

LG-A120

Service Manual



LG Electronics

Table Of Contents

1. INTRODUCTION.....	3	4.14 Torch LED Trouble.....	75
1.1 Purpose.....	3	4.15 FM Radio Trouble.....	77
1.2 Regulatory Information.....	3	4.16 No Connection Trouble.....	80
2. PERFORMANCE.....	5	4.17 RX Trouble.....	83
2.1 H/W Features.....	5	4.18 DCXO Trouble.....	86
2.2 S/W Features.....	6	4.19 SAW Filter Trouble.....	87
3. TECHNICAL BRIEF.....	14	4.20 TX Trouble.....	88
3.1 Digital Main Processor(MT6223).....	14	4.21 Transceiver trouble.....	90
3.2 Power Amplifier Module(SKY77542).....	22	4.22 PAM Trouble.....	91
3.3 Transceiver Module(AD6548).....	23	4.23 Mobile Switch Trouble.....	96
3.4 Memory Module (K5L6443ABM-AD11).....	26	5. DOWNLOAD.....	98
3.5 FM Radio Module (AR1200/1210).....	30	5.1 Download setup.....	98
3.6 LCD Interface.....	32	5.2 Download Process.....	99
3.7 SIM Card Interface.....	34	6. BLOCK DIAGRAM.....	107
3.8 KEYPAD Interface.....	35	7. CIRCUIT DIAGRAM.....	108
3.9 Battery Charging Block Interface.....	36	8. BGA IC PIN Check.....	114
3.10 Audio Interface.....	37	9. PCB LAYOUT.....	116
3.11 Vibrator Interface.....	38	10. ENGINEERING MODE.....	118
3.12 Key LED Interface.....	39	11. CALIBRATION.....	122
4. TROUBLE SHOOTING.....	40	11.1 Test Equipment Setup.....	122
4.1 Power On Trouble.....	40	11.2 Calibration Steps.....	123
4.2 SIM Card Trouble.....	43	12. STAND ALONE TEST.....	162
4.3 Vibrator Trouble.....	45	12.1 Test Configuration.....	162
4.4 Keypad Trouble.....	47	12.2 META tool Install process.....	163
4.5 RTC Trouble.....	50	12.3 Rx Test.....	166
4.6 Key Backlight Trouble.....	52	12.4 Tx Test.....	172
4.7 LCM Backlight Trouble.....	55	13. #EV#.....	178
4.8 LCM Trouble.....	58		
4.9 Microphone Trouble.....	61		
4.10 Receiver Trouble.....	64		
4.11 Speaker Trouble.....	66		
4.12 Headphone Trouble.....	69		
4.13 Charging Trouble.....	73		

1. INTRODUCTION

1.1 Purpose

This manual provides information necessary to repair, 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 dose not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunications service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

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

C. Changes in Service

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

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual.

Therefore, note that authorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

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

F. Pictures


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

G. Interference and Attenuation

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

H. Electrostatic Sensitive Devices

ATTENTION

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

Following information is ESD handing:

- . 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 packages as described.

2. PERFORMANCE

2.1 H/W Features

Solution	6223D	MTK
Type	Bar type	
Antenna Type	Internal (dual-Band)	
Main Display	1.77" 128 x 160 , TFT/65k	
Battery	950mAh Li-ion inner pack	950mAh: 55x34x5.7mm
Music player	Yes	Only for FM (AMR/WAV file)
FM Receiver	Yes , US/Europe band support	(87.5~108MHz)
Embedded FM antenna	Yes	Tension contact FPC type FM Antenna on Battery cover.
Real time FM recording	Yes	
Loud Speaker	Yes	x 2 , Φ 16 speaker
Music player--real resuming	Yes	
Memory Size	64Mb+32Mb	User memory: 729KB
LMT (Lost Mobile Tracker)	Yes	LMT for: AMA M-DOG: China
Torch LED	Y	
In flight mode	Yes	

2.2 S/W Features

Feature	Detail Item	Description	
OS	OS	Operating System	Y
Audio	Speech Code	FR,EFR,HR,AMR-NB	Y
	AMR code	GSM Full Rate 3GPP Adaptive Multi Rate (AMR-NB)	Y
	FM Radio		Y
	MP3 Ring Tone	MP3 decode	Y
	Integrated hands free speaker	Speaker phone mode	Y
	Key Tone Volume	6 Level (Include Mute)	Y
	Ring Tone Volume	6 Level (Include Mute)	Y
	Ring Tone	MP3 ring tone/Midi	Y
	Call Alert type	Ring, Vibrate, Ring & Vibrate, Ring after vibrate, Silent	Y
	Earpiece Volume	6 Level (Include Mute)	Y
	Mute		Y
Frequency Bands	GSM dual band MS 900-1800	Configuration is during software compile time.	Y
	PCS dual band MS 850-1900		N
Date Service	Circuit		N
	Packet		N
Connectivity	Infrared (IrDA)		N
	Bluetooth		N
	USB		N
	USB Mass storage		N
	RS232(UART)	Only for manufacture tool	Y

Voice Function	Voice Recording		Y
	Voice Command		N
	Answering machine		N
Camera	Capture Size	160x120, 320x240, 640x480	N
	Preview Size	Full Screen: 128x128	N
	Quality	Low, Normal, High	N
	EV	+4, +3, +2, +1, 0, -1, -2, -3, -4	N
	WB	Auto, Daylight, Tungsten, FLUORESCENT, Cloud, INCANDESCENCE	N
	Zoom	640x480 : 1x 320x240 : 1x, 2x 160x120/128x128 : 1x, 2x, 4x	N
	Effect	Normal, Sepia, Grayscale, Color invert	N
	Continuous Shot	1 Shot, 3 shot, 6 shot	N
	Self Timer	3 seconds, 5 seconds, 10 seconds	N
	Shutter tone	Off, tone1, tone2, tone3	N
	Storage	Phone/SD card	N
	Reset Setting	Restore to default setting	N
Image Viewer	Browse detail image Info		N
	Full Screen View		N
File Manager (Sound folder)	Browse file tree		Y
	Copy, Rename, Delete, Move files		Y
	Rename, Delete, Multi-Delete, Create folder		Y
Display	RSSI	6 level (0~5 level)	Y

	Battery level	4 level (0~3 level)	Y
	RTC	Date & Time Display	Y
	PLMN/Service Indicator		Y
	Quick Access Mode In Idle		Y
	Dimming Clock		N
	Dual Clock		N
	Home shortcut	Display Shortcut icon in Idle(Quick Access)	Y
Call History	Last Dial Number	Max : 40 records	Y
	Last Received Number	Max : 40 records	Y
	Last Missed Number	Max : 40 records	Y
	Scratch Pad Memory		N
	Call Duration	Last Call time, Total Call Time	Y
Call Cost	Last Call Charge Units		Y
	Total Charge Units		Y
Call Management	Call Waiting		Y
	Call Swap		Y
	Call Retrieve		Y
	Auto Answer		N
	Auto Redial		Y
	Calling Line		N
	Full Call Divert		Y
	Speed Dialing		Y
	Last Number Redial		Y

	Multi Party Call		Y
	ECT	Explicit Call Transfer	Y
Network	Automatic Network Selection		Y
	Manual Network		Y
	Preferred Network	(User definition)	Y
	Network Service Status		Y
DTMF	DTMF Signaling		Y
	DTMF Enable & Disable		Y
Cell Broadcast	Read Cell Broadcast		Y
	On/Off setting	Receive On/Off	Y
	Alert setting		N
	CB message Language setting		Y
	Channel Setting		Y
Contacts(Phone Book)	Entry	1000	Y
	Field	Name, Mobile, Home, Office	Y
	Copy	ME <-> SIM	Y
	Move	ME <-> SIM	Y
	FDN		Y
	SDN		Y
	Email Entry		N
	Picture ID		N
	Video Caller ID		N
vCard		N	

	Business Card		N
	Delete	Delete, Delete All(SIM or Phone), Multi Delete	Y
Supplementary Services	CFU	Call Forwarding Unconditional	Y
	CFB	Call Forwarding on Mobile Subscriber Busy	Y
	CFNRy	Call Forwarding on No Reply	Y
	CFNRc	Call Forwarding on Mobile Subscriber Not Reachable	Y
	BAOC	Barring of All Outgoing Calls	Y
	BOIC	Barring of Outgoing International Calls	Y
	BOICexHC	Barring of Outgoing International Calls except those directed to the Home PLMN Country	Y
	BAIC	Barring of All Incoming Calls	Y
	BICRoam	Barring of Incoming Calls when Roaming Outside the/Home PLMN Country	Y
	Conference Call	Up to 5	Y
SIM	Plug in Type	3V & 1.8 V	Y
	SIM Lock	Service Provider / Network Lock	N
	SIM Toolkit	Class 3	Y
Short Message	Read Message		Y
	Write and Edit Message		Y
	Send and Receive Message		Y
	Reply to Message		Y
	Forward Message		Y
	Extract Number from Message		Y

	Message Status		Y
	Message Unread		Y
	Settable Message Center Number, Reply Path and Validity		Y
	Visible and Audible Message Receive		Y
	Voice Mail		Y
	Settable Voice Mail Center Number		Y
	Message Protocol	Normal,	Y
	Message Overflow Indicator	Blinking Icon	Y
	Message Center Number		Y
	Nokia Smart Message		N
Miscellaneous Function	Development & Test Facility		Y
	Field Test Facility		Y
	Display Software Version		Y
	IMEI		Y
	Restore Factory Setting		Y

	Battery Charging Mode		Y
Text Input	Language	Selectable Auto Language	Y
	Predictive word input	T9	Y
Scheduler	Calendar	MAX: 100 records (35 chars)	Y
	To Do	MAX: 50 records (35 chars)	Y
	Memo	MAX: 10 records (80 chars)	N
World Time	Setting Local Time		Y
	Display Two Number of Cities Time	Dual Clock	N
	Daylight saving		Y
	NITZ		Y
Unit converter		Length, Weight,	Y
Stop Watch			N
Calculator		+ - * /	Y
PC Sync	Phone Book Sync	Only For manufacture	N
	Message Sync		N
Game		2 C game	Y
Security	Emergency Call		Y
	Handset Lock		Y
	Security Code	When Delete All	N
	PIN Lock		Y
	Keypad Lock		Y
Real Time Clock	12/24 Hour		Y
	Calendar		Y
	Time Zone		Y
	Daylight saving		N

	Alarm Manager	Once, Daily, Mon~Fri, hourly	Y
	Dimming Clock		N
	Power-off Alarm		Y
	On Alarm Event	Display & Ring	Y
Others	Mobile Tracking software	For India, Asia	Y
	M-DOG	For China	Y
Accessory	Charger Adapter		Y
	Normal earmic (without hook switch)		Y
User Memory		729 KB	Y

3. TECHNICAL BRIEF

3.1 Digital Main Processor

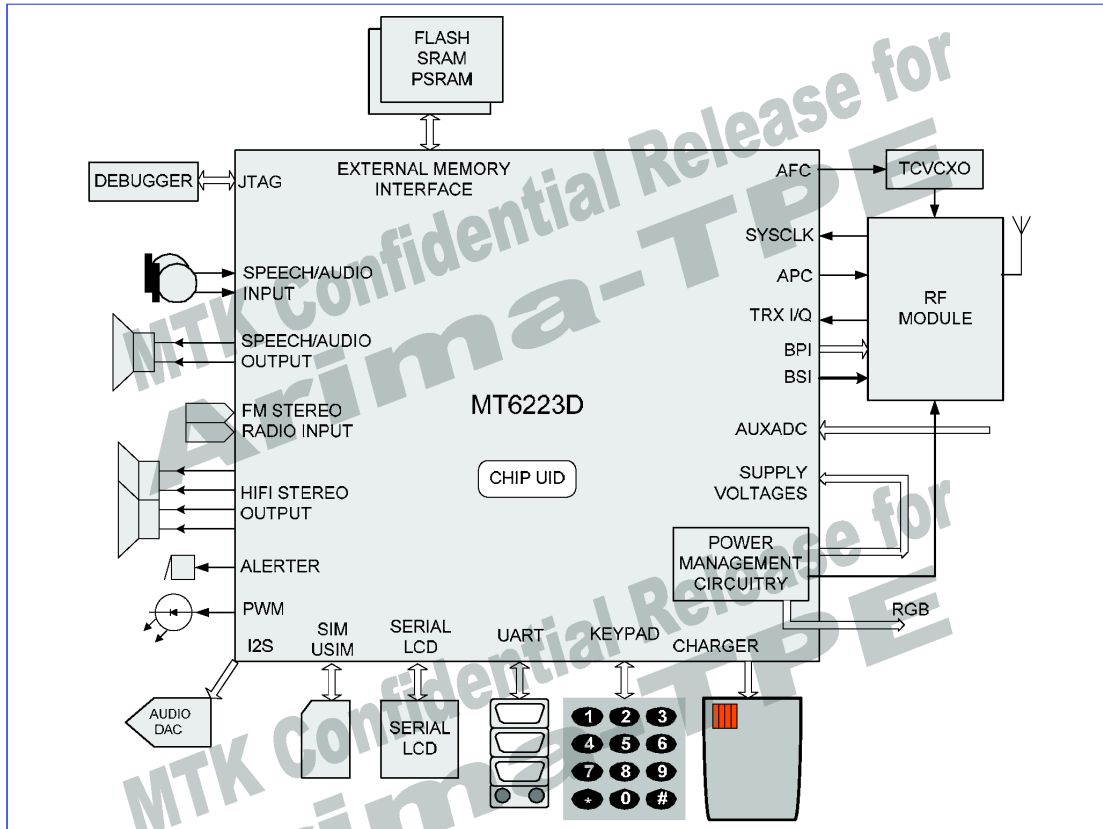


Figure.3-1-1 MT6223 FUNCTIONAL BLOCK DIAGRAM

3.1.1 System Overview

MT6223D is an entry level chipset solution with class 12 GPRS/GSM modem. It integrates not only analog baseband but also power management blocks into one chip and can greatly reduce the component count and make smaller PCB size. Besides, MT6223D is capable of SAIC (Single Antenna Interference Cancellation) and AMR speech.

Based on 32 bit ARM7EJ-STM RISC processor, MT6223D provides an unprecedented platform for high quality Modem performance.

Platform

MT6223D runs the ARM7EJ-STM RISC processor at up to 52Mhz, thus providing best trade-off between system performance and power consumption.

For large amount of data transfer, high performance DMA (Direct Memory Access) with hardware flow control is implemented, which greatly enhances the data movement speed while reducing MCU processing load.

Targeted as a modem-centric platform for mobile applications, MT6223D also provides hardware security digital rights management for copyright protection. For further safeguarding, and to protect manufacturer's development investment, hardware flash content protection is also provided to prevent unauthorized porting of software load.

Memory

MT6223D supports up to 2 external state-of-the-art devices through its 16-bit host interface. Devices such as burst/page mode Flash, page mode SRAM, and Pseudo SRAM are supported. To minimize power consumption and ensure low noise, this interface is designed for flexible I/O voltage and allows lowering of supply voltage down to 1.8V. The driving strength is configurable for signal integrity adjustment. The data bus also employs retention technology to prevent the bus from floating during turn over.

Multi-media

MT6223D utilize high resolution audio DAC, digital audio, and audio synthesis technology to provide superior audio features., e.g. MP3 ring tone.

Connectivity, and Storage

MT6223D supports UART as well as Bluetooth interface. Also, necessary peripheral blocks are embedded for a voice centric phone: Keypad Scanner with the capability to detect multiple key presses, SIM Controller, Alerter, Real Time Clock, PWM, Serial LCD Controller, and General Purpose Programmable I/Os.

Audio

Using a highly integrated mixed-signal Audio Front-End, architecture of MT6223D allows for easy audio interfacing with direct connection to the audio transducers. The audio interface integrates D/A and A/D Converters for Voice band, as well as high resolution Stereo D/A Converters for Audio band. In addition, MT6223D also provides Stereo Input and Analog Mux. MT6223D also supports AMR codec to adaptively optimize speech and audio quality.

Radio

MT6223D integrates a mixed-signal Baseband front-end in order to provide a well-organized radio interface with flexibility for efficient customization. It contains gain and offset calibration mechanisms, and filters with programmable coefficients for comprehensive compatibility control on RF modules. This approach also allows the usage of a high resolution D/A Converter for controlling VCXO or crystal, thus reducing the need for expensive TCVCXO. MT6223D achieve great MODEM performance by utilizing 14-bit high resolution A/D Converter in the RF downlink path. Furthermore, to reduce the need for extra external current-driving component, the driving strength of some BPI outputs is designed to be configurable.

Debug Function

The JTAG interface enables in-circuit debugging of software program with the ARM7EJ-S core. With this standardized debugging interface, MT6223D provides developers with a wide set of options in choosing ARM development kits from different third party vendors. Low Power Features MT6223D offers various low-power features to help reduce system power consumption. These features include Pause Mode of 32KHz clocking at Standby State, Power Down Mode for individual peripherals, and Processor Sleep Mode. In addition, MT6223D are also fabricated in advanced low leakage CMOS process, hence providing an overall ultra low leakage solution.

Power Management

MT6223D integrates all regulators that a voice-centric phone needs. Seven LDOs optimized for Specific GSM/GPRS baseband sub-systems are included, and a RF transceiver needed LDO is also built-in. Besides Li-Ion battery charge function, SIM card level shifter interface, two open-drain output switches to control the LED and vibrator are equipped. Other power management schemes such as thermal overload protection, Under Voltage Lock-out Protection (UVLO), over voltage protection and power-on reset and start-up timer are also MT6223D features. Besides, 3 NMOS switches controlling the RGB LEDs are also embedded to reduce BOM count.

Package

The MT6223D device is offered in 9mm×9mm, 224-ball, 0.5 mm pitch, TFBGA package.

3.1.2 Platform Feature

General

- Integrated voice-band, audio-band and base-band analog front ends
- TFBGA 9mm×9mm, 224-ball, 0.5 mm pitch package

MCU Subsystem

- ARM7EJ-S 32-bit RISC processor
- High performance multi-layer AMBA bus
- Java hardware acceleration for fast Java-based games and applets
- Operating frequency: 26/52 MHz

- Dedicated DMA bus
- 7 DMA channels
- 320K bits on-chip SRAM
- On-chip boot ROM for Factory Flash Programming
- Watchdog timer for system crash recovery
- 3 sets of General Purpose Timer
- Circuit Switch Data coprocessor
- Division coprocessor

External Memory Interface

- Supports up to 2 external devices
- Supports 16-bit memory components with maximum size of up to 128M Bytes each
- Supports Flash and SRAM/PSRAM with Page Mode or Burst Mode
- Industry standard serial LCD Interface
- Supports multi-media companion chips with 8/16 bits data width
- Flexible I/O voltage of 1.8V ~ 2.8V for memory interface
- Configurable driving strength for memory interface

User Interfaces

- 5-row × 7-column keypad controller with hardware scanner
- Supports multiple key presses for gaming
- SIM/USIM Controller with hardware T=0/T=1 protocol control
- Real Time Clock (RTC) operating with a separate power supply
- General Purpose I/Os (GPIOs)
- 2 Sets of Pulse Width Modulation (PWM) Output
- Alert Output with Enhanced PWM or PDM
- 6 external interrupt lines

Security

- Supports security key and 59 bit chip unique ID

Connectivity

- 3 UARTs with hardware flow control and speed up to 921600 bps
- DAI/PCM and I2S interface for Audio application

Low Power Schemes

- Power Down Mode for analog and digital circuits
- Processor Sleep Mode
- Pause Mode of 32KHz clocking at Standby State
- 3-channel Auxiliary 10-bit A/D Converter for application usage other than battery monitoring

Power and Supply Management

- 2.8V to 5.5V Input Range
- Charger Input up to 8V
- Seven LDOs Optimized for Specific GSM

Sub-systems

One LDO for RF transceiver

High Operation Efficiency and Low Stand-by Current

Li-Ion Battery Charge function

SIM Card Interface

Two Open-Drain Output Switches to Control the LED and Vibrator

Three NMOS switches to control RGB LEDs

Thermal Overload Protection

Under Voltage Lock-out Protection

Over Voltage Protection

Power-on Reset and Start-up Timer

Test and Debug

Built-in digital and analog loop back modes for both Audio and Baseband Front-End

DAI port complying with GSM Rec.11.10

JTAG port for debugging embedded MCU

3.1.3 MODEM Features

Radio Interface and Baseband Front End

GMSK modulator with analog I and Q channel outputs

10-bit D/A Converter for uplink baseband I and Q signals

14-bit high resolution A/D Converter for downlink baseband I and Q signals

Calibration mechanism of offset and gain mismatch for baseband A/D Converter and D/A Converter

10-bit D/A Converter for Automatic Power Control

13-bit high resolution D/A Converter for Automatic Frequency Control

Programmable Radio RX filter with adaptive bandwidth control

Dedicated Rx filter for FB acquisition

2 Channels Baseband Serial Interface (BSI) with 3-wire control

Bi-directional BSI interface. RF chip register read access with 3-wire or 4-wire interface.

10-Pin Baseband Parallel Interface (BPI) with programmable driving strength

Multi-band support

Voice and Modem CODEC

Dial tone generation

Voice Memo

Noise Reduction

Echo Suppression

Advanced Sidetone Oscillation Reduction

Digital sidetone generator with programmable gain

- Two programmable acoustic compensation filters
- GSM/GPRS quad vocoders for adaptive multirate (AMR), enhanced full rate (EFR), full rate (FR) and half rate (HR)
- GSM channel coding, equalization and A5/1, A5/2 and A5/3 ciphering
- GPRS GEA1, GEA2 and GEA3 ciphering
- Programmable GSM/GPRS Modem
- GSM Circuit Switch Data
- GPRS Class 12

Voice Interface and Voice Front End

- Two microphone inputs sharing one low noise amplifier with programmable gain and automatic gain control (AGC) mechanism
- Voice power amplifier with programmable gain
- 2nd order Sigma-Delta A/D Converter for voice uplink path
- D/A Converter for voice downlink path
- Supports half-duplex hands-free operation
- Compliant with GSM 03.50

3.1.4 Multi-Media Features

LCD Interface

- Dedicated Serial Interface supports 1 external Serial interface for LCM

LCD Controller

- Supports LCM format: RGB332, RGB444, RGB565, RGB666, RGB888
- Supports LCD module with maximum resolution up to 176x220 at 16bpp
- 2 layer blending
- Supports hardware display rotation for each layer

Audio CODEC

- Wavetable synthesis with up to 64 tones
- Advanced wavetable synthesizer capable of generating simulated stereo
- Wavetable including GM full set of 128 instruments and 47 sets of percussions
- PCM Playback and Record
- Digital Audio Playback

Audio Interface and Audio Front End

- Supports I2S interface
- High resolution D/A Converters for Stereo Audio playback
- Stereo analog input for stereo audio source
- Analog multiplexer for Stereo Audio
- FM Radio Recording
- Stereo to Mono Conversion

3.1.5 General Description

Figure3-1-2 details the block diagram of MT6223D. on a dual-processor architecture, MT6223D integrates both an ARM7EJ-S core and 2 digital signal processor cores. ARM7EJ-S is the main processor that is responsible for running 2G and 2.5G protocol software. Digital signal processors handle the MODEM algorithms as well as advanced audio functions.

Except for some mixed-signal circuitries, the other building blocks in MT6223D are connected to either the microcontroller or one of the digital signal processors.

Specifically, MT6223D consist of the following subsystems:

- ◆ Microcontroller Unit (MCU) Subsystem - includes an ARM7EJ-S RISC processor and its accompanying memory management and interrupt handling logics.
- ◆ Digital Signal Processor (DSP) Subsystem - includes 2 DSP cores and their accompanying memory, memory controller, and interrupt controller.
- ◆ MCU/DSP Interface - where the MCU and the DSPs exchange hardware and software information.
- ◆ Microcontroller Peripherals - includes all user interface modules and RF control interface modules.
- ◆ Microcontroller Coprocessors - runs computing-intensive processes in place of Microcontroller.
- ◆ DSP Peripherals - hardware accelerators for GSM/GPRS/EGDE channel codec.
- ◆ Voice Front End - the data path for converting analog speech from and to digital speech.
- ◆ Audio Front End - the data path for converting stereo audio from stereo audio source
- ◆ Baseband Front End - the data path for converting digital signal from and to analog signal of RF modules.
- ◆ Timing Generator - generates the control signals related to the TDMA frame timing.
- ◆ Power, Reset and Clock subsystem - manages the power, reset, and clock distribution inside MT6223D
- ◆ LDOs, Power-on sequences, swiches and SIM level shifters.

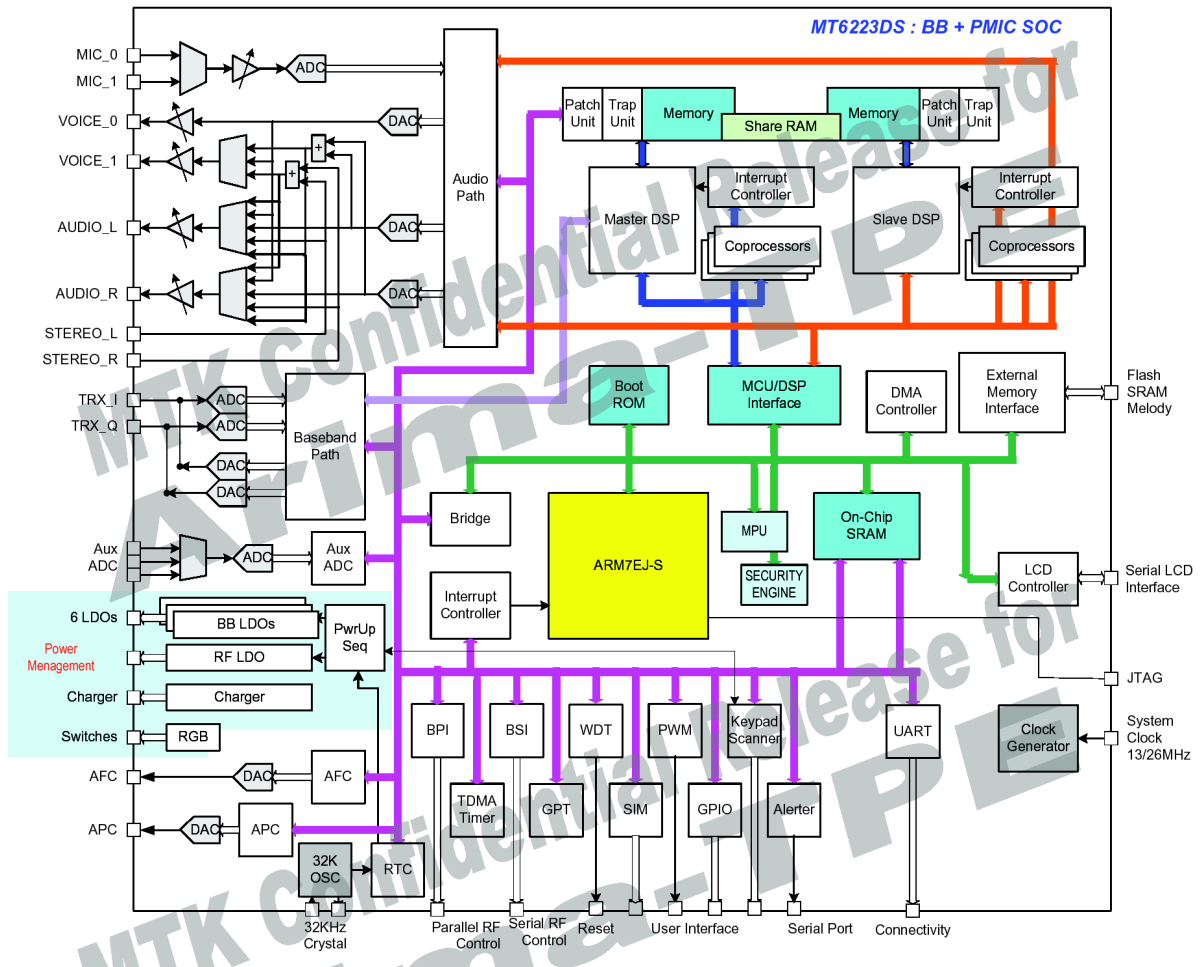


Figure.3-1-2 MT6223 BLOCK DIAGRAM

3.2 Power Amplifier Module (SKY77542)

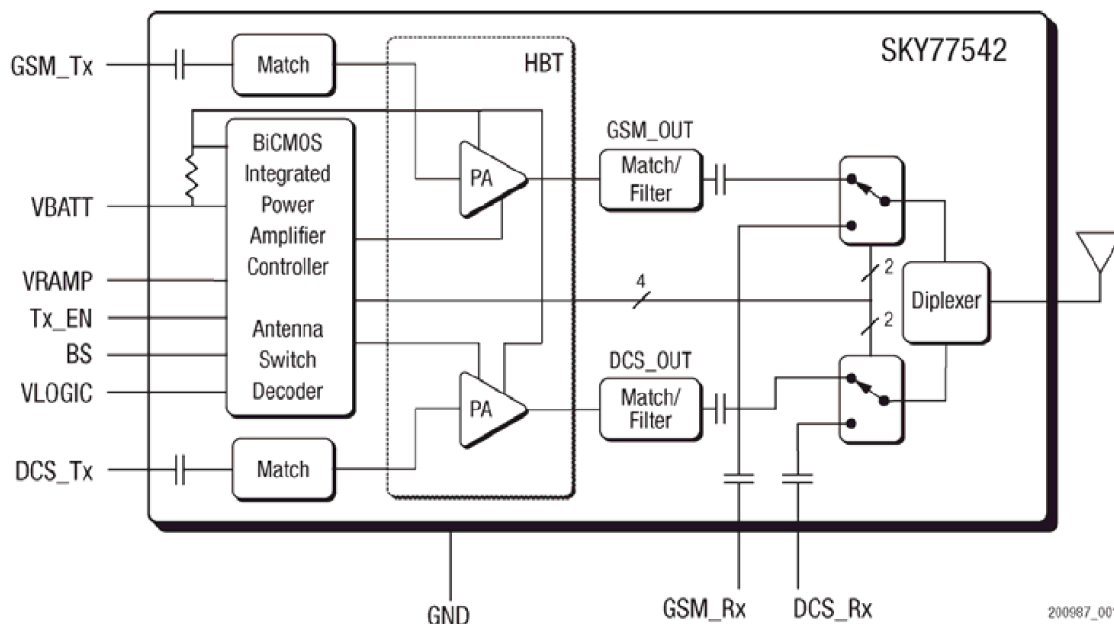


Figure.3-2-1 SKY77542 FUNCTIONAL BLOCK DIAGRAM

The SKY77542 is a transmit and receive front-end module (FEM) with Integrated Power Amplifier Control (iPAC.) for dual-band cellular handsets comprising GSM900 and DCS1800 operation. Designed in a low profile, compact form factor, the SKY77542 offers a complete Transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM900 PA block and a DCS1800 PA block, impedance-matching circuitry for 50 Ω input and output impedances, Tx harmonics filtering, high linearity and low insertion loss PHEMT RF switches, diplexer and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM900 band and the other PA block supports the DCS1800 band. Both PA blocks share common power supply pads to distribute current. The output of each PA block and the outputs to the two receive pads are connected to the antenna pad through PHEMT RF switches and a diplexer. The GaAs die, PHEMT die, Silicon (Si) die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Band selection and control of transmit and receive modes are performed using two external control pads. Refer to the functional block diagram in [Figure 3-2-1](#) below. The band select pad (BS) selects between GSM and DCS modes of operation. The transmit enable (Tx_EN) pad controls receive or transmit mode of the respective RF switch (Tx = logic 1). Proper timing between transmit enable (Tx_EN) and Analog Power Control (VRAMP) allows for high isolation between the antenna and Tx-VCO while the VCO is being tuned prior to the transmit burst.

The SKY77542 is compatible with logic levels from 1.2 V to VCC for BS and Tx_EN pads, depending on the level applied to the VLOGIC pad. This feature provides additional flexibility for the designer in the selection of FEM interface control logic.

3.3 Transceiver Module (AD6548)

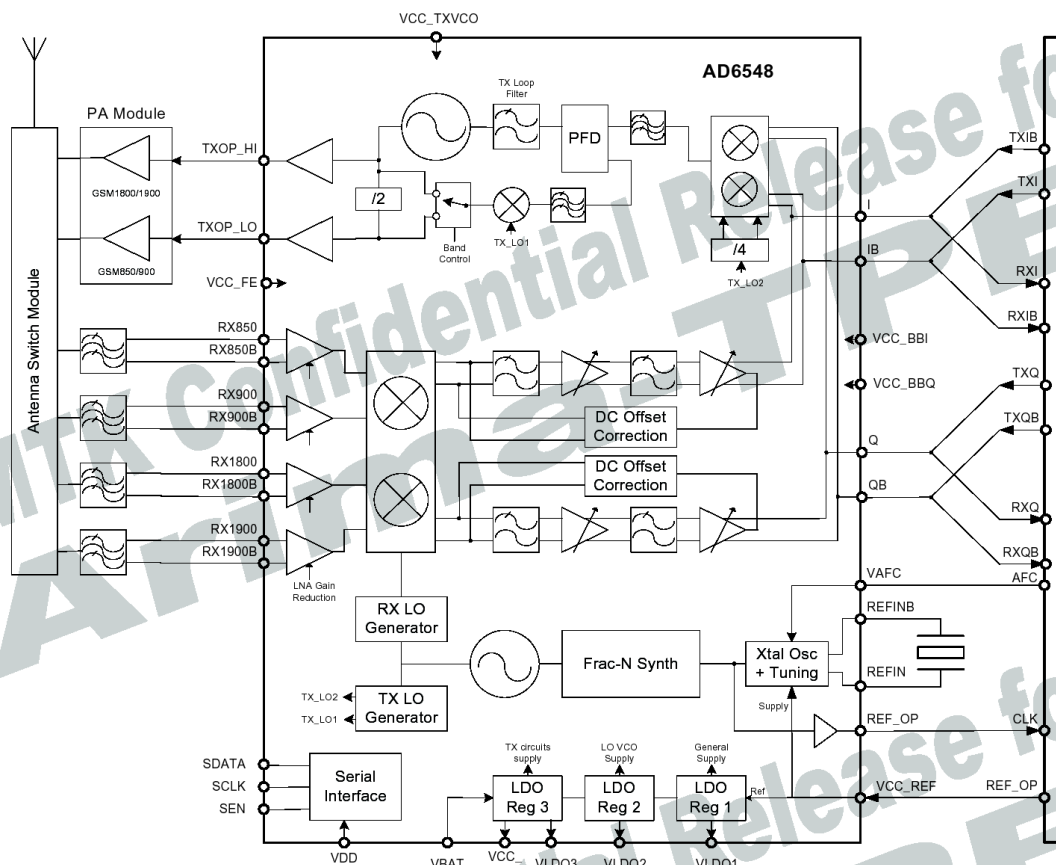


Figure.3-3-1 AD6548 FUNCTIONAL BLOCK DIAGRAM

3.3.1 General Descriptions

The AD6548/9 provides a highly integrated direct conversion radio solution that combines, on a single chip, all radio and power management functions necessary to build the most compact GSM radio solution possible. The only external components required for a complete radio design are the Rx SAWs, PA, Switchplexer and a few passives enabling an extremely small cost effective GSM Radio solution.

The AD6548/9 uses the industry proven direct conversion receiver architecture of the Othello™ family. For Quad band applications the front end features four fully integrated programmable gain differential LNAs. The RF is then downconverted by quadrature mixers and then fed to the baseband programmable-gain amplifiers and active filters for channel selection. The Receiver output pins can be directly connected to the baseband analog processor. The Receive path features automatic calibration and tracking to remove DC offsets.

The transmitter features a translation-loop architecture for directly modulating baseband signals onto the integrated TX VCO. The translation-loop modulator and TX VCO are extremely low noise removing the need for external SAW filters prior to the PA.

The AD6548/9 uses a single integrated LO VCO for both the receive and the transmit circuits. The synthesizer lock times are optimized for GPRS applications up to and including class 12. To dramatically reduce the BOM both TX Translational loop and main PLL Loop Filters are fully

integrated into the device.

AD6548 incorporates a complete reference crystal calibration system. This allows the external VCTCXO to be replaced with a low cost crystal. No other external components are required. The AD6549 uses the traditional VCTCXO reference source.

The AD6548/9 also contains on-chip low dropout voltage regulators (LDOs) to deliver regulated supply voltages to the functions on chip, with a battery input voltage of between 2.9V and 5.5V. Comprehensive power down options are included to minimize power consumption in normal use.

A standard 3 wire serial interface is used to program the IC. The interface features low-voltage digital interface buffers compatible with logic levels from 1.6V to 3.0V.

The AD6548/9 is packaged in a 5mm × 5mm , 32-lead LFCSP package.

ORDERING GUIDE	Model Temperature Range	Package
AD6548BCPZ	-20 °C to +85 °C	LFCSP-32
AD6549BCPZ	-20 °C to +85 °C	LFCSP-32

3.3.2 Features

Fully Integrated GSM Transceiver including

Direct Conversion Receiver

- 4 Differential LNAs
- Integrated Active RX Channel Select Filters
- Programmable Gain Baseband Amplifiers

Translation Loop Direct VCO Modulator

- Integrated TX VCO and tank
- External TX filters eliminated
- Integrated Loop filter components

High performance multi band PLL system

- Fast Fractional-N Synthesizer
- Integrated Local Oscillator VCO
- Fully Integrated Loop filters
- Crystal Reference Oscillator & Tuning System (AD6548)

Power Management

- Integrated LDOs allow direct battery supply connection

Small footprint

- 32-Lead 5 X 5 mm Chipscale Package

APPLICATIONS

- Dual, Triple and Quad Band Radios
- GSM850, E-GSM 900, DCS1800 and PCS1900
- GPRS to Class 12- EDGE RX

3.3.3 Pin Descriptions

No	Name	Description	No	Name	Description
1	VCC_FE	Front end supply (IP) ³	17	VCC_REF	Reference Oscillator Supply (IP)
2	I	I baseband input/output	18	VAFC	AD6548 Crystal Freq control (IP) AD6549: Connect to VCC_REF
3	IB	I baseband input/output	19	REFINB	Crystal / VCTCXO Connection
4	VCC_BBI	Baseband I, TX path supply (IP) ³	20	REFIN	Crystal Connection
5	SDATA	Serial port data	21	REF_OP	Reference Frequency Output
6	SCLK	Serial port clock	22	QB	Q baseband input/output
7	SEN	Serial port enable	23	Q	Q baseband input/output
8	N/C	Not connected	24	VCC_BBQ	Baseband Q supply (IP) ³
9	VLDO3	TX LDO Output ¹	25	RX1900B	PCS 1900 LNA input
10	TXOP_LO	Transmit O/P (850/900MHz)	26	RX1900	PCS 1900 LNA input
11	TXOP_HI	Transmit O/P (1800/1900MHz)	27	RX1800B	DCS 1800 LNA input
12	VCC_TXVCO	TX VCO supply (1)	28	RX1800	DCS 1800 LNA input
13	VDD	Serial interface supply	29	RX900B	E-GSM 900 LNA input
14	VBAT	Battery I/P for LDO reg's	30	RX900	E-GSM 900 LNA input
15	VLDO1	LDO regulator Output ²	31	RX850B	GSM 850 LNA input
16	VLDO2	LO VCO Supply ¹	32	RX850	GSM 850 LNA input

3.4 Memory Module (K5L6443ABM-AD11)

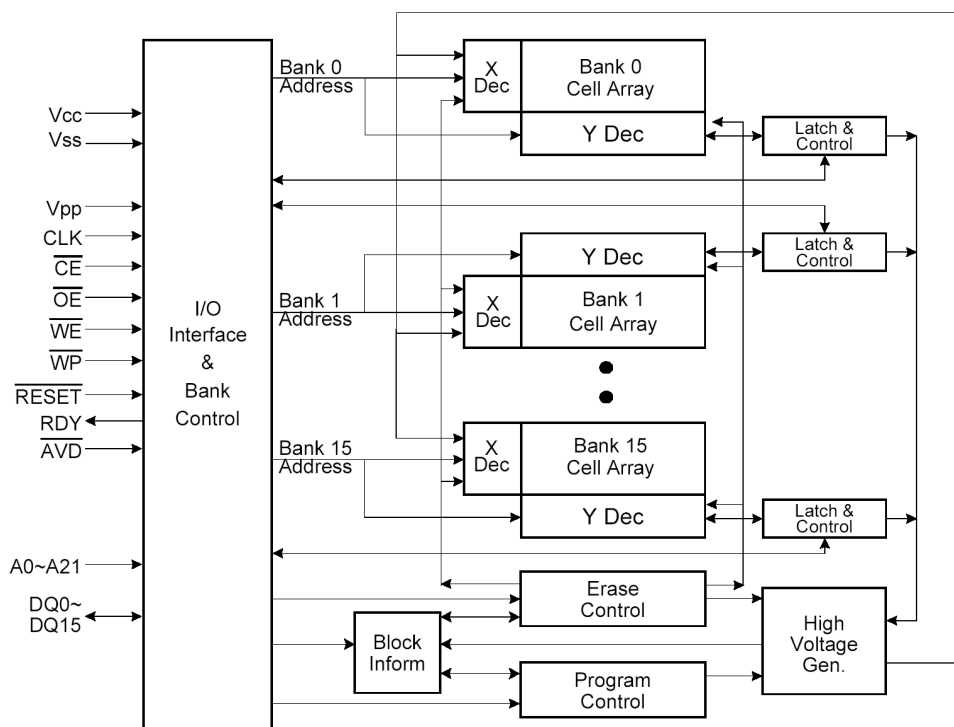


Figure.3-4-1 K5L6443ABM-AD11 FUNCTIONAL BLOCK DIAGRAM

GENERAL DESCRIPTION

The K5L6433ABM is a MultiChip Package Memory which combines 64Mbit NOR Flash Memory and 32M bit UtRAM2.

The 64Mb NOR Flash featuring single 1.8V power supply is a 64Mbit Synchronous Burst Multi Bank Flash Memory organized as 4Mx16. The memory architecture of the device is designed to divide its memory arrays into 135 blocks with independent hardware protection. This block architecture provides highly flexible erase and program capability. The 64Mb NOR Flash consists of sixteen banks. This device is capable of reading data from one bank while programming or erasing in the other bank. Regarding read access time, the device provides an 14.5ns burst access time and an 70ns initial access time at 54MHz. At 66MHz, the device provides an 11ns burst access time and 70ns initial access time. At 83MHz, the device provides an 9ns burst access time and 70ns initial access time. At 108MHz, the device provides an 7ns burst access time and 70ns initial access time. The device performs a program operation in units of 16 bits (Word) and an erase operation in units of a block. Single or multiple blocks can be erased. The block erase operation is completed within typically 0.7sec. The device requires 15mA as program/erase current in the extended temperature ranges.

SAMSUNG's UtRAM products are designed to meet the request from the customers who want to cope with the fast growing mobile applications that need high-speed random access memory. UtRAM is the solution for the mobile market with its low cost, high density and high performance feature. device is fabricated by SAMSUNG's advanced CMOS technology using one transistor memory cell. The device supports the traditional SRAM like asynchronous operation (asynchronous page read and asynchronous write), the NOR flash like synchronous operation (synchronous burst read and asynchronous write) and the fully synchronous operation (synchronous burst read and synchronous burst write). These operation modes are defined through the Configuration Register Setting. It supports the special features for the standby power saving. Those are the PAR(Partial Array Refresh) mode, DPD(Deep Power Down) mode and

internal TCSR(Temperature Compensated Self Refresh). It also supports variable and fixed latency, driver strength settings, Burst sequence (wrap or No-wrap) options and a device ID register (DIDR).

The K5L6433ABM is suitable for use in data memory of mobile communication system to reduce not only mount area but also power consumption.

This device is available in 88-ball FBGA Type.

Features

<Common>

- Operating Temperature : -25°C ~ 85°C
- Package : 88-ball FBGA Type - 8mm x 10mm x 1.2mm, 0.8mm pitch

<NOR Flash>

- *This device has the Sync MRS option (Extended Configuration Register)*
 - Single Voltage, 1.7V to 1.95V for Read and Write operations
 - Organization
 - 4,194,304 x 16 bit (Word Mode Only)
 - Read While Program/Erase Operation
 - Multiple Bank Architecture
 - 16 Banks (4Mb Partition)
 - OTP Block : Extra 256word block
 - Read Access Time (@ CL=30pF)
 - Asynchronous Random Access Time : 70ns
 - Synchronous Random Access Time : 70ns
 - Burst Access Time :7ns (108Mhz)
 - Page Mode Operation
- 8-Words Page access allows fast asynchronous read Page Read Access Time : 20ns
- Burst Length :
 - Continuous Linear Burst
 - Linear Burst : 8-word & 16-word with Wrap
 - Block Architecture
 - Eight 4Kword blocks and one hundred twenty seven 32Kword blocks
 - Bank 0 contains eight 4 Kword blocks and seven 32Kword blocks
 - Bank 1~Bank 15 contain one hundred twenty 32Kword blocks
 - Reduce program time using the VPP
 - Support Single & Quad word accelerate program
 - Power Consumption (Typical value, CL=30pF)
 - Async/Sync burst Access Current : 24mA
 - Program/Erase Current : 15mA
 - Read While Program/Erase Current : 40mA
 - Standby Mode/Auto Sleep Mode :15uA
 - Block Protection/Unprotection

- Using the software command sequence
- Last two boot blocks are protected by WP=VIL
- All blocks are protected by VPP=VIL
- Handshaking Feature
 - Provides host system with minimum latency by monitoring RDY
- Erase Suspend/Resume
- Program Suspend/Resume
- Unlock Bypass Program/Erase
- Hardware Reset (RESET)
- Data Polling and Toggle Bits
 - Provides a software method of detecting the status of program or erase completion
- Endurance : 100,000 Program/Erase Cycles
- Support Common Flash Memory Interface
- Low Vcc Write Inhibit

<UtRAM2>

- Process technology: CMOS
- Organization: 2M x 16 bit
- Power supply voltage: 1.7V~1.95V
- Three state outputs
- Supports Configuration Register Set
 - CRE pin set up
 - Software set up
- Supports power saving modes
 - PAR (Partial Array Refresh)
 - DPD (Deep Power Down)
 - Internal TCSR (Temperature Compensated Self Refresh)
- Supports driver strength optimization
- Support 2 operation modes
 - Asynchronous mode (4-Page)
 - Synchronous mode
- Random access time:70ns
- Page access time:20ns
- Synchronous burst operation
 - Max. clock frequency : 104MHz
 - Fixed and Variable read latency
 - 4 / 8 / 16 / 32 and Continuous burst
 - Wrap / No-wrap
 - Latency : 3(Variable) @ 104MHz
 - Burst stop
 - Burst read suspend
 - Burst write data masking

Pin DESCRIPTION

	1	2	3	4	5	6	7	8
A	DNU	DNU					DNU	DNU
B	A4rc	A18rc	A19rc	VSSrc	VCCr	NC	A21r	A11rc
C	A5rc	/LBc	NC	VSSrc	NC	CLKrc	NC	A12rc
D	A3rc	A17rc	NC	VPPr	/WEc	/CSc	A9rc	A13rc
E	A2rc	A7rc	NC	/WPr	/AVDrc	A20rc	A10rc	A15rc
F	A1rc	A6rc	/UBc	/Resetr	/WEr	A8rc	A14rc	A16rc
G	A0rc	DQ8rc	DQ2rc	DQ10rc	DQ5rc	DQ13rc	WAITrc	NC
H	/OEc	DQ0rc	DQ1rc	DQ3rc	DQ12rc	DQ14rc	DQ7rc	NC
J	NC	/OEr	DQ9rc	DQ11rc	DQ4rc	DQ6rc	DQ15rc	VCCQrc
K	/CEr	NC	NC	NC	VCCc	NC	VCCQrc	CREc
L	VSSrc	VSSQrc	VCCQrc	VCCr	VSSrc	VSSQrc	VSSQrc	VSSrc
M	DNU	DNU					DNU	DNU

88 FBGA: Top View (Ball Down)

	NOR + U _t RAM
	NOR Flash
	U _t RAM2
	Power
	Ground
	NC/DNU

Pin Name	Pin Function(Common)
DQ0rc ~ DQ15rc	Data Input/Output
A0rc ~ A20rc	Address Input
CLKrc	Clock
/AVDrc	Address Valid Input
F-RDY	Ready Out(NOR)
R-WAIT	Data Availability (U _t RAM)
VCCQrc	Data Input/Output Power
VSSrc	Ground
VSSQrc	Ground

Pin Name	Pin Function(U _t RAM2)
/LBc,UBc	Lower Byte Enable, Upper Byte Enable
CREc	Control Register Enable
VCC	Power Supply
\overline{OEc}	Output Enable
/WEc	Write Enable
/CSc	Chip Enable

Pin Name	Pin Function(NOR Flash)
A21r	Address Input
/CEr	Chip Enable
/WPr	Write Protection
/OEc	Output Enable
/WEc	Write Enable
/Resetr	Hardware Reset
VCCr	Power Supply
VPPr	Accelerates Programming

Pin Name	Pin Function
NC	Not Connected

3.5 FM Radio Module (AR1200/1210)

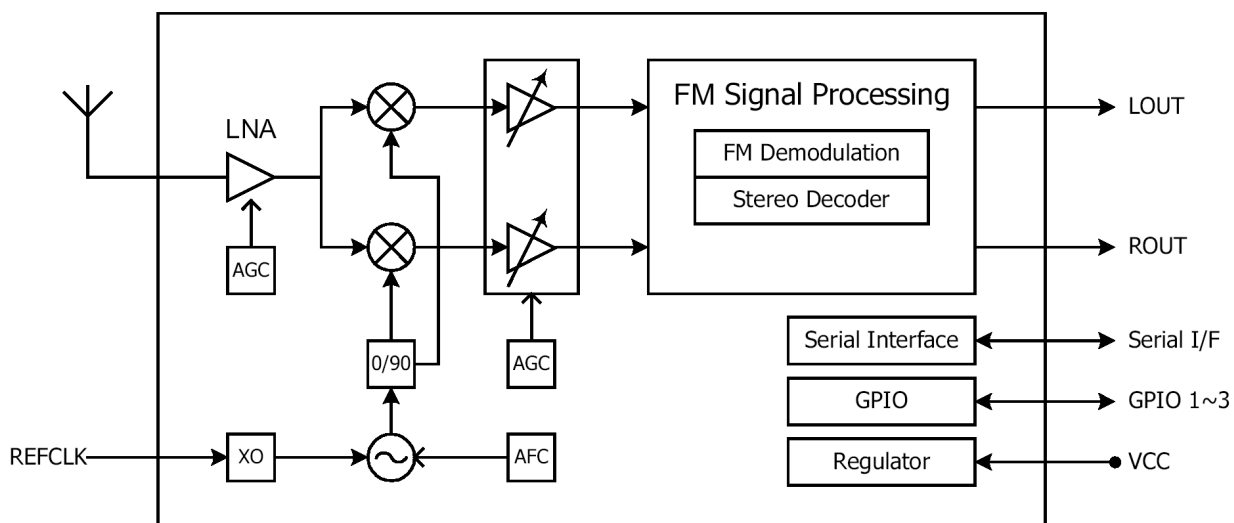
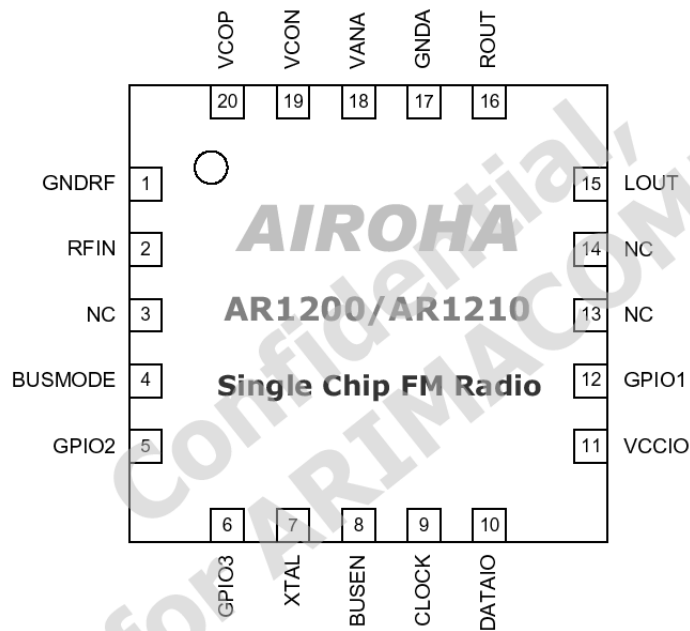


Figure. 3-5-1 AR1200/1210 FM Receiver Block Diagram

AR1200 /AR1210 is a highly integrated single chip stereo FM radio receiver for all kinds of applications. AR1200 /AR1210 supports worldwide FM bands from 76 to 108MHz. It integrates LNA, Mixer, Oscillator and LDO regulator to minimize the external BOM cost.

The built-in FM signal processing unit with noise reduction mechanism provides optimum sound quality. A simple 2-wire/3-wire interface allows easy control from the host. For AR1200, Radio Data System(RDS) and Radio Broadcast Data System(RBDS) demodulator and decoder are also supported.

AR1200 and AR1210 are pin-to-pin compatible and are the same in all FM radio receiver functions, specs and packages except the RDS/RBDS function. AR1200 supports RDS/ RBDS receiver function, while AR1210 do not.



PIN	SIGNAL	TYPE	DESCRIPTION
1	GNDRF	GND	RF Ground
2	RFIN	Input, Analog	RF Input
3	NC		Not Connected
4	BUSMODE	Input, Digital Control	2-wire/3-wire Bus Mode Selection
5	GPIO2	Input/Output, Digital	General I/O Port 2
6	GPIO3	Input/Output, Digital	General I/O Port 3
7	XTAL	Analog	XTAL Oscillator Input
8	BUSEN	Input, Digital Control	Serial Interface
9	CLOCK	Input, Digital Control	Serial Interface
10	DATAIO	Input/Output, Digital	Serial Interface
11	VCCIO	VCC Supply	Supply Voltage for I/O Ports
12	GPIO1	Input/Output, Digital	General I/O Port 1
13	NC		Not Connected
14	NC		Not Connected
15	LOUT	Output, Analog	Left Audio Output
16	ROUT	Output, Analog	Right Audio Output
17	GNDA	GND	Analog Ground
18	VANA	VCC Supply	Supply Voltage for Analog Circuits
19	VCON	Input, Analog	VCO Tank Input
20	VCOP	Input, Analog	VCO Tank Input

3.6 LCD Interface

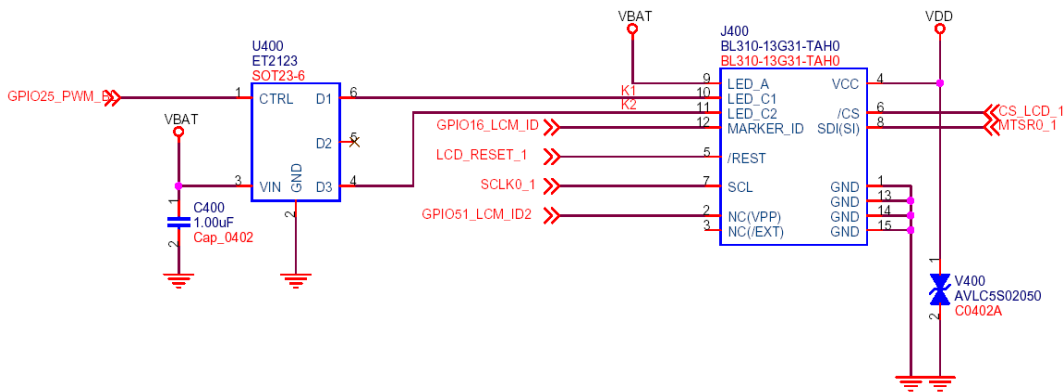


Figure.3-6-1 LCD Interface

General Description

The **Arima 1.77"** model is a Color TFT (Main) LCD supplied by LG Innotek.

This main LCD has a 1.77inch diagonally measured active display area with 128(RGB)x160 resolution. Each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes.

Main color is determined with colors signal for each pixel.

The **Arima 1.77"** has been designed to apply the interface method that enables low power, high speed, and high contrast.

The **Arima 1.77"** is intended to support applications where thin thickness, wide viewing angle and low power consumption are critical factors and graphic displays are important.

Pin Description

Pin No.	Symbol	Description	Remark
1	GND	-	Ground
2	NC	OPEN	OPEN
3	V45	OPEN	OPEN
4	VCC	I	Power supply for driver
5	/RESET	I	Reset Pin. Initialize the LSI at the low level
6	/CS	I	Chip Select. Active low
7	SCL	I	Serial clock input in SPI mode
8	SDI	I	Serial input in SPI mode
9	LED_A	I	LED anode connection
10	LED_C1	O	LED cathode connection
11	LED_C2	O	LED cathode connection
12	MAKER_ID	O	Distinction of LCD maker
13	GND	-	Ground

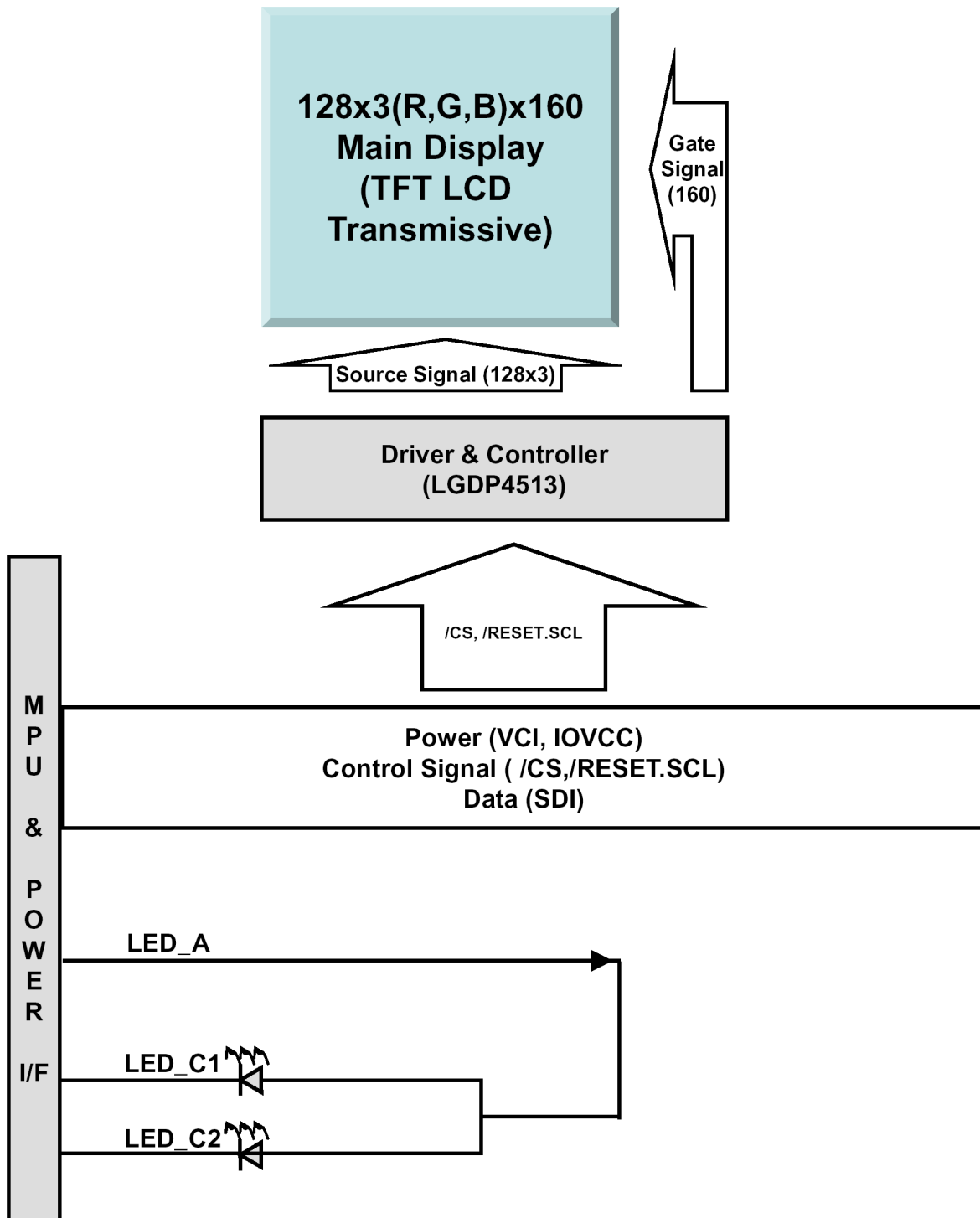


Figure. 3-6-2 DM17-BSM02 Block Diagram

3.7 SIM Card Interface

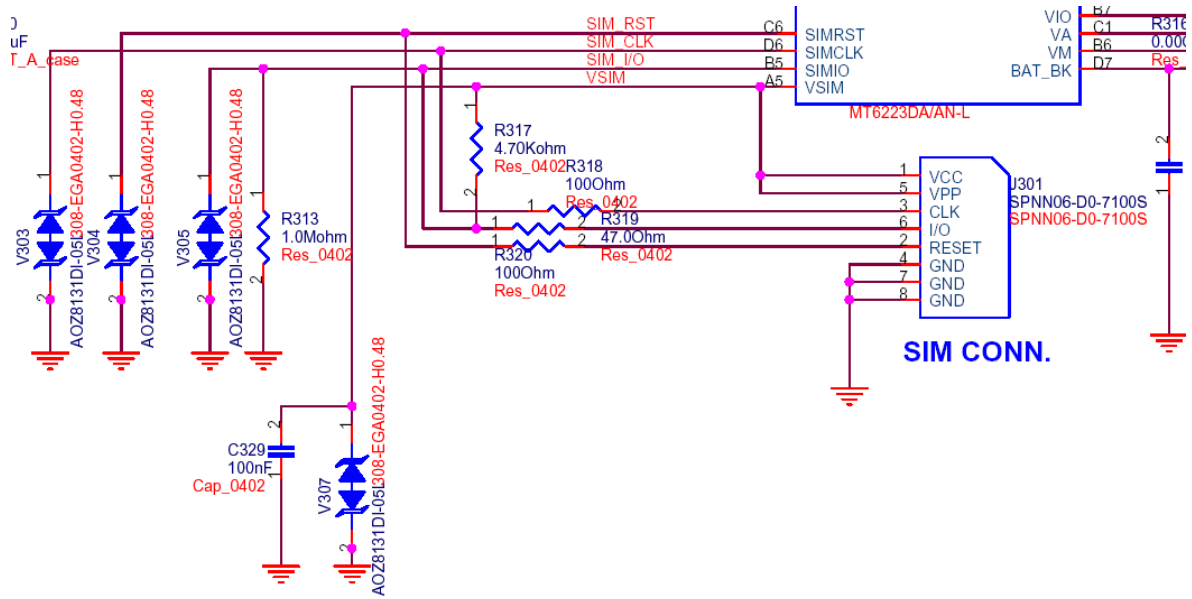


Figure.3-7-1 SIM CARD Interface

The MT6223 contains a dedicated smart card interface to allow the MCU access to the SIM card. It can operate via 4 terminals, using SIMVCC, SIMI/O, SIMRST, SIMCLK

The SIMVCC is used to control the external voltage supply to the SIM card. SIMRST is used as the SIM card reset signal. SIMI/O and SIMCLK are used for data exchange purpose.

The SIM interface acts as a half duplex asynchronous communication port and its data format is composed of ten consecutive bits: a start bit in state Low, eight information bits, and a tenth bit used for parity checking.

3.8 KEYPAD Interface

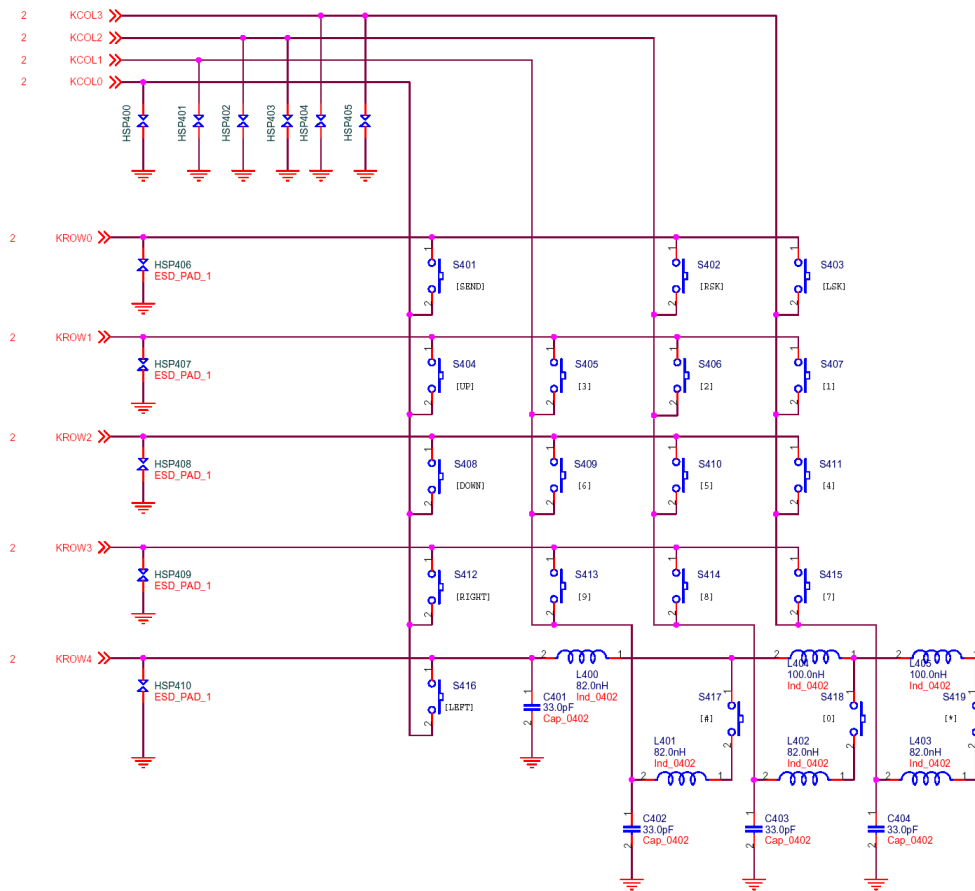


Figure.3-8-1. KEYPAD Interface

The keypad can be divided into two parts: one is the keypad interface including 4 columns and 5 rows; the other is the key detection block which provides key pressed, key released and de-bounce mechanisms. Each time the key is pressed or released, i.e. something different in the 4 x 5 matrix, the key detection block senses the change and recognizes if a key has been pressed or released. Whenever the key status changes and is stable, a KEYPAD IRQ is issued.

The MT6223 can then read the key(s) pressed directly in KP_HI_KEY, KP_MID_KEY and KP_LOW_KEY registers. To ensure that the key pressed information is not missed, the status register in keypad is not read-cleared by APB read command. The status register can only be changed by the key-pressed detection FSM.

3.9 Battery Charging Block Interface

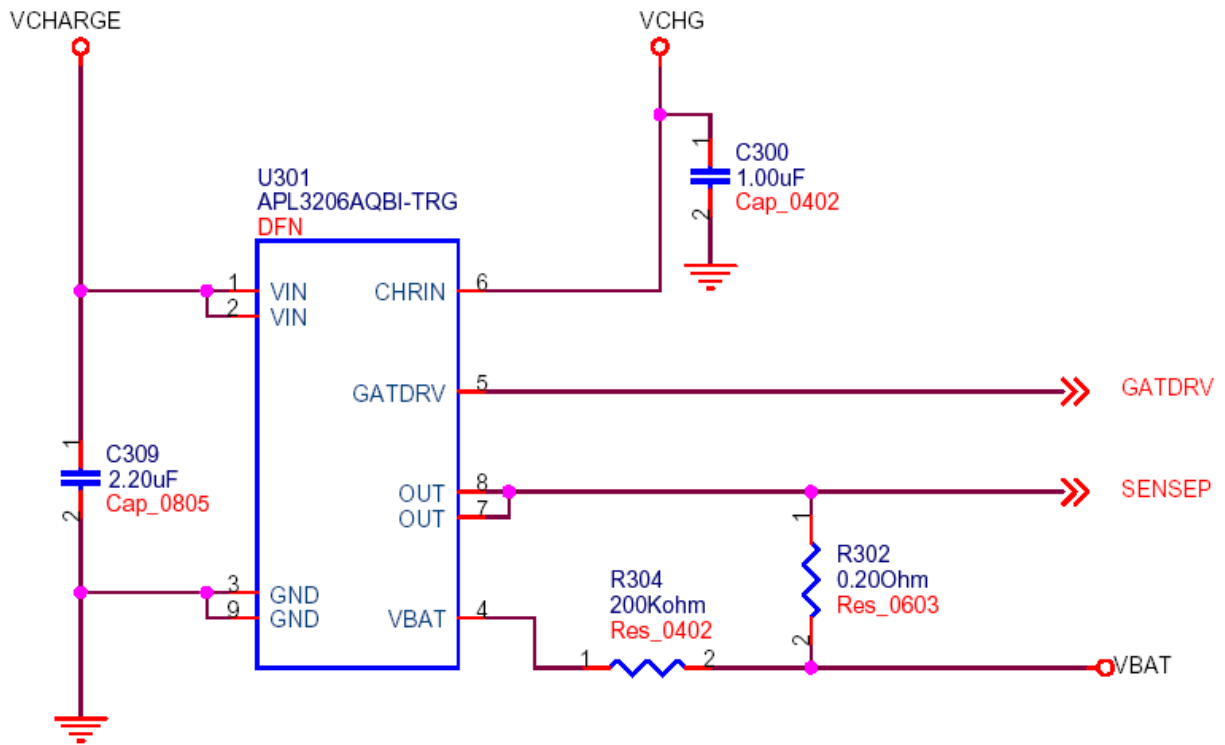


Figure.3-9-1 Charging IC Interface

The APL3206AQBI-TRG is controlled by MT6223.

3.10 Audio Interface

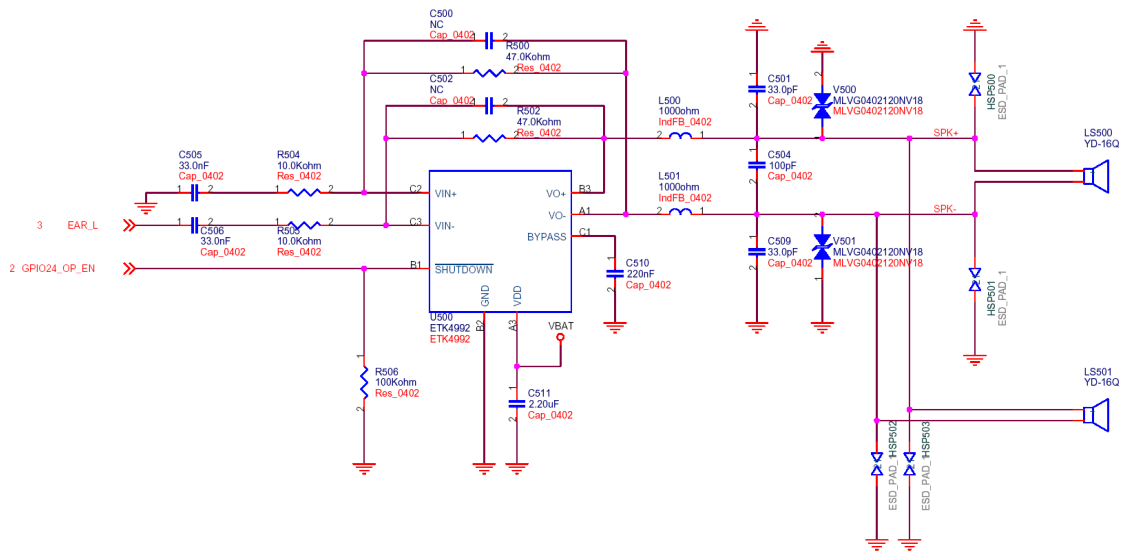


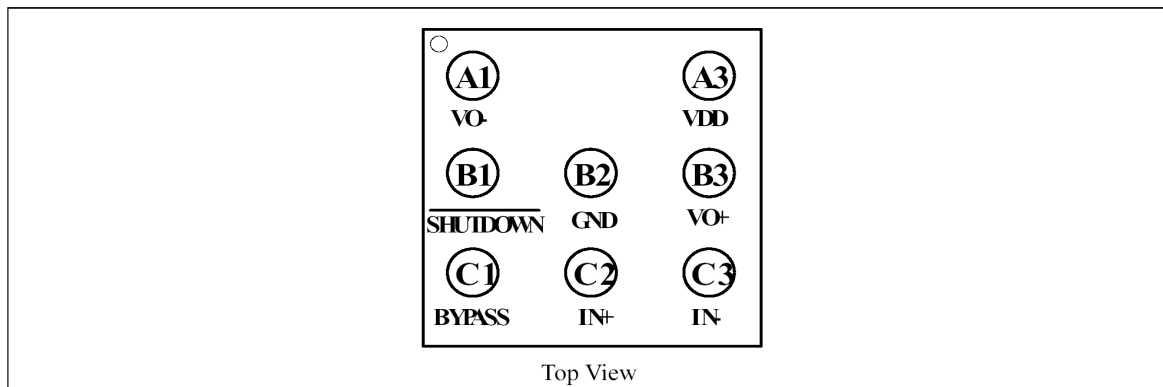
Figure.3-10-1 Audio Interface

The ETK4992 is a fully differential audio power amplifier designed for portable communication device applications. It is capable of delivering 1.25 watt of continuous average power to an 8. BTL load with less than 1% distortion (THD+N) from a 5V battery voltage. It operates from 2.2 to 5.5V.

Features like 90dB PSRR at 217Hz, improved RF-rectification immunity, the space-saving 8-bump WLCSP package, the advanced pop & click circuitry, a minimal count of external components and low-power shutdown mode make ETK4992 ideal for wireless handsets.

The ETK4992 is unity-gain stable, and the gain can be configured by external resistors.

Pin Configuration



Pin Function

Pin No.	Name	I/O	Function
A1	VO-	O	Negative differential output.
B1	SHUTDOWN	I	Shutdown Pin, active low.
C1	BYPASS	I	Common mode voltage. Connect a bypass capacitor to GND for common mode voltage filtering. The bypass capacitor is optional.
B2	GND	POWER	Ground.
C2	IN+	I	Positive differential input.
A3	VDD	POWER	Power supply.
B3	VO+	O	Positive differential output.
C3	IN-	I	Negative differential input.

3.11 Vibrator Interface

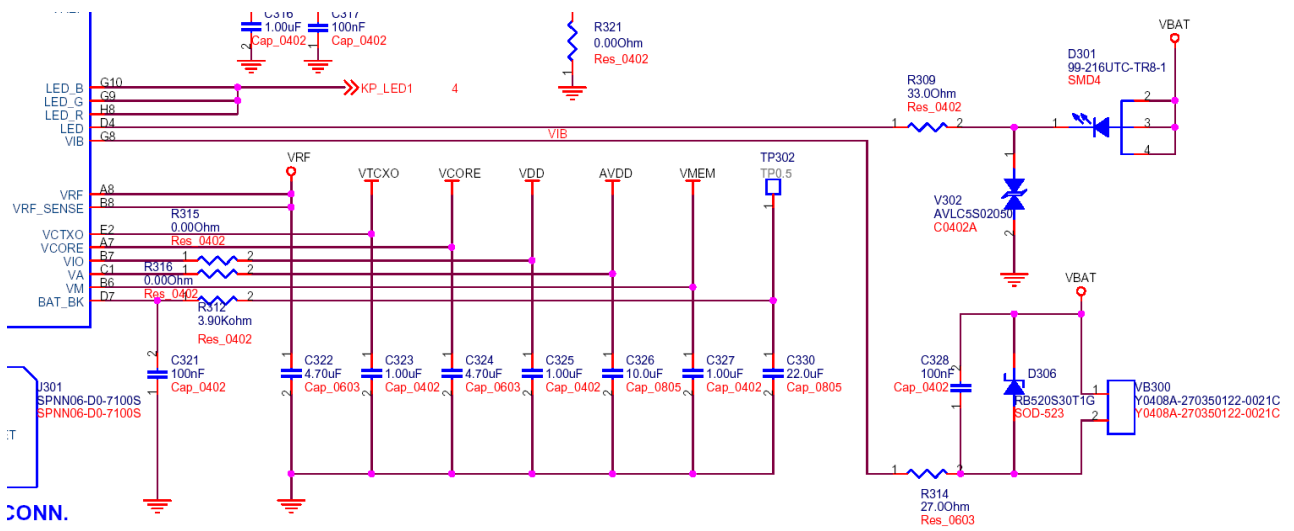
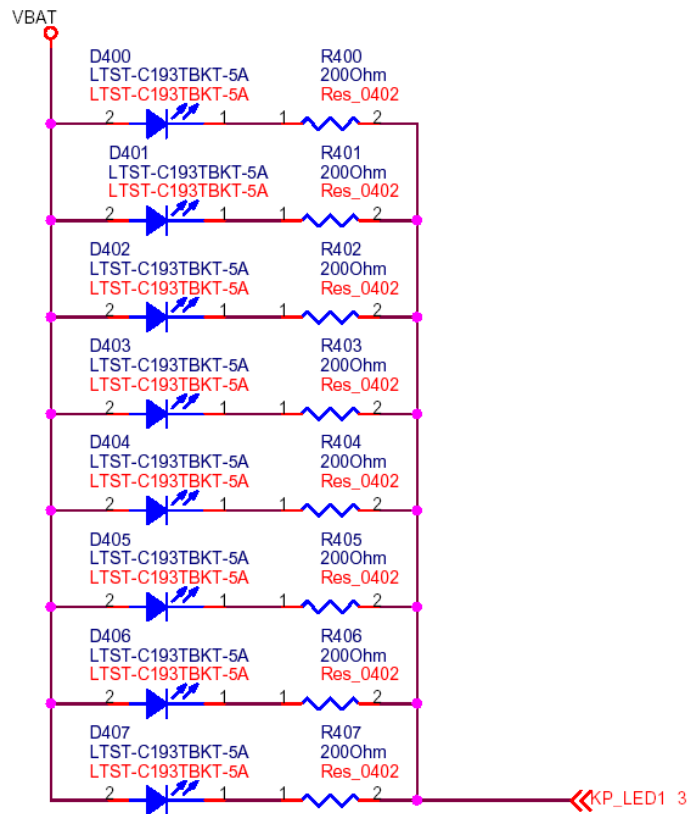


Figure.3-11-1 Vibrator Interface

This handset has Vibrator operation. Control signal is controlled by MT6223.

3.12 Key LED Interface



This handset has 8 LEDs that illuminates blue color.

Control signal is controlled by MT6223 and handset has 3 methods, ON, OFF, Dimming

4. Trouble Shooting

A120 Base Band Trouble shooting

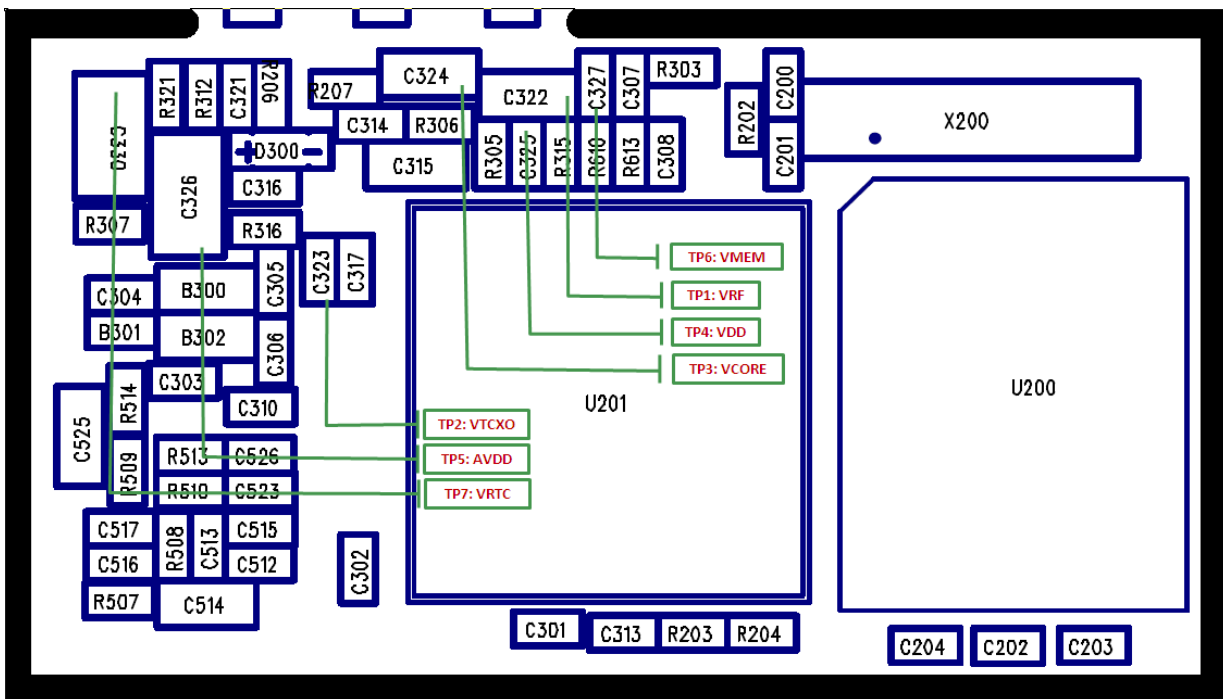
4.1 Power On Trouble

4.1.1 Test Point

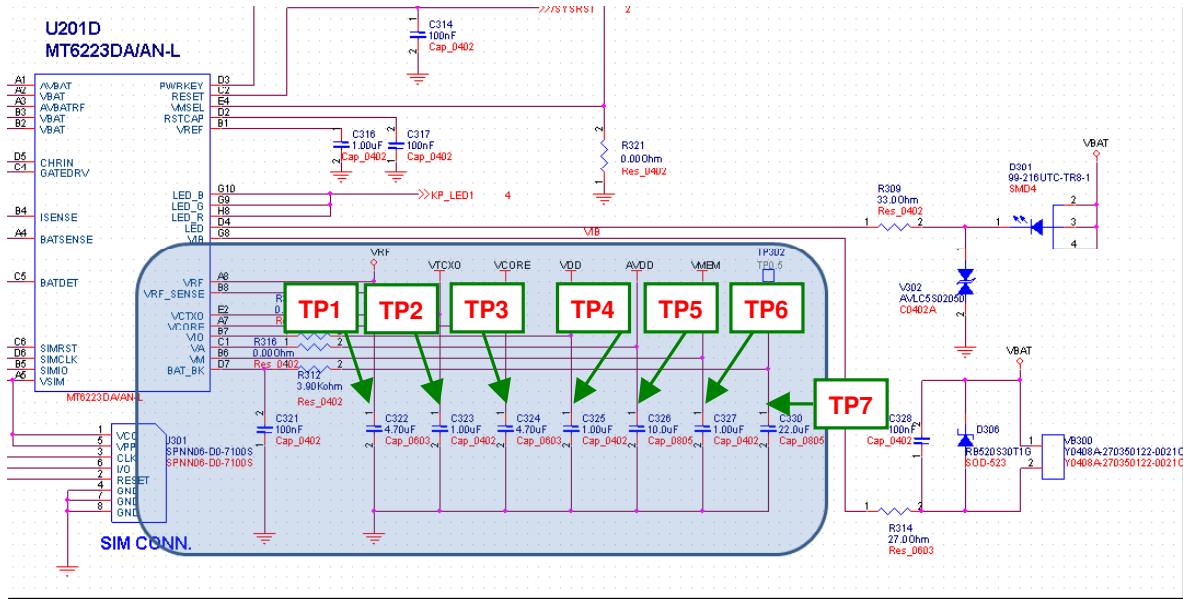
Check Points :

- Battery Voltage(Need to over 3.35V)
- Power-On key detection(PWRON signal)

	Voltage	Measure pin	PART
VRF	2.8V	C322 Pin1	TP1
VTCXO	2.8V	C323 Pin1	TP2
VCORE	1.8V	C324 Pin1	TP3
VDD	2.8V	C325 Pin1	TP4
AVDD	2.8V </td <td>C326 Pin1</td> <td>TP5</td>	C326 Pin1	TP5
VMEM	1.8V	C327 Pin1	TP6
VRTC	2.7V	C330 Pin1	TP7



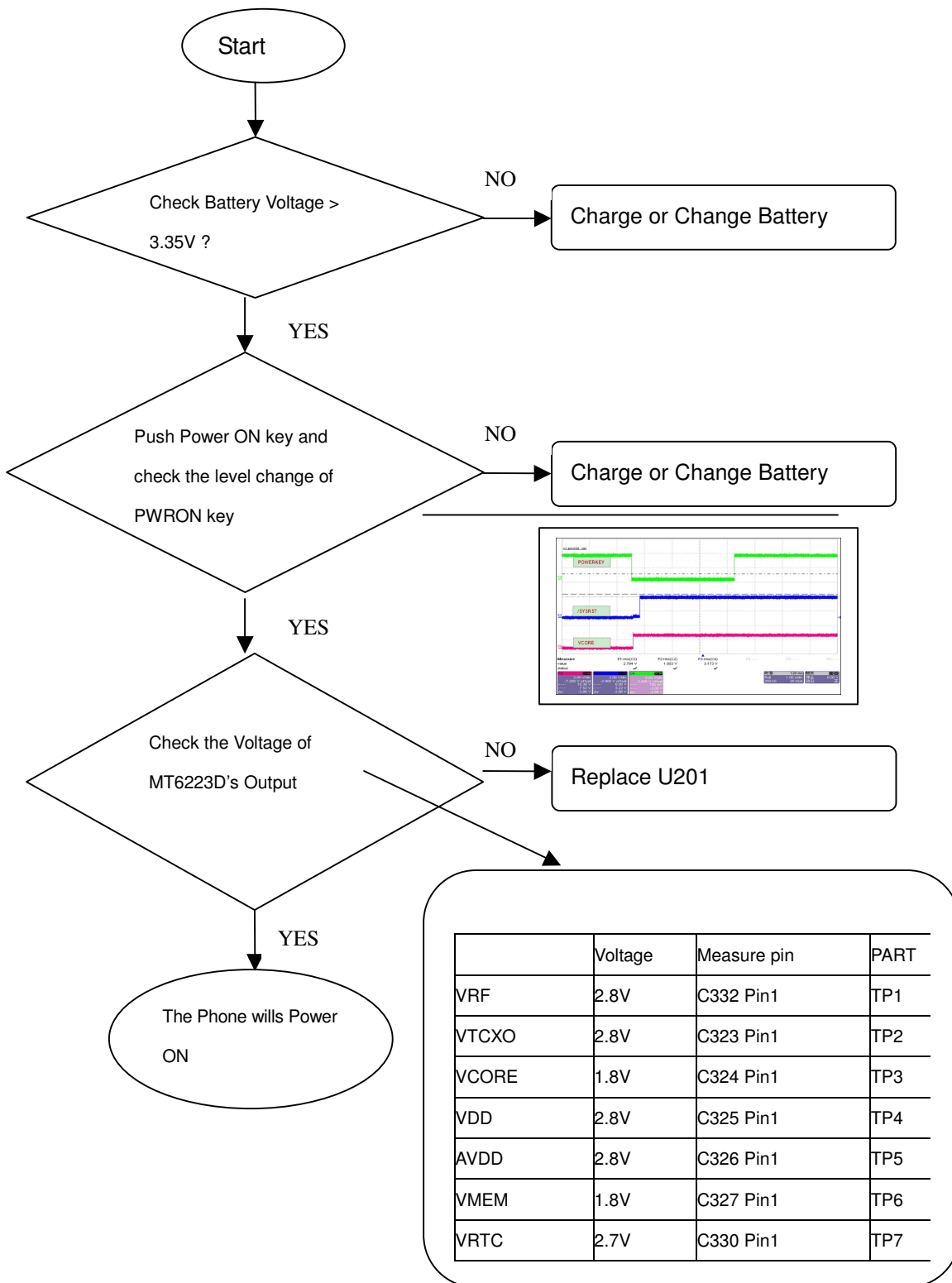
4.1.2 Circuit Diagram



References voltage:

VSIM	1.8V/3.3V
VRF	2.8V
VCORE	1.8V/1.5V
VIO	2.8V
VMEM	1.8V/2.8V
VA	2.8V
VCTX0	2.8V
VMSSEL	VMEM
H	2.8V
L	1.8V

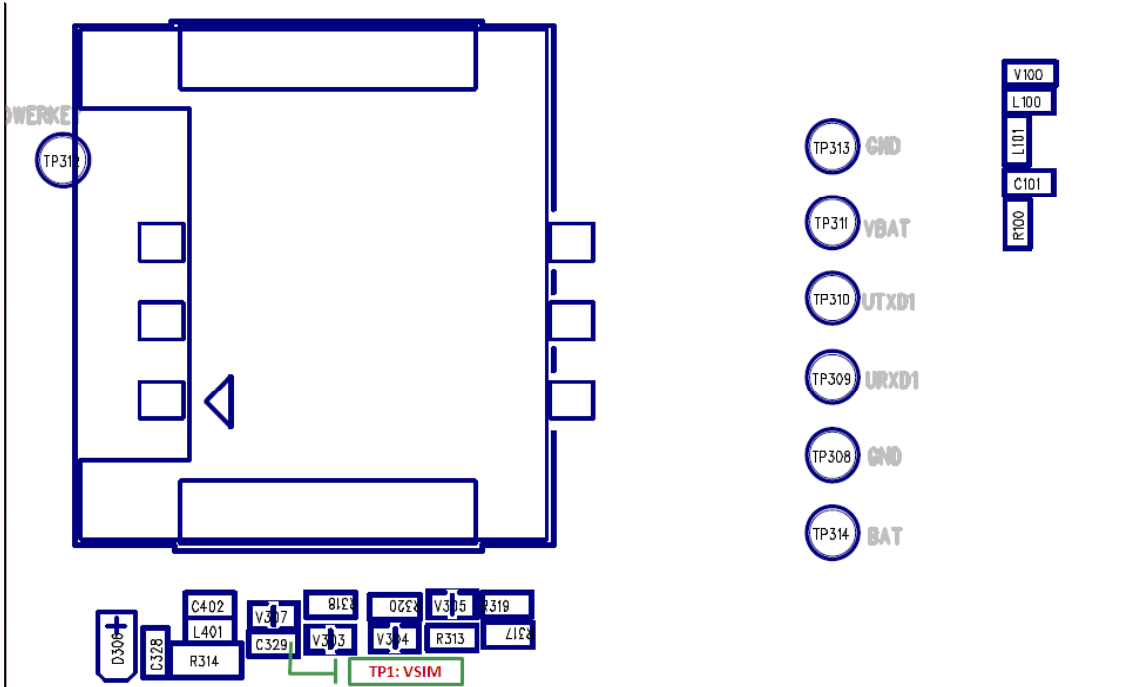
4.1.3 Checking Flow



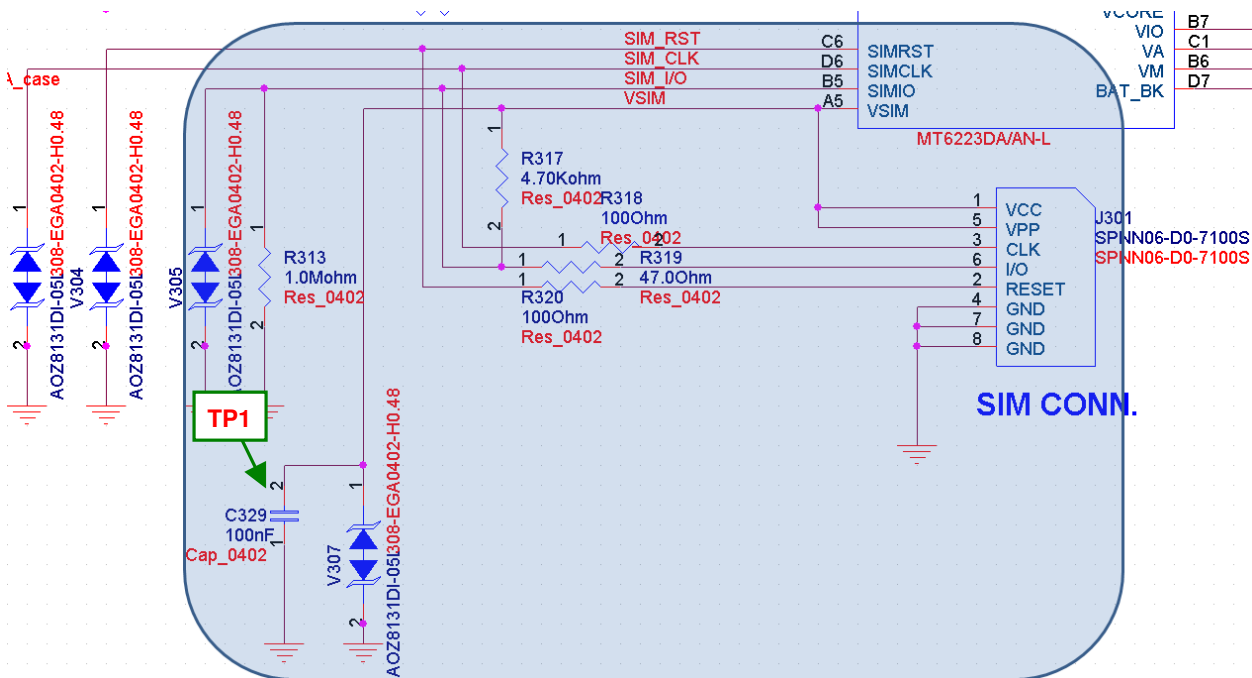
4.2 SIM Card Trouble

4.2.1 Test Point

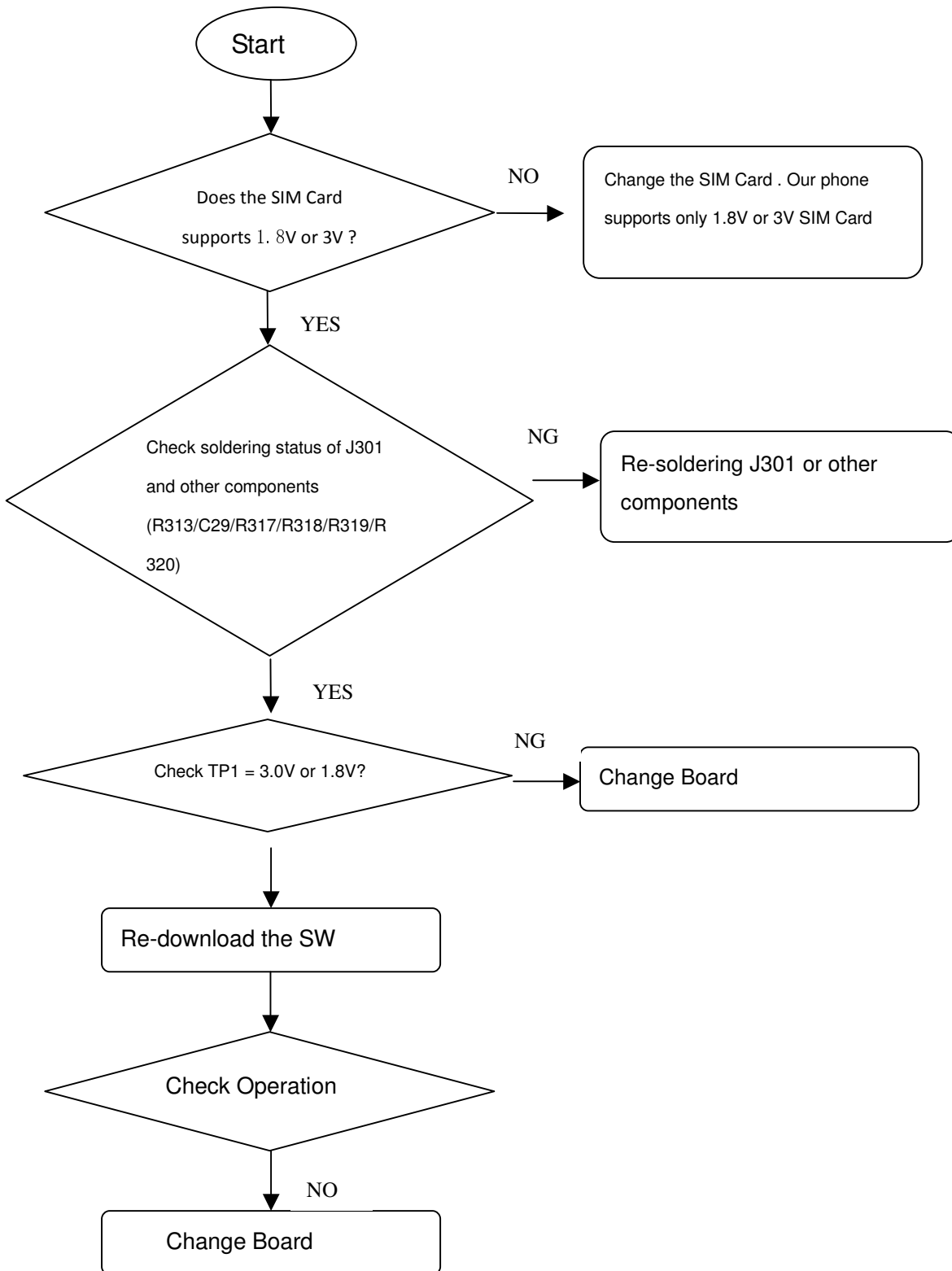
		Measure pin	PART
VSIM		C329 Pin2	TP1



4.2.2 Circuit Diagram



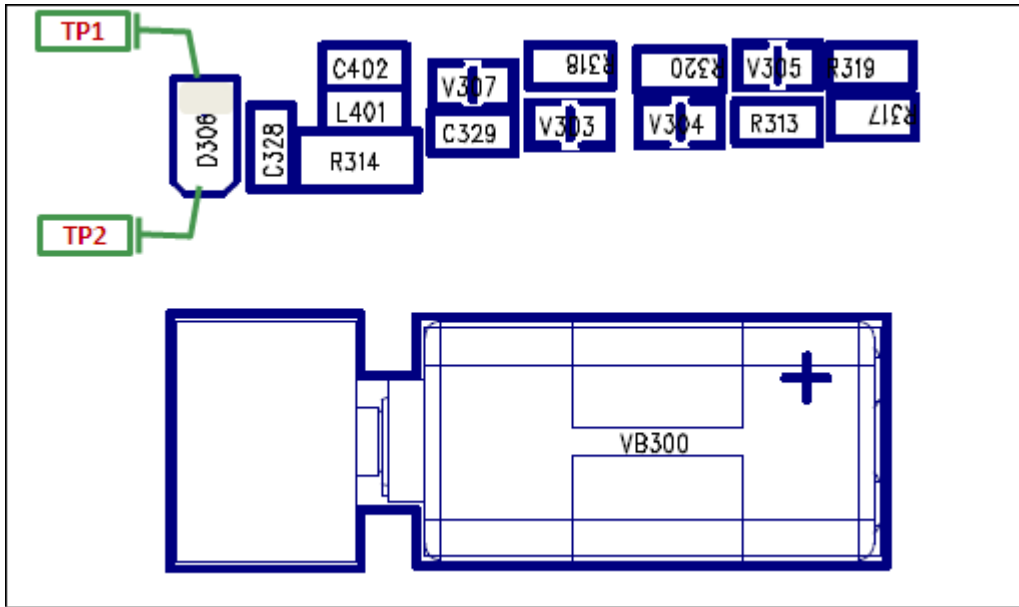
4.2.3 Checking Flow



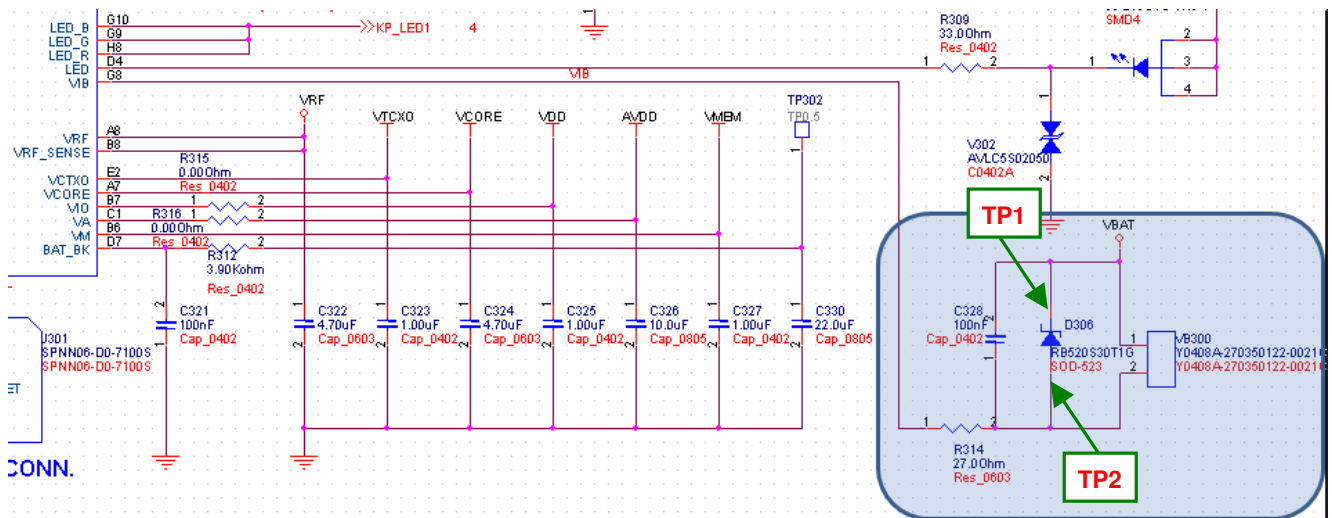
4.3 Vibrator Trouble

4.3.1 Test Point

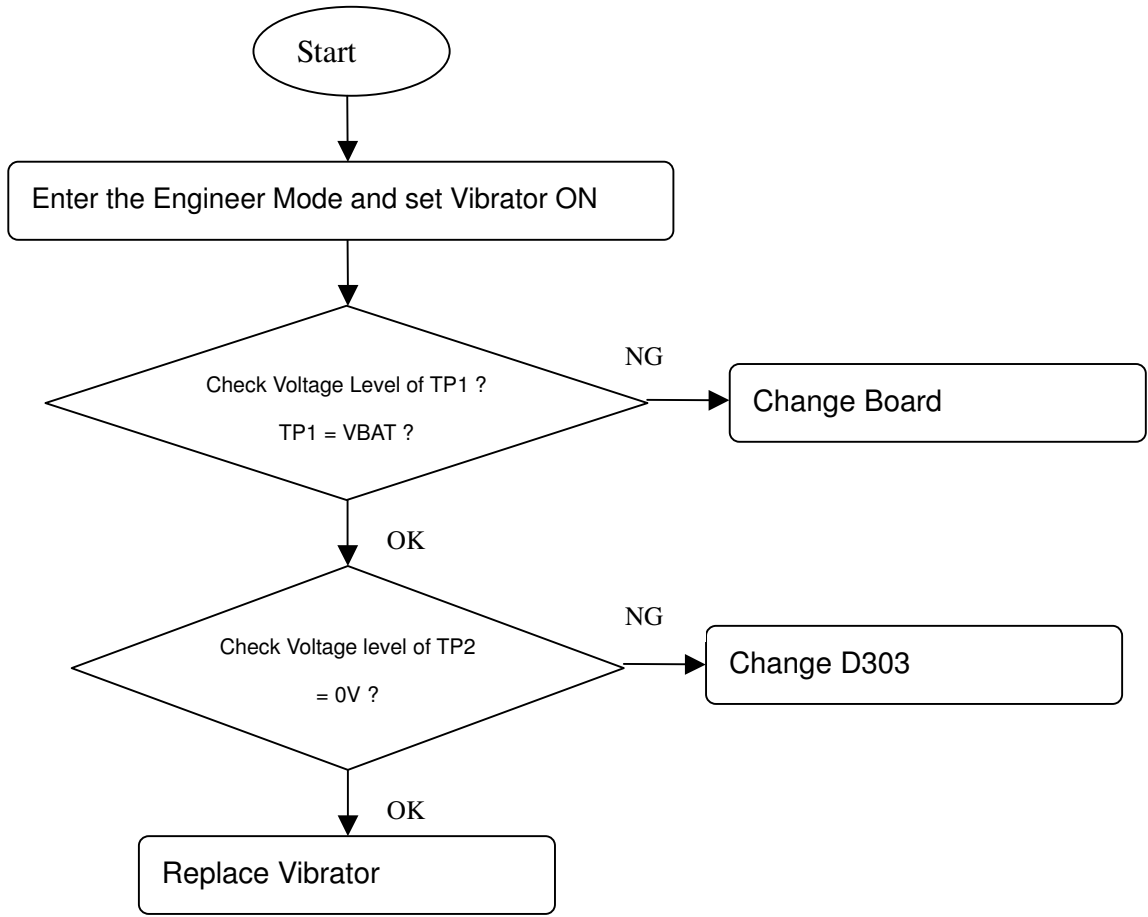
		Measure pin	PART
VBAT		D306 Pin2	TP1
		D306 Pin1	TP2



4.3.2 Circuit Diagram

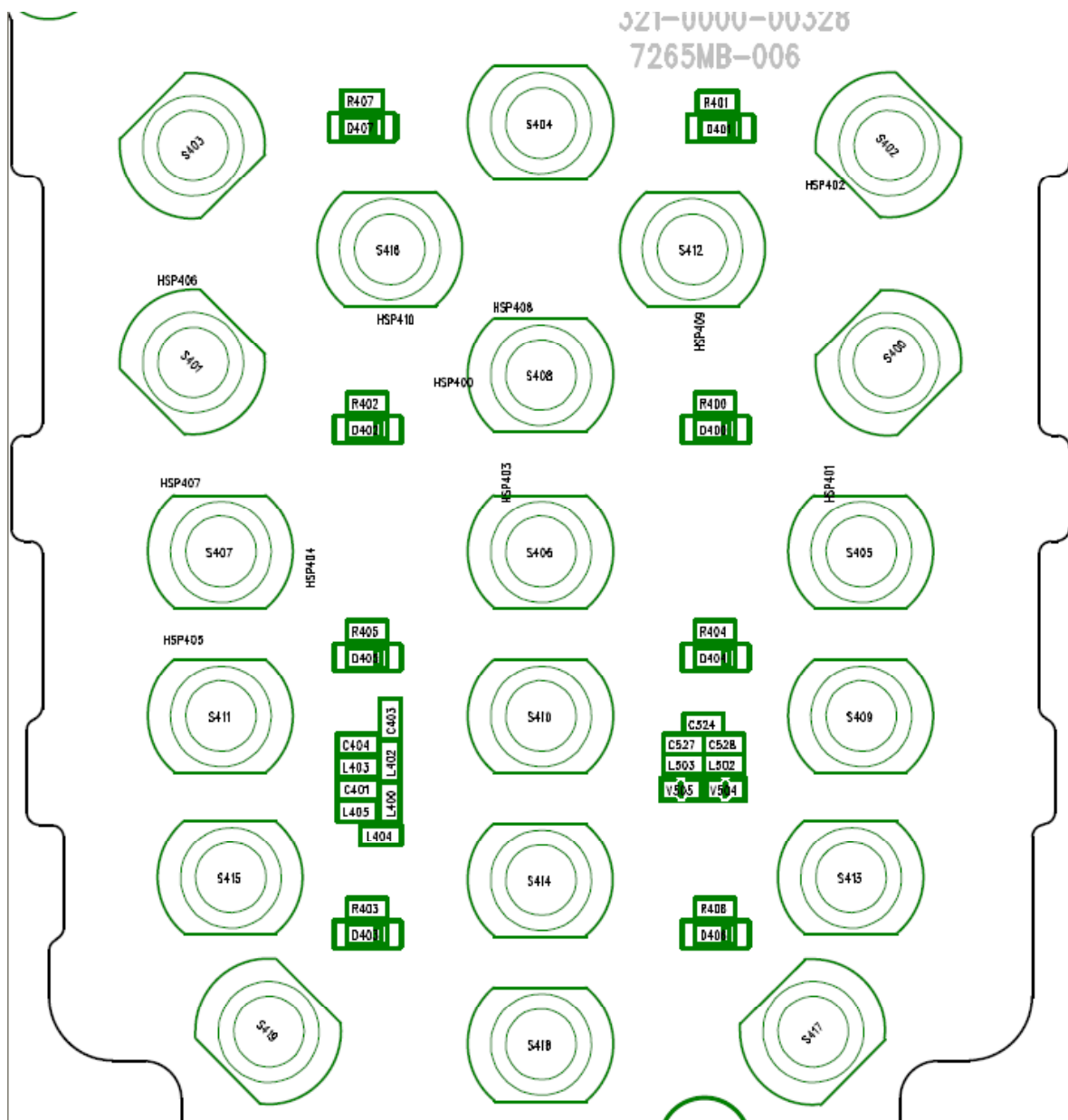


4.3.3 Checking Flow

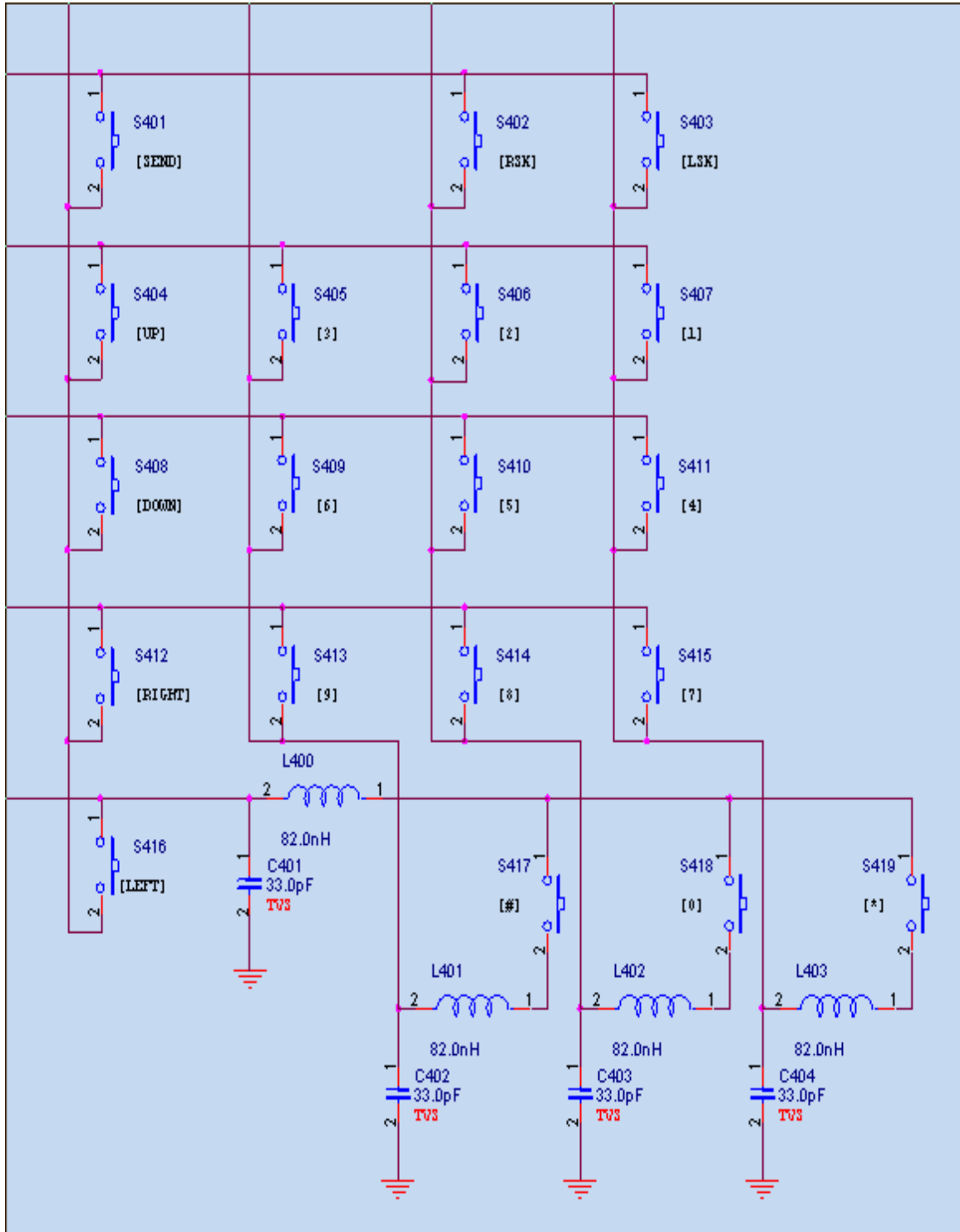


4.4 Keypad Trouble

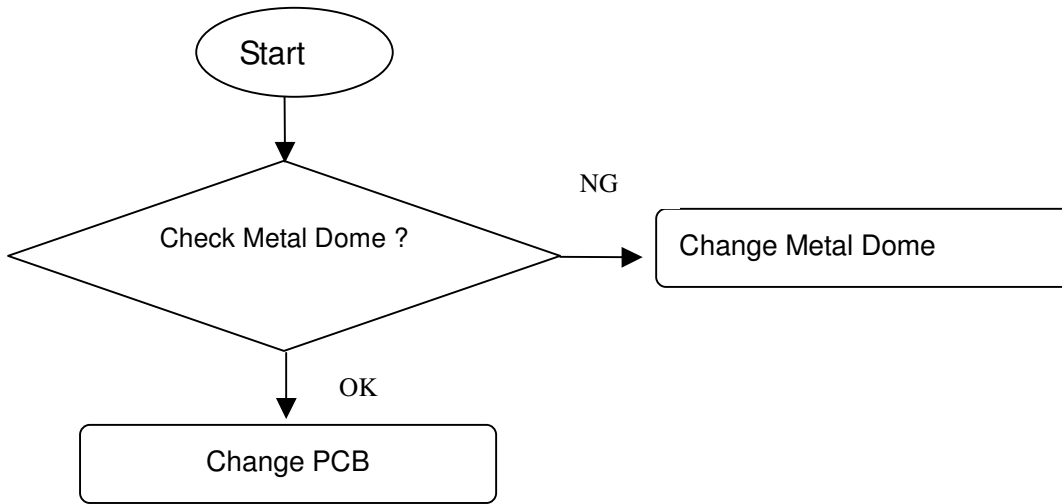
4.4.1 Test Point



4.4.2 Circuit Diagram



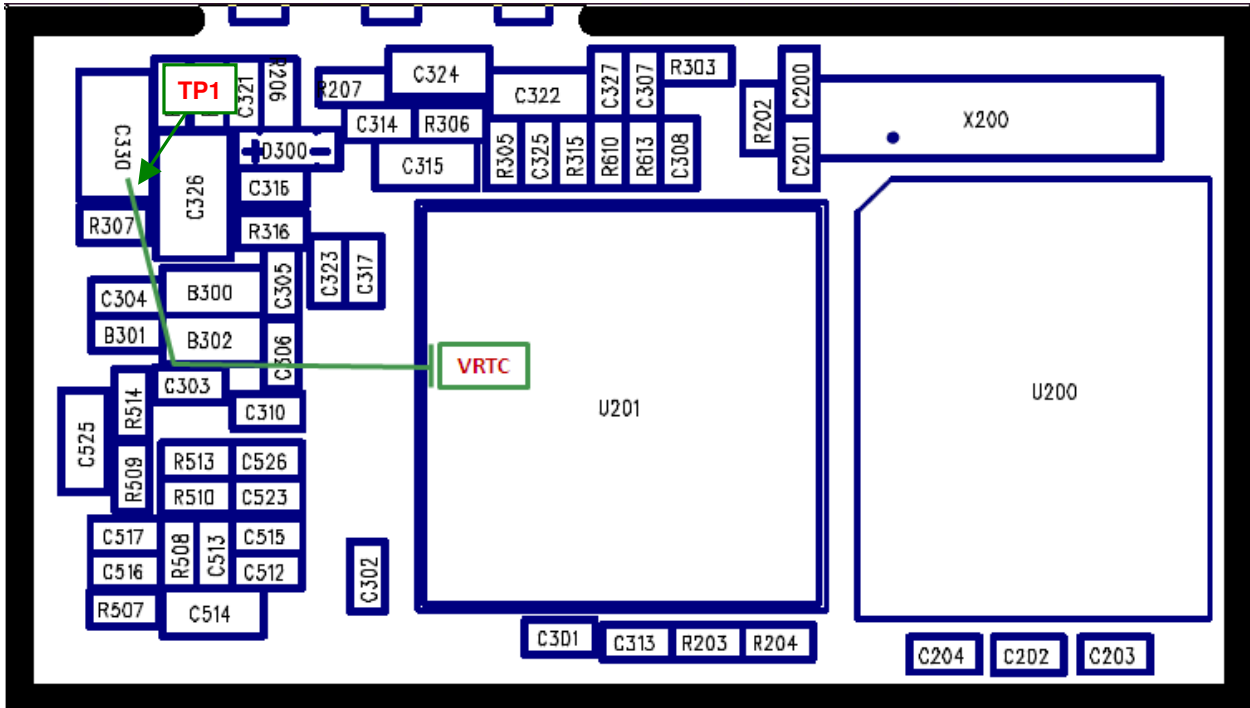
4.4.3 Checking Flow



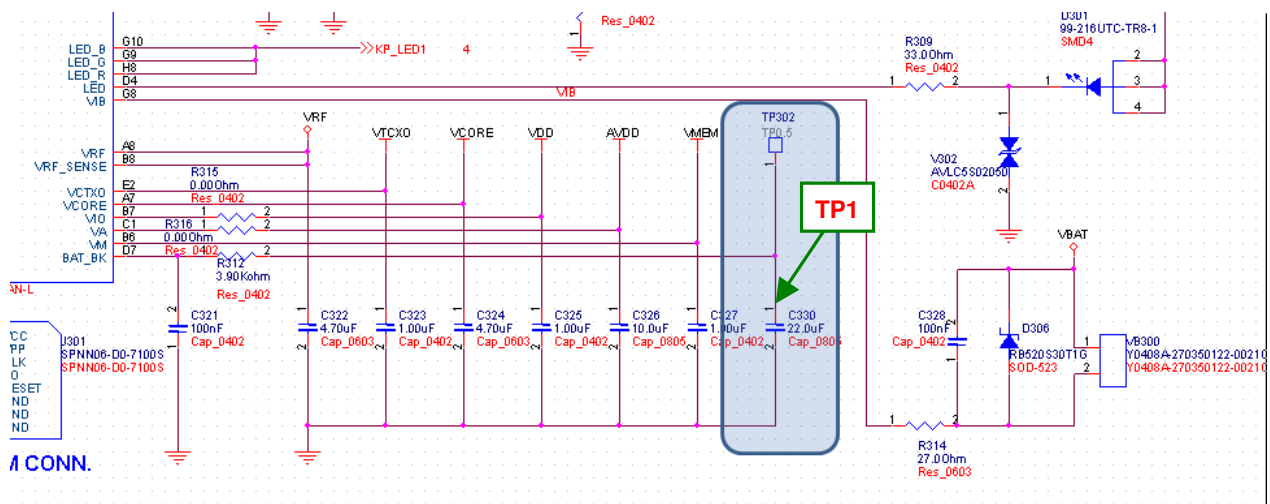
4.5 RTC Trouble

4.5.1 Test Point

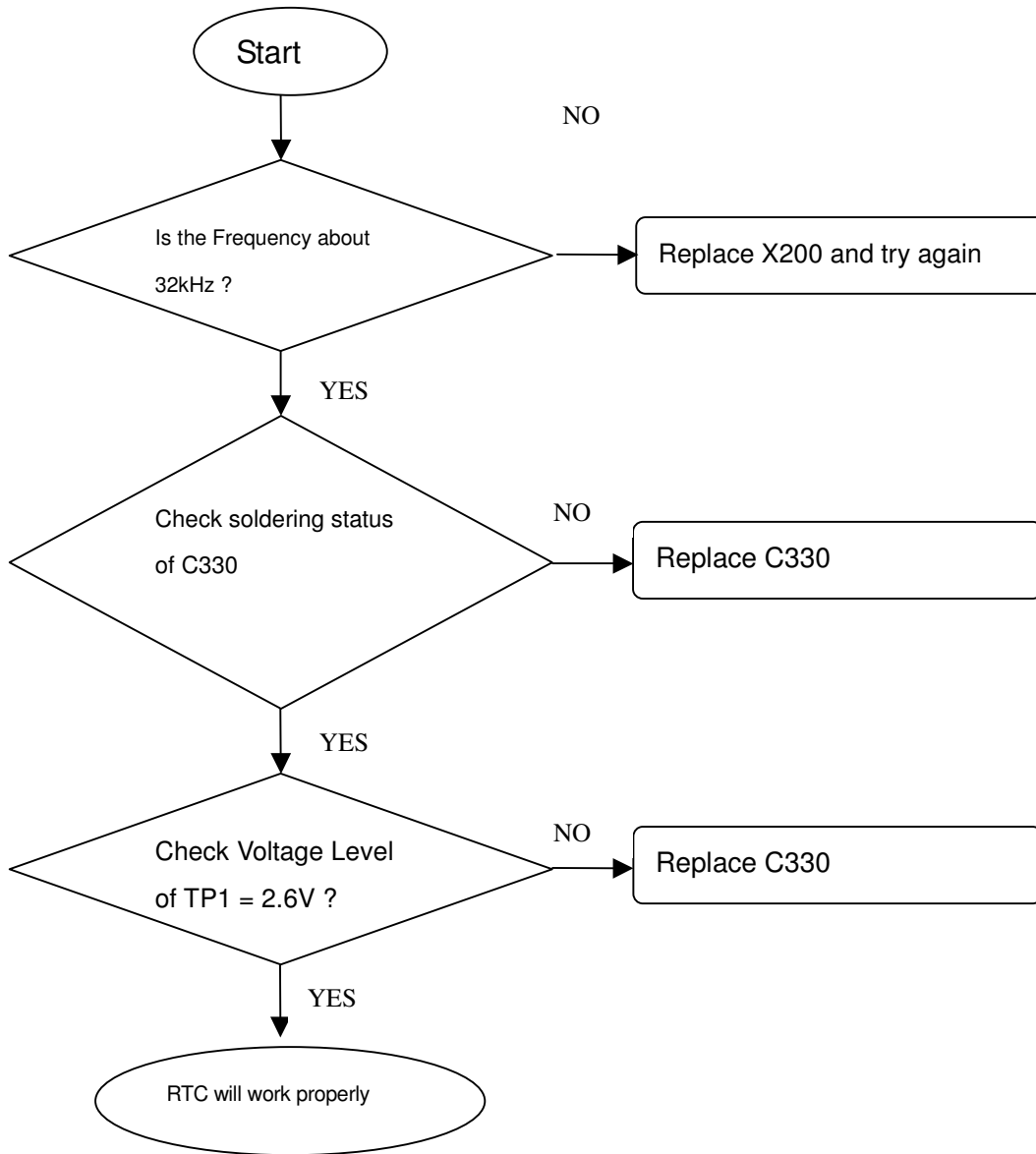
		Measure pin	PART
VRTC		C330 Pin1	TP1



4.5.2 Circuit Diagram



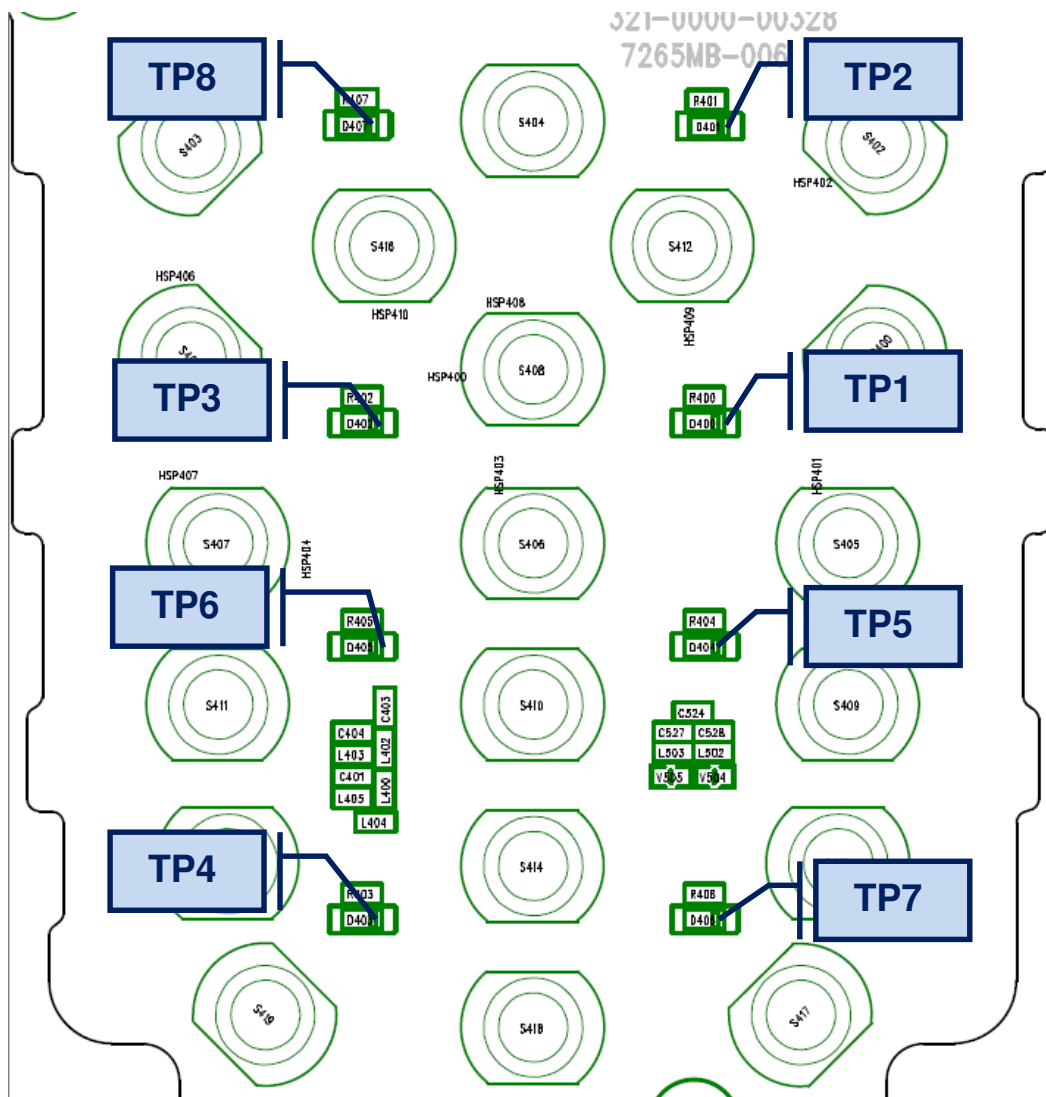
4.5.3 Checking Flow



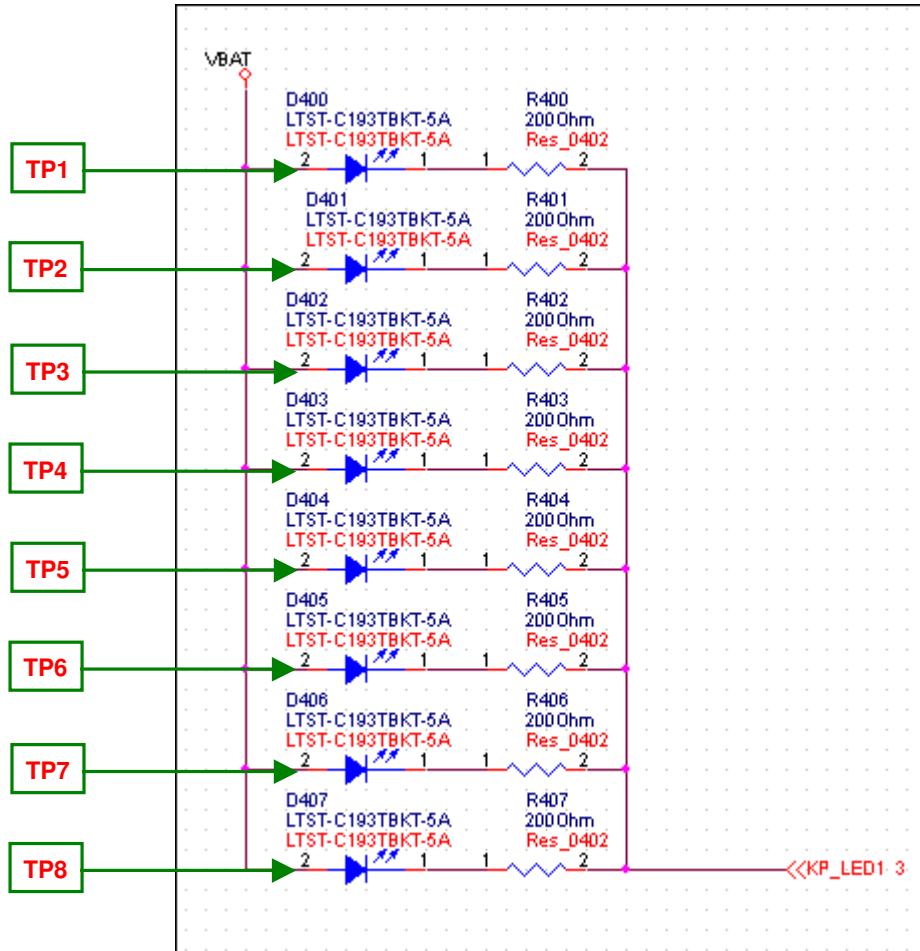
4.6 Key Backlight Trouble

4.6.1 Test Point

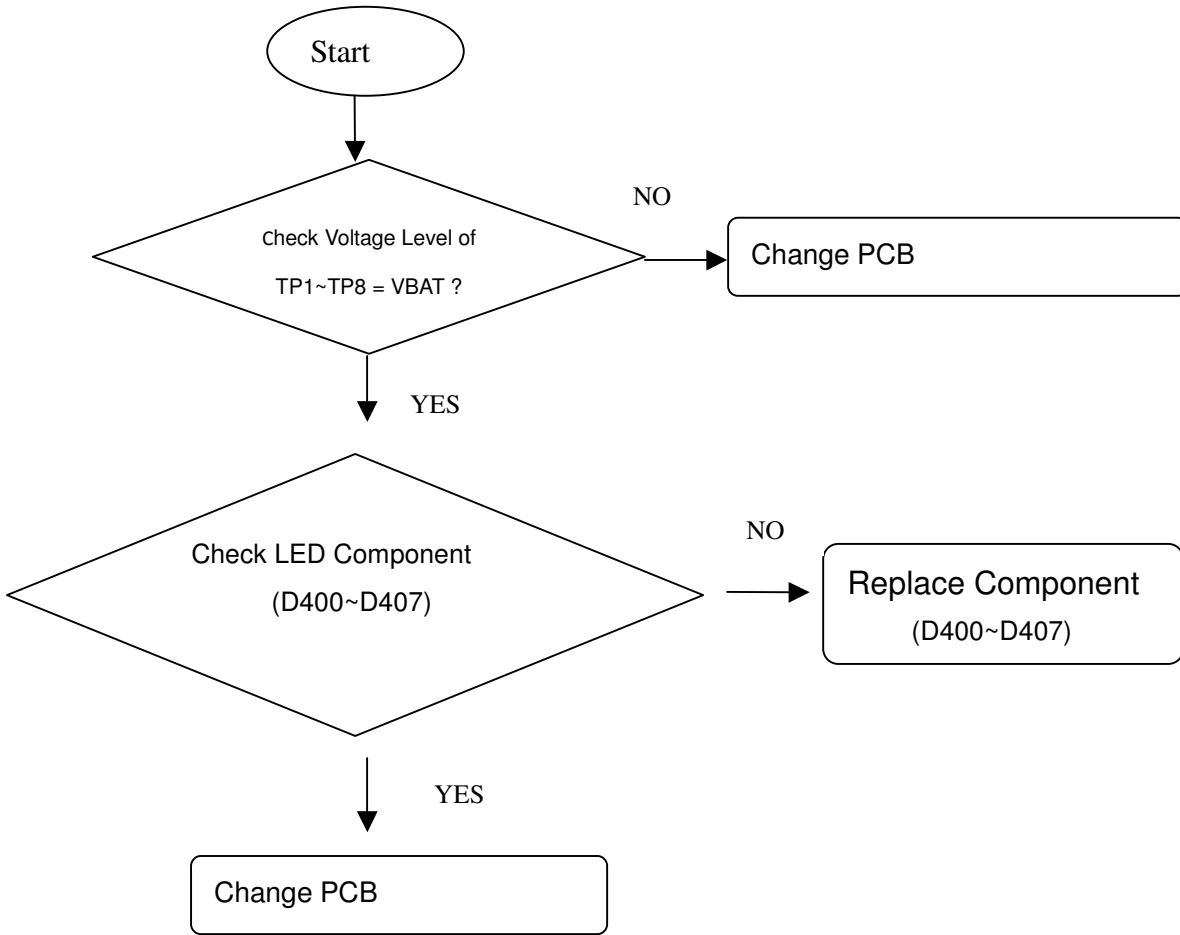
		Measure pin	PART
VBAT		D400 Pin2	TP1
VBAT		D401 Pin2	TP2
VBAT		D402 Pin2	TP3
VBAT		D403 Pin2	TP4
VBAT		D404 Pin2	TP5
VBAT		D405 Pin2	TP6
VBAT		D406 Pin2	TP7
VBAT		D407 Pin2	TP8



4.6.2 Circuit Diagram



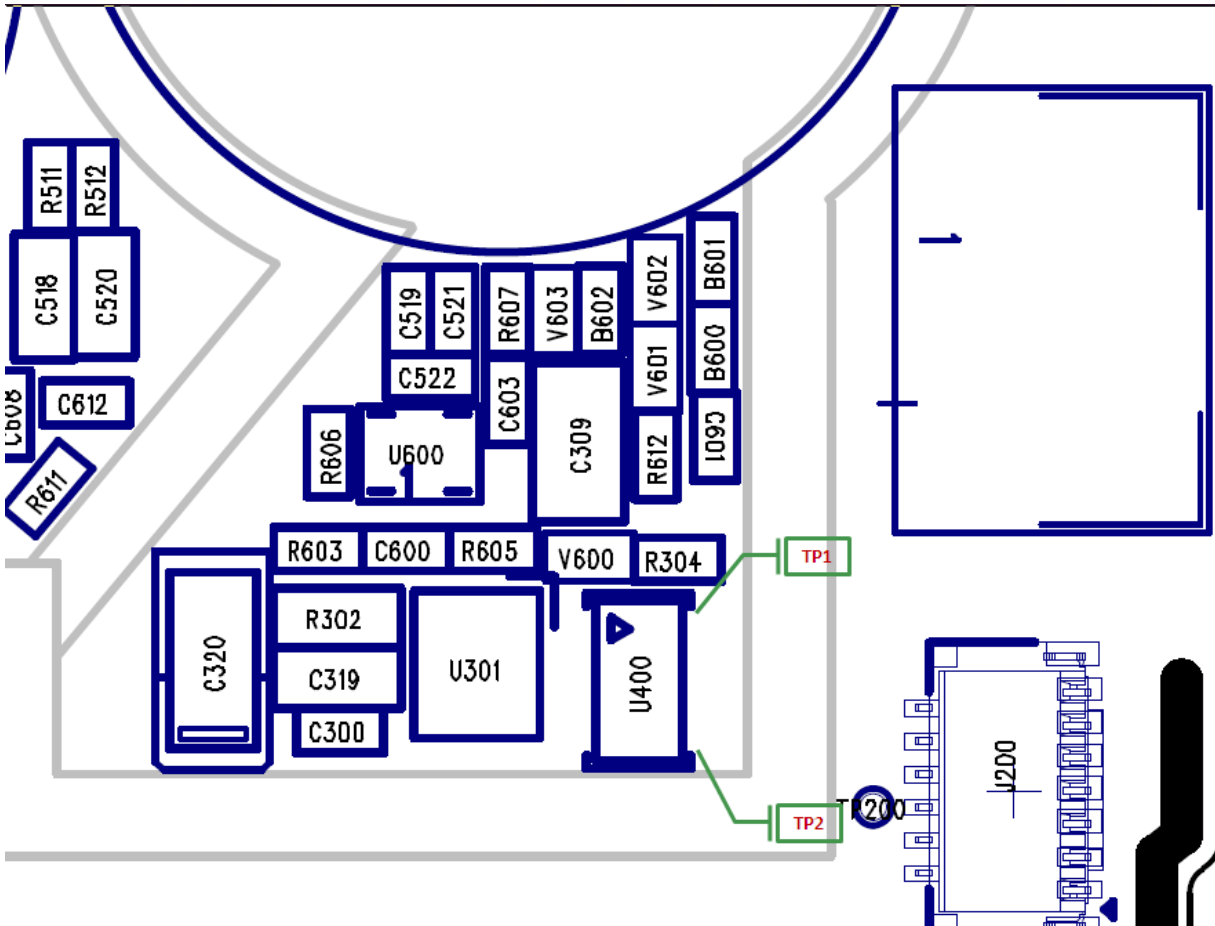
4.6.3 Checking Flow



4.7 LCM Backlight Trouble

4.7.1 Test Point

Net		Measure pin	PART
D1		U400 Pin 6	TP1
D3		U400 Pin 4	TP2

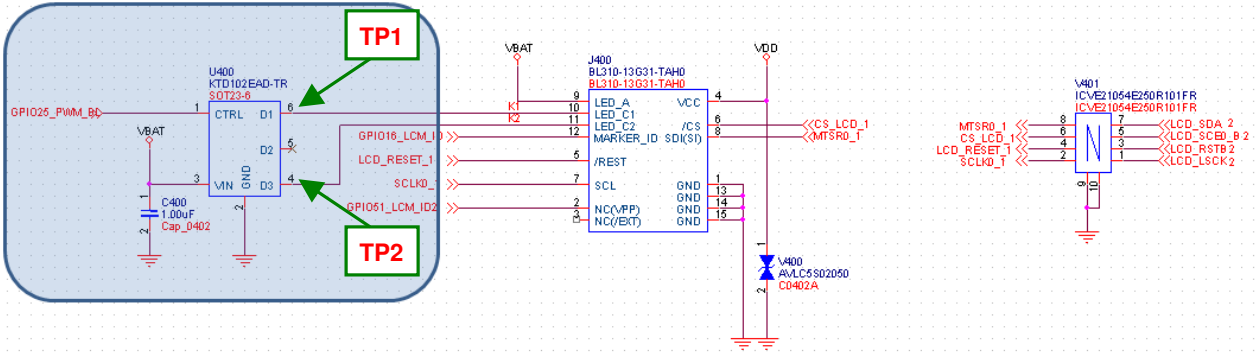


4.7.2 Circuit Diagram

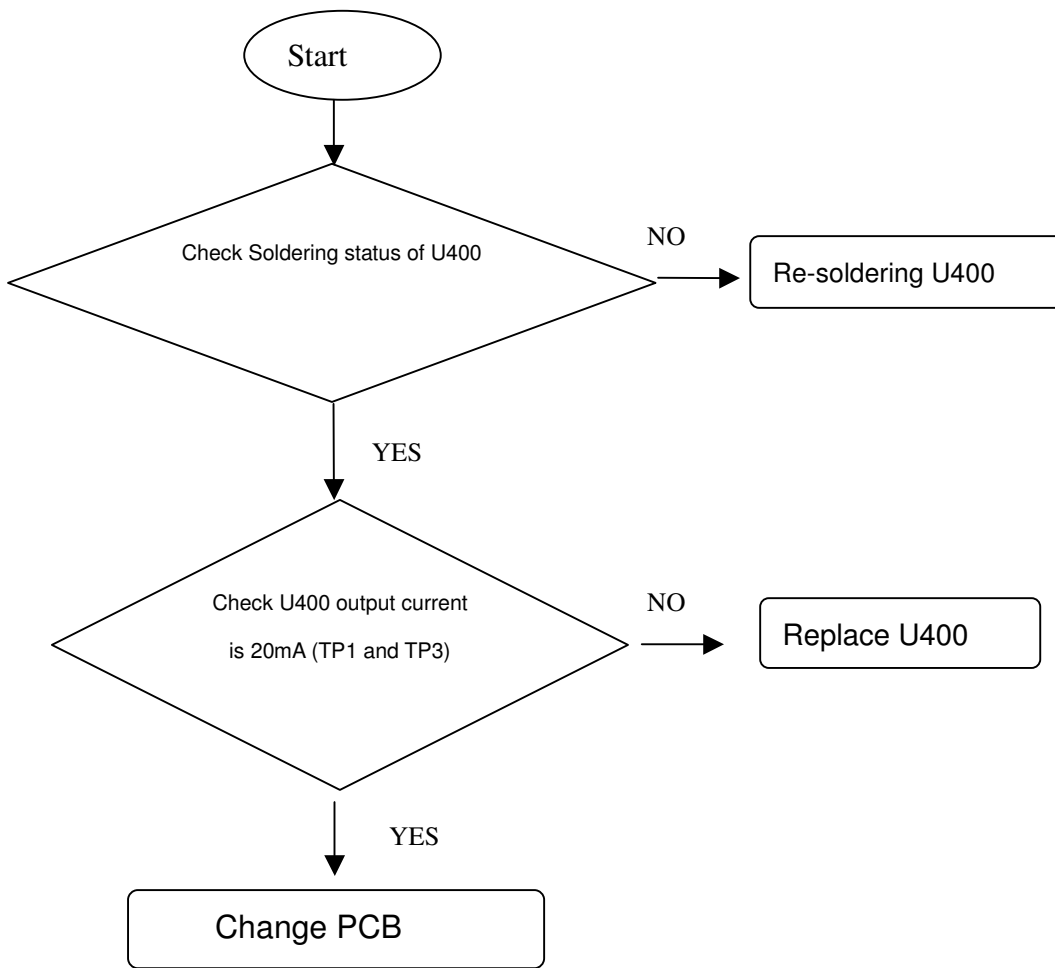
LCM BACKLIGHT DRIVER

VENDER	GPIO16_LCM_ID
LGIT	LOW
TBD	HIGH

VENDER	GPIO51_LCM_ID2
TBD	LOW
TBD	HIGH



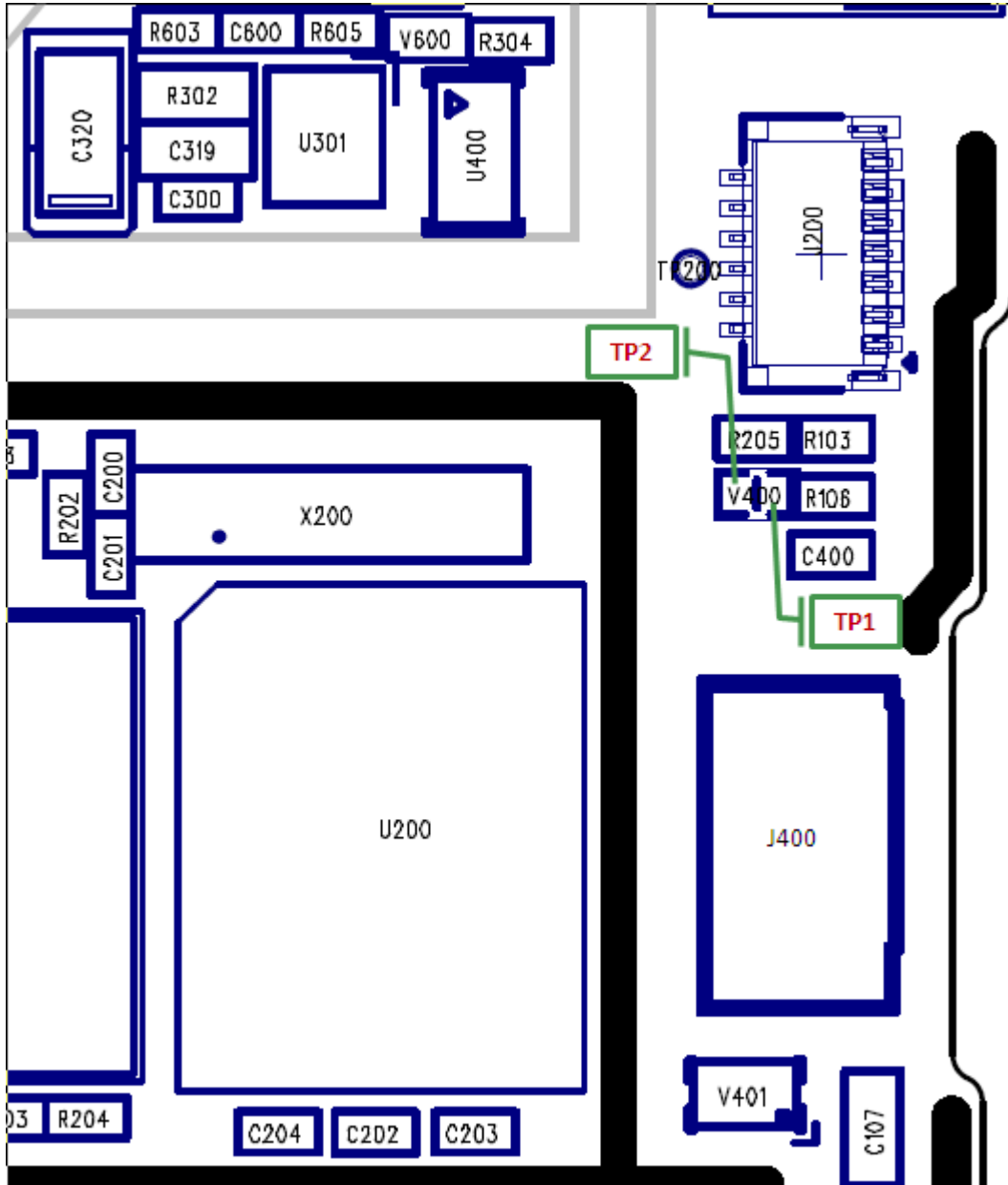
4.7.3 Checking Flow



4.8 LCM Trouble

4.8.1 Test Point

Net		Measure pin	PART
VDD		V400 Pin1	TP1
GND		V400 Pin2	TP2

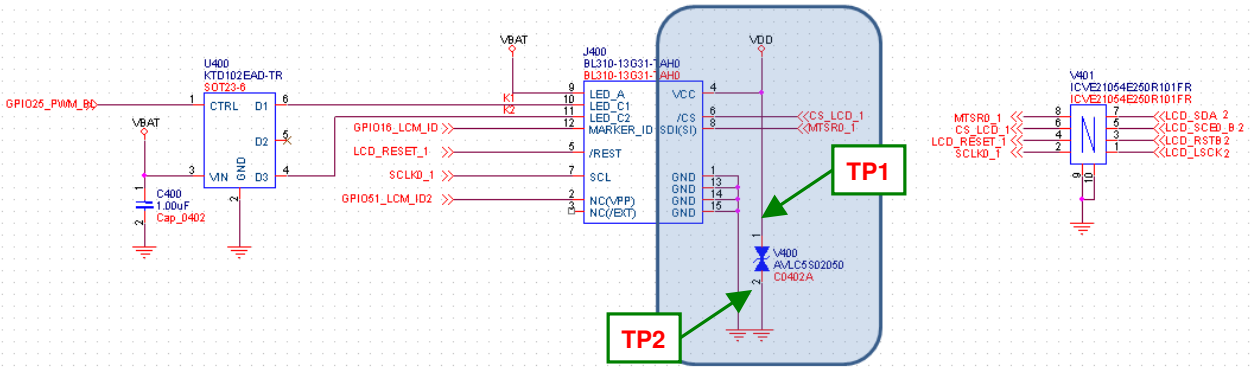


4.8.2 Circuit Diagram

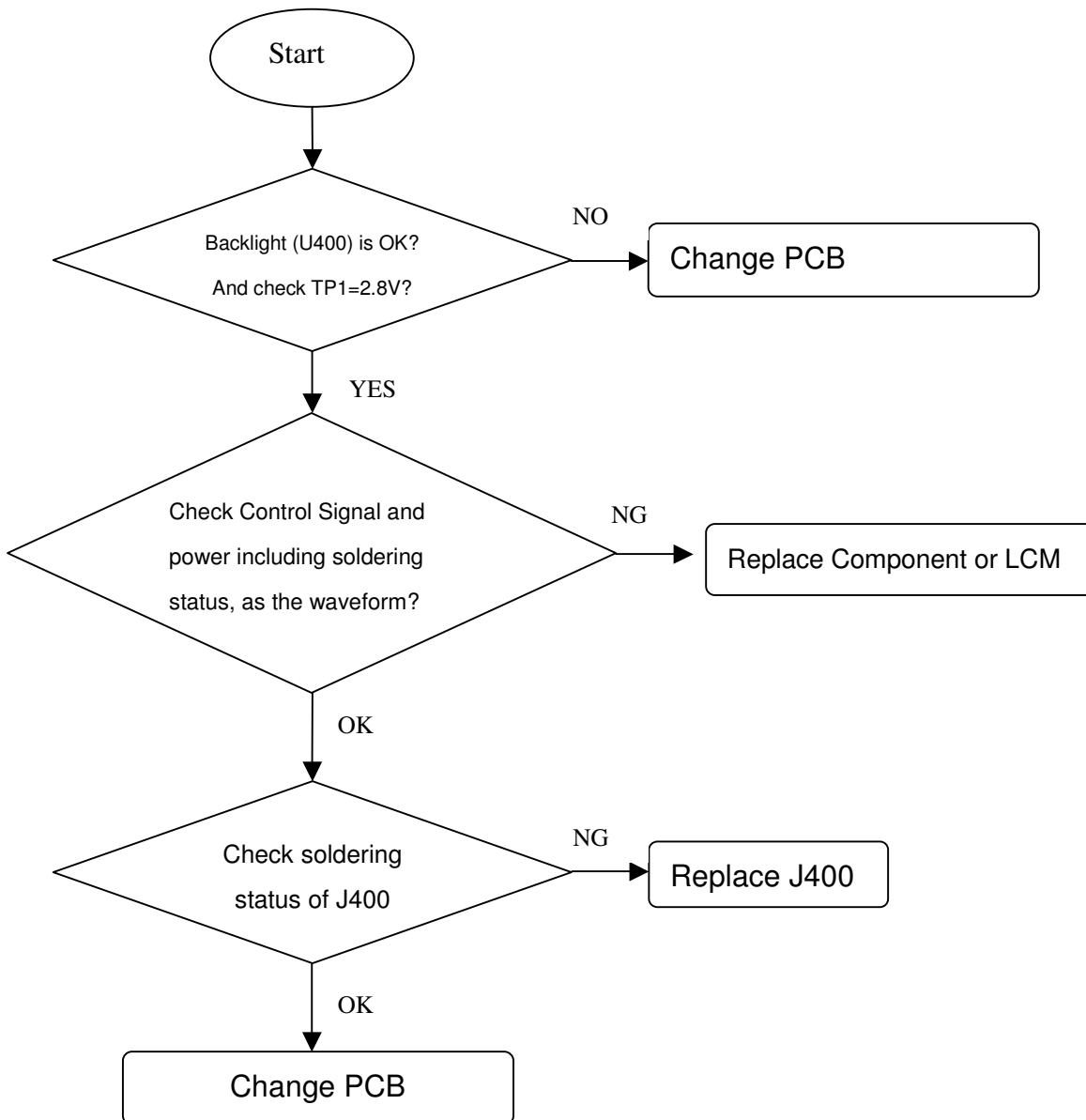
LCM BACKLIGHT DRIVER

VENDER	GPIO16_LCM_ID
LGIT	LOW
TBD	HIGH

VENDER	GPIO51_LCM_ID2
TBD	LOW
TBD	HIGH



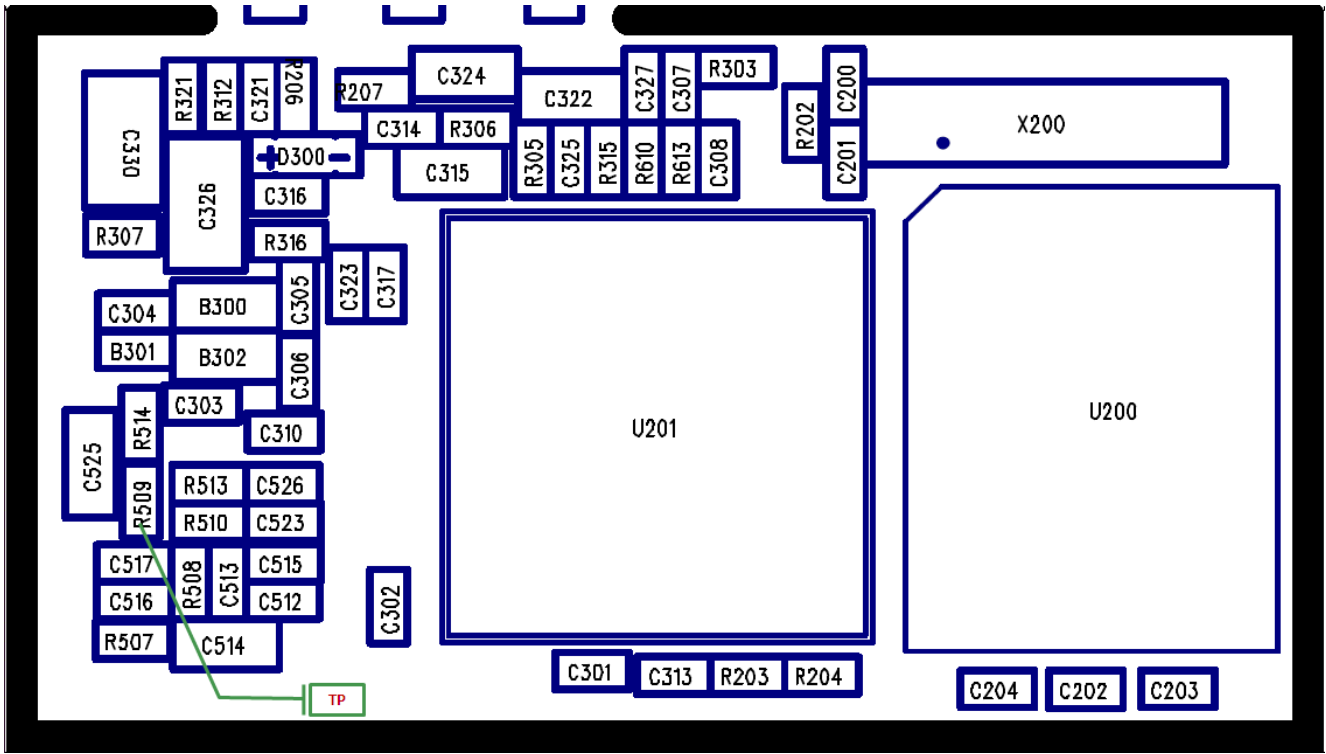
4.8.3 Checking Flow



4.9 Microphone Trouble

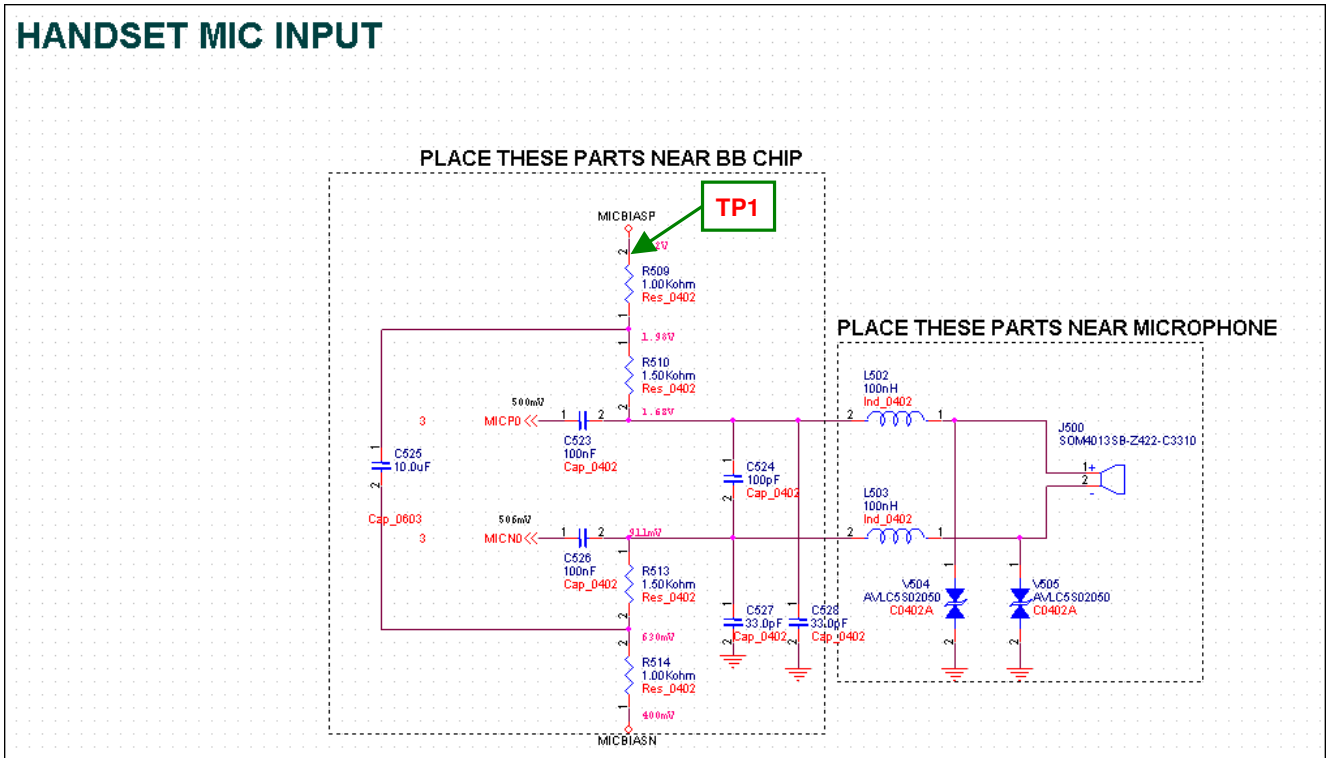
4.9.1 Test Point

Net		Measure pin	PART
VBIAS		R509 Pin2	TP

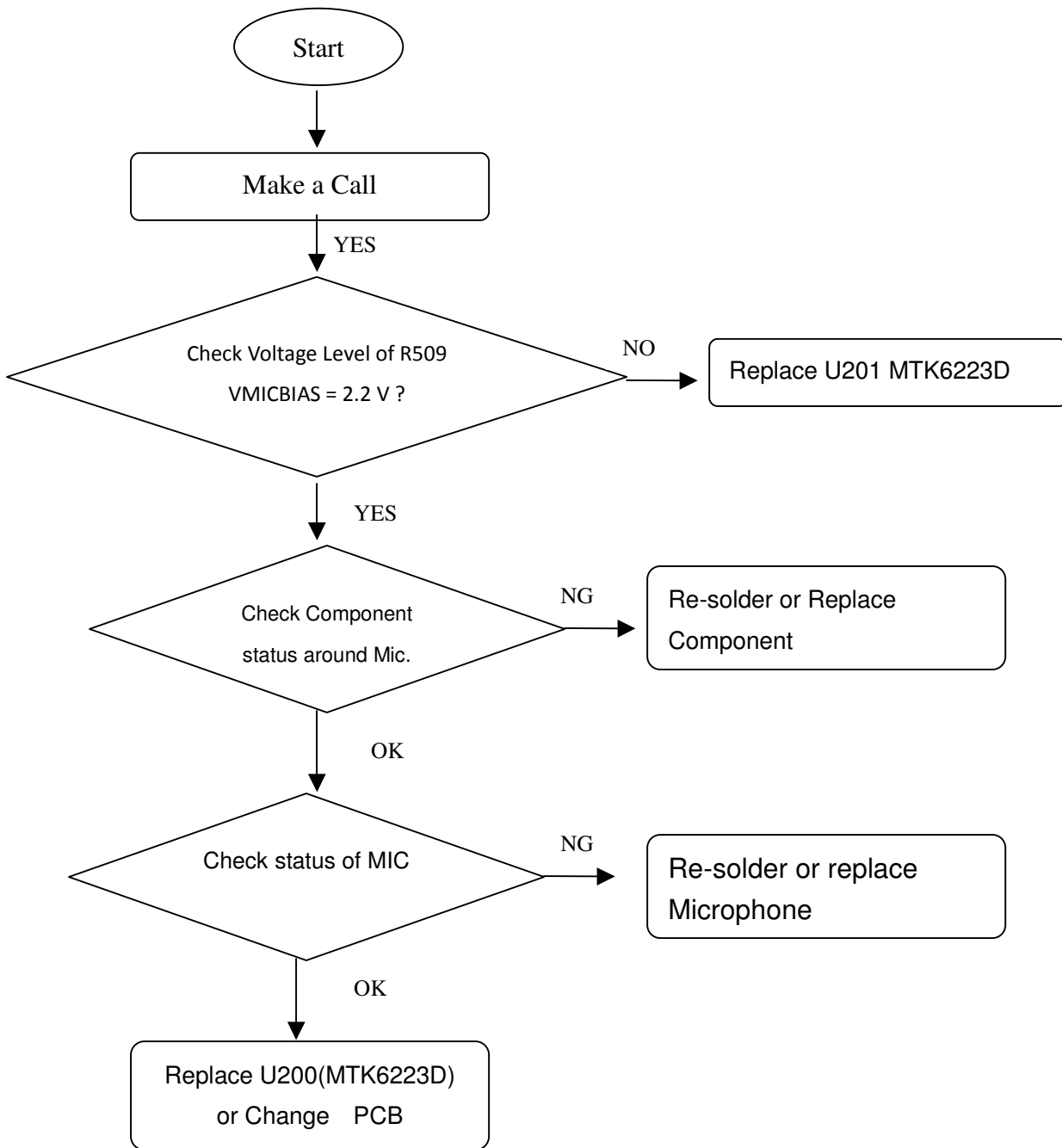


4.9.2 Circuit Diagram

HANDSET MIC INPUT



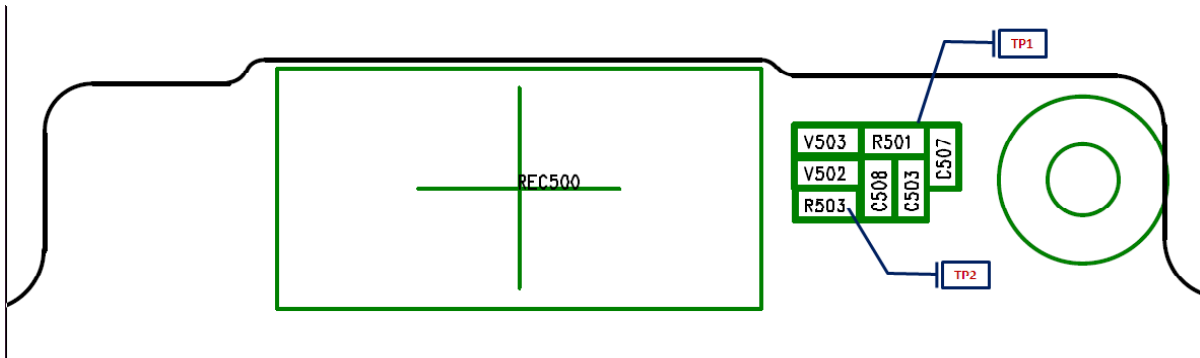
4.9.3 Checking Flow



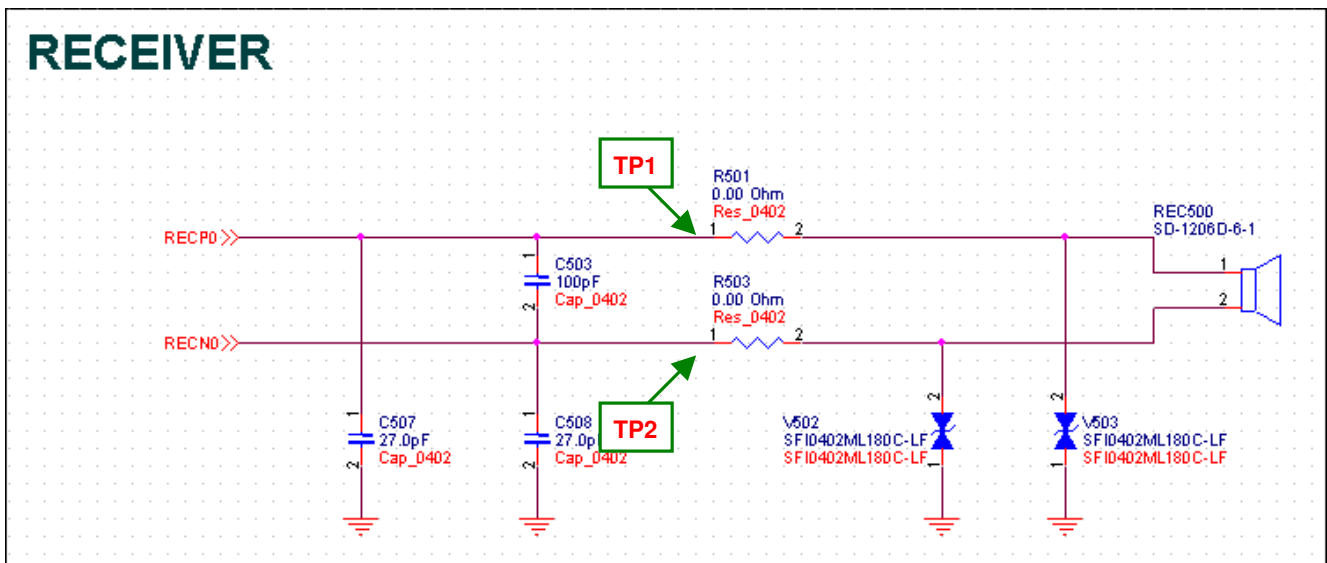
4.10 Receiver Trouble

4.10.1 Test Point

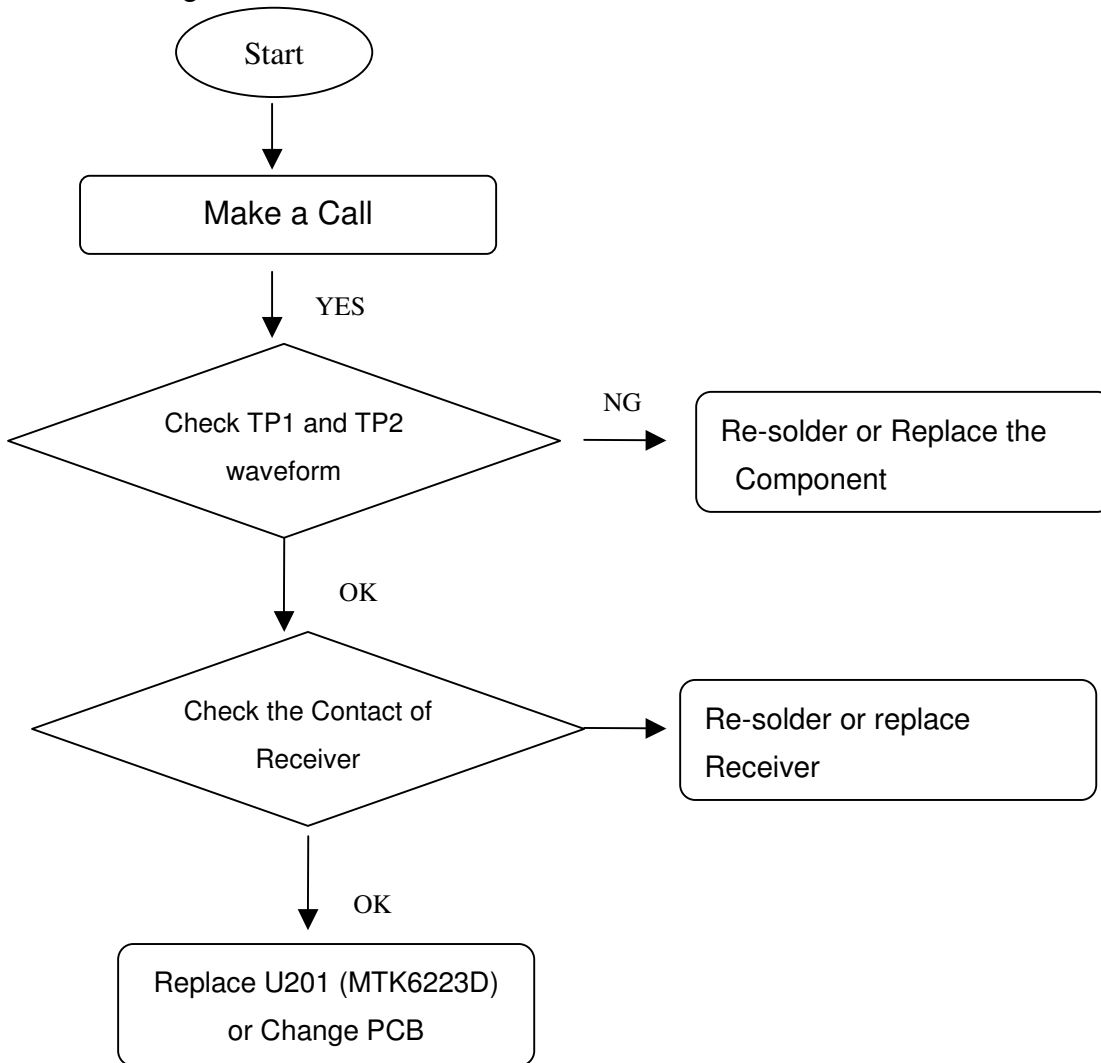
Net		Measure pin	PART
RECP0		R501 Pin1	TP1
RECNO		R503 Pin1	TP2



4.10.2 Circuit Diagram



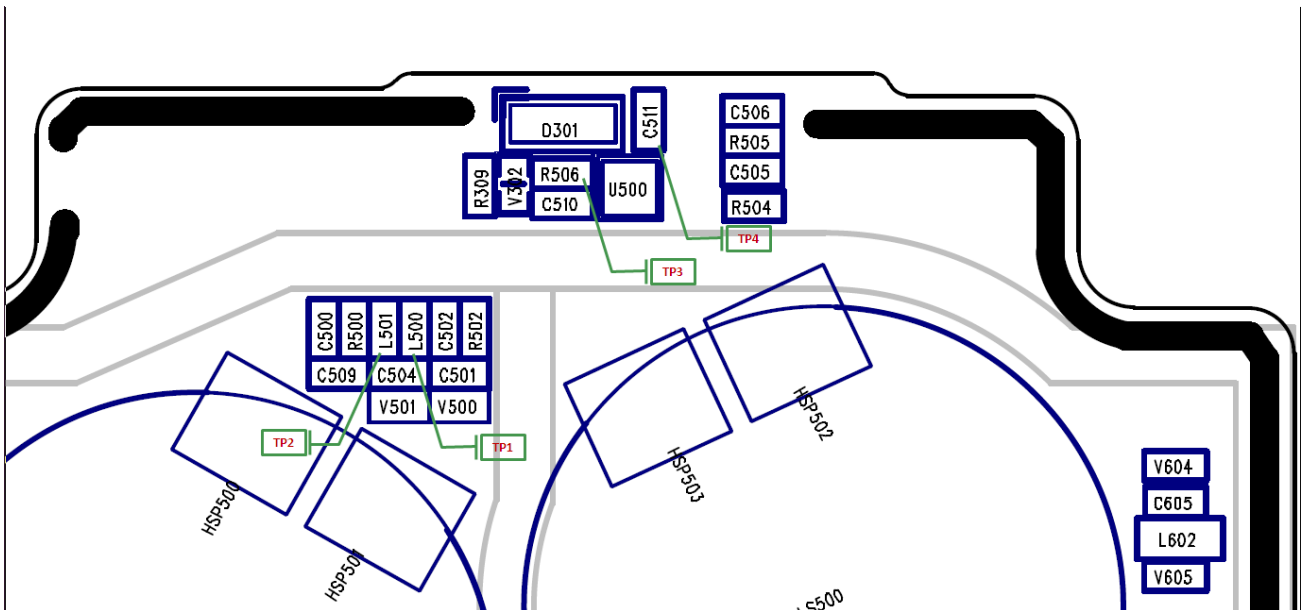
4.10.3 Checking Flow



4.11 Speaker Trouble

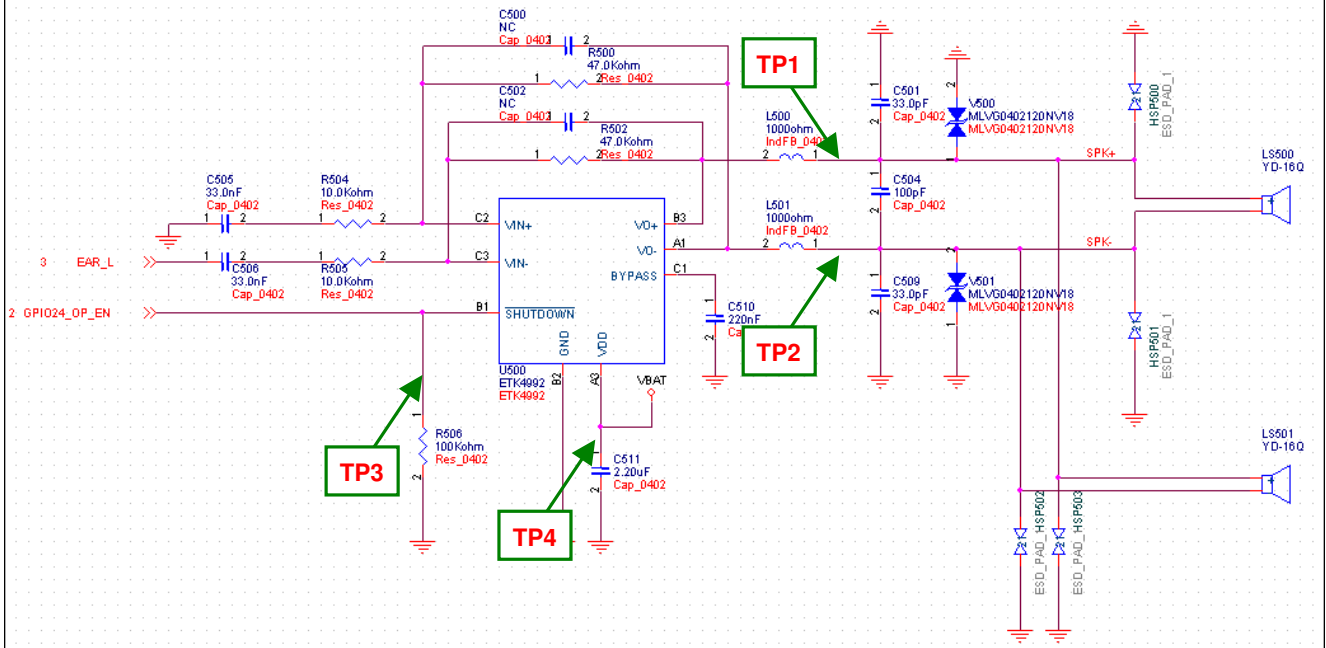
4.11.1 Test Point

Net		Measure pin	PART
SPK-		L500 Pin1	TP1
SPK+		L501 Pin1	TP2
U500.B1		R506 Pin1	TP3
VBAT		C511 Pin1	TP4

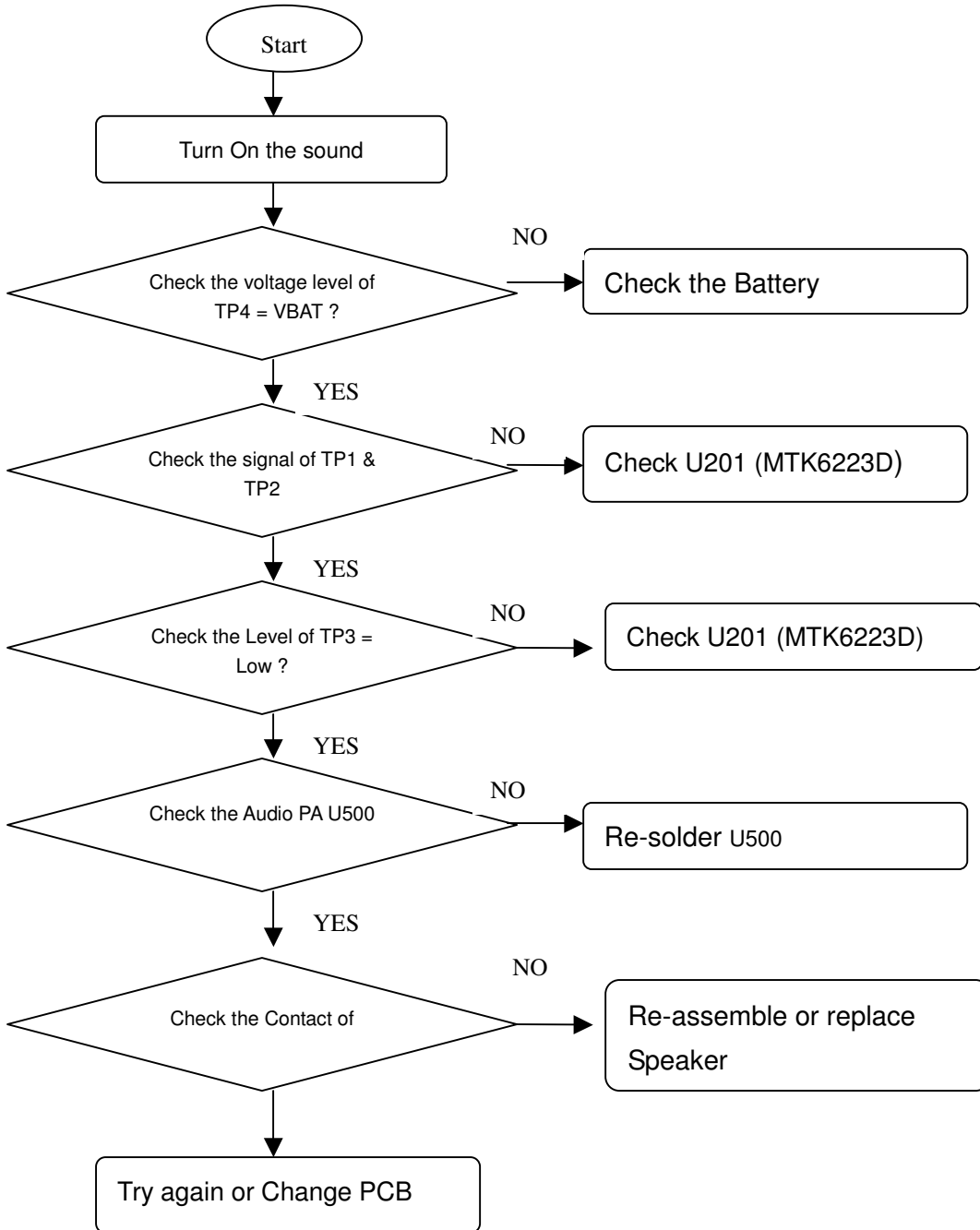


4.11.2 Circuit Diagram

SPEAKER



4.11.3 Checking Flow



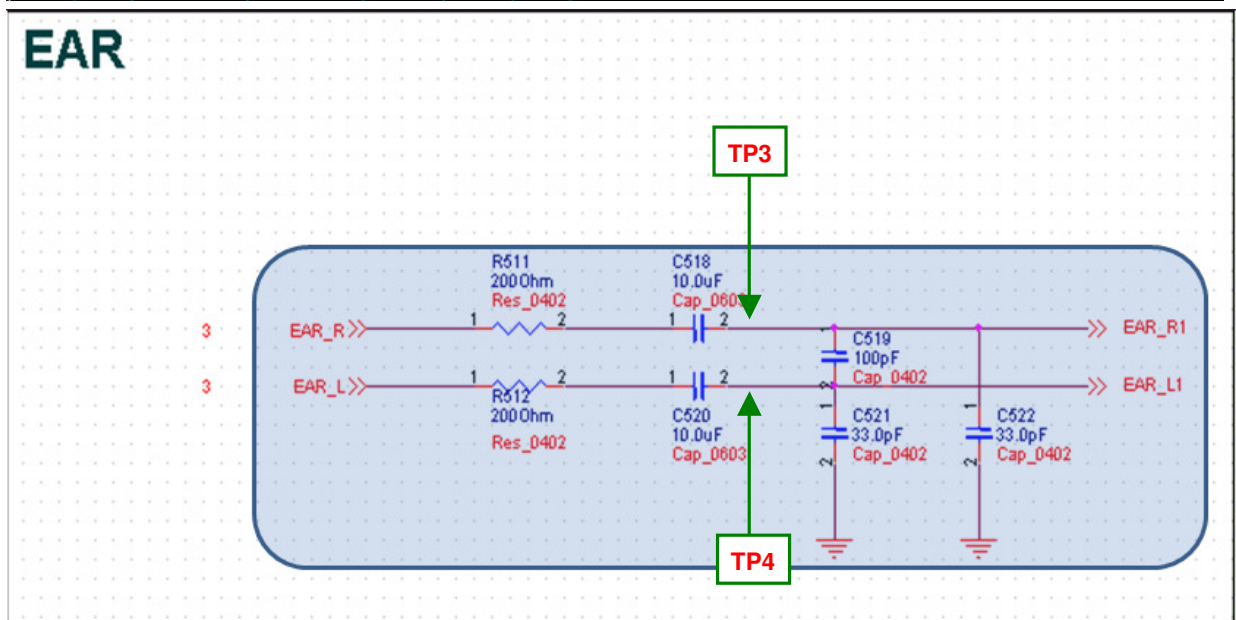
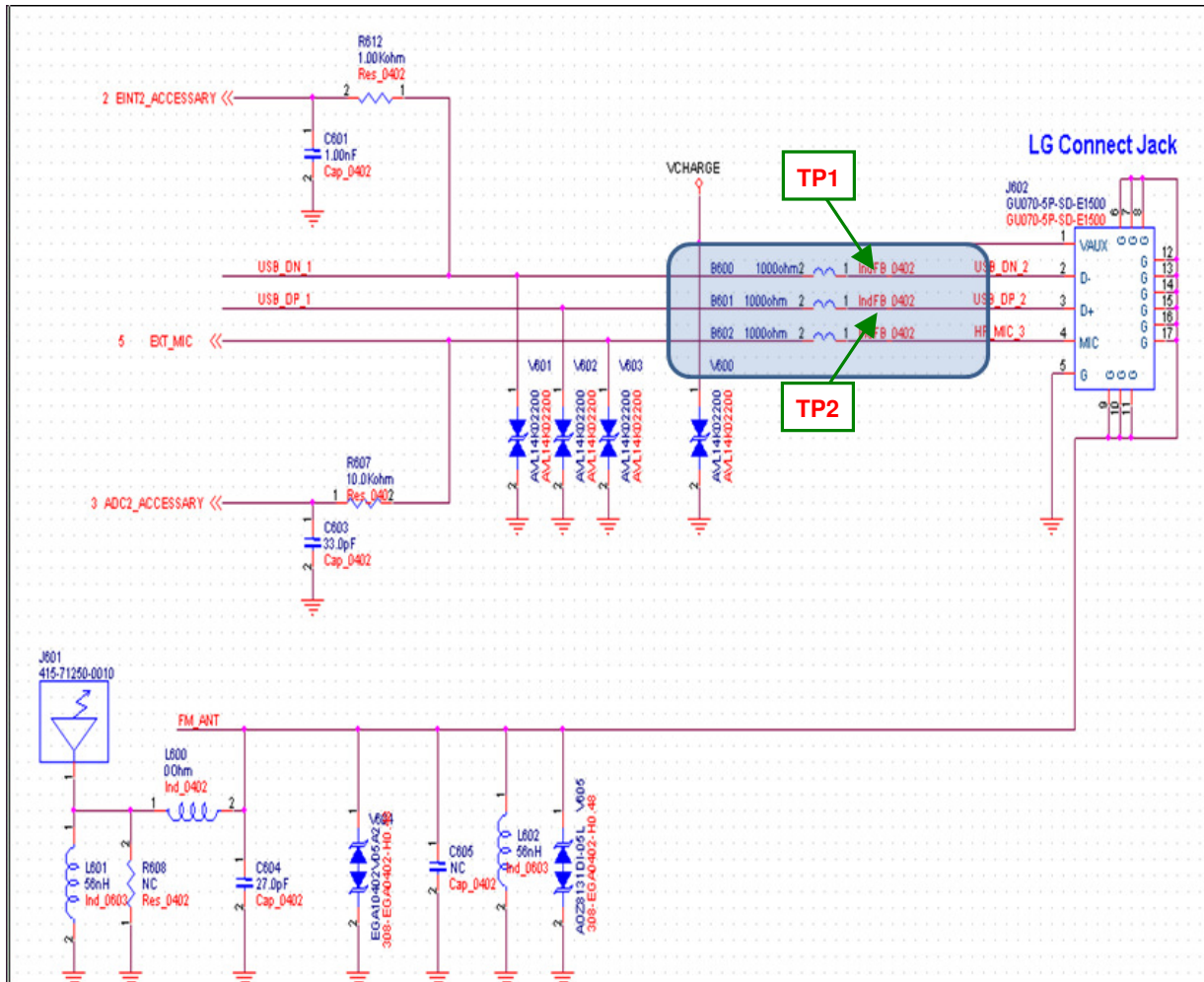
4.12 Headphone Trouble

4.12.1 Test Point

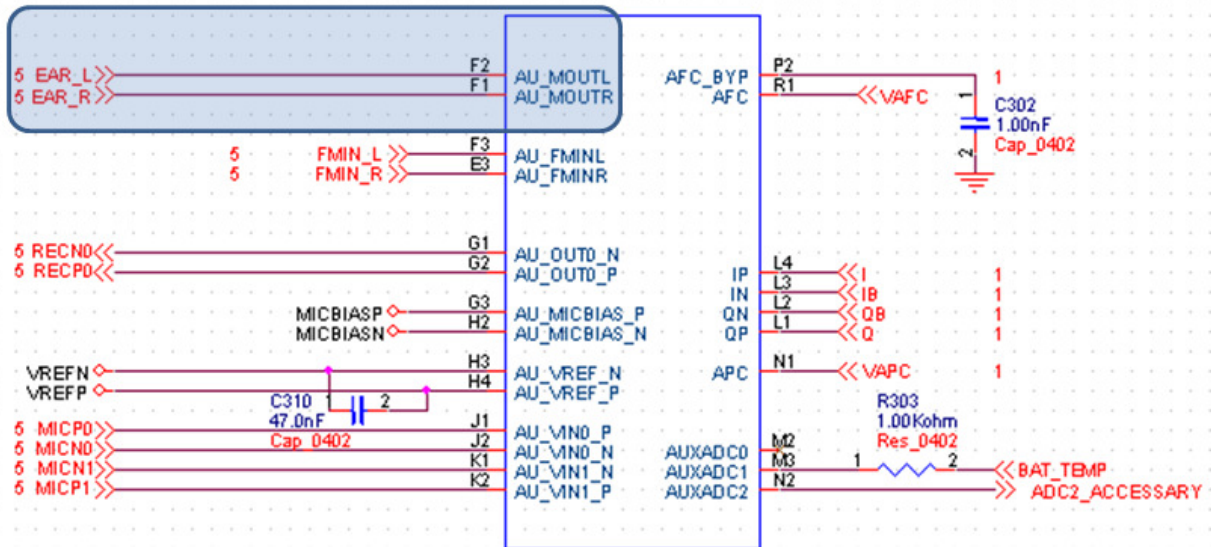
Net		Measure pin	PART
USB_DN_2		B600 Pin1	TP1
USB_DP_2		B601 Pin1	TP2
EAR_R1		C518 Pin2	TP3
EAR_L1		C520 Pin2	TP4



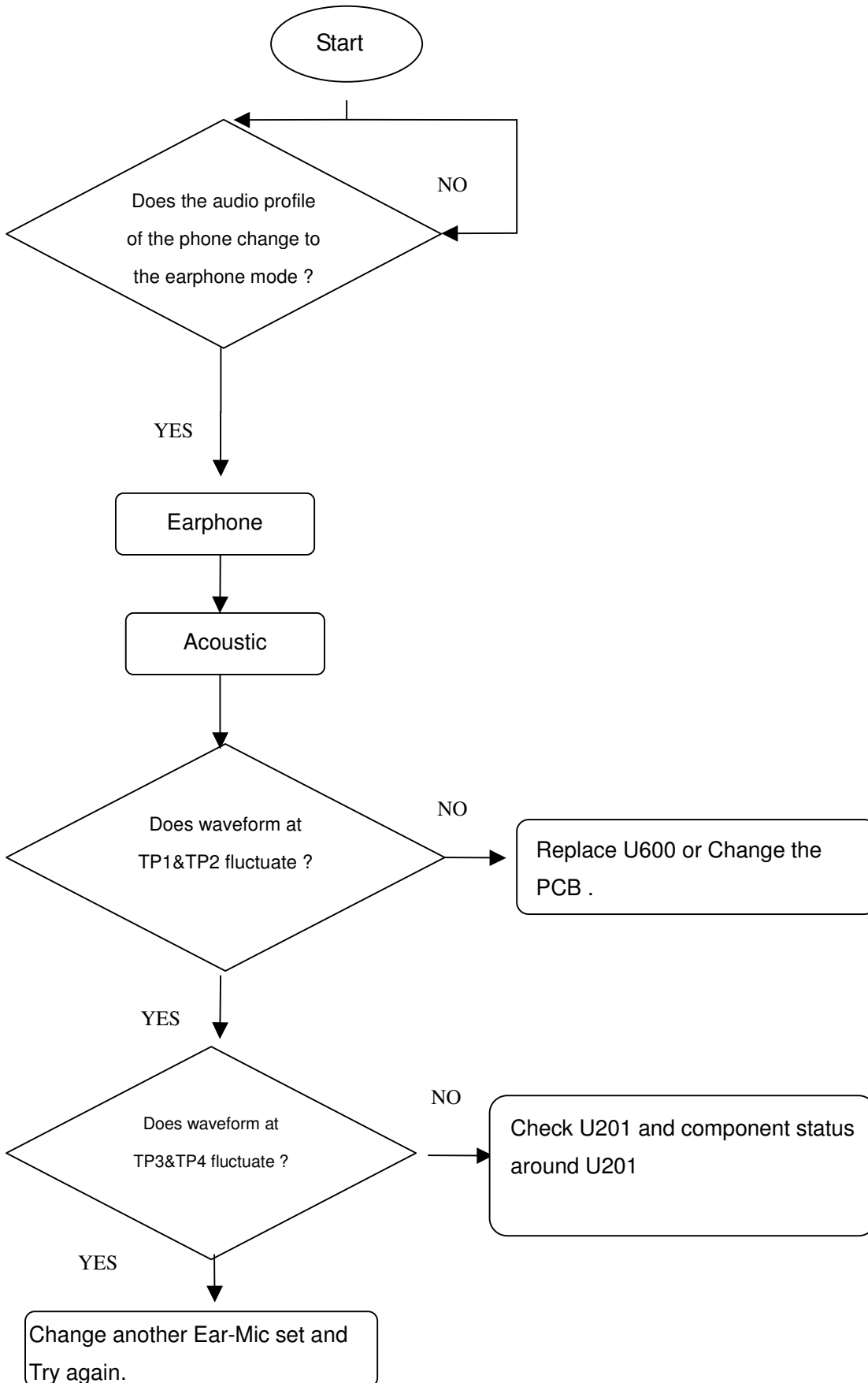
4.12.2 Circuit Diagram



U201C MT6223DA/AN-L



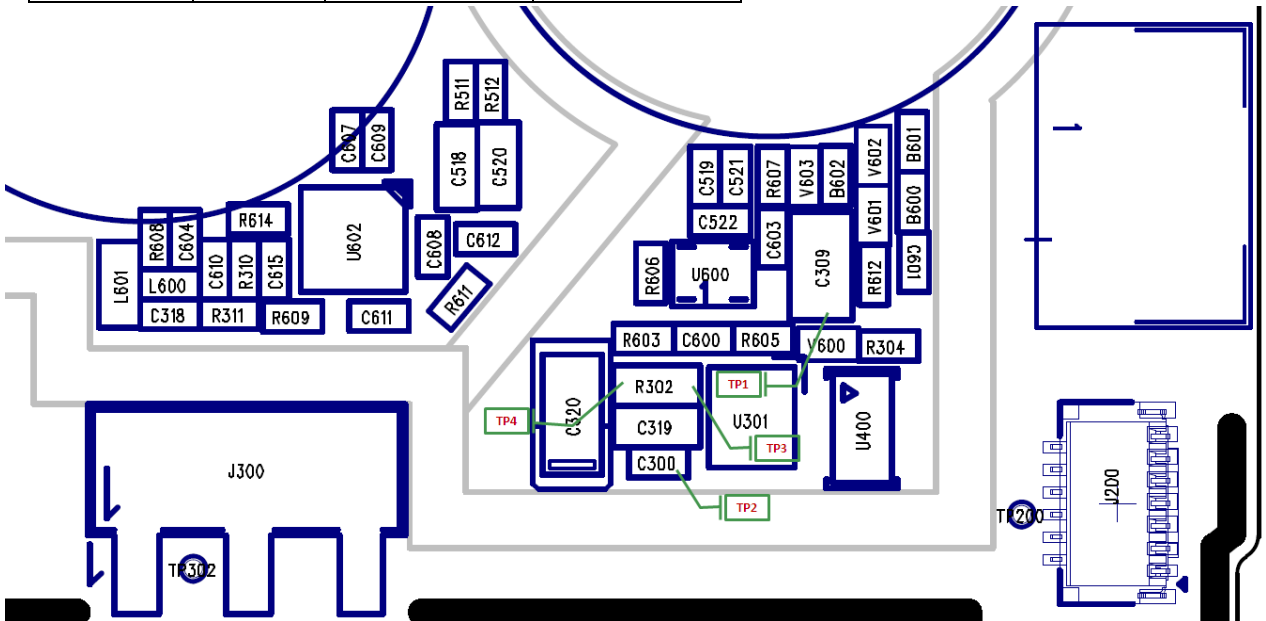
4.12.3 Checking Flow



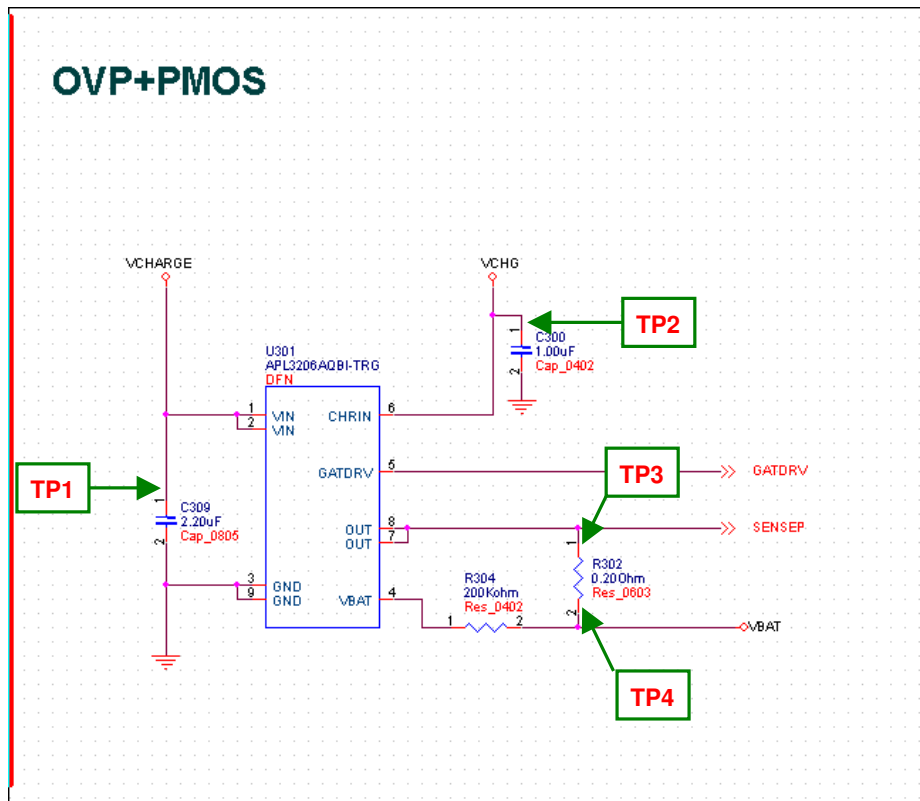
4.13 Charging Trouble

4.13.1 Test Point

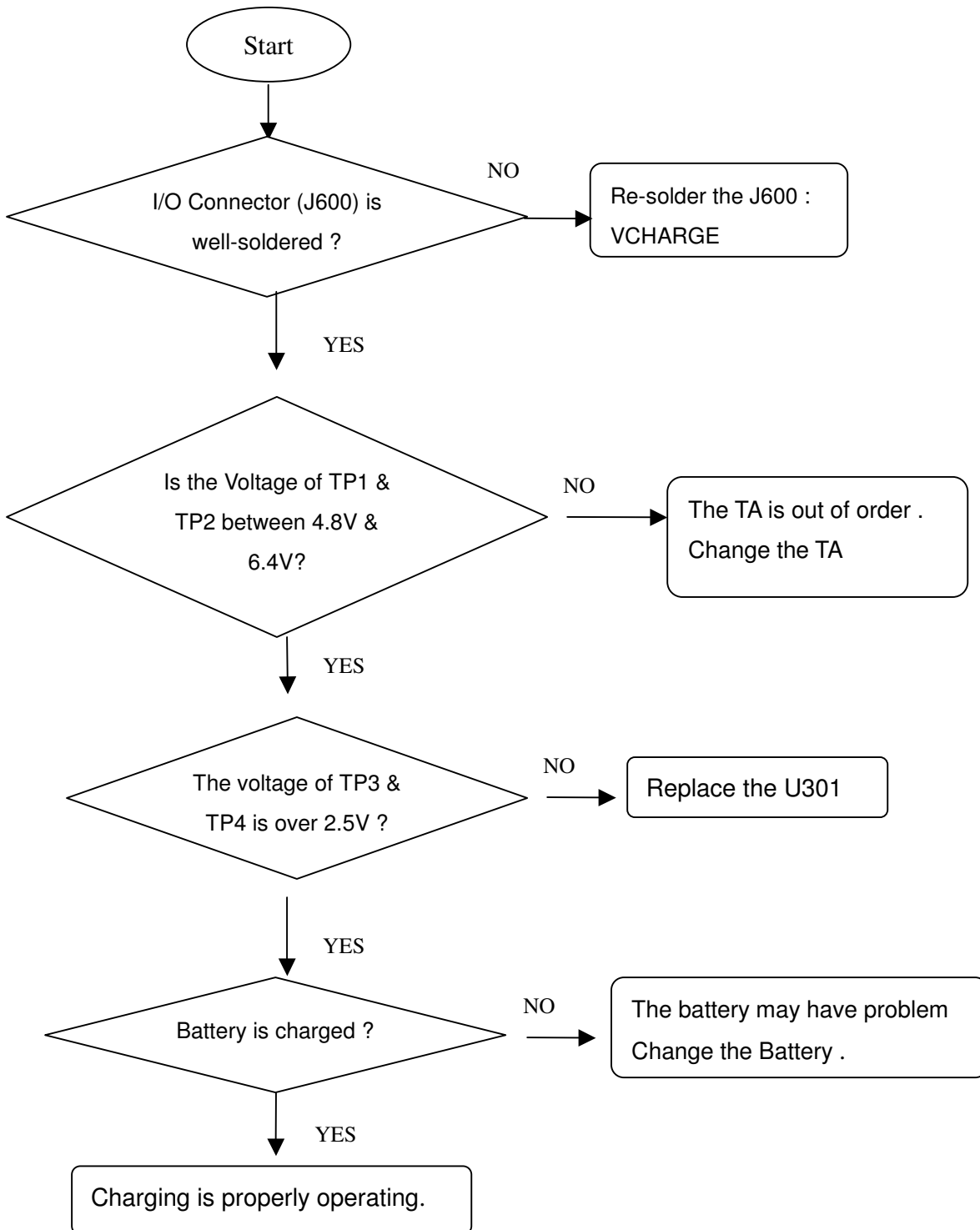
Net		Measure pin	PART
		C309 Pin1	TP1
		C300 Pin1	TP2
SENSEP		R302.1 Pin1	TP3
VBAT		R302.2 Pin2	TP4



4.13.2 Circuit Diagram



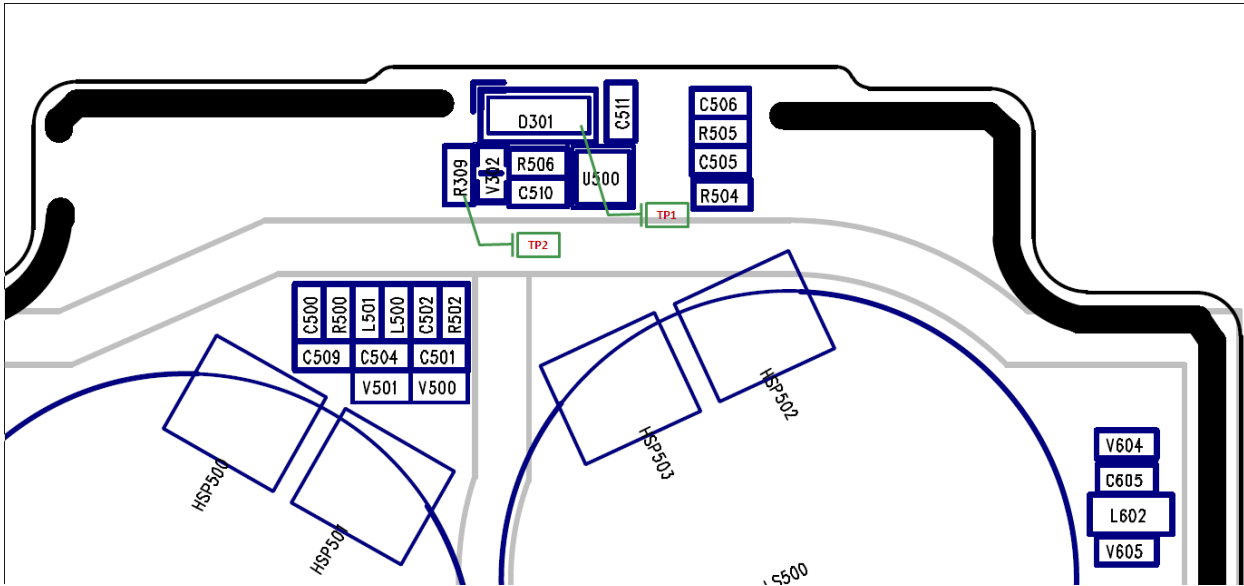
4.13.3 Checking Flow



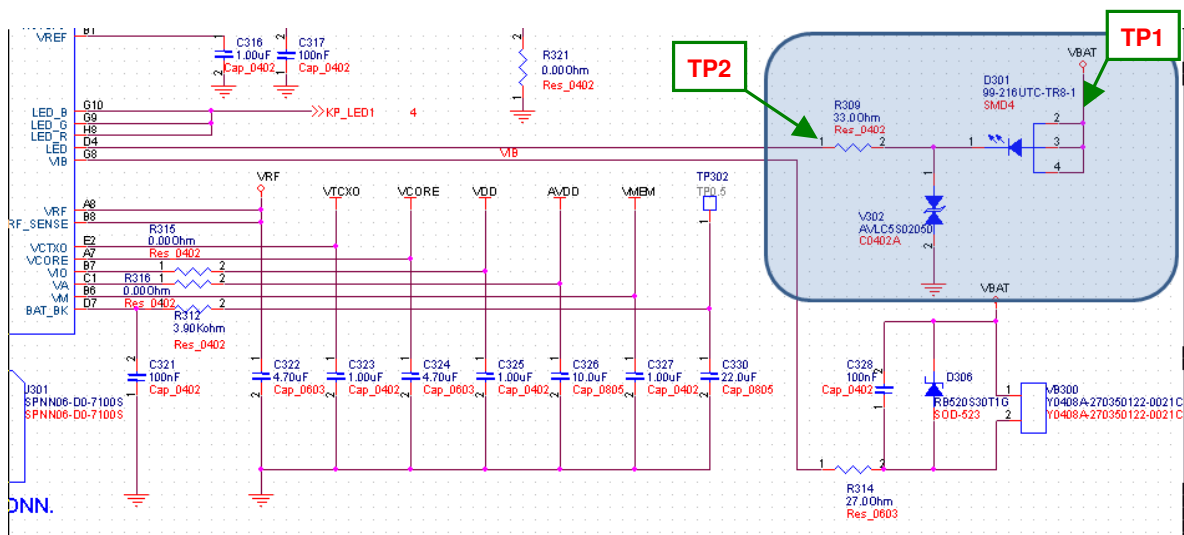
4.14 Torch LED Trouble

4.14.1 Test point

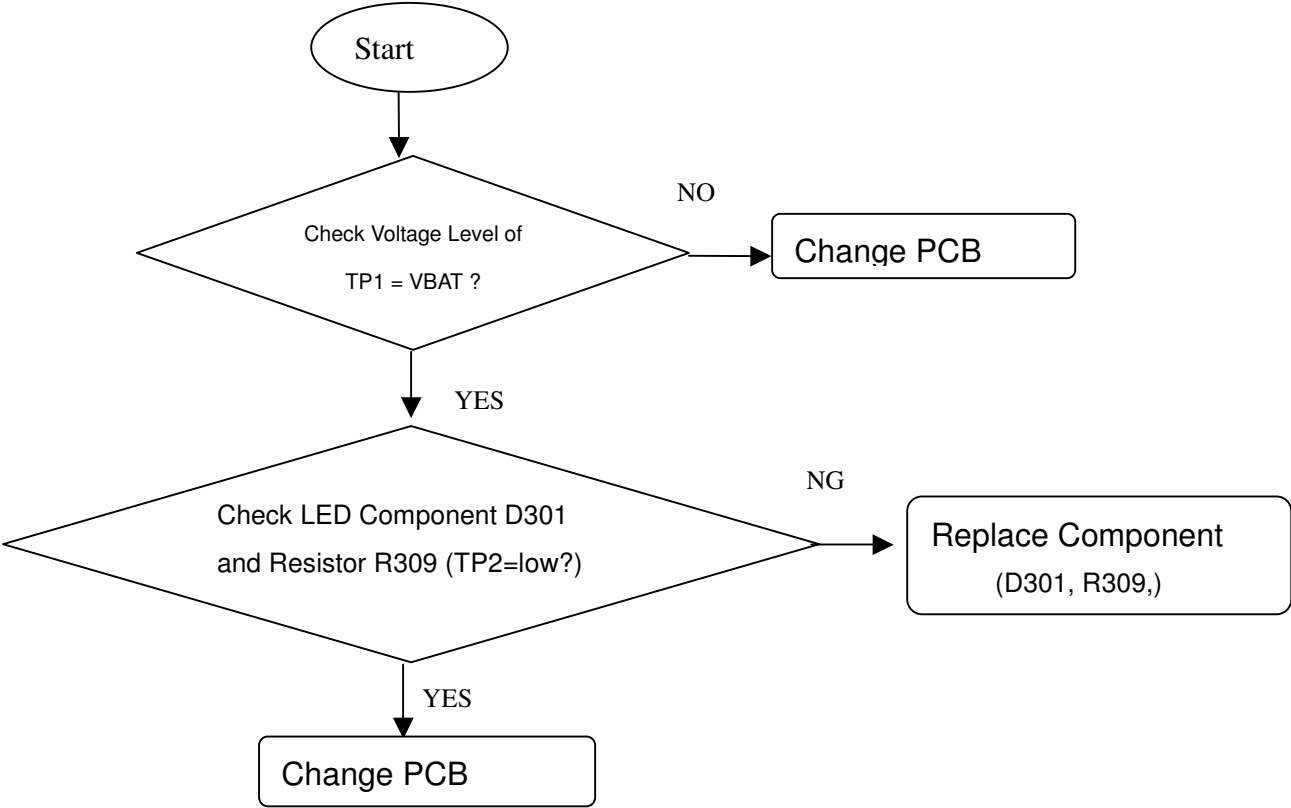
Net		Measure pin	PART
VBAT		D301 Pin2,3,4	TP1
		R309 Pin1	TP2



4.14.2 Circuit Diagram

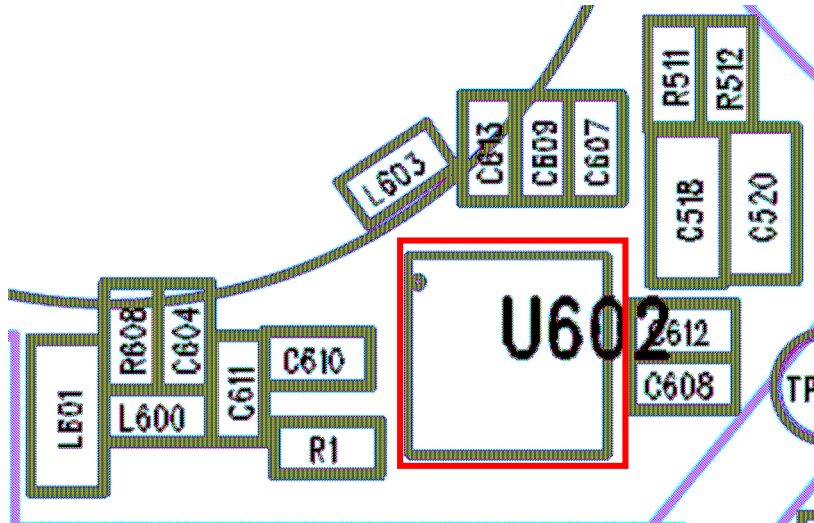


4.14.3 Checking Flow

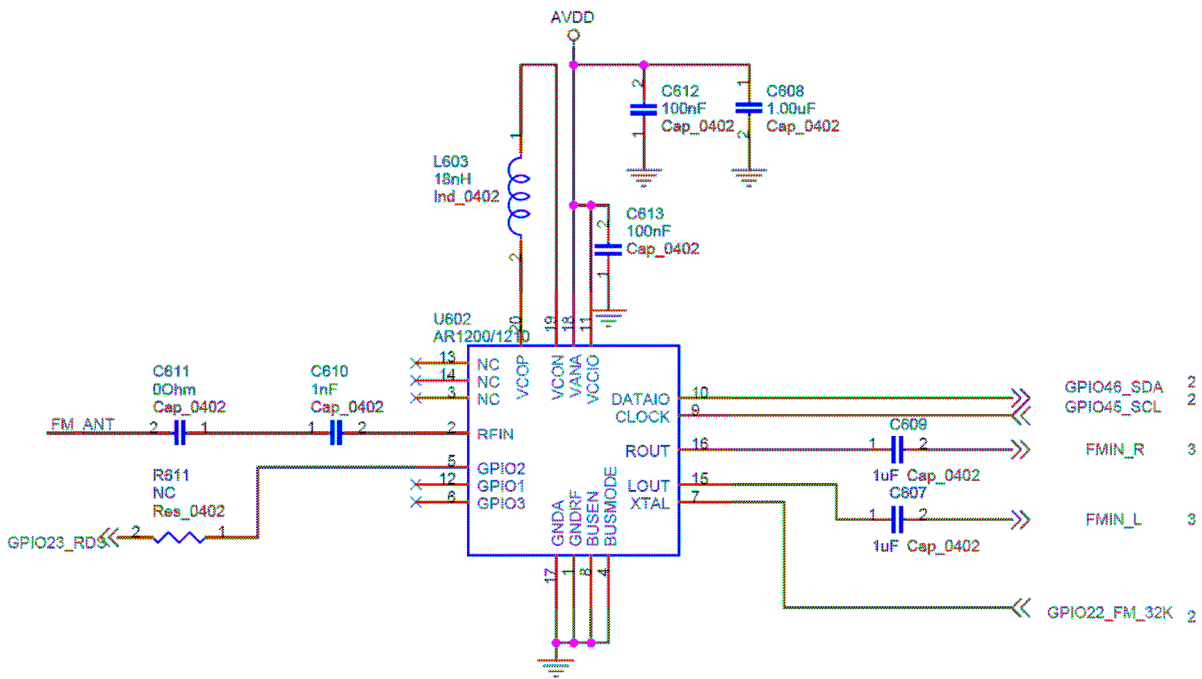


4.15 FM Radio Trouble

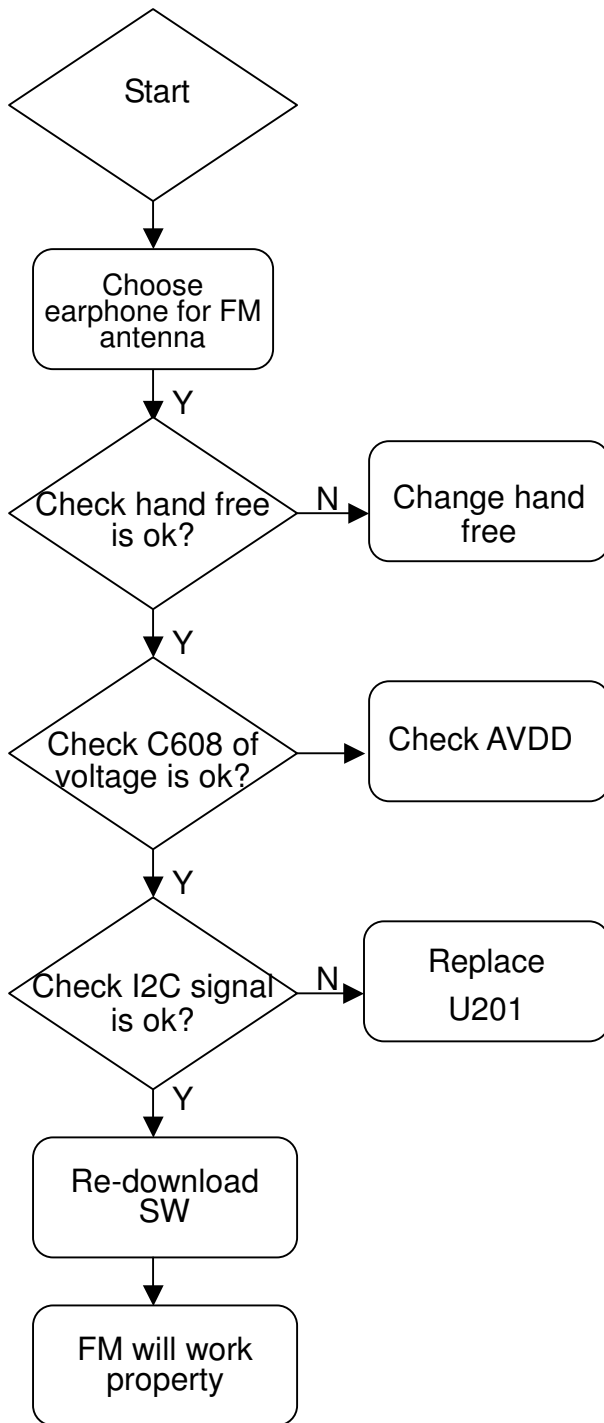
4.15.1 Test point



4.15.2 FM Radio circuit:

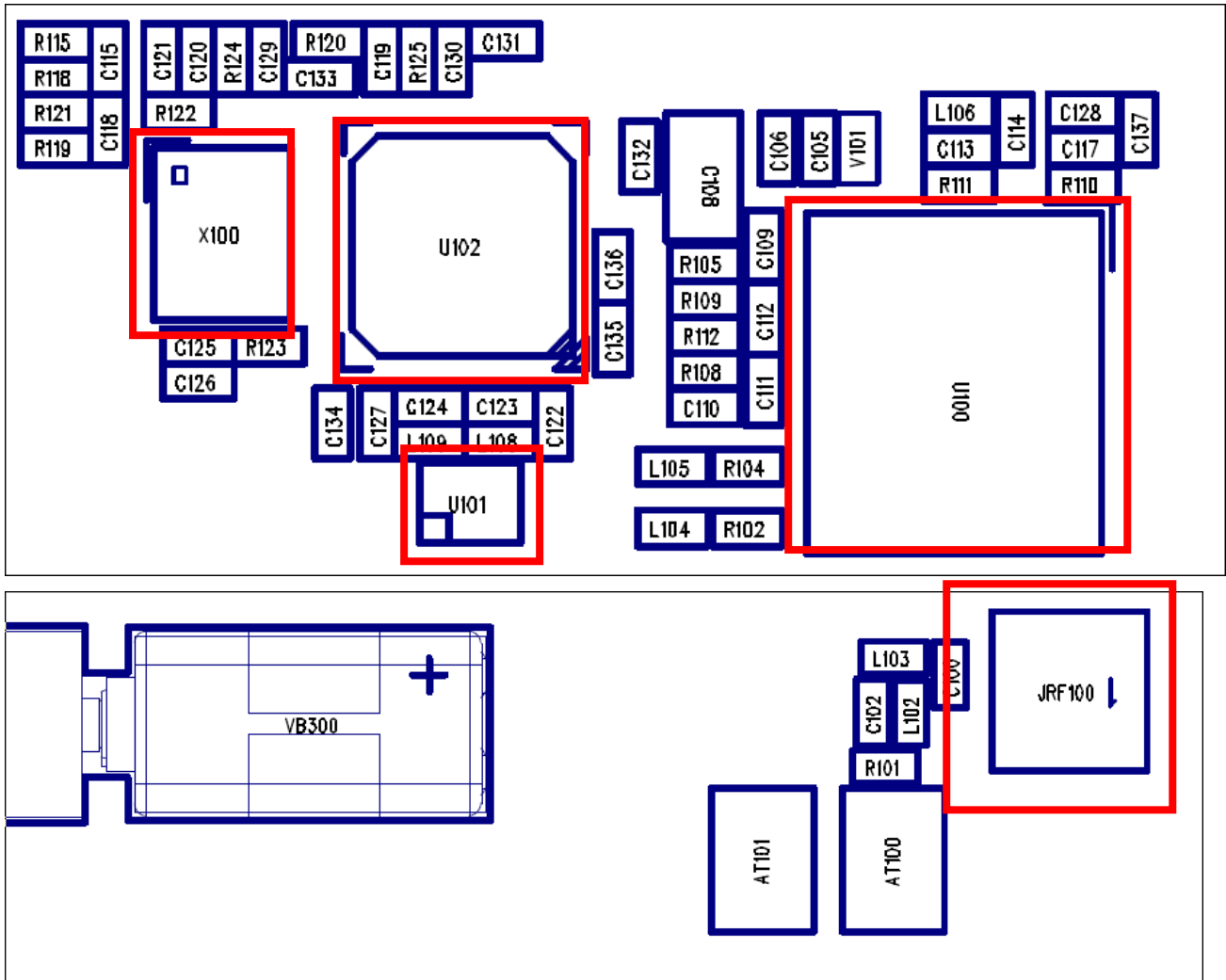


4.15.3 Checking Flow



RF TROUBLE SHOOTING

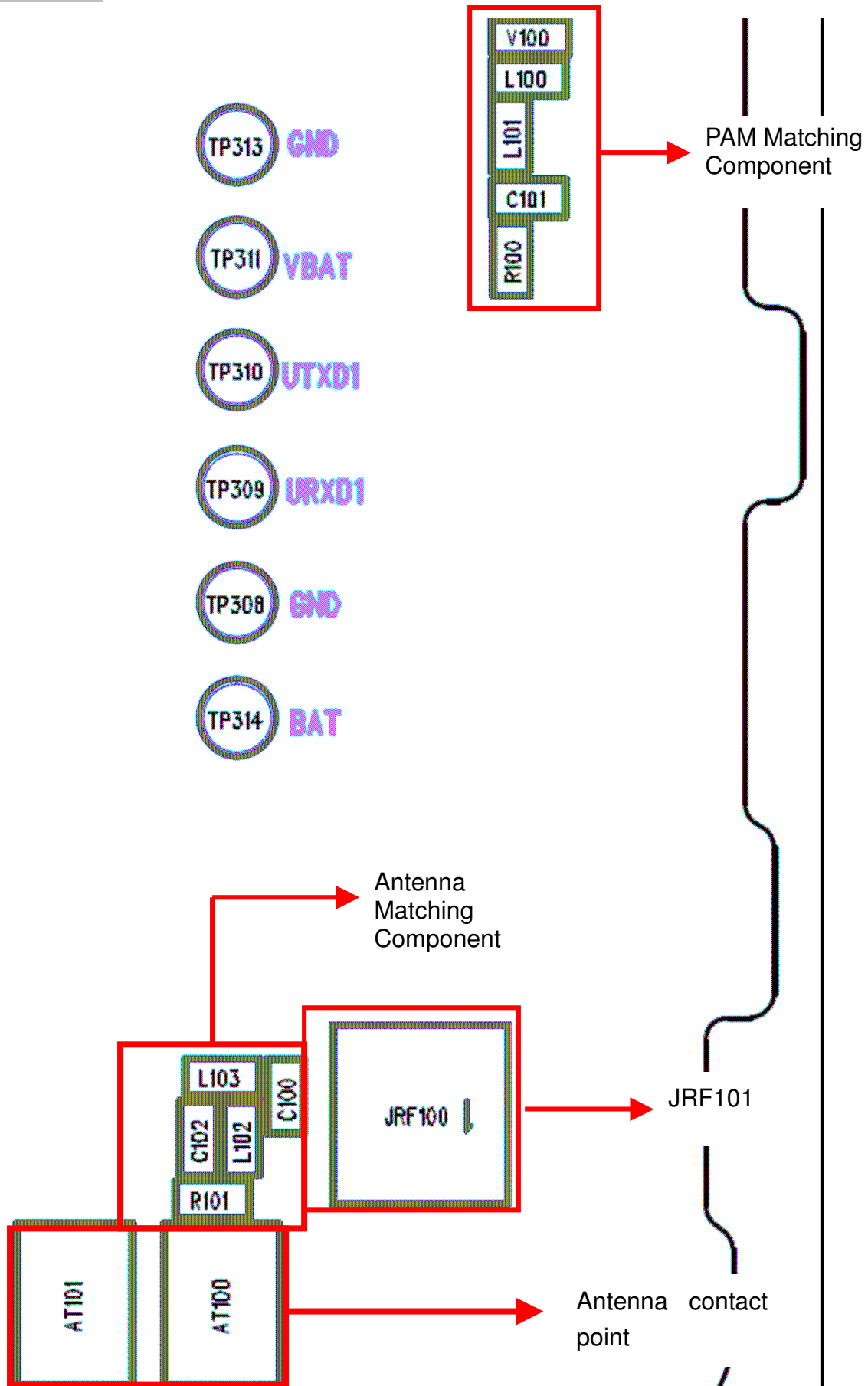
RF Module



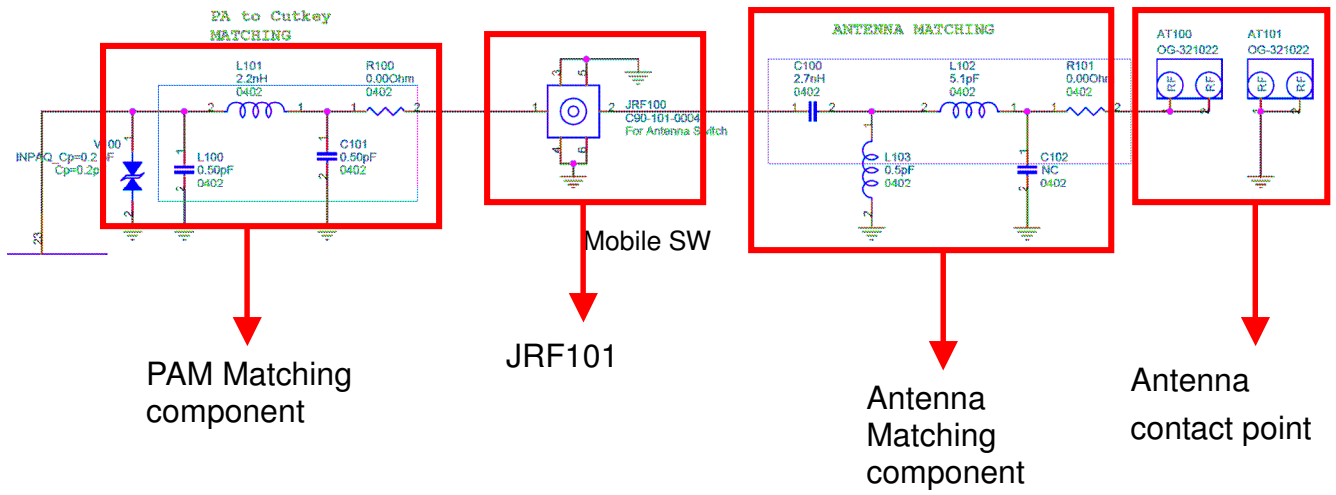
REFERENCE	PART Description
U100	PAM (Power Amp. Module+ASM)
X100	DCXO (26MHz)
JRF100	Mobile Switch
U101	RX SAW Filter
U102	Transceiver

4.16 No Connection Trouble

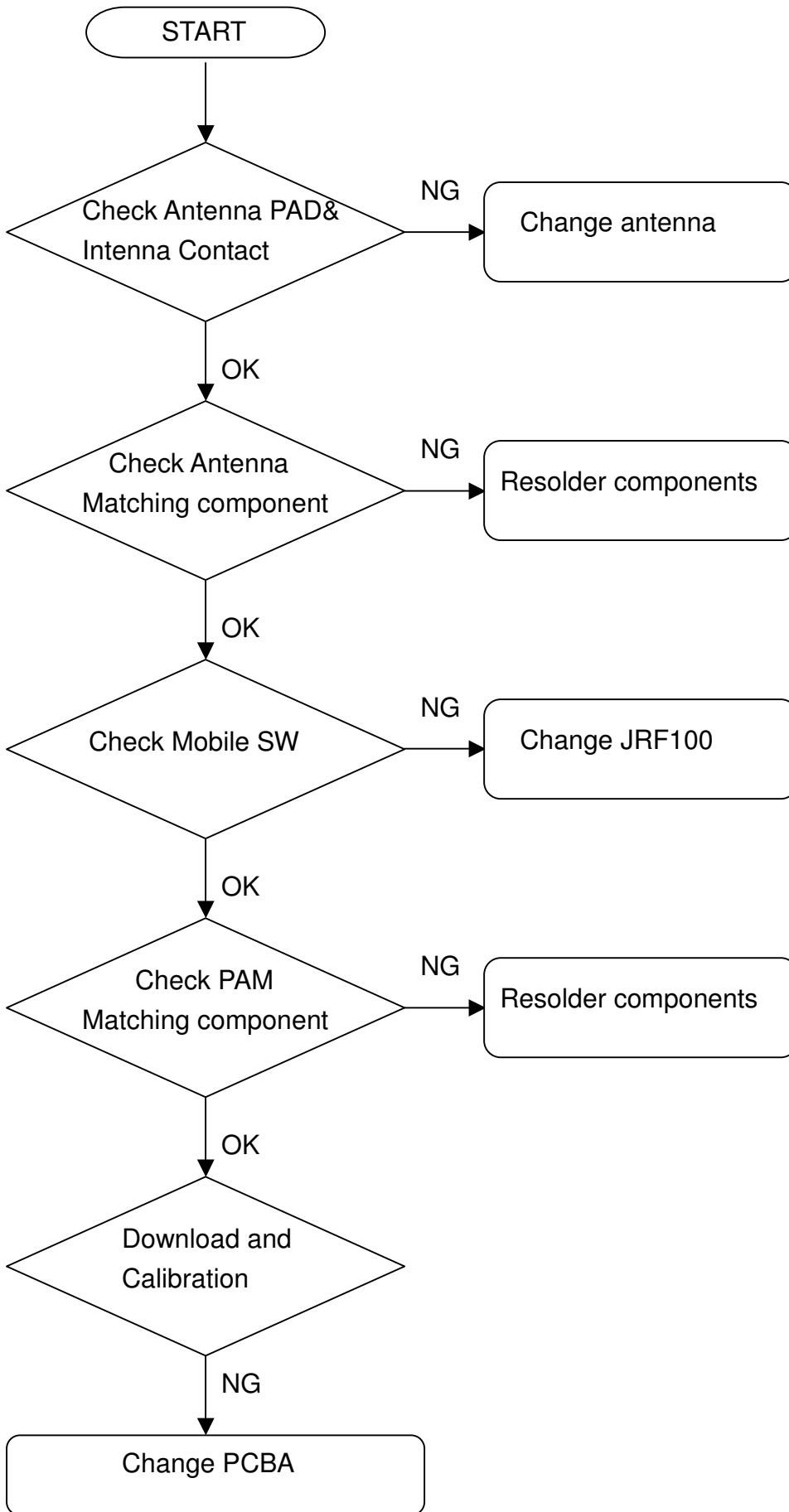
TEST POINT



CIRCUIT



CHECKING FLOW

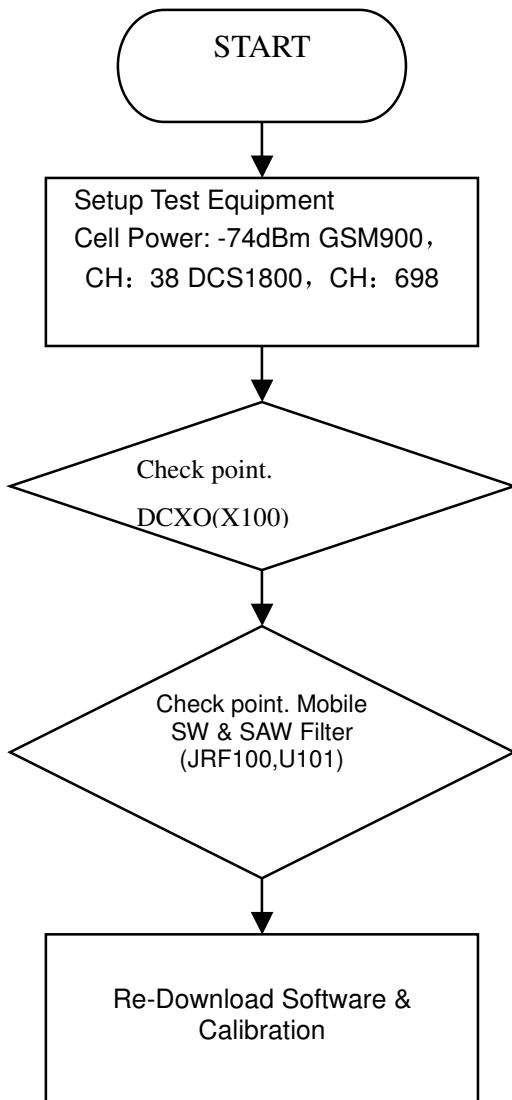


4.17 RX Trouble

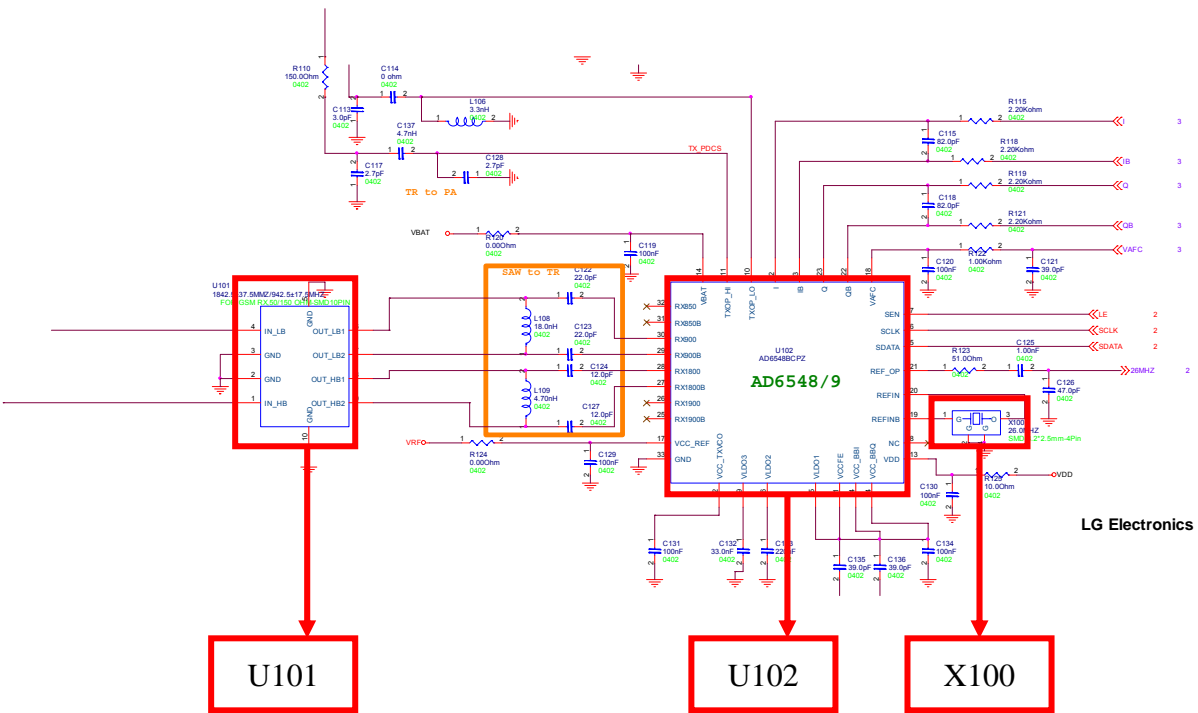
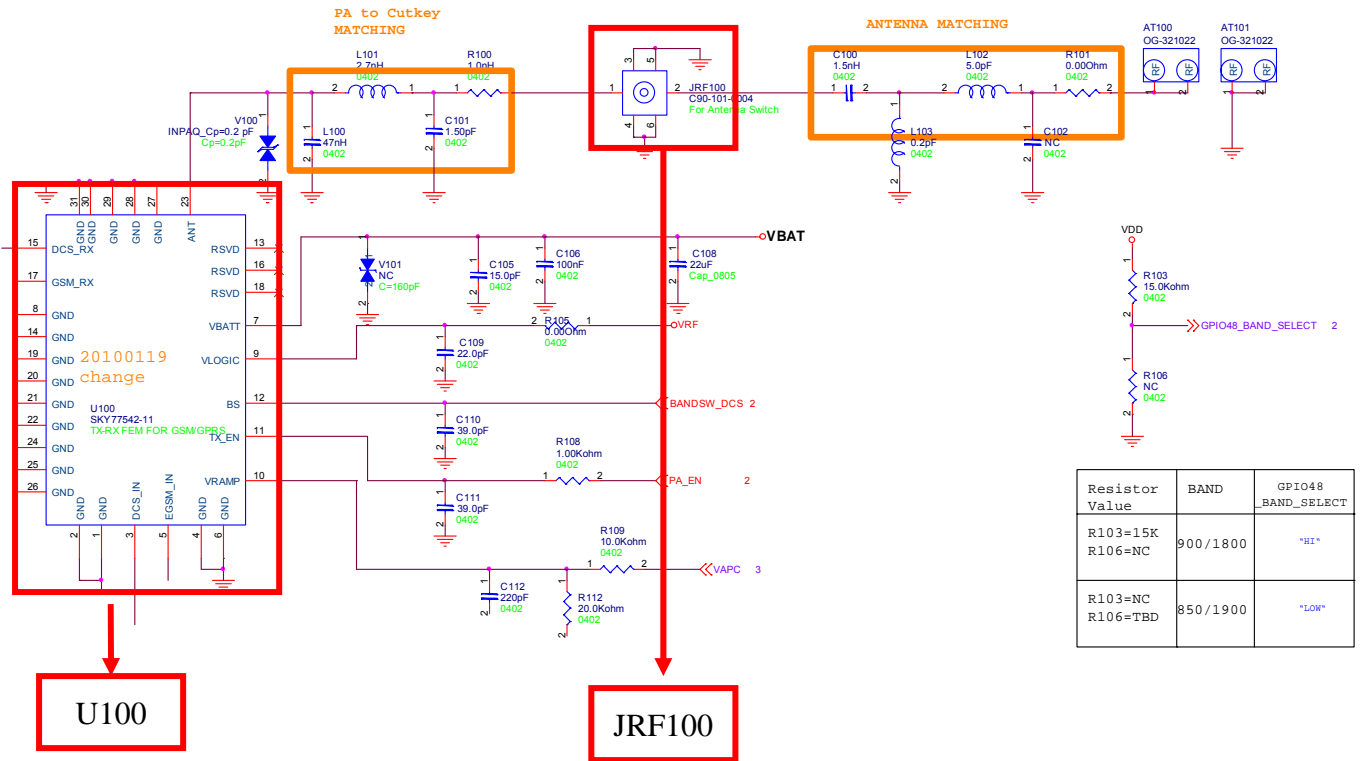
TEST POINT



CHECKING FLOW

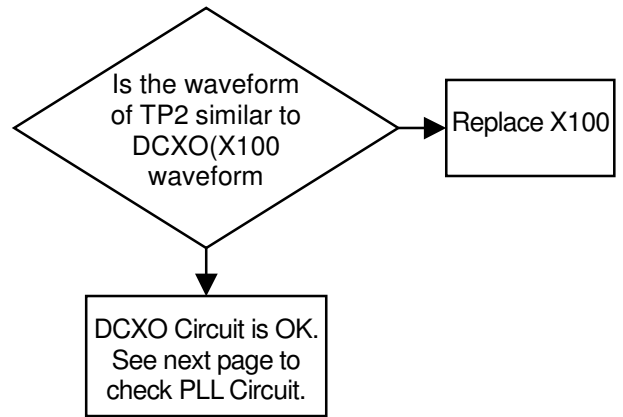
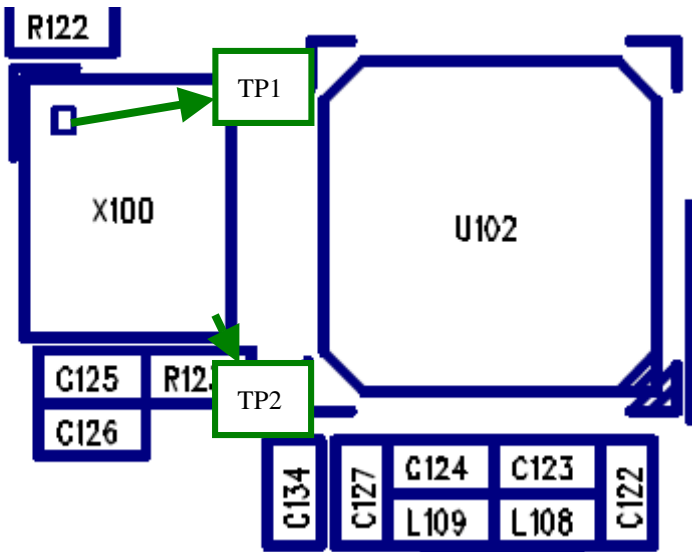


CIRCUIT

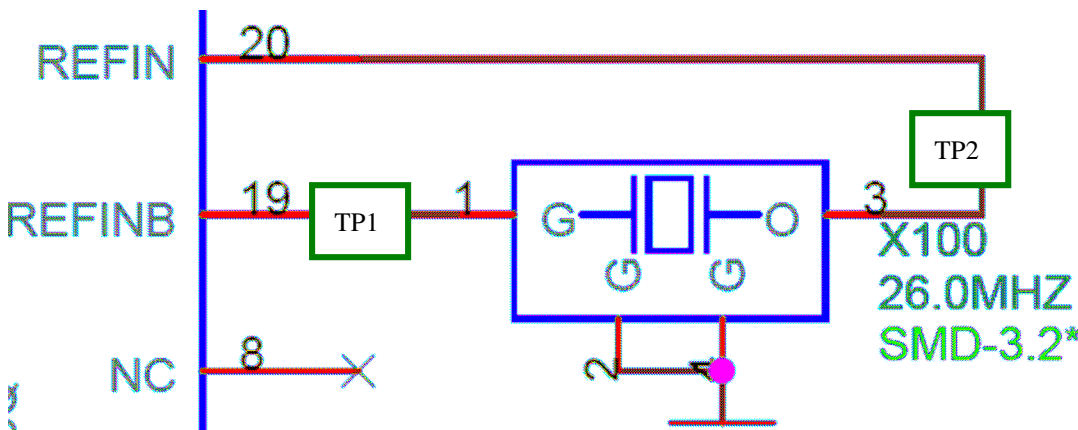


4.18 DCXO Trouble

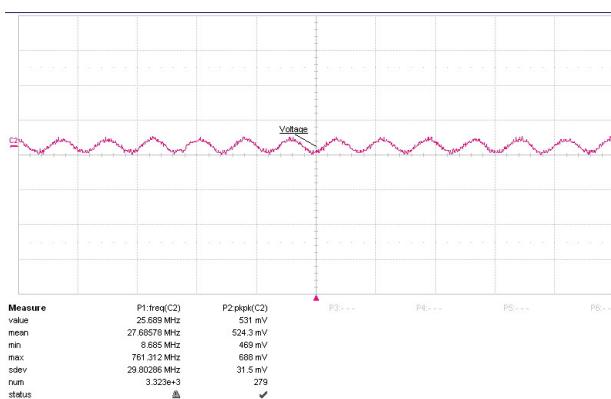
TEST POINT **CHECKING FLOW**



CIRCUIT

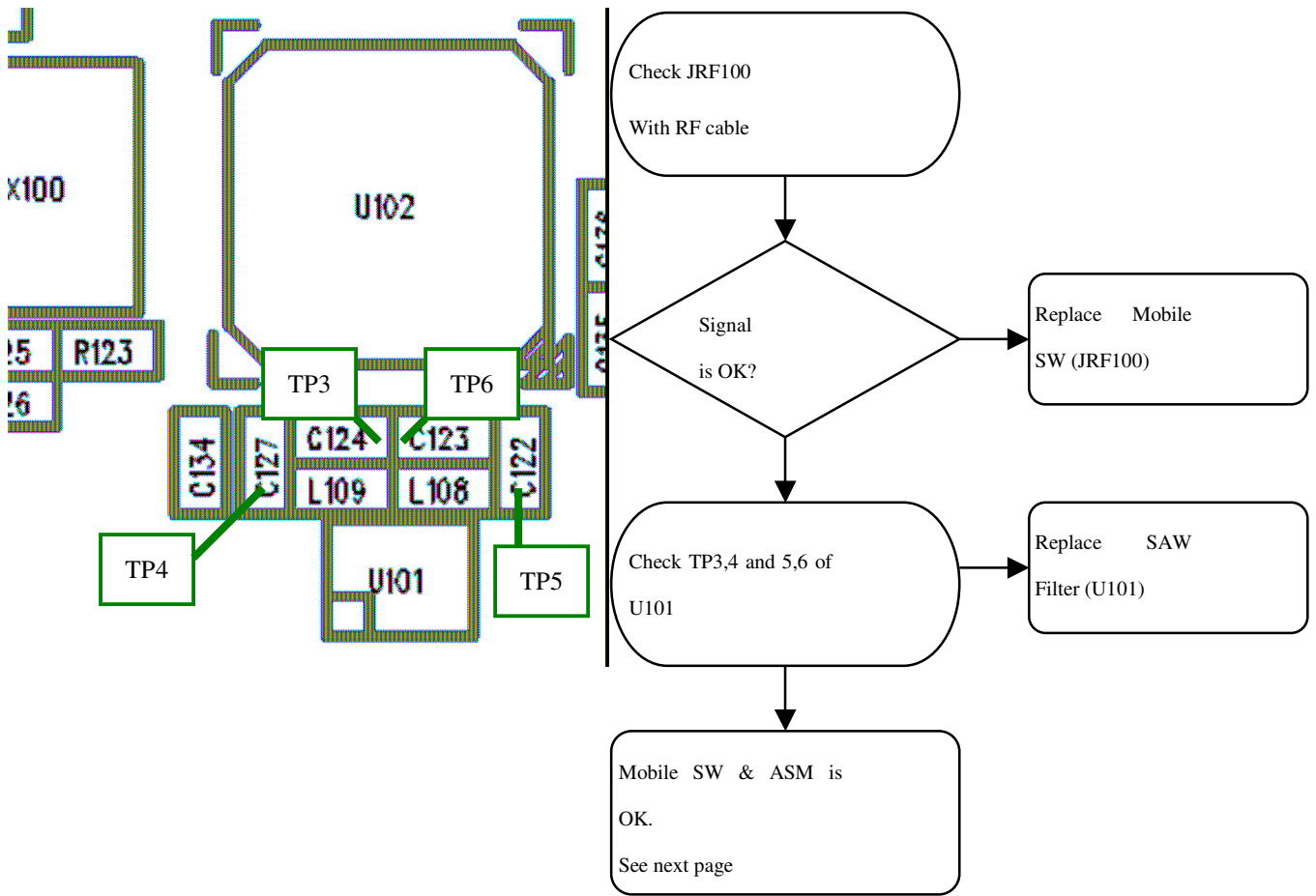


TP2 WAVE FORM



4.19 SAW Filter Trouble

TEST POINT	CHECKING FLOW
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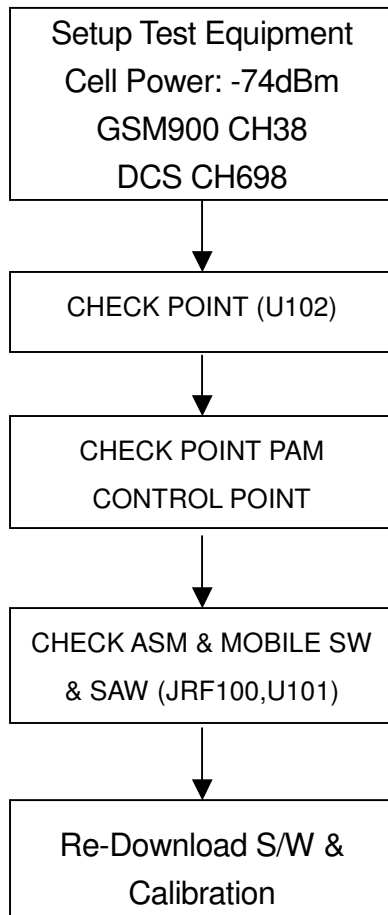


4.20 TX Trouble

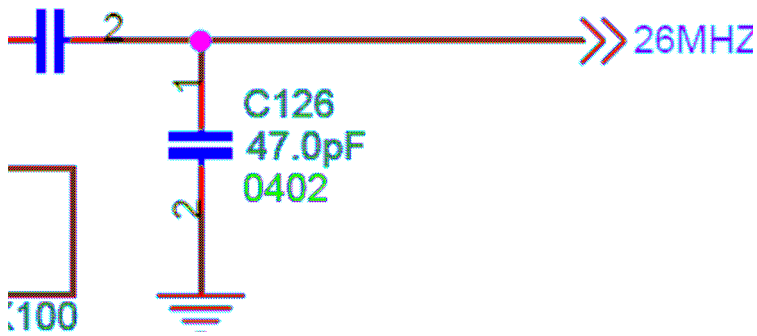
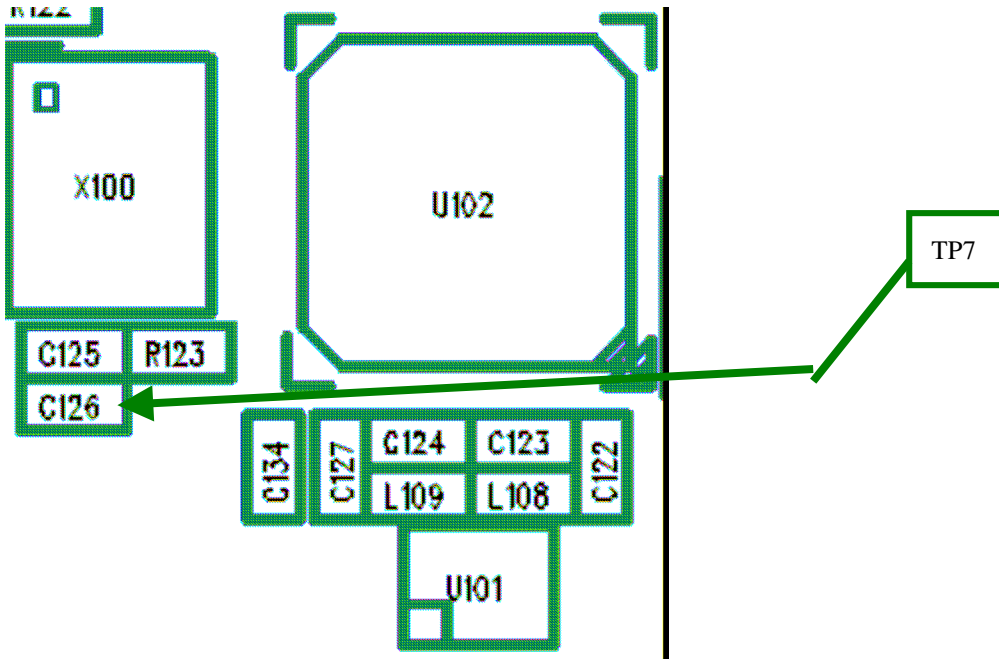
TEST POINT



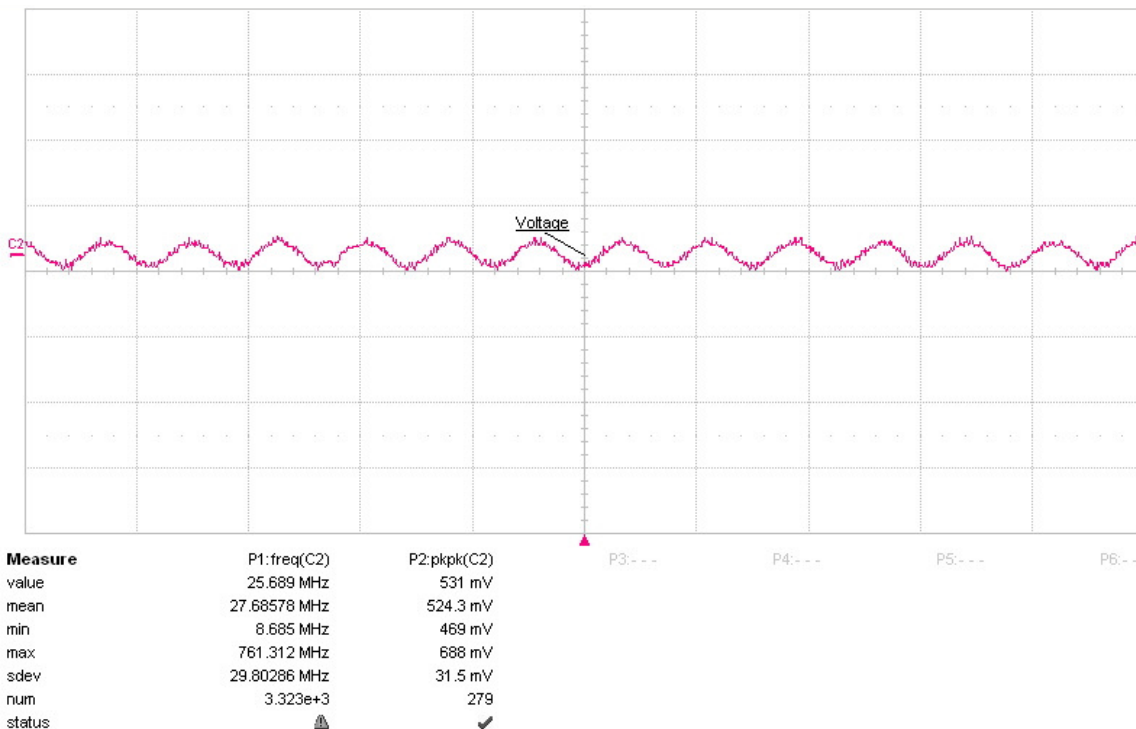
CHECKING FLOW



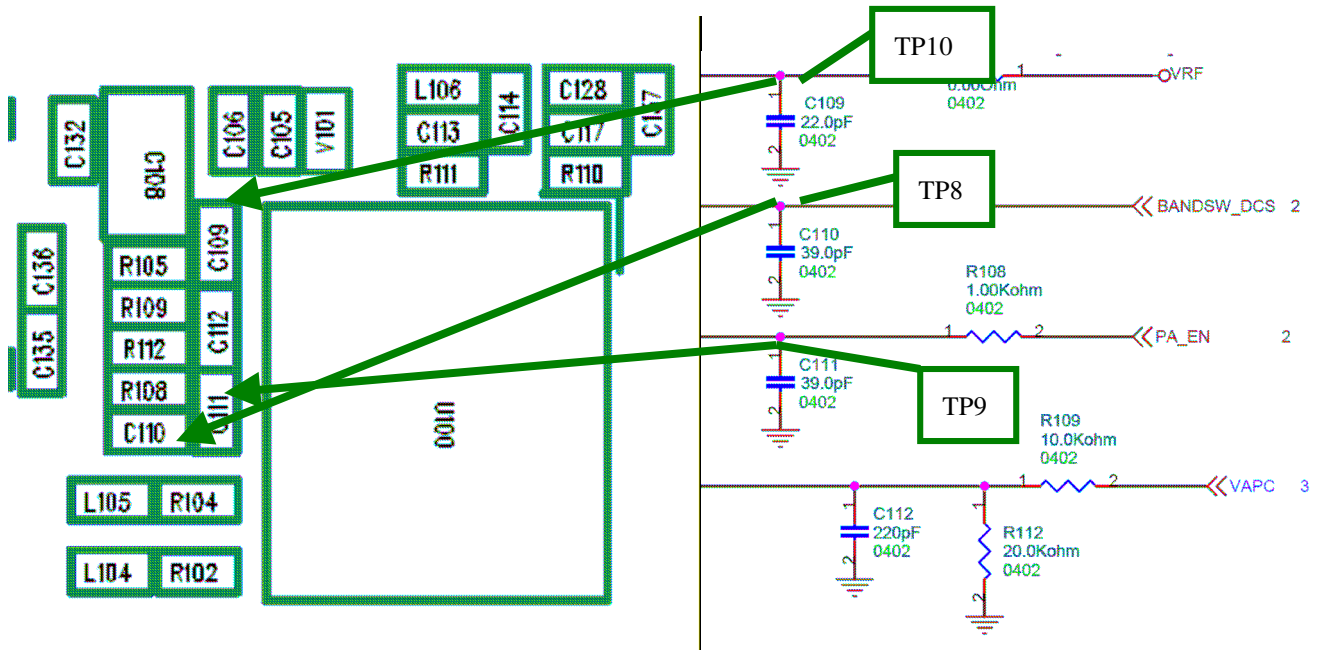
4.21 Transceiver trouble



TP7, there is 26MHz signal, check it. Following is the waveform.



4.22 PAM Trouble



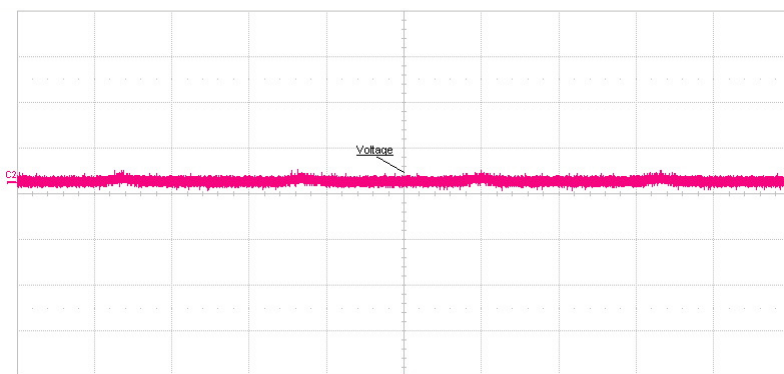
Signal configuration

Mode	GSM900 TX	DCS 1800 TX	GSM900 RX	DCS 1800 RX
BS (TP8)	L	H	L	H
TXON_PA (TP9)	H	H	L	L
VLOGIC (TP10)	H	H	H	H

Wave form

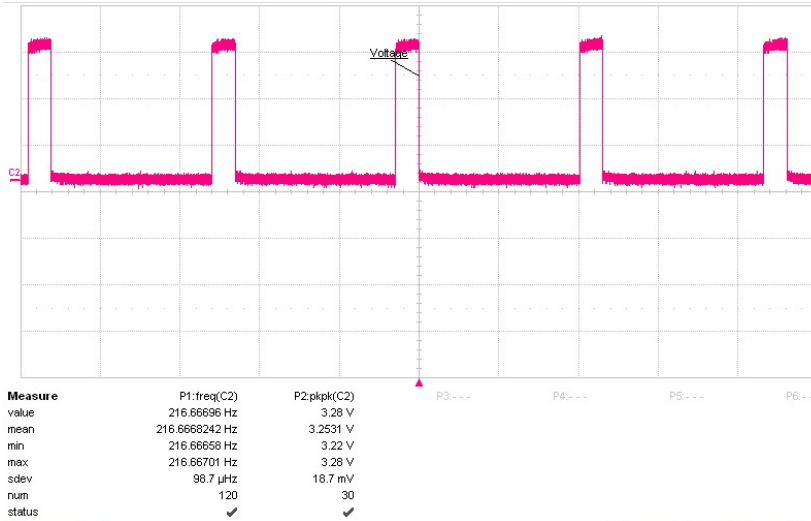
GSM900 TX

TP8

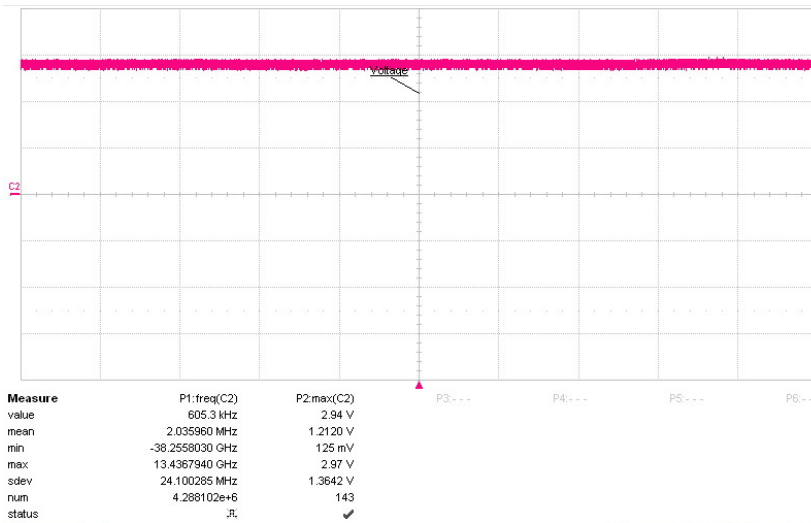


Measure	P1:freq(C2)	P2:pkpk(C2)	P3:---	P4:---	P5:---	P6:---
value	63.8854 kHz	469 mV				
mean	358.2045499469 kHz	706.8 mV				
min	-3.345032163 GHz	250 mV				
max	1.308690822 GHz	3.28 V				
sdev	7.202245744 MHz	939.6 mV				
num	476.642e+3	378				
status	∅	✓				

TP9

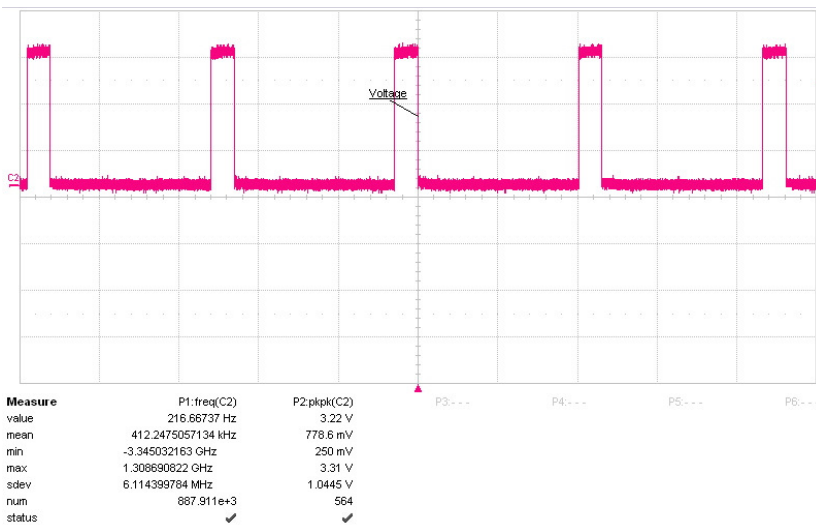


TP10

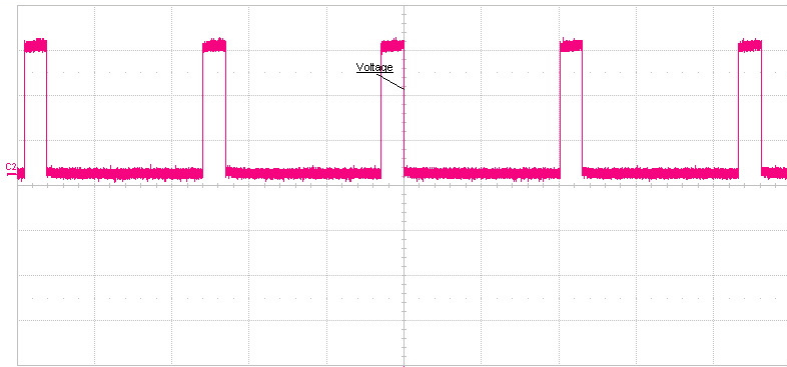


DCS1800 TX

TP8

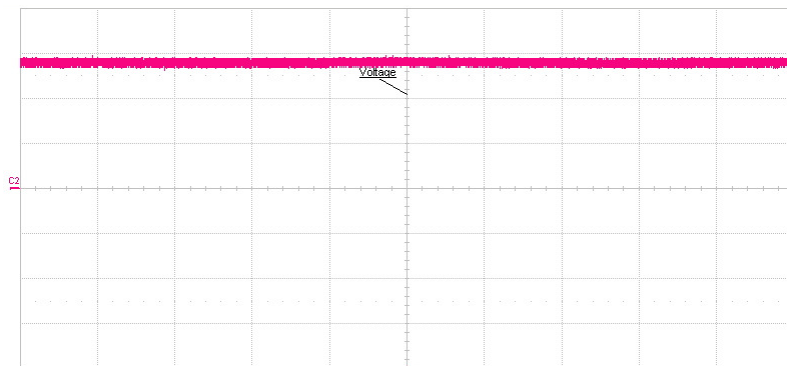


TP9



Measure	P1:freq(C2)	P2:pkpk(C2)	P3:---	P4:---	P5:---	P6:---
value	216.66672 kHz	3.22 V				
mean	421.5215647897 kHz	863.9 mV				
min	-3.346032163 GHz	250 mV				
max	3.371017258 GHz	3.31 V				
sdev	6.925940489 MHz	1.1221 V				
num	937.262e+3	603				
status	✓	✓				

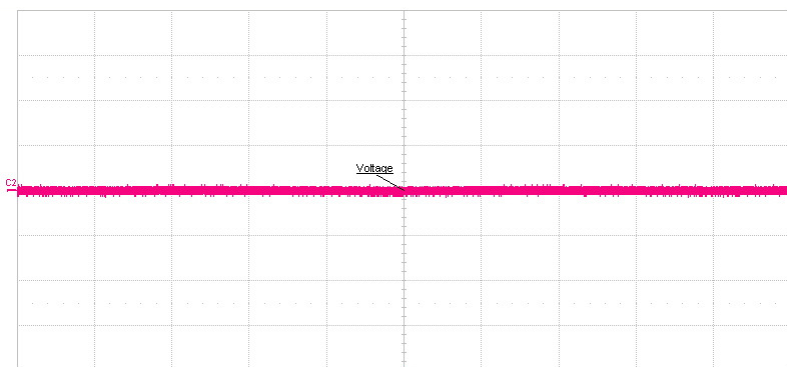
TP10



Measure	P1:freq(C2)	P2:max(C2)	P3:---	P4:---	P5:---	P6:---
value	382.157 kHz	2.94 V				
mean	2.027226 MHz	907.4 mV				
min	-38.2558030 GHz	125 mV				
max	13.4367940 GHz	2.97 V				
sdev	22.823510 MHz	1.2527 V				
num	4.843769e+6	301				
status	.IL	✓				

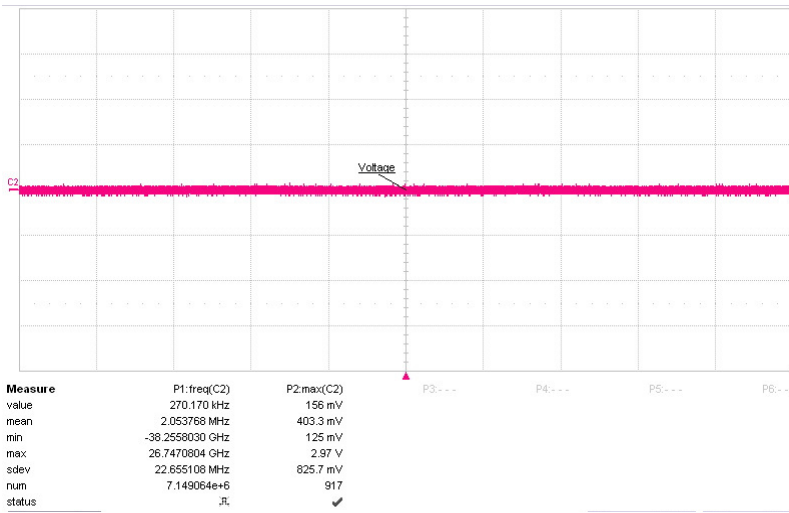
GSM900 RX

TP8

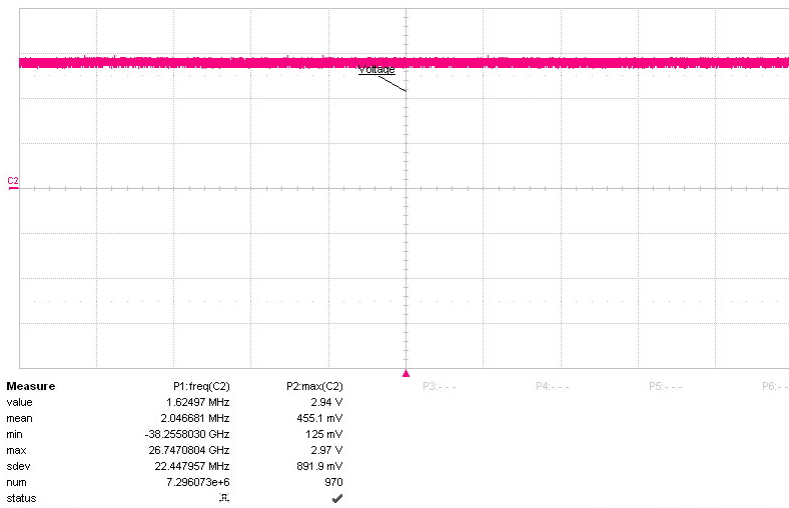


Measure	P1:freq(C2)	P2:max(C2)	P3:---	P4:---	P5:---	P6:---
value	1.6066 MHz	125 mV				
mean	2.049789 MHz	442.1 mV				
min	-38.2568030 GHz	125 mV				
max	26.7470804 GHz	2.97 V				
sdev	23.279601 MHz	876.6 mV				
num	6.712865e+6	801				
status	.IL	✓				

TP9

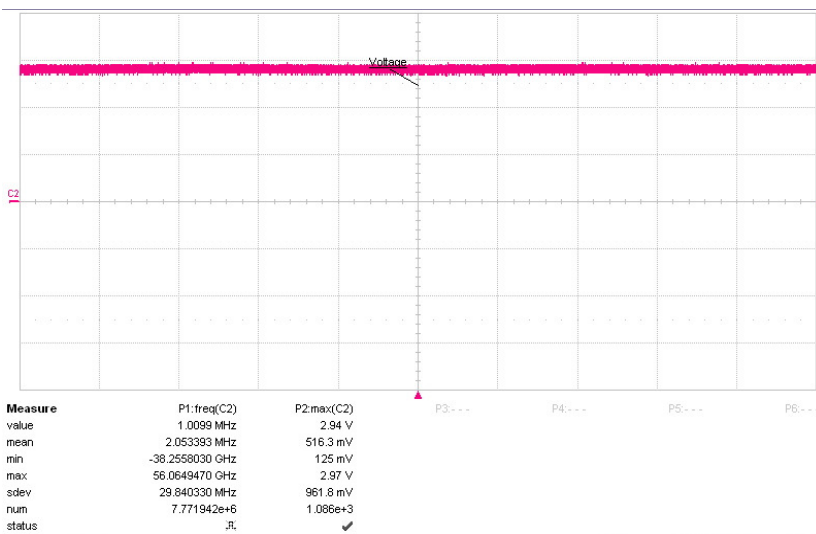


TP10

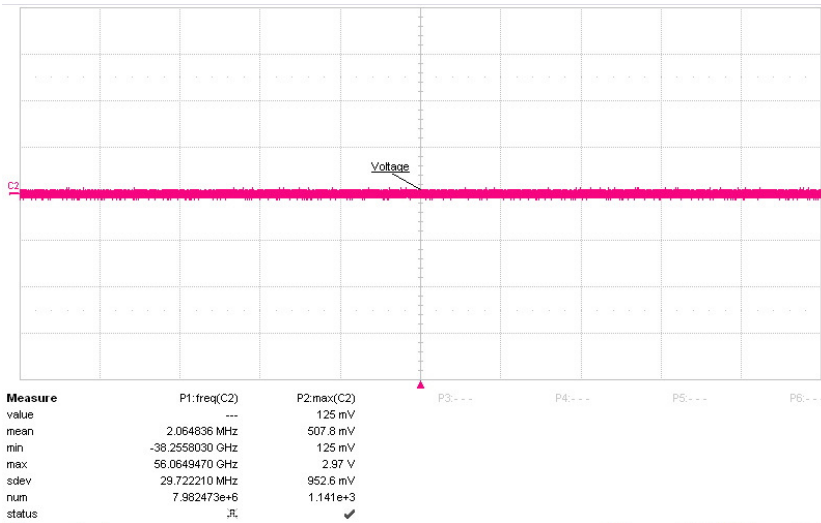


DCS1800 RX

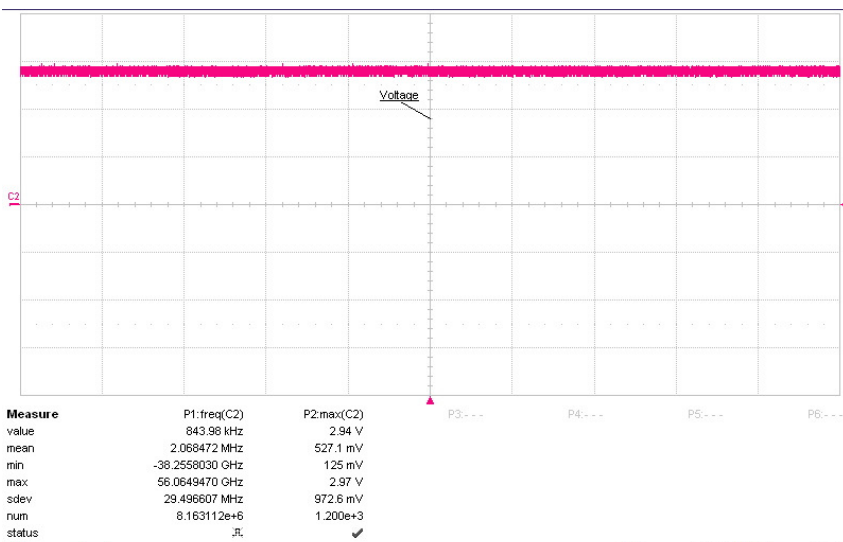
TP8



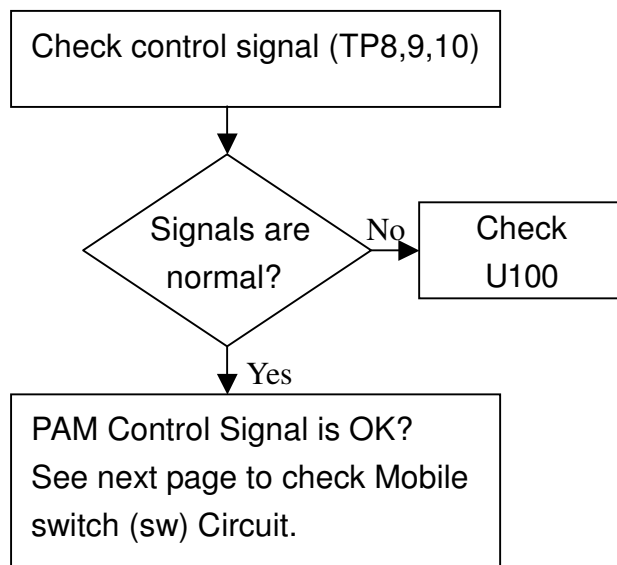
TP9



TP10

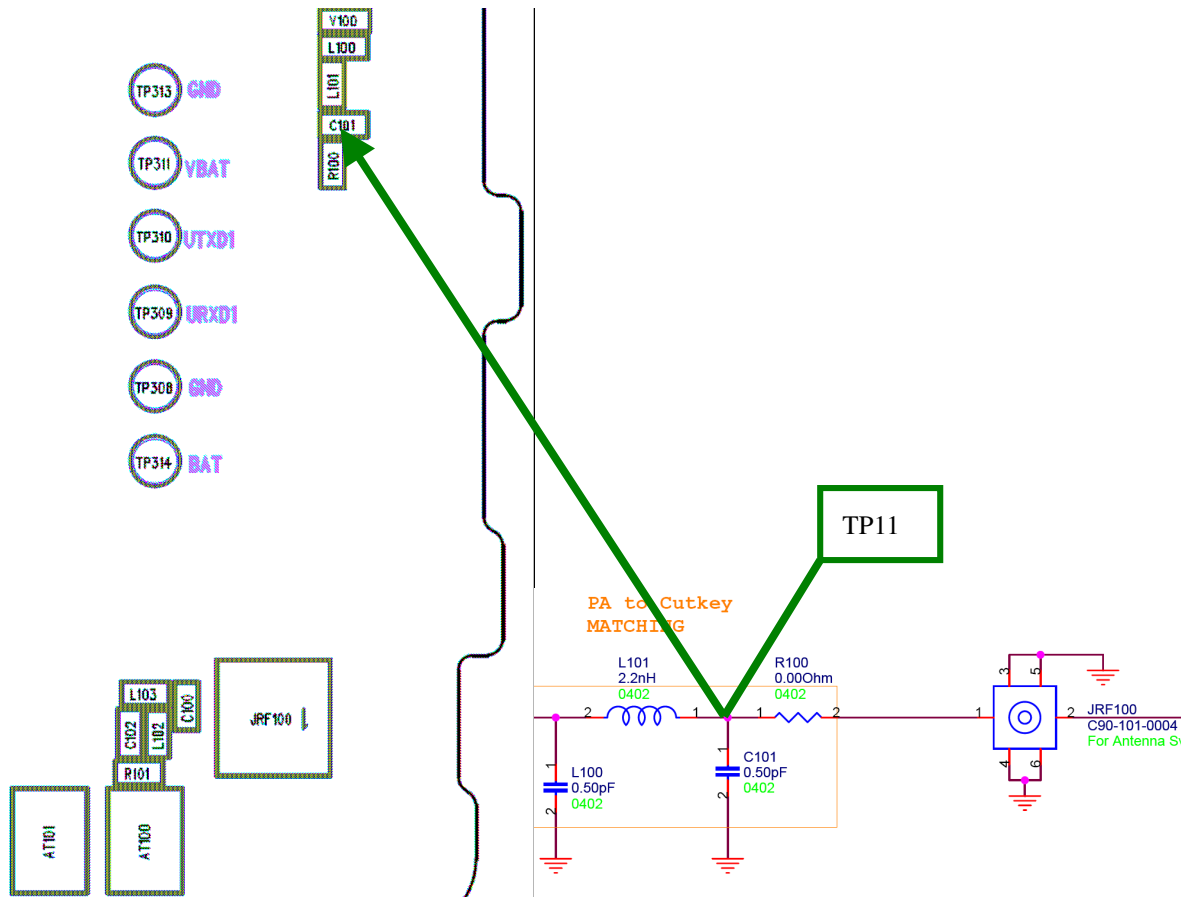


CHECKING FLOW

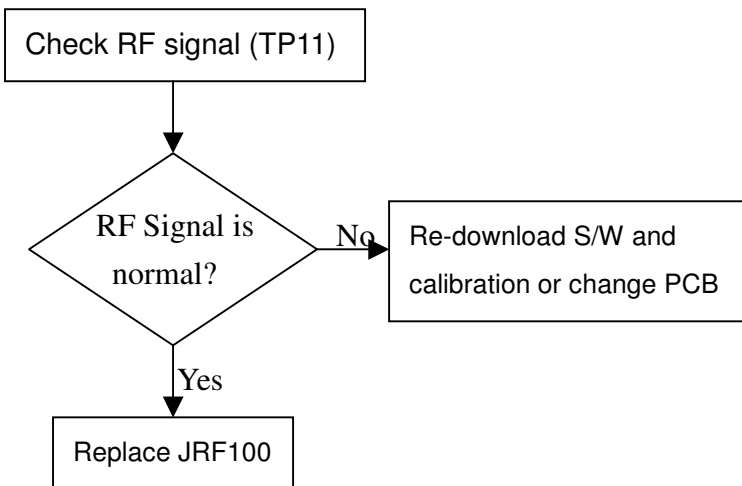


4.23 Mobile Switch Trouble

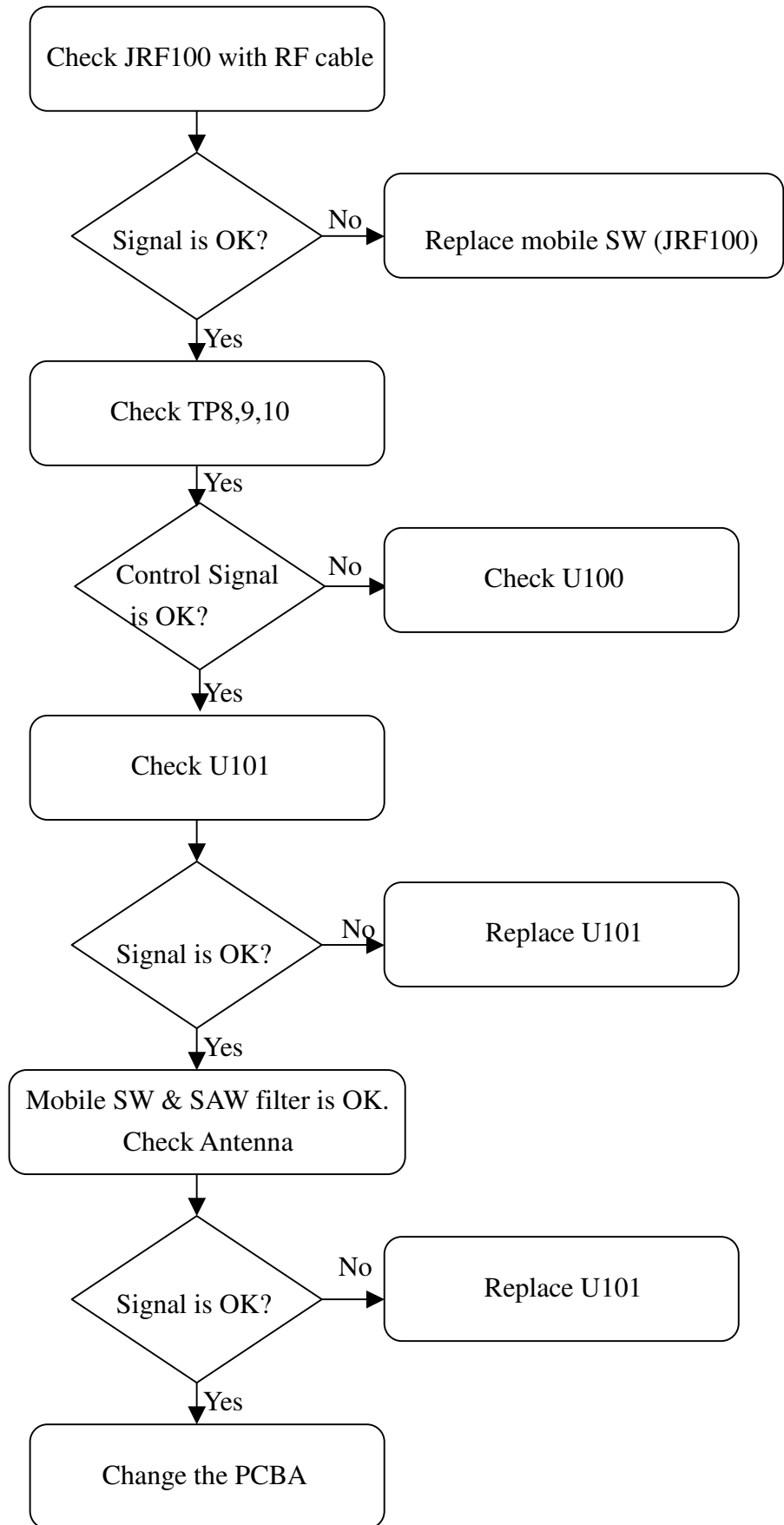
TEST POINT



CHECKING FLOW

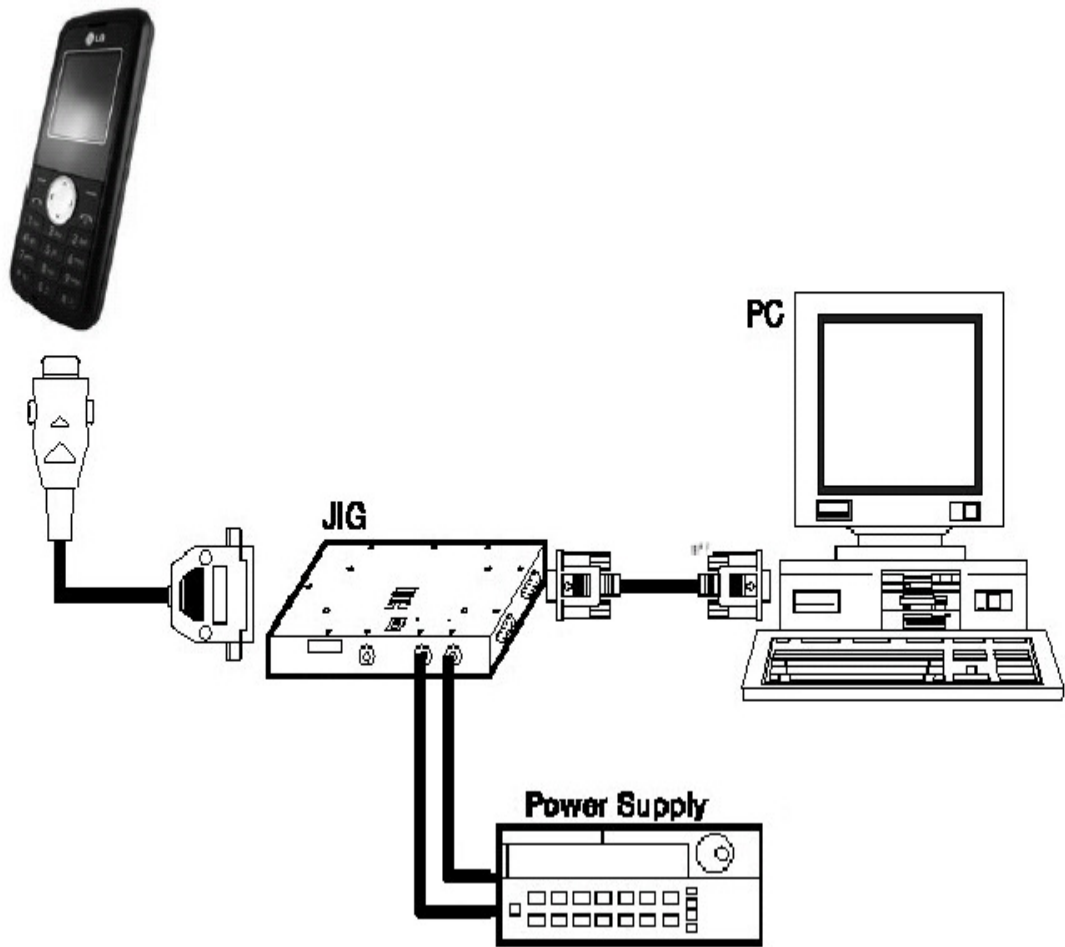


The full CHECKING FLOW of TX Trouble



5.DOWNLOAD

5.1 Download setup



5.2 Download Process

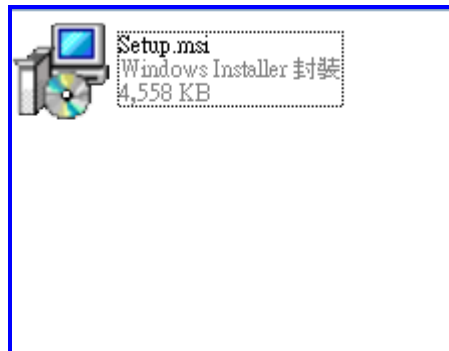
LEO Download Tool

■ Tools

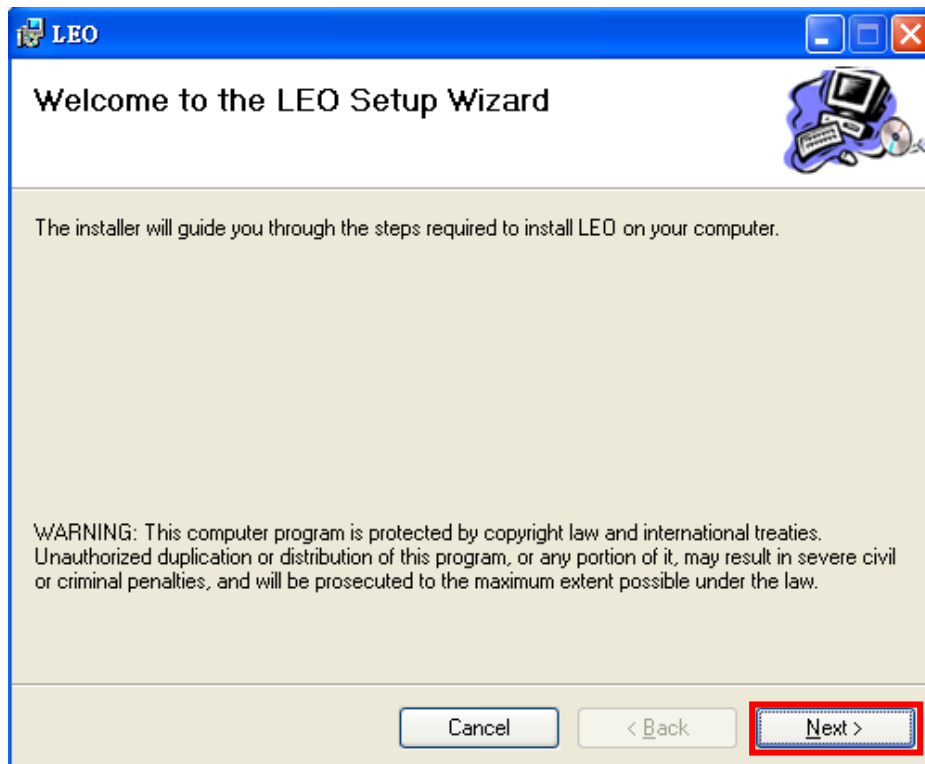
1. Download cable(**Prolific USB-to-Serial**)
2. PC
3. Battery (3.8 V Li-ion Battery)

■ How to install Leo download tool

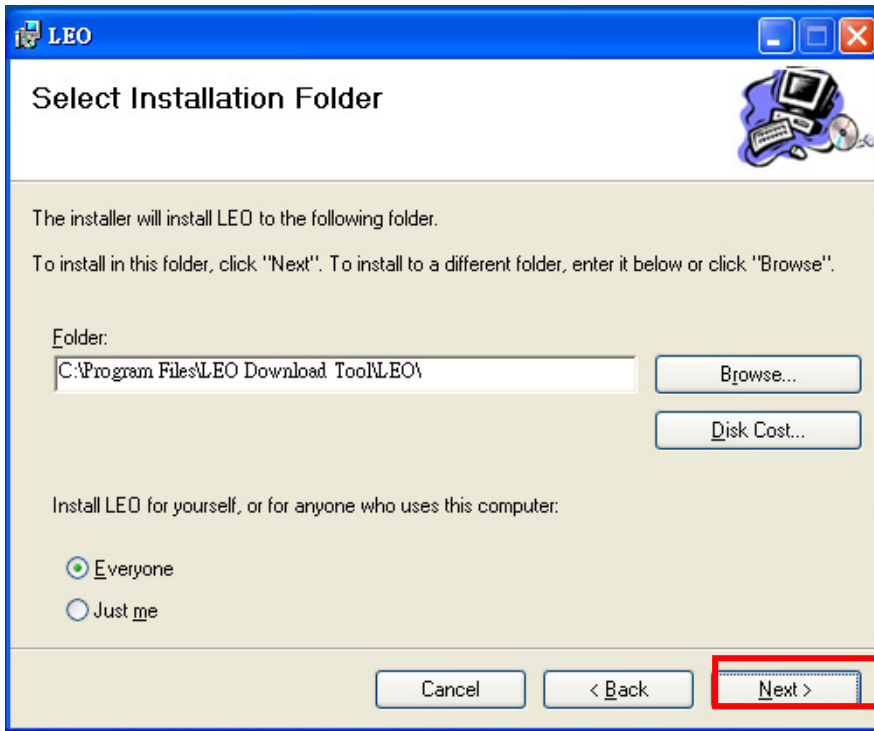
1. You must install “Prolific USB-to-Serial Comm Port” driver first before installing this program, and then double click the “Setup.msi” start installation.



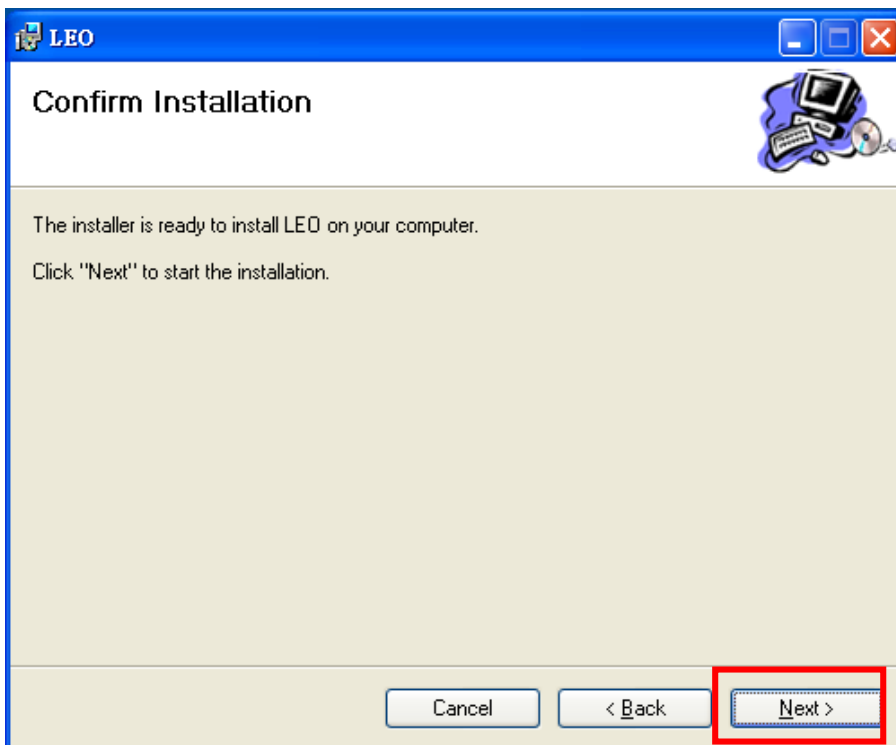
2. You can see the below picture, and then click the “Next” button.



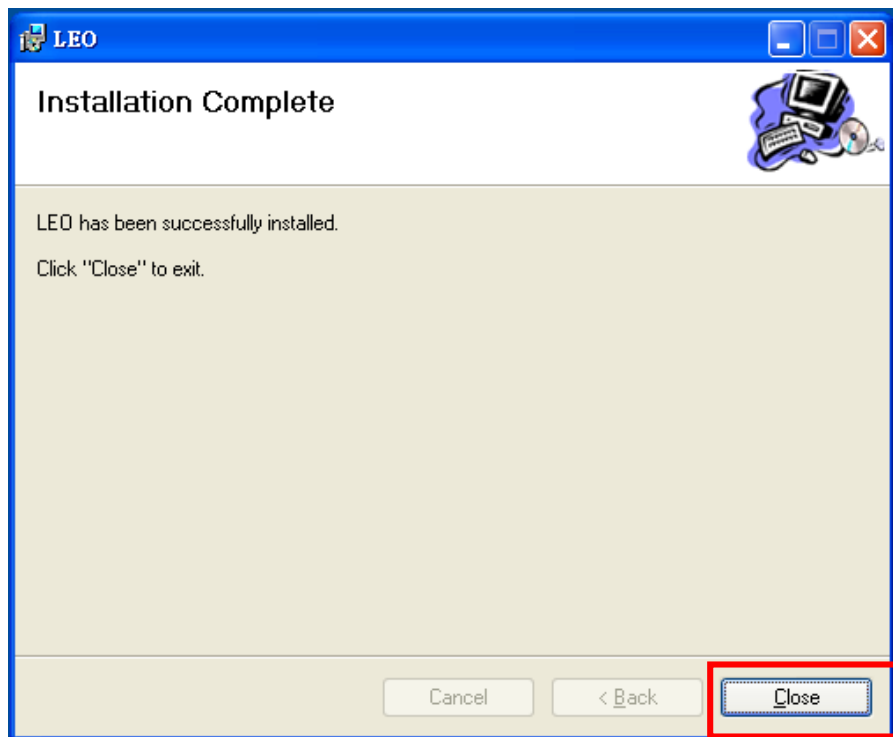
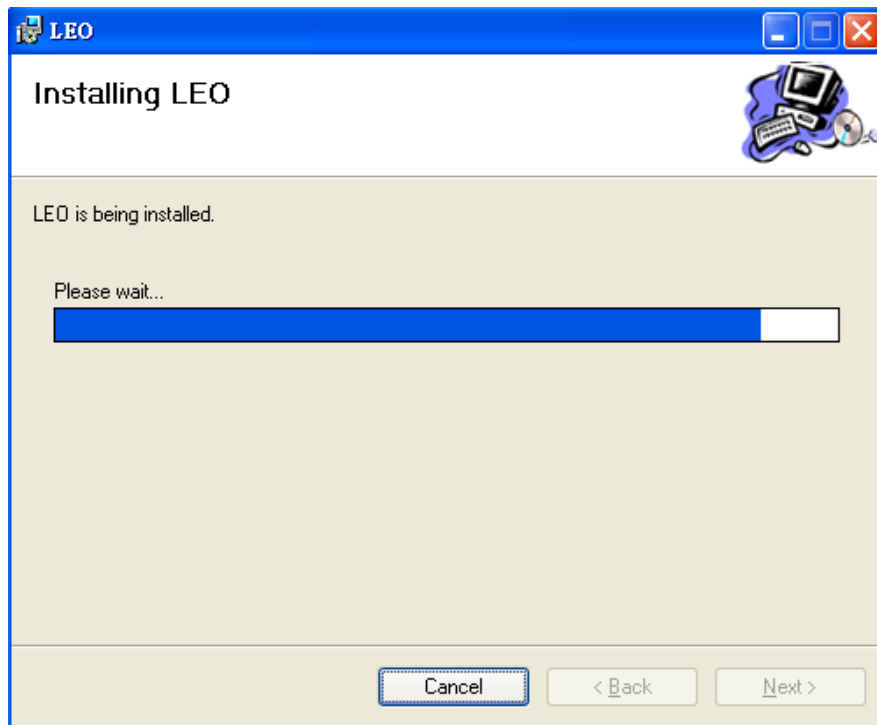
3. You can see the below picture, and then click the “Next” button.



4. You can see the below picture, and then click the “Next” button.



5. You can see the below Installing picture, and then click the “Close” button installation complete.



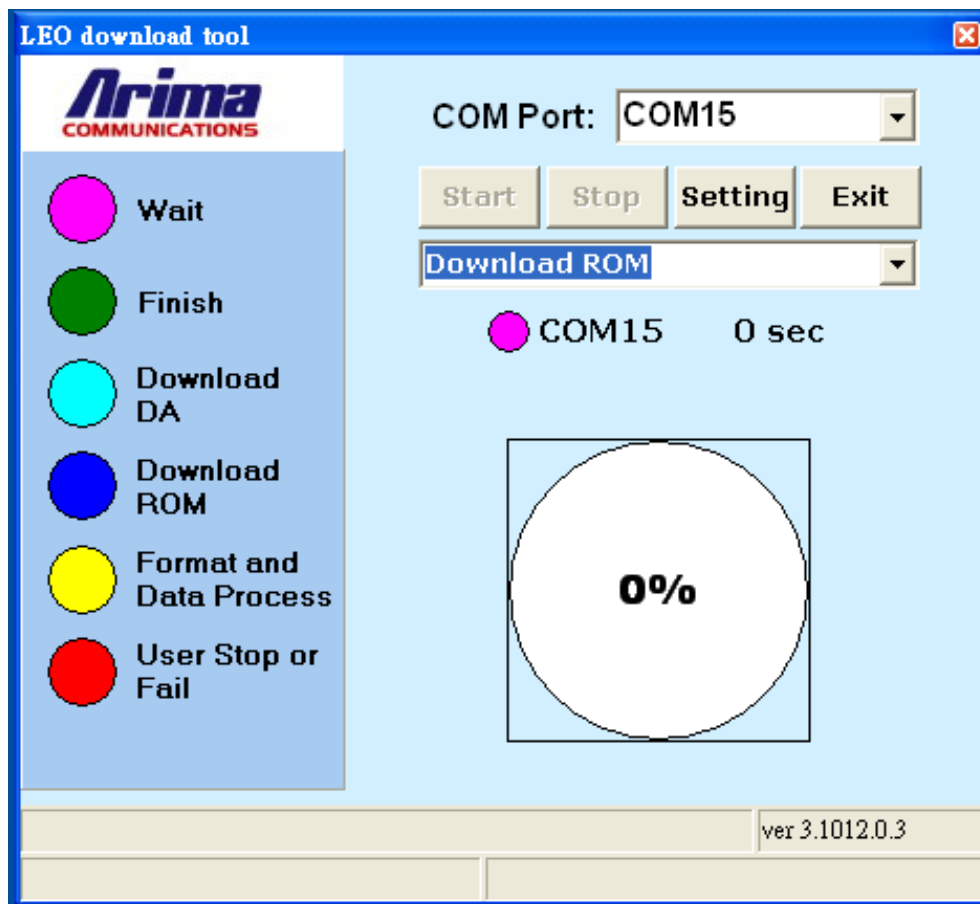
■ How to use Leo download tool

For example: A120-00-V10a-404-XX-JUN-10-2010

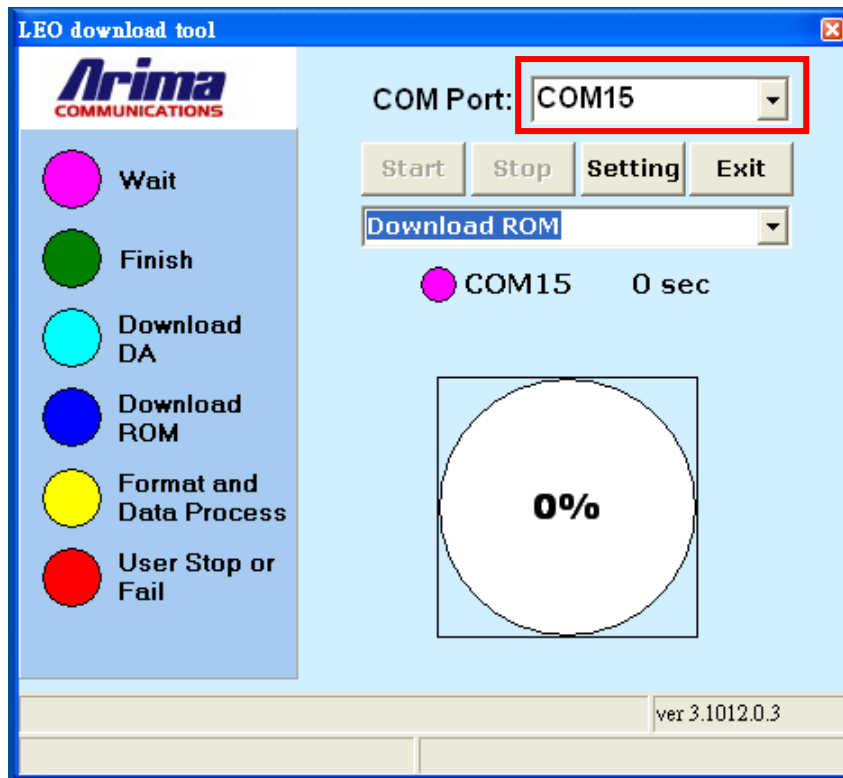
1. Connect Download cable with computer, and then double click the "LEO Download Tool".



2. you can see the below picture.



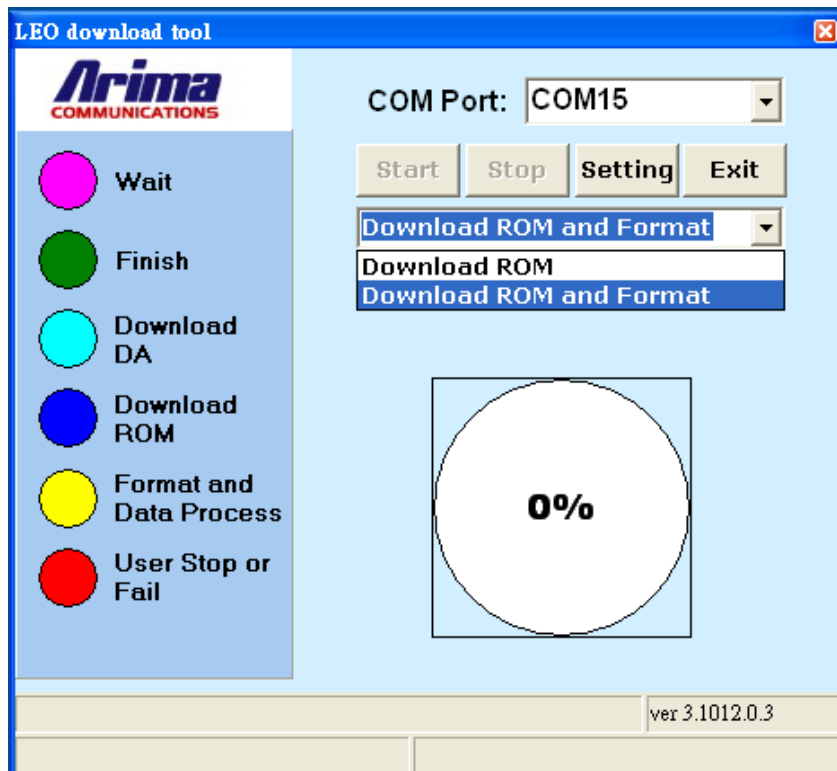
3. Select COM port (LEO will auto detect COM port)



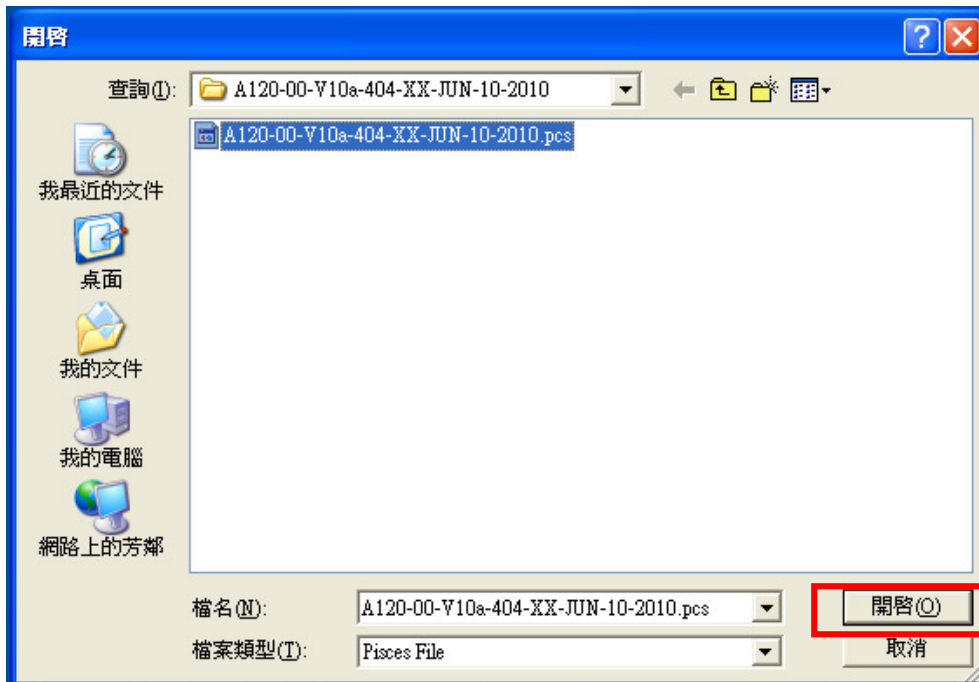
4. Select Download mode.

Note: ① If you select "Download ROM", it will download software only.

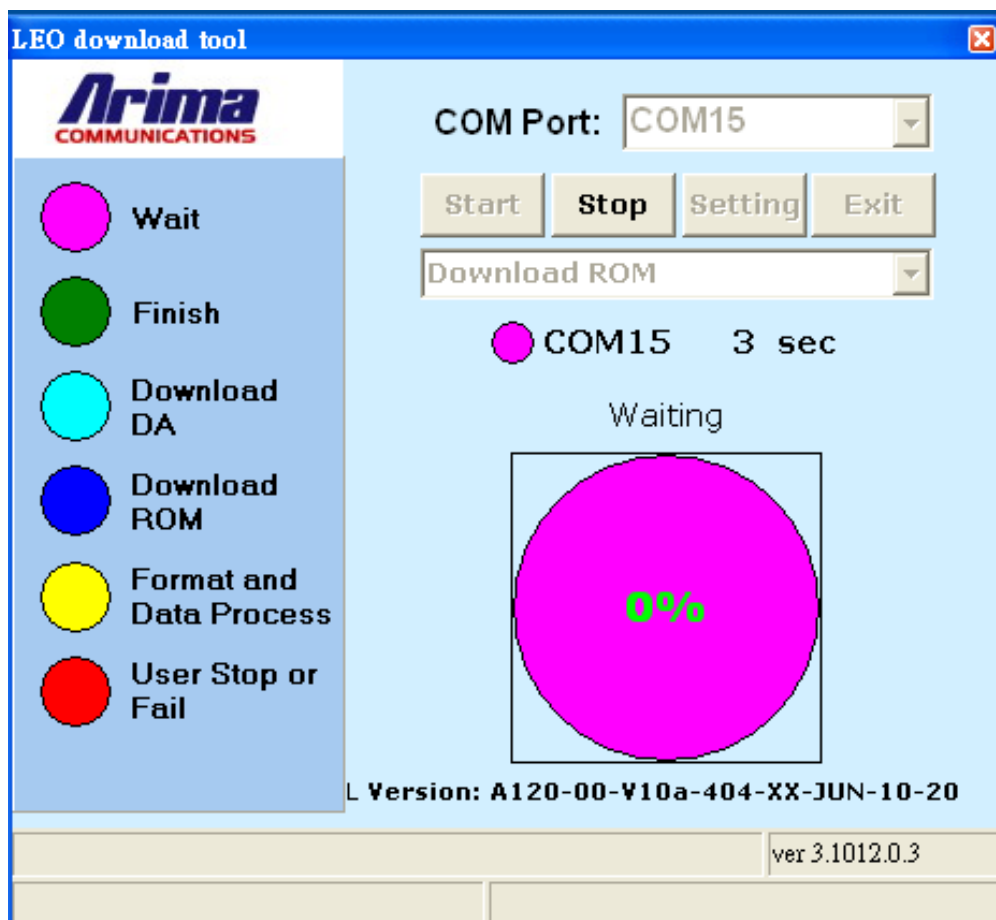
② If you select "Download ROM and Format", it will download software and delete NVRAM all data except calibration data and IMEI number, and delete user disk data include contact information、message etc, also it still will reset META_NVRAM to factory default.



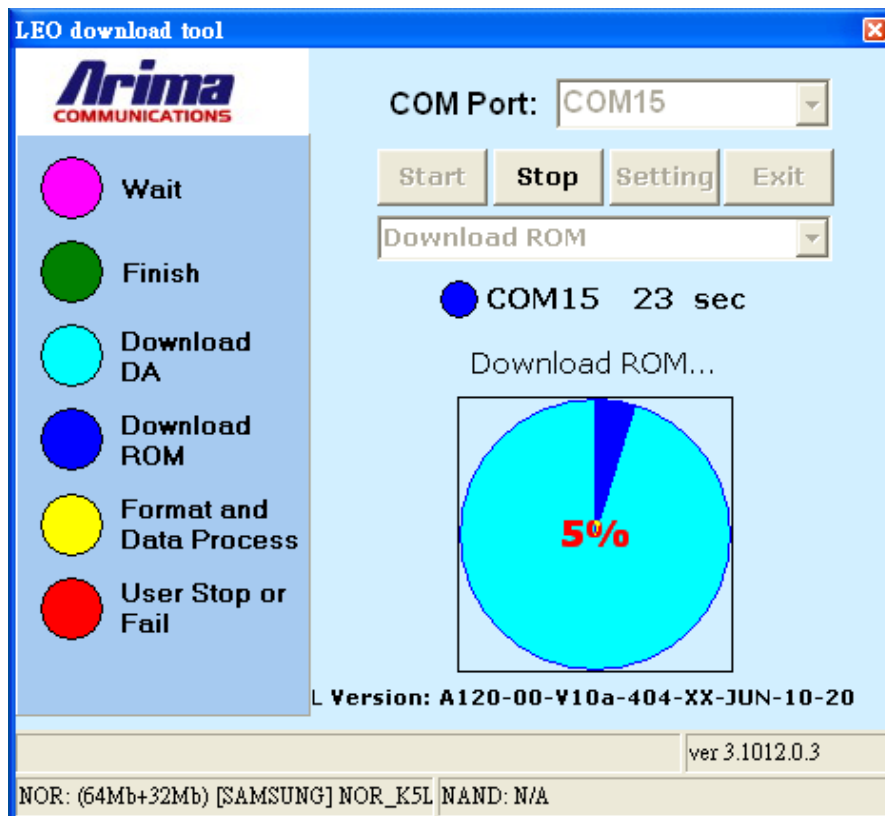
5. Click the “Setting” button and select a valid file. The file always be end of “.PCS” , reference below picture.



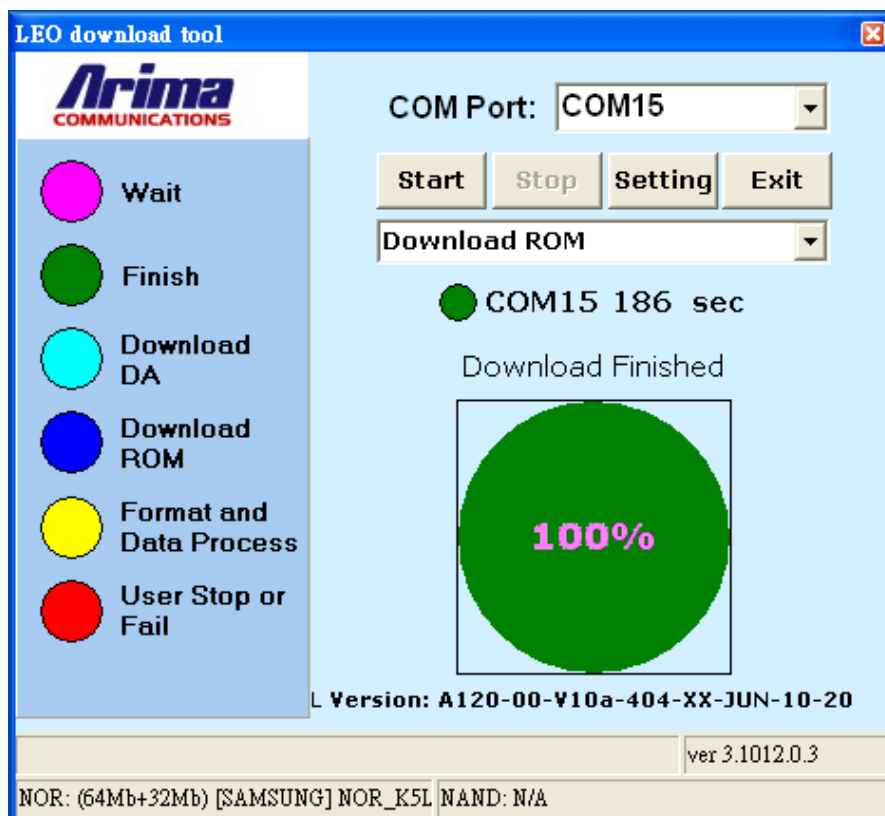
6. Select the “. PCS “file and press open, you can see following picture.



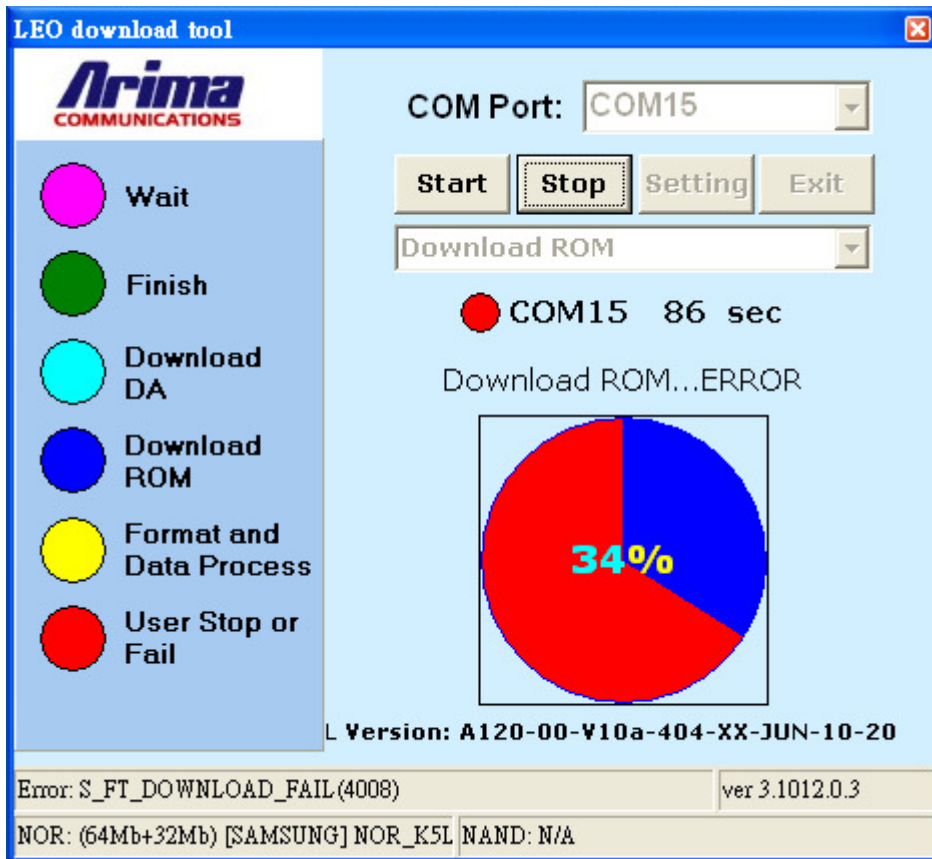
7. After you see the pink cycle, connect download cable with handset, and then press the power key, you will see below picture.



8. After reach to 100%, SW download finish.



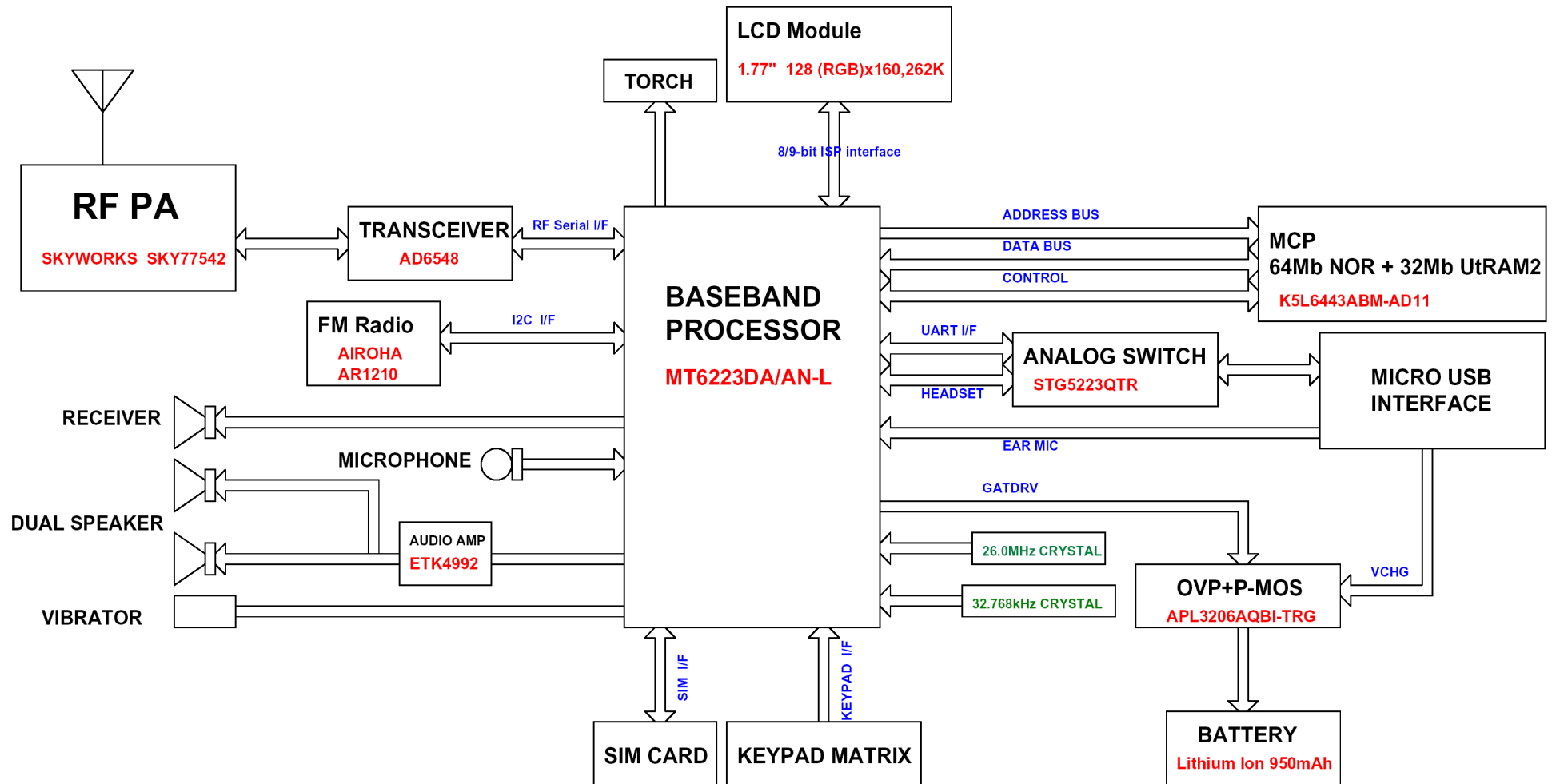
9.If download failed, you will see the below picture.



Attention: If appear failed image, Please try close LEO and try open again.

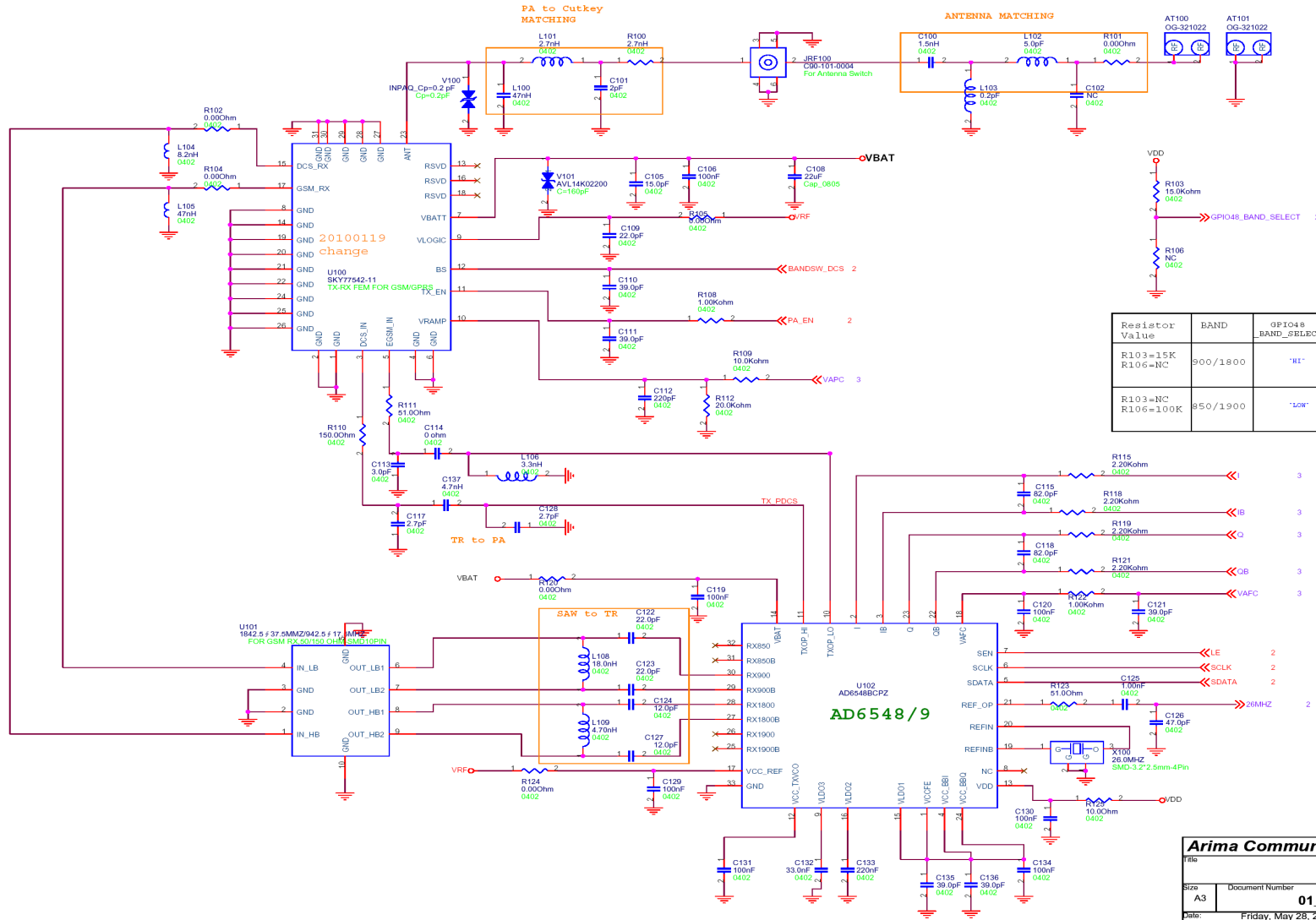
6. BLOCK DIAGRAM

V30-7265 BLOCK DIAGRAM

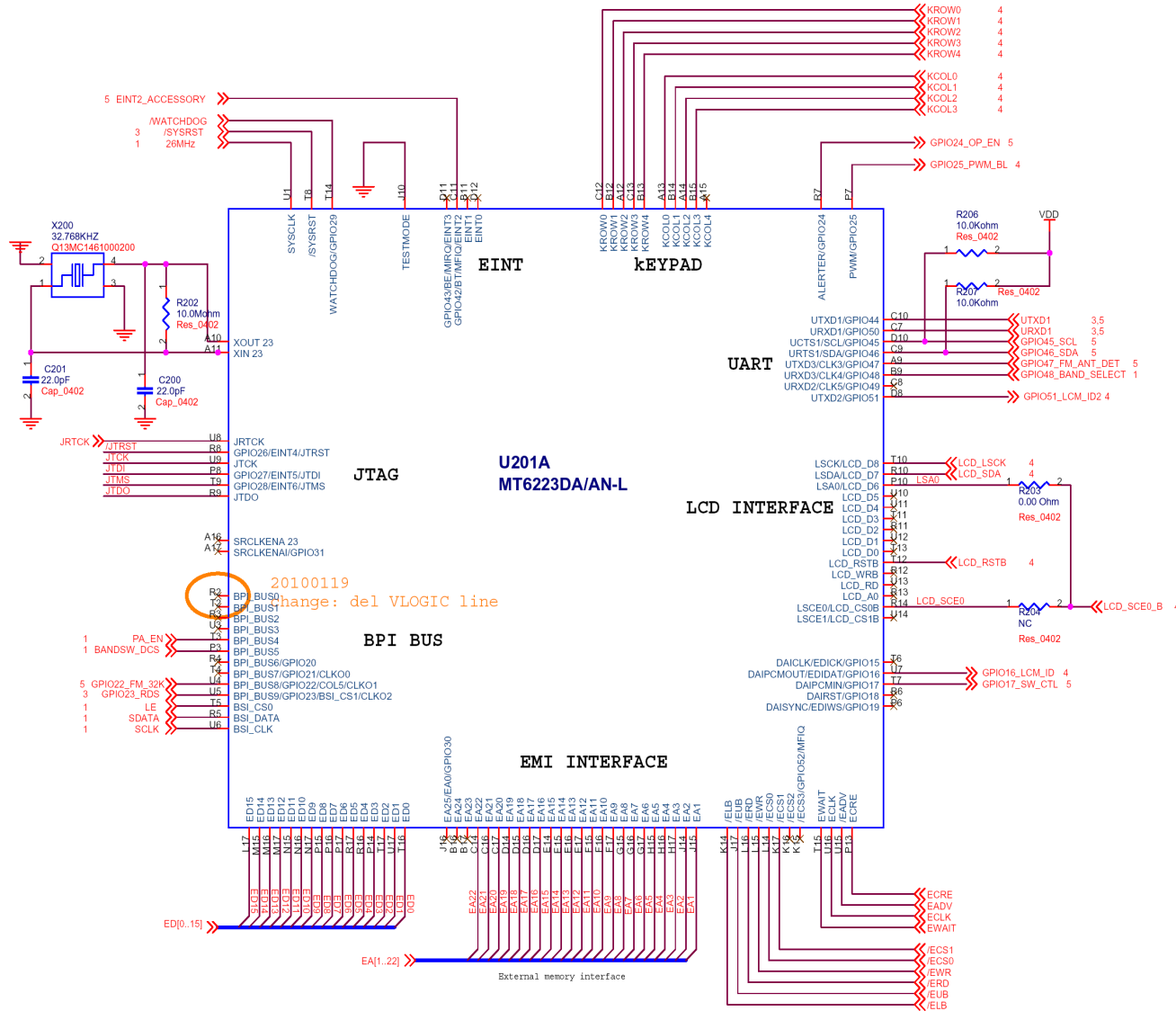


7. CIRCUIT DIAGRAM

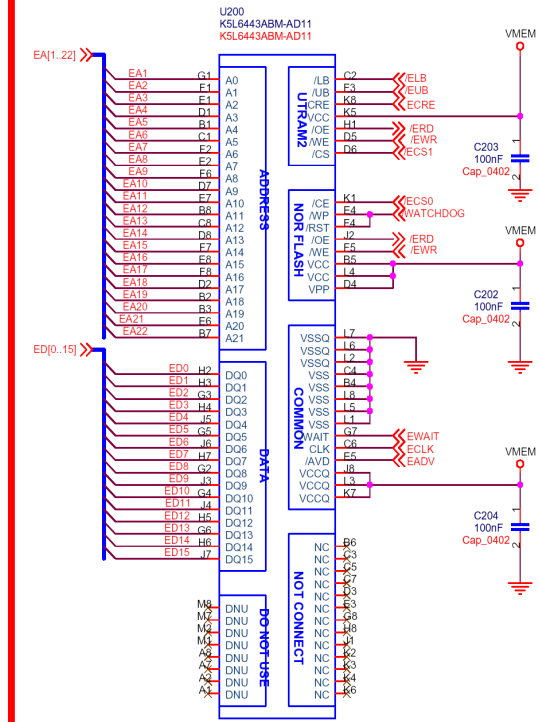
	PA to Cutkey MATCHING	ANTENNA MATCHING	PA	SAW	TR to PA	SAW to TR
EU (900/1800)	C100=2.7nH L102=2.7nH R101=0 ohm V100=0.2pF VARIATOR	L100=3.9nH C101=3.9pF R100=0 ohm C102=0.5pF	U100=77542	U101=B9500_EPCOS	R111=56 ohm, L111=3.3nH, C116=33pF C113=NC, L3.3nH, C114=2.2pF R108=56 ohm, L112=1.8nH, C137=18pF C128=NC, L107=1.5nH, C117=1.0pF	C103=33pF, R102=0 ohm, L104=NC C108=18pF, R104=0 ohm, L105=NC
US (850/1900)	L100=3.3nH L101=2.7nH R100=0 ohm C101=1.9pF V100=0.2pF VARIATOR	L100=3.9nH C101=3.9pF R100=0 ohm C102=0.5pF	U100=77543	U101=B9506_EPCOS	R111=56 ohm, L111=3.3nH, C116=33pF C113=NC, L3.3nH, C114=2.2pF R108=56 ohm, L112=1.8nH, C137=18pF C128=NC, L107=1.5nH, C117=1.0pF	C103=33pF, R102=0 ohm, L104=NC C108=18pF, R104=0 ohm, L105=NC



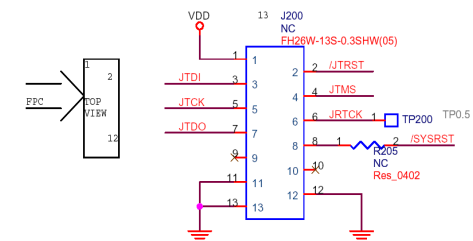
BB CHIP_LOGIC

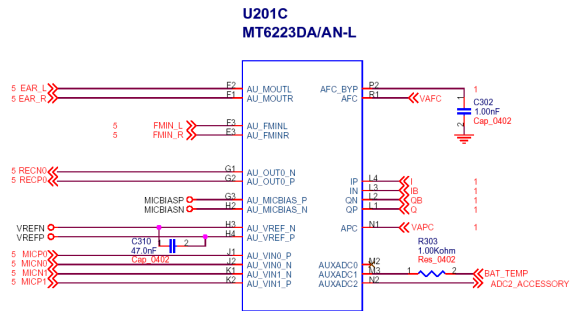
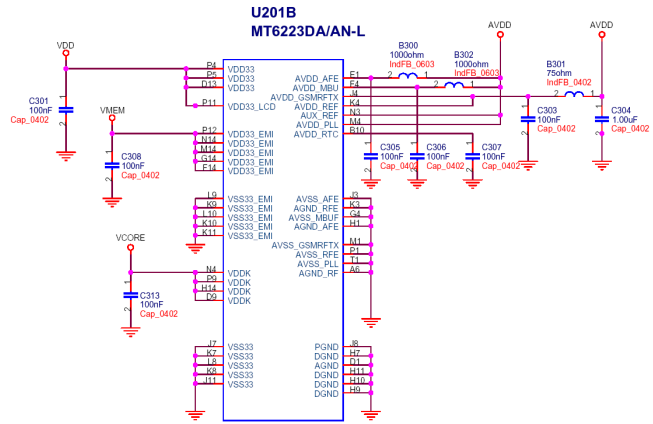


MCP

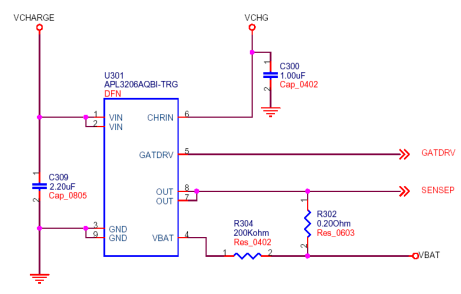


JTAG

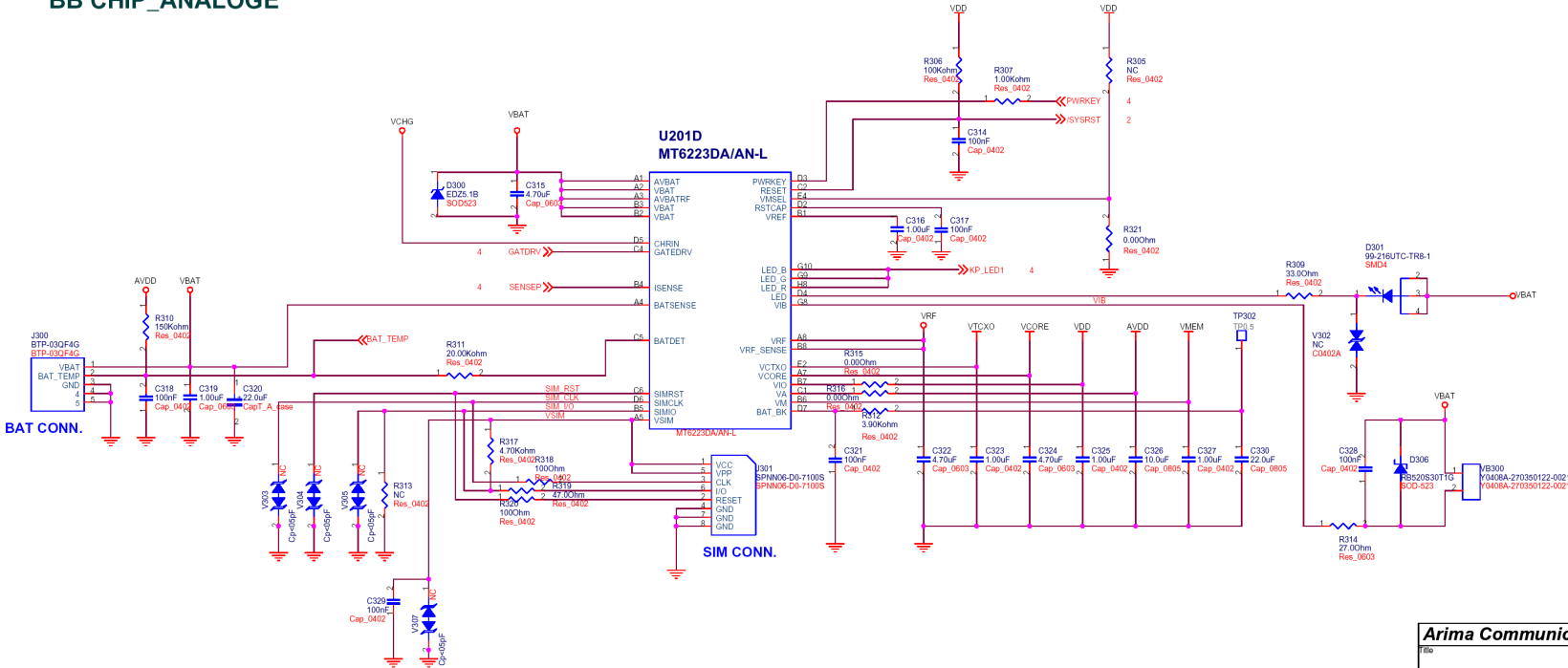




OVP+PMOS



BB CHIP_ANALOG

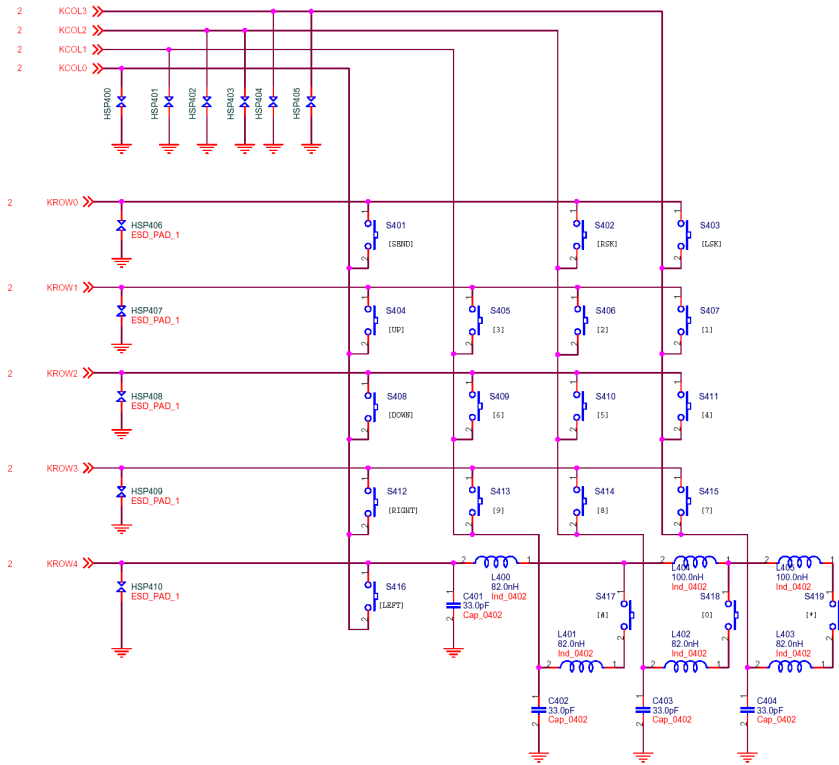


VDDK	1.8V
VDD33	2.8V
VDD_LCD	1.8V/2.8V
VDD_EMI	1.8V/2.8V
VSIM	1.8V/3.3V
VRF	2.8V
VCORE	1.8V/1.5V
VIO	2.8V
VMEM	1.8V/2.8V
VA	2.8V
VCTX0	2.8V
VMSEL	VMEM
H	2.8V
L	1.8V

Arima Communications Corp.

V30

KEYPAD



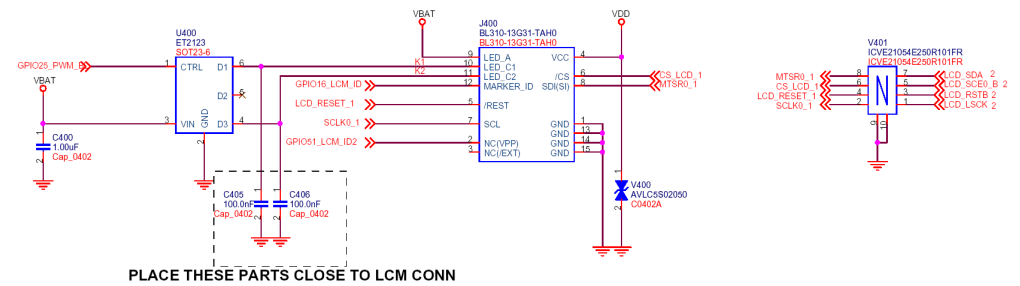
PWRKEY



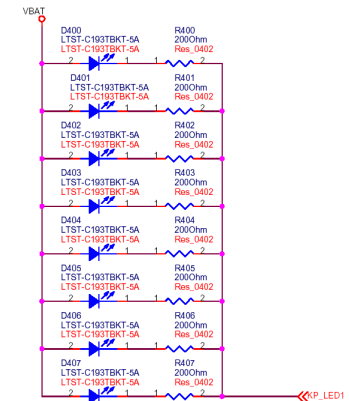
LCM BACKLIGHT DRIVER

VENDER	GPIO16_LCM_ID
LGIT	LOW
TBD	HIGH

VENDER	GPIO51_LCM_ID2
TBD	LOW
TBD	HIGH



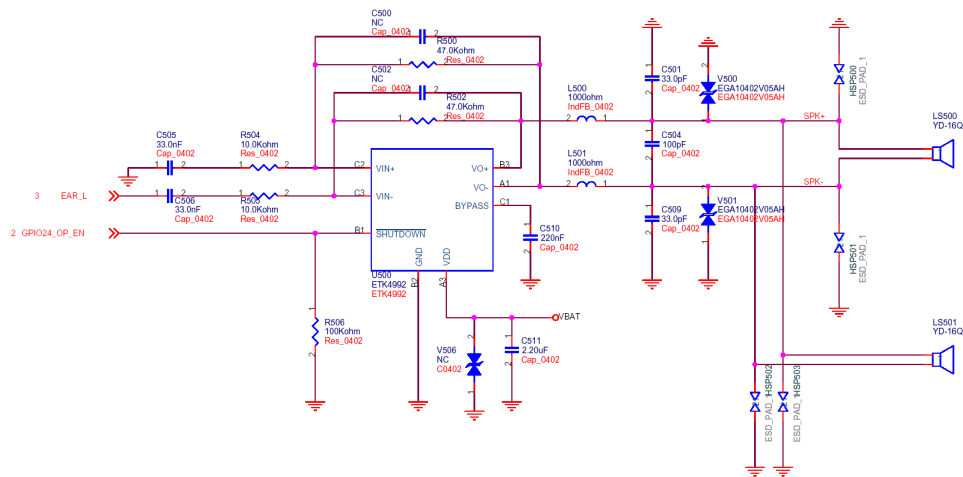
KEYPAD BACKLIGHT LED



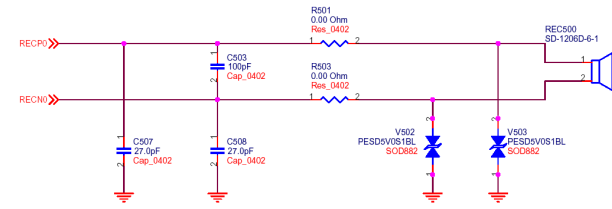
Arima Communications Corp.

V30

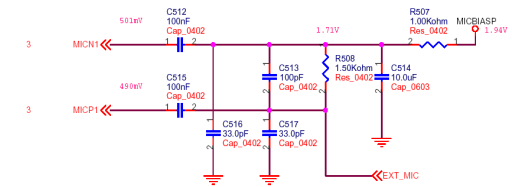
SPEAKER



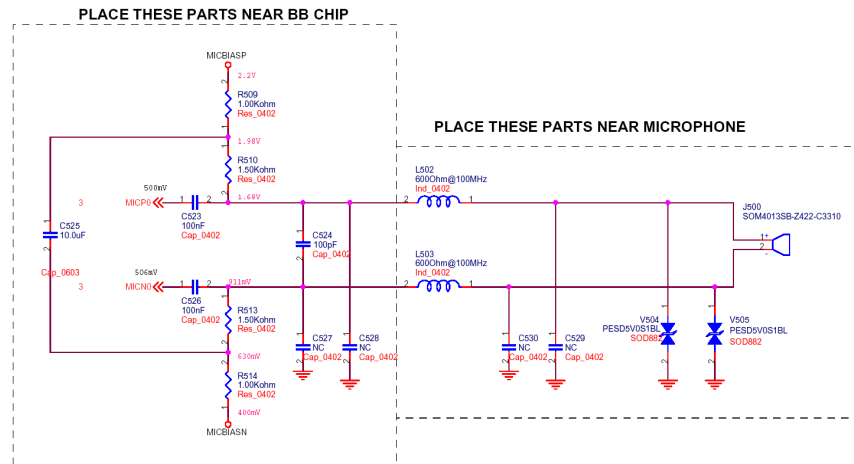
RECEIVER



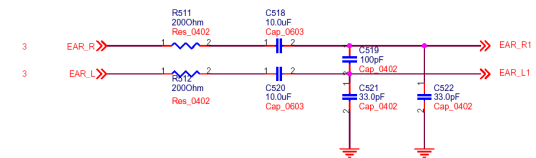
HEADSET MIC INPUT



HANDSET MIC INPUT

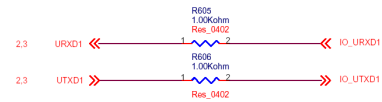
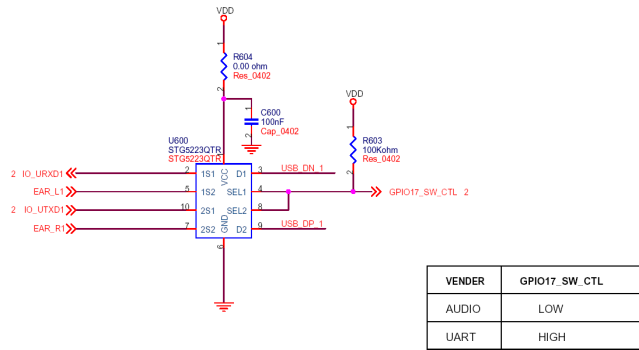


EAR

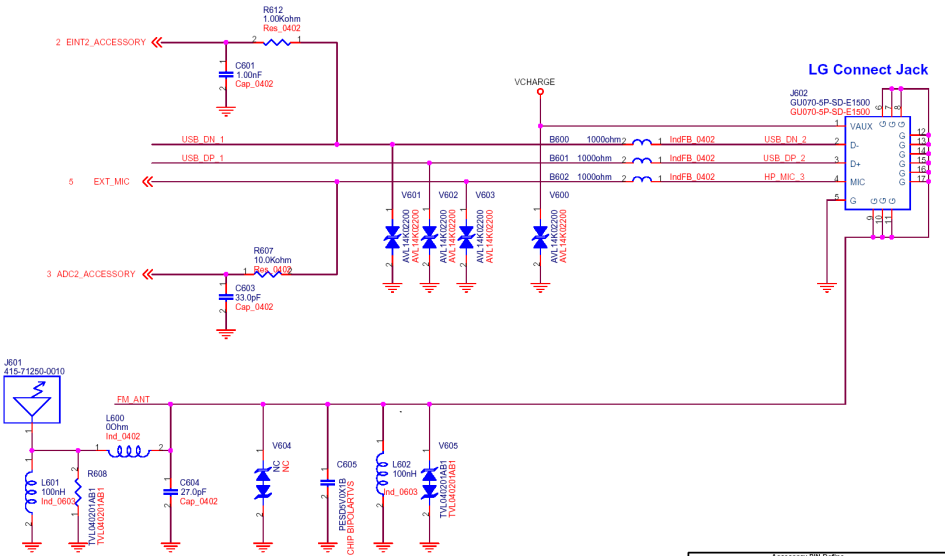


Arima Communications Corp.
Title V30

IO SWITCH

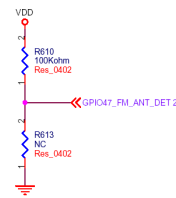
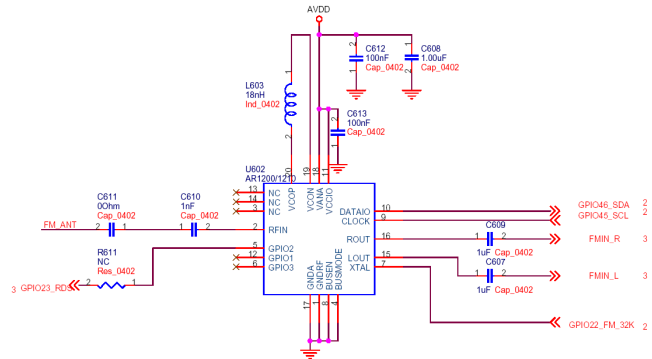


IO INTERFACE



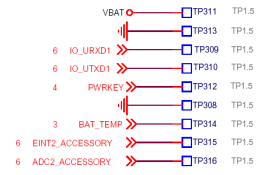
Accessory Pin Define			
1	Vaux	V5V	UART
2	D-	D+	HANDFREE
3	D+	D-	ADSP_L
4	MIC	HP MIC	ADSP_R
5	GND	GND	REV(T12K)
			USB
			VBAT

FM RADIO



Resistor Value	FM_ANT	GPIO47_FM_ANT_DET
R541=100K R542=NC	EXT+INTER	HIGH
R541= NC R542=10K	ONLY EXT	LOW

TEST POINT FOR DOWNLOAD



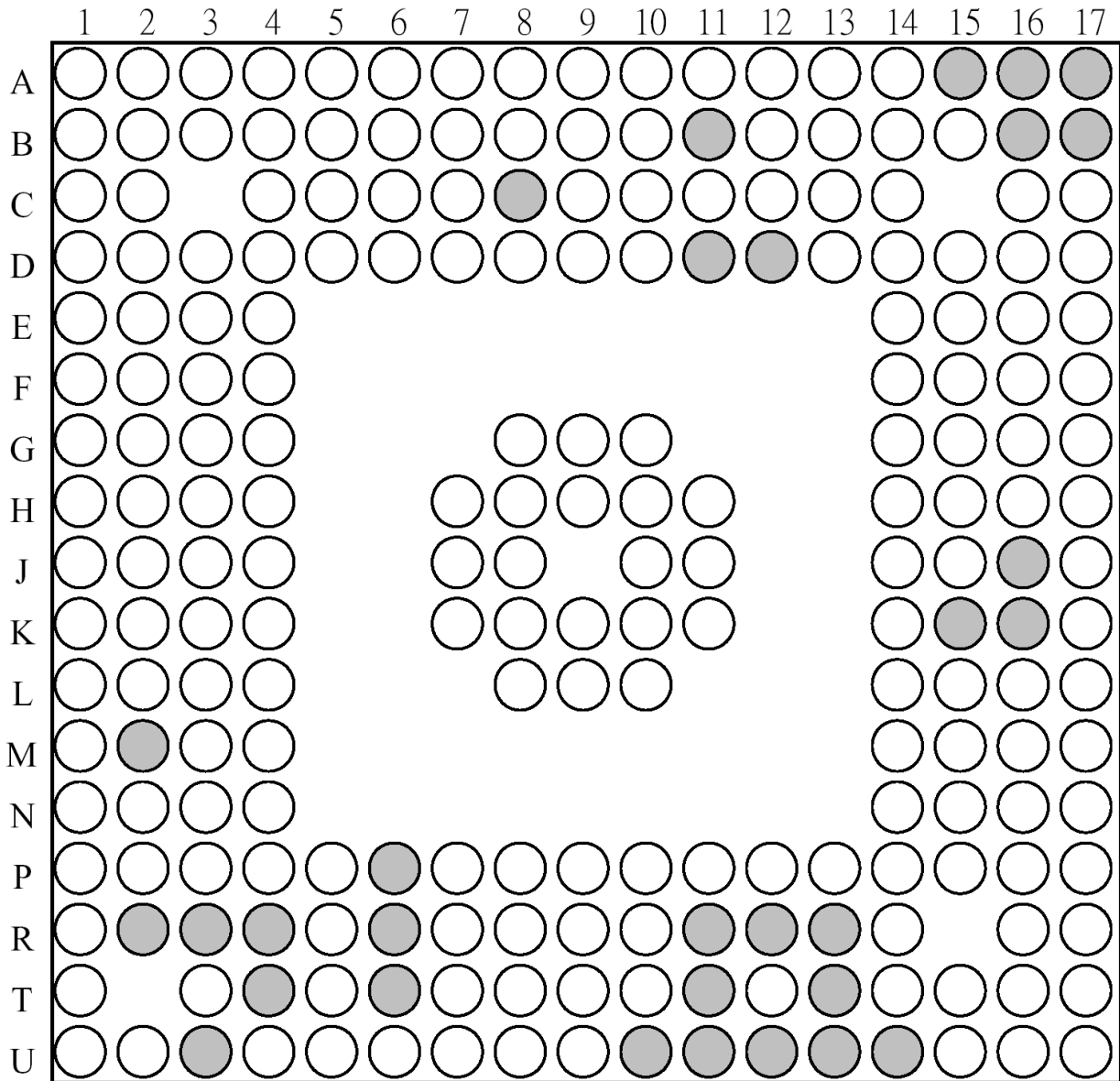
Arima Communications Corp.

V30

8. BGA IC PIN Check

8.1 BGA PIN Check of main chip (MT6223)

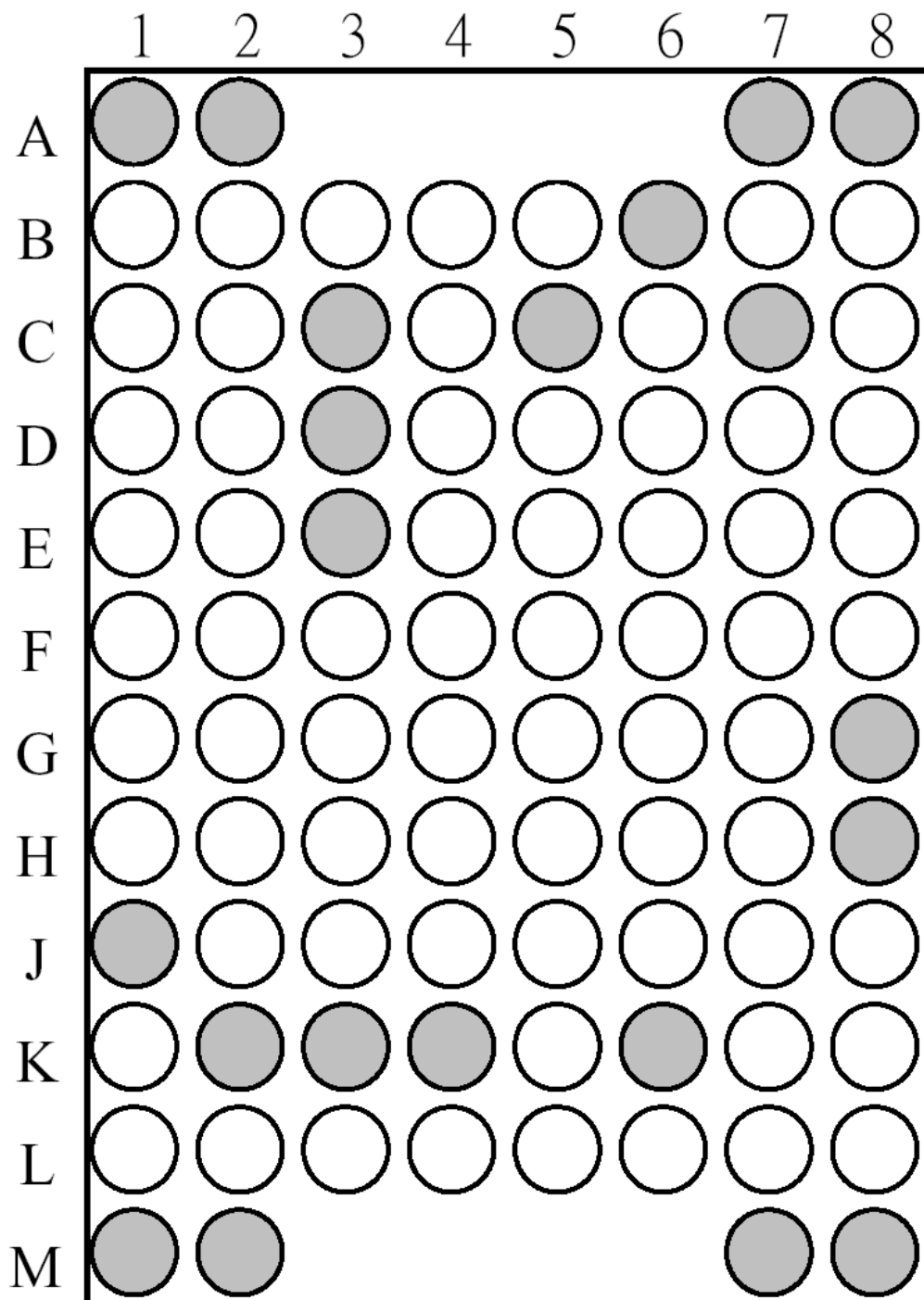
BB_MT6223 (U201)



- BGA use
- BGA non-us

8.2 BGA PIN Check of Memory (K5L6443ABM-AD11)

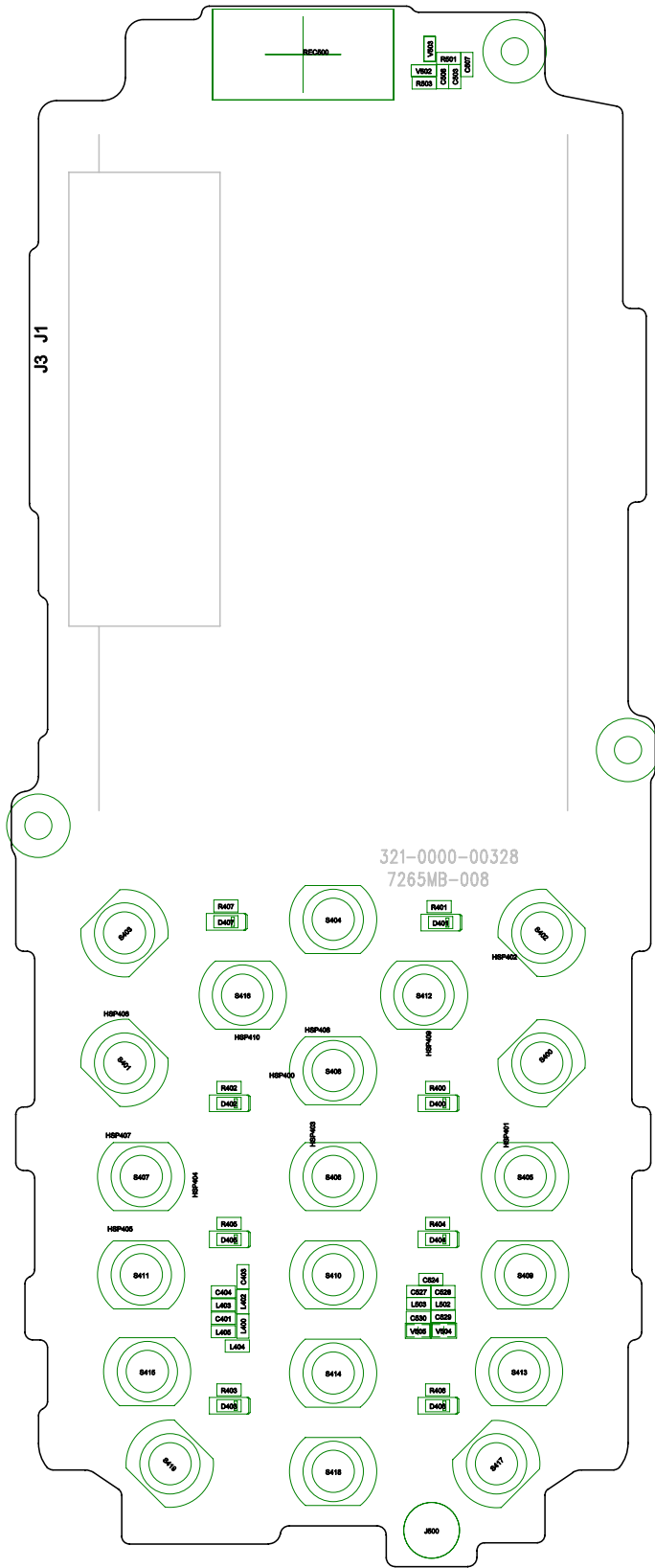
K5L6443ABM-AD11 (U200)



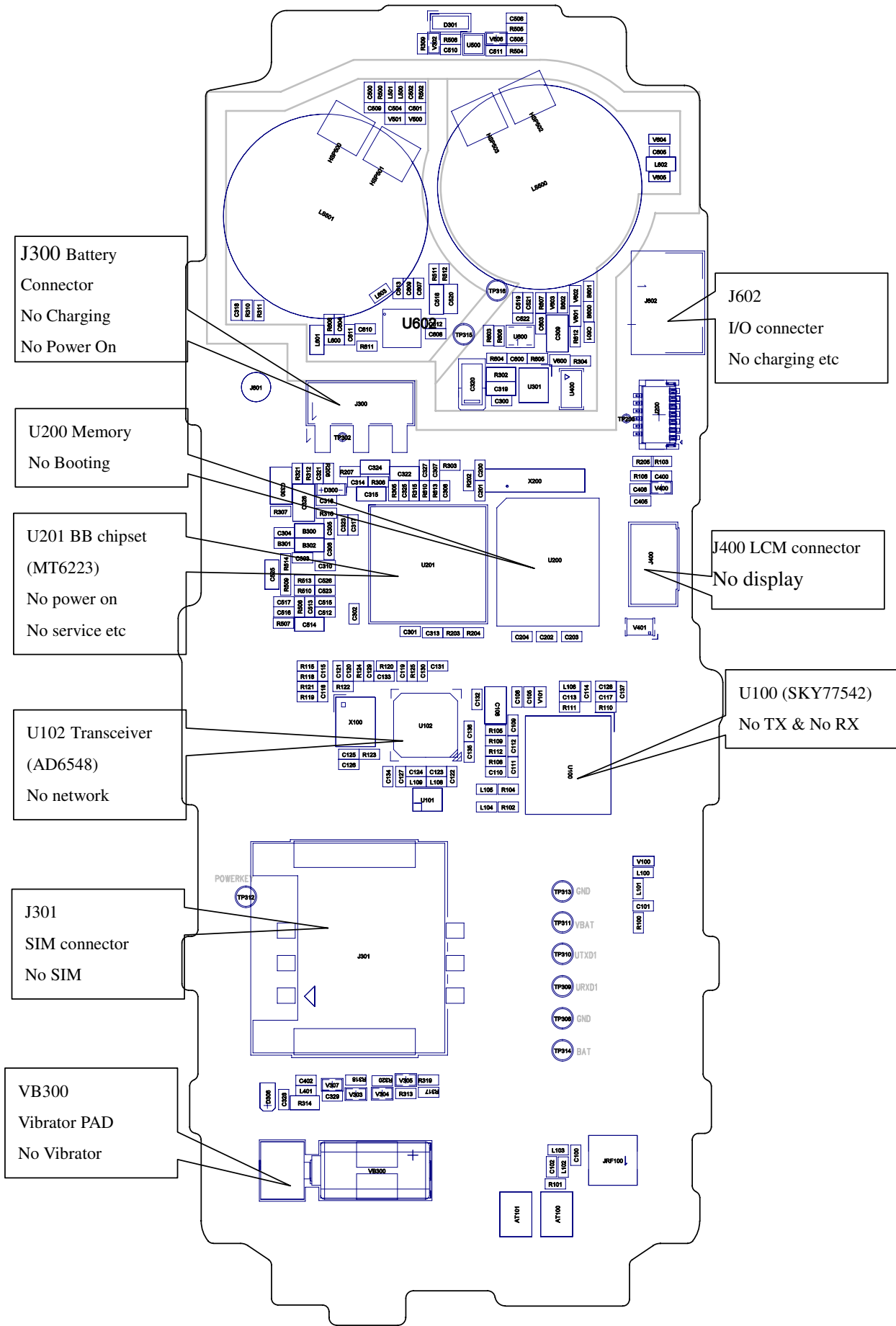
○ BGA use

● BGA non-use

9. PCB LAYOUT



TOP



Bottom

10.Engineering Mode

1. Test purpose

- a) To verify Appearance by visual check
- b) To verify recognition of SIM card
- c) To verify Function Test in the table shown as below
- d) To verify power down phone

2. Test System

- 1. Power Supply Unit (PSU)+Dummy Battery or Battery
- 2. Test SIM Card (Spec: GSM Phase 2+ Test SIM Standard 1(3.1))
- 3. Sample Hands free Kit (SHF, Stereo)

3. Test Procedure

3.1 Appearance Test

Verify appearance by visual check

3.2 SIM Test

Verify recognition of SIM card

If “Insert SIM” indicated on Display, it is NG.

3.3 Enter Service Mode

3.1.1 No SIM Card installed

- a. Power on Phone
- b. Press **878** to enter service mode.

3.1.2 SIM Card installed

- a. Power on Phone
- b. Press ***#878#** to enter service mode.

3.1.3 Software Version Check

Select item 6 “Version” in Factory mode to check software version.

4 MMI Tests

1. Auto test
2. SHOW, IMEI, SW Version
3. Echo Loop
4. Keypad
5. Antenna Test
6. Version
7. Resource BIN
8. Vibrator
9. Loud Spk
10. Ringtone
11. LED
12. LCD
13. Receiver
14. ADC
15. Charger
16. Headset
17. RTC
18. MTBF
19. UART
20. FM Radio

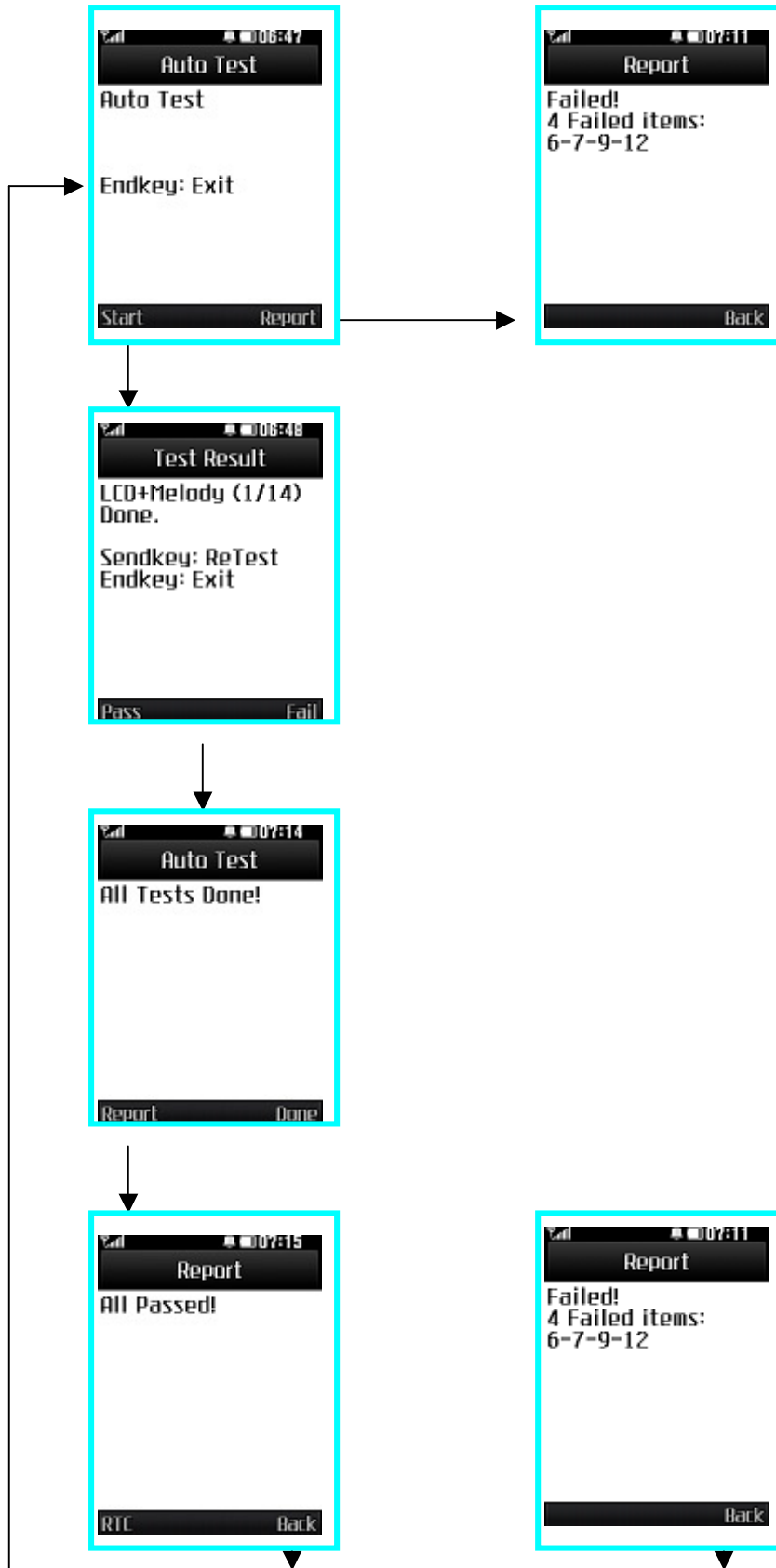
Auto Test Mode

This auto test mode is designed to do the baseband test automatically. When you finish all tests, phone will report the result for you.

Enter and Exit Auto Test Mode

In the idle screen, enter “*#878#” and the Auto Test Mode menu will show up. In Auto Test Mode main menu, press Left-Soft-Key (LSK) “Start” will process the test automatically or End key to go back to the idle screen.

Work Flow



All Auto Test

Charger Test, LCD+Melody+Torch, BackLight+Vib+Flashlight, MIC, Headset, KeyPad, FM-Radio, RTC, ADC, Antenna

1. Charger Test

Check the charger function is correct or not and charging current.

2 .LCD+Melody+Torch

LCD Backlight, LCD pattern and MIDI melody playing.

3 .LCM Backlight

The LCD backlight and keypad backlight with Vibrator on/off on every 0.5sec.

4 .MIC

Enable microphone audio path to pass input sounds to receiver for checking the microphone and receiver component.

5. Headset

To test the analog loop back path from headset MIC to headset Receiver.

6 .KeyPad

Test all keypad keys. All the keys are displayed on the screen. When a key is pressed, the depression is detected and the key disappears from the screen. Once all keys are detected, the test stops and exits.

7 .FM-Radio

Force FM-Radio to receive FM signal and show the RSSI in 100.7 MHz channel.

8 .RTC/ADC test

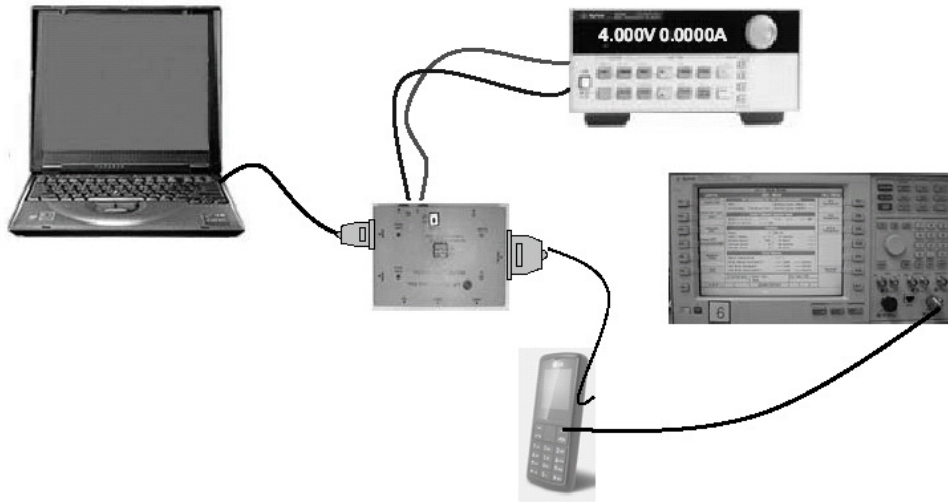
Test RTC and adc, show report in the same screen.

9.Antenna

To test the antenna module.

11.CALIBRATION

11.1 Test Equipment set up



11.2 Calibration Steps

Environment Requirement:

OS:

MS Windows 2000 or XP

Hardware:

Generic Pentium III or above PC (256M RAM or above)

GPIB Card

- National Instruments GPIB device and driver
- Agilent GPIB card and driver
- KEITHLEY GPIB card and driver

Radio Communication Tester

- Rohde & Schwarz CMU 200
- Agilent 8960
- Anritsu MT8820
- Rohde & Schwarz CMD55
- Willtek WT4400
- Agilent N4010A (for Bluetooth test)
- Rohde & Schwarz CBT (for Bluetooth test)
- Anritsu MT88852 (for Bluetooth test)

DC Power Supply

- Agilent 661x or Agilent 663x2 series power supply
- R&S NGSM Power Supply
- KEITHLEY 2303, 2304, 2306
- Agilent 3631A power supply
- Willtek WT4400 power supply option

Others

USB download cable

Dummy battery

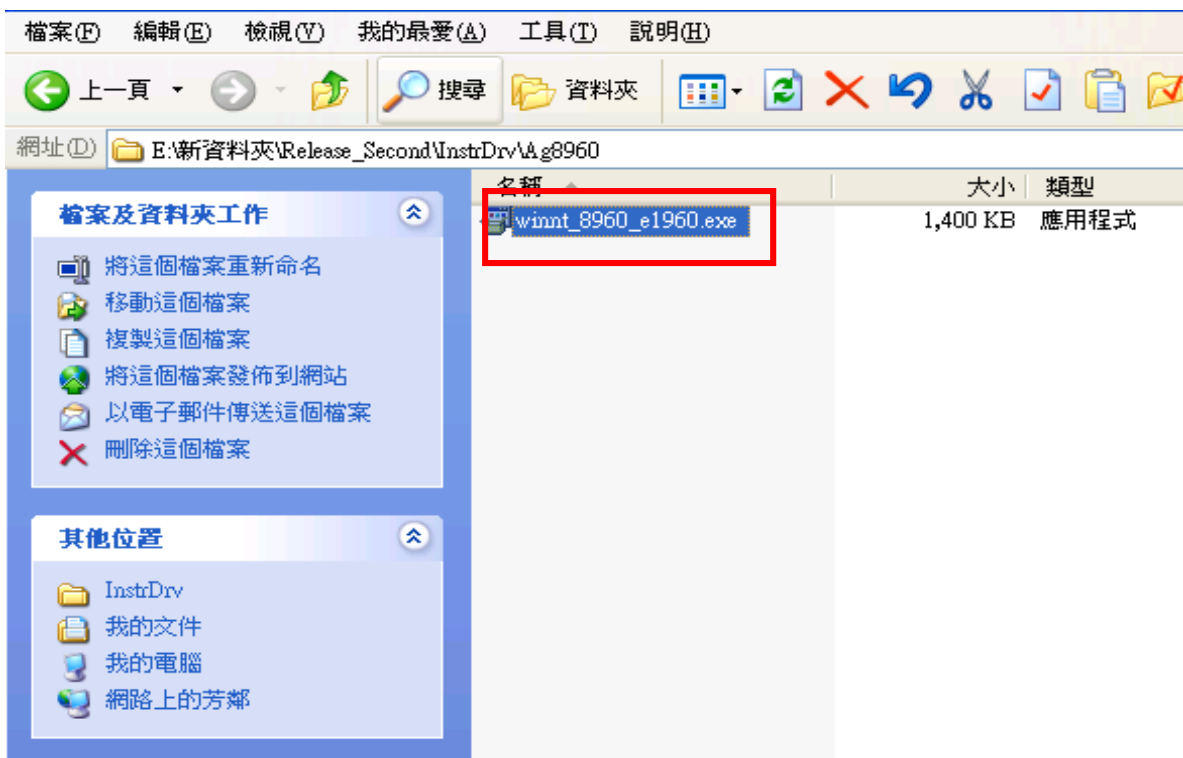
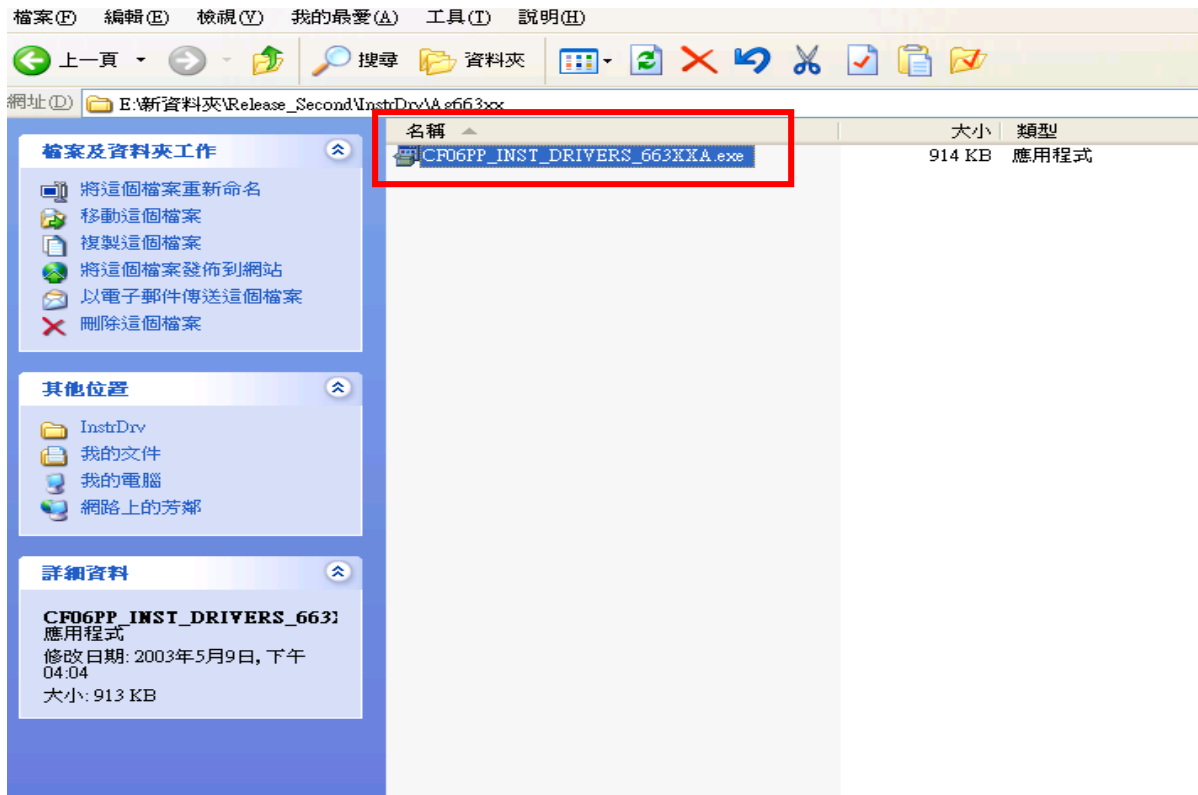
RF cable

The following diagrams depict the system setups when using the Agilent test platform.

Connect 8960, power supply , computer ,phone



When install the MTK ATE tool, first install driver.
In turn execute [CF06PP_INST_DRIVERS_663XXA.exe](#), [winnt_8960_e1960.exe](#), [230x-850a01.exe](#).



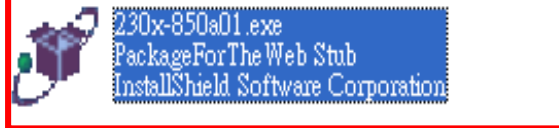


E:\新資料夾\Release_Second\InstDrv\KEIL\THLEY

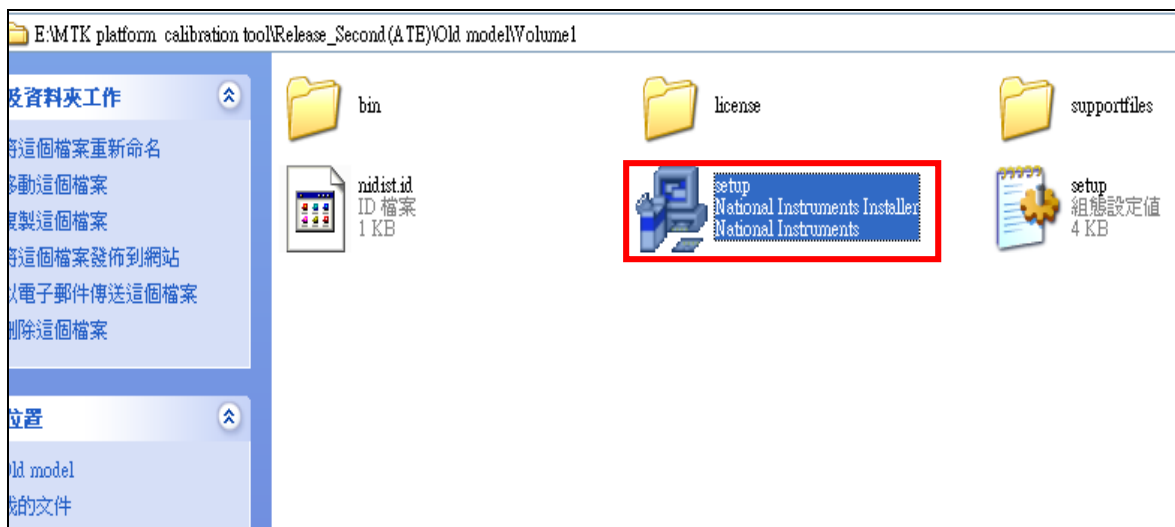
檔案及資料夾工作

- 將這個檔案重新命名
- 移動這個檔案
- 複製這個檔案
- 將這個檔案發佈到網站
- 以電子郵件傳送這個檔案
- 刪除這個檔案

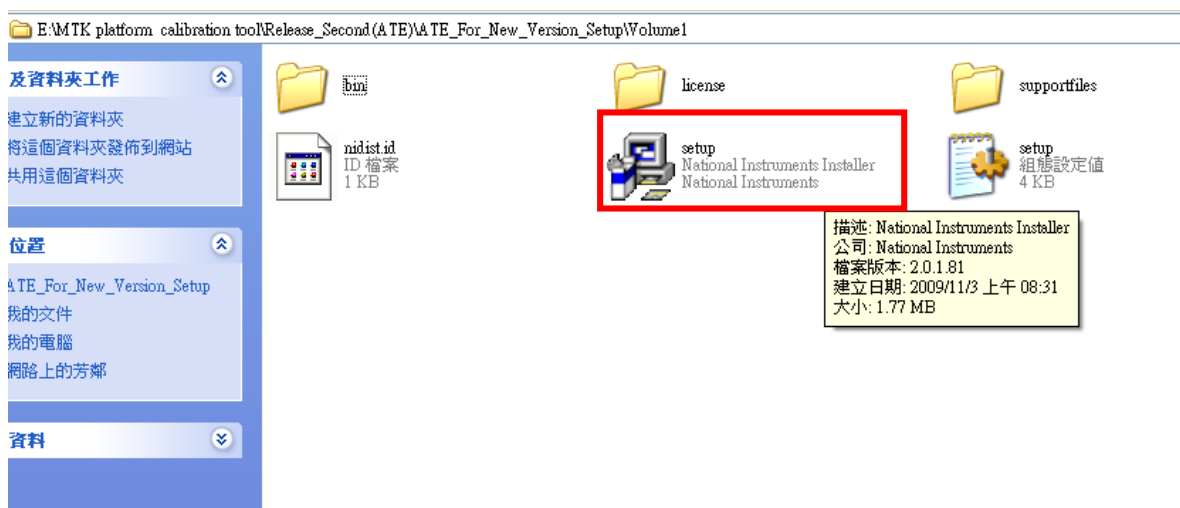
位置



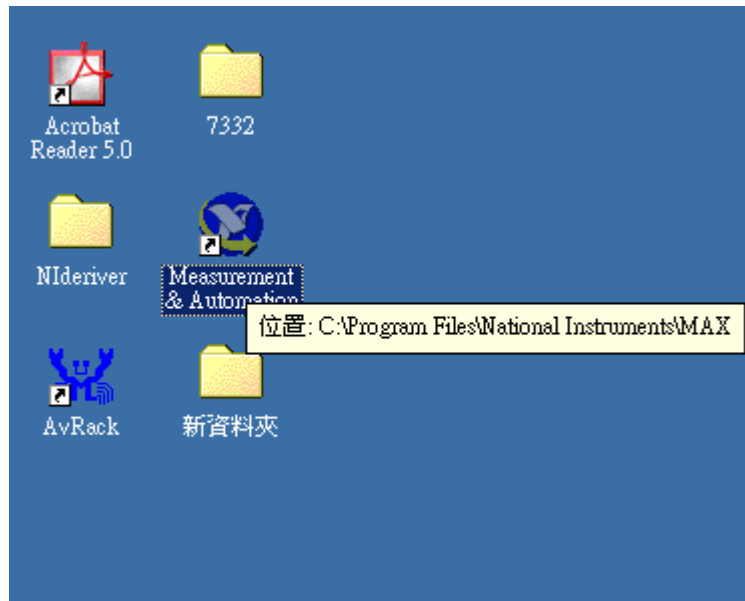
Second, to install the MTK ATE tool, execute the [Old model \ Volume1 \setup.exe](#) file. The Installation Wizard guides the user through the installation process step by step, up to Installation finish.



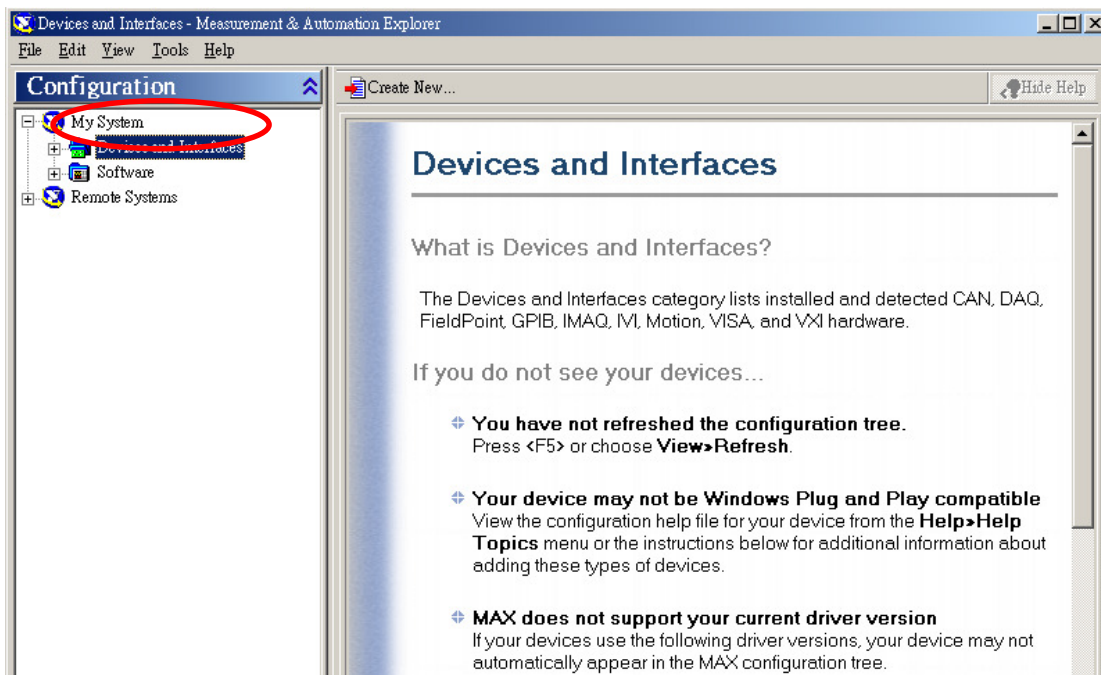
Third, to install the MTK ATE tool, execute the [ATE_For_New_Version_Setup \ Volume1 \setup.exe](#) file. The Installation Wizard guides the user through the installation process step by step, up to Installation finish.



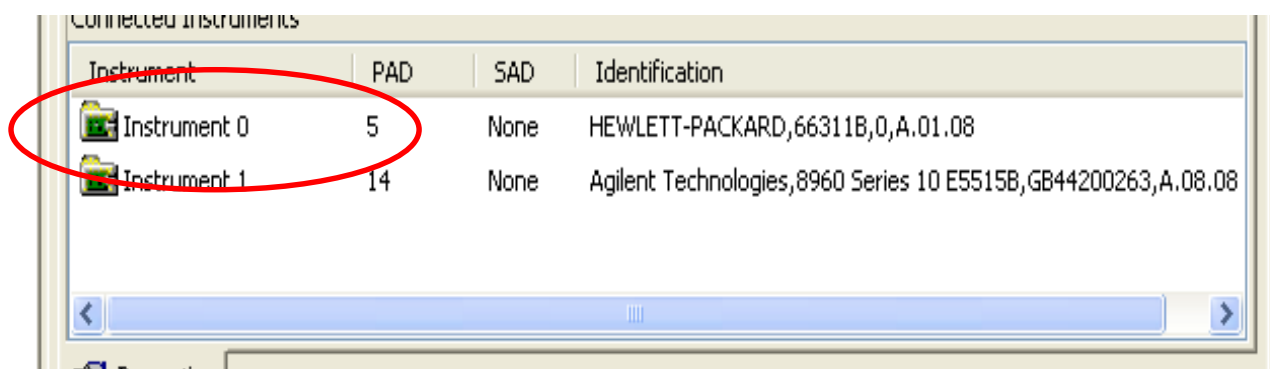
Execute Measurement & Automation to check equipment address



Choose Devices and Interfaces



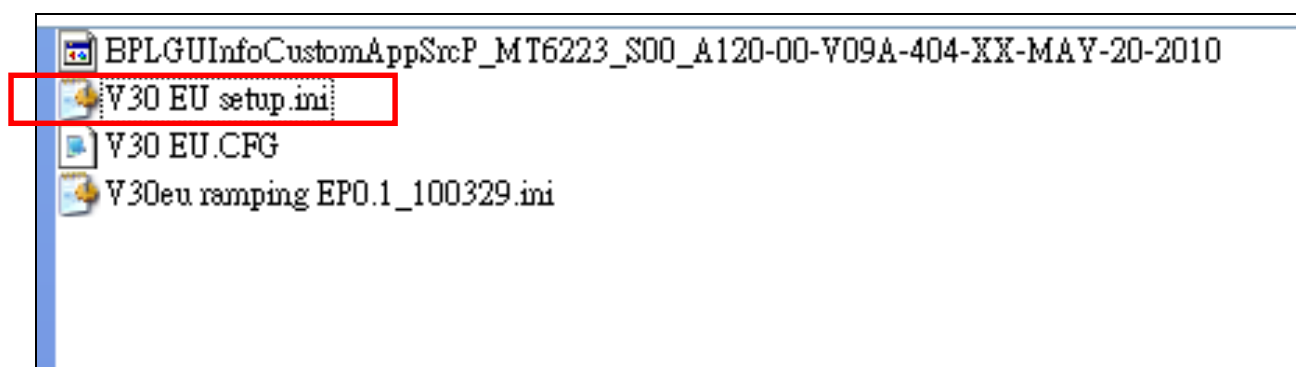
You can see your equipment address



Instrument	PAD	SAD	Identification
Instrument 0	5	None	HEWLETT-PACKARD,66311B,0,A.01.08
Instrument 1	14	None	Agilent Technologies,8960 Series 10 E5515B,GB44200263,A.08.08

Choose [V30 EU setup.ini](#) and open the file to setup from data files .

(For example: A120)



Setup your CMU Base GPIB address and power supply address

```
Y30 EU setup.ini - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明(H)

[Reset RF Function Group]
GSM850 Sig = 0
GSM900 Sig = 1
GSM1800 Sig = 1
GSM1900 Sig = 0
GSM850 NSig = 0
GSM900 NSig = 1
GSM1800 NSig = 1
GSM1900 NSig = 0

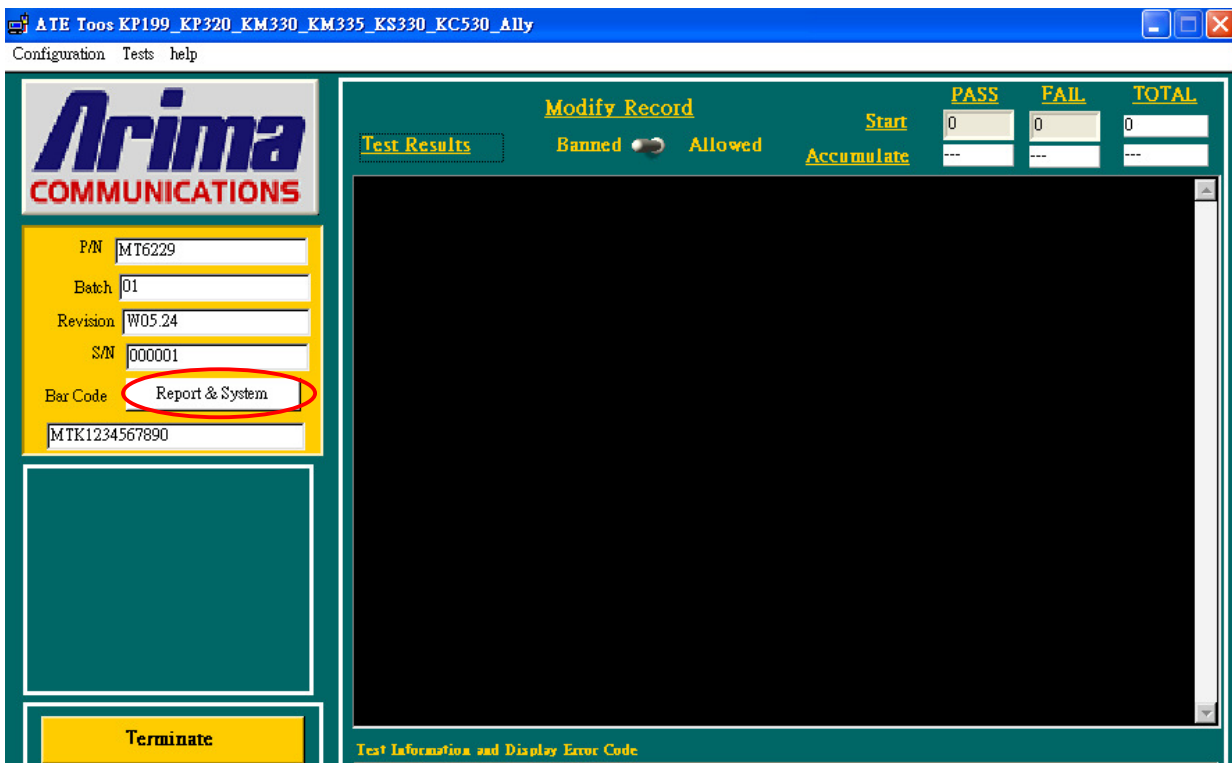
[System Setting]
External Reference Clock = 0
CMU Base GPIB Address = 20
Instrument = "AC8060"
Power Supply Address = GPIB0::5::INSTR
CMU RF Port = 2
Debug Mode = 1
Test Mode = 0
FDM database file Line0001 = "C:\\Program Files\\HMETA\\MODEL_
FDM database file Line0002 = "7S72650000-P1C"
Calibration file = "C:\\Program Files\\HMETA\\MODEL_DATA\\U30
Config file = "C:\\Program Files\\HMETA\\MODEL_DATA\\U30 EU\\
Report file path = "c:\\
Database file = "c:\\Program Files\\MTK_atedemo\\mtk_ate.xls"
IMSI = "001011234567890"
POWER ON AFTER CHANGE = 1
Stability Count = 1
Check Testfixture = 0
Fixture COM port = 8
```

ATE Tool system setting

Execute MTK_ate demo



Press Report & System button



Setting your equipment

Part Number: MT6229
Batch: 01
Revision: W05.24
Serial Number: 000001
Bar Code: MTK1234567890

GSM/EDGE Cal Setting
Band:
 GSM850 Cal GSM900 Cal DCS Cal PCS Cal
RX (Xtal Tx):
 AFC Type: Crystal AFC AFC Cal
 PathLoss Calibration AFC T/R Cal
 AFC CapId Cal
TX GSM/EDGE
 APCDC Cal(Skyworks only) Slope Skew FB dac
 TXIQ: GMSK TXIQ PCL Check: Nono
 PA: GSM Full PCL TXP Cal
Battery/ADC: ADC Cal/PSU Ctrl
WiFi Cal:
 TxDoOffset EEPROM Copy TXP CAL RF Check
 Cap Id Internal Sensor
BT Cal:
 BT CapId wo Tester
GSM/EDGE Final Setting
 GSM850 GSM900 DCS PCS GPRS Test

System Setting
TEST MODE SELECT
 Manual Initial
Bar Code Get Type When Calibration
 Scan Barcode
Power Supply Type PSU GPIB Address
 Agilent 663xx 5
GSM/EDGE Tester CMU RF Port
 Agilent 8960 RF2
WiFi Tester
 N4010A
BT Tester WCDMA Tester
 N4010A MT8820B
Baseband Chip Type COM Port Select
 AutoDetect COM 15
 Cal INP LOSS Cal OUP LOSS
 Save Change

NVRAM Database file (For Modem and feature phone)
 e:\calibration data\7262 calibration data\BPLGUIInfoCustomAppSrcP_MT6235B_S01_GX200-00-V09A-404-XX-OCT-09-5
 ..Select Modem Database file

NVRAM Database file (For AP, Smart phone only)
 ..Select AP Database file

Config File Location (CFG file)
 e:\calibration data\7262 calibration data\7262-Sloan.CFG
 ..Select Config File

Calibration File Location (.ini file)
 e:\calibration data\7262 calibration data\7262-Sloan.INI
 ..Select Calibration INI

Battery DFI file (For smart battery)
 ..Select Battery DFI file

Setting your power supply type

System Setting
TEST MODE SELECT
 Manual Initial
Bar Code Get Type When Calibration
 Scan Barcode
Power Supply Type PSU GPIB Address
 KEITHLEY230 7
GSM/EDGE Tester CMU RF Port
 Agilent 8960 RF2
WiFi Tester
 IQVIEW
BT Tester
 CMU200
Baseband Chip Type COM Port Select
 6226 COM 6
 Cal INP LOSS Cal OUP LOSS

Choose your Power Supply Type

Setting your GSM/EDGE Tester

The screenshot shows the 'system setting' menu with the following configuration:

- TEST MODE SELECT: Manual Initial
- Bar Code Get Type When Calibration: Scan Barcode
- Power Supply Type: KEITHLEY230
- PSU GPIB Address: 7
- GSM/EDGE Tester: Agilent 8960 (circled in red)
- CMU RF Port: RF2
- WiFi Tester: IQVIEW
- BT Tester: CMU200
- Baseband Chip Type: 6226
- COM Port Select: COM 6
- Cal INP LOSS:
- Cal OUP LOSS:

A blue arrow points from a box labeled 'Choose your Tester' to the 'Agilent 8960' dropdown menu.

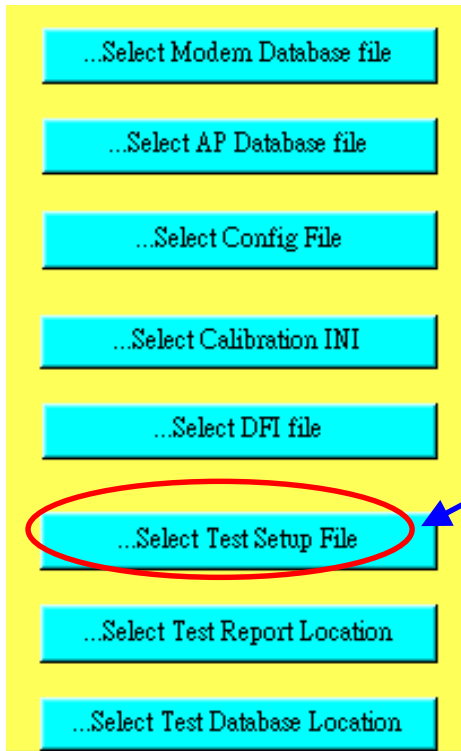
Choose your download com port

The screenshot shows the 'system setting' menu with the following configuration:

- TEST MODE SELECT: Manual Initial
- Bar Code Get Type When Calibration: Scan Barcode
- Power Supply Type: KEITHLEY230
- PSU GPIB Address: 7
- GSM/EDGE Tester: Agilent 8960
- CMU RF Port: RF2
- WiFi Tester: IQVIEW
- BT Tester: CMU200
- Baseband Chip Type: 6226
- COM Port Select: COM 6 (circled in red)
- Cal INP LOSS:
- Cal OUP LOSS:

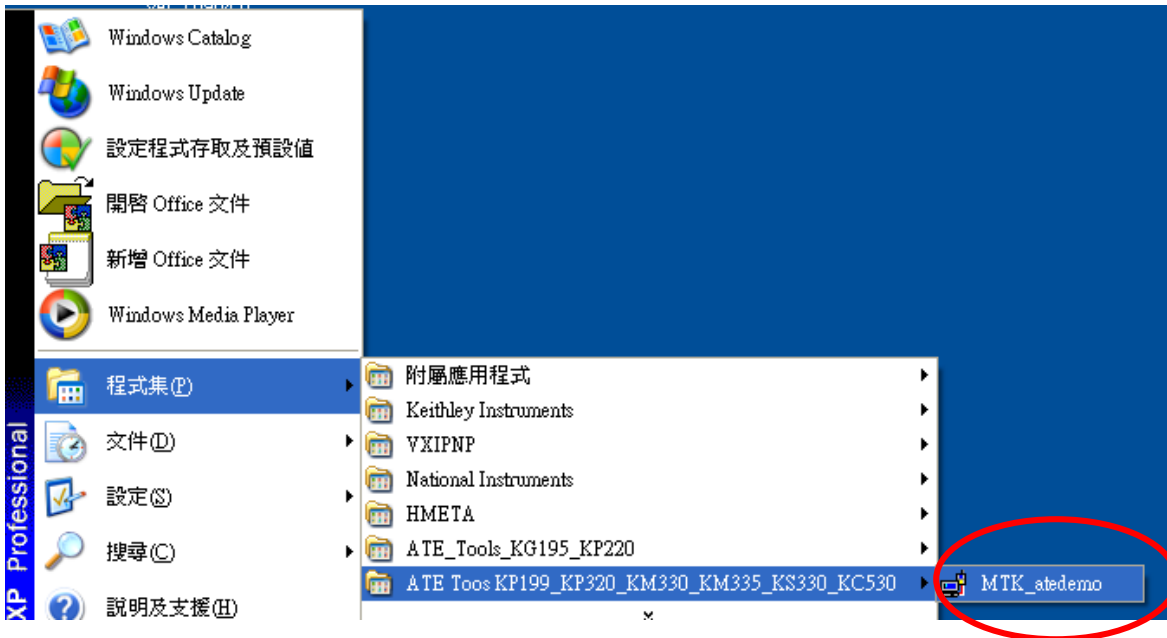
A blue arrow points from a box labeled 'Choose your download cable connect COM port' to the 'COM 6' dropdown menu.

Choose “select test setup file”

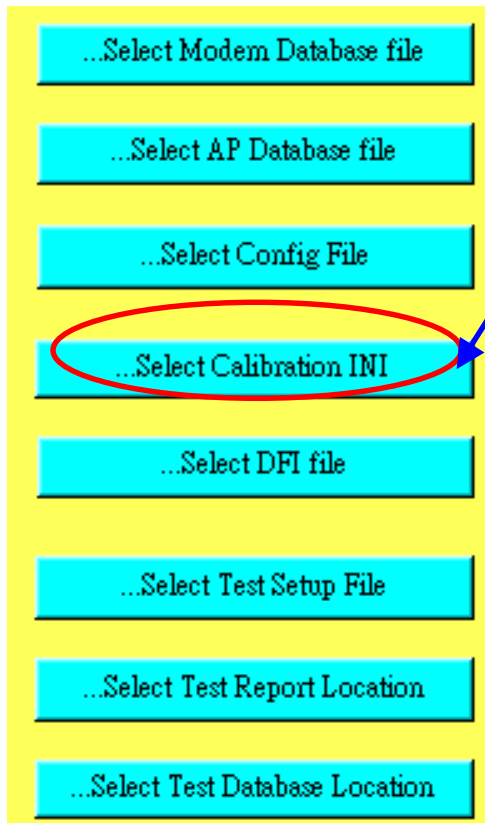


To select the setup file in this icon
(For example: V30 EU setup.ini)

Execute MTK_ ate demo again

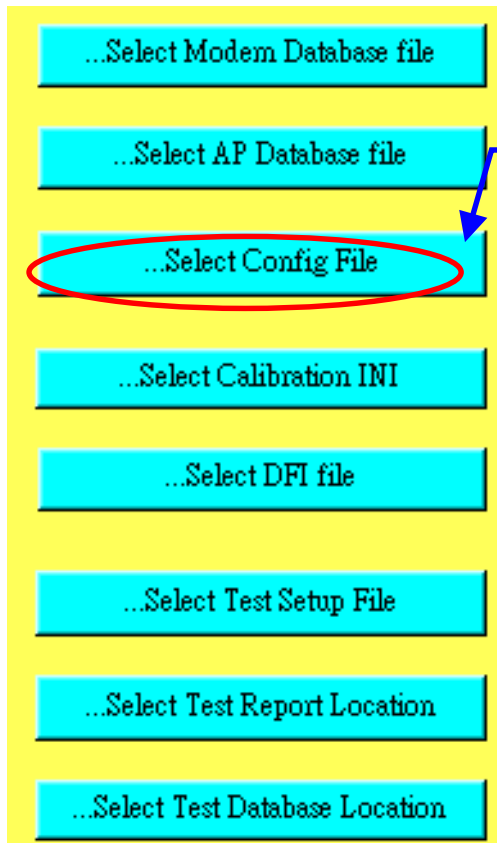


Choose Calibration INI



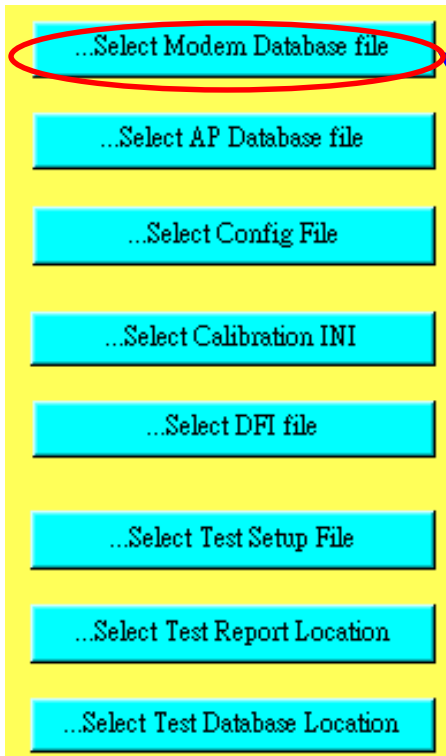
To select the ini file in this icon
(For example: V30eu ramping
EPO.1_100329.ini)

Choose Con fig File



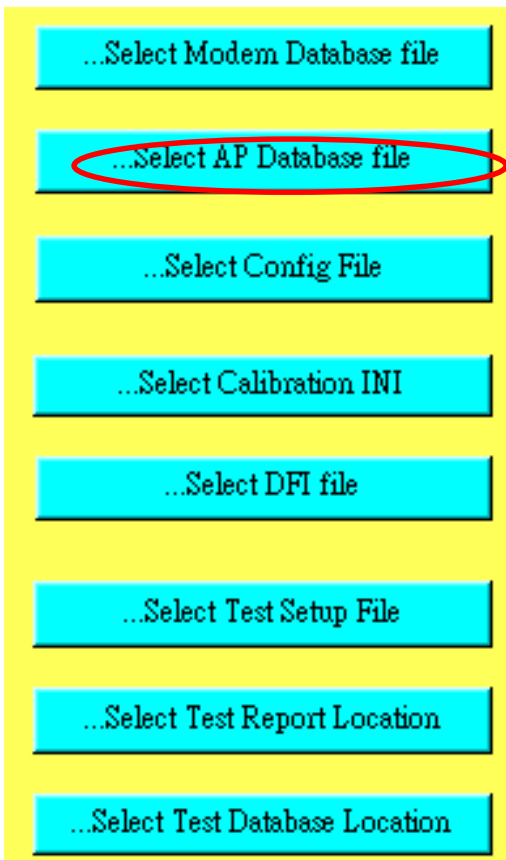
To select the CFG file in this icon
(For example: V30 EU.CFG)

Choose NVRAM Database file



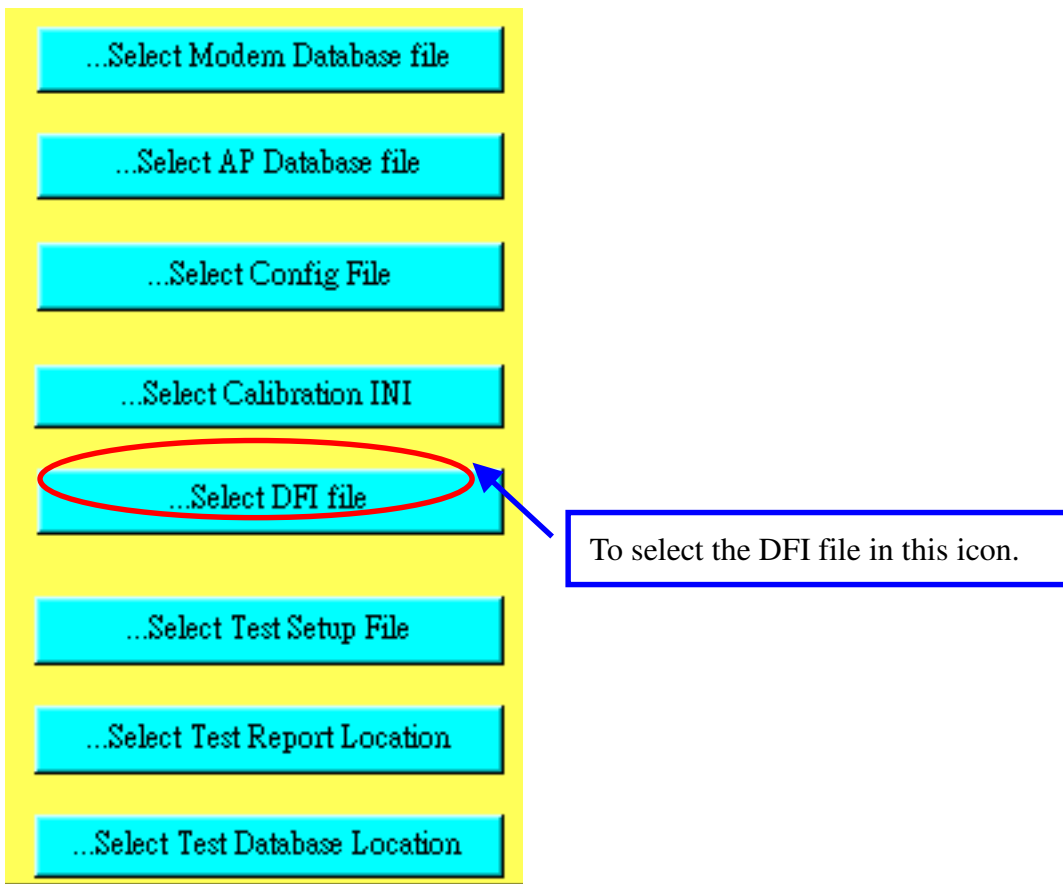
To select the SW database in this icon.

Choose AP database file (Caution: ONLY Smart phone need choose it)



To select the AP database in this icon.

Choose Battery DFI file (**Caution: ONLY Smart battery need choose it**)



...Select Modem Database file

...Select AP Database file

...Select Config File

...Select Calibration INI

...Select DFI file

...Select Test Setup File

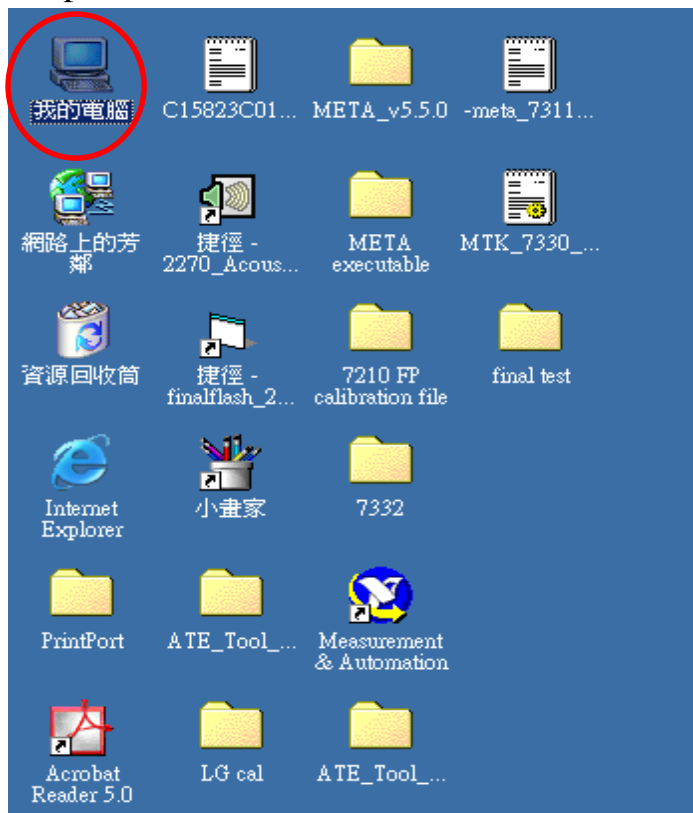
...Select Test Report Location

...Select Test Database Location

To select the DFI file in this icon.

How to setup your test report location

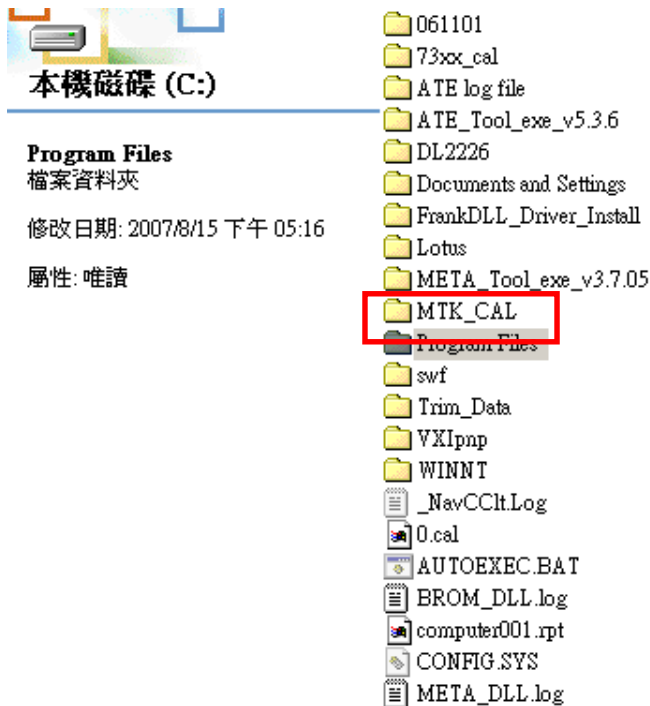
Choose my computer



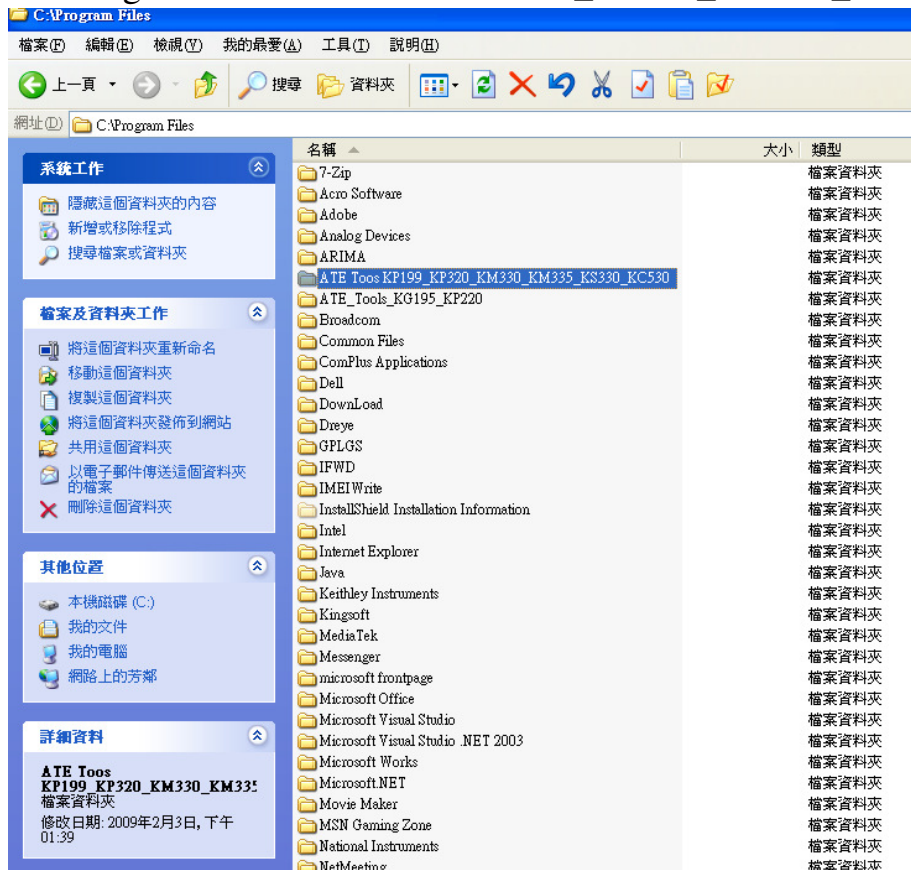
Choose "C" disk

名稱 ▲	類型	大小總計	可用空間
3.5 軟碟機 (A:)	3.5 吋軟式磁碟機		
本機磁碟 (C:)	本機磁碟	18.6 GB	15.6 GB
新增磁碟區 (D:)	本機磁碟	18.6 GB	16.0 GB
控制台	可用空間: 15.6 GB, 容量: 18.6 GB		

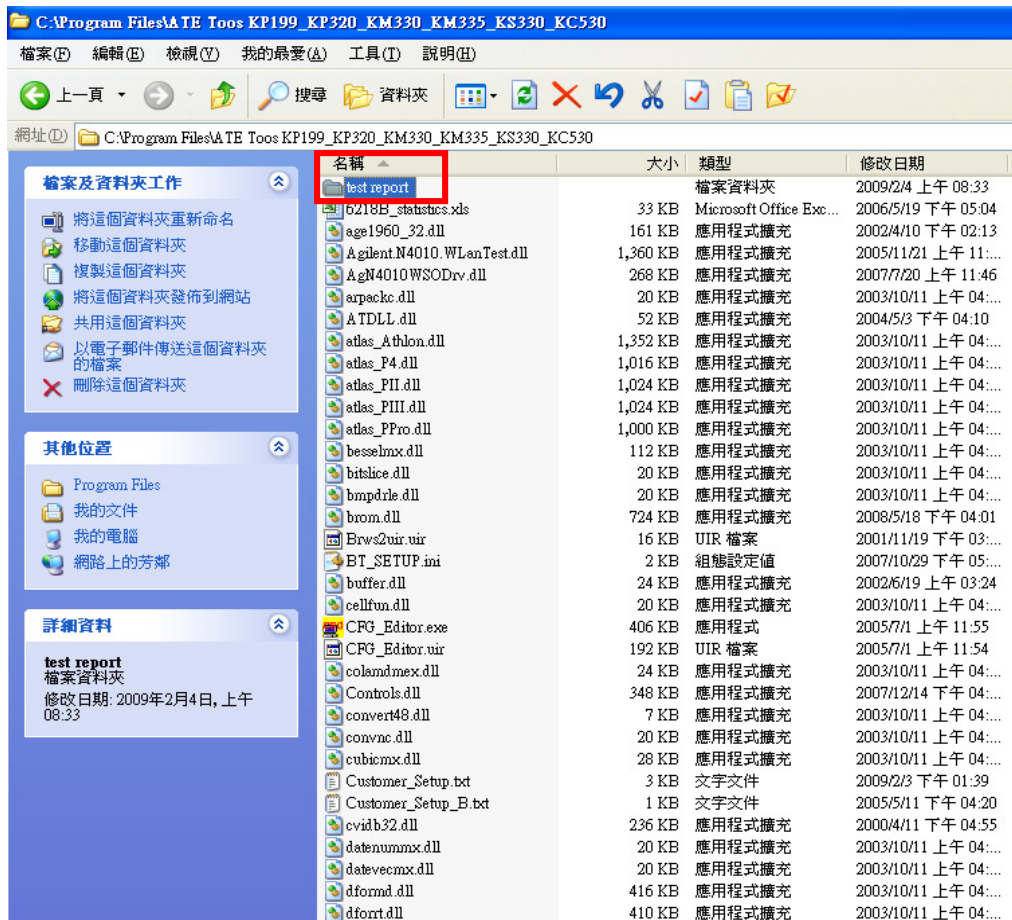
Choose “program files”



Choose “Program Files \ATE Tools KP199_KP320_KM330_KM335_KC530”file



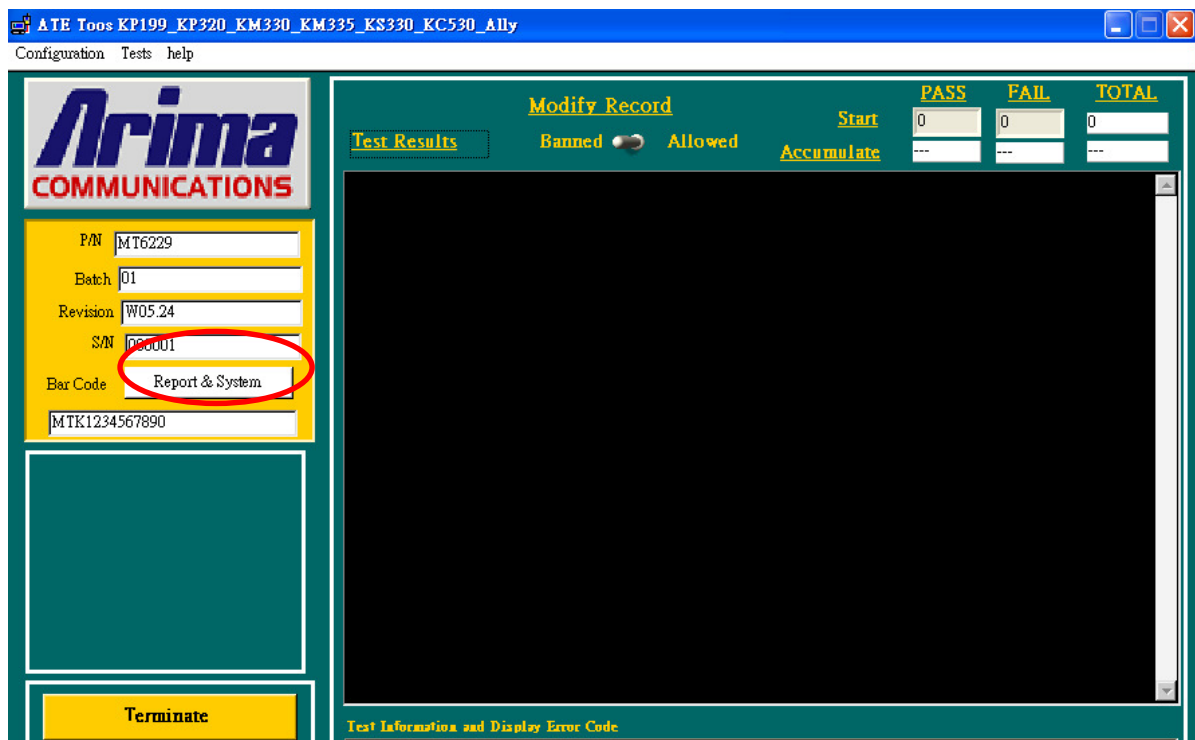
Setup new file and leave the window



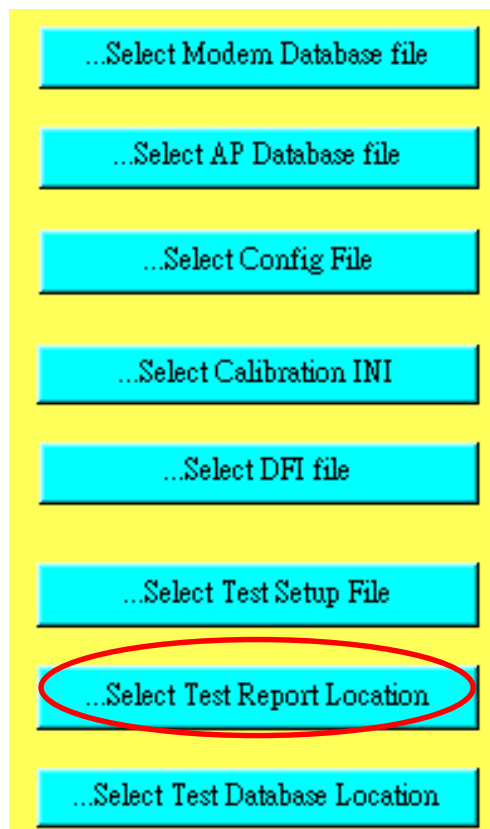
Execute MTK_ate demo



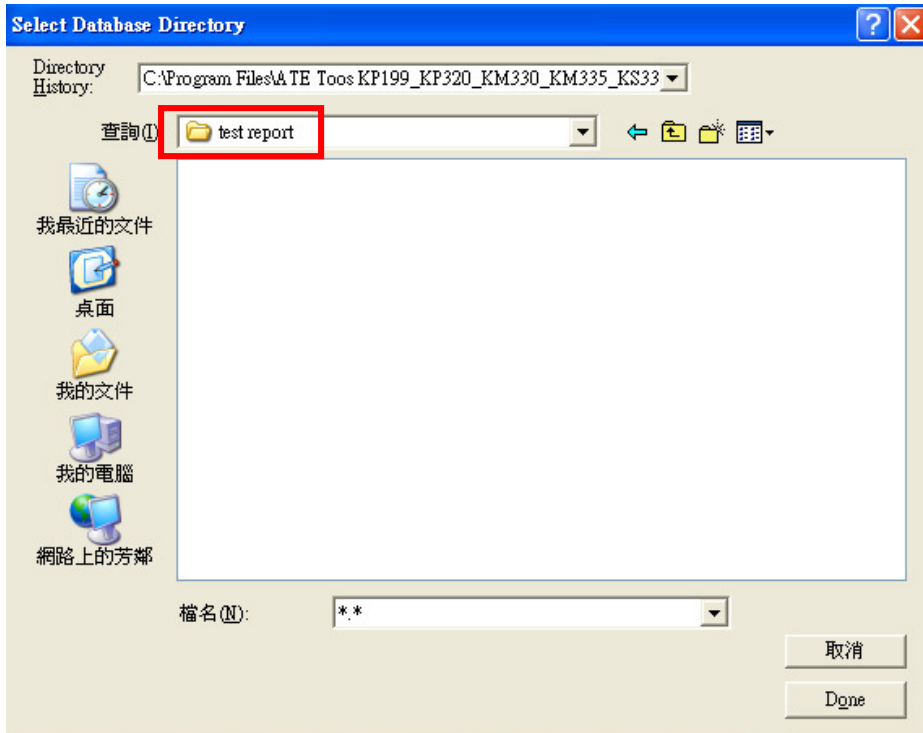
Press Report & System button



Press "select test report location"



Choose your setup report



Press "Done"



Setup finish

The screenshot shows a software configuration window with several sections:

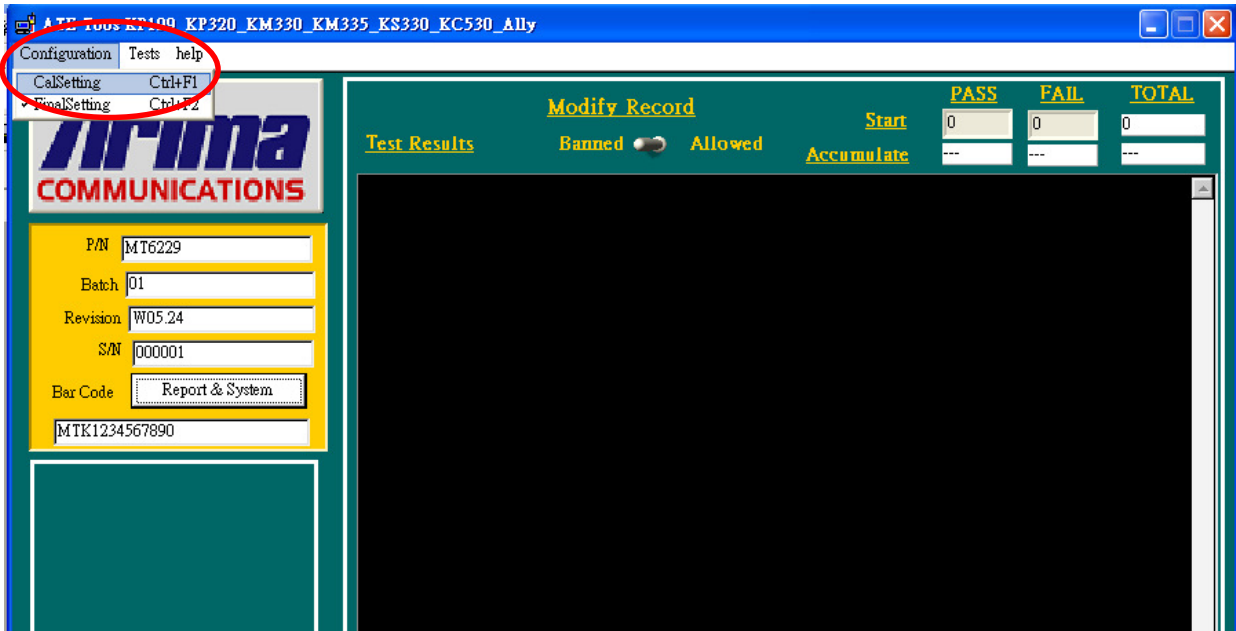
- Left Panel:** Contains checkboxes for 'Fast Power Measurement (CMU 3.50)', 'Wireless test', 'Fast Handset Calibration', 'GSM Default Items', 'Stop Condition', 'Add Final Status', 'RF Final Test with Check Bar Code', 'Final Test with IMEI Write', 'Add Cal Status', and 'Multi MS MS # 2 Handsets'.
- PA Section:** Includes a dropdown for 'PA GSM Full PCL' and a checked checkbox for 'TXP Cal'.
- Battery/ADC Section:** Includes a checked checkbox for 'ADC Cal/PSU Ctrl'.
- WiFi Cal Section:** Includes checkboxes for 'TxDoOffset', 'EEPROM Copy', 'TXP CAL', 'RF Check', 'Cap Id', and 'Internal Sensor'.
- BT Cal Section:** Includes checkboxes for 'BT CapId' and 'wo Tester'.
- GSM/EDGE Final Setting Section:** Includes checkboxes for 'GSM850', 'GSM900', 'DCS', 'PCS', and 'GPRS Test'.
- WiFi Tester Section:** Includes dropdowns for 'WiFi Tester' (N4010A), 'BT Tester' (CBT), 'WCDMA Tester' (CMU200), 'Baseband Chip Type' (AutoDetect), and 'COM Port Select' (COM 15). It also has checkboxes for 'Cal INP LOSS' and 'Cal OUP LOSS'.
- Bottom Right:** A prominent orange button labeled 'Save Change'.
- Bottom Section:** A list of file paths for 'NVRAM Database file', 'Config File Location', 'Calibration File Location', 'Battery DFI file', 'Test Setup File Location', 'Test Report Location', and 'Report Database Location', each with a corresponding '...Select' button.

When you finish the setup then you press **save change** icon.

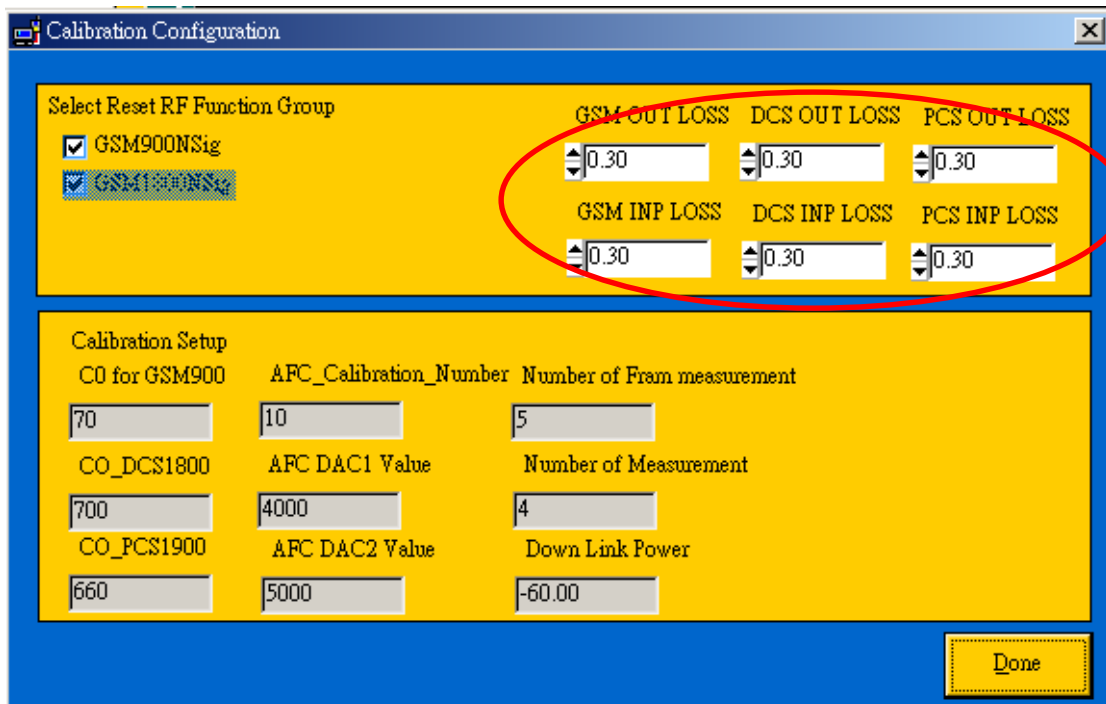
This screenshot is similar to the one above but includes an overlaid dialog box:

- ATE INFORMATION Dialog Box:** A blue-titled window with a close button (X) in the top right. The text inside reads 'Setting change, Please restart program!' and has an 'OK' button at the bottom.
- Background Interface:** The same configuration window as in the previous image, but the 'Save Change' button is now circled in red, indicating it is the next step to take.

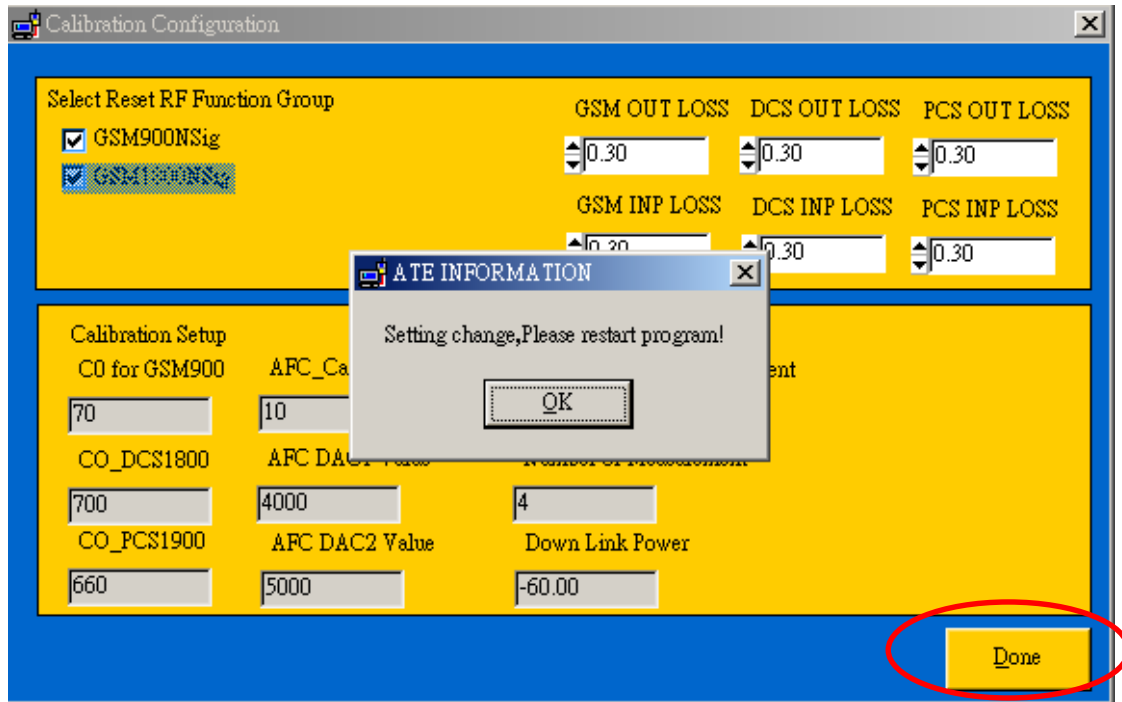
Press Configuration choose Cal Setting



Setting your cable loss



Press Done to save



Press Configuration choose Final setting



Choose “MT Call” from Establish Call Type

Select Reset RF Function Group

- GSM850 Sig
- GSM 900 Sig
- GSM 1800 Sig
- GSM 1900 Sig

Establish Call Type MT Call MO Call

IMSI NUMBER
001011234567890

External 10MHz Reference Clock

Call Setup Configuration

Call Setup Channel BCCH Channel

GSM850 128 128

Call Setup Channel BCCH Channel Call Setup Network
GSM 1 32 GSM900

Call Setup Channel BCCH Channel BCCH RF LEVEL
DCS 512 700 -60.00

Call Setup Channel BCCH Channel ES TCH LEVEL
PCS 512 700 -81.00

GPRS Test Mode GPRS Test Mode **Multi Slot**

GPRS AG USFER MCS9 GPRS ACK ON/OFF

Key in your test SIM card number form IMSI NUMBER

Select Reset RF Function Group

- GSM850 Sig
- GSM 900 Sig
- GSM 1800 Sig
- GSM 1900 Sig

Establish Call Type MT Call MO Call

IMSI NUMBER
001011234567890

External 10MHz Reference Clock

Call Setup Configuration

Call Setup Channel BCCH Channel

GSM850 128 128

Call Setup Channel BCCH Channel Call Setup Network
GSM 1 32 GSM900

Call Setup Channel BCCH Channel BCCH RF LEVEL
DCS 512 700 -60.00

Call Setup Channel BCCH Channel ES TCH LEVEL
PCS 512 700 -81.00

GPRS Test Mode GPRS Test Mode **Multi Slot**

GPRS AG USFER MCS9 GPRS ACK ON/OFF

Press “Done” and save your setting

Final Test Configurations

Select Reset RF Function Group

- GSM850 Sig
- GSM 900 Sig
- GSM 1800 Sig
- GSM 1900 Sig

Establish Call Type MT Call MO Call

IMSI NUMBER
001011234567890

External 10MHz Reference Clock

Call Setup Configuration

Call Setup Channel BCCH Channel

GSM850 128 128

Call Setup Channel BCCH Channel Call Setup Network
GSM 1 32 GSM900

Call Setup Channel BCCH Channel BCCH RF LEVEL
DCS 512 700 -60.00

Call Setup Channel BCCH Channel ES TCH LEVEL
PCS 512 700 -81.00

GPRS Test Mode GPRS Test Mode **Multi Slot**

GPRS AG USFER MCS9 GPRS ACK ON/OFF

Measurement Configurations

Power Measurement Burst Modulation Modulation Spectrum Meas Burst GSM Switch Meas Burst

10 10

Average Burst Power Phase Error Spectrum Meas Burst Sw enable

Peak Burst Power Phase Error RMS

PVT Match Frequency Error

Timing Error

BLUETOOTH LOSS

BT OUT LOSS BT INP LOSS
0.50 0.50

Rx Report

RX Quality GSM Rx Meas Level PCS Rx Meas Level **GSM850 LOSS /**

RX Level -100.00 -100.00 GSM OUT LOSS DCS OUT LOSS PCS OUT LOSS
0.30 0.30 0.30

RFER DCS Rx Meas Level GSM850 Rx Meas Level GSM INP LOSS DCS INP LOSS PCS INP LOSS
-100.00 -100.00 0.30 0.30 0.30

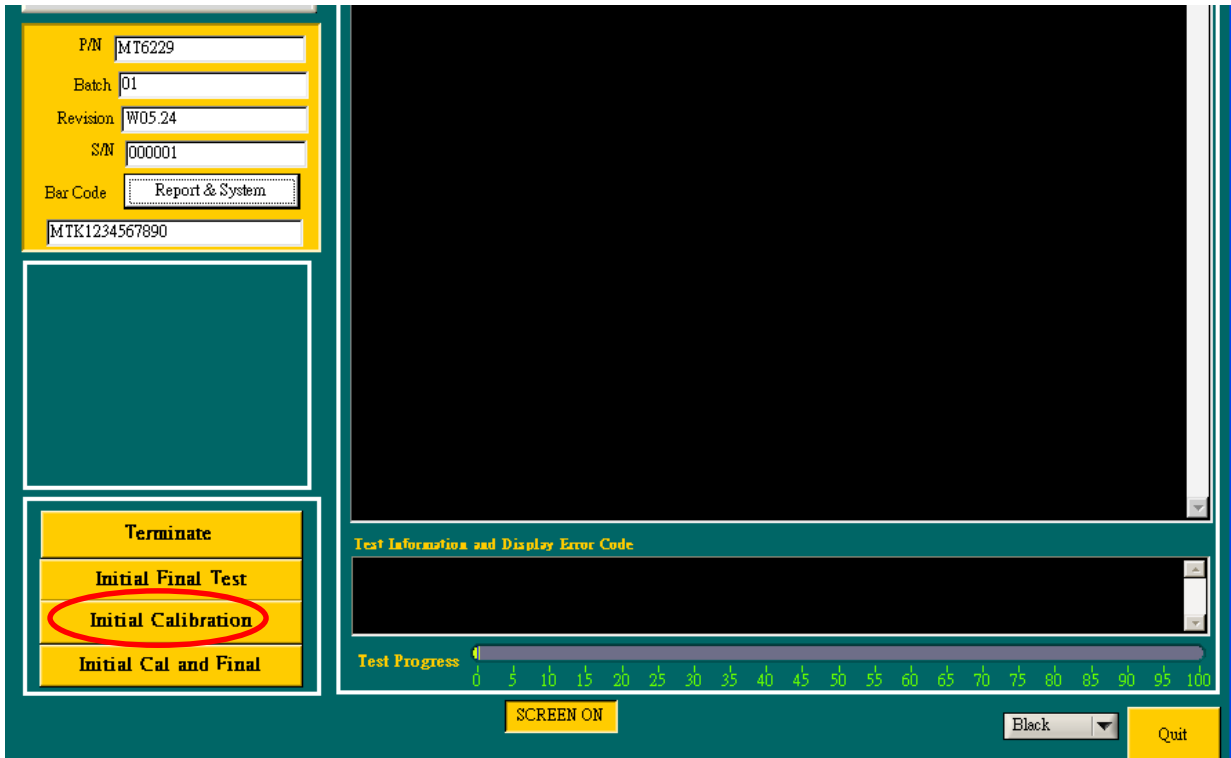
BBB Rx RFER Burst Rx BBB Burst 0.30 0.30 0.30

Manual BER Limit Check 128 88

ATE INFORMATION
Setting change, Please restart program!
OK

Done

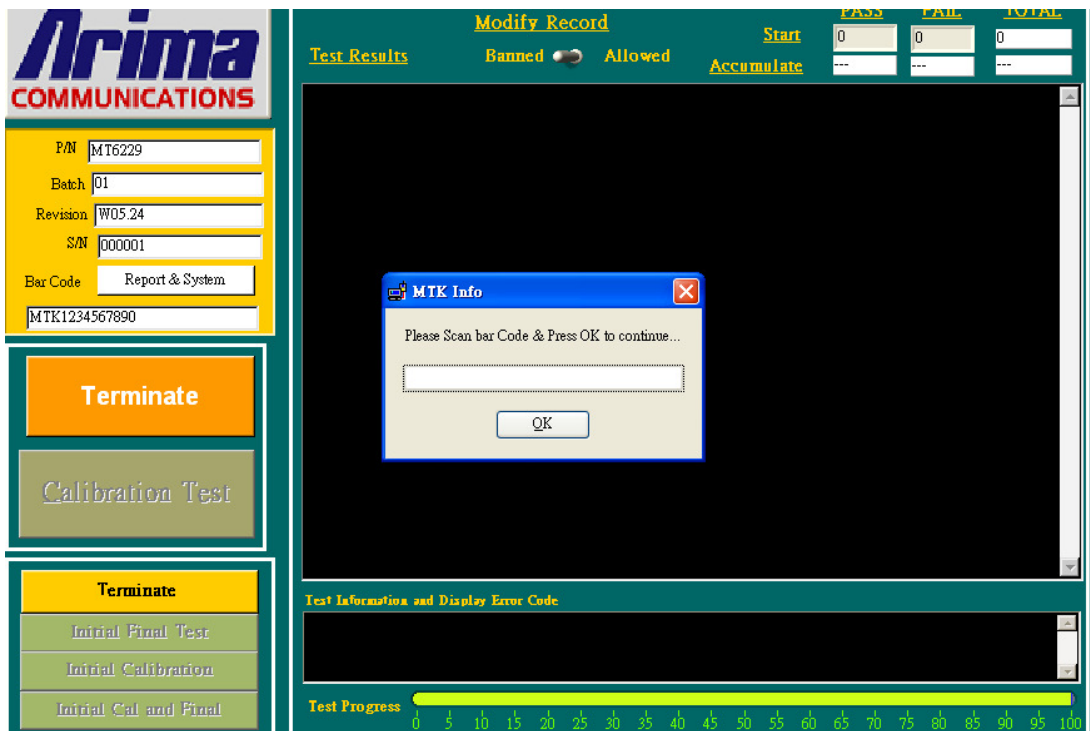
If you want calibration , you can press “initial calibration”



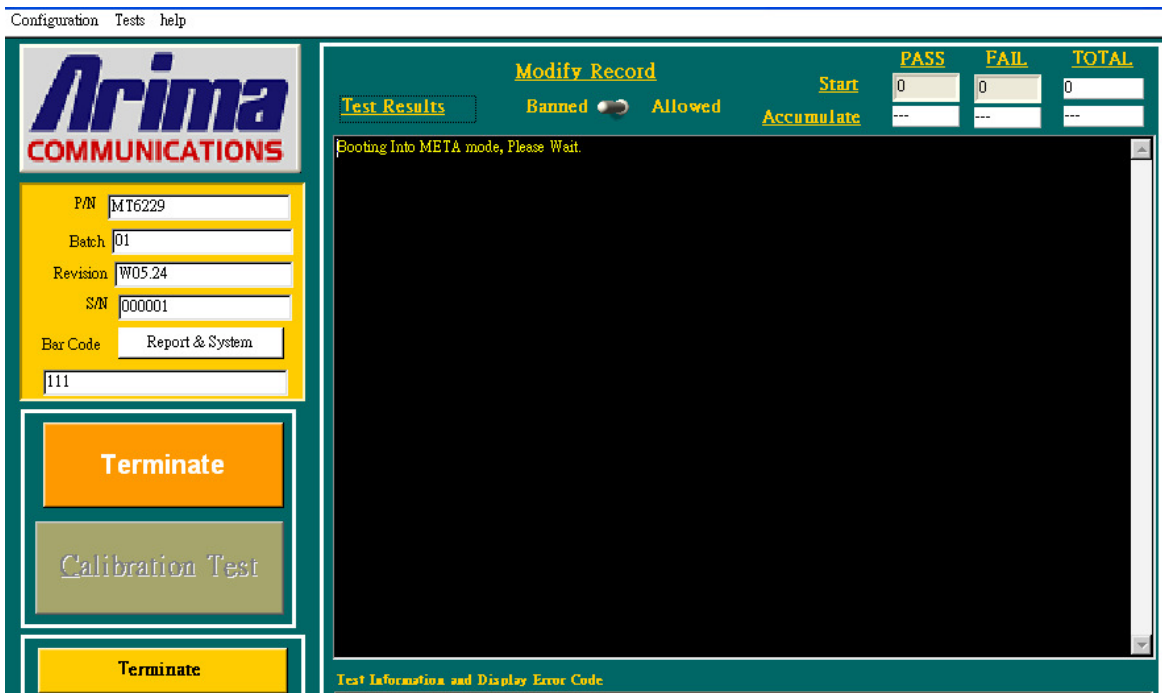
Press Calibration Test



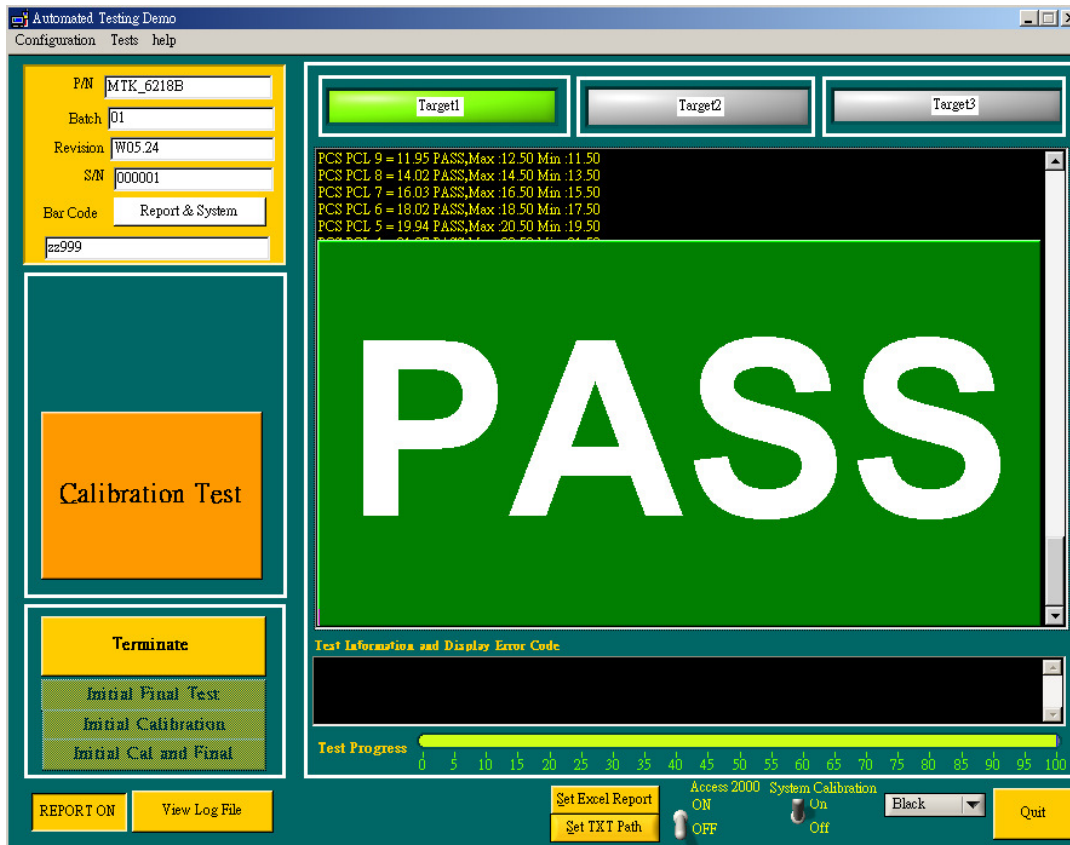
Key-in your phone bar Code



Press your phone of power on key and Start calibration



Calibration is ok and will show "PASS"



You can see the test report

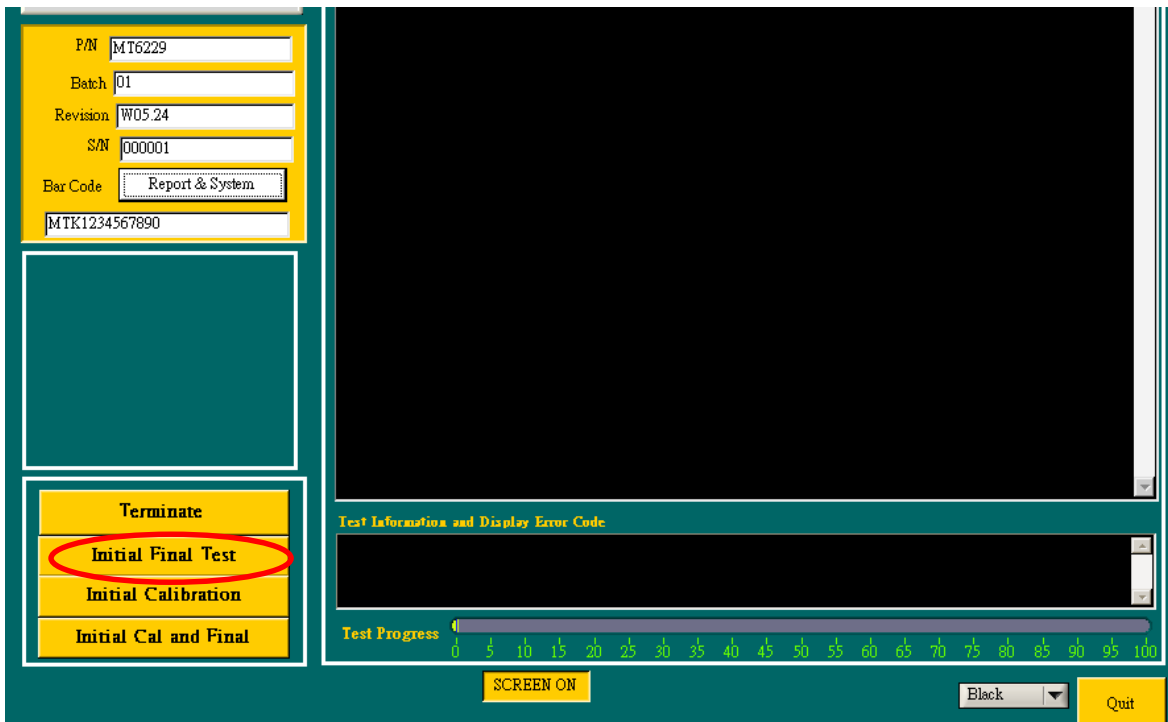
```

-----
ATE Tool Version:5.0.3
Part Number: MTK_6218B
Serial Number: 000001
Revision: W05.24
Batch: 01
Bar Code: qqq
Error Code: 000
-----

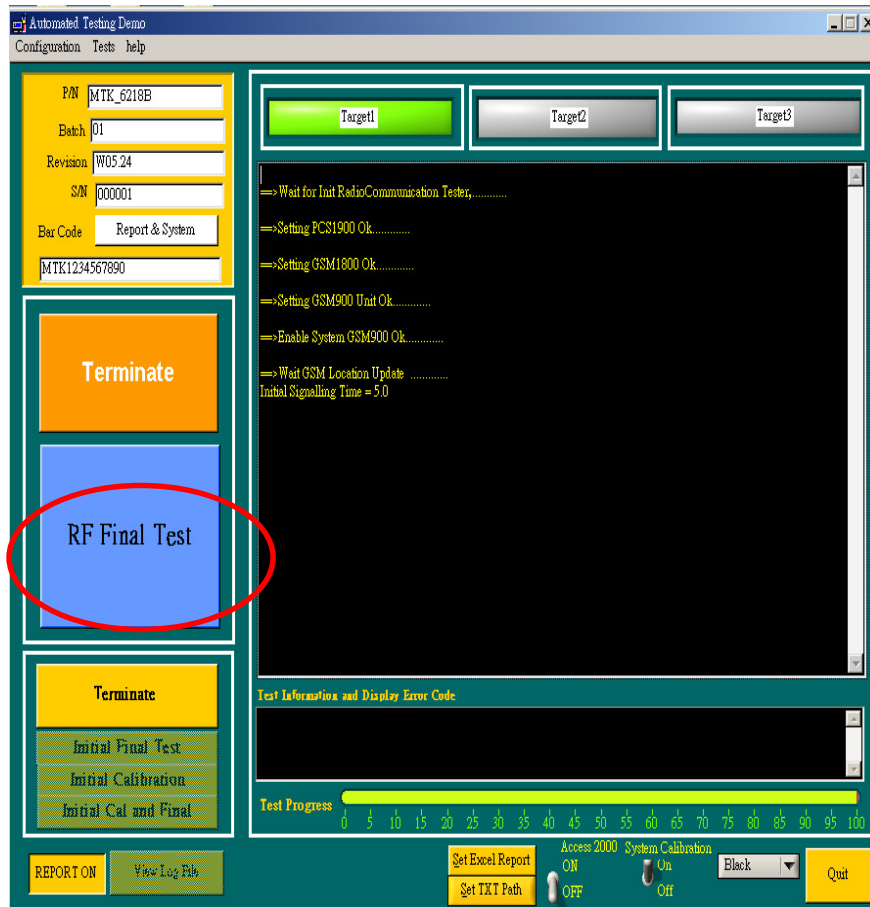
==>Wait GSM Location Update .....
Enter into META Mode OK
AFC Calibration OK
Slope=2.824,min:1.000,max:10.000
Use Default Value=3836
AFC Calibration time=1.64(sec)
PL GSM TCH 15 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 30 = 1.00 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 45 = 0.88 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 60 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 75 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 80 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 100 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 124 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 975 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1000 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1023 = 1.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 550 = 0.50 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 590 = 1.00 Pass MAX:3.00 MIN:-3.00

```

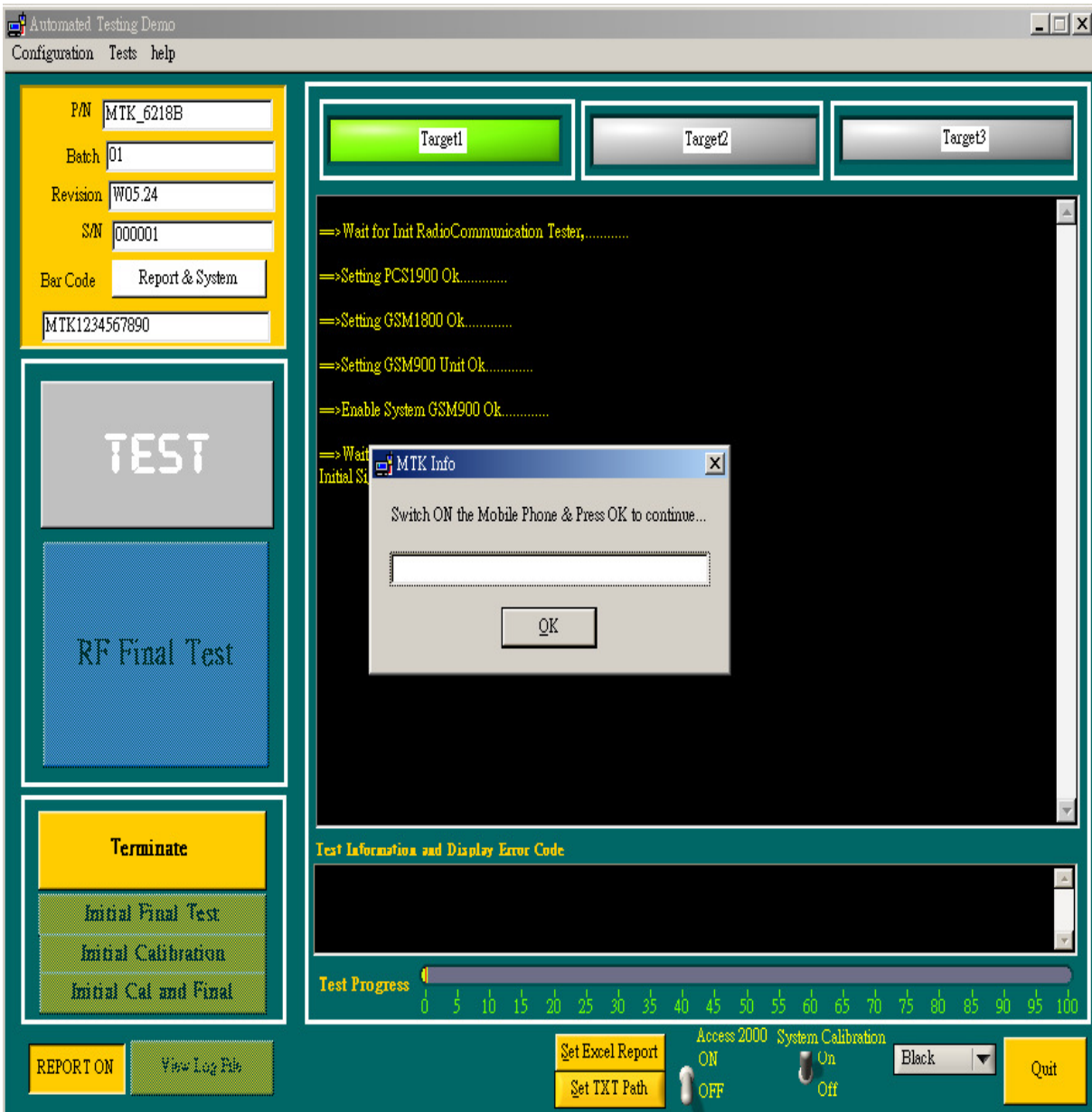
If you want final test , you can press “initial final test “



Press “RF Final test”



1. Handset to insert SIM card
2. Key-in bar code or IMEI number
3. Power on handset



ATE start final test

The screenshot displays the 'Automated Testing Demo' software interface. The window title is 'Automated Testing Demo' with a menu bar containing 'Configuration Tests help'. The interface is divided into several sections:

- Configuration Panel (Left):** Contains input fields for 'PN' (MTK_6218B), 'Batch' (01), 'Revision' (W05.24), 'S/N' (000001), and 'Bar Code' (zz999). A 'Report & System' button is also present.
- Test Selection (Middle-Left):** A large 'TEST' button is positioned above a blue button labeled 'RF Final Test'.
- Termination Options (Bottom-Left):** A yellow 'Terminate' button is above three green buttons: 'Initial Final Test', 'Initial Calibration', and 'Initial Cal and Final'.
- Target Selection (Top-Right):** Three buttons labeled 'Target1', 'Target2', and 'Target3' are displayed.
- Test Results (Center-Right):** A scrollable text area shows the following test results:


```
GSM Band TCH 124, PCL 5
      -----
      Avg. Burst Power (Avg.)[dBm] = 32.228660 Pass
      Peak Burst Power [dBm] = 32.228660 Pass
      Burst Power Matching = 0 Pass
      Maximum phase error peak [deg] = 5.259489 Pass
      Maximum phase error RMS [deg] = 2.343793 Pass
      Maximum frequency error [Hz] = -20.146050 Pass
      Timing Advance error = 0.000000 Pass
      Rx Level = 29 Pass
      Rx Quality = 0 Pass
      Class II = 0.029904 Pass
      Class Ib = 0.000000 Pass
      Modulation +400kHz= -66.839870
      Modulation -400kHz= -65.896740 PASS
      Modulation +600kHz= -68.604150
      Modulation -600kHz= -69.584160 PASS
      Modulation +1.2MHz= -71.047200
      Modulation -1.2MHz= -70.857630 PASS
      Modulation +1.8MHz= -78.453870
      Modulation -1.8MHz= -79.476660 PASS
      Modulatuin = 0 Pass
      Switching +400kHz= -31.559020
      Switching -400kHz= -30.744700 PASS
      Switching +1.8MHz= -43.066520
      Switching -1.8MHz= -40.874710 PASS
      Switching = 0 Pass
```
- Test Information and Display Error Code (Bottom-Center-Right):** A scrollable text area for error codes.
- Test Progress (Bottom-Center):** A progress bar showing approximately 35% completion, with a scale from 0 to 100.
- Control Panel (Bottom):** Includes 'REPORT ON' and 'View Log File' buttons, 'Set Excel Report' and 'Set TXT Path' buttons, 'Access 2000' and 'System Calibration' toggle switches (ON/OFF), a 'Black' dropdown menu, and a 'Quit' button.

If ATE test finish , ATE will show pass

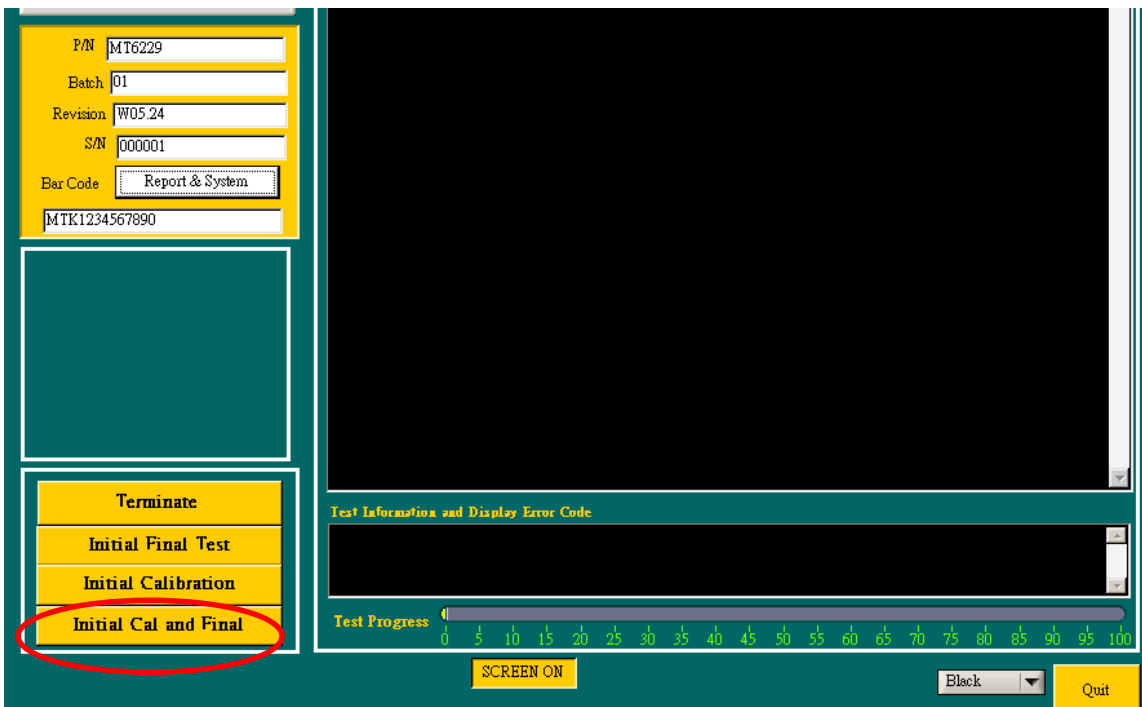


You can see the test report

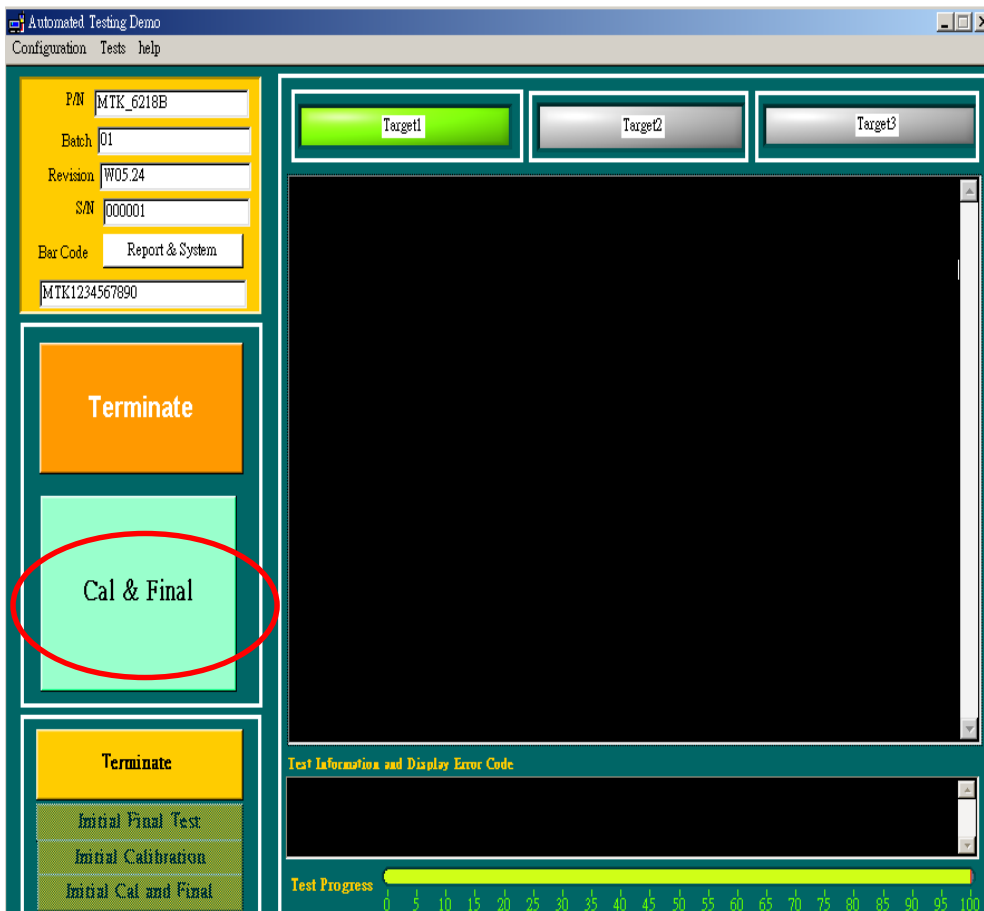
```
-----  
ATE Tool Version:5.0.3  
Part Number: MTK_6218B  
Serial Number: 000001  
Revision: W05.24  
Batch: 01  
Bar Code: qqq  
Error Code: 000  
-----
```

```
==>Wait GSM Location Update .....  
Enter into META Mode OK  
AFC Calibration OK  
Slope=2.824,min:1.000,max:10.000  
Use Default Value=3836  
AFC Calibration time=1.64(sec)  
PL GSM TCH 15 = 1.25 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 30 = 1.00 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 45 = 0.88 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 60 = 1.25 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 75 = 1.38 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 80 = 1.50 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 100 = 1.25 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 124 = 1.25 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 975 = 1.50 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 1000 = 1.38 Pass MAX:3.00 MIN:-3.00  
PL GSM TCH 1023 = 1.00 Pass MAX:3.00 MIN:-3.00  
PL DCS TCH 550 = 0.50 Pass MAX:3.00 MIN:-3.00  
PL DCS TCH 590 = 1.00 Pass MAX:3.00 MIN:-3.00
```

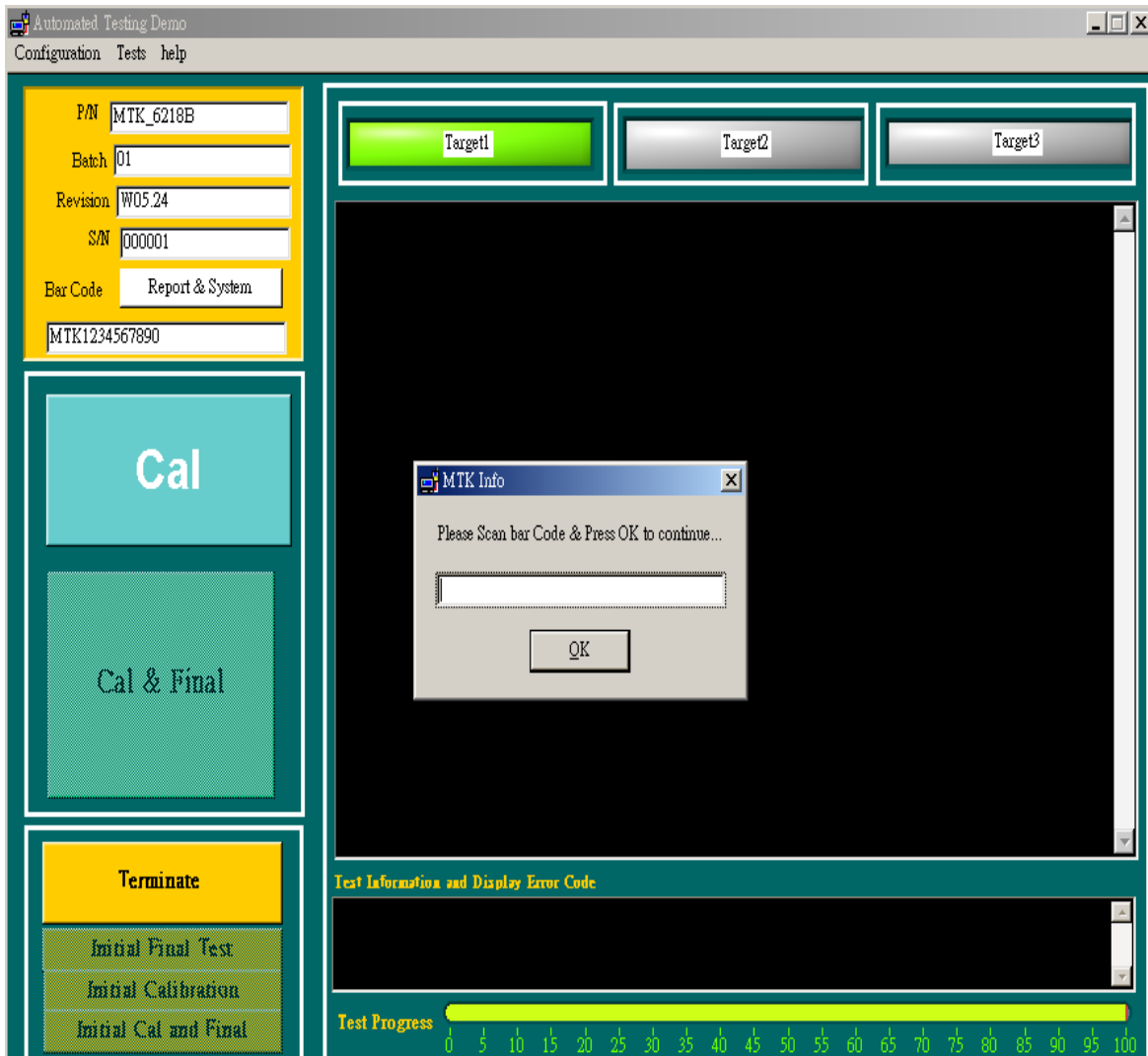
If you want initial cal and final test , you can press “initial cal and final test”



Press “Cal & Final”



1. Handset to insert SIM card
2. Key-in bar code or IMEI number
3. Power on handset



Start calibration

The screenshot displays the 'Automated Testing Demo' software interface. The window title is 'Automated Testing Demo' and the menu bar includes 'Configuration Tests help'. On the left, there is a configuration panel with the following fields: P/N (MTK_6218B), Batch (01), Revision (W05.24), S/N (000001), Bar Code (Report & System), and a text field containing 'zz999'. Below this panel are three large buttons: 'Cal' (blue), 'Cal & Final' (green), and 'Terminate' (yellow). Under the 'Terminate' button are three sub-buttons: 'Initial Final Test', 'Initial Calibration', and 'Initial Cal and Final'. At the top right, there are three target selection buttons: 'Target1' (highlighted in green), 'Target2', and 'Target3'. The main display area shows a list of test results for various TCH frequencies, all passing with a MAX of 3.00 and MIN of -3.00. The results are as follows:

Test Item	Value	Pass	MAX	MIN
PL DCS TCH 710	0.00	Pass	3.00	-3.00
PL DCS TCH 740	0.00	Pass	3.00	-3.00
PL DCS TCH 770	0.25	Pass	3.00	-3.00
PL DCS TCH 810	0.50	Pass	3.00	-3.00
PL DCS TCH 850	0.38	Pass	3.00	-3.00
PL DCS TCH 885	0.50	Pass	3.00	-3.00
PL PCS TCH 550	1.25	Pass	3.00	-3.00
PL PCS TCH 590	1.12	Pass	3.00	-3.00
PL PCS TCH 620	1.12	Pass	3.00	-3.00
PL PCS TCH 650	1.12	Pass	3.00	-3.00
PL PCS TCH 680	1.25	Pass	3.00	-3.00
PL PCS TCH 710	1.25	Pass	3.00	-3.00
PL PCS TCH 740	1.50	Pass	3.00	-3.00
PL PCS TCH 770	1.38	Pass	3.00	-3.00
PL PCS TCH 810	1.62	Pass	3.00	-3.00

Below the test results, the following text is displayed:

```
Path Loss Calibration OK  
Pathloss Calibration time=8.31(sec)  
-----GSM900 APC Cal-----  
delta s = 0  
Cal APC Power:19.03  
delta s = 0  
Cal APC Power:32.24  
-----DCS1800 APC Cal-----  
delta s = 0  
Cal APC Power:13.96  
delta s = 0  
Cal APC Power:29.20  
-----PCS1900 APC Cal-----
```

The bottom section of the interface includes 'Test Information and Display Error Code' (currently empty) and a 'Test Progress' bar showing approximately 65% completion.

Calibration finish and power on handset again



Start final test

The screenshot shows the 'Automated Testing Demo' application window. On the left, there is a configuration panel with fields for P/N (MTK_6218B), Batch (01), Revision (W05.24), SN (000001), and Bar Code (Report & System, zz999). Below these are three large buttons: 'Cal', 'Cal & Final', and 'Terminate'. Under 'Terminate' are three sub-buttons: 'Initial Final Test', 'Initial Calibration', and 'Initial Cal and Final'. The main area has three target buttons: 'Target1' (highlighted in green), 'Target2', and 'Target3'. The central display shows test results for Target1, including a list of pass/fail metrics for various frequency bands (DCS, PCS) and calibration times for GSM900, DCS1800, and PCS1900. At the bottom, there is a 'Test Progress' bar showing approximately 65% completion.

Configuration:
P/N: MTK_6218B
Batch: 01
Revision: W05.24
SN: 000001
Bar Code: Report & System
zz999

Test Results (Target1):

```

PL DCS TCH 710 = 0.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 740 = 0.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 770 = 0.25 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 810 = 0.50 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 850 = 0.38 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 885 = 0.50 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 550 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 590 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 620 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 650 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 680 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 710 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 740 = 1.50 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 770 = 1.38 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 810 = 1.62 Pass MAX:3.00 MIN:-3.00
Path Loss Calibration OK
Path Loss Calibration time=8.31(sec)
-----GSM900 APC Cal-----
delta s = 0
Cal APC Power:19.03
delta s = 0
Cal APC Power:32.24
-----DCS1800 APC Cal-----
delta s = 0
Cal APC Power:13.96
delta s = 0
Cal APC Power:29.20
-----PCS1900 APC Cal-----

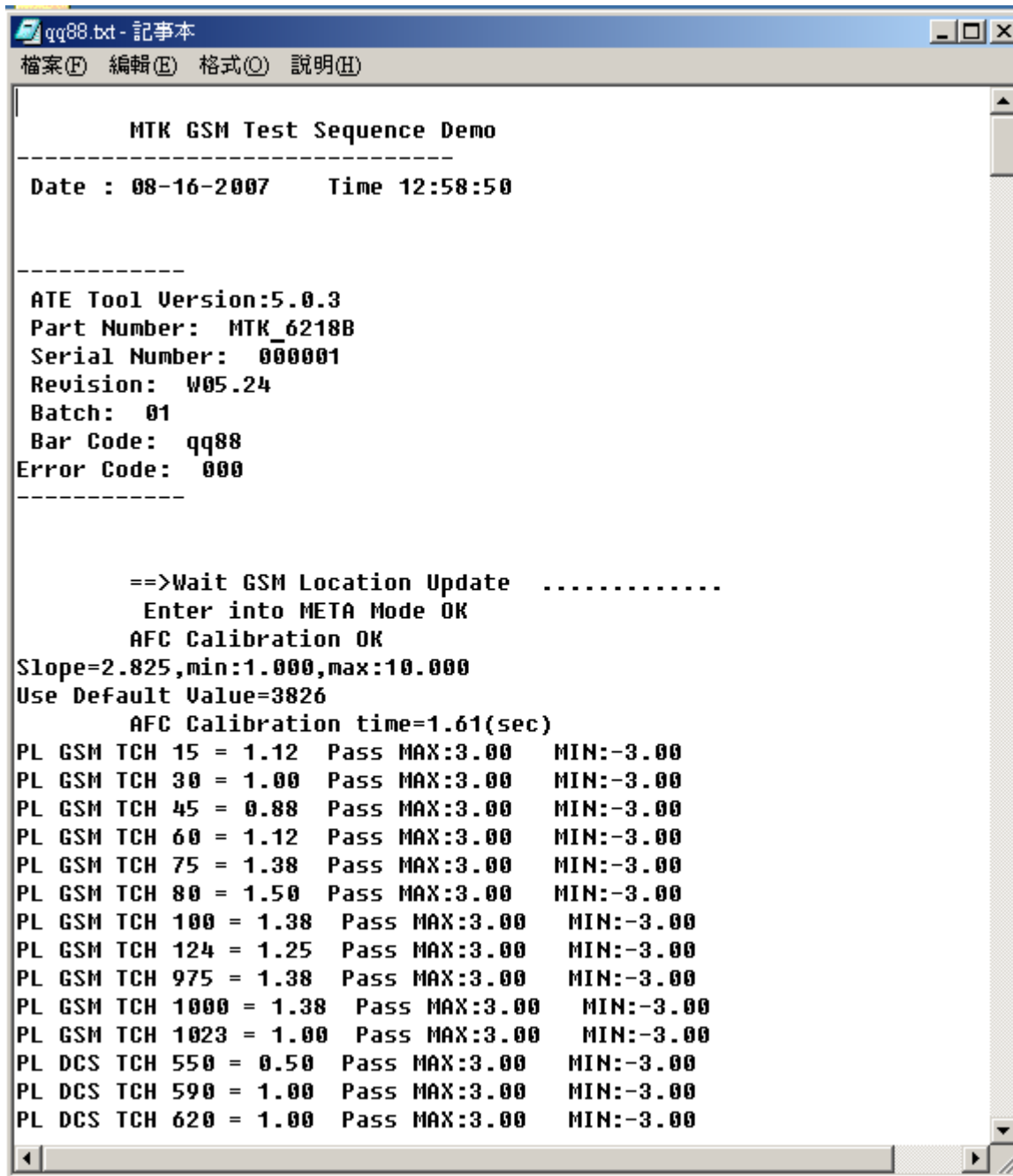
```

Test Progress: 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Finish "Cal & Final test"



Ate show the test report



The image shows a Notepad window titled 'qq88.txt - 記事本'. The text inside the window is a test report for an MTK GSM device. The report includes the date and time, ATE tool version, part number, serial number, revision, batch, bar code, and error code. It also details the test sequence, including waiting for GSM location update, entering META mode, AFC calibration, and a series of PL GSM and PL DCS TCH tests with their respective results.

```
MTK GSM Test Sequence Demo
-----
Date : 08-16-2007   Time 12:58:50
-----
ATE Tool Version:5.0.3
Part Number:  MTK_6218B
Serial Number: 000001
Revision:  W05.24
Batch:  01
Bar Code:  qq88
Error Code: 000
-----

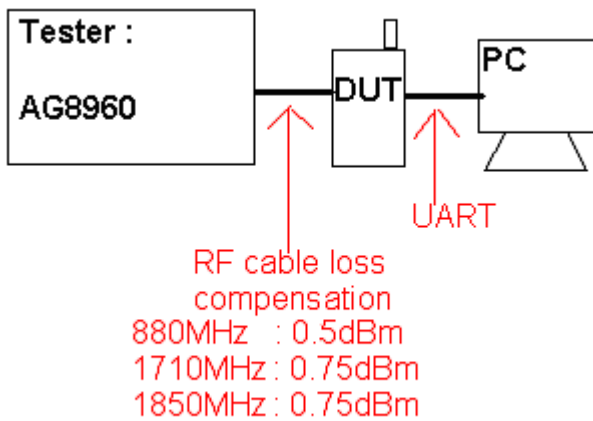
==>Wait GSM Location Update .....
Enter into META Mode OK
AFC Calibration OK
Slope=2.825,min:1.000,max:10.000
Use Default Value=3826
AFC Calibration time=1.61(sec)
PL GSM TCH 15 = 1.12 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 30 = 1.00 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 45 = 0.88 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 60 = 1.12 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 75 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 80 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 100 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 124 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 975 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1000 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1023 = 1.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 550 = 0.50 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 590 = 1.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 620 = 1.00 Pass MAX:3.00 MIN:-3.00
```

12. STAND ALONE TEST

12.1 RF TX & RX Test :

Test Configuration & Expected Outcome

Test Configuration :



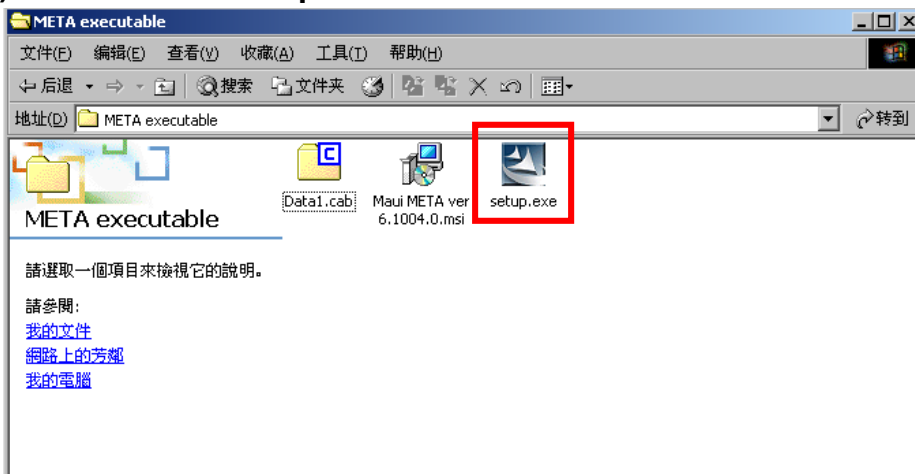
Expected Outcome :

TX power	: 32.5	+/- 1.5 dBm	for GSM900
TX power	: 29.5	+/- 1.5 dBm	for DCS1800
RX power	: -85	+/- 4 dBm	for GSM900, DCS1800

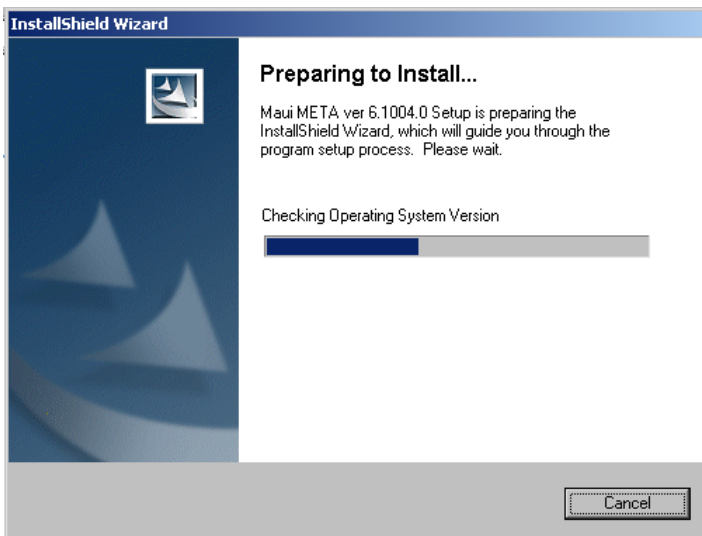
12.2 META Install & RF TX & RX Check

META Tool Install process :

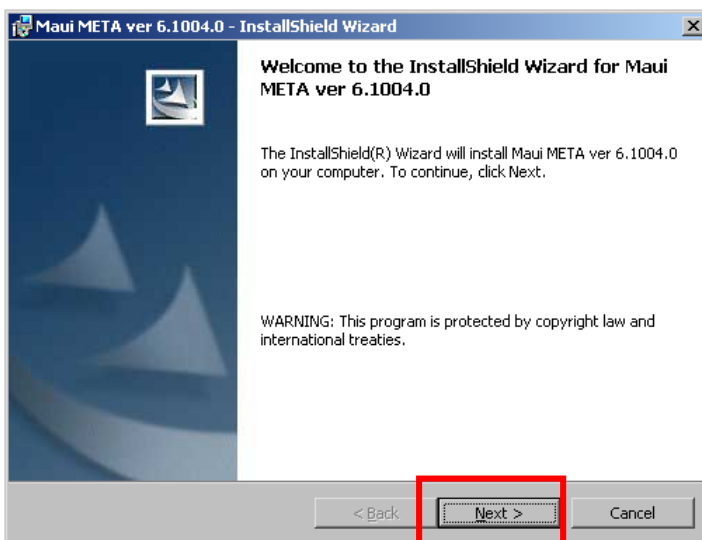
(1) Double click “setup.exe”



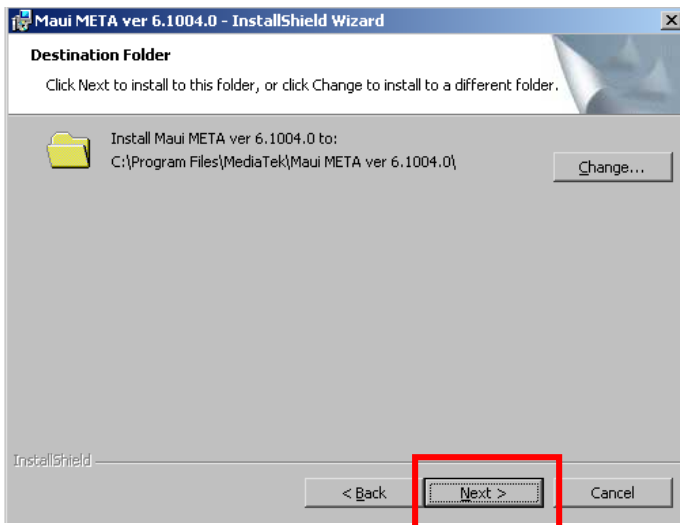
(2) Install Process



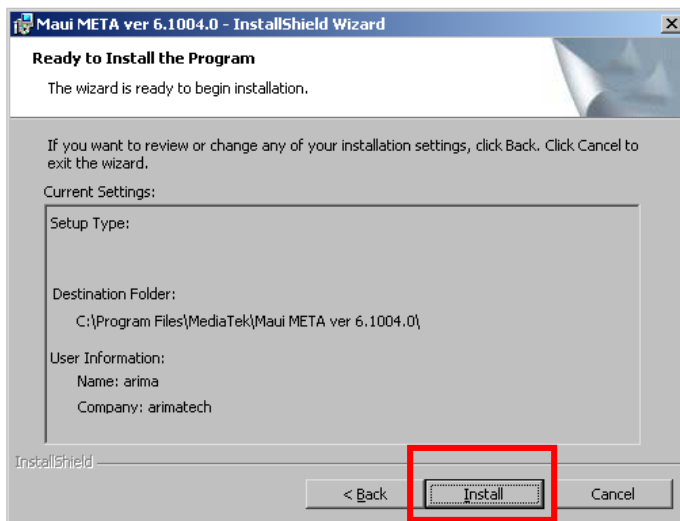
(3) Install Process – press “Next”



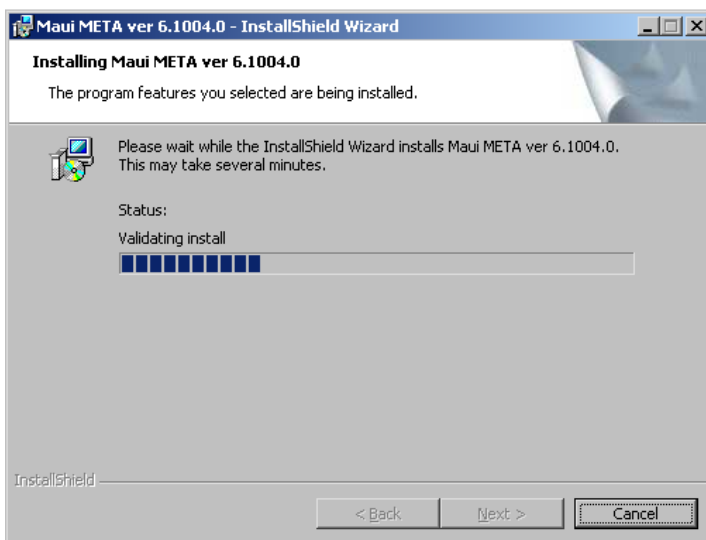
(4) Install Process – press “Next”



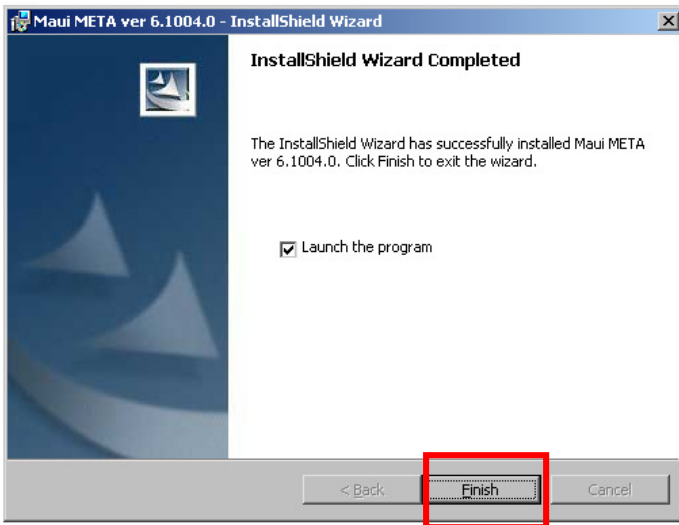
(5) Install Process – press “Install”



(6) Install Process



(7) Install Process – press “Finish”



12.3 RF RX Check:

(1) Open “ Meta_RF_Tool ”



(2) Pull in UART cable

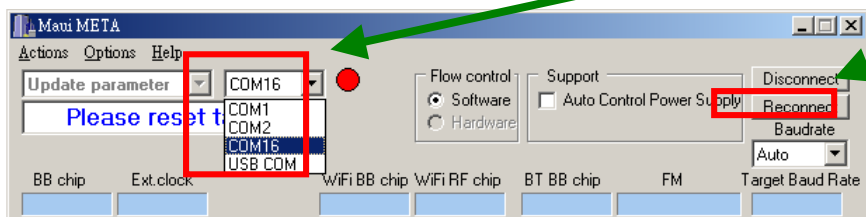


(3) Inset RF-Cable (AG8960)



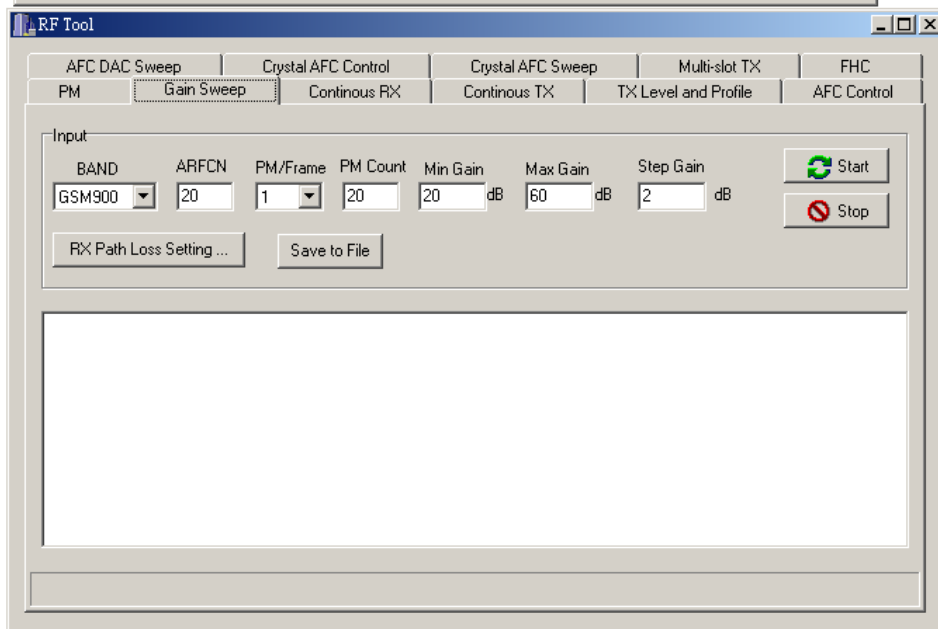
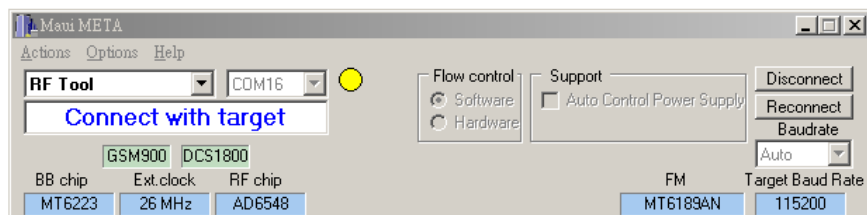
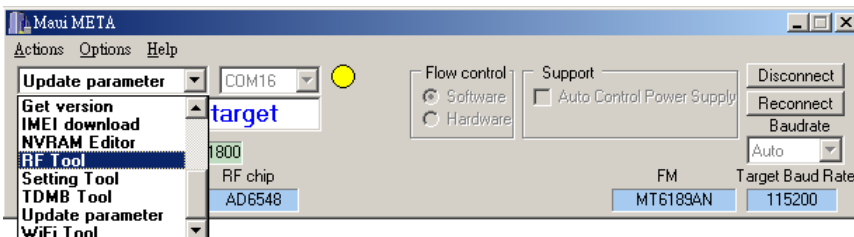
(4) Select proper com port and press “Reconnect” .

Step1

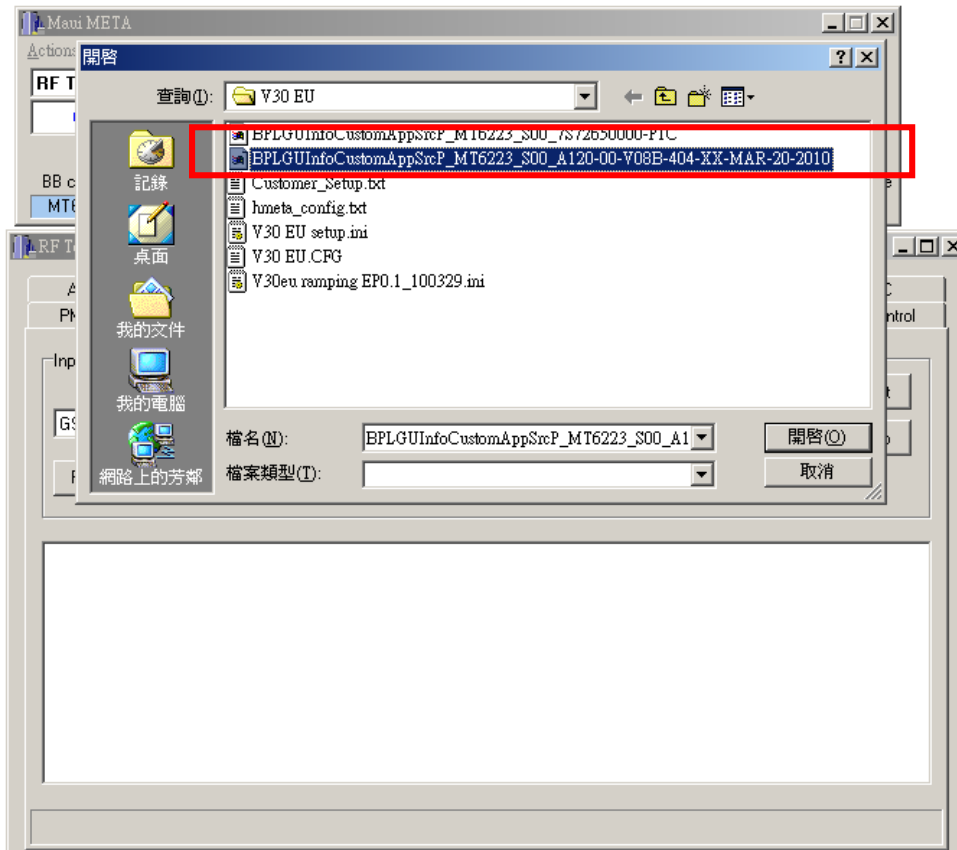
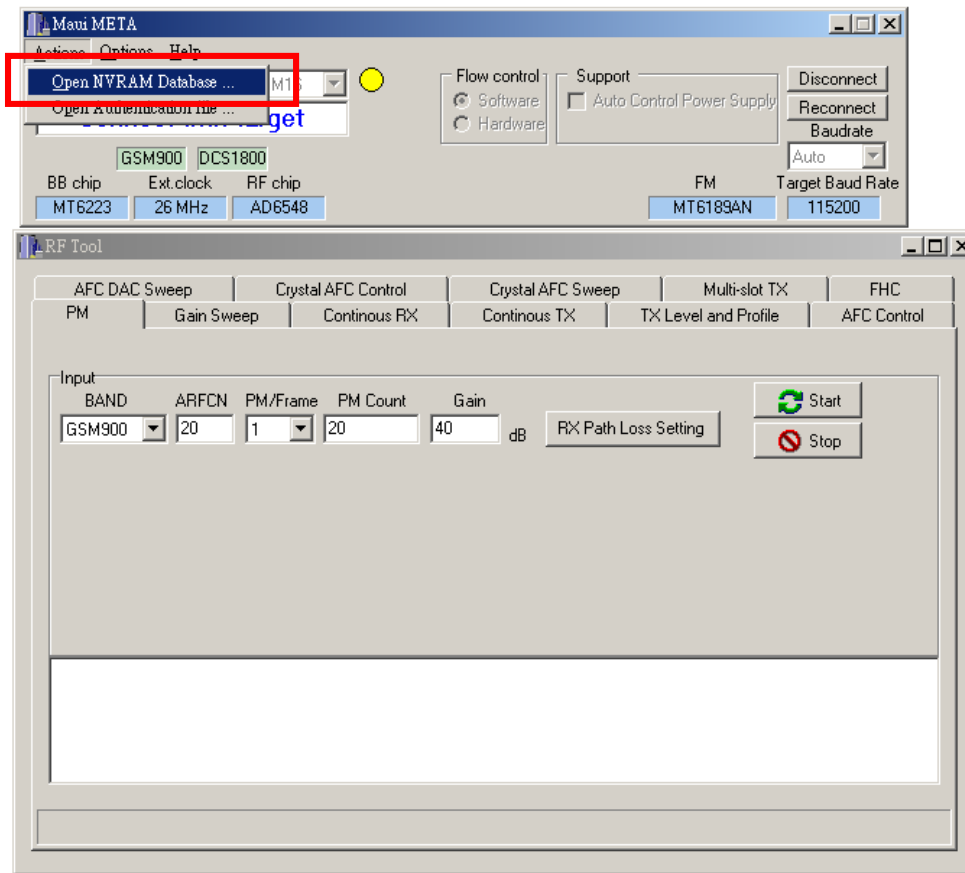


Step2

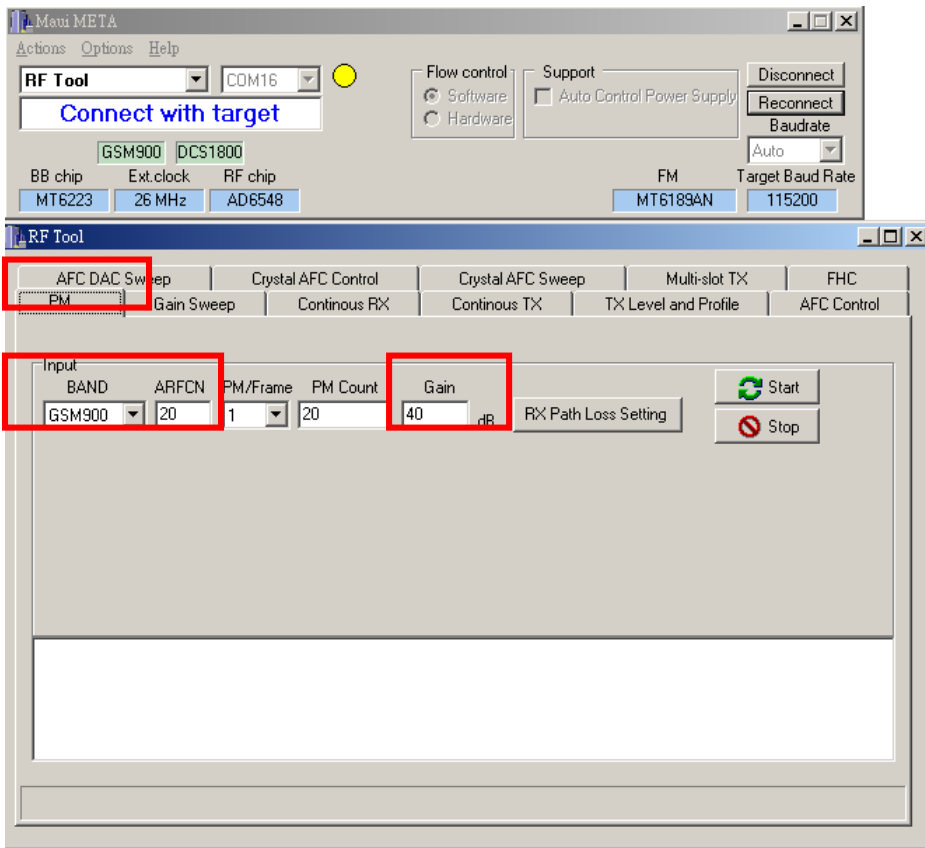
(5) Press handset’s power key and it will show LG logo. Then appear the following picture. Select RF Tool.



(6) Loading database Make sure the same to handset.

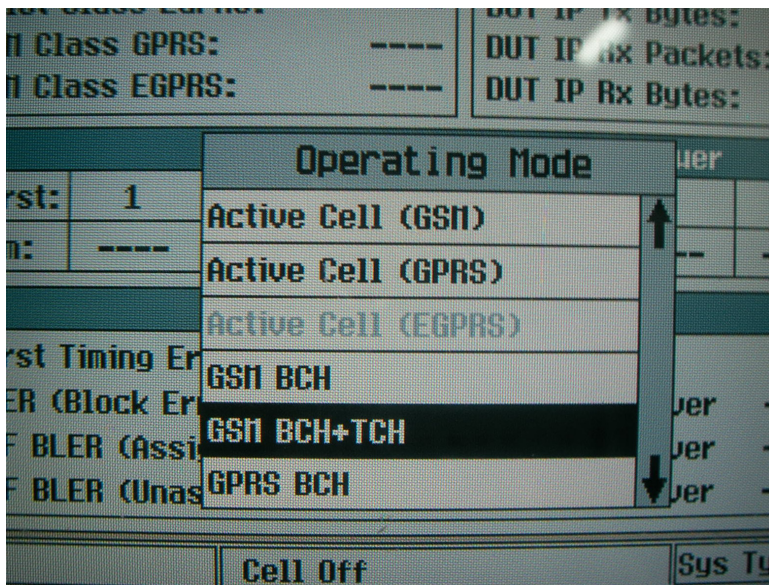
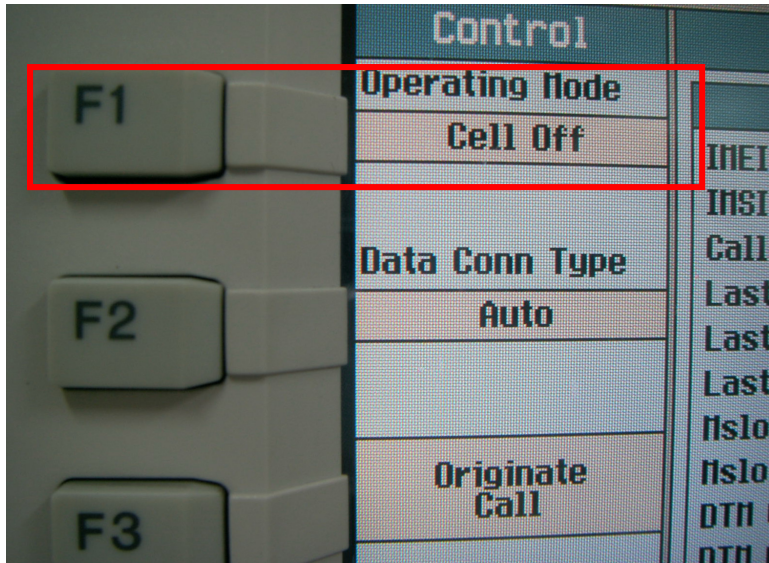


(7) Press “PM” to RX check. Select proper Band, ARFCN and PM Count.

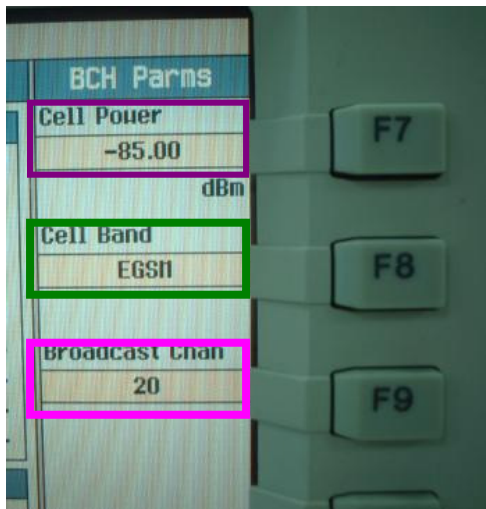


(8) Setup AG8960: Press CALL SETUP, than press “F1”, and select “GSM BCH+TCH”.





(9) RX Test (AG8960)--- Set "BCH Parms" ,



(10) RX Test --- Press Start

1. Select Band (GSM/DCS)
2. Set channel number
3. Press "Start"

The screenshot shows the 'RF Tool' software interface. The top window, 'Maui META', displays connection settings for COM16 and a 'Connect with target' button. Below it, hardware details are shown: BB chip (MT6223), Ext. clock (26 MHz), RF chip (AD6548), FM (MT6189AN), and Target Baud Rate (115200). The main 'RF Tool' window has several tabs: AFC DAC Sweep, Crystal AFC Control, Crystal AFC Sweep, Multi-slot TX, and FHC. Under 'Crystal AFC Control', the 'Continuous RX' tab is active. The 'Input' section shows: BAND (GSM900), ARFCN (20), PM/Frame (1), PM Count (20), and Gain (40 dB). A red arrow points to the BAND dropdown. A green box highlights the 'Start' button. Below the input fields is a table of results:

BAND	ARFCN	DSP Power	Ant. Power	Used Gain	Deviation	I_DC	Q_DC	Valid sample
GSM900	20	-44.500	-85.375	40.875	3.100	22	56	20

At the bottom, a status bar indicates 'Power measurement successful'.

12.4 RF TX Check :

(1) Open “ Meta_RF_Tool ”.



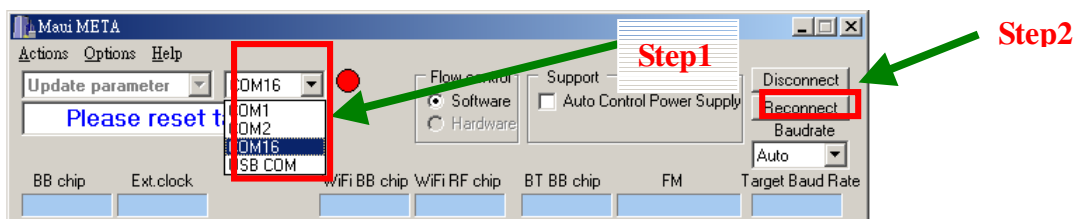
(2) Pull in UART cable.



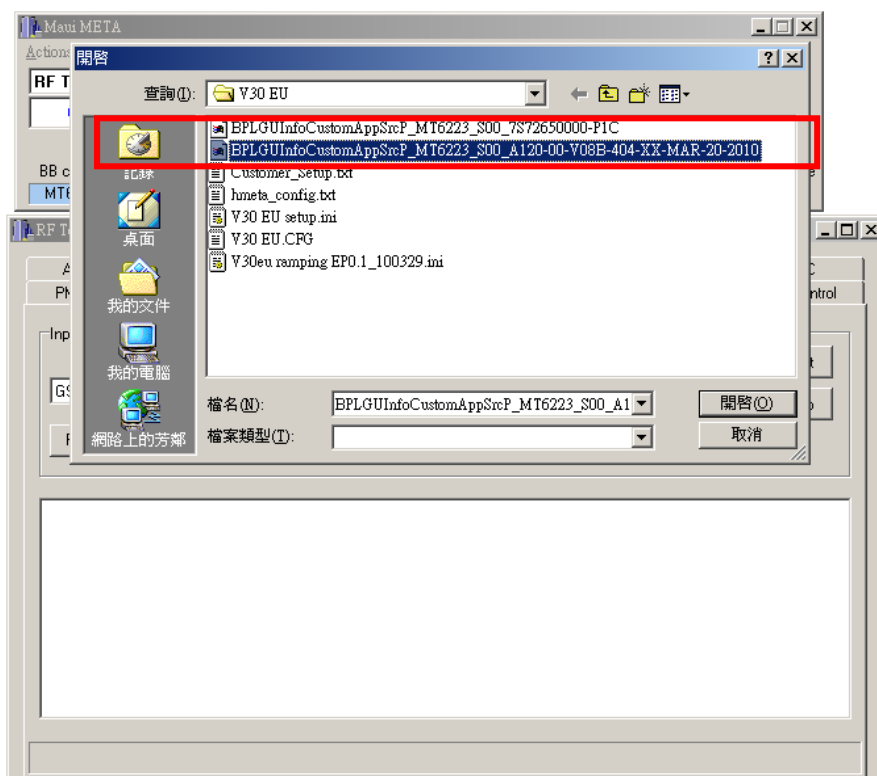
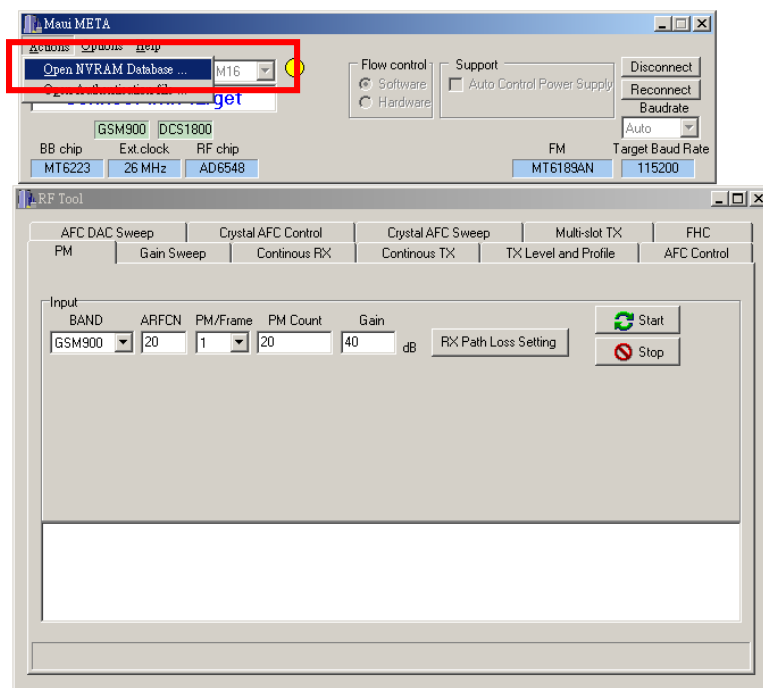
(3) Inset RF-Cable (AG8960).



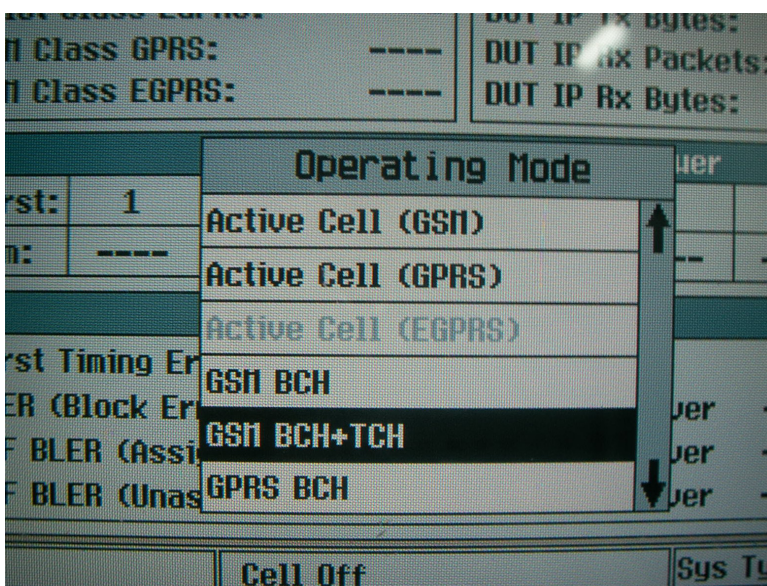
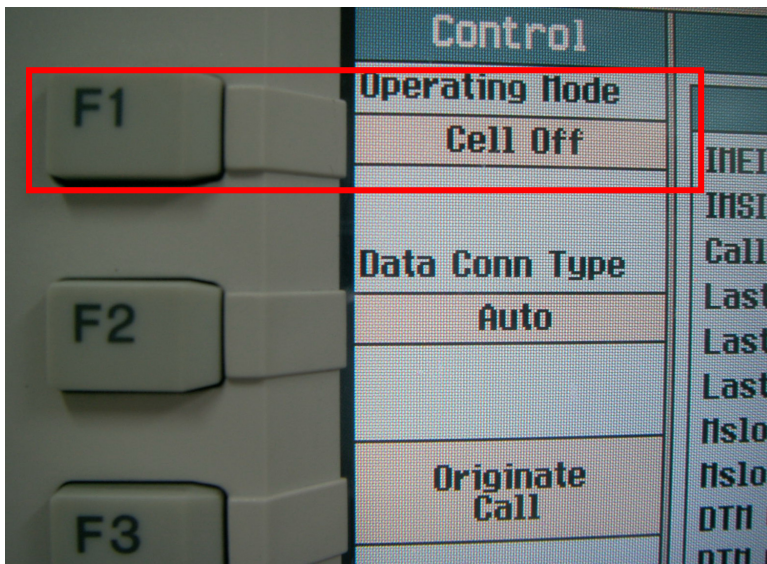
(4) Select proper com port and press “Reconnect” and then press handset’s power key.



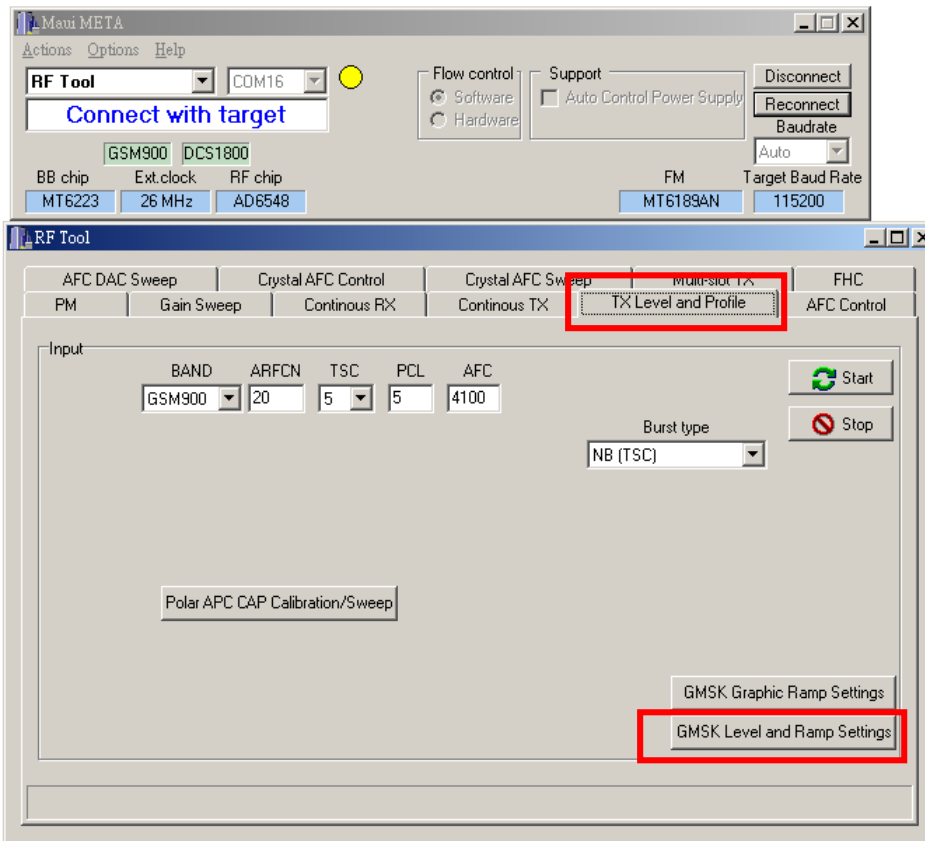
(5) Loading database Make sure the same to handset.



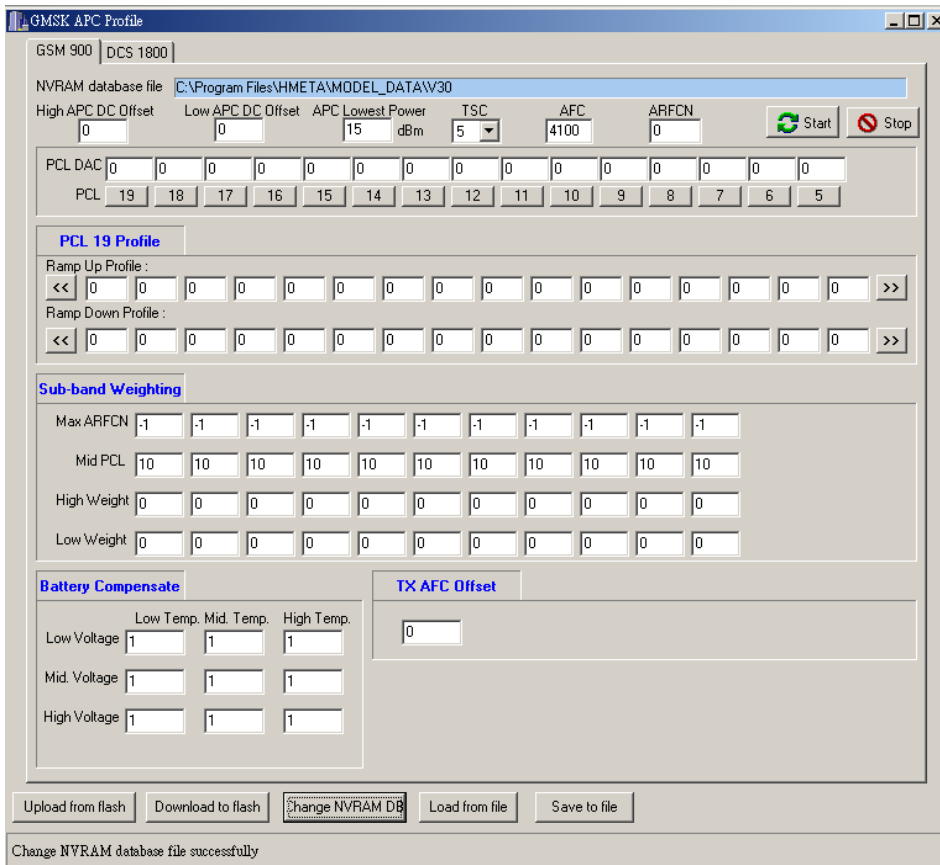
(6) AG8960 need to set TCH Params.

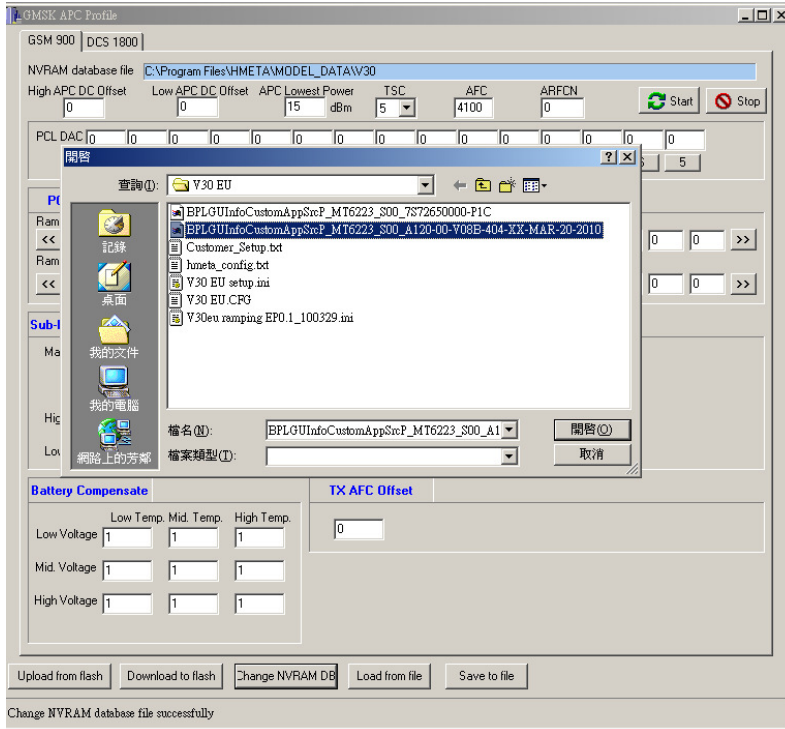


(7) Press “TX level and profile” to TX Test, and click “GMSK Level and Ramp settings”.

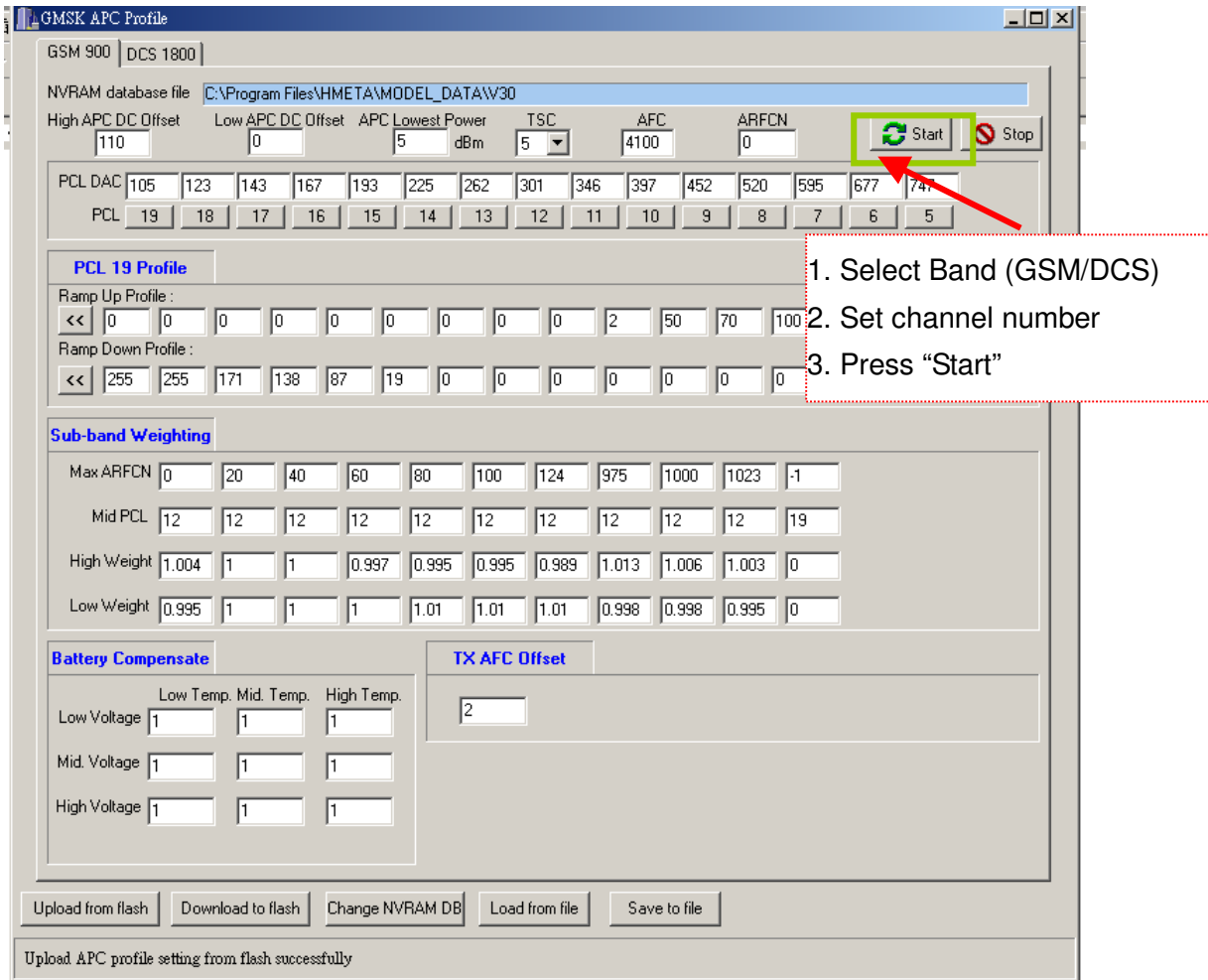


(8) Select “Change NVRAM DB” to choose the right database of the mobile.

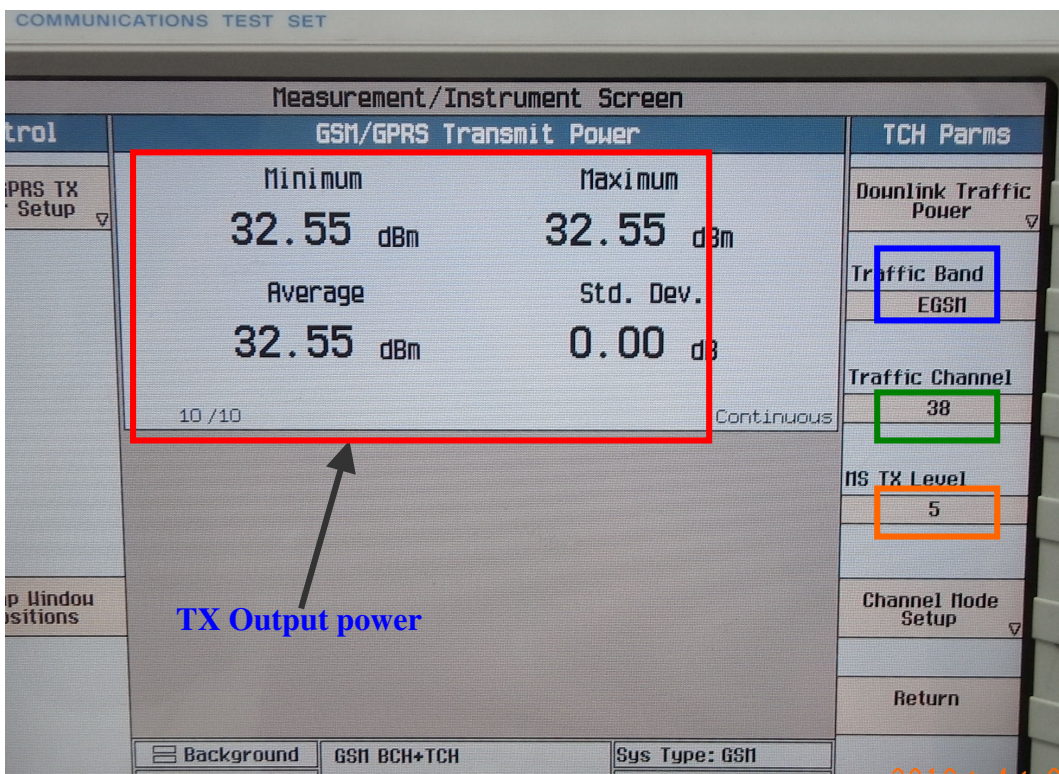
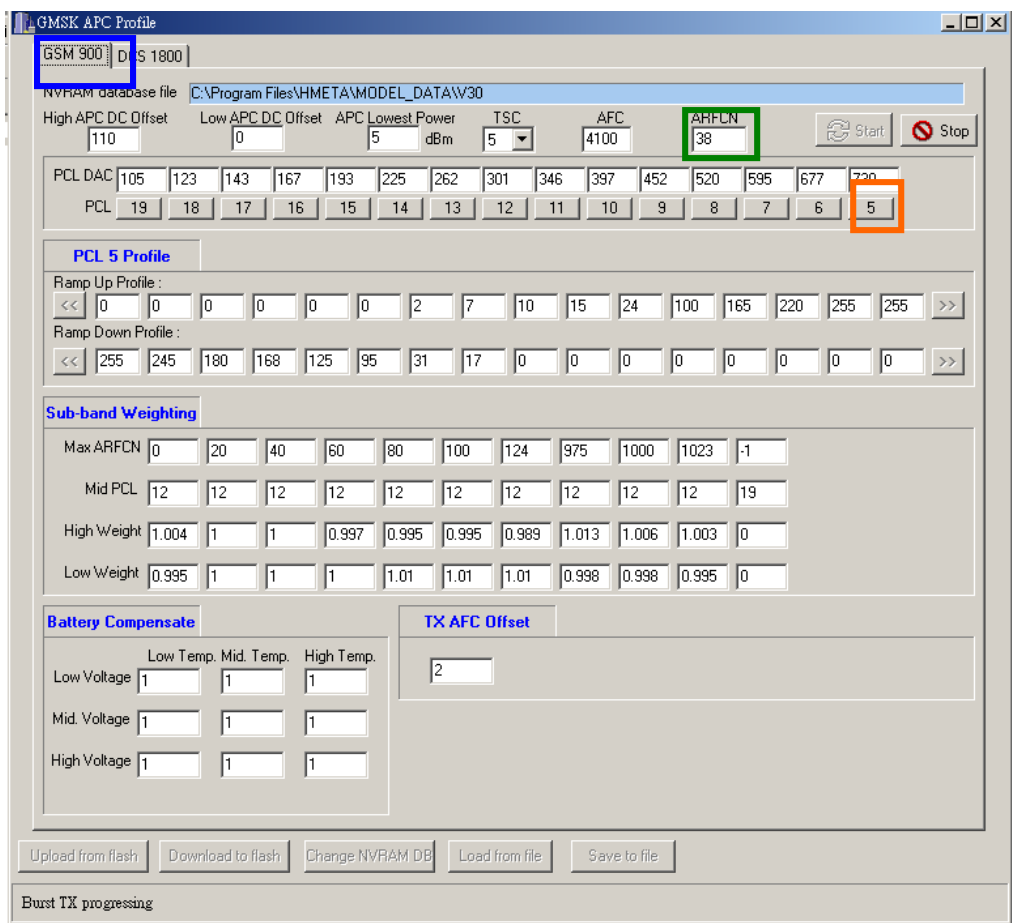




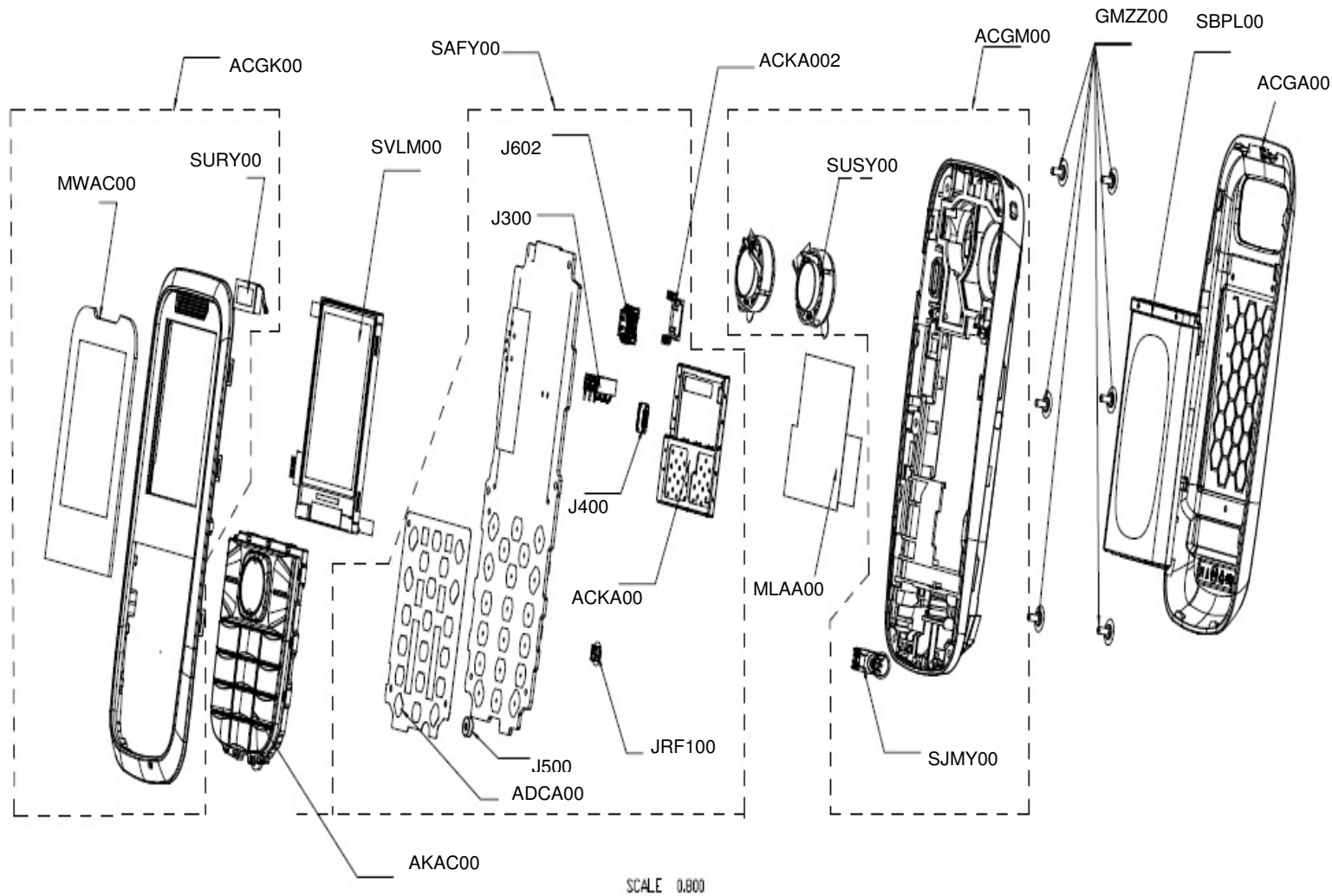
Then press “Upload from flash” to get the parameters, and press “Start”



(9) TX Test (AG8960) --- Need set “Band”, “Channel” & “Power Level”



13. #EV#



Location No	Description
ACGA00	COVER ASSY,BATTERY
SBPL00	BATTERY PACK,LI-ION
ACGK00	COVER ASSY,FRONT
MWAC00	WINDOW,LCD
SURY00	RECEIVER
ACGM00	COVER ASSY,REAR
SJMY00	VIBRATOR,MOTOR
SUSY00	SPEAKER
AKAC00	KEYPAD ASSY,MAIN
GMZZ00	SCREW MACHINE
MLAA00	LABEL,APPROVAL
SAFY00	PCB ASSY,MAIN
ADCA00	DOME ASSY,METAL
ACKA00	CAN ASSY,SHIELD
ACKA002	CAN ASSY,SHIELD
J300	CONNECTOR,BOARD TO BOARD
J400	CONNECTOR,FFC/FPC
J602	Connector
JRF100	CONN,RF SWITCH
J500	MICROPHONE
SVLM00	LCD MODULE

Level	Part Name	Arima part number	LG part Number	Description	Qty
.1	Headset	333-0000-00077	SGEY0003218	Headset Stereo Channel Type_EMB-LGE011STKC_16 Ohm_Mic.S/N'58 'dB_- 42 'dB_PT.CRESYN_Micro USB 5 pin, 750 + 250 mm	1
.1	Battery Cover	405-72650-0002	ACGA0049701	Cover_7265_BLACK_PC+ABS_N/A_Battery cover Ass'y_SKYCROSS_N/A	1
.1	Battery	306-0000-00071	SBPL0090501	Li-ion Battery Cell Packing_3.7V_950mAh_BLACK_LGIP-531A-SBPL0090501_LG INNOTEK_Bar code:SBPL0090501	1
.1	Adapter	331-0000-00134	SSAD0032601	Travel Charger_100~240V_5.10V_700mA_CE;FCC;UL_STA-U34IS_EN50075_JEWOO_SALCOMP_MICRO USB 5PIN,SSAD0032603	1
..2	Screw	409-00000-0115	GMZZ0006901	Machine Screw_Flat_Cross(JCIS)_1.4mm_3.0 mm_BLACK_Steel_Plating Zinc_KUAOLENG(SHANGHAI)_Nylok	6
..2	Main Key	404-72650-0002	AKAC0021501	Key_7265_BLACK_PC+Rubber_Painting_HINDI_Main keypad_ICHIA(SUZHOU)_N/A	1
...3	RECEIVER	313-0000-00177	SURY0015301	RECEIVER_RR120623LF01_12.0 * 6.0mm_32 Ohm_108dB_GETTOP ACOUSTIC_N/A	1
..2	Shielding mylar	415-72650-0005	MTAZ0366601	SHEET_7265_BLACK_PET_N/A_Shielding mylar_E-LIN(KUNSHAN)_N/A	1
...3	Vibrator	320-0000-00047	SJMY0009601	Vibrator Bar Type_Y0408A-270350122-0021C_R2.5+4.40*5.20*12.60mm_LNLON_Spring contact type	1
...3	Speaker	313-0000-00179	SUSY0030401	LOUD SPEAKER_SC160040LA02_Φ 16.0 mm_8 Ohm_93.0dB_GETTOP ACOUSTIC_± 3dB, H=4.00mm, Spring contact	1
...3	Display	327-0000-00108	SVLM0042301	LCD TFT_Transmissive_128x160 Pixels_1.77 inch_DM17-BSM02_LG INNOTEK_262K Color,FPC type	1
..2	Front Cover Sub-Ass'y (supply type is phantom)	8M-726500-0002	ACGK0175401	01-Front Cover Sub-Ass'y_7265_BLACK_Front cabinet	1
...3	Front Cabinet	401-72650-0001	MCJK0139401	Front Cabinet_7265_BLACK_PC_N/A_Front cabinet ass'y_A-TEK PRECISION(SUZHOU)_N/A	1
..2	Main Lens	403-72650-0002	MWAC0156101	Lens_7265_BLACK_PMMA+PC_N/A_Main Lens_OPTEC_N/A	1
...3	Rear Cabinet	402-72650-0001	ACGM0173601	Rear Cabinet_7265_ORANGE_PC_Painting_Rear cabinet ass'y_SKYCROSS_N/A	1
..2	Main PCB Ass'y (supply type is phantom)	8M-726500-0001	SAFY0394301	08-PCBA Sub-Ass'y_7265_NATURAL_Main PCB Ass'y	1
...3	Metal Dome	415-72650-0002	ADCA0121901	DOME_7265_WHITE_STAINLESS STEEL_N/A_Metal Dome_MAGMA_N/A	1
.1	HANDSET LABEL	478-726500-001	MLAA0072301	HANDSET LABEL_Packing Label_7265_Global_HIGH TEMP. ART PAPER_N/A_E-LIN(KUNSHAN)	1
...3	LCM conductive adhesive	415-72650-0007	MTAD0137801	ADHESIVE_7265_GRAY_CONDUCTIVE GASKET_N/A_LCM conductive adhesive_GUAN YI(WUJIANG)_N/A	2

.....5	X200	305-0000-00026	EXSY0024801	Crystal Oscillator_Q13MC1461000200_32.768KHZ_±20ppm_SMD-7*1.5mm-4Pin_EPSON TOYOCOM_MC-146 type	1
.....5	X100	305-0000-00092	EXSY0025201	Crystal Oscillator_TZ1387A_26.0 MHZ_±10.0ppm_SMD-3.2*2.5mm-4Pin_TAI-SAW_N/A	1
.....5	D400,D407,D406,D405,D404,D403,D402,D401	309-0000-00021	EDLH0015001	LED Single Color_LTST-C193TBKT-5A_BLUE_2pin_0603_5mA/18~28mcd_LITEON_Luminous Bin Code=M1/M2	8
.....5	D301	309-0000-00165	EDLL0009201	LED Single Color_99-216UTC/TR8-1_WHITE_4pin_SMD4_20mA/<1720mcd_EVERLIGHT_2.8*0.86**0.6mm,SIDE VIEW	1
.....5	U600	311-0000-00881	EUSY0431201	I.C ANALOG SWITCH_ET5223_QFN_10 PINS_NoMemory_ETEK_SPDT SWITCH	1
.....5	U602	311-0000-00980	EUSY0431301	I.C FM MODULE_AR1210-S85QEGK0_QFN_20 PINS_NoMemory_AIROHA_N/A	1
.....5	U201	311-0000-00681	EUSY0409801	I.C BASEBAND PROCESSOR_MT6223DA/AN-L_TFBGA_224 BALLS_NoMemory_MTK_FOR GSM/GRRS	1
.....5	U102	311-0000-00740	EUSY0399701	I.C TRANSCEIVER_AD6548BCPZ_LFCSP_32 PINS_NoMemory_MTK_N/A	1
.....5	U100	311-0000-00894	EUSY0431401	I.C POWER AMP MODULE(RF)_SKY77542-11_MCM_30PIN_NoMemory_SKYWORKS_TX-RX FEM FOR GSM/GPRS	1
.....5	U200	311-0000-00970	EUSY0431501	I.C STACKED MEMORY_K5L6433ABM-AD11_FBGA_88 BALLS_64M+32M_SAMSUNG_NOR Flash+UtrAM2	1
.....5	U301	311-0000-00965	EUSY0431701	I.C CHARGE_APL3206A QBI-TRG_TDFN_6 PINS_NoMemory_ANPEC_N/A	1
.....5	U400	311-0000-00977	EUSY0431801	I.C DC-DC CONVERT_ET2123_SOT23-6_6_NoMemory_ETEK_N/A	1
.....5	U500	311-0000-00786	EUSY0399601	I.C AUDIO POWER AMPLIFIER_ETk4992_WLCSP_8 BALLS_NoMemory_ETEK_Vo=3.6v,0.6w,8ohm	1
.....5	J500	312-0000-00040	SUMY0012401	Omni-MIC._SOM4013SB-Z422-C3310_58'dB_-42dB_±2.0dB_Φ4.0*1.30mm_NA_SMD Type_GONGDA_N/A	1
.....5	JRF100	314-0000-00016	ENWY0006901	CON. ANTENNA CONNECTOR_C90-101-0004_NA_6 pin_SPEED TECH CORP(BEIJING)_For Antenna Switch	1
.....5	AT100,AT101	314-0000-00434	ENRY0010601	CON. SPRING CONNECTOR_PJSCG-0A-1000S_NA_1 pin_PROCONN_T=2.2 mm	2
.....5	J301	314-0000-00390	ENSY0023101	CON. SIM CARD CONNECTOR_SIM-06JK3G_2.540 mm_6 pin_OCTEKCONN_H=1.8mm	1
.....5	J300	314-0000-00391	ENBY0050001	CON. BATTERY CONNECTOR_BTP-03QF4G_3.000 mm_3 pin_OCTEKCONN_H=5.7mm	1
.....5	J602	314-0000-00430	ELCH0018201	CON. MICRO USB CONNECTOR_GU073-5P-SD-E1500_0.650 mm_5 pin_LS MTRON_H=3mm	1
.....5	J400	314-0000-00507	ENQY0016601	CON. FPC CONNECTOR_BL310-13G31-TAH0_0.300 mm_13 pin_TAIWAN SUNCAGEY_H=1.0mm	1
.....5	U101	326-0000-00146	SFSY0042501	Filter SAW_B39182B9500L310_1842.5±37.5MMZ/942.5±17.5MHZ_EPCOS_FOR GSM RX,50/150 OHM-SMD10PIN	1
.....5	I/O connector shielding	415-72620-0023	ACKA0028101	CASE_7262_SILVER_COPPER-NICKEL-ZINC ALLOY_N/A_I/O connector shielding case_SPEED(KUNSHAN)_N/A	1
.....5	BB shielding case	415-72650-0004	ACKA0035701	CASE_7265_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_BB shielding case_PLIGHT(JIANGSU)_cover+frame	1