

FCC WPT REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do,
16677, Rep. of Korea

Date of Issue:
October 29, 2020

Test Site/Location:
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-
si, Gyeonggi-do, 17383 KOREA

Report No.: HCT-RF-2010-FC006

FCC ID: A3LSMG991U

APPLICANT: SAMSUNG Electronics Co., Ltd.

Model: SM-G991U

Additional Model: SM-G991U1

EUT Type: Mobile Phone

**Frequency of Operation
& Max. Transmit Power:** 110 kHz ~ 148 kHz(Power sharing) : 7.21 dBuV/m @300 m

FCC Classification: Part 15 Low Power Transmitter Below 1705 kHz (DCD)

FCC Rule Part(s): FCC Part 15, Subpart C (15.209)

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Report No.: HCT-RF-2010-FC006

REVIEWED BY



Report prepared by : Jung Ki Lim
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2010-FC006	October 29, 2020	- First Approval Report

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1. EUT DESCRIPTION

Model	SM-G991U
Additional Model	SM-G991U1
EUT Type	Mobile Phone
Power Supply	DC 3.88 V
Battery Information	Model: EB-BG991ABY Type: Li-ion Battery
Travel Adapter Information	Model : EP-TA800 Manufacture: DONGYANG E&P
Data Cable Information	Model : EP-DN980BBZ Manufacture: RF-Tech
Ear-jack Information	Model : YBD-19HS-026 Manufacture: ALMUS
Frequency of Operation	110 kHz ~ 148 kHz(Power sharing)
Max. Transmit Power	7.21 dBuV/m @300 m
Date(s) of Tests	September 15, 2020 ~ October 28, 2020

2. TEST METHODOLOGY

The measurement procedure described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Device (ANSI C63.10-2013) is used in the measurement of the test device.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013).

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

4. FACILITIES AND ACCREDITATIONS

FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil,

Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.

The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- (1) The antennas of this E.U.T are permanently attached.
- (2) The E.U.T Complies with the requirement of §15.203

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence.

The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

7. Worst case configuration

Mode	EUT State	Position of Client device	Battery of Client device	Client device
Power sharing	Charging from EUT to Client device (See Note 3)	Aligned	1 % ~ 20 %	Phone (See Note 2)
			20 % ~ 50 %	
			90 % ~ 100 %	
		Cross	1 % ~ 20 %	
			20 % ~ 50 %	
			90 % ~ 100 %	
	Charging from EUT(Charging from TA) to Client device	Aligned	1 % ~ 20 %	
			20 % ~ 50 %	
			90 % ~ 100 %	
		Cross	1 % ~ 20 %	
			20 % ~ 50 %	
			90 % ~ 100 %	

Note:

1. Client device:

Of Phone and Wearable device, we tested on Phone.

2. Phone(Client device):

- Model : SM-G986B/DS

- Manufacturer : SAMSUNG

- FCC ID : A3LSMG986B

3. EUT can operate the power sharing mode when battery level is over 30%.

Because test results are not different between fully charged status and battery level 30% status(EUT condition), test were performed fully charged condition.

4. All position of loop antenna were investigated and the worst position results are reported.

- Position : Horizontal, Vertical, Parallel to the ground plane

- Worst Position : Horizontal

5. The EUT was tested in three orthogonal axis(X, Y, Z) and the worst position results are reported.

- Axis : X, Y, Z

- Worst Axis : X

6. SM-G991U, SM-G991U1 were tested and the worst case results are reported.

(Worst case : SM-G991U)

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.

- Mode : EUT + External accessories(Earphone, etc) + Travel Adapter + Phone(Client device)
 , EUT + Travel Adapter + Phone(Client device)

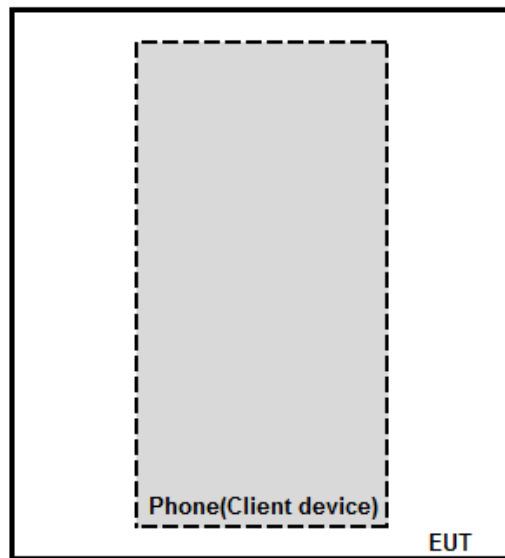
- Worstcase : EUT + Travel Adapter + Phone(Client device)

2. SM-G991U, SM-G991U1 were tested and the worst case results are reported.

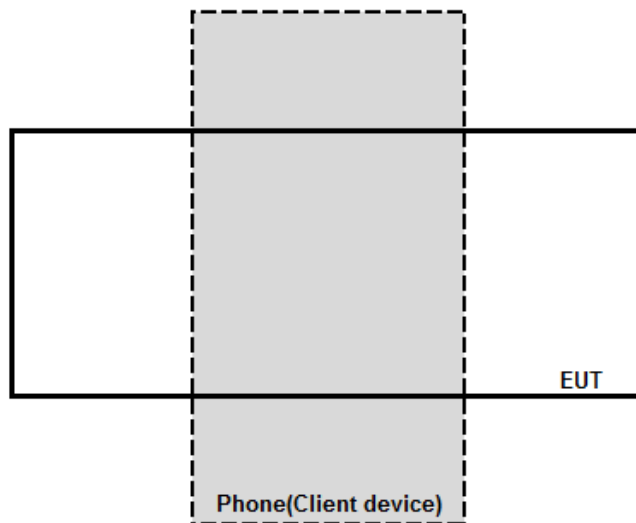
(Worst case : SM-G991U)

Test Setup Diagram:

Aligned



Cross



8. TEST SUMMARY

Test Description	FCC Rule	Limit	Condition	Result
Radiated emission	§15.209	cf. Section 9	Radiated	Pass
AC Power Line Conducted Emission	§15.207	cf. Section 10		Pass
Emission bandwidth.	§2.1049	<u>See note1</u>		<u>See note1</u>

Note:

1. For reporting purposes only.

9. RADIATED EMISSION MEASUREMENT

Test Settings

1. Analyzer frequency set to the frequency of the radiated spurious emissipn of interst
2. RBW :
 - 9kHz – 150kHz : 300Hz
 - 150kHz – 30MHz : 10kHz
 - 30MHz – 1GHz : 100kHz
3. VBW : $\geq 3 \times$ RBW
4. Sweep time : Auto couple
5. Detector : Peak
6. Trace : Maxhold
7. Trace was allowed to stabilize

Limit(FCC)

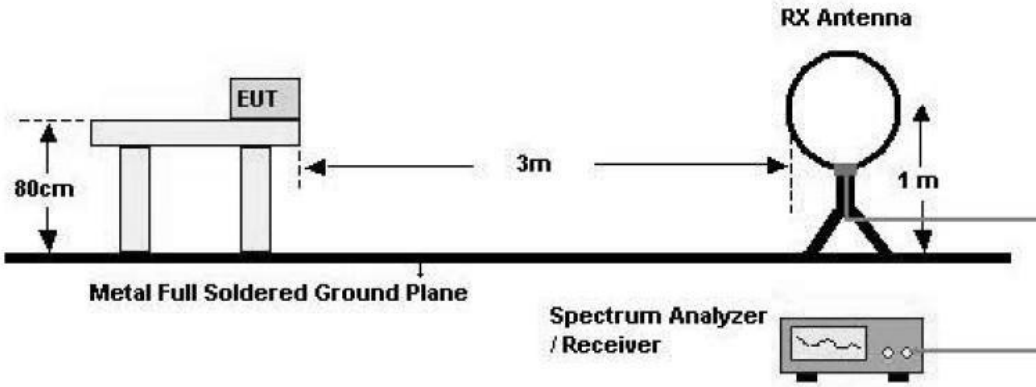
Except as provided elsewhere in this paragraph the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Rule Part	Frequency (MHz)	Limit
Part 15.209	0.009 ~ 0.490	2400/F(kHz) uV/m@300 m
	0.490 ~1.705	24000/F(kHz) uV/m@30 m
	1.705 ~ 30	30 uV/m@30 m
	30 ~ 88	100 ** uV/m@3 m
	88 ~ 216	150 ** uV/m@3 m
	216 ~ 960	200 ** uV/m@3 m
	Above 960	500 uV/m@3 m

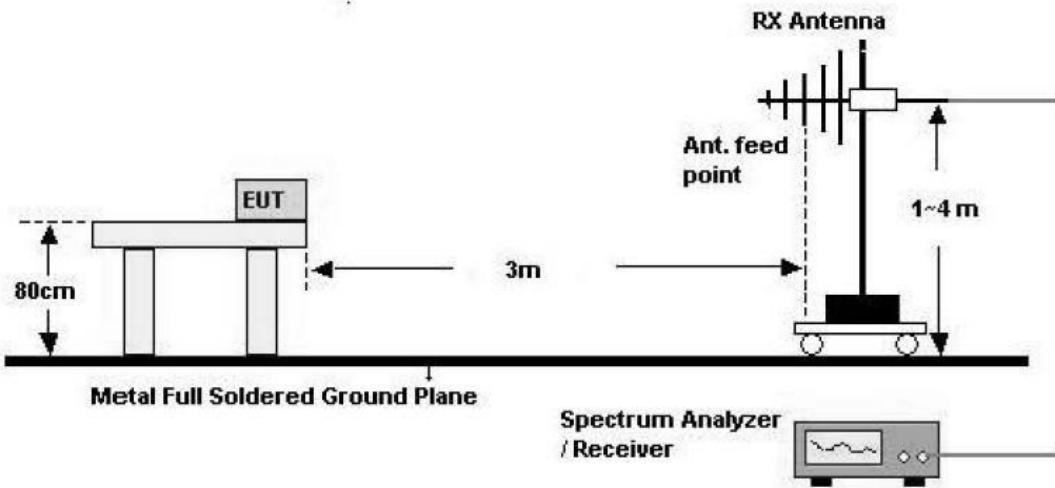
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

Test Set-up

Below 30 MHz



30 MHz - 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT.
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The limit is converted from microvolts/meter to decibel microvolts/meter. Sample Calculation:
 - * Result level(dB μ V/m@30m)
= Reading level(dB μ V/m@3m) + Ant factor(dB/m) + Cable Loss(dB) – Distance Correction Factor.
6. Distance Correction
 - * 0.009 MHz – 0.490 MHz :
 $40\log(3\text{ m}/300\text{ m}) = - 80\text{ dB}$
 - * 0.490 MHz – 30MHz :
 $40\log(3\text{ m}/30\text{ m}) = - 40\text{ dB}$
7. Plots were taken without using any correction factors.
8. The worst case plots are reported.

KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 1GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3m from the EUT, which is varied from 1m to 4m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Setting
 - (1) Measurement Type(Peak):
 - Measured Frequency Range : 30 MHz – 1 GHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 100 kHz
 - VBW \geq 3 x RBW
7. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Result
Test Result

Frequency (kHz)	Reading Level (dBuV/m)@3m	Ant.Factor (dB/m)	Cable Loss (dB)	Distance Correction (dB)	Result Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
19.101	35.650	17.9	0.42	-80	-26.03	41.98	68.01
# 113.35	68.344	17.1	0.42	-80	5.86	26.51	20.65
115.35	33.805	17.1	0.42	-80	-28.68	26.37	55.05
340.95	46.789	17.1	0.42	-80	-15.69	16.95	32.64
7563	15.683	18.0	0.42	-40	-5.90	29.54	35.44

Note

1. “#” Fundamental Frequency
2. EUT Mode: Charging from EUT to Phone
3. Position: Aligned
4. 30 MHz – 1GHz : No Critical peaks found
5. The fundamental frequency(110kHz – 148kHz) varies depending on the position of client device.
All fundamental frequency were investigated and the worst results are reported.

Frequency (kHz)	Reading Level (dBuV/m)@3m	Ant.Factor (dB/m)	Cable Loss (dB)	Distance Correction (dB)	Result Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
19.101	35.868	17.9	0.42	-80	-25.81	41.98	67.79
# 113.55	69.694	17.1	0.42	-80	7.21	26.50	19.29
115.55	31.372	17.1	0.42	-80	-31.11	26.35	57.46
340.95	47.756	17.1	0.42	-80	-14.72	16.95	31.67
3297	15.649	17.8	0.42	-40	-6.13	29.54	35.67

Note

1. “#” Fundamental Frequency
2. EUT Mode: Charging from EUT(Charging from TA) to Phone
3. Position: Aligned
4. 30 MHz – 1GHz : No Critical peaks found
5. The fundamental frequency(110kHz – 148kHz) varies depending on the position of client device.
All fundamental frequency were investigated and the worst results are reported.

Frequency (kHz)	Reading Level (dBuV/m)@3m	Ant.Factor (dB/m)	Cable Loss (dB)	Distance Correction (dB)	Result Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
19.010	35.760	17.9	0.4	-80	-25.92	42.02	67.94
# 113.45	68.035	17.1	0.4	-80	5.55	26.51	20.96
115.45	29.152	17.1	0.4	-80	-33.33	26.36	59.69
338.1	46.818	17.1	0.4	-80	-15.66	17.03	32.69
7563	17.273	18.0	0.4	-40	-4.31	29.54	33.85

Note

1. “#” Fundamental Frequency
2. EUT Mode: Charging from EUT to Phone
3. Position: Cross
4. 30 MHz – 1GHz : No Critical peaks found
5. The fundamental frequency(110kHz – 148kHz) varies depending on the position of client device.
All fundamental frequency were investigated and the worst results are reported.

Frequency (kHz)	Reading Level (dBuV/m)@3m	Ant.Factor (dB/m)	Cable Loss (dB)	Distance Correction (dB)	Result Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
19.192	35.994	17.9	0.42	-80	-25.69	41.94	67.63
#113.60	69.525	17.1	0.42	-80	7.05	26.50	19.46
115.5	28.447	17.1	0.42	-80	-34.03	26.35	60.38
340.95	49.672	17.1	0.42	-80	-12.81	16.95	29.76
7563	17.144	18.0	0.42	-40	-4.44	29.54	33.98

Note

1. “#” Fundamental Frequency
2. EUT Mode: Charging from EUT(Charging from TA) to Phone
3. Position: Cross
4. 30 MHz – 1GHz : No Critical peaks found
5. The fundamental frequency(110kHz – 148kHz) varies depending on the position of client device.
All fundamental frequency were investigated and the worst results are reported.

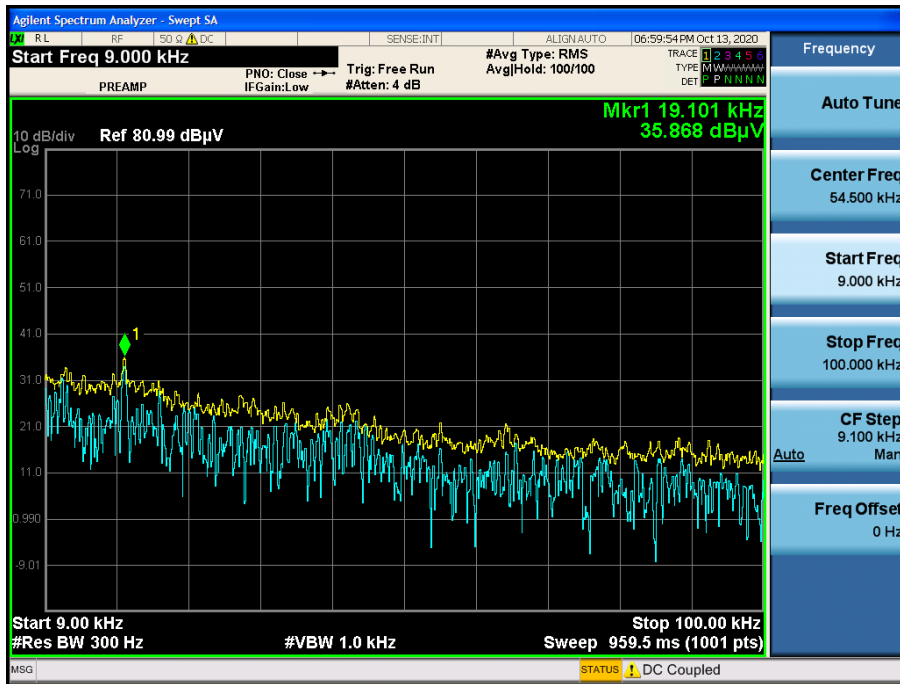
Test Plot

In order to simplify the report, the worst case results are reported.

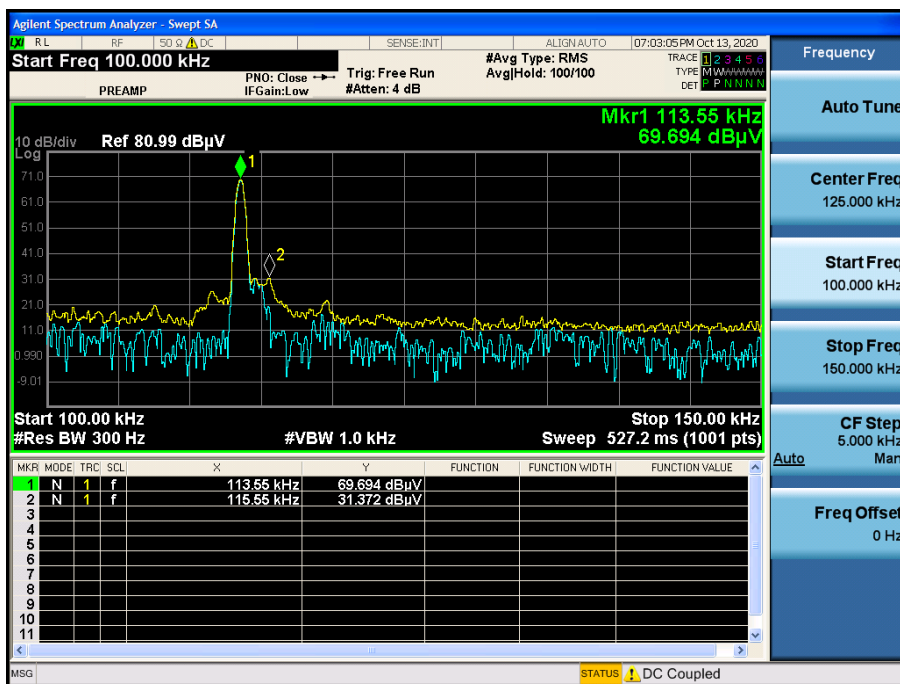
Worst case

- EUT Mode: Charging from EUT(Charging from TA) to Phone
- Position: Aligned

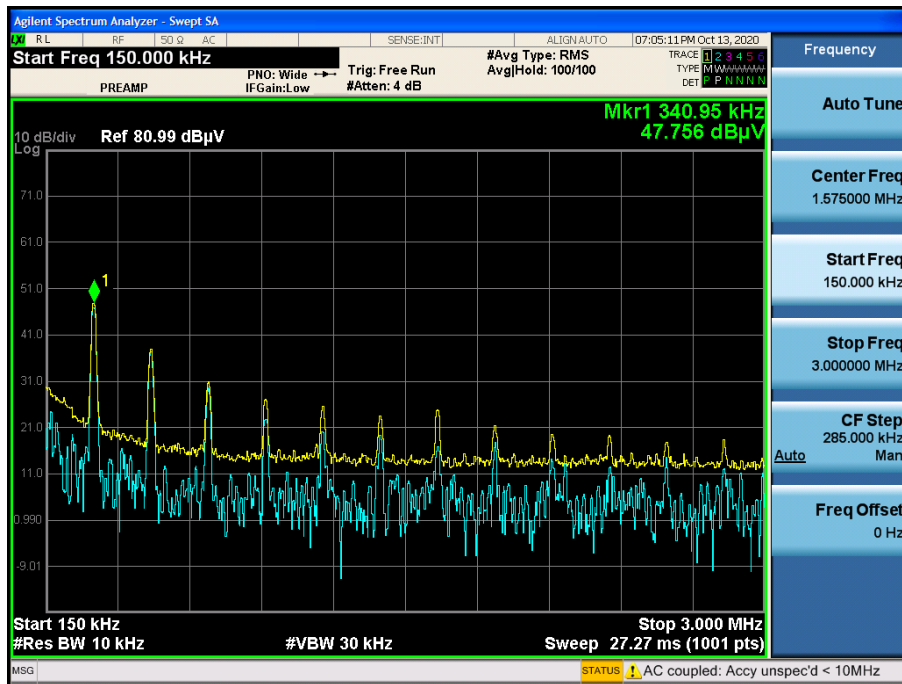
Frequency Range : 9 kHz – 100kHz



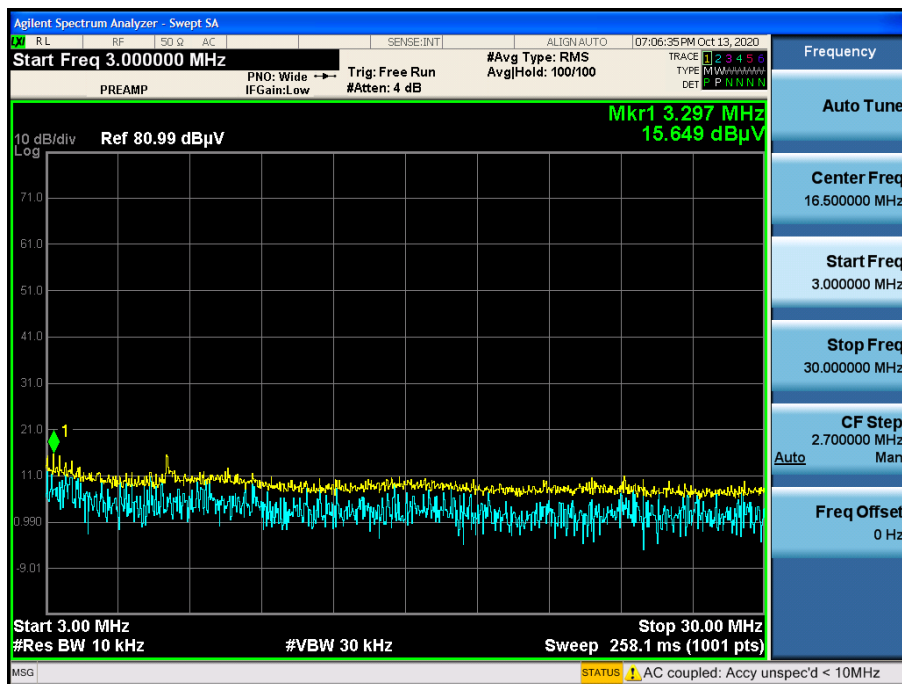
Frequency Range : 100 kHz – 150kHz



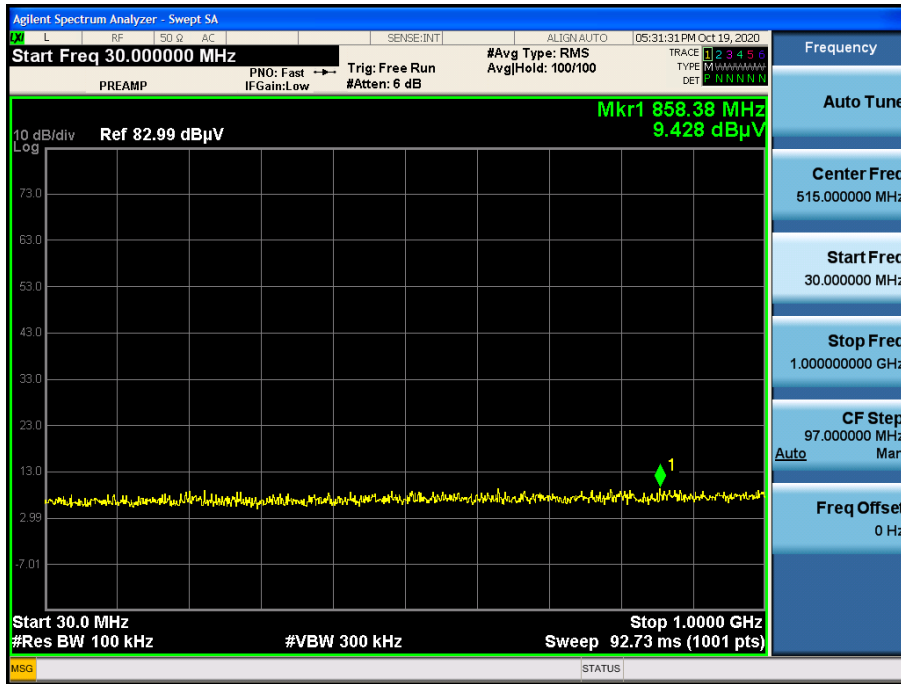
Frequency Range : 150 kHz – 3 MHz



Frequency Range : 3 MHz – 30 MHz



Frequency Range : 30 MHz – 1 GHz
(30 MHz – 1GHz : No Critical peaks found)



Note :

In order to simplify the report, attached plots were only the worstcase

10. POWERLINE CONDUCTE EMISSIONS

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 ^(a)	56 to 46 ^(a)
0.50 to 5	56	46
5 to 30	60	50

^(a)Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.
5. The EUT is the device operating below 30 MHz.
 - For unterminated the Antenna, the AC line conducted tests are performed with the antenna connected
 - For terminated the Antenna, the AC line conducted tests are performed with a dummy load connected to the EUT antenna output terminal.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

Test Result & Plot (Position: Aligned)
Conducted Emissions (Line 1)

Test

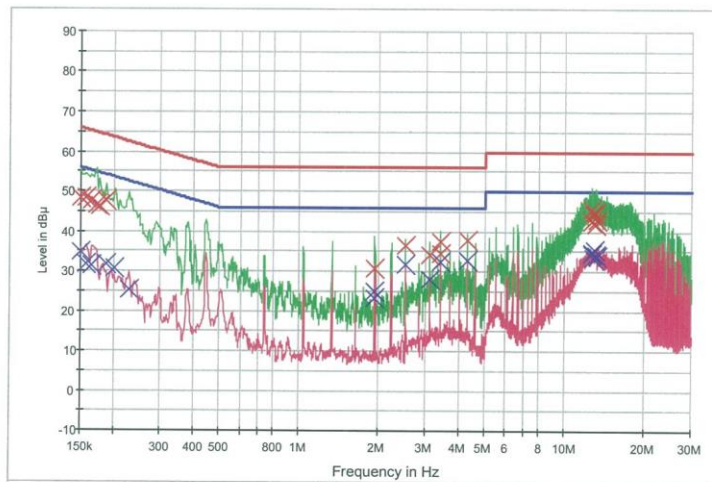
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HCT TEST Report

Common Information

EUT: SM-G991U
 Manufacturer: SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions: POWER SHARING ALIGNED 1~20% L1

FCC CLASS B_Exten Cable



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	48.3	9.000	Off	L1	9.8	17.7	66.0
0.158000	48.3	9.000	Off	L1	9.8	17.3	65.6
0.164000	47.6	9.000	Off	L1	9.8	17.6	65.3
0.172000	46.7	9.000	Off	L1	9.8	18.2	64.9
0.176000	46.2	9.000	Off	L1	9.8	18.5	64.7
0.188000	47.6	9.000	Off	L1	9.8	16.5	64.1
1.928000	30.8	9.000	Off	L1	9.9	25.2	56.0
2.522000	36.5	9.000	Off	L1	9.9	19.5	56.0
3.114000	34.1	9.000	Off	L1	9.9	21.9	56.0
3.410000	37.6	9.000	Off	L1	9.9	18.5	56.0
3.414000	34.4	9.000	Off	L1	9.9	21.6	56.0
4.300000	37.7	9.000	Off	L1	10.0	18.3	56.0
12.574000	45.6	9.000	Off	L1	10.3	14.4	60.0
12.624000	42.5	9.000	Off	L1	10.3	17.5	60.0
12.716000	44.7	9.000	Off	L1	10.3	15.3	60.0
13.016000	44.5	9.000	Off	L1	10.3	15.5	60.0
13.024000	41.7	9.000	Off	L1	10.3	18.3	60.0
13.300000	42.7	9.000	Off	L1	10.3	17.3	60.0

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Test

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Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	34.8	9.000	Off	L1	9.8	21.2	56.0
0.158000	31.7	9.000	Off	L1	9.8	23.9	55.6
0.164000	31.5	9.000	Off	L1	9.8	23.8	55.3
0.188000	31.6	9.000	Off	L1	9.8	22.5	54.1
0.200000	30.5	9.000	Off	L1	9.8	23.1	53.6
0.228000	25.4	9.000	Off	L1	9.8	27.1	52.5
1.926000	25.0	9.000	Off	L1	9.9	21.0	46.0
1.930000	23.3	9.000	Off	L1	9.9	22.7	46.0
2.522000	31.6	9.000	Off	L1	9.9	14.4	46.0
3.114000	28.1	9.000	Off	L1	9.9	17.9	46.0
3.410000	32.4	9.000	Off	L1	9.9	13.6	46.0
4.300000	32.8	9.000	Off	L1	10.0	13.2	46.0
12.574000	34.8	9.000	Off	L1	10.3	15.2	50.0
12.688000	34.3	9.000	Off	L1	10.3	15.7	50.0
12.736000	33.4	9.000	Off	L1	10.3	16.6	50.0
12.902000	35.5	9.000	Off	L1	10.3	14.5	50.0
13.024000	34.2	9.000	Off	L1	10.3	15.8	50.0
13.300000	33.7	9.000	Off	L1	10.3	16.3	50.0

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Conducted Emissions (Line 2)

Test

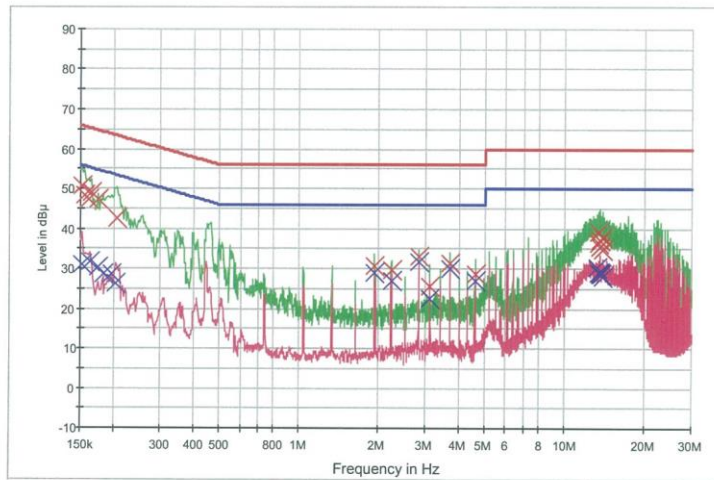
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HCT TEST Report

Common Information

EUT: SM-G991U
 Manufacturer: SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions: POWER SHARING ALIGNED 1~20% N

FCC CLASS B_Exten Cable



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	50.6	9.000	Off	N	9.8	15.2	65.9
0.156000	48.2	9.000	Off	N	9.8	17.5	65.7
0.160000	47.4	9.000	Off	N	9.8	18.0	65.5
0.164000	49.1	9.000	Off	N	9.8	16.2	65.3
0.174000	47.3	9.000	Off	N	9.8	17.5	64.8
0.206000	42.5	9.000	Off	N	9.8	20.9	63.4
1.926000	30.8	9.000	Off	N	9.8	25.2	56.0
2.224000	29.6	9.000	Off	N	9.9	26.4	56.0
2.818000	33.2	9.000	Off	N	9.9	22.8	56.0
3.114000	25.5	9.000	Off	N	9.9	30.5	56.0
3.708000	31.5	9.000	Off	N	9.9	24.5	56.0
4.596000	28.6	9.000	Off	N	10.0	27.4	56.0
13.322000	39.0	9.000	Off	N	10.4	21.0	60.0
13.440000	36.4	9.000	Off	N	10.4	23.6	60.0
13.490000	37.2	9.000	Off	N	10.4	22.8	60.0
13.520000	35.6	9.000	Off	N	10.4	24.4	60.0
13.790000	38.0	9.000	Off	N	10.4	22.0	60.0
13.836000	34.9	9.000	Off	N	10.4	25.1	60.0

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Test

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Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	30.9	9.000	Off	N	9.8	25.0	55.9
0.162000	31.7	9.000	Off	N	9.8	23.7	55.4
0.174000	30.2	9.000	Off	N	9.8	24.6	54.8
0.182000	28.5	9.000	Off	N	9.8	25.9	54.4
0.196000	28.5	9.000	Off	N	9.8	25.3	53.8
0.204000	26.1	9.000	Off	N	9.8	27.3	53.4
1.926000	29.0	9.000	Off	N	9.8	17.0	46.0
2.224000	26.9	9.000	Off	N	9.9	19.1	46.0
2.818000	31.6	9.000	Off	N	9.9	14.4	46.0
3.114000	22.6	9.000	Off	N	9.9	23.4	46.0
3.708000	30.1	9.000	Off	N	9.9	15.9	46.0
4.598000	26.9	9.000	Off	N	10.0	19.1	46.0
13.270000	30.2	9.000	Off	N	10.4	19.8	50.0
13.438000	28.9	9.000	Off	N	10.4	21.1	50.0
13.498000	29.0	9.000	Off	N	10.4	21.0	50.0
13.520000	28.8	9.000	Off	N	10.4	21.2	50.0
13.778000	28.7	9.000	Off	N	10.4	21.3	50.0
13.836000	28.1	9.000	Off	N	10.4	21.9	50.0

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Test Result & Plot (Position: Cross)
Conducted Emissions (Line 1)

Test

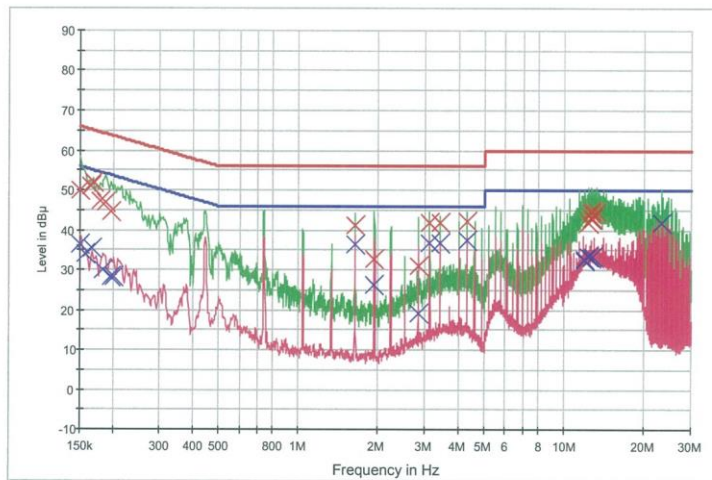
1 / 2

HCT TEST Report

Common Information

EUT: SM-G991U
 Manufacturer: SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions: POWER SHARING CROSS 1~20% L1

FCC CLASS B_Exten Cable



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG x Final Result 1-QPK x Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	50.0	9.000	Off	L1	9.8	16.0	66.0
0.164000	51.1	9.000	Off	L1	9.8	14.2	65.3
0.168000	52.1	9.000	Off	L1	9.8	12.9	65.1
0.178000	47.2	9.000	Off	L1	9.8	17.4	64.6
0.188000	47.1	9.000	Off	L1	9.8	17.0	64.1
0.196000	44.4	9.000	Off	L1	9.8	19.3	63.8
1.630000	41.2	9.000	Off	L1	9.8	14.8	56.0
1.928000	32.6	9.000	Off	L1	9.9	23.4	56.0
2.818000	31.1	9.000	Off	L1	9.9	24.9	56.0
3.114000	41.8	9.000	Off	L1	9.9	14.2	56.0
3.410000	41.9	9.000	Off	L1	9.9	14.1	56.0
4.300000	42.3	9.000	Off	L1	10.0	13.7	56.0
12.354000	42.0	9.000	Off	L1	10.3	18.0	60.0
12.574000	44.2	9.000	Off	L1	10.3	15.8	60.0
12.600000	44.9	9.000	Off	L1	10.3	15.1	60.0
12.682000	43.0	9.000	Off	L1	10.3	17.0	60.0
12.790000	42.7	9.000	Off	L1	10.3	17.3	60.0
13.196000	44.4	9.000	Off	L1	10.3	15.6	60.0

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Test

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Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	36.6	9.000	Off	L1	9.8	19.4	56.0
0.158000	34.0	9.000	Off	L1	9.8	21.6	55.6
0.166000	35.4	9.000	Off	L1	9.8	19.7	55.2
0.184000	30.0	9.000	Off	L1	9.8	24.3	54.3
0.196000	28.3	9.000	Off	L1	9.8	25.5	53.8
0.202000	28.3	9.000	Off	L1	9.8	25.2	53.5
1.630000	36.3	9.000	Off	L1	9.8	9.7	46.0
1.928000	26.4	9.000	Off	L1	9.9	19.6	46.0
2.818000	19.2	9.000	Off	L1	9.9	26.8	46.0
3.114000	36.7	9.000	Off	L1	9.9	9.3	46.0
3.410000	36.8	9.000	Off	L1	9.9	9.2	46.0
4.300000	37.3	9.000	Off	L1	10.0	8.7	46.0
11.932000	32.7	9.000	Off	L1	10.3	17.3	50.0
11.976000	32.5	9.000	Off	L1	10.3	17.5	50.0
12.352000	33.3	9.000	Off	L1	10.3	16.7	50.0
12.682000	32.9	9.000	Off	L1	10.3	17.1	50.0
12.796000	33.5	9.000	Off	L1	10.3	16.5	50.0
23.274000	41.9	9.000	Off	L1	10.6	8.1	50.0

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Conducted Emissions (Line 2)

Test

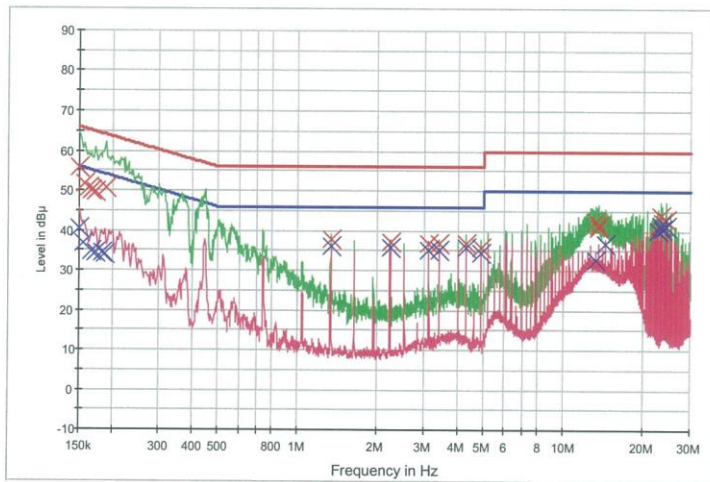
1 / 2

HCT TEST Report

Common Information

EUT: SM-G991U
 Manufacturer: SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions: POWER SHARING CROSS 1~20% N

FCC CLASS B_Exten Cable



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	55.7	9.000	Off	N	9.8	10.3	66.0
0.158000	51.8	9.000	Off	N	9.8	13.8	65.6
0.162000	50.7	9.000	Off	N	9.8	14.7	65.4
0.166000	50.2	9.000	Off	N	9.8	15.0	65.2
0.172000	49.7	9.000	Off	N	9.8	15.2	64.9
0.190000	50.7	9.000	Off	N	9.8	13.3	64.0
1.334000	37.9	9.000	Off	N	9.8	18.1	56.0
2.224000	37.1	9.000	Off	N	9.9	18.9	56.0
3.114000	36.6	9.000	Off	N	9.9	19.4	56.0
3.410000	36.7	9.000	Off	N	9.9	19.3	56.0
4.300000	36.9	9.000	Off	N	10.0	19.1	56.0
4.892000	35.7	9.000	Off	N	10.0	20.3	56.0
13.268000	42.6	9.000	Off	N	10.4	17.4	60.0
13.488000	40.7	9.000	Off	N	10.4	19.3	60.0
13.492000	41.5	9.000	Off	N	10.4	18.5	60.0
23.276000	43.8	9.000	Off	N	10.8	16.2	60.0
23.572000	42.2	9.000	Off	N	10.8	17.8	60.0
24.166000	42.9	9.000	Off	N	10.8	17.1	60.0

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Test

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Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	40.6	9.000	Off	N	9.8	15.4	56.0
0.156000	36.9	9.000	Off	N	9.8	18.7	55.7
0.166000	34.8	9.000	Off	N	9.8	20.4	55.2
0.172000	34.3	9.000	Off	N	9.8	20.5	54.9
0.184000	34.5	9.000	Off	N	9.8	19.8	54.3
0.188000	34.2	9.000	Off	N	9.8	20.0	54.1
1.334000	36.2	9.000	Off	N	9.8	9.8	46.0
2.224000	35.7	9.000	Off	N	9.9	10.3	46.0
3.114000	35.2	9.000	Off	N	9.9	10.8	46.0
3.410000	35.0	9.000	Off	N	9.9	11.0	46.0
4.300000	35.6	9.000	Off	N	10.0	10.4	46.0
4.892000	34.5	9.000	Off	N	10.0	11.5	46.0
13.268000	32.9	9.000	Off	N	10.4	17.1	50.0
14.380000	36.7	9.000	Off	N	10.4	13.3	50.0
22.680000	40.2	9.000	Off	N	10.8	9.8	50.0
23.276000	41.4	9.000	Off	N	10.8	8.6	50.0
23.572000	40.5	9.000	Off	N	10.8	9.5	50.0
24.166000	41.1	9.000	Off	N	10.8	8.9	50.0

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11. EMISSION BANDWIDTH PLOT

Test Settings

1. Analyzer frequency set to the frequency of the radiated spurious emissipn of interst
2. RBW : 300 Hz
(Becasuse the measured signal is CW/CW-like,adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.)
3. VBW : $\geq 3 \times$ RBW
4. Sweep time : Auto couple
5. Detector : Peak
6. Trace : Maxhold
7. Trace was allowed to stabilize

Limit

None

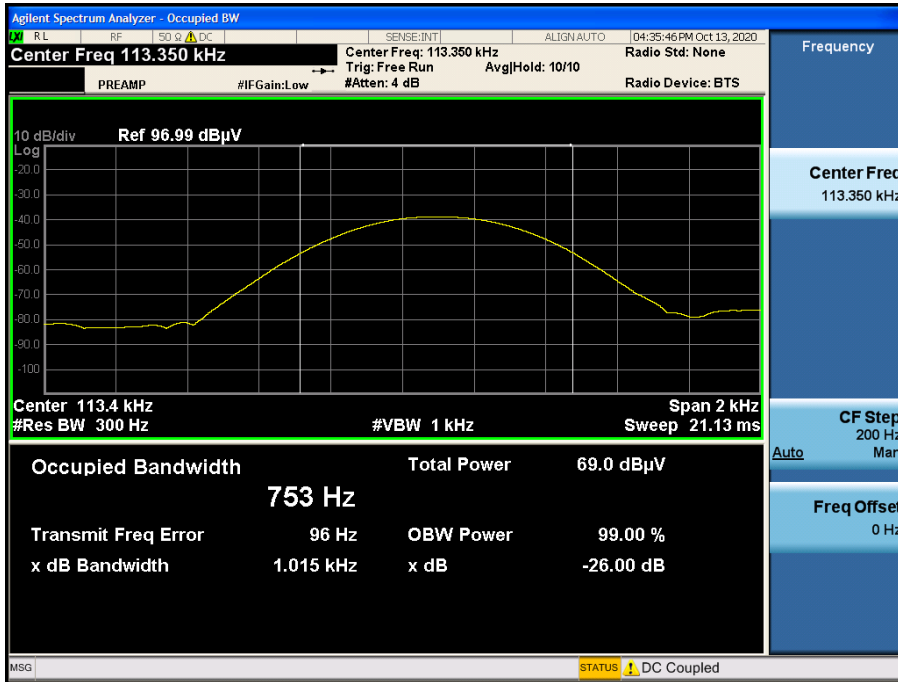
(for reporting purposes only.)

■ Test Result

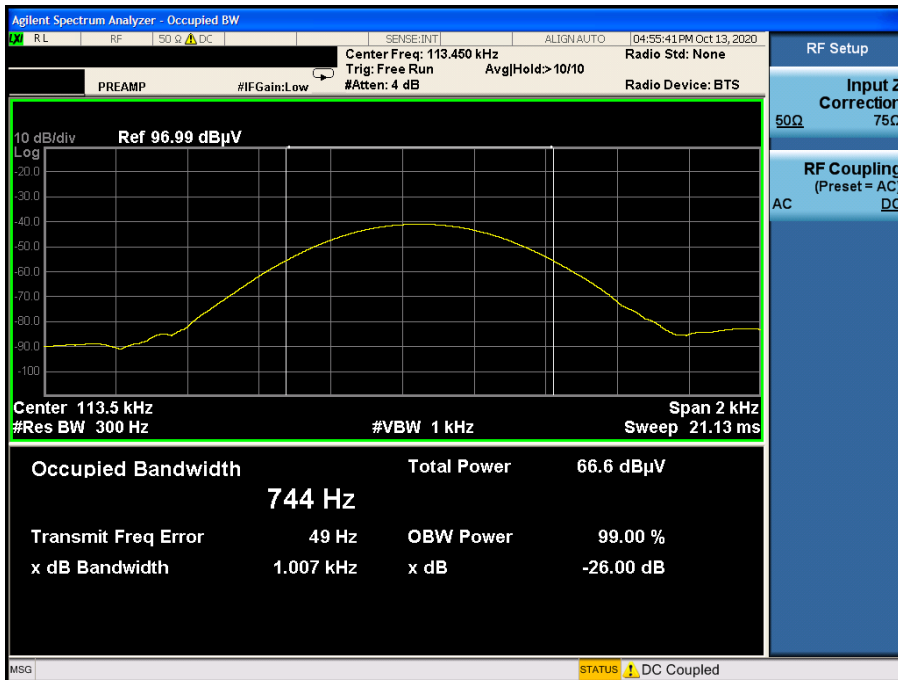
EUT Mode	Position	Test Frequency (kHz)	26dB Bandwidth (kHz)	Occupied Bandwidth (Hz)
Charging from EUT to Phone	Aligned	113.35	1.015	753
	Cross	113.45	1.007	744
Charging from EUT(Charging from TA) to Phone	Aligned	113.55	1.021	759
	Cross	113.60	1.022	758

Test Plot

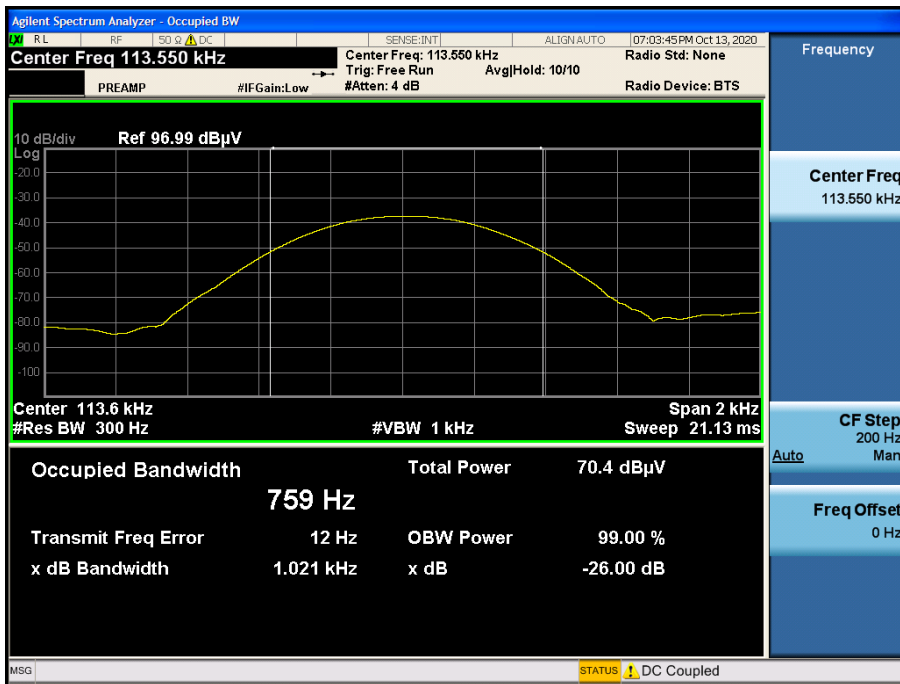
Charging from EUT to Phone – Position : Aligned



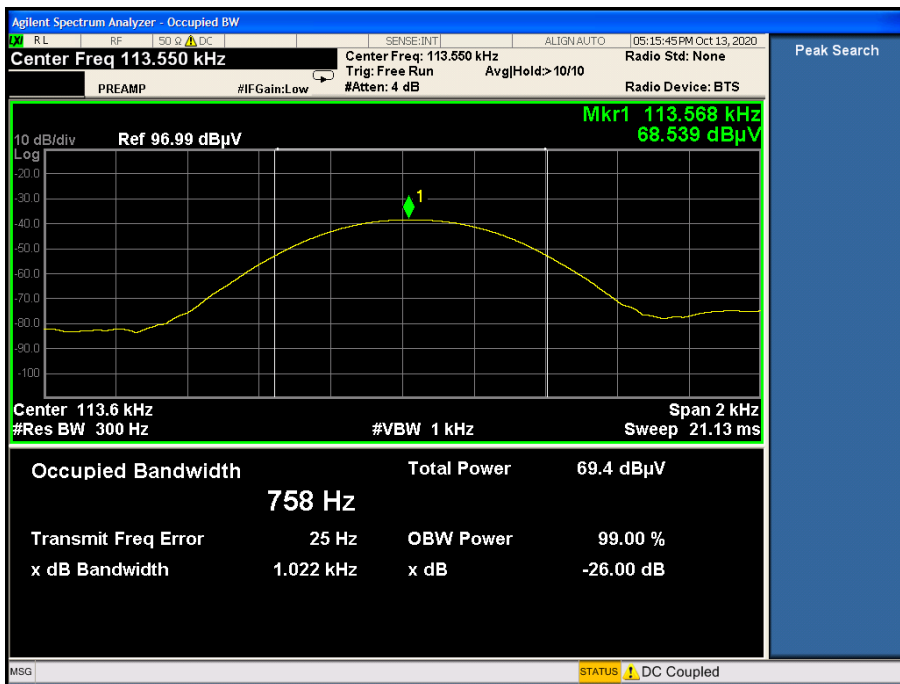
Charging from EUT to Phone – Position : Cross



Charging from EUT(Charging from TA) to Phone – Position : Aligned



Charging from EUT(Charging from TA) to Phone – Position : Cross



12. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	09/04/2020	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/10/2020	Annual	100584
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	05/18/2020	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	03/22/2019	Biennial	760
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	07/28/2020	Annual	102168
Agilent	N9030A / Signal Analyzer	01/13/2020	Annual	MY49431210
Api tech.	18B-03 / Attenuator (3 dB)	03/02/2020	Annual	1
Agilent	8493C-10 / Attenuator(10 dB)	03/02/2020	Annual	08285
CERNEX	CBLU1183540 / Power Amplifier	03/02/2020	Annual	22964

13. Annex A_TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2010-FC006-P