Service Manual

Model : U990/KU990

Internal Use Only

Service Manual

U990/KU990

Date: November, 2007 / Issue 1.0

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1. INTRODUCTION

1.1 Purpose

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

1.2 Regulatory Information

A. Security

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

B. Incidence of Harm

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

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the phones or compatibility with the net work, 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 phones must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

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

F. Pictures

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

G. Interference and Attenuation

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

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the  sign.
Following information is ESD handling:

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

2. PERFORMANCE

2.1 System Overview

Item	Specification
Shape	GSM900/1800/1900 and WCDMA2100 - Bar type Handset
Size	103.5 X 54.4 X 14.8 mm
Weight	Under 112 g (with 1000mAh Battery)
Power	3.7 V normal, 1000 mAh Li-Ion
Talk Time with 1000mAh)	Over 170 min (WCDMA, Tx=10 dBm, Voice) Over 200 min (GSM, Max Tx-29dBm, Voice)
Standby Time (with 1000mAh)	Over 250 Hrs (WCDMA, DRX=1.28) Over 250 Hrs (GSM, Paging period=5)
Antenna	Internal type
LCD	Main 3” TFT, WQVGA, 262K
LCD Backlight	White LED Back Light
Camera	5.0 Mega pixel + VGA Video Call Camera
Vibrator	Yes (Coin Type)
LED Indicator	No
MIC	Yes
Receiver	Yes
Earphone Jack	Yes (18 pin)
Connectivity	Bluetooth, USB
External Memory	Yes(Micro SD)
I/O Connect	18 Pin

2.2 Usable environment

1) Environment

Item	Specification
Voltage	3.7 V(Typ), 3.2 V(Min), [Shut Down : 3.2 V]
Operation Temp	-20 ~ +60°C
Storage Temp	-30 ~ +80°C
Humidity	85 % (Max)

2) Environment (Accessory)

Reference	Spec.	Min	Typ.	Max	Unit
TA Power	Available power	100	220	240	Vac

* CLA : 12 ~ 24 V(DC)

2.3 Radio Performance

1) Transmitter - GSM Mode

No	Item		GSM		DCS & PCS	
1	Conducted Spurious Emission	MS allocated Channel	100k~1GHz	-39dBm	9k ~ 1GHz	-39dBm
					1G~[A]MHz	-33dBm
			1G~12.75GHz	-33dBm	[A]M~[B]MHz	-39dBm
					[B]M~12.75GHz	-33dBm
		Idle Mode	100k~880MHz	-60dBm	100k~880MHz	-60dBm
			880M~915MHz	-62dBm	880M~915MHz	-62dBm
			915M~1GHz	-60dBm	915M~1GHz	-60dBm
			1G~[A]MHz	-50dBm	1G~[A]MHz	-50dBm
			[A]M~[B]MHz	-56dBm	[A]M~[B]MHz	-56dBm
			[B]M~12.5GHz	-50dBm	[B]M~12.5GHz	-50dBm

* In case of DCS : [A] -> 1710, [B] -> 1785

* In case of PCS : [A] -> 1850, [B] -> 1910

No	Item		GSM		DCS & PCS	
2	Radiated Spurious Emission	MS allocated Channel	30M ~ 1GHz	-36dBm	30M~1GHz	-36dBm
					1G~[A]MHz	-30dBm
			1G ~ 4GHz	-30dBm	[A]M~[B]MHz	-36dBm
					[B]M~4GHz	-30dBm
		Idle Mode	30M ~ 880MHz	-57dBm	30M~880MHz	-57dBm
			880M ~ 915MHz	-59dBm	880M~915MHz	-59dBm
			915M~1GHz	-57dBm	915M~1GHz	-57dBm
			1G~[A]MHz	-47dBm	1G~[A]MHz	-47dBm
			[A]M~[B]MHz	-53dBm	[A]M~[B]MHz	-53dBm
			[B]M~4GHz	-47dBm	[B]M~4GHz	-47dBm
3	Frequency Error		±0.1ppm		±0.1ppm	
4	Phase Error		±5(RMS)		±5(RMS)	
			±20(PEAK)		±20(PEAK)	
5	Frequency Error Under Multipath and Interference Condition		3dB below reference sensitivity		3dB below reference sensitivity	
			RA250 : ±200Hz		RA250: ±250Hz	
			HT100 : ±100Hz		HT100: ±250Hz	
			TU50 : ±100Hz		TU50: ±150Hz	
			TU3 : ±150Hz		TU1.5: ±200Hz	
6	Output RF Spectrum	Due to modulation	0 ~ 100kHz	+0.5dB	0 ~ 100kHz	+0.5dB
			200kHz	-30dB	200kHz	-30dB
			250kHz	-33dB	250kHz	-33dB
			400kHz	-60dB	400kHz	-60dB
			600 ~ 1800kHz	-66dB	600 ~ 1800kHz	-60dB
			1800 ~ 3000kHz	-69dB	1800 ~ 6000kHz	-65dB
			3000 ~ 6000kHz	-71dB	≥6000kHz	-73dB
			≥6000kHz	-77dB		
		Due to Switching transient	400kHz	-19dB	400kHz	-22dB
			600kHz	-21dB	600kHz	-24dB
			1200kHz	-21dB	1200kHz	-24dB
			1800kHz	-24dB	1800kHz	-27dB

**** In case of DCS : [A] -> 1710, [B] -> 1785 * In case of PCS : [A] -> 1850, [B] -> 1910**

2. PERFORMANCE

No	Item	GSM			DCS & PCS		
7	Intermodulation attenuation		–		Frequency offset		800kHz
					Intermodulation product should be Less than 55dB below the level of Wanted signal		
8	Transmitter Output Power	Power control Level	Power (dBm)	Tolerance (dB)	Power control Level	Power (dBm)	Tolerance (dB)
		5	33	±3	0	30	±3
		6	31	±3	1	28	±3
		7	29	±3	2	26	±3
		8	27	±3	3	24	±3
		9	25	±3	4	22	±3
		10	23	±3	5	20	±3
		11	21	±3	6	18	±3
		12	19	±3	7	16	±3
		13	17	±3	8	14	±3
		14	15	±3	9	12	±4
		15	13	±3	10	10	±4
		16	11	±5	11	8	±4
		17	9	±5	12	6	±4
		18	7	±5	13	4	±4
		19	5	±5	14	2	±5
					15	0	±5
9	Burst timing	Mask IN			Mask IN		

2) Transmitter - WCDMA Mode

No	Item	Specification
1	Maximum Output Power	Class 3 : +24dBm(+1/-3dB)
2	Frequency Error	±0.1ppm
3	Open Loop Power control in uplink	±9dB@normal, ±12dB@extreme
4	Inner Loop Power control in uplink	Adjust output(TPC command)
		cmd 1dB 2dB 3dB
		+1 +0.5/1.5 +1/3 +1.5/4.5
		0 -0.5/+0.5 -0.5/+0.5 -0.5/+0.5
		-1 -0.5/-1.5 -1/-3 -1.5/-4.5
		Group (10 equel command group)
		+1 +8/+12 +16/+24
5	Minimum Output Power	-50dBm(3.84MHz)
6	Out-of-synchronization handling of output power	Qin/Qout : PCCH quality levels Toff@DPCCH/Ior : -22 -> -28dB Ton@DPCCH/Ior : -24 -> -18dB
7	Transmit OFF Power	-56dBm(3.84MHz)
8	Transmit ON/OFF Time Mask	±25us PRACH,CPCH,uplinlk compressed mode
9	Change of TFC	±25us Power varies according to the data rate DTX : DPCH off (minimize interference between UE)
10	Power setting in uplink compressed	±3dB(after 14slots transmission gap)
11	Occupied Bandwidth(OBW)	5MHz(99%)
12	Spectrum emission Mask	-35-15*(Δf-2.5)dBc@Δf=2.5~3.5MHz,30k -35-1*(Δf-3.5)dBc@Δf=3.5~7.5MHz,1M -39-10*(Δf-7.5)dBc@Δf=7.5~8.5MHz,1M -49dBc@Δf=8.5~12.5MHz,1M

No	Item	Specification
13	Adjacent Channel Leakage Ratio(ACLR)	33dB@5MHz, ACP>-50dBm 43dB@10MHz, ACP>-50dBm
14	Spurious Emissions (*: additional requirement)	-36dBm@f=9~150KHz, 1K BW -36dBm@f=50KHz~30MHz, 10K BW -36dBm@f=30MHz~1000MHz, 100K BW -30dBm@f=1~12.5GHz, 1M BW (*)-41dBm@f=1893.5~1919.6MHz, 300K (*)-67dBm@f=925~935MHz, 100K BW (*)-79dBm@f=935~960MHz, 100K BW (*)-71dBm@f=1805~1880MHz, 100K BW
15	Transmit Intermodulation	-31dBc@5MHz,Interferer -40dBc -41dBc@10MHz, Interferer -40dBc
16	Error Vector Magnitude (EVM)	17.5%(>-20dBm) (@12.2K, 1DPDCH+1DPCCH)
17	Transmit OFF Power	-15dB@SF=4.768Kbps, Multi-code transmission

3)Receiver - GSM Mode

3) Transmitter - HSDPA Mode

<table>
<tr><th>No</th><th>Item</th><th colspan="5">Specification</th></tr>
<tr><td>1</td><td>Maximum Output Power</td><td colspan="5">Sub-Test
1=1/15, 2=12/15 21~25dBm / 3.84 MHz
3=13/15 4=15/8 20~25dBm / 3.84 MHz
5=15/7 6=15/0 19~25dBm / 3.84 MHz</td></tr>
<tr><td rowspan="6">2</td><td rowspan="6">HS-DPCCH</td><td>Sub-test in table C.10.1.4</td><td>Power step</td><td>Start of Ack/Nack boundary</td><td>Power step size, P [dB]</td><td>Transmitter power step tolerance [dB]</td></tr>
<tr><td rowspan="4">5</td><td>1</td><td>Start of Ack/Nack</td><td>6</td><td>+/- 2.3</td></tr>
<tr><td>2</td><td>Start of CQI</td><td>1</td><td>+/- 0.6</td></tr>
<tr><td>3</td><td>Middle of CQI</td><td>0</td><td>+/- 0.6</td></tr>
<tr><td>4</td><td>End of CQI</td><td>5</td><td>+/- 2.3</td></tr>
<tr><td rowspan="6">3</td><td rowspan="6">Spectrum Emission Mask</td><td colspan="5">Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0</td></tr>
<tr><td colspan="2">Frequency offset from carrier Δf</td><td colspan="2">Minimum requirement</td><td>Measurement Bandwidth</td></tr>
<tr><td colspan="2">2.5 ~ 3.5 MHz</td><td colspan="2">-35-15(Δf-2.5)dBc</td><td>30 kHz</td></tr>
<tr><td colspan="2">3.5 ~ 7.5 MHz</td><td colspan="2">-35-1(Δf-3.5)dBc</td><td>1 MHz</td></tr>
<tr><td colspan="2">7.5 ~ 8.5 MHz</td><td colspan="2">-35-10(Δf-7.5)dBc</td><td>1 MHz</td></tr>
<tr><td colspan="2">8.5 ~ 12.5 MHz</td><td colspan="2">-49dBc</td><td>1 MHz</td></tr>
<tr><td>4</td><td>Adjacent Channel Leakage Power Ratio (ACLR)</td><td colspan="5">Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0
> 33 dB @ ±5 MHz
> 43 dB @ ±10 MHz</td></tr>
<tr><td>5</td><td>Error Vector Magnitude</td><td colspan="5">3GPP Not Complete</td></tr>
</table>

4)Receiver - GSM Mode

No	Item		GSM	DCS & PCS
1	Sensitivity (TCH/FS Class II)		-105dBm	-105dBm
2	Co-Channel Rejection (TCH/FS Class II, RBER, TU high/FH)		C/Ic=7dB	Storage -30 ~ +85
3	Adjacent Channel Rejection	200kHz	C/Ia1=-12dB	C/Ia1=-12dB
		400kHz	C/Ia2=-44dB	C/Ia2=-44dB
4	Intermodulation Rejection		Wanted Signal :-98dBm 1st interferer:-44dBm 2nd interferer:-45dBm	Wanted Signal :-96dBm 1st interferer:-44dBm 2nd interferer:-44dBm
5	Blocking Response (TCH/FS Class II, RBER)		Wanted Signal :-101dBm Unwanted : Depend on Frequency	Wanted Signal :-101dBm Unwanted : Depend on Frequency

5) Receiver - WCDMA Mode

No	Item	Specification
1	Reference Sensitivity Level	-106.7 dBm(3.84 MHz)
2	Maximum Input Level	-25dBm(3.84MHz) -44dBm/3.84MHz(DPCH_Ec) UE@+20dBm output power(Class3)
3	Adjacent Channel Selectivity (ACS)	33dB UE@+20dBm output power(Class3)
4	In-band Blocking	-56dBm/3.84MHz@10MHz UE@+20dBm output power(Class3)
		-44dBm/3.84MHz@15MHz UE@+20dBm output power(Class3)
5	Out-band Blocking	-44dBm/3.84MHz@f=2050~2095 and 2185~2230MHz UE@+20dBm output power(Class3)
		-30dBm/3.84MHz@f=2025~2050 and 2230~2255MHz UE@+20dBm output power(Class3)
		-15dBm/3.84MHz@f=1~2025 and 2255~12500MHz UE@+20dBm output power(Class3)
6	Spurious Response	-44dBm CW UE@+20dBm output power(Class3)
7	Intermodulation Characteristic	-46dBm CW@10MHz -46dBm/3.84MHz@20MHz UE@+20dBm output power(Class3)
8	Spurious Emissions	-57dBm@f=9KHz~1GHz, 100K BW -47dBm@f=1~12.5GHz, 1M BW -60dBm@f=1920MHz~1980MHz, 3.84M BW -60dBm@f=2110MHz~2170MHz, 3.84M BW

6) Receiver - HSDPA Mode

No	Item	Specification
1	Maximum Input Level (BLER or R), 16QAM Only	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0 BLER < 10% or R >= 700kbps

2.4 Current Consumption

1) KU990/U990 Current Consumption

	Stand by	Voice Call	VT
WCDMA	Under 4.00 mA (DRX=1.28)	Under 350 mA (Tx=10dBm)	Under 550mA (Tx=10dBm)
GSM	Under 4.00 mA Paging=5 period	Under 300 mA (Tx=29dBm)	

(Stand by and Voice Call Test Condition : Bluetooth off, LCD backlight off,Neighbor Cell off) (VT Test Condition : Speaker off, LCD backlight On)

2.5 RSSI BAR

Level Change	WCDMA	GSM
BAR 4 → 3	-88 ± 2 dBm	-90 ± 2 dBm
BAR 3 → 2	-98 ± 2 dBm	-95 ± 2 dBm
BAR 2 → 1	-108 ± 2 dBm	-100 ± 2 dBm
BAR 1 → 0	-112 ± 2 dBm	-106 ± 2 dBm

2.6 Battery BAR

Indication	Standby
Bar 4	Over 3.81 ± 0.03V
Bar 4 → 3	3.80 ± 0.03V
Bar 3 → 2	3.70 ± 0.03V
Bar 2 → 1	3.61 ± 0.03V
Bar 1 → Empty	3.49 ± 0.03V
Low Voltage, Warning message+ Blinking	3.49 ± 0.03V (Stand-by) / 3.49 ± 0.03V (Talk) [Interval : 3min(Stand-by) / 1min(Talk)]
Power Off	3.20 ± 0.03V (Stand-by) 3.10 ± 0.03V (Talk)

2.7 Sound Pressure Level

No	Test Item		Specification	
1	Sending Loudness Rating (SLR)	MS	8 ±3 dB	
2	Receiving Loudness Rating (RLR)	MS	Nor	-4 ± 3 dB
		MS	Max	-15 ± 3 dB
3	Side Tone Masking Rating (STMR)	MS	Min	17 dB
4	Echo Loss (EL)	MS	Min	40 dB
5	Idle Noise-Sending (INS)	MS	Max	-64 dBm0p
6	Idle Noise-Receiving (INR)	MS	Nor	Under -47 dBPA
		MS	Max	Under -36 dBPA
7	Sending Loudness Rating (SLR)	Headset	8±3dB	
8	Receiving Loudness Rating (RLR)	Headset	Nor	-1 ±3 dB
		Headset	Max	-12 ±3 dB
9	Side Tone Masking Rating (STMR)	Headset	Min	25 dB
10	Echo Loss (EL)	Headset	Min	40 dB
11	Idle Noise-Sending (INS)	Headset	Max	-55 dBm0p
12	Idle Noise-Receiving (INR)	Headset	Nor	Under -45 dBPA
		Headset	Max	Under -40 dBPA
13	TDMA Noise -. GSM : Power Level : 5 DCS/PCS : Power Level : 0 (Cell Power : -90 ~ -105 dBm) -. Acoustic (Max Vol.) MS/Headset SLR : 8 ± 3dB MS/Headset RLR : -15 ± 3dB/-12dB (SLR/RLR : Mid-value setting)	MS and Headset	Max	Under -62 dBm

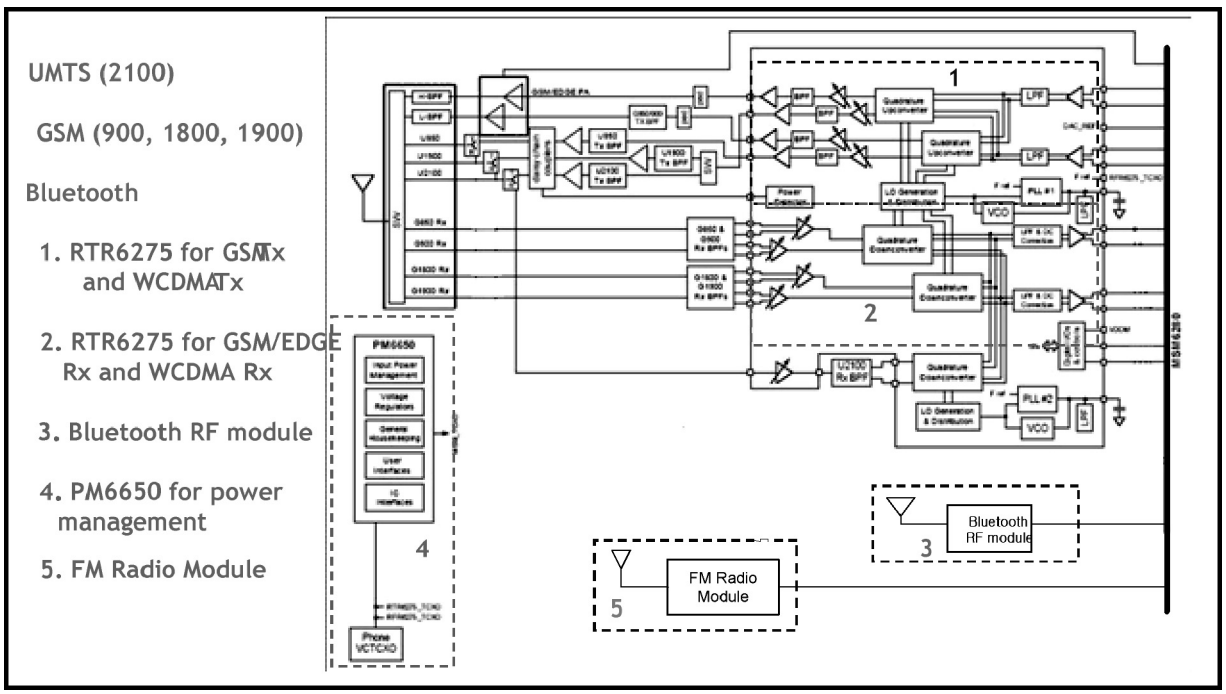
2.8 Charging

- Charging Method : CC & CV (Constant Current and Constant Voltage)
- Maximum Charging Voltage : 4.2 V
- Maximum Charging Current : 600 mA
- Normal Battery Capacity : 1000 mAh
- Charging Time : Max 3 hours (except for trickle charging time)
- Full charging indication current (charging icon stop current) : 80 mA
- Cut-off voltage : 3.20 V (Stand-By), 3.10V (Talk)

3. TECHNICAL BRIEF

3.1 General Description

The U990 supports UMTS-2100, GSM-900, DCS-1800, and PCS-1900 based GSM/GPRS/EDGE/UMTS. All receivers and the UMTS transmitter use the radioOne[1] Zero-IF architecture to eliminate intermediate frequencies, directly converting signals between RF and baseband. The quad-band GSM transmitters use a baseband-to-IF upconversion followed by an offset phase-locked loop that translates the GMSK-modulated or 8-PSK-modulated signal to RF.



[Fig 1.1] Block diagram of RF part

[1] QUALCOMM's branded chipset that implements a Zero-IF radio architecture.

3. TECHNICAL BRIEF

A generic, high-level functional block diagram of U990 is shown in Figure 1-1. One antenna collects base station forward link signals and radiates handset reverse link signals. The antenna connects with receive and transmit paths through a FEM(Front End Module).

The UMTS receive paths each include an LNA, an RF band-pass filter, and a downconverter that translate the signal directly from RF-to-baseband using radioOne ZIF techniques. The RFIC's Rx analog baseband outputs, for the receive chains, connect to the MSM IC. The UMTS and GSM Rx baseband outputs share the same inputs to the MSM IC.

For the transmit chains, the RTR6275 IC directly translates the Tx baseband signals (from the MSM device) to an RF signal using an internal LO generated by integrated on-chip PLL and VCO. The RTR6275 IC outputs deliver fairly high-level RF signals that are first filtered by Tx SAWs and then amplified by their respective UMTS PAs. The high- and low-band UMTS RF transmit signals emerge from the RTR6275 transceiver.

In the GSM receive path, the received RF signals are applied through their band-pass filters and down-converted directly to baseband in the RTR6275 transceiver IC. These baseband outputs are shared with the UMTS receiver and routed to the MSM IC for further signal processing.

The GSM/EDGE transmit path employs one stage of up-conversion and, in order to improve efficiency, is divided into phase and amplitude components to produce an open-loop Polar topology:

1. The on-chip quadrature up-converter translates the GMSK-modulated signal or 8-PSK modulated signal, to a constant envelope phase signal at RF;
2. The amplitude-modulated (AM) component is applied to the ramping control pin of Polar power amplifier from a DAC within the MSM

U990 power supply voltages are managed and regulated by the PM6650 Power Management IC. This versatile device integrates all wireless handset power management, general housekeeping, and user interface support functions into a single mixed signal IC. It monitors and controls the external power source and coordinates battery recharging while maintaining the handset supply voltages using low dropout, programmable regulators.

The device's general housekeeping functions include an ADC and analog multiplexer circuit for monitoring on-chip voltage sources, charging status, and current flow, as well as userdefined off-chip variables such as temperature, RF output power, and battery ID. Various oscillator, clock, and counter circuits support IC and higher-level handset functions. Key parameters such as under-voltage lockout and crystal oscillator signal presence are monitored to protect against detrimental conditions.

3.2 GSM Mode

3.2.1 GSM Receiver

The Dual-mode U990's receiver functions are split between the three RFICs as follows:

- GSM-900, DCS-1800, PCS-1900 and UMTS-2100 modes both use the RTR6275 IC only. Each mode has independent front-end circuits and down-converters, but they share common baseband circuits (with only one mode active at a time). All receiver control functions are beginning with SBI[2]-controlled parameters.

RF Front end consists of antenna, antenna switch module (LSHS-M090UH) which includes three RX saw filters (GSM-900, DCS-1800 and PCS-1900). The antenna switch module allows multiple operating bands and modes to share the same antenna. In U990, a common antenna connects to one of six paths: 1) UMTS-2100 Rx/Tx, 2) GSM-900 Rx, 3) GSM-900 Tx, 4) DCS-1800 Rx, and 5) DCS-1800, PCS-1900 Tx(High Band Tx's share the same path), 6) PCS-1900 Rx. UMTS operation requires simultaneous reception and transmission, so the UMTS Rx/Tx connection is routed to a duplexer that separates receive and transmit signals. GSM900, DCS1800, and PCS1900 operation is time division duplexed, so only the receiver or transmitter is active at any time and a frequency duplexer is not required.

Control Logic (L : 0 ~ 0.1V, H : 2.6 ~ 2.8V)

	Vc3	Vc2	Vc1	Vdd
GSM900 Tx	L	H	H	H
DCS1800/PCS1900 Tx	L	L	H	H
UMTS Tx/Rx	H	L	H	H
GSM 900 Rx	L	L/H	L	H
DCS 1800 Rx	H	L/H	L	H
PCS 1900 Rx	L	L/H	L	H

L/H : L and H are acceptable

[Table 1.1] Antenna Switch Module Control logic

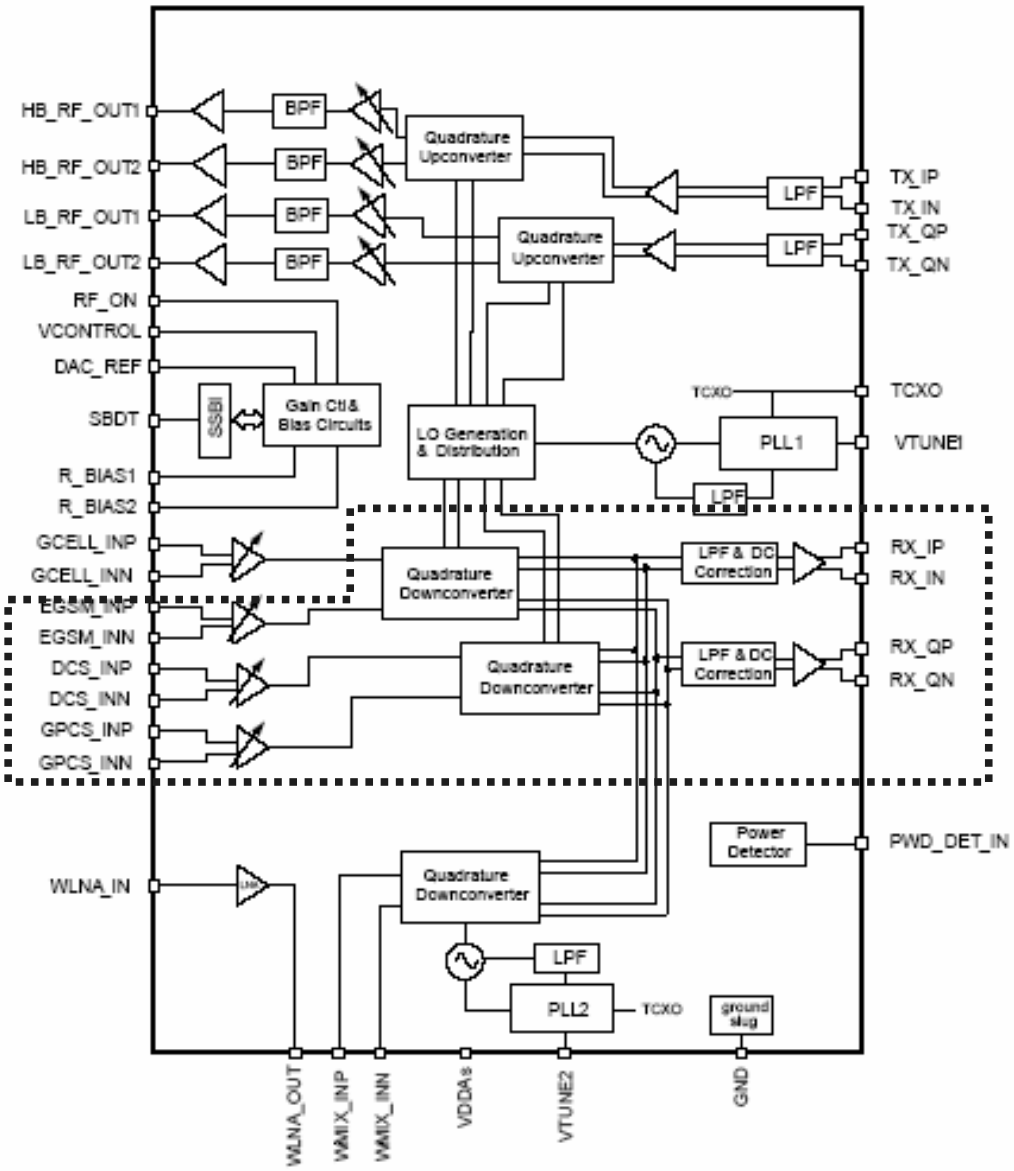
[2] The RFIC operating modes and circuit parameters are MSM-controlled through the proprietary 3-line Serial Bus Interface (SBI). The Application Programming Interface (API) is used to implement SBI commands. The API is documented in AMSS Software - please see applicable AMSS Software documentation for details.

The GSM900, DCS1800, and PCS1900 receiver inputs of RTR6275 are connected directly to the transceiver front-end circuits(filters and antenna switch module). GSM900, DCS1800, and PCS1900 receiver inputs use differential configurations to improve common-mode rejection and second-order non-linearity performance. The balance between the complementary signals is critical and must be maintained from the RF filter outputs all the way into the IC pins

Since GSM900, DCS1800, and PCS1900 signals are time-division duplex (the handset can only receive or transmit at one time), switches are used to separate Rx and Tx signals in place of frequency duplexers - this is accomplished in the switch module.

The GSM900, DCS1800, and PCS1900 receive signals are routed to the RTR6275 through band selection filters and matching networks that transform single-ended 50-Ωsources to differential impedances optimized for gain and noise figure. The RTR input uses a differential configuration to improve second-order inter-modulation and common mode rejection performance. The RTR6275 input stages include MSM-controlled gain adjustments that maximize receiver dynamic range.

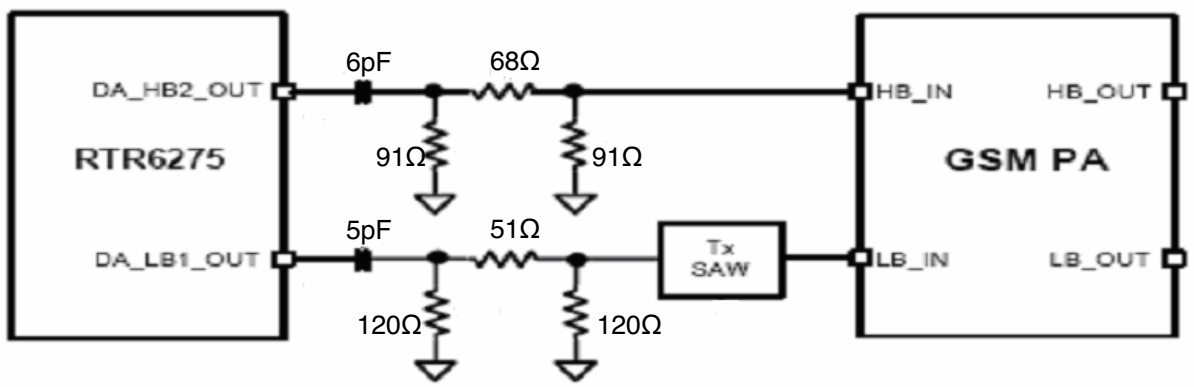
The amplifier outputs drive the RF ports of the quadrature RF-to-baseband downconverters. The downconverted baseband outputs are multiplexed and routed to lowpass filters (one I and one Q) having passband and stopband characteristics suitable for GMSK or 8-PSK processing. These filter circuits include DC offset corrections. The filter outputs are buffered and passed on to the MSM6280 IC for further processing (an interface shared with the RFR6275 UMTS receiver outputs)



[Fig 1.2] RTR6275 RX feature

3.2.2 GSM Transmitter

The RTR6275 transmitter outputs(DA_HB2_OUT and DA_LB1_OUT) include on-chip output matching inductors. 50ohm output impedance is achieved by adding a series capacitor at the output pins. The capacitor value may be optimized for specific applications and PCB characteristics based on pass-band symmetry about the band center frequency, the suggested starting value is shown in Figure1.3.



[Fig 1.3] GSM Transmitter matching

The RTR6275 IC is able to support GSM 900 and GSM 1800/1900 mode transmitting. This design guideline shows a tri-band GSM application.

Both high-band and low band outputs are followed by resistive pads to ensure that the load Presented to the outputs remains close to 50ohm. The low-band GSM. Tx path also includes a Tx-band SAW filter to remove noise-spurious components and noise that would be amplified by the PA and appear in the GSM Rx band

3.3 UMTS Mode

3.3.1 Receiver

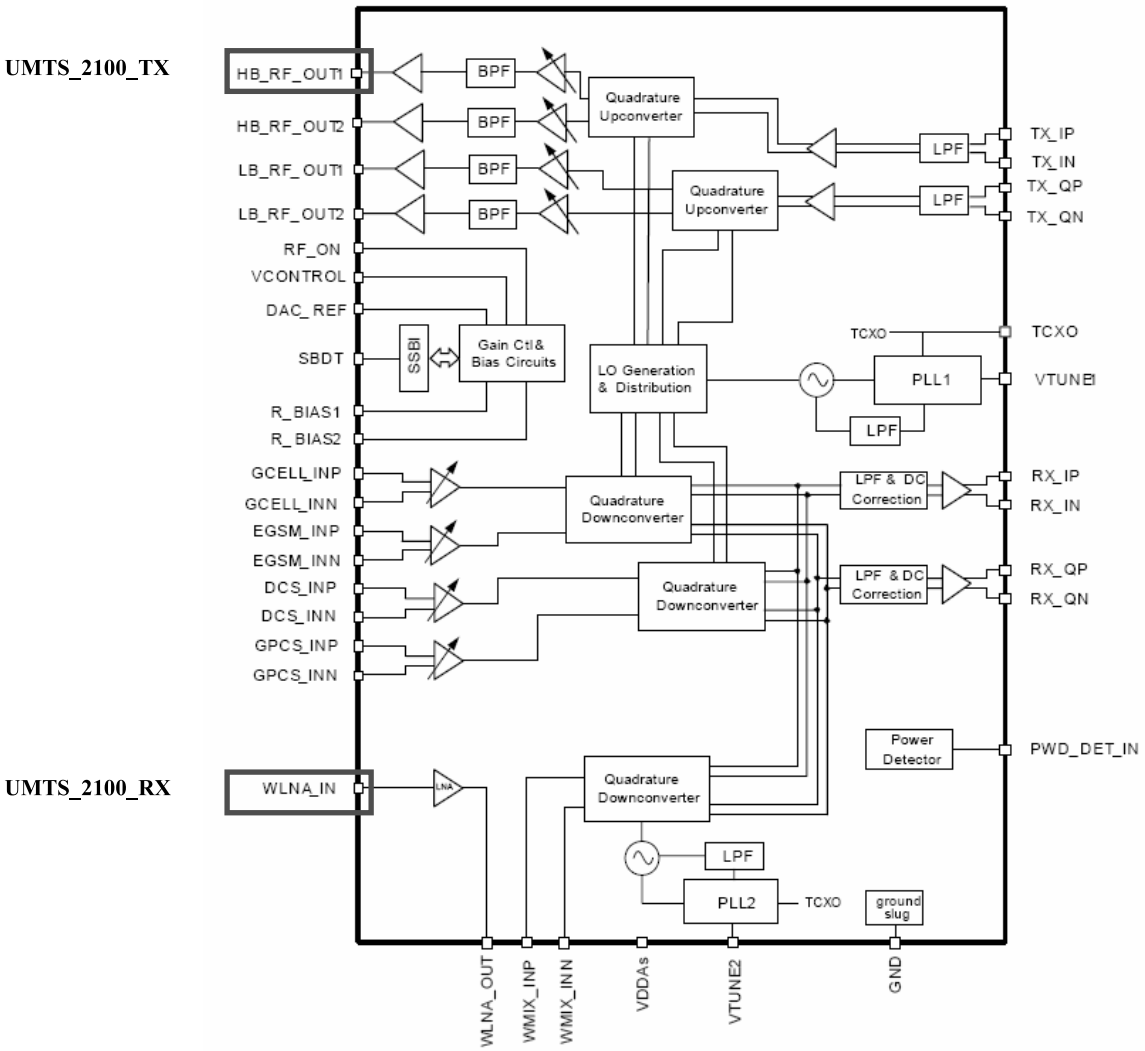
The UMTS duplexer receiver output is routed to LNA circuits within the RTR6275 device. The UMTS Rx input is provided with an on-chip LNA that amplifies the signal before a second stage filter that provides differential downconverter. This second stage input is configured differentially to optimize second-order intermodulation and common mode rejection performance. The gain of the UMTS frontend amplifier and the UMTS second stage differential amplifier are adjustable, under MSM control, to extend the dynamic range of the receivers. The second stage UMTS Rx amplifiers drive the RF ports of the quadrature RF-tobaseband downconverters. The downconverted UMTS Rx baseband outputs are routed to lowpass filters having passband and stopband characteristics suitable for UMTS Rx processing. These filter circuits allow DC offset corrections, and their differential outputs are buffered to interface shared with GSM Rx to the MSM IC. The UMTS baseband outputs are turned off when the RTR6275 is downconverting GSM signals and on when the UMTS is operating.

3.3.2 Transmitter

The UMTS Tx path begins with differential baseband signals (I and Q) from the MSM device. These analog input signals are amplified, filtered, and applied to the quadrature up-converter mixers. The up-converter output is amplified by multiple variable gain stages that provide transmit AGC control. The AGC output is filtered and applied to the driver amplifier; this output stage includes an integrated matching inductor that simplifies the external matching network to a single series capacitor to achieve the desired 50-Ω interface.

The RTR6275 UMTS output is routed to its power amplifier through a bandpass filter, and delivers fairly high-level signals that are filtered and applied to the PA. Transmit power is delivered from the duplexer to the antenna through the switch module.
The transceiver LO synthesizer is contained within the RTR6275 IC with the exception of the off-chip loop filter components and the VC-TCXO. This provides a simplified design for multimode applications. The PLL circuits include a reference divider, phase detector, charge pump, feedback divider, and digital logic generator.

UMTS Tx. Using only PLL1, the LO generation and distribution circuits create the necessary LO signals for nine different frequency converters. The UMTS transmitter also employs the ZIF architecture to translate the signal directly from baseband to RF. This requires FLO to equal FRF, and the RTR6275 IC design achieves this without allowing FVCO to equal FRF. The RTR6275 IC is able to support UMTS 2100/1900 and UMTS 850 mode transmitting.
This design guideline shows only UMTS 2100 applications.



[Figure 1.4] RTR6275 IC functional block diagram

3.4 LO generation and distribution circuits

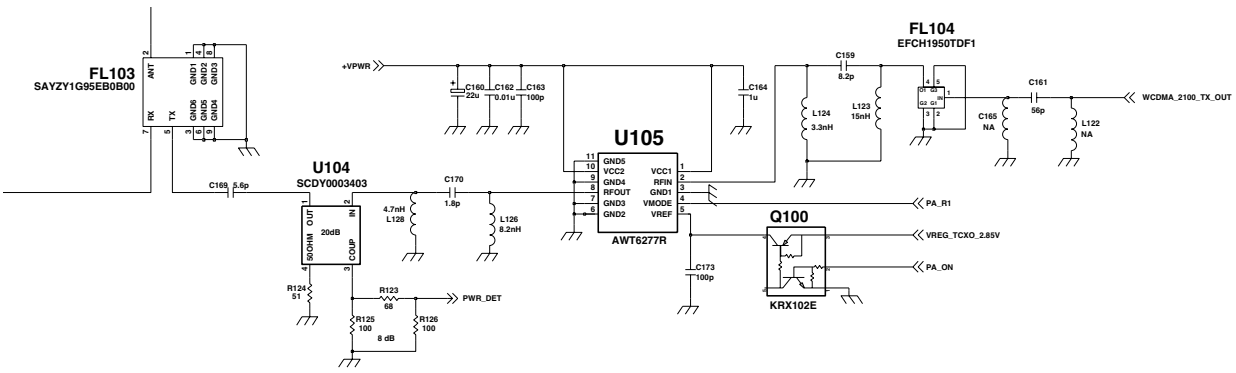
The integrated LO generation and distribution circuits are driven by internal VCOs to support various modes to yield highly flexible quadrature LO outputs that drive all GSM/EDGE and UMTS band upconverters and downconverters; with the help of these LO generation and distribution circuits, true zero-IF architecture is employed in all GSM and UMTS band receivers and transmitters to translate the signal directly from RF to baseband and from baseband to RF.

Two fully functional fractional-N synthesizers, including VCOs and loop filters, are integrated within the RTR6275 IC. The first synthesizer (PLL1) creates the transceiver LOs that support the UMTS 2100/1900/1800 transmitter, and all four GSM band receivers and transmitters including: GSM850, GSM900, DCS1800, and PCS1900. The second synthesizer (PLL2) provides the LO for the UMTS 2100/1900/1800 receiver. An external TCXO input signal is required to provide the synthesizer frequency reference to which the PLL is phase and frequency locked. The RTR6275 IC integrates most of PLL loop filter components onchip except two off-chip loop filter series capacitors, and significantly reduces off-chip component requirement. With the integrated fractional-N PLL synthesizers, the RTR6275 has the advantages of more flexible loop bandwidth control, fast lock time, and low-integrated phase error.

3.5 Off-chip RF Components

3.5.1 UMTS PAM (U105: AWT6277R)

The UMTS PA output power is monitored by power detector circuits (U101 : RTR6275) . This detector voltage can be used for transmitter calibration and monitor to meet RF system specification.



[Figure 1.5] UMTS PAM, Duplexer, Coupler

3.5.2 VCTCXO (X100 : TG-5010LH(19.2M))

The Voltage Controlled Temperature Compensated Crystal Oscillator (VCTCXO) provides the reference frequency for all RFIC synthesizers as well as clock generation functions within the MSM6280 IC. The oscillator frequency is controlled by the MSM6280 IC.s TRK_LO_ADJ pulse density modulated signal in the same manner as the transmit gain control TX_AGC_ADJ. A two-pole RC lowpass filter is recommended on this control line.

The PM6650 IC controls the handset power-up sequence, including a special VCTCXO warm-up interval before other circuits are turned on. This warm-up interval (as well as other TCXO controller functions) is enabled by the MSM TCXO_EN line . The PM6650 IC VREG_TCXO regulated output voltage is used to power the VCTCXO and is enabled before most other regulated outputs.
Any GSM mode power control circuits within the MSM6280 IC require a reference voltage for proper operation and sufficient accuracy. Connecting the PM6650 IC REF_OUT directly to the MSM6275 IC GSM_PA_PWR_CTL_REF provides this reference. This sensitive analog signal needs a 0.1 μF low frequency filter near to MSM side, and isolate from digital logic and clock traces with ground on both sides, plus ground above and below if routed on internal layers.

3.5.3 Front-End Module (FL100 : LSHS-M090UH)

This equipment uses a single antenna to support all handset operating modes, with an antenna switch module select the operating frequency and band. UMTS operation requires simultaneous reception and transmission, so the UMTS Rx/Tx connection is routed to a duplexer that separates receive and transmit signals. The active connection is MSM-selected by three control lines (GPIO[9], GPIO[10], and GPIO[11]). These GPIOs are programmed to be ANT_SEL0, ANT_SEL1, and ANT_SEL2 respectively.

	Vc3	Vc2	Vc1	Vdd
GSM900 Tx	L	H	H	H
DCS1800/PCS1900 Tx	L	L	H	H
UMTS Tx/Rx	H	L	H	H
GSM 900 Rx	L	L	L	H
DCS 1800 Rx	H	L	L	H
PCS 1900 Rx	L	L	L	H

[Table 1.2] Front End Module control logic

3.5.4 PMIC Functional Block Diagram (U501 : PM6650-2M)

• Input power management

- Valid external supply attachment and removal detection
- Supports unregulated (closed-loop) external charger supplies and USB supplies as input power sources
- Supports lithium-ion main batteries
- Trickle, constant current, constant voltage, and pulsed charging of the main battery
- Supports coin cell backup battery (including charging)
- Battery voltage detectors with programmable thresholds
- VDD collapse protection
- Charger current regulation and real-time monitoring for over-current protection
- Charger transistor protection by power limit control
- Control drivers for two external pass transistors and one external battery MOSFET MOSFET is optional
- Voltage, current, and power control loops
- Automated recovery from sudden momentary power loss

• Output voltage regulation

- One boost (step-up) switched-mode power supply (SMPS) for driving white LEDs and hosting USBOTG
- Three buck (step-down) switched-mode power supplies that efficiently generate MSMC, MSME, and PA (or second MSMC) supply voltages
- Supports dynamic voltage scaling (DVS) for MSMC and PA
- Eleven low dropout regulator circuits with programmable output voltages, implemented using three different current ratings: 300 mA (two), 150 mA (six), and 50 mA (three). These can be used to power MSMA, MSMP, RFRX1, RFRX2, RFTX, SYNT, TCXO, WLAN, MMC, USB, and RUIM circuits.
- All regulators can be individually enabled/disabled for power savings
- Low power mode available on MSMA and MSMP regulators
- All regulated outputs are derived from a common bandgap referenceclose tracking

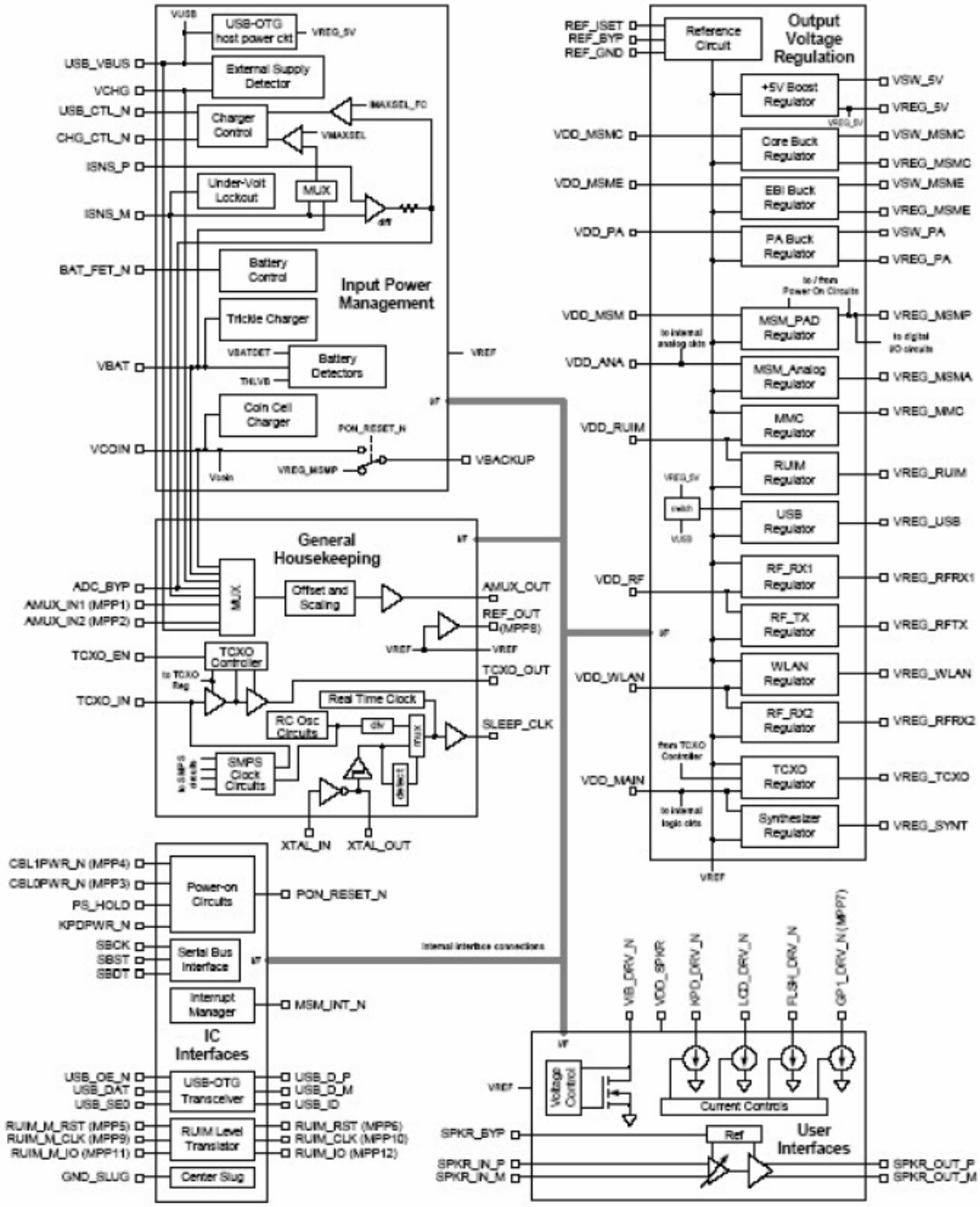
• Integrated handset-level housekeeping functions reduces external parts count, size, cost

- Analog multiplexer selects from 8 internal and up to 18 external inputs
- Multiplexer outputs offset and gain are adjusted, increasing the effective ADC resolution
- Adjusted multiplexer output is buffered and routed to an MSM device ADC
- Dual oscillators -32.768 kHz off-chip crystal and on-chip RC assures MSM device sleep clock
- Crystal oscillator detector and automated switch-over upon lost oscillation
- Real time clock for tracking time and generating associated alarms
- On-chip adjustments minimize crystal oscillator frequency errors
- Circuits control TCXO warm-up and synchronize, deglitch, and buffer the TCXO signal
- TCXO buffer control for optimal QPH/catnap timing
- Three-stage over-temperature protection (smart thermal control)

• Integrated handset-level user interfaces

- Four programmable current sinks recommended as keypad backlight, LCD backlight, camera flash, and general-purpose drivers
- Vibration motor driver programmable from 1.2 to 3.1V in 100 mV increments
- Speaker driver with programmable gain, turn-on time, and muting; differential operation (drives external 8 Ω speakers with volume controlled 500 mW)

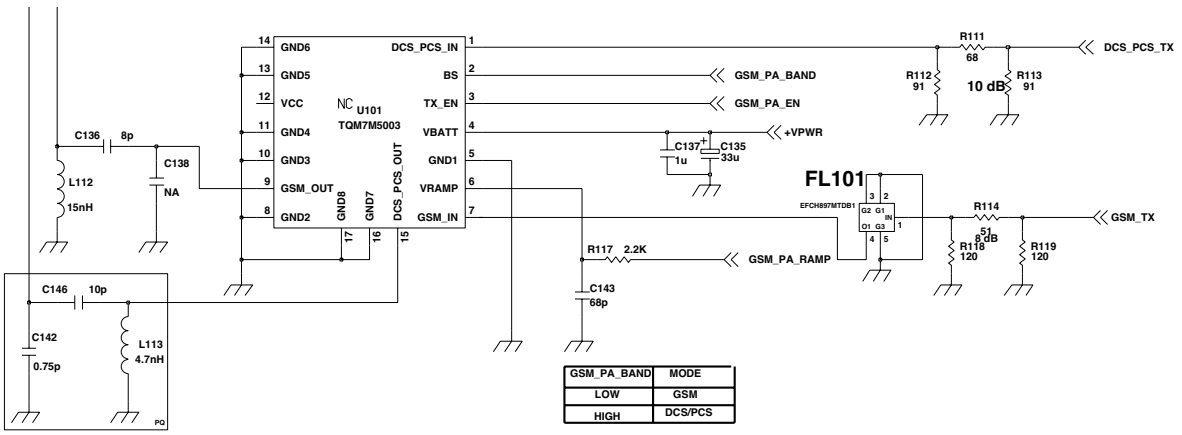
- IC-level interfaces
  - MSM device-compatible 3-line SBI for efficient initialization, status, and control
  - Supports the MSM devices interrupt processing with an internal interrupt manager
  - Many functions monitored and reported through real-time and interrupt status signals
  - Dedicated circuits for controlled power-on sequencing, including the MSM devices reset signal
  - Several events continuously monitored for triggering power-on/power-off sequences
  - Supports and orchestrates soft resets
  - USB-OTG transceiver for full-speed (12 Mb/s) and low speed (1.5 Mb/s) interfacing of the MSM device to computers as a USB peripheral, or connecting the MSM device to other peripherals
  - RUIM level translators enable MSM device interfacing with external modules
- Twelve multi-purpose pins that can be configured as digital or analog I/Os, bi-directional I/Os, or current sinks. Default functions support the RUIM level translators, power-on circuits, analog multiplexer inputs, an LED driver, and a reference voltage buffer.
- Highly integrated functionality in a small package - 84-pin BCCS with a large center slug for electrical ground, mechanical stability, and thermal relief



[Figure 1.7] PM6650 Block Diagram

3.5.5 GSM PAM (U101:TQM7M5003)

The TQM7M5003 is an extremely small (7 x 7 mm), GSM/EDGE PAM for handset applications. This module has been optimized for excellent EDGE efficiency and Pout in a Polar Loop environment at EDGE class E2+ operation while maintaining high GSM/GPRS efficiency.
The small size and high performance is achieved with high-reliability 3rd generation InGaP HBT technology. With 50ßŸ and output, no external matching or bias components are required.
The module incorporates two highly-integrated InGaP power amplifier die with a CMOS controller. Each amplifier has three gain stages with on-die inter-stage matching implemented with a high Q passives technology for optimal performance. The CMOS controller implements a fully integrated power control within the module for GSM operations, and serves as the AM/AM path in EDGE operations. This eliminates the need for any external couplers, power detectors, current sensing etc., to assure the output power level. The module has Tx enable and band select inputs. Module construction is a low-profile overmolded landgrid array on laminate.



[Figure 1. 8] GSM PAM Schematic

3.5.6 UMTS Duplexer(FL103:SAYZY1G95EB0B00)

A UMTS duplexer splits a single operating band into receive and transmit paths. Important performance requirements include;

- Insertion loss, this component is also in the receive and transmit paths ;
  In the U990 typical losses : UMTS2100_ Tx = 1.5 dB, UMTS2100_ Rx = 1.8 dB
- Out-of-band rejection or attenuation, the duplexer provides input selectivity for the receiver, output filtering for the transmitter, and isolation between the two. Rejection levels for both paths are specified over a number of frequency ranges. Two Tx-to-Rx isolation levels are critical to receiver performance:
- Rx-band isolation, the transmitter is specified for out-of-band noise falling into the Rx band. This noise leaks from the transmit path into the receive path, and must be limited to avoid degrading receiver sensitivity. The required Rx-band isolation depends on the PA out of-band noise levels and Rx-band losses between the PA and LNA. Minimum duplexer Rx band isolation value is about 46.7 dB.
- Tx-band isolation, the transmit channel power also leaks into the receiver. In this case, the leakage is outside the receiver passband but at a relatively high level. It combines with Rx band jammers to create cross-modulation products that fall in-band to desensitize the receiver. The required Tx-band isolation depends on the PA channel power and Tx-band losses between the PA and LNA. Minimum duplexer Tx-band isolation value is about 51.7dB.
- Passband ripple, the loss of this fairly narrowband device is not flat across its passband. Passband ripple increases the receive or transmit insertion loss at specific frequencies, creating performance variations across the band.s channels, and should be controlled.
- Return loss, minimize mismatch losses with typical return losses of 10 dB or more (VSWR <2:1).
- Power handling, high power levels in the transmit path must be accommodated without degraded performance. The specified level depends on the operating band class and mobile station class (per the applicable standard), as well as circuit losses and antenna EIRP. Several duplexer characteristics depend upon its source and load impedances. QUALCOMM strongly recommends an isolator be used between the UMTS PA and duplexer to assure proper performance.

3.5.7 UMTS Rx RF filter (FL102 : EFCH2140TDE1)

An RF filter is located between the UMTS LNA and mixer. Insertion loss is important, but not as critical as losses before the LNA. The most important parameters of this component include:

• Out-of-band rejection or attenuation levels, usually specified to meet these conditions:

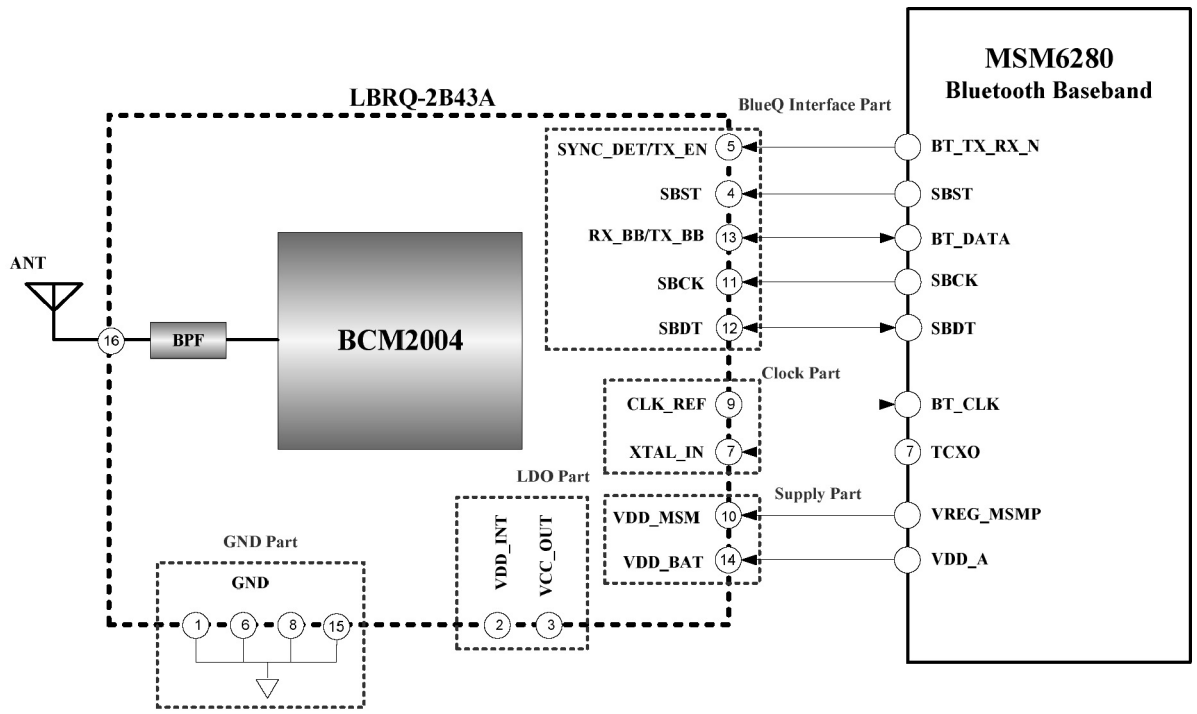
- Far out-of-band signals - ranging from DC up to the first band of particular concern and from the last band of particular concern to beyond three times the highest passband frequency.
- Tx-band leakage - the transmitter channel power, although attenuated by the duplexer, still presents a cross-modulation threat in combination with Rx-band jammers. The RF filter must provide rejection of this Tx-band leakage.
- Other frequencies of particular concern . bands known to include other wireless transmitters that may deliver significant power levels to the receiver input.

Parameter		Frequency	Our Preliminary spec. D/N: T2140F3A			Unit
			Min.	Typ.	Max.	
Passband			2110 ... 2170			MHz
Insertion loss		2110 ... 2170MHz		1.5	2.0	dB
Ripple in passband		2110 ... 2170MHz		0.5	1.2	dB
Amplitude imbalance		2110 ... 2170MHz	-1.5	-1.11 +0.73	+1.5	dB
Phase imbalance		2110 ... 2170MHz	-10.0	-1.92 +1.02	+10.0	deg.
Attenuation	Att1	0.1 ... 1980MHz	40	43		dB
	Att2	1980 ... 2040MHz	30	34		dB
	Att3	2250 ... 3000MHz	18	25		dB
	Att4	3000 ... 6000MHz	25	40		dB
VSWR	Input	2110 ... 2170MHz		1.5	2.0	
	Output	2110 ... 2170MHz		1.5	2.0	
Input impedance (Single Ended)			50			Ohm
Output impedance (Differential)			100 // 10nH			Ohm
Maximum drive level		1920 ... 1980MHz			+10	mW
DC Input level					+3	V
Operating temperature			-25		+85	deg. C
Storage temperature			-30		+85	deg. C

[Table 1.3] UMTS Rx SAW Filter Specification

3.5.8 Bluetooth (M800 : LBRQ-2B43A)

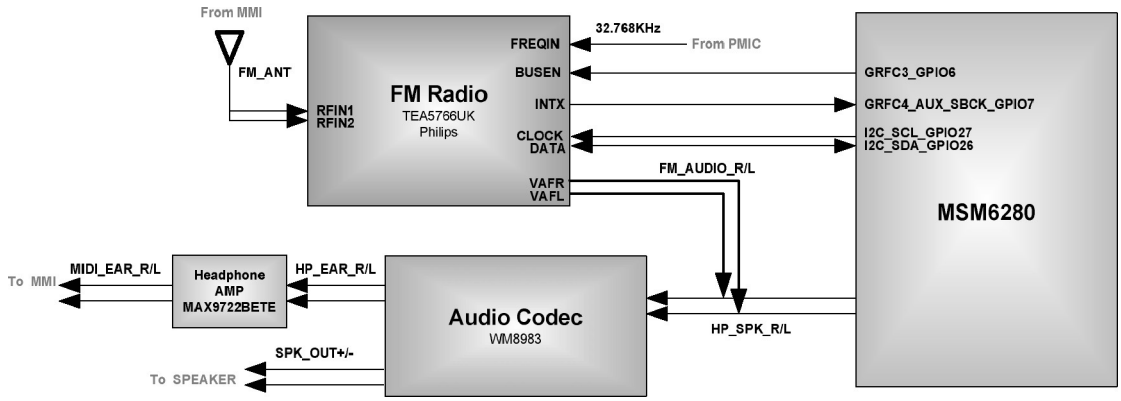
The MSM6280 includes BT baseband embedded BT 1.1 compliant baseband core, so the other bluetooth components are bluetooth RF module and Antenna. Figure1.9 shows the bluetooth system architecture in the U990.



[Figure 1.9] Bluetooth system architecture

3.5.9 FM Radio (U103 : TEA5766UK)

This FM Module is a single chip, electronically tuned, FM stereo radio with RDS/RBDS demodulator and decoder for low voltage applications, with fully integrated IF selectivity and demodulation. This equipment tunes the European, US, and Japanese FM bands.
Figure1.10 shows the FM Radio system architecture in the U990.



[Figure 1.10] FM Radio system architecture in the U990

3. BB Technical Description

3.6 Digital Baseband (DBB/MSM6280)

3.6.1 General Description

A. Features (MSM6280)

- Support for multimode operation - HSDPA, tri-band WCDMA (UMTS), quad GSM/GPRS/EDGE
- Support for HSDPA downlink up to 7.2Mbps (initial commercial release will support 3.6Mbps
- HSDPA. Later releases will have support for 7.2 Mbps HSDPA)
- Support for WCDMA (UMTS) uplink data rate up to 384 kbps
- High-performance ARM926EJ-S running at up to 225 MHz (later at 270 MHz for 7.2 Mbps HSDPA)
- ARM Jazelle Java hardware acceleration for faster Java-based games and other applets
- QDSP4000 high-performance DSP cores
- Integrated Bluetooth 1.2 baseband processor for wireless connectivity to peripherals
- Qcamera™ with 15 fps QVGA viewfinder resolution, and support for 4 MP camera sensors
- Direct interface to digital camera module with video front end (VFE) image processing
- True 3D graphics for advanced wireless gaming
- SecureMSM v2.0 includes support for Open Mobile Alliance (OMA) DRM v2.0, SIM-lock and IMEI integrity. Support for Q-fuse.
- Audio on par with portable music players
- Vocoder support (AMR, FR, EFR, HR)
- Advanced 14 x 14 mm, 0.5 mm pitch, 409-pin lead-free CSP packaging technology
- SD/SDIO hardware support

3. TECHNICAL BRIEF

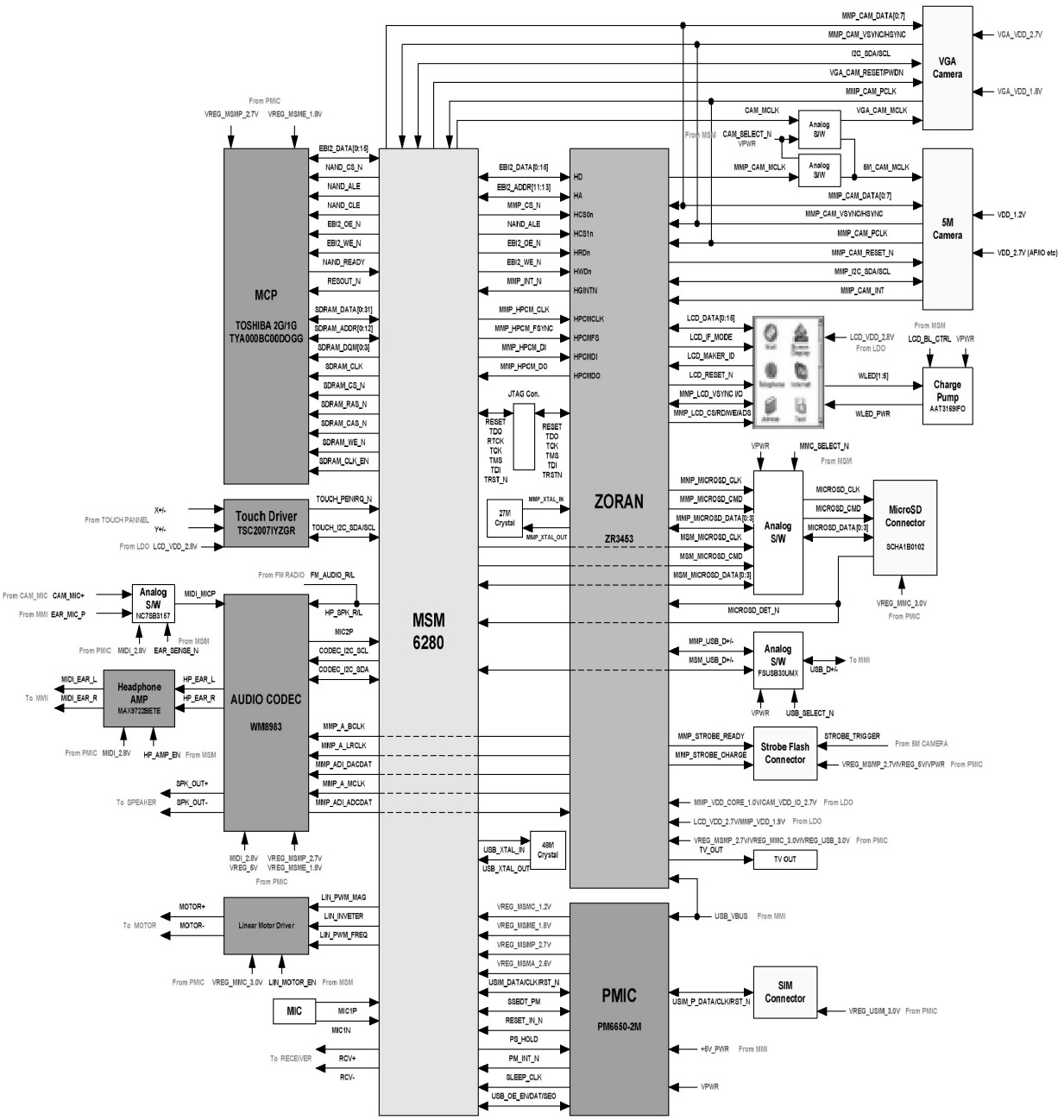


Figure. Simplified Block Diagram of Baseband

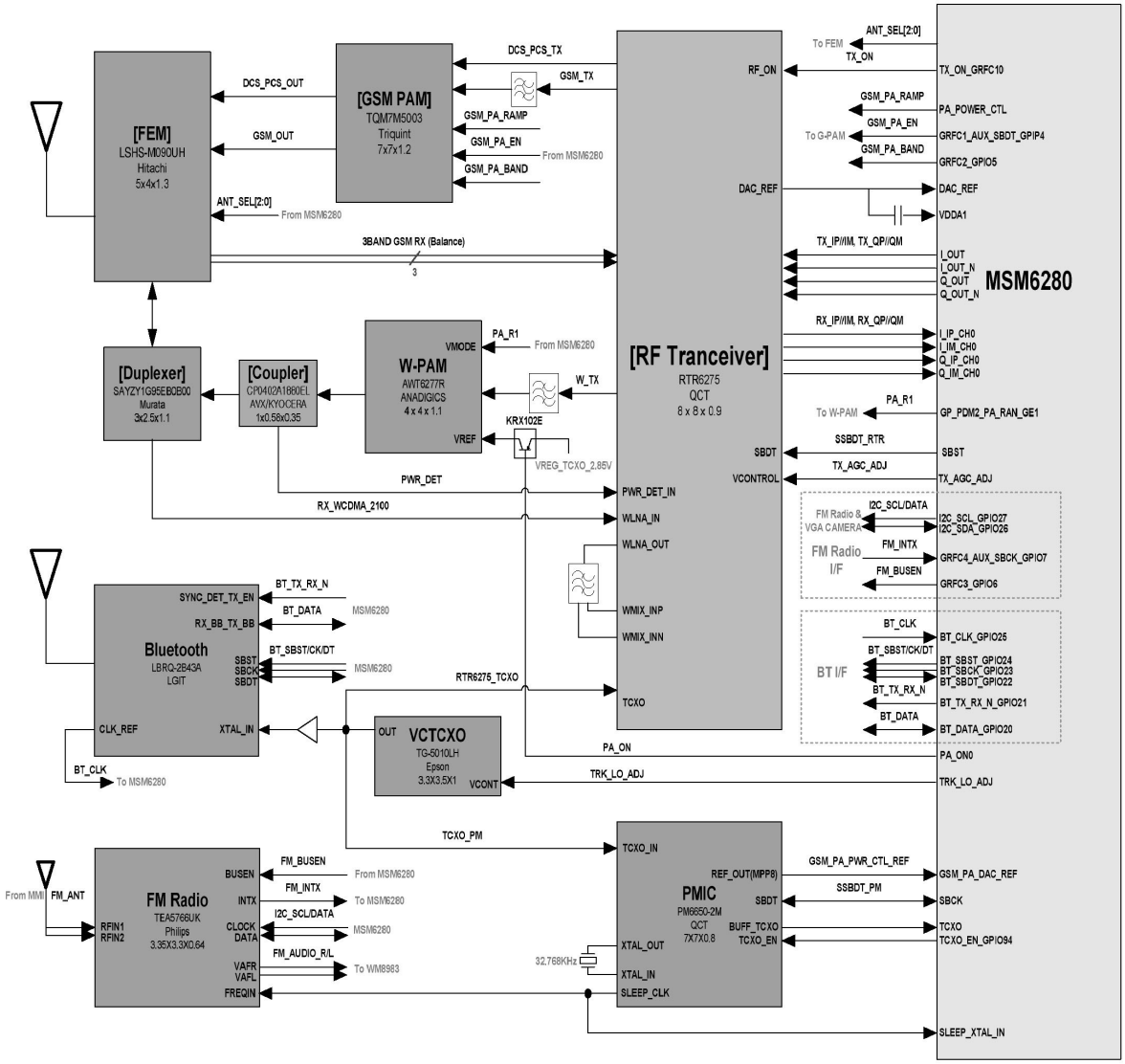


Figure. Simplified Block Diagram of RF

3.7 Subsystem(MSM6280)

3.7.1. ARM Microprocessor Subsystem

The MSM6280 device uses an embedded ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM, including control of the external peripherals such as the keypad, LCD, SDRAM, and NAND-Flash devices. Through a QUALCOMM proprietary serial bus interface (SBI) the ARM926EJ-S configures and controls the functionality of the RTR6275, RFR6275 and PM6650 devices.

3.7.2 WCDMA R99 features

The MSM6280 device supports release 99 June 2004 of the W-CDMA FDD standard, including the following features:

■ All modes and data rates for W-CDMA frequency division duplex (FDD), with the following restrictions:

❑ The downlink supports the following specifications:
- Up to four physical channels, including the broadcast channel (BCH), if present
- Up to three dedicated physical channels (DPCHs)
- Spreading factor (SF) range support from 4 to 256
- The following transmit diversity modes are supported:
  Space time transmit diversity (STTD)
  Time-switched transmit diversity (TSTD)
  Closed-loop feedback transmit diversity (CLTD)

■ The uplink supports the following specifications:

❑ The uplink provides the following UE support:
- One physical channel, eight TrCH, and 16 TrBks starting at any frame boundary
- A maximum data rate of 384 kbps

❑ Full SF range support from 4 to 256

■ SMS (CS and PS)

■ PS data rate - 384 kbps DL / 384 kbps UL

■ CS data rate - 64 kbps DL / 64 kbps UL

■ AMR (all rates)

3.7.3 HSDPA features

The MSM6280 device supports the HSDPA release 5 standard:

- Supports HS-DSCH (HS-SCCH, HS-PDSCH and HS-DPCCH) in addition to the R99 transport channels as defined in 3GPP specifications.
- Supports a maximum of four simultaneous HS-SCCH channels as defined in 3GPP specifications.
- Supports a maximum of 10 HS-PDSCH channels and supports both QPSK and 16 QAM modulation. It supports UE category 6 in SW release 2.0 and category 8 in SW release 4.0.
- Supports CQI, and ACK/NACK on HS-DPCCH channel as defined in 3GPP specifications.
- Supports all incremental redundancy versions for HARQ, as defined in 3GPP specifications.
- Can switch between HS-PDSCH and DPCH channel resources, as directed by the network.
- Can be configured to support any of the two power classes 3 or 4 as defined in 3GPP R5 specifications (25.101).
- Supports network activation of compressed mode by SF/2 or HLS on the DPCH for conducting inter-frequency or inter-RAT measurements when the HS-DSCH is active.
- Supports STTD on both associated DPCH and HS-DSCH simultaneously.
- Supports CLTD mode 1 on the DPCH when the HS-PDSCH is active.
- Supports STTD on HS-SCCH when either STTD or CLTD Mode 1 are configured on the associated DPCH.
- Supports TFC selection limitation on the UL factoring in the transmissions on the HS-DPCCH as required in TS 25.133.

3.7.4 GSM features

The following GSM modes and data rates are supported by the MSM6280 device hardware. Support modes conform to release '99 specifications of the sub-feature.

■ Voice features

- ❑ FR
- ❑ EFR
- ❑ AMR
- ❑ HR
- ❑ A5/1, A5/2, and A5/3 ciphering

■ Circuit-switched data features

- ❑ 9.6k
- ❑ 14.4k
- ❑ Fax
- ❑ Transparent and non-transparent modes for CS data and fax
- ❑ No sub-rates are supported.

3.7.5 GPRS features

■ Packet switched data (GPRS)

- ❑ DTM (Simple Class A) operation
- ❑ Multi-slot class 12 data services
- ❑ CS schemes: CS1, CS2, CS3, and CS4
- ❑ GEA1, GEA2, and GEA3 ciphering

■ Maximum of four Rx timeslots per frame

3.7.6 EDGE features

■ EDGE E2 power class for 8 PSK

■ DTM (simple Class A), multi-slot class 12

■ Downlink coding schemes - CS 1-4, MCS 1-9

■ Uplink coding schemes - CS 1-4, MCS 1-9

■ BEP reporting

■ SRB loopback and test mode B

■ 8-bit, 11-bit RACH

■ PBCCH support

■ 1 phase/2 phase access procedures

■ Link adaptation and IR

■ NACC, extended UL TBF.

3.7.7 MSM6280 device audio processing features

■ Integrated wideband stereo CODEC

❏ 16-bit DAC with typical 88 dB dynamic range

❏ Supports sampling rates up to 48 kHz on the speaker path and 16 kHz on the microphone path

■ VR- Voice mail + voice memo

■ Acoustic echo cancellation

■ Audio AGC

■ Audio Codecs: AMR-NB, AAC, AAC Plus, Enhanced AAC Plus, Windows Audio v9, Real Audio 8 (G2)

■ Internal vocoder supporting AMR, FR, EFR, and HR

3.7.8 MSM6280 microprocessor subsystem

■ Industry standard ARM926EJ-S embedded microprocessor subsystem

❏ 16 kB instruction and 16 kB data cache

❏ Instruction set compatible with ARM7TDMI®

❏ ARM version 5TEJ instructions

❏ Higher performance 5 stage pipeline, Harvard cached architecture

❏ Higher internal CPU clock rate with on-chip cache

■ Java hardware acceleration

■ Enhanced memory support

Please note that NOR/PSRAM will not be supported on MSM6280.

❏ 75 MHz and 90 MHz bus clock for SDRAM

❏ 32-bit SDRAM

❏ Dual memory buses separating the high-speed memory subsystem (EBI1) from low-speed peripherals (EBI2) such as LCD panels

❏ 1.8 V or 2.6 V memory interface support (excluding EBI1)

❏ NAND FLASH memory interface

- 8/16-bit data I/O width NAND flash support
- 1- or 4-bit ECC
- 512-byte/2KB page-size support
- 2 chip selects supported for NAND Flash

❏ Boot from NAND

❏ Low-power SDRAM (LP-SDRAM) interface

■ Internal watchdog and sleep timers

3.7.9 Supported interface features

- USB On-the-Go core supports both slave and host functionality
- Three universal asynchronous receiver transmitter (UART) serial ports
- USIM controller (via UART)
- Integrated 4-bit secure digital (SD) controller for SD and Mini SD cards
- Parallel LCD interface
- General-purpose I/O pins
- External keypad interface

3.7.10 Supported multimedia features

- Provide additional general purpose MIPS by using:
  - ❏ Two QDSP4000s
  - ❏ Dedicated hardware accelerators and compression engines
- Improve Java, BREW, and game performance
  - ❏ Integrated Java and 2D/3D graphics accelerator with Sprite engine
- Enable various accessories via USB host connectivity.
  - ❏ Integrated USB host controller functionality
- Enable compelling visual and audio applications.

Qcamera™

- High-quality digital camera processing, supporting CCD or CMOS image sensors up to 4-megapixel with 15 fps capture rate
- 15 fps QVGA viewfinder

Qtv™

- Audio and video decoder that supports VOD, MOD and Broadcast multimedia services.
- Audio Codecs supported: AMR-NB, AAC, AAC Plus, Enhanced AAC Plus, Windows® Audio v9, RealAudio® v8
- Integrated stereo wideband Codec for music/digital clips
- CMX
- Video Codecs supported: MPEG-4, H.263, H.264, Windows Media® v9 and RealNetworks® v10

Video telephony services: Qvideophone™

- A two-way mobile video conferencing solution that delivers 15 fps @ QCIF
- Video Codecs supported: MPEG-4 and H.263
- Audio Codecs supported: AMR-NB.

Qcamcorder™

■ Real time mobile video encoder

■ Video Codecs supported: MPEG-4, H.263.H.264

■ Audio Codecs supported: AMR-NB, AAC

■ Recording performance: 15 fps @ QVGA, 384 kbps

gpsOne™

■ Integrated gpsOne processing

■ Standalone gpsOne mode in which the handset acts as a GPS receiver

CMX™ (MIDI and still image, animation, text, LED/vibrate support)

■ 72 simultaneous polyphonic tones

■ 44 kHz sampling rate

■ 512 kB wave table

■ Support of universal file formats

- ❏ Standard MIDI Format (SMF)
- ❏ SP-MIDI
- ❏ SMAF Audio playback (MA-2, MA-3, MA-5)
- ❏ XMF/OLS
- ❏ MFil (requires Docomo license)

■ PNG decoder

■ Pitch bend range support

■ LED/vibrate support

■ Scalable Vector Graphics (SVG- Tiny 1.1 + SVG Tiny 1.2)

■ MLZ decoder

■ Integrated PNG/SAF A.T.

Table 1-1 Summary of MSM6280 device features

Features	MSM6280 device
Processor	ARM926 EJ-S – 225 MHz and 270 MHz (for 3.6 Mbps and 7.2 Mbps HSDPA) ADSP – 75 MHz and 90 MHz (for 3.6 Mbps and 7.2 Mbps HSDPA) MDSP – 61.44 MHz
Process technology	90 nm
Broadcast	TSIF (dedicated)
High speed serial interface	Mobile display digital interface (MDDI)
Security/digital rights management	OMA DRM v2.0 Q-fuse supported
Supported RF platforms	Tri-band UMTS (3U), Platform B (RFCMOS), Platform D (Diversity)
gpsOne	Supported
16-bit burst NOR flash + 16-bit or 32-bit burst PSRAM	Not supported
8-bit or 16-bit NAND flash + 32-bit SDRAM	Supported **Only 32-bit SDRAM supported**
USB	USB-OTG
Qcamcorder	15 fps @ QVGA, 15 fps QVGA viewfinder
Qtv (video decode)	30 fps @ QVGA playback 15 fps @ QVGA streaming
Qvideophone (video telephony)	15 fps @ QCIF
Qcamera (camera interface)	4M pixel support
Audio/video decoders	MP3, AAC, AAC+, Enhanced AAC+ ADPCM, MP4, H.263, H.264, Windows Media, Real
2D/3D graphics HW acceleration	HW – 100K triangles/sec

3.7.11 Serial Bus Interface(SBI)

The MSM6280 device's SSBI is designed specifically to be a quick, low pin count control protocol for QUALCOMM's RTR6275, RFR6275 and PM6650 ASICs. Using the SSBI, the RTR6275, RFR6275, and PM6650 devices can be configured for different operating modes and for minimum power consumption, extending battery life in Standby mode. The SSBI also controls DC baseband offset errors.

3.7.12 Wideband CODEC

The MSM6280 device integrates a wideband voice/audio CODEC into the mobile station modem (MSM). The CODEC supports two differential microphone inputs, one differential earphone output, one single-ended earphone output, and a differential analog auxiliary interface. The CODEC integrates the microphone and earphone amplifiers into the MSM6280 device, reducing the external component count to just a few passive components. The microphone (Tx) audio path consists of a two-stage amplifier with the gain of the second stage set interally. The Rx/Tx paths are designed to meet the ITU-G.712 requirements for digital transmission systems.

3.7.13 Vocoder Subsystem

The MSM6280 device's QDSP4000 supports AMR,FR,EFR and HR. In addition, the QDSP4000 has modules to support the following audio functions: DTMF tone generation, DTMF tone detection, Tx/Rx volume controls, Tx/Rx automatic gain control (AGC), Rx Automatic Volume Control (AVC), EarSeal Echo Canceller (ESEC), Acoustic Echo Canceller (AEC), Noise Suppression (NS), and programmable, 13-tap, Type-I, FIR, Tx/Rx compensation filters. The MSM6280 device's integrated ARM9TDMI processor downloads the firmware into the QDSP4000 and configures QDSP4000 to support the desired functionality.

3.7.14 ARM Microprocessor subsystem

The MSM6280 device uses an embedded ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM device, including control of the external peripherals such as the keypad, LCD, RAM, ROM, and EEPROM devices.

Through a generic single serial bus interface (SSBI) the ARM926EJ-S configures and controls the functionality of the RFR6275, RTR6275, and PM6650 devices.

3.7.15 Mode Select and JTAG Interfaces

The mode pins to the MSM6280 device determine the overall operating mode of the ASIC. The options under the control of the mode inputs are Native mode, which is the normal subscriber unit operation, ETM mode, which enables the built-in trace mode, and test mode for factory testing. The MSM6280 device meets the intent of the ANSI/IEEE 1149.1A-1993 feature list. The JTAG interface can be used to test digital interconnects between devices within the mobile station during manufacture.

3.7.16 General-Purpose Input/Output Interface

The MSM6280 device has general-purpose bidirectional input/output pins. Some of the GPIO pins have alternate functions supported on them. The alternate functions include USB interface, additional RAM, ROM, general-purpose chip selects, parallel LCD interface, and a UART interface. The function of these pins is documented in the various software releases.

3.7.17 UART

The MSM6280 device employs three UARTs. UART1 has dedicated pins while UART2 and UART3 share multiplexed pins.

- UART1 for data
- UART2 (can be used for USIM interface)
- UART3 for data

3.7.18 USB

The MSM6280 device integrates a universal serial bus (USB) controller that supports both unidirectional and bidirectional transceiver interfaces. The USB controller acts as a USB peripheral communicating with the USB host.

3.8 Power Block

3.8.1 General

MSM6280, included RF, is fully covered by PM6650(Qualcomm PMIC). PM6650 cover the power of MSM6280, MSM memory, RF block, Bluetooth, USIM and TCXO. Major power components are :

PM6650 : Phone power supply
AAT3169 : LCD Backlight/Flash charge pump

3.8.2 PM6650

The PM6650 device (Figure 1-1) integrates all wireless handset power management. The power management portion accepts power from all the most common sources - battery, external charger, adapter, coin cell back-up - and generates all the regulated voltages needed to power the appropriate handset electronics. It monitors and controls the power sources, detecting which sources are applied, verifying that they are within acceptable operational limits, and coordinates battery and coin cell recharging while maintaining the handset electronics supply voltages. Eight programmable output voltages are generated using low dropout voltage regulators, all derived from a common trimmed voltage reference.
A dedicated controller manages the TCXO warm-up and signal buffering, and key parameters (under-voltage lockout and crystal oscillator signal presence) are monitored to protect against detrimental conditions.
MSM device controls and statuses the PM6650 IC using Single Serial Bus Interface (SSBI) supplemented by an Interrupt Manager for time-critical information. Another dedicated IC Interface circuit monitors multiple trigger events and controls the power-on sequence.

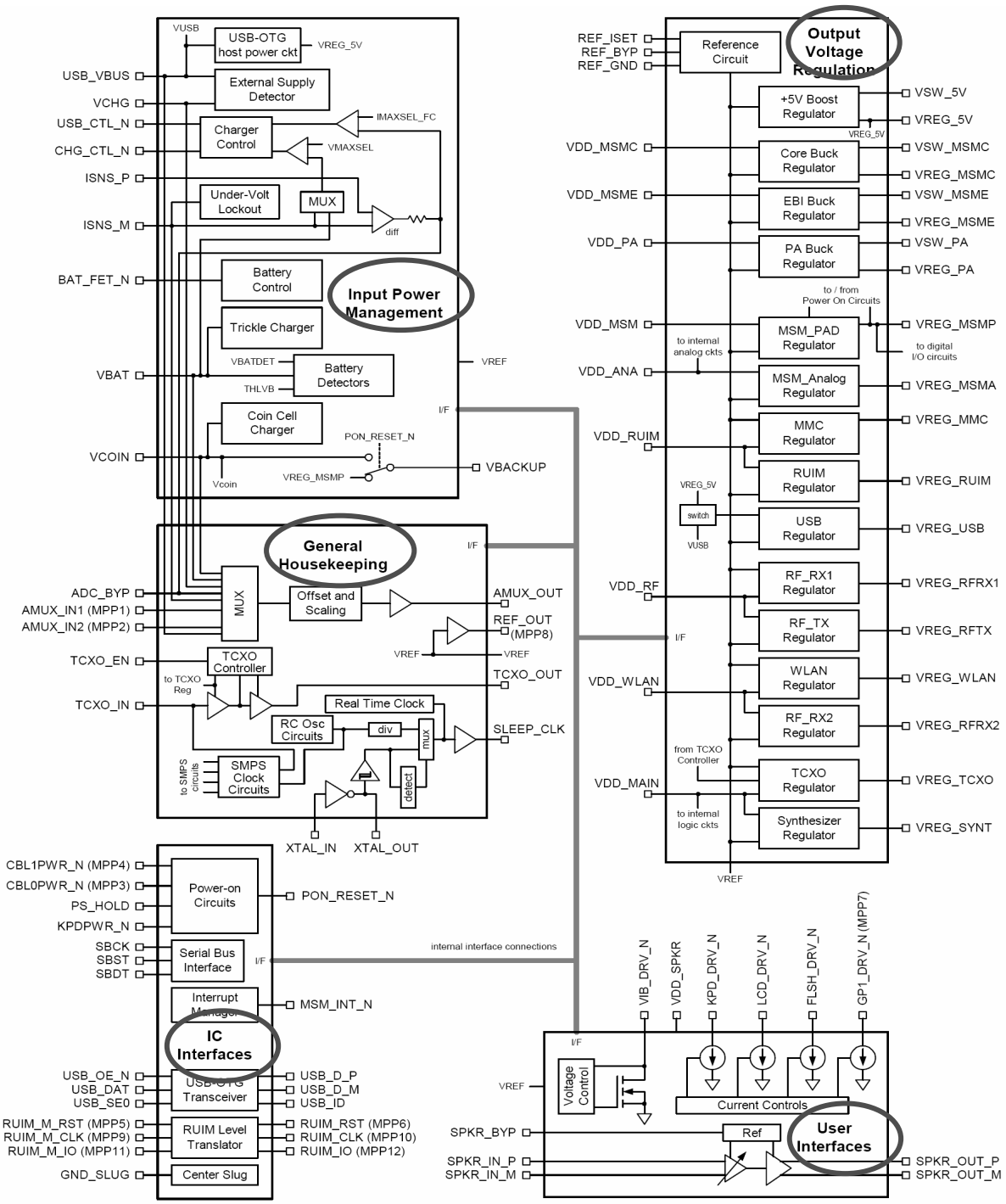
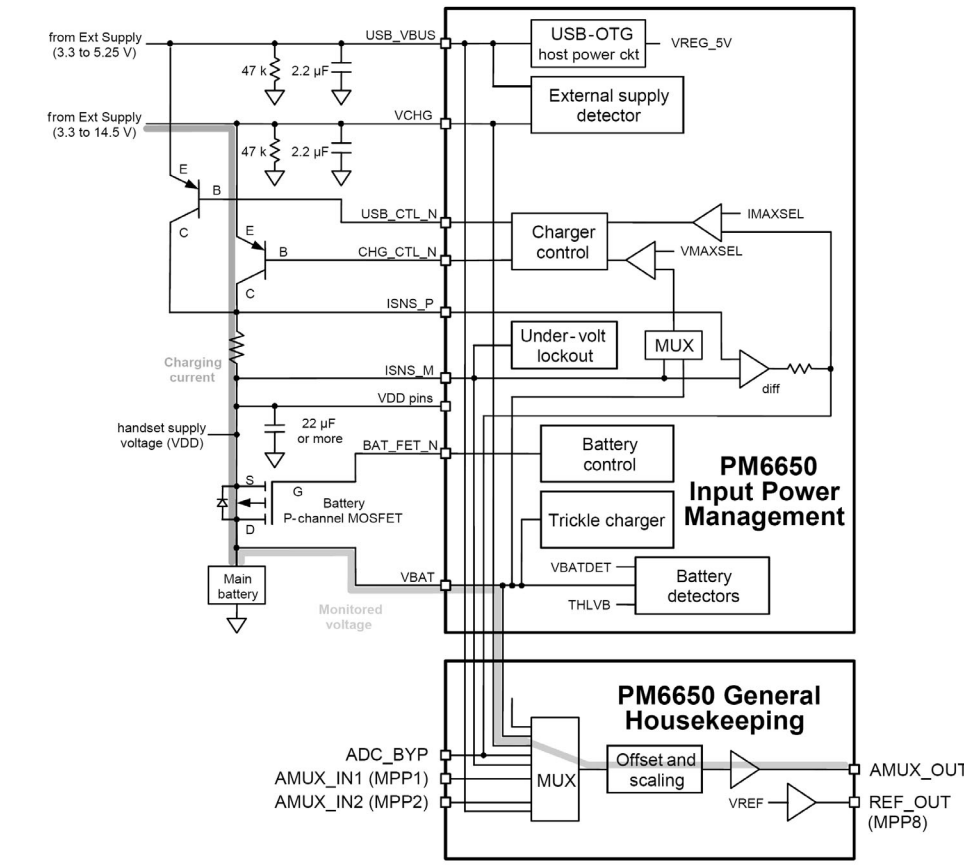


Figure 1-1. PM6650 Functional Block Diagram

3.8.3 Charging control

A programmable charging block in PM6650 is used for battery charging. It is possible to set limits for the charging current. The external supply typically connects directly to pin (VCHG). The voltage on this pin (VCHG) is monitored by detection circuitry to ascertain whether a valid external supply is applied or not. For additional accuracy or to capture variations over time, this voltage is routed internally to the housekeeping ADC via the analog multiplexer. PM6650 circuits monitor voltages at VCHARGER and ICHARGE pins to determine which supply should be used and when to switch between the two supplies. These pins are connected to the Source (or emitter) and Drain (or collector) contacts of the pass transistor respectively.



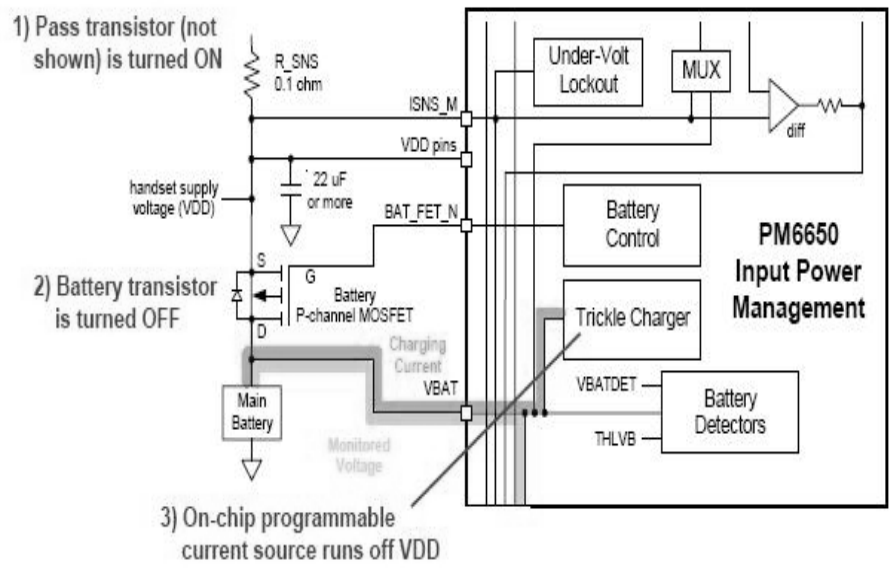
4.2V~3.81V 100~70 (%)	3.80V~3.71V 69~45 (%)	3.70V~3.62V 44~20 (%)	3.61V~3.50V 19~3 (%)	3.49V~3.28V 2~0 (%)

KU990 Battery Bar Display(Stand By Condition)

Trickle Charging

Trickle Charging of the main battery, enabled through SBI control and powered from VDD, is provided by the PM6650 IC, The trickle charger is on-chip programmable current source that supplies current from VDD to pin (VBAT). Trickle charging can be used for lithium-ion and nickel-based batteries, with its performance specified below (3.2V). The charging current is set to 80mA.

Parameter	Min	Typ	Max	Unit
Trickle Current	60	80	100	mA



"Auto Trickle Charge" feature

When this feature is enabled VBAT is checked as soon as a valid external supply is detected.

- If VBAT < 1V:
  Faulty battery, too low to chg; PM6650 powers up normally
- If 1V < VBAT < 3V:
  Battery good but depleted; trickle charging auto-started. Special algorithm followed.
- If VBAT > 3V:
  Normal PM6650 power-up

4) Current is set by software: 0 (off) to 80 mA; 8 states

5) Charging current (blue) flows out pin 6 (VBAT)

6) Battery voltage is routed to MSM ; MSM HKADC measures VBAT

7) Trickle charging is finished when the battery reaches the desired threshold

Constant Current Charging

The PM6650 IC supports constant current charging of the main battery by controlling the charger pass transistor and the battery transistor. The constant current charging continues until the battery reaches its target voltage, 4.2V.

Constant Voltage Charging

Constant voltage charging begins when the battery voltage reaches a target voltage, 4.2V. The end of constant voltage charging is commonly detected 10% of the full charging current.

- Charging Method : CC & CV (Constant Current & Constant Voltage)
- Maximum Charging Voltage : 4.2V
- Maximum Charging Current : 600mA
- Nominal Battery Capacity : 1000mAh
- Charger Voltage : 5.1V
- Charging time : Max 3h (Except time trickle charging)
- Full charge indication current (icon stop current) : 100mA
- Low battery POP UP : Idle - 3.49V, Dedicated(GSM/WCDMA) - 3.49V
- Low battery alarm interval : Idle - 3 min, Dedicated - 1min
- Cut-off voltage : 3.20V(idle), 3.1V(call)

3.9 External memory interface

The MSM6280 device was designed to provide two distinct memory interfaces. EBI1 was targeted for supporting high speed synchronous memory devices. EBI2 was targeted towards supporting slower asynchronous devices such as LCD, NAND flash, SRAM, etc. In addition, MSM6280 provide SD bus interface. KU990 supports 512MByte free user memory using SD interface.

• EBI1 Features

- 16 bit static and dynamic memory interface
- 32 bit dynamic memory interface
- 24 bits of address for static memory devices which can support up to 32MBytes on each chip select
- Synchronous burst memories supported (burst NOR, burst PSRAM)
- Synchronous DRAM memories supported
- Byte addressable memory supporting 8 bit, 16 bit and 32 bit accesses
- Pseudo SRAM (PSRAM) memory support

• EBI2 Features

- Support for asynchronous FLASH and SRAM(16bit & 8bit).
- Interface support for byte addressable 16bit devices (UB_N & LB_N signals).
- 2Mbytes of memory per chip select.
- Support for 8 bit/16bit wide NAND flash.
- Support for parallel LCD interfaces, port mapped of memory mapped(18 or 16 bit).

• 2Gb NAND(16bit, Large Block) flash memory + 1Gb SDRAM (32bit)

• 1-CS(Chip Select) are used.

• The SD bus allows the dynamic configuration of the number of data line from 1 to 4 Bidirectional data signal. After power up by default, the Device will use only DAT0. After initialization, host can change the bus width.

Interface Spec				
Device	Part Name	Maker	Read Access Time	Write Access Time
NAND	TYA000BC00DOGG	Toshiba	50 ns	30 ns
SDRAM	TYA000BC00DOGG	Toshiba	15 ns	15 ns

Table#1. External memory interface

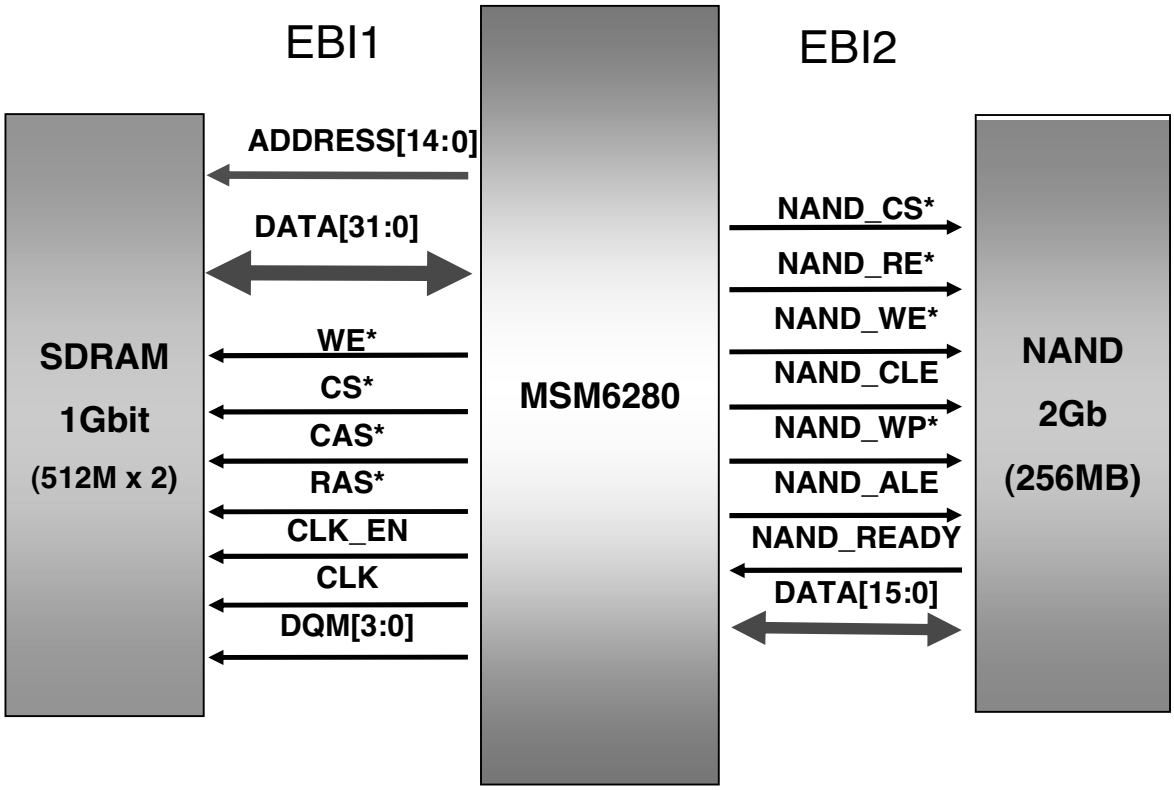


Figure. Simplified Block Diagram of Memory Interface

3.10 H/W Sub System

3.10.1 RF Interface

A. RTR6275(WCDMA_Tx, GSM_Tx/Rx)

MSM6280 controls RF part(RTR6275) using these signals.

• SBST : SSBI I/F signals for control Sub-chipset

• PA_ON1 : Power AMP on RF part

• RX0_I/Q_M/P,TX_I/Q_M/P : I/Q for T/Rx of RF

• TX_AGC_ADJ : control the gain of the Tx signal prior to the power amplifier

• DAC_REF : Reference input to the MSM Tx data DACs

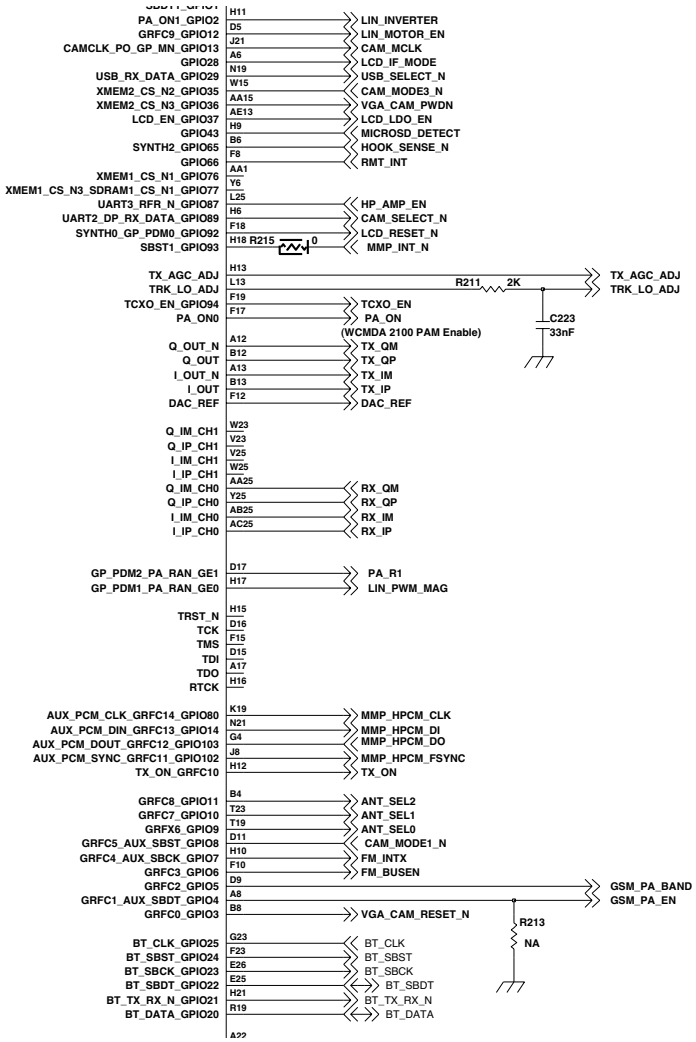


Figure. Schematic of RF Interface of MSM6280

B. the others

• TRK_LO_ADJ : TCXO(19.2M) Control

• PA_ON : WCDMA(2100) TX Power Amp Enable

• ANT_SEL[0-2] : Ant Switch Module Mode Selection(WCDMA,GSM Tx/Rx,DCS-PCS Tx/Rx)

• GSM_PA_BAND : GSM/DCS-PCS Band Selection of Power Amp

• GSM_PA_RAMP : Power Amp Gain Control of APC_IC

• GSM_PA_EN : Power Amp Gain Control Enable of APC_IC

3.10.2 MSM Sub System

3.10.2.1. USIM Interface

SIM interface scheme is shown in Figure.
And, there control signals are followed

- USIM_CLK : USIM Clock
- USIM_Reset : USIM Reset
- USIM_Data : USIM Data T/Rx

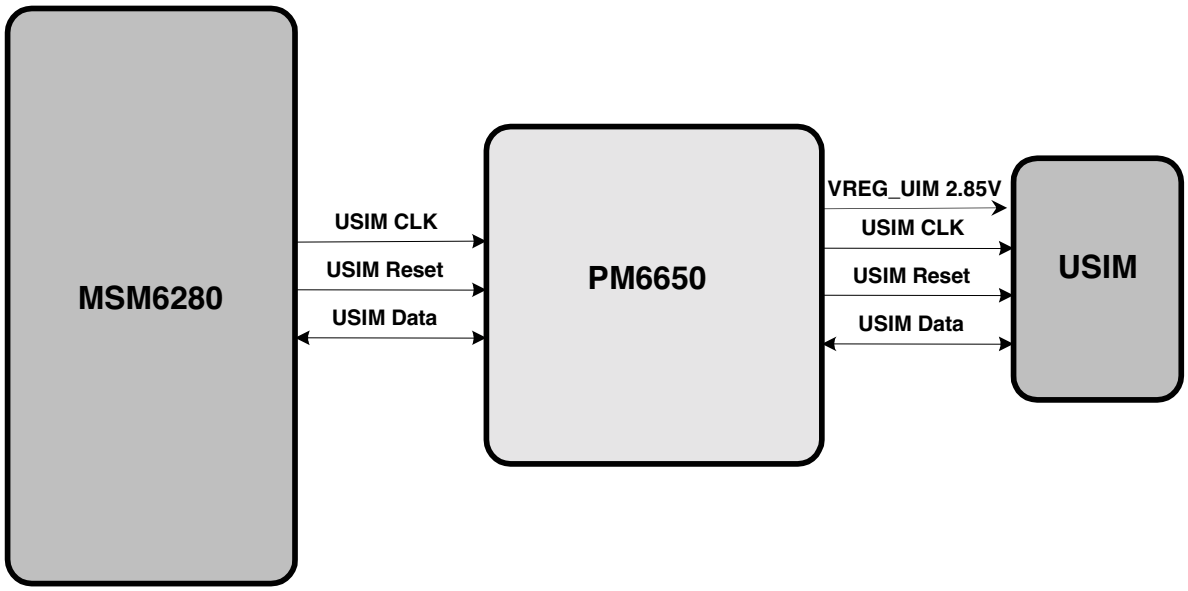


Figure. SIM Interface

3.10.2.2 UART Interface

UART signals are connected to MSM GPIO through IO connector with 115200 bps speed.

GPIO_Map	Name	Note
GPIO_96	UART_RXD	Data_Rx
GPIO_95	UART_TXD	Data_Tx

Table. UART Interface

3.10.2.3 USB

The MSM6280 device contains a Universal Serial Bus (USB) interface to provide an efficient interconnect between the mobile phone and a personal computer (PC). The USB interface of the MSM6280 was designed to comply with the definition of a peripheral as specified in USB Specification, Revision 1.1. Therefore, by definition, the USB interface is also compliant as a peripheral with the USB Specification, Revision 2.0. The USB Specification Revision 1.1 defines two speeds of operation, namely low-speed (1.5 Mbps) and full-speed (12 Mbps), both of which are supported by the MSM6280.

Name	Note
USB_DAT	Data to/from MSM
USB_SE0	Data to/from MSM
USB_OE_N	Out-Put Enable of Transceiver
USB_VBUS	USB_Power From Host(PC)
USB_D+	USB Data+ to Host
USB_D	USB Data- to Host

Table. USB Signal Interface

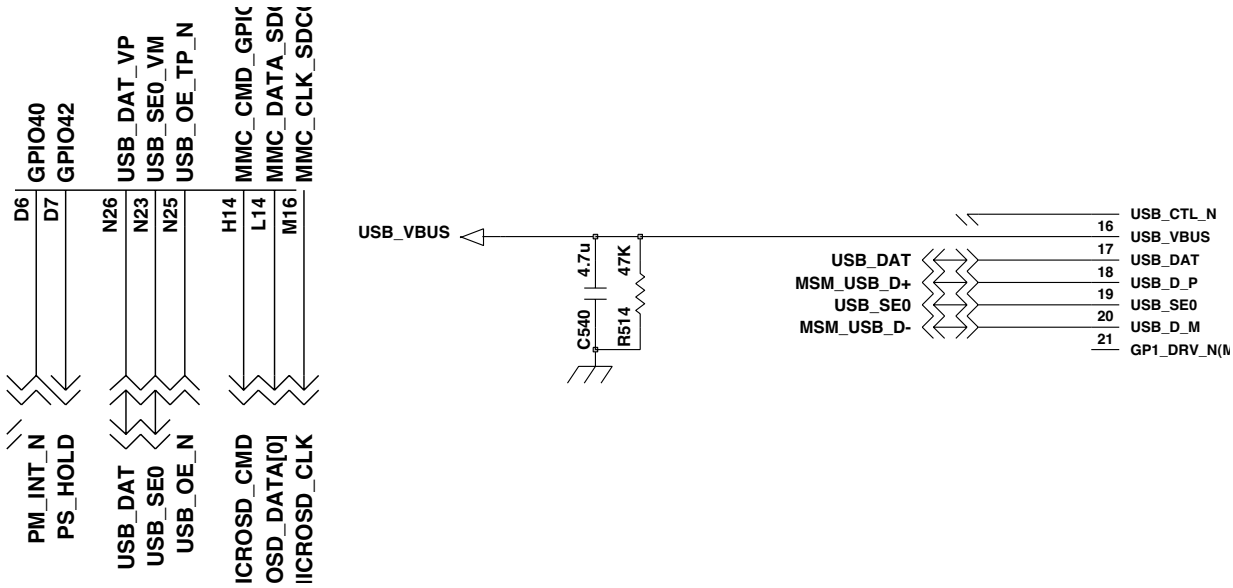


Figure. Schematic of USB block(MSM6280 Side & PM6650 Side)

3.10.3 HKADC(House Keeping ADC)

The MSM6280 device has an on-chip 8-bit analog-to-digital converter (HKADC) which is tended to digitize DC signals corresponding to analog parameters such as battery voltage, temperature, and RF power levels. The MSM6280 device has six analog input pins which are multiplexed to the input of the internal HKADC.

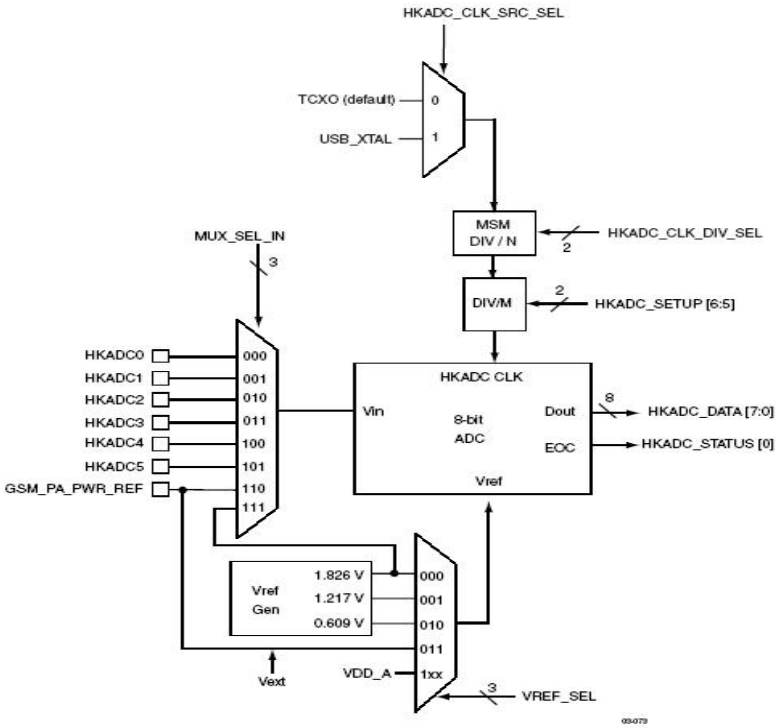


Figure. MSM6280HKADC Block diagram

Channel	Signal	Note
HKADC0	AMUX_OUT	RF PAM Temperature Check
HKADC1	VBATT_SENSE	Battery voltage level
HKADC2	REF_ADC	ADC Reference voltage
HKADC3	TTY_ADC_DET	Ear jack Detection for TTY
HKADC4	PCB_Rev_ADC	PCB Version Check
HKADC5	Battery_THERM	Battery Temperature Check

Table. HKADC channel table

3.10.4 Key Pad

There are 5 key buttons. Shows the Key Matrix & Keypad circuit.
'END' Key is connected to PMIC(PM6650).

	COL(0)	COL(1)
ROW(0)	Lock	Capture
ROW(1)		AF
ROW(2)	SEND	CLR

Table. Key Matrix Mapping Table

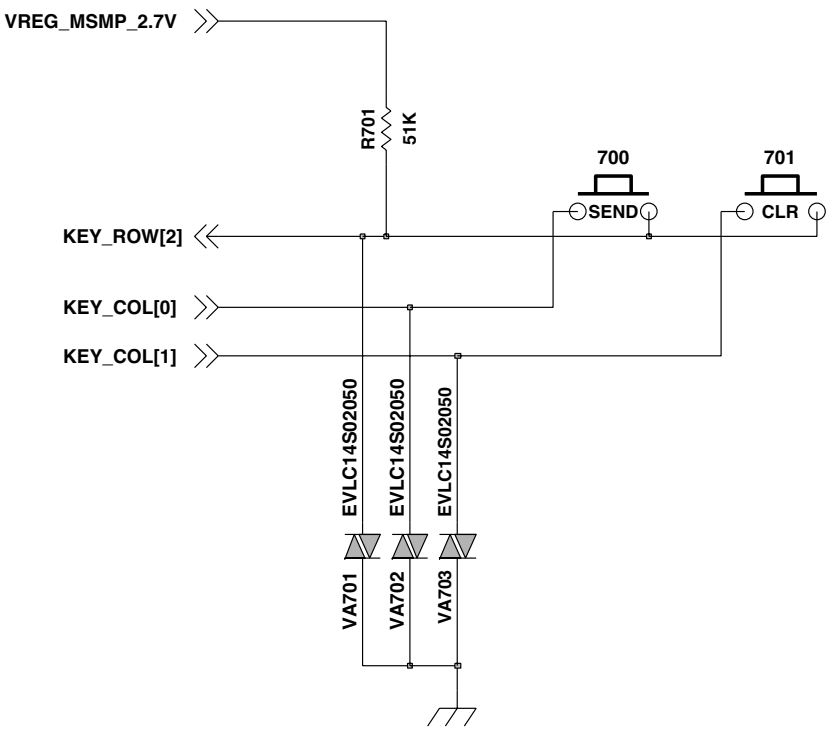


Figure. Main Keypad Circuit

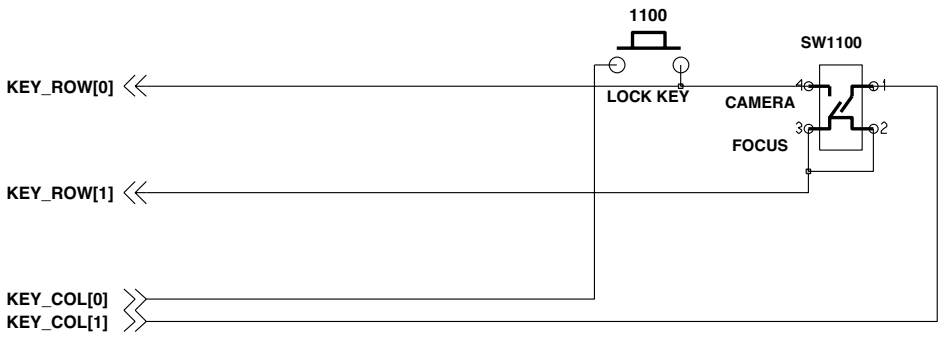


Figure. Side Keypad Circuit

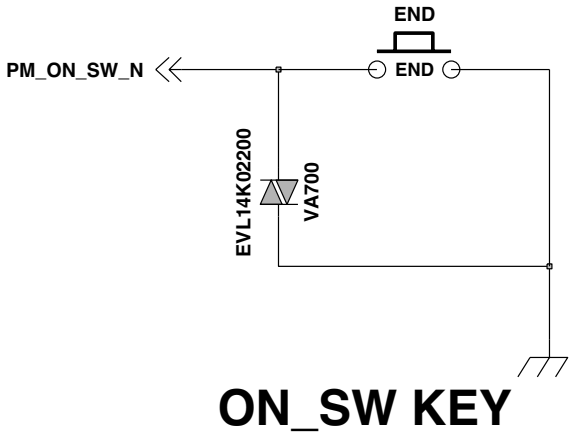


Figure. END Keypad Circuit

3.10.5 Camera Interface

U990 Installed a 5M Pixel and 0.3Mega Camera.
Below figure shows the camera board to board connector and camera I/F signal.

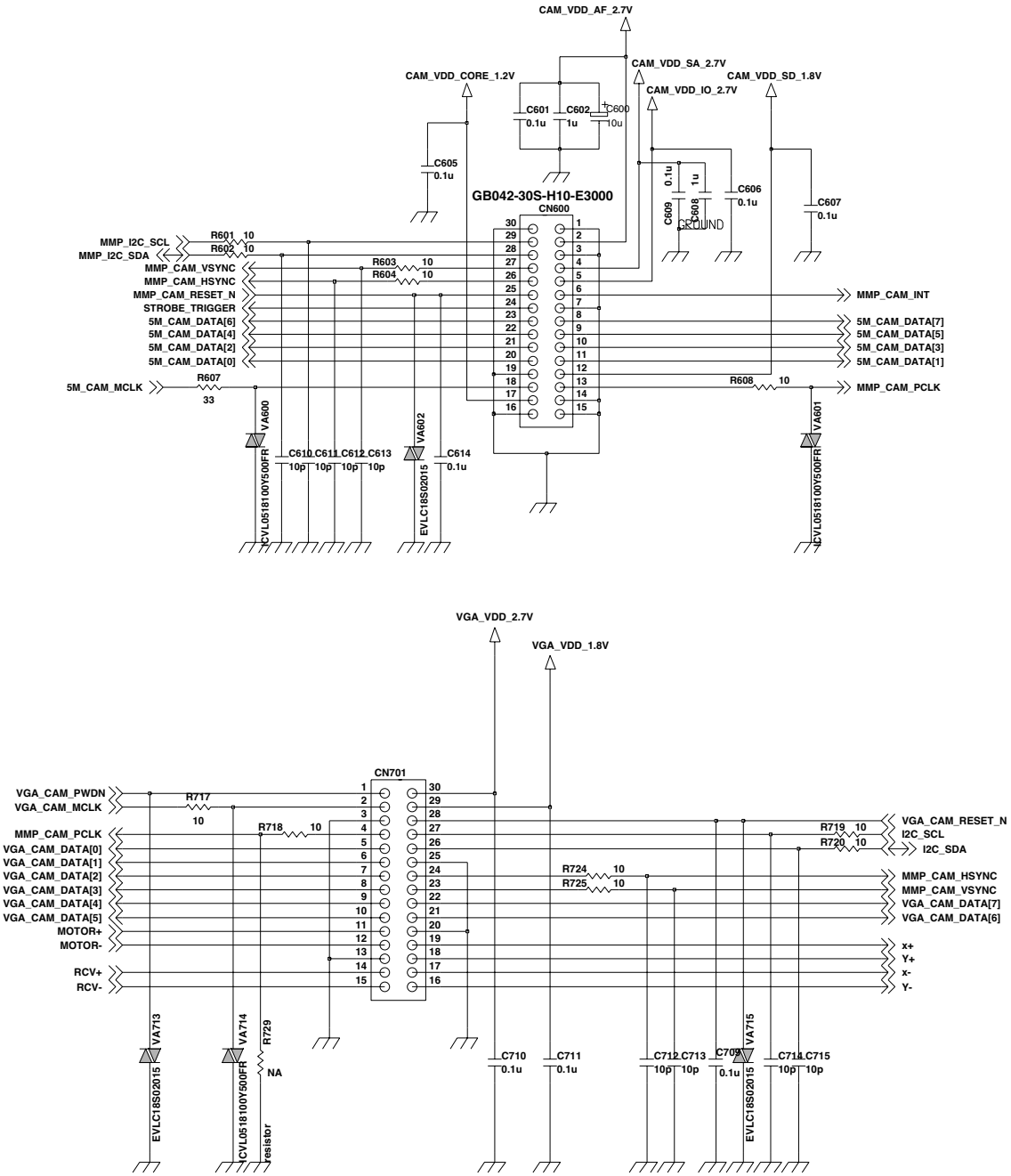


Figure. Camera PCB Board to Board Connector

The MEGA Camera module is connected to Main PCB with 30pin Board to Board connector Its interface is dedicated camera interface port in Multimedia chip. The camera port supply 13MHz master clock to camera module, vertical sync signal, horizontal sync signal, reset signal and 8bits data from camera module. The camera module is controlled by I2C port from Multimedia chip.

[Pin Description]

Pin No.	Symbol	I/O	State at reset	State at power save	State at power off	Description
1	AF_GND	-	-	-	-	Ground (Auto Focus)
2	GND	-	-	-	-	Ground
3	VDD_AF (2.8 V)	-	-	-	-	Voltage Supply (Auto Focus)
4	SCL	I/O	Hi Z	Active	Hi Z	I^2C Serial Bus Clock *1
5	GND	-	-	-	-	Ground
6	SDA	I/O	Hi Z	Active	Hi Z	I^2C Serial Bus Data I/O *1
7	VDD_SA (2.8 V)	-	-	-	-	Voltage Supply (Sensor Analog)
8	VSYNC	O	Low	Hi Z	Hi Z	Vertical Synchronization Signal
9	VDD_IO (2.8 or 1.8V)	-	-	-	-	Voltage Supply (I/O)
10	HSYNC	O	Low	Hi Z	Hi Z	Horizontal Synchronization Signal
11	TRIG	O	Low	Low	Low	Interrupt Line Signal
12	XRST	I	-	-	-	System Reset
13	GND	-	-	-	-	Ground
14	STRB	O	Low	Low	Low	LED/Xenon Strobe Control
15	D[7]	O	Low	Hi Z	Hi Z	Digital Video Data (MSB)
16	D[6]	O	Low	Hi Z	Hi Z	Digital Video Data
17	D[5]	O	Low	Hi Z	Hi Z	Digital Video Data
18	D[4]	O	Low	Hi Z	Hi Z	Digital Video Data
19	D[3]	O	Low	Hi Z	Hi Z	Digital Video Data
20	D[2]	O	Low	Hi Z	Hi Z	Digital Video Data
21	D[1]	O	Low	Hi Z	Hi Z	Digital Video Data
22	D[0]	O	Low	Hi Z	Hi Z	Digital Video Data (LSB)
23	VDD_SD (1.8 V)	-	-	-	-	Voltage Supply (Sensor Digital)
24	GND	-	-	-	-	Ground
25	DCK	O	Low	Hi Z	Hi Z	Digital Video Data Clock
26	MCK	I	-	-	-	System Clock Input
27	GND	-	-	-	-	Ground
28	VDD_L (1.2 V)	-	-	-	-	Voltage Supply (DSP Core)

Table. Interface between MEGA Camera Module and MAIN PCB (in camera module)

The VGA Camera module is connected to FPCB with 20pin Board to Board connector (AXK720147G). Its interface is dedicated camera interface port in MSM6280. The camera port supply 13.MHz master clock to camera module and receive 13MHz pixel clock (15fps), vertical sync signal, horizontal sync signal, reset signal and 8bits data from camera module. The camera module is controlled by I2C port from MSM6280.

[Pin Description]

No	Name	Port	Note
1	CAM_PWDN	i	Camera power down
2	CAM_MCLK	I	Master Clock(24M)
3	GND	GND	GND
4	CAM_PCLK	O	Clock for Camera Data Out(13M)
5	CAM_DATA(0)	O	Data
6	CAM_DATA(1)	O	Data
7	CAM_DATA(2)	O	Data
8	CAM_DATA(3)	O	Data
9	CAM_DATA(4)	O	Data
10	CAM_DATA(5)	O	Data
11	CAM_DATA(6)	O	Data
12	CAM_DATA(7)	O	Data
13	CAM_VSYNC	O	Vertical Synch
14	CAM_HSYNC	O	Horizontal Sync
15	GND	GND	GND
16	I2C_SCD	I	I2C Clock
17	I2C_SCL	I	I2C Clock
18	CAM_RESET_N	I	Camera reset signal
19	VREG_MSMP_2.8V	I	Camera I/O Power
20	VREG_CAM_2.8V	I	Camera I/O Power

Table. Interface between VGA Camera Module and FPCB (in camera module)

3.10.6 LCD Module (LS030B3UX01 : SHARP)

- The IM220DBN2A model is a Color TFT Main supplied by SHARP.
  This LCD Module has a 3.0 inch diagonally measured active display area with 240(RGB)X400 resolution. each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes.

* Features

- Display mode(Main LCD) : Normally Black, Transmissive VA mode 265K colors
- LCD Driver IC: LS030B3UX01(Magnachip)
- Driving Method : A-Si TFT Active Matrix
- 16 bit CPU interface Parallel

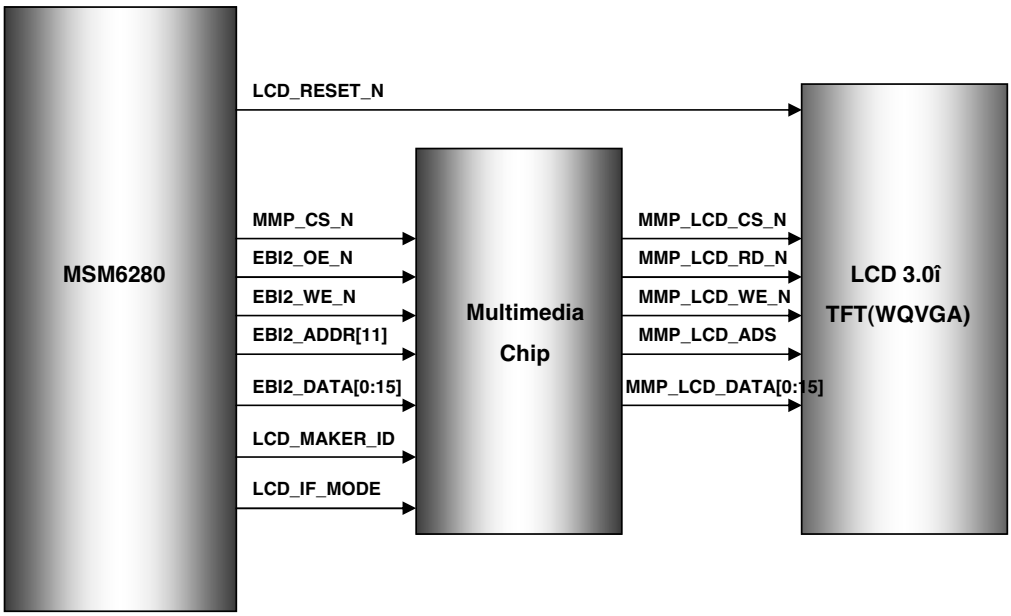
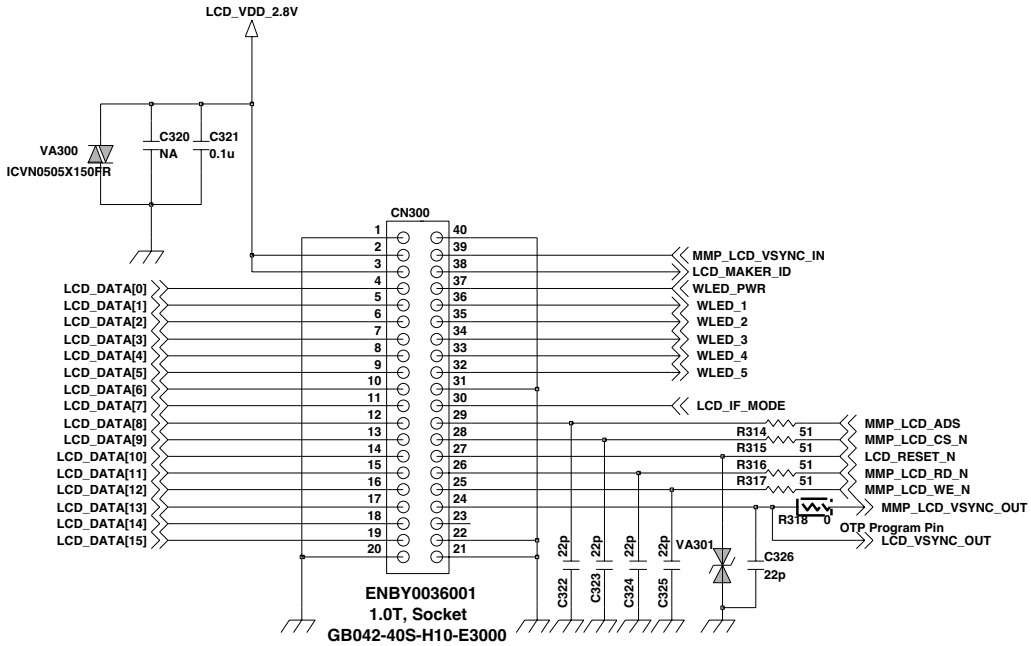
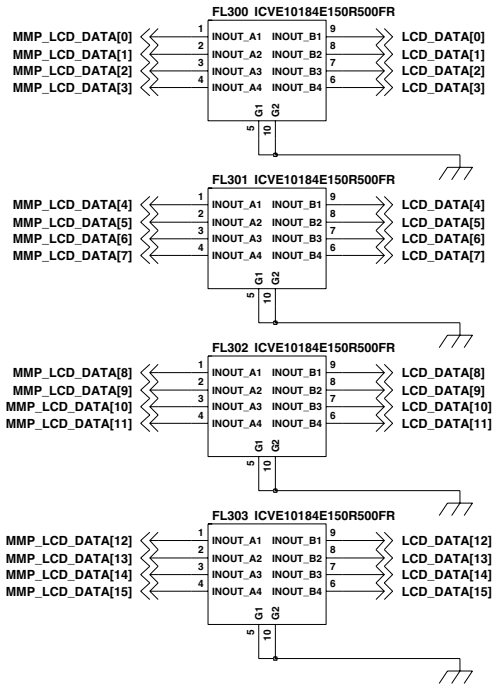


Figure. LCD Module Block Diagram

3.10.7 Display

LCD module is connected to Main PCB with 40 pin B TO B connector The LCD module is controlled by 16-bit EBI2 in MSM6280 via Multimedia Chip.





3.10.7.1 Audio Signal Processing & Interface

Audio signal processing is divided uplink path and downlink path.
The uplink path amplifies the audio signal from MIC and converts this analog signal to digital signal and then transmits it to DBB Chip (MSM6280).
This transmitted signal is reformed to fit in GSM & WCDMA frame format and delivered to RF Chipset.
The downlink path amplifies the signal from DBB chip (MSM6280) and outputs it to receiver (or speaker). The receive path can be directed to either one of two earphone amplifiers or the auxiliary output. The outputs earphone1 (EAR1OP, EAR1ON) and auxiliary out (LINE_OP, LINE_ON) are differential outputs. Earphone2 (HPH_L, HPH_R) is a single-ended output stage designed to drive a headset speaker.
The microphone interface consists of two differential microphone inputs, one differential auxiliary input and a two-stage audio amplifier.

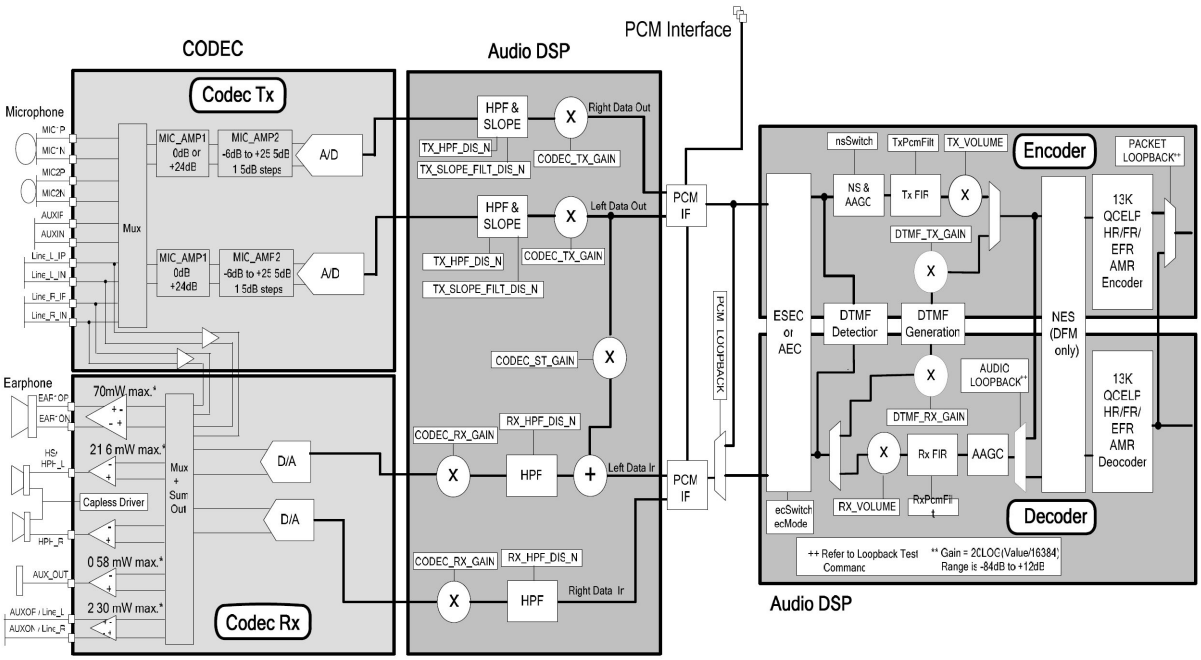


Figure. Audio Interface Detailed Diagram(MSM6280)

MSM6280 Audio CODEC pins

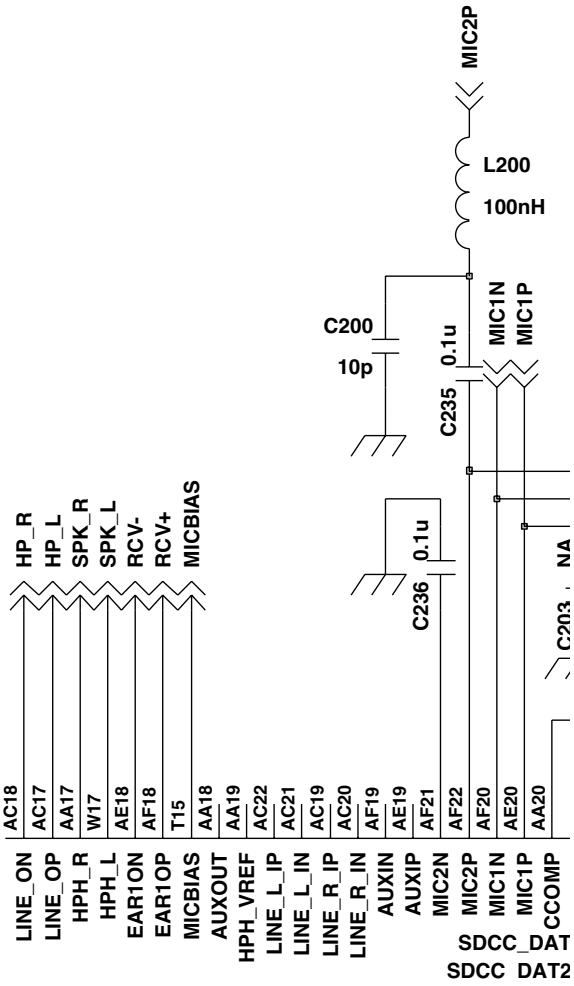


Figure . Audio part schematics

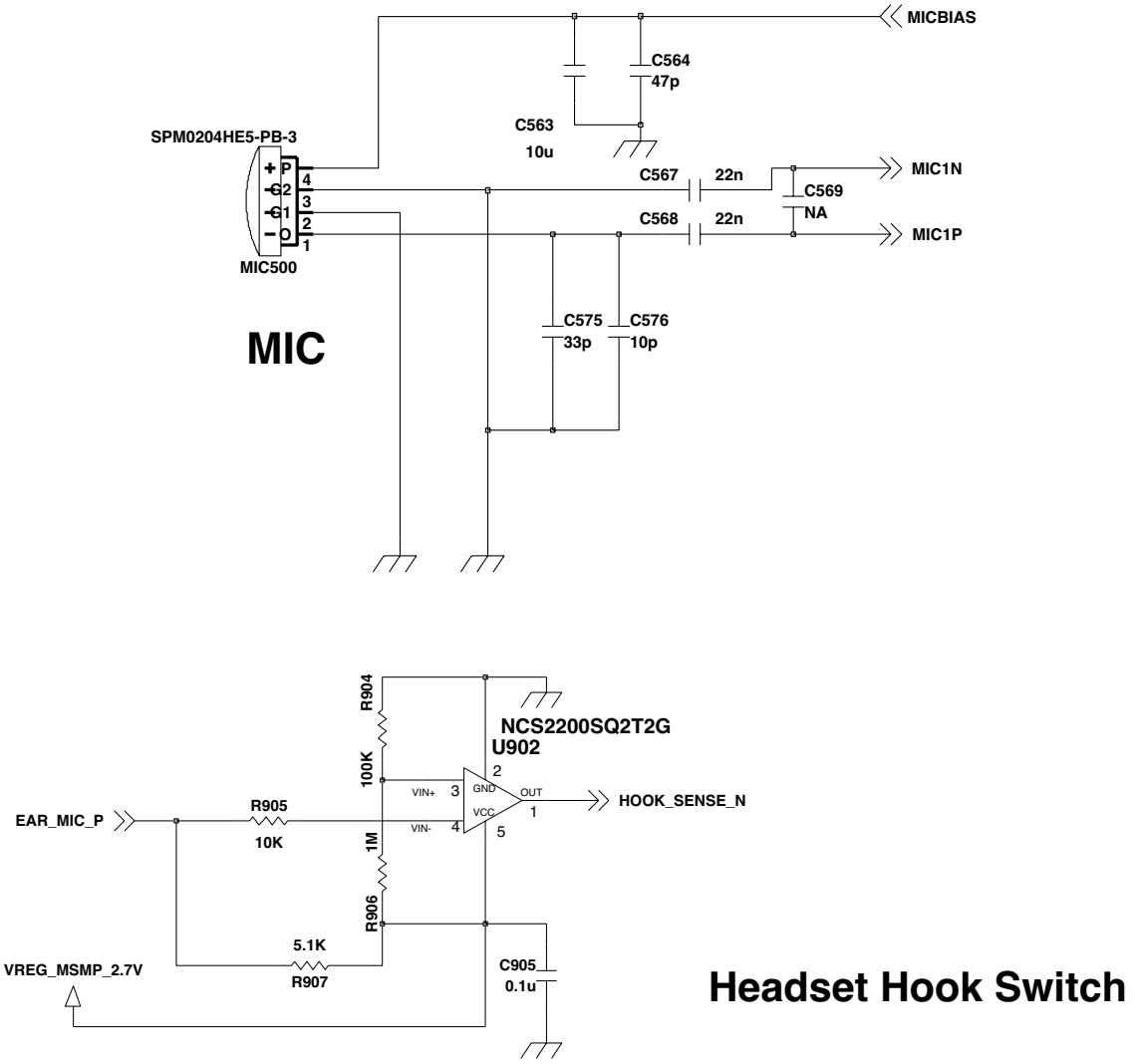
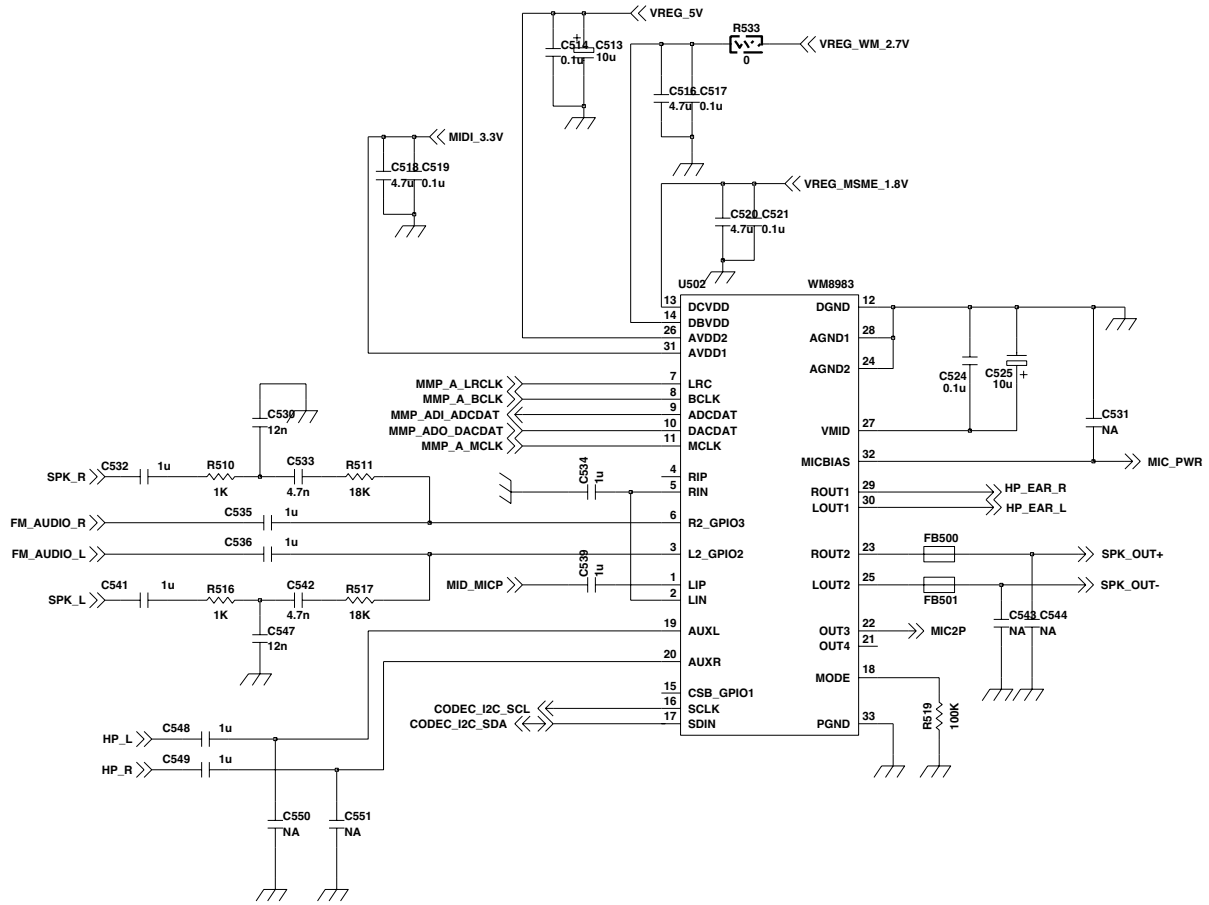


Figure . Audio part schematics



AUDIO DAC/ADC, AMP etc. (WM8983)

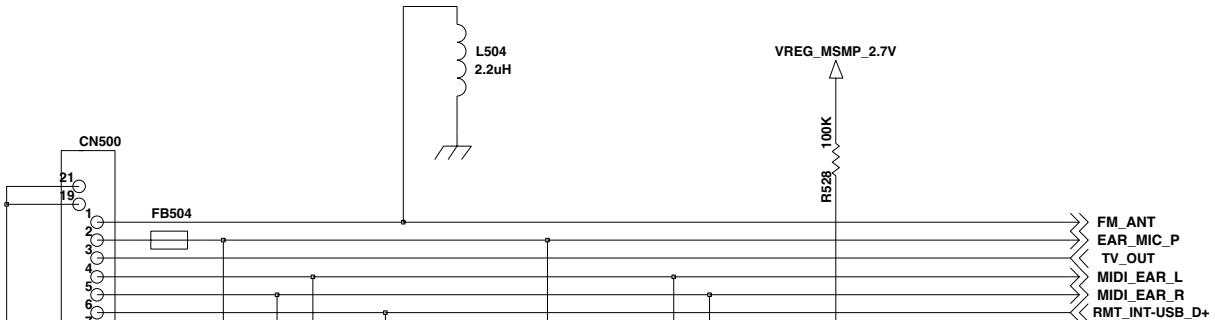


Figure . Audio part schematics

3.10.7.2 Audio Mode

There are three audio modes (Voice call, speaker phone, MIDI/MP3).

MODE	Device	Description
Voice Call	Receiver Mode	Receiver Voice Call
	Loud Mode	Speaker Phone
	Headset	Headset Voice Call
Speaker phone	Loud Mode	Speaker Phone
MIDI	Loud Mode	Speaker MIDI Bell
	Headset	Headset MIDI Bell
MP3	Loud Mode	Speaker MP3
	Headset	Headset MP3

Table. Audio Mode

Audio & Sound Main Component
There are 8 main components in KU990.

	Component	Maker Part No.	Note
1	MSM6280	MSM6280	Base-Band Modem
2	Audio Codec	WM8983	ADC/DAC, AB class SPK AMP
3	Analog Switch	NC7SB3157L6X	Analog Switch for MIC BIAS
4	Speaker	EMS1634APB1	8 ohm Speaker
5	Receiver	EMR0906SP	32 ohm receiver
6	Main MIC	SPM0204HE5-PB	-42 dB microphone
7	CAM MIC	SPOB-413S42-RC3310BC	-42 dB microphone
8	Ear MIC	HC-MQD-LG059	Ear MIC

Table. Audio main component list

Multimedia Chip

3.11 Feature List

3.11.1 IC Characteristics

- MCP with Internal SDRAM, no need for external memory.
- Package: 180-pin TFBGA (8 x 8 mm)
- 90nm process
- Core voltage - 1.0 V
- IO voltage - Eleven strips, separate voltage between 1.8 and 3.3 V

3.11.2 Multimedia Performance

- Digital Still Camera support with ISP on chip up to 5M pixel.
  - Photo-album and photo-editing capabilities.
  - Superior quality, (e.g. including lens shading).
  - Camera controls for flash, optical zoom,focus, shutter and iris.
- Camcorder operation as a DivX recorder /player at 30 fps CIF, VGA resolution.
  AVI file format with MP3 audio.
- Player for general DivX content, up to 30 fps CIF resolution. MP3 or WMA audio.
- 3GPP MMS compliant video clip recorder, supporting CIF/QCIF H.263, MPEG4 recording with AMR voice or AAC audio.
- Player for 3GPP MMS / streaming video clips, up to 30 fps CIF H.263, MPEG4, and H.264 with AMR voice or AAC/Enhanced AACPlus audio.
- 3GPP-compliant videophone, with H.263 or MPEG4 video at QCIF 15 fps (full-duplex).
- MIDI player (for ring tones, melodies).
  Compliant with 3GPP standards, including
  support for Mobile XMF for melodies with custom instruments.

- Audio stereo recorder player MP3/WMA
- ID3 tags display
- Spectral bars
- Lyrics display
- Equalizer
- 3D Surround Audio

3.11.3 DRM

- MDTV Conditional access compliant to JSR-177 (AES and TDES)
- Key exchange support
- True RNG (Random Number Generator)

3.11.4 3D Graphics

- 3D hardware + software accelerator targeting VGA 30 fps games with PlayStation™-1 enhanced quality.
  - Setup and viewport transforms
  - Bilinear and Trilinear texturing
  - Multi-texturing
  - Flat and Gourard shading
  - 24-bit ARGB support
  - Compressed textures (2 bits/texel)
  - Mipmaping
  - Full scene anti-aliasing (x4 / x16)
  - 16-bit Z-buffer
  - 4-bit stencil buffer
  - Fog
  - Alpha blending
  - Dot3 bump mapping
- Fill rate: 120M pixels/sec
- Polygon rate 0.8M triangles/sec

3.11.5 Image Sensor

• 10/12/14/16-bit RGB - Bayer Grid
- CMOS up to 5MP
- CCD up to 5MP
- Pixel clock - Up to 90 MHz.
- Active pixel rate - up to 75M pixels/sec:
- 15fps @ 5MP
- 25fps @ 3MP
- 30fps @ 2MP
- Black-level evaluation and correction
- Defective pixel correction
- Auto exposure and White-balance
- Edge enhancement and auto focus.
- Lens shading correction
- Polyphase image scaling.
- Digital zoom up to X4 in 16 steps
- 8/16-bit YCbCr - 4:2:2
- Input streaming bus - as CCIR601
- Progressive (CMOS/CCD sensors) or interlaced (PAL/NTSC decoders) mode
- Pixel clock - Up to 120 MHz (8-bit), 60Mhz (16-bit)
- Input resolution - Up to 5M pixels
- Auto focus
- Polyphase image scaling
- Digital zoom up to X4 in 16 steps

3.11.6 LCD Port

• Output resolution - up to VGA
• Supports dual-panels (two LCDs)
• Bypass from Host port to LCD CPU bus
• Up to 18-bit color depth (262K colors)
• CPU bus 8/9/16/18 bit compliant to all known vendors.
• RGB bus 3/6/18 bit up to 30Mhz clock

3.11.7 TV-out Port

• Composite analog interface
- NTSC-M
- PAL-B,D,G,H,I

3.11.8 Video and Graphics Postprocessing

- Handles Video (YUV) and Graphic (RGB)
- Video de-blocking
- Blending of video and graphics - up to 256 levels of blending
- Resizing (upscale and downscale) using quality polyphase filter
- Rotation and flip - 90, 180 and 270 degrees
- Picture brightness, contrast, and saturation control
- Display gamma adjustment
- Color space reduction

3.11.9 Serial Audio Ports

- ZR3453X has two audio/voice ports: one port is used for host bypass connection, and another for connecting to a codec or to a Bluetooth voice port.
  - PCM master/slave
  - I2S master/slave (5 lines including clock)
  - AC'97 master (5 lines including AC-Link reset)
  - Audio output master clock (I2S), up to 48 MHz
  - Supports sample rates of 8, 11.025, 16, 22.05, 24, 32, 44.1 or 48 kHz

3.11.10 Serial Data Ports

- I2C Multiple device support 100 and 400 kHz
- UART with flow control up to 3Mb/sec
- SPI port with Bit clock up to 40 MHz
  - (Motorola, National microwire, TI synchronous serial interface)

3.11.11 Mass Storage

- High-speed SD/MMC I/F
- NAND-flash storage
- SPI-flash
- CE-ATA HDD.
- SDIO peripherals

3.11.12 USB

- USB 2.0 High speed/full speed
- USB On The Go
- USB applications:
  - USB mass storage
  - PictBridge
  - Webcam

3.11.13 Host Port

- Two flavors:
  - Generic interface 8/16-bit Intel style.
    Connects as memory map (4-bit address)
  - LCD like 8/9/16 bit multiplexed bus.
    Connects as an LCD (1-bit address)

3.11.14 Clocks

- Main clock input frequency, 10 to 31 MHz:
  - Directly from system PMU main clock and bypass its control
  - Embedded crystal oscillator (12Mhz)
  - Optional GPS TCXO
- Four configurable clock-out pins to drive external components:
  (e.g. Audio codec, Sensor, PWM)

3.11.15 Boot

- Host boot
- Standalone boot

3.11.16 Debug

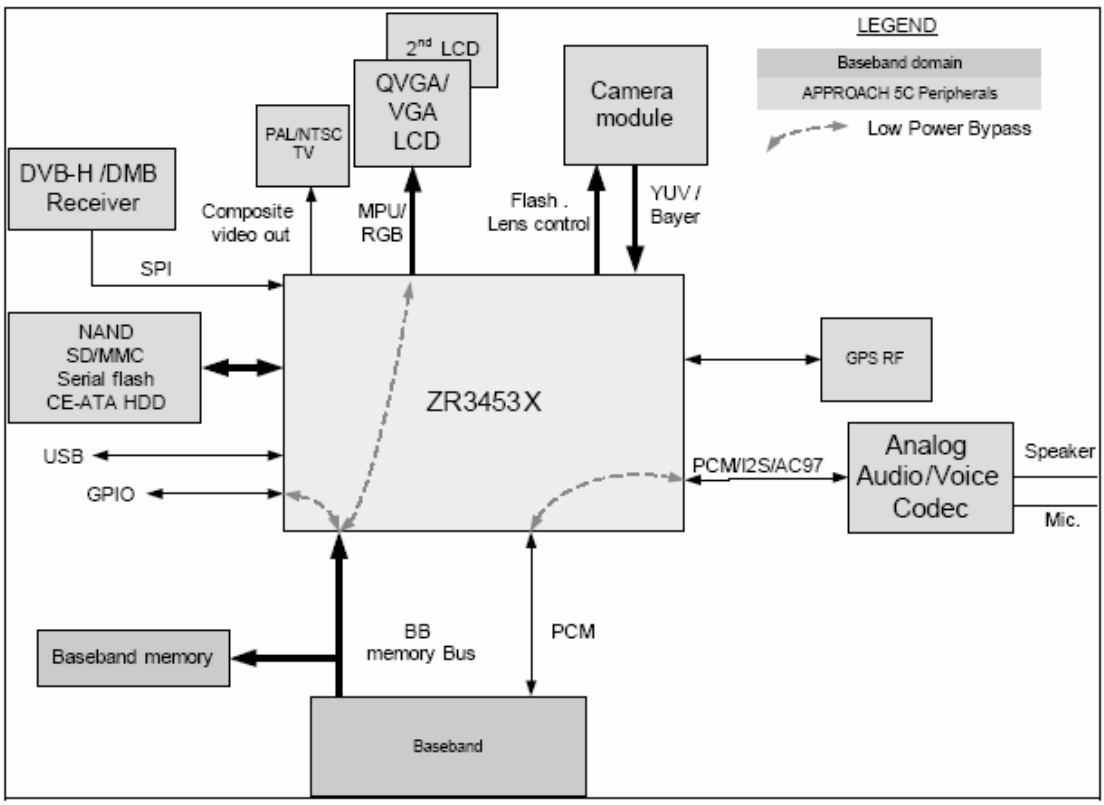
- JTAG for code debug
- UART for fast system ramp up

3.11.17 Power

- Very low power consumption, smaller than150mW for all intense multimedia applications.
- Low power sleep mode 100 μW
  - Host can control display audio and peripherals via bypass
- Light sleep mode 500uW
  - Specifically for GPS accurate off-line tracking

Figure 1-1 presents a typical multimedia cellular phone system where ZR3453X is used as a co-coprocessor. In this system, ZR3453X is connected to the following devices:

- Baseband chip (the host)
- CCD/CMOS Image Sensor for capturing video and still
- LCD panel(s)for displaying video
- Audio CODEC (A2D, D2A) for capturing voice and playing voice/music
- Media Flash (SmartMedia, NANDFlash, MMC or SD) to store media data (two active I/F, e.g. one NAND and one SD)
- Connector to TV



[Figure 1-1]

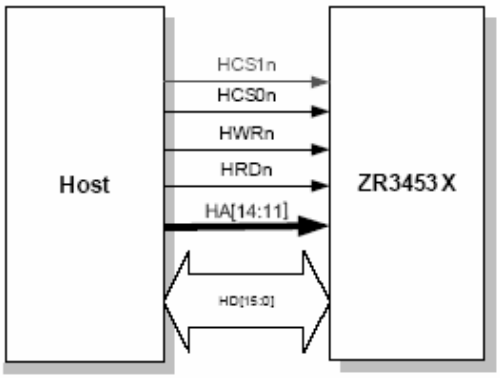
3.12 Multimedia Chip Interface

3.12.1 Host Interface

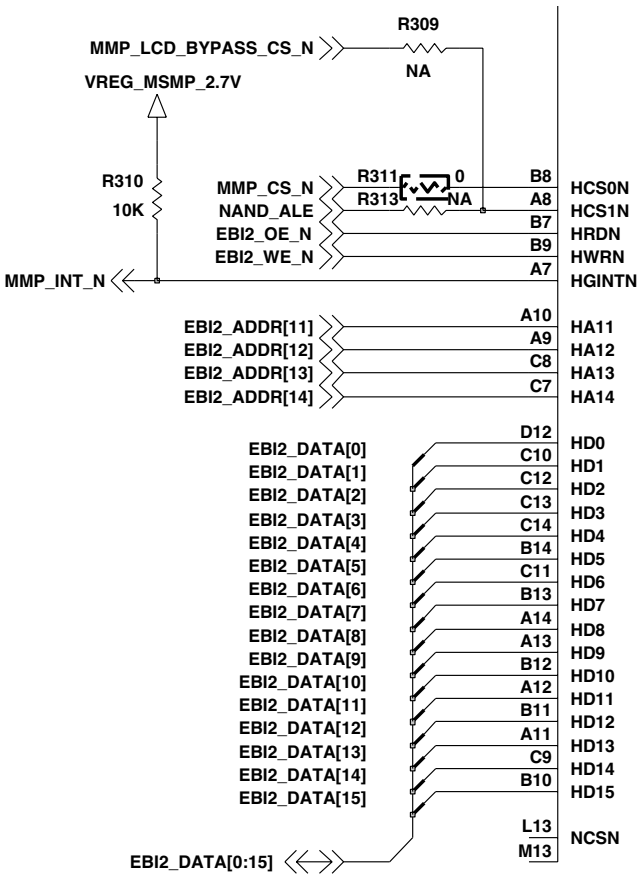
3.12.1.1 Host Interface

The HOST interface connects the ZR3453X and the host processor (a handset baseband chip) in two optional modes:

- On the host memory bus.
- On the host LCD bus.



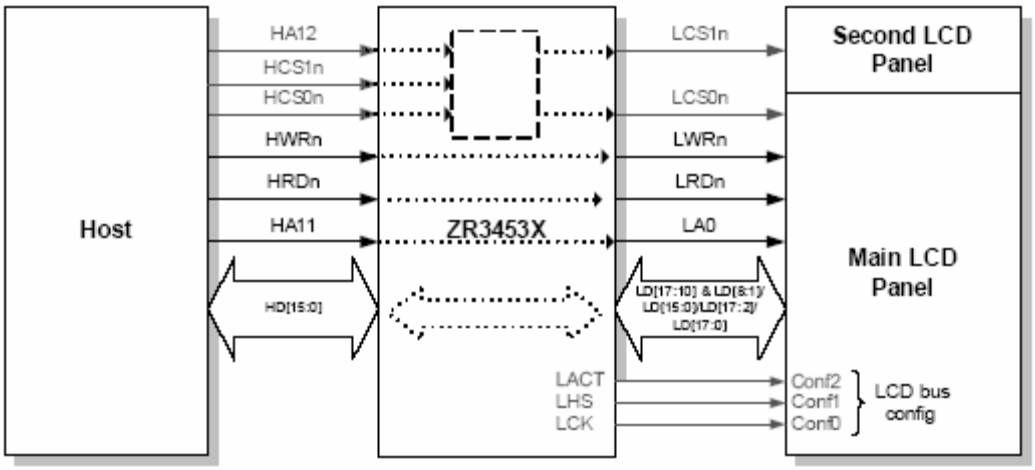
[Block Diagram]



[Schematics]

3.12.2 Host - LCD - Bypass mode

The Host-LCD Bypass bypasses the host interface pins to the LCD pins.
This means that the bus transactions performed by the host are transferred to the LCD pins, enabling the host to have full control over one or two LCD panels, even when the ZR3453X is in sleep mode. This is the default mode.



3.12.3 Camera interface

ZR3453X connects with the CCD or CMOS Image Sensor (CIS) via its image sensor port.
ZR3453X supports several system configurations:

- CCD bayer 10,12,14,16 bit (ZR34532 only)
- CMOS bayer 10,12,14,16 bit
- YCbCr 8 bit
- YCbCr 8 bit with pixel valid
- YCbCr 16 bit

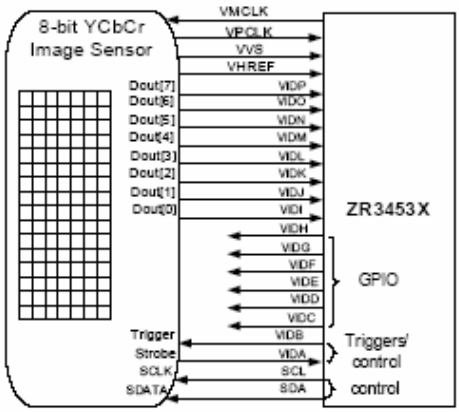
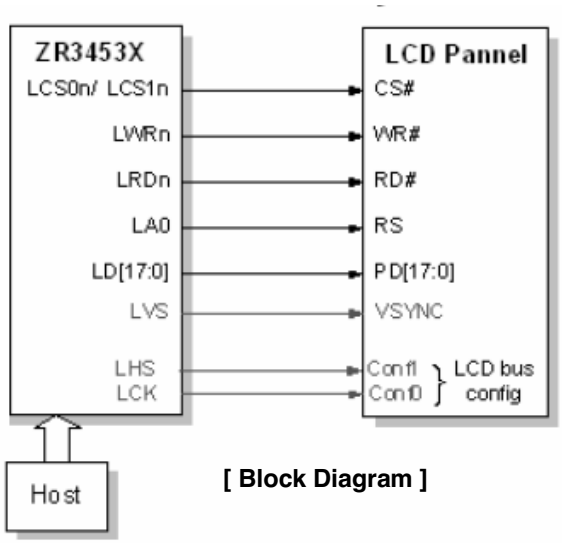


Table 3-11: Input Resolutions for Supported Applications

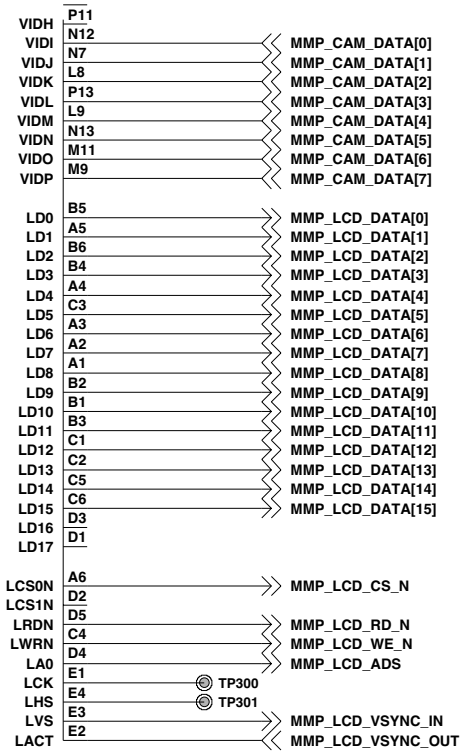
Image sensor resolution	Application
352 x 288 (CIF)	Video / Still
640 x 480 (VGA)	Video / Still
800 x 600 (SVGA)	Video / Still
1024 x 768 (XGA)	Video / Still
1280 x 960 (1.3MP)	Video / Still
1600 x 1200 (2MP)	Still
2048 x 1536 (3MP)	Still
2352 x 1728 (4MP)	Still
2592 x 1944 (5MP)	Still

3.12.4 LCD Interface

The ZR3453X LCD port supports mobile LCD panels of upto VGA size and upto 60fps refresh rate. There are various bus formats and color depth up to 18-bit (262K colors).



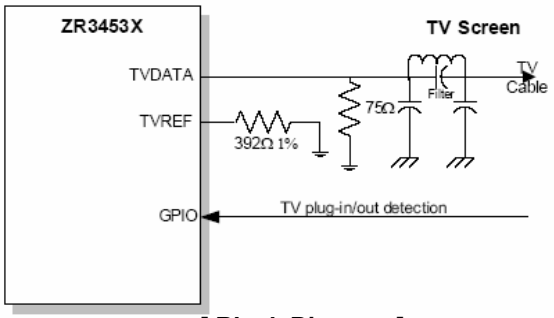
[Block Diagram]



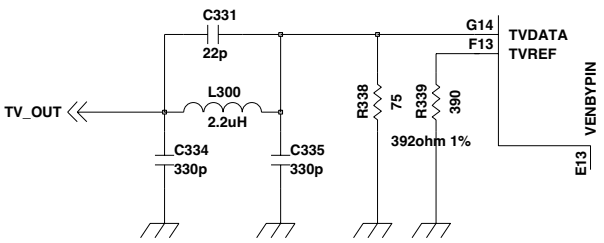
[Schematics]

3.12.5 TV out Interface

The display data is converted to video with video-encoder according to CCIR-601 and sampled by 10-bit DAC and transmitted over an analog pad as a composite video signal.
This mode is used in a system where ZR3453X is connected gluelessly to a TV screen that requires real-time display data. ZR3453X generates TV signal according to the NTSC and PAL standards.
The TVDATA pin can drive a full video level signal directly into a 75 terminated TV cable.



[Block Diagram]



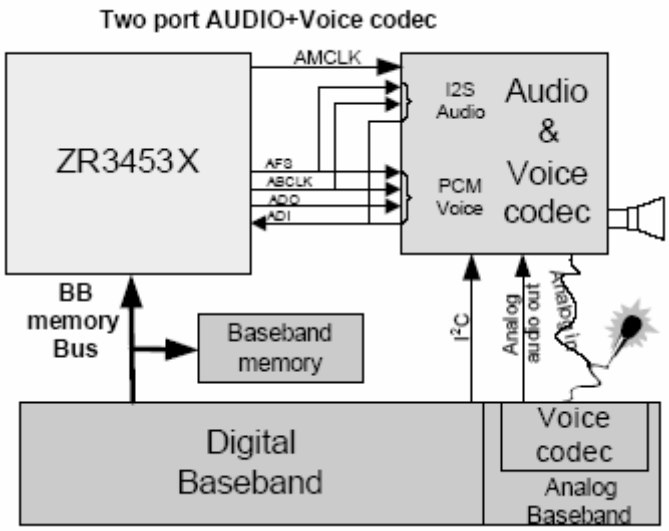
[Schematics]

3.12.6 Audio Interface

In this configuration ZR3453X is connected to an external audio codec.
There are three possible configurations:

- Audio/Voice codec with two ports: PCM and I2S
- Audio/Voice codec with one port: I2S
- Audio/voice/data codec with one port: AC97

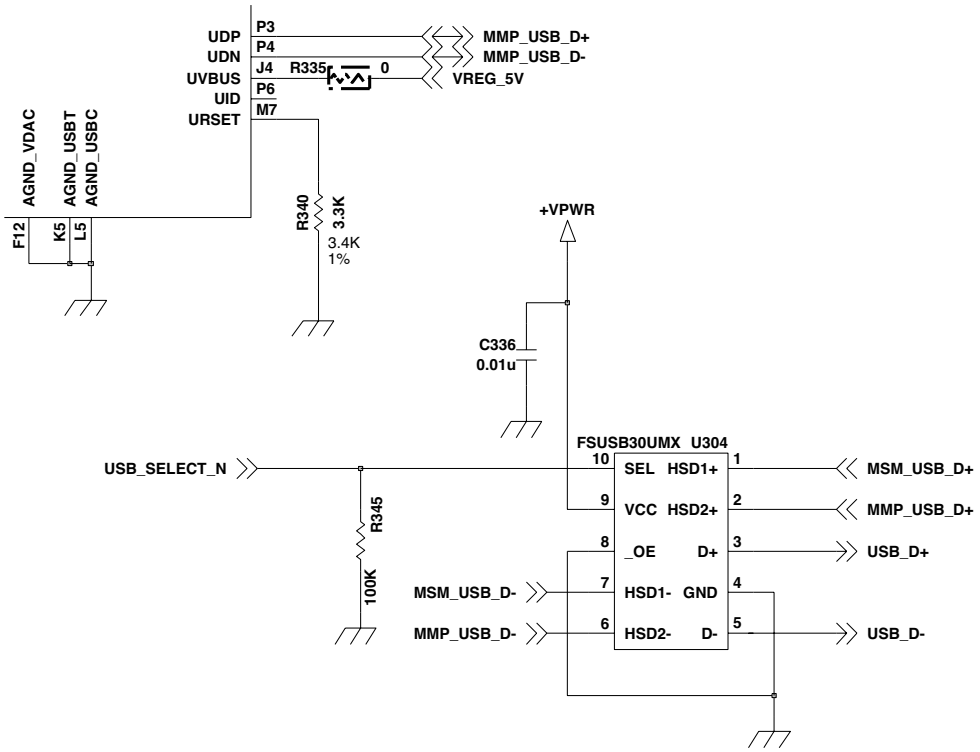
In all configurations ZR3453X connects its external audio ports to the codec single or two ports.
The host uses its internal voice codec for voice communication. There is no bypass of voice.
The host controls the codec configuration via I2C bus directly. The host codec analog audio output is connected to the external audio codec and muxed with the codec audio path from the ZR3453X on the way is to the speaker.
The microphone is connected to the external audio codec and the baseband internal codec.
ZR3453X appears in Figure 3-35 as a master on the bit clock and frame sync. This is only one of the possible configurations. In external audio configuration ZR3453X can run all the Audio/voice applications including conversation recording .



3.12.7 USB interface

ZR3453X is a USB 2.0 Device or On-the-Go dual-role device (OTG) with the following characteristics:

- Complies with USB (Universal Serial Bus) 2.0 specifications
- Complies with On-the-Go Supplement 1.0a
- Integrated 45-ohm termination, 1.5Kilohm pull-up and 15-Kilohm pull-down resistors.
- Supports 480-Mbps high-speed, 12-Mbps full-speed and 1.5Mbps low-speed (Host mode only) data transmission rates.
- Control + 4 endpoints:
  - EP0 - two-way Control
  - 2-input , 2-output - Bulk, INT or ISO
- Suspend, resume, reset and SOF signaling



3.12.8 MMC interface

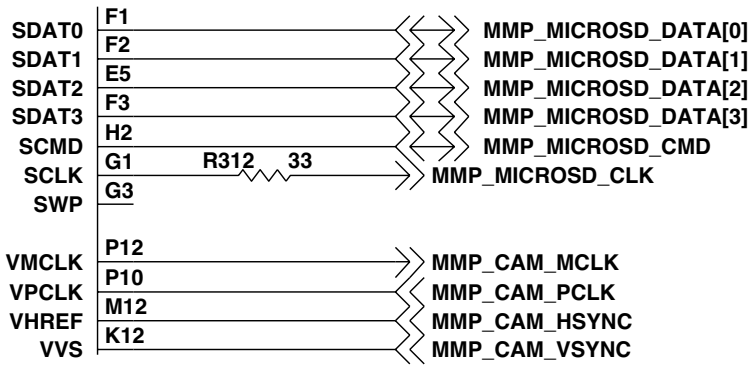
ZR3453X has a dedicated port for multimedia cards. It can support SD (Secure Digital) cards and SecureMMC (standard multimedia cards with security functions).
The same port can be used for HDD CE_ATA connection or SDIO to peripheral devices (e.g.; MDTV front-end).

MMC

- MMC v4
- Dual voltage (separate IO power domain, host GPIO control)
- 1 or 4 bit cards
- Multiple cards support (if dual-voltage or high-speed interface are not used)
- Up to 43 MHz bit clock

SD

- 1 or 4 bit bus support
- High-Speed SD, up to 43 MHz bit clock



3.12.9 Power Domain

Symbol	Parameter	Min.	Typ.	Max.	Units
V_{DDIO}	I/O supply voltage (VDD_Host, VDD_PMU vs. GND)	1.62	1.8-3.3	3.6	V
V_{DDIO}	I/O supply voltage (VDD_General, VDD_Serial, VDD_MMC, VDD_LCD, VDD_NAND, VDD_CIS vs. GND)	1.62[1]	1.8-3.3	3.6	V
V_{SDRAM}	SDRAM interface pins (VDDQ, VDD_SD_Core vs. GND)	1.7	1.8	1.95	V
V_{DDCORE}	Core supply voltage (VDDCore vs. GND)	0.97	1	1.1	V
V_{DPLL}	PLL digital supply (AVDD_PLL vs. AVSS_PLL)	0.97	1	1.1	V
V_{APLL}	PLL analog supply (AHVDD_PLL vs. AHVSS_PLL)	0.97	1	1.1	V
V_{TVOUT}	TVOUT analog supply (AVDD_VDAC, AVDD_VDAC_I vs. AGND_VDAC_BS, AGND_VDAC_P)	2.7	3.3	3.6	V
V_{USB}	USB power supply (VDD_USB vs. GND_USB)	3.0	3.3	3.6	
T_A	Ambient temperature	-40	25	85	ºC

3.13 Touch Screen Interface

The TSC2007 device has a 12-bit analog-to-digital resistive touch screen converter including drivers and the control logic to measure touch pressure. The TSC2007 device is controlled by I2C port from MSM6280.

Touch Screen interface scheme is shown in Figure.

And, there control signals are followed

- TOUCH_I2C_SCL : I2C CLOCK
- TOUCH_I2C_SDA : I2C DATA
- TOUCH_PENIRQ_N : DETECT

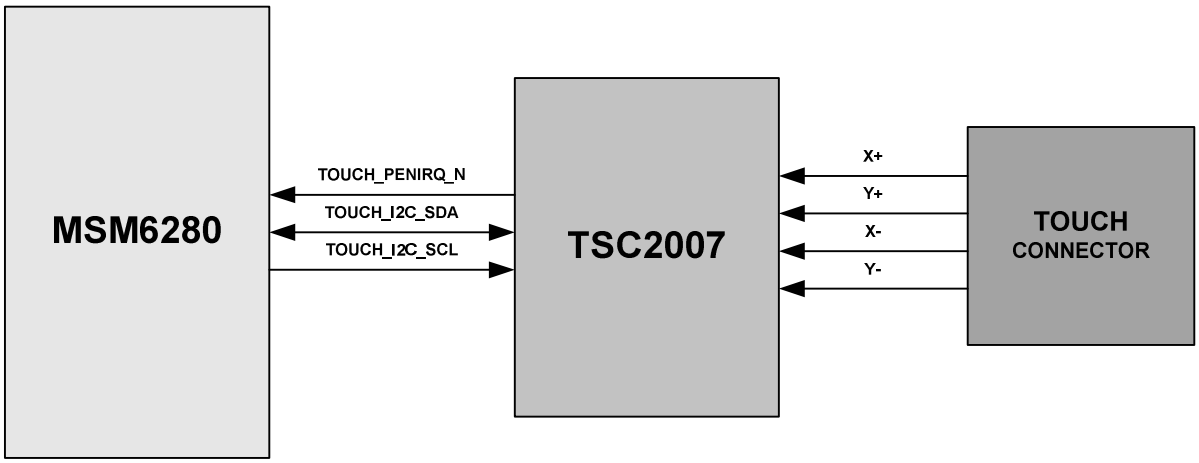
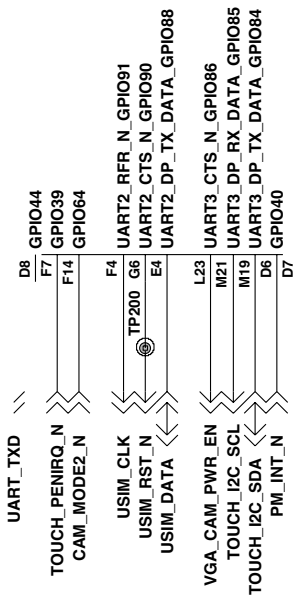
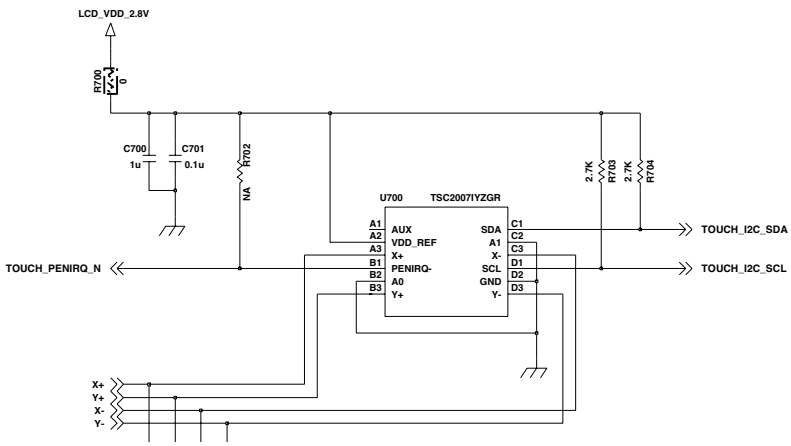


Figure. Touch Screen Interface



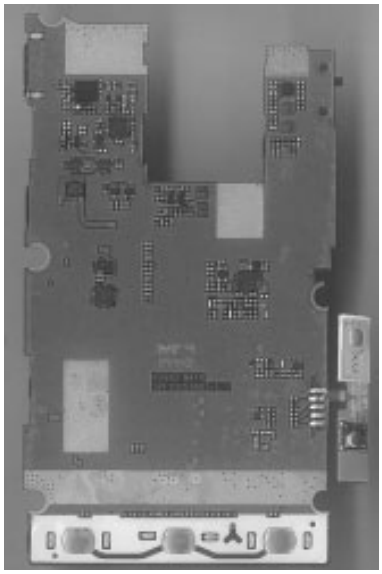


3.14 Main Features

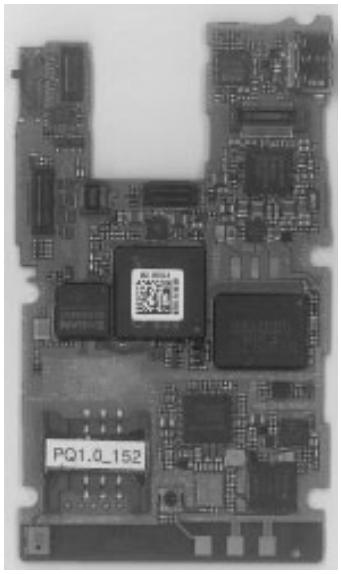
1. Main features of KU990

- BAR Type
- WCDMA(2100) + GSM(900,1800) + PCS(1900) Triple mode
- Main LCD: 240x400/3.0”/262K TFT
- 5.1M Pixel AF Camera
- VGA CMOS Camera
- ϕ16 module speaker
- Stereo Headset
- Video telephony in WCDMA with camera
- HSDPA up to 3.6 Mbps
- Loud Speaker phone(in GSM and WCDMA)
- 64 Poly Sound
- Audio: MP3, AAC, AAC+,AAC++, WMA, WAV
- MPEG4 encoder/decoder and play/save
- H.263 decoder
- Video Recording: VGA 30 fps
- JPEG en/decoder
- Support Bluetooth, USB
- FM Radio
- touch screen, touch feedback
- 103 x 54 x 15.6 mm
- 1000mAh soft pack

2. Main Components of KU990

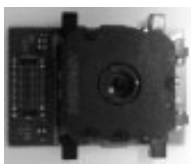


MAIN Top Side

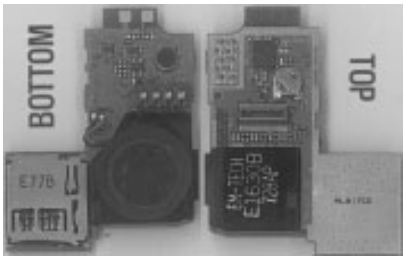


MAIN Bottom Side

VGA camera



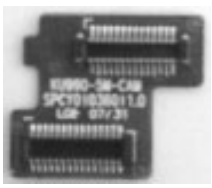
5M camera



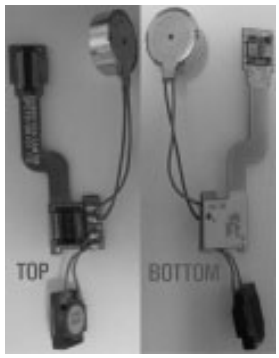
Sub PCB

Intenna

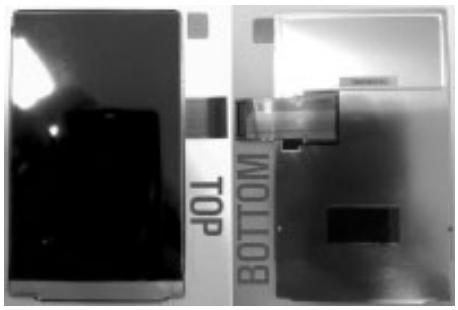
Strobe Flash



5M Camera FPCB

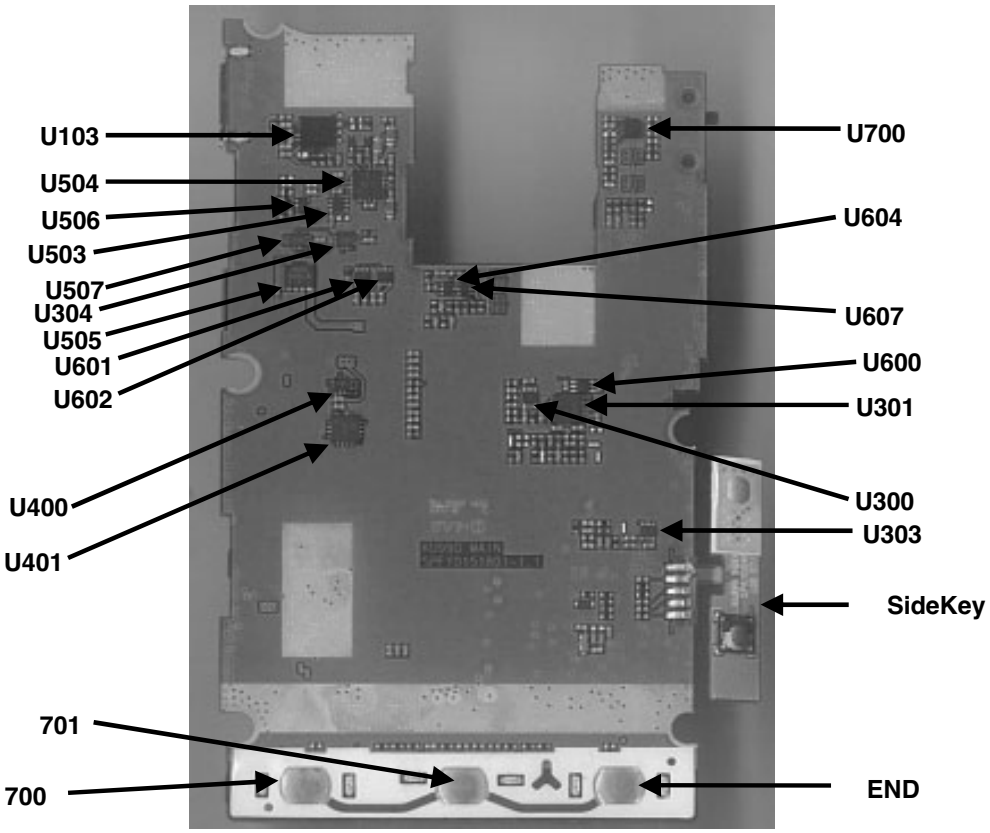


VGA Camera FPCB



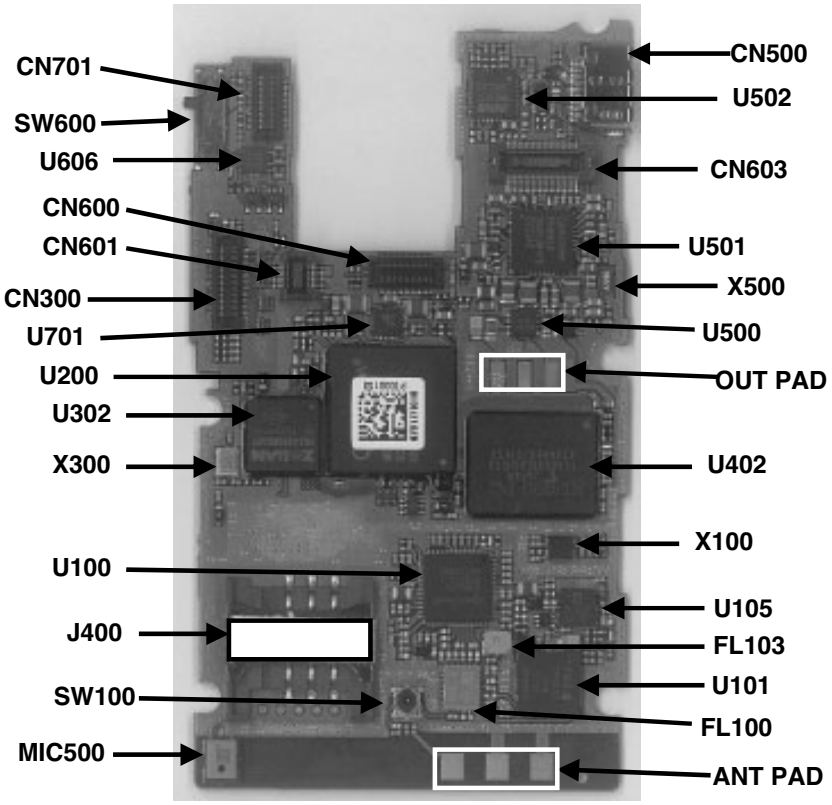
LCD

2.1 Main Top Side



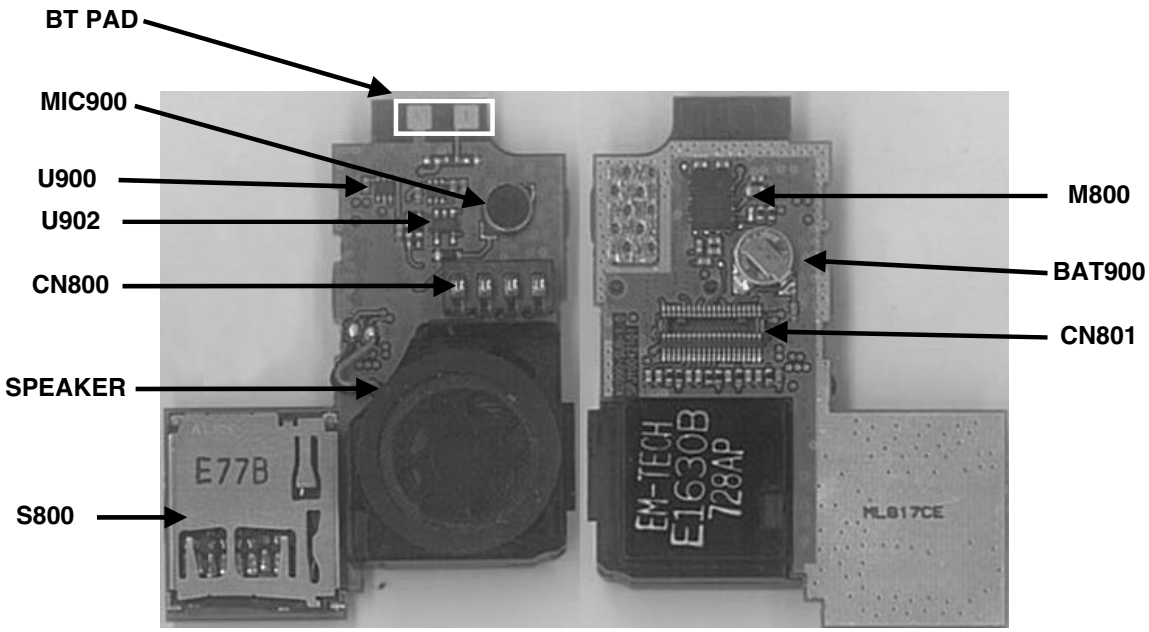
Reference	Description	Reference	Description
U103	FM Radio IC	700	Send Key
U504	Headphone AMP IC	701	Clear Key
U506	CAM/HP MIC SEL IC	END	End Key
U503	Audio AMP LDO	SideKey	Side Key FPCB
U507	USB/REMOCON SEL IC	U303	LCD LOD IC
U304	Switch IC for USB2.0	U300	
U505	Over Voltage Protection IC	U301	LCD Backlight Charge Pump IC
U601	5M CAM LDO IC	U600	VGA CAM LDO IC
U602		U607	Switch IC for 5M VT Call
U400	MicroSD Select MSM and MMP IC	U604	
U401		U700	Touch Screen Driver IC

2.2 Main Bottom Side



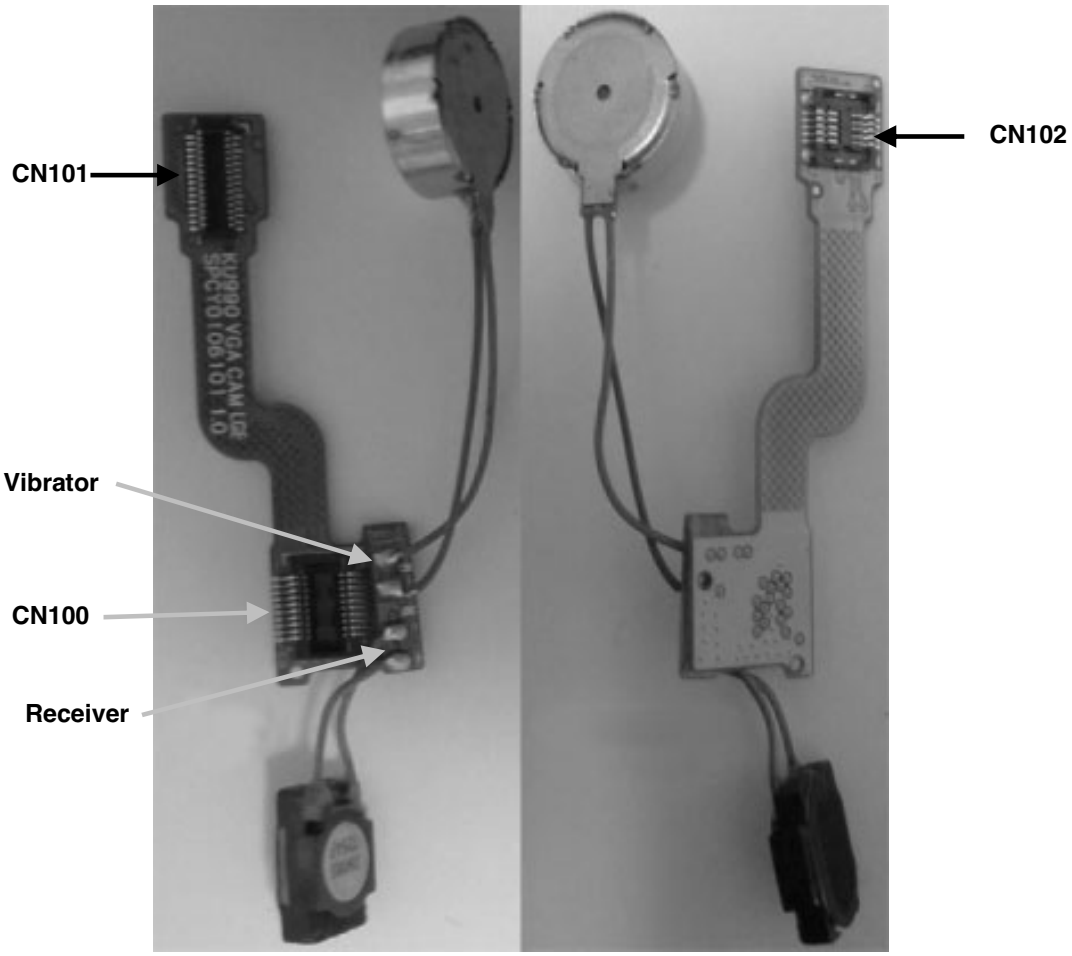
Reference	Description	Reference	Description
CN701	VGA CAM FPCB Connector	CN500	TA and USB Connector
SW600	Mode Switch	U502	WM8983 Audio DAC/ADC AMP IC
U606	Linear Motor Driver IC	CN603	Main-Sub B-to-B Connector
CN600	5M CAM FPCB Connector	U501	PM6650 PMIC
CN601	Strobe Flash Connector	X500	32.768KHz Crystal Oscillator
CN300	LCD Connector	U500	Charging IC
U701	DC-DC Converter IC	OUT PAD	Battery Connector PAD
U200	MSM6280 Modem IC	U402	Memory IC
U302	ZR3453 DSP IC	X100	19.2MHz Crystal Oscillator for TCXO
X300	27Mhz Crystal Oscillator	U105	PAM IC for WCDMA
U100	RTR6275 RF IC	FL103	Duplexer IC for WCDMA
J400	USIM Connector	U101	PAM IC for GSM
SW100	RF Switch	FL100	Antenna Switching Module
MIC500	MIC	ANT PAD	Main Intenna Connection PAD

2.3 Sub PCB



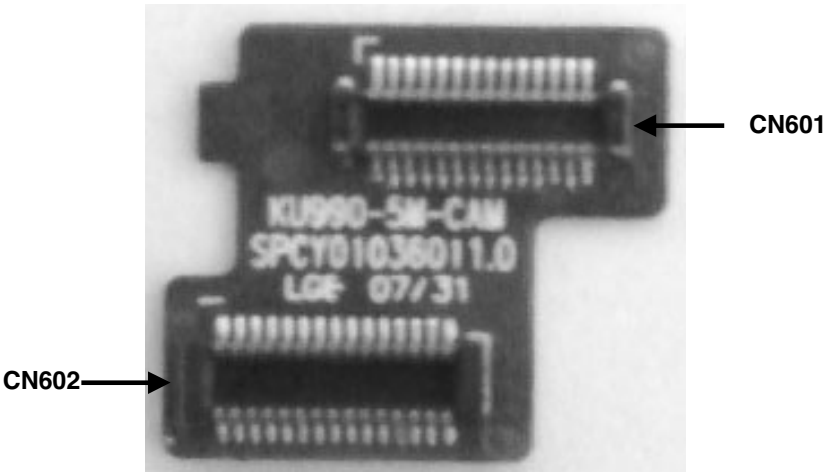
Reference	Description	Reference	Description
BT PAD	Bluetooth Antenna PAD	SPEAKER	Module Speaker
MIC900	CAM MIC	S800	T-Flash Connector
U900	5MP Camera Power IC	M800	Bluetooth Driver IC
U902	Headset Hook Switch IC	BAT900	Backup Battery
CN800	Wheel Switch Connector	CN801	Main-Sub B-to-B Connector

2.4 VGA Camera FPCB



Reference	Description	Reference	Description
Vibrator	Vibrator PAD	CN101	Main B-to-B Connector (FPCB to Main PCB)
Receiver	Receiver PAD		
CN100	VGA_CAMERA Connector	CN102	Touch Window Connector

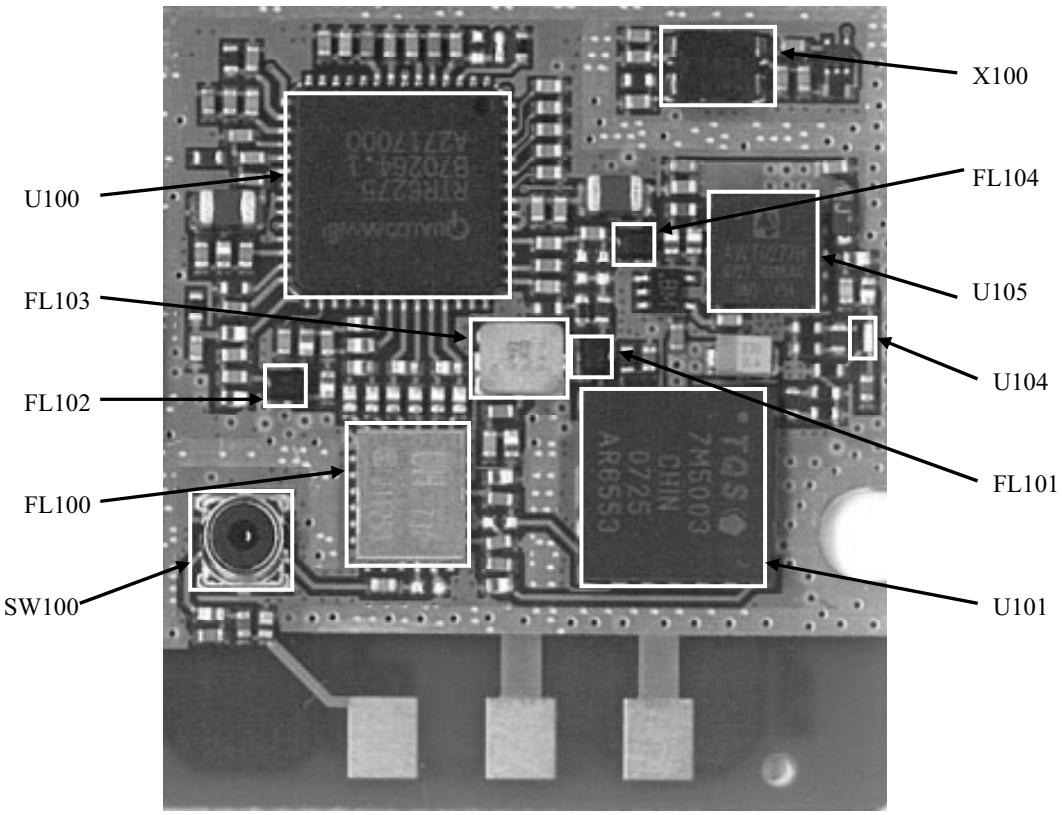
2.5 5M Camera FPCB



Reference	Description	Reference	Description
CN601	5M Camera Module Connector	CN602	Main PCB Connector (FPCB to Main PCB)

4. TROUBLE SHOOTING

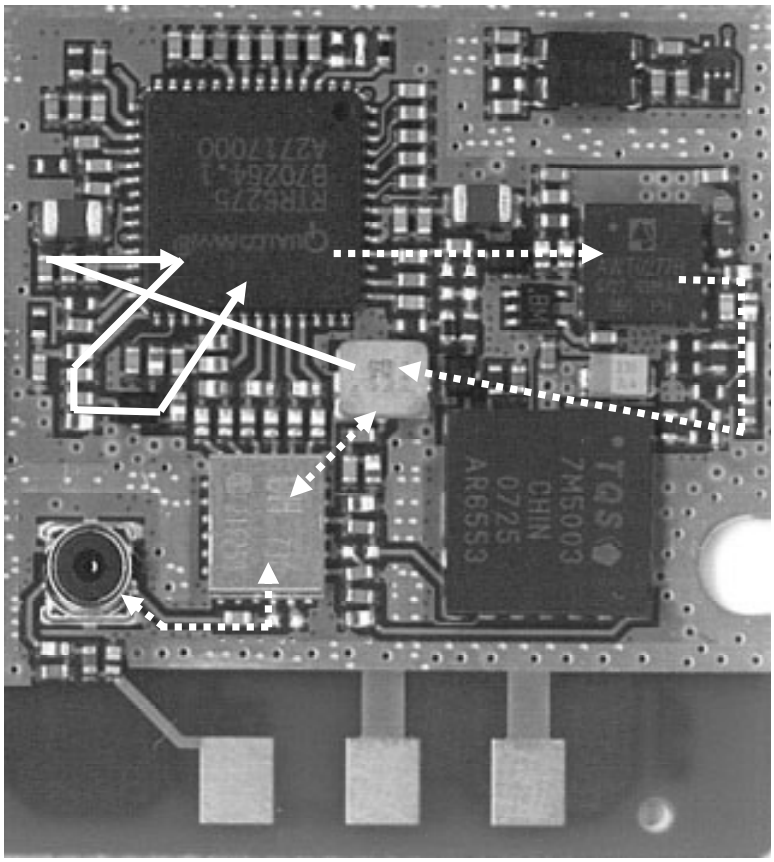
4.1 RF Component



Reference	Description	Reference	Description
U100	GSM/UMTS Transceiver (RTR)	X100	VCTCXO(19.2MHz)
FL103	UMTS Duplexer	FL104	UMTS TX SAW
FL102	UMTS RX SAW	U105	UMTS PAM
FL100	Front-End-Module	U104	Coupler
SW100	RF Antenna Connector	FL101	GSM900 TX SAW
		U101	GSM/EDGE PAM

4.2 SIGNAL PATH

4.2.1 UMTS PATH

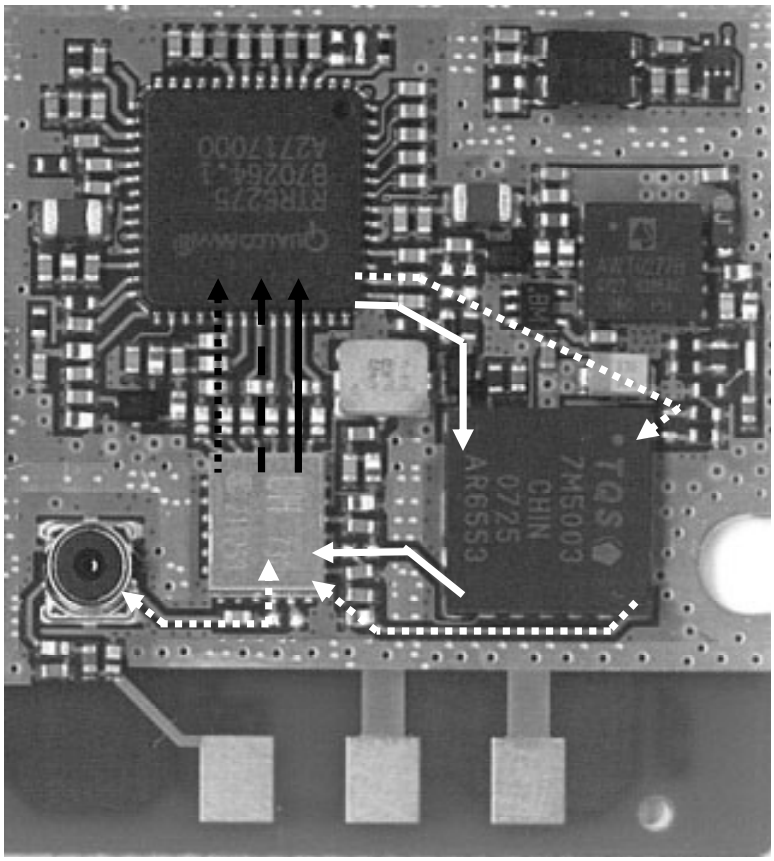


COMMON TX/RX PATH

UMTS TX PATH

UMTS RX PATH

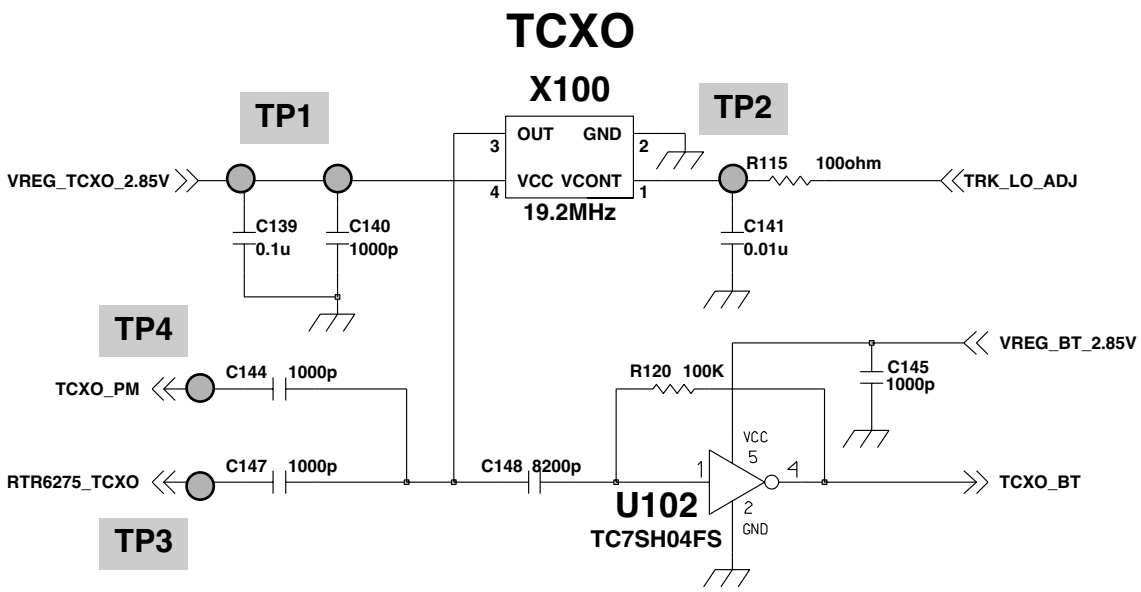
4.2.2 GSM PATH



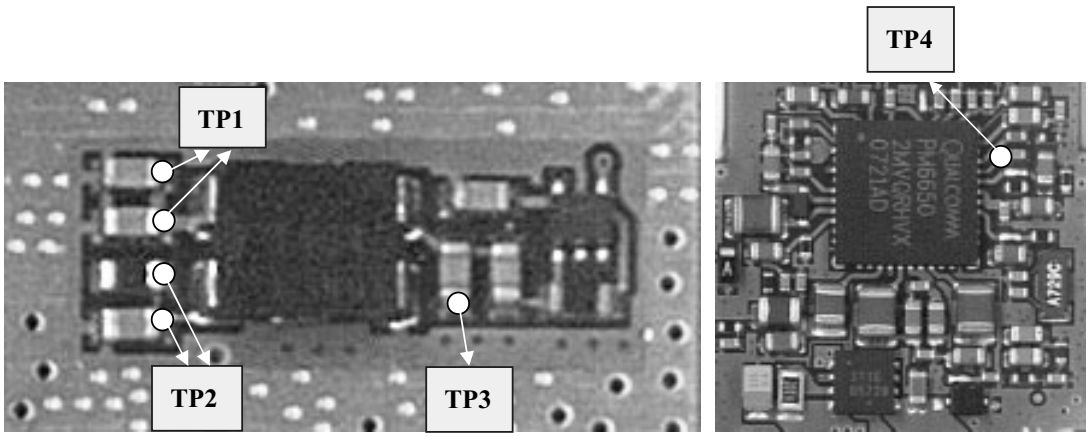
COMMON TX/RX PATH
GSM RX PATH
DCS/PCS TX PATH
PCS RX PATH
GSM TX PATH
DCS RX PATH

4.3 Checking VCTCXO Block

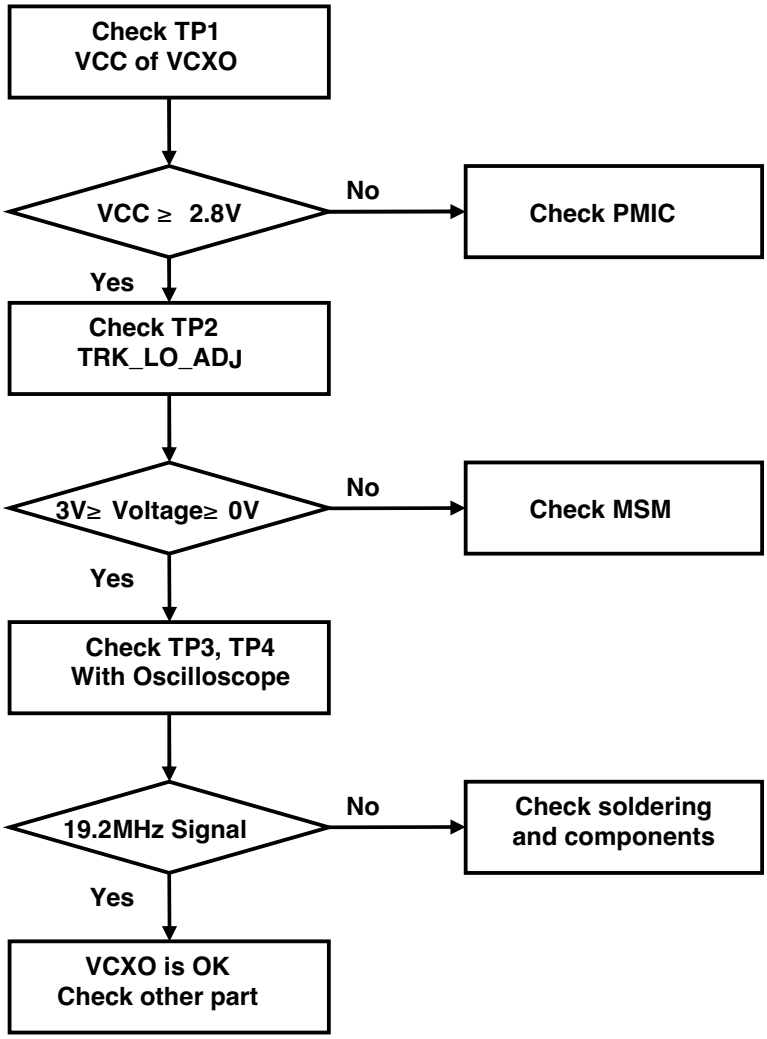
The reference frequency (19.2MHz) from X100 (VCXO) is used UMTS TX part, GSM part and BB part.

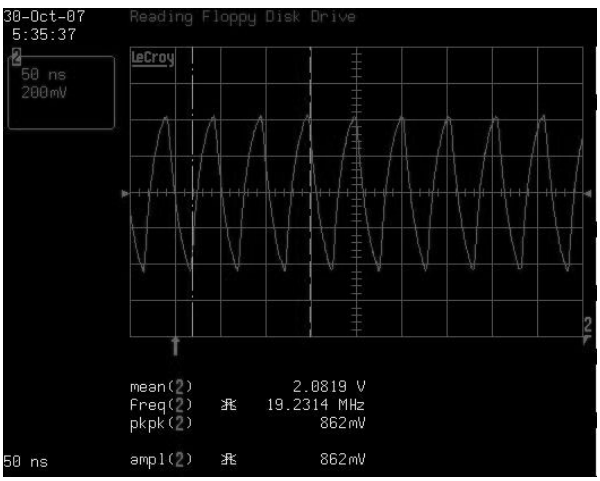


Schematic of the TCXO Block

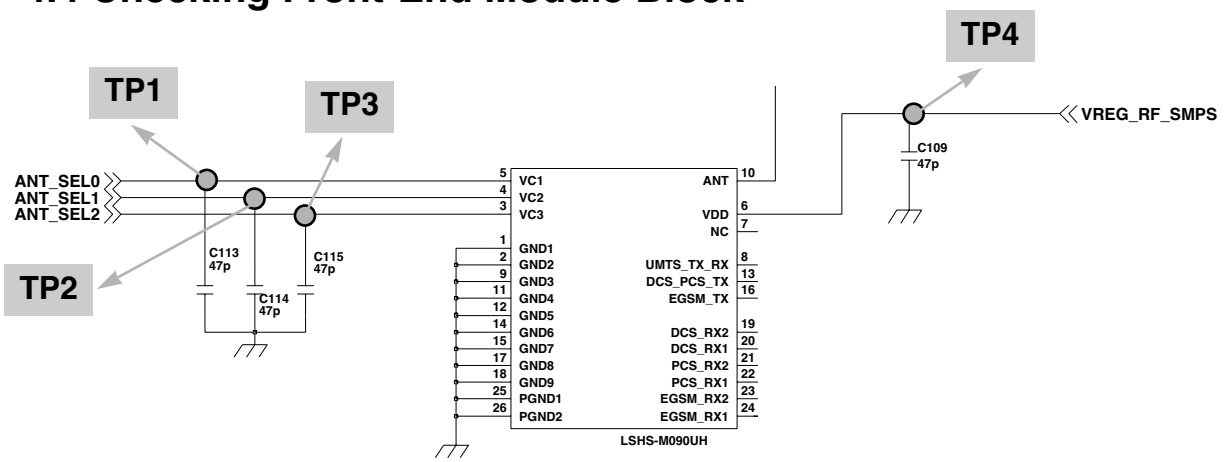


Test Point of the TCXO Blcok

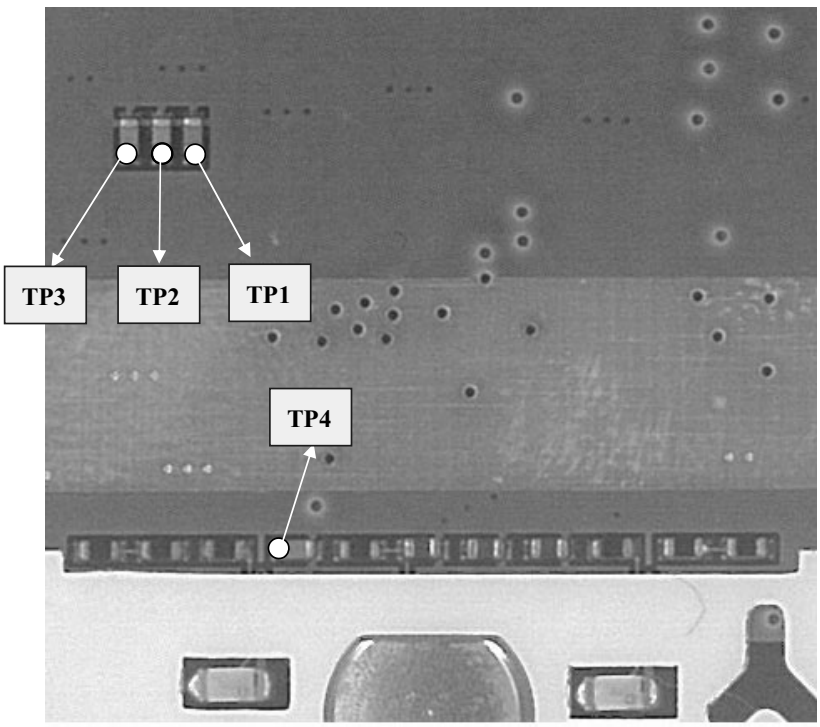




4.4 Checking Front-End Module Block



Schematic of the Front-End Module Block

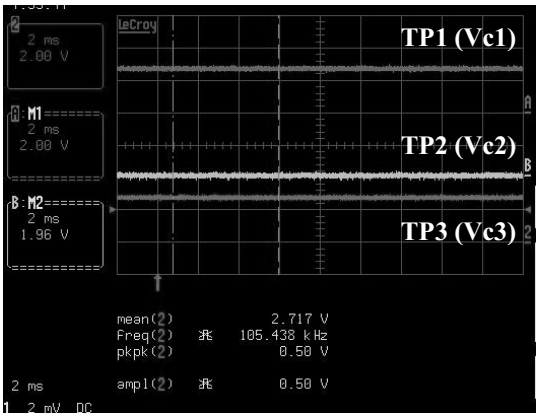


Test Point of Front-End Module Block

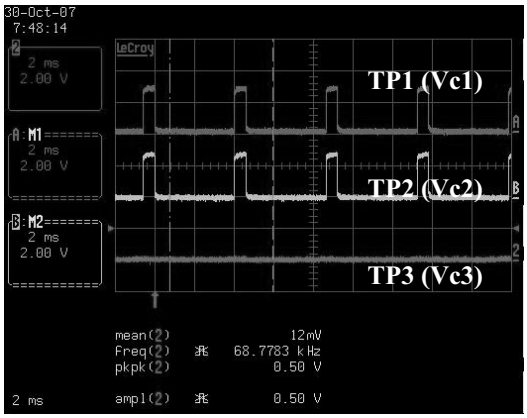
	Vc3	Vc2	Vc1	Vdd
GSM900 Tx	L	H	H	H
DCS1800/PCS1900 Tx	L	L	H	H
UMTS Tx/Rx	H	L	H	H
GSM 900 Rx	L	L/H	L	H
DCS 1800 Rx	H	L/H	L	H
PCS 1900 Rx	L	L/H	L	H

Logic Table of the FEM

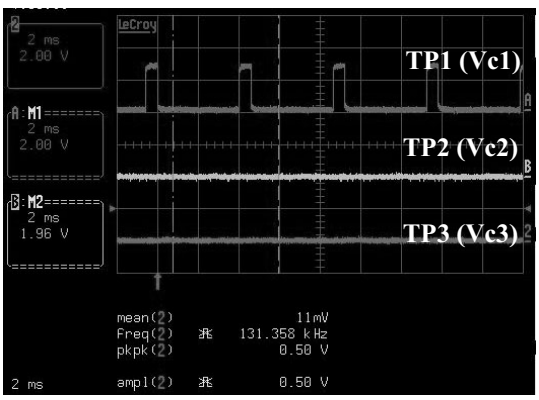
- UMTS Tx/Rx



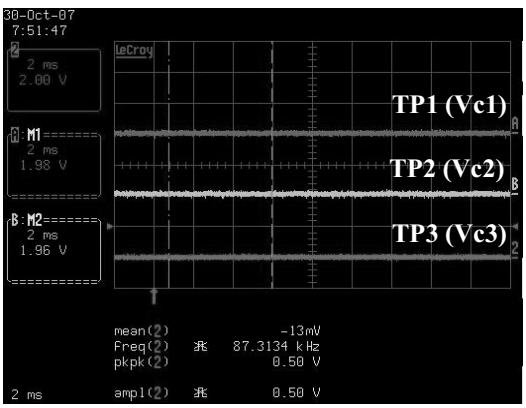
- GSM900 Tx



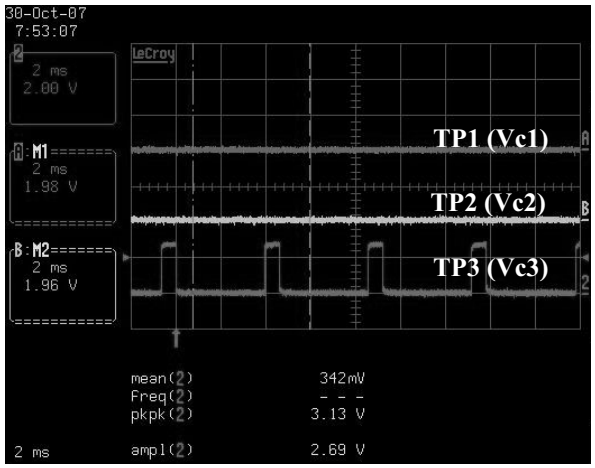
- DCS1800/PCS1900 Tx



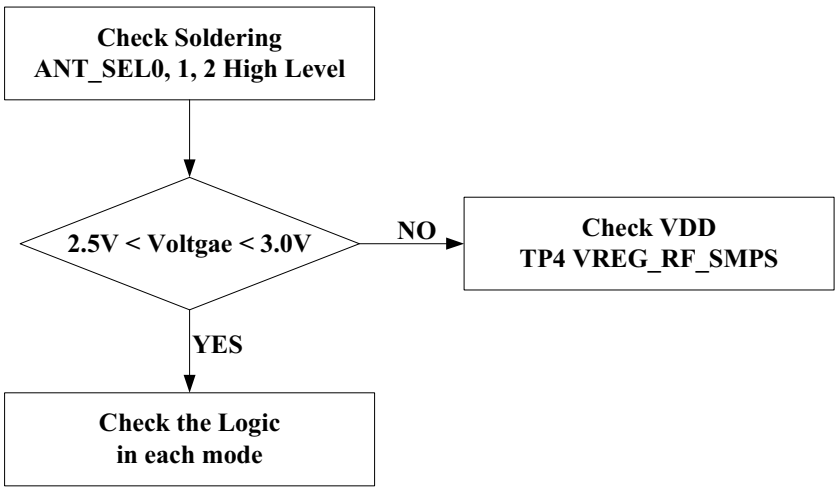
- GSM Rx / PCS1900 Rx



- DCS1800 Rx

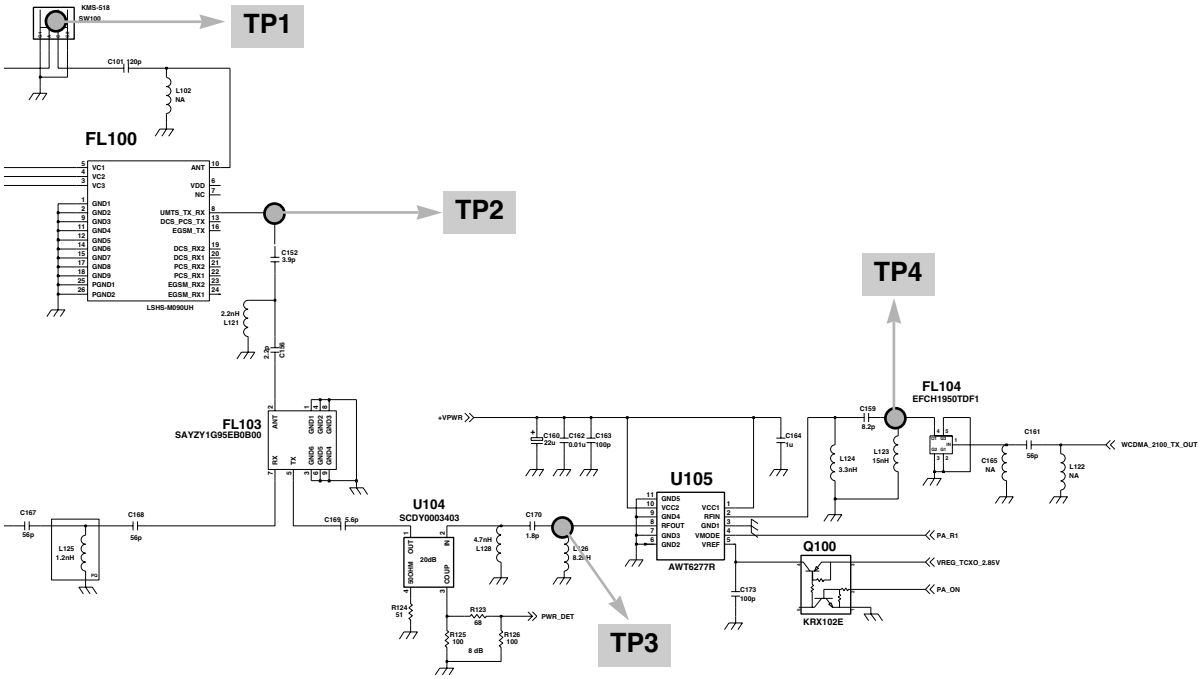


Checking Switch Block power source

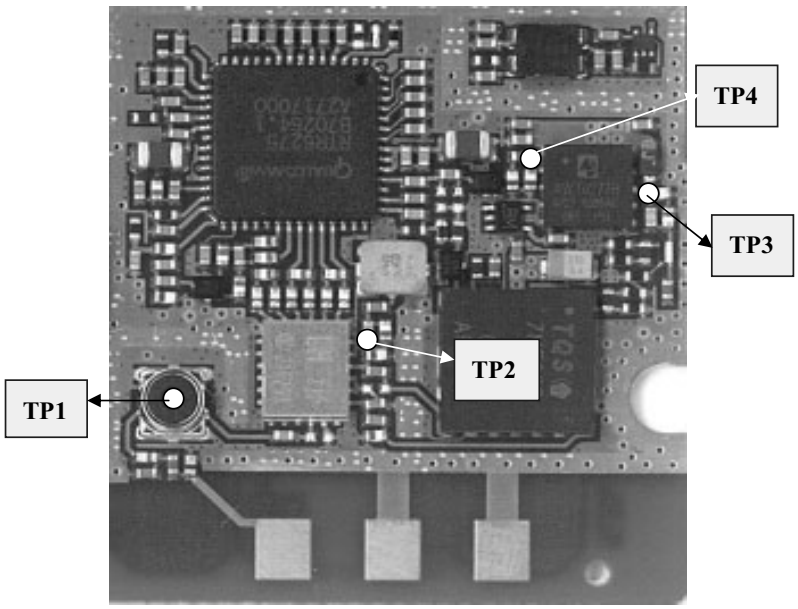


4.5 Checking UMTS Block

4.5.1 Checking TX level

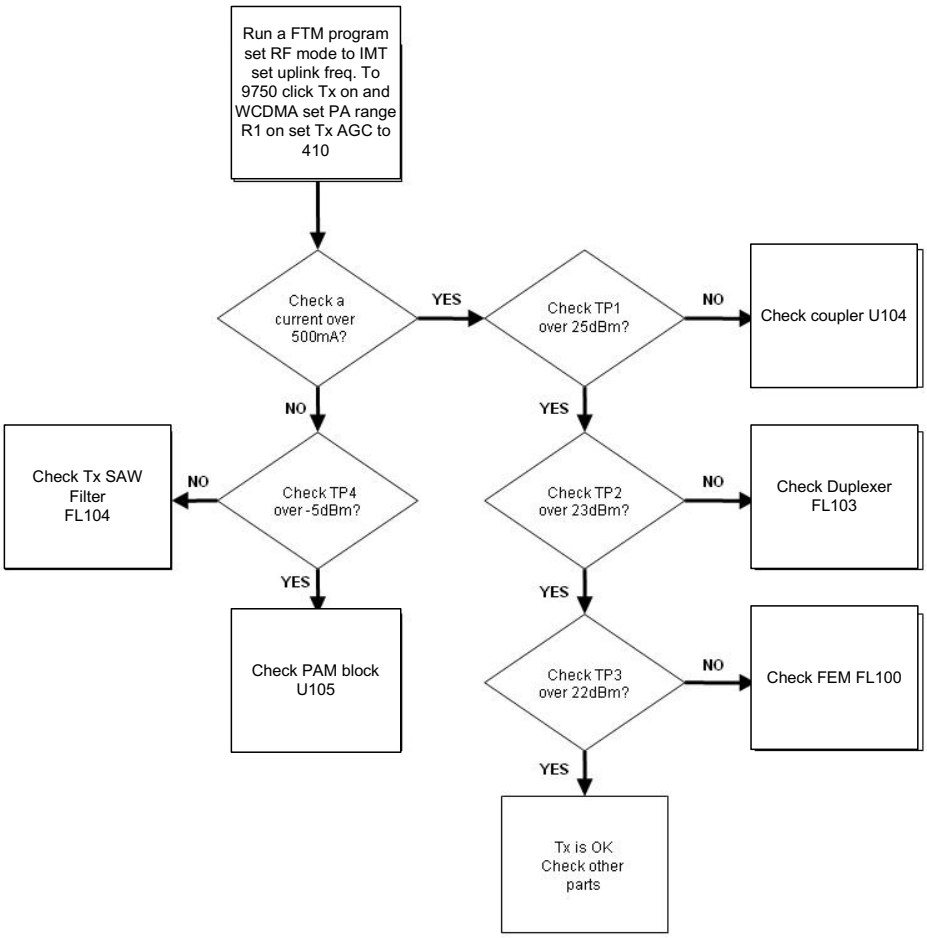


Schematic of the WCDMA Tx Block



Test Point of the WCDMA Tx Block

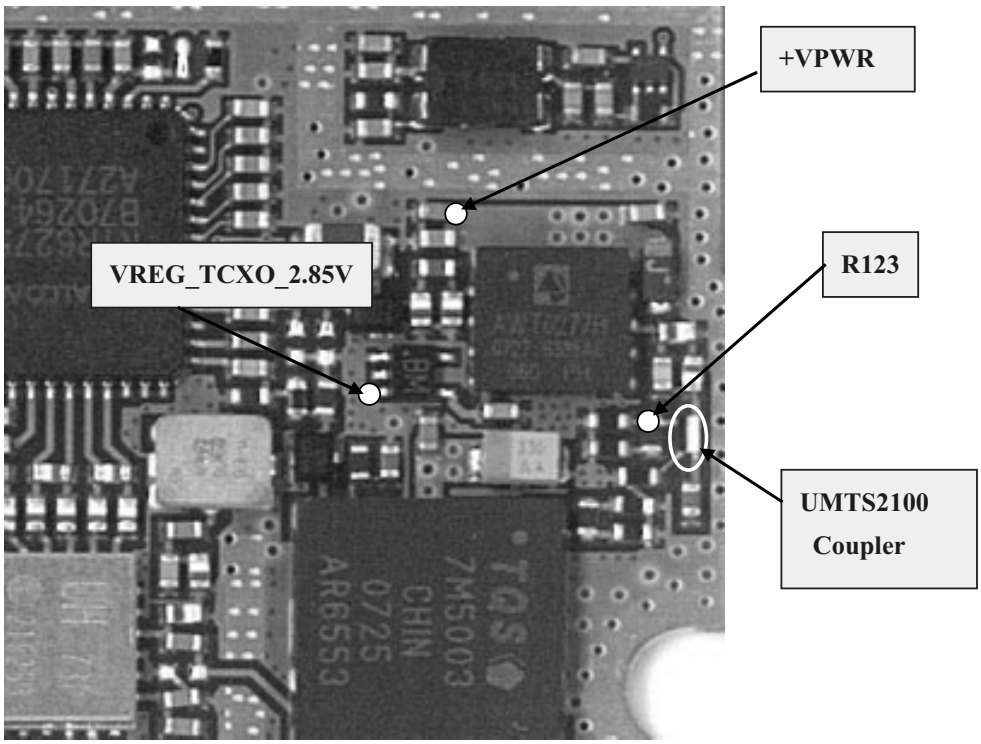
For testing, Max power of UMT 2100 is needed.



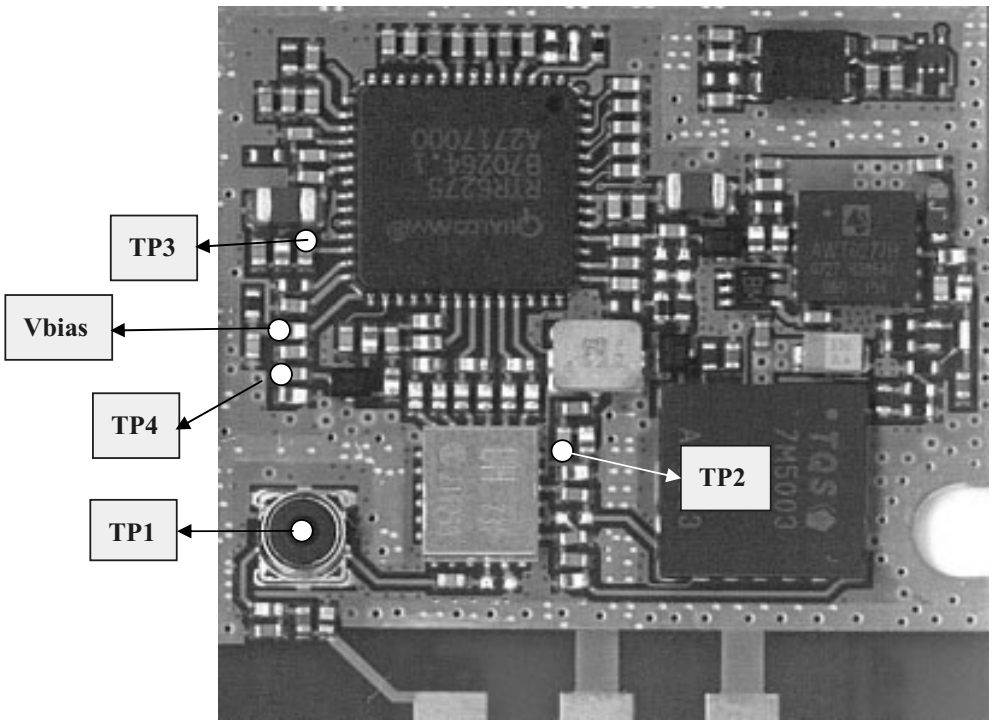
4.5.2 Checking UMTS PAM Control Block

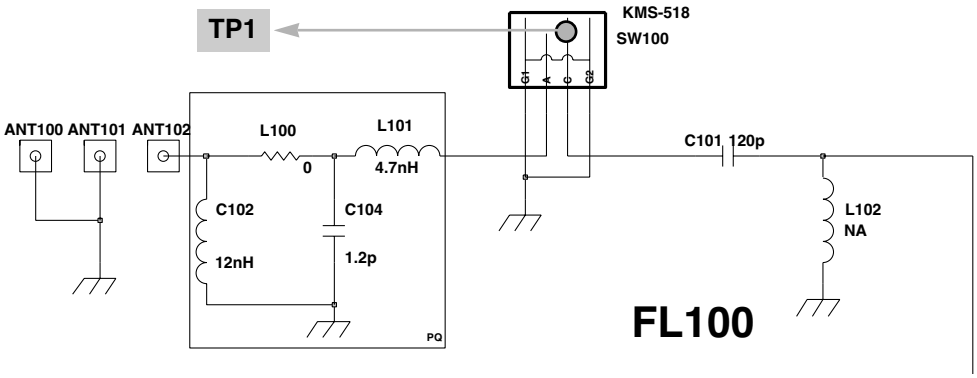
• PAM control signal

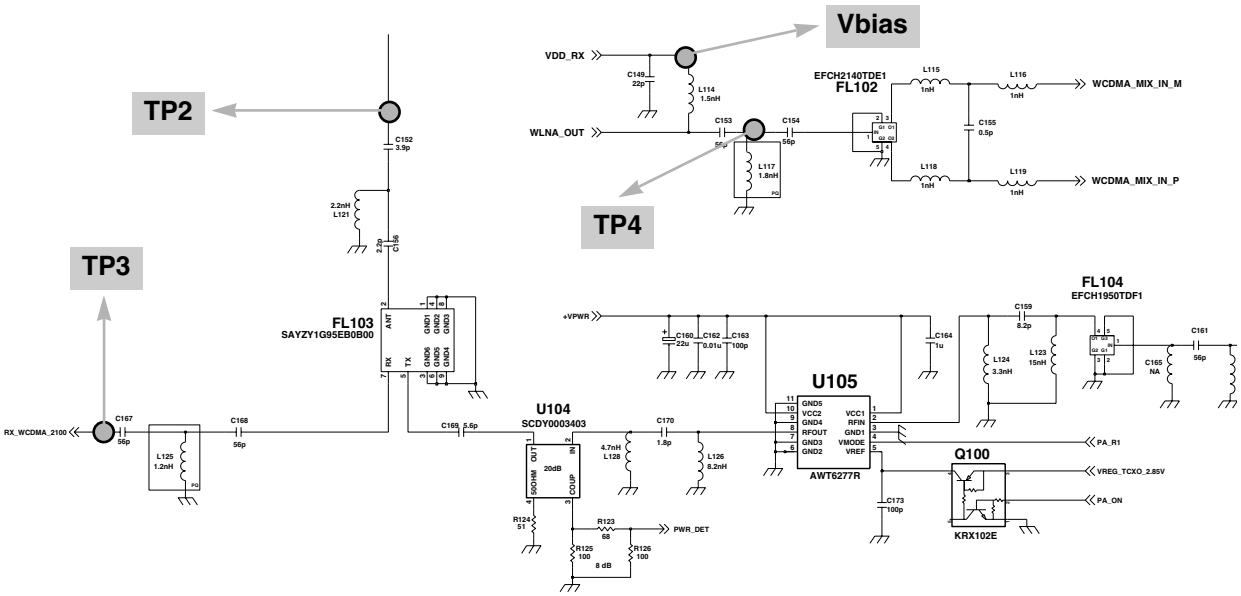
1. PWR_DET : UMTS Tx Power Detected value (Check R123)
2. TX_AGC_ADJ : UMTS RTR6275 Tx Amp Gain Control
3. VREG_TCXO_2.85V : UMTS PAM enable (about 2.85V)
4. +VPWR : UMTS PAM Main Voltage (3V < +VPWR < 4.2V)
5. PA_ON : Turns the PA on and off
6. PA_R1 : Control signals that step the active PA mode and bias

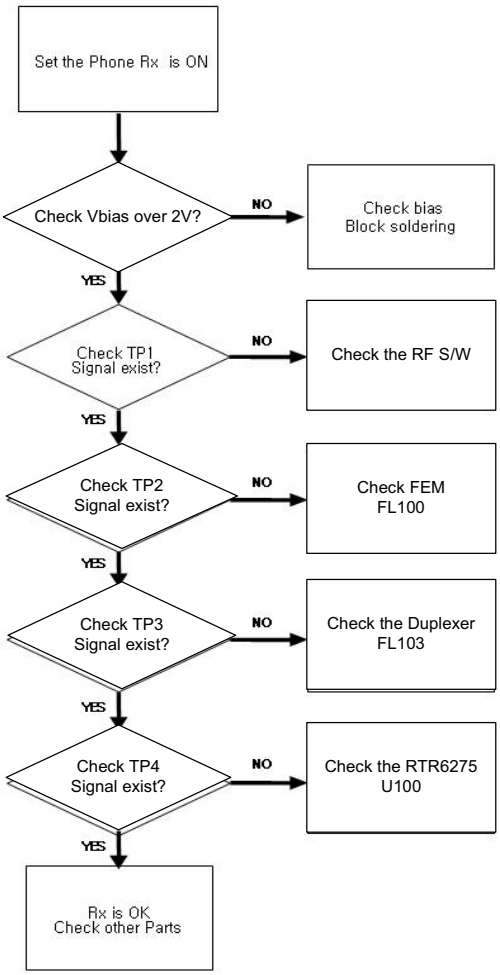


4.5.3 Checking RX level

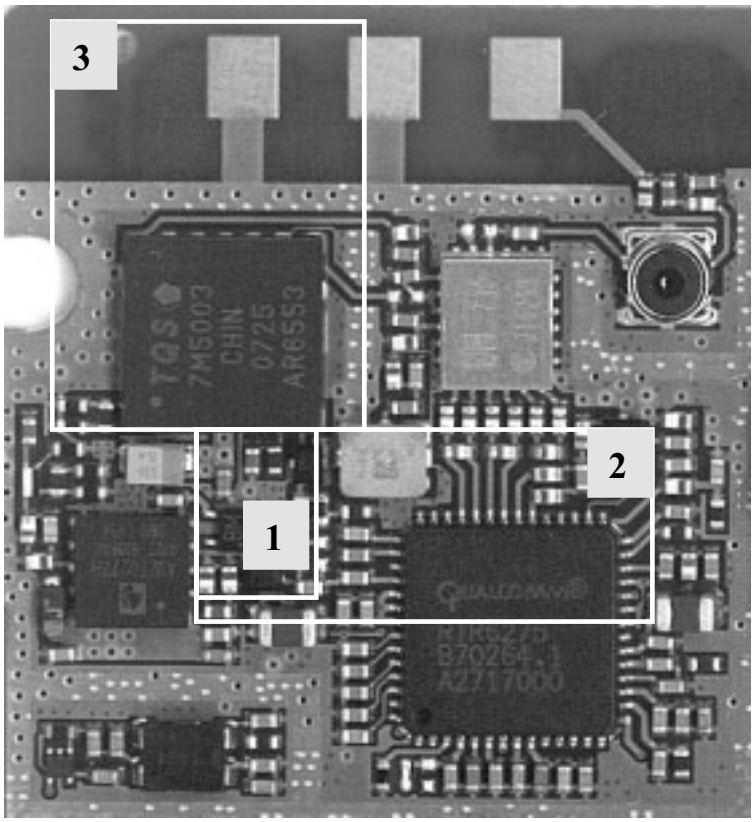


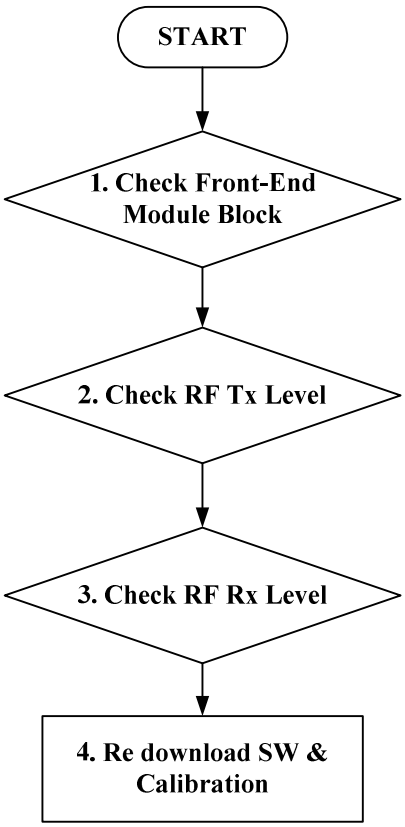






4.6 Checking GSM Block

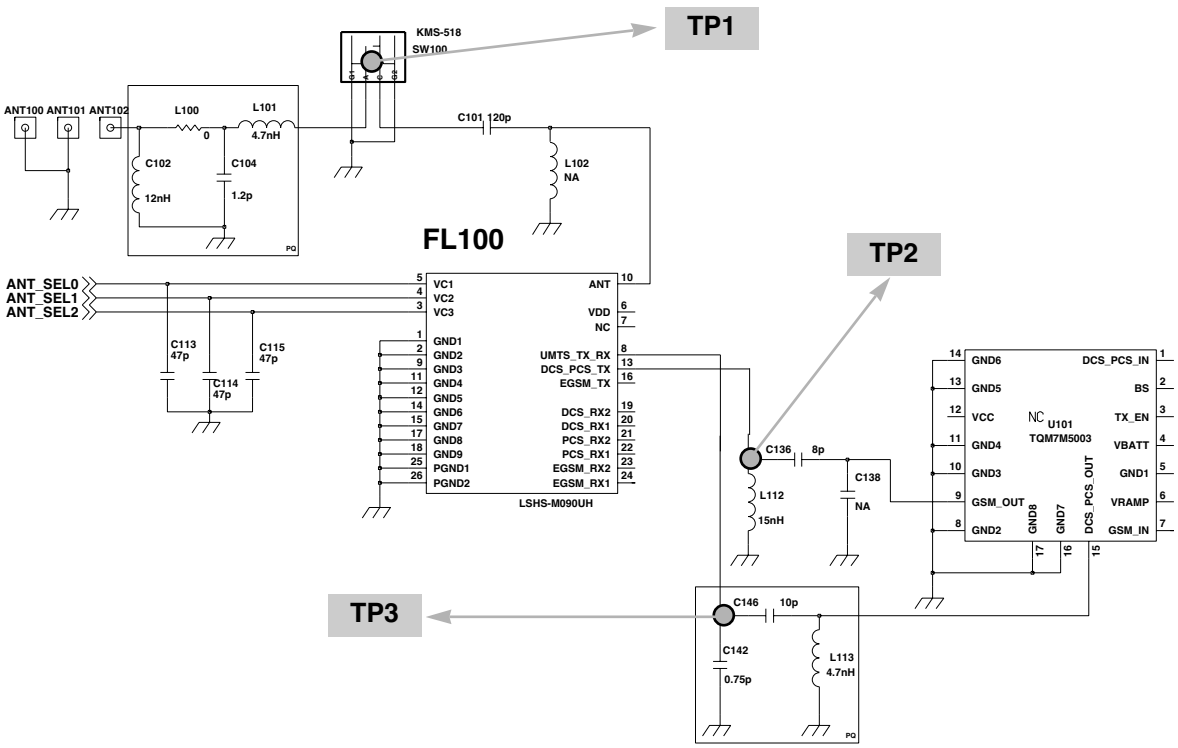




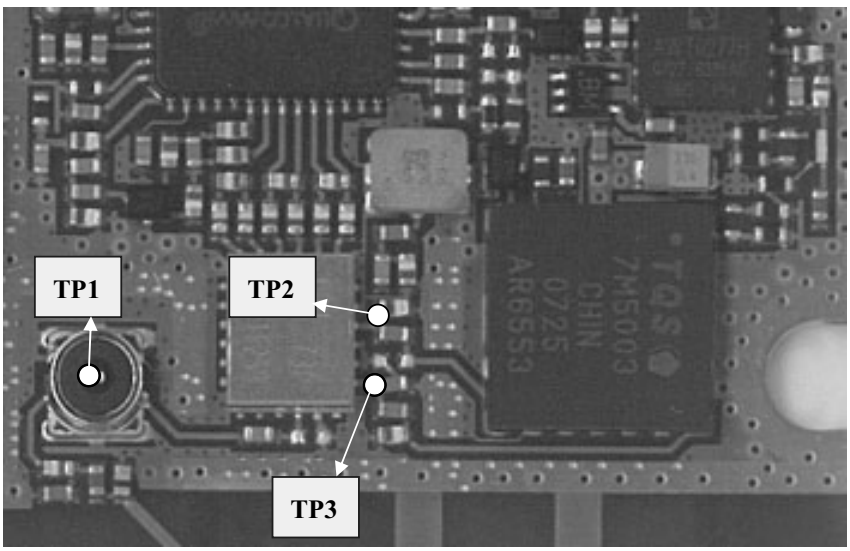
4.6.1 Checking Front-End Module

Refer to chapter 3.4

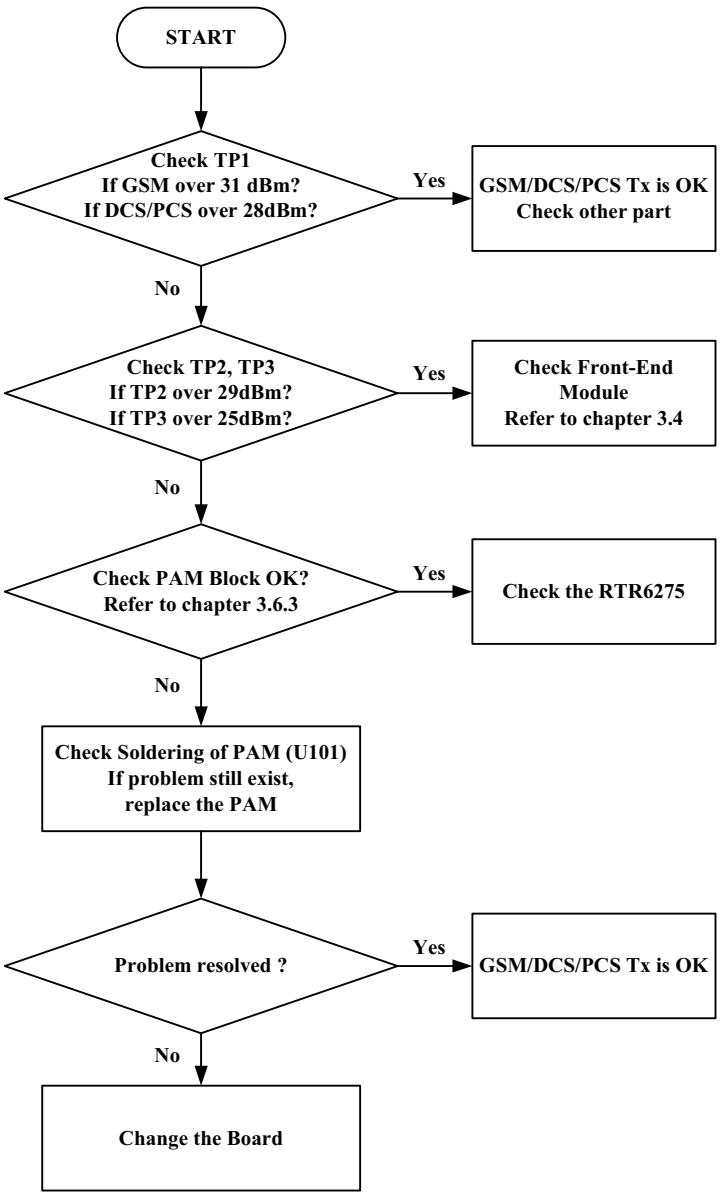
4.6.2 Checking RF Tx Level



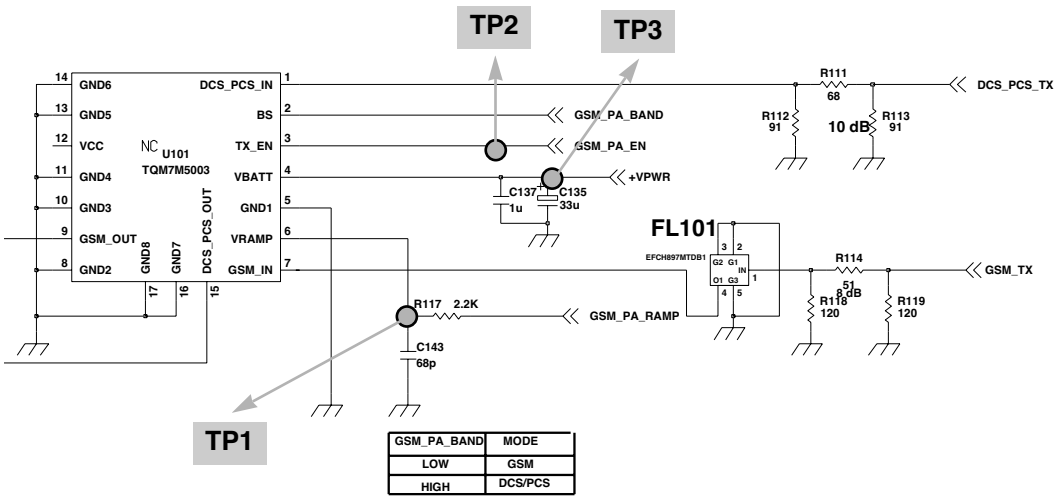
Schematic of the GSM Tx Block



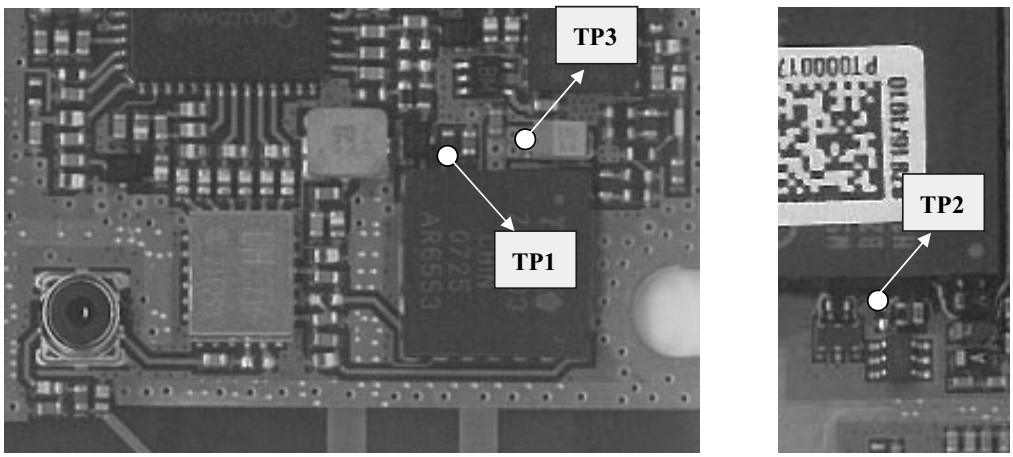
Test Point of GSM Tx Block



4.6.3 Checking PAM Block



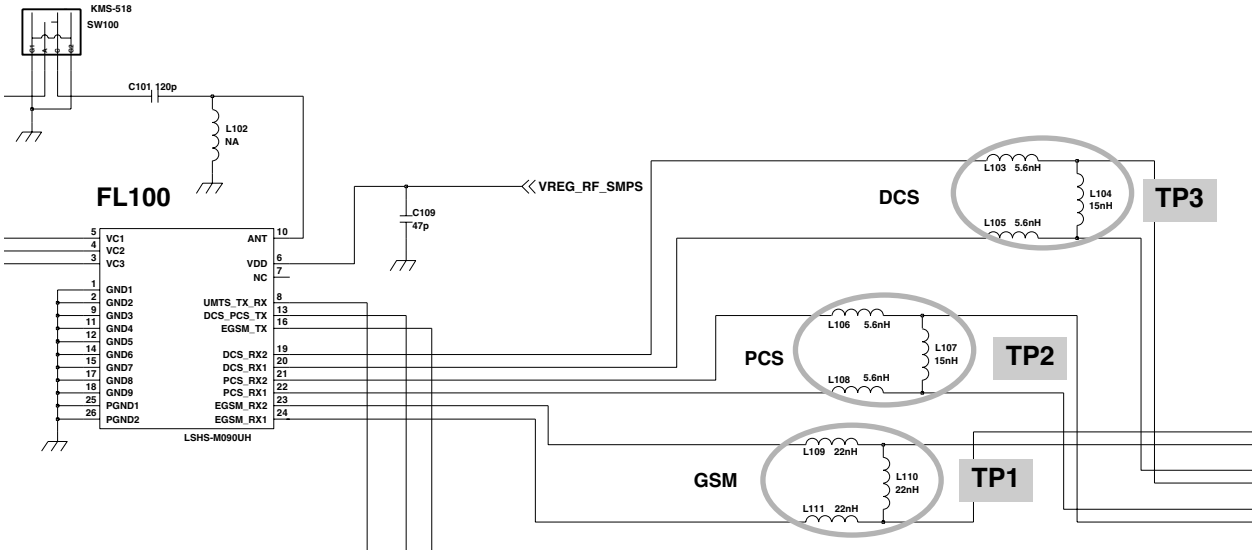
Schematic of PAM Block



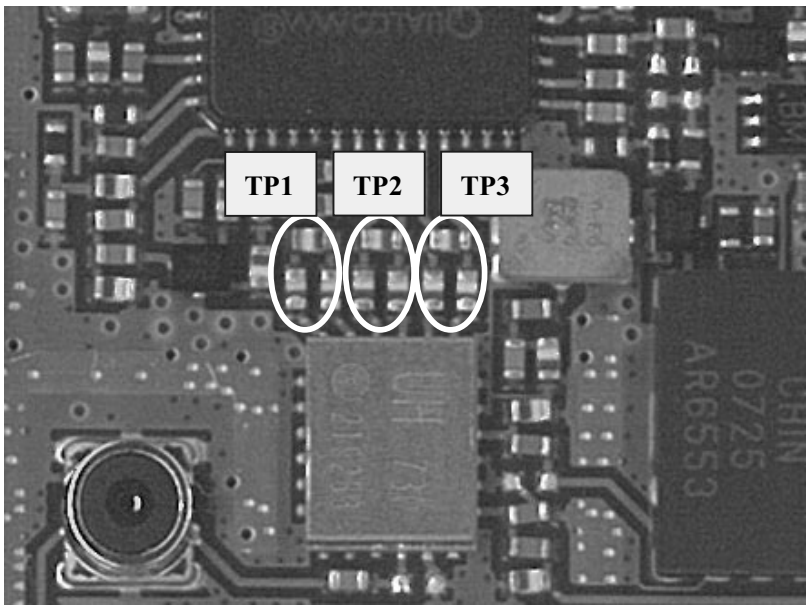
Test Point of PAM Block

Test Point	Net name	Description
TP1	GSM_PA_RAMP	Power Amp Gain Control. Typically, 0.2 ~1.6V
TP2	GSM_PA_EN	Power Amp Enable (ON : >2.5V, OFF : <0.7V)
TP3	+VPWR	PAM Supply Voltage (Vcc > 3V)

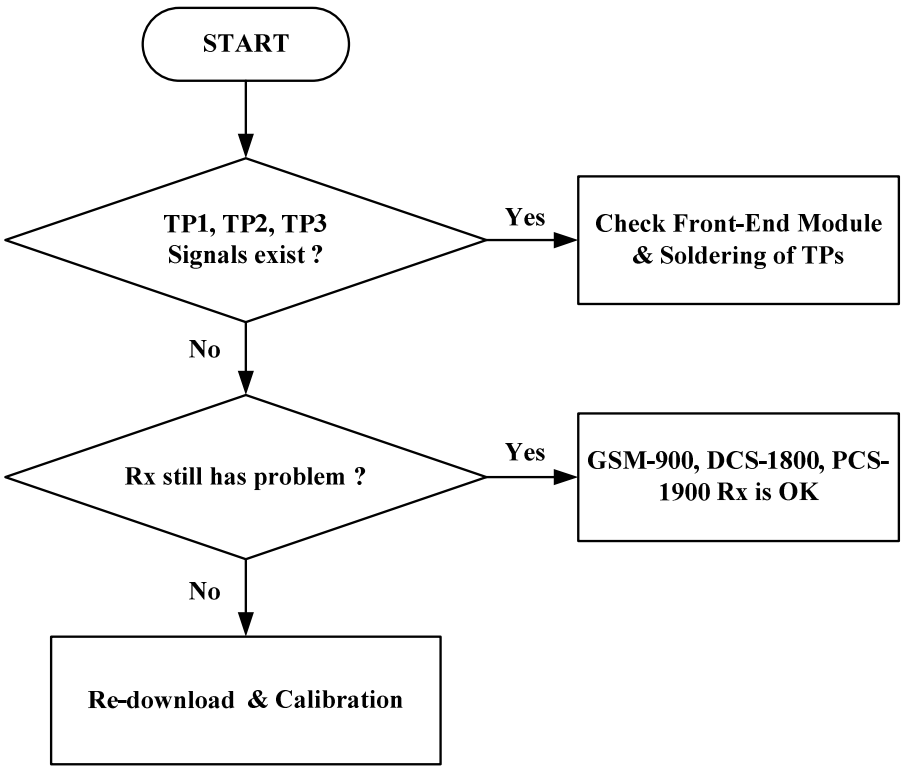
4.6.4 Checking RF Rx Level



Schematic of GSM-900, DCS-1800, PCS-1900 Rx Block



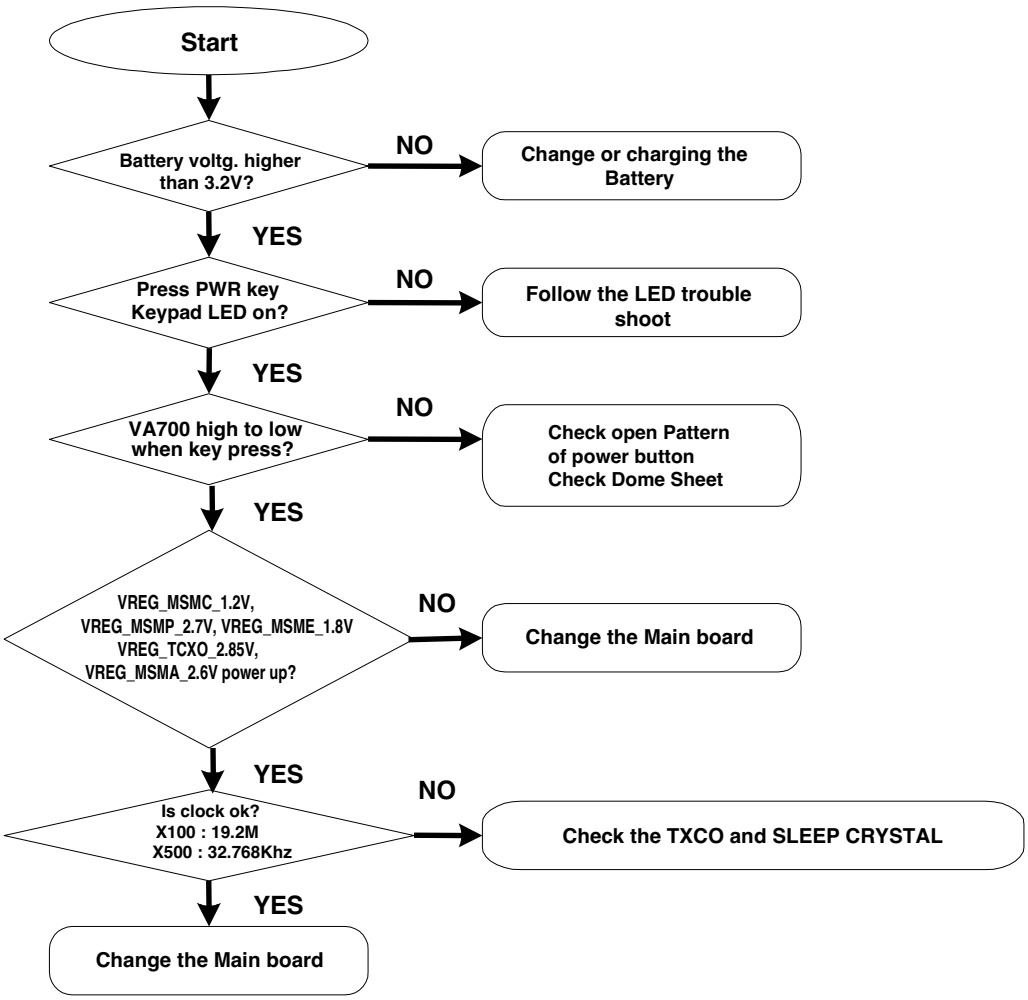
Test Point of Rx Block

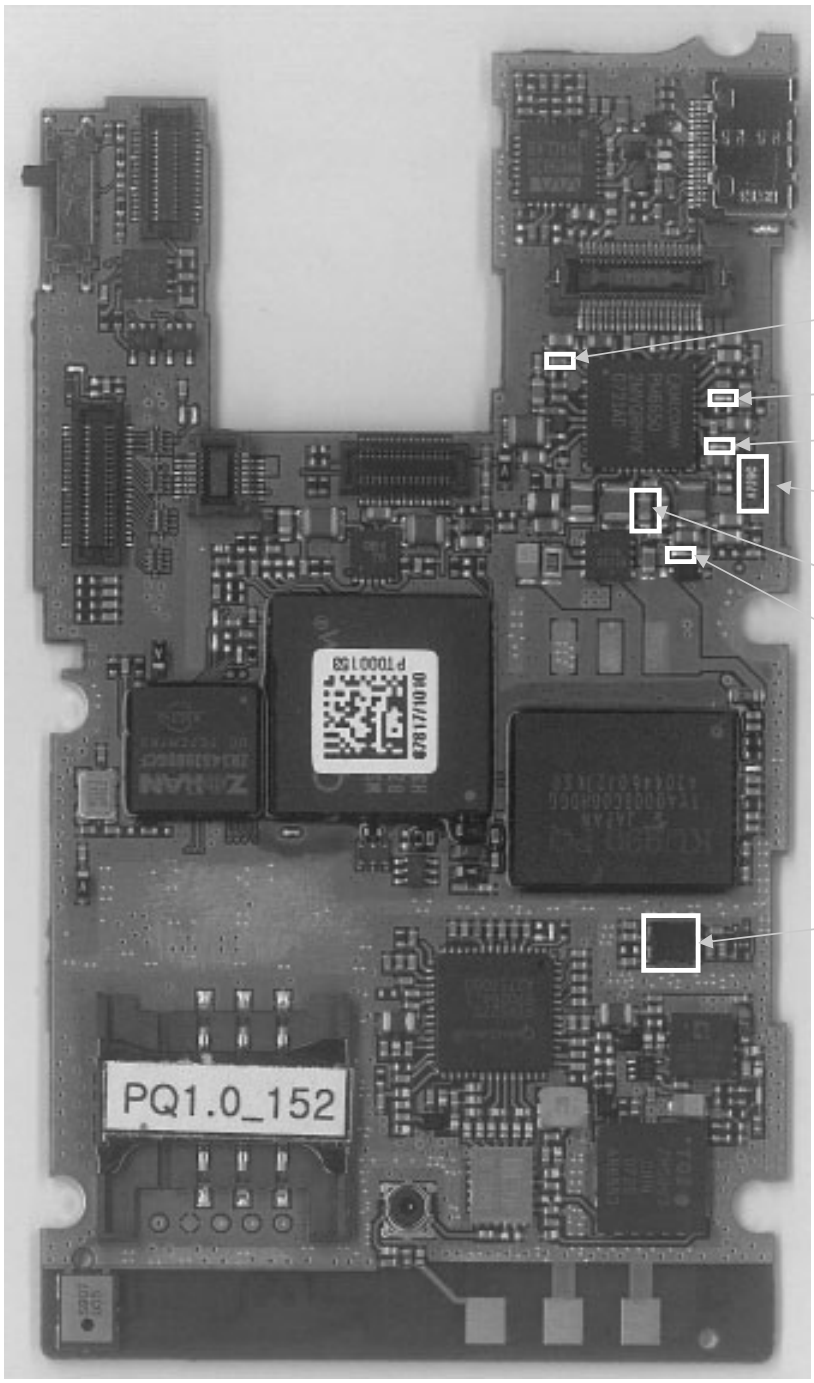


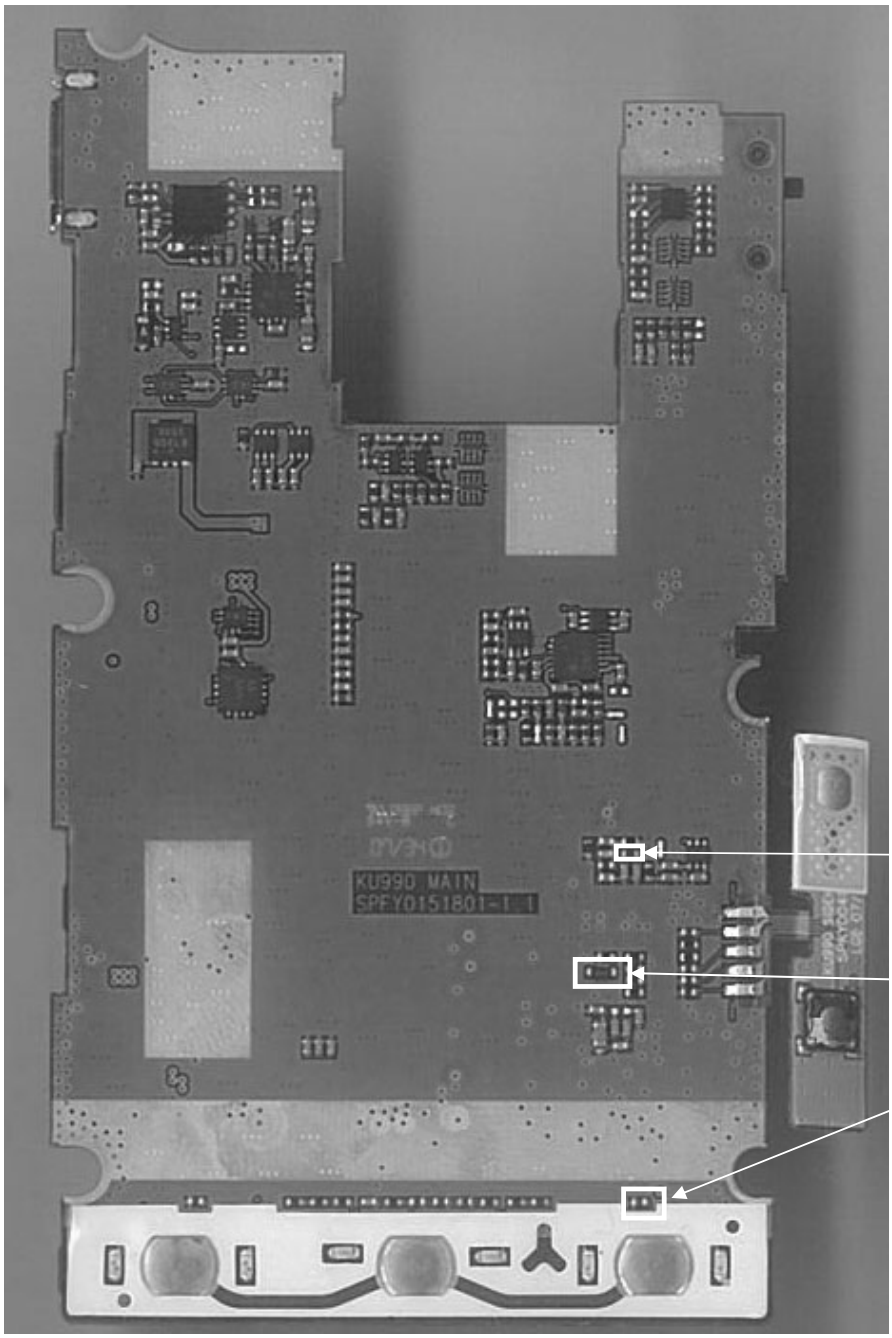
4.7 Power on trouble

Power on sequence of KU990 is :

PWR key press → PM_ON_SW_N go to low (VA700, PM6650-2M KPDPWR_N pin#24) → PM6650-2M Power Up → VREG_MSMC_1.2V(C560), VREG_MSME_1.8V(R520), VREG_MSMP_2.7V(R513), VREG_MSMA_2.6V(R508), VREG_TCXO_2.85V(C510) power up → PON_RESET_N assert to MSM → Phone booting & PS_HOLD(D500) assert High to PMIC(PM6650-2M)





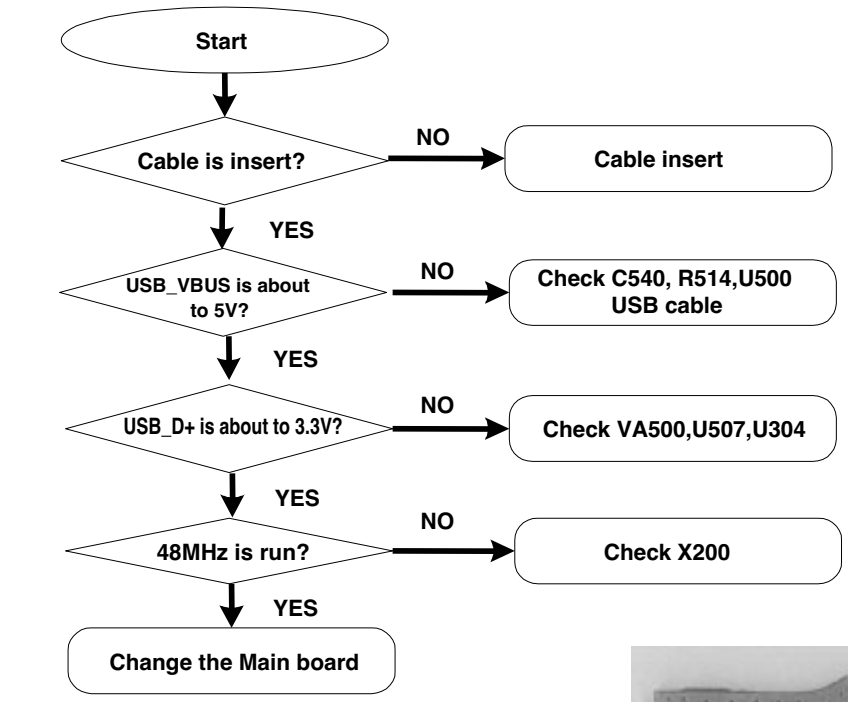


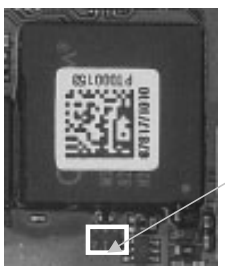
4.7.1 USB trouble

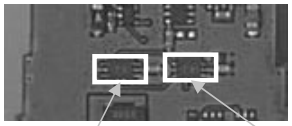
USB Initial sequence of KU990 is :

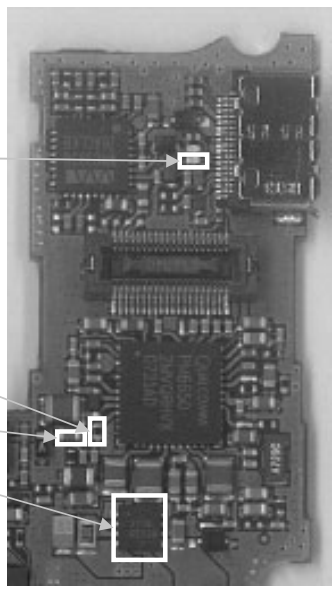
USB connected to KU990 → USB_VBUS(C540) go to 5V

→ USB_D+(VA202) go to 3.3V → 48M Crystal on → USB_DATA is triggered → USB work









VA500(USB_D+)

X200(48MHz)

R514(USB_VBUS)

C540(USB_VBUS)

U500(USB_VBUS)

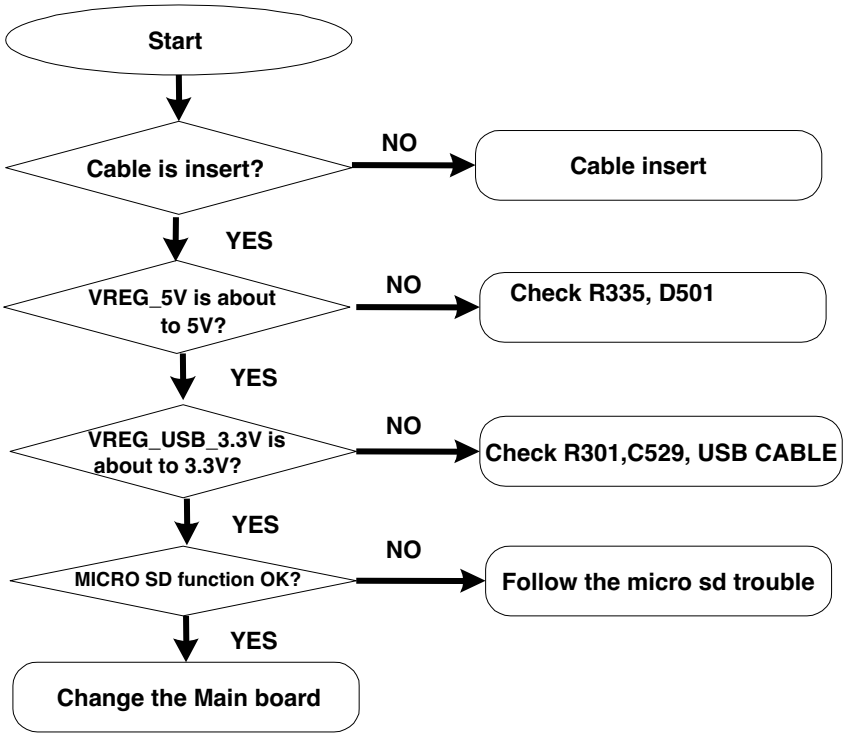
U507(USB_D+)

U304(USB_D+)

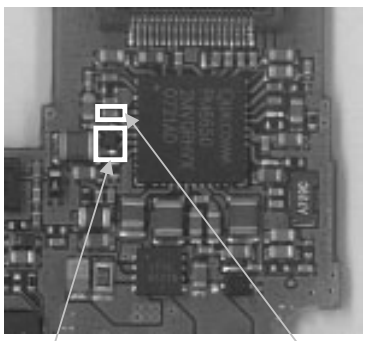
4.7.2 UMS(USB MASS STORAGE) trouble

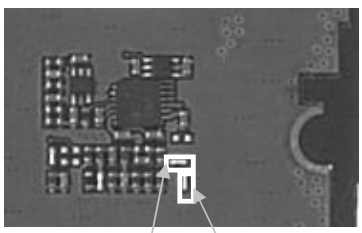
UMS Initial sequence of KU990 is :

USB connected to KU990 → VREG_5V(R335, UMS) go to 5V → VREG_USB_3.3V(R301) go to 3.3V → USB_DATA is triggered → USB work



< TOP SIDE >





D501(VREG_5V) C529 (VREG_USB_3.3V)

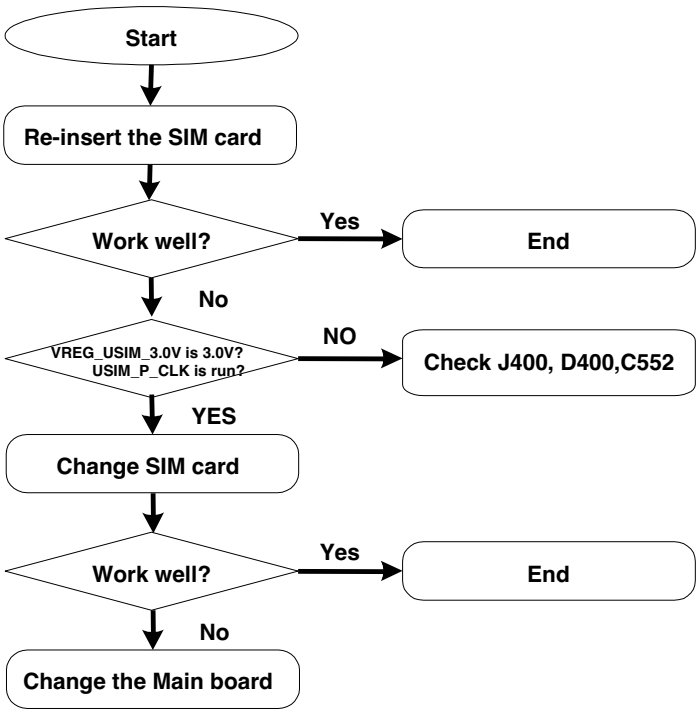
R335(VREG_5V)

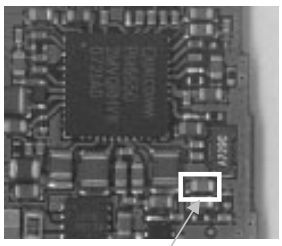
R301(VREG_USB_3.3V)

4.8 SIM detect trouble

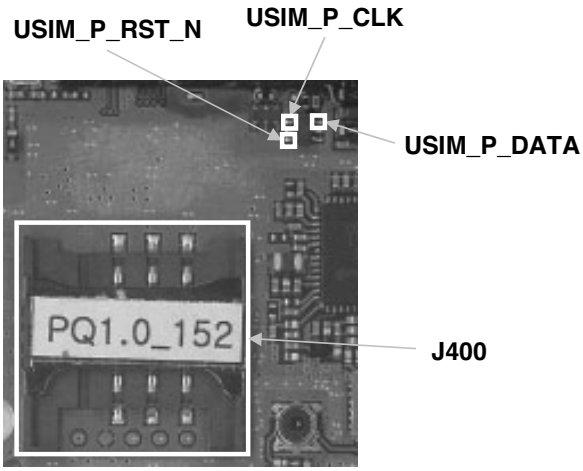
USB Initial sequence of KU990 is :

VREG_USIM_3.0V(C552 of PM6650) go to 3.0V → USIM clock, reset and data triggered → USIM IF work (Schematic and place are refer to SIM technical brief)



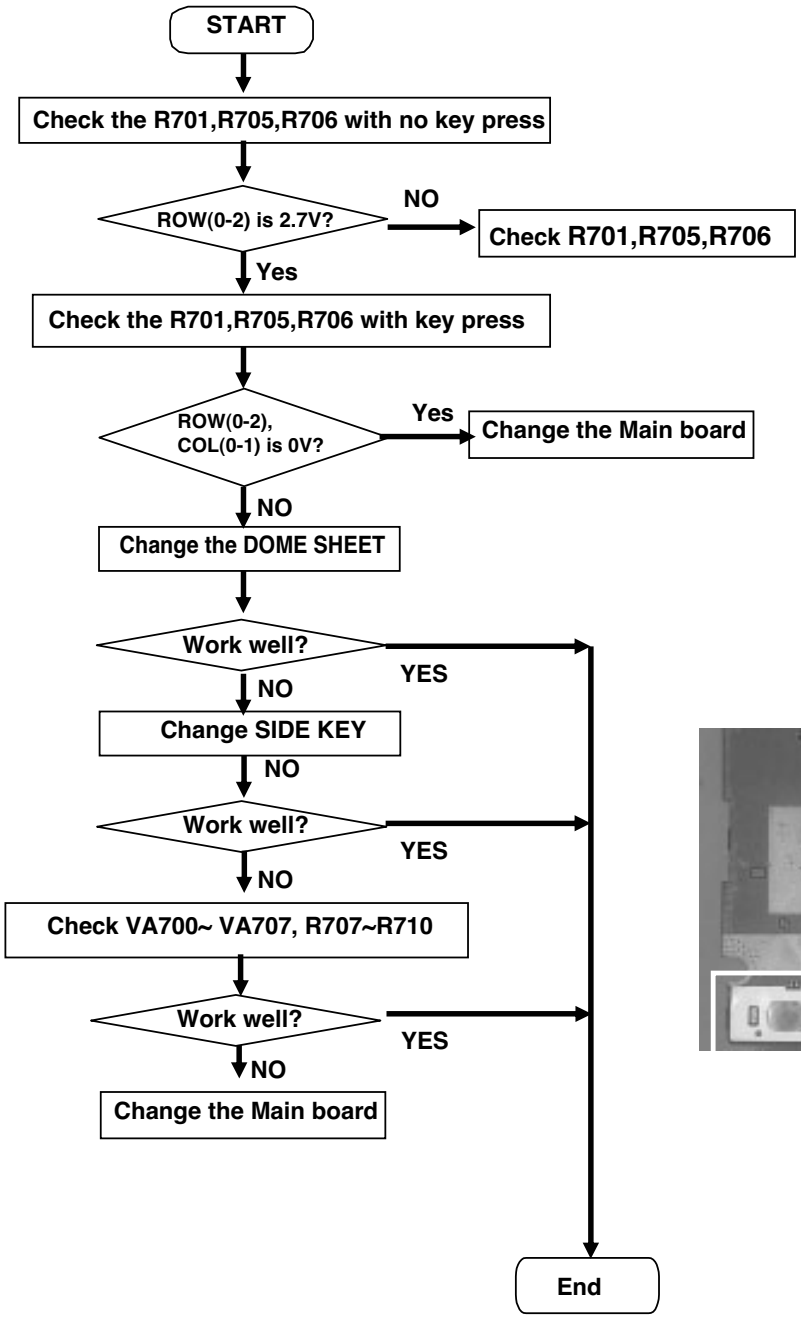


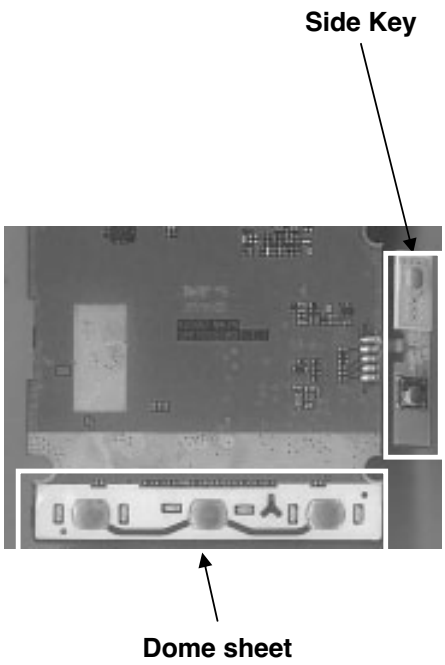
C552(VREG_USIM_3.0V)

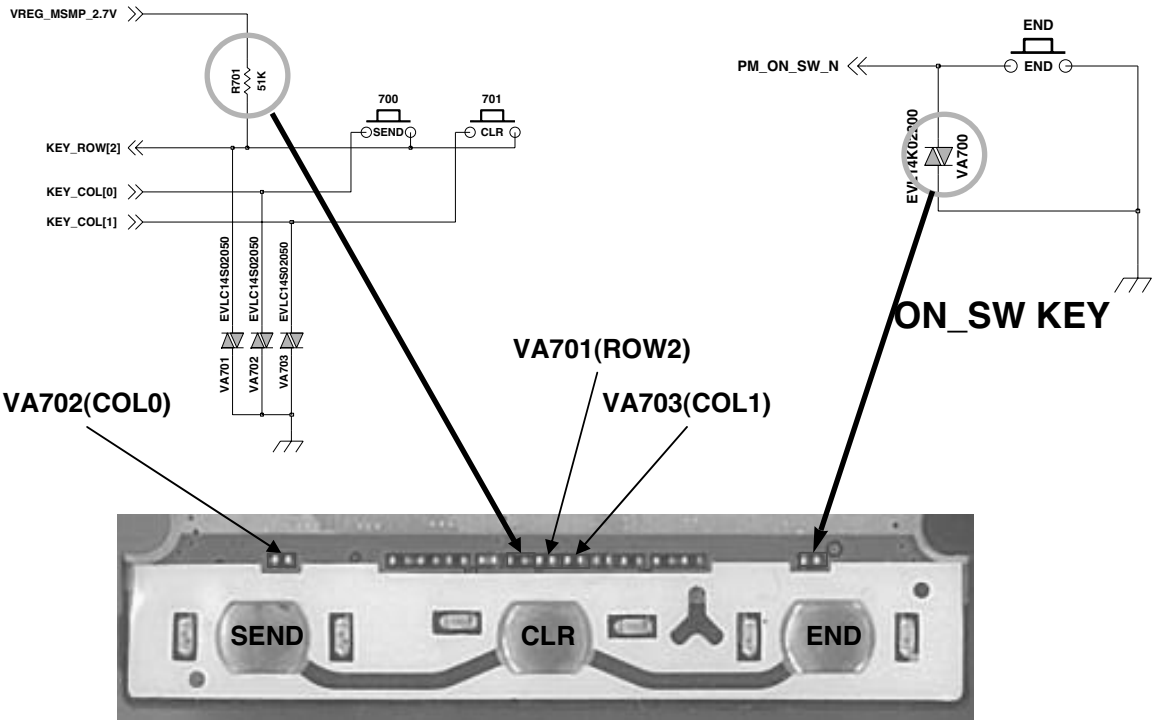


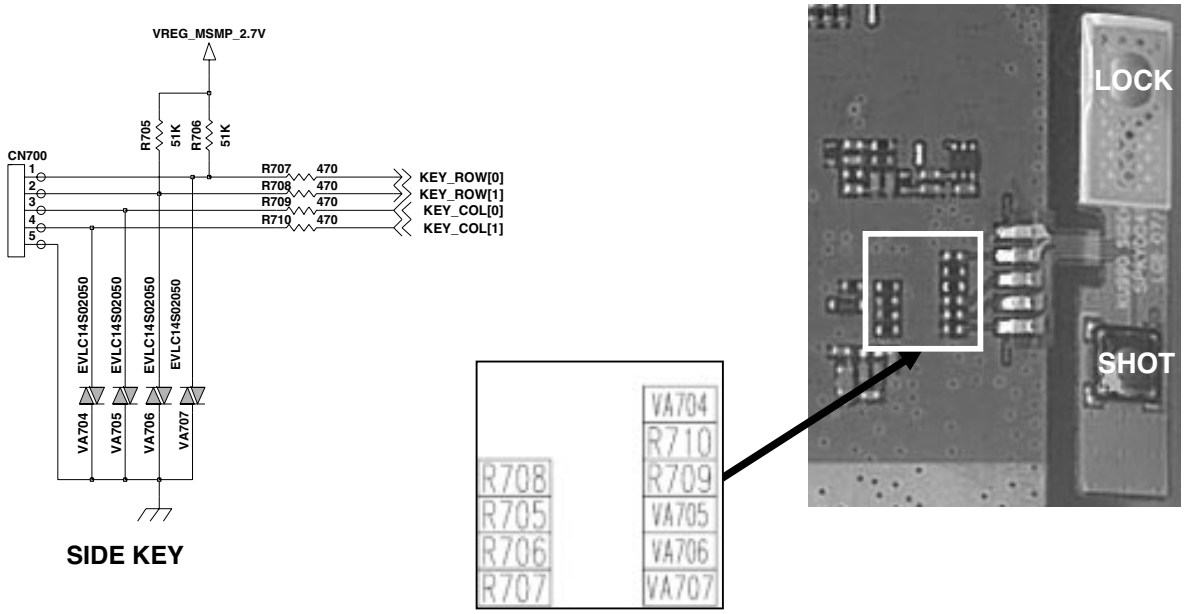
4.9 Key sense trouble (KEYPAD)

Key Sense sequence of KU990 is :
Default condition ROW(0-2) is 2.7V → Press the key → Corresponding ROW(x) and COL(x) go to 0V → Scan pulse(Col => Row) → MSM sense what key pressed.





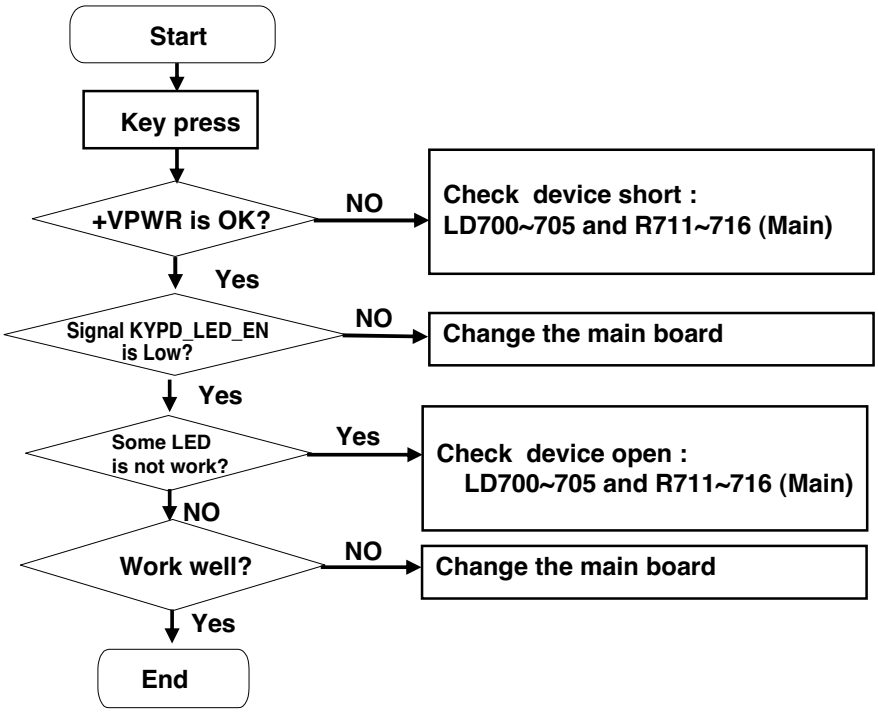


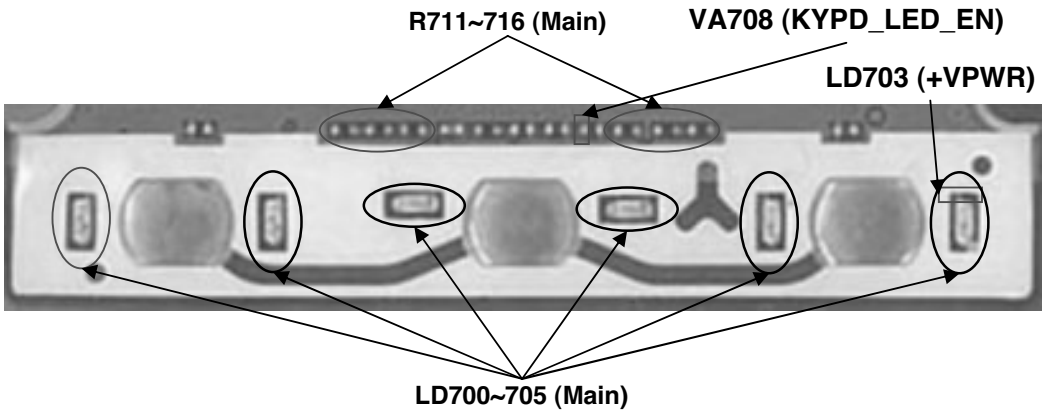


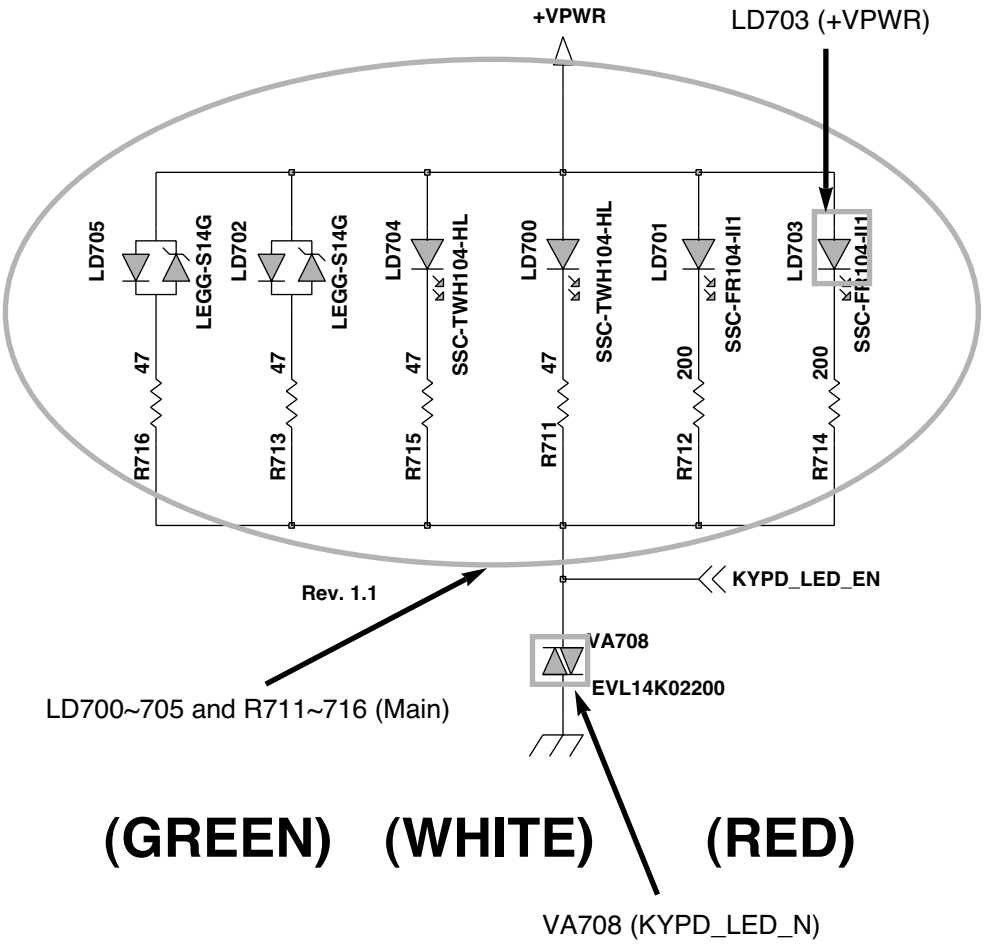
Schematic of key sense part

4.10 Keypad backlight trouble

Key Pad Back Light is on as below :
Key pressing → PM6650 KYPD_LED_EN go to Low → LED On (Key Pad LED controlled by PM6650)



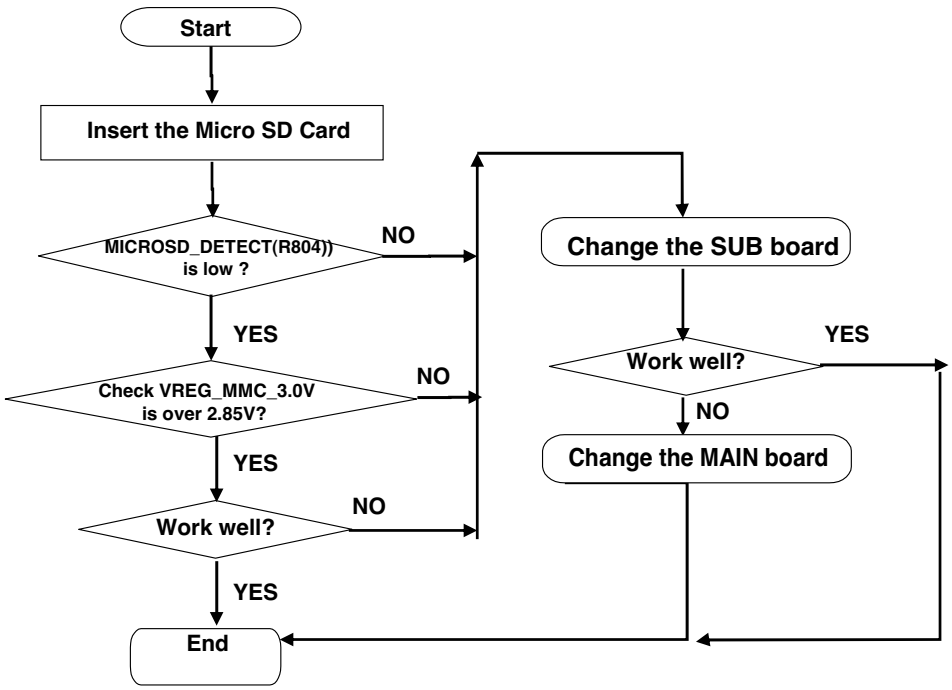


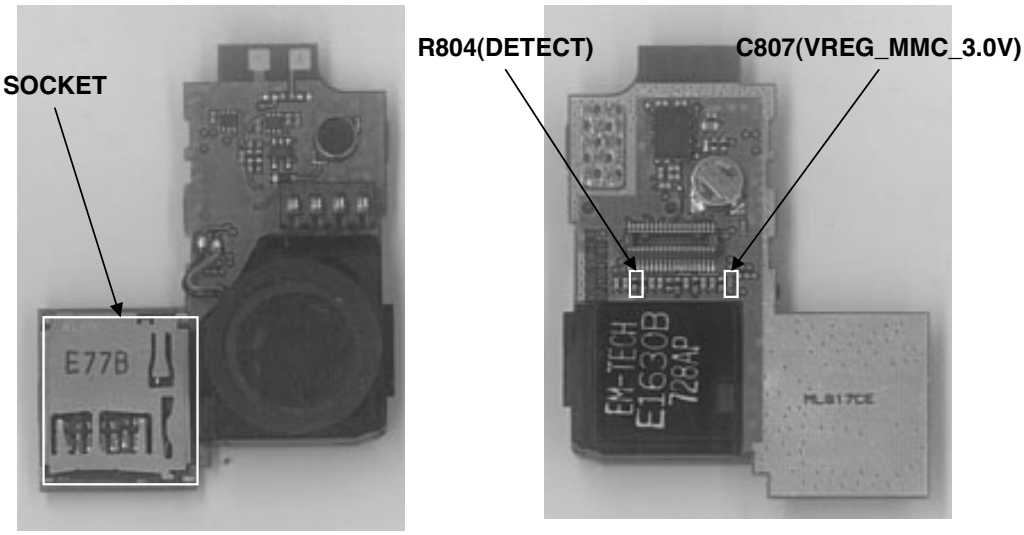


Schematic of keypad backlight part

4.11 Micro SD trouble

Micro SD is worked as below :
Micro SD insertion → MICROSD_DETECT(R804) goes to low → go working

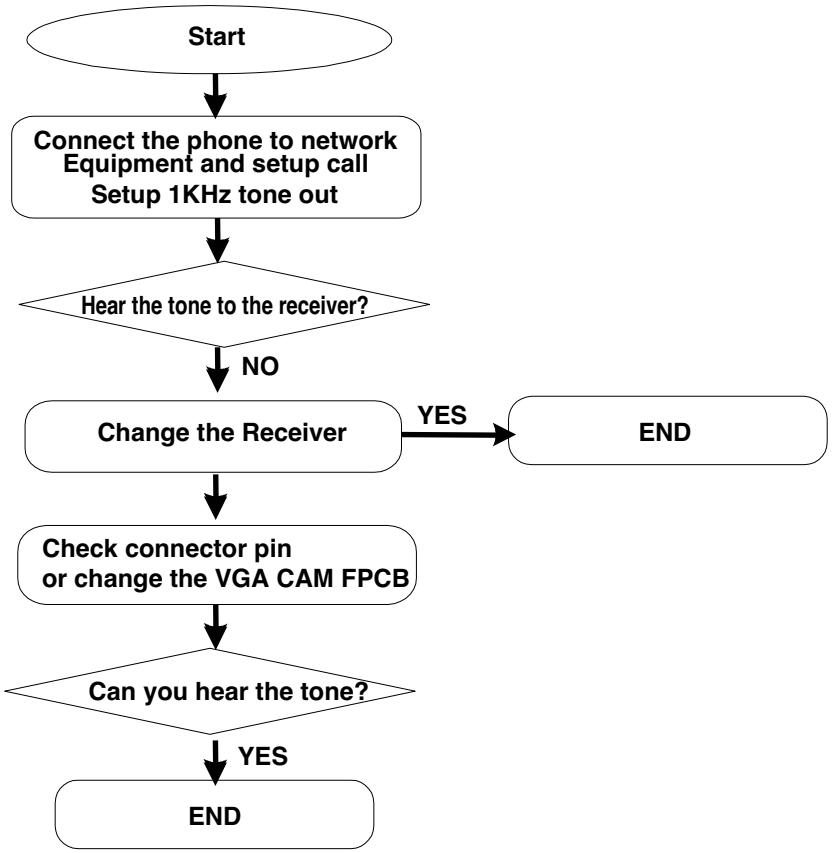


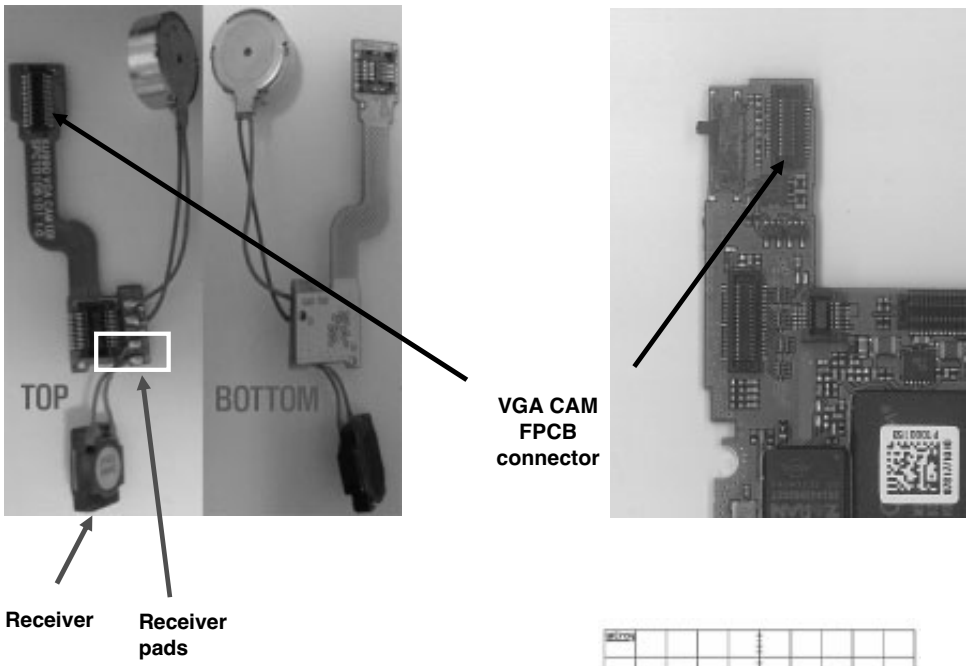


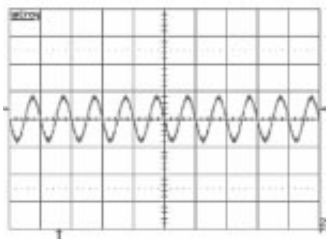
4.12 Audio trouble

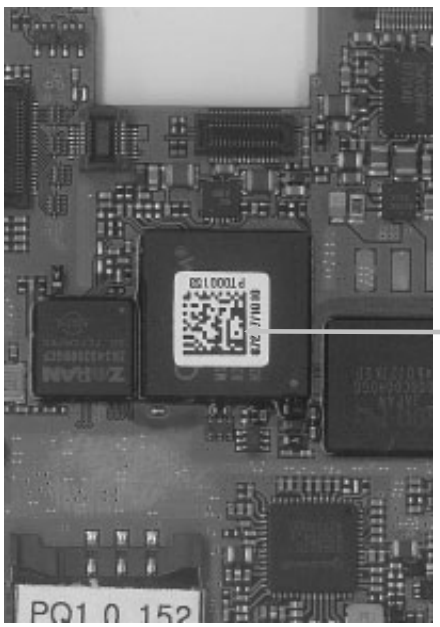
4.12.1 Receiver path

Voice Receiver path as below:
MSM6280 Ear1ON/Ear1OP → CN701(VGA CAM FPCB connector) → Receiver



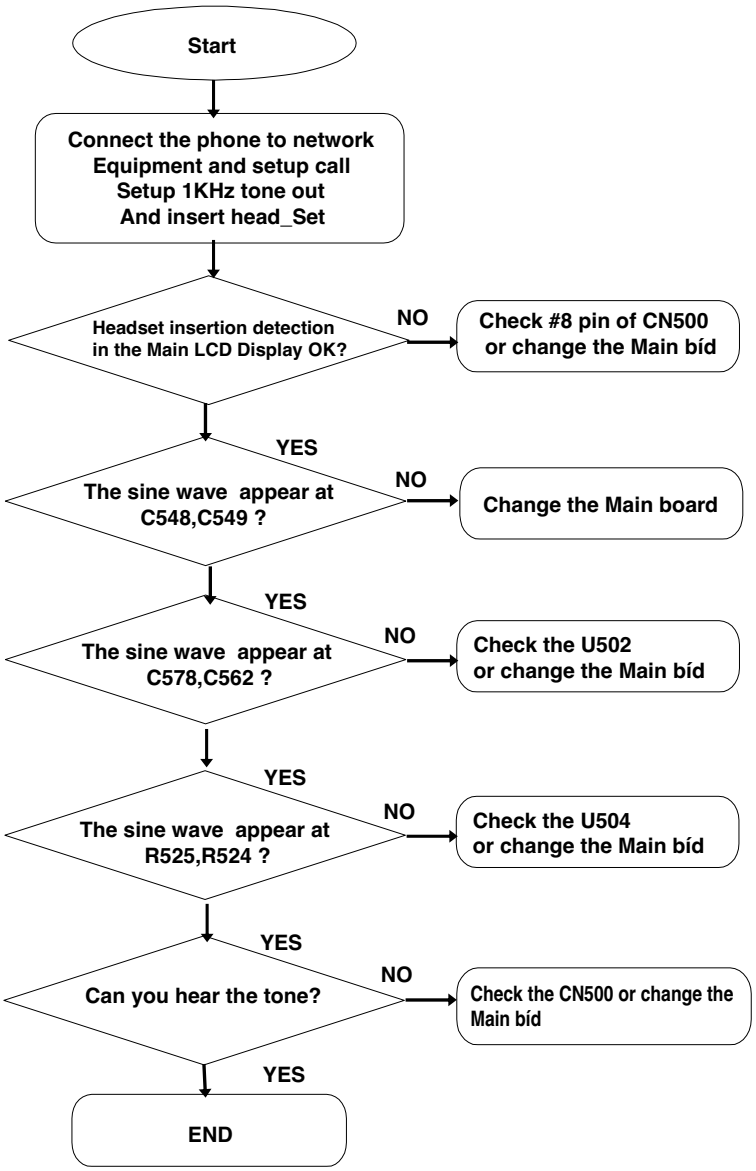


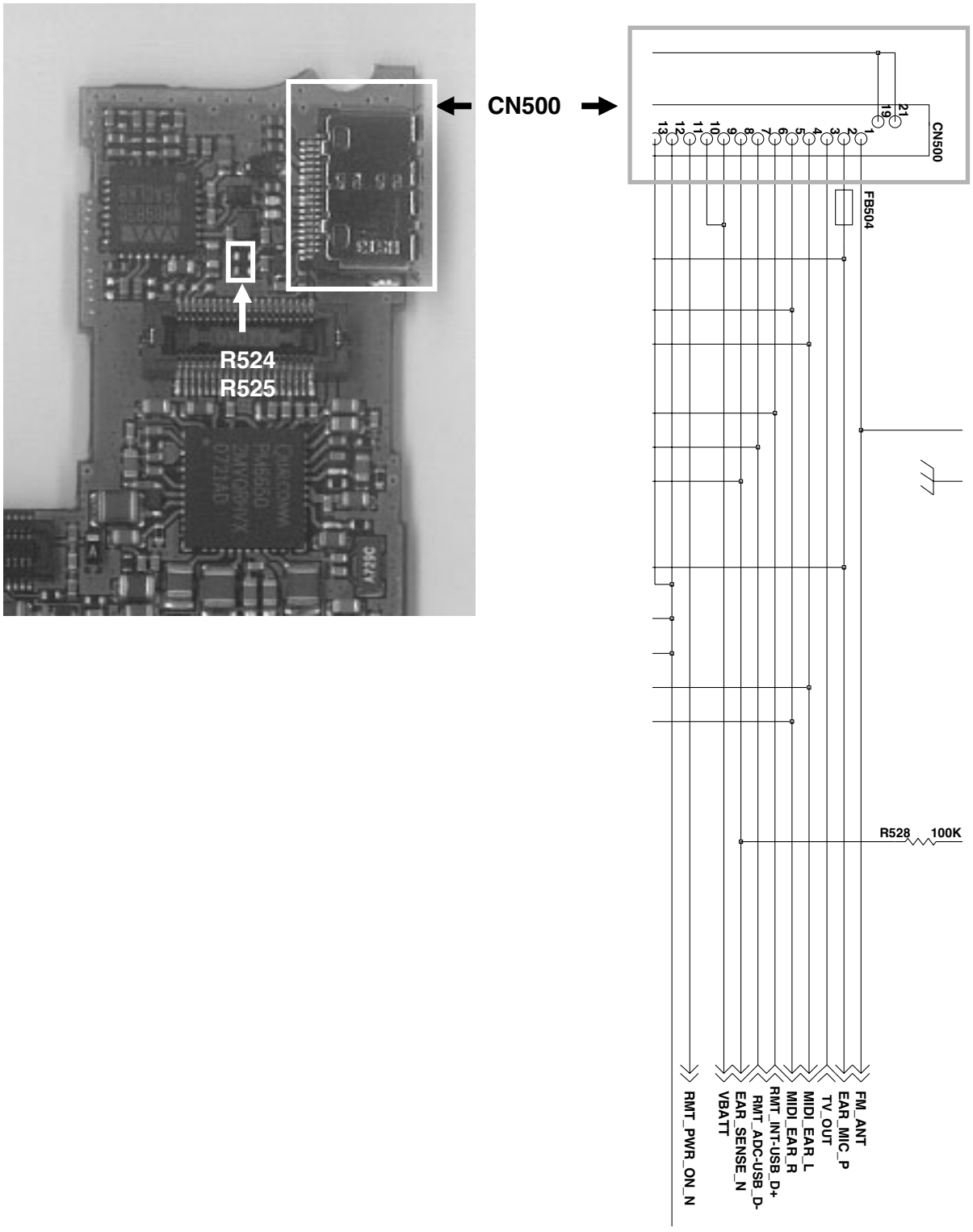




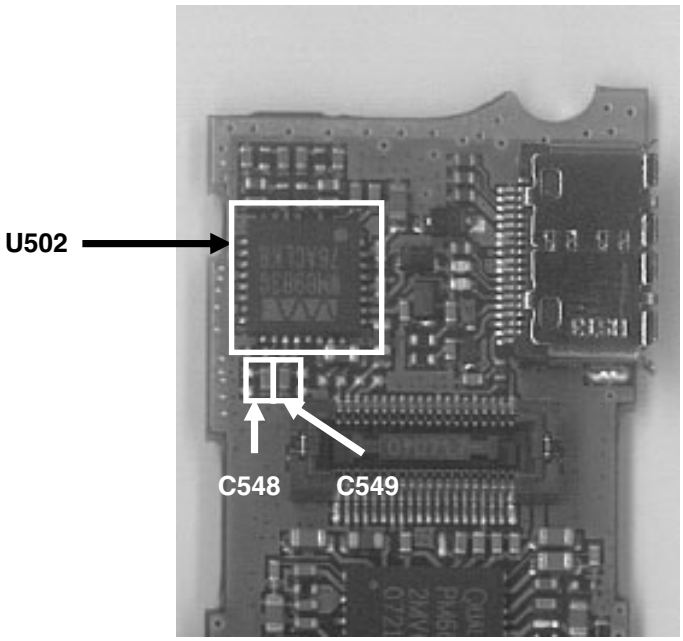
4.12.2 Voice path for headset

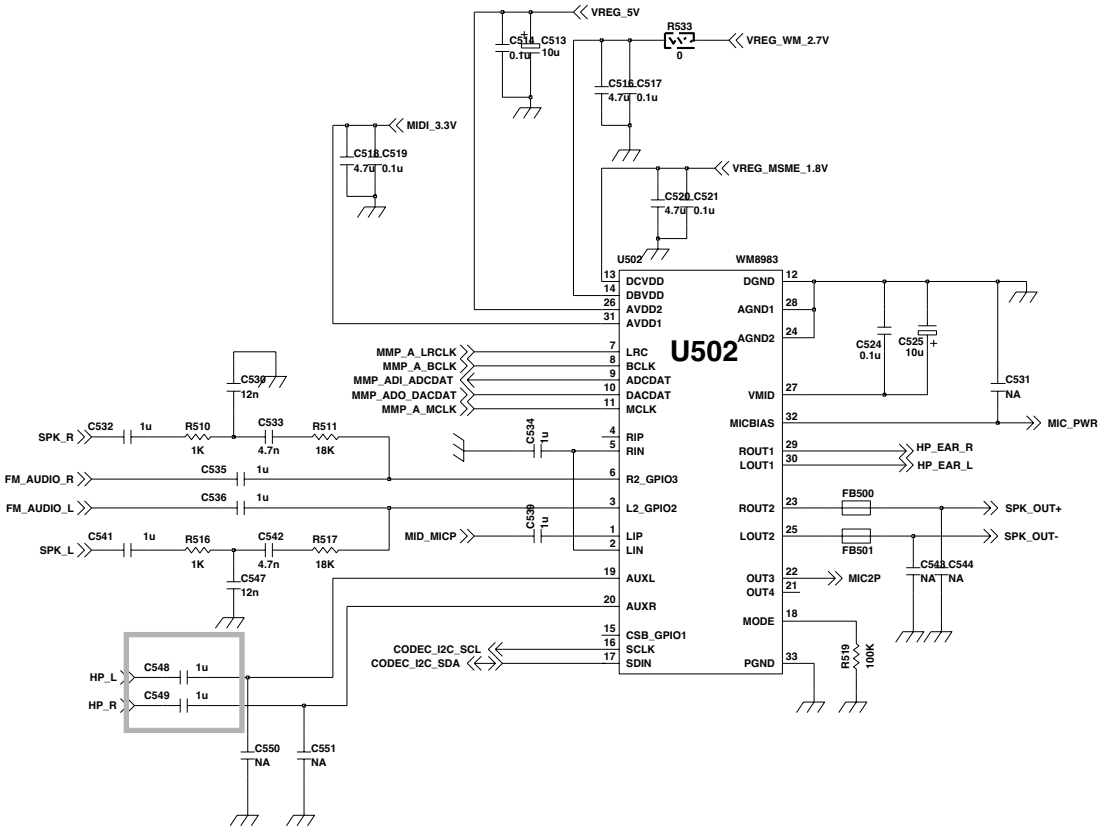
Voice path for Head_Set as below:
MSM6280 HPH_R, HPH_L → C548,C549 U502(audio codec) → C578,C562 → R529,C522 → U504(Headset AMP) → FB502, FB503 → R525, R524 → #4, #5 pin of CN500 headset Jack



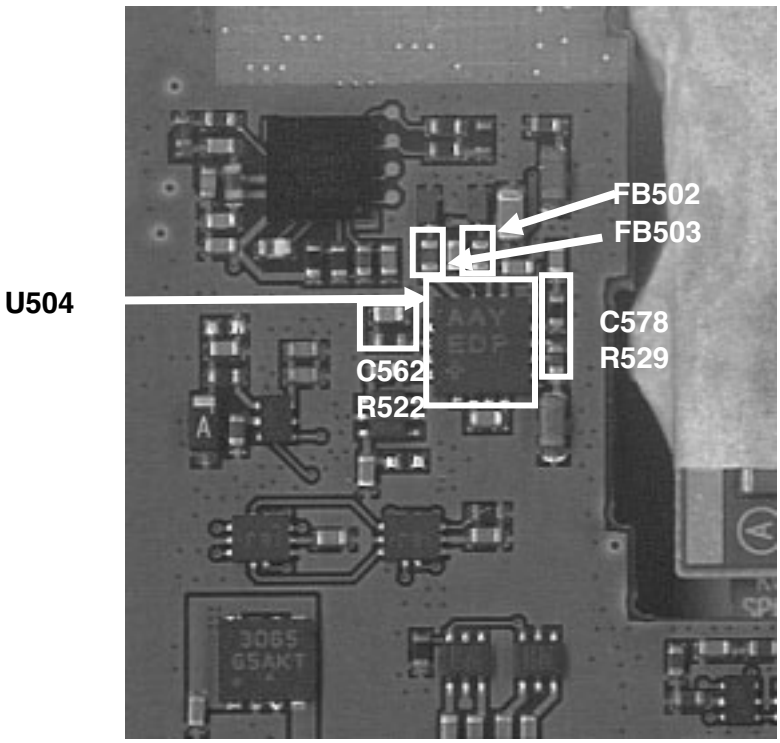


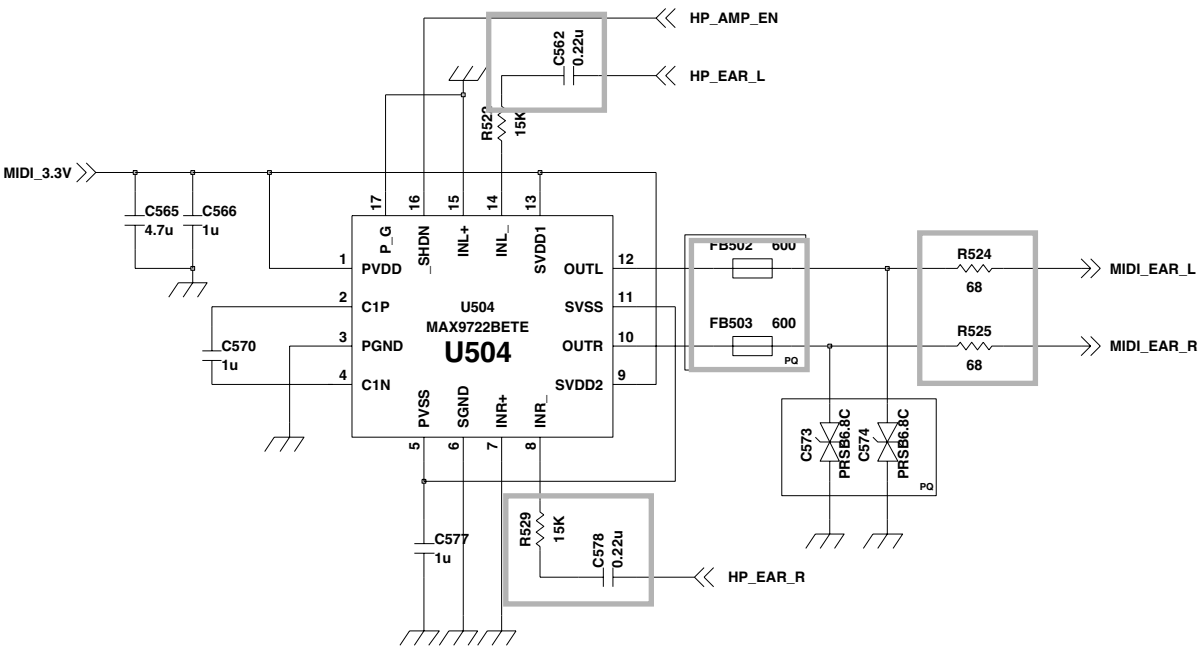
Schematic of voice path





Schematic of voice path

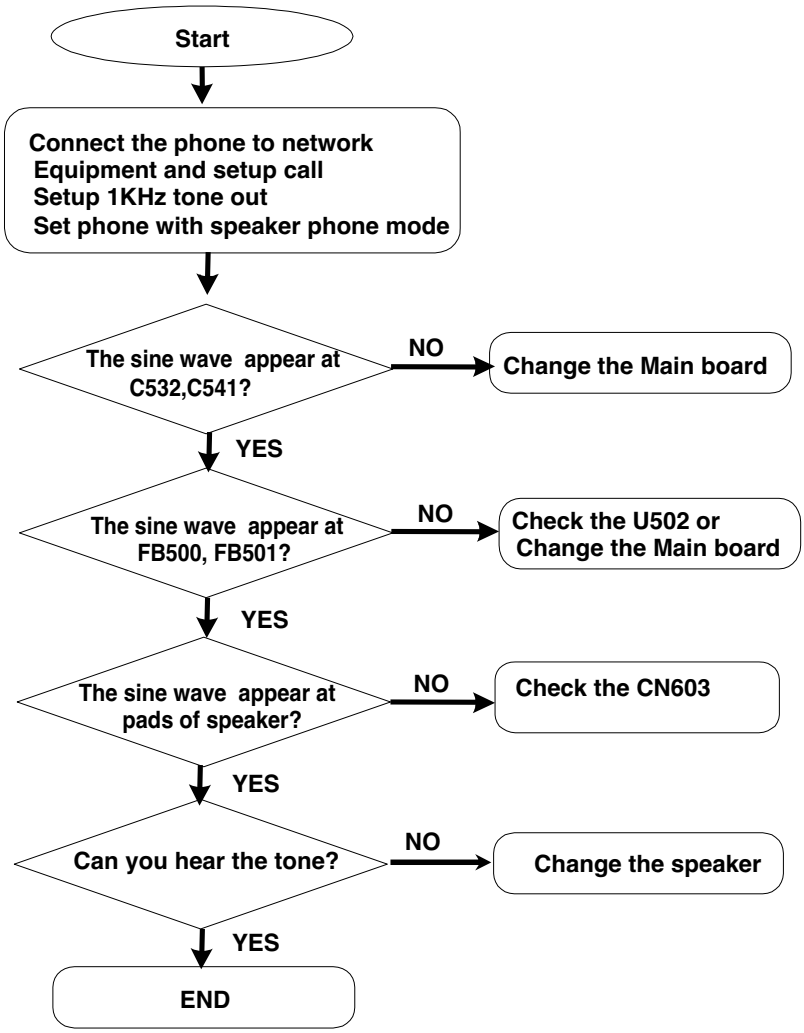


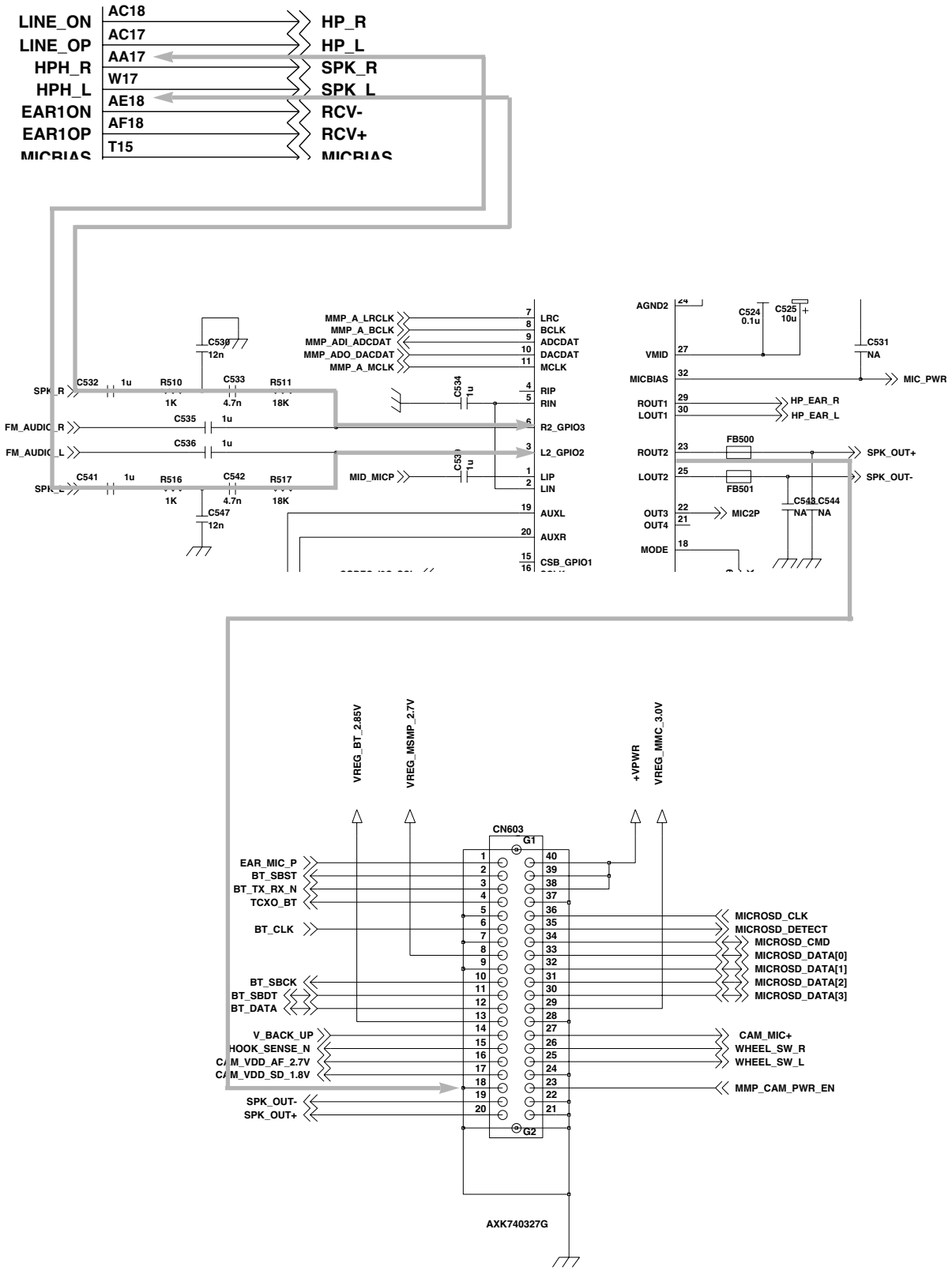


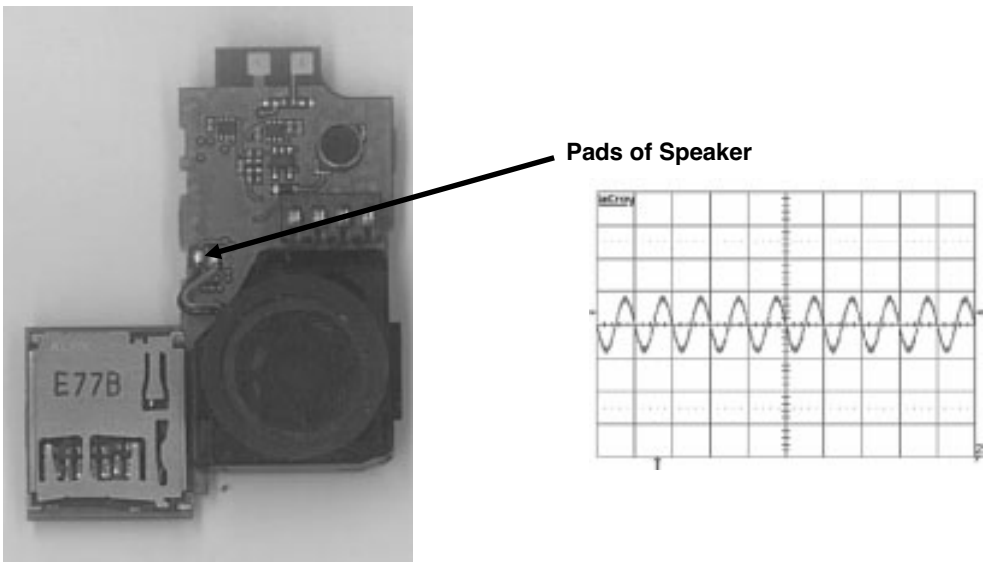
Schematic of voice path

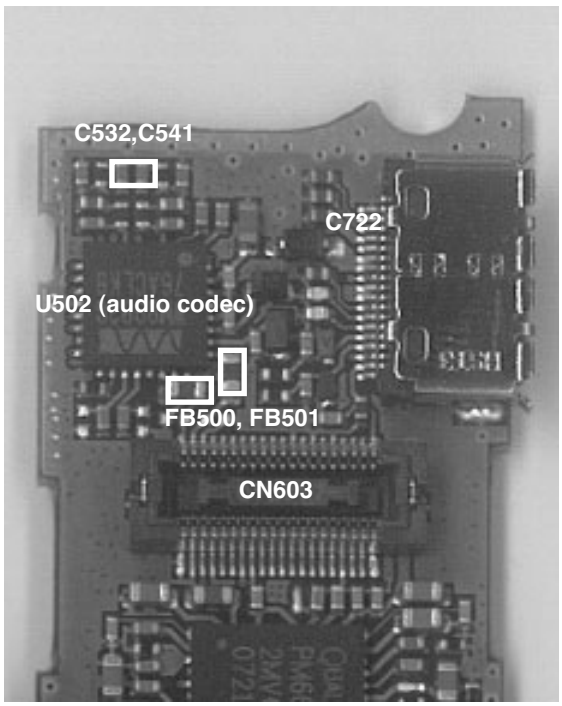
4.12.3 Loud speaker path (voice speaker phone/VT)

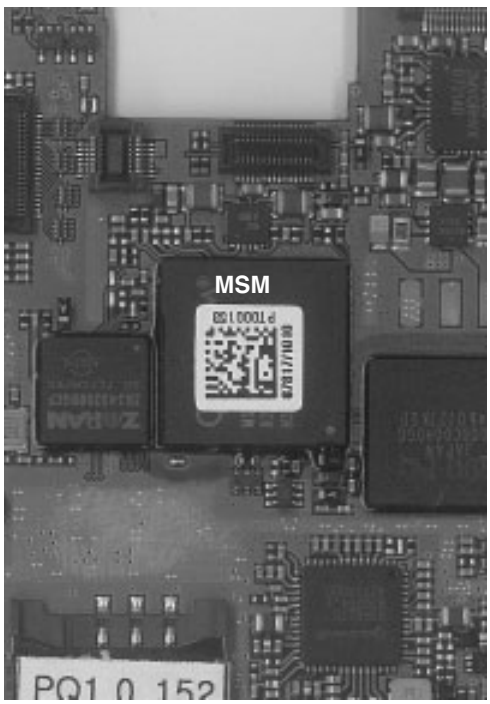
Loud speaker path as below:
MSM6280 SPK_R, SPK_L → C532,C541 → R510,R516 → C533,C542 → R511,R517 → U502(audio codec) → FB500,FB501 → CN603(B'toB connector) → OUT800, OUT801 (SPK PAD) → Speaker





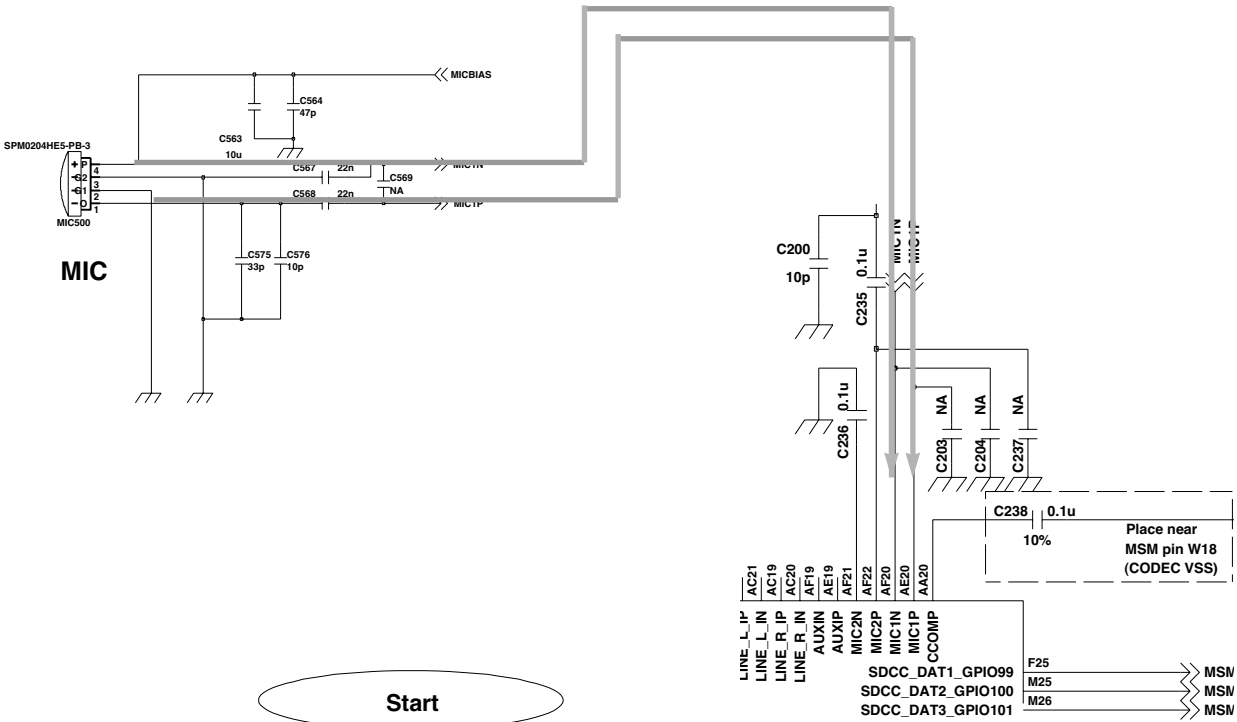


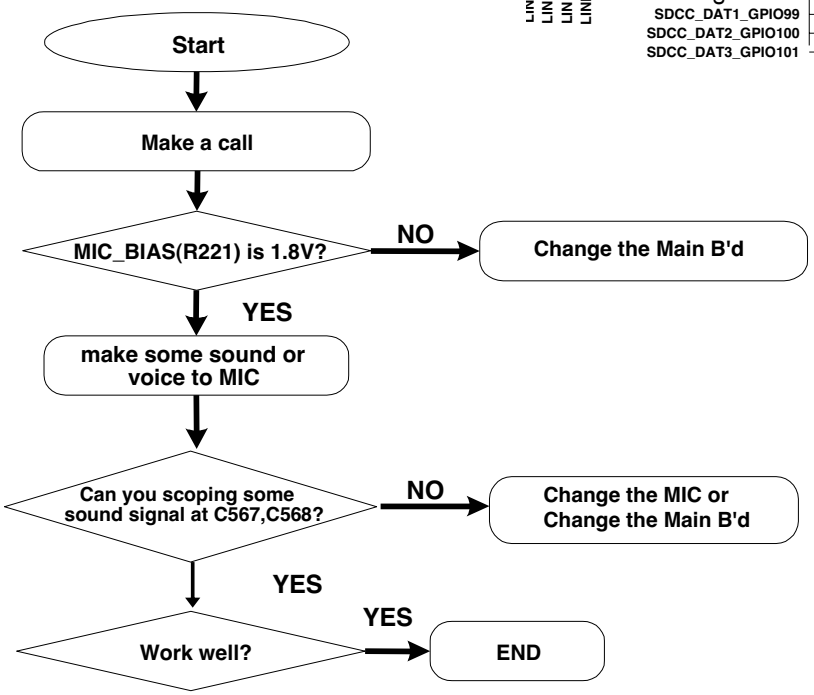


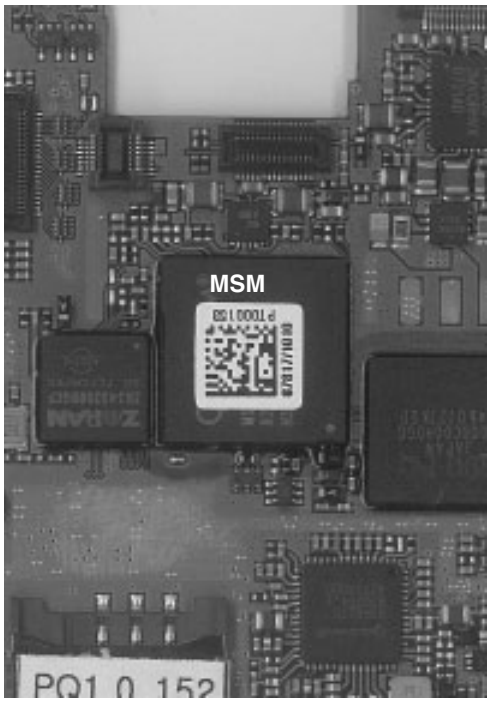


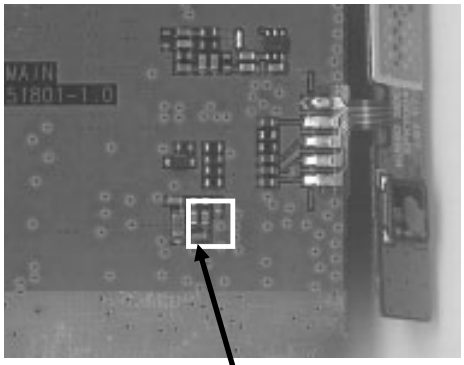
4.12.4 Microphone for main MIC

Main Microphone path as below:
MIC → C567,C568 → MSM internal CODEC

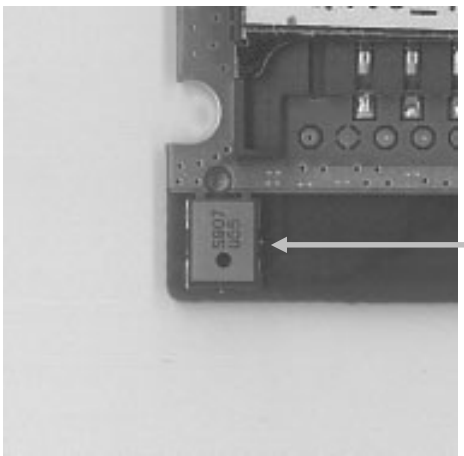








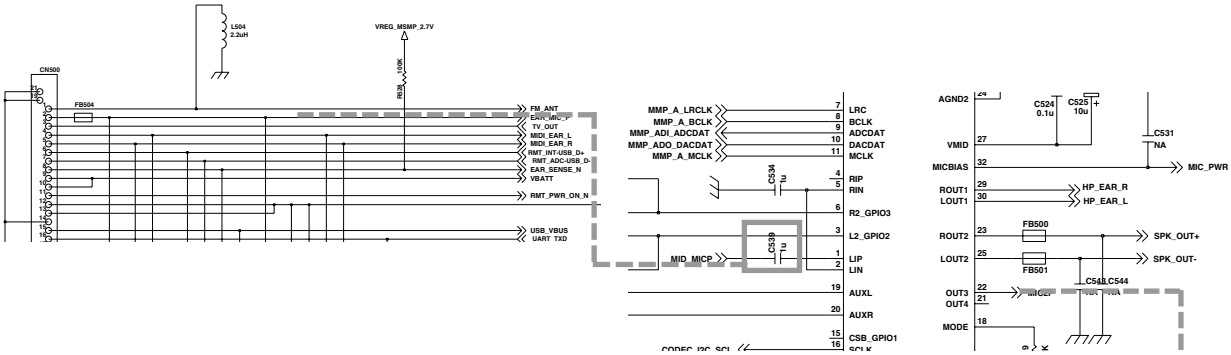
C567, C568

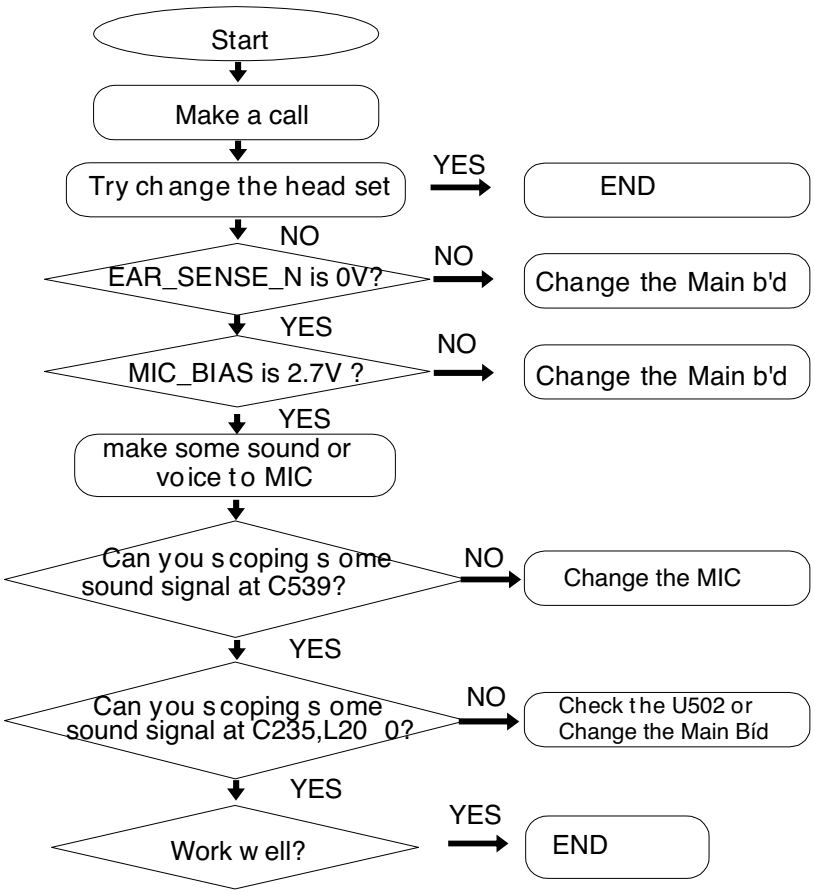


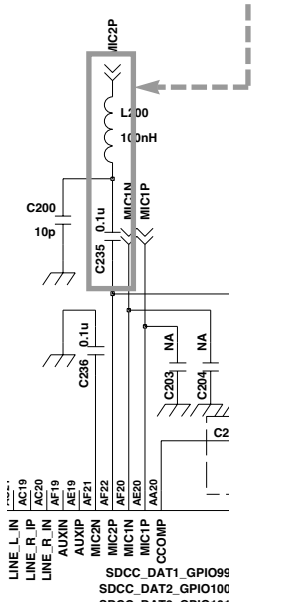
MIC500 (MIC for Handset)

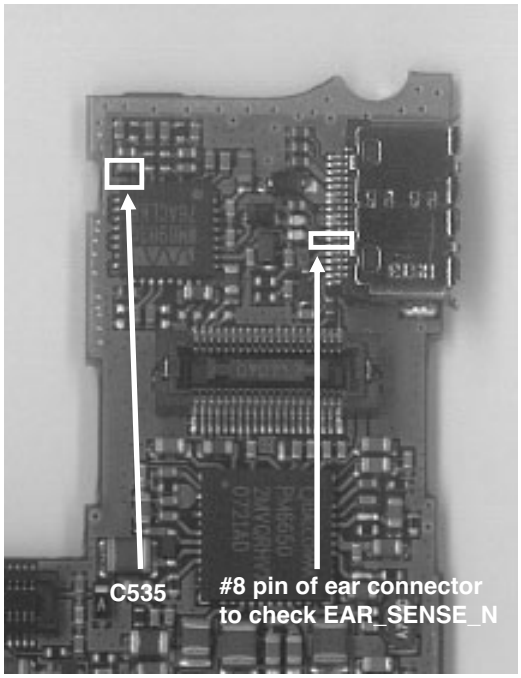
4.12.5 Microphone for headset

MIC for Head_Set path as below:
Insert Headset → EAR_SENSE_N(pin8) go 0V → MSM6280 sense Head_Set insertion → MIC signal → U502(audio codec) → MSM6280.



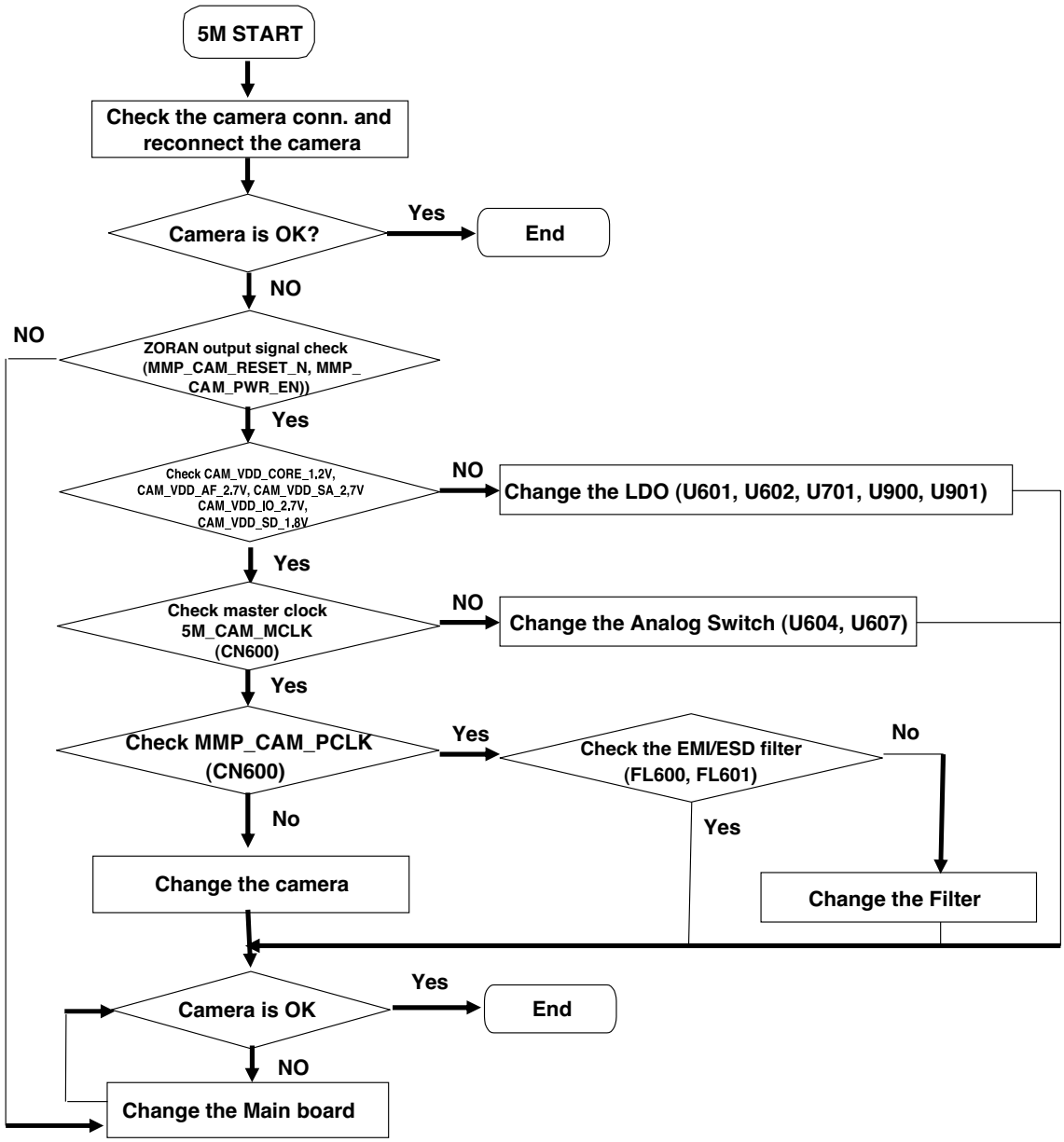


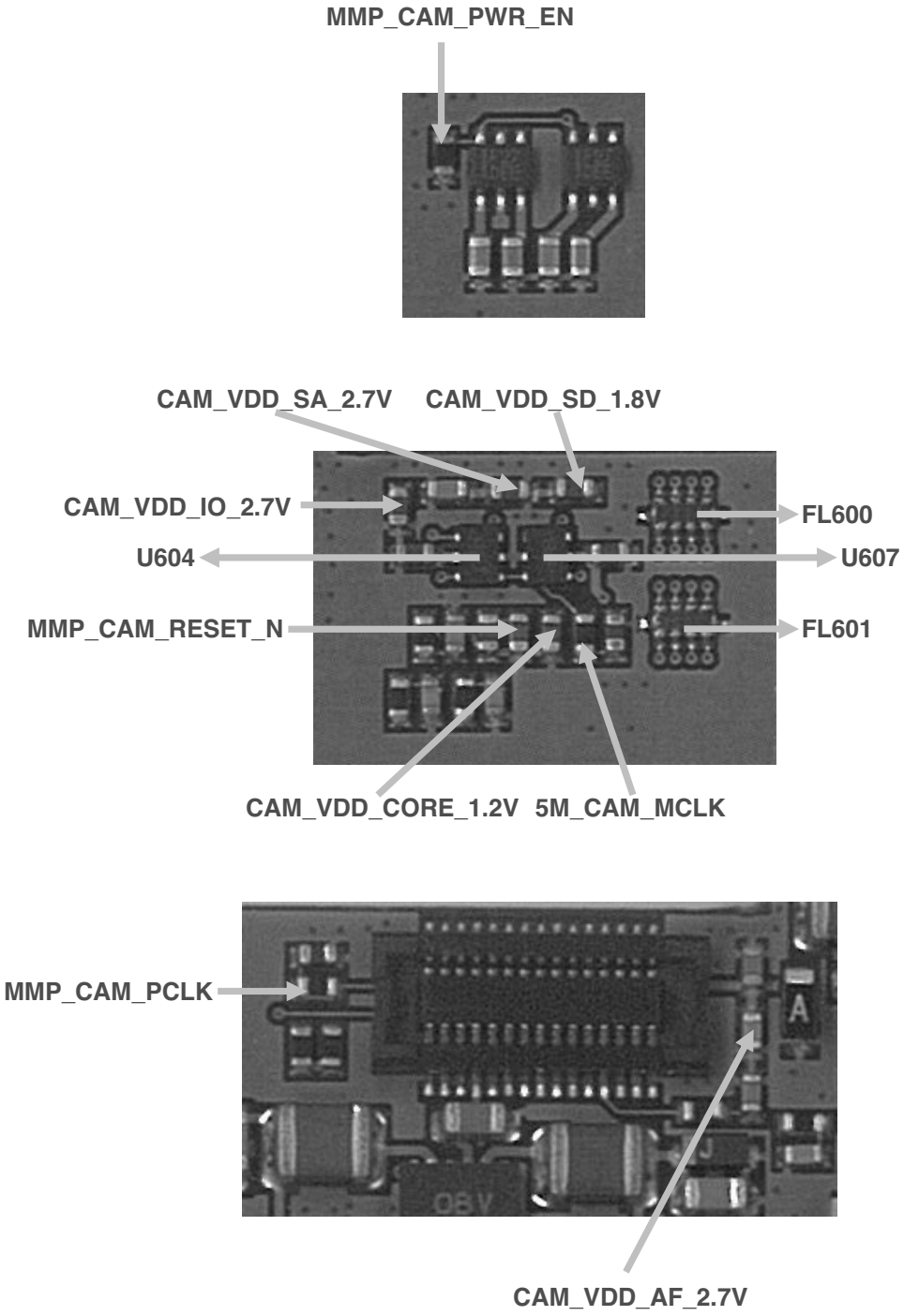


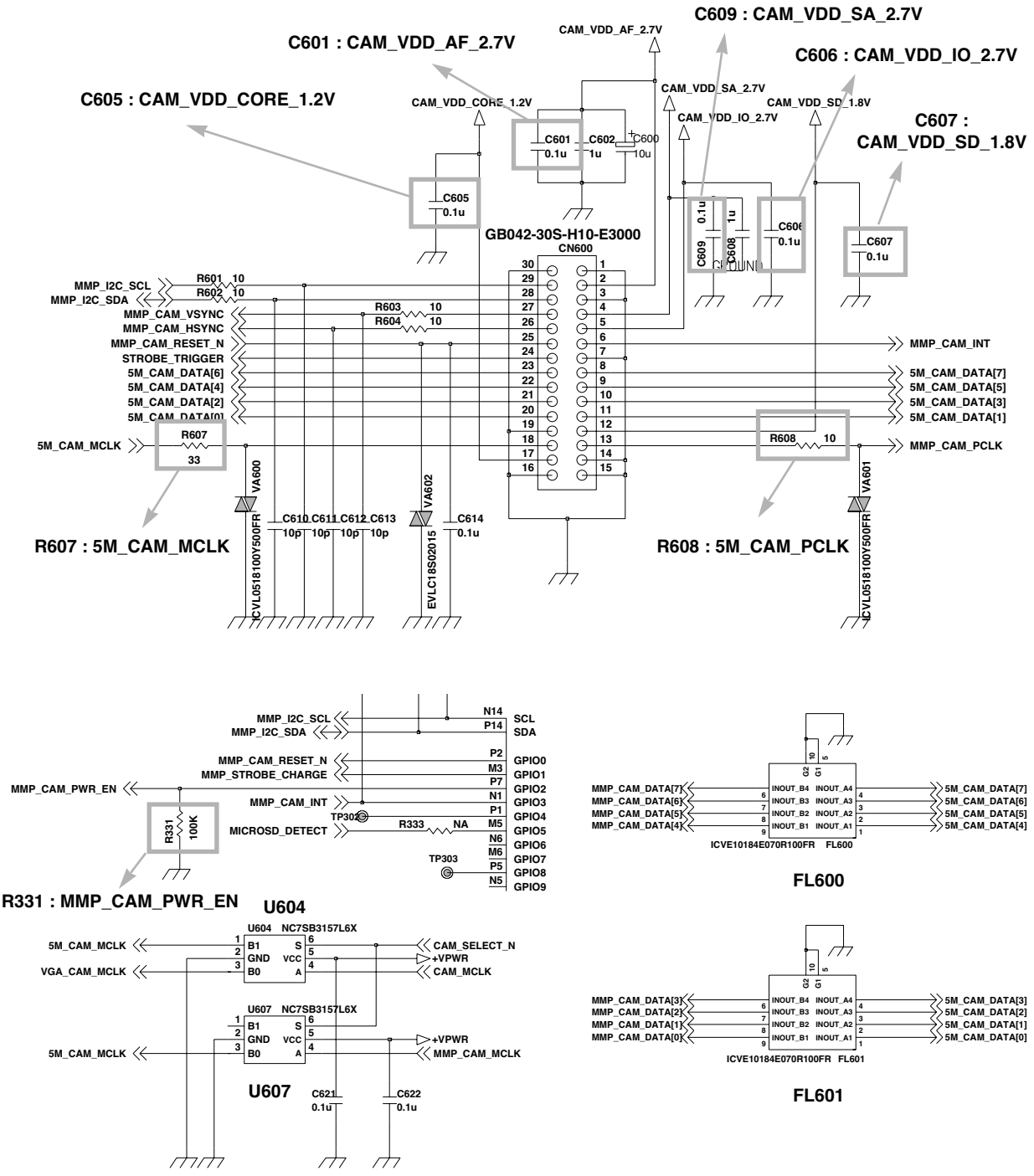


4.13 Camera trouble

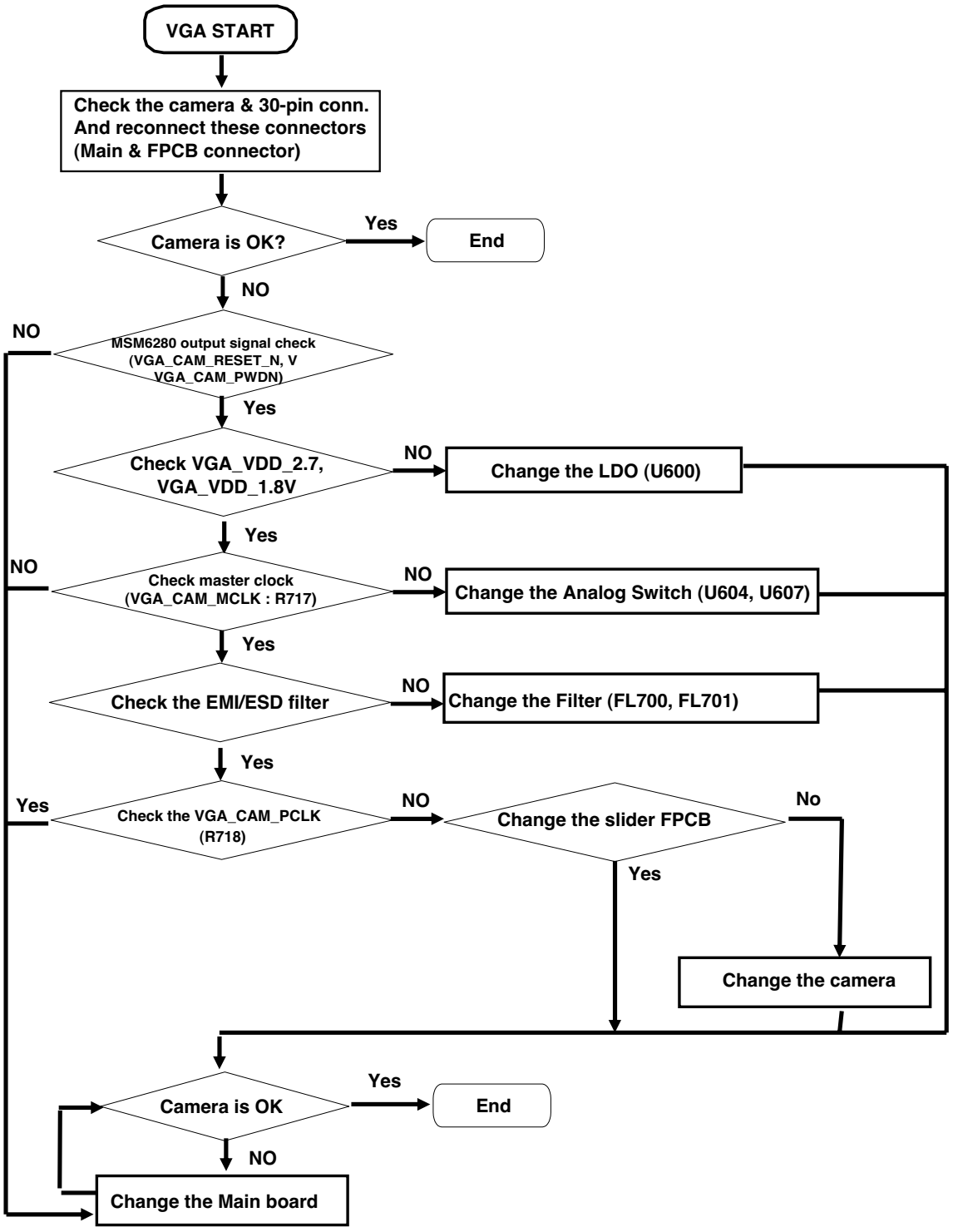
Camera control signals are generated by ZORAN (Multimedia Chip)
and directly connected with ZORAN.
KU990 has two cameras. The one is a 5 Mega Camera, the other is VGA camera.

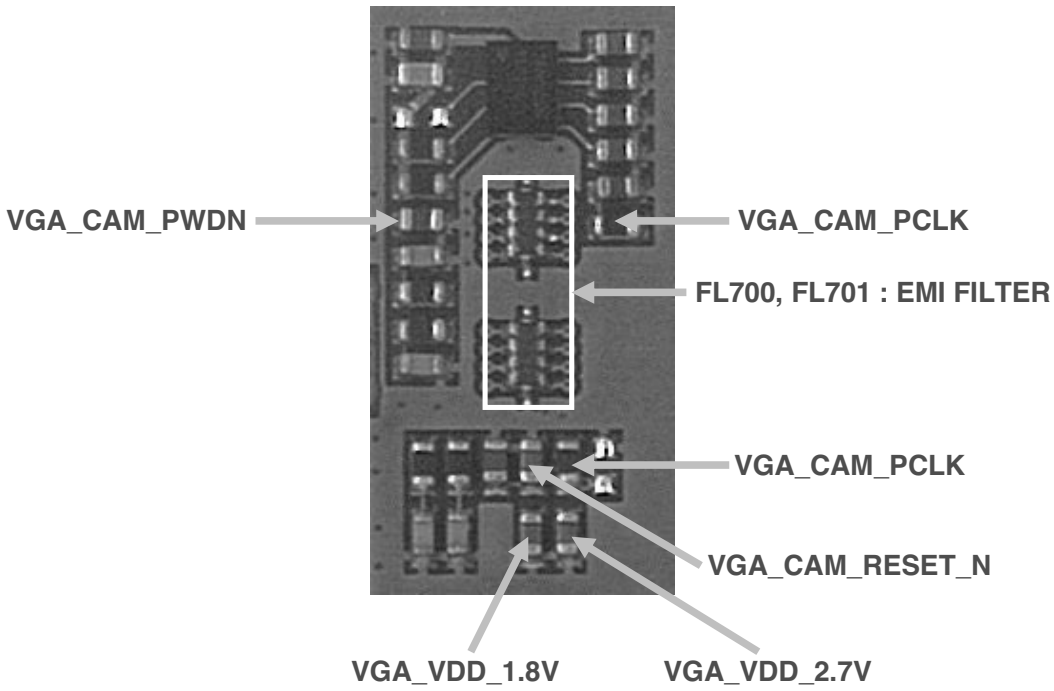


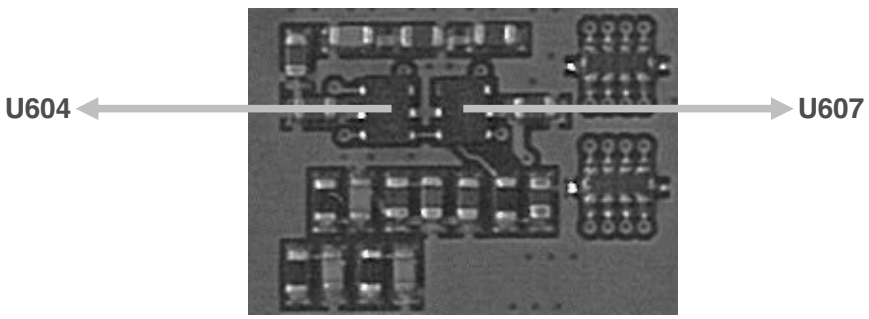


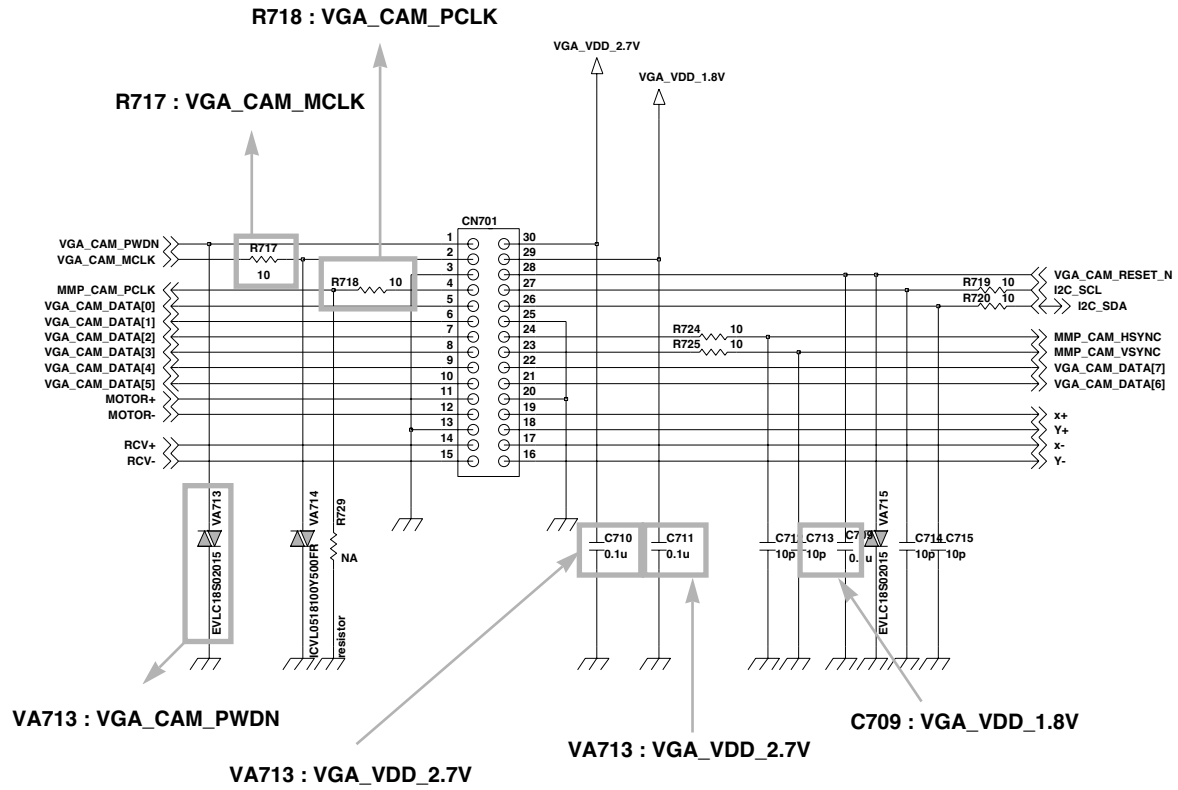


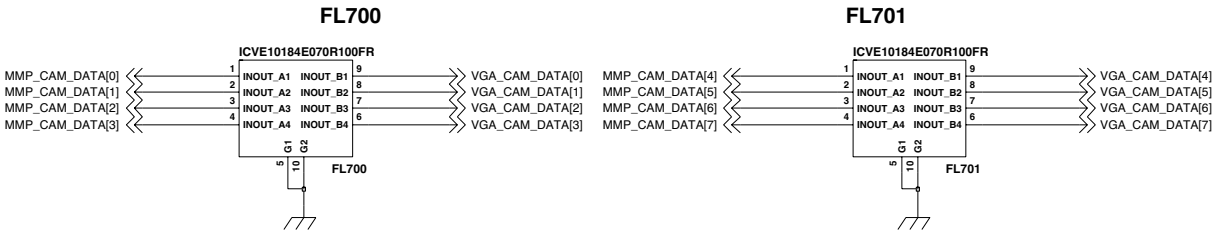
Schematic of 5M camera part

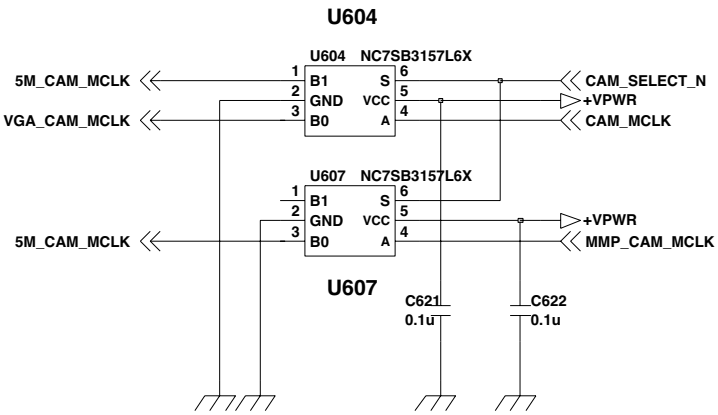








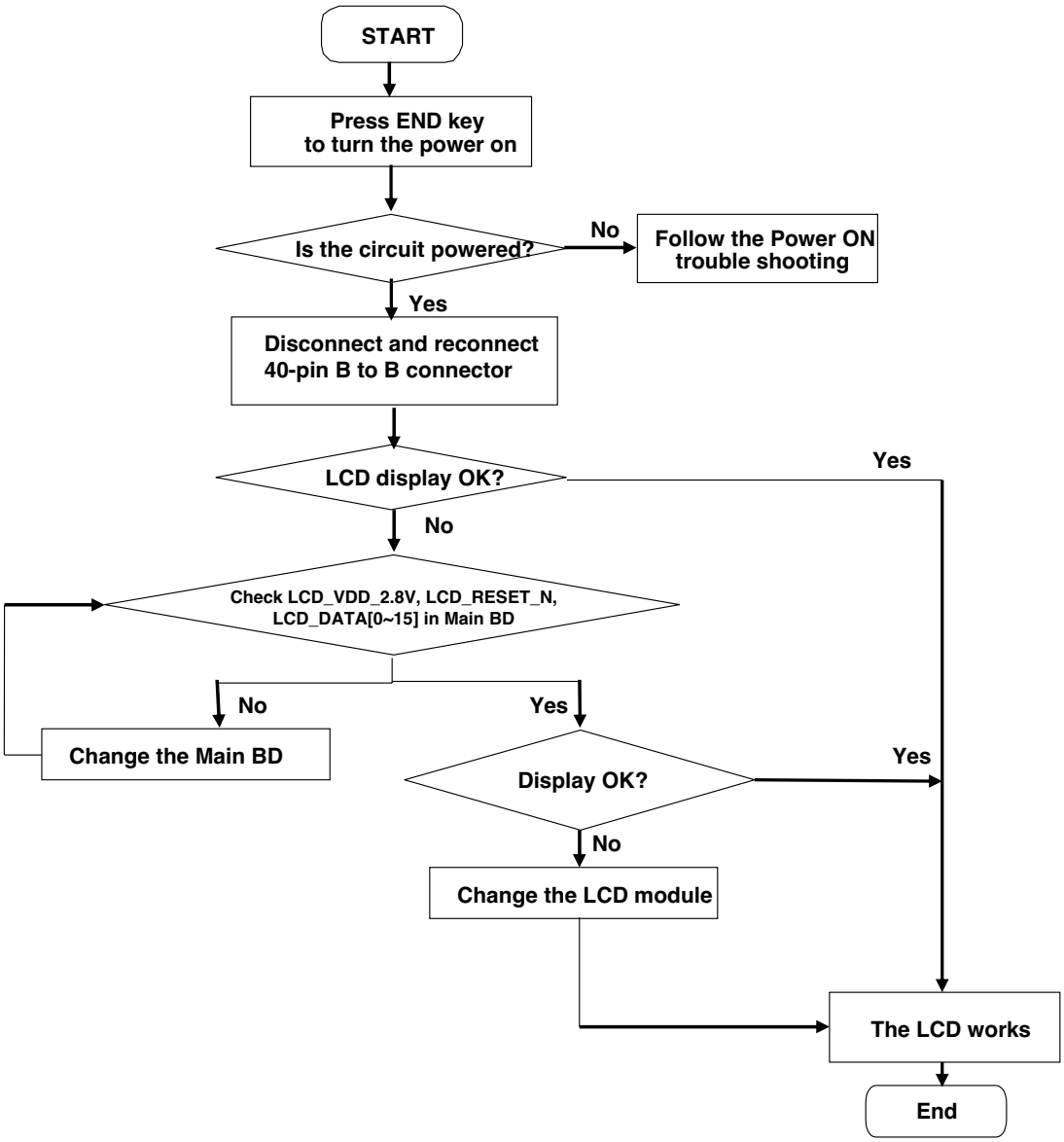




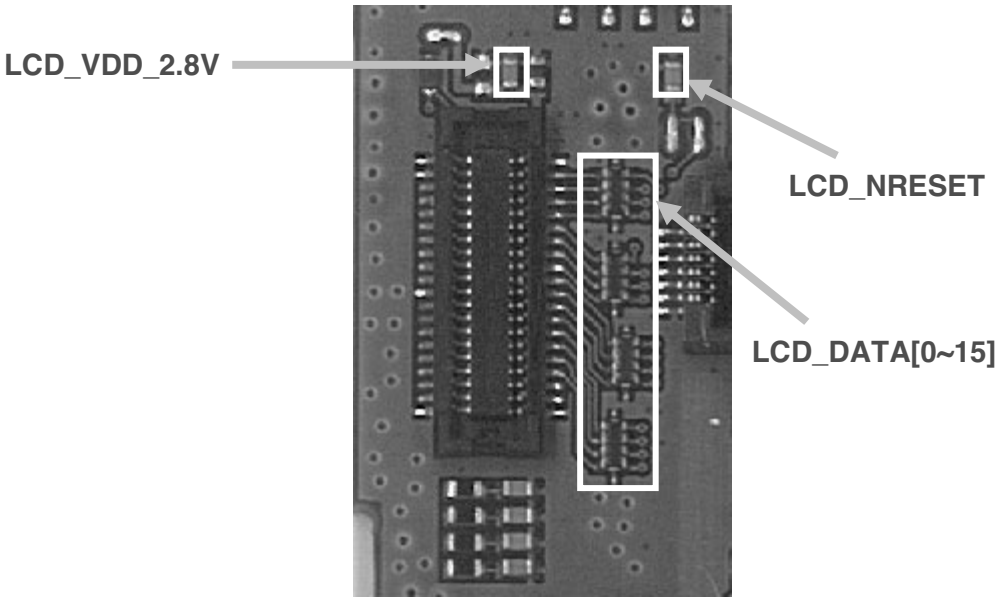
Schematic of VGA camera part

4.14 Main LCD trouble

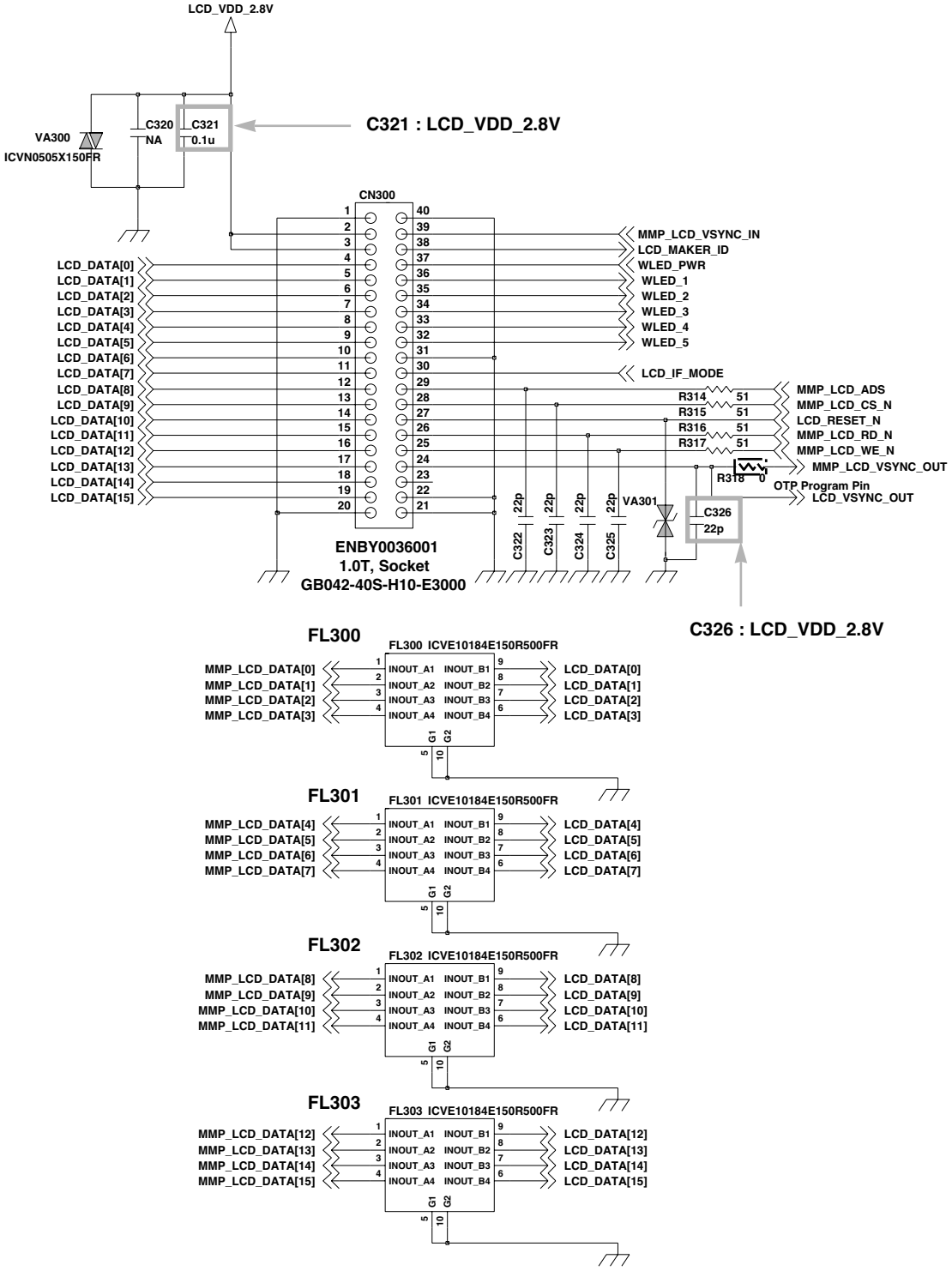
Main LCD control signals are generated by MSM6280. Those signal's path are :
MSM6280 → Z ORAN (Multimedia Chip) -> 40-pin connector(CN300 in Main PCB) -> 40-pin connector (in LCD Module)



Main BD



4. TROUBLE SHOOTING



Schematic of LCD part

4.15 Bluetooth trouble

Bluetooth supplied voltages are generated by the PM6650.
Those signal's path are : PM6650 → VREG_MSMP_2.7V and VREG_BT_2.85V is asserted → TCXO_BT 19.2MHz is asserted → Bluetooth ON → BT_TX_RX_N is High → BT serial interface control is operated (SBST / SBCK / SBDT)

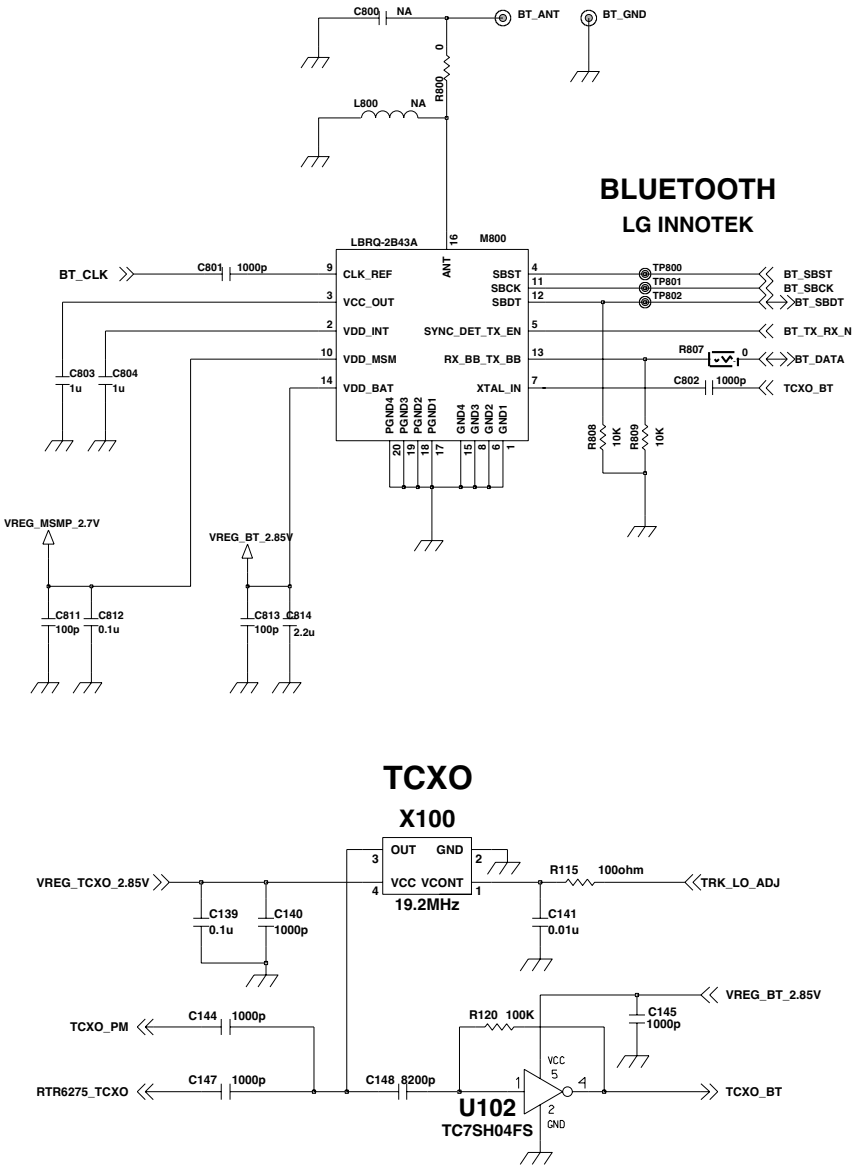
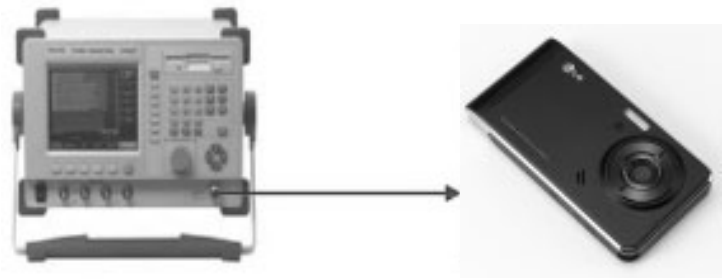


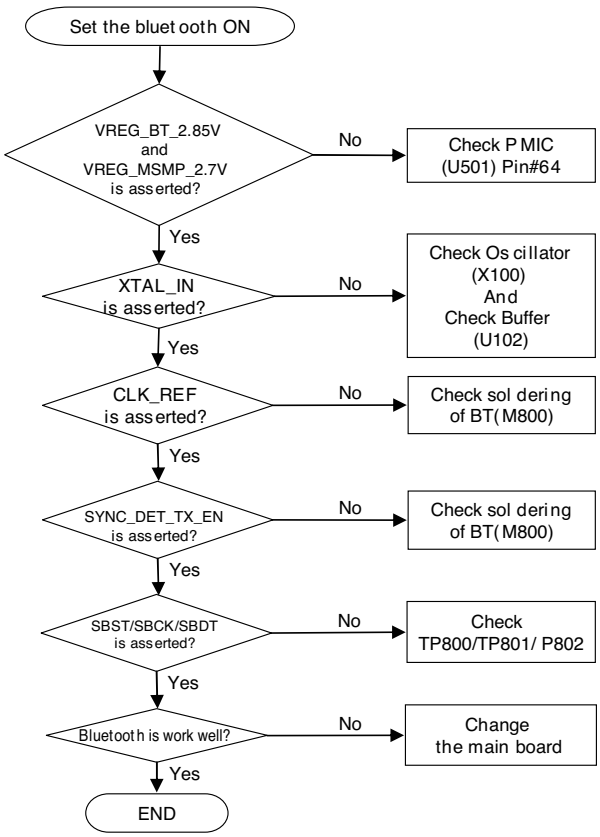
Figure. Schematic of Bluetooth Interface

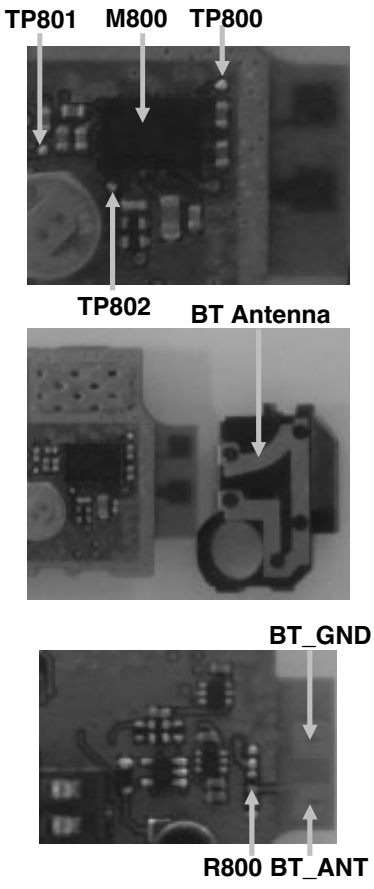
4.16 Bluetooth RF Test



TC-3000A (Bluetooth Tester)

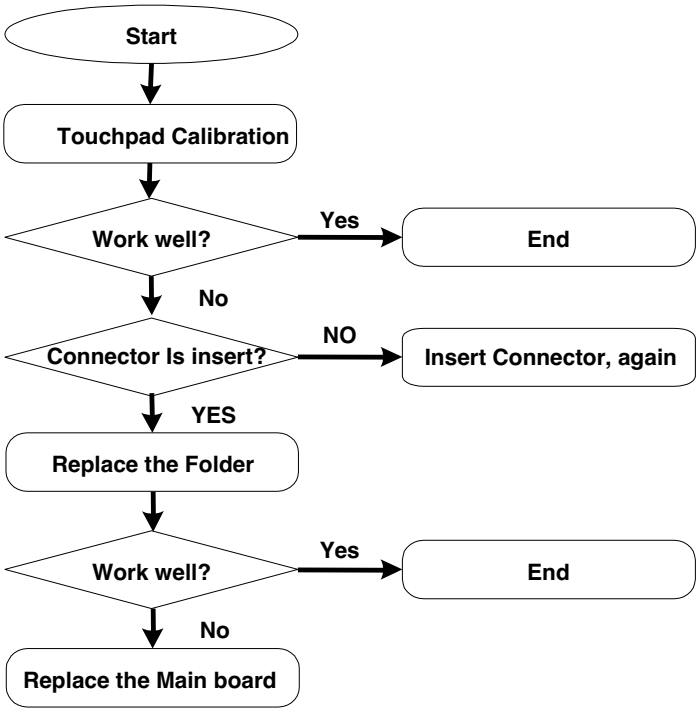
1. Set phone to bluetooth test-mode.
   - Enter Test Mode(3845#*990#) → Module Test Set → BT DUT → BT DUT ON
2. Insert a phone in a TEMSELL (in case of radiation test)
3. Set 'discover' after push menu button of the tester and select the link analyzer .
4. After 'set test mode', confirm the connection state.
5. Measure the power of full channel after hopping mode is selected to 'ON'
6. You can select wanted test cases after getting an optimized power

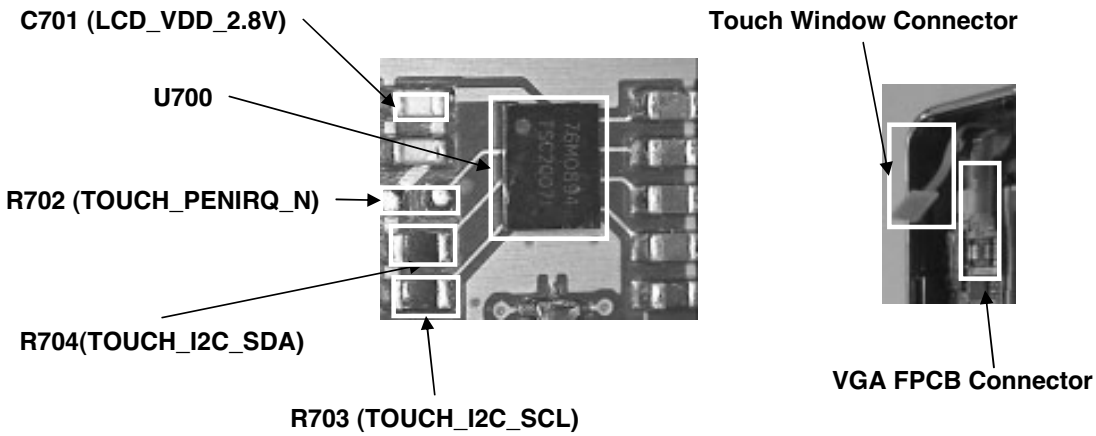




4.17 Touch Screen trouble

Touch Initial sequence of KU990 is:
LCD_VDD_2.8V(C701) goes to 2.8V → TOUCH_PENIRQ_N(R702),TOUCH_I2C_SCL(R703) & TOUCH_I2C_SDA(R704) go to high Touch operation of KU990 is :
A finger is touching on the screen -> TOUCH_PENIRQ_N is low -> I2C is connected -> A finger is took off from the Screen -> TOUCH_PENIRQ_N is high -> I2C is not connected.





5. DOWNLOAD

5.1 Introduction

LGMDP is a LGE application that allow users to download images from PC to handset. LGMDP is a download tool with capabilities to upload image files to the handset. LGMDP is designed to be simple to use and easy enough for the beginner to upload executable images to the handset. LGMDP supports Windows 2000/XP where the LG (Ver 4.6 or later) USB modem driver is installed. Additionally, LGMDP allows multi downloading up to 9 handsets at the same time.

5.2 Downloading Procedure

• Connect the phone to your desktop PC using the USB cable and run the LGMDP application. Before getting started, set up LGMDP preferences from the Preferences of the file menu the way you want. Click on the File menu and select Preferences.

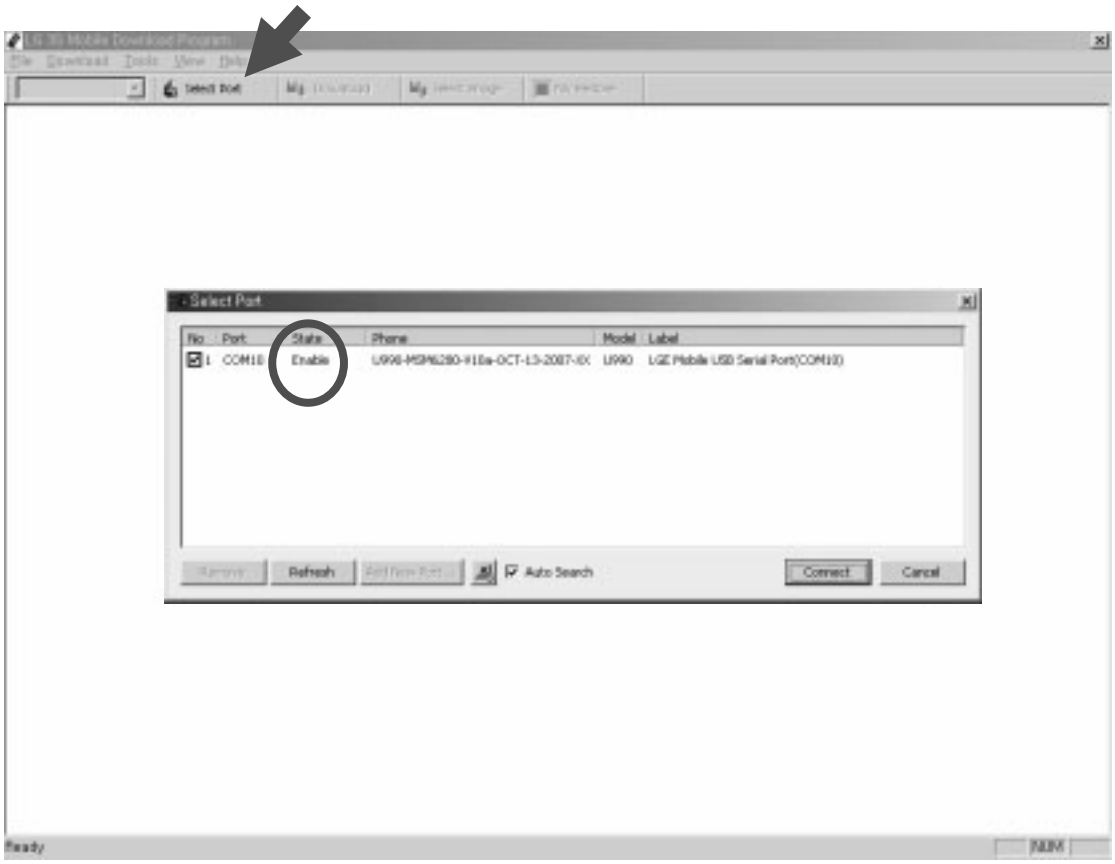
➢ **Play a success sound**
It will be played a .wav file when the download has been completed. To enable this simply check the box.

➢ **Always on Top**
Check if LGMDP always appears at the top of the window so that user can monitor it all the time.

➢ **Automatically run Select Port When LGMDP starts**
When LGMDP starts, it will automatically select Select Port button to download new image file.

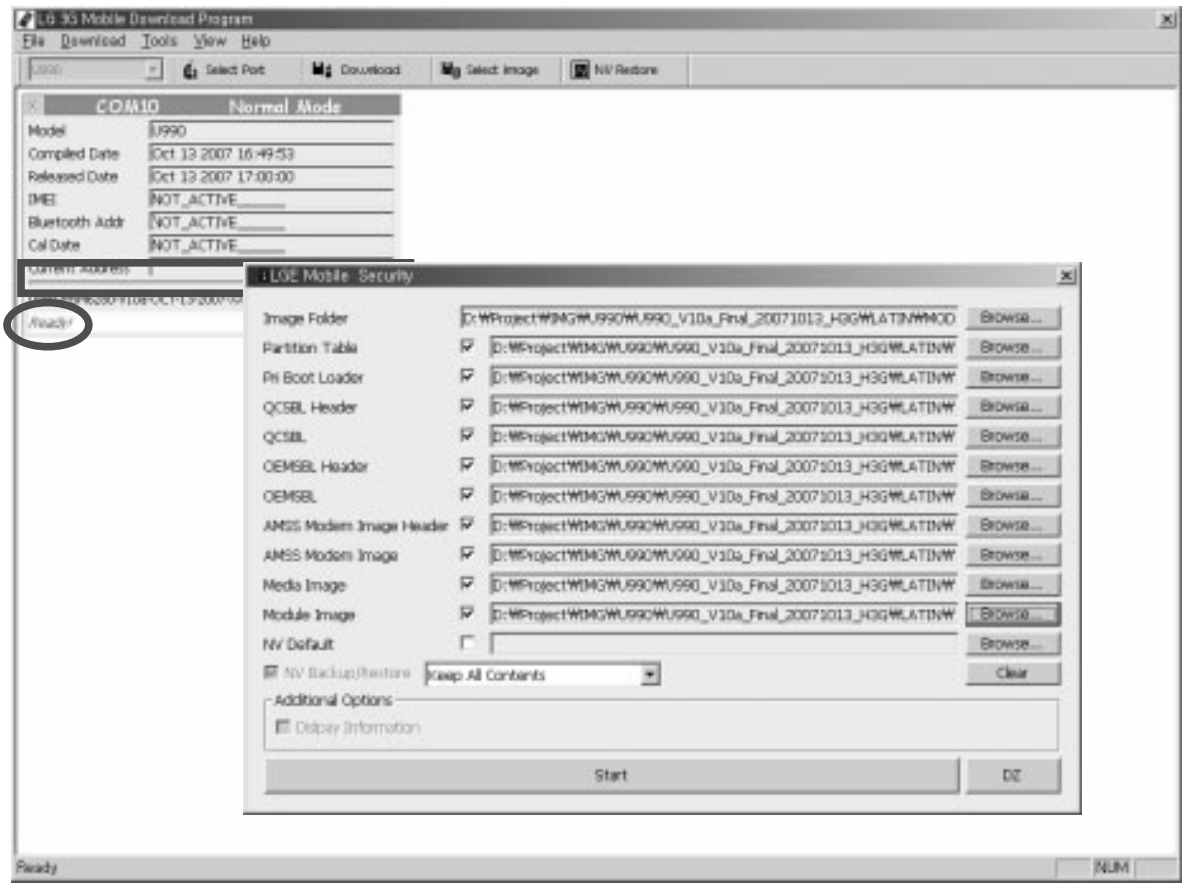
5.2.1 Connecting to PC

• Click on the Select Port and then Select Port window will be pop up. Check if state shows Enable for the port to be connected for downloading images. Then click on the Connect button.
(The port number(COM7) shall be different from that of the port number in the snapshot.)

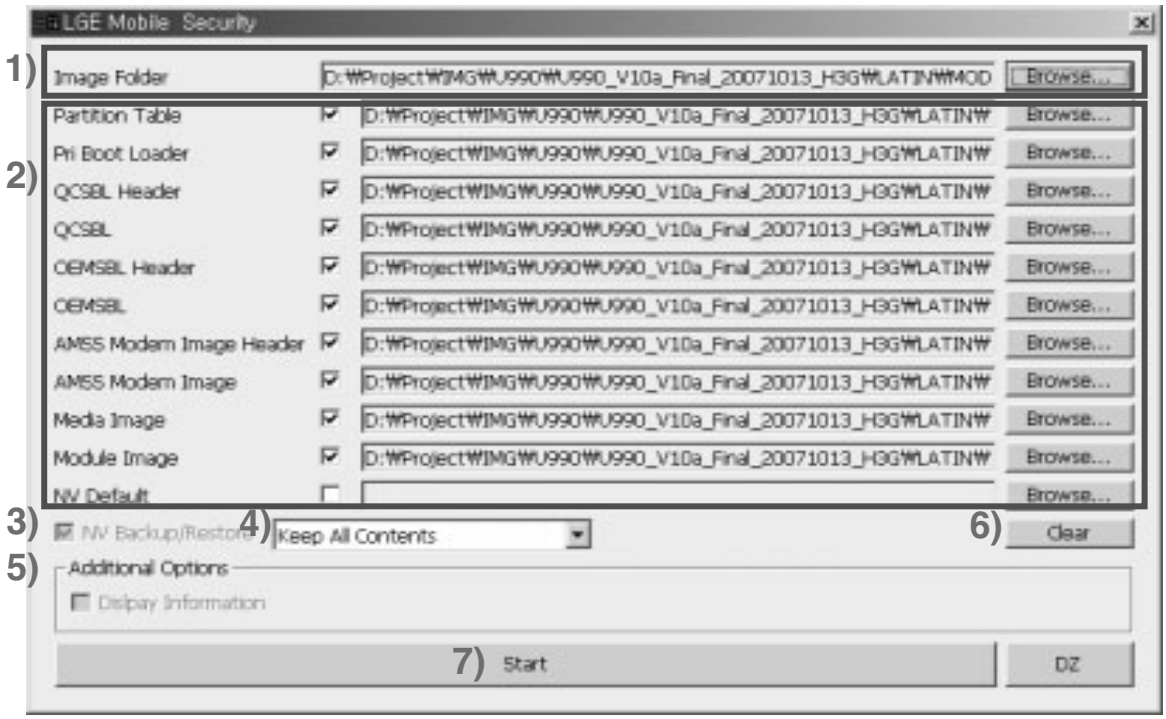


5. DOWNLOAD

• The status Ready is displayed when the application is ready for downloading. While the images are transmitted from PC to the handset, a progressive bar
(Red box) indicating the degree of transmission of data is displayed.



1) Image Folder indicates loot path where all image files are placed. To change location of the default image path, select Browse... button. The edit box shows the file path where images are located. Please note that all images should be located in a selected folder.
2) Click on the Browse... button to select image files to be downloaded on the handset.
3) NV Backup/Restore: NV Backup/Restore always have to be done, and it is default selected option. Backup the NV data and restore the backed up NV data automatically.



4) Reset database & Contents:

User related data including the setting data on the EFS is reset in the handset. The user contents in the handset will be erased. If you want to reset all the user data back to the way they were before you started downloading new images, check the option.

Erase_EFS:

The calibration data, user contents, media, and module are erased. Only calibration data is kept when NV backup/restore is checked. The user contents and file system physically are wiped out.

Keep All Contents

Maintain user data including WAP, AD, DRM, E-mail, Play lists, and images when downloading a new S/W images. User data stated above are maintained if this option is selected.

5) Additional Options:

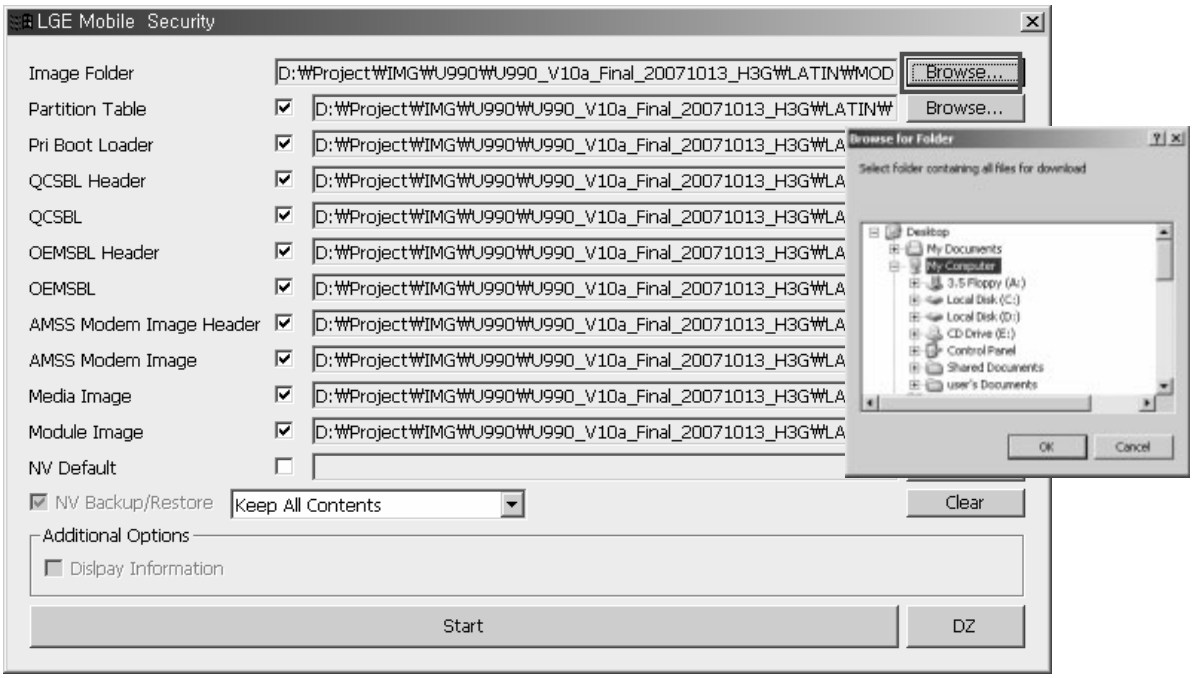
Display Information is defaultly not selected and user cannot choose.
Override partition table is also also defaultly not selected and user cannot choose.

6) Clear: Clearing all directory paths of images in the dialog.

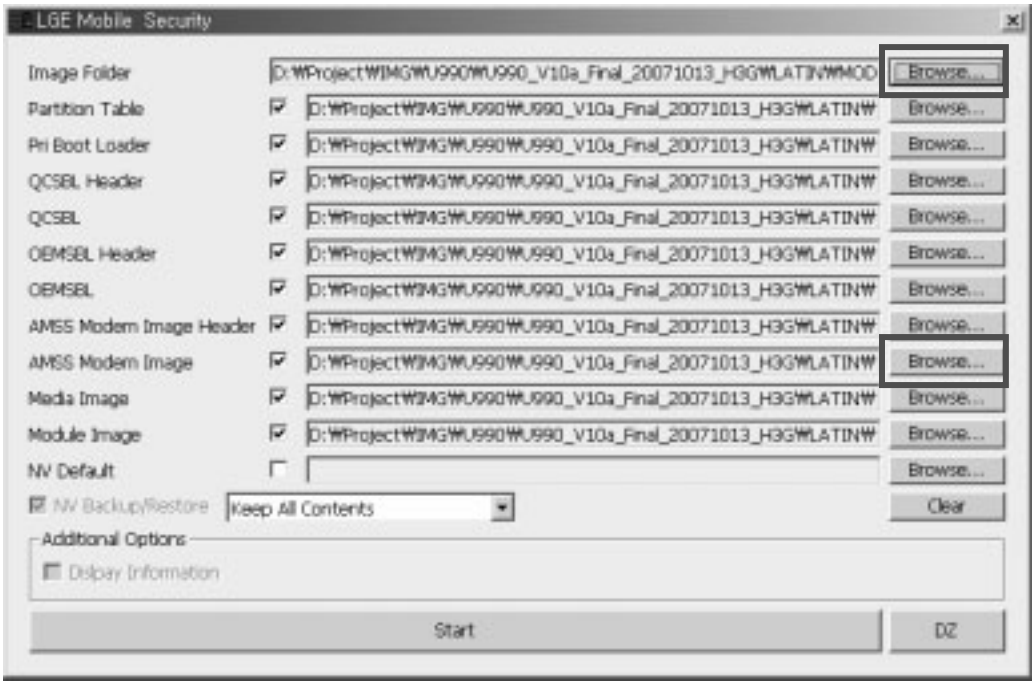
7) Start: Starting downloading the selected individual image.

5.2.2 Choosing image files

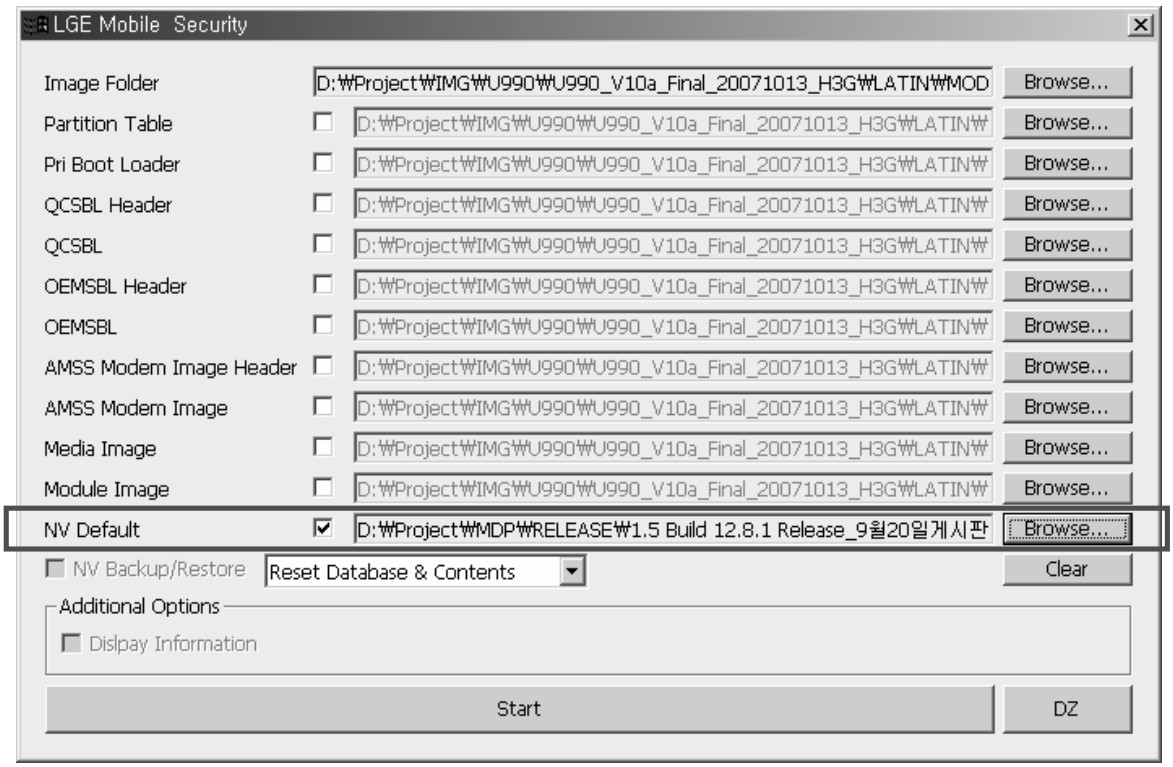
• Select the image folder, where all the image files are located, by clicking on the Browse....
(The folder name shall be different from that of the folder name in the snapshot. The folder name indicates the path where the image files are located.)



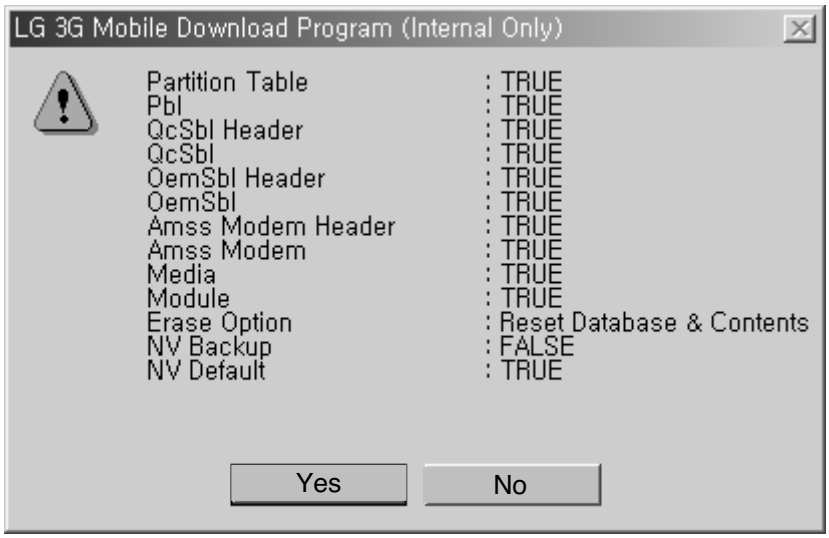
Select the path on the Image Folder by clicking on the Browse..., then the LGMDP will automatically load images accordingly. Also you can select images by manually. For instance, select the path of AMSS Modem Image file by clicking on the Browse... button. The selected AMSS image will be downloaded to the handset from the path directory in the PC. Make sure that you have chosen correct file. In case of wrong AMSS Modem file is selected, the phone may not work.
(The file name shall be different from that of the file name in the snapshot.)



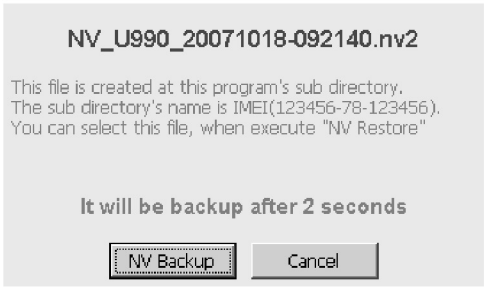
• If NV restore is failed, then the NV Data(*.nv2) is erased permanently. In this case, choose the desired NV file to be downloaded on the handset. To enable this simply check the box or select the NV file from the LGMDP installation directory by clicking on the Browse... button.



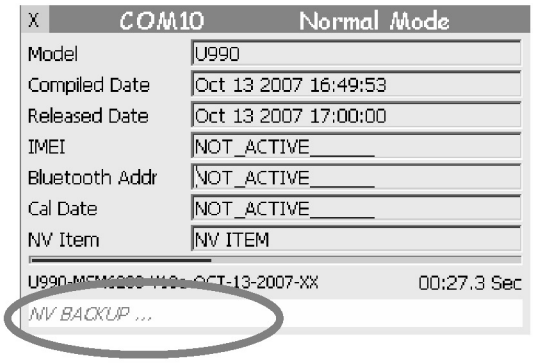
Click on the START button to start downloading. A summary of the selected images and option information window will be displayed. Click on the No button if this is not the setting you are downloading for. Otherwise click on the Yes button to continue downloading selected image file with options.



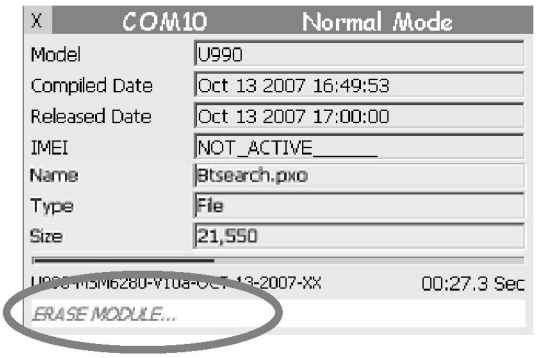
5.2.3 Downloading



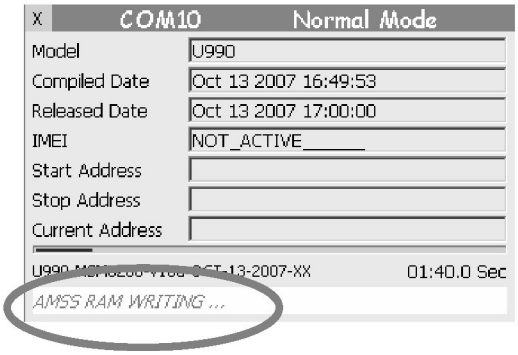
- This message box informs that a new file for NV backup will be created in the displayed file name in the LGMDP installation directory.



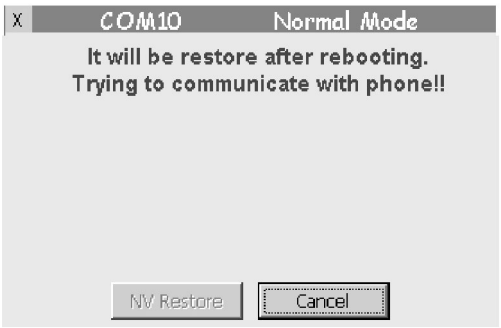
- Backing up NV data and backed up NV data will be stored in the LGMDP installation directory.



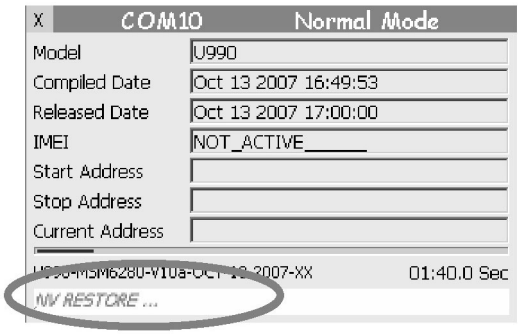
- Erasing the existing directories and files before the Module image is downloaded.



- Downloading the AMSS modem image

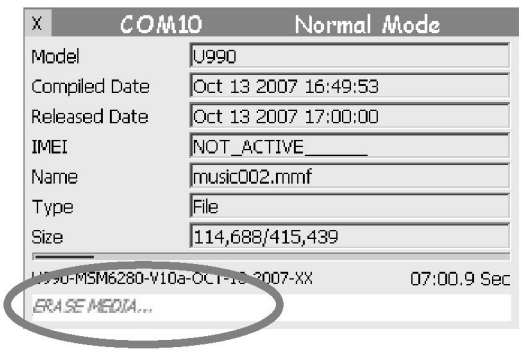


• Rebooting the handset and re-establishing the connection

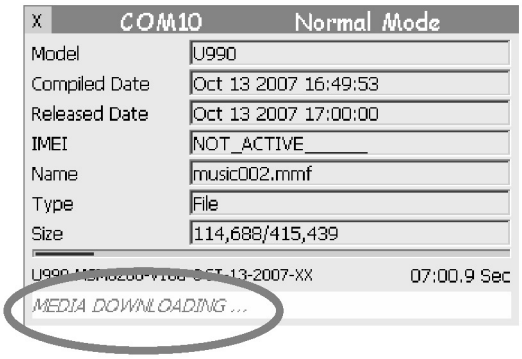


• Restoring NV data which backed up in the Backing up process. User can also restore NV data using NV Default image selection.

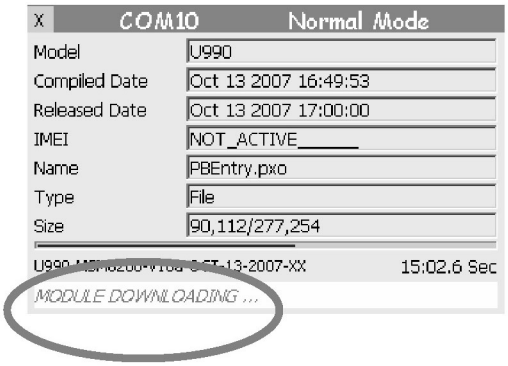
• Rebooting the handset and re-establishing the connection



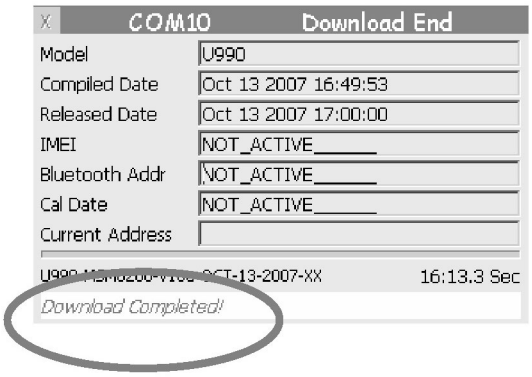
• Erasing the existing directories and files before downloading the selected Media image



• Downloading Media image in progress



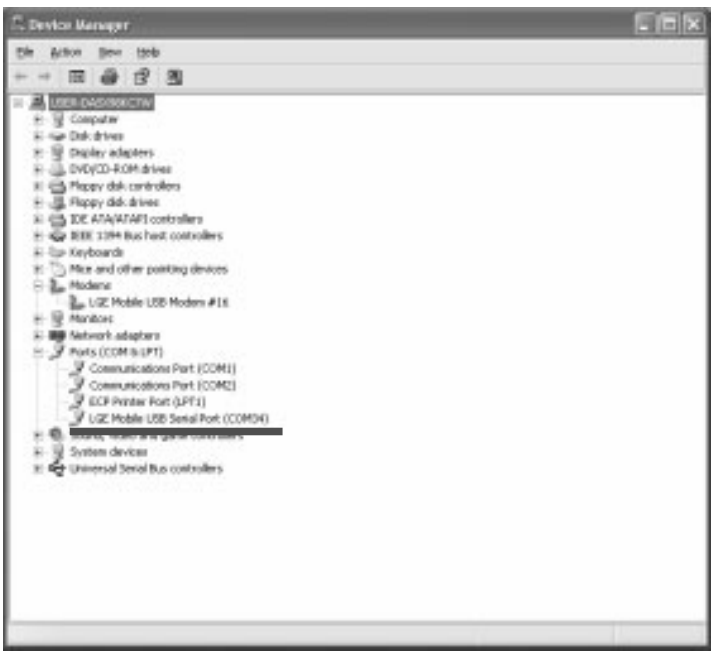
• Downloading Module image in progress



• Downloading process has completed successfully

5.2.4 Tools

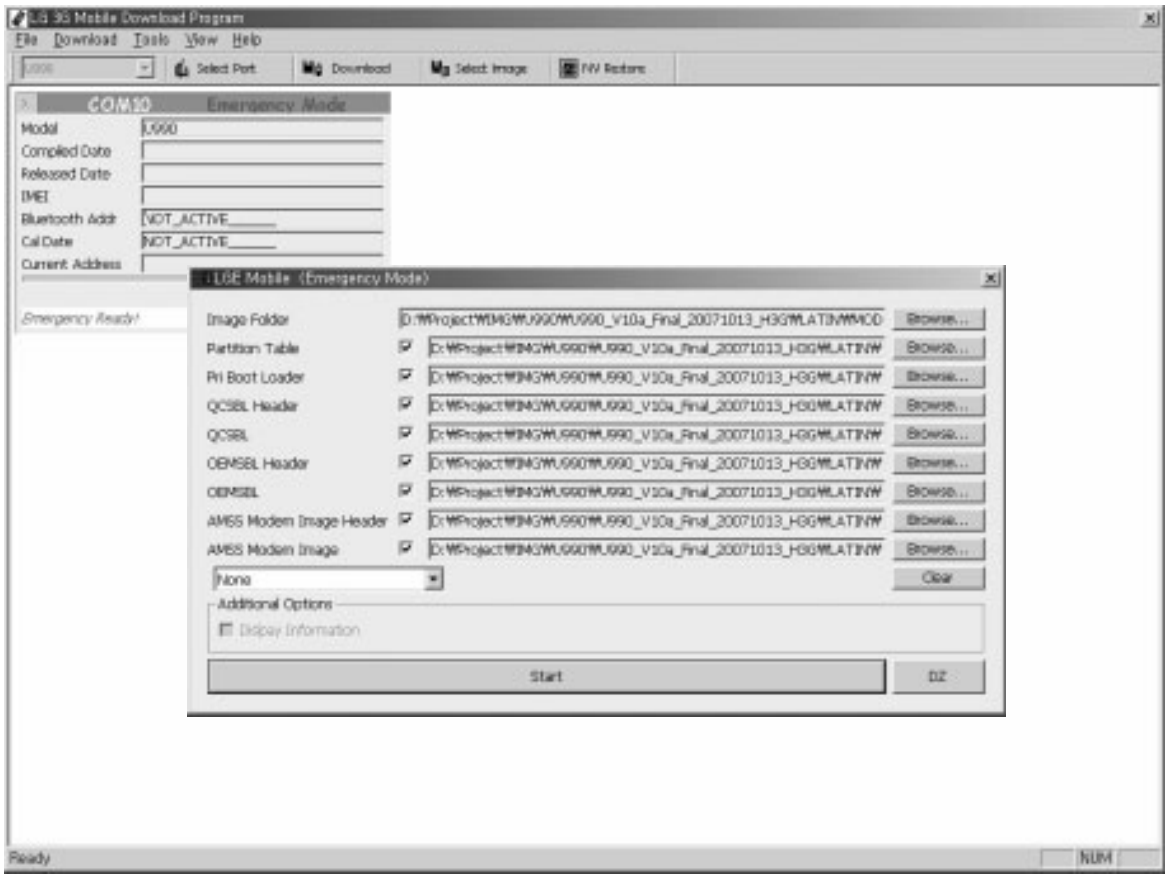
• Device Manager allows to monitor current hardware that is installed on your PC. Device Manager is designed to monitor USB connectivity and check where the COM has been installed . Select Device Manager from the Tools of the file menu.



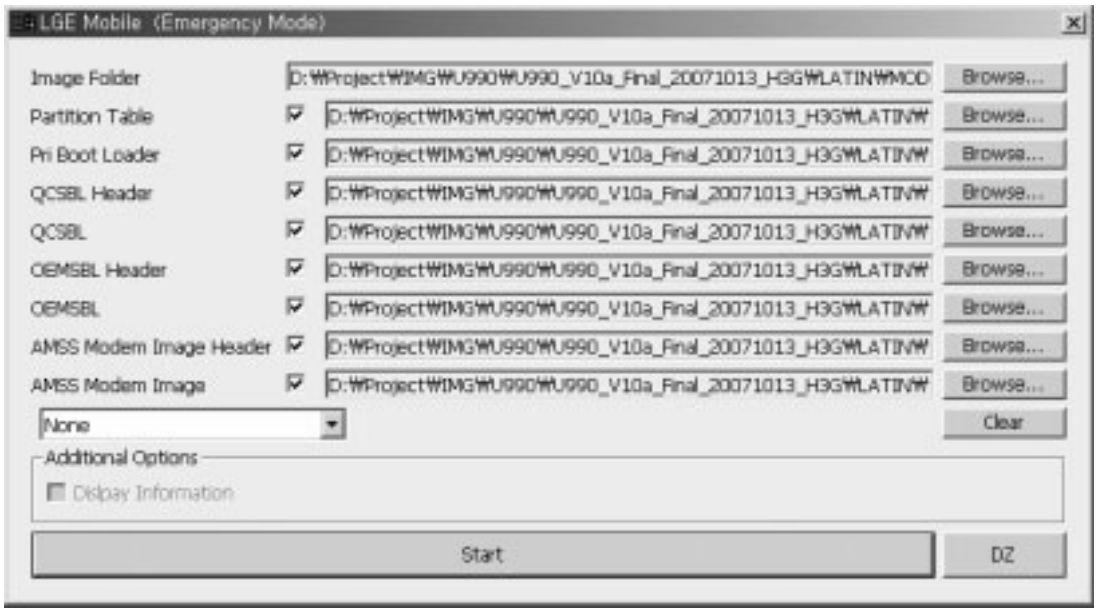
5.3 Troubleshooting Download Errors

5.3.1 When the phone does not work

- Reboot the phone in the emergency mode (Simultaneously press 2, 5, and PWR red keys) and then try to download all the images up to AMSS. In the emergency mode, you can not download media or module image.
  The phone supports a special mode called emergency mode. In this mode, minimum units for downloading is running so that users can download the images again in case of emergency situation. (AMSS modem, Media, and Module images can not be running in this mode.)
- The below dialog shows parameters of Select Port when phone is booted in Emergency mode. Click on the Connect button to continue.

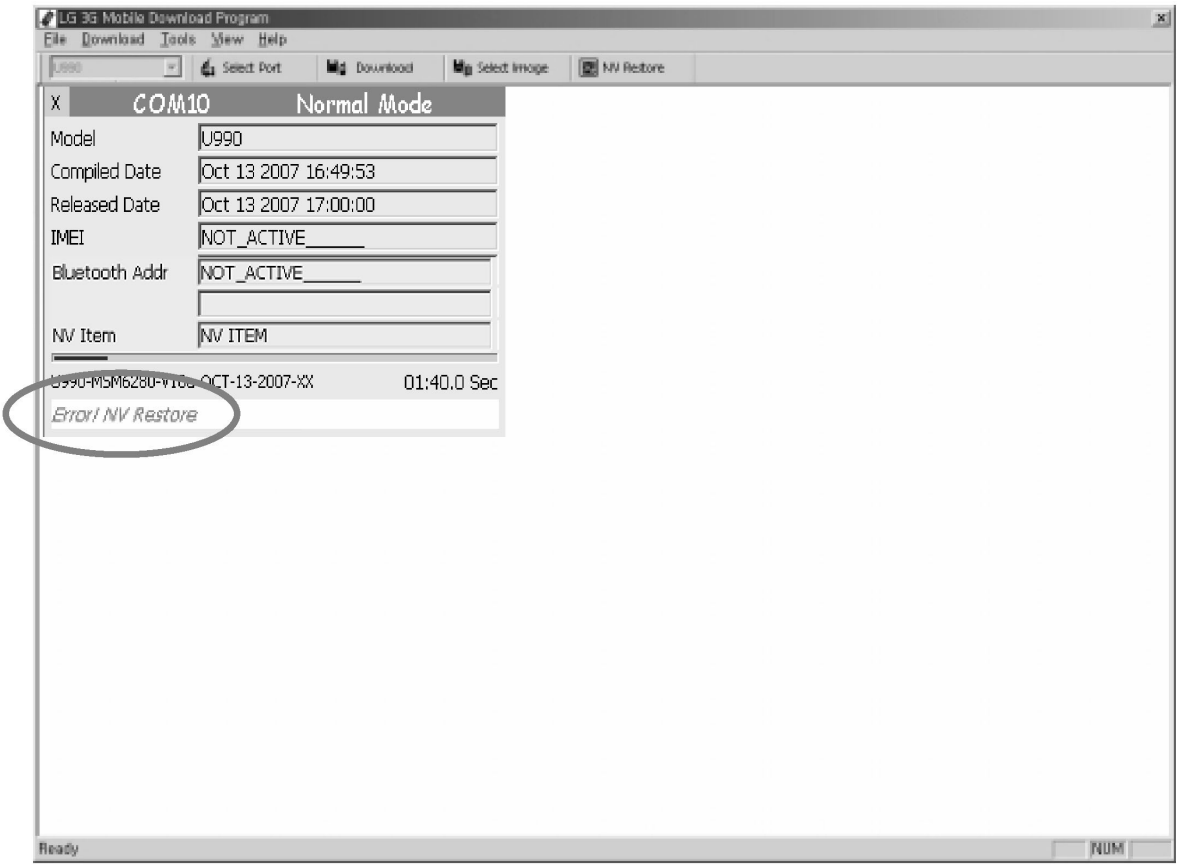


• Choose Image file after clicking on the Browse... button. Make sure that you have chosen the right image file. After choosing valid images, then click on the Start button to start downloading selected images. The selected image will be downloaded to the handset from the path directory in the PC. After downloading images successfully, it will boot to normal mode.



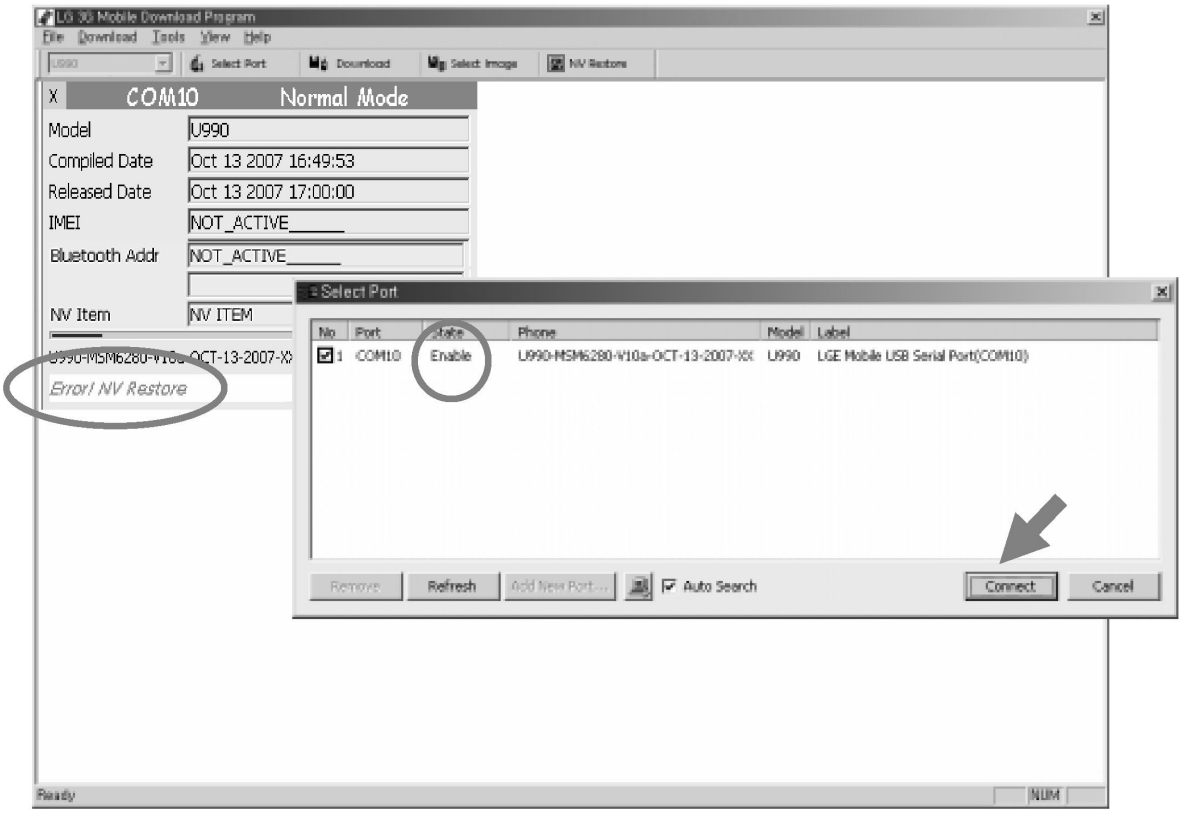
5.3.2 NV Restore Error

• Snapshot showing the NV Restore error. Next slide shows the remedial procedure to adopt.

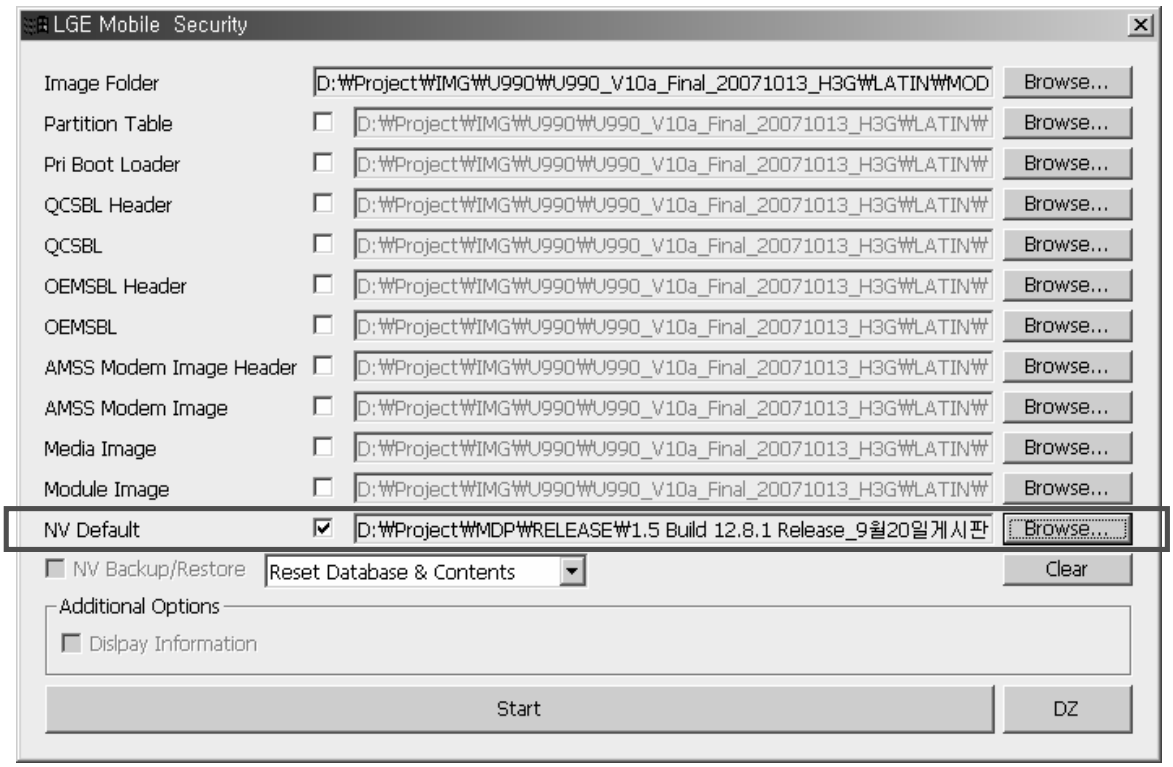


5. DOWNLOAD

• Connect the handset and Press the Connect button in the Select Port window.
(Enable state in the window indicates that the Phone has been detected and is ready to download.)

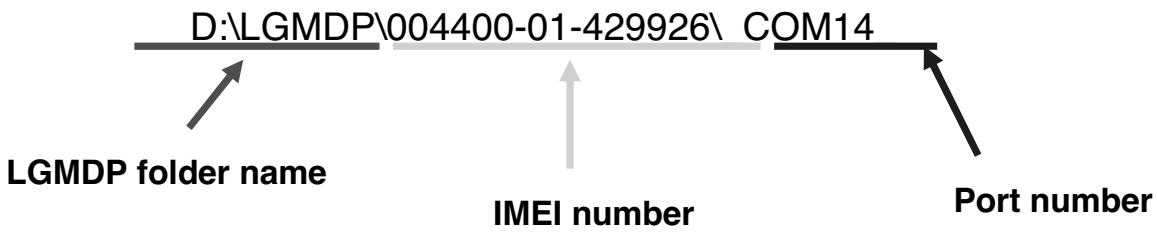


• Click on Browse... . Select the LGMDP installation directory and a list of NV Backup files(*.nv2) will be shown. These nv files were saved every time NV Backup option was selected, and the name of the nv file is determined based on the time when NV Backup was done. Choose the desired NV file to be downloaded on the handset, and click on Start.



5.4 Caution

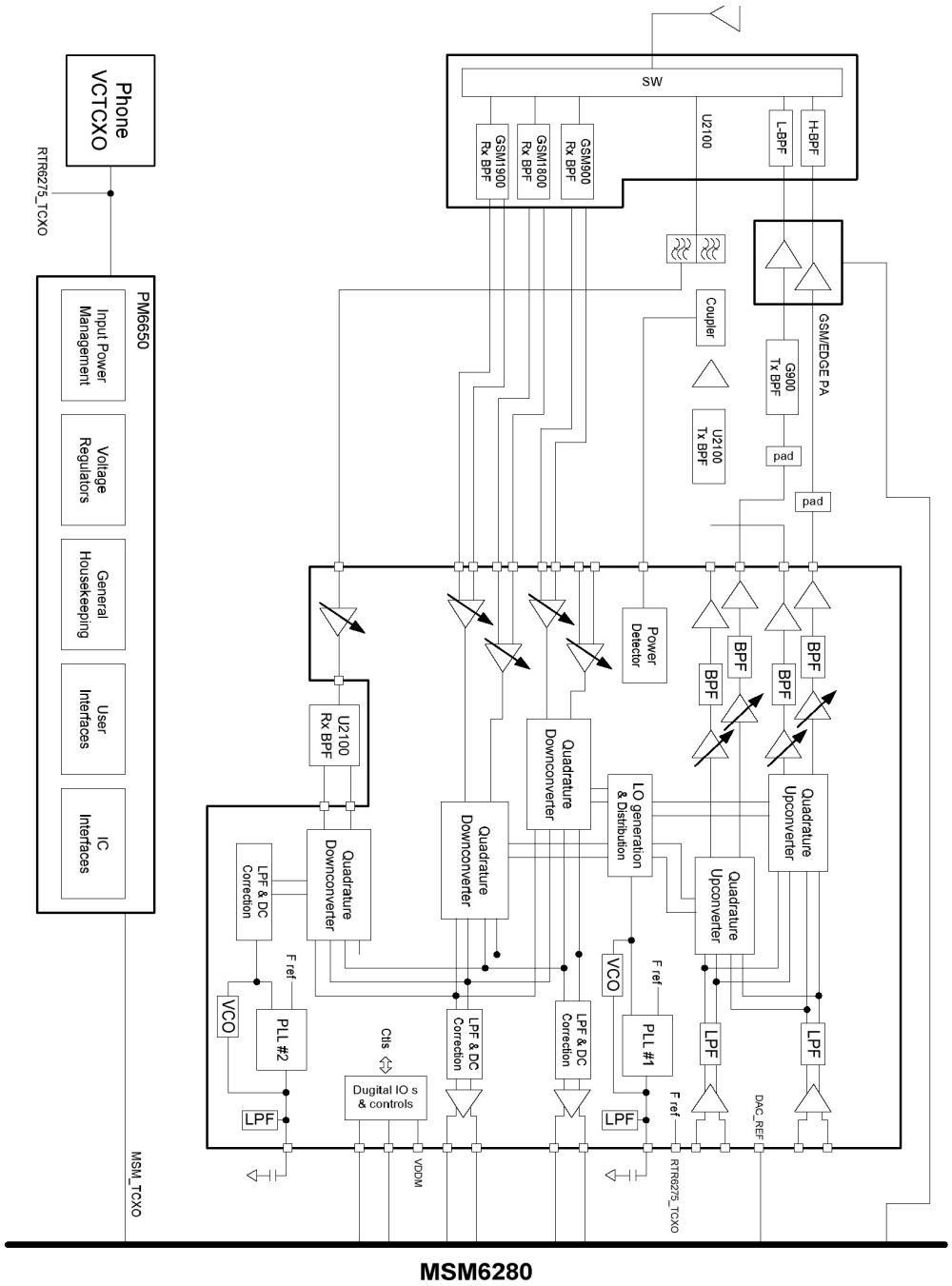
1) Multi-downloading using the USB hub is not recommendable.
2) If you see the message ‘cal mode’ after ‘completing download’, you must do NV restore and image (media and module) download.
3) The NV data saved at LGMDP folder as following format.



4) Recommended that the Module and Media Image have to be downloaded at the same time.
5) Erase EFS option will erase everything (media, module, nv items, and user data) in the EFS area.

6. BLOCK DIAGRAM

6.1 GSM & UMTS RF Block



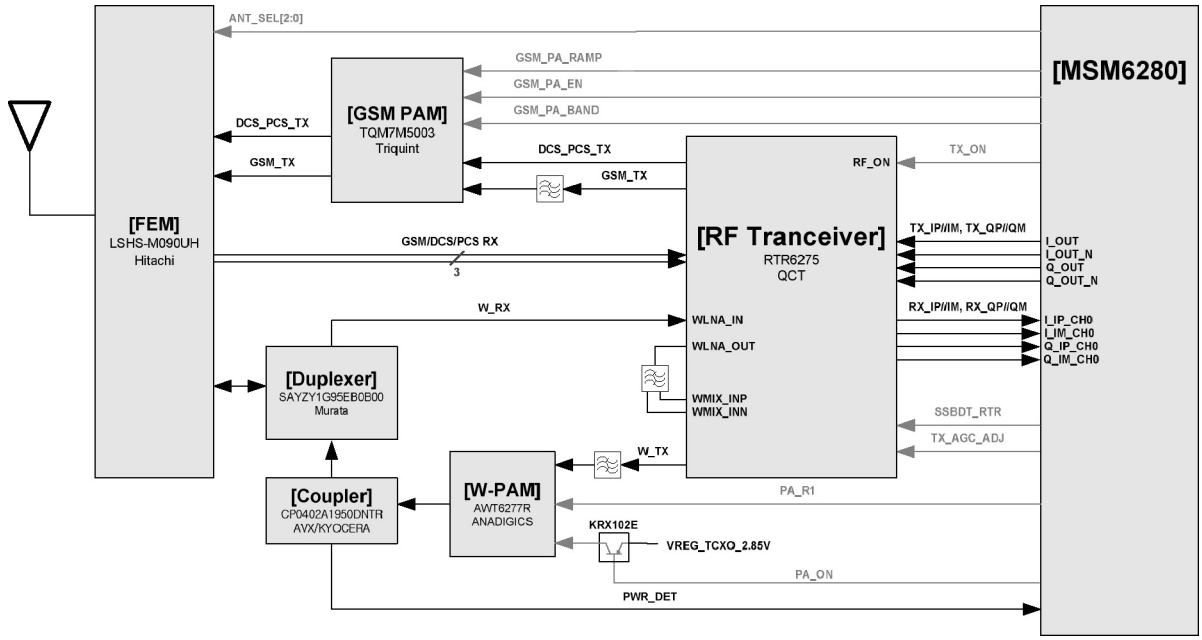
[Figure 2.1] UMTS-2100 + EGSM-900/DCS-1800/PCS-1900 RF Functional Block Diagram

6. BLOCK DIAGRAM

Block	Ref. Name	Part Name	Function	Comment
Common	FL100	LSHS-M090UH	Front End Module	ASM+Rx Saw
	SW100	KMS518	Test Connector	Calibration, etc
	X100	TG-5010LH_19_2M	VCTCXO	19.2MHz
	U100	RTR6275	RF Transceiver IC	TRX
Bluetooth	M800	LBRQ-2B43A	BT RF Transceiver	BT TRX
UMTS	FL103	SAYZ1G95EB0B00	Duplexer	TRX
	FL102	EFCH2140TDE1	RX SAW Filter	RX
	FL104	EFCH1950TDF1	TX SAW Filter	TX
	U105	AWT6277R	TX PAM	TX
	U104	CP0402A1950DNTR	Coupler	TX
GSM	U101	TQM7M5003	TX Dual PAM	TX
	FL101	EFCH897MTDB1	Tx SAW Filter	Tx

[Table 2.1] RF Block Component

6.2 Interface Diagram



[Figure 2.2] U990 Interface Diagram

6. BLOCK DIAGRAM

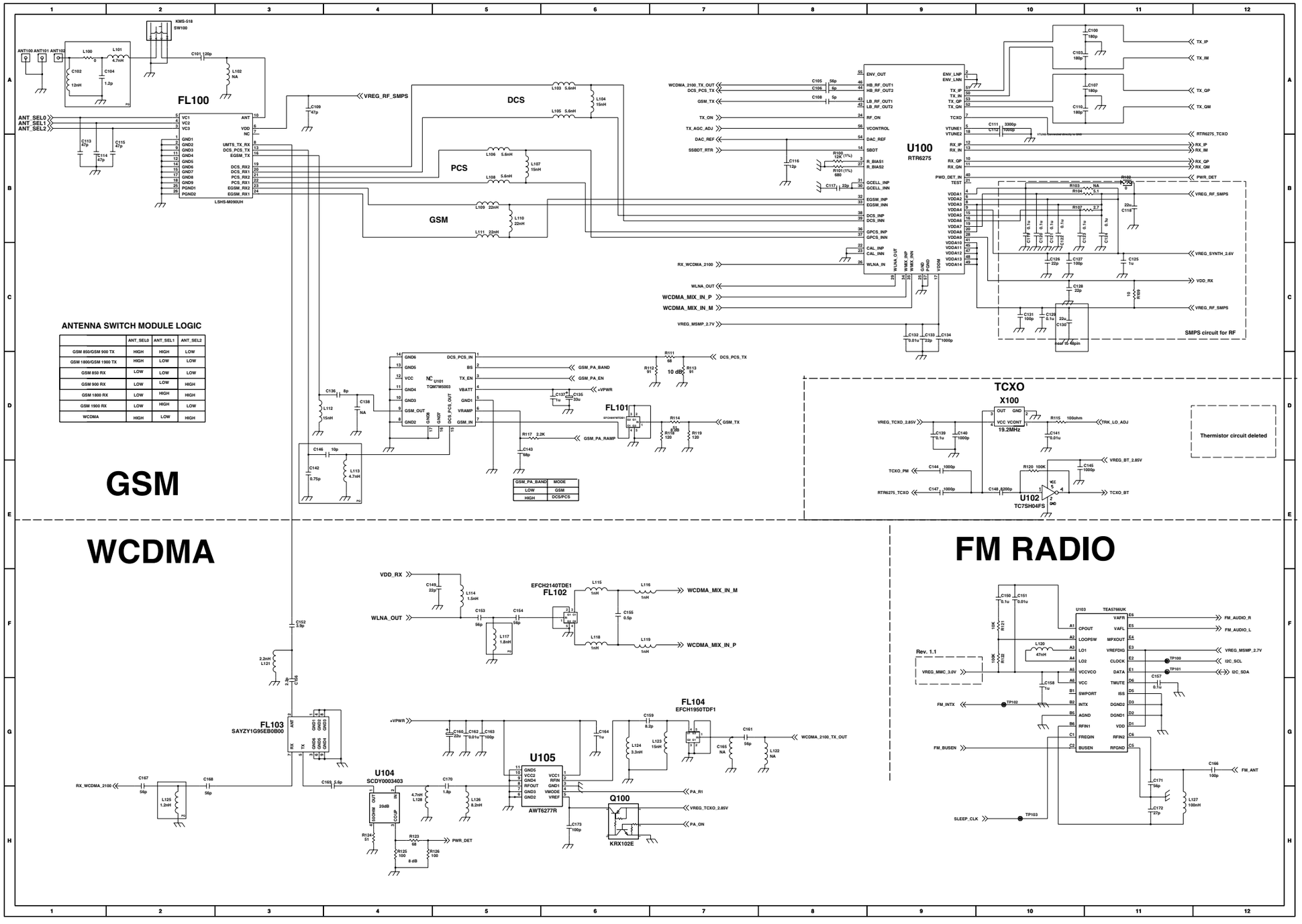
Main RF signal

Main RF signal	Description	Comment
GSM 900 TX	GSM 900 TX RF Signal	
DCS TX	DCS TX RF Signal	
PCS TX	PCS TX RF Signal	
W- TX	UMTS2100 TX RF Signal	
GSM 900 RX	GSM 900 RX RF Signal	
DCS RX	DCS RX RF Signal	
PCS RX	PCS RX RF Signal	
W- RX	UMTS2100 RX RF Signal	
TX_I/Q	I/Q for Tx of RF	
RX_I/Q	I/Q for Rx of RF	

Control signal

Control signal	Description	Comment
UMTS PA_CTL signal		
PA_R1	UMTS Tx High/Low Power Control	
PA_ON	Power Amp. Enable	
GSM PA_CTL signal		
GSM_PA_BAND	DCS or PCS /GSM Mode Selection	
GSM_PA_EN	Power Amp. Gain Control Enable	
GSM_PA_RAMP	Power Amp. Gain Control	
RF Tranceiver_CTL signal		
TX_ON	RF Enable Signal	
SSBDT_RTR	Bidirectional SSBI Data	
TX_AGC_ADJ	UMTS Transmit Gain Control	
FEM_CTL signal		
ANT_SEL 0,1,2	Ant Switch Module Mode Selection	*UMTS, GSM900Tx/Rx, DCS Tx/Rx, PCS Tx/Rx*

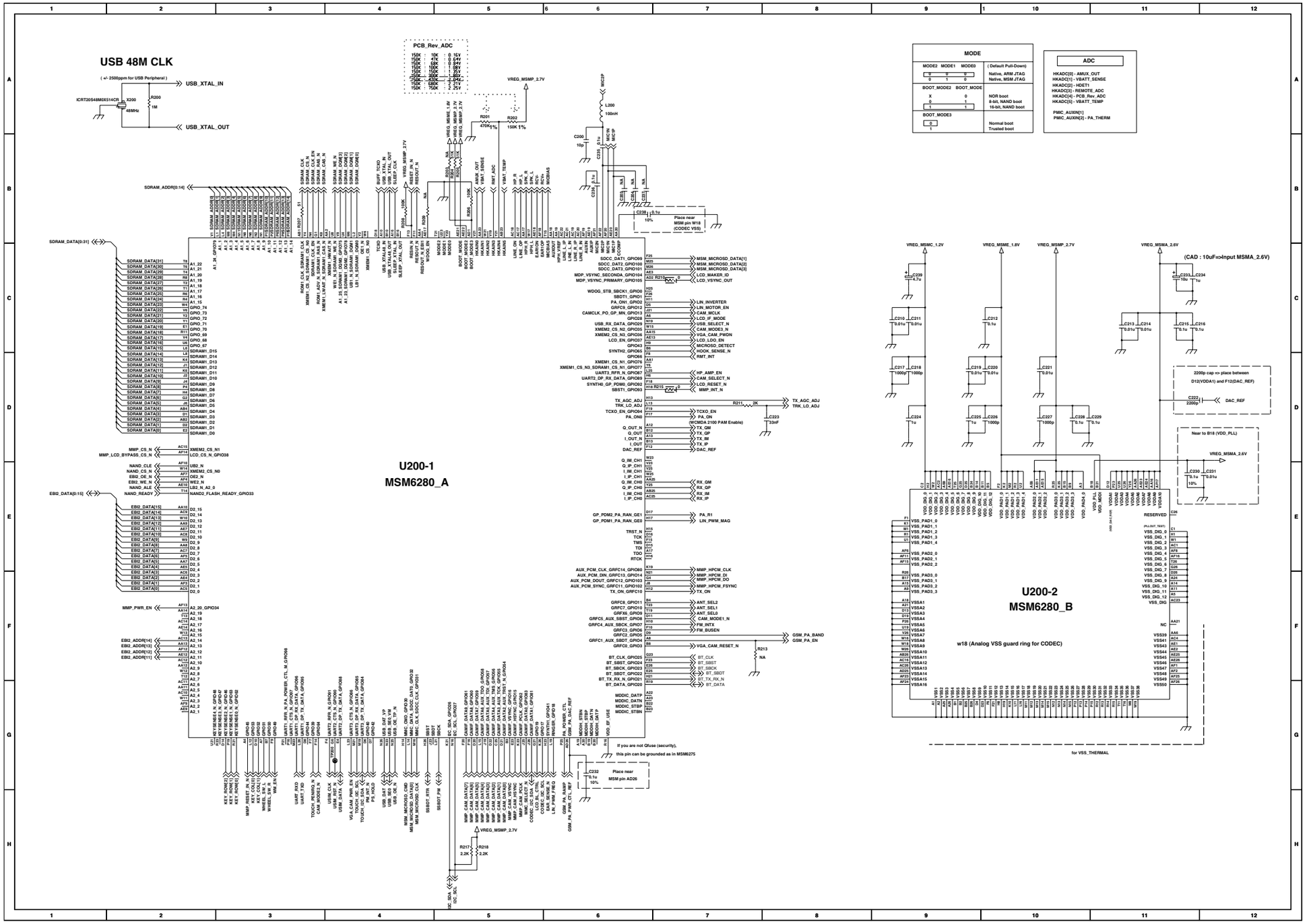
7. CIRCUIT DIAGRAM



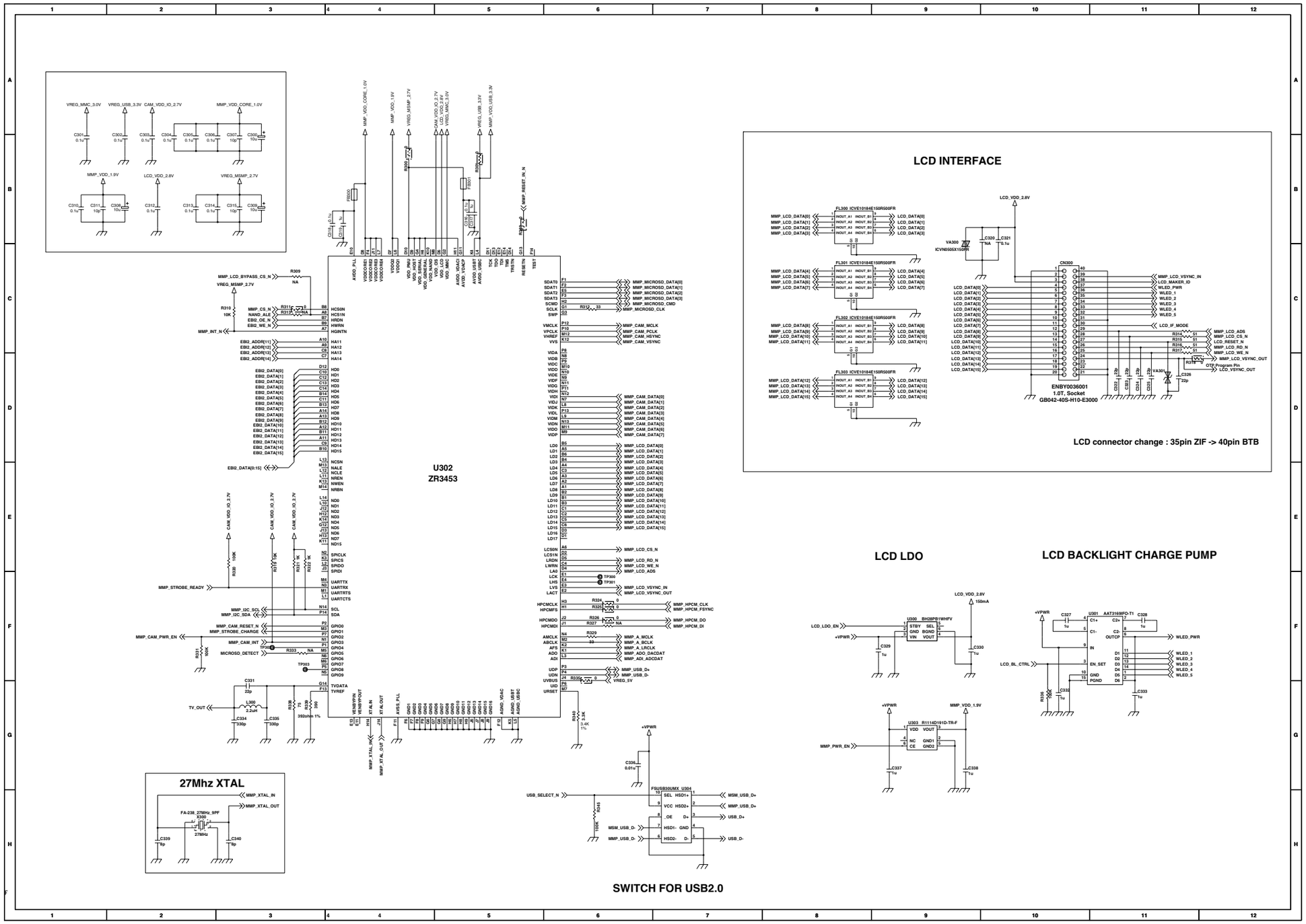
	ANT_SEL0	ANT_SEL1	ANT_SEL2
GSM 850/GSM 900 TX	HIGH	HIGH	LOW
GSM 1800/GSM 1900 TX	HIGH	LOW	LOW
GSM 850 RX	LOW	LOW	LOW
GSM 900 RX	LOW	LOW	HIGH
GSM 1800 RX	LOW	HIGH	HIGH
GSM 1900 RX	LOW	HIGH	LOW
WCDMA	HIGH	LOW	HIGH

GSM_PA_BAND	MODE
LOW	GSM
HIGH	DCS/PCS

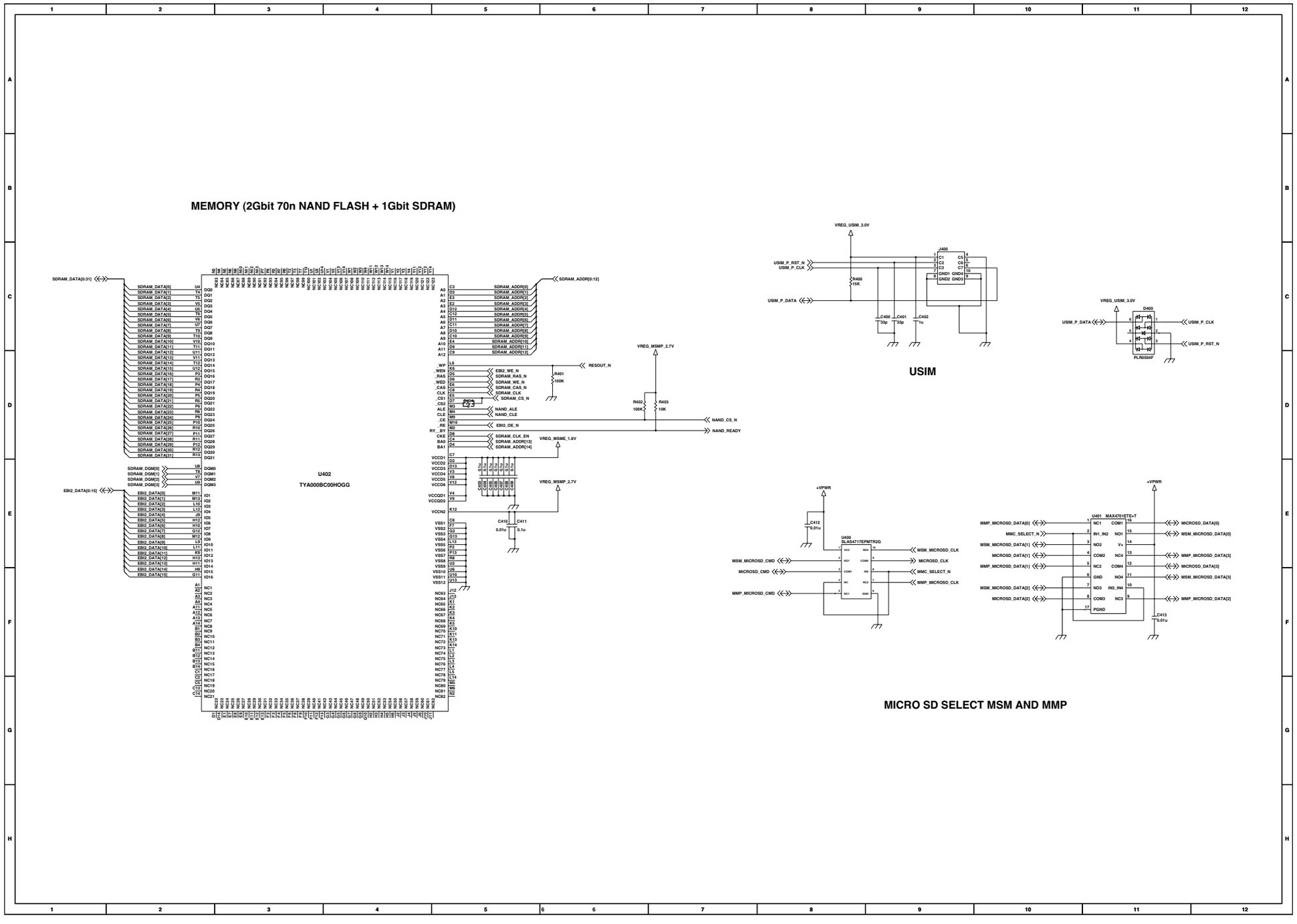
7. CIRCUIT DIAGRAM



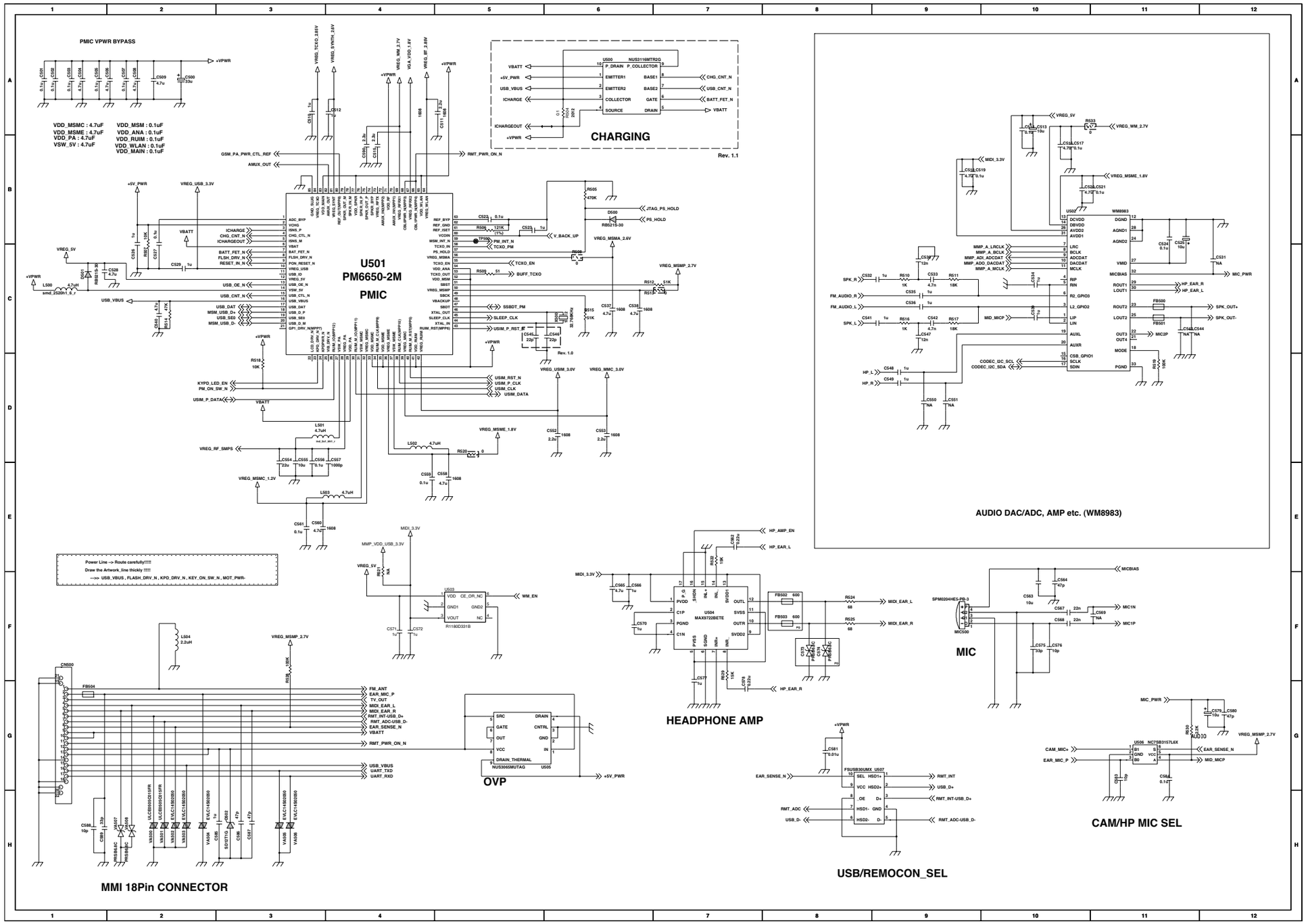
7. CIRCUIT DIAGRAM



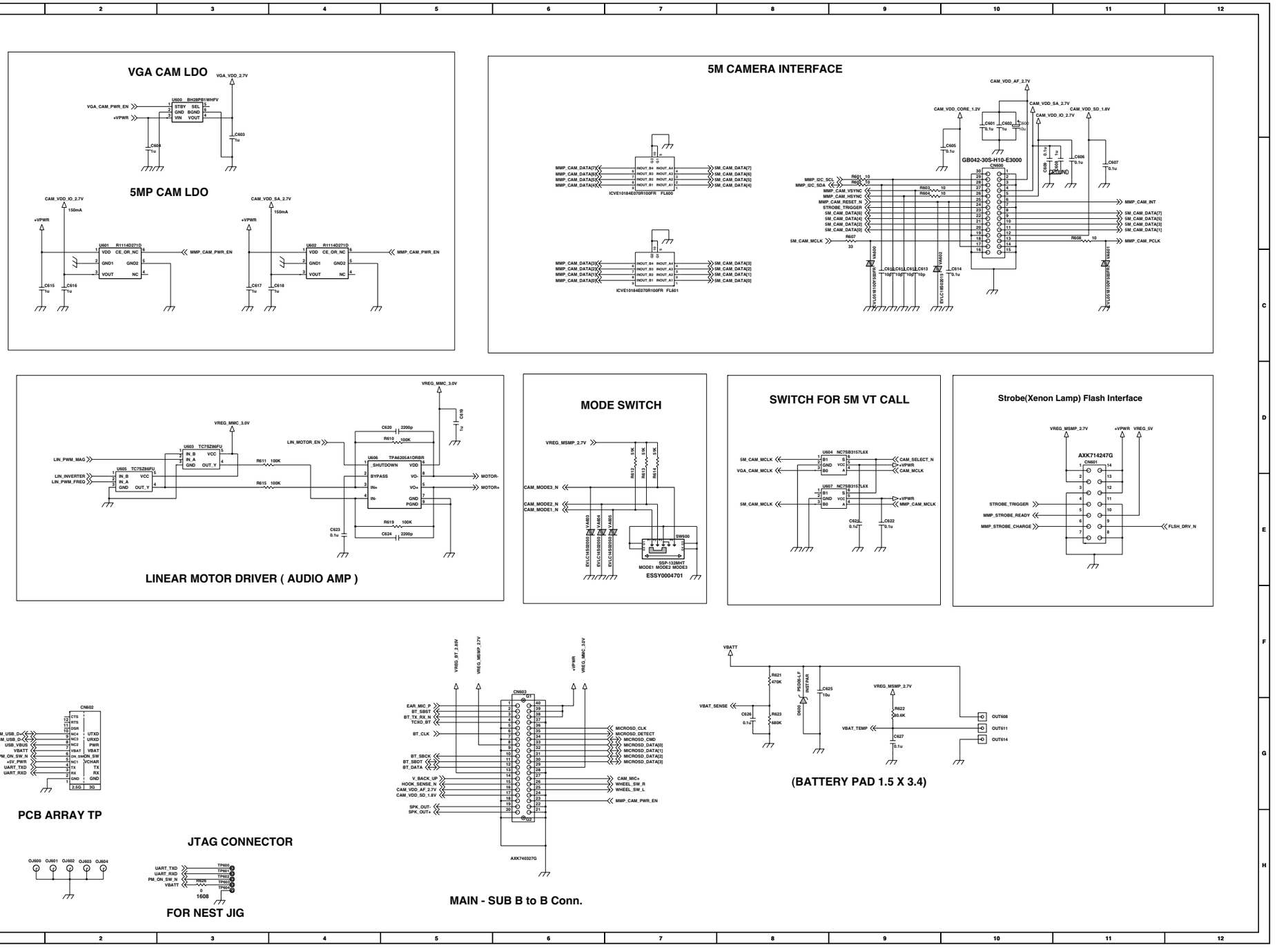
7. CIRCUIT DIAGRAM



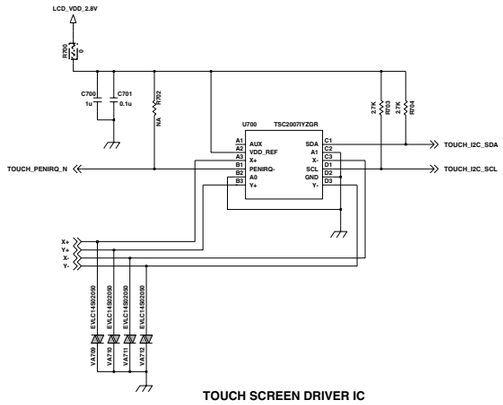
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

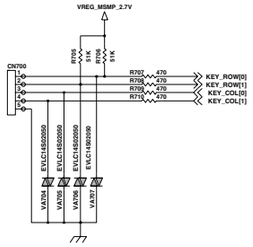


7. CIRCUIT DIAGRAM

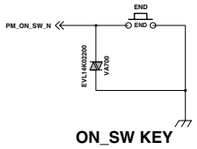


TOUCH SCREEN DRIVER IC

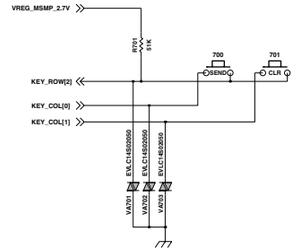
Touch Driver IC change : TSC2003 -> TSC2007



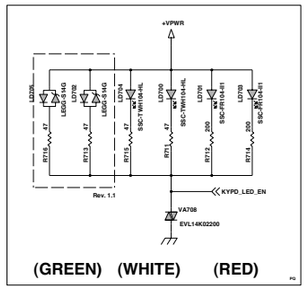
SIDE KEY



ON_SW KEY

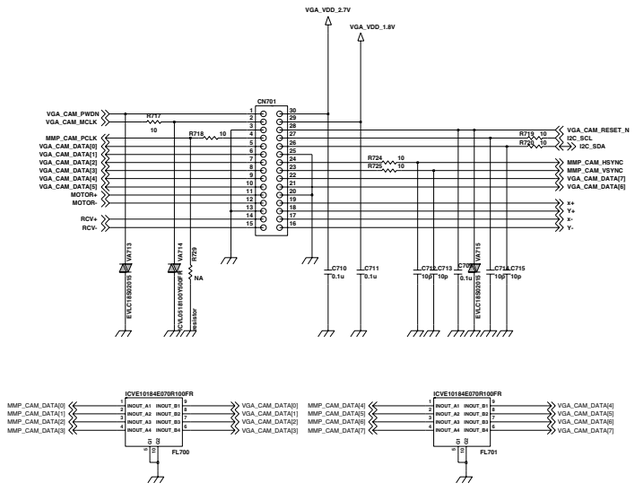


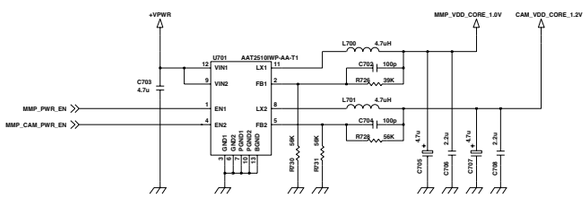
KEY



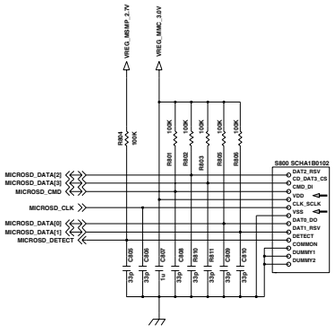
(GREEN) (WHITE) (RED)

KEY PCB BACKLIGHT LEDs

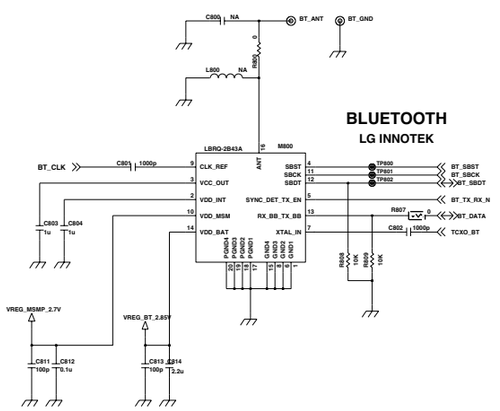


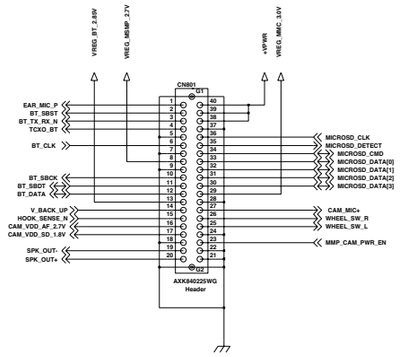


7. CIRCUIT DIAGRAM

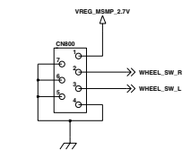


Micro SD





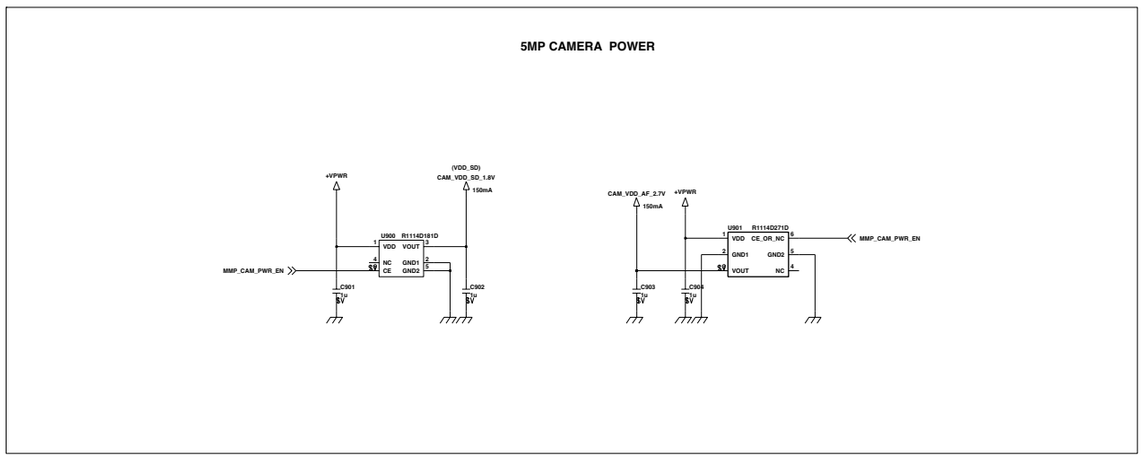
MAIN - SUB B to B Conn.

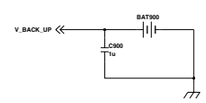


WHEEL CONNECTOR

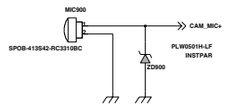
SPEAKER +/-

7. CIRCUIT DIAGRAM

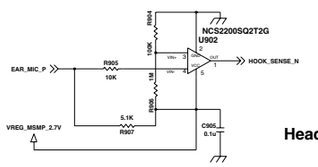




BACK_UP BATTERY

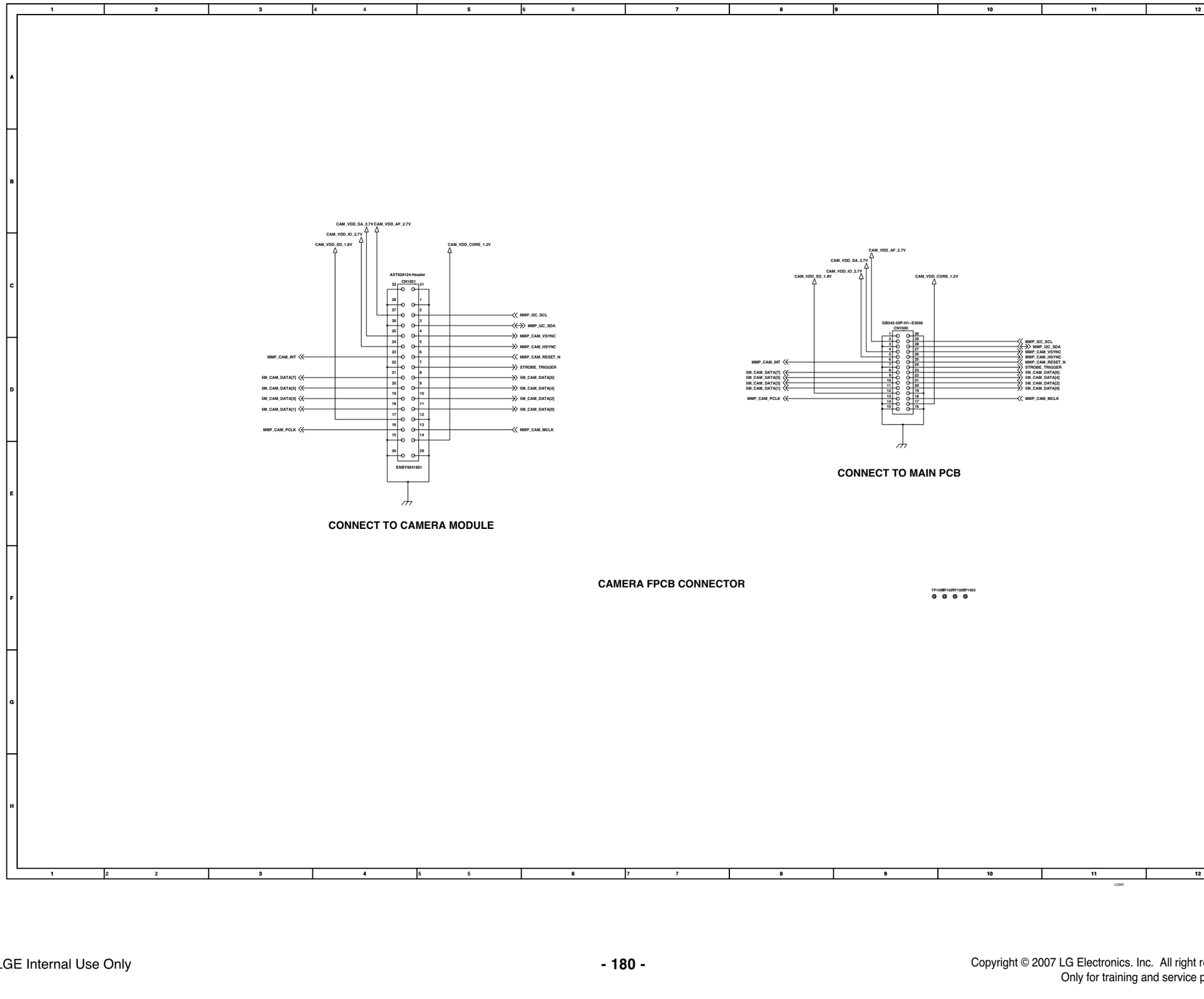


CAM MIC

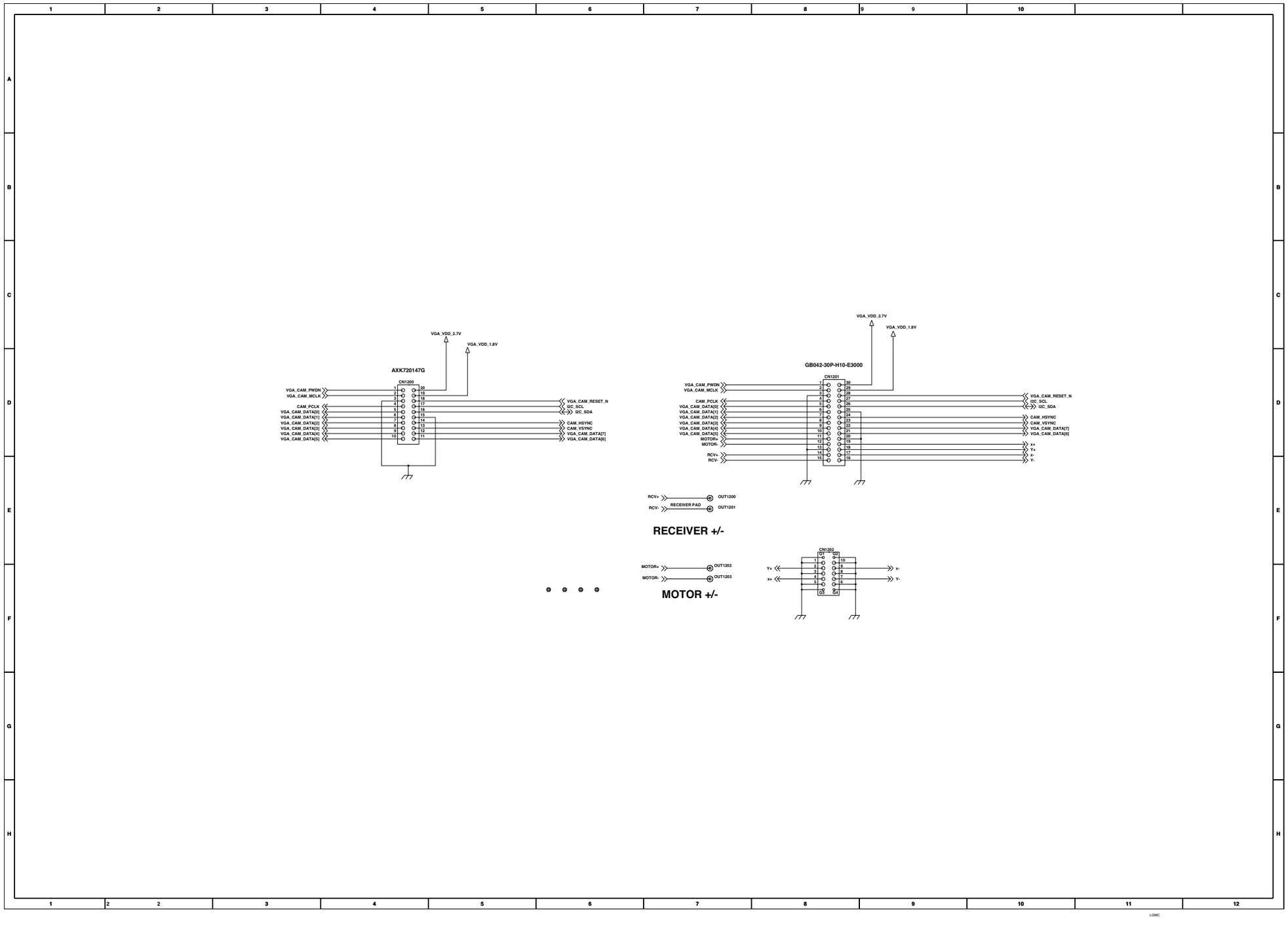


Headset Hook Switch

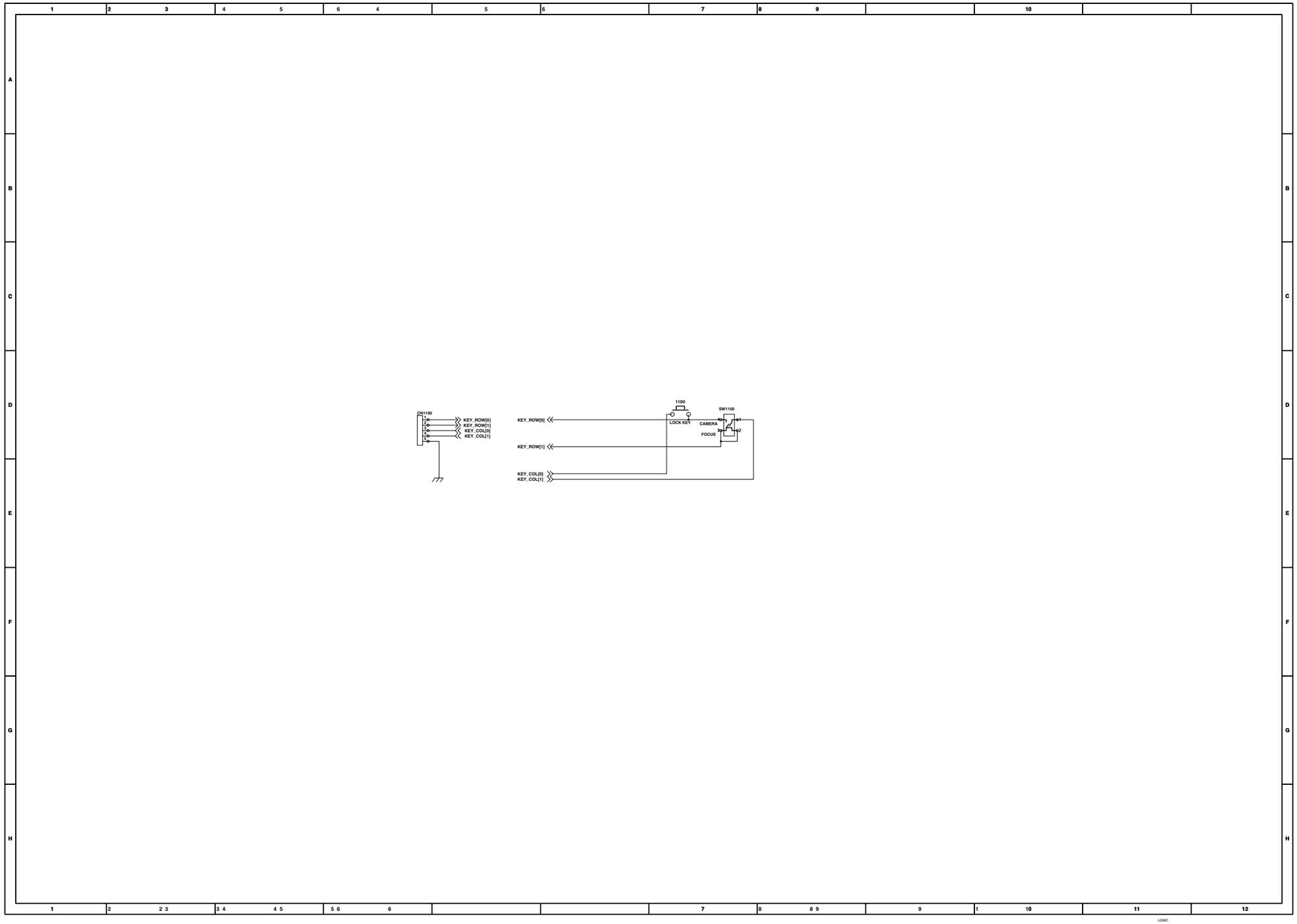
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM



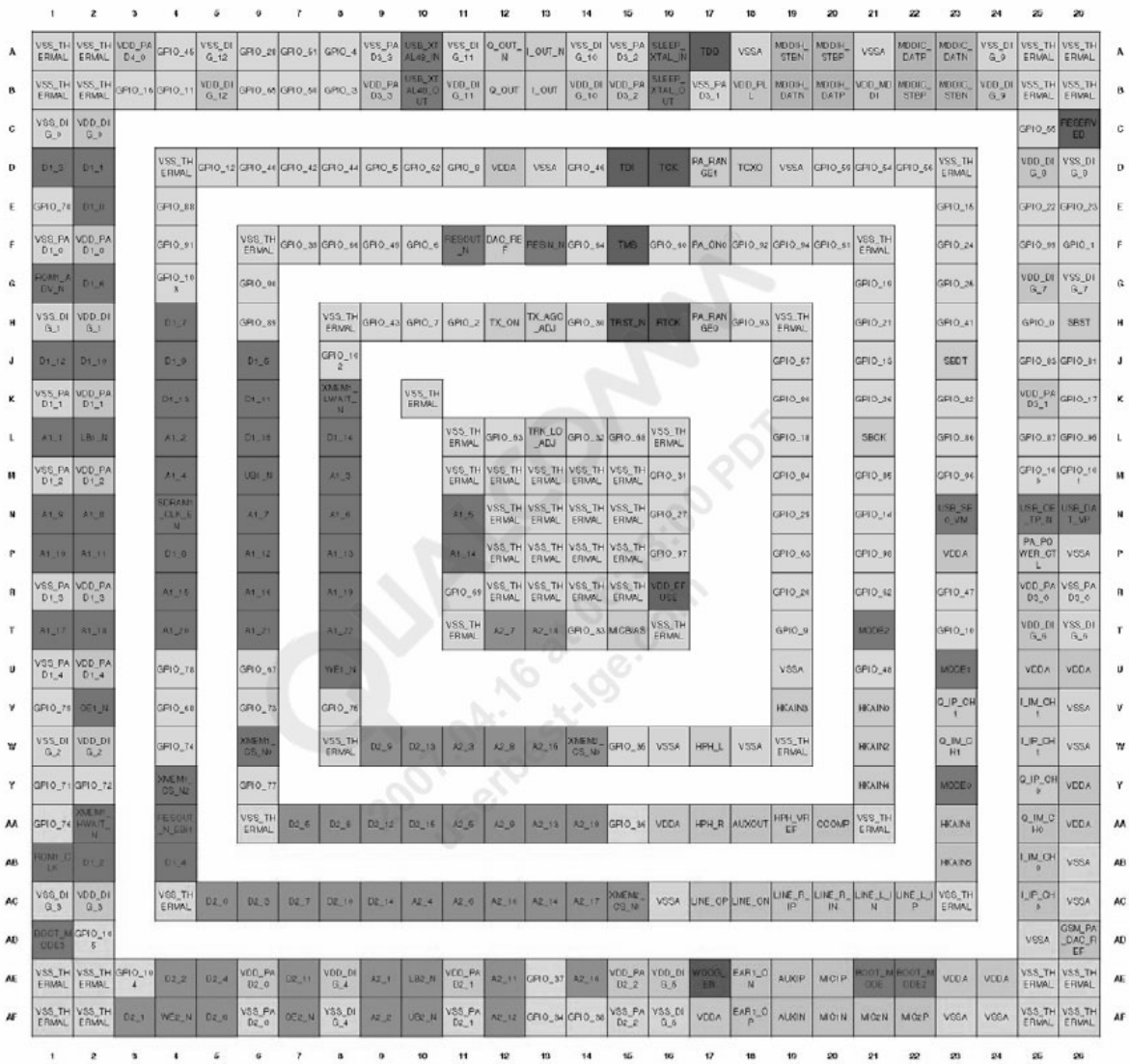
7. CIRCUIT DIAGRAM



8. BGA IC PIN MAP

1. MSM6280

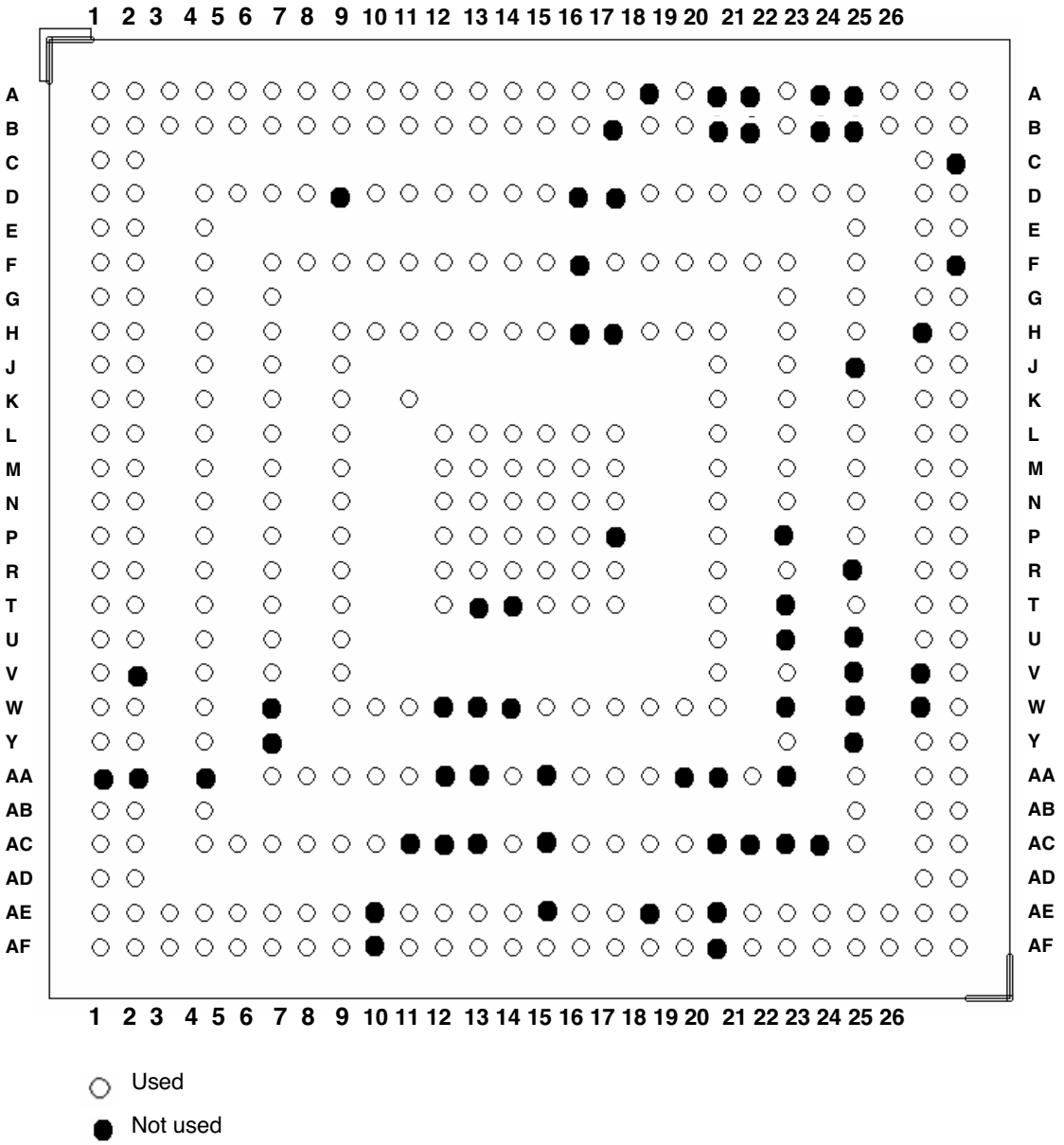
(Top View)



8. BGA IC PIN MAP

1. MSM6280

(Top View)

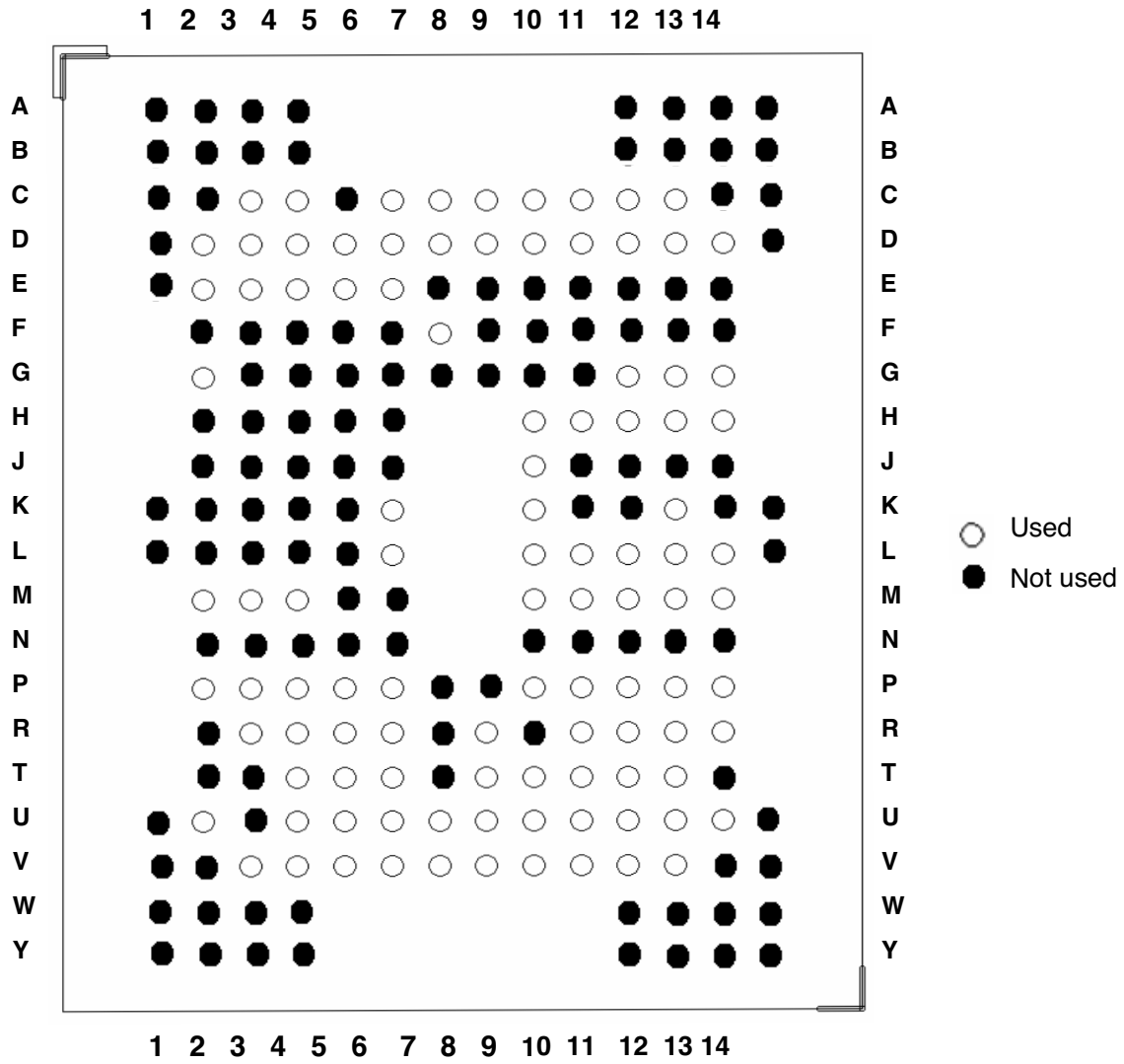


2. MCP (Top View)

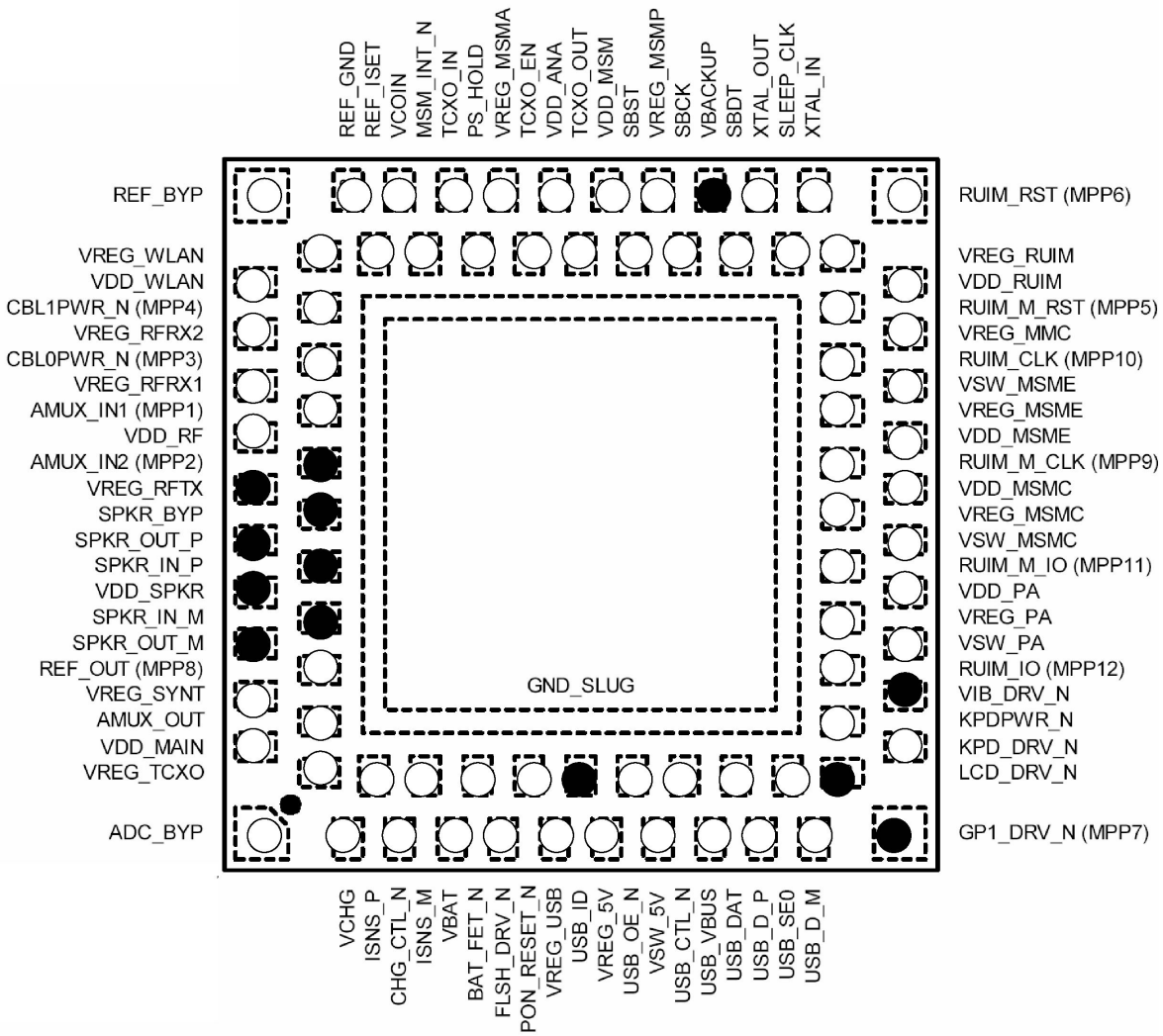
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	NC	NC	NC	NC							NC	NC	NC	NC
B	NC	NC	NC	NC							NC	NC	NC	NC
C	NC	NC	A0	BA0	NC	V_{SS}	V_{CCd}	CLK	A12	A9	A7	A5	NC	NC
D	NC	V_{CCd}	A1	BA1	$\overline{RAS}$	$\overline{WEd}$	$\overline{CS}$	CKE	A11	A8	A6	A4	V_{CCd}	NC
E	NC	A3	A2	A10	$\overline{CS}$	$\overline{CAS}$	NC	NC	NC	NC	NC	NC	NC	
F		NC	NC	NC	NC	NC	V_{SS}	NC	NC	NC	NC	NC	NC	
G		V_{SS}	NC	NC	NC	NC	NC	NC	NC	NC	I/O16	I/O8	V_{SS}	
H		NC	NC	NC	NC	NC			I/O15	I/O7	I/O14	I/O6	I/O13	
J		NC	NC	NC	NC	NC			I/O5	NC	NC	NC	NC	
K	NC	NC	NC	NC	NC	$\overline{WEn}$			I/O12	NC	NC	V_{CCn}	NC	NC
L	NC	NC	NC	NC	NC	$\overline{WP}$			I/O10	I/O3	I/O11	I/O4	V_{SS}	NC
M		RY/$\overline{BY}$	ALE	CLE	NC	NC			$\overline{CE}$	$\overline{RE}$	I/O1	I/O9	I/O2	
N		NC	NC	NC	NC	NC			NC	NC	NC	NC	NC	
P		V_{SS}	DQ16	DQ18	DQ20	DQ22	NC	NC	DQ24	DQ25	DQ27	DQ29	V_{SS}	
R		NC	DQ17	DQ19	DQ21	DQ23	NC	V_{SS}	NC	DQ26	DQ28	DQ30	DQ31	
T		NC	NC	DQ1	DQ2	DQ5	NC	DQM1	DQ8	DQ9	DQ11	DQ14	NC	
U	NC	V_{SS}	NC	DQ0	DQ4	V_{SS}	DQ7	DQM0	DQM3	V_{SS}	DQ12	DQ15	V_{SS}	NC
V	NC	NC	V_{CCd}	V_{CCQd}	DQ3	DQ6	DQM2	V_{CCd}	V_{CCQd}	DQ10	DQ13	V_{CCd}	NC	NC
W	NC	NC	NC	NC							NC	NC	NC	NC
Y	NC	NC	NC	NC							NC	NC	NC	NC

8. BGA IC PIN MAP

2. MCP (Top View)

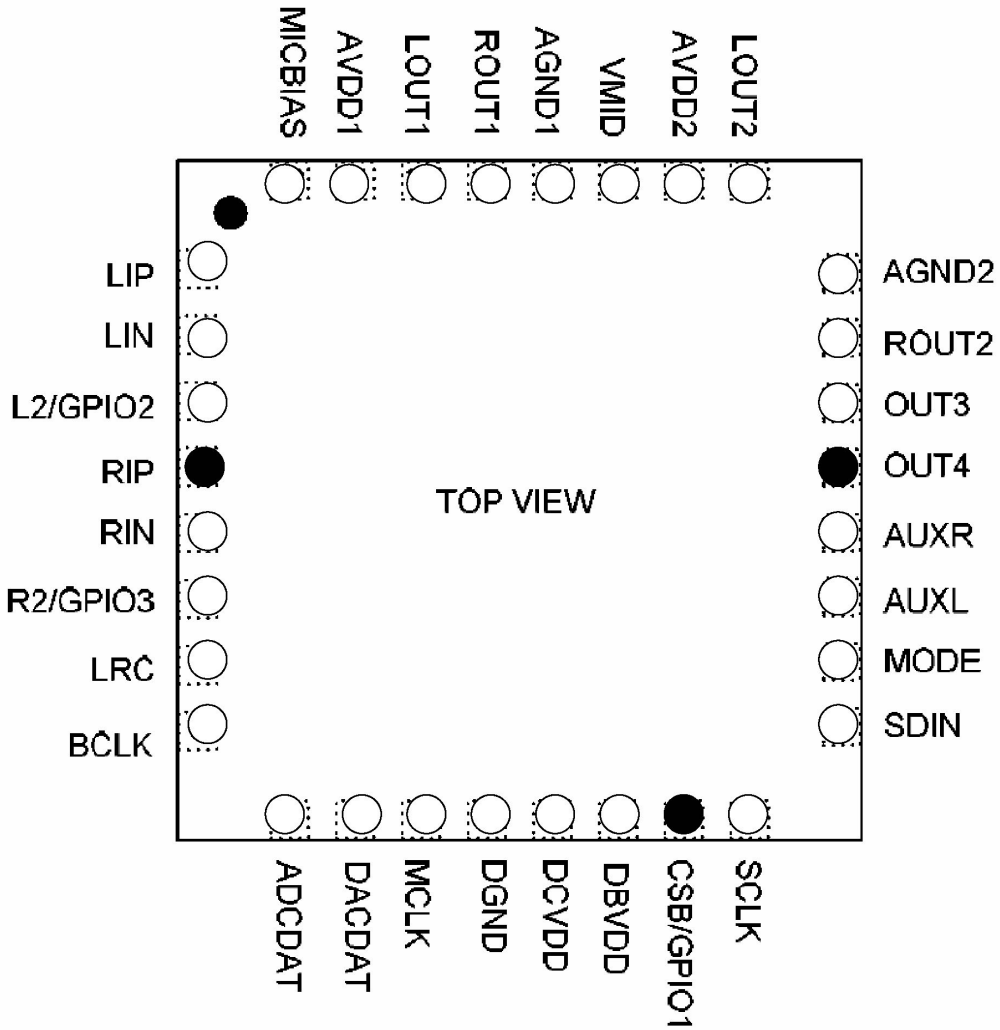


3. PM6650-2 (PMIC)

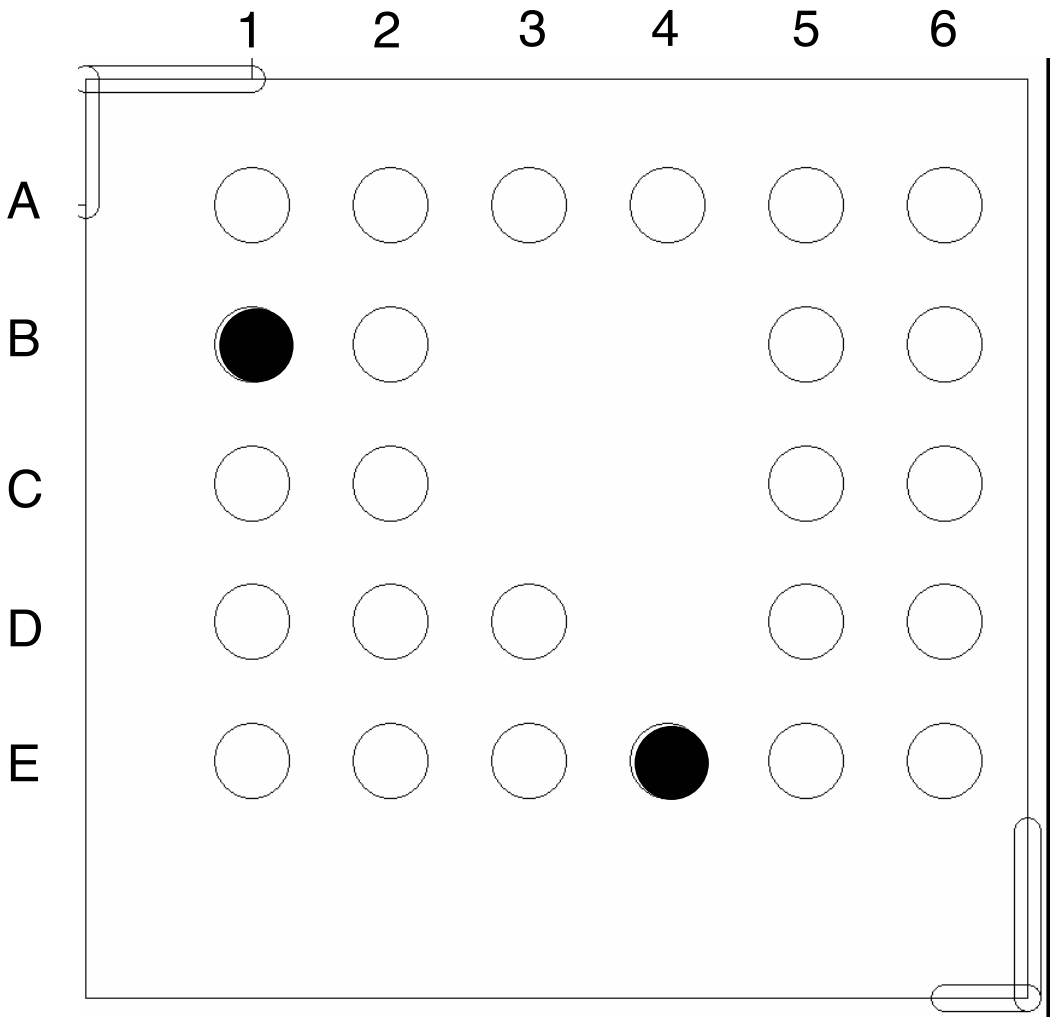


8. BGA IC PIN MAP

4. WM8983 (Audio codec)

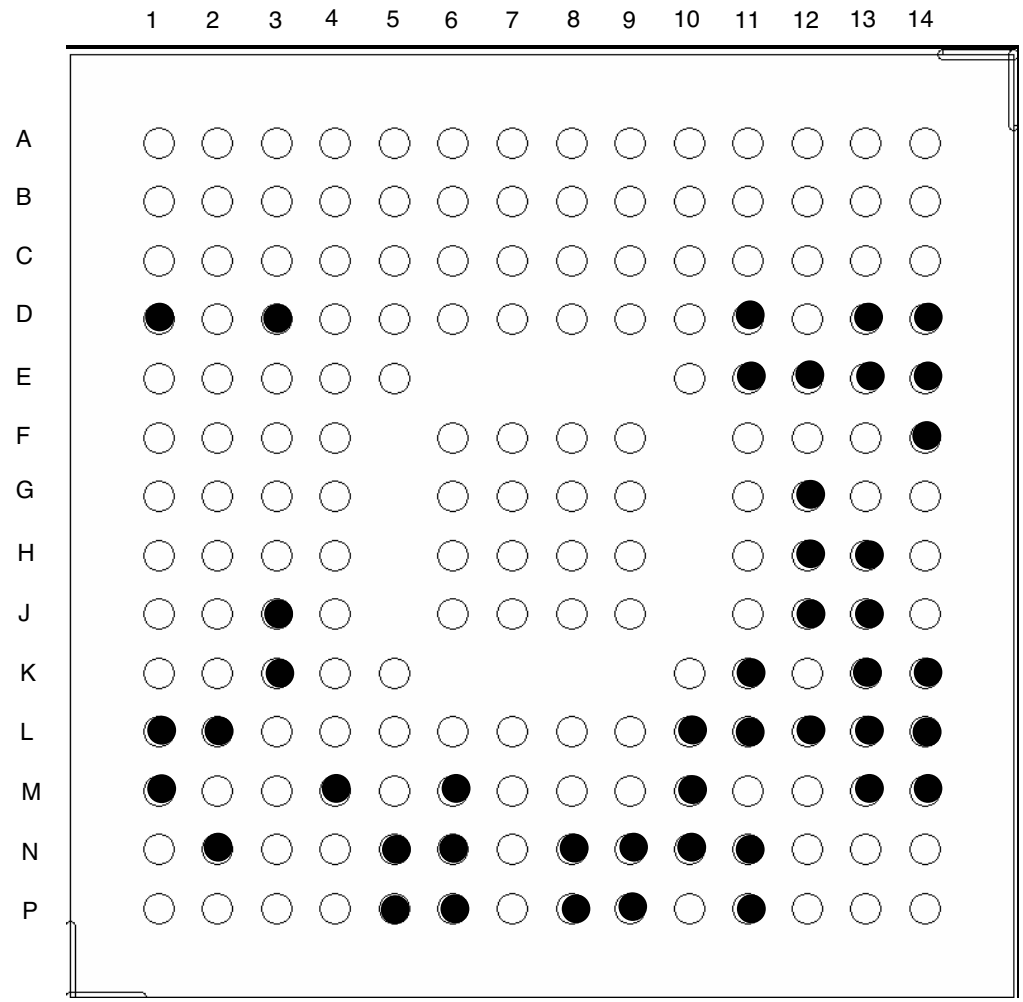


5. FM RADIO

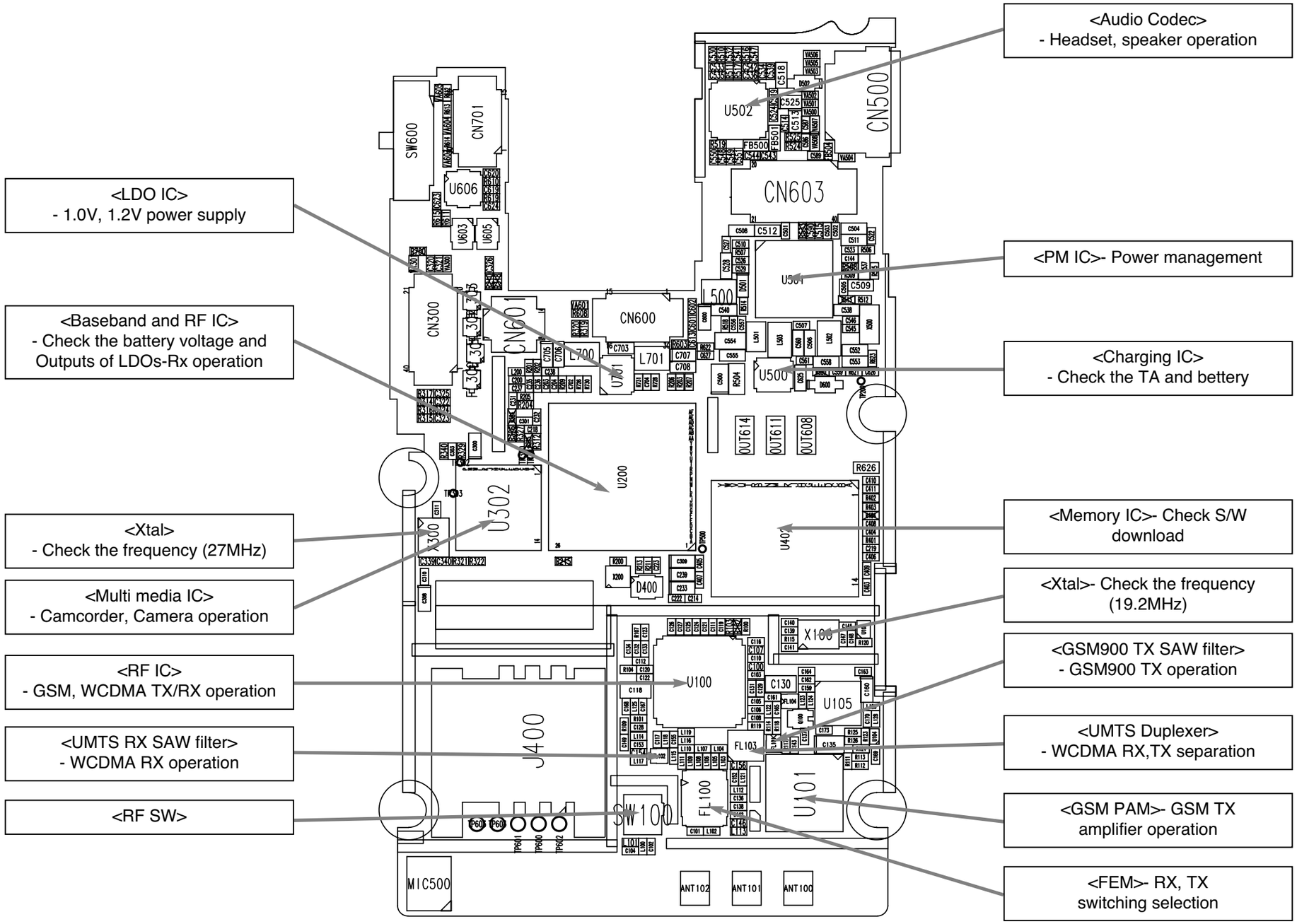


8. BGA IC PIN MAP

6. ZORAN(ZR3453)

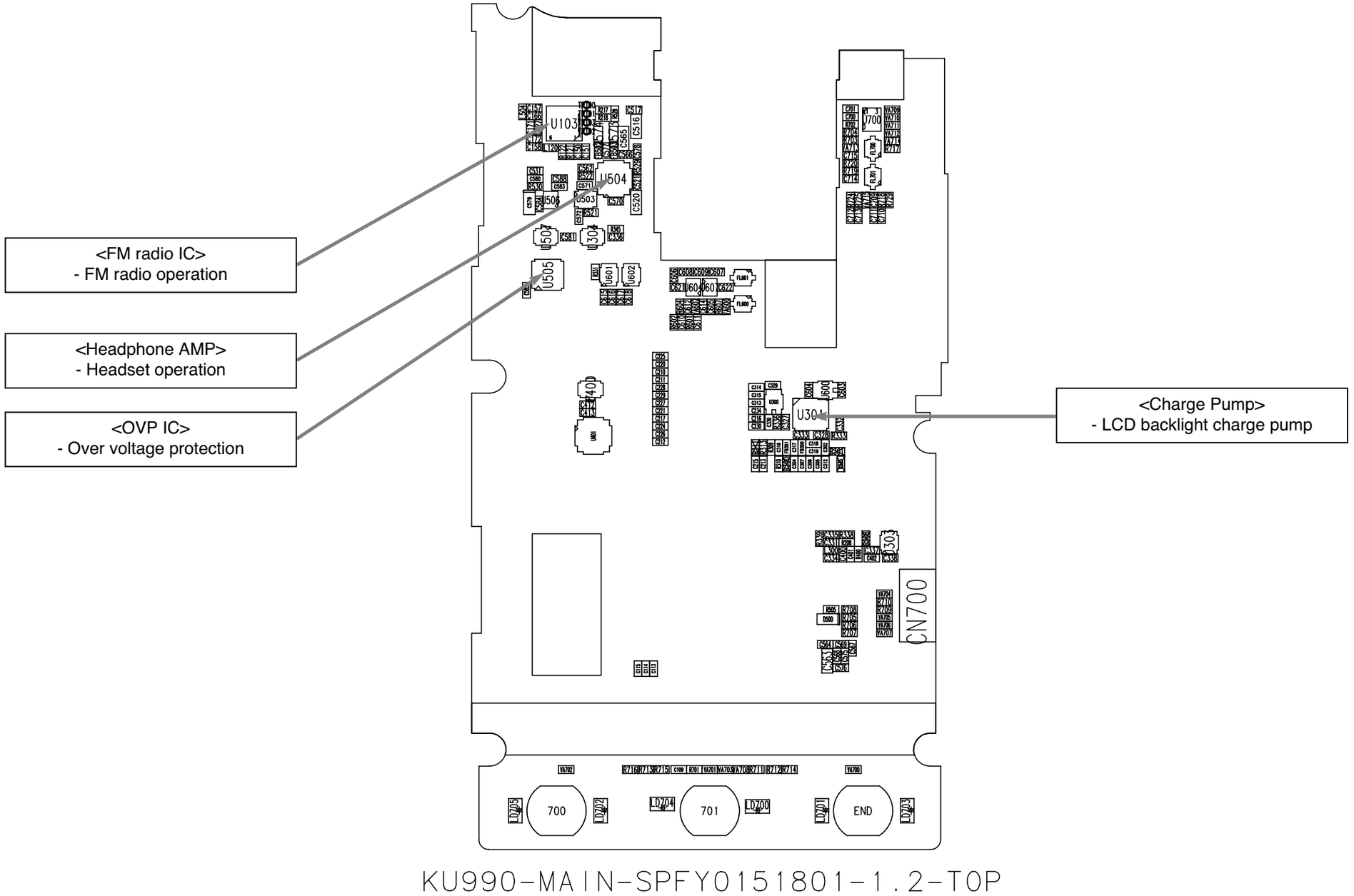


9. PCB LAYOUT



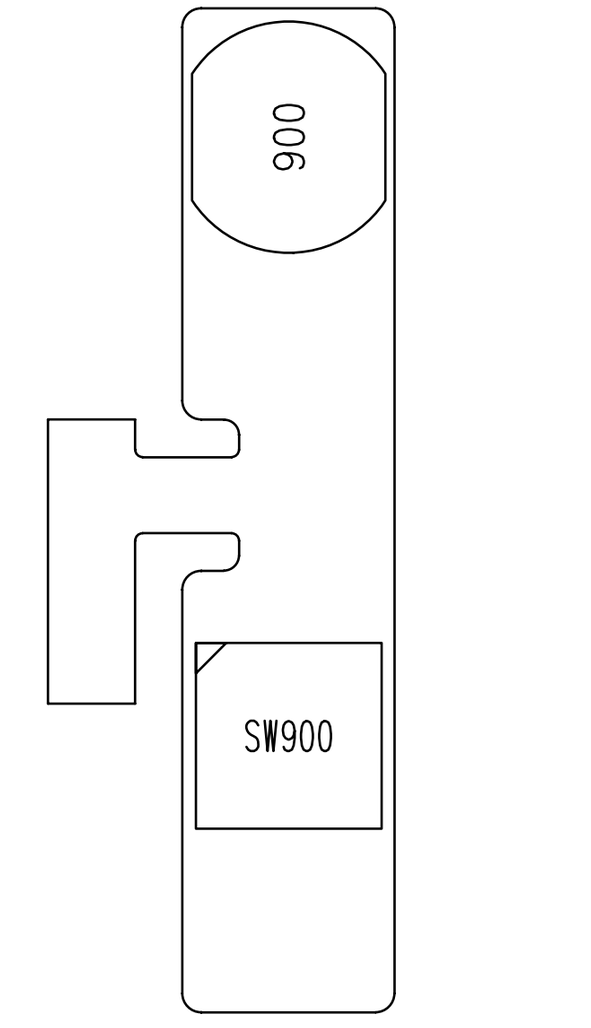
KU990-MAIN-SPFY0151801-1.2-BOT

9. PCB LAYOUT



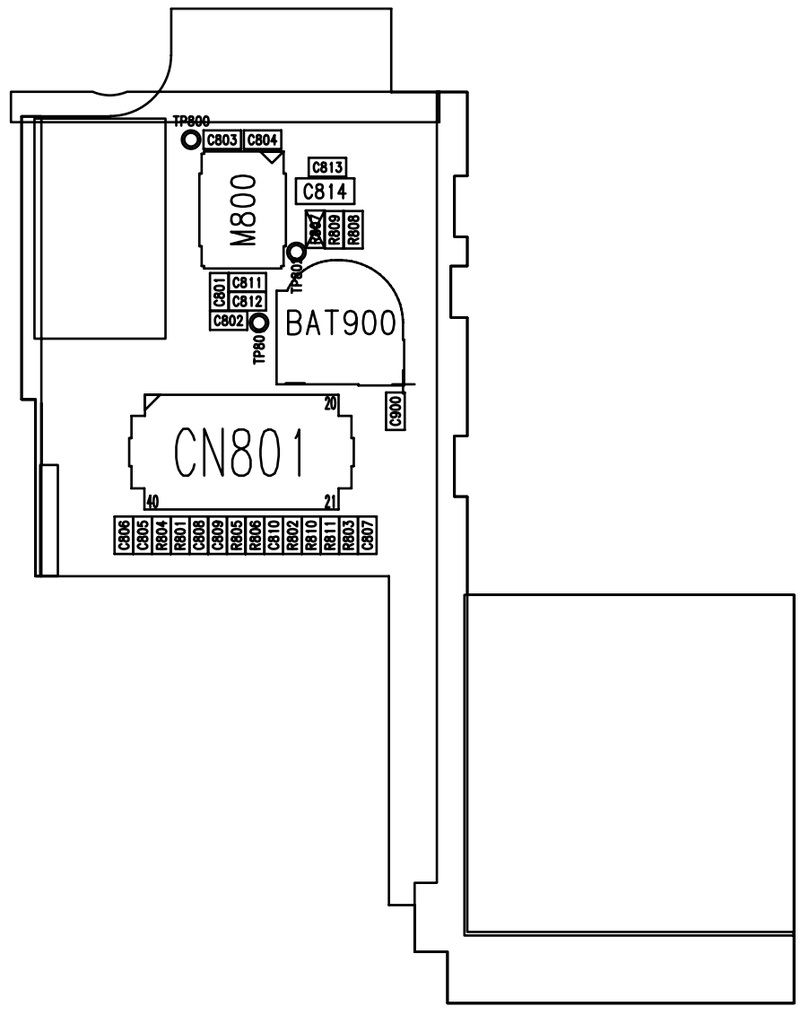
KU990-MAIN-SPFY0151801-1.2-TOP

9. PCB LAYOUT



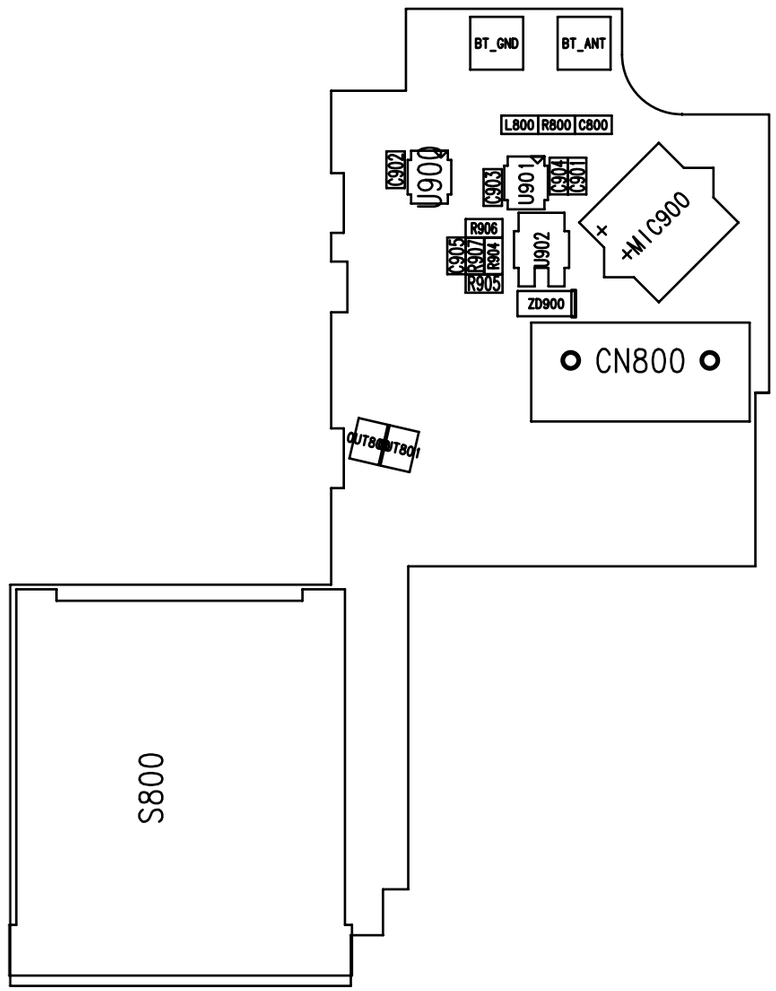
ASSEMBLY TOP

9. PCB LAYOUT



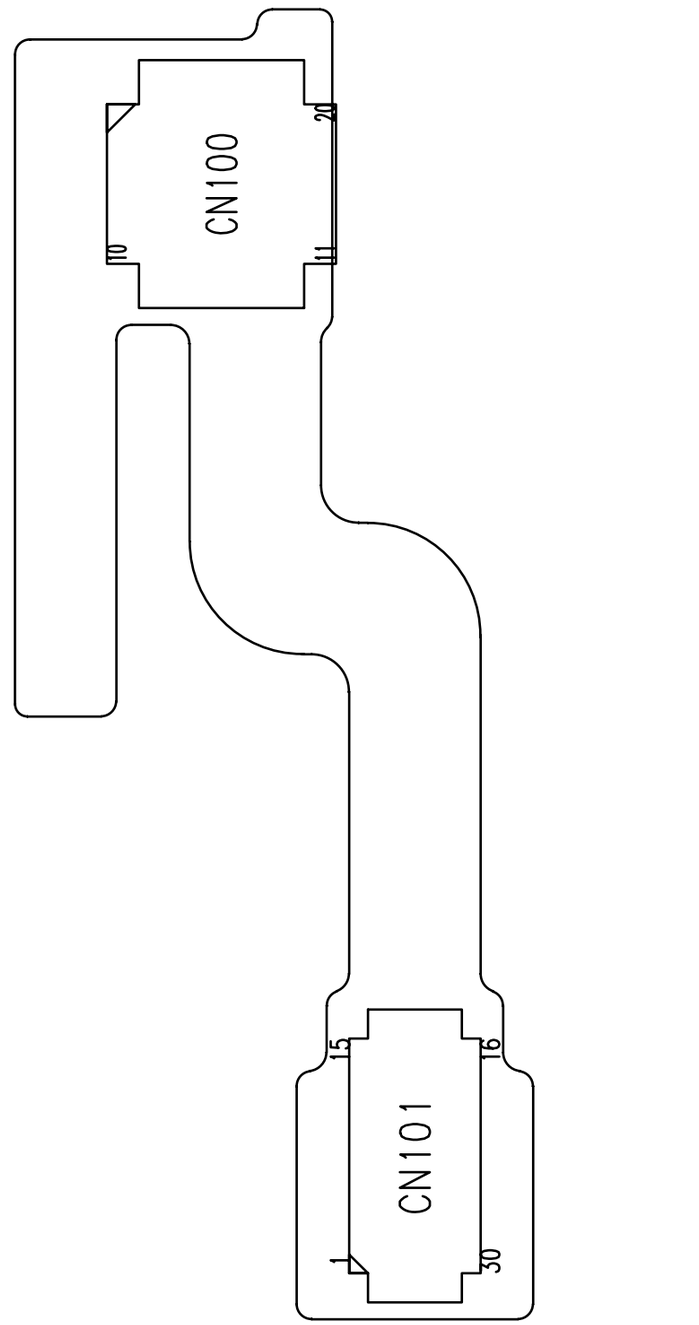
KU990-SUB-SPJY0042101-1.0-TOP

9. PCB LAYOUT



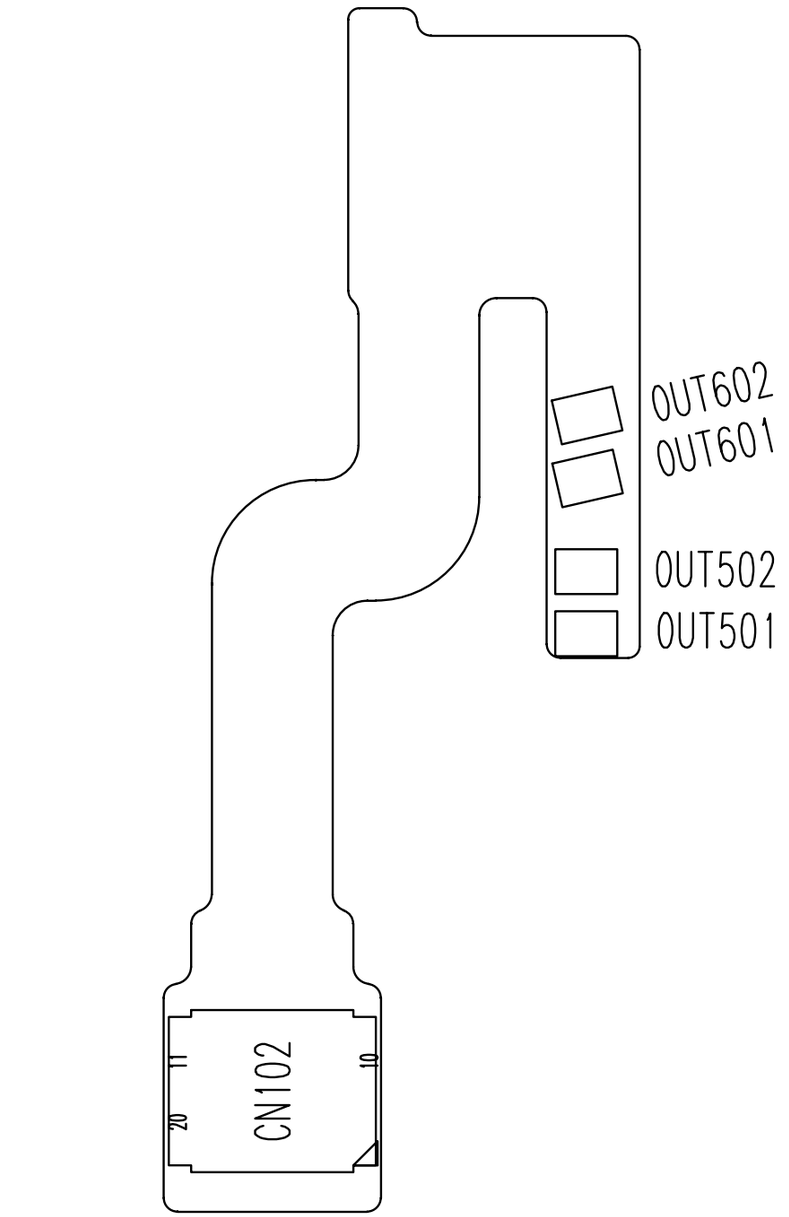
KU990-SUB-SPJY0042101-1.0-BTM

9. PCB LAYOUT



KU990-F-CAM-1.0-TOP

9. PCB LAYOUT

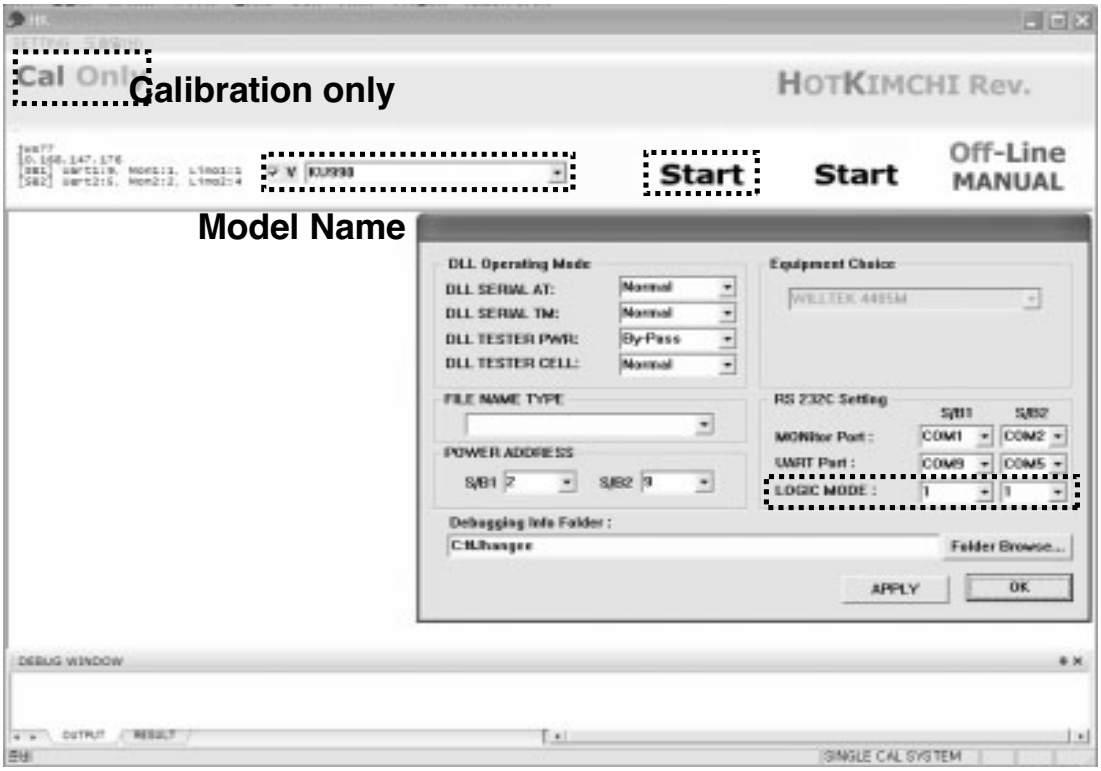


KU990-F-CAM-1.0-BOT

10. Calibration

10.1 Usage of Hot-Kimchi

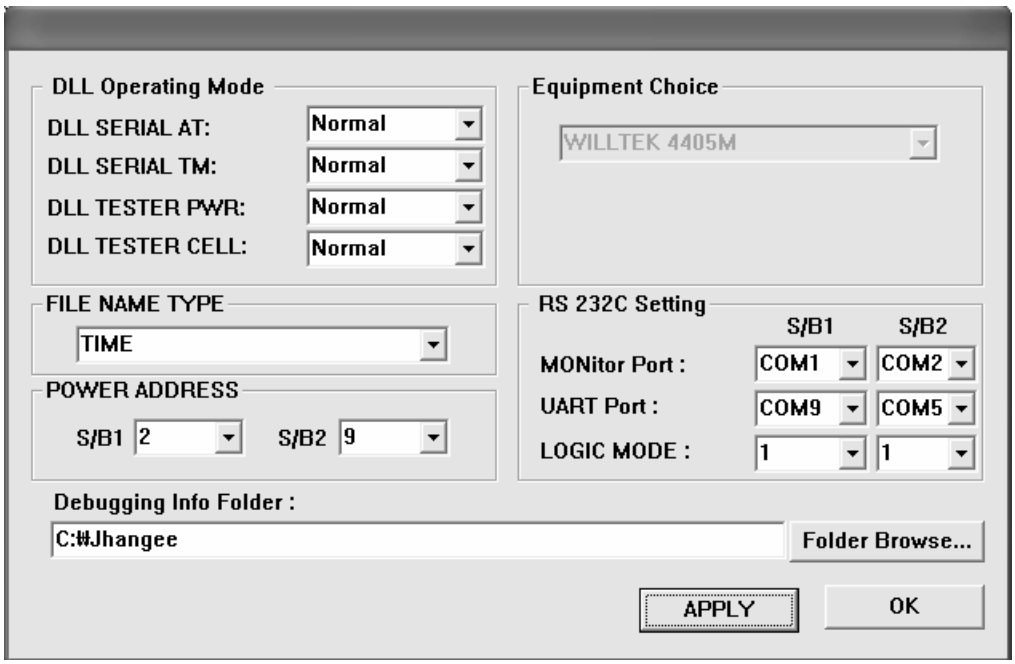
10.1.1 Calibration



• Procedure

1. Click SETTING in menu, and logic operation in sub-menu.
   Choose “1” in LOGIC MODE (means calibration alone)
2. Select the model name which you want in list box
3. Click Start button to calibrate a phone

10.1.2 Basic Setting



• Contents

√ Click SETTING in menu, and logic operation in sub-menu.

√ You can select how to control AT comm, Testset, and Power supply in DLL Operating Mode.

√ You can set UART Port and logic mode. (mode 1 : Calibration alone)

√ You can set Result File's name type. If you choose "TIME", the saved files' name is saved in a run - time.

√ You can run the multi mode (S/B1,S/B2 : You can use S/B1 for only one port.)

√ You can set the path of HOTKIMCHI program.

10.1.3 Log of Calibration and Test

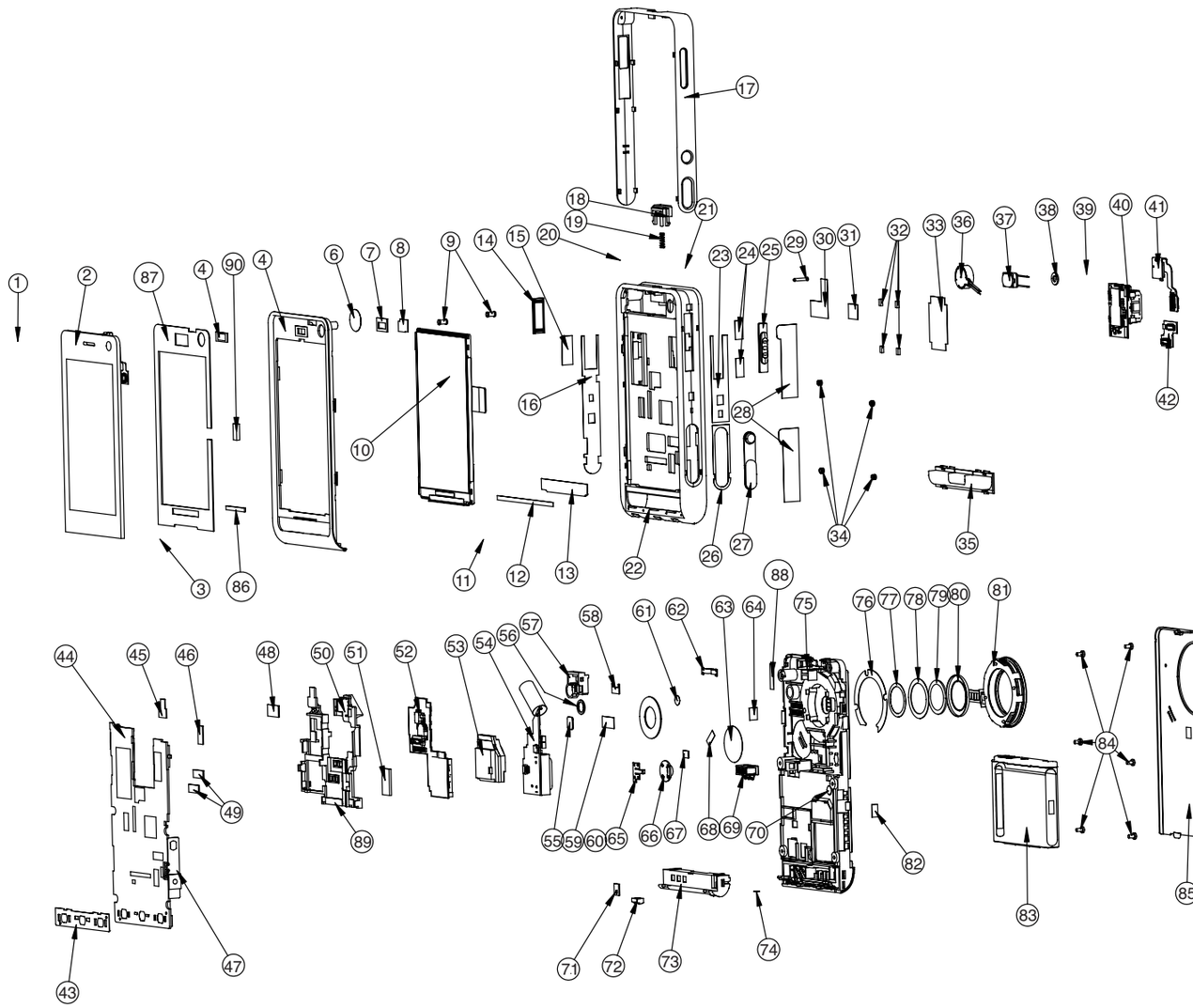
• Contents

√ On Running, Log window is created in center area. It displays logs of command, and measurements of Calibration or Autotest.

√ The result files are saved in the directory “~janghee\debug\Cal”, “~janghee\debug\Auto”, or “~janghee\debug\CalAuto”.

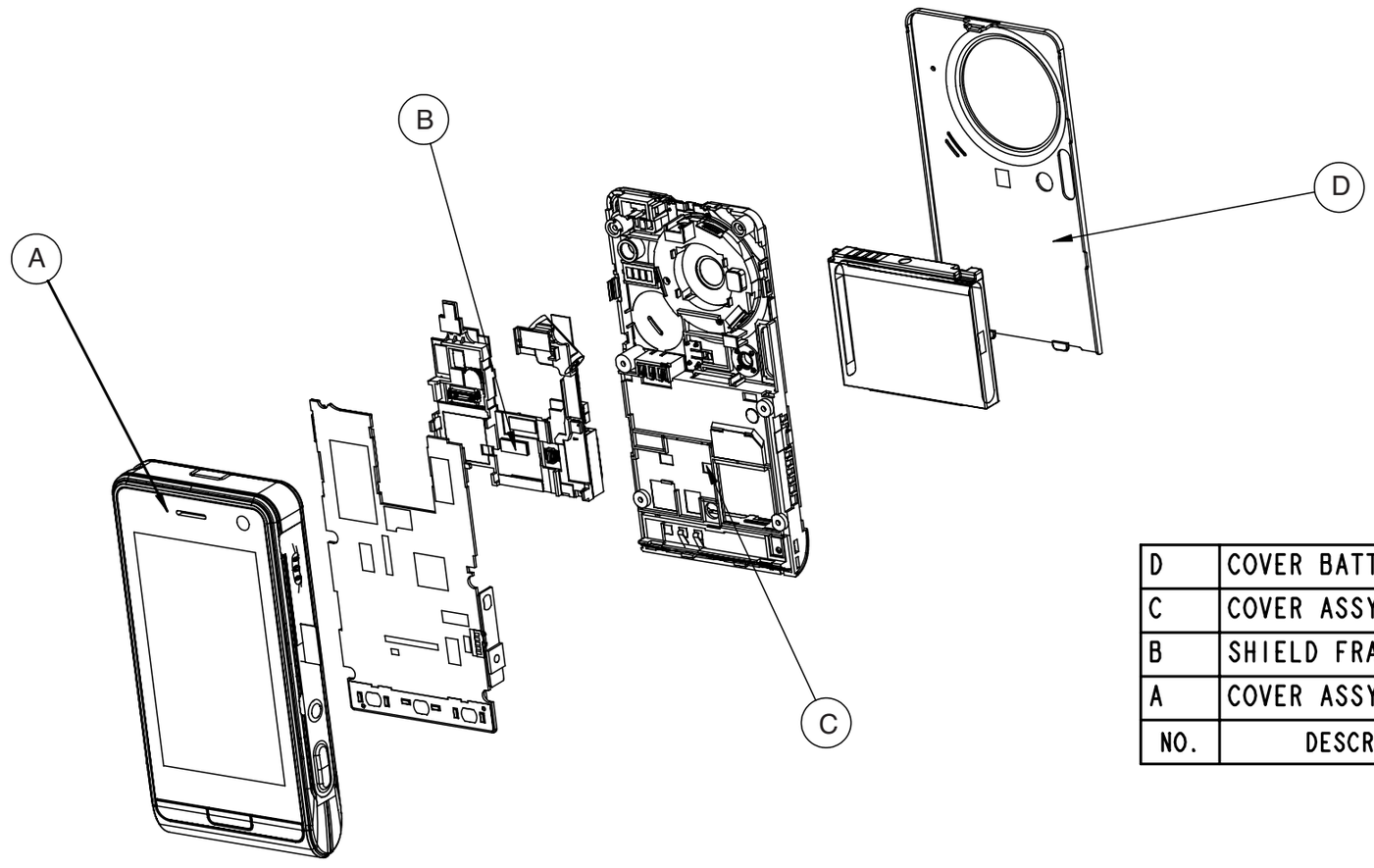
11. EXPLODED VIEW & REPLACEMENT PART LIST

11.1 EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
90	PAD, WINDOW VENT	1	MPBZ019380	
89	PAD, FRAME	1	MPBZ019000	
88	TAPE,GASKET_5	1	MTAZ019400	
87	TAPE,WINDOW	1	MTAD007200	
86	PAD,LCD IC	1	MPBG006890	
85	COVER,BATTERY	1	MCJA004760	
84	SCREW MACHINE BIND	6	GMEY001060	
83	BATTERY	1	SBPL009110	
82	PLATE	1	MPFZ002990	
81	WHEEL ASSY	1	ESQY000120	
80	DECO,CAMERA	1	MDAD003280	
79	TAPE,WHEEL DECO	1	MTAA014290	
78	WINDOW,CAMERA MEGA	1	MWAE002800	
77	TAPE,WINDOW	1	MTAD007210	
76	PAD,WHEEL BRAKET	1	MPBZ018730	
75	COVER REAR	1	MCJN006920	
74	FILTER,MIKE RUBBER	1	MFBD002530	
73	ANTENNA ASSY,INTENNA	1	SNGF0027102	
72	PAD,MIKE RUBBER	1	MPBH003240	
71	PAD,MIKE INTENNA	1	MPBH003220	
70	LABEL A/S	1	MLAB00011102	
69	BT CONNETOR	1	ENZY001990	
68	TAPE,GASKET_3	1	MTAC005830	
67	PAD,CONNETOR STROBE	1	MPBU000770	
66	WINDOW,CAMERA	1	MWAE002640	
65	SPRING,PLATE	1	MSDD000670	
64	TAPE INSULATOR	1	MTAZ019740	
63	FILTER,SPEAKER	1	MFBC003300	
62	SPRING, PLATE 2	1	MSDD000690	
61	FILTER,MOVING MIKE	1	MFBD002540	
60	TAPE,PROTECTION MEGA	1	MTAB018310	
59	TAPE, FLEXIBLE PCB	1	MTAJ000170	
58	PAD,RECEIVER	1	MPBM001940	
57	BT ANTENNA ASSY,INTENNA	1	SNGF002720	
56	PAD,MIKE_2	1	MPBH003230	
55	PAD,CONNETOR REAR	1	MPBU000760	
54	STROBE	1	SMZY001680	
53	MODULE SPEAKER	1	SUSY002480	
52	SUB PCB	1	SAJY002490	
51	PAD LCD CONN	1	MPBU000800	
50	FRAME SHIELD	1	MFEA001560	
49	PAD,CONNECTOR 3	2	MPBU000790	
48	PAD,CONNECTOR	1	MPBU000780	
47	PCB,SIDEKEY	1	SPKY004930	
46	PAD	1	MPBZ018720	
45	PAD,MOTOR	1	MPBJ004590	
44	PCB ASSY MAIN	1	SAFY020340	
43	DOME ASSY,METAL	1	ADCA006930	
42	PCB,ASSY FLEXIBLE	1	SACE0057302	
41	PCB,ASSY FLEXIBLE	1	SACY006300	
40	CAMERA 5M	1	SVCY001460	
39	CAMERA	1	SVCY001400	
38	PAD,CAMERA	1	MPBT004490	
37	RECEIVER	1	SURY001280	
36	MOTOR	1	SJMY000850	
35	KEYPAD	1	MKAG000090	
34	INSERT,NUT 15	4	MICA001990	
33	PAD,CAMERA	1	MPBT004470	
32	TAPE,GASKET 4	4	MTAC005790	
31	TAPE,GASKET	1	MTAC005810	
30	TAPE, SHIELD	1	MTAC005820	
29	SHAFT	1	MSJY000120	
28	TAPE,PROTECTION	2	MTAB018540	
27	BUTTON,SIDE	1	MBJL004270	
26	TAPE, DECO(5)	1	MTAA014660	
25	KNOB	1	MKBZ000210	
24	TAPE,INSULATOR MODE	2	MTAZ019590	
23	TAPE,DECO(1)	1	MTAA014250	
22	COVER,FRONT	1	MCJK007300	
21	TAPE,DECO(2)	1	MTAA014260	
20	TAPE,DECO(3)	1	MTAA014270	
19	SPRING,LOCKER	1	MSDC001060	
18	LOCKER,BATTERY	1	MLEA003930	
17	DECO,FRONT	1	MDAG002840	
16	TAPE,DECO(4)	1	MTAA014280	
15	TAPE,INSULATOR EARJACK	1	MTAZ019580	
14	CAP,EARPHONE JACK	1	MCCC004590	
13	PAD,LCD	1	MPBG006510	
12	TAPE,UPPER2	1	MTAZ019570	
11	TAPE,UPPER	1	MTAZ019390	
10	LCD	1	SVLM002550	
9	INSERT,NUT	2	MICA001390	
8	TAPE,CAMERA	1	MTAK000250	
7	PAD,RECEIVER	1	MPBM001920	
6	TAPE,MOTOR	1	MTAF000600	
5	COVER	1	MCJZ004650	
4	FILTER,RECEIVER	1	MFBB002320	
3	TAPE,PROTECTION KEYPAD	1	MTAB018290	
2	WINDOW, LCD	1	MWAC008310	
1	TAPE,PROTECTION WINDOW	1	MTAB018280	

ASS'Y EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
D	COVER BATTERY		MCJA0047601	
C	COVER ASSY REAR		ACGM0094701	
B	SHIELD FRAME ASSY		AFBA0007701	
A	COVER ASSY FRONT		ACGK0093401	

11.2 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	Spec	Color	Remark
1		IMT,BAR/FLIP	TIMT0000711		Black	
2	AAAY00	ADDITION	AAAY0260102		Without Color	
3	WSAY00	SOFTWARE,APPLICATION	WSAY0113601	; , , ,WORLD WIDE , ,		
3	MCCL00	CAP,BOX	MCCL0001103	BOX, TW, , , , ,	Without Color	
3	MCJZ00	COVER	MCJZ0049101	BOX, TW, , , , ,	Without Color	
3	MLAC00	LABEL,BARCODE	MLAC0004501	Export(105*40)	Without Color	
3	MLAJ00	LABEL,MASTER BOX	MLAJ0004401	LABEL,MASTER BOX(for C1300i NEW_CGR)	Without Color	
3	MLAP00	LABEL,UNIT	MLAP0001115	Reliance Seal Label	Without Color	
3	MPAA00	PACKING,BLISTER(LOWER)	MPAA0002003	PRESS, PB, , , , ,	Without Color	
3	MPAB00	PACKING,BLISTER(UPPER)	MPAB0001603	PRESS, PB, , , , ,	Without Color	
3	MPCY00	PALLET	MPCY0011201	PALLET(for G5400 O2U 1200x1000_Wooden)	Silver	
2	APEY00	PHONE	APEY0415111		Black	
3	ACGK00	COVER ASSY,FRONT	ACGK0093401		Without Color	
4	ACGZ00	COVER ASSY	ACGZ0013901	UPPER	Without Color	
5	MCJZ00	COVER	MCJZ0046501	MOLD, PC LUPOY SC-1004A, , , , ,	Black	5
6	MICA01	INSERT,FRONT	MICA0013901	2.2X4.0	Without Color	9
5	MFBB00	FILTER,RECEIVER	MFBB0023201	COMPLEX, (empty), , , , ,	Without Color	4
5	MPBM00	PAD,RECEIVER	MPBM0019201	COMPLEX, (empty), , , , ,	Without Color	7
5	MTAF	TAPE,MOTOR	MTAF0006001		Without Color	6
5	MTAK00	TAPE,CAMERA	MTAK0002501	COMPLEX, (empty), , , , ,	Without Color	8
4	ACHA00	COVER SUB ASSY,FRONT	ACHA0001801		Without Color	
5	MBJL00	BUTTON,SIDE	MBJL0042701	MOLD, ABS MP-211, , , , ,	Silver	27
5	MCCC00	CAP,EARPHONE JACK	MCCC0045901	COMPLEX, (empty), , , , ,	Black	`4
5	MCJK00	COVER,FRONT	MCJK0073001	MOLD, PC LUPOY SC-1004A, , , , ,	Black	22
6	MICA00	INSERT,FRONT	MICA0019901	M1.4 D2.2 L1.5	Gold	34
5	MDAG00	DECO,FRONT	MDAG0028401	MOLD, PC LUPOY SC-1004A, , , , ,	Black	17
5	MKBZ00	KNOB	MKBZ0002101	MOLD, PC LUPOY SC-1004A, , , , ,	Black	25
5	MLEA00	LOCKER,BATTERY	MLEA0039301	MOLD, PC LUPOY SC-1004A, , , , ,	Black	18
5	MPBT00	PAD,CAMERA	MPBT0044701	COMPLEX, (empty), , , , ,	Without Color	33
5	MSDC00	SPRING,LOCKER	MSDC0010601		Without Color	19
5	MSIY00	SHAFT	MSIY0001201	CUTTING, STS, , , , ,	Silver	29
5	MTAA00	TAPE,DECO	MTAA0142501	COMPLEX, (empty), , , , ,	Without Color	23
5	MTAA01	TAPE,DECO	MTAA0142601	COMPLEX, (empty), , , , ,	Without Color	21

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	MTAA02	TAPE,DECO	MTAA0142701	COMPLEX, (empty), , , , ,	Without Color	20
5	MTAA03	TAPE,DECO	MTAA0142801	COMPLEX, (empty), , , , ,	Without Color	16
5	MTAA04	TAPE,DECO	MTAA0146601	COMPLEX, (empty), , , , ,	Without Color	26
5	MTAB00	TAPE,PROTECTION	MTAB0185401	COMPLEX, (empty), , , , ,	Without Color	28
5	MTAC00	TAPE,SHIELD	MTAC0057901	COMPLEX, (empty), , , , ,	Without Color	32
5	MTAC01	TAPE,SHIELD	MTAC0058101	COMPLEX, (empty), , , , ,	Without Color	31
5	MTAZ00	TAPE	MTAZ0193901	COMPLEX, (empty), , , , ,	Black	11
5	MTAZ01	TAPE	MTAZ0195701	COMPLEX, (empty), , , , ,	Without Color	12
5	MTAZ02	TAPE	MTAZ0195801	COMPLEX, (empty), , , , ,	Without Color	15
5	MTAZ03	TAPE	MTAZ0195901	COMPLEX, (empty), , , , ,	Without Color	24
4	MKAG00	KEYPAD,MAIN	MKAG0000901	MOLD, PC LUPOY SC-1004A, , , , ,	Black	35
4	MLAZ00	LABEL	MLAZ0038303	PRINTING, (empty), , , , ,	White	
4	MPBG00	PAD,LCD	MPBG0065101	COMPLEX, (empty), , , , ,	Black	
4	MPBG01	PAD,LCD	MPBG0068901	COMPLEX, (empty), , , , ,	Without Color	
4	MPBT00	PAD,CAMERA	MPBT0044901	COMPLEX, (empty), , , , ,	Without Color	38
4	MPBZ00	PAD	MPBZ0193801	COMPLEX, (empty), , , , ,	Without Color	
4	MTAB00	TAPE,PROTECTION	MTAB0182801	COMPLEX, (empty), , , , ,	Without Color	1
4	MTAB01	TAPE,PROTECTION	MTAB0182901	COMPLEX, (empty), , , , ,	Without Color	3
4	MTAC00	TAPE,SHIELD	MTAC0058201	COMPLEX, (empty), , , , ,	Without Color	
4	MTAD00	TAPE,WINDOW	MTAD0072001	COMPLEX, (empty), , , , ,	Without Color	
4	MWAC00	WINDOW,LCD	MWAC0083101	COMPLEX, (empty), , , , ,	Without Color	
4	SACY00	PCB ASSY,FLEXIBLE	SACY0063001			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0057301			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0036101			
7	ENBY00	CONNECTOR,BOARD TO BOARD	ENBY0018601	10 PIN,.4 mm,STRAIGHT , ,H=0.9, SOCKET		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0047101			
7	ENBY00	CONNECTOR,BOARD TO BOARD	ENBY0019501	20 PIN,.4 mm,ETC , ,H=1.5, Socket		
7	ENBY01	CONNECTOR,BOARD TO BOARD	ENBY0040601	30 PIN,0.4 mm,ETC , ,H=1.0 ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,R/TP , ,		
6	SPCY00	PCB,FLEXIBLE	SPCY0106101	POLYI ,0.4 mm,Mutil-5,VGA-CAM ,; , , , , , , , , ,		
4	SJMY00	VIBRATOR,MOTOR	SJMY0008502	3 V,1.0 A,10*3.6T ,2.0Vrms 175HZ linear motor 1.5G ,; ,3V , , ,1.5G , , , ,		36
4	SURY00	RECEIVER	SURY0012801			37
4	SVCY00	CAMERA	SVCY0014601	CMOS ,MEGA ,5M AF, Sony 1/2.8", HPCB		39
4	SVCY01	CAMERA	SVCY0014001	CMOS ,VGA ,5.5x11.4x3.2t, Magna 1/7.4"		

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SVLM00	LCD MODULE	SVLM0025501	MAIN ,240*400 ,45.08*75*2.2 ,262k ,TFT ,TM ,DAC IC(Sharp) ,		10
3	ACGM00	COVER ASSY,REAR	ACGM0094701		Without Color	
4	ENZY00	CONNECTOR,ETC	ENZY0019901	3 PIN,3 mm,STRAIGHT , ,		70
4	ESQY00	SWITCH,ROTARY	ESQY0001201	6 V,0.005 A,HORIZONTAL ,0.04 G,KU990 Wheel Switch ,; ,2C2P ,6VDC ,0.5MA ,HORIZONTAL ,		81
4	MCJN00	COVER,REAR	MCJN0069201	MOLD, PC LUPOY SC-1004A, , , , ,	Black	75
4	MDAD00	DECO,CAMERA	MDAD0032801	PRESS, Al, 0.3, , , ,	Black	80
4	MFBC00	FILTER,SPEAKER	MFBC0033001	COMPLEX, (empty), , , , ,	Without Color	64
4	MFBD00	FILTER,MIKE	MFBD0025301	COMPLEX, (empty), , , , ,	Without Color	74
4	MFBD01	FILTER,MIKE	MFBD0025401	COMPLEX, (empty), , , , ,	Black	62
4	MLAB00	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	White	
4	MPBH00	PAD,MIKE	MPBH0032201	COMPLEX, (empty), , , , ,	Without Color	57,71
4	MPBH01	PAD,MIKE	MPBH0032301	COMPLEX, (empty), , , , ,	Without Color	
4	MPBH02	PAD,MIKE	MPBH0032401	COMPLEX, (empty), , , , ,	Without Color	72
4	MPBM00	PAD,RECEIVER	MPBM0019401	COMPLEX, (empty), , , , ,	Without Color	59
4	MPBT00	PAD,CAMERA	MPBT0044801	COMPLEX, (empty), , , , ,	Without Color	
4	MPBU00	PAD,CONNECTOR	MPBU0007601	COMPLEX, (empty), , , , ,	Without Color	56
4	MPBU01	PAD,CONNECTOR	MPBU0007701	COMPLEX, (empty), , , , ,	Without Color	68
4	MPBZ00	PAD	MPBZ0187301	COMPLEX, (empty), , , , ,	Without Color	76
4	MPFZ01	PLATE	MPFZ0029901	COMPLEX, (empty), , , , ,	Without Color	82
4	MSDD00	SPRING,PLATE	MSDD0006701	PRESS, Bs, 0.15, , , ,	Gold	66
4	MSDD01	SPRING,PLATE	MSDD0006901	PRESS, Bs, , , , ,	Gold	63
4	MTAA00	TAPE,DECO	MTAA0142901	COMPLEX, (empty), , , , ,	Without Color	79
4	MTAC00	TAPE,SHIELD	MTAC0058301	COMPLEX, (empty), , , , ,	Without Color	69
4	MTAD00	TAPE,WINDOW	MTAD0072101	COMPLEX, (empty), , , , ,	Without Color	77
4	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0001701	COMPLEX, (empty), , , , ,	Without Color	60
4	MTAZ00	TAPE	MTAZ0194001	COMPLEX, (empty), , , , ,	Without Color	47
4	MTAZ01	TAPE	MTAZ0197401	COMPLEX, (empty), 0.1, , , ,	Without Color	65
4	MWAE00	WINDOW,CAMERA	MWAE0028001	CUTTING, Quartz Glass, , , , ,	Without Color	78
4	MWAE01	WINDOW,CAMERA	MWAE0026401	MOLD, Polyarylamide IXEF 1032, , , , ,	Without Color	67
3	MLAK00	LABEL,MODEL	MLAK0006901			
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	

11.2 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	Spec	Color	Remark
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0027102	3.0 ,-2.0 dBd, ,EGSM+DCS+PCS+W-BAND I, INTERNAL ,; ,QUAD ,-2.0 ,50 ,3.0		58,73
4	SNGF01	ANTENNA,GSM,FIXED	SNGF0027201	3.0 ,-2.0 dBd, ,BLUETOOTH, INTERNAL ,; ,SINGLE ,-2.0 ,50 ,3.0		
3	GMEY00	SCREW MACHINE,BIND	GMEY0010601	1.4 mm,2.5 mm,MSWR3(BK) ,N ,+ ,NYLOK	Black	84
3	SACY00	PCB ASSY,FLEXIBLE	SACY0063003			
4	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0057302			
5	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0047102			
6	CN601	CONNECTOR,BOARD TO BOARD	ENBY0041601	28 PIN,0.4 mm,ETC , ,B to B ,; , ,0.40MM ,[empty] ,MALE ,SMD ,BK , ,		
6	ENBY01	CONNECTOR,BOARD TO BOARD	ENBY0040601	30 PIN,0.4 mm,ETC , ,H=1.0 ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,R/TP , ,		
5	SPCY00	PCB,FLEXIBLE	SPCY0103601	POLYI ,0.2 mm,DOUBLE ,5M-F-CAM ,; , , , , , , , , ,		
3	SAFY00	PCB ASSY,MAIN	SAFY0203411			44
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0075601			
5	ADCA00	DOME ASSY,METAL	ADCA0069301		Without Color	43
5	SPKY00	PCB,SIDEKEY	SPKY0049301	POLYI ,0.2 mm,DOUBLE , ,; , , , , , , , , ,		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0124311			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0091501			
6	C100	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C101	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C102	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	C103	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000196	0.75 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C105	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C108	CAP,CHIP,MAKER	ECZH0000806	5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000149	3.3 nF,50V,K,X7R,HD,1005,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C116	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C119	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C124	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C127	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C128	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C131	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C135	CAP,TANTAL,CHIP	ECTH0005501	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C136	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C140	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C141	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C142	CAP,CERAMIC,CHIP	ECCH0000196	0.75 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C143	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C144	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C145	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C146	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C147	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C148	CAP,CHIP,MAKER	ECZH0001105	8200 pF,16V ,K ,X7R ,HD ,1005 ,R/TP		
6	C149	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C152	CAP,CERAMIC,CHIP	ECCH0000195	3.9 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C153	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C154	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C155	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C156	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C159	CAP,CHIP,MAKER	ECZH0000846	8.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C160	CAP,TANTAL,CHIP	ECTH0004101	22 uF,6.3V ,M ,STD ,1608 ,R/TP		
6	C161	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C162	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C163	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C164	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C167	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C168	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C169	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C170	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C173	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C200	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C233	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C235	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C236	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C238	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C239	CAP,TANTAL,CHIP,MAKER	ECTZ0004701	4.7 uF,6.3V ,M ,STD ,1608 ,R/TP		
6	C300	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C308	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C309	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C321	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C322	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C323	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C325	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C339	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C340	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C410	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C411	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C500	CAP,TANTAL,CHIP	ECTH0005501	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C501	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C502	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C503	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C504	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C505	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C506	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C507	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C508	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C509	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C510	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C511	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C512	CAP,CHIP,MAKER	ECZH0003501	1 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C513	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C514	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C515	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C518	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C522	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C523	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C524	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C525	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C526	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C527	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C528	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C529	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C530	CAP,CERAMIC,CHIP	ECCH0000199	12 nF,16V ,K ,X7R ,HD ,1005 ,R/TP		
6	C532	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C533	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
6	C534	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C535	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C536	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C537	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C538	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C539	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C540	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C541	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C542	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
6	C545	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C546	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C547	CAP,CERAMIC,CHIP	ECCH0000199	12 nF,16V ,K ,X7R ,HD ,1005 ,R/TP		
6	C548	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C549	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C552	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C553	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C554	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C555	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C556	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C557	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C558	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C559	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C560	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C561	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C586	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C587	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C589	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C590	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C600	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C601	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C602	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C613	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C619	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C620	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C623	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C624	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C625	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C626	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C627	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C702	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C703	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C704	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C705	CAP,TANTAL,CHIP,MAKER	ECTZ0004701	4.7 uF,6.3V ,M ,STD ,1608 ,R/TP		
6	C706	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C707	CAP,TANTAL,CHIP,MAKER	ECTZ0004701	4.7 uF,6.3V ,M ,STD ,1608 ,R/TP		
6	C708	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	CN300	CONNECTOR,BOARD TO BOARD	ENBY0036001	40 PIN,0.4 mm,ETC , ,H=1.0, Socket		
6	CN500	CONNECTOR,I/O	ENRY0006401	18 PIN,0.4 mm,ANGLE , ,H=2.5, Reverse Type		
6	CN600	CONNECTOR,BOARD TO BOARD	ENBY0040701	30 PIN, mm,ETC , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,R/TP ,1.0 ,		
6	CN601	CONNECTOR,BOARD TO BOARD	ENBY0035201	14 PIN,0.4 mm,ETC , ,H=2.0, Socket		
6	CN603	CONNECTOR,BOARD TO BOARD	ENBY0029501	40 PIN,0.4 mm,ETC , ,H=3.0, Socket		
6	CN701	CONNECTOR,BOARD TO BOARD	ENBY0040701	30 PIN, mm,ETC , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,R/TP ,1.0 ,		
6	D400	DIODE,TVS	EDTY0008607	SC70-6L ,6 V,200 W,R/TP ,PB-FREE		
6	D501	DIODE,SWITCHING	EDSY0011901	EMD2 ,30 V,1 A,R/TP ,VF=1.5V(IF=200mA) , IR=30uA(VR=10V)		
6	D502	DIODE,TVS	EDTY0007401	SMD ,12 V,350 W,R/TP ,		
6	D600	DIODE,TVS	EDTY0008601	SOD-323 ,6 V,400 W,R/TP ,PB-FREE		
6	FB500	FILTER,BEAD,CHIP	SFBH0001501	120 ohm,1608 ,		
6	FB501	FILTER,BEAD,CHIP	SFBH0001501	120 ohm,1608 ,		
6	FB504	FILTER,BEAD,CHIP	SFBH0008103	1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP		
6	FL100	FILTER,SEPERATOR	SFAY0010002	900,1800 ,1900.2100 , dB, dB, dB, dB,ETC ,GSM TRIPLE, WCDMA2100 FEM, 5X4X1.3		
6	FL101	FILTER,SAW	SFSY0030201	897.5 MHz,1.4*1.1*0.6 ,SMD ,Pb-free_SAW_GSM900_Tx		
6	FL102	FILTER,SAW	SFSY0031201	2140 MHz,1.4*1.1*0.62 ,SMD ,2110M~2170M, IL 2.0, 5pin, U-B, 50-100_10, WCDMA BAND I Rx ,; ,2140 ,1.4*1.1*0.62 ,SMD ,R/TP		
6	FL103	DUPLEXER,IMT	SDMY0001202	1950 MHz,2140 MHz,1.8 dB,2.4 dB,43 dB,45 dB,3.0*2.5*1.1 ,SMD ,SAW DUPLEXER ,; ,2140 ,45 ,1950 ,43 ,2.4 ,1.8 ,3.0*2.5*1.1 ,DUAL ,SMD ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FL104	FILTER,SAW	SFSY0031101	1950 MHz,1.4*1.1*0.62 ,SMD ,RF Filter for WCDMA 2Ghz ,; ,1950 ,1.4*1.1*0.62 ,SMD ,P/TR		
6	FL300	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
6	FL301	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
6	FL302	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
6	FL303	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
6	J400	CONN,SOCKET	ENSY0018701	6 PIN,ETC , ,2.54 mm,H=1.8		
6	L100	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	L101	INDUCTOR,CHIP	ELCH0001035	4.7 nH,S ,1005 ,R/TP ,PBFREE		
6	L103	INDUCTOR,CHIP	ELCH0001036	5.6 nH,S ,1005 ,R/TP ,PBFREE		
6	L104	INDUCTOR,CHIP	ELCH0001031	15 nH,J ,1005 ,R/TP ,PBFREE		
6	L105	INDUCTOR,CHIP	ELCH0001036	5.6 nH,S ,1005 ,R/TP ,PBFREE		
6	L106	INDUCTOR,CHIP	ELCH0005014	5.6 nH,S ,1005 ,R/TP ,		
6	L107	INDUCTOR,CHIP	ELCH0001031	15 nH,J ,1005 ,R/TP ,PBFREE		
6	L108	INDUCTOR,CHIP	ELCH0005014	5.6 nH,S ,1005 ,R/TP ,		
6	L109	INDUCTOR,CHIP	ELCH0005004	22 nH,J ,1005 ,R/TP ,		
6	L110	INDUCTOR,CHIP	ELCH0004711	22 nH,J ,1005 ,R/TP ,		
6	L111	INDUCTOR,CHIP	ELCH0005004	22 nH,J ,1005 ,R/TP ,		
6	L112	INDUCTOR,CHIP	ELCH0004710	15 nH,J ,1005 ,R/TP ,		
6	L113	INDUCTOR,CHIP	ELCH0004704	4.7 nH,S ,1005 ,R/TP ,		
6	L114	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	L115	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L116	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L117	INDUCTOR,CHIP	ELCH0004708	2.7 nH,S ,1005 ,R/TP ,		
6	L118	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L119	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L121	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L123	INDUCTOR,CHIP	ELCH0004710	15 nH,J ,1005 ,R/TP ,		
6	L124	INDUCTOR,CHIP	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,		
6	L125	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L126	INDUCTOR,CHIP	ELCH0004705	8.2 nH,J ,1005 ,R/TP ,		
6	L128	INDUCTOR,CHIP	ELCH0004704	4.7 nH,S ,1005 ,R/TP ,		
6	L200	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L500	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	L501	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP , ,; , ,0.3NH , , , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L502	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	L503	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	L700	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	L701	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	MIC500	MICROPHONE	SUMY0010603	PIN ,42 dB,4.72*3.76*1.25 ,MEMS MIC , , , ,OMNI ,1.5TO5V , ,SMD		
6	Q100	TR,BJT,ARRAY	EQBA0000602	TESV ,200 mW,R/TP ,EPITAXIAL PLANAR NPN/PNP TRANSISTOR		
6	R100	RES,CHIP,MAKER	ERHZ0000212	12 Kohm,1/16W ,F ,1005 ,R/TP		
6	R101	RES,CHIP,MAKER	ERHZ0000310	680 ohm,1/16W ,F ,1005 ,R/TP		
6	R104	RES,CHIP,MAKER	ERHZ0003801	5.1 ohm,1/16W ,J ,1005 ,R/TP		
6	R107	RES,CHIP	ERHY0013101	2.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000517	91 ohm,1/16W ,J ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000517	91 ohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R115	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R117	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R119	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R120	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R123	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		
6	R124	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R125	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R126	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R200	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000537	680000 ohm,1/16W ,F ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000222	150 Kohm,1/16W ,F ,1005 ,R/TP		
6	R204	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R205	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R207	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R312	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R314	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R315	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R316	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R317	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R319	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R320	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R321	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R322	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R329	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R340	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R401	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R402	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R504	RES,CHIP,MAKER	ERHZ0003901	0.1 ohm,1/4W ,F ,2012 ,R/TP ,; ,0.1 ,1% ,1/4W ,2012 ,R/TP		
6	R506	RES,CHIP,MAKER	ERHZ0004201	121000 ohm,1/16W ,F ,1005 ,R/TP		
6	R507	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R509	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R510	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R511	RES,CHIP,MAKER	ERHZ0000431	18 Kohm,1/16W ,J ,1005 ,R/TP		
6	R512	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R514	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R515	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R516	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R517	RES,CHIP,MAKER	ERHZ0000431	18 Kohm,1/16W ,J ,1005 ,R/TP		
6	R518	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R519	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R524	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		
6	R525	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		
6	R603	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R608	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R610	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R611	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R612	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R613	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R614	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R615	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R619	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R621	RES,CHIP,MAKER	ERHZ0000288	470 Kohm,1/16W ,F ,1005 ,R/TP		
6	R622	RES,CHIP,MAKER	ERHZ0000318	80.6 Kohm,1/16W ,F ,1005 ,R/TP		
6	R623	RES,CHIP,MAKER	ERHZ0000537	680000 ohm,1/16W ,F ,1005 ,R/TP		
6	R626	RES,CHIP,MAKER	ERHZ0000701	0 ohm,1/10W ,J ,1608 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R726	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R728	RES,CHIP	ERHY0000147	56K ohm,1/16W,F,1005,R/TP		
6	R730	RES,CHIP	ERHY0000147	56K ohm,1/16W,F,1005,R/TP		
6	R731	RES,CHIP	ERHY0000147	56K ohm,1/16W,F,1005,R/TP		
6	SW100	CONN,RF SWITCH	ENWY0005301	,SMD , dB,H=1.85 ,; ,3.00MM ,STRAIGHT ,RF ADAPTER ,SMD ,R/TP ,AU , ,		
6	SW600	SWITCH,SLIDE	ESSY0004701	4 V,300 mA,HORIZONTAL , G,Slide Switch ,; ,1C3P ,[empty] ,[empty] ,[empty] ,1.5N , ,TP		
6	U100	IC	EUSY0300502	QFN ,56 PIN,R/TP ,chartered,GSM, WCDMA Single RF Transceiver, 8X8X0.9 ,; ,IC,Tx/Rx		
6	U101	PAM	SMPY0013501	35 dBm,51 %, A, dBc, dB,7x7x1.1 ,SMD ,Polar Edge		
6	U102	IC	EUSY0278501	SON5-P-0.50 ,5 PIN,R/TP ,INVERTER GATE, Pb Free		
6	U104	COUPLER,RF DIRECTIONAL	SCDY0003403	-18 dB,-.25 dB,-33 dB,1.0*0.58*0.35 ,SMD ,1920M ~ 1980M, 4pin, Pb Free , ,[empty] , , ,SMD ,R/TP		
6	U105	PAM	SMPY0013301	dBm,43 %, A,-40 dBc,26 dB,4x4x1.1 ,SMD ,2.1GHz, HSDPA		
6	U200	IC	EUSY0295601	CSP ,409 PIN,R/TP ,WCDMA/GSM/GPRS/EDGE/HSDPA Base Band		
6	U302	IC	EUSY0330701	FPBGA ,180 PIN,R/TP ,5M Camera,VGA30,Multi audio codec		
6	U402	IC	EUSY0333402	FBGA ,225 PIN,ETC ,2G(LB/128Mx16/2.7V) NAND+1G(8Mx4x32) SDRAM ,; ,IC,MCP		
6	U500	IC	EUSY0332901	WDFN ,8 PIN,R/TP ,-12V, 6.3A, Single P-MOSFET & DUAL Transistor		
6	U501	IC	EUSY0306302	BCCS ,84 PIN,R/TP ,7x7, MSMC(1.2V), pbfree		
6	U502	IC	EUSY0342001	QFN ,32 PIN,R/TP ,CODEC,3D, 5band equalizer,Stereo HP AMP, Stereo SPKAMP ,; ,IC,Audio Codec		
6	U603	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U605	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U606	IC	EUSY0335701	QFN ,8 PIN,R/TP ,1.2W, Mono, Differencial Audio AMP		
6	U701	IC	EUSY0251501	DFN33-12 ,12 PIN,R/TP ,DUALDCDC_DMBpower,400mA,600mA,1Mhz		
6	VA300	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA301	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW ,[empty] ,[empty] ,2P ,1		
6	VA500	VARISTOR	SEVY0007301	5 V,<0.5pF ,SMD ,		
6	VA501	VARISTOR	SEVY0007301	5 V,<0.5pF ,SMD ,		
6	VA502	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA503	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA504	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA505	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA506	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA507	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	VA508	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	VA601	VARISTOR	SEVY0004301	18 V, ,SMD ,10pF, 1005		
6	VA603	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA604	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA605	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	X100	VCTCXO	EXSK0007802	19.2 MHz,1.5 PPM,10 pF,SMD ,3.3*2.5*1.0 , ,; , ,2PPM ,2.8V , , , , ,SMD ,P/TP		
6	X200	RESONATOR	EXRY0002401	48 MHz,.5 %,14 pF,SMD ,2.0*1.2*0.65 ,Outgoing Tolerance 0.2%, 0.05% at -40'C ~ +85C, Built-In Cap		
6	X300	X-TAL	EXXY0023301	27 MHz,50 PPM,9 pF,50 ohm,SMD ,3.2*2.5*0.7 ,30ppm at -20'C ~ +70'C, Pb Free		
6	X500	X-TAL	EXXY0018701	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0091001			
6	C109	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C150	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C151	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C157	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C158	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C166	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C171	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C172	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C229	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C312	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C313	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C315	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C316	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C317	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C318	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C319	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C327	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C329	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C330	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C331	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C332	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C333	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C334	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C335	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C336	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C337	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C338	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C400	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C401	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C412	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C516	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C517	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C521	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C562	CAP,CERAMIC,CHIP	ECCH0002004	0.22 uF,10V ,K ,B ,TC ,1005 ,R/TP		
6	C563	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C564	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C565	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C566	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C567	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C568	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C570	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C571	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C572	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C573	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	C574	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	C575	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C576	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C577	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C578	CAP,CERAMIC,CHIP	ECCH0002004	0.22 uF,10V ,K ,B ,TC ,1005 ,R/TP		
6	C579	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C580	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C581	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C583	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C584	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C585	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C588	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C603	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C604	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C605	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C606	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C607	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C608	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C609	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C610	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C611	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C612	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C614	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C615	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C616	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C617	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C618	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C621	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C622	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C700	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C701	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C709	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C710	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C711	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C712	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C713	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C714	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C715	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	D500	DIODE,SWITCHING	EDSY0011901	EMD2 ,30 V,1 A,R/TP ,VF=1.5V(IF=200mA) , IR=30uA(VR=10V)		
6	FB300	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FB301	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FB502	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FB503	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FL600	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL601	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL700	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL701	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	L120	INDUCTOR,CHIP	ELCH0004722	47 nH,J ,1005 ,R/TP ,		
6	L127	INDUCTOR,CHIP	ELCH0009114	100 nH,J ,1005 ,R/TP ,coil		
6	L300	INDUCTOR,CHIP	ELCH0010401	2.2 uH,M ,1005 ,R/TP ,		
6	L504	INDUCTOR,CHIP	ELCH0010401	2.2 uH,M ,1005 ,R/TP ,		
6	LD700	DIODE,LED,CHIP	EDLH0011901	WHITE ,1608 ,R/TP ,PB-FREE(ZENER)		
6	LD701	DIODE,LED,CHIP	EDLH0007901	RED ,1608 ,R/TP ,Indicator,0.4T Red LED		
6	LD702	DIODE,LED,CHIP	EDLH0014501	GREEN ,1608 ,R/TP , ,; ,[empty] ,2.85~3.25 , , , , ,[empty] ,[empty] ,2P		
6	LD703	DIODE,LED,CHIP	EDLH0007901	RED ,1608 ,R/TP ,Indicator,0.4T Red LED		
6	LD704	DIODE,LED,CHIP	EDLH0011901	WHITE ,1608 ,R/TP ,PB-FREE(ZENER)		
6	LD705	DIODE,LED,CHIP	EDLH0014501	GREEN ,1608 ,R/TP , ,; ,[empty] ,2.85~3.25 , , , , ,[empty] ,[empty] ,2P		
6	R121	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R122	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R218	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R331	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R336	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R338	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R339	RES,CHIP	ERHY0000170	390 ohm,1/16W ,F ,1005 ,R/TP		
6	R345	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R400	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
6	R505	RES,CHIP,MAKER	ERHZ0000487	470 Kohm,1/16W ,J ,1005 ,R/TP		
6	R522	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
6	R528	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R529	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
6	R530	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R601	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R602	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R604	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R607	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R701	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R703	RES,CHIP	ERHY0003601	2700 ohm,1/16W ,J ,1005 ,R/TP		
6	R704	RES,CHIP	ERHY0003601	2700 ohm,1/16W ,J ,1005 ,R/TP		
6	R705	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R706	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R707	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R708	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R709	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R710	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R711	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R712	RES,CHIP,MAKER	ERHZ0000527	200 ohm,1/6W ,J ,1005 ,R/TP		
6	R713	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R714	RES,CHIP,MAKER	ERHZ0000527	200 ohm,1/6W ,J ,1005 ,R/TP		
6	R715	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R716	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R717	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R718	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R719	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R720	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R724	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R725	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	SPFY00	PCB,MAIN	SPFY0151801	FR-4 ,0.8 mm,STAGGERED-10 , ,; , , , , , , , , ,		
6	U103	IC	EUSY0335301	WLCSP(Coated) ,25 PIN,R/TP ,FM Tuner(RDS), 3.35*3.3, Pb Free		
6	U300	IC	EUSY0290701	HVSOF5 ,5 PIN,R/TP ,150mA, 2.8V, Auto Power Save LDO		
6	U301	IC	EUSY0336502	, PIN,R/TP , ,; ,IC,Charge Pump		
6	U303	IC	EUSY0346001	SON1612 ,6 PIN,R/TP ,1.9V 150mA Single LDO ,; ,IC,LDO Voltage Regulator		
6	U304	IC	EUSY0338301	uMLP ,10 PIN,R/TP ,High Speed USB Siwitch 2.0 3.7pF 6.5ohm 1.4X1.8		
6	U400	IC	EUSY0317101	WQFN ,10 PIN,R/TP ,1.8*1.4*0.75		
6	U401	IC	EUSY0271201	TQFN ,16 PIN,R/TP ,Quad Analog switch, Pb Free		
6	U503	IC	EUSY0333001	SON1612 ,6 PIN,R/TP ,3.3V, 150mA LDO Pb-Free, Active High		
6	U504	IC	EUSY0303901	QFN,130mW Capless Stereo Headphone Driver ,16 PIN,R/TP ,Capless hp amp		
6	U505	IC	EUSY0333701	TLLGA ,8 PIN,R/TP ,OVP		
6	U506	IC	EUSY0175301	MICROPAK ,6 PIN,R/TP ,SPDT ANALOG SWITCH / 2:1 MUX/DEMUX, Pb Free		
6	U507	IC	EUSY0338301	uMLP ,10 PIN,R/TP ,High Speed USB Siwitch 2.0 3.7pF 6.5ohm 1.4X1.8		
6	U600	IC	EUSY0290701	HVSOF5 ,5 PIN,R/TP ,150mA, 2.8V, Auto Power Save LDO		
6	U601	IC	EUSY0338701	SON1612-6 ,6 PIN,R/TP ,2.7V 150mA LDO Pb-Free		
6	U602	IC	EUSY0338701	SON1612-6 ,6 PIN,R/TP ,2.7V 150mA LDO Pb-Free		
6	U604	IC	EUSY0175301	MICROPAK ,6 PIN,R/TP ,SPDT ANALOG SWITCH / 2:1 MUX/DEMUX, Pb Free		
6	U607	IC	EUSY0175301	MICROPAK ,6 PIN,R/TP ,SPDT ANALOG SWITCH / 2:1 MUX/DEMUX, Pb Free		
6	U700	IC	EUSY0337101	CSP ,12 PIN,R/TP ,Touchscreen Controller IC , ,IC,A/D Converter		
6	VA600	VARISTOR	SEVY0004301	18 V, ,SMD ,10pF, 1005		
6	VA602	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA700	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
6	VA701	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA702	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA703	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA704	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA705	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA706	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA707	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA708	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	VA709	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA710	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA711	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA712	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA713	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA714	VARISTOR	SEVY0004301	18 V, ,SMD ,10pF, 1005		
6	VA715	VARISTOR	SEVY0003801	18 V, ,SMD ,		
5	WSYY00	SOFTWARE	WSYY0636510			
3	SAJY00	PCB ASSY,SUB	SAJY0024902			52
4	SAJB00	PCB ASSY,SUB,INSERT	SAJB0012001			
5	AFBA00	FRAME ASSY,SHIELD	AFBA0007701		Without Color	
6	MFEA00	FRAME,SHIELD	MFEA0015601	MOLD, ABS MP-211, , , , ,	Without Color	50
6	MPBJ00	PAD,MOTOR	MPBJ0045901	COMPLEX, (empty), , , , ,	Without Color	45
6	MPBU00	PAD,CONNECTOR	MPBU0007801	COMPLEX, (empty), , , , ,	Without Color	48
6	MPBU01	PAD,CONNECTOR	MPBU0007901	COMPLEX, (empty), , , , ,	Without Color	49
6	MPBZ00	PAD	MPBZ0190001	COMPLEX, (empty), , , , ,	Without Color	
5	MPBU00	PAD,CONNECTOR	MPBU0008001	COMPLEX, (empty), , , , ,	Without Color	51
5	MPBZ00	PAD	MPBZ0187201	COMPLEX, (empty), , , , ,	Without Color	46
5	SMZY00	MODULE,ETC	SMZY0016801			55
5	SUSY00	SPEAKER	SUSY0026002	UNIT ,8 ohm,83 dB,16 mm,19.85*18.75*6.1 Module SPK ,; , , , , , , ,[empty]		
4	SAJE00	PCB ASSY,SUB,SMT	SAJE0019001			
5	SAJC00	PCB ASSY,SUB,SMT BOTTOM	SAJC0017301			
6	C901	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C902	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C903	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C904	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C905	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	CN800	CONNECTOR,ETC	ENZY0015301	4 PIN,2.2 mm,ETC , ,H=2.3		
6	MIC900	MICROPHONE	SUMY0010507	UNIT ,42 dB,4*1.35 ,SMD		
6	R800	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R904	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R905	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R906	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R907	RES,CHIP,MAKER	ERHZ0000530	5.1 Kohm,1/16W ,J ,1005 ,R/TP		
6	S800	CONN,SOCKET	ENSY0015801	8 PIN,ETC , ,1.1 mm,H=1.9, Detect Pin		
6	U900	IC	EUSY0294701	SON1612-6 ,6 PIN,R/TP ,1.8V 150mA LDO Pb-Free		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	U901	IC	EUSY0338701	SON1612-6 ,6 PIN,R/TP ,2.7V 150mA LDO Pb-Free		
6	U902	IC	EUSY0250501	SC70 ,5 PIN,R/TP ,Comparator, pin compatible to EUSY0077701		
6	ZD900	DIODE,TVS	EDTY0008610	SOD-523 ,5 V,250 W,R/TP ,PB-FREE		
5	SAJD00	PCB ASSY,SUB,SMT TOP	SAJD0019601			
6	BAT900	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
6	C801	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C802	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C803	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C804	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C805	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C806	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C807	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C808	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C809	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C810	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C811	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C812	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C813	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C814	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C900	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	CN801	CONNECTOR,BOARD TO BOARD	ENBY0029401	40 PIN,0.4 mm,ETC , ,H=3.0		
6	M800	MODULE,ETC	SMZY0012601	4.5x3.2x1.2 Bluetooth RF Module		
6	R801	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R802	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R803	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R804	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R805	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R806	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R808	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R809	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R810	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	R811	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
5	SPJY00	PCB,SUB	SPJY0042101	FR-4 ,0.5 mm,BUILD-UP 4 , ,; , , , , , , , , ,		

11.3 Accessory

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

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	MCHZ00	COMPACT DISK	MCHZ0040301	COMPLEX, (empty), , , , ,	SILVER SNOW	
3	MCJA00	COVER,BATTERY	MCJA0047601	PRESS, Al, , , , ,	Black	85
3	MHBY00	HANDSTRAP	MHBY0004310	COMPLEX, (empty), , , , ,	Without Color	
3	MPHY00	PROTECTOR	MPHY0011301	COMPLEX, (empty), 0.1, , , ,	Without Color	
3	SBPL00	BATTERY PACK,LI-ION	SBPL0091101	3.7 V,1000 mAh,1 CELL,PRISMATIC ,KU990(NYX) BATT, Europe Label, Pb-Free ,; ,3.7 ,1000 ,0.2C ,PRISMATIC ,46x34x55 , ,BLACK ,Innerpack ,Europe(Reverse insert OK)	Black	
3	SGDY00	DATA CABLE	SGDY0010908	; ,[empty] ,[empty] ,[empty] ,18pin 6.2mm. NYX Box Package ,BLACK , ,N		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0005546	; ,10mW ,16ohm ,111dB ,20HZ ,20HZ ,[empty] ,BLACK ,18P MMI CONNECTOR ,Plug Mold(Abnormal) ,Earphone,Stereo		
3	SSAD00	ADAPTOR,AC-DC	SSAD0025003	100-240V ,5060 Hz,5.1 V,.7 A,CE ,England, 18pin plug, Nyx packing ,; , , , , , ,WALL 2P ,I/O CONNECTOR ,		

Note