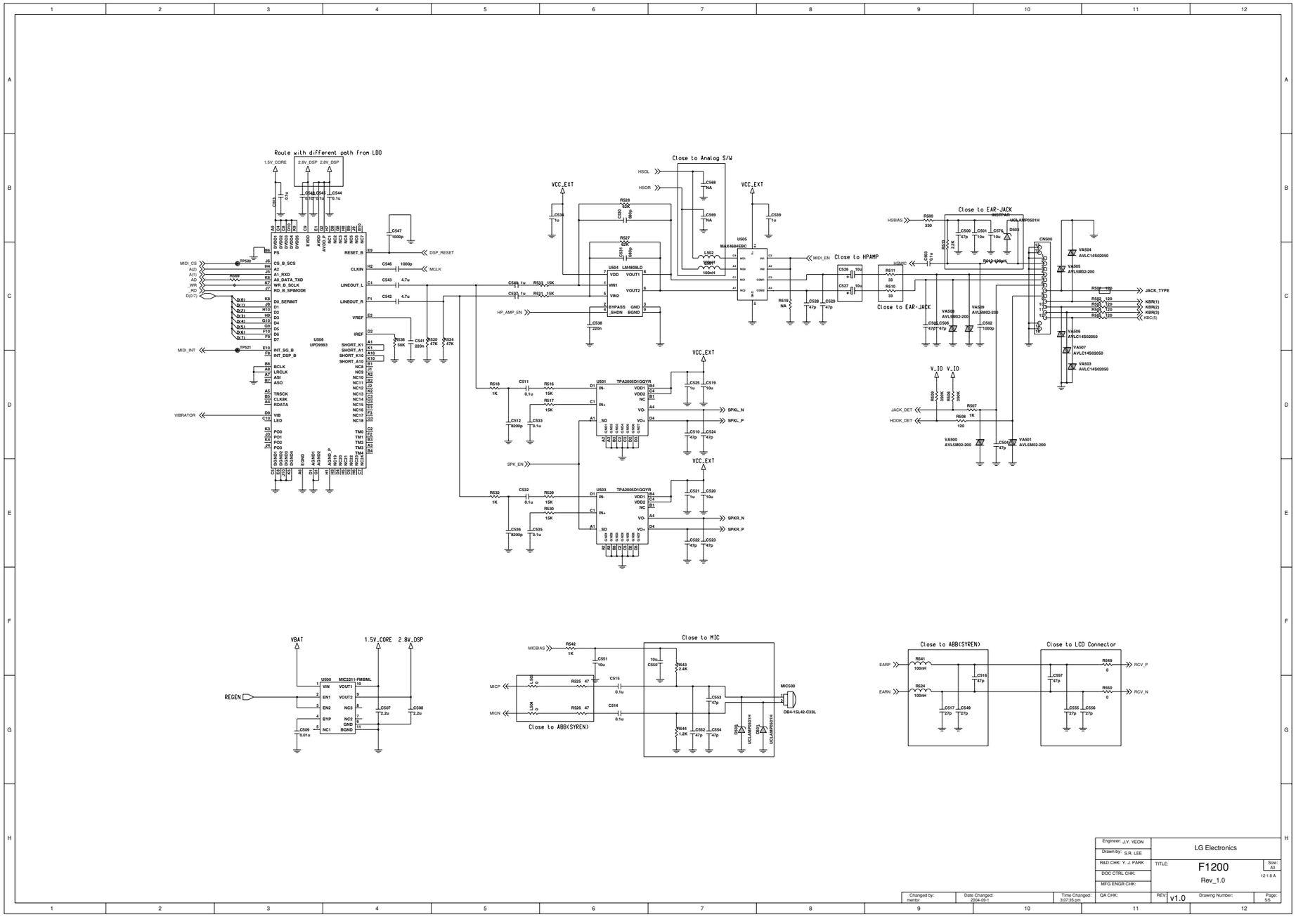


Engineer: S.J.KWON	LG Electronics
Drawn by: C.B.HONG	
R&D CHK: I. Y. HWANG	TITLE: F1200 Rev_1.0
DOC CTRL CHK:	Size: A3
MFG ENGR CHK:	12 1 8 A
Changed by: mentor	Date Changed: 2004-08-1
Time Changed: 3:07:35 pm	QA CHK:
REV	Drawing Number:
Page: 1/5	

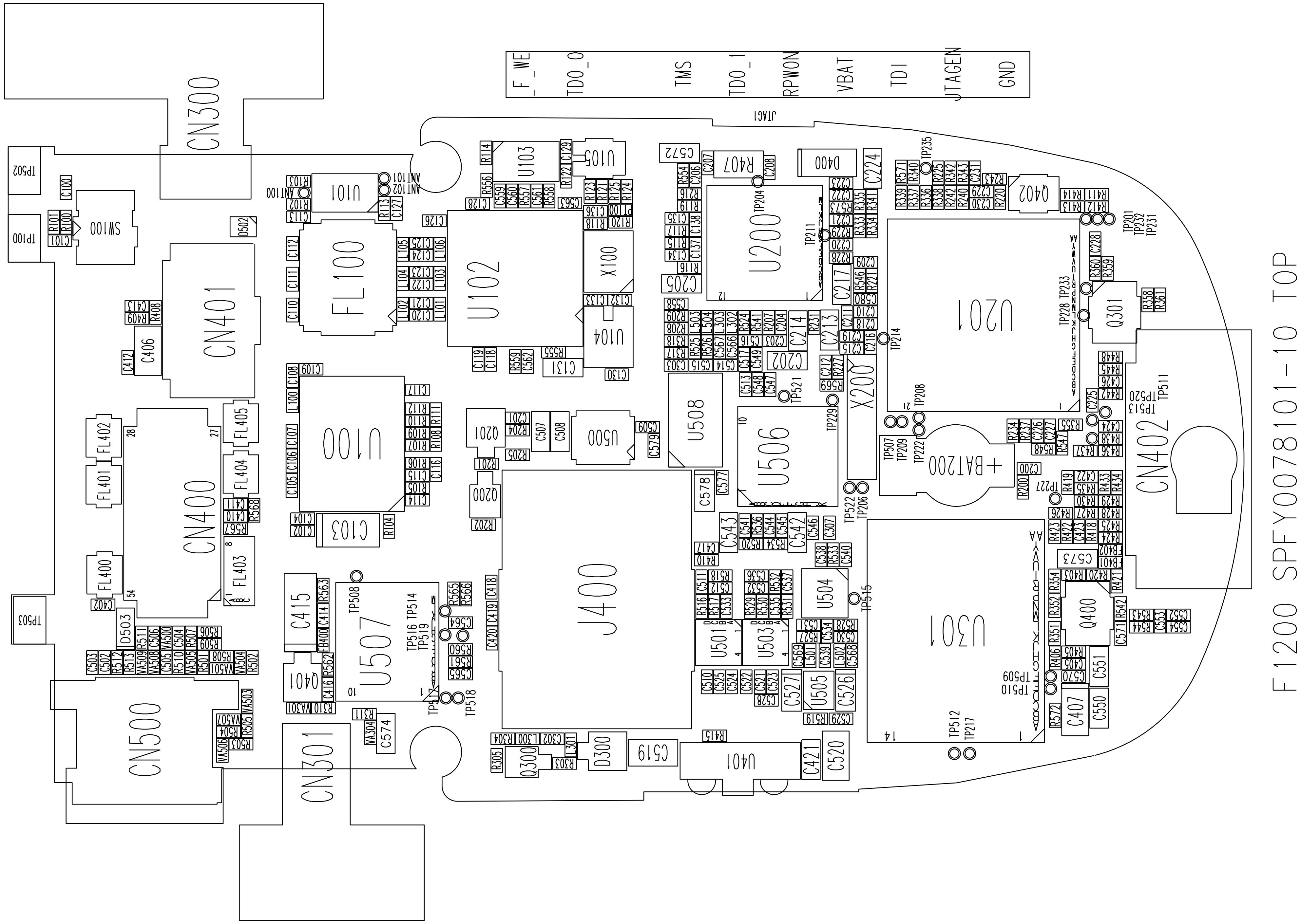

DBB
U201
DF751685AL1GZA
ABB
U200
TWL3016GQW
V_RTC
V_IO
VBAT
X200MC-146.7pF
Close to DBB
Close to ABB
SI1304DL
Q201
Q200
2SC5585
SDI
MCLK
ON_OFF
MIDI_INT
JACK_DET
DSP_RESET
GUIDE HOLE
LG Electronics
F1200
Rev_1.0
Engineer: J.S. BAE
Drawn by: S. R. LEE
R&D CHK: Y. J. PARK
DOC CTRL CHK:
MFG ENGR CHK:
QA CHK:
REV: V1.0
Drawing Number:
Page: 2/5
Changed by: mentor
Date Changed: 2004-09-1
Time Changed: 3:07:35 pm

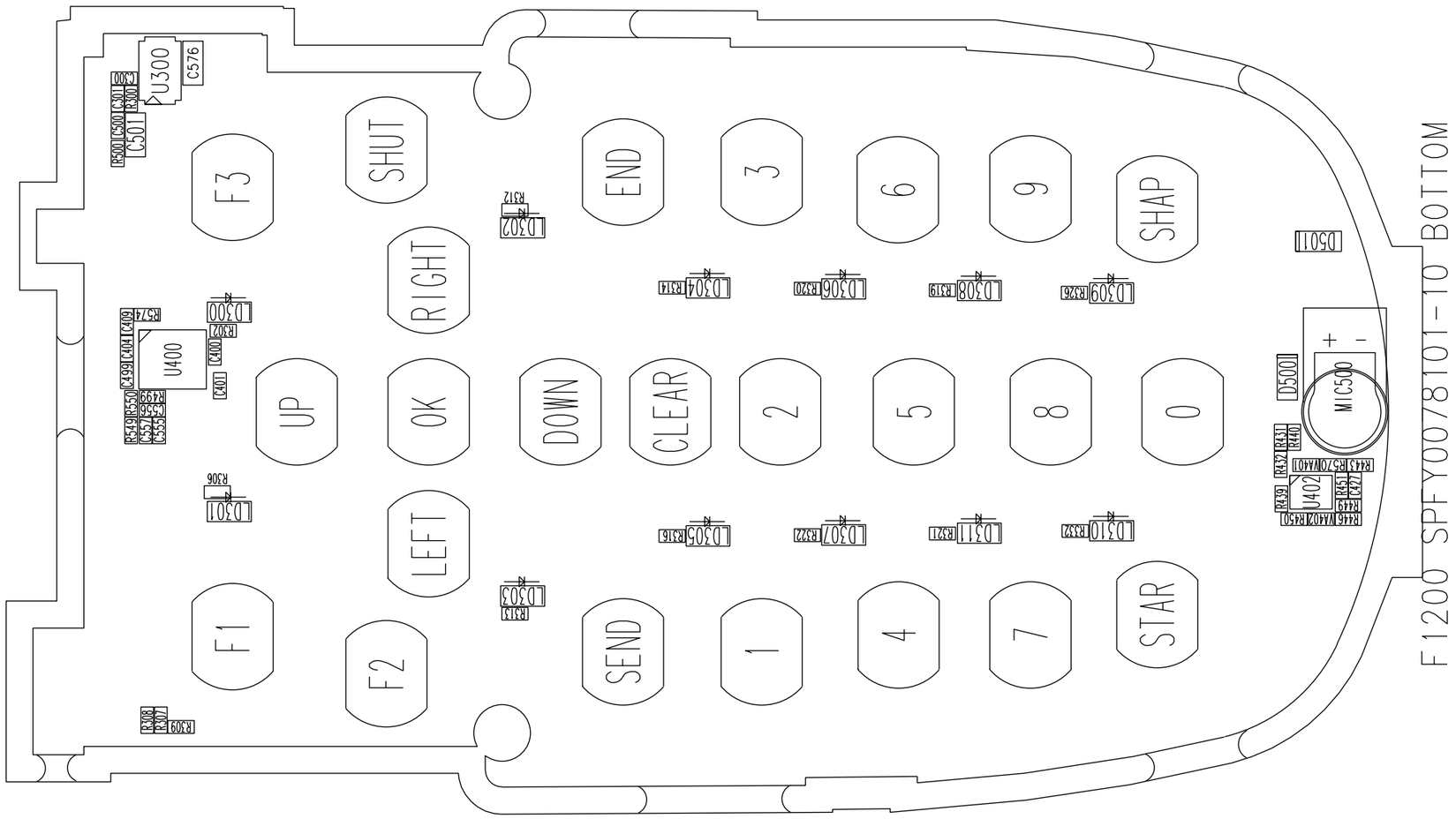

SideKey (Volume)
CAMERA
MCP
U301
TV00AC9122_123AOBG
U507
CL761A
LG Electronics
F1200
Rev_1.0


LCD CON.
CHARGING
IrDA
SIM
CN400
CN402
FL400 ICVE21184E150R101
FL401 ICVE2118E150R101
FL403 CSPEM8608
FL404 ICVE2118E150R101
FL405 ICVE2118E150R101
U400 AAT3152IWP
U402 NLAS4717FCT1G
U401 CIM-80S7B-T
CN401
J400
JTAG1
LCD_CS
LCD_RST
LCD_WR
LCD_ADS
MAIN_CS
RESET
WR
ADS
RD
MLED1
MLED2
MLED3
MLED
KLED
SPKL_N
SPKL_P
SPKR_N
SPKR_P
RCV_N
RCV_P
MOTOR
KBC(S)
KBR(1)
KBR(2)
KBR(3)
CAM_D(0)
CAM_D(1)
CAM_D(2)
CAM_D(3)
CAM_D(4)
CAM_D(5)
CAM_D(6)
CAM_D(7)
CAM_MCLK
CAM_PCLK
CAM_HS
CAM_VS
CAM_SDA
CAM_SCK
CAM_RST
LCD_RD
LCD_ID
LCD_D(0)
LCD_D(1)
LCD_D(2)
LCD_D(3)
LCD_D(4)
LCD_D(5)
LCD_D(6)
LCD_D(7)
CAM_PWR
2.8V_DSP
V_SRAM
VBAT
VCHG
CLOSE TO FB401/402
V_IO
VCC_EXT
USB_PU_EN
USB_DP
USB_DM
USB_EN
CTS_MODEM
RTS_MODEM
TX
TX_MODEM
RX_MODEM
RX
DSR_MODEM
HANDSFREE
RPWON
TDO_ARM
TMS
TCK
TDI
VCUSB
PCM_TS
PCM_SYNC
PCM_CLK
PCM_RX
AUXO
AUXI
MLED
LCD_BACKLIGHT
VCHG
ICTL
PCHG
VCCS
VBATS
BATT_TEMP
D400 CUS02
PRE_LED
KLED
F_KEY_BL
TX_IRDA
RX_IRDA
SD_IRDA
V_SIM
SIM_RST
SIM_CLK
SIM_IO
RX
TX
RPWON
VBAT


Route with different path from LDO
Close to Analog S/W
Close to HPAMP
Close to EAR-JACK
Close to ABB(SYREN)
Close to MIC
Close to LCD Connector
VCC_EXT
1.5V_CORE
2.8V_DSP
VBAT
V_IO
MIDI_CS
MIDI_INT
VIBRATOR
DSP_RESET
MCLK
HP_AMP_EN
MIDI_EN
SPK_EN
HSBIAS
JACK_DET
HOOK_DET
JACK_TYPE
KBR(1)
KBR(2)
KBR(3)
KBC(5)
SPKL_N
SPKL_P
SPKR_N
SPKR_P
REGEN
MICBIAS
MICP
MICN
EARP
EARN
RCV_P
RCV_N
OB4-15L42-C33L
LG Electronics
F1200
Rev_1.0

9. PCB LAYOUT


F1200 SPFY0078101-10 TOP
F_WE
TDO_0
TMS
TDO_1
RPWON
VBAT
TDI
JTAGEN
GND


F1200 SPFY007810I-10 BOTTOM
U300
C576
C300
R300
C301
C501
R500
C500
C301
F3
SHUT
END
3
6
9
SHAP
RIGHT
D302
R312
D304
R314
D306
R320
D308
R319
D309
R326
D501I
U400
D300
R307
C400
C401
C409
R574
C399
R549
R550
R556
C557
C555
R399
C402
UP
OK
DOWN
CLEAR
2
5
8
0
D301
R306
D305
R316
D307
R322
D311
R321
D310
R327
LEFT
F1
F2
SEND
1
4
7
STAR
R308
R307
R309
D500I
MIC500
R431
R440
R432
R439
U402
R445
R570
R446
R440
R450
R449

Note

10. ENGINEERING MODE

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

The key sequence for switching the engineering mode on is “2 9 4 5 # * # ” Select.

Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press ‘select’ key to progress the test. Pressing ‘back’ key will switch back to the original test menu.

[1] All Auto test

[2] Baseband test

[2-1] LED

[2-1-1] Back light

[2-1-2] Indicator LED

[2-2] LCD

[2-2-1] LCD Auto

[2-2-2] LCD Color

[2-2-3] LCD Quality

[2-3] Camera

[2-3-1] Preview

[2-3-2] Settings

[2-4] Font

[2-4-1] Font8 X 10

[2-4-2] Font8 X 10i

[2-4-3] Font8 X 16

[2-4-4] Font8 X 16i

[2-4-5] Font8 X 16b

[2-4-6] Font10X18

[2-4-7] Font8 X 19

[2-4-8] Font13 X 20

[2-5] Alert

[2-5-1] Vibrator

[2-5-2] Ring

[2-5-3] Effect Sound

[2-5-4] iMelody Sound

[2-5-5] EMS Sound

[2-5-6] Speaker Teste

[2-6] Serial Port

[2-6-1] Modem

[2-6-2] Irda

[2-7] Battery Info1

[2-8] Audio Gain

[2-8-1] Receiver

[2-8-1-1] Voice

[2-8-1-1-1] Link Volume

[2-8-1-1-2] Sidetone

[2-8-1-2] Keytone

[2-8-1-1-1] Link Volume

[2-8-1-1-2] Sidetone

[2-8-1-3] Echo Control

[2-8-2] EarMic

[2-8-2-1] Voice

[2-8-2-1-1] Link Volume

[2-8-2-1-2] Sidetone

[2-8-2-2] Keytone

[2-8-2-1-1] Link Volume

[2-8-2-1-2] Sidetone

[2-8-2-3] Echo Control

[2-8-3] Loud Speaker

[2-8-3-1] Voice

[2-8-3-1-1] Link Speaker

[2-8-3-1-2] Sidetone

[2-8-3-2] Keytone

[2-8-3-1-1] Link Volume

[2-8-3-1-2] Sidetone

[2-8-3-3] Echo Control

[2-8-4] HANDSFREE

[2-8-4-1] Voice

[2-8-4-1-1] Link Volume

[2-8-4-1-2] Sidetone

[2-8-4-2] Keytone

[2-8-4-1-1] Link Volume

[2-8-4-1-2] Sidetone

[2-8-4-3] Echo Control

[2-8-5] Default Value

[2-8-6] DAI Test

[2-9] Irda Test

[2-10]Format NAND

[3] F1200 Vers

[4] Eng Mode

[4-1] Cell Environ.

[4-2] Location Info

[4-3] Layer1 Info

[4-4] Band Selection

[4-5] CMU200 BLER

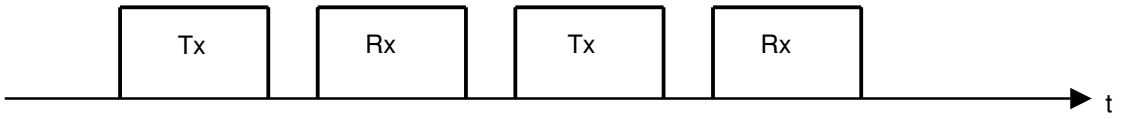
[5] Factory Default

11. STAND ALONE TEST

11.1 What's the Standalone Test?

Set the Phone to Perform only Tx or Rx mode for monitoring performance of Tx part or Rx part only.

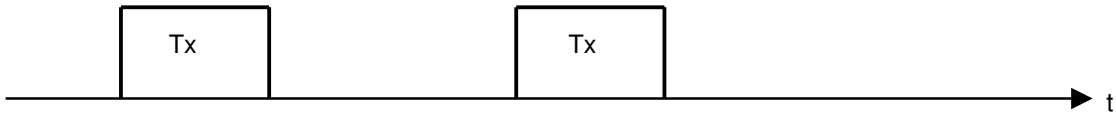
1. Normal Call



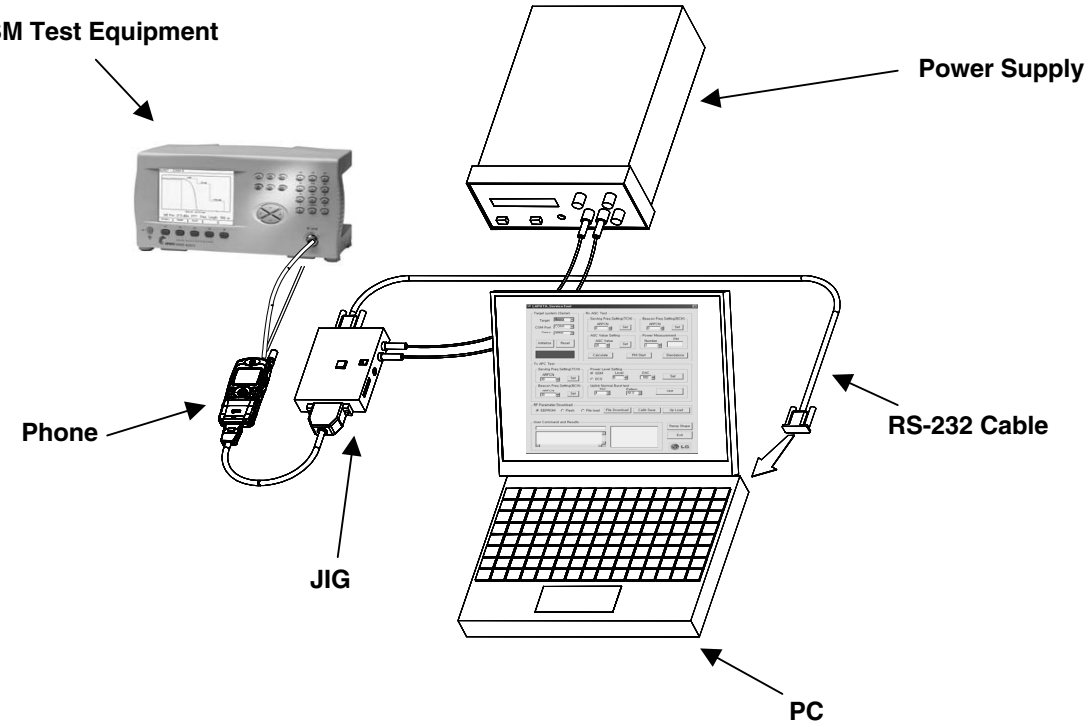
2. Standalone

- During Rx Standalone

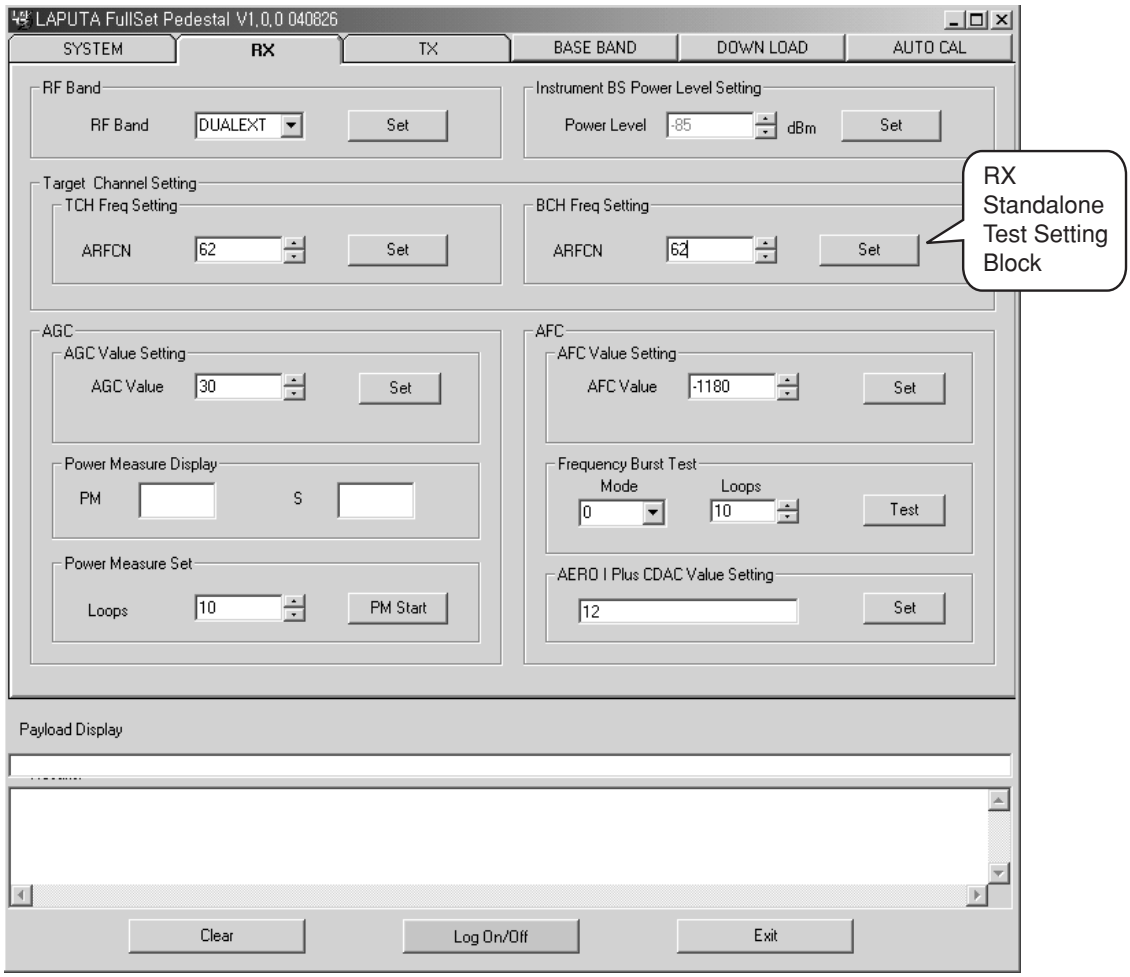
- During Tx Standalone

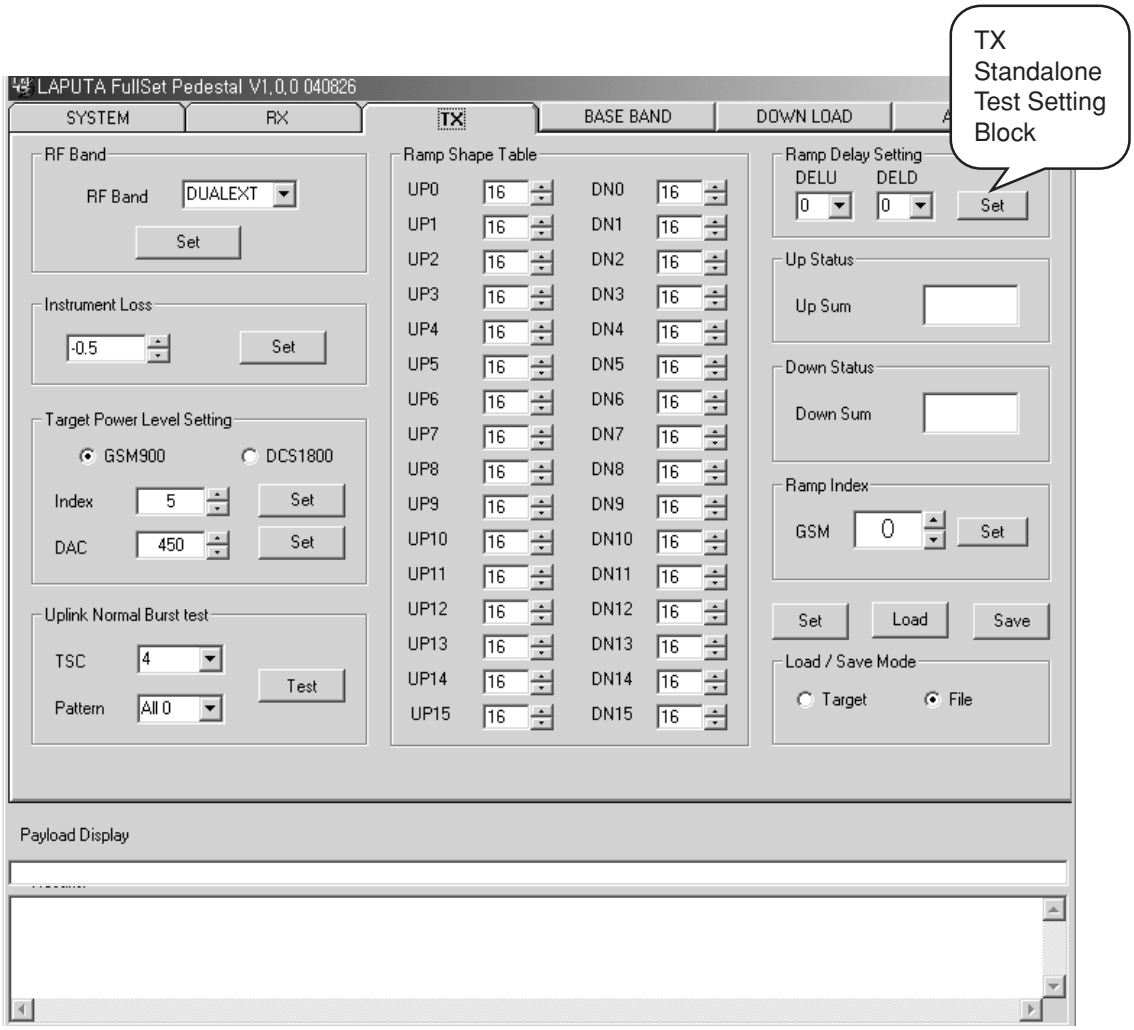


11.2 Standalone Test Equipment Setup



11.3 HW Test : Software for Standalone Test Setup




TX Standalone Test Setting Block
LAPUTA FullSet Pedestal V1.0.0 040826
SYSTEM
RX
TX
BASE BAND
DOWN LOAD
RF Band
RF Band
DUALEXT
Set
Instrument Loss
-0.5
Set
Target Power Level Setting
GSM900
DCS1800
Index
5
Set
DAC
450
Set
Uplink Normal Burst test
TSC
4
Pattern
All 0
Test
Ramp Shape Table
UP0 16 DN0 16
UP1 16 DN1 16
UP2 16 DN2 16
UP3 16 DN3 16
UP4 16 DN4 16
UP5 16 DN5 16
UP6 16 DN6 16
UP7 16 DN7 16
UP8 16 DN8 16
UP9 16 DN9 16
UP10 16 DN10 16
UP11 16 DN11 16
UP12 16 DN12 16
UP13 16 DN13 16
UP14 16 DN14 16
UP15 16 DN15 16
Ramp Delay Setting
DELU
DELD
0
0
Set
Up Status
Up Sum
Down Status
Down Sum
Ramp Index
GSM
0
Set
Set
Load
Save
Load / Save Mode
Target
File
Payload Display

11.4 Tx Stand alone Test Setting

1. Setting the Test Equipment as 'Test Mode-BCH'

Example)
For HP8960
On the Control Window
Operating Mode : Test
Test Function : BCH

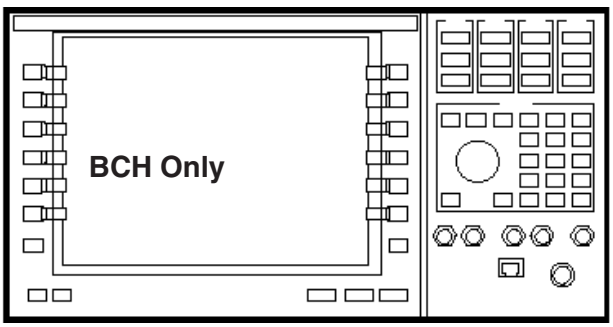
For HP8922
Operating mode : Test Mode

2. Setting Channel and Power

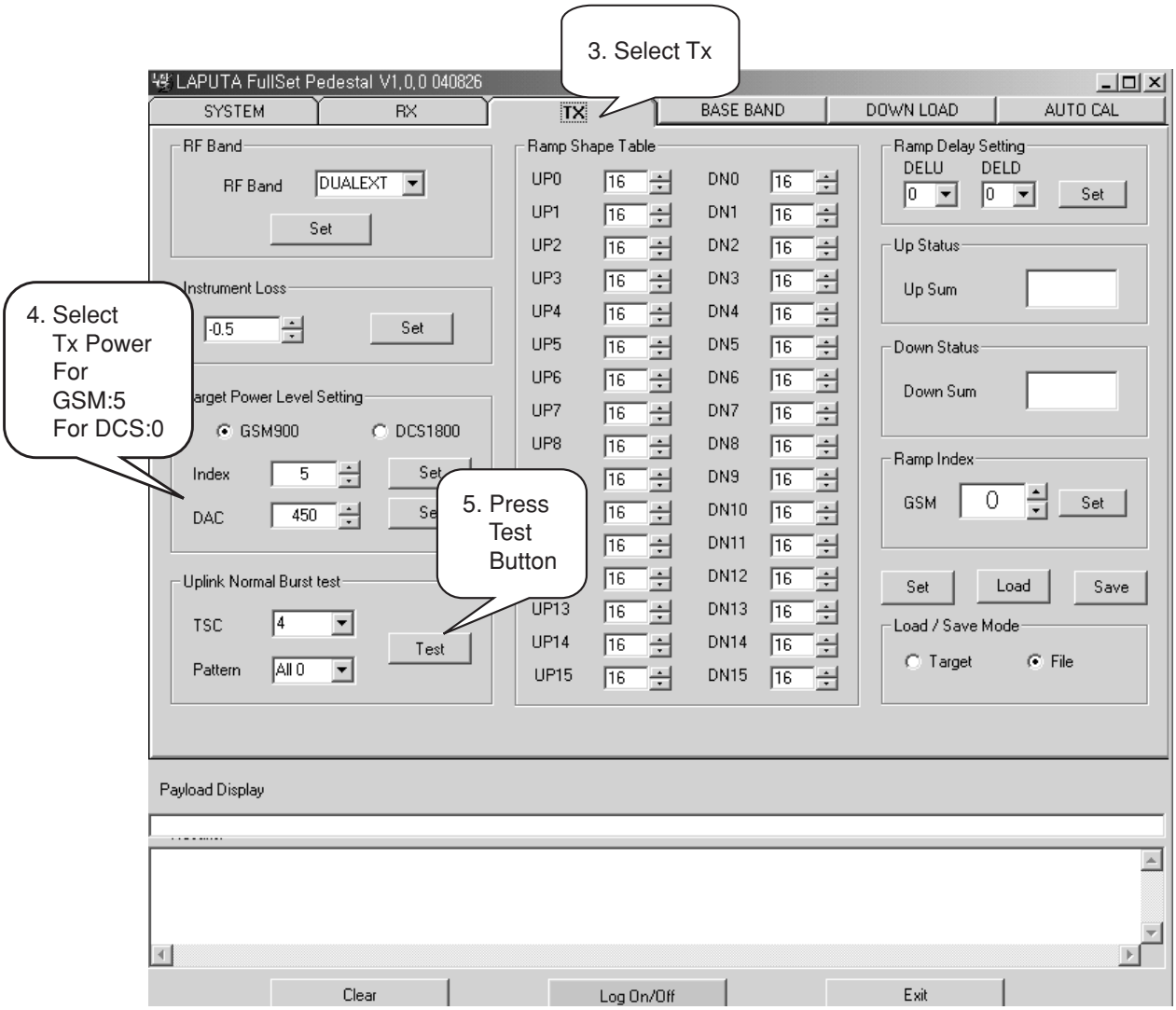
For GSM
BCH : 62 CH
TCH : 62 CH
Tx Level : 5

For DCS
BCH : 700 CH
TCH : 700 CH
Tx Level : 0

For PCS
BCH : 512 CH
TCH : 512 CH
TX Level : 0



Tx Stand alone Test Setting



11.5 Rx Stand alone Test Setting

1. Setting the Test Equipment as 'CW Mode'

Example)

For HP8960
On the Control Window
Operating Mode : Test
Test Function : CW

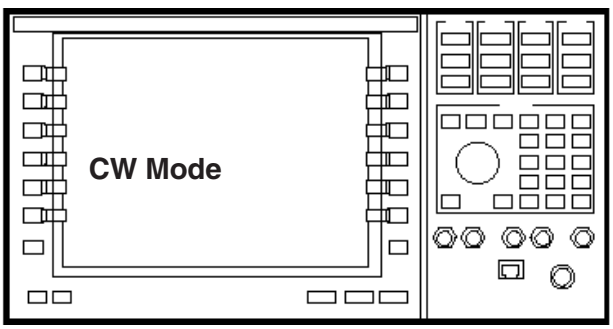
For HP8922
Operating mode : CW Generator

2. Setting Channel and Power

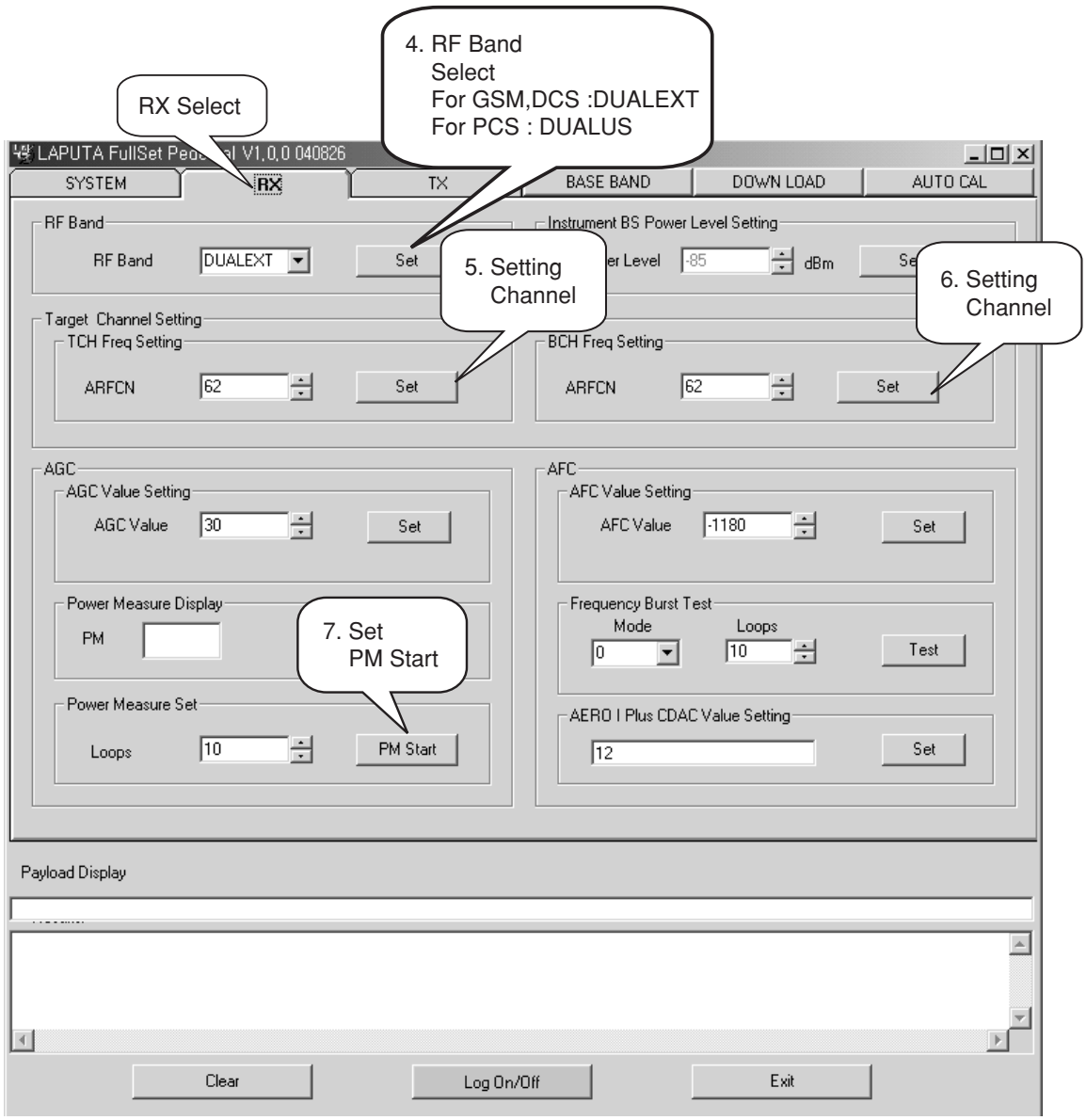
For GSM
BCH : 62 CH
TCH : 62 CH
Tx Level : 5

For DCS
BCH : 700 CH
TCH : 700 CH
Tx Level : 0

For PCS
BCH : 512 CH
TCH : 512 CH
TX Level : 0



Rx Stand alone Test Setting



12. SERVICE AND CALIBRATION

12.1 Service S/W

12.1.1 Overview

This service S/W is used for Calibration and Standalone test.

12.1.2 Hardware and Software Environment

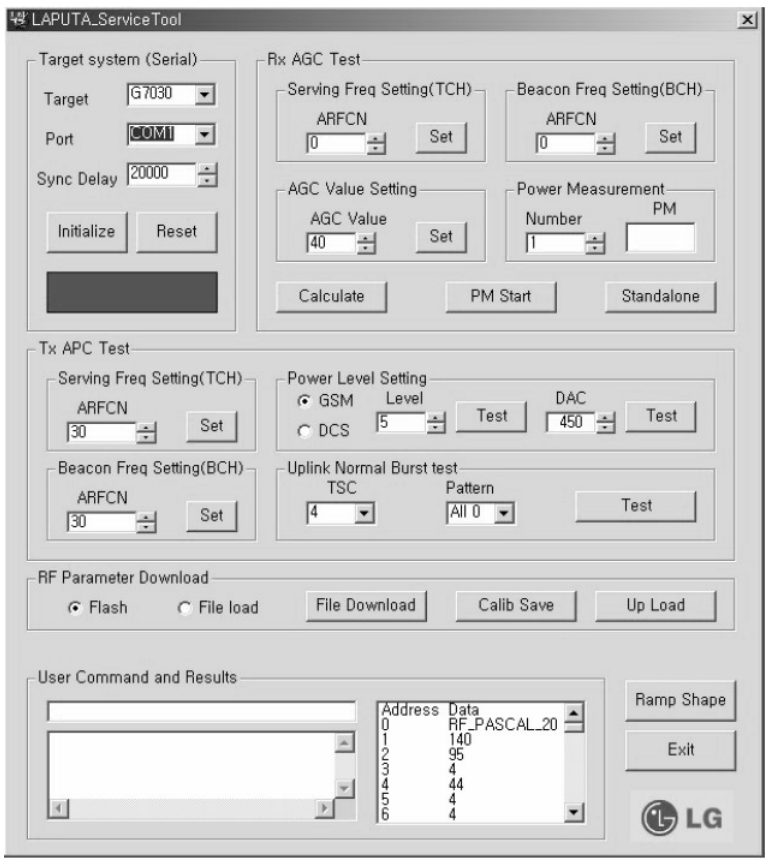
- More than 486 computer
- 16Mbyte RAM
- Remained more than 10Mbyte in Hard Disk Memory
- Under Microsoft window 98 or more than

12.1.3 Software Installation

Unzip the phones service software provided where slide you want there are some files extracted in that slide. Start Setup.exe in Service software setup slide. RampTable.dat, default transmit ramping table, and rf_original_F1200.epm, default calibration data, are located in window system slide so that these files are loaded automatically, if you execute LaputaService.exe.

12.1.4 Common Properties of Service Software

When you execute this program, you'll see the below user interface window titled LAPUTA_Service Tool. The LAPUTA_Service Tool has five main frames.



A. Target System Frame

This is for initializing the target phone. When you use this program to test F1200 phone, you have to initialize target at first. To initialize target phone, select target (F1200 is default) and COM port used at your computer and then click the Initialize button. If target initializing is ended successfully, the box in red below the initialize button will turn into green.

B. RX AGC Test Frame

At this part, you can control receiver path of target phone.

Serving Freq. Setting (TCH)

You can set TCH of phone. The number means ARFCN of Traffic channel. You can change the value by clicking arrow button by one step or just entering the number directly.

Beacon Freq. Setting (BCH)

You can set BCH of phone. The number means ARFCN of base station broadcasting channel.

AGC Value Setting

You can set AGC gain of phone. The number means gain of AGC amplifier in Rx path.

Power Measurement

The number means channel index according to pre-defined ARFCN. There are 12 pre-defined ARFCNs within Rx band. 4 ARFCNs are for GSM and others for DCS,PCS. Clicking arrow button to change number, you can see TCH and BCH ARFCN changed automatically. PM window displays the power level measured in baseband chip. PM value is useful to calculate the received absolute power. The unit of PM is dBd.

PM Start

You can measure Rx power that target received from test equipment. When you click this button the result of power measurement displayed at PM blank in Power Measurement frame.
You can measure PM for all 12-channel indexes by changing Number and clicking PM Start.

Calculate

You have to do this work after measuring PM for all 12-channel indexes. When you click this button, service software calculate the calibration data from measured 12 PM data.

Standalone

This button makes target operate in Rx mode continuously. Target will be operated under the condition that you set. During continuous receiving mode, label of Standalone button is changed to Stop. If you want stop receiving mode operating, click this button one more.

C. TX APC Test Frame

At this part, you can control transmit path of target phone.

Serving Freq. Setting (TCH)

You can set TCH of phone. The number means ARFCN of Traffic channel.

Beacon Freq. Setting (BCH)

You can set BCH of phone. The number means ARFCN of base station broadcasting channel.

Power Level Setting

First, you have to choose operating mode (GSM or DCS,PCS) according to TCH and BCH frequency that you selected before. Then select the Level and adjust the DAC value. Level means GSM/DCS,PCS output power level. Usable range is 5 to 19 for GSM, 0 to 15 for DCS,PCS. DAC value is a factor to determine output power. Its variable range is 0 to 1023.

Uplink Normal Burst test

You can also control the traffic slot number be using by changing TCS value. Because GSM has 8-time slot, TCS value varies 0 to 7. Pattern is to select data format that is transmitted. You can send all data 0, or 1 or repeating of 1010. But it is good to you to using the default value because data format doesn't affect to RF characteristics.

Test

Transmitting is started when you click this button. During Transmitting, label of Test button is changed to Stop. If you want stop transmitting, click this button one more.

D. RF Parameter Download Frame

Saving epm file into Flash

When you have a epm file, contains calibrated data, and you want to download into target Flash, check Flash and click File Download button. Then you can see RF parameters Save window. Select epm file you want to save into Flash then click Open. During saving file into Flash, The statement bar indicating download process is displayed under the RF Parameter Download frame. As successfully ending download, information box will be appeared. Click Ok.

Saving Cal. Data to Flash

After Rx or Tx calibration, you can save the calibration results into Flash and epm file. Check Flash and click Calib Save button. Then you can see RF parameters Save window. Write the file name and click Save button.

E. User Command and Results Frame

Whenever you click button or make some event in service software, every ordered event is displayed in this frame. You can also see calibration results here.

F. Ramp shape button

This button is for burst shape table. But it is deactivated in service software.

12.2 Calibration

12.2.1 Overview

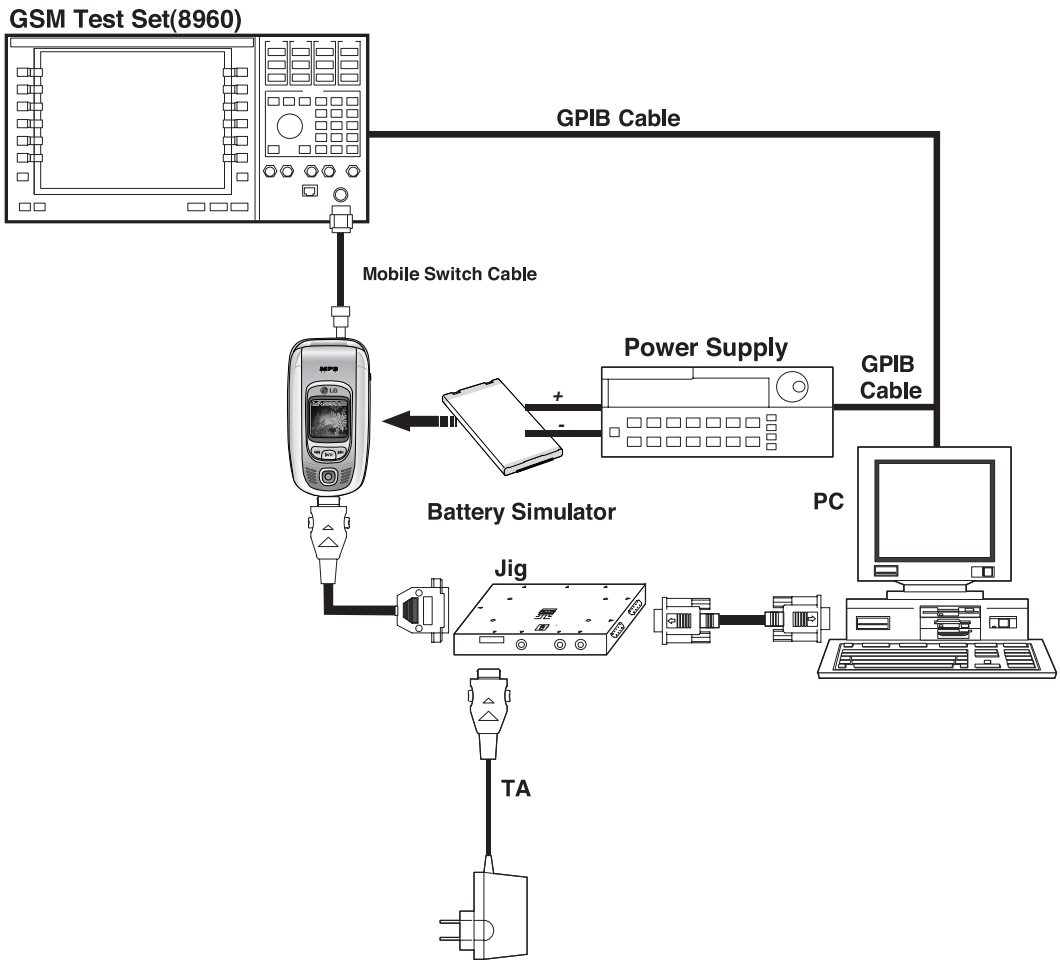
The calibration values of the phone reside on the Flash. The contents of the Flash can be read by the service software and saved as a file. This is advisable when there is need to retain that information, e.g. in view of replacement of the circuit. The program also enables writing the default parameters on the Flash, in which case all calibration steps should be carried out. The service software can't control the equipment, so only manual calibration process is possible.

12.2.2 Equipment List

Calibration Equipment List

Equipment for Calibration	Type/Model	Brand
Wireless Communication Test Set	HP-8960, HP8922, CMU200, any other call equipment	
RS-232 Cable and Test JIG		
RF Cable		
Power Supply		
Service S/W	Laputa	
PC (for Software Installation)	Pentium Ⅱ class above 300MHz	

Equipment Setup



12.2.3 Calibration steps

In order for the RSSI measurements to be within the GSM specifications, some calibration is necessary. Also, due to AGC implementation, some AGC specific constants need calibration. In total, three calibrations are required per receive band, AGC calibration, channel compensation and temperature compensation. Of these, temperature compensation is not needed in replacement of the circuit. In AGC calibration the reference power fed into the phone via permanent antenna connector is –74dBm. In channel compensation, the channel numbers in Rx band are;

A. RX Calibration

E-GSM band : 0, 40, 124, 975, and 1023.

DCS band : 512, 574, 636, 700, 760, 822 and 885.

PCS band : 512, 574,636,700,760and 810.

Procedure

a) Initialize phone by clicking Initialize button.

b) Set the GSM test equipment CW mode and BCH and TCH of GSM test equipment '0', same with phone.

c) Set the power of GSM test equipment '–74dBm'.

d) Click the PM Start button, then the value, received power by phone, is displayed in PM measurement window at service software.

e) Change the BCH and TCH of phone by clicking the Number button and set the channel (BCH & TCH) of equipment to be same.

f) Click the PM Start button.

g) Repeat above procedure until the displayed number in Power Measurement window is 12.

h) Click the Calculate button, then the service software calculate the channel compensation parameters.

i) Saving updated calibration data into phone by clicking Calib Saving button.

<NOTE>

If the calibration does not done for all channels, 5 channels for EGSM900 and 7 channels for DCS1800,PCS1900, the service software reports, "Please execute after measuring the PM".

B. TX Calibration

In order for the Tx power to be within the GSM specifications for each Tx level, some calibration is necessary. In total, four calibrations are required per transmit band, power calibration, channel compensation, temperature compensation and low voltage compensation. Of these, temperature compensation and low voltage compensation are not needed in replacement of the circuit and channel compensation is not needed because the transmit power is in GSM specification with enough margin In power compensation, the channel numbers used in Tx band are;

E-GSM band : 62.

DCS band : 699.

PCS band : 689

And the target powers in dBm for each power level are;

Power Level	GSM	DCS
0		29
1		28
2		26
3		24
4		22
5	32	20
6	31	18
7	29	16
8	27	14
9	25	12
10	23	10
11	21	8
12	19	6
13	17	4
14	15	2
15	13	0
16	11	
17	9	
18	7	
19	5	

Table 6-2 TX Target Powers

Procedure

a) Initialize phone by clicking Initialize button.

b) Set the BCH and TCH of the phone 62 for E-GSM900, 699 for DCS1800 and 689 for PCS1900. Of cause you have to match test equipment's BCH and TCH ARFCN with this value. For each power level, adjust the DAC value to get target power and click Test button. Then you can see the output power displayed on test equipment.

c) Saving updated calibration data into phone by clicking Calib Saving button.

12.2.4 Test JIG Operation

JIG Power

Equipment	GSM
Power Supply	Usually 4.0V
DC Adaptor	9.5V, 500mA

JIG DIP Switch

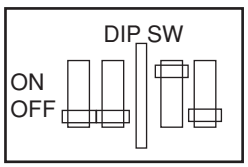
Switch Number	Name	Description
Switch 1	ADI_REMOTE	In On state phone is awaked. Not used OFF state
Switch 2	TI_REMOTE	InOn state phone is awaked.
Switch 3	VBAT	Power is provided for phone from Power supply
Switch 4	PS	Power is provided for phone from DC adaptor

JIG LED

LED Number	Name	Description
LED 1	Power	Power is provided for test JIG
LED 2	TA	Indicate charging state of the phone battery with travel charger
LED 3	MON STATUS	Indicate date transfer state through the UART IrDA
LED 4	UART STATUS	Indicate date transfer state through the UART MODEM

Operation

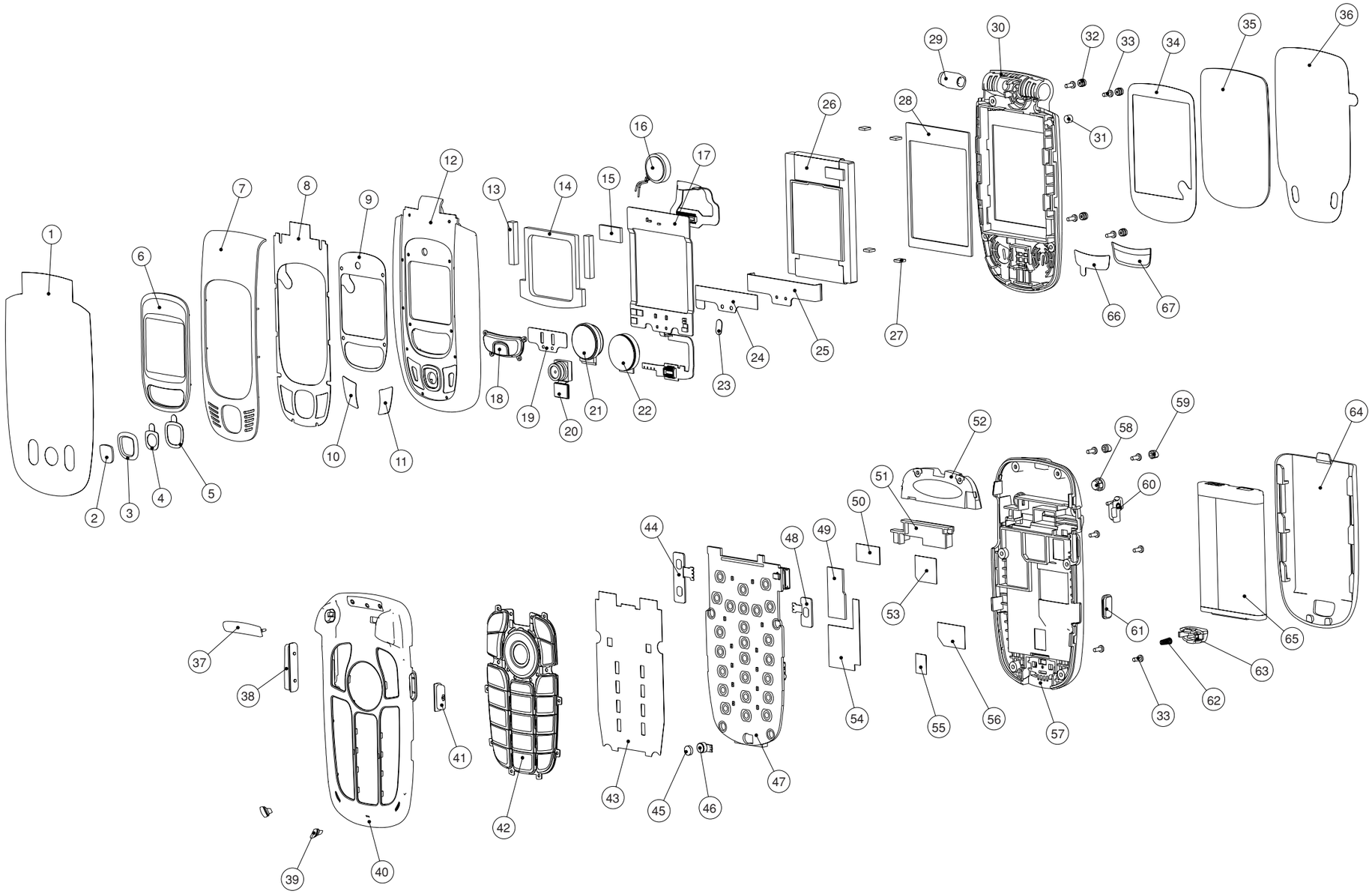
1) Connect the RS232 serial cable between COM port of notebook and MON port of test JIG in
2) Set the power supply 4.0V
3) set the 3rd of DIP SW ON state.
4) set the 4th of DIP SW ON state.



5) Press the phone power key. If the remote power on is used, switch the 1st of DIP SWITCH ON.

13. EXPLODED VIEW & REPLACEMENT PART LIST

13.1 Exploded View



<Parts List of Exploded View>

ITEM	PART NAME	PART NO.	Q'TY	REMARK
67	DECO, RECEIVER	WDAH0009201-MP	1	
66	TAPE, DECO<RECEIVER>	WTAA0057801-MP	1	
65	BATTERY PACK,LI-ION	SBPL0072127-MP	1	
64	COVER, BATTERY	WCJA0014**-MP	1	
63	LOCKER, BATTERY	WLEA0019S**-MP	1	
62	SPRING,LOCKER	WSDC0001301-MP	1	
61	WINDOW, IRDA	WWAG0007401-MP	1	
60	CAP, EARPHONE JACK	WCCC0018S**-MP	1	
59	CAP, SCREW <REAR>	WCCH0034**-MP	2	
58	CAP, MOBILE SWITCH	WCCF0018B**-MP	1	
57	COVER, REAR	WCJN0027B**-MP	1	
56	INSULATOR <REAR SIM>	WIDZ0048101-MP	1	
55	INSULATOR <REAR>	WIDZ0048001-MP	1	
54	PAD <ABSORBER>	WPBZ0068601-MP	1	
53	INSULATOR <REAR2>	WIDZ0052201-MP	1	
52	ANTENNA,GSM,FIXED	SNGF0006101-MP	1	
51	SUPPORT	WSHY0006701-MP	1	
50	GASKET, SHIELD FORM <REAR>	WGAD0065301-MP	1	
49	PAD <REAR>	WPBZ0064001-MP	1	
48	PCB ASSY, FUNCTION <CAMERA R>	SADY0009201-MP	1	
47	PCB ASSY,MAIN,AUTO	SAFA0037701-MP	1	
46	MICROPHONE	SUMY0003802-MP	1	
45	PAD,MIKE	WPBH0012801-MP	1	
44	PCB ASSY,SIDEKEY <VOLUME L>	SAKY0004501-MP	1	
43	DOME ASSY, METAL	ADCA0024501-MP	1	
42	BUTTON, DIAL	WBJA0015S**-MP	1	
41	BUTTON, SIDE	WBJL0014801-MP	1	
40	COVER, FRONT	WCJK0031Z**-MP	1	
39	BUMPER	WBHY0011**-MP	2	
38	BUTTON, VOLUME	WBJN0003701-MP	1	
37	STOPPER	WSGY0007S**-MP	1	
36	TAPE, PROTECTION<MAIN WINDOW>	WTAB0052801-MP	1	
35	WINDOW, LCD	WWAC0043S**-MP	1	
34	TAPE, WINDOW <MAIN>	WTAD0027901-MP	1	
33	SCREW MACHINE,BIND	GMEY0005901-MP	10	
32	CAP, SCREW <FOLDER>	WCCH0034S**-MP	4	
31	MAGNET,SWITCH	WMAA0001601-MP	1	
30	COVER, FOLDER (LOWER)	WCJH0021**-MP	1	
29	HINGE,FOLDER	WHFD0007801-MP	1	
28	PAD, LCD	WPBG0025601-MP	1	
27	PAD	WPBZ0062201-MP	4	
26	LCD MODULE	SVLM0011101-MP	1	
25	BRACKET	WBFZ0020201-MP	1	
24	TAPE, BRACKET	WTAZ0043301-MP	1	
23	FILTER, RECEIVER	WFBB0007101-MP	1	
22	SPEAKER	SUSY0014301-MP	1	
21	TWO-WAY MODE SPEAKER	SUVT0003506-MP	1	
20	CAMERA	SVCY0005201-MP	1	
19	DOME ASSY, METAL	ADCA0024401-MP	1	
18	BUTTON,FUNCTION	WBJC0012701-MP	1	
17	PCB ASSY,FLEXIBLE	SACY0027301-MP	1	
16	VIBRATOR,MOTOR	SJMY0002802-MP	1	
15	GASKET, SHIELD FORM<LCD CON>	WGAD0065001-MP	1	
14	PAD, LCD(SUB)	WPBG0017201-MP	1	
13	GASKET, SHIELD FORM	WGAD0065201-MP	2	
12	COVER, FOLDER (UPPER)	WCJJ0028O**-MP	1	
11	FILTER, SPEAKER <R>	WFBC0011001-MP	1	
10	FILTER, SPEAKER <L>	WFBC0010901-MP	1	
9	TAPE, WINDOW(SUB)	WTAE0017801-MP	1	
8	TAPE, DECO<UPPER>	WTAA0057701-MP	1	
7	DECO <UPPER>	WDAY0009S**-MP	1	
6	WINDOW, LCD(SUB)	WWAF0022I**-MP	1	
5	TAPE <CAMERA DECO>	WTAZ0043501-MP	1	
4	TAPE <CAMERA WINDOW>	WTAZ0043601-MP	1	
3	DECO, CAMERA	WDAD0007401-MP	1	
2	WINDOW, CAMERA	WWAE0004601-MP	1	
1	TAPE, PROTECTION	WTAB0052701-MP	1	

Note

13.2 REPLACEMENT PARTS

<Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
1		GSM(FOLDER)	TGFF0052001		Blue	
2	AAAY00	ADDITION	AAAY0066701		Blue	
3	MCJA00	COVER,BATTERY	MCJA0011401	f1200 battery cover	Blue Silver	64
2	APEY01	PHONE	APEY0183301		Blue	
3	ACGG00	COVER ASSY,FOLDER	ACGG0054303		Blue	
4	ABFZ00	BRACKET ASSY	ABFZ0002901	f1200 bracket assy	Silver	
5	MBFZ00	BRACKET	MBFZ0020201	f1200 bracket	Silver	25
5	MTAZ00	TAPE	MTAZ0043301	F1200 bracket tape	Black	24
4	ACGH00	COVER ASSY, FOLDER(LOWER)	ACGH0026501	f1200 folder lower assy	Silver	
5	MCJH00	COVER,FOLDER(LOWER)	MCJH0021101	F1200 folder lower	Silver	30
5	MDAH00	DECO,RECEIVER	MDAH0009201	f1200 lower deco receiver	Silver	67
5	MFBB00	FILTER,RECEIVER	MFBB0007101	f1200 folder lower receiver filter	Black	23
5	MMAA00	MAGNET,SWITCH	MMAA0001601	7100 magnetic	Silver	31
5	MPBG00	PAD,LCD	MPBG0025601	F1200 main lcd pad	Black	28
5	MPBZ00	PAD	MPBZ0062201	f1200 lower lcd shield pad	Black	27
5	MTAA00	TAPE,DECO	MTAA0057801	f1200 lower receiver deco tape	Black	66
5	MTAD00	TAPE,WINDOW	MTAD0027901	f1200 main window tape		34
4	ACGJ00	COVER ASSY, FOLDER(UPPER)	ACGJ0037803	f1200_folder_upper_assy_bl	Blue	
5	MCJJ00	COVER,FOLDER(UPPER)	MCJJ0028001	F1200 folder upper	Silver	12
5	MDAD00	DECO,CAMERA	MDAD0007401	f1200 folder upper camera deco	Silver	3
5	MDAY00	DECO	MDAY0009501	f1200 folder upper deco	Blue	7
5	MFBC00	FILTER,SPEAKER	MFBC0010901	f1200 speaker filter (left)	Black	10
5	MFBC01	FILTER,SPEAKER	MFBC0011001	f1200 speaker filter (right)	Black	11
5	MGAD00	GASKET,SHIELD FORM	MGAD0065001	f1200 gasket shield form (lcd con)	Gold	15
5	MGAD01	GASKET,SHIELD FORM	MGAD0065201	f1200 gasket shield form (upper)	Gold	13
5	MTAA00	TAPE,DECO	MTAA0057701	f1200 upper deco tape	Black	8
5	MTAE00	TAPE,WINDOW(SUB)	MTAE0017801	F1200 sub window tape	Black	9
5	MTAZ00	TAPE	MTAZ0043501	f1200 camera deco tape		5
5	MTAZ01	TAPE	MTAZ0043601	f1200 camera window tape		
4	ACGK00	COVER ASSY,FRONT	ACGK0041103	f1200_main_front_assy_bl	Blue	
5	MBHY00	BUMPER	MBHY0011101	f1200 front bumper	Metalic Silver	
5	MBJL00	BUTTON,SIDE	MBJL0014801	f1200 main button side	Silver	41
5	MBJN00	BUTTON,VOLUME	MBJN0003701	f1200 main volume button	Silver	38
5	MCJK00	COVER,FRONT	MCJK0031201	f1200 main front	Silver	40
5	MSGY00	STOPPER	MSGY0007901	f1200_stopper	Blue	37
4	AWAB00	WINDOW ASSY,LCD	AWAB0012101	F1200 Sub Window Assy	Silver	
5	BFAA00	FILM,INMOLD	BFAA0020701	F1200 Sub Window Film Inmold	Silver	
5	MWAF00	WINDOW,LCD(SUB)	MWAF0022101	F1200 Sub Window, inmold	Silver	6
4	GMEY00	SCREW MACHINE,BIND	GMEY0005901	1.4 mm,3.5 mm,MSWR3(BK) ,B ,+ ,HEAD D=2.7MM		
4	MBJC00	BUTTON,FUNCTION	MBJC0012701	f1200 button function	Silver	18
4	MCCH00	CAP,SCREW	MCCH0034501	f1200screw cap (folder)	Metalic Silver	32
4	MHFD00	HINGE,FOLDER	MHFD0007801	L1100 HINGE(pi 7.0*11.5L)		29
4	MLAC00	LABEL,BARCODE	MLAC0003401	EZ LOOKS(user for mechanical)		
4	MPBQ00	PAD,LCD(SUB)	MPBQ0017201	f1200 folder upper lcd pad	Black	14
4	MTAB00	TAPE,PROTECTION	MTAB0052701	f1200_tape_protection		1
4	MTAB01	TAPE,PROTECTION	MTAB0052801	f1200_tape_protection(main window)		36
4	MWAC00	WINDOW,LCD	MWAC0043501	F1200 Main Window		35
4	MWAE00	WINDOW,CAMERA	MWAE0004601	f1200 camera window		2
3	ACGM00	COVER ASSY,REAR	ACGM0041302	f1200_main_rear_assy_bl	Grey	
4	MCCC00	CAP,EARPHONE JACK	MCCC0018501	f1200 earphone jack cap	Grey	60
4	MCJN00	COVER,REAR	MCJN0027801	f1200 main rear	Blue Silver	57
4	MGAD00	GASKET,SHIELD FORM	MGAD0065301	f1200 gascker shield form (rear)	Gold	50
4	MIDZ00	INSULATOR	MIDZ0048001	f1200 rear insulator	Blue	55
4	MIDZ01	INSULATOR	MIDZ0048101	f1200 rear insulator (sim)	Blue	56
4	MIDZ02	INSULATOR	MIDZ0052201	f1200_rear_insulator2	Blue	53
4	MLEA00	LOCKER,BATTERY	MLEA0019501	f1200 battery locker	Blue Silver	63
4	MPBZ00	PAD	MPBZ0064001	f1200_main_rear_pad	Black	49
4	MPBZ01	PAD	MPBZ0068601	f1200_absorber	Black	54

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	MSDC00	SPRING,LOCKER	MSDC0001301	C1300 CGRSV Cone Type 1.8PI, 2.5PI, 5.0 Length	Silver White	62
4	MSHY00	SUPPORT	MSHY0006701	f1200 support	Silver	51
4	MWAG00	WINDOW,IRDA	MWAG0007401	f1200 irda window	Dark Blue	61
3	MCCH00	CAP,SCREW	MCCH0034401	f1200 rear screw cap	Grey	59
3	MLAA00	LABEL,APPROVAL	MLAA0030001	F1200_MOC_RUSghost	White	
3	MLAK00	LABEL,MODEL	MLAK0006901			
3	MLAZ00	LABEL	MLAZ0040301	F1200_CE_LABEL	White	
5	MPBH00	PAD,MIKE	MPBH0012801	f1200_mic_pad	Black	45

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	ADCA00	DOME ASSY,METAL	ADCA0024401	f1200 folder function dome assy (4pi)	White	19
4	SACY00	PCB ASSY,FLEXIBLE	SACY0027301			17
5	SACA00	PCB ASSY, FLEXIBLE,AUTO	SACA0001201	POLI, 0.4mm, MULTI-4		
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0010701			
7	C1	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
7	C10	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
7	C11	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
7	C12	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
7	C13	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
7	C2	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
7	C3	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
7	C4	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
7	C5	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
7	C6	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
7	C7	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C8	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C9	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	CN1	CONNECTOR,BOARD TO BOARD	ENBY0013404	20 PIN,0.4 mm,STRAIGHT ,Au ,B to B BOSS ZERO		
7	FB1	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
7	FB2	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
7	LD1	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
7	LD2	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
7	R1	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
7	R10	RES,CHIP	ERHY0000125	10K ohm,1/16W,F,1005,R/TP		
7	R11	RES,CHIP	ERHY0000125	10K ohm,1/16W,F,1005,R/TP		
7	R13	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
7	R2	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
7	R3	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
7	R4	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
7	R5	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
7	R6	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
7	R7	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
7	R8	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
7	R9	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
7	VA3	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
7	VA4	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
7	VA7	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
7	VA8	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0016801			
7	C14	CAP,CERAMIC,CHIP	ECCH0000124	56 pF,50V,J,NP0,TC,1005,R/TP		
7	C15	CAP,CERAMIC,CHIP	ECCH0000124	56 pF,50V,J,NP0,TC,1005,R/TP		
7	C16	CAP,CERAMIC,CHIP	ECCH0000124	56 pF,50V,J,NP0,TC,1005,R/TP		
7	CN2	CONNECTOR,BOARD TO BOARD	ENBY0020203	40 PIN,0.4 mm,ETC ,AU ,HEIGHT 0.9MM,BOSS		
7	CN3	CONNECTOR,BOARD TO BOARD	ENBY0013006	54 PIN,0.4 mm,STRAIGHT ,AU ,HEADER(T:1.5MM)		
7	VA1	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
7	VA2	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
7	VA5	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
7	VA6	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	SPCY00	PCB,FLEXIBLE	SPCY0039301	POLYI ,0.4 mm,MULTI-4 ,		
5	SACB00	PCB ASSY, FLEXIBLE,INSERT	SACB0017901			
4	SJMY00	VIBRATOR,MOTOR	SJMY0002802	3 V,0.08 A,12*15 ,G5300 VIBRATOR (0.5t PAD)		16
4	SUSY00	SPEAKER	SUSY0014301	ASSY ,8 ohm,90 dB,15 mm,*3.7T, Wire:10mm		22
4	SUVT00	TWO-WAY MODE SPEAKER	SUVT0003506	8 ohm,28 ohm,87 dB,105 dB,15 mm,4.3T		21
4	SVCY00	CAMERA	SVCY0005201	CMOS ,VGA ,FPCB Type		20
4	SVLM00	LCD MODULE	SVLM0011101	MAIN, M:1.86(128*160) S:1.17(96*96), 36.7*50.1*4.8, 65k, TFT, TM, HD66777, AIO_Dual TFT One Chip DIC		26
3	GMEY00	SCREW MACHINE,BIND	GMEY0005901	1.4 mm,3.5 mm,MSWR3(BK) ,B ,+ ,HEAD D=2.7MM		33
3	MBJA00	BUTTON,DIAL	MBJA0015503	f1200_button_dial_RUSBL	Blue	42
3	MCCF00	CAP,MOBILE SWITCH	MCCF0018801	f1200 mobile switch cap	Grey	58
3	SAFY01	PCB ASSY,MAIN	SAFY0103601	F1200 EUASV		
4	SAFA00	PCB ASSY,MAIN,AUTO	SAFA0037701	F1200 EUASV		47
5	MLAB00	LABEL,A/S	MLAB0000601	HUMIDITY STICKER		
5	MLAC00	LABEL,BARCODE	MLAC0003301	EZ LOOKS(use for PCB ASSY MAIN(hardware))		
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0038101	F1200 BOTTOM PCB		
6	BAT200	BATTERY,CELL,LITHIUM	SBCL0001305	3 V,1 mAh,COIN ,SMT Temp.260 degree. PB-Free B/B		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C101	INDUCTOR,CHIP	ELCH0001001	10 nH,J,1005,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C103	CAP,TANTAL,CHIP,MAKER	ECTZ0003101	33 uF,10V ,M ,STD ,ETC ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0000111	12 pF,50V,J,NP0,TC,1005,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C124	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0000159	22 nF,16V,K,X7R,HD,1005,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C128	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C131	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C136	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C138	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C200	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C229	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0000124	56 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C303	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
6	C407	CAP,TANTAL,CHIP	ECTH0001701	10 uF,6.3V ,M ,L_ESR ,2012 ,R/TP		
6	C410	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C411	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C412	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C415	CAP,TANTAL,CHIP	ECTH0000121	10 uF,10V,K,STD,3216,TP		
6	C416	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000130	150 pF,50V ,J ,SL ,TC ,1005 ,R/TP		
6	C419	CAP,CERAMIC,CHIP	ECCH0000130	150 pF,50V ,J ,SL ,TC ,1005 ,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C423	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C426	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C502	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C503	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C504	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C505	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C506	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C507	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C508	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C509	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C510	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C511	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C512	CAP,CERAMIC,CHIP	ECCH0000154	8.2 nF,16V,K,X7R,HD,1005,R/TP		
6	C513	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
6	C514	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C515	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C516	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C517	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0006501	10 uF,6.3V ,K ,X5R ,TC ,2012 ,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0006501	10 uF,6.3V ,K ,X5R ,TC ,2012 ,R/TP		
6	C521	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C522	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C523	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C524	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C525	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C526	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C527	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C528	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C529	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C530	CAP,CERAMIC,CHIP	ECCH0000141	680 pF,50V,K,X7R,HD,1005,R/TP		
6	C531	CAP,CERAMIC,CHIP	ECCH0000141	680 pF,50V,K,X7R,HD,1005,R/TP		
6	C532	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C533	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C534	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C535	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C536	CAP,CERAMIC,CHIP	ECCH0000154	8.2 nF,16V,K,X7R,HD,1005,R/TP		
6	C537	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C538	CAP,CERAMIC,CHIP	ECCH0004902	220 nF,10V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C539	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C540	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C541	CAP,CERAMIC,CHIP	ECCH0004902	220 nF,10V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C542	CAP,CHIP,MAKER	ECZH0026301	4.7 uF,6.3V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C543	CAP,CHIP,MAKER	ECZH0026301	4.7 uF,6.3V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C544	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
6	C545	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
6	C546	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C547	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C548	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C549	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C550	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
6	C551	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
6	C552	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C553	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C554	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C558	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
6	C559	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C560	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C561	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C562	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C564	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C565	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C566	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C567	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C570	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C571	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C572	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C573	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C574	CAP,CHIP,MAKER	ECZH0026301	4.7 uF,6.3V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C577	CAP,CERAMIC,CHIP	ECCH0000139	470 pF,50V,K,X7R,HD,1005,R/TP		
6	C578	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C579	CAP,CERAMIC,CHIP	ECCH0004902	220 nF,10V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	CN400	CONNECTOR,BOARD TO BOARD	ENBY0013005	54 PIN,0.4 mm,STRAIGHT ,AU ,T:1.5MM		
6	CN401	CONNECTOR,ETC	ENZY0013002	3 PIN,3 mm,ETC ,AU ,BATTERY CONN.		
6	CN402	CONNECTOR,I/O	ENRY0000801	24 PIN,0.5 mm,ETC ,Au ,BAT ZERO		
6	CN500	CONN,JACK/PLUG,EARPHONE	ENJE0003602	12 ,12 PIN,MMIC CONN.12P		
6	D300	DIODE,SWITCHING	EDSY0005301	SC-70 ,80 V,0.1 A,R/TP ,		
6	D400	DIODE,SWITCHING	EDSY0012101	US-FLAT ,30 V,1 A,R/TP ,2.5*1.25*0.6(t)		
6	D502	DIODE,TVS	EDTY0006701	CSP ,15 KV,200 mW,R/TP ,4 CHANNEL ESD ARRAY		
6	D503	DIODE,TVS	EDTY0007301	SOD-523 ,5 V,240 W,R/TP ,SINGLE LINE TVS DIODE FOR ESD		
6	FB400	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
6	FB401	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB402	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL100	DUPLEXER,GSM	SDGY0000601	900.1800 MHz,1900 MHz,1.4 dB,1.4 dB,30 dB,25 dB,6.7*5.5*1.5 ,SMD ,TRIPLE FEM		
6	FL400	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
6	FL401	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
6	FL402	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
6	FL403	FILTER,EMI/POWER	SFEY0006701	SMD ,CSP, 20 Ball 8ch EMI Filter /w ESD		
6	FL404	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
6	FL405	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
6	J400	CONN,SOCKET	ENSY0007609	6 PIN,ETC ,BRIDGE NON PROTECTOR ,2.54 mm,HEIGHT 2.5T		
6	L101	INDUCTOR,CHIP	ELCH0004711	22 nH,J ,1005 ,R/TP ,		
6	L103	INDUCTOR,CHIP	ELCH0004713	6.8 nH,J ,1005 ,R/TP ,		
6	L106	INDUCTOR,CHIP	ELCH0001407	5.6 nH,S ,1005 ,R/TP ,		
6	L300	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L301	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L302	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L303	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L501	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L502	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L503	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	L504	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	PT100	THERMISTOR	SETY0001201	NTC ,22 Kohm,SMD ,1.0*0.5 / NSM4 SERIES		
6	Q200	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
6	Q201	TR,FET,N-CHANNEL	EQFN0005201	SOT-323 ,0.29 W,25 V,0.70 A,R/TP ,N-Channel MOSFET		
6	Q300	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
6	Q301	TR,BJT,NPN	EQBN0004801	SMT6 ,0.2 W,R/TP ,		
6	Q400	TR,FET,P-CHANNEL	EQFP0003301	SOT-6 ,1.6 W,30 V,2.4 A,R/TP ,use for charge P- CHANNEL FET		
6	Q401	TR,FET,P-CHANNEL	EQFP0004501	SOT-323 ,0.29 W,1.8 V,0.86 A,R/TP ,P-Chanel MOSFET		
6	Q402	TR,BJT,ARRAY	EQBA0000406	SC-70 ,0.2 W,R/TP ,CDMA,Common use		
6	R100	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R101	CAP,CERAMIC,CHIP	ECCH0000174	2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	R102	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R103	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R104	RES,CHIP	ERHY0000125	10K ohm,1/16W,F,1005,R/TP		
6	R105	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R106	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R107	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
6	R108	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
6	R109	RES,CHIP	ERHY0006603	36 ohm,1/16W ,J ,1005 ,R/TP		
6	R110	RES,CHIP	ERHY0006603	36 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP	ERHY0000184	150 ohm,1/16W ,F ,1005 ,R/TP		
6	R112	RES,CHIP	ERHY0000184	150 ohm,1/16W ,F ,1005 ,R/TP		
6	R113	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R115	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R116	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R117	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R118	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R119	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R120	RES,CHIP	ERHY0000289	270K ohm,1/16W,J,1005,R/TP		
6	R123	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R124	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R125	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R200	RES,CHIP	ERHY0000203	10 ohm,1/16W,J,1005,R/TP		
6	R201	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
6	R202	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R204	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R205	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R207	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
6	R208	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R209	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R216	RES,CHIP	ERHY0000154	120K ohm,1/16W,F,1005,R/TP		
6	R220	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R221	RES,CHIP	ERHY0000102	10 ohm,1/16W,F,1005,R/TP		
6	R227	RES,CHIP	ERHY0000292	470K ohm,1/16W,J,1005,R/TP		
6	R228	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R229	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R231	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R234	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R237	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R240	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R243	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R303	RES,CHIP	ERHY0000205	15 ohm,1/16W,J,1005,R/TP		
6	R304	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R305	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R310	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R311	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R317	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R318	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R333	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R334	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R335	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R336	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R337	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R338	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R339	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R340	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R341	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R342	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R343	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R351	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R352	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R354	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R355	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R358	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R359	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R360	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R361	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R403	RES,CHIP	ERHY0000205	15 ohm,1/16W,J,1005,R/TP		
6	R405	RES,CHIP	ERHY0013401	1.5 Mohm,1/16W ,F ,1005 ,R/TP		
6	R406	RES,CHIP	ERHY0000105	51 ohm,1/16W,F,1005,R/TP		
6	R407	RES,CHIP	ERHY0008701	0.22 ohm,1/4W ,J ,2012 ,R/TP		
6	R408	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
6	R409	RES,CHIP	ERHY0000138	33K ohm,1/16W,F,1005,R/TP		
6	R410	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R411	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R412	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R413	RES,CHIP	ERHY0000209	27 ohm,1/16W,J,1005,R/TP		
6	R414	RES,CHIP	ERHY0000209	27 ohm,1/16W,J,1005,R/TP		
6	R415	RES,CHIP	ERHY0000211	33 ohm,1/16W,J,1005,R/TP		
6	R418	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R419	RES,CHIP	ERHY0000287	220K ohm,1/16W,J,1005,R/TP		
6	R420	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R421	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R422	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R423	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R424	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R426	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R428	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R430	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R433	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R435	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
6	R436	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R437	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R438	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R442	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R445	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R448	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R501	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
6	R502	RES,CHIP	ERHY0000222	120 ohm,1/16W,J,1005,R/TP		
6	R503	RES,CHIP	ERHY0000222	120 ohm,1/16W,J,1005,R/TP		
6	R504	RES,CHIP	ERHY0000222	120 ohm,1/16W,J,1005,R/TP		
6	R505	RES,CHIP	ERHY0000222	120 ohm,1/16W,J,1005,R/TP		
6	R506	RES,CHIP	ERHY0006102	390 Kohm,1/16W ,J ,1005 ,R/TP		
6	R507	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R508	RES,CHIP	ERHY0000222	120 ohm,1/16W,J,1005,R/TP		
6	R509	RES,CHIP	ERHY0006102	390 Kohm,1/16W ,J ,1005 ,R/TP		
6	R510	RES,CHIP	ERHY0000211	33 ohm,1/16W,J,1005,R/TP		
6	R511	RES,CHIP	ERHY0000211	33 ohm,1/16W,J,1005,R/TP		
6	R512	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	R513	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
6	R516	RES,CHIP	ERHY0000128	15K ohm,1/16W,F,1005,R/TP		
6	R517	RES,CHIP	ERHY0000128	15K ohm,1/16W,F,1005,R/TP		
6	R518	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R520	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
6	R524	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	R525	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R526	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R527	RES,CHIP	ERHY0000148	62K ohm,1/16W,F,1005,R/TP		
6	R528	RES,CHIP	ERHY0000148	62K ohm,1/16W,F,1005,R/TP		
6	R529	RES,CHIP	ERHY0000128	15K ohm,1/16W,F,1005,R/TP		
6	R530	RES,CHIP	ERHY0000128	15K ohm,1/16W,F,1005,R/TP		
6	R531	RES,CHIP	ERHY0000128	15K ohm,1/16W,F,1005,R/TP		
6	R532	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R533	RES,CHIP	ERHY0000128	15K ohm,1/16W,F,1005,R/TP		
6	R534	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
6	R536	RES,CHIP	ERHY0000147	56K ohm,1/16W,F,1005,R/TP		
6	R541	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	R542	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R543	RES,CHIP	ERHY0000248	2.4K ohm,1/16W,J,1005,R/TP		
6	R544	RES,CHIP	ERHY0000243	1.2K ohm,1/16W,J,1005,R/TP		
6	R546	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R554	RES,CHIP	ERHY0000150	75K ohm,1/16W,F,1005,R/TP		
6	R555	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R556	RES,CHIP	ERHY0000231	390 ohm,1/16W,J,1005,R/TP		
6	R557	RES,CHIP	ERHY0000231	390 ohm,1/16W,J,1005,R/TP		
6	R558	RES,CHIP	ERHY0000231	390 ohm,1/16W,J,1005,R/TP		
6	R559	RES,CHIP	ERHY0000231	390 ohm,1/16W,J,1005,R/TP		
6	R560	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R561	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R562	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R563	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R565	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R566	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R567	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R569	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R571	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R573	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
6	SW100	CONN,RF SWITCH	ENWY0003001	STRAIGHT ,SMD ,0.6 dB,3.8X3.0X3.6T		
6	U100	PAM	SMPY0007201	35 dBm,53 %,0.8 A,-50 dBc,50 dB,6.0*8.0*1.2 ,SMD ,QUAD		
6	U101	IC	EUSY0161702	US-8 ,8 PIN,R/TP ,UHS TRIPLE BUFFER / 3.1 WIDE SIZE		
6	U102	IC	EUSY0161302	8x8 LGA ,32 PIN,R/TP ,		
6	U103	IC	EUSY0100502	8-LEAD US8 ,8 PIN,R/TP ,UHS DUAL 2-INPUT AND GATE		
6	U104	IC	EUSY0118602	SOT23 ,5 PIN,R/TP ,2.85V/150mA Low Noise uCap LDO Regulator		
6	U105	IC	EUSY0073401	, PIN,R/TP ,INVERTER		
6	U200	IC	EUSY0179001	143GQW PBGA ,143 PIN,R/TP ,ANALOG BB CHIP / CODE NAME : SYREN		
6	U201	IC	EUSY0243701	BGA ,293 PIN,R/TP ,T.I. CALYPSO PLUS DBB		
6	U301	IC	EUSY0221001	TFBGA ,225 PIN,R/TP ,MCP (192M NOR Flash 96M PSRAM 512M NAND Flash)		
6	U401	IC	EUSY0122301	SURFACE MOUNT ,7 PIN,R/TP ,IRDA DATA 1.3 LOW POWER TRANSCEIVER / 115.2kb/s		
6	U500	IC	EUSY0154407	MLF ,10 PIN,R/TP ,Dual(1.5V/150mA,2.8V/300mA) LDO Regulator		
6	U501	IC	EUSY0160001	MicroStar Junior ,15 PIN,R/TP ,1.1W Class-D Mono Audio AMP		
6	U503	IC	EUSY0160001	MicroStar Junior ,15 PIN,R/TP ,1.1W Class-D Mono Audio AMP		
6	U504	IC	EUSY0142501	LLP ,8 PIN,R/TP ,Dual 105mW Headphone Amplifier		
6	U505	IC	EUSY0119002	4X3 UCSP / CODE : B12-4 ,10 PIN,R/TP ,DUAL SPDT ANALOG SWITCHES		
6	U506	IC	EUSY0221901	BGA ,85 PIN,R/TP ,Midi 64poly & AAC & MP3 Decoder		
6	U507	IC	EUSY0240501	6.2*7.2, SCSP ,96 PIN,R/TP ,CAMERA BACK END CHIP		
6	U508	IC	EUSY0247101	MSOP-8 ,8 PIN,R/TP ,500mA(continuous), 3.3V LDO		
6	VA301	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA304	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA500	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	VA501	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	VA503	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA504	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA505	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	VA506	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA507	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA508	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	VA509	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	X100	X-TAL	EXXY0019501	26 MHz,10 PPM,8 pF,50 ohm,SMD ,3.2*2.5*0.6 ,		
6	X200	X-TAL	EXXY0015601	.032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0037001	F1200 TOP PCB		
6	C300	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C400	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C427	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C499	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C500	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C501	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
6	C555	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C556	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C557	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C576	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
6	D500	DIODE,TVS	EDTY0007301	SOD-523 ,5 V,240 W,R/TP ,SINGLE LINE TVS DIODE FOR ESD		
6	D501	DIODE,TVS	EDTY0007301	SOD-523 ,5 V,240 W,R/TP ,SINGLE LINE TVS DIODE FOR ESD		
6	LD300	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD301	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD302	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD303	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD304	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD305	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD306	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD307	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD308	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD309	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD310	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD311	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R300	RES,CHIP	ERHY0000274	51K ohm,1/16W,J,1005,R/TP		
6	R302	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R306	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R307	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R308	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R309	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R312	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R313	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R314	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R316	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R319	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R320	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R321	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R322	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R326	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R332	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R431	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R432	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R439	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R440	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R443	RES,CHIP	ERHY0000209	27 ohm,1/16W,J,1005,R/TP		
6	R446	RES,CHIP	ERHY0000209	27 ohm,1/16W,J,1005,R/TP		
6	R449	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R450	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R451	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R499	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R500	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
6	R549	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R550	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	U300	IC	EUSY0129502	LEADLESS CHIP ,6 PIN,R/TP ,HALL-EFFECT SWITCH IC / 2.0*3.0*0.8		
6	U400	IC	EUSY0236901	DFN ,12 PIN,R/TP ,1x/1.5x/2x Charge pump(Sink type)		
6	U402	IC	EUSY0235001	Microbump-10 ,10 PIN,R/TP ,Dual SPDT Analog Switch (USB 1.1)		
6	VA401	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA402	VARISTOR	SEVY0003801	18 V, ,SMD ,		
5	SPFY00	PCB,MAIN	SPFY0078101	FR-4 ,1.0 mm,STAGGERED-8 ,		
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0031901	F1200 INSERT		
5	ADCA00	DOME ASSY,METAL	ADCA0024501	f1200 main dome assy (5pi)	Silver	43
5	CN300	PCB ASSY,SIDEKEY	SAKY0004501	Volume Key		44
5	CN301	PCB ASSY,FUNCTION	SADY0009201	Camera Button		48
5	MIC500	MICROPHONE	SUMY0003802	FPCB ,-42 dB,4*1.5 ,		46
3	SNGF00	ANTENNA,GSM,FIXED	SNGF0006101	3.0 ,-2.0 dBd, ,EGSM+DCS+PCS, Intenna		52

< Accessory>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
3	MHBY00	HANDSTRAP	MHBY0002101	T5100 RUSSV Square Coupling, Cow Leather	Metalic Silver	
3	MHBY01	HANDSTRAP	MHBY0001101	Neck Strap 380mm	Grey	
3	SBPL00	BATTERY PACK,LI-ION	SBPL0072127	3.7 V,950 mAh,1 CELL,PRISMATIC ,S310 INNERPACK BATTERY	Silver	65
3	SGDY00	DATA CABLE	SGDY0004403	T5100 ,24P,D-CABLE		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0005501	,12pin Connector (Tyco)		
3	SRCY00	CDROM	SRCY0001340	S/W ,NONE ,F1200 ,650 MB,		
3	SSAD00	ADAPTOR,AC-DC	SSAD0007828	100-240V ,60 Hz,5.2 V,800 mA,CE,CB,GOST ,EU PLUG(24P),STD		
3	WSYY00	SOFTWARE	WSYY0193001	F1200P64-7-V80I-xxx-xx Jan 04 2005		

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