

Service Manual

LG-E612

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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 common carrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

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

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the 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 Product Name

E612 : WCDMA900/2100+EGSM/GSM850/DCS/PCS

(HSDPA 7.2Mbps GPRS Class 12)

2.2 Supporting Standard

Item	Feature	Comment
Supporting Standard	WCDMA(FDD1,8)/EGSM/GSM850/DCS1800/PCS1900 with seamless handover Phase 2+(include AMR) SIM Toolkit: Class 1, 2, 3, C-E	
Frequency Range	WCDMA(FDD1) TX : 1920 – 1980 MHz WCDMA(FDD1) RX : 2110 – 2170 MHz WCDMA(FDD8) TX : 880~915 MHz WCDMA(FDD8) RX : 925~960 MHz EGSM TX: 880 – 915 MHz EGSM RX: 925 – 960 MHz GSM850 TX: 824 – 849 MHz GSM850 RX: 869 – 894 MHz DCS1800 TX : 1710 – 1785 MHz DCS1800 RX: 1805 – 1880 MHz PCS1900 TX: 1850 – 1910 MHz PCS1900 RX: 1930 – 1990 MHz	
Application Standard	WAP 2.0	

2.3 Main Parts : GSM Solution

Item	Part Name	Comment
Digital Baseband	MSM7225A: Qualcomm	
Analog Baseband	PM8029 : Qualcomm	
RF Chip	RTR6285A : Qualcomm	

2.4 HW Features

Item		Feature	Comment
Form Factor		DOP type	
Battery		1) Capacity Standard : Li-Ion , 1500mAh	
		2) Packing Type : Soft Pack	
Size		Standard : 118.3 x 66.5 x 9.88mm	
Weight		120g	With Battery
Volume		74.89cc	
PCB		L1B2 10 Layers , 0.8t	
Stand by time		2G Up to 600 hrs 3G Up to 600 hrs	@ Paging Period 5 (2G) @ DRX 7 (3G)
Charging time		3 hrs	@ Power Off / 1500mAh
Talk time		2G Up to 750mins 3G Up to 600mins	@ Power Level 13 (2G) @ Tx = 0dBm (3G)
RX sensitivity		WCDMA(FDD1) :-106.7 dBm WCDMA(FDD8) :-104.7 dBm EGSM :-105 dBm GSM850 :-105 dBm DCS 1800 :-105 dBm PCS 1900 :-105 dBm	
TX output power	WCDMA/ GSM/ GPRS	WCDMA : 24dBm/3.84MHz,+1/- 3dBm EGSM : 33dBm GSM850 : 33 dBm DCS 1800 : 30 dBm PCS 1900 : 30 dBm	Class3(WCDMA) Class4 (EGSM) Class4 (GSM850) Class1 (PCS) Class1 (DCS)
	EDGE	GSM 900 : 27 dBm DCS 1800 : 26 dBm PCS 1900 : 26 dBm	E2 (GSM900) E2 (PCS) E2 (DCS)
GPRS compatibility		GPRS Class 12	
SIM card type		Plug-In SIM 3V /1.8V	

2. PERFORMANCE

Display	Main LCD HVGA Main LCD(4.0", 320 x 480)	
Built-in Camera	5M AF CMOS Camera	
Status Indicator	No	
Keypad	Function key : 1 Side Key : 2 Power key : 1	Function Key: Home, Back, Menu, Side Key : Volume up/down
ANT	Main : Internal Fixed Type	LDS type
System connector	5 Pin	
Ear Phone Jack	3.5Phi, 4 Pole, Stereo	
PC synchronization	Yes	
Memory	eMMC : 4GByte DRAM :4Gbit	
Speech coding	FR, EFR, HR,AMR	
Data & Fax	Built in Data & Fax support	
Vibrator	Built in Vibrator	
Blue Tooth	V3.0	
MIDI(for Buzzer Function)	SW Decoded 72Poly	
Music Player	MP3/ WMA/AAC/HE-AAC/EAAC+	
Video Player	MPEG4, H.263, H.264	
Camcorder	MPEG4, H.263, H.264	
Voice Recording	Yes	
Speaker Phone mode Support	Yes	
Travel Adapter	Yes	
CDROM	No	
Stereo Headset	Yes	Not inbox
Data Cable	Yes	
T-Flash (External Memory)	Yes	Not inbox

2.5 SW Features

Item	Feature	Comment
RSSI	0 ~ 4 Levels	
Battery Charging	0 ~ 20 Levels	
Key Volume	0 ~ 7 Level	
Audio Volume	0 ~ 7 Level	
Time / Date Display	Yes	
Multi-Language	Yes	English/French/German/Spanish/Italian/Danish/Dutch/Korean
Quick Access Mode	Dialing/ Contact / Menu / Message	
PC Sync	Yes	
Speed Dial	Yes	
Profile	Yes	not same with feature phone setting
CLIP / CLIR	Yes	
Phone Book	Name / Number / Email / Website/Postal addresses/Organizations/Groups/ Birthday / Ringtone	There is no limitation on the number of items. It depends on available memory amount.
Last Dial Number	Yes	Last Dial Numbers, Last Received Numbers and Last Missed Numbers can store up to a total of 500.
Last Received Number	Yes	Last Dial Numbers, Last Received Numbers and Last Missed Numbers can store up to a total of 500.
Last Missed Number	Yes	Last Dial Numbers, Last Received Numbers and Last Missed Numbers can store up to a total of 500.

2. PERFORMANCE

Search by Number / Name	Name	
Group	Yes	There is no limitation on the number of items. It depends on available memory amount.
Fixed Dial Number	Yes	
Service Dial Number	No	
Own Number	Yes	Read only (add/edit/delete are not supported)
Voice Memo	Yes	
Call Reminder	No	
Network Selection	Automatic	
Mute	Yes	
Call Divert	Yes	
Call Barring	Yes	
Call Charge (AoC)	Yes	
Call Duration	Yes	
SMS (EMS)	There is no limitation on the number of items. It depends on available memory amount.	EMS does not support.
SMS Over GPRS	No	
EMS Melody / Picture	No	
Send / Receive / Save	No	
MMS MPEG4 Send / Receive / Save	Yes	
Long Message	MAX 2000 characters	
Cell Broadcast	Yes	
Download	Over the Web	
Game	No	
Calendar	Yes	
Memo	No	

2. PERFORMANCE

World Clock	No	
Unit Convert	No	
Stop Watch	No	
Wall Paper	Yes	
WAP Browser	No	Support only web browser based on webkit. WAP stack and wml are not supported.
Download Melody / Wallpaper	Yes	Over web browser
SIM Lock	Yes	Operator Dependent
SIM Toolkit	Class 1, 2, 3, C	
MMS	Yes	Google MMS Client
EONS	No	
CPHS	Yes	V4.2
ENS	No	
Camera	Yes	3M FF / Digital Zoom : x4
JAVA	No	
Voice Dial	No	
IrDa	No	
Bluetooth	Yes	Ver. 3.0
FM radio	Yes	
GPRS	Yes	Class 12
EDGE	Yes	Class 12
Hold / Retrieve	Yes	
Conference Call	Yes	Max. 6
DTMF	Yes	
Memo pad	No	
TTY	No	
AMR	Yes	
SyncML	Yes	
IM	No	
Email	Yes	

2.6 HW SPEC.

1) GSM transceiver specification

Item	Specification
Phase Error	Rms : 5° Peak : 20 °
Frequency Error	GSM : 0.1 ppm DCS/PCS : 0.1 ppm
EMC(Radiated Spurious Emission Disturbance)	GSM/DCS : < -28dBm
Transmitter Output power and Burst Timing	GSM : 5dBm – 33dBm ± 3dB DCS/PCS : 0dBm – 30dBm ± 3dB
Burst Timing	<3.69us
Spectrum due to modulation out to less than 1800kHz offset	200kHz : -36dBm 600kHz : -51dBm/-56dBm
Spectrum due to modulation out to larger than 1800kHz offset to the edge of the transmit band	GSM : 1800-3000kHz : < -63dBc(-46dBm) 3000kHz-6000kHz : < -65dBc(-46dBm) 6000kHz < : < -71dBc(-46dBm) DCS : 1800-3000kHz : < -65dBc(-51dBm) 6000kHz < : < -73dBc(-51dBm)
Spectrum due to switching transient	400kHz : -19dBm/-22dBm(5/0), -23dBm 600kHz : -21dBm/-24dBm(5/0), -26dBm
Reference Sensitivity – TCH/FS	Class II(RBER) : -105dBm(2.439%)
Usable receiver input level range	0.012(-15 - -40dBm)
Intermodulation rejection – Speech channels	± 800kHz, ± 1600kHz : -98dBm/-96dBm (2.439%)
AM Suppression – GSM : -31dBm – DCS : -29dBm	-98dBm/-96dBm (2.439%)
Timing Advance	± 0.5T

2) WCDMA transmitter specification

Item	Specification
Transmit Frequency	Band1 : 1920 MHz ~ 1980 MHz Band8 : 880MHz ~ 915MHz
Maximum Output Power	+24 dBm / 3.84 MHz, +1 / -3 dB
Frequency Error	within ± 0.1 PPM
Open Loop Power Control	Normal Conditions : within ± 9 dB, Extreme Conditions : within ± 12 dB
Minimum Transmit Power	< -50 dBm / 3.84 MHz
Occupied Bandwidth	< 5 MHz at 3.84 Mcps (99% of power)
Adjacent Channel Leakage Power Ratio (ACLR)	> 33 dB @ ± 5 MHz, > 43 dB @ ± 10 MHz
Spurious Emissions $ f-f_c > 12.5$ MHz	< -36 dBm / 1 kHz RW @ $9 \text{ kHz} \leq f < 150 \text{ kHz}$ < -36 dBm / 10 kHz RW @ $150 \text{ kHz} \leq f < 30 \text{ MHz}$ < -36 dBm / 100 kHz RW @ $30 \text{ MHz} \leq f < 1 \text{ GHz}$ < -30 dBm / 1 MHz RW @ $1 \text{ GHz} \leq f < 12.75 \text{ GHz}$ < -60 dBm / 3.84 MHz RW @ $869 \text{ MHz} \leq f \leq 894 \text{ MHz}$ < -60 dBm / 3.84 MHz RW @ $1930 \text{ MHz} \leq f \leq 1900 \text{ MHz}$ < -60 dBm / 3.84 MHz RW @ $2110 \text{ MHz} \leq f \leq 2155 \text{ MHz}$ < -67 dBm / 100 kHz RW @ $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$ < -79 dBm / 100 kHz RW @ $935 \text{ MHz} < f \leq 960 \text{ GHz}$ < -71 dBm / 100 kHz RW @ $1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$ < -41 dBm / 300 kHz RW @ $1884.5 \text{ MHz} < f < 1919.6 \text{ MHz}$
Transmit Intermodulation	< -31 dBc @ 5 MHz & < -41 dBc @ 10 MHz when Interference CW Signal Level = -40 dBc
Error Vector Magnitude	< 17.5 %, when Pout $\geq$ -20 dBm
Peak Code Domain Error	< -15 dB at Pout $\geq$ -20 dBm

3) WCDMA receiver specification

Item	Specification																			
Receive Frequency	Band1 : 2110 ~ 2170 MHz Band8 : 925~960MHz																			
Reference Sensitivity Level	Band1 : BER < 0.001 when $\hat{I}_{or}$ = -106.7 dBm / 3.84 MHz Band8 : BER < 0.001 when $\hat{I}_{or}$ = -103.7 dBm / 3.84 MHz																			
Maximum Input Level	BER < 0.001 when $\hat{I}_{or}$ = -25 dBm / 3.84 MHz																			
Adjacent Channel Selectivity (ACS)	ACS > 33 dB where BER < 0.001 when $\hat{I}_{or}$ = -92.7dBm / 3.84 MHz & I_{oac} = -52 dBm / 3.84 MHz @ ± 5 MHz(Band1) $\hat{I}_{or}$ = -89.7dBm / 3.84 MHz & I_{oac} = -52 dBm / 3.84 MHz @ ± 5 MHz(Band8)																			
Blocking Characteristic	BER < 0.001 when $\hat{I}_{or}$ = -103.7 dBm / 3.84 MHz & $I_{blocking}$ = -56 dBm / 3.84 MHz @ $F_{uw}(\text{offset}) = \pm 10$ MHz or $I_{blocking}$ = -44 dBm / 3.84 MHz @ $F_{uw}(\text{offset}) = \pm 15$ MHz																			
Spurious Response	BER < 0.001 when $\hat{I}_{or}$ = -103.7 dBm / 3.84 MHz & $I_{blocking}$ = -44 dBm																			
Intermodulation	BER < 0.001 when $\hat{I}_{or}$ = -103.7 dBm / 3.84 MHz, $\hat{I}_{or}$ = -100.7 dBm / 3.84 MHz(Band8) & I_{ouw1} = -46 dBm @ $F_{uw1}(\text{offset}) = \pm 10$ MHz & I_{ouw2} = -46 dBm / 3.84 MHz @ $F_{uw2}(\text{offset}) = \pm 20$ MHz																			
Spurious Emissions	< -57 dBm / 100 kHz BW @ $9 \text{ kHz} \leq f < 1 \text{ GHz}$ < -47 dBm / 1 MHz BW @ $1 \text{ GHz} \leq f \leq 12.75 \text{ GHz}$																			
Inner Loop Power Control In Uplink	Adjust output(TPC command) <table><tr><td>cmd</td><td>1dB</td><td>2dB</td><td>3dB</td></tr><tr><td>+1</td><td>+0.5/1.5</td><td>+1/3</td><td>+1.5/4</td></tr><tr><td>0</td><td>-0.5/+0.5</td><td>-0.5/+0.5</td><td>-0.5/+0.5</td></tr><tr><td>-1</td><td>-0.5/-1.5</td><td>-1/-3</td><td>-1.5/-4</td></tr></table> group(10equal command group) <table><tr><td>+1</td><td>+8/+12</td><td>+16/+24</td></tr></table>	cmd	1dB	2dB	3dB	+1	+0.5/1.5	+1/3	+1.5/4	0	-0.5/+0.5	-0.5/+0.5	-0.5/+0.5	-1	-0.5/-1.5	-1/-3	-1.5/-4	+1	+8/+12	+16/+24
cmd	1dB	2dB	3dB																	
+1	+0.5/1.5	+1/3	+1.5/4																	
0	-0.5/+0.5	-0.5/+0.5	-0.5/+0.5																	
-1	-0.5/-1.5	-1/-3	-1.5/-4																	
+1	+8/+12	+16/+24																		

4) HSDPA transmitter specification

Item	Specification				
Transmit Frequency	Band1 : 1920 MHz ~ 1980 MHz Band8 : 880MHz ~ 915MHz				
Maximum Output Power	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				
HS-DPCCH	Sub-test in table C.10.1.4	Power step	Power step slot boundary	Power step size, P [dB]	Transmitter power step tolerance [dB]
	5	1	Start of Ack/Nack	6	+/- 2.3
		2	Start of CQI	1	+/- 0.6
		3	Middle of CQI	0	+/- 0.6
		4	End of CQI	5	+/- 2.3
Spectrum Emission Mask	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0				
	Frequency offset from carrier Δf		Minimum requirement		Measurement Bandwidth
	2.5 ~ 3.5 MHz		-35-15 $\times(\Delta f$ -2.5)dBc		30 kHz
	3.5 ~ 7.5 MHz		-35-1 $\times(\Delta f$ -3.5)dBc		1 MHz
	7.5 ~ 8.5 MHz		-35-10 $\times(\Delta f$ -7.5)dBc		1 MHz
	8.5 ~ 12.5 MHz		-49dBc		1 MHz
Adjacent Channel Leakage Power Ratio (ACLR)	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0 				

5) HSDPA receiver specification

Item	Specification
Receive Frequency	Band1 : 2110 MHz ~ 2170 MHz Band8 : 925 MHz ~ 960 MHz
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

6) WLAN 802.11b transceiver specification

Item	Specification
Transmit Frequency	2400 MHz ~ 2483.5 MHz (CH1~CH13)
Tx Power Level	≤ 20dBm under (Europe), ≤ 30dBm under (USA)
Frequency Tolerance	within ±25 PPM
Chip clock Frequency Tolerance	within ±25 PPM
Spectrum Mask	≤ -30 @ $f_c - 22\text{MHz} < f < f_c - 11\text{MHz}$ and $f_c + 11\text{MHz} < f < f_c + 22\text{MHz}$ ≤ -50 @ $f < f_c - 22\text{MHz}$ and $f > f_c + 22\text{MHz}$
Power ramp on/off time	≤ 2us
Carrier Suppression	≤ -15dB
Modulation Accuracy (Peak EVM)	≤ 35%
Spurious Emissions	< -36 dBm @ 30MHz ~ 1GHz < -30 dBm above @ 1GHz ~ 12.75GHz < -47 dBm @ 1.8GHz ~ 1.9GHz < -47 dBm @ 5.15GHz ~ 5.3GHz
Rx Min input Sensitivity	≤ -76dBm(1Mbps,2Mbps,5.5Mbps,11Mbps) @ FER ≤ 8%
Rx Max input Sensitivity	≥ -10dBm(1Mbps,2Mbps,5.5Mbps,11Mbps) @ FER ≤ 8%
Rx Adjacent Channel Rejection	≥ 35dB @FER ≤ 8%, interference input signal -70dBm@ $f_c \pm 25\text{MHz}$ (11Mbps)

7) WLAN 802.11g transceiver specification

Item	Specification
Transmit Frequency	2400 MHz ~ 2483.5 MHz (CH1~CH13)
Tx Power Level	≤ 20dBm under (Europe), ≤ 30dBm under (USA)
Frequency Tolerance	within ±25 PPM
Chip clock Frequency Tolerance	within ±25 PPM
Spectrum Mask	≤ -20 @ ±11MHz offset (9Mhz ~ 11MHz) ≤ -28 @ ±20MHz offset (11MHz ~ 20Mhz) ≤ -40 @ ±30MHz offset (20MHz ~ 30Mhz)
Transmitter constellation error (rms EVM)	≤ -5dB
Spurious Emissions	< -36 dBm @ 30MHz ~ 1GHz < -30 dBm above @ 1GHz ~ 12.75GHz < -47 dBm @ 1.8GHz ~ 1.9GHz < -47 dBm @ 5.15GHz ~ 5.3GHz
Rx Min input Sensitivity	PER ≤ 10% -82dBm@6Mbps, -81dBm@9Mbps, -79dBm@12Mbps -77dBm@18Mbps, -74dBm@24Mbps, -70dBm@36Mbps -66dBm@48Mbps, -65dBm@54Mbps
Rx Max input Sensitivity	≥ -20dBm(6,9,12,18,24,36,48,54Mbps) @ PER ≤ 10%
Rx Adjacent Channel Rejection	PER ≤ 10%, ACR ≥ 16dB@6Mbps, ACR ≥ 15dB@9Mbps, ACR ≥ 13dB@12Mbps, ACR ≥ 11dB@18Mbps, ACR ≥ 8dB@24Mbps, ACR ≥ 4dB@36Mbps ACR ≥ 0dB@48Mbps, ACR ≥ -1dB@54Mbps ※ ACR shall be measured by setting the desired signal's strength 3 dB above the rate-dependent sensitivity specified in min input sensitivity

8) GPS receiver specification

Item	Specification
Receive Frequency	1574.42 MHz ~ 1576.42 MHz
Minimum Sensitivity	1 satellite $\geq -142\text{dBm}$, 7 satellites $\geq -147\text{dBm}$ at coarse time aiding

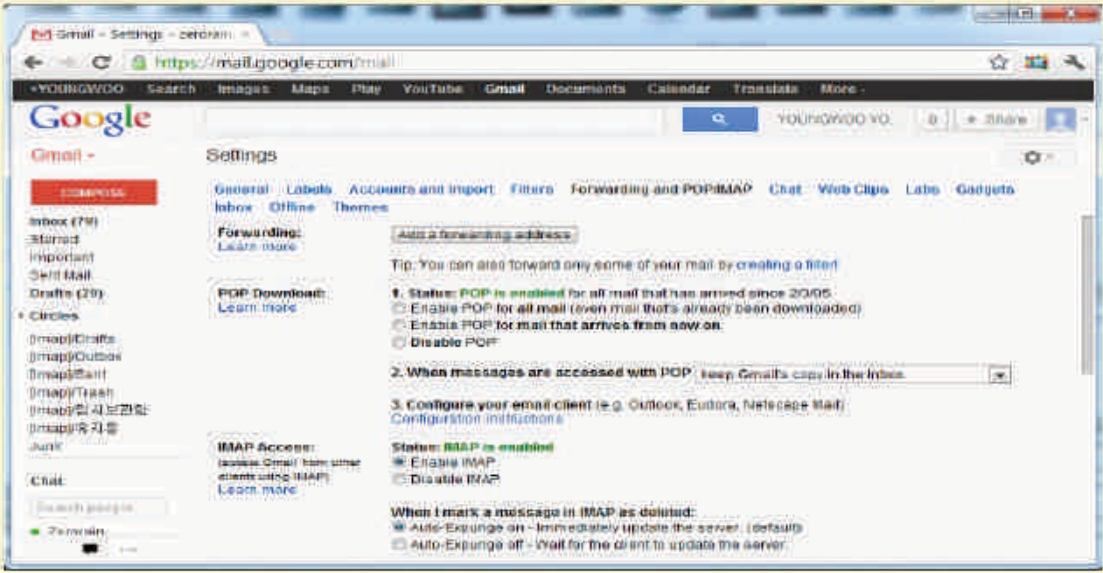
3. CIC AND SERVICE CENTER

3.1 CIC FAQ

No	FAQ	Q&A
1	Q	I forgot my PhoneLock password.
	A	1. Applied Recovery mode. (When phone is powered off, press the bottom volume key and power key at the same time. Once LED is turned on at the bottom, press home key while releasing the keys you pressed. It goes to Recovery mode menu.) 2. Check the staff in charge of manual 3. Press 3845#*612# on dial menu in normal status, go to WCDMA ONLY -> Factory Reset will start.
		1. How to disable Pattern Lock, Password and PIN. 2. Request for checking out it is specified in the user manual. 3. Descriptions on HW factory reset key combination and how to do it.
2	Q	What should I do to add or remove files to and from the SD card?
	A	1. Connect USB - Select MTP
		1.PC<-> SD CARD 2.PHONE<-> SD CARD
3	Q	3G connection does not work properly abroad.
	A	Other continents except Europe, 3G can be unavailable due to the difference of frequency. But GSM connection is available so you can call or receive SMS.
		- ex) 1. Europe<->Europe 2. Europe<->Continent(North America, Asia etc).

3. CIC AND SERVICE CENTER

No	FAQ	Q&A
4	Q	What should I do to deal with the wrong GPS location?
	A	Your current location may not accurate depending on the location in use. (Open sky, indoor, semi indoor) - You may check Google location service under Open sky condition by following Setting > Location Services > GPS satellite, Google location service - It may be less accurate under indoor/semi indoor condition if phone fails to find satellite even after GPS satellite and Google location service.
5	Q	What should I do to deal with the incompatible apps downloaded?
	A	1. Uninstall
6	Q	What should I do to create an email account?
	A	You should check if data is available when you initiate your account. (You need to check if data is available under Wi-Fi and Local state) If data is available, you can proceed after entering ID and Password.

No	FAQ	Q&A
7	Q	Email registration does not work.
	A	1. For Exchange account, enter ID and PW and press Next button. You may have to select manually 'Accept all certificates' 2. For POP/IMAP account, you may have to change the settings of account. You need to check if the account you are using is available for POP/IMAP. (e.g. Google Mail)  The screenshot shows the Gmail Settings page for a user named YOUNGWOO VO. The 'Forwarding and POP/IMAP' tab is selected. Under 'POP Download', the status is 'POP is enabled' for mail arriving since 2010/05. Under 'IMAP Access', the status is 'IMAP is enabled'. The 'Auto-Expunge' option is set to 'on'.
8	Q	Apps not in use appear as programs in use even when I kill them.
	A	Preload application is not killed.

No	FAQ	Q&A
9	Q	Wi-Fi connection does not work properly.
	A	There may be many reasons that Wi-Fi is not connected. Please, check followings. 1. Check if Wi-Fi is turned ON. 2. AP information and the information user enter can be different. 1) For your access, check security type and password of AP security information. 2) AP information can be renewed. "Forget" the former AP by clicking and try again to connect when AP list is newly updated. 3. Check if you are trying to connect AP which requires you authorization by mobile carriers. 1) If your device is not authorized by carrier, you may not be able to connect or use Wi-Fi. 4. In case of the problem on DHCP server, dynamic IP address may not be allocated. If so, please find AP manager.
10	Q	What should I do to install the PC Sync Program?
	A	Go to http://www.lgmobile.co.kr and press "Smartphone" next to PC initiation program on upper central part. Download LG PC Suite (for models after PRADA) or LG Mobile Sync for Android (for models before PRADA) and execute the program to install. You should install both of LG USB Driver and WIndowMediaPlayer10 or newer (for LG PC Suite).
11	Q	What should I do to install the Phone Driver?
	A	You can download it from phone manual or the website of LG Electronics.

No	FAQ	Q&A
12	Q	How to connect internet/data network
	A	1. Data On in Setting menu. (Settings > More... > Mobile networks > Data enabled > check) 2. Data On in Notification Bar. (--> Drag Notification Bar down to screen and activate Data Icon) (Data Icon setting: Drag Notification Bar down to screen > Edit > Setting on upper right > Data enabled > check)
13	Q	What should I do to connect the PC Sync program with the phone?
	A	1. For USB connection : After attaching phone to PC with a USB, set USB connection type on phone as "LG software" and click on the connection button to PC Suite program. Desktop>Menu button>system setting>connectivity>USB connection type 2. For Wifi connection: Connect phone and PC with the same AP (same Wi-Fi)>Desktop>Menu buoon>system setting>connectivity>check the checkbox of PC Suite Wi-Fi connection below and press OK. Search phone by pressing Wi-Fi connection button on PC Suite>Once phone is found, select it and press connection button.
14	Q	Can I change the language setting?
	A	Settings-language input - language
15	Q	What should I do for Reset and Factory Reset?
	A	reset : settings - back up and reset -factory data reset factory reset : 3845#*612# - WCDMA only - factory reset

3. CIC AND SERVICE CENTER

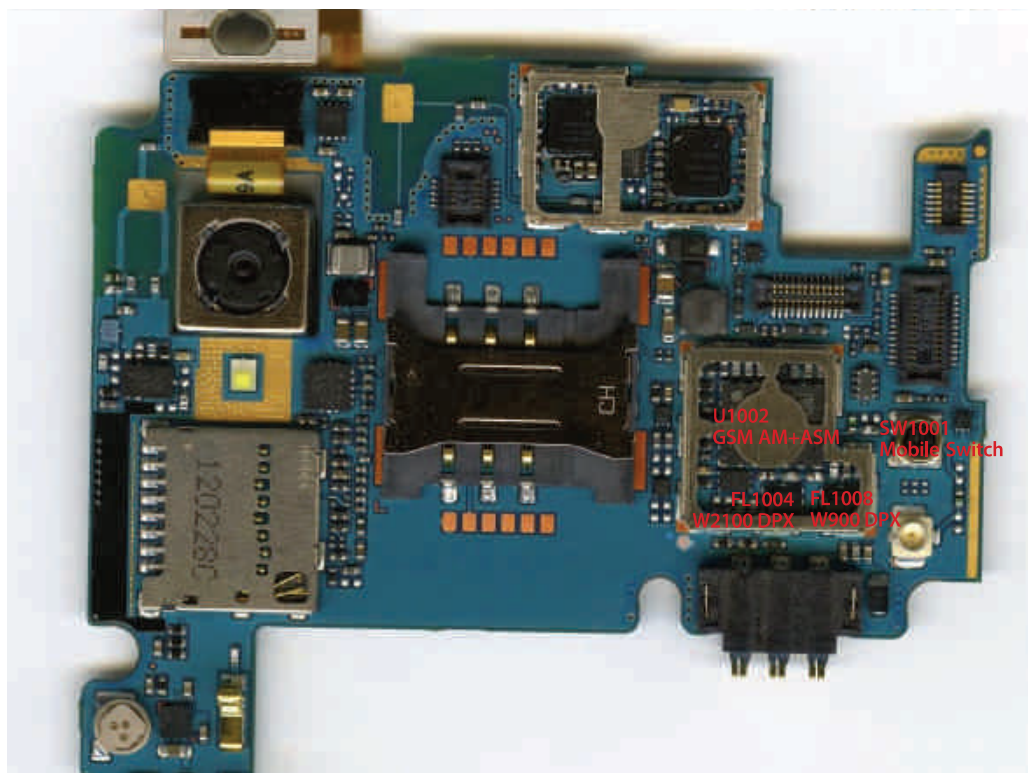
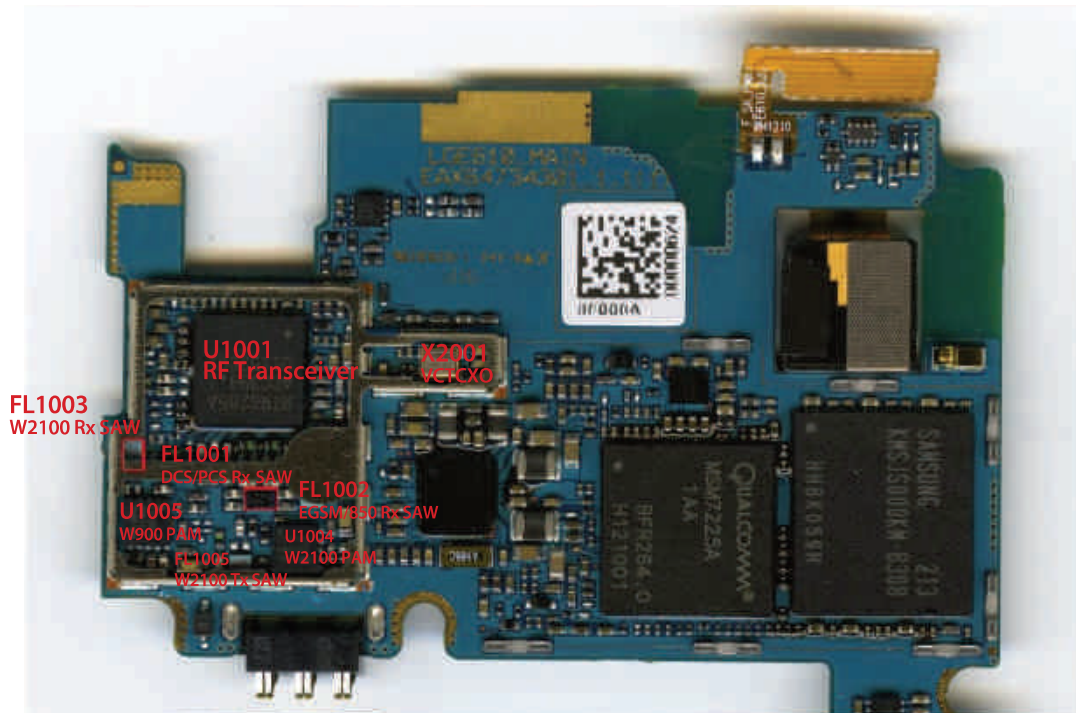
No	FAQ	Q&A
16	Q	What should I do to change the bell sound?
	A	settings- sounds
17	Q	Is it compatible with other devices?
	A	bluetooth, wifi direct, wifi
ex) 1. Bluetooth 2. other		
18	Q	What should I do to use HDMI?
	A	Not available
19	Q	What should I do to solve HDMI error?
	A	Not available
20	Q	What should I do to use SmartShare?
	A	Select smart share application -> Connect WiFi / WiFi direct
21	Q	What should I do to deal with Smartshare error?
	A	See when wifi is not connected. In case that it is not running even if network is connected, ask service center or R&D.

3. CIC AND SERVICE CENTER

No	FAQ	Q&A
22	Q	My battery runs out so fast.
	A	Check if applications not in use are running (menu-app settings), Set LCD brightness down. Disable Bluetooth, WiFi, 3G Data, GPS when do not use. Use Power save mode.
23	Q	What should I do to find out the schedule for new releases of OS or SW?
	A	Notice on the webpage of LG Electronics / Ask Service Center
24	Q	What should I do to update SW?
	A	Visit Service Center / web download
25	Q	What about the warranty period and limit?
	A	It is not Development department-related issue.
26	Q	What kinds of phone accessories are there?
	A	Battery, TA, Data cable, User Guide, Ear-set, External Memory(2GB), NFC Tag -> In-box item list is different depending on region.
27	Q	We ask you for more than 3 Qs&As expected regarding new products, features and other specific things.
	A	Q1.For use of Dual Sim, is 3G SIM available to both SIM1 and SIM2? Yes, it is. Q2. For use of Dual Sim, can I take a new call from SIM2 during the call from SIM1? Yes, the call from SIM1 is hold and you can take new call from SIM2. Q3. For connection to N/W, can I set a connection through only one certain SIM ? Yes, On Setting menu, you can set default data network.

4. TROUBLE SHOOTING

4.1 RF Component

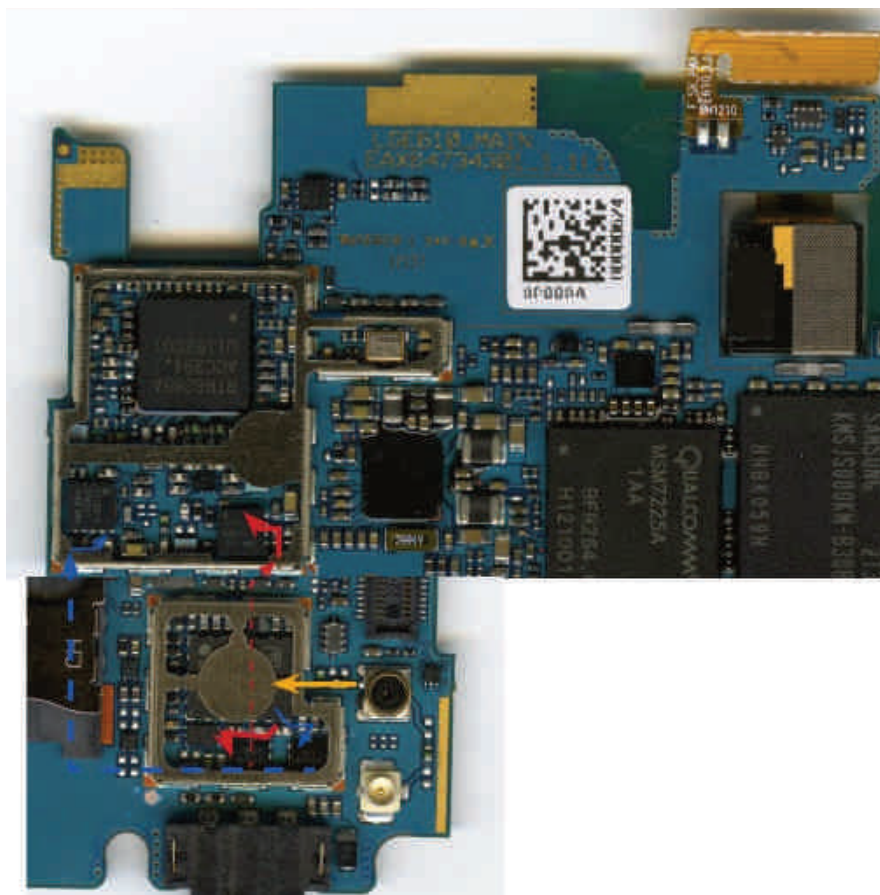


4. TROUBLE SHOOTING

RF component (WCDMA / GSM)

Reference	Description	Reference	Description
U1001	RTR6285A(Transceiver)	FL1008	WCDMA (VIII) Duplexer
U1002	GSM TX Module (ASM+GSM PAM)	FL1003	WCDMA (I) RX SAW Filter
U1004	WCDMA (I) PAM	FL1002	EGSM/850 Rx saw filter
U1005	WCDMA (VIII) PAM	FL1001	DCS/PCS Rx saw filter
FL1005	WCDMA (I) TX SAW Filter	X2001	VCTCXO(19.2MHz)
FL1004	WCDMA (I) Duplexer	SW1001	RF Antenna Connector

4.2 SIGNAL PATH



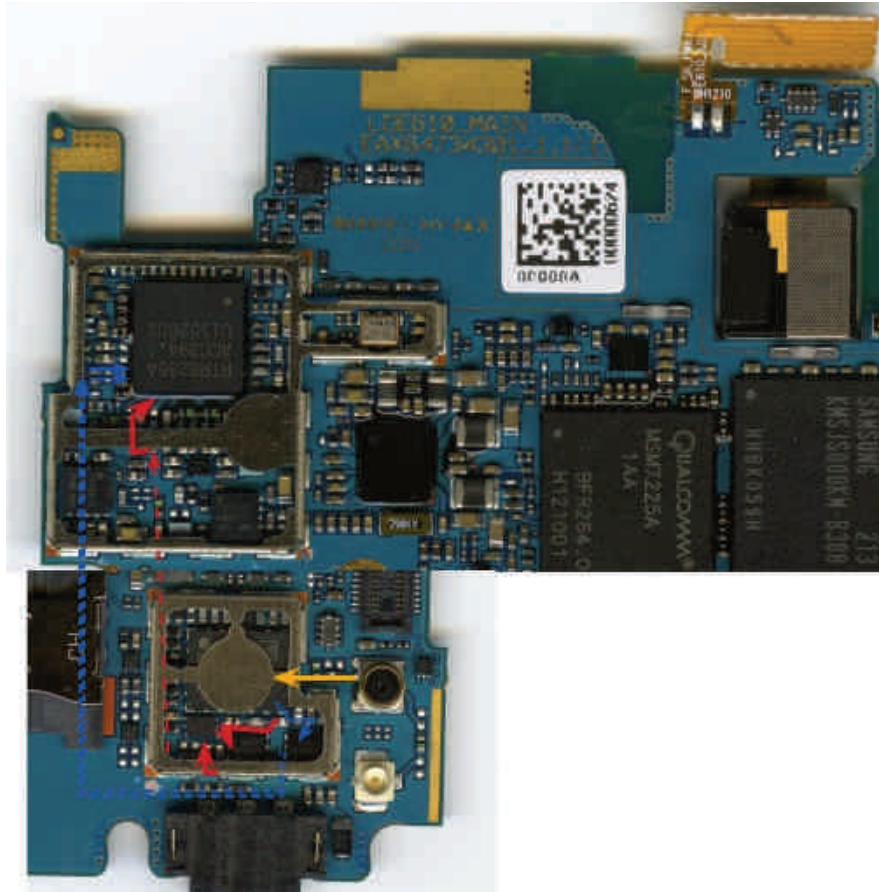
WCDMA I and VIII Band TX Signal PATH

D2. WCDMA 2100 TX PATH

E2. WCDMA 900 TX PATH

F1. COMMON TX/RX PATH

4. TROUBLE SHOOTING



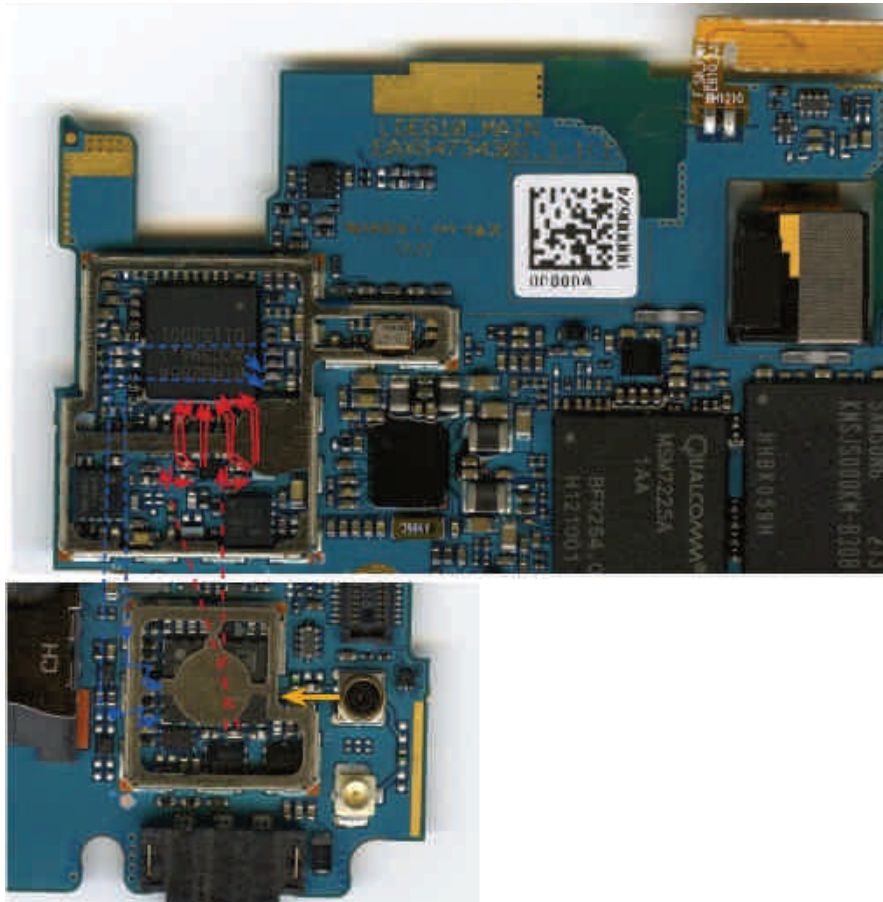
WCDMA I and VIII Band RX Signal PATH

D1. WCDMA 2100 RX PATH

E1. WCDMA 900 RX PATH

F1. COMMON TX/RX PATH

4. TROUBLE SHOOTING



GSM850/GSM900/DCS/PCS's RX/TX Signal PATH

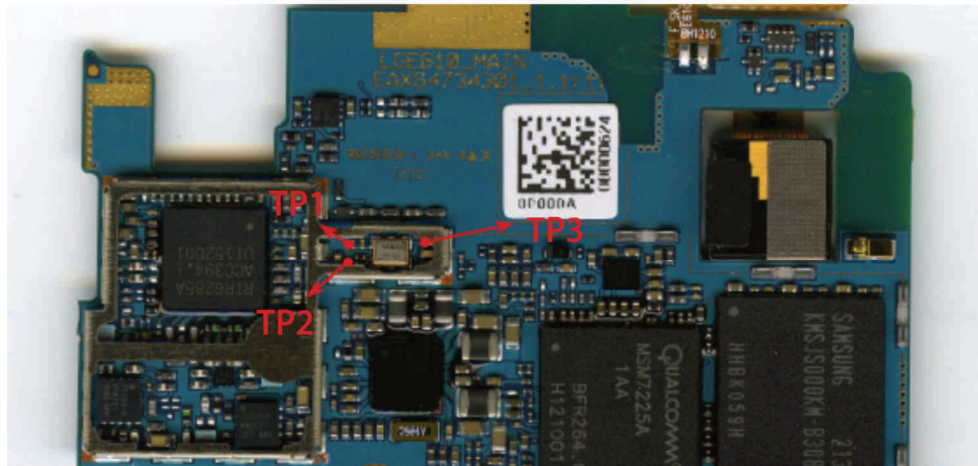
A. GSM850/GSM900/DCS1800/PCS1900 RX PATH

B. GSM850/GSM900/DCS1800/PCS1900 TX PATH

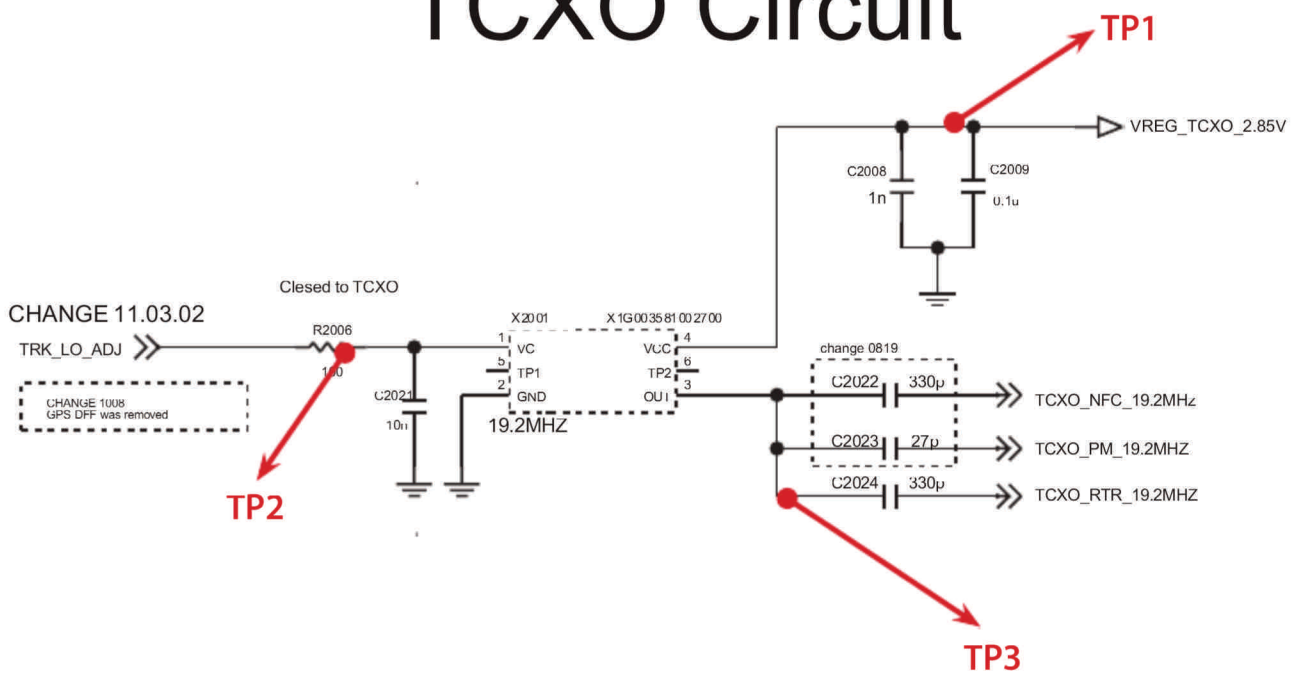
C1. COMMON TX/RX PATH

4.3 Checking TCXO Block

The output frequency (19.2MHz) of TCXO (X2001) is used as the reference one of RTR6285A and PM8029 internal VCO.

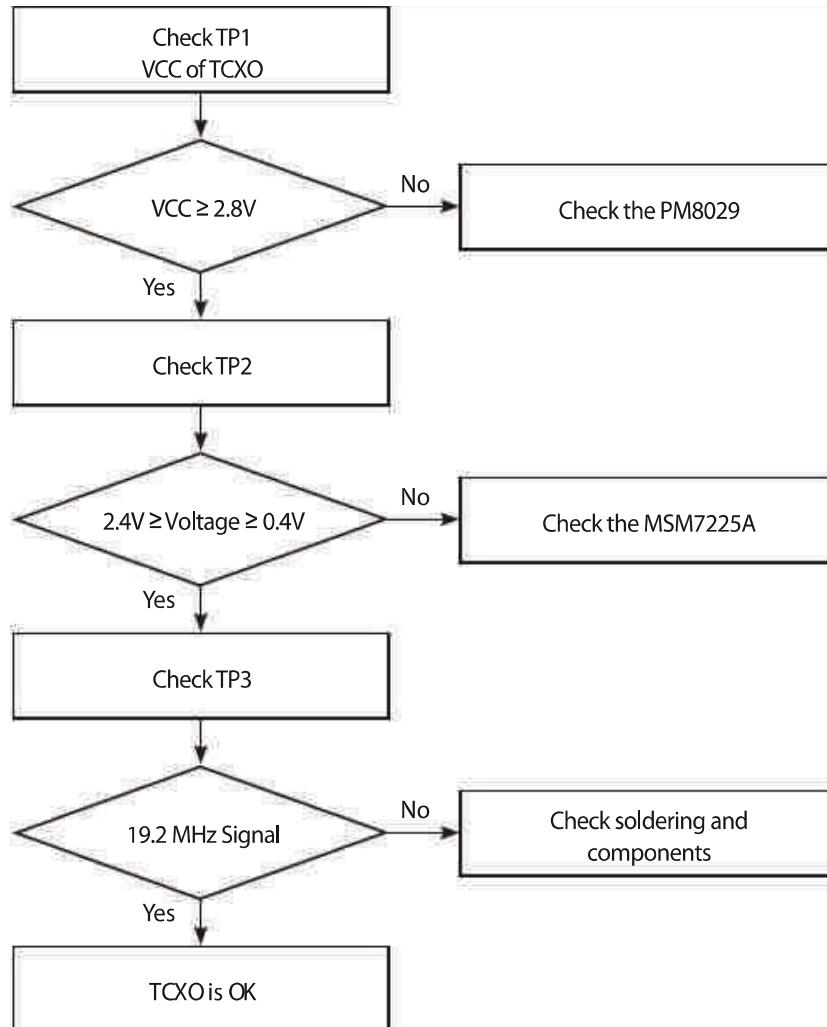


TCXO Circuit

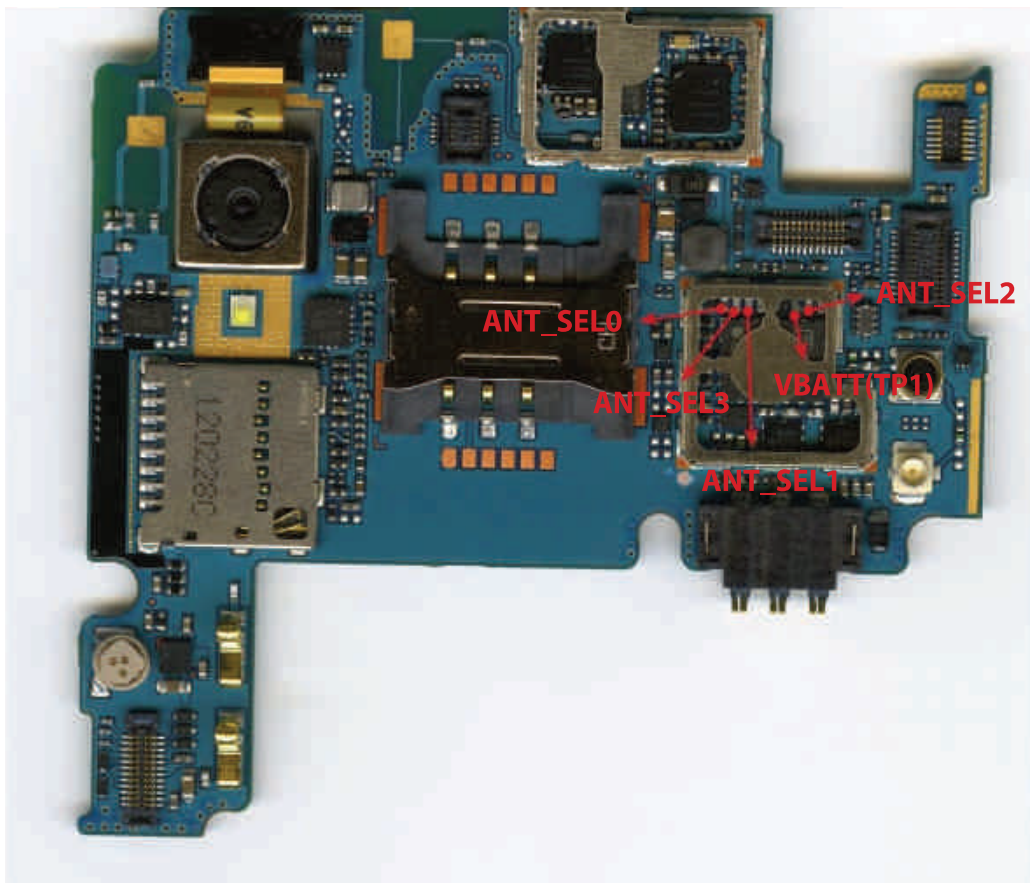


Schematic of the Crystal Part (19.2MHz)

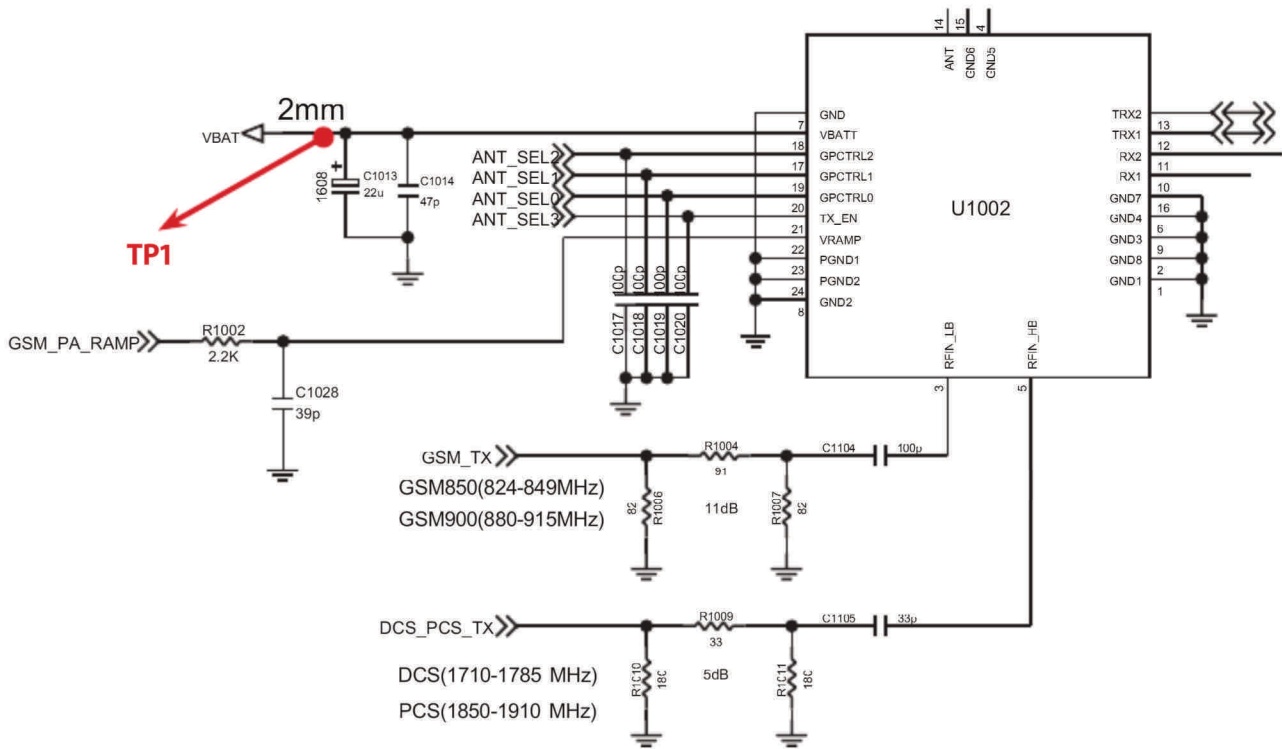
4. TROUBLE SHOOTING



4.4 Checking GSM TX Module(GSM PAM + ASM) Block



4. TROUBLE SHOOTING

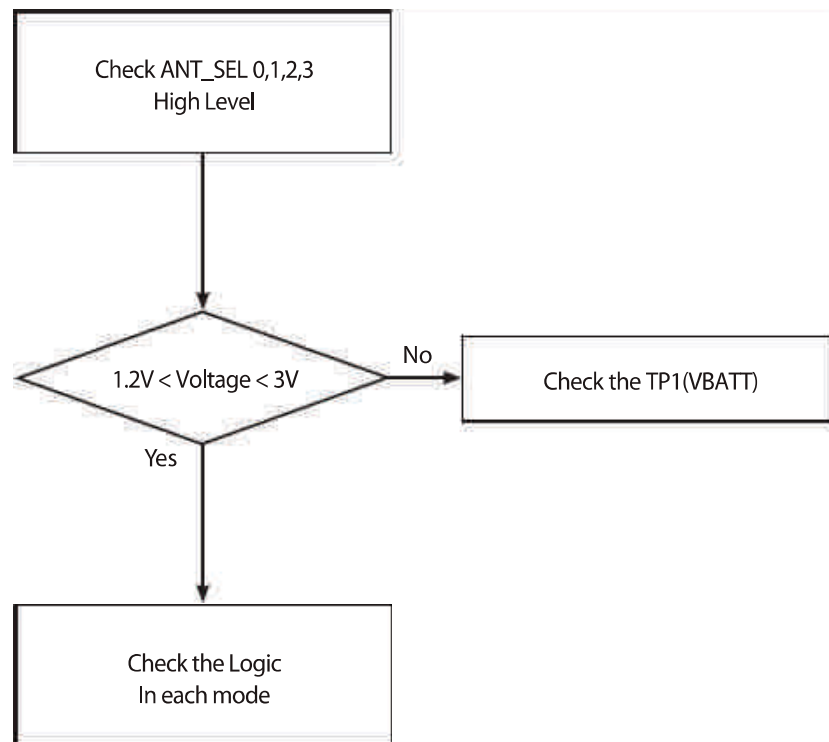


Schematic of the Antenna Switch Block

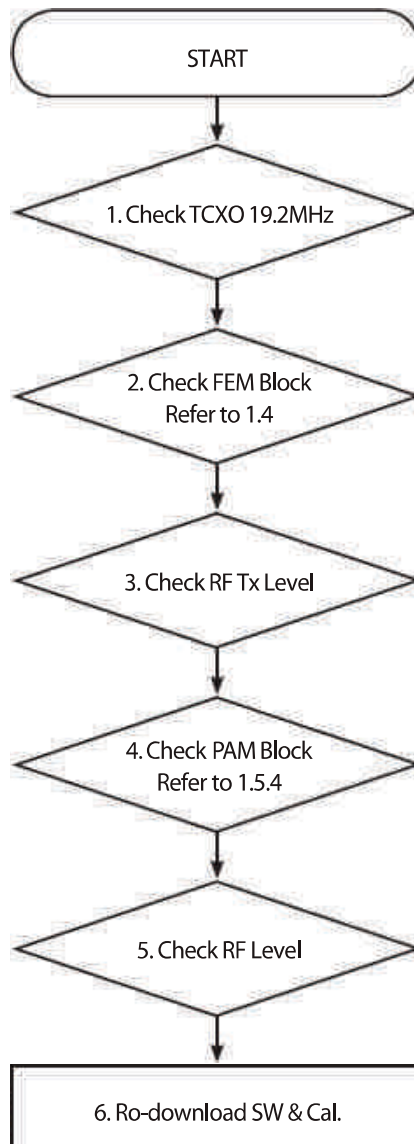
Module Control and Antenna Switch Logic

ANT_SEL 3	ANT_SEL 2	ANT_SEL 1	ANT_SEL 0	Tx Module Mode
0	0	0	0	Standby
0	1	0	0	Rx1
0	0	1	0	Rx2
0	0	1	1	TRX1
0	0	0	1	TRX2
1	0	1	0	Low Band GMSK
1	0	1	1	High Band GMSK

Checking Switch Block Power Source



4.5 Checking WCDMA Block



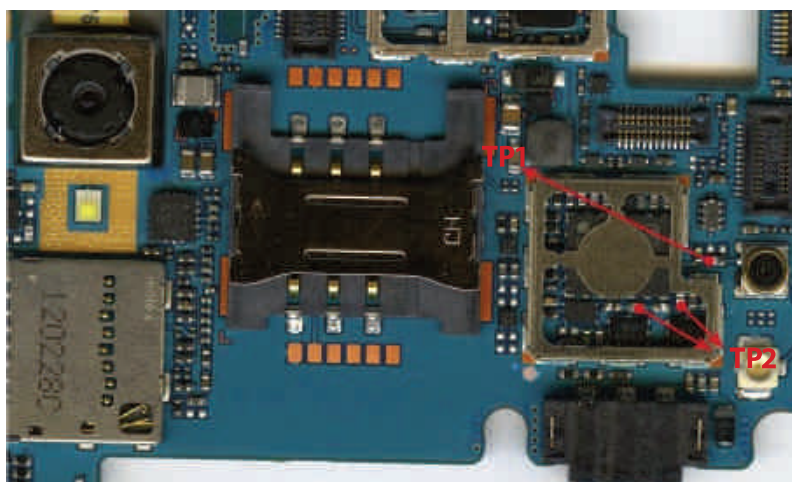
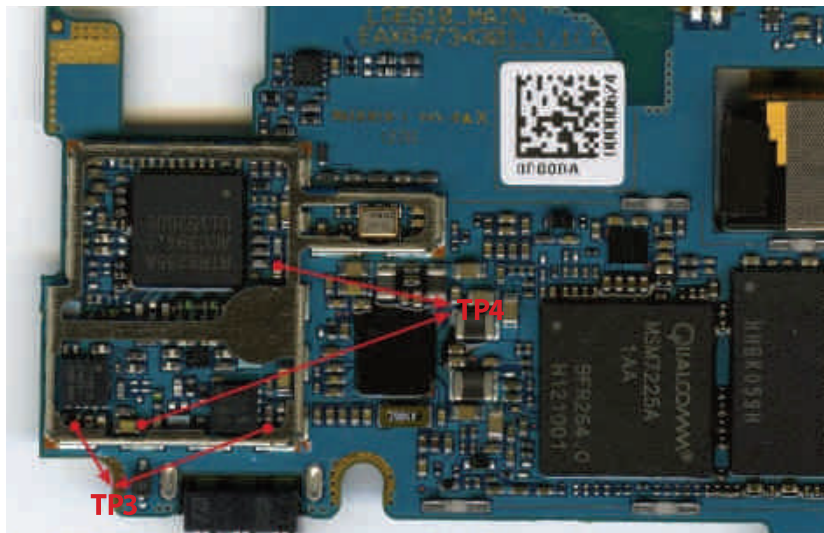
4.5.1 Checking TCXO Block

Refer to 4.3

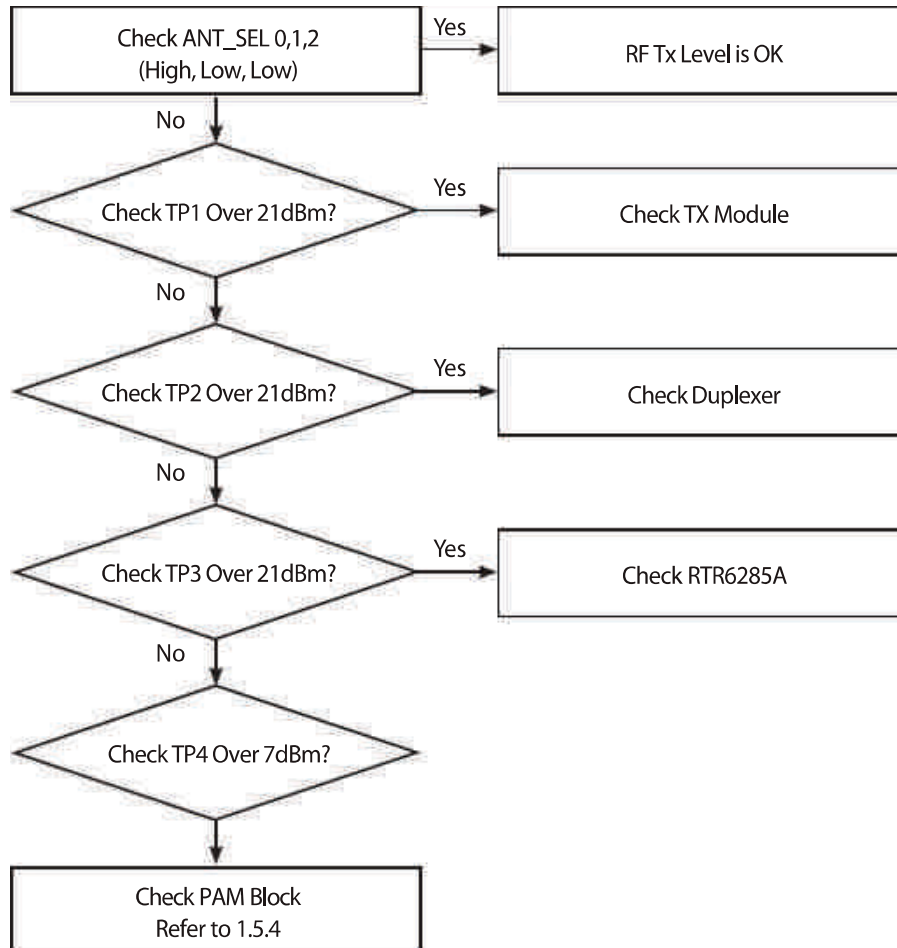
4.5.2. Checking Tx Module Block

Refer to 4.4

4.5.3. Checking RF TX Level







RTR6285 Maximum output Power = 7 dBm
RTR6285 minimum output Power = -80 dBm
PAM(ACPM-5281) = Maximum input Power = 10 dBm

4.5.4. Checking PAM Block

PAM Control Signal

PA_ON0 (C1085), PA_ON1 (C1100) : PAM Enable

PA_R0: PAM Gain Control

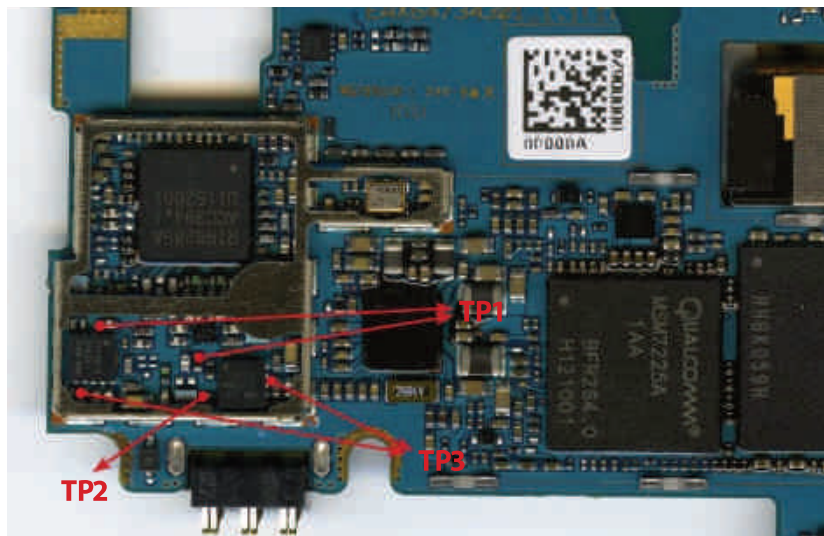
PA_ON must be HIGH (over 2.6V)

PAM IN/OUT Signal:

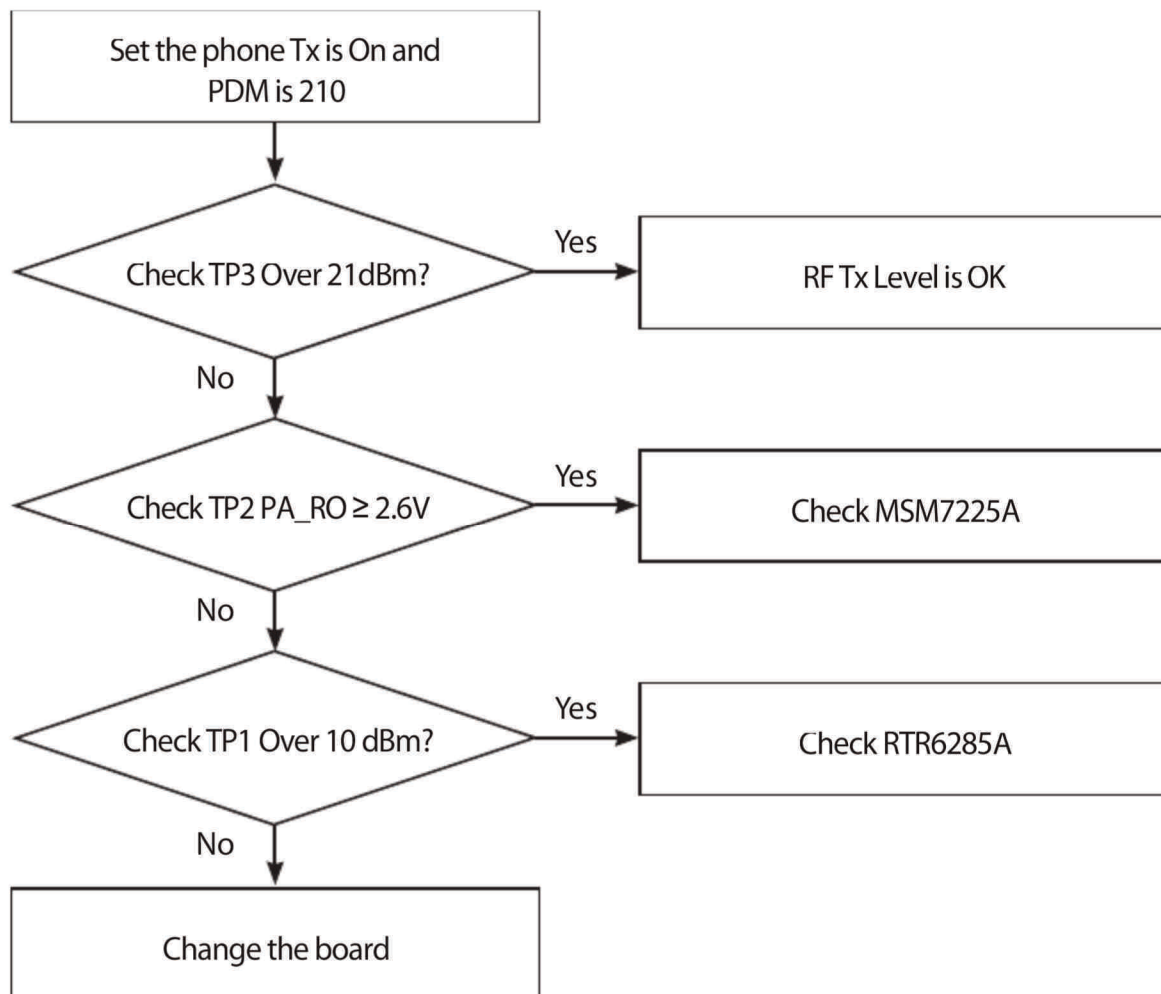
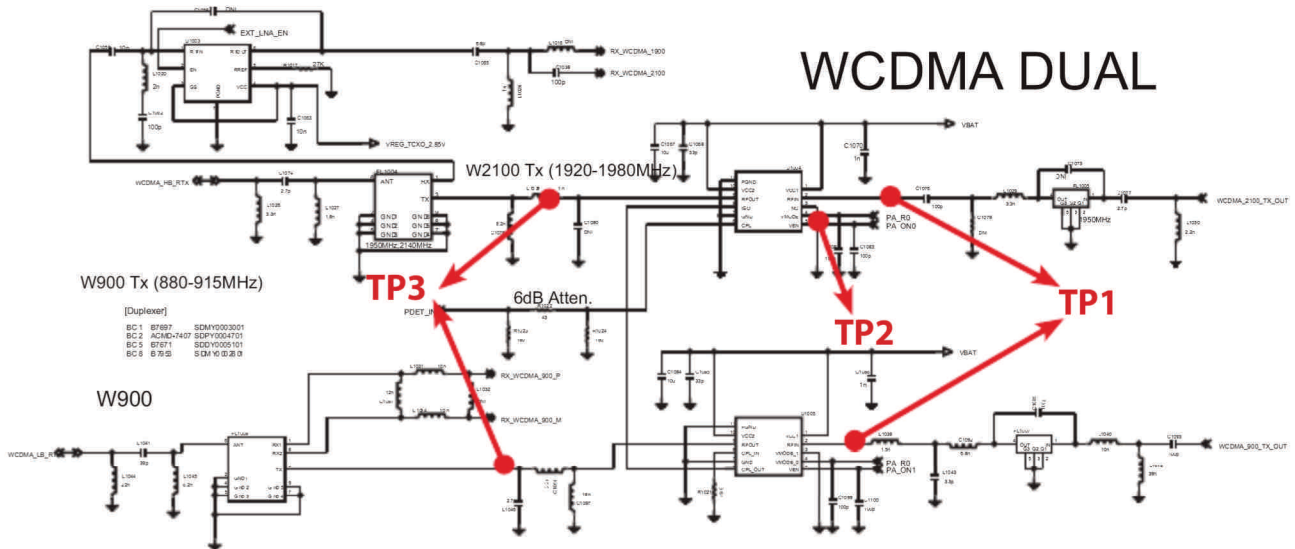
When PAM is under the operation of high power mode (PA_R0 (C1085) : Low),

PAM OUT power must be over 21 dBm

PAM IN power must be under 10 dBm

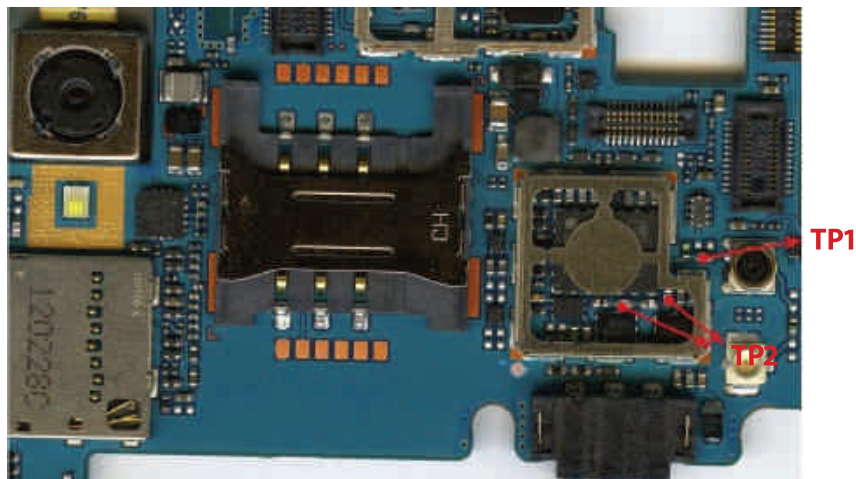
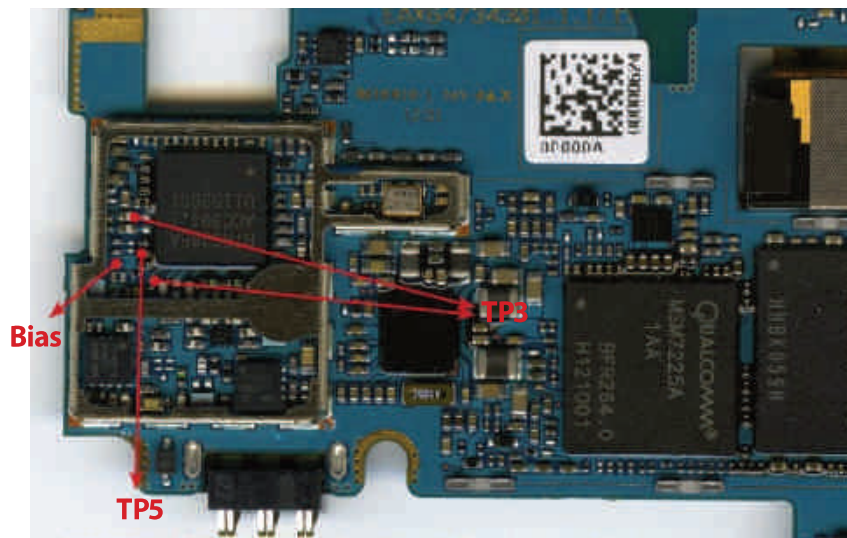


4. TROUBLE SHOOTING

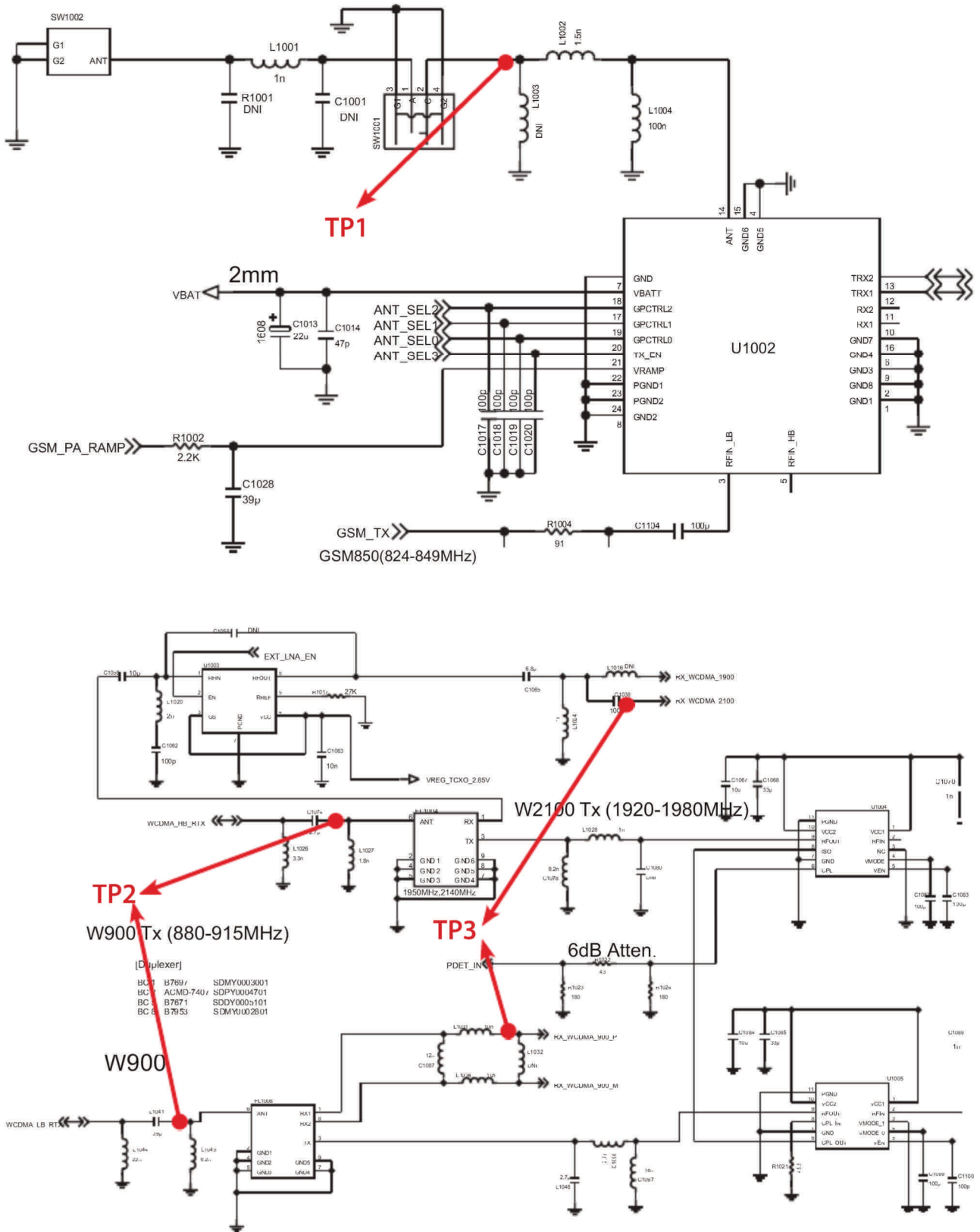


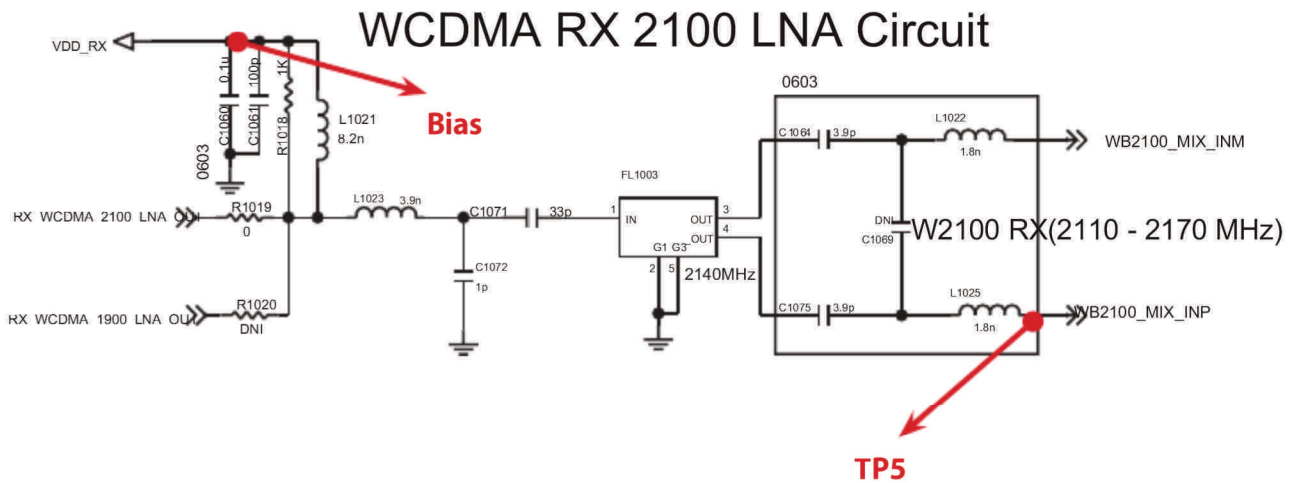
4.5.5. Checking RF Rx Level

Test Point (RF Rx Level)

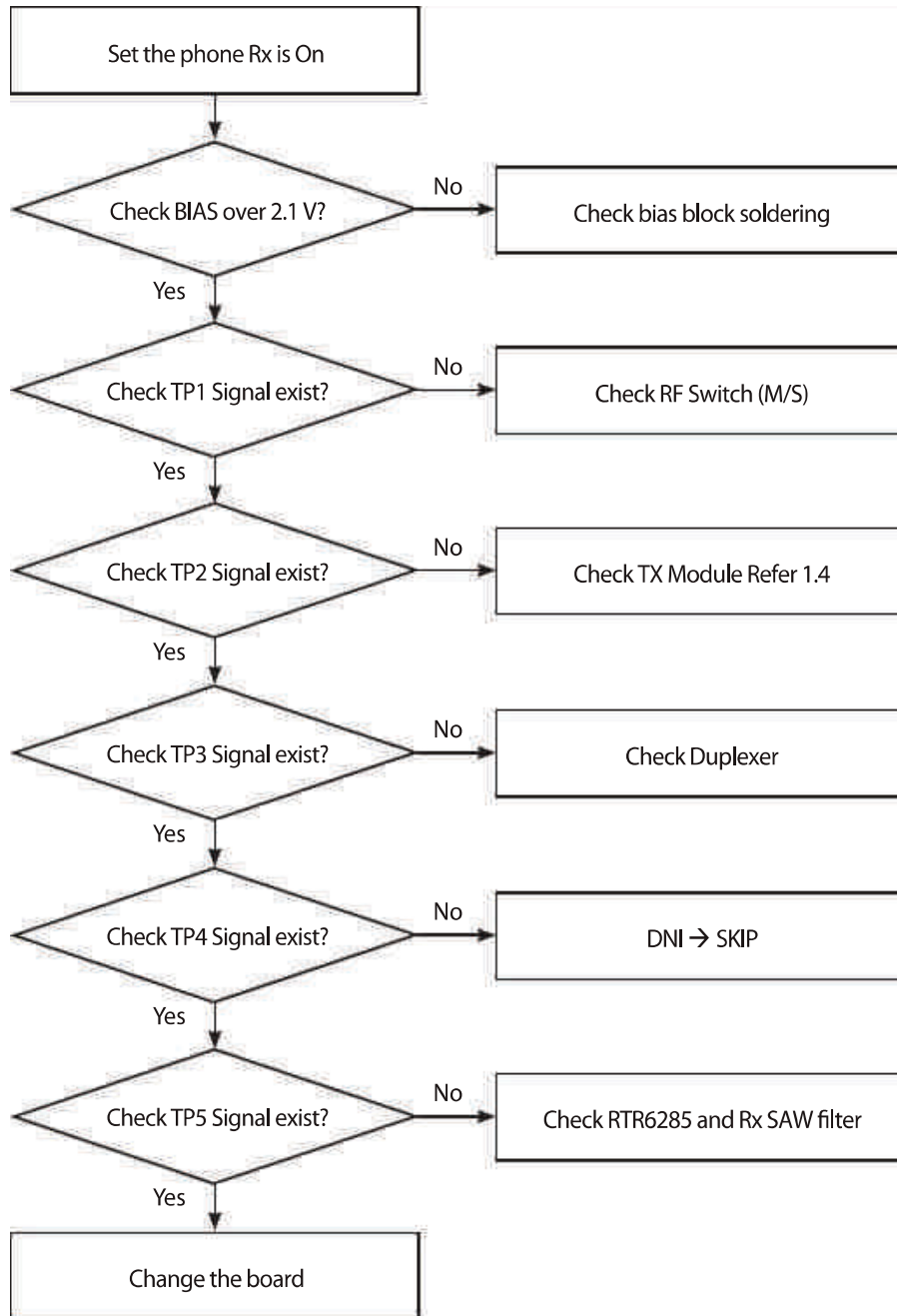


4. TROUBLE SHOOTING

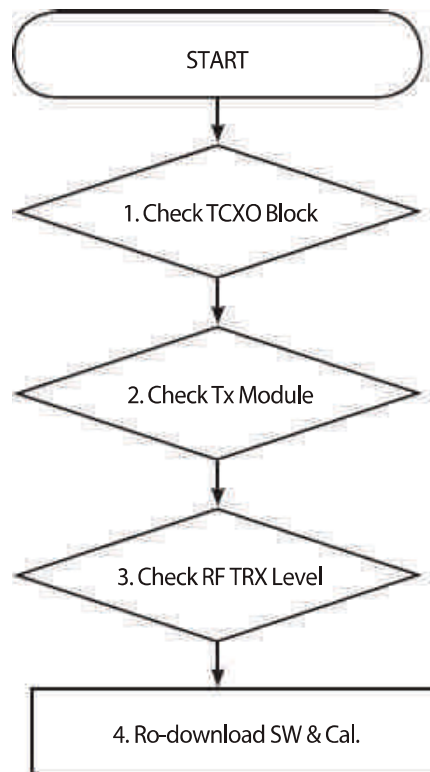




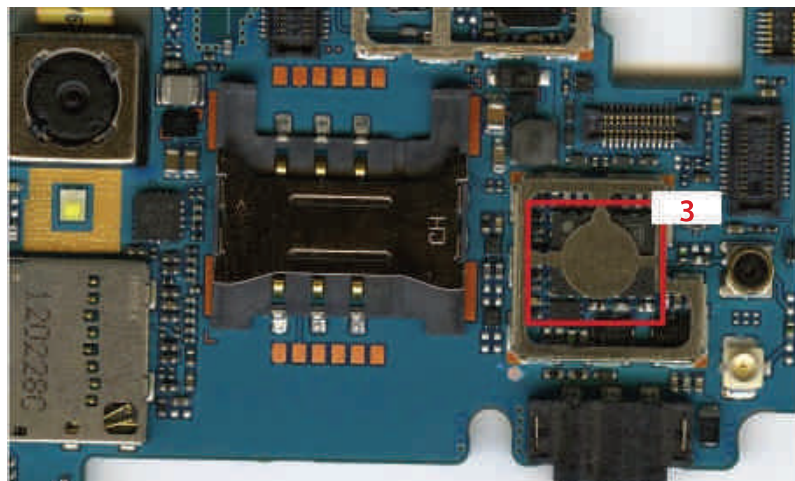
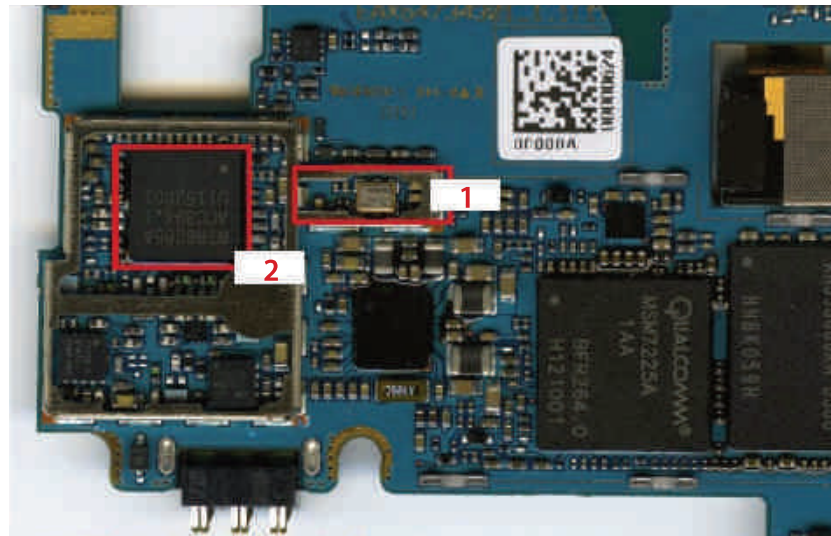
4. TROUBLE SHOOTING



4.6 Checking GSM Block



4. TROUBLE SHOOTING



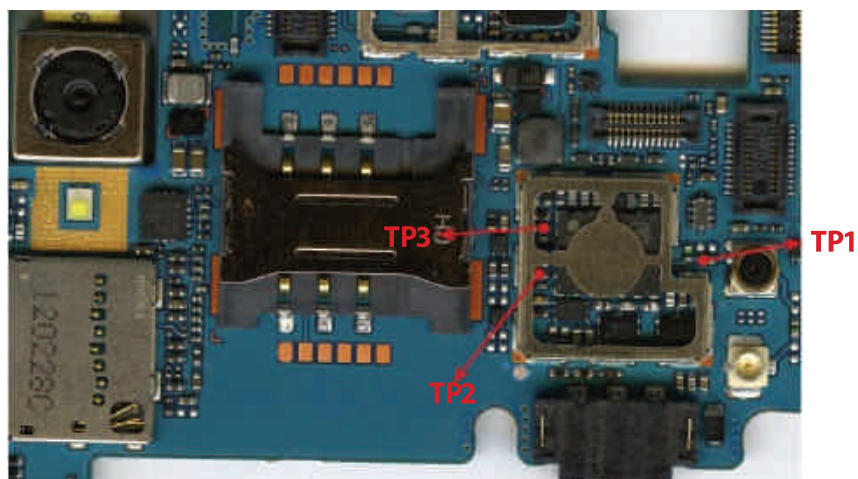
4.6.1 Checking TCXO Block

Refer to 4.3

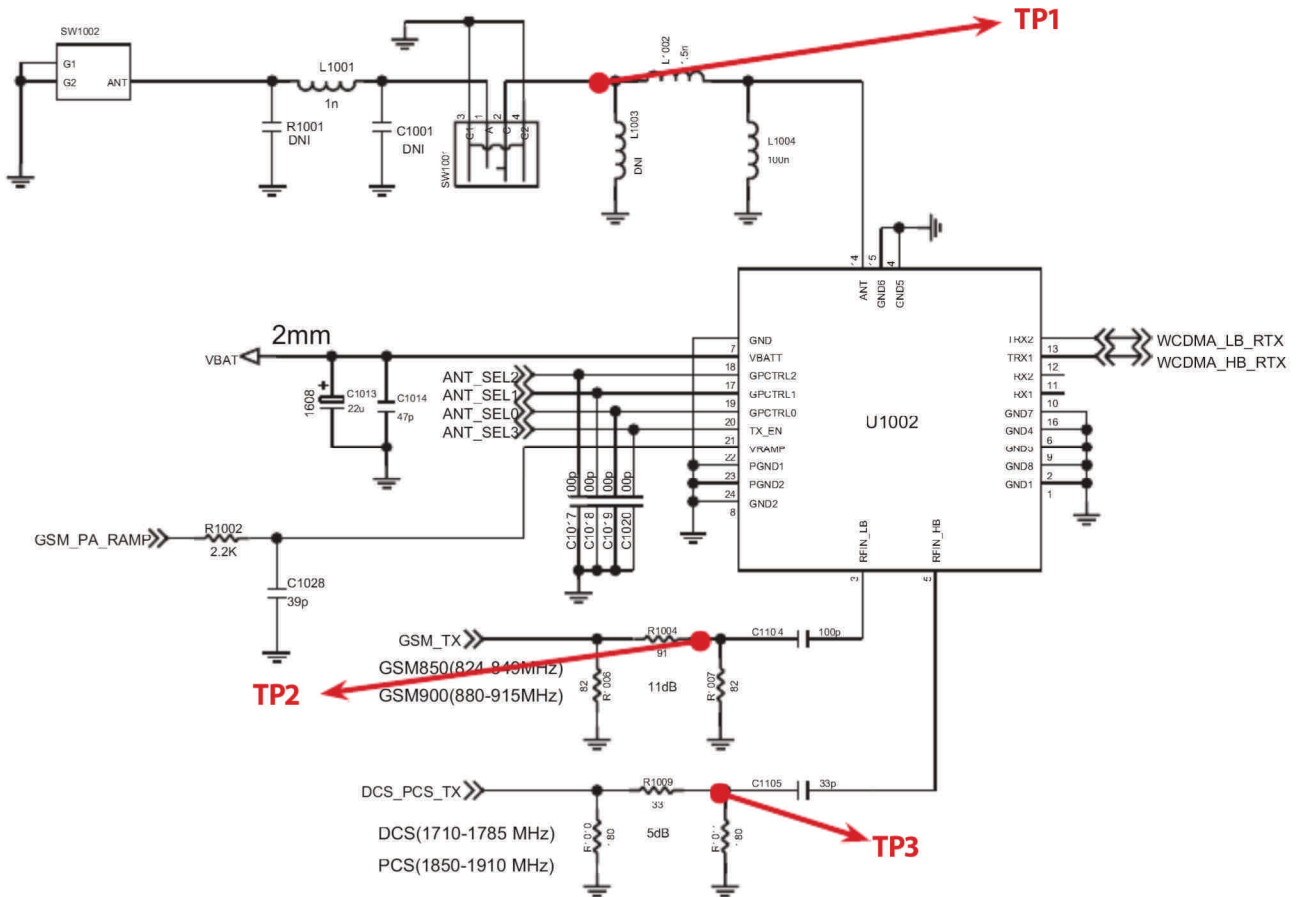
4.6.2 Checking Tx module Block

Refer to 4.4

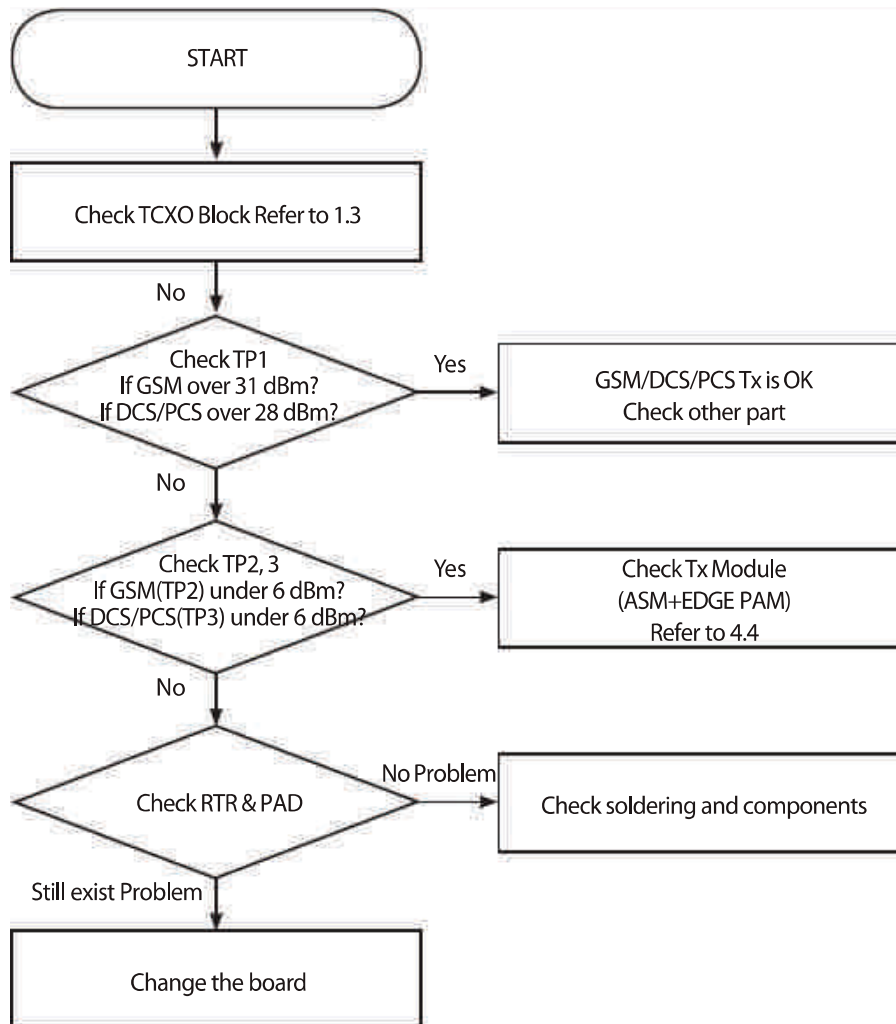
4.6.3 Checking RF TX level



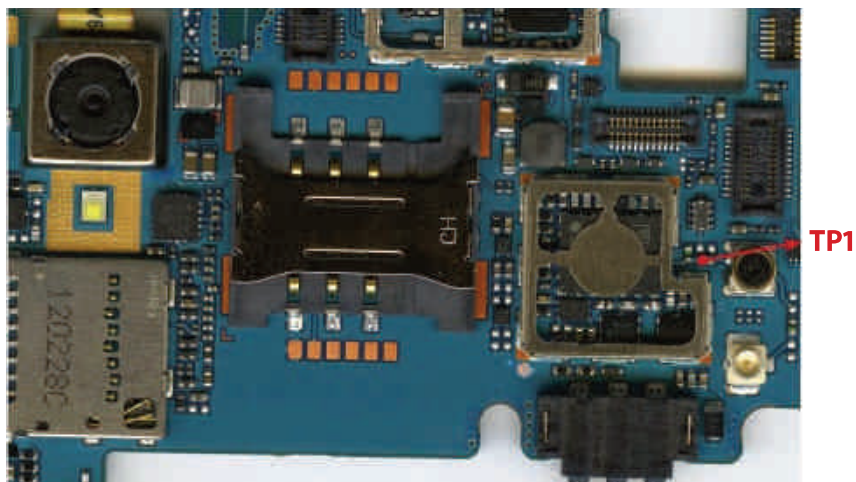
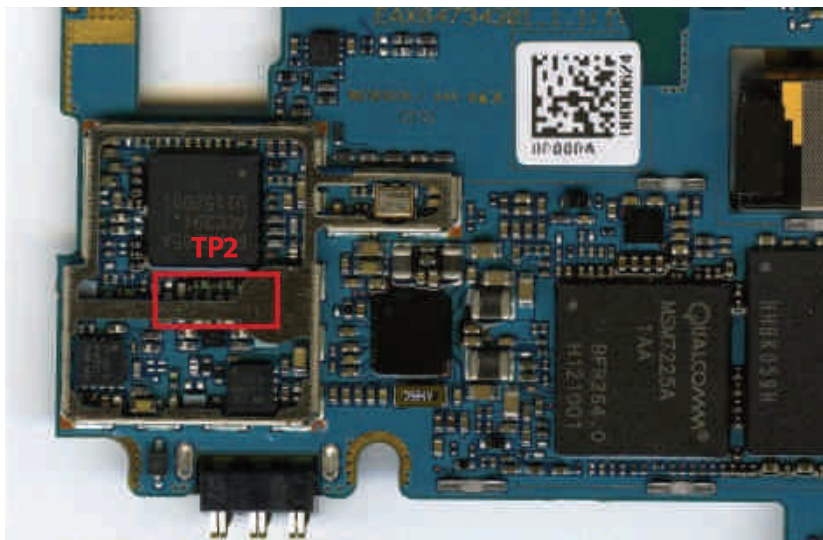
4. TROUBLE SHOOTING



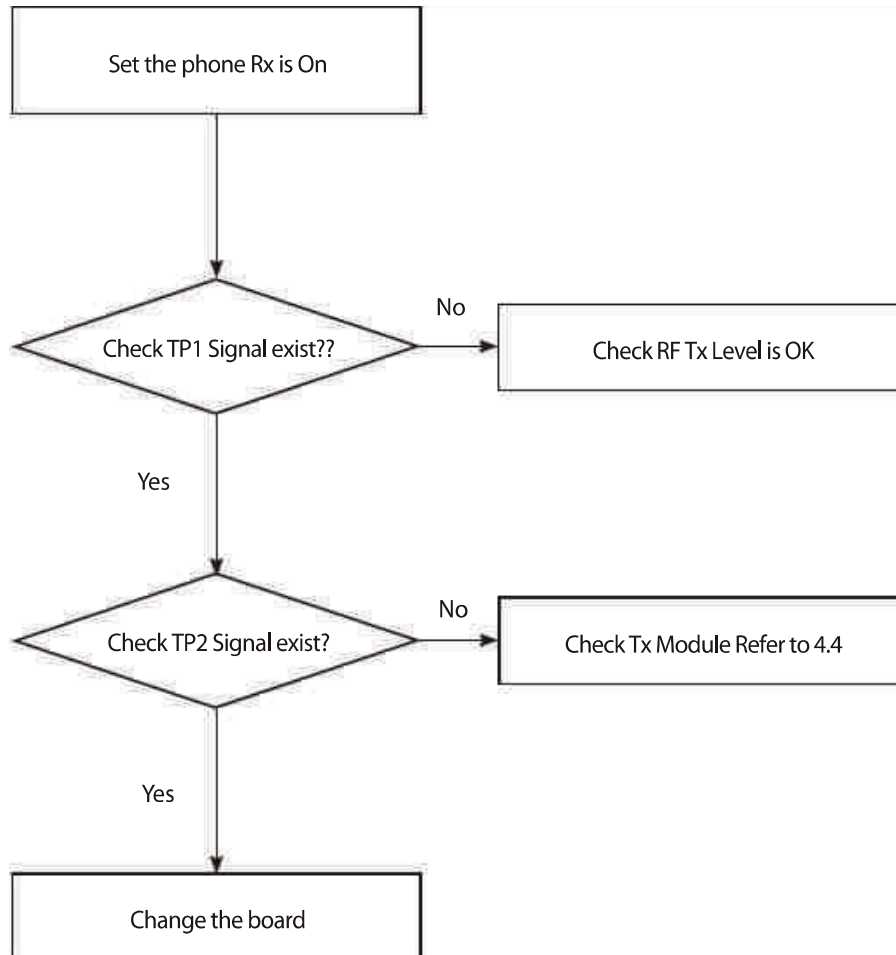
Schematic of GSM/DCS/PCS Tx Block



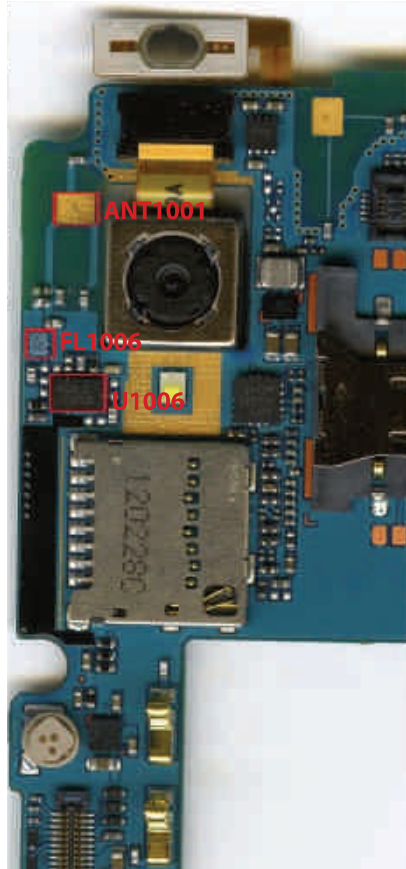
4.6.4 Checking RF Rx Block







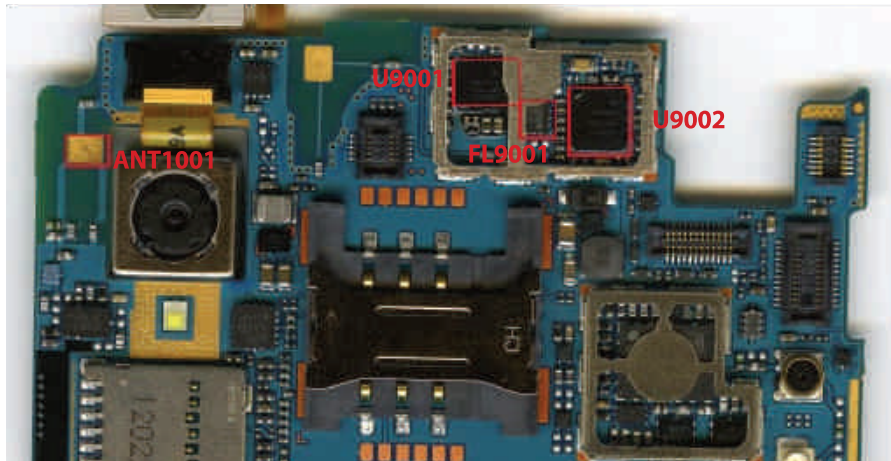
4.7 GPS/WIFI/BT RF Component



RF Component(GPS)

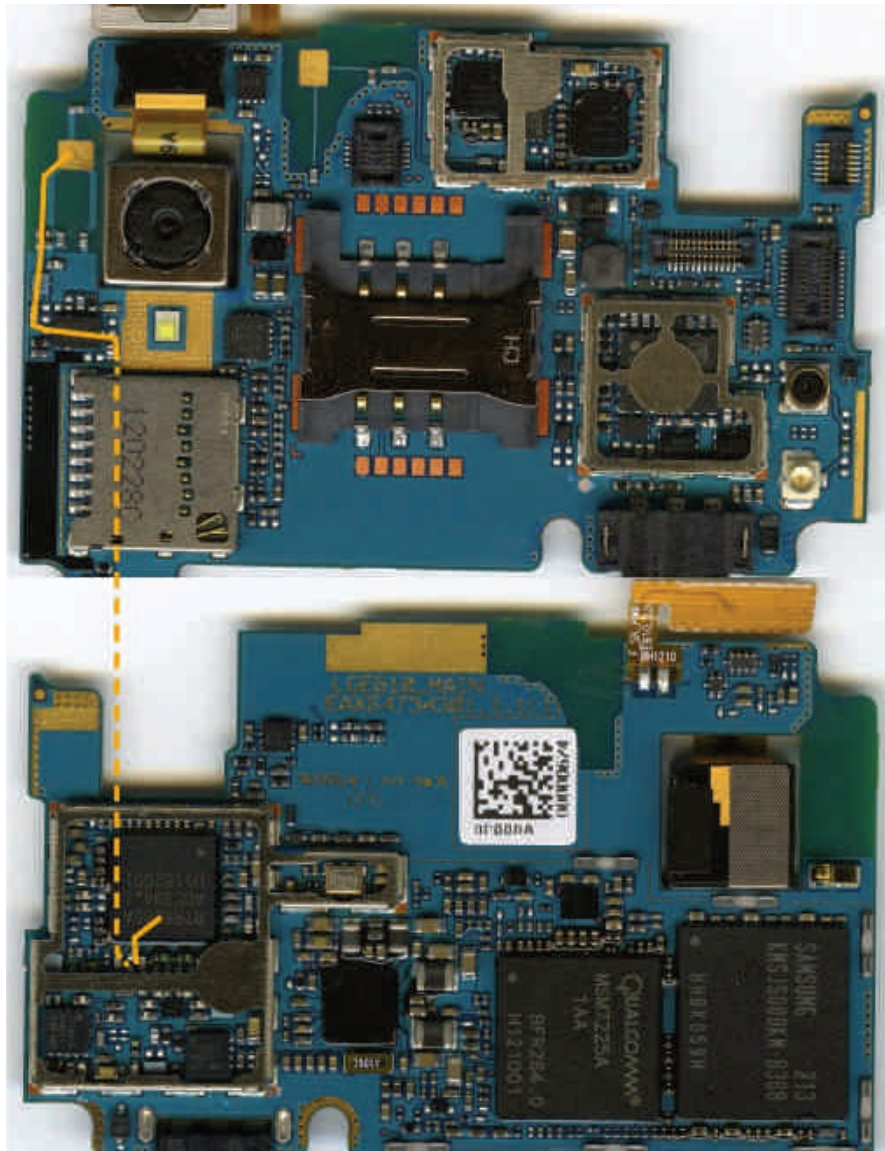
Reference	Description
ANT1001	ANTENNA PAD connected to Carrier type antenna
FL1006	GPS SAW FILTER
U1006	GPS LNA

4. TROUBLE SHOOTING



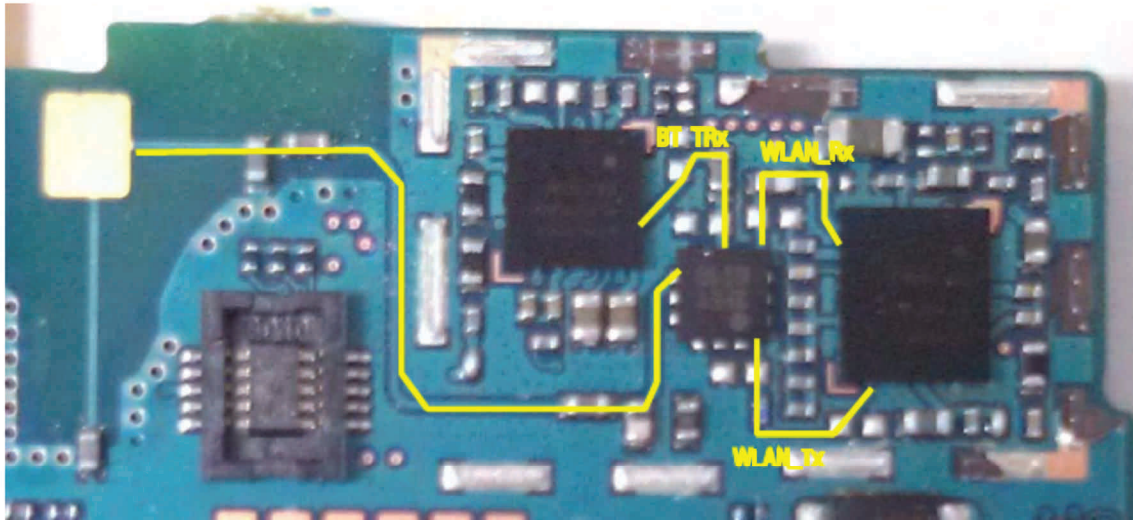
Reference	Description
ANT9001	ANTENNA PAD connected to Carrier type antenna
U9001	BT module
U9002	WiFi module
FL9001	FEM

4.8 GPS/WIFI/BT SIGNAL PATH



GPS Signal PATH (main board bottom)

GPS Rx PATH

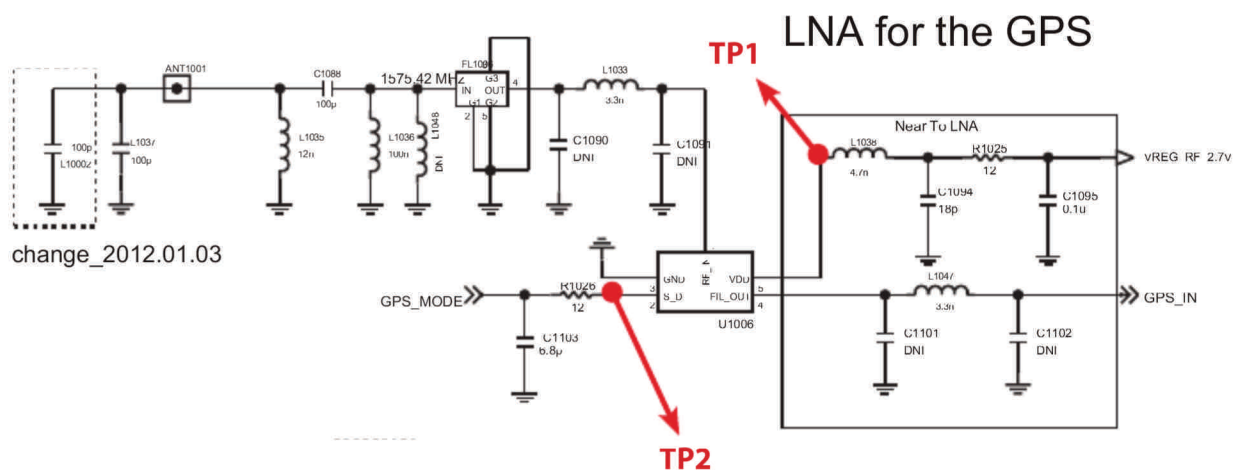
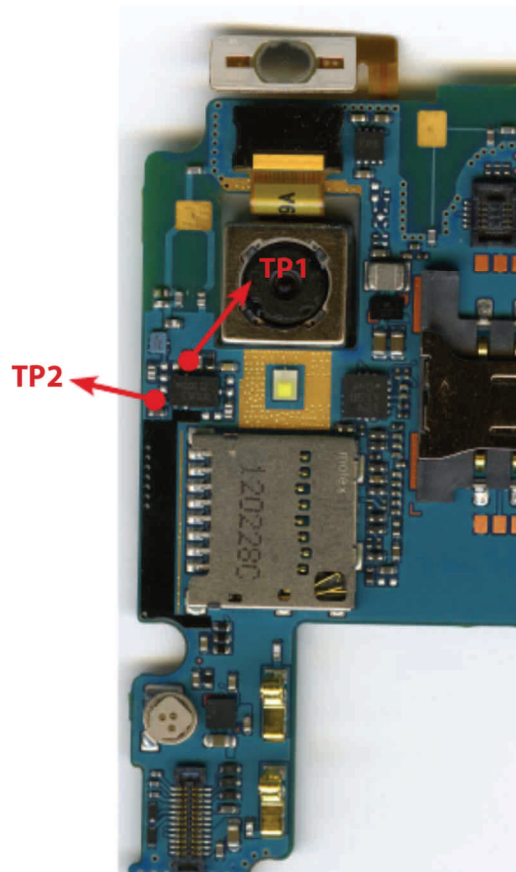


WiFi / BT Signal PATH

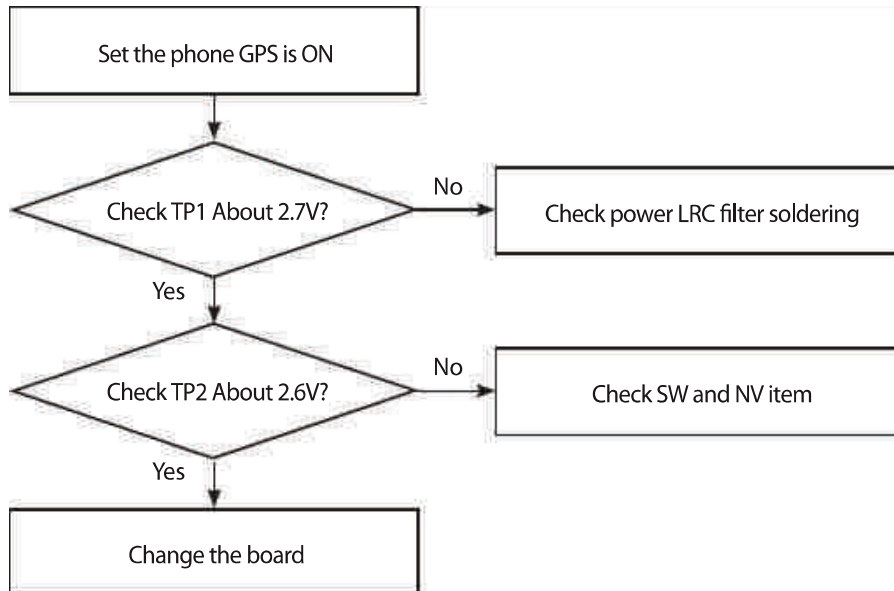
WiFi / BT Tx and Rx PATH

4.9 GPS/WIFI/BT Trouble shooting

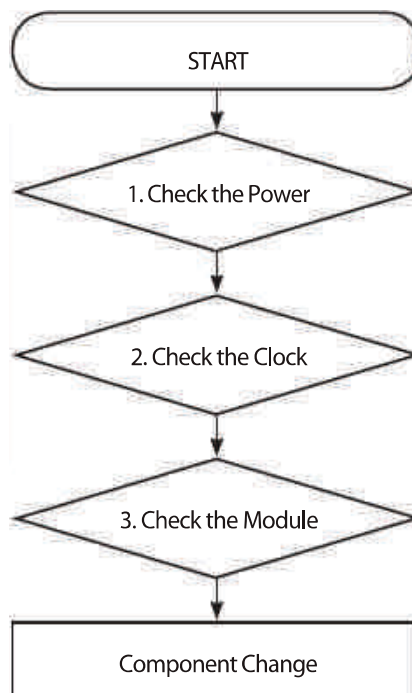
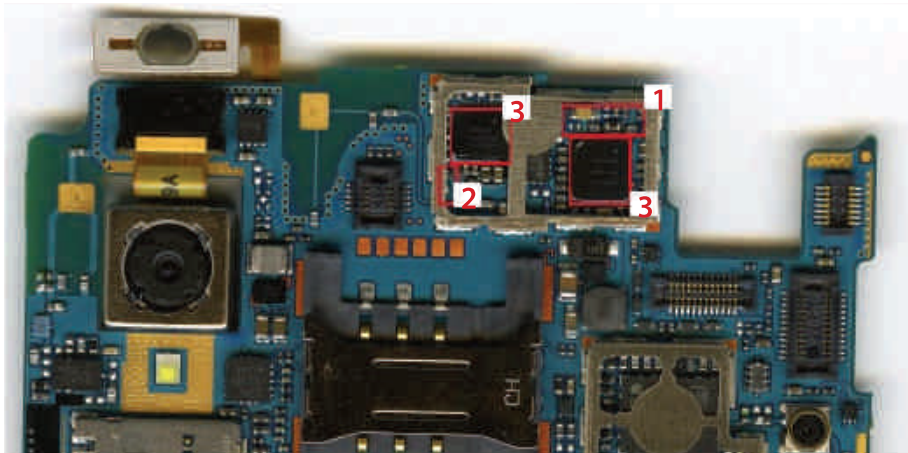
4.9.1 A-GPS Block



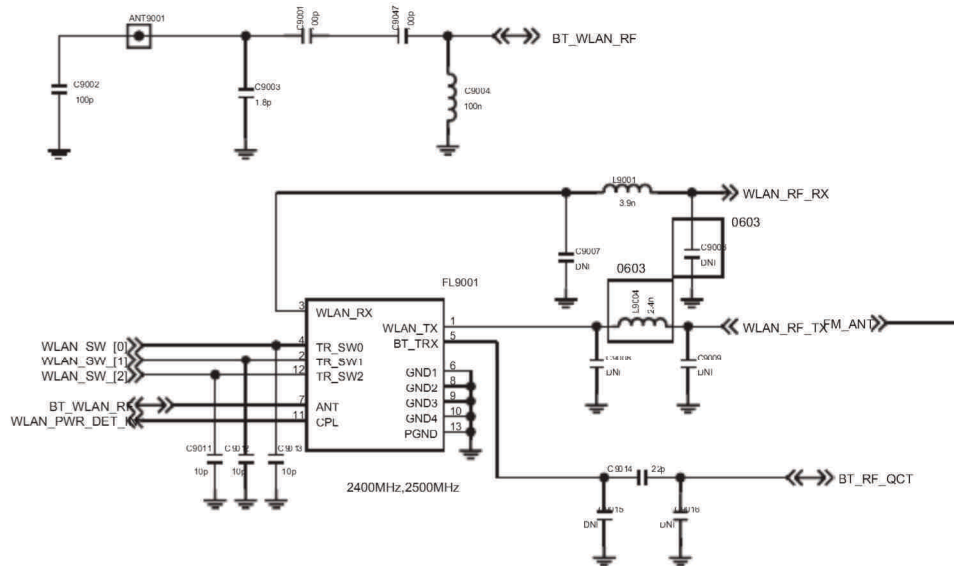
4. TROUBLE SHOOTING



4.9.2 WLAN/BT/FM Block



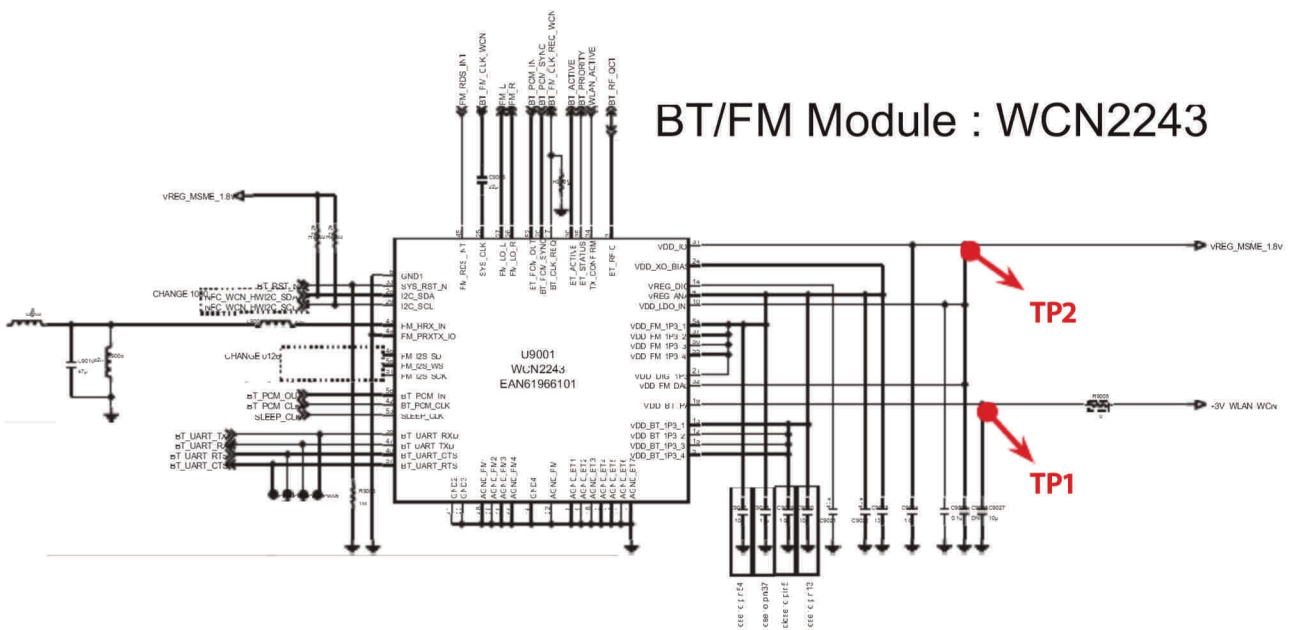
BT/WI-FI FRONT-END



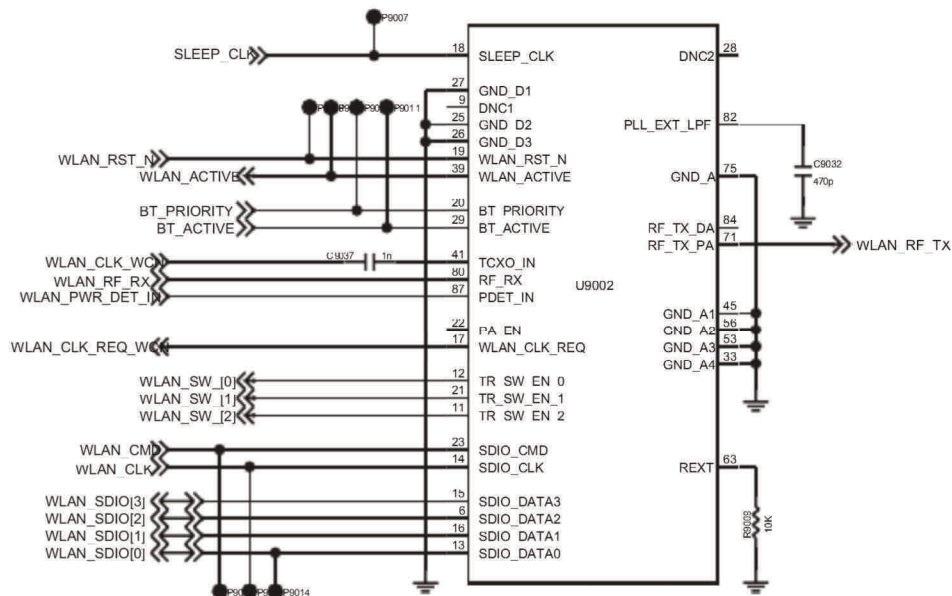
ANTENNA SWITCH MODULE LOGIC

	SW0	SW1	SW2
WiFi RX-ANT	HIGH	LOW	LOW
WiFi TX-ANT	LOW	HIGH	LOW
BT-ANT	LOW	LOW	HIGH

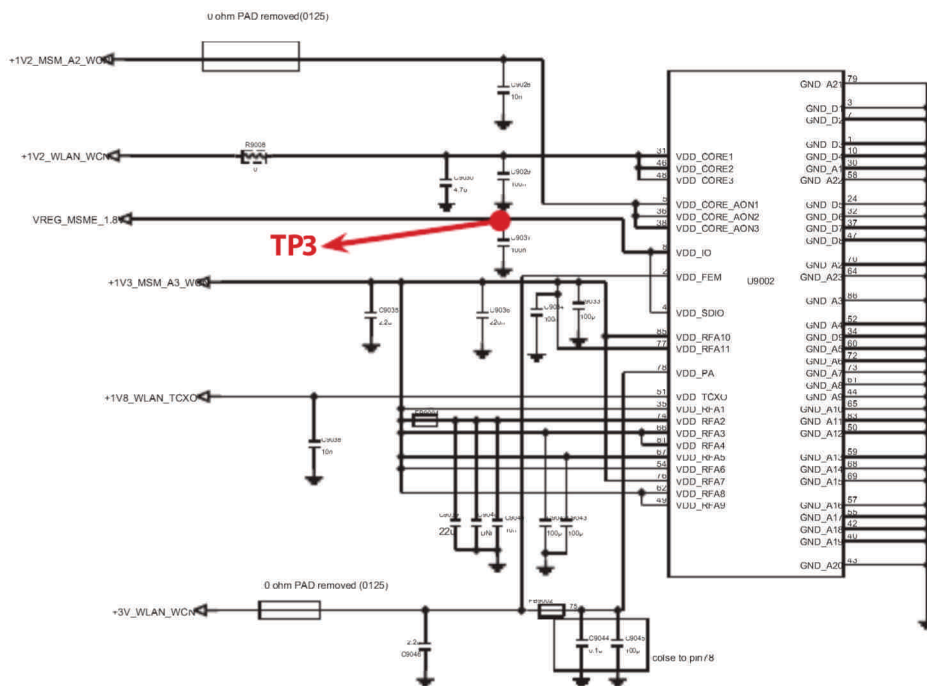
BT/FM Module : WCN2243



Wi-Fi : WCN1314

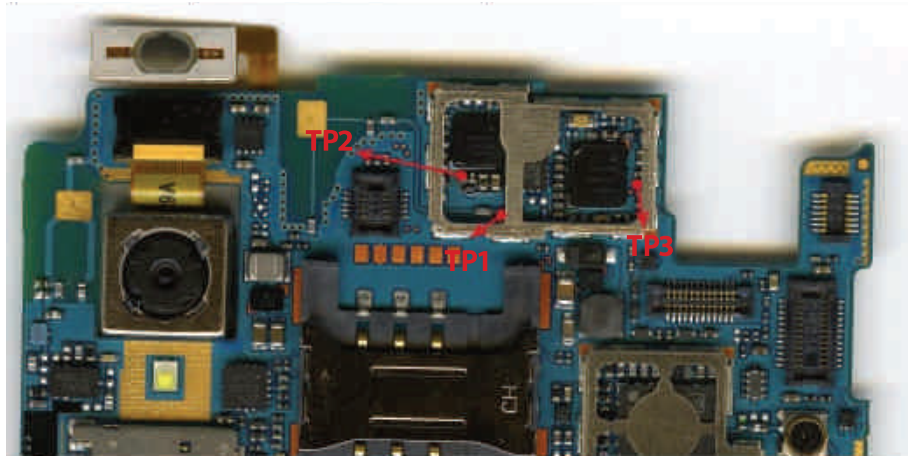


WiFi : WCN 1314



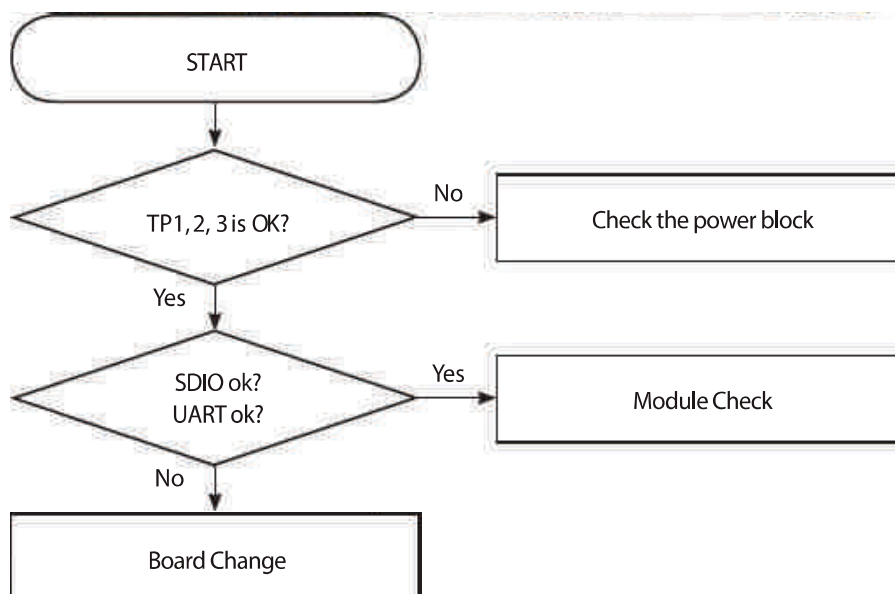
[Figure] Schematic of WiFi/BT module

4. TROUBLE SHOOTING



Test point Description

Test point	Net name	Description
TP1	'+3V_WLAN_WCN	Power for BT/WiFi BB core and WiFi power Amp. (V Batt)
TP2	VREG_MSME_1.8V	Power for BT power Amp. (1.8V)
TP3	VREG_MSME_1.8V	Power for host interface (1.8V)

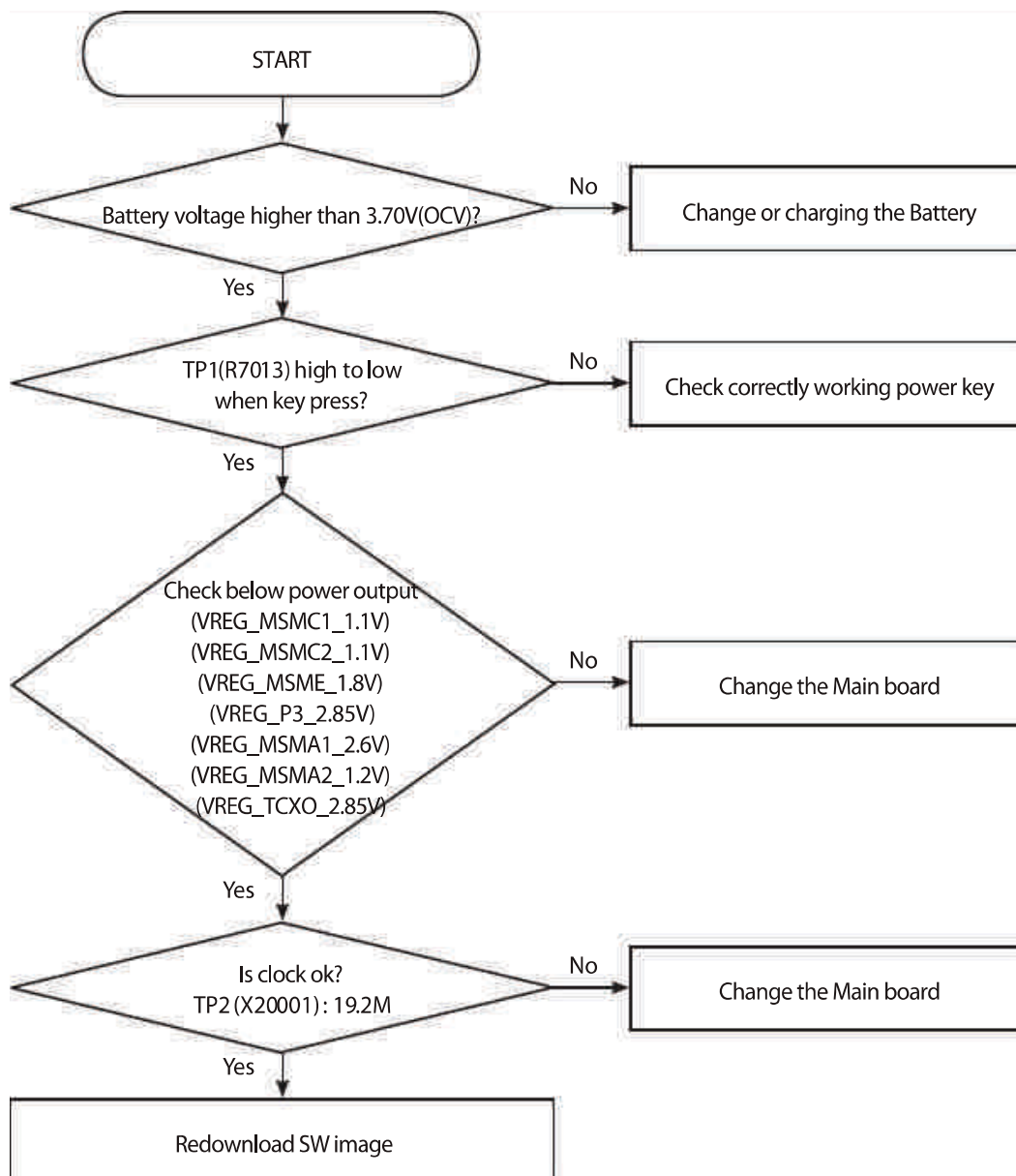


4.10 Power ON Trouble Shooting

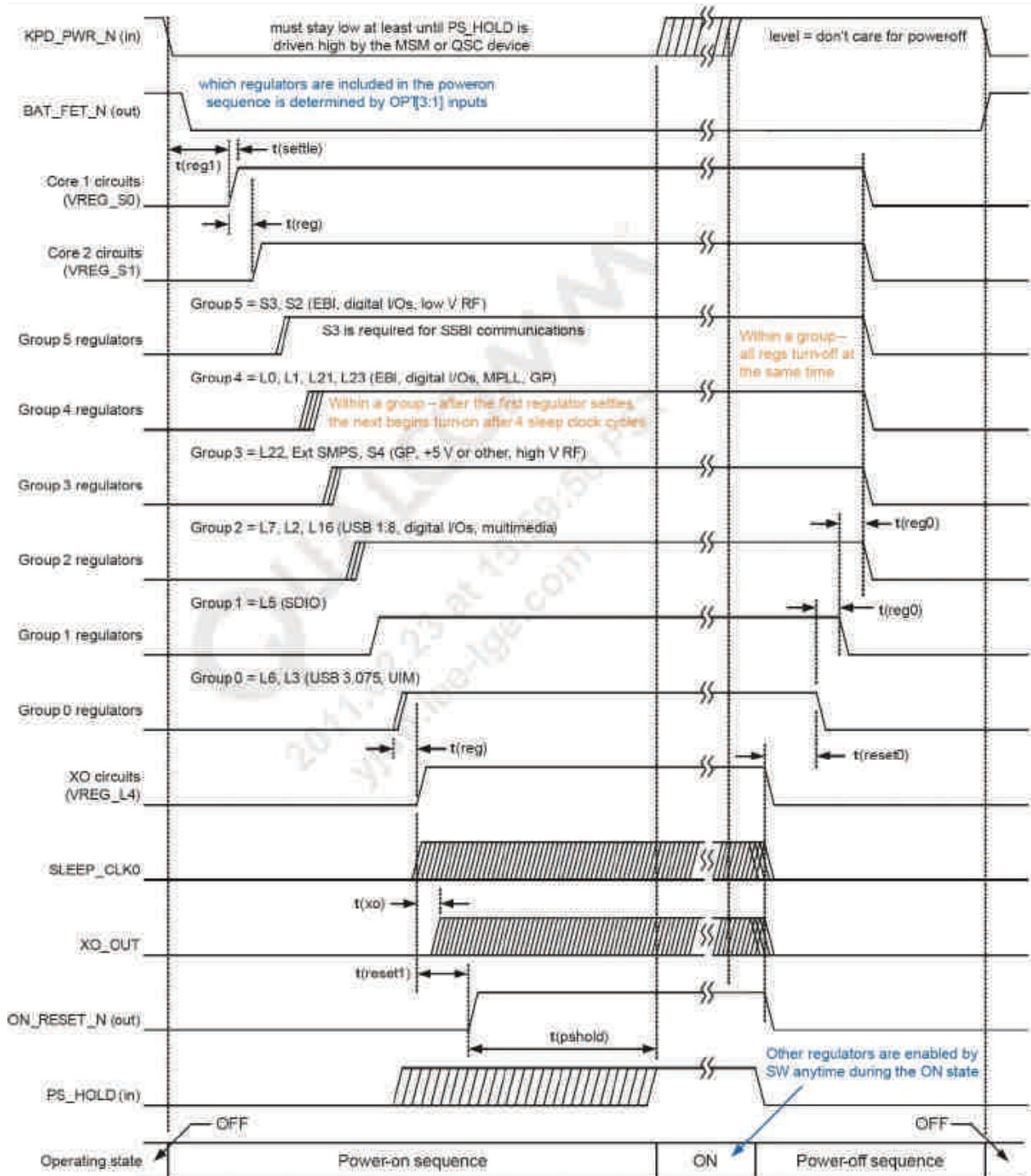
Power On sequence of E612 is :

Power key press -> KPD_PWR_N go to low -> PM8029 Power Up -> VREG_MSMC1_1.1V (L4001), VREG_MSMC2_1.1V (L4002), VREG_MSME_1.8V (L4003), VREG_P3_2.85V (C4053), VREG_MSMA1_2.6V (C4048), VREG_MSMA2_1.2V (C4044) VREG_TCXO_2.85V (C4049)

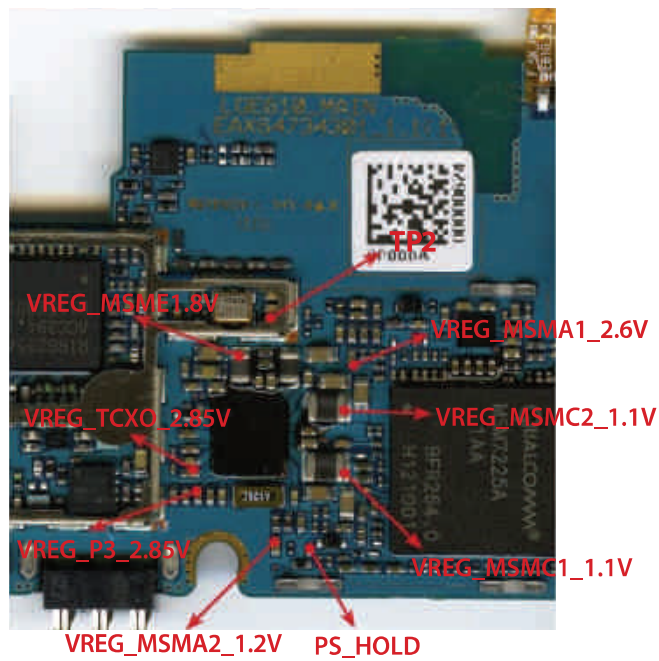
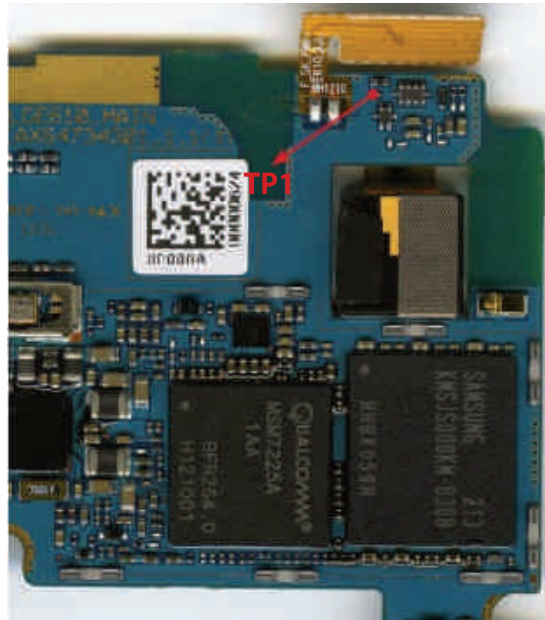
power ON -> Phone booting and PS_HOLD(R4037) go to High



4. TROUBLE SHOOTING



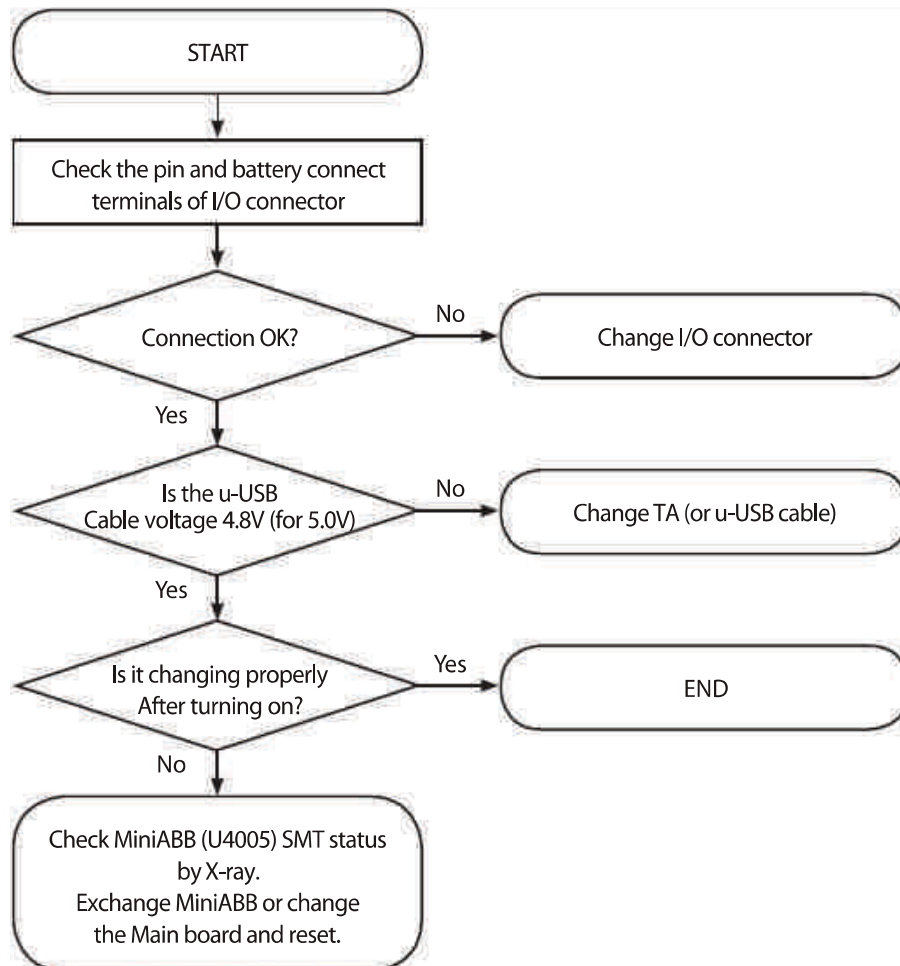
4. TROUBLE SHOOTING



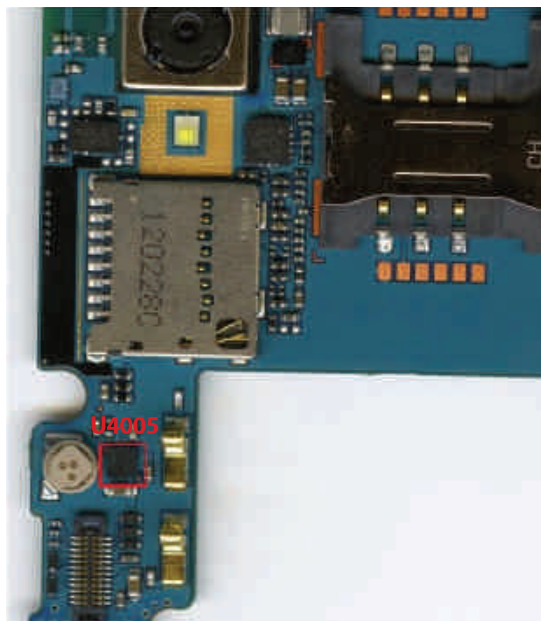
u-USB Connector



4. TROUBLE SHOOTING

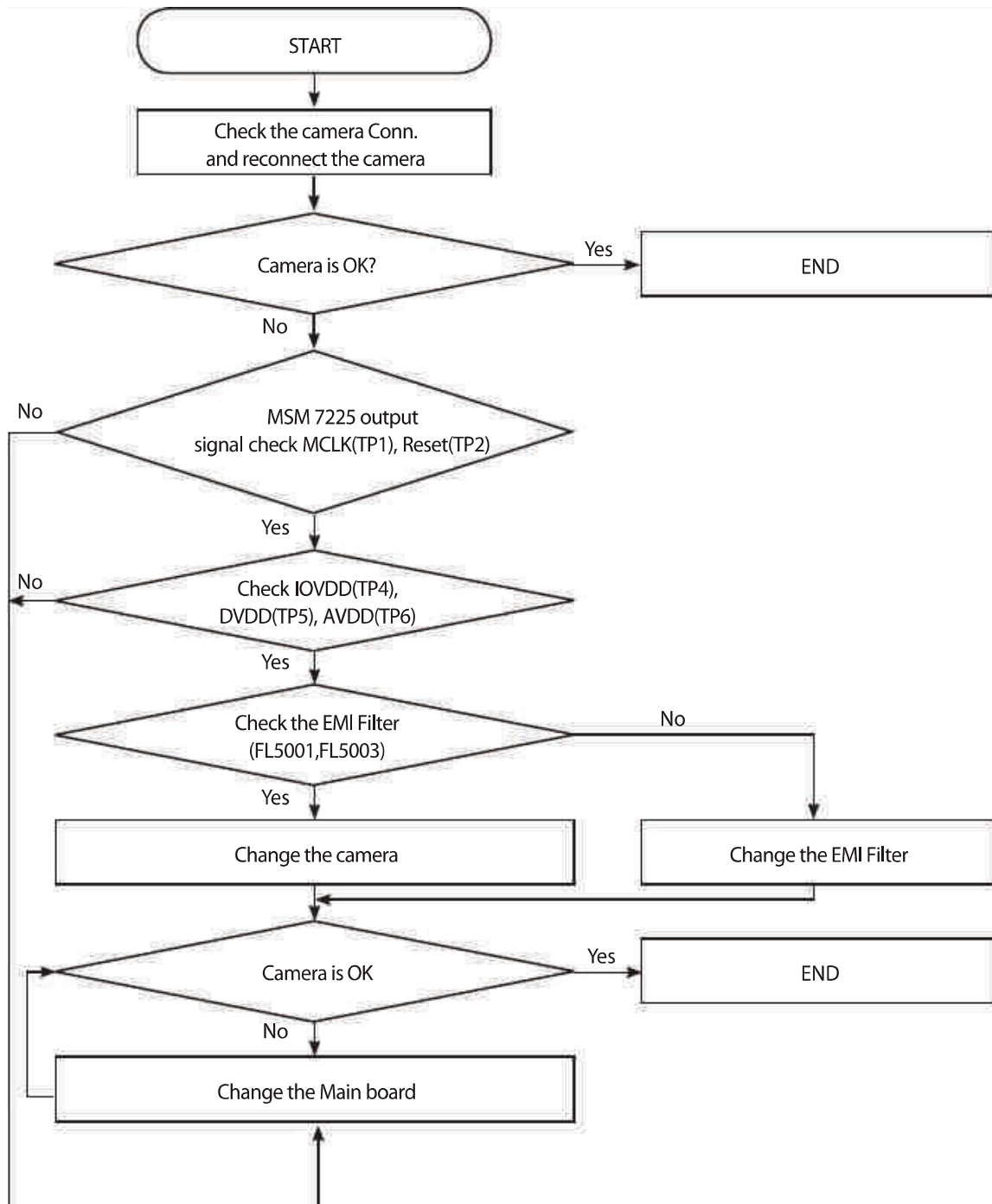


Charger Troubleshoot Flow

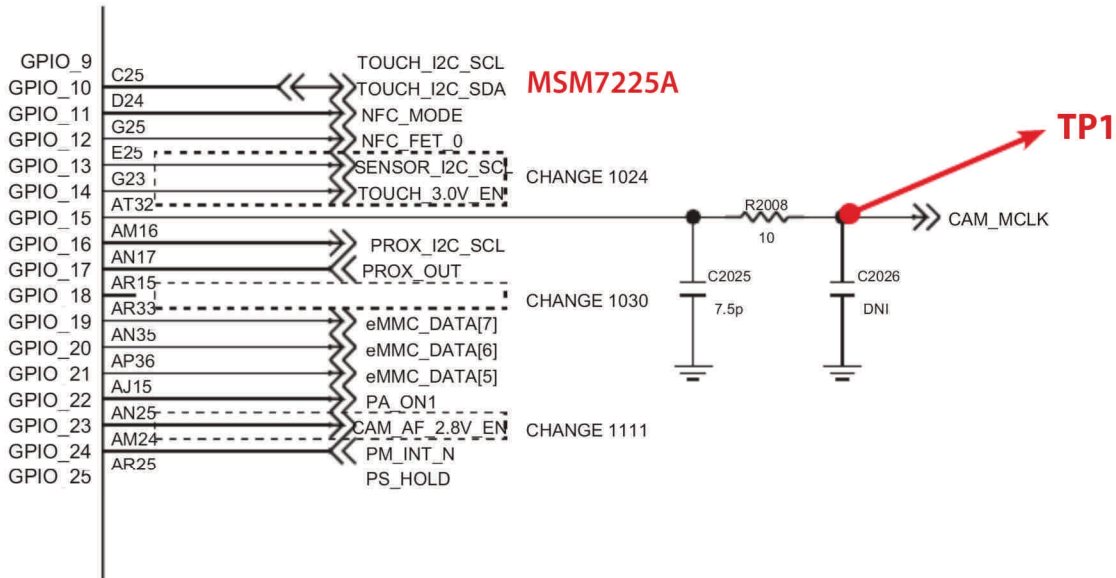


4. 12 5M AF Camera Trouble Shooting

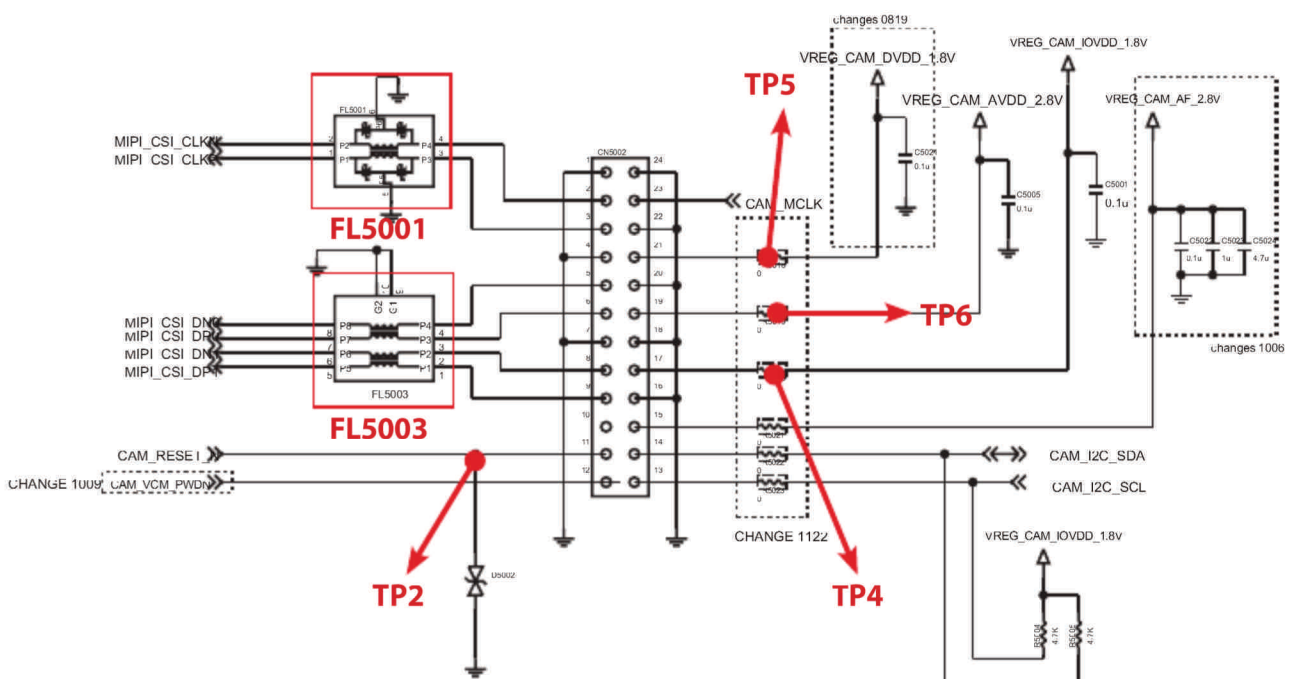
5M camera control signals are generated by MSM7225A.



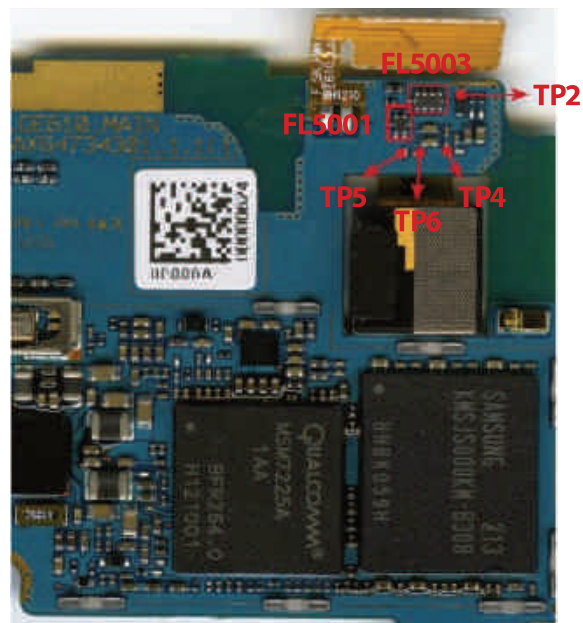
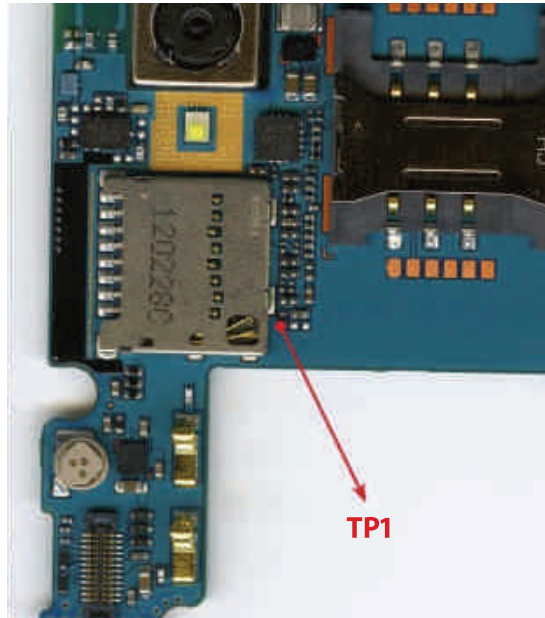
4. TROUBLE SHOOTING



CAMERA (5M MIPI)



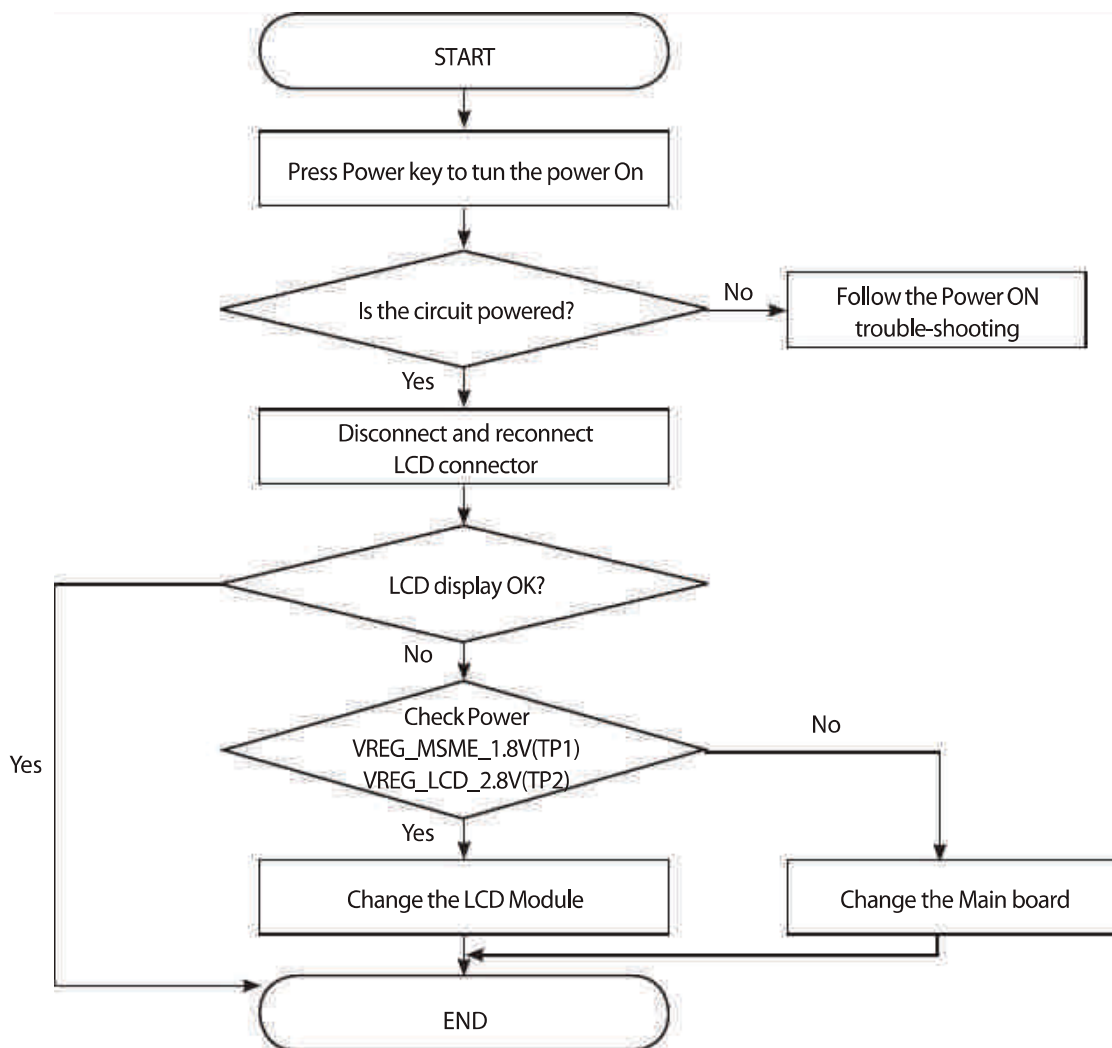
4. TROUBLE SHOOTING



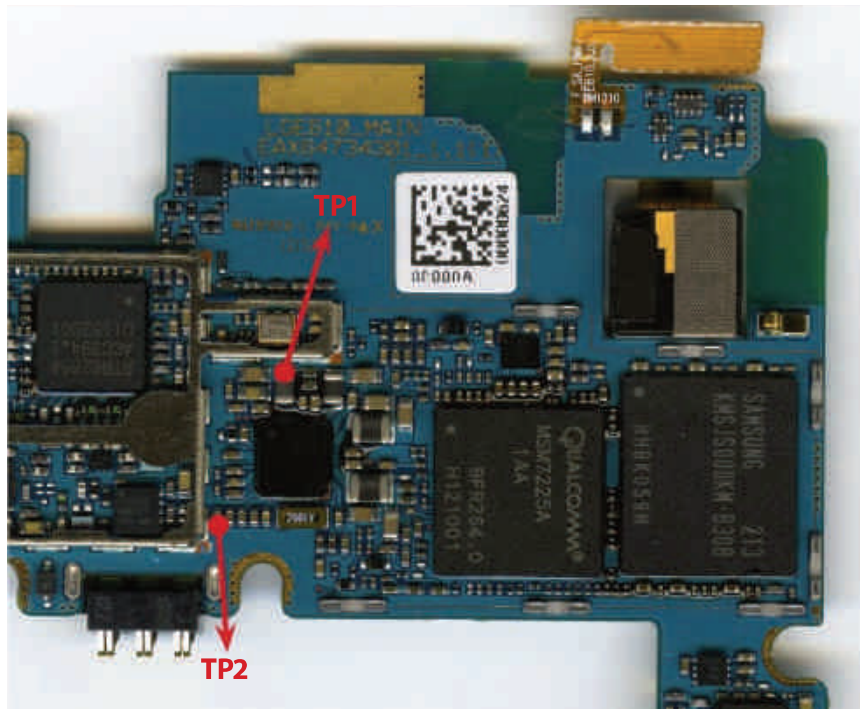
4. 13 Main LCD trouble

Main LCD control signals are generated by MSM7225A. Those signal's path are :

MSM7225A -> LCD Module



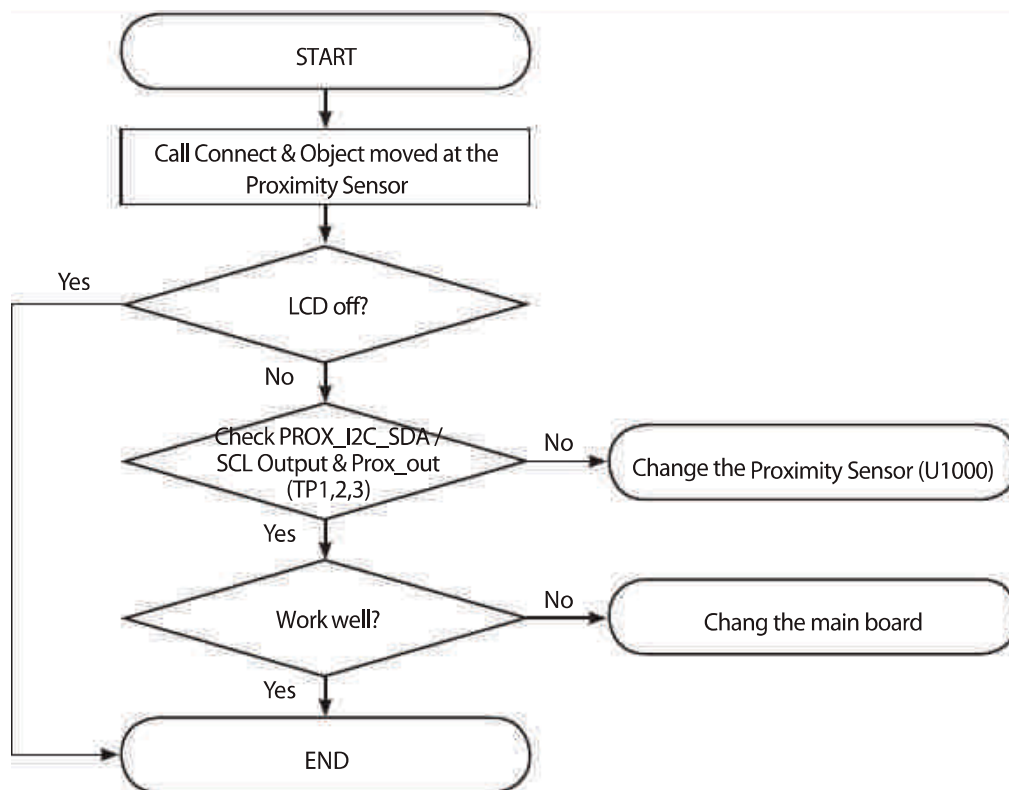
4. TROUBLE SHOOTING



4.14 Proximity Sensor on/off Trouble Shooting

Proximity Sensor is worked as below :

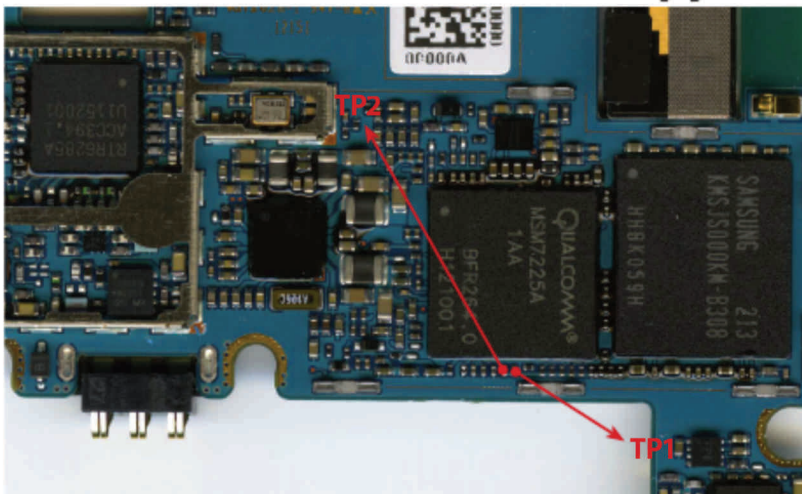
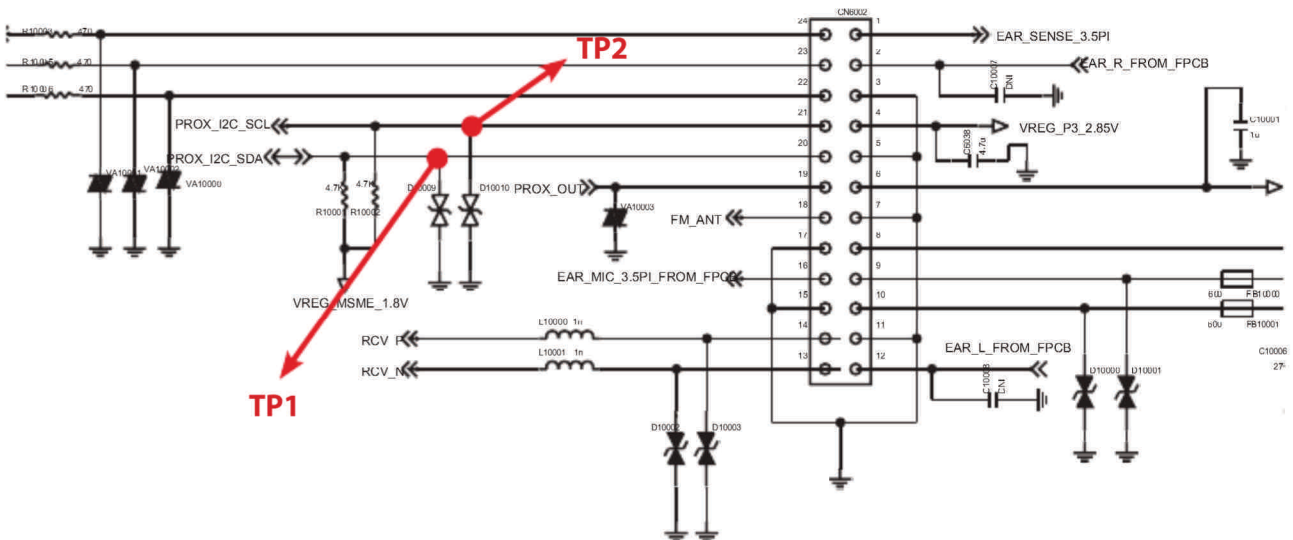
Call connected -> Object moved at the sensor -> Control the screen's on/off operation automatically



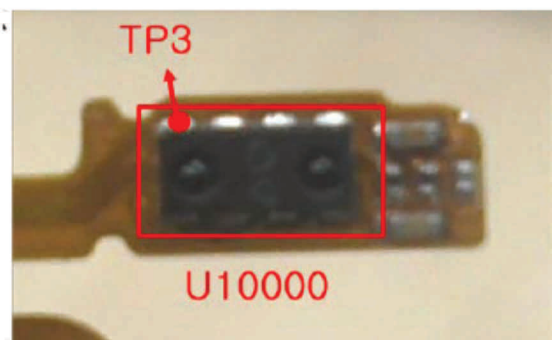
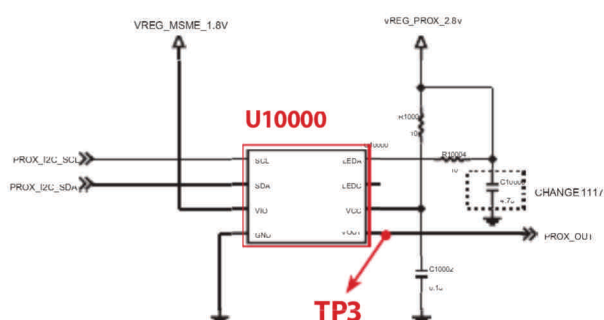
Measurement

VREG_MSME_1.8V
 VREG_P3_2.85V
 PROX_OUT
 PROX_I2C_SCL / SDA

FPCB_EARJACK Connector



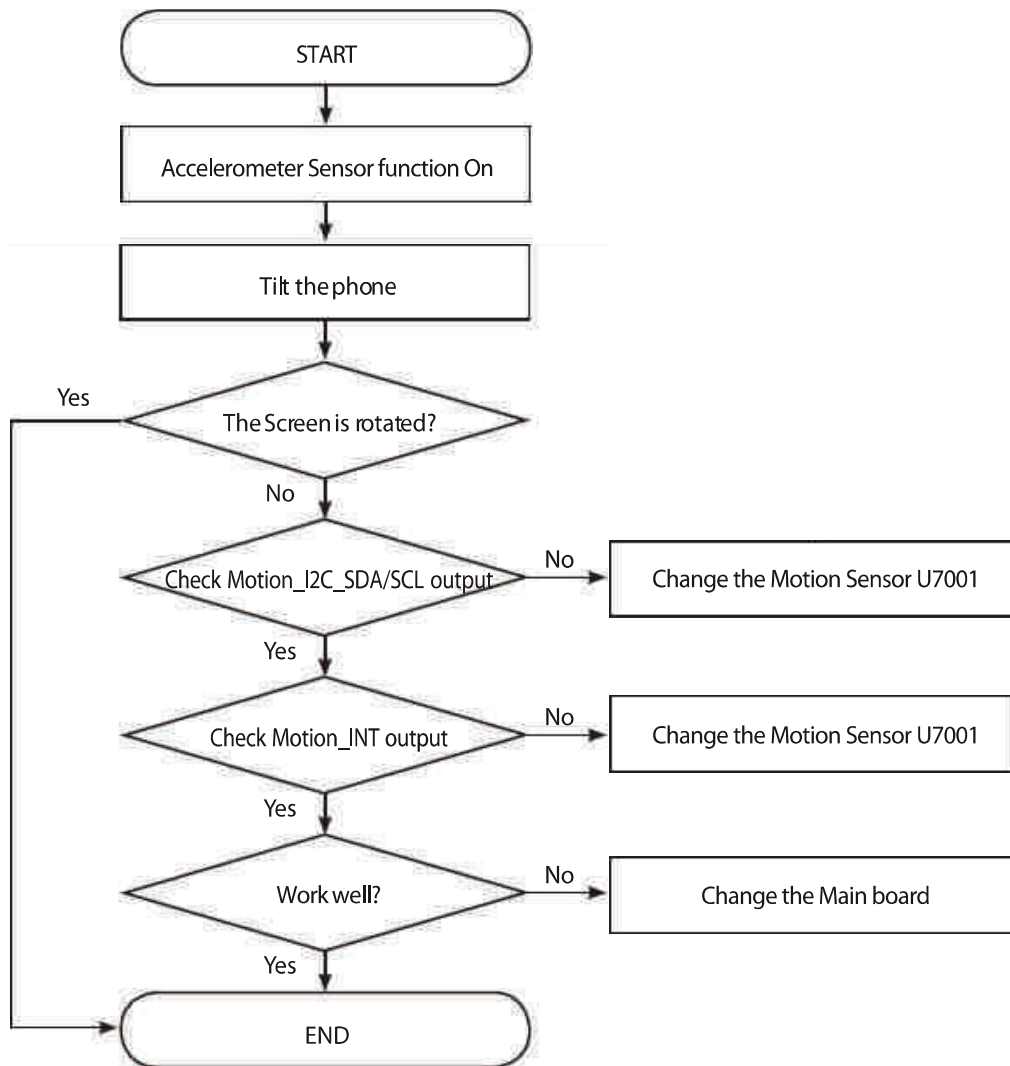
Proximity Sensor



4.15 Motion Sensor on/off Trouble Shooting

Motion Sensor is worked as below :

Accelerometer Sensor function On -> Tilt the phone (90°) -> The screen is had rotated automatic



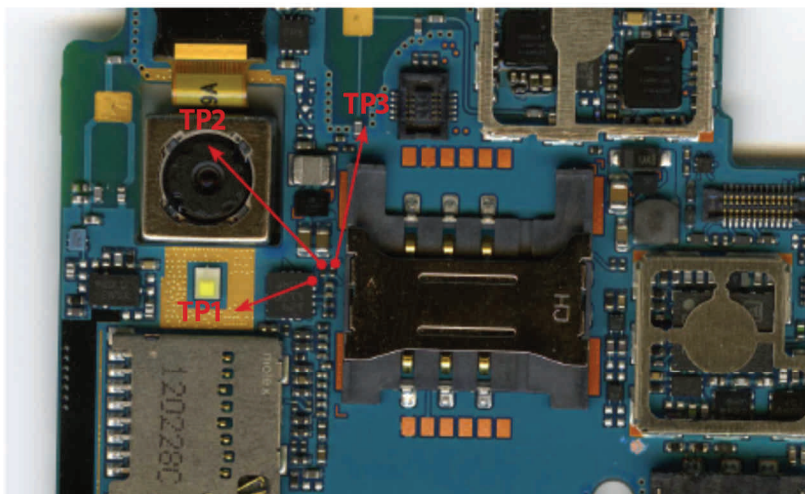
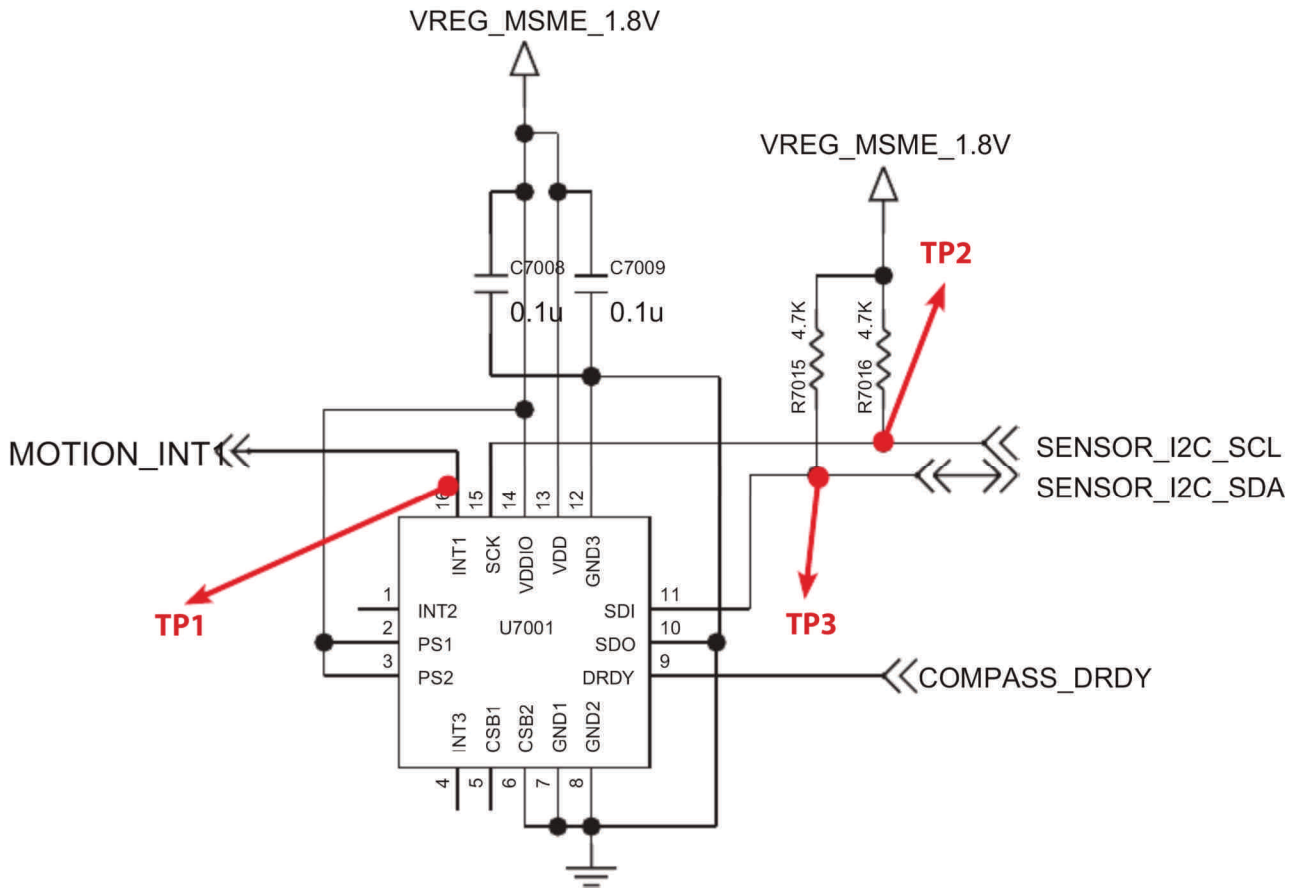
Measurement

VREG_MSME_1.8V

MOTION_INT1

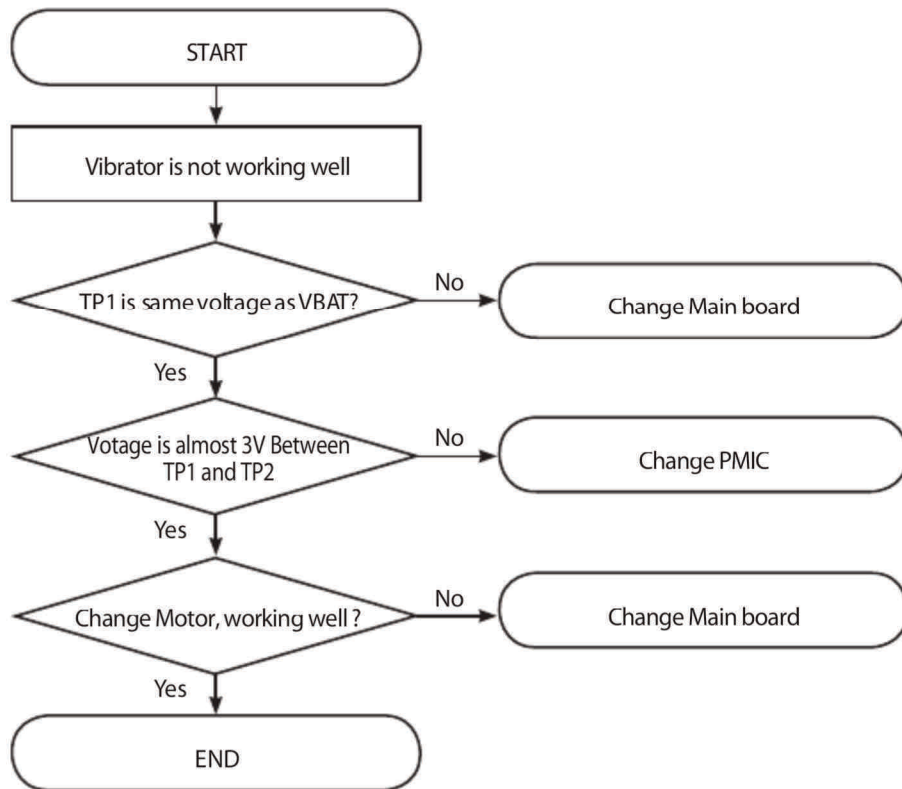
SENSOR_I2C_SDA / SCL

4. TROUBLE SHOOTING



4.16 DC Motor Trouble Shooting

Vibrator is worked as below

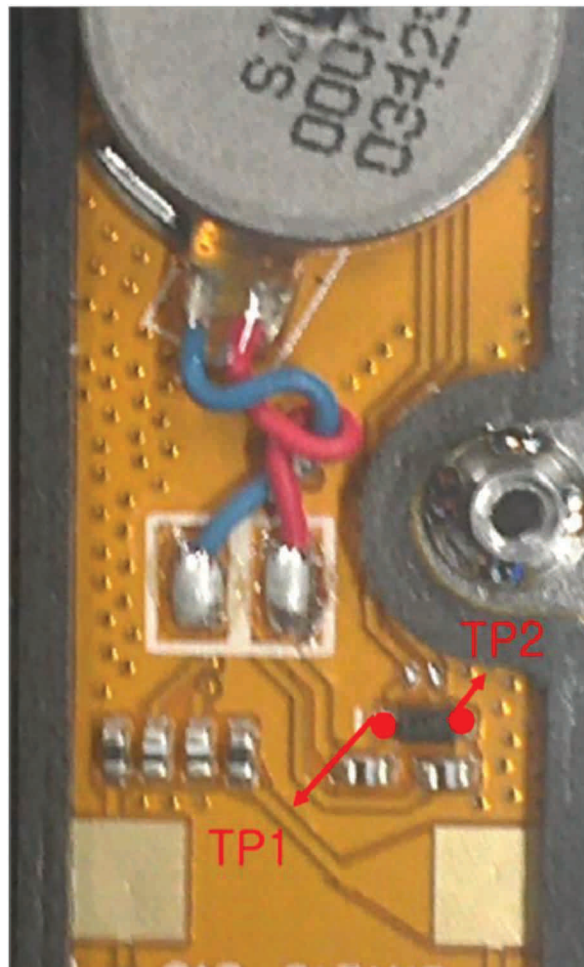
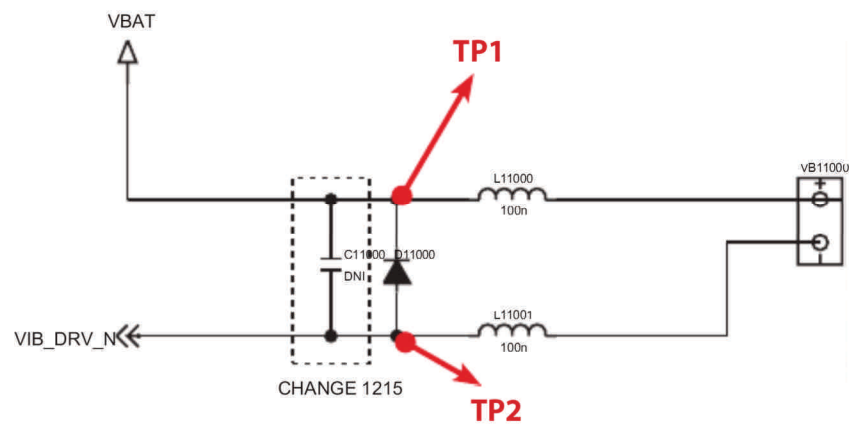


Measurement

VBAT

VIB_DRV_N

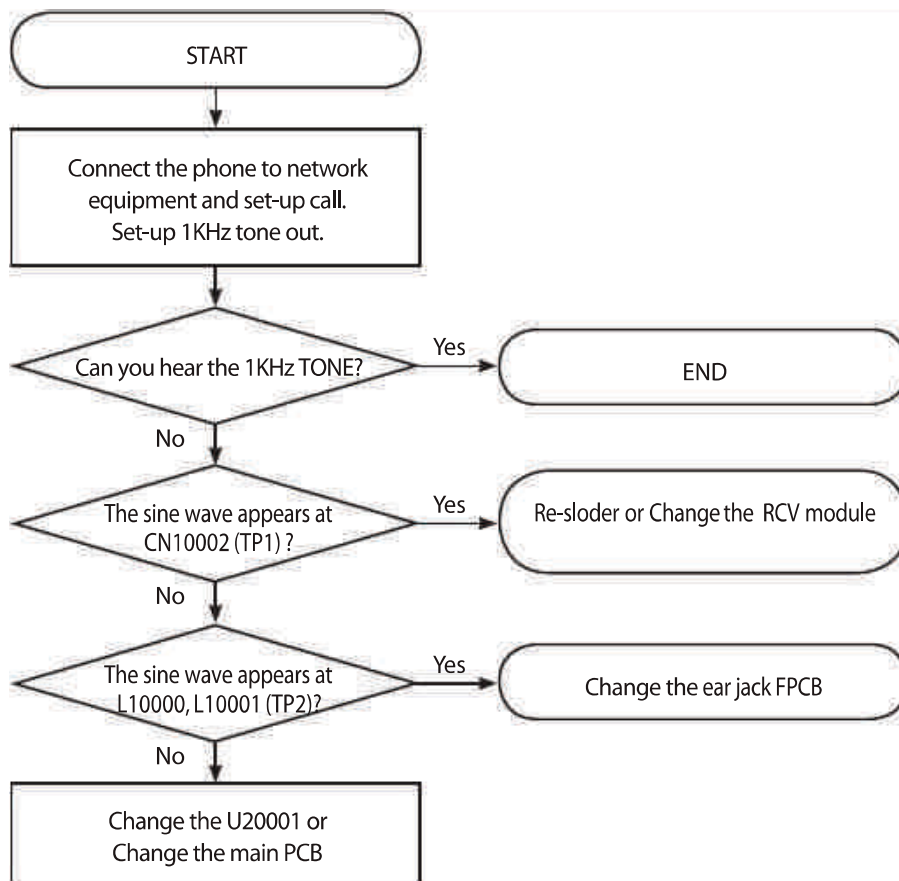
DC MOTOR

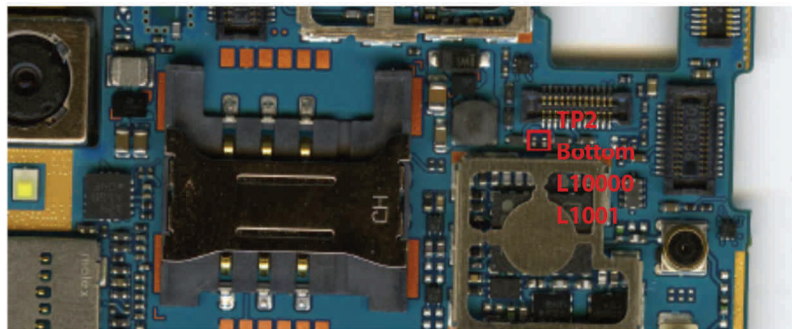
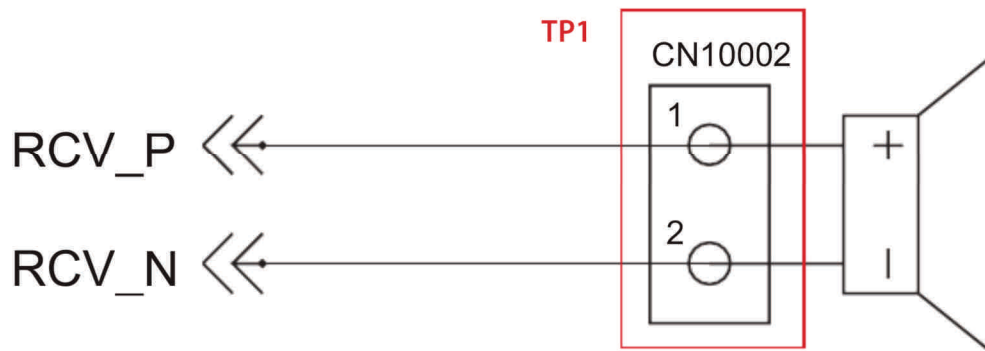
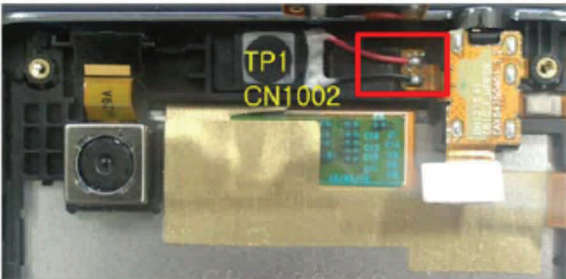


4.17 Audio Trouble

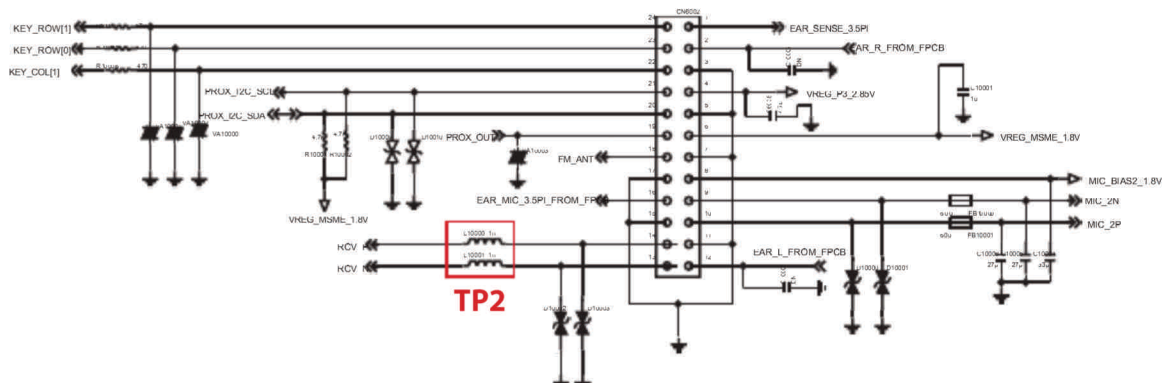
4.17.1 Receiver Path

MSM7225A EAR1_OP, EAR1_ON -> RCV_P, RCV_N -> CN1002(TP1) -> L10000,L10001(TP2)





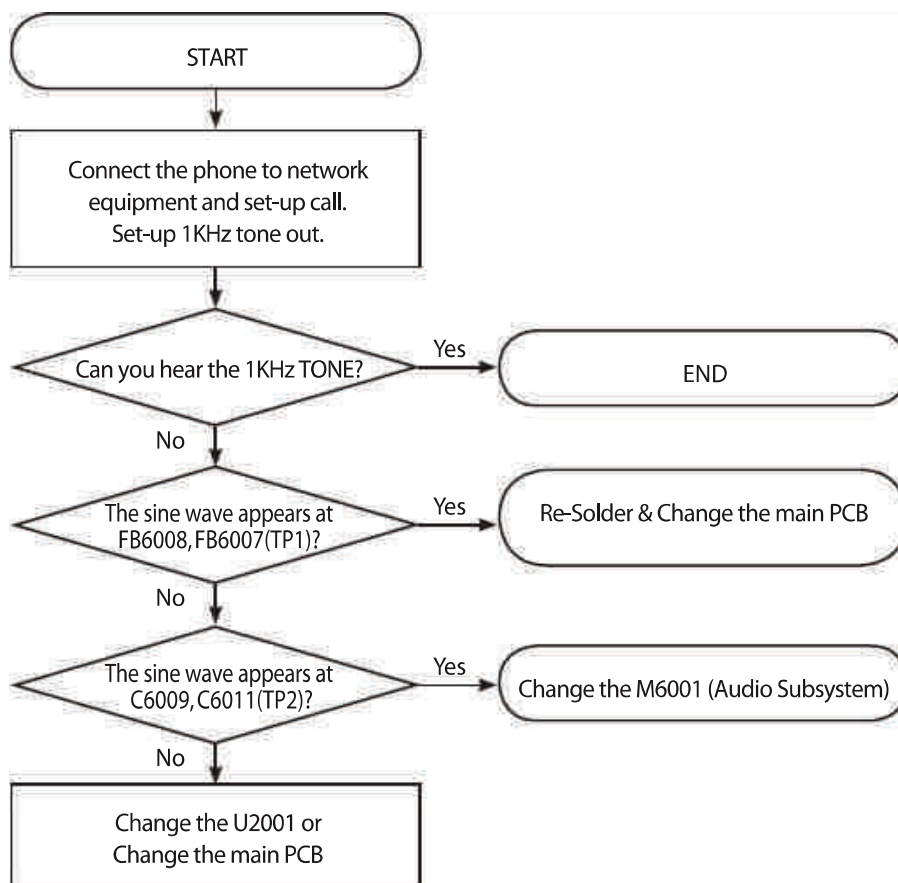
FPCB_EARJACK Connector



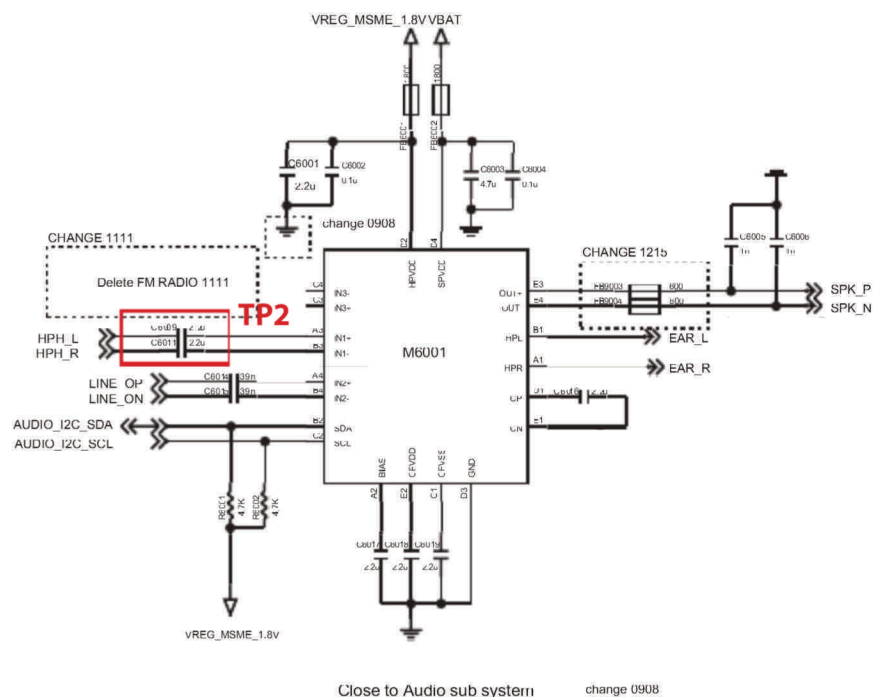
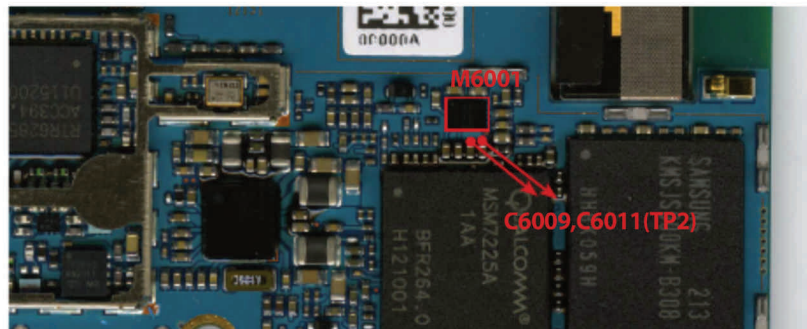
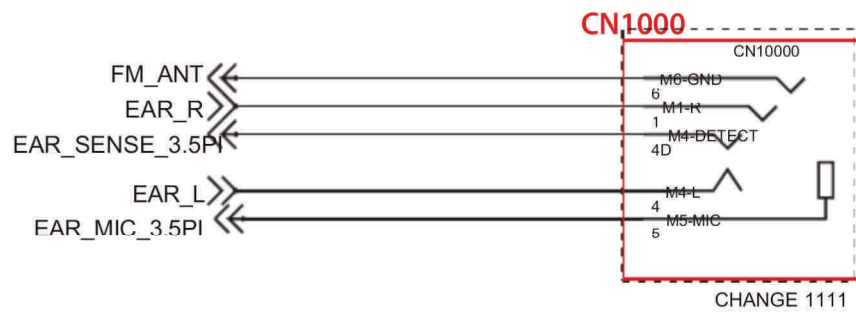
4.17.2 Headset path

MSM7225A HPH_R, HPH_L -> C6009, C6011(TP2) -> M6001 (TPA2055D3: Audio Subsystem) ->

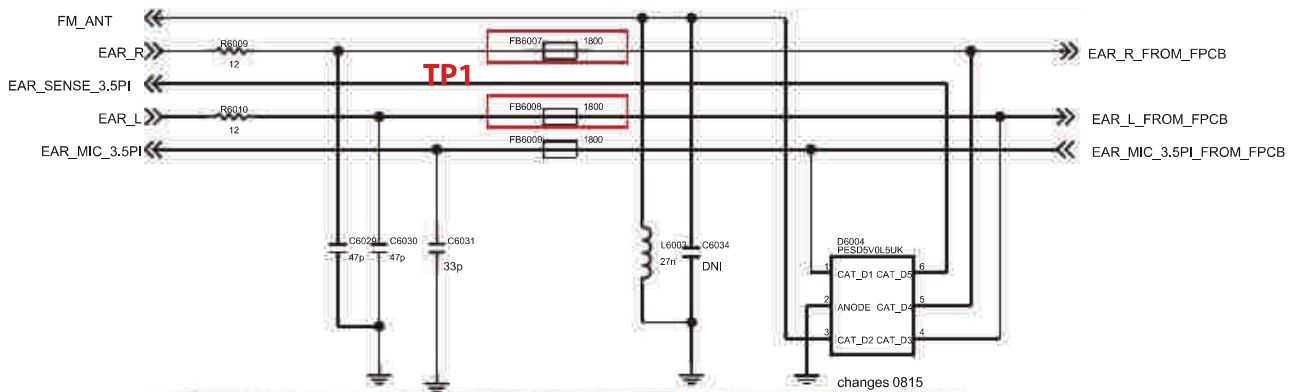
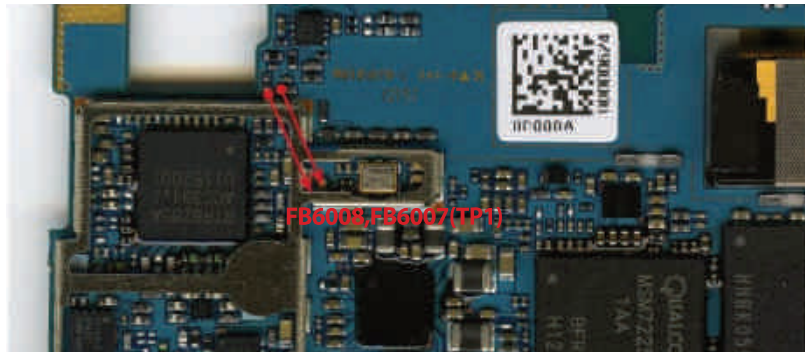
R6009, R6010 -> FB6008, FB6007(TP1) -> CN10000(3.5pi Ear-jack)



4. TROUBLE SHOOTING



4. TROUBLE SHOOTING

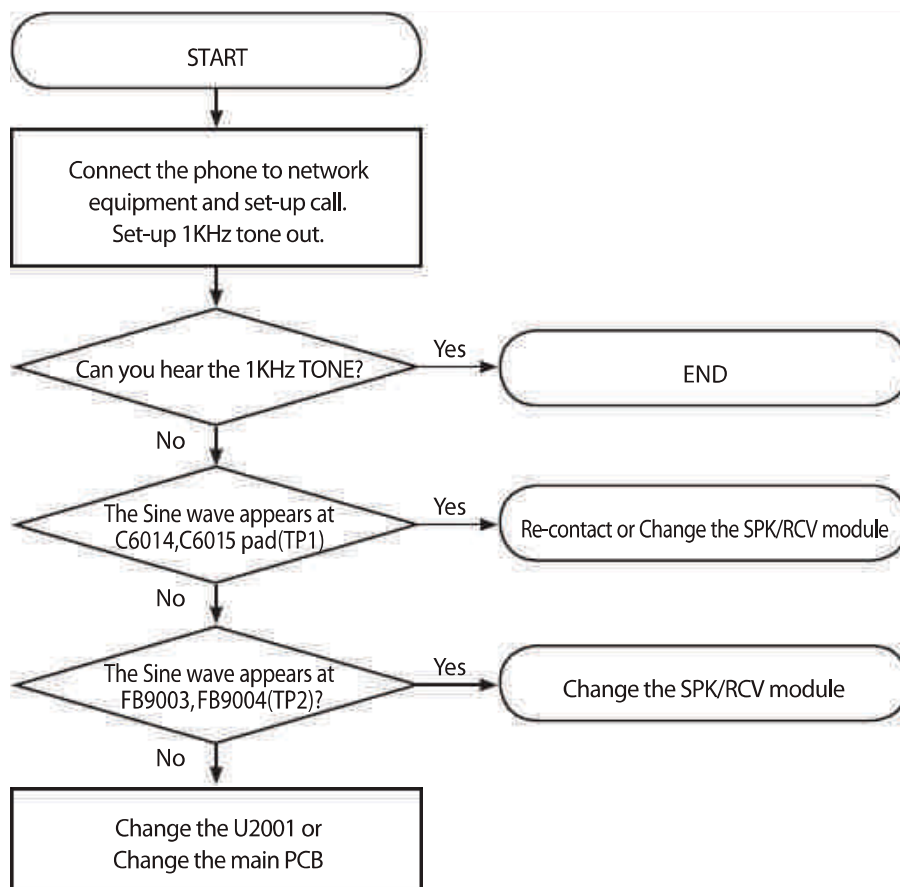


change 1111 -Close to earjack conn

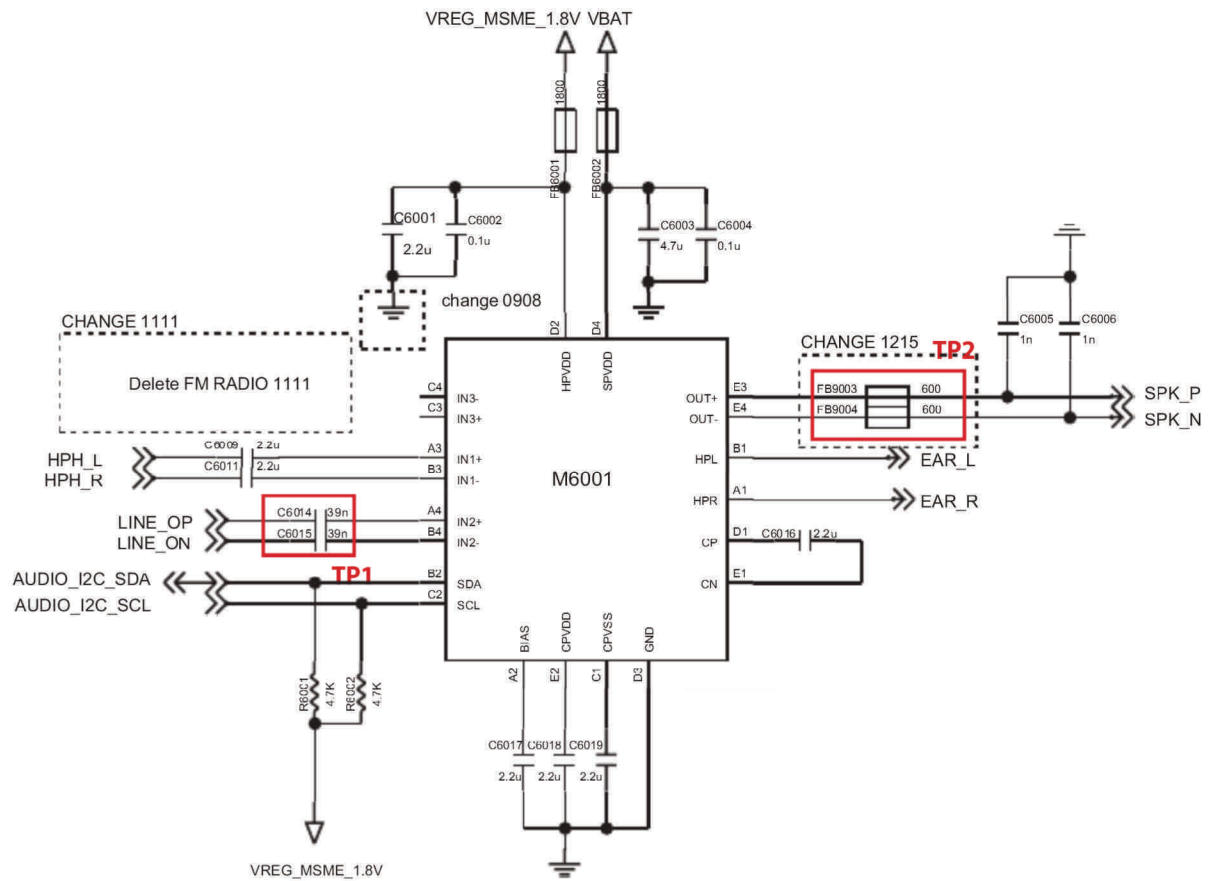
4.17.3 Speaker/Speaker Phone path

MSM7225A LINE_OP, LINE_ON -> C6014,C6015(TP1) -> M6001TPA2055D3 :

Audio Subsystem)-> FB9003, FB9004(TP2) -> CN11002

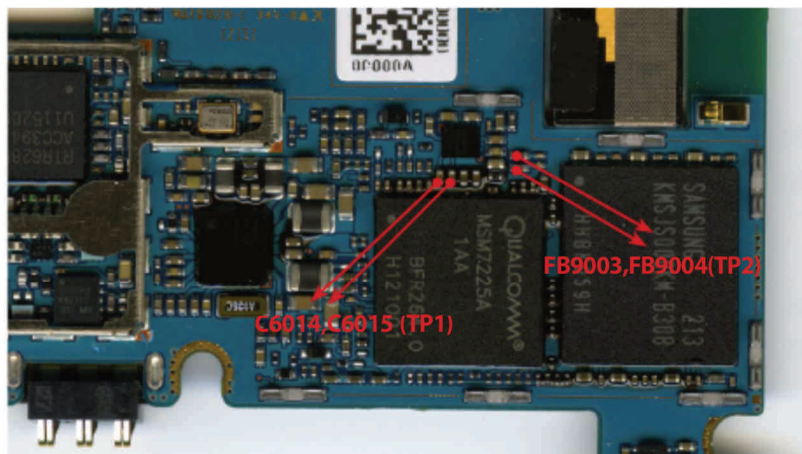


4. TROUBLE SHOOTING

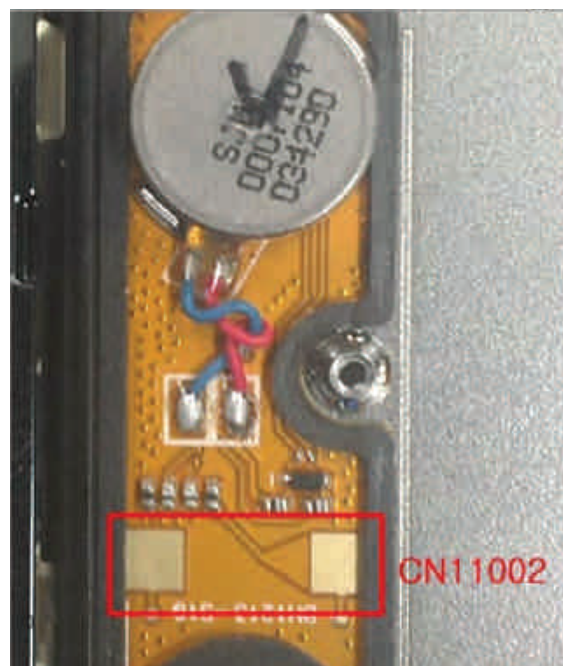
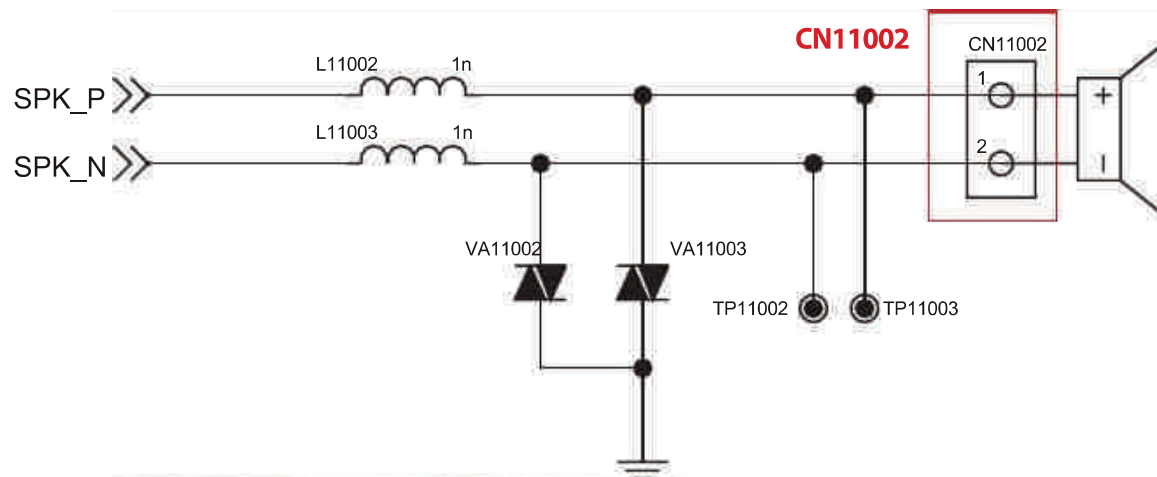


Close to Audio sub system

change 0908



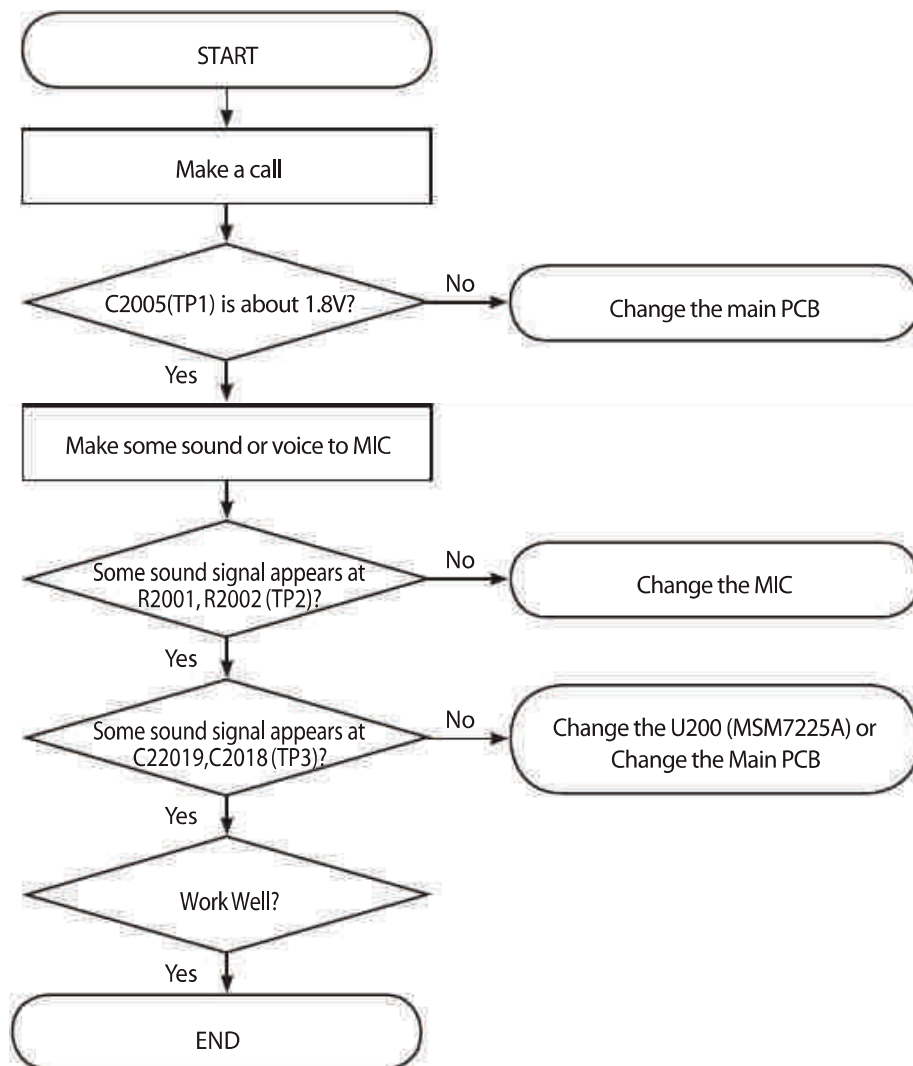
4. TROUBLE SHOOTING

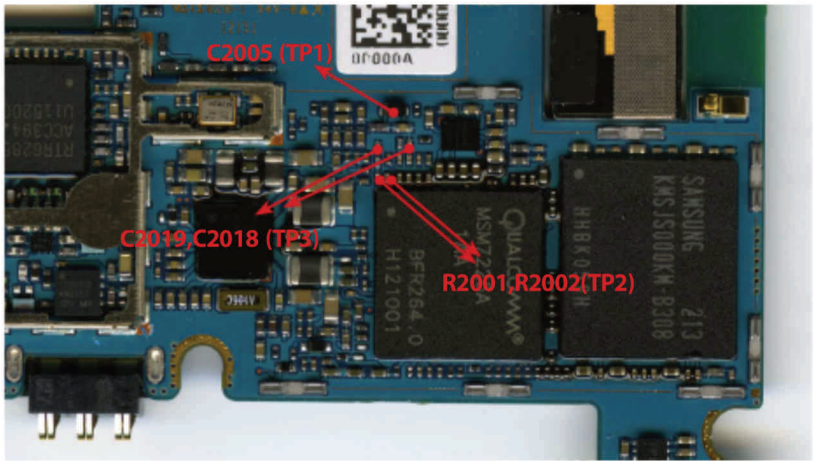


4.17.4 Main Microphone

MIC Signal: MIC1100 -> R2001,R2002 (TP2) -> C2019,C2018 (TP3) MIC1P of MSM7225A

MIC Bias: MIC_BIAS -> C2005(TP1) -> MIC1100



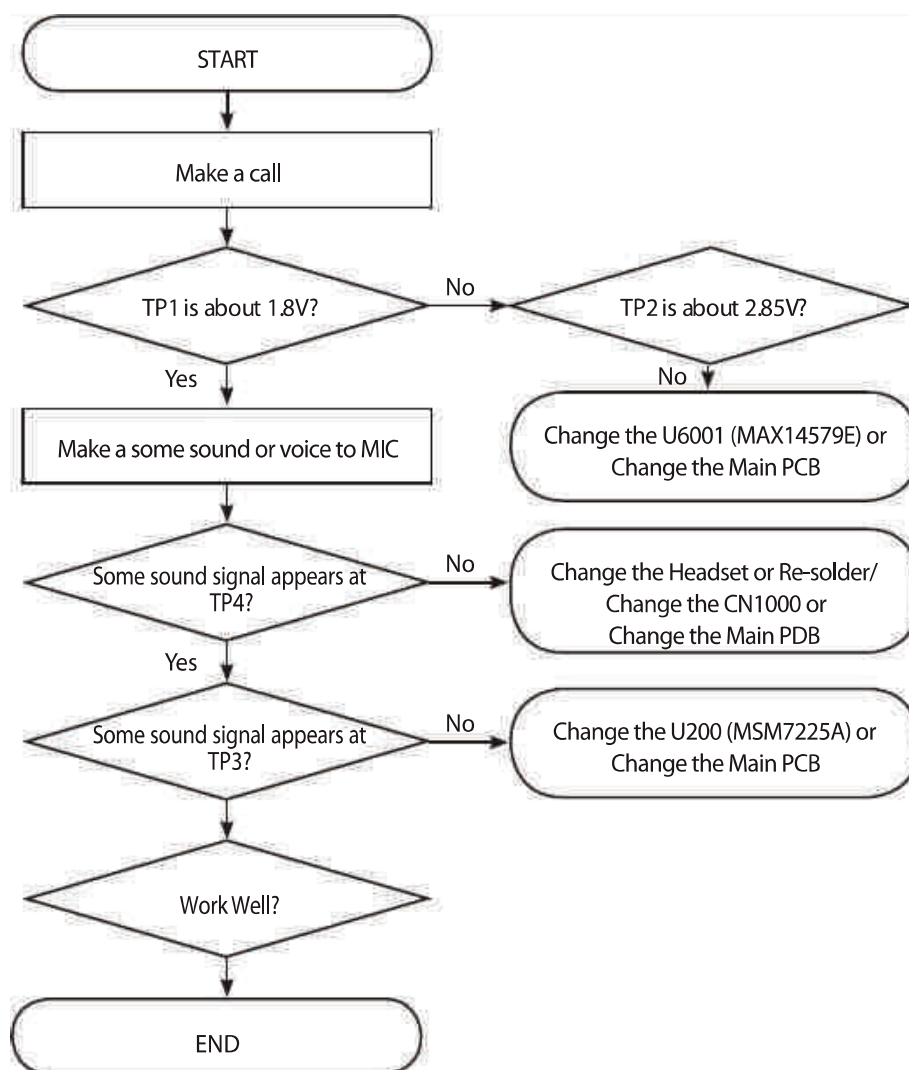


4.17.5 Headset microphone

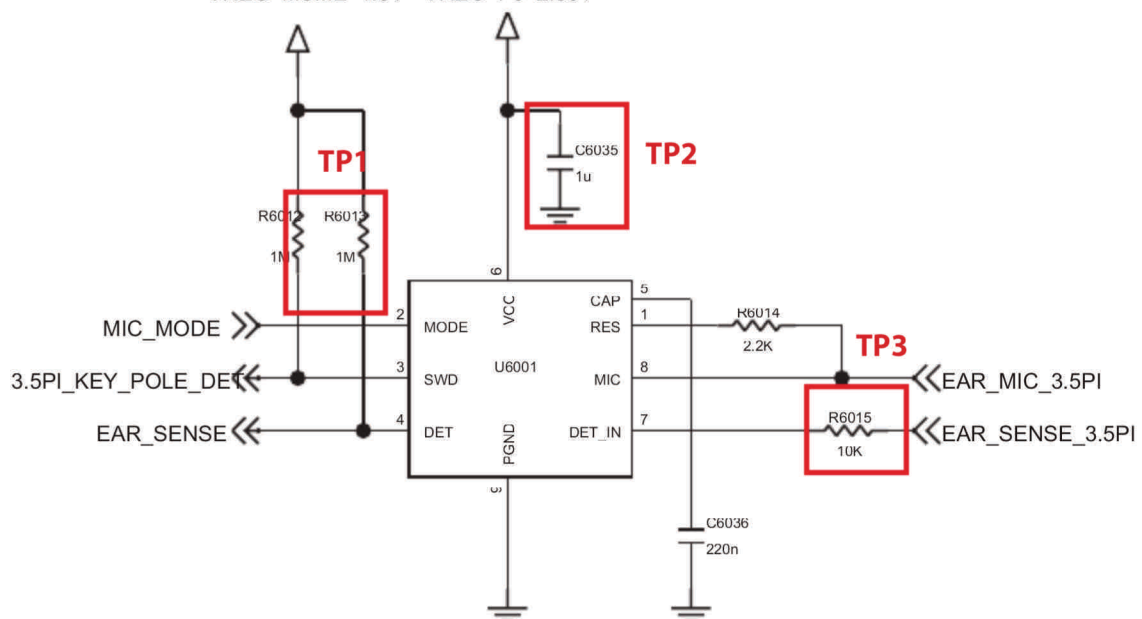
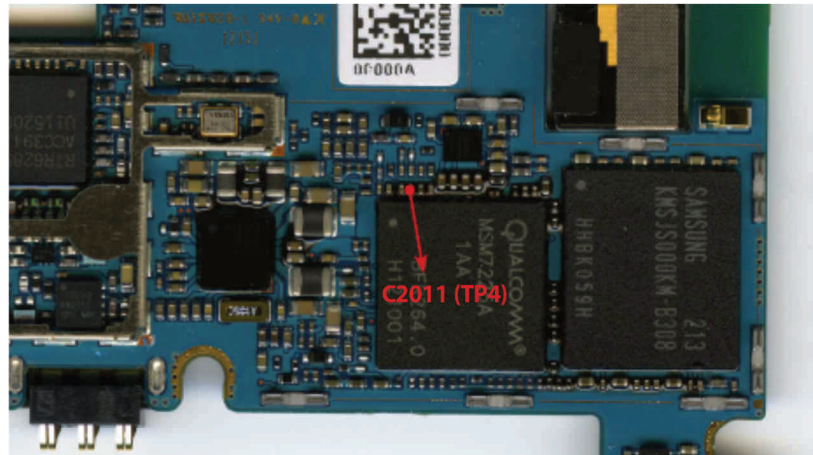
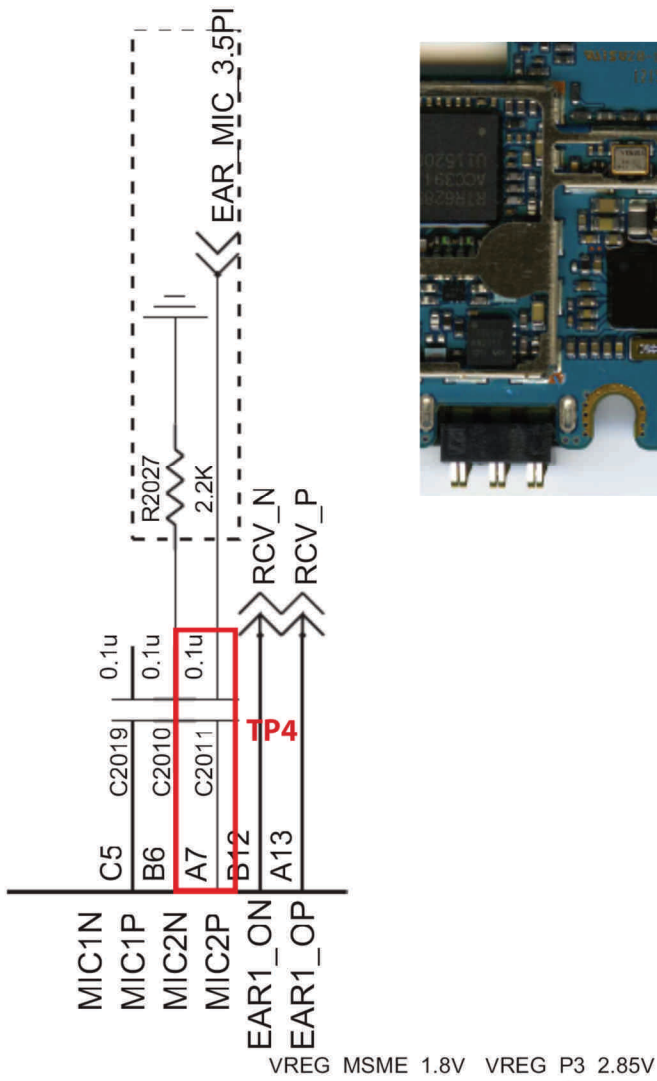
MIC Signal: 3.5 pi Headset (CN10000) -> R6014 (TP4) MIC of MAX14579E & C2011 (TP4) MIC2P of MSM7225A

MIC Bias: VREG_MSME_1.8V -> R6013 (TP1) DET -> R6015DET_IN -> Headset MIC \

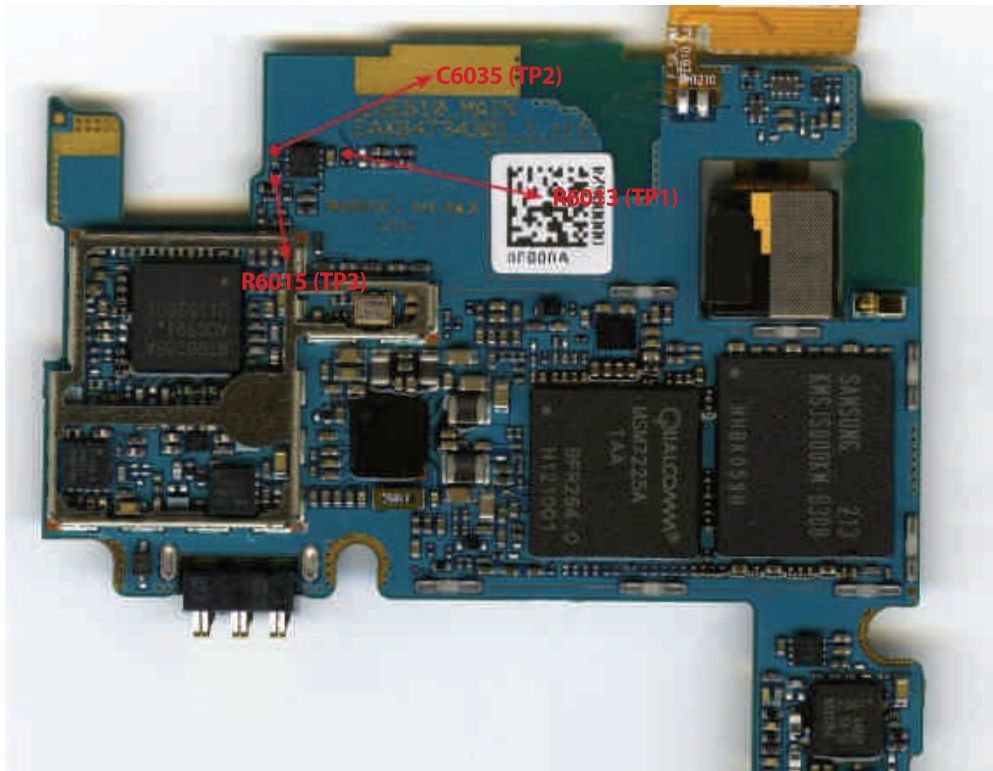
HS Detect IC Bias: VREG_P3_2.85V -> C6035 (TP2)



4. TROUBLE SHOOTING

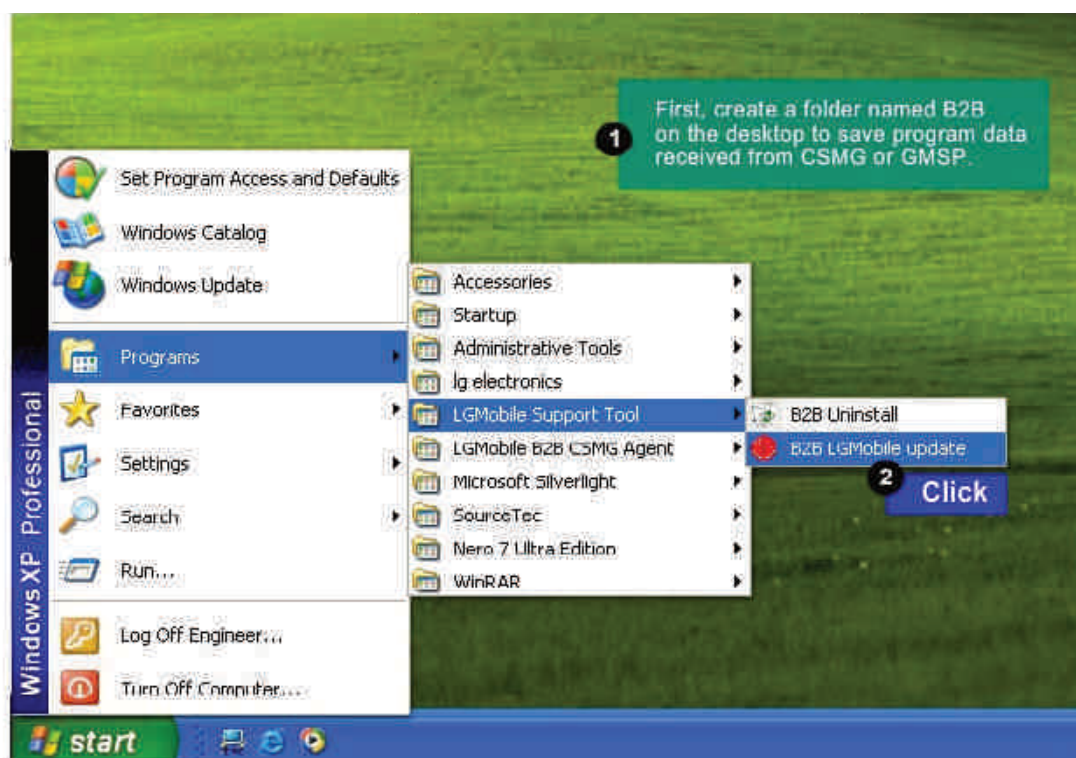


4. TROUBLE SHOOTING

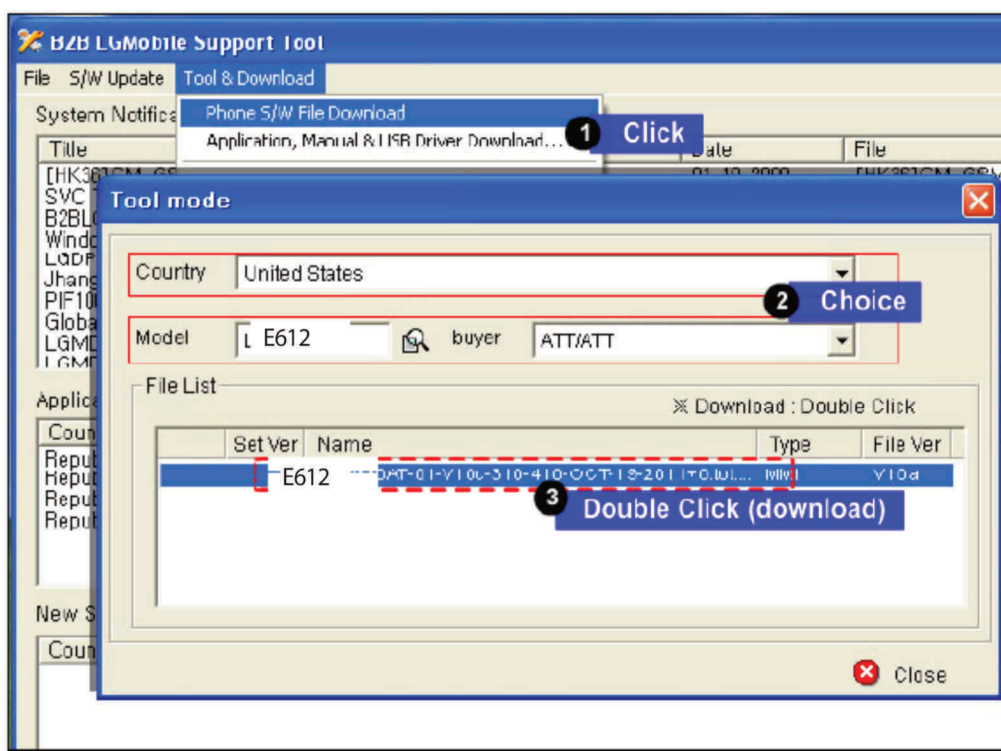
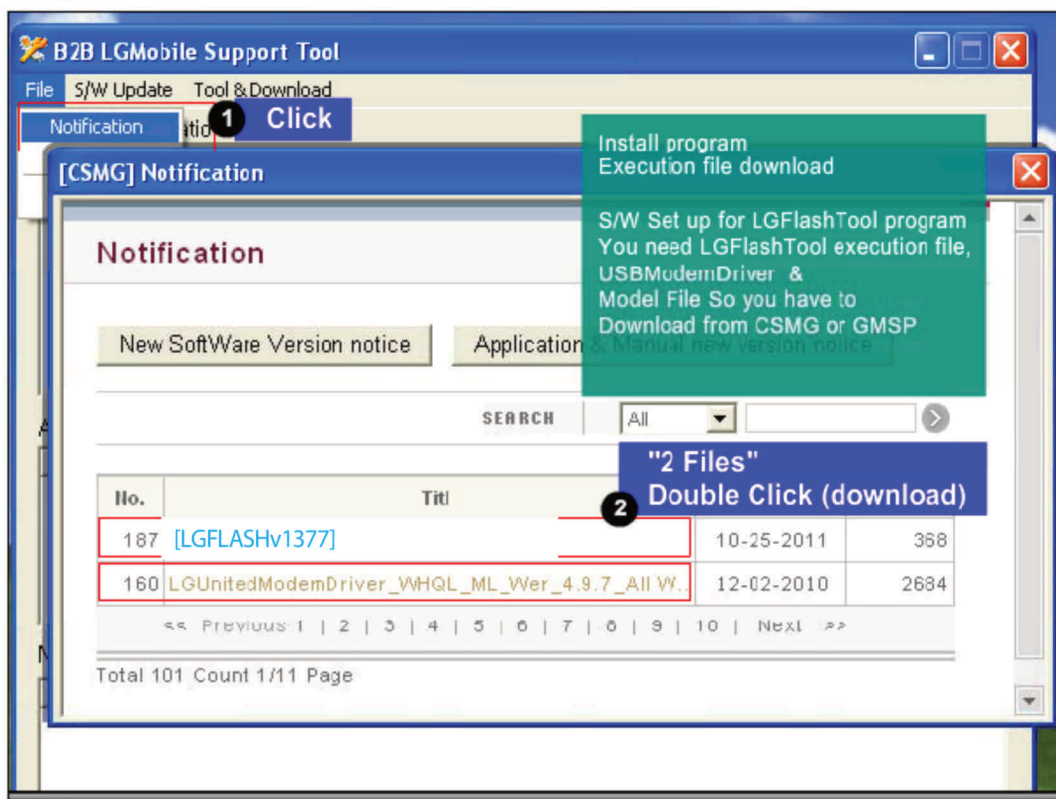


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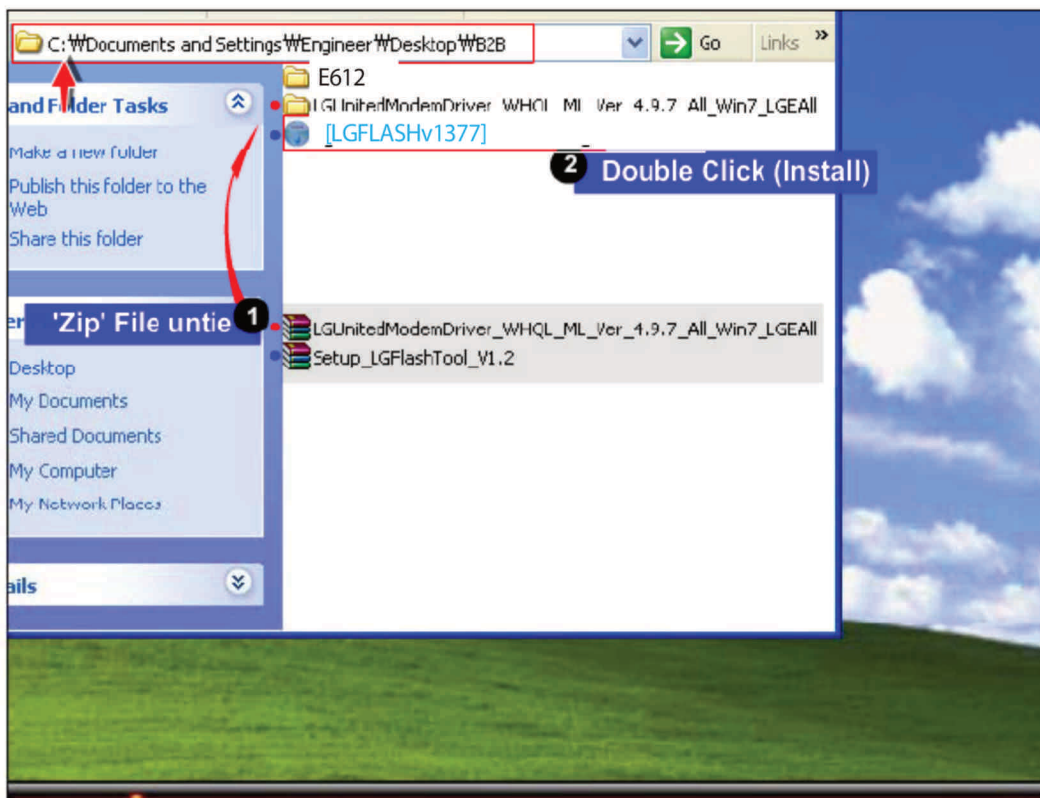
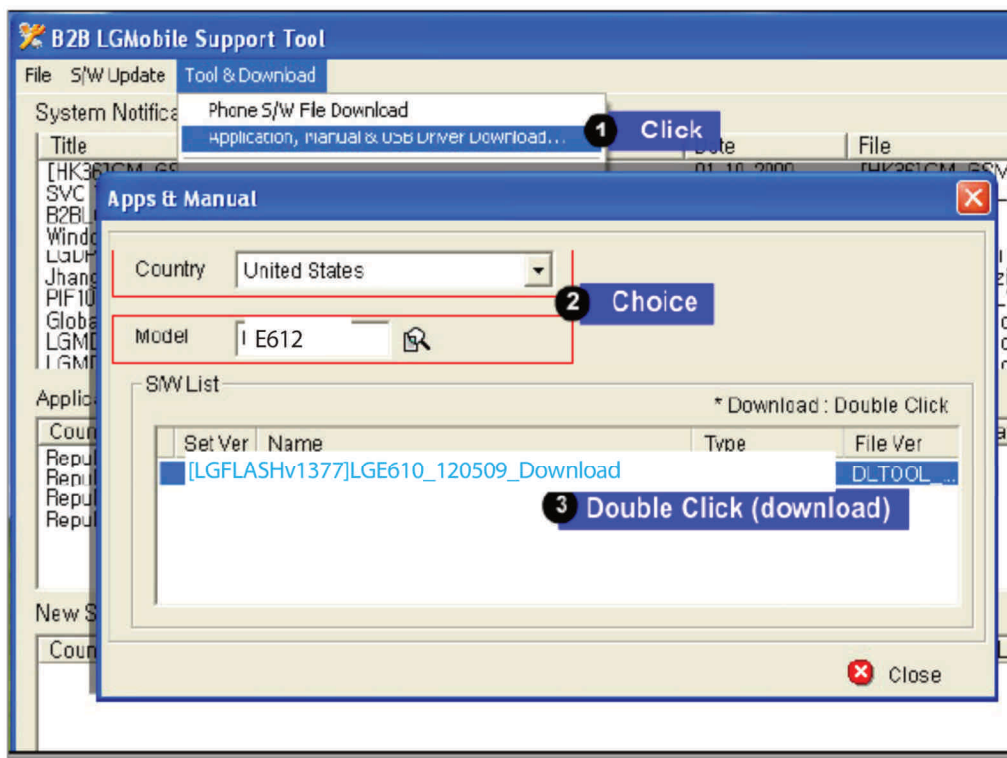
TOOL INFORMATION		
TOOL VERSION	DLL NAME	USB DRIVER
[LGFLASHv1377]	[LGFLASHv1377]LGE612_120509_ Download	LG United Mobile Driver Version 3.6 Package Release 2011.11.01
Please Check the Version to "B2B"		
H/W		
	Name	Part No.
D/L Cable	Micro 5P (56-open-910K) USB DLC	RAD32167835

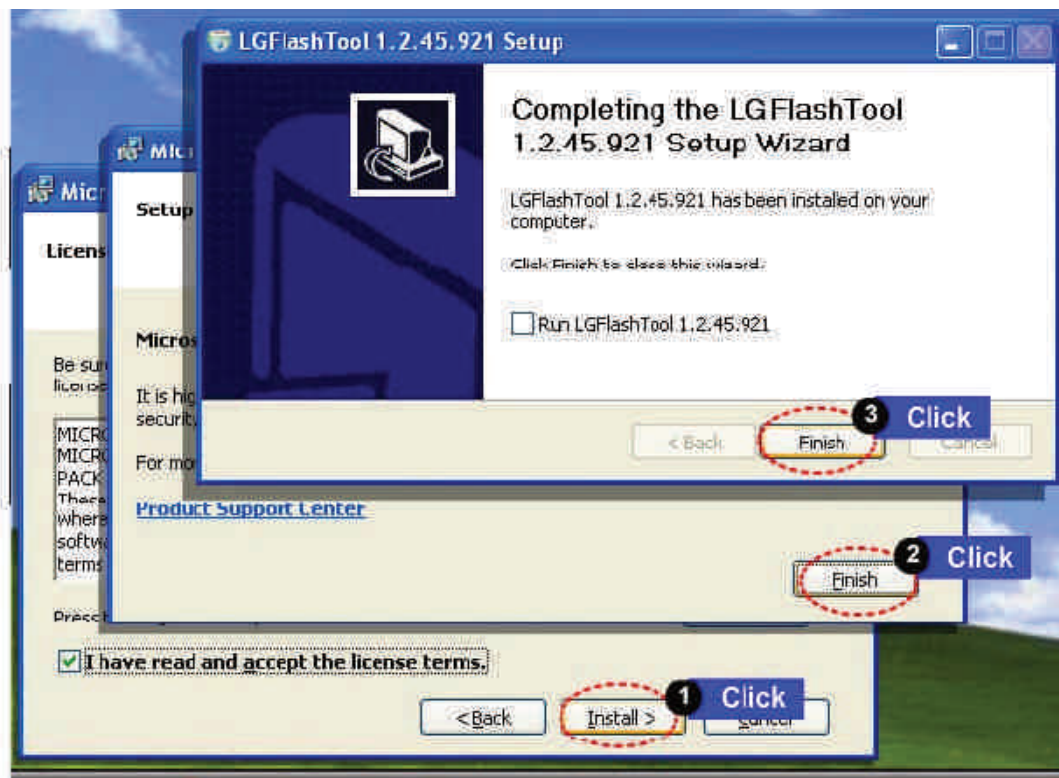
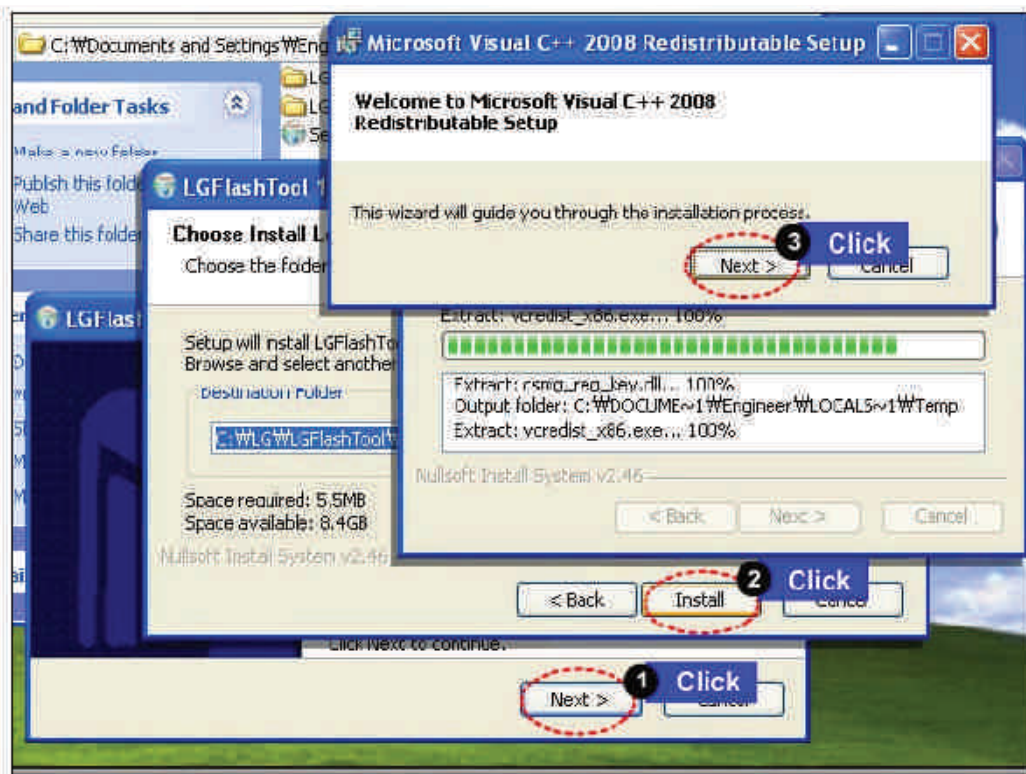


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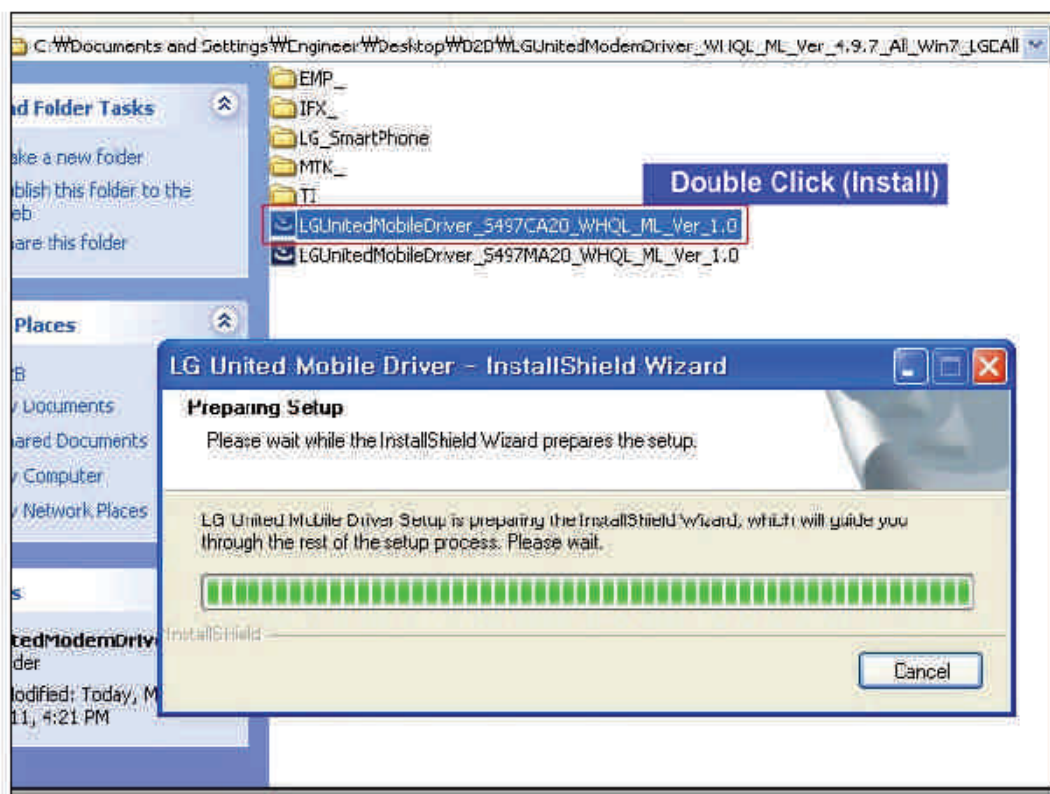
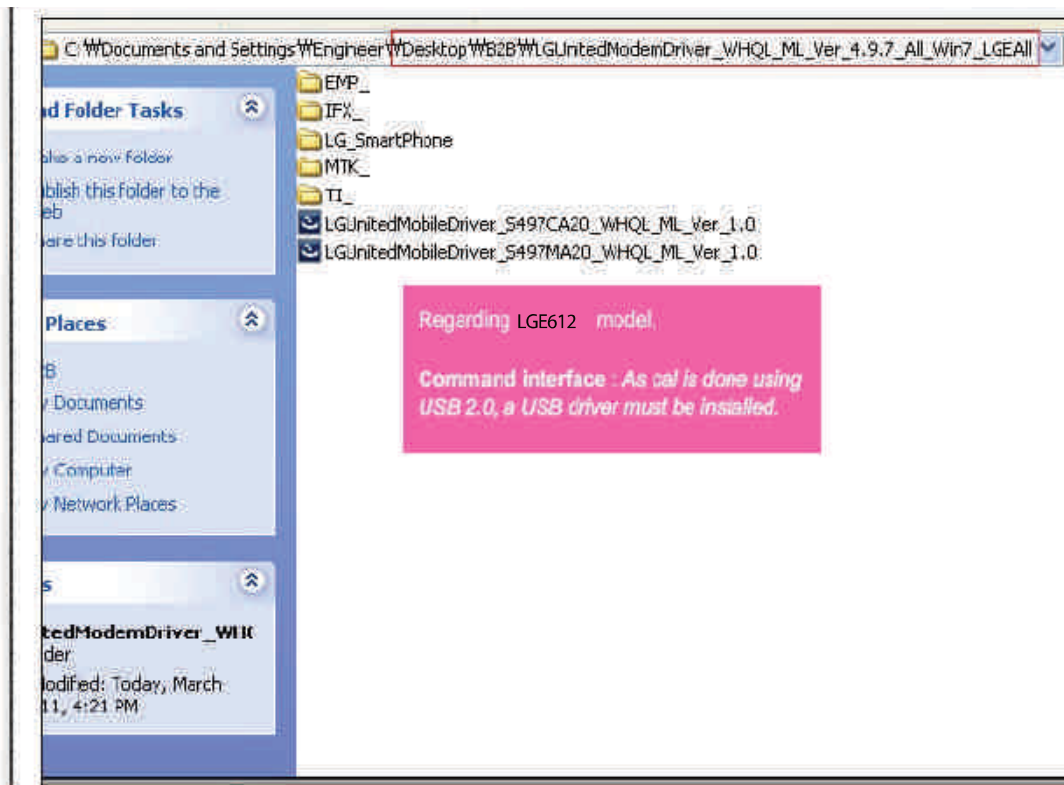


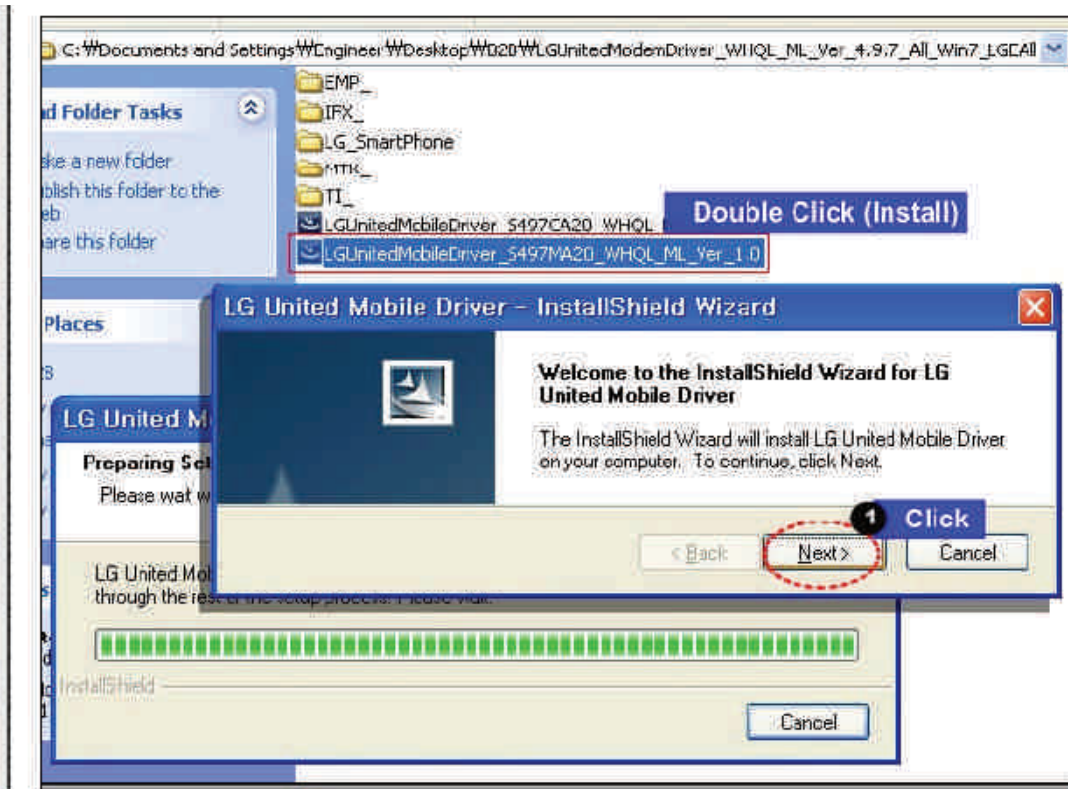
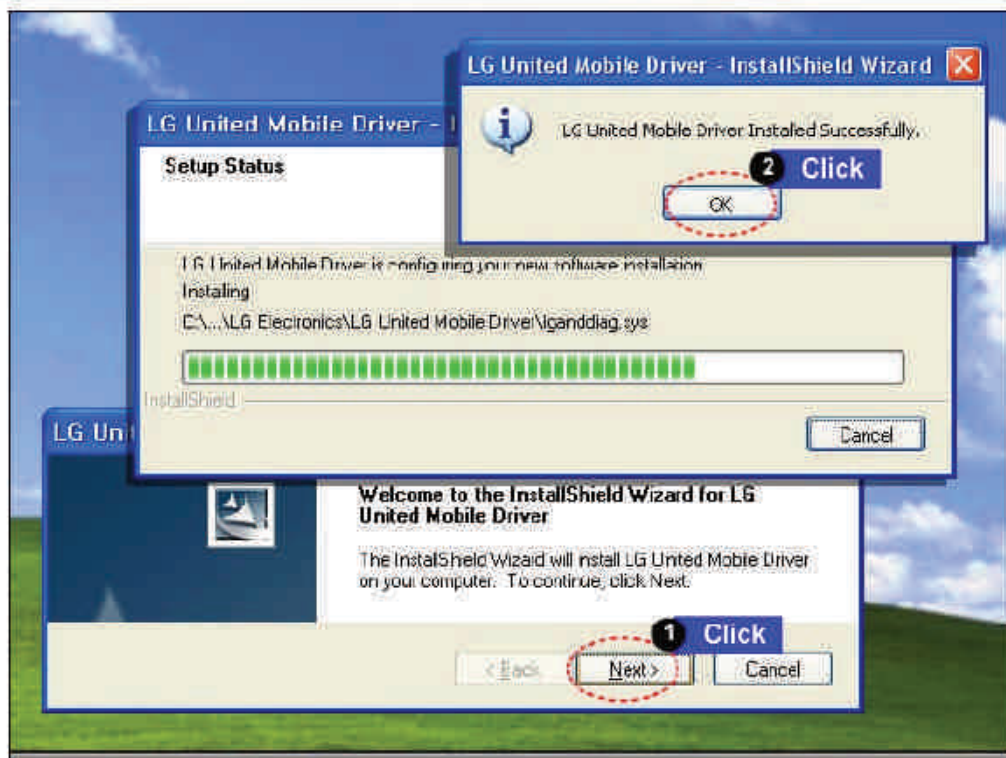
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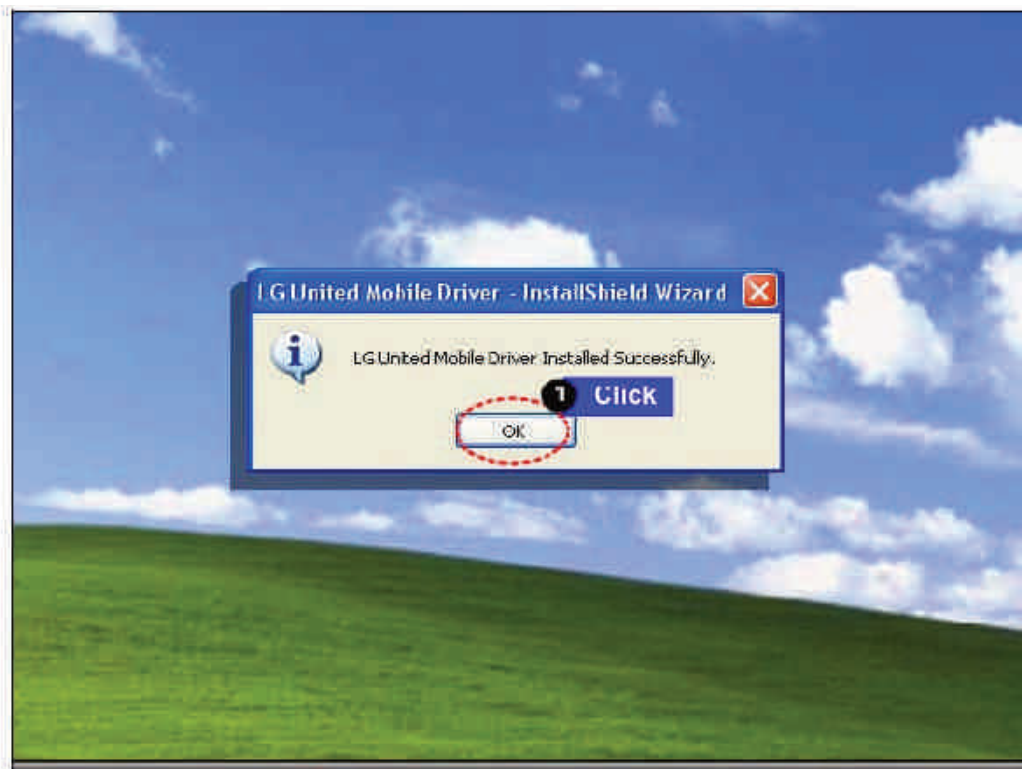
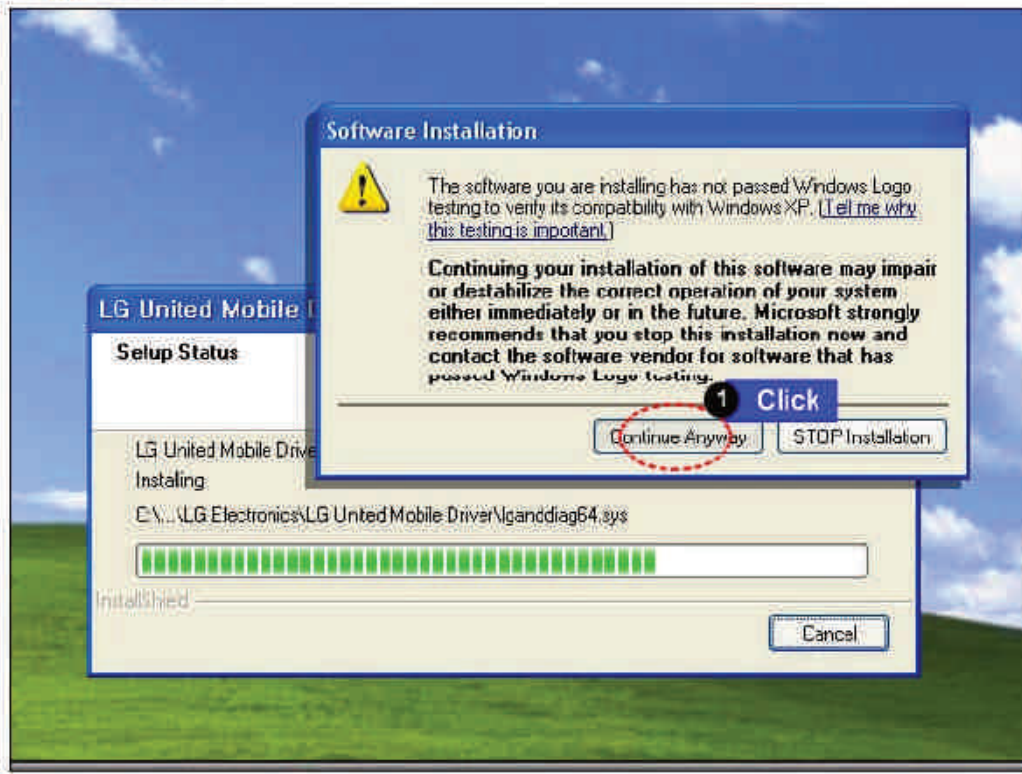




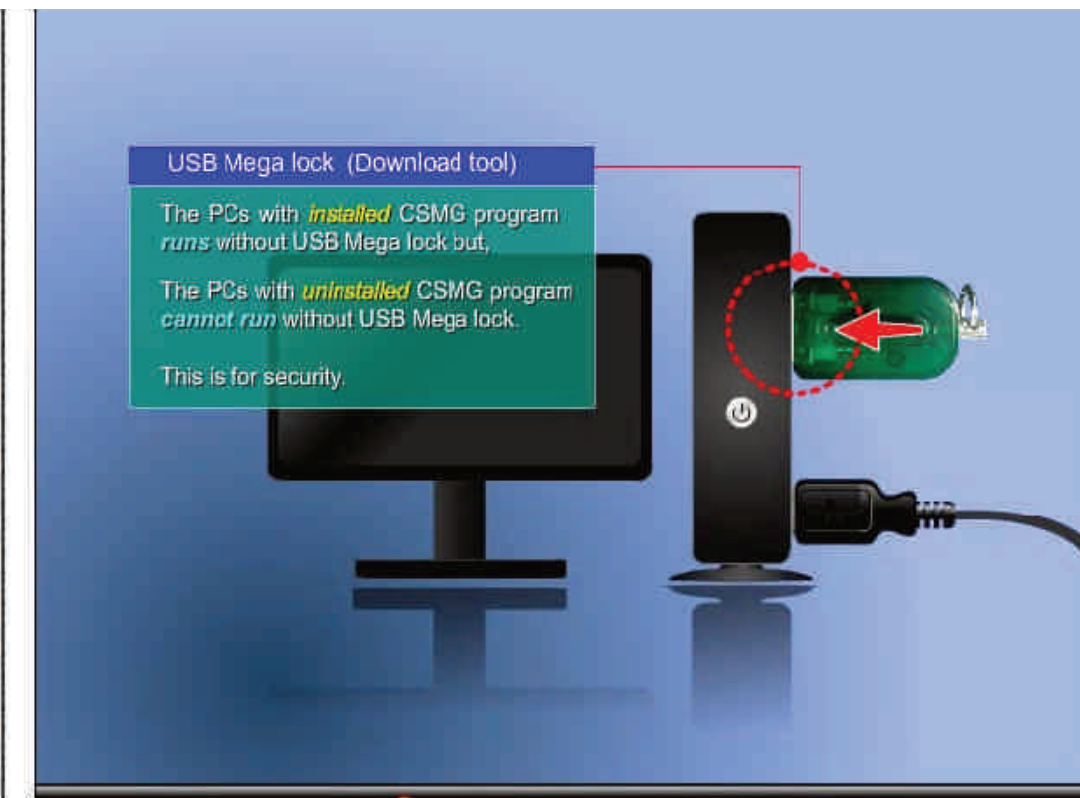
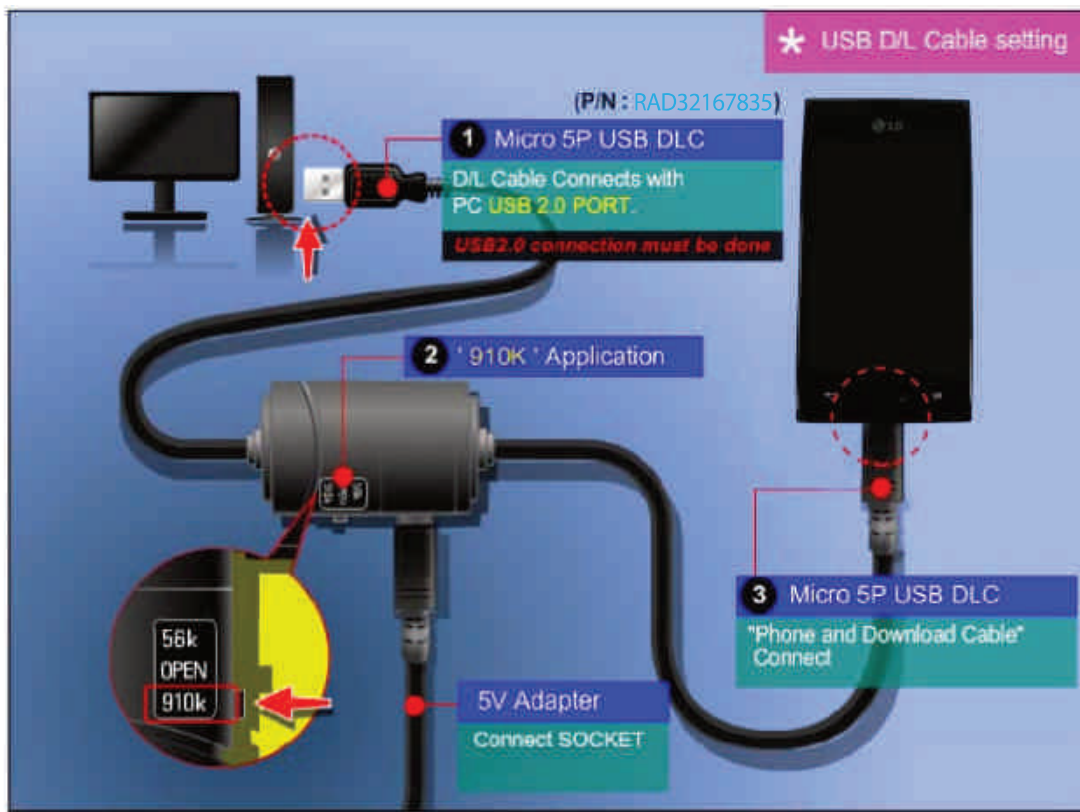
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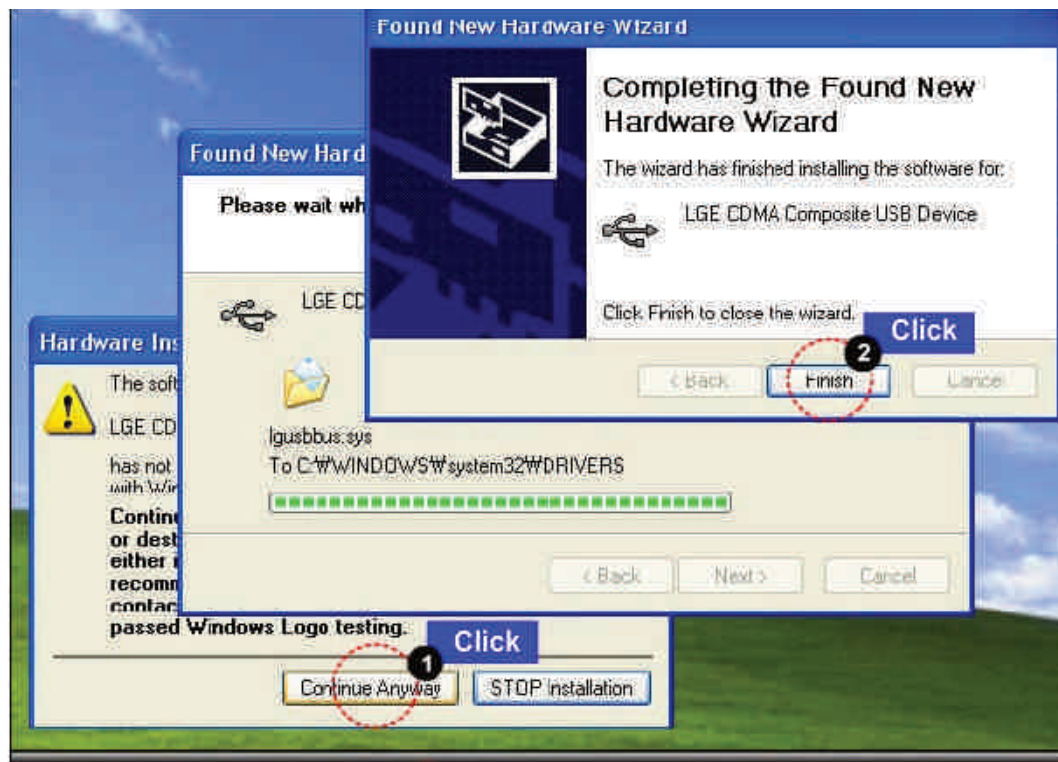




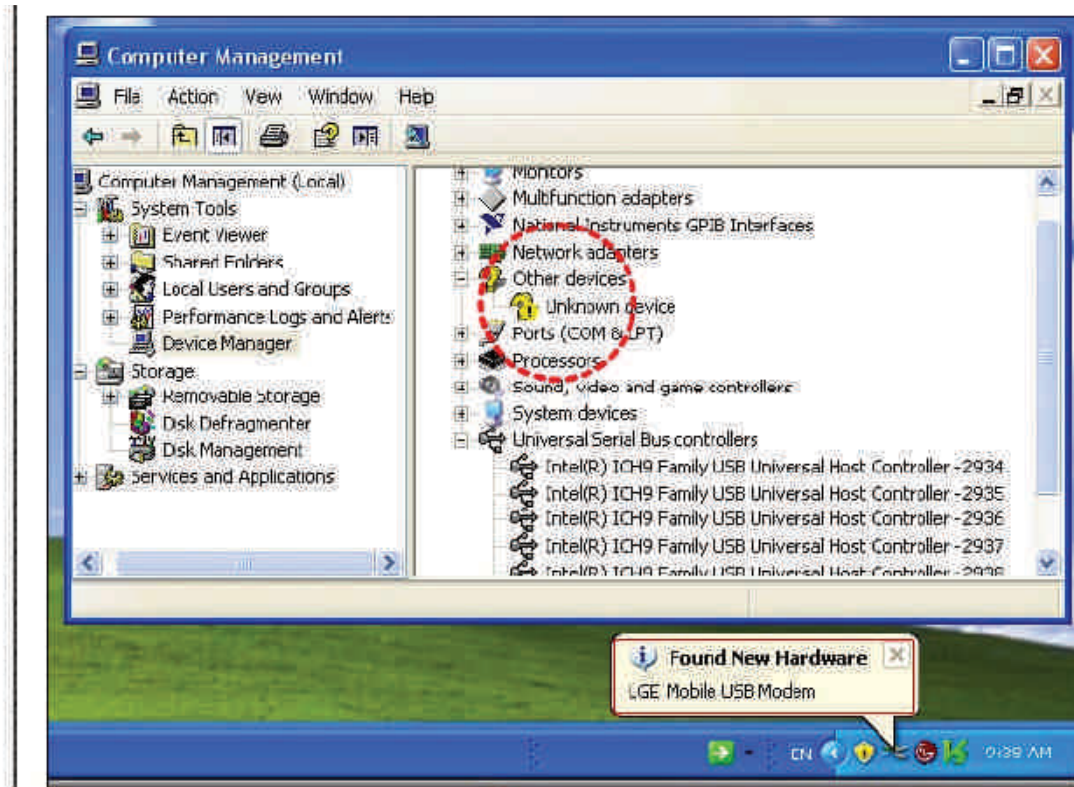
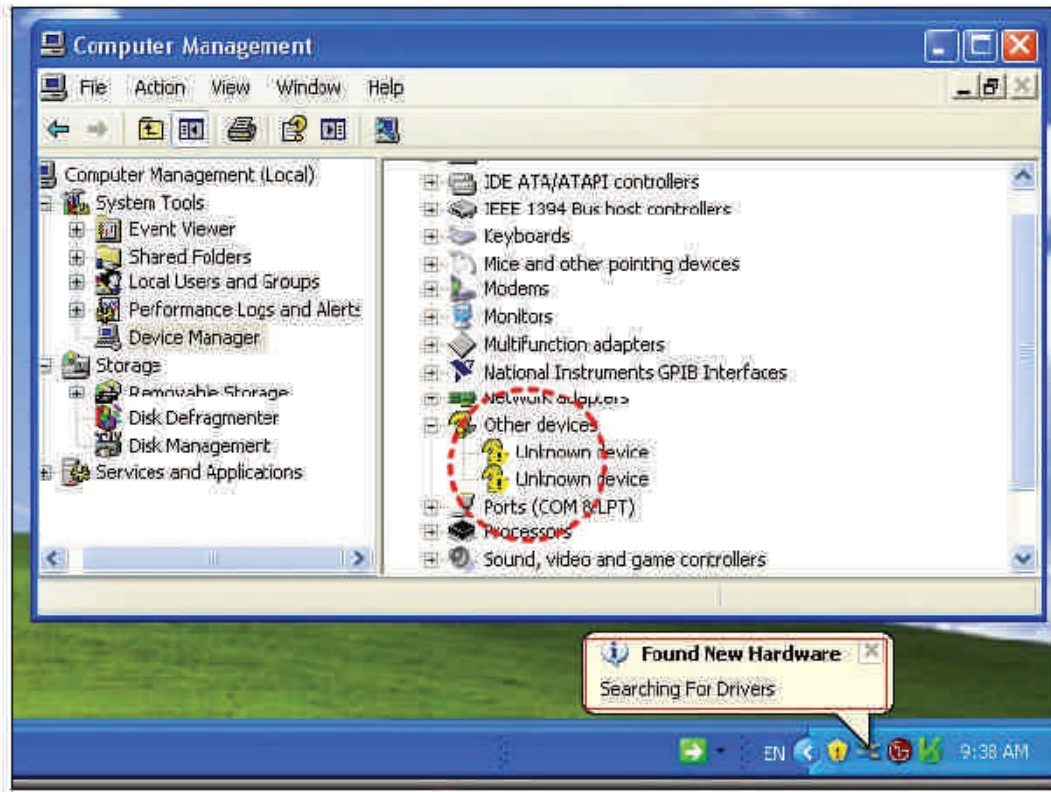


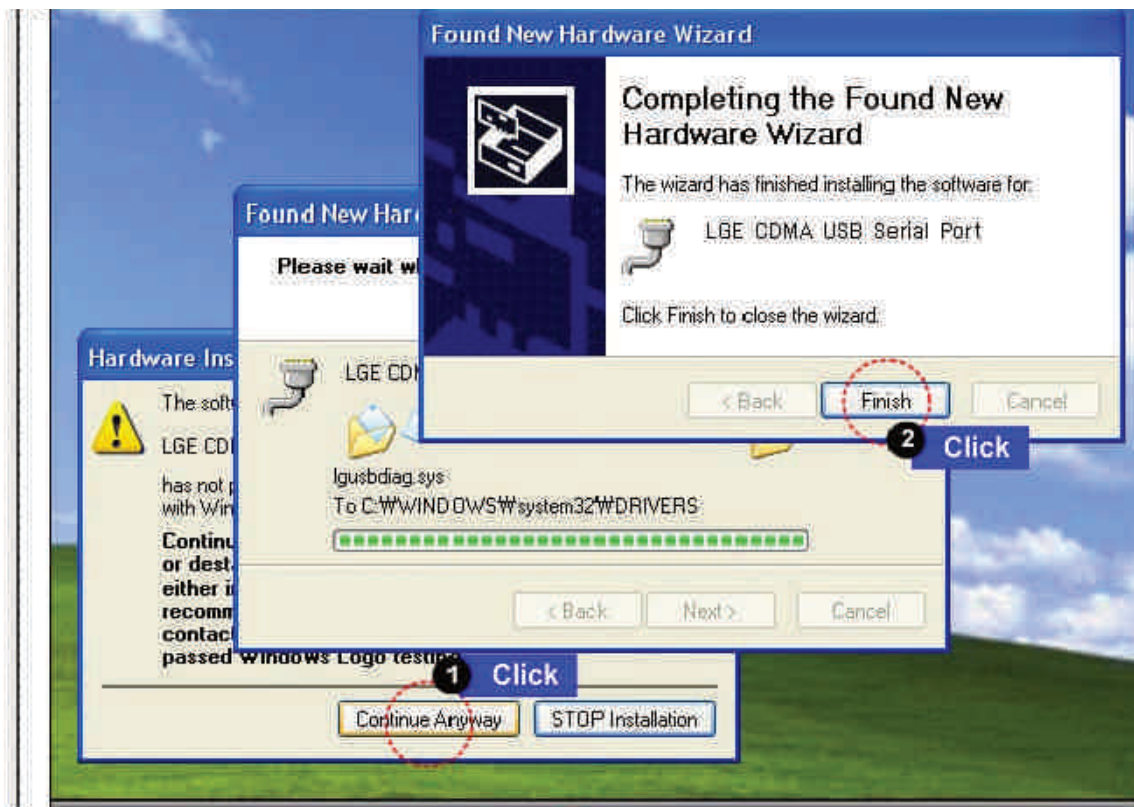
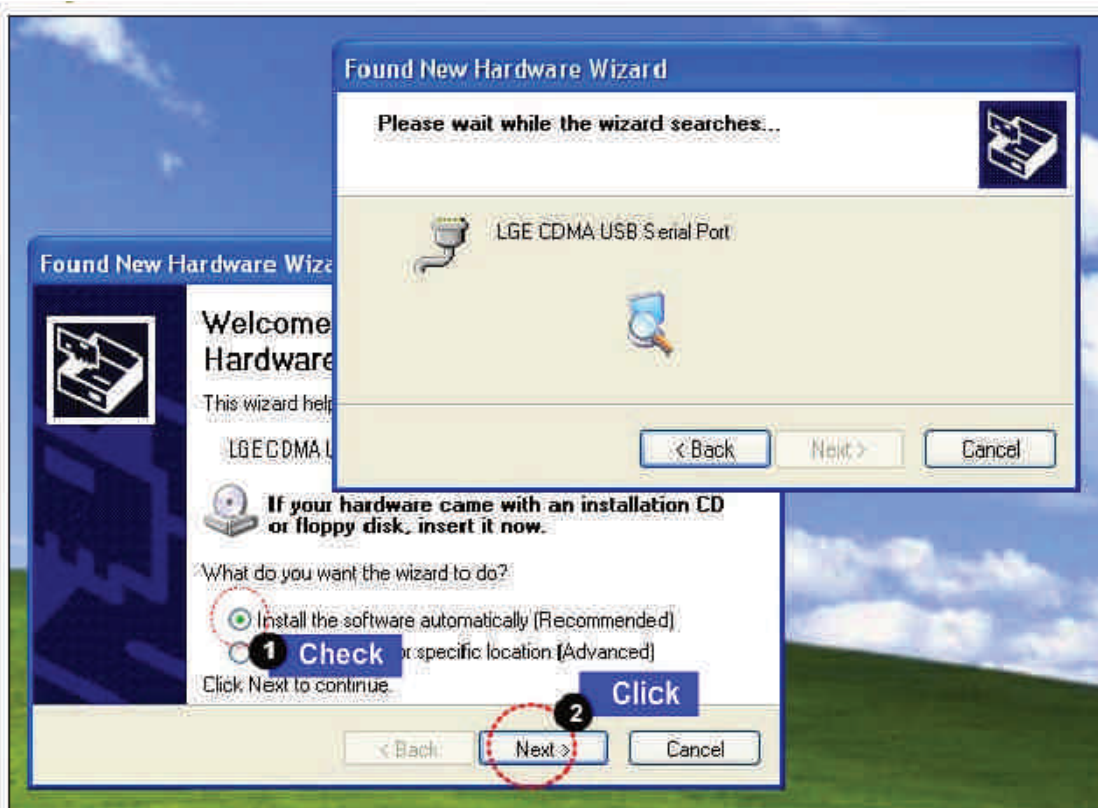
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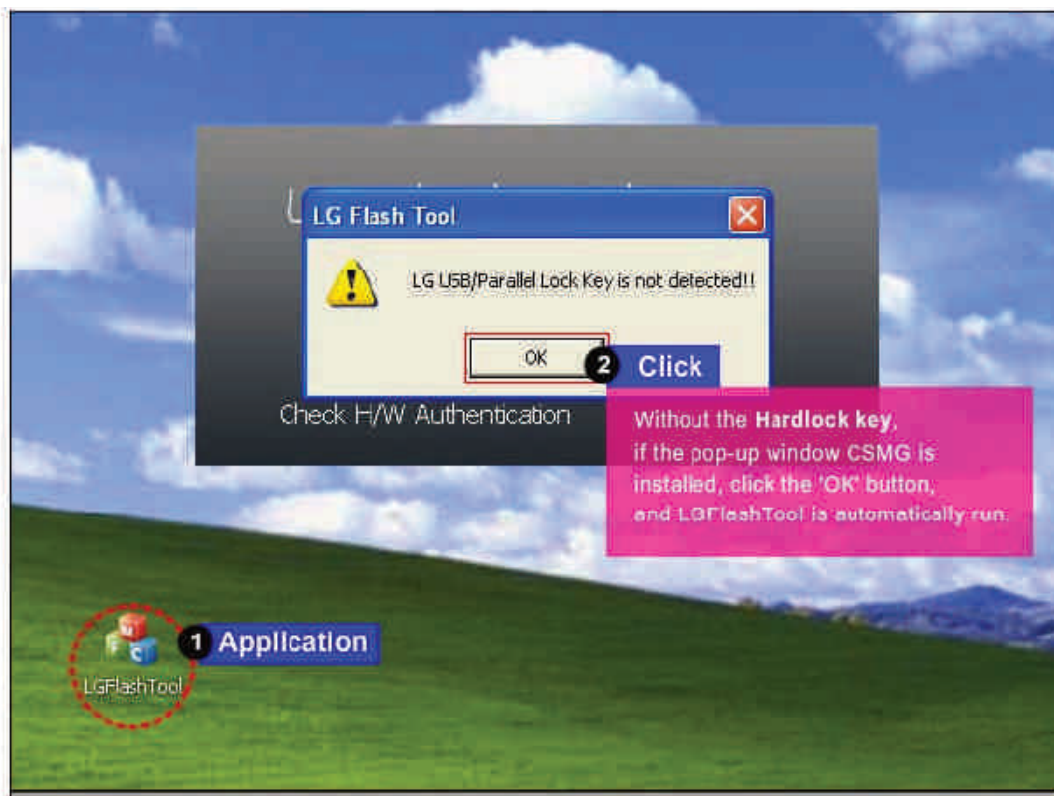
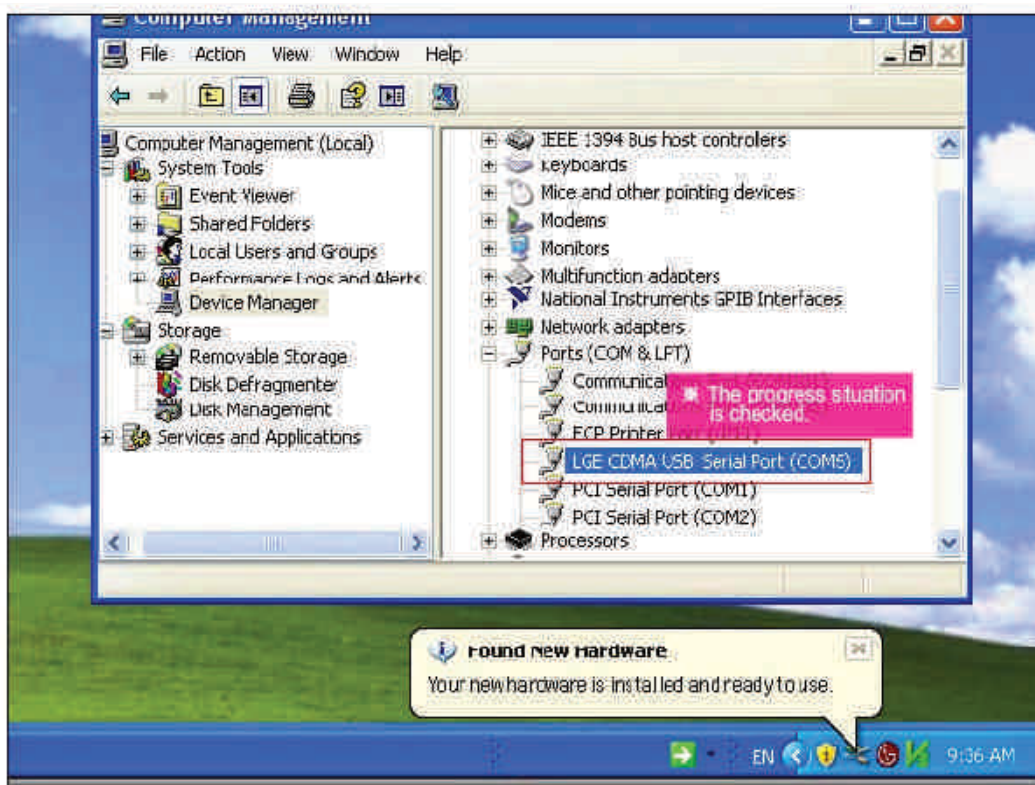




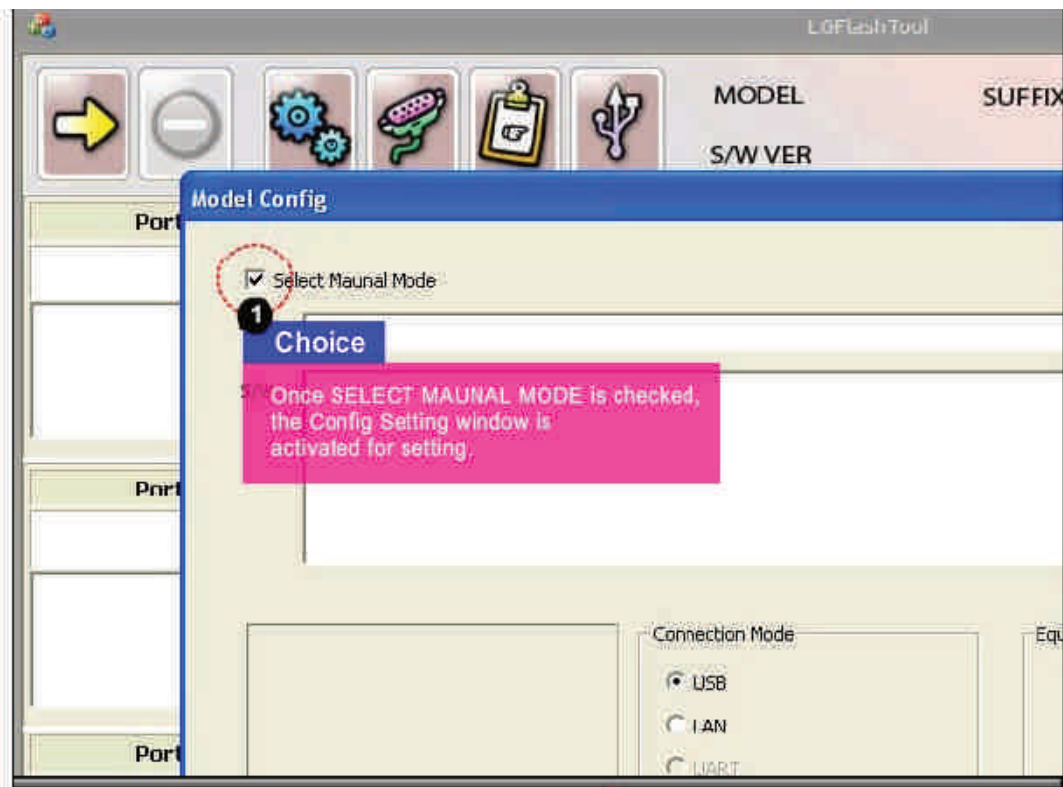
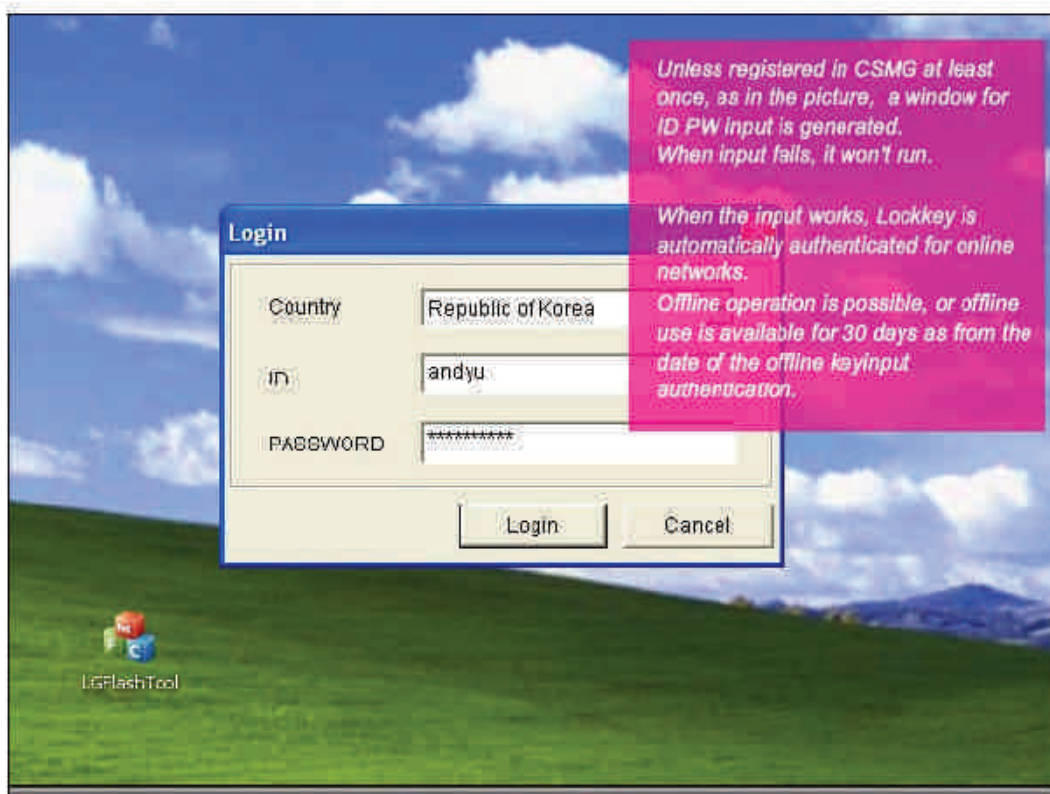
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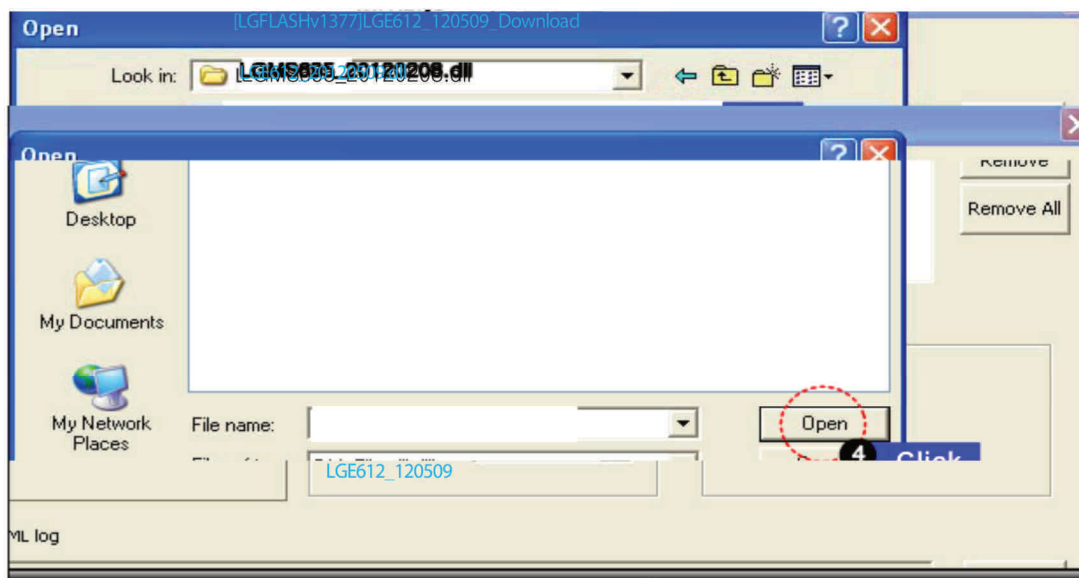




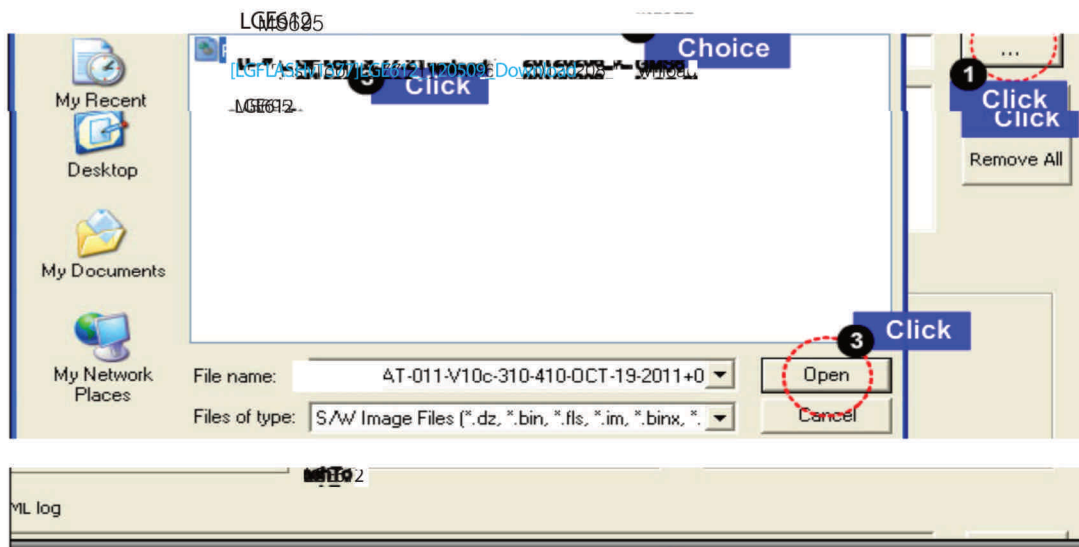
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5. DOWNLOAD



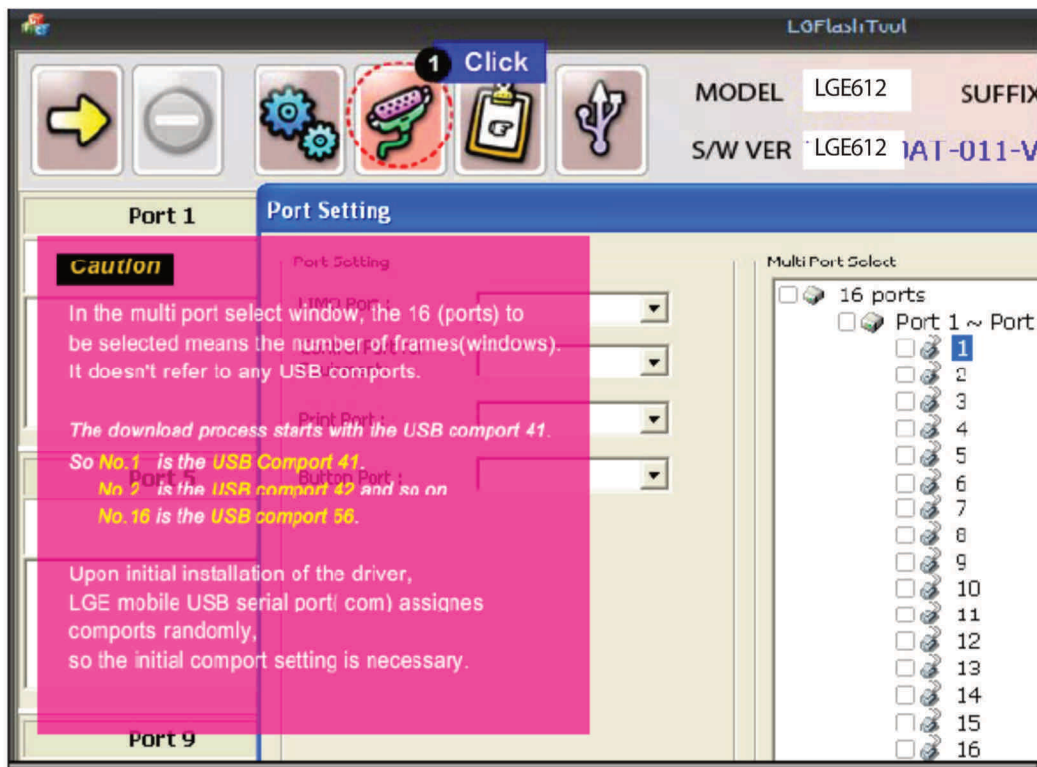
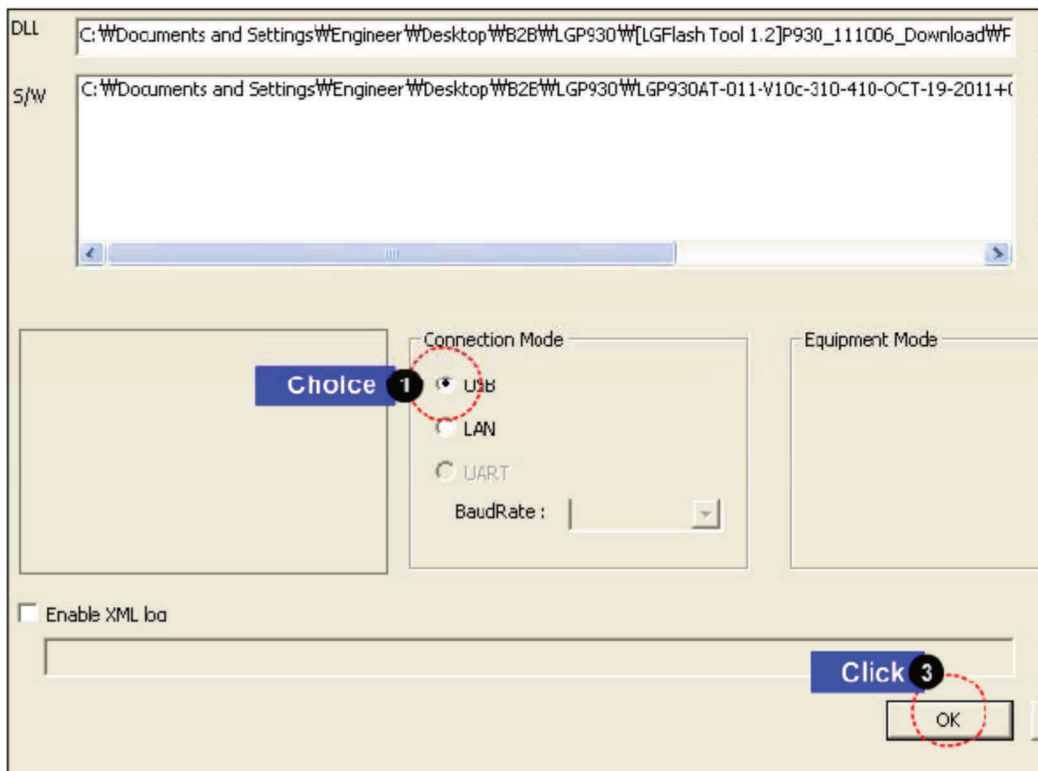
MS695



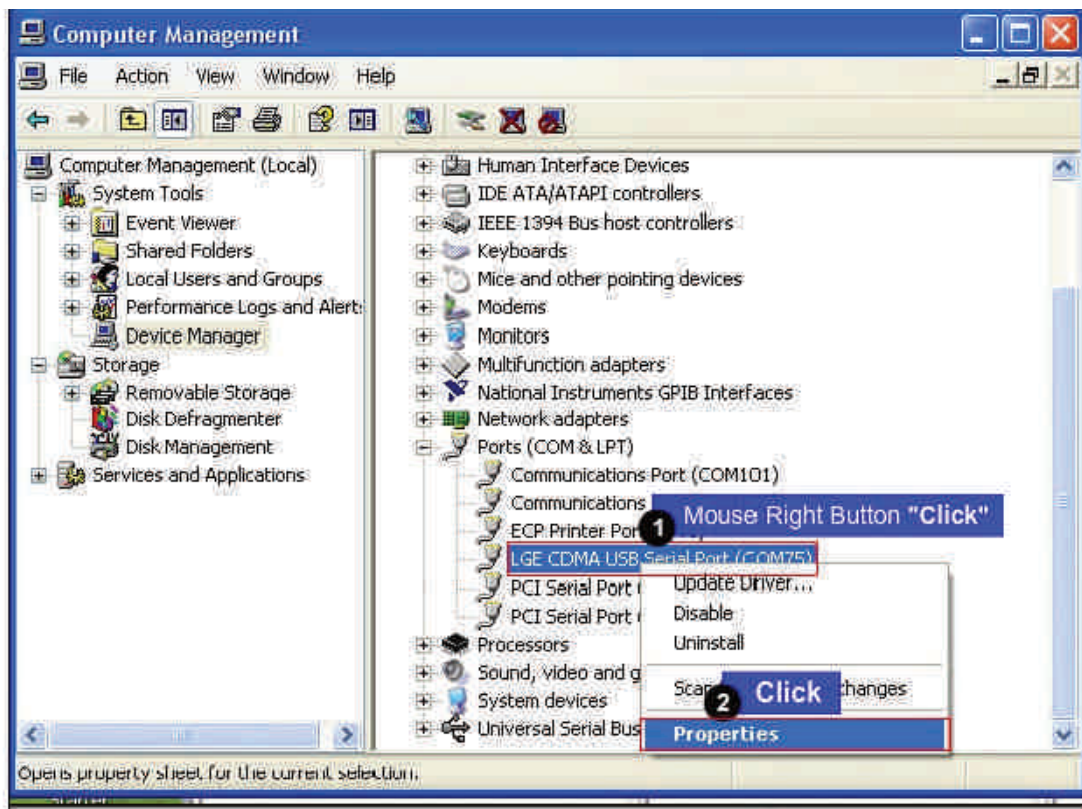
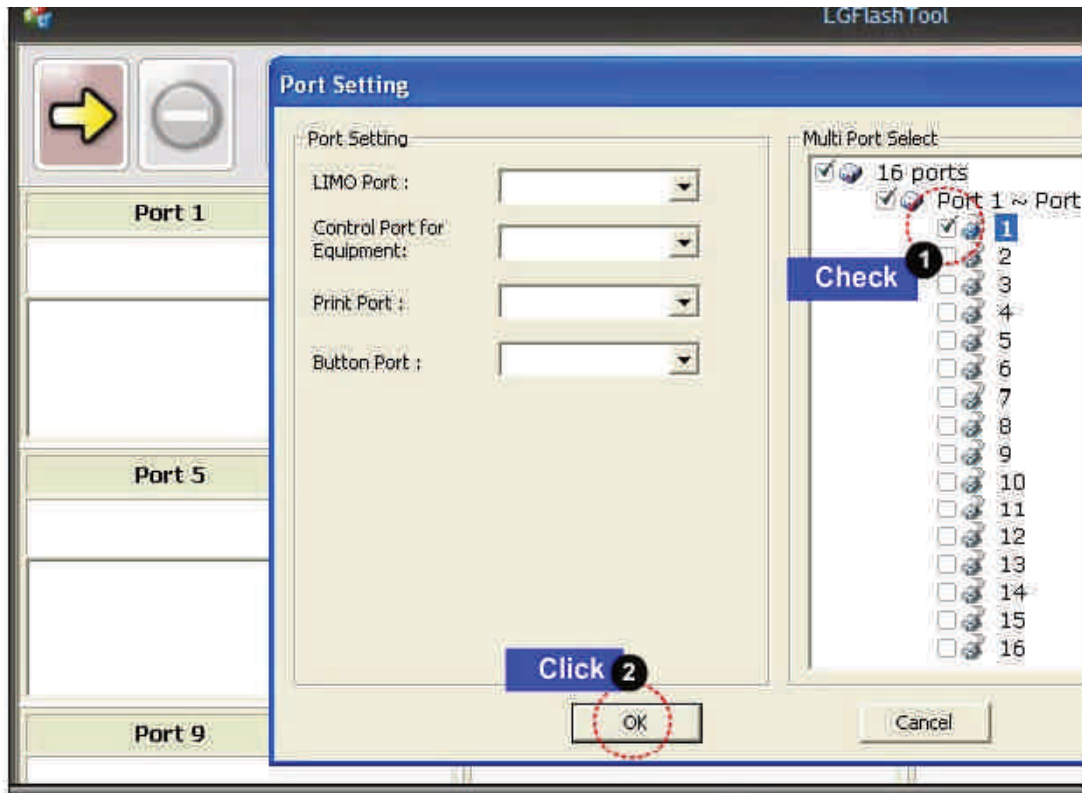
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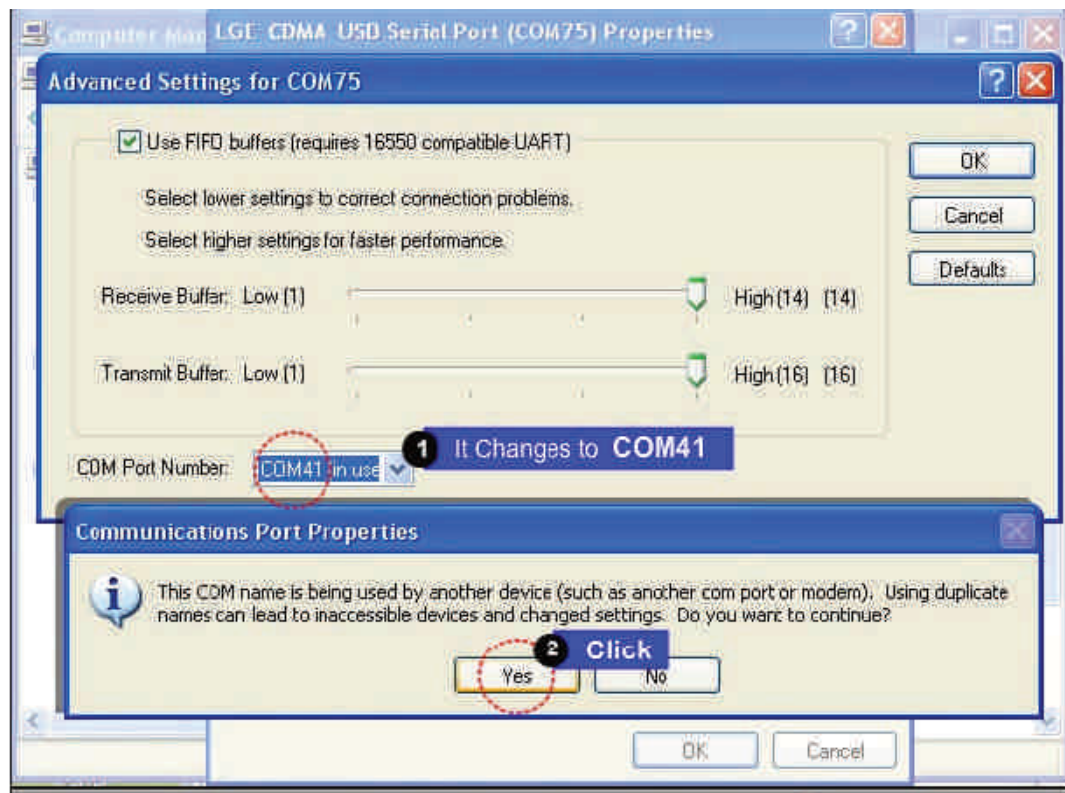
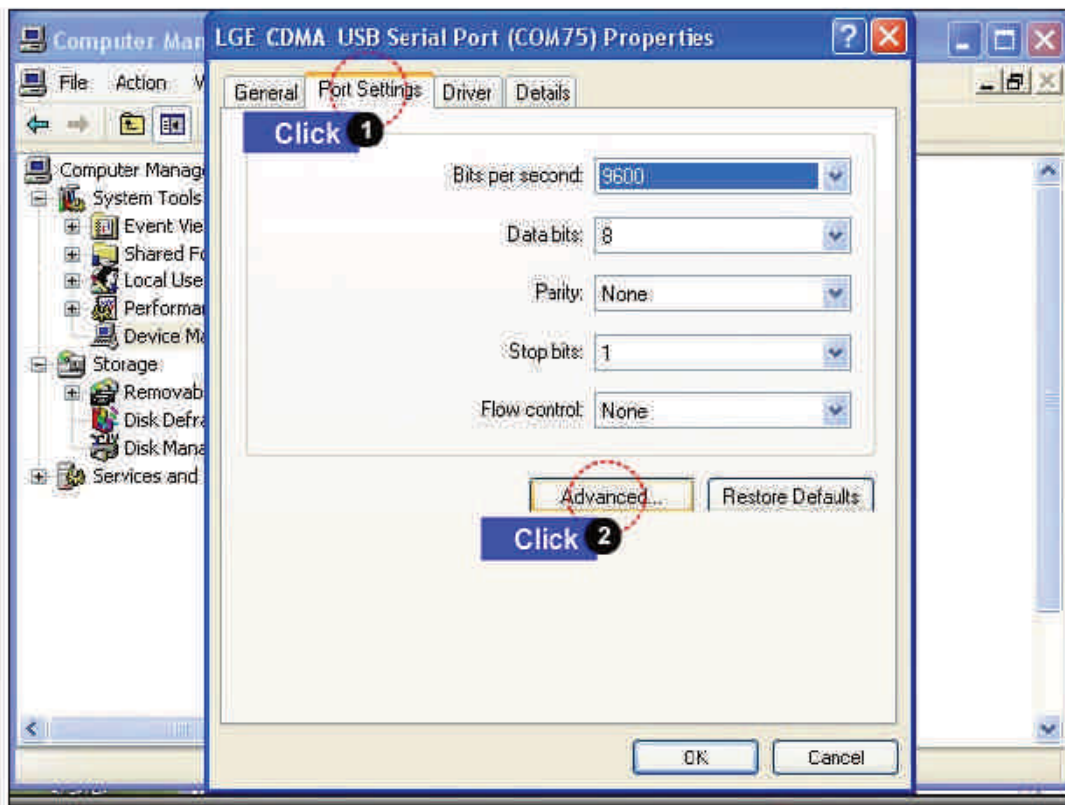


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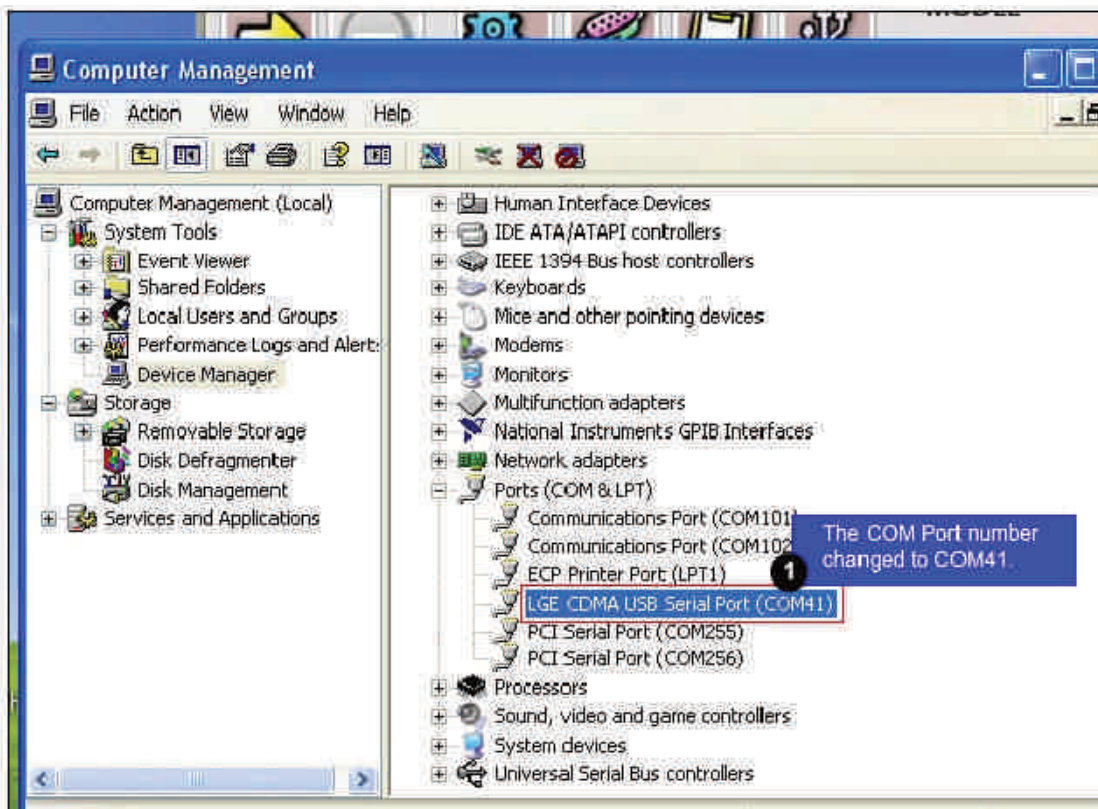
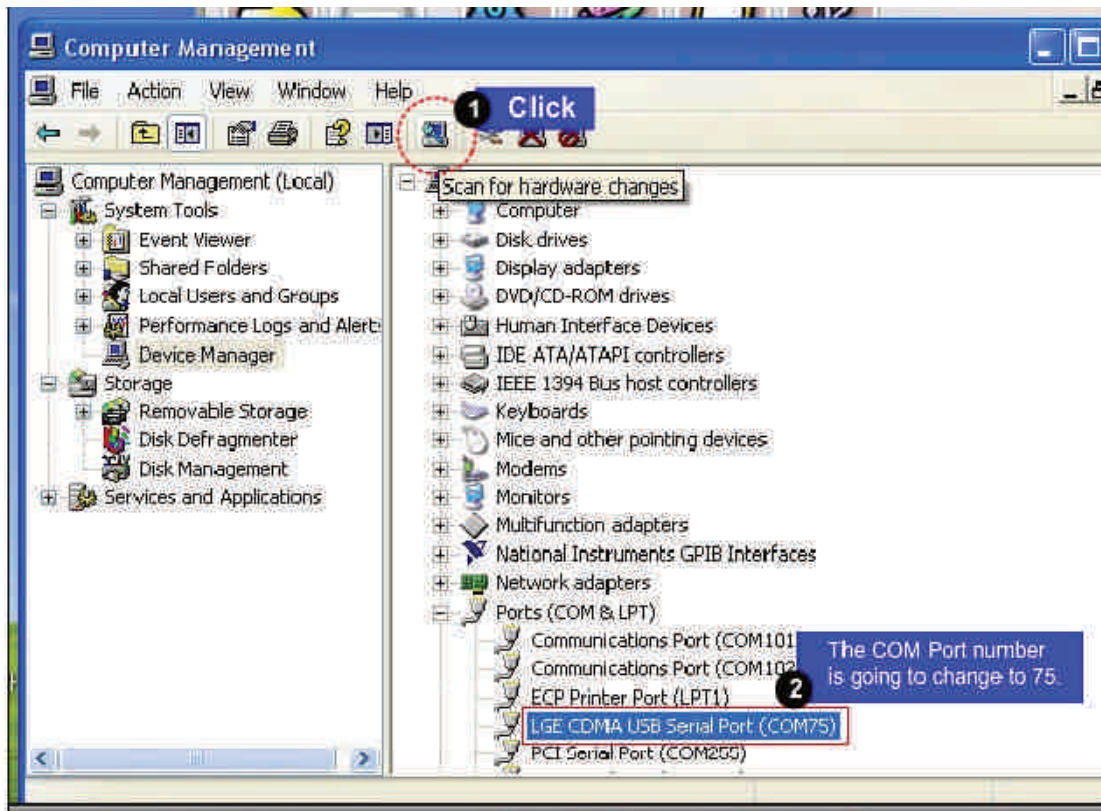


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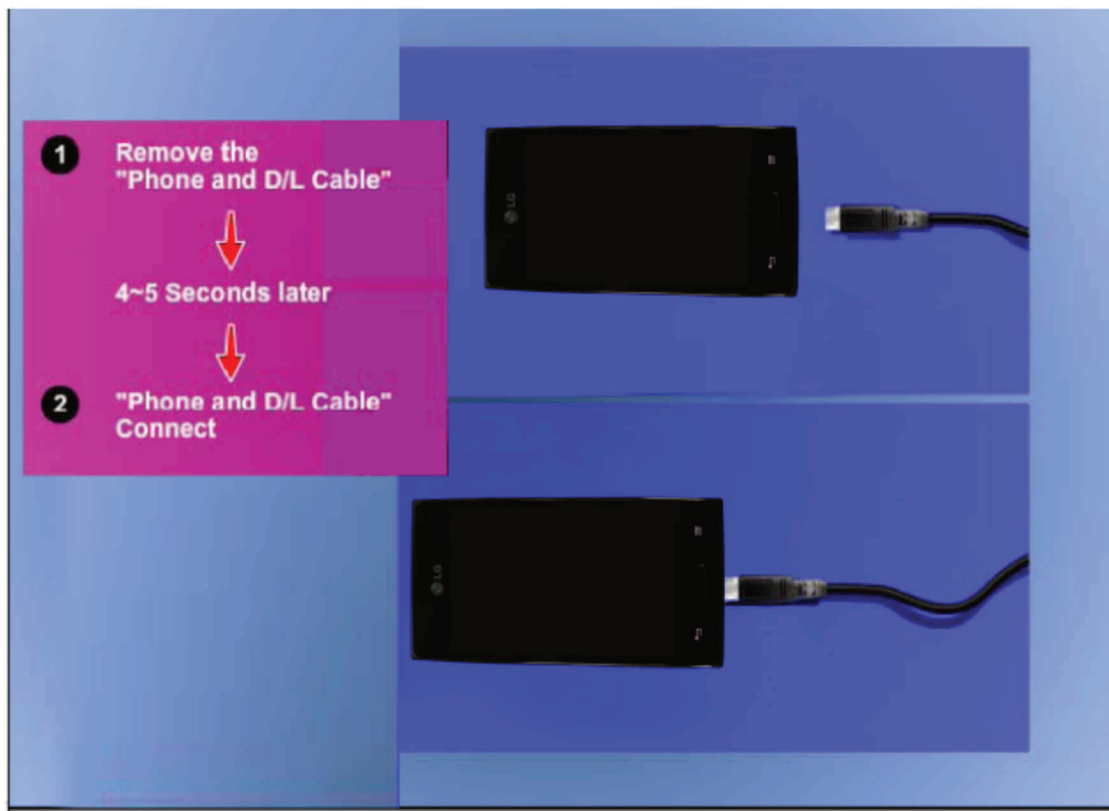
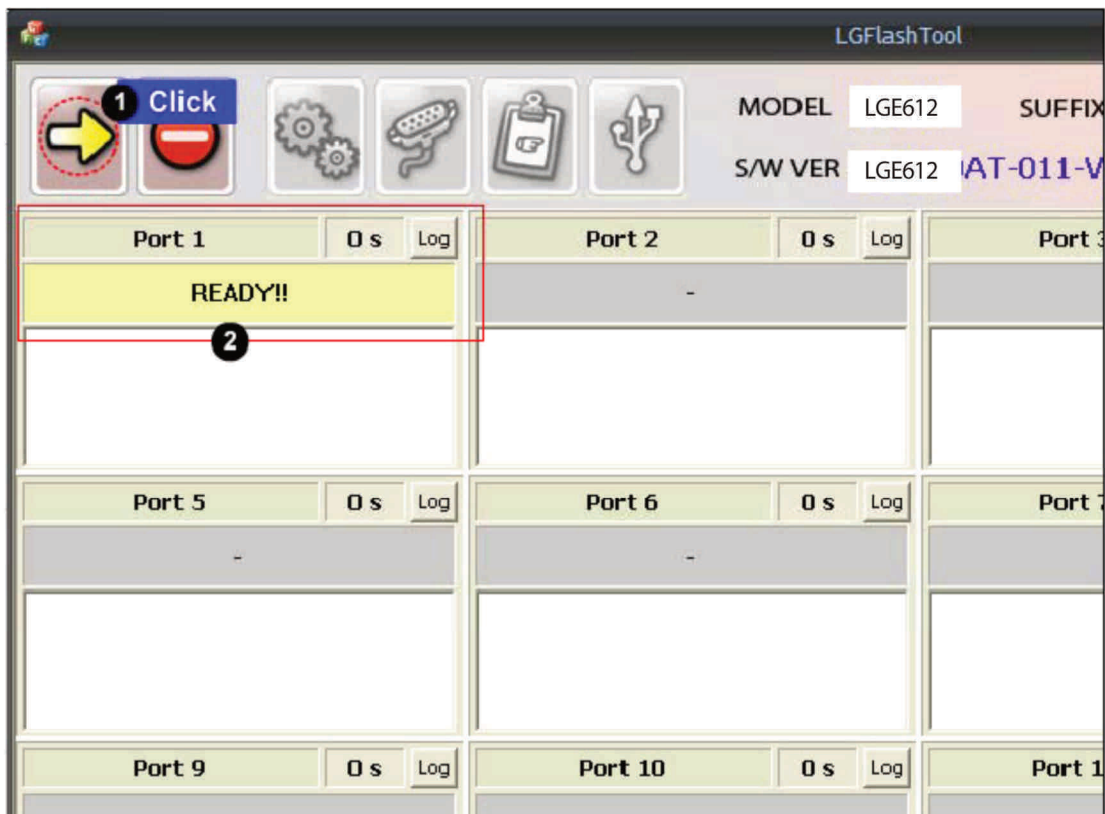




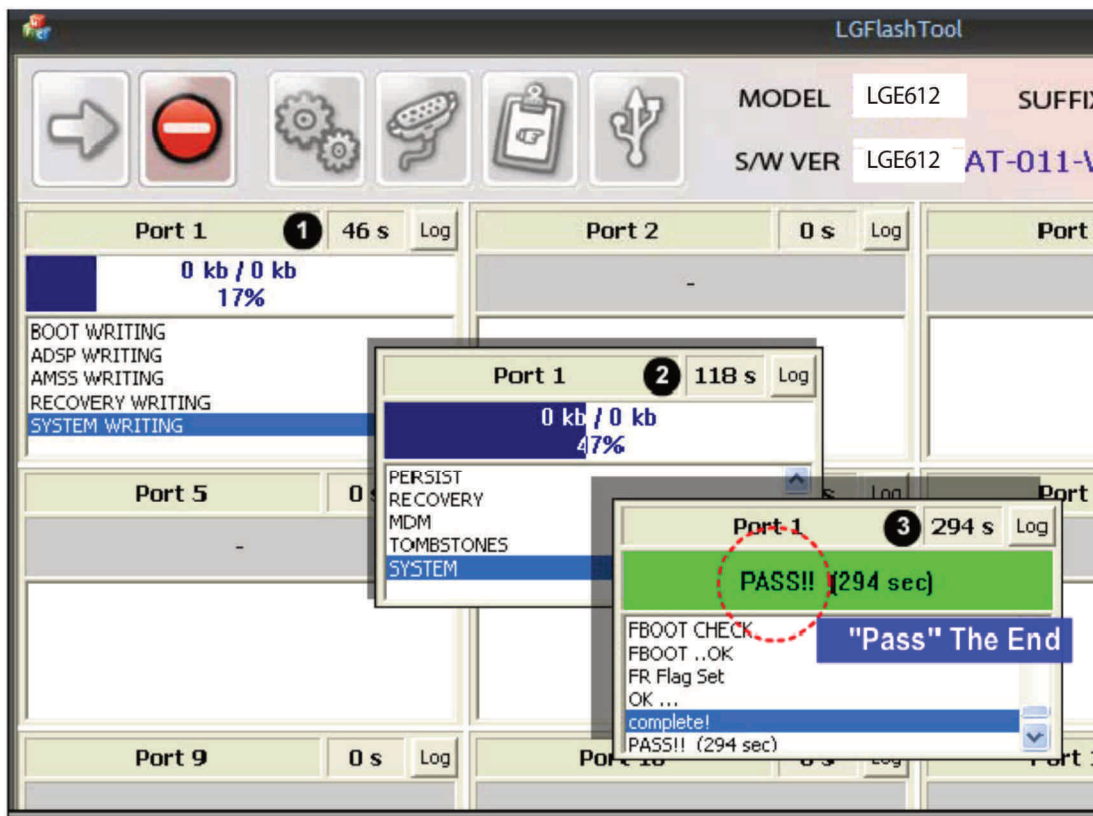
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5. DOWNLOAD

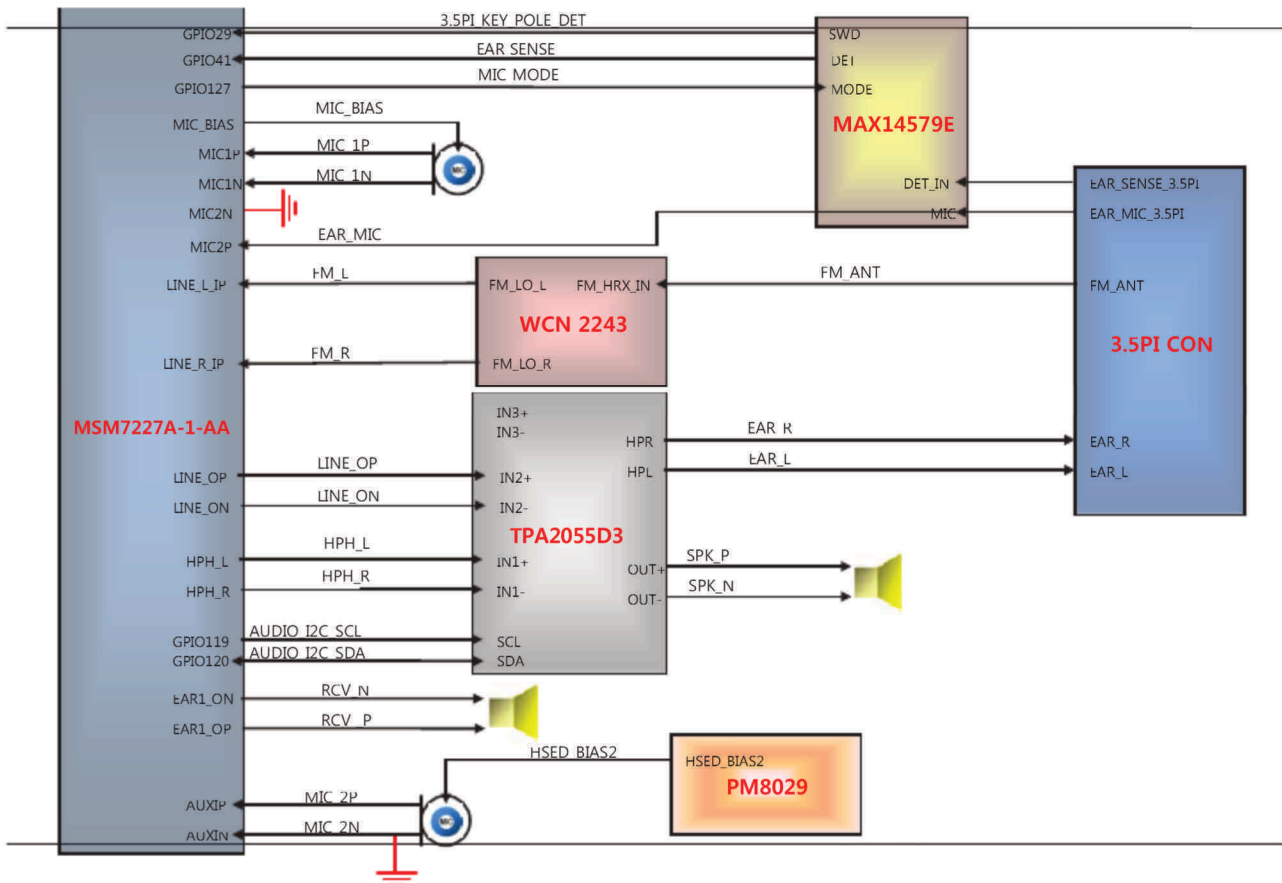


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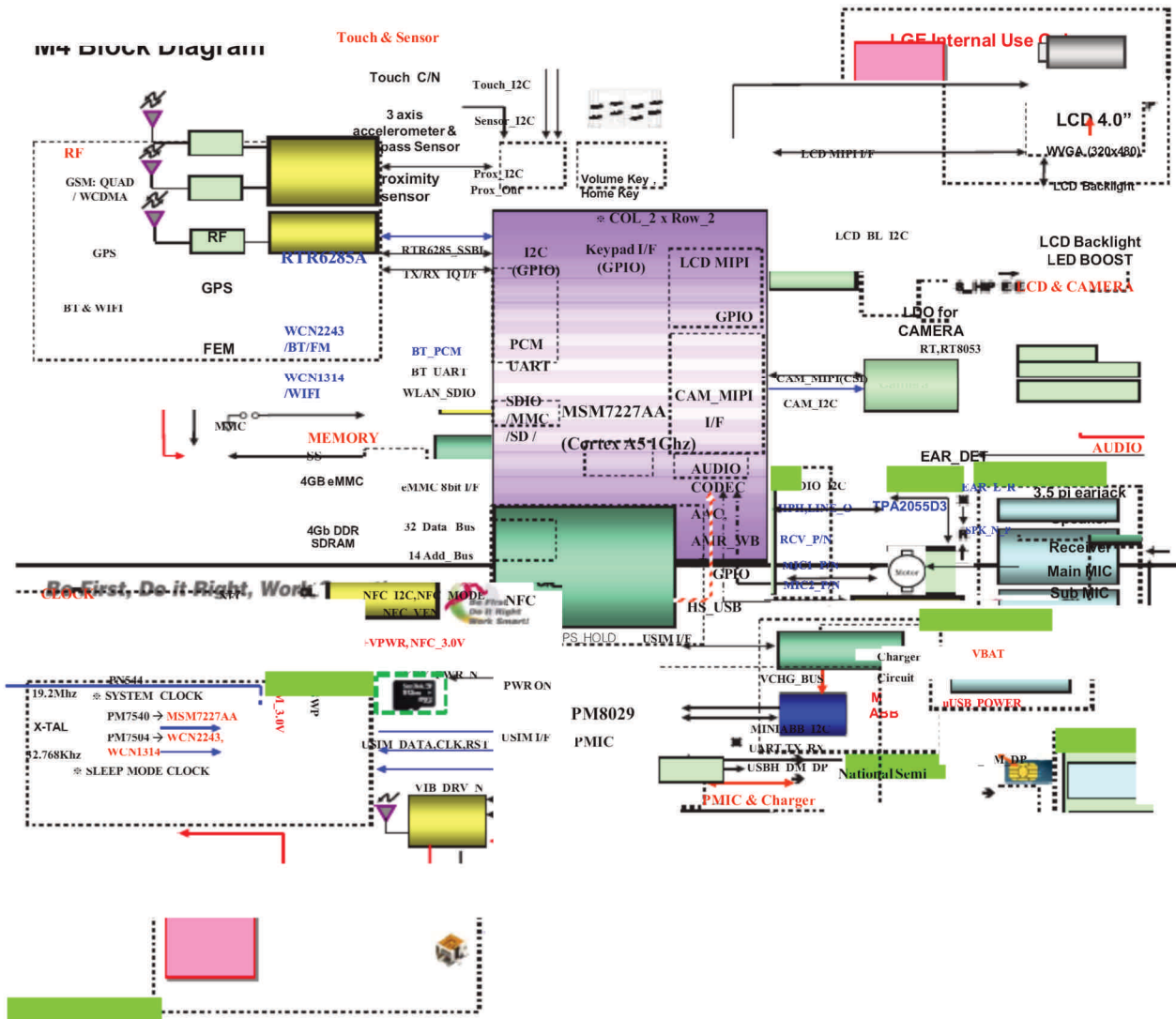
6. Block diagram

LGPE612 Audio Block Diagram

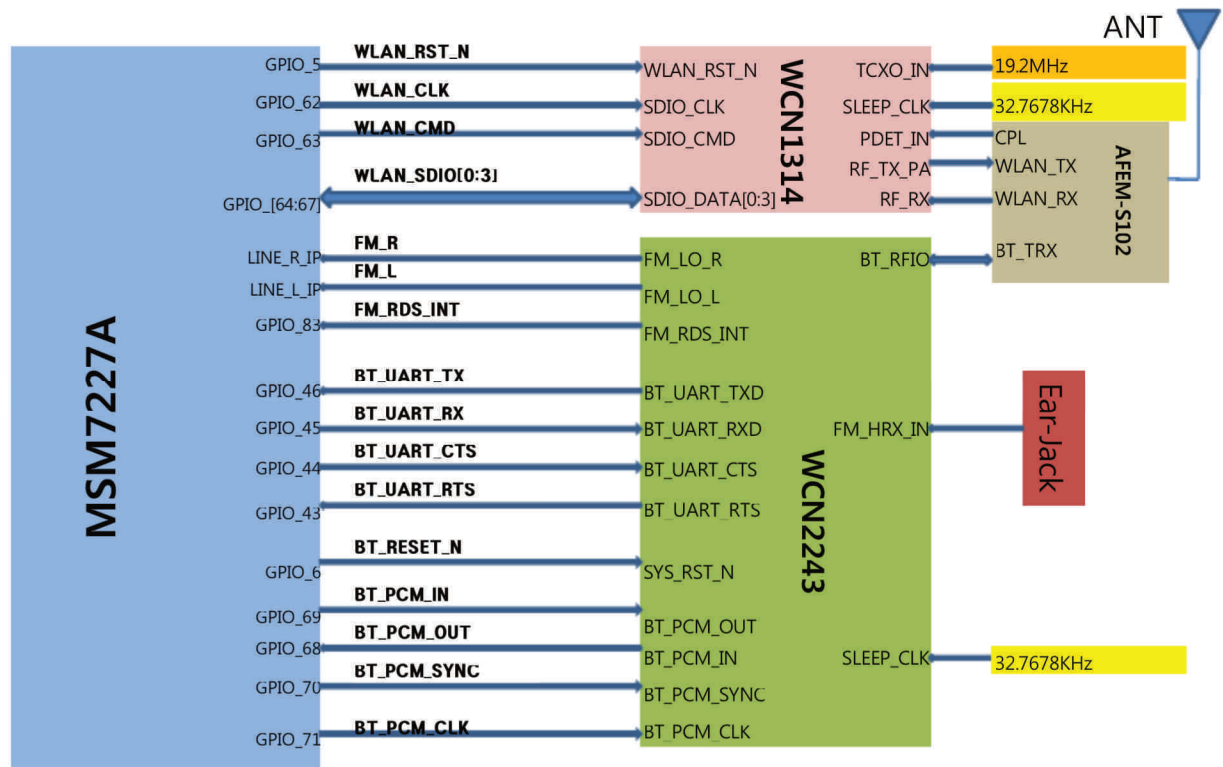


6. BLOCK DIAGRAM

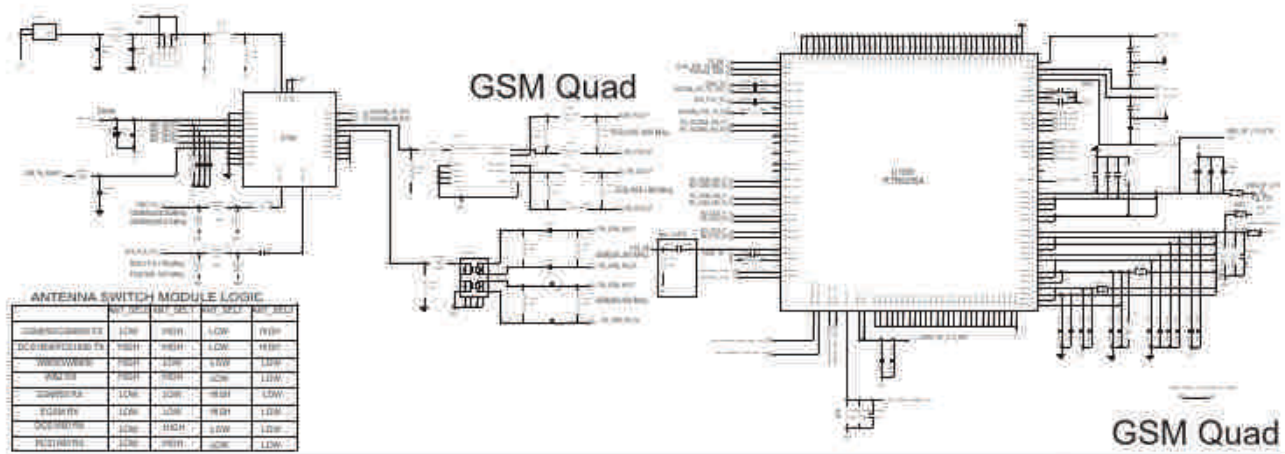
LGE612 Block Diagram



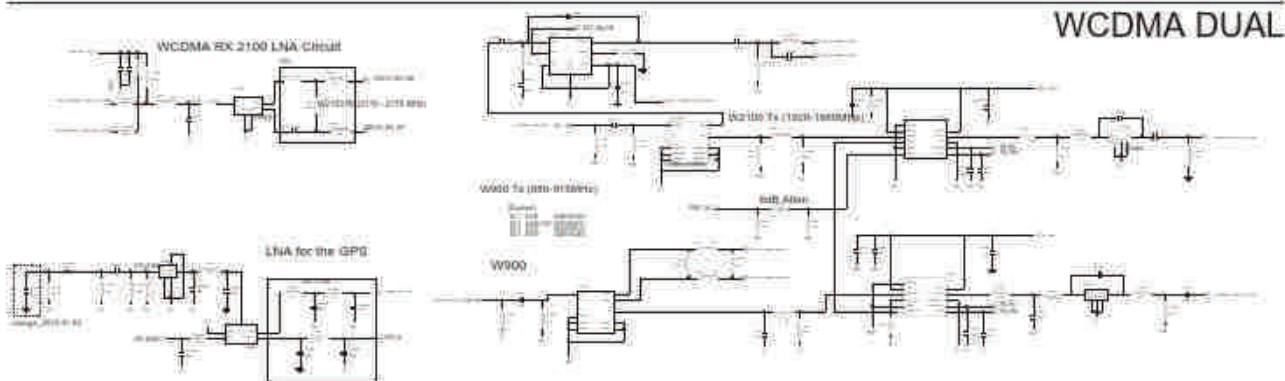
LGE612 BT/WLAN/FM Block Diagram



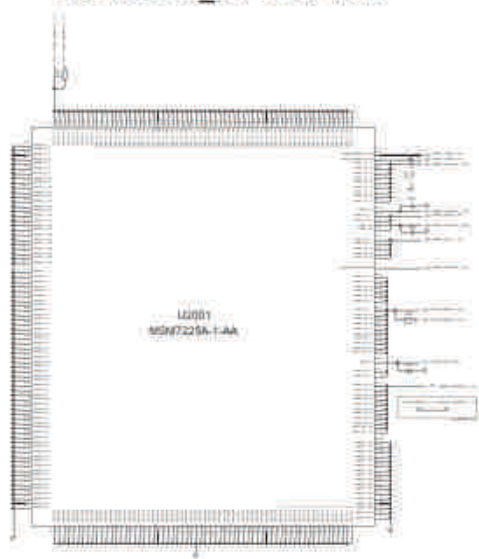
7. CIRCUIT DIAGRAM



	SW1	SW2	SW3	SW4	SW5
CODE/STATION FREQ	1.340	1.351	1.360	1.370	1.380
DC/STATION FREQ	1.381	1.391	1.400	1.410	1.420
WAVELENGTH	2.240	2.210	2.200	2.190	2.180
WAVE SET	2.240	2.210	2.200	2.190	2.180
SWITCH PA	1.340	1.350	1.360	1.370	1.380
SWITCH FB	1.390	1.380	1.370	1.360	1.350
DC/STATION FREQ	1.340	1.351	1.360	1.370	1.380
DC/STATION FREQ	1.390	1.380	1.370	1.360	1.350



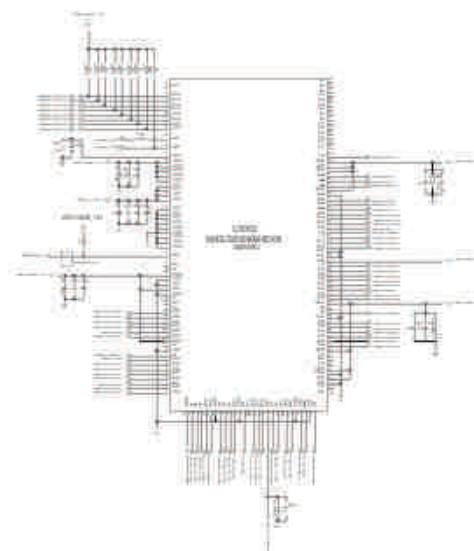
MSM7225A_A Power Part



Cap for MSM7x25_A Power



MCP (4GB eMMC +4Gb LPDDR1)



PCB Revision

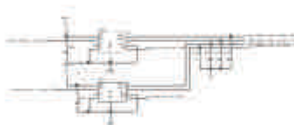
ADC



Rev	Change	By	Date
1.0	Initial Release	XXX	2013.01.01
1.1	Added Pin 1 to Pin 10	XXX	2013.01.01
1.2	Added Pin 11 to Pin 20	XXX	2013.01.01
1.3	Added Pin 21 to Pin 30	XXX	2013.01.01
1.4	Added Pin 31 to Pin 40	XXX	2013.01.01
1.5	Added Pin 41 to Pin 50	XXX	2013.01.01
1.6	Added Pin 51 to Pin 60	XXX	2013.01.01
1.7	Added Pin 61 to Pin 70	XXX	2013.01.01
1.8	Added Pin 71 to Pin 80	XXX	2013.01.01
1.9	Added Pin 81 to Pin 90	XXX	2013.01.01
1.10	Added Pin 91 to Pin 100	XXX	2013.01.01
1.11	Added Pin 101 to Pin 110	XXX	2013.01.01
1.12	Added Pin 111 to Pin 120	XXX	2013.01.01
1.13	Added Pin 121 to Pin 130	XXX	2013.01.01
1.14	Added Pin 131 to Pin 140	XXX	2013.01.01
1.15	Added Pin 141 to Pin 150	XXX	2013.01.01
1.16	Added Pin 151 to Pin 160	XXX	2013.01.01
1.17	Added Pin 161 to Pin 170	XXX	2013.01.01
1.18	Added Pin 171 to Pin 180	XXX	2013.01.01
1.19	Added Pin 181 to Pin 190	XXX	2013.01.01
1.20	Added Pin 191 to Pin 200	XXX	2013.01.01
1.21	Added Pin 201 to Pin 210	XXX	2013.01.01
1.22	Added Pin 211 to Pin 220	XXX	2013.01.01
1.23	Added Pin 221 to Pin 230	XXX	2013.01.01
1.24	Added Pin 231 to Pin 240	XXX	2013.01.01
1.25	Added Pin 241 to Pin 250	XXX	2013.01.01
1.26	Added Pin 251 to Pin 260	XXX	2013.01.01
1.27	Added Pin 261 to Pin 270	XXX	2013.01.01
1.28	Added Pin 271 to Pin 280	XXX	2013.01.01
1.29	Added Pin 281 to Pin 290	XXX	2013.01.01
1.30	Added Pin 291 to Pin 300	XXX	2013.01.01
1.31	Added Pin 301 to Pin 310	XXX	2013.01.01
1.32	Added Pin 311 to Pin 320	XXX	2013.01.01
1.33	Added Pin 321 to Pin 330	XXX	2013.01.01
1.34	Added Pin 331 to Pin 340	XXX	2013.01.01
1.35	Added Pin 341 to Pin 350	XXX	2013.01.01
1.36	Added Pin 351 to Pin 360	XXX	2013.01.01
1.37	Added Pin 361 to Pin 370	XXX	2013.01.01
1.38	Added Pin 371 to Pin 380	XXX	2013.01.01
1.39	Added Pin 381 to Pin 390	XXX	2013.01.01
1.40	Added Pin 391 to Pin 400	XXX	2013.01.01
1.41	Added Pin 401 to Pin 410	XXX	2013.01.01
1.42	Added Pin 411 to Pin 420	XXX	2013.01.01
1.43	Added Pin 421 to Pin 430	XXX	2013.01.01
1.44	Added Pin 431 to Pin 440	XXX	2013.01.01
1.45	Added Pin 441 to Pin 450	XXX	2013.01.01
1.46	Added Pin 451 to Pin 460	XXX	2013.01.01
1.47	Added Pin 461 to Pin 470	XXX	2013.01.01
1.48	Added Pin 471 to Pin 480	XXX	2013.01.01
1.49	Added Pin 481 to Pin 490	XXX	2013.01.01
1.50	Added Pin 491 to Pin 500	XXX	2013.01.01
1.51	Added Pin 501 to Pin 510	XXX	2013.01.01
1.52	Added Pin 511 to Pin 520	XXX	2013.01.01
1.53	Added Pin 521 to Pin 530	XXX	2013.01.01
1.54	Added Pin 531 to Pin 540	XXX	2013.01.01
1.55	Added Pin 541 to Pin 550	XXX	2013.01.01
1.56	Added Pin 551 to Pin 560	XXX	2013.01.01
1.57	Added Pin 561 to Pin 570	XXX	2013.01.01
1.58	Added Pin 571 to Pin 580	XXX	2013.01.01
1.59	Added Pin 581 to Pin 590	XXX	2013.01.01
1.60	Added Pin 591 to Pin 600	XXX	2013.01.01
1.61	Added Pin 601 to Pin 610	XXX	2013.01.01
1.62	Added Pin 611 to Pin 620	XXX	2013.01.01
1.63	Added Pin 621 to Pin 630	XXX	2013.01.01
1.64	Added Pin 631 to Pin 640	XXX	2013.01.01
1.65	Added Pin 641 to Pin 650	XXX	2013.01.01
1.66	Added Pin 651 to Pin 660	XXX	2013.01.01
1.67	Added Pin 661 to Pin 670	XXX	2013.01.01
1.68	Added Pin 671 to Pin 680	XXX	2013.01.01
1.69	Added Pin 681 to Pin 690	XXX	2013.01.01
1.70	Added Pin 691 to Pin 700	XXX	2013.01.01
1.71	Added Pin 701 to Pin 710	XXX	2013.01.01
1.72	Added Pin 711 to Pin 720	XXX	2013.01.01
1.73	Added Pin 721 to Pin 730	XXX	2013.01.01
1.74	Added Pin 731 to Pin 740	XXX	2013.01.01
1.75	Added Pin 741 to Pin 750	XXX	2013.01.01
1.76	Added Pin 751 to Pin 760	XXX	2013.01.01
1.77	Added Pin 761 to Pin 770	XXX	2013.01.01
1.78	Added Pin 771 to Pin 780	XXX	2013.01.01
1.79	Added Pin 781 to Pin 790	XXX	2013.01.01
1.80	Added Pin 791 to Pin 800	XXX	2013.01.01
1.81	Added Pin 801 to Pin 810	XXX	2013.01.01
1.82	Added Pin 811 to Pin 820	XXX	2013.01.01
1.83	Added Pin 821 to Pin 830	XXX	2013.01.01
1.84	Added Pin 831 to Pin 840	XXX	2013.01.01
1.85	Added Pin 841 to Pin 850	XXX	2013.01.01
1.86	Added Pin 851 to Pin 860	XXX	2013.01.01
1.87	Added Pin 861 to Pin 870	XXX	2013.01.01
1.88	Added Pin 871 to Pin 880	XXX	2013.01.01
1.89	Added Pin 881 to Pin 890	XXX	2013.01.01
1.90	Added Pin 891 to Pin 900	XXX	2013.01.01
1.91	Added Pin 901 to Pin 910	XXX	2013.01.01
1.92	Added Pin 911 to Pin 920	XXX	2013.01.01
1.93	Added Pin 921 to Pin 930	XXX	2013.01.01
1.94	Added Pin 931 to Pin 940	XXX	2013.01.01
1.95	Added Pin 941 to Pin 950	XXX	2013.01.01
1.96	Added Pin 951 to Pin 960	XXX	2013.01.01
1.97	Added Pin 961 to Pin 970	XXX	2013.01.01
1.98	Added Pin 971 to Pin 980	XXX	2013.01.01
1.99	Added Pin 981 to Pin 990	XXX	2013.01.01
1.100	Added Pin 991 to Pin 1000	XXX	2013.01.01

CHECK IT!!!
TOUCH 3.0V LDO

CAM LDO



Mini ABB Basic



Battery Conn.

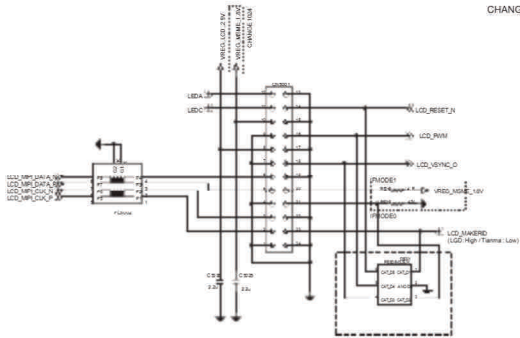


BACK-UP BATTERY

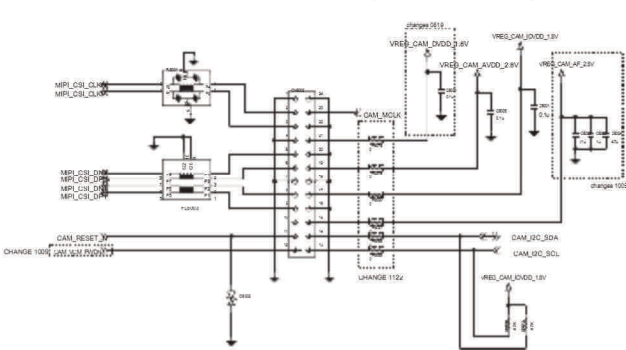


4.0" HVGA MIPI I/F LCD Connector

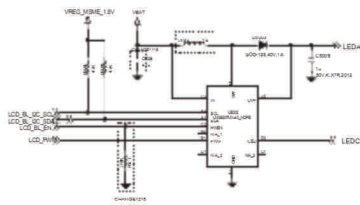
CHANGE 1107



CAMERA (5M MIPI)

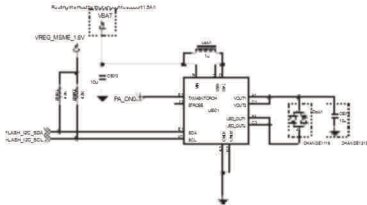


LCD BACKLIGHT LED BOOST

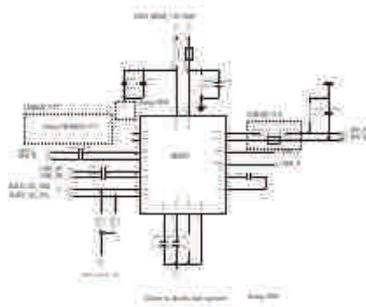


LGEInternal Use Only

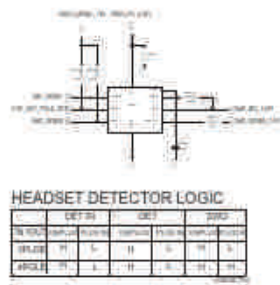
Flash LED Driver



Audio SUB SYSTEM



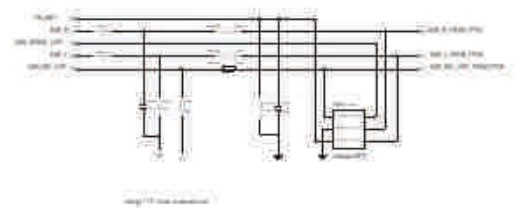
HEADSET_DETECT



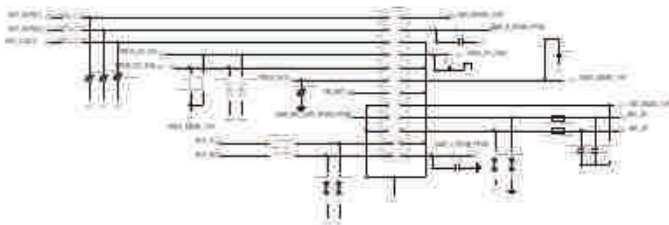
HEADSET DETECTOR LOGIC

	DET_B1	DET_B2	DET_B3
DET_B1	1	0	0
DET_B2	0	1	0
DET_B3	0	0	1

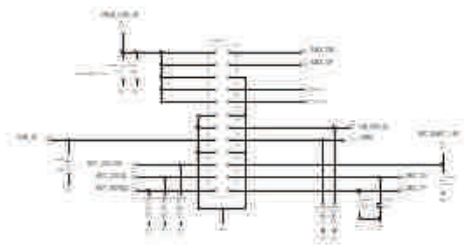
Earjack connector



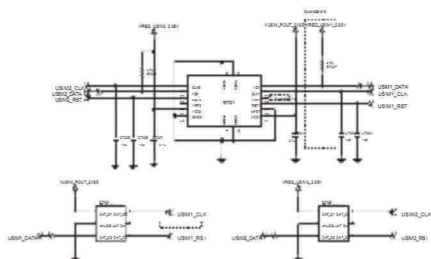
FPCB_EARJACK Connector



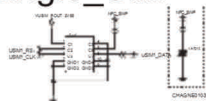
FPCB_KEY Connector



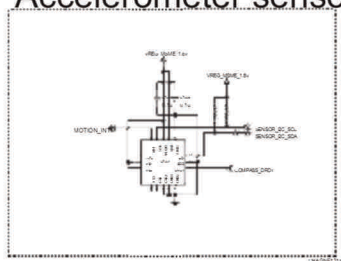
USIM Socket Dual_SIM



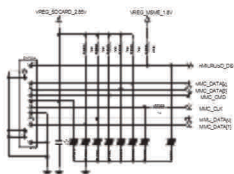
Single_SIM



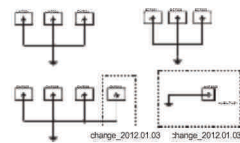
Compass + Accelerometer sensor



MICRO-SD



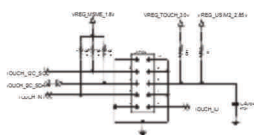
SHIELD CAN CLIP



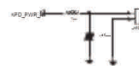
RF Band-check

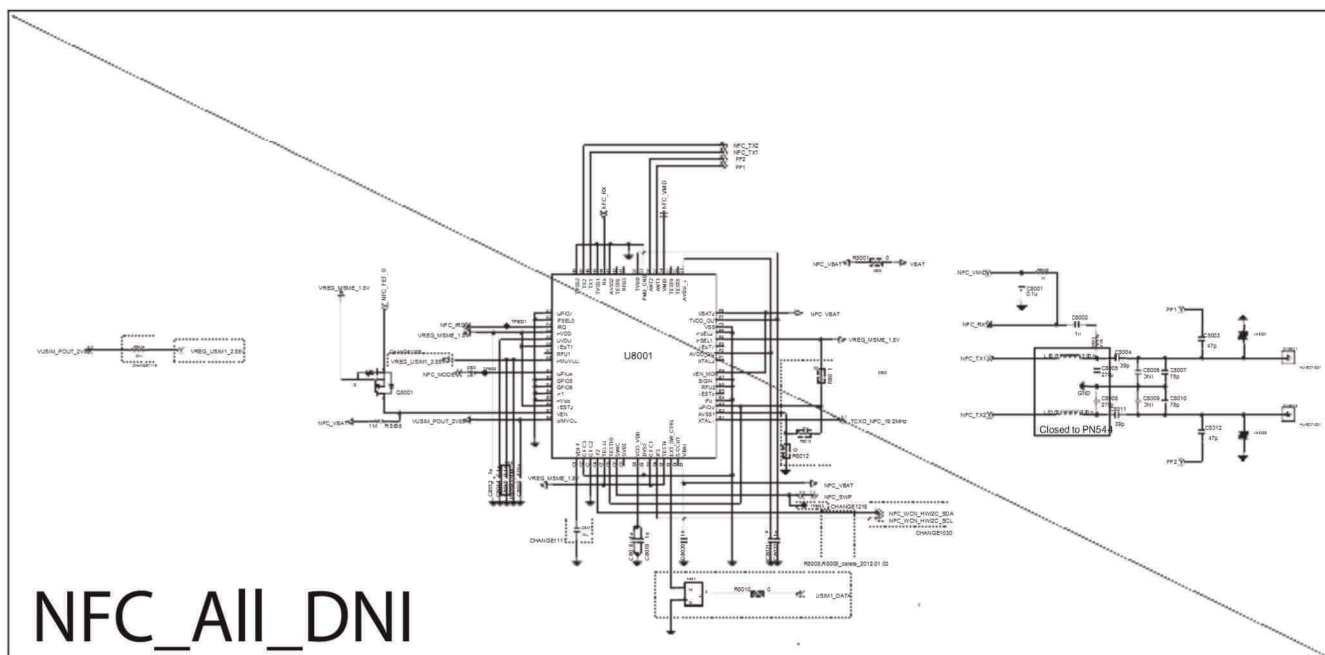


Touch

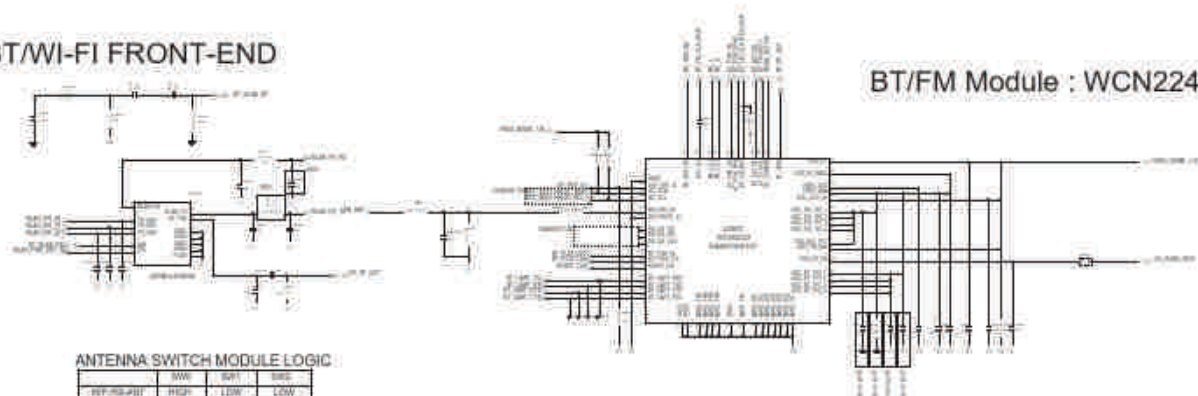


FPCB_POWERKEY





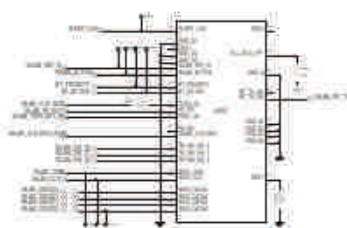
BT/WI-FI FRONT-END



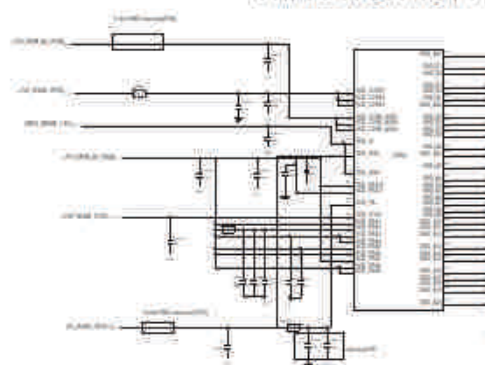
ANTENNA SWITCH MODULE LOGIC

	SW1	SW2	SW3
BT/PG-ANT	HIGH	LOW	LOW
BT/TA-ANT	LOW	HIGH	LOW
BT-ANT	LOW	LOW	HIGH

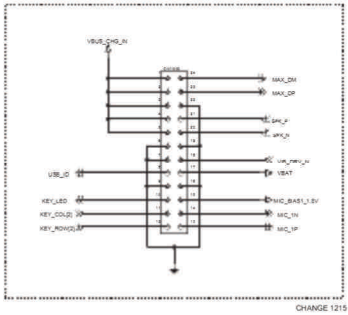
Wi-Fi : WCN1314



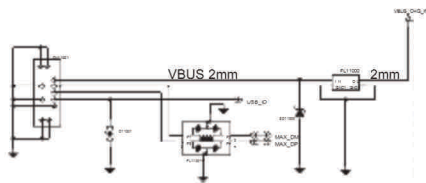
WiFi : WCN 1314



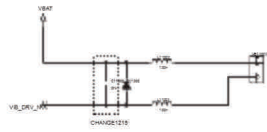
FPCB_KEY Connector



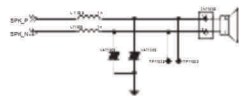
u-USB Connector



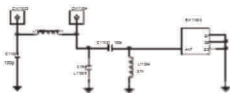
DC MOTOR



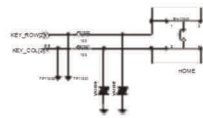
SPK



MAIN ANT

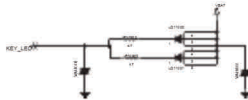


Home KEY

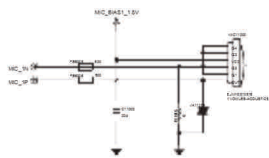


	COL[1]	COL[2]
ROW[0]	VOL_UP	
ROW[1]	VOL_DOWN	
ROW[2]		HOME

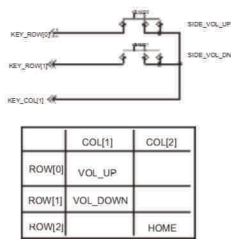
KEY LED



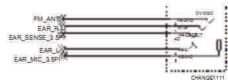
MIC



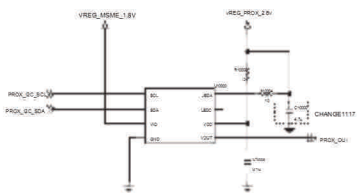
VOLUME SIDEKEY



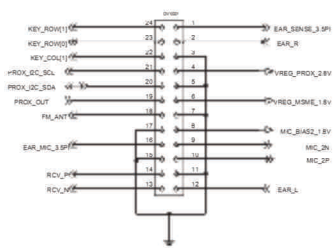
3.5 Phi Earjack



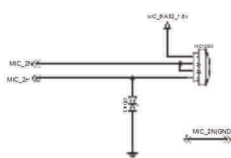
Proximity Sensor



Upper FPCB C/N



MIC2



Receiver



8. BGA PIN MAP

U3002 - Memory MCP (Top View)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	DNU		DAT0m	DAT1m	DAT2m			VDDQd	VSSQd	VSSd	VDDd	VSSQd		DNU
B		DAT3m	DAT4m	DAT5m	DAT6m	DAT7m	DQ30d	DQ28d	DQ26d	DQ24d	DQ53d	DQ23d	VDDQd	
C	VSSd	VDDIm	A4d	VSSQm		VDDQm	DQ31d	DQ29d	DQ27d	DQ25d	DM3d	DQ22d	DQ21d	VDDQd
D	A5d	A6d	A7d									DQ19d	DQ20d	VSSQd
E	A12d	A11d	A8d			VDDm	VSSm					DQ18d	DQ17d	DQ16d
F	VDDd	A13d	A9d		VDDm							DQ52d	DM2d	VSSQd
G	CKEd	CS0d			VSSm							CKd	VDDQd	VDDd
H	VDDQd	RASd	WEd								VSSm	CKd	VDDQd	VSSd
J	CKE1d	CASd	CS1d								VDDm	DQ51d	DM1d	VSSQd
K	BA1d	VSSd	A10d		RSTm			VSSm	VDDm			DQ13d	DQ14d	DQ15d
L	BA0d	A0d	A1d									DQ11d	DQ12d	VSSQd
M	VSSd	VDDd	A2d	VDDQm	CMDm	CLKm	DQ1d	DQ3d	DQ5d	DQ7d	DM0d	DQ9d	DQ10d	VDDQd
N		VSSQm	A3d	VDDQm	VSSQm	VSS0d	DQ0d	DQ2d	DQ4d	DQ6d	DQ50d	DQ8d	VDDQd	
P	DNU		VDDQm	VSSQm	VDDQm	VSSQm		VDDQd	VSSQd		VDDd	VSSQd		DNU

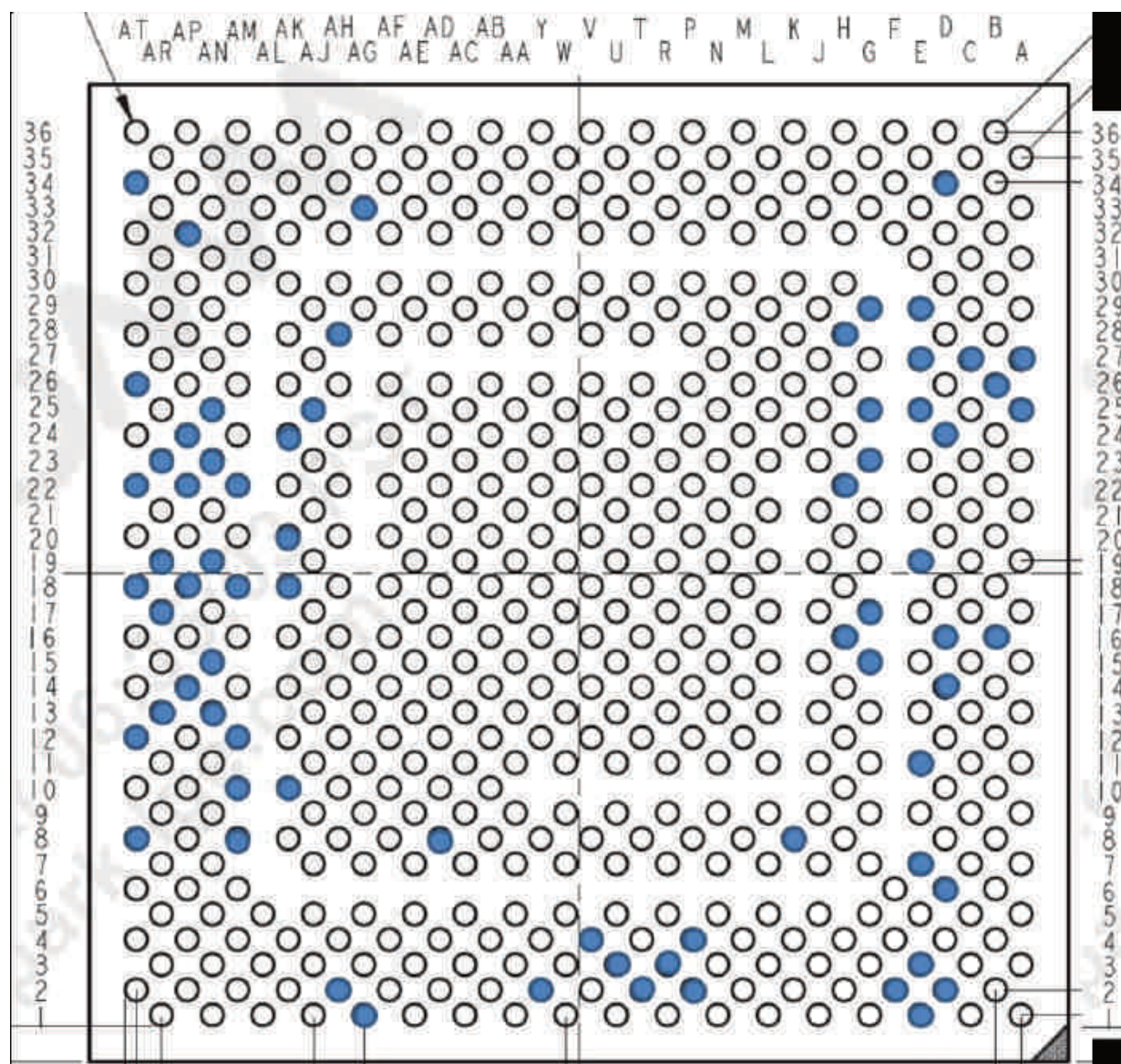
153 FBGA: Top View (Ball Down)

	Mobile SDRAM
	e-MMC
	Power
	Ground

NOT IN USE

8. BGA PIN MAP

U2001 - MSM7225A (Bottom View)

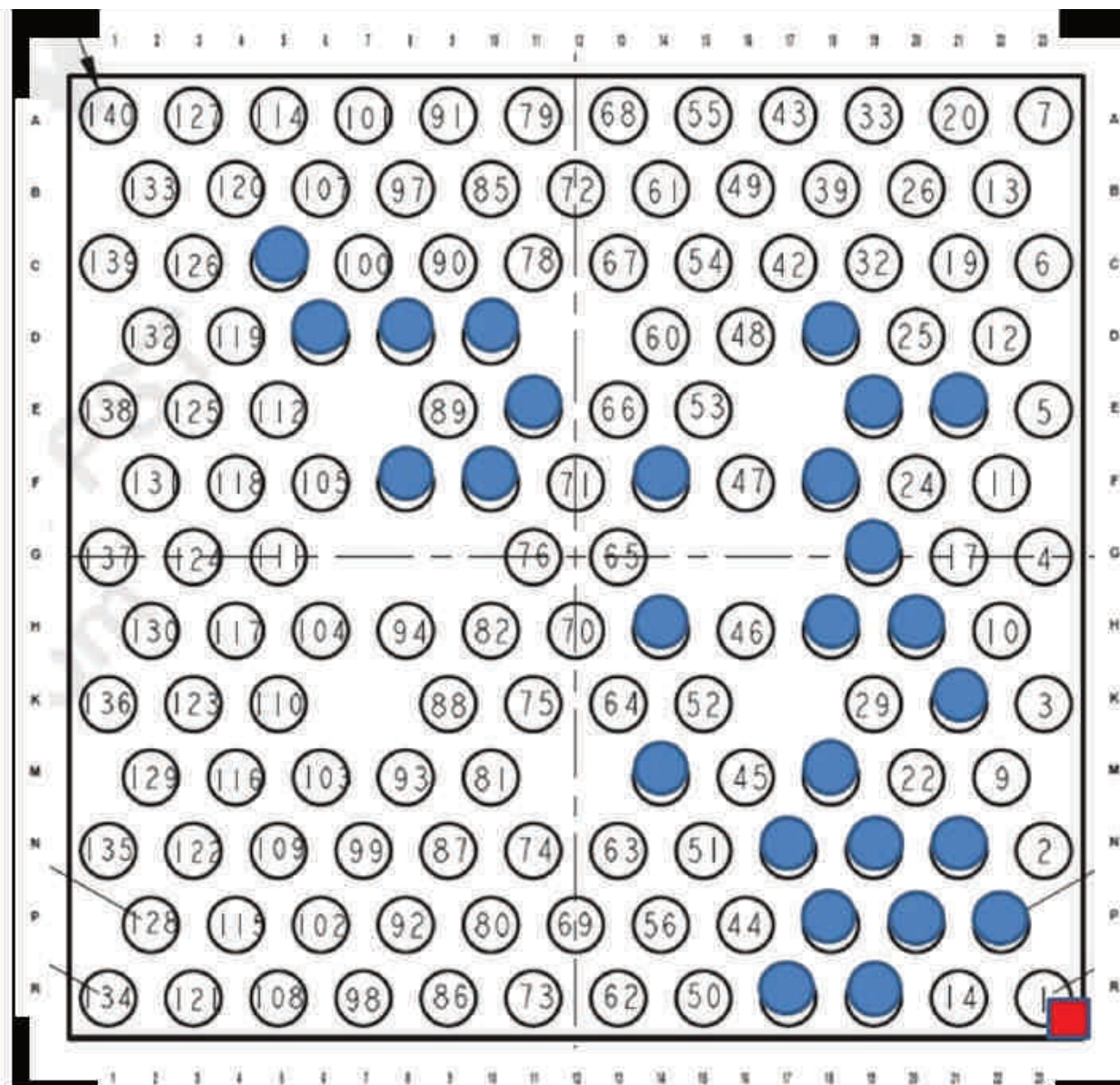


○ USE

● NOT IN USE

8. BGA PIN MAP

U4002 - PM8029 (Bottom View)



○ USE

● NOT IN USE

8. BGA PIN MAP

U1001 - RTR6285A (Top View)

	1	2	3	4	5	6	7	8	9	10	11	12	13	
A	GND	TX_RBU6	DAC_IREF	TX_P	VDDA2	VDDA2	HB_RF_O UT3	HB_RF_O UT2	HB_RF_O UT1	LB_RF_OU T1	VDDA1	PDET_IN	GND	A
B	VDDA2	GND	TX_QP	TX_QN	TX_IN	VDDA2	GND	GND	LB_RF_OU T2	VDDA2	GND	EGSM_INN	GCELL_IN N	B
C	TCXO	GND										EGSM_INP	GCELL_IN P	C
D	VDDA1	VDDA1		GND	GND	GND	GND	GND	GND	GND		GPDS_INN	DCS_INN	D
E	VTUNE1	GND		GND	GND	GND	GND	GND	GND	GND		GPDS_INP	DCS_INP	E
F	VDDA1	VDDA2		GND	GND	GND	GND	GND	GND	GND		GND	VDDA2	F
G	VTUNE_G PS	VDDA2		GND	GND	GND	GND	GND	GND	GND		GND	GPS_IN	G
H	VDDA1	VDDA1		GND	GND	GND	GND	GND	GND	GND		GND		H
J	PRX_QP	PRX_QN		GND	GND	GND	GND	GND	GND	GND				J
K	PRX_IN	PRX_IP		GND	GND	GND	GND	GND	GND	GND		GND	WPRXSE1	K
L	DRX_QP	DRX_QN										VDDA2	WPRXSE2	L
M	DRX_IP	DRX_IN	SRDT	VDDA1	VDDA1	VDDA2	RF_IN	WB_MX_I NM	WPRXLB	GND	GND	GND	WPRXSE1 _OUT	M
N	GND		VDDA2	VDDA1	VTUNE2	VDDA2	VDDA2	WB_MX_I NP	WPRXLB	WPRXHP	WPRXHB	WPRXSE2 _OUT	GND	N
	1	2	3	4	5	6	7	8	9	10	11	12	13	

RTR6285A IC pin assignments (top view)

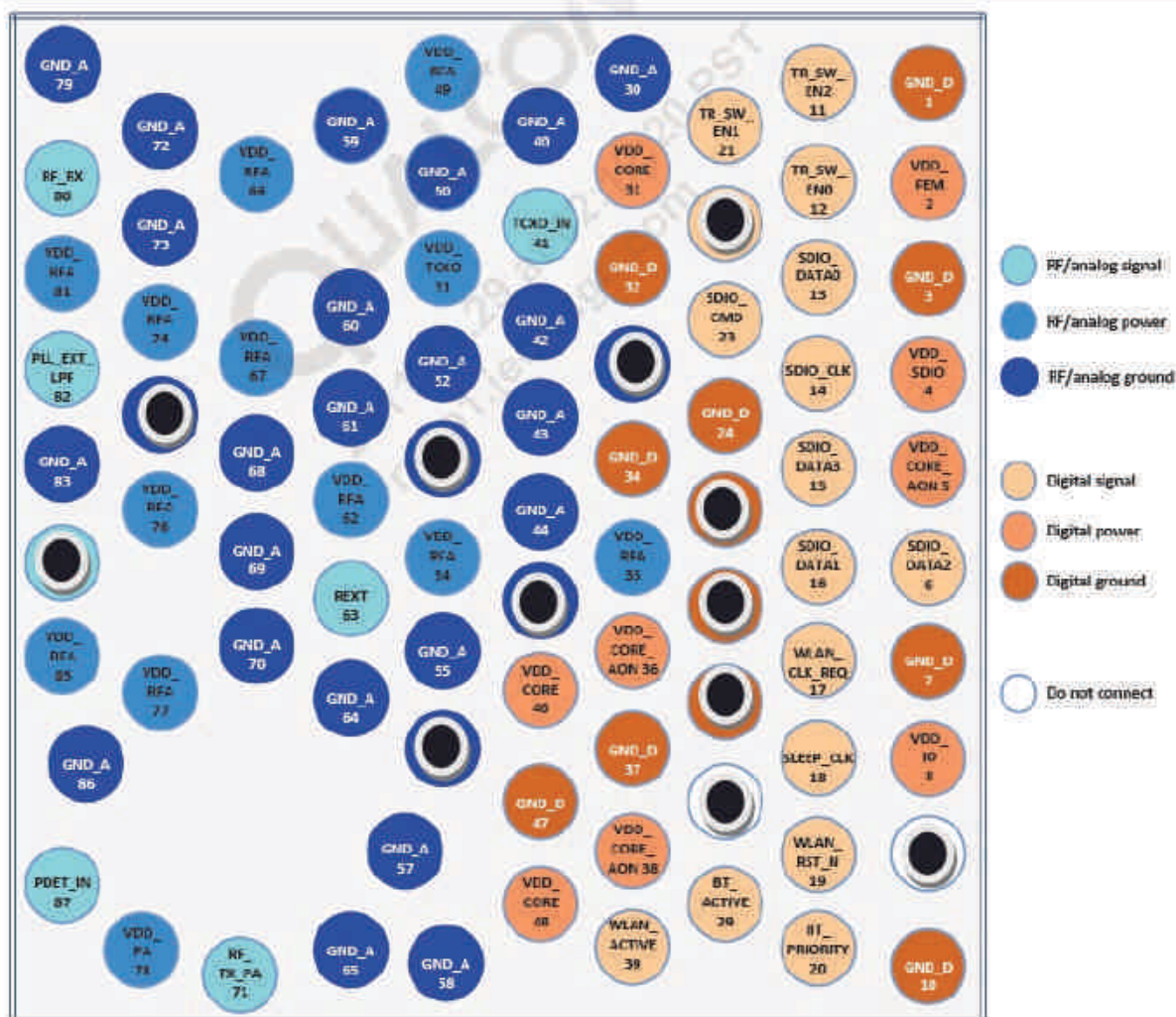
- USE
● NOT IN USE



WCN2243 IC pin assignments, top view

8. BGA PIN MAP

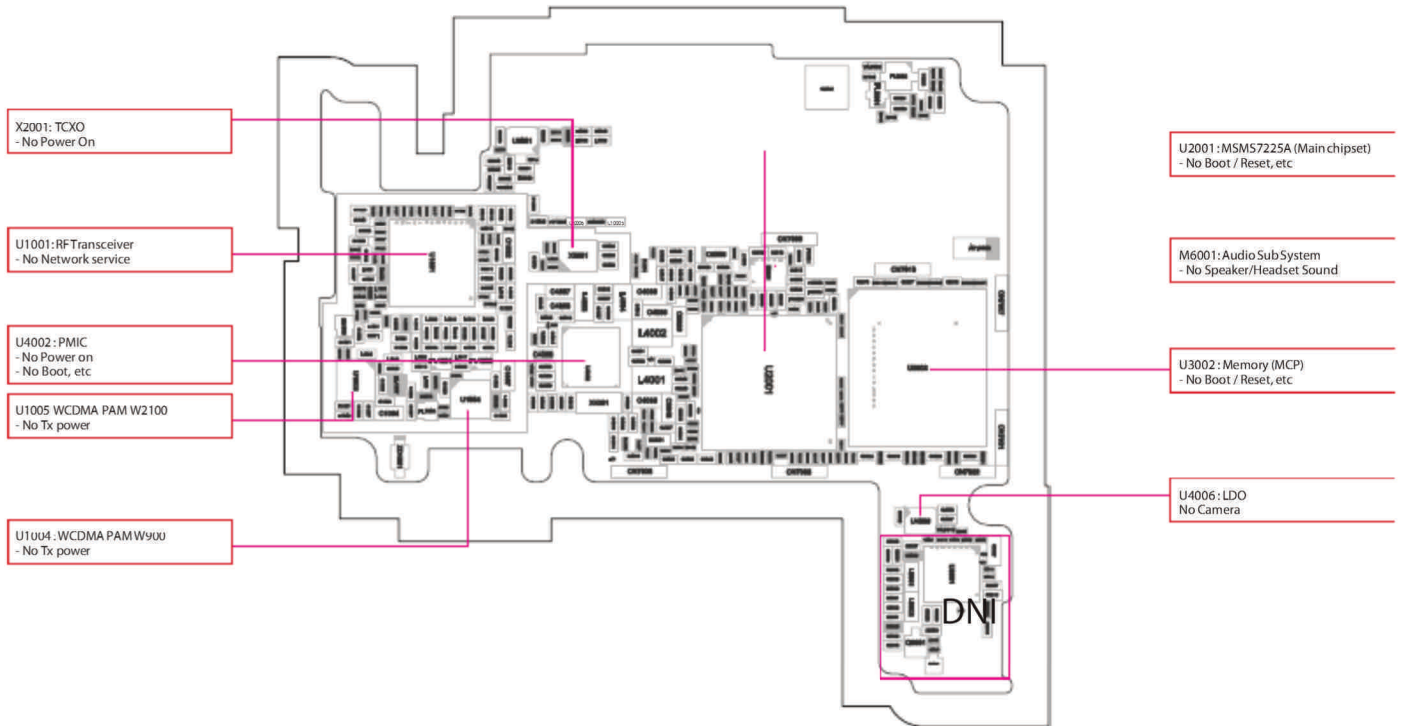
U9002 – WCN1314 (WiFi) (Top View)



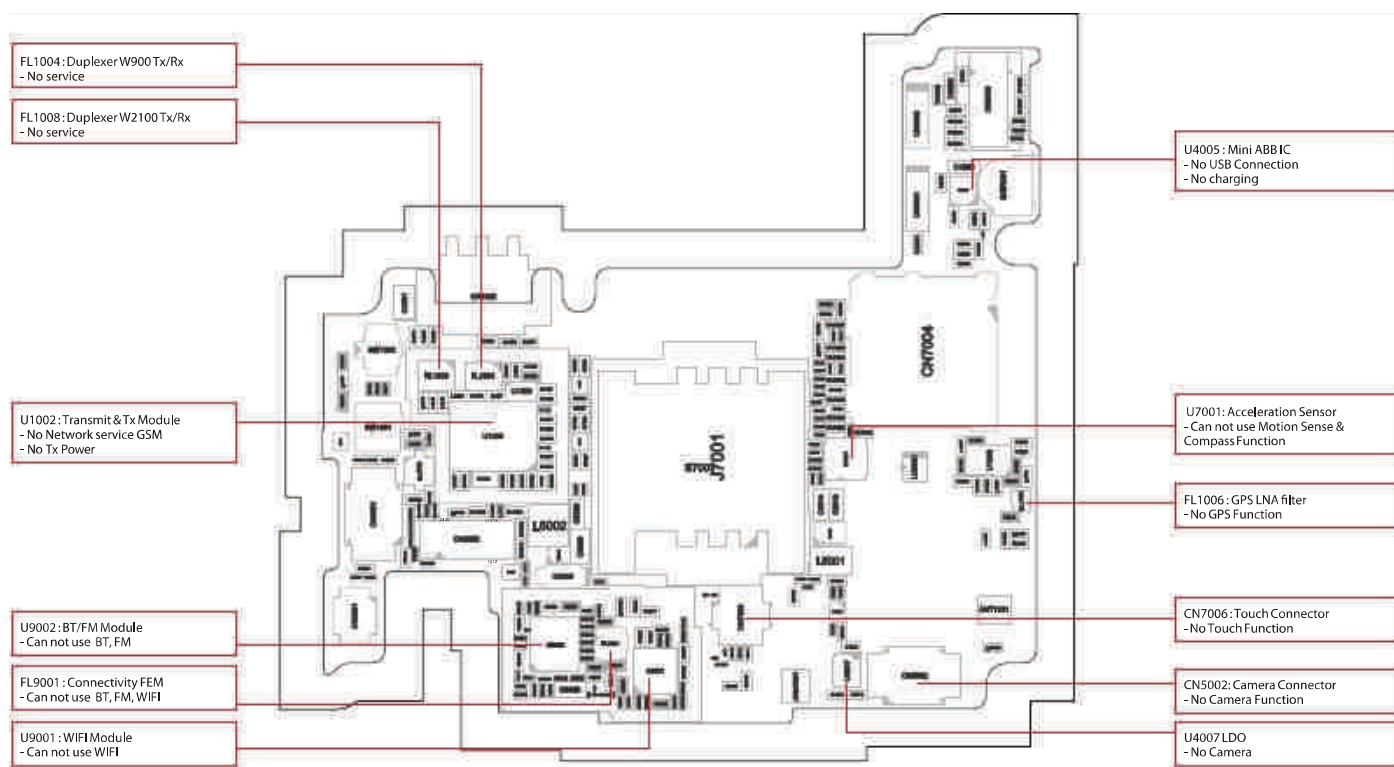
WCN1314 IC pin assignments (top view)

- USE
- NOT IN USE

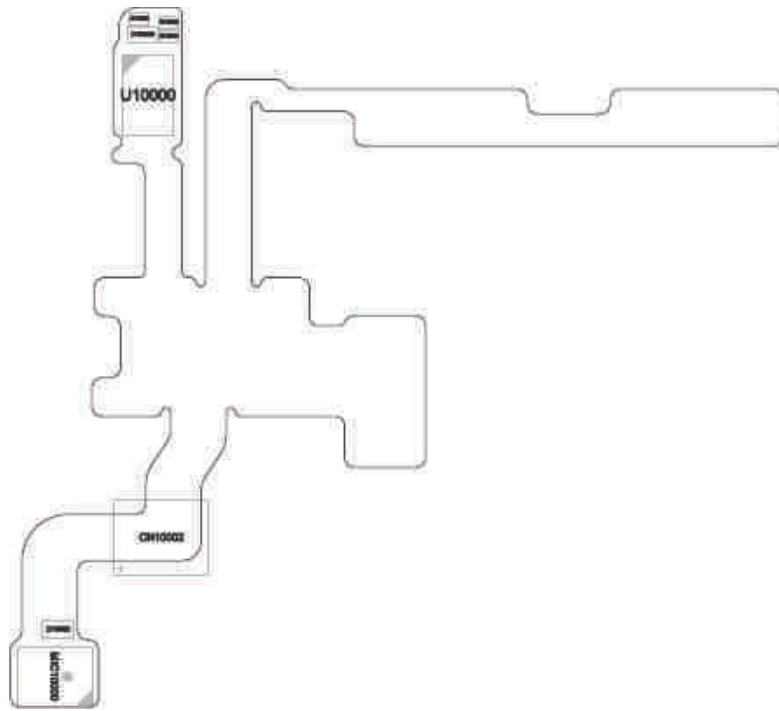
9. PCB LAYOUT



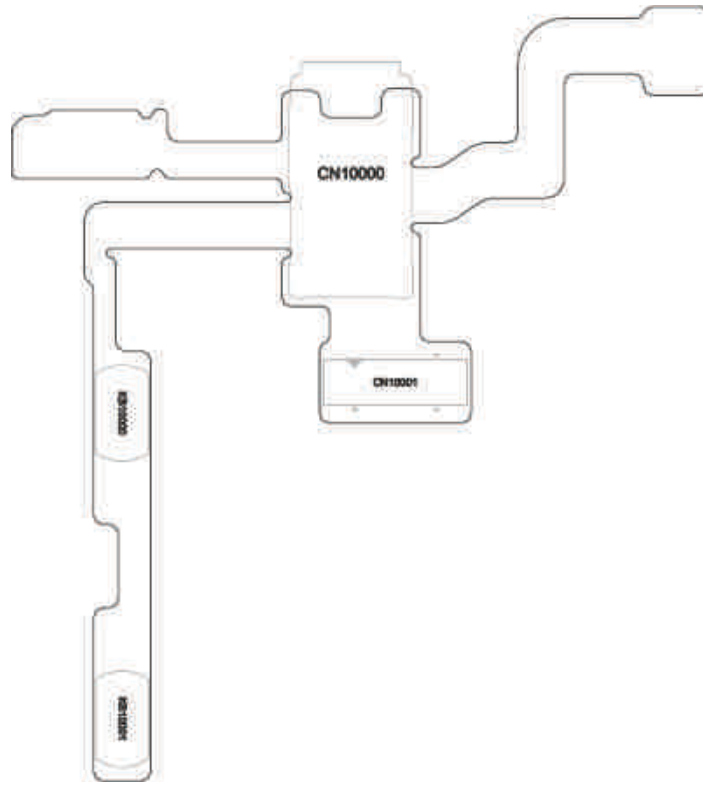
LG-E612_MAIN_EAX64750401_1.2_TOP



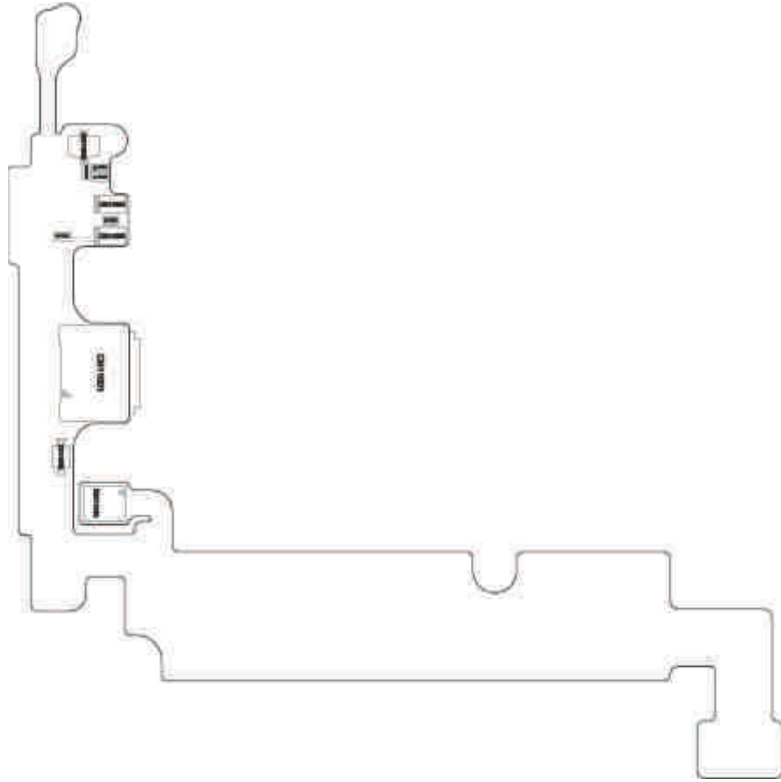
LG-E612_MAIN_EAX64750401_1.0_BOT



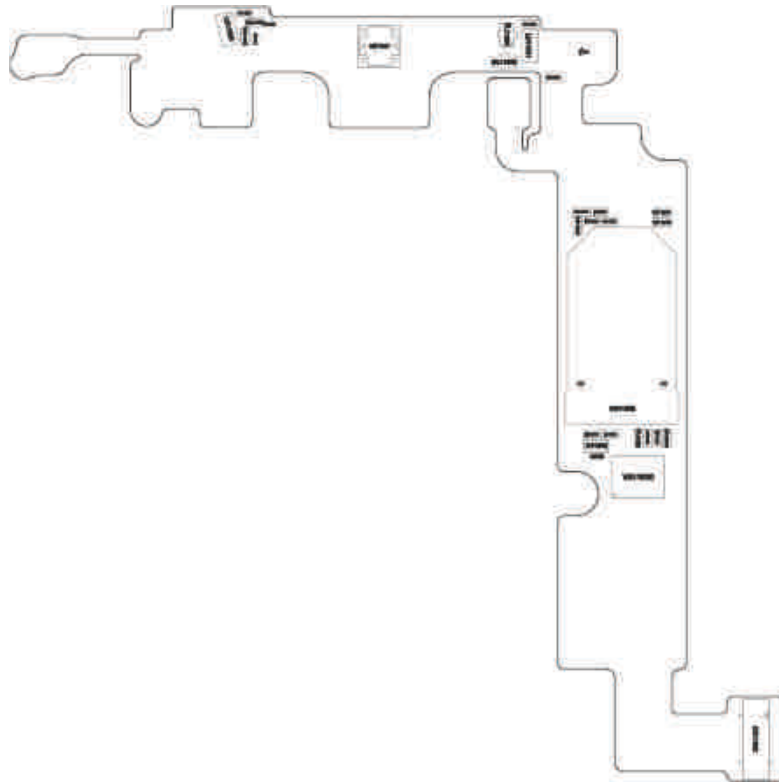
LG-E612_F_UPPER_EAX64750401_1.0_BOT



LG-E612_F_UPPER_EAX64750401_1.2_TOP



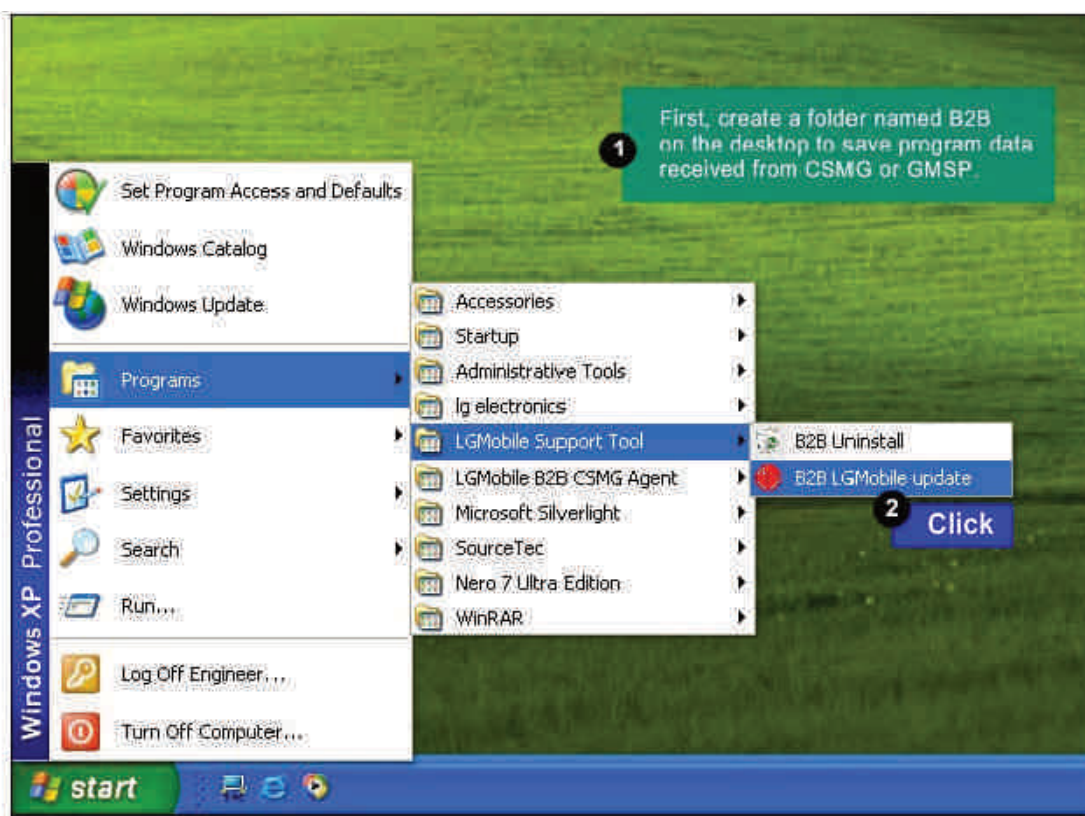
LG-E612_F__LOWER_EAX64750401_1.1_BOT

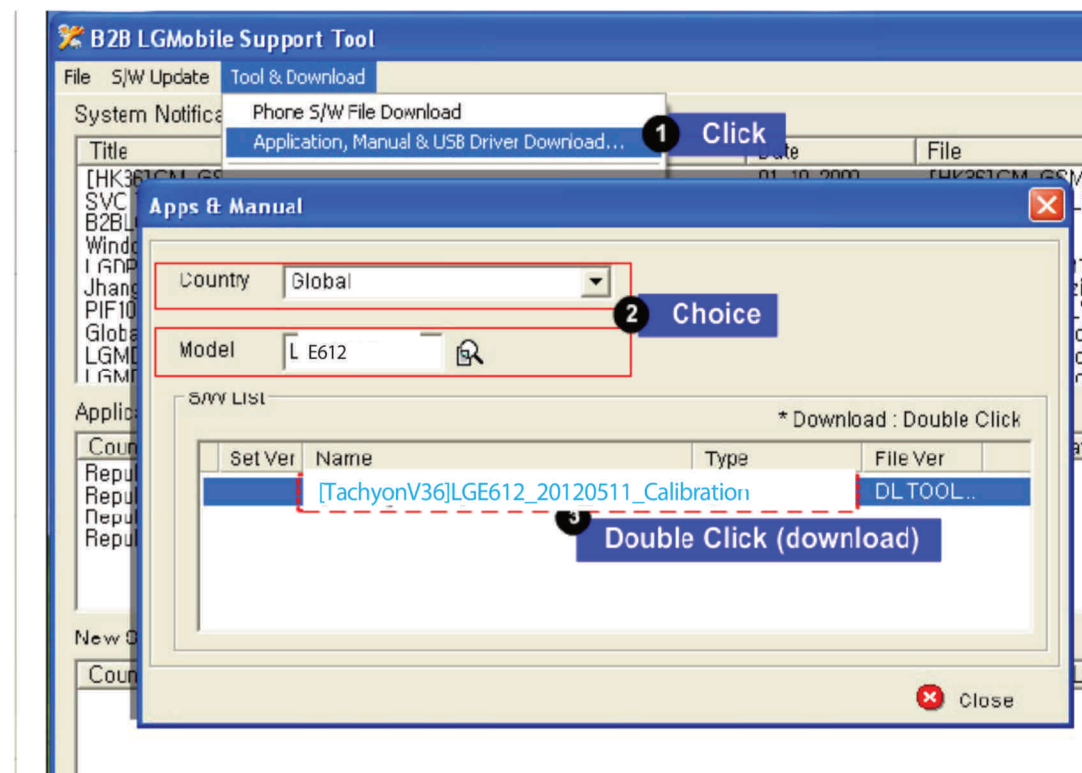
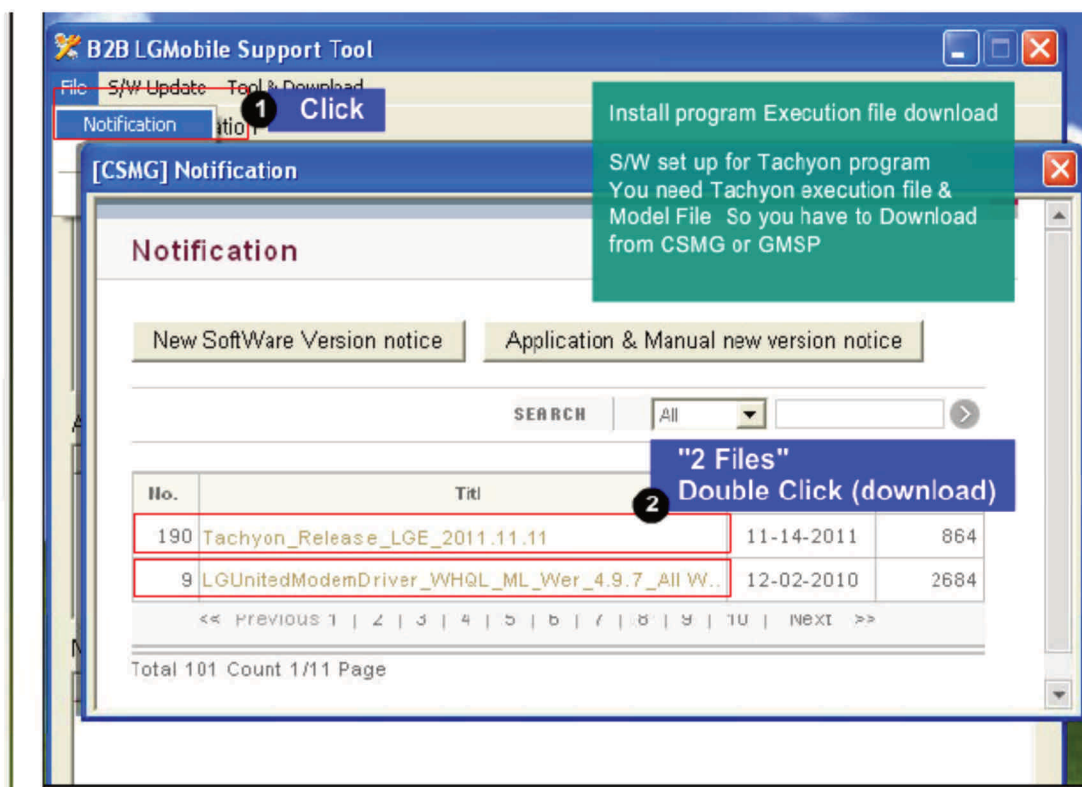


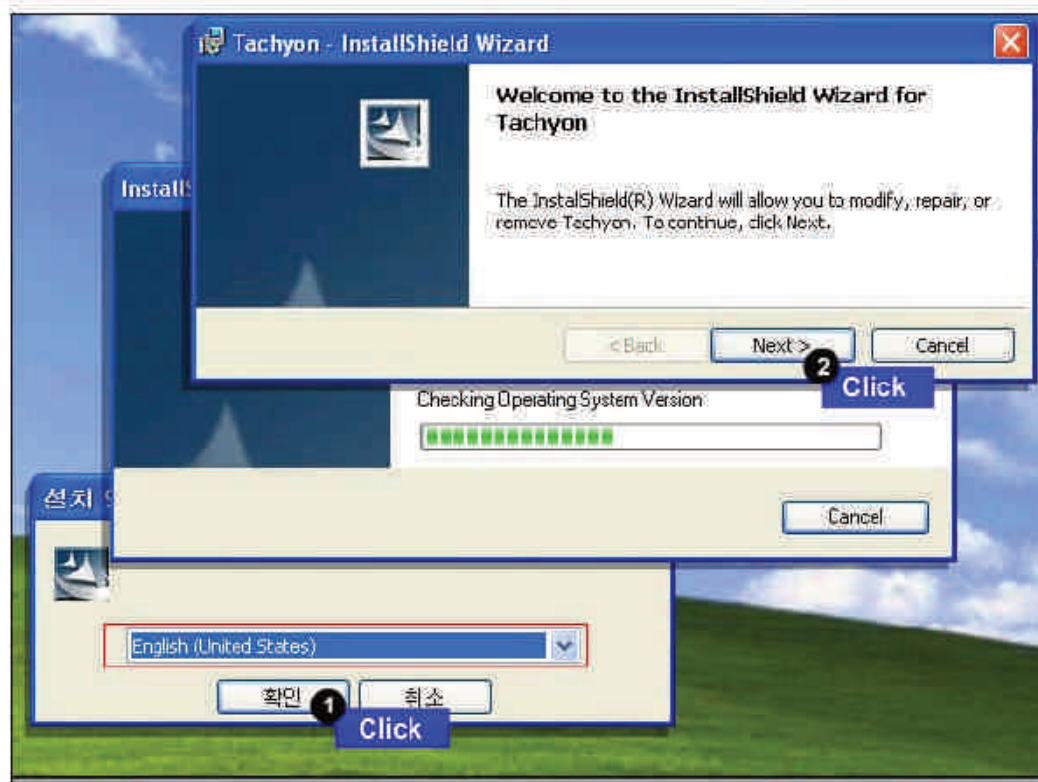
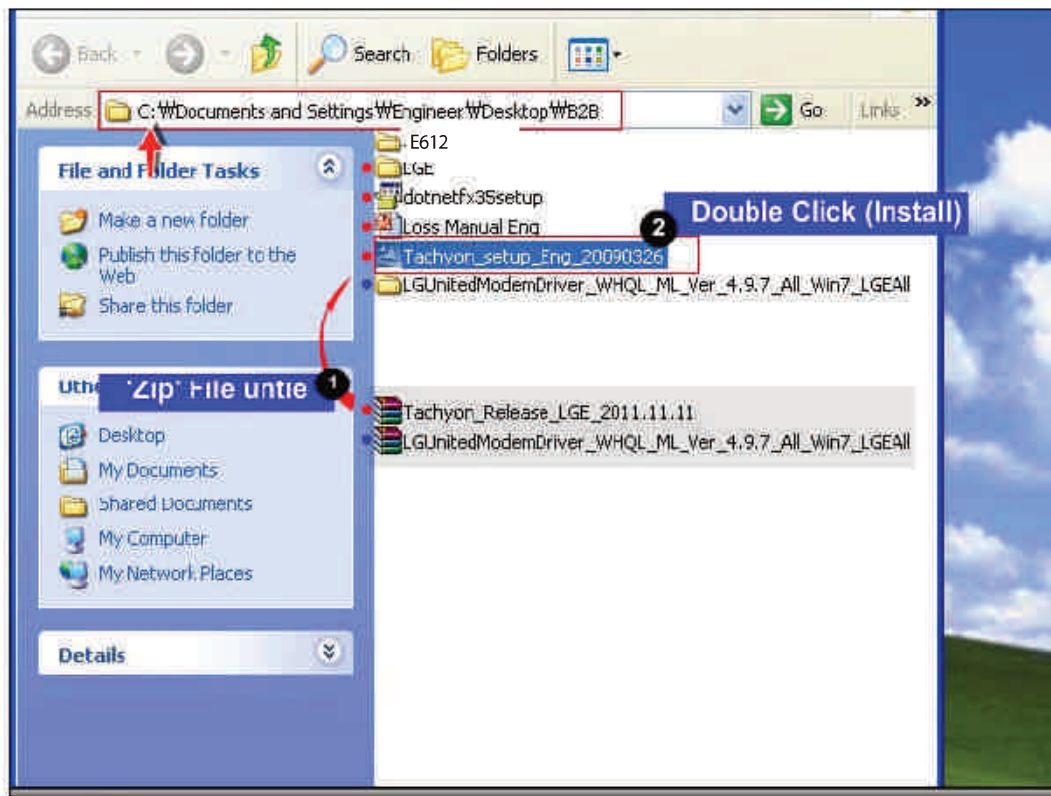
LG-E612_F__LOWER_EAX64750401_1.1_TOP

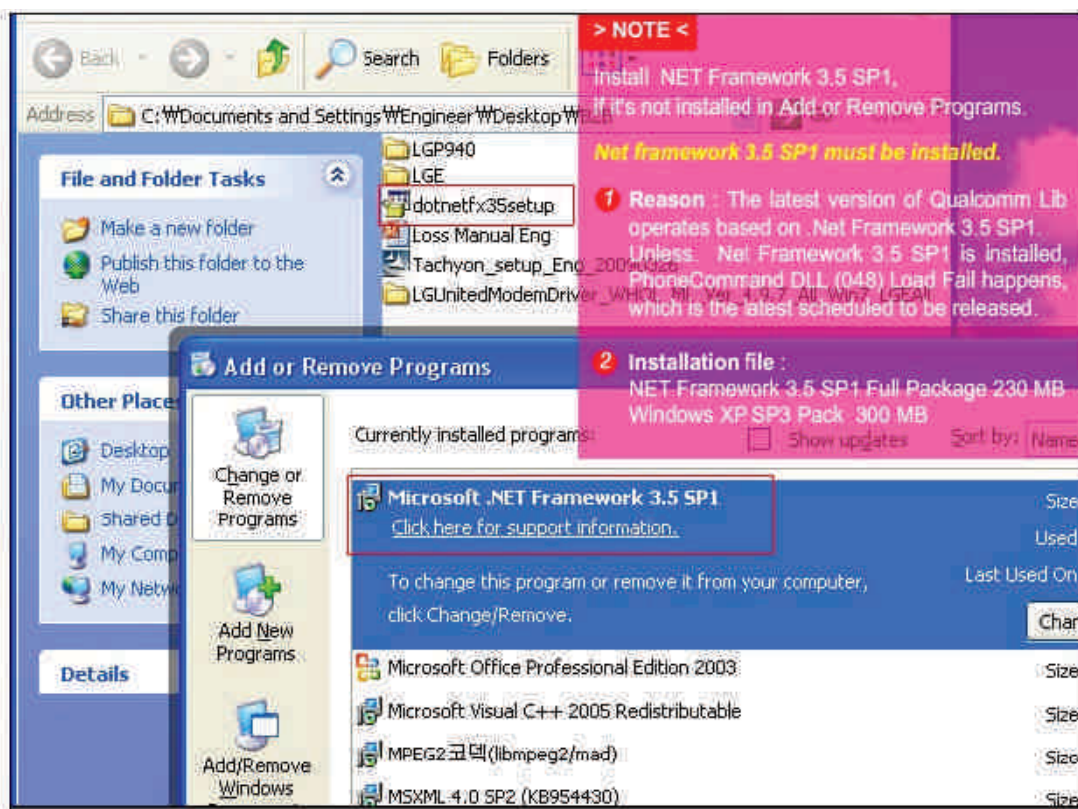
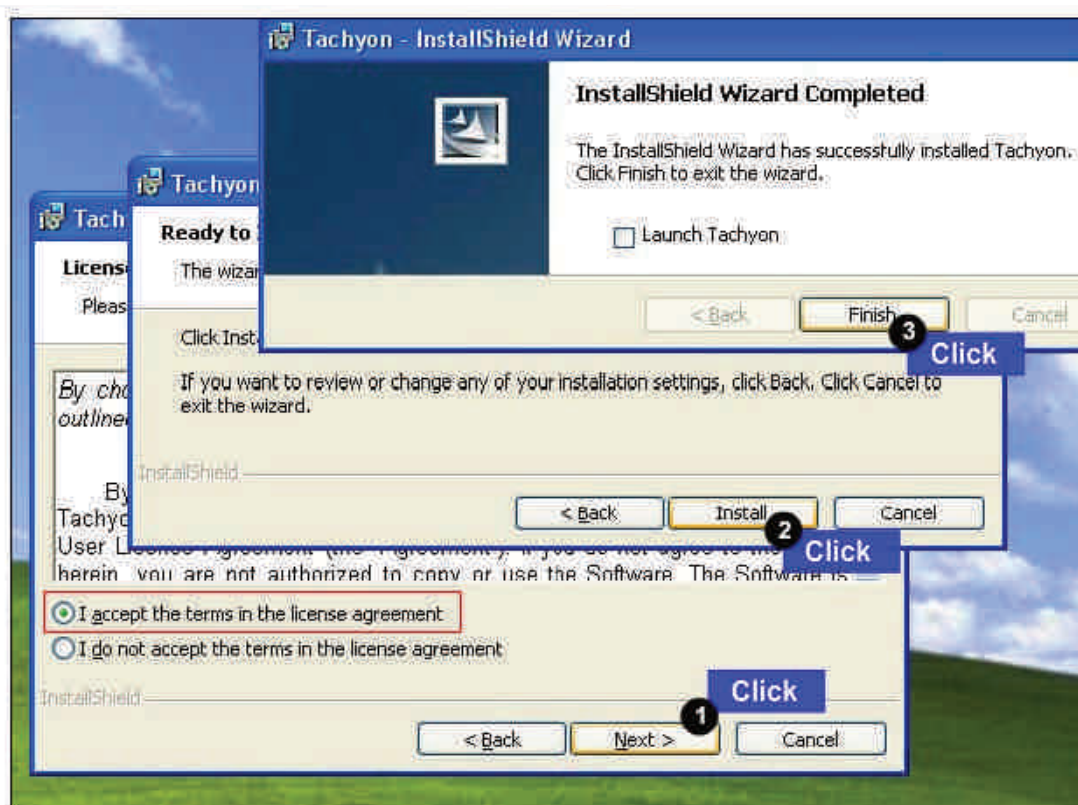
10. CALIBRATION

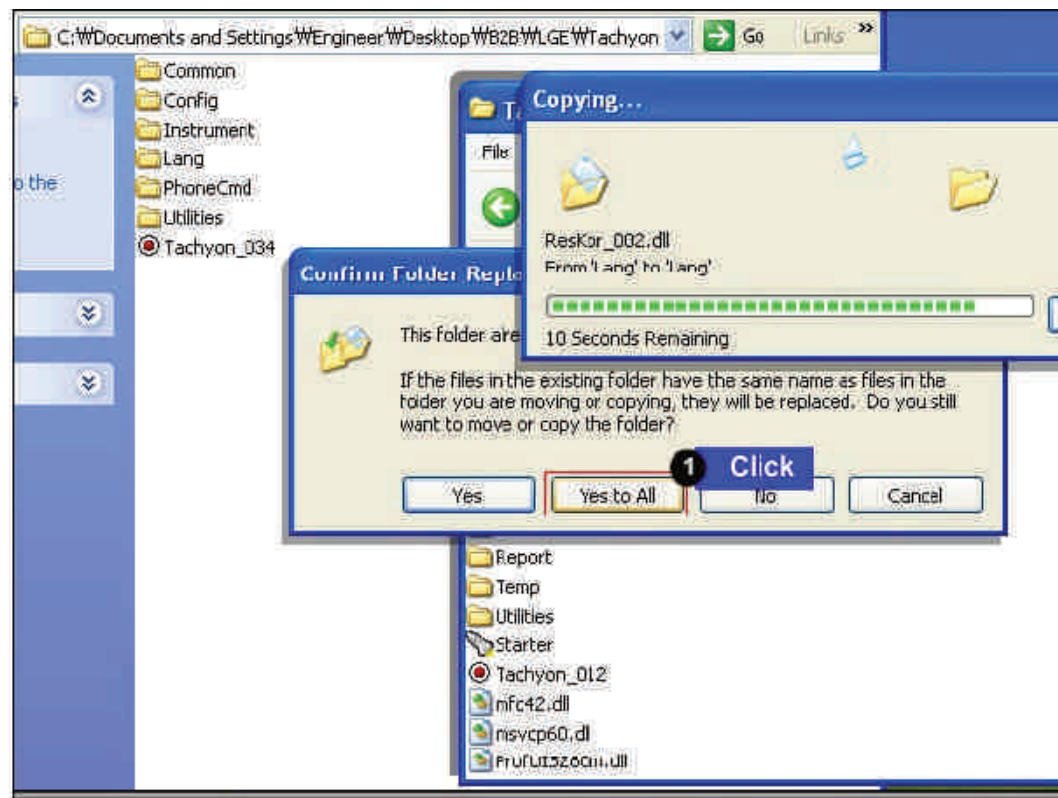
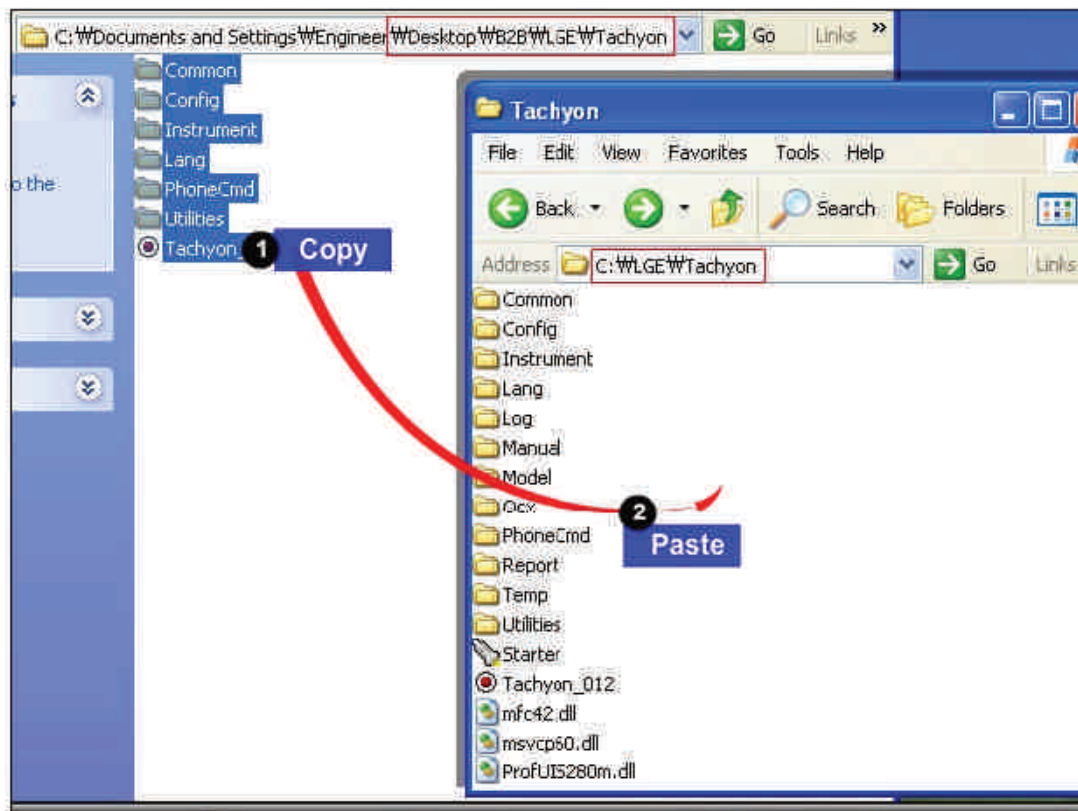
CAL INFORMATION		
S/W VERSION		
[TachyonV36]LGE612_20120511_Calibration		
Please Check the Version to "B2B"		
H/W		
	Name	Part No.
PIF	PIF200(All Type)	BJAY0024021
USB Cable	USB Cable	RAD32247898
Power Cable	DC Power Cable	RAD32247878
I/O Cable	5P E-SATA_DC_Plug	RAD32167861
RF Cable_Main	RF-900	BJAY0023732
Power Supply_PIF	Power Supply 5.3V	
Power Supply_Phone	Power Supply 5.0V	
RF Test Equipment	E5515C(8960)	

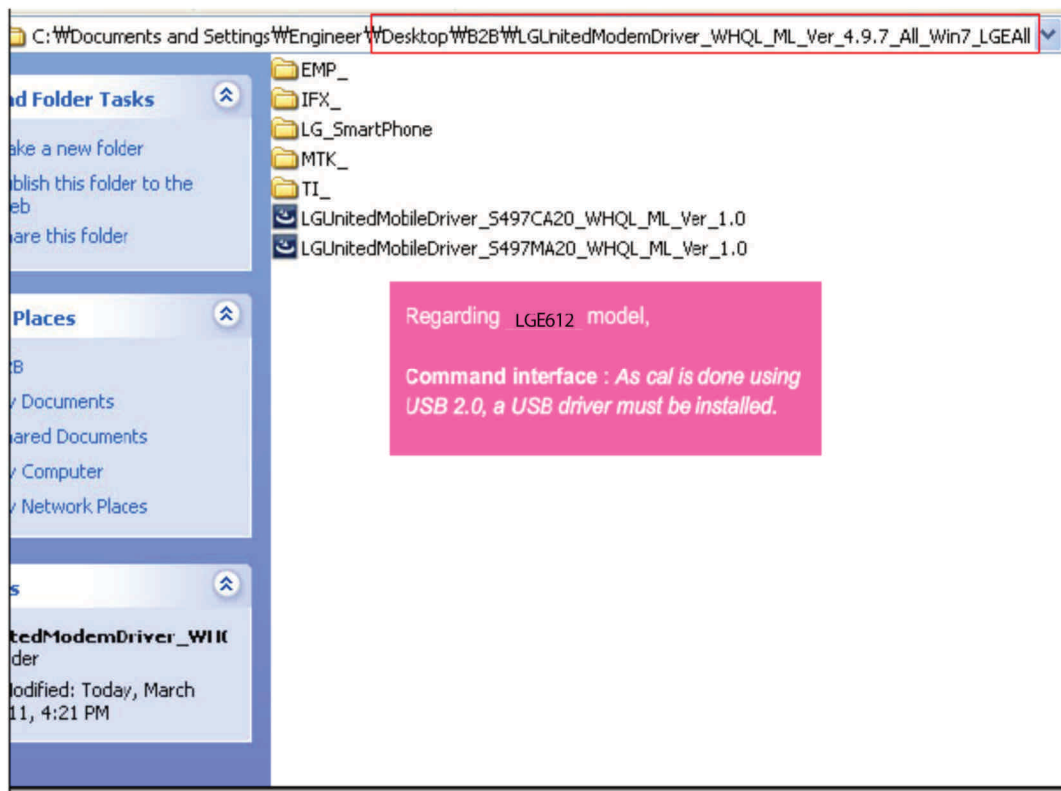
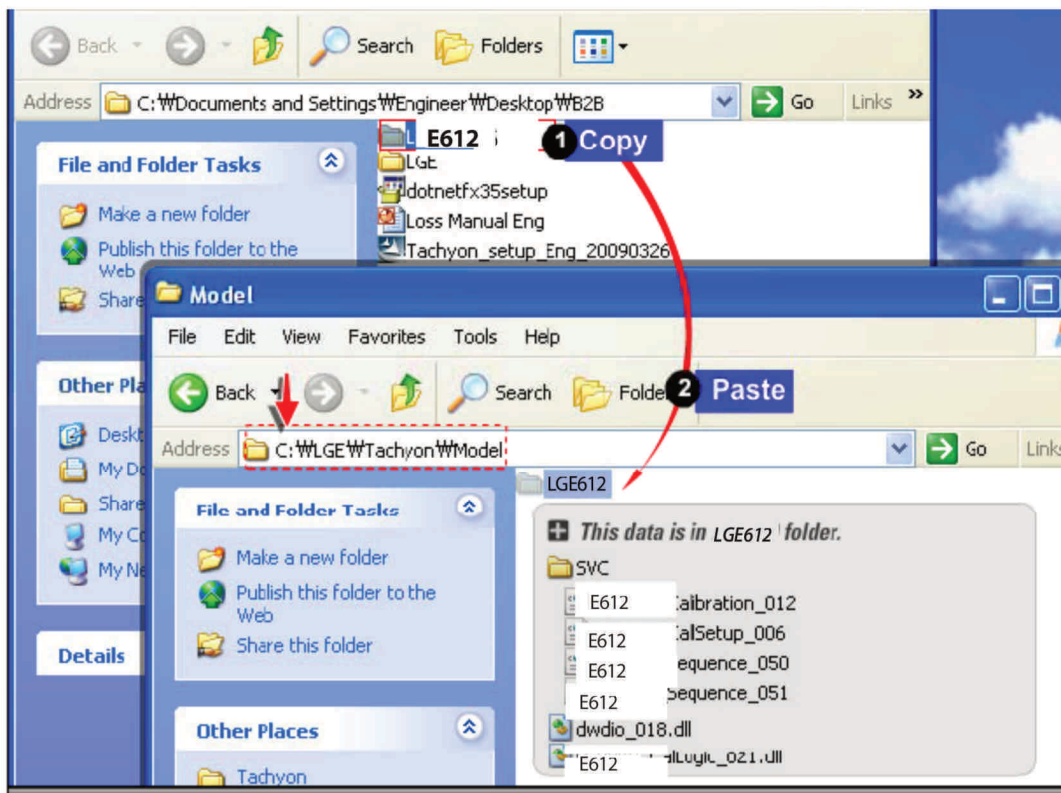


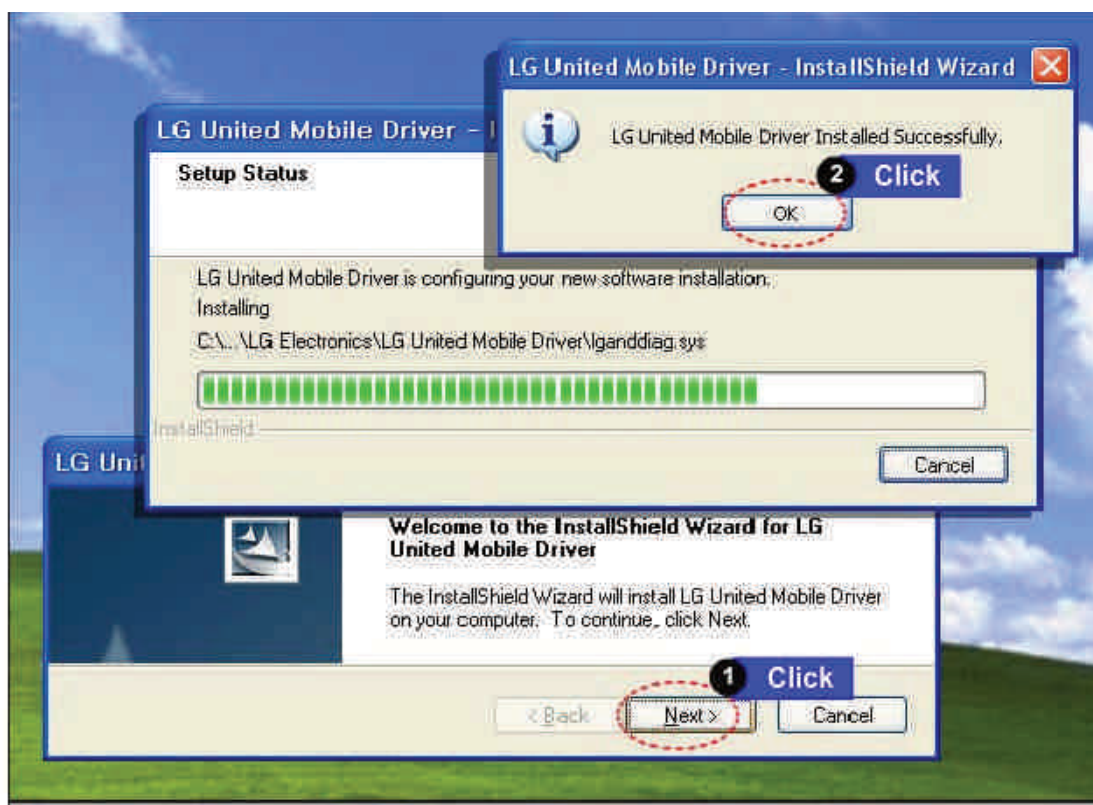
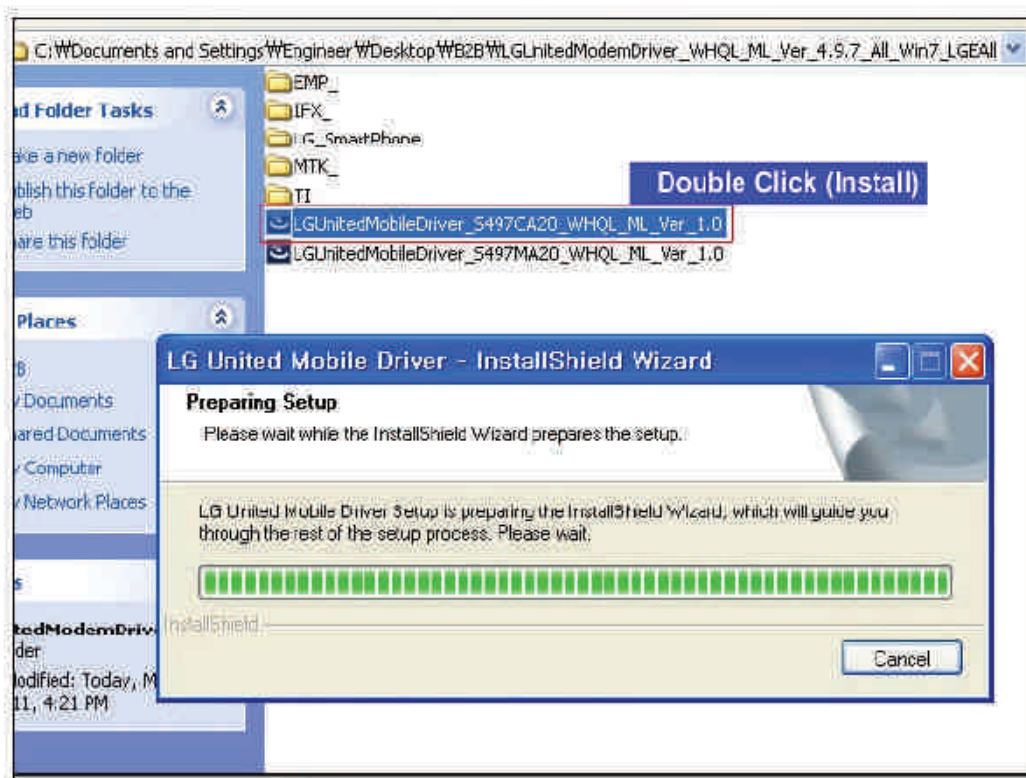


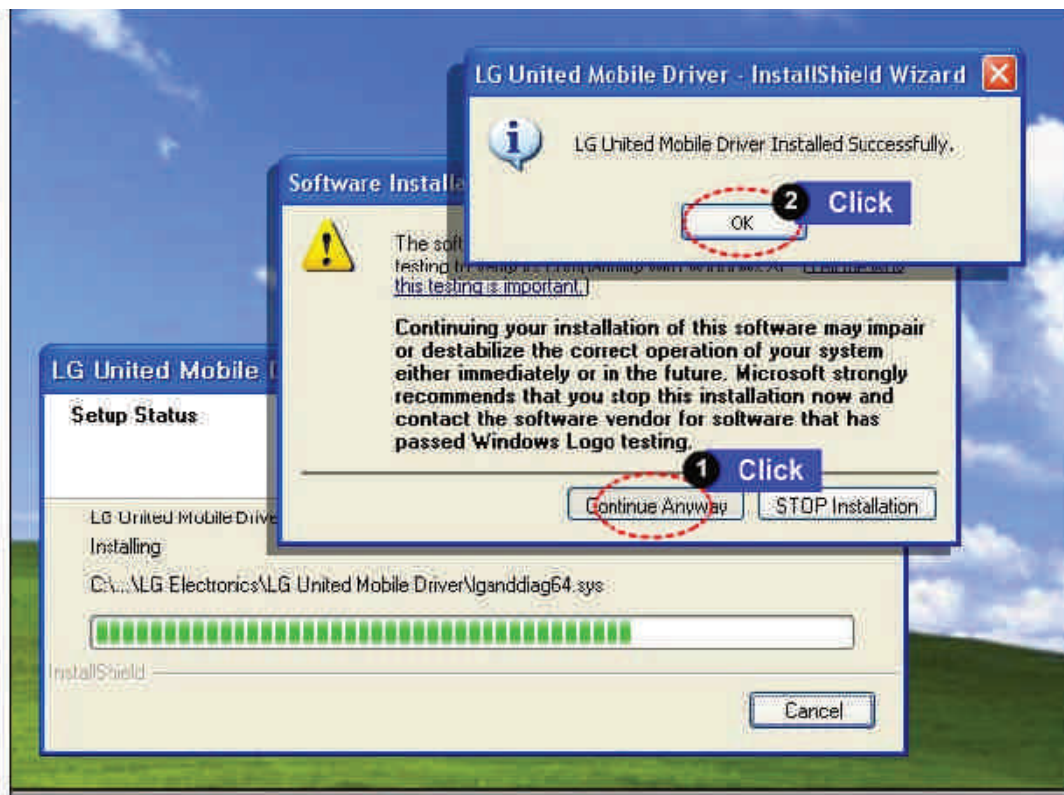
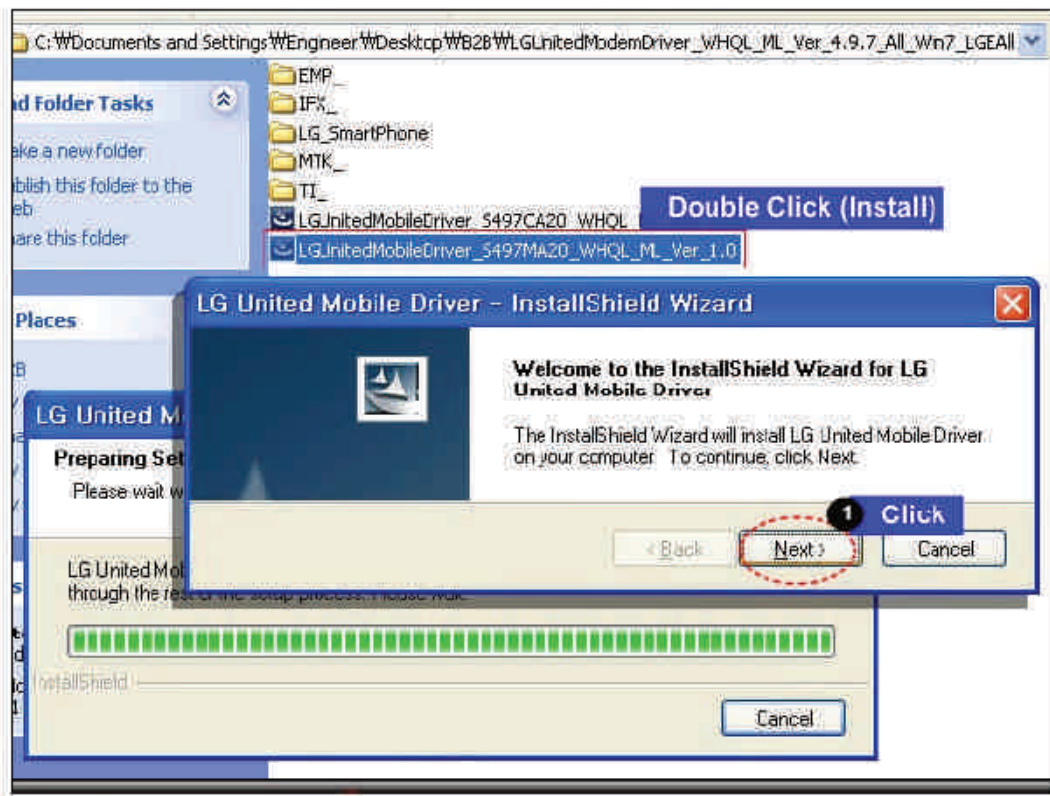


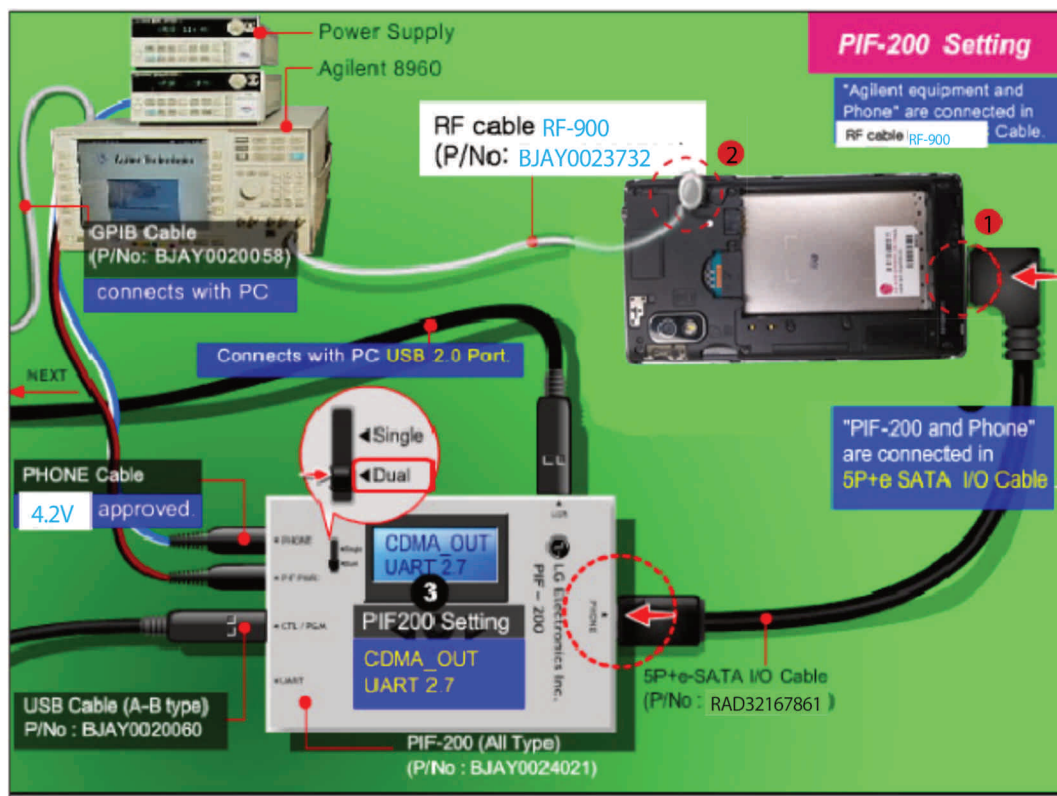
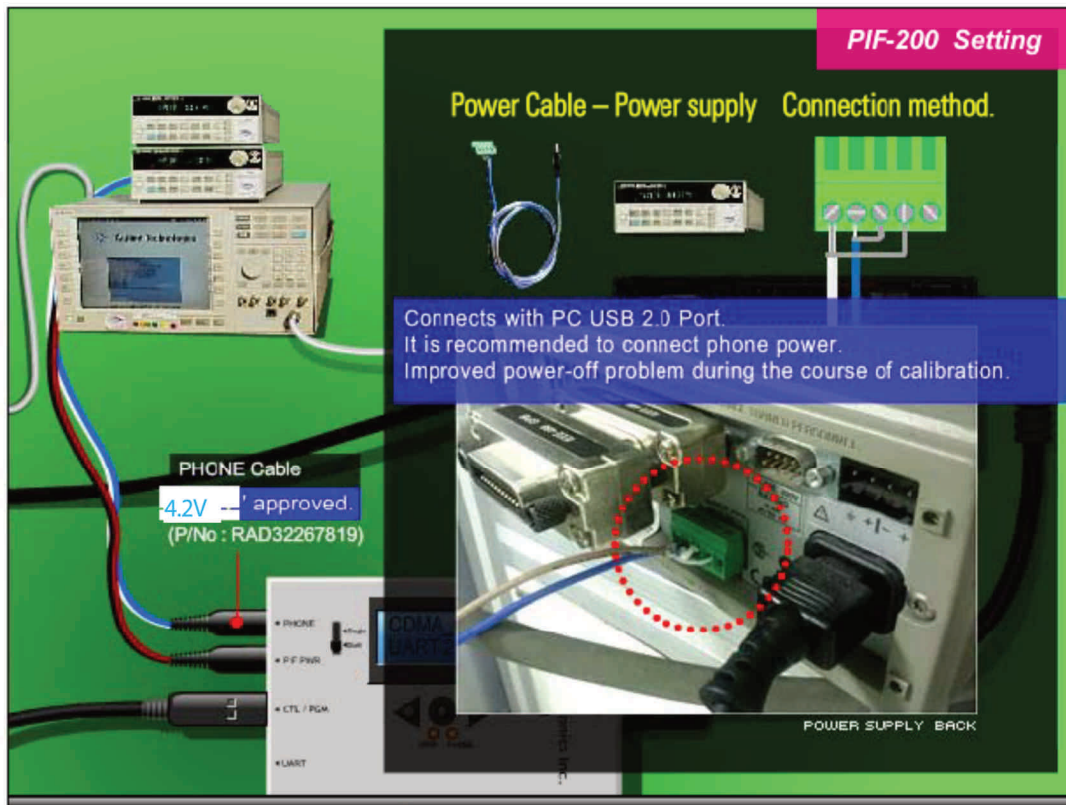


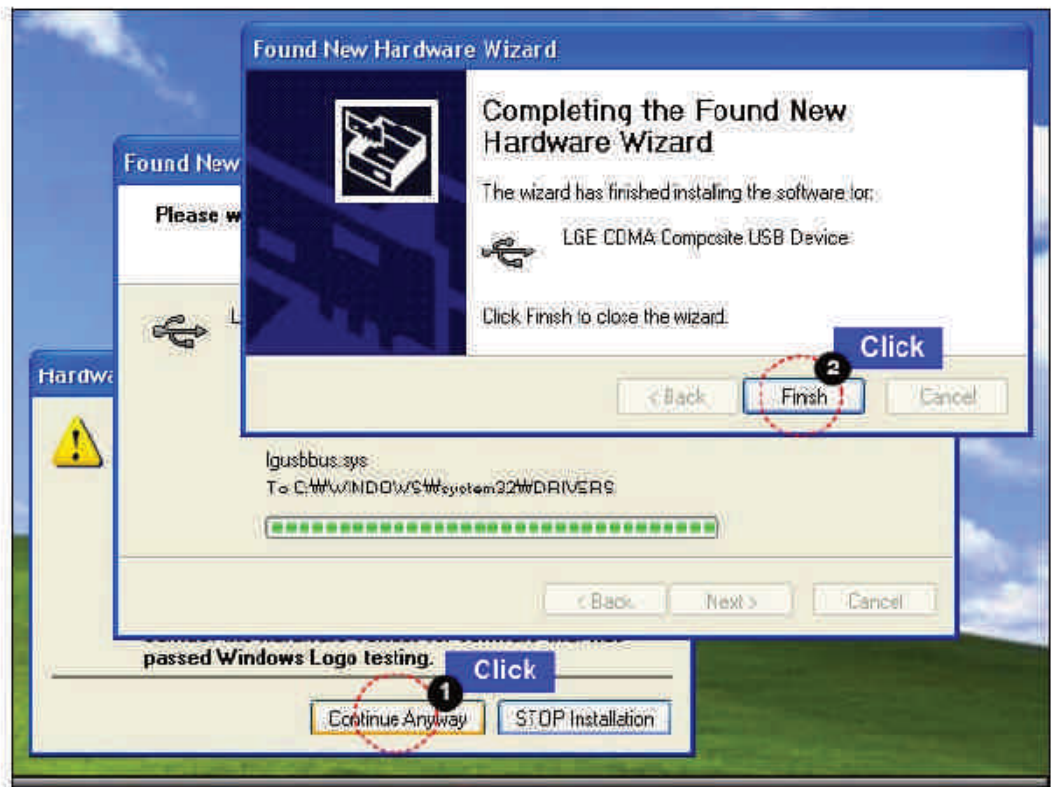
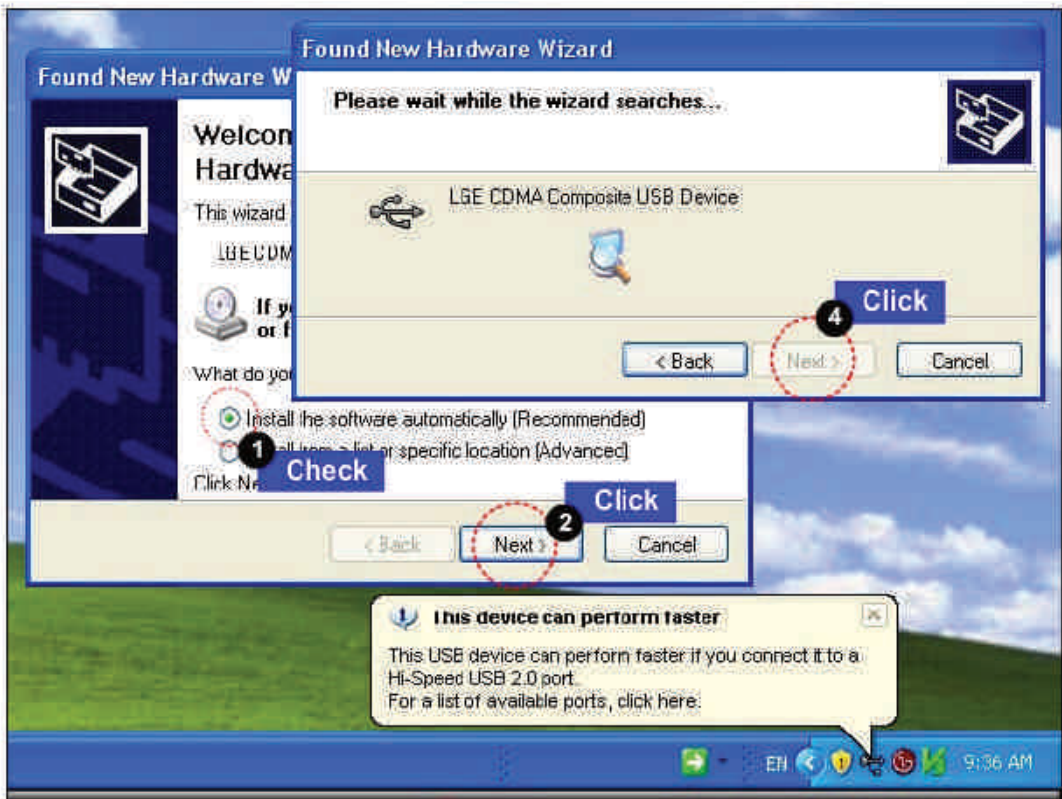


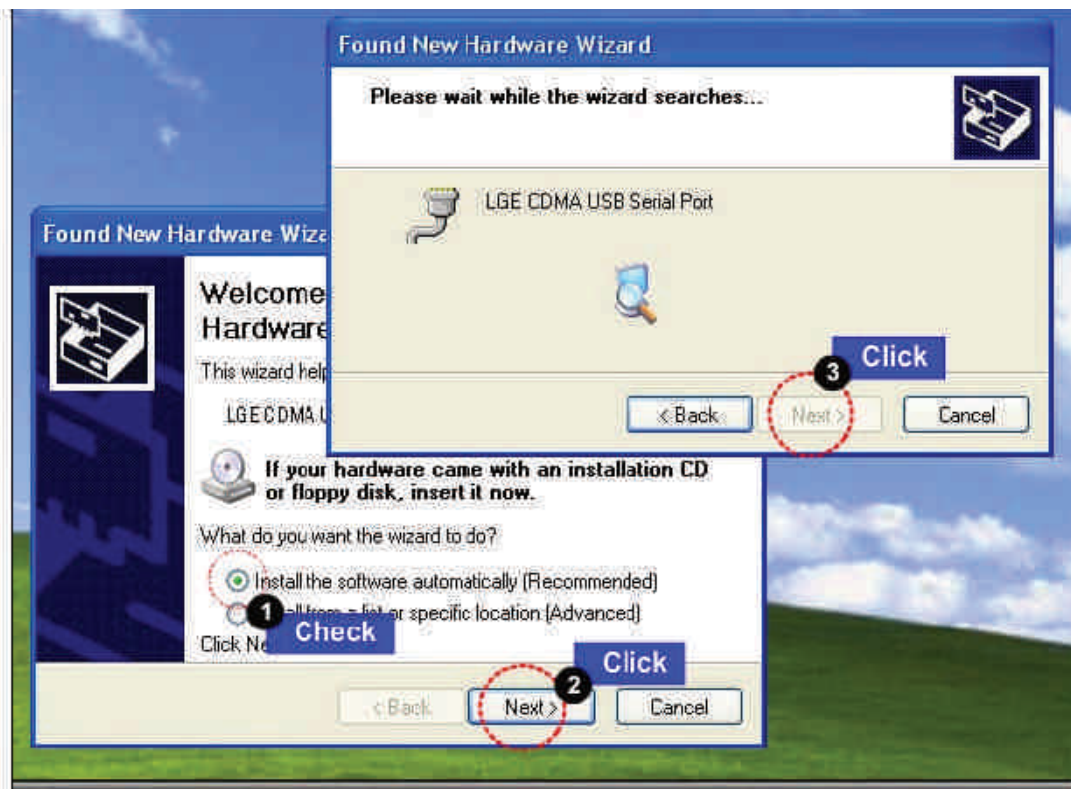
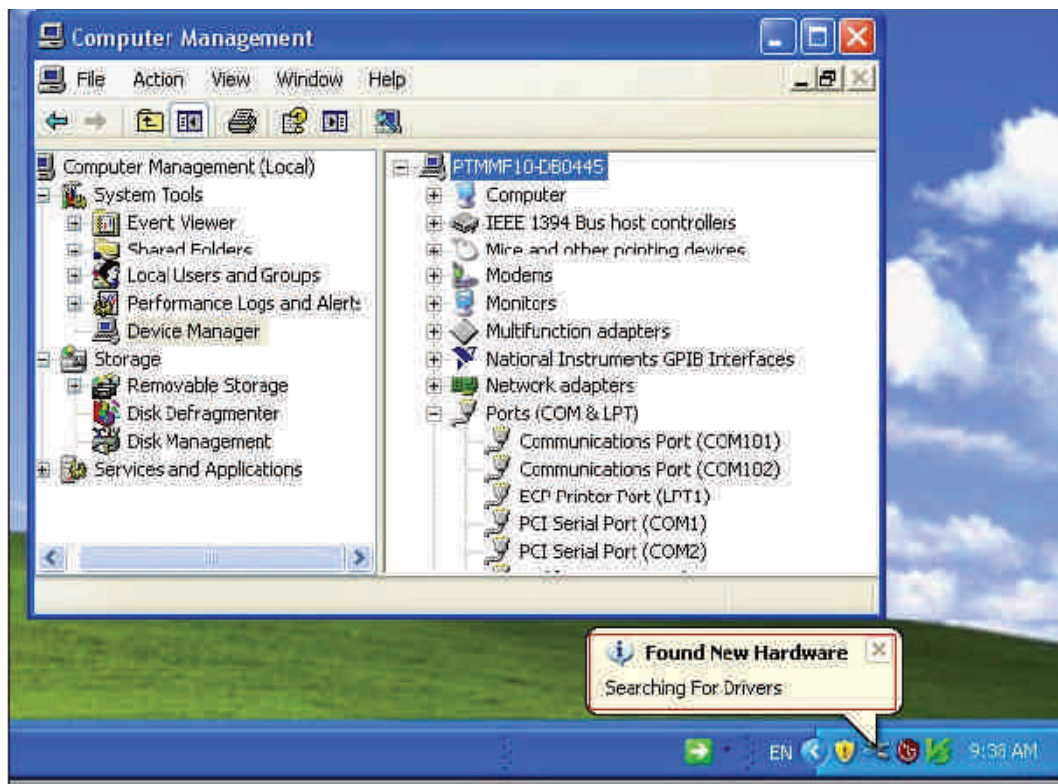


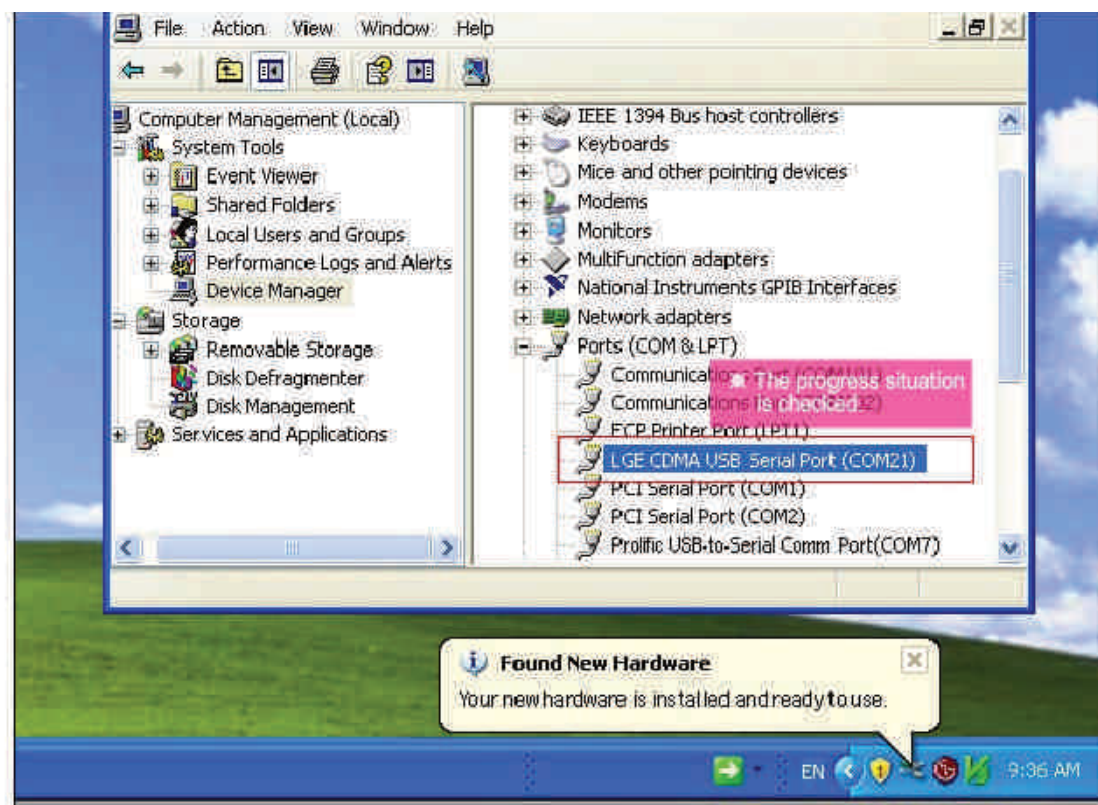
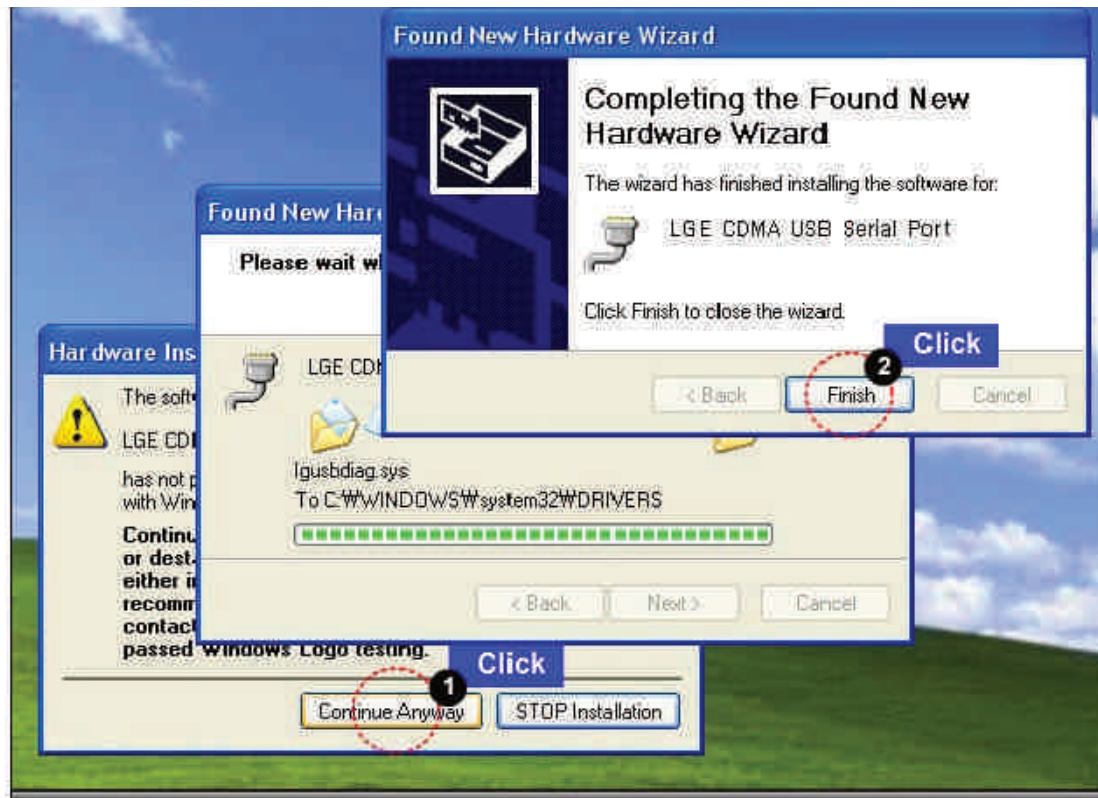


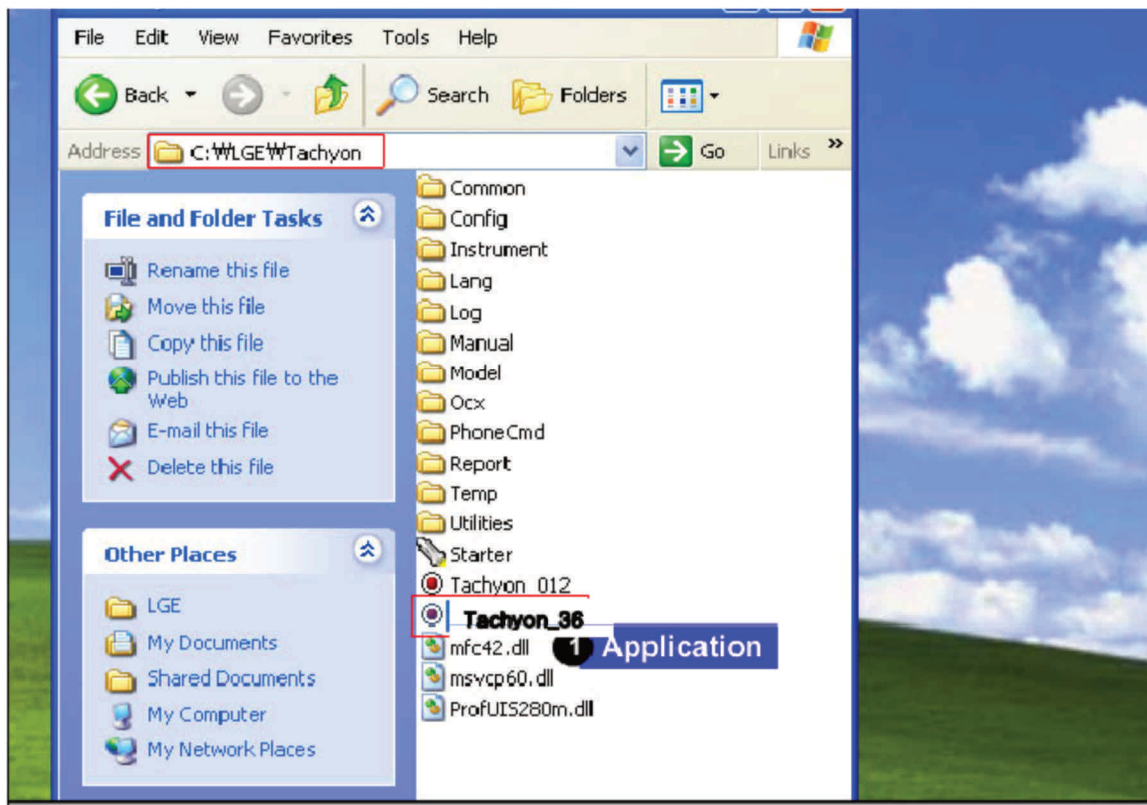
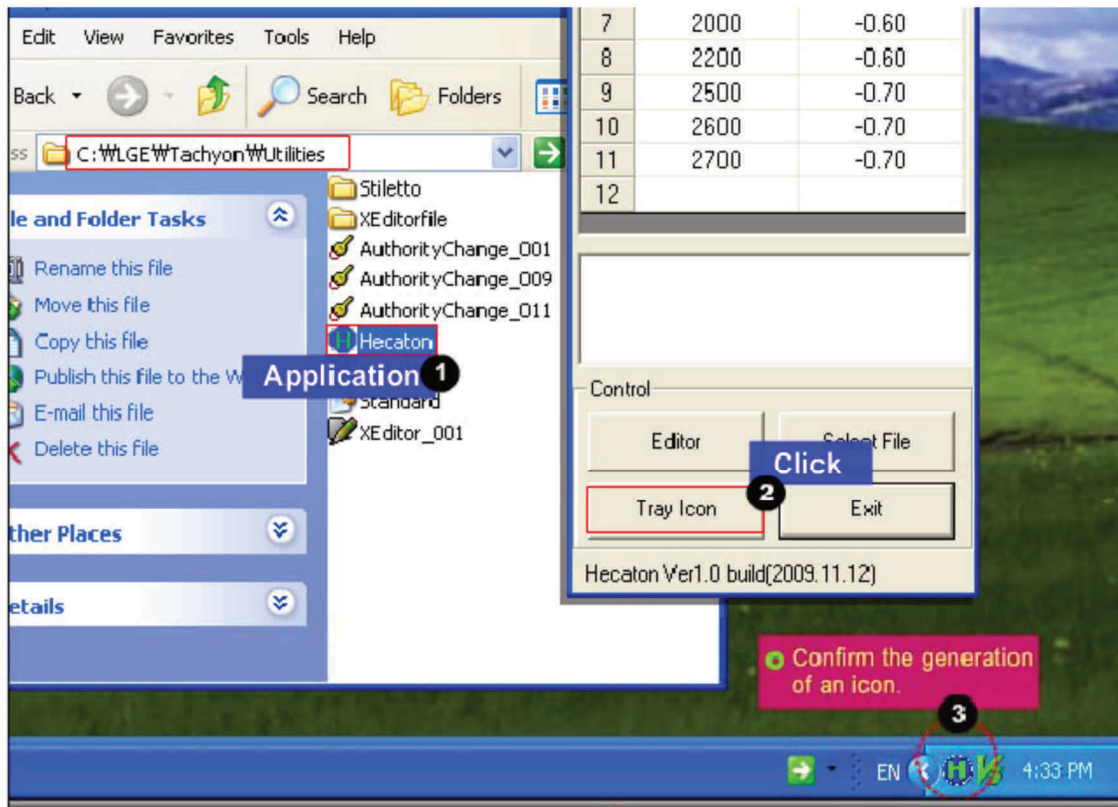




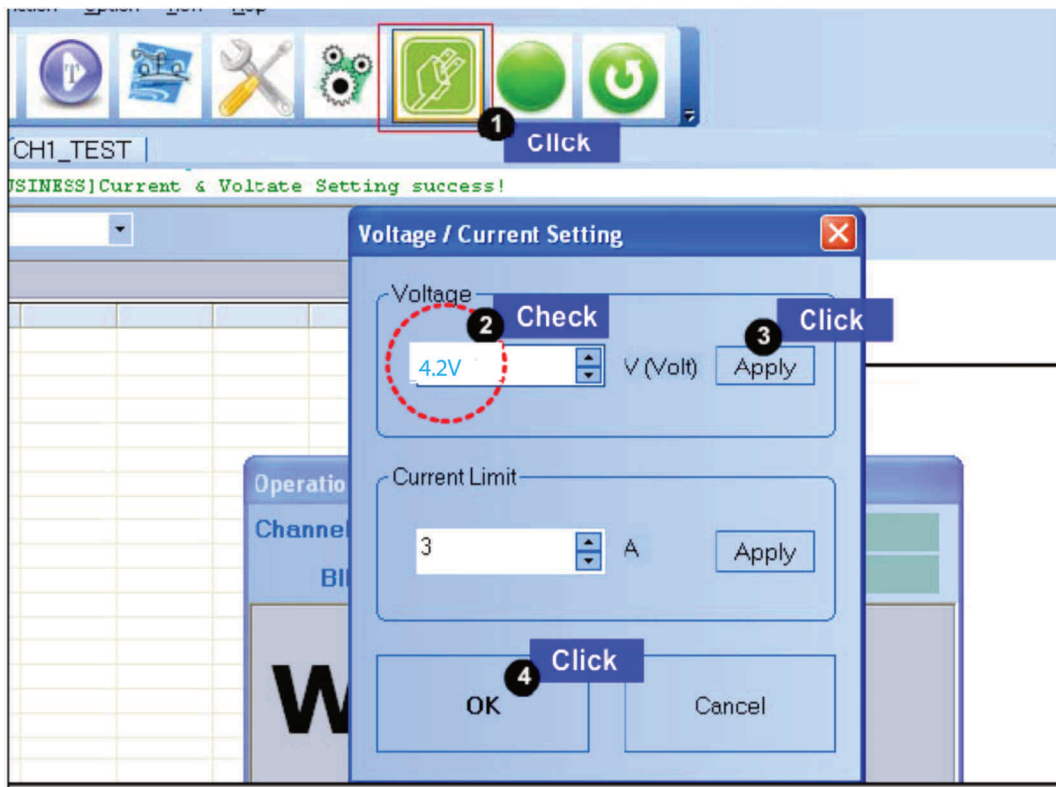
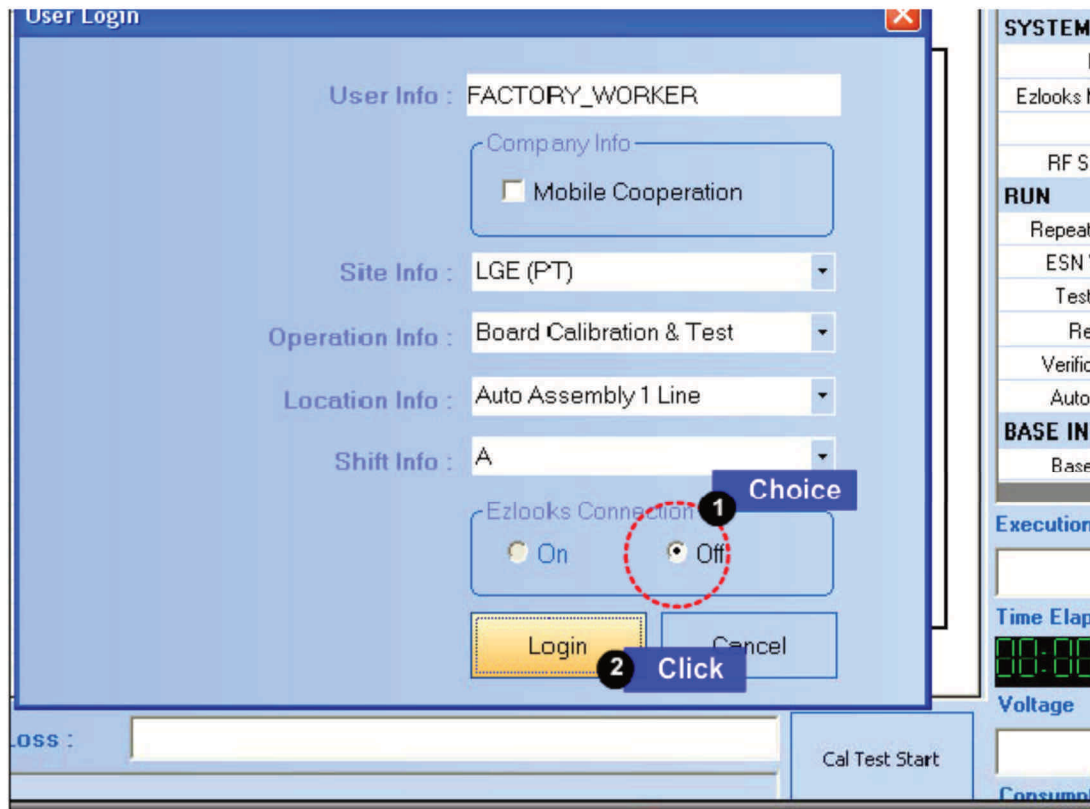


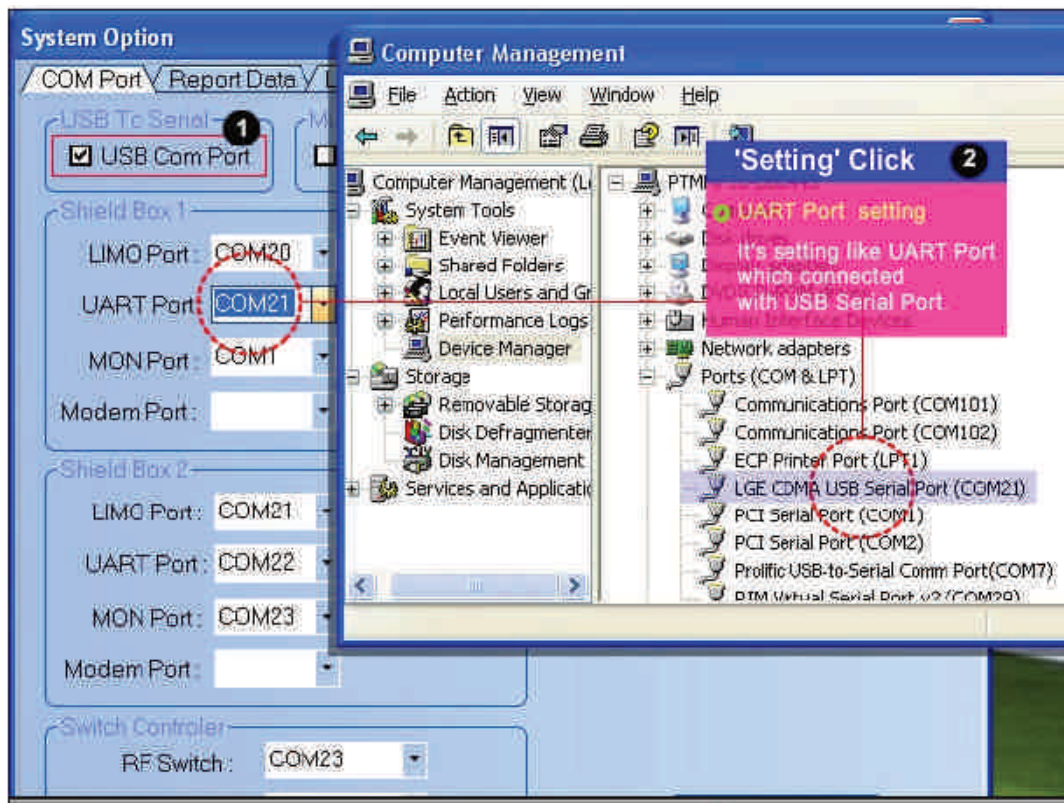
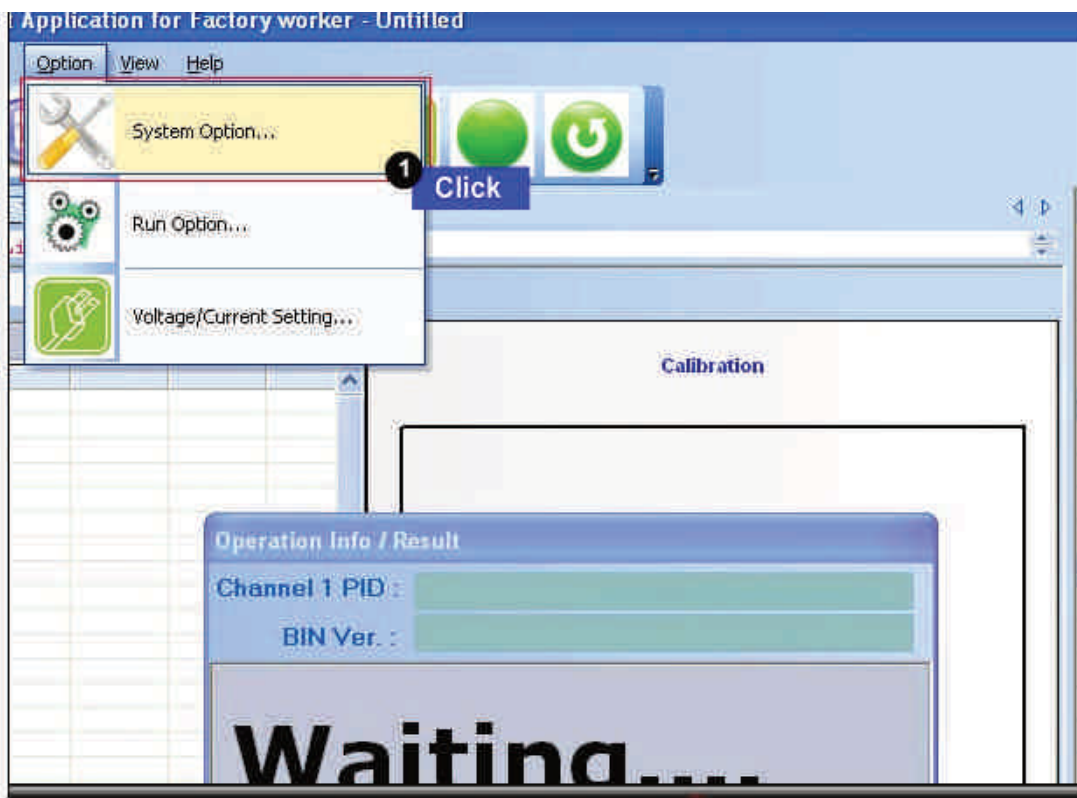


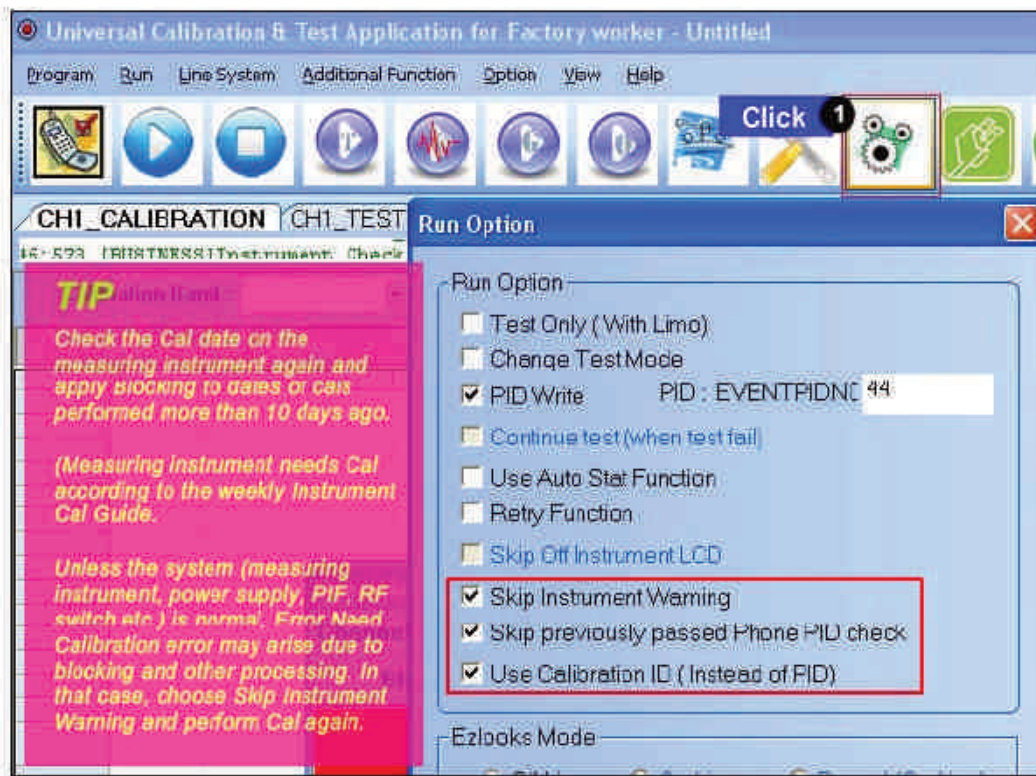
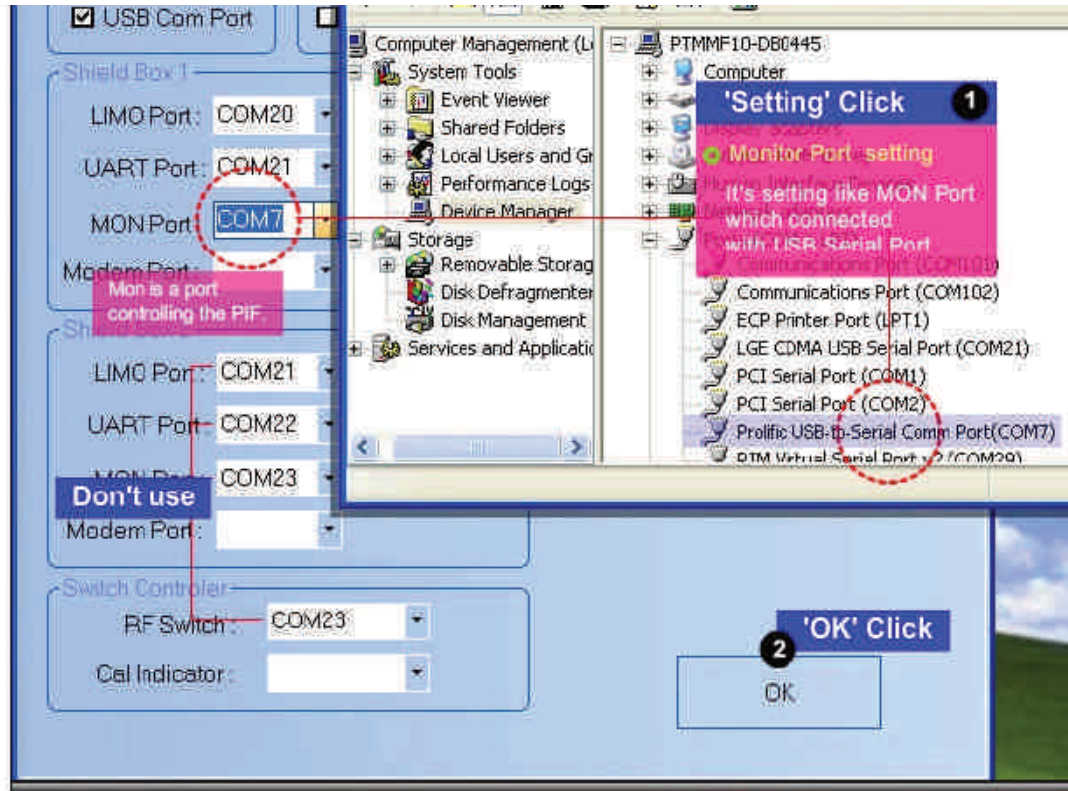


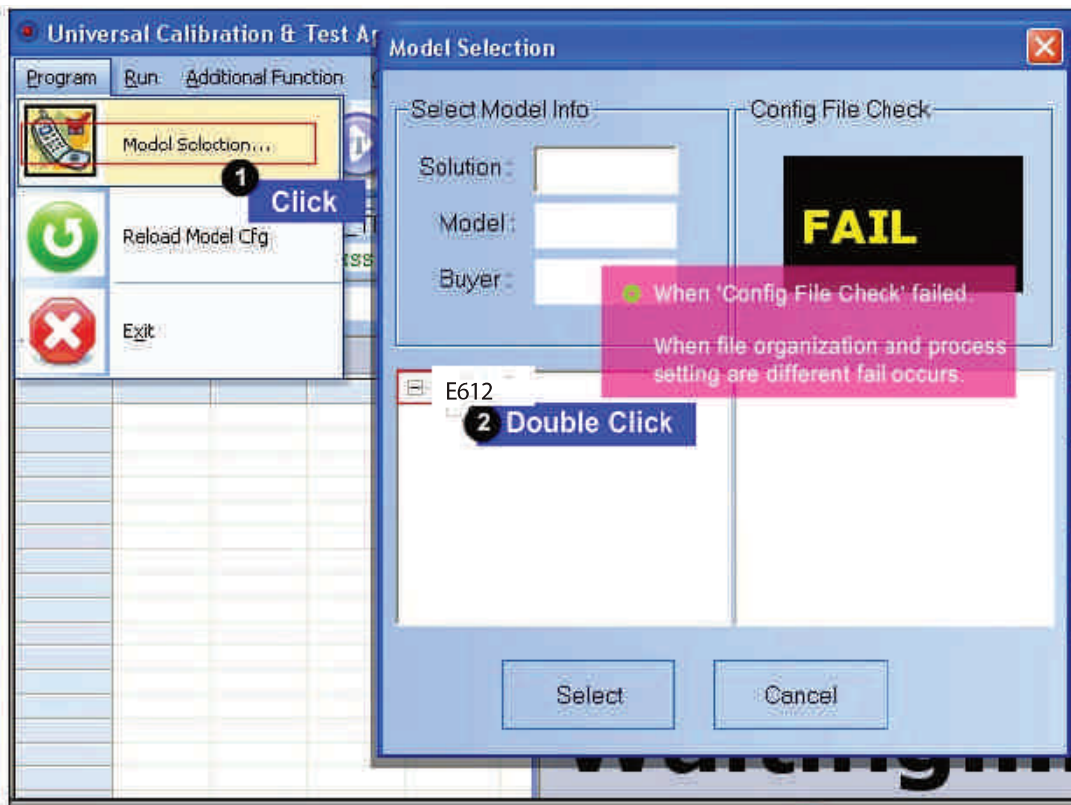
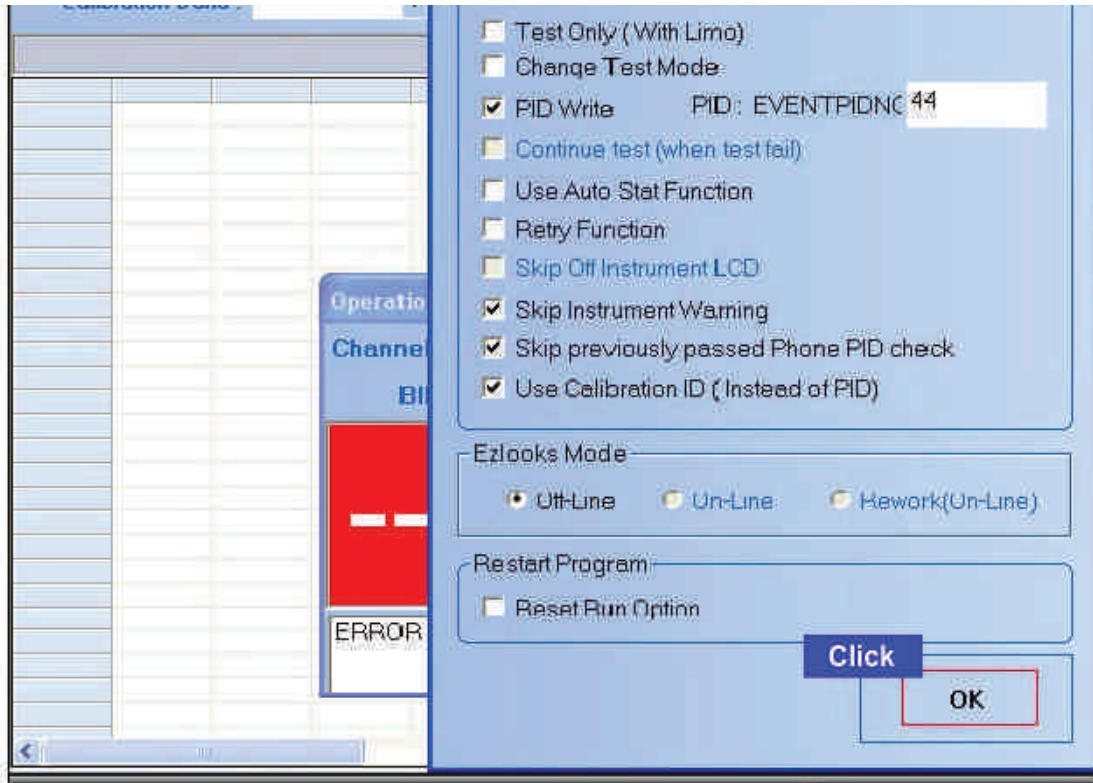


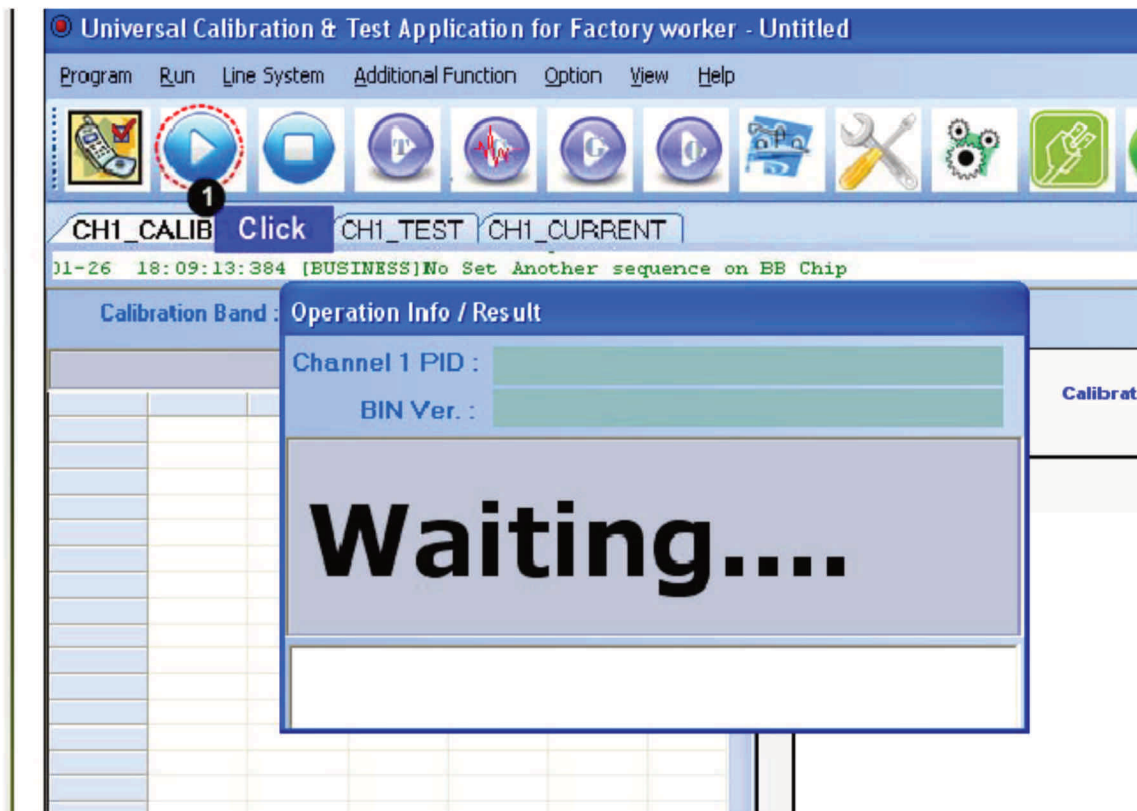
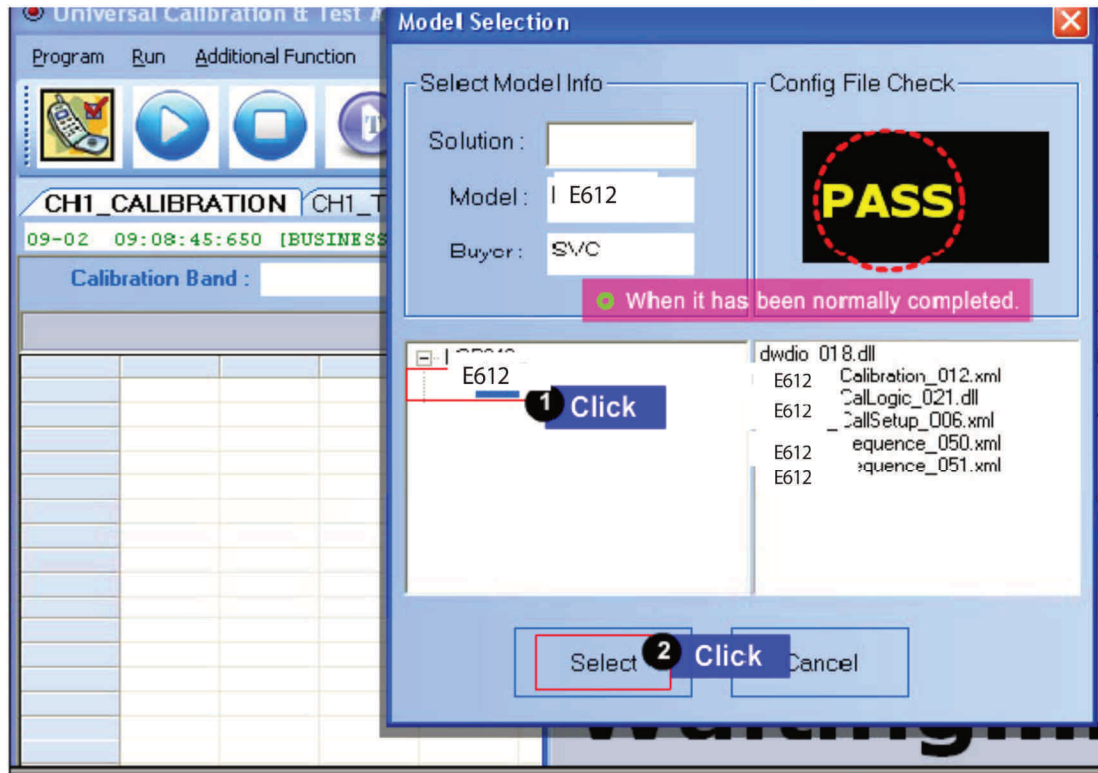
10. CALIBRATION

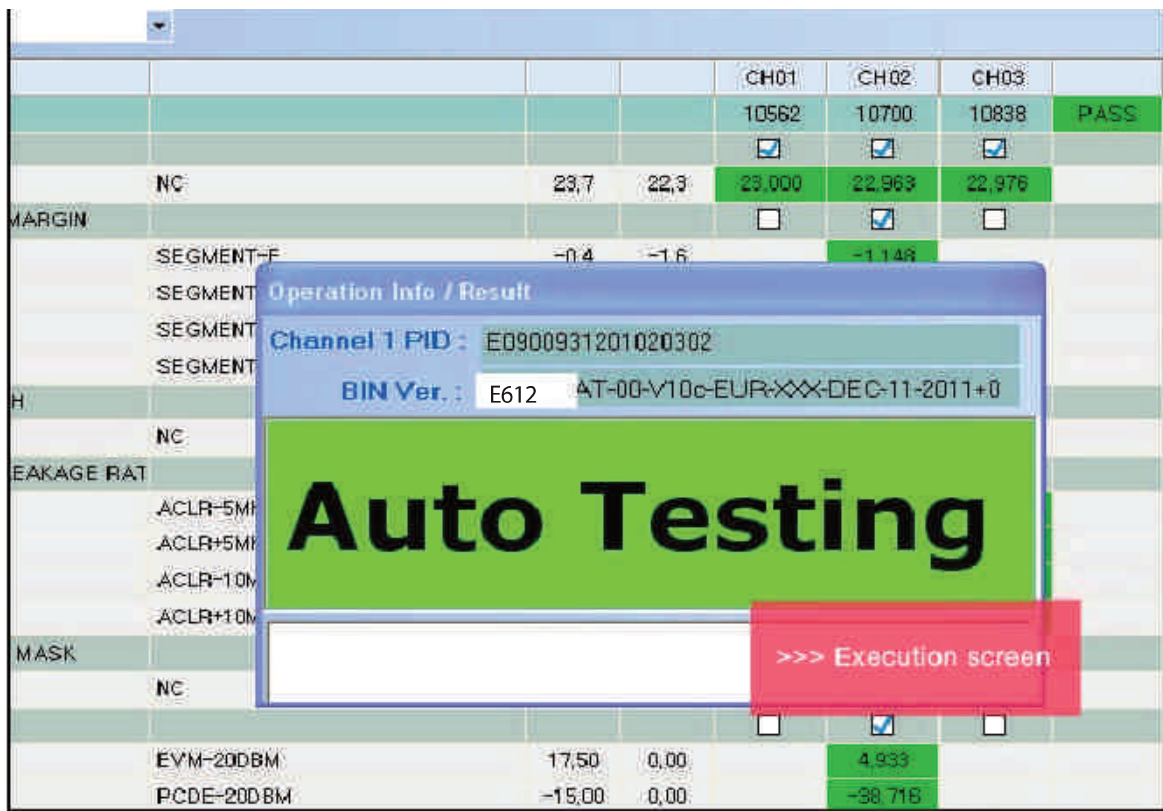
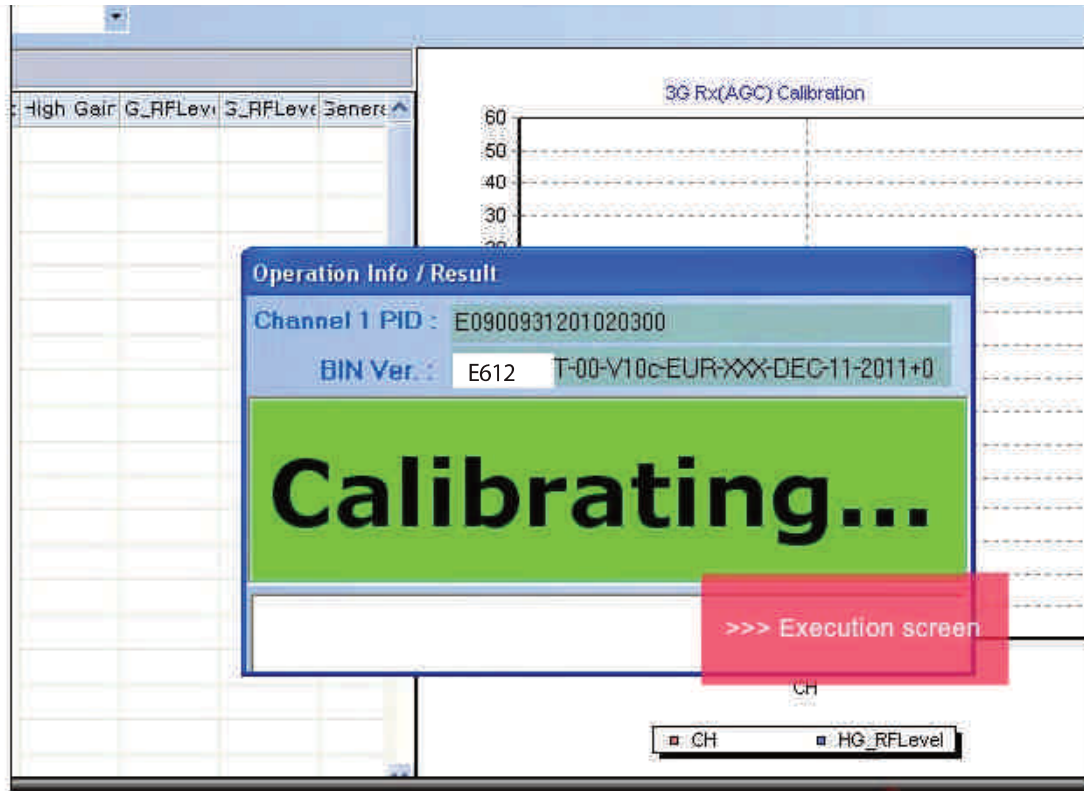












				10562	10700	10838	PASS
				☒	☒	☒	
MARGIN	NC	23.7	22.8	23.065	22.983	23.013	
				☐	☒	☐	
SEGMENT							
SEGMENT							
SEGMENT							
SEGMENT							
TH							
	NC						
LEAKAGE RAT							
	ACLR-5M						
	ACLR+5M						
	ACLR-10M						
	ACLR+10M						
N MASK							
	NC	0.5	-0.5				
Y							
	EVM-20DBM	17.50	0.00		4.720		
	PCDE-20DBM	-15.00	0.00		-38.441		
System Loss : MySystem(MS)gms - RF900 60.grf							

Operation Info / Result

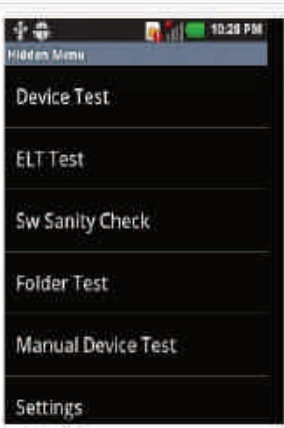
Channel 1 PID : F0900931201020299

BIN Ver.: E612 AT-00-V10c-EUR-XXX-DEC-11-2011+0

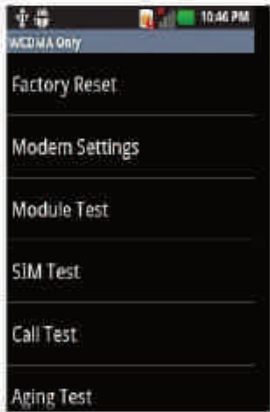
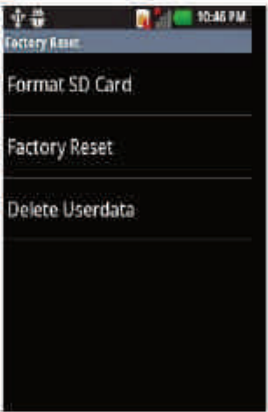
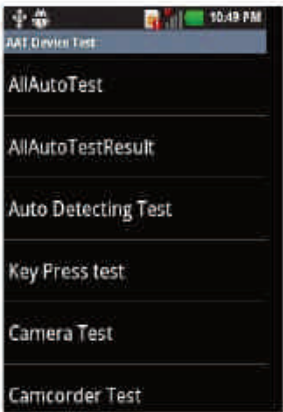
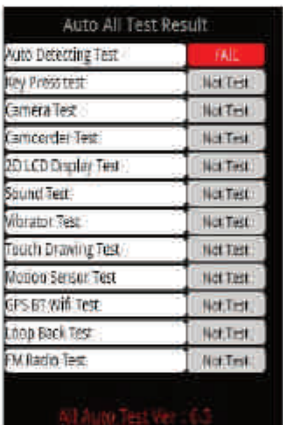
--- PASS ---

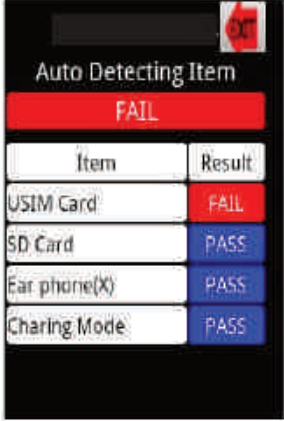
'PASS' The End

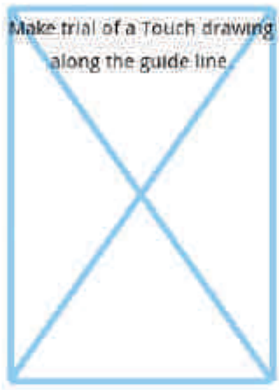
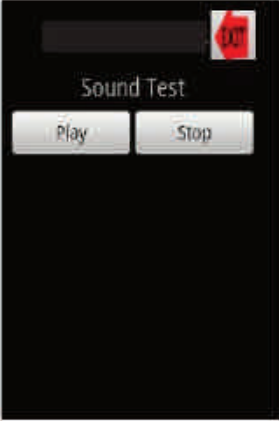
11. HIDDEN MENU

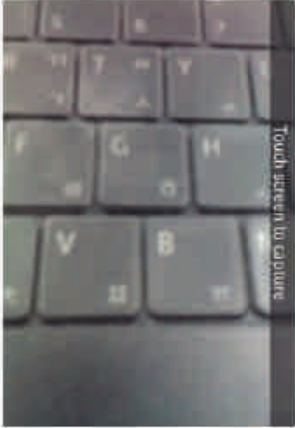
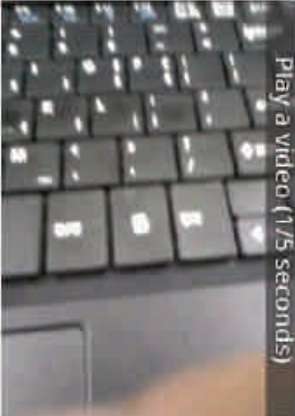
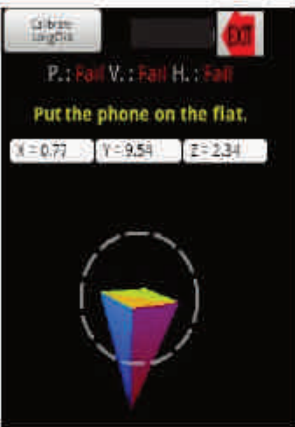
	Hidden Menu Start Start shortcut keys: 3845#*612#
	Hidden Menu Start the desired menu: Menu, click
	Version Info Classified Information representation -> Hidden Menu -> Settings -> Version Info

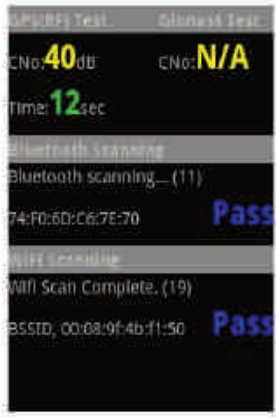
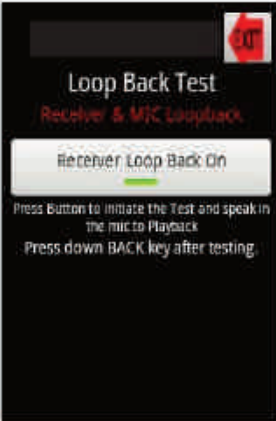
11. HIDDEN MENU

 A screenshot of a mobile phone screen showing a menu titled "WCDMA Only". The menu items are: Factory Reset, Modem Settings, Module Test, SIM Test, Call Test, and Aging Test.	 A screenshot of a mobile phone screen showing a menu titled "Factory Reset". The menu items are: Format SD Card, Factory Reset, and Delete Userdata.	Factory Reset Format SD Card : SD Card Data reset Factory Reset : Reset as default Factory Settings Delete Userdata : Disabled -> Hidden menu -> WCDMA-Only -> Factory Reset
 A screenshot of a mobile phone screen showing a menu titled "AAT Device Test". The menu items are: AllAutoTest, AllAutoTestResult, Auto Detecting Test, Key Press test, Camera Test, and Camcorder Test.	AAT Device Test Allauto Test : -> You can test all functions automatically	
 A screenshot of a mobile phone screen showing the "Auto All Test Result" screen. It displays a list of tests and their results: Auto Detecting Test (FAIL), Key Press test (Not Test), Camera Test (Not Test), Camcorder Test (Not Test), 2D LCD Display Test (Not Test), Sound Test (Not Test), Vibration Test (Not Test), Touch Drawing Test (Not Test), Motion Sensor Test (Not Test), GPS BT/WiFi Test (Not Test), Loop Back Test (Not Test), and FM Radio Test (Not Test). The version "AAT Auto Test Ver : 0.3" is shown at the bottom.	Auto All Test Result -> You can check Test Results	

	Auto Detecting Item Check below Items USIM Card : connecting is PASS -> SD Card : connecting is PASS -> Ear Phone : No connecting is PASS -> Charing Mode : connecting is PASS
	2D LCD Display Test Check Black & White Color
	Key Press Test Check below Items Up/Down key : Hard Key Power key : Hard Key Menu key : Touch Key Home key : Hard Key Back key : Touch Key Compass Sensor : Check North Proximity Sensor : Bilnd the Proximity sensor

 The image shows a square frame with a blue 'X' inside. Above the frame, the text reads: "Make trial of a Touch drawing along the guide line."	Touch Drawing Test Draw a guide line
 The image shows a black screen with a red 'X' icon in the top right corner. The title "Sound Test" is centered. Below the title are two buttons: "Play" and "Stop".	Sound Test Touch the "Play" icon
 The image shows a black screen with a red 'X' icon in the top right corner. The title "Vibrator Test" is centered. Below the title are two buttons: "Vibrator On" and "Vibrator Off". Under these are four buttons for duration: "5000 ms", "7000 ms", "9000 ms", and "10000 ms". Below these are two more buttons: "15000 ms" and "20000 ms". At the bottom, the text "2Sec(On) - 1Sec(Off) Test" is displayed above two buttons: "Start" and "Stop".	Vibrator Test Touch the "Start" icon

	Camera Test – Snapshot Touch screen to capture
	Camera Test - Camcoding Camera is recoding for 5 seconds
	Motion Sensor Test Check 3 positions -> Position horizontally -> Position Vertically -> Position side

	GPS BT Wifi Test GPS(RF) test : CNO is some value : OK Bluetooth Scanning is PASS : OK WiFi Scanning is PASS : OK
	Sound Loopback Test "Look Back On" is test mode on "Look Back OFF" is test mode off
	FM Radio Test 87.5 Mhz is scanned automatically -> Connect ear-jack -> Touch "FM Radio Off" icon

12. EXPLODED VIEW & REPLACEMENT PART LIST

This document is draft version, so the contents will be updated after registering the final one.