New Product SVC Guide
[SM-G935F]

Rev 2.7

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SAMSUNG ELECTRONICS

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Specification

Item	Spec.		
AP Chipset	Vendor	Cores	Speed
	S.LSI	Octa-core	2.4 Ghz Quad + 1.6Ghz Quad
Memory	RAM		Flash
	4GB		32GB
Display	Size	Resolution	Type
	5.5 inch	1440 X 2560, WQHD	Super AMOLED
CAMERA	Resolution (Main/Front)	Auto Focus	Video (Main)
	12MP / 5MP	2PD Phase detection	1080p @ 60fps
Network	2G/3G	LTE	
	Support	B1/2/3/4/5/7/12/17/20	Cat 11 (50Mbps UL / 600Mbps DL)
Sensors	Accelerometer, Magnetic, Gyro, Barometer, RGB Light, Proximity, Fingerprint, Heart Rate Light		
Connectivity	Bluetooth 4.1, WIFI 802.11 a/b/g/n/ac, NFC, MST, USB2.0		
Battery & GPS	3,600mAh	A-GPS & GLONASS & BEIDOU	
Micro SD & OS	Up to 200GB	Android V6.0.1 (Marshmallow)	
Remarks	Water Resistance : IP68		

New Concepts of H/W

Dual Photodiode Sensor

Phase Detection

S6

S7 (World 1st in mobile)

■ Photodiode A
■ Photodiode B
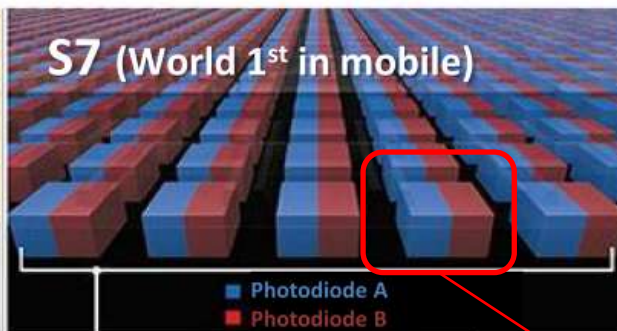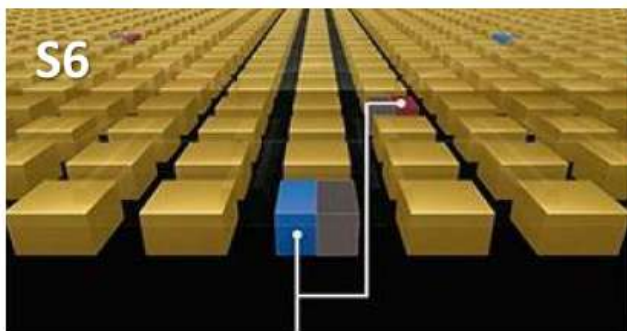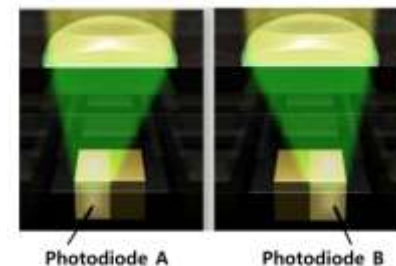
- Phase Detection pixel

  : Fixed numbers of pixels

  (120K, 0.7%)

- Phase Detection pixel

  : All pixels (24M, 100%)

  ※ Used in Canon DSLR camera (70D)

Photodiode A   Photodiode B

■ Super Fast AF Speed

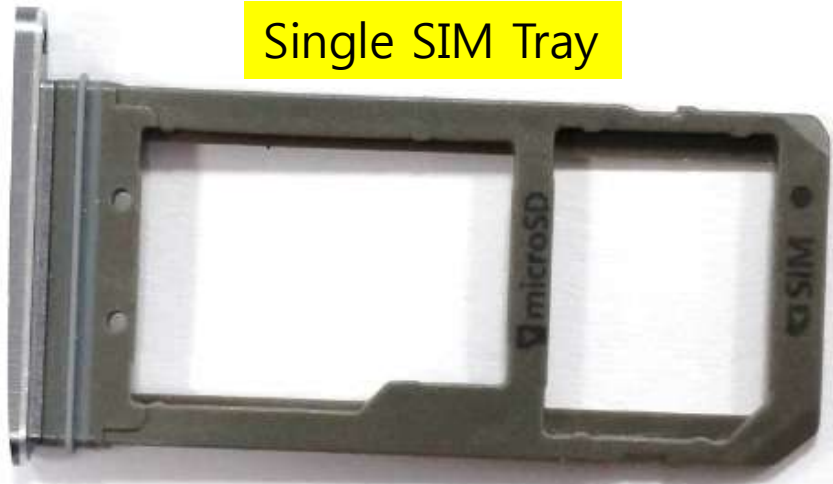- S6 0.85s → S7 0.2s @ 20 Lux

New Concepts of H/W

MicroSD card Support – Hybrid SIM/SD socket

Single SIM Tray

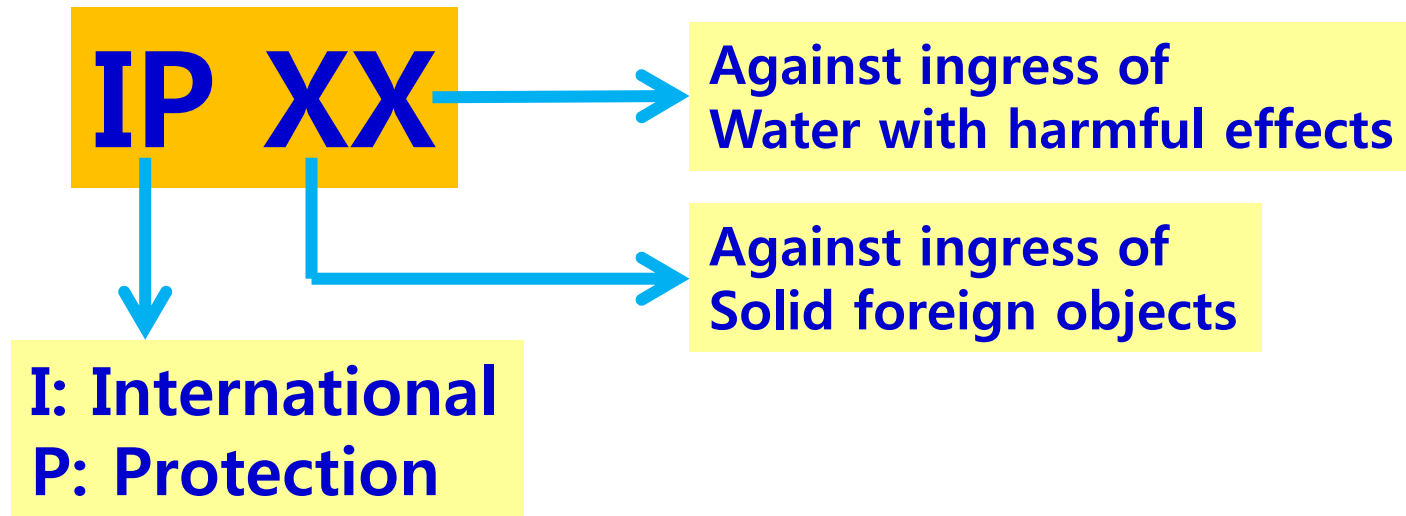Dual SIM Tray

IP68

IP XX

→ Against ingress of
Water with harmful effects

→ Against ingress of
Solid foreign objects

I: International
P: Protection
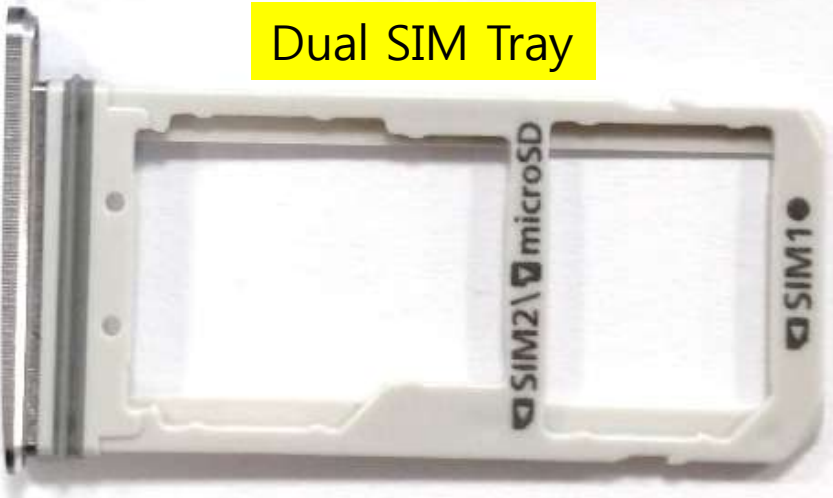
New Concepts of H/W

IP68

Level	Object size protected against	Effective against
0	—	No protection against contact and ingress of objects
1	>50 mm	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part
2	>12.5 mm	Fingers or similar objects
3	>2.5 mm	Tools, thick wires, etc.
4	>1 mm	Most wires, screws, etc.
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment.
6	Dust tight	No ingress of dust; complete protection against contact (dust tight)

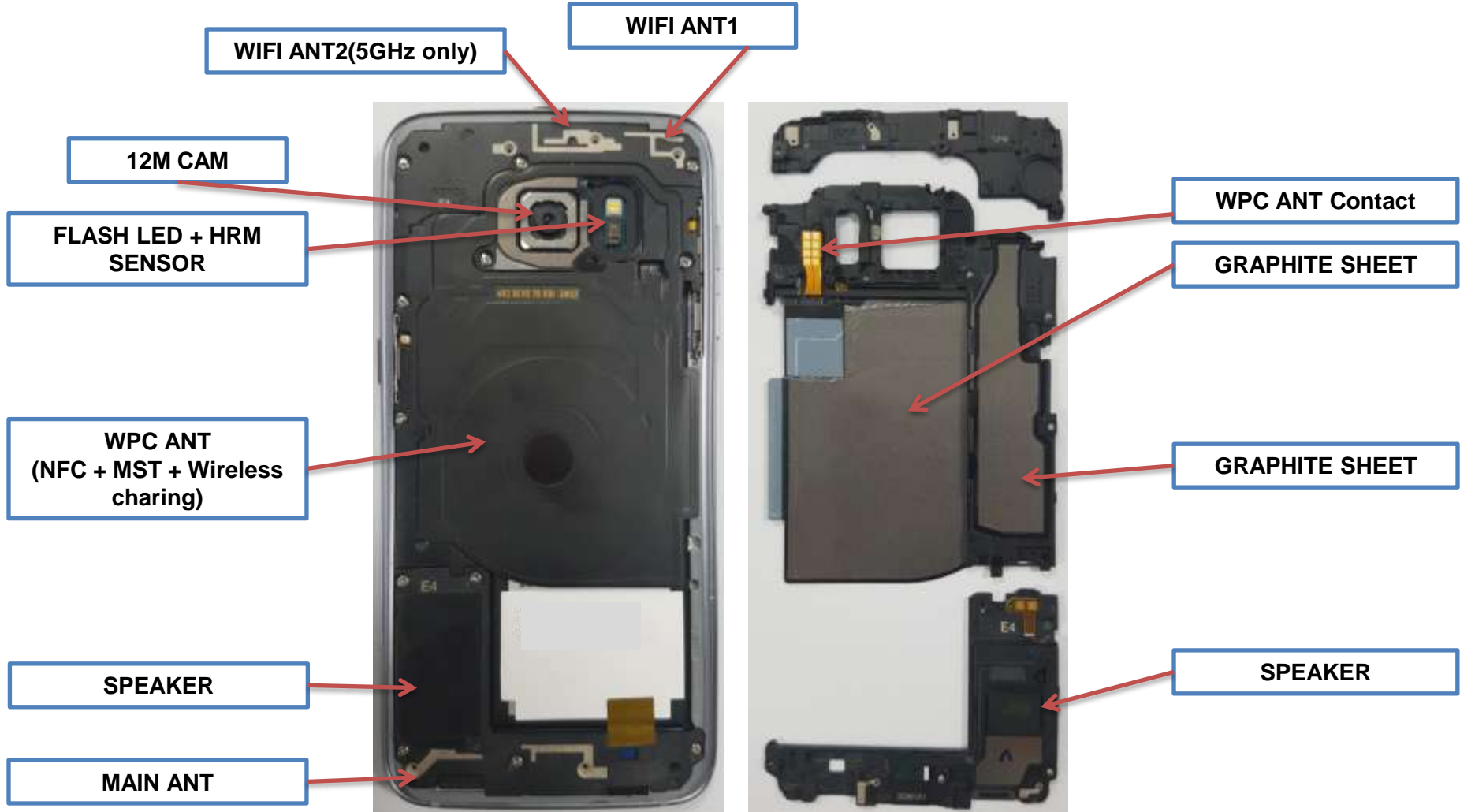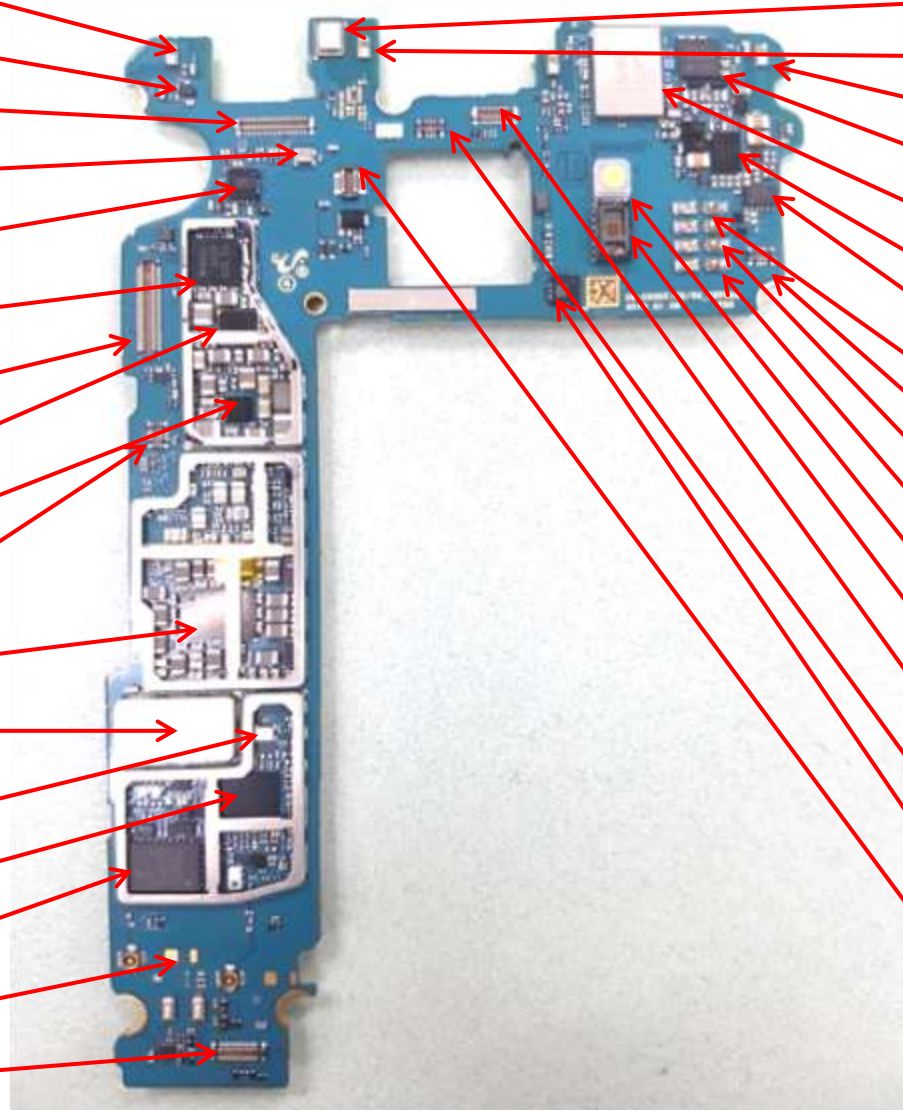| Level	Protected against	Effective against
0	Not protected	—
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect.
2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.
3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Splashing of water	Water splashing against the enclosure from any direction shall have no harmful effect.
5	Water jets	Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects.
6	Powerful water jets	Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects.
7	Immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).
8	Immersion beyond 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it produces no harmful effects.

Disassembly & Reassembly

Parts Layout

Rear Case

WIFI ANT2(5GHz only)

WIFI ANT1

12M CAM

FLASH LED + HRM SENSOR

WPC ANT Contact

GRAPHITE SHEET

WPC ANT
(NFC + MST + Wireless charing)

GRAPHITE SHEET
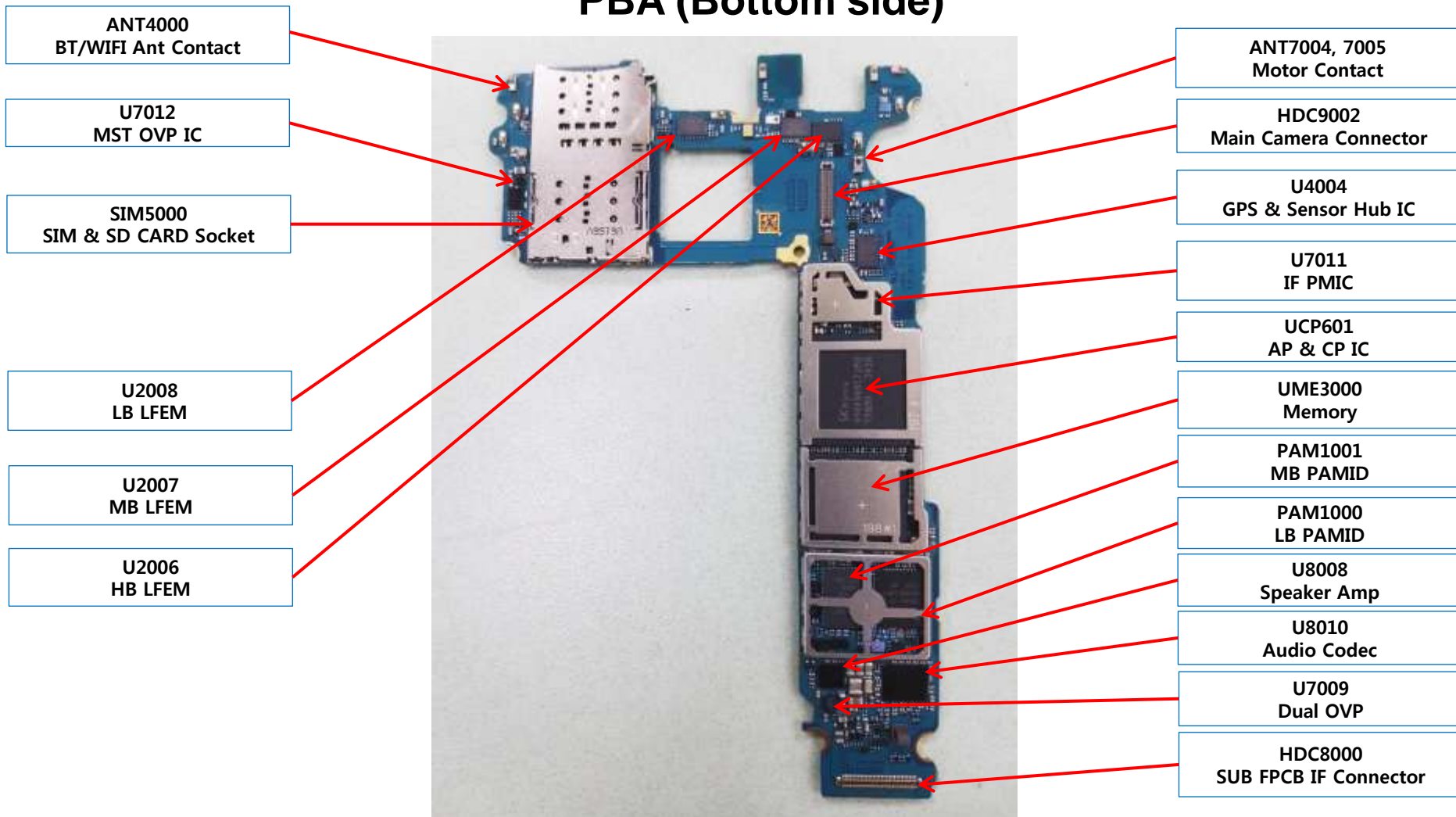
SPEAKER

SPEAKER

MAIN ANT
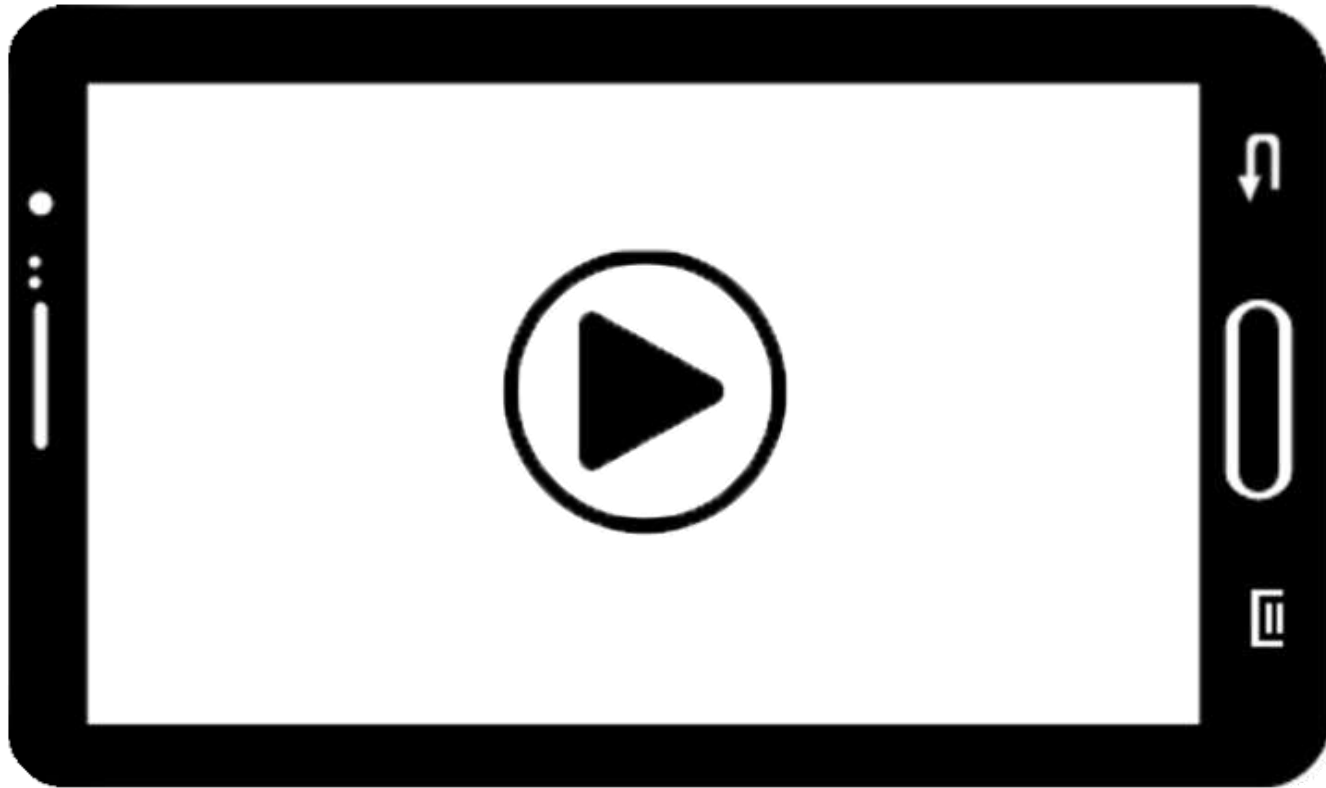
Parts Layout

PBA (Top side)

ANT2004
HB SUB Ant Contact

U4000
GPS LNA

HDC9000
VT CAM Connector

OSC4000
GPS Clock

U4006
6 Axis sensor

U9005
Companion IC

HDC9001
UB Connector

U7001
SUB PMIC

U9010
Display PMIC

HDC7001
Power key Connector

U7000
AP PMIC

U1006
S735 ET Modulator
(inside shield can)

TCX3000
26MHz TCXO

U3003
Transceiver

PAM1002
HB PAMID

ANT8000, 8001
Speaker Contact

HDC4001
BTP IF Connector

MIC8000
2nd MIC

ANT2005
LB/MB SUB Ant Contact

ANT4001
BT/WIFI Ant Contact

U4012
NFC IC

U4005
BT/WIFI IC

U7008
Wireless Charging IC

U7014
MST IC

ANT7006, 7007
MST Ant Contact

HDC7002
Volume key Connector

ANT4004, 4005
NFC Ant Contact

ANT7000, 7002
WPC Ant Contact

LED7000
Camera Flash

U4010
HRM Sensor

HDC4000
Proximity Sensor & MIC
& SVC LED Connector

HDC8001
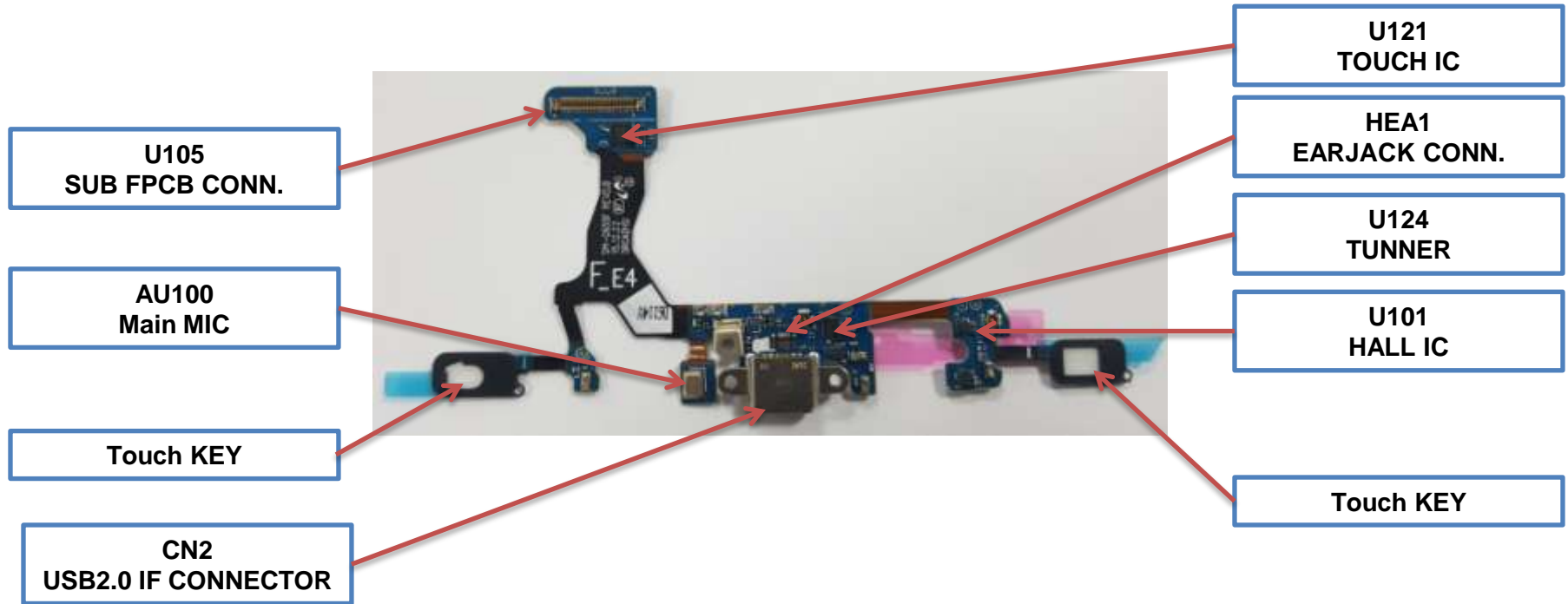RCV Connector

U4007
Barometer Sensor

HDC7000
Battery Connector

Parts Layout

PBA (Bottom side)

ANT4000
BT/WIFI Ant Contact

U7012
MST OVP IC

SIM5000
SIM & SD CARD Socket

U2008
LB LFEM

U2007
MB LFEM

U2006
HB LFEM

ANT7004, 7005
Motor Contact

HDC9002
Main Camera Connector

U4004
GPS & Sensor Hub IC

U7011
IF PMIC

UCP601
AP & CP IC

UME3000
Memory

PAM1001
MB PAMID

PAM1000
LB PAMID

U8008
Speaker Amp

U8010
Audio Codec

U7009
Dual OVP

HDC8000
SUB FPCB IF Connector

Parts Layout

SUB PBA

U121
TOUCH IC

HEA1
EARJACK CONN.

U124
TUNNER

U101
HALL IC

Touch KEY

U105
SUB FPCB CONN.

AU100
Main MIC

Touch KEY

CN2
USB2.0 IF CONNECTOR

Troubleshooting

No Power

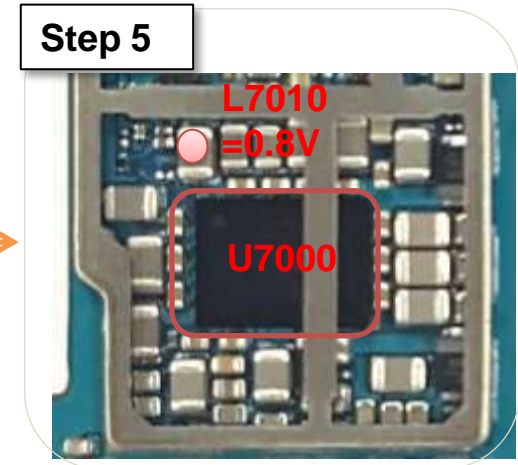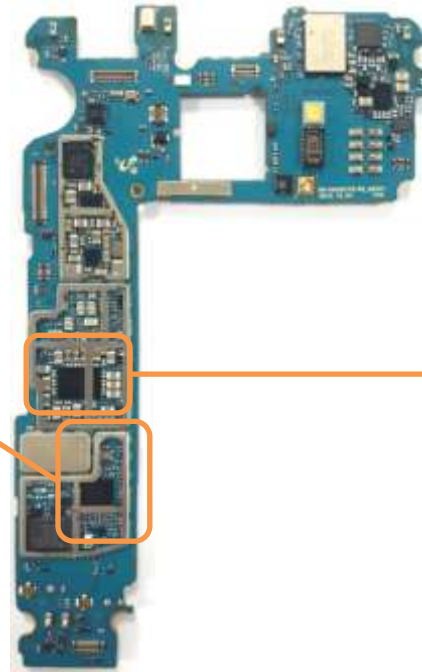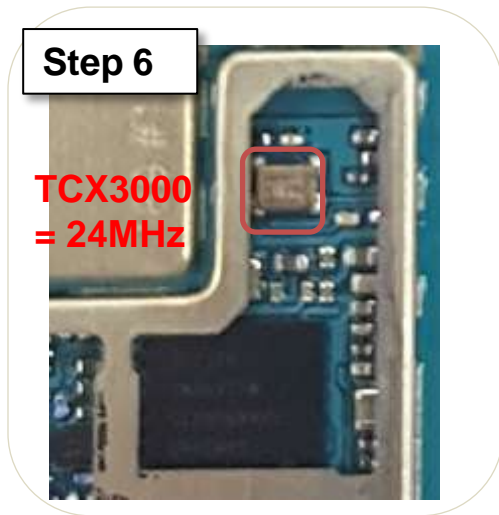| Step	Check point	Result value	Defect point
1	Confirm the defect symptom	-	-
2	* * Analyse reasons of No-Power using **the Power & Current test jig Power** test mode.	PASS	Battery, Battery connector, Physical Key
		Leakage Current fail	Go to the step 2.1
		Power On Current fail	Go to the step 3
2.1	Check the Resistance between JIG Power V_Battery / VPH_PWR/ V_BAT and Ground. (C701,C805)	Normal (Over dozens of KΩ)	Go to the step 5
		Abnormal	Capacitors for ESD protection
3	It's possible to enter the download mode?	Yes	Go to the step 3.1
		No	Go to the step4
3.1	Check if it's rooted.	Rooted	OOW
		Normal	S/W update
4	Check the voltage of C7129	C7129 = Power supply voltage	Go to the step 5
		If not the correct value	Replace the U7011
5	Check the voltage of L7010(=PMIC Output)	L7010 = 0.8V	Go to the step 6
		If not the correct value	Replace the U7000

** Usage guide of the Power & Current test jig has been uploaded at GSPN. (Power & Current Tester_Rev4_150716.pdf)

Troubleshooting

No Power (cont')

Step	Check point	Result value	Defect point
6	Check the frequency of TCX3000	26MHz	Main chip (UCP601)
		If not the correct value	X-TAL (TCX3000)

Step 6

TCX3000 = 24MHz

Step 5

L7010 =0.8V

U7000

Troubleshooting

Power on but no operation (freezing)

Step	Check point	Result value	Defect point
1	Confirm the defect symptom	-	-
2	* * Analyse reasons of No-Power using **the Power & Current test jig**.	PASS	Go to the step 1
		Leakage Current fail	Refer to the No-power Troubleshooting
		Power On Current fail	Go to the step 3
3	It's possible to enter the download mode?	Yes	Go to the step 3.1
		No	Go to the step 4
3.1	Check if it's rooted.	Rooted	OOW
		Normal	Go to the step 4
4	Enter the safe mode, and check if powers up.	Solved	3rd party Apps.
		Not solved	Go to the step 5
5	Perform full reset.	Solved	S/W or 3rd party Apps
		Not solved	Go to the step 6
6	Upgrade software to the latest version.	Solved	S/W
		Not solved	Replace the eMMC

** Usage guide of the Power & Current test jig has been uploaded at GSPN. (Power & Current Tester_Rev4_150716.pdf)
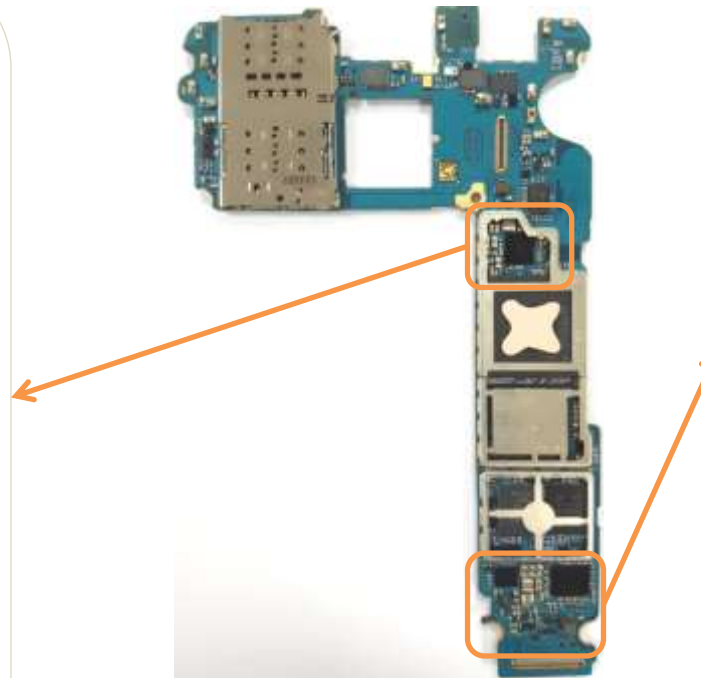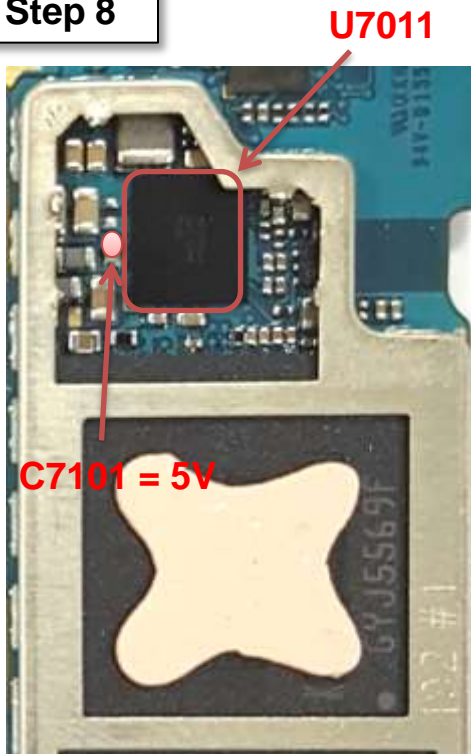
Troubleshooting

No Charging

Step	Check point	Result value	Defect point
1	Confirm the defect symptom	-	-
2	Charge the customer battery during 5min at least.	Solved	Totally discharged battery
2	Charge the customer battery during 5min at least.	Not solved	Battery
3	** Analyse reasons of No-Charging using **the Power & Current test jig Charging test mode** with no defect charger. (Test battery voltage should be below 85%)	PASS	Go to the step 4
3	** Analyse reasons of No-Charging using **the Power & Current test jig Charging test mode** with no defect charger. (Test battery voltage should be below 85%)	FAIL	Go to the step 5
4	** Test a customer's charger using **the Power & Current test jig TA test mode**.	PASS	Go to the step 1
4	** Test a customer's charger using **the Power & Current test jig TA test mode**.	FAIL	Customer's Charger
5	Disassemble and check I/F connector visually	Dust	Clean I/F connector
5	Disassemble and check I/F connector visually	Damage	Replace I/F connector
5	Disassemble and check I/F connector visually	Normal	Go to the step 6
6	Replace a battery	Solved	Go to the step 1
6	Replace a battery	Not solved	Go to the step 7
7	Check the voltage of L7022	L7022 = 5V	Go to the step 7
7	Check the voltage of L7022	If not the correct value	may not connected charger
8	Check the voltage of C7101	C7101 = 5V	Replace the U7011
8	Check the voltage of C7101	If not the correct value	Replace the U7009

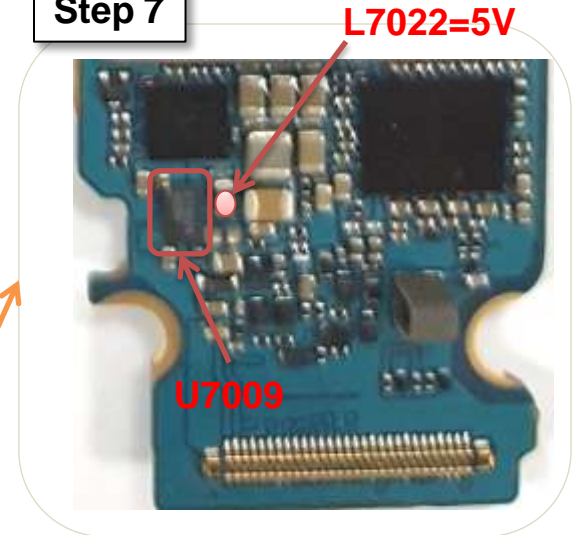**** Usage guide of the Power & Current test jig has been uploaded at GSPN. (Power & Current Tester_Rev4_150716.pdf)**
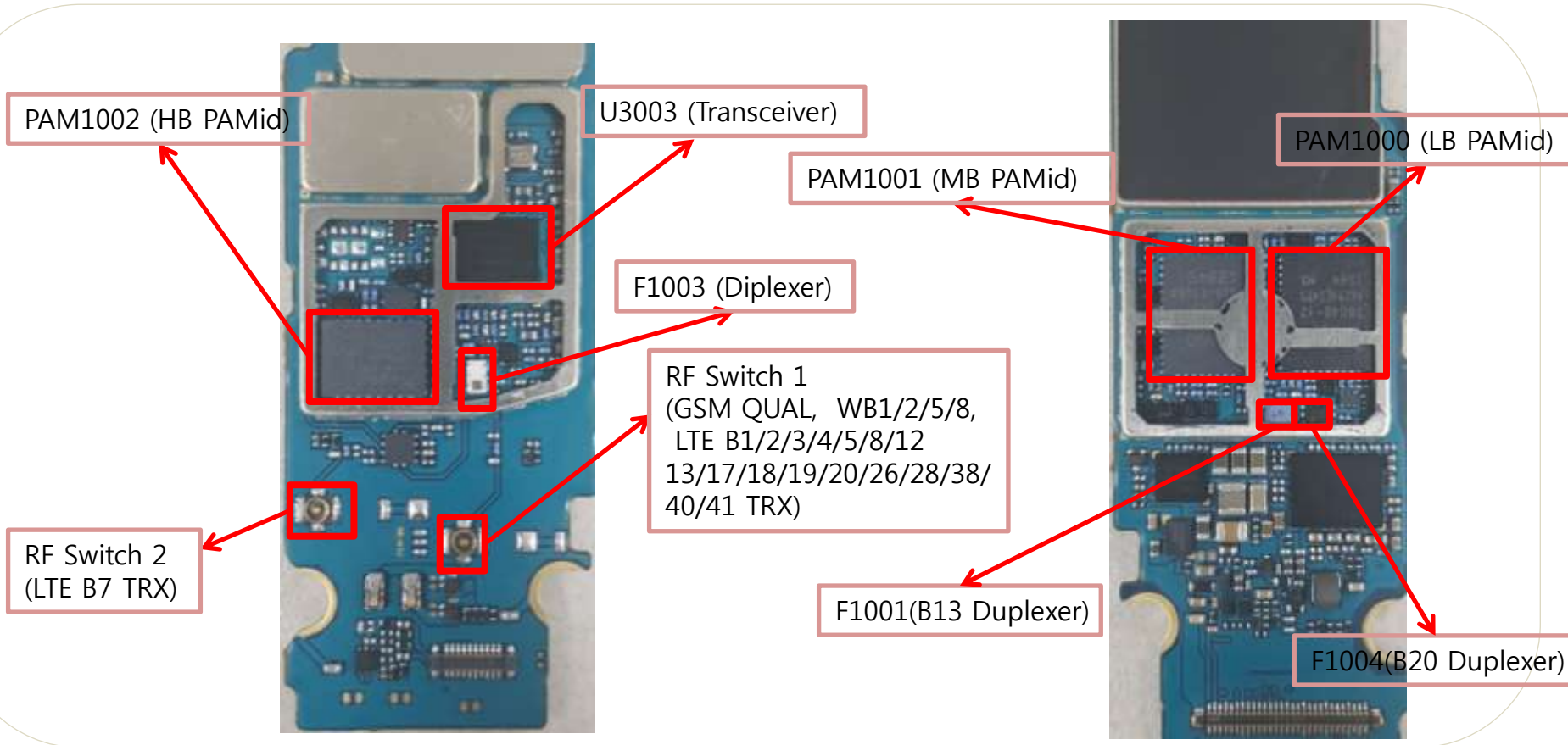
Troubleshooting

No Charging

Step 8

U7011

C7101 = 5V

Step 7

L7022=5V

U7009

Troubleshooting

Call Problem (with RF equipment)

Step	Check point	Result value		Defect point
1	Confirm the defect symptom	-		-
2	RF radiation test	Pass		Network or Settings
		Fail		Go to the next step
3	RF calibration	Pass		Go to the step 4
		Fail		Go to the step 5
4	RF radiation test	Pass		Repaired
		Fail		Except PBA (Coaxial cable, Antenna, Shielding condition)
5	A type of failure	TX	Low band	Diplexer, low band PAMid, Duplexer, Transceiver
			Mid band	Diplexer, Mid band PAMid, Duplexer, Transceiver
			High band	Diplexer, HB PAMid, Transceiver
		RX	Low band	Diplexer, low band PAMid, Duplexer, Transceiver
			Mid band	Diplexer, Mid band PAMid, Duplexer, Transceiver
			High band	Diplexer, HB PAMid, Transceiver

Troubleshooting

Call Problem

Step5

PAM1002 (HB PAMid)

U3003 (Transceiver)

PAM1000 (LB PAMid)

PAM1001 (MB PAMid)

F1003 (Diplexer)

RF Switch 1
(GSM QUAL, WB1/2/5/8,
LTE B1/2/3/4/5/8/12
13/17/18/19/20/26/28/38/
40/41 TRX)

RF Switch 2
(LTE B7 TRX)

F1001(B13 Duplexer)

F1004(B20 Duplexer)

Troubleshooting

Call Problem (without RF equipment)

Step	Check point	Result value	Defect point
1	Confirm the defect symptom	-	-
2	Check the settings (airplane mode, Mobile networks)	Abnormal	Settings
2	Check the settings (airplane mode, Mobile networks)	Normal	Go to the next step
3	Check the debug screen *#0011# (Compare to normal device)	Abnormal	Go to the next step
3	Check the debug screen *#0011# (Compare to normal device)	Normal	Network
4	Check the RF parts except PBA. (Coaxial cable, Antenna, Shielding condition, etc..)	Broken, dust, corrosion	RF parts
4	Check the RF parts except PBA. (Coaxial cable, Antenna, Shielding condition, etc..)	Loose fitting	Connection
4	Check the RF parts except PBA. (Coaxial cable, Antenna, Shielding condition, etc..)	Normal	Go to the next step
5	Check the status visually(crack, missing, Corrosion..etc) of RF components. (compare to normal PBA) U3003 Transceiver PAM1000 Low band PAMid(PAM + FEMid) PAM1001 Mid band PAMid(PAM + FEMid) PAM1002 High band PAMid(PAM + FEMid) F1001,1004 Duplexer F1003 Diplexer	Abnormal	RF components.
5	Check the status visually(crack, missing, Corrosion..etc) of RF components. (compare to normal PBA) U3003 Transceiver PAM1000 Low band PAMid(PAM + FEMid) PAM1001 Mid band PAMid(PAM + FEMid) PAM1002 High band PAMid(PAM + FEMid) F1001,1004 Duplexer F1003 Diplexer	Normal	CP(Call Processor) (UCP601-2)

Troubleshooting

Call Problem

Step2,3

CHECK SETTINGS

← Airplane mode

On ●

Turn off calling and messaging functions, and turn off Mobile data.

Wi-Fi and Bluetooth will also be turned off, but can be turned on again in Settings or in the quick settings panel.

ServiceMode

2G-BASIC Info
Reg Status : <NOT_REGISTER>
MCC : 450 MNC : 01
RAT: GSM(2G), Band:GSM850
BCCH arfcn:202 Rx Lvl:-66
TCH Rx Lvl:–, Rx Q:–
NOM : 2, Rac : 188
CellId : 0x29880, Lac :2988
Timing Advance : 0
Tx_Pwr_Lvl: 0

**DEBUG SCREEN STATUS
Same value compare to normal device.**

Step4
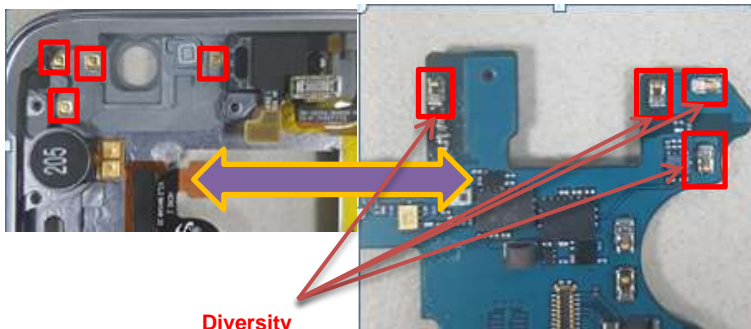
Diversity ANTENNA contact

Step4

Coaxial cable (connect Main Ant. with PBA)

Main ANTENNA contact

ANT. Contact (for main RF)

Step5

PAM1002 (HB PAMid)

U3003 (Transceiver)

F1003 (Diplexer)

RF Switch 1 (GSM QUAL, WB1/2/5/8, LTE B1/2/3/4/5/8/12 13/17/18/19/20/26/28/38/40/41 TRX)

RF Switch 2 (LTE B7 TRX)

PAM1001 (MB PAMid)

PAM1000 (LB PAMid)

F1001(B13 Duplexer)

F1004(B20 Duplexer)

Troubleshooting

Sound Problem

Step.	Check point	Result value	Defect point
1	Confirm the defect symptom.	-	-
2	*#0*# → speaker	No sound	Go to the next step
2		Normal	S/W or Settings
3	Replace the speaker	Solved	speaker
3		Not solved	Go to the next step
4	Activate the speaker path. (*#0*# → Speaker)	-	-
5	Check the signal at two of speaker contacts. (Using oscilloscope) Notice : It should be measured when the speaker path is activated on.	Same signal compared with a good PBA	Go to step 6
5		No signal	Audio Codec (U8010)
6	Check if the SPK is contacted to PBA well, and assemble the phone again.	Solved	Assembly error
6		Not solved	Go to step 3

Troubleshooting

Sound Problem

Step 3

Speaker

Step 5, 6

U8010
Audio Codec

Speaker contacts
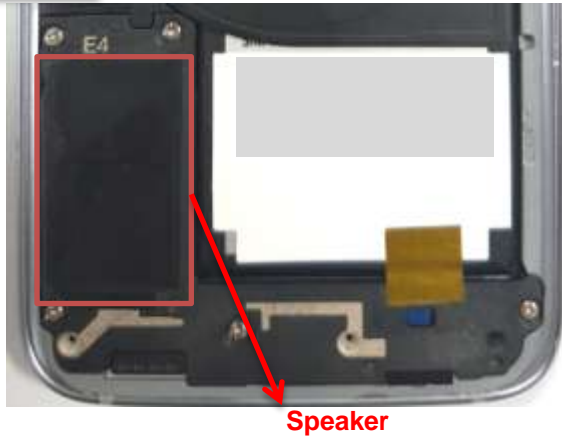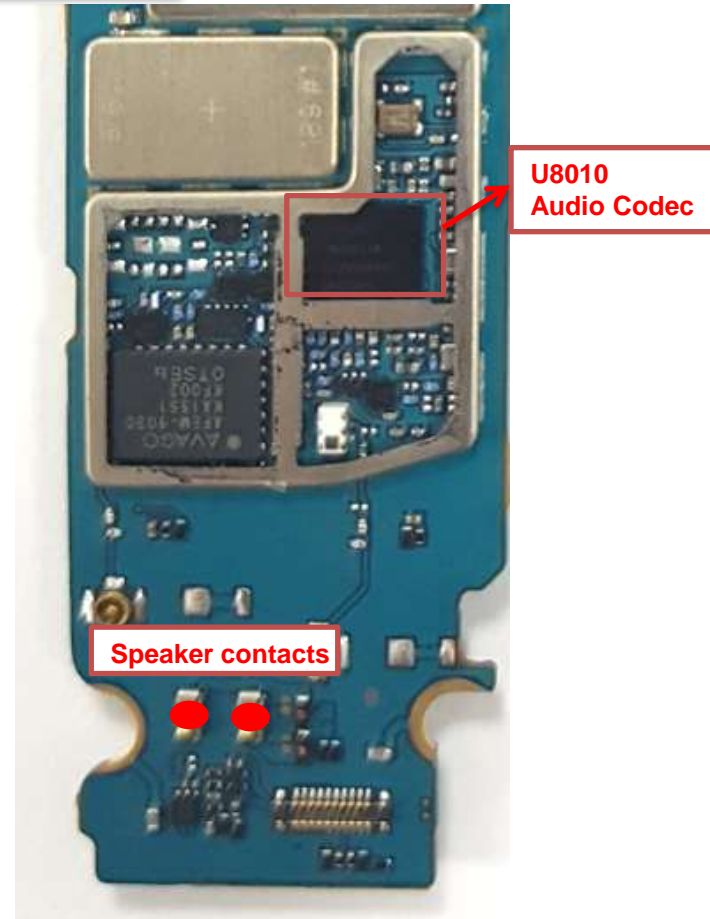
Troubleshooting

Display Problem

Step	Check point	Result value	Defect point
1	Confirm the defect symptom	-	-
2	Check the UB connector (HDC9001)	Broken, dust, corrosion	UB connector (HDC9001)
		Loose fitting	Connection
		Normal	Go to the next step
3	Replace the UB ass'y	Solved	UB ass'y
		Not solved	Go to the next step
4	Connect a UB, and display on with a power supply (power supply voltage : 4.0V)	-	-
5	Check the voltage of C90000, C90005 Notice. It should be measured when the display is activated on	If not the correct value	Display PMIC(U9010)
		C90000=3.0V C90005=1.6V	Go to the next step
6	Check the voltage of following chips (C9023,C9022,C9027) Notice. It should be measured when the display is activated on	If not the correct value	Display PMIC(U9010)
		C9023=4.6V C9022=-1.4~-5.4V C9027=5.8~7.9V	MAIN CHIP

Troubleshooting

Display Problem

LCD CONNECTOR

HDC9001

U9010

- C90005
- C9022
- C9027
- C9023
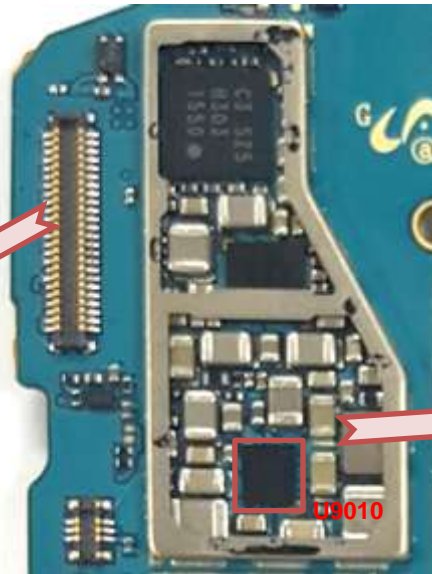
RF Calibration Preparation

Item	Quantity	Code
❶ 4 Port Divider	1	GH81-11962A
❷ 50 ohm Termination	2	GH81-11962E
❸ RF cable (Divider to phone)	2	GH81-11962M
❹ RF cable (Instrument to divider)	1	GH81-11962U
❺ Anyway JIG	1	-
❻ Power Supply	1	E3632A
❼ RF Equipment	1	CMW500
❽ IF cable	1	GH81–10952A

CABLE CODE

Connection Diagram
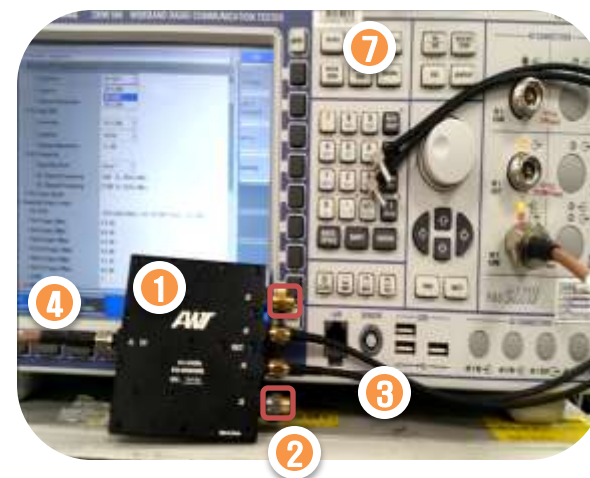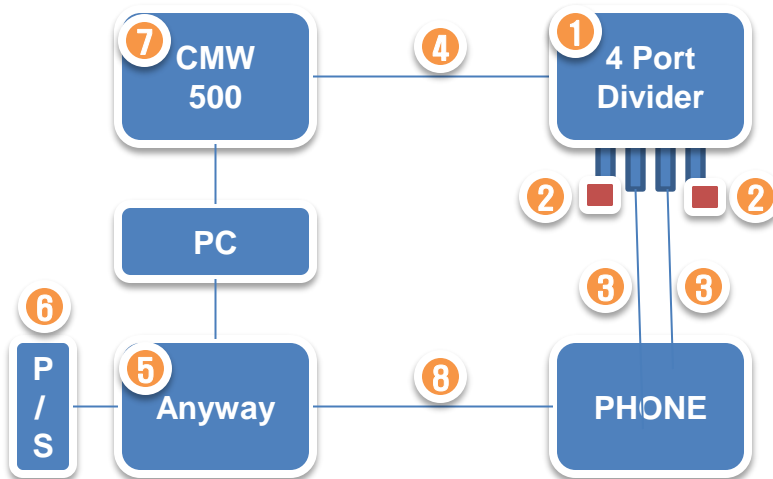
S/W Download

How to enter the S/W download mode

1. Turn off the device
2. Press 3 buttons simultaneously
   (Volume down + Home + Power on)
3. Press volume up button after 'Warning' message.
4. Connect the USB cable after 'Downloading' message.

For force to reset, press Volume Down+Power key during 7 sec.
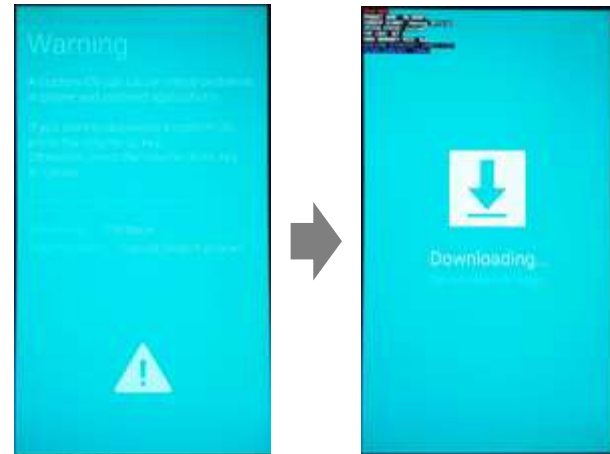
How to download S/W

1. Run the Odin tool with 3.11+ and check the device is connected to Odin.
2. Select each 4 S/W files.
   (BL, AP, CP, CSC)
3. Press the start button in the Odin.
4. Automatically reboot the phone when the downloading is completed.

Always On Display

- Show clock/calendar/image during LCD off
- Estimated usage time will be reduced by approximately 1~2 hour after AOD on
- For avoiding LCD burn, location of image will move per 1 min.
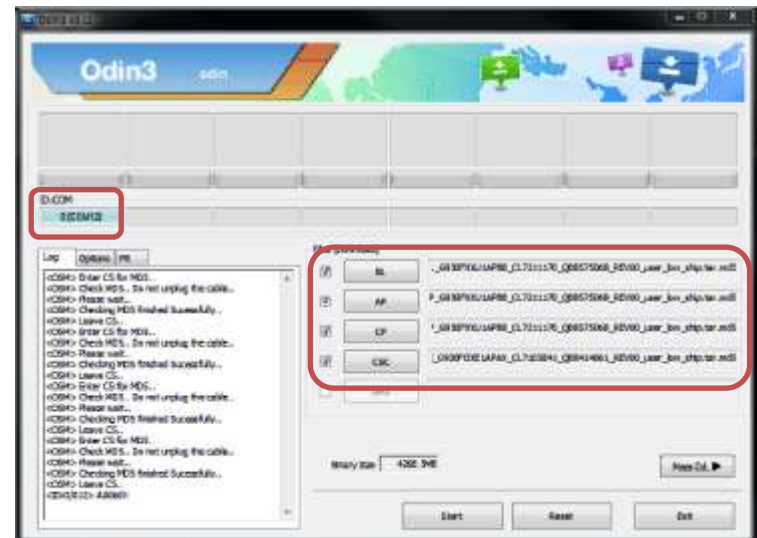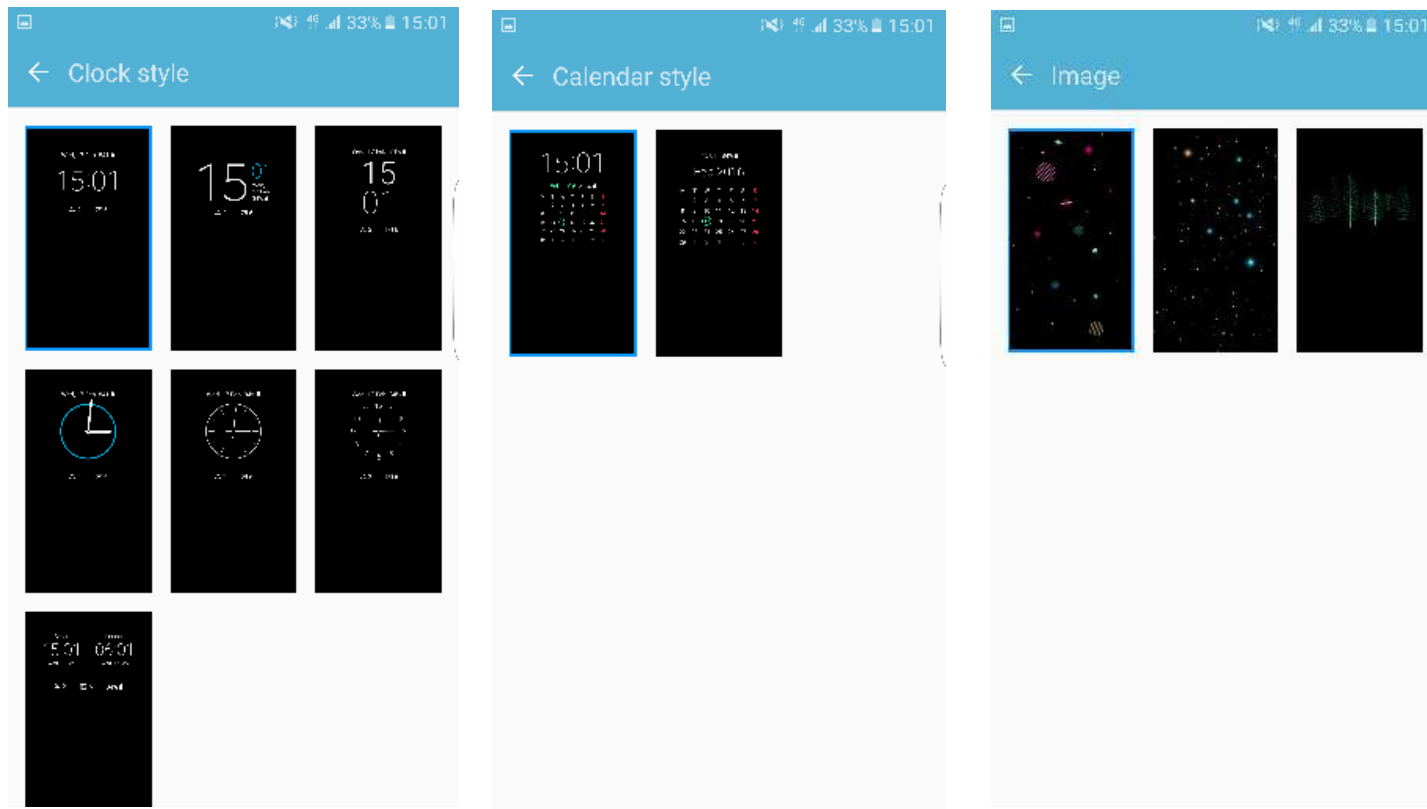
Key Features for G930F/G935F

Always On Display

Entering Path :

Settings

↓

Display

↓

Always on display
On

Always on display

On ⬤

Select an image or information to show instead of fully turning off the screen.

Content to show
Clock

Clock style

Background image

About Always on display

- This document cannot be used without Samsung's Authorization -

Confidential

Game Launcher

UX scenario	Main features

- **Activated when 1ˢᵗ game is installed from any store (Google / Galaxy apps)**
- **Gathers installed games automatically (For quick access)**
- **Game features / settings for improving game experience**
- **Promote new offers and games**

After 1ˢᵗ game is installed, pop-up occurs to request the activation of the service
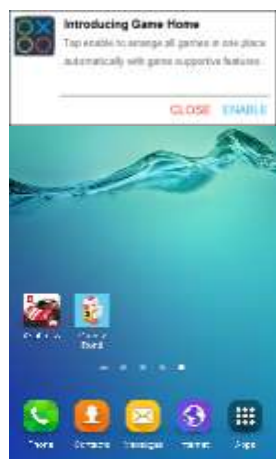
My Games
Gather installed games

Game features
To improve game experience

Game & video recommendation
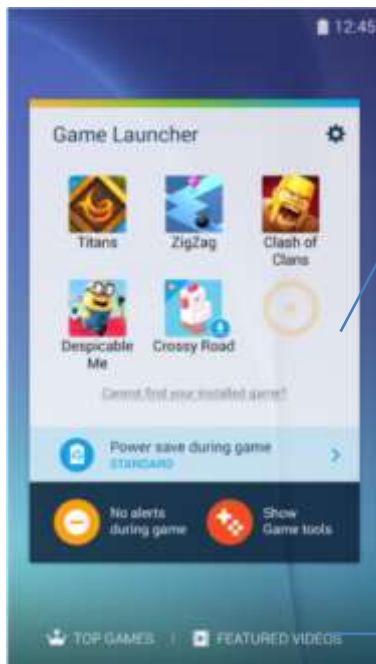
<Save battery usage while playing>
To lower power consumption, it controls brightness, resolution, frame rate of a game

<No alerts during game>
discrete call & alarm notification, suspend notifications

<Game tools>
Display the game features while playing

<Top Charts>
Game Rankings based on usage data of galaxy devices

<Game Videos>
popular YouTube videos related with the installed games on the device

Game Launcher

- Power save during game

[Details]
- Save battery consumption via Brightness, Resolution and FPS control
- Reduction of 10~20% battery usage than existing function
- Custom settings
· Resolution : Standard / Low / Extreme low
· FPS : 15FPS ~ 60FPS (adjustable every 5FPS)

[Functions comparison with other solutions]
- Power saving mode : Save battery power by reducing screen brightness, turning off the touch key light, turning off Vibration feedback etc.
- Power Save for game : Brightness, Resolution and FPS control

[Estimated saving rate on real games]
- Increase playtime about average 19%
- Additional playtime
· Clash of Clans : 2.31 Hours
· Candy Crush Saga : 0.96 Hours
· Cookie Run : 3.75 Hours

Game Launcher

Titans | ZigZag | Clash of Clans

Despicable Me | Crossy Road

Cannot find your installed game?

Power save during game
STANDARD

No alerts during game | Show Game tools
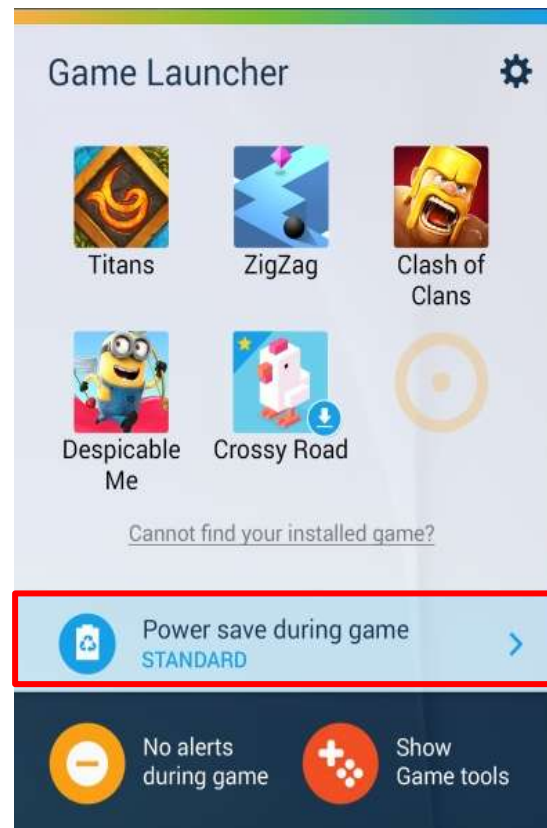
Game Launcher - No alerts during game

UX scenario

No alerts during game : ON

Game play

* Game play screen under 'No alerts during game' mode

## Feature detail

[No alerts in game]
- Letting a player to focus on his play by minimizing incoming calls and suppressing SMS, and other pop-up notification.
- Call is notified with a discrete pop-up and disappear after 3 sec.
- All missed calls and notifications are stacked in the quick panel.

[Comparison with 'Do not disturb' feature]
- Do not disturb : Device to mute all calls and alerts.
- No alerts in game : Mute all calls and alerts, discrete pop-up for calls, stack notifications in the quick panel without pop-up
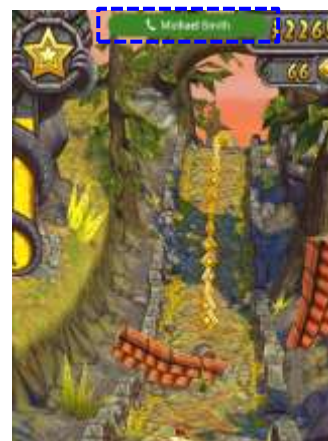
* call's pop-up notification. If user clicks, then available to answer the call via the quick panel.

- This document cannot be used without Samsung's Authorization -

Confidential
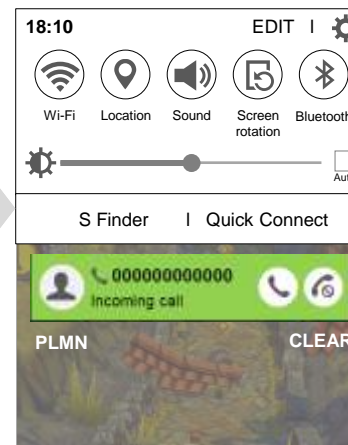
Game Launcher – Game tool

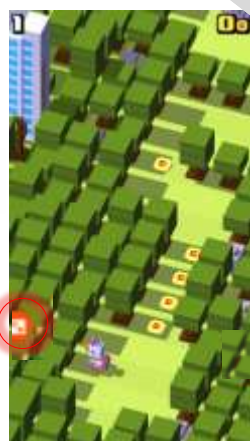| UX Scenario	Main Feature
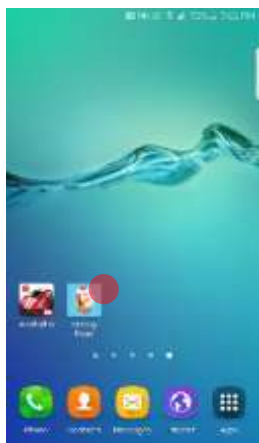
Game start

Guide at 1st launch
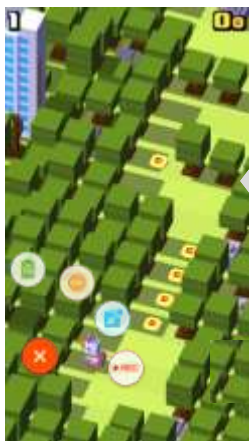
- Floating icon* for opening Game tools

[Screenshot]
- Capture game screen while playing
- Easy to do by just touching the screen (instead of H/W button)

[No interruption]
- Minimize incoming call, message, alarm via discrete pop up
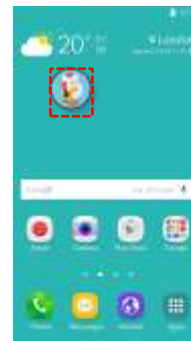- Pop-up consists in 3 sec. discrete visual on top of the screen

[Keep Alive game]
- Minimize the game without terminating the application

[Game Record]
- Video recording the game while playing
- Use front camera and in-and-out sound recording at the same time
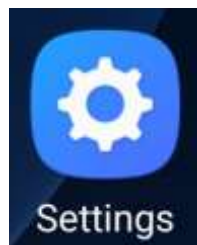

Pop-up

Keep alive game

Game video recording
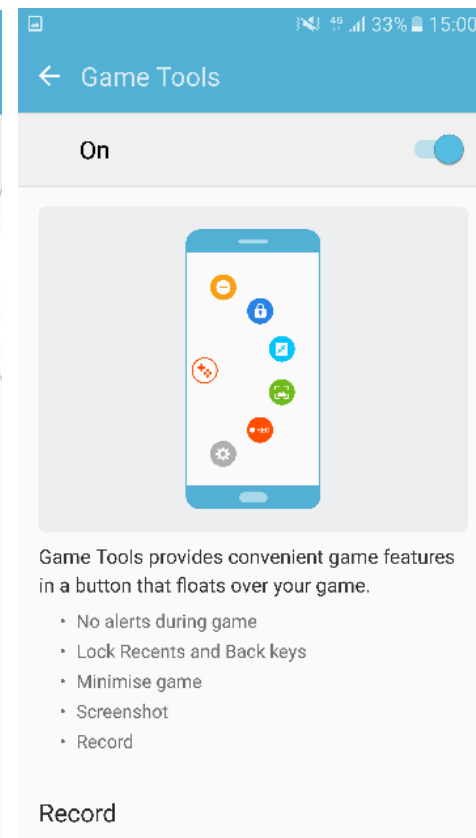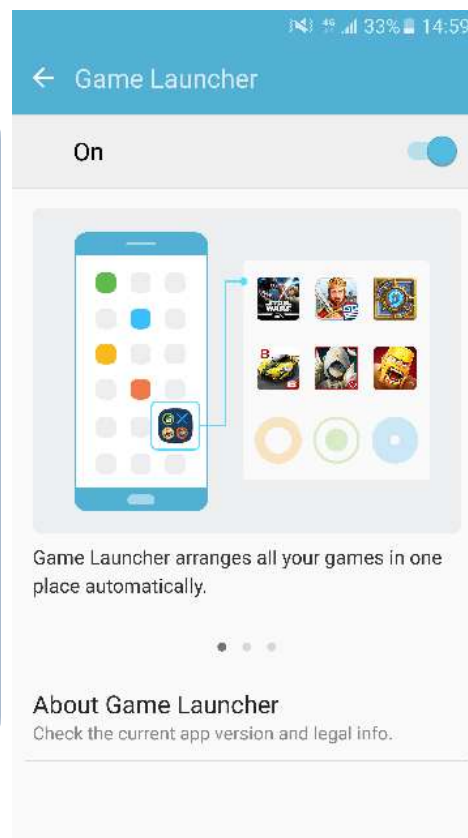(w/ front camera & Sound)

Game Launcher / Tool

Entering Path :

Settings

↓

Advanced features

↓

Games
Manage useful features while you play games.

Game Launcher arranges all your games in one place automatically.

● ○ ○

About Game Launcher
Check the current app version and legal info.

Game Tools provides convenient game features in a button that floats over your game.

· No alerts during game
· Lock Recents and Back keys
· Minimise game
· Screenshot
· Record

Record

Camera

Quick Focus in the low light

AF in low light –approx. 0.2 sec / S6 : 0.85 sec

Motion Panorama

Panorama image/video captured at the same time with just one shot

Motion Photo

Record a short video clip of what happens before each picture is taken

Save as RAW file

Save pictures without compression in Pro mode.
When this option enabled, each picture will be saved as both a RAW file and a JPG file. Additional viewer app is needed for RAW file.
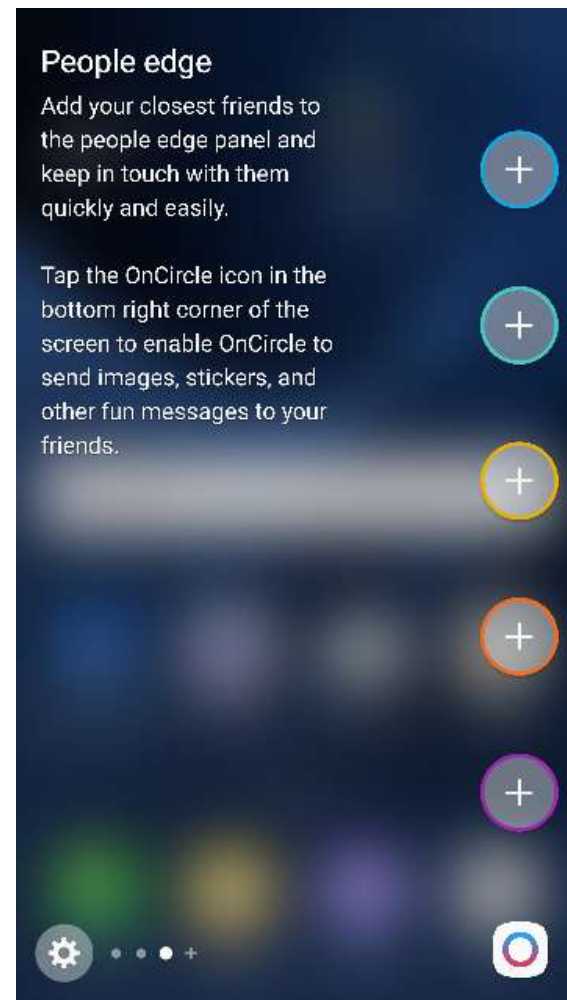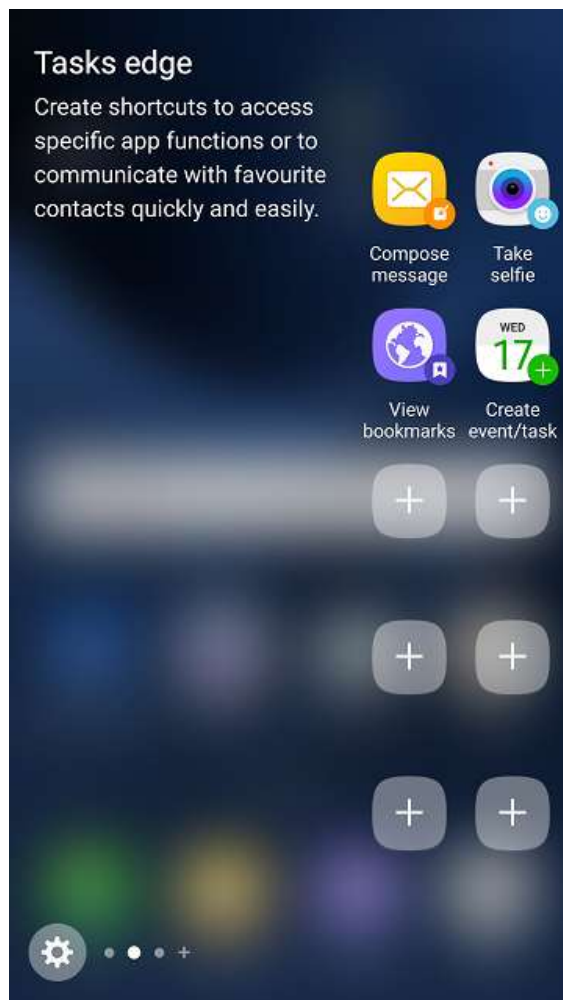
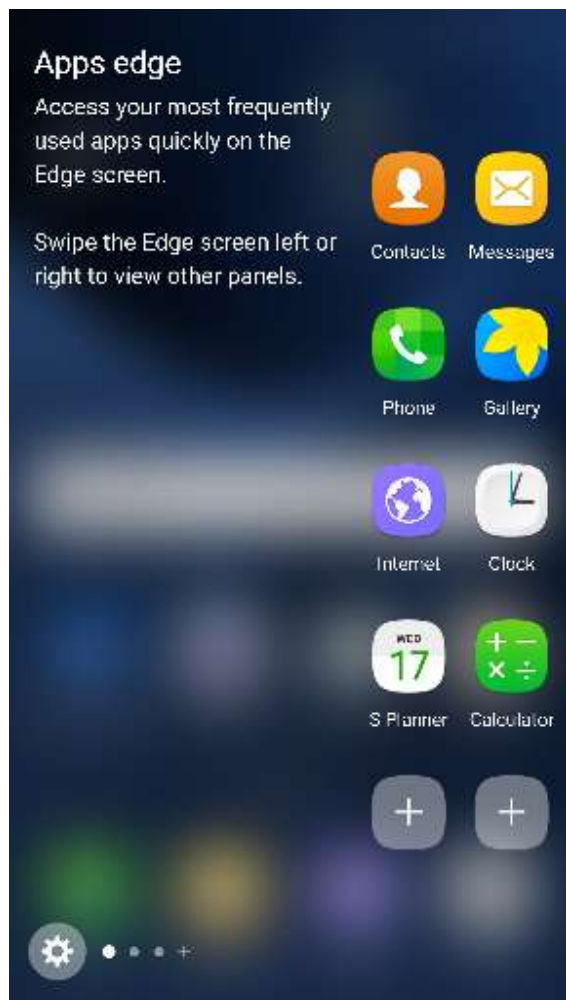**Entering Path : CAMERA → Tab a selective focus Icon**
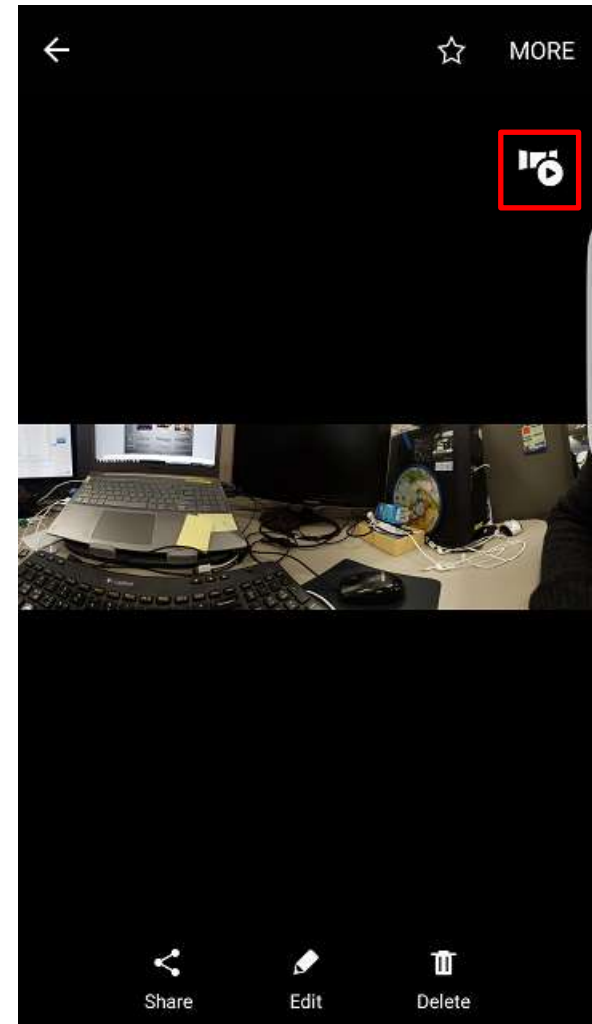
Key Features for G935F only

Enhanced Edge UX

- Edge region is wider and useful shortcut added

SVC Technical Information

Basic Information

AP Chipset	CP Chipset	IF Cable	RF Cable		RF Divider
SEC S5E8890		GH81-10952A	GH81-11962M (pi : 1.2T)		GH81-11962A
Charger Spec			Charging Current Standard	New Pocket Type	Water Resistance
Adaptive (5.0 V-2A, 9.0V-1.67A)			-	-	IP68

SVC Jig List for Galaxy S7 Edge

Item	Code	Item	Code
Hot Plate	GH81-12712E(220V)	Acryl Jig Rework Foam	GH81-12065B
OCTA Disass'y Holder	GH81-12119A	OCTA Disass'y Jig Upper	GH81-12833A
Glass Absorber	GH81-11902D	Double Sided Tape	GH81-12126A
TSP tape Attaching JIG	GH81-11905A	Pressing JIG Body	GH81-11903A
Pressing Pad(for OCTA/battery)	GH81-13537J	Pressing Pad(for Battery)	GH81-12694A
Weight and Pad for water resistance Test	GH81-12046A		

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