



# SP ATA Tool



# Outline

1. ATA Tool Introduction
2. How To Use ATA Tool
3. Detail setting for some test item

# ATA Tool Introduction

- ATA Tool is the abbreviation of **Assembly Test Assistant Tool**, which is used to provide convenience for **PCBA** testing on production line.
- All test items are implemented by **AT COMMAND**.
  - Communication between PC and DUT must be OK.
- ATA tool can support **max 4 DUT concurrent** testing.

# ATA Tool Introduction

## ■ Supported Test Items Until Now

- SW Version
  - Modem version
  - AP version
- Touch panel
- Key Pad
- T Card
- EMMC
- SIM Card
- Charger
- RTC
- WIFI
- BT
- FM
- Signaling Test

# ATA Tool Introduction

- **Supported Test Items Until Now**
  - Vibrator
  - Camera
  - LCM
  - Sensor
    - G-Sensor
    - M-Sensor
    - ALS/PS
    - Gyroscope

# ATA Tool Components

- **ATATool.exe**

- **DLLs**

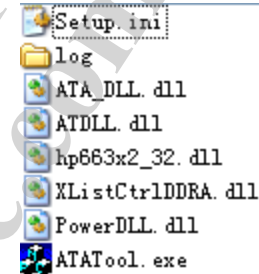
- ATA\_DLL.dll
  - manage the main test flow.
- ATDLL.dll
  - Manage AT command communication.
- XListCtrlDDRA.dll
  - Manage list box layout on UI.
- PowerDLL.dll
  - Manage power supply.

- **Log dir**

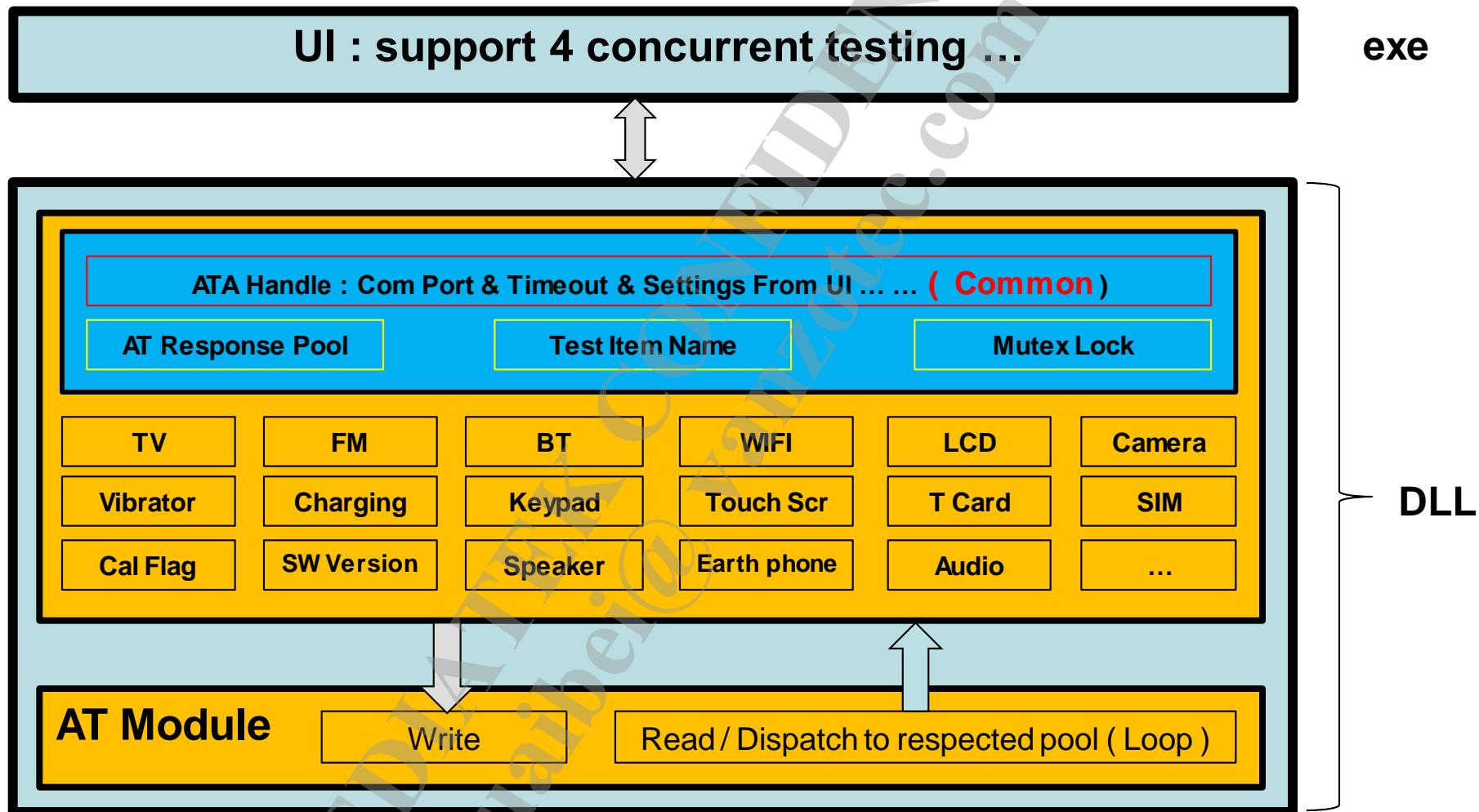
- Test log will be saved here.

- **Setup.ini**

- Auto generated file which save settings on UI.
- Tool will load this file to initiate the UI settings when starting.



# ATA Tool Architecture



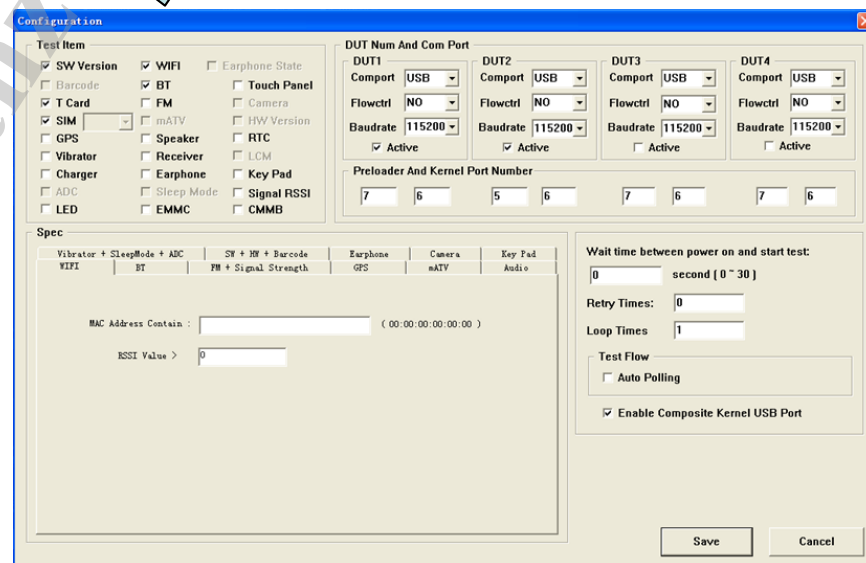
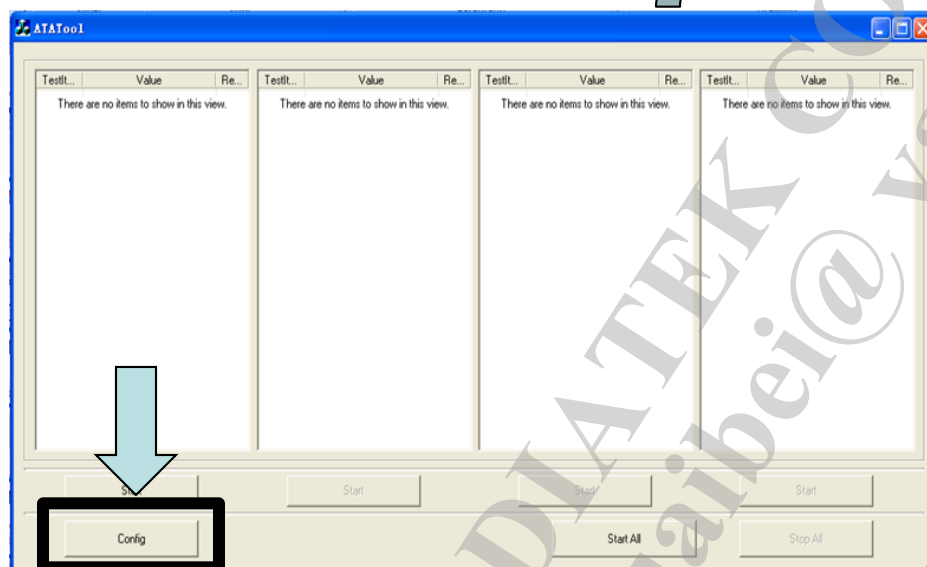
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# How To Use ATA Tool

- Run ATATool.exe
- Press **Config** button to configure test items.



# How To Use ATA Tool

## ■ Configure test item settings.

### Which items to be tested.

- 1) Disabled items are for future development.

Define **pass or fail limit** in the spec region.

Detail criterion will be introduced in the following page.

Test flow control parameters. Detailed info will be introduced in the next page.

### How many DUT be tested.

- 1) Max support 4 DUT concurrent testing.
- 2) Check **Active checkbox** to enable this port.
- 3) Input Preloader & Kernel port number  
-- Port number should be set according to the value displayed in system device manger.

The screenshot shows the ATA Tool configuration window with several sections highlighted by callouts:

- Test Item:** A list of test items with checkboxes. Items like SW Version, WIFI, BT, SIM, GPS, Vibrator, Charger, ADC, LED, Barcode, FM, mATV, Speaker, Receiver, Earphone, Sleep Mode, EMMC, Touch Panel, Camera, HW Version, RTC, LCM, Key Pad, Signal RSSI, and CMMB are visible. Some are checked, some are not.
- DUT Num And Com Port:** A section for configuring four DUTs (DUT1, DUT2, DUT3, DUT4). Each DUT has a Comport (USB), Flowctrl (NO), Baudrate (115200), and an Active checkbox.
- Preloader And Kernel Port Number:** A section for entering port numbers for each DUT, with fields for Preloader and Kernel ports.
- Test Flow Control:** A section for setting test parameters, including Wait time between power on and start test (0 to 30 seconds), Retry Times (0), Loop Times (1), and Test Flow (Auto Polling, Enable Composite Kernel USB Port).
- MAC Address Contain:** A field for entering a MAC address.
- RSST Value:** A field for entering an RSST value.

At the bottom right, there are 'Save' and 'Cancel' buttons.

# How To Use ATA Tool

- **Configure test item settings.**
  - **Wait time between power on and start test**
    - Specify the time that will be delayed between entering factory mode and starting test.
    - Provide enough time for DUT stability.
  - **Retry times**
    - Retry times if the test item fail to enhance stability.
  - **Loop Times (Reserved)**
  - **Auto polling**
    - Specify if need to press start button when starting to test next DUT.

The screenshot shows the ATA Tool configuration window with the following settings:

- Wait time between power on and start test:** 0 second (0 ~ 30)
- Retry Times:** 0
- Loop Times:** 1
- Test Flow:**
  - ☐ Auto Polling
  - ☐ Set Flag To Barcode
  - ☐ Enable Composite Kernel USB Port
- Current Measure Chip Port Number:**
  - 1: 2
  - 2: 52
  - 3: 0
  - 4: 0

# How To Use ATA Tool

## – Set Flag To Barcode

- Write test result flag into barcode.
- You can specify flag & index in tag SW+HW+Barcode

The screenshot shows the MediaTek ATA Tool interface with the 'SW + HW + Barcode' tab selected. The 'Barcode' section is highlighted, showing the following fields:

- Index:** 59
- Pass Flag:** p
- Fail Flag:** f

Callouts provide additional information:

- Barcode index to write flag
- pass flag string: default = p
- fail flag string: default = f

# How To Use ATA Tool

## – Enable Composite Kernel USB Port

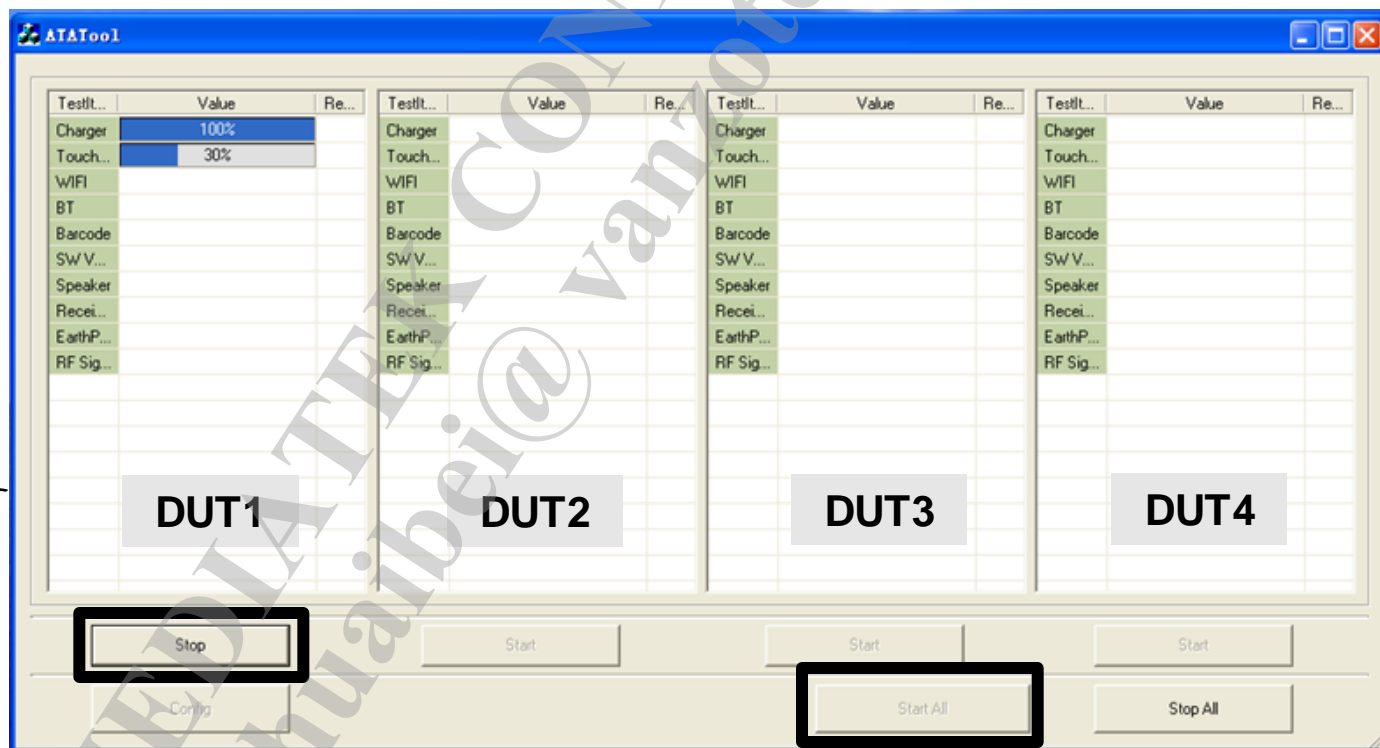
- If to use composite kernel USB port.
- **Uncheck** it if you want to do more than 2 DUTs **con-current testing**
  - enumerate different port number for each DUT (Single kernel USB port)
- **Check** it if you want to **catch ADB log** from DUT.
  - ADB port will display in device manager (Composite kernel USB port)
- **Note:**
  - The kernel port number may be different of the two state.
  - Pre-loader port number is equal.

# How To Use ATA Tool

- Save settings and click **Start All** button to start all testing or **Start** button to start the dedicated testing.

Insert USB cable with the target powered off to enter factory mode:

- 1) The first column show test item name.
- 2) The second column show test progress for each test item via progress bar.
- 3) The third column show test result pass or fail after test finished.

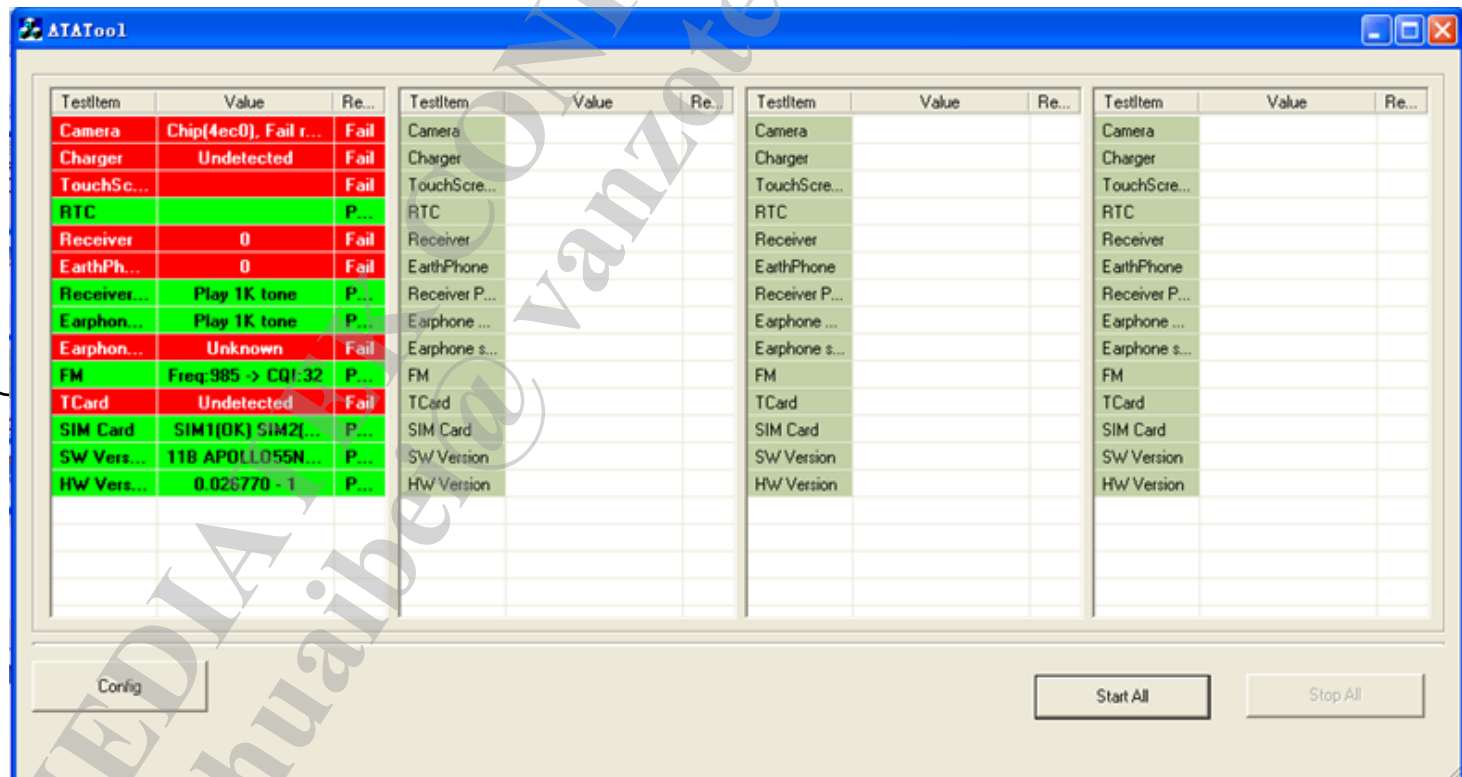


# How To Use ATA Tool

- ATA Tool show test result after test finished.

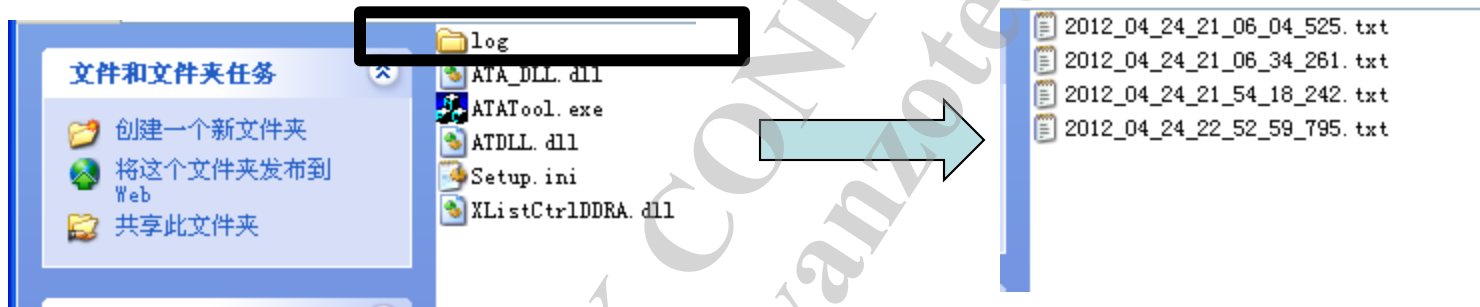
## Test Finished

- 1) **Passed** items will be set **green**, while **failed** will be set **deep red**.
- 2) The second column will show detail data of each test item.
- 3) The third column show test result ( Pass or Fail ).



# How To Use ATA Tool

- After test finished, **test log will be recorded** under the **log** directory located at the same dir as ATA tool exe.
  - Log name is set by **barcode** if barcode is tested, or by **date info**.



- AT Command response** from target will be recorded into log files located under **C:\**.
  - Log name format: ATA\_DLL\_COMx.log (x indicate DUT number 1,2,3,4)

地址 (D)

C:\

名称	大小	类型	修改日期
ATA_DLL_DUT1.log	0 KB	文本文档	2013-7-17 17:18
ATA_DLL_DUT2.log	0 KB	文本文档	2013-7-17 17:18



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# FM

- **Frequency**
  - Target will measure the frequency specified here. (unit: 100Hz)
- **Chip String Contain**
  - **Reserved**, not used now
- **RSSI value**
  - The RSSI value should be **greater than** the value set on UI.

The screenshot displays a configuration interface for FM. At the top, there is a navigation bar with tabs: Vibrator + SleepMode + ADC, SW + HW + Barcode, Earphone, Camera, Key Pad, WIFI, BT, FM + Signal Strength, GPS, mATV, and Audio. The 'FM + Signal Strength' tab is selected. Below the navigation bar, the 'FM' section is highlighted with a dashed black border. It contains three input fields: 'Frequency:' with the value '988' and a unit of '100 Hz', 'Chip String Contain:' with an empty field, and 'RSSI Value >' with the value '-100'. Below the 'FM' section, there is another section for 'FM Signal Strength' containing an 'RSSI Min Value:' field with the value '0' and a unit of 'dBm'.

Frequency:	Unit
988	100 Hz

Chip String Contain:

RSSI Value >
-100

RSSI Min Value:	Unit
0	dBm

# SW Version

## ■ SW Version

- The SW version read from target should **contain the sub string** set here.
  - Modem Version
  - AP Version

WIFI | BT | FM + Signal Strength | GPS | mATV | Audio

Vibrator + SleepMode + ADC | SW + HW + Barcode | Earphone | Camera | Key Pad

SW

Modem Version

AP Version

HW

Voltage min value  v

Voltage Max Value  v

GPIO Value

Barcode

Template

# Sensor

## ■ Test Method

- Tool read the current state status of sensor from target.
- Compare read status with the limit value set here.
  - Max & Min value

## ■ Supported Sensor

- G-Sensor
- M-Sensor
- ALS-PS
- Gyroscope

The screenshot displays a software interface for configuring various sensors. At the top, there is a horizontal menu bar with the following tabs: Vibrator + SleepMode + ADC, SW + HW + Barcode, Earphone, Camera, Key Pad, PM Cal, LED, WIFI, BT, FM + Signal Strength, GPS, mATV, Audio, and Sensor. The 'Sensor' tab is currently selected and highlighted with a black border. Below the menu bar, the interface is divided into four main sections, each with 'Max' and 'Min' value input fields:

- G-Sensor:** Contains three rows for X, Y, and Z axes. The X-axis 'Max' field has a blue cursor.
- M-Sensor:** Contains three rows for X, Y, and Z axes.
- ALS-PS:** Contains two rows for ALS and PS.
- GYROSCOPE:** Contains three rows for X, Y, and Z axes.

All input fields currently contain the value '0'.

# WIFI

## ■ Test Method

- Control target search dedicated AP specified in SW Load.
  - AP name is specified in factory.ini with **default name mtkguest**.
    - Customer need to modify AP name to mtkguest, or modify SW load setting.
    - WIFIWIFI.SSID=mtkguest
- Get the RSSI value, then compare with the setting here.
  - Searched RSSI value should be greater than here.

The screenshot shows a testing interface with a menu bar at the top containing: Vibrator + SleepMode + ADC, SW + HW + Barcode, Earphone, Camera, Key Pad, PM Cal, LED, WIFI, BT, FM + Signal Strength, GPS, mATV, Audio, and Sensor. The 'WIFI' option is selected. Below the menu, there are two input fields. The first is labeled 'MAC Address Contain :' and has a text box with '(00:00:00:00:00:00)' next to it. A callout box points to this field with the text 'Reserved, not used'. The second is labeled 'RSSI Value >' and has a text box with '-100' next to it. A callout box points to this field with the text 'Min RSSI value'.

# Audio

## ■ Test Method

### – Speaker

- Speaker and Mic are connected.
- Tool control speaker play tone, Mic record and analyze frequency and amplitude.
- Customer can set Min & Max value for frequency & amplitude in Audio tag.

### – Receiver

- Same as Speaker.
- Receiver & Mic are connected.

### – Headset

- Same as speaker.
- Headset receiver and headset mic are connected.

# Audio

## ■ UI Setting

- Customer can set Left & Right max and min value for test result.
  - Freq unit: HZ

The screenshot displays the Audio settings interface. At the top, there are tabs for various system settings: Vibrator + SleepMode + ADC, SW + HW + Barcode, Earphone, Camera, Key Pad, PM Cal, LED, WIFI, BT, FM + Signal Strength, GPS, mATV, Audio (selected), and Sensor. The main content area is divided into three sections: Speaker, Receiver, and Headset. Each section has Left and Right channel settings. The Speaker section has Min Freq (2800), Max Freq (3200), Min Amp (10000), and Max Amp (80000000). The Receiver section has Min Freq (2800), Max Freq (3200), Min Amp (10000), and Max Amp (80000000). The Headset section has Min Freq (800), Max Freq (1200), Min Amp (1000), and Max Amp (100000000).

Section	Channel	Min Freq	Max Freq	Min Amp	Max Amp
Speaker	Left	2800	3200	10000	80000000
	Right	2800	3200	10000	80000000
Receiver	Left	2800	3200	10000	80000000
	Right	2800	3200	10000	80000000
Headset	Left	800	1200	1000	100000000
	Right	800	1200	1000	100000000

# Vibrator

## ■ Test Method

- Tool control power measure board to measure current C1.
  - Vibrator is off now.
- Tool control target to power on vibrator.
- Tool control power measure board to measure current C2.
  - Vibrator is on now.
- Than tool will know pass or fail by:
  - $C2 - C1$  should be greater than specified offset value C.
  - C2 should be in specified limit .(  $C_{min} \sim C_{max}$  )

## ■ UI Setting

- Customer can set specified offset value C.
- Customer can set  $C_{min}$  &  $C_{max}$ .



# Vibrator

- UI Setting

WIFI	BT	FM + Signal Strength	GPS	mATV	Audio	Sensor
Vibrator + SleepMode + ADC	SW + HW + Barcode	Earphone	Camera	Key Pad	PM Cal	LED
<b>Vibrator</b>						
Current Min Value:		<input type="text" value="0"/>	C2 Min limit			
Current Max Value:		<input type="text" value="1"/>	C2 Max limit			
Current Diff Min Value:		<input type="text" value="0.03"/>	C2-C1 offset Min limit			
<b>ADC</b>						
Battery Vol_1		<input type="text" value="0"/>	<b>PSU</b>			
Battery Vol_2		<input type="text" value="0"/>	PSU1 GPIB Addr: <input type="text"/>			
Battery_Vol_Max Diff		<input type="text" value="0"/>	PSU2 GPIB Addr: <input type="text"/>			
Charger Current Max		<input type="text" value="600"/> mA	PSU3 GPIB Addr: <input type="text"/>			
Charger Current Min		<input type="text" value="400"/> mA	PSU4 GPIB Addr: <input type="text"/>			

# ADC

- Test Method
  - Tool read battery voltage, then compare real value measured by power measure board.
  - Customer can set the max difference between the two value.

The screenshot shows the MediaTek test tool interface with various configuration tabs. The 'ADC' tab is selected, and the 'Battery\_Vol\_Max Diff' field is highlighted with a black box. The interface includes sections for Vibrator, Sleep Mode, ADC, and PSU configuration.

WIFI	BT	FM + Signal Strength	GPS	mATV	Audio	Sensor
Vibrator + SleepMode + ADC	SW + HW + Barcode	Earphone	Camera	Key Pad	PM Cal	LED

**Vibrator**

Current Min Value:  A

Current Max Value:  A

Current Diff Min Value:  A

**Sleep Mode**

Max Current  A

**ADC**

Battery Vol\_1

Battery Vol\_2

**Battery\_Vol\_Max Diff**  (highlighted)

Charger Current Max  mA

Charger Current Min  mA

**PSU**

PSU1 GPIB Addr:

PSU2 GPIB Addr:

PSU3 GPIB Addr:

PSU4 GPIB Addr:

# Charger

- Test Method
  - Tool read charger current from target.
  - Customer can set min & max limit value.

WIFI	BT	FM + Signal Strength	GPS	mATV	Audio	Sensor
Vibrator + SleepMode + ADC	SW + HW + Barcode	Earphone	Camera	Key Pad	PM Cal	LED

Vibrator		Sleep Mode	
Current Min Value:	<input type="text" value="0"/> A	Max Current	<input type="text" value="0"/> A
Current Max Value:	<input type="text" value="1"/> A		
Current Diff Min Value:	<input type="text" value="0.03"/> A		

ADC		PSU	
Battery Vol_1	<input type="text" value="0"/>	PSU1 GPIB Addr:	<input type="text"/>
Battery Vol_2	<input type="text" value="0"/>	PSU2 GPIB Addr:	<input type="text"/>
Battery_Vol_Max Diff	<input type="text" value="0"/>	PSU3 GPIB Addr:	<input type="text"/>
Charger Current Max	<input type="text" value="600"/> mA	PSU4 GPIB Addr:	<input type="text"/>
Charger Current Min	<input type="text" value="400"/> mA		

# PM Cal (1/3)

## ■ Background

- For vibrator and ADC test, a power measure chip is used for measuring voltage and current value. ( Total 4 chips for max 4 DUT)
- This item is for calibrating power measure chip to make measured voltage value more accurate.

PM1				PM2			
	VOL	ADC	Slope/Offse		VOL	ADC	Slope/Offse
1	0	0	0	1	0	0	0
2	0	0	0	2	0	0	0

PM3				PM4			
	VOL	ADC	Slope/Offse		VOL	ADC	Slope/Offse
1	0	0	0	1	0	0	0
2	0	0	0	2	0	0	0

# PM Cal (2/3)

- **Calibration Steps (take PM1 as example)**
  - Tune power supply to voltage1 (such as 3V)
  - Send command to power measure chip to get ADC value.
    - Command = "voltage?\r\n"
  - Power chip will return ADC value, then fill to ADC1
  - Tune power supply to voltage2 (such as 4V)
  - Send command to power measure chip to get ADC value.
    - Command = "voltage?\r\n"
  - Power chip will return ADC value, then fill to ADC2
  - Click ==> button to get calibrated value (slope and offset).

# PM Cal (3/3)

- Note:
  - If power measured chip is already calibrated, you can input the calibrated result directly.

The screenshot displays the PM Cal (3/3) interface with four power measurement channels (PM1, PM2, PM3, PM4). Each channel has input fields for VOL, ADC, and Slope/Offset. The ADC field for PM1 is highlighted with a black box.

Channel	VOL	ADC	Slope/Offset
PM1	1 3	656	0.004608
	2 4	873	-0.022848
PM2	1 3	539	0.005714
	2 4	714	-0.079846
PM3	1 0	0	0
	2 0	0	0
PM4	1 0	0	0
	2 0	0	0

# Other settings

- **Other settings are reserved now.**
  - Other settings are not used now.
  - May be used in the future.



**Thanks!**

