LG

Service Manual

LG

Service Manual

C1100

Model : C1100

P/N : MMBD0034301

Date : June, 2004 / Issue 1.0

Table Of Contents

1. INTRODUCTION

1.1 Purpose

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

1.2 Regulatory Information

A. 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 are 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 result from such unauthorized use.

B. 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.

C. 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 the 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.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. 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.

F. Pictures

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

G. Interference and Attenuation

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

H. 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
EEPROM	Electrical Erasable Programmable Read-Only Memory
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, 760 mAh Cell Size: 33.8(W) x 49.7(H) x 4.6(T) [mm] Weight: 30.00g	
Stand by Current	Under the minimum current consumption environment (such as paging period 9), the level of standby current is below 4mA.	
Talk time	Up to 3 hours (GSM TX Level 7)	
Stand by time	Up to 200 hours (Paging Period: 9, RSSI: -85 dBm)	
Charging time	Approx. Under 3 hours	
RX Sensitivity	GSM, EGSM: –105dBm, DCS: –105dBm	
TX output power	GSM, EGSM: 33dBm (Level 5), DCS: 30dBm (Level 0)	
GPRS compatibility	Class 10	
SIM card type	3V only	
Display	Main LCD: 128 x 128 pixel 65K Color STN	
Status Indicator	Hard icons. Key Pad; 0 ~ 9, #, *, Up/Down/Left/Right Navigation Key, Menu Key, Clear Key, Send Key, END/PWR Key Soft Key (Left/Right)	
ANT	External	
EAR Phone Jack	Yes	
PC Synchronization	Yes	
Speech coding	EFR/FR/HR	
Data and Fax	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recording	No	
C-Mike	Yes	
Receiver	Yes	
Travel Adapter	Yes	
MIDI	16 Poly	
Options	Hands-free kit, CLA, 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">GSM
TX: 890 + n x 0.2 MHz
RX: 935 + n x 0.2 MHz (n=1~124)
EGSM
TX: 890 + (n-1024) x 0.2 MHz
RX: 935 + (n-1024) x 0.2 MHz (n=975~1024)
DCS
TX: 1710 + (n-512) x 0.2 MHz
RX: 1805 + (n-512) x 0.2 MHz (n=512~885)</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">< 0.1 ppm</td></tr>
<tr><td rowspan="20">4</td><td rowspan="20">Power Level</td><td colspan="6">GSM, EGSM</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">DCS</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)	**GSM, EGSM**	
		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
		DCS	
		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)	**GSM, EGSM**	
		Offset from Carrier (kHz).	Max. dBm
		400	–19
		600	–21
		1,200	–21
		1,800	–24
		DCS	
		Offset from Carrier (kHz).	Max. dBm
		400	–22
		600	–24
		1,200	–24
		1,800	–27
7	Spurious Emissions	Conduction,Emission Status	

<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">GSM, EGSM
BER (Class II) < 2.439% @–102 dBm
DCS
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>12</td><td>RLR</td><td colspan="3">2±3 dB</td></tr>
<tr><td rowspan="12">13</td><td rowspan="12">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>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="8">16</td><td rowspan="8">Distortion</td><td>dB to ARL (dB)</td><td colspan="2">Level Ratio (dB)</td></tr>
<tr><td>–35</td><td colspan="2">17.5</td></tr>
<tr><td>–30</td><td colspan="2">22.5</td></tr>
<tr><td>–20</td><td colspan="2">30.7</td></tr>
<tr><td>–10</td><td colspan="2">33.3</td></tr>
<tr><td>0</td><td colspan="2">33.7</td></tr>
<tr><td>7</td><td colspan="2">31.7</td></tr>
<tr><td>10</td><td colspan="2">25.5</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>System frequency (13 MHz) tolerance</td><td colspan="3">≤ 2.5 ppm</td></tr>
<tr><td>19</td><td>32.768KHz tolerance</td><td colspan="3">≤ 30 ppm</td></tr>
</table>

2. PERFORMANCE

Item	Description	Specification	
20	Ringer Volume	At least 80 dB under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm.	
21	Charge Current	CC Charge : < 500 mA Trickle Charge : < 60 mA	
22	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
23	Battery Indicator	Battery Bar Number	Voltage
		0	~ 3.62V
		1	3.62 ~ 3.73V
		2	3.73 ~ 3.82V
		3	3.82V ~
24	Low Voltage Warning	3.5 ± 0.03V (Standby)	
		3.62 ± 0.03V (Call)	
25	Forced shut down Voltage	3.35 ± 0.03V	
26	Battery Type	1 Li-ion Battery Standard Voltage = 3.7V Battery full charge voltage = 4.2V Capacity : 950mAh	
27	Travel Charger	Switching-mode charger Input : 100 ~ 240V, 50/60 Hz Output : 5.2V, 600 mA	

3. TECHNICAL BRIEF

3.1 Transceiver (SI4205-BM, U301)

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

The Aero I transceiver is the integrated RF front end for multi-band GSM/GPRS digital cellular handsets and wireless data modems. The integrated solution eliminates the IF SAW filter, external low noise amplifier (LNAs) for three bands, transmit and RF voltage controlled oscillator (VCO modules, and other discrete components found in conventional designs.

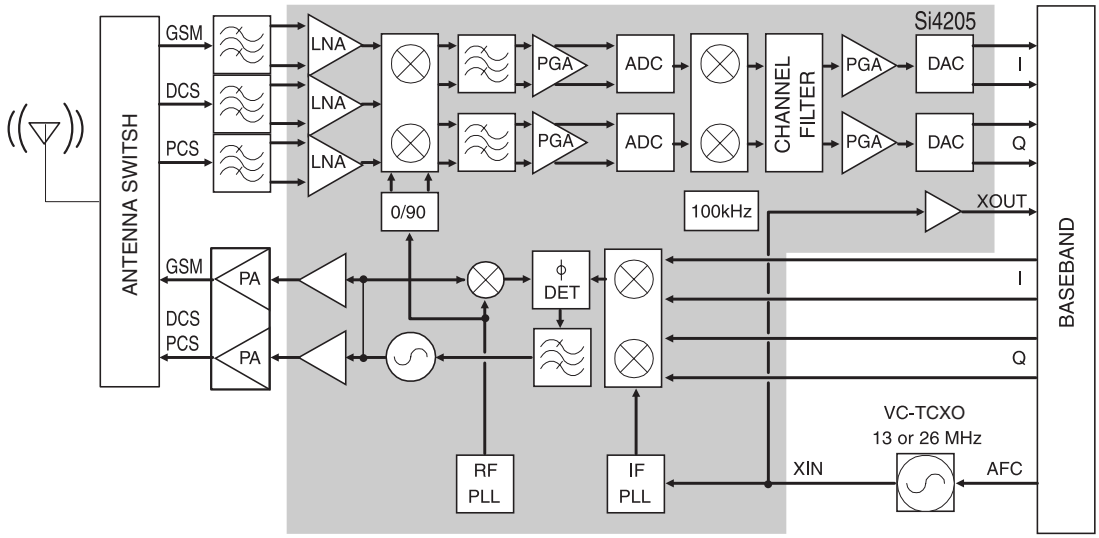


Figure 3-1. RECEIVER FUNCTIONAL BLOCK DIAGRAM

(1) Receiver Part

The Aero I transceiver uses a low-IF receiver architecture which 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 superheterodyne architectures.

A. RF front end

RF front end consists of Antenna Switch(FL400), two SAW Filters(FL401, FL402) and dual band LNAs integrated in transceiver (U401).

The Received RF signals(GSM 925MHz ~ 960MHz, DCS 1805MHz ~ 1880MHz) are fed into the antenna or Mobile switch.

The Antenna Switch(FL400) is used to control the Rx and Tx paths. And, the input signals VC1 and VC2 of a FL400 are directly connected to baseband controller to switch either Tx or Rx path on.

The logic and current is given below Table 3-1.

Table 3-1. The Logic and current

	VC1	VC2	Current
DCS TX	0V	2.5 ~ 3.0V	10.0 mA max
GSM TX	2.5 ~ 3.0V	0V	10.0 mA max
GSM/DCS RX	0V	0V	< 0.1 mA

Three differential-input LNAs are integrated in SI4205. The GSM input supports the GSM 850 (869-849 MHz) or E-GSM 900 (925-960MHz) bands. The DCS input supports the DCS 1800 (1805-1880 MHz) band. The PCS input supports the PCS 1900 (1930-1990 MHz) band.

The LNA inputs are matched to the 150Ω balanced output SAW filters through external LC matching networks. The LNA gain is controlled with the LNAG[1:0] and LNAC[1:0] bits in register 05h (Figure 3-2).

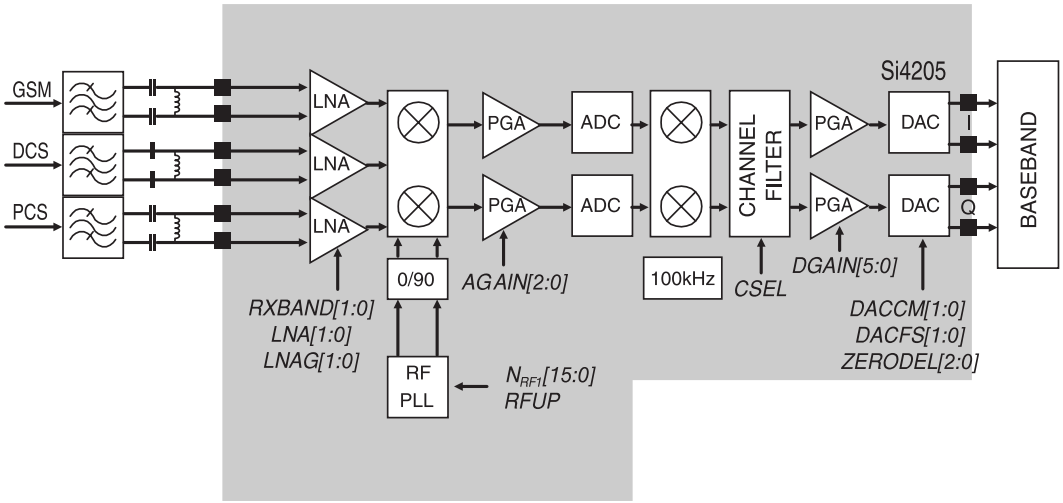


Figure 3-2. SI4205 RECEIVER PART

B. Intermediate frequency (IF) and Demodulation

A quadrature image-reject mixer downconverts the RF signal to a 100KHz intermediate frequency (IF) with the RFLO from the frequency synthesizer. The RFLO frequency is between 1737.8 to 1989.9 MHz, and is internally divided by 2 for GSM 850 and E-GSM 900 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 (Figure3-2). The quadrature IF signal is digitized with high resolution A/D converters (ADCs).

The ADC output is downconverted to baseband with a digital 100KHz quadrature LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. The selectivity setting (CSEL=0) or a low selectivity setting (CSEL=1). The low selectivity filter has a flatter group channelization filter is in the baseband chip. After channel selection, the digital output is scaled with a 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. 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.

(2) Transmitter Part

The transmit (Tx) section consists of an I/Q baseband upconverter, and offset phase-locked loop (OPLL) and two output buffers that can drive external power amplifiers (PA), one for the GSM 850 (824-849 MHz) and E-GSM 900 (880-915 MHz) bands and one for the DCS 1800 (1710-1785 MHz) and PCS 1900 (1850-1910MHz) bands.

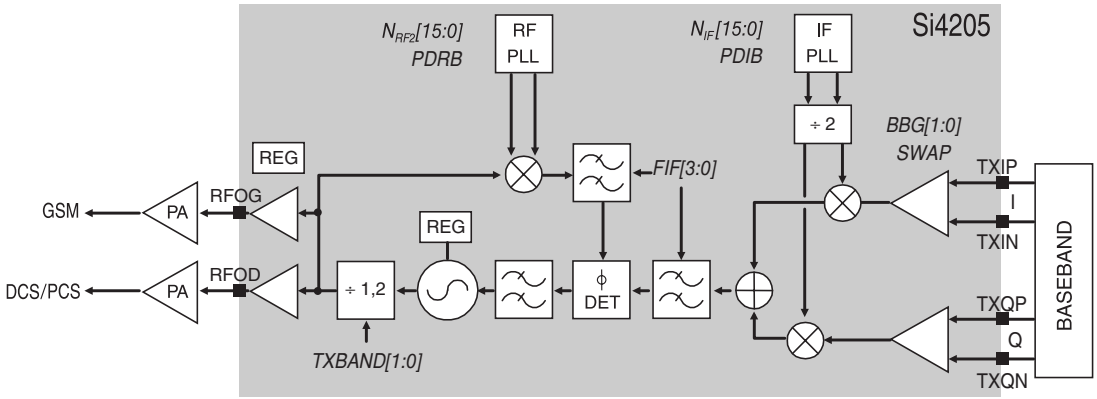


Figure 3-3. SI4205 TRANSMITTER PART

A. 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 in-phase (TXIP, TXIN) and quadrature (TXQP, TXQN) signals with the IFLO to generate a SSB IF signal that is filtered and used as the reference input to the OPLL.

The IFLO frequency is generated between 766 and 896 MHz and internally divided by 2 to generate the quadrature LO signals for the quadrature modulator, resulting in an IF between 383 and 448 MHz. For the E-GSM 900 band, two different IFLO frequencies are required for spur management. Therefore, the IF PLL must be programmed per channel in the E-GSM 900 band.

B. 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 GSM 850 and E-GSM 900 bands. The RFLO frequency is generated between 1272 and 1483 MHz. To allow a single VCO to be used for the RFLO, high-side injection is used for the GSM 850 and E-GSM 900 bands, and low-side injection is used for the DCS 1800 and PCS 1900 bands. The I and Q signals are automatically swapped when switching bands. Additionally, the SWAP bit in register 03h can be used to manually exchange the I and Q signals. 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 (Figure 3-3), and should be set to the recommended settings detailed in the register description.

(3) Frequency Synthesizer

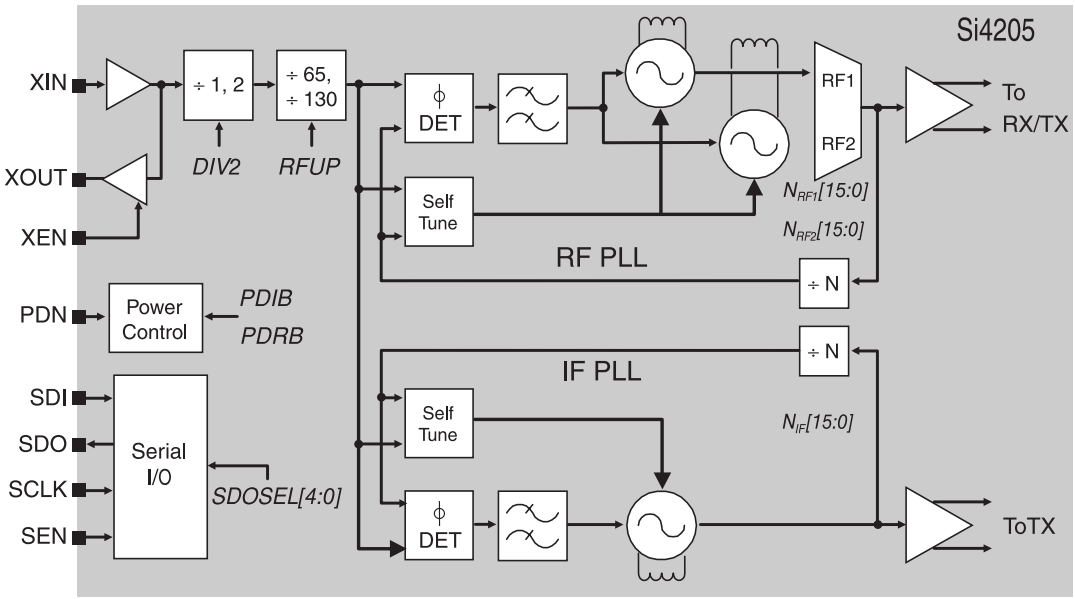


Figure 3-4. SI4205 FREQUENCY SYNTHESIZER PART

The Aero I transceiver 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 NIF. Programming the N-Divider register for either RF1 or RF2 automatically selects the proper VCO. The output frequency of each PLL is as follows:

$$f_{out} = N \times f_{\phi}$$

The DIV2 bit in register 31h controls a programmable divider at the XIN pin to allow either a 13 or 26 MHz reference frequency. For receive mode, the RF1 PLL phase detector update rate (f_{ϕ}) should be programmed f_{ϕ} = 100 kHz for DCS 1800 or PCS 1900 bands, and f_{ϕ} = 200 kHz for GSM 850 and E-GSM 900 bands. For transmit mode, the RF2 and IF PLL phase detector update rates are always f_{ϕ} =200 kHz.

3.2 Power Amplifier Module (RF3133, U302)

The RF3133 is a high-power, high-efficiency power amplifier module with integrated power control. The device is self-contained with 50Ω input and output terminals. The power control function is also incorporated, eliminating the need for directional couplers, detector diodes, power control ASICs and other power control circuitry; this allows the module to be driven directly from the DAC output.

The device is designed for use as the final RF amplifier in GSM 850, E-GSM 900, DCS and PCS handheld digital cellular equipment and other applications in the 824-849 MHz, 880-915 MHz, 1710-1785 MHz, and 1850-1910 MHz bands.

On-board power control provides over 37 dB of control range with an analog voltage input (TX_RAMP); and, power down with a logic “low” for standby operation (TX_ENABLE).

External control (BAND_SELECT) is used to select the GSM or DCS band with a logic high or low. A logic low enables the GSM band whereas a logic high enables the DCS band.

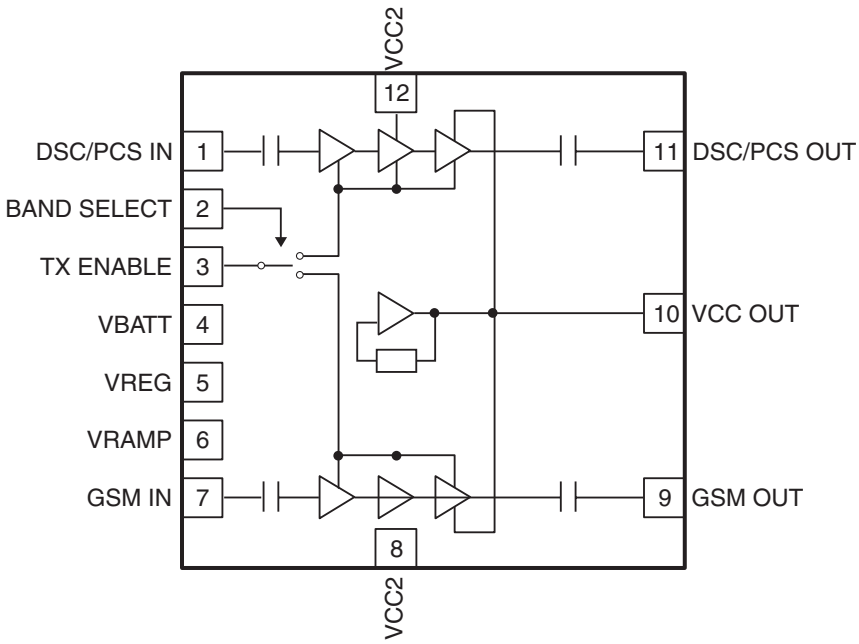


Figure 3-5. FUNCTIONAL BLOCK DIAGRAM OF RF3133

3.3 13MHz Clock (VCTCXO, X301)

The 13 MHz clock(X301) consists of a TCXO(Temperature Compensated Crystal Oscillator) which oscillates at a frequency of 13 MHz. It is used within the Si4205, analog base band chipset (U102, AD6537B), digital base band chipset (U101, AD6525), and MIDI (U401) chipset.

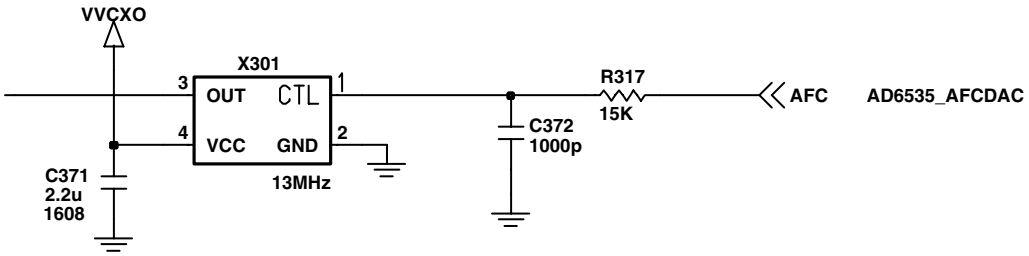


Figure 3-6. VCTCXO CIRCUIT DIAGRAM

3.4 Power Supplies for RF Circuits (RF LDO, U303)

Two regulators are used for RF circuits. One is MIC5255 (U303), and the other is one port of AD6537B (U102).

MIC5255 (U303) supplies power to transceiver (SI4205, U301).

One port of AD6537B supplies power to VCTCXO (X301).

Main power (VBAT) from battery is used for PAM (RF3133, U302) because PAM requires high power.

Table 3-2. RF POWER SUPPLIERS

Supplier	Voltage	Powers	Enabled signal
U303 (VRF)	2.85V	U301, U302	CLKON
U102 (VVCX0)	2.75V	X301	
Battery (VBAT)	3.4~4.2V	U302,U303	

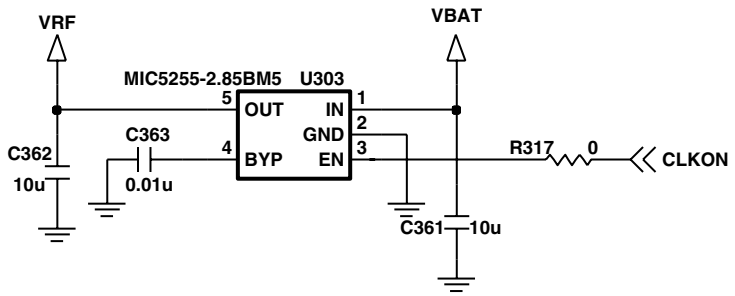


Figure 3-7. RF LDO CIRCUIT DIAGRAM

3.5 Digital Main Processor (AD6525, U101)

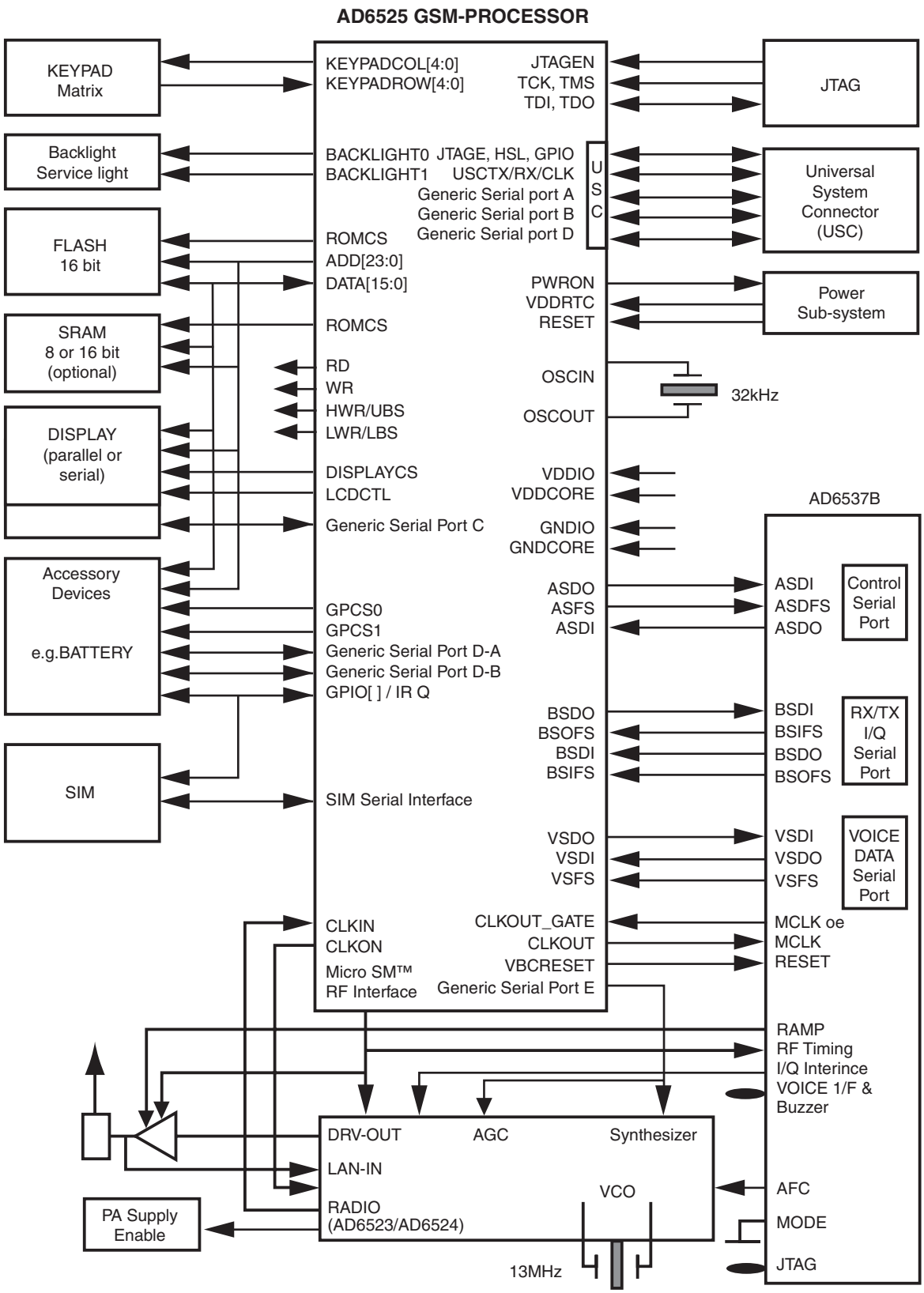


Figure 3-8. SYSTEM INTERCONECTION OF AD6525 EXTERNAL INTERFACE

• AD6525 is an ADI designed processor.

• AD6525 consists of

1. BUS arbitration Subsystem

• EBUS, RBUS, PBUS, SBUS, DMABUS, IOBUS

2. DSP Subsystem

• ADI DSP, Viterbi coprocessor, Ciphering unit, Cache memory/controller system

3. MCU Subsystem

• ARM7TDMI, boot ROM, Clock generation and access control module

4. Peripheral Subsystem

• MMI group
  ⇨ Keyboard, Display, Backlight, RTC, GPIO interface

• House Keeping group
  ⇨ Watchdog Timer, Interrupt controller, General Timer

• GSM system group

• Direct Memory Access group
  ⇨ Between PBUS,RBUS, and EBUS

3.5.1 Interconnection with external devices

A. RTC Block Interface

Countered by external X-TAL

The X-TAL oscillates 32.768KHz

B. LCD module interface

The LCD module is controlled by DBB chipset, AD6525.

When LCD operate, the AD6525 controls the LCD module through LCD_CS, LCD_RESET, ADD01, WR, DATA[00-15]. LCD_ID, LCD_RESET

Table 3-3. LCD module interface

Signals	Description
LCD_CS	MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
LCD_RESET	This pin resets LCD module.
ADD1(RS)	This pin determines whether the data to LCD module are display data or control data. ADD1 can select 16 bit parallel bus. ADD1 is also used to address flash memory.
WR	Write control. The phone do not read data from LCD chip.
DATA	Parallel data lines. Color LCD driver chip uses the 16-bit data interface.
2V8_VMEM	3V voltage is supplied to white colored LED driver for backlighting.
LCD_BACKLIGHT	Control signal of white LED driver IC.
DATA[00-15]	Parallel data lines, Sub LCD driver chip uses the 8-bit data in reface.

C. RF Interface

The AD6525 control RF parts through PA_BAND, ANT_SW1, ANT_SW2, CLKON , PA_EN, S_EN, S_DATA, S_CLK, RF_PWR_DWN

Table 3-4. RF CONTROL SIGNALS DISCRIPTION

GPO	Signal Name	Description
17	PA_BAND	PAM Band Select
9	ANT_SW1	Antenna Switch Band Select
11	ANT_SW2	Antenna Switch Band Select
-	CLKON	RF LDO Enable/Disable
16	PA_EN	PAM Enable/Disable
19	S_EN	PLL Enable/Disable
20	S_DATA	Serial Data to PLL
21	S_CLK	Clock to PLL
4	RF_PWER_DWN	Powerdown Input

D. SIM Interface

The AD6525 check status periodically in call mode if SIM card is inserted or not, but the AD6525 don't check in deep sleep mode.

Interface by SIM_DATA, SIMCLK, SIM_RST(GPIO_23)

Table 3-5. SIM CONTROL SIGNALS DISCRIPTION

	Description
SIM_DATA	This pin receives and sends data to SIM card. This model support only 3.0 volt interface SIM card.
SIMCLK	Clock 3.25MHz frequency.
SIM_RST(GPIO_23)	Reset SIM block

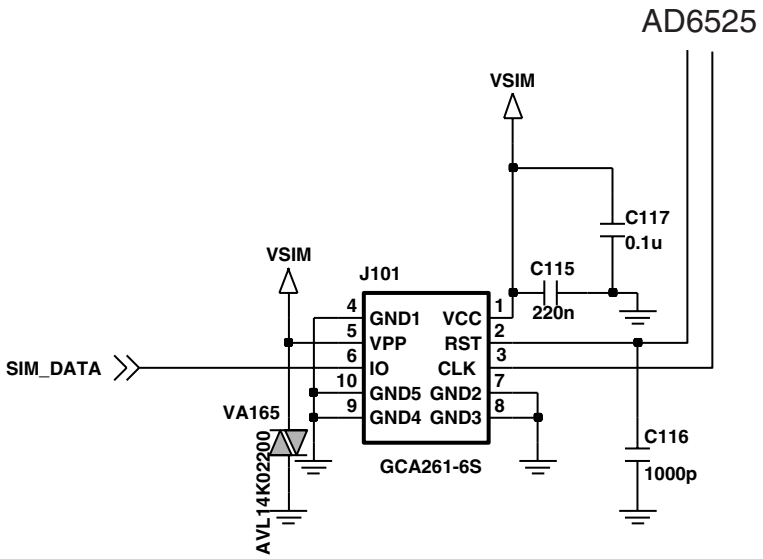


Figure 3-9. SIM CIRCUIT

E. Key Interface

Include 5 column and 5 row. The AD6525 detect key press by interrupt.

F. ADP3537B Interrupt

There are two interrupts, EOC and CHRDET

EOC: End of Charge. AD6525 makes charging operation stop when high signal is inputted.

CHRDET: This pin is activated when the charger is inserted.

3.5.2 AD6525 Architecture

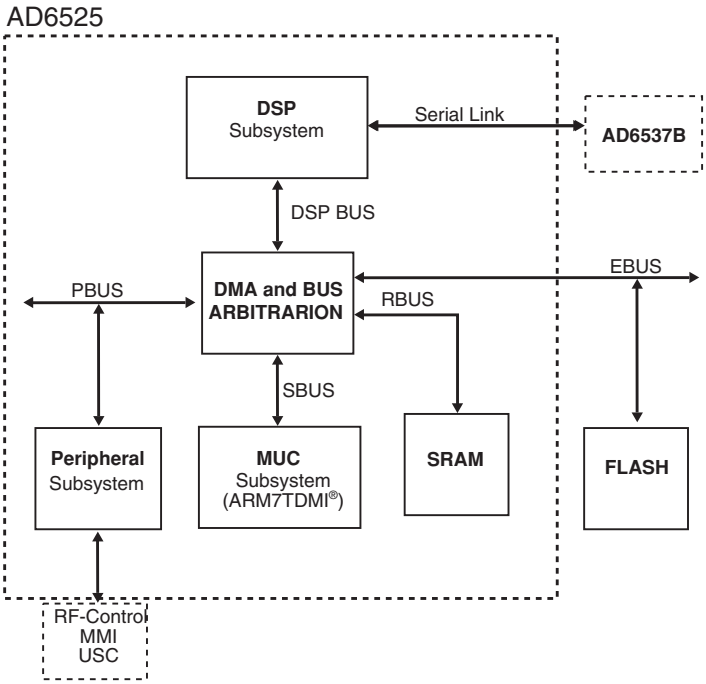


Figure 3-10. AD6525 INTERNAL ARCHITECTURE

The internal architecture of AD6525 is shown in Figure 3-10. AD6525 regroups three main subsystems connected together through a dynamic and flexible communication bys network. It also includes onboard system RAM (SRAM) and interfaces with external Flash Memory, Baseband converter functions, and terminal functions like MMI, SIM and Universal System Connector (USC).

The Digital Signal Processing (DSP) subsystem primarily hosts all the speech processing, channel equalization and channel codec functions. The code used to implement such functions can be stored in external Flash Memory and dynamically downloaded on demand into the DSP's program RAM and Instruction Cache.

The microcontroller subsystem supports all the GSM terminal software, including the layer 1, 2 and 3 of the GSM protocol stack, the MMI, and applications software such as data services, test and maintenance. It is tightly associated with on-chip system SRAM and also includes boot ROM memory with a small dedicated routine to facilitate the initialization of the external Flash Memory via code download using the on-chip serial interface to the external Flash Memory interface.

The peripheral subsystem is composed of system peripherals such as interrupt controller, real time clock, watch dog timer, power management and a timing and control module. It also includes peripheral interfaces to the terminal functions: keyboard, battery supervision, radio and display. Both the DSP and the MCU can access the peripheral subsystem via the peripheral bus (PBUS).

For program and data storage, both the MCU subsystem and the DSP subsystem can access the on chip system SRAM and external memory such Flash Memory. The access to the SRAM module is made through the RAM Bus (RBUS) under the control of the bus arbitration logic. Similarly, access to the Flash Memory is through the parallel External Bus (EBUS).

3.6 Analog Main & Power Management Processor (AD6537B, U102)

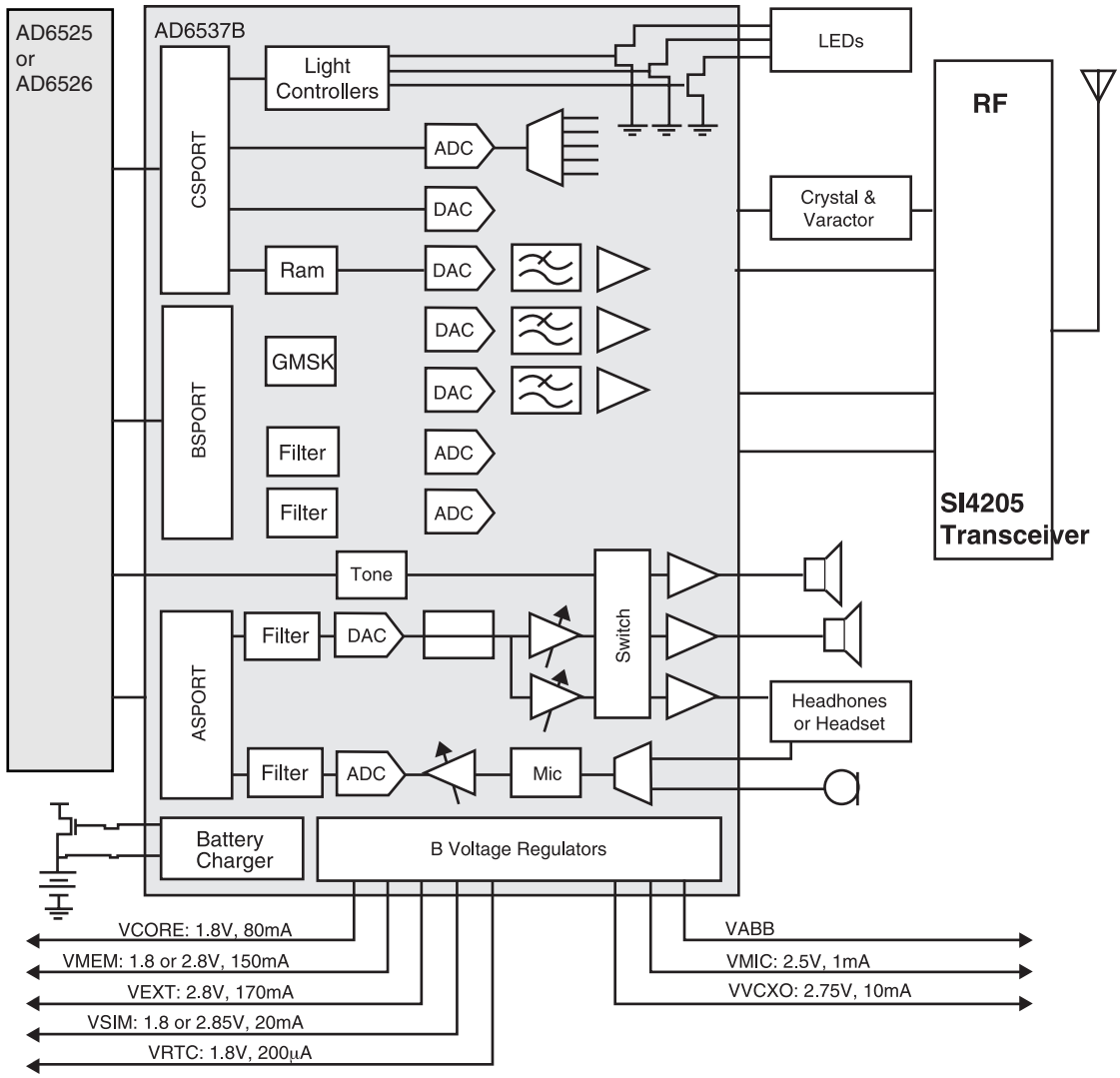


Figure 3-11. AD6537B FUNCTIONAL BLOCK DIAGRAM

• AD6537B is an ADI designed processor.

• AD6537B consists of

1. BB Transmit section

- This section generates in-phase and quadrature BB modulated GMSK signals.
- Digital GMSK modulator, 10-bit DACs, Reconstruction Filter

2. BB Receive section

- 2 identical ADC channels that process BB in-phase and quadrature input signals.

3. Auxiliary section

- 2 auxiliary DASs •AFC DAC, IDAC, AUX ADC
- AUX ADC : 6 channels 10 bits
  AFC DAC : 13 bits
  IDAC : 10 bits

4. Voiceband section

- Receive audio signal from MIC.
  Send audio signal to Speaker
- It interconnect with external device like main microphone, main receiver, ear-microphone and Hands-free kit.

5. Power Management section

- 8 LDOs Block in the AD6537B. VCORE, VMEM, VEXT, VSIM, VRTC, VABB, VMIC, VVCXO
- Battery Charging Block

3.6.1 Baseband transmit section

1. The AD6537B Baseband Transmit Section is designed to support GMSK for both single-slot and multi-slot application.
2. The transmit channel consists of a digital GMSK modulator, a matched pair of 10-bit DACs and a matched pair of reconstruction filter

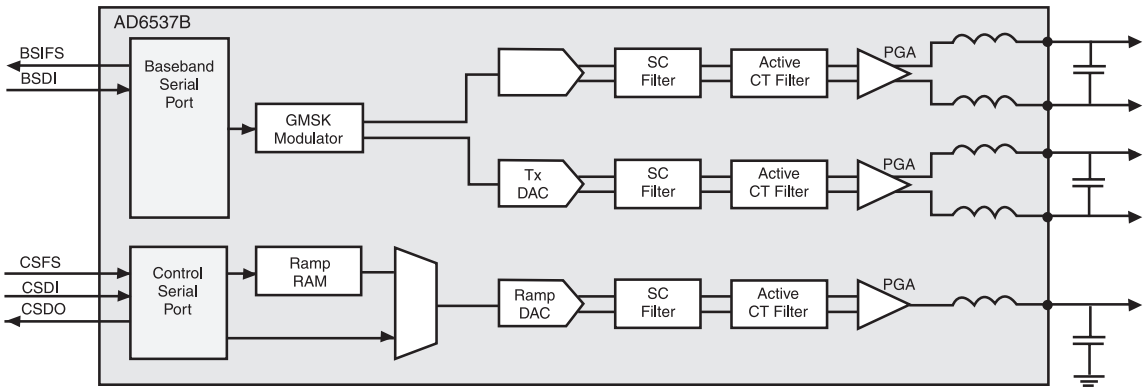


Figure 3-12. AD6537B BASEBAND TRANSMIT SECTION

3.6.2 Baseband receive section

1. This section consists of two identical ADC channels that process baseband in-phase(I) and quadrature(Q) input signals.
2. Each channel consists of a coarse switched capacitor Anti-Alias filter, followed by a low-pass digital filter

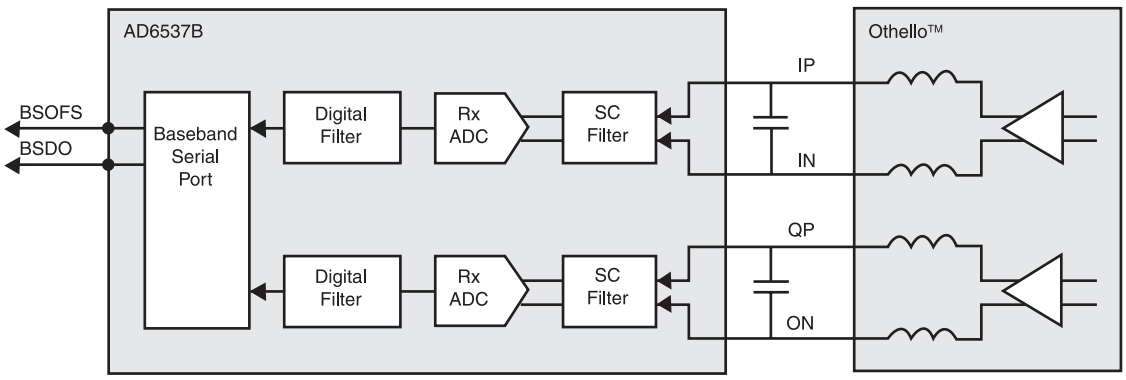


Figure 3-13. AD6537B BASEBAND RECEIVE SECTION

3.6.3 Auxiliary Section

1. This section includes an Automatic Frequency Control (AFC) DAC, voltage reference buffers, an Auxiliary ADC, and light controllers.
2. This section also contains AUX ADC and Voltage Reference
   - AFC DAC: 13 bits
   - IDAC: 10 bits
   - The Auxiliary ADC provides :

   Two differential inputs for temperature sensing.

   - A differential input for the battery charger current sensor
   - A single-ended input for battery voltage measurement
   - A single-ended input for battery type identification
   - Two single-ended inputs for microphone and hookswitch detection, one for each of two analog

   Audio input channels

   - Two general purpose external inputs
   - REF, REFOUT, REFCHG
   - REFADC and REFADC/2, and AGND1 inputs for offset and gain measurement

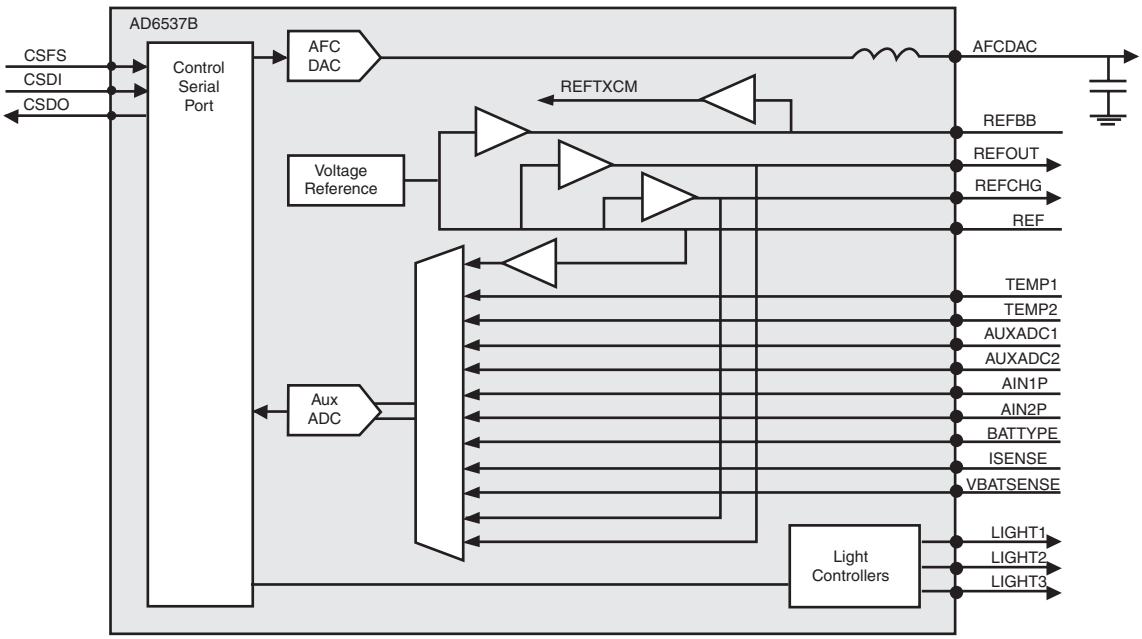


Figure 3-14. AD6537B AUXILIARY SECTION

3.6.4 Audio Section

1. Receive audio signal from microphone. C1100 use differential configuration.
2. Send audio signal to speaker. C1100 use differential configuration.
3. This section provides an audio codec with a digital-to-analog converter and an analog-to-digital converter, a ring tone volume controller, a microphone interface, and multiple analog input and output channels.
4. It interconnect with external device like main microphone, main receiver, and headset jack through the AIN1N, AIN1P, AIN2N, AIN2P, AIN3N, AIN3P, AOUT1P, AOUT1N, AOUT2P, AOUT2N, AOUT3P, and AOUT3N port.
   - AIN1P, AIN1N : Main microphone positive/negative terminal
   - AOUT2P, AOUT2N : Main Speaker positive/negative terminal
   - AIN2P, AIN2N : Ear-Mic microphone positive/negative terminal
   - AOUT1P, AOUT1N : Ear-Mic speaker positive/negative terminal

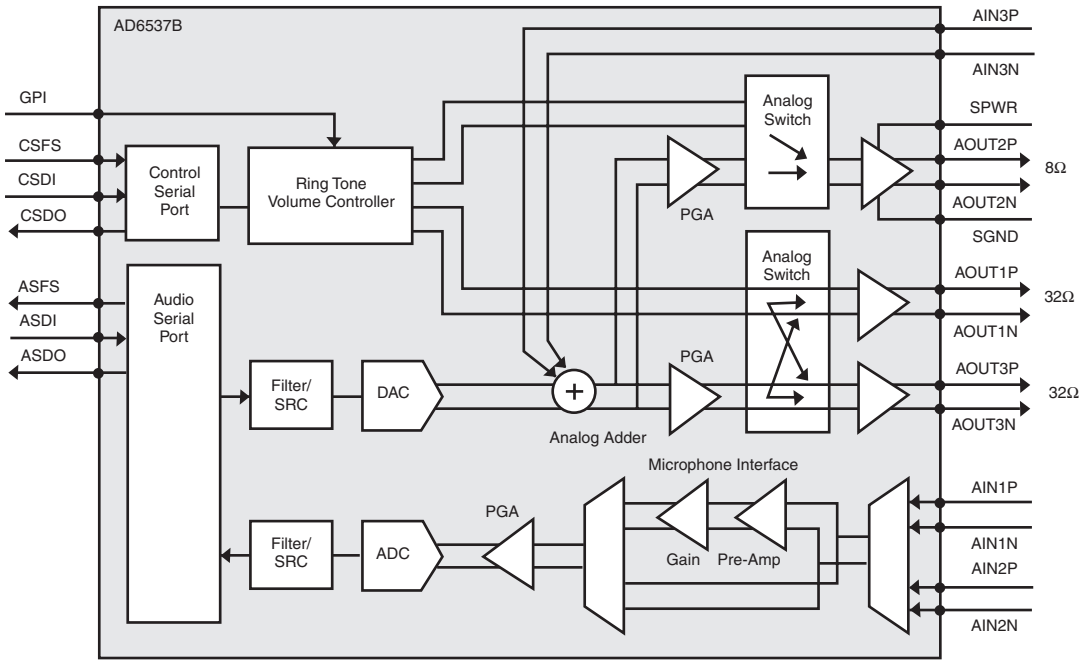


Figure 3-15. AD6537B AUDIO SECTION

3.6.5 Power Management

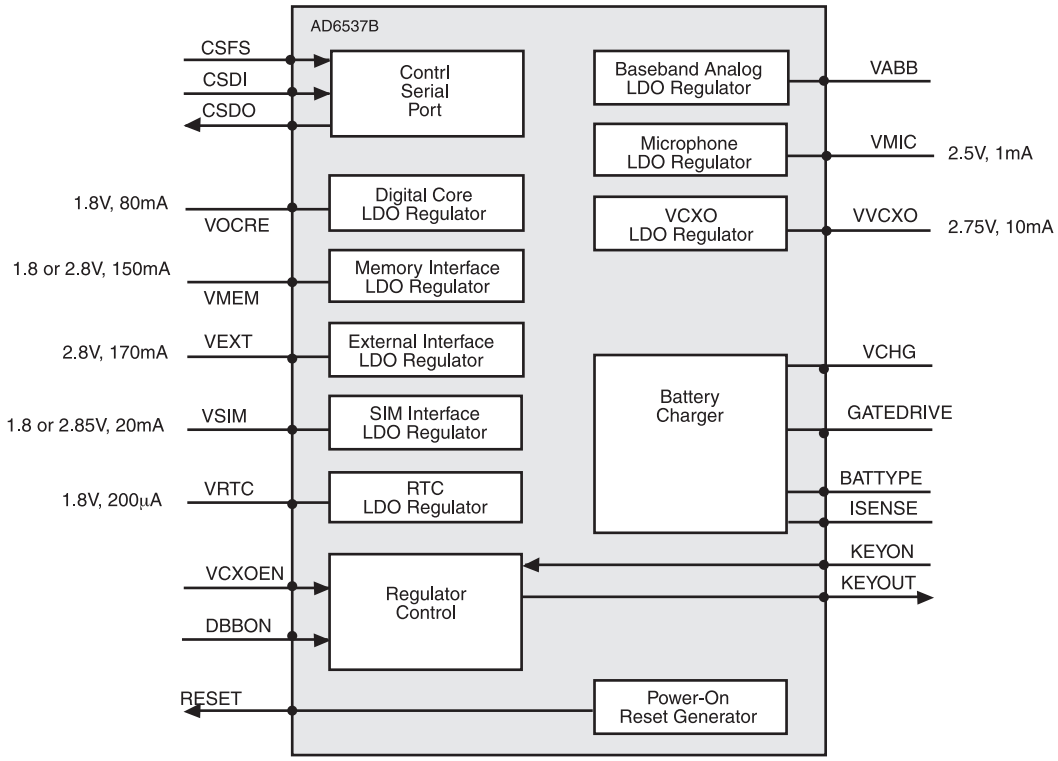


Figure 3-16. AD6537B POWER MANAGEMENT SECTION

1. Power up sequence logic

1. The AD6537B controls power on sequence
2. Power on sequencez
   - If a battery is inserted, the battery powers the 8 LDOs.
   - Then if PWRONKEY is detected, the LDOs output turn on.
   - REFOUT is also enabled
   - Reset is generated and send to the AD6525

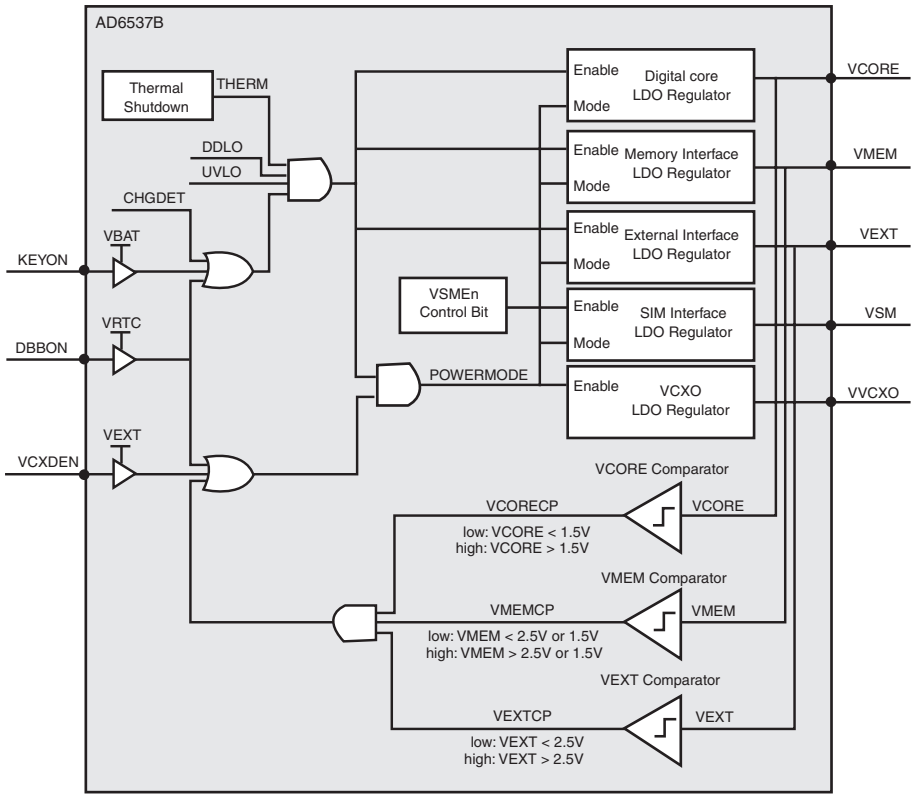


Figure 3-17. AD6537B POWER MODE LOGIC

2. LDO Block

1. There are 8LDOs in the AD6537B.
   - VCORE : supplies Digital Baseband Processor core and AD6537 digital core (1.8V, 80mA)
   - VMEM : supplies external memory and the interface to the external memory on the digital baseband processor (1.8V or 2.8V, 150mA)
   - VEXT : supplies Radio digital interface and high voltage interface (2.8V, 170mA)
   - VSIM : supplies the SIM interface circuitry on the digital processor and SIM card (1.8V or 2.85V, 20mA)
   - VRTC : supplies the Real-Time Clock module (1.8 V, 200 µA)
   - VABB : supplies the analog portions of the AD6537
   - VMIC : supplies the microphone interface circuitry (2.5 V, 1 mA)
   - VVCXO : supplies the voltage controlled crystal oscillator (2.75 V, 10 mA)

Table 3-6. AD6537B LDO DESCRIPTION

	Description
VSIM	2.85V(is provided to SIM card)
VCORE	1.8V(is provided to the AD6525 & AD6537B's digital core)
VRTC	1.8V(is provided to the RTC and Backup Battery)
VMIC	2.55V(is provided to the AD6525 I/O and used as microphone bias)
VTCXO	2.75V(is provided to VCTCXO)
VMEM	2.8V(is provided to Flash)
VEXT	2.8V(is provided to LCD)

3. Battery Charging Block

1. It can be used to charge Lithium Ion and/or Nickel Metal Hydride batteries. Charger initialization, trickle charging, and Li-Ion charging control are implemented in hardware.
2. Charging Process
   - Check charger is inserted or not
   - If AD6537B detects that Charger is inserted, the CC-CV charging starts.
   - Exception: When battery voltage is lower than 3.2V, the precharge(low current charge mode) starts firstly.
   - And the battery voltage reach to 3.2V the CC-CV charging starts.
3. Pins used for charging
   - CHG_DET: Interrupt to AD6525 when charger is plugged.
   - CHG_EN: Control signal from AD6525 to charge Li+ battery
   - EOC: Interrupt to AD6525 when battery is fully charged
   - GATEIN: Control signal from AD6525 to charge NiMH battery. But, not used.
   - MVBAT: Battery voltage divider. Divide ratio is 1:2.3 and it is sensed in AD6521 AUX_ADC
4. TA (Travel Adaptor)
   - Input voltage: AC 85V ~ 260V, 50~60Hz
   - Output voltage: DC 5.2V (±0.2 V)
   - Output current: Max 850mA (±50mA)
5. Battery
   - Li-polymer & Li-ion battery (Max 4.2V, Nom 4.0V)
   - Standard battery: Capacity - 770mAh, Advanced Li-ion

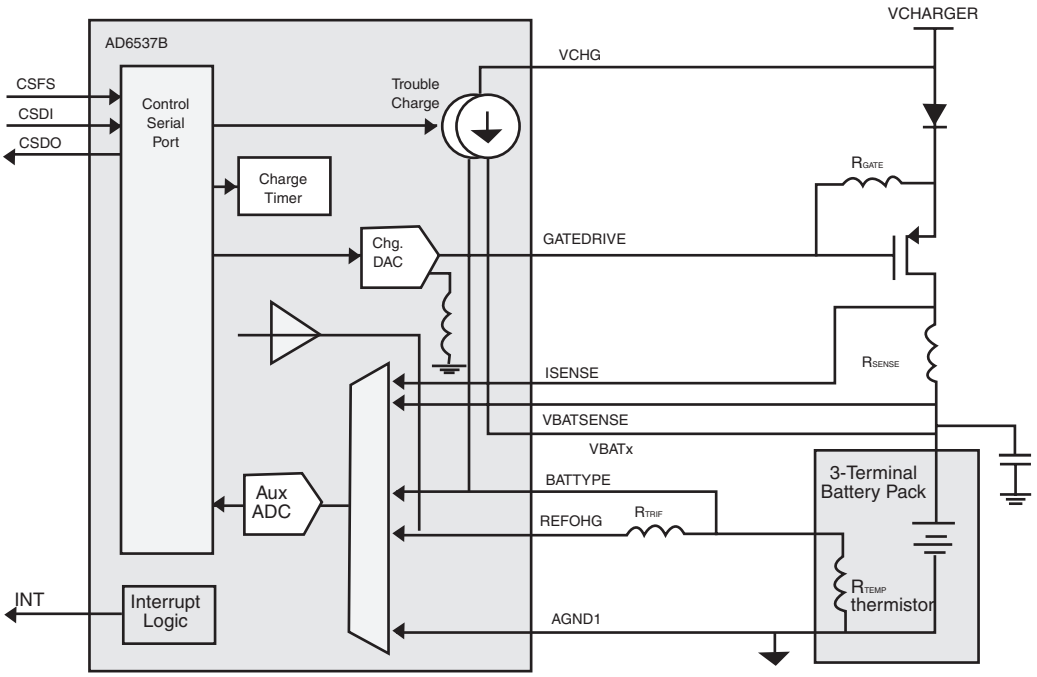


Figure 3-18. AD6537B BATTERY CHARGING BLOCK

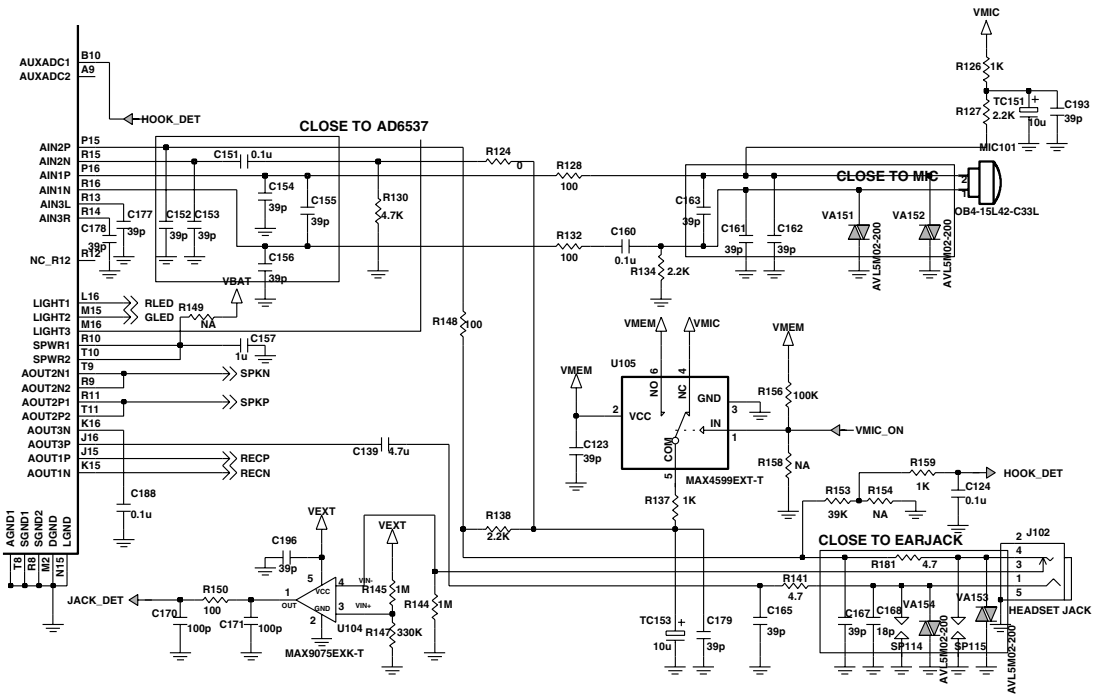


Figure 3-19. C1100 AUDIO CIRCUIT

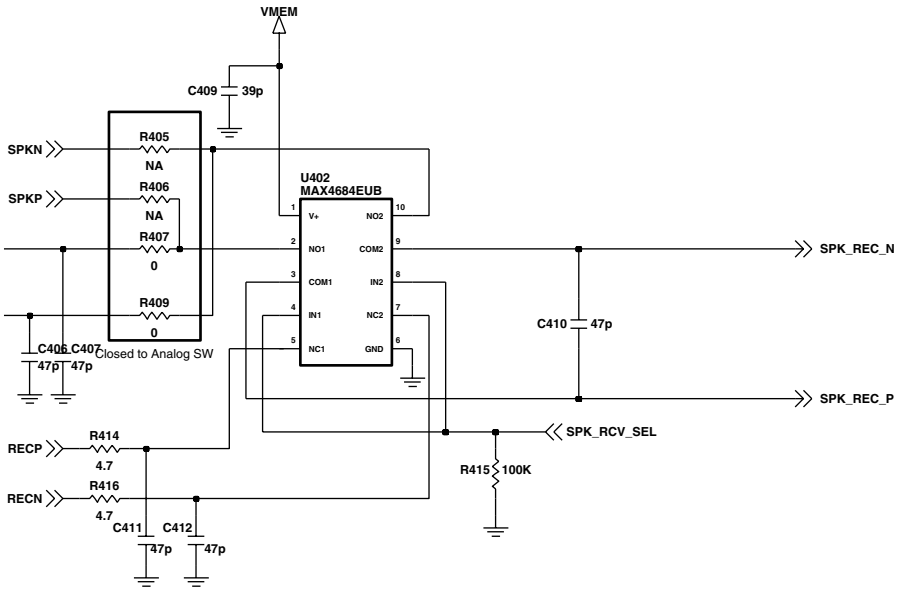


Figure 3-20. MAIN RECEIVER CIRCUIT

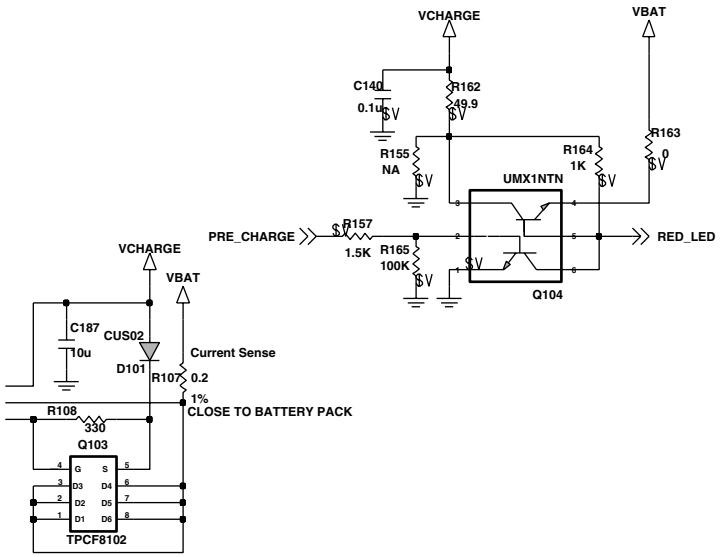


Figure 3-21. CHARGING CIRCUIT

In order to reduce time for trickle charging, additional circuit (Pre-charge circuit) was included. This circuit has supplied a 50mA current into the battery additionally.

So call it, it reduce trickle charging time

3.7 Memory (TH50VPF5783AASB, U201)

Block Diagram

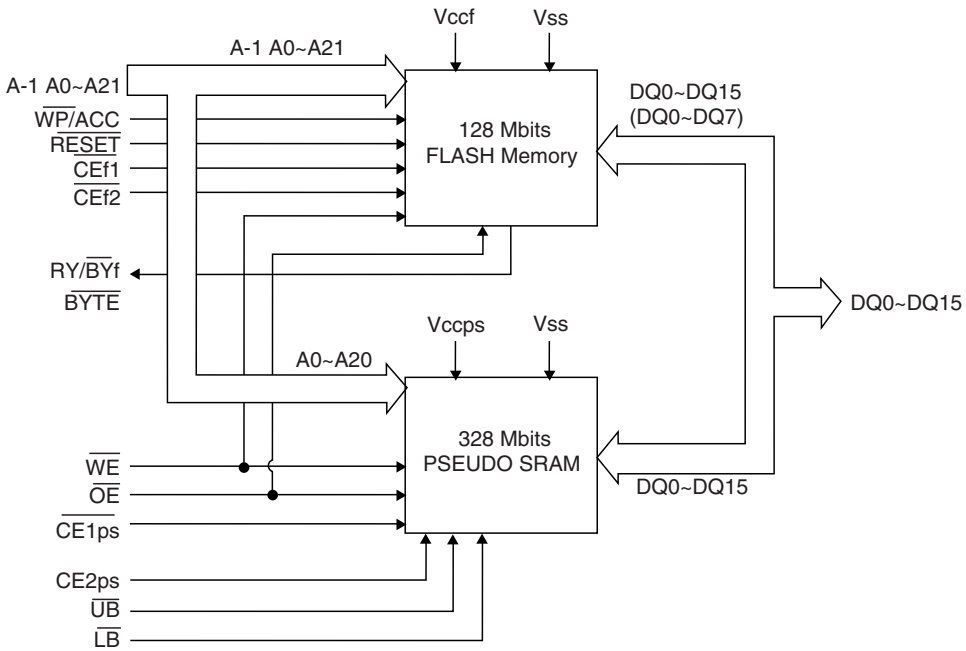


Figure 3-22. MEMORY BLOCK DIAGRAM

- 128Mbit flash memory + 32Mbit PSRAM
- 16 bit parallel data bus
- ADD01 ~ ADD22.
- 2 Chip enables for Flash memory select.
- RF Calibration data, Audio parameters and battery calibration data etc are stored in Flash memory area.

3.8 Display and Interface

Table 3-7. LCD module discription

Main LCD Display Format	128 X RGB X 128 dots
Main LCD Backlight	White LED Backlight

C1100 Main LCD supports one 65,536 color LCD module.

There are the control signals : LCD_CS (This acts as the chip select enable for the LCD Driver), WR, ADD01(RS) and LCD_RESET. DATA[00:15] pins to send data for displaying graphical text onto the LCD.

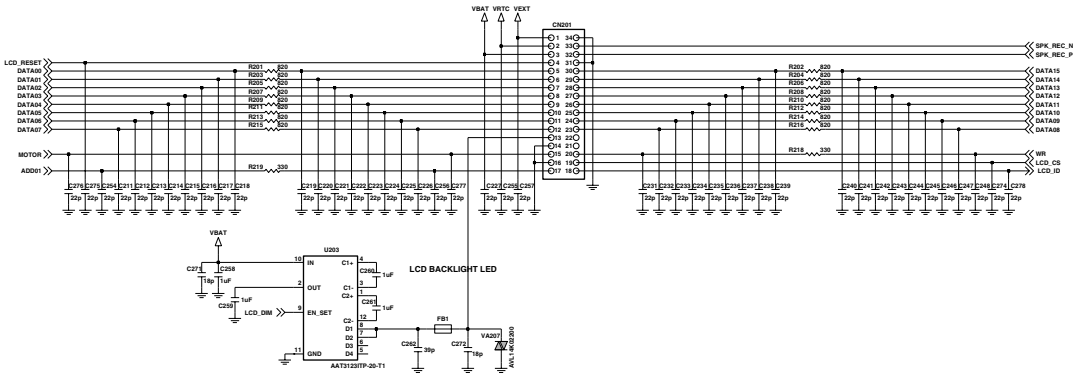


Figure 3-23. LCD INTERFACE CIRCUIT

3.9 Keypad Switches and Scanning

The key switches are metal domes, which make contact between two concentric pads on the keypad layer of the PCB when pressed. There are 24 switches (SW1-SW2,KB2~KB22), connected in a matrix of 5 rows by 5 columns, as shown in Figure, except for the power switch (KB101), which is connected independently. Functions, the row and column lines of the keypad are connected to ports of AD6525. The columns are outputs, while the rows are inputs and have pull-up resistors built in.

When a key is pressed, the corresponding row and column are connected together, causing the row input to go low and generate an interrupt. The columns/rows are then scanned by AD6525 to identify the pressed key.

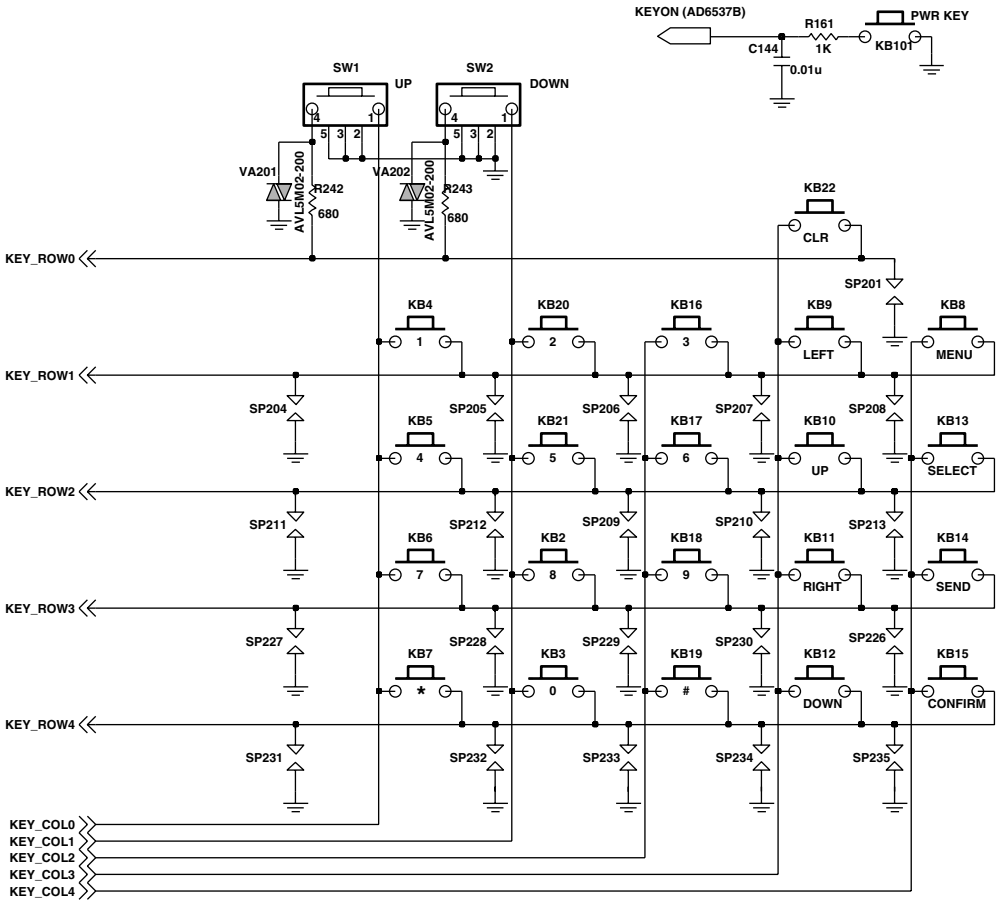


Figure 3-24. C1100 KEYPAD CIRCUIT

3.10 Microphone

The microphone is placed to the front cover and contacted to main PCB. The audio signal is passed to AIN1P and AIN1N pins of AD6537B. The voltage supply VMIC is output from AD6537B, and is a bias voltage for the AIN1P. The AIN1P and AIN1N signals are then A/D converted by the Voiceband ADC part of AD6537B. The digitized speech is then passed to the DSP section of AD6525 for processing (coding, interleaving etc.).

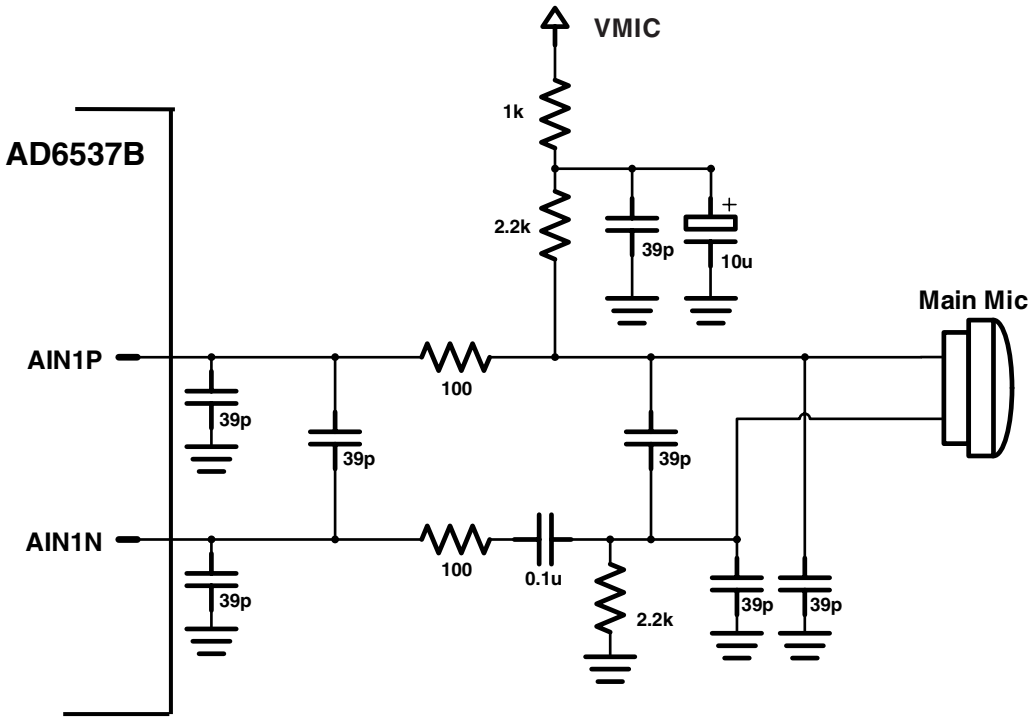


Figure 3-25. MICROPHONE

3.11 Main Receiver

The Receiver is driven directly from AD6537B AOUT1P and AOUT1N pins and the gain is controlled by the PGA in an AD6537B.

The Receiver is placed in the folder cover and contacted to LCD MODULE

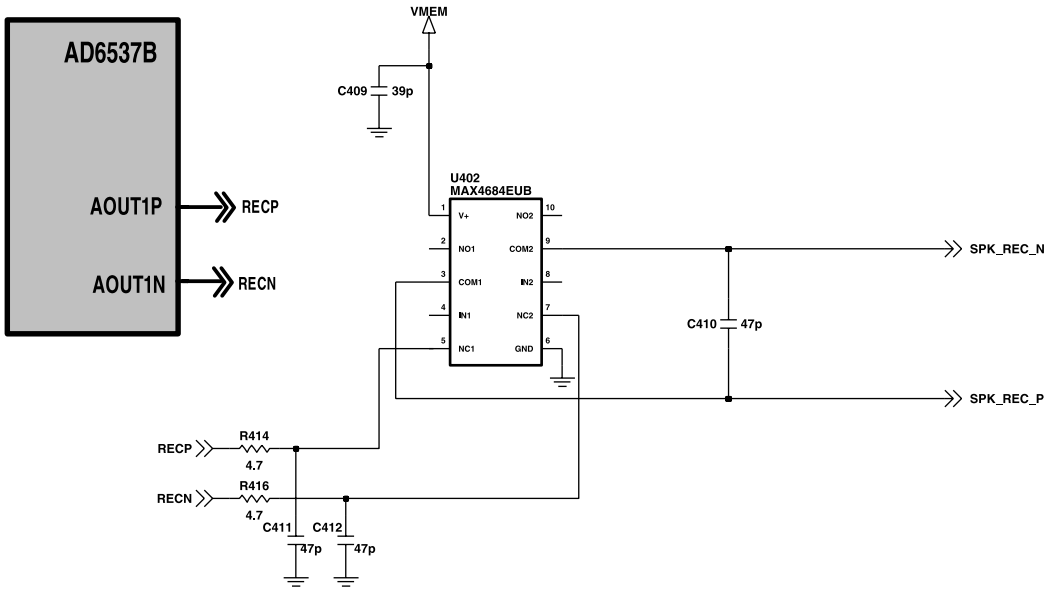


Figure 3-26. MAIN RECEIVER

3.12 Headset Jack Interface

This phone chooses a 3-pole type ear-mic jack which has three electrodes such as Receiver +, Mic+, and GND. This type usually supports only single-ended configuration in the audio path. But most of phones use the common interface.

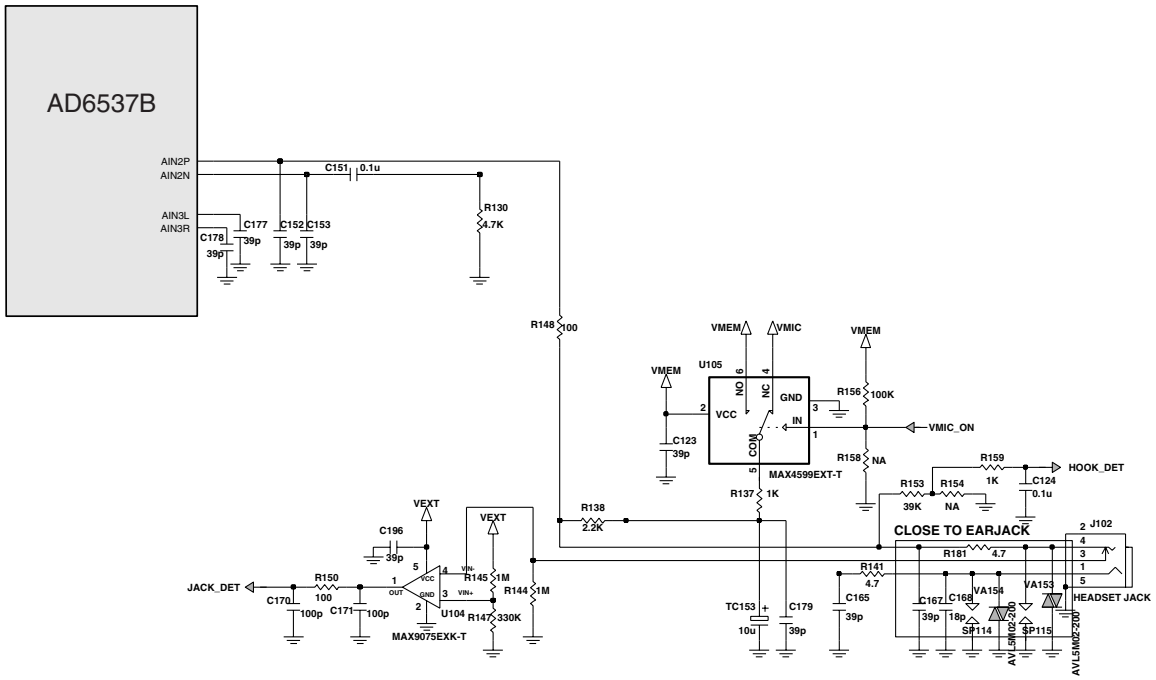


Figure 3-27. HANDS-FREE & HEADSET JACK INTERFACE

3.13 Speaker & MIDI IC

C1100 don't use buzzer. but uses the loud speaker and Melody IC which makes the robust joyful melody sounds.

• Melody IC control

2GPIO are assigned to control melody IC. Melody data is transferred to melody IC.

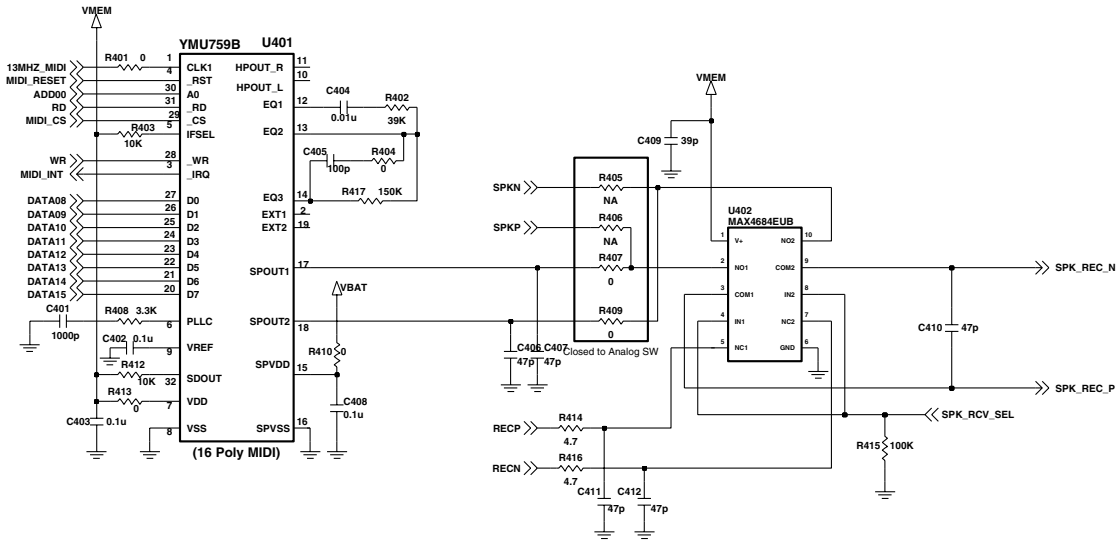


Figure 3-28. SPEAKER & MIDI IC

This phone have a melody IC of Yamaha, YMU759B is a synthesis LSI for portable telephone that is capable of playing high quality music by utilizing FM synthesizer and ADPCM decoder. This chipset is equipped with Yamaha's original FM synthesizer, with which the device is capable of simultaneously generating up to 16 voices with different tones, that is 16 polys. YMU759B includes a speaker amplifier low ripple whose maximum output is 550mW at SPVDD = 3.6V.

3.14 Key Back-light Illumination

In key back-light illumination, there are 10 blue LEDs on main PCB keypad side , which are driven by LIGHT3 line from AD6537B.

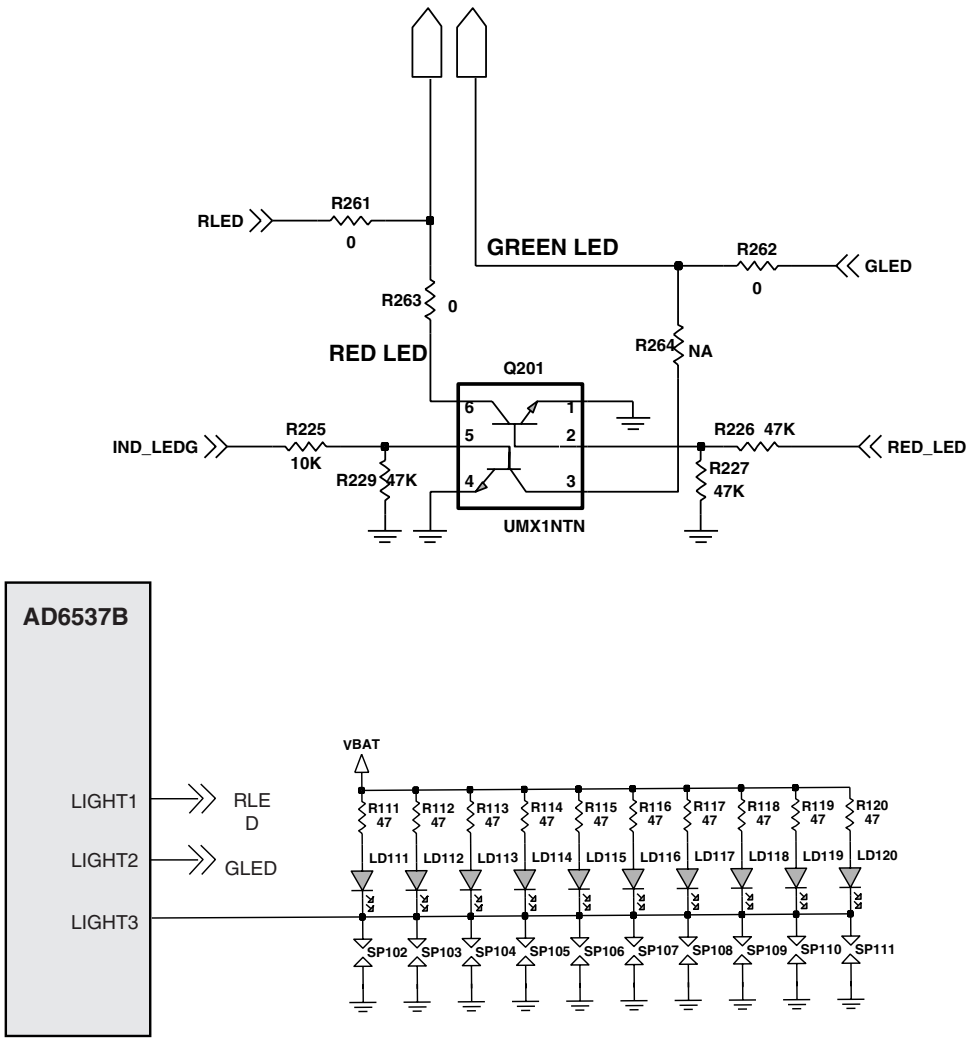


Figure 3-29. KEY BACK-LIGHT ILLUMINTION

3.15 LCD Back-light Illumination

In LCD Back-light illumination, there is an charge pump driver in main PCB, which is controlled by LCD_DIM line from AD6525.

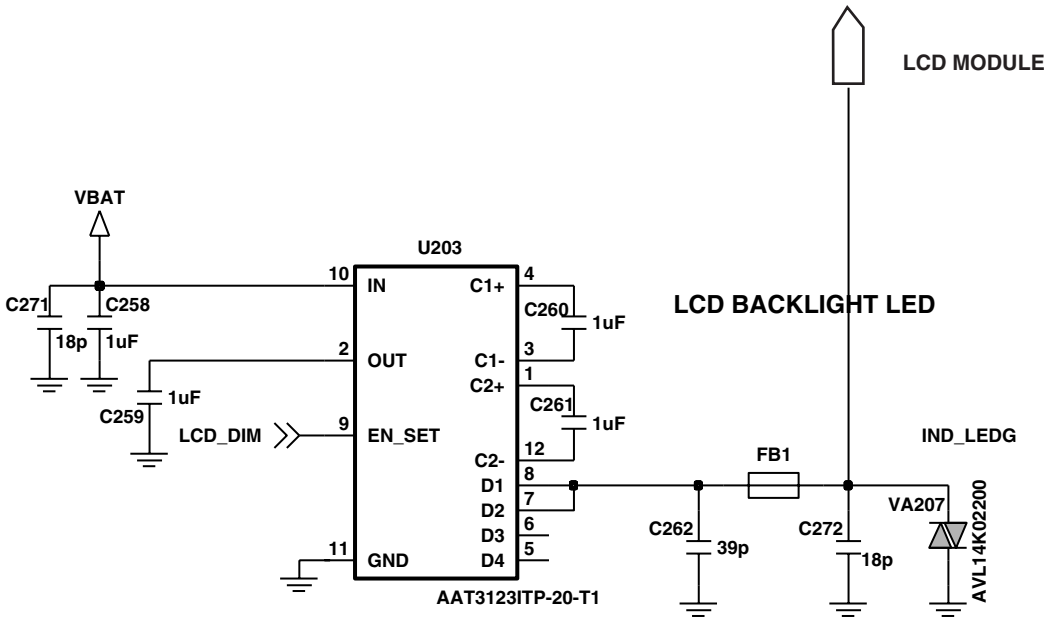


Figure 3-30. MAIN LCD BACKLIGHT ILLUMINATION

3.16 MOTOR

The Vibrator is placed in the folder cover and contacted to LCD MODULE. The vibrator is driven from VIBRATOR (GPIO_0) of AD6525.

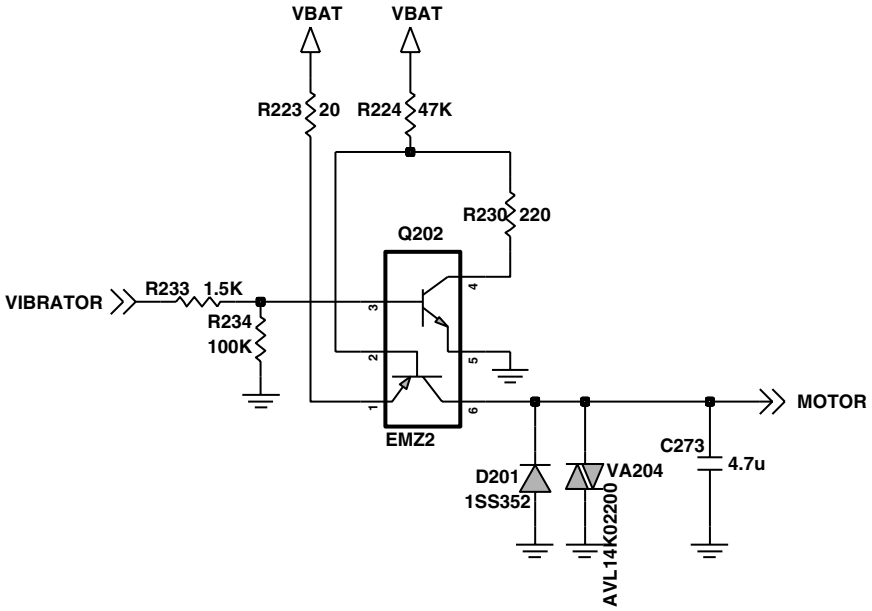


Figure 3-31. MOTOR

4. TROUBLE SHOOTING

4.1 RX Trouble

Test Point

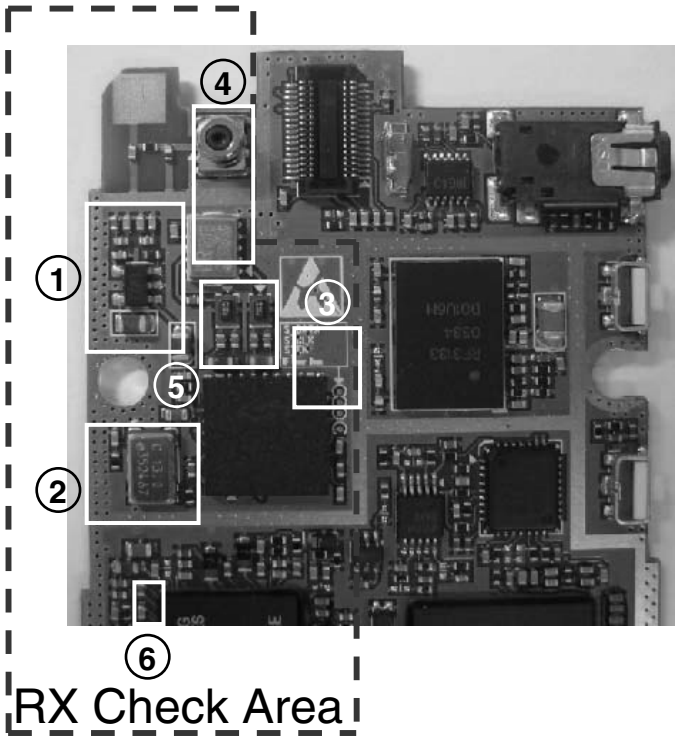
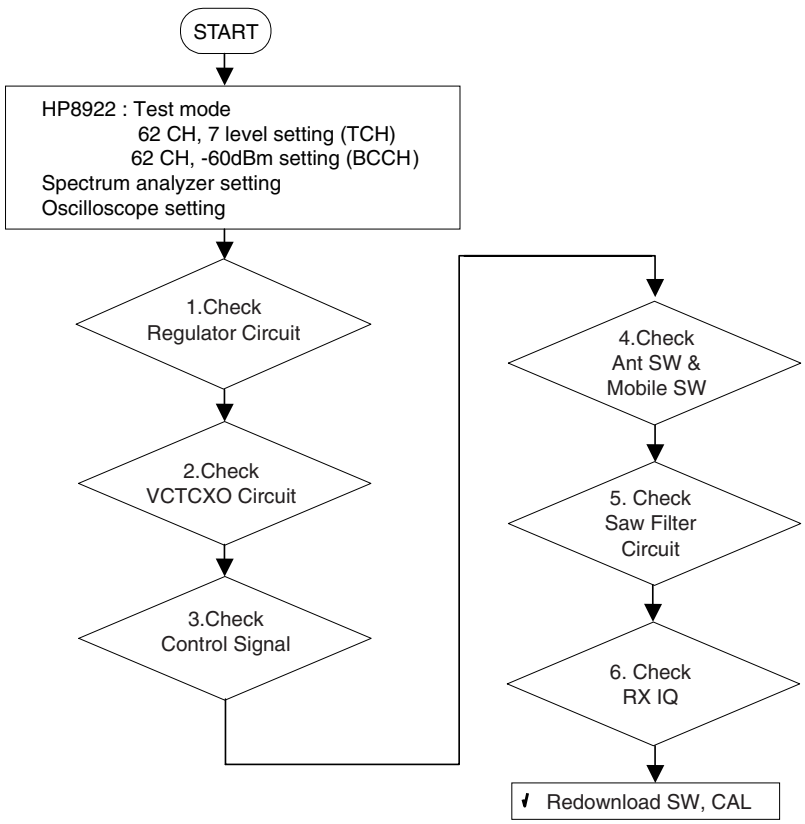


Figure 4-1.

Checking Flow



(1) Checking Regulator Circuit

Test Points

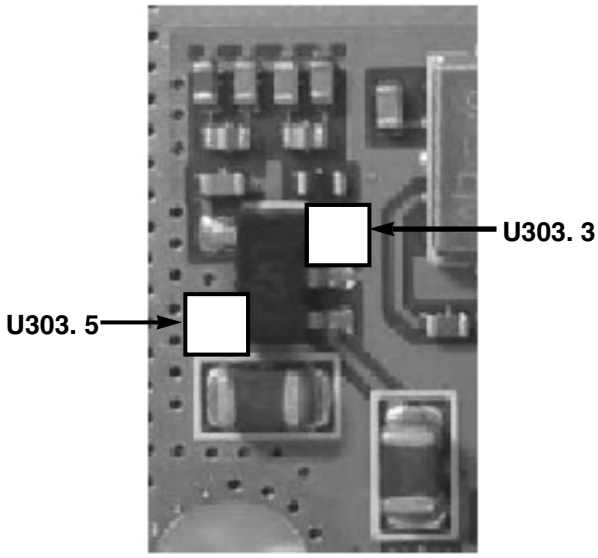
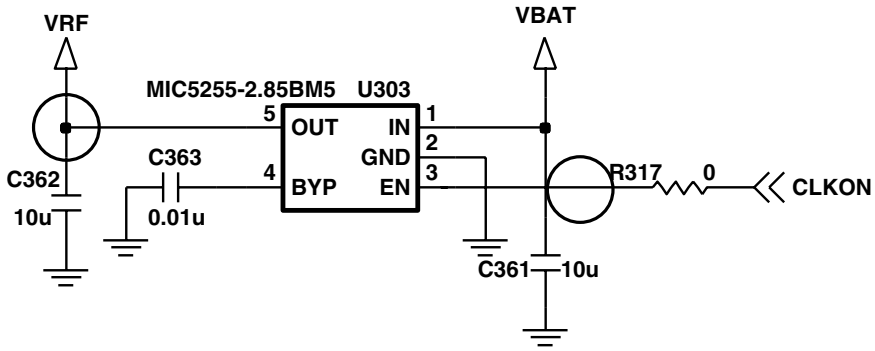
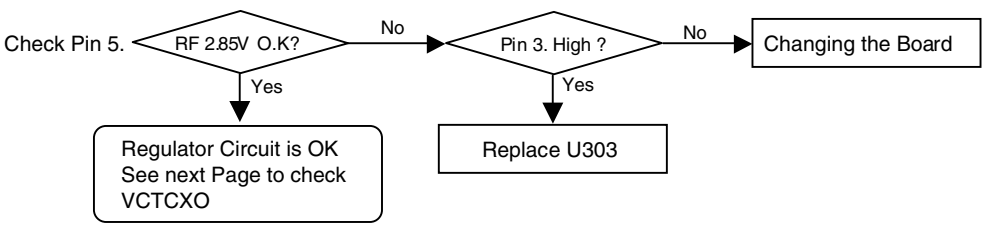


Figure 4-2.

Circuit Diagram



Checking Flow



(2) Checking VCTCXO Circuit

Test Points

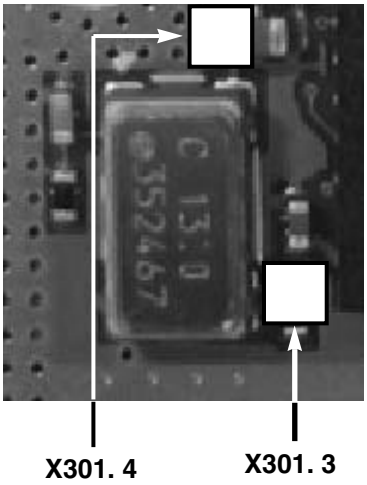
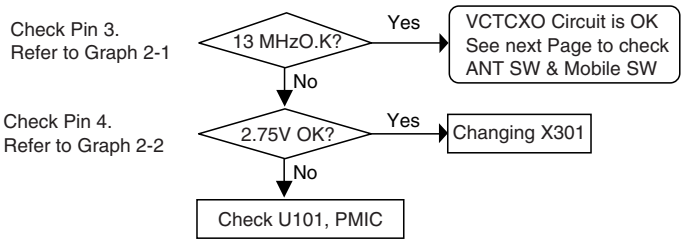
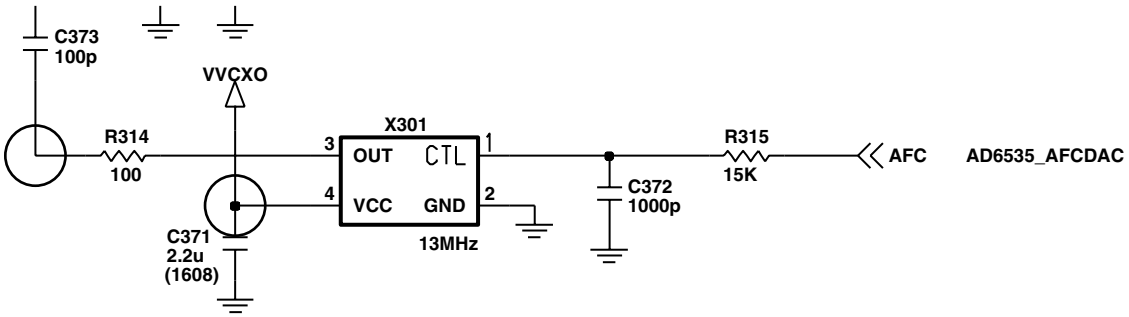


Figure 4-3.

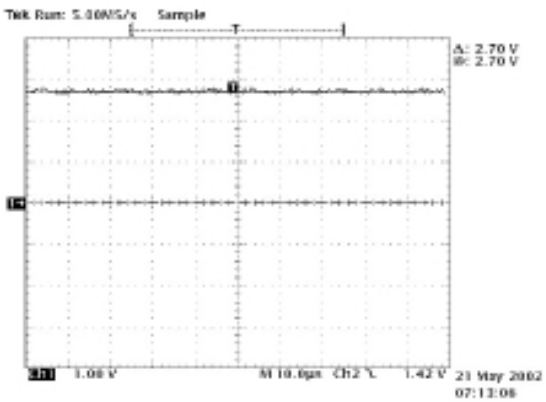
Checking Flow

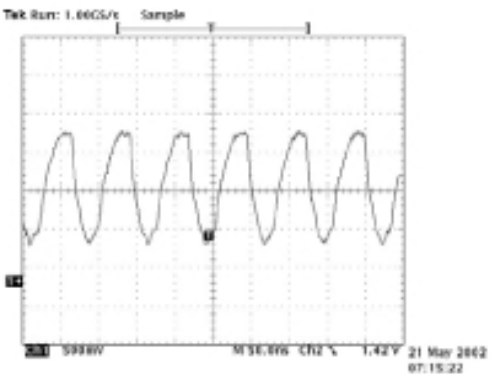


Circuit Diagram



Waveform





(3) Checking PLL Control Signal

Test Points

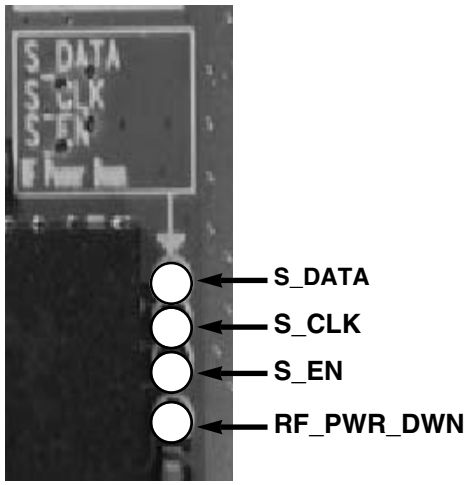
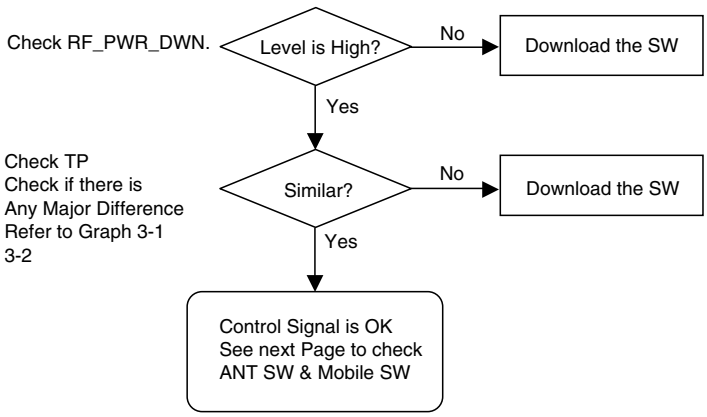
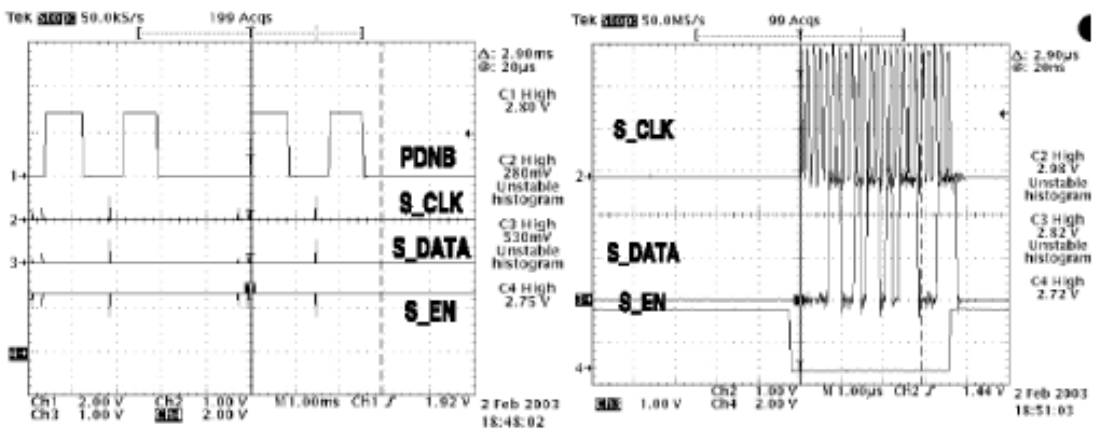


Figure 4-4.

Checking Flow



Waveform



(4) Checking Ant SW & Mobile SW

Test Points

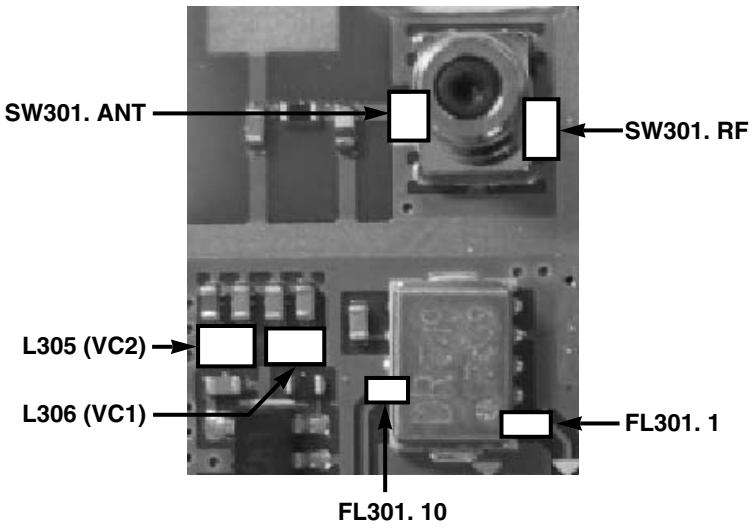
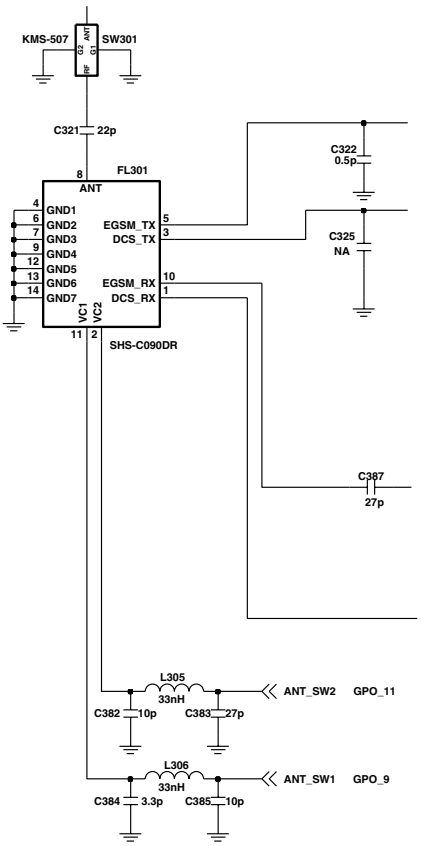
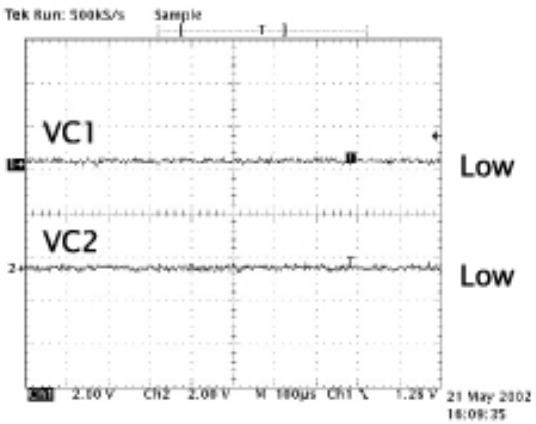


Figure 4-5.

Circuit Diagram



Waveform



ANT SW Control GSM& DCS RX Mode

Checking Flow

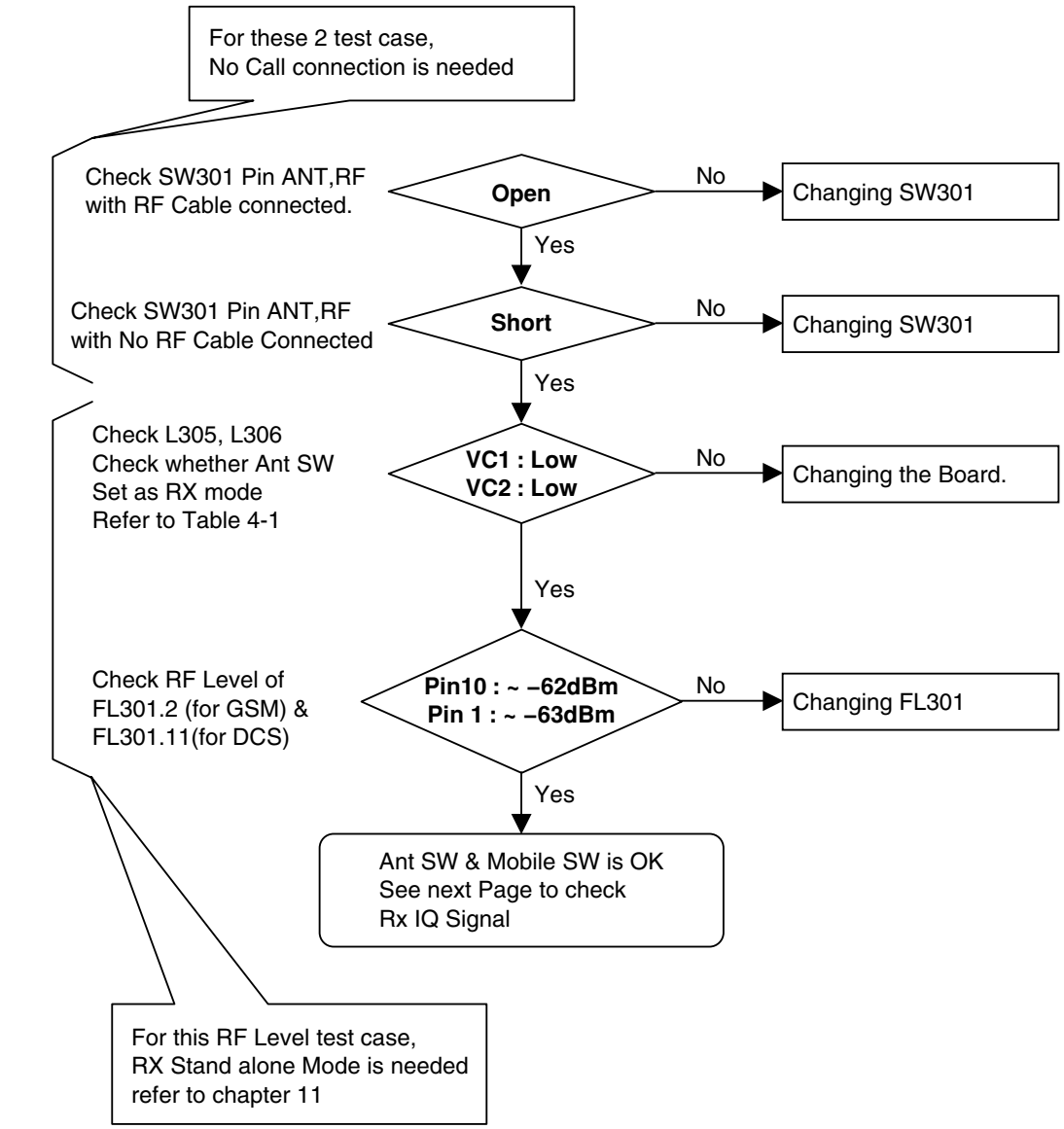
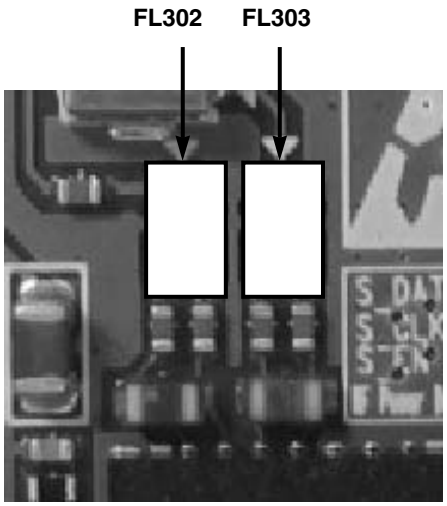


Table 4-1.

ANT SW	VC1	VC2
DCS TX	0	1
EGSM TX	1	0
EGSM,DCS RX	0	0

(5) Checking SAW Filter Circuit

Test Points



Circuit Diagram

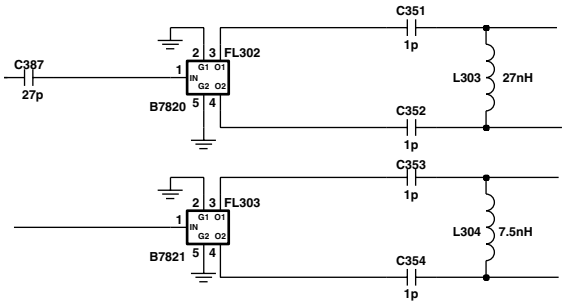
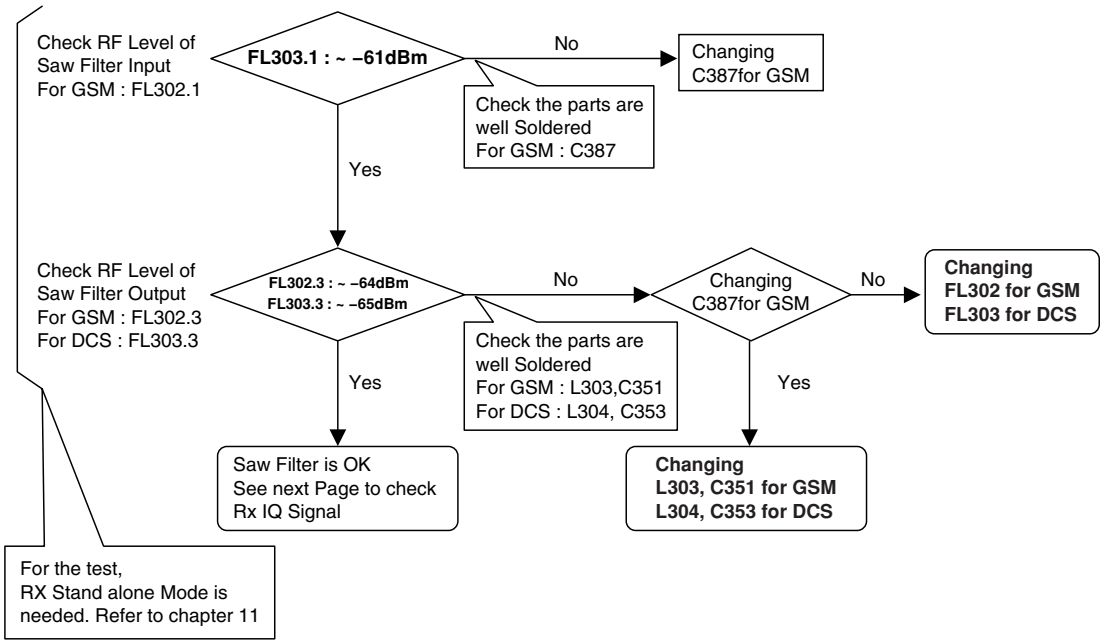


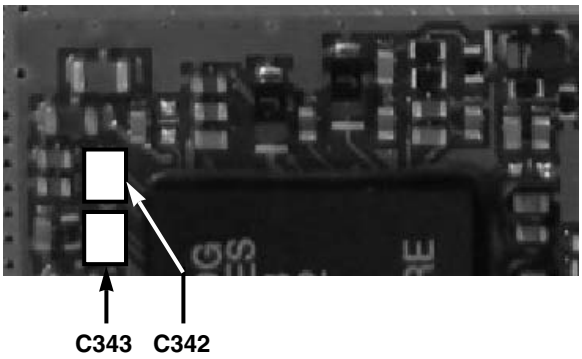
Figure 4-6.

Checking Flow



(6) Checking RX IQ

Test Points



Circuit Diagram

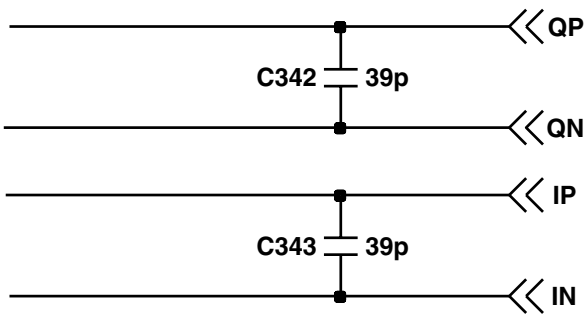
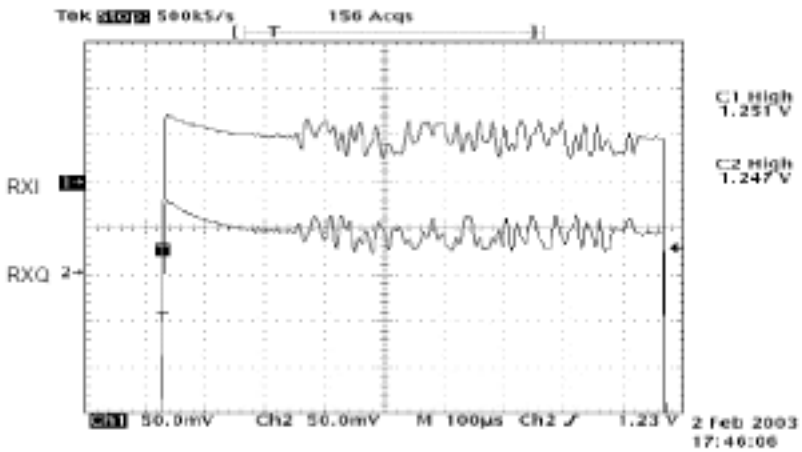


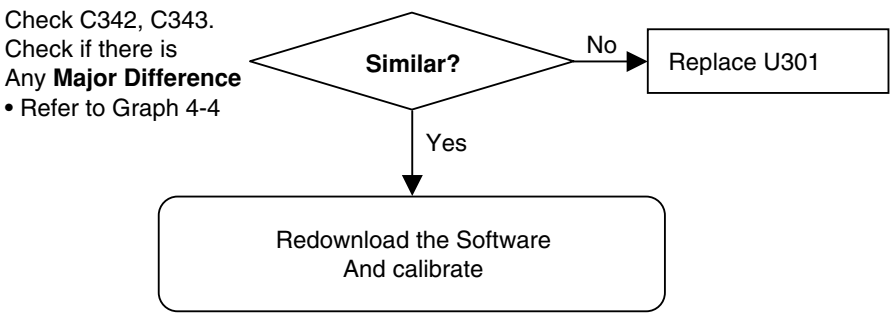
Figure 4-7.

Waveform



Graph 4-4.

Checking Flow



4.2 TX Trouble

Test Points

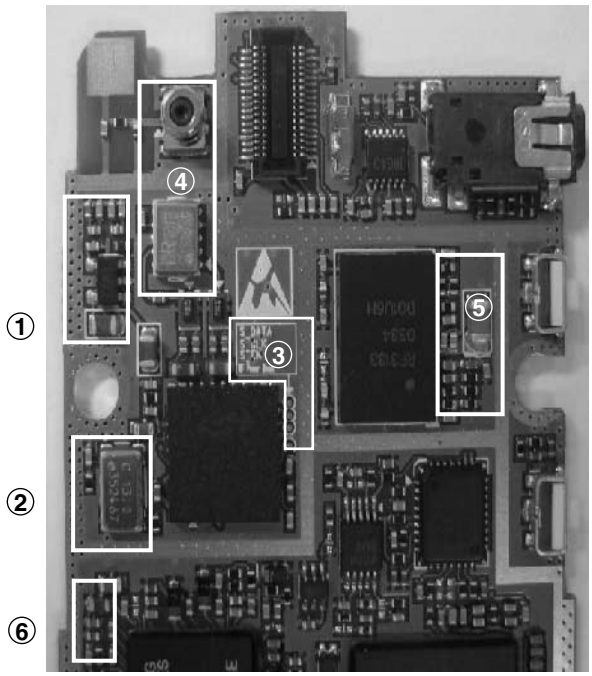
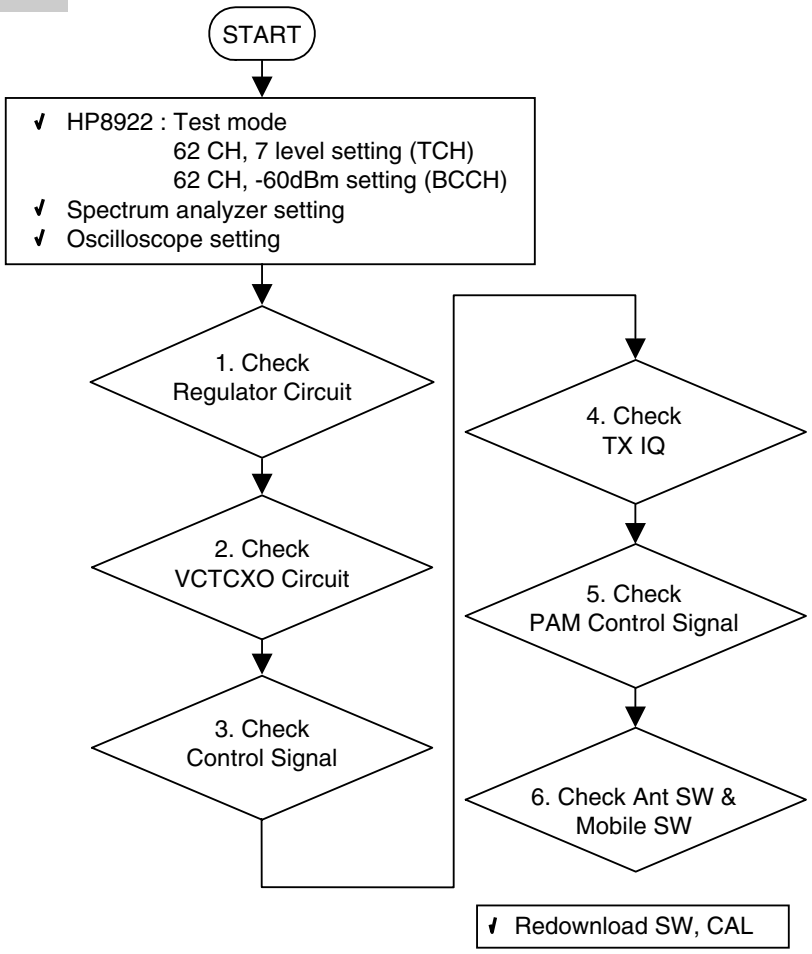


Figure 4-8.

Checking Flow



(1) Checking Regulator Circuit

Test Points

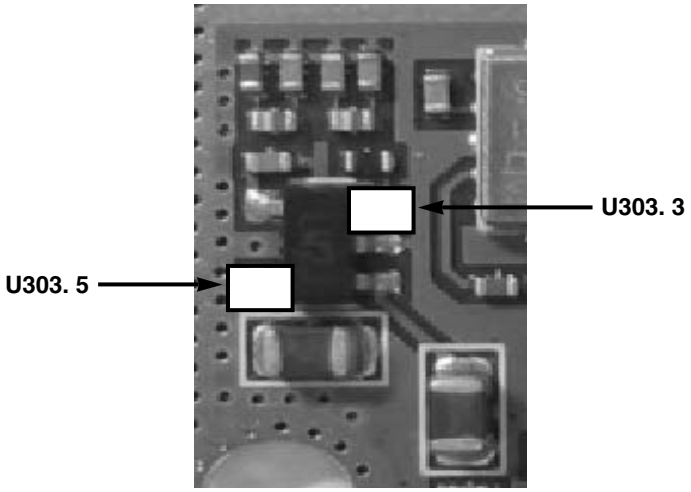
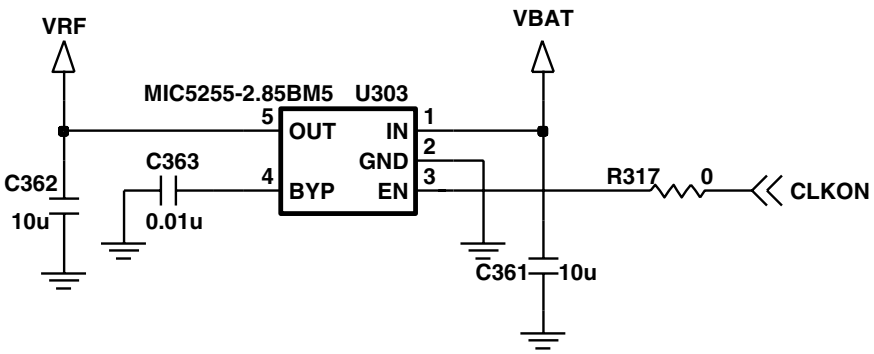
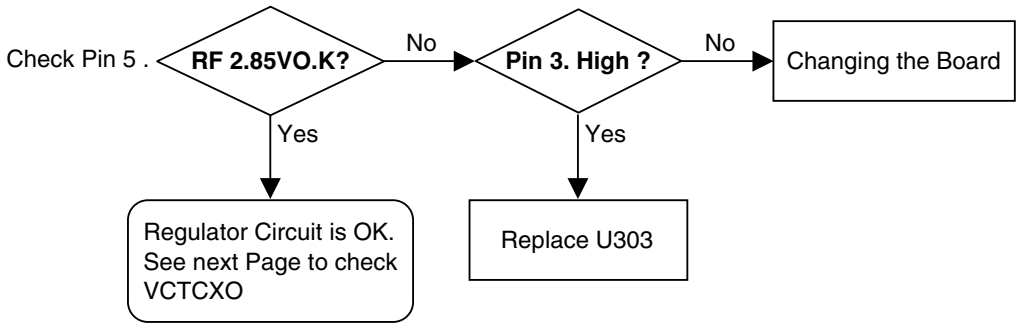


Figure 4-9.

Circuit Diagram



Checking Flow



(2) Checking VCTCXO Circuit

Test Points

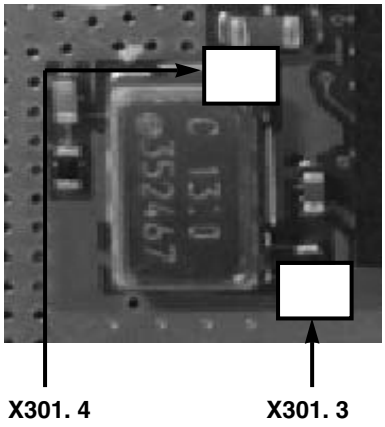
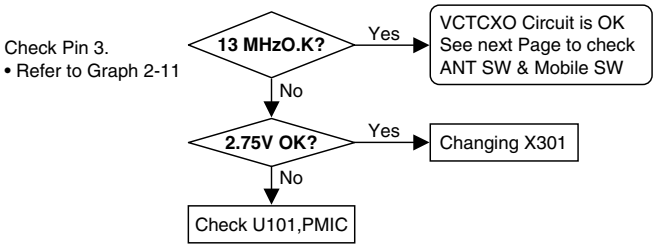
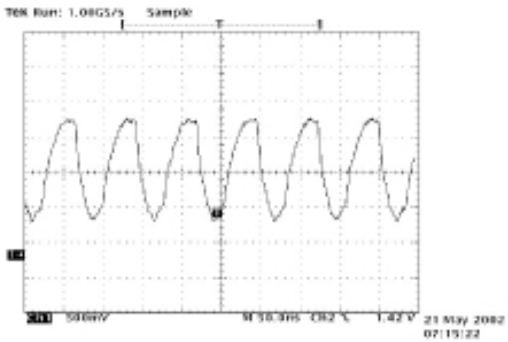


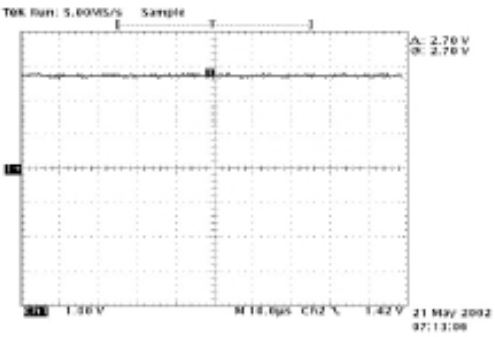
Figure 4-10.

Checking Flow

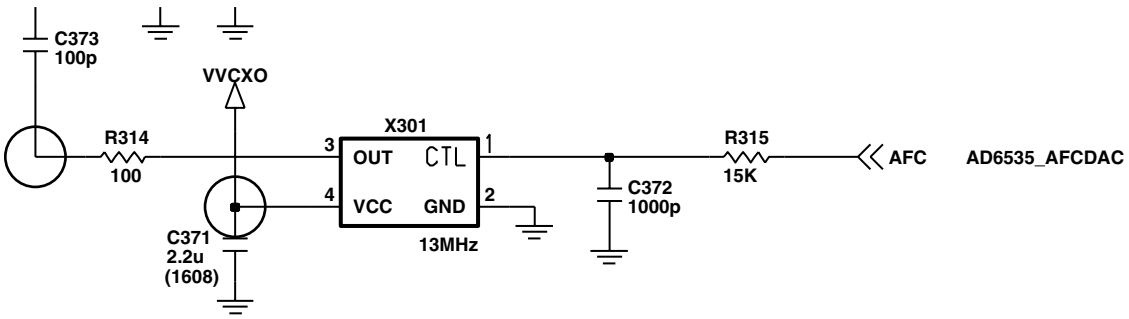


Waveform





Circuit Diagram



(3) Checking PLL Control Signal

Test Points

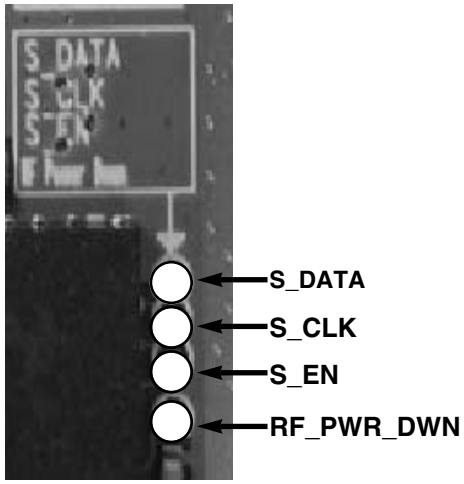
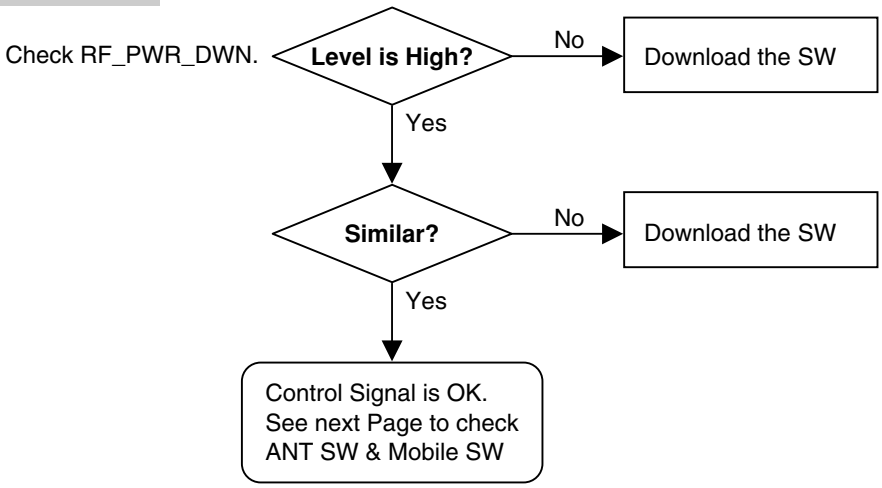
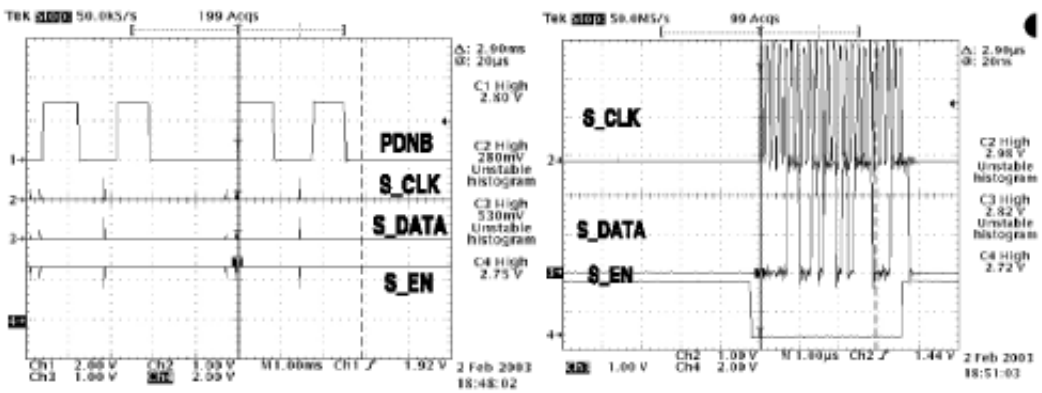


Figure 4-11.

Checking Flow



Waveform



(4) Checking Ant SW & Mobile SW

Test Points

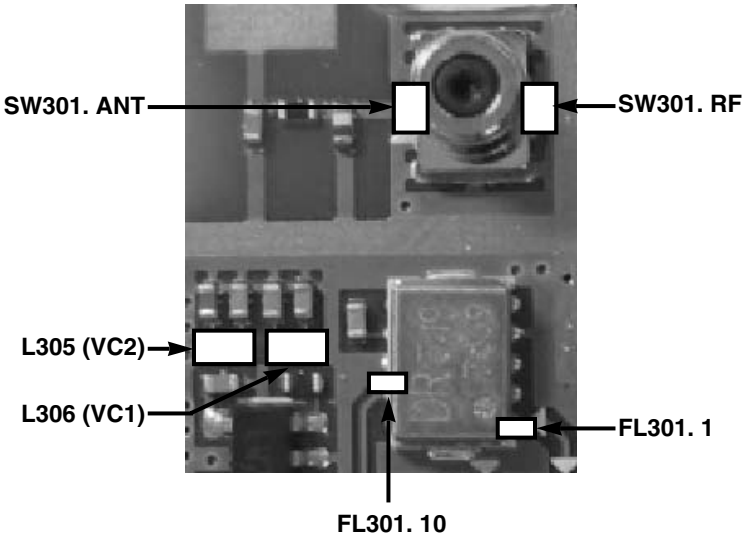
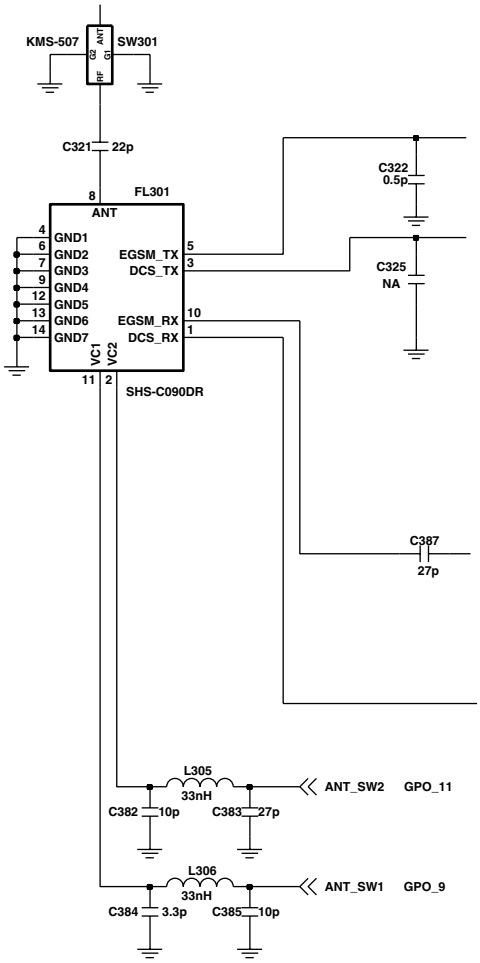
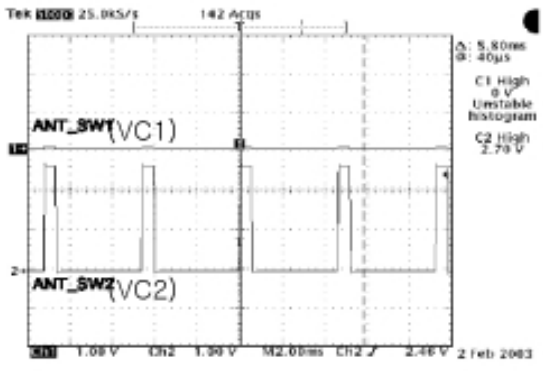


Figure 4-12.

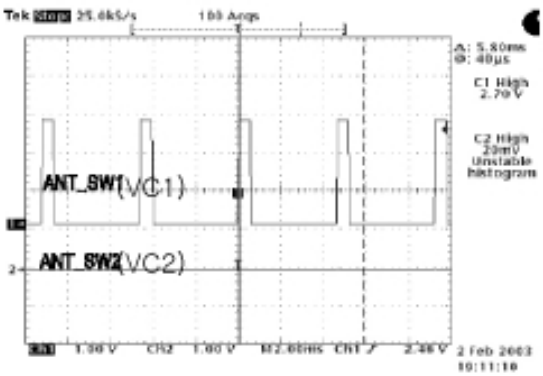
Circuit Diagram



Waveform



Graph 4-7.(a)



Graph 4-7.(b)

(5) Checking Ant SW & Mobile SW

Checking Flow

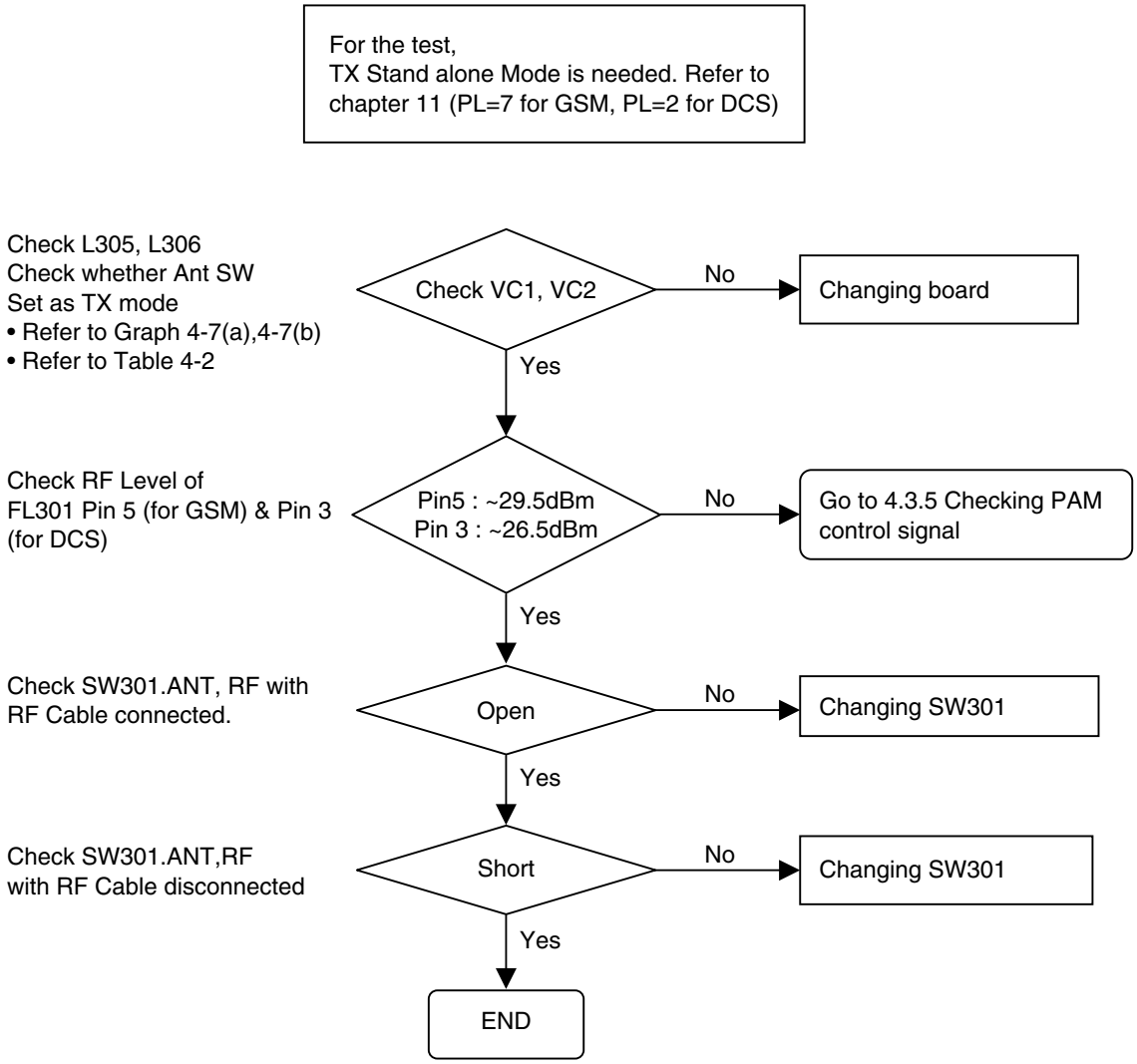


Table 4-2.

ANT SW	VC1	VC2
DCS TX	0	1
EGSM TX	1	0
EGSM,DCS RX	0	0

(6) Checking PAM Control Signal

Test Points

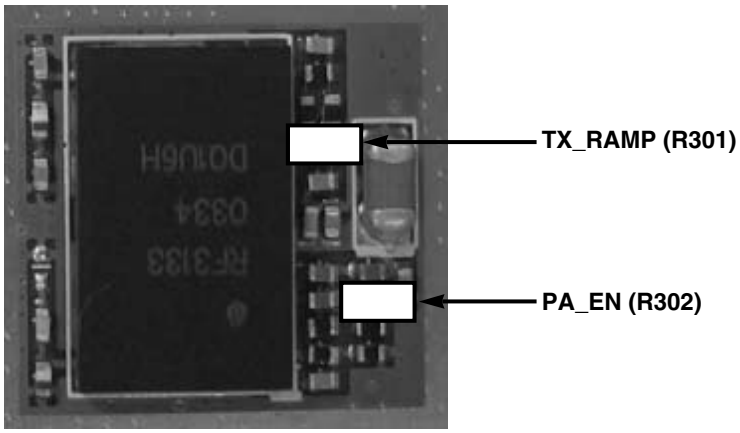
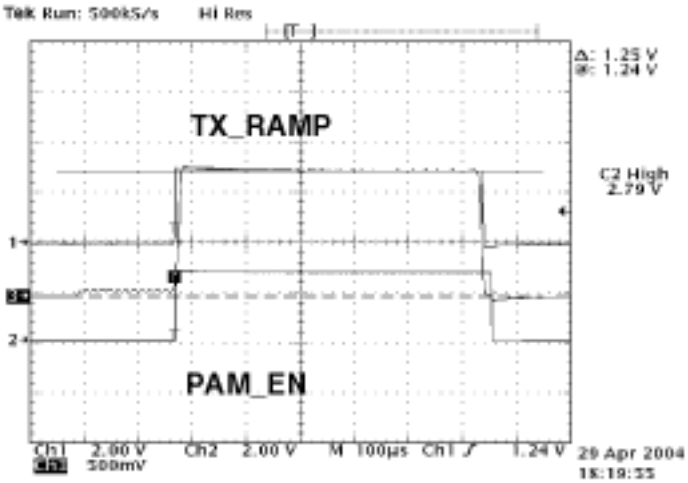


Figure 4-13.

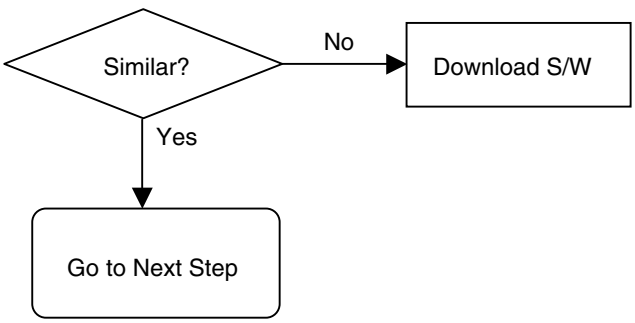
Waveform



Graph 4-8.

Checking Flow

Check TX_RAMP and PA_EN
Check if there is
Any Major Difference or not
Refer to Graph 5-11



(7) Checking TX IQ

Test Points

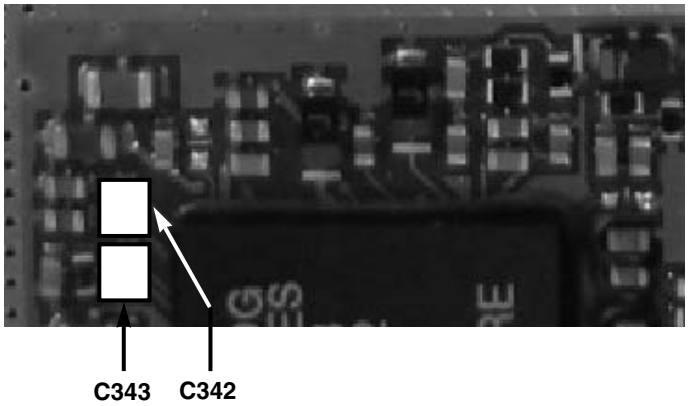
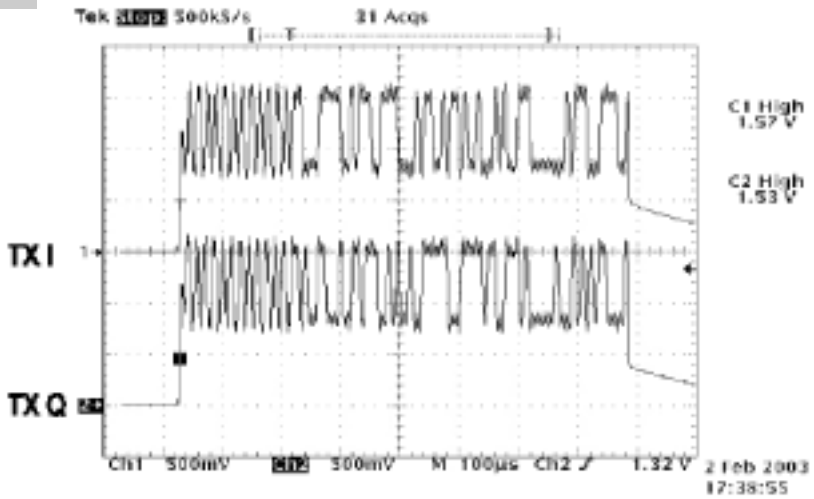


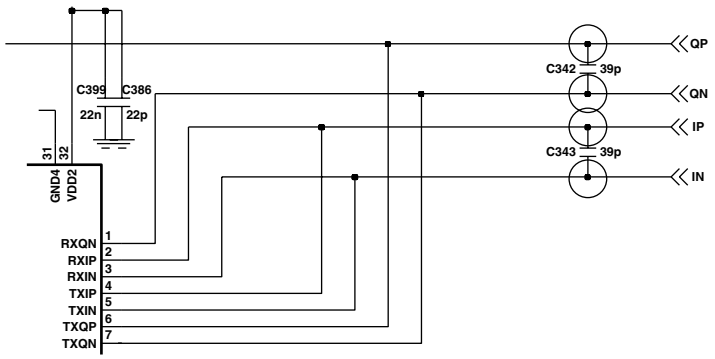
Figure 4-14.

Waveform



Graph 4-9.

Circuit Diagram



4.3 Power On Trouble

Circuit Diagram & Test Points

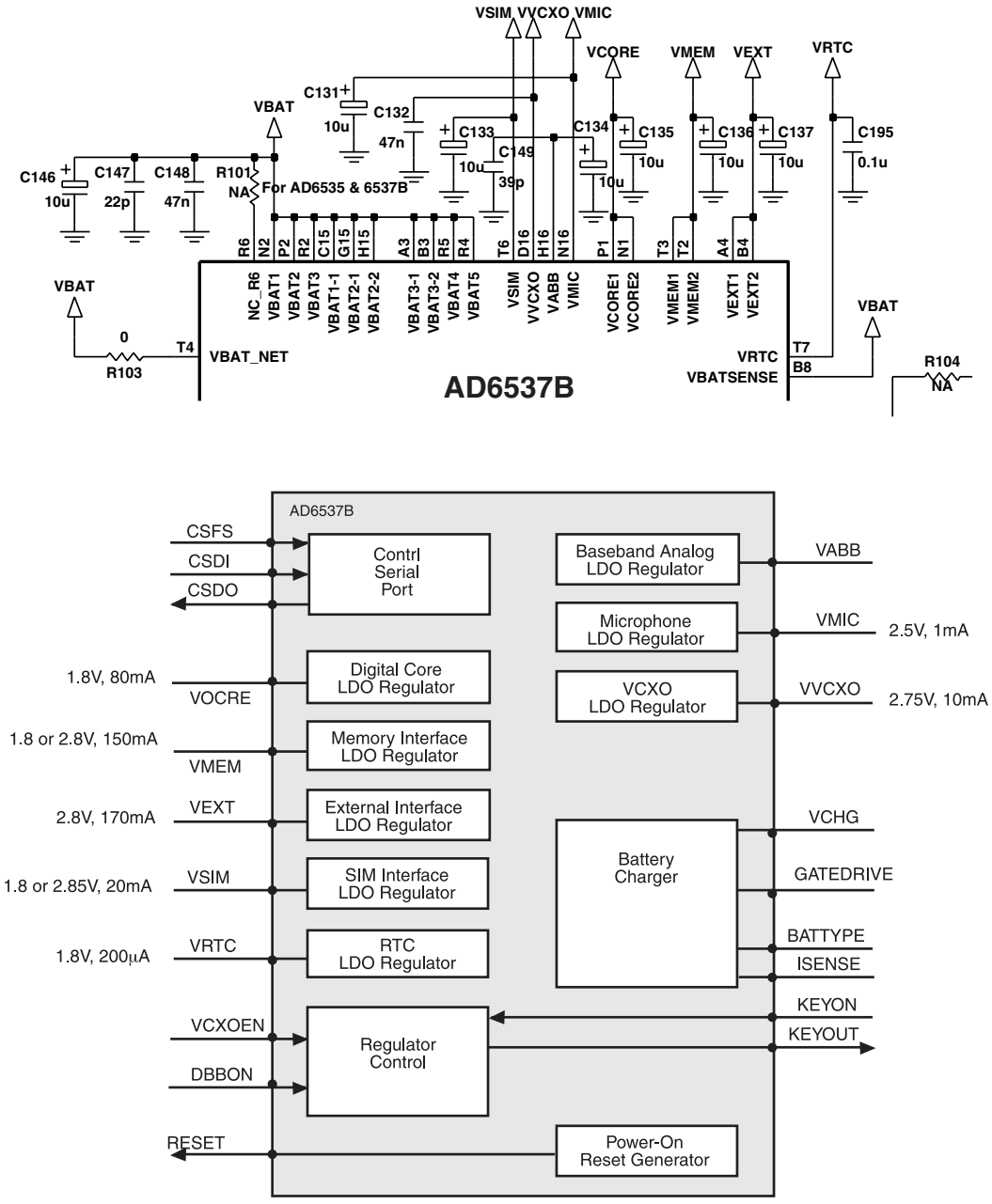
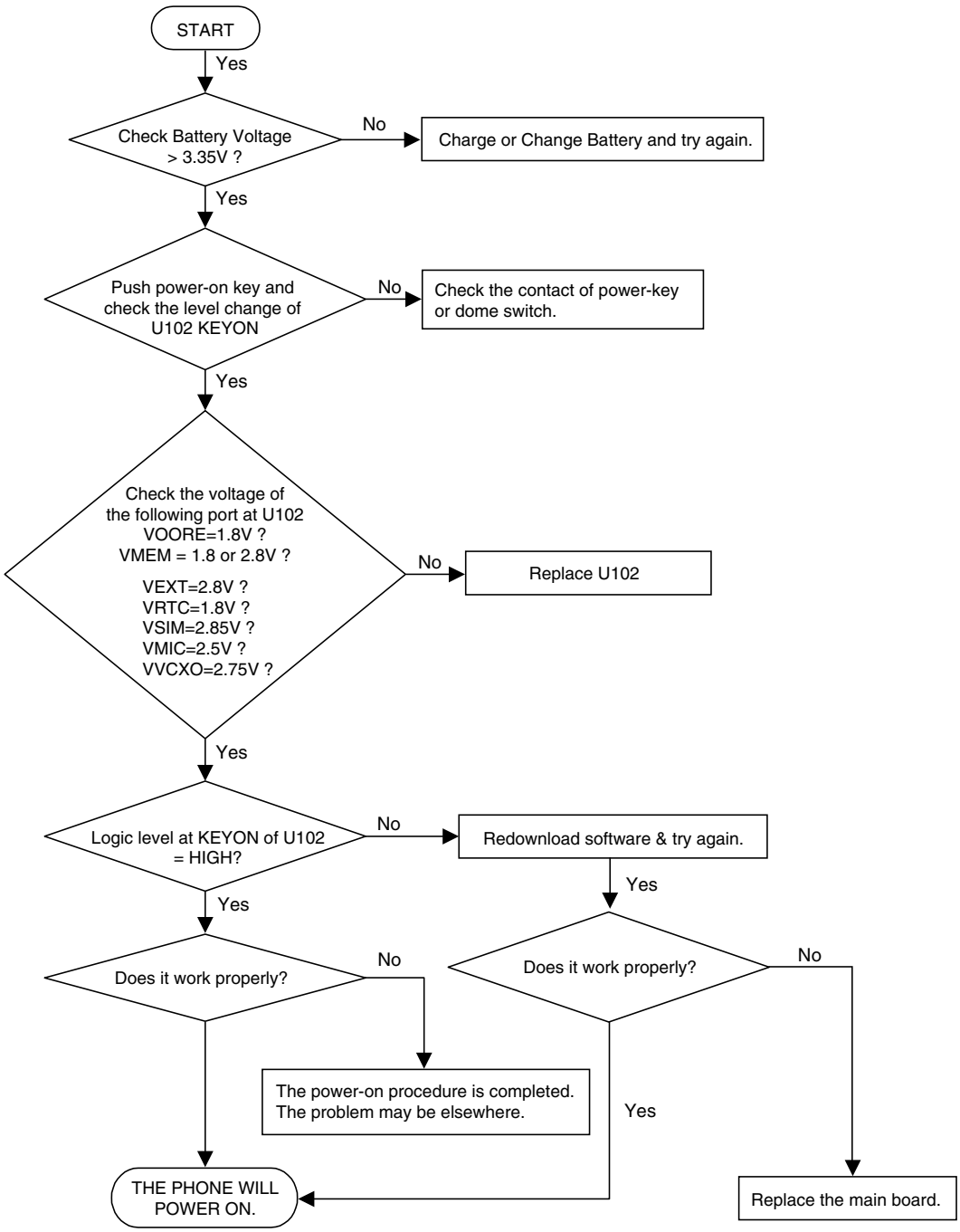


Figure 4-15. AD6537B POWER MANAGEMENT SECTION

Checking Flow



4.4 Charging Trouble

Test Points

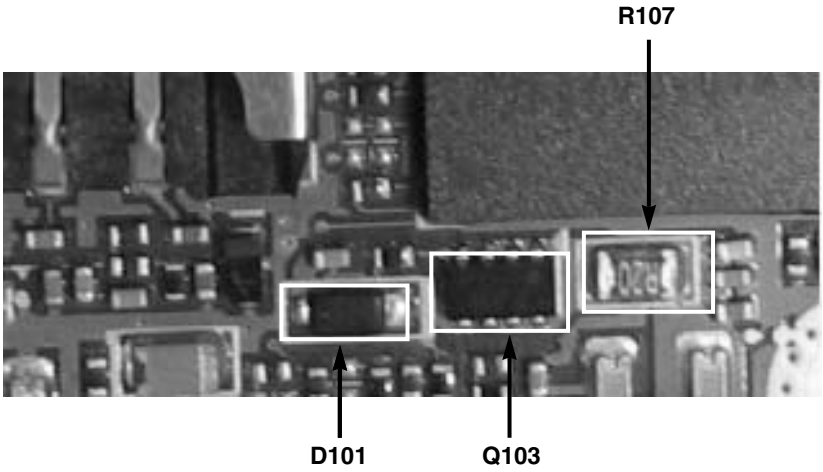
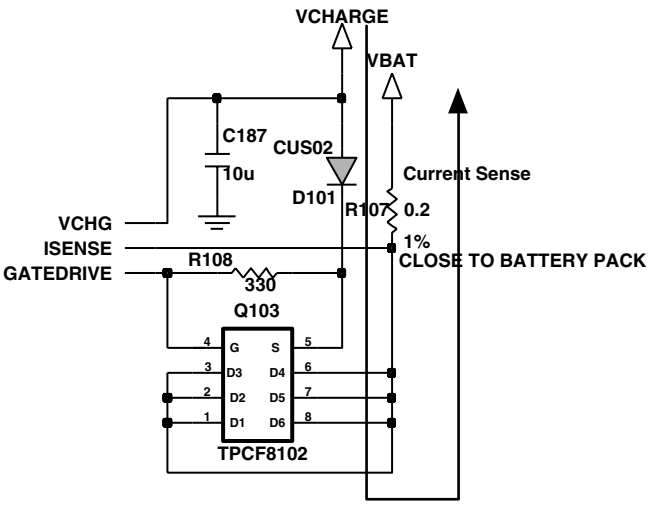


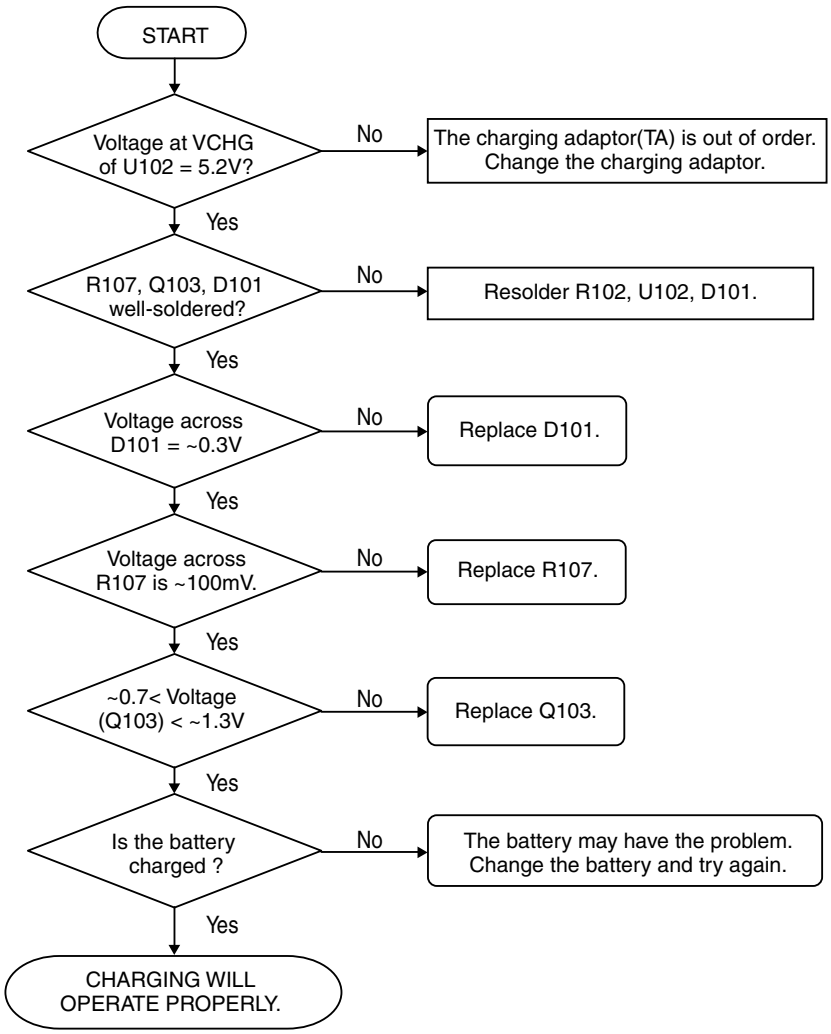
Figure 4-16.

Circuit Diagram



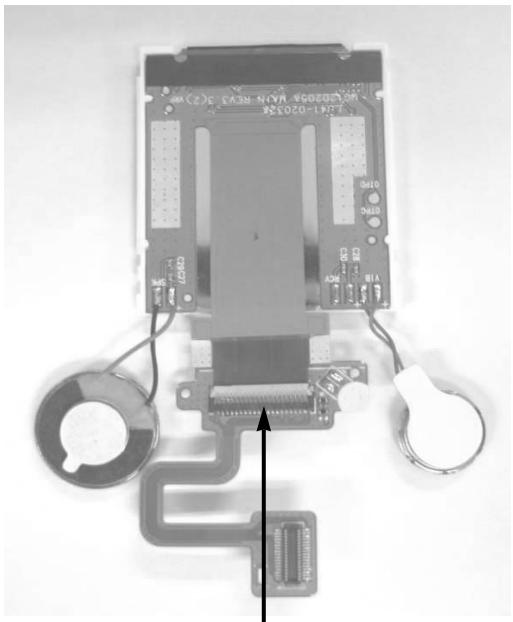
Checking Flow

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



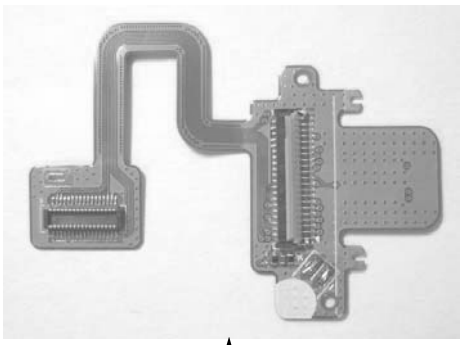
4.5 LCD Trouble.

Checking Flow



Connection Check

Figure 4-17.(a)



If the FPCB has a problem, the control signals for LCD cannot be transmitted properly.

Figure 4-17.(b)

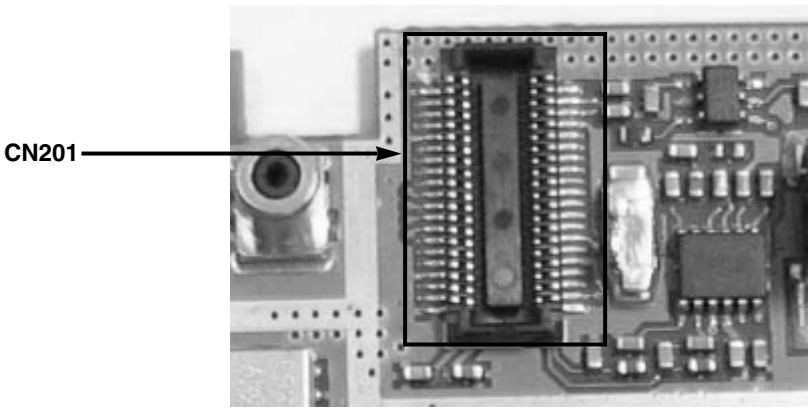
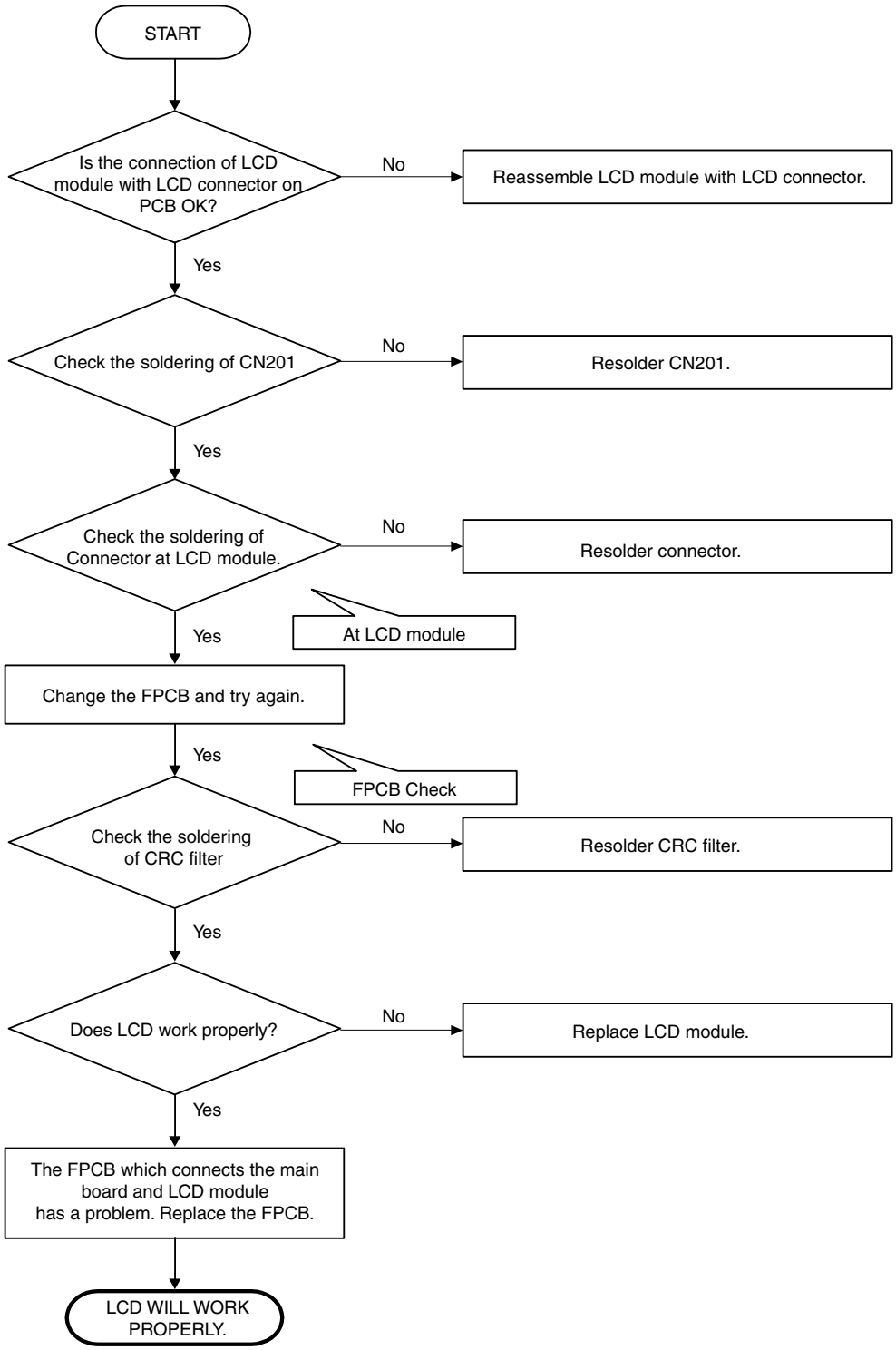


Figure 4-17.(c)

Checking Flow



4.6 Receiver Trouble

Test Points

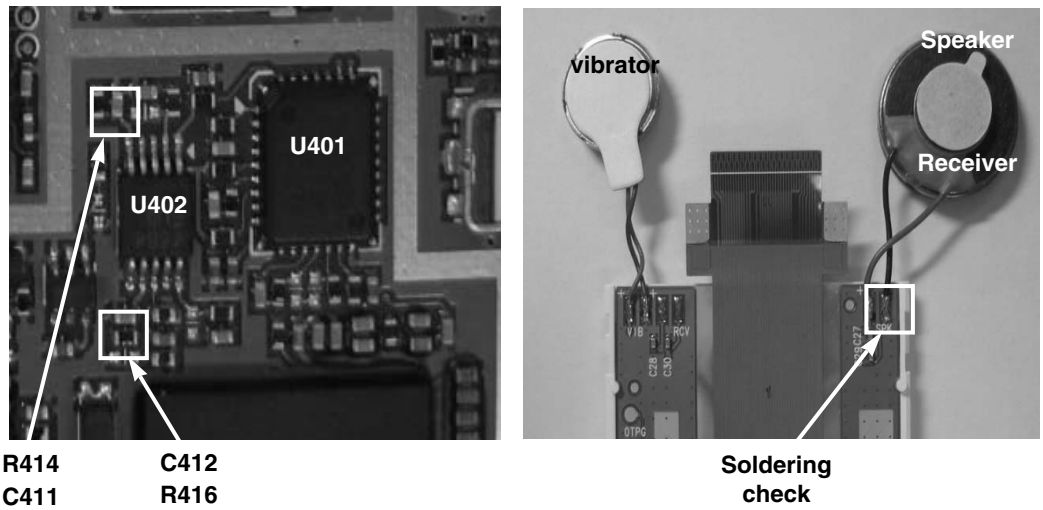
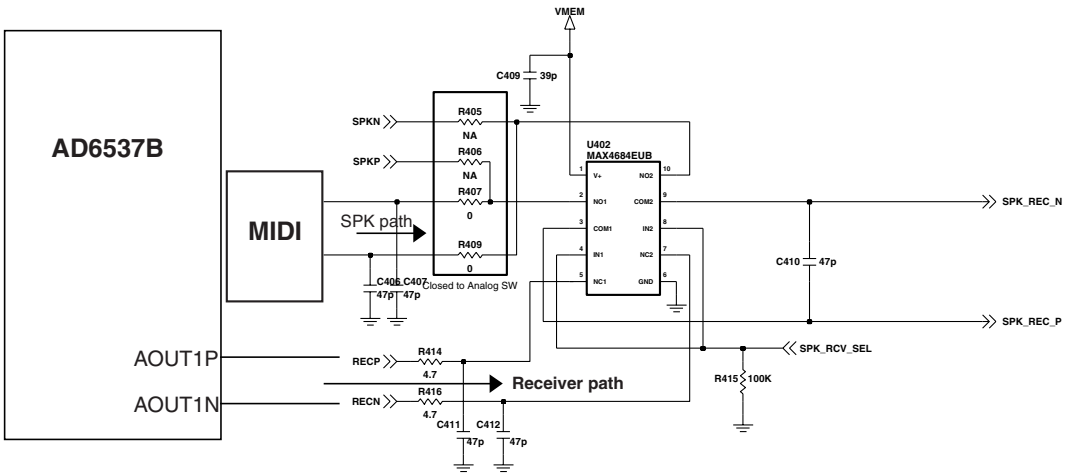


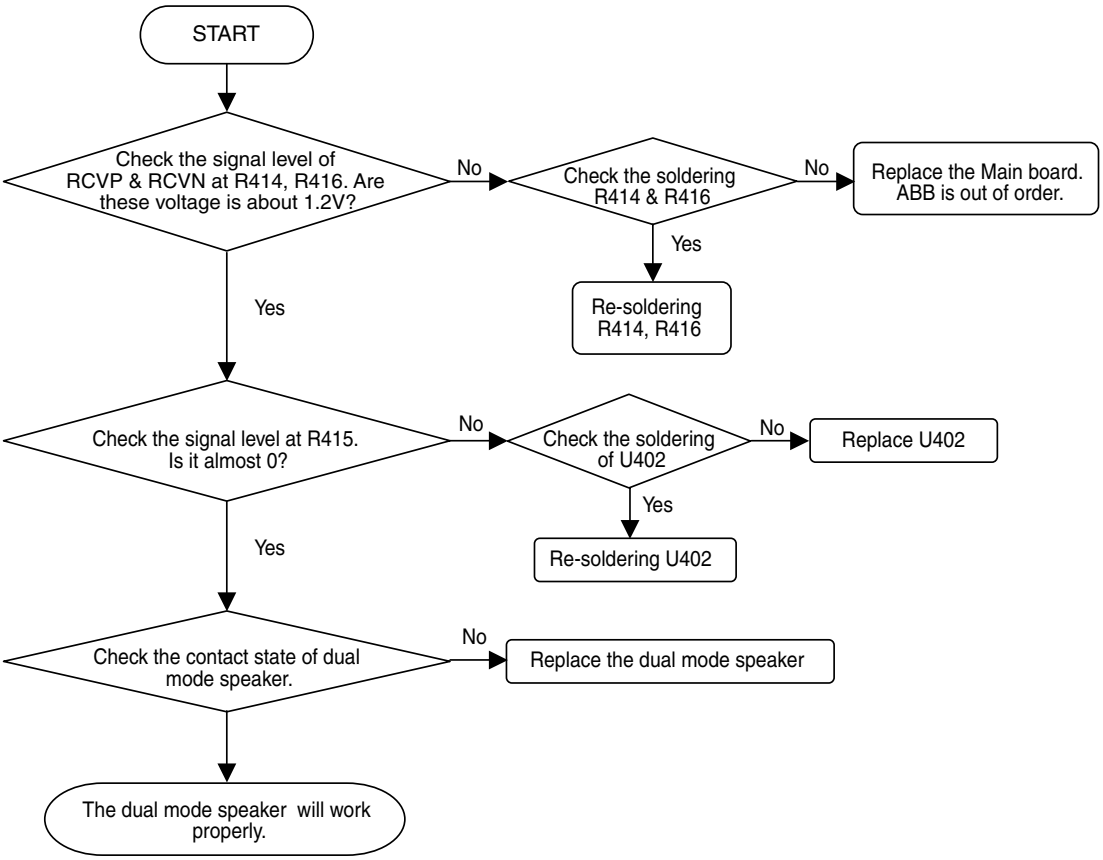
Figure 4-18.

Circuit Diagram

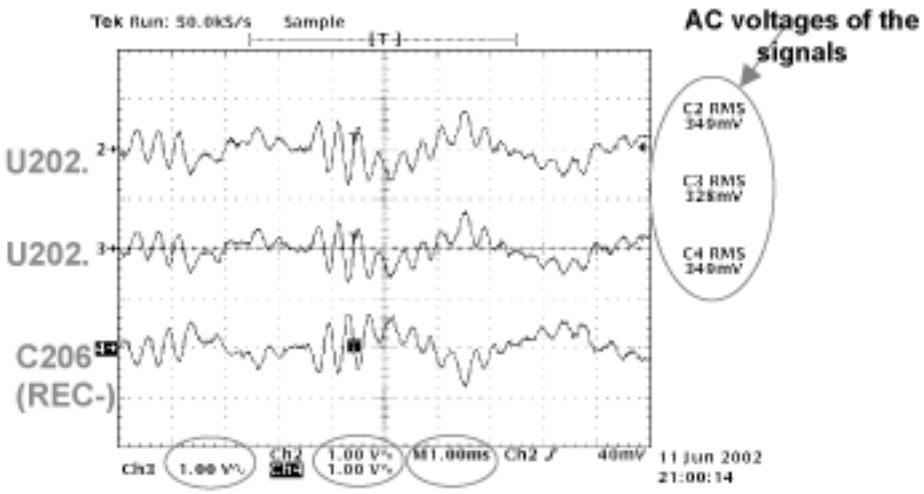


Checking Flow

SETTING : After initialize Agilent 8960, Test EGSM, DCS mode



Waveform



Graph 4-10.

4.7 Speaker Trouble

Test Points

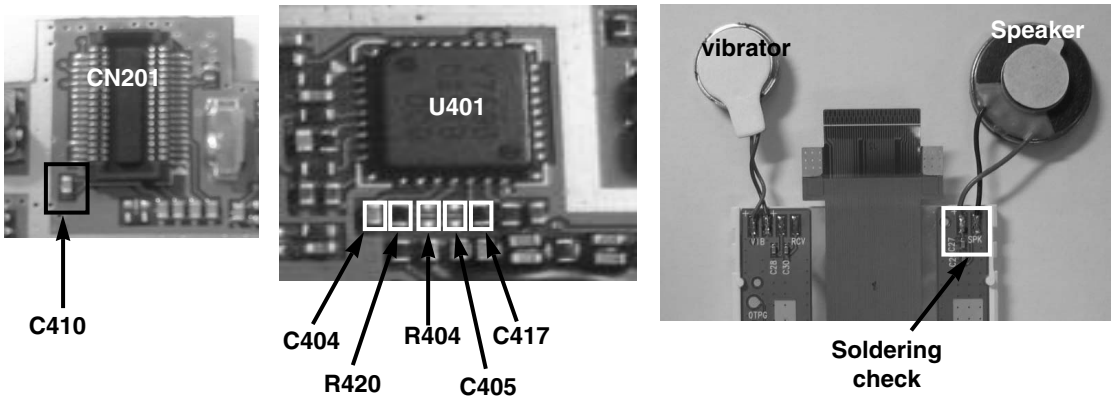
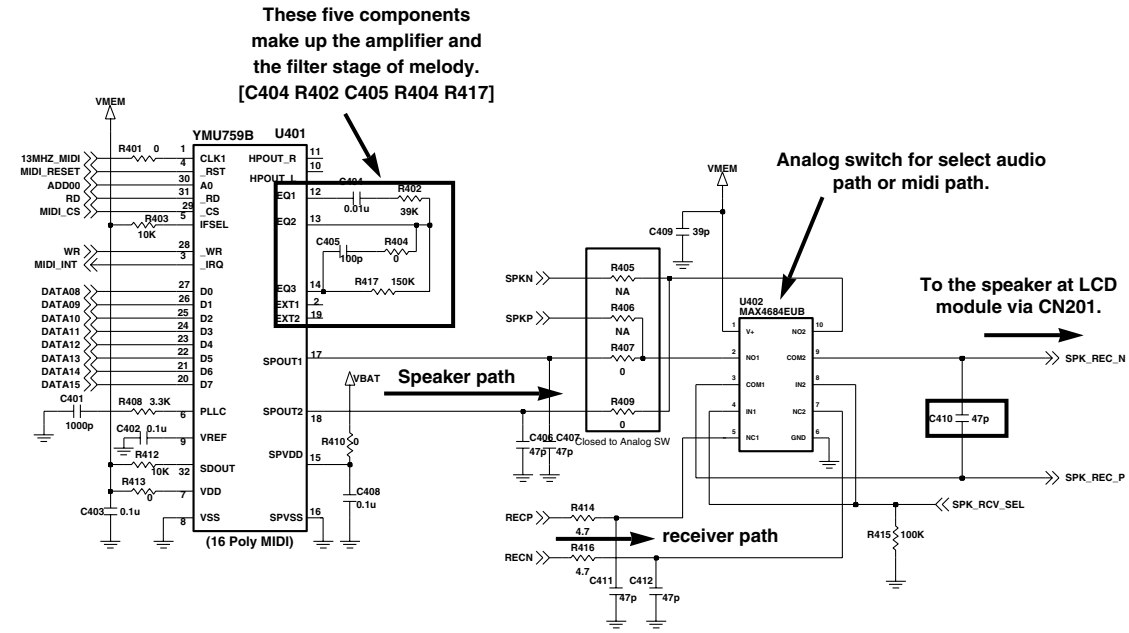


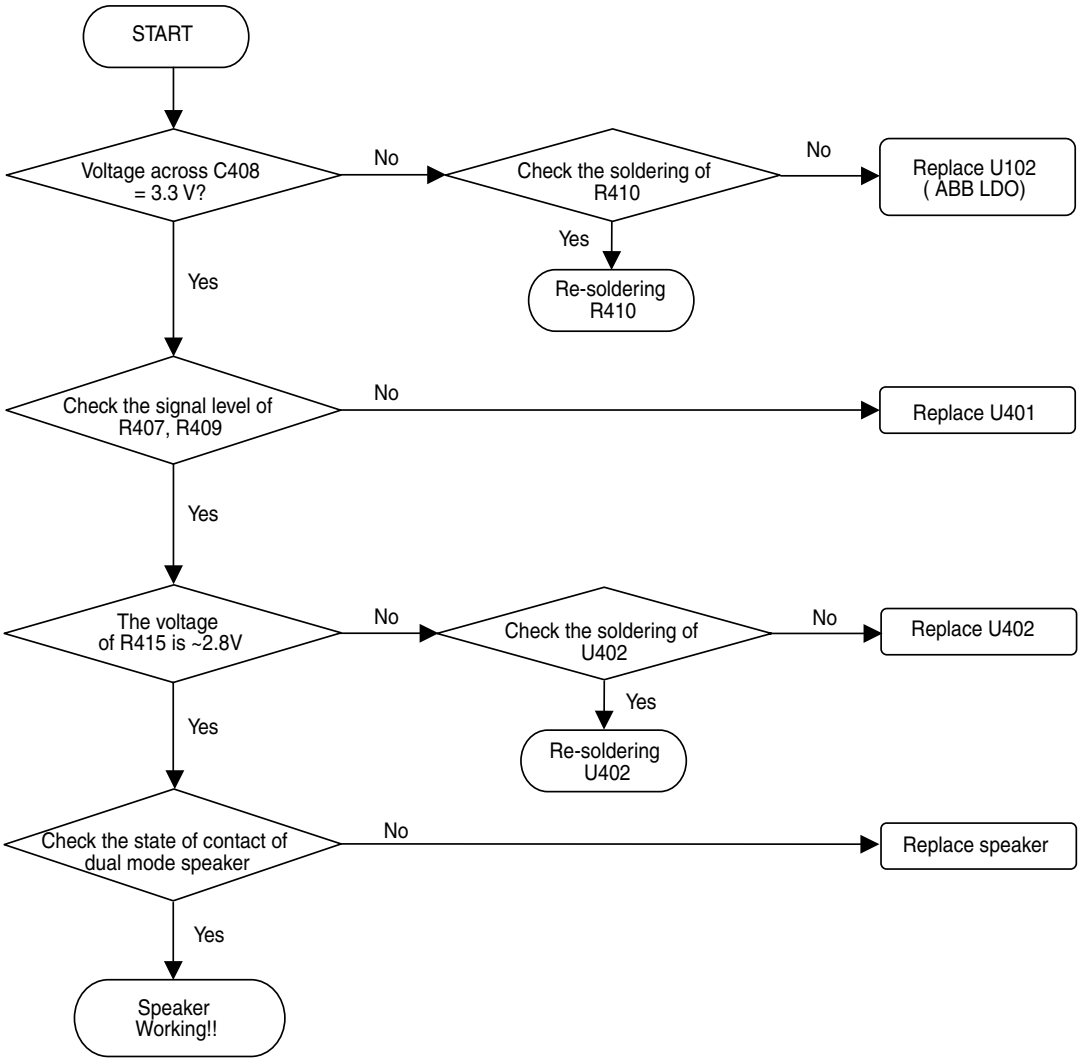
Figure 4-19.

Circuit Diagram



Checking Flow

SETTING : Connect PIF to the phone, and Power on. Enter the engineering mode, and set "Melody on" at Buzzer of BB test menu.



4.8 Mic Trouble

Test Points

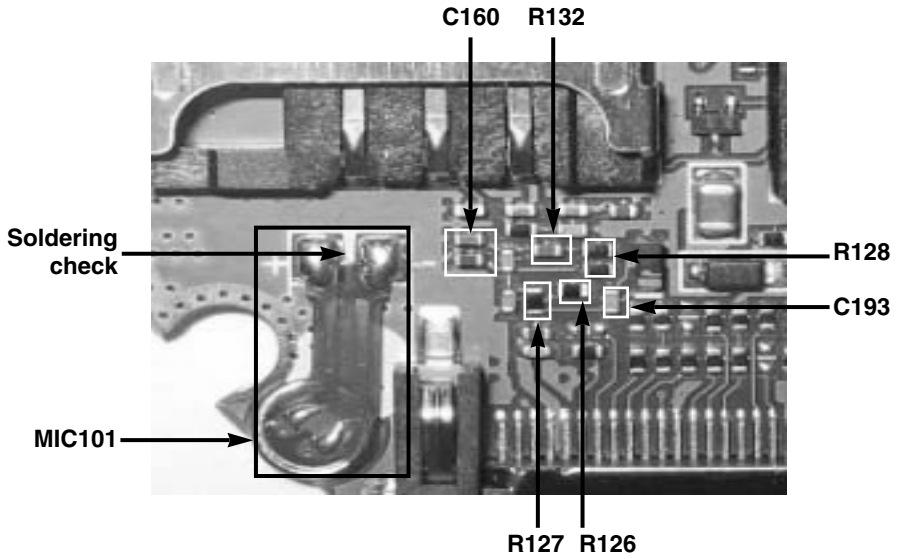
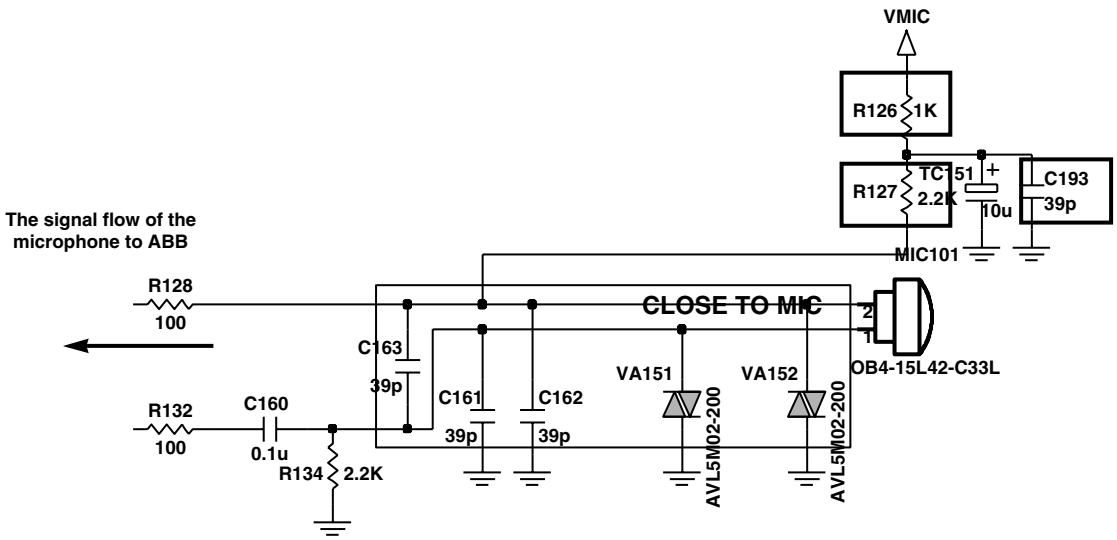


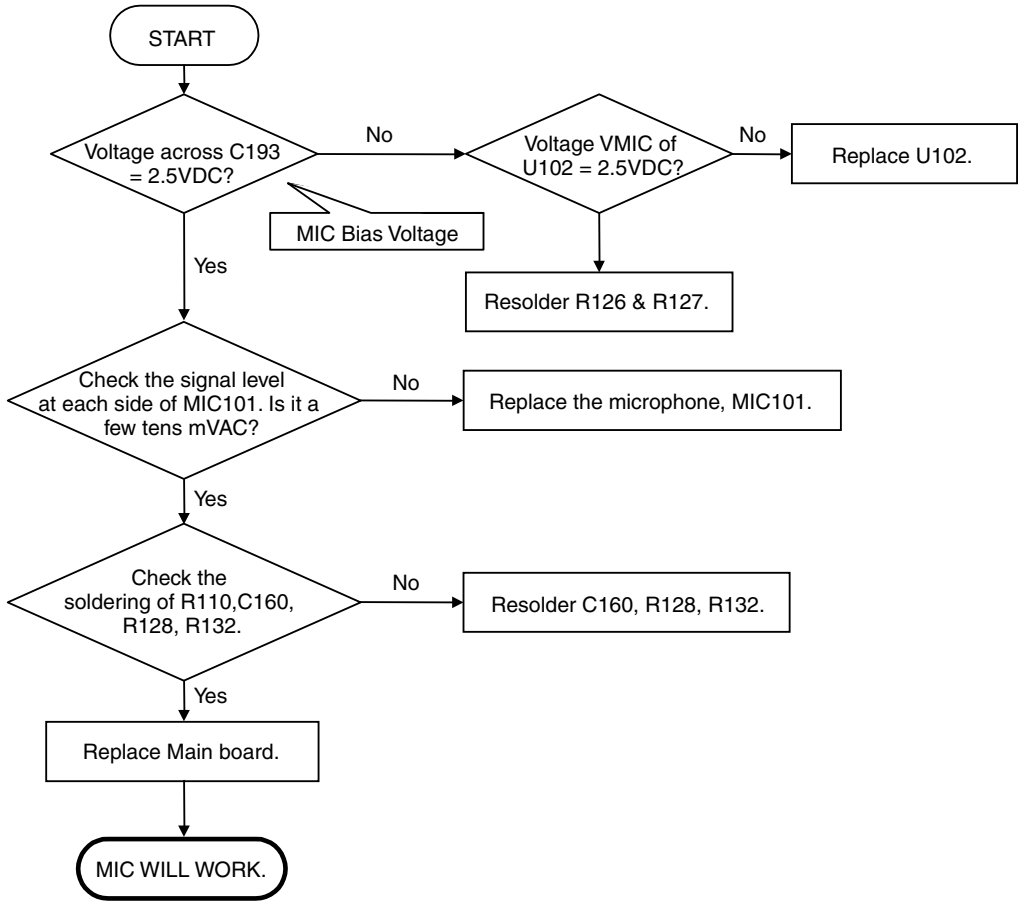
Figure 4-20.

Circuit Diagram



Checking Flow

SETTING : After initialize Agilent 8960, Test EGSM, DCS mode



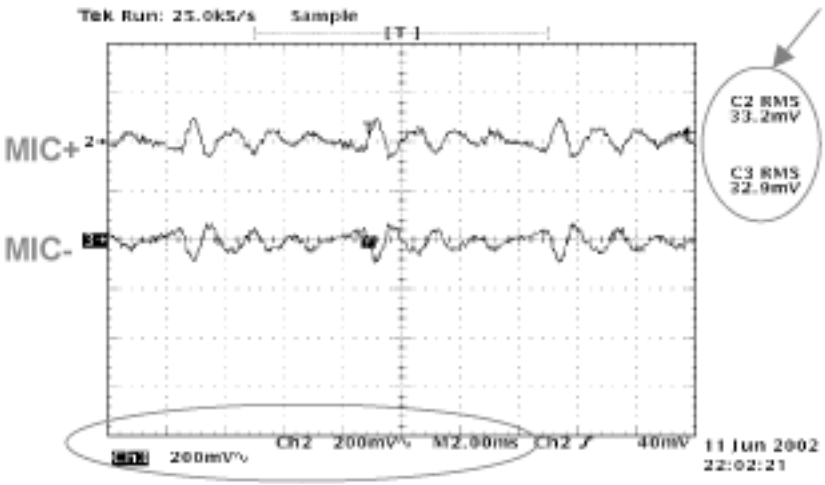


Figure 4-20.

4.9 Vibrator Trouble

Test Points

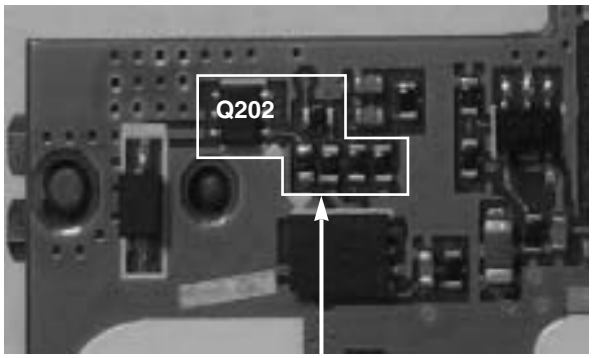


Figure 4-21.(a)

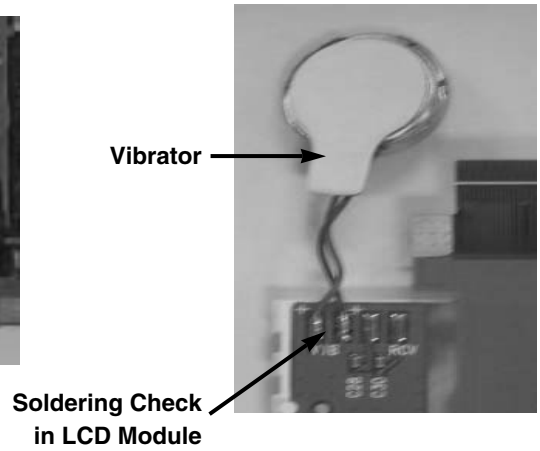
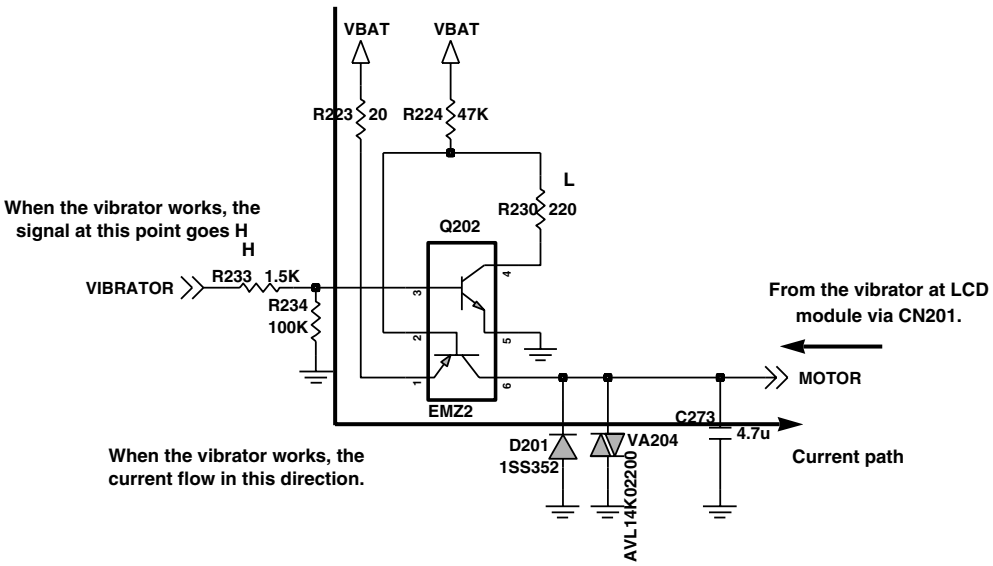


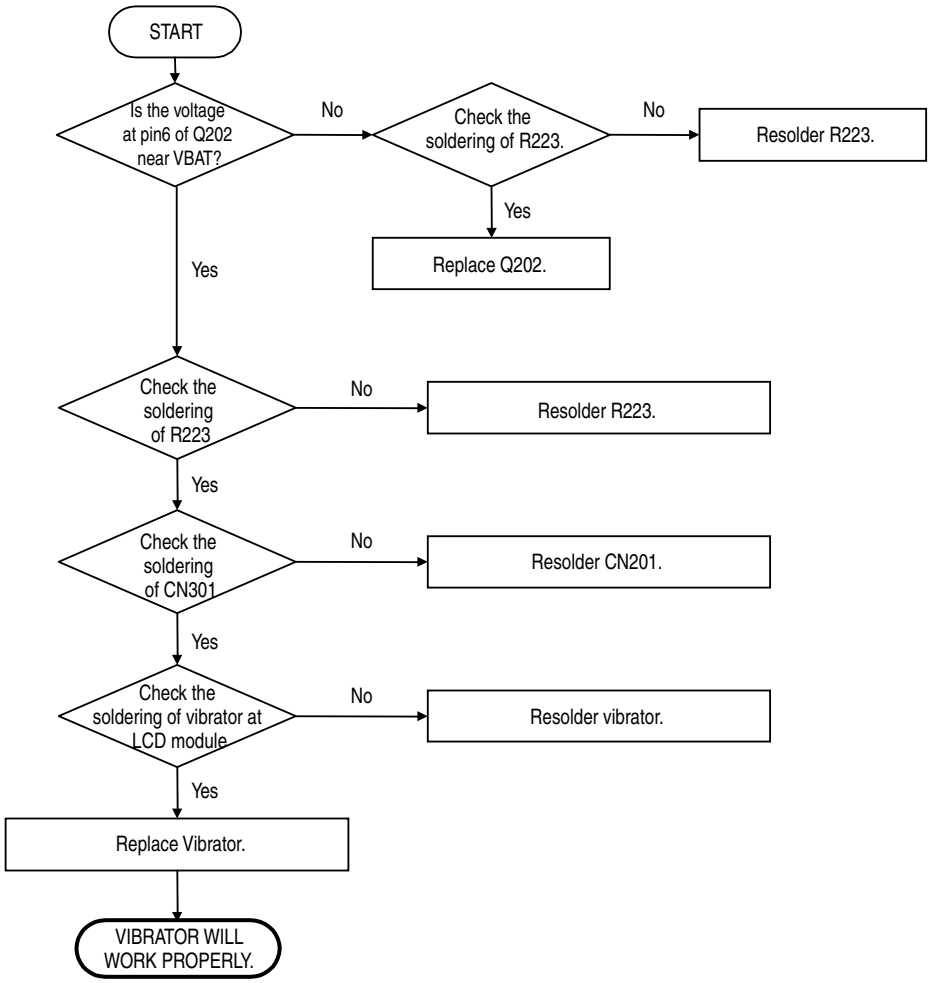
Figure 4-21.(b)

Circuit Diagram



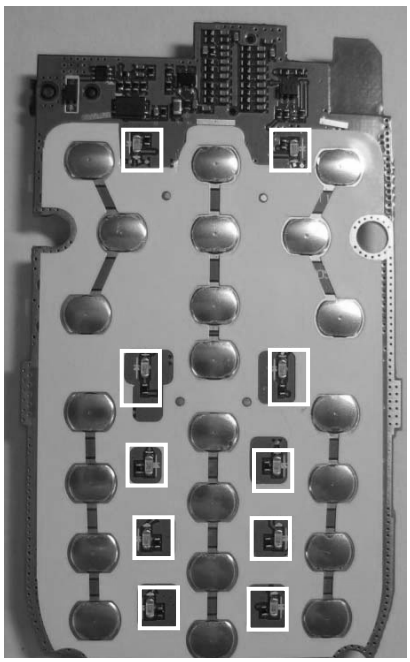
Checking Flow

SETTING : After Initialize Agilent 8960, Test in EGSM, Connect PIF to the phone, and Power on. Enter The engineering mode, and set 'Vibrator on' at Vibration of BB test menu.



4.10 Key Backlight LED Trouble

Test Points



Circuit Diagram

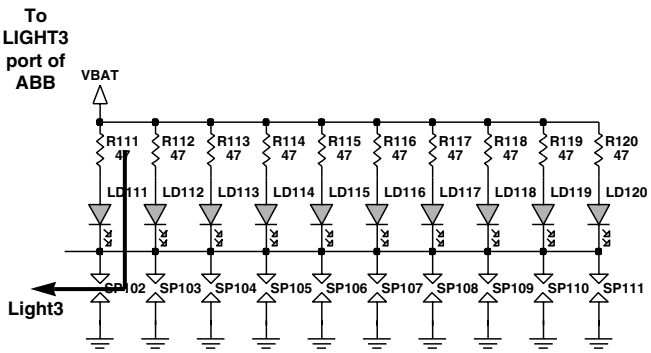
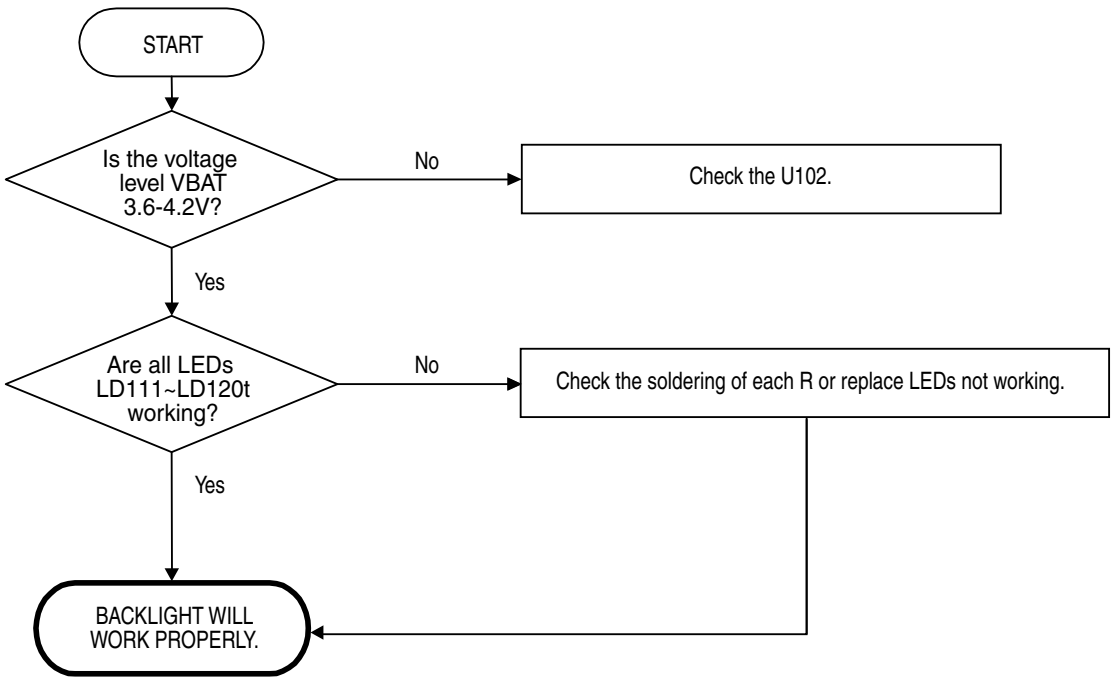


Figure 4-22.

Checking Flow



4.11 Folder on/off Trouble

Test Points

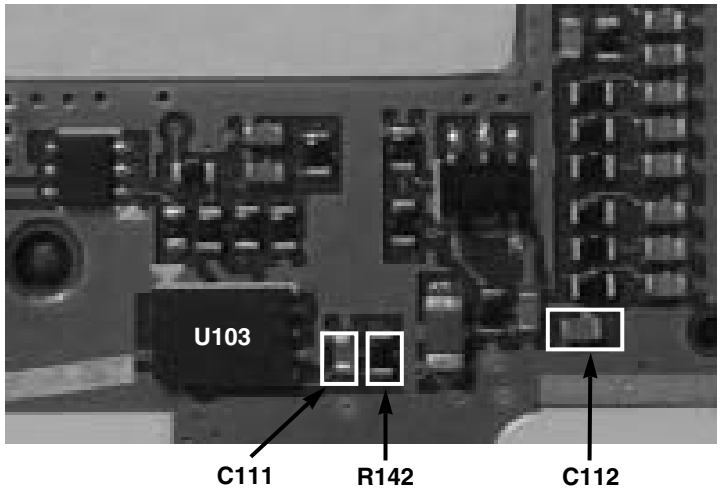
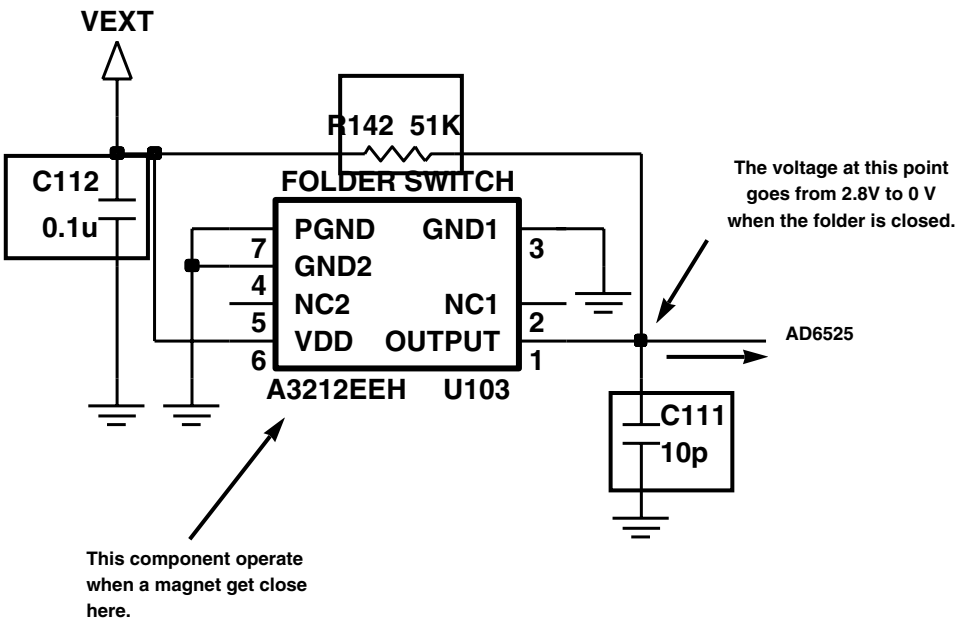
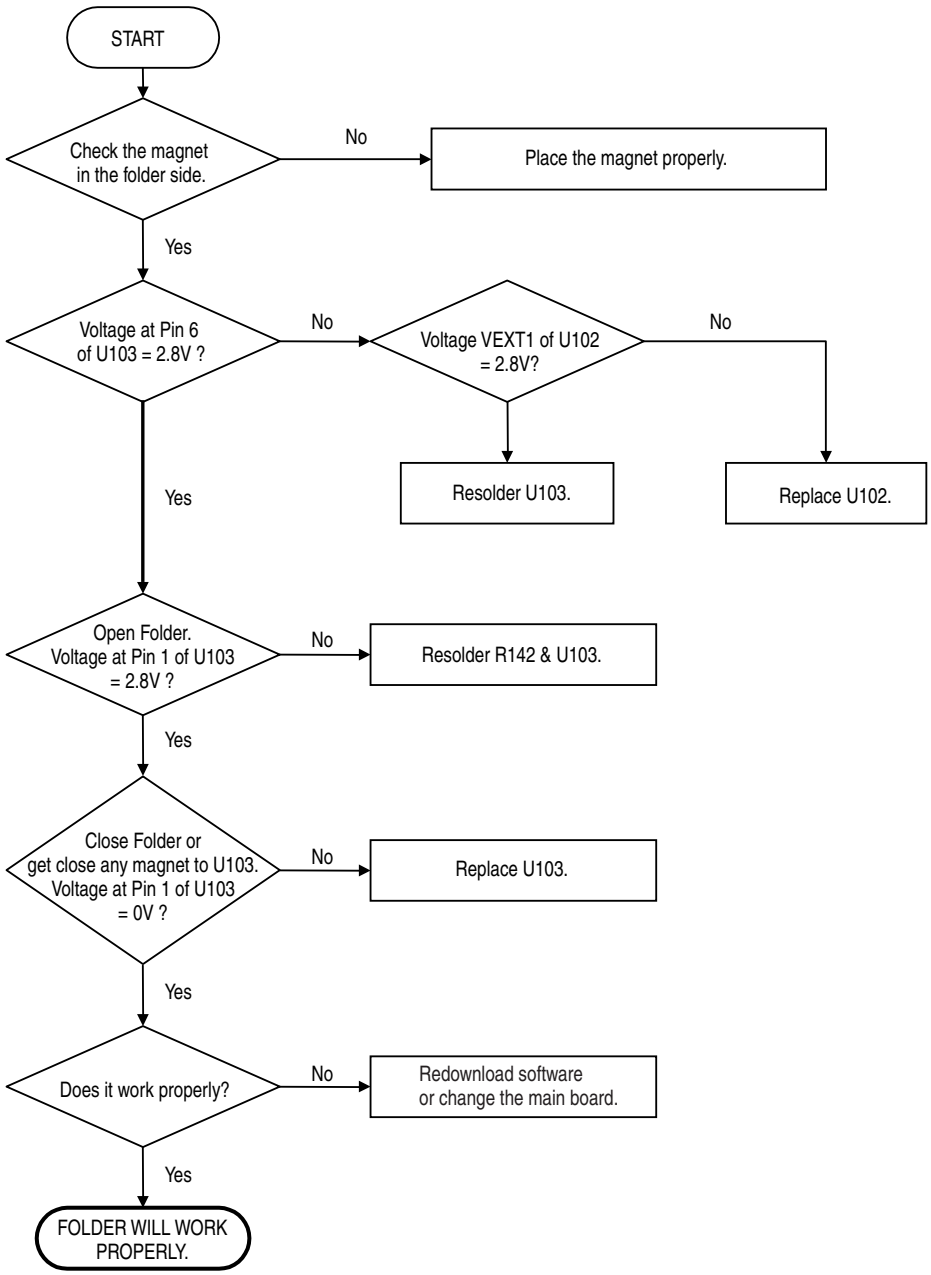


Figure 4-23.

Circuit Diagram



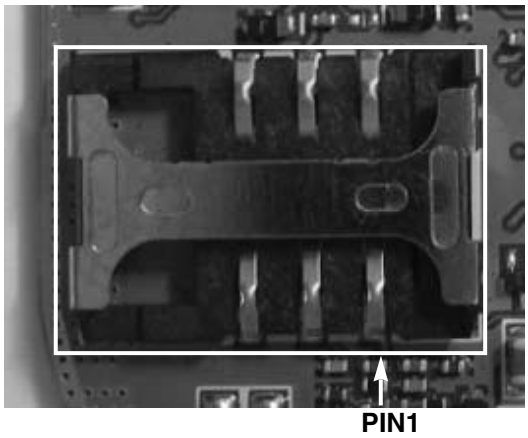
Checking Flow



4.12 SIM Detect Trouble

SETTING : Insert SIM into J101, connect PIF to the Phone, and Power on.

Test Points



Circuit Diagram

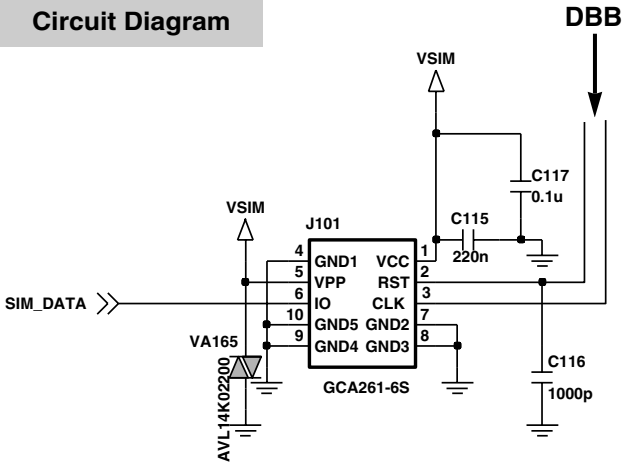
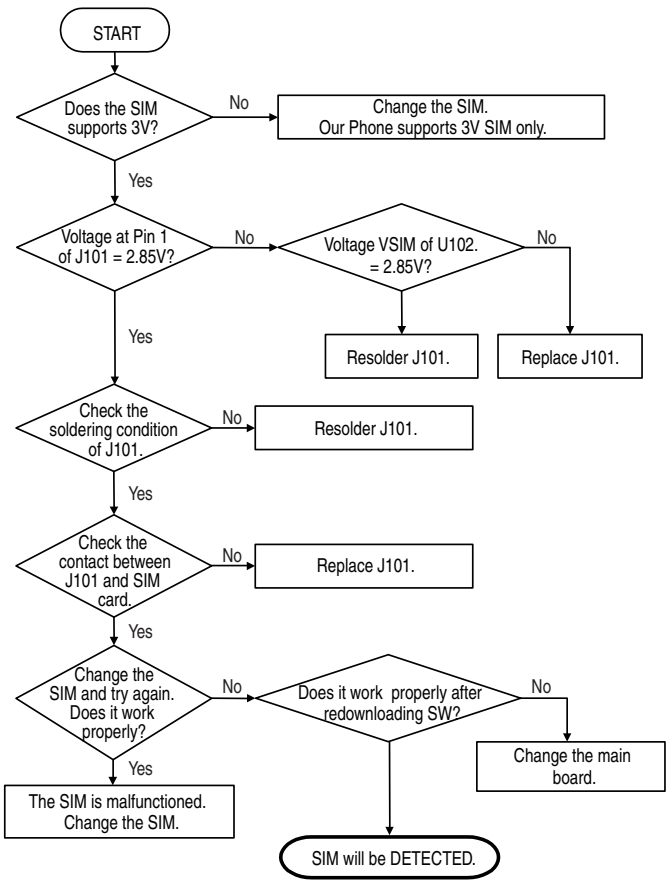


Figure 4-24.

Checking Flow



4.13 Earphone Trouble

Test Points

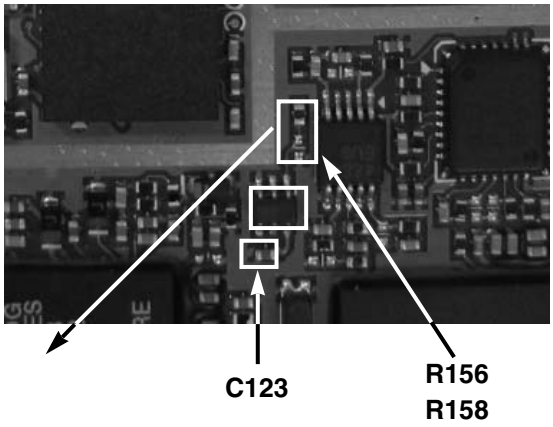


Figure 4-25.(a)

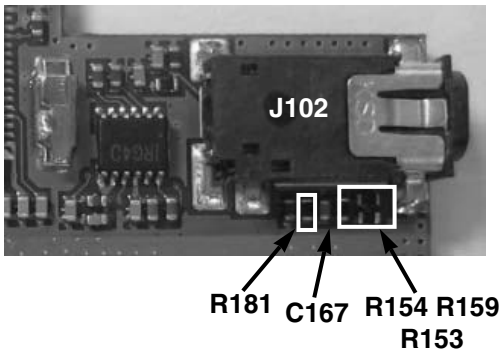
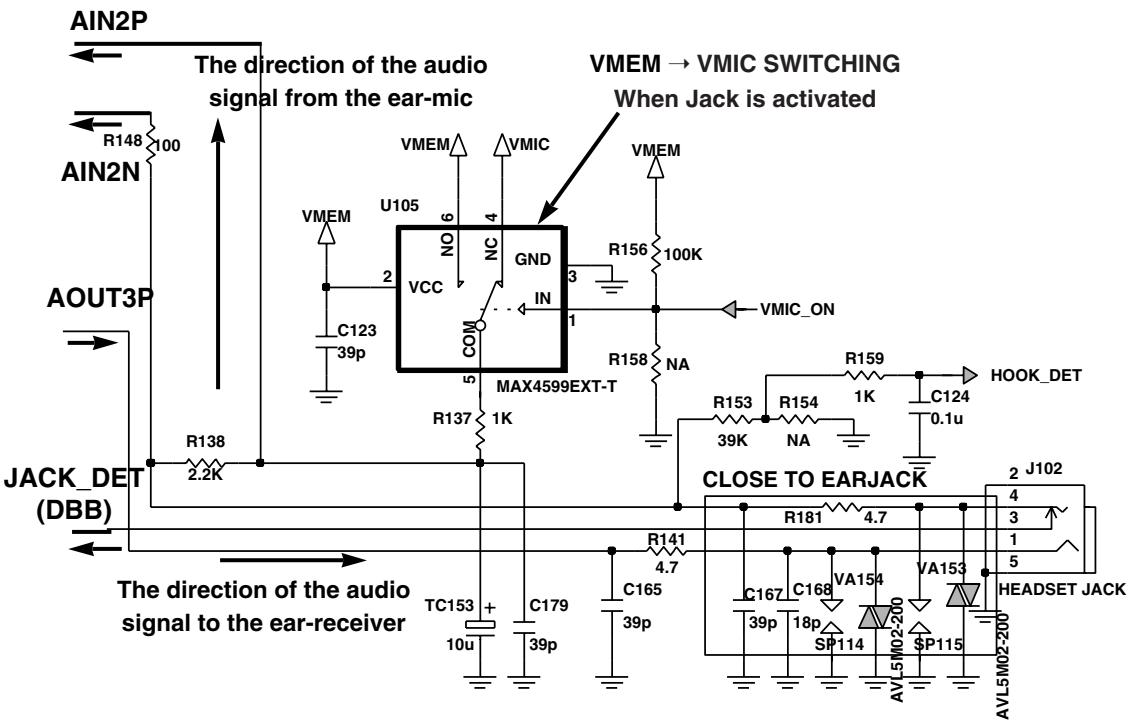
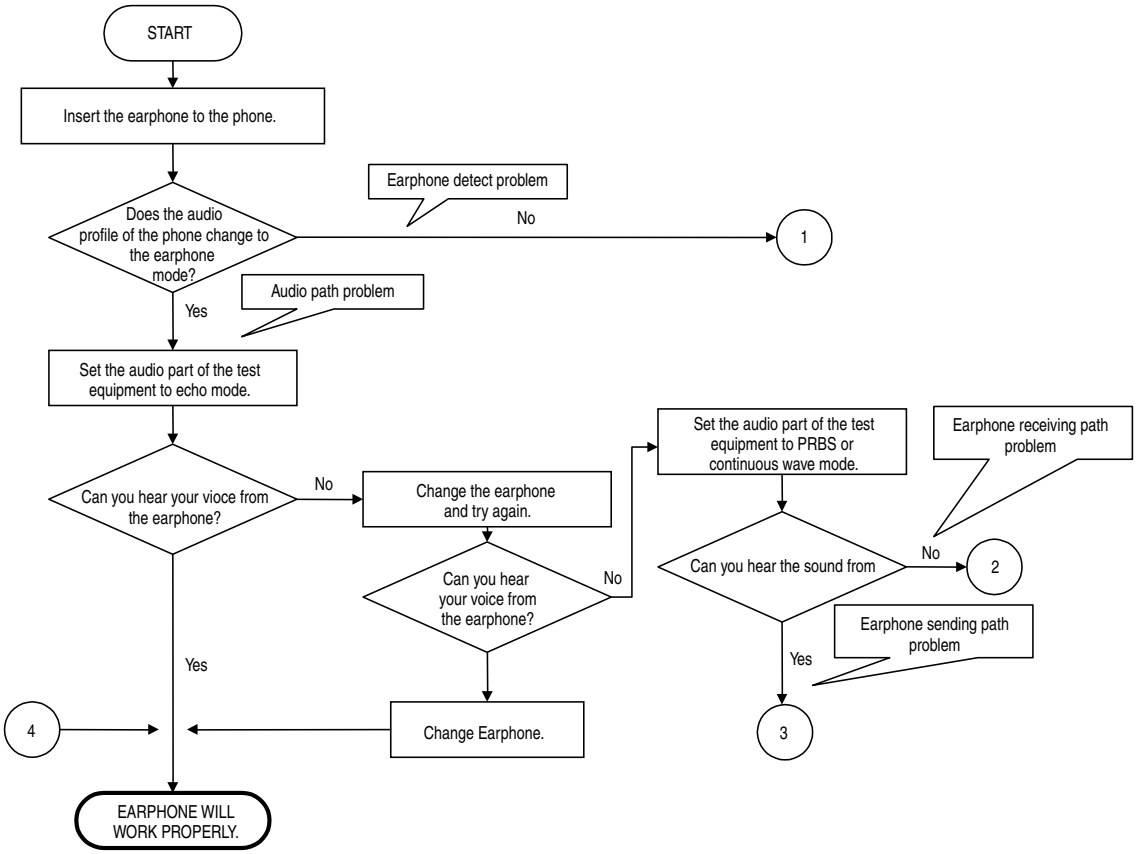


Figure 4-25.(b)

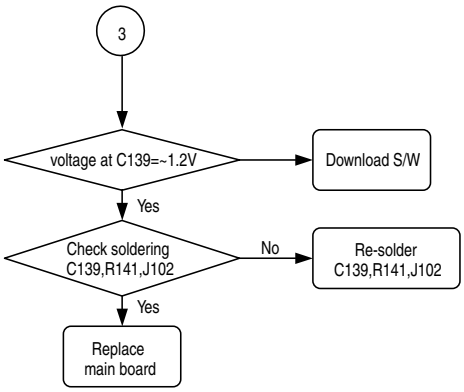
Circuit Diagram



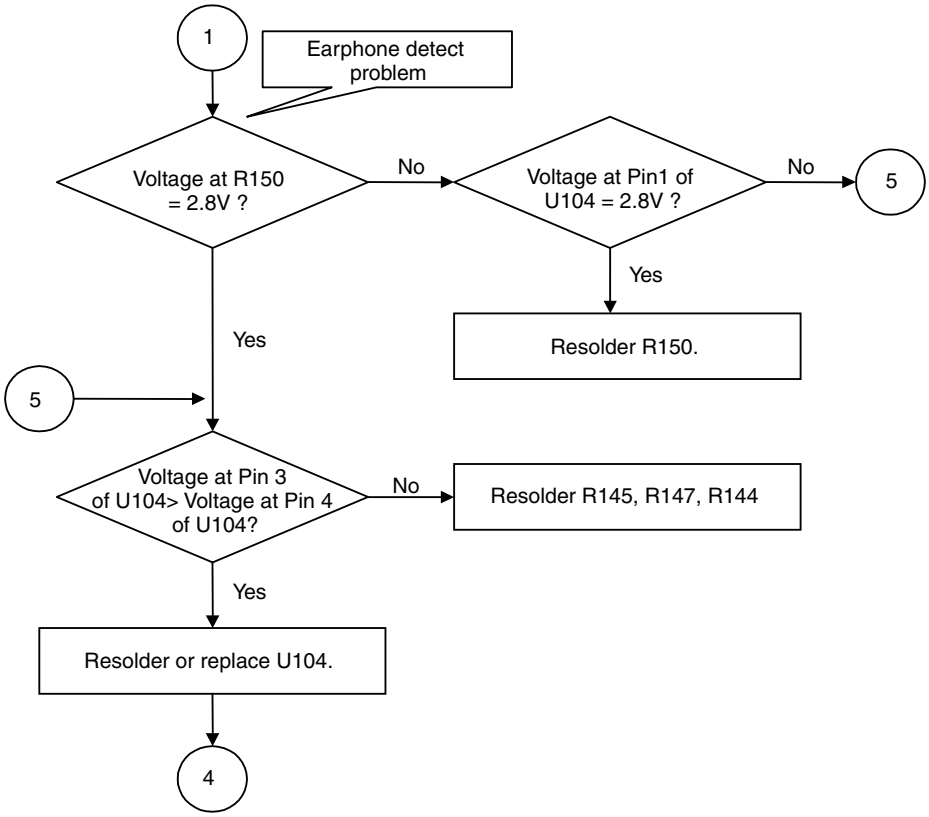
Checking Flow



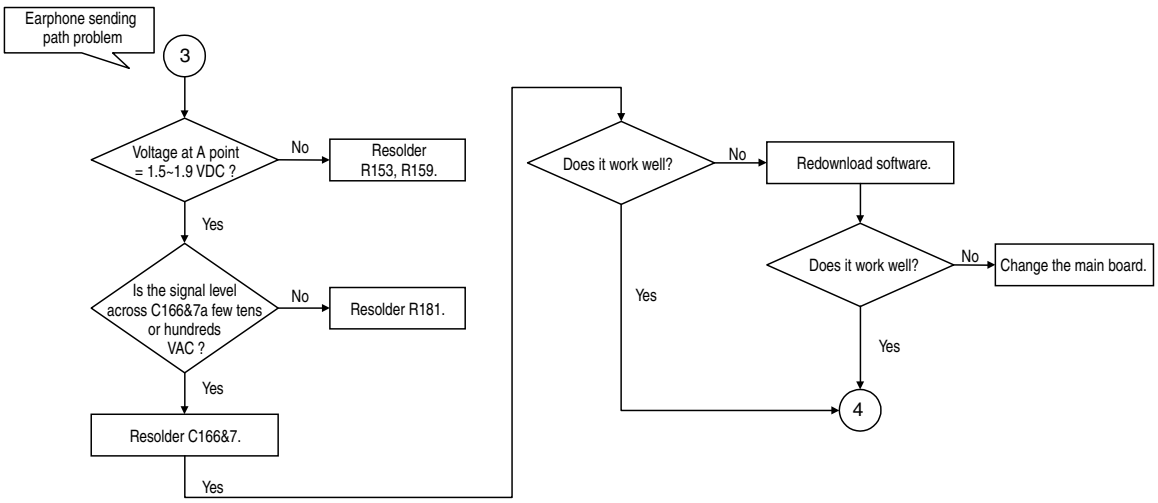
Earphone receiving path problem



Earphone detect problem



Earphone sending path problem



4.14 Indicator LED Trouble

Test Points

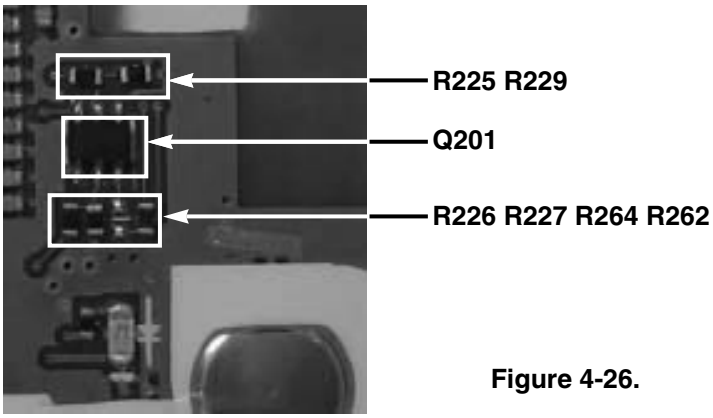
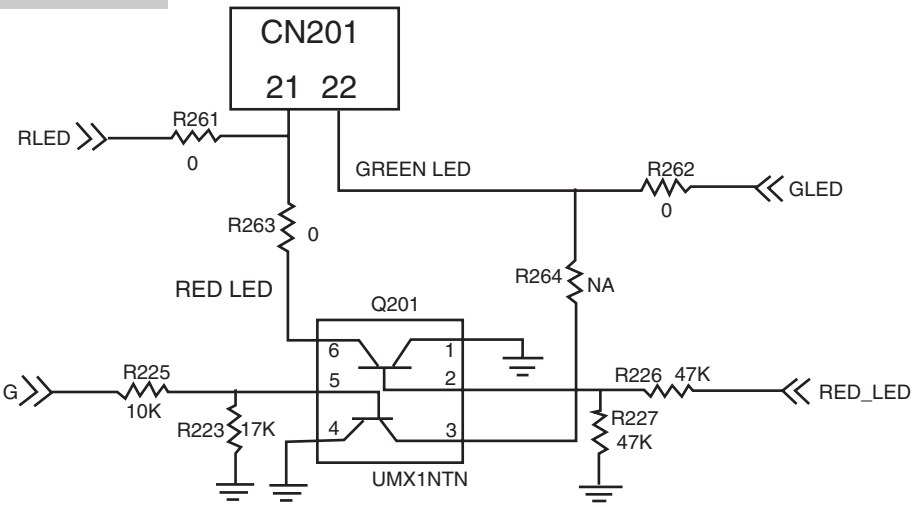
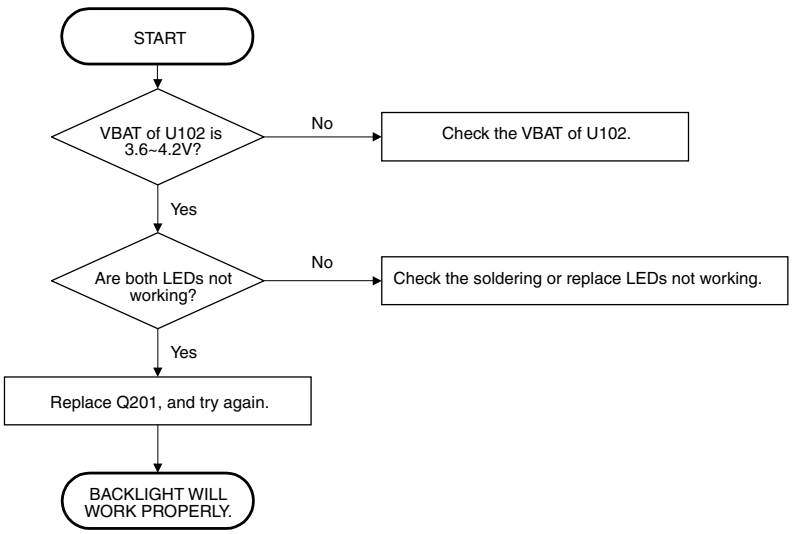


Figure 4-26.

Circuit Diagram



Checking Flow



4.15 RTC Trouble

Test Points

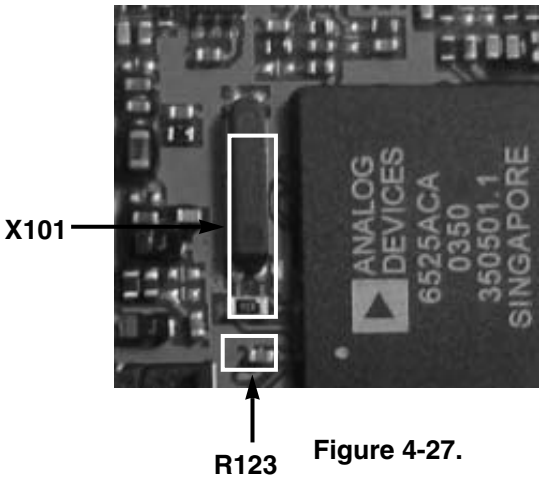
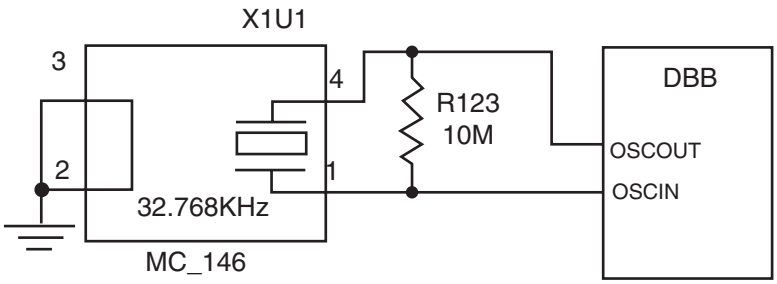
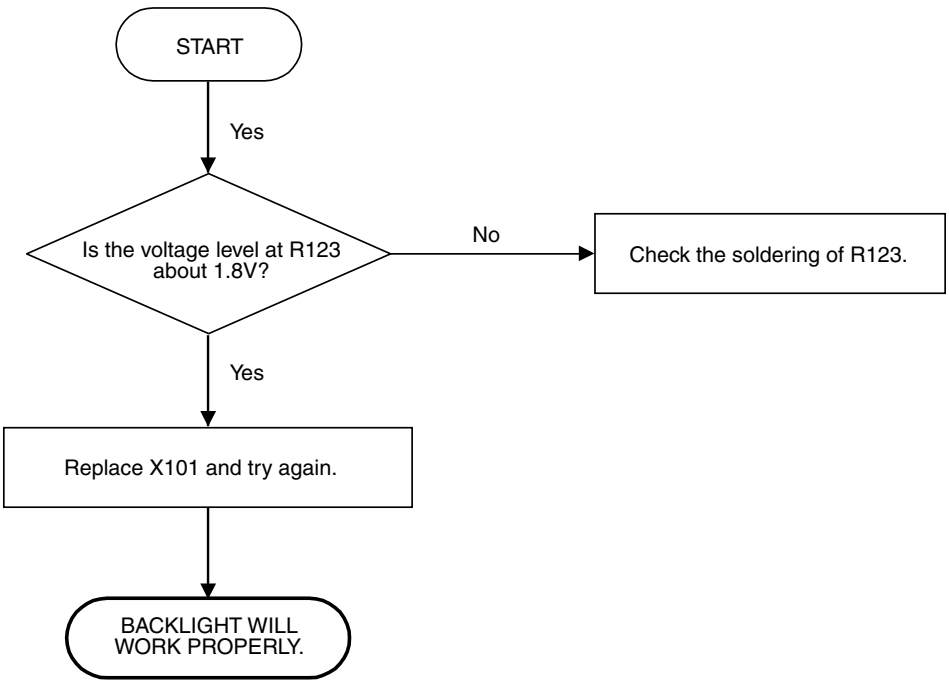


Figure 4-27.

Circuit Diagram



Checking Flow



5. DISASSEMBLY INSTRUCTION

5.1 Disassembly

1. Remove the Battery and Screws as shown below.

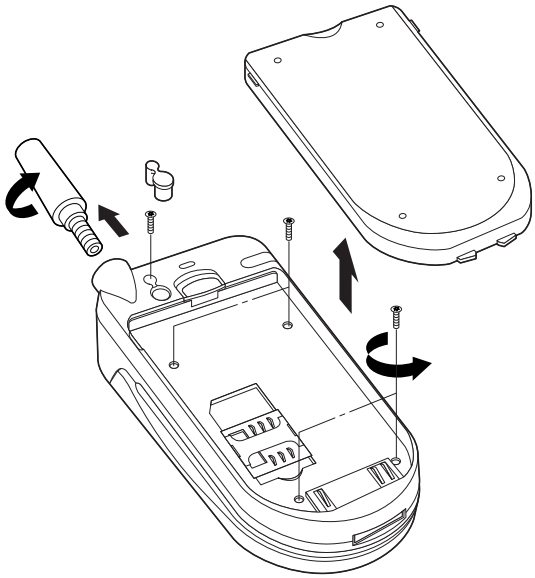


Figure 5-1.

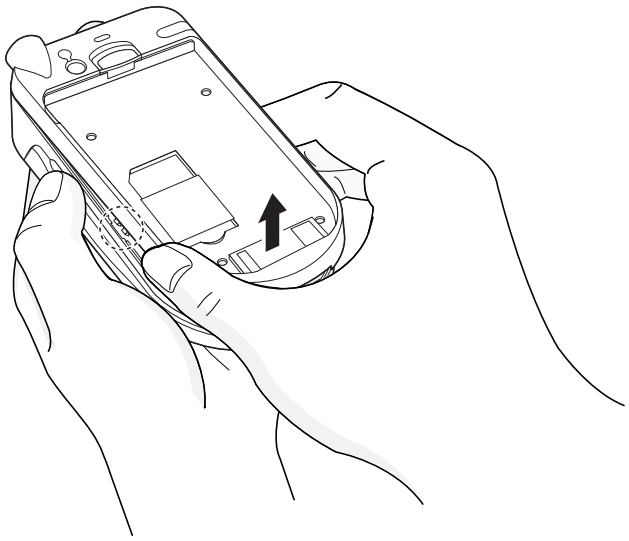


Figure 5-2.

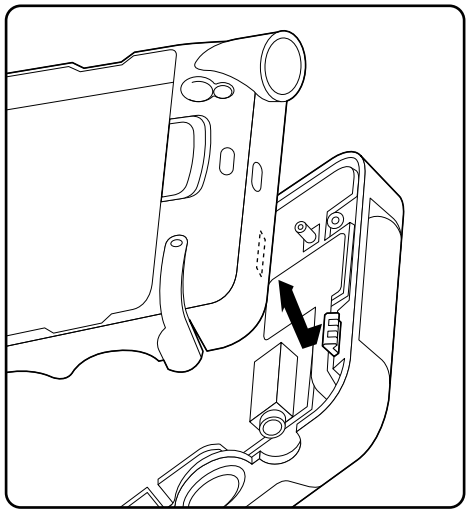


Figure 5-3.

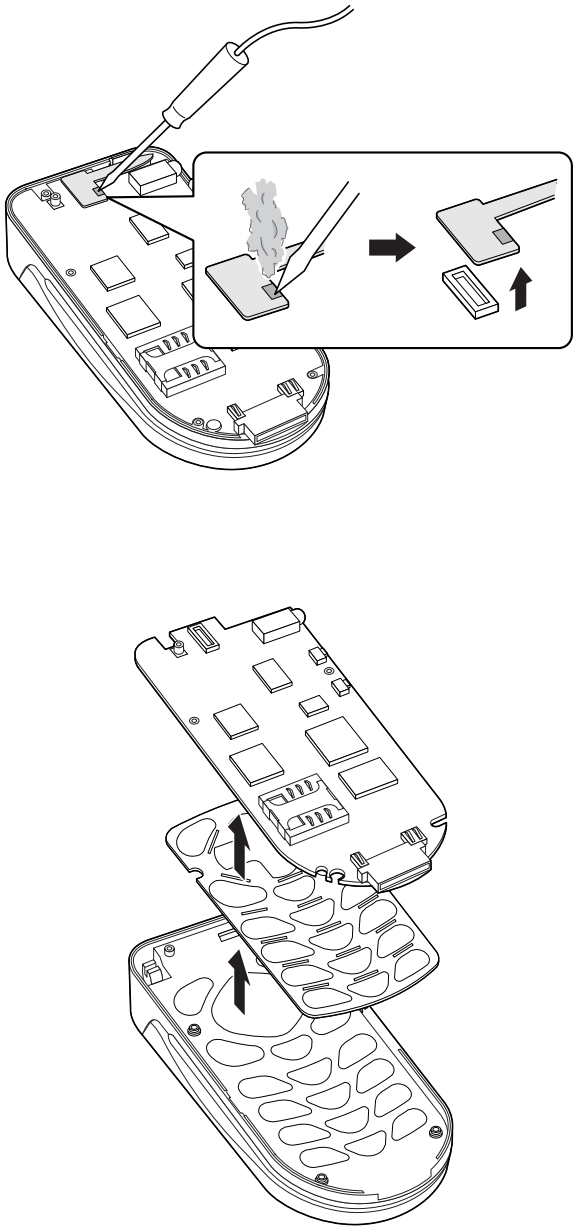


Figure 5-4.

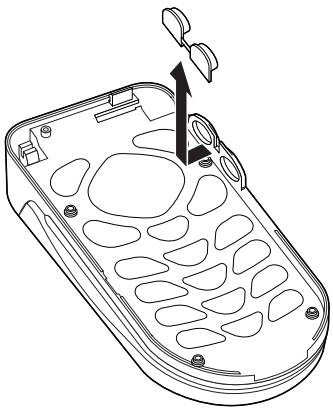


Figure 5-5.

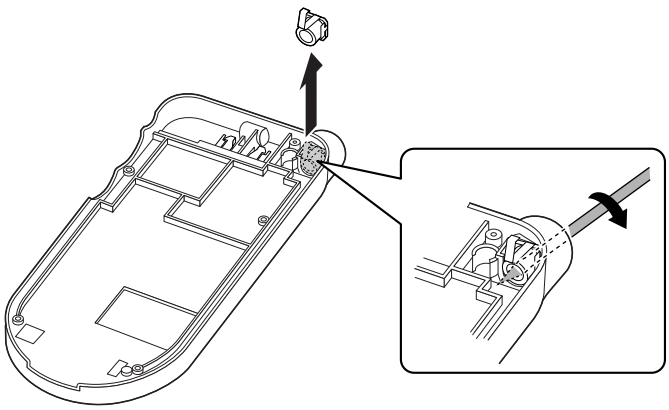


Figure 5-6.

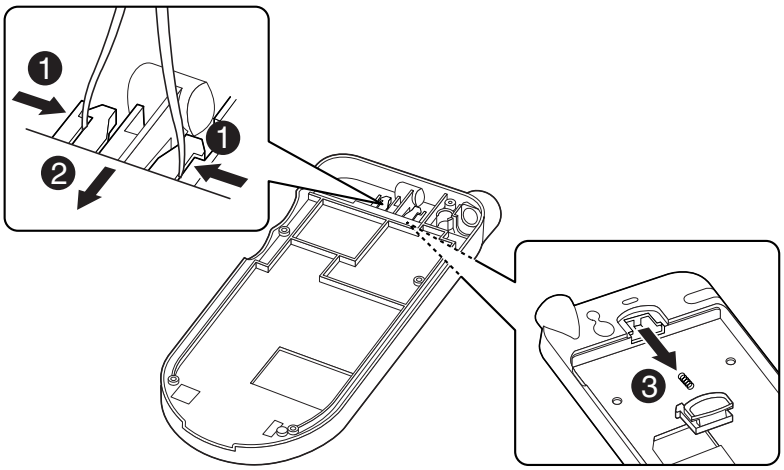


Figure 5-7.

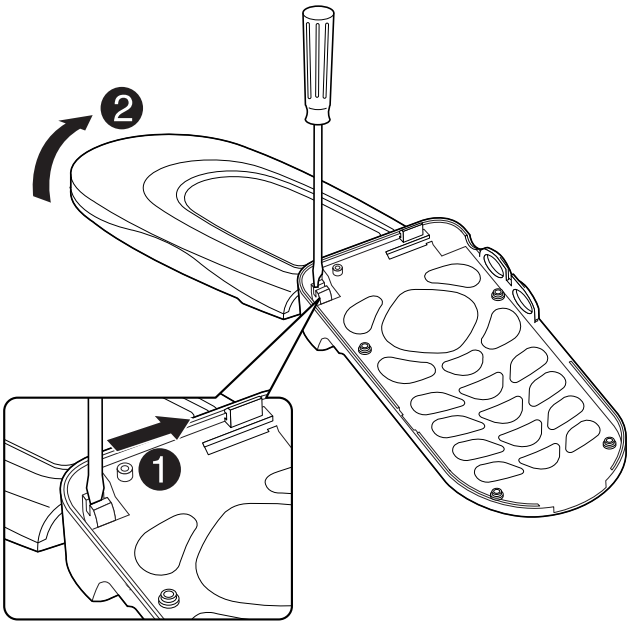


Figure 5-8.

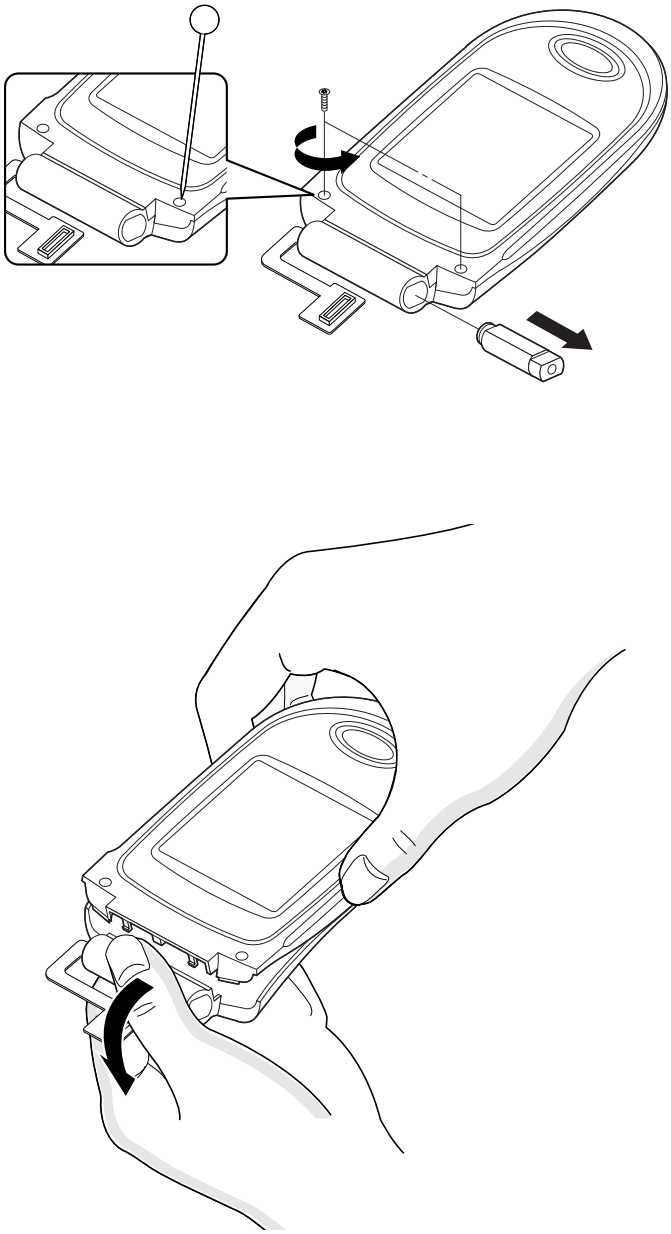


Figure 5-9.

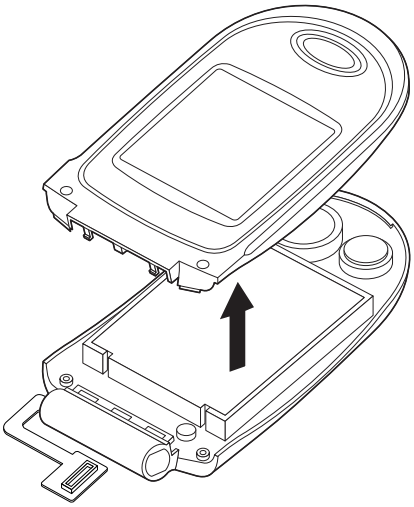


Figure 5-10.

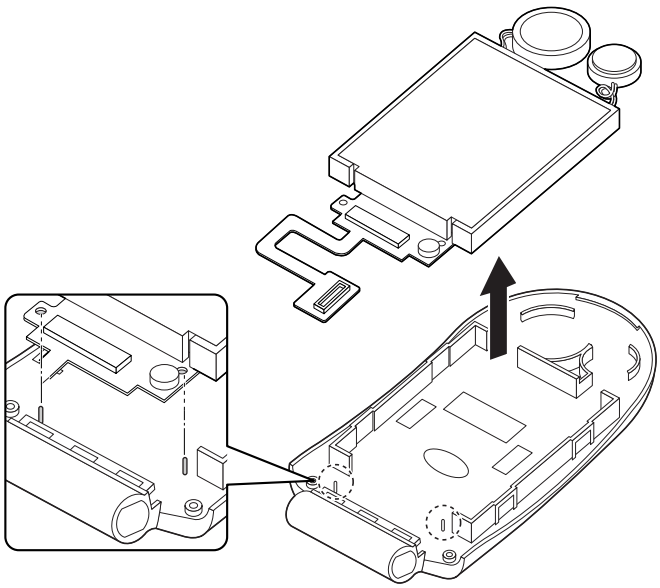


Figure 5-11.

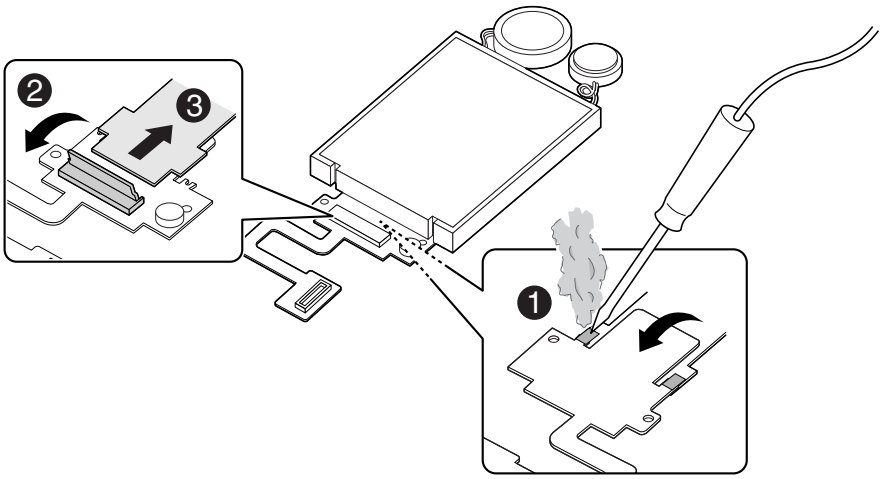


Figure 5-12.

6. DOWNLOAD AND CALIBRATION

6.1 Download

A. Download Setup

Figure 6-1 describes Download setup.

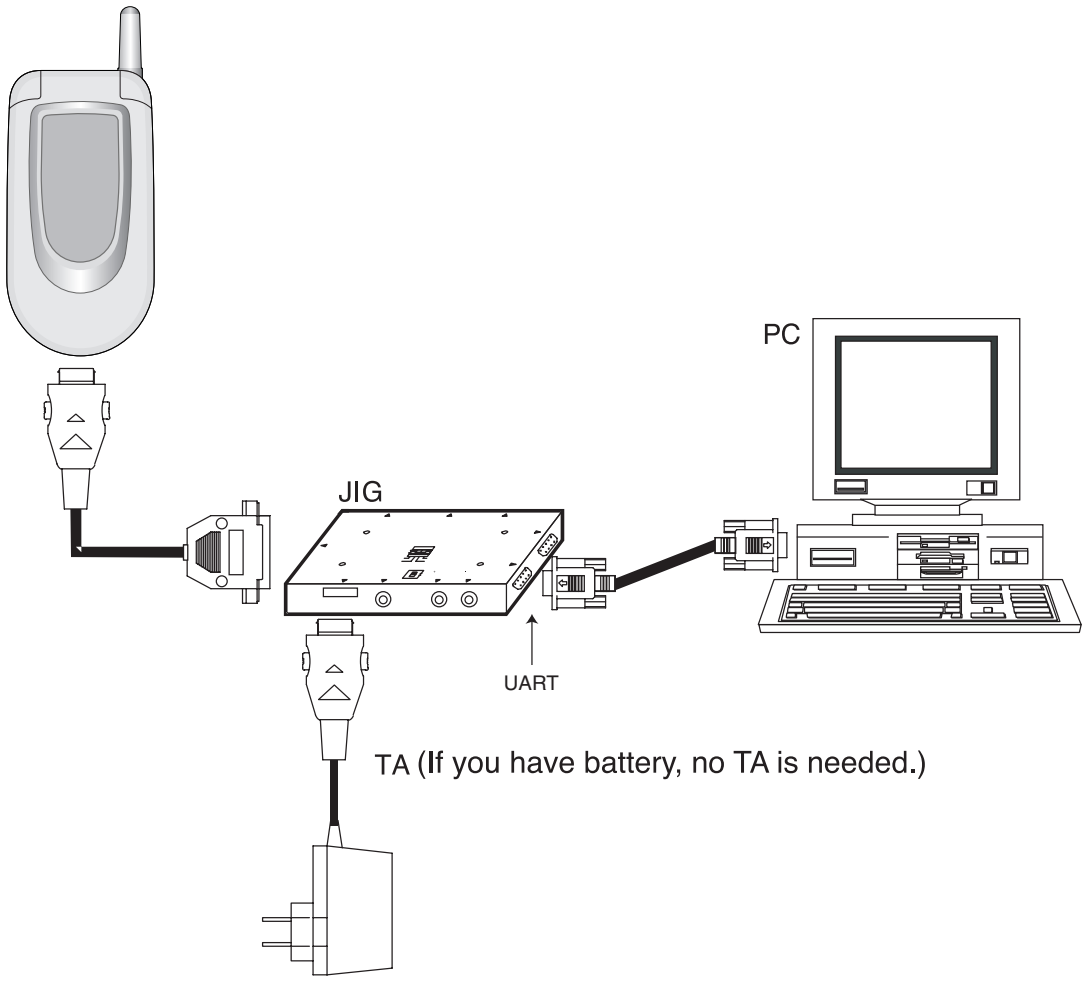
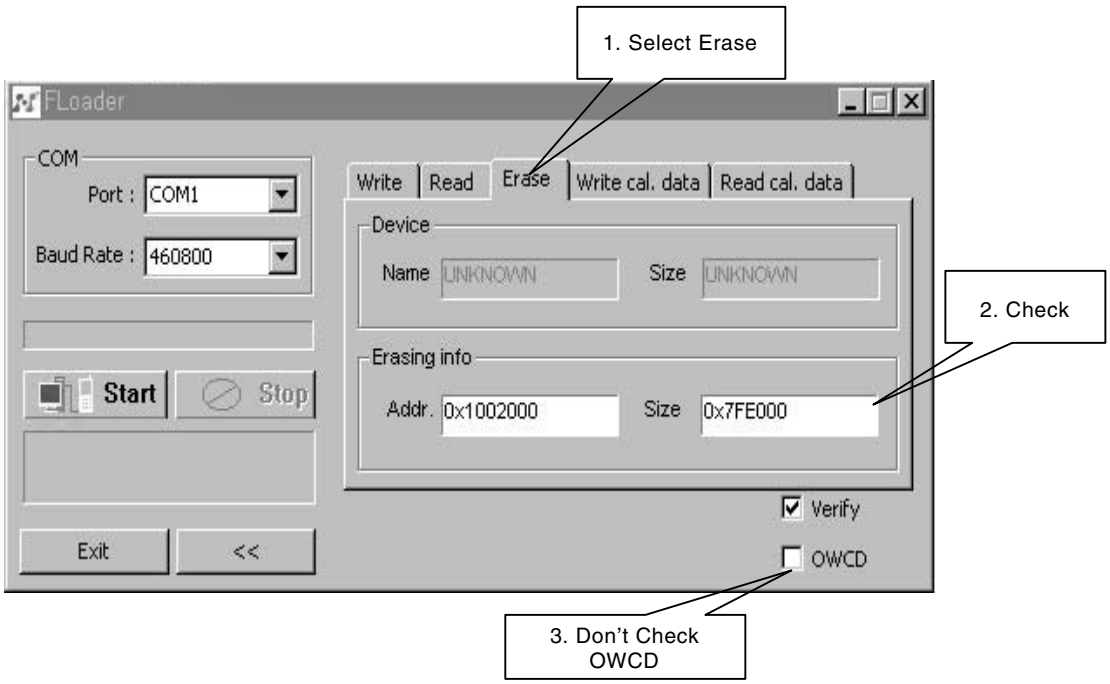


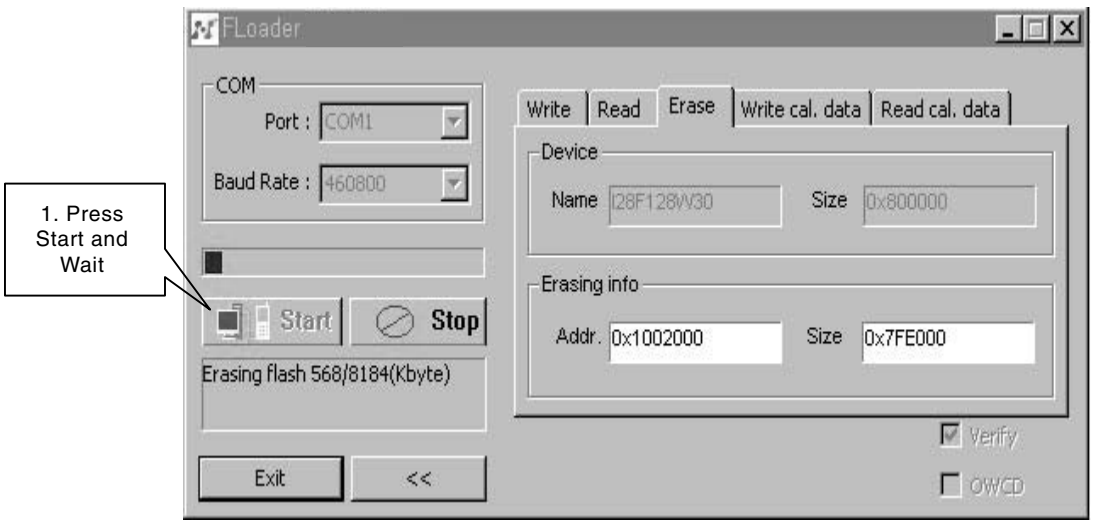
Figure 6-1. Download Setup

B. Download Procedure

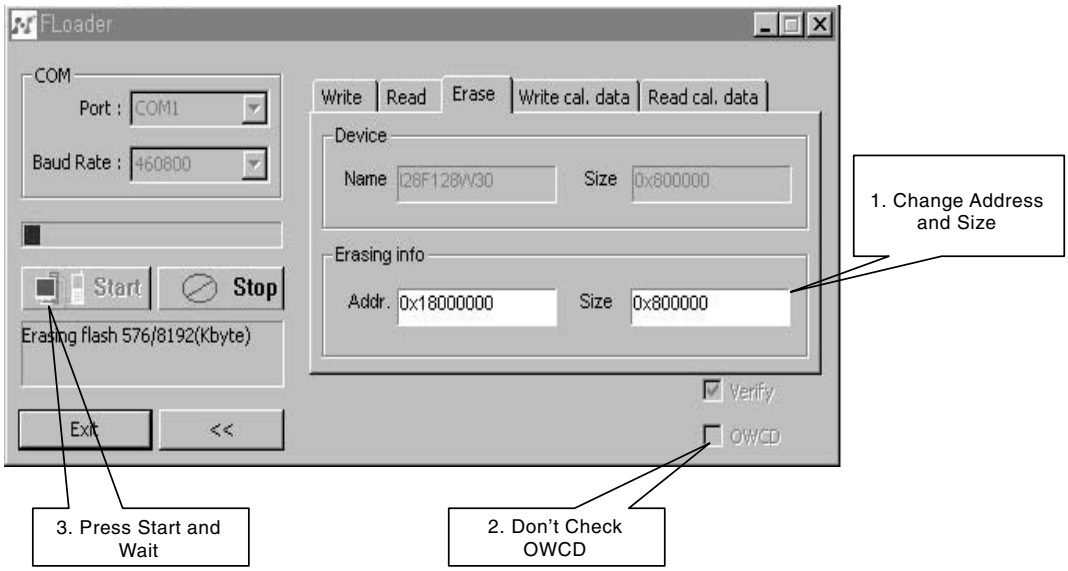
1. Access Flash loader program in PC and select Erase. (Don't check OWCD)



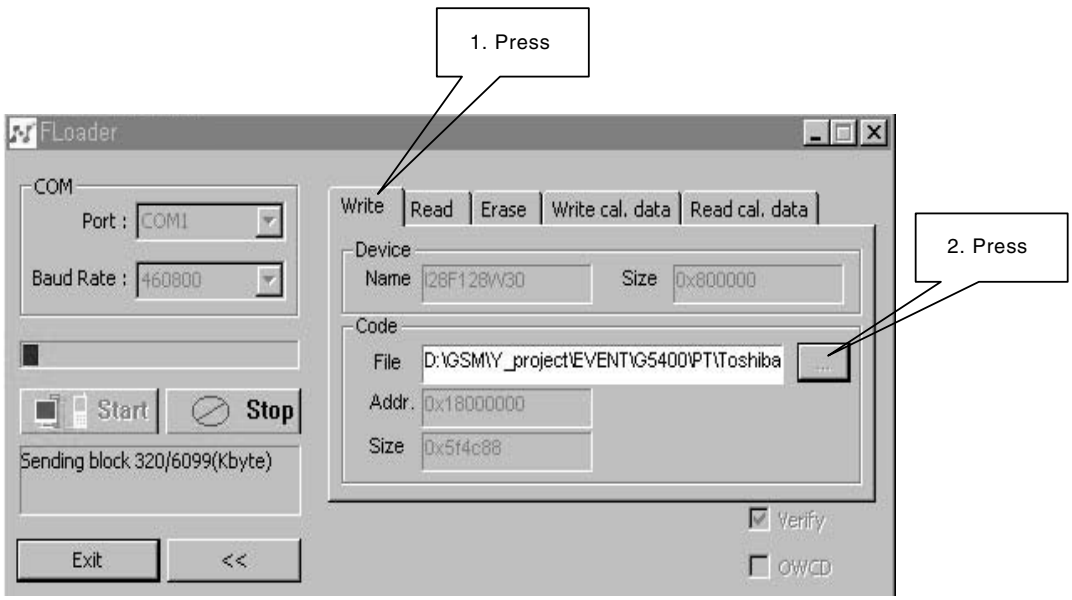
2. Press Start and Wait until Erase is completed.



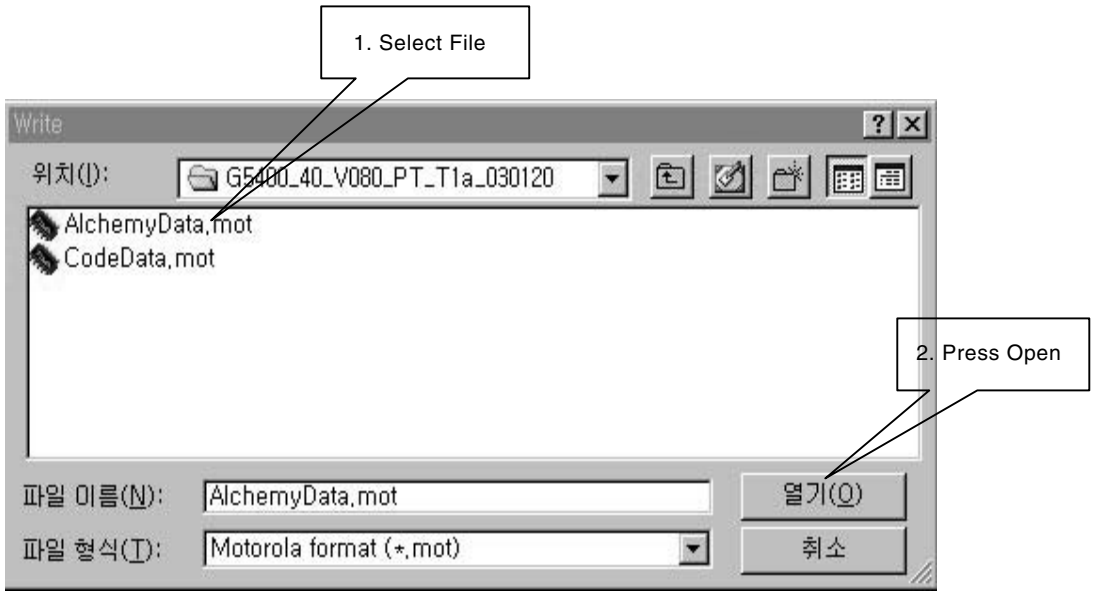
3. Change Address and Size(Address : 18000000, Size : 0x800000), and Press Start and Wait until Erase is completed again.



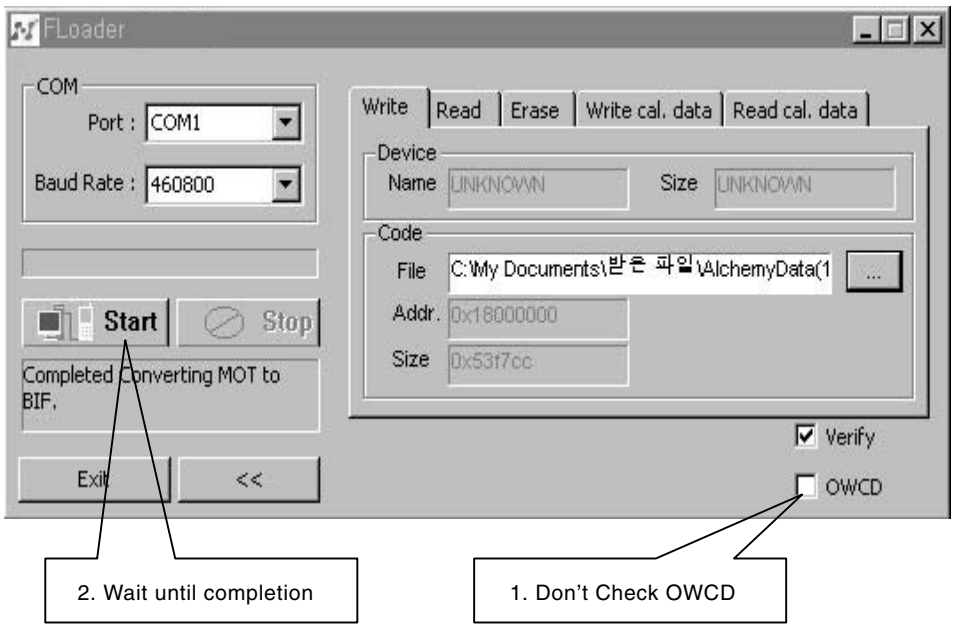
4. Press Write to start Download and press ... Key to choose software (AlchemyData.mot)



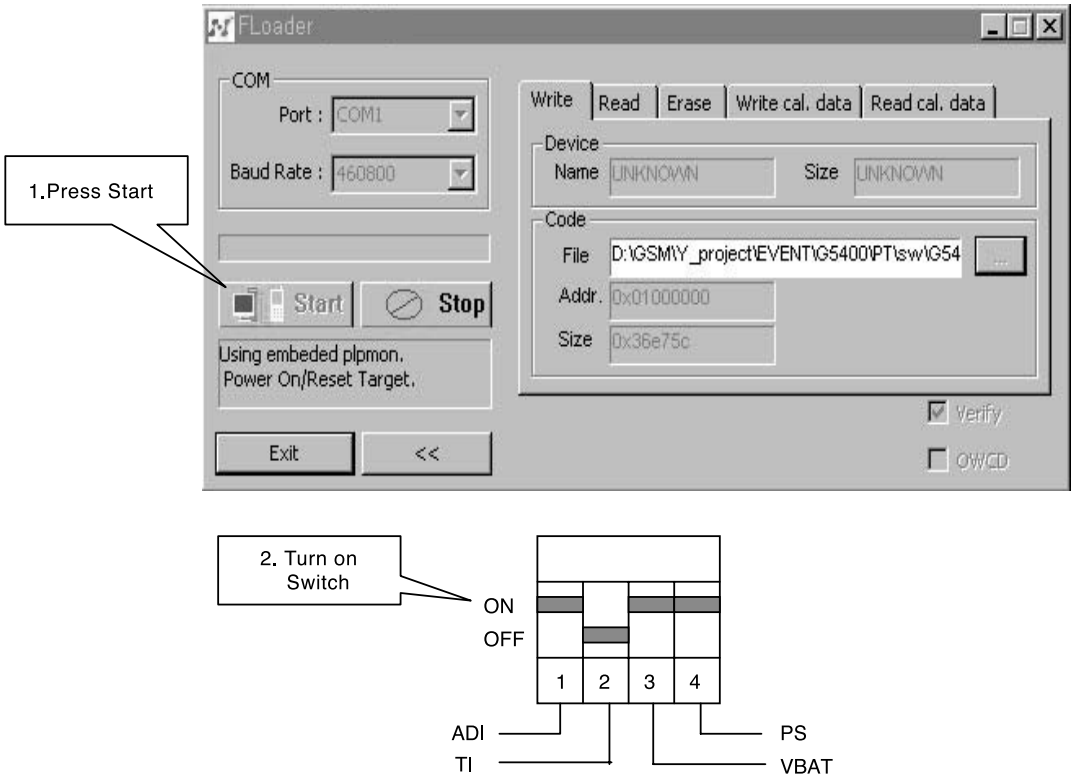
5. Choose software



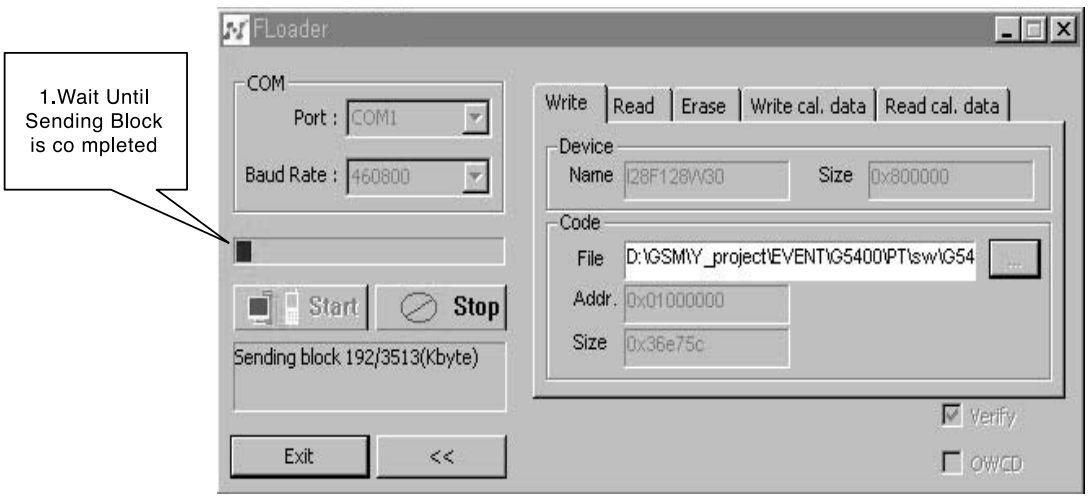
6. Wait until converting from MOT to BIF is completed (Don't check OWCD)



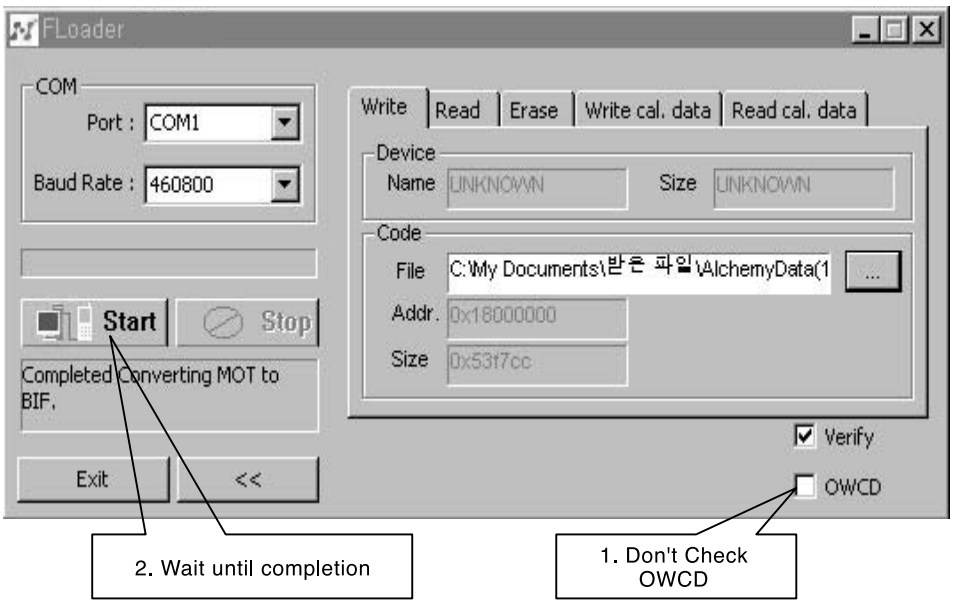
7. Press Start and Power on the phone using JIG remote Power on (Switch 1)



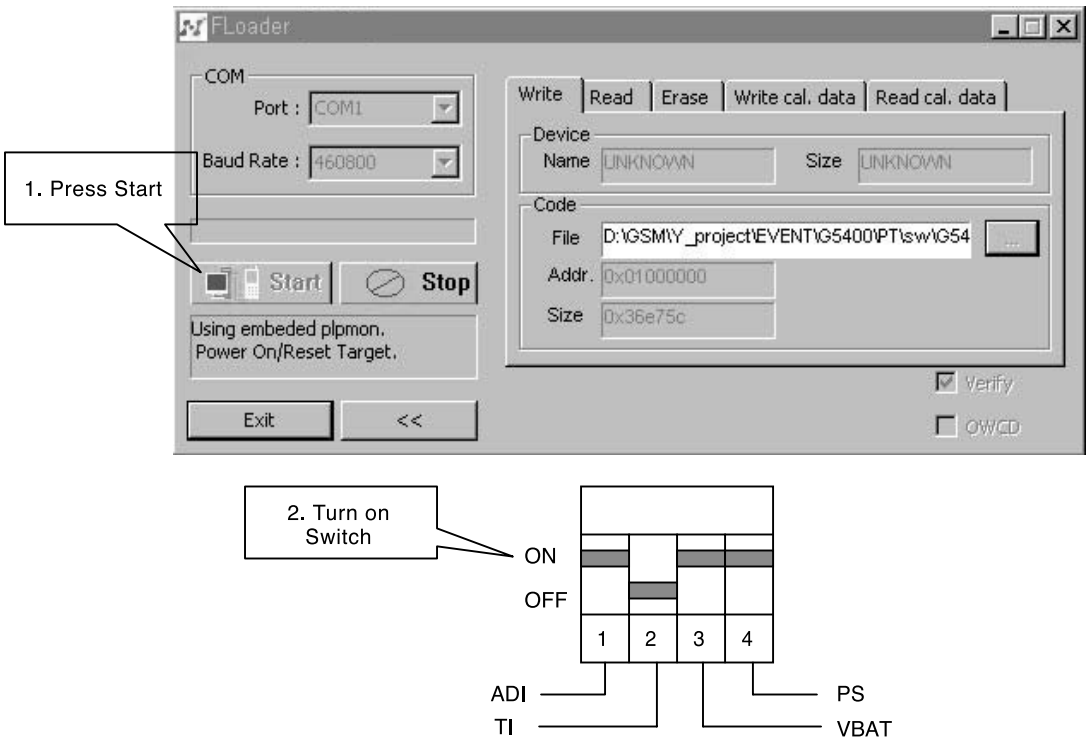
8. Wait until Sending Block is completed



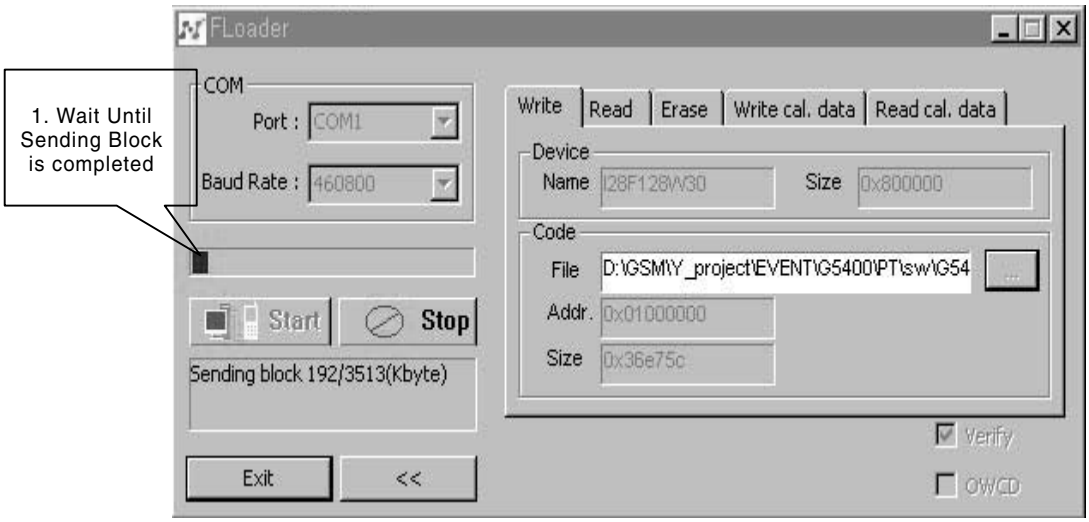
9. Press Write to start Download and press [...] Key to choose software (CodeData.mot)



10. Choose software



11. Wait until Sending Block is completed



6.2 Calibration

A. Equipment List

Table 6-1. Calibration Equipment List

Equipment for Calibration	Type/Model	Brand
Wireless Communication Test Set	HP-8960	Agilent
RS-232 Cable and Test JIG		LG
RF Cable		LG
Power Supply	HP-66311B	Agilent
GPIB interface card	HP-GPIB	Agilent
Calibration & Final test software		LG
Test SIM Card		
PC (for Software Installation)	Pentium II class above 300MHz	

B. Equipment Setup

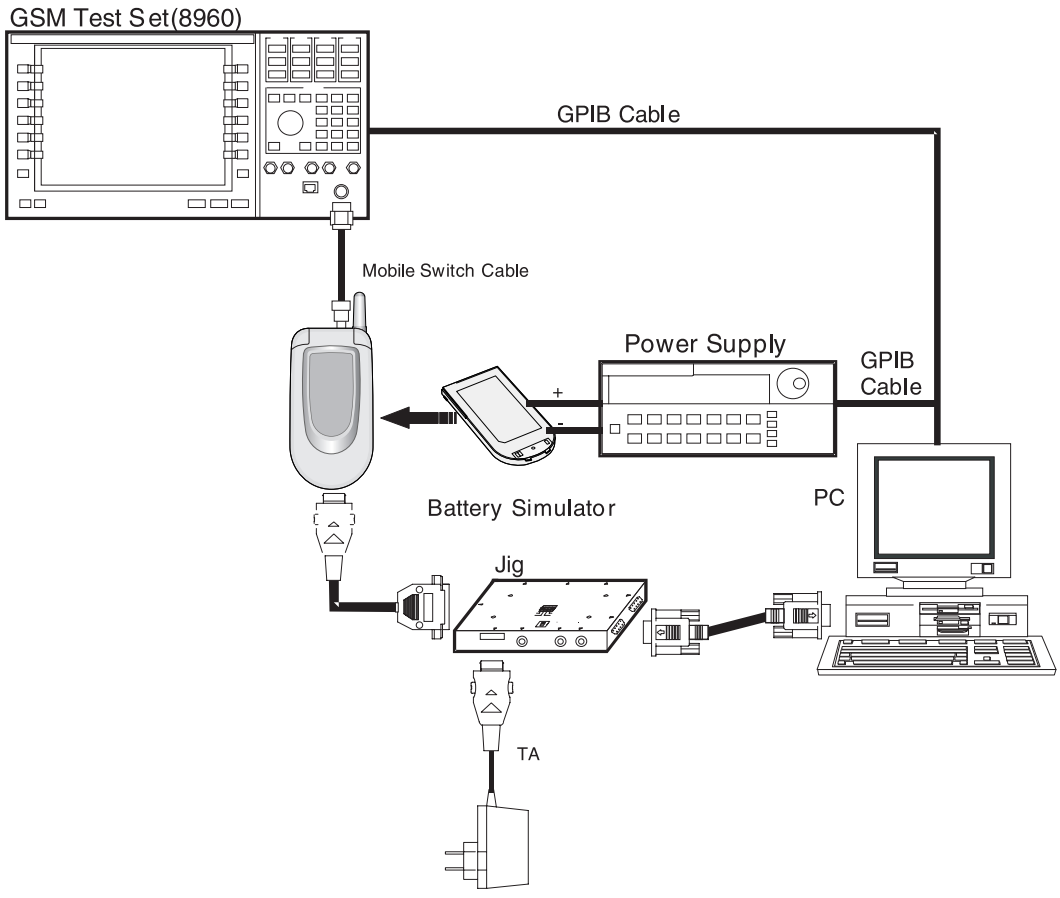


Figure 6-2.

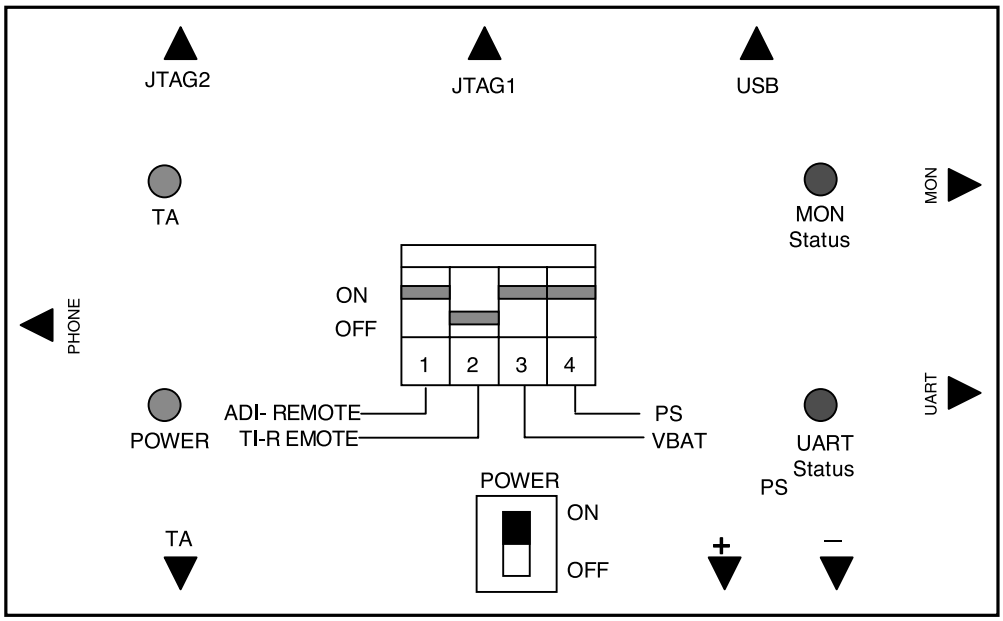


Figure 6-3. The top view of Test JIG

C. Test Jig Operation

Table 6-2. Jig Power

Power Source	Description
Power Supply	usually 4.0V
Travel Adaptor	Use TA, name is TA-20G (24pin)

Table 6-3. Jig DIP Switch

Switch Number	Name	Description
Switch 1	ADI-REMOTE	In ON state, phone is awaked. It is used ADI chipset.
Switch 2	TI-REMOTE	In ON state, phone is awaked. It is used TI chipset.
Switch 3	VBAT	Power is provided for phone from battery
Switch 4	PS	Power is provided for phone from Power supply

Table 6-4. LED Description

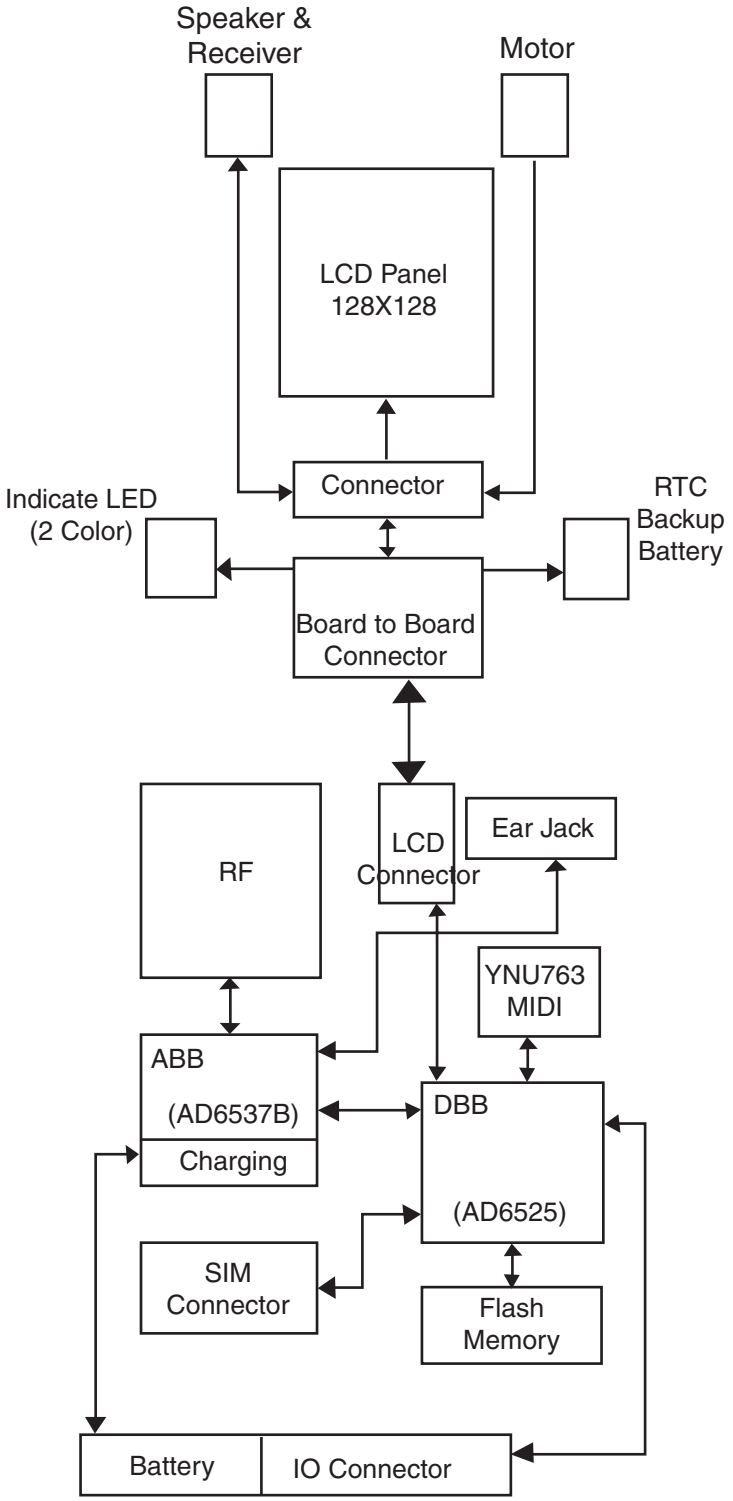
LED Number	Name	Description
LED 1	Power	Power is provided for Test Jig.
LED 2	TA	Indicate charging state of the phone battery
LED 3	UART	Indicate data transfer state through the UART port
LED 4	MON	Indicate data transfer state through the MON port

1. Connect as Fig 6-2 (RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3 rd , 4 th of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1 st ON state

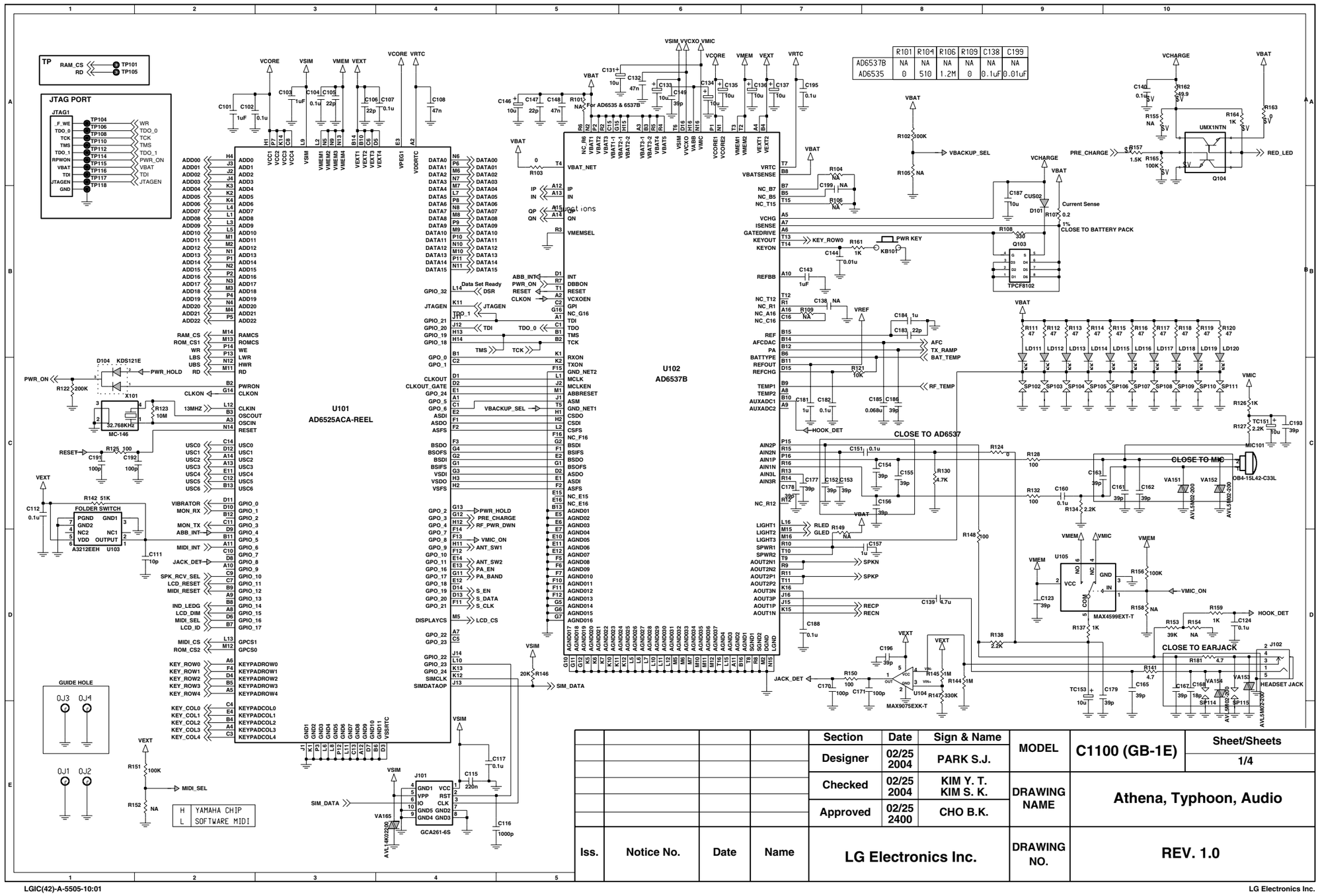
D. Procedure

1. Connect as Fig 6-2 (RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Power ON PC then enter into Windows 98 (Remark : Windows 2000 system could be feasible)
3. Run AUTOCAL.exe, the AUTOCAL application window will be appeared.

7. BLOCK DIAGRAM

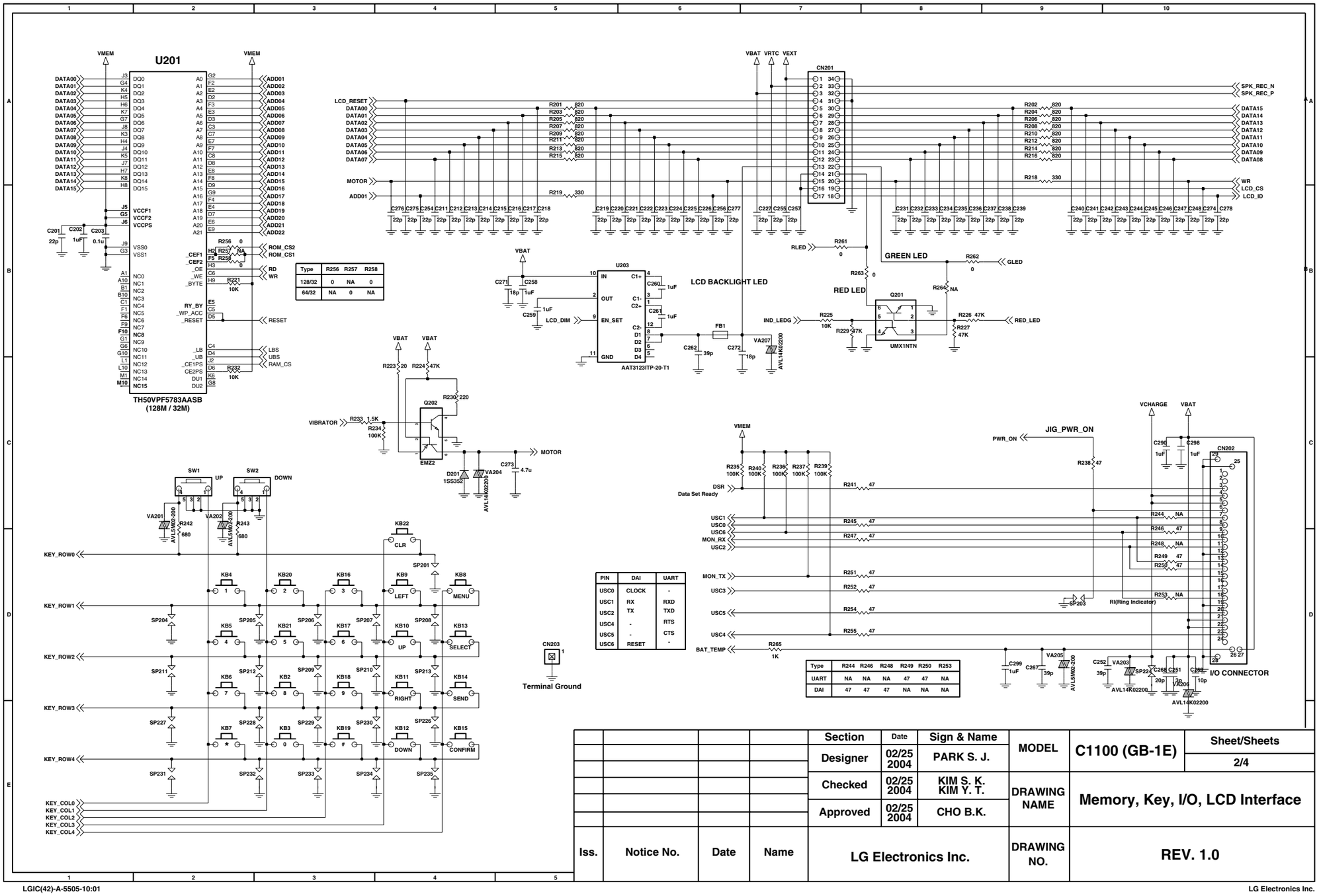


8. CIRCUIT DIAGRAM



LGIC(42)-A-5505-10:01

LG Electronics Inc.



Type	R256	R257	R258
128/32	0	NA	0
64/32	NA	0	NA

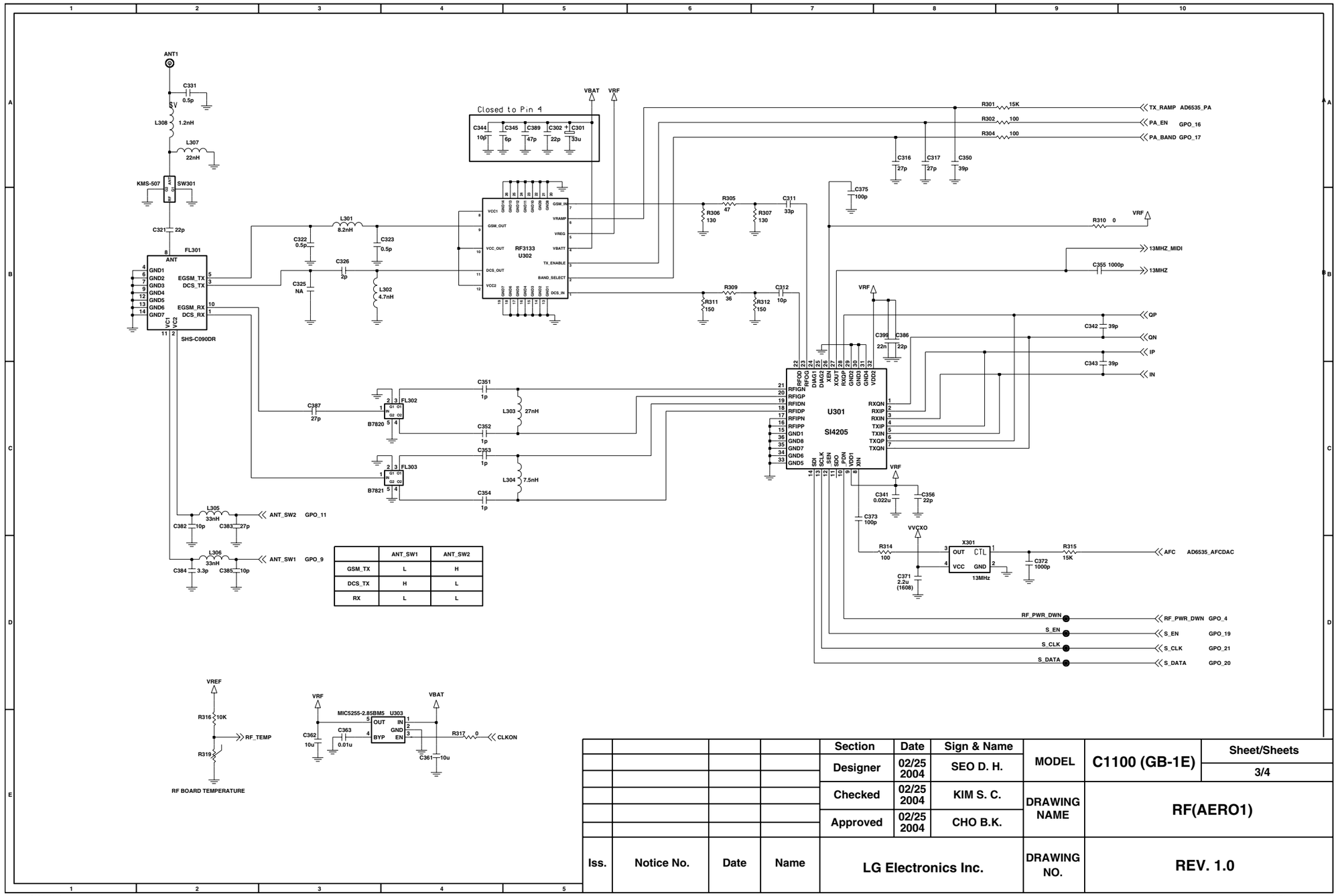
PIN	DAI	UART
USC0	CLOCK	-
USC1	RX	RXD
USC2	TX	TXD
USC4	-	RTS
USC5	-	CTS
USC6	RESET	-

Type	R244	R246	R248	R249	R250	R253
UART	NA	NA	NA	47	47	NA
DAI	47	47	47	NA	NA	NA

Iss.	Notice No.	Date	Name	Section	Date	Sign & Name	MODEL	C1100 (GB-1E)	Sheet/Sheets
				Designer	02/25 2004	PARK S. J.			2/4
				Checked	02/25 2004	KIM S. K. KIM Y. T.	DRAWING NAME	Memory, Key, I/O, LCD Interface	
				Approved	02/25 2004	CHO B.K.			
				LG Electronics Inc.			DRAWING NO.	REV. 1.0	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

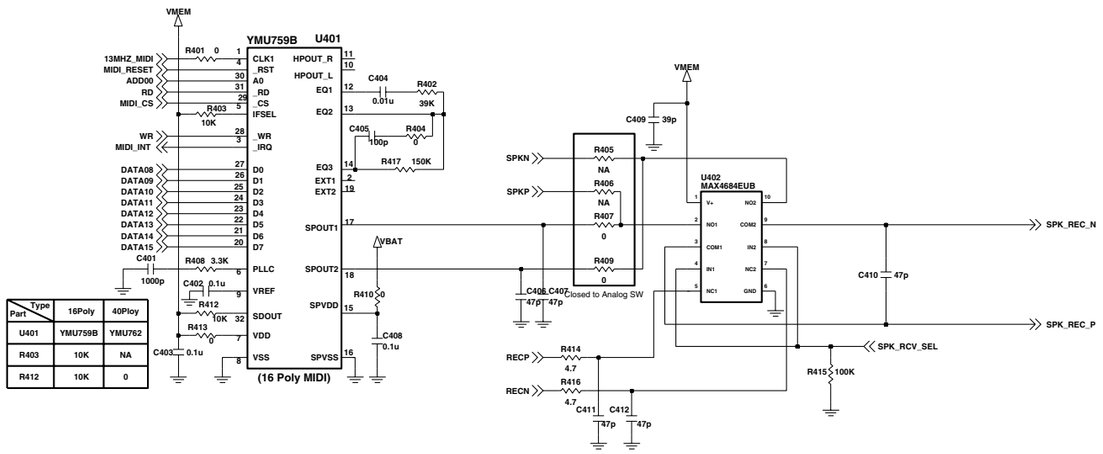


	ANT_SW1	ANT_SW2
GSM_TX	L	H
DCS_TX	H	L
RX	L	L

Iss.	Notice No.	Date	Name	Section	Date	Sign & Name	MODEL	C1100 (GB-1E)	Sheet/Sheets
				Designer	02/25 2004	SEO D. H.			3/4
				Checked	02/25 2004	KIM S. C.	DRAWING NAME	RF(AERO1)	
				Approved	02/25 2004	CHO B.K.			
				LG Electronics Inc.			DRAWING NO.	REV. 1.0	

LGIC(42)-A-5505-10:01

LG Electronics Inc.



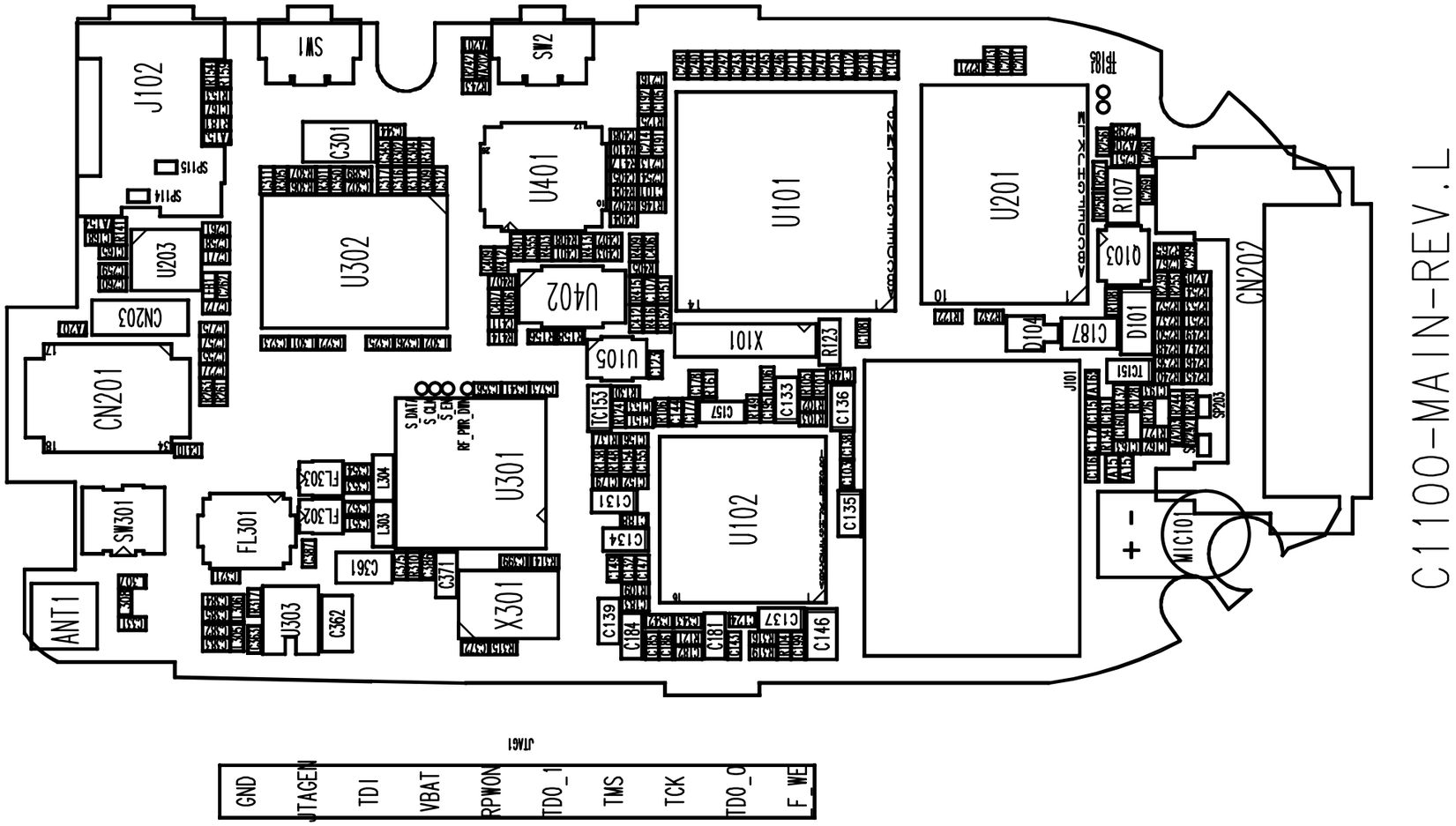
Part \ Type	16Poly	40Ploy
U401	YMU759B	YMU762
R403	10K	NA
R412	10K	0

				Section	Date	Sign & Name	MODEL	C1100 (GB-1E)	Sheet/Sheets
				Designer	02/25 2004	PARK S.J.			4/4
				Checked	02/25 2004	KIM Y. T. KIM S.K.	DRAWING NAME	MIDI	
				Approved	02/25 2004	CHO B.K.			
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV. 1.0	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

9. PCB LAYOUT


C1100-MAIN-REV.L
J102
SW1
SW2
U401
U101
U201
U302
U402
U105
X101
R123
R107
Q103
D104
C187
D101
CN202
CN203
CN201
U203
SP115
SP114
C301
U301
C133
C157
C136
C135
U102
C131
C134
C139
C184
C181
C137
C146
X301
C361
C371
C362
U303
FL301
FL302
FL303
L303
L304
SW301
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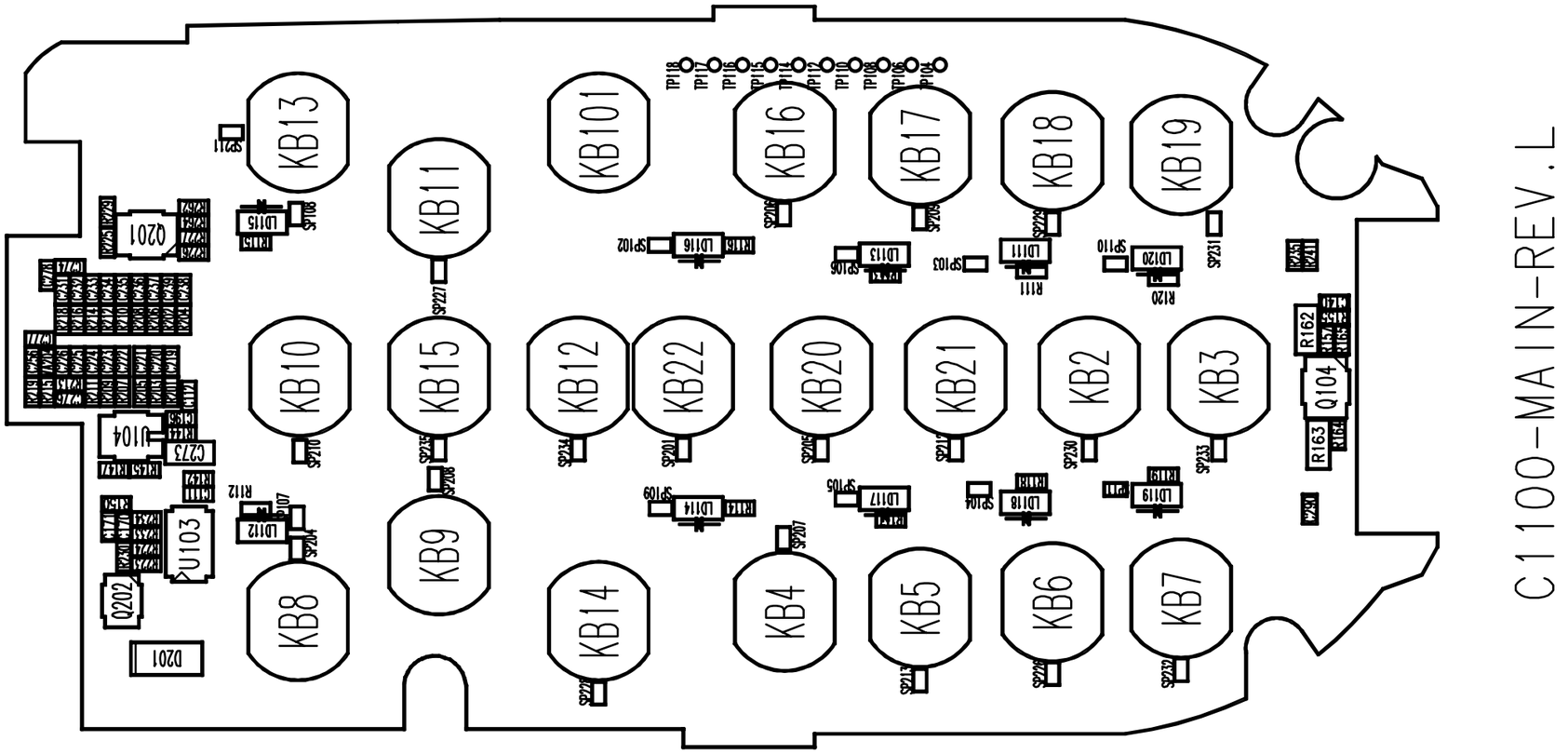
MIC101
JTAG1
GND
JTAGEN
TDI
VBAT
RPWON
TDO_1
TMS
TCK
TDO_0
F_WE


KB13
KB11
KB101
KB16
KB17
KB18
KB19
KB10
KB15
KB12
KB22
KB20
KB21
KB2
KB3
KB8
KB9
KB14
KB4
KB5
KB6
KB7
Q201
U104
U103
Q202
D201
Q104
R162
R163
C1100-MAIN-REV.L

10. ENGINEERING MODE

A. About Engineering Mode

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

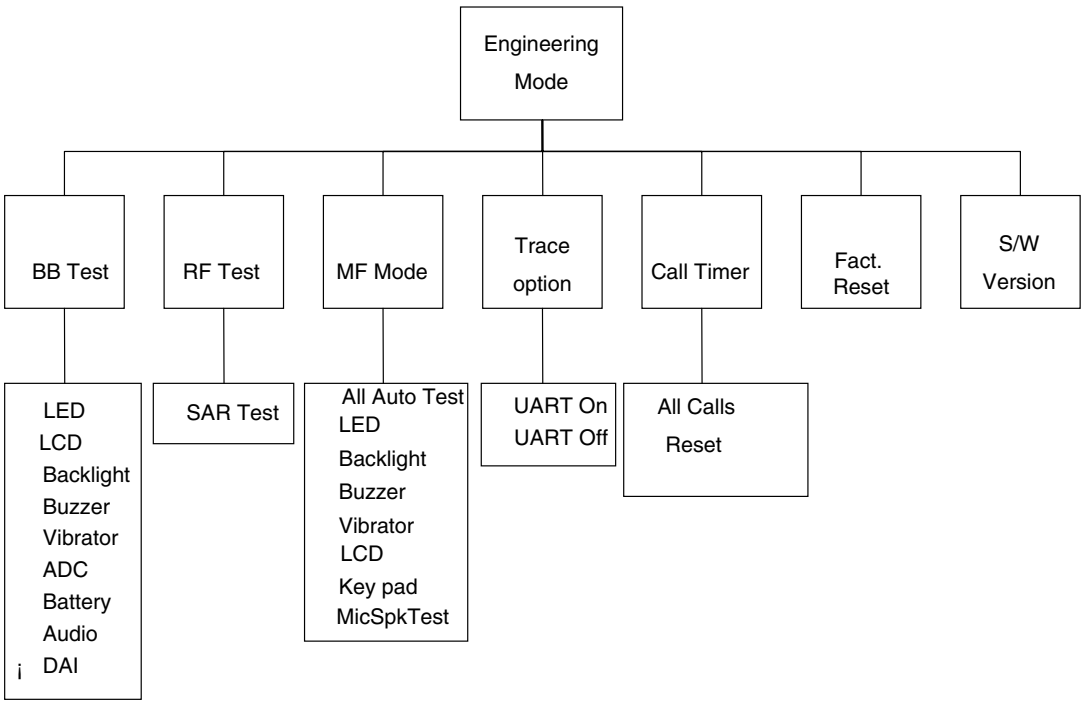
B. Access Codes

The key sequence for switching the engineering mode on is 2945#*#. Pressing END will switch back to non-engineering mode operation.

C. Key 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.

D. Engineering Mode Menu Tree



10.1 BB Test [MENU 1]

Baseband Test

10.1.1 LCD

- **Contrast value :** This menu is to test Main LCD contrast.
  - Contrast Value [10-50] : Change this value by up and down key.
- **Sub LCD Contrast :** This menu is to test Sub LCD contrast.
  - Contrast Value [0-50] : Change this value by up and down key.

10.1.2 Backlight [1-2]

This menu is to test the LCD Backlight and Keypad Backlight.

- **Backlight On** : LCD Backlight and Keypad Backlight light on at the same time.
- **Backlight Off** : LCD Backlight and Keypad Backlight light off at the same time.
- **Backlight value** : This controls brightness of Backlight. When entering into the menu, the present backlight-value in the phone is displayed. Use Left / Right key to adjust the level of brightness. The value of the brightness set at last will be saved in the NVRAM.

10.1.3 Buzzer

This menu is to test the melody sound.

- **Melody on** : Melody sound is played through the speaker.
- **Melody off** : Melody sound is off.

10.1.4 Vibrator

This menu is to test the vibration mode.

- **Vibrator On** : Vibration mode is on.
- **Vibrator Off** : Vibration mode is off.

10.1.5 ADC (Analog to Digital Converter)

This displays the value of each ADC.

- **MVBAT ADC (Main Voltage Battery ADC)**
- **AUX ADC (Auxiliary ADC)**
- **TEMPER ADC (Temperature ADC)**

10.1.6 BATTERY

- **Bat Cal** :

  This displays the value of Battery Calibration.
  The following menus are displayed in order; BAT_LEV_4V, BAT_LEV_3_LIMIT, BAT_LEV_2_LIMIT, BAT_LEV_1_LIMIT, BAT_IDLE_LI MIT, BAT_INCALL_LIMIT, SHUT_DOWN_VOLTAGE, BAT_RECHARGE_LMT

- **TEMP Cal** :

  This displays the value of Temperature Calibration.
  The following menus are displayed in order; TEMP_HIGH_LIMIT, TEMP_HIGH_RECHARGE_LMT, TEMP_LOW_RECHARGE_LMT, TEMP_LOW_LIMIT

10.1.7 Audio

This is a menu for setting the control register of Voiceband Baseband Codec chip.
Although the actual value can be written over, it returns to default value after switching off and on the phone.

- **VbControl1** : VbControl1 bit Register Value Setting
- **VbControl2** : VbControl2 bit Register Value Setting
- **VbControl3** : VbControl3 bit Register Value Setting
- **VbControl4** : VbControl4 bit Register Value Setting
- **VbControl5** : VbControl5 bit Register Value Setting
- **VbControl6** : VbControl6 bit Register Value Setting

10.1.8 DAI (Digital Audio Interface)

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- **DAI AUDIO** : DAI audio mode
- **DAI UPLINK** : Speech encoder test
- **DAI DOWNLINK** : Speech decoder test
- **DAI OFF** : DAI mode off

10.2 RF Test [MENU 2]

Radio Frequency Test

10.2.1 SAR test

This menu is to test the Specific Absorption Rate.

- **SAR Test On** : Phone continuously process TX only. Call-setup equipment is not required.
- **SAR Test Off** : TX process off

10.3 MF Mode [MENU 3]

This manufacturing mode is designed to do the baseband test automatically. Selecting this menu will process the test automatically, and phone displays the previous menu after completing the test.

10.3.1 All auto test

LCD, Backlight, Vibrator, Buzzer, Key Pad, Mic&Speaker,

10.3.2 LED

LCD Backlight and LED Backlight are on for about 1.5 seconds at the same time, then off.

10.3.3 Backlight

This menu is to test the volume of Melody. It rings in the following sequence. Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

10.3.4 Buzzer

Vibrator is on for about 1.5 seconds.

10.3.5 Vibrator

Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

10.3.6 LCD

When a pop-up message shows 'Press Any Key', you may press any keys including side keys, but not [Soft2 Key]. If the key is working properly, name of the key is displayed on the screen. Test will be completed in 15 seconds automatically.

10.3.7 Key pad

Sub LCD screen resolution tests horizontally one by one and fills the screen.

10.3.8 MicSpkTest

The sound from MIC is recorded for about 3 seconds, then it is replayed on the speaker automatically

10.4 Trace option [MENU 4]

This is NOT a necessary menu to be used by neither engineers nor users.

10.5 Call timer [MENU 5]

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- **All calls** : This displays total conversation time. User cannot reset this value.
- **Reset settings** : This resets total conversation time to this, [00:00:00].
- **DAI DOWNLINK** : Speech decoder test
- **DAI OFF** : DAI mode off

10.6 Fact. Reset [MENU 6]

This Factory Reset menu is to format data block in the flash memory and this procedure set up the default value in data block.

Attention

- Fact. Reset (i.e. Factory Reset) should be only used during the Manufacturing process.
- Servicemen should NOT progress this menu, otherwise some of valuable data such as Setting value, RF Calibration data, etc. cannot be restored again.

10.7 S/W version

This displays software version stored in the phone.

11. STAND ALONE TEST

11.1 Introduction

This manual explains how to examine the status of RX and TX of the model.

A. Tx Test

TX test - this is to see if the transmitter of the phones is activating normally.

B. Rx Test

RX test - this is to see if the receiver of the phones is activating normally.

11.2 Setting Method

A. COM port

a. Move your mouse on the “Connect” button, then click the right button of the mouse and select “Com setting”.

b. In the “Dialog Menu”, select the values as explained below.

- Port : select a correct COM port
- Baudrate : 38400
- Leave the rest as default values

B. Tx

1. Selecting Channel

- Select one of GSM or DCS Band and input appropriate channel.

2. Selecting APC

a. Select either Power level or Scaling Factor.

b. Power level

- Input appropriate value GSM (between 5~19) or DCS (between 0~15)

c. Scaling Factor

- A ‘Ramp Factor’ appears on the screen.
- You may adjust the shape of the Ramp or directly input the values.

C. Rx

1. Selecting Channel

- Select one of GSM or DCS Band and input appropriate channel.

2. Gain Control Index (0~ 26) and RSSI level

- See if the value of RSSI is close to -16dBm when setting the value between 0 ~ 26 in Gain Control Index.
- Normal phone should indicate the value of RSSI close to -16dBm.

11.3 HW Test : Software for Standalone Test Setup

a. Select a COM port
b. Set the values in Tx or Rx
c. Select band and channel
d. After setting them all above, press connect button.
e. Press the start button

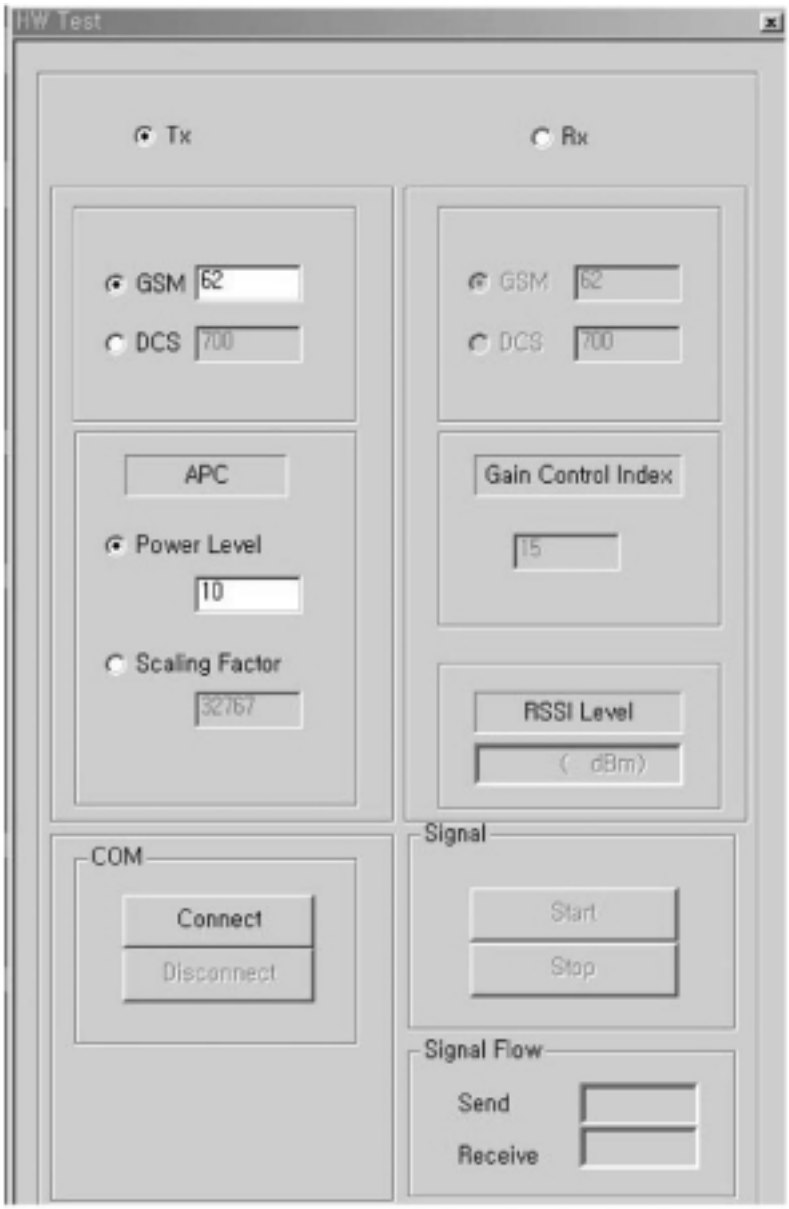


Figure 11-1. HW test program

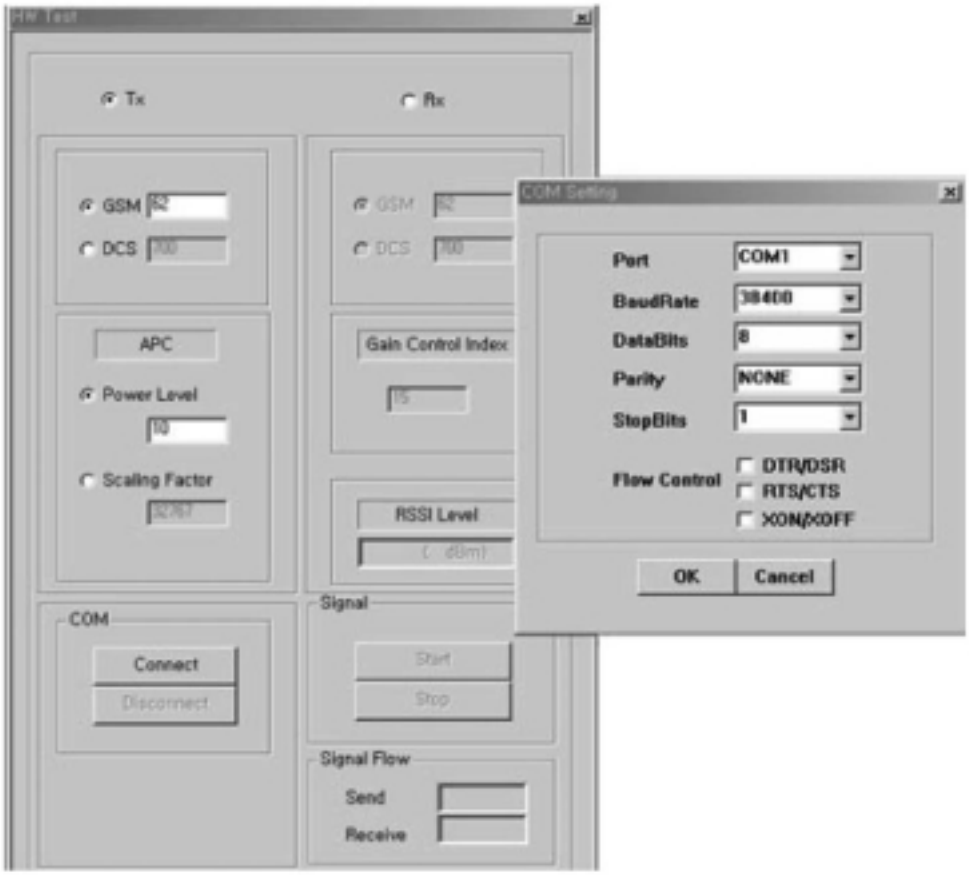


Figure 11-1. HW test program

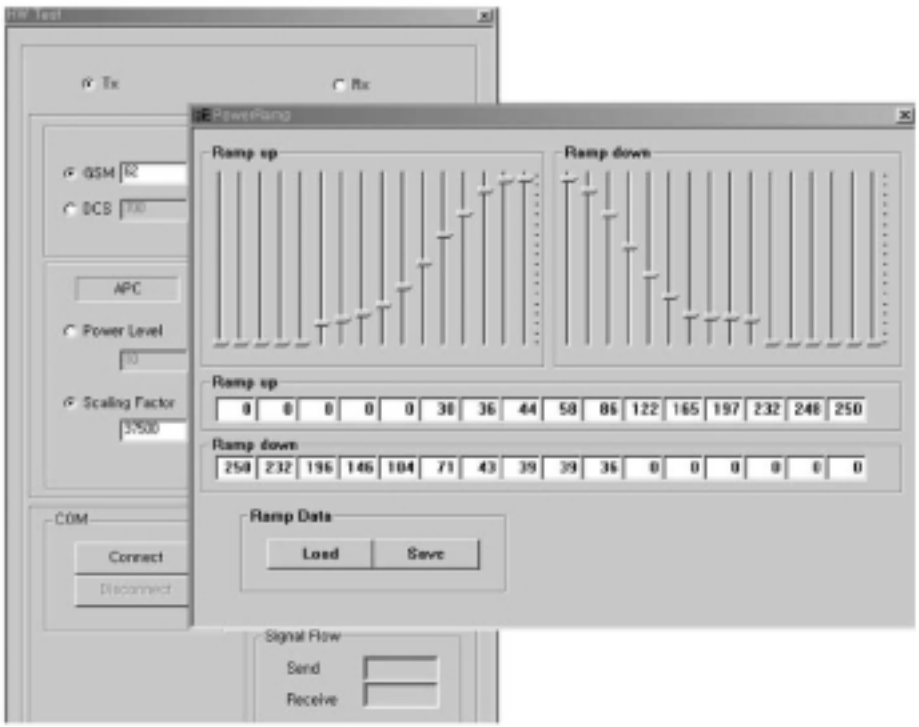


Figure 11-1. HW test program

12. AUTO CALIBRATION

12.1 Overview

Autocal (Auto Calibration) is the PC side Calibration tool that perform Tx ,Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable power supply).
Autocal generate calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

12.2. Requirements

- PC or Notebook installed with Microsoft Windows 98/ME/2000/XP
- Auto Calibration program(Autocal.exe)
- GSM Phone
- LGE PIF JIG, Serial Cable, Data Cable
- Agilent 8960(Call Setting Instrument)
- Tektronix PS2521G(Programmable Power Supply)

12.3 Equipment Setup

- File(F) Clear View	: Clear Calibration Status window texts
- File(F) Save View	: Save Calibration Status window texts
- File(F) Save Setting	: Save Current Calibration settings to setting file(*.cal)
- File(F) Load Setting	: Load saved Calibration setting
- File(F) Make BIN ALL	: Make binary file after calibration finished
- File(F) Make BIN BAT.Cal only	: Make binary file of battery cal data only after calibration finished
- File(F) Make & Write BIN	: Make binary file after calibration finished then download it to the Flash Memory
- View(V) Tools	: Enable or disable Tool bar
- View(V) Status	: Enable or disable status bar
- Connection(C) Connect	: Connect the phone with PC. This procedure checks whether the PC is connected “ag8960 ” or not. After that it performs sync. procedure with phone. If the sync. procedure is successful state column on status bar changed to SETUP, else you should disconnect phone and try again from the beginning and also check the whole connection. All measurement is performed at state SETUP.
- Connection(C) Port Setting	: Show COM port setting dialog and Baudrate you can change,etc.
- GPIB(G) Connect	: Connect the Ag8960 GPIB card with PC.

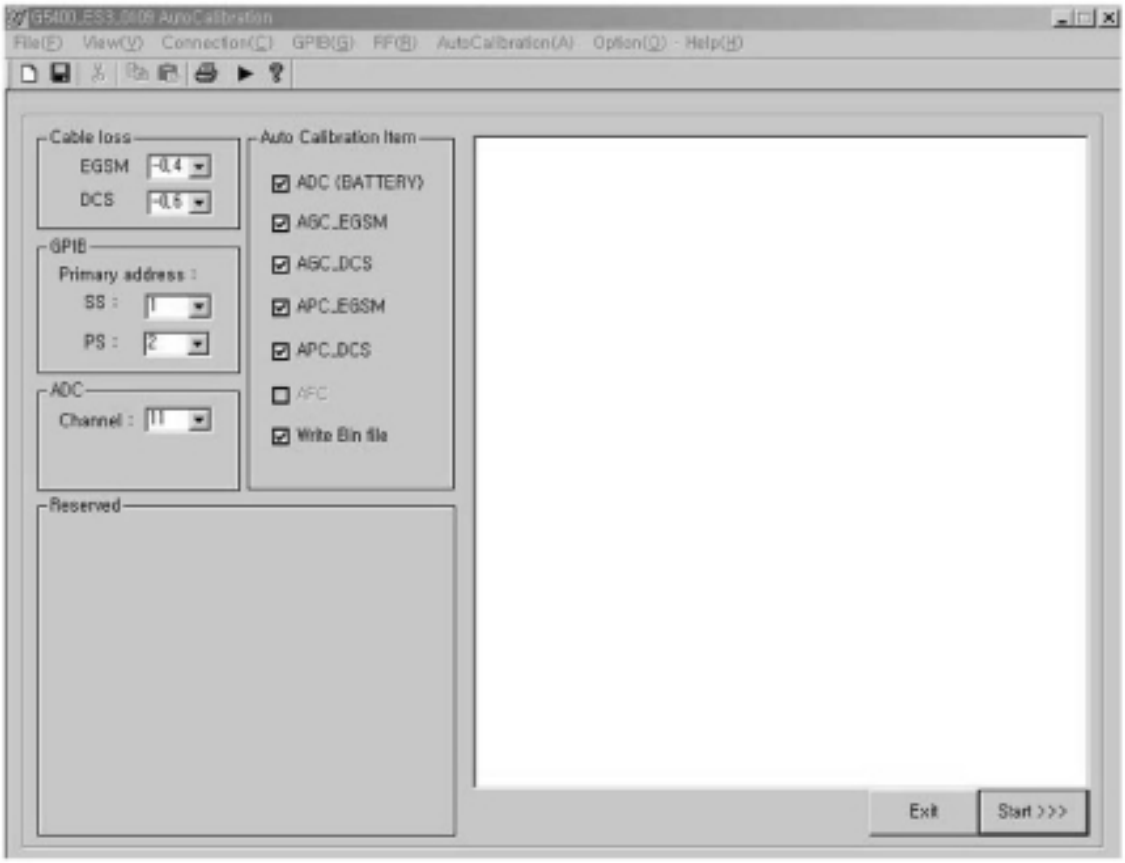


Figure 12-1. Equipment Setup

Screen → Cable loss	: Enter the RF cable loss GSM and DCS
Screen → GPIB(Primary address)	: Enter the SS(Ag8960) and PS(Tektronix PS2521G) GPIB address
Screen → ADC Channel	: Default ADC Calibration Channel
Screen → Auto Calibration Item	: Default Calibration Settings about Tx, Rx, ADC and write BIN file

12.4 AGC

This procedure is for Rx calibration.
In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

12.5 APC

This procedure is for Tx calibration.
In this procedure you can get proper scale factor value and measured power level.

12.6 ADC

This procedure is for battery calibration.
You can get main Battery Config Table and temperature Config Table

12.7 Setting

Check com port and cable loss. Select automatic calibration item. If you uncheck one item calibration will stop from the unchecked item. This is useful when you want to process only one item.

12.8 How to do calibration

A. Connect cable between phone and serial port of PC.

B. Connect Ag8960 equipment and Power Supply and phone.

C. Set correct port and baud rate.

D. Press Start button. AutoCal process all calibration procedure

   i. AGC EGSM

   ii. AGC DCS

   iii. APC EGSM

   iv. APC DCS

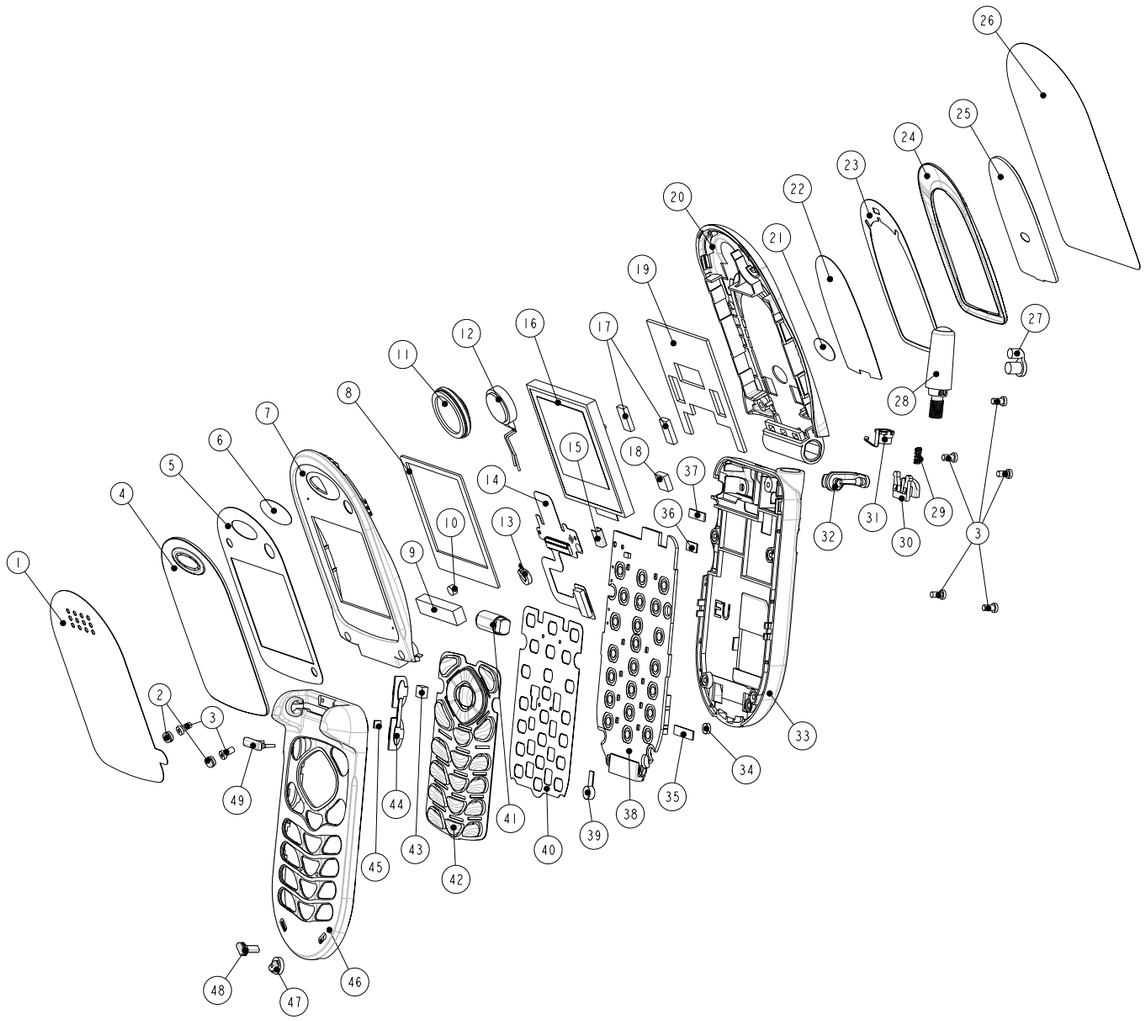
   v. ADC

E. After finished all measurement. The state is return to SETUP.

F. The Cal file will be generated and then the calibration data will be written into phone and then will be reset.

13. EXPLODED VIEW & REPLACEMENT PART LIST

13.1 EXPLODED VIEW



No.	Part Name	Part No.	Q'ty
1	TAPE,PROTECTION	MTAB0042601	1
2	CAP,SCREW	MCCH0021501	2
3	SCREW MACHINE	GMZZ0009402	7
4	WINDOW ASSY,LCD	AWAB0009701	1
5	TAPE,WINDOW	MTAD0022201	1
6	FILTER,SPEAKER	MFBC0008101	1
7	COVER,FOLDER(LOWER)	MCJH0016501	1
8	PAD,LCD	MPBG0021101	1
9	PAD,FLEXIBLE PCB	MPBF0005601	1
10	MAGNET,SWITCH	MMAA0000601	1
11	SPEAKER	SUSY0006207	1
12	VIBRATOR,MOTOR	SJMY0002802	1
13	BATTERY,CELL,LITHIUM	SBCL0001001	1
14	PCB ASSY,FLEXIBLE	SACY0017002	1
15	INSULATOR	MIDZ0041401	1
16	LCD	SVLY0018801	1
17	GASKET,SHIELD FOAM	MGAD0049601	2
18	GASKET,SHIELD FOAM	MGAD0049901	1
19	PAD	MPBZ0042501	1
20	COVER,FOLDER(UPPER)	MCJJ0022501	1
21	SHEET	MSAZ0013401	1
22	TAPE,WINDOW(SUB)	MTAE0014901	1
23	TAPE,DECO	MTAA0047201	1
24	DECO,WINDOW(SUB)	MDAM0005001	1
25	WINDOW,LED	MWAD0003501	1
26	TAPE,PROTECTION	MTAB0042401	1
27	CAP,MOBILE SWITCH	MCCF0013401	1
28	ANTENNA,GSM,FIXED	SNGF0003701	1
29	SPRING,LOCKER	MSDC0001901	1
30	LOCKER,BATTERY	MLEA0015201	1
31	CONTACT,ANTENNA	MCIA0010901	1
32	CAP,EARPHONE JACK	MCCC0013501	1
33	COVER,REAR	MCJN0019801	1
34	PAD,MIKE	MPBH0007501	1
35	GASKET,SHIELD FOAM	MGAD0045801	1
36	GASKET,SHIELD FOAM	MGAD0049001	1
37	GASKET,SHIELD FOAM	MGAD0049301	1
38	PCB ASSY,MAIN	SAFY0097701	1
39	MICROPHONE	SUMY0003803	1
40	DOME ASSY,METAL	ADCA0017101	1
41	HINGE,FOLDER	MHFD0005901	1
42	KEYPAD ASSY	AKAZ0004502	1
43	GASKET,SHIELD FOAM	MGAD0048801	1
44	BUTTON,SIDE	MBJL0011601	1
45	PAD	MPBZ0050701	1
46	COVER,FRONT	MCJK0023101	1
47	BUMPER	MBHY0008501	1
48	BUMPER	MBHY0008401	1
49	STOPPER	MSGY0004901	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)	TGFF0033001		Silver	
2	APEY00	PHONE	APEY0131001	C1100 ORUSV	Silver	
3	ACGG00	COVER ASSY,FOLDER	ACGG0037701	C1100 ORUSV	Silver	
4	ACGH00	COVER ASSY, FOLDER(LOWER)	ACGH0020701	C1100 ORUSV Main Window Tape 0.1t	Dark Gray	
5	MCJH00	COVER,FOLDER(LOWER)	MCJH0016501	C1300 CGRSV	Dark Gray	7
5	MFBC00	FILTER,SPEAKER	MFBC0008101	C1300 CGRSV ELLIPSE 0.1t	Black	6
5	MMAA00	MAGNET,SWITCH	MMAA0000601	LG-G510,511,512 common use, DIA : 3.0mm+1.5t	Silver	10
5	MPBF00	PAD,FLEXIBLE PCB	MPBF0005601	C1300 CGRSV 26 X 5 X 3.5 t	Black	9
5	MPBG00	PAD,LCD	MPBG0021101	C1300 CGRSV 35.6 X 39.3 X 0.7 t	Black	8
5	MTAD00	TAPE,WINDOW	MTAD0022201	C1300 CGRSV 0.1 t		5
4	ACGJ00	COVER ASSY, FOLDER(UPPER)	ACGJ0029801	C1100 ORUSV	Silver	
5	MCJJ00	COVER,FOLDER(UPPER)	MCJJ0022501	C1100 ORUSV	Silver	20
5	MDAM00	DECO,WINDOW(SUB)	MDAM0005001	C1100 ORUSV 0.2t	Silver	24
5	MGAD00	GASKET,SHIELD FORM	MGAD0049601	C1300 CGRSV 4 x 8 x 1.5 t	Gold	17
5	MGAD01	GASKET,SHIELD FORM	MGAD0049901	C1300 CGRSV 5.2 X 5.2 X 1.8 t	Gold	18
5	MICA00	INSERT,FRONT	MICA0001201	LG-G510,511,512 common use, DIA = 1.7mm+2.3t		
5	MPBZ00	PAD	MPBZ0042501	C1300 CGRSV 1.0 t	Black	19
5	MSAZ00	SHEET	MSAZ0013401	C1200 TMDBD, Dx=11.3, Dy=7.3, t<0.2mm	White	21
5	MTAA00	TAPE,DECO	MTAA0047201	C1100 ORUSV 0.2t		23
5	MTAB00	TAPE,PROTECTION	MTAB0042401	C1300 CGRSV Upper Protection 38 X 68 X 0.07t		26
5	MTAE00	TAPE,WINDOW(SUB)	MTAE0014901	C1100 ORUSV 0.16t		22
4	ACGK00	COVER ASSY,FRONT	ACGK0032501	C1100 ORUSV	Silver	
5	MBHY00	BUMPER	MBHY0008401	C1300 CGRSV 4.4 X 1.9	Silver	48
5	MBHY01	BUMPER	MBHY0008501	C1300 CGRSV 4.4 X 1.9, 5.2 PI for MIKE	Silver	47
5	MBJL00	BUTTON,SIDE	MBJL0011601	C1300 CGRSV Chrome Plating	Silver	44
5	MCJK00	COVER,FRONT	MCJK0023101	C1100 ORUSV	Silver	46
5	MICA00	INSERT,FRONT	MICA0006001	G7030,M1.4 x L2.5, Outside Diameter 2.0	Yellow	
5	MPBZ00	PAD	MPBZ0050701	C1300 CGRSV 2.0 X 2.0 X 0.5t	Black	
5	MSGY00	STOPPER	MSGY0004901	C1300 CGRSV 8.9 X 2.6	Silver	49
5	MTAZ00	TAPE	MTAZ0036001	C1300 CGRSV 20 X 4 X 0.05t	Blue	
4	AWAB00	WINDOW ASSY,LCD	AWAB0009701	C1100 ONLY LG LOGO	Silver	4
5	BFAA00	FILM,INMOLD	BFAA0015901	C1100 EUASV Main Window Inmold Film	Silver	
5	MWAC00	WINDOW,LCD	MWAC0036601	C1100 ORUSV 1.0t	Silver	
4	GMZZ00	SCREW MACHINE	GMZZ0009402	C1300 CGRSV 1.4 mm, 3.0 mm, Head DIA 2.7, 1.2t, STAR	Silver	
4	MCCH00	CAP,SCREW	MCCH0021501	C1300 CGRSV 3.1PI	Dark Gray	2
4	MHFD00	HINGE,FOLDER	MHFD0005901	PI5.8, 5Kgf, CAN Type, Prexco(Head R1.0), Click Hinge	Deep Silver	41
4	MIDZ00	INSULATOR	MIDZ0041401	C1300 CGRSV 9 X 5.5 X 0.05t	Blue	15
4	MLAC00	LABEL,BARCODE	MLAC0003401	EZ LOOKS(user for mechanical)		
4	MTAB00	TAPE,PROTECTION	MTAB0042601	C1300 CGRSV Main Window Protection 41 X 65 X 0.15t		1
4	MWAD00	WINDOW,LED	MWAD0003501	C1100 ORUSV 0.8t	Cyber Mirror	25
3	ACGM00	COVER ASSY,REAR	ACGM0029801	C1100 ORUSV	Silver	
4	MCCC00	CAP,EARPHONE JACK	MCCC0013501	C1300 CGRSV 6.2PI	Silver	32
4	MCIA00	CONTACT,ANTENNA	MCIA0010901	C1300 CGRSV 4.75pi X 3.85h	Gold	31
4	MCJN00	COVER,REAR	MCJN0019801	C1100 ORUSV CE0700 carved	Silver	33
4	MGAD00	GASKET,SHIELD FORM	MGAD0045801	C1300 CGRSV 11 X 2.8 X 0.4t	Gold	35
4	MGAD01	GASKET,SHIELD FORM	MGAD0049001	C1300 CGRSV 6.5 X 2.8 X 0.35t	Gold	36
4	MGAD02	GASKET,SHIELD FORM	MGAD0049301	C1100 ORUSV 9 X 2.5 X 0.45t	Gold	37
4	MLEA00	LOCKER,BATTERY	MLEA0015201	C1300 CGRSV	Silver	30
4	MPBH00	PAD,MIKE	MPBH0007501	C1300 CGRSV 3.2 PI 1.0t	Black	34
4	MSDC00	SPRING,LOCKER	MSDC0001901	diameter 5X1.6		29
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0003701	3.0 ,-2 dBd,SILVER ,GSM+DCN,C1100+C1200		28
3	ADCA00	DOME ASSY,METAL	ADCA0017101	C1300 CGRSV D-Dimple 4.9 or 5.0 PI	White	40
3	AKAZ00	KEYPAD ASSY	AKAZ0004502	C1100 ORUSV menu EMI Applied	Silver	42
3	GMZZ00	SCREW MACHINE	GMZZ0009402	C1300 CGRSV 1.4 mm, 3.0 mm, Head DIA 2.7, 1.2t, STAR	Silver	3
3	MCCF00	CAP,MOBILE SWITCH	MCCF0013401	C1300 CGRSV 3 PI, 5.2 PI	Silver	27
3	MLAK00	LABEL,MODEL	MLAK0006901			

13. EXPLODED VIEW & REPLACEMENT PART LIST

<Main component>

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	SACY00	PCB ASSY,FLEXIBLE	SACY0017002			14
5	SACA00	PCB ASSY, FLEXIBLE,AUTO	SACA0000801			
6	C1	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C2	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	CN1	CONNECTOR,BOARD TO BOARD	ENBY0013401	34 PIN,0.4 mm,STRAIGHT ,Au ,B to B G5400		
6	CN2	CONNECTOR,BOARD TO BOARD	ENBY0018701	41 PIN,0.3 mm,ETC ,AU ,		
6	LD1	DIODE,LED,CHIP	EDLH0003401	RED, GREEN ,ETC ,R/TP ,SIZE 1315 , GSM DUAL LED		
6	R1	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R2	RES,CHIP	ERHY0000172	68 ohm,1/16W ,F ,1005 ,R/TP		
6	R3	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R4	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	SPCY00	PCB,FLEXIBLE	SPCY0032001	POLYI ,45 mm,DOUBLE ,		
4	SBCL00	BATTERY,CELL,LITHIUM	SBCL0001303	2 V,1 mAh,COIN ,SOLDER TYPE BACKUP BATTERY		13
4	SJMY00	VIBRATOR,MOTOR	SJMY0002802	3 V,0.08 A,12*15 ,G5300 VIBRATOR (0.5t PAD)		12
4	SUSY00	SPEAKER	SUSY0006207	ASSY ,8 ohm,92 dB,17 mm,5T		11
4	SVLY00	LCD	SVLY0018801			16
3	SAFY00	PCB ASSY,MAIN	SAFY0097701	C1100 EUASV		38
4	MLAB	LABEL,A/S	MLAB0000601	HUMIDITY STICKER		
4	MLAC00	LABEL,BARCODE	MLAC0003301	EZ LOOKS(use for PCB ASSY MAIN(hardware))		
4	SAFA00	PCB ASSY,MAIN,AUTO	SAFA0034201	C1100 ORUSV		
5	C101	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C102	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C103	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C104	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C105	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C106	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C107	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C108	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C111	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C112	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C115	CAP,CERAMIC,CHIP	ECCH0001811	220000 pF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
5	C116	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C117	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C123	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C124	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C131	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C132	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C133	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C134	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C135	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C136	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C137	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C139	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C140	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C143	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
5	C144	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C146	CAP,TANTAL,CHIP,MAKER	ECTZ0002601	10 uF,10V ,M ,STD ,2125 ,R/TP		
5	C147	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C148	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C149	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C151	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C152	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C153	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C154	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C155	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C156	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C157	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
5	C160	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C161	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C162	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C163	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C165	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C167	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C168	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
5	C170	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C171	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C177	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C178	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C179	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C181	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
5	C182	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C183	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C184	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
5	C185	CAP,CERAMIC,CHIP	ECCH0000165	68 nF,6.3V,K,X5R,HD,1005,R/TP		
5	C186	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C187	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C188	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C191	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C192	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C193	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C195	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C196	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C201	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C202	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C203	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C211	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C212	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C213	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C214	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C215	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C216	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C217	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C218	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C219	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C220	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C221	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C222	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C223	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C224	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C225	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C226	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C227	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C231	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C232	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C233	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C234	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C235	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C236	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C237	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C238	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C239	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C240	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C241	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C242	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C243	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C244	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C245	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C246	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C247	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C248	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C251	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
5	C252	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C254	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C255	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C256	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C257	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C258	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C259	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C260	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C261	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C262	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C267	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C268	CAP,CERAMIC,CHIP	ECCH0000114	20 pF,50V,J,NP0,TC,1005,R/TP		
5	C269	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C271	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
5	C272	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C273	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C274	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C275	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C276	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C277	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C278	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C290	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C298	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C299	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C301	CAP,TANTAL,CHIP,MAKER	ECTZ0000318	33 uF,10V ,M ,L_ESR ,ETC ,R/TP		
5	C302	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C311	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
5	C312	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C316	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C317	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C321	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C322	CAP,CERAMIC,CHIP	ECCH0000101	0.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C323	CAP,CERAMIC,CHIP	ECCH0000101	0.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C326	CAP,CERAMIC,CHIP	ECCH0000176	2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C331	CAP,CERAMIC,CHIP	ECCH0000101	0.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C341	CAP,CERAMIC,CHIP	ECCH0000159	22 nF,16V,K,X7R,HD,1005,R/TP		
5	C342	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C343	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C344	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C345	CAP,CERAMIC,CHIP	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP		
5	C350	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C351	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V,C,NP0,TC,1005,R/TP		
5	C352	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V,C,NP0,TC,1005,R/TP		
5	C353	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V,C,NP0,TC,1005,R/TP		
5	C354	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V,C,NP0,TC,1005,R/TP		
5	C355	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C356	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C361	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C362	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C363	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C371	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C372	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C373	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C375	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C382	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C383	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C384	CAP,CERAMIC,CHIP	ECCH0000171	3.3 pF,16V ,J ,NP0 ,TC ,1005 ,R/TP		
5	C385	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C386	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C387	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C389	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C399	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
5	C401	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C402	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C403	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C404	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C405	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C406	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C407	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C408	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C409	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C410	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C411	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C412	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	CN201	CONNECTOR,BOARD TO BOARD	ENBY0013402	34 PIN,0.4 mm,STRAIGHT ,Au ,B to B G5400		
5	CN202	CONNECTOR,I/O	ENRY0002202	24 PIN,0.5 mm,ETC ,AU ,OFFSET TYPE		
5	D101	DIODE,SWITCHING	EDSY0012101	US-FLAT ,30 V,1 A,R/TP ,2.5*1.25*0.6(t)		
5	D104	DIODE,SWITCHING	EDSY0005701	EMT3 ,80 V,4 A,R/TP ,		
5	D201	DIODE,SWITCHING	EDSY0012301	1-1E1A ,85 V,1 A,R/TP ,P=200mW, IFM=200mA		
5	FB1	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FL301	FILTER,SEPERATOR	SFAY0003702	900 ,1800 ,1.3 dB,1.5 dB,30 dB,25 dB,4532 ,Antenna switch		
5	FL302	FILTER,SAW	SFSY0021301	942.5 MHz,2.0*1.4*0.68 ,SMD ,		
5	FL303	FILTER,SAW	SFSY0021302	1842.5 MHz,2.0*1.4*0.68 ,SMD ,		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	J101	CONN,SOCKET	ENSY0007607	6 PIN,ETC ,BRIDGE NON PROTECTOR TYPE ,2.54 mm,3.0T		
5	J102	CONN,JACK/PLUG, EARPHONE	ENJE0002301	3,5 PIN,G7000 EAR JACK 3 pole, 5 pin KSD		
5	L301	INDUCTOR,CHIP	ELCH0001004	8.2 nH,J,1005,R/TP		
5	L302	INDUCTOR,CHIP	ELCH0005013	4.7 nH,S ,1005 ,R/TP ,		
5	L303	INDUCTOR,CHIP	ELCH0002715	27 nH,G ,1608 ,R/TP ,coil inductor		
5	L304	INDUCTOR,CHIP	ELCH0002714	7.5 nH,G ,1608 ,R/TP ,coil inductor		
5	L305	INDUCTOR,CHIP	ELCH0005006	33 nH,J ,1005 ,R/TP ,		
5	L306	INDUCTOR,CHIP	ELCH0005006	33 nH,J ,1005 ,R/TP ,		
5	L307	INDUCTOR,CHIP	ELCH0001413	22 nH,J ,1005 ,R/TP ,CDMA		
5	L308	INDUCTOR,CHIP	ELCH0001009	1.2 nH,S ,1005 ,R/TP ,		
5	LD111	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD112	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD113	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD114	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD115	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD116	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD117	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD118	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD119	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD120	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	MTCA00	TERMINAL,GROUND	MTCA0001501	C1300 CGRSV 4.7 X 1.8 X 1.3 (0.3t) Sn Plating	Silver	
5	Q103	TR,FET,P-CHANNEL	EQFP0004201	2.9*1.9*0.8(t) ,0.7 W,20 V,-6.0 A,R/TP ,NDC652P upgrade(substitution) item		
5	Q104	TR,BJT,ARRAY	EQBA0000406	SC-70 ,0.2 W,R/TP ,CDMA,Common use		
5	Q201	TR,BJT,ARRAY	EQBA0000406	SC-70 ,0.2 W,R/TP ,CDMA,Common use		
5	Q202	TR,BJT,ARRAY	EQBA0002701	EMT6 ,150 mW,R/TP ,NPN, PNP, 150 mA		
5	R102	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R103	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R107	RES,CHIP	ERHY0001102	0.2 ohm,1/4W ,F ,2012 ,R/TP		
5	R108	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
5	R111	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R112	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R113	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R114	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R115	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R116	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R117	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R118	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R119	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R120	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R121	RES,CHIP	ERHY0000125	10K ohm,1/16W,F,1005,R/TP		
5	R122	RES,CHIP	ERHY0000286	200K ohm,1/16W,J,1005,R/TP		
5	R123	RES,CHIP	ERHY0000512	10M ohm,1/16W,J,1608,R/TP		
5	R124	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R125	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R126	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R127	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
5	R128	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R130	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R132	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R134	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
5	R137	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R138	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
5	R141	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
5	R142	RES,CHIP	ERHY0000274	51K ohm,1/16W,J,1005,R/TP		
5	R144	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
5	R145	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
5	R146	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
5	R147	RES,CHIP	ERHY0000291	330K ohm,1/16W,J,1005,R/TP		
5	R148	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R150	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R151	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R153	RES,CHIP	ERHY0000271	39K ohm,1/16W,J,1005,R/TP		
5	R156	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R157	RES,CHIP	ERHY0000116	1.5K ohm,1/16W,F,1005,R/TP		
5	R159	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R161	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R162	RES,CHIP	ERHY0004101	49.9 ohm,1/10W ,F ,1608 ,R/TP		
5	R163	RES,CHIP	ERHY0000401	0 ohm,1/16W,J,1608,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R164	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R165	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R181	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
5	R201	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R202	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R203	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R204	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R205	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R206	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R207	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R208	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R209	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R210	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R211	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R212	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R213	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R214	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R215	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R216	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R218	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
5	R219	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
5	R221	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R223	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
5	R224	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R225	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R226	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R227	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R229	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R230	RES,CHIP	ERHY0000226	220 ohm,1/16W,J,1005,R/TP		
5	R232	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R233	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
5	R234	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R235	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R236	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R237	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R238	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R239	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R240	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R241	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R242	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
5	R243	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
5	R245	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R246	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R247	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R249	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R250	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R251	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R252	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R254	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R255	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R256	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R258	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R261	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R262	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R263	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R265	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R301	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
5	R302	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R304	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R305	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R306	RES,CHIP	ERHY0004301	130 ohm,1/16W ,J ,1005 ,R/TP		
5	R307	RES,CHIP	ERHY0004301	130 ohm,1/16W ,J ,1005 ,R/TP		
5	R309	RES,CHIP	ERHY0006603	36 ohm,1/16W ,J ,1005 ,R/TP		
5	R310	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R311	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R312	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R314	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R315	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R316	RES,CHIP	ERHY0000125	10K ohm,1/16W,F,1005,R/TP		
5	R317	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R319	THERMISTOR	SETY0001201	NTC ,22 Kohm,SMD ,1.0*0.5 / NSM4 SERIES		
5	R401	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R402	RES,CHIP	ERHY0000271	39K ohm,1/16W,J,1005,R/TP		
5	R403	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R404	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R407	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R408	RES,CHIP	ERHY0000250	3.3K ohm,1/16W,J,1005,R/TP		
5	R409	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R410	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R412	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R413	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R414	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
5	R415	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R416	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
5	R417	RES,CHIP	ERHY0000284	150K ohm,1/16W,J,1005,R/TP		
5	SPFY00	PCB,MAIN	SPFY0072101	FR-4 ,1.00 mm,BUILD-UP 8 ,		
5	SW1	SWITCH,TACT	ESCY0002501	12 V,0.05 A,HORIZONTAL ,220 G,G5200 TACK S/W		
5	SW2	SWITCH,TACT	ESCY0002501	12 V,0.05 A,HORIZONTAL ,220 G,G5200 TACK S/W		
5	SW301	CONN,RF SWITCH	ENWY0003001	STRAIGHT ,SMD ,0.6 dB,3.8X3.0X3.6T		
5	TC151	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	TC153	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	U101	IC	EUSY0157001	LFBGA ,160 PIN,R/TP ,DIGITAL BASEBAND PROCESSOR		
5	U102	IC	EUSY0169301	148-TERMINAL BGA ,148 PIN,R/TP ,GSM ANALOG BASEBAND / TYPHOON B		
5	U103	IC	EUSY0129502	LEADLESS CHIP ,6 PIN,R/TP ,HALL-EFFECT SWITCH IC / 2.0*3.0*0.8		
5	U104	IC	EUSY0077701	SC70-5 ,5 PIN,R/TP ,		
5	U105	IC	EUSY0077301	SC70-6/SOT23-6 ,6 PIN,R/TP ,		
5	U201	IC	EUSY0145401	P-FBGA73 ,73 PIN,R/TP ,128M FLASH 32M PSRAM / BOTTOM BOOT / CE 2 PCS		
5	U203	IC	EUSY0178201	TSOPJW-12 ,12 PIN,R/TP ,CHARGE PUMP FOR WHITE LED / MAX - 6 LEDS		
5	U301	IC	EUSY0161301	8x8 LGA ,28 PIN,R/TP ,		
5	U302	PAM	SMPY0004001	35 dBm,55 %,2 A,-50 dBc,25 dB,10.0 * 7.0 * 1.4 ,SMD ,		
5	U303	IC	EUSY0118602	SOT-23-5 ,5 PIN,R/TP ,150mA LOW NOISE uCAP CMOS LDO		
5	U401	IC	EUSY0098501	32-PIN QFN ,32 PIN,R/TP ,MA-2 / UP TO 16 VOICES / FM SYNTHESIZER		
5	U402	IC	EUSY0119001	10 uMAX ,10 PIN,R/TP ,DUAL SPDT ANALOG SWITCHES		
5	VA151	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA152	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA153	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA154	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA165	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA201	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA202	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA203	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA204	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA205	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA206	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA207	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	X101	X-TAL	EXXY0015601	.032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		
5	X301	VCTCXO	EXSK0000801	13.0 MHz, PPM,10 pF,SMD ,5.0*3.2*1.5 ,		
3	SUMY00	MICROPHONE	SUMY0003803	PIN ,42 dB,4*1.5 ,FPCB		39
2	MHBY00	HANDSTRAP	MHBY0001101	Neck Strap 380mm	Gray	

13.3 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
2	SBPL00	BATTERY PACK,LI-ION	SBPL0072128	3.7 V,760 mAh,1 CELL,PRISMATIC ,C1100 BATTERY(SV)	Silver	
2	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003203	G4050 G4010 For USA ,3 POLE Design change		
2	SSAD00	ADAPTOR,AC-DC	SSAD0007835	FREE ,50 Hz,5.2 V,800 mA,CE,CB ,UK(IO.24P)		