

2. Specification

2-1. GSM General Specification

	GSM850	EGSM 900	DCS1800	PCS1900	WCDMA 2100	WCDMA 1900	WCDMA 900	WCDMA 850
Freq. Band[MHz] Uplink/ Downlink	824-849 869-894	880-915 925-960	1710-1785 1805-1880	1850-1910 1930-1990	1920-1980 2110-2170	1850-1910 1930-1990	880-915 925-960	824-849 869-894
ARFCN range	128-251	0-124 & 975-1023	512-885	512-810	UL:9612-9888 DL:10562-10838	UL:9262-9538 DL:9662-9938	UL: 2712-2863 DL: 2937-3088	UL: 4132-4233 DL: 4357-4458
Tx/Rx spacing	45MHz	45MHz	95MHz	80MHz	190MHz	80MHz	45MHz	45MHz
Mod. Bit rate/ Bit Period	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us	3.84Mcps	3.84Mcps	3.84Mcps	3.84Mcps
Time Slot Period/ Frame Period	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms	FrameLength: 10ms Slotlength: 0.667ms	FrameLength: 10ms Slotlength: 0.667ms	FrameLength: 10ms Slotlength: 0.667ms	FrameLength: 10ms Slotlength: 0.667ms
Modulation	0.3GMSK	0.3GMSK	0.3GMSK	0.3GMSK	QPSK, HPSK	QPSK, HPSK	QPSKHQPSK	QPSKHQPSK
MS Power	33dBm-5dBm	33dBm-5dBm	30dBm-0dBm	30dBm-0dBm	24dBm--50dBm	24dBm--50dBm	24dBm~ -50dBm	24dBm~ -50dBm
Power Class	5pcl ~ 19pcl	5pcl ~ 19pcl	0pcl ~ 15pcl	0pcl ~ 15pcl	3(max+24dBm)	3(max+24dBm)	3(max+24dBm)	3(max+24dBm)
Sensitivity	-102dBm	-102dBm	-100dBm	-100dBm	-106.7dBm	-106.7dBm	-106.7dBm	-106.7dBm
TDMA Mux	8	8	8	8	0	0	0	0
Cell Radius	35Km	35Km	2Km	2Km	2Km	2Km	2Km	2Km

2-2. GSM Tx Power Class

TX Power control level	GSM850	TX Power control level	EGSM900	TX Power control level	DCS1800	TX Power control level	PCS1900
5	32.5±2 dBm	5	34±2 dBm	0	31±3 dBm	0	29.5±3 dBm
6	31±2 dBm	6	31±2 dBm	1	28±3 dBm	1	28±3 dBm
7	29±2 dBm	7	29±2 dBm	2	26±3 dBm	2	26±3 dBm
8	27±2 dBm	8	27±2 dBm	3	24±3 dBm	3	24±3 dBm
9	25±2 dBm	9	25±2 dBm	4	22±3 dBm	4	22±3 dBm
10	23±2 dBm	10	23±2 dBm	5	20±3 dBm	5	20±3 dBm
11	21±2 dBm	11	21±2 dBm	6	18±3 dBm	6	18±3 dBm
12	19±2 dBm	12	19±2 dBm	7	16±3 dBm	7	16±3 dBm
13	17±2 dBm	13	17±2 dBm	8	14±3 dBm	8	14±3 dBm
14	15±2 dBm	14	15±2 dBm	9	12±4 dBm	9	12±4 dBm
15	13±2 dBm	15	13±2 dBm	10	10±4 dBm	10	10±4 dBm
16	11±3 dBm	16	11±3 dBm	11	8±4 dBm	11	8±4 dBm
17	9±3dBm	17	9±3dBm	12	6±4 dBm	12	6±4 dBm
18	7±3 dBm	18	7±3 dBm	13	4±4 dBm	13	4±4 dBm
19	5±3 dBm	19	5±3 dBm	14	2±5 dBm	14	2±5 dBm
				15	0±5 dBm	15	0±5 dBm

2-3. LTE General Specification

	LTE Band1	LTE Band3	LTE Band5	LTE Band7	LTE Band8	LTE Band20
Freq. Band[MHz] Uplink/ Downlink	1920~1980 2110~2170	1710~1785 1805~1880	824~849 869~894	2500~2570 2620~2690	880~915 925~960	832~862 791~821
ARFCN range	UL: 18000~18599 DL: 0~599	UL: 19200~19949 DL: 1200~1949	UL: 20400~20649 DL: 2400~2649	UL: 20750~21449 DL: 2750~3449	UL: 21450~21799 DL: 3450~3799	UL: 24150~24449 DL: 6150~6449
Tx/Rx spacing	190MHz	95MHz	45MHz	120MHz	45MHZ	-41MHz
Channel Bandwidth	5/10/15/20 MHz	1.4/3/5/10/15/20 MHz	1.4/3/5/10 MHz	5/10/15/20 MHz	1.4/3/5/10MHz	5/10/15/20 MHz
Modulation	QPSK,16/64QAM	QPSK,16/64QAM	QPSK,16/64QAM	QPSK,16/64QAM	QPSK,16/64QAM	QPSK,16/64QAM
MS Power (MPR)	-35~25.7 dBm	-35~25.7 dBm	-35~25.7 dBm	-35~25.7 dBm	-35~25.7 dBm	-35~25.7 dBm
Sensitivit (QPSK) (BW 10MHz)	-97dBm	-94dBm	-95dBm	-95dBm	-94dBm	-94dBm
Cell Radius	>5Km	>5Km	>5Km	>5Km	>5Km	>5Km

3. Operation Instruction and Installation

Main Function

- Android OS: L
- Exynos 7420 (64bit, 2.1G Quad + 1.5G Quad)
- 64G Bytes (UFS) + 3GByte LPDDR4
- 5.1" UB (2560 x 1440(WQHD))
- 16MP Camera + 5MP Front Camera
- GPS / BT v4.1 / USB v2.0 / WiFi (802.11 a/b/g/n/ac) / NFC
- Sensors: Gyro/Accelerometer, Magnetic, Proximity, Light, IrLED, HRM, Barometer, Finger, Hall IC
- Additional :
 - Wireless Charger
 - Adaptive Charger 9V,1.67A / 5V, 2.0A
 - Data Cable 2.7pi, 1.2m
 - Ear phone 3.5pi, 4pin

9. Reference Abbreviate

Reference Abbreviate

- **AAC**: Advanced Audio Coding.
- **AVC** : Advanced Video Coding.
- **BER** : Bit Error Rate
- **BPSK**: Binary Phase Shift Keying
- **CA** : Conditional Access
- **CDM** : Code Division Multiplexing
- **C/I** : Carrier to Interference
- **DMB** : Digital Multimedia Broadcasting
- **EN** : European Standard
- **ES** : Elementary Stream
- **ETSI**: European Telecommunications Standards Institute
- **MPEG**: Moving Picture Experts Group
- **PN** : Pseudo-random Noise
- **PS** : Pilot Symbol
- **QPSK**: Quadrature Phase Shift Keying
- **RS** : Reed-Solomon
- **SI** : Service Information
- **TDM** : Time Division Multiplexing
- **TS** : Transport Stream

1. Safety Precautions

1-1. Repair Precaution

Before attempting any repair or detailed tuning, shield the device from RF noise or static electricity discharges.

Use only demagnetized tools that are specifically designed for small electronic repairs, as most electronic parts are sensitive to electromagnetic forces.

Use only high quality screwdrivers when servicing products. Low quality screwdrivers can easily damage the heads of screws.

Use only conductor wire of the properly gauge and insulation for low resistance, because of the low margin of error of most testing equipment.

We recommend 22-gauge twisted copper wire.

Hand-soldering is not recommended, because printed circuit boards (PCBs) can be easily damaged, even with relatively low heat. Never use a soldering iron with a power rating of more than 100 watts and use only lead-free solder with a melting point below 250°C (482°F).

Prior to disassembling the battery charger for repair, ensure that the AC power is disconnected. Always use the replacement parts that are registered in the SEC system. Third-party replacement parts may not function properly.

1-2. ESD(Electrostatically Sensitive Devices) Precaution

Many semiconductors and ESDs in electronic devices are particularly sensitive to static discharge and can be easily damaged by it. We recommend protecting these components with conductive anti-static bags when you store or transport them.

Always use an anti-static strap or wristband and remove electrostatic buildup or dissipate static electricity from your body before repairing ESDs.

Ensure that soldering irons have AC adapter with ground wires and that the ground wires are properly connected.

Use only desoldering tools with plastic tips to prevent static discharge.

Properly shield the work environment from accidental electrostatic discharge before opening packages containing ESDs.

The potential for static electricity discharge may be increased in low humidity environments, such as air-conditioned rooms. Increase the airflow to the working area to decrease the chance of accidental static electricity discharges.

6. Level 1 Repair

6-1. S/W installation

6-1-1. Required items in order to install S/W

- Installation program: Downloader Program (**Odin3 v3.10.exe with odin3.ini**)
- SM-G925F Mobile Phone
- Data Cable
- JIG BOX (GH81-11888A)
- JIG Cable (GH81-10952A)
- Adapter (GH81-11888K)
- Serial Cable
- Mobile device specific S/W: Binary files

※ Settings



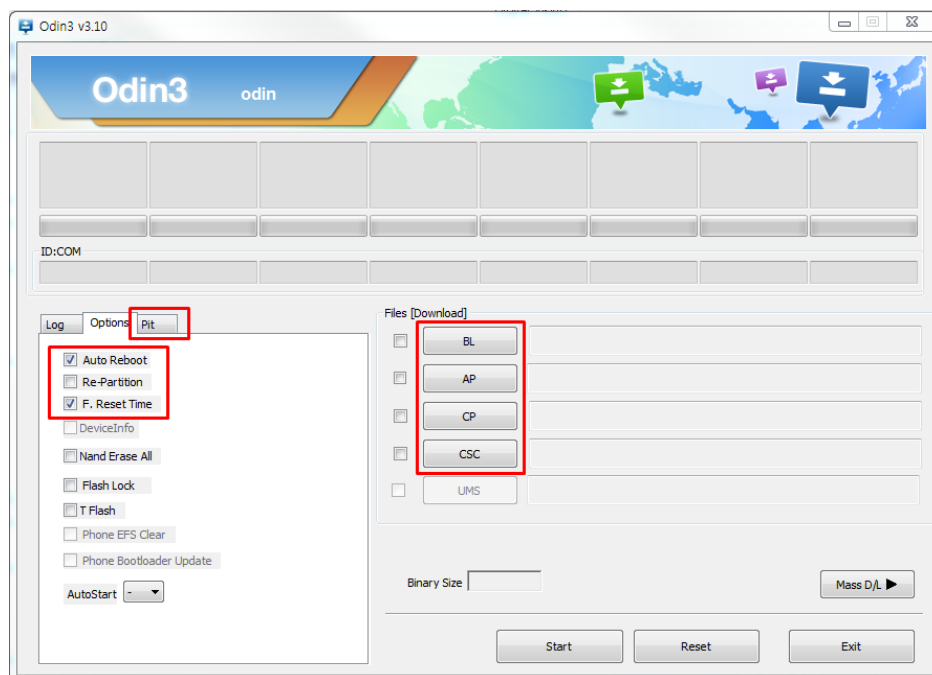
Connect ANYWAY JIG BOX
with JIG CABLE (Phone to JIG)
or PC to Phone Using Data Cable



6-1-2. S/W Installation Program (Downloader program)

- Open up the S/W Installation Program by executing the **"Odin3 v3.10.exe"**
("odin3.ini" file should be in the same folder with odin3 v3.10.exe)

1. Enable the check mark by click on the following options,
 - Check Auto Reboot, and F. Reset Time
 - Check PIT
 - Check BL,AP,CP and CSC Files

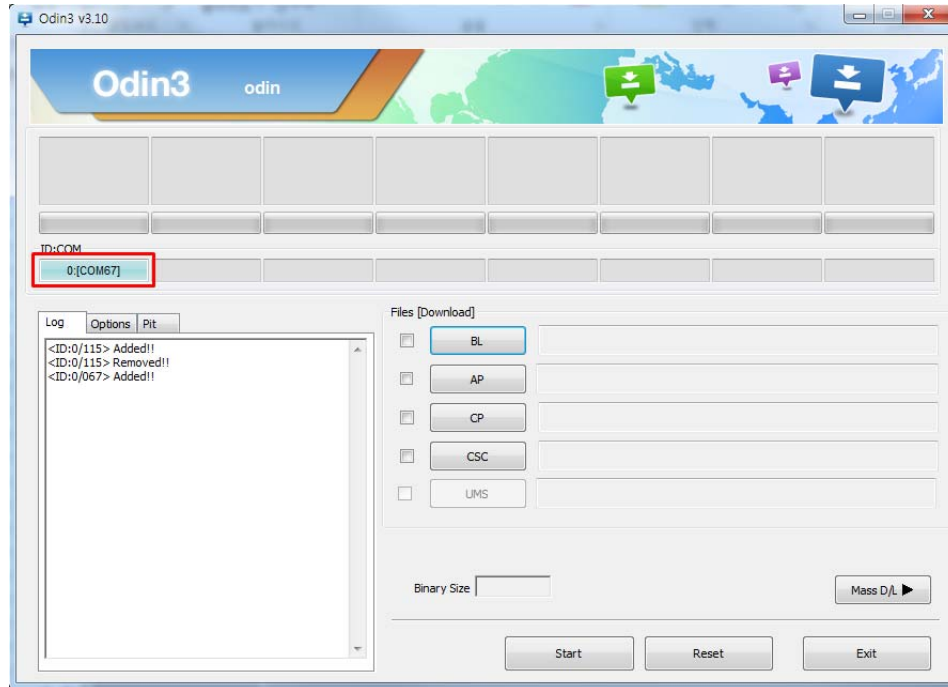


2. Enter into Download Mode

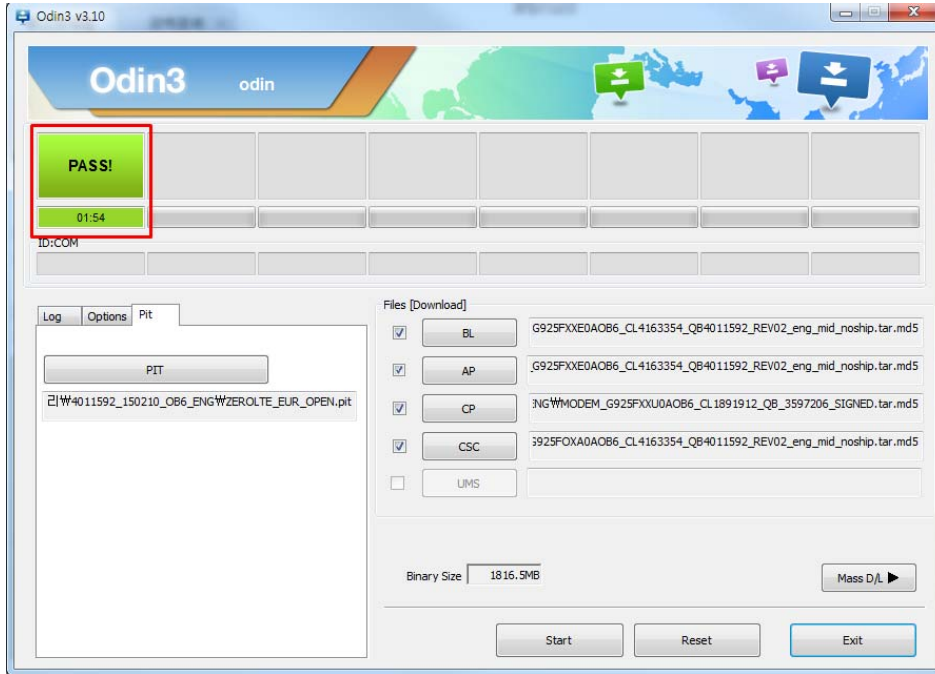
- ① Enter into Download Mode by pressing Volume Down button ON/OFF Button, and Home key simultaneously.
- ② Next, press Volume Up button.

3. Connect the device to PC via Data Cable.

Make sure that the one of communication port [ID:COM] box is highlighted in yellow. The device is now connected with the PC and ready to download the binary file into the device.



4. Start downloading binary file into the device by clicking Start Button on the screen. the green colored "PASS!" sign will appear on the upper-left box if the binary file has been successfully downloaded into the device.



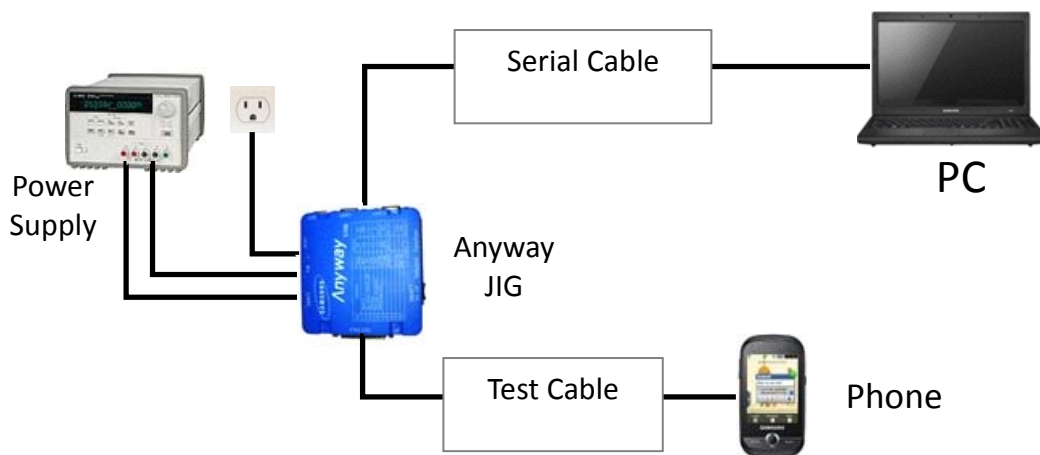
5. Disconnect the device from the Data cable.
6. Once the device boots up, you can check the version of the binary file or name by pressing the following code in sequence;
***#1234#**

6-3 IMEI writing

6-3-1 Preparation

- New IMEI writing Program has been released.
- Supported Model : Models which CAB files are uploaded on HHPsvc INI File category, instead of ini file.
- Refer to below IMEI writing procedure.(For SM-G925F Model)

- H/W

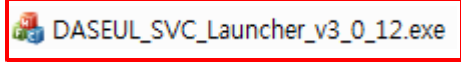


- S/W

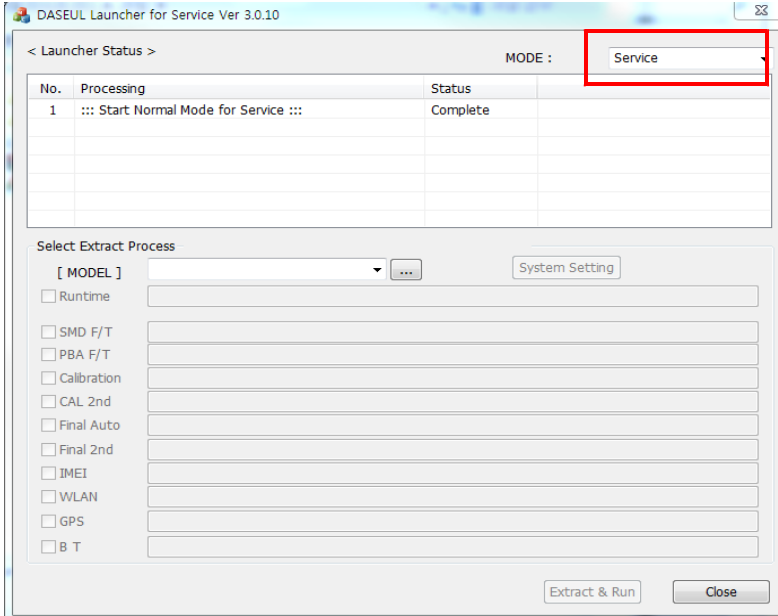
① Library Install	To use Daseul, library files should be installed. Refer to SVC Bulletin “(11-82) Daseul (New IMEI writing Program) Library Install guide_rev1.0”
② Launcher	DASEUL_SVC_Launcher_v3_0_12 or higher -Uploaded on HHPsvc Notice
③ Runtime File	1. DASEUL_IMEI_ALL_SVC_Runtime_3.1.145.0_r00203.CAB or higher -Uploaded on HHPsvc Notice 2. Make ‘ModelName’ folder at the same position with launcher & Runtime file. <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> </div>
④ Model File	Copy Model File under the ‘Model Name’ folder

6-2-2 IMEI writing Process

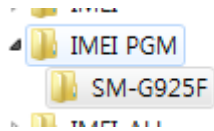
1. Run DASEUL_SVC_Launcher_v3.0.12.exe



2. Select Service Mode



3. Click [MODEL] ... and Select folder where the Launcher exists



4. Select Model

DASEUL Launcher Ver 3.0.24

< Launcher Status >

No.	Processing	Status
1	::: Start Normal Mode :::	Complete

Select Extract Process

Runtime DASEUL_Runtime_Ver_3.1.135.1.CAB

SMD F/T

PBA F/T

Calibration

CAL 2nd

Final Auto

Final 2nd

IMEI r00182 | SM-A500FU_COMMON(CSC)_IMEI_Ver_3.1.132.1.C

WLAN

GPS

BT

Extract & Run Close

5. Check IMEI and click 'System Setting'

※Once you setup the setting, you don't have to do it again, unless there is change. From second run of the IMEI program, check IMEI and click 'Extract & Run'.

6. Check 'IMEI Write / IMEI Check', and click 'IMEI SVC & Repair Option'

DASEUL Launcher Ver 3.0.24

< Launcher Status >

No.	Processing	Status
1	::: Start Normal Mode :::	Complete

Select Extract Process

Runtime DASEUL_Runtime_Ver_3.1.135.1.CAB

SMD F/T

PBA F/T

Calibration

CAL 2nd

Final Auto

Final 2nd

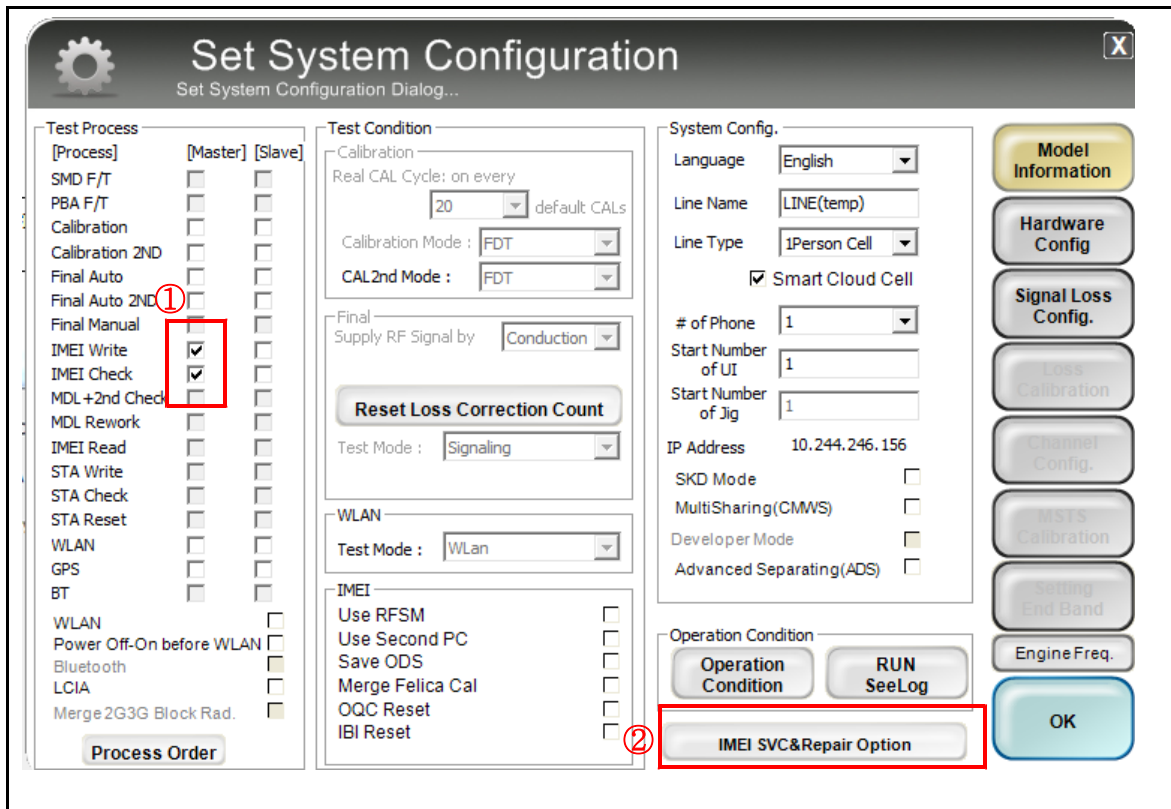
IMEI r00182 | SM-A500FU_COMMON(CSC)_IMEI_Ver_3.1.132.1.C

WLAN

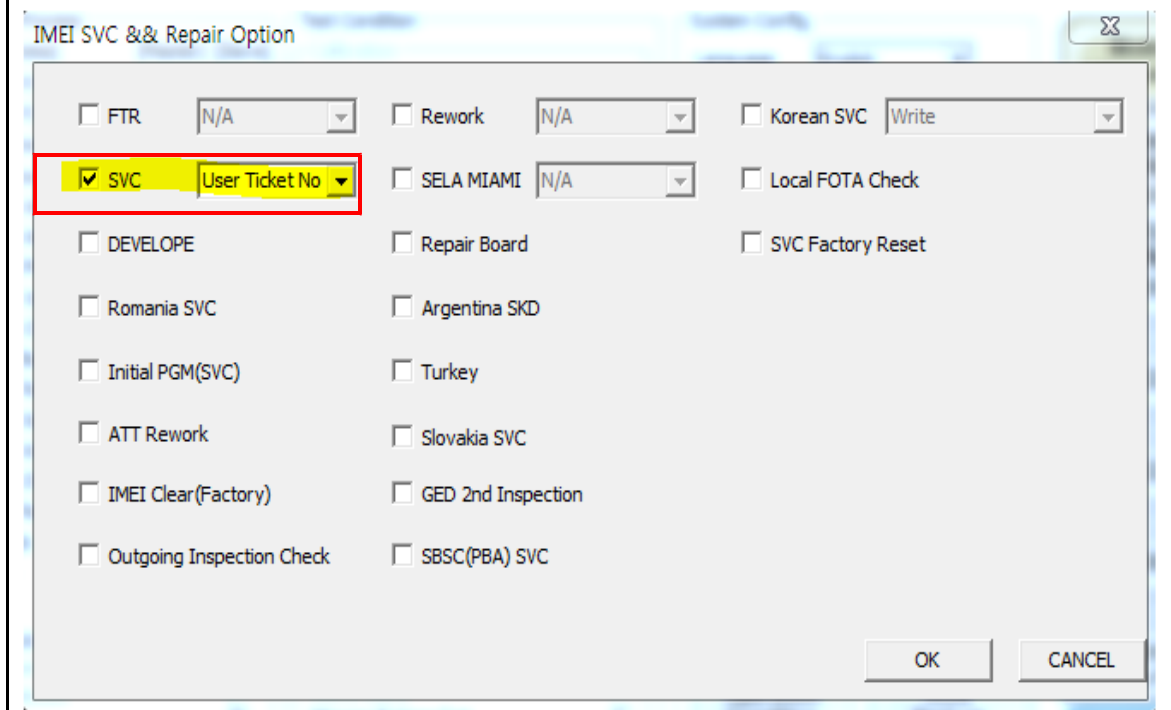
GPS

BT

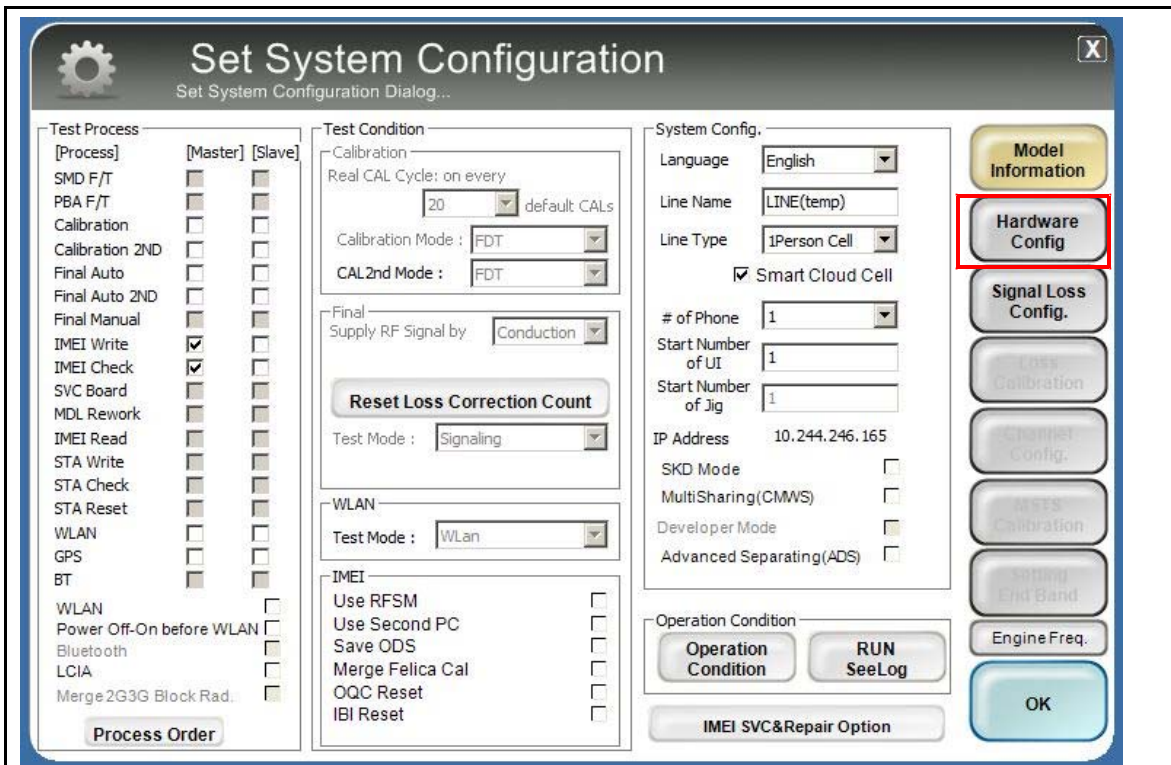
Extract & Run Close



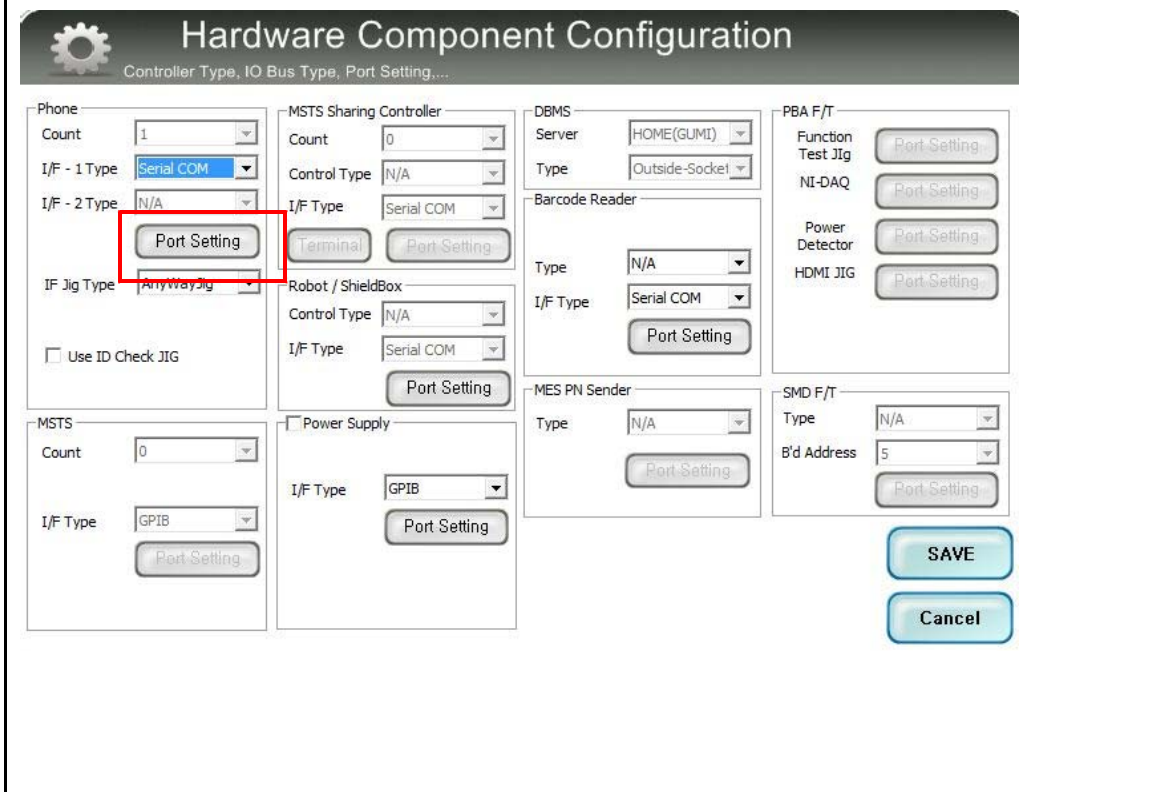
7. Check 'SVC , User Ticket No' and click OK



8. Click 'Hardware Config'



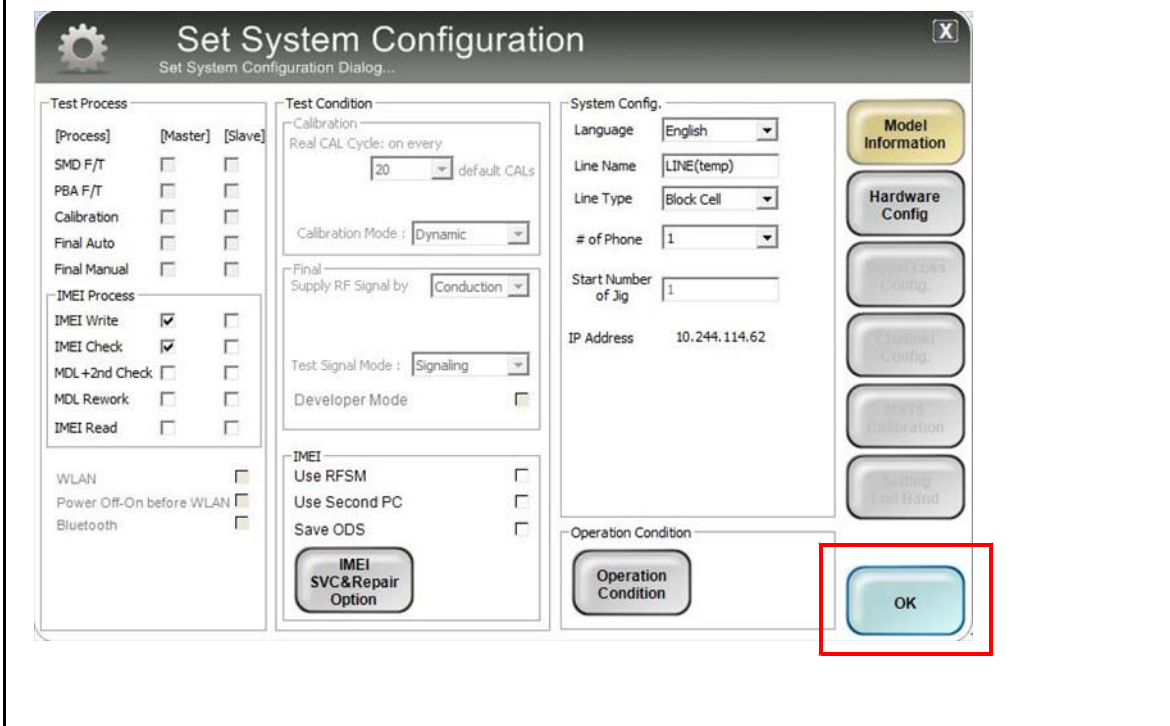
9. Click 'Port Setting'



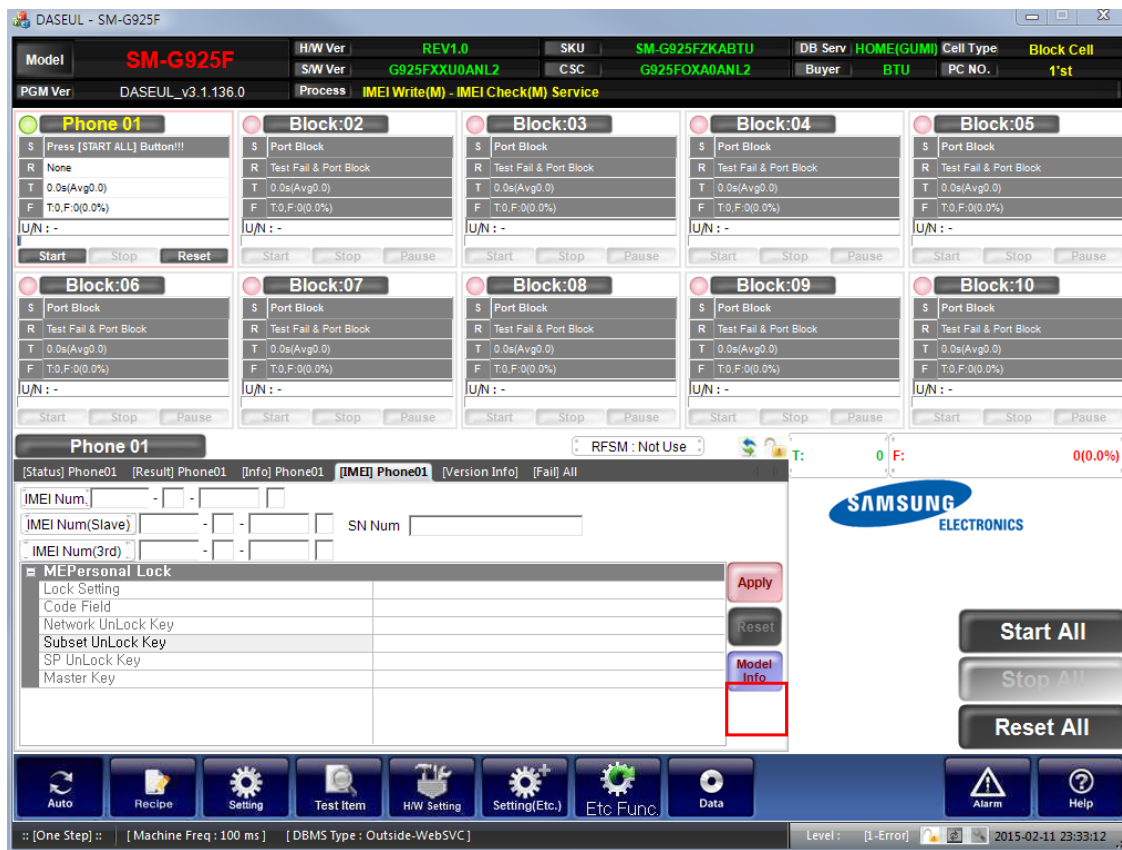
10. Select Port Number and SAVE



11. Click OK to proceed



12. Click Model Info and OK when pop-up shows

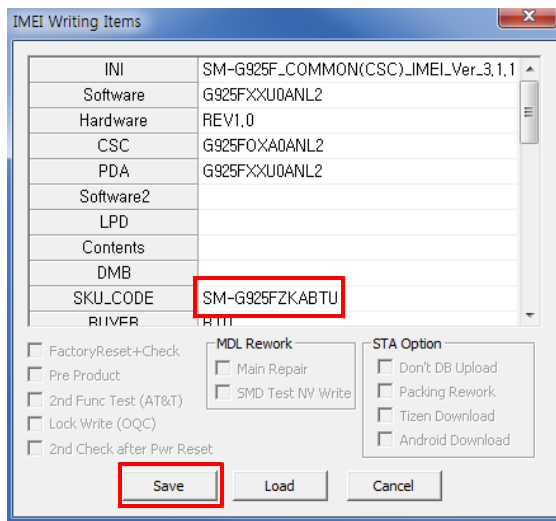


13. Click OK

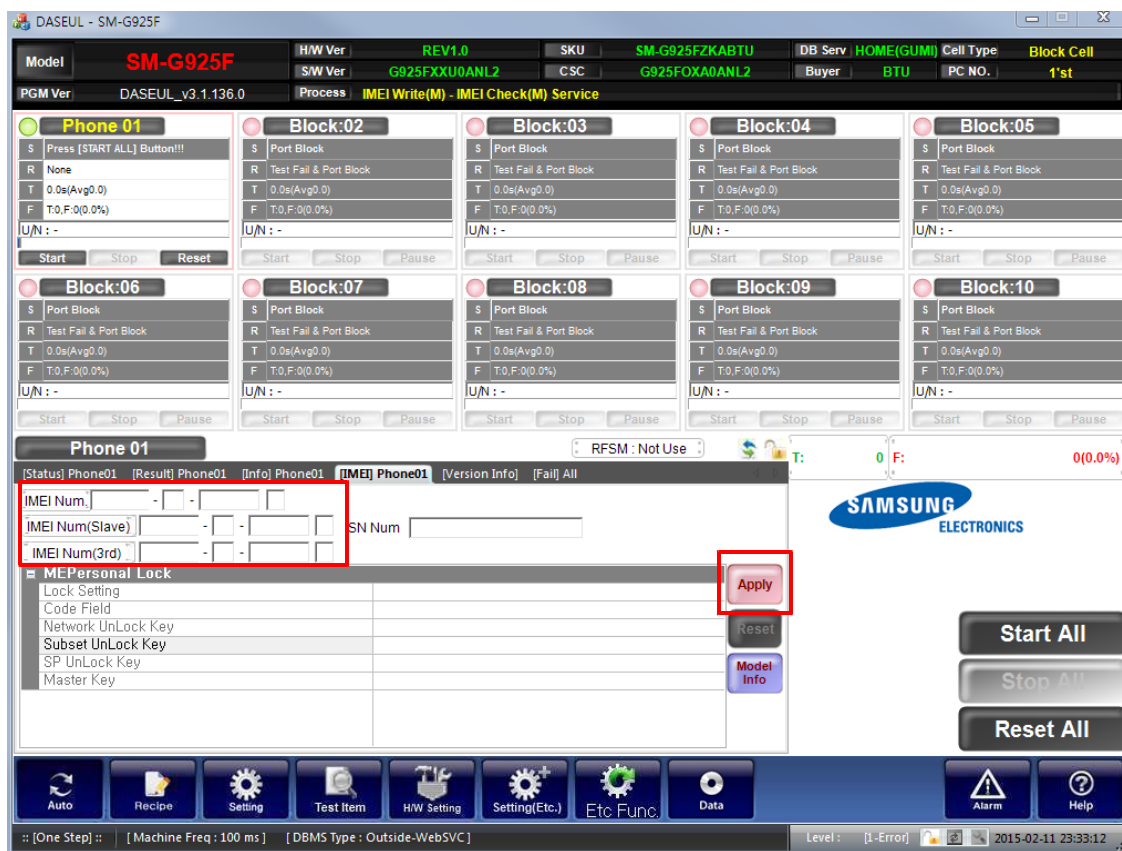


14. Input SKU_CODE and BUYER, then click Save button.

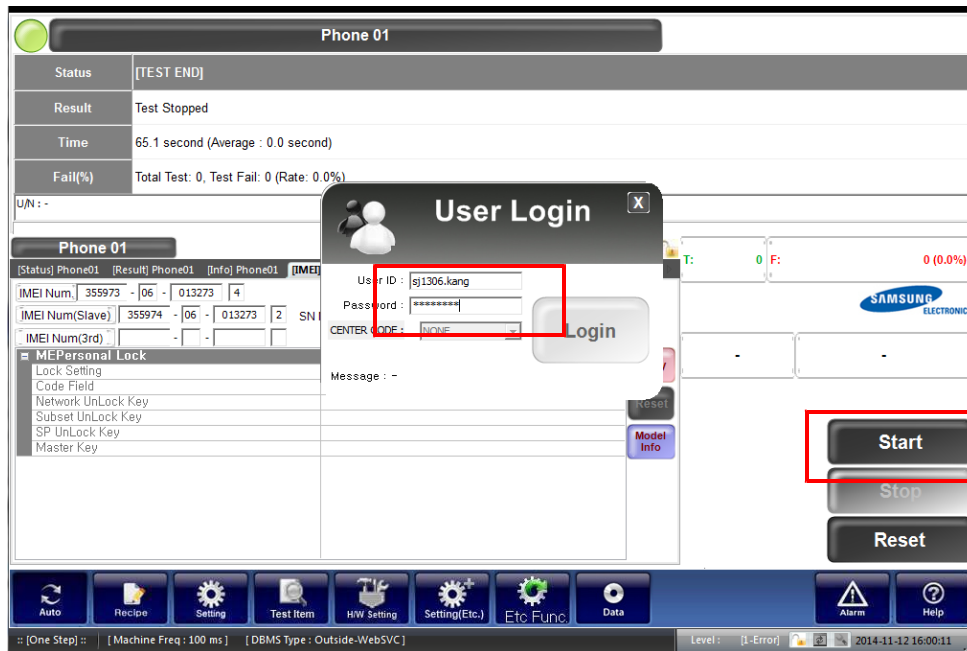
※ Refer to HHPsvc→IMEI Review to check SKU Code and buyer



15. Input IMEI Number and click Apply



16. ① Click Start, and input IMEI writing ID and Password →②input Ticket No

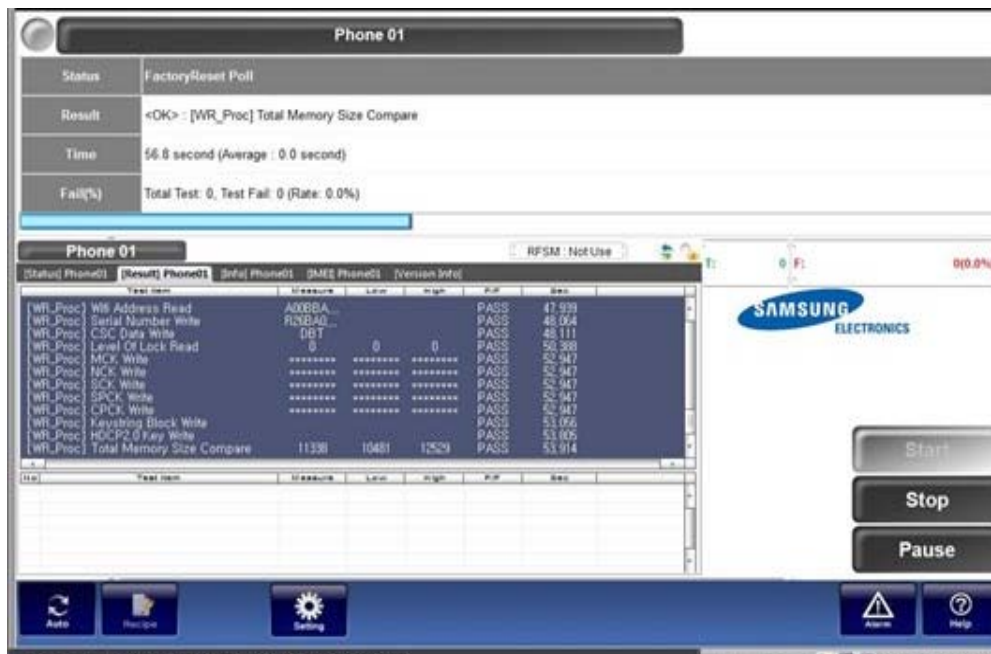


17. Connect the phone to Anyway JIG

※ When you connect the phone, the phone should be turned off.

After connecting the phone, the phone will be booted automatically.

18. IMEI Writing Proceeding



19. IMEI Writing Success

Phone 01

Status: [TEST END]

Result: <Test Pass>: 037195

Time: 215.0 second (Average : 215.6 second)

Fail(%): Total Test: 1, Test Fail: 0 (Rate: 0.0%)

Phone 01 | RFSM: Not Use | T: 1 | F: 0 (0.0%)

Test Item	Measure	Low	High	Pass	Fail
[CH_Proc] AK_Authenticate Check				PASS	213.519
[CH_Proc] IMEI Compare	359575...	359575...	359575...	PASS	213.581
[CH_Proc] Bluetooth ID Compare	39E.CE.4...	39E.C...	39E.C...	PASS	214.283
[CH_Proc] Serial Number Compare	R268A0...	R268A...	R268A...	PASS	214.345
[CH_Proc] MCK Compare	*****	*****	*****	PASS	214.455
[CH_Proc] NCK Compare	*****	*****	*****	PASS	214.455
[CH_Proc] SCK Compare	*****	*****	*****	PASS	214.455
[CH_Proc] SPCK Compare	*****	*****	*****	PASS	214.455
[CH_Proc] CPCK Compare	*****	*****	*****	PASS	214.455
[CH_Proc] PCK Compare	*****	*****	*****	PASS	214.455
[CH_Proc] Keysting Block Compare	ON	ON	ON	PASS	214.502
[CH_Proc] HDCP2.0 Key Check	OK	OK	OK	PASS	214.673

Buttons: Start, Stop, Reset, Alarm, Help

6-4. Boot Recovery

6-4-1. Symptom

- No Power on, Unable to enter download mode.

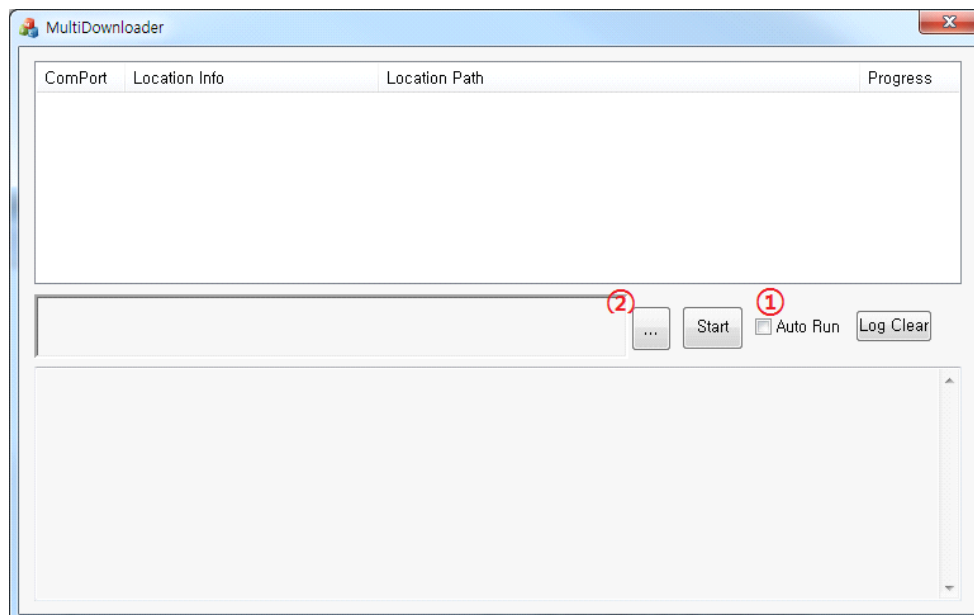
6-4-2. Coverage

- The device which get damaged for bootloader.
 - The device which was swapped Nand Flash(UFS).
- In this case, need to UFS provisioning procedure should be followed.

6-4-3. Required items in order to do Boot Recovery

- SM-G925F Mobile Phone(Normal device)
- Data Cable
- Downloader Program (**Odin3 v3.10.exe**)
- Emergency Downloader Program (For Windows 32bit or 64bit)
- cfg(config file) and bootloader for Multidownloader
-DEBUG_USB_RECOVERY_ZEROLTE~.tgz
- Full S/W binary(pit, BL, AP, CP) for Odin download.

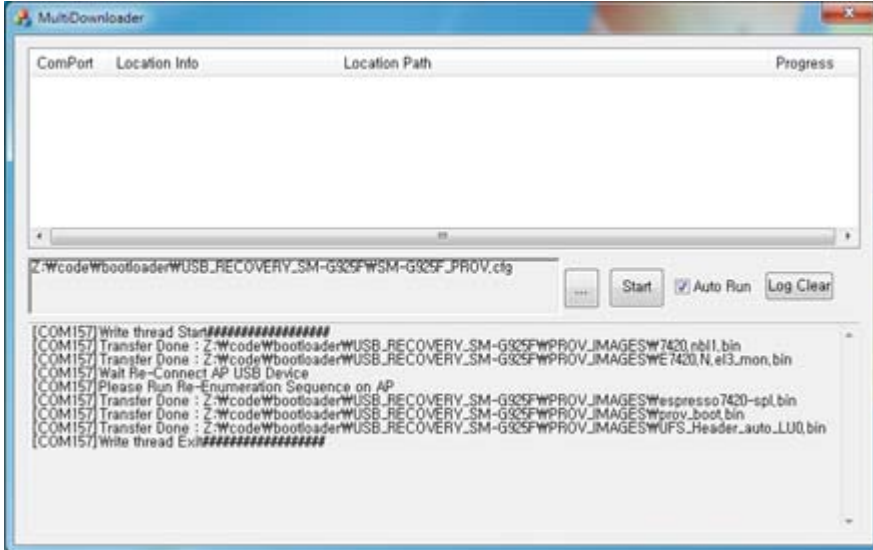
6-4-4. Process of Boot Recovery



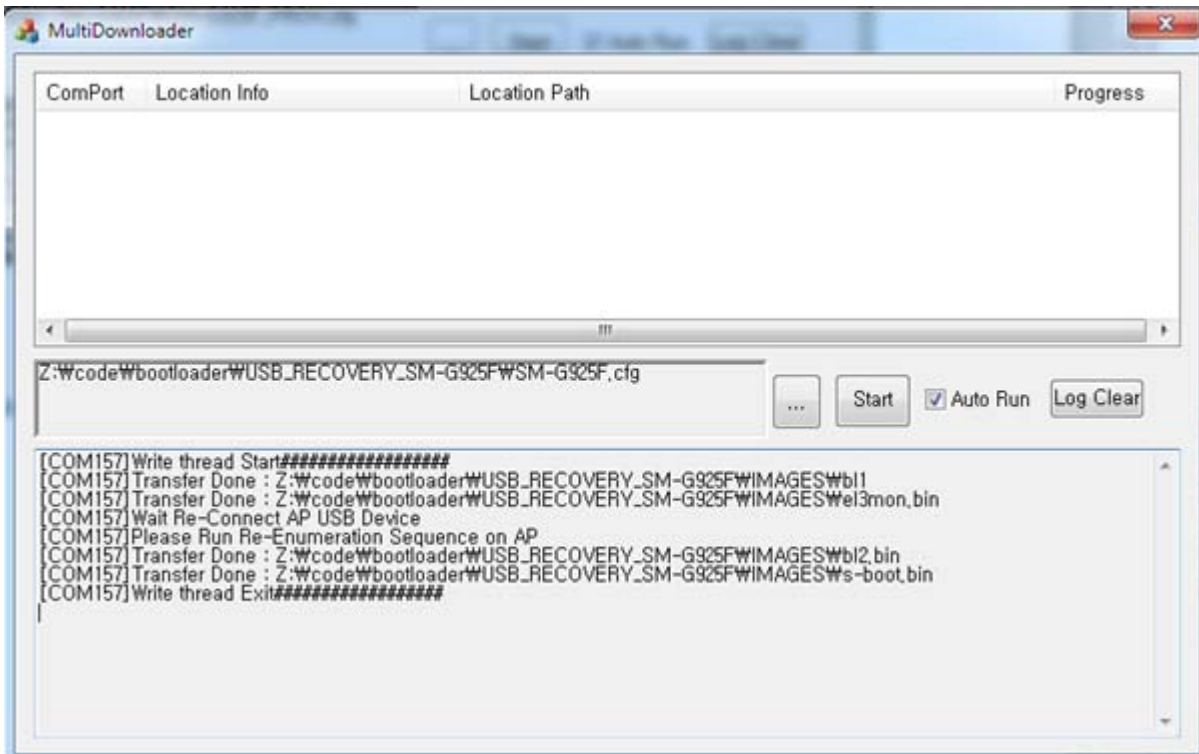
1. Run Emergency Downloader
2. ①(Auto Run) Check
3. Click Button ②(...) and select cfg File

Select SM-G925F_PROV.cfg file for UFS provisioning

4. Connect Device to PC with data cable.
5. Long press Power-Key until device until this message (Write thread Exit #####)

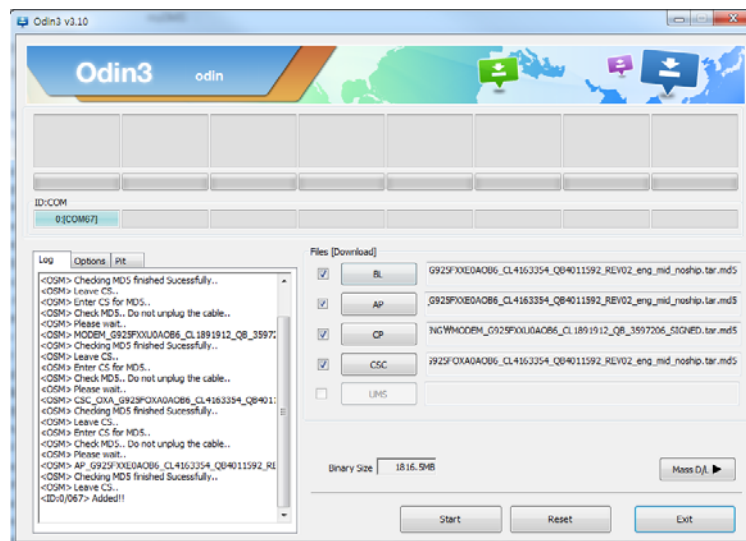


6. Disconnect USB Data cable
7. Click Button @(...) and select cfg File, Select SM-G925F.cfg
8. Connect Device to PC with data cable.
9. Long press Power-Key until device entering Odin download mode.



6-4-5. Process of binary download after Boot Recovery

After entering download mode, download full S/W to the device including BL(Bootloader), AP(Platform binary), CP(Modem binary) and CSC.



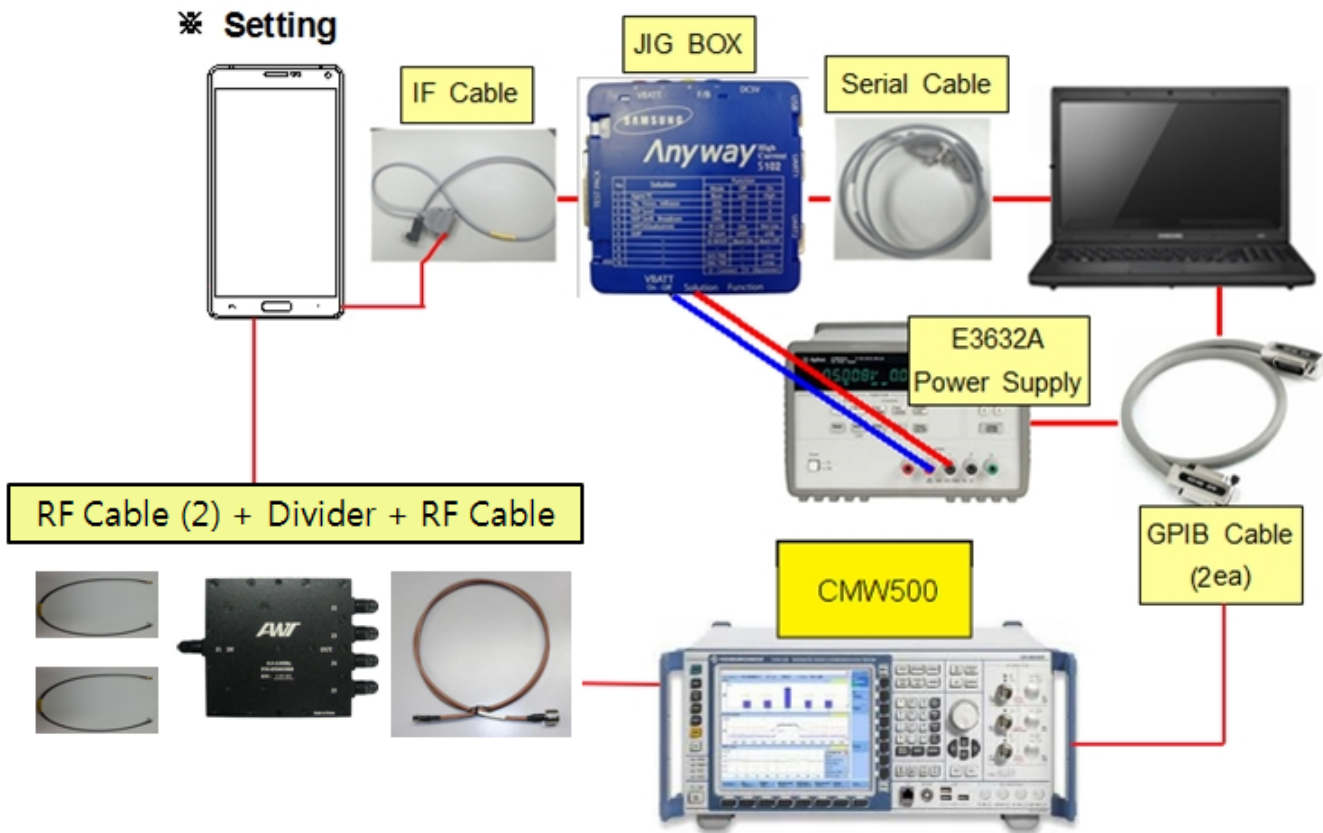
6-5. RF Calibration

6-5-1. Required items in order to calibrate RF

- Installation program: RF Calibration Program
 - Daseul_Launcher_vx.x.xx.exe
 - Daseul_CAL_ALL_Runtime_x.x.xxx.x.CAB
 - Model File (SM-G925F_OPEN_CALIBRATION_VER_x.x.xxx.xx.CAB)

※ It is required to use the latest program.

- SM-G925F Mobile Phone
- E3632A Power Supply
- JIG BOX (GH81-11888A)
- Adapter (GH81-11888K)
- 2 RF Cable (GH81-11962D - 2ea)
- R&S CMW500
- GPIB Cable (2ea)
- IF Cable (GH81-10952A)
- UART Serial Cable

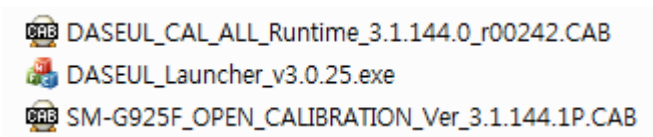


• Table of test cables

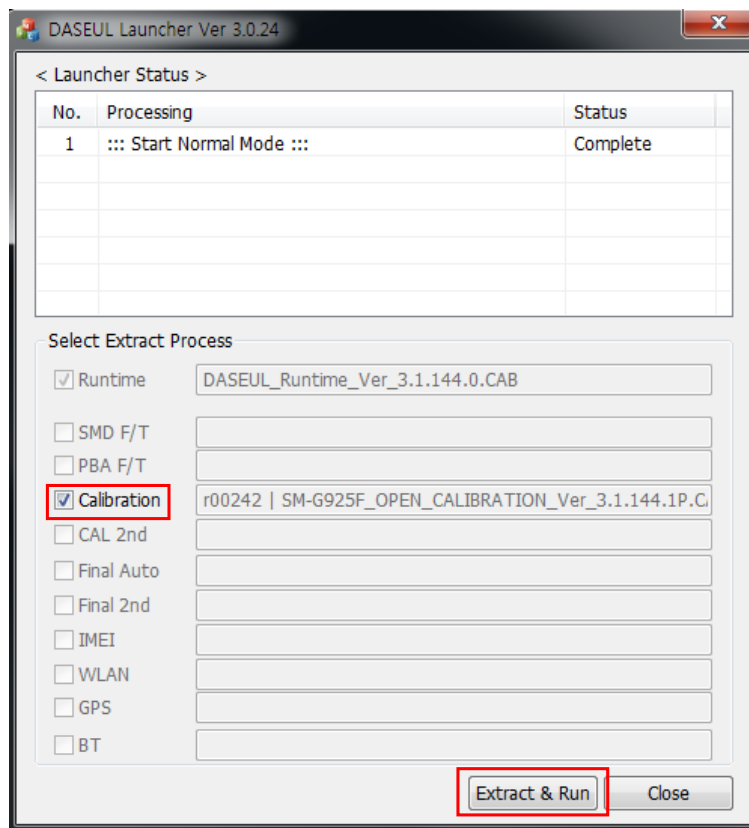
IF Cable	GH81-10952A	GH81-10631A	GH81-11171A	
	7 pin	11 pin	7 pin (Old)	
RF Cable	GH81-11962D	GH81-11962G	GH81-11962C	GH81-11456A
	1.35T, Short	1.35T, Long	1.6T, Short	1.6T, Long
4 Port Divider	GH81-11962A			
	Use / No use			

6-1-2. RF Calibration Program

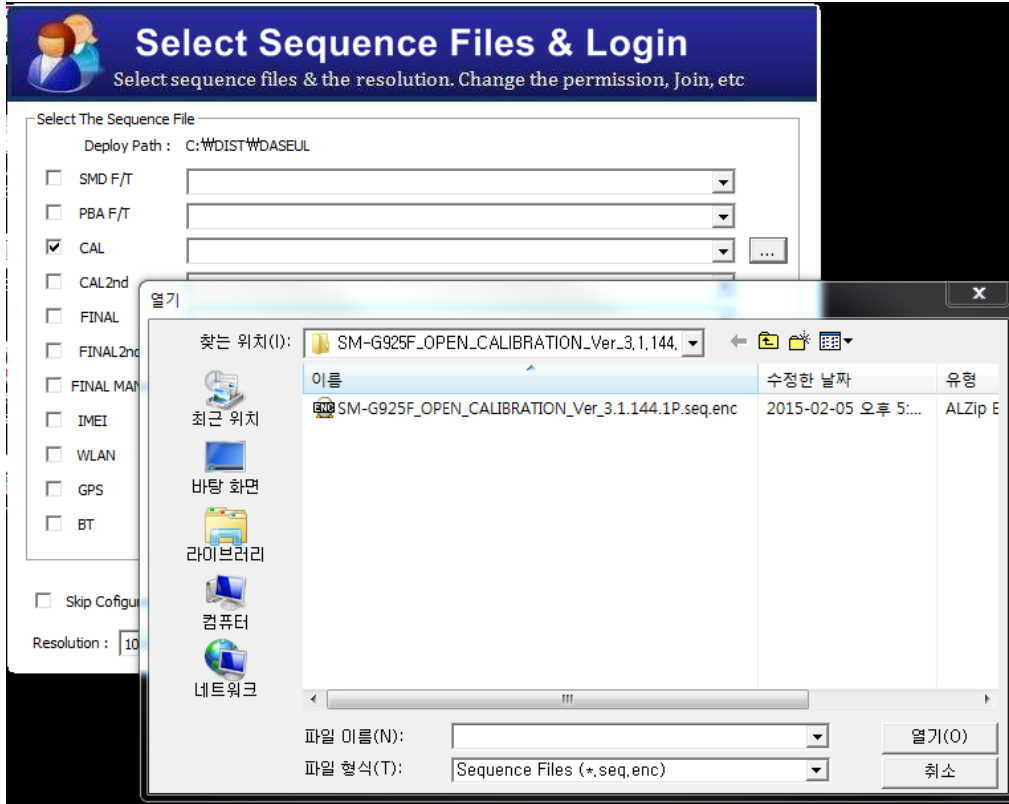
1. Run the RF Calibration Program Launcher, '[DASEUL_Launcher_vx.x.xx.exe](#)'.



2. Check the 'Calibration' menu, and select 'Extract & Run'.



3. Check the 'CAL' and open the model file, then select 'Start' button.



4. Change the Line Type to 'Block Cell' and disable 'Smart Cloud Cell'.

Set System Configuration
Set System Configuration Dialog...

Test Process

[Process]	[Master]	[Slave]
SMD F/T	<input type="checkbox"/>	<input type="checkbox"/>
PBA F/T	<input type="checkbox"/>	<input type="checkbox"/>
Calibration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calibration 2ND	<input type="checkbox"/>	<input type="checkbox"/>
Final Auto	<input type="checkbox"/>	<input type="checkbox"/>
Final Auto 2ND	<input type="checkbox"/>	<input type="checkbox"/>
Final Manual	<input type="checkbox"/>	<input type="checkbox"/>
IMEI Write	<input type="checkbox"/>	<input type="checkbox"/>
IMEI Check	<input type="checkbox"/>	<input type="checkbox"/>
MDL +2nd Check	<input type="checkbox"/>	<input type="checkbox"/>
MDL Rework	<input type="checkbox"/>	<input type="checkbox"/>
IMEI Read	<input type="checkbox"/>	<input type="checkbox"/>
STA Write	<input type="checkbox"/>	<input type="checkbox"/>
STA Check	<input type="checkbox"/>	<input type="checkbox"/>
STA Reset	<input type="checkbox"/>	<input type="checkbox"/>
WLAN	<input type="checkbox"/>	<input type="checkbox"/>
GPS	<input type="checkbox"/>	<input type="checkbox"/>
BT	<input type="checkbox"/>	<input type="checkbox"/>
WLAN	<input type="checkbox"/>	<input type="checkbox"/>
Power Off-On before WLAN	<input type="checkbox"/>	<input type="checkbox"/>
Bluetooth	<input type="checkbox"/>	<input type="checkbox"/>
LCIA	<input type="checkbox"/>	<input type="checkbox"/>
Merge 2G3G Block Rad.	<input type="checkbox"/>	<input type="checkbox"/>

Test Condition

Calibration
Real CAL Cycle: on every
20 default CALs

Calibration Mode : FDT

CAL2nd Mode : FDT

Final
Supply RF Signal by : Conduction

Reset Loss Correction Count

Test Mode : Signaling

WLAN
Test Mode : WLAN

IMEI
Use RFSM
Use Second PC
Save ODS
Merge Felica Cal
OQC Reset
IBI Reset

System Config.

Language : English

Line Name : LINE(temp)

Line Type : Block Cell

Smart Cloud Cell

of Phone : 1

Start Number of UI : 1

Start Number of Jig : 1

IP Address : 10.244.247.23

SKD Mode

MultiSharing(CMWS)

Developer Mode

Advanced Separating(ADS)

Operation Condition

Operation Condition

IMEI SVC&Repair Option

Model Information

Hardware Config

Signal Loss Config.

Loss Calibration

Channel Config.

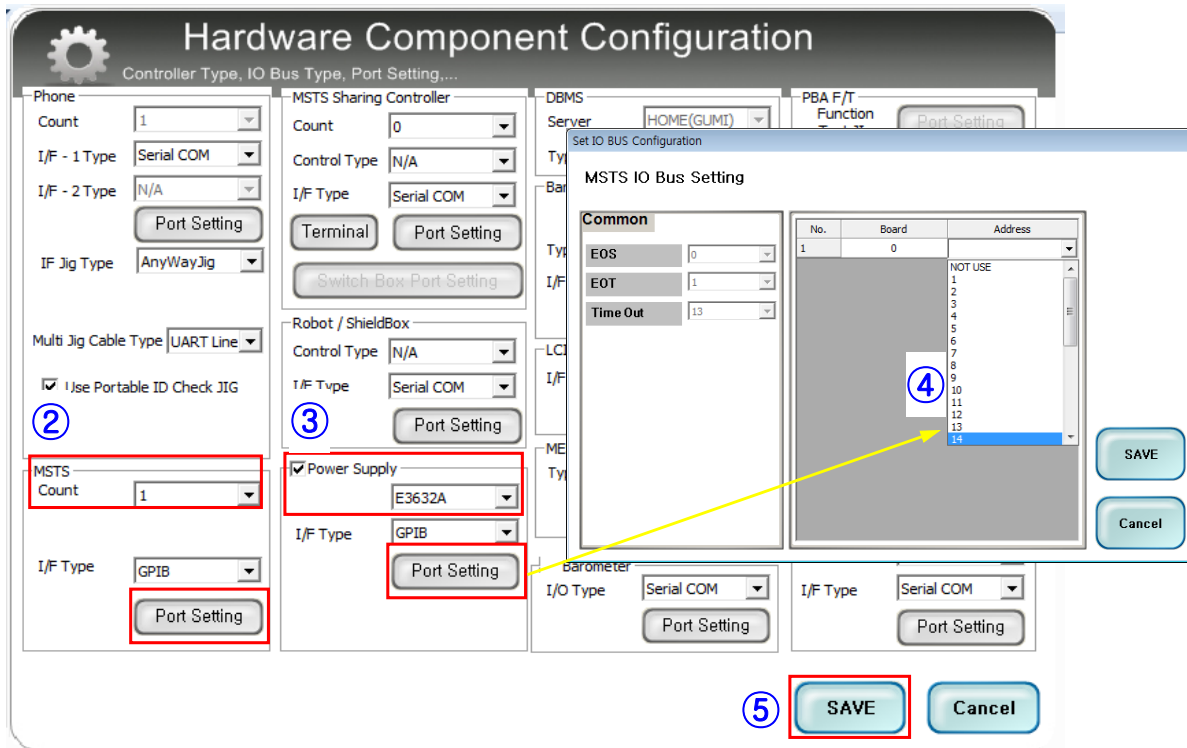
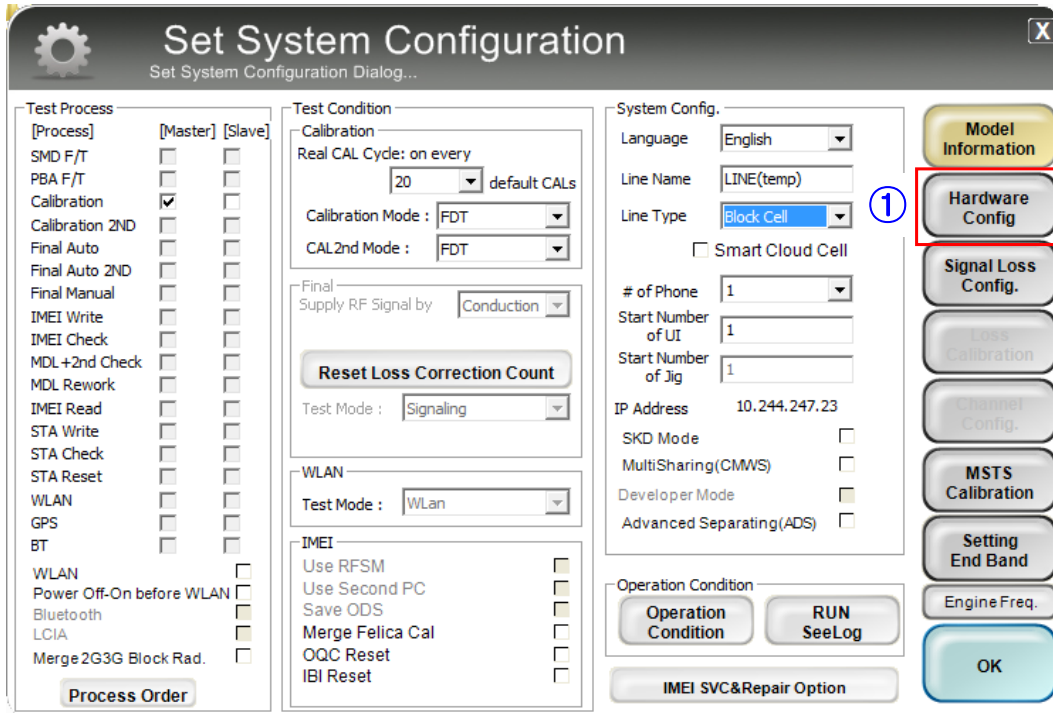
MSTS Calibration

Setting End Band

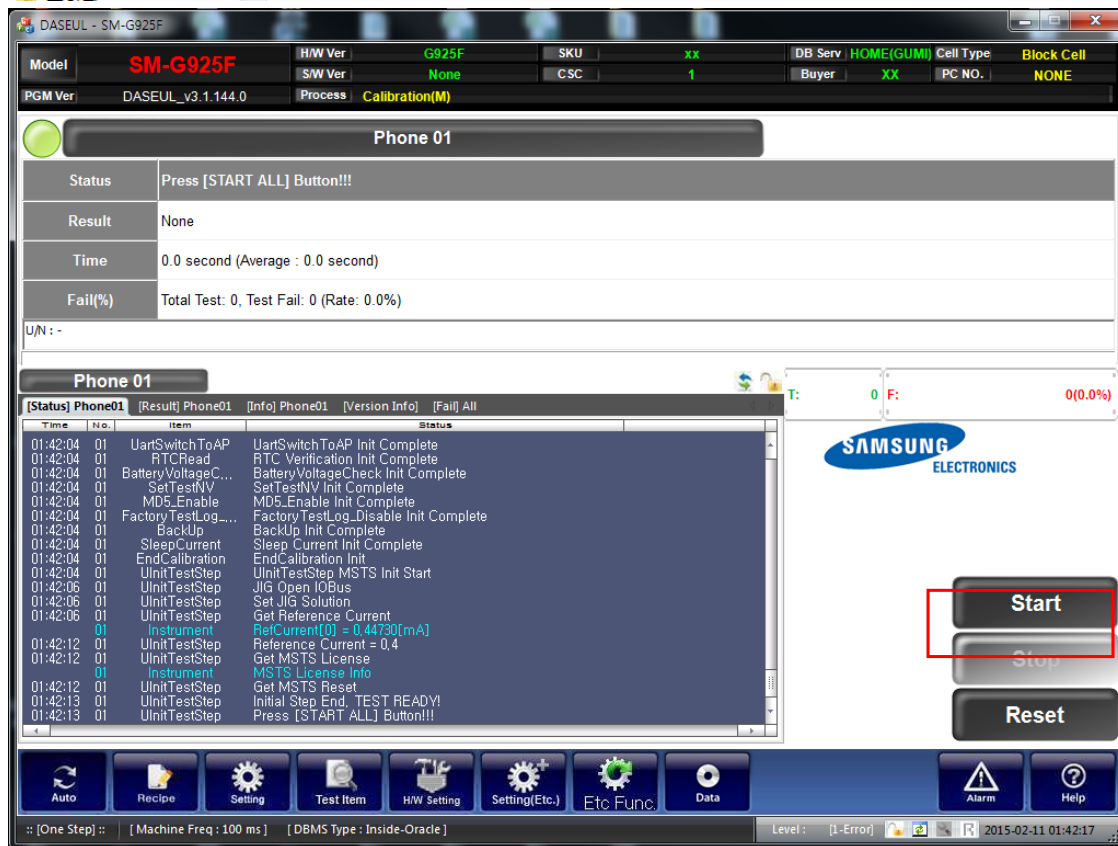
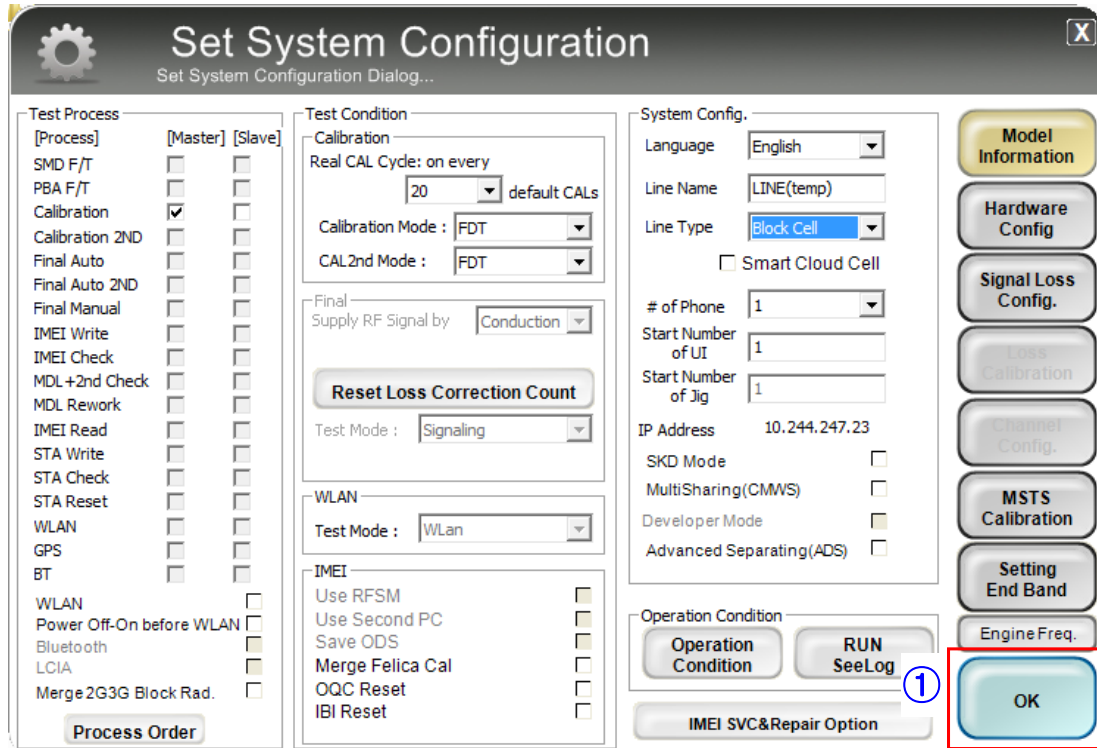
Engine Freq.

OK

- Set the GPIB address of MSTS(CMW500) and Power Supply(E3632A) to enter 'Hardware Config' and 'Save'. (Check the GPIB address of equipments in advance)



6. Press 'OK' to start RF Calibration after completing all settings.



7-1. Speaker Calibration

7-1-1 Notice

- It is necessary to calibrate the speaker for all cases of replacing the speakers.
- Target models : Galaxy A(A3/5/7), E(E5/7), S6 Series

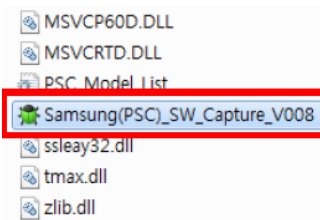
7-1-2 You need :

- Mobile device
- Laptop or Note PC
- Anyway Jig
- UART Serial Cable
- IF Test Cable (Different by models)

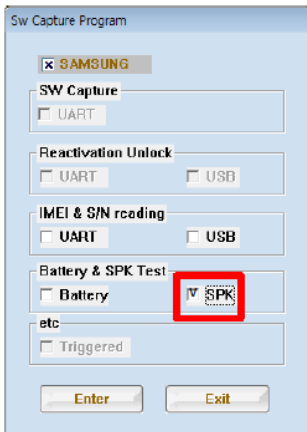
7-1-3 Lay-out



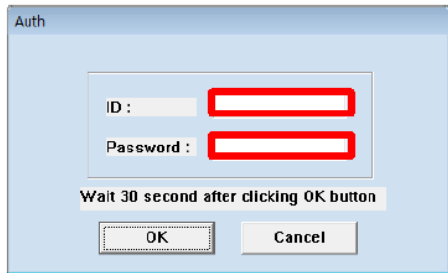
7-1-4 How to Calibrate Speaker



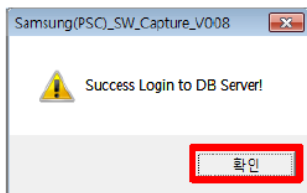
① Run 'Samsung(PSC)_SW_Capture_V008.exe'.



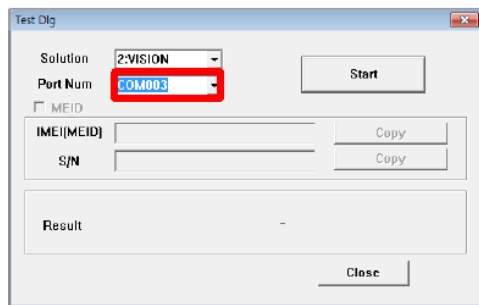
② Check 'SPK' item in the box.



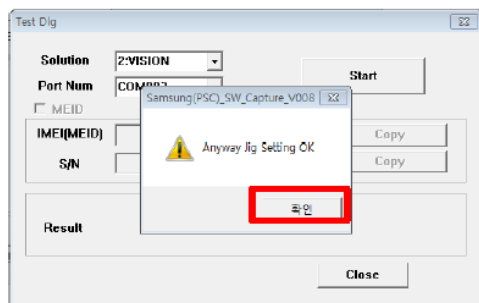
③ Input GSPN ID and Password, then press 'OK'.



④ Confirm Login to DB Server to press '확인'.

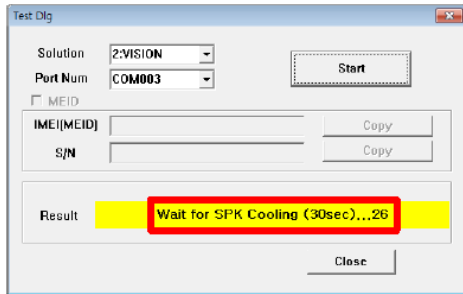


⑤ Set Port Number and press 'Start'.

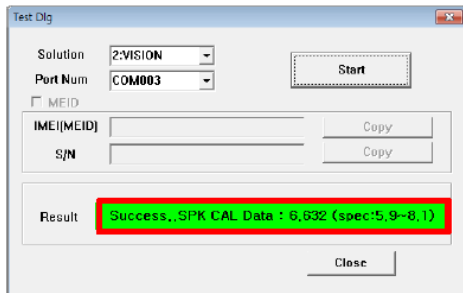


⑥ Confirm the Anyway Jig Setting to press '확인'.

⑦ Connect Mobile device to IF Test cable,
then power on to press power key.
※ Phone should be powered off before test.



⑦ Speaker Calibration will start within 30 seconds after Booting complete.
※ LCD must be turned on in order to test properly.



⑧ Confirm whether the Speaker Calibration is done successfully.

7-2. Battery Accumulated Usage Initialization

7-2-1 Notice

- It is necessary to initialize the battery accumulated usage for all cases of replacing the batteries.
- Target models : Embedded-Battery Models >> Galaxy A(A3/5/7), E(E5/7), S6 Series

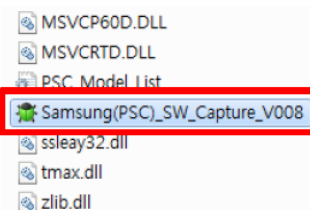
7-2-2 You need :

- Mobile device
- Laptop or Note PC
- Anyway Jig
- UART Serial Cable
- IF Test Cable (Different by models)

7-2-3 Lay-out



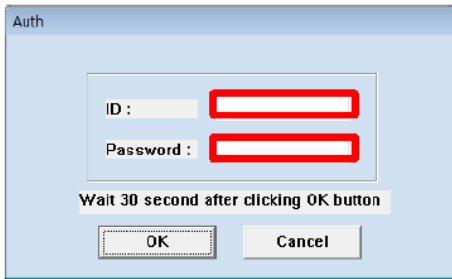
7-2-4 How to Initialize Battery Accumulated Usage



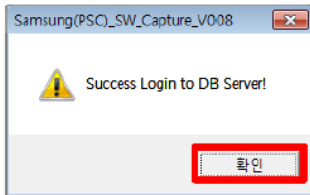
① Run 'Samsung(PSC)_SW_Capture_V008.exe'.



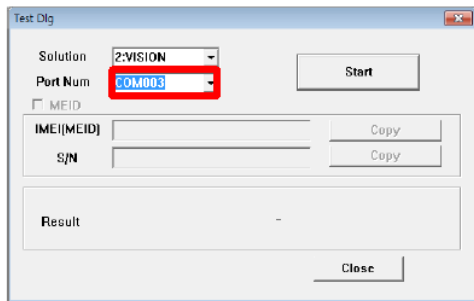
② Check 'Battery' item in the box.



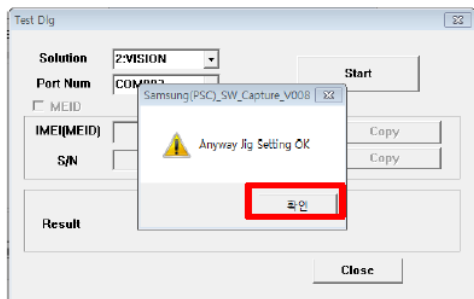
③ Input GSPN ID and Password, then press 'OK'.



④ Confirm Login to DB Server to press '확인'.



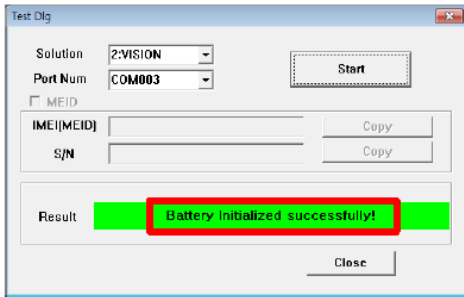
⑤ Set Port Number and press 'Start'.



⑥ Confirm the Anyway Jig Setting to press '확인'.

⑦ Connect Mobile device to IF Test cable, then power on to press power key.

※ Phone should be powered off before test.



⑦ Battery Accumulated Usage Initialization will start as soon as Booting complete.
 ※ LCD must be turned on in order to test properly.



*Estimated Battery Cycle value: 0

⑧ Confirm whether 'Estimated Battery Cycle' is '0' after input key string *#0228#.