New Product SVC Guide
[SM-G950F]

Instructor

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SAMSUNG ELECTRONICS

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Contents

Specification

Item	Spec.		
AP Chipset	Vendor	Cores	Speed
	Samsung LSI	Octa-core	big : MNGS Quad 2.5GHz LITTLE : A53 Quad 1.7GHz
Memory	RAM		Flash
	4GB LPDDR4x		64GB
Display	Size	Resolution	Type
	146.5mm (5.8") / 143.3mm(5.6") Full rectangle / rounded corners	Quad HD 1440 x 2960 (S7:1440x2560)	sAMOLED
CAMERA	Resolution (Main/Front)	Auto Focus	Video (Main)
	12MP 2PD OIS / 8M AF	Phase detection	1080p @ 60fps
Network	2G/3G	LTE	
	Support	DL CAT16 (979Mbps) // UL CAT5 (75Mbps)	
Sensors	Accelerometer, Magnetic, Gyro, Barometer, RGB Light, Proximity, Fingerprint, Heart rate		
	New : Force touch		
Connectivity	Bluetooth 5.0, WIFI a/b/g/n/ac, NFC, USB3.1, Display port, MST, WPC		
Battery & GPS	3,000mAh	A-GPS & GLONASS	
Micro SD & OS	Up to 256GB	Android V7.0 (N)	
Remarks	Water Resistance : IP68	Dual SIM : supported (by regions)	

New Concepts of H/W

Force touch – How it works

Without peressure	With peressure

$$C = \frac{\varepsilon A}{d}$$

Without peressure: ADH, PET, Sensing Pattern, 탄성체 / Insulation, PET, ADH, GND, d

With peressure: ADH, PET, Sensing Pattern, 탄성체 d / Insulation, PET, ADH, GND
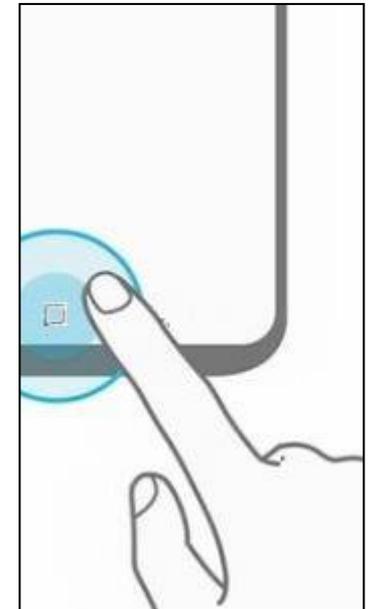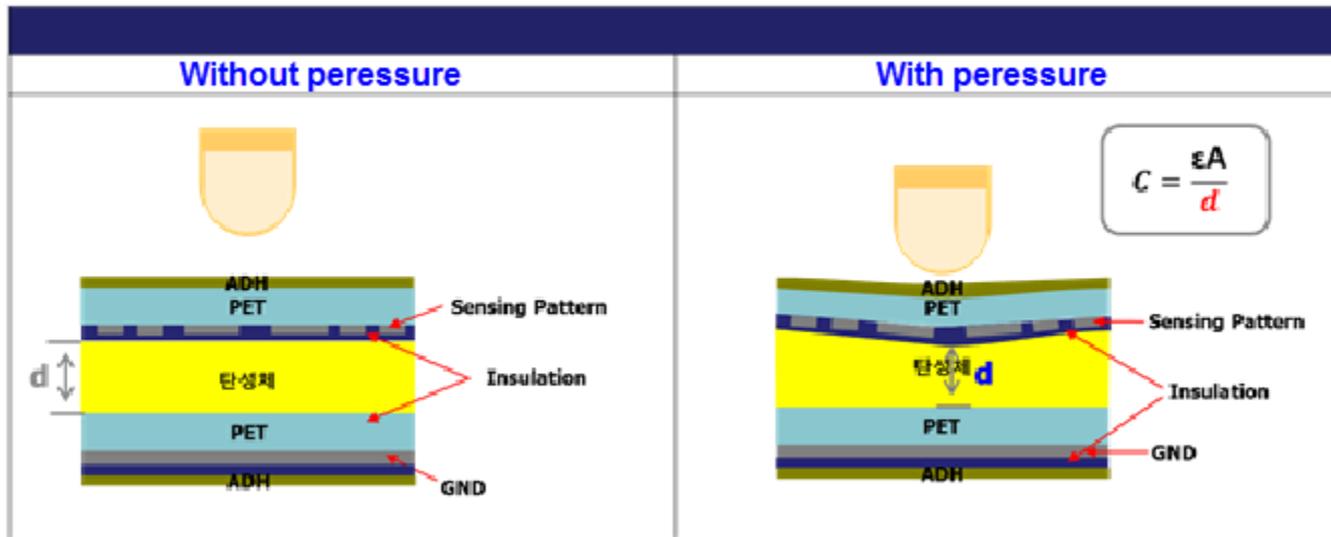
A pair of sensing patterns are added underneath the display module

to replace traditional home key which works when soft key UI disappears

DEX – turning a phone into a PC
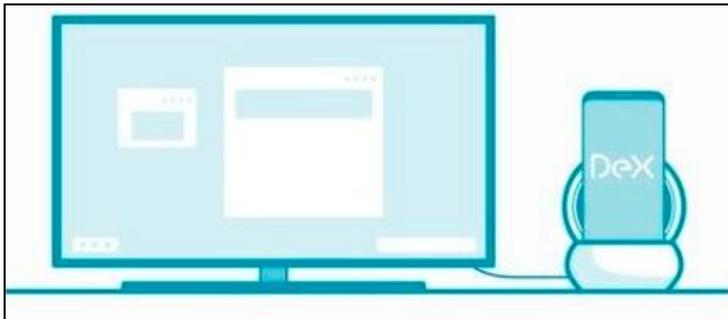
1. **Multi-Tasking**

2. **External Monitor**

3. **Keyboard & mouse**

Enables to have personal computing environment without carrying laptops

Powerful performances with familiar window shape UI multi-tasking

**A Travel adaptor should be presented to provide DEX with power**

Display port

Using USB Type-C alternate mode, Gallaxy S8 can send video stream and audio stream directly to external monitors while receiving charging power at the same time
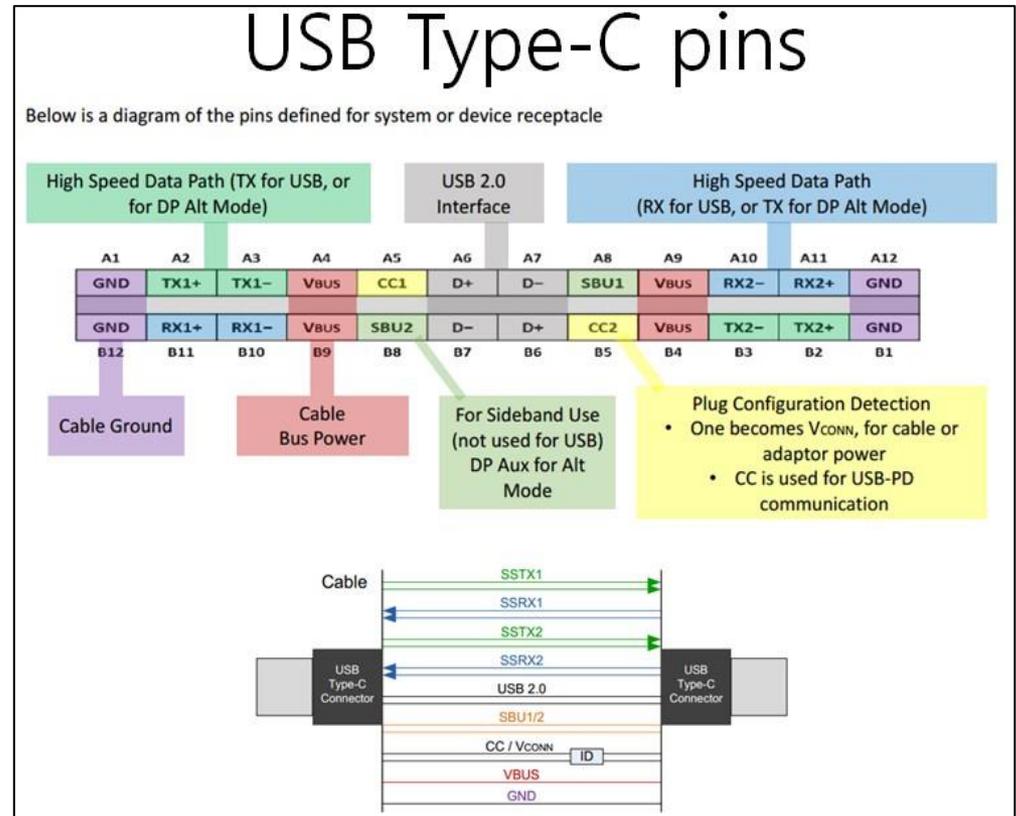
Disassembly & Reassembly

Important management points

Sensor FPCB connector

OK
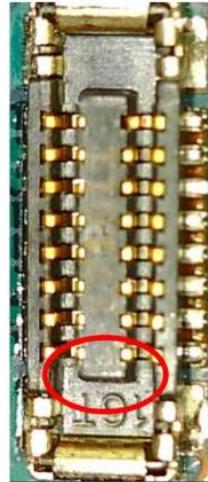
NG
A misallign of the connectors can cause a high sleep current problem
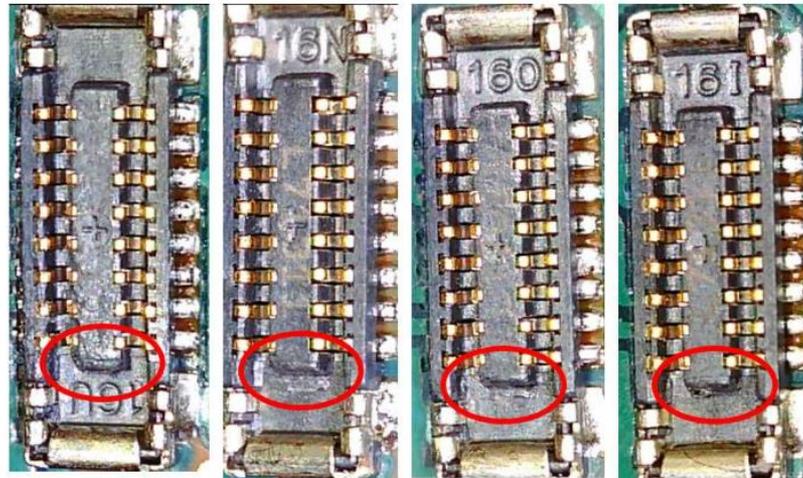
Disassembly & Reassembly

Important management points

OK
Push softly to make a round curve
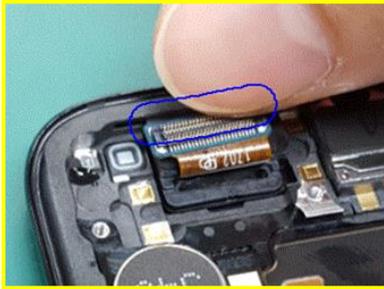
NG
Giving too much pressure could cause FPCB cracks

Blue cable

White cable
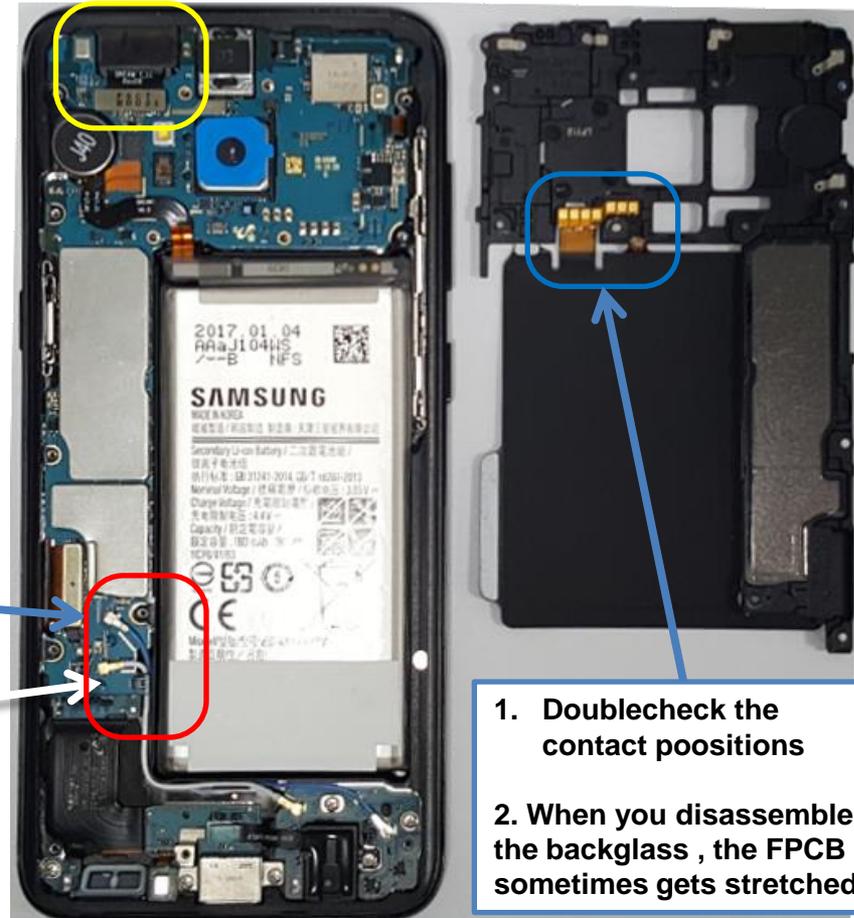
1. **Doublecheck the contact poositions**

2. **When you disassemble the backglass , the FPCB sometimes gets stretched**

Parts Layout

Rear assembly

SIM + microSD SOCKET

WIFI ANT

SUB ANT

Finger pirnt sensor

Wireless charging + NFC + MST coil

You can not charge tht device without this coil module because the temperature sensor is located on this coil module. It feels too hot without the temperature sensor

SPEAKER

EARJACK

Finger print sensor

We put this on the rear cover not on the back glass. but when you take the back glass out, it will come with the glass because the sensor is attached to it

Parts Layout

Front assembly

RCV

Sensor FPCB
(Proxy + IR LED + SVC LED)

Flash led

Front cam + IRIS cam module

Main cam

HRM sensor

Vibration Motor

Power key

Battery

Heat spread thermal sheet

Lower sub pba

SPEAKER + Antenna module

Earjack

Parts Layout

Rear assembly

SIM + microSD SOCKET

WIFI ANT

**SUB ANT**

Finger pirnt sensor

Finger print sensor

We put this on the rear cover not on the back glass. but when you take the back glass out, it will come with the glass because the sensor is attached to it

Wireless charging + NFC + MST coil

You can not charge tht device without this coil module

SPEAKER

EARJACK

Parts Layout

PBA (Top side)

Label	Description
SIM100	SIM1,SIM2,T-flash Socket
U203	Antenna switch
ANT802, ANT803	RCV contect clips
ANT303, 304, 305, 306	SIDE KEY contects
U408	GND contact clip
U418	NFC IC
U408	6-Axis sensor
U402	Sensor hub IC
UME300	UFS MEMORY
U100	ET MODULATOR
PAM102	MB LPAMID
PAM101	2G PAM
U800	SPK AMP
U805	OVP IC
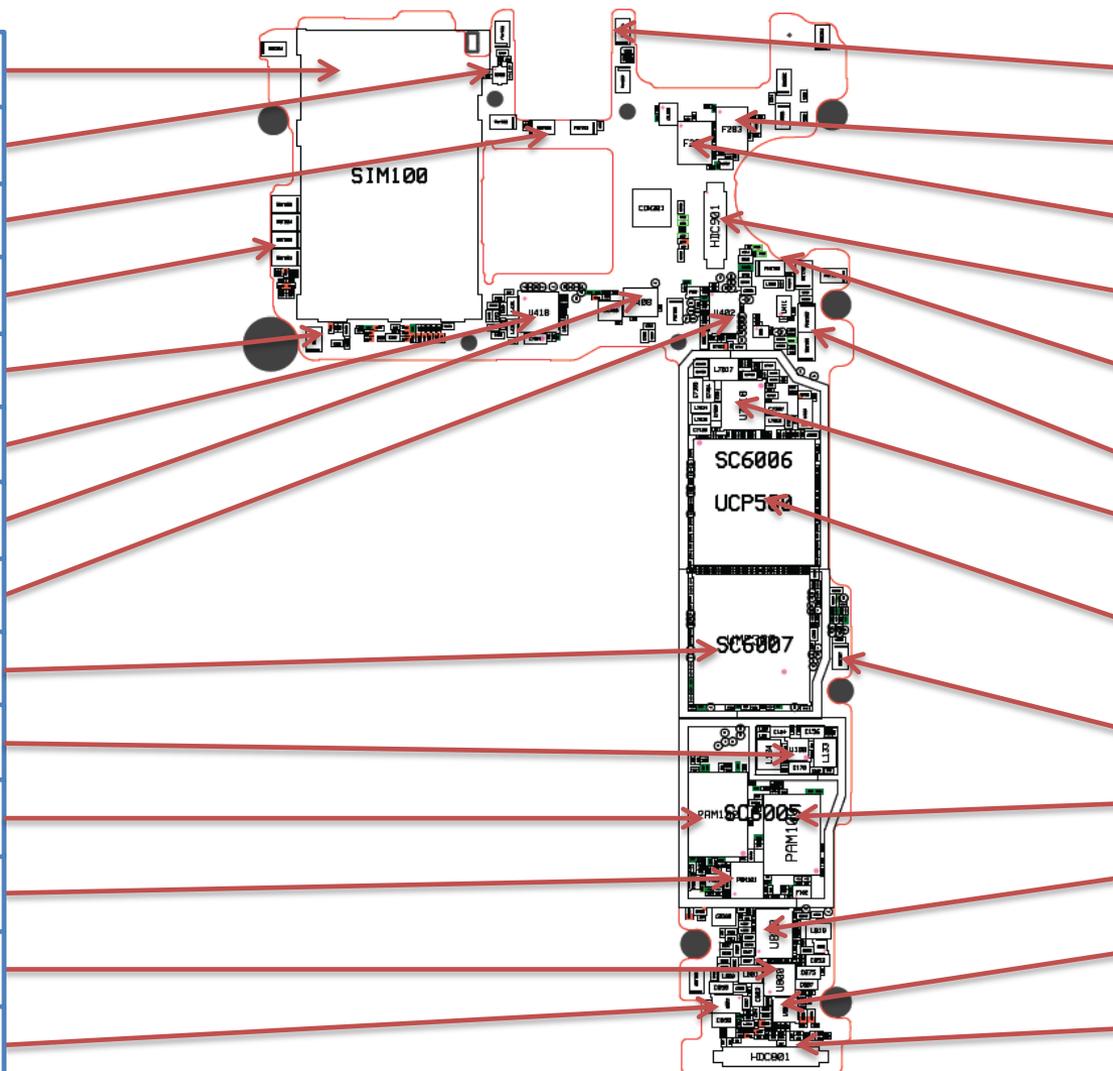
Label	Description
U201	Antenna contact
F203	MB LFEM
F201	LB LFEM
HDC901	Rear Camera Connector
ANT700 , 701	MOTOR contact clips
ANT301, 302	Powerkey contact clip
U7018	IF PMIC
UCP500	AP, UCP500-UP MEMORY
ANT207	GND contact clip
PAM100	LB LPAMID
U808	CODEC IC
U804	CC IC
HDC801	SUB FPCB IF Connector

Parts Layout

PBA (Bottom side)

MIC800
SUB MICROPHONE

HDC900
FRONT CAM / IRIS CAM conn.

LED900
FLASH LED

F206
MB LFEM

U412
HRM Sensor

HDC7000
Battery connector

HDC5000
JTAG connector

U903
COMPANION IC

U901
SUB PMIC

U7002
AP PMIC

TCX300
TCXO

HDC902
DISPLAY Connector

U103
MAIN SWITCH
(BAND7/38/40/B1 PRX)

RFS100
Antenna switch contact

U900
Display PMIC
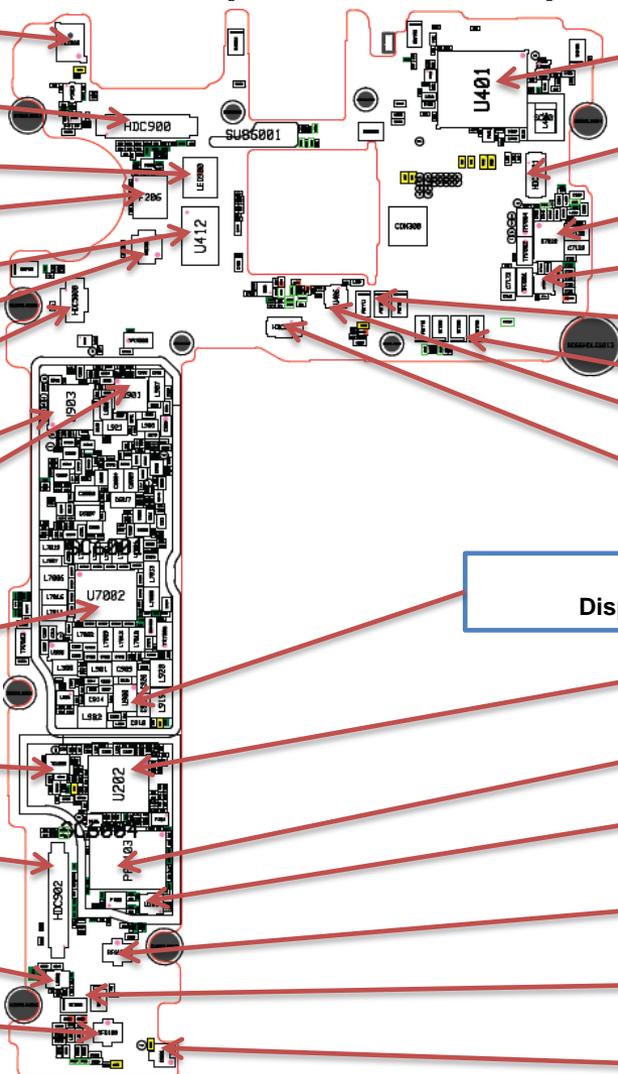
U401
BT / WIFI IC

ANT1101/1102
Ant. Contact (for Sub Ant.1)

U7020
MFC IC

U7023
MST Switch IC

ANT711/707
NFC clips

ANT709/705/708/706
WPC, MST clips

U406
Barometor

HDC904
Fingerprint sensor conn.

U202
TRANSCEIVER

PAM103
HB LPAMID

U101
Antenna switch

RFS101
Antenna switch contact

F101
MAIN FEMID
(BAND1TX/2/3/5/8/20)

Q801
VBUS discharging FET

Parts Layout

SUB PBA

SDC200
SUB FPCB CONN.

U113
TOUCH KEY IC

CN101
USB3.1 Type-C IF conn.

MAIN MIC

HEA100
Earjack conn.

U105
Grip sensor

U102
Antenna signal switch

U101
Antenna signal switch

U103
Antenna signal switch

U104
HALL SENSOR
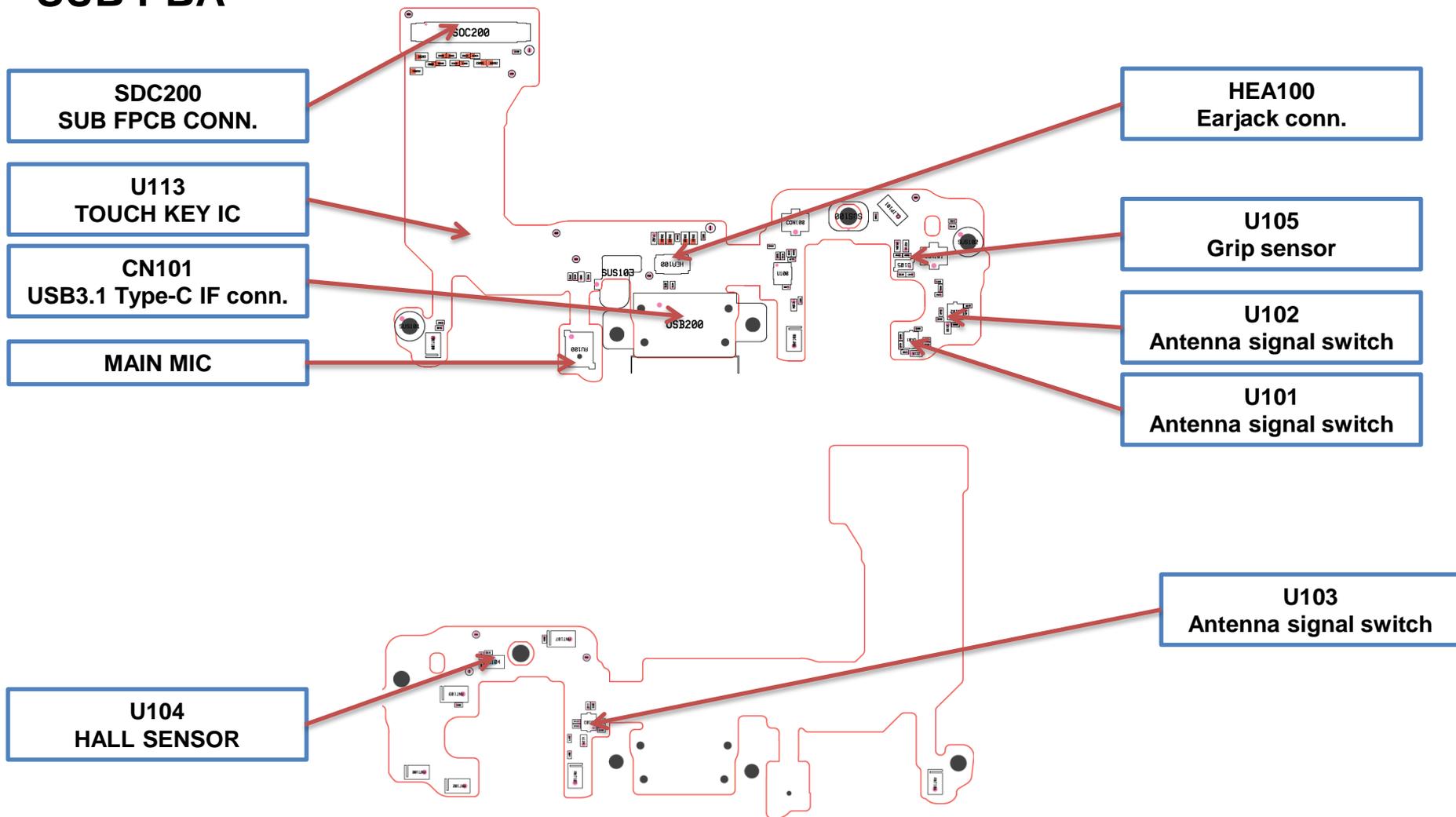
Troubleshooting

No Power

The connection diagram of the Power & Current test jig has been changed by applying USB type-C.
Please refer to the another document.
(New connectivity - USB Type C_Rev1.0)

USB TYPE C

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 terminal, 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. (V_Battery = C7200 , V_BAT = C858)	Normal (Over dozens of KΩ)	Go to the step 5
		Abnormal	Capacitors for ESD protection
3	Is it 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	SW
		Normal	S/W update
4	Try to do the boot recovery.	Pass	Go to the step 3
		Fail	Go to the step 5
5	Check the voltage of C860	C860 = Power supply voltage	Go to the step 6
		If not the correct value	Replace the U7002(=PMIC)
6	Check the frequency of TCX300	26MHz	Main chip (UCP500)
		If not the correct value	TCXO

** Usage guide of the Power & Current test jig has been uploaded at GSPN. (Power & Current Tester Guide_Re5.1)

No Power (cont')

Step2.1

C7200 = V_battery

Step6

Step2.1
Step5

C858 = V_bat

C860

Troubleshooting

USB TYPE C

Power on but no operation

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 2.1
2.1	Try to do the boot recovery.	Solved	Boot area in S/W
		Not solved	Go to the step 7
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	Go to the step 7
7	Check the voltage of C312, C308	C312 ≠ 1.8V C308 ≠ 2.95V	PBA
		If not the correct value	Replace the UFS memory

** Usage guide of the Power & Current test jig has been uploaded at GSPN. (Power & Current Tester_Rev5_150716.pdf)

Power on but no operation (cont')


Step7

C312 = 1.8V

C308 = 2.95V

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		Not solved	Battery
3	Try to charge the phone using the normal charger of repair center.	PASS	Customer's Charger
3		FAIL	Go to the step 4
4	**Check the charging current using the galaxy must – charging current test mode.**	PASS	Go to the step 5
4		FAIL	Go to the step 6
5	Disassemble and check I/F connector visually	Dust	Clean I/F connector
5		Damage	Replace I/F connector
5		Normal	Go to the step 6
6	Check the voltage of C854	C854 = 3.4V ↑	Go to the step 7
6		If not the correct value	Replace U804
7	Check the voltage of L809	L809 = 5V	Replace the U7018
7		If not the correct value	Replace the U805

** **User guide of the GALAXY MUST has been uploaded at GSPN.**

Troubleshooting

No Charging

Step7

U7018

SC6006
UCP500

Step6

Step7

L809

U805

C854

U804

SIM100

SC6006
UCP500

SC6007

HDC801

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
		Normal	Go to the next step
3	Check the debug screen *#0011# (Compare to normal device)	Abnormal	Go to the next step
		Normal	Network
4	Check the RF parts except PBA. (Coaxial cable, Antenna, Shielding condition, etc..)	Broken, dust, corrosion	RF parts
		Loose fitting	Connection
		Normal	Go to the next step
5	Check the status visually(crack, missing, Corrosion..etc) of RF components. (compare to normal PBA) PAM100 LB LPAMID PAM102 MB LPAMID PAM103 HB LPAMID U101 LB/MB/HB SWITCH F201 LB LFEM (B5/812/13/17/18/19/202628) F203 MB LFEM (B1/4/9, B3/7/40 4RXD) F206 HB LFEM (B2/3/7/25/38/40/41, B1/4 4RXD)	Abnormal	RF components.
		Normal	AP+CP(Call Processor) (UCP500)

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	*#0*# → speaker	Normal	S/W or Settings
3	Replace the speaker modue	Solved	speaker
3	Replace the speaker modue	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	Check the signal at two of speaker contacts. (Using oscilloscope) Notice : It should be measured when the speaker path is activated on.	No signal	Go to step 7
6	Check if the SPK is contacted to SUB PBA well, and assemble the phone again.	Solved	Assembly error
6	Check if the SPK is contacted to SUB PBA well, and assemble the phone again.	Not solved	Go to step 3
7	Check the signal at L800, L802	L800, L802 = no signal	PBA
7	Check the signal at L800, L802	L802, signal found	Go to step 6

Troubleshooting

Sound Problem

Step5
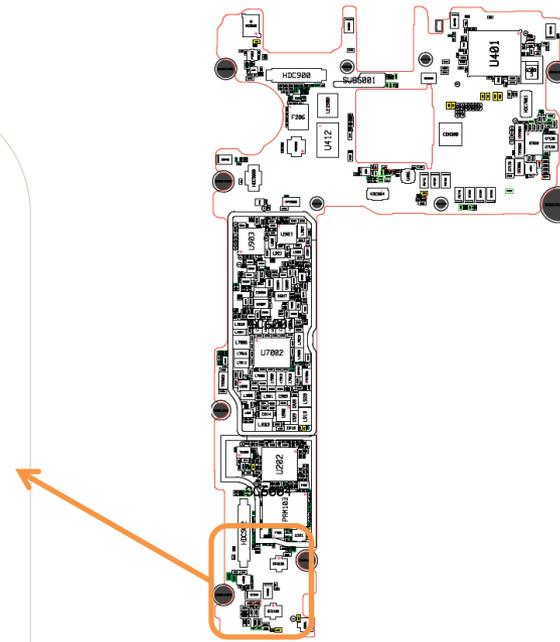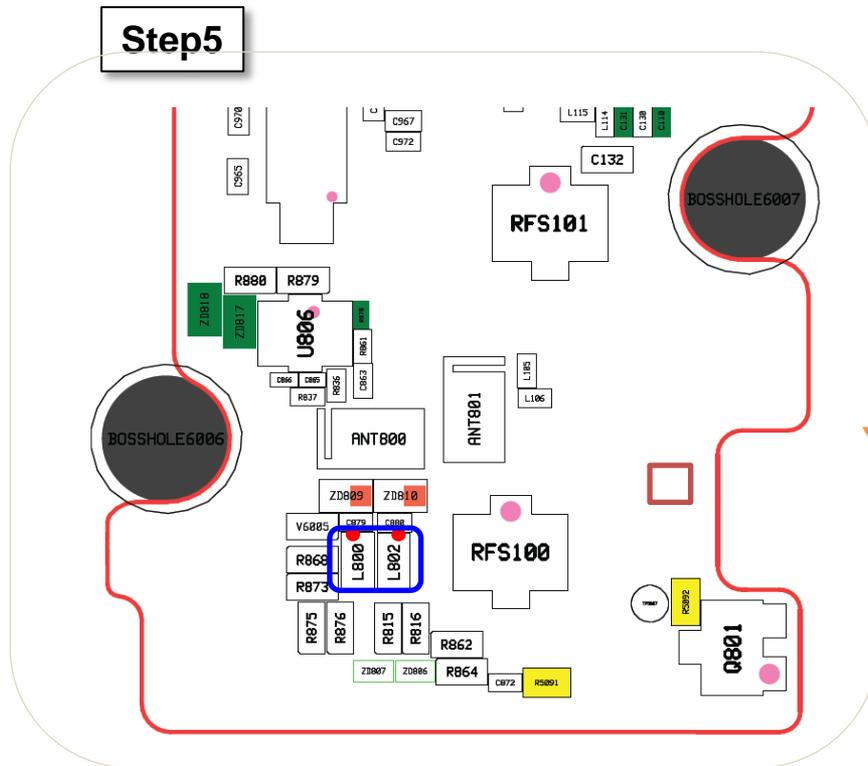
Troubleshooting

Display Problem

Step	Check point	Result value	Defect point
1	Confirm the defect symptom	-	-
2	Check the display connector (HDC902)	Broken, dust, corrosion	connector (HDC902)
		Loose fitting	Connection
		Normal	Go to the next step
3	Replace the display module	Solved	Display module
		Not solved	Go to the next step
4	Connect display and turn the phone on with a power supply (power supply voltage : 4.2V)	-	-
5	Check the voltage of C931 = 3.0V, L900 = 7.0V C932 = 1.8V Be noted. It should be measured when the display is activated on	If not the correct value	Display PMIC(U900)
		C931=3.0V L900 = 7.0V C932 = 1.8V	AP or PBA

Troubleshooting

Display problem

Step2

LCD CONNECTOR

Step5

L900 = 7.0V

C931 = 3.0V

C932 = 1.8V
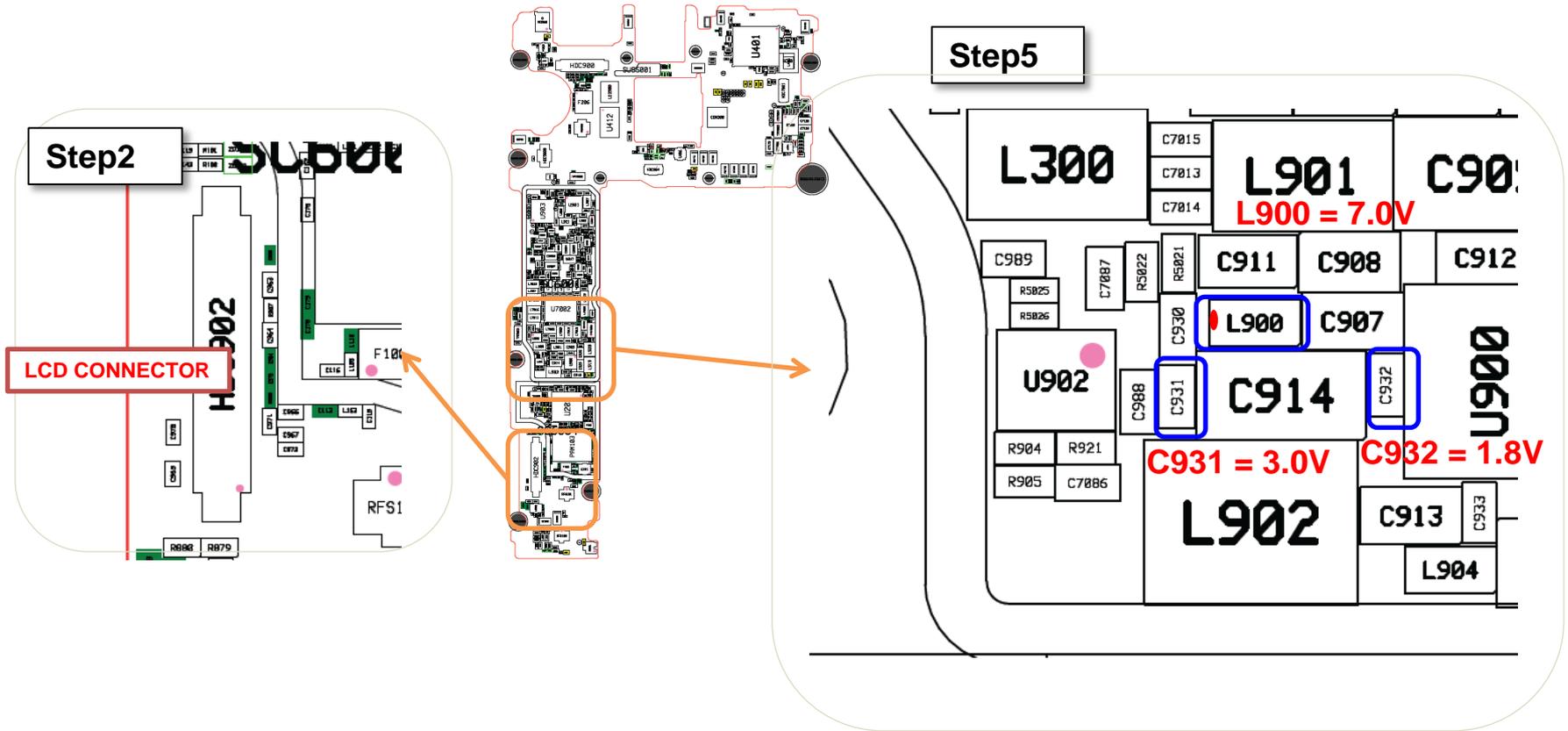
RF Calibration Preparation

Item	Quantity	Code
① 4 Port Divider	1	GH81-11962A
② 50 ohm Termination	2	GH81-11962E
③ RF cable (Divider to phone)	2 of each	GH81-11962M GH81-11962U
④ RF cable (Instrument to divider)	1	GH81-11962B
⑤ Anyway JIG S103	1	-
⑥ Power Supply	1	E3632A
⑦ RF Equipment	1	CMW500
⑧ IF cable	1	GH81-11962W

Connection Diagram
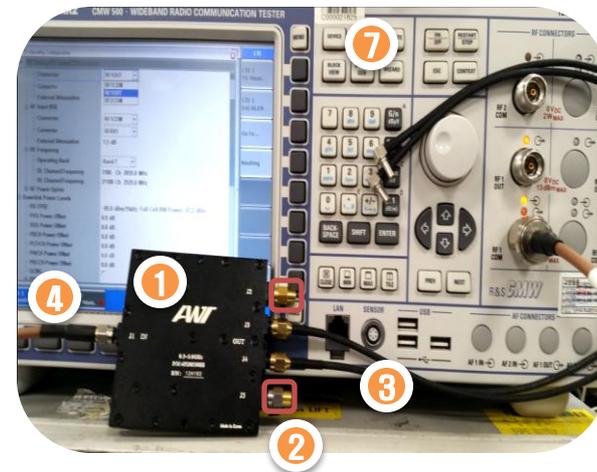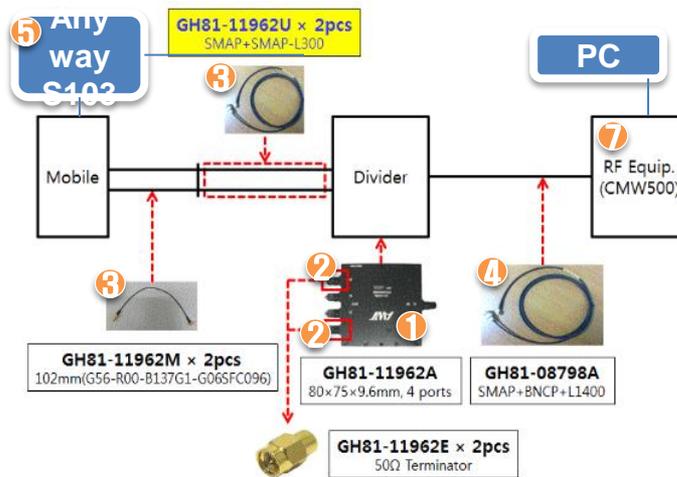
GH81-11962U × 2pcs
SMAP+SMAP-L300

GH81-11962M × 2pcs
102mm(G56-R00-B137G1-G06SFC096)

GH81-11962A
80×75×9.6mm, 4 ports

GH81-08798A
SMAP+BNCP+L1400

GH81-11962E × 2pcs
50Ω Terminator

S/W Download

How to enter the S/W download mode

1. Turn off the device
2. Press 3 keys simultaneously which are
   Volume Down key, Bixby key and Power key
3. As following the instruction,
   press Volume Up key after Warning message
4. Connect USB cable (C-Type)
   after Downloading message.

※ For force to reset the device, press Volume Down + Power key during 7 sec.

How to download S/W

1. Run Odin3 v3.12 and later
2. Check the device is connected to Odin
3. Select 4 binaries which are BL, AP, CP, CSC
4. Press the start button in the Odin
5. Automatically reboot the device
   when downloading is completed
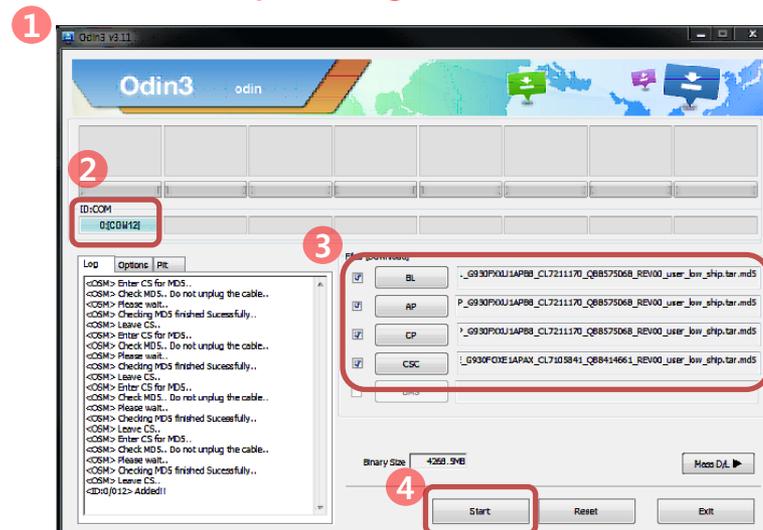
Bixby Service

- To go to Hello Bixby, press 1) Bixby key or 2) swipe right on Home screen
- Bixby Home, Bixby Vision, Bixby Voice, Bixby Reminder
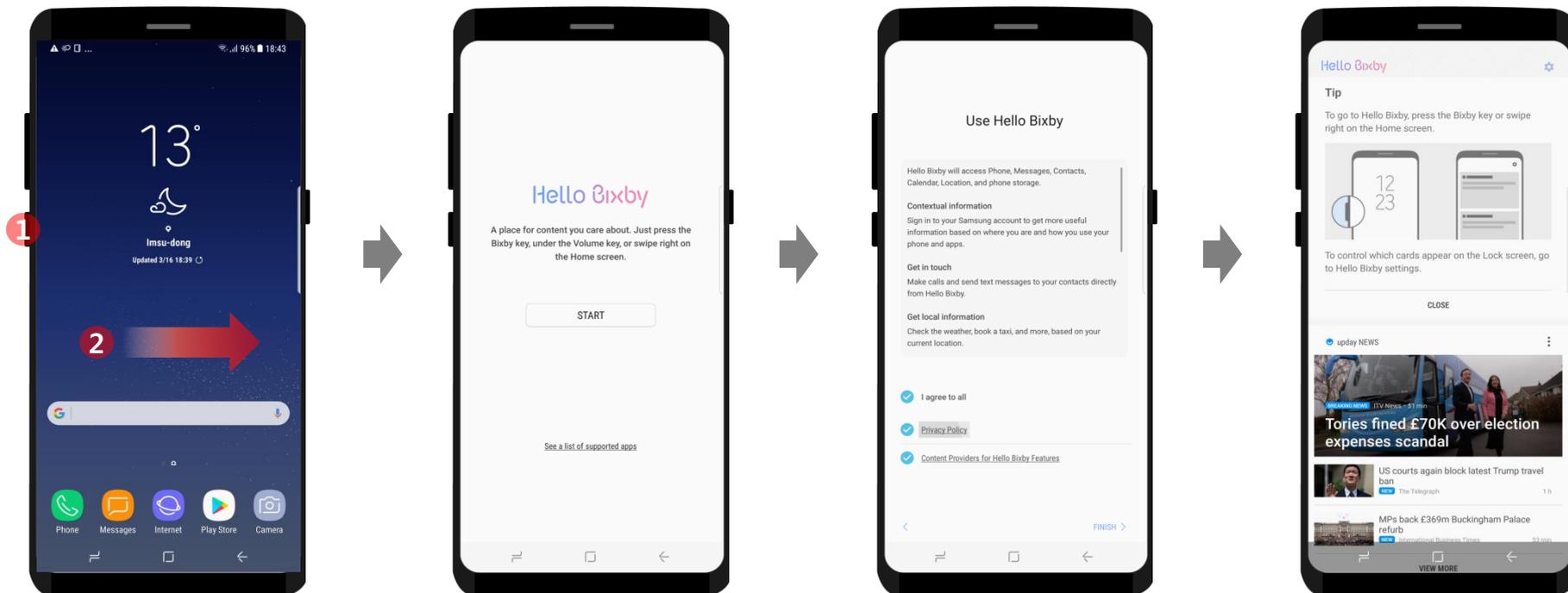
Bixby Key Mapping *Is located under Volume Key on the left side*

Gesture	Screen	Bixby Voice Service Enabled
Short Press	**On Any Screen** (including *Incoming call)	**Bixby Home** (Hello Bixby)
	On Lock screen	**Bixby Home** (Hello Bixby)
Press and Hold	**On Any Screen** (including *Incoming call)	**Bixby Voice**
	On Lock screen	**Bixby Voice**
	On Keyboard	**Dictation**

Bixby Home (Hello Bixby)

- Bixby Home is a new name for DayLite and Hello Bixby is greeting
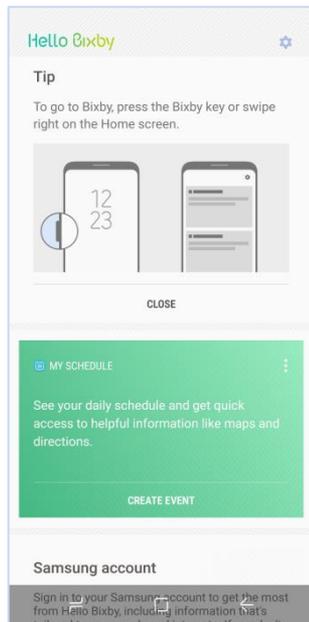
Bixby Home
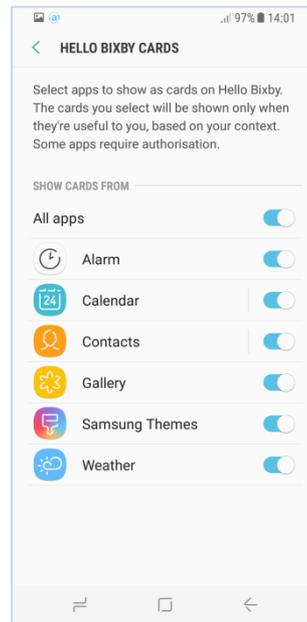
Bixby Cards
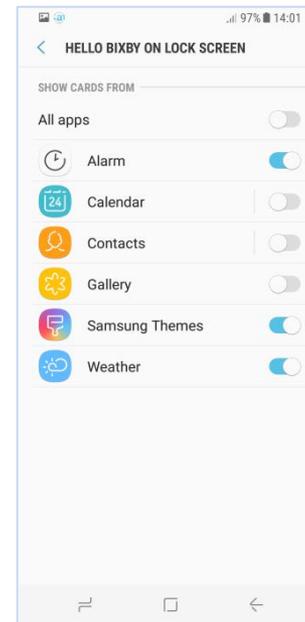
Bixby on Lock Screen
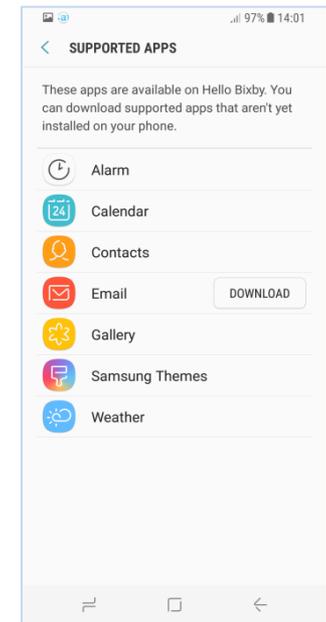
Supported App

Bixby Voice

- Bixby Voice is the way to give a commend and provide feedback
 about the result by thumb up/down when the commend is completed
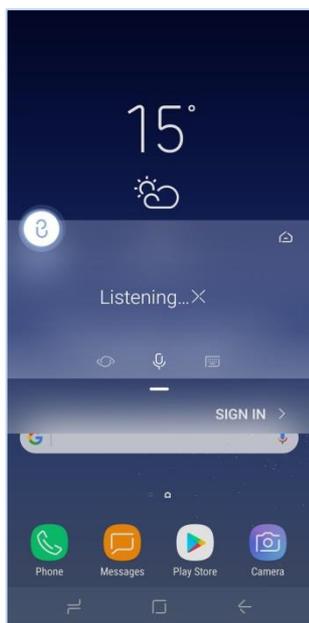
Bixby key Long press   Commend   Result & Feedback   Training
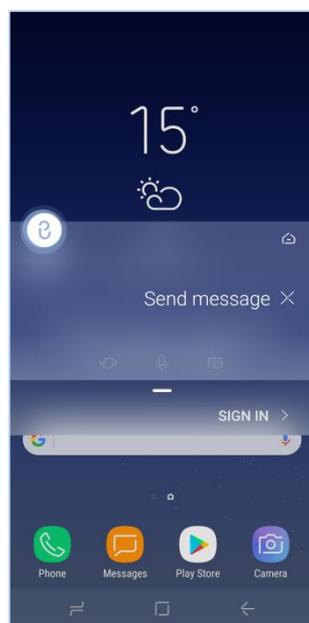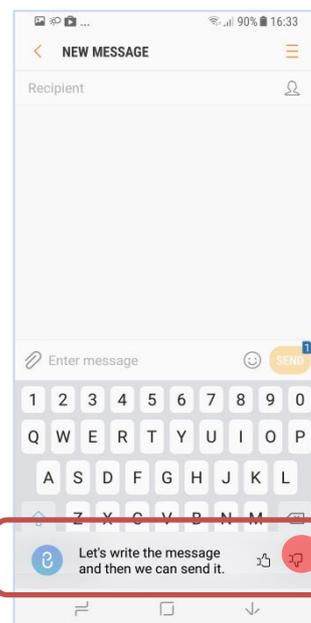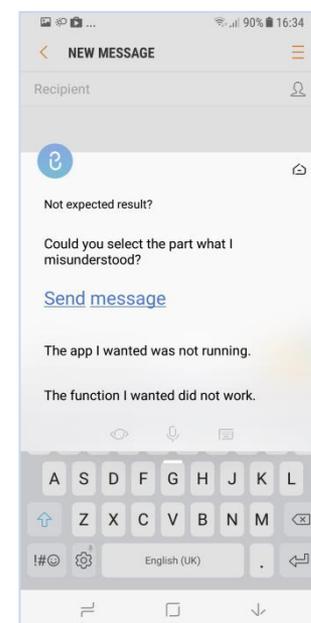
Bixby Vision

- The most intuitive way to connect Real world to Digital world

The Quickest Search using Camera

Shopping

Place
(Landmark, Restaurant)

Image Search

Wine

Text
(Translation, OCR, BizCard)

QR & Barcode

- Multi Entry to Bixby Vision

① **Camera**

② **Gallery**

③ **Samsung Internet**

④ **Bixby Home (TBD)**

Bixby Reminder *"A Service that Stores Tasks or Contents and Alerts Users based on their Situation"*

- Reminder by Bixby Home and Voice
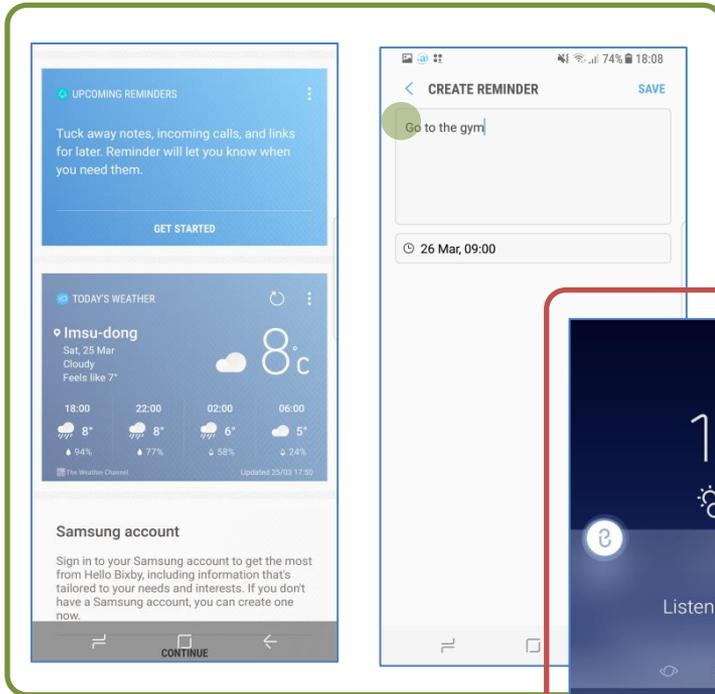
Reminder

By Bixby Voice

"Remind me to eat drug at 3pm"
"Remind me to buy milk when I leave my office "
"Remind me to water my plants when I get home"
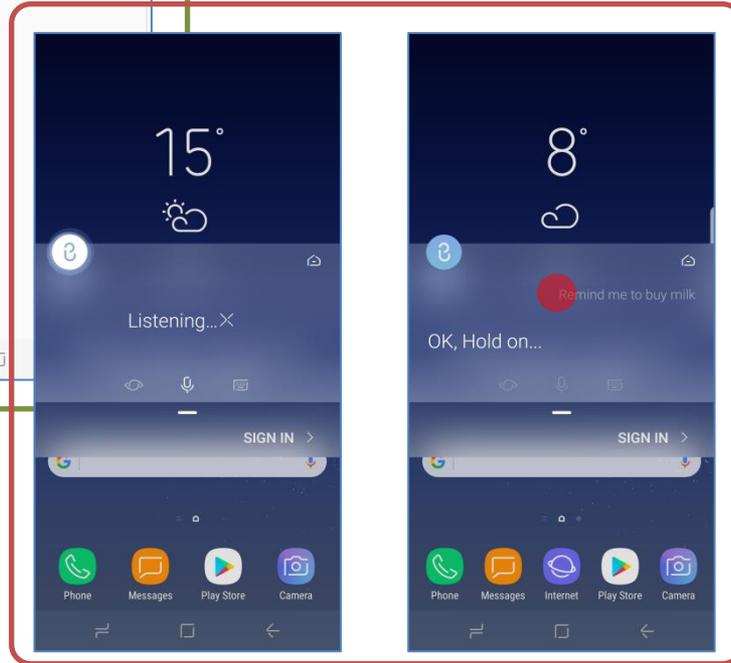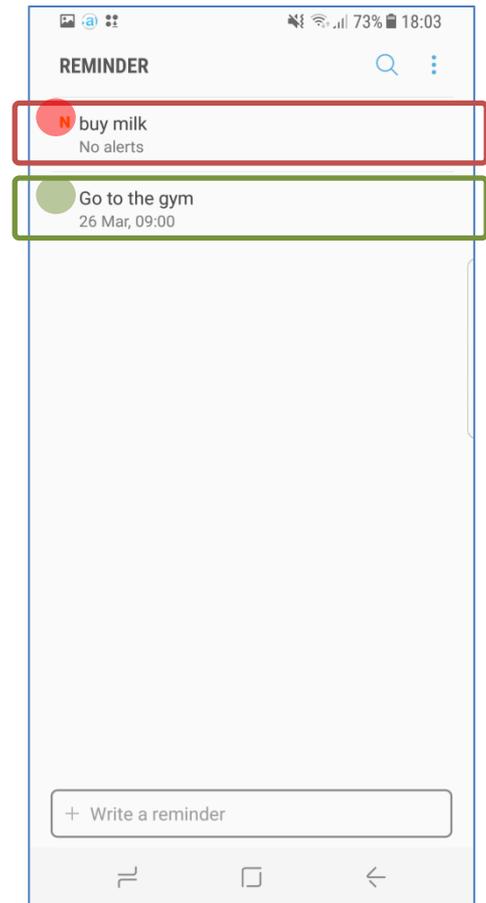
By Bixby Home
Reminder App launched by Hello Bixby Card

Samsung Dex

- is a service that provides users with a desktop environment
  by connecting their smartphone to an external display (TV or monitor).
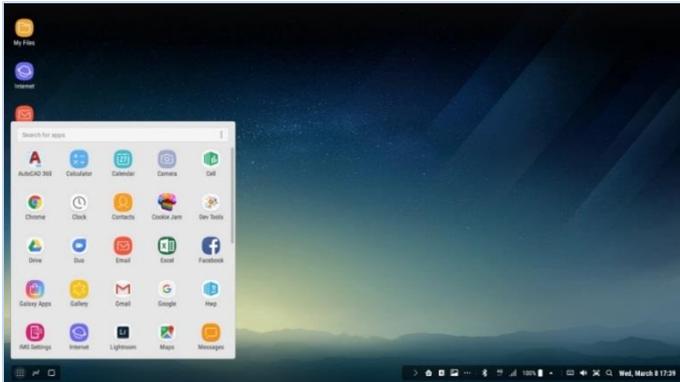
Desktop-like Home Screen
Samsung DeX provides Home Screen familiar to Desktop users
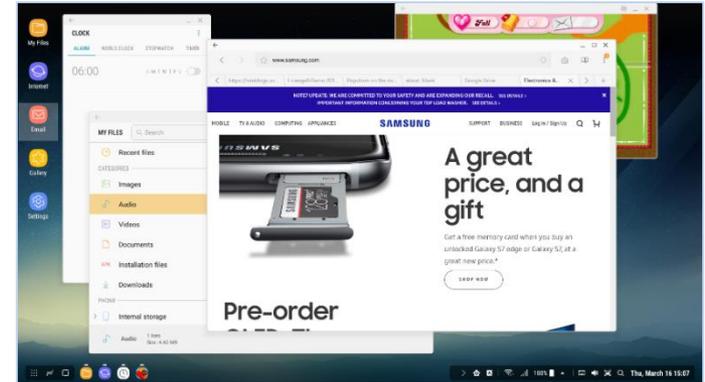
Multiple Resizable Windows
User can not only launch multiple apps at the same time but also freely resize apps

Keyboard/Mouse optimized experience
Mouse right click (contextual menu) and keyboard shortcuts are supported
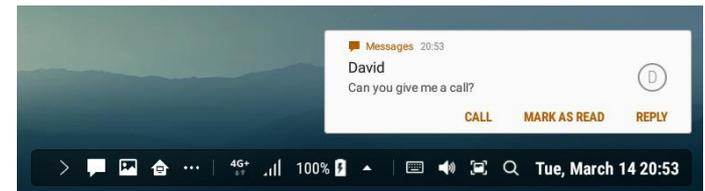

Notification
User gets Pop-up notification from the right-bottom of the screen

PAI – Play Auto Install (1/3)

- Google's app download solution (Play Store apk) that allows users to recover (re-install) the deleted applications or install new applications
- In Dream/Dream2 projects, PAI will be used to recover the removable Samsung and Google preloaded apps.
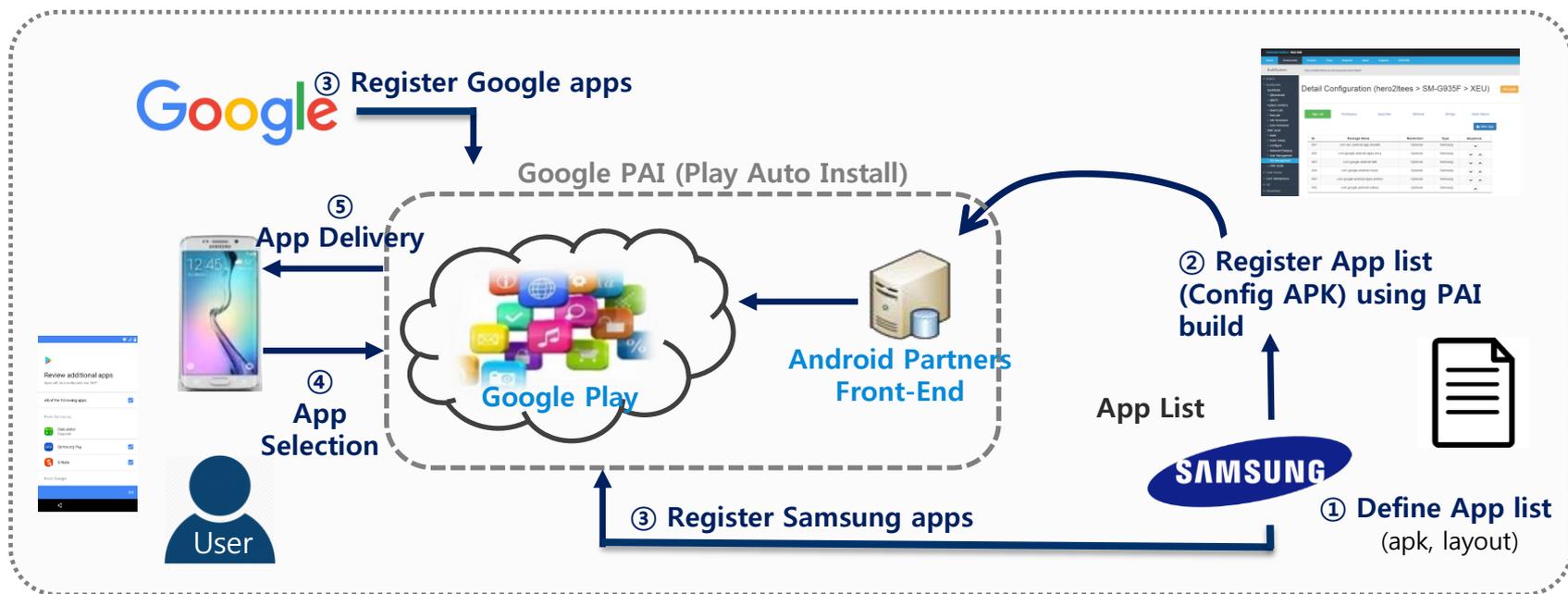
PAI – Play Auto Install (2/3)

- Removable Preload App List
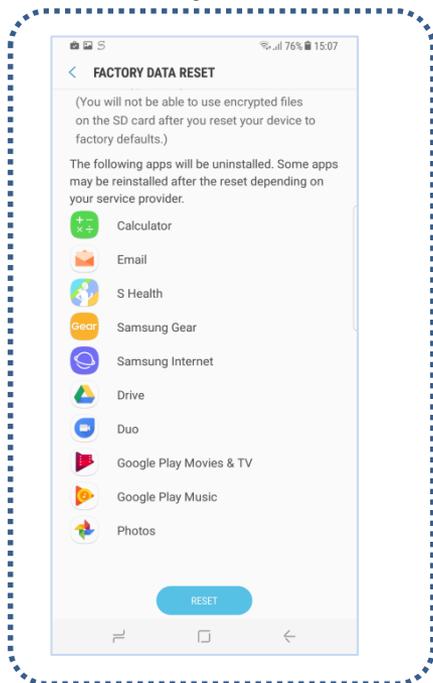
Factory Reset	Setup Wizard	Idle
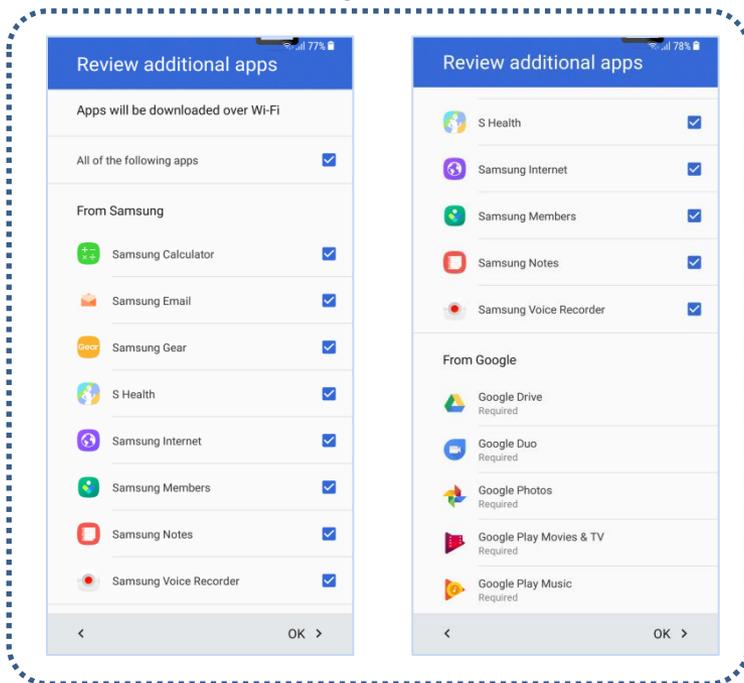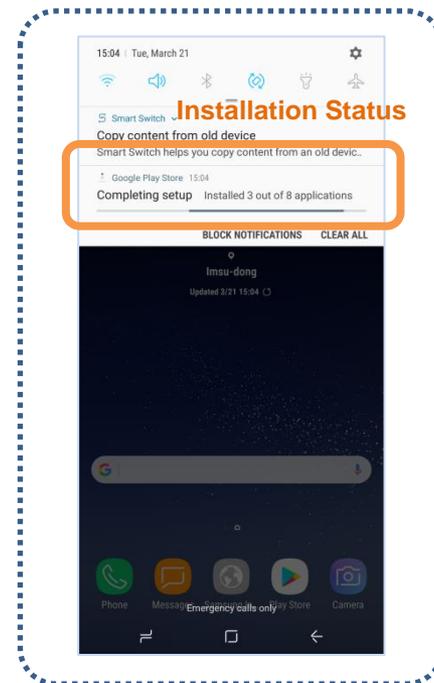
Samsung (9) : Internet, S Health, Samsung Pay*, Samsung Note, Calculator, Voice Recorder, Email, Samsung Members*, Samsung Gear

Google (5)   : Play music, Duo, Photos, Play movies & TV, Drive

* Samsung Pay, Samsung Members are not preloaded in all the countries. So in Global S/W they will be deleted while booting if they should not be preloaded for a specific country.

PAI – Play Auto Install (3/3)

- App downloading Conditions

User has access to WiFi?
- Yes → A. Download apps immediately on WiFi
- No → User has access to mobile data?

D. Wait for network to start the setup

User has access to mobile data?
- Yes → Is data zero-rated?
- No → D. Wait for network to start the setup

Is data zero-rated?
- Yes → B. Download apps immediately on data
- No → C. Wait for WiFi or use data upon user consent
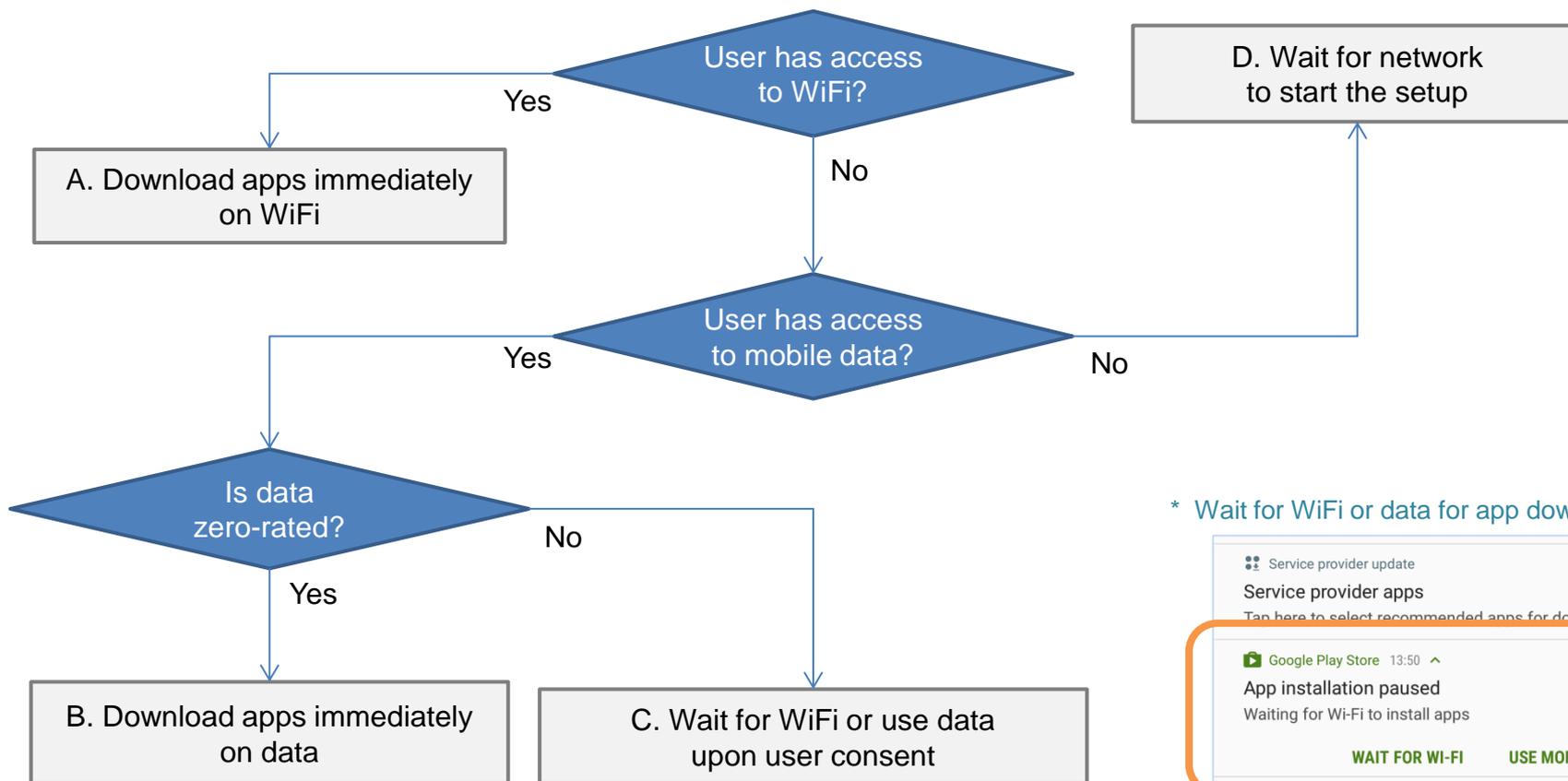
* Wait for WiFi or data for app downloading

Service provider update
Service provider apps
Tap here to select recommended apps for download

Google Play Store 13:50
App installation paused
Waiting for Wi-Fi to install apps

WAIT FOR WI-FI   USE MOBILE DATA

BLOCK NOTIFICATIONS   CLEAR ALL
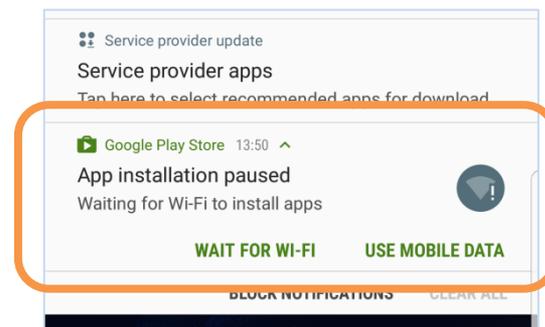
OMC v4 (1/3)

- Open Market Customization: is "a tool for Single SW"
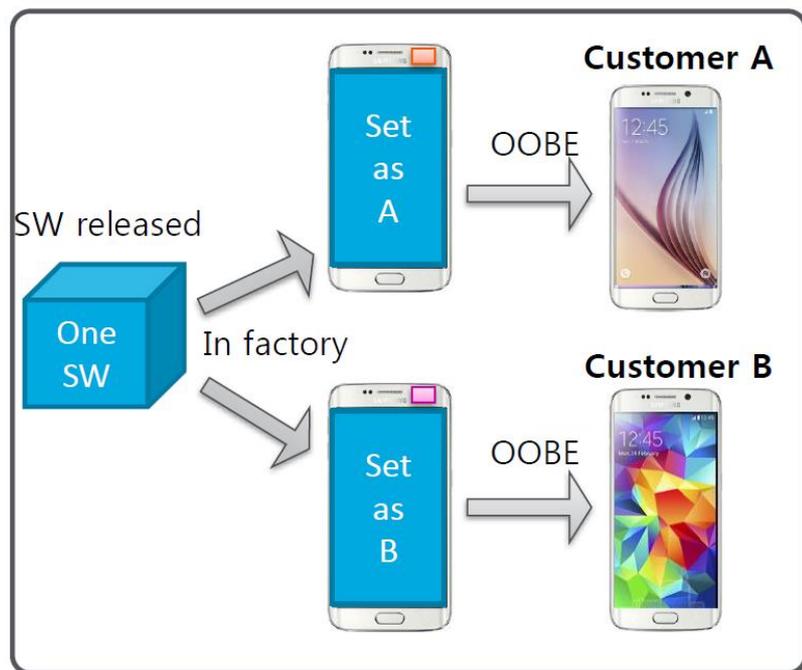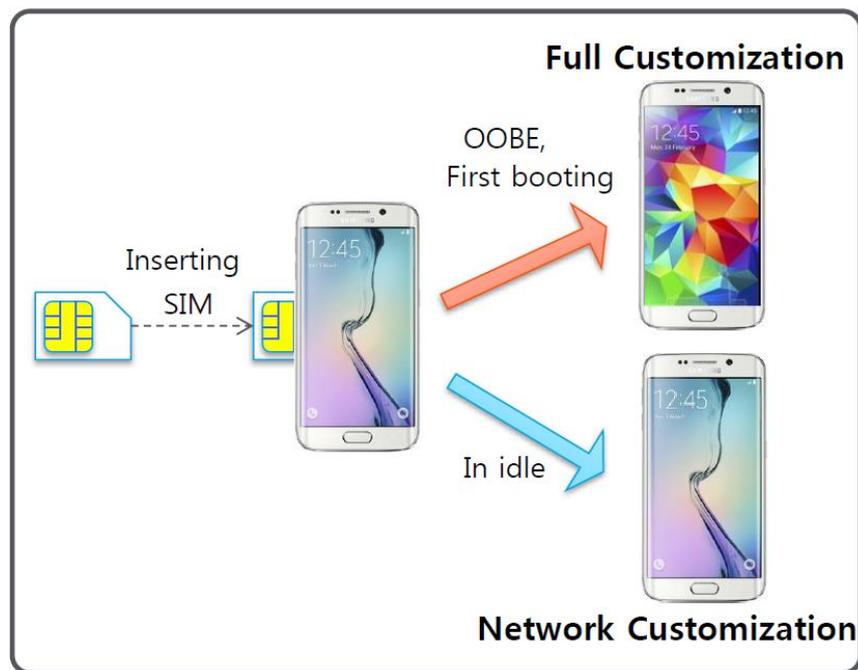
OMC v4 (2/3)

- Scenario: OOBE/Initial Booting time

1. Preloaded configurations are loaded and applied at first (OMC Preload)
2. Update Configuration via Samsung Server by step #3, #7 (OMC Update)
3. Download apps & resources from Galaxy Apps

< OMC Server>

Carrier Configuration

Samsung

< Galaxy Apps>

Apps / resources

① Initial SIM card is inserted

② Device self-configuration

③ Configuration download
   (including app & resource list)

④ Resource download/installed

⑤ Apps download

⑥ Apps installed

⑦ Configuration installed, after reboot
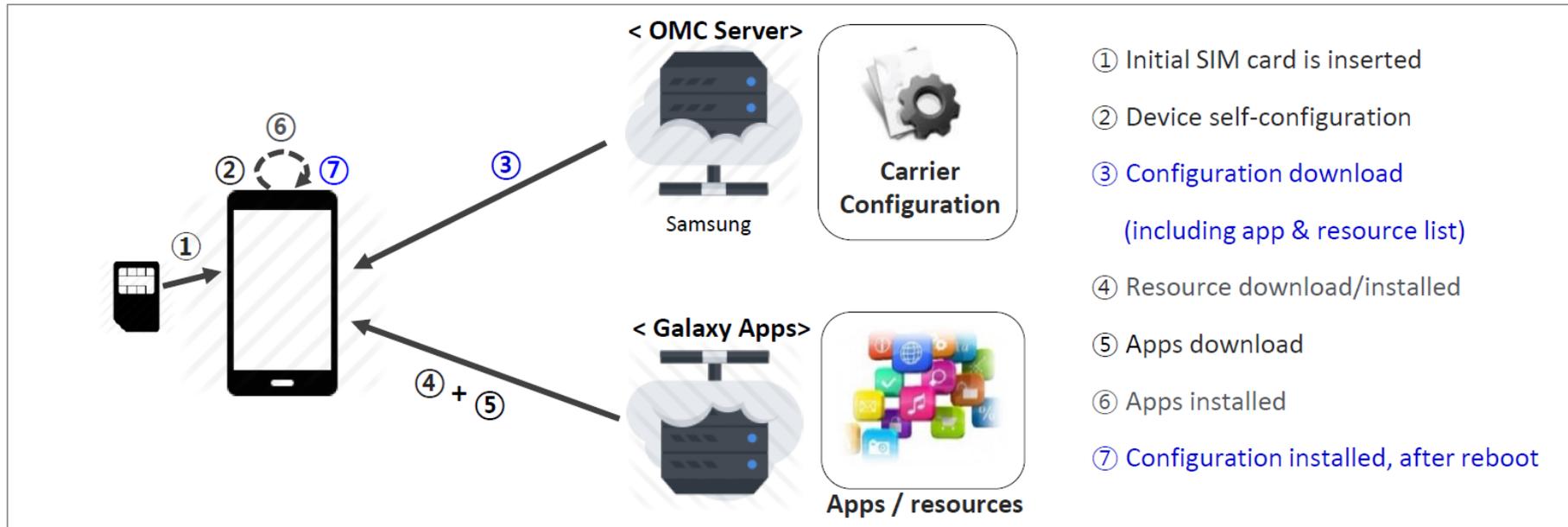
OMC v4 (3/3)

- UX for App D/L and SIM Swap
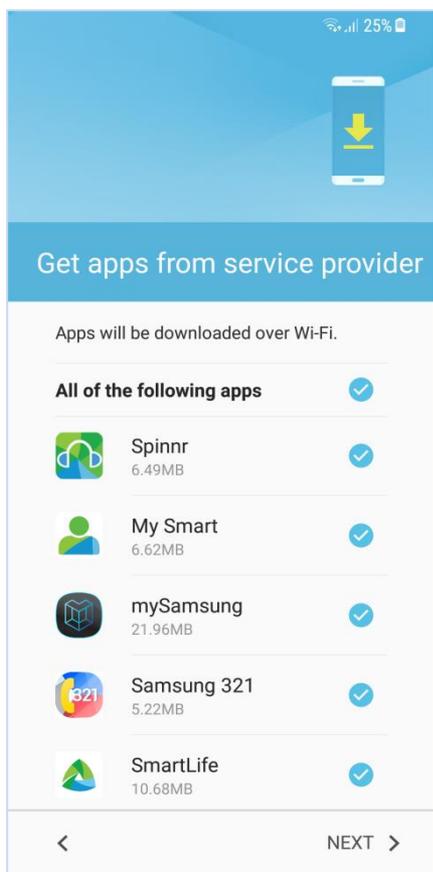
| App D/L During SUW | SIM Swap During SUW | SIM Swap After SUW |

| | * RESET AND RESTART
- **Full Customization** | * RESTART
- **Network Customization** |
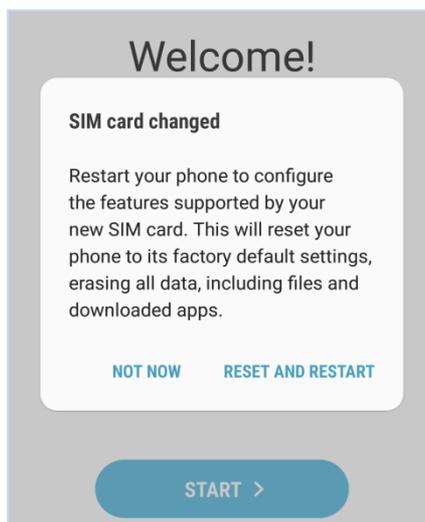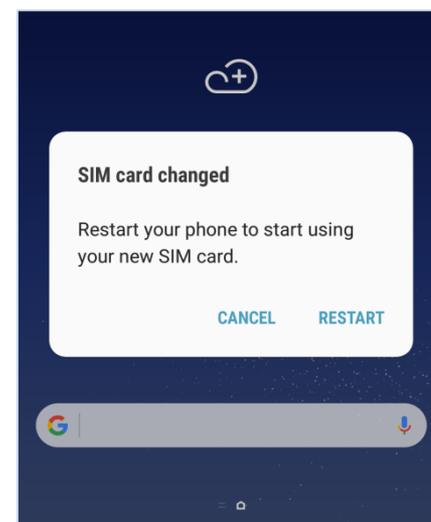
New Concepts(UI/IX) for G950F/G955F

Home Screen & App tray

- Clean Home & App tray 1 page policy

※ Resolution: 2960x1440(QHD+)

S7

Briefing

1 Briefing
Home Screen 2 page

2 Enter App tray

S8

Hello Bixby

No page
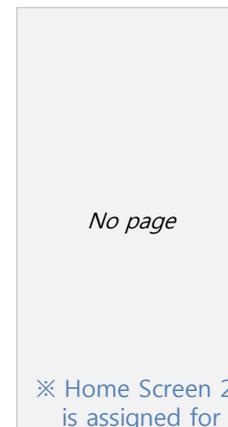
※ Home Screen 2page
is assigned for a carrier
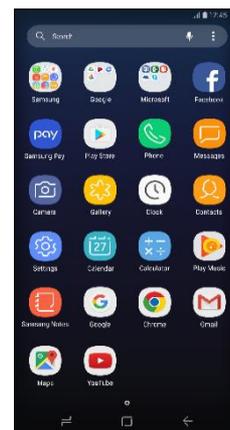
3 Hello Bixby Home

4 Enter App tray

SVC Technical Information

Basic Information

AP Chipset	CP Chipset	IF Cable	RF Cable		RF Divider
Samsung Exynos 8895		**GH81-11962W (USB C type)**	GH81-11962M (2ea) GH81-11962U (2ea)		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 S8

Item	Code	Item	Code
Hot Plate	GH81-12712E	OCTA Disass'y Jig Upper	GH81-12833A
OCTA Disass'y Holder	GH81-12119A	Double Sided Tape	GH81-12126A
Glass Absorber	GH81-11902D	Pressing JIG Body	GH81-11903A
TSP tape Attaching JIG	GH81-11905A	Pressing Pad(for Back Glass)	GH81-14725A
		Pressing Pad(for Battery)	GH81-12694A

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