

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
	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
	LB41 : 2496 ~ 2690	39650≤N≤41589
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
	LB17 : 734 ~ 746	5730≤N≤5849
	LB20 : 791 ~ 821	6150≤N≤6449
	LB28 : 758 ~ 803	9210≤N≤9659
	LB38 : 2570 ~ 2620	37750≤N≤38249
	LB40 : 2300 ~ 2400	38650≤N≤39649
	LB41 : 2496 ~ 2690	39650≤N≤41589

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

2. Specification

3) GSM BAND frequency

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

2. Specification

2-2. GSM / WCDMA / LTE General Specification

1) GSM BAND

		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

	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
TDMA Mux	-	-		-	
Cell Radius	-	-		-	

2. Specification

3) LTE BAND

	LTE BAND1	LTE BAND2	LTE BAND3	LTE BAND4	LTE BAND5	LTE BAND7	LTE BAND8
Freq. Band[MHz] Uplink/Downlink	1920~1980 2110~2170	1850~1910 1930~1990	1710 ~ 1785 1805 ~ 1880	1710~1755 2110~2155	824~849 869~894	2500~2570 2620~2690	880~915 925~960
ARFCN range	18000~18599 0~599	18600~19199 600~1199	19200 ~ 19949 1200~1949	19950~20399 1950~2399	20400~20649 2400~2649	20750~21449 2750~3449	21450~21799 3450~3799
Tx/Rx spacing	190 MHz	80 MHz	95 MHz	400 MHz	45 MHz	120 MHz	45 MHz
Mod. Bit rate/ Bit Period	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)
Time Slot Period/Frame Period	10ms	10ms	10ms	10ms	10ms	10ms	10ms
Modulation	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM
MS Power	Max:22.5±2.7 dBm Min:-49dBm	Max:22.5±2.7 dBm Min:-49dBm	Max:23±2.7d Bm Min:-49dBm	Max:23±2.7d Bm Min:-49dBm	Max:24±2.7d Bm Min:-49dBm	Max:23±2.7d Bm Min:-49dBm	Max:24±2.7d Bm Min:-49dBm
Power Level	Class3	Class3	Class3	Class3	Class3	Class3	Class3
Sensitivity	-97dBm	-95dBm	-94dBm	-97dBm	-95dBm	-95dBm	-94dBm
TDMA Mux	-		-				-
Cell Radius	-		-				-

2. Specification

	LTE BAND17	LTE BAND20	LTE BAND28	LTE BAND38	LTE BAND40	LTE BAND41
Freq. Band[MHz] Uplink/Downlink	704~716 734~746	832~862 791~821	703~748 758~803	2570~2620 2570~2620	2300~2400 2300~2400	2496~2690 2496~2690
ARFCN range	23730~23849 5730~5849	19250 ~ 19950 1250~1950	20400~20650 2400~2650	37750~38249 37750~38249	38650~39649 38650~39649	39650~41589 39650~41589
Tx/Rx spacing	30 MHz	41 MHz	55 MHz			
Mod. Bit rate/ Bit Period	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)	9Mbps/s (at 10MHz BW,50RB)
Time Slot Period/Frame Period	10ms	10ms	10ms	10ms	10ms	10ms
Modulation	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM	UL : QPSK 16QAM 64QAM DL : QPSK 16QAM 64QAM 256QAM
MS Power	Max:24±2.7dB m Min:-49dBm	Max:24±2.7dB m Min:-49dBm	Max:23.5±2.7dB m Min:-49dBm	Max:23±2.7dB m Min:-49dBm	Max:23±2.7dB m Min:-49dBm	Max:23±2.7dB m Min:-49dBm
Power Level	Class3	Class3	Class3	Class3	Class3	Class3
Sensitivity	-94dBm	-94dBm	-95.5dBm	-97dBm	-97dBm	-95dBm
TDMA Mux	-	-			-	
Cell Radius	-	-			-	

2. Specification

2-3. GSM BAND TX power control level

TX Power control level	GSM850	GSM900	TX Power control level	DCS1800	TX Power control level	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. Operation Instruction and Installation

Main Function

Item	Description
OS	Android V6.0.1 (Marshmallow)
RF	LTE Cat.6 (300/ 50Mbps)
Battery	3,600mAh
Base Band	Exynos7880 1.9GHz Quad + 1.9GHz Quad(octa core)
Other RF	A-GPS, Glonass, Beidou,, BT4.2, USB Type C, NFC, WIFI 802.11 a/b/g/n/ac 2.4+5GHz, MST
Camera	16M+16M Camera
LCD	5.7" FHD OCTA
RAM	3GB RAM + 32GB UFS
Sensor	Accelerometer, Barometer, Fingerprint Sensor, Gyro Sensor, Geomagnetic Sensor, Hall Sensor, Proximity Sensor, RGB Light Sensor
Accessory	Charger: 5V/2A (AFC: 9V/1.67A) Data cable : 1.2M C to A C to B usb connector 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. 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.

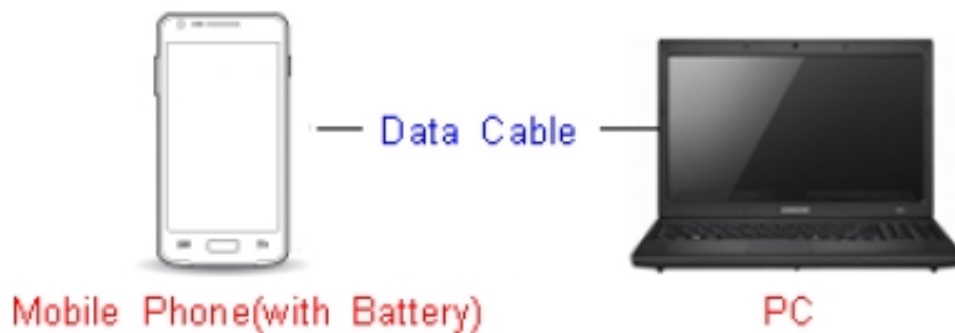
6. Level 1 Repair

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

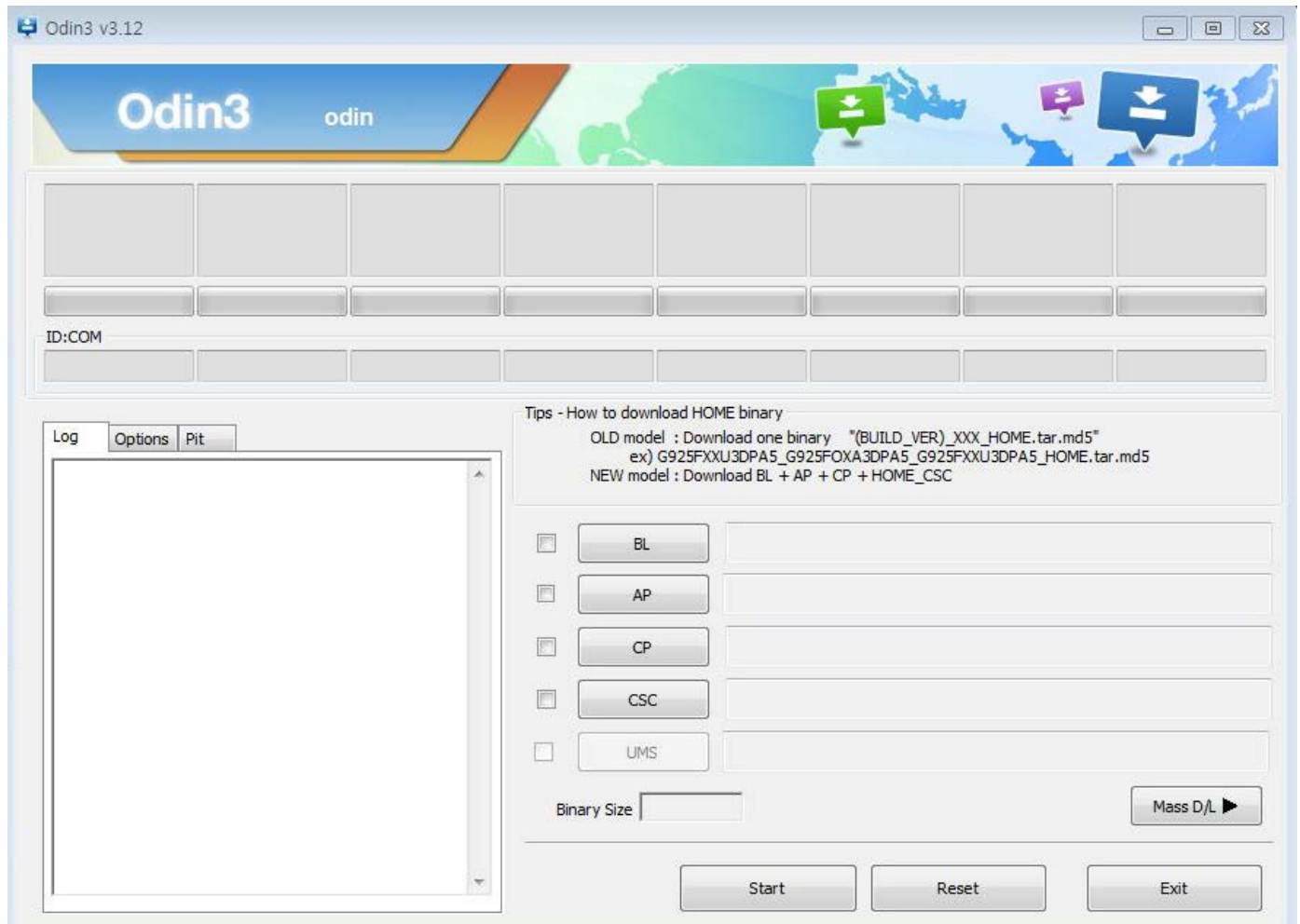


Data Cable : GH39-01886A

6. Level 1 Repair

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

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

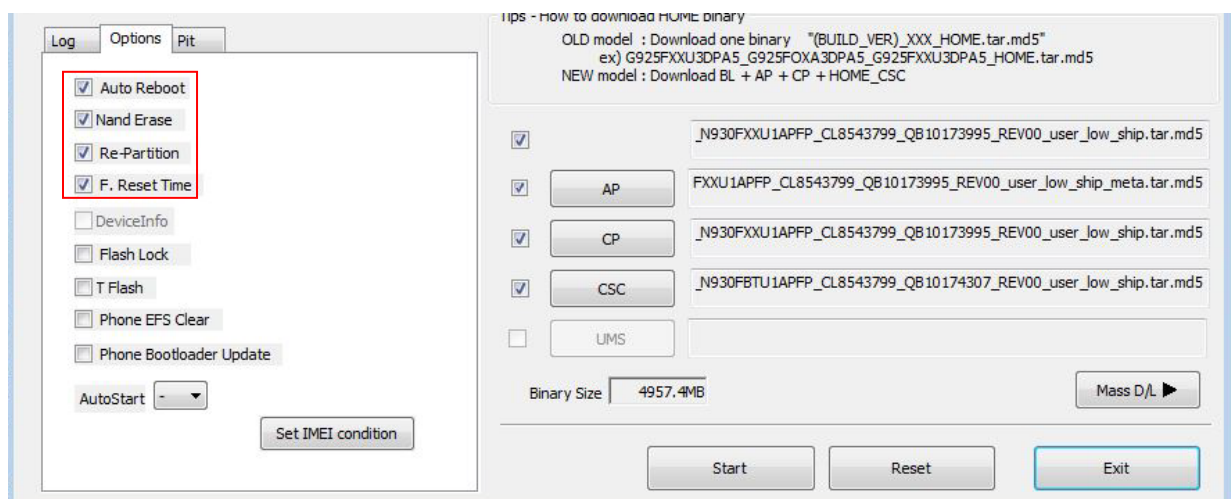
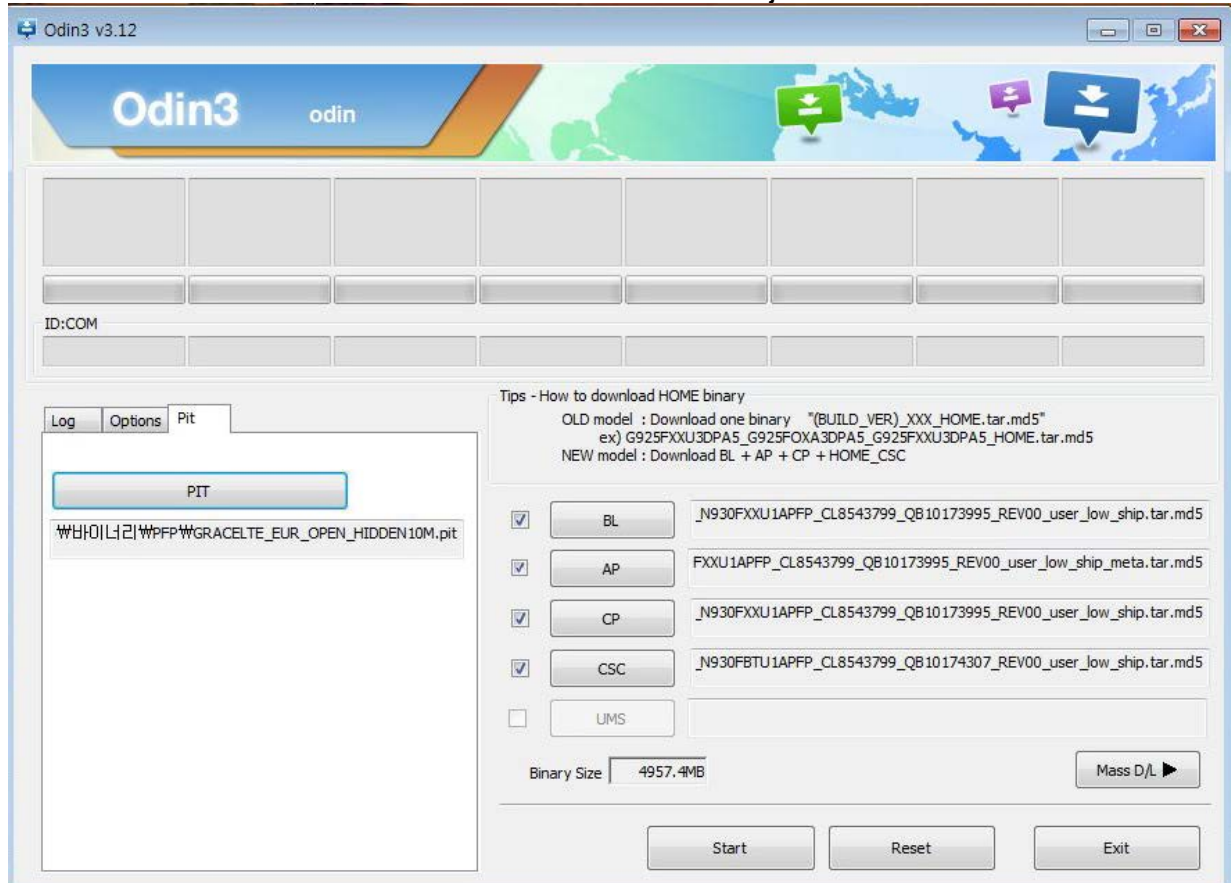


6. Level 1 Repair

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

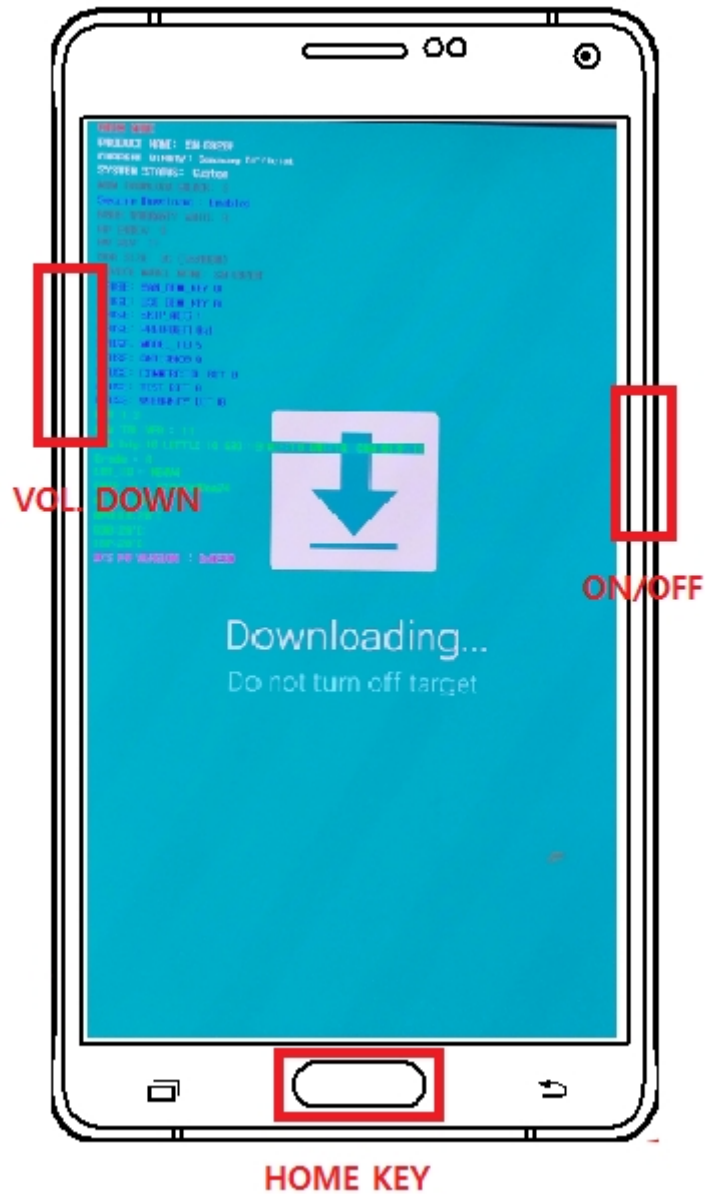
* Note : "Odin v3.12 or above" checks MD5 checksum just after file selection.



6. Level 1 Repair

2. Enter into Download Mode

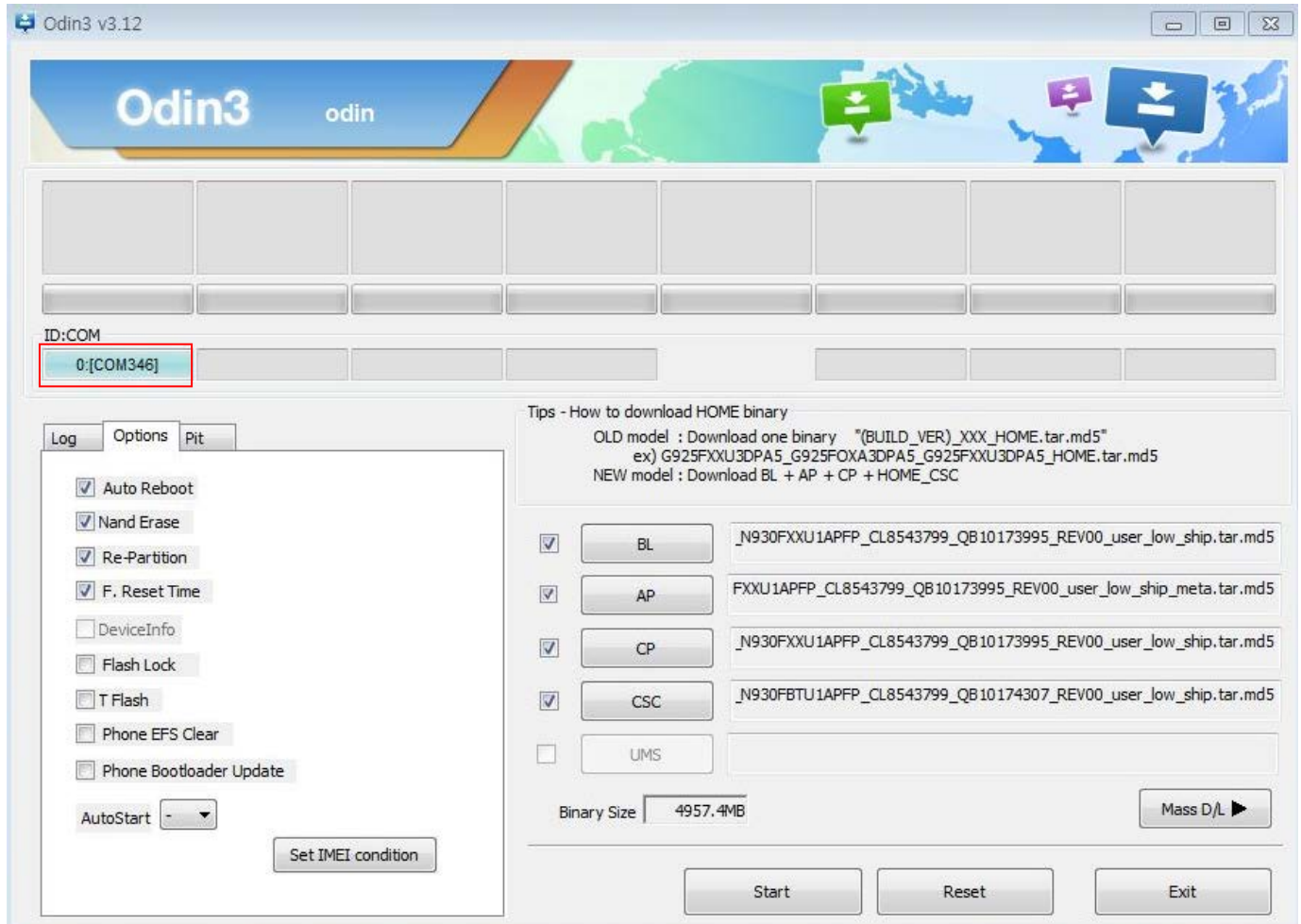
- Enter into Download Mode by pressing Home button, Volume Down button and Power On/Off Button simultaneously followed by pressing Volume up button as a direction of the phone.



6. Level 1 Repair

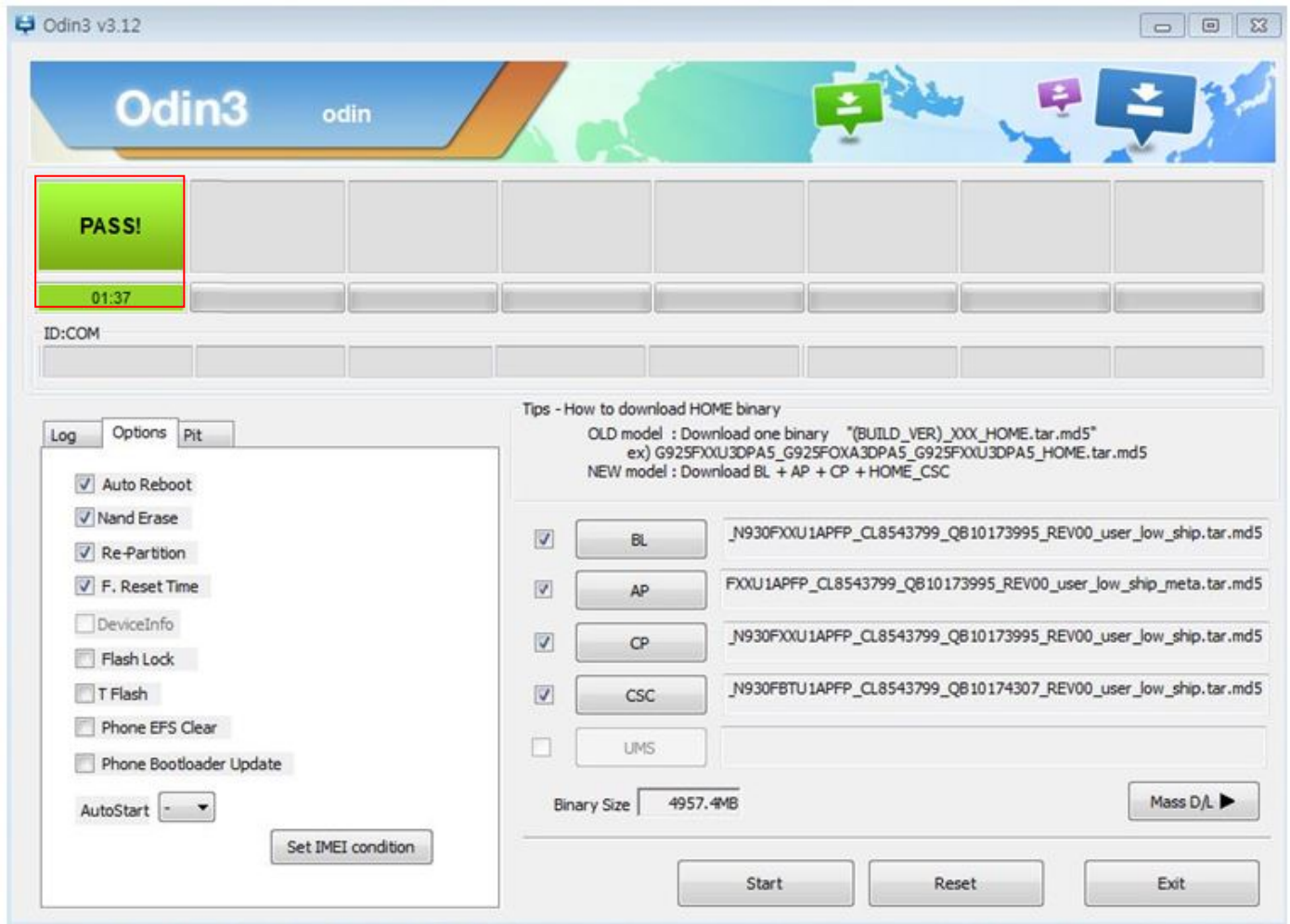
3. Connect the device to PC via Data Cable.

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

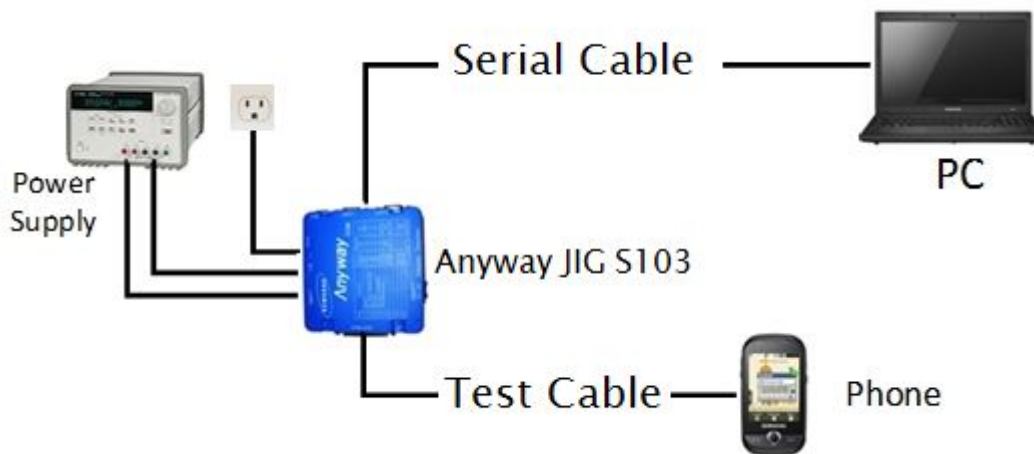
6. Level 1 Repair

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”
② Launcher	DASEUL_SVC_Launcher_v3_0_25 or higher -Uploaded on HHPsvc Notice
③ Runtime File	1. DASEUL_Runtime_Ver_3.1.139.0.CAB or higher -Uploaded on HHPsvc Notice 2. Make 'ModelName' folder at the same position with launcher & Runtime file.
④ Model File	Copy Model File under the 'Model Name' folder

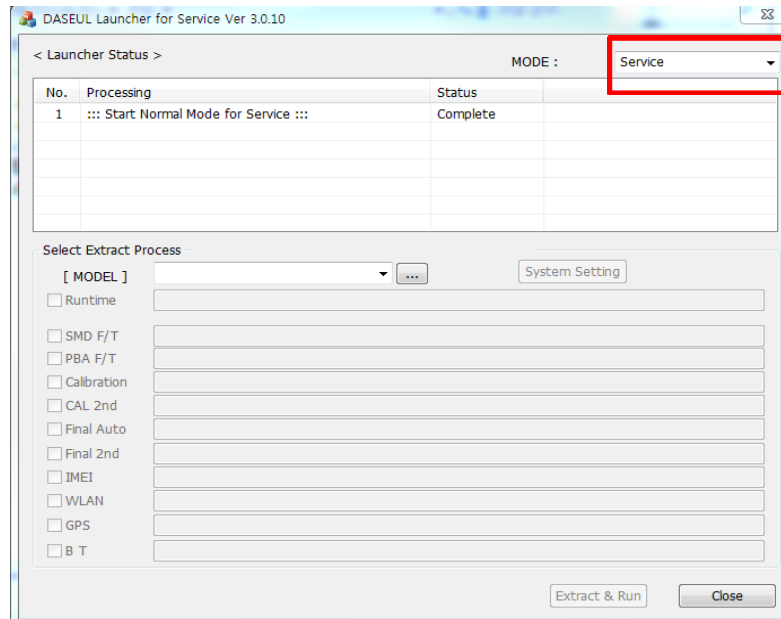
6. Level 1 Repair

6-2-2 IMEI writing Process

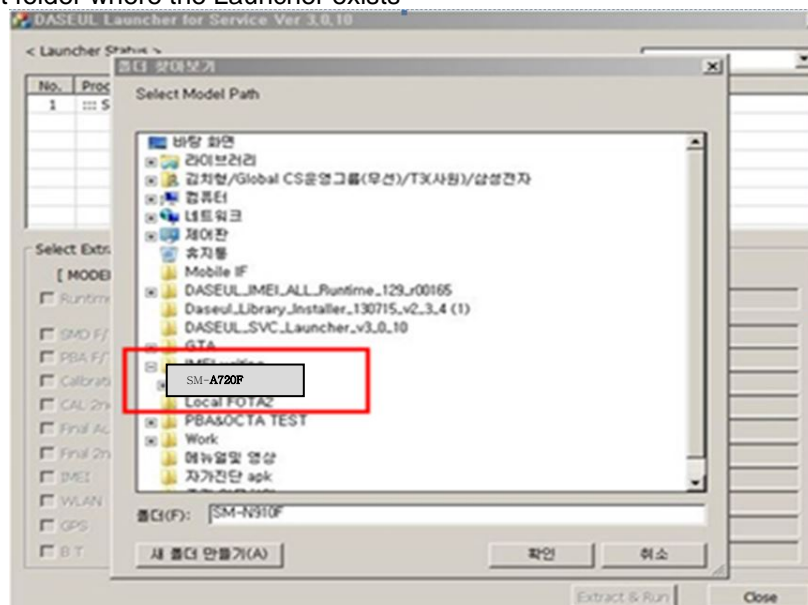
1. Run DASEUL_SVC_Launcher_v3.0.10.exe

 DASEUL_SVC_Launcher_v3.0.10.exe

2. Select Service Mode

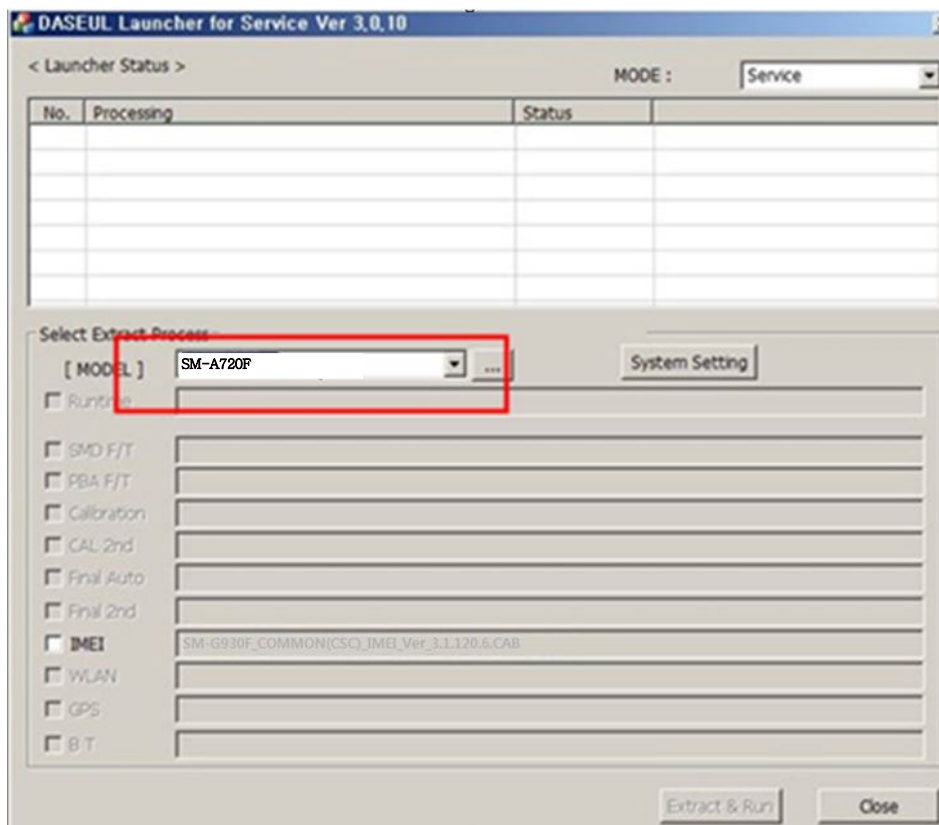


3. Click  and Select folder where the Launcher exists



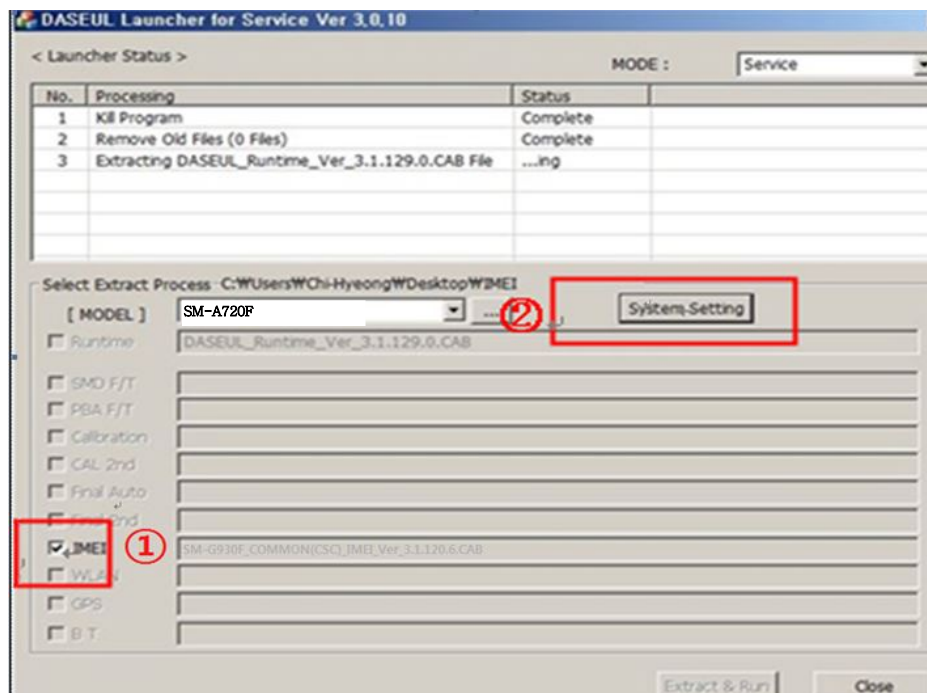
6. Level 1 Repair

4. Select Model



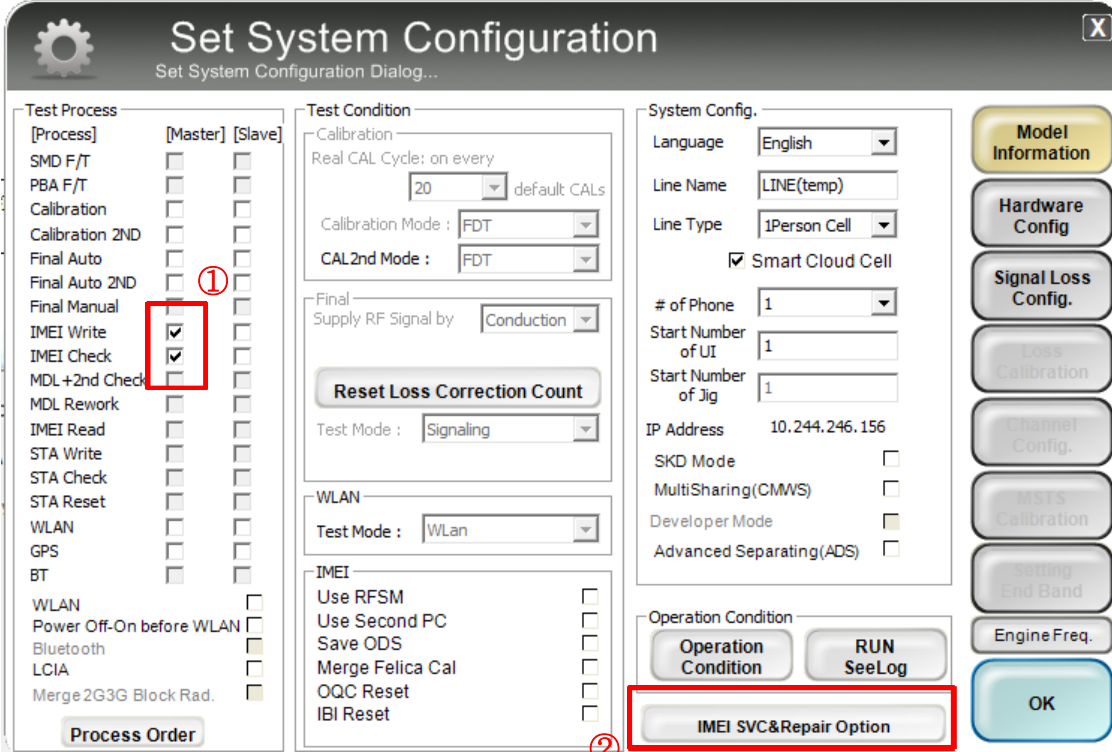
5. Check IMEI and click System Setting

※ 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.



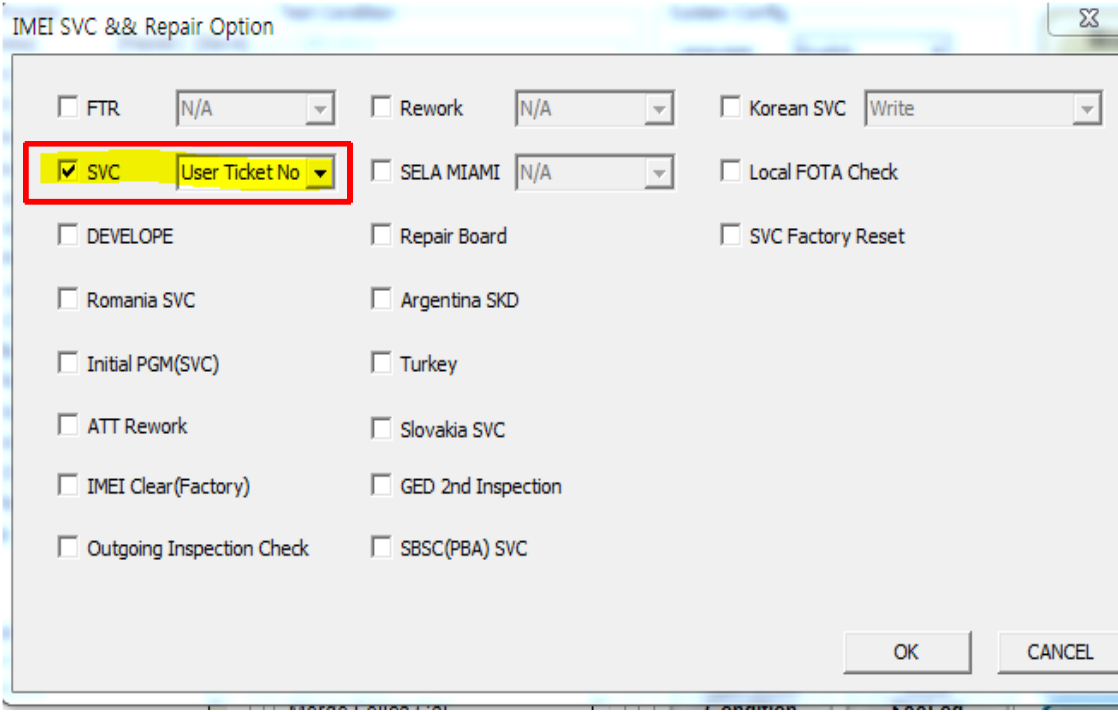
6. Level 1 Repair

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



The image shows the 'Set System Configuration' dialog box. In the 'Test Process' section, the 'IMEI Write' and 'IMEI Check' checkboxes are checked and highlighted with a red box and a circled '1'. In the 'Test Condition' section, the 'IMEI' sub-section is expanded, and the 'IMEI SVC & Repair Option' button is highlighted with a red box and a circled '2'. The 'System Config.' section contains various settings like Language, Line Name, Line Type, and Smart Cloud Cell. The 'Operation Condition' section has buttons for 'Operation Condition', 'RUN SeeLog', and 'IMEI SVC & Repair Option'. The 'Model Information' section on the right has buttons for 'Model Information', 'Hardware Config', 'Signal Loss Config.', 'Loss Calibration', 'Channel Config.', 'MSTS Calibration', 'Setting End Band', and 'Engine Freq.'. The 'OK' button is at the bottom right.

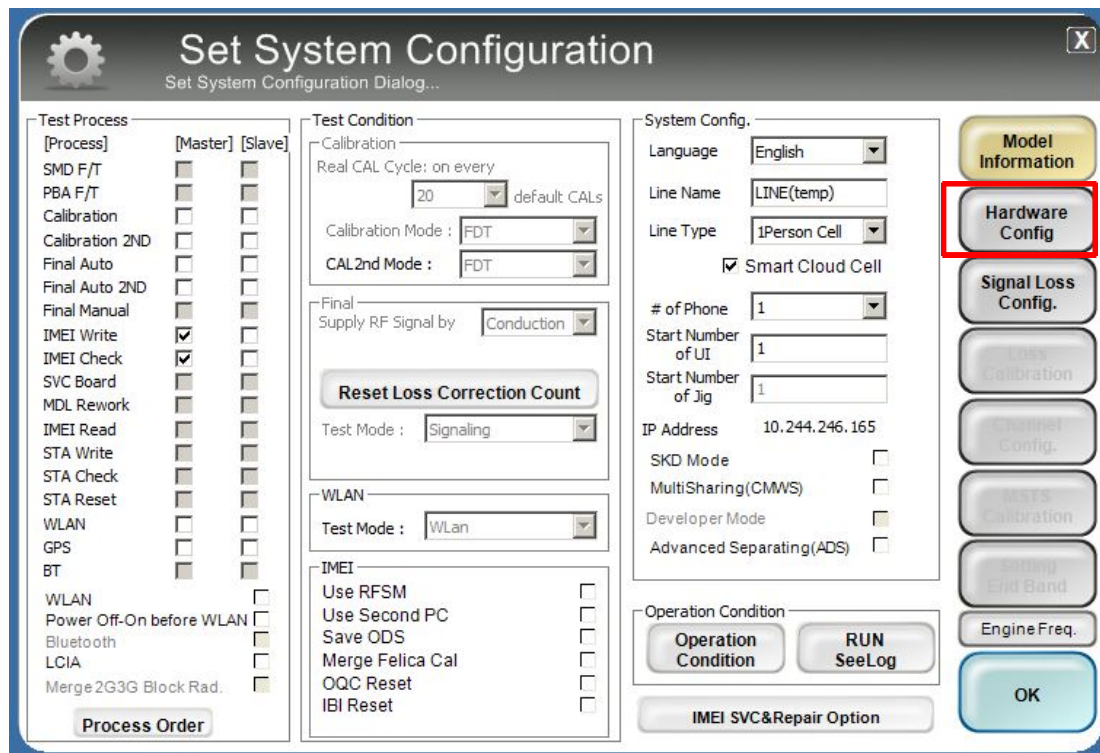
7. Check SVC , User Ticket No and click OK



The image shows the 'IMEI SVC && Repair Option' dialog box. The 'SVC' checkbox is checked and highlighted with a red box. The 'User Ticket No' dropdown menu is also highlighted with a red box. Other options include 'FTR', 'Rework', 'Korean SVC', 'SELA MIAMI', 'Local FOTA Check', 'DEVELOPE', 'Repair Board', 'SVC Factory Reset', 'Romania SVC', 'Argentina SKD', 'Initial PGM(SVC)', 'Turkey', 'ATT Rework', 'Slovakia SVC', 'IMEI Clear(Factory)', 'GED 2nd Inspection', 'Outgoing Inspection Check', and 'SBSC(PBA) SVC'. The 'OK' and 'CANCEL' buttons are at the bottom right.

6. Level 1 Repair

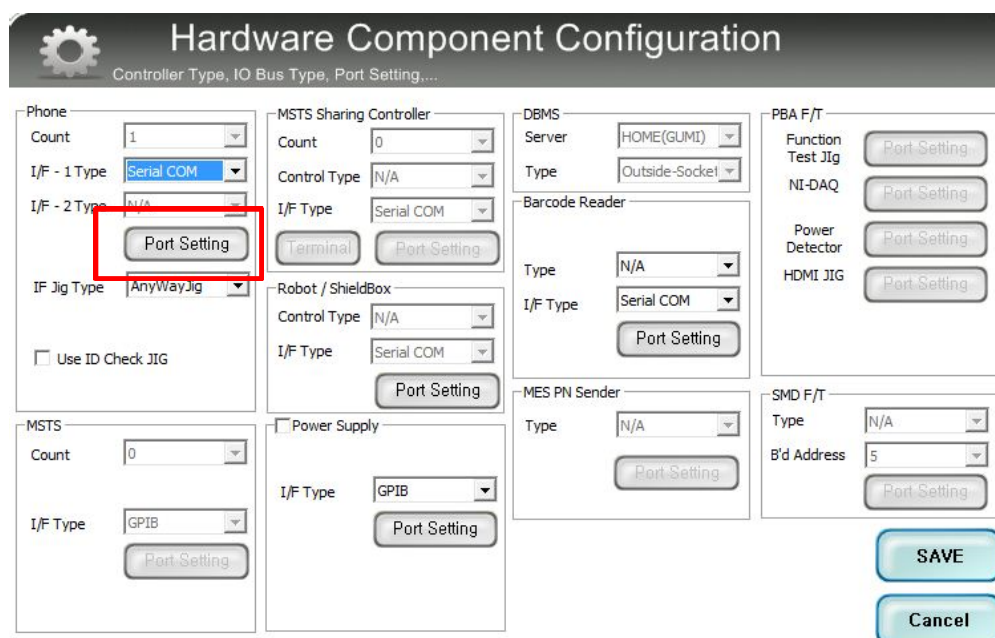
8. Click Hardware Config



The 'Set System Configuration' dialog box is shown. It has a title bar with a gear icon and the text 'Set System Configuration Dialog...'. The dialog is divided into several sections:

- Test Process:** A list of test processes with checkboxes for [Process], [Master], and [Slave]. Processes include SMD F/T, PBA F/T, Calibration, Calibration 2ND, Final Auto, Final Auto 2ND, Final Manual, IMEI Write, IMEI Check, SVC Board, MDL Rework, IMEI Read, STA Write, STA Check, STA Reset, WLAN, GPS, BT, WLAN, Power Off-On before WLAN, Bluetooth, LCIA, and Merge2G3G Block Rad.
- Test Condition:** Includes '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), and 'IMEI' (Use RFSM, Use Second PC, Save ODS, Merge Felica Cal, OQC Reset, IBI Reset).
- System Config.:** Includes 'Language' (English), 'Line Name' (LINE(temp)), 'Line Type' (1Person Cell), 'Smart Cloud Cell' (checked), '# of Phone' (1), 'Start Number of UI' (1), 'Start Number of Jig' (1), 'IP Address' (10.244.246.165), 'SKD Mode', 'MultiSharing(CMWS)', 'Developer Mode', and 'Advanced Separating(ADS)'.
- Operation Condition:** Includes 'Operation Condition' and 'RUN SeeLog' buttons.
- Model Information:** A vertical stack of buttons: 'Model Information', 'Hardware Config' (highlighted with a red box), 'Signal Loss Config.', 'Loss Calibration', 'Channel Config.', 'MSTC Calibration', 'Setting End Band', 'Engine Freq.', and 'OK'.

9. Click Port Setting

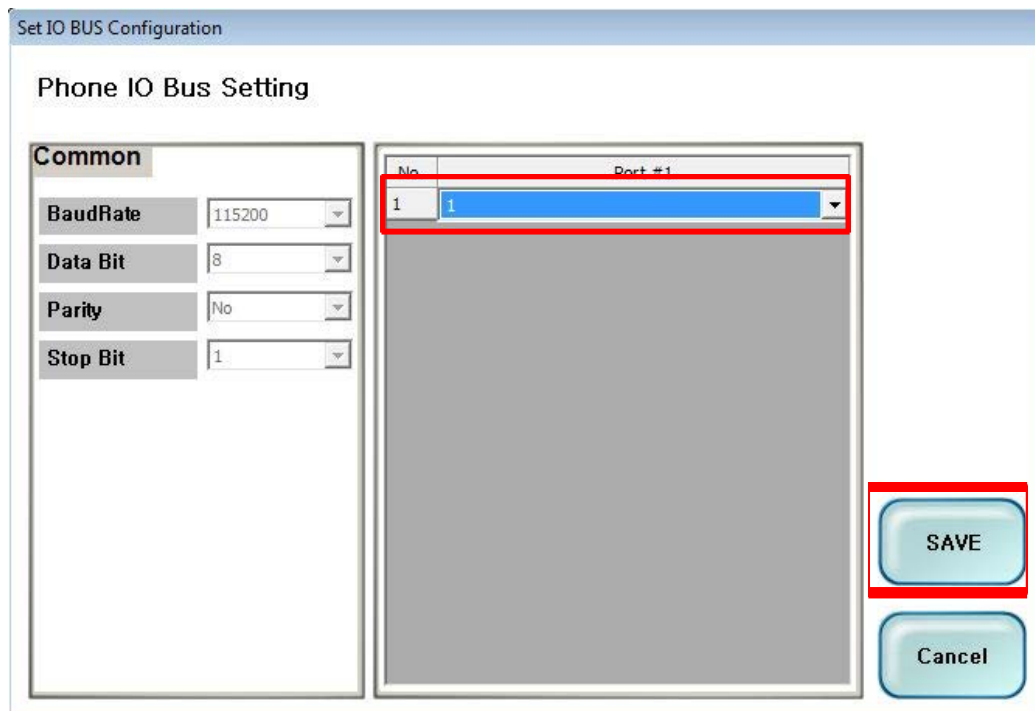


The 'Hardware Component Configuration' dialog box is shown. It has a title bar with a gear icon and the text 'Controller Type, IO Bus Type, Port Setting,...'. The dialog is divided into several sections:

- Phone:** Includes 'Count' (1), 'I/F - 1 Type' (Serial COM), 'I/F - 2 Type' (N/A), 'I/F Jig Type' (AnyWayJig), and 'Use ID Check JIG' (unchecked).
- MSTS:** Includes 'Count' (0) and 'I/F Type' (GPIB).
- MSTS Sharing Controller:** Includes 'Count' (0), 'Control Type' (N/A), 'I/F Type' (Serial COM), and 'Terminal' button.
- Robot / ShieldBox:** Includes 'Control Type' (N/A), 'I/F Type' (Serial COM), and 'Port Setting' button.
- Power Supply:** Includes 'I/F Type' (GPIB) and 'Port Setting' button.
- DBMS:** Includes 'Server' (HOME(GUMI)), 'Type' (Outside-Socket), and 'Barcode Reader' (Type: N/A, I/F Type: Serial COM, Port Setting button).
- MES PN Sender:** Includes 'Type' (N/A) and 'Port Setting' button.
- PBA F/T:** Includes 'Function Test Jig' (Port Setting button), 'NI-DAQ' (Port Setting button), 'Power Detector' (Port Setting button), and 'HDMI JIG' (Port Setting button).
- SMD F/T:** Includes 'Type' (N/A), 'B'd Address' (5), and 'Port Setting' button.
- Buttons:** 'SAVE' and 'Cancel' buttons at the bottom right.

6. Level 1 Repair

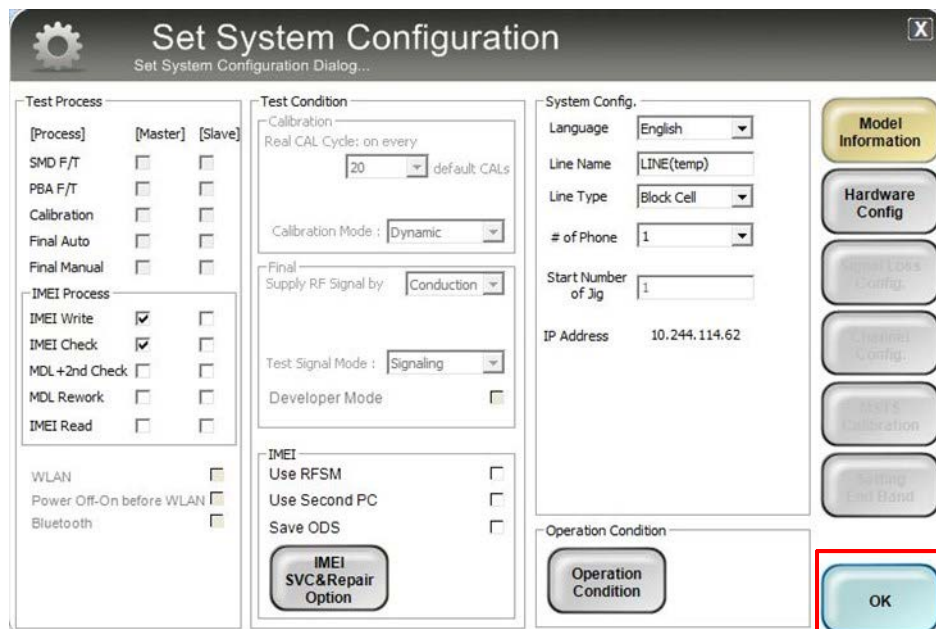
10. Select Port Number and SAVE



The 'Set IO BUS Configuration' dialog box is shown. It has a title bar 'Set IO BUS Configuration' and a subtitle 'Phone IO Bus Setting'. The 'Common' tab is selected. On the left, there are four settings: 'BaudRate' (115200), 'Data Bit' (8), 'Parity' (No), and 'Stop Bit' (1). On the right, there is a table with two columns: 'No.' and 'Port #1'. The first row has '1' in the 'No.' column and '1' in the 'Port #1' column. A red rectangle highlights the 'Port #1' column header and the first row. Below the table, there are two buttons: 'SAVE' and 'Cancel'. A red rectangle highlights the 'SAVE' button.

No.	Port #1
1	1

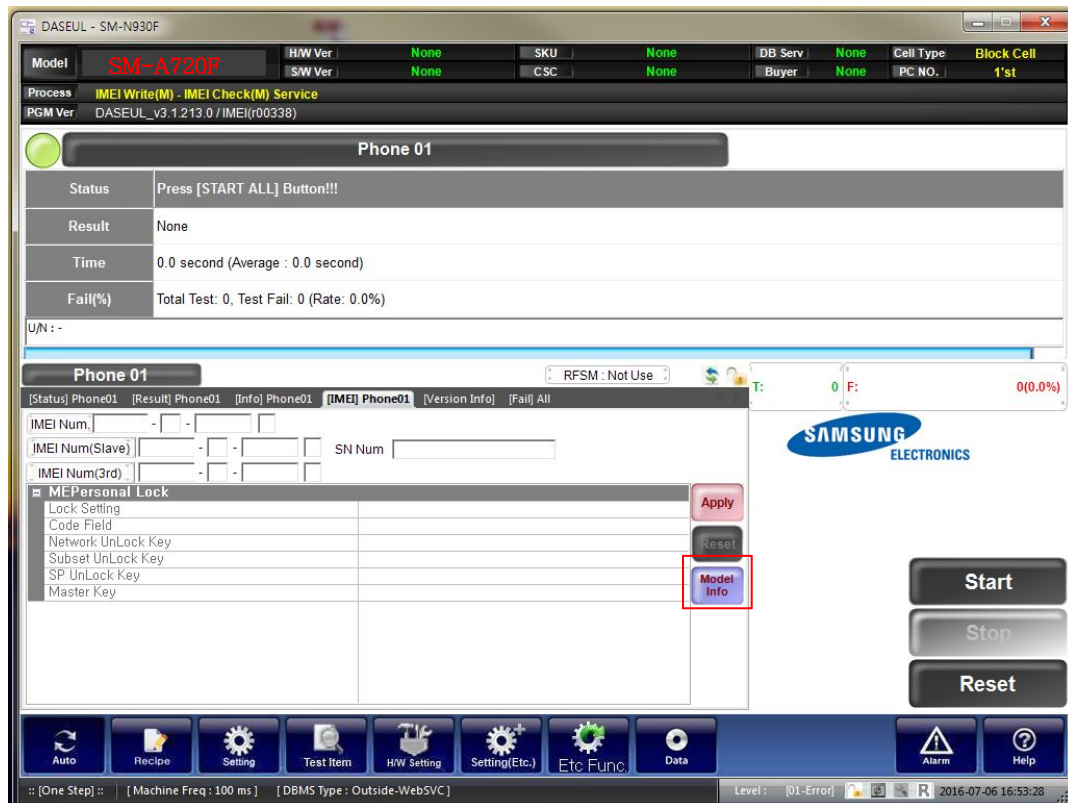
11. Click OK to proceed



The 'Set System Configuration' dialog box is shown. It has a title bar 'Set System Configuration' and a subtitle 'Set System Configuration Dialog...'. The 'Test Process' tab is selected. On the left, there are two sections: 'Test Process' and 'IMEI Process'. The 'Test Process' section has three columns: '[Process]', '[Master]', and '[Slave]'. The 'IMEI Process' section has four rows: 'IMEI Write', 'IMEI Check', 'MDL +2nd Check', and 'MDL Rework'. The 'IMEI Check' row has a checkmark in the '[Master]' column. Below these, there are three checkboxes: 'WLAN', 'Power Off-On before WLAN', and 'Bluetooth'. On the right, there are three sections: 'Test Condition', 'System Config.', and 'Operation Condition'. The 'Test Condition' section has 'Calibration Mode' set to 'Dynamic' and 'Test Signal Mode' set to 'Signaling'. The 'System Config.' section has 'Language' set to 'English', 'Line Name' set to 'LINE(temp)', 'Line Type' set to 'Block Cell', '# of Phone' set to '1', 'Start Number of Jig' set to '1', and 'IP Address' set to '10.244.114.62'. The 'Operation Condition' section has a button labeled 'Operation Condition'. At the bottom right, there is a button labeled 'OK'. A red rectangle highlights the 'OK' button.

6. Level 1 Repair

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



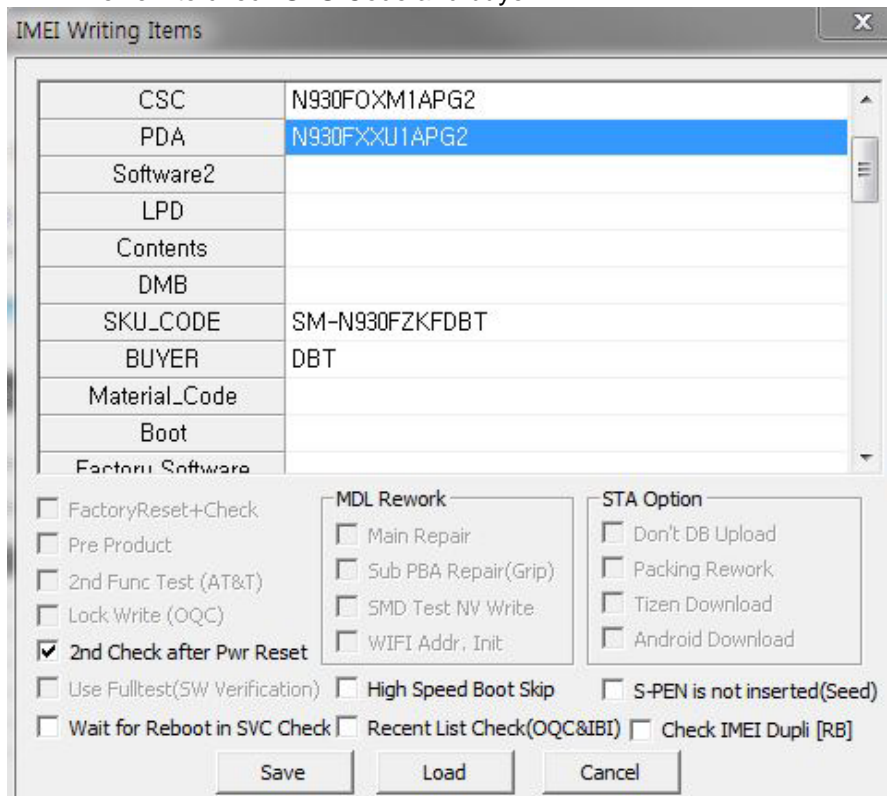
13. Click OK



6. Level 1 Repair

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

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



The 'IMEI Writing Items' dialog box contains a table with the following data:

Item	Value
CSC	N930FOXMI1APG2
PDA	N930FXXU1APG2
Software2	
LPD	
Contents	
DMB	
SKU_CODE	SM-N930FZKFDBT
BUYER	DBT
Material_Code	
Boot	
Factory Software	

Below the table are several checkboxes:

- ☐ FactoryReset+Check
- ☐ Pre Product
- ☐ 2nd Func Test (AT&T)
- ☐ Lock Write (OQC)
- ☒ 2nd Check after Pwr Reset
- ☐ Use Fulltest(SW Verification)
- ☐ Wait for Reboot in SVC Check

MDL Rework section:

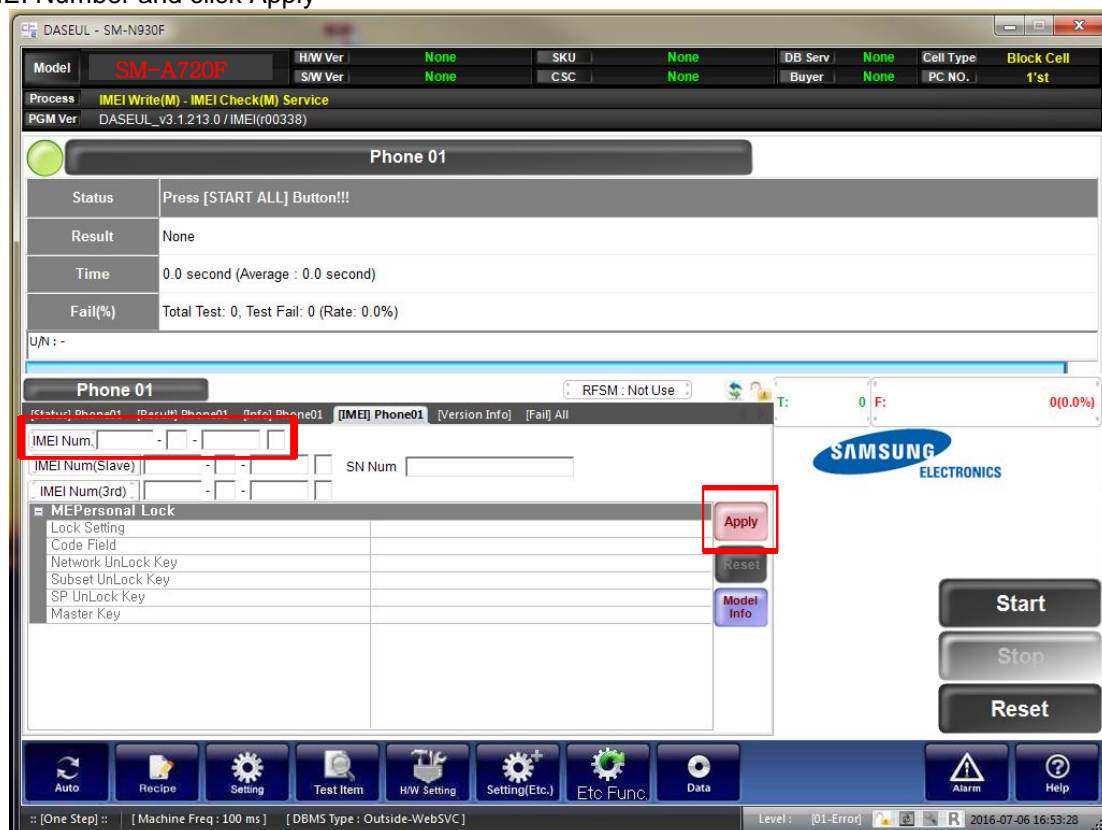
- ☐ Main Repair
- ☐ Sub PBA Repair(Grip)
- ☐ SMD Test NV Write
- ☐ WIFI Addr. Init
- ☐ High Speed Boot Skip
- ☐ Recent List Check(OQC&IBI)

STA Option section:

- ☐ Don't DB Upload
- ☐ Packing Rework
- ☐ Tizen Download
- ☐ Android Download
- ☐ S-PEN is not inserted(Seed)
- ☐ Check IMEI Dupli [RB]

Buttons: Save, Load, Cancel

15. Input IMEI Number and click Apply



The main interface shows the 'Phone 01' section with the following status:

- Status: Press [START ALL] Button!!!
- Result: None
- Time: 0.0 second (Average : 0.0 second)
- Fail(%): Total Test: 0, Test Fail: 0 (Rate: 0.0%)

Below this is the 'IMEI' section with input fields for:

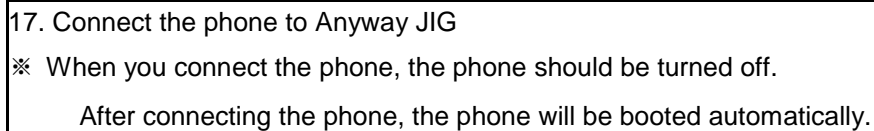
- IMEI Num. (highlighted with a red box)
- IMEI Num(Slave)
- IMEI Num(3rd)
- SN Num

There is an 'Apply' button (highlighted with a red box) and a 'Reset' button. The bottom of the screen features a toolbar with icons for Auto, Recipe, Setting, Test Item, H/W Setting, Setting(Etc.), Etc Func, Data, Alarm, and Help. The status bar at the bottom indicates 'Level: 01-Error' and the date '2016-07-06 16:53:28'.

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



Phone 01

Status: FactoryReset Poll

Result: <OK> : [WR_PProc] Total Memory Size Compare

Time: 56.8 second (Average : 0.0 second)

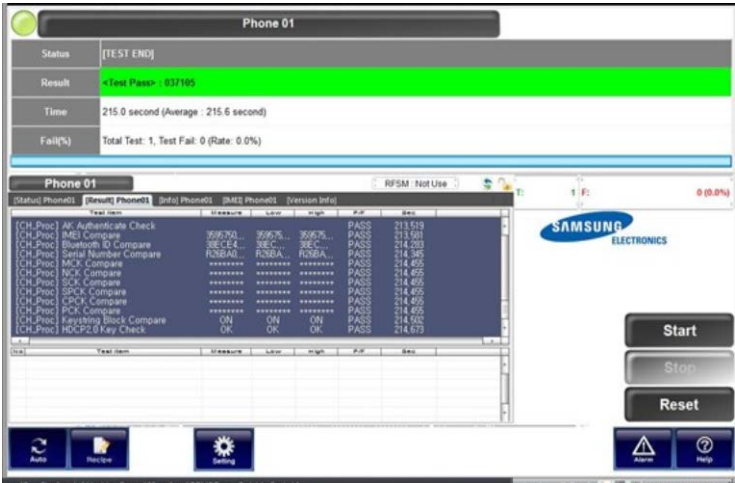
Fail(%): Total Test: 0, Test Fail: 0 (Rate: 0.0%)

Test Item	Address	Value	High	Pass	Fail
[WVR_PProc] WVR Address Read	00000000	00000000	00000000	PASS	47.939
[WVR_PProc] Serial Number Write	00000000	00000000	00000000	PASS	48.064
[WVR_PProc] CSC Data Write	00000000	00000000	00000000	PASS	48.111
[WVR_PProc] Level Of Lock Read	00000000	00000000	00000000	PASS	50.308
[WVR_PProc] NCK Write	00000000	00000000	00000000	PASS	52.947
[WVR_PProc] NCK Write	00000000	00000000	00000000	PASS	52.947
[WVR_PProc] SCP Write	00000000	00000000	00000000	PASS	52.947
[WVR_PProc] SCP Write	00000000	00000000	00000000	PASS	52.947
[WVR_PProc] CPCK Write	00000000	00000000	00000000	PASS	52.947
[WVR_PProc] Keylock Block Write	00000000	00000000	00000000	PASS	53.096
[WVR_PProc] CSC-PC-Data Write	00000000	00000000	00000000	PASS	53.025
[WVR_PProc] Total Memory Size Compare	11330	10481	12529	PASS	53.914

Start Stop Pause

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

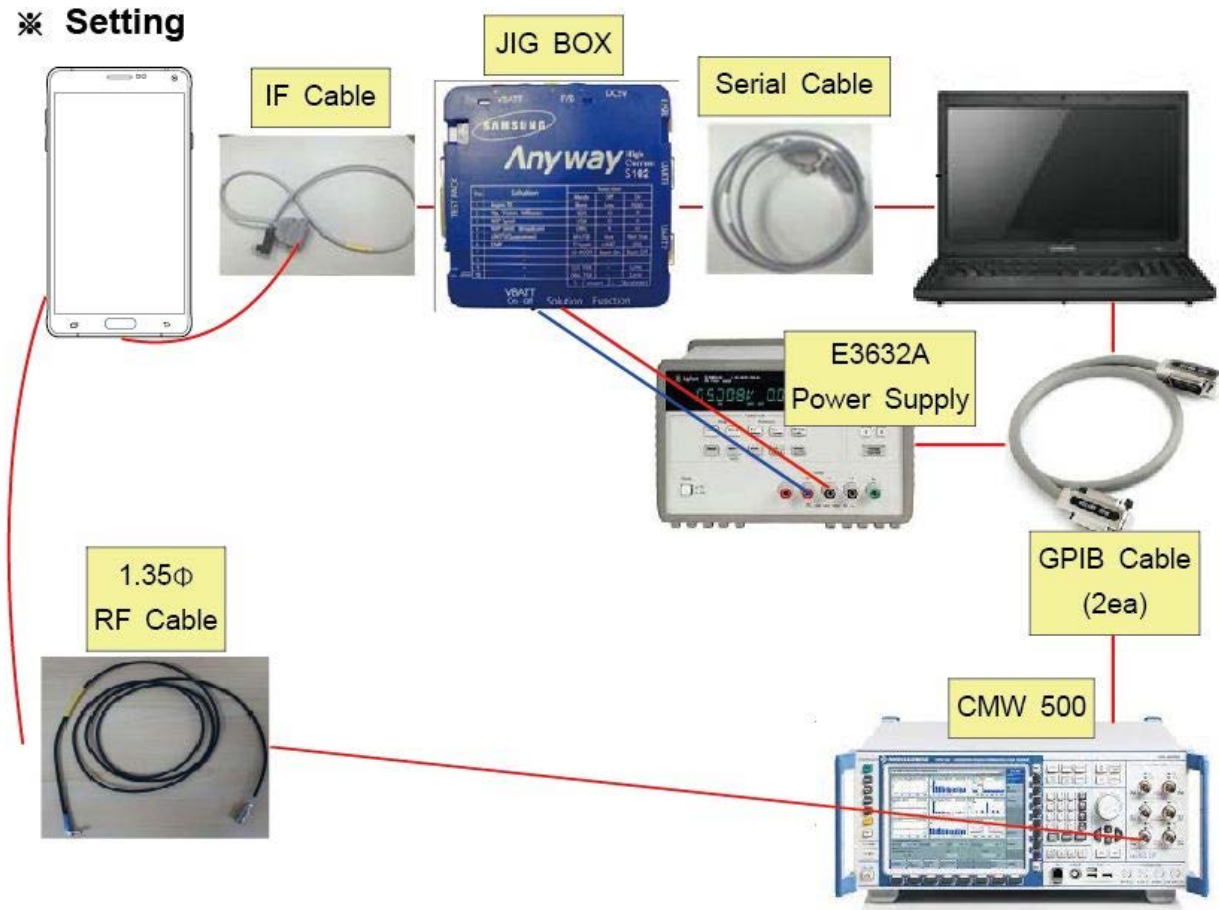
- Installation program: RF Calibration Program
 - Daseul_Launcher_vx.x.xx.exe
 - Daseul_CAL_ALL_Runtime_x.x.xxx.x.CAB
 - Model File ([SM-A720F_OPEN_CALIBRATION_Ver_3.1.244.1.CAB](#))
- ※ It is required to use the latest program.
- [SM-A720F](#) Mobile Phone
- E3632A Power Supply
- JIG BOX (I-market: 1122429700(GH81-12520B))
- IF Cable (I-market: 1128242500(GH81-11962W))
- Adapter (GH81-11888K)
- RF Cable (GH81-11962G 1ea)
- R&S CMW500
- GPIB Cable (2ea)
- UART Serial Cable

• Table of test cables

IF Cable	GH81-10631A	GH81-11962W	GH81-11171A	
	11 pin	USB C Type	7 pin (Old)	
RF Cable (Manual)	GH81-11962D	GH81-11962G	GH81-11962C	GH81-11962F
	1.35T, Short 	1.35T, Long 	1.6T, Short 	1.6T, Long 
4 Port Divider	GH81-11962A	GH81-11962B	GH81-11962E	
	Use / No use 	Divider Cable 	50Ω terminator 	

6. Level 1 Repair




※ Setting



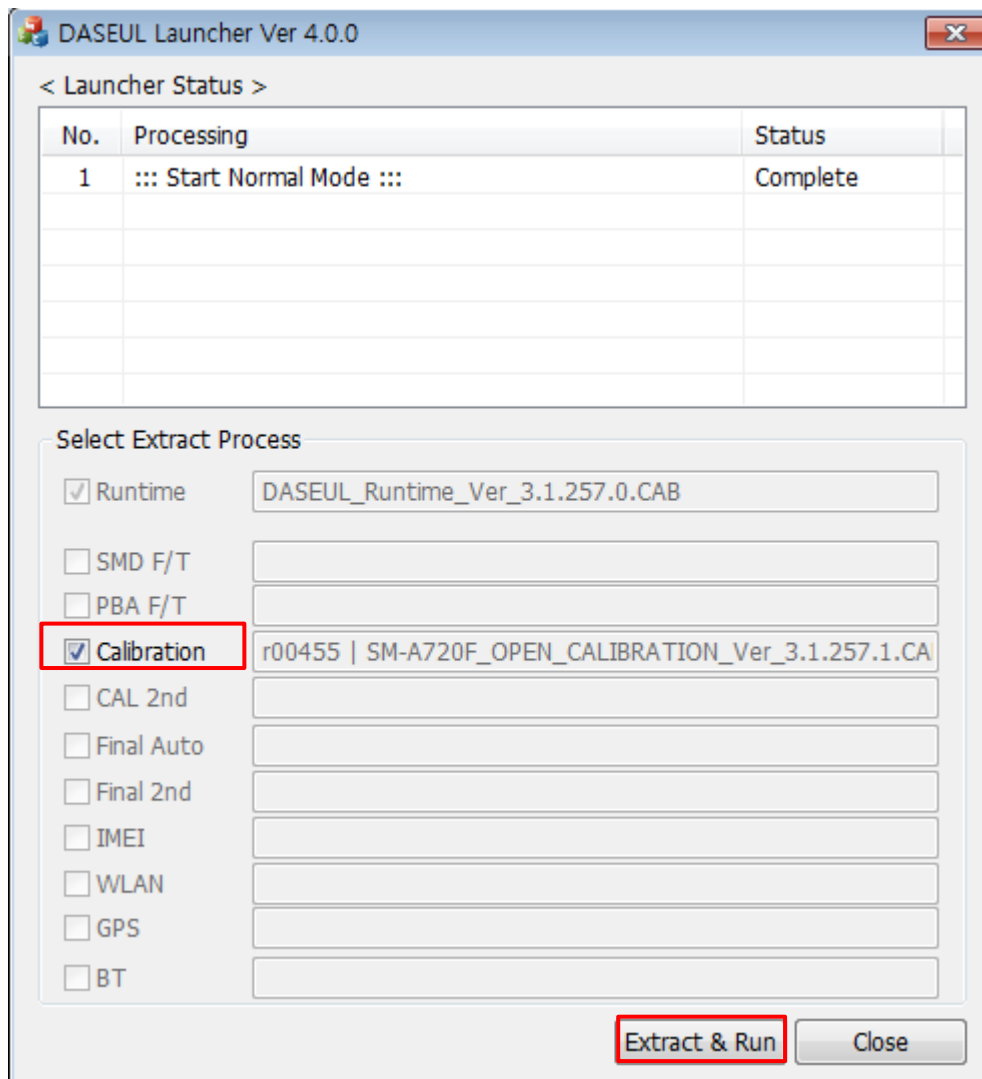
6. Level 1 Repair

6-3-2. RF Calibration Program

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

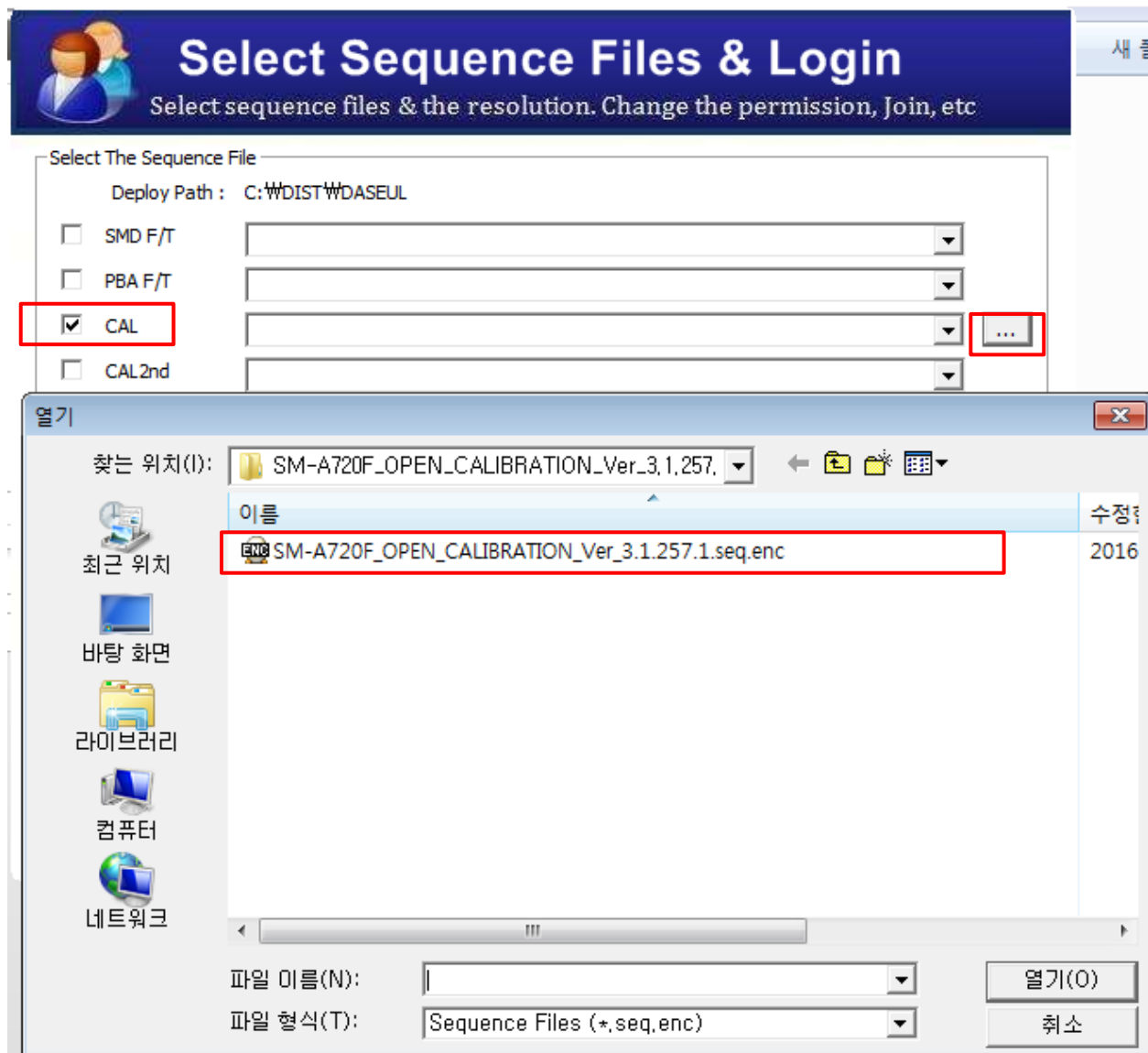
 DASEUL_CAL_ALL_Runtime_3.1.257.0_r00455.CAB
 DASEUL_Launcher_v4.0.0.exe
 SM-A720F_OPEN_CALIBRATION_Ver_3.1.257.1.CAB

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



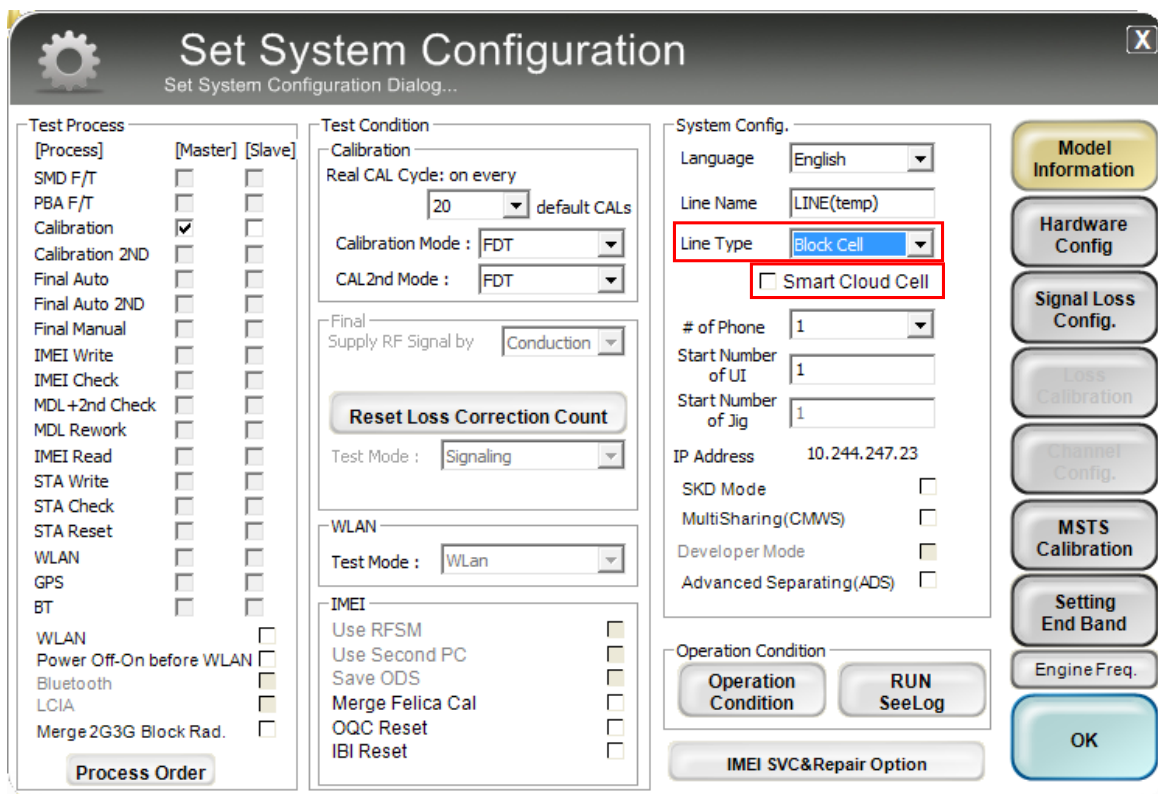
6. Level 1 Repair

3. Check the 'CAL' and open the [model file](#), then select 'Start' button.



6. Level 1 Repair

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



The image shows a 'Set System Configuration' dialog box with a title bar and a close button (X). The dialog is divided into several sections:

- Test Process:** A list of test processes with checkboxes for [Process], [Master], and [Slave]. The 'Calibration' process is checked under [Process].
- Test Condition:** Includes 'Calibration' settings (Real CAL Cycle: on every 20, default CALs), 'Calibration Mode' (FDT), 'CAL2nd Mode' (FDT), 'Final Supply RF Signal by' (Conduction), 'Reset Loss Correction Count' button, 'Test Mode' (Signaling), 'WLAN Test Mode' (Wlan), and 'IMEI' settings (Use RFSM, Use Second PC, Save ODS, Merge Felica Cal, OQC Reset, IBI Reset).
- System Config.:** Includes 'Language' (English), 'Line Name' (LINE(temp)), 'Line Type' (Block Cell), 'Smart Cloud Cell' (unchecked), '# of Phone' (1), 'Start Number of UI' (1), 'Start Number of Jig' (1), 'IP Address' (10.244.247.23), 'SKD Mode' (unchecked), 'MultiSharing(CMWS)' (unchecked), 'Developer Mode' (unchecked), and 'Advanced Separating(ADS)' (unchecked).
- Operation Condition:** Includes 'Operation Condition' and 'RUN SeeLog' buttons.
- IMEI SVC&Repair Option:** A button at the bottom.
- Model Information:** A vertical stack of buttons on the right: Model Information, Hardware Config, Signal Loss Config., Loss Calibration, Channel Config., MSTS Calibration, Setting End Band, Engine Freq., and OK.

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)

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 default CALs

Calibration Mode :

CAL2nd Mode :

Final
Supply RF Signal by :

Reset Loss Correction Count

Test Mode :

WLAN
Test Mode :

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

System Config.

Language :

Line Name :

Line Type :

☐ Smart Cloud Cell

of Phone :

Start Number of UI :

Start Number of Jig :

IP Address : 10.244.247.23

SKD Mode ☐

MultiSharing(CMWS) ☐

Developer Mode ☐

Advanced Separating(ADS) ☐

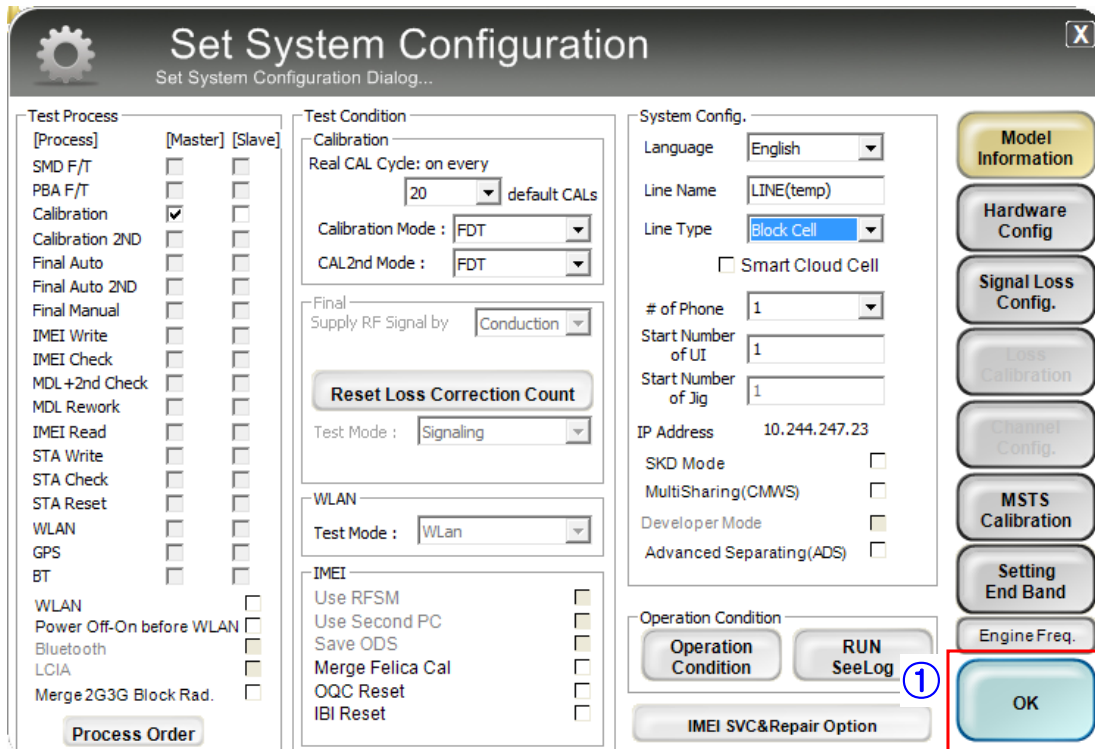
Operation Condition

Model Information

The screenshot shows the 'Hardware Component Configuration' window. The 'Phone' section on the left has a red box around the 'MSTS Count' dropdown (set to 1) and the 'Port Setting' button below it, with a circled '2' next to it. The 'MSTS Sharing Controller' section has a red box around the 'Power Supply' dropdown (set to E3632A) and the 'Port Setting' button below it, with a circled '3' next to it. A modal window titled 'Set IO BUS Configuration' is open, showing the 'MSTS IO Bus Setting' tab. In this modal, a red box highlights the 'SAVE' button at the bottom, with a circled '5' next to it. Another red box highlights the 'Address' dropdown in the modal, which is set to 'NOT USE', with a circled '4' next to it. The 'SAVE' button in the main window is also highlighted with a red box and a circled '5' next to it.

6. Level 1 Repair

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



The 'Set System Configuration' dialog box is shown with various settings. The 'Test Process' tab is active, showing a list of test items. The 'Test Condition' tab is also visible, showing 'Calibration' settings. The 'System Config.' tab is active, showing 'Language' set to English, 'Line Name' as LINE(temp), 'Line Type' as Block Cell, and 'Smart Cloud Cell' unchecked. The 'Operation Condition' tab is also visible, showing 'Operation Condition' and 'RUN SeeLog' buttons. The 'OK' button is highlighted with a red box and a circled '1'.

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.

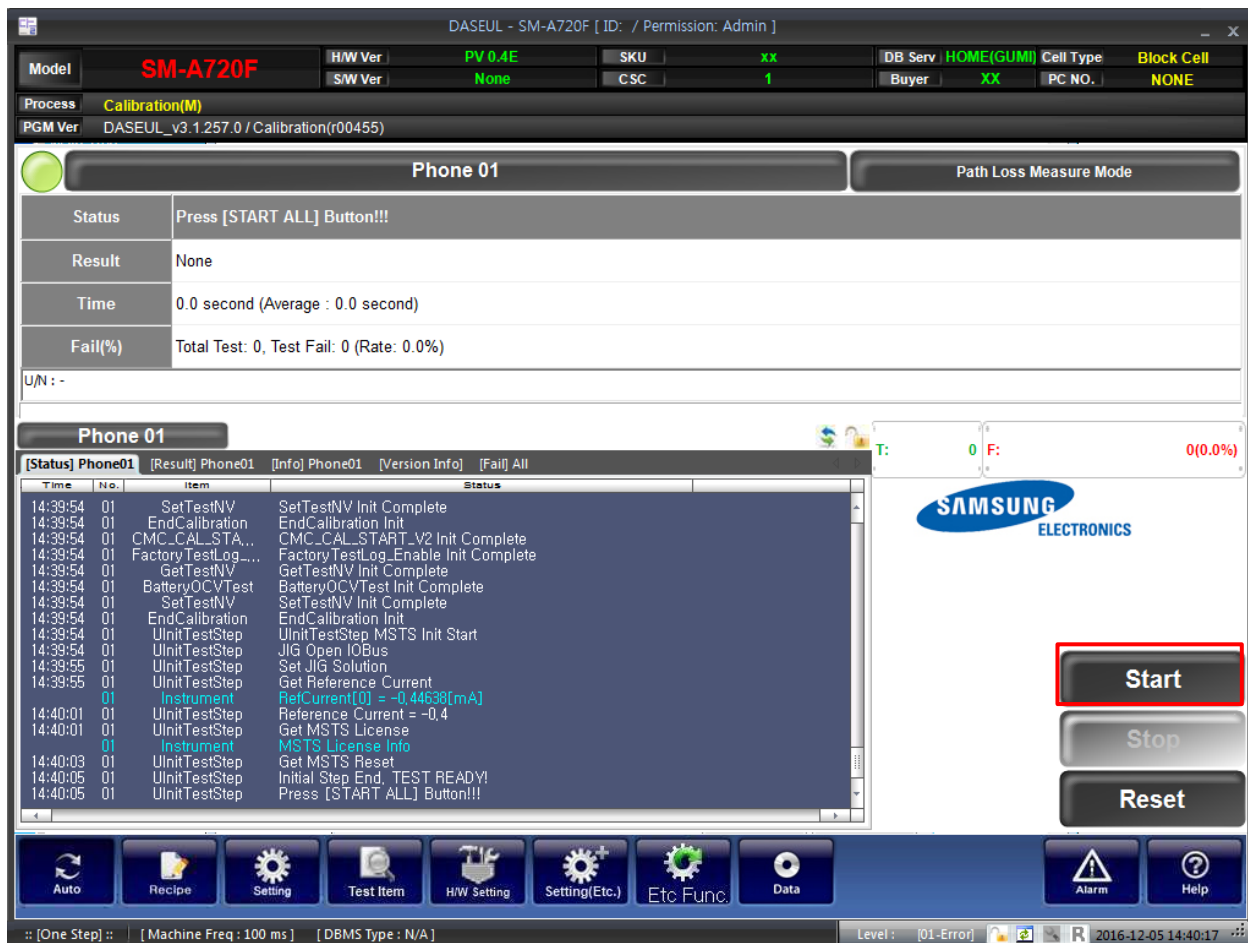
Language: English
Line Name: LINE(temp)
Line Type: Block Cell
☐ Smart Cloud Cell
of Phone: 1
Start Number of UI: 1
Start Number of Jig: 1
IP Address: 10.244.247.23
SKD Mode
MultiSharing(CMWS)
Developer Mode
Advanced Separating(ADS)

Operation Condition

Operation Condition
RUN SeeLog
IMEI SVC&Repair Option

Model Information
Hardware Config.
Signal Loss Config.
Loss Calibration
Channel Config.
MSTS Calibration
Setting End Band
Engine Freq.

OK



The 'DASEUL - SM-A720F' interface is shown. The top bar displays 'Model: SM-A720F', 'H/W Ver: PV 0.4E', 'SKU: xx', 'DB Serv: HOME(GUMI)', 'Cell Type: Block Cell', 'SW Ver: None', 'CSC: 1', 'Buyer: XX', and 'PC NO.: NONE'. The 'Process' is 'Calibration(M)' and 'PGM Ver' is 'DASEUL_v3.1.257.0 / Calibration(r00455)'. The 'Phone 01' section shows 'Status: Press [START ALL] Button!!!', 'Result: None', 'Time: 0.0 second (Average : 0.0 second)', and 'Fail(%): Total Test: 0, Test Fail: 0 (Rate: 0.0%)'. The 'Phone 01' section also shows 'Path Loss Measure Mode'. The 'SAMSUNG ELECTRONICS' logo is visible. The 'Start' button is highlighted with a red box. The 'Stop' and 'Reset' buttons are also visible. The bottom bar shows 'Auto', 'Recipe', 'Setting', 'Test Item', 'H/W Setting', 'Setting(Etc.)', 'Etc Func.', 'Data', 'Alarm', and 'Help'.

Model SM-A720F **H/W Ver** PV 0.4E **SKU** xx **DB Serv** HOME(GUMI) **Cell Type** Block Cell
SW Ver None **CSC** 1 **Buyer** XX **PC NO.** NONE

Process Calibration(M) **PGM Ver** DASEUL_v3.1.257.0 / Calibration(r00455)

Phone 01 **Path Loss Measure Mode**

Status Press [START ALL] Button!!!
Result None
Time 0.0 second (Average : 0.0 second)
Fail(%) Total Test: 0, Test Fail: 0 (Rate: 0.0%)

Phone 01

[Status] Phone01 **[Result] Phone01** **[Info] Phone01** **[Version Info]** **[Fail] All**

14:39:54 01 SetTestNV SetTestNV Init Complete
14:39:54 01 EndCalibration EndCalibration Init
14:39:54 01 CMC_CAL_STA... CMC_CAL_START_V2 Init Complete
14:39:54 01 FactoryTestLog... FactoryTestLog_Enable Init Complete
14:39:54 01 GetTestNV GetTestNV Init Complete
14:39:54 01 BatteryOCVTest BatteryOCVTest Init Complete
14:39:54 01 SetTestNV SetTestNV Init Complete
14:39:54 01 EndCalibration EndCalibration Init
14:39:54 01 UinitTestStep UinitTestStep MSTS Init Start
14:39:54 01 UinitTestStep JIG Open IOBus
14:39:54 01 UinitTestStep Set JIG Solution
14:39:54 01 UinitTestStep Get Reference Current
14:39:54 01 Instrument RefCurrent[0] = -0.44638[mA]
14:40:01 01 UinitTestStep Reference Current = -0.4
14:40:01 01 UinitTestStep Get MSTS License
14:40:03 01 Instrument MSTS License Info
14:40:05 01 UinitTestStep Get MSTS Reset
14:40:05 01 UinitTestStep Initial Step End, TEST READY!
14:40:05 01 UinitTestStep Press [START ALL] Button!!!

SAMSUNG ELECTRONICS

Start
Stop
Reset

Auto **Recipe** **Setting** **Test Item** **H/W Setting** **Setting(Etc.)** **Etc Func.** **Data** **Alarm** **Help**

Level : [01-Error] **2016-12-05 14:40:17**