LG

Service Manual

LG

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L1100

Model : L1100

P/N : MMBD0032801

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REVISED HISTORY

DATE	ISSUE	CONTENTS OF CHANGES	S/W VERSION
31/MAR/2004	ISSUE 0.1	Initial Release	

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

This manual provides the information necessary to install, program, operate and maintain the L1100

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1. Introduction

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the L1100

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 you're 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. LGE 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. LGE 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 L1100 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 the L1100 must be performed only by the LGE 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

The L1100 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

An L1100 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 Ratio
CC-CV	Constant Current – Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milliwatt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
EL	Electroluminescence
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
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. General Performance

2.1 Product Name

L1100: Support GPRS (Class 10)

2.2 Supporting Standard

Item	Feature	Comment
Supporting Standard	E-GSM/ DCS/ PCS Tril Band with seamless handover Phase 2+ SIM Toolkit : Class 1,2,3	
Frequency Range	E-GSM TX : 880 – 915 MHz E-GSM RX : 925 – 960 MHz DCS 1800 TX : 1710 – 1785 MHz DCS 1800 RX : 1805 – 1880 MHz PCS 1900 TX : 1850 – 1909 MHz PCS 1900 RX : 1930 – 1990 MHz	
Application Standard	WAP 2.0 : Yes MMS : Yes JAVA : MIDP v1.0 IrDA 1.3	

2.3 Main Parts: GSM Solution

	L1100
Digital Baseband	CALYPSO @39MHz (D751992GHH)
Analog Baseband	IOTA (TWL3014CGGM)
RF Chip	Aero-1 (SI4205)

2.4 H/W Features

Item	Feature	Comment
Form Factor	Clam shell	LCD (TFT 65K Color)
Battery	**Capacity** Standard: Li-Ion, 820mAh(Min)	Cell Size: Standard 4.5(L)×33.8(W)×49.7(H)mm
	Packing Type: Hard Pack	
Size	Standard: 89×50×24mm	L×W×H
Weight	90.5g	With Battery
PCB	Main PCB : 8Layers, 1t FPCB : 5Layers, 0.5t	
AVG TCVR current (mA)	270 mA (GSM, Power Level 5) 120 mA (GSM, Power Level 12)	
Standby Current	2.6mA	@ Paging Period 9
Standby time	Up to 200 hours	@ Paging Period 9
Charging time	Below 3 hr.	@ Power Off / 820mAh
Talk time	Min : 3hr @Power Level 5 Min : 6hr @Power Level 12	@ 820mAh
RX sensitivity	GSM 900 : -105 dBm DCS 1800 : -105 dBm PCS 1900 : -105 dBm	
TX output power	GSM 900 : 32 dBm DCS 1800 : 29 dBm PCS 1900 : 29 dBm	Class4 (GSM) Class1 (DCS) Class1 (PCS)
GPRS compatibility	GPRS Class 10	
SIM card type	Plug-In SIM 3V	
Display	-MAIN LCD : 65K Color-TFT (128 X160) -SUB LCD : 4Gray (96X 64) - Pixels : 0.231 x 0.231 mm - View Area : 30.57 x 7.96 mm -Active Area : 29.568 x 36.96 mm -Backlight : White LED	(Sub : 0.197 x 0.21) (Sub : 20.9 x 15.4) (Sub : 18.902 x 13.43)
Status Indicator	Yes (Red, Green)	
Keypad	Alphanumeric Key : 12 Function Key : 12 Side Key : 2 Total Number of Keys : 26	Function Key: 4 Key Navigation & OK, F1, F2, SND, END/PWR, Clear, Camera, Calendar

Item	Feature	Comment
Antenna	Fixed Type	
System connector	24 Pin	
Ear Phone Jack	3 Pole (ϕ2.5mm)	
PC synchronization	Yes	CDROM
Memory	Flash : 128Mbit / SRAM : 64Mbit	AMD
Speech coding	FR, EFR, HR	
Data & Fax	Built in Data & Fax support	
Vibrator	Built in Vibrator	
IrDA	Built in IrDA	PC sync support
MIDI (for Buzzer Function)	40 Poly	Buzzer Function By Using MIDI IC
Voice Recording	up to 90 sec	30sec x 3
Travel Adapter	Yes	
Camera Sensor	VGA / CIS	
Options	Travel Adapter Ear-Microphone Hand Strap Cigarette Lighter Adapter Data Cable Handsfree Car Kit Simple Hands Free kit	

2.5 S/W Features

Item	Feature	Comment
RSSI	0~5 level	Antenna
Battery Charging	0~4 level	
Key Volume	0~5 level	
Keypad Volume	0~5 level	
Effect sound volume	0~5 level	
Ring Volume	0~5 level	
Time/Date Display	Yes	
Text Input	T9	
Multi-language	Yes	
Quick Access Mode	Schedule/Ring Tone/Phonebook Camera/GPRS	
PC Sync	Schedule/Phonebook/SMS	MS Scheduler & Outlook
Speed Dial	Yes (2~9)	Voice mail center → 1 key
Profile	Yes	
CLIP/CLR	Yes	
Phonebook	3 Number + 1 Memo + 1 e-mail	Phone (Up to 255 entries)
Last Dial Number	Yes (20)	
Last Received Number	Yes (20)	
Last Missed Number	Yes (10)	
Search Number/Name	Yes	
Group	7 / User Editor	
Fixed Dial Number	Yes	
Voice Memo	30 secs * 3	
Call Remainder	Yes	
Network Selection	Automatic / Manual	

Item	Feature	Comment
Mute	Yes	
Call Divert	Yes	
Call Barring	Yes	
Call Charge	Yes	
Call Duration	Yes	
SMS (EMS)	100	
EMS Send/Receive/Save	Yes	Melody/Picture/Animation
MMS	Yes	
WAP Browser	WAP 2.0	
Java	CLDC v1.0.3 / MIDP v1.0.3	
Wall Paper	Yes	Max. 10 preset
Download Melody/ Wallpaper (MMS)	Over the WAP	
Long Message	Max. 918 Character(6page*153)	
Cell Broadcast	Yes	
Calendar	Yes	
Memo	20	
World Clock	Yes	
Unit Convert	Length/Surface/Volume/Weight	
Fax & Data	Yes	
SIM Lock	Yes	Operator Dependent
SIM Toolkit	Class 1,2,3	
Camera	Image resolutio(640 x 480, 320*240, 160* 400 KB dynamic memory for images : Max 200 photos (128 x 96) Max 4x zoom	
Phone lock	Yes	
Security	DRM (Forward-lock only)	
CPHS	Yes	
IM	Yes	

3. H/W Circuit Description

3.1 RF Transceiver General Description

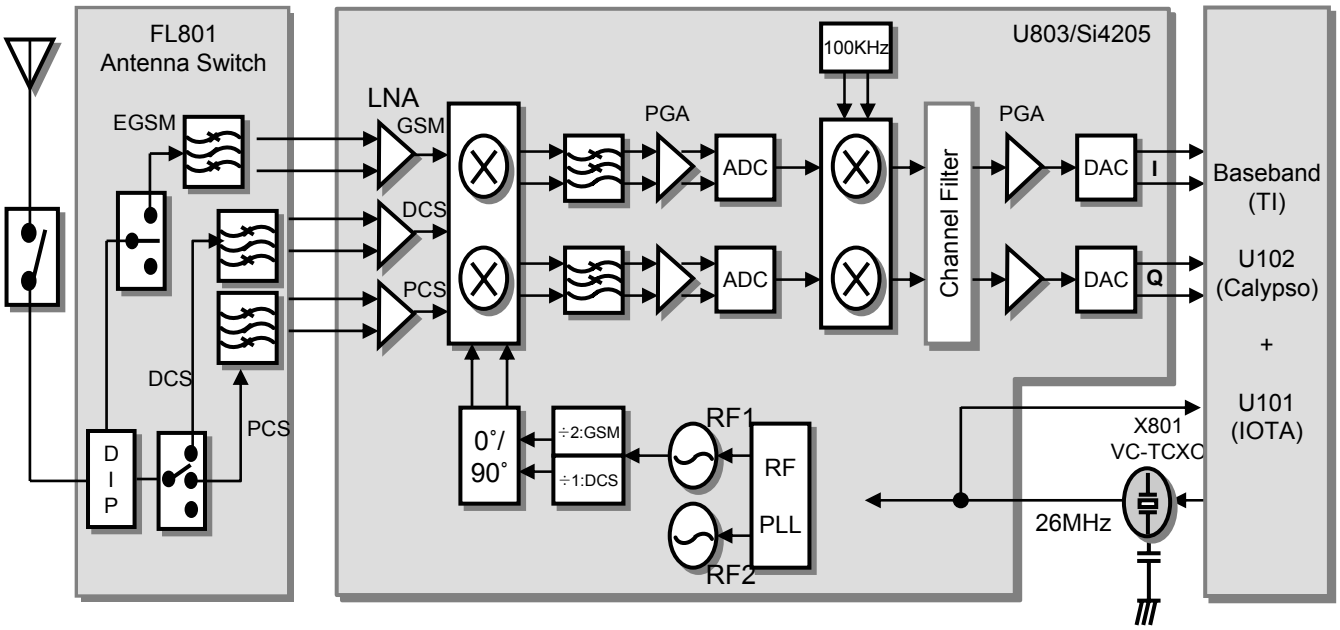
The RF parts consist of a transceiver part, a power amplifier part, a front-end module part, a voltage supply part, and a VC-TCXO part.
The Aero™ I transceiver is composed of single RF chipset, Si4205-BM[U803] which is a triple and quad-band GSM/GPRS wireless communications.
This device integrated a receiver based on a low IF (100KHz) architecture and a transmitter based on modulation loop architecture. The transceiver employed a 3 wire serial interface to allow an external system controller to write the control registers for dividers, receive path gain, power down setting, and other controls.

3.2 Receiver Part

The receiver part uses a low-IF receiver architecture that allows for the on-chip integration of the channel selection filters, eliminating the external RF image reject filters and the IF SAW filter required in conventional super-heterodyne architecture. The Si4205-BM[U803] integrates three differential input LNAs that are matched to the 150 Ohm balanced-output SAW filters through external LC matching networks.
A quadrature image-rejection mixer downconverts the RF signal to a 100kHz intermediate frequency (IF) with the RFLO from the frequency synthesizer. The mixer output is amplified with an analog programmable gain amplifier (PGA) and quadrature IF signal is digitized with high resolution A/D converters (ADCs).
The Si4205-BM[U803] downconverts the ADC output to baseband with a digital 100kHz quadrature LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. After channel selection, the digital output is scaled with digital PGA, which is controlled with the DGAIN[5:0] bits in register 05h. The amplified digital output signal go through with DACs that drive a differential analog signal onto the RXIP,RXIN,RXQP and RXQN pins to interface to standard analog ADC
input baseband ICs.

	Antenna Bar Number	Rx Power (dBm)
Antenna Display	5 → 4	-85dBm±2dBm
	4 → 3	-90dBm±2dBm
	3 → 2	-95dBm±2dBm
	2 → 1	-100dBm±2dBm
	1 → 0	-105dBm±2dBm

Figure 1. RF Receiver Block



3.2.1. RF Front End

RF front end consists of Antenna Switch(FL801), triple band LNAs integrated in transceiver(U803). The Received RF signals (EGSM 925MHz ~ 960MHz, DCS 1805MHz ~ 1880MHz, PCS 1930MHz ~ 1990MHz) are fed into the antenna or mobile switch. An antenna matching circuit is between the antenna and the mobile switch. The Antenna Switch(FL801) is used for control the Rx and TX paths. And the input signals VC1,VC2 and VC3 of a FL801 pass through triple-buffer(U801) are directly connected to baseband controller to switch either TX or RX path on. Ant S/W (FL801) is an antenna switch module for triple band phone. The logic and current is given below **Table 3-1.**

Table 3-1. The Logic and Current

	VC1	VC2	VC3	Current
EGSM RX	0 V	0 V	0 V	< 0.1 mA
DCS RX	0 V	0 V	0 V	< 0.1 mA
PCS RX	2.5~3.0 V	0 V	0 V	10.0 mA max
EGSM TX	0 V	0 V	2.5~3.0 V	10.0 mA max
DCS/PCS TX	0 V	2.5~3.0 V	0 V	10.0 mA max

3.2.2. IF

A quadrate image-rejection 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 and 1989.9 MHz, and is divided by two for GSM 850 and EGSM 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. The quadrate IF signal is digitized with high resolution A/D converters (ADCs).
The Si4205-BM[U803] down-converts the ADC output to baseband with a digital 100kHz quadrate LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. The response of the IIR filter is programmable to a high selectivity setting(CSEL=0) or a low selectivity setting (CSEL=1). After channel selection, the digital output is scaled with digital PGA, which is controlled with the DGAIN[5:0] bits in register 05h.

3.2.3. Demodulator and Baseband Processing

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

3.2.4. Synthesizer

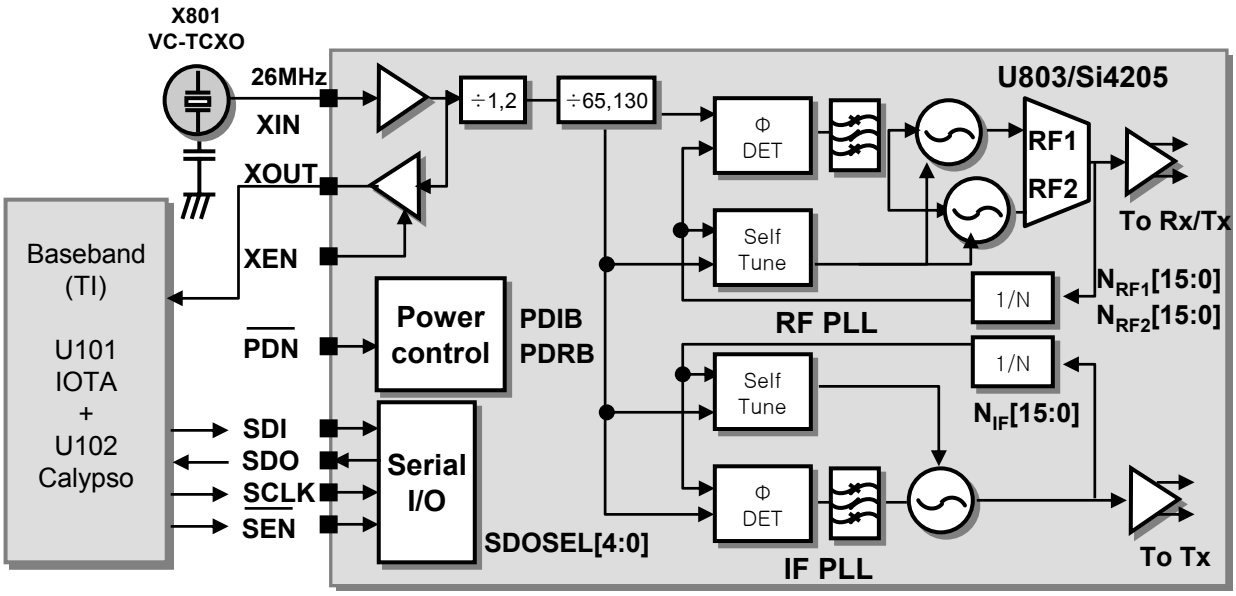
The Aero I transceiver integrates two complete PLLs including VCOs, varactors, resonators, loop filters, reference and VCO dividers, and phase detectors. The RF PLL uses two multiplexed VCOs. The RF1 VCO is used for receive mode, and the RF2 VCO is used for transmit mode. The IF PLL is used only during transmit mode. All VCO tuning inductors are also integrated. The IF and RF output frequencies are set by programming the N-Divider registers, NRF1, NRF2 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:

fout = N * fø

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 (fϕ) should be programmed fϕ = 100 kHz for DCS 1800 or PCS 1900 bands, and fϕ = 200 kHz for GSM 850 and E-GSM 900 bands.

Transmit modes should always use fø = 200kHz. The IF and RF output frequencies are set by programming he N-Divider registers and also programmed via 3-wire interface with external system controller.

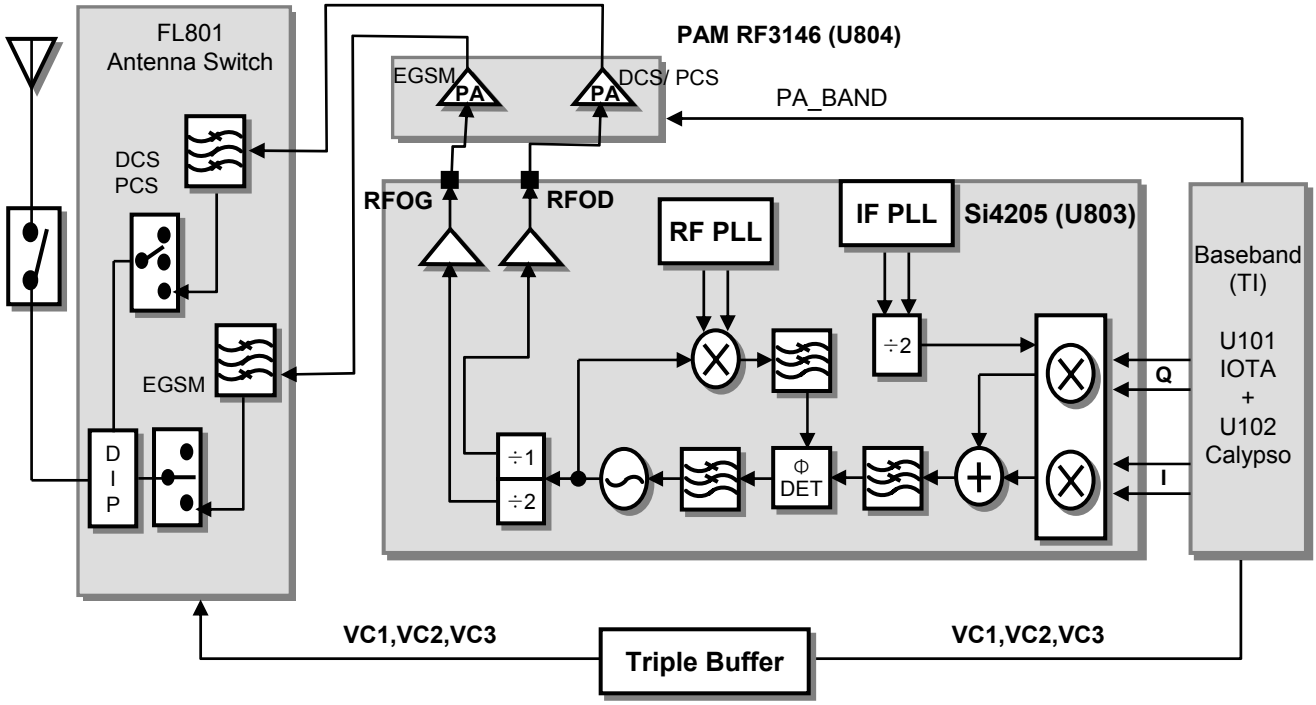
Figure 2. Synthesizer Block



3.3 Transmitter Part

The Transmitter part contains the transmitter parts of Si4205-BM[U803], Power Amp Module[U804] and Antenna switch[FL801]. The transmit section of Si4205-BM [U502] consists of an I/Q baseband upconverter, an offset phase-locked loop(OPLL) and two output buffers that can drive external power amplifiers(PA).
The RF GMSK outputs from the transmit VCO are fed directly to the RF power amplifiers.
The peak output power and the profile of the transmitted burst are controlled by means of incorporated power control circuits inside of PA and DAC output from the Baseband Controller.
The PA outputs pass to the antenna connector via Antenna Switch.

Figure 3. RF Transmit Block



3.3.1. IF Modulator

The baseband converter(BBC) within the GSM chipset generates I and Q baseband signals for the Transmit vector modulator. The modulator provides more than 40dBc of carrier and unwanted side-band. Rejection and produces a GMSK modulated signal. The baseband software is able to cancel out differential DC offsets in the I/Q baseband signals caused by imperfections in the D/A converters. The TX-Modulator implements a quadrature modulator. A quadrature mixer upconverts the differential I/Q signals with the IFLO to generate a SSB IF signal, which is filtered and used as the reference input to the OPLL. The 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 383MHz and 448 MHz.

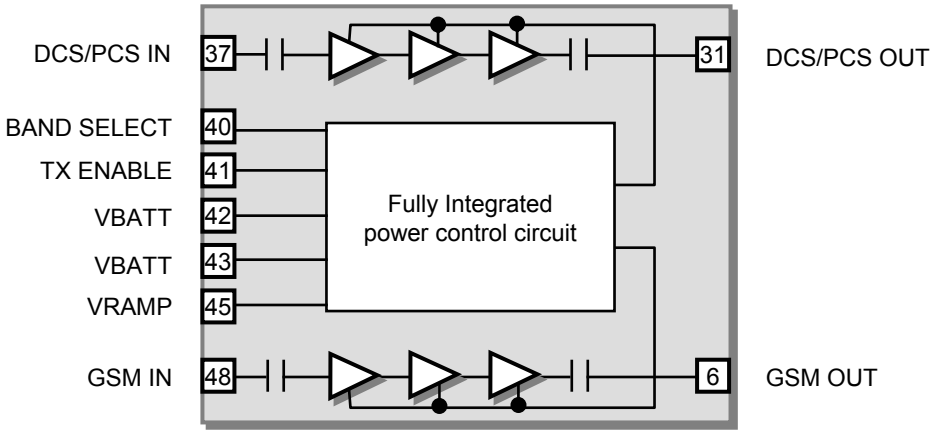
3.3.2. OPLL

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

3.4 Power Amplifier

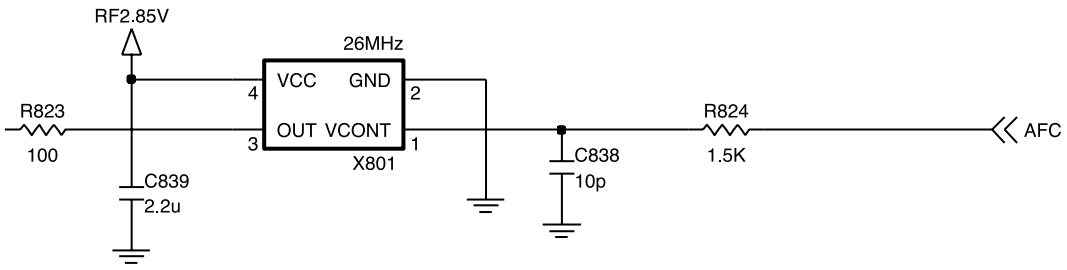
The RF3146 [U804] is a quad-band EGSM 900/GSM 850/DCS/PCS power amplifier module that in corporates an indirect closed loop method of power control. The indirect closed loop is fully self-contained and it does not require loop optimization. It can be driven directly from the DAC output in the baseband circuit.
On-board power control provides over 37 dB of control range with an analog voltage input(Vramp). Efficiency is 60% at GSM and 55% at DCS/PCS.

Figure 4. Power Amp



3.5 26MHz Clock

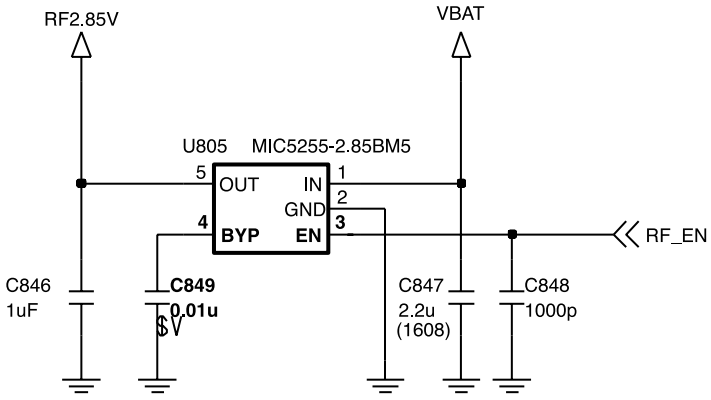
The 26 MHz clock consists of a TCXO(Temperature Compensated Crystal Oscillator) which oscillates at a frequency of 26 MHz. It is used within the Si4205 RF Main Chip, BB Analog chip-set(IOTA), Digital chipset (Calypso).



3.6 Power Supplies and Control Signals

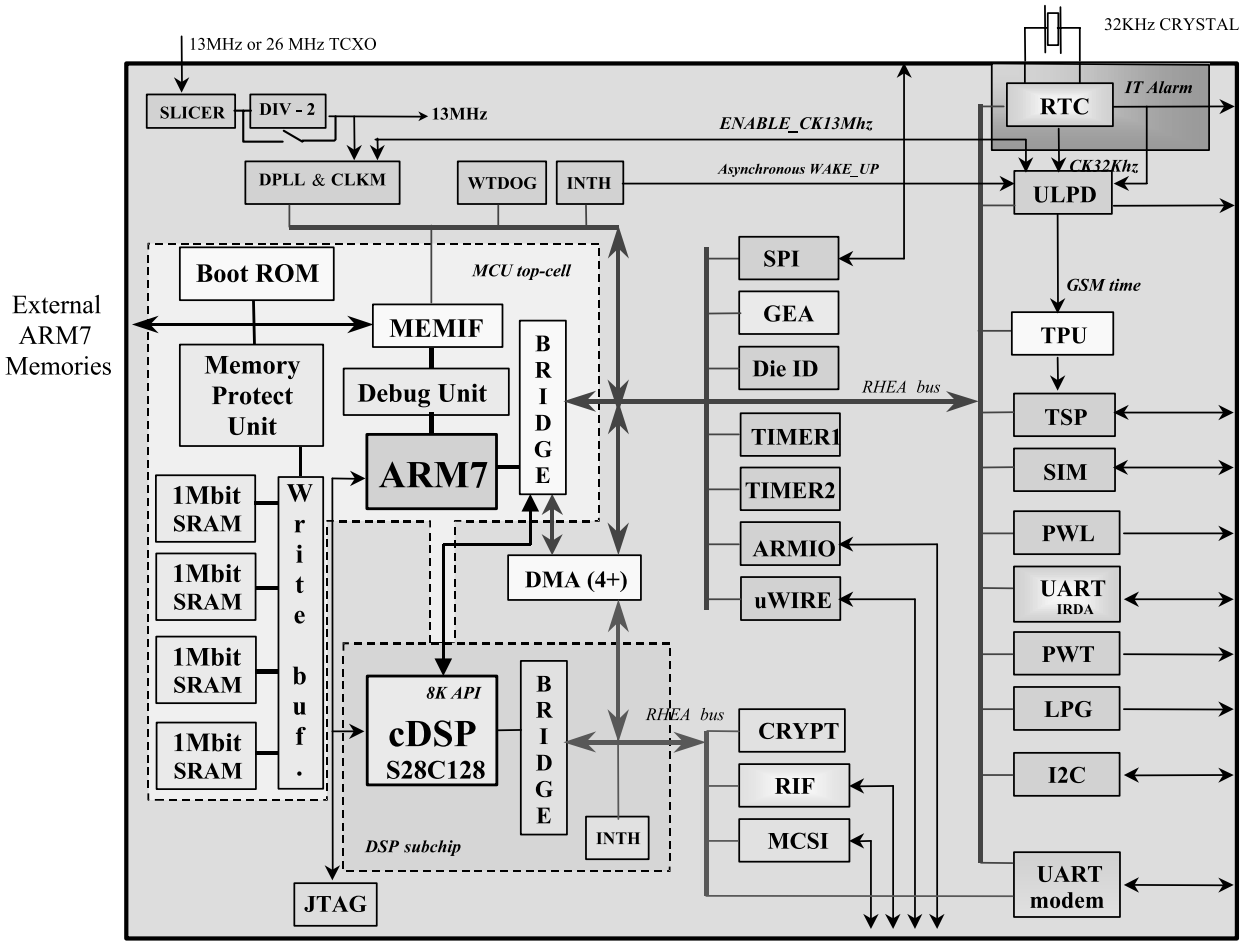
An external regulator(U805) is used to provide DC power to RF part. Every RF component except power amp module uses this external regulator.

Figure 6 External regulator Circuit



3.7 Digital Baseband (DBB) Processor

Figure 7. Top level block diagram of the Calypso G2(HERCROM400G2)



3.7.1. General Description

CALYPSO is a chip implementing the digital base-band processes of a GSM/GPRS mobile phone. This chip combines a DSP sub-chip (LEAD2 CPU) with its program and data memories, a Micro-Controller core with emulation facilities (ARM7TDMIE), internal 8Kb of Boot ROM memory, 4M bit SRAM memory, a clock squarer cell, several compiled single-port or 2-ports RAM and CMOS gates. The chip will fully support the Full-Rate, Enhanced Full-Rate and Half-Rate speech coding. CALYPSO implements all features for the structural test of the logic (full-SCAN, BIST, PMT, JTAG boundary-SCAN).

3.7.2. Block Description

CALYPSO architecture is based on two processor cores ARM7 and DSP using the generic RHEA bus standard as interface with their associated application peripherals.
CALYPSO is composed from the following blocks:
• ARM7TDMIE : ARM7TDMI CPU core
• DSP subchip
• ARM peripherals:

General purpose peripherals

• ARM Memory Interface for external RAM, Flash or ROM
• 4 Mbit Static RAM with write-buffer

Application peripherals

• ARM General purposes I/O with keyboard interface and two PWM modulation signals
• UART 16C750 interface (UART_IRDA) with
→ IRDA control capabilities (SIR)
→ Software flow control (UART mode).
• UART 16C750 interface (UART_MODEM) with
→ Hardware flow protocol (DCD, CTS/RTS)
→ Autobaud function
• SIM Interface.
• TPU(Time Processing Unit) : Processing for GSM time base
• TSP(Time Serial Port) : GSM data interface with RF and ABB

Memory Interface : External/Internal Memory Interface

nCS0 : FLASH1, 16bit access, 3 wait state

nCS1 : FLAHS2, 16bit access, 3 wait state

nCS2 : Ext SRAM, 16bit access, 3 wait state

nCS3 : Main LCD(16bit access), OEL(8bit access) addressing, 3 wait state

nCS4 : MIDI(8bit access), USB(8bit access) addressing, 3 wait state

nCS6 : Int SRAM, 32bit access, 0 wait state

* Calypso is internally 39MHz machine (25ns machine cycle), so it requires 3 wait-state for 80ns access(25*4 = 100 ns).

3.7.3 RF Interface (TPU, TSP Block)

Calypso uses this interface to control IOTA_CS(ABB Processor) and AERO(RF Processor) with GSM Time Base

Table 3-3. RF Interface Spec.

TSP (Time Serial Port)		
Resource	**Interconnection**	**Description**
TSPDO	ABB & RF main Chip	Control Data
TSPEN0	ABB	ABB Control Data Enable Signal
TSPEN1	RF main Chip	RF Control Data Enable Signal
TSP (Time Serial Port)		
TSPACT0	PDNB	RF main Chip Reset Signal
TSPACT1	PA_ON	Power Amp ON signal
TSPACT2	PA_BAND	Power Amp band-selection signal
TSPACT3	VC1	Ant. Switch control signal
TSPACT4	VC2	Ant. Switch control signal
TSPACT5	VC3	Ant. Switch control signal

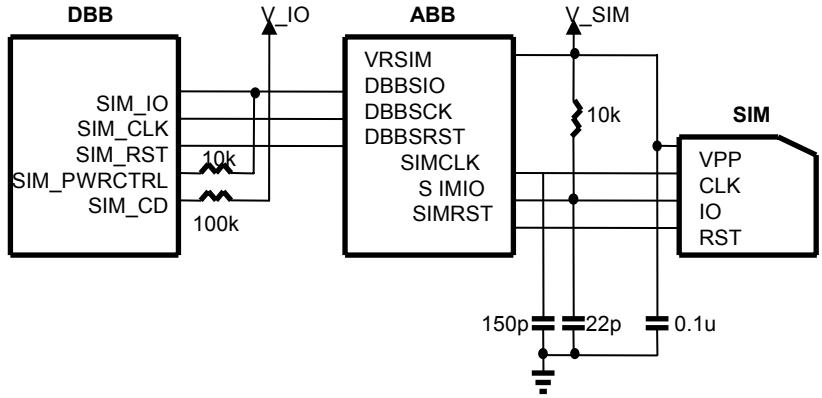
3.7.4. SIM Interface

SIM interface scheme is shown in (Figure 8).
SIM_IO, SIM_CLK, SIM_RST ports are used to communicate DBB with ABB and the Charge Pump in ABB enables 1.8V/3V SIM operation.

SIM Interface

SIM_CLK	**SIM card reference clock**
SIM_RST	**SIM card async/sync reset**
SIM_IO	**SIM card bidirectional data line**
SIM_PWCTRL	**SIM card power activation**
SIM_CD	**SIM card presence detection**

Figure 8. SIM Interface



3.7.5. UART Interface

L1100 has two UART Drivers as follow :

UART1 : Hardware Flow Control / Fax & Data Modem
UART2 : Handsfree Control / SW trace or IrDA Modem

Figure 3-4. UART Interface spec.

UART MODEM (UART1)		
Resource	**Name**	**Description**
TX_MODEM	TXD	Transmit Data
RX_MODEM	RXD	Receive Data
CTS_MODEM	CTS	Clear To Send
RTS_MODEM	RTS	Request To Send
GPIO 3	DSR	Data Set Ready
UART IrDA (UART2)		
Resource	**Name**	**Description**
TXIR_IRDA	TX_IRDA	Infra-Red Transmit Pulse
TX_IRDA	TX	Transmit Data(UART2)
RXIR_IRDA	RX_IRDA	Infra-Red Receive Pulse
RX_IRDA	RX	Receive Data(UART2)
SD_IRDA	SD_IRDA	IRDA transceiver Shutdown Mode

3.7.6. GPIO Map

In total 16 allowable resources, L1100 is using 13 resources except 3 resources dedicated to SIM and Memory. L1100 GPIO (General Purpose Input/Output) Map, describing application, I/O state, and enable level, is shown in below table.

Table 5. GPIO Map Table

I/O #	Application	I/O	Resource State	Inactive State	Active State
I/O (0)	FOLDER	I	GPIO	HIGH (Open)	LOW (Closed)
I/O (1)	MELODY_INT	I	GPIO	HIGH	LOW
I/O (2)	SPK_EN	I	GPIO	HIGH	LOW
I/O (3)	DSR	I	GPIO	HIGH	LOW
I/O (4)	LCD_BACKLIGHT	I	GPIO	LOW	HIGH
I/O (5)	SIM_PWRCTRL	O	SIM	HIGH	HIGH
I/O (6)	BCLKX	I	GPIO	LOW(REC)	HIGH(SPK)
I/O (7)	LCD_RESET	O	GPIO	HIGH	LOW
I/O (8)	IF_MODE	O	GPIO	LOW	HIGH
I/O (9)	CAM_HOLD	O	GPIO	LOW	HIGH
I/O (10)	INDLED_R	O	GPIO	LOW	HIGH
I/O (11)	INDLED_G	O	GPIO	LOW	HIGH
I/O (12)	LCD_ID	O	GPIO	RESERVED	
I/O (13)	HANDSFREE	I	GPIO	HIGH	LOW
I/O (14)	NBHE	O	MEMORY		
I/O (15)	NBLE	O	MEMORY		

3.8 Analog Baseband (ABB) Processor

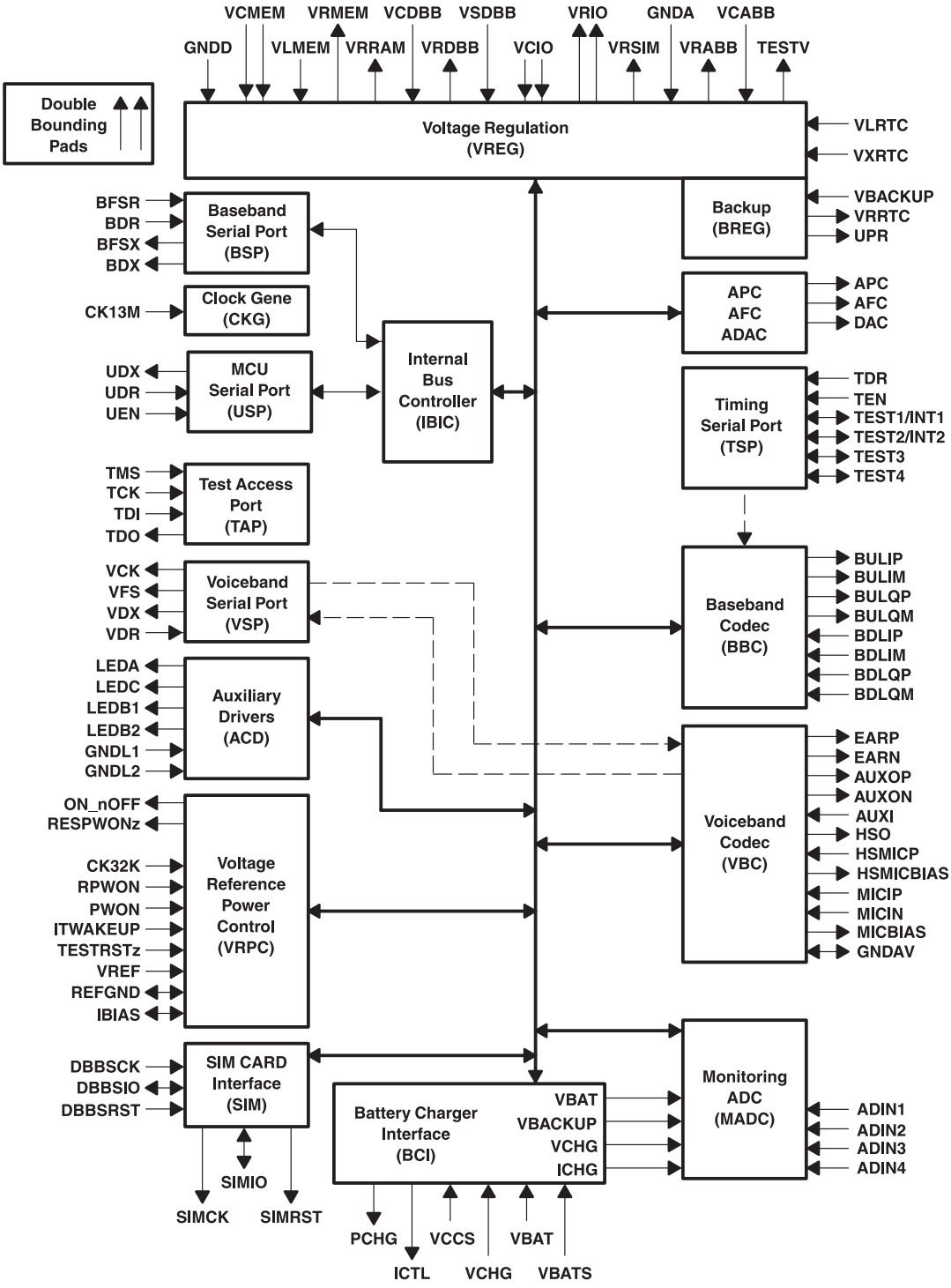
3.8.1. General Description

IOTA is Analog Baseband (ABB) Chip supports GSM900, DCS1800, PCS1900, GPRS Class 10 with Digital Basband Chip (Calypso G2).
IOTA processes GSM modulation/demodulation and power management operations.

Block Description
• Audio Signal Processing & Interface
• Baseband in-phase(I), quadrature(Q) Signal Processing
• RF interface with DBB (time serial port)
• Supply voltage regulation

• Battery charging control
• Switch ON/OFF
• 1.8V/3V SIM card Interface
• 4 internal & 4external ADC channels

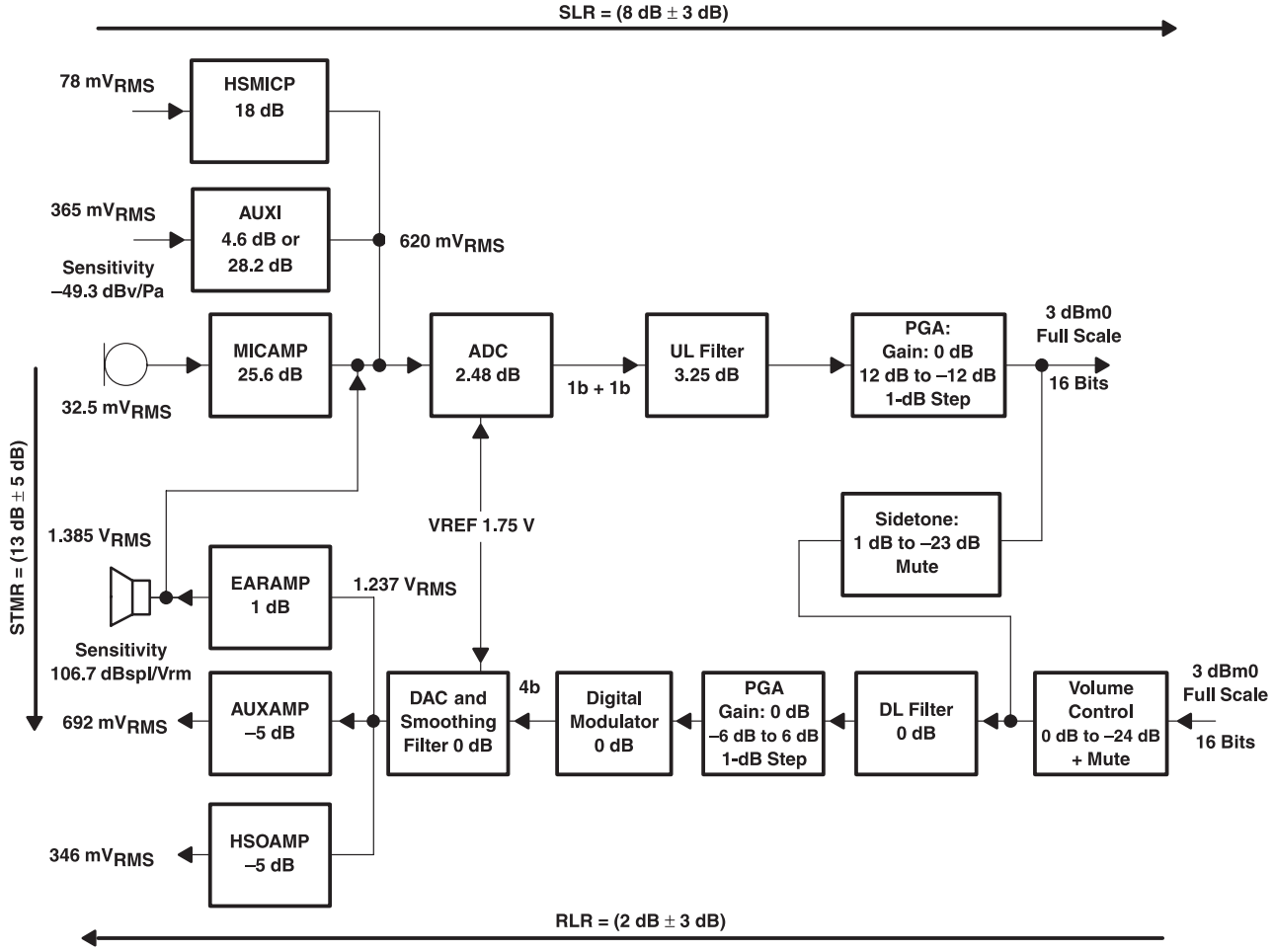
Figure 9. Top level block diagram of the IOTA(TWL3014CGGM)



3.8.2. Audio Signal Processing & Interface

The voice codec circuitry processes analog audio components in the voice uplink (VUL) path and applies this signal to the voice signal interface for eventual baseband modulation. In the voice downlink (VDL) path, the codec circuitry changes voice component data received from the voice serial interface (VSP) into analog audio.

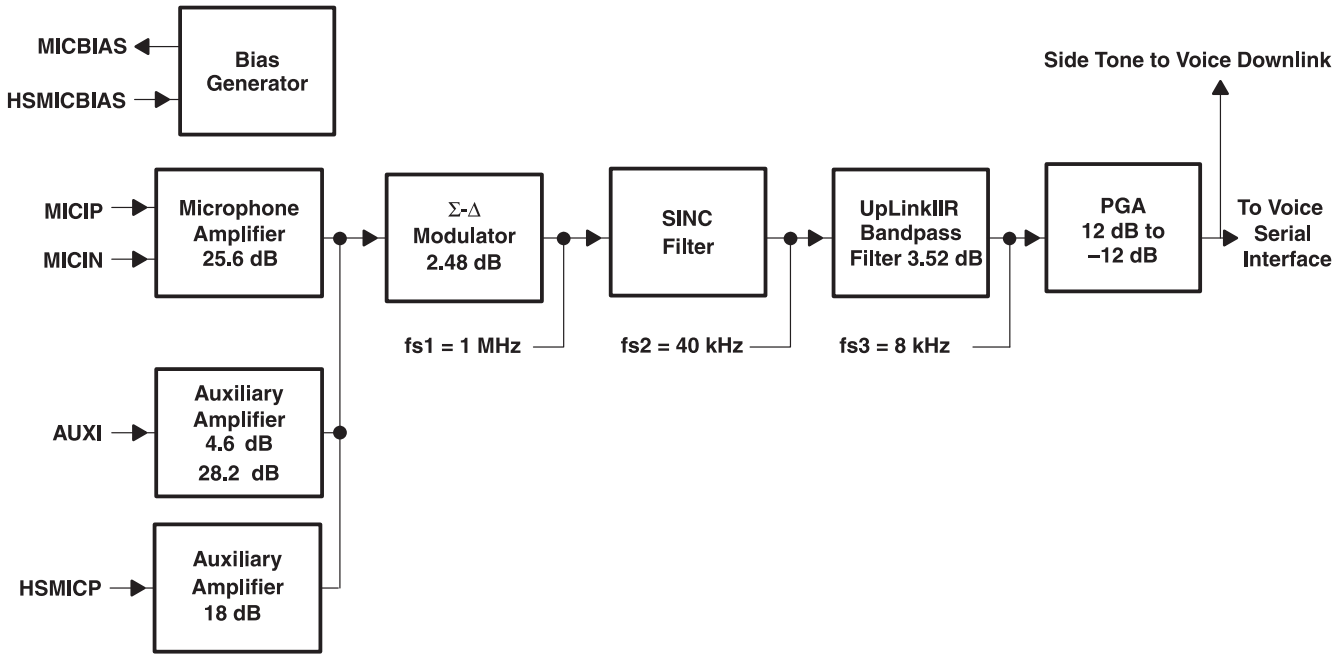
Figure 10. Audio Interface Block Diagram



3.8.3. Audio uplink processing

The VUL path includes two input stages. The first stage is a microphone amplifier, compatible with electret microphones containing a FET buffer with open drain output. The microphone amplifier has a gain of typically 25.6 dB (±1 dB) and provides an external voltage of 2.0 V or 2.5 V to bias the microphone (MICBIAS). The auxiliary audio input can be used as an alternative source for higher level speech signals. This stage performs single-ended-to differential conversion and provides a programmable gain of 4.6 dB or 28.2 dB. The third stage is a headset microphone amplifier, compatible with electret microphones. The headset microphone amplifier has a gain of typically 18 dB and provides an external voltage of 2.0 V or 2.5 V to bias the headset microphone (HSMICBIAS). When one of the input stages (MICI, AUXI, HSMICP) is in use, the two other input stages are disabled and powered down. The resulting fully differential signal is fed to the analog-to-digital converter (ADC). The ADC conversion slope depends on the value of the internal voltage reference. Analog-to-digital conversion is performed by a third-order Σ-Δ modulator with a sampling rate of 1 MHz. Output of the ADC is fed to a speech digital filter, which performs the decimation down to 8 kHz and band-limits the signal with both low-pass and high-pass transfer functions. Programmable gain can be set digitally from -12 dB to +12 dB in 1-dB steps and is programmed with bits 4-0 (VULPG(4:0)) of the voiceband uplink register. The speech samples are then transmitted to the DSP via the VSP at a rate of 8 kHz. There are 15 meaningful output bits. Programmable functions of the VUL path, power-up, input selection, and gain are controlled by the BSP or the USP via the serial interfaces.
The VUL path can be powered down by bit 0 (VULON) of the power down register.

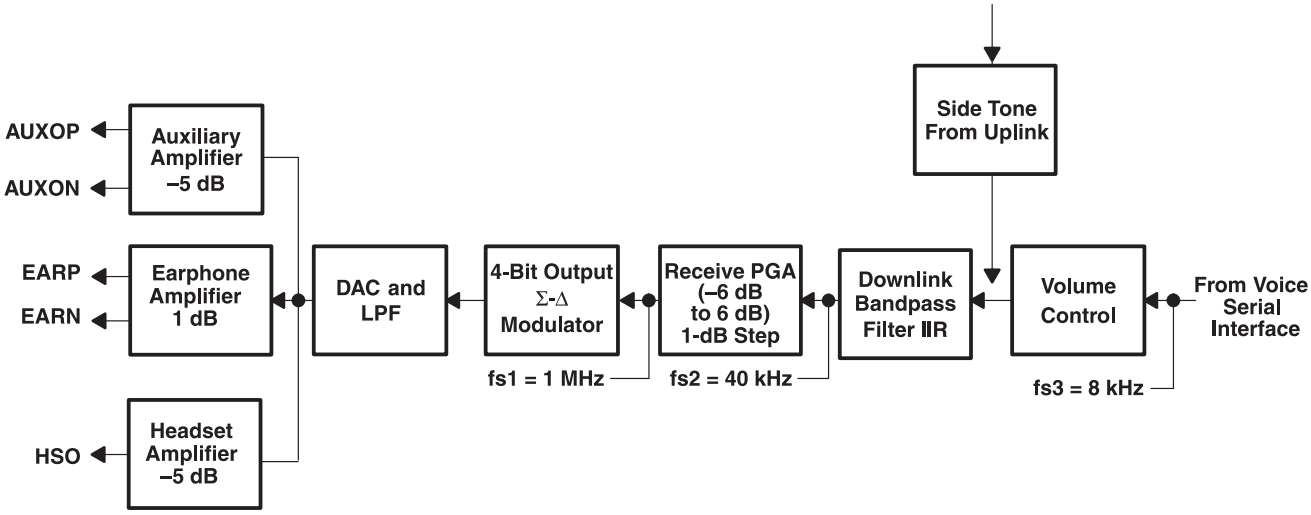
Figure 11. Uplink Path



3.8.4. Audio downlink processing

The VDL path receives speech samples at the rate of 8 kHz from the DSP via the VSP and converts them to analog signals to drive the external speech transducer. The digital speech coming from the DSP is first fed to a speech digital filter that has two functions. The first function is to interpolate the input signal and to increase the sampling rate from 8 kHz up to 40 kHz to allow the digital-to-analog conversion to be performed by an oversampling digital modulator. The second function is to band-limit the speech signal with both low-pass and high-pass transfer functions. The filter, the PGA gain, and the volume gain can be bypassed by programming bit 9 (VFBYP) in the voiceband control register 1. The interpolated and band-limited signal is fed to a second order Σ-Δ digital modulator sampled at 1 MHz to generate a 4-bit (9 levels) oversampled signal. This signal is then passed through a dynamic element matching block and then to a 4-bit digital-to-analog converter (DAC). The volume control and the programmable gain are performed in the voiceband digital filter. Volume control is performed in steps of 6 dB from 0 dB to -24 dB. In mute state, attenuation is higher than 40 dB. A fine adjustment of gain is possible from -6 dB to +6 dB in 1-dB steps to calibrate the system depending on the earphone characteristics. This configuration is programmed with the voiceband downlink control register.

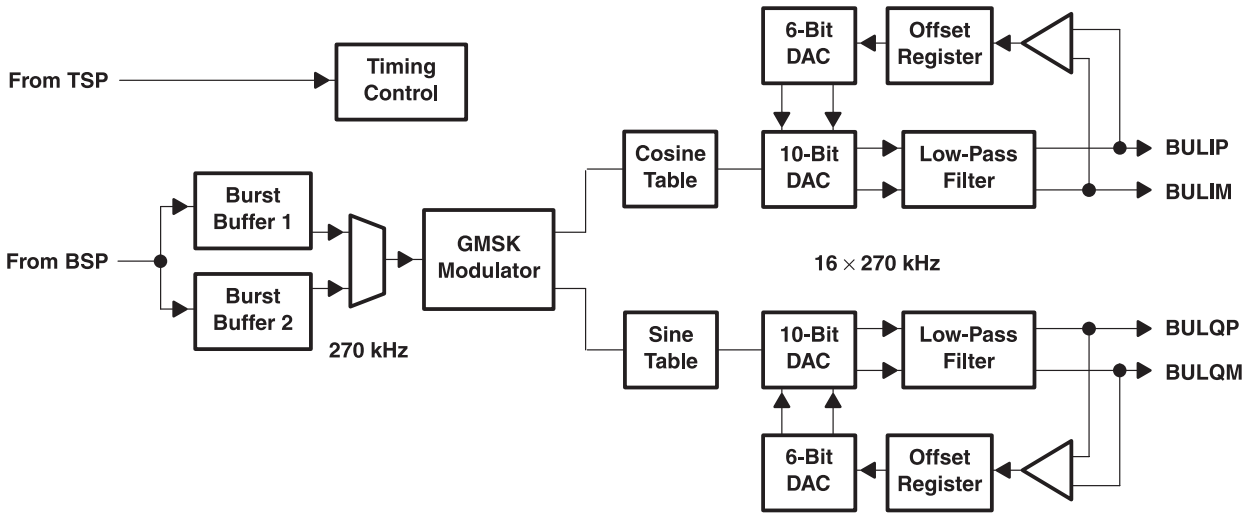
Figure 12. Downlink Path



3.8.5. Baseband Codec (BBC)

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

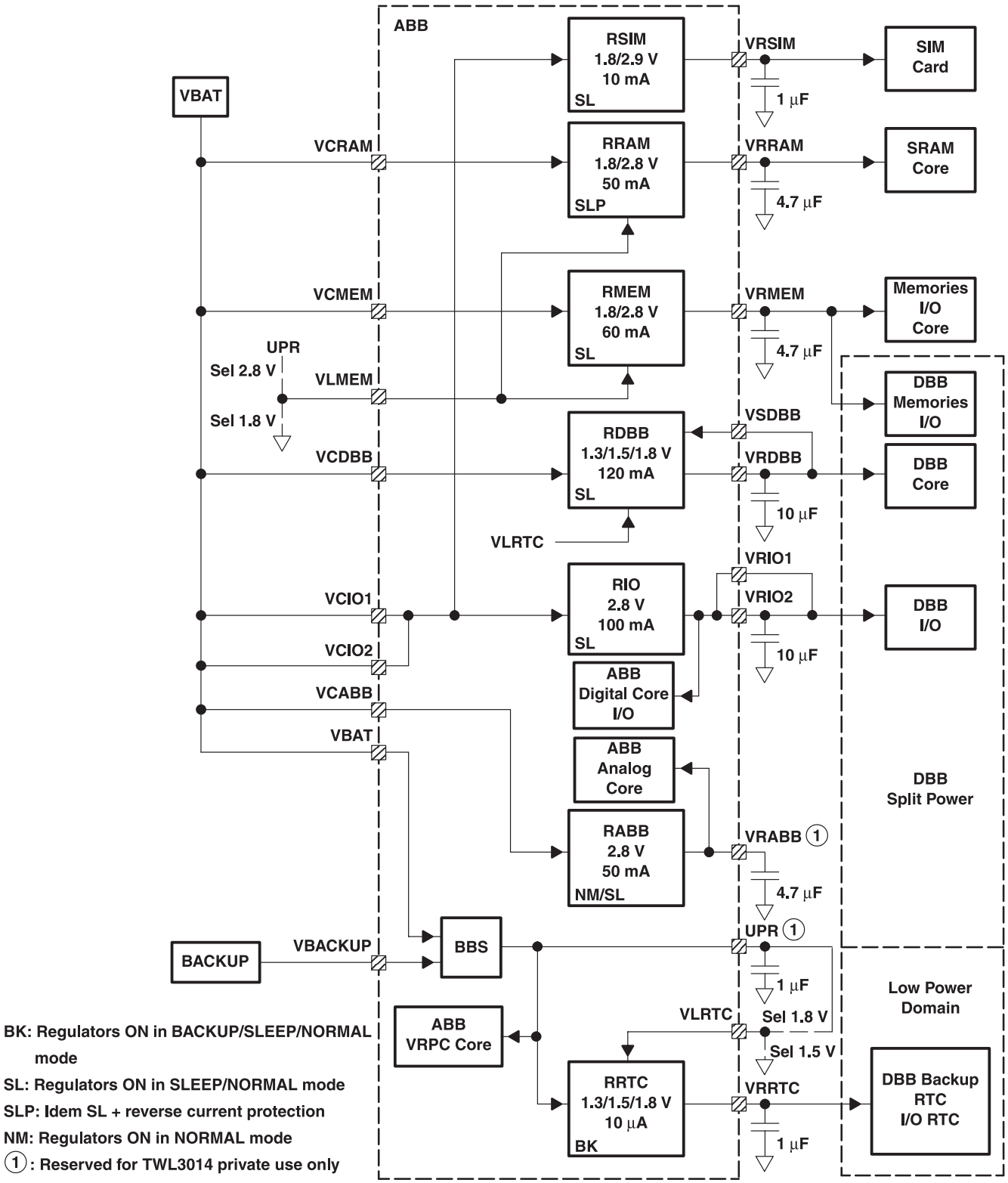
Figure 13. Baseband Codec Block Diagram



3.8.6. Voltage Regulation (VREG)

There are 7 LDO (Low Drop Output) regulators in ABB chip.
The output of these 7 LDOs are as following table. (Figure14) shows the power supply related blocks of DBB/ABB and their interfaces in L1100.

Figure 14. Power Supply Scheme



BK: Regulators ON in BACKUP/SLEEP/NORMAL mode

SL: Regulators ON in SLEEP/NORMAL mode

SLP: Idem SL + reverse current protection

NM: Regulators ON in NORMAL mode

(1): Reserved for TWL3014 private use only

Table 3-6. LDO Output Table

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

3.8.7. ADC Channels

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

Table 3-7. ADC Channel Spec

ADC 8 Channels		
Resource	**Name**	**Description**
VCHG	VCHG	Charging Management
VBAT	VBAT	
ICHG	ICHG	
VBACKUP	VBACKUP	Backup Battery
ADIN1	JACK DETECT	Ear-mic set Jack detect
ADIN2	BATT_TEMP	Battery Detect
ADIN3	TEMPSENSE	Temperature Sensing
ADIN4	HOOK_DETECT	HOOK_DETECT

3.8.8. Charging

Charging block in ABB processes charging operation by using VBAT, ICHG value through ADC channel. Battery Block Indication and SPEC of L1100 is as follow.

Figure 15. Battery Block Indication

4.2V~3.92V **3.91V~3.79V** **3.78V~3.70V** **3.69V~3.61V** **3.60V~3.35V**

1. Charging method: CC-CV
2. Charger detect voltage: about 5.2V
3. Charging time: 3h under
4. Icon stop current: 100mA
5. Charging current: 420mA
6. CV voltage: 4.2V
7. Cutoff current: 30mA
8. Full charge indication current (icon stop current) : 100mA
9. Recharge voltage: 4.16V
10. Low battery alarm
    a. Idle: 3.62V
    b. Dedicated: 3.50V
11. Low battery alarm interval :
    a. Idle: 3min
    b. Dedicated:1min
12. Switch-off voltage: 3.35V
13. Charging temperature ADC range
    a. ~ -5℃ : not charging operation.
    b. -5℃ ~ 50℃ : charging.
    c. 50℃~ : not charging operation.

3.8.9. Switch On/Off

L1100 Power State : Defined 4cases as follow

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

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

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

3.8.10. Memories

L1100 using 128Mbit Flash + 64Mbit SRAM with 16 bit parallel data bus thru ADD01 ~ ADD22.

3.8.11. Display & FPCB Interface

LCD module include:

- ▶ MAIN LCD: 128*160, 65,000 Color TFT LCD
- ▶ SUB LCD: 96*64, 4Gray LCD
- ▶ LCD Backlight: White LED illumination

MAIN BOARD AND FPCB is connected by 60pin connector. FPCB have three connectors , 60pin, 40pin, and 20pin. FPCB and MAIN BOARD is connected by 60 pin connector . camera module is connected by 20pin connector . LCD module is connect by 40pin connector .

Connector Interface Spec.

Table 3-8 Connector Interface Spec.

	MAIN BOARD LCD CONNECTOR	FPCB 60PIN CONN.		
		60PIN CONN.	CAMERA 20PIN CONN.	LCM 40PIN CONN.
1	GND	GND	GND	V_SRAM
2	L_D(0)	L_D(0)	C_MCLK	V_SRAM
3	L_D(1)	L_D(1)	C_PWR	LCD_RESET
4	L_D(2)	L_D(2)	C_PCLK	LCD_RESET
5	L_D(3)	L_D(3)	C_CD0	L_SUB_CS
6	L_D(4)	L_D(4)	C_CD1	L_D(0)
7	L_D(5)	L_D(5)	C_CD2	L_D(1)
8	L_D(6)	L_D(6)	C_CD3	L_D(2)
9	L_D(7)	L_D(7)	C_CD4	L_D(3)
10	LCD_RESET	LCD_RESET	C_CD5	L_D(4)
11	SLED1	SLED1	C_CD6	L_D(5)
12	LCD_ID	LCD_ID	C_CD7	L_D(6)
13	SLED	SLED	C_VS	L_D(7)
14	L_MAIN_CS	L_MAIN_CS	C_HS	MLED
15	L-SUB_CS	L_SUB_CS	C_SDA	MLED1
16	L_WR	L_WR	C_SCK	MLED2
17	L_A(1)	L_A(1)	C_RST	MLED3
18	IFMODE	IFMODE	C_PWR	GND
19	VBACKUP	VBACKUP	C_PWR	GND
20	V_SRAM	V_SRAM	GND	GND
21	GND	GND		SLED
22	C_PWR	C_PWR		SLED1
23	C_MCLK	C_MCLK		GND
24	C_PCLK	C_PCLK		GND
25	C_HS	C_HS		GND
26	C_VS	C_VS		L_D(15)
27	C_SDA	C_SDA		L_D(14)
28	C_SCK	C_SCK		L_D(13)
29	C_RST	C_RST		L_D(12)
30	GND	GND		L_D(11)
31	GND	GND		L_D(10)
32	C_CD7	C_CD7		L_D(9)
33	C_CD6	C_CD6		L_D(8)
34	C_CD5	C_CD5		L_WR
35	C_CD4	C_CD4		L_MAIN_CS
36	C_CD3	C_CD3		L_A(1)
37	C_CD2	C_CD2		IFMODE
38	C_CD1	C_CD1		LCD_ID
39	C_CD0	C_CD0		IFMODE_RESERVE
40	GND	GND		GND
41	EAR_P	EAR_P		
42	EAR_N	EAR_N		
43	GND	GND		
44	SPKP	SPKP		
45	SPKN	SPKN		
46	GND	GND		
47	MLED	MLED		
48	MLED3	MLED3		
49	MLED2	MLED2		
50	MLED1	MLED1		
51	GND	GND		
52	L_D(15)	L_D(15)		
53	L_D(14)	L_D(14)		
54	L_D(13)	L_D(13)		
55	L_D(12)	L_D(12)		

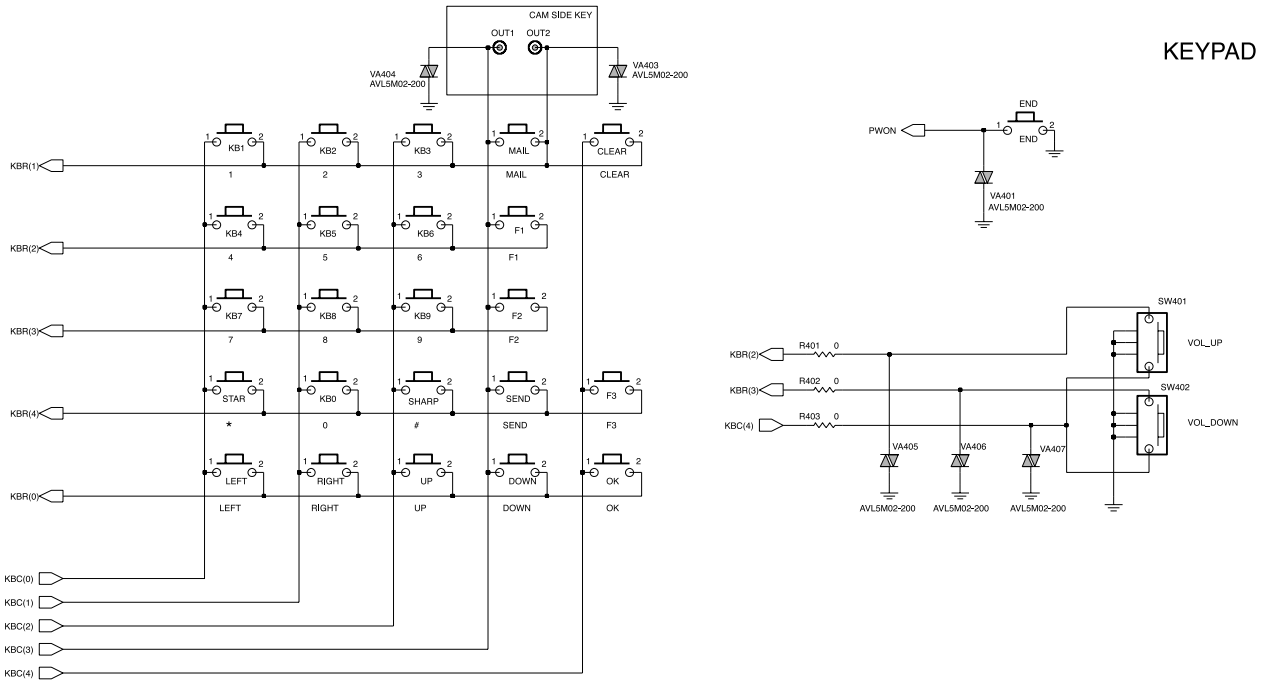
3.8.12. Keypad Switching & Scanning

Table 3-9. Keypad Map

	KBC0	KBC1	KBC2	KBC3	KBC4
KBR0	LEFT	RIGHT	UP	DOWN	OK
KBR1	[1]	[2]	[3]	CAM	CLEAR
KBR2	[4]	[5]	[6]	[F1]	VOL_UP
KBR3	[7]	[8]	[9]	[F2]	VOL_DOWN
KBR4	[*]	[0]	[#]	[C]	[F3]

DBB supports 25 Key Map and Switch-ON Key is connected directly to ABB as (Figure16).

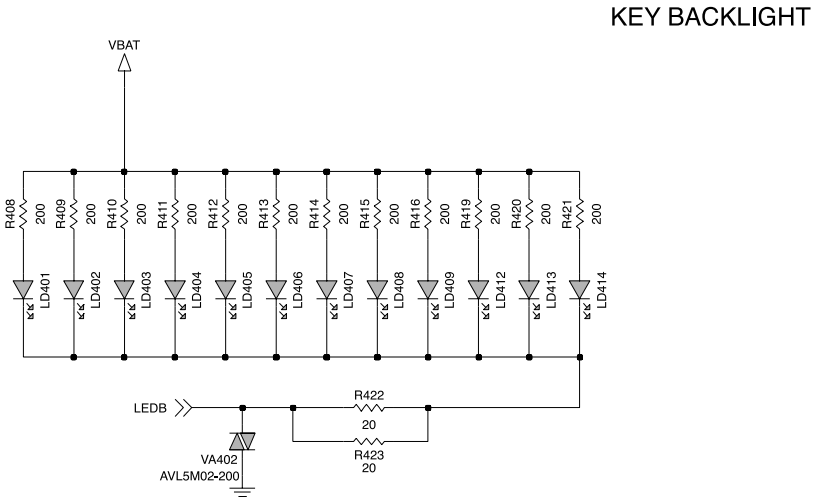
Figure 16. Keypad Scanning Scheme



3.8.13. Keypad back-light Illumination

There are 12 Deep Blue LEDs in Main Board for Keypad Backlight.
Keypad Back-light is driven by 'LEDB' line from IOTA .

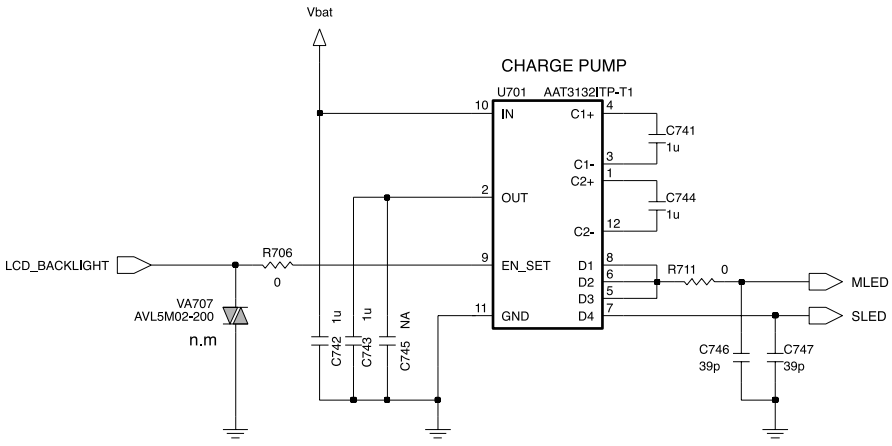
Figure 17. Keypad Back-light Scheme



3.8.14. LCD Illumination

There are 3 LEDs in the LCD module for LCD backlighting. MLED and SLED is connected driver ic of LCD module.

Figure 18. LCD Back-light Scheme



3.8.15. Audio Circuit

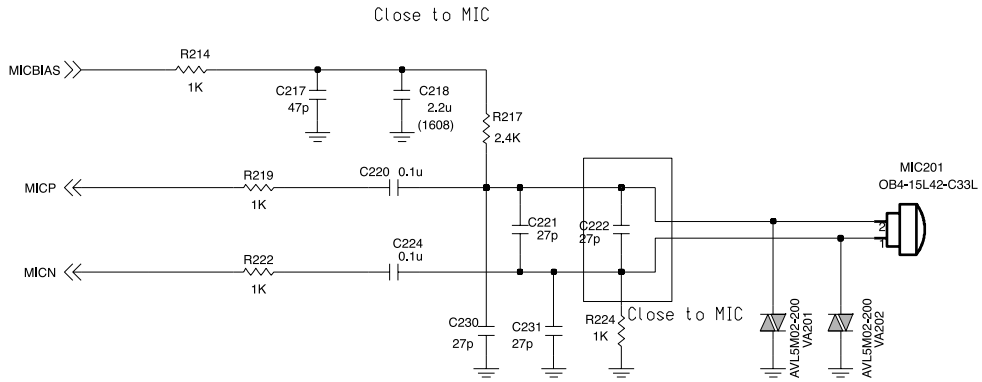


Figure 19. Microphone system

When a call is established, MICBIAS signal goes up to '2.5V' in the L1100. IOTA(ABB) provides both 2.0V and 2.5V for MICBIAS to circuit designer. VA201, VA202 are employed to enhance ESD immunity.

Head set Jack Interface

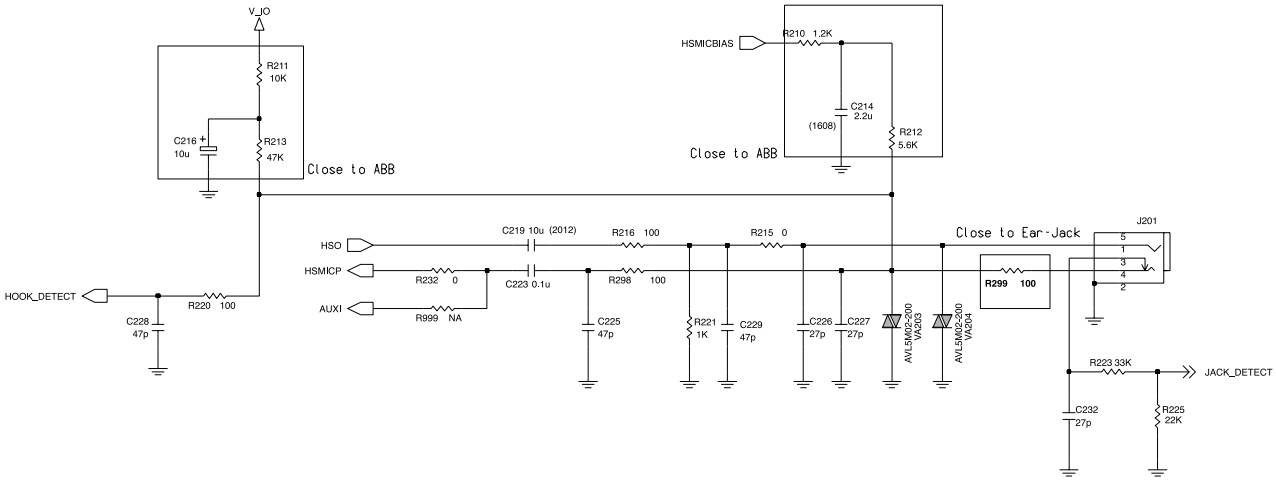


Figure 20. Ear-Jack interface

When ear-mic set or head set plug is inserted into the receptacle, JACK_DETECT signal which is input of ADIN1 in ABB changes from ‘H’ to ‘L’. If hook button is pushed for a second to make a call, then HOOK_DETECT signal which is input of ADIN4 in ABB goes from ‘H’ to ‘L’. Also call end has same mechanism by pushing hook button on the Ear- microphone strap.
Ordinarily detection of pushing hook button is established by signal de-bouncing for about 20ms.

Receiver Circuits

MAIN PCB

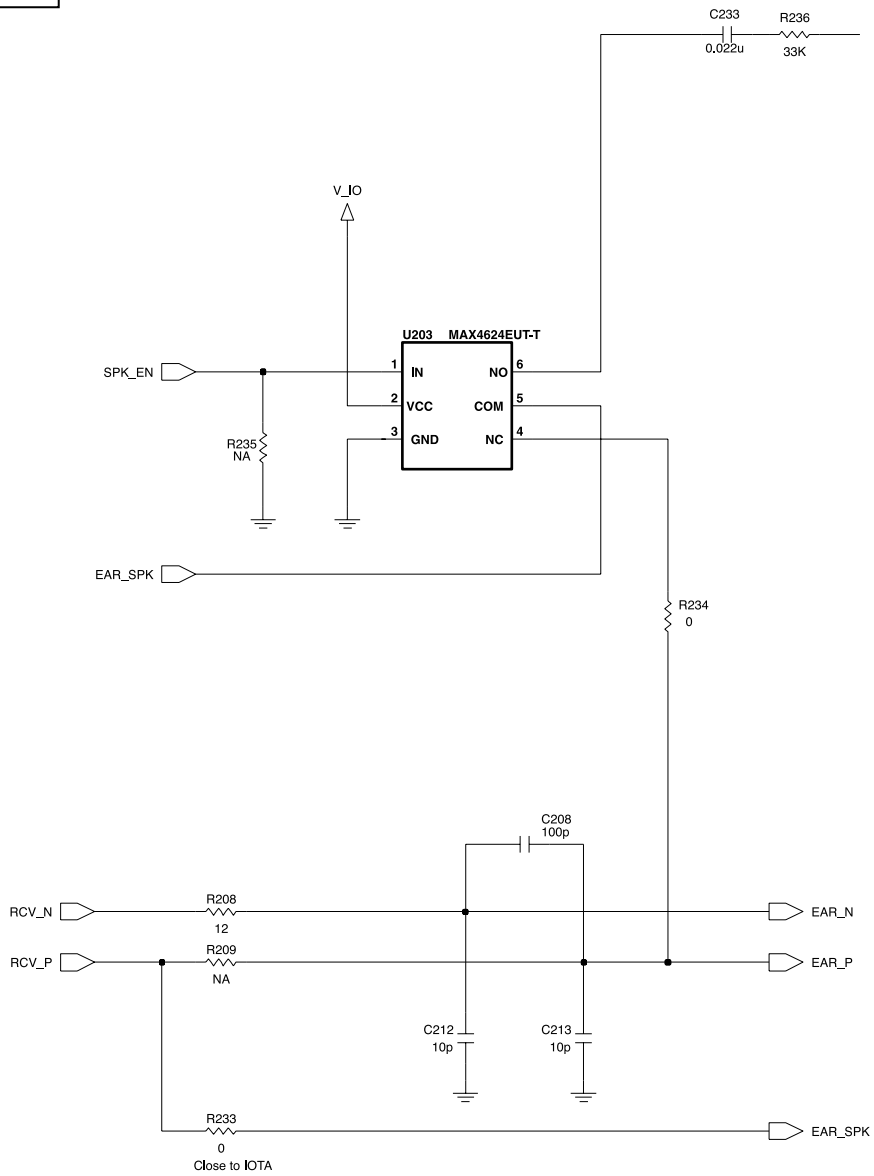


Figure 21. Receiver and MMS mode system switch

A single analog switch is employed to support both voice and MMS sound mode with EAR_SPK. In the MMS mode the SPK_EN port sets ‘H’ , then the EAR_SPK will be connected with MIDI sound path (NO) and operate as loud speaker. The other case, the SPK_EN port will remain ‘L’ state and EAR_SPK will be connected with receiver path EAR_P(NC)

MIDI SOUND circuit description

MAIN PCB

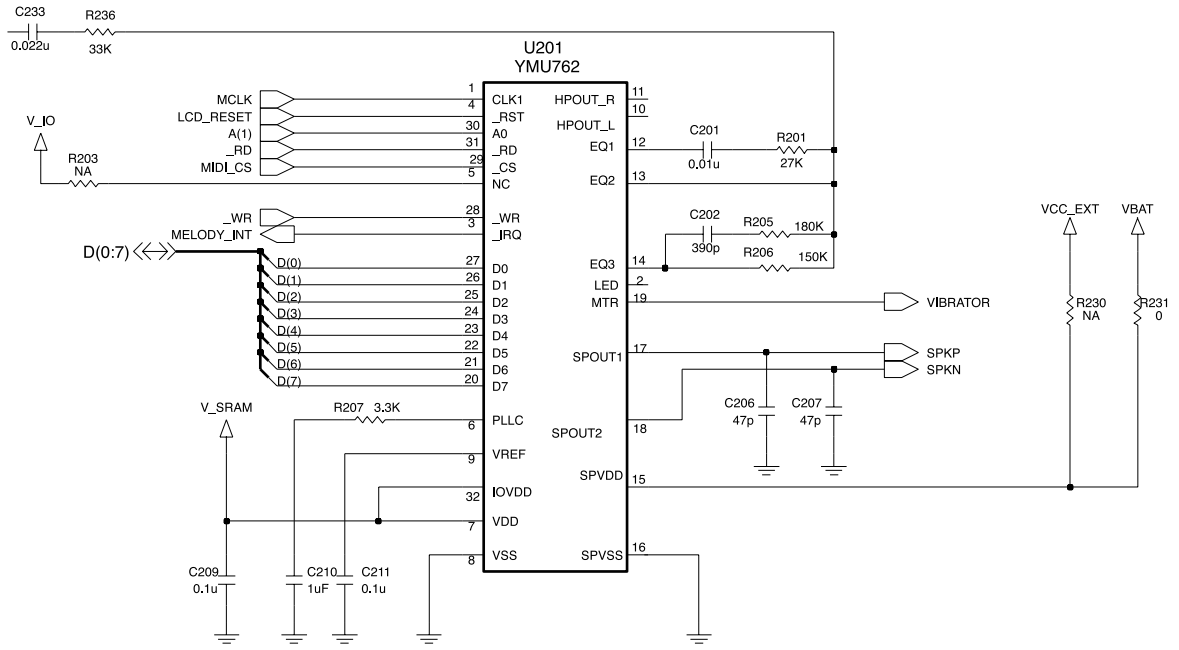


Figure 22. MIDI sound Circuit

The YMU762 has features as described below.

- Simultaneous generation of up to 40 tones:
- Polyphonic synthesizer specification
- Has built-in default tones for FM and Waveform table synthesizers in the ROM, and the tones can be downloaded to RAM.
- Stream replay with ADPCM/PCM
- Software interrupt mechanism for external synchronization
- Equipped with 8 bit parallel I/F for control from CPU
- Equipped with speaker amplifier and equalizer circuit
- Has built-in PLL to support inputting of master clock up to 20 MHz.
- Contains a 16-bit stereophonic D/A converter.

Receiver and Speaker circuit

FPCB

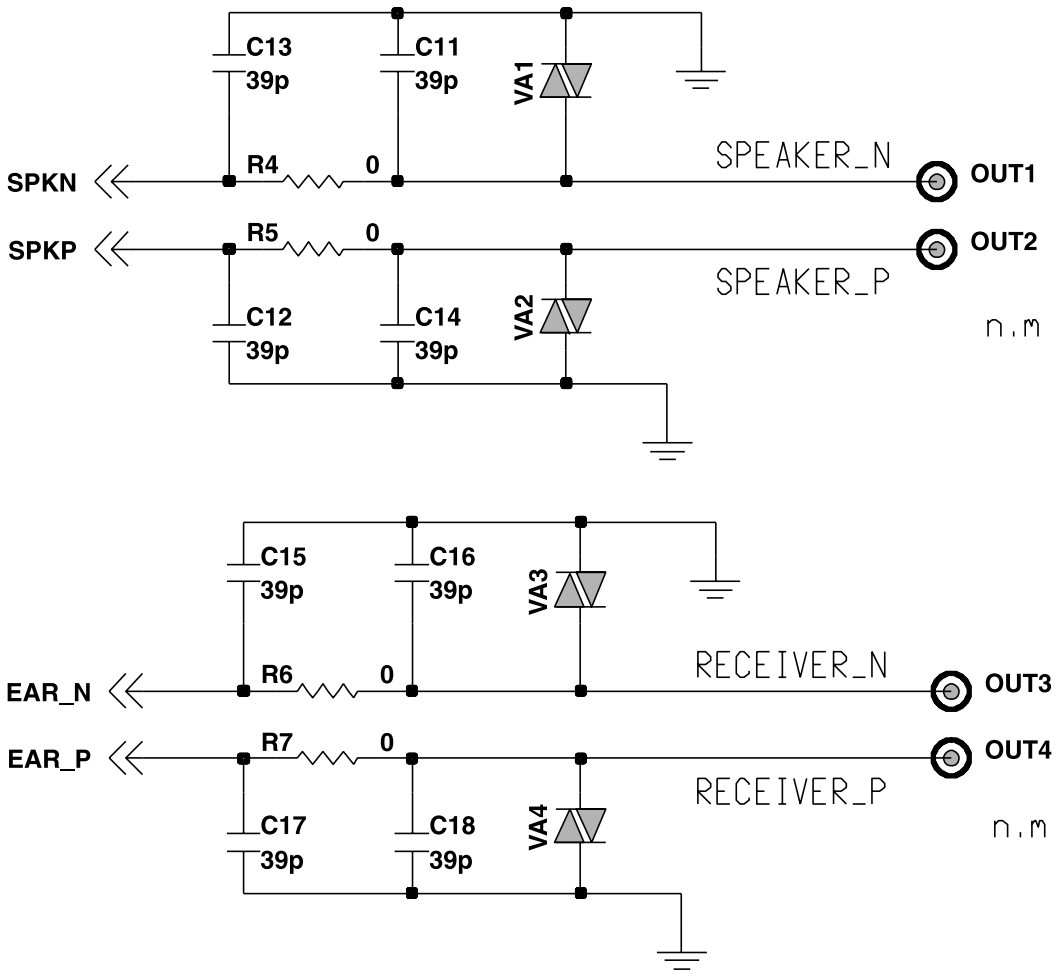


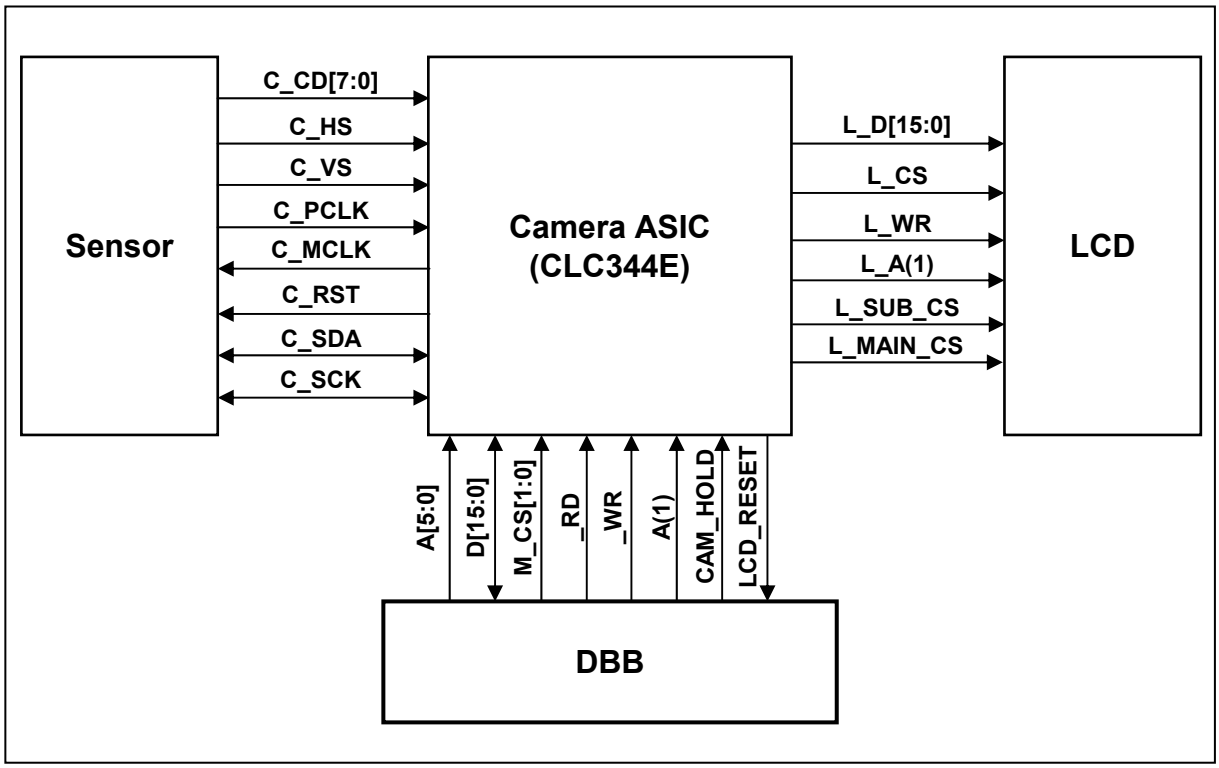
Figure XX. Receiver and Speaker Circuit of FPCB

SPKN, SPKP signals from MIDI sound are connected to speaker through OUT1 and OUT2.
EAR_N, EAR_P signals from ABB are connected to receiver through OUT3 and OUT4.

3.9. Camera Circuit

Under camera action mode, CLC344E wholly controls LCD by itself to execute camera functions, while, under bypass mode, CLC344E lets all LCD driver-related signals bypass it, as if it does not exist at all in the system.

Figure 23. Camera Circuit Block Diagram

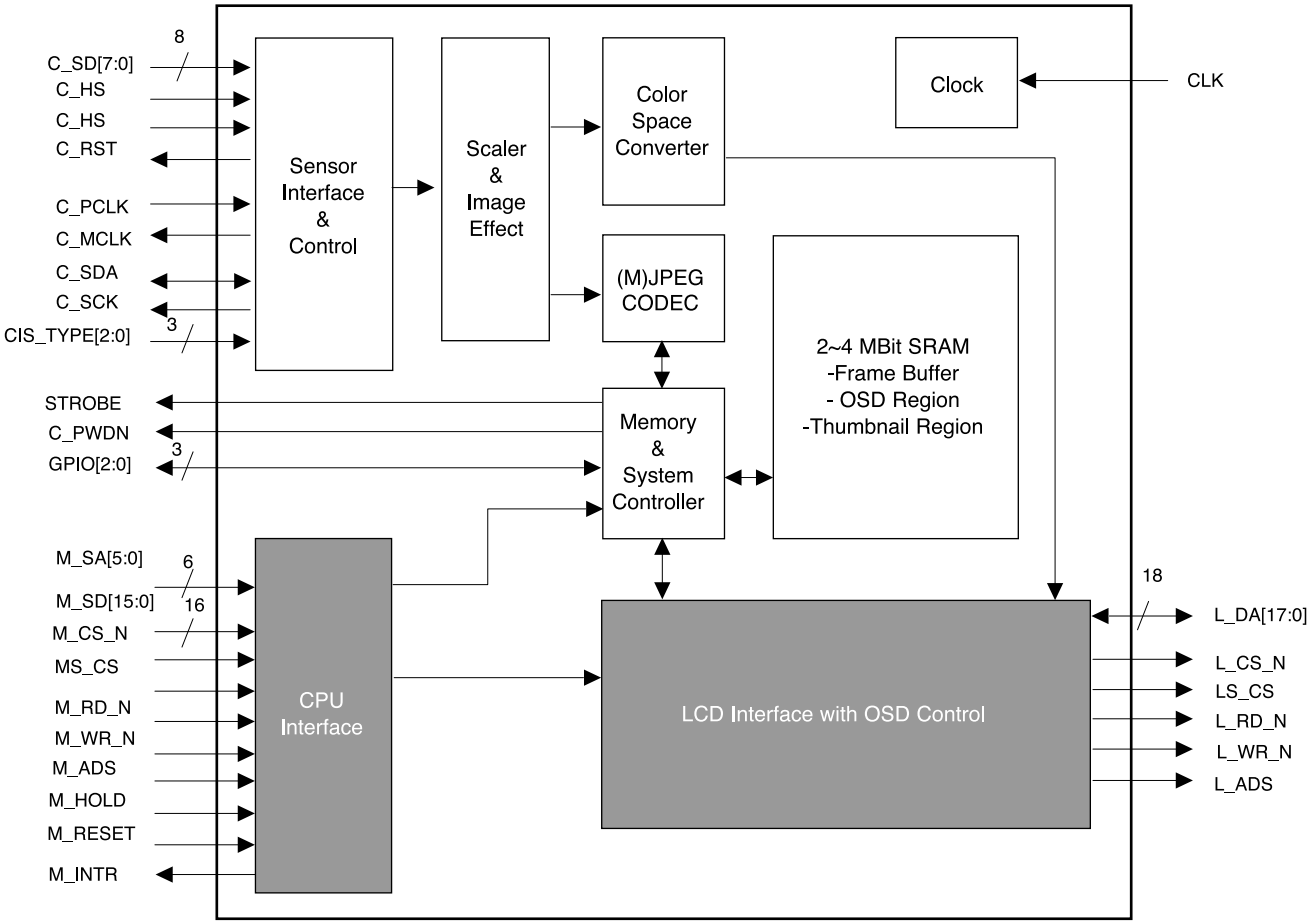


3.9.1. Camera Chipset

General description of CLC344E Camera chipset.

- External Clock Source Up to 27 MHz
- Internal Clock Divider 1/2, 1/3, 1/4 for Sensor Clock Output
- Support Standard SRAM Interface (6bit Address & 16bit Data) for CPU Interface
- 4 Mbit Stacked SRAM
- Support LCD Signal By-pass Mode
- Fully Hardwired JPEG and Motion-JPEG Codec
- Support three General Port IO
- 8 x 8 100pin BGA Package

Figure 24. CLC344E, Camera Chip Block Diagram



The camera IC, CLC344E, is controlled through _RD, _WR, _MAIN_CS,_SUB_CS, CAM_HOLD, LCD_RESET, ADD[1-6], DATA[0-15] by PD751992GHH(DBB). In by-pass mode, CLC344E by passes all LCD control signal from PD751992GHH(DBB) to LCD module. In operating mode, CLC344E samples the image data from camera sensor connected on FPCB CN2 through C_CD[0-7], C_MCLK, C_PCLK, C_HS, C_VS, C_SDA, C_SCK, C_RST signals and controls the LCD module through L_A(1), L_D[0-15], L_WR, L_SUB_CS,L_MAIN_CS.
The camera power is provided by U602 MIC5255. It converts VBAT from battery to 2.85V

Table 3-10. CLC344E Interface

Port Name	Description
_WR	Write control to CLC344E or LCD module
_RD	Read control. The phone do not read data from LCD chip
CAM_INT	Interrupt to DBB. It can be set to level or edge interrupt
CAM_HOLD	This signal determines the camera operation mode. Making high, disable all CLC344E functions
CAM_RST	This signal resets the CLC344E
ADD[1-6]	Address lines from DBB
DATA[0-15]	Parallel data lines from DBB
2V85_CAM	2.85V power supply to CLC344E
C_CD[0-7]	Sensor Data bus
C_RST	Sensor reset
C_PCLK	Sensor input data sampling clock
C_MCLK	Sensor clock
C_SDA	IIC bus data line
C_SCK	IIC bus clock line
C_PWDN	Sensor power down control pin
L_D[0-15]	Parallel data lines to LCD module
L_A[1]	Address control LCD module
_MAIN_CS	MAIN LCD chip select
_SUB_CS	SUB LCD chip select
L_WR	Write control LCD data line

Figure 25. CLC344E, Camera Chip Circuit

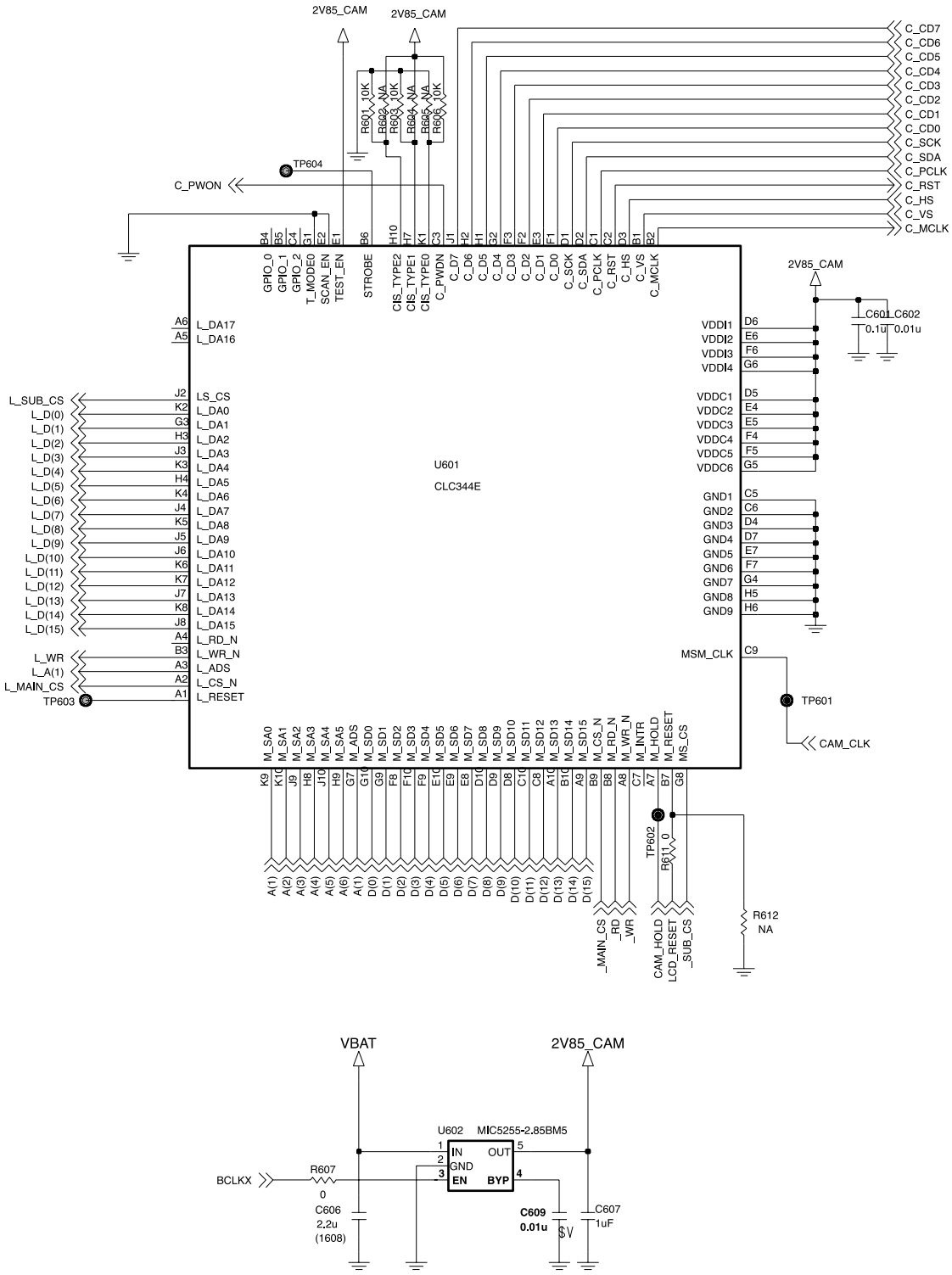
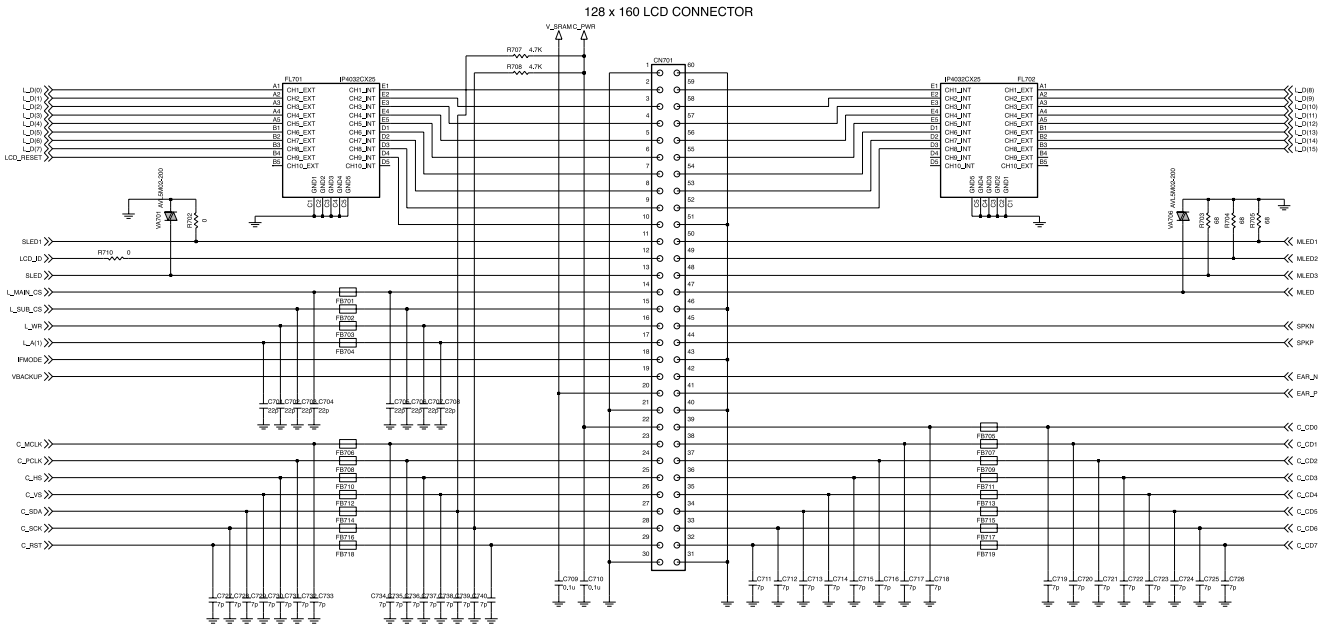


Figure 26. LCD Connection Thru CLC344E, Camera chip

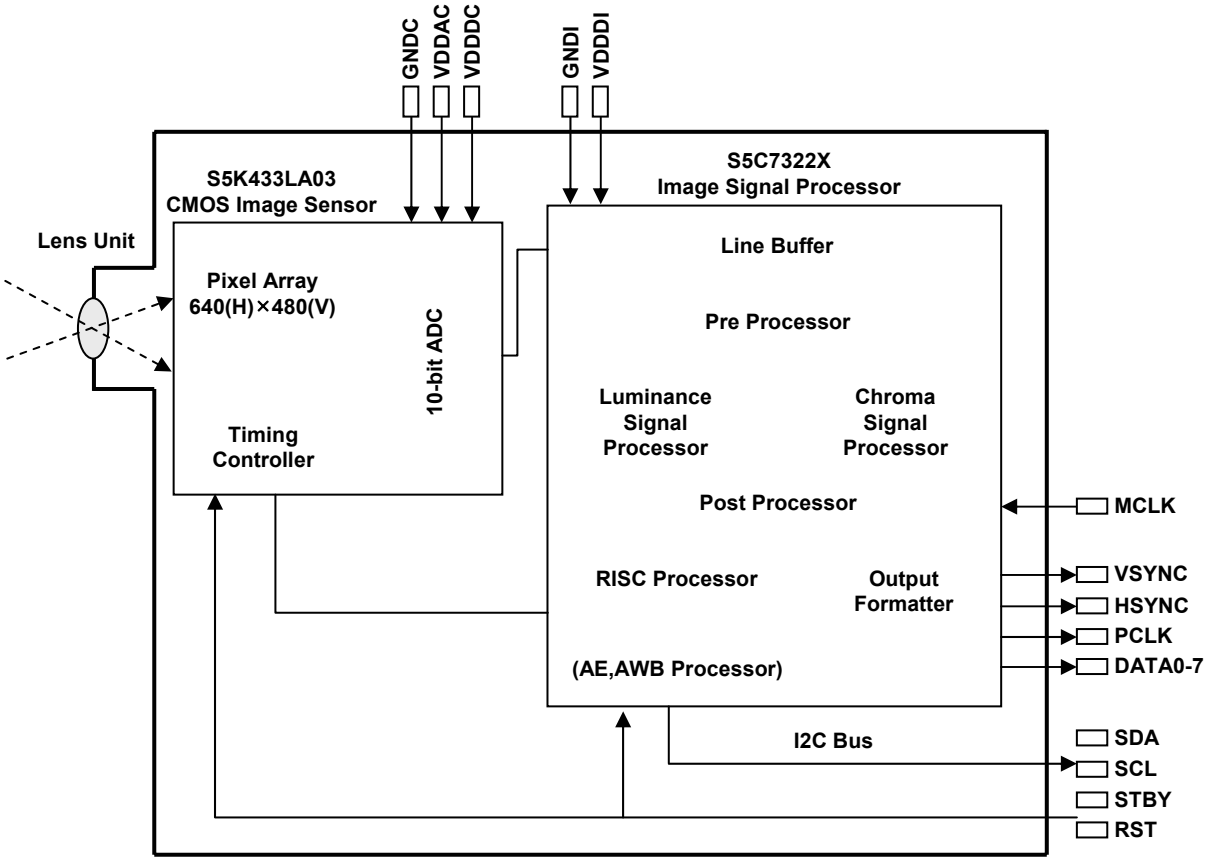


3.9.2. CMOS Image Sensor

General description of CIS Camera Module

- Optical Size: 1/4 inch
- Unit Pixel: 5.6 μm X 5.6 μm
- Effective Resolution: 640X480, VGA
- 8.5mm X 9.5mm X 6.6mm module size
- 8-bit CCIR656 (YCrCb) Video Output
- VGA Output Capability
- Programmable Gamma Correction
- Auto White Balance and Auto Exposure Control
- Horizontal and/or Vertical Mirror Output
- Standby-Mode for Power Saving
- Maximum 30 Frame per Second
- Single Power Supply Voltage: 2.8V
- I2C Type Control Interface

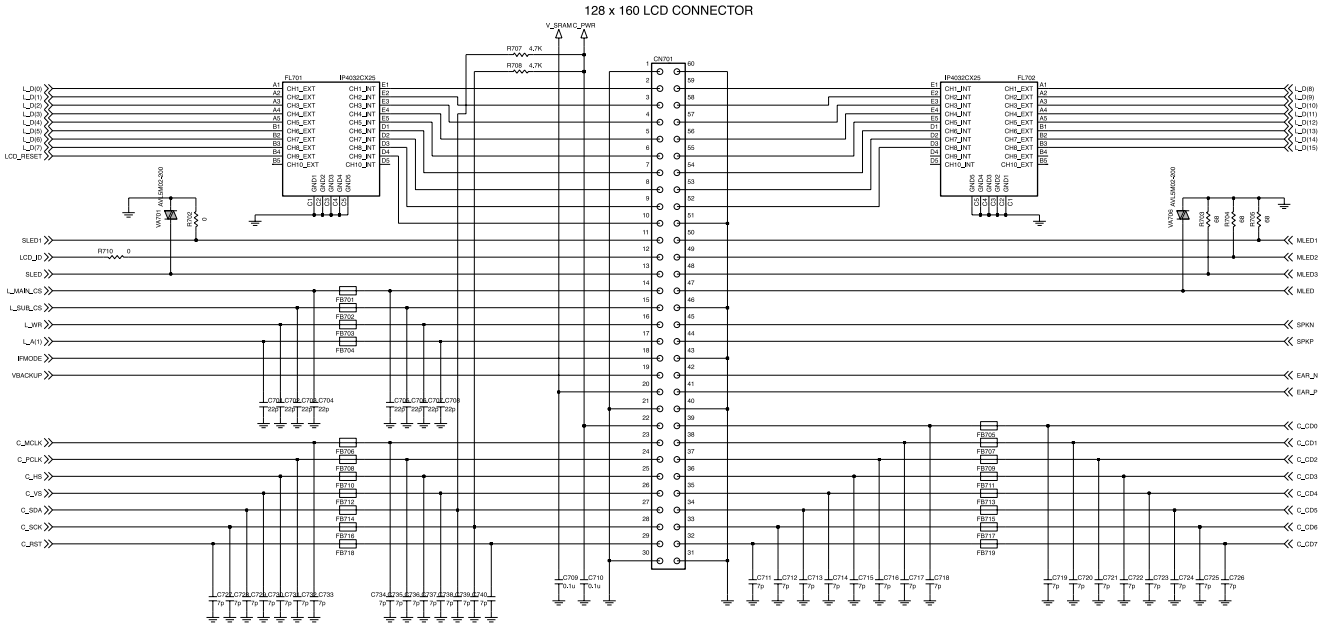
Figure 27. Camera Module Block Diagram



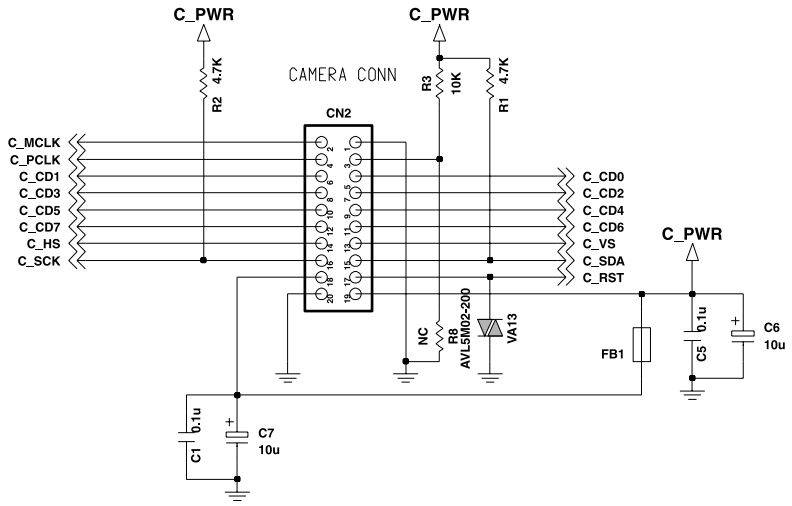
The Camera module is fully functional camera module with embedded lens. A low-noise low-power color CMOS image sensor, and an image signal processor, produce high-quality digital video output including CCIR656 format with maximum 30 frames per second for full frame readout. The CMOS image sensor, fabricated by SAMSUNG 0.35μm CMOS image sensor process technology which is dedicated to higher-sensitivity and lower-dark level compared to standard CMOS process technology and on-chip CDS and 10-bit column ADC circuit makes high signal-to-noise ratio with low power consumption. The image sensor, signal processor and some passive components are packed with IR-cut filter and lens units to have very small volume of whole camera system. It needs only 2.8V single power supply and a main clock supplied to operate. All the function can be controlled by control register setting through the standard 2-wire serial interface.

Figure 28. Camera Module Circuit

MAIN BOARD

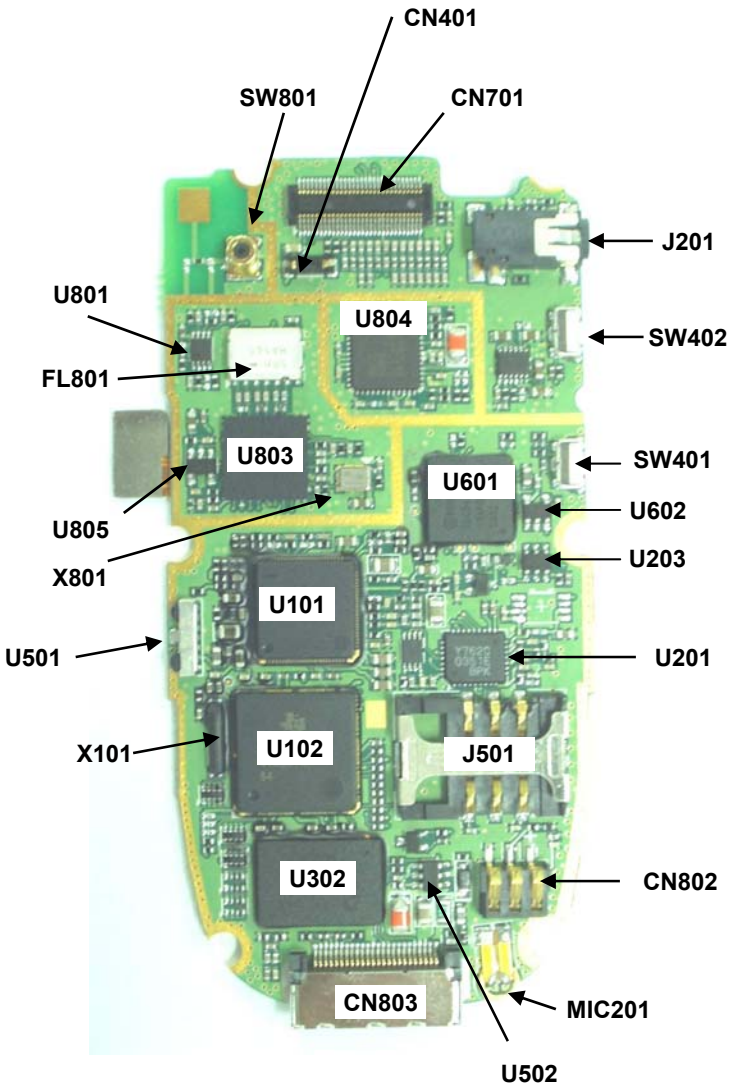


FPCB

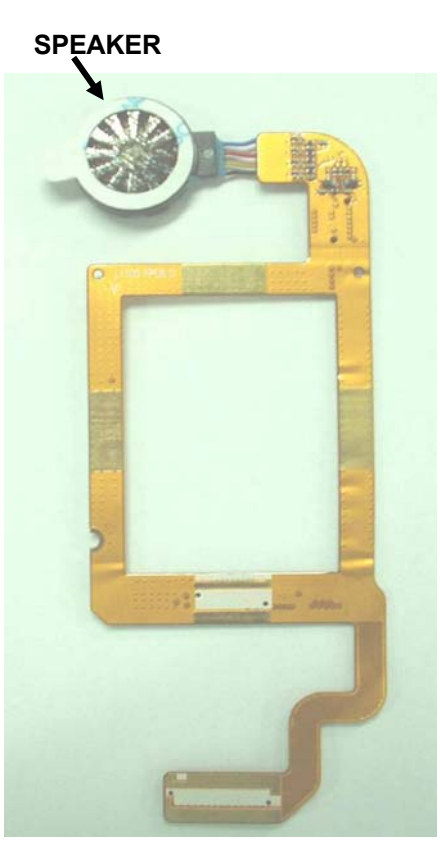


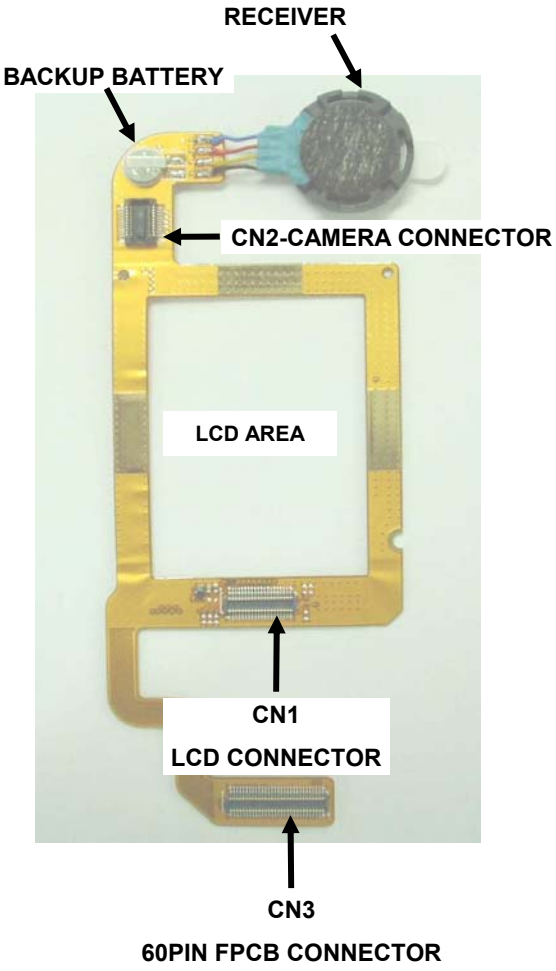
4. TROUBLESHOOTING

4.1 Main Components Placement

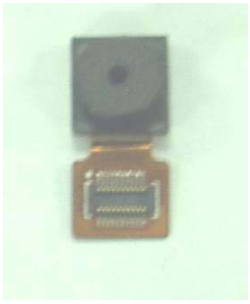


4.2 FPCB Components Placement





4.3 Baseband Components



4.4 Main Components (Description)

MAIN

LD301	Indicator LED	U302	Memory(128M Flash+64M SRAM)
CN401	VIBRATOR CONNECTOR	U501	IrDA port
CN803	IO connector	U303	Indicate LED control switch
CN701	FPCB connector	Q402	Vibrator control TR
X101	Crystal (32.768KHz)	U201	MIDI chipset (YMU762)
J501	SIM card connector	U202	Audio power source
FL801	Antenna switch	U102	Digital Baseband Chipset (CALYPSO)
SW801	Mobile switch	U502	Charging current control TR
J301	Ear-mic connector	U803	Transceiver
Q301	Indicate LED control TR	X801	control VCXO(26MHz)
SW501	Antenna Switch	U804	PAM
Q301	Indicate LED control TR	U805	RF power source
SW401	Side Key (down)	U801	Antenna Control
SW202	Side Key (up)	U805	RF power source
SW201	Side Key (down)	U801	Antenna Control
SW202	Side Key (up)	U101	Analog Baseband Chipset (IOTA)

FPCB

SPK/RCV	Speaker/Receiver	CN3	FPCB connector(60pin)
CN2	Camera connector	CN1	Lcd connector
CN1	Lcd connector	BAT1	Backup Battery

4.5 Power On Trouble

4.5.1 Power On Sequence

Connecting Battery

• Power-On Key Detection
• PWON signal goes to ABB and then ABB reset DBB by ON_OFF signal
• ON_OFF turn low(1.5V) to HIGH(2.8V) and it resets Calypso

4.5.2 Check Points

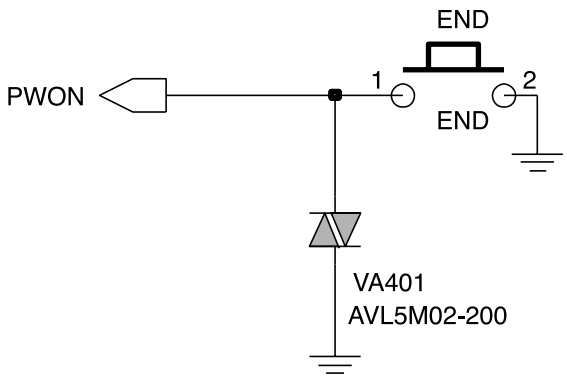
• Battery Voltage
• Power-On Key Detection (PWON signal)
• Outputs of LDOs

4.5.3 Trouble Shooting Setup

• Connect PIF-UNION to the phone
• Set the TI-remote switch PIF-UNION off

4.5.4 Trouble Shooting Procedure

• Check Battery voltage
• END_KEY Dome Switch condition
• Check the output voltages of all LDOs

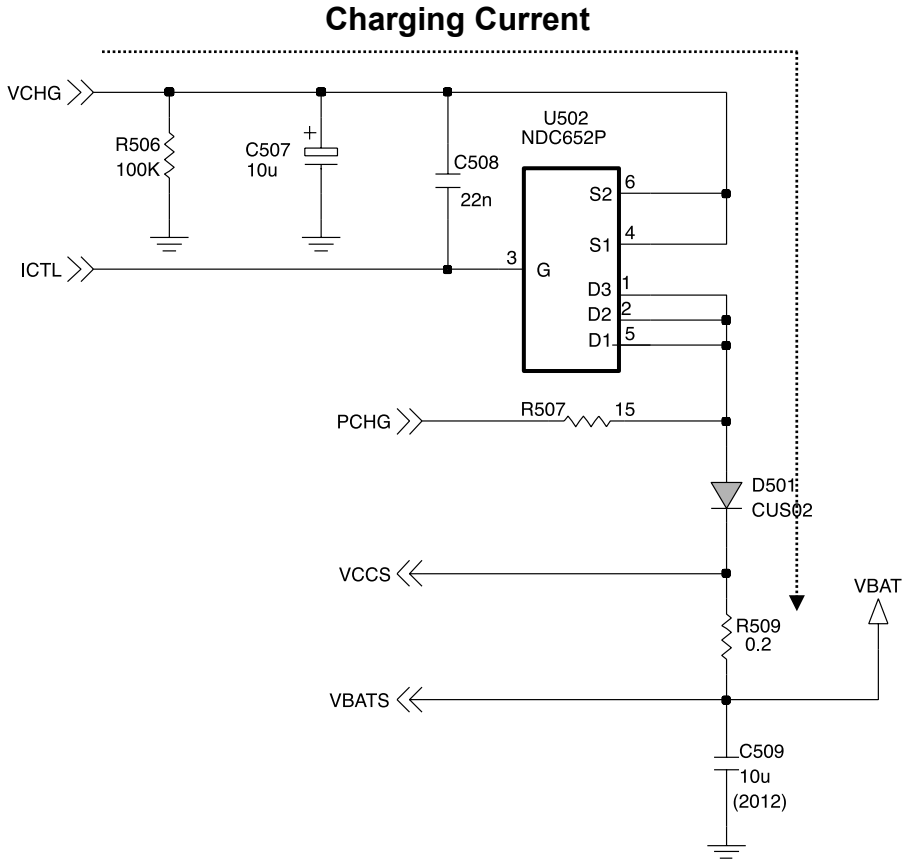


4.6 Charging Trouble

- Charging method : CC-CV
- Charger detect voltage : about 5.2V
- Charging time : under 3hours
- Charging current : 420mA
- Cutoff current : 50mA
- Low battery alarm
  - -. Idle : 3.62V
  - -. Dedicated : 3.50V
- Switch-off voltage : 3.35V
- Charging temperature adc range
  - -. ~ -5℃ : not charging operation.
  - -. -5℃ ~ 50℃ : charging.
  - -. 50℃~ : not charging operation.

4.2V~3.92V **3.91V~3.79V** **3.78V~3.70V** **3.69V~3.61V** **3.60V~3.35V**

Block Diagram



Charging Procedure

- Connecting TA & Charger Detection
- Control the charging Current by ABB
- Charging Current flows into the Battery

Trouble Shooting Setup

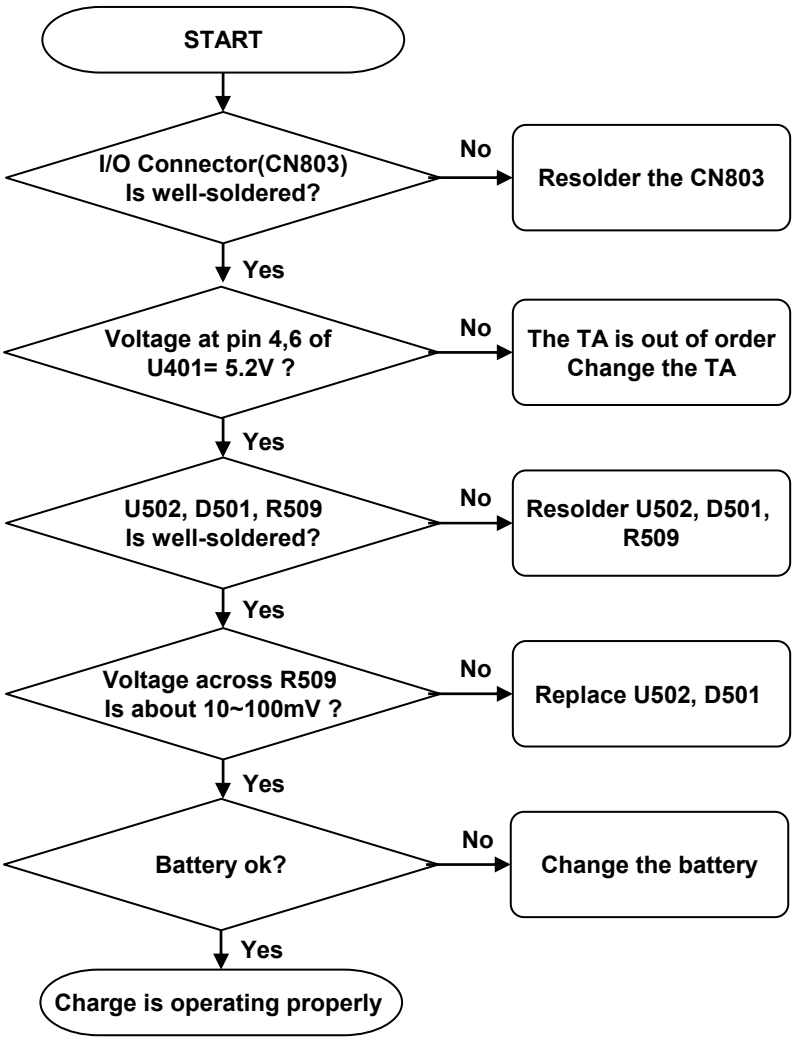
- Connect Battery & TA to the handset.

Check Points

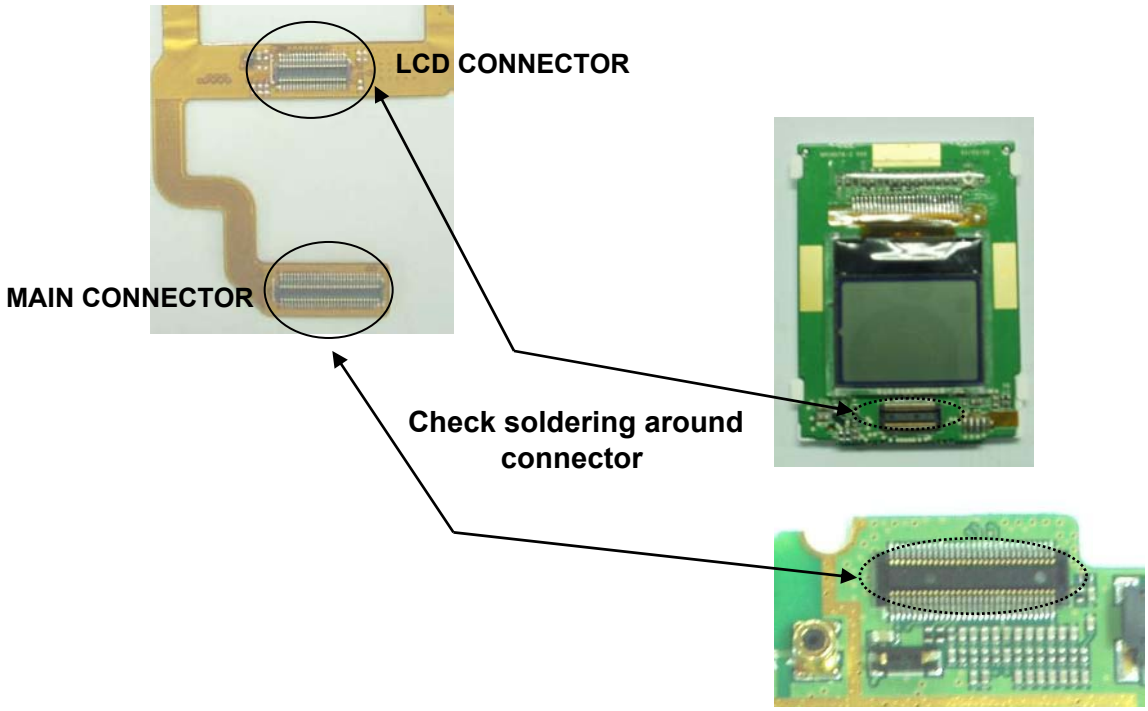
- Connection of TA
- Charging Current Path
- Battery

Trouble Shooting Procedure

- Check the charger connector.
- Check the charging current path.
- Check the battery



4.7 LCD Display Trouble



LCD Control Signals From Main Board

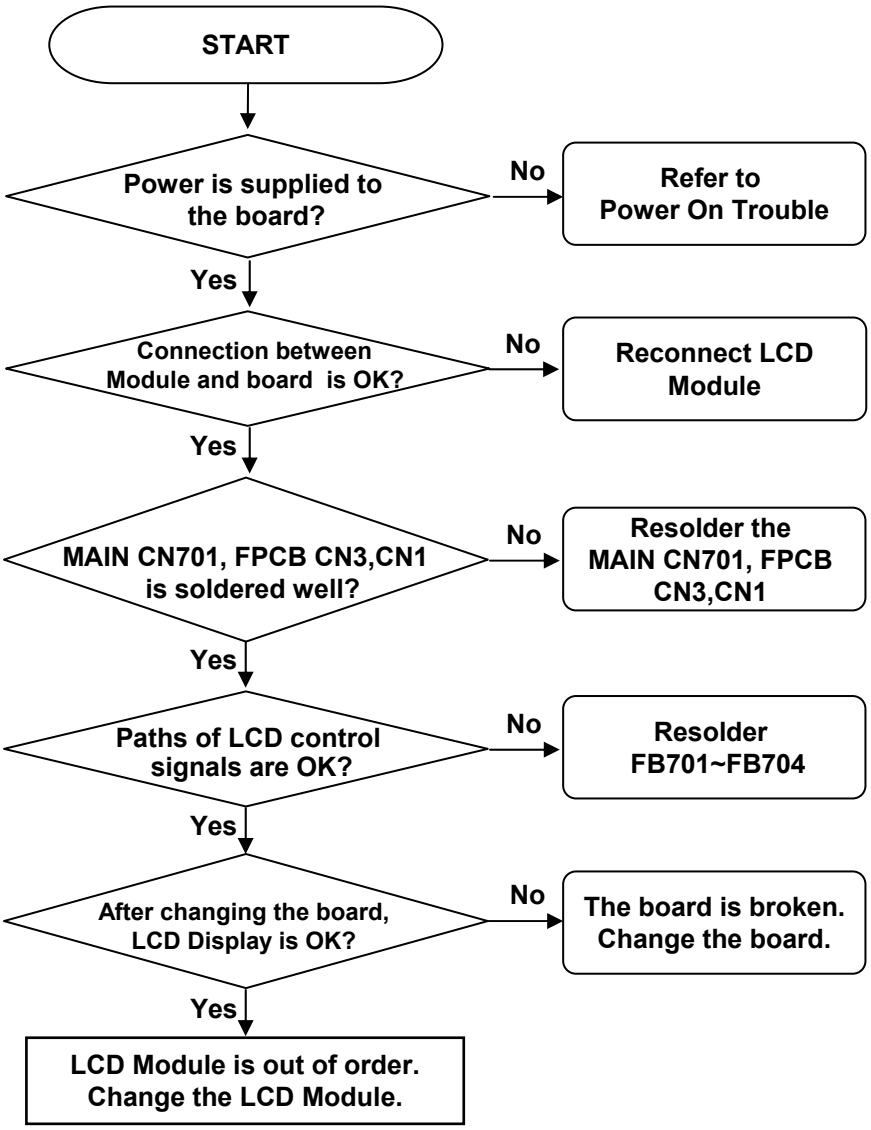
- MLED , L_MAIN_CS, L_SUB_CS ,LCD_RESET, L_WR, LCD_ID
- L_A(1), L_D(0)~L_D(15), IFMODE

Check Points

- The Assembly status of the LCD Module.
- The Soldering of connectors
- The FPCB which connects the LCD module with the main board.

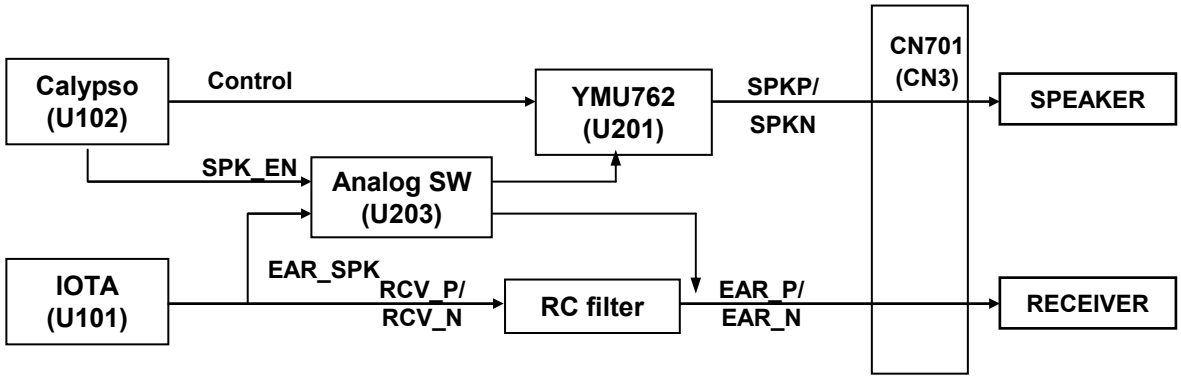
Trouble Shooting Setup

- Connect PIF, and power on


START
Power is supplied to the board?
No
Refer to Power On Trouble
Yes
Connection between Module and board is OK?
No
Reconnect LCD Module
Yes
MAIN CN701, FPCB CN3,CN1 is soldered well?
No
Resolder the MAIN CN701, FPCB CN3,CN1
Yes
Paths of LCD control signals are OK?
No
Resolder FB701~FB704
Yes
After changing the board, LCD Display is OK?
No
The board is broken. Change the board.
Yes
LCD Module is out of order. Change the LCD Module.

4.8 Receiver Trouble

Block Diagram



Melody Generation

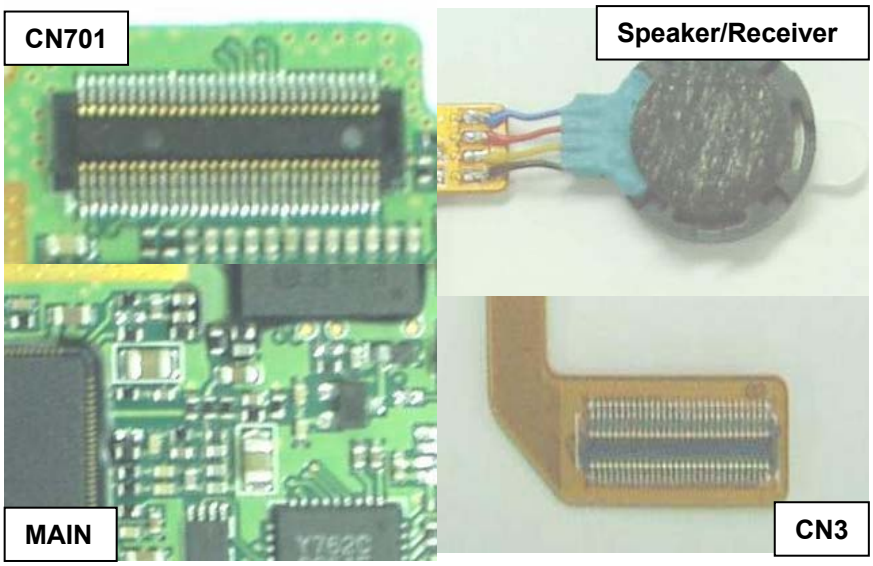
- U201(YMU762,MIDI) is controlled by DBB.
- U201 generates 40poly MIDI sound and it is delivered to the speaker
- When SPK_EN is 'H', EAR_SPK from U203 is delivered to the speaker through U201

Signals to the receiver

- RCV_P,RCV_N From ABB
- EAR_N, EAR_P are delivered to Receiver, when SPK_EN is 'L'

Check Points

- Audio signals from ABB
- Audio signals to the receiver
- Audio signal path
- Check the sound level to the speaker.
- Soldering of connectors, speaker and receiver
- Speaker
- Receiver



Check the states these points !

Receiver Trouble Shooting Setup

- Initialize GSM MS test equipment.
- Connect PIF-UNION and power on.
- Make a test call to 112.
- Set audio part at test equipment as PRBS or continuous wave, not echo.
- Set the audio volume max.

Trouble shooting Procedure

- Check the audio signal levels at each point.
- Check the soldering of the connector.
- Check the soldering of the receiver.
- Check the receiver.
- Check receiver cable states.

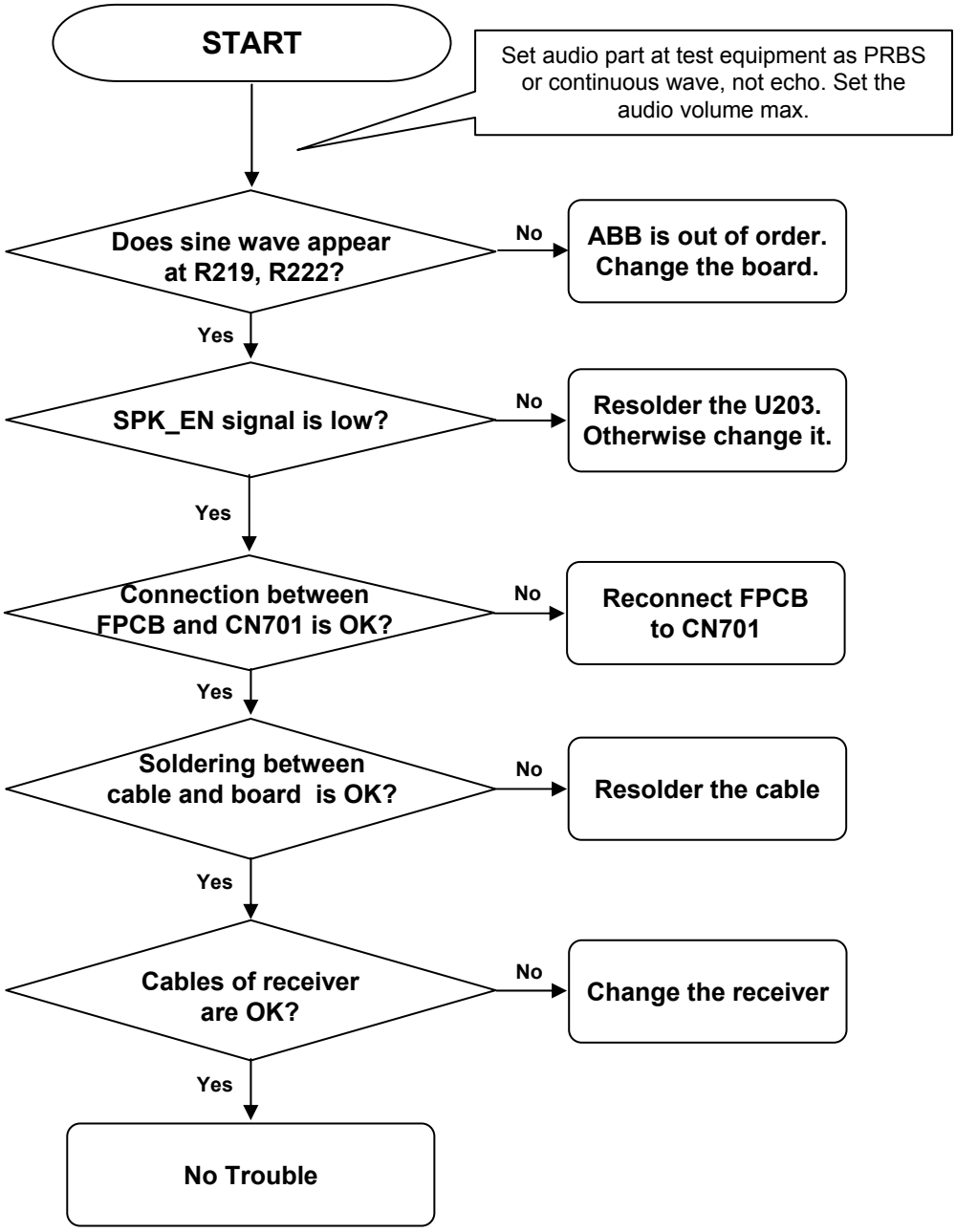
Speaker Trouble Shooting Setup

- Connect PIF to the phone, and power on.
- Enter the engineering mode, and go to menu "Baseband → Alert → Ring"

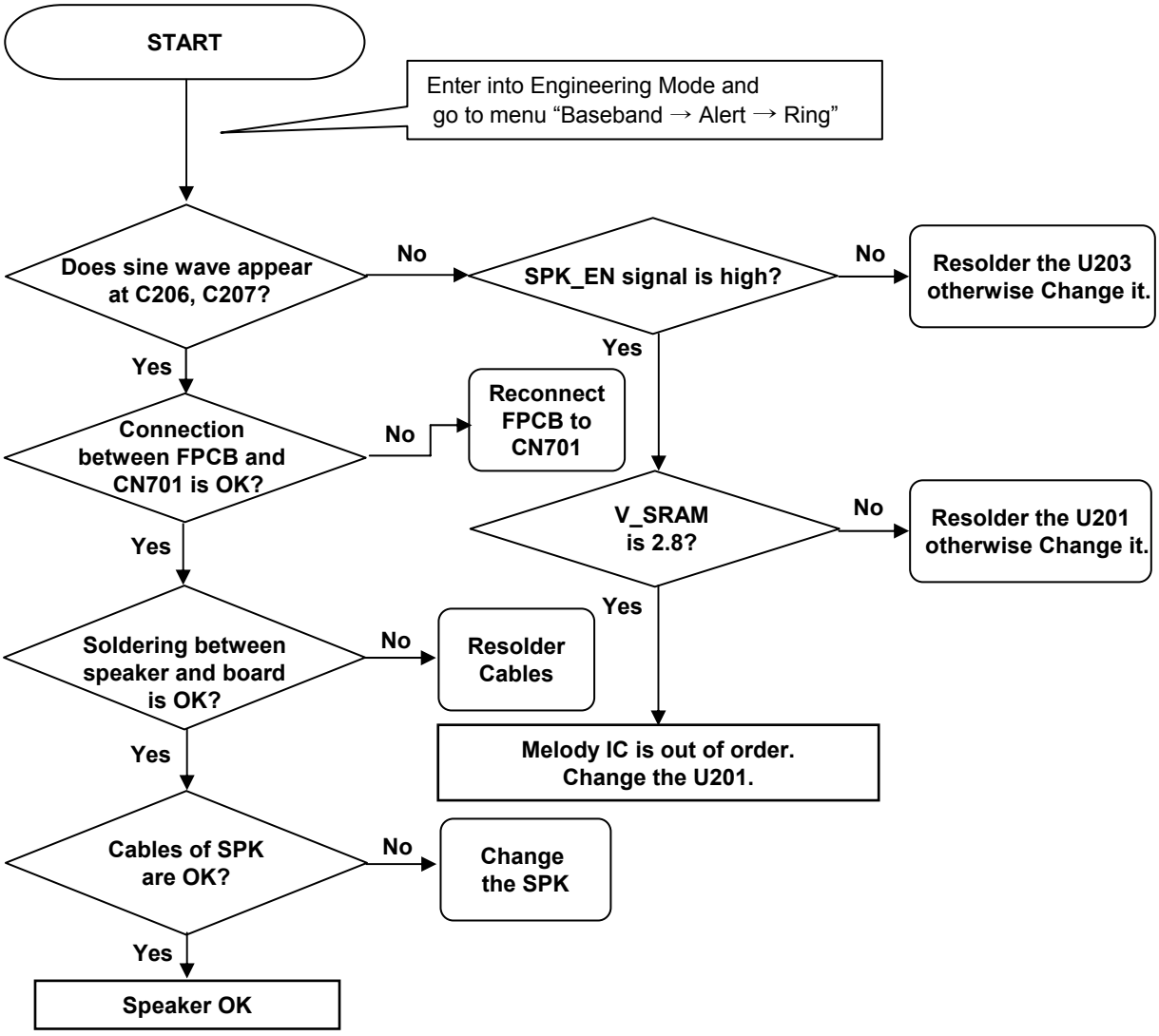
Trouble Shooting Procedure

- Check the voltage levels of power supplies.
- Check all sound path.
- Check the sound level to the speaker.
- Check the speaker and the soldering.

4.8.1. Receiver Trouble

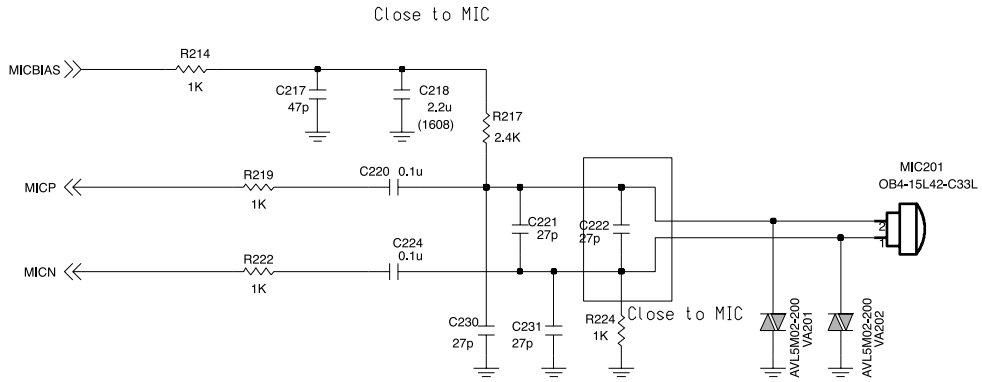


4.8.2. Speaker Trouble



4.9 Microphone Trouble

Circuit Diagram



Microphone Signal Flow

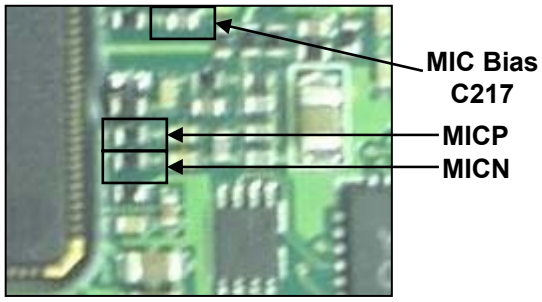
- MIC is enable by MICBIAS
- MICBIAS, MICP, MICN signals to ABB

Check Points

- Microphone bias
- Audio signal level of the microphone
- Soldering of components

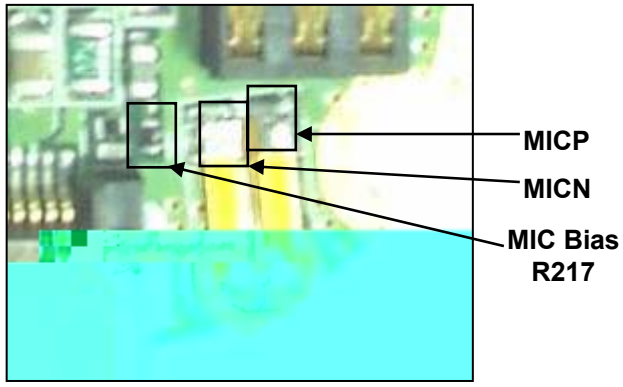
Trouble Shooting Setup

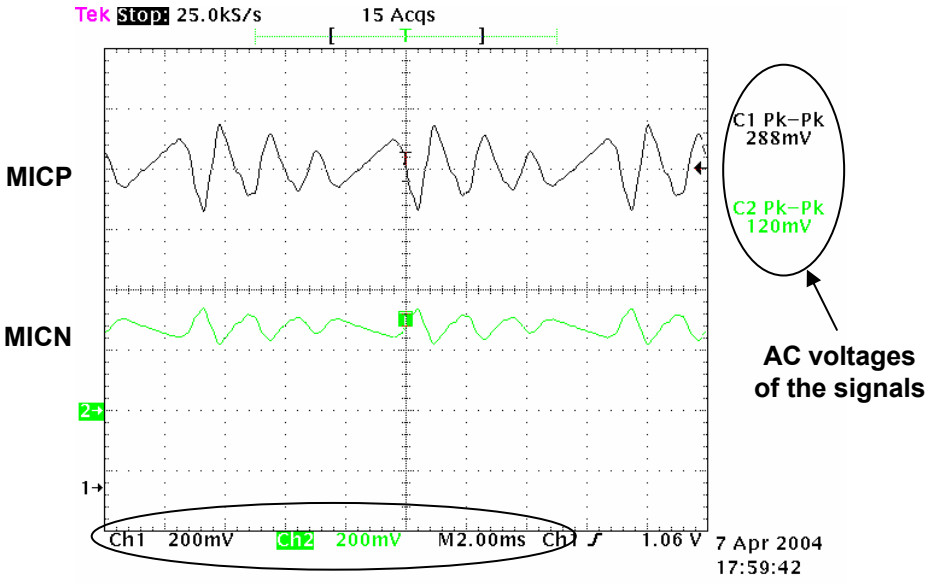
- Initialize GSM MS test equipment.
- Connect PIF-UNION to the phone, and power on.
- Make a test call to 112.
- Make a sound in front of the microphone



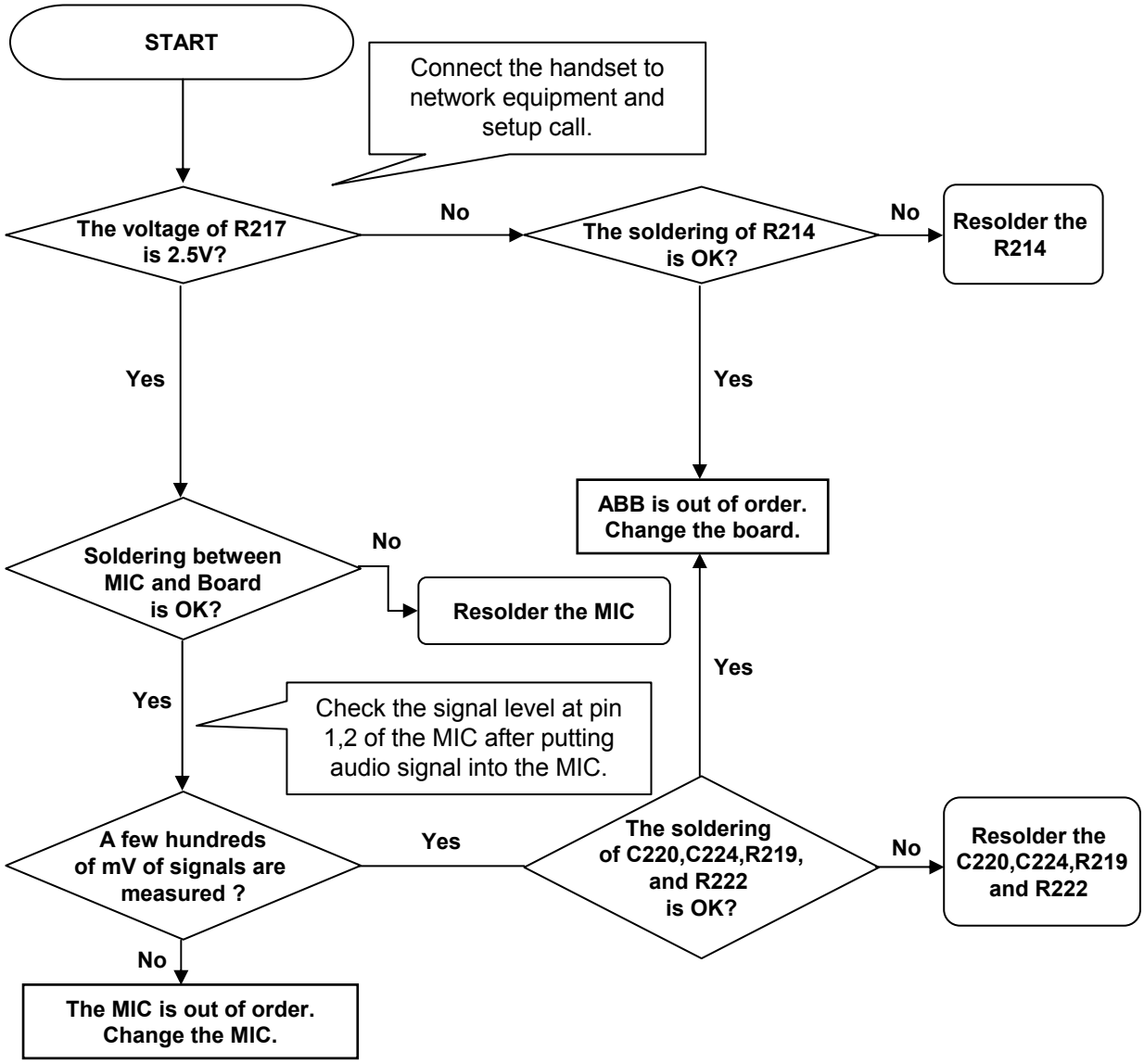
Trouble Shooting Procedure

- Check the bias of the microphone.
- Check the audio signal path.
- Check the soldering.
- Check the microphone.
- Check the operation of FPCB



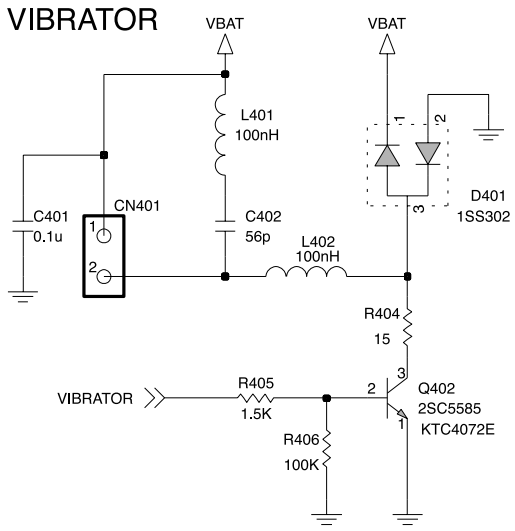


The waveforms at MICP and MICN


START
Connect the handset to network equipment and setup call.
The voltage of R217 is 2.5V?
No
The soldering of R214 is OK?
No
Resolder the R214
Yes
Yes
ABB is out of order. Change the board.
Soldering between MIC and Board is OK?
No
Resolder the MIC
Yes
Yes
Check the signal level at pin 1,2 of the MIC after putting audio signal into the MIC.
A few hundreds of mV of signals are measured ?
Yes
The soldering of C220,C224,R219, and R222 is OK?
No
Resolder the C220,C224,R219 and R222
No
The MIC is out of order. Change the MIC.

4.10 Vibrator Trouble

Block Diagram



Vibrator Operation

- Vibrator is controlled by MIDI chip
- When vibrator signal is high, vibrator is enabled

Check Points

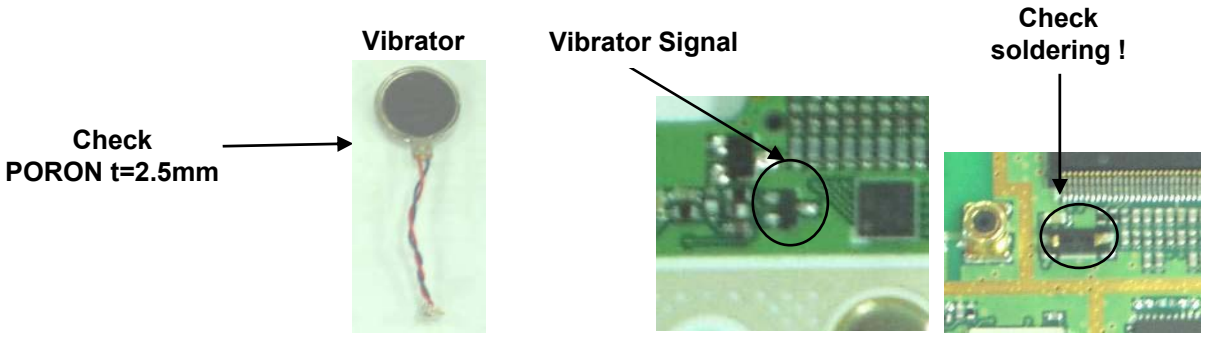
- VCC lines (V_SRAM) of MIDI chip
- Vibrator signal path
- The connection between the main board and vibrator module
- The soldering of socket
- The Vibrator (PORON t=2.5mm)

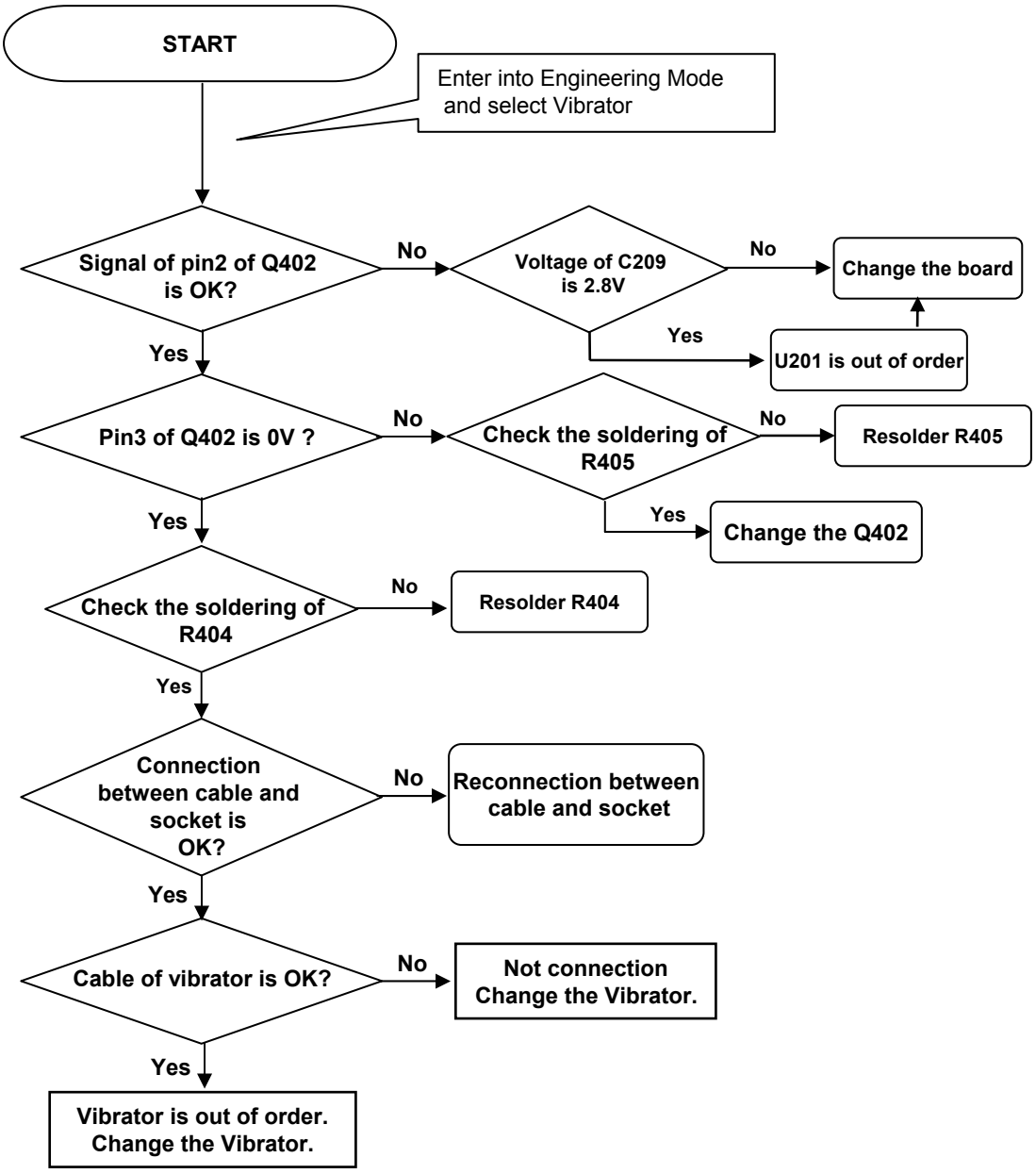
Trouble Shooting Setup

- Connect PIF to the phone, and power on.
- Enter the engineering mode.
- Go to menu “Baseband → Alert → Vibrator”

Trouble Shooting Procedure

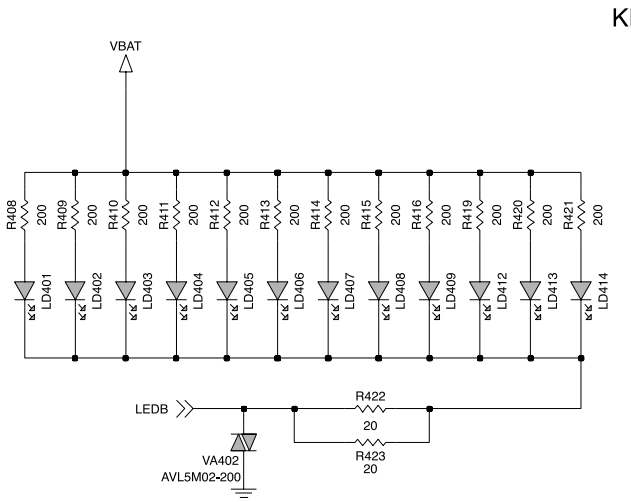
- Check vibrator signal
- Check soldering of components
- Check connection of cable-to-socket
- Check vibrator PORON thickness




START
Enter into Engineering Mode and select Vibrator
Signal of pin2 of Q402 is OK?
No
Voltage of C209 is 2.8V
No
Change the board
Yes
U201 is out of order
Yes
Pin3 of Q402 is 0V ?
No
Check the soldering of R405
No
Resolder R405
Yes
Change the Q402
Yes
Check the soldering of R404
No
Resolder R404
Yes
Connection between cable and socket is OK?
No
Reconnection between cable and socket
Yes
Cable of vibrator is OK?
No
Not connection Change the Vibrator.
Yes
Vibrator is out of order. Change the Vibrator.

4.11 Keypad Backlight Trouble

Block Diagram

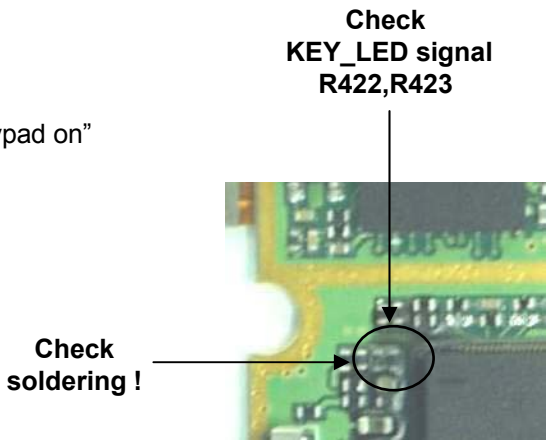


Backlight Operation

- The keypad LED backlight is controlled with LEDB signal.
- LEDB signal from ABB.
- The LEDs are forward biased and turned on.

Trouble Shooting Setup

- Connect PIF-UNION to the phone, and power on.
- Enter the engineering mode.
- Go to menu “Baseband → LED → Backlight → Keypad on”

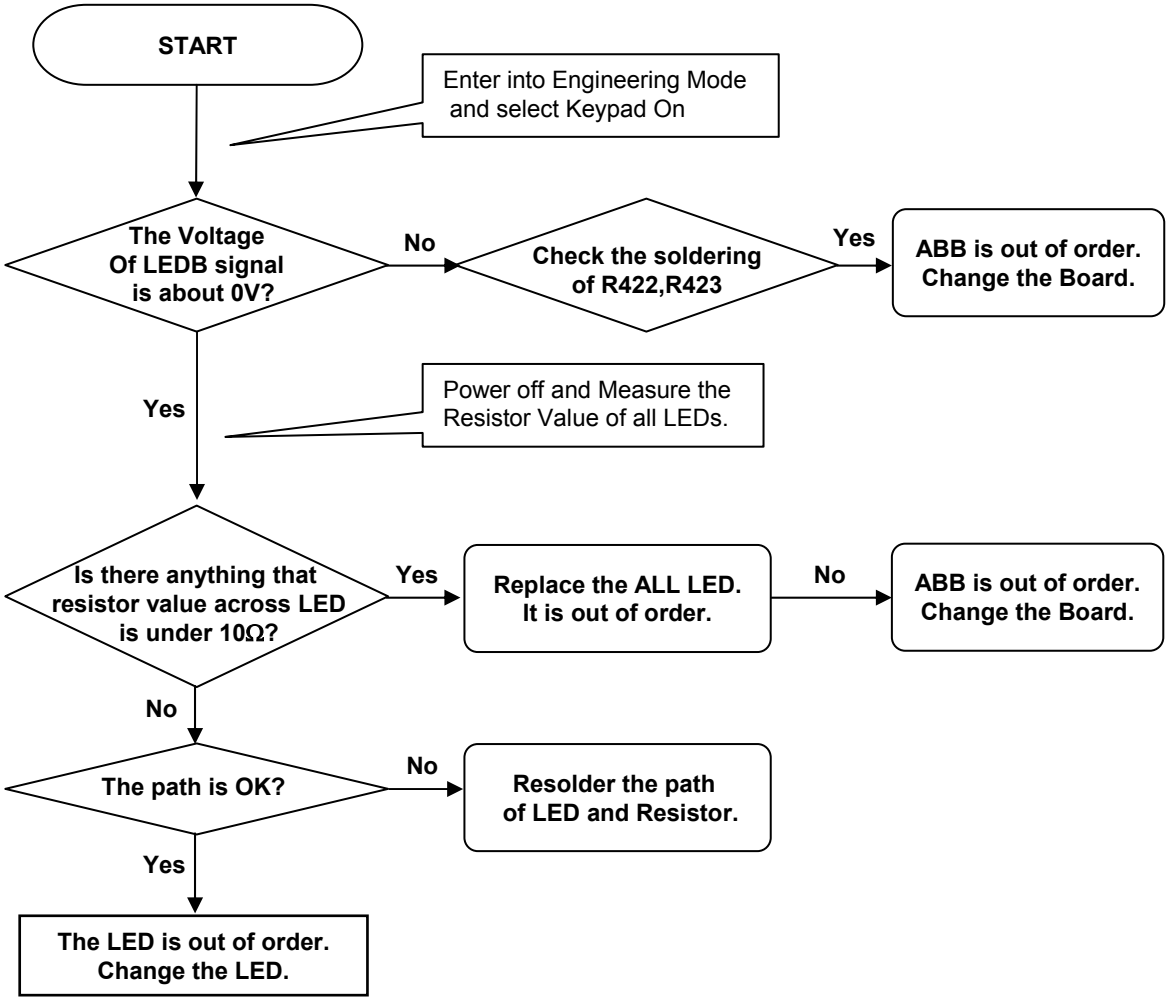


Trouble Shooting Procedure

- Check the soldering of components
- Check the LEDB signal
- Check LEDs

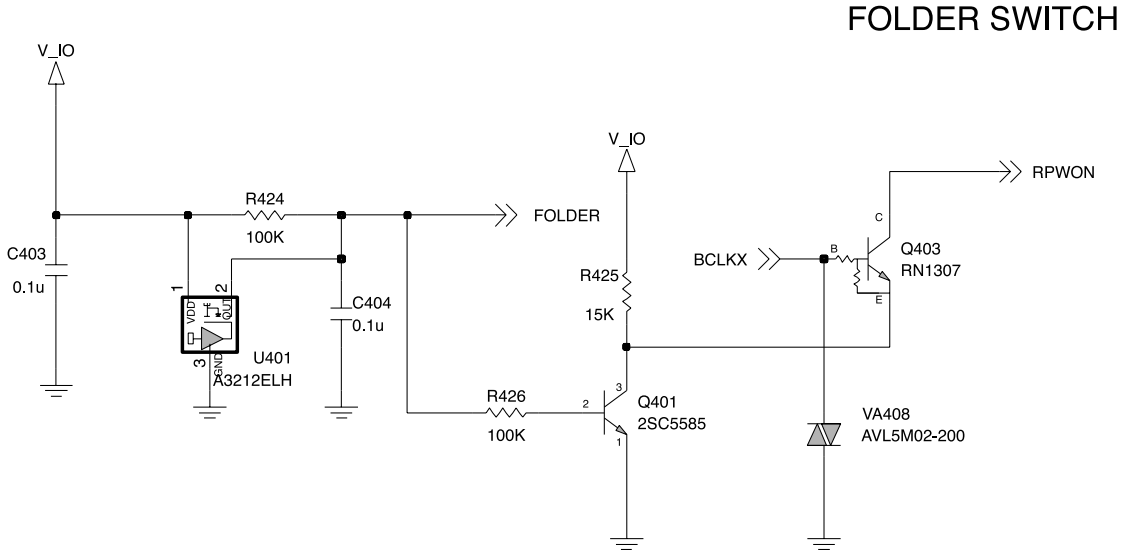
Check Points

- LEDB signal
- LEDs


START
Enter into Engineering Mode and select Keypad On
The Voltage Of LEDB signal is about 0V?
No
Check the soldering of R422,R423
Yes
ABB is out of order. Change the Board.
Yes
Power off and Measure the Resistor Value of all LEDs.
Is there anything that resistor value across LED is under 10Ω?
Yes
Replace the ALL LED. It is out of order.
No
ABB is out of order. Change the Board.
No
The path is OK?
No
Resolder the path of LED and Resistor.
Yes
The LED is out of order. Change the LED.

4.12 Folder Open/Close Trouble

Block Diagram

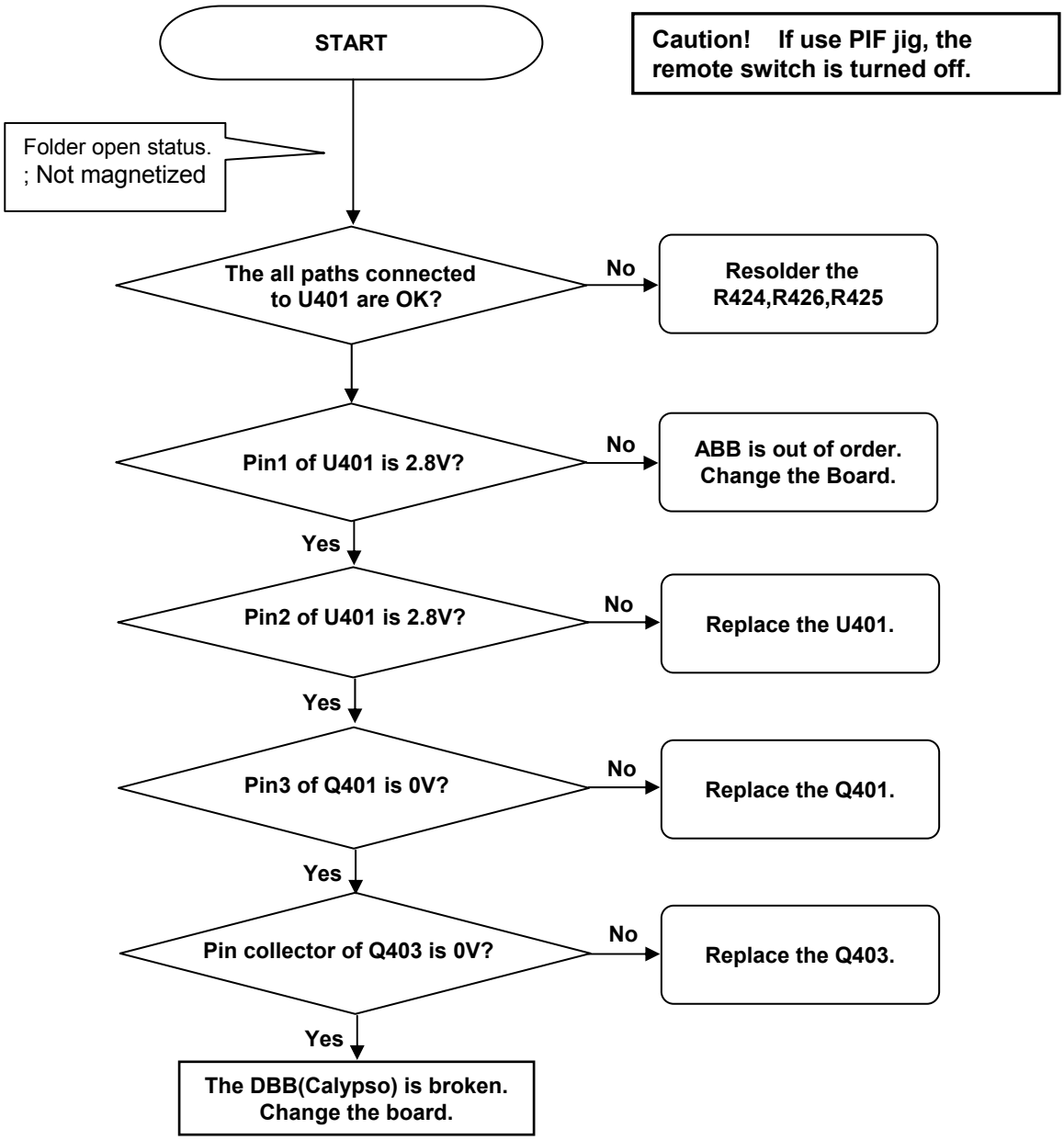


Flip Operation

- There is a magnet to detect the Flip status, opened or closed.
- If a magnet is close to the hall-effect switch(U401), the voltage at pin 2 of U401 goes to 0V. Otherwise, V_IO.
- This Flip signal is delivered to DBB, and the status of Flip is reported.

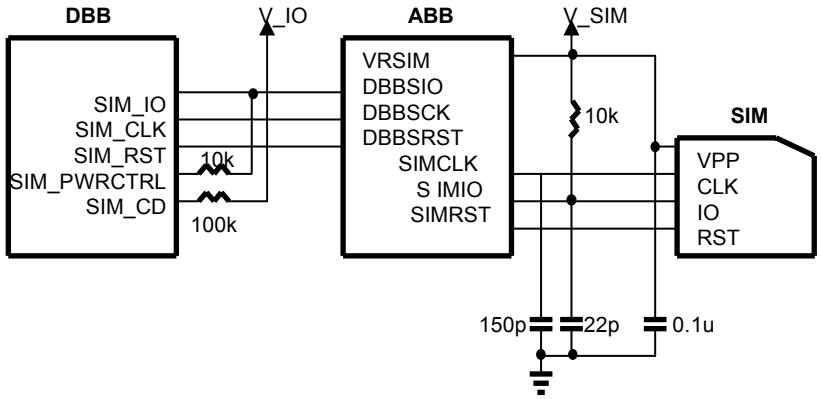
Flip Signal Status

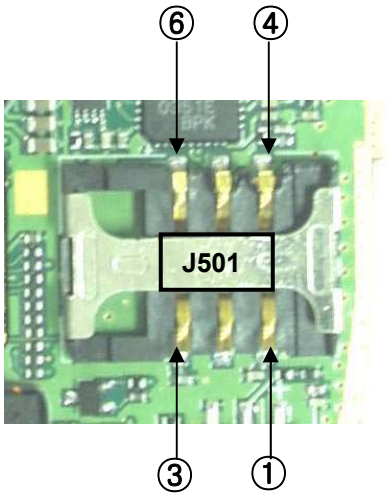
- L : Close (Magnetized)
- H : Open (Not magnetized)


START
Caution! If use PIF jig, the remote switch is turned off.
Folder open status.
; Not magnetized
The all paths connected to U401 are OK?
No
Resolder the R424,R426,R425
Pin1 of U401 is 2.8V?
No
ABB is out of order. Change the Board.
Yes
Pin2 of U401 is 2.8V?
No
Replace the U401.
Yes
Pin3 of Q401 is 0V?
No
Replace the Q401.
Yes
Pin collector of Q403 is 0V?
No
Replace the Q403.
Yes
The DBB(Calypso) is broken. Change the board.

4.13 SIM Detect Trouble

Block Diagram





Connection between SIM and DBB

• SIM_CLK, SIM_IO, SIM_RST

Check Points

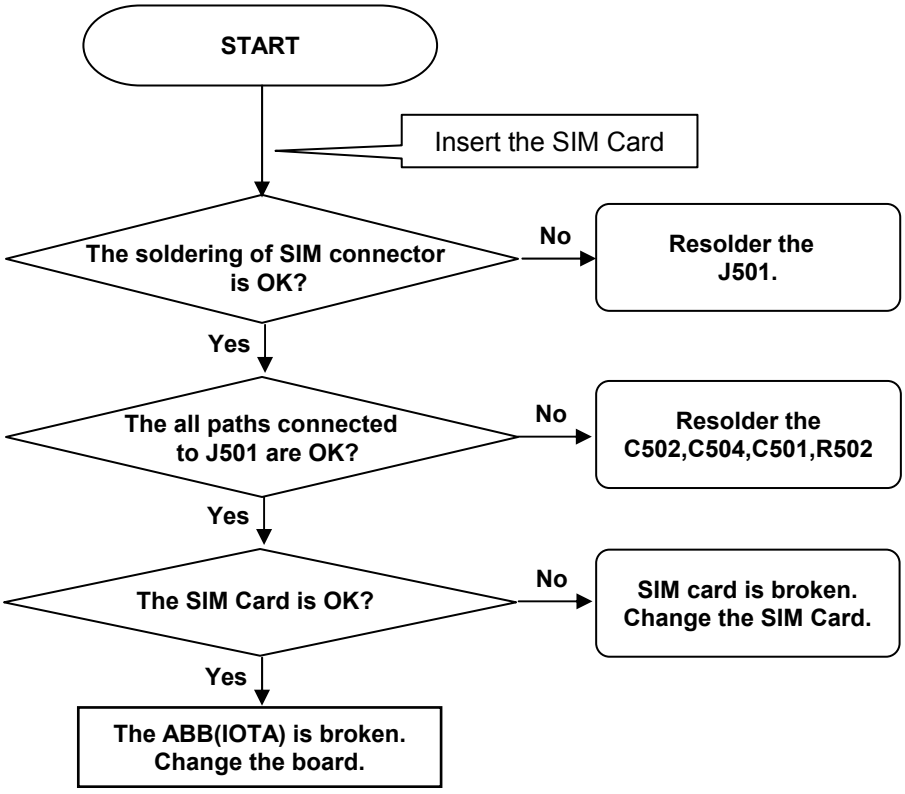
• Contact between SIM and socket
  -. Soldering of SIM socket

Trouble Shooting Setup

• Insert the SIM into socket
  -. Connect PIF to the phone, and power on.

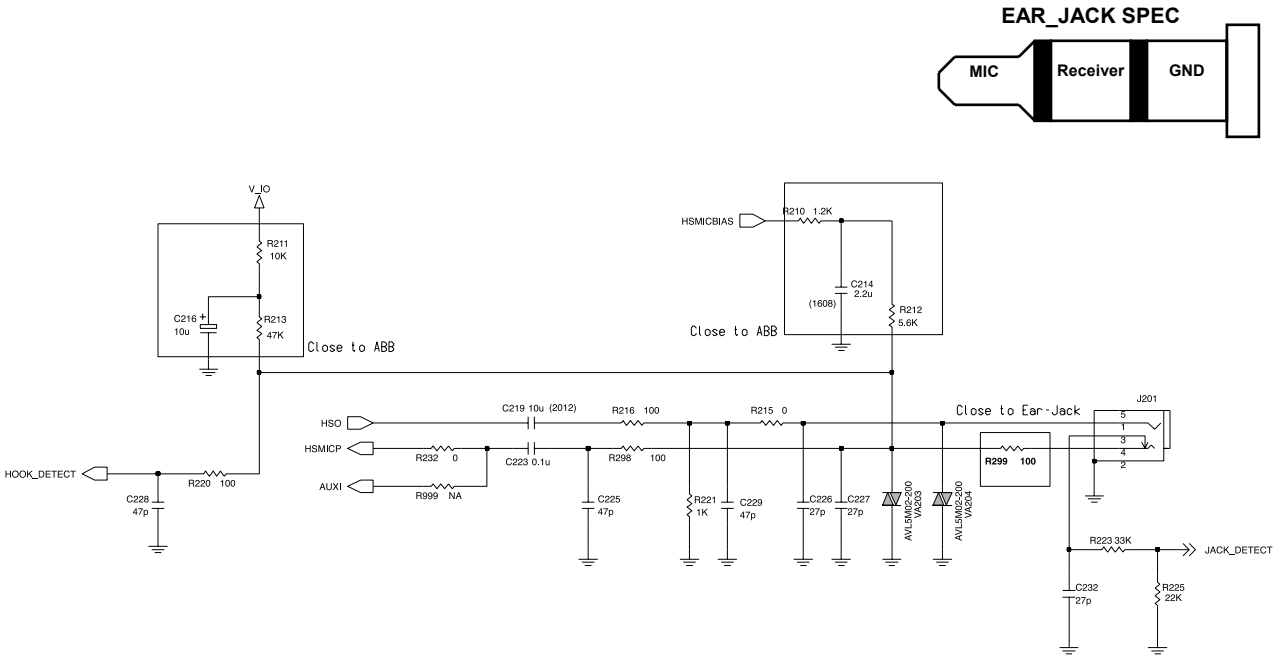
Trouble Shooting Procedure

• Check the power supply.
  -. Check the soldering of SIM socket.
  -. Check the SIM.


START
Insert the SIM Card
The soldering of SIM connector is OK?
No
Resolder the J501.
Yes
The all paths connected to J501 are OK?
No
Resolder the C502,C504,C501,R502
Yes
The SIM Card is OK?
No
SIM card is broken. Change the SIM Card.
Yes
The ABB(IOTA) is broken. Change the board.

4.14 Earphone Trouble

Block Diagram



Earphone Detecting Operation

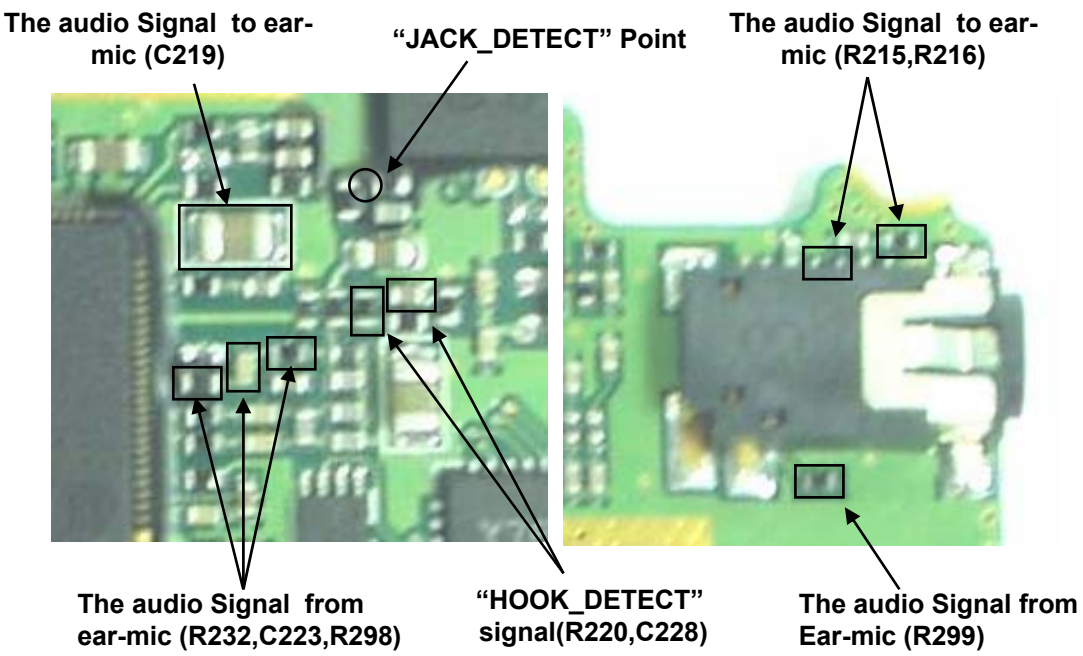
• The DBB read JACK_DETECT port periodically and if the voltage of “JACK_DETECT” goes to 0V, it detects ear-jack inserted.
•The ABB operates A/D conversion continuously and if the voltage of “HOOK_DETECT” node goes to about 40mV, it detects hook switch is pushed in call state.

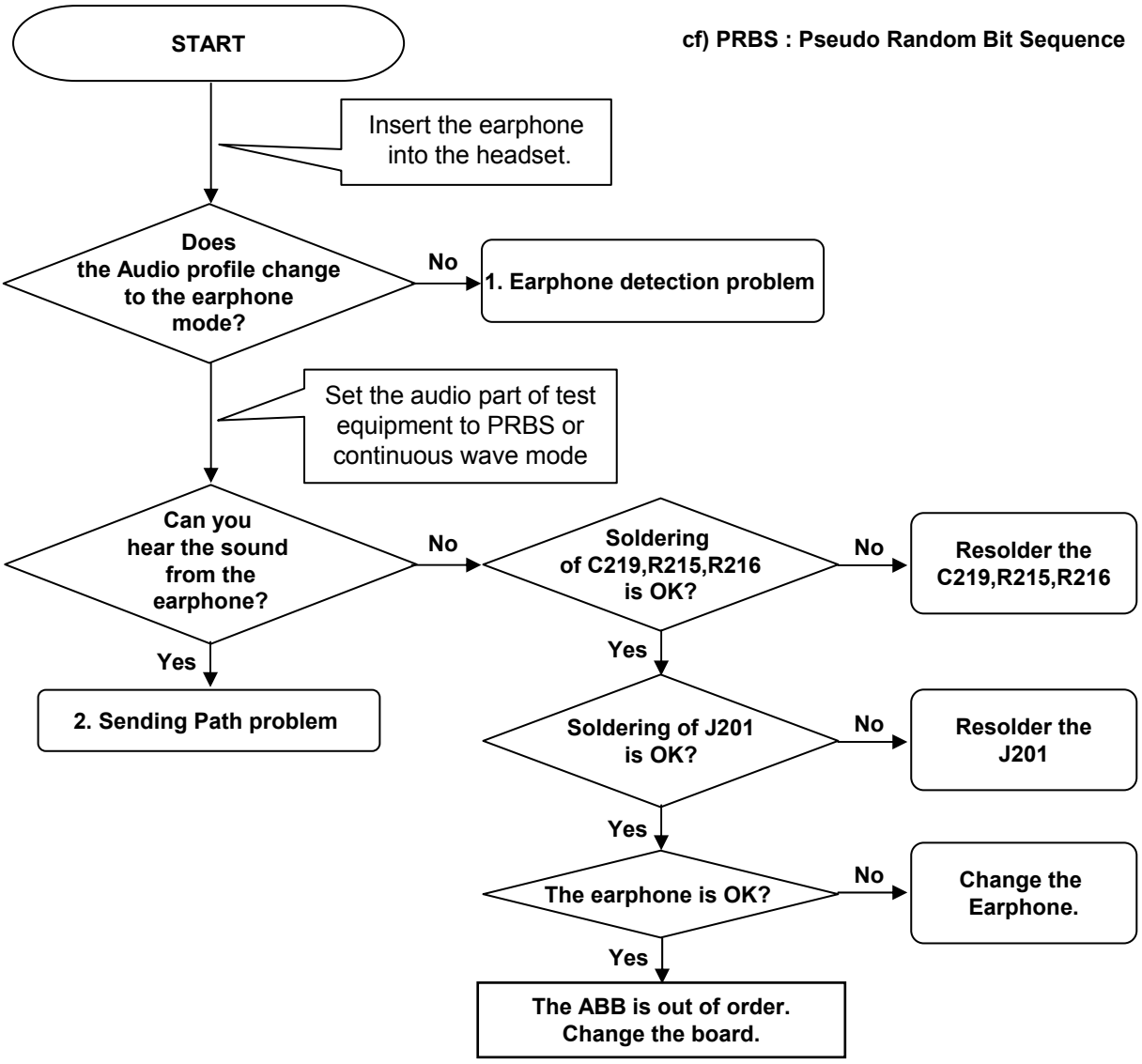
Earphone Sending Path

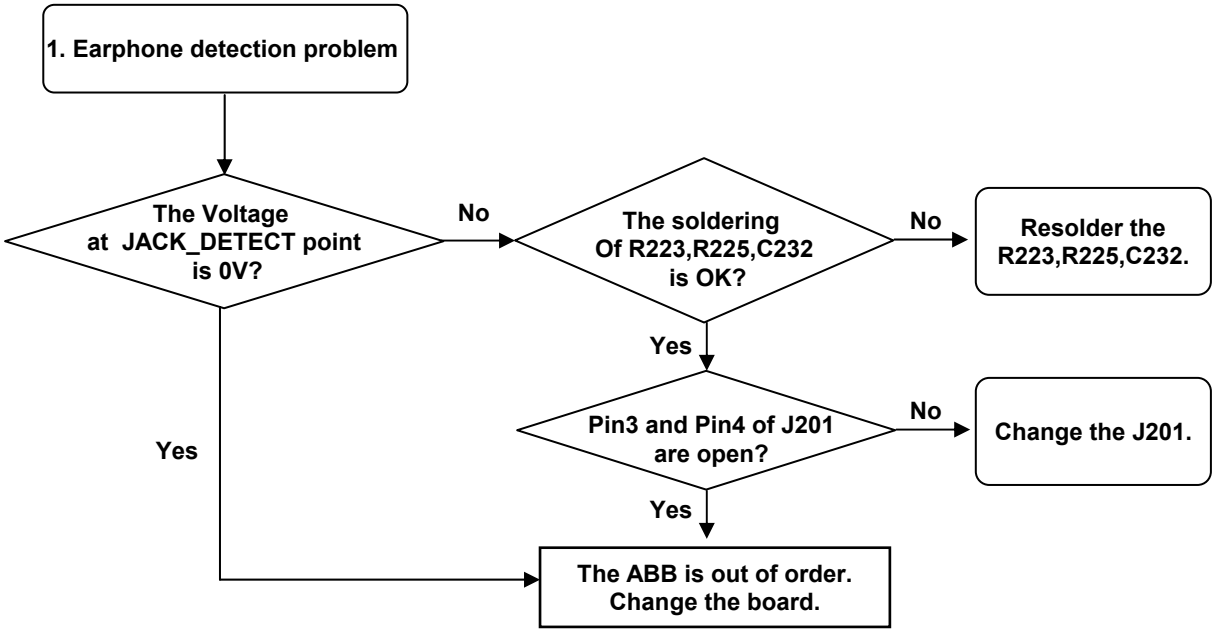
• HSMICP is the audio signal from the microphone of the earphone.
•R215, R216 and C219 make the path of the audio signal from the microphone of the earphone.
•This audio signal is delivered to ABB(IOTA).

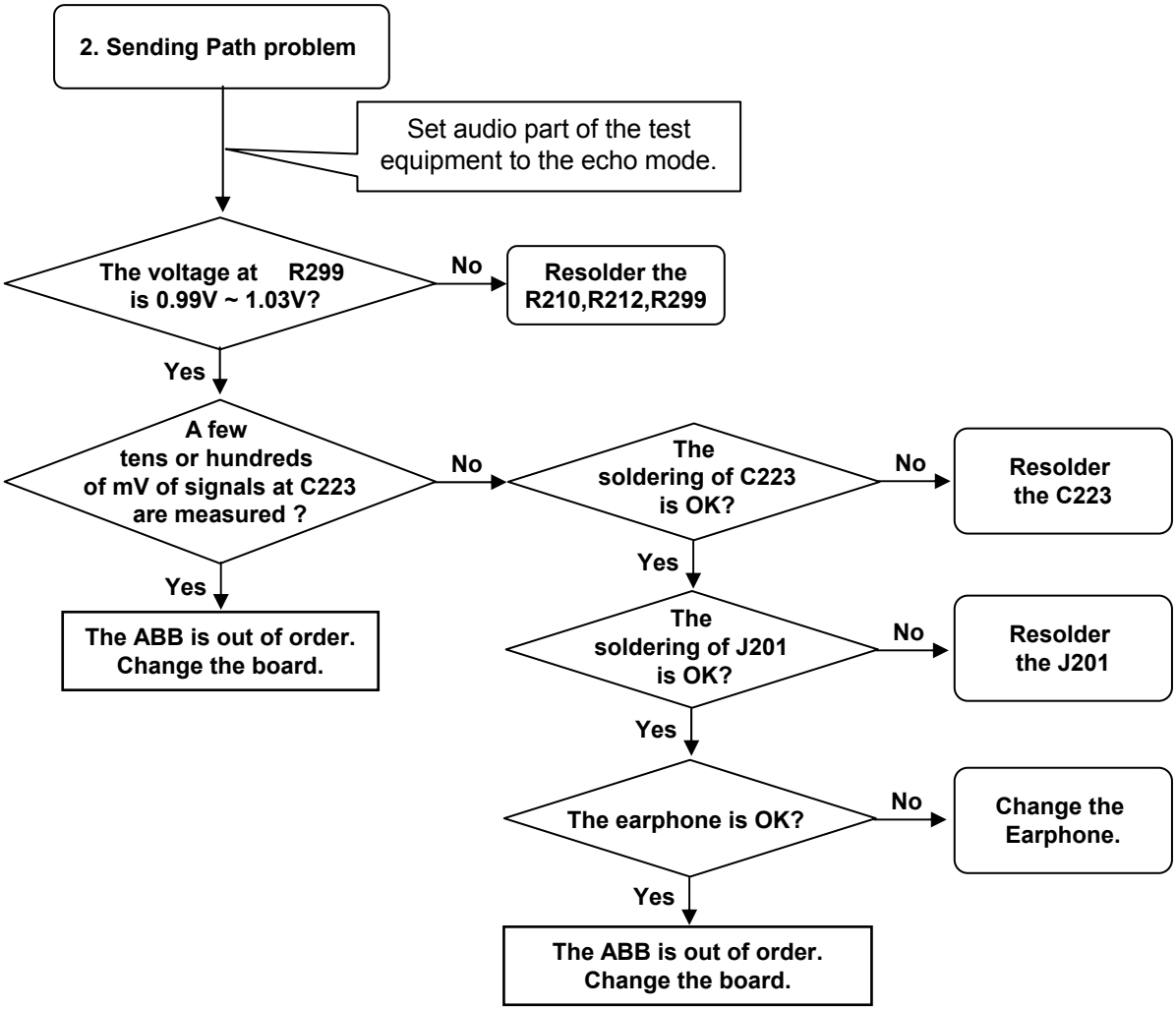
Earphone Receiving Path

• HSO is the audio signal from ABB(IOTA).
• R232,C223,R298 and R299 make the path of the audio signal from ABB to earphone.


The audio Signal to ear-mic (C219)
"JACK_DETECT" Point
The audio Signal to ear-mic (R215,R216)
The audio Signal from ear-mic (R232,C223,R298)
"HOOK_DETECT" signal(R220,C228)
The audio Signal from Ear-mic (R299)

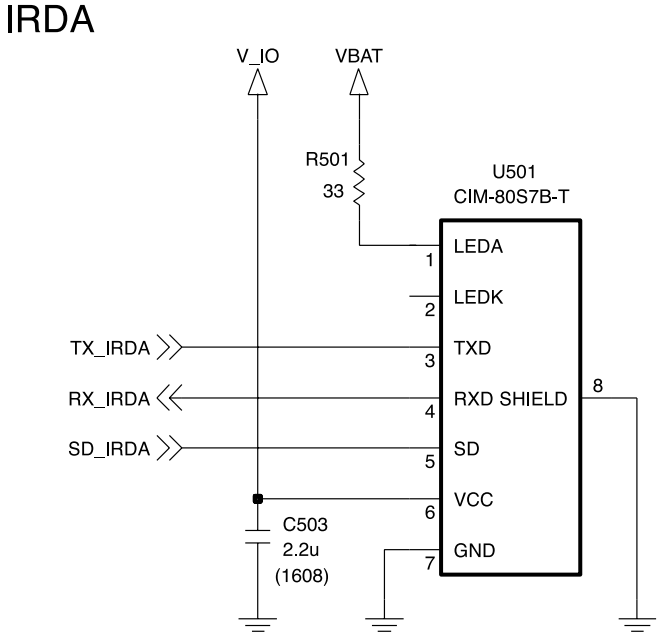

START
cf) PRBS : Pseudo Random Bit Sequence
Insert the earphone into the headset.
Does the Audio profile change to the earphone mode?
No
1. Earphone detection problem
Set the audio part of test equipment to PRBS or continuous wave mode
Can you hear the sound from the earphone?
No
Soldering of C219,R215,R216 is OK?
No
Resolder the C219,R215,R216
Yes
2. Sending Path problem
Yes
Soldering of J201 is OK?
No
Resolder the J201
Yes
The earphone is OK?
No
Change the Earphone.
Yes
The ABB is out of order. Change the board.


1. Earphone detection problem
The Voltage at JACK_DETECT point is 0V?
No
The soldering Of R223,R225,C232 is OK?
No
Resolder the R223,R225,C232.
Yes
Pin3 and Pin4 of J201 are open?
No
Change the J201.
Yes
Yes
The ABB is out of order. Change the board.


2. Sending Path problem
Set audio part of the test equipment to the echo mode.
The voltage at R299 is 0.99V ~ 1.03V?
No
Resolder the R210,R212,R299
Yes
A few tens or hundreds of mV of signals at C223 are measured ?
No
The soldering of C223 is OK?
No
Resolder the C223
Yes
Yes
The ABB is out of order. Change the board.
The soldering of J201 is OK?
No
Resolder the J201
Yes
The earphone is OK?
No
Change the Earphone.
Yes
The ABB is out of order. Change the board.

4.15 Infrared Data Association Trouble

Block Diagram



Infrared Signal Flow

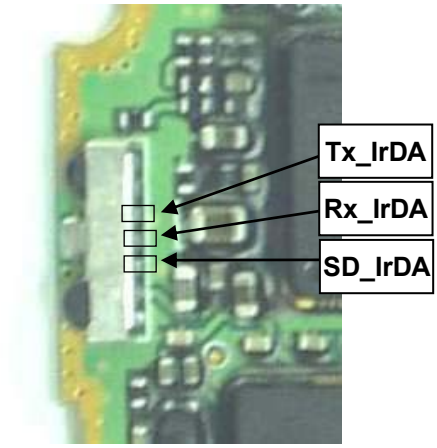
- Infrared is enable by SD
  - TX_IRDA,RX_IRDA,SD_IRDA signals from DBB

Check Points

- Check the power supply.
  - Check the soldering of Components
  - Check the IrDA Transceiver

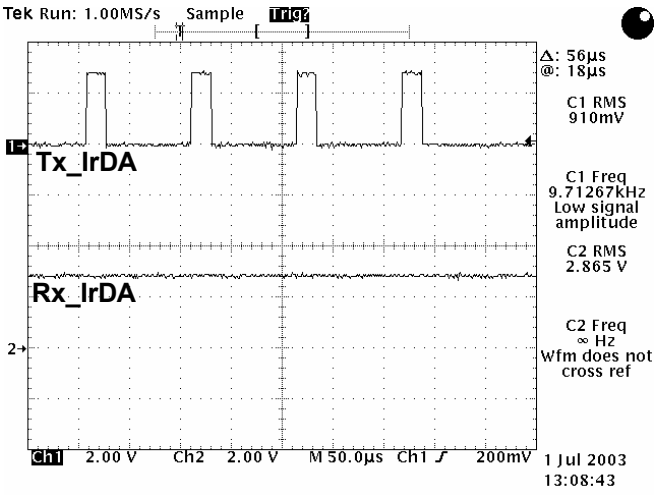
Trouble Shooting Setup

- Enter the engineering mode.
  - Go to menu 'Baseband → IrDA Test'

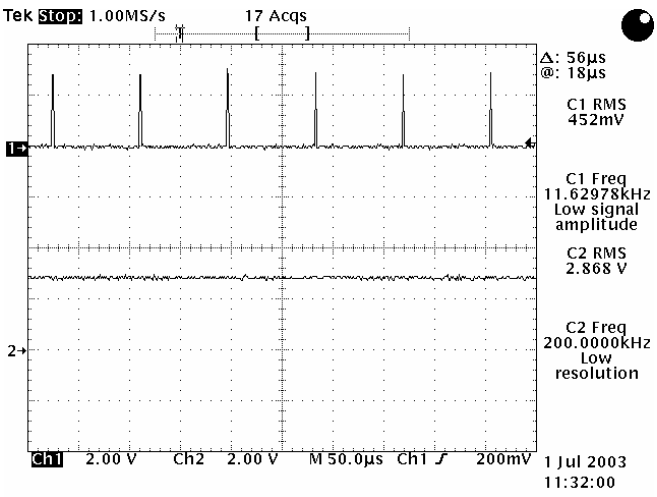


Trouble Shooting Procedure

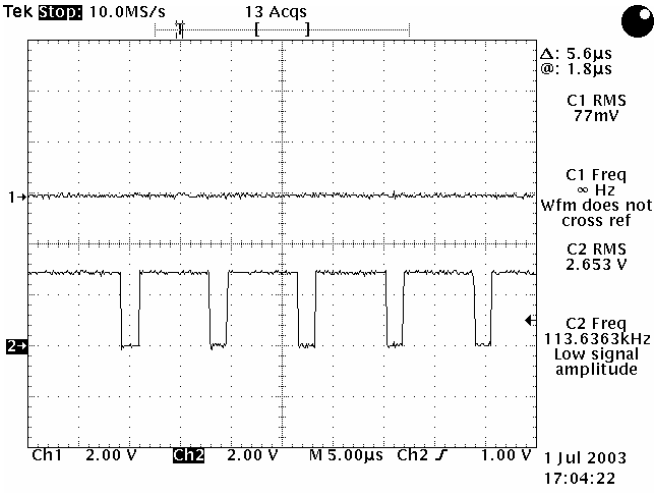
- Check the SD,TX, RX signal.
  - Check the soldering.
  - Check the IrDA Transceiver.



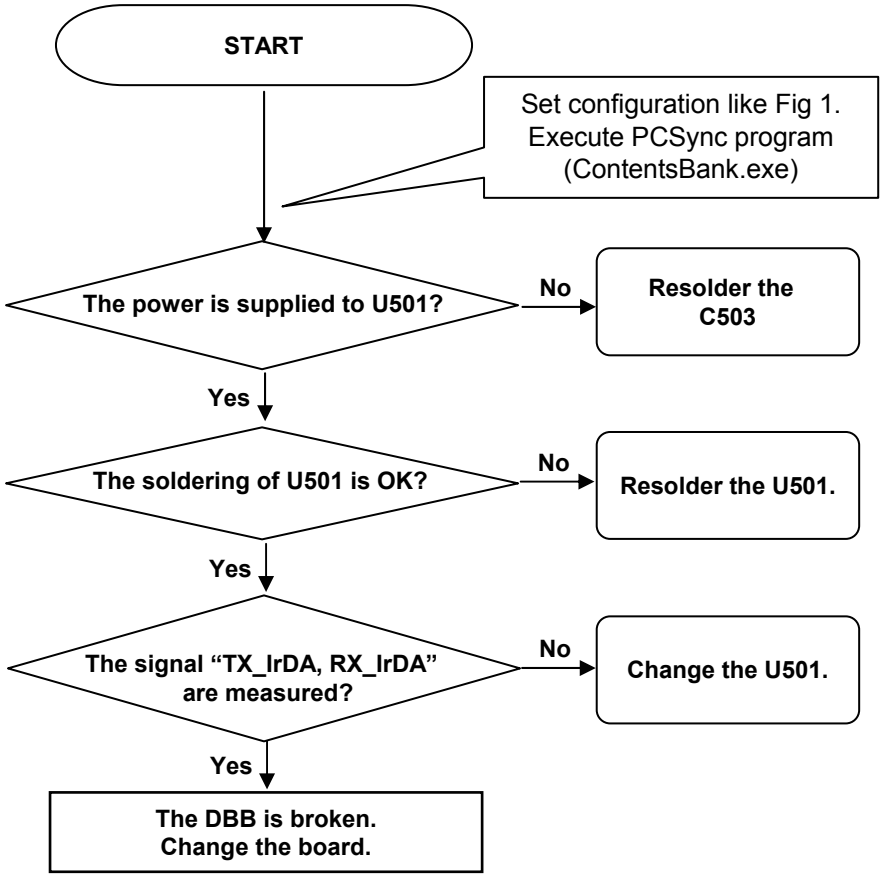
Searching…



Enabled (TX_IrDA)



Enabled(RX_IrDA)


START
Set configuration like Fig 1.
Execute PCSync program
(ContentsBank.exe)
The power is supplied to U501?
No
Resolder the C503
Yes
The soldering of U501 is OK?
No
Resolder the U501.
Yes
The signal "TX_IrDA, RX_IrDA" are measured?
No
Change the U501.
Yes
The DBB is broken.
Change the board.

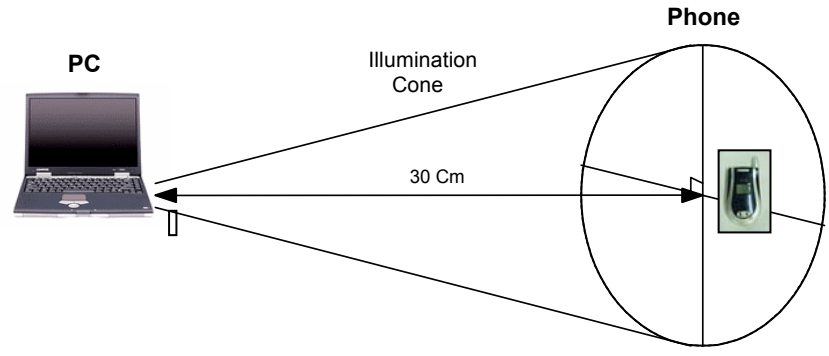
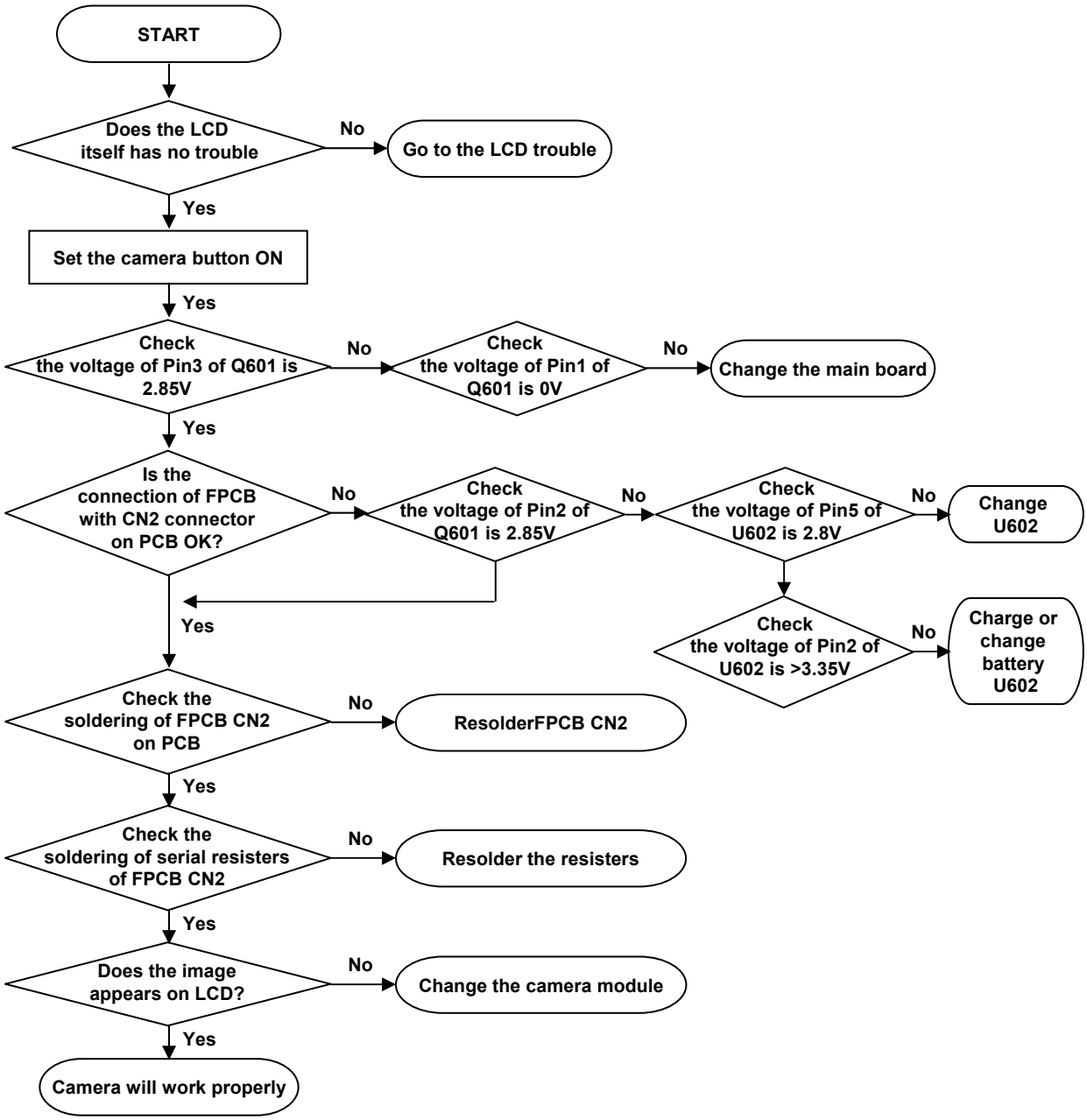

Phone
PC
Illumination
Cone
30 Cm

Figure 1.

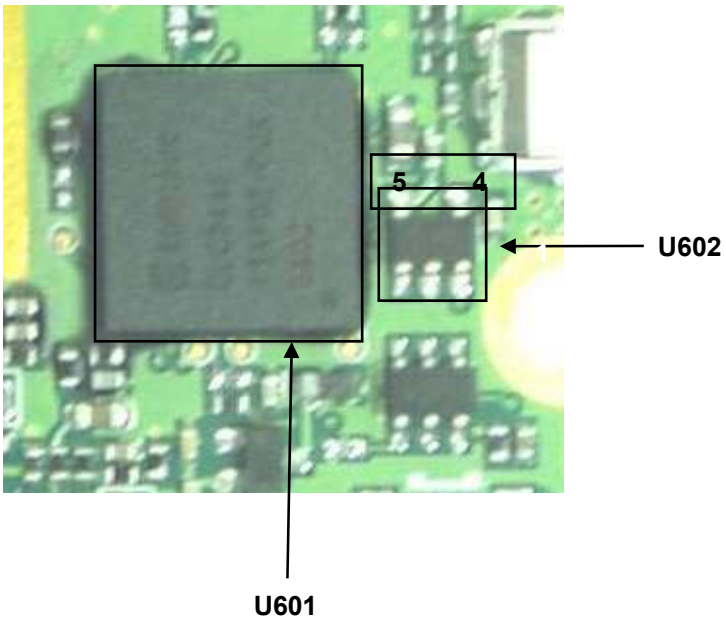
4.16 Camera Trouble

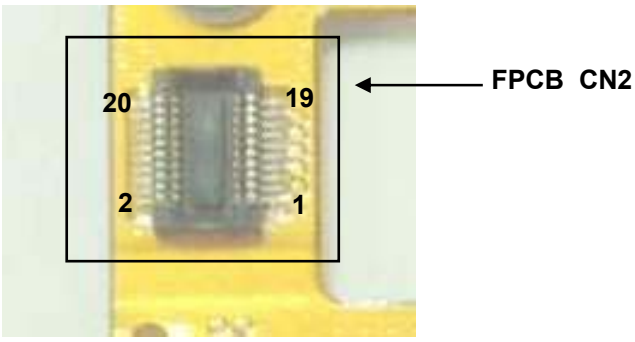
SETTING : Connect PIF, and set remote switch ON at PIF

Checking Flow

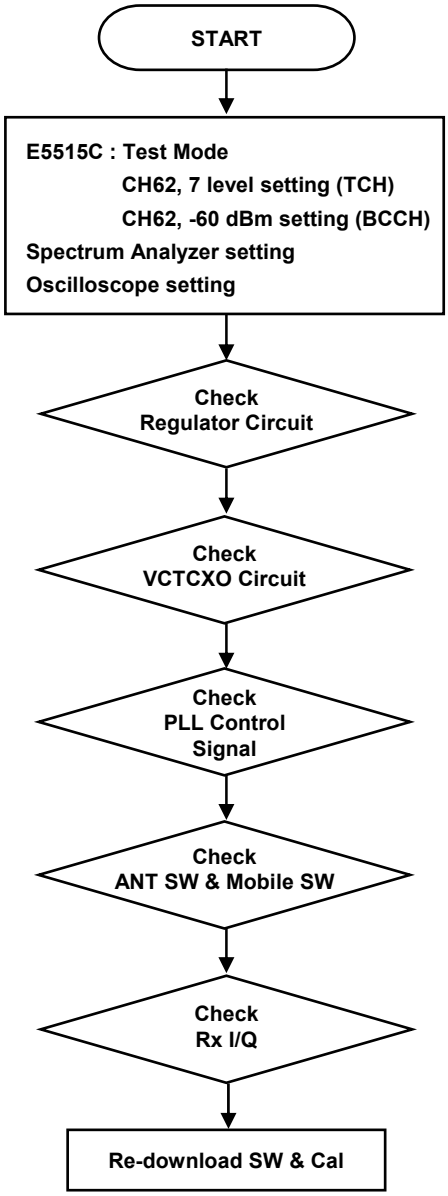


Test Points

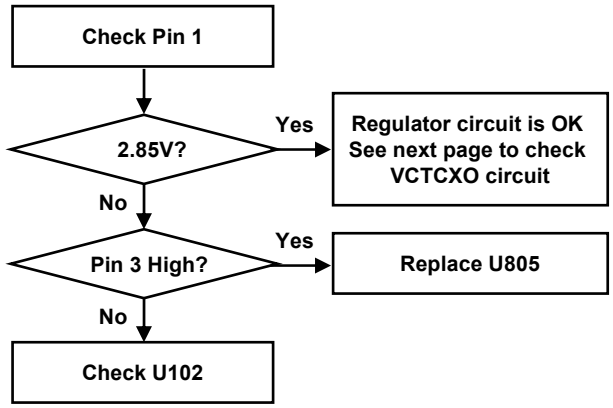


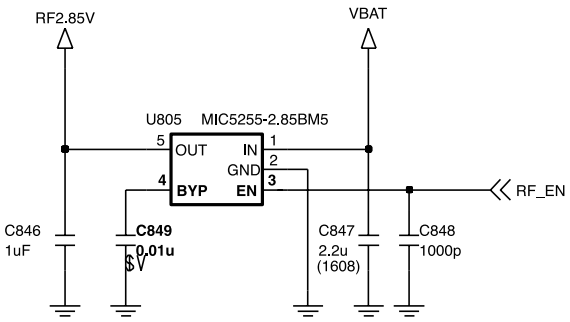


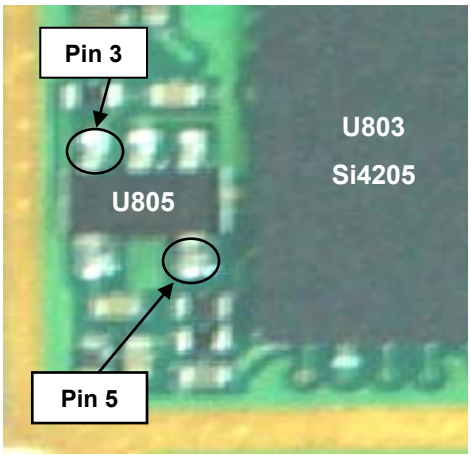
RF Rx pass Trouble Shooting

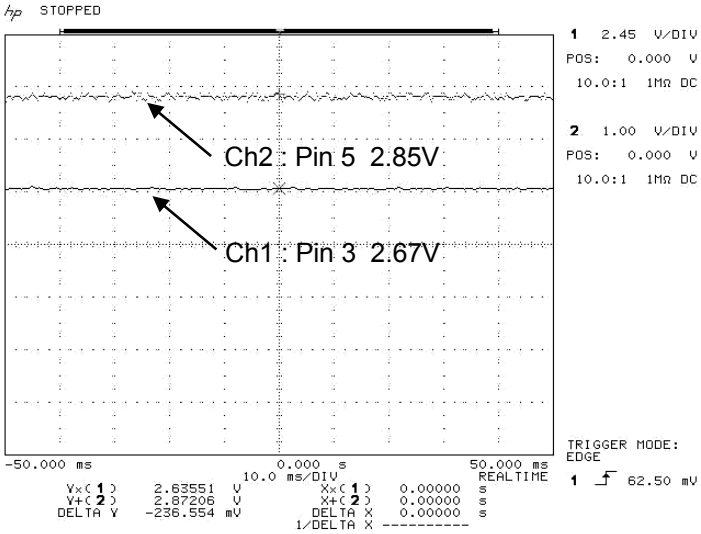


Checking Regulator Circuit (Rx pass continued)

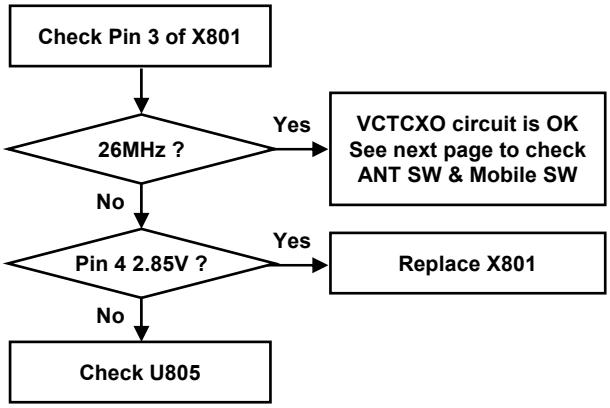


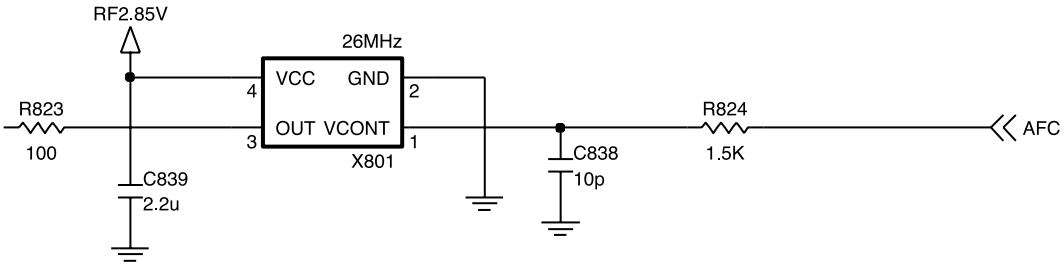


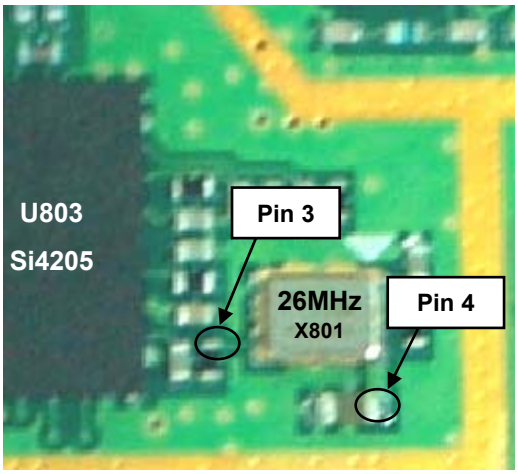


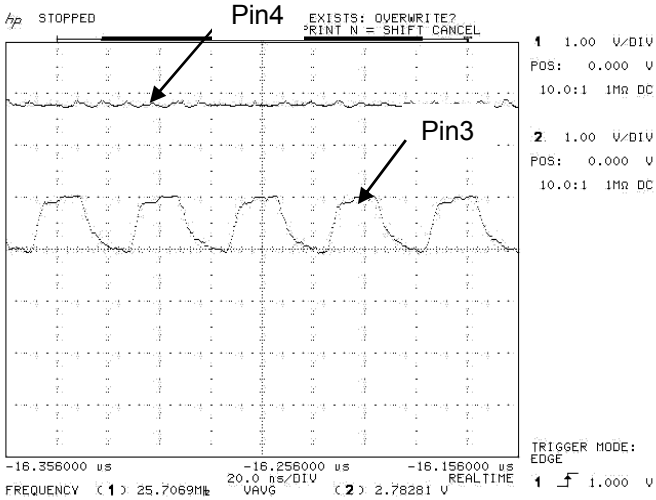


Checking VCTCXO Circuit (Rx pass continued)

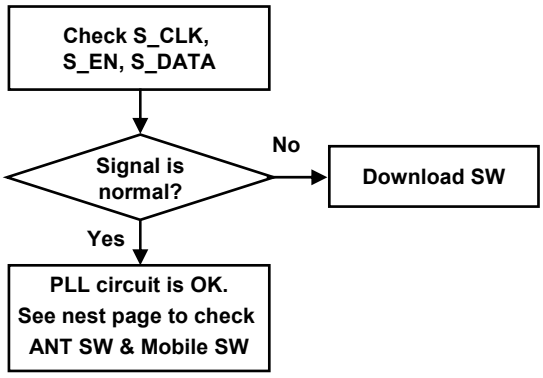


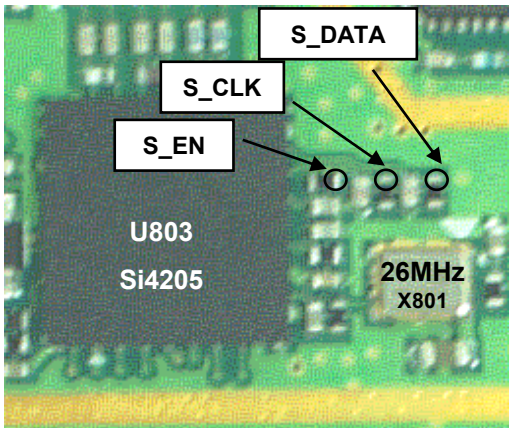


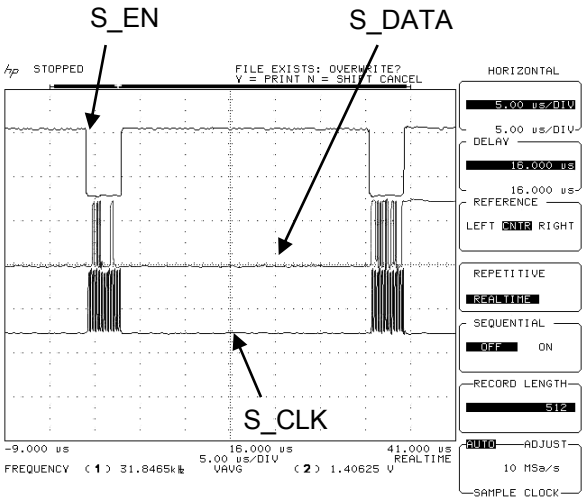


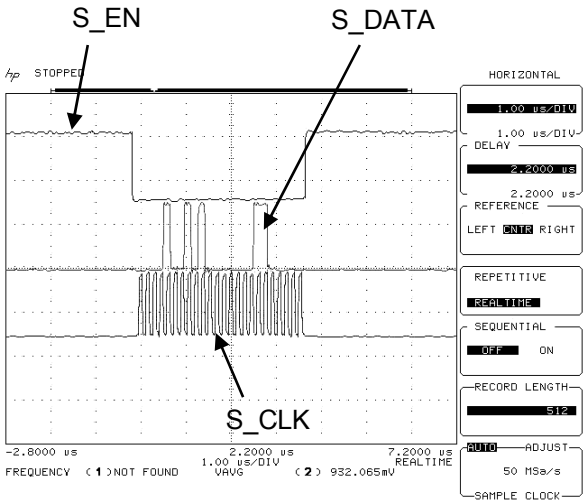


Checking PLL Circuit (Rx pass continued)

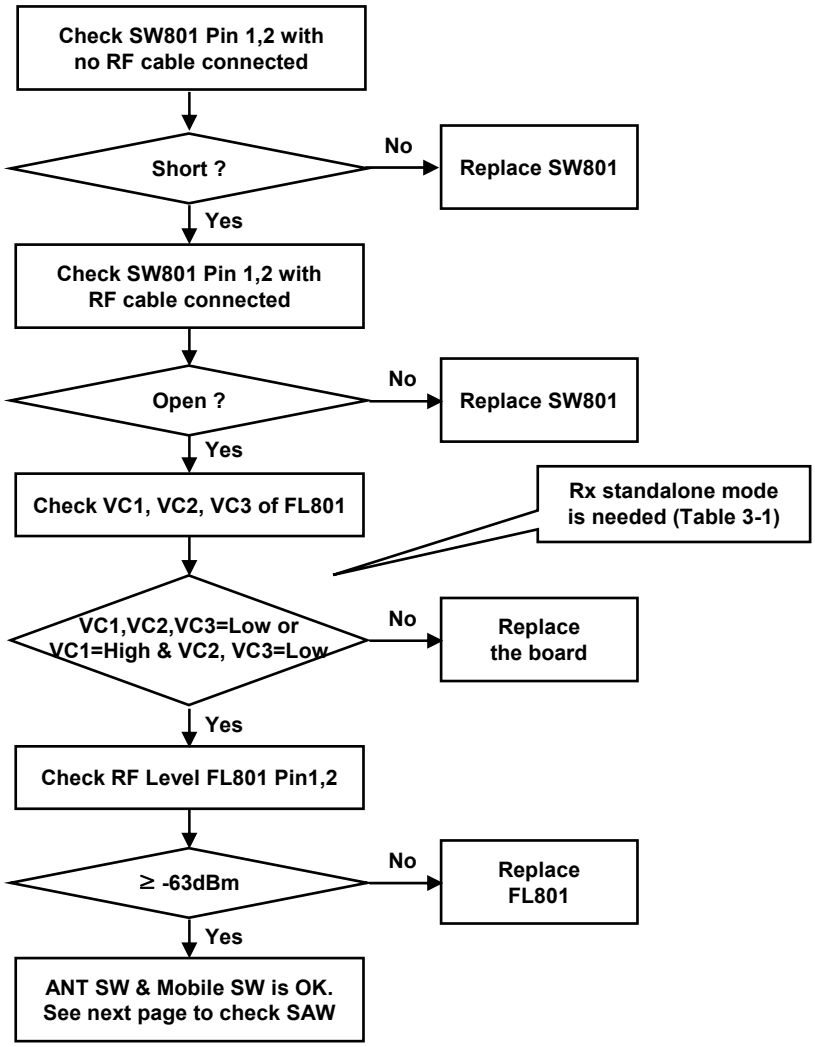




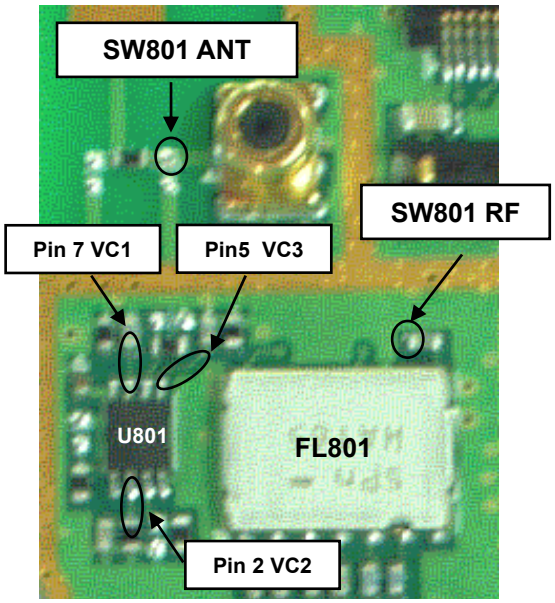


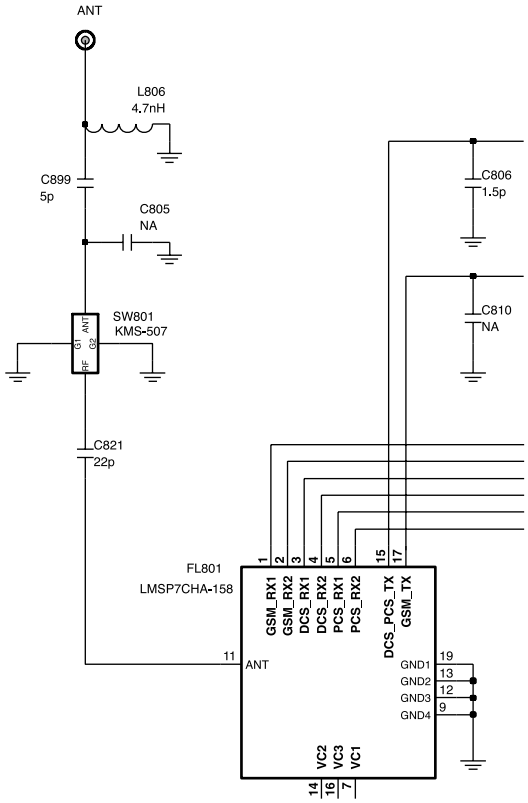


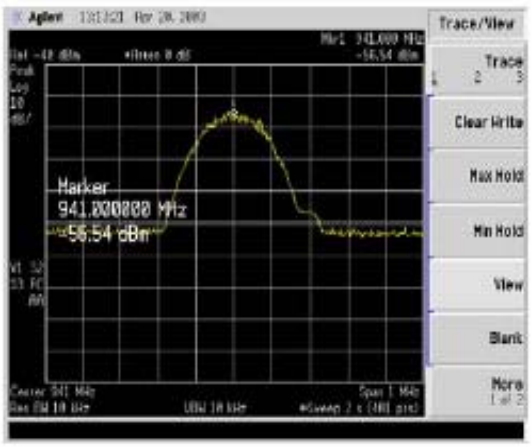
Checking ANT SW & Mobile SW (1) (Rx pass continued)



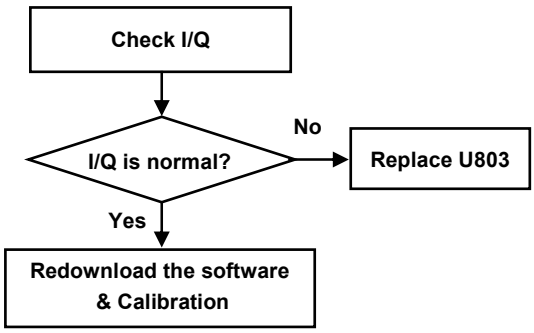
Checking ANT SW & Mobile SW (2) (Rx pass continued)

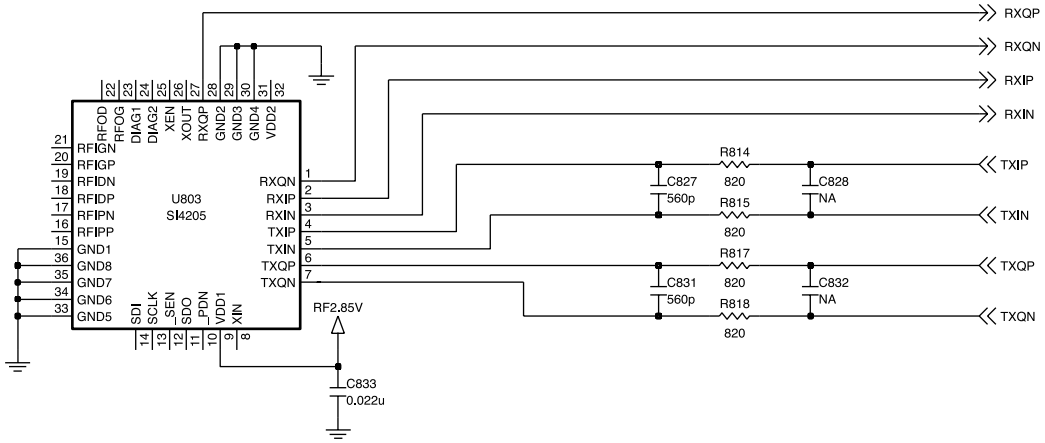


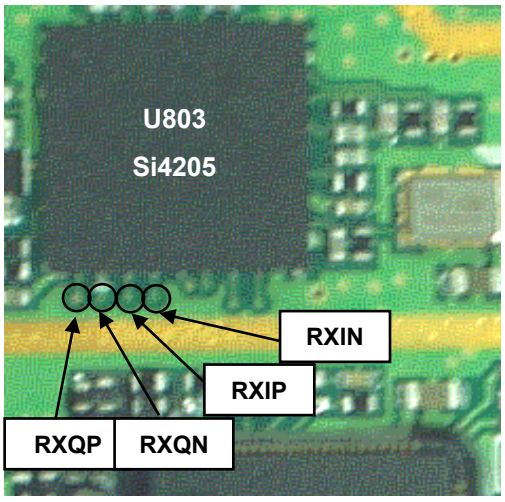


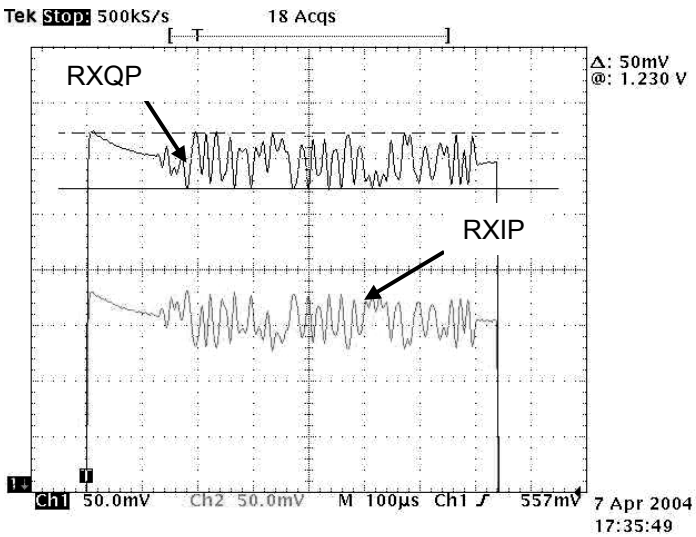


Checking Rx I/Q (Rx pass continued)

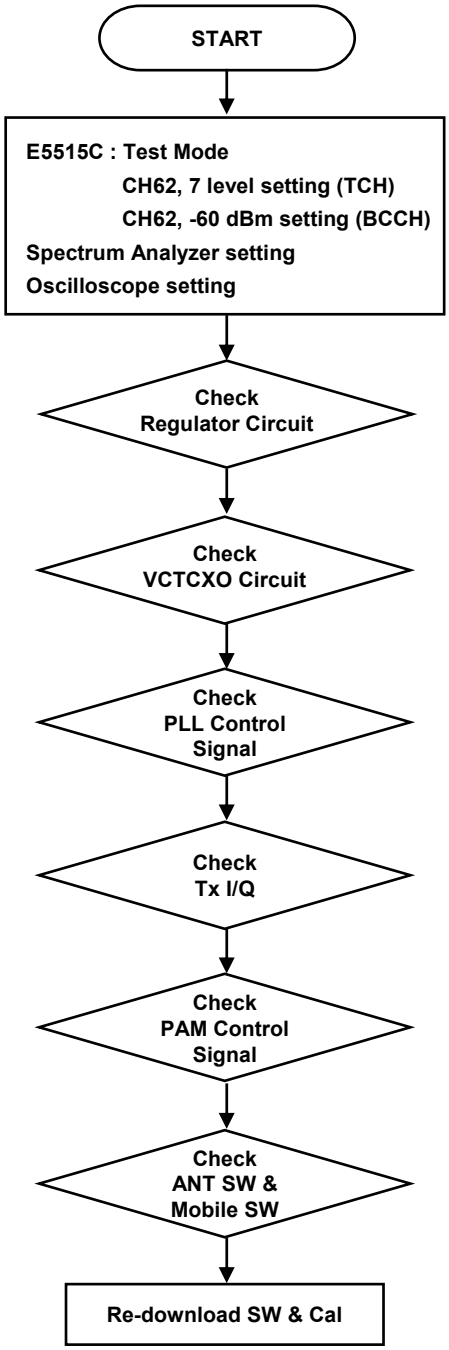




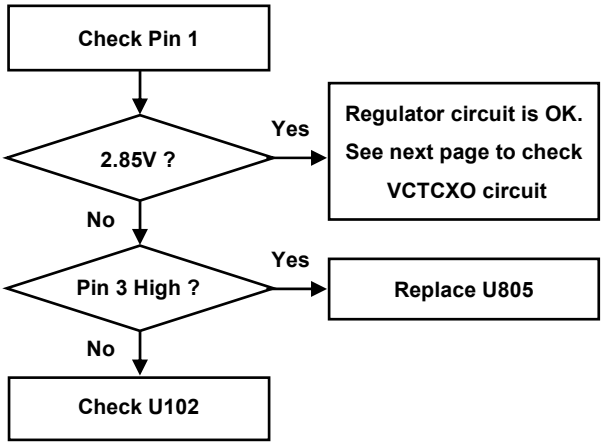


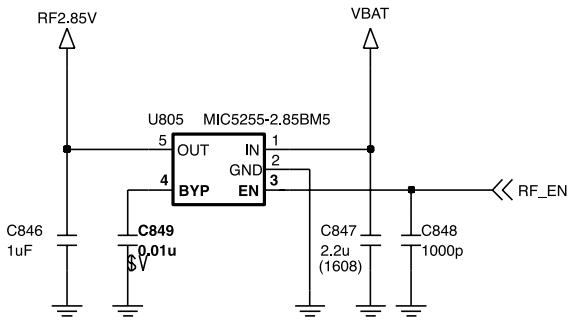


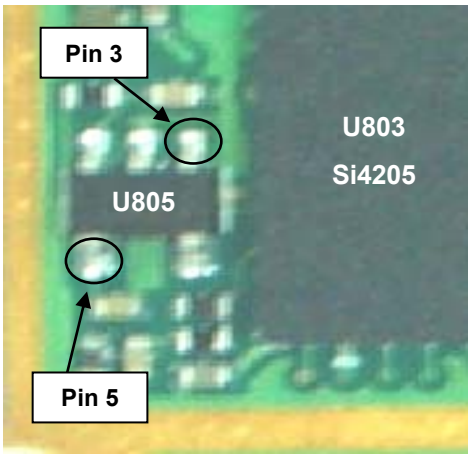
RF Tx pass Trouble Shooting

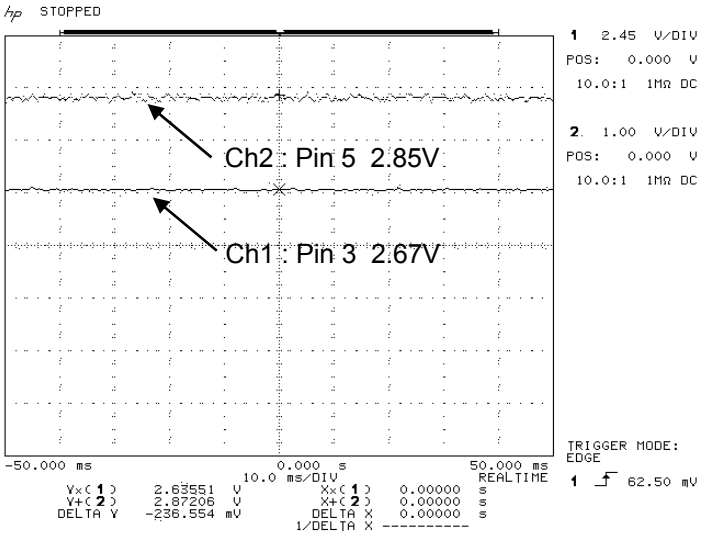


Checking Regulator Circuit (Tx pass continued)

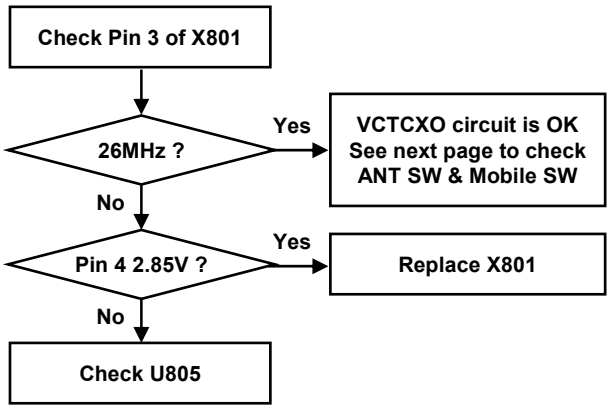


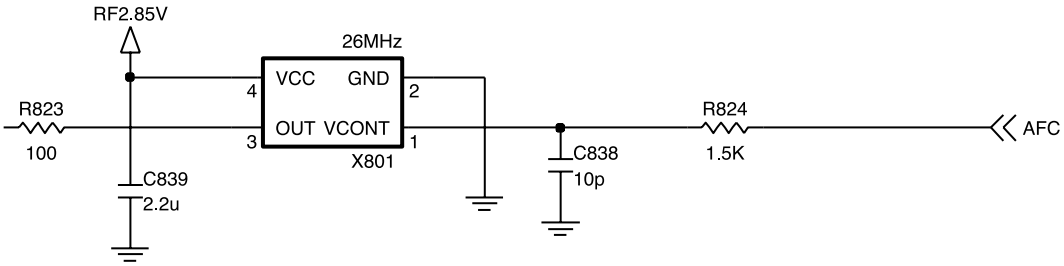


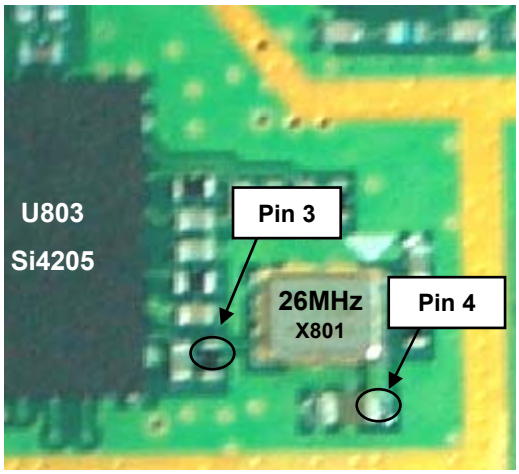


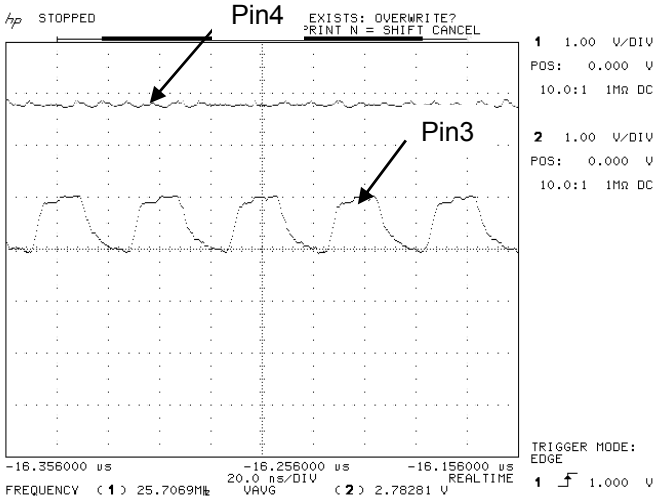


Checking VCTCXO Circuit (Tx pass continued)

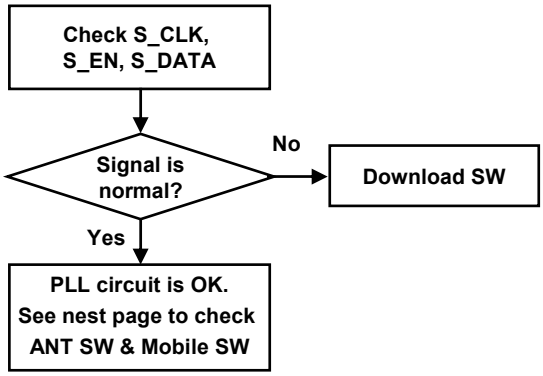


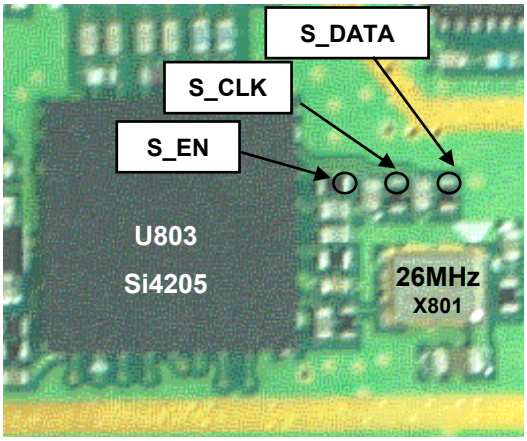


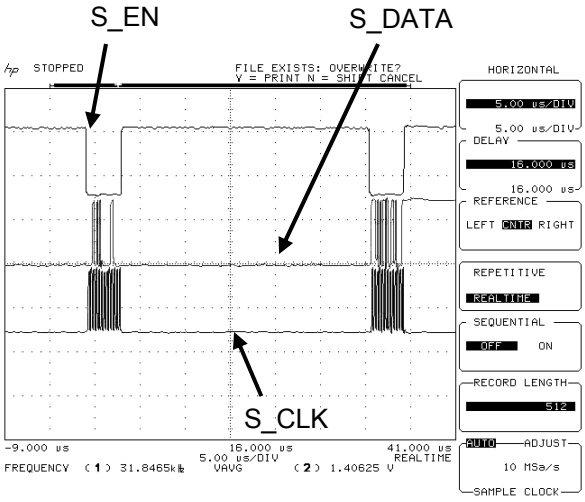


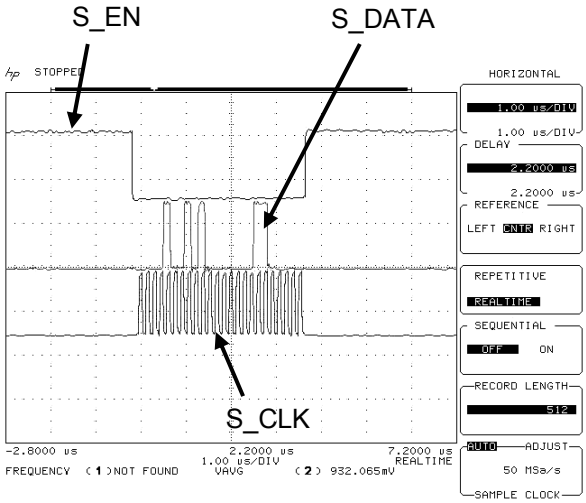


Checking PLL Circuit (Tx pass continued)

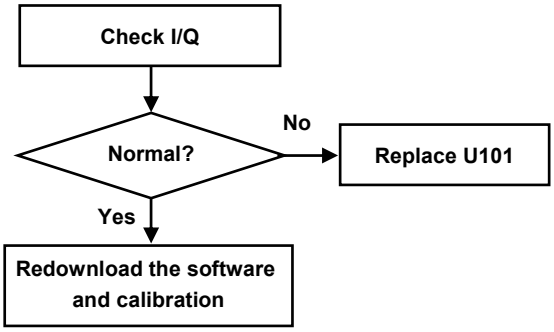


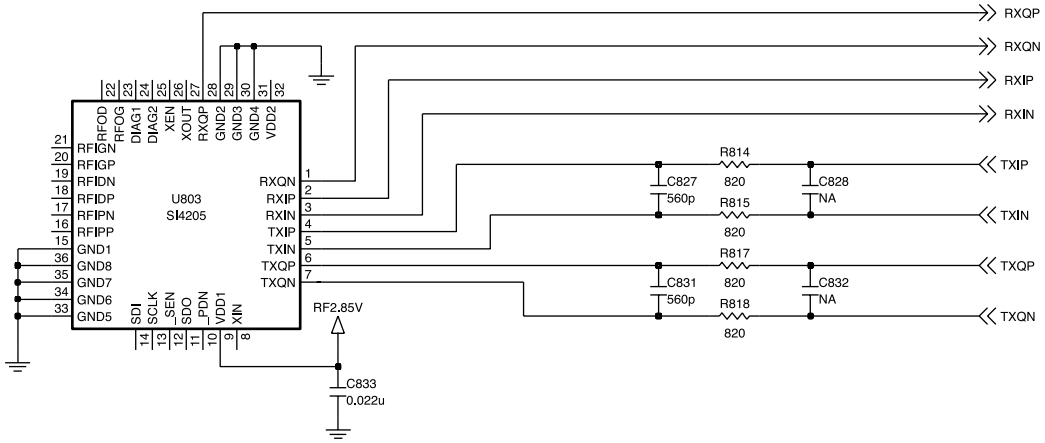


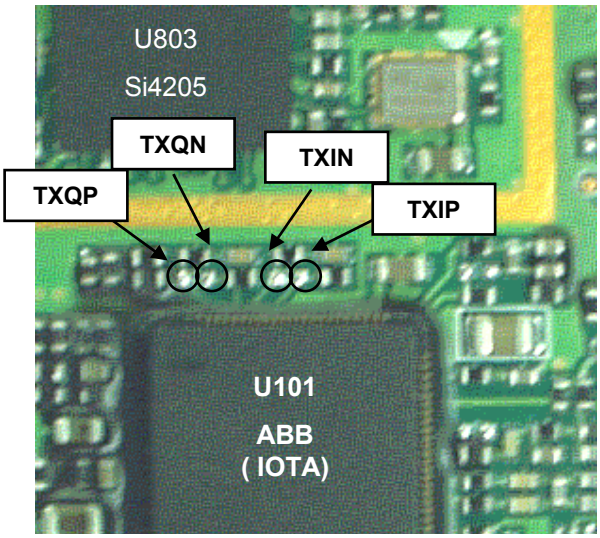


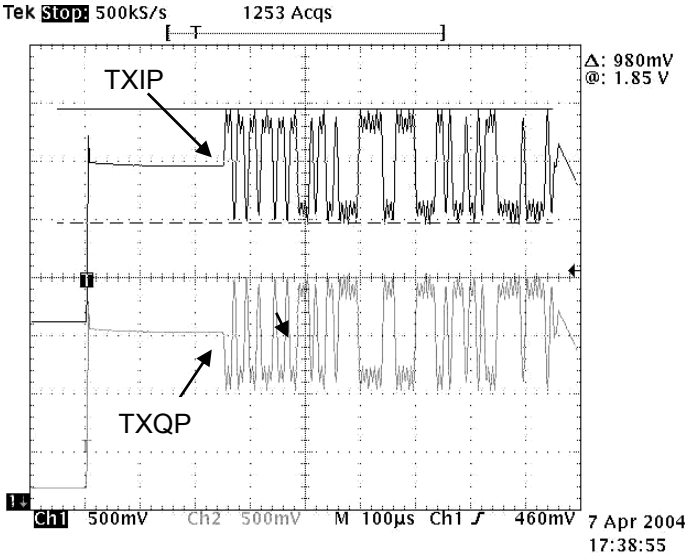


Checking Tx I/Q (Tx pass continued)

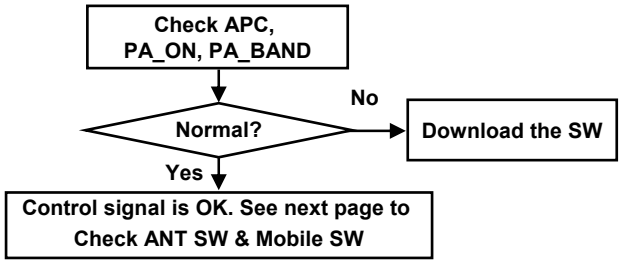


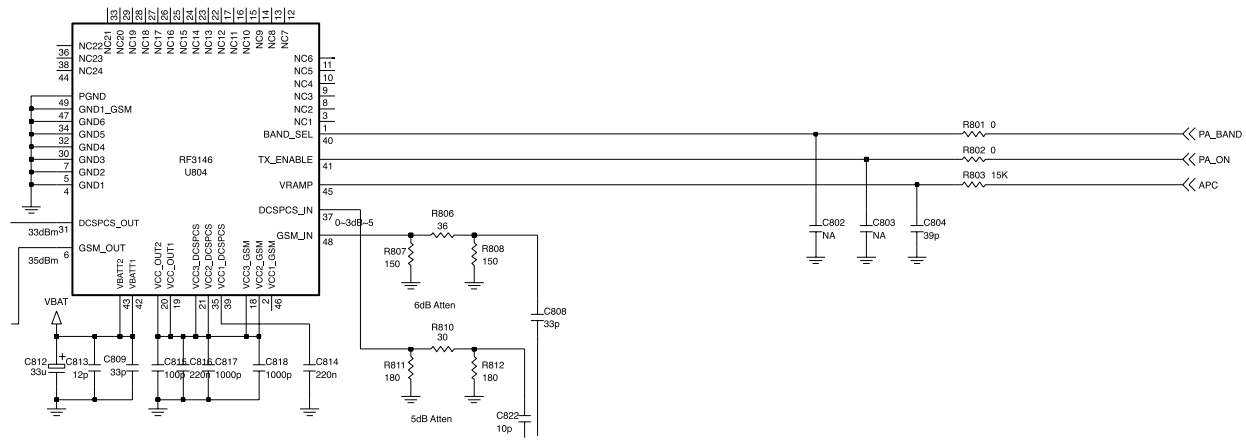


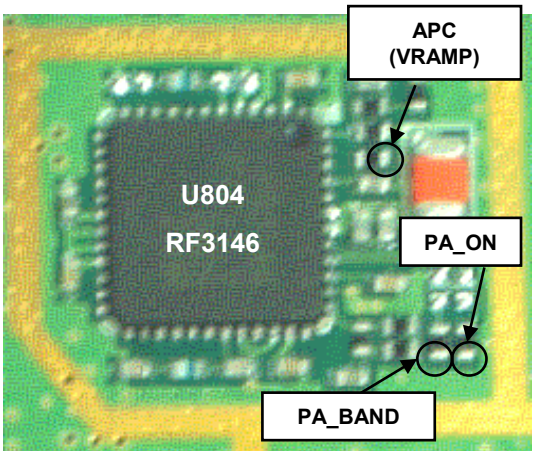


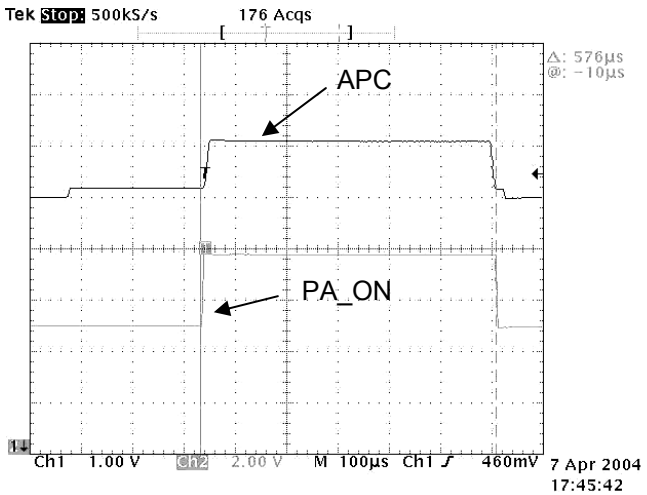


Checking PAM Control Signal (Tx pass continued)

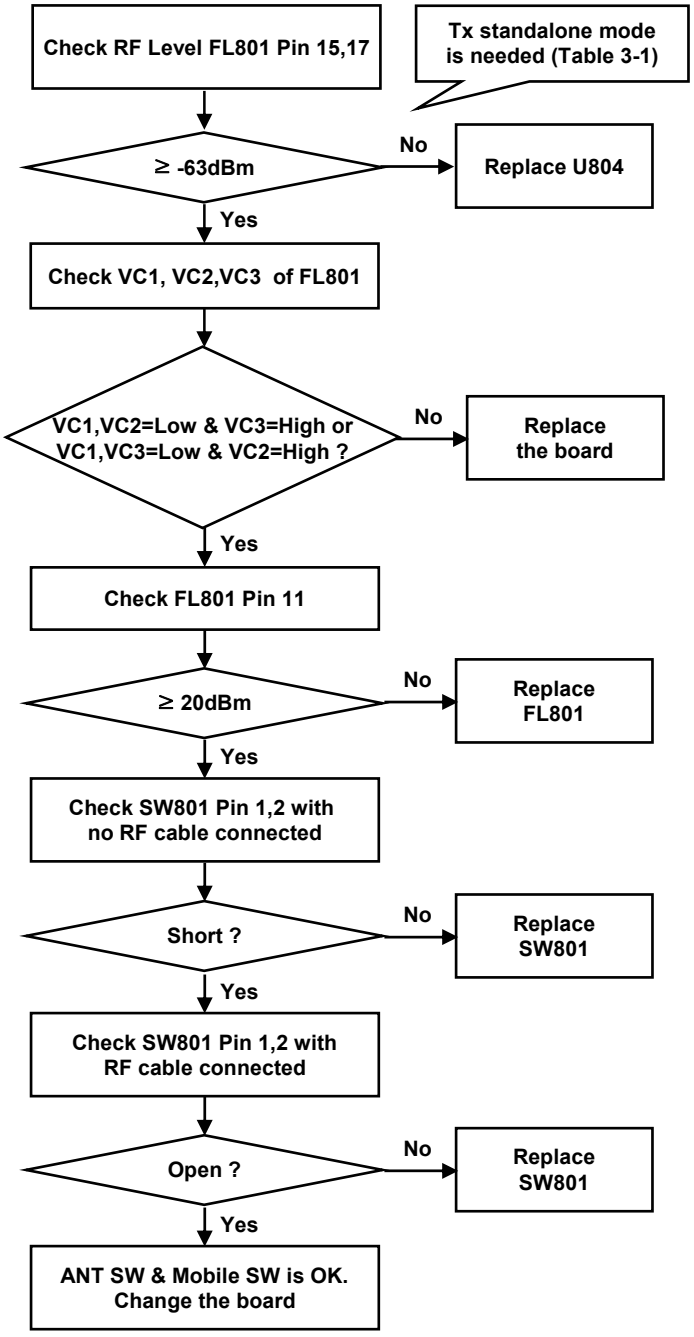




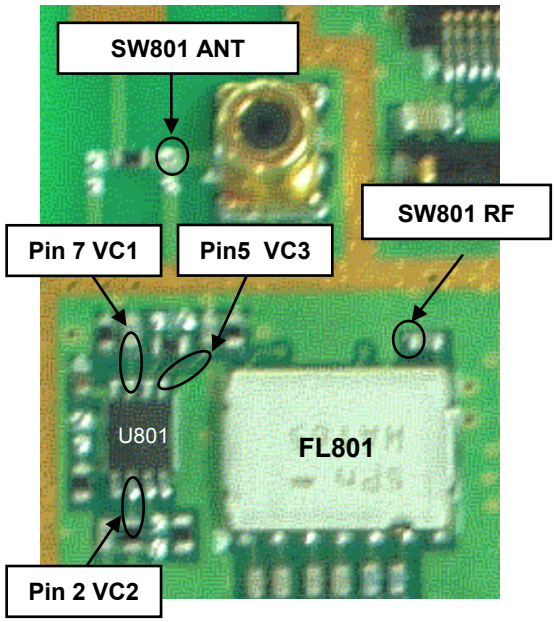


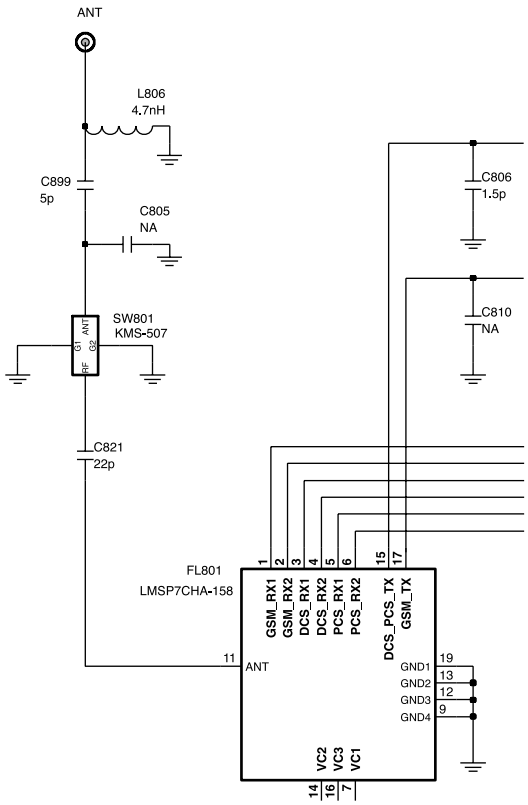


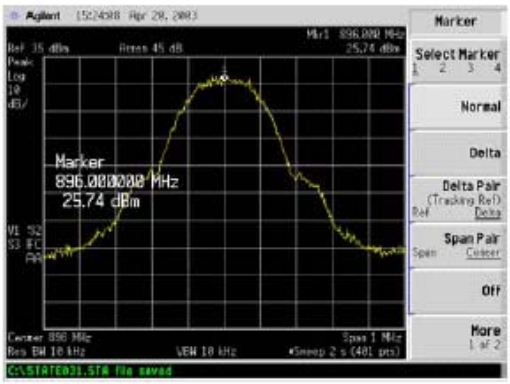
Checking ANT SW & Mobile SW (1) (Tx pass continued)



Checking ANT SW & Mobile SW (2) (Tx pass continued)

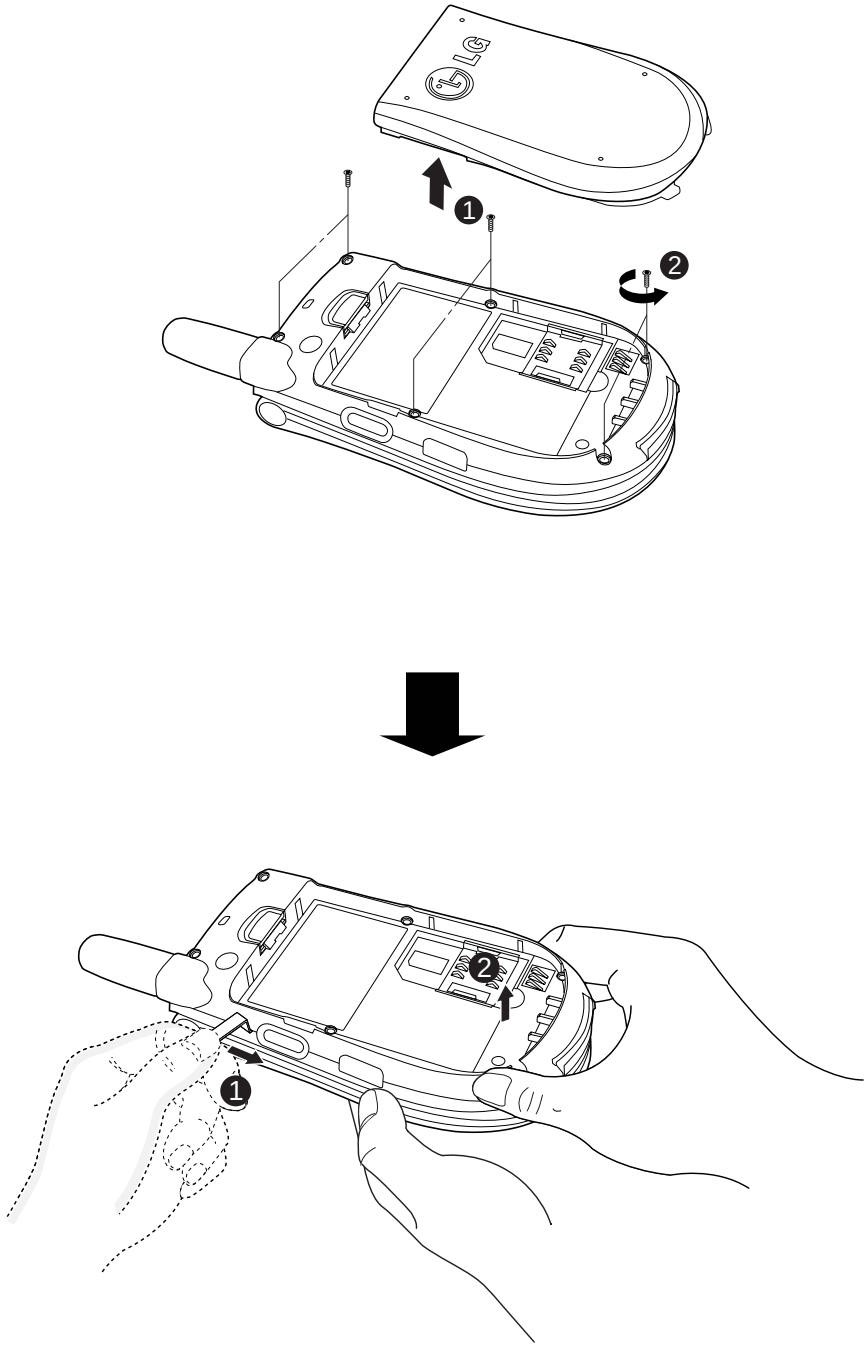


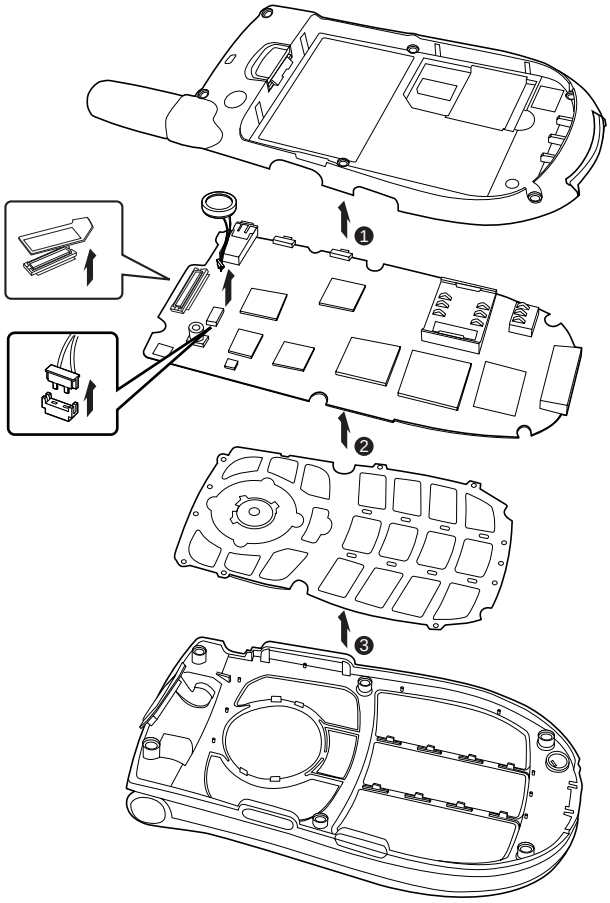




5. ASSEMBLY INSTRUCTION

5.1 Disassembly

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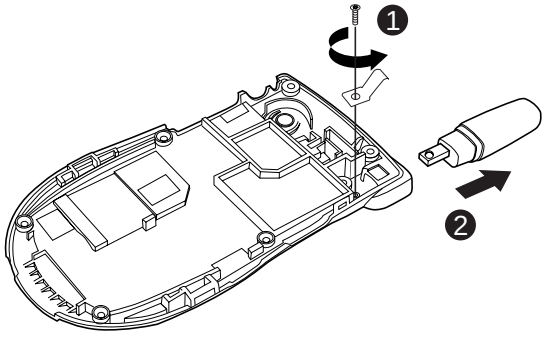
2
3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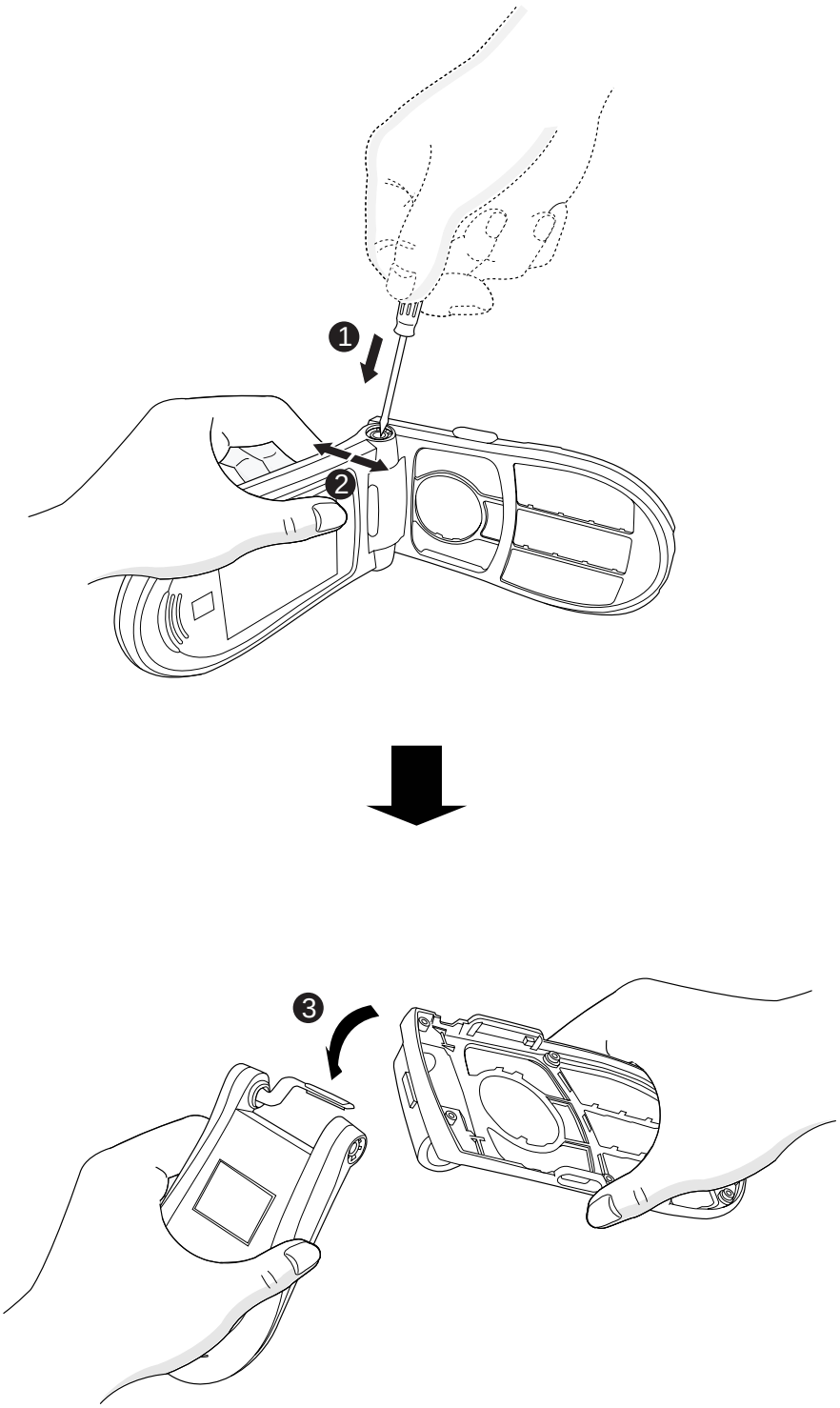
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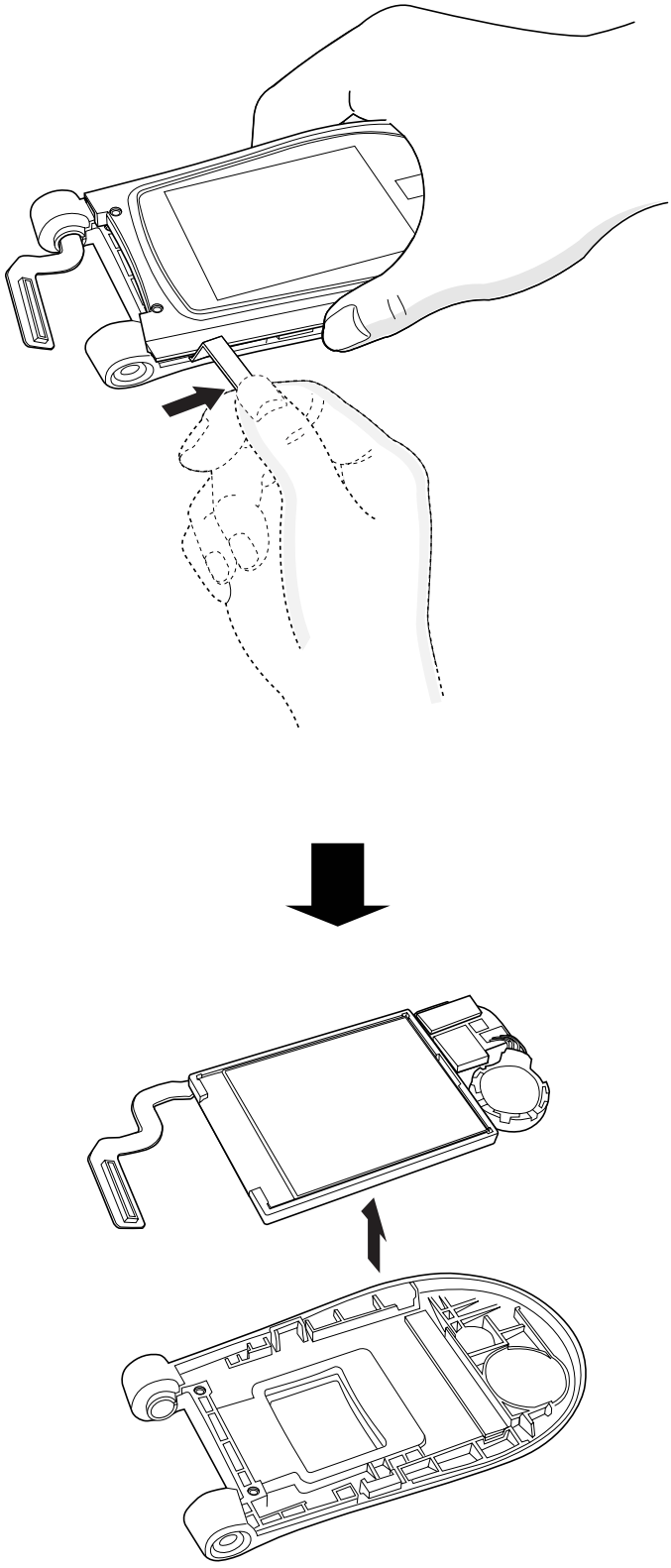


6. DOWNLOAD

6.1 Download Setup

6.1.1 In case of using the Data kit

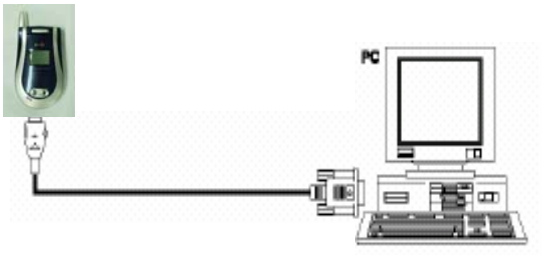


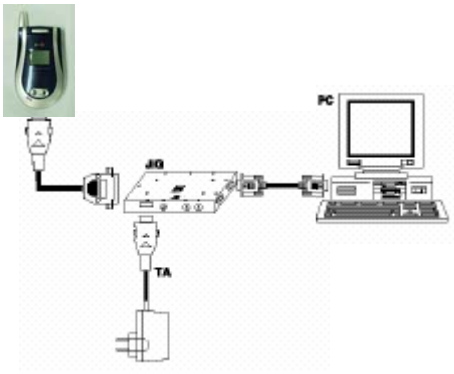
Figure 6-1 Describes Download Setup

Preparation

- Target Handset
- Data kit
- Battery
- IBM compatible PC supporting RS-232 with Windows 98 or newer

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

6.1.2 In case of using the PIF



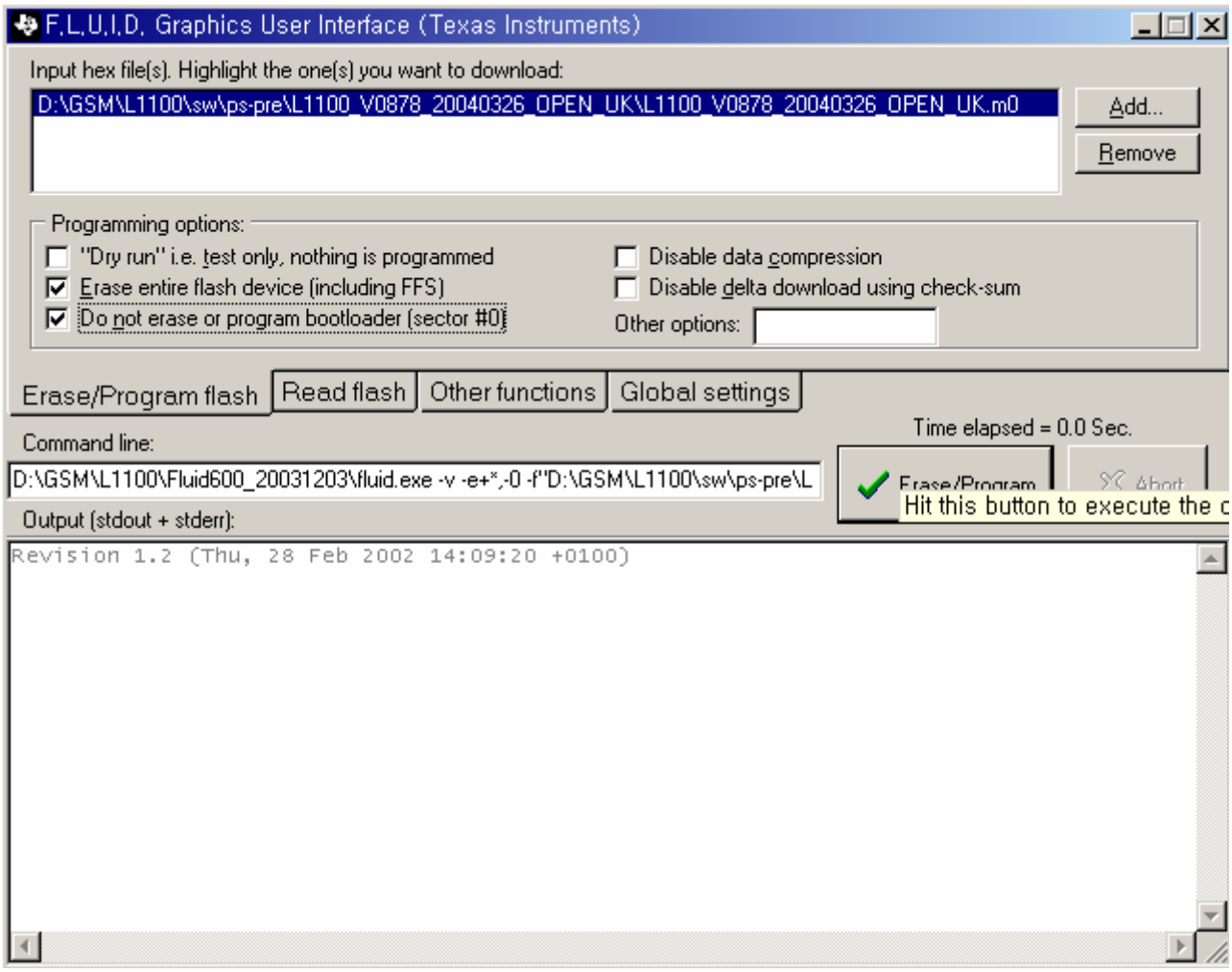
Preparation

- Target Handset
  - PIF
  - RS-232 Cable and PIF-to-Phone interface Cable
  - TA/Power Supply or Battery
- BM compatible PC supporting RS-232 with Windows 98 or newer

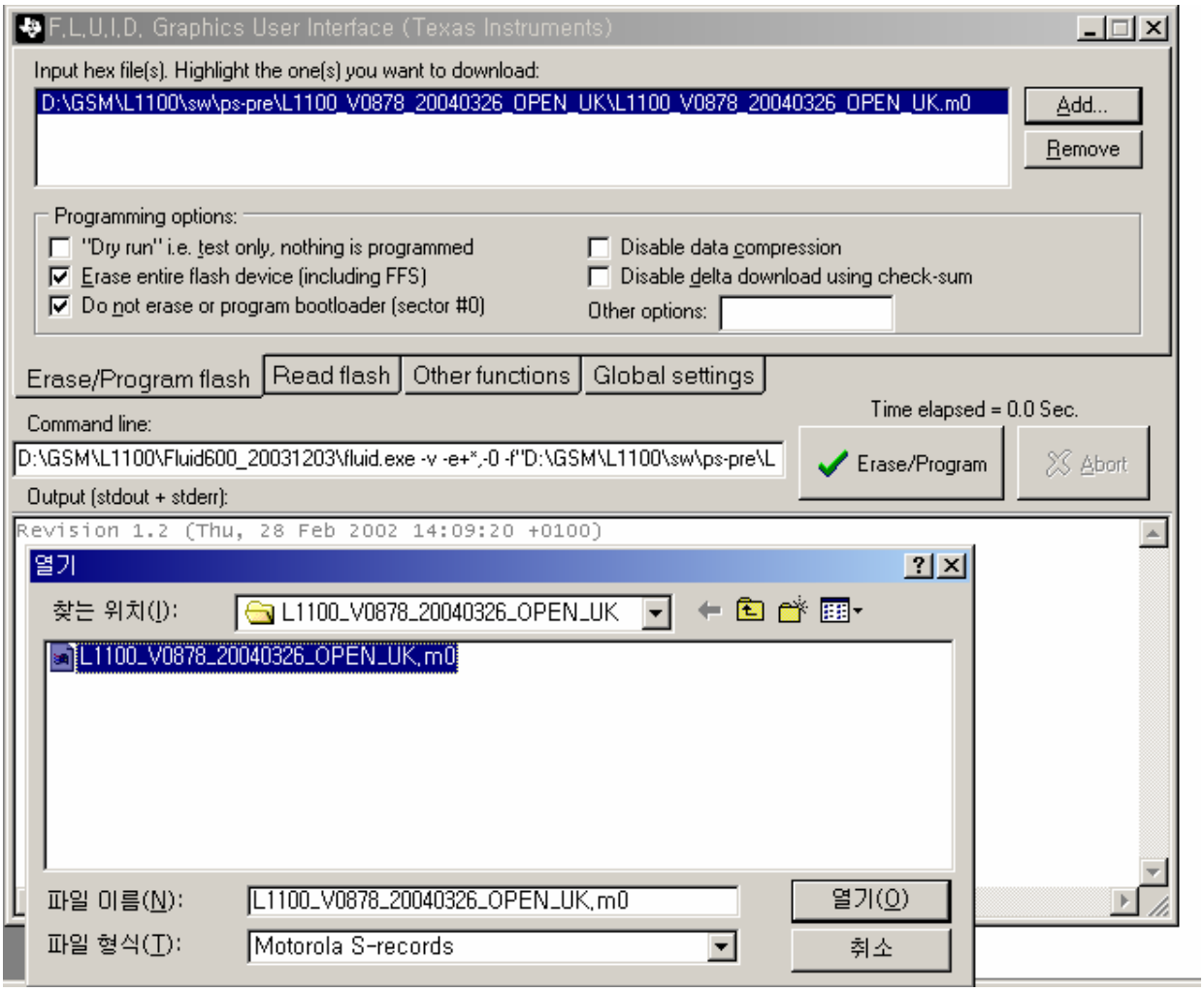
If you use battery, you should have a battery with the voltage above 3.7V.

6.2 Download Procedure

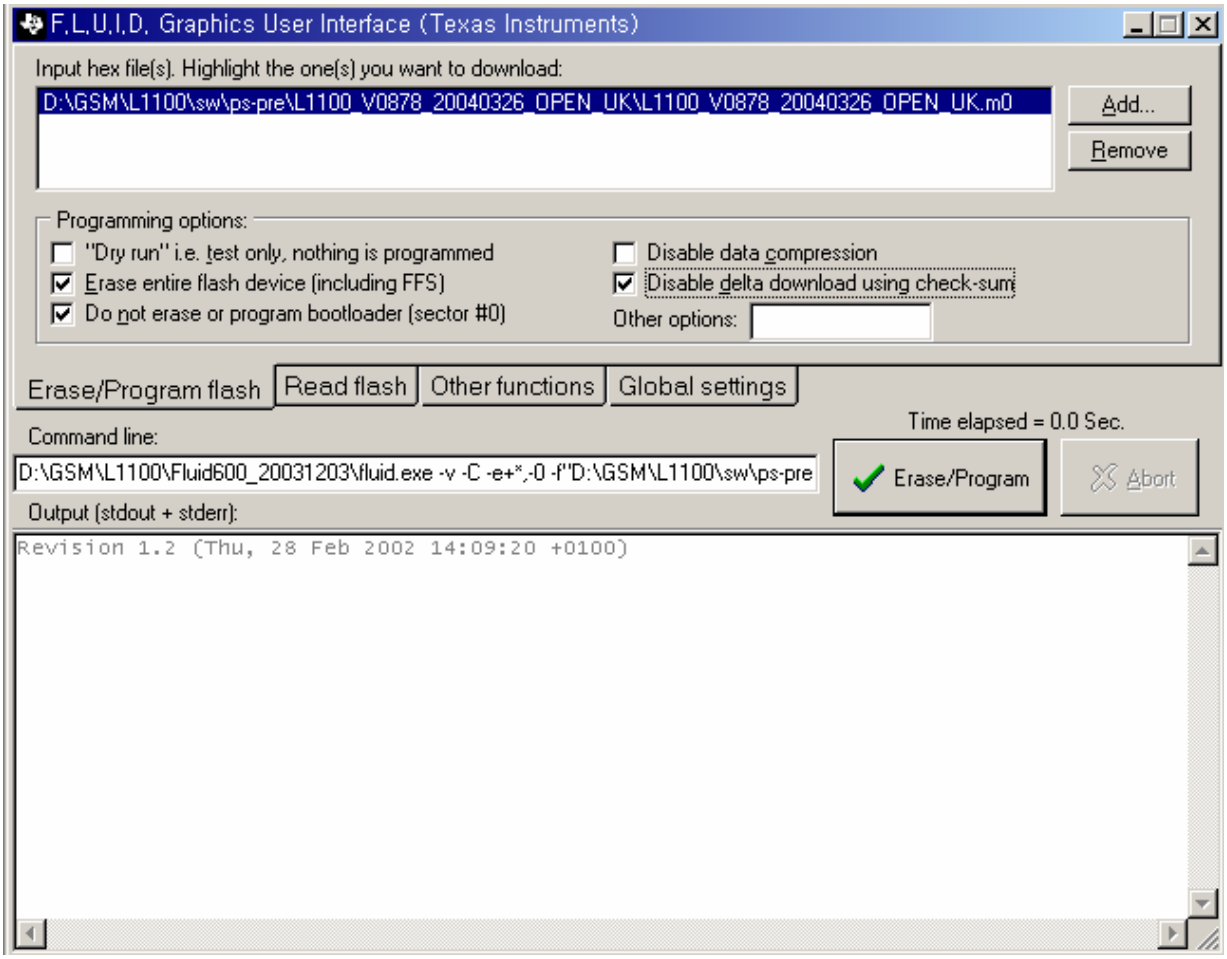
1. Execute Fluid_GUI.exe and select “Erase/Program flash” menu.



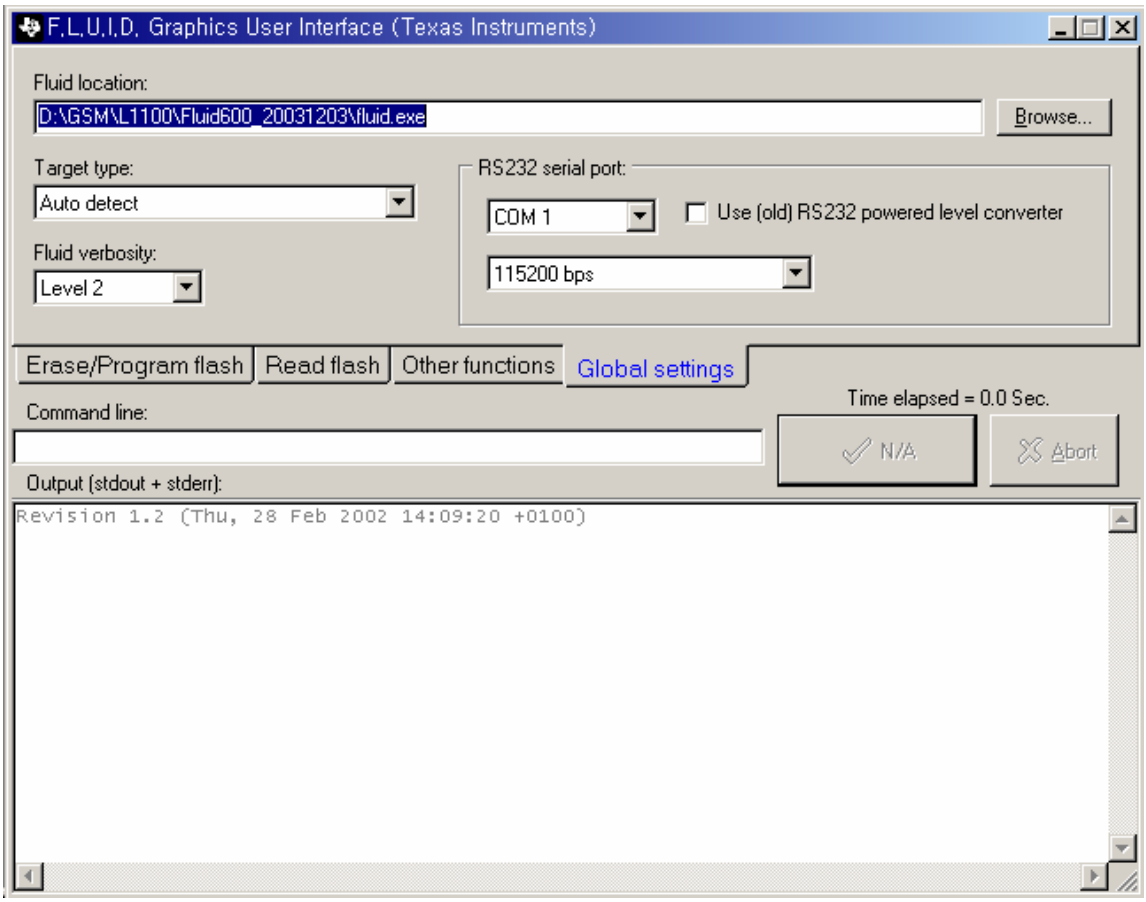
2. Click the “Add” button. Then, choose m0 file which is going to download.



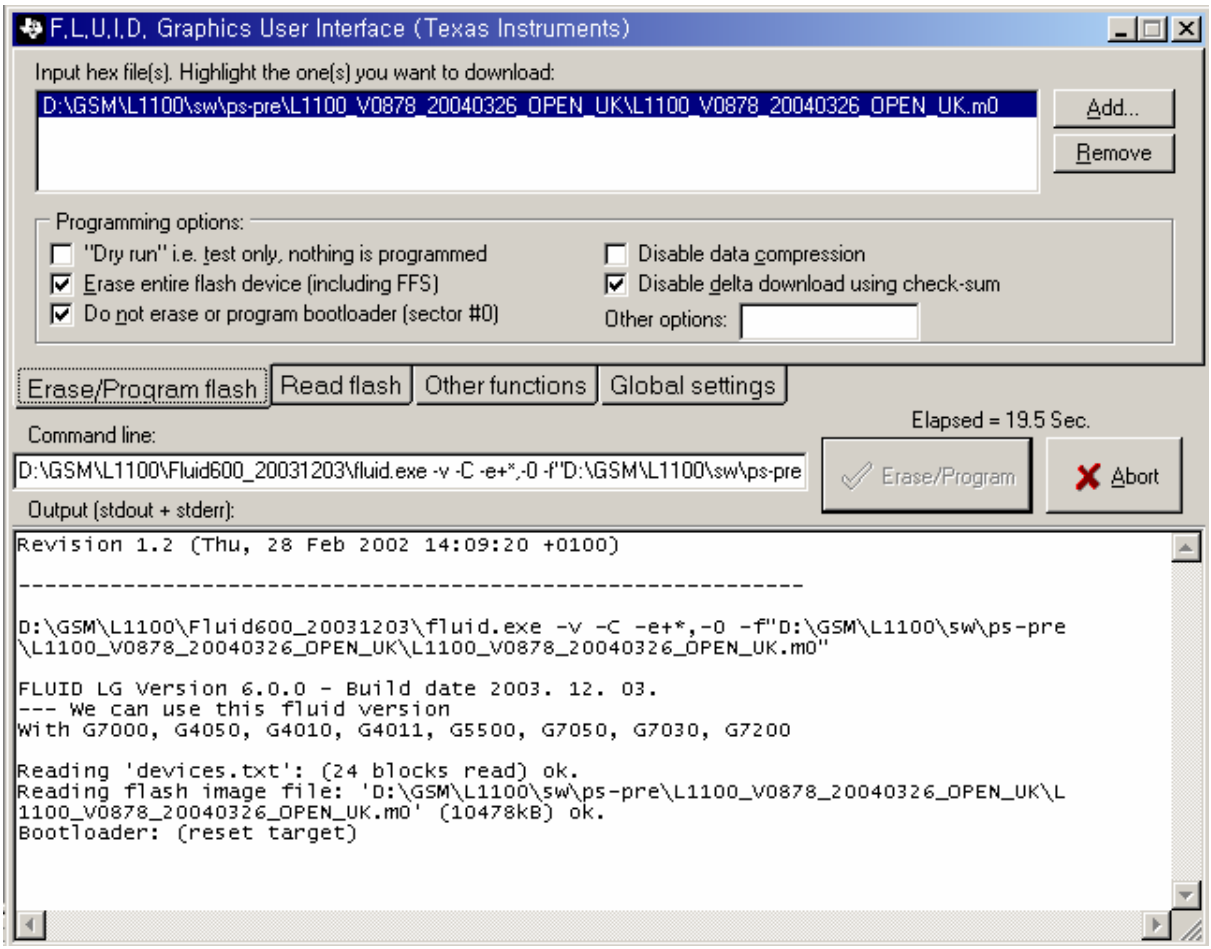
3. You must choose three programming options in programming options box. One is to decide whether you erase entire flash. If m0 file which is going to download have the change of pcm structure for current target's m0 file, you must erase entire flash memory. The second programming option is to decide whether you erase bootloader. It is recommended not to erase bootloader. The third is to decide whether you take delta-download, or not. If you use delta-download, You can save download time through comparing m0 and flash block, and not downloading flash block same with m0 file.



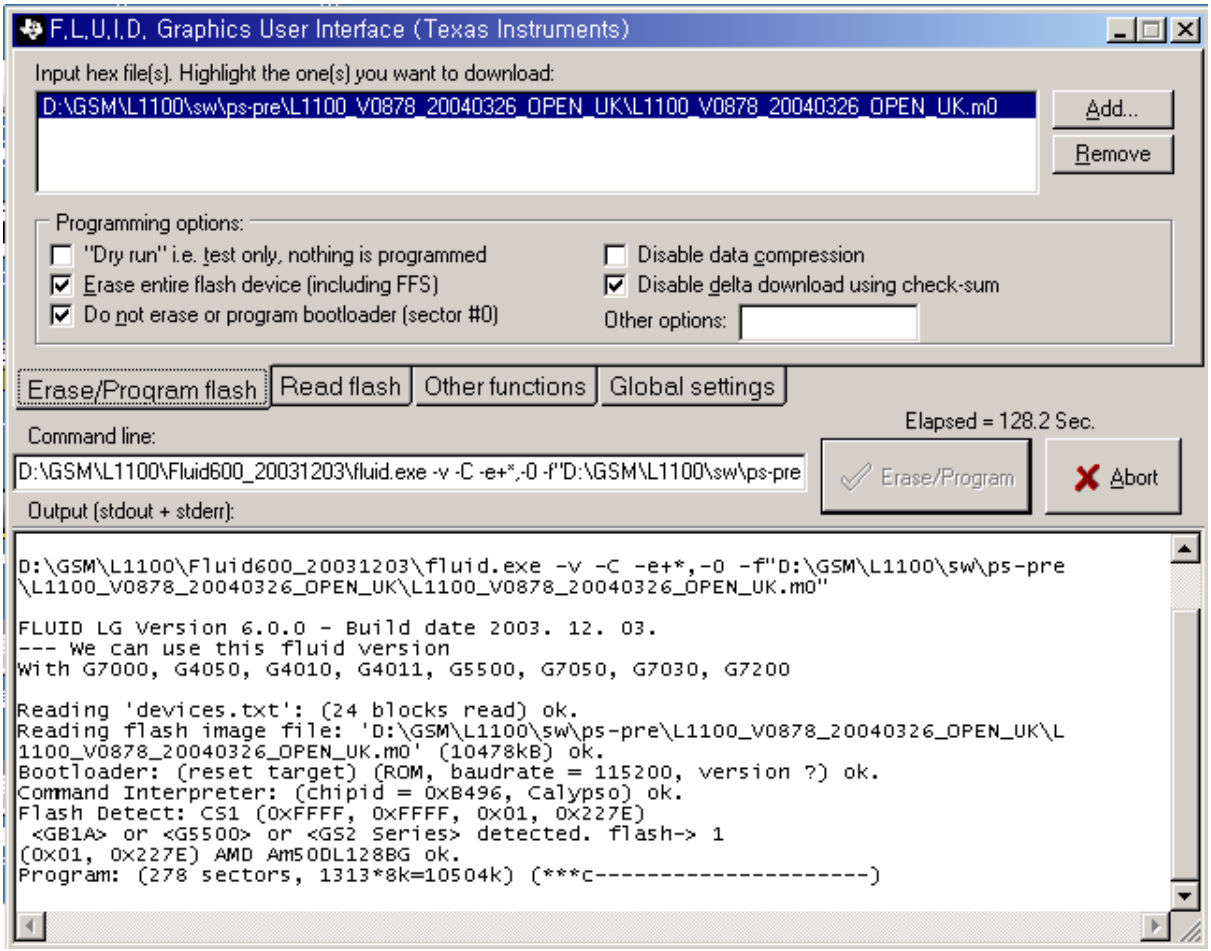
4. Press “Global Settings” menu. Choose a correct serial port and set the configuration as below.



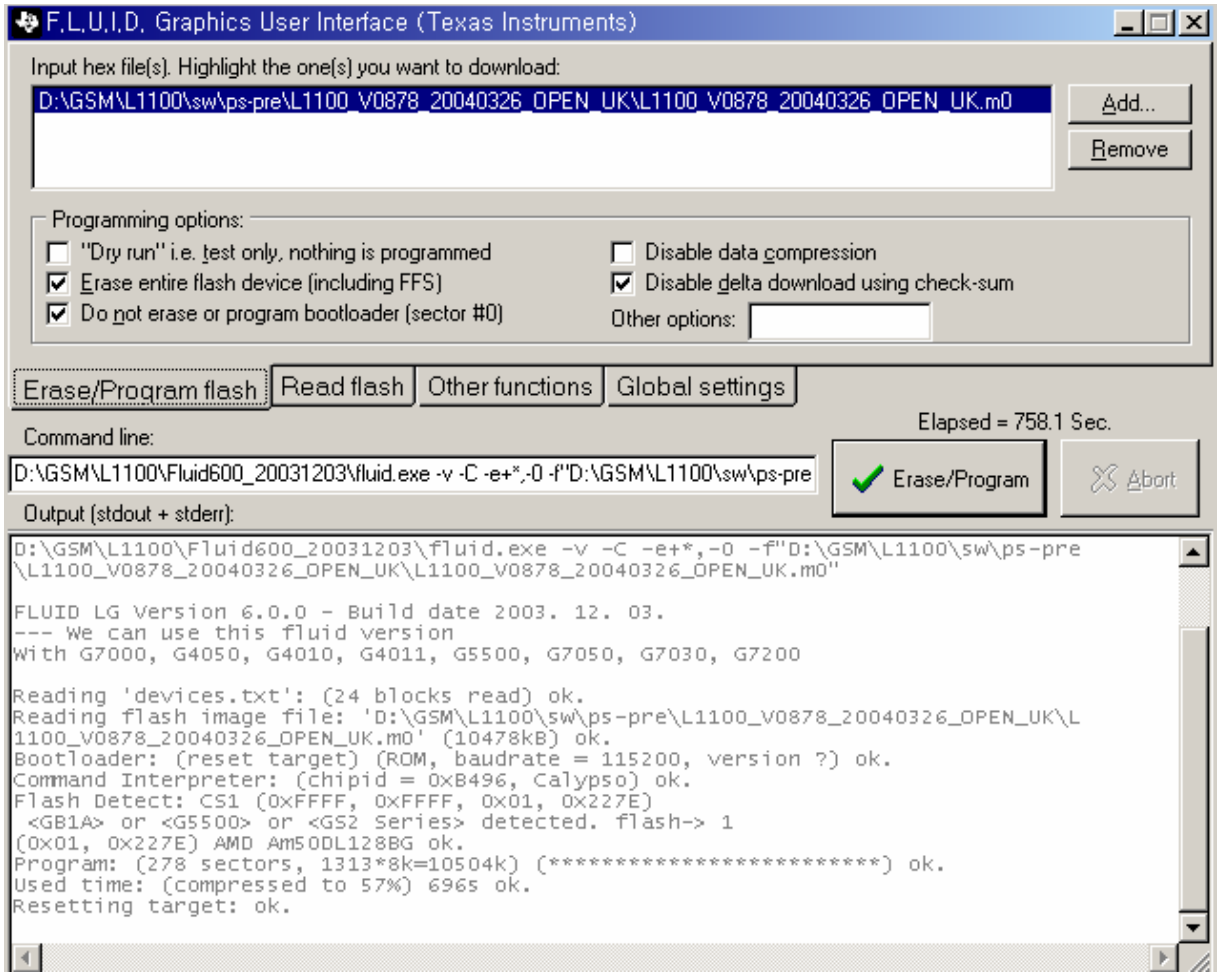
5. After checking programming options, Click “Erase/Program” button. If you click “Erase/Program” button, you will be able to see that “(reset target)” is displayed in the “Output” window. And then if you push shortly the “Power key” of the mobile, downloading will be started.



6. Wait for downloading to be finished.



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



7. SERVICE AND CALIBRATION

7.1 Service S/W

7.1.1 Overview

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

7.1.2 Hardware and Software Environment

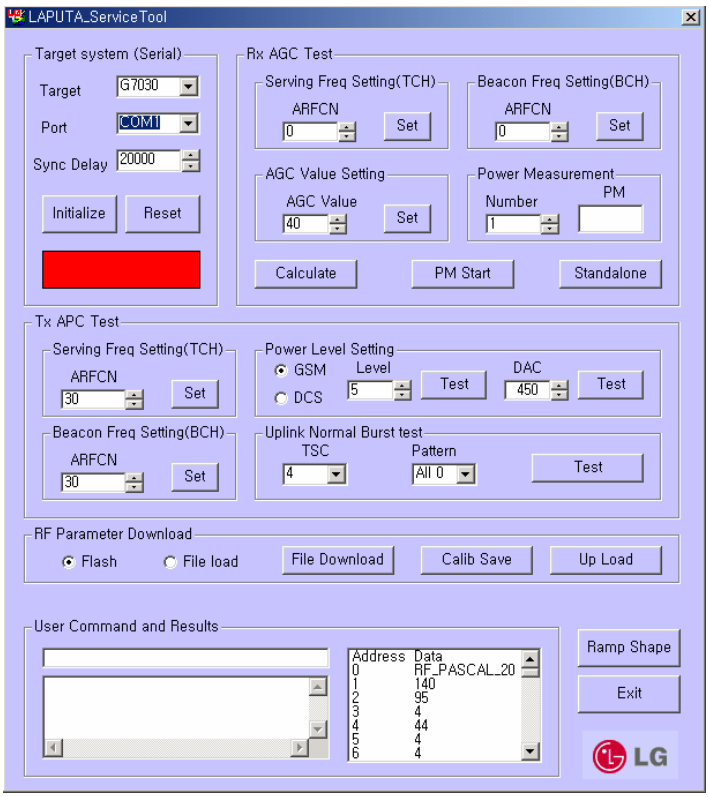
- More than 486 computer
- 16Mbyte RAM
- Remained more than 10Mbyte in Hard Disk Memory
- Under Microsoft window 98 or more than

7.1.3 Software Installation

Unzip the phones service software provided where slide you want there are some files extracted in that slide. Start Setup.exe in Service software setup slide. RampTable.dat, default transmit ramping table, and rf_original_L1100.epm, default calibration data, are located in window system slide so that these files are loaded automatically, if you execute LaputaService.exe.

7.1.4 Common Properties of Service Software

When you execute this program, you'll see the below user interface window titled LAPUTA_Service Tool in figure 7-1. The LAPUTA_Service Tool has five main frames.



A. Target System Frame

This is for initializing the target phone. When you use this program to test L1100 phone, you have to initialize target at first. To initialize target phone, select target (L1100 is default) and COM port used at your computer and then click the Initialize button. If target initializing is ended successfully, the box in red below the initialize button will turn into green.

B. RX AGC Test Frame

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

Serving Freq. Setting (TCH)

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

Beacon Freq. Setting (BCH)

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

AGC Value Setting

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

Power Measurement

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

PM Start

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

Calculate

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

Standalone

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

C. TX APC Test Frame

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

Serving Freq. Setting (TCH)

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

Beacon Freq. Setting (BCH)

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

Power Level Setting

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

Uplink Normal Burst test

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

Test

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

D. RF Parameter Download Frame

Saving epm file into Flash

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

Saving Cal. Data to Flash

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

E. User Command and Results Frame

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

F. Ramp shape button

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

7.2 Calibration

7.2.1 Overview

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

7.2.2 Equipment List

Table 7-1. Calibration Equipment List

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

7.2.3 Equipment Setup

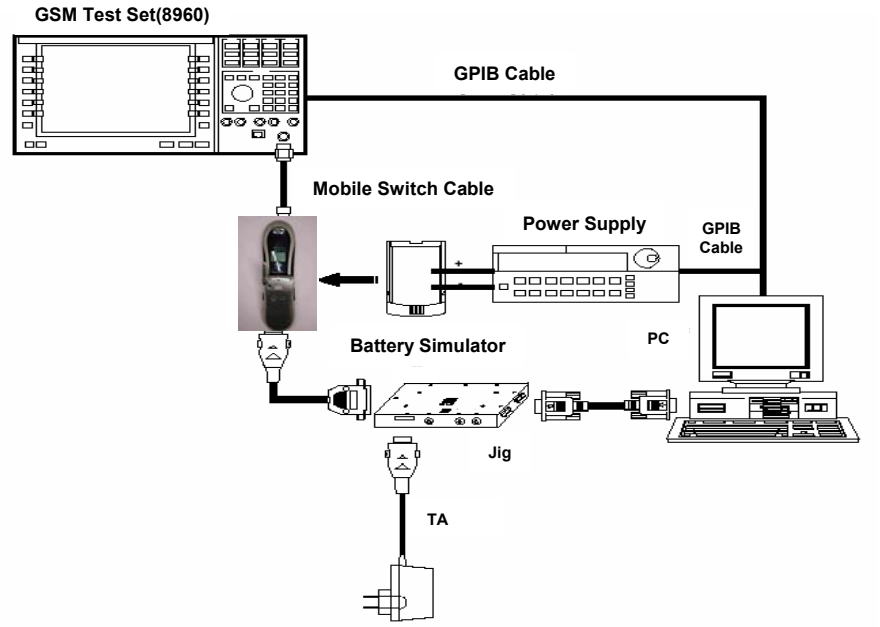


Figure 7-1 Calibration Equipment List

7.2.4 Calibration steps

A. RX Calibration

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

E-GSM band : 0, 40, 124, 975, and 1023.
DCS band : 512, 574, 636, 700, 760, 822 and 885.

Procedure

a) Initialize phone by clicking Initialize button.
b) Set the GSM test equipment CW mode and BCH and TCH of GSM test equipment ‘0’, same with phone.
c) Set the power of GSM test equipment ‘–74dBm’.
d) Click the PM Start button, then the value, received power by phone, is displayed in PM measurement window at service software.
e) Change the BCH and TCH of phone by clicking the Number button and set the channel (BCH & TCH) of equipment to be same.

f) Click the PM Start button.
g) Repeat above procedure until the displayed number in Power Measurement window is 12.
h) Click the Calculate button, then the service software calculate the channel compensation parameters.
i) Saving updated calibration data into phone by clicking Calib Saving button.

NOTE

If the calibration does not done for all channels, 5 channels for EGSM 900 and 7 channels for DCS1800, the service software reports, “Please execute after measuring the PM”.

B. TX Calibration

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

E-GSM band : 62.
DCS band : 699.

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

Table 6-2 TX Target Powers

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

Procedure

a) Initialize phone by clicking Initialize button.
b) Set the BCH and TCH of the phone 62 for E-GSM900 and 699 for DCS1800. Of cause you have to match test equipment's BCH and TCH ARFCN with this value. For each power level, adjust the DAC value to get target power and click Test button. Then you can see the output power displayed on test equipment.
c) Saving updated calibration data into phone by clicking Calib Saving button.

7.2.5 Test JIG Operation

JIG Power

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

JIG DIP Switch

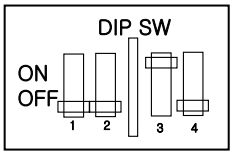
Switch Number	Name	Description
Switch 1	ADI_REMOTE	In On state phone is awaked. Not used - OFF state
Switch 2	TI_REMOTE	In On state phone is awaked.
Switch 3	VBAT	Power is provided for phone from Power supply
Switch 4	PS	Power is provided for phone from DC adaptor

JIG LED

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

Operation

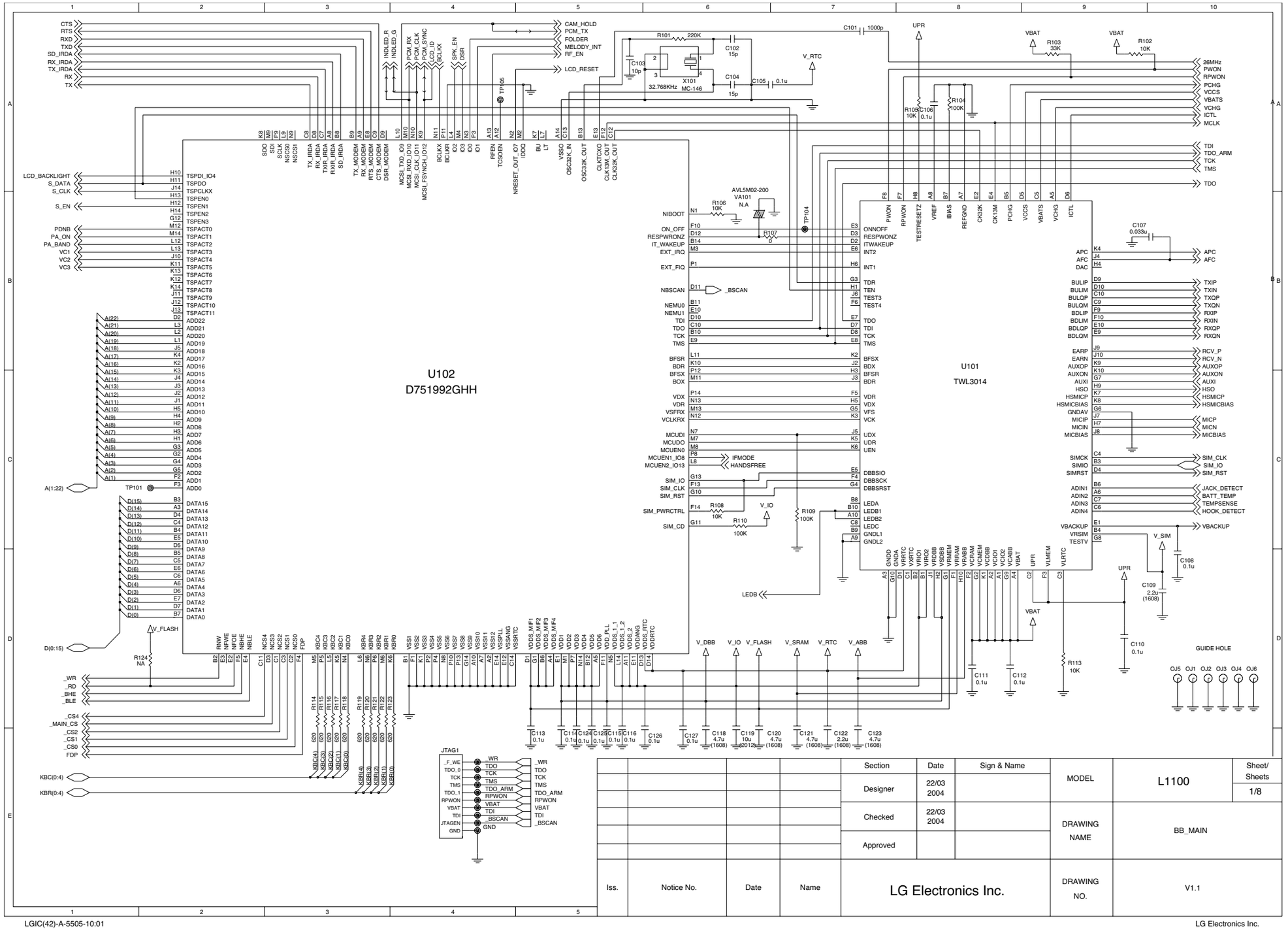
1) Connect the RS232 serial cable between COM port of notebook and MON port of test JIG in general
2) Set the power supply 4.0V
3) set the 3rd of DIP SW ON state.
4) set the 4th of DIP SW ON state.



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

8. Circuit Diagram

8.1 BB_MAIN



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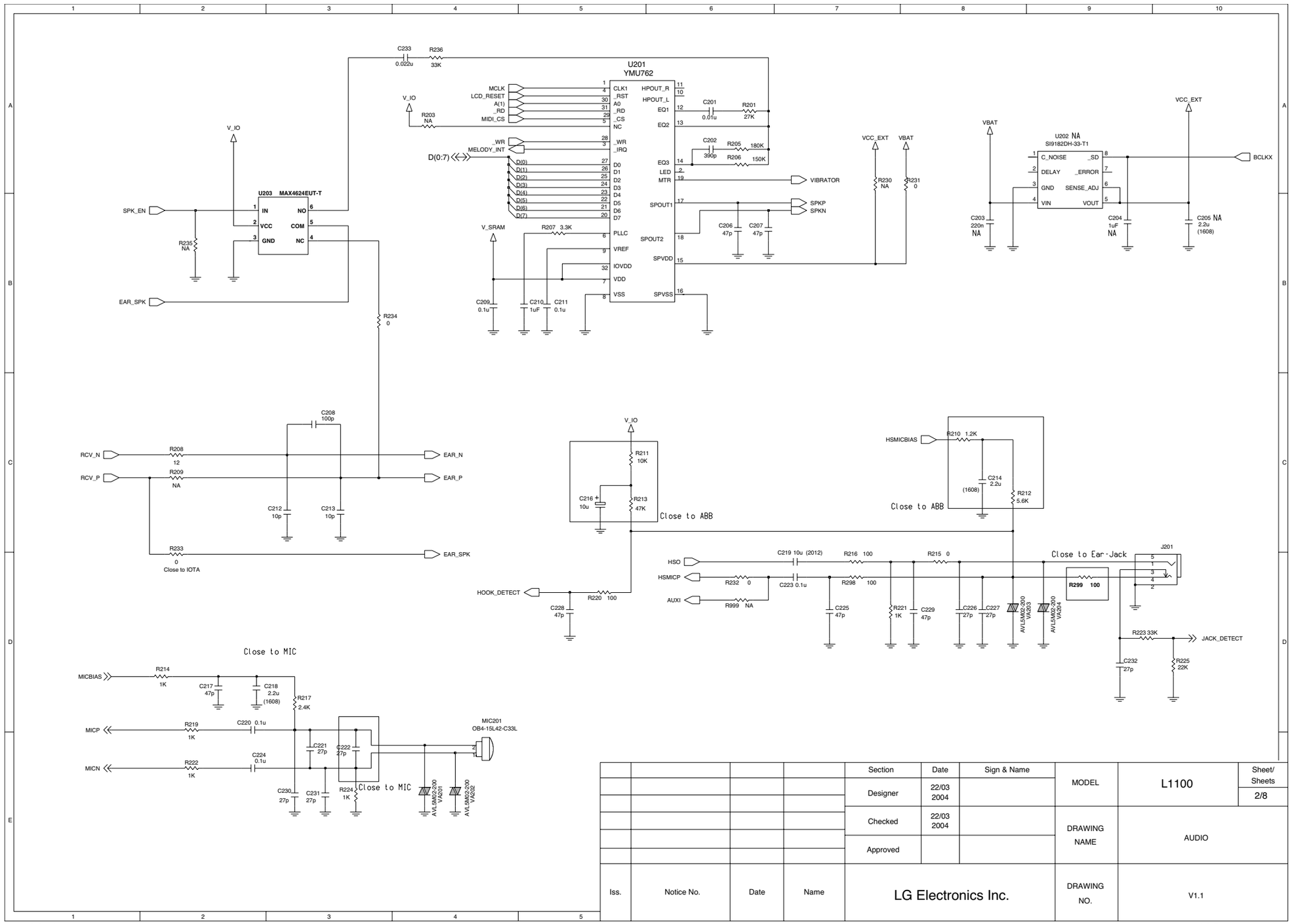
Checked	22/03 2004		DRAWING NAME	BB_MAIN	
Approved					

Iss.	Notice No.	Date	Name	LG Electronics Inc.	DRAWING NO.	V1.1

8.2 AUDIO



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				Approved					
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	V1.1	

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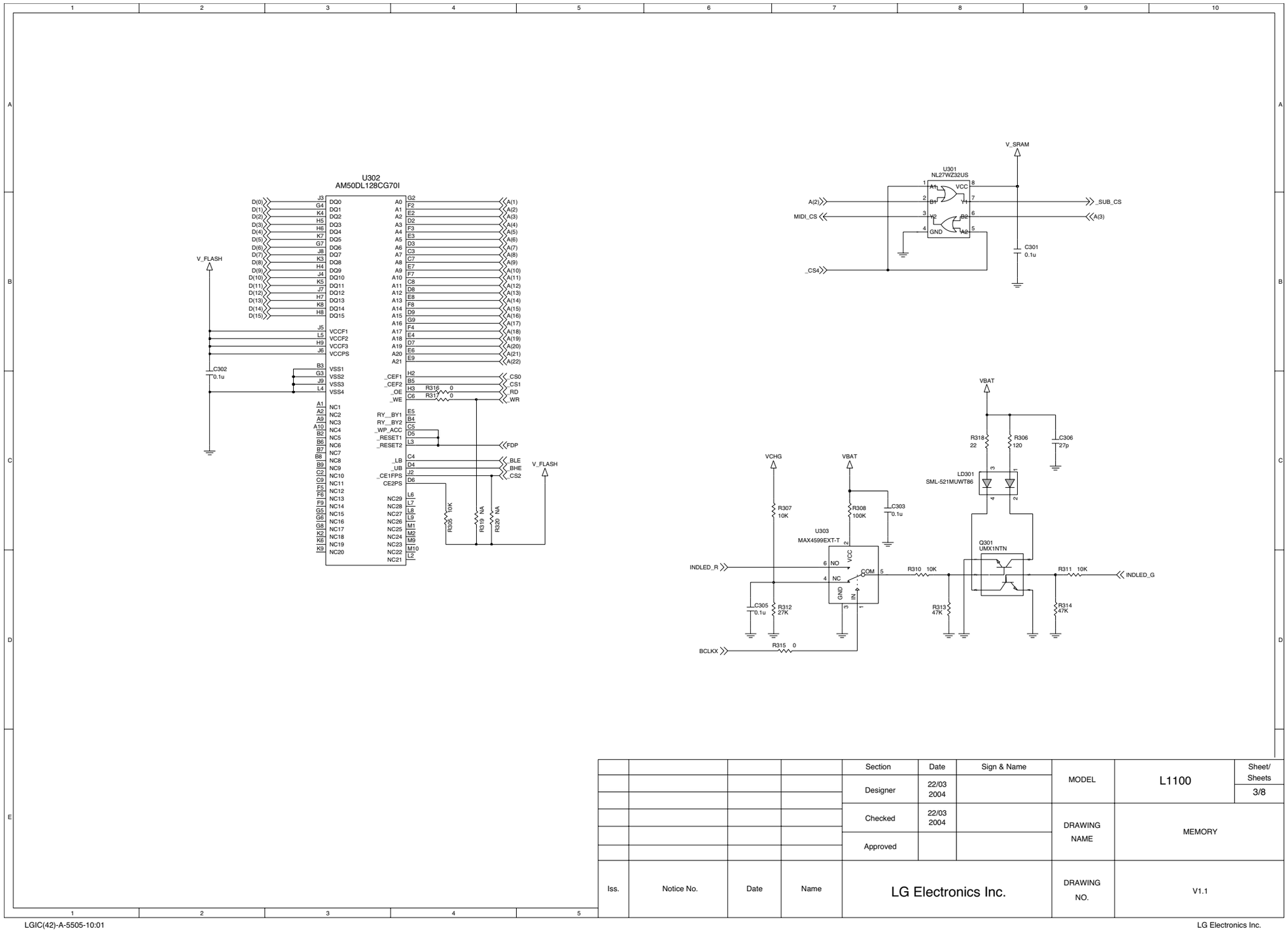
LG Electronics Inc.

8.3 MEMORY



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				Approved					
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	V1.1	

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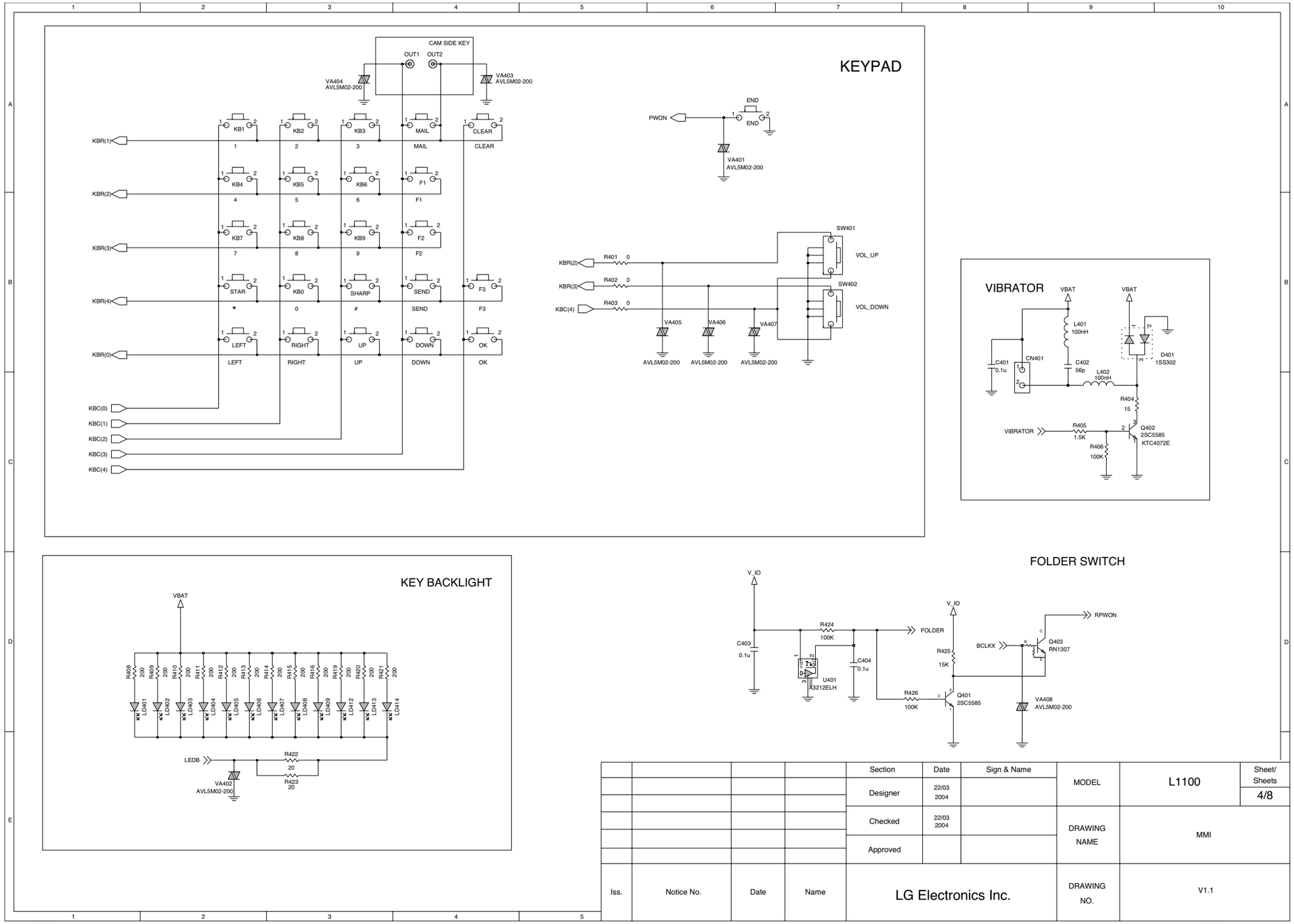
LG Electronics Inc.

8.4 MMI



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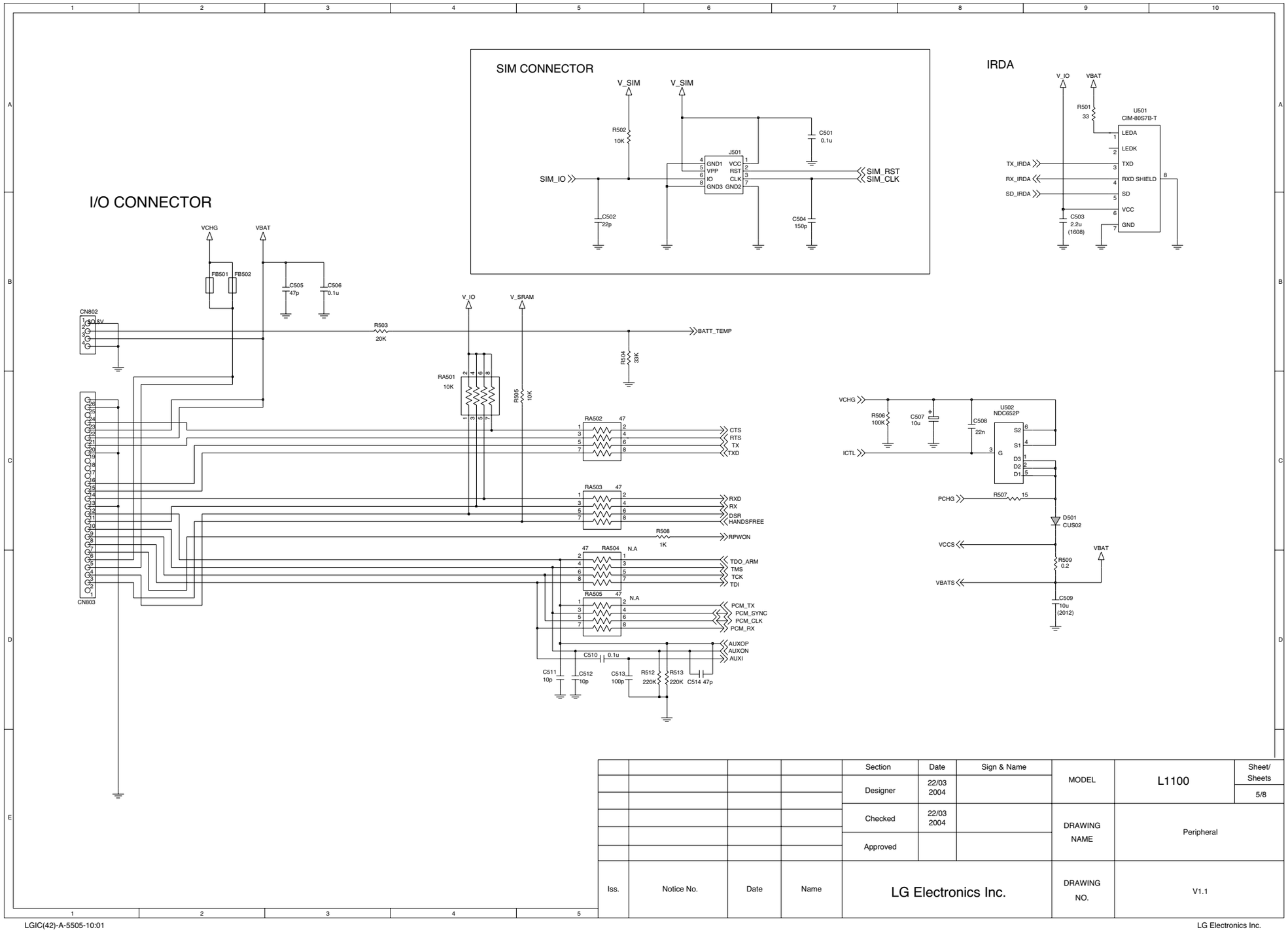
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	V1.1	

8.5 Peripheral



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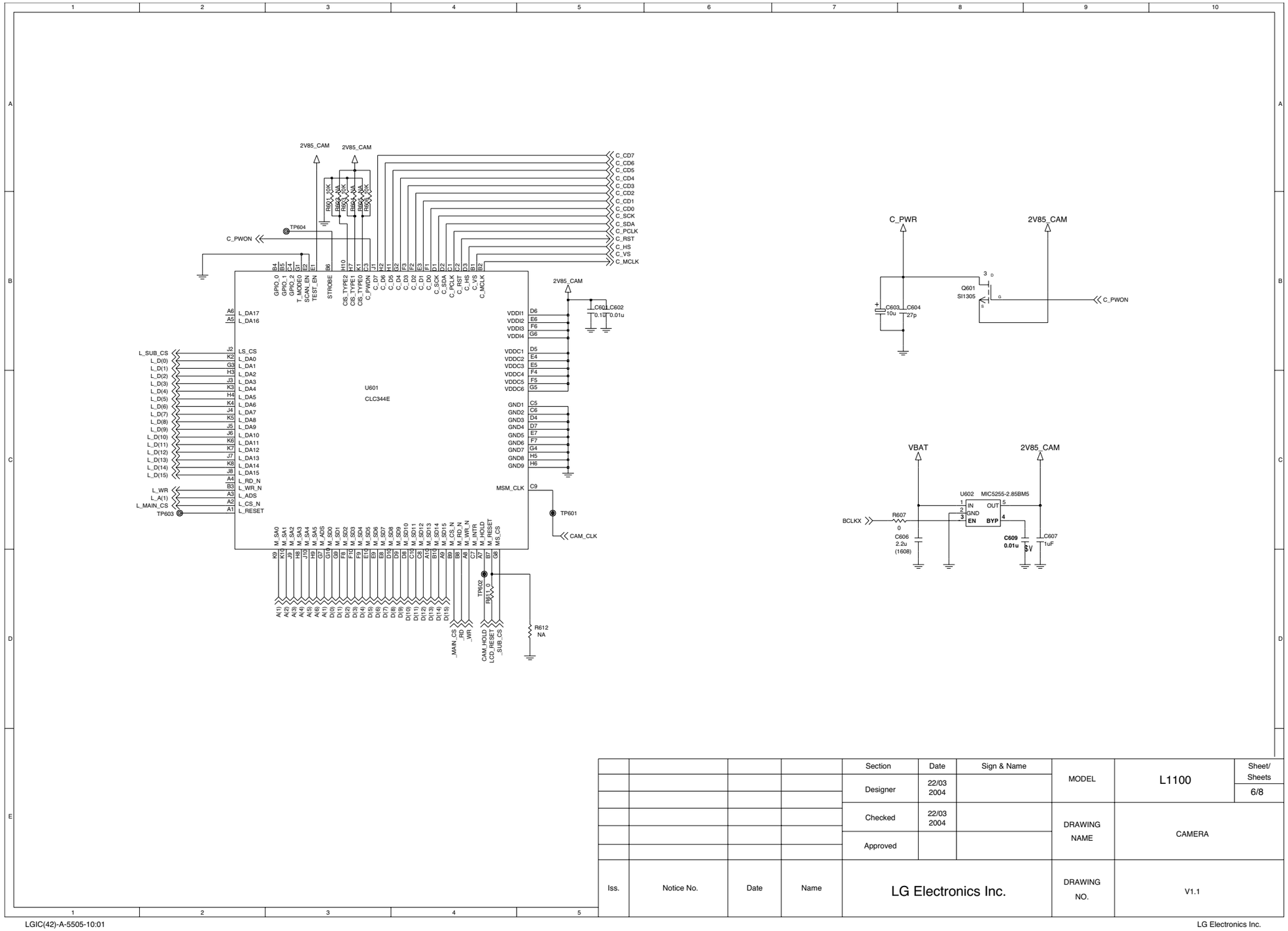
8.6 CAMERA



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				Approved					
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	V1.1	

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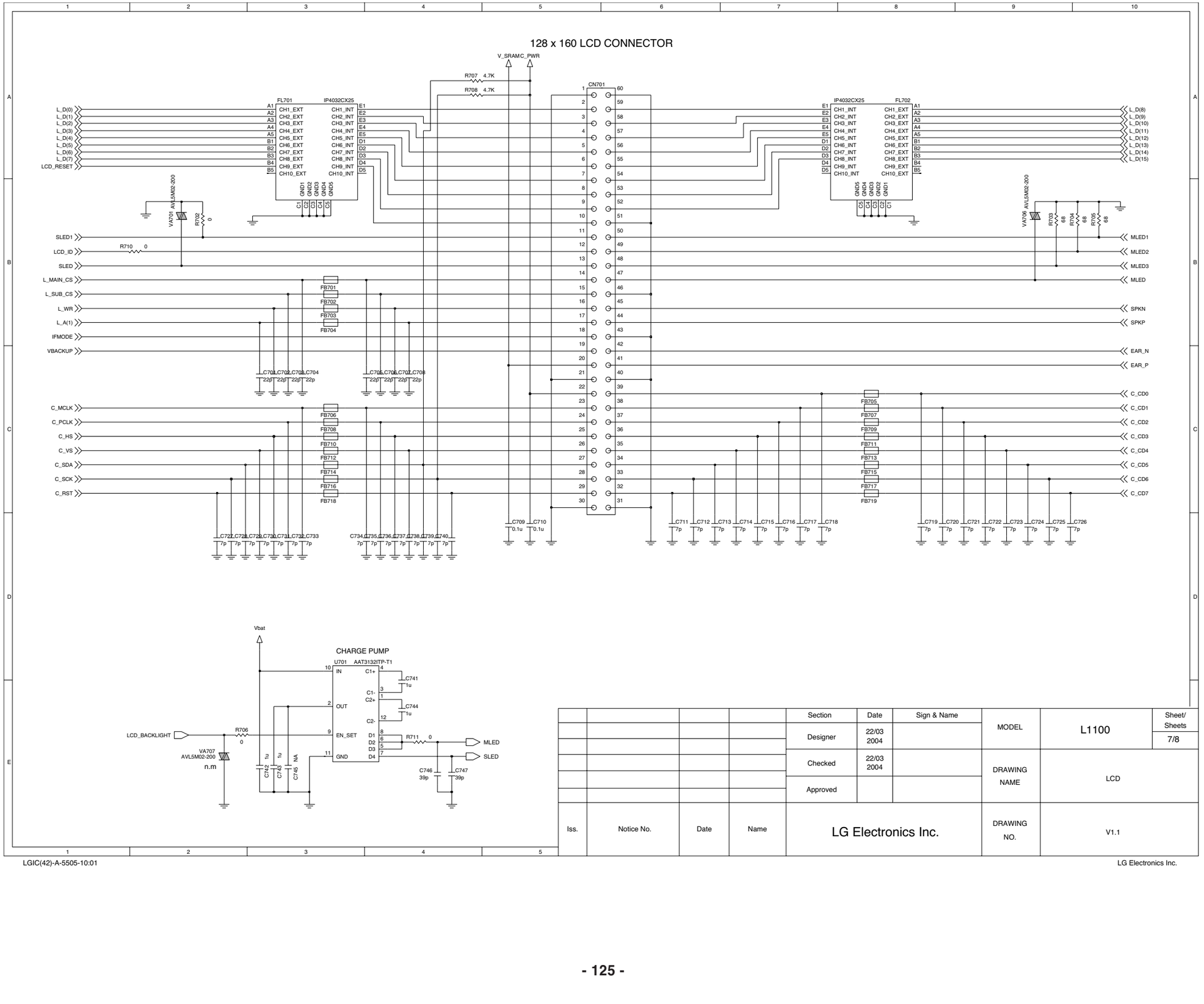
8.7 LCD



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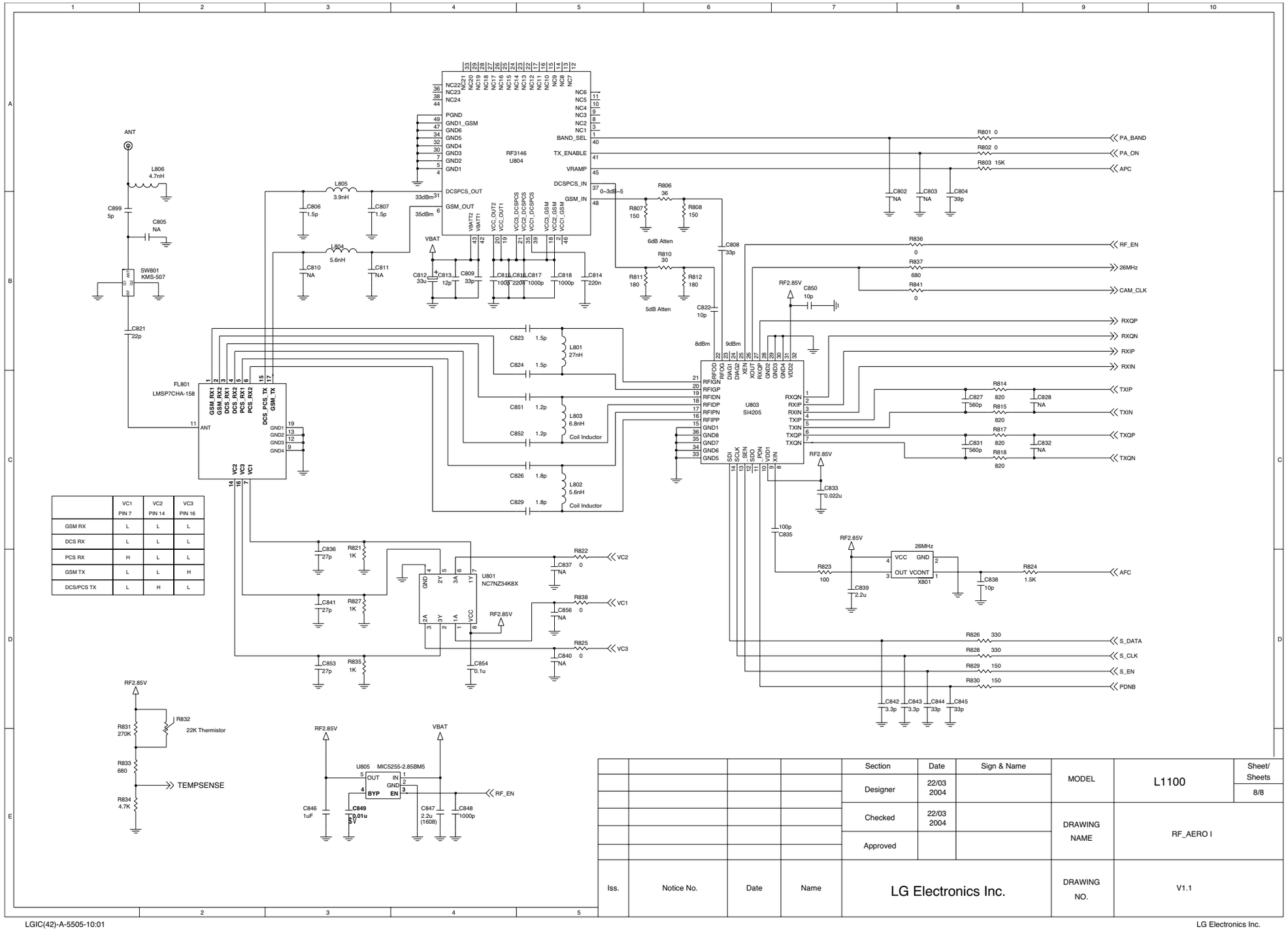
8.8 RF_AERO I



VC1 PIN 7	VC2 PIN 14	VC3 PIN 16
GSM RX	L	L	L
DCS RX	L	L	L
PCS RX	H	L	L
GSM TX	L	L	H
DCS/PCS TX	L	H	L

Iss.	Notice No.	Date	Name	Section	Date	Sign & Name	MODEL	L1100	Sheet/ Sheets
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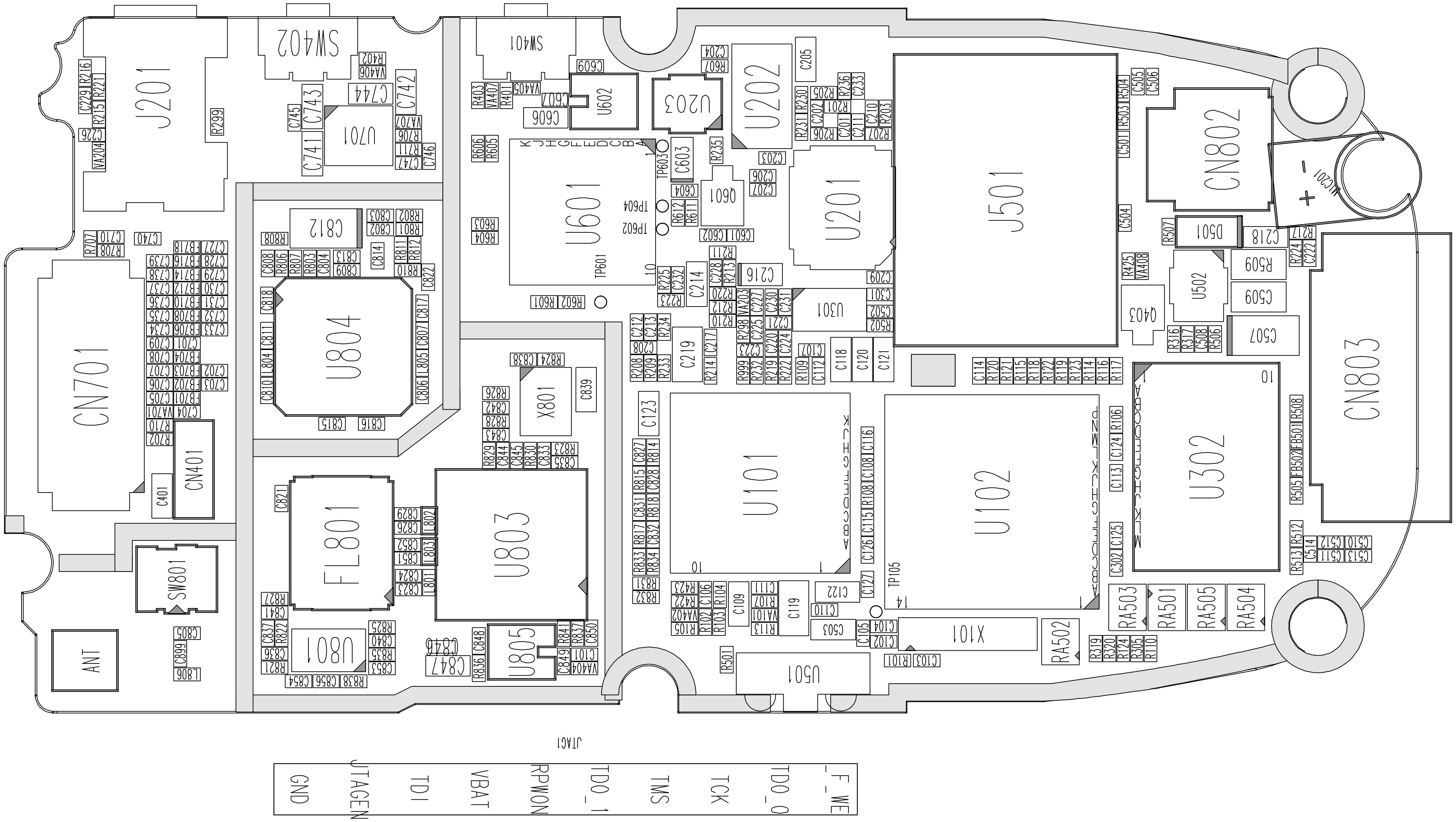
9. PCB LAYOUT



J201
SW402
SW401
U701
U602
U203
U202
U601
U201
J501
CN802
CN701
CN401
U804
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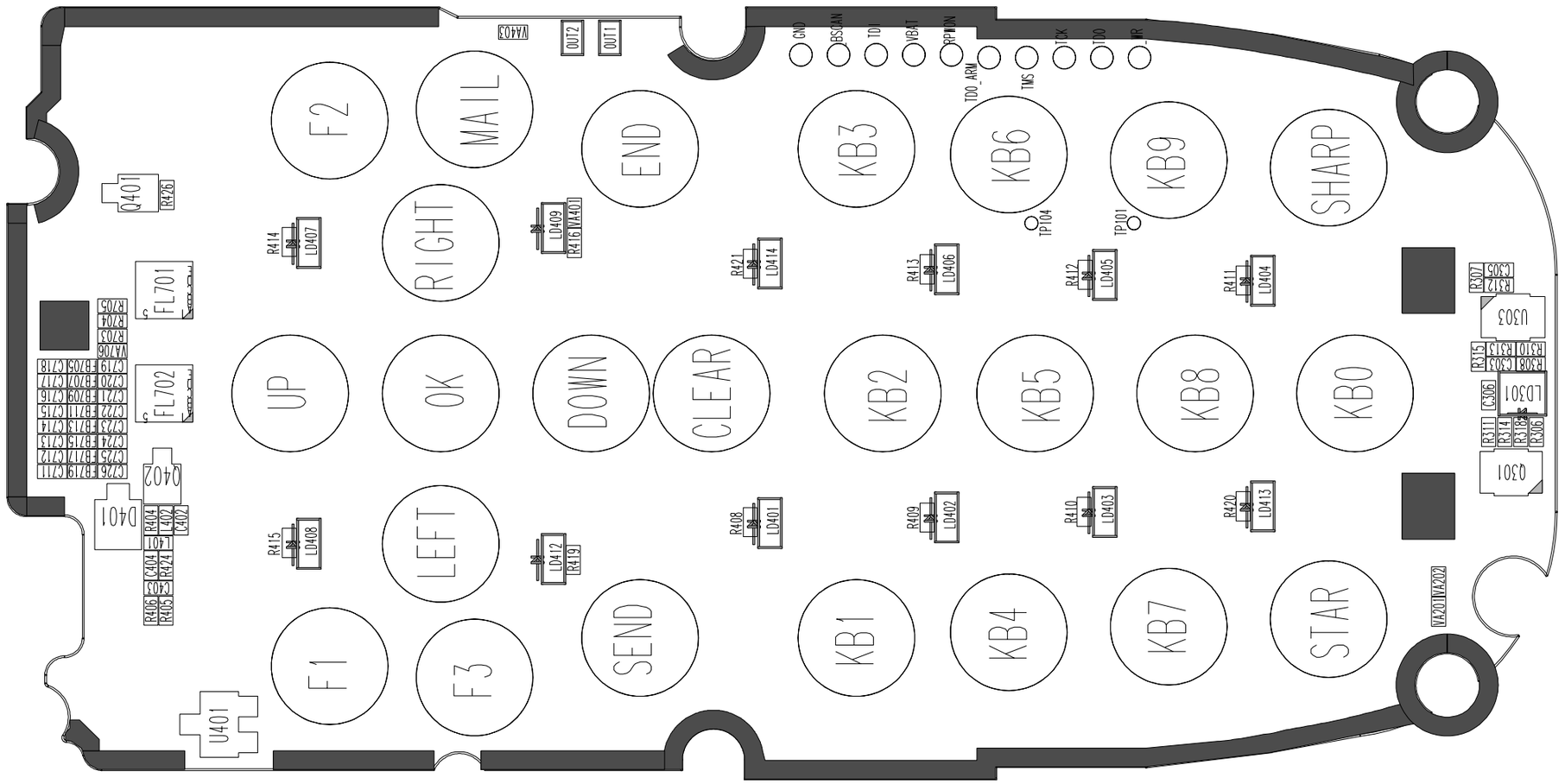
FL801
SW801
ANT
U801
U805
U101
U102
U302
CN803
U301
U502
D501
X101
U501
RA501
RA502
RA503
RA504
RA505
JTAG1
GND
JTAGEN
TDI
VBAT
RPWON
TDO_1
TMS
TCK
TDO_0
_F_WE

9. PCB LAYOUT


F2
MAIL
RIGHT
END
KB3
KB6
KB9
SHARP
UP
OK
DOWN
CLEAR
KB2
KB5
KB8
KB0
LEFT
SEND
KB1
KB4
KB7
STAR
F1
F3
GND
BSCAN
TDI
VBAT
RPWDN
TDO_ARM
TMS
TCK
TDO
TRST
OUT2
OUT1
VA403
Q401
R426
R414
LD407
LD409
LD416 (R416)
R421
LD414
R413
LD406
R412
LD405
R411
LD404
TP104
TP101
FL701
FL702
R705
R704
R703
VA706
C719
FB705
C718
C720
FB707
C717
C721
FB709
C716
C722
FB711
C715
C723
FB713
C714
C724
FB715
C713
C725
FB717
C712
C726
FB719
C711
Q402
D401
R404
L402
C402
L401
C404
R424
C403
R406
R405
R415
LD408
LD412
R419
R408
LD401
R409
LD402
R410
LD403
R420
LD413
U401
WA201
WA202
R307
C305
R312
U303
R315
R310
R313
R308
C303
LD301
C306
R311
R314
R318
R306
Q301

10. ENGINEERING MODE

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset. The key sequence for switching the engineering mode on is “2945#*# “Select. Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press ‘select’ key to progress the test. Pressing ‘back key will switch back to the original test menu.

[1] All auto test

[2] Baseband test

[2-1] LED

[2-1-1] BACKLIGHT ON/OFF

[2-1-2] INDICATOR LED ON/OFF

[2-1-3] KEYPAD ON/OFF

[2-2] LCD

[2-2-1] LCD AUTO

[2-2-2] LCD COLOR

[2-3] CAMERA

[2-3-1] PREVIEW

[2-3-2] SETTING

[2-4] FONT

[2-4-1] FONT 8×10

[2-4-2] FONT 8×10 I

[2-4-3] FONT 8×16

[2-4-4] FONT 8×16 I

[2-4-5] FONT 8×16 B

[2-4-6] FONT 10×19

[2-4-7] FONT 13×20

[2-5] ALERT

[2-5-1] VIBRATOR

[2-5-2] RING

[2-5-3] EFFECT SOUND

[2-5-4] IMELODY TEST

[2-5-5] EMS SOUND

[2-6] SERIAL PORT

[2-6-1] MODEM

[2-6-2] IrDA

[2-7] BATTERY INFO1

[2-8] AUDIO GAIN

[2-8-1] RECEIVER

[2-8-2] EAR MIC

[2-8-3] LOUD SPEAKER

[2-8-4] HANDSFREE

[2-8-5] DEFAULT VALUE

[2-9] IrDA TEST

[3] S/W VERS

[4] ENG MODE

[4-1] CELL ENVIRON

[4-2] LOCATION INFO

[4-3] LAYER1 INFO

[5] CALL TIMER

[6] FACTORY DEFAULT

11. STANDALONE TEST

11.1 Setting Method

11.1.1 COM Port

In the “Dialog Menu”, select the values as explained below.
• Port : select a correct COM port
• Baudrate : 38400
• Leave the rest as default values

11.1.2 Tx Test

1. Selecting Channel

• Select one of EGSM 900, DCS, PCS Band and input appropriate channel.

2. Selecting APC

a. Select either Power level or DAC value.
b. Power level
• Input appropriate value GSM (between 5~19) or DCS (between 0~15)
c. DAC value
• You may adjust directly the power level with DAC values.

11.1.3 Rx Test

1. Selecting Channel

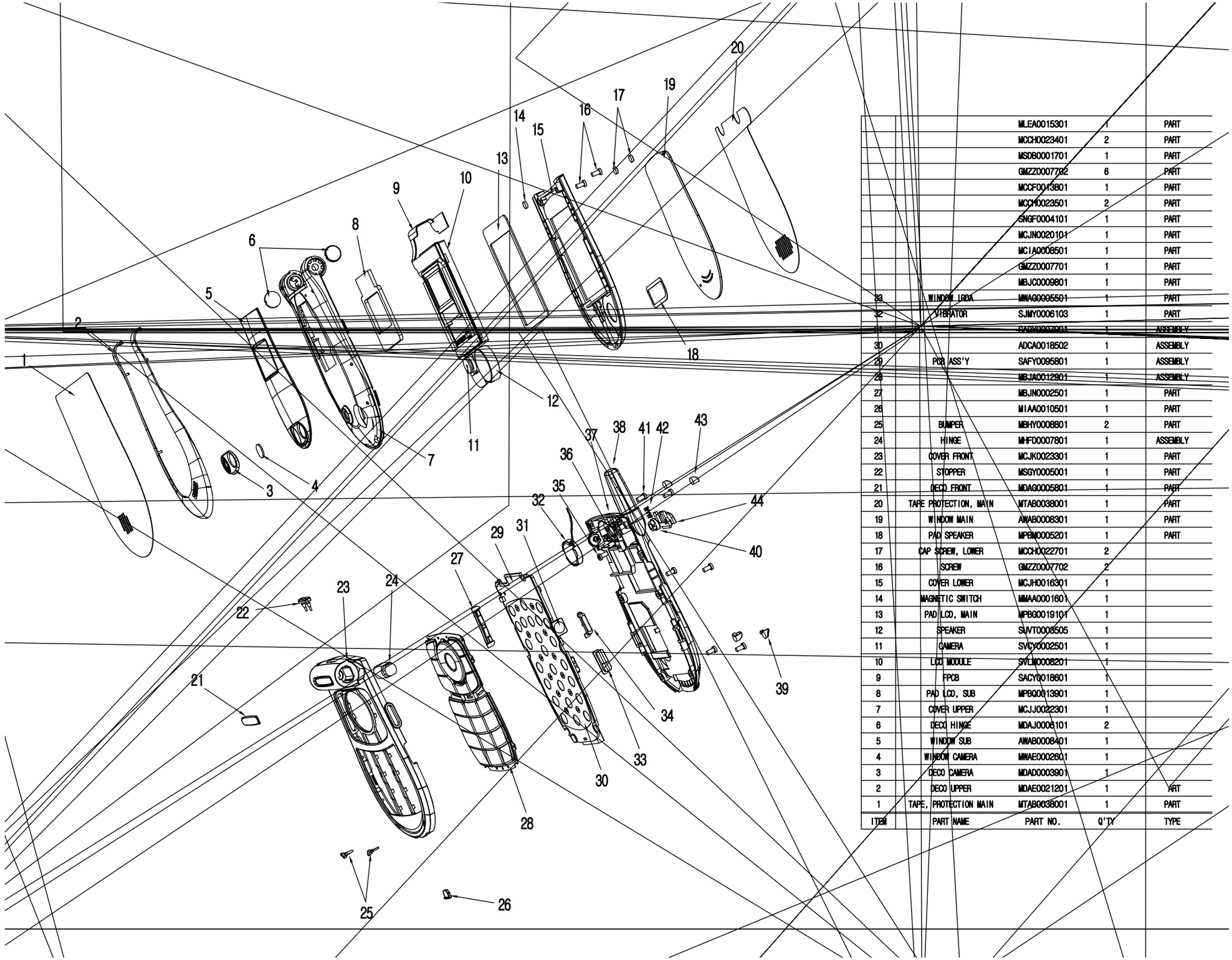
• Select one of EGSM 900, DCS, PCS Band and input appropriate channel.

2. Automatic Gain Control and Instrument Power level

See if the value of RSSI is close to -60dBm when setting the value 40 AGC Value Setting.
• Normal phone should indicate the value of RSSI close to -60dBm.

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW



ITEM		PART NAME	PART NO.	Q'TY	TYPE
1		TAPE, PROTECTION MAIN	MTAB0038001	1	PART
2		DECO UPPER	MDAE0021201	1	PART
3		DECO CAMERA	MDAD0003901	1	
4		WINDOW CAMERA	MWAE0002601	1	
5		WINDOW SUB	AWAB0008401	1	
6		DECO HINGE	MDAJ0008101	2	
7		COVER UPPER	MCJJ0022301	1	
8		PAD LCD, SUB	MPBQ0013901	1	
9		FPCB	SACY0018601	1	
10		LCD MODULE	SVLM0008201	1	
11		CAMERA	SVCY0002501	1	
12		SPEAKER	SUVT0003505	1	
13		PAD LCD, MAIN	MPBG0019101	1	
14		MAGNETIC SWITCH	MMAA0001601	1	
15		COVER LOWER	MCJH0016301	1	
16		SCREW	GMZZ0007702	2	
17		CAP SCREW, LOWER	MCCH0022701	2	
18		PAD SPEAKER	MPBM0005201	1	PART
19		WINDOW MAIN	AWAB0008301	1	PART
20		TAPE PROTECTION, MAIN	MTAB0038001	1	PART
21		DECO FRONT	MDAG0005801	1	PART
22		STOPPER	MSGY0005001	1	PART
23		COVER FRONT	MCJK0023301	1	PART
24		HINGE	MHFD0007801	1	ASSEMBLY
25		BUMPER	MBHY0008801	2	PART
26			MIAA0010501	1	PART
27			MBJN0002501	1	PART
28			MBJA0012901	1	ASSEMBLY
29		PCB ASS'Y	SAFY0095801	1	ASSEMBLY
30			ADCA0018502	1	ASSEMBLY
31			SAMY0002903	1	ASSEMBLY
32		VIBRATOR	SJMY0006103	1	PART
33		WINDOW IRDA	MWAG0005501	1	PART
			GMZZ0007701	1	PART
			MCIA0008501	1	PART
			MCJN0020101	1	PART
			SNGF0004101	1	PART
			MCCH0023501	2	PART
			MCCF0013801	1	PART
			GMZZ0007702	6	PART
			MSDB0001701	1	PART
			MCCH0023401	2	PART
			MLEA0015301	1	PART

12.2 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)	TGFF0031801	L1100	Dark Gray	
2	ABEZ00	BOX ASSY	ABEZ0038802	BOX ASSY(for L1100 ORU)	Dark Gray	
3	MBAD00	BAG,VINYL(PE)	MBAD0002901	LOWDENSITY POLYETHYLENE(t=0.05mm)		
3	MBEE00	BOX,MASTER	MBEE0040901	BOX,MASTER(New_package_mbox)	Silver	
3	MBEF00	BOX,UNIT	MBEF0059001	BOX,UNIT(for L1100 ORU)	Dark Gray	
3	MLAJ00	LABEL,MASTER BOX	MLAJ0002201	LABEL,MASTER BOX(G4010 for Cingular)	Metalic Silver	
3	MLAQ00	LABEL,UNIT BOX	MLAQ0001601		Dark Gray	
3	MPAD00	PACKING,SHELL	MPAD0004501	PACKING,SHELL(New_package_wo_datakit)	Silver	
3	MPCY00	PALLET	MPCY0009503	PALLET(G7100 for Orange UK_Angle)	Black	
3	MPCY01	PALLET	MPCY0009501	PALLET(G7100 for Orange UK_EUR)	Black	
3	MPCY02	PALLET	MPCY0009502	PALLET(G7100 for Orange UK_Cap)	Black	
2	AMBA00	MANUAL ASSY,OPERATION	AMBA0034902	L1100 User Manual assay for UK Orange		
3	MMBB00	MANUAL,OPERATION	MMBB0121102	L1100 User manual for Orange UK		
2	APEY02	PHONE	APEY0134801		Dark Gray	
3	ACGG00	COVER ASSY,FOLDER	ACGG0037202	L1100 FOLDER ASSY, ORANGE	Dark Gray	
4	ACGH00	COVER ASSY,FOLDER(LOWER)	ACGH0020202	L1100 COVER ASS'Y LOWER	Dark Gray	
5	MCJH00	COVER,FOLDER(LOWER)	MCJH0016302	L1100 LOWER COVER	Dark Gray	15
5	MMAA00	MAGNET,SWITCH	MMAA0001601	7100 magnetic	Silver	14
5	MPBG	PAD,LCD	MPBG0019101	L1100 PAD, MAIN LCD	Black	13
5	MPBM	PAD,RECEIVER	MPBM0005201	L1100 RECEIVER FELT	Black	18
5	MPBZ00	PAD	MPBZ0051901	PAD LOWER, 4*6*0.2T		
5	MTAD	TAPE,WINDOW	MTAD0020201	L1100 TAPE(FOR WINDOW MAIN)	Metalic Silver	
4	ACGJ	COVER ASSY,FOLDER(UPPER)	ACGJ0029302	L1100 COVER ASS'Y UPPER	Dark Gray	
5	MCJJ	COVER,FOLDER(UPPER)	MCJJ0022302	L1100 COVER_UPPER	Dark Gray	7
5	MDAE	DECO,FOLDER(UPPER)	MDAE0021201	L1100 DECO_UPPER	Silver	2
5	MGAD00	GASKET,SHIELD FORM	MGAD0046001	L1100 4*33*1.0T	Silver	
5	MICA00	INSERT,FRONT	MICA0001201	LG-G510,511,512 common use, DIA = 1.7mm+2.3t		
5	MPBQ00	PAD,LCD(SUB)	MPBQ0013901	L1100 PAD, SUB LCD	Black	8
5	MPBZ	PAD	MPBZ0044601	L1100 SWS24P 5*34*1.0T	Black	
5	MTAE	TAPE,WINDOW(SUB)	MTAE0013801	L1100 TAPE(FOR WINDOW SUB & DECO UPPER)	Metalic Silver	

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	MTAZ00	TAPE	MTAZ0026401	L1100 TAPE LENS CAMERA	Metalic Silver	
4	ACGK	COVER ASSY,FRONT	ACGK0031903	L1100 COVER ASS'Y FRONT	Dark Gray	
5	MBHY00	BUMPER	MBHY0008802	L1100 BUMPER(COVER, FRONT)	Dark Gray	25
5	MBJN00	BUTTON,VOLUME	MBJN0002501	L1100 BUTTON, SIDE		27
5	MCJK	COVER,FRONT	MCJK0023302	L1100 COVER FRONT	Dark Gray	23
5	MDAG00	DECO,FRONT	MDAG0005801	L1100 FRONT DECO	Silver	21
5	MIAA00	INDICATOR,LED	MIAA0010501	L1100		26
5	MICA00	INSERT,FRONT	MICA0001201	LG-G510,511,512 common use, DIA = 1.7mm+2.3t		
5	MSGY00	STOPPER	MSGY0005002	L1100	Dark Gray	22
5	MTAA00	TAPE,DECO	MTAA0041801	L1100 TAPE DECO(FRONT)	Metalic Silver	
5	MWAG00	WINDOW,IRDA	MWAG0005501	L1100	Dark Blue	33
4	ADBY00	DECO ASSY	ADBY0003601	L1100 DECO ASSY (TAPE + HINGE DECO)	Silver	
5	MDAJ00	DECO,HINGE	MDAJ0006101	L1100 DECO_HINGE	Silver	6
5	MTAA	TAPE,DECO	MTAA0041901	L1100 TAPE DECO HINGE	Metalic Silver	
4	AWAB00	WINDOW ASSY,LCD	AWAB0008301	L1100 MAIN WINODW ASSY	Silver	19
5	BFAA00	FILM,INMOLD	BFAA0014801	L1100 INMOLD FILM(FOR MAIN WINDOW)	Silver	
5	MWAC	WINDOW,LCD	MWAC0036301	L1100 MAIN LCD WINDOW		
4	AWAB01	WINDOW ASSY,LCD	AWAB0008402	L1100 ORANGE, SUB WINDOW	Dark Gray	5
5	BFAA00	FILM,INMOLD	BFAA0014902	L1100 INMOLD, OPEN MARKET(FOR SUB WINDOW)	Dark Gray	
5	MWAF	WINDOW,LCD(SUB)	MWAF0018301	L1100 SUB LCD WINDOW		
4	GMZZ00	SCREW MACHINE	GMZZ0007702	1.7 mm,3.5 mm,MSWR3(FZY) ,N ,STR ,- ,T OF HEAD= 0.9 DIA OF HEAD=2.7 1.7 mm,3.5 mm,MSWR3(FZY) ,N ,STR ,- ,T OF HEAD= 0.9 DIA OF HEAD=2.7	Black	16,41
4	MCCH00	CAP,SCREW	MCCH0022702	L1100 CAP SCREW(LOWER)	Dark Gray	17
4	MDAD	DECO,CAMERA	MDAD0003901	L1100 DECO_CAMERA	Silver	3
4	MGAD02	GASKET,SHIELD FORM	MGAD0053101	SHIELD FORM, 2.8*5*2.0T	Silver	
4	MHFD00	HINGE,FOLDER	MHFD0007801	L1100 HINGE(pi 7.0*11.5L)		24
4	MIDA00	INSULATOR,LCD	MIDA0011401	22x17x0.05t	Gloden Yellow	
4	MIDZ00	INSULATOR	MIDZ0041101	INSULATOR, FPCB	Light Blue	
4	MIDZ01	INSULATOR	MIDZ0040801	12X4X0.05t	Light Blue	
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0006401	PAD, B To B CONN., 6.9*15*0.5T	Black	
4	MPBZ00	PAD	MPBZ0048301	6X6X0.8t, PAD, FPCB MIDDLE	Black	

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	MTAA	TAPE,DECO	MTAA0042001	L1100 TAPE DECO CAMERA	Metalic Silver	
4	MTAB00	TAPE,PROTECTION	MTAB0038001	PROTECTION TAPE(FOR MAIN WINDOW)		1,20
4	MTAB01	TAPE,PROTECTION	MTAB0038101	PROTECTION TAPE(FOR SUB WINDOW)		
4	MTAZ00	TAPE	MTAZ0029801	TAPE, LCD CONDUCTIVE	Black	
4	MWAE00	WINDOW,CAMERA	MWAE0002601	L1100 CAMERA WINDOW (pi 6.3*0.55T)		4
3	ACGM00	COVER ASSY,REAR	ACGM0030001	L1100 COVER ASSY, REAR	Silver	
4	ACGM00	ANTENNA,GSM,FIXED	SNGF0004101	3.0 ,-2 dBd,SILVER ,GSM+DCS+PCS,L1100,EXTERNAL		38
4	GMZZ00	SCREW MACHINE	GMZZ0007701	1.7 mm,3.5 mm,MSWR3(FZY) ,N ,STR ,- ,T OF HEAD= 0.9 DIA OF HEAD=2.7	Gold	35
4	MCCC00	CAP,EARPHONE JACK	MCCC0013701	L1100	Silver	
4	MCIA00	CONTACT,ANTENNA	MCIA0008501	G5500 EUASV	Gold	36
4	MCJN00	COVER,REAR	MCJN0020101	L1100 REAR COVER	Silver	37
4	MICA00	INSERT,FRONT	MICA0001201	LG-G510,511,512 common use, DIA = 1.7mm+2.3t		
4	MLAB00	LABEL,A/S	MLAB0001101	G4015 ATTSV	Red	
4	MLEA00	LOCKER,BATTERY	MLEA0015301	L1100		44
4	MSDB00	SPRING,COIL	MSDB0001701	G7000	Pearl White	42
3	ADCA00	DOME ASSY,METAL	ADCA0018502	L1100, L1150 DOME ASS'Y METAL	Silver	30
3	GMZZ00	SCREW MACHINE	GMZZ0007702	1.7 mm,3.5 mm,MSWR3(FZY) ,N ,STR ,- ,T OF HEAD= 0.9 DIA OF HEAD=2.7 1.7 mm,3.5 mm,MSWR3(FZY) ,N ,STR ,- ,T OF HEAD= 0.9 DIA OF HEAD=2.7	Black	
3	MBJA	BUTTON,DIAL	MBJA0012901	L1100 ORANGE UK		28
3	MBJC00	BUTTON,FUNCTION	MBJC0009801	L1100 BUTTON CAMERA		34
3	MCCF00	CAP,MOBILE SWITCH	MCCF0013801	L1100	Silver	40
3	MCCH00	CAP,SCREW	MCCH0023401	L1100 CAP SCREW REAR(UP)	Silver	43
3	MCCH01	CAP,SCREW	MCCH0023501	L1100 CAP SCREW REAR(DOWN)	Silver	39
3	MLAK00	LABEL,MODEL	MLAK0010701	G7200 (CE0889)	White	
3	MPBZ	PAD	MPBZ0051501	4*3.5*0.5T	Black	
3	SADY00	PCB ASSY,FUNCTION	SADY0007901			31

12.2 Replacement Parts
<Main component>

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

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	SACY00	PCB ASSY,FLEXIBLE	SACY0018601	L1100 EUACO	Cobalt Blue	9
5	BAT1	BATTERY,CELL,LITHIUM	SBCL0001001	3 V,1.2 mAh,COIN ,ASAHI BATTERY (ML414NB/F9D)		
5	C1	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C11	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C12	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C13	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C14	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C15	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C16	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C17	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C18	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C4	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C5	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C6	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C7	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C9	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	CN1	CONNECTOR,BOARD TO BOARD	ENBY0013405	40 PIN,0.4 mm,STRAIGHT ,Au ,B to B CNT BOSS		
5	CN2	CONNECTOR,BOARD TO BOARD	ENBY0013409	20 PIN,0.4 mm,ETC ,AU ,		
5	CN3	CONNECTOR,BOARD TO BOARD	ENBY0013407	60 PIN,0.4 mm,STRAIGHT ,AU ,WLL LM-D100		
5	FB1	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
5	R1	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R2	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R3	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R4	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R5	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R6	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R7	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	SPCY	PCB,FLEXIBLE	SPCY0031201	POLYI ,.5 mm,MULTI-6 ,		
5	VA1	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA11	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA2	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA3	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA4	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
4	SUVT00	TWO-WAY MODE SPEAKER	SUVT0003505	8 ohm,32 ohm,87 dB,111 dB,16 mm,16*12		12

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	SVCY00	CAMERA	SVCY0002501	CMOS ,VGA ,VGA,CIS		11
4	SVLM00	LCD MODULE	SVLM0008201	128*160(1.86 ,36.2*48.7 ,Main TFT Sub 4-Gray(96*64) TM		10
3	SAFY	PCB ASSY,MAIN	SAFY0095801	L1100 EUA		29
4	MLAB00	LABEL,A/S	MLAB0001001	PCB A/S LAVEL		
4	MLAC00	LABEL,BARCODE	MLAC0003301	EZ LOOKS(use for PCB ASSY MAIN(hardware))		
4	SAFA00	PCB ASSY,MAIN,AUTO	SAFA0033901	L1100 EUA		
5	C101	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C102	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
5	C103	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C104	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
5	C105	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C106	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C107	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
5	C108	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C109	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C110	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C111	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C112	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C113	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C114	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C115	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C116	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C118	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C119	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C120	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C121	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C122	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C123	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C124	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C125	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C126	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C127	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C201	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C202	CAP,CERAMIC,CHIP	ECCH0000138	390 pF,50V,K,X7R,HD,1005,R/TP		
5	C206	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C207	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C208	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C209	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C210	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C211	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C212	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C213	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C214	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C216	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C217	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C218	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C219	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C220	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C221	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C222	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C223	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C224	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C225	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C226	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C227	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C228	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C229	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C230	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C231	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C232	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C233	CAP,CERAMIC,CHIP	ECCH0000159	22 nF,16V,K,X7R,HD,1005,R/TP		
5	C301	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C302	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C303	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C305	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C306	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C401	CAP,CERAMIC,CHIP	ECCH0000271	0.1 uF,16V,K,X7R,HD,1608,R/TP		
5	C402	CAP,CERAMIC,CHIP	ECCH0000124	56 pF,50V,J,NP0,TC,1005,R/TP		
5	C403	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C404	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C501	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C502	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C503	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C504	CAP,CERAMIC,CHIP	ECCH0000130	150 pF,50V,J,SL,TC,1005,R/TP		
5	C505	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C506	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C507	CAP,TANTAL,CHIP,MAKER	ECTZ0003901	10 uF,16V ,M ,STD ,ETC ,R/TP		
5	C508	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C509	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C510	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C511	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C512	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C513	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C514	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C601	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C602	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C603	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
5	C604	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C606	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C607	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
5	C609	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C701	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C702	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C703	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C704	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C705	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C706	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C707	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C708	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C709	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C710	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
5	C711	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C712	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C713	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C714	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C715	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C716	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C717	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C718	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C719	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C720	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C721	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C722	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C723	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C724	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C725	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C726	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C727	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C728	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C729	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C730	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C731	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C732	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C733	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C734	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C735	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C736	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C737	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C738	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C739	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C740	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C741	CAP,CERAMIC,CHIP	ECCH0000283	1 uF,16V ,K ,X7R ,HD ,1608 ,R/TP		
5	C742	CAP,CERAMIC,CHIP	ECCH0000283	1 uF,16V ,K ,X7R ,HD ,1608 ,R/TP		
5	C743	CAP,CERAMIC,CHIP	ECCH0000283	1 uF,16V ,K ,X7R ,HD ,1608 ,R/TP		
5	C744	CAP,CERAMIC,CHIP	ECCH0000283	1 uF,16V ,K ,X7R ,HD ,1608 ,R/TP		
5	C746	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C747	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C804	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C806	CAP,CERAMIC,CHIP	ECCH0000103	1.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C807	CAP,CERAMIC,CHIP	ECCH0000103	1.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C808	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
5	C809	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
5	C812	CAP,TANTAL,CHIP,MAKER	ECTZ0000318	33 uF,10V ,M ,L_ESR ,ETC ,R/TP		
5	C813	CAP,CERAMIC,CHIP	ECCH0000111	12 pF,50V,J,NP0,TC,1005,R/TP		
5	C814	CAP,CERAMIC,CHIP	ECCH0004902	220 nF,10V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C815	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C816	CAP,CERAMIC,CHIP	ECCH0004902	220 nF,10V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C817	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C818	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C821	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C822	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C823	CAP,CERAMIC,CHIP	ECCH0000103	1.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C824	CAP,CERAMIC,CHIP	ECCH0000103	1.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C826	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
5	C827	CAP,CERAMIC,CHIP	ECCH0000140	560 pF,50V,K,X7R,HD,1005,R/TP		
5	C829	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C831	CAP,CERAMIC,CHIP	ECCH0000140	560 pF,50V,K,X7R,HD,1005,R/TP		
5	C833	CAP,CERAMIC,CHIP	ECCH0000159	22 nF,16V,K,X7R,HD,1005,R/TP		
5	C835	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C836	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C838	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C839	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C841	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C842	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C843	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C844	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
5	C845	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
5	C846	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
5	C847	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C848	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C849	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C850	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C851	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C852	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C853	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C854	CAP,CERAMIC,CHIP	ECCH0000168	0.1 uF,16V,Z,Y5V,HD,1005,R/TP		
5	C899	CAP,CERAMIC,CHIP	ECCH0000106	5 pF,50V,C,NP0,TC,1005,R/TP		
5	CN401	CONNECTOR,BOARD TO BOARD	ENBY0001802	2 PIN,1.27 mm,STRAIGHT ,SILVER ,		
5	CN701	CONNECTOR,BOARD TO BOARD	ENBY0013408	60 PIN,0.4 mm,STRAIGHT ,AU ,WLL LM-D100		
5	CN802	CONNECTOR,ETC	ENZY0013001	3 PIN,2 mm,ETC ,AU ,CAP(2.9MM)		
5	CN803	CONNECTOR,I/O	ENRY0000801	24 PIN,0.5 mm,ETC ,Au ,BAT ZERO		
5	D401	DIODE,SWITCHING	EDSY0005301	SC-70 ,80 V,0.1 A,R/TP ,		
5	D501	DIODE,SWITCHING	EDSY0012101	US-FLAT ,30 V,1 A,R/TP ,2.5*1.25*0.6(t)		
5	FB501	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
5	FB502	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
5	FB701	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB702	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB703	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB704	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB705	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB706	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB707	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB708	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB709	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	FB710	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB711	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB712	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB713	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB714	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB715	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB716	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB717	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB718	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FB719	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
5	FL701	FILTER,EMI/POWER	SFEY0006801	SMD ,10Channel RC array filter, 80R,40pF shunt		
5	FL702	FILTER,EMI/POWER	SFEY0006801	SMD ,10Channel RC array filter, 80R,40pF shunt		
5	FL801	FILTER,SEPERATOR	SFAY0003802	900.1800 ,1900 ,3.0 dB,3.8 dB,25 dB,23 dB,ETC ,7.2*5.0*1.8mm		
5	J201	CONN,JACK/PLUG,EARPHONE	ENJE0002301	3,5 PIN,G7000 EAR JACK 3 pole, 5 pin KSD		
5	J501	CONN,SOCKET	ENSY0007608	6 PIN,ETC ,BRIDGE NON PROTECTOR TYPE ,2.54 mm,2.7T		
5	L401	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
5	L402	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
5	L801	INDUCTOR,CHIP	ELCH0005005	27 nH,J ,1005 ,R/TP ,		
5	L802	INDUCTOR,CHIP	ELCH0009103	5.6 nH,J ,1005 ,R/TP ,		
5	L803	INDUCTOR,CHIP	ELCH0009104	6.8 nH,J ,1005 ,R/TP ,		
5	L804	INDUCTOR,CHIP	ELCH0001407	5.6 nH,S,1005,R/TP		
5	L805	INDUCTOR,CHIP	ELCH0001420	3.9 nH,S ,1005 ,R/TP ,CDMA		
5	L806	INDUCTOR,CHIP	ELCH0001406	4.7 nH,S,1005,R/TP		
5	LD301	DIODE,LED,CHIP	EDLH0003401	RED, GREEN ,ETC ,R/TP ,SIZE 1315 , GSM DUAL LED		
5	LD401	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD402	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD403	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD404	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD405	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD406	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD407	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD408	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD409	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD412	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD413	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	LD414	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
5	Q301	TR,BJT,ARRAY	EQBA0000406	SC-70 ,0.2 W,R/TP ,CDMA,Common use		
5	Q401	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	Q402	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
5	Q403	TR,BJT,NPN	EQBN0007001	SC-70 ,0.1 W,R/TP ,		
5	Q601	TR,FET,P-CHANNEL	EQFP0004501	SOT-323 ,0.29 W,1.8 V,0.86 A,R/TP ,P-Chanel MOSFET		
5	R101	RES,CHIP	ERHY0000287	220K ohm,1/16W,J,1005,R/TP		
5	R102	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R103	RES,CHIP	ERHY0000138	33K ohm,1/16W,F,1005,R/TP		
5	R104	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R105	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R106	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R107	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R108	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R109	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R110	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R113	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R114	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R115	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R116	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R117	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R118	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R119	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R120	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R121	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R122	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R123	RES,CHIP	ERHY0000236	620 ohm,1/16W,J,1005,R/TP		
5	R201	RES,CHIP	ERHY0000268	27K ohm,1/16W,J,1005,R/TP		
5	R205	RES,CHIP	ERHY0000285	180K ohm,1/16W,J,1005,R/TP		
5	R206	RES,CHIP	ERHY0000284	150K ohm,1/16W,J,1005,R/TP		
5	R207	RES,CHIP	ERHY0000250	3.3K ohm,1/16W,J,1005,R/TP		
5	R208	RES,CHIP	ERHY0000204	12 ohm,1/16W,J,1005,R/TP		
5	R210	RES,CHIP	ERHY0000243	1.2K ohm,1/16W,J,1005,R/TP		
5	R211	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R212	RES,CHIP	ERHY0000255	5.6K ohm,1/16W,J,1005,R/TP		
5	R213	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R214	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R215	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R216	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R217	RES,CHIP	ERHY0000248	2.4K ohm,1/16W,J,1005,R/TP		
5	R219	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R220	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R221	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R222	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R223	RES,CHIP	ERHY0000138	33K ohm,1/16W,F,1005,R/TP		
5	R224	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R225	RES,CHIP	ERHY0000266	22K ohm,1/16W,J,1005,R/TP		
5	R231	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R232	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R233	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R234	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R236	RES,CHIP	ERHY0000138	33K ohm,1/16W,F,1005,R/TP		
5	R298	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R299	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R305	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R306	RES,CHIP	ERHY0000222	120 ohm,1/16W,J,1005,R/TP		
5	R307	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R308	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R310	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R311	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R312	RES,CHIP	ERHY0000268	27K ohm,1/16W,J,1005,R/TP		
5	R313	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R314	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R315	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R316	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R317	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R318	RES,CHIP	ERHY0000208	22 ohm,1/16W,J,1005,R/TP		
5	R401	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R402	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R403	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R404	RES,CHIP	ERHY0000205	15 ohm,1/16W,J,1005,R/TP		
5	R405	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
5	R406	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R408	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R409	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R410	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R411	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R412	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R413	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R414	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R415	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R416	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R419	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R420	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R421	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
5	R422	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
5	R423	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
5	R424	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R425	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
5	R426	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R501	RES,CHIP	ERHY0000211	33 ohm,1/16W,J,1005,R/TP		
5	R502	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R503	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
5	R504	RES,CHIP	ERHY0000138	33K ohm,1/16W,F,1005,R/TP		
5	R505	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R506	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R507	RES,CHIP	ERHY0000205	15 ohm,1/16W,J,1005,R/TP		
5	R508	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R509	RES,CHIP	ERHY0001102	0.2 ohm,1/4W ,F ,2012 ,R/TP		
5	R512	RES,CHIP	ERHY0000287	220K ohm,1/16W,J,1005,R/TP		
5	R513	RES,CHIP	ERHY0000287	220K ohm,1/16W,J,1005,R/TP		
5	R601	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R603	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R606	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R607	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R611	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R702	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R703	RES,CHIP	ERHY0000216	68 ohm,1/16W,J,1005,R/TP		
5	R704	RES,CHIP	ERHY0000216	68 ohm,1/16W,J,1005,R/TP		
5	R705	RES,CHIP	ERHY0000216	68 ohm,1/16W,J,1005,R/TP		
5	R706	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R707	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R708	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R710	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R711	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R801	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R802	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R803	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
5	R806	RES,CHIP	ERHY0006603	36 ohm,1/16W ,J ,1005 ,R/TP		
5	R807	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R808	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R810	RES,CHIP	ERHY0000210	30 ohm,1/16W,J,1005,R/TP		
5	R811	RES,CHIP	ERHY0000224	180 ohm,1/16W,J,1005,R/TP		
5	R812	RES,CHIP	ERHY0000224	180 ohm,1/16W,J,1005,R/TP		
5	R814	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R815	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R817	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R818	RES,CHIP	ERHY0000239	820 ohm,1/16W,J,1005,R/TP		
5	R821	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R822	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R823	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R824	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
5	R825	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R826	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
5	R827	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R828	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
5	R829	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R830	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R831	RES,CHIP	ERHY0000289	270K ohm,1/16W,J,1005,R/TP		
5	R832	THERMISTOR	SETY0001201	NTC ,22 Kohm,SMD ,1.0*0.5 / NSM4 SERIES		
5	R833	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
5	R834	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R835	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R836	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R837	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
5	R838	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R841	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	RA501	RES,ARRAY,R	ERNR0000403	10000 ohm, ohm,8 PIN,J ,1/32 W ,SMD ,R/TP		
5	RA502	RES,ARRAY,R	ERNR0000401	47 ohm, ohm,8 PIN,J ,1/32 W ,SMD ,R/TP		
5	RA503	RES,ARRAY,R	ERNR0000401	47 ohm, ohm,8 PIN,J ,1/32 W ,SMD ,R/TP		
5	SPFY00	PCB,MAIN	SPFY0070801	FR-4 ,1.0 mm,MULTI-8 ,		
5	SW401	SWITCH,TACT	ESCY0002501	12 V,0.05 A,HORIZONTAL ,220 G,G5200 TACK S/W		
5	SW402	SWITCH,TACT	ESCY0002501	12 V,0.05 A,HORIZONTAL ,220 G,G5200 TACK S/W		
5	SW801	CONN,RF SWITCH	ENWY0003001	STRAIGHT ,SMD ,0.6 dB,3.8X3.0X3.6T		
5	U101	IC	EUSY0148001	100GGM PBGA ,100 PIN,BK ,ANALOG BB CHIP		
5	U102	IC	EUSY0155201	179GHH PBGA ,179 PIN,R/TP ,CALYPSO / DIGITAL BB CHIP		
5	U201	IC	EUSY0111601	32-PIN QFN ,32 PIN,R/TP ,MA-3 / 40 TONES / FM + WAVEFORM TABLE		

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	U203	IC	EUSY0077401	SOT23-6 ,6 PIN,R/TP ,SPDT ANALOG SWITCH		
5	U301	IC	EUSY0147002	US8 ,8 PIN,R/TP ,DUAL 2-INPUT OR GATE		
5	U302	IC	EUSY0160502	88-BALL FBGA ,88 PIN,R/TP ,128M (64M * 2) FLASH 64M PSRAM		
5	U303	IC	EUSY0077301	SC70-6/SOT23-6 ,6 PIN,R/TP ,		
5	U401	IC	EUSY0129501	SC-74A FIT ,3 PIN,R/TP ,HALL EFFECT SWITCH		
5	U501	IC	EUSY0122301	SURFACE MOUNT ,7 PIN,R/TP ,IRDA DATA 1.3 LOW POWER TRANSCEIVER / 115.2kb/s		
5	U502	TR,FET,P-CHANNEL	EQFP0003301	SOT-6 ,1.6 W,30 V,2.4 A,R/TP ,use for charge P-CHANNEL FET		
5	U601	IC	EUSY0156702	CSP (8*8) ,100 PIN,R/TP ,CLC344E COMPATIBLE / DONGBU SEMI. FAB		
5	U602	IC	EUSY0118602	SOT-23-5 ,5 PIN,R/TP ,150mA LOW NOISE uCAP CMOS LDO		
5	U701	IC	EUSY0167601	TSSOPJW-12 ,12 PIN,R/TP ,CHARGE PUMP FOR WHITE LED / MAIN - 3 / SUB - 2		
5	U801	IC	EUSY0161702	US-8 ,8 PIN,R/TP ,UHS TRIPLE BUFFER / 3.1 WIDE SIZE		
5	U803	IC	EUSY0161301	8x8 LGA ,28 PIN,R/TP ,		
5	U804	PAM	SMPY0006401	35 dBm,55 %,0.8 A,-50 dBc,50 dB,7*7*0.9 ,SMD ,		
5	U805	IC	EUSY0118602	SOT-23-5 ,5 PIN,R/TP ,150mA LOW NOISE uCAP CMOS LDO		
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	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA204	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA401	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA402	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA403	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA404	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA405	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA406	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA407	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA408	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA701	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA706	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	X101	X-TAL	EXXY0015601	32.768 KHz,20 PPM,6 pF,65 Kohm,SMD ,6.9*1.4*1.3 ,		
5	X801	VCTCXO	EXSK0004901	26 MHz,2 PPM,10 pF,SMD ,3.2*2.5*1.2 ,		
3	SJMY00	VIBRATOR,MOTOR	SJMY0006103	3 V,0.9 A,12*25 ,GS-2 PORON 0.5MM,CONNECTOR TYPE		32
3	SUMY00	MICROPHONE	SUMY0003802	FPCB ,-42 dB,4*1.5 ,		

12.3 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	MHBY00	HANDSTRAP	MHBY0001101	Neck Strap 400mm (CDMA,common use)	Gray	
2	SBPL00	BATTERY PACK,LI-ION	SBPL0072124	3.7 V,820 mAh,1 CELL,PRISMATIC ,S110 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)		
2	WSYY00	SOFTWARE	WSYY0132401			