2. Specification

2-1. Radio Frequency & Channel

1) LTE BAND frequency

Equa.	Freq. Range	CH Range
FUL = FUL_low+0.1(NUL-NOffs-UL)	LB1 : 1920 ~ 1980	18000≤N≤18599
	LB2 : 1850 ~ 1910	18600≤N≤19199
	LB3 : 1710 ~ 1785	19200≤N≤19949
	LB4 : 1710 ~ 1755	19950≤N≤20399
	LB5 : 824 ~ 849	20400≤N≤20649
	LB7 : 2500 ~ 2570	20750≤N≤21449
	LB8 : 880 ~ 915	21450≤N≤21799
	LB12 : 699 ~ 716	23010≤N≤23179
	LB13 : 777 ~ 787	23180≤N≤23279
	LB17 : 704 ~ 716	23730≤N≤23849
	LB20 : 832 ~ 862	24150≤N≤24449
	LB28 : 703 ~ 748	27210≤N≤27659
	LB38 : 2570 ~ 2620	37750≤N≤38249
	LB40 : 2300 ~ 2400	38650≤N≤39649
	LB66 : 1710 ~ 1780	131972≤N≤132671
FDL = FDL_low+0.1(NDL-NOffs-DL)	LB1 : 2110 ~ 2170	0≤N≤599
	LB2 : 1930 ~ 1990	600≤N≤1199
	LB3 : 1805 ~ 1880	1200≤N≤1949
	LB4 : 2110 ~ 2155	1950≤N≤2399
	LB5 : 869 ~ 894	2400≤N≤2649
	LB7 : 2620 ~ 2690	2750≤N≤3449
	LB8 : 925 ~ 960	3450≤N≤3799
	LB12 : 729 ~ 746	5010≤N≤5179
	LB13 : 746 ~ 756	5180≤N≤5279
	LB17 : 734 ~ 746	5730≤N≤5849
	LB20 : 791 ~ 821	6150≤N≤6449
	LB28 : 758 ~ 803	9210≤N≤9659
	LB38 : 2570 ~ 2620	37750≤N≤38249
	LB41 : 2496 ~ 2690	39650≤N≤41589
	LB66 : 2110 ~ 2200	66436≤N≤67335

2. Specification

2) WCDMA BAND frequency

Equa.	Freq. Range	CH Range
Tx = N*0.2	WB1 : 1920 ~ 1980	9612≤N≤9888
	WB2 : 1850 ~ 1910	9262≤N≤9538
	WB4 : 1710 ~ 1755	1312≤N≤1513
	WB5 : 824 ~ 849	4132≤N≤4233
	WB8 : 880 ~ 915	2712≤N≤2863
Rx = N*0.2	WB1 : 2110 ~ 2170	10562≤N≤10838
	WB2 : 1930 ~ 1990	9662≤N≤9938
	WB4 : 2110 ~ 2155	1537≤N≤1738
	WB5 : 869 ~ 894	4357≤N≤4458
	WB8 : 925 ~ 960	2937≤N≤3088

3) GSM BAND frequency

Equa.	Freq. Range	CH Range
Tx = 824.2+0.2*(N-128)	GSM850 : 824 ~ 849	128≤N≤251
Tx = 890+0.2*(N-1024)	GSM900 : 880 ~ 915	975≤N≤1023
Tx = 1710.2+0.2*(N-512)	DCS : 1710 ~ 1785	512≤N≤885
Tx = 1850.2+0.2*(N-512)	PCS : 1850 ~ 1910	512≤N≤810
Rx = 869.2+0.2*(N-128)	GSM850 : 869 ~ 894	128≤N≤251
Rx = 935+0.2*(N-1024)	GSM900 : 925 ~ 960	975≤N≤1023
Rx = 1805.2+0.2*(N-512)	DCS : 1805 ~ 1880	512≤N≤885
Rx = 1930.2+0.2*(N-512)	PCS : 1930 ~ 1990	512≤N≤810

2. Specification

2-2. GSM / WCDMA / LTE General Specification

1) GSM BAND

Item		GSM 850	GSM 900	DCS1800	PCS1900
Freq. Band[MHz] Uplink/Downlink		824~849 869~894	880~915 925~960	1710~1785 1805~1880	1850~1910 1930~1990
ARFCN range		128~251	0~124 & 975~1023	512~885	512~810
Tx/Rx spacing		45 MHz	45 MHz	95 MHz	80 MHz
Mod. Bit rate/ Bit Period	GPRS	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us
Time Slot Period/Frame Period		576.9 us 4.615 ms	576.9 us 4.615 ms	576.9 us 4.615 ms	576.9 us 4.615 ms
Modulation	GPRS	0.3 GMSK	0.3 GMSK	0.3 GMSK	0.3 GMSK
MS Power	GPRS	33 dBm~5 dBm	33 dBm~5 dBm	30 dBm~0 dBm	30 dBm~0 dBm
Power Level	GPRS	5 pcl~19 pcl	5 pcl~19 pcl	0 pcl~15 pcl	0 pcl~15 pcl
Sensitivity		-102 dBm	-102 dBm	-100 dBm	-102 dBm
TDMA Mux		8	8	8	8
Cell Radius		3 Km	3 Km	2 Km	2 Km

2. Specification

2) WCDMA BAND

Item	WCDMA BAND1	WCDMA BAND2	WCDMA BAND4	WCDMA BAND5	WCDMA BAND8
Freq. Band[MHz] Uplink/Downlink	1920~1980 2110~2170	1850~1910 1930~1990	1710~1755 2110~2155	824~849 869~894	880~915 925~960
ARFCN range	9612~9888 10562~10838	9262~9538 9662~9938	1312~1513 1537~1738	781~4233 1006~4458	2712~2863 2937~3088
Tx/Rx spacing	190MHz	80MHz	400MHz	45MHz	45MHz
Mod. Bit rate/ Bit Period	3.84 Mcps/s	3.84 Mcps/s	3.84 Mcps/s	3.84 Mcps/s	3.84 Mcps/s
Time Slot Period/Frame Period	10ms	10ms	10ms	10ms	10ms
Modulation	UL : HQPSK DL : QPSK	UL : HQPSK DL : QPSK	UL : HQPSK DL : QPSK	UL : HQPSK DL : QPSK	UL : HQPSK DL : QPSK
MS Power	Max:23.0dBm (+1~-3)dBm Min:<-50dBm	Max:22.0dBm (+1~-3)dBm Min:<-50dBm	Max:21.5dBm (+1~-3)dBm Min:<-50dBm	Max:23.0dBm (+1~-3)dBm Min:<-50dBm	Max:23.0dBm (+1~-3)dBm Min:<-50dBm
Power Level	Class3	Class3	Class3	Class3	Class3
Sensitivity	-106.7dBm	-104.7dBm	-104.7dBm	-104.7dBm	-104.7dBm

2. Specification

3) LTE BAND

Band	Downlink (MHz)			Bandwidth	Uplink (MHz)			Duplex spacing
	Low	Middle	High	DL/UL (MHz)	Low	Middle	High	(MHz)
	Earfcn				Earfcn			
1	2110	2140	2170	60	1920	1950	1980	190
	0	300	599		18000	18300	18599	
2	1930	1960	1990	60	1850	1880	1910	80
	600	900	1199		18600	18900	19199	
3	1805	1842.5	1880	75	1710	1747.5	1785	95
	1200	1575	1949		19200	19575	19949	
4	2110	2132.5	2155	45	1710	1732.5	1755	400
	1950	2175	2399		19950	20175	20399	
5	869	881.5	894	25	824	836.5	849	45
	2400	2525	2649		20400	20525	20649	
6	875	880	885	10	830	835	840	45
	2650	2700	2749		20650	20700	20749	
7	2620	2655	2690	70	2500	2535	2570	120
	2750	3100	3449		20750	21100	21449	
8	925	942.5	960	35	880	897.5	915	45
	3450	3625	3799		21450	21625	21799	
12	729	737.5	746	17	699	707.5	716	30
	5010	5095	5179		23010	23095	23179	
13	746	751	756	10	777	782	787	-31
	5180	5230	5279		23180	23230	23279	
17	734	740	746	12	704	710	716	30
	5730	5790	5849		23730	23790	23849	
20	791	806	821	30	832	847	862	-41
	6150	6300	6449		24150	24300	24449	
28	758	780.5	803	45	703	725.5	748	55
	9210	9435	9659		27210	27435	27659	
66	2110	2155	2200	90 / 70	1710	1745	1780	400
	66436	66886	67335		131972	132322	132671	
38 (TDD)	2570	2595	2620	50	-	-	-	-
	37750	38000	38249					
40 (TDD)	2300	2350	2400	100	-	-	-	-
	38650	39150	39649					

2. Specification

2-3. GSM BAND TX power control level

TX Power Control Level	GSM850	GSM900	TX Power Control level	DCS1800	TX Power Control evel	PCS1900
5	33±2 dBm	33±2 dBm	0	30±2 dBm	0	30±2 dBm
6	31±3 dBm	31±3 dBm	1	28±3 dBm	1	28±3 dBm
7	29±3 dBm	29±3 dBm	2	26±3 dBm	2	26±3 dBm
8	27±3 dBm	27±3 dBm	3	24±3 dBm	3	24±3 dBm
9	25±3 dBm	25±3 dBm	4	22±3 dBm	4	22±3 dBm
10	23±3 dBm	23±3 dBm	5	20±3 dBm	5	20±3 dBm
11	21±3 dBm	21±3 dBm	6	18±3 dBm	6	18±3 dBm
12	19±3 dBm	19±3 dBm	7	16±3 dBm	7	16±3 dBm
13	17±3 dBm	17±3 dBm	8	14±3 dBm	8	14±3 dBm
14	15±3 dBm	15±3 dBm	9	12±4 dBm	9	12±4 dBm
15	13±3 dBm	13±3 dBm	10	10±4 dBm	10	10±4 dBm
16	11±5 dBm	11±5 dBm	11	8±4 dBm	11	8±4 dBm
17	9±5 dBm	9±5 dBm	12	6±4 dBm	12	6±4 dBm
18	7±5 dBm	7±5 dBm	13	4±4 dBm	13	4±4 dBm
19	5±5 dBm	5±5 dBm	14	2±5 dBm	14	2±5 dBm
-	-	-	15	0±5 dBm	15	0±5 dBm

3. Product Function

Main Function

Item	Description
OS	Android V7.1
SM-J250F RF	2G : 850/900/1800 3G : 850/900/1900/2100 LTE : Band 1/3/5/7/8/20/38/40
SM-J250M RF	2G : 850/900/1800/1900 3G : Band 1/2/4/5/8 LTE : Band 1/2/3/4/5/7/8/12/13/17/28/66
SM-J250G RF	2G : 850/900/1800 3G : 850/900/1900/2100 LTE : Band 1/3/5/7/8/28/38/40
Battery	2,600mAh
Base Band	MSM8917 1.4GHz (Quad-Core)
Other RF	GPS, Glonass, Beidou, BT4.2, USB 2.0, WIFI 802.11 b/g/n 2.4GHz
Camera	8M+5M Camera
LCD	5.0" super AMOLED
RAM	1.5GB RAM + 16GB eMMC
Sensor	Accelerometer, Proximity Sensor
Accessory	Charger: 5V/1A Data cable : 0.8M USB-A Ejection Pin

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. Safety Precautions

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.

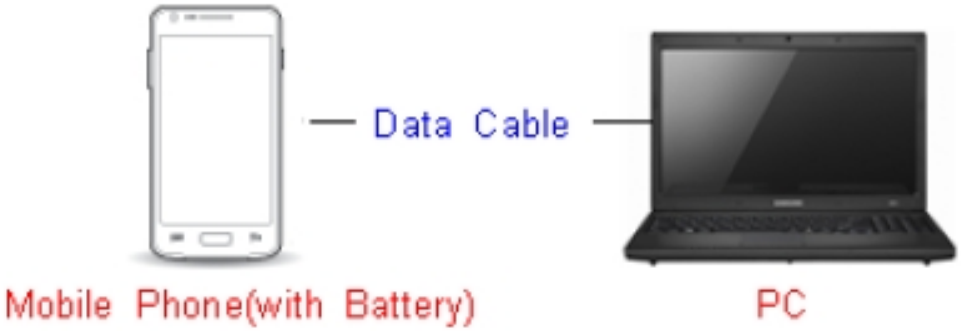
6. Level 1 Repair

6-1. S/W installation

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

- Installation program: Downloader Program (**Odin3 v3.12.5.exe**)
- Mobile Phone
- Data Cable
- Mobile device specific S/W: Binary files

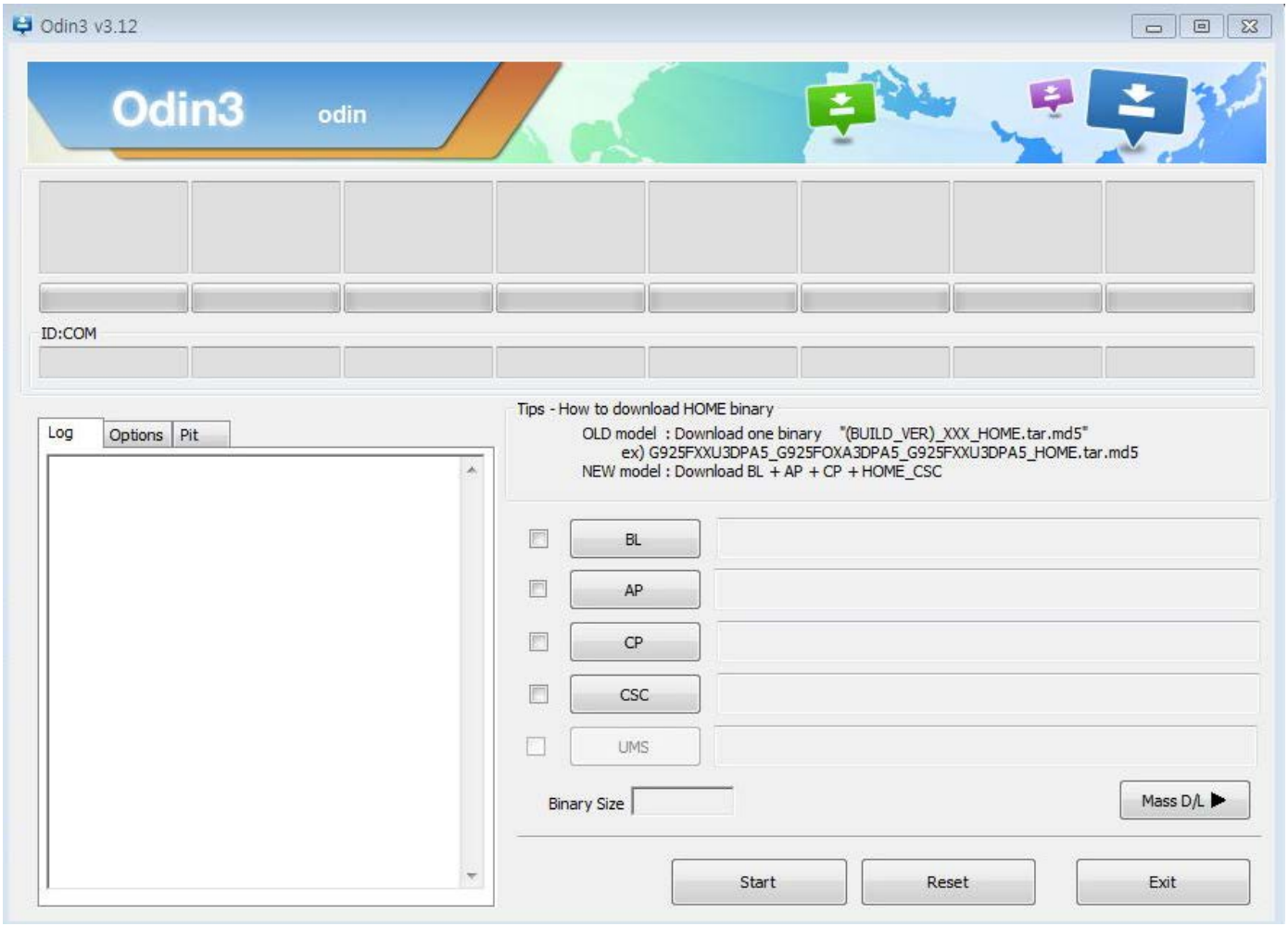
※ Settings



Data Cable : GH39-01710D

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

■ Open up the S/W Installation Program by executing the **"Odin3 v3.12.5.exe"**

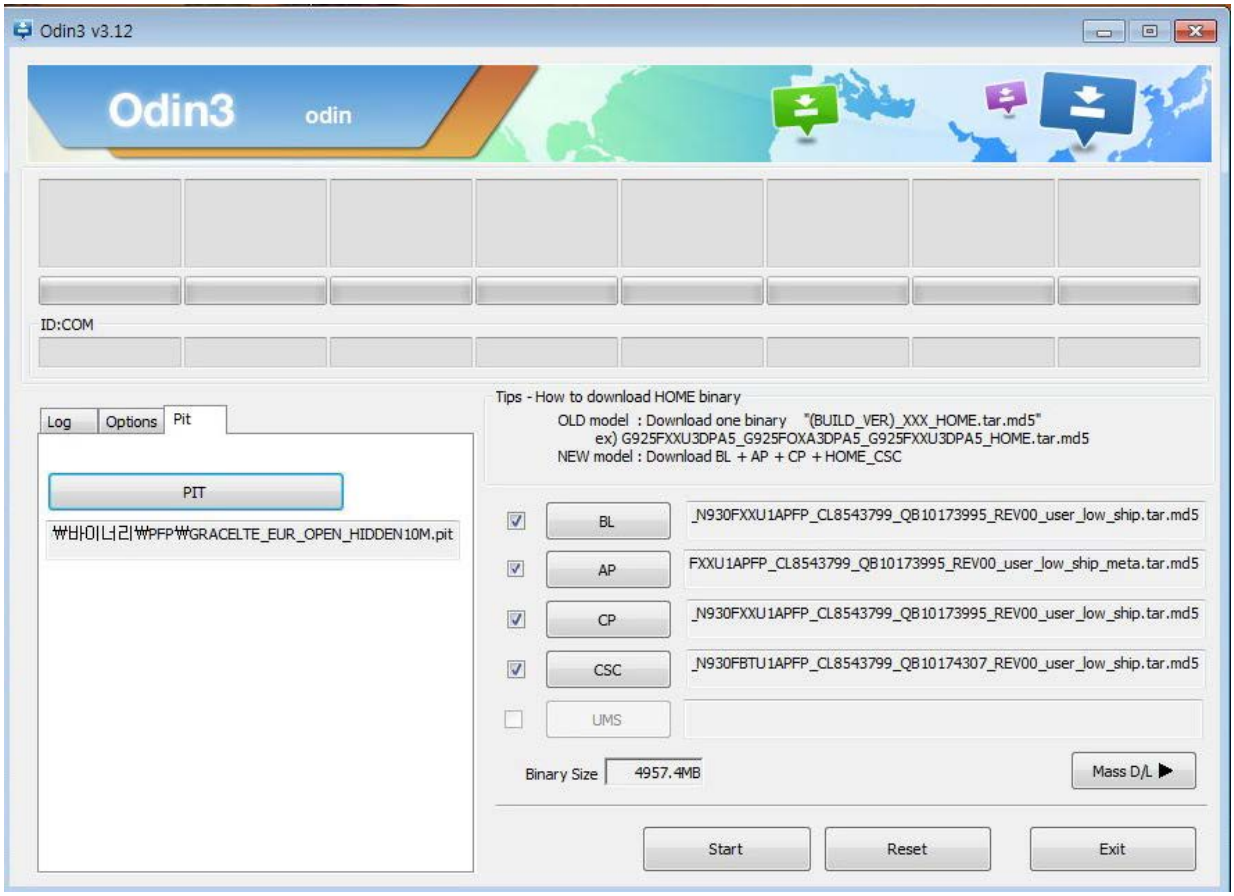


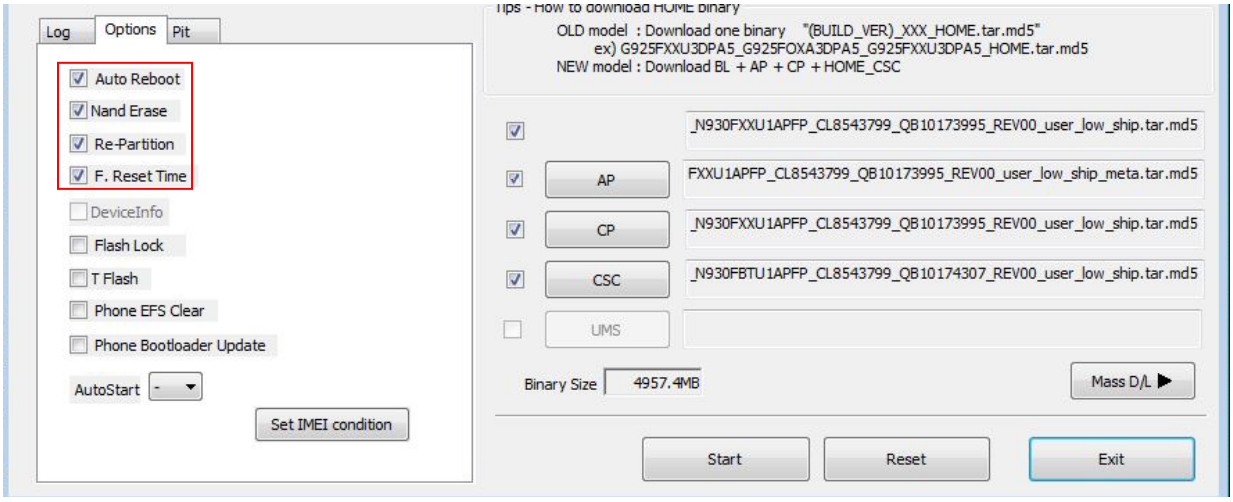
6. Level 1 Repair

1. Enable the check mark by click on the following options,

- Check Auto Reboot, Re-Partition, and F. Reset Time-
- Check PIT
- Check Nand Erase All
- Check BL, AP, CP, and CSC Files

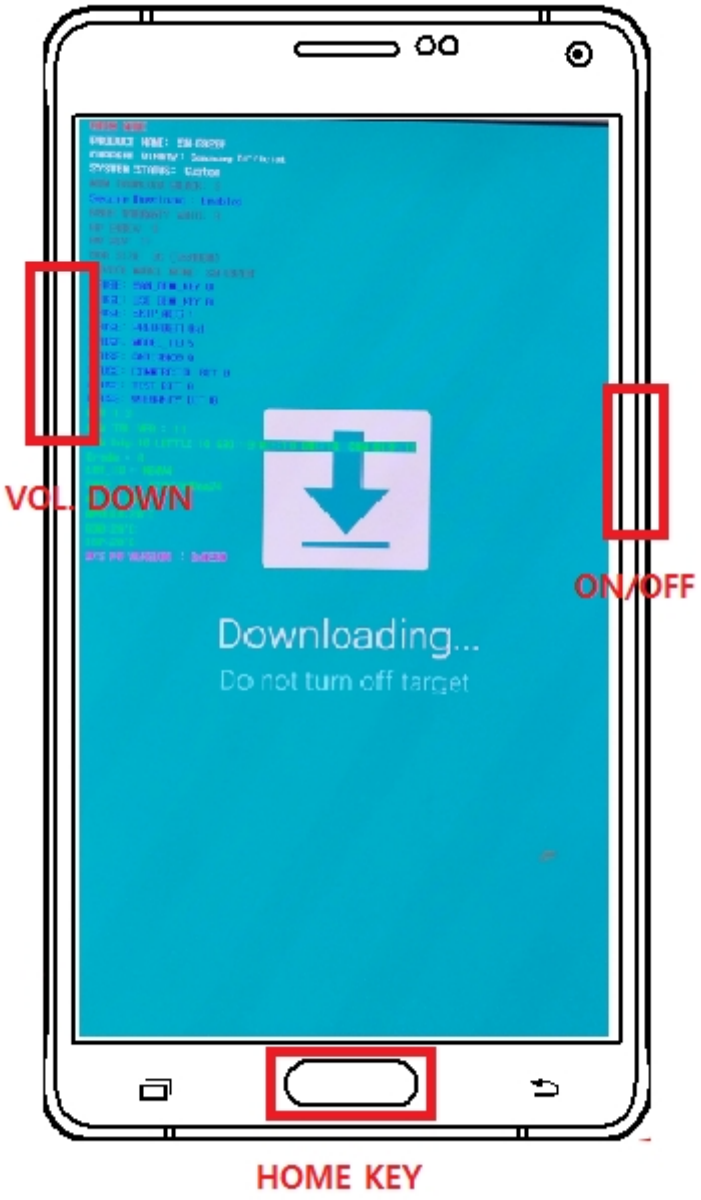
* Note : "Odin v3.12 or above" checks MD5 checksum just after file selection.





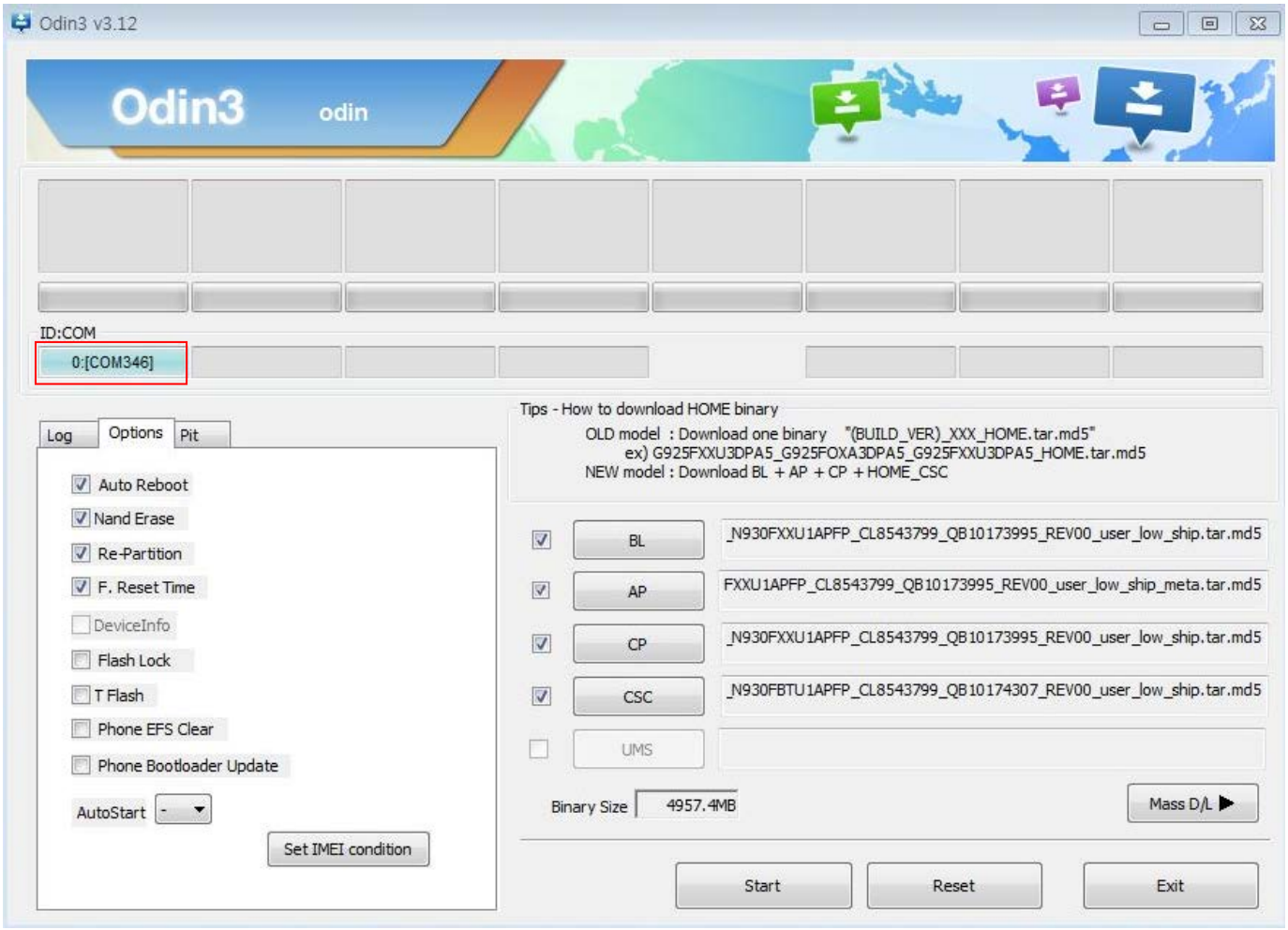
6. Level 1 Repair

2. Enter into Download Mode
- Enter into Download Mode by pressing Home button, Volume Down button and Power On/Off Button simultaneously followed by pressing Volume up button as a direction of the phone.



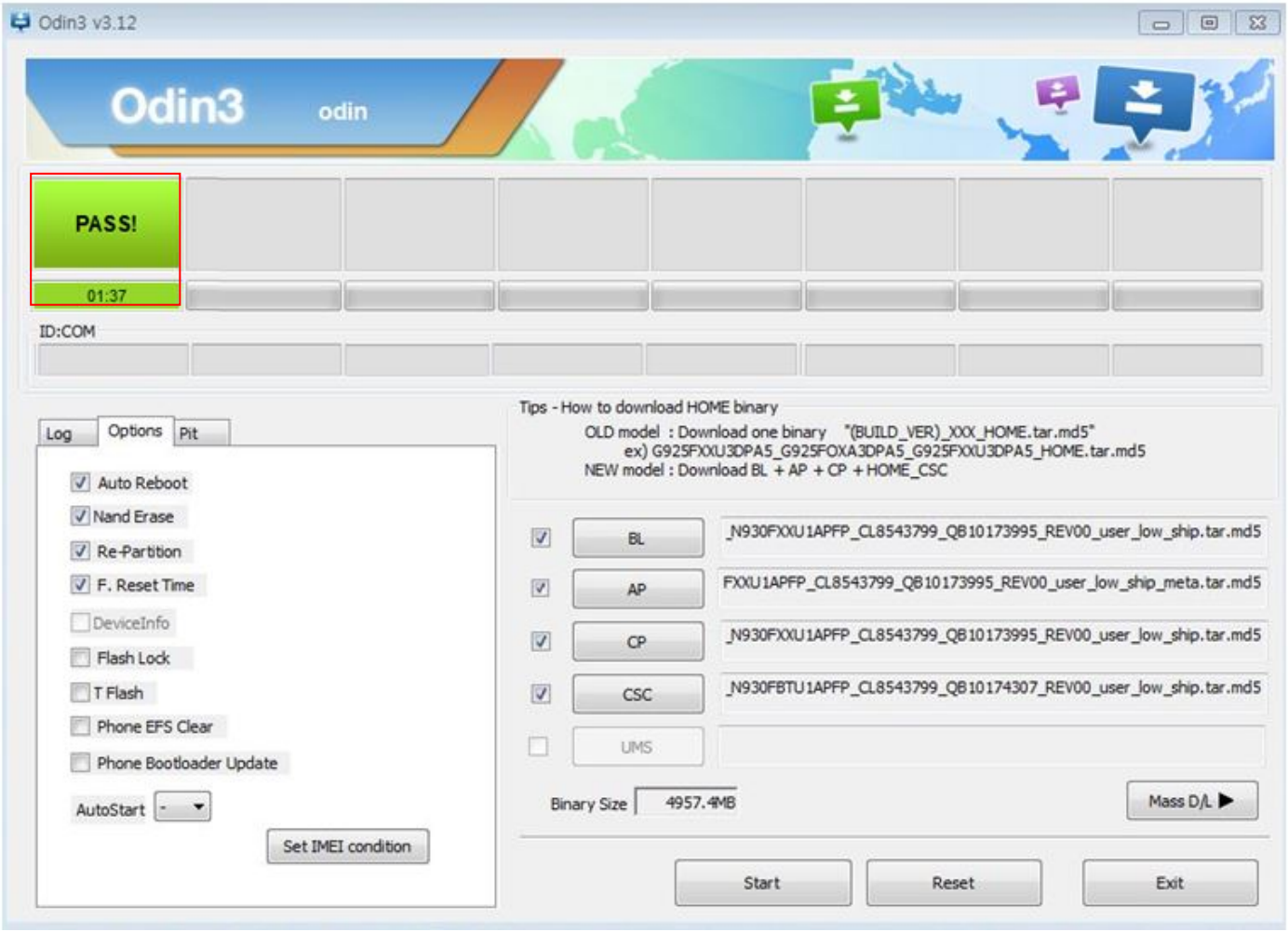
6. Level 1 Repair

3. Connect the device to PC via Data Cable.
Make sure that the one of communication ports [ID:COM] box is highlighted in sky blue.
The device is now connected with the PC and ready to download the binary files in it.



6. Level 1 Repair

4. Start downloading the binary files 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 files have 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#**

You can perform Factory Reset by Settings → Accounts → Backup and reset

※ Caution. Never disconnect during the S/W downloading.

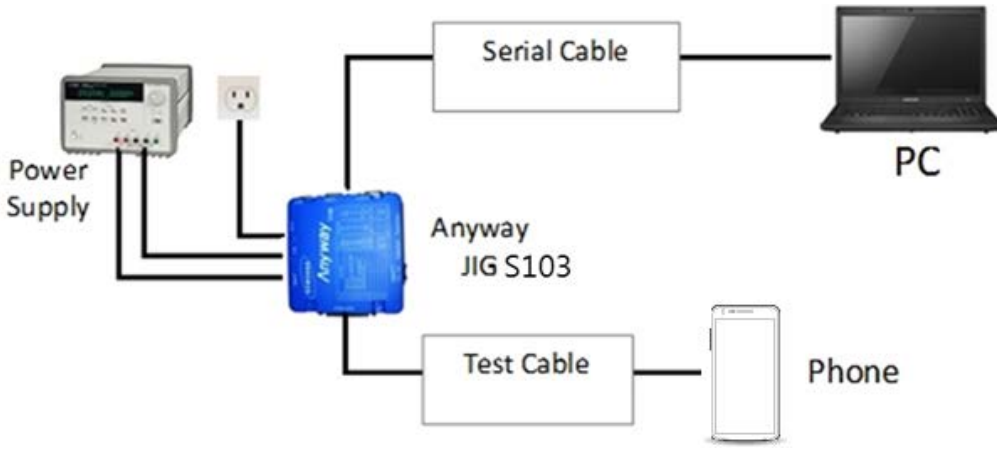
6. Level 1 Repair

6-2. IMEI writing

6-2-1. 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.

- H/W



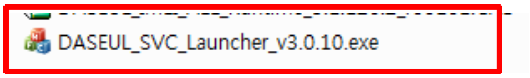
- S/W

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”
②Launcher	DASEUL_SVC_Launcher_v3_0_25 or higher -Uploaded on HHPsvc Notice
③ Runtime File	1. DASEUL_Runtime_Ver_3.1.299.0.CAB or higher -Uploaded on HHPsvc Notice 2. Make ‘ModelName’ folder at the same position with launcher & Runtime file.
④Model File	Copy Model File under the ‘Model Name’ folder

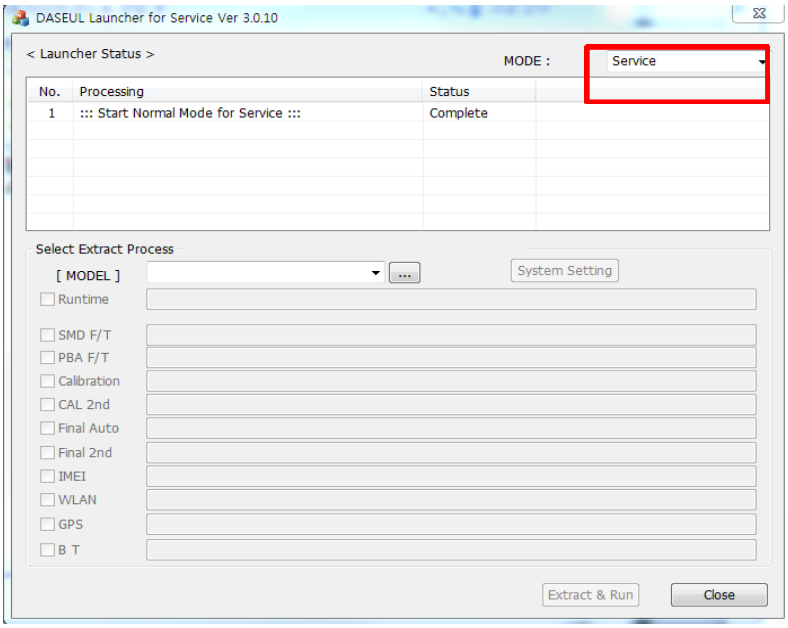
6. Level 1 Repair

6-2-2. IMEI writing Process

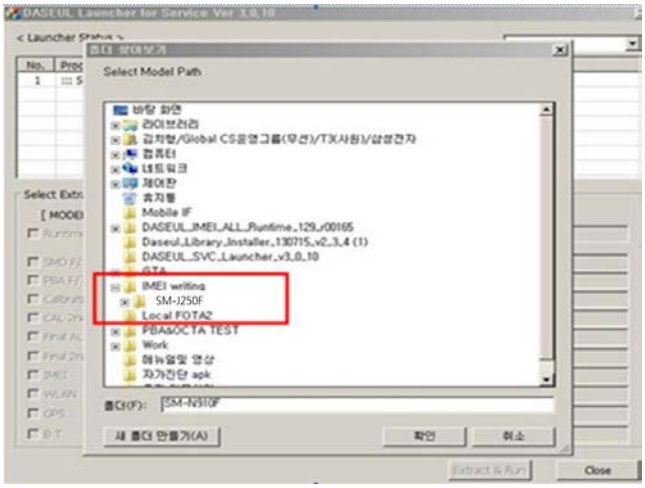
1. Run DASEUL_SVC_Launcher_v3.0.10.exe



2. Select Service Mode

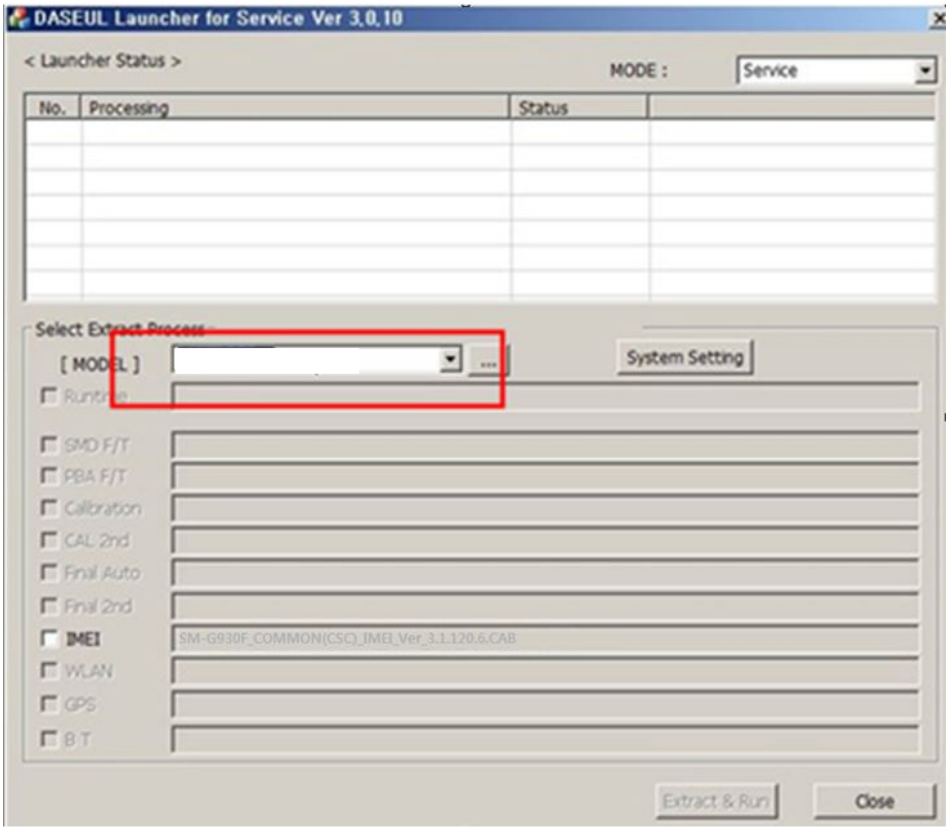


3. Click  and Select folder where the Launcher exists



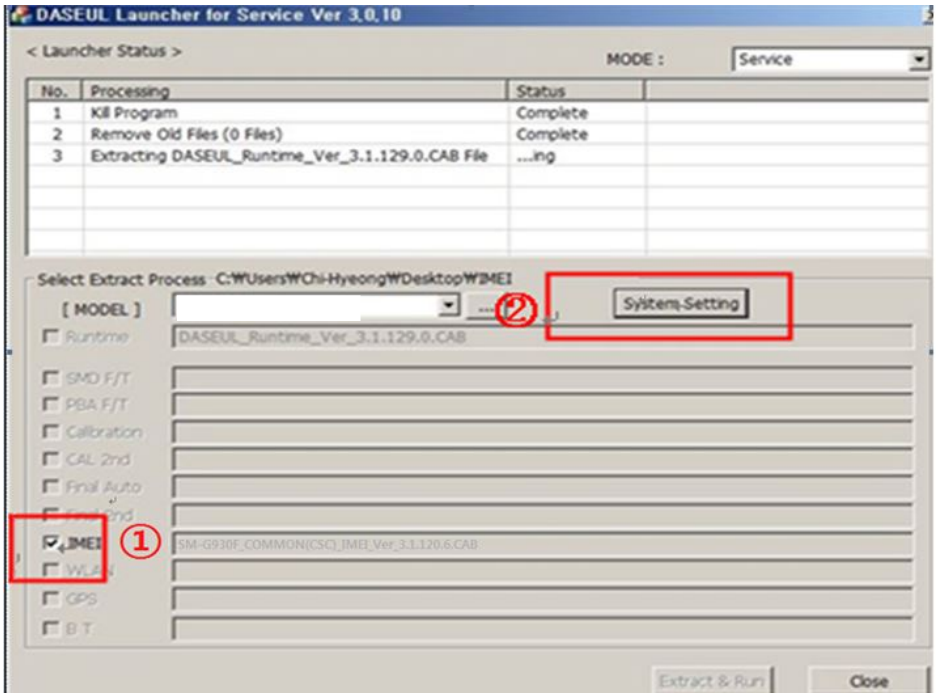
6. Level 1 Repair

4. Select Model



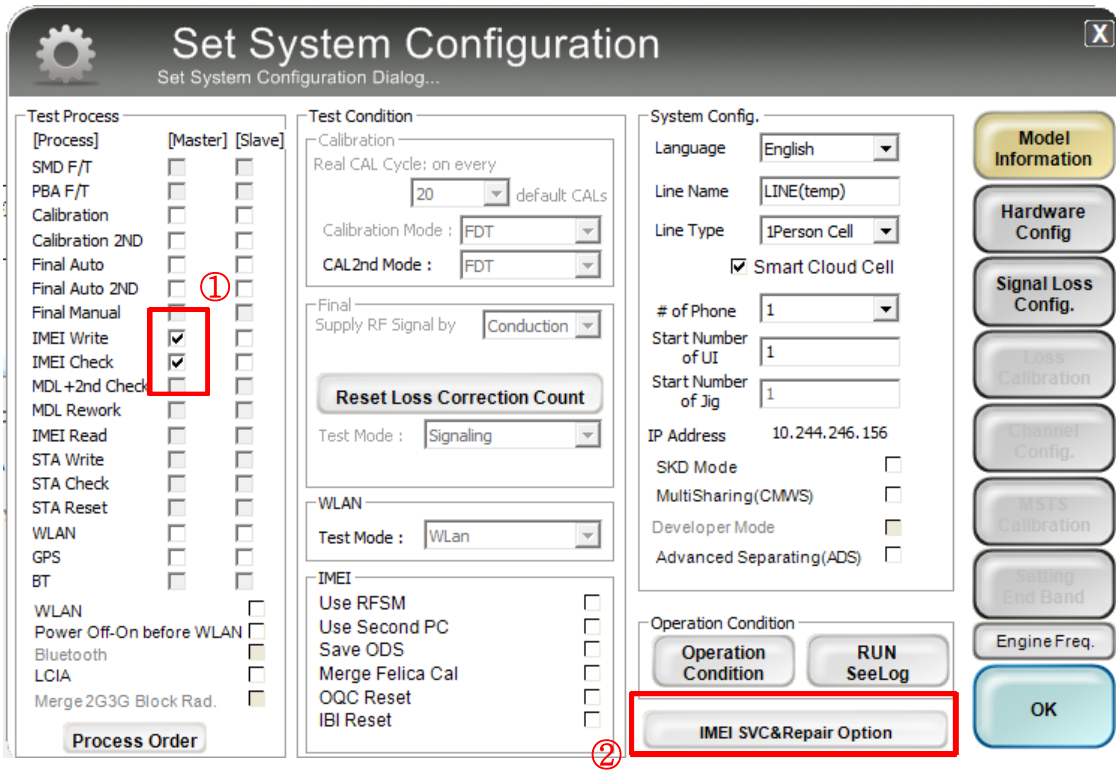
5. Check IMEI and click System Setting

※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.

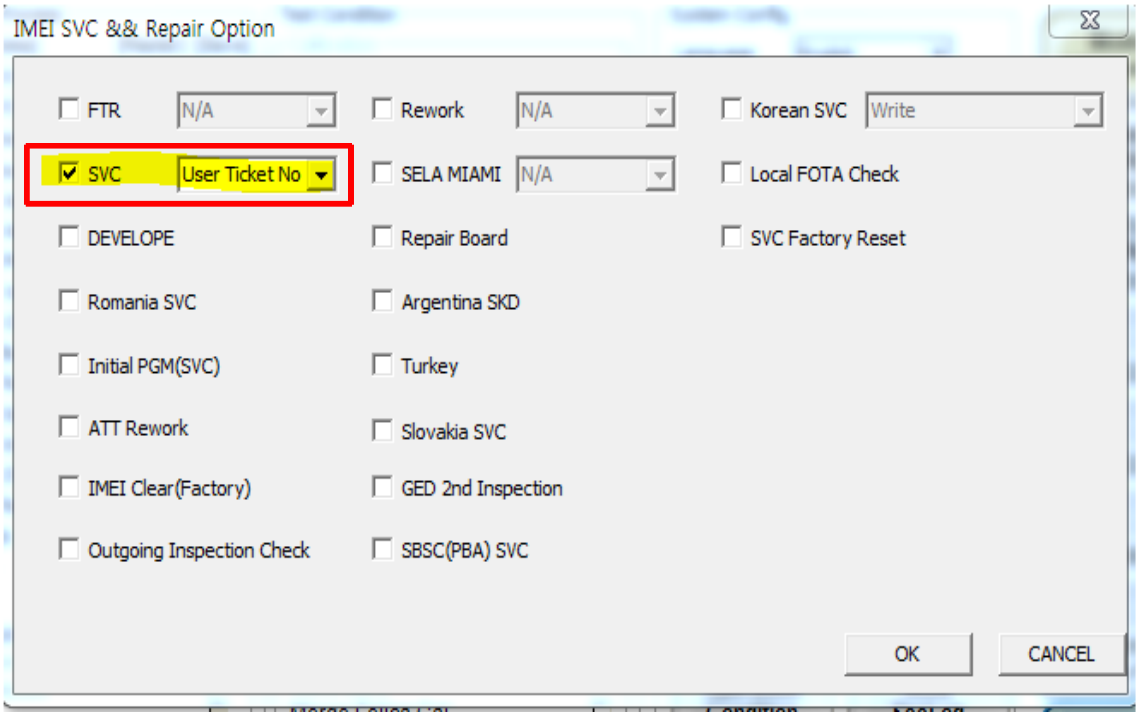


6. Level 1 Repair

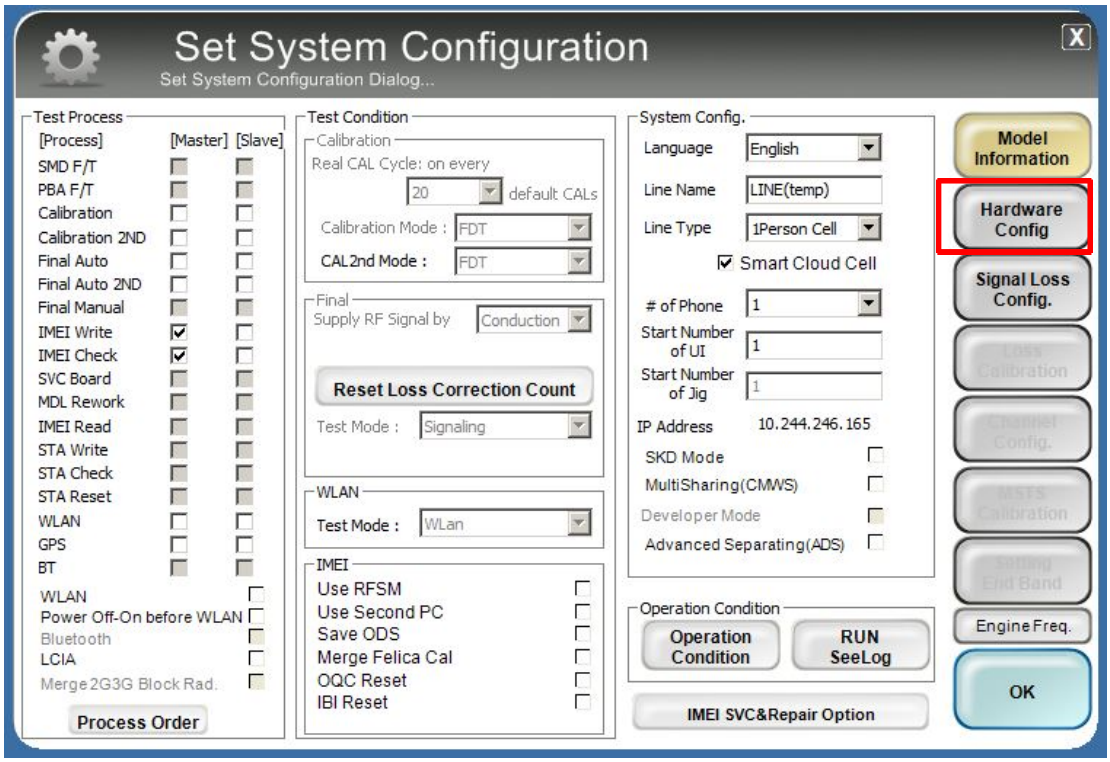
6. Check IMEI Write / IMEI Check and click IMEI SVC & Repair Option.



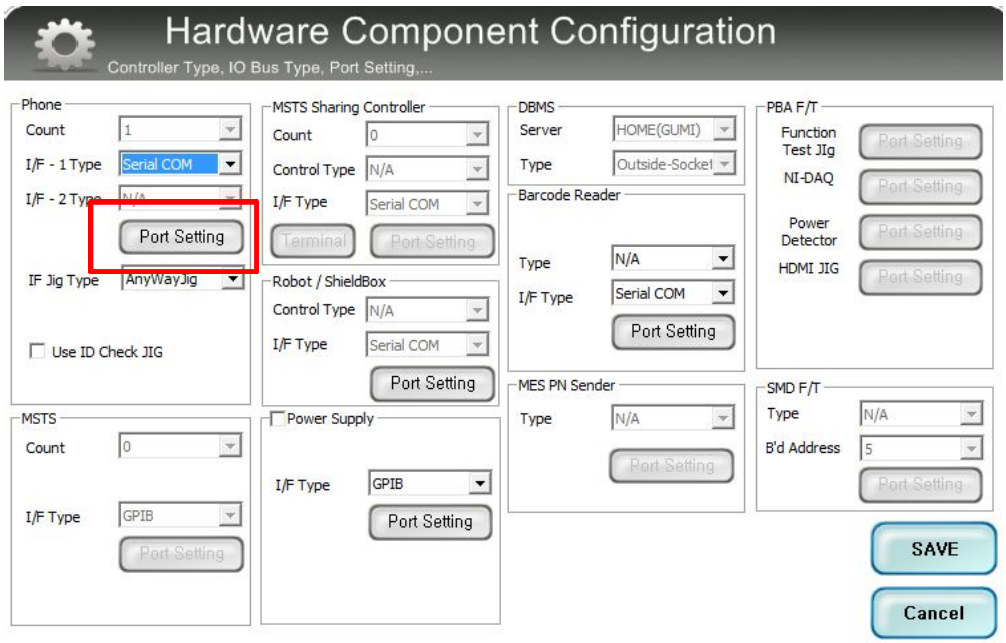
7. Check SVC , User Ticket No and click OK



8. Click Hardware Config

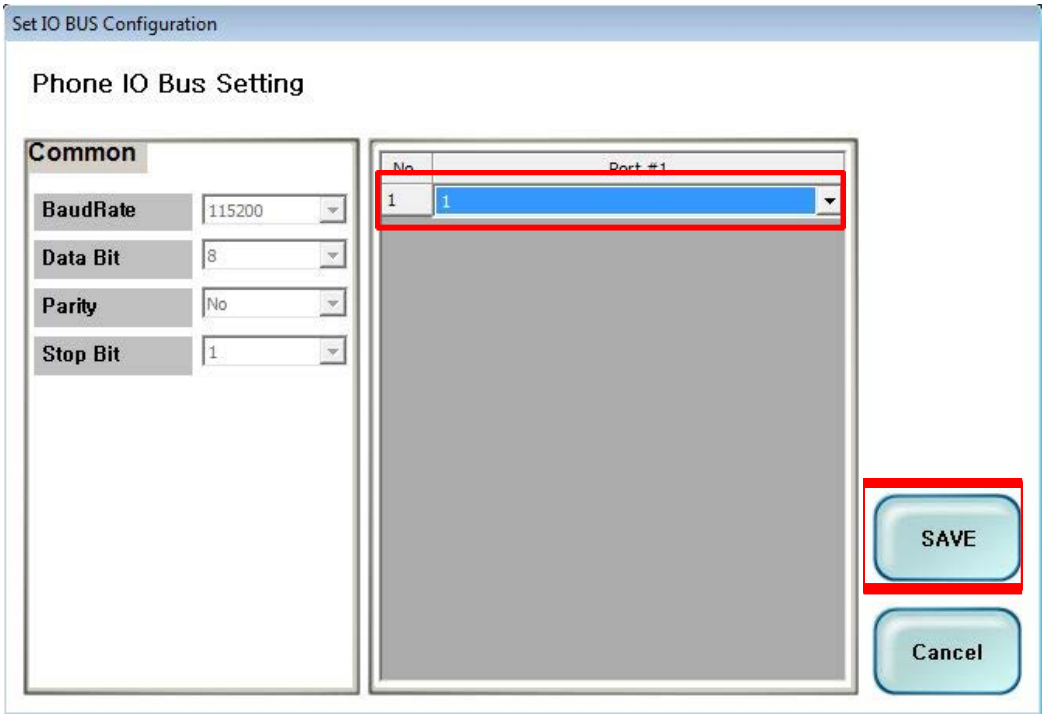


9. Click Port Setting

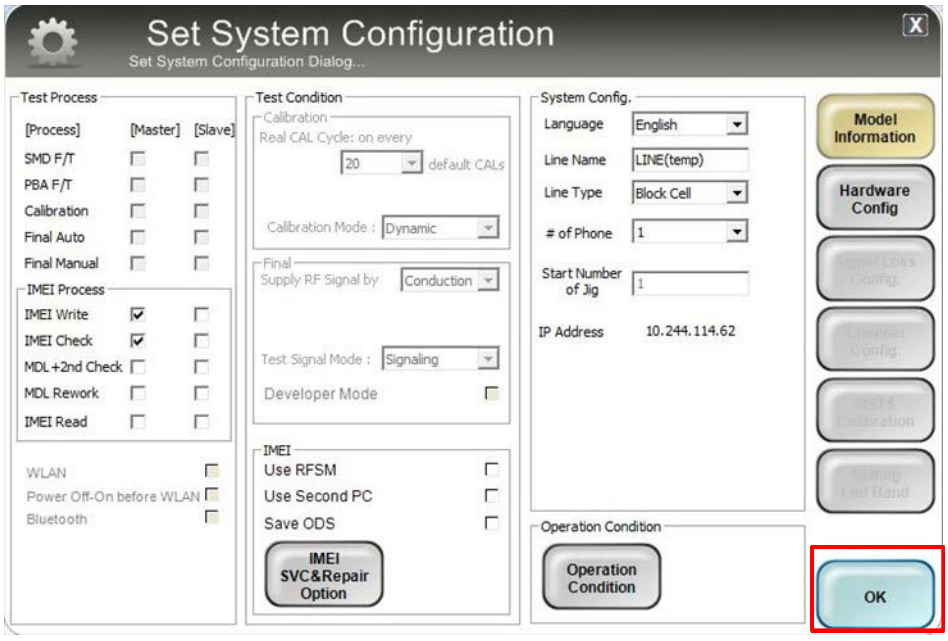


6. Level 1 Repair

10. Select Port Number and SAVE

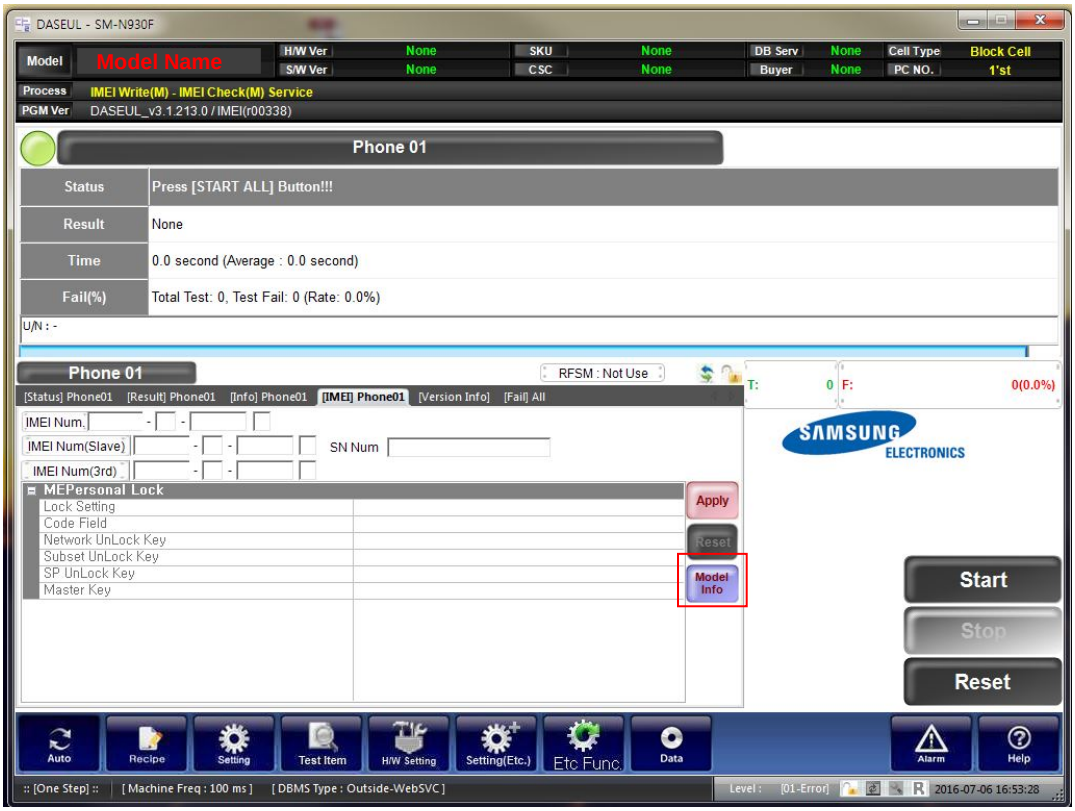


11.Click OK to proceed

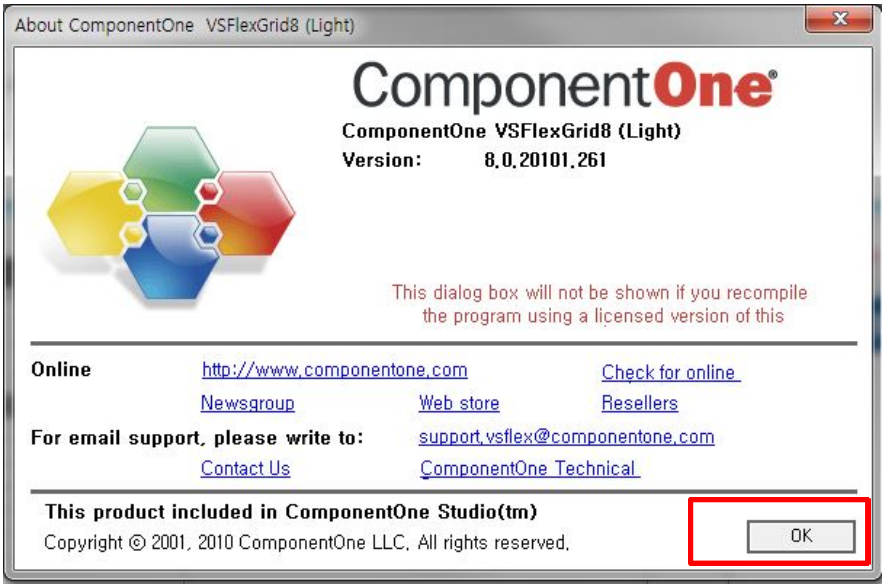


6. Level 1 Repair

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

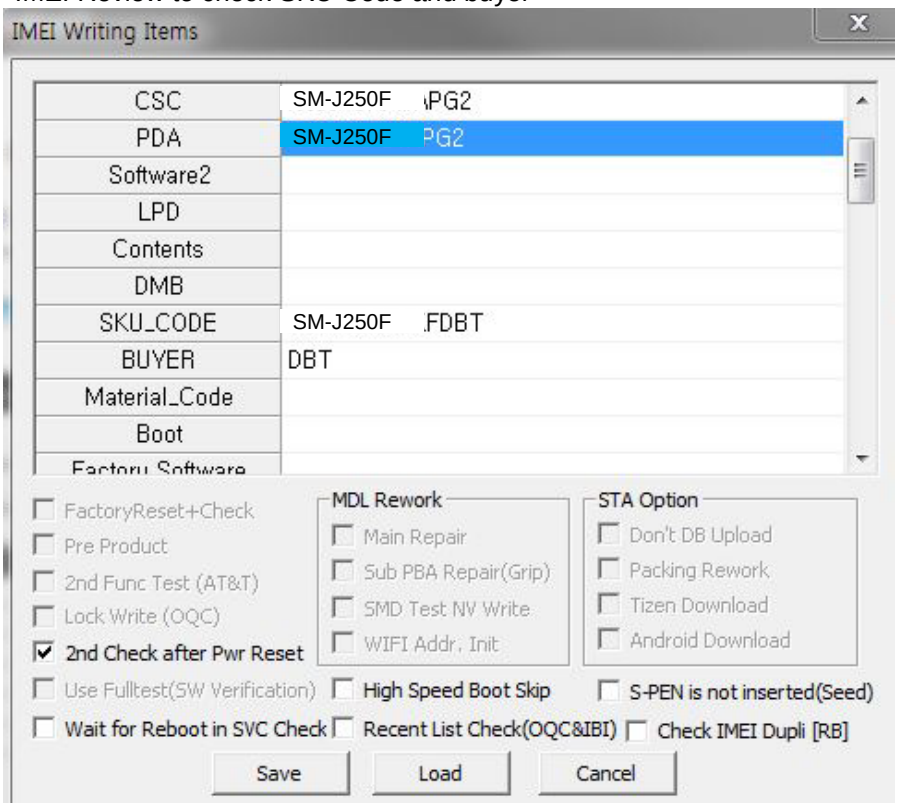


13. Click OK

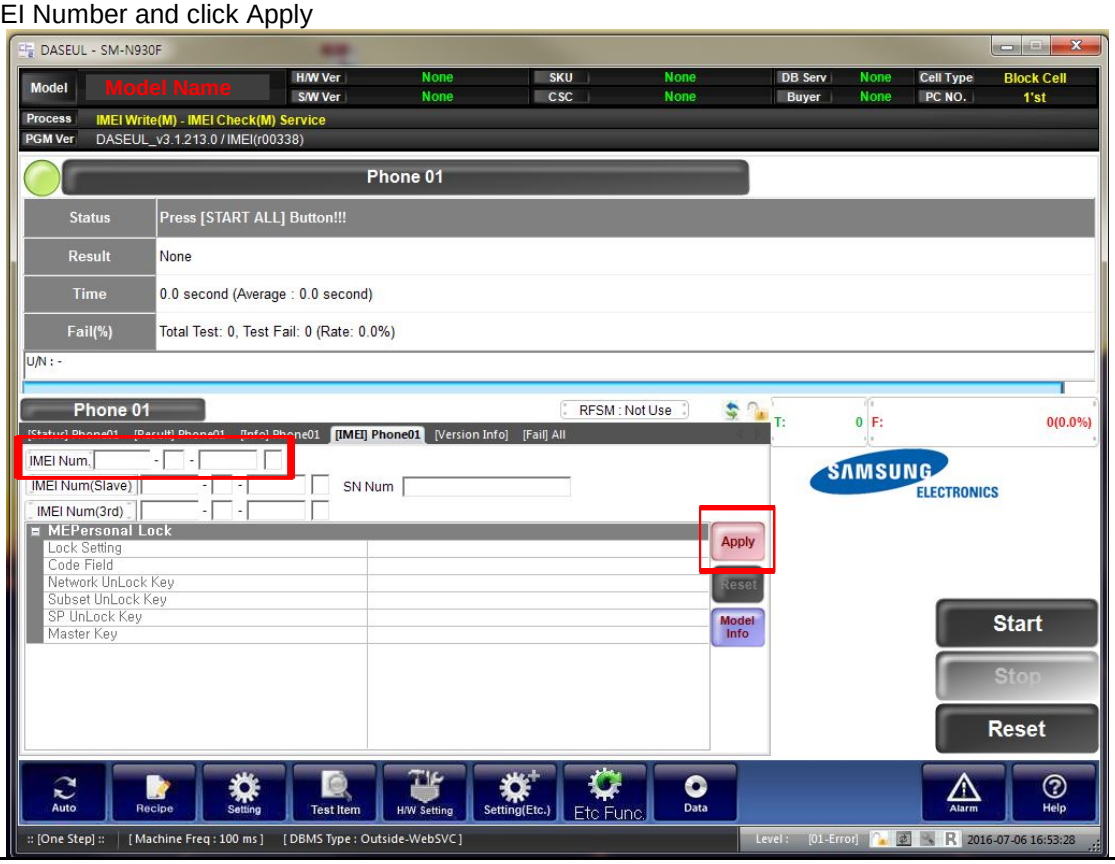


14. Input SKU_CODE and BUYER, then click Save button.

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

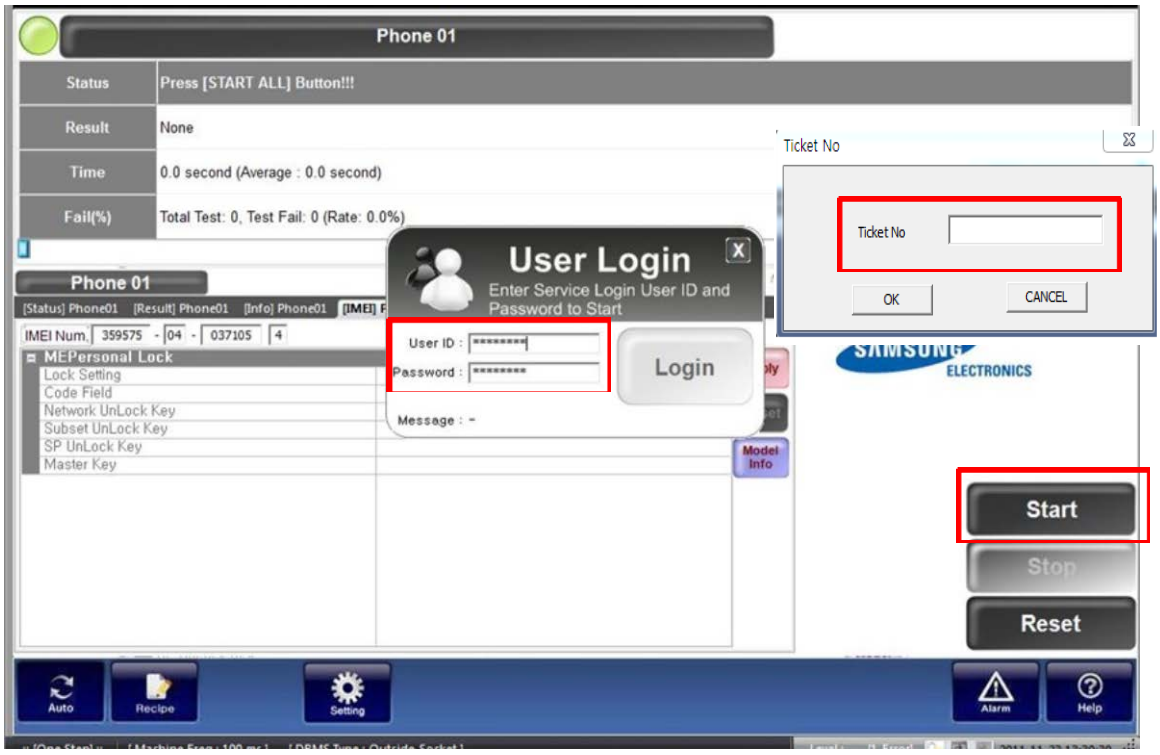


15. Input IMEI Number and click Apply



6. Level 1 Repair

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

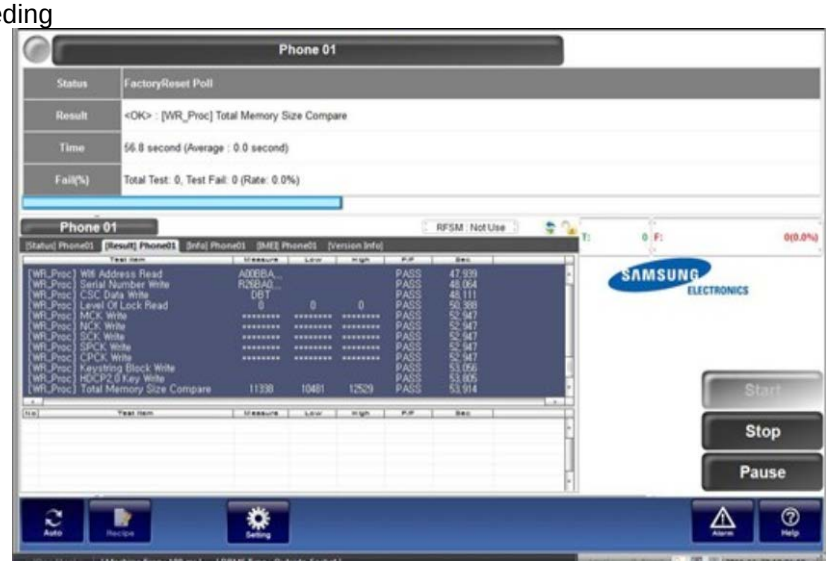


17. Connect the phone to Anyway JIG

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

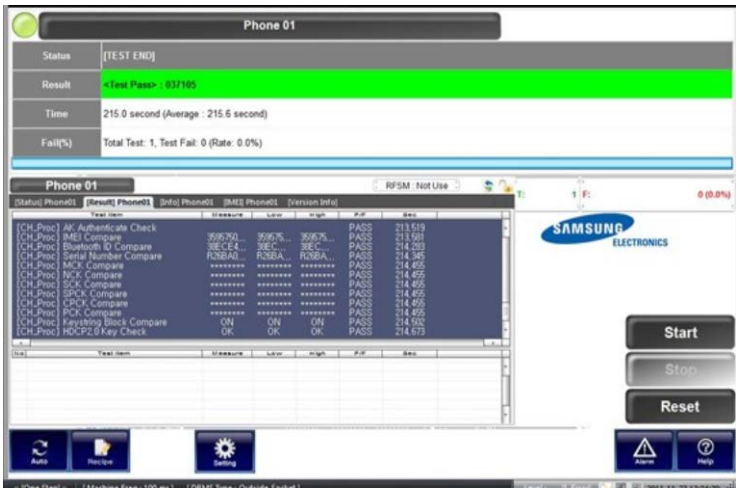
After connecting the phone, the phone will be booted automatically.

18. IMEI Writing Proceeding



6. Level 1 Repair

19. IMEI Writing Success



6. Level 1 Repair

6-3. RF Calibration

6-3-1. 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-J250F_OPEN_CALIBRATION_Ver_3.1.298.3.CAB**)

※ It is required to use the latest program.

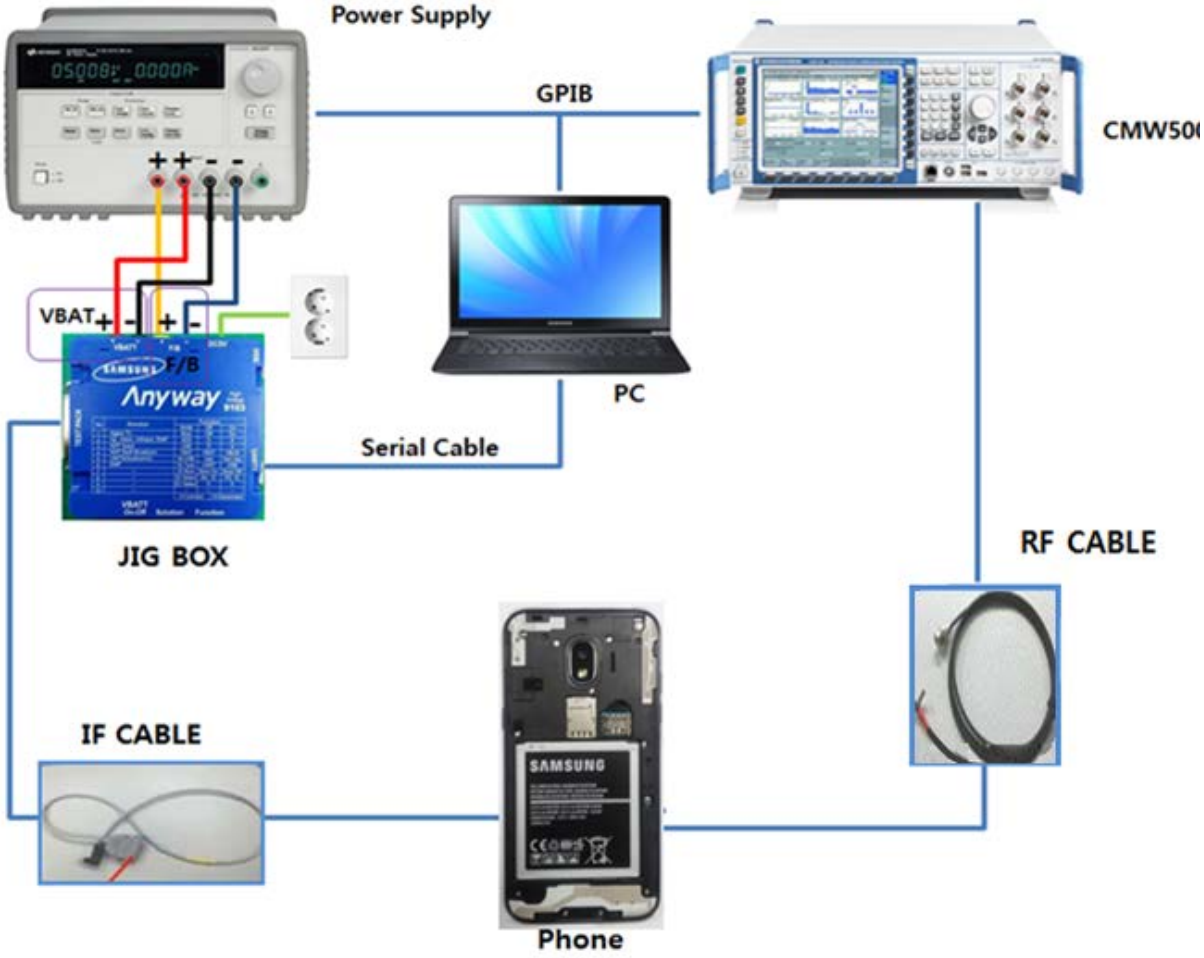
• Mobile Phone
• R&S CMW500
• E3632A Power Supply
• GPIB Cable (2ea)
• JIG BOX (GH81-12520B)
• IF Cable (GH81-10952A)
• Adapter (GH81-11888K)
• UART Serial Cable
• RF Cable (GH81-11962G)

❖ Table of test cables

IF Cable	**GH81-10952A**
	7 pin (NEW)
RF Cable (Manual)	**GH81-11962G**
	1.35T, 1750mm 

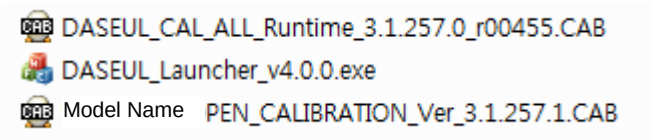
6. Level 1 Repair

❖ Setting

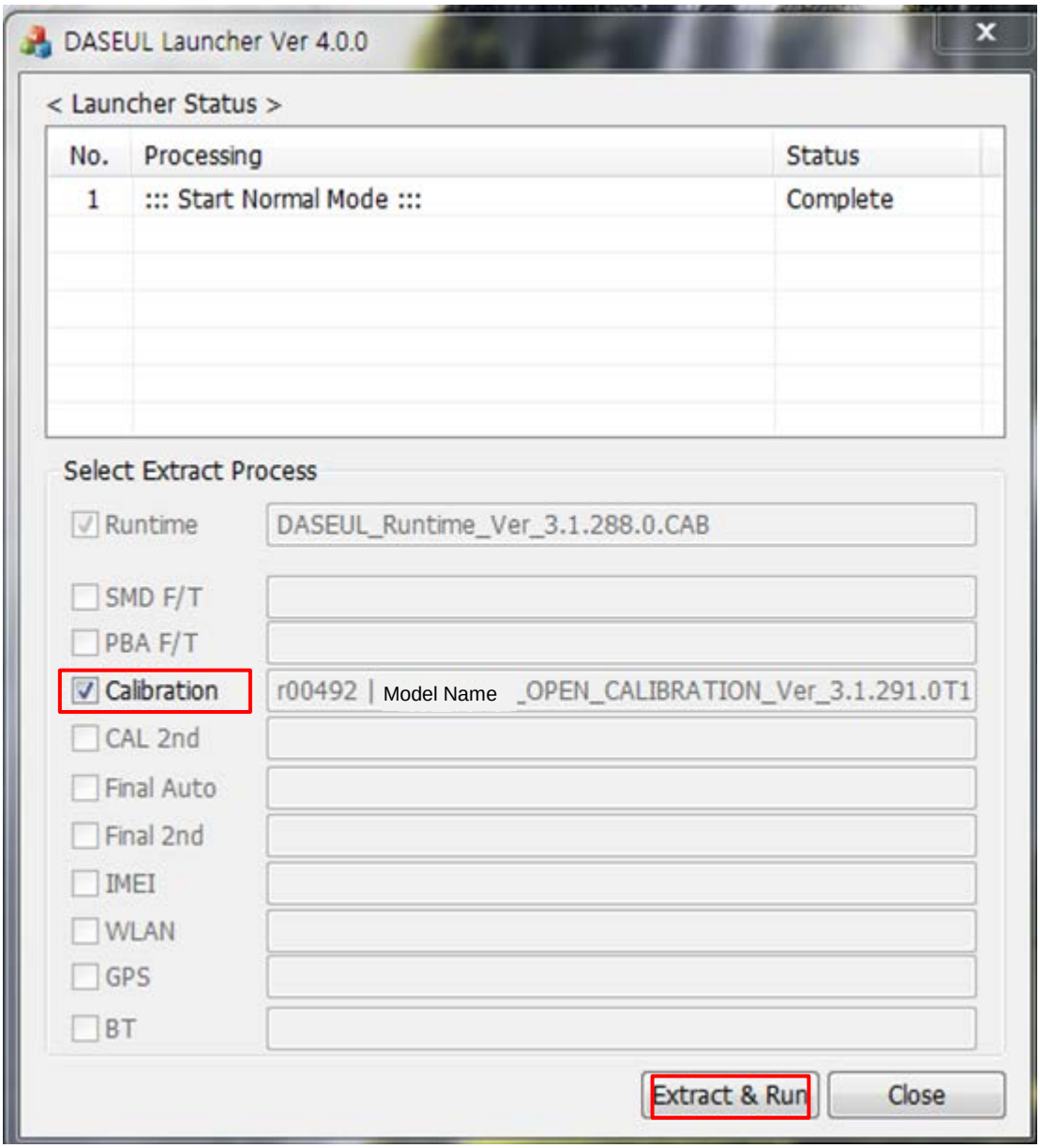


6-3-2. RF Calibration Program

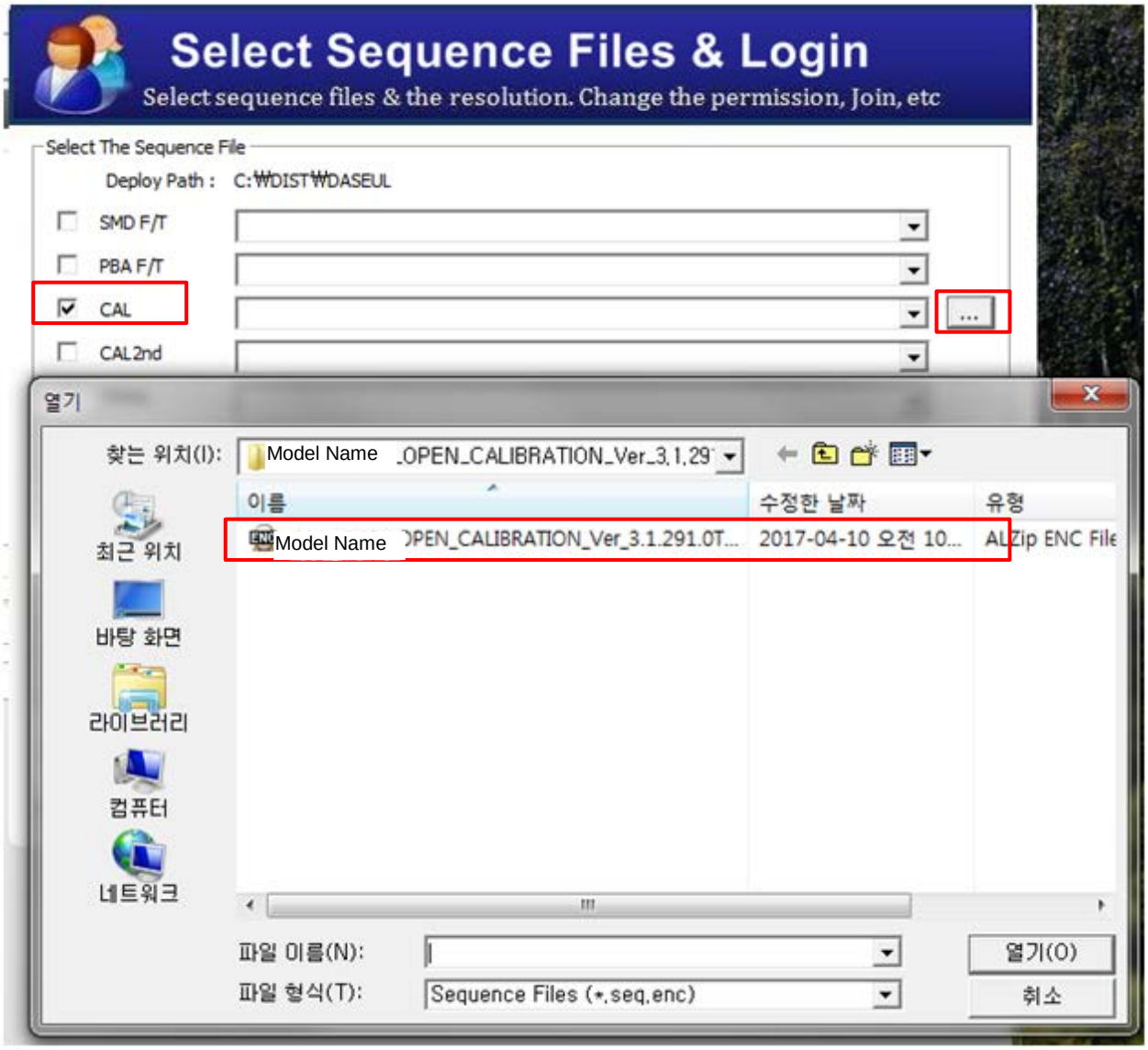
1. Run the RF Calibration Program Launcher, 'DASEUL_Launcher_vx.x.xx.exe'.



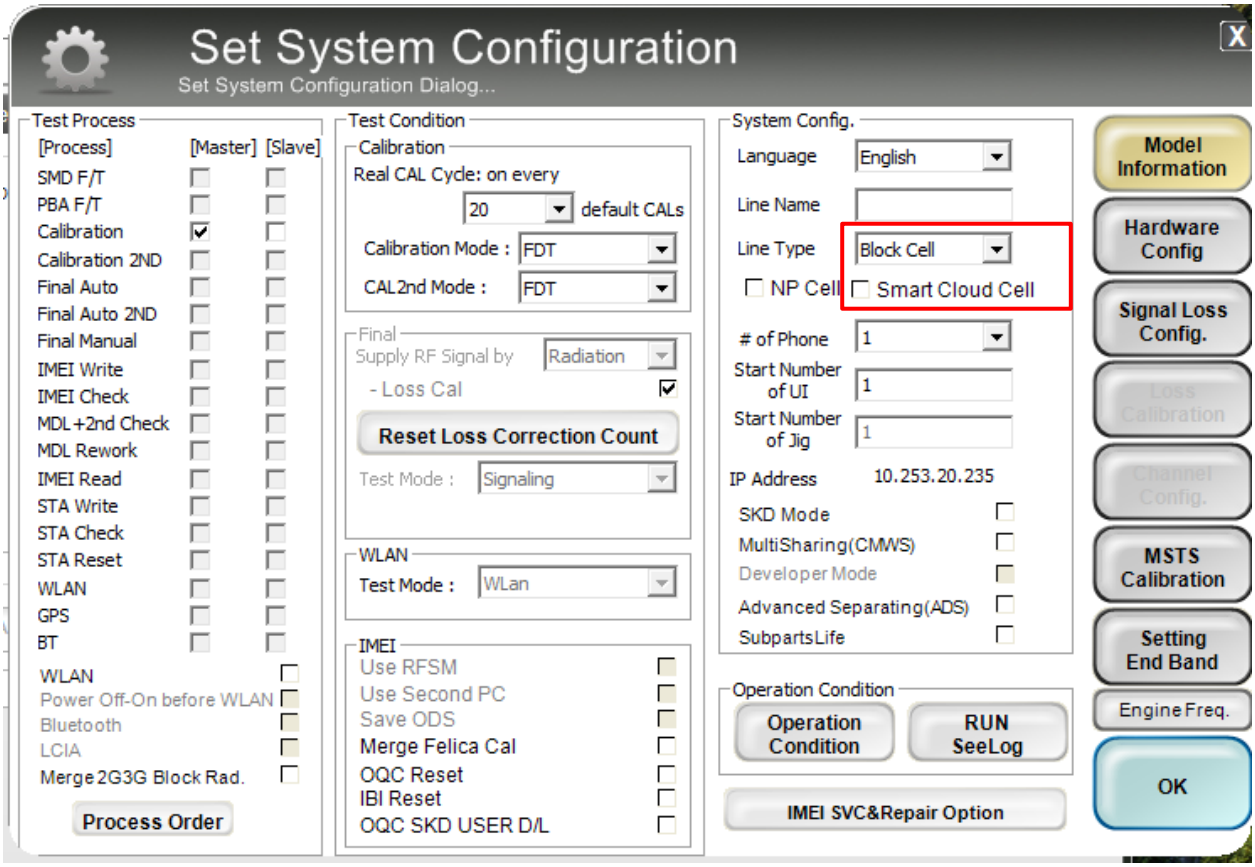
2. Check the 'Calibration' menu, and select 'Extract & Run'.



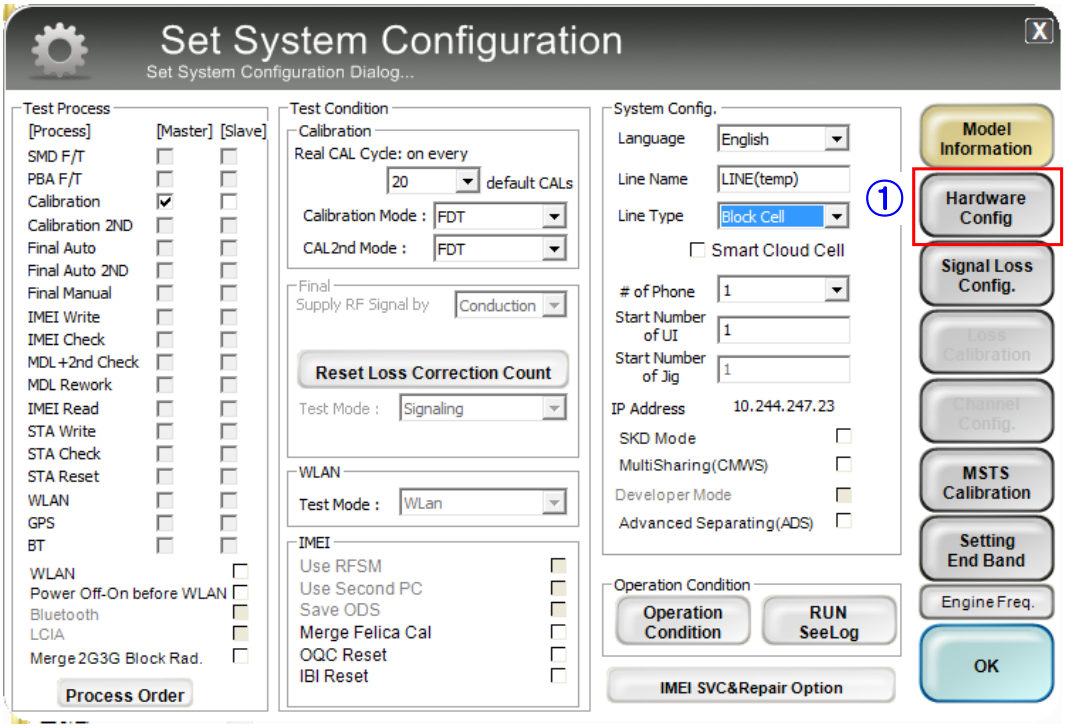
3. Check the 'CAL' and open the model file, then select 'Start' button.

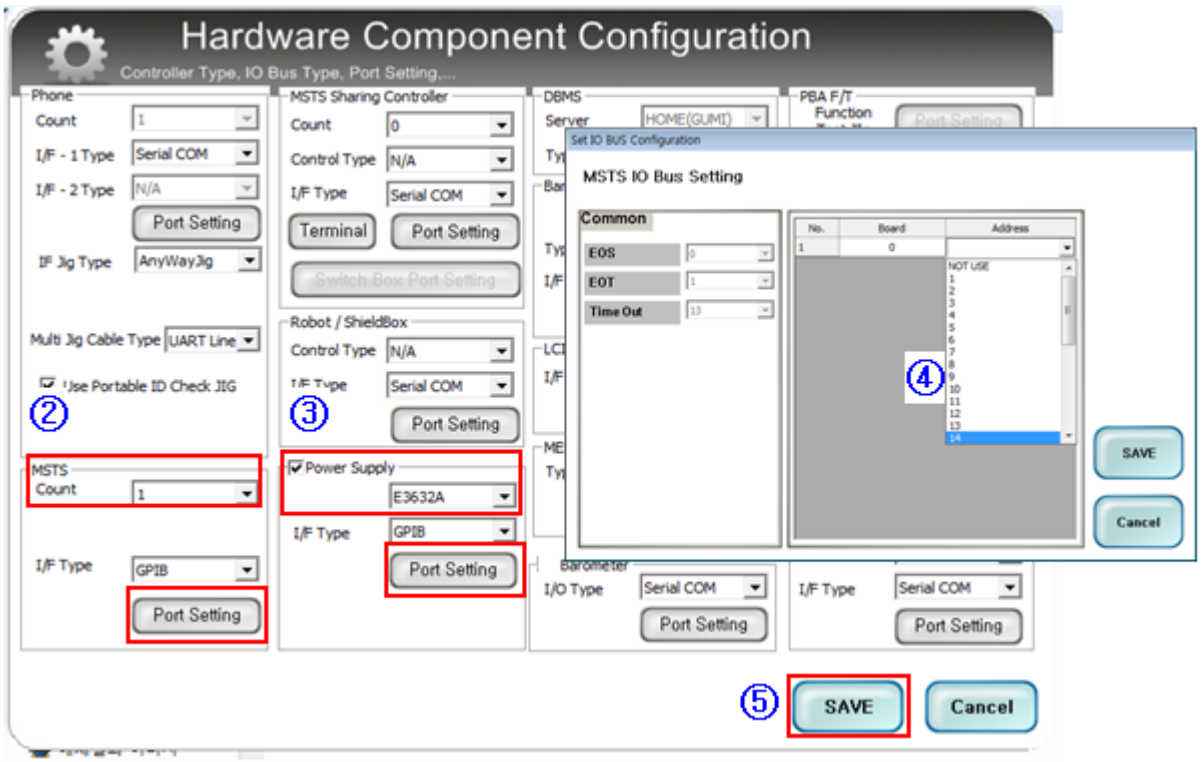


4. Change the Line Type to 'Block Cell' and disable 'Smart Cloud Cell'.



5. 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.