SAMSUNG

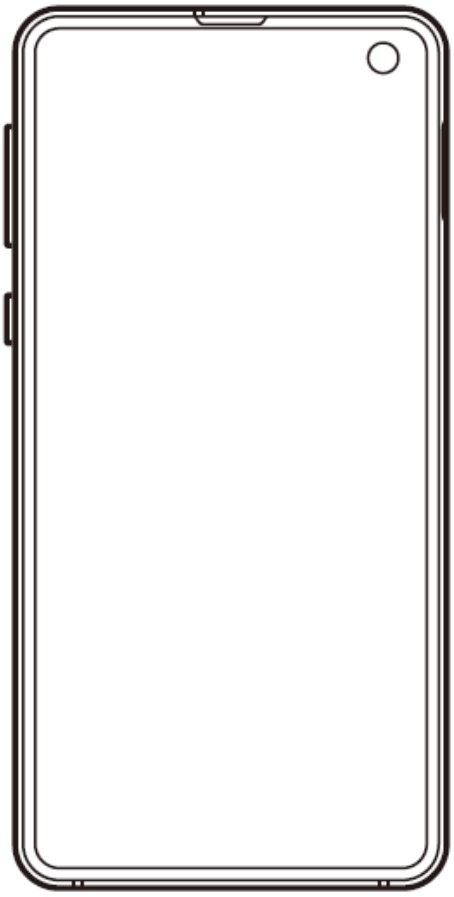
Mobile Device

SM-G970U/U1/W

Common

SERVICE Manual

Mobile Device



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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.

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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.

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2. Specification

2-1. GSM General Specification

Item		GSM850	EGSM 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		45MHz	45MHz	95MHz	80MHz
Mod. Bit rate/ Bit Period		270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us
Time Slot Period/ Frame Period		576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms
Modulation	0.3GMSK	0.3GMSK	0.3GMSK	0.3GMSK	
MS Power		33dBm~ 5dBm	33dBm~ 5dBm	30dBm~ 0dBm	30dBm~ 0dBm
Power Class		5pcl ~ 19pcl	5pcl ~ 19pcl	0pcl ~ 15pcl	0pcl ~ 15pcl
Sensitivity		-102dBm	-102dBm	-100dBm	-100dBm
TDMA Mux		8	8	8	8
Cell Radius		35Km	35Km	2Km	2Km

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2-2. GSM Tx Power Class

TX Power control level	GSM850	TX Power control level	EGSM900	TX Power control level	DCS1800	TX Power control level	PCS1900
5	33±2 dBm	5	33±2 dBm	0	30±3 dBm	0	30±3 dBm
6	31±2 dBm	6	31±2 dBm	1	28±3 dBm	1	28±3 dBm
7	29±2 dBm	7	29±2 dBm	2	26±3 dBm	2	26±3 dBm
8	27±2 dBm	8	27±2 dBm	3	24±3 dBm	3	24±3 dBm
9	25±2 dBm	9	25±2 dBm	4	22±3 dBm	4	22±3 dBm
10	23±2 dBm	10	23±2 dBm	5	20±3 dBm	5	20±3 dBm
11	21±2 dBm	11	21±2 dBm	6	18±3 dBm	6	18±3 dBm
12	19±2 dBm	12	19±2 dBm	7	16±3 dBm	7	16±3 dBm
13	17±2 dBm	13	17±2 dBm	8	14±3 dBm	8	14±3 dBm
14	15±2 dBm	14	15±2 dBm	9	12±4 dBm	9	12±4 dBm
15	13±2 dBm	15	13±2 dBm	10	10±4 dBm	10	10±4 dBm
16	11±3 dBm	16	11±3 dBm	11	8±4 dBm	11	8±4 dBm
17	9±3 dBm	17	9±3 dBm	12	6±4 dBm	12	6±4 dBm
18	7±3 dBm	18	7±3 dBm	13	4±4 dBm	13	4±4 dBm
19	5±3 dBm	19	5±3 dBm	14	2±5 dBm	14	2±5 dBm
-	-	-	-	15	0±5 dBm	15	0±5 dBm

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2-3. WCDMA General Specification

Item		WCDMA 2100	WCDMA 1900	WCDMA 1700	WCDMA 900	WCMDA 850
Freq. Band[MHz] Uplink/Downlink		1922~1977 2112~2167	1852~1907 1932~1987	1710~1755 2110~2155	880~915 925~960	824~849 869~894
ARFCN range		UL: 9612~9888 DL: 10562~10838	UL: 9262~9538 DL: 9662~9938	UL: 1312~1513 DL: 1537~1738	UL: 2712~2863 DL: 2937~3088	UL: 4132~4233 DL: 4357~4458
Tx/Rx spacing		190MHz	80MHz	400MHz	45MHz	45MHz
Mod. Bit rate/ Bit Period		3.84Mcps	3.84Mcps	3.84Mcps	3.84Mcps	3.84Mcps
Time Slot Period/ Frame Period		FrameLength: 10ms Slotlength: 0.667ms	FrameLength: 10ms Slotlength: 0.667ms	FrameLength: 10ms Slotlength: 0.667ms	FrameLength: 10ms Slotlength: 0.667ms	FrameLength: 10ms Slotlength: 0.667ms
Modulation	QPSK HQPSK	QPSK HQPSK	QPSK HQPSK	QPSK HQPSK	QPSK HQPSK	
MS Power		24dBm~ -50dBm	24dBm~ -50dBm	24dBm~ -50dBm	24dBm~ -50dBm	24dBm~ -50dBm
Power Class		3(max+24dBm)	3(max+24dBm)	3(max+24dBm)	3(max+24dBm)	3(max+24dBm)
Sensitivity		-106.7dBm	-106.7dBm	-106.7dBm	-106.7dBm	-106.7dBm
TDMA Mux		8	8	8	8	8
Cell Radius		2Km	2Km	2Km	2Km	2Km

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2-4. CDMA General Specification

Item	US PCS	CDMA	CDMA BC10	GPS
Tx Freq. range	1850 ~ 1910MHz	824.04 ~ 848.97MHz	817.9 ~ 823.1MHz	-
Rx Freq. range	1930 ~ 1990MHz	869.04 ~ 893.97MHz	862.9 ~ 868.1MHz	1575.42MHz
Channel Bandwidth	1.23MHz	1.23MHz	1.23MHz	-
Channel Spacing	50KHz	30KHz	25KHz	Not Used
Number of Channel	1200	832	205	1
Duplex Separation	80MHz	45MHz	45MHz	-
Type of Emission	1M28F9W	1M28F9W	1M28F9W	-
Tx Local Frequency	F_{Tx} * 0.7999	F_{Tx} * 1.6666	F_{Tx} * 1.6666	-
Rx Local Frequency	F_{Rx} * 0.8888	F_{Rx} * 2	F_{Rx} * 2	-
Frequency Stability	(F_{RX}-80MHz)±150Hz	(F_{RX}-45MHz)±300Hz	(F_{RX}-45MHz)±300Hz	-
Operating Temperature	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃

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2-5. LTE General Specification

Item	LTE FDD B1	LTE FDD B2	LTE FDD B3	LTE FDD B4
Tx Freq. range	1920~1980 MHz	1850 ~ 1910 MHz	1710 ~ 1785 MHz	1710~1755 MHz
Rx Freq. range	2110~2170 MHz	1930 ~ 1990 MHz	1805 ~ 1880 MHz	2110~2155 MHz
Channel Bandwidth	5, 10, 15, 20MHz	1.4, 3, 5, 10, 15, 20 MHz	1.4, 3, 5, 10, 15, 20 MHz	1.4, 3, 5, 10, 15, 20 MHz
Channel Spacing	180KHz	180KHz	180KHz	180KHz
Number of Channel	25, 50, 75, 100	6, 15, 25, 50, 75, 100	6, 15, 25, 50, 75, 100	6, 15, 25, 50, 75, 100
Duplex Separation	190 MHz	80 MHz	95 MHz	400 MHz
Type of Emission	4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	1M09G7D (QPSK) 1M11W7D (16QAM) 1M11W7D (64QAM) 1M11W7D (256QAM) 2M71G7D (QPSK) 2M71W7D (16QAM) 2M71W7D (64QAM) 2M71W7D (256QAM) 4M57G7D (QPSK) 4M55W7D (16QAM) 4M55W7D (64QAM) 4M55W7D (256QAM) 9M05G7D (QPSK) 9M02W7D (16QAM) 9M02W7D (64QAM) 9M02W7D (256QAM) 13M6G7D (QPSK) 13M6W7D (16QAM) 13M6W7D (64QAM) 13M6W7D (256QAM) 18M1G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	1M11G7D (QPSK) 1M11W7D (16QAM) 1M11W7D (64QAM) 1M11W7D (256QAM) 2M71G7D (QPSK) 2M71W7D (16QAM) 2M71W7D (64QAM) 2M71W7D (256QAM) 4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	1M10G7D (QPSK) 1M11W7D (16QAM) 1M11W7D (64QAM) 1M11W7D (256QAM) 2M71G7D (QPSK) 2M73W7D (16QAM) 2M73W7D (64QAM) 2M73W7D (256QAM) 4M55G7D (QPSK) 4M54W7D (16QAM) 4M54W7D (64QAM) 4M54W7D (256QAM) 9M04G7D (QPSK) 9M02W7D (16QAM) 9M02W7D (64QAM) 9M02W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M1W7D (16QAM) 18M1W7D (64QAM) 18M1W7D (256QAM)
Operating Temperature	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃

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2. Specification

Item	LTE FDD B5	LTE FDD B7	LTE FDD B8	LTE FDD B12
Tx Freq. range	824 ~ 849 MHz	2500~2570 MHz	880 ~ 915 MHz	699 ~ 716 MHz
Rx Freq. range	869 ~ 894 MHz	2620~2690 MHz	925 ~ 960 MHz	729 ~ 746 MHz
Channel Bandwidth	1.4, 3, 5, 10 MHz	5, 10,15, 20 MHz	1.4, 3, 5, 10 MHz	1.4, 3, 5, 10 MHz
Channel Spacing	180KHz	180KHz	180KHz	180KHz
Number of Channel	6, 15, 25, 50	25, 50, 75, 100	6, 15, 25, 50	25, 50, 75, 100
Duplex Separation	45 MHz	45 MHz	45 MHz	30 MHz
Type of Emission	1M10G7D (QPSK) 1M11W7D (16QAM) 1M11W7D (64QAM) 1M11W7D (256QAM) 2M72G7D (QPSK) 2M72W7D (16QAM) 2M72W7D (64QAM) 2M72W7D (256QAM) 4M59G7D (QPSK) 4M56W7D (16QAM) 4M56W7D (64QAM) 4M56W7D (256QAM) 9M03G7D (QPSK) 9M03W7D (16QAM) 9M03W7D (64QAM) 9M03W7D (256QAM)	4M57G7D (QPSK) 4M54W7D (16QAM) 4M54W7D (64QAM) 4M54W7D (256QAM) 9M04G7D (QPSK) 9M05W7D (16QAM) 9M05W7D (64QAM) 9M05W7D (256QAM) 13M6G7D (QPSK) 13M6W7D (16QAM) 13M6W7D (64QAM) 13M6W7D (256QAM) 18M1G7D (QPSK) 18M1W7D (16QAM) 18M1W7D (64QAM) 18M1W7D (256QAM)	1M11G7D (QPSK) 1M11W7D (16QAM) 1M11W7D (64QAM) 1M11W7D (256QAM) 2M71G7D (QPSK) 2M71W7D (16QAM) 2M71W7D (64QAM) 2M71W7D (256QAM) 4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM)	1M10G7D (QPSK) 1M10W7D (16QAM) 1M10W7D (64QAM) 1M10W7D (256QAM) 2M72G7D (QPSK) 2M72W7D (16QAM) 2M72W7D (64QAM) 2M72W7D (256QAM) 4M57G7D (QPSK) 4M53W7D (16QAM) 4M53W7D (64QAM) 4M53W7D (256QAM) 9M03G7D (QPSK) 9M03W7D (16QAM) 9M03W7D (64QAM) 9M03W7D (256QAM)
Operating Temperature	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃

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2. Specification

Item	LTE FDD B13	LTE FDD B14	LTE FDD B18	LTE FDD B19
Tx Freq. range	777~787 MHz	788 ~ 798 MHz	815 ~ 830 MHz	830 ~ 845 MHz
Rx Freq. range	746~756 MHz	758 ~ 768 MHz	860 ~ 875 MHz	875 ~ 890 MHz
Channel Bandwidth	5, 10 MHz	5, 10 MHz	5, 10, 15 MHz	5, 10, 15 MHz
Channel Spacing	180KHz	180KHz	180KHz	180KHz
Number of Channel	25, 50	25, 50	25, 50, 75	25, 50, 75
Duplex Separation	-31 MHz	-30 MHz	45 MHz	45 MHz
Type of Emission	4M54G7D (QPSK) 4M53W7D (16QAM) 4M53W7D (64QAM) 4M53W7D (256QAM) 9M01G7D (QPSK) 9M02W7D (16QAM) 9M02W7D (64QAM) 9M02W7D (256QAM)	4M56G7D (QPSK) 4M54W7D (16QAM) 4M54W7D (64QAM) 4M54W7D (256QAM) 9M06G7D (QPSK) 9M03W7D (16QAM) 9M03W7D (64QAM) 9M03W7D (256QAM)	4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM)	4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM)
Operating Temperature	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃

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2. Specification

Item	LTE FDD B20	LTE FDD B25	LTE FDD B26	LTE FDD B28
Tx Freq. range	832 ~ 862 MHz	1850~1915 MHz	814 ~ 849 MHz	703 ~ 748 MHz
Rx Freq. range	791 ~ 821 MHz	1930~1995 MHz	859 ~ 894 MHz	758 ~ 803 MHz
Channel Bandwidth	5, 10, 15, 20 MHz	1.4, 3, 5, 10, 15, 20 MHz	1.4, 3, 5, 10, 15 MHz	3, 5, 10, 15, 20 MHz
Channel Spacing	180KHz	180KHz	180KHz	180KHz
Number of Channel	25, 50, 75, 100	6, 15, 25, 50, 75, 100	6, 15, 25, 50, 75	15, 25, 50, 75, 100
Duplex Separation	-41 MHz	80 MHz	45 MHz	55 MHz
Type of Emission	4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	1M09G7D (QPSK) 1M11W7D (16QAM) 1M11W7D (64QAM) 1M11W7D (256QAM) 2M71G7D (QPSK) 2M71W7D (16QAM) 2M71W7D (64QAM) 2M71W7D (256QAM) 4M57G7D (QPSK) 4M55W7D (16QAM) 4M55W7D (64QAM) 4M55W7D (256QAM) 9M05G7D (QPSK) 9M02W7D (16QAM) 9M02W7D (64QAM) 9M02W7D (256QAM) 13M6G7D (QPSK) 13M6W7D (16QAM) 13M6W7D (64QAM) 13M6W7D (256QAM) 18M1G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	1M08G7D (QPSK) 1M09W7D (16QAM) 1M09W7D (64QAM) 1M09W7D (256QAM) 2M69G7D (QPSK) 2M70W7D (16QAM) 2M70W7D (64QAM) 2M70W7D (256QAM) 4M50G7D (QPSK) 4M51W7D (16QAM) 4M51W7D (64QAM) 4M51W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM)	2M71G7D (QPSK) 2M71W7D (16QAM) 2M71W7D (64QAM) 2M71W7D (256QAM) 4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)
Operating Temperature	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃

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2. Specification

Item	LTE FDD B30	LTE TDD B38	LTE TDD B39	LTE TDD B40
Tx Freq. range	2305 ~ 2315 MHz	2570 ~ 2620 MHz	1880~1920 MHz	2300 ~ 2400 MHz
Rx Freq. range	2350 ~ 2360 MHz	2570 ~ 2620 MHz	1880~1920 MHz	2300 ~ 2400 MHz
Channel Bandwidth	5, 10 MHz	5, 10, 15, 20 MHz	5, 10, 15, 20 MHz	5, 10, 15, 20 MHz
Channel Spacing	180KHz	180KHz	180KHz	180KHz
Number of Channel	25, 50	25, 50, 75, 100	25, 50, 75, 100	25, 50, 75, 100
Duplex Separation	45 MHz	-	-	-
Type of Emission	4M53G7D (QPSK) 4M52W7D (16QAM) 4M52W7D (64QAM) 4M52W7D (256QAM) 9M02G7D (QPSK) 9M02W7D (16QAM) 9M02W7D (64QAM) 9M02W7D (256QAM)	4M54G7D (QPSK) 4M52W7D (16QAM) 4M52W7D (64QAM) 4M52W7D (256QAM) 9M00G7D (QPSK) 9M05W7D (16QAM) 9M05W7D (64QAM) 9M05W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	4M50G7D (QPSK) 4M50W7D (16QAM) 4M50W7D (64QAM) 4M50W7D (256QAM) 9M00G7D (QPSK) 9M00W7D (16QAM) 9M00W7D (64QAM) 9M00W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)
Operating Temperature	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃

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2. Specification

Item	LTE TDD B41	LTE TDD B48	LTE FDD B66	LTE FDD B71
Tx Freq. range	2496~ 2690 MHz	3550~ 3700 MHz	1710 ~ 1780 MHz	663 ~ 698 MHz
Rx Freq. range	2496~ 2690 MHz	3550~ 3700 MHz	2110 ~ 2200 MHz	617 ~ 652 MHz
Channel Bandwidth	5, 10, 15, 20 MHz	5, 10, 15, 20 MHz	1.4, 3, 5, 10, 15, 20 MHz	5, 10, 15, 20 MHz
Channel Spacing	180KHz	180KHz	180KHz	180KHz
Number of Channel	25, 50, 75, 100	25, 50, 75, 100	6, 15, 25, 50, 75, 100	25, 50, 75, 100
Duplex Separation	-	-	400 MHz	-46 MHz
Type of Emission	4M54G7D (QPSK) 4M52W7D (16QAM) 4M52W7D (64QAM) 4M52W7D (256QAM) 9M00G7D (QPSK) 9M05W7D (16QAM) 9M05W7D (64QAM) 9M05W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	4M54G7D (QPSK) 4M51W7D (16QAM) 4M51W7D (64QAM) 4M51W7D (256QAM) 9M05G7D (QPSK) 9M03W7D (16QAM) 9M03W7D (64QAM) 9M03W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M1G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)	1M10G7D (QPSK) 1M11W7D (16QAM) 1M11W7D (64QAM) 1M11W7D (256QAM) 2M71G7D (QPSK) 2M73W7D (16QAM) 2M73W7D (64QAM) 2M73W7D (256QAM) 4M55G7D (QPSK) 4M54W7D (16QAM) 4M54W7D (64QAM) 4M54W7D (256QAM) 9M04G7D (QPSK) 9M02W7D (16QAM) 9M02W7D (64QAM) 9M02W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M1W7D (16QAM) 18M1W7D (64QAM) 18M1W7D (256QAM)	4M58G7D (QPSK) 4M53W7D (16QAM) 4M53W7D (64QAM) 4M53W7D (256QAM) 9M04G7D (QPSK) 9M03W7D (16QAM) 9M03W7D (64QAM) 9M03W7D (256QAM) 13M5G7D (QPSK) 13M5W7D (16QAM) 13M5W7D (64QAM) 13M5W7D (256QAM) 18M0G7D (QPSK) 18M0W7D (16QAM) 18M0W7D (64QAM) 18M0W7D (256QAM)
Operating Temperature	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃	-30℃ ~ +60℃

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3. Product Function

Main Function

Item	Description
OS	Android V9.0
RF	**2G** CDMA : CDMA800 / USPCS1900 GSM : GSM850 / GSM900 / DCS1800 / PCS1900 **3G** CDMA : BC0 / BC1 / BC10 WCDMA : B1 / B2 / B4 / B5 / B8 TD-SCDMA : B34 / B39 **4G** - (LTE) FDD : B1 / B2 / B3 / B4 / B5 / B7 / B8 / B12 / B13 / B14 / B18 / B19 / B20 / B25 / B26 / B28 / B29 / B30 / B66 / B71 - TDD : B38 / B39 / B40 / B41 / B46 / B48
Battery	Typ : 3100mAh / Rated : 3000mAh
Base Band	SM8150 2.8GHz, 2.4GHz, 1.7GHz
Other RF	A-GPS, Glonass, BT5.0, USB 3.1 Type-C, WIFI 802.11 a/b/g/n/ac/ax MIMO, NFC,MST
Camera	Dual Camera (Wide: 12M A/F, OIS, F1.5-2.4 / Ultra Wide: 16M, F2.2) with LED Flash, Front Camera (10M A/F, F1.9)
Display	5.8", Full HD+, 1080x2280
RAM	6GB or 8GB
ROM	128GB (up to 256GB)
Sensor	Accelerometer, Barometer, Fingerprint Sensor, Gyro Sensor, Geomagnetic Sensor, Hall Sensor, Proximity Sensor, RGB Light Sensor
Accessory	Charger : 5V/2A or 9 V/1.67 A Data cable : USB Type-C Ear jack : 3.5pi, 4Pin

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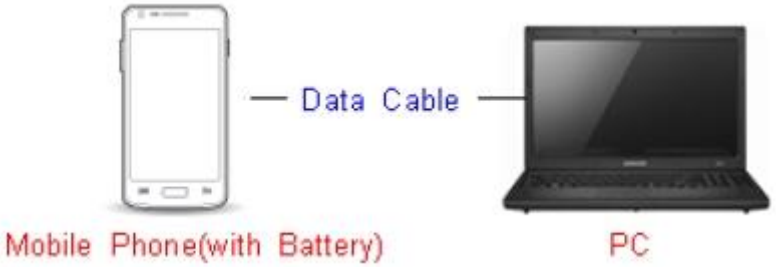
6. Level 1 Repair

6-1. S/W Update

6-1-1. Preparation

- S/W Update program : **Fenrir 5.17.xxxx**
- Mobile Phone
- Data Cable

※ Settings



Data Cable :
GH39-01949A
GH39-01949A
GH39-01951A

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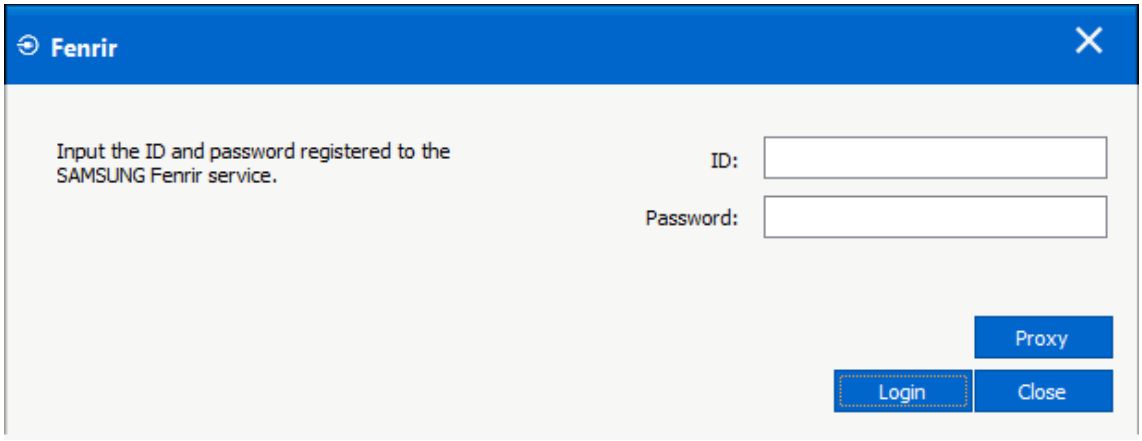
6-1-2. How to use ‘Fenrir’ S/W update program.

1) Launch Fenrir by clicking on the icon on the desktop

- SVH (Fenrir_Home) : It uses Home binary which does not have user data area in the memory when flashed to a device. (Keep user data)

- SVC (Fenrir_Factory) : It uses Factory binary which erases all user data in the memory when flashed to a device. (Clear user data)
- SVA (Fenrir_All) : It uses Factory and Home binaries. you can download Home and Factory binary in a PC(but requires double HDD storage and NW traffic)

2) Input ID & password
※You need to reset the ID information in case of PC change and format and repair, hard disk change



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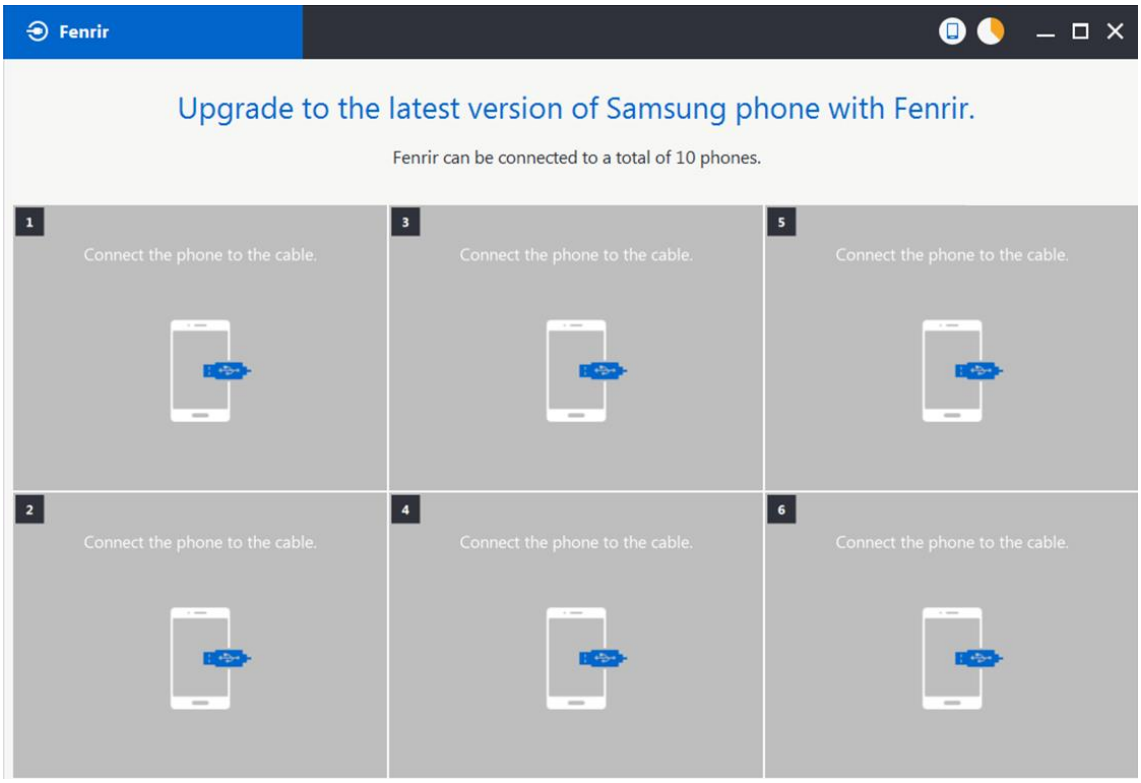
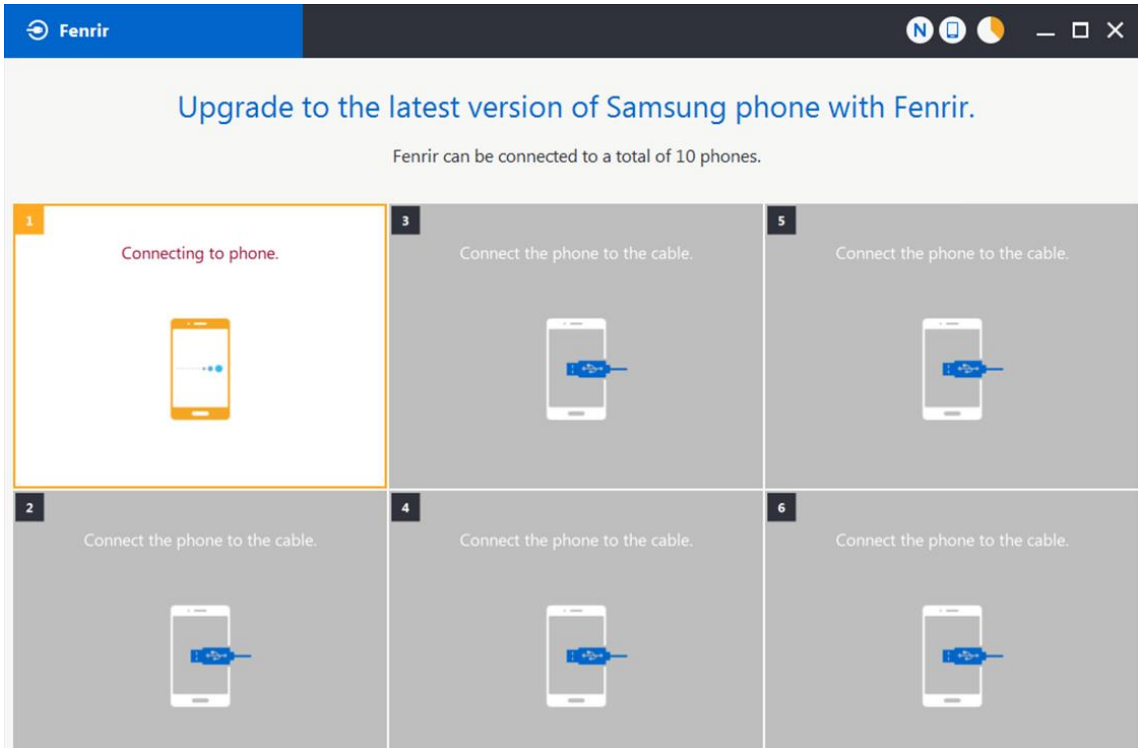
3) Ensure device has sufficient charge (at least 20%) to start firmware update.



4) Connect the device to PC via data cable.

5) Upon USB connection, you will be presented with below screen.



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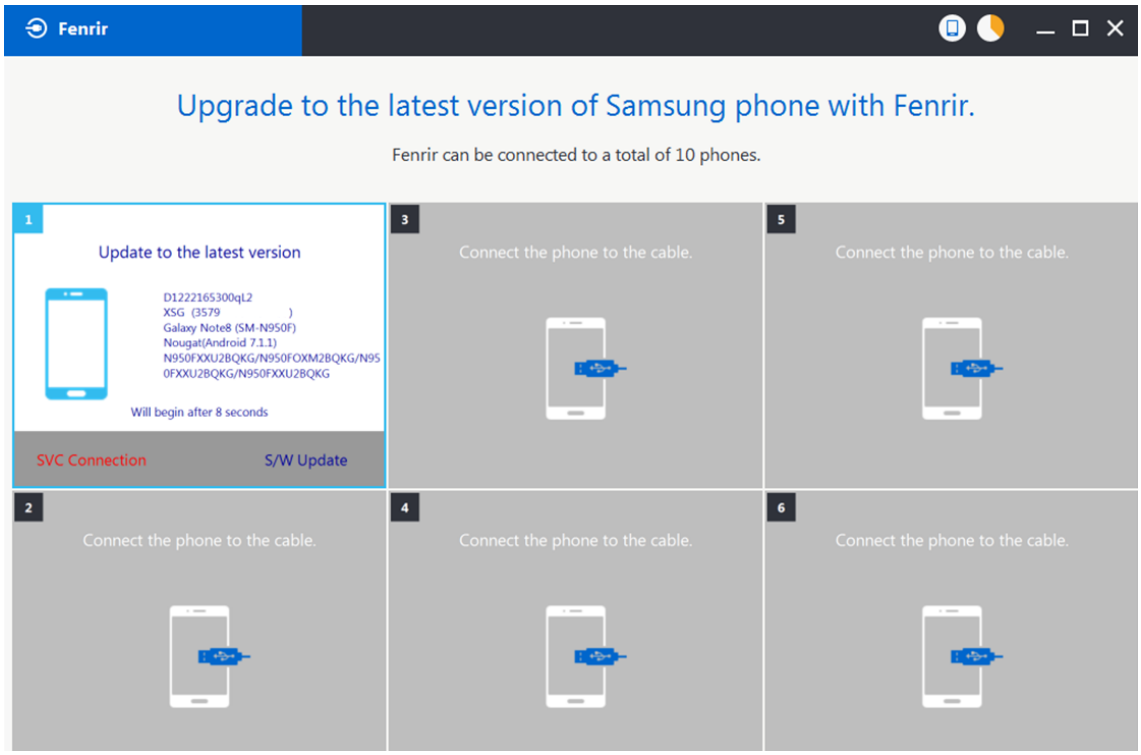
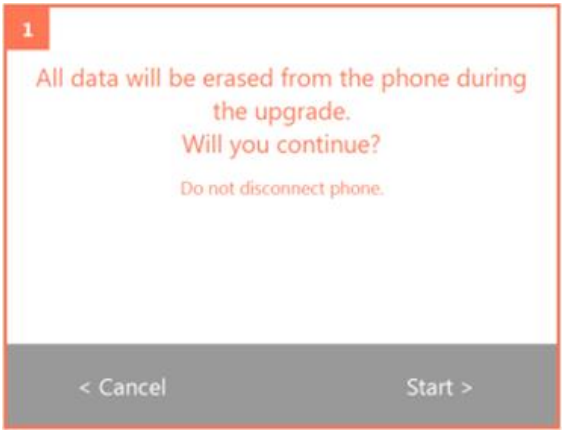
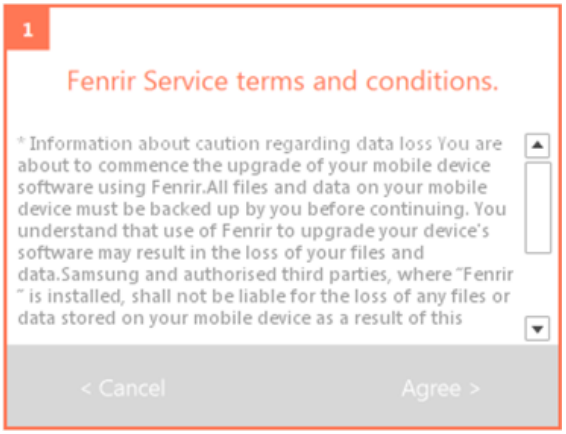
6. Level 1 Repair

6) Once device is detected, you will be presented with below screen. To update S/W, select “S/W Update” or to exit select “SVC Connection”. If you select “SVC Connection”, only Fenrir connection history (record) will be stored in the FUS server to support warranty validation. (This is known as “Service Connection” history)



7) Once Fenrir starts, application will display the below screen. And select the Start button & Agree button.





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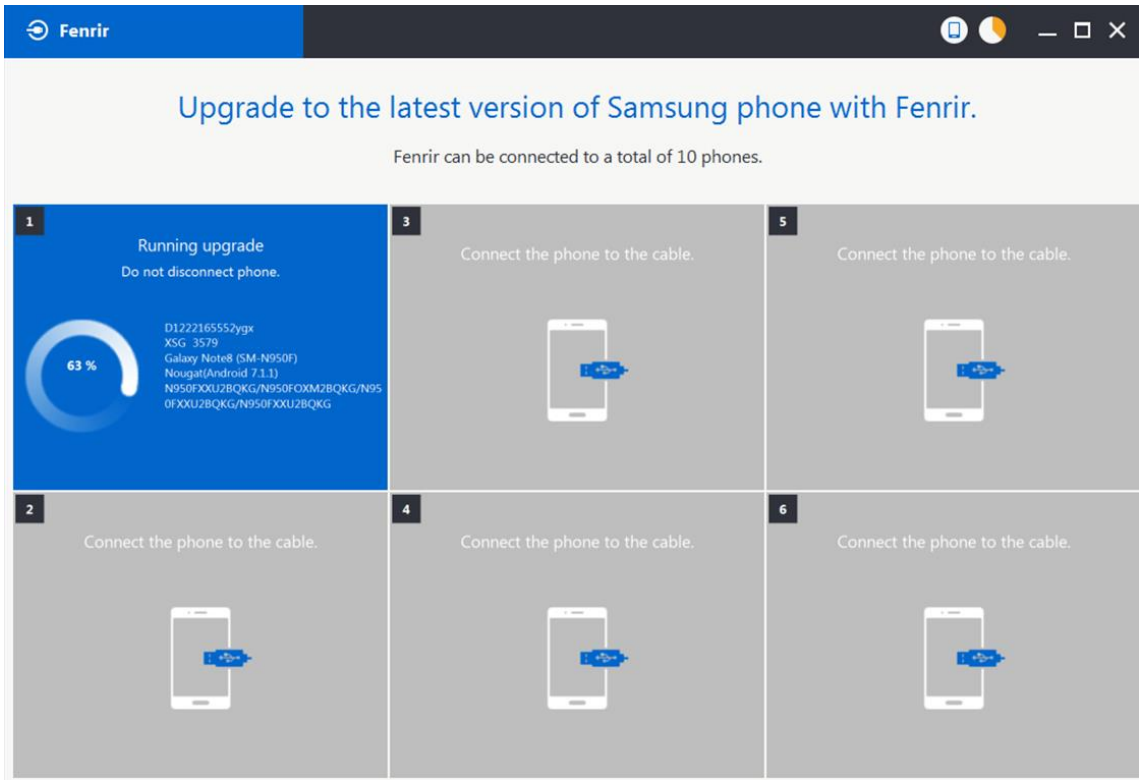
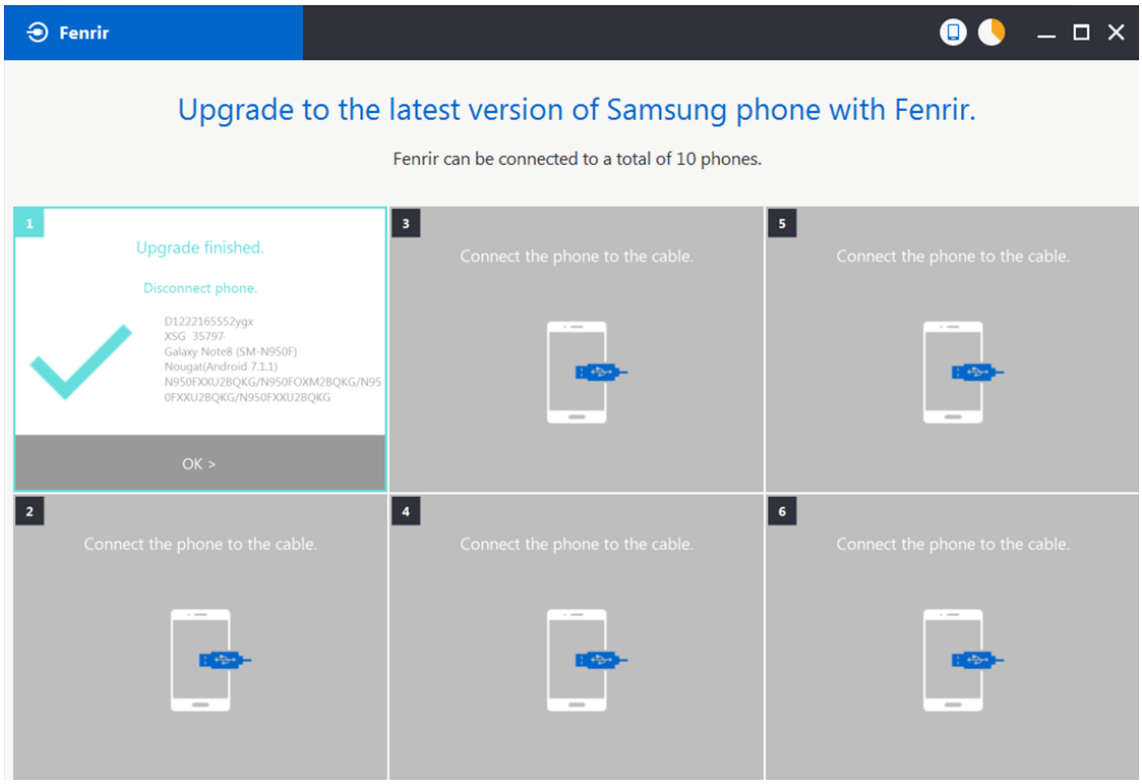
8) The status circle increases as the update installs. The update process takes approximately 5-10 minutes to complete. Do not disconnect the device from USB during processing.



9) Once complete, application will present the below screen indicating update complete.
Click Ok and detach device from USB.



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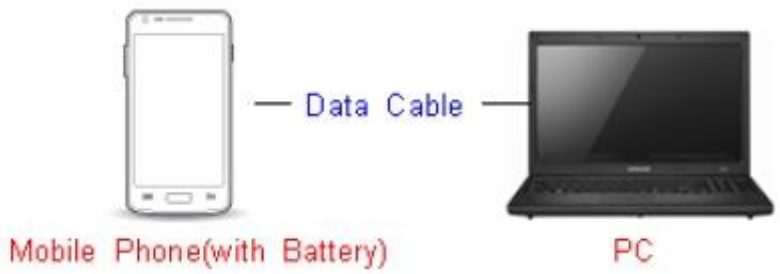
6-2. How to use 'Odin' program

※ S/W Update via Fenrir is mandatory.
Below is the method to use 'Odin' program in any specific case.

6-2-1. Preparation

- Installation program : **Odin3 v3.13.2.exe or above**
- Mobile Phone
- Data Cable
- S/W Binary files (downloaded from GSPN)

※ Settings



Data Cable :
GH39-01949A
GH39-01949A
GH39-01951A

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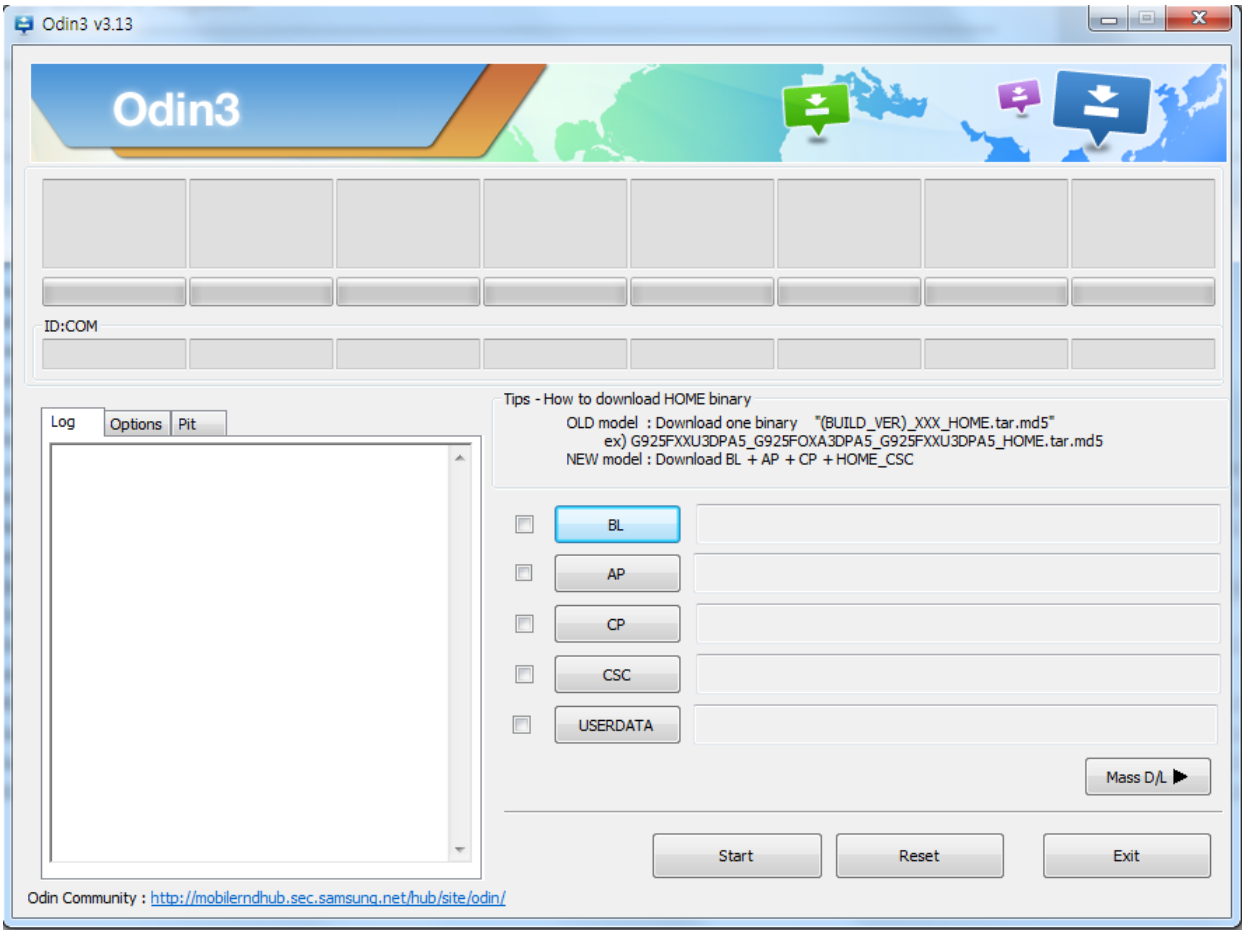
6-2-2. S/W Installation Program (Downloader program)

Open up the S/W Installation Program by executing the **"Odin3 v3.13.2.exe" or above**



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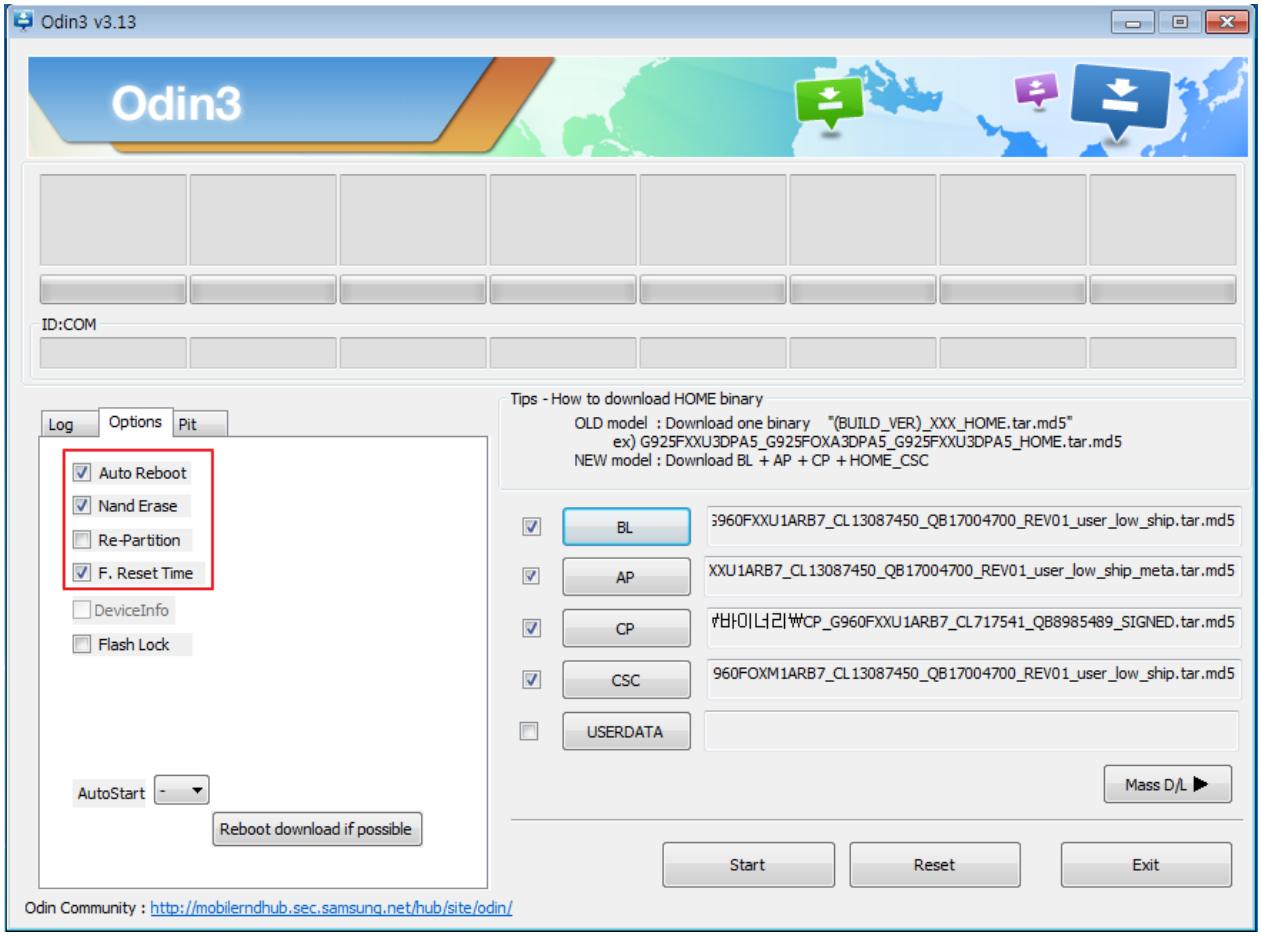
6. Level 1 Repair

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

- Check Auto Reboot, F. Reset Time, Nand Erase

- Check BL, AP, CP, CSC Files

* Note : Odin PGM checks MD5 checksum just after file selection.



6. Level 1 Repair

2. Enter into Download Mode
- Enter into Download Mode by pressing Volume Down button and Intelligence button simultaneously and connecting data cable followed by pressing Volume up button as a direction of the phone.

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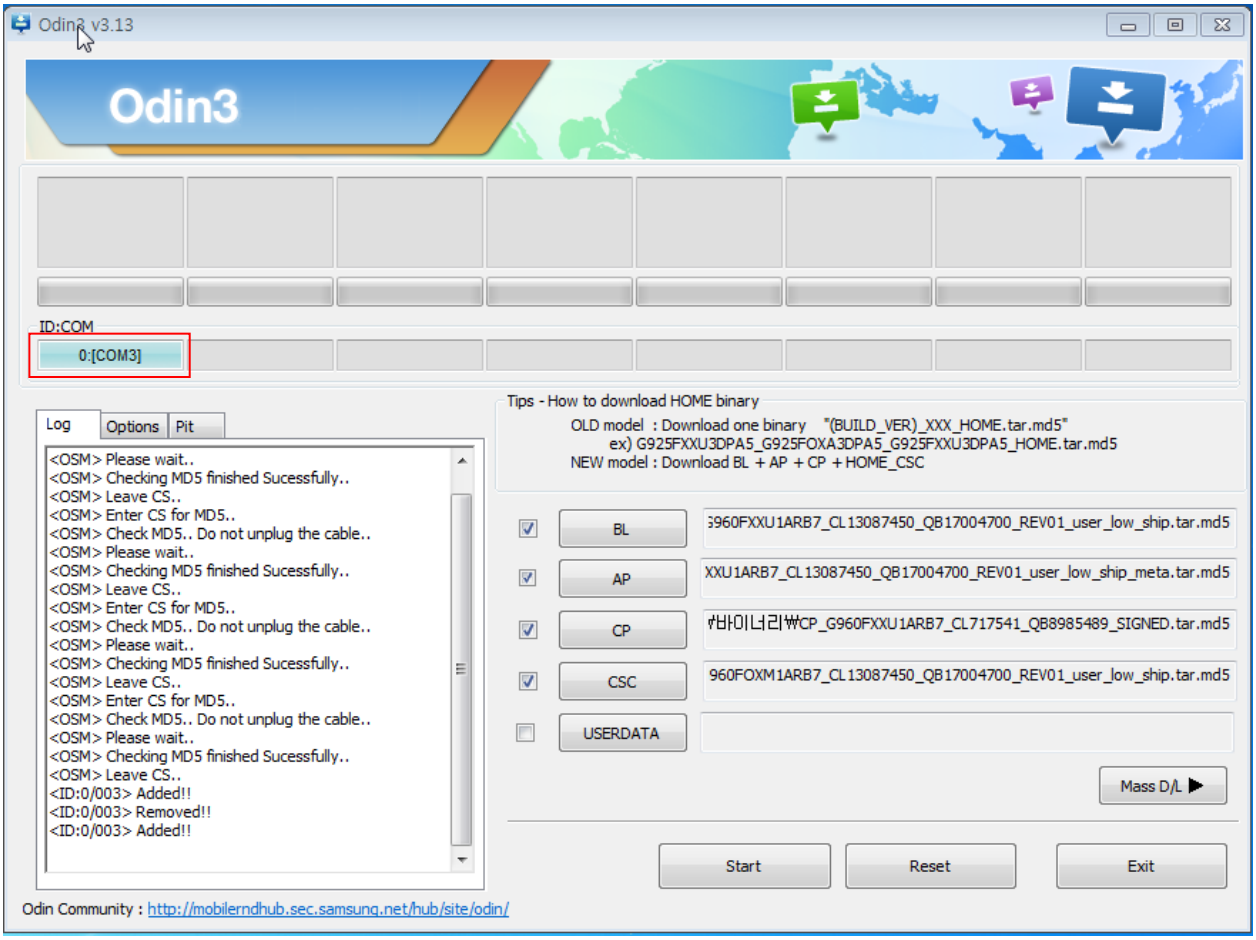
3. Connect the device to PC via Data Cable.
Make sure that the one of communication ports [ID:COM] box is highlighted in sky blue.
The device is now connected with the PC and ready to download the binary files in it.



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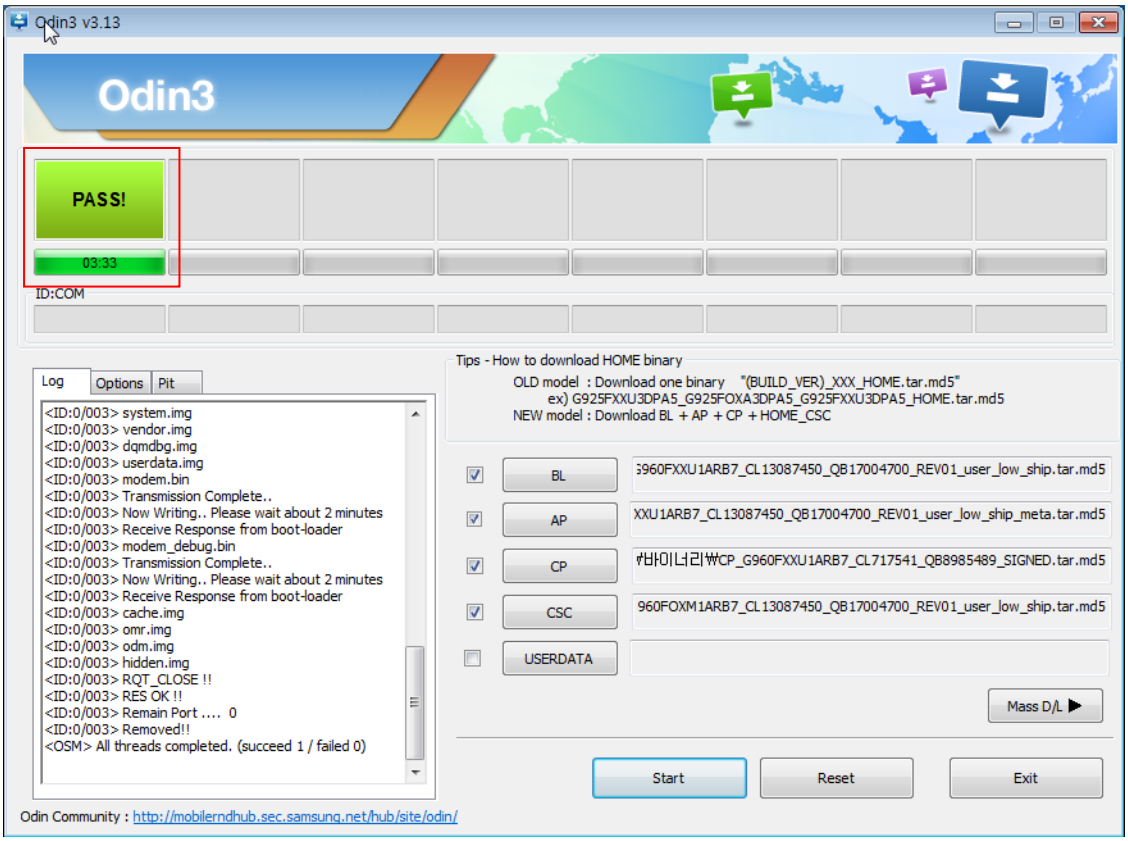
6. Level 1 Repair

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 data Reset by Settings → General Management → Reset

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

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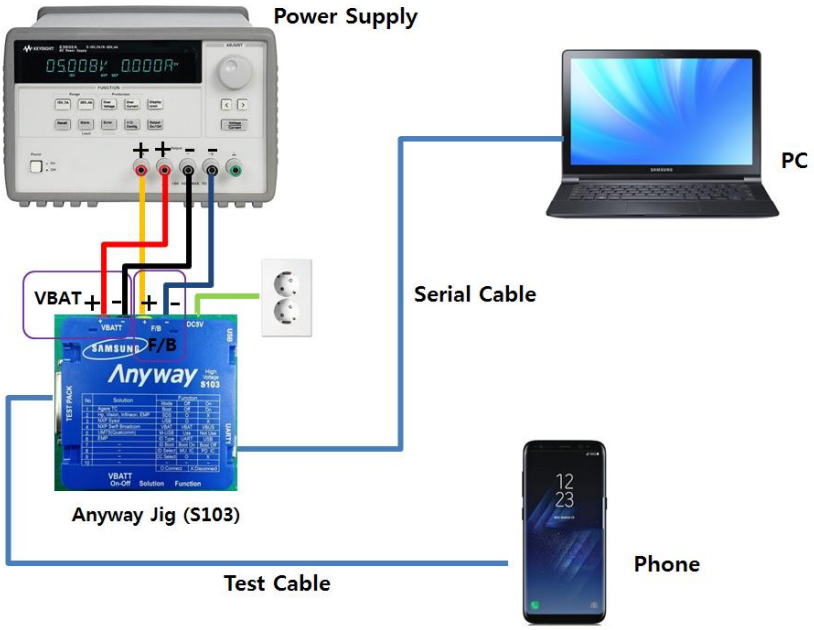
6-3. IMEI writing

6-3-1. Preparation

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

- H/W



- S/W

① Library Install	To use Daseul, library files should be installed. Refer to SVC Bulletin “(11-82) Daseul (New IMEI writing Program) Library Install guide_rev1.0”
②Launcher	**DASEUL_SVC_Launcher_v3.0.12** or higher -Uploaded on HHPsvc Notice
③ Runtime File	1. **DASEUL_IMEI_ALL_Runtime_3.1.405.0_r00595.CAB** or higher -Uploaded on HHPsvc Notice 2. Make ‘ModelName’ folder at the same position with launcher & Runtime file. DASEUL_IMEI_ALL_Runtime_3.1.405.0_r00595 DASEUL_Launcher_v3.0.29 SM-G970F_SS(CSC)_IMEI_Ver_3.1.385.3
④Model File	Copy Model File under the ‘Model Name’ folder

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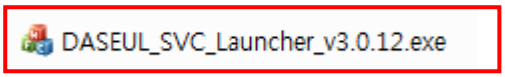
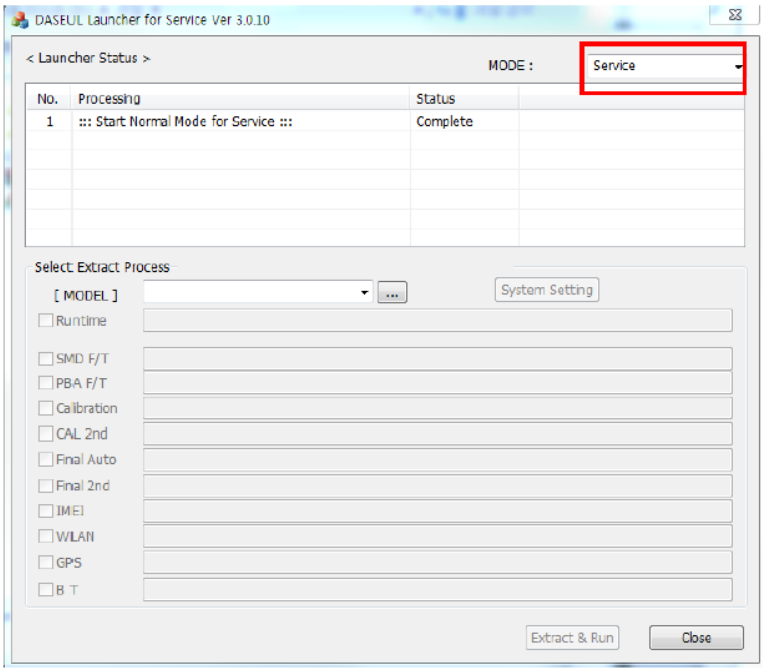
6-3-2. IMEI writing Process

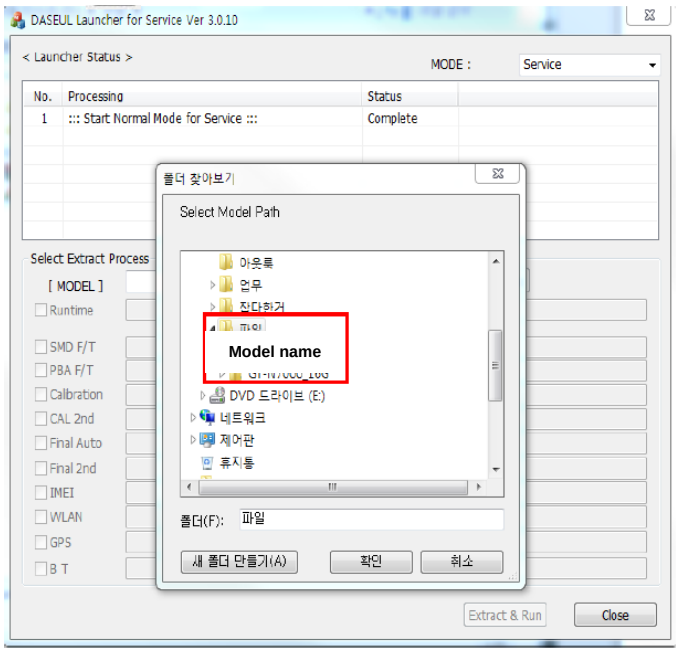
1. Run DASEUL_SVC_Launcher_v3.0.12.exe



2. Select Service Mode



3. Click ... and Select folder where the Launcher exists



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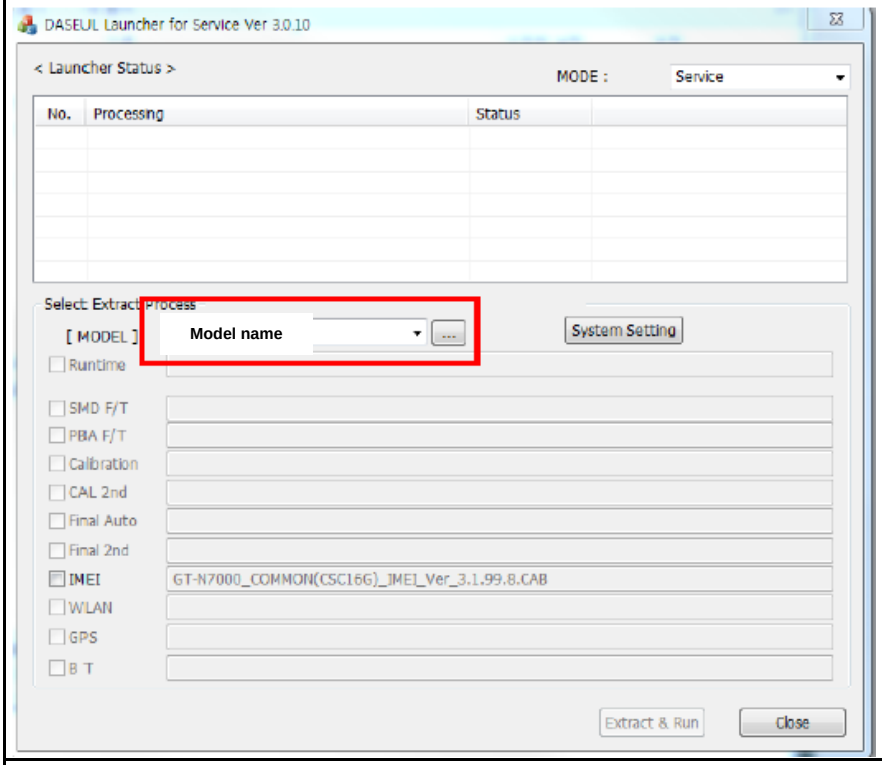
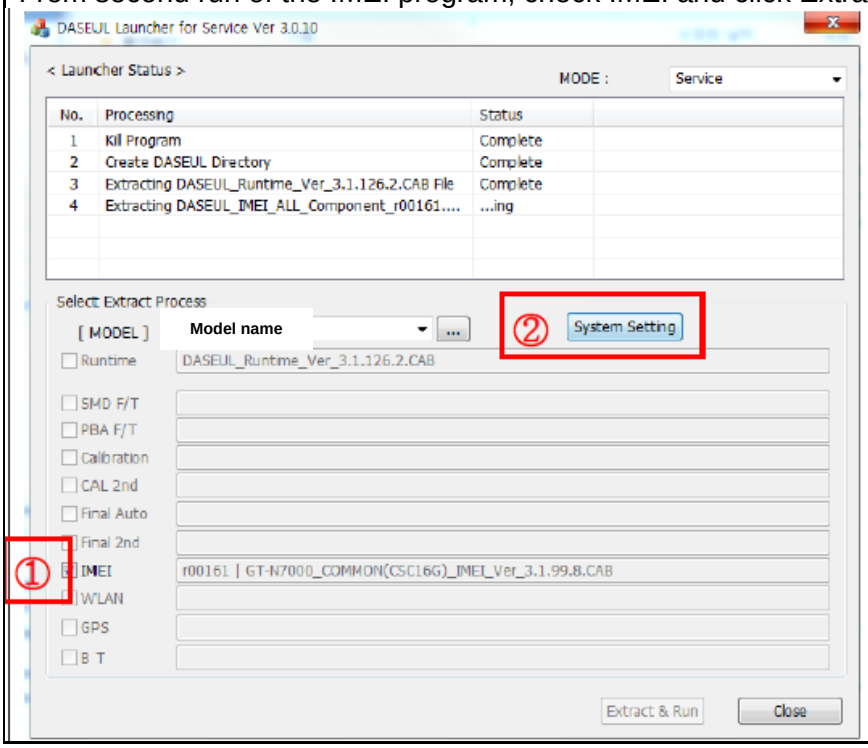
4. Select Model



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.



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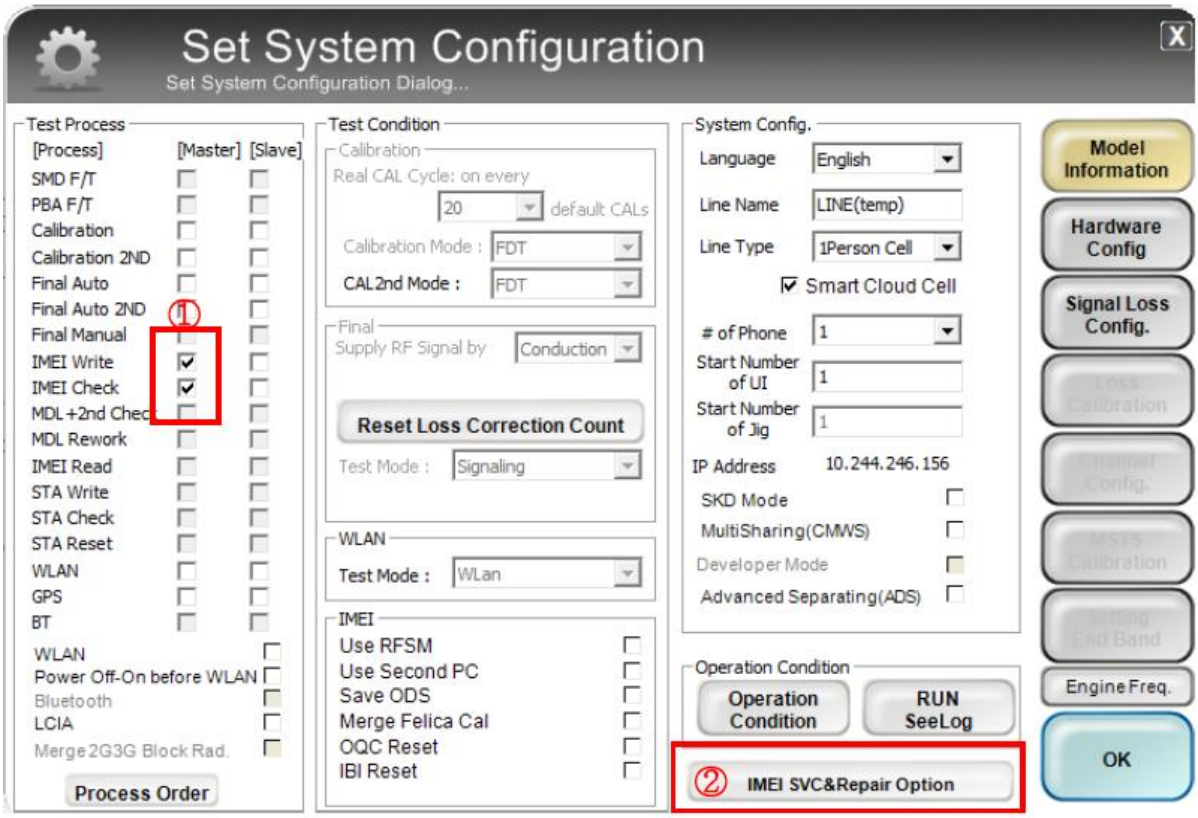
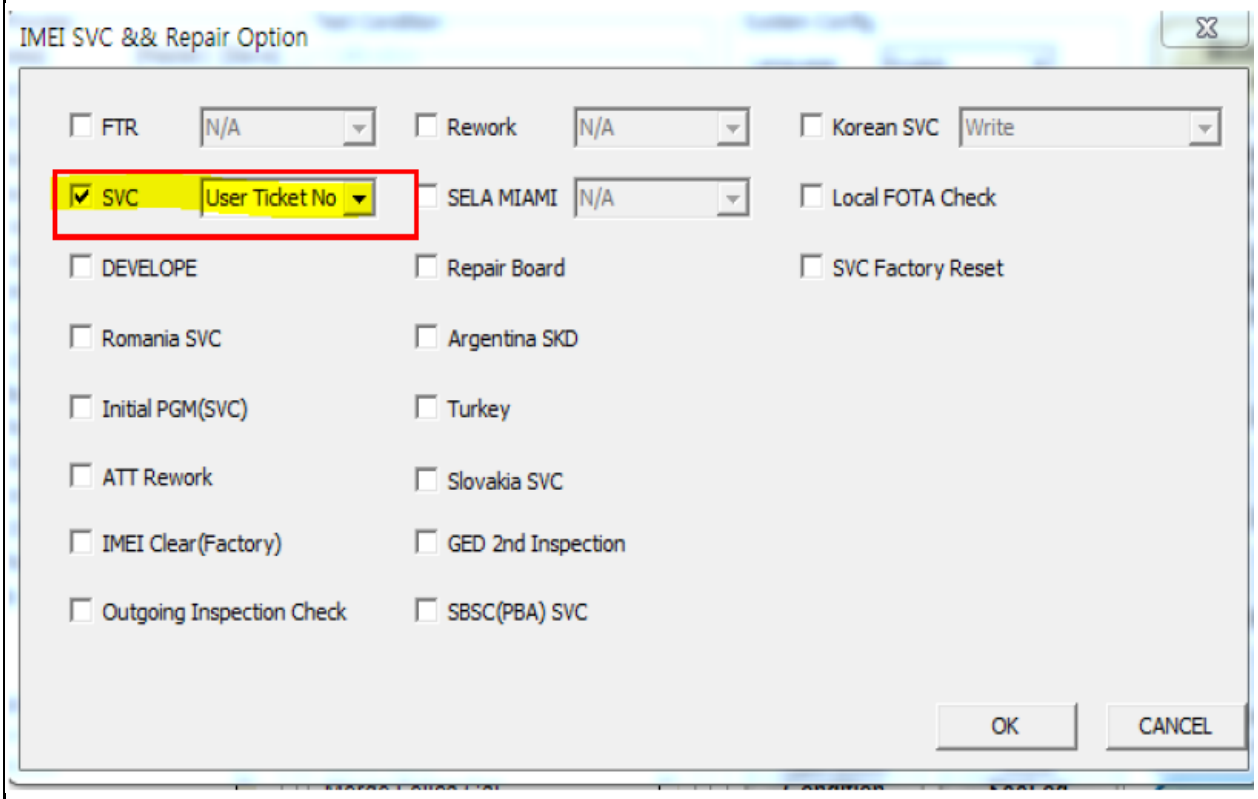
6. Level 1 Repair

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



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



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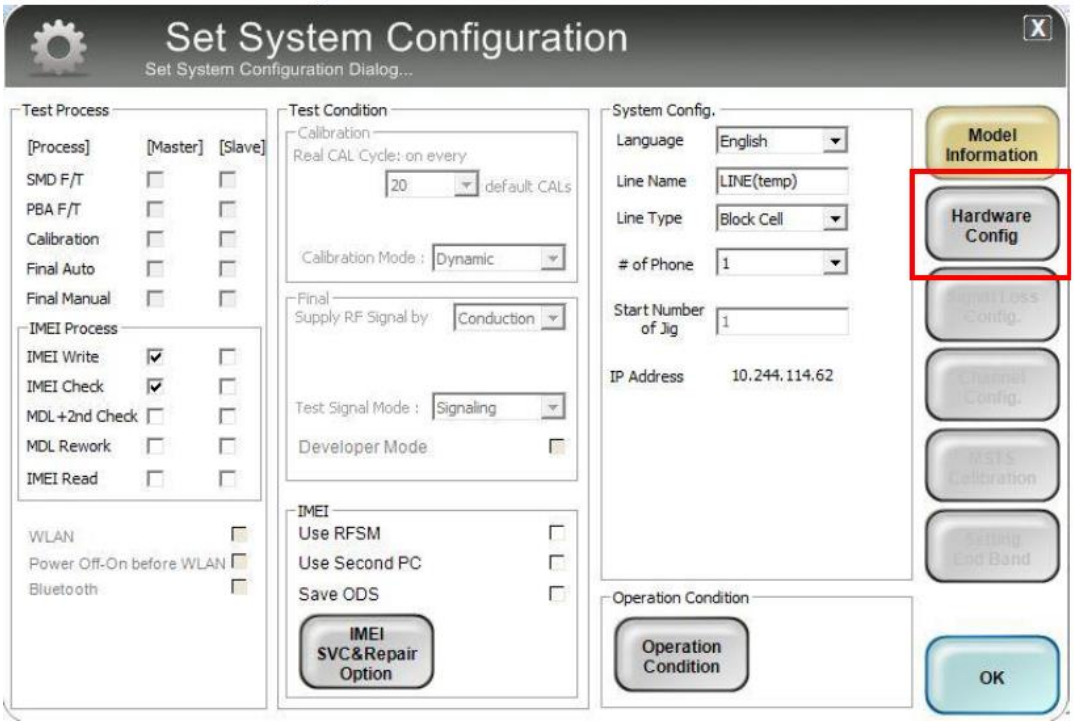
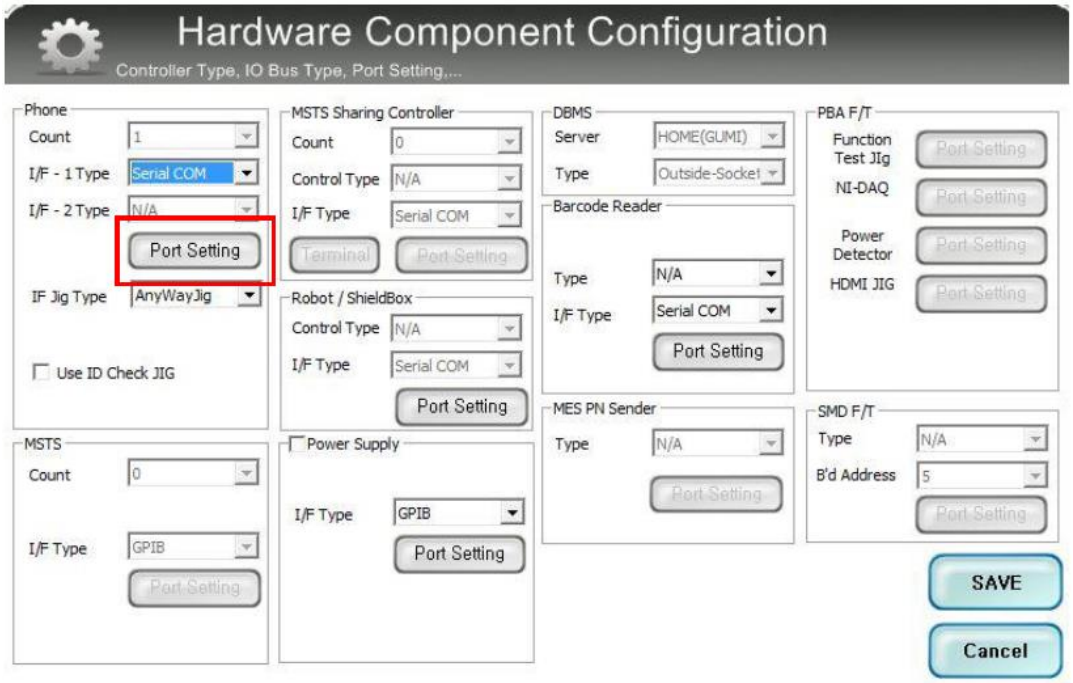
8. Click ‘Hardware Config’



9. Click ‘Port Setting’



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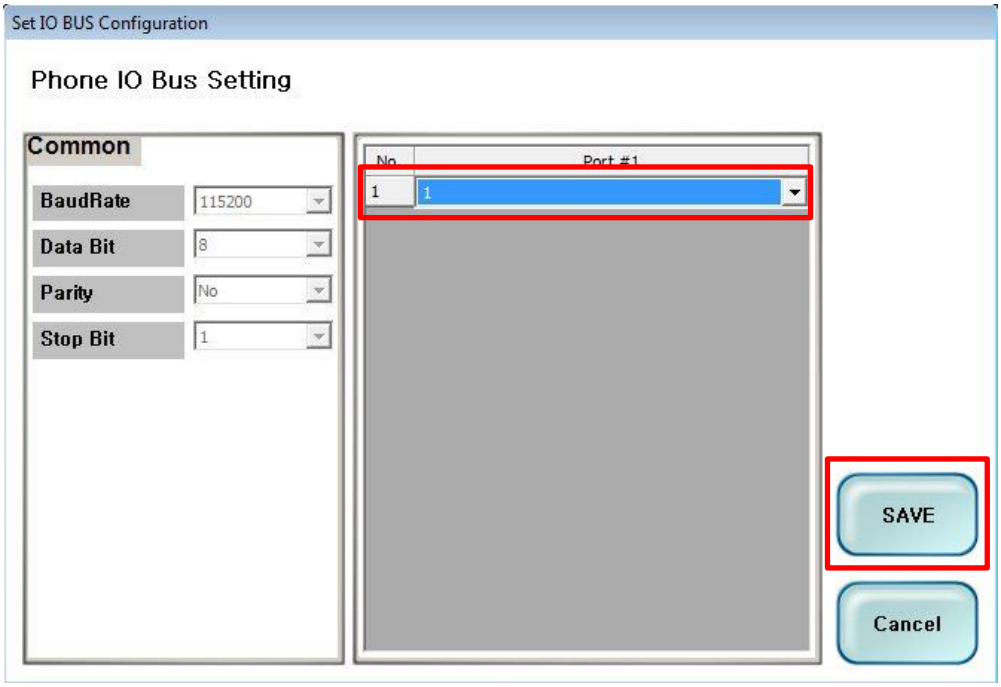
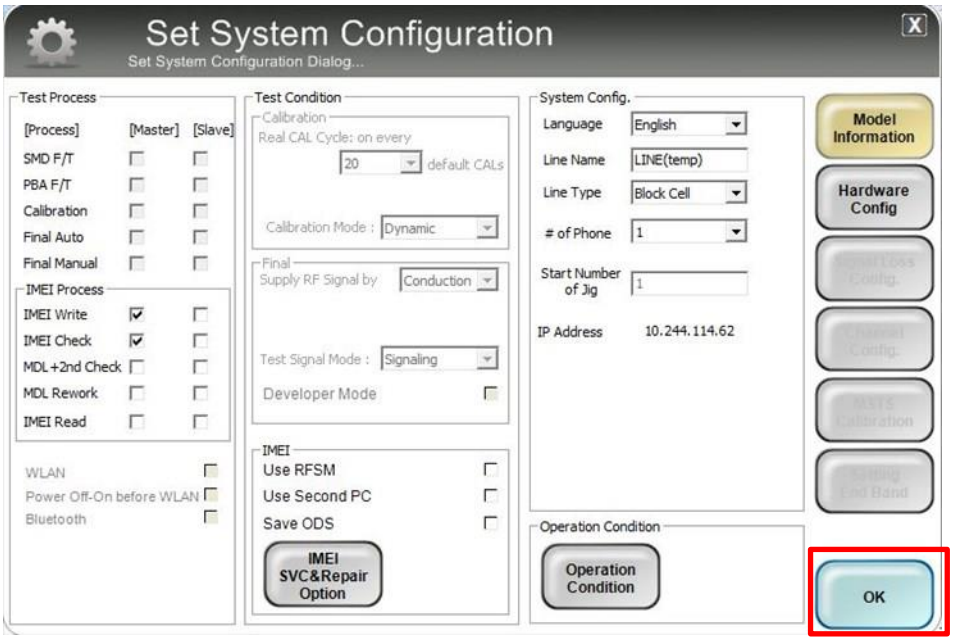
10. Select Port Number and SAVE



11.Click OK to proceed



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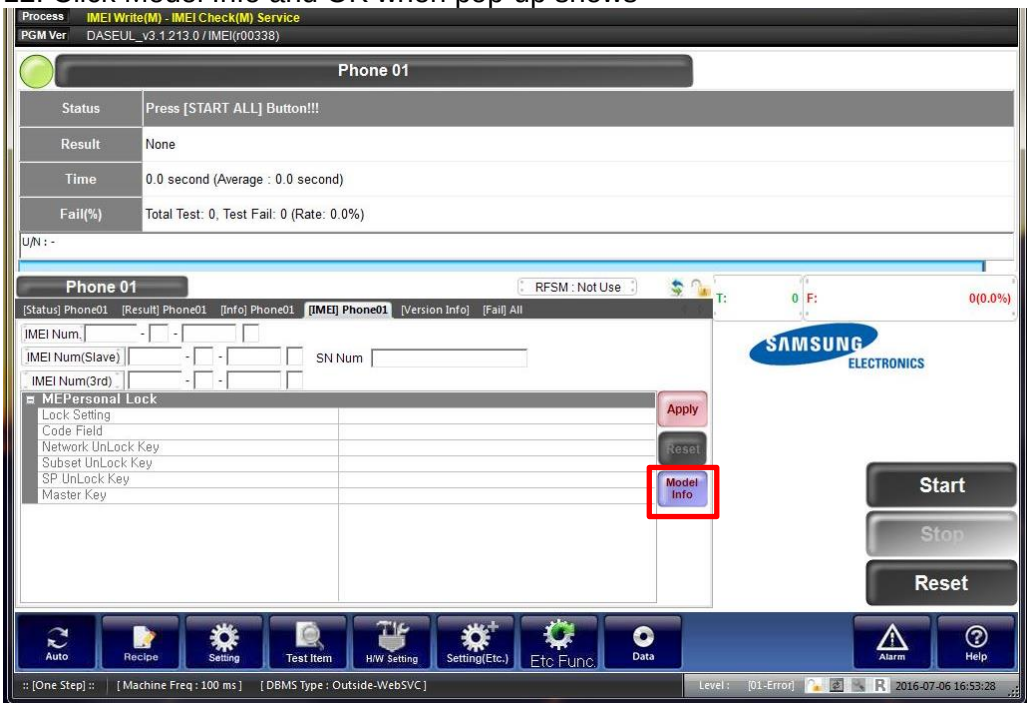
12. Click Model Info and OK when pop-up shows



13. Click OK

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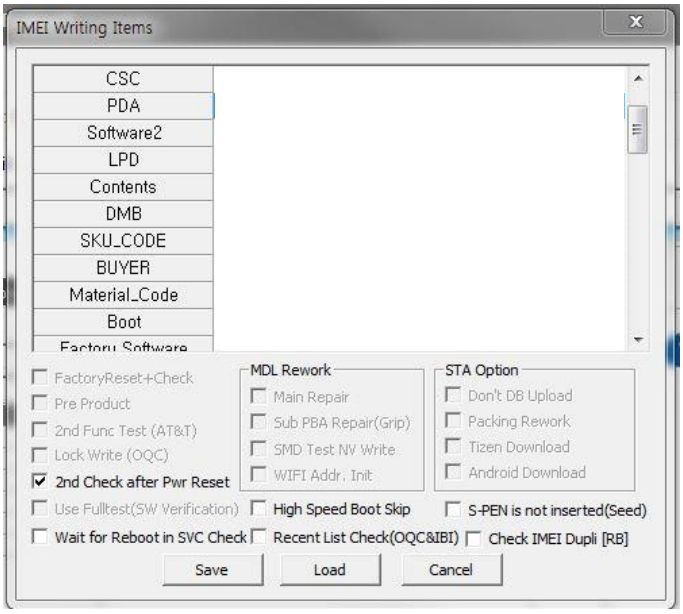
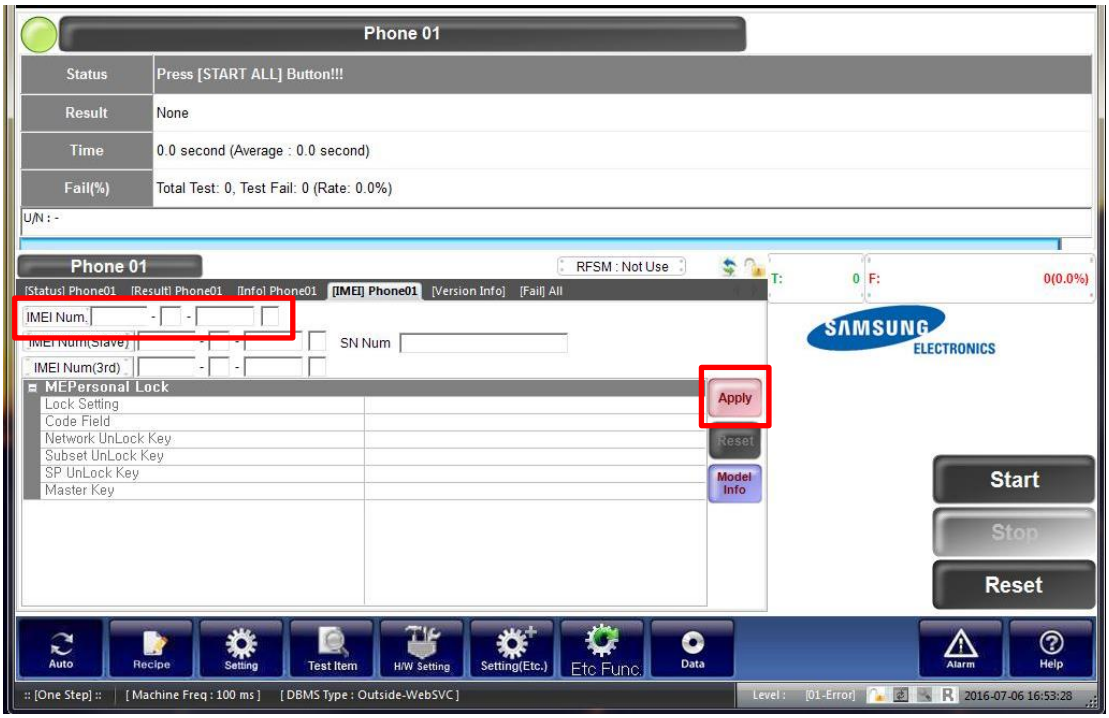
6. Level 1 Repair

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

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



15. Input IMEI Number and click Apply



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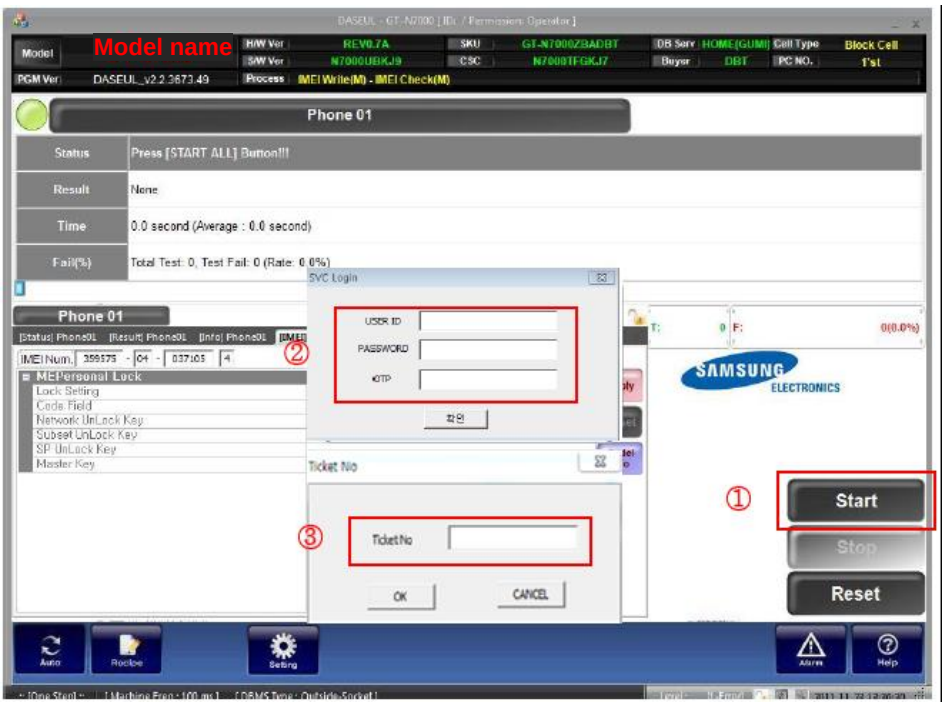
6. Level 1 Repair

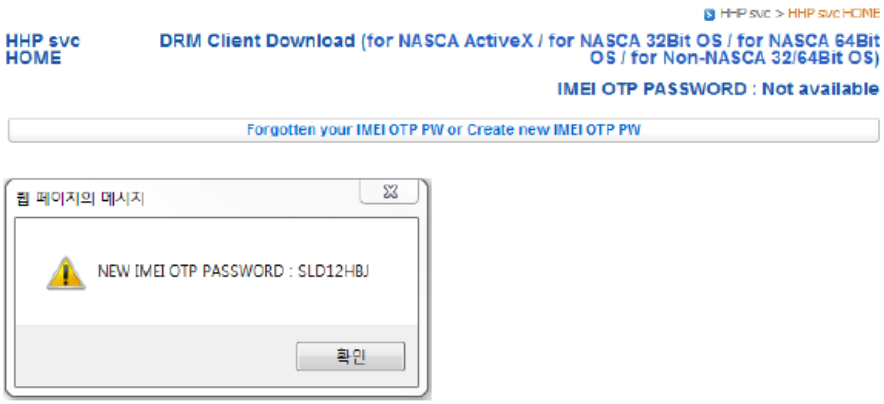
16. ① Click Start → ②Input IMEI writing ID and Password & OTP → ③Input Ticket No



※ OTP(One time Password) : OTP is valid for 6 hours.

After that, you can get new OTP by click the "Forgotten your IMEI OTP PW or Crete new IMEI OTP PW" button.

☞ OTP Location : GSPN → Knowledge → HHP svc → Home



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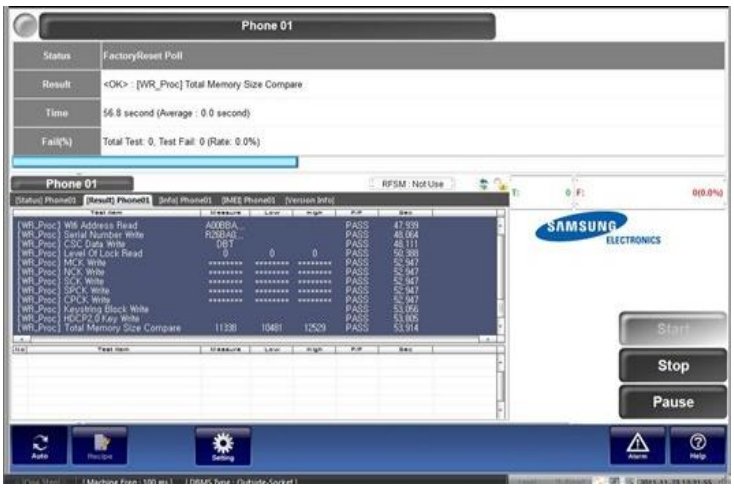
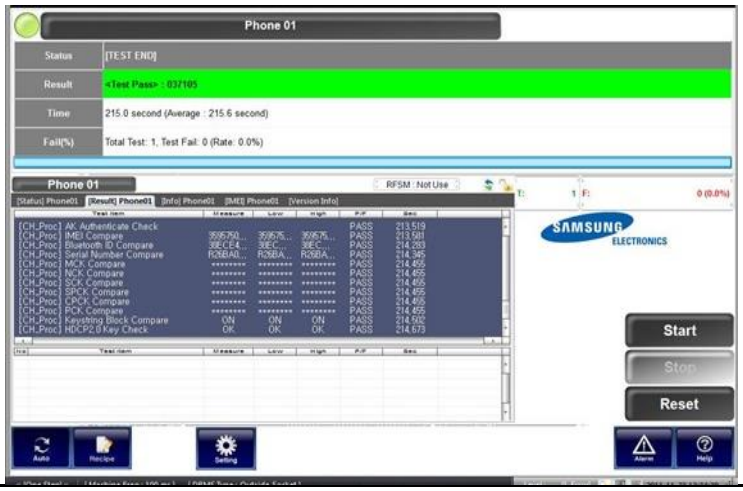
17. Connect the phone to Anyway JIG

※ When you connect the phone, the phone should be turned off.
After connecting the phone, the phone will be booted automatically.

18. IMEI Writing Proceeding



19. IMEI Writing Success



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9. Reference Abbreviation

Reference Abbreviation

— **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

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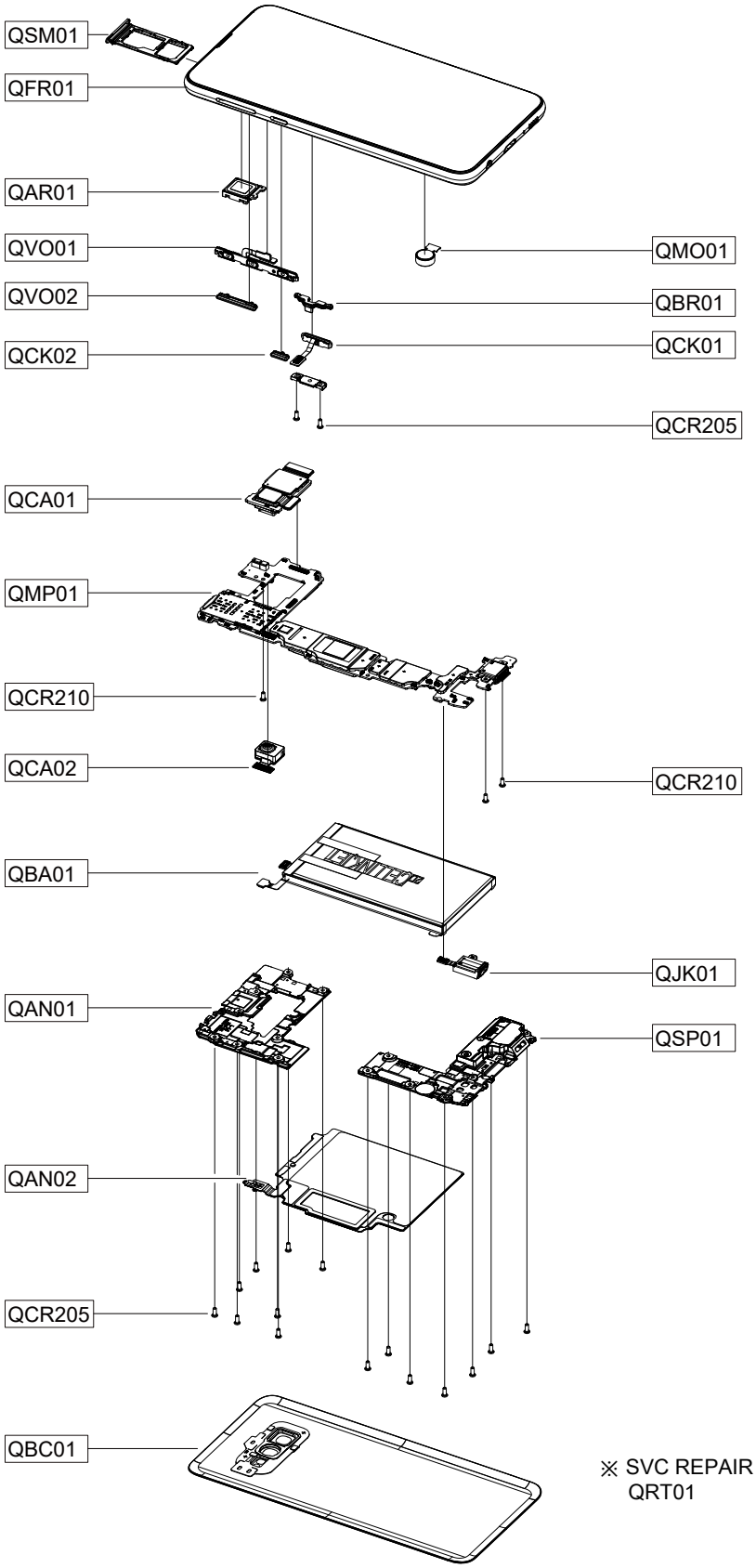
4. Exploded View and Parts List

4-1. Cellular phone Exploded View



※ SVC REPAIR TAPE
QRT01

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5. MAIN Electrical Parts List

Parts Code	Design LOC	Description
R2010,R2011,R5201	0202-002125	SOLDER-SHORT
R5203,R5205	0202-002125	SOLDER-SHORT
D7200	0401-001110	DIODE-SWITCHING
D4000,ZD7001	0404-001250	DIODE-SCHOTTKY
ZD10303	0406-001506	DIODE-TVS
ZD8008	0406-001561	DIODE-TVS
ZD10301,ZD10302	0406-001592	DIODE-TVS
ZD10304,ZD10305	0406-001592	DIODE-TVS
ZD10306,ZD10307	0406-001592	DIODE-TVS
ZD10308	0406-001592	DIODE-TVS
ZD8006	0406-001709	DIODE-TVS
ZD7006,ZD7007	0406-001729	DIODE-TVS
ZD8004,ZD8007	0406-001781	DIODE-TVS
ZD4002,ZD4015	0406-001787	DIODE-TVS
ZD7003	0406-001805	DIODE-TVS
ZD4016,ZD4017	0406-001809	DIODE-TVS
ZD4001,ZD4020	0406-001826	DIODE-TVS
ZD4003,ZD4004,ZD4006	0406-001834	DIODE-TVS
ZD4008,ZD4009,ZD4011	0406-001834	DIODE-TVS
ZD4013,ZD4014	0406-001834	DIODE-TVS
LED9000	0601-003707	LED
U9000	0903-002233	IC
U4049	1001-001755	IC
U1006,U1009	1001-001843	IC
U2094	1001-001975	IC
U3049,U3050	1001-002038	IC
U2089	1001-002042	IC
U1000	1001-002044	IC
U7006	1001-002045	IC
U1001,U1008	1001-002056	IC
U1005,U1007	1001-002063	IC
U4064,U4076	1009-001076	IC
U2101	1201-003729	IC
U1010	1201-004114	IC
U1002	1201-004164	IC
U8000,U8010	1201-004178	IC
U1301	1201-004183	IC
U1004	1201-004208	IC

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U3004	1201-004211	IC
U10001	1202-001120	IC
U9014	1203-008472	IC
U10300	1203-008603	IC
U7300	1203-008802	IC
U7004	1203-008811	IC
U10000	1203-009032	IC
U9024	1203-009035	IC
U4050	1203-009080	IC
U7003	1203-009156	IC
U7007	1203-009168	IC
U7000	1203-009176	IC
U7001	1203-009177	IC
U4074	1204-003661	IC
U2001	1204-003772	IC
U4043	1205-005731	IC
U8042	1205-005745	IC
U2102	1205-006026	IC
UCP500	1205-006028	IC
U4082	1209-002513	IC
U4062	1209-002567	IC
U4066	1209-002578	IC
U4100,U4300	1209-002608	IC
U4101	1209-002619	IC
TH1000,TH3000,TH4000	1404-001724	THERMISTOR
TH7000,V5000	1404-001724	THERMISTOR
V7001,V7004,V7009	1405-001395	VARISTOR
V7014,V7016,V7019	1405-001395	VARISTOR
V7026,V7028,V7031	1405-001395	VARISTOR
V7013	1405-001401	VARISTOR
V2010,V2011,V7002	1405-001403	VARISTOR
V7010,V7300	1405-001403	VARISTOR
V7000,V7003	1405-001404	VARISTOR
V3011	1405-001409	VARISTOR
V7023	1405-001412	VARISTOR
C3047,V1010,V2002	1405-001415	VARISTOR
V2007,V2008,V7017	1405-001415	VARISTOR
V7021	1405-001415	VARISTOR
C2326,C2327,V2001	1405-001420	VARISTOR

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V3001,V7006,V7015	1405-001420	VARISTOR
V7018,V7027	1405-001420	VARISTOR
V1000,V1001,V1004	1405-001425	VARISTOR
C2023,V3000,V3007	1405-001441	VARISTOR
V3008,V3010,V3014	1405-001441	VARISTOR
R7037	2007-007142	R-CHIP
R4020,R4021	2007-007193	R-CHIP
R10300	2007-007318	R-CHIP
R3007,R3008,R4101	2007-007741	R-CHIP
R4300,R7038,R7039	2007-007741	R-CHIP
R7062,R8012,R8013	2007-007741	R-CHIP
R8018	2007-007741	R-CHIP
R4105	2007-007798	R-CHIP
R7058	2007-007860	R-CHIP
R10005	2007-008052	R-CHIP
R10013,R5015	2007-008211	R-CHIP
R5021	2007-008263	R-CHIP
R7300	2007-008403	R-CHIP
R10007,R10008,R7002	2007-008531	R-CHIP
R7004,R7005	2007-008531	R-CHIP
R8007	2007-008587	R-CHIP
R4000,R4001,R4002	2007-008774	R-CHIP
R4003,R4006,R4007	2007-008774	R-CHIP
R4008,R4009,R4102	2007-008774	R-CHIP
R4103	2007-008774	R-CHIP
R3002,R3003	2007-008798	R-CHIP
R7061	2007-008809	R-CHIP
R3028,R3029,R4100	2007-009111	R-CHIP
R4016	2007-009154	R-CHIP
C1505,C1506,R7006	2007-009157	R-CHIP
R7022,R7023	2007-009157	R-CHIP
R7063	2007-009182	R-CHIP
R8000,R8001,R8002	2007-009201	R-CHIP
R8003	2007-009201	R-CHIP
R3037,R6002,R7033	2007-009212	R-CHIP
R7034,R7035,R7041	2007-009212	R-CHIP
R9204,R9205	2007-009212	R-CHIP
R7018,R7019	2007-009233	R-CHIP
R10004,R3004	2007-009314	R-CHIP

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R10001,R4017,R5053	2007-009408	R-CHIP
R5054,R8006	2007-009408	R-CHIP
R1014,R2012,R4035	2007-009805	R-CHIP
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R4029,R7015,R7025	2007-009866	R-CHIP
R5009,R5011,R5019	2007-009879	R-CHIP
R5020	2007-009879	R-CHIP
R4004,R4005	2007-009924	R-CHIP
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R4010,R4015	2007-009969	R-CHIP
R7000	2007-010202	R-CHIP
R7046,R7047	2007-010685	R-CHIP
R5046	2007-011043	R-CHIP
R3020,R3021,R3022	2007-011378	R-CHIP
R3023	2007-011378	R-CHIP
R2013,R2014	2007-011532	R-CHIP
R10012,R10014,R9000	2007-011542	R-CHIP
R5047,R5048	2007-011545	R-CHIP
R5039,R5040,R5056	2007-011546	R-CHIP
R5057,R5058,R5059	2007-011546	R-CHIP
R5036,R5041	2007-011548	R-CHIP
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R7043	2007-011591	R-CHIP
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R5016,R5026,R5028	2007-011594	R-CHIP
R5042,R5043	2007-011594	R-CHIP
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R2019	2007-011648	R-CHIP
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R10003	2007-012202	R-CHIP
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C7123,C9009,C9070	2203-000311	C-CERAMIC,CHIP

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C2144,C2162,C2163	2203-005736	C-CERAMIC,CHIP
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C8100,C8101,C9010	2203-005736	C-CERAMIC,CHIP

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C1081,C1511,C2508	2203-005777	C-CERAMIC,CHIP
L1026,L1030	2203-005777	C-CERAMIC,CHIP
C10310,C9047,C9058	2203-005779	C-CERAMIC,CHIP
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L1092	2203-005792	C-CERAMIC,CHIP
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C8074,C8075	2203-006896	C-CERAMIC,CHIP
C4042,C6016	2203-007210	C-CERAMIC,CHIP

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C3022,C3024,C3028	2203-007393	C-CERAMIC,CHIP
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C2085,C2088,C2089	2203-007621	C-CERAMIC,CHIP
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C2100,C2101,C2104	2203-007621	C-CERAMIC,CHIP
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C2157,C2158,C2200	2203-007621	C-CERAMIC,CHIP

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C2201,C2202,C2203	2203-007621	C-CERAMIC,CHIP
C2204,C2205,C2206	2203-007621	C-CERAMIC,CHIP
C2207,C2208,C2209	2203-007621	C-CERAMIC,CHIP
C2210,C3001,C3002	2203-007621	C-CERAMIC,CHIP
C3029,C3030,C3038	2203-007621	C-CERAMIC,CHIP
C3045,C4002,C4029	2203-007621	C-CERAMIC,CHIP
C4039,C4045,C4048	2203-007621	C-CERAMIC,CHIP
C4050,C4052,C5000	2203-007621	C-CERAMIC,CHIP
C5001,C5003,C5004	2203-007621	C-CERAMIC,CHIP
C6017,C7054,C7096	2203-007621	C-CERAMIC,CHIP
C7121,C7182,C8008	2203-007621	C-CERAMIC,CHIP
C8009,C8010,C8012	2203-007621	C-CERAMIC,CHIP
C8013,C8014,C8017	2203-007621	C-CERAMIC,CHIP
C8018,C8019,C8020	2203-007621	C-CERAMIC,CHIP
C8021,C8023,C8024	2203-007621	C-CERAMIC,CHIP
C8025,C8028,C8030	2203-007621	C-CERAMIC,CHIP
C8052,C8061,C9065	2203-007621	C-CERAMIC,CHIP
C9207,C9208	2203-007621	C-CERAMIC,CHIP
C10004,C10035,C10302	2203-007796	C-CERAMIC,CHIP
C1057,C3019,C4000	2203-007796	C-CERAMIC,CHIP
C4027,C4300,C5002	2203-007796	C-CERAMIC,CHIP
C6000,C6001,C6002	2203-007796	C-CERAMIC,CHIP
C6003,C6004,C6005	2203-007796	C-CERAMIC,CHIP
C6007,C6020,C6021	2203-007796	C-CERAMIC,CHIP
C6022,C6023,C6024	2203-007796	C-CERAMIC,CHIP
C6025,C6026,C6027	2203-007796	C-CERAMIC,CHIP
C6028,C6029,C6032	2203-007796	C-CERAMIC,CHIP
C6033,C6047,C6048	2203-007796	C-CERAMIC,CHIP
C6055,C6056,C6057	2203-007796	C-CERAMIC,CHIP
C6064,C6065,C6066	2203-007796	C-CERAMIC,CHIP
C6067,C6068,C6069	2203-007796	C-CERAMIC,CHIP
C6070,C6071,C6072	2203-007796	C-CERAMIC,CHIP
C6073,C6074,C6075	2203-007796	C-CERAMIC,CHIP
C6080,C6081,C6082	2203-007796	C-CERAMIC,CHIP
C6085,C6086,C6087	2203-007796	C-CERAMIC,CHIP
C6090,C6094,C7013	2203-007796	C-CERAMIC,CHIP
C7021,C7035,C7037	2203-007796	C-CERAMIC,CHIP
C7038,C7047,C7049	2203-007796	C-CERAMIC,CHIP
C7050,C7051,C7053	2203-007796	C-CERAMIC,CHIP

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C7077,C7085,C7114	2203-007796	C-CERAMIC,CHIP
C7178,C7183,C7188	2203-007796	C-CERAMIC,CHIP
C7197,C7200,C7204	2203-007796	C-CERAMIC,CHIP
C8004,C8006,C8015	2203-007796	C-CERAMIC,CHIP
C8029,C8037,C8050	2203-007796	C-CERAMIC,CHIP
C9041,C9042	2203-007796	C-CERAMIC,CHIP
C7212	2203-007809	C-CERAMIC,CHIP
C1000,C1001,C1042	2203-008097	C-CERAMIC,CHIP
C1085,C7120,C7179	2203-008097	C-CERAMIC,CHIP
C8001,C8033	2203-008097	C-CERAMIC,CHIP
C7105,C7106,C7113	2203-008158	C-CERAMIC,CHIP
C7116	2203-008158	C-CERAMIC,CHIP
C10011,C10014,C10034	2203-008242	C-CERAMIC,CHIP
C10305,C4001,C4003	2203-008242	C-CERAMIC,CHIP
C6009,C7125,C7208	2203-008242	C-CERAMIC,CHIP
C9011,C9012,C9014	2203-008242	C-CERAMIC,CHIP
C9018,C9021,C9051	2203-008242	C-CERAMIC,CHIP
C9052,C9078,C9083	2203-008242	C-CERAMIC,CHIP
C9109	2203-008242	C-CERAMIC,CHIP
C7122	2203-008243	C-CERAMIC,CHIP
C2150	2203-008400	C-CERAMIC,CHIP
C3090,C3091	2203-008403	C-CERAMIC,CHIP
C10021,C10023,C10024	2203-008466	C-CERAMIC,CHIP
C10025,C10026,C10027	2203-008466	C-CERAMIC,CHIP
C10028,C10030,C10031	2203-008466	C-CERAMIC,CHIP
C10303,C10311,C2143	2203-008466	C-CERAMIC,CHIP
C3012,C4106,C4107	2203-008466	C-CERAMIC,CHIP
C7103,C7104,C8042	2203-008466	C-CERAMIC,CHIP
C8051,C8057,C8068	2203-008466	C-CERAMIC,CHIP
C8069,C8076,C8077	2203-008466	C-CERAMIC,CHIP
C8078,C8079,C8080	2203-008466	C-CERAMIC,CHIP
C9080,C9081,C9085	2203-008466	C-CERAMIC,CHIP
C9086,C9126	2203-008466	C-CERAMIC,CHIP
C6046,C6058,C6076	2203-008470	C-CERAMIC,CHIP
C6078,C6091,C6300	2203-008470	C-CERAMIC,CHIP
C6305	2203-008470	C-CERAMIC,CHIP
C2010,C3023,C7043	2203-008529	C-CERAMIC,CHIP
C1007,C1008,C1044	2203-008563	C-CERAMIC,CHIP
C1049,C1050,C1092	2203-008563	C-CERAMIC,CHIP

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C1507,C2115,C2308	2203-008563	C-CERAMIC,CHIP
C7039,C7088	2203-008563	C-CERAMIC,CHIP
C7014,C7029,C7030	2203-008572	C-CERAMIC,CHIP
C7107,C7108,C7119	2203-008572	C-CERAMIC,CHIP
C2016	2203-008689	C-CERAMIC,CHIP
C1095	2203-008844	C-CERAMIC,CHIP
C10007,C10032,C10037	2203-008860	C-CERAMIC,CHIP
C10038,C1311,C2173	2203-008860	C-CERAMIC,CHIP
C7012,C7020,C7024	2203-008860	C-CERAMIC,CHIP
C7033,C7034,C7036	2203-008860	C-CERAMIC,CHIP
C7040,C7041,C7075	2203-008860	C-CERAMIC,CHIP
C7080,C7083,C7084	2203-008860	C-CERAMIC,CHIP
C7090,C7175,C7176	2203-008860	C-CERAMIC,CHIP
C7177,C7184,C7185	2203-008860	C-CERAMIC,CHIP
C7186,C7303	2203-008860	C-CERAMIC,CHIP
C10012,C10013,C1002	2203-008876	C-CERAMIC,CHIP
C10022,C10033,C10304	2203-008876	C-CERAMIC,CHIP
C1045,C1094,C2011	2203-008876	C-CERAMIC,CHIP
C2020,C4006,C4007	2203-008876	C-CERAMIC,CHIP
C7025,C7126,C9001	2203-008876	C-CERAMIC,CHIP
C9002,C9003,C9006	2203-008876	C-CERAMIC,CHIP
C9024,C9025,C9026	2203-008876	C-CERAMIC,CHIP
C9027,C9032,C9038	2203-008876	C-CERAMIC,CHIP
C9048,C9049,C9050	2203-008876	C-CERAMIC,CHIP
C9053,C9059,C9075	2203-008876	C-CERAMIC,CHIP
C9079,C9084,C9088	2203-008876	C-CERAMIC,CHIP
C9089	2203-008876	C-CERAMIC,CHIP
C6006,C6036,C6037	2203-009064	C-CERAMIC,CHIP
C4020,C4025	2203-009167	C-CERAMIC,CHIP
C7000	2203-009444	C-CERAMIC,CHIP
C10009,C10010	2203-009537	C-CERAMIC,CHIP
C10306,C10307,C10308	2203-009551	C-CERAMIC,CHIP
C10309	2203-009551	C-CERAMIC,CHIP
C4064	2203-009600	C-CERAMIC,CHIP
C10005,C10006,C10008	2203-009618	C-CERAMIC,CHIP
C10015,C10016,C10017	2203-009618	C-CERAMIC,CHIP
C10018,C10019,C2012	2203-009618	C-CERAMIC,CHIP
C7042,C9005,C9037	2203-009618	C-CERAMIC,CHIP
C10000,C10001,C7006	2203-009733	C-CERAMIC,CHIP

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C7007,C7023,C7031	2203-009733	C-CERAMIC,CHIP
C7046,C7055,C7056	2203-009733	C-CERAMIC,CHIP
C7062,C7063,C7072	2203-009733	C-CERAMIC,CHIP
C7076,C7079,C7086	2203-009733	C-CERAMIC,CHIP
C7100,C7181,C7189	2203-009733	C-CERAMIC,CHIP
C7190,C7191,C7300	2203-009733	C-CERAMIC,CHIP
C7320,C7321,C8031	2203-009733	C-CERAMIC,CHIP
C9044,C9061,C9062	2203-009733	C-CERAMIC,CHIP
C9063,C9200	2203-009733	C-CERAMIC,CHIP
C6010,C6011,C6030	2203-009735	C-CERAMIC,CHIP
C6031,C6034,C6035	2203-009735	C-CERAMIC,CHIP
C6042,C6043,C6044	2203-009735	C-CERAMIC,CHIP
C6045,C6049,C6050	2203-009735	C-CERAMIC,CHIP
C6051,C6052,C6053	2203-009735	C-CERAMIC,CHIP
C6054,C6060,C6061	2203-009735	C-CERAMIC,CHIP
C6083,C6084,C6088	2203-009735	C-CERAMIC,CHIP
C6089	2203-009735	C-CERAMIC,CHIP
C2002,C2007,C2077	2203-009736	C-CERAMIC,CHIP
C2081,C2087,C6008	2203-009736	C-CERAMIC,CHIP
C7003,C7016,C7199	2203-009736	C-CERAMIC,CHIP
C7206,C9016,C9034	2203-009736	C-CERAMIC,CHIP
C9069,C9111,C9206	2203-009736	C-CERAMIC,CHIP
C9211,C9220,C9221	2203-009736	C-CERAMIC,CHIP
C9222,C9223,C9224	2203-009736	C-CERAMIC,CHIP
C7005,C8072	2203-009858	C-CERAMIC,CHIP
C2021	2203-009859	C-CERAMIC,CHIP
C8000,C8002,C8032	2203-009969	C-CERAMIC,CHIP
C8034	2203-009969	C-CERAMIC,CHIP
C9015,C9033,C9035	2203-009987	C-CERAMIC,CHIP
C9036	2203-009987	C-CERAMIC,CHIP
TA7001,TA7002	2409-001387	CAPACITOR
TA7000,TA7003	2409-001400	CAPACITOR
C1018,L1052,L2066	2703-002649	INDUCTOR
L2306	2703-002649	INDUCTOR
L1016,L1020,L1100	2703-002903	INDUCTOR
L2028,L2089,L2091	2703-002903	INDUCTOR
L3010,L3018	2703-002903	INDUCTOR
C1080,C1111,L1093	2703-002907	INDUCTOR
L1515	2703-002907	INDUCTOR

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L1038,L2005,L2305	2703-002955	INDUCTOR
L3003	2703-002955	INDUCTOR
L1005,L1007,L1022	2703-002958	INDUCTOR
L1046,L1062,L3041	2703-002958	INDUCTOR
L9008,L9009,L9013	2703-002959	INDUCTOR
L4001	2703-003064	INDUCTOR
L1109	2703-003970	INDUCTOR
L3002,L3004	2703-004000	INDUCTOR
C1067,C1119,C2145	2703-004012	INDUCTOR
C2303,L1511	2703-004012	INDUCTOR
C1082,C3027,L3028	2703-004013	INDUCTOR
C1047,C1048,C3003	2703-004014	INDUCTOR
C3026,L1000,L3026	2703-004014	INDUCTOR
L2062,L2074	2703-004033	INDUCTOR
C1056,C1072,C1087	2703-004034	INDUCTOR
C1304,C2126,C2139	2703-004034	INDUCTOR
C2146,C2167,C2168	2703-004034	INDUCTOR
C3018,C3021,L1041	2703-004034	INDUCTOR
L3019	2703-004034	INDUCTOR
L3012	2703-004037	INDUCTOR
C1012,C1116,C2166	2703-004038	INDUCTOR
C3046,L1003,L1012	2703-004038	INDUCTOR
L1013,L2015	2703-004038	INDUCTOR
L2000,L2002,L2011	2703-004193	INDUCTOR
L2040,L3015	2703-004193	INDUCTOR
C1031,C1039,C1055	2703-004286	INDUCTOR
C1099,C1118,C2094	2703-004286	INDUCTOR
L1110,L2063,L2073	2703-004286	INDUCTOR
L3016	2703-004286	INDUCTOR
C1029	2703-004287	INDUCTOR
C2307,L2520	2703-004288	INDUCTOR
L7308	2703-004289	INDUCTOR
C1032,C1061,L1014	2703-004295	INDUCTOR
L1305,L2071	2703-004295	INDUCTOR
C1024,C1083,C3005	2703-004317	INDUCTOR
C3007,C3025,L1051	2703-004317	INDUCTOR
L1105,L1523,L2092	2703-004317	INDUCTOR
L3025,L3054	2703-004317	INDUCTOR
L1023,L1025	2703-004328	INDUCTOR

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C2503,L1018,L1032	2703-004362	INDUCTOR
C2151,L1047,L1307	2703-004363	INDUCTOR
C1030	2703-004368	INDUCTOR
L3084	2703-004703	INDUCTOR
L8007,L8008	2703-004841	INDUCTOR
L1015,L1035,L1036	2703-004853	INDUCTOR
L1064,L1067,L8009	2703-004853	INDUCTOR
L1008	2703-004911	INDUCTOR
L7300	2703-004947	INDUCTOR
L7014	2703-005058	INDUCTOR
L10004,L7002,L9002	2703-005067	INDUCTOR
L9003,L9005	2703-005067	INDUCTOR
C1058,C1101,L1049	2703-005085	INDUCTOR
L1101,L1513	2703-005085	INDUCTOR
L1017	2703-005087	INDUCTOR
C2302	2703-005089	INDUCTOR
L3023,L3024	2703-005200	INDUCTOR
L10000	2703-005224	INDUCTOR
L9000	2703-005225	INDUCTOR
L7004,L7024,L8000	2703-005233	INDUCTOR
L8002,L8003,L8005	2703-005233	INDUCTOR
L2009	2703-005340	INDUCTOR
L10003	2703-005418	INDUCTOR
L8001,L8004	2703-005505	INDUCTOR
L4012,L4013	2703-005555	INDUCTOR
L7010,L7019,L7029	2703-005581	INDUCTOR
L7000,L7006,L7007	2703-005660	INDUCTOR
L7008,L7009,L7011	2703-005660	INDUCTOR
L7012,L7015,L7018	2703-005660	INDUCTOR
L7020,L7021,L7022	2703-005660	INDUCTOR
L7023	2703-005660	INDUCTOR
L7003,L7016,L7017	2703-005661	INDUCTOR
L7028	2703-005661	INDUCTOR
L10001,L10002	2703-005663	INDUCTOR
L2008	2703-005705	INDUCTOR
OSC7000	2801-005481	CRYSTAL-UNIT
F3000,F3004,F3007	2903-001576	FILTER-CERAMIC
F1302	2904-002305	FILTER-SAW
F1004	2904-002339	FILTER-SAW

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F2004	2904-002347	FILTER-SAW
F2008	2904-002355	FILTER-SAW
F1010	2904-002362	FILTER-SAW
F2301	2904-002377	FILTER-SAW
F2302	2904-002395	FILTER-SAW
F1009	2904-002397	FILTER-SAW
F2006,F2009	2904-002400	FILTER-SAW
F3001,F3003	2904-002401	FILTER-SAW
F3006	2909-001422	FILTER-DUPLEXER
F1001	2910-000406	FILTER
F1002	2910-000410	FILTER
U2000,U2100	2911-000454	FILTER
F2304	2911-000462	FILTER
U2091	2911-000466	FILTER
MIC8000,MIC8001	3003-001243	MIC-CONDENSOR
L8100,L8101	3301-001534	CORE-FERRITE BEAD
L8102	3301-001869	CORE-FERRITE BEAD
L8020	3301-001885	CORE-FERRITE BEAD
L9004,L9010,L9014	3301-002223	CORE-FERRITE BEAD
L2030,L4004,L4005	3301-002235	CORE-FERRITE BEAD
L4006,L4007	3301-002235	CORE-FERRITE BEAD
L1006,L1009,L1060	3301-002237	CORE-FERRITE BEAD
L1061,L1310,L2034	3301-002237	CORE-FERRITE BEAD
L2037,L2300,L2301	3301-002237	CORE-FERRITE BEAD
L8103	3301-002237	CORE-FERRITE BEAD
L10009,L1068,L1075	3301-002238	CORE-FERRITE BEAD
L1521,L4102	3301-002238	CORE-FERRITE BEAD
L10300,L10301	3301-002239	CORE-FERRITE BEAD
L10008,L1078	3301-002243	CORE-FERRITE BEAD
L1071	3301-002244	CORE-FERRITE BEAD
L9001	3301-002248	CORE-FERRITE BEAD
L9006,L9007	3301-002279	CORE-FERRITE BEAD
L2056	3301-002309	CORE-FERRITE BEAD
L10005,L10006,L10007	3301-002312	CORE-FERRITE BEAD
L4100,L4101,R3006	3301-002312	CORE-FERRITE BEAD
L4002,L7001,L7013	3301-002331	CORE-FERRITE BEAD
L8017,L8018,L8019	3301-002356	CORE-FERRITE BEAD
RFS1000,RFS1001	3705-001708	CONNECTOR-COAXIAL
U3008	3709-001892	CONNECTOR-CARD EDGE

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5. MAIN Electrical Parts List

HDC10300	3711-007173	CONNECTOR-HEADER
HDC7000	3711-008847	CONNECTOR-HEADER
HDC8001	3711-008997	CONNECTOR-HEADER
HDC9000	3711-009356	CONNECTOR-HEADER
HDC9001,HDC9003	3711-009407	CONNECTOR-HEADER
HDC10000	3711-009408	CONNECTOR-HEADER
ANT1003,ANT1007	3712-001604	CONNECTOR
ANT1008,ANT1009	3712-001604	CONNECTOR
ANT2008,ANT3004	3712-001604	CONNECTOR
ANT7032,ANT7035	3712-001604	CONNECTOR
ANT7036,ANT7038	3712-001604	CONNECTOR
ANT7039,ANT7040	3712-001604	CONNECTOR
ANT7043	3712-001604	CONNECTOR
ANT2001,ANT2007	3712-001626	CONNECTOR
ANT3000,ANT3006	3712-001626	CONNECTOR
ANT1015,ANT2005	3712-001633	CONNECTOR
ANT7041	3712-001633	CONNECTOR
ANT7015,ANT7018	3712-001634	CONNECTOR
ANT7019,ANT7020	3712-001634	CONNECTOR
ANT7021,ANT7022	3712-001634	CONNECTOR
ANT1000,ANT1002	3712-001666	CONNECTOR
ANT2000,ANT2002	3712-001666	CONNECTOR
ANT2006,ANT3001	3712-001666	CONNECTOR
ANT3003,ANT3005	3712-001666	CONNECTOR
ANT3007,ANT8002	3712-001666	CONNECTOR
ANT8003	3712-001666	CONNECTOR
ANT7008,ANT7009	3712-001714	CONNECTOR
ANT7010,ANT7011	3712-001714	CONNECTOR
ANT7012,ANT7013	3712-001714	CONNECTOR
ANT7014,ANT8000	3712-001714	CONNECTOR
ANT8001	3712-001714	CONNECTOR
ANT1011,ANT2003	3712-001731	CONNECTOR
ANT2004	3712-001731	CONNECTOR
IFC4000	3722-004150	JACK-PHONE
F3002	4709-002284	RF-MODULE
F1000	4709-002529	RF-MODULE
F1303	4709-002654	RF-MODULE
U3048	4709-002709	RF-MODULE
SUS3001,SUS3002	GH61-13928A	SUS -SCREW2

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5. MAIN Electrical Parts List

SUS3003	GH61-13968A	SUS -PLATE1
SUS3004	GH61-13969A	SUS -SCREW1
GA7000,GA7001	GH62-00042A	PAD GAP-SMD GASKET
ANT7034	GH62-00048A	PAD GAP-SMD GASKET
SC3007	GH63-16568A	SHIELD-CAN WIFI
SC3008	GH63-16569A	SHIELD-CAN PB02
SC3011	GH63-16570A	SHIELD-CAN -DRX2
SC3010	GH63-16571A	SHIELD-CAN PMIC
SC3012	GH63-16594A	SHIELD-CAN SPKAMP
SC3009	GH63-16596A	SHIELD-CAN -TRCV
SC3001	GH63-16597A	SHIELD-CAN MEMORY
SC3003	GH63-16616A	SHIELD-CAN -PAMID
SC3000	GH63-16640A	SHIELD-CAN AP
SC3005	GH98-43722A	SHIELD-CAN -DRX
SC3002	GH98-43793A	SHIELD-CAN -ET
U4101SP	GH02-17632A	Tape
UME6000	1107-002611	IC-FLASH MEMORY
SC3001SP	SS00-004408	Nanofoam
UCP500UP	1105-002994	DRAM

Please consult the GSPN website (Samsung Portal) for the most recent version of the product's part list.

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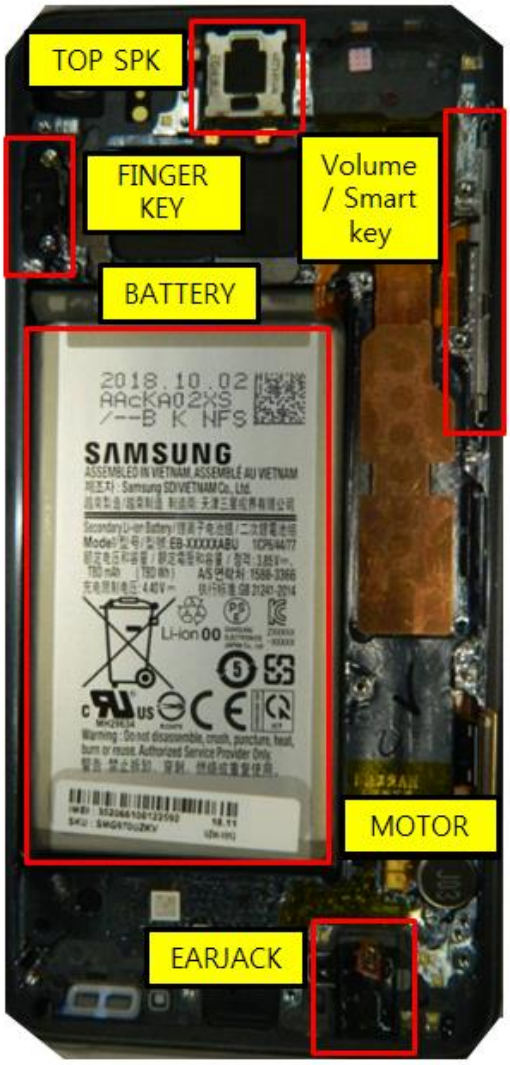
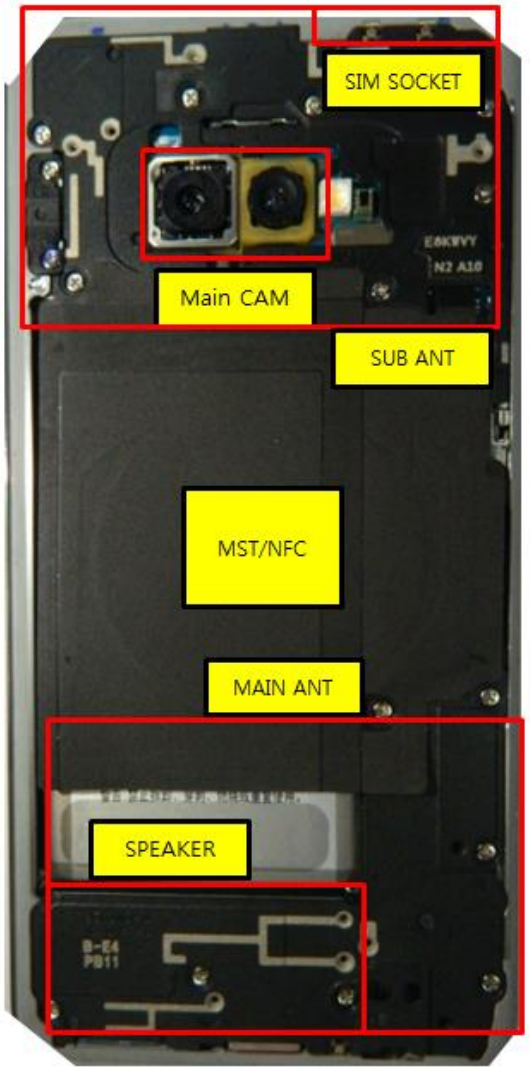
7. Level 2 Repair

7-1. Components on the Rear Case





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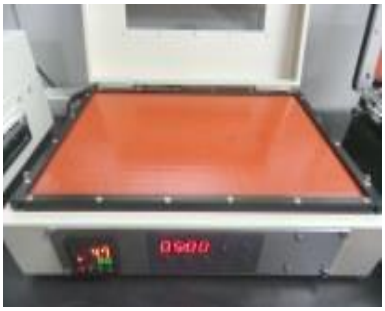
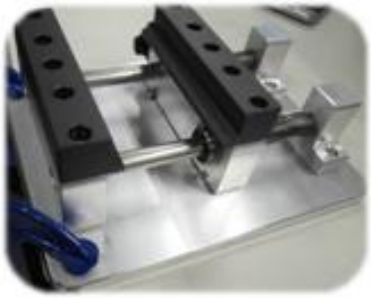
7. Level 2 Repair

7-2. Pre-requisite

Tweezers / Disass'y Stick / Screw Driver	**Anti-static Gloves**
	
Anti-static Mat	**Hot Plate**
	
A OCTA Disassembly Holder	**OCTA Disassembly Upper**
Ethyl Alcohol	**Cotton Swab**

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7. Level 2 Repair

7-3. Parts which must be changed after repair

BOM description & part code	KIT code	Image	Remarks
Backglass Outside tape [GH81-16436A]	GH82-18798A		Replace for Backglass
Cam sealing tape [GH02-17355A]			
Mic sealing tape [GH02-07406A]			

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7-4. Disassembly

1

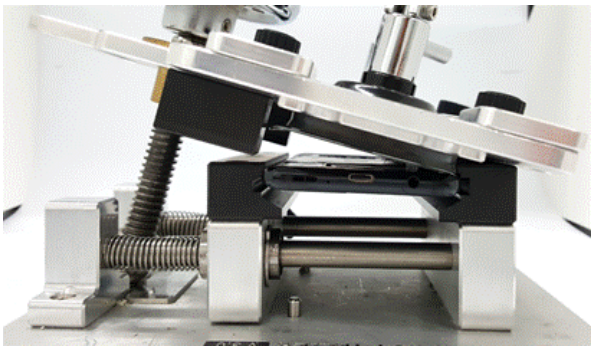
Put the device in the chamber as following below heating condition
- SOC 68%↓: 70℃/10~20 minute
- SOC 68%↑: 60℃/10~20 minute

※ Please confirm the heating condition released lastly, and follow it.

※ Caution
Be care of scratch.

2

Detach the Back Glass.
Detach the left side of Back glass.



※ Caution
Be care of scratch.

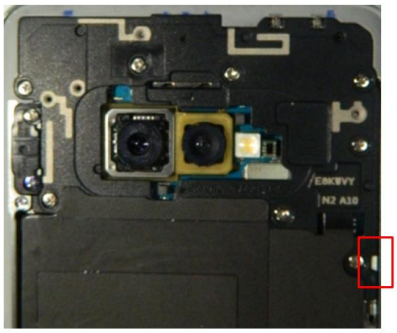
3

Unscrew 15 Point and disassemble SIM Tray from device.

※ Caution
Be care of Rear damage.

4

Disassemble Upper Rear.
(Use disassemble hole left/right side of Rear to detach it)



Rear Top disassemble hole.

※ Caution
1) Be care of scratch.
2) Be care of Rear and connector damage.

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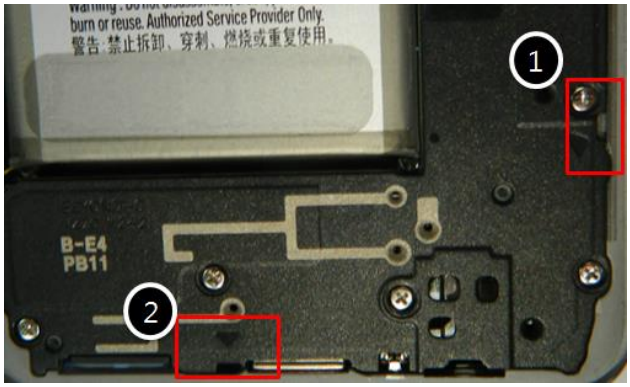
7. Level 2 Repair

5 Finally Disassemble Rear of bottom side.
(Use disassemble hole right side of Rear to detach it)



※ Caution
1) Be care of scratch.
2) Be care of Rear and connector damage.
3) Be careful not to damage the PBA.

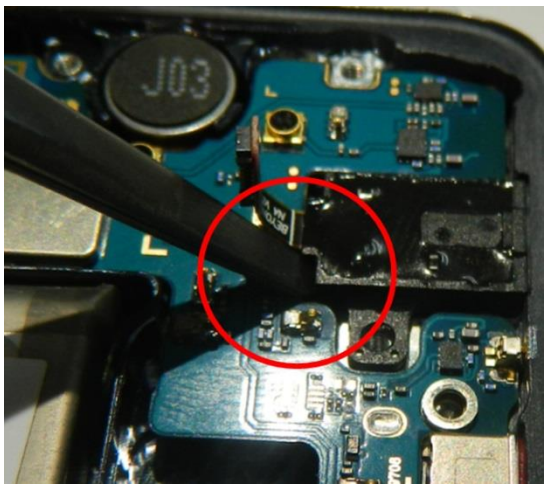
6 Unscrew PBA 3points.

※ Caution
Be careful not to damage the PBA.

7 Battery connect and the other connectors.
(5 Point).

※ Caution
1) Be care of scratch.
2) Be care of connector damage.

8 Detach Ear Jack.



※ Caution
1) Be care of FPCB damage.
2) Be care of Ear jack connector.

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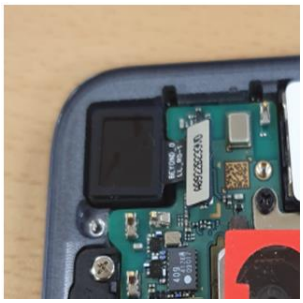
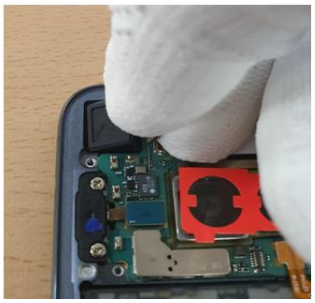
7. Level 2 Repair

9 Detach Front CAM.  	**10** Detach other components.
※ Caution 1) Be care of PBA damage. 2) Be care of Front CAM connector.	※ Caution Be care of several kinds of damage.

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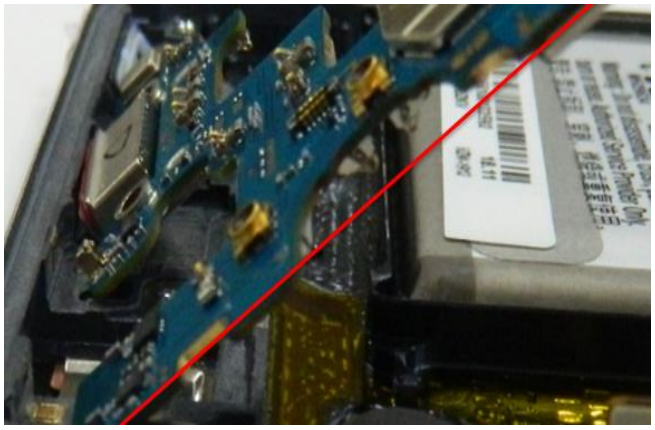
7-5. Assembly

1

Assemble PBA on Front.
About 30 degrees will be inserted into the PBA.



※ Caution
Be care of FPCB damage.

2

Battery connect and the other connectors.
(5 Point)

※ Caution
Be care of FPCB and Y-OCTA damage.

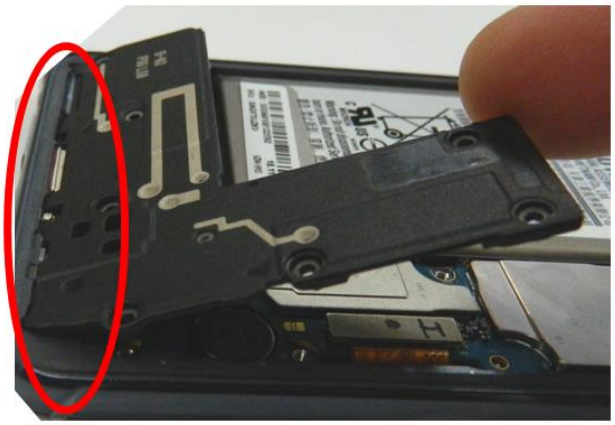
3

Screw 3 Point s of the PBA
(* Torque value : 1.3kgf)

※ Caution
Be careful not to damage the PBA.

4

Assemble the Bottom REAR in sequence.



※ Caution
Be care of scratch and REAR damage

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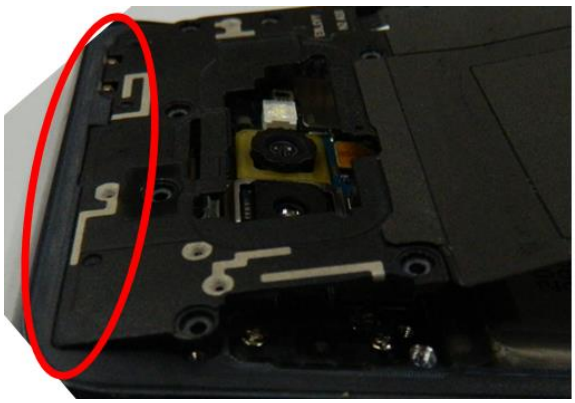
7. Level 2 Repair

5

Assemble the TOP+MID REAR Assy in sequence.



※ Caution
Be care of scratch and REAR damage.

6

Screw 15points of the Front. And Insert sim tray
(* Torque : 1.3 kgf)

※ Caution
Be care of scratch and REAR damage.

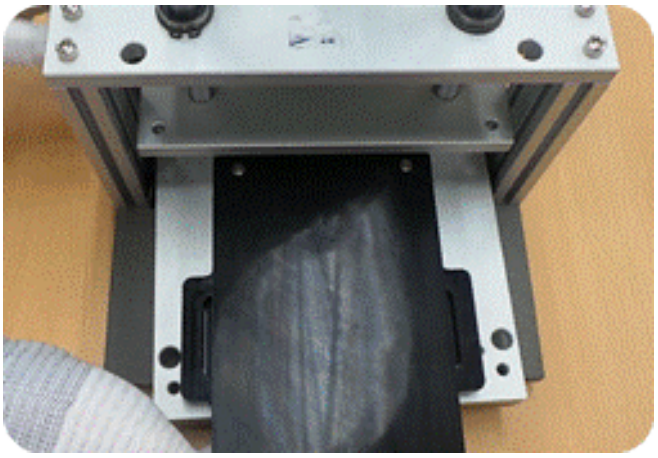
7

Assemble backglass.

※ Caution
Be care of scratch and tilt.

8

Press Back Glass.
Pressing force : 1 N
Pressing time : 1 minute



※ Caution
Be care of scratch.

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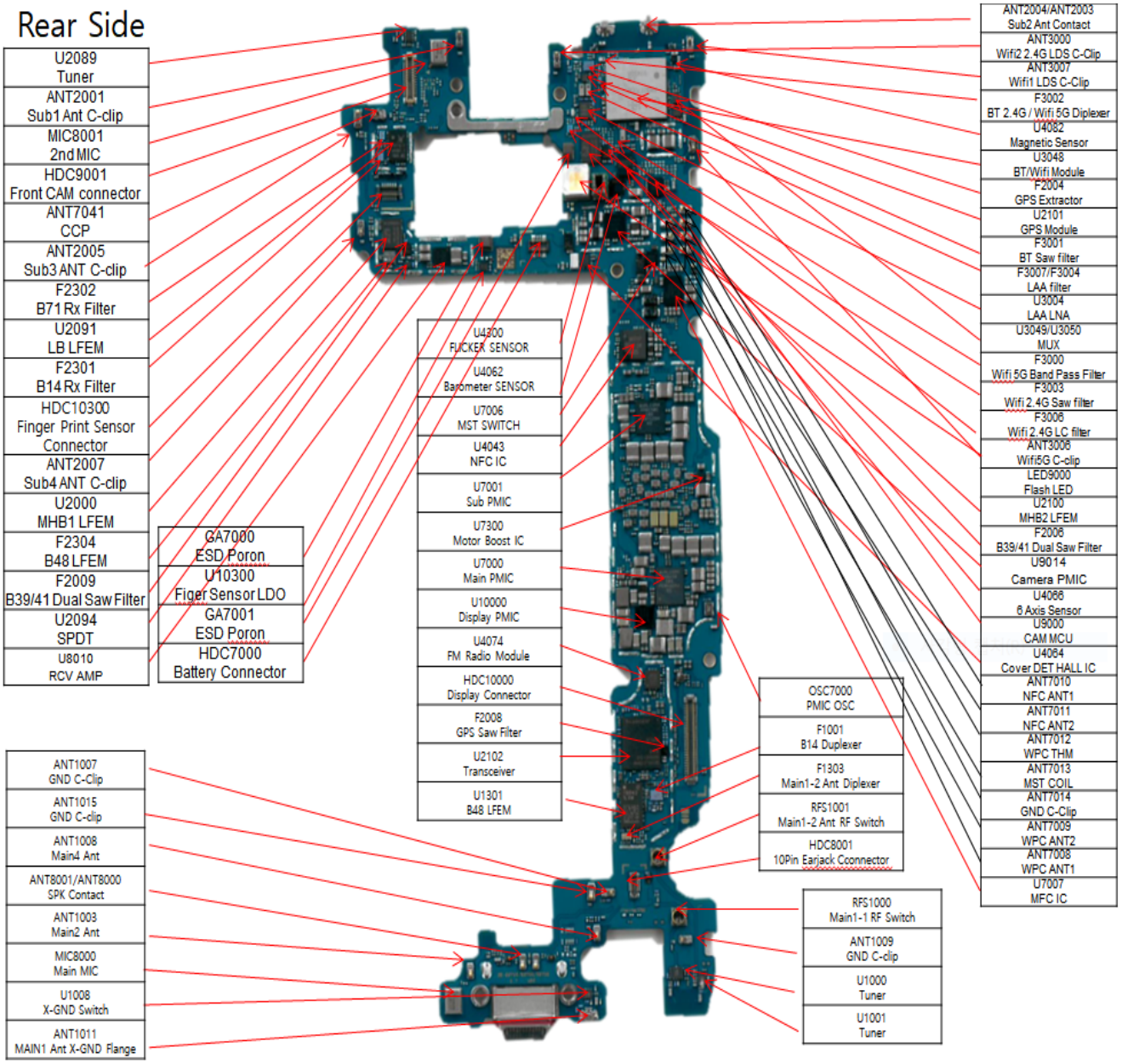
8. Level 3 Repair

8-1. Components Layout



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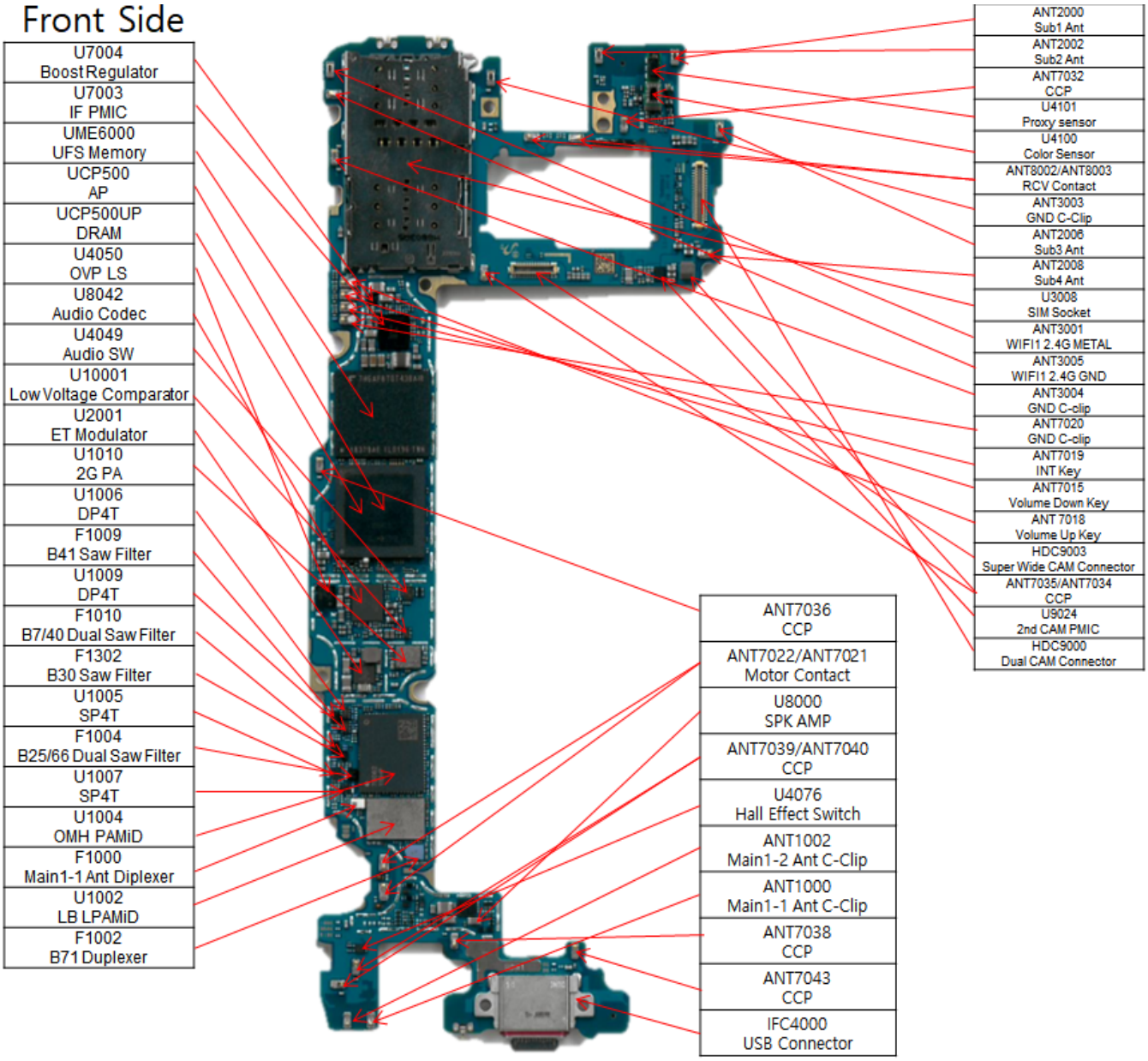
8. Level 3 Repair



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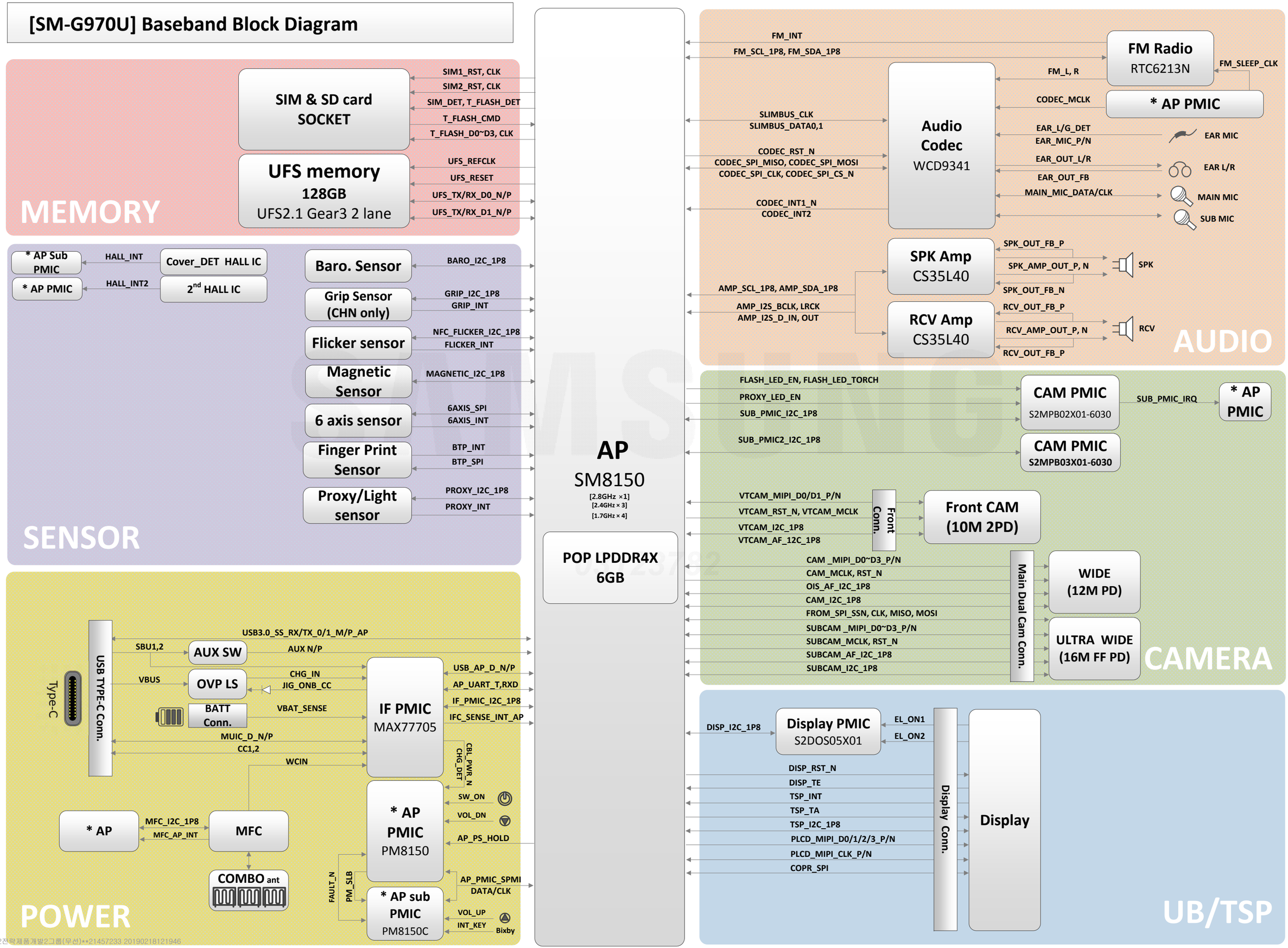
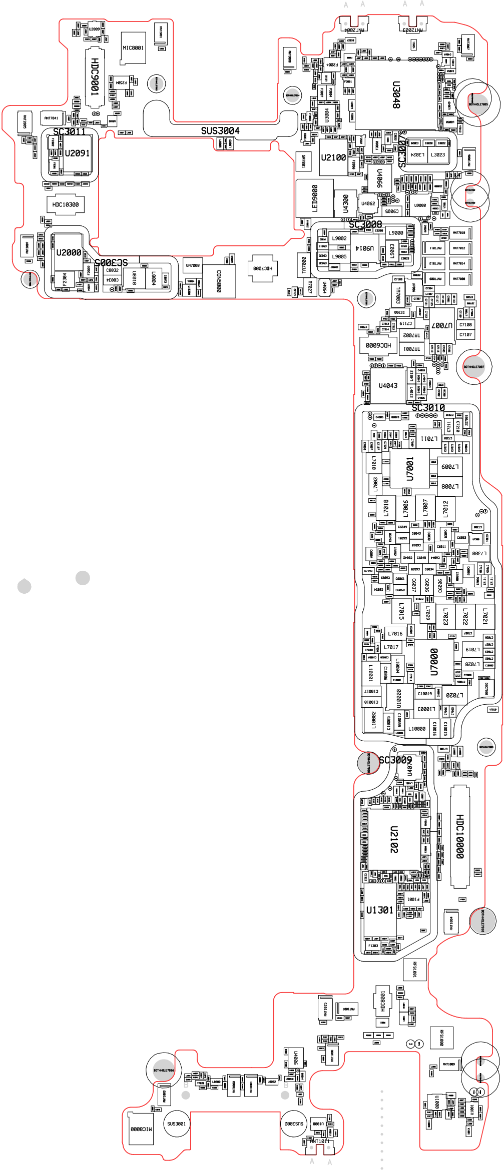
[SM-G970U] Baseband Block Diagram



심명섭03123782전략제품개발2그룹(무선)**21457233 20190218121946


U2089
MIC8001
ANT2001
HDC9001
F2504
ANT2005
ANT7041
SC3011
U2091
SUS3004
HDC10300
U2000
ANT2007
SC3005
C8032
C8034
U8010
L8004
GA7000
CON5000
HDC7000
ANT2004
ANT2003
ANT3008
F2004
U3004
F3807
F3804
F3801
U3048
ANT3007
GA7001
U2100
F2806
SC3007
L3024
L3023
ANT3006
U4066
LED9000
U4300
U4062
C9065
U9000
SC3008
L9002
L9000
U9014
L9005
L9003
TA7000
R7027
U4064
ANT7010
ANT7011
ANT7012
ANT7013
ANT7014
ANT7009
ANT7008
C7108
TA7003
D7200
C7119
U7007
C7108
C7107
TA7002
HDC6000
TA7001
BOTHHOLE7007
U4043
L4012
L4013
SC3010
C7211
C7210
L7011
L7010
U7001
L7009
L7003
L7008
L7018
L7006
L7007
L7012
C6049
C6043
C6853
L7300
C6045
C6035
C6034
C6061
C6037
C6036
C6006
C6068
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L7029
L7023
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ANT1015
ANT1007
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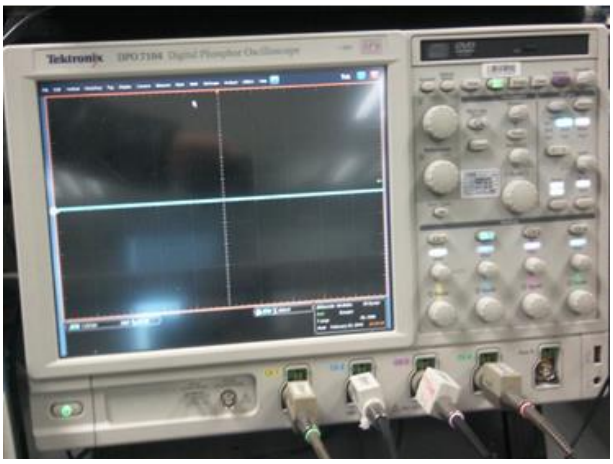
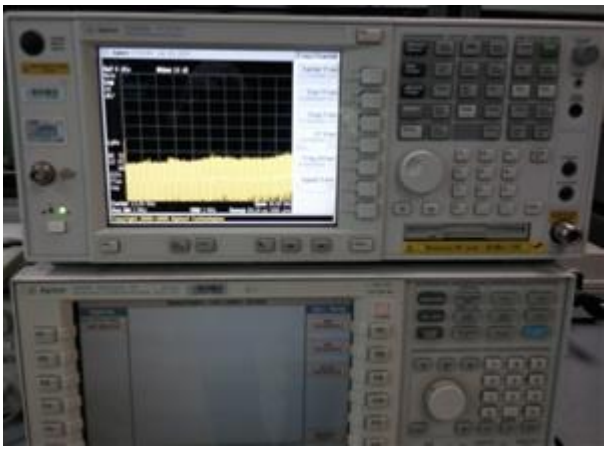
RFS1000
U4006
ANT1008
ANT1009
BOTHHOLE7016
ANT1003
L8002
MIC8000
SUS3001
SUS3002
U1008
ANT1011
U10000
U1001

U3008
U4101
U4100
HDC9000
HDC9003
CDC9001
SC3001
U7003
L7000
UME6000
UCP500
SC3002
SC3003
U8042
U1010
L2005
C2003
C2001
SC3004
U1004
U1002
F1002
SC3007
SUS3003
IFC4000

8-3. Flow chart of Troubleshooting.

	
Oscilloscope	**Digital Multimeter**
Power Supply	**+ driver, ESD Safe Tweezer**
	
8960 & Spectrum Analyzer	**Soldering iron**

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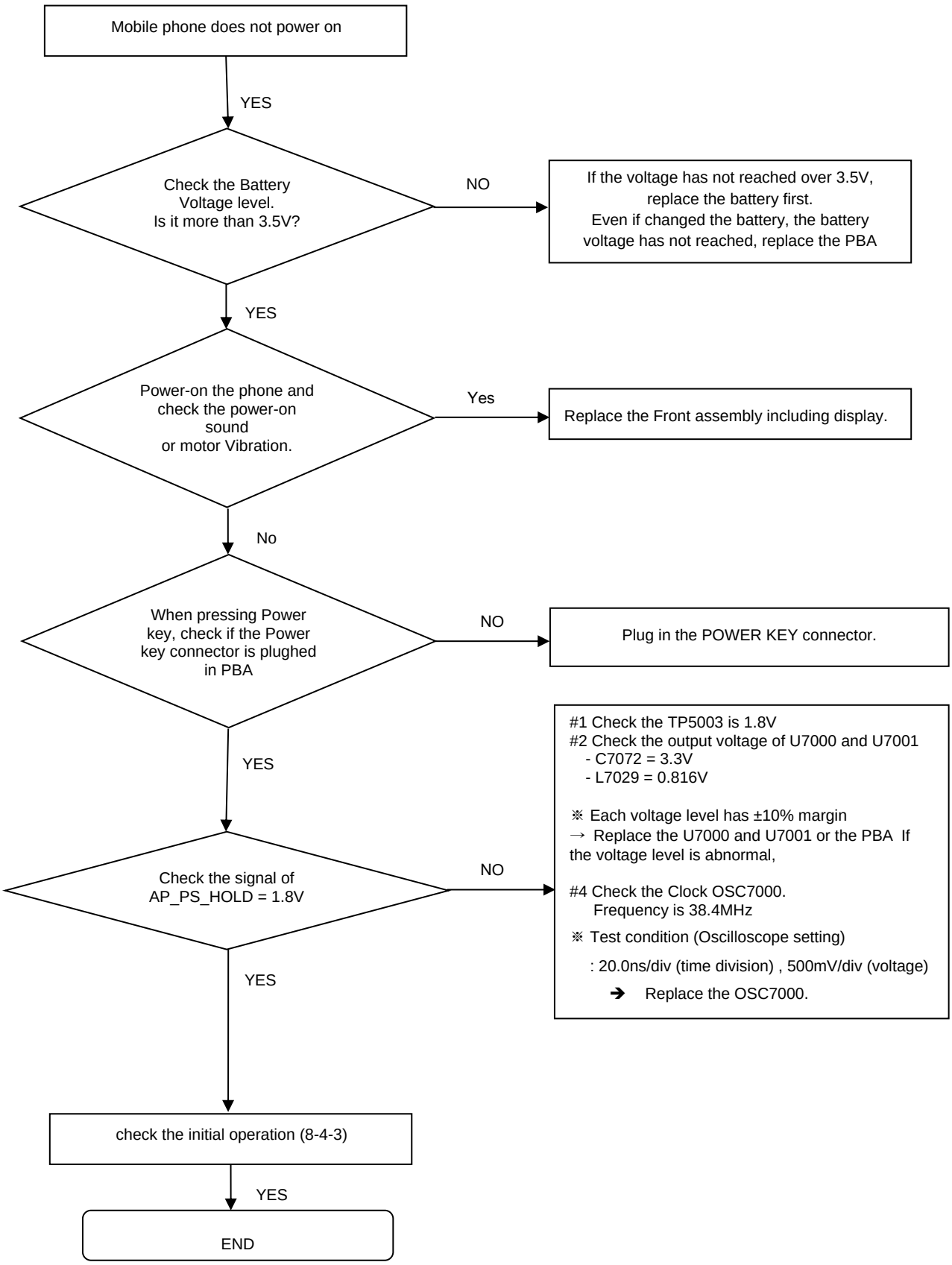
8-4-1. Power on



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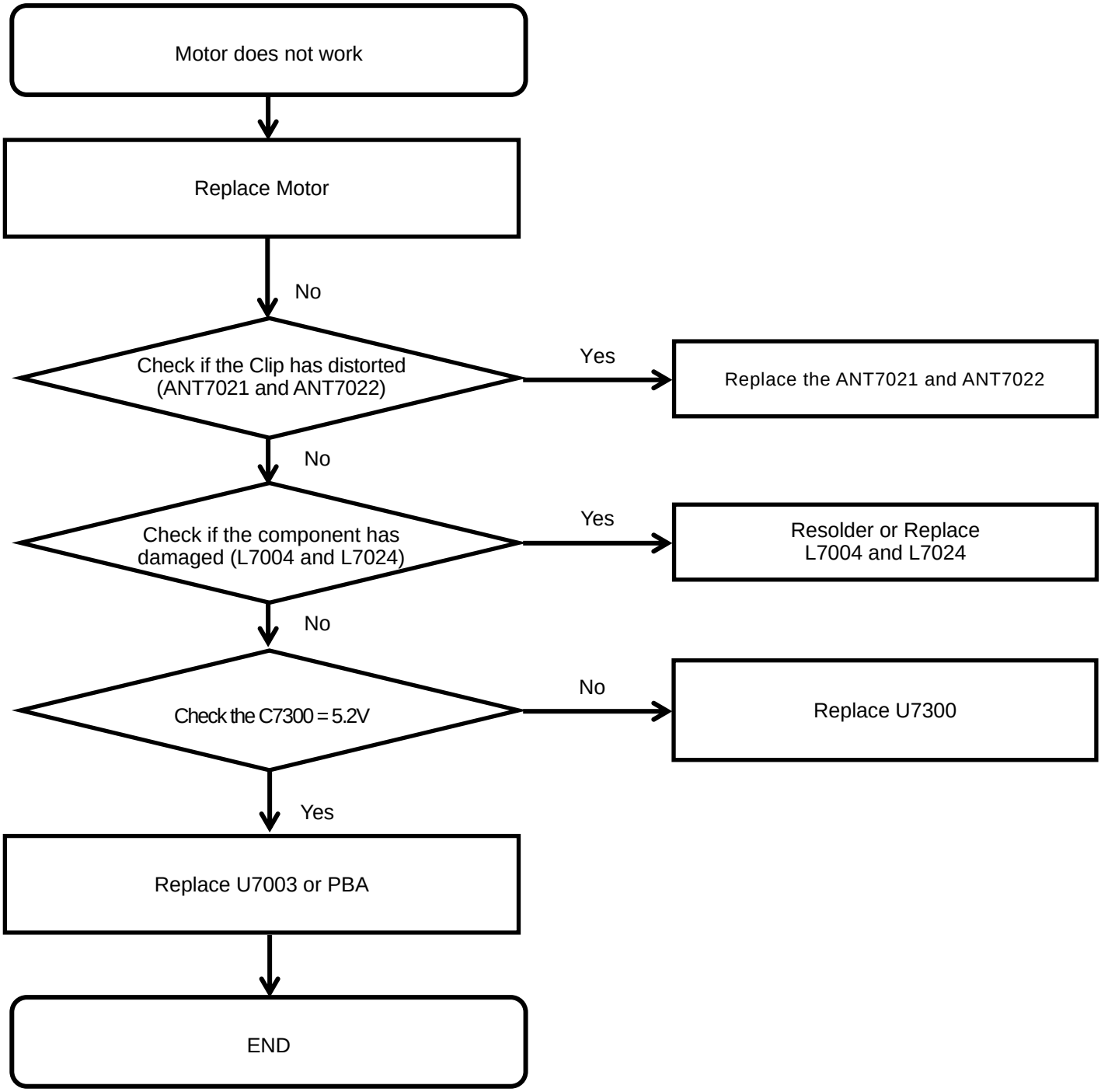
8-4-2. Motor



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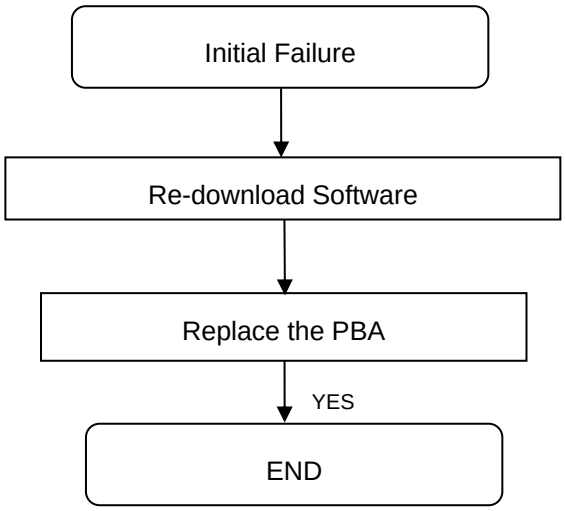
8-4-3. initial



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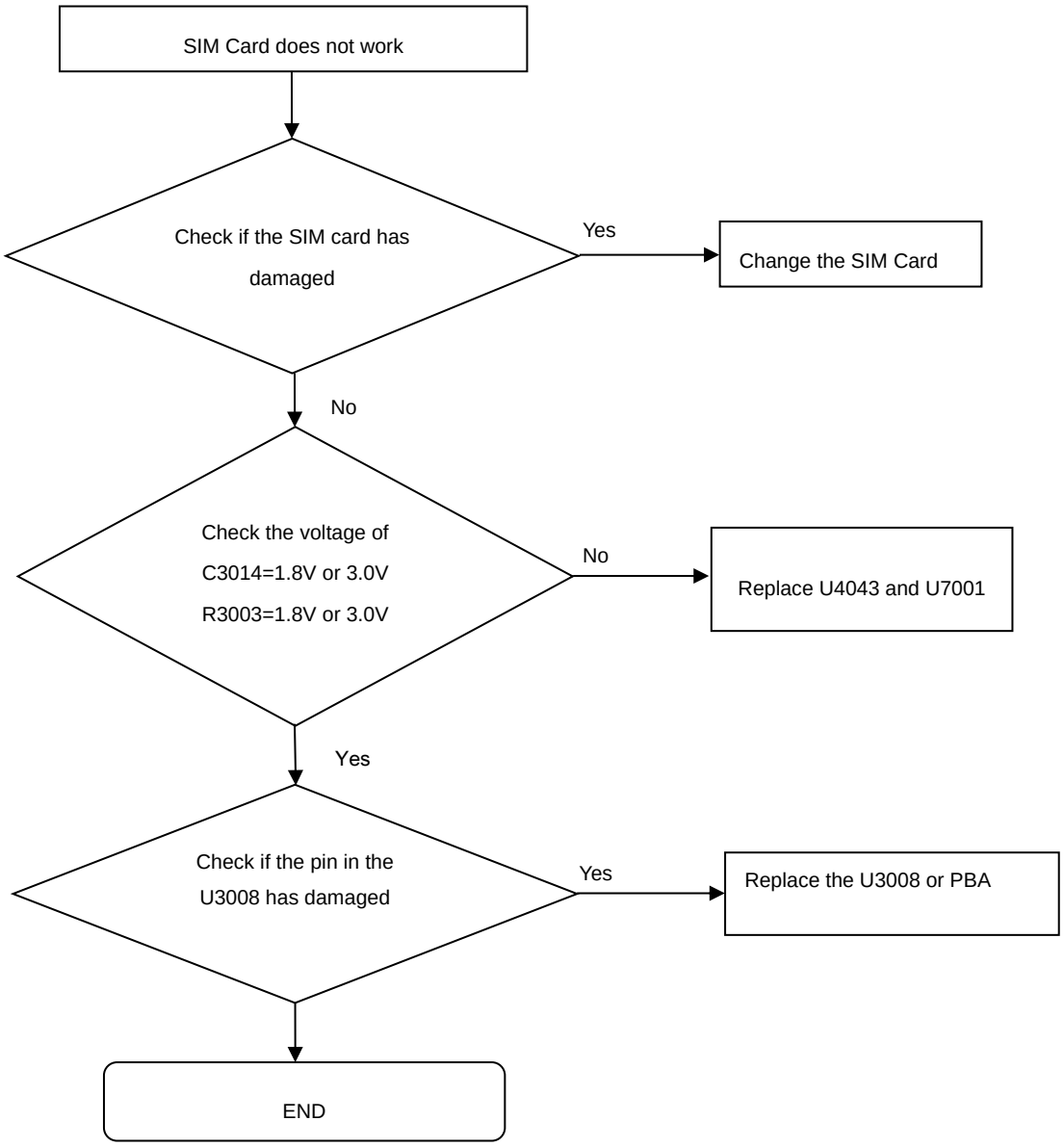
8-4-4. SIM PART



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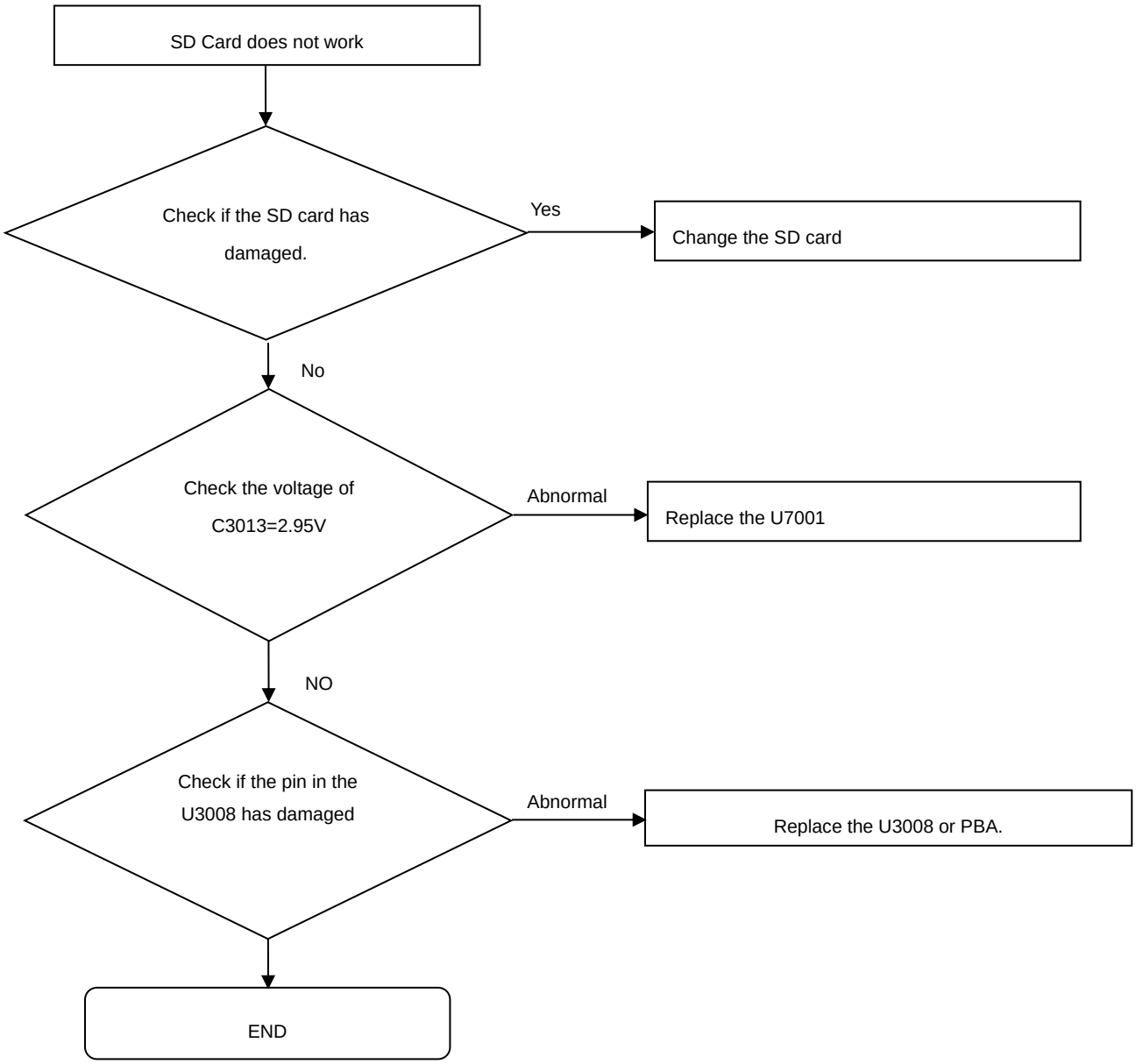
8-4-5. SIM/SD PART



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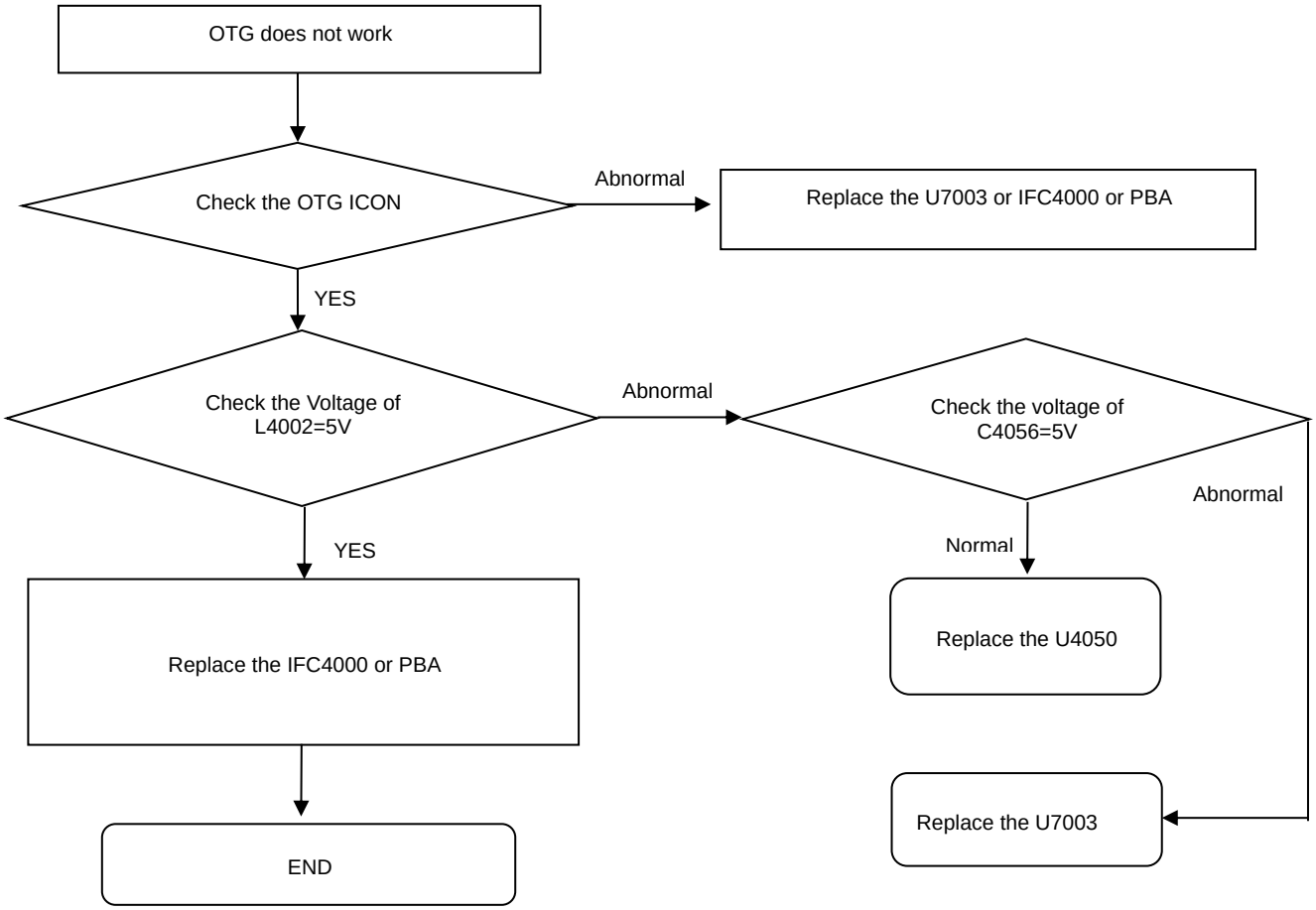
8-4-6. OTG



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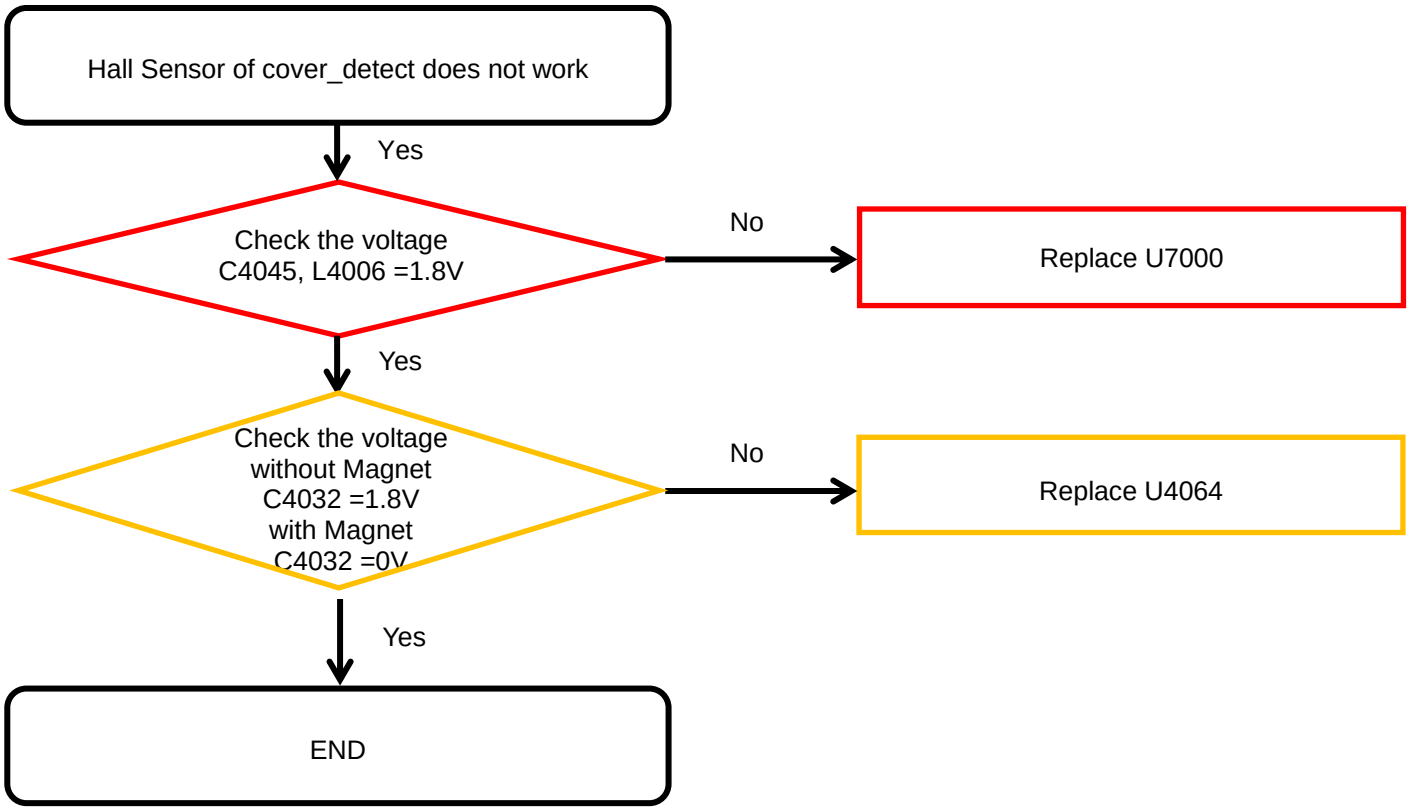
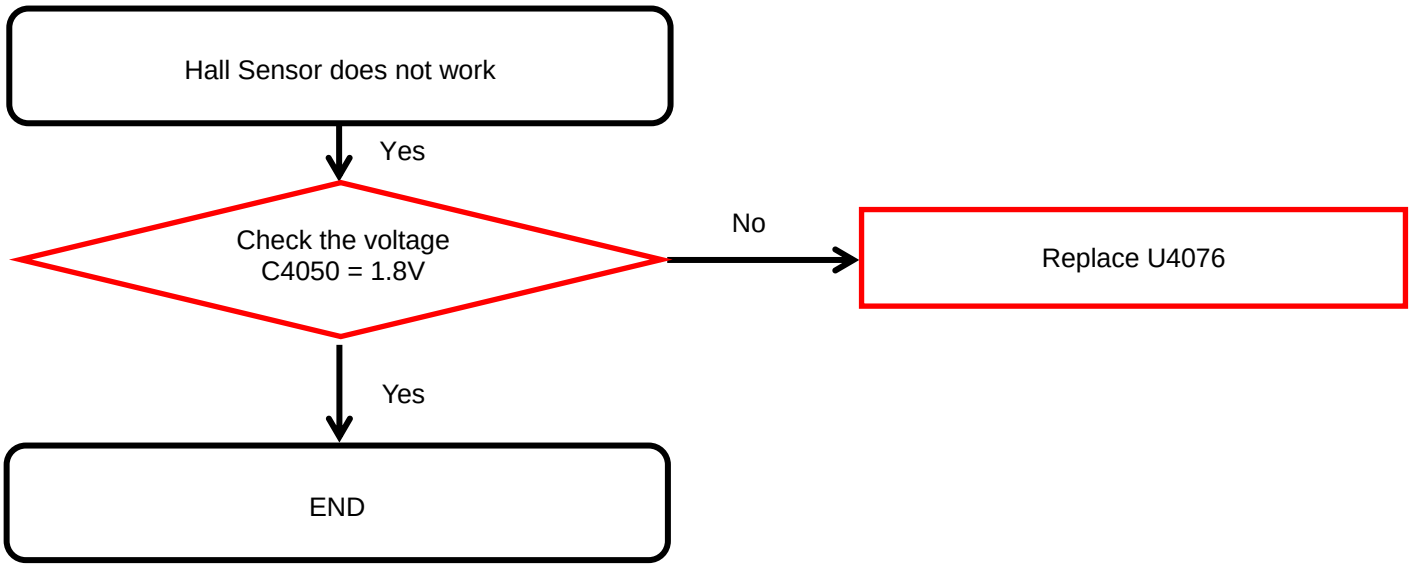
8-4-7. Hall IC





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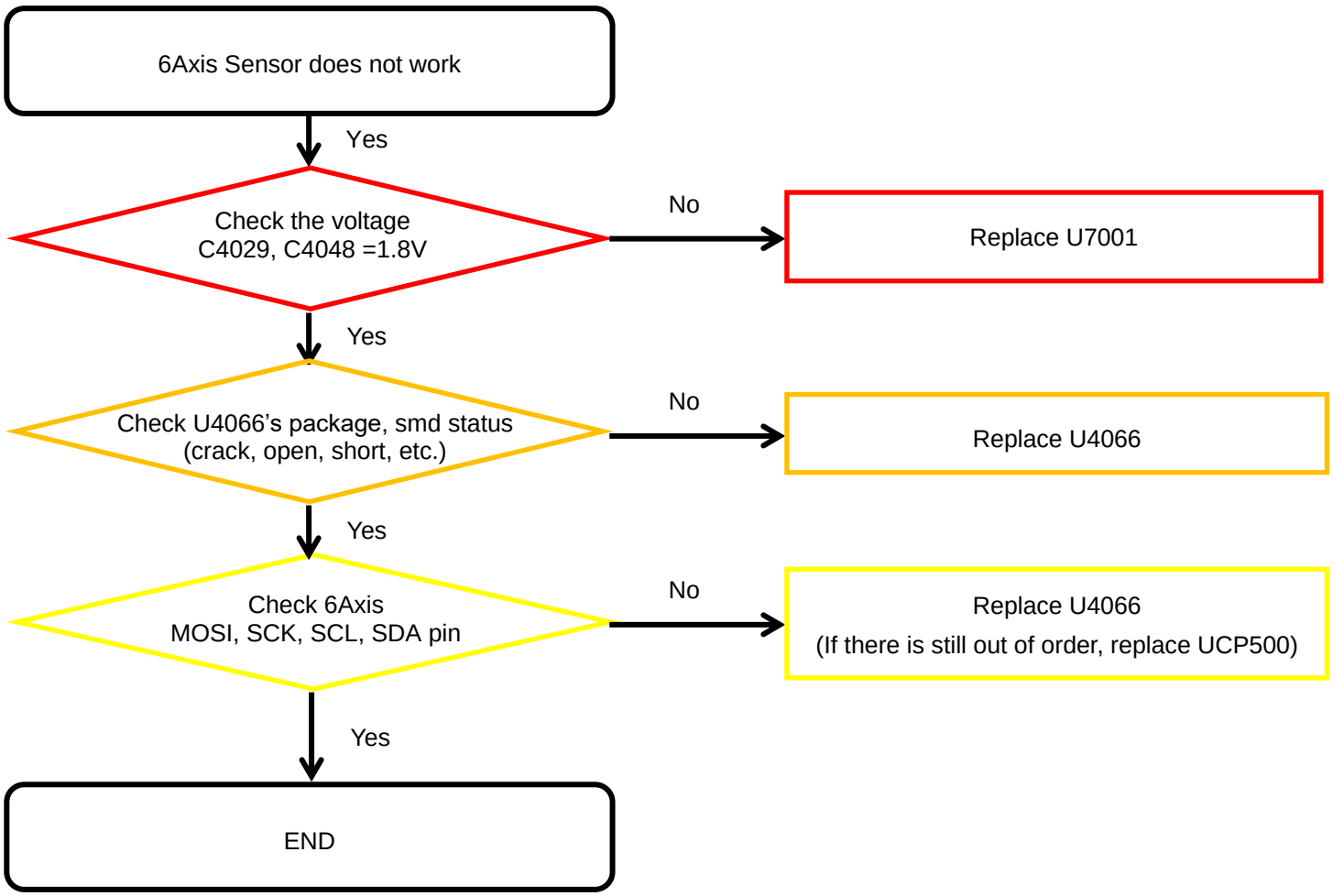
8-4-8. 6Axis sensor



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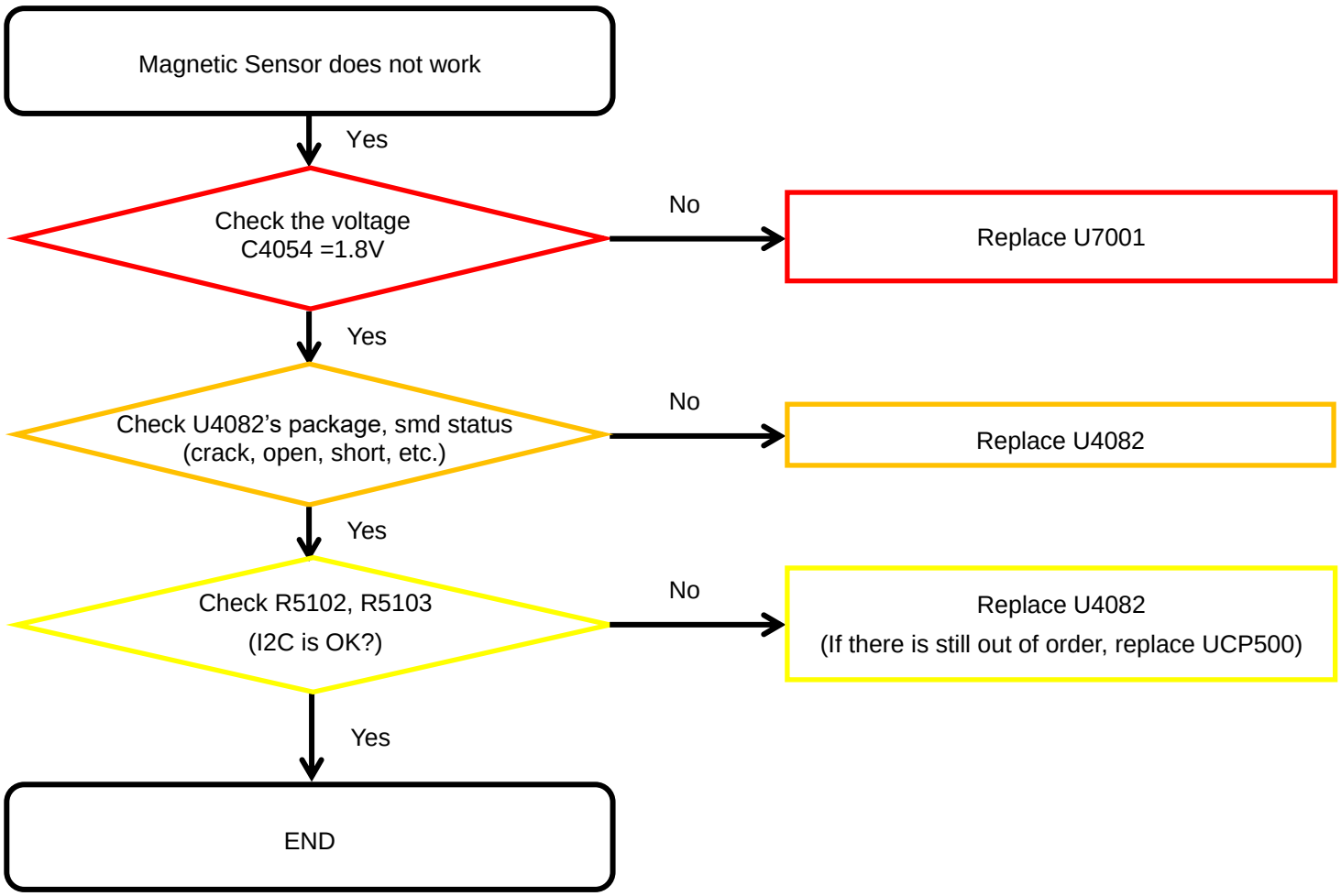
8-4-9. Magnetic sensor



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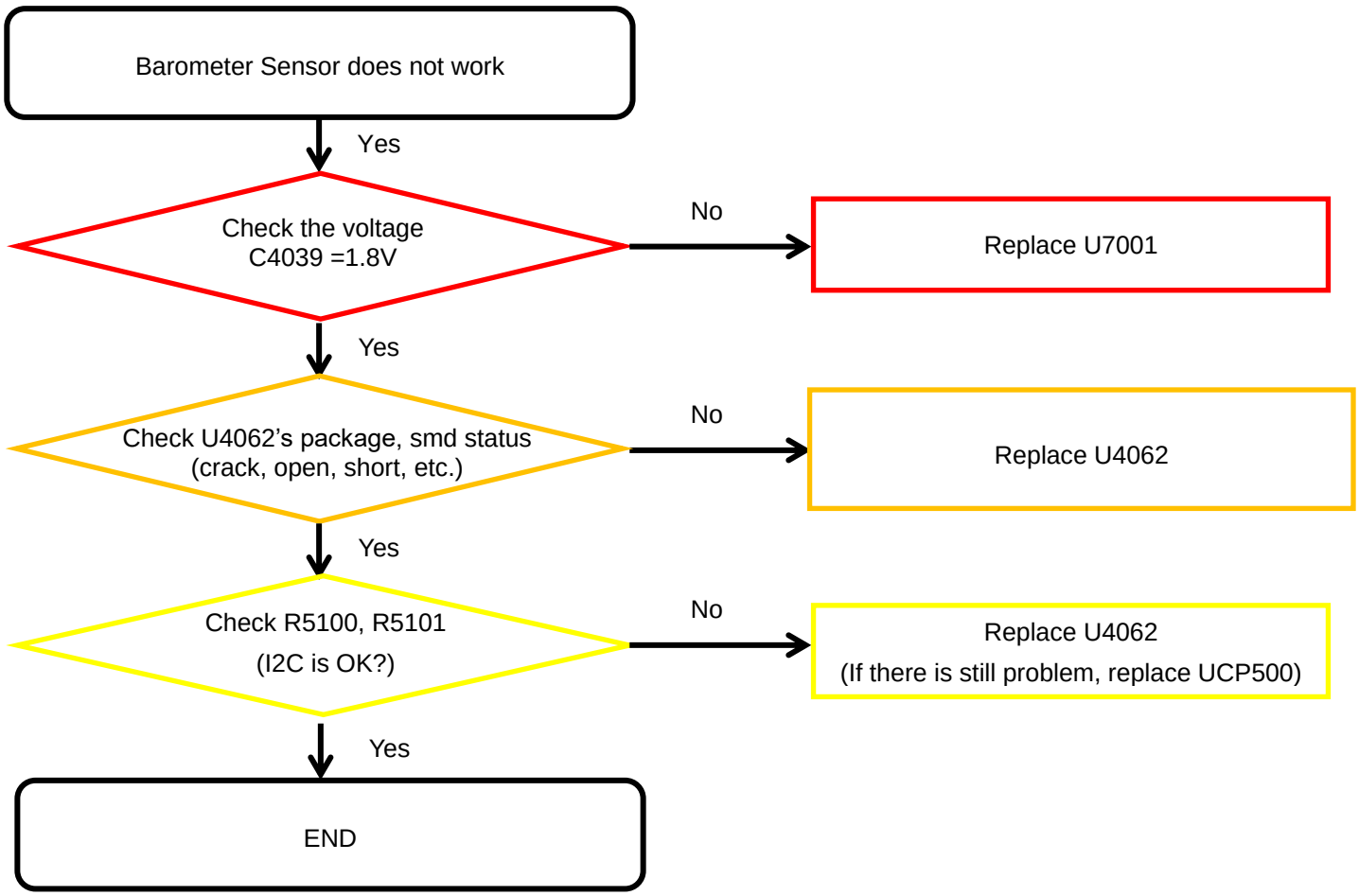
8-4-10. Barometer sensor



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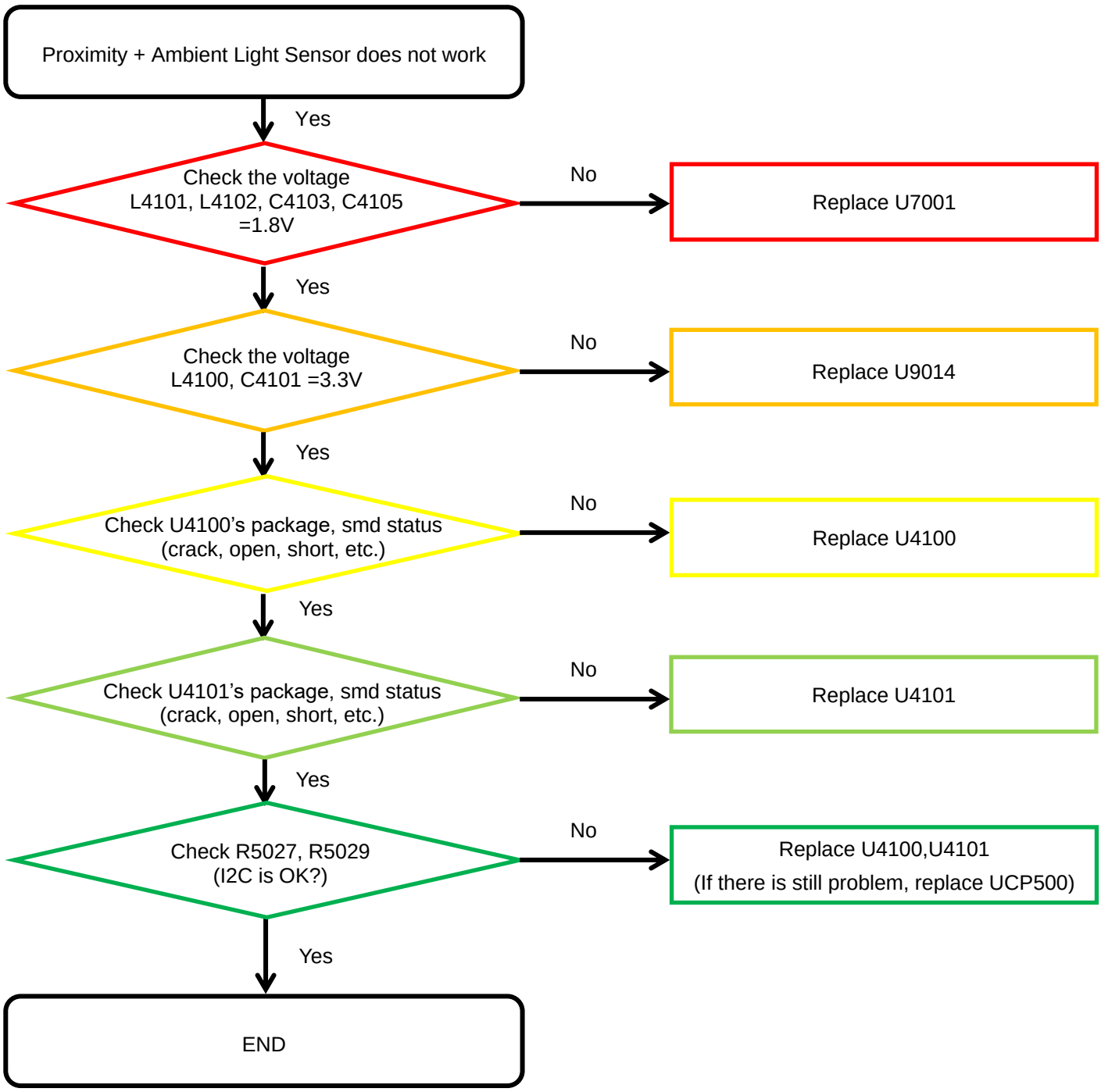
8-4-11. Proximity/Ambient Light sensor



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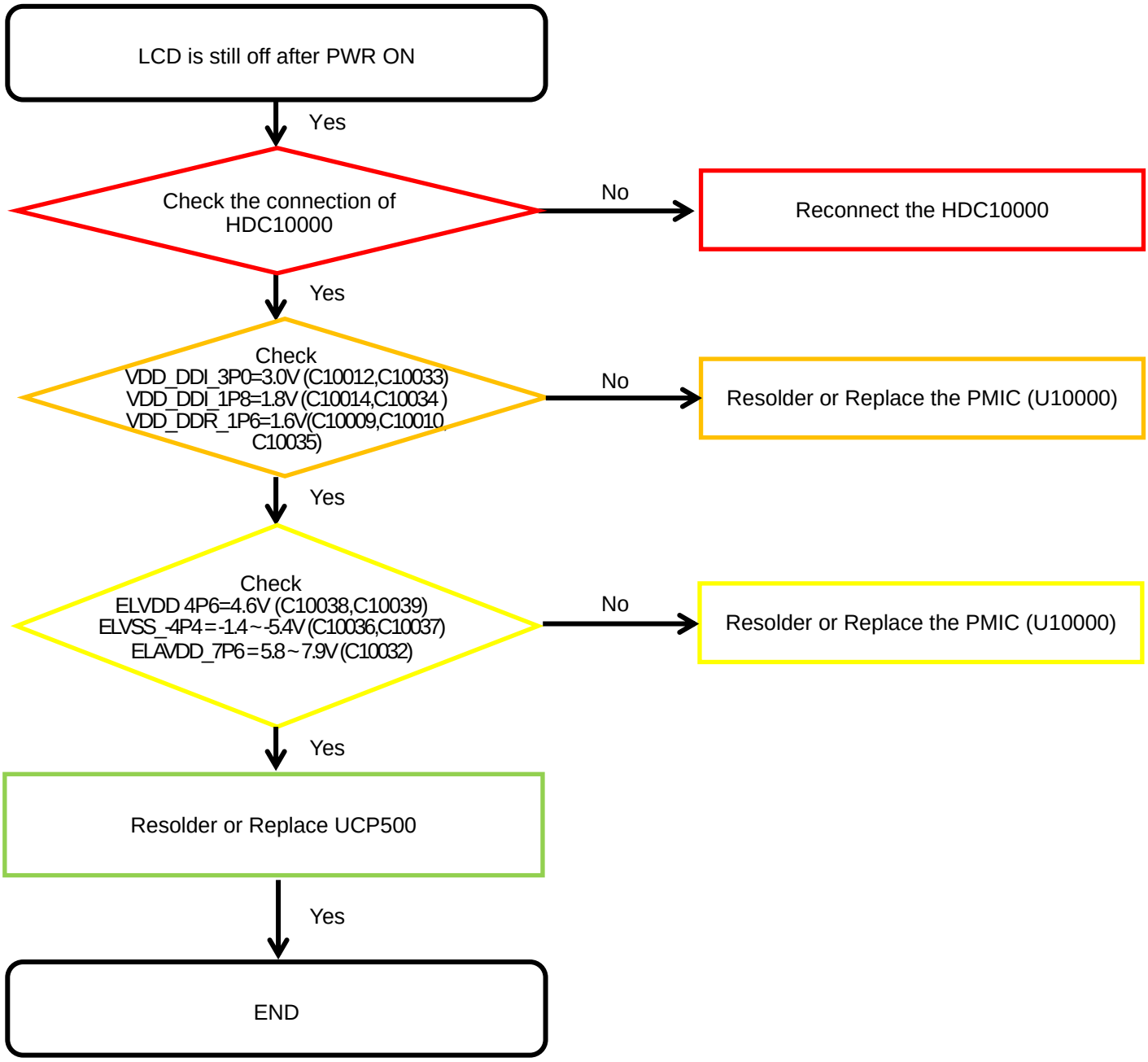
8-4-12. Display



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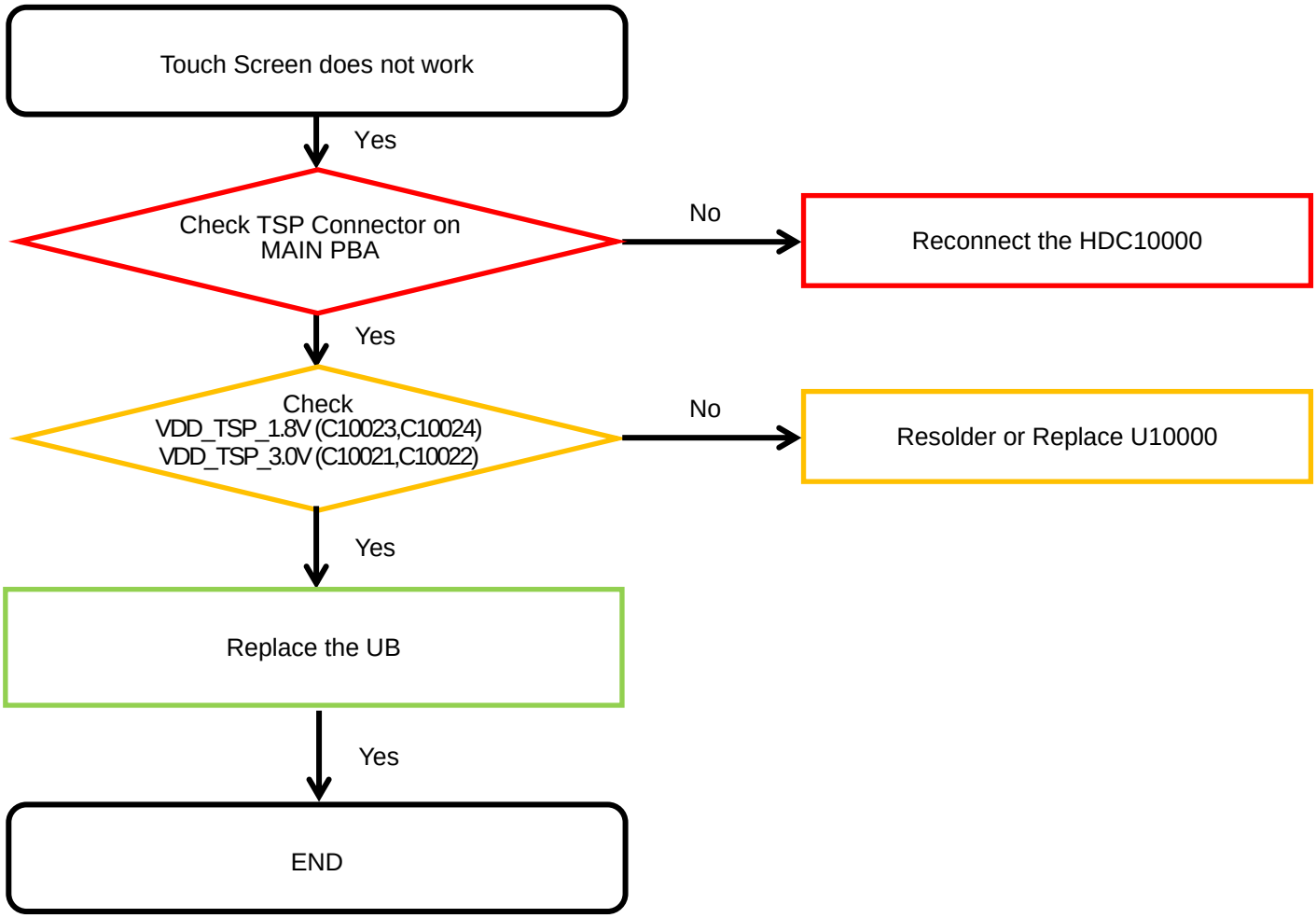
8-4-13. TSP



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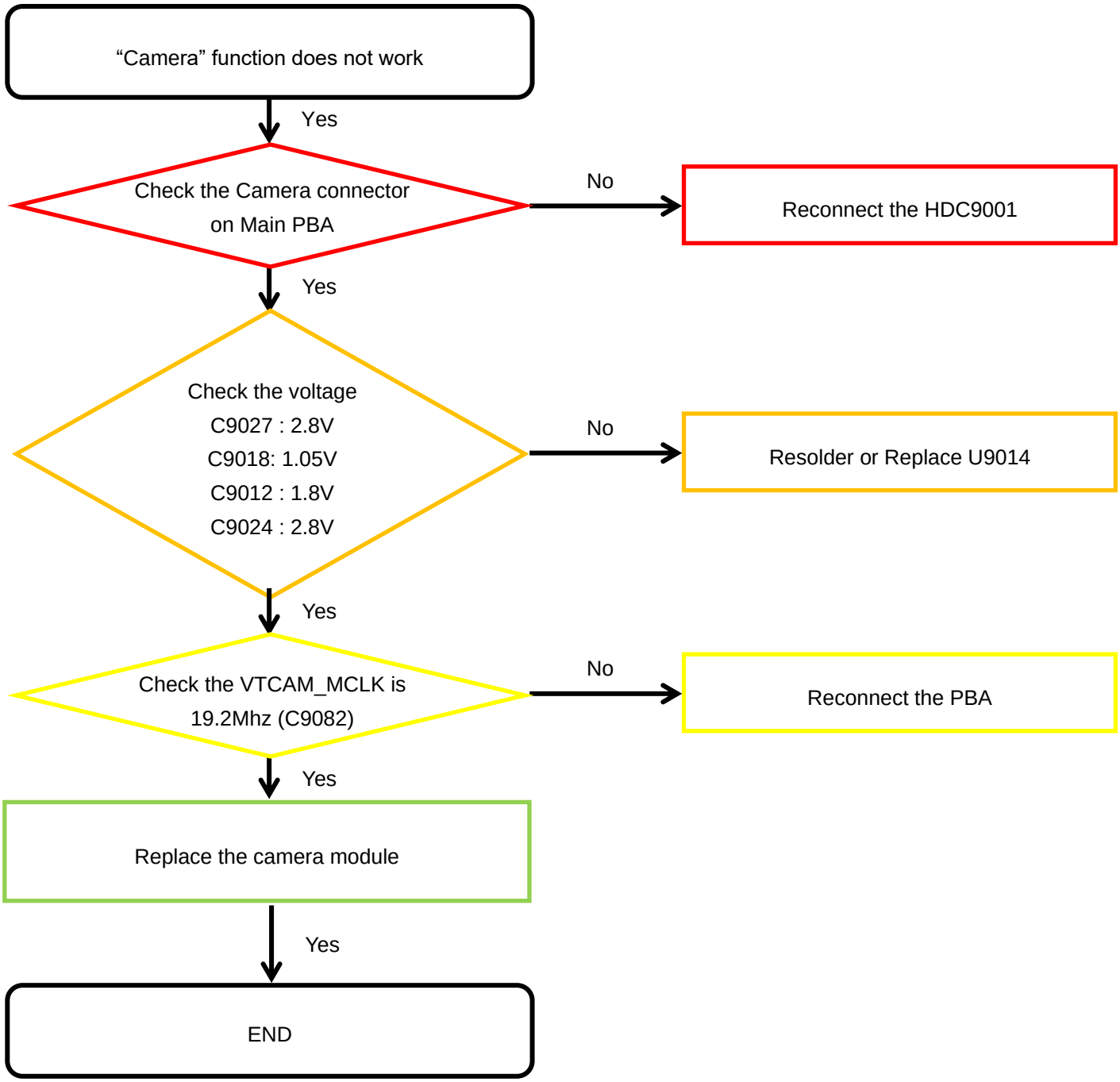
8-4-14. VT CAMERA



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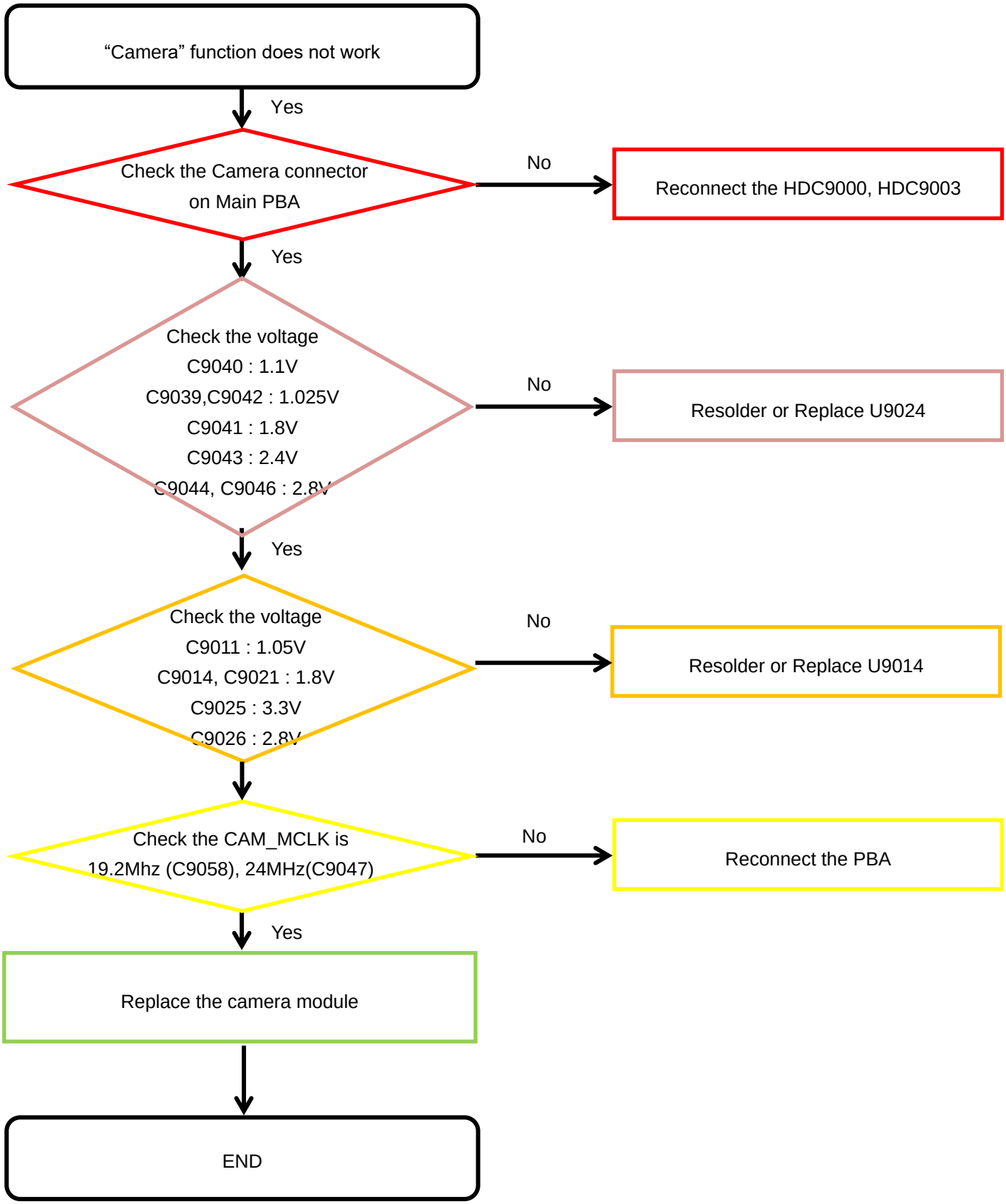
8-4-15. Rear CAMERA



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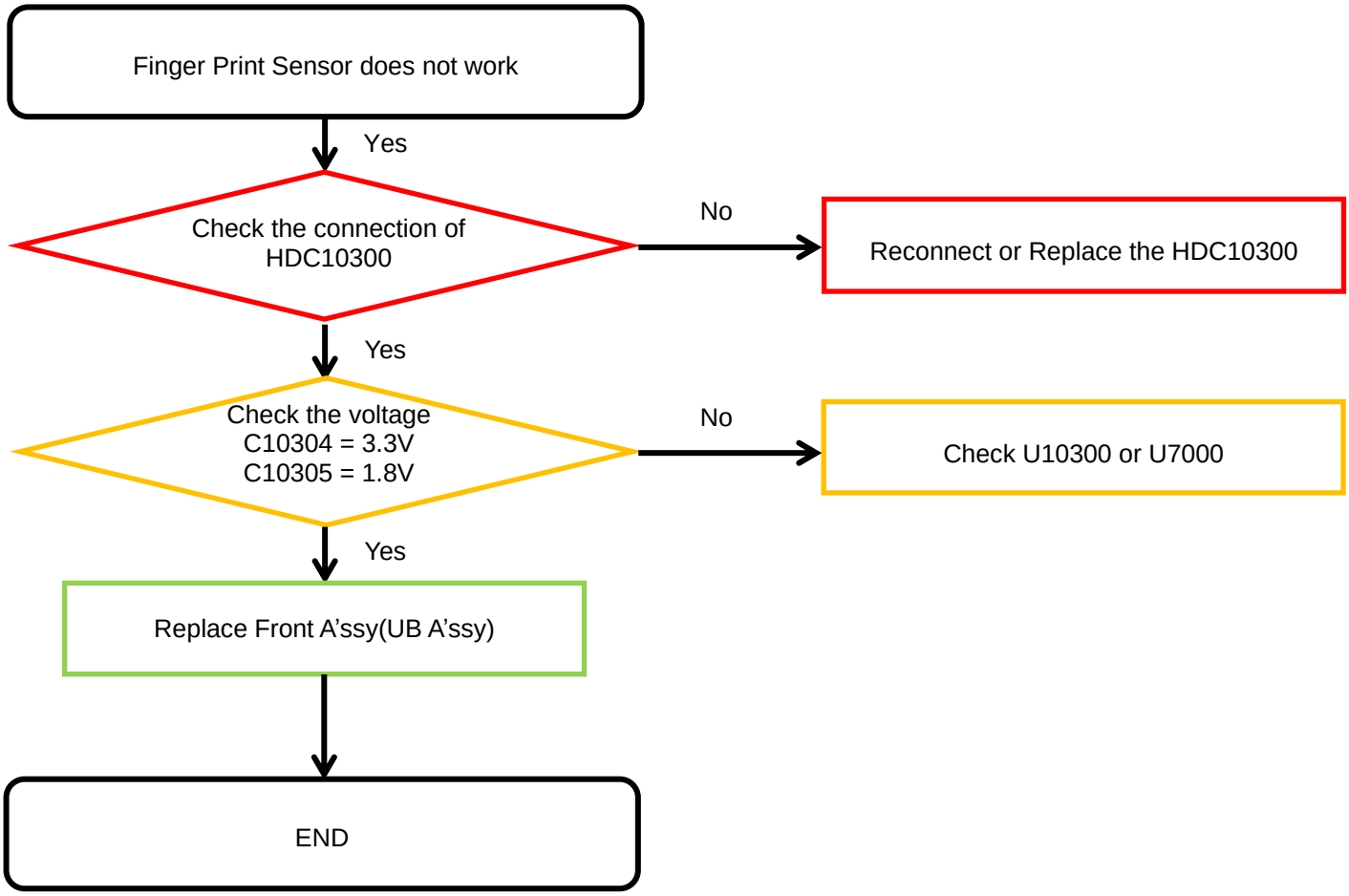
8-4-16. Finger Print



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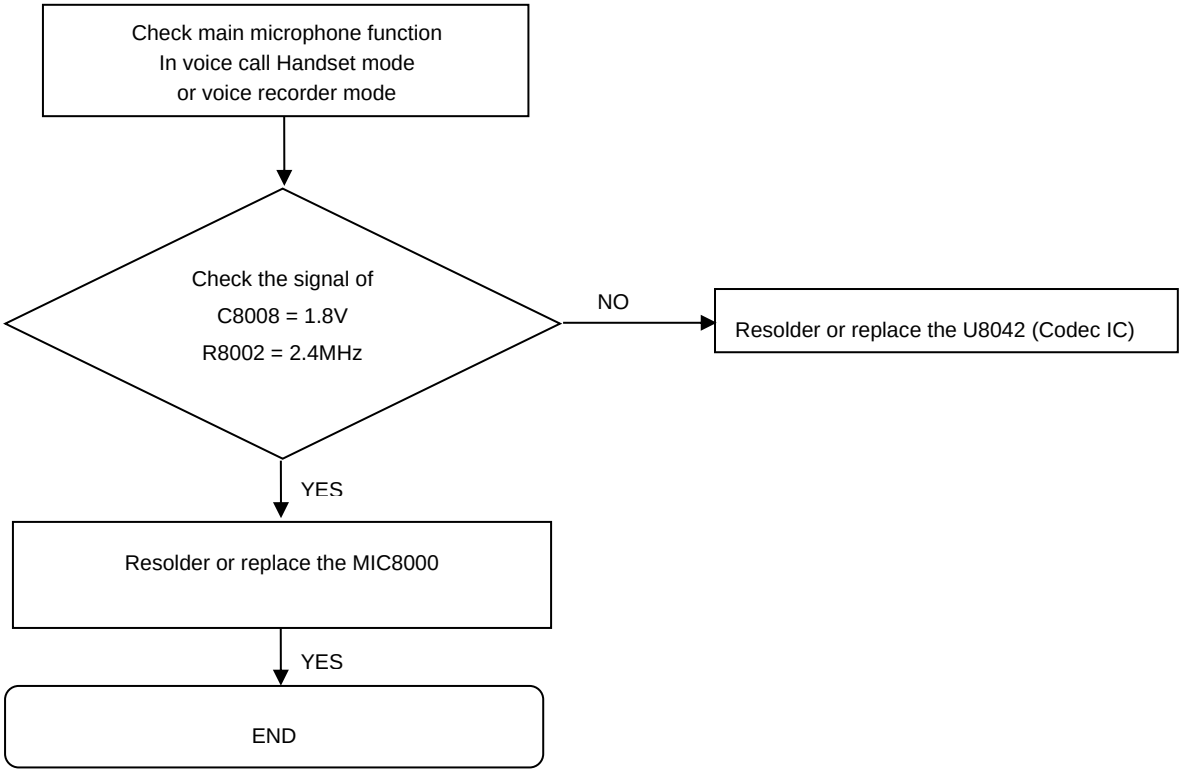
8-4-17-1. Main MIC



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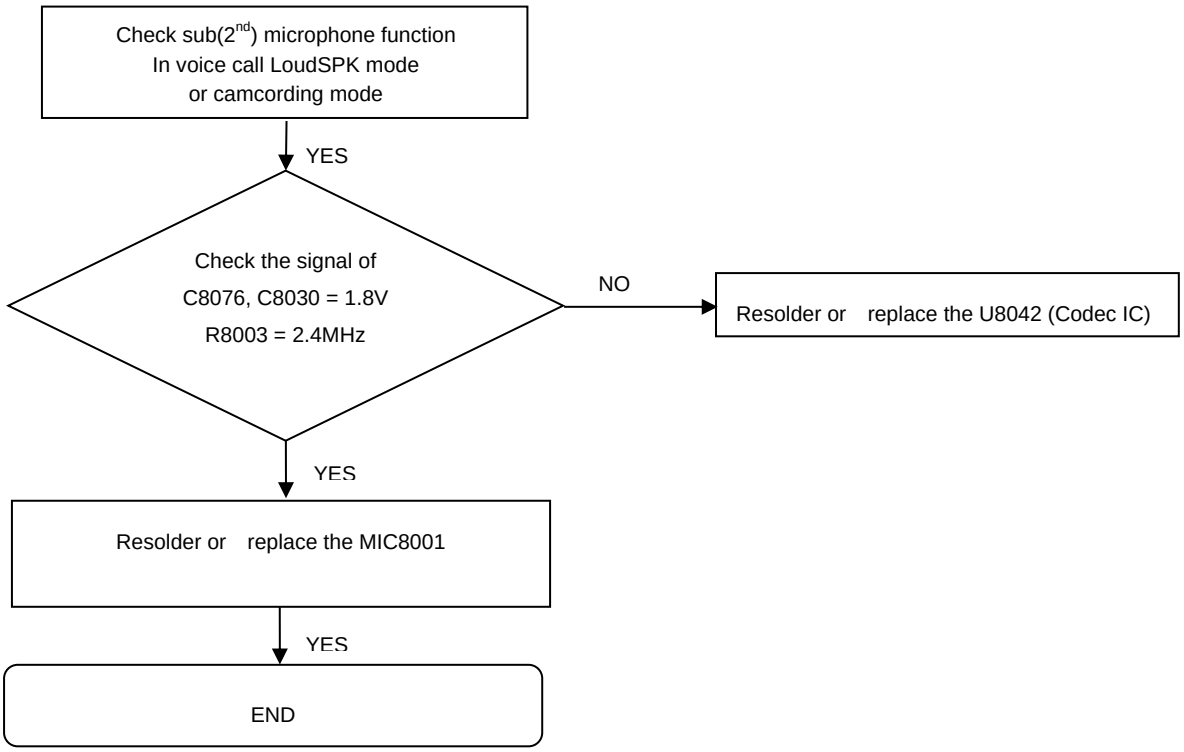
8-4-17-2. Sub(2nd) MIC



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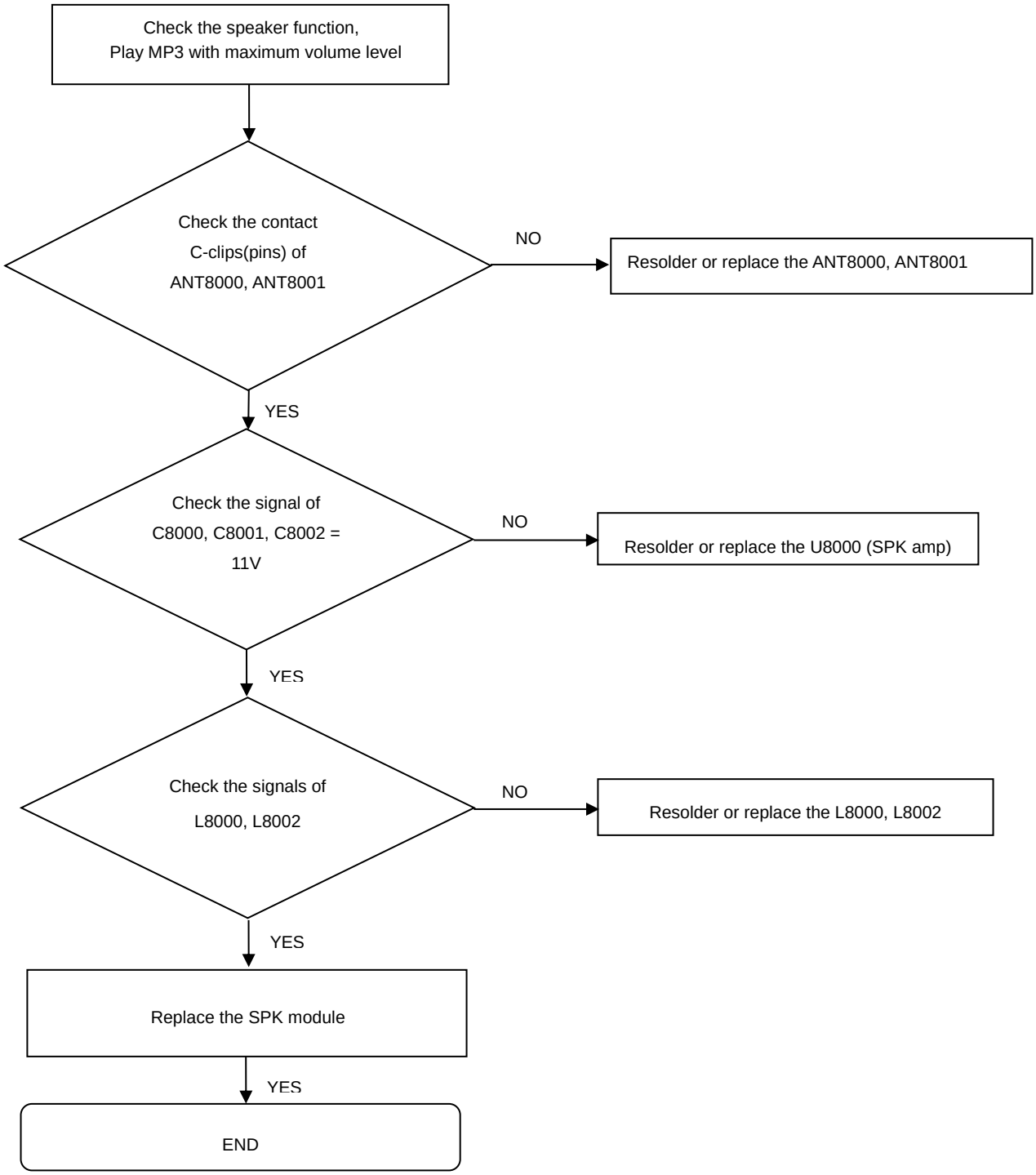
8-4-18. Speaker part



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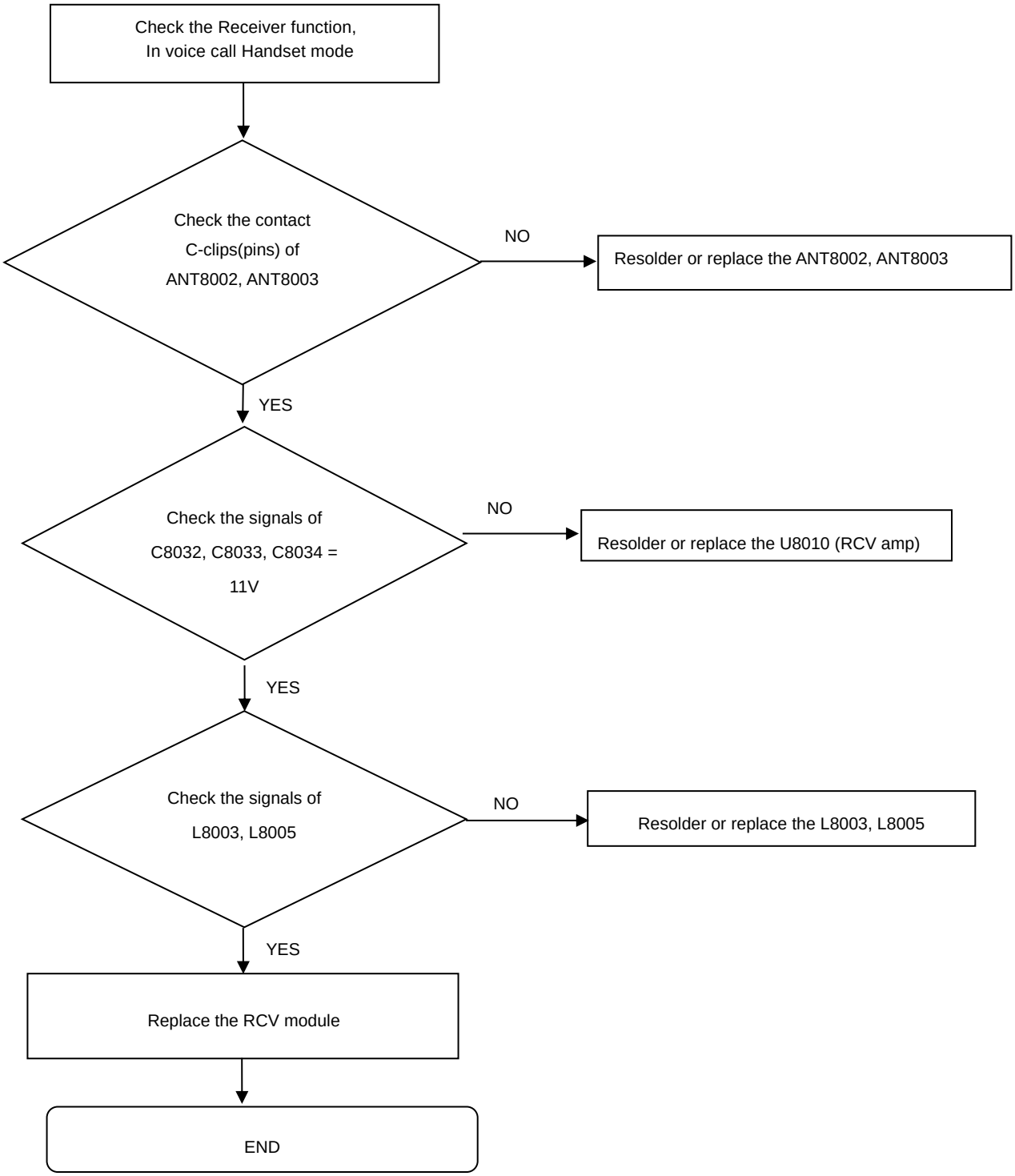
8-4-19. Receiver part



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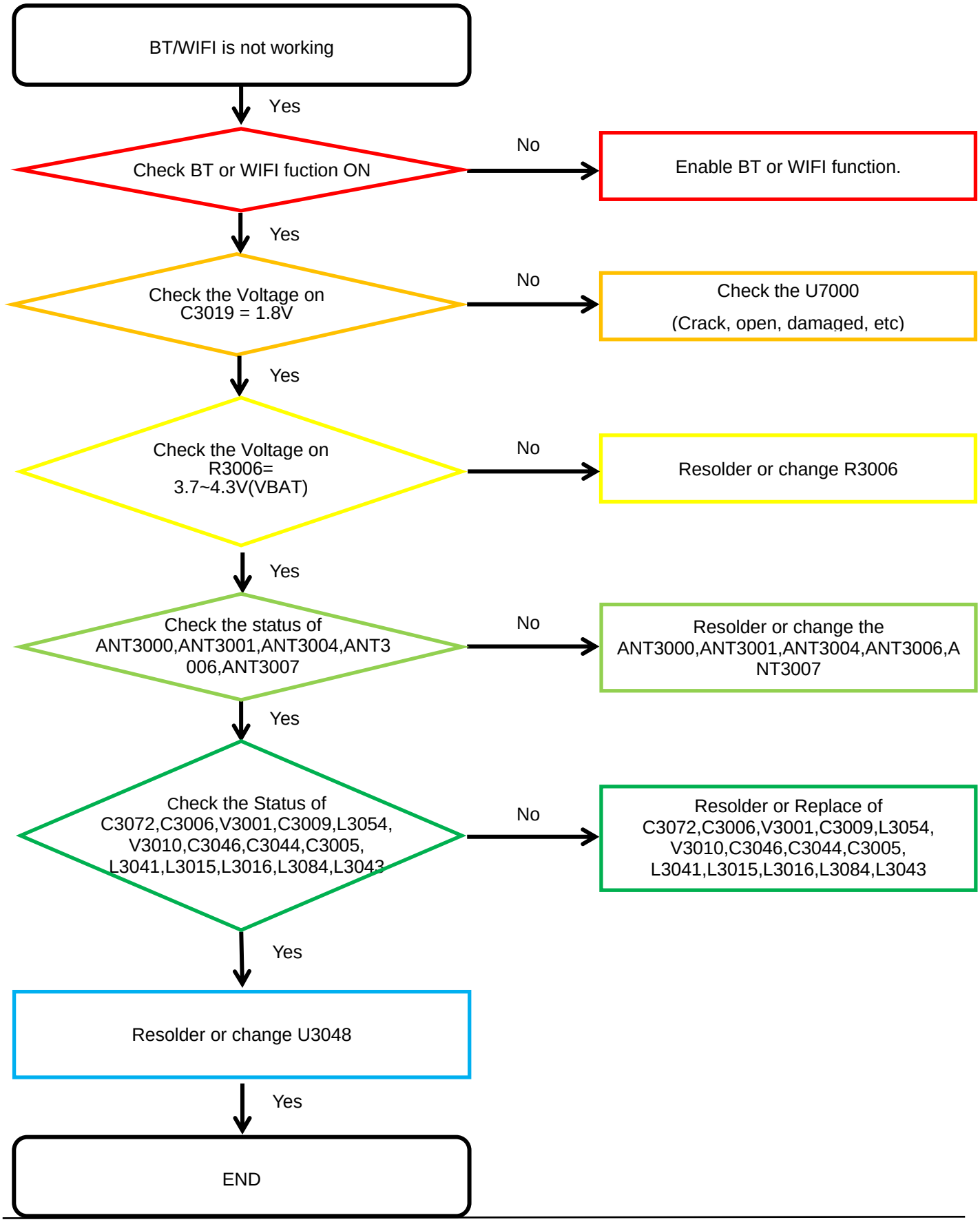
8-4-20. BT/WIFI



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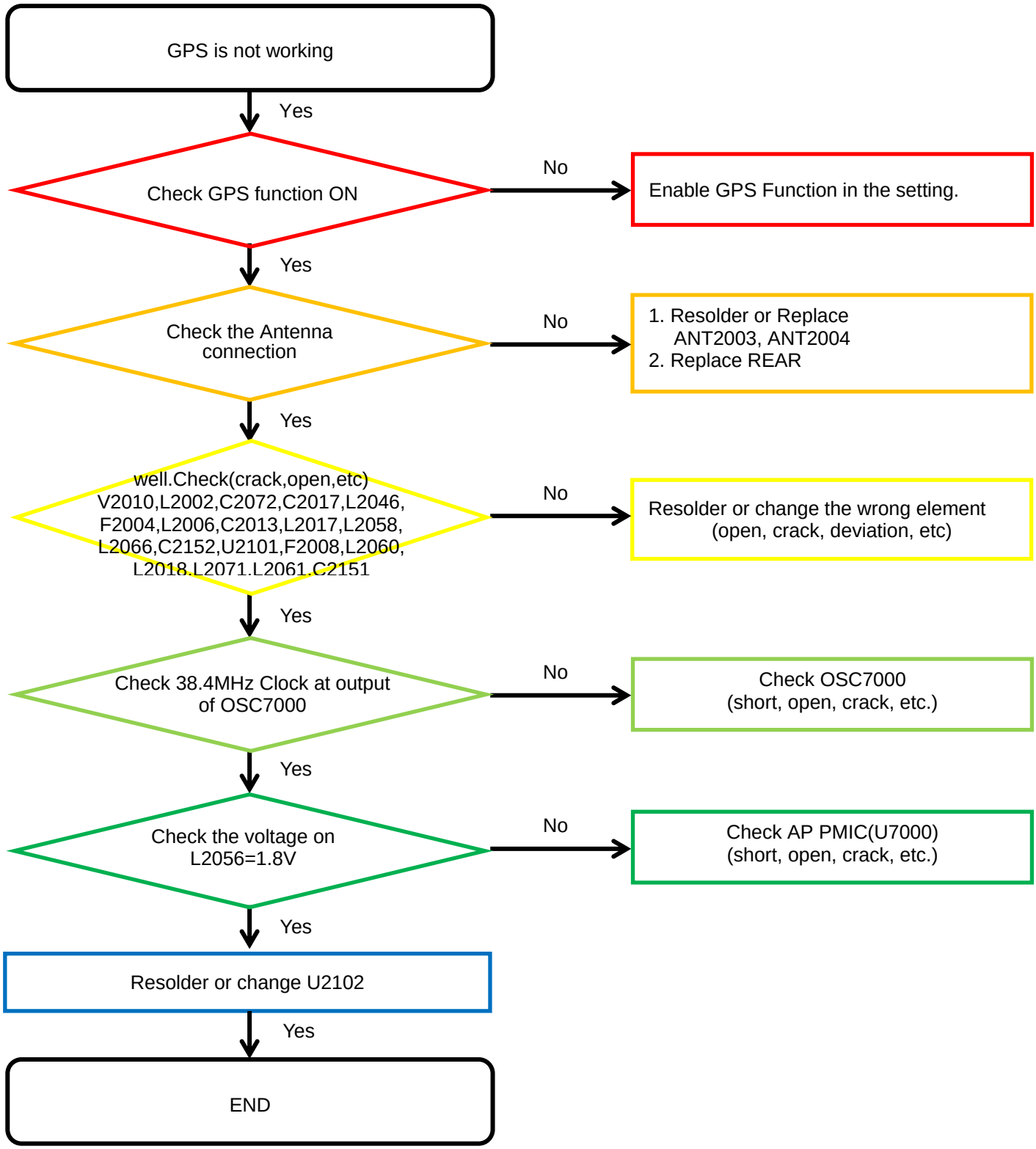
8-4-21. GPS



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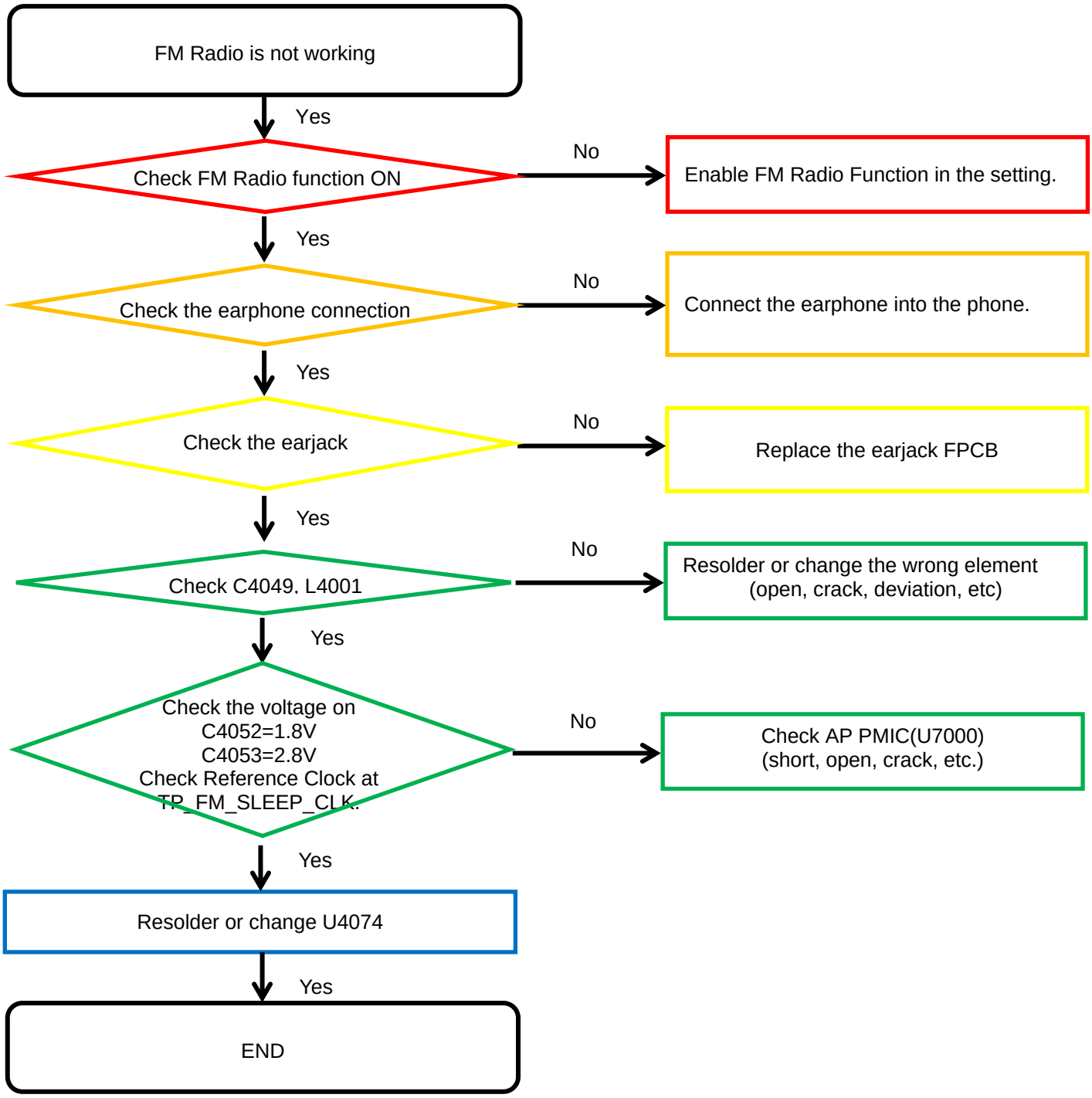
8-4-22. FM Radio



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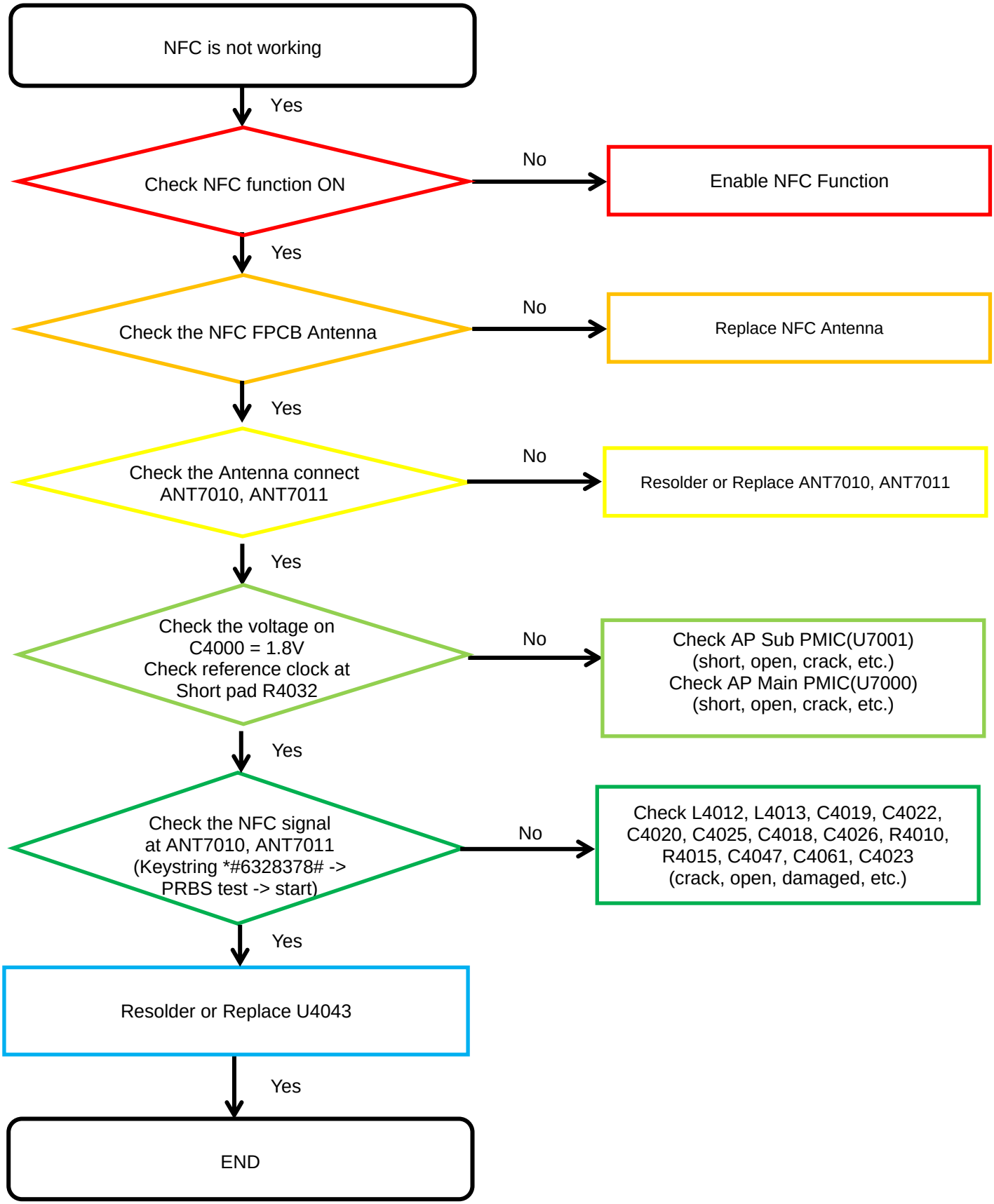
8-4-23. NFC



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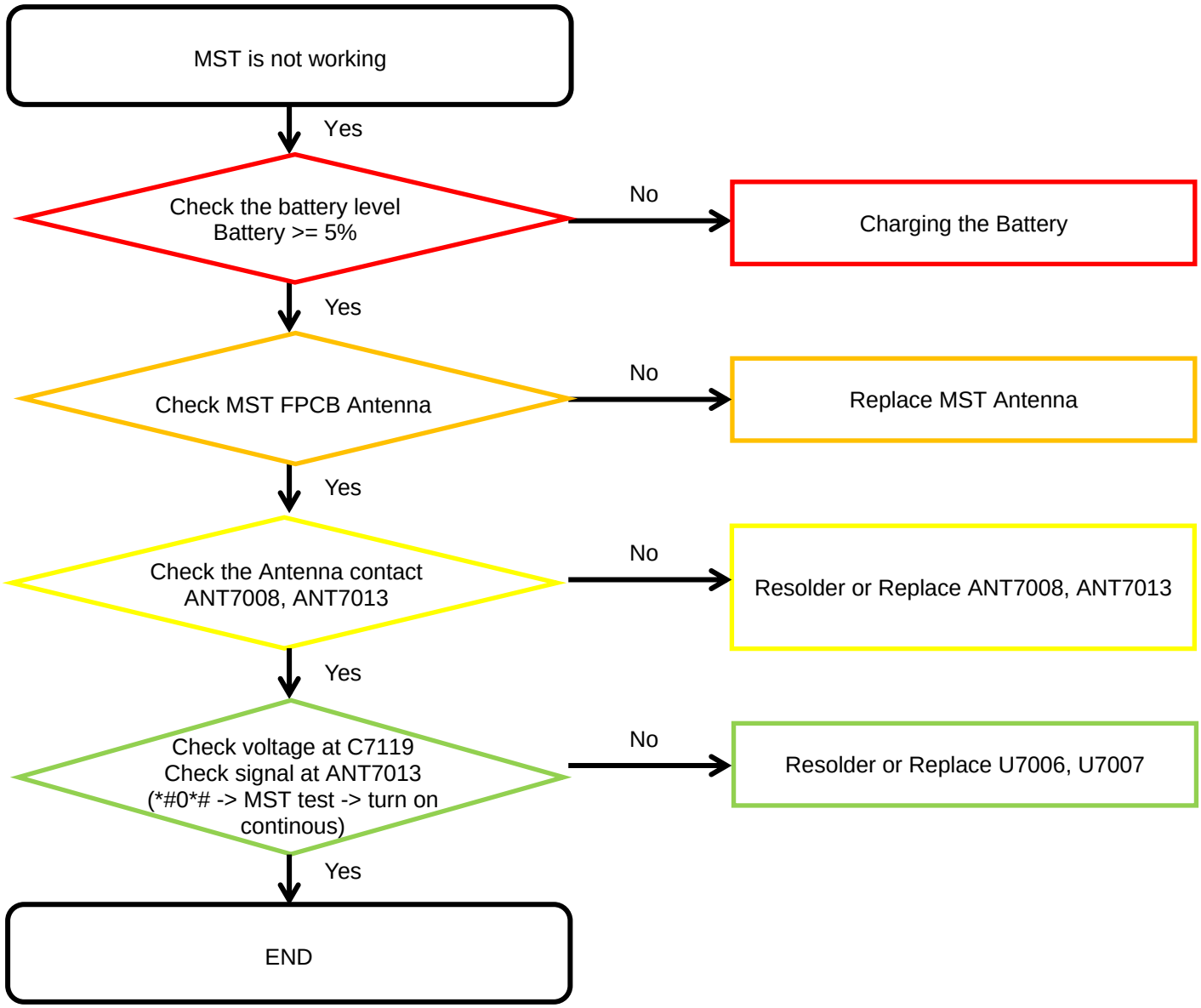
8-4-24. MST



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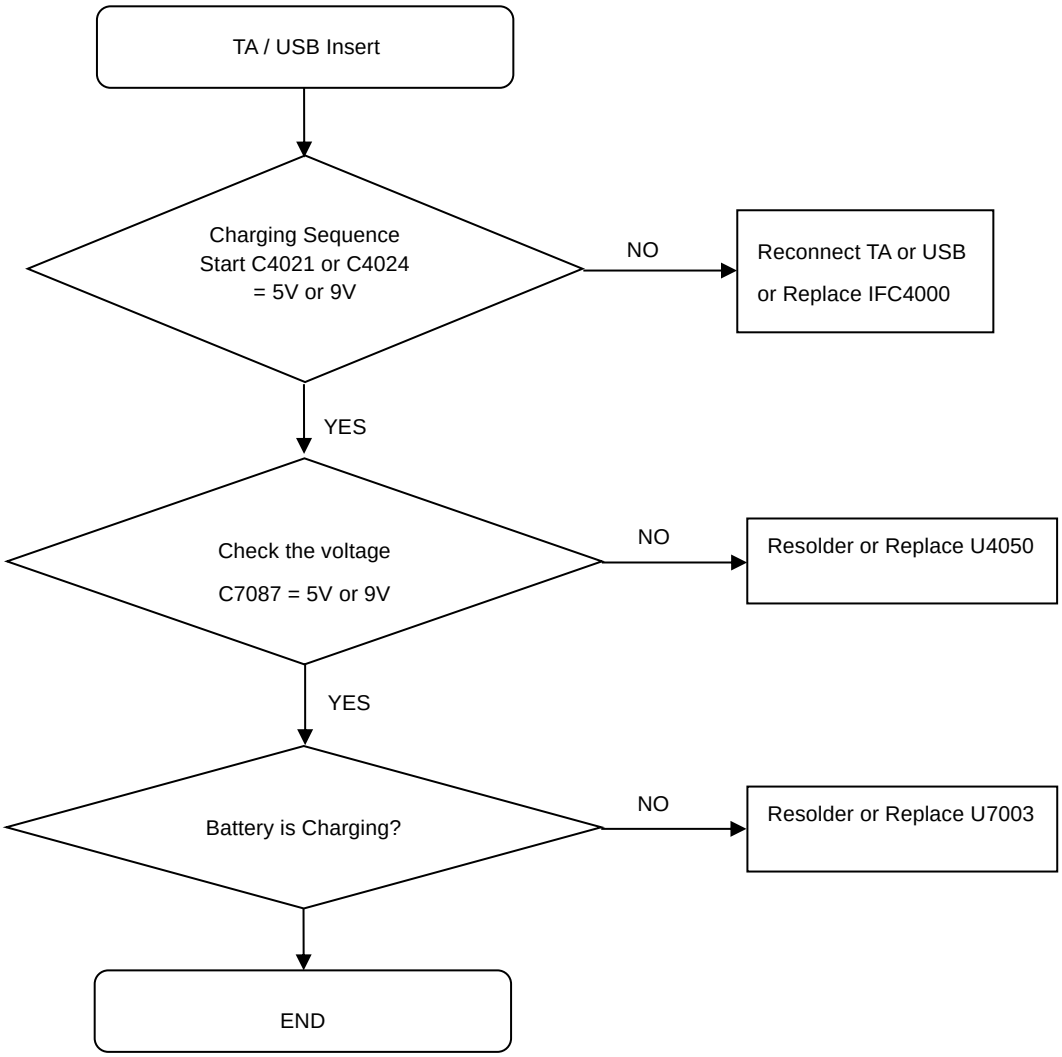
8-4-25-1. Charging Part
Wire Charging (Normal/Fast)



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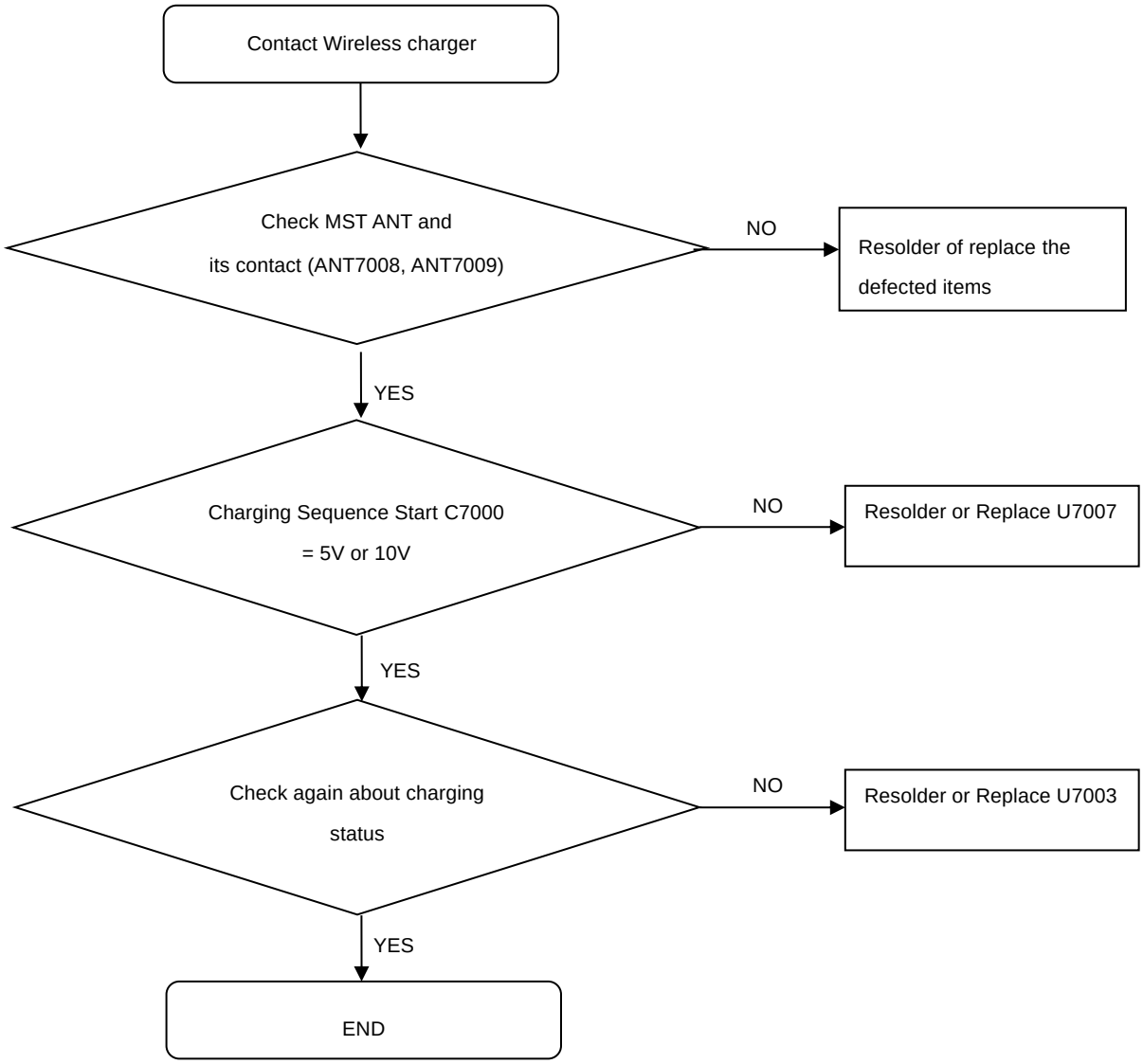
8-4-25-2. Charging Part
Wirless Charging (Normal/Fast)



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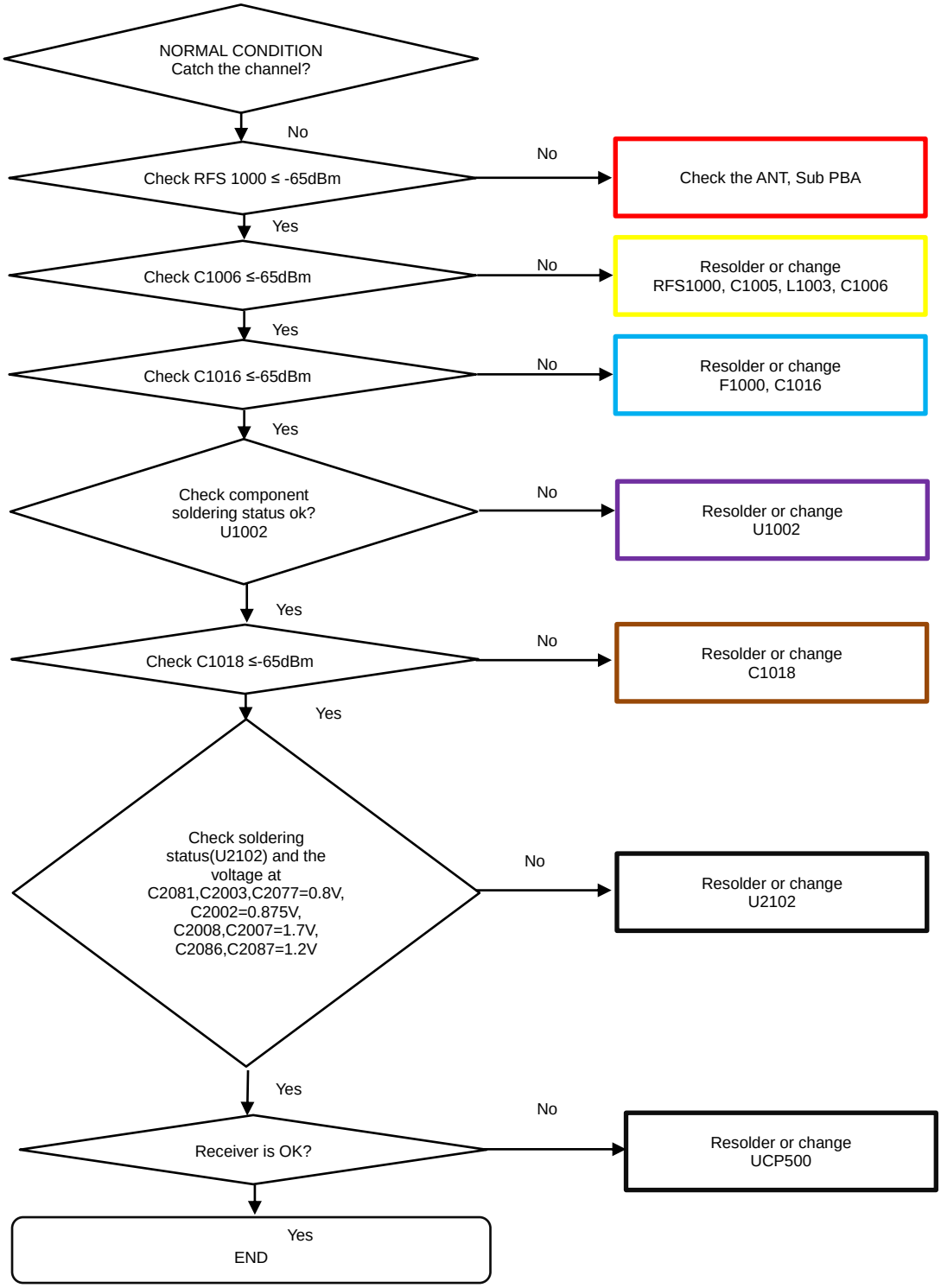
8-4-26. GSM 850/900, CDMA BC0/10, WCDMA B5/8, LTE B5/8/12/13/14/17/18/19/20/26/28/29/71 RX



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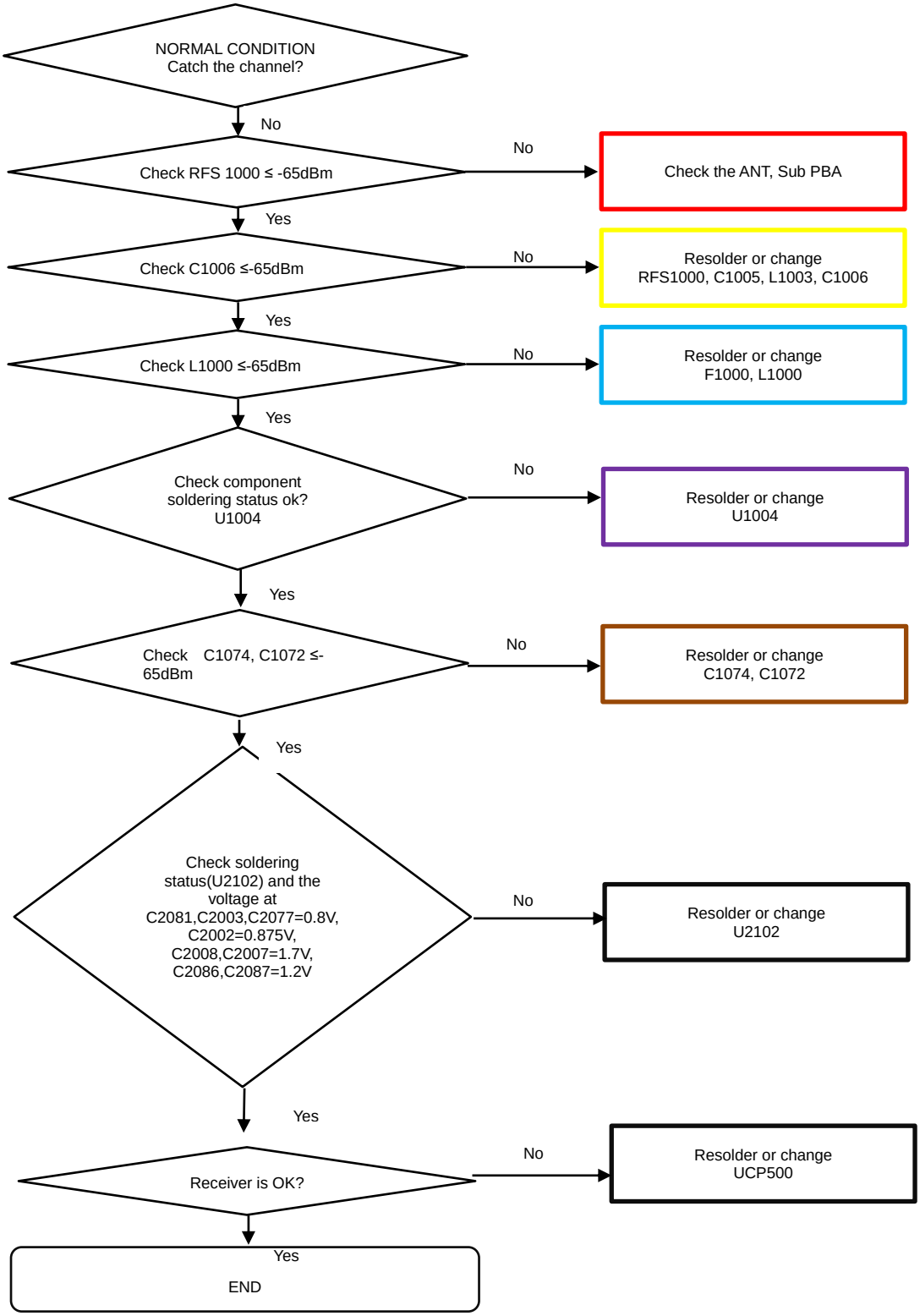
8-4-27. CDMA BC1, GSM 1800/1900, WCDMA B1/2/4, TDSCDMA B34/39, LTE B1/2/3/4/25/39/66 RX



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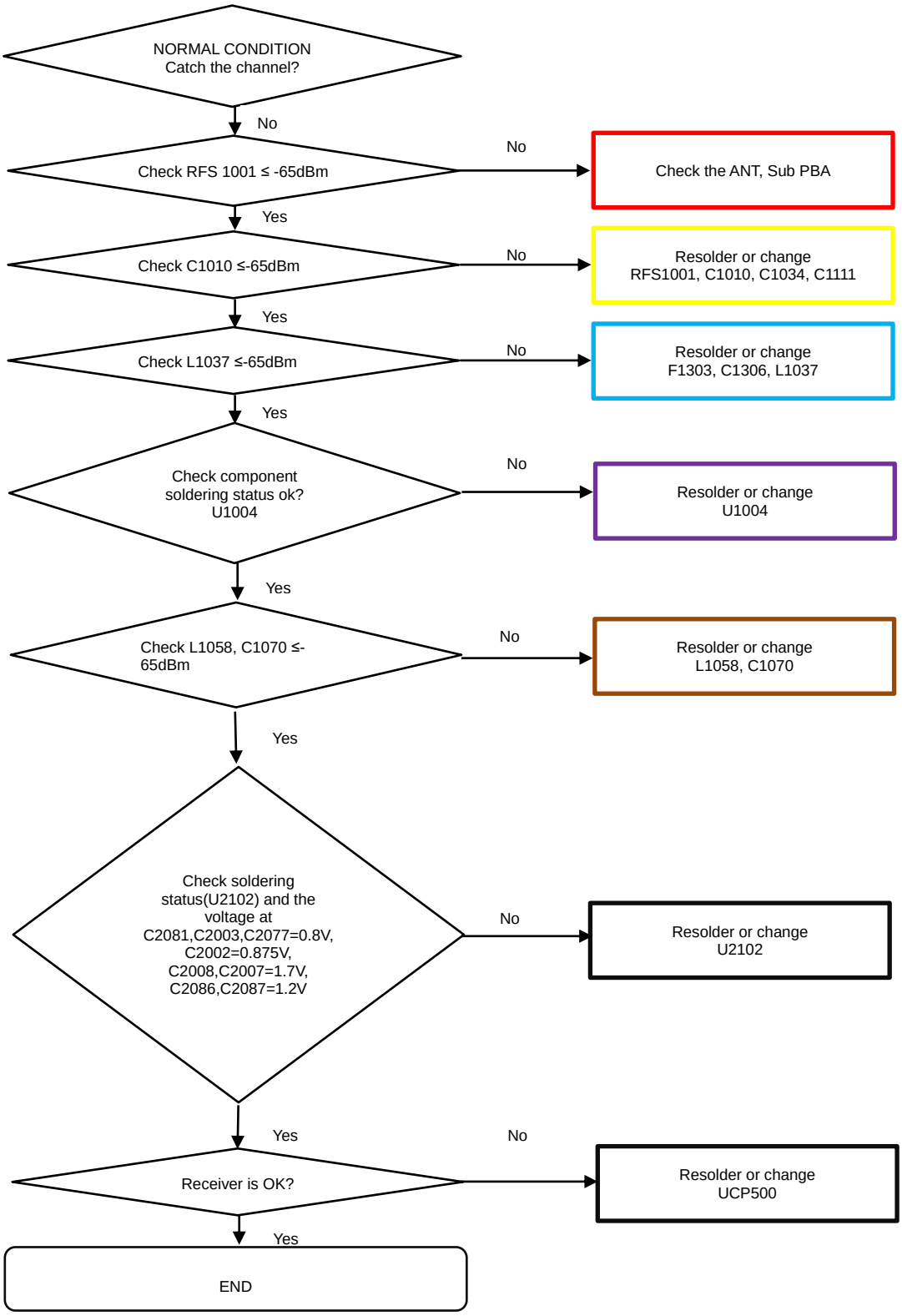
8-4-28. LTE B7/38/41 RX



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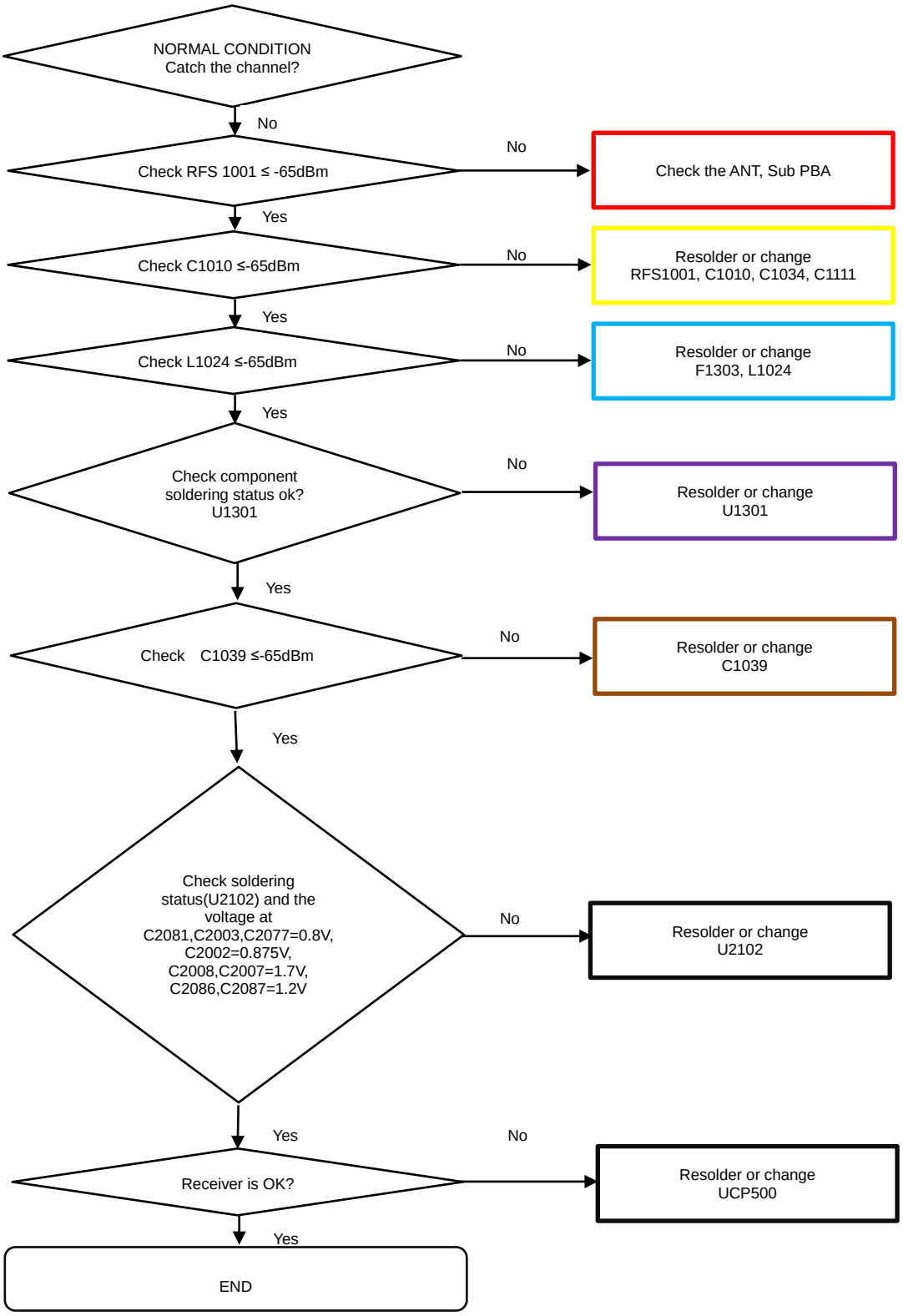
8-4-29. LTE B48 RX



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8-4-30. CDMA BC0/10, GSM 850/900, WCDMA B5/8, LTE B5/8/12/13/14/18/19/20/26/28/29/71 DRX

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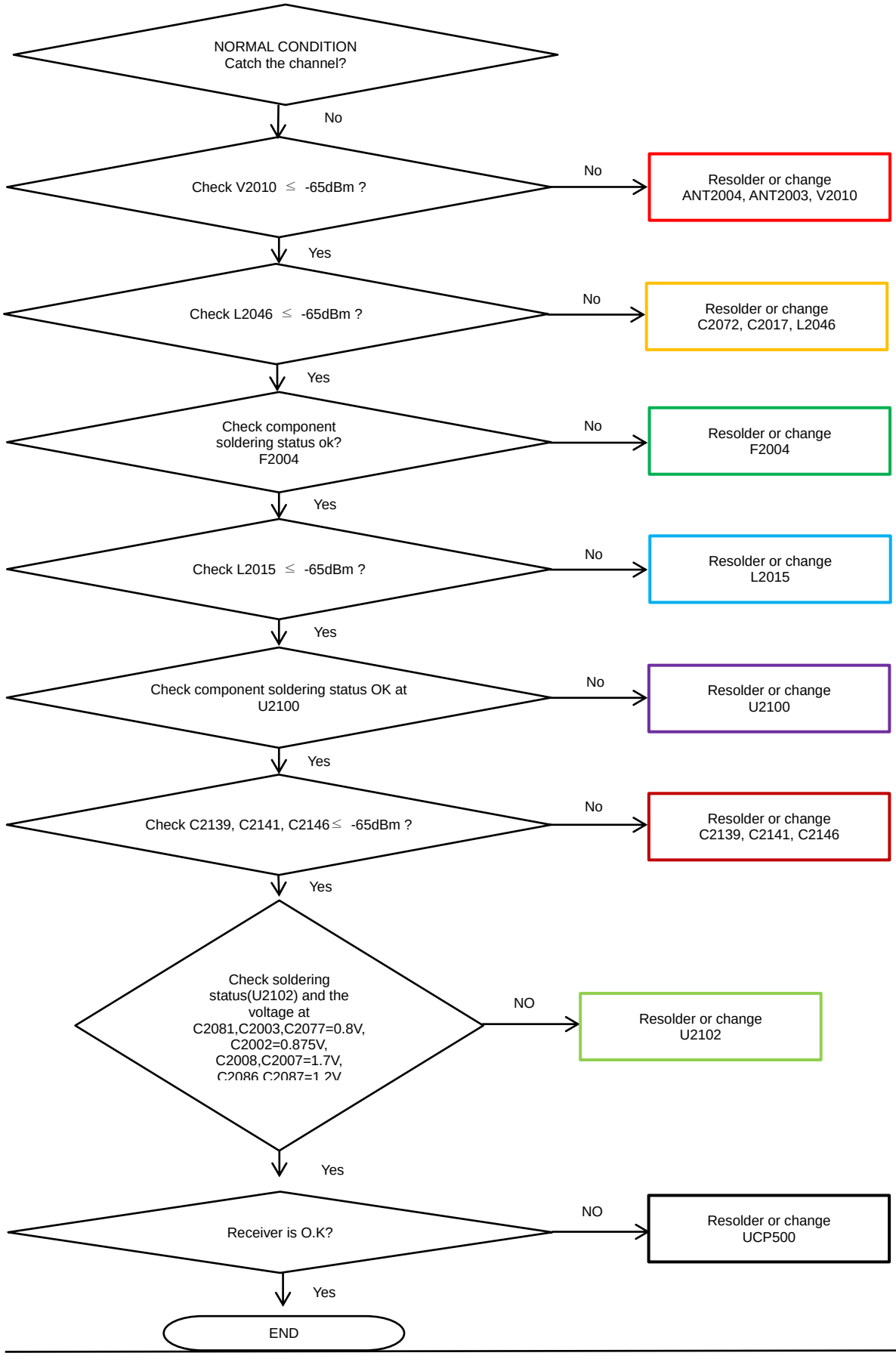
8-4-31. GSM1800/1900, CDMA BC1, WCDMA 1/2/4, LTE B1/2/3/4/7/25/30/38/40/66 DRX



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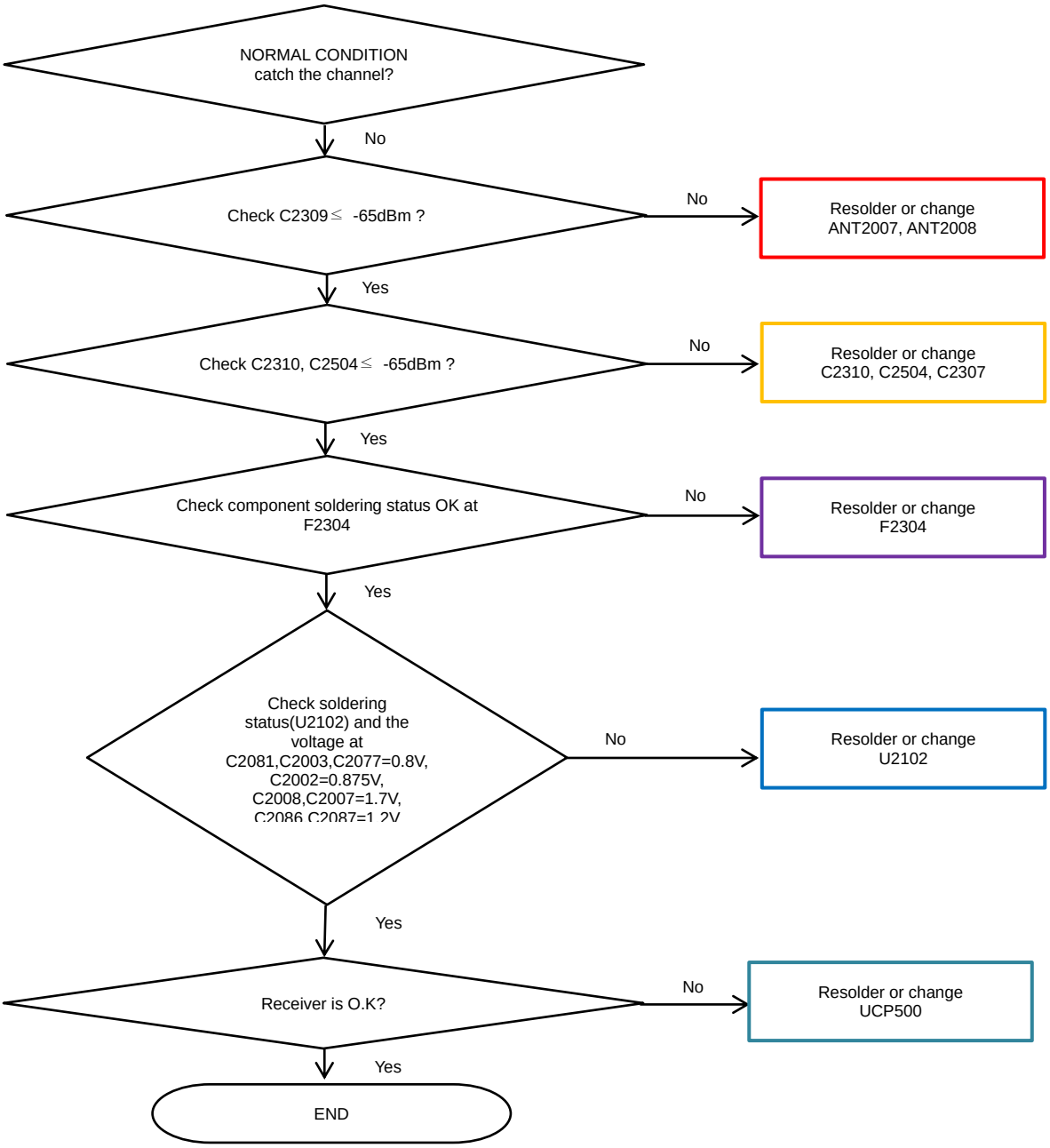
8-3-32. LTE 48 DRX



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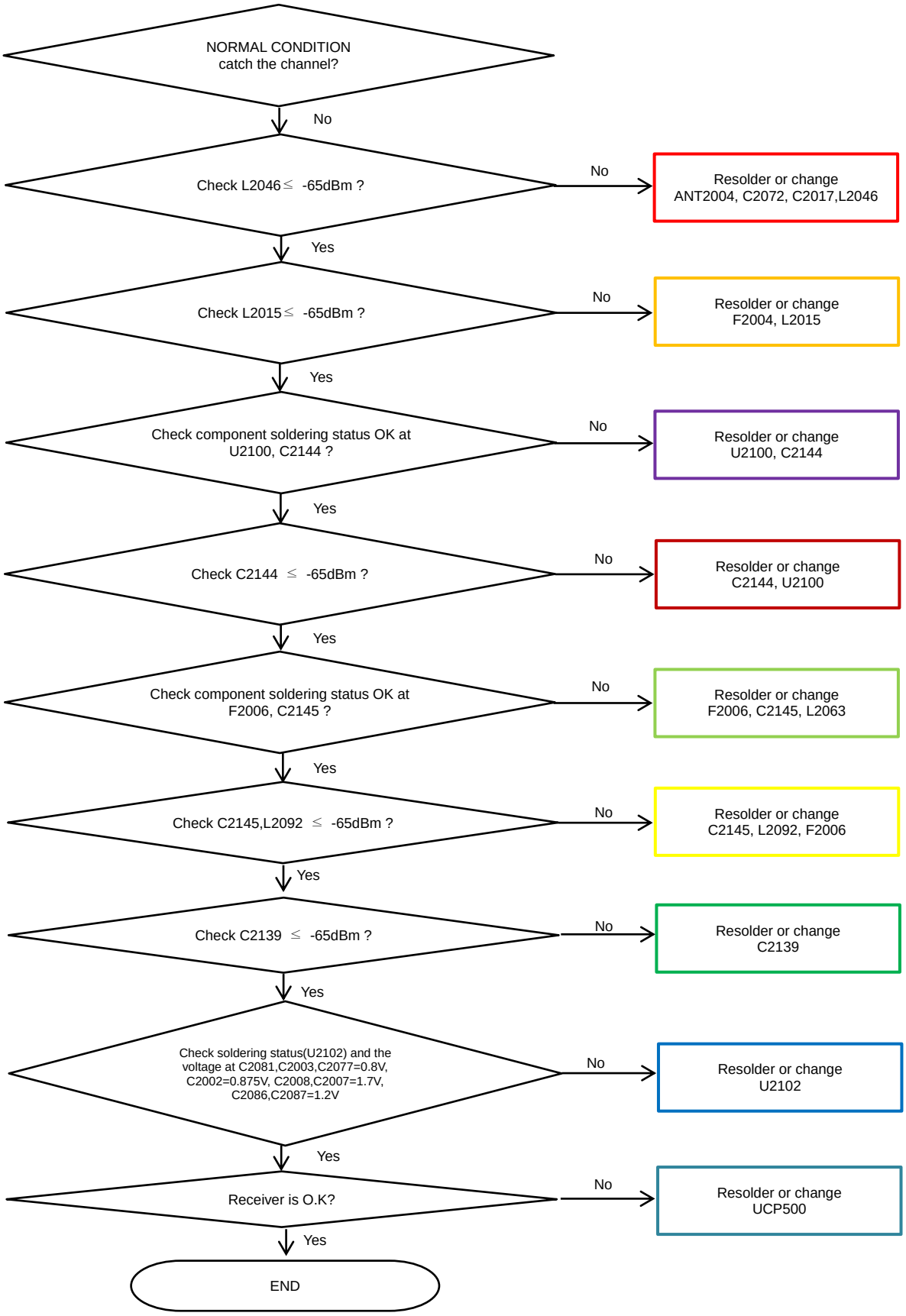
8-3-33. LTE 39/41 DRX



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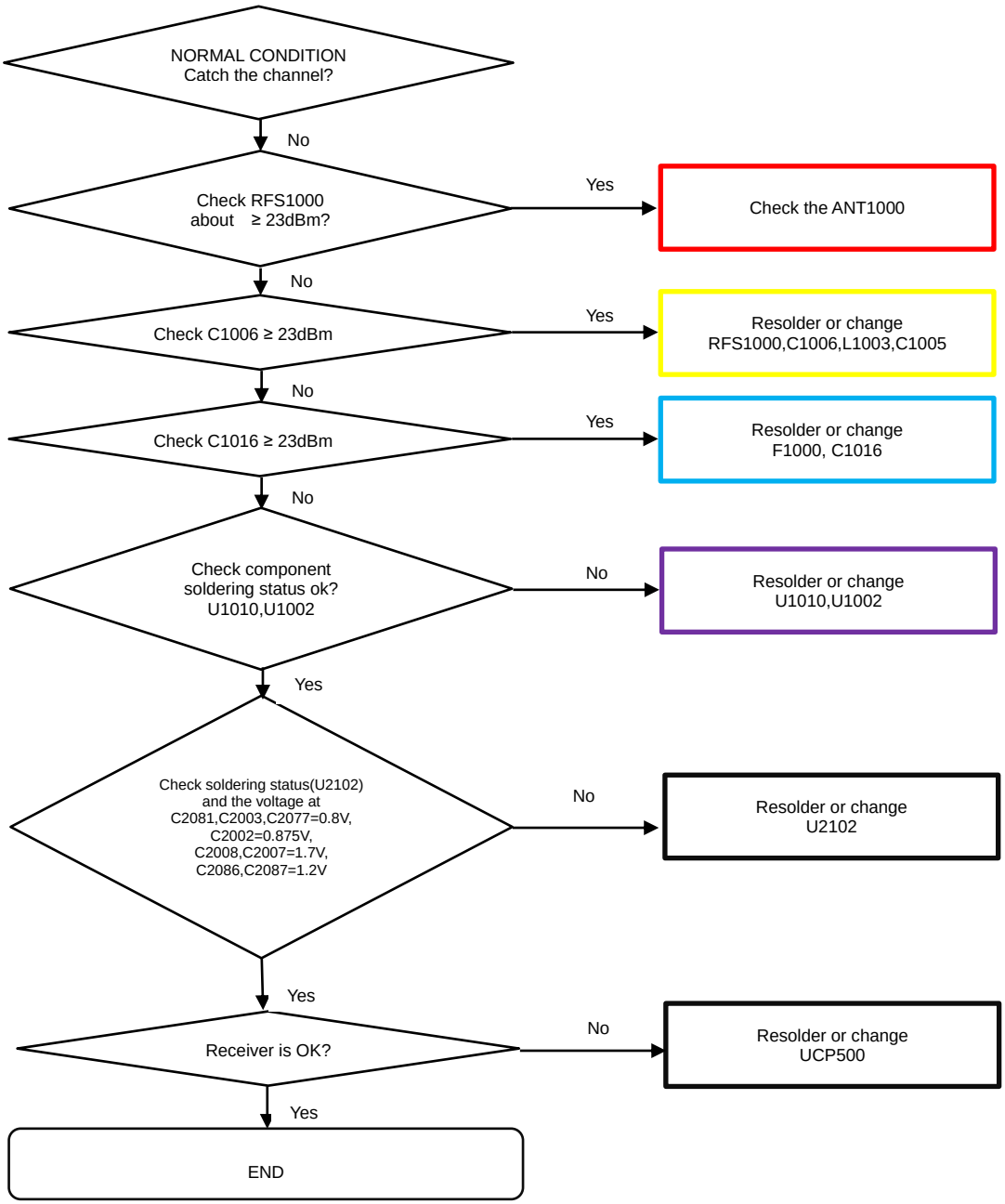
8-4-34. GSM 850/900 TX



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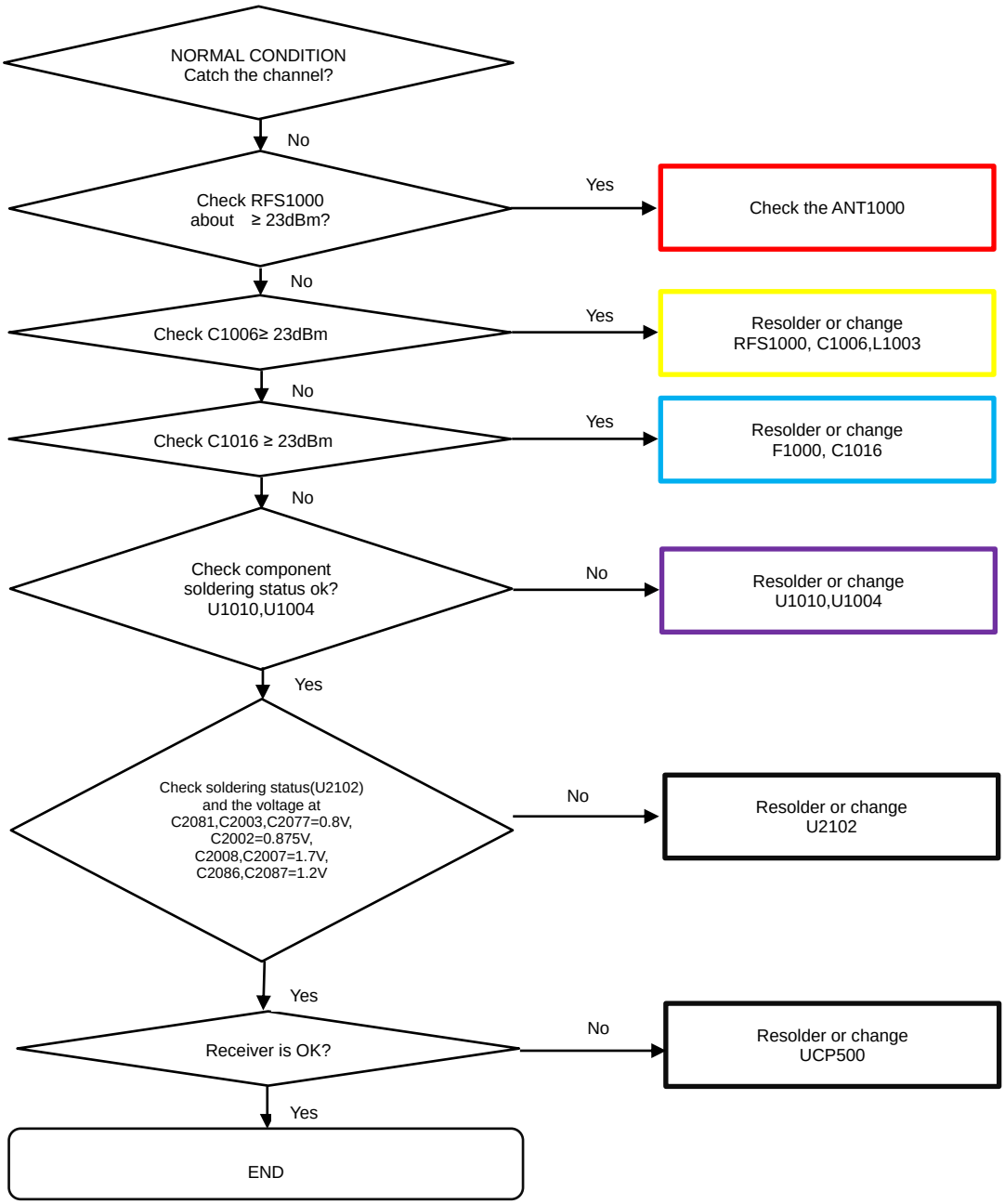
8-4-35. GSM 1800/1900 TX



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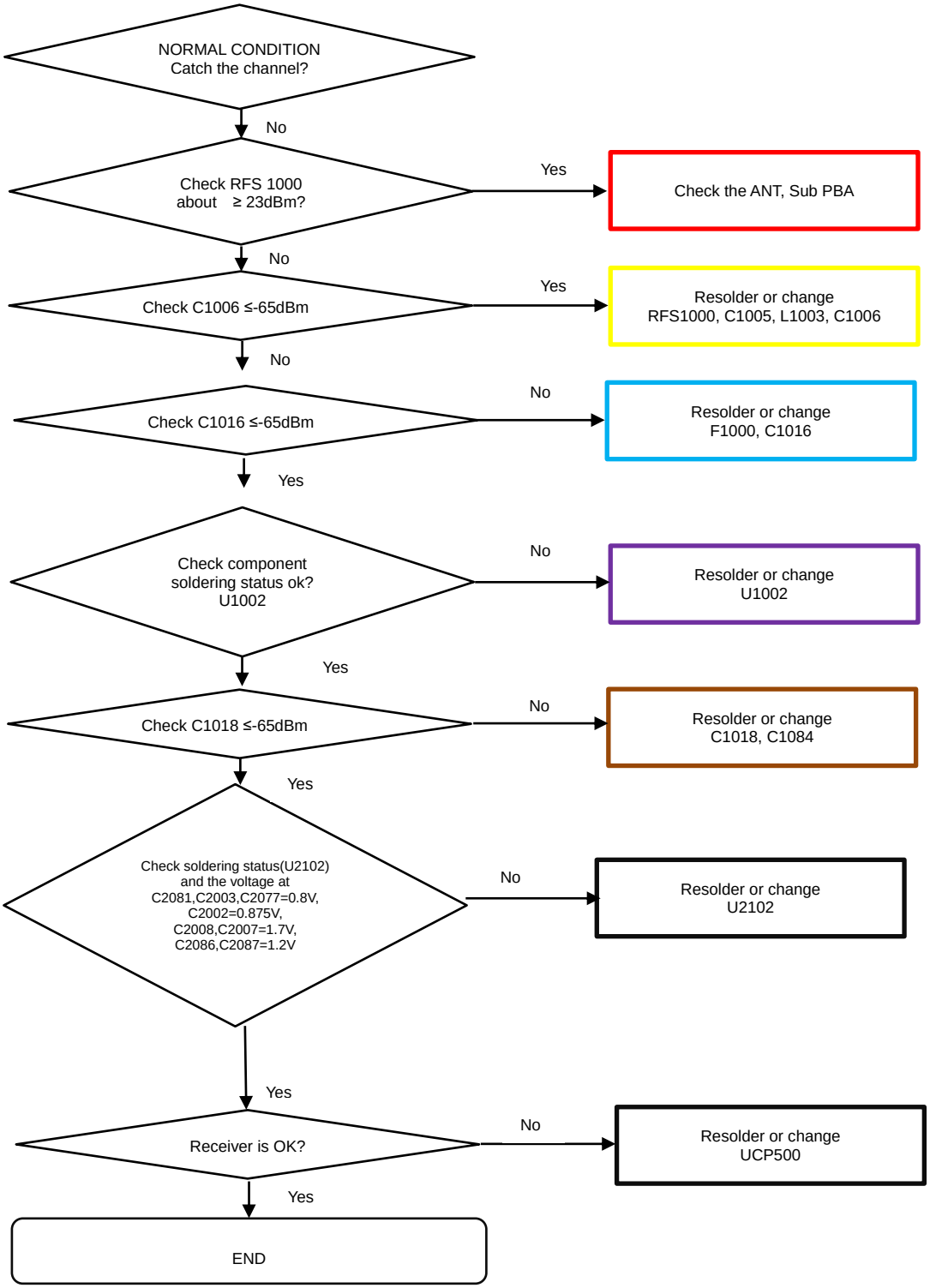
8-4-36. CDMA BC0/10, WCDMA B5/8, LTE B5/8/12/13/17/18/19/20/26/28/29 TX



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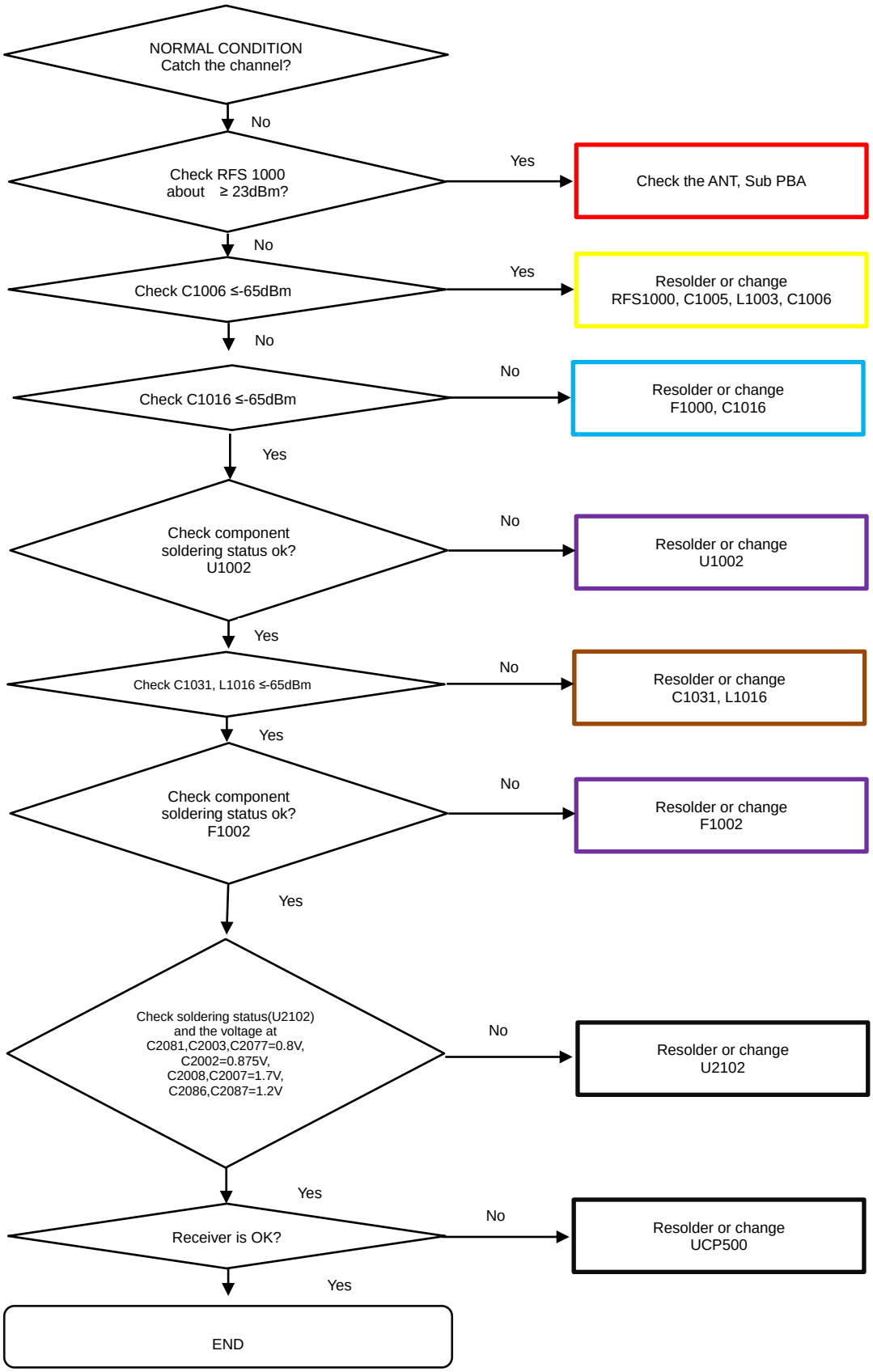
8-4-37. LTE B14 TX



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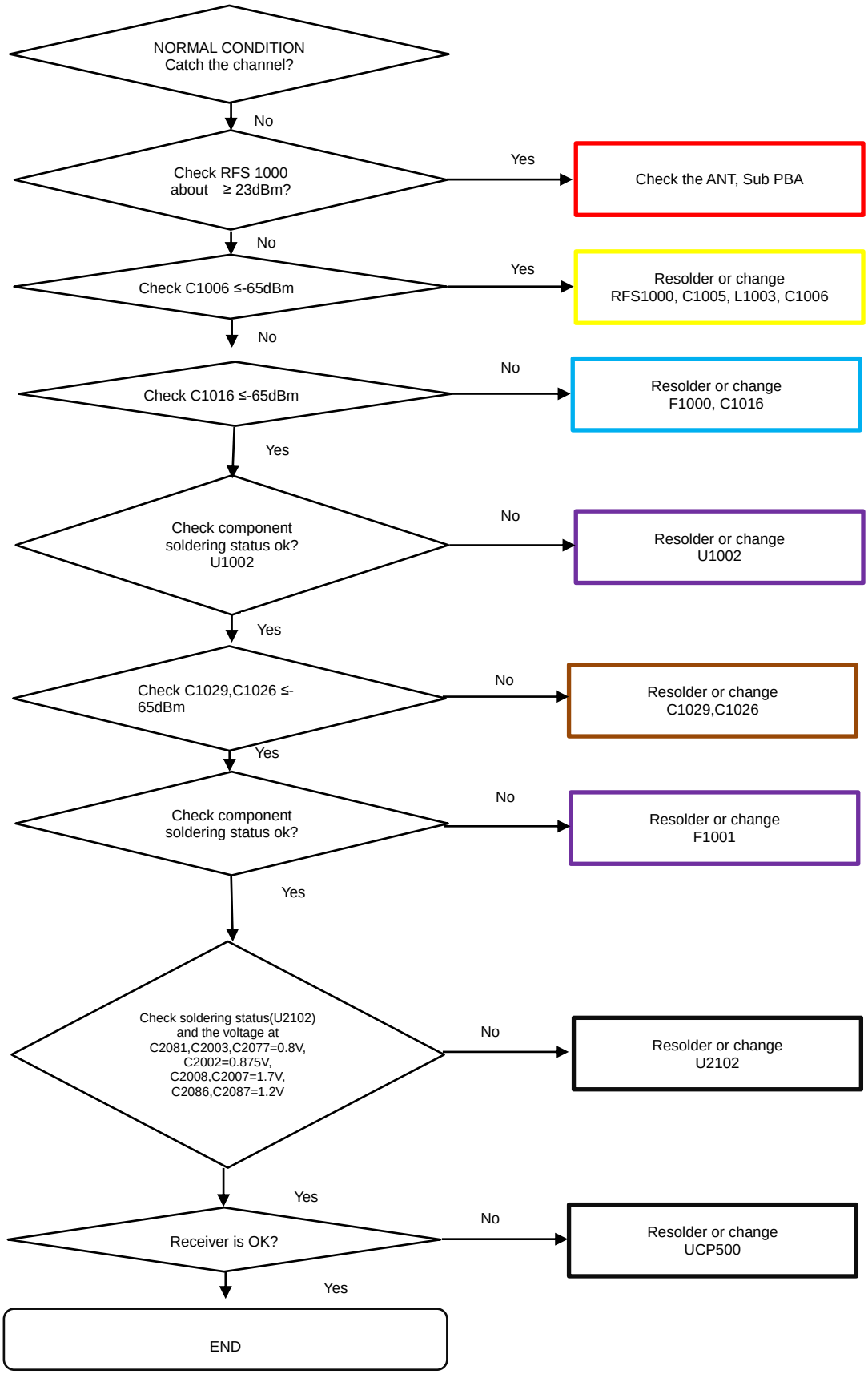
8-4-38. LTE B71 TX



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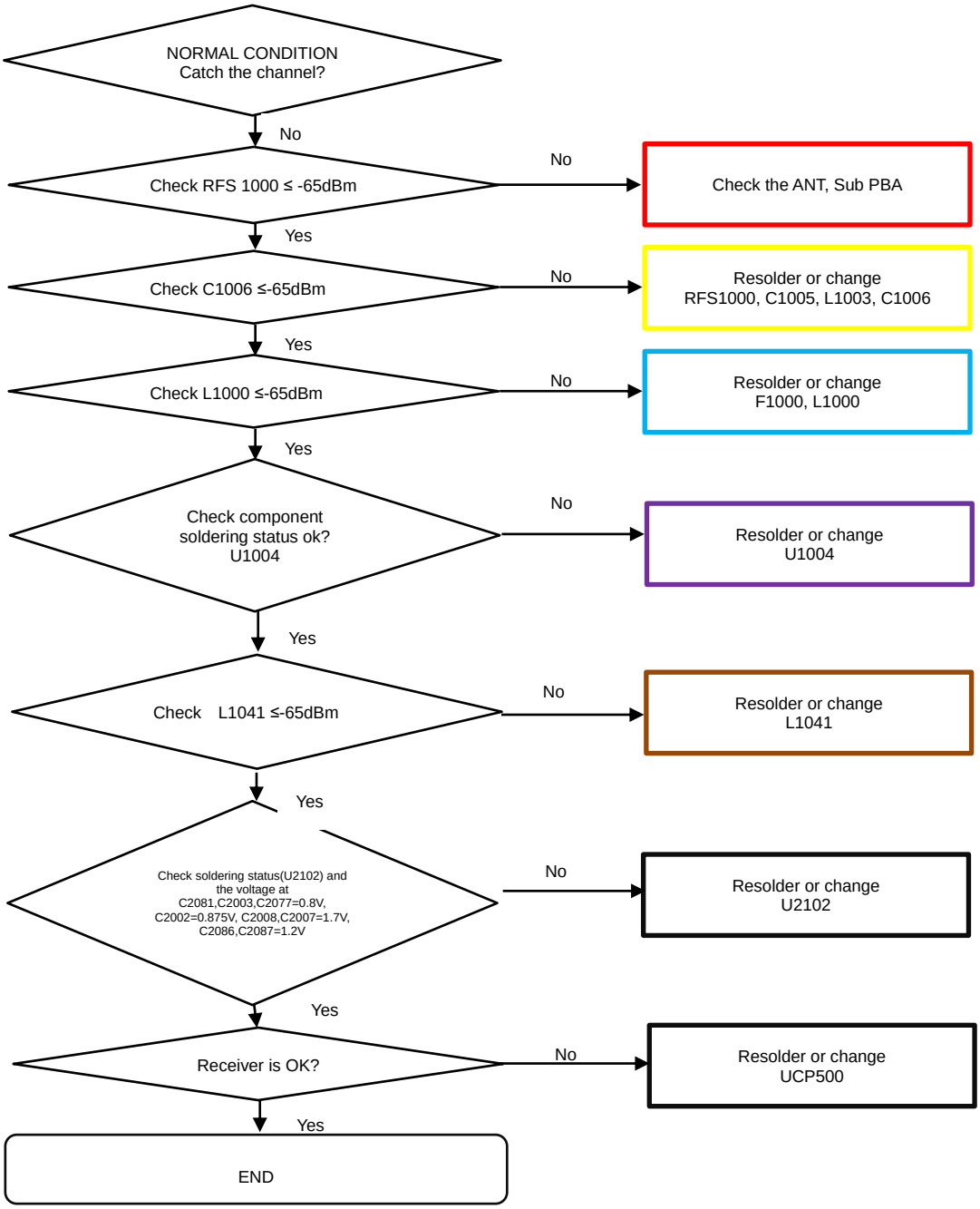
8-4-39. CDMA BC1, GSM 1800/1900, WCDMA B1/2/4, TDSCDMA B34/39, LTE B1/2/3/4/25/66 TX



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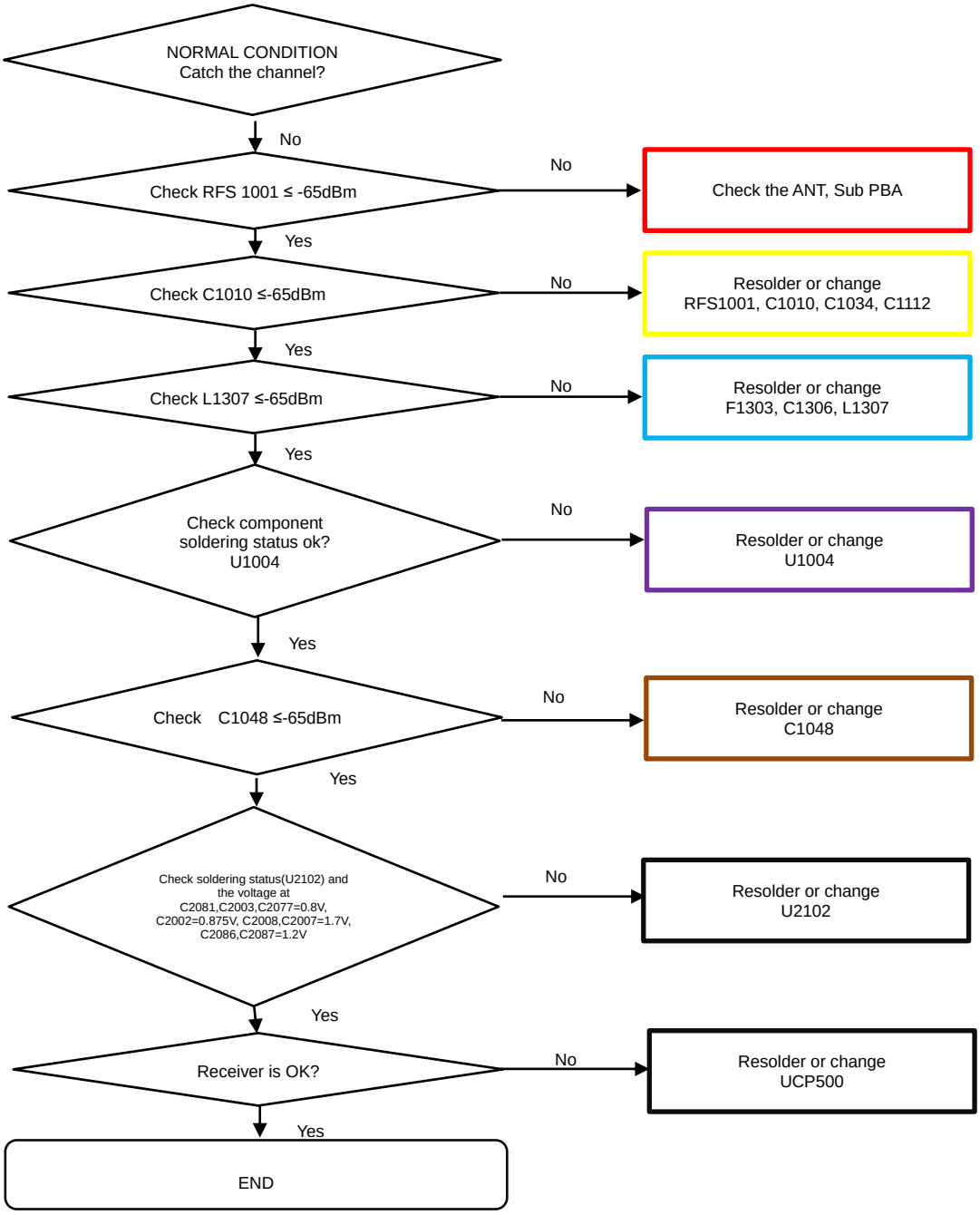
8-4-40. LTE B7/38/41 TX



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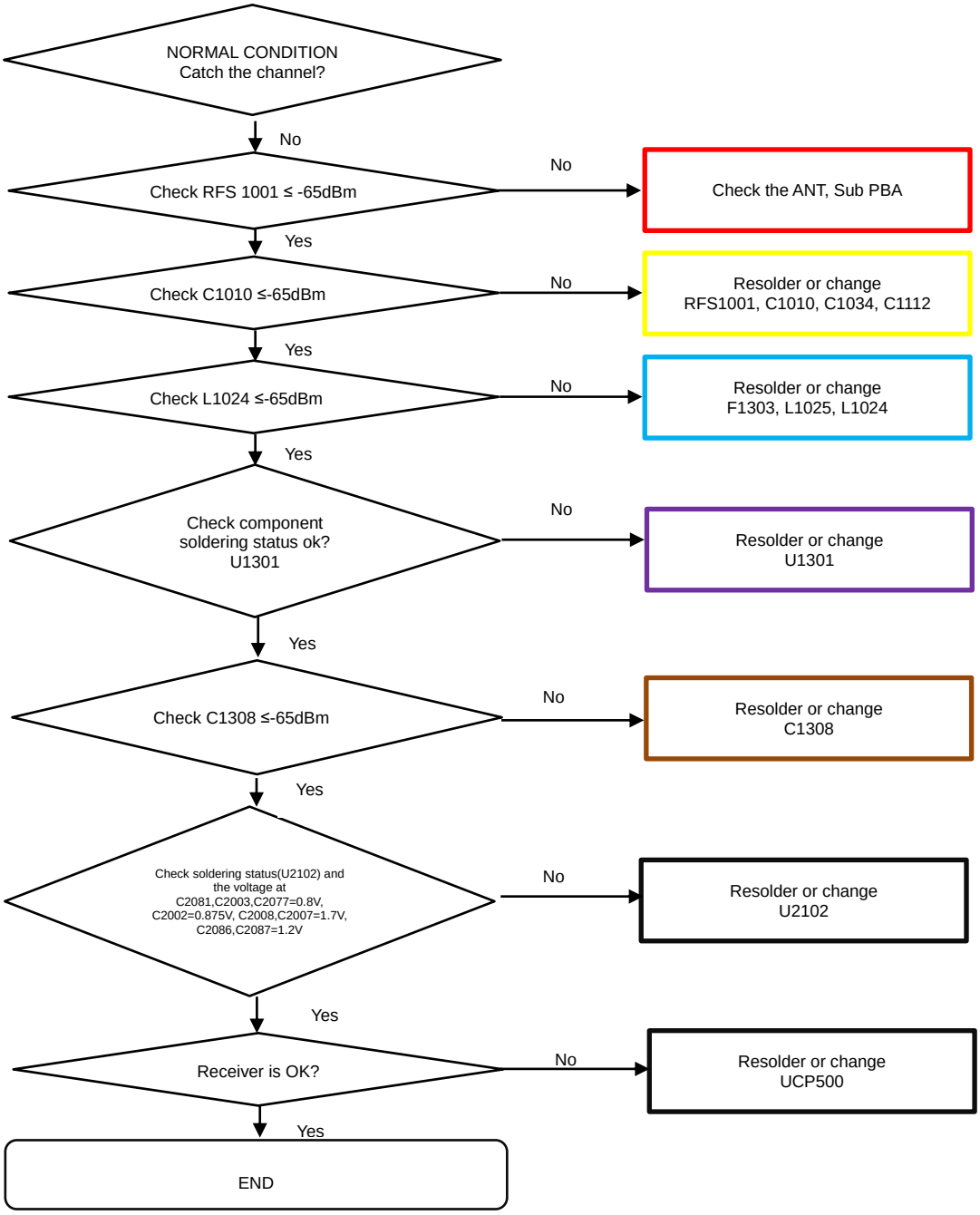
8-4-41. LTE B48 TX



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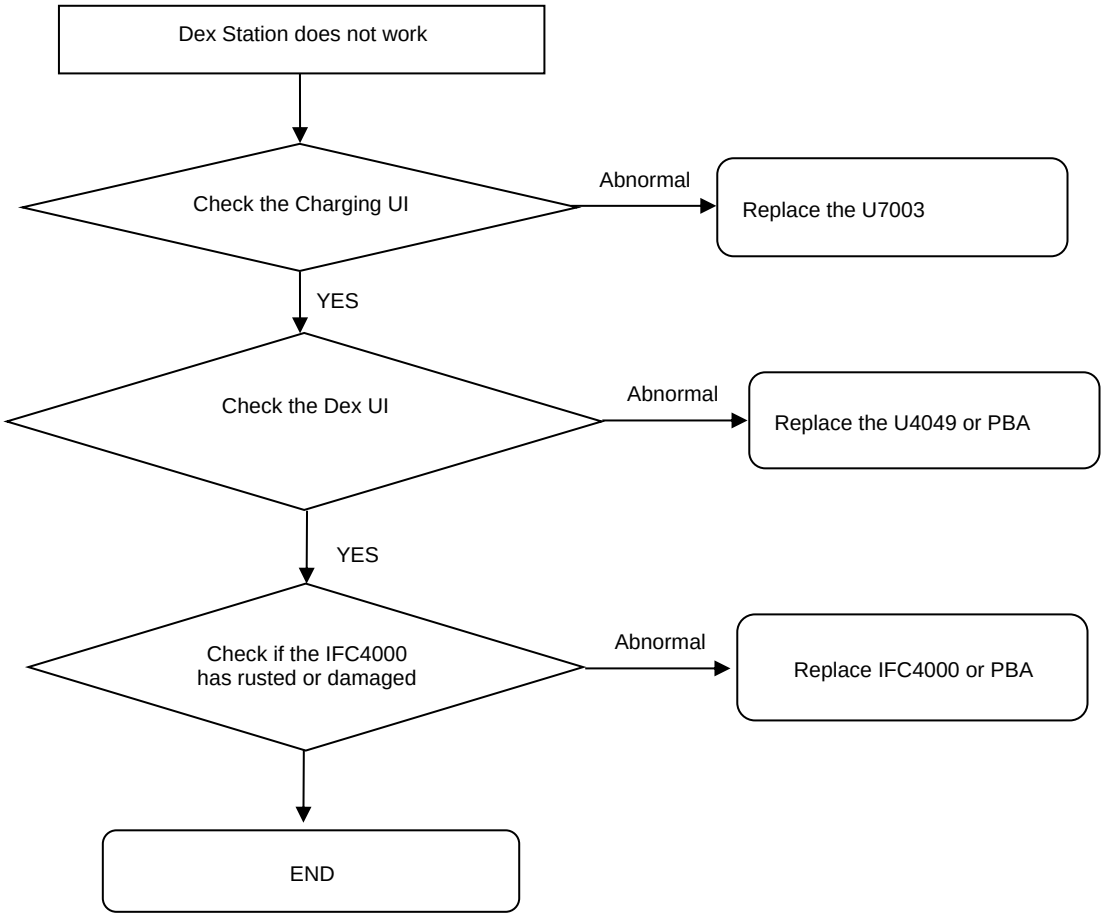
8-4-42. Dex Station



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