

FCC NFC REPORT

FCC Certification

Applicant Name:

SAMSUNG Electronics Co., Ltd.

Address:

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

Date of Issue:

June 30, 2017

Test Site/Location:

HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-R-1706-F109

HCT FRN: 0005866421

FCC ID : A3LSMJ330KOR

APPLICANT : SAMSUNG Electronics Co., Ltd.

Model(s): SM-J330L

EUT Type: Mobile Phone

RF Output Field Strength: 18.48 dBuV/m @30 m

Frequency of Operation: 13.56 MHz

Modulation type: ASK

FCC Classification: Low Power Communication Device – Transmitter

FCC Rule Part(s): FCC Part 15.225 Subpart C

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)



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Manager of Telecommunication testing center

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1706-F109	June 30, 2017	- First Approval Report

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1. GENERAL INFORMATION

Applicant: SAMSUNG Electronics Co.,Ltd.
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID: A3LSMJ330KOR
EUT Type: Mobile Phone
Model (s): SM-J330L
Date(s) of Tests: May 22 ~ June 30, 2017
Place of Tests: HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

2. EUT DESCRIPTION

Model	SM-J330L
EUT Type	Mobile Phone
Power Supply	DC 3.85 V
Battery Information	Model: EB-BJ33CABA Type: Lithium ion polymer cell
Frequency of Operation	13.56 MHz
Transmit Power	18.48 dBuV/m @30 m
Modulation Type	ASK
Antenna Specification	Manufacturer: AQ Pacific Antenna type: FPCB Type Antenna

3. TEST METHODOLOGY

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

3.1 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.

3.2 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 15.225 under the FCC Rules Part 15 Subpart C.

3.3 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. 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 6.3 of ANSI C63.10. (Version: 2013).

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

4. 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 : 2006).

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The 10 m semi anechoic chamber used to collect the Conducted and Radiated data is located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4 (Version: 2014). Detailed description of test facilities was submitted to the Commission and accepted dated July 07, 2015 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned loop, 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."

6. 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."

* The antennas of this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203

7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

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

Parameter	Expanded Uncertainty ($\pm$ 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

8. TEST SUMMARY

The results in this report apply only to sample tested

Regulation	Test Type	Range	Result
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(a)	Radiated Electric Field Emissions	13.553MHz to 13.567MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(b)	Radiated Electric Field Emissions	13.410MHz to 13.553MHz and 13.567MHz to 13.710MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(c)	Radiated Electric Field Emission	13.110 MHz to 13.410 MHz and 13.710 MHz to 14.010 MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209 (d)	Radiated Electric Field Emissions	9kHz to 30MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209	Radiated Electric Field Emissions	30MHz to 1GHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.207	AC power conducted emissions	150kHz to 30MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(e)	Frequency Stability	0.01% of nominal	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.215(c)	20 dB Bandwidth	-	Pass

9. RADIATED EMISSION MEASUREMENT

Requirement(s): 15.209, 15.225

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:

Minimum Standard: FCC Part 15.225 / 15.209

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

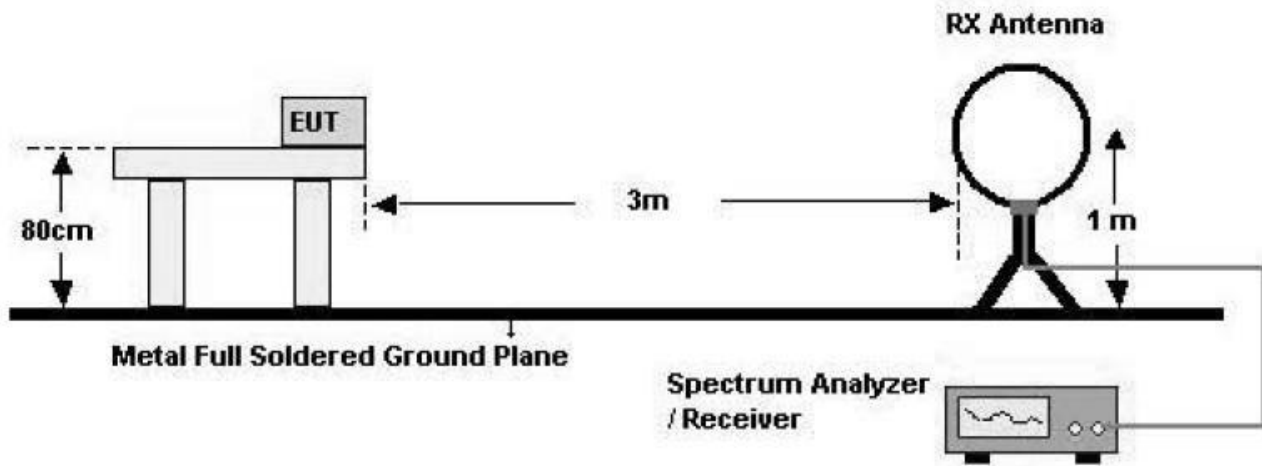
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

15.225 Operation within the band 13.110 MHz – 14.010 MHz

- The field strength of any emissions within the band 13.553 MHz-13.567 MHz shall not exceed 15,848 microvolts/meter (= 84 dBuV/m) at 30 meters.
- Within the bands 13.410-13.553 MHz and 13.567 MHz-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter (=50.5dBuV/m) at 30 meters.
- Within the bands 13.110-13.410 MHz and 13.710 MHz-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter (=40.5 dBuV/m) at 30 meters.
- The field strength of any emissions appearing outside of the 13.110 MHz-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.
- The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
- In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

9.1. RADIATED EMISSION 9 kHz – 30 MHz

Test Set-up



Test Procedure

The EUT was placed on a non-conductive table located on semi-anechoic chamber.

The loop antenna was placed at a location 3m from the EUT. Radiated emissions were measured with the loop antenna both parallel and perpendicular to the plane of the EUT loop antenna and with x, y, z planes in EUT.

The limit is converted from microvolts/meter to decibel microvolts/meter. Sample Calculation:

Corrected Amplitude = Raw Amplitude(dBμV/m) + ACF(dB) + Cable Loss(dB) – Distance Correction Factor

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 1 GHz

RBW = 9 kHz (9 kHz ~ 30 MHz)

= 120 kHz (30 MHz ~ 1 GHz)

Trace Mode = max hold

Detector Mode = peak / Quasi-peak

Sweep time = auto

■ Test Results (Worst case : Y-H)

13.553 MHz-13.567 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.5600(H)	38.94	19.54	-40	18.48	84	65.52
13.5594(V)	34.72	19.54	-40	14.26	84	69.74

13.410 MHz-13.553 MHz and 13.567 MHz-13.710 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.553	25.74	19.54	-40	5.28	50.47	45.19
13.567	25.74	19.54	-40	5.28	50.47	45.19

13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.3476	20.52	19.54	-40	0.06	40.51	40.45
13.7718	21.39	19.54	-40	0.93	40.51	39.58

9 kHz -30 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
12.4506	10.95	19.54	-40	-9.51	29.54	39.05
14.0739	8.18	19.54	-40	-12.28	29.54	41.82
27.1305	6.98	19.99	-40	-13.03	29.54	42.57
27.1289	6.66	19.99	-40	-13.35	29.54	42.89

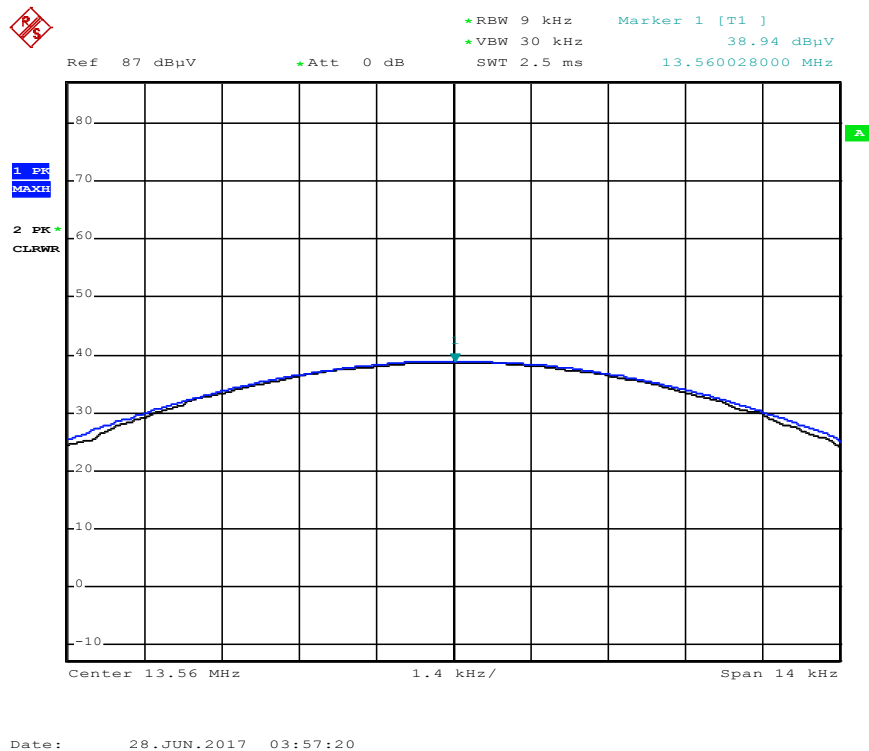
Note : The test results for below 30 MHz is correlated to an open site.

The result on OATS is about 2 dB higher than semi-anechoic chamber(10 m chamber)

1. Distance Correction Below 30 MHz = $40\log(3 \text{ m}/30 \text{ m}) = -40 \text{ dB}$
Measurement Distance : 3 m (Below 30 MHz)
2. Factor = Antenna Factor + Cable Loss
3. Result Level = Read Level + Factor + Distance Correction
4. Margin = Limit – Result Level
5. We have done x, y, z planes in EUT
6. Antenna rotated about its vertical/horizontal axis for maximum response at each azimuth position around the EUT.
7. Worst case of operating mode is type A, analog mode and 106 kbps.

RESULT PLOTS

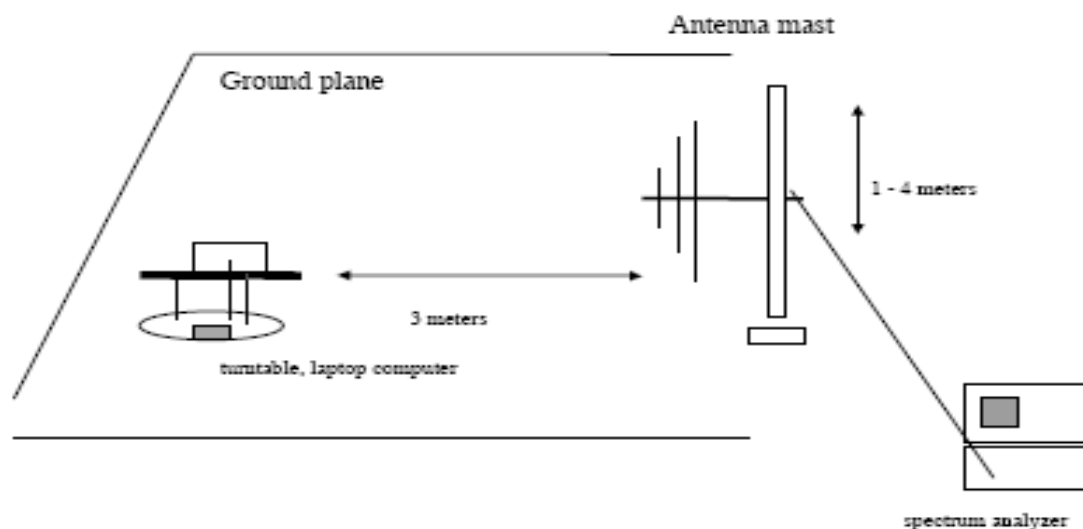
Worst Plot for Radiated Emissions



Note : Only the worst case plots for Radiated Emissions.

9.2. RADIATED EMISSION 30 MHz – 1000 MHz

Test Set-up



Test Procedures: Radiated emissions were measured according to ANSI C63.10.

The EUT was set to transmit at the highest output power.

The EUT was set 3 meter away from the measuring antenna.

■ Test Results

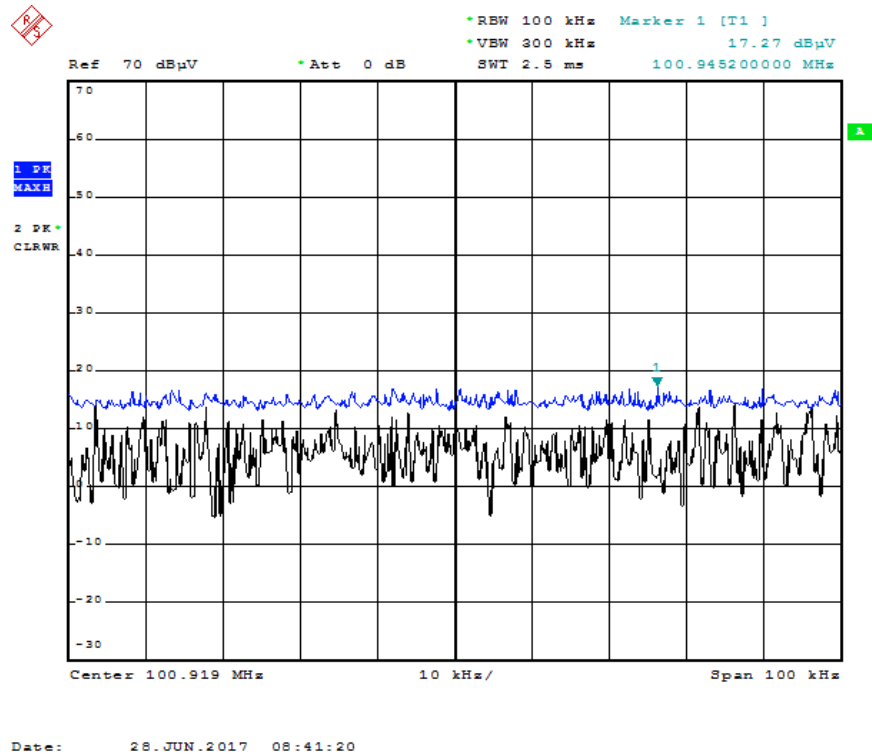
Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV	dB/m	dB	(H/V)	dBuV/m	dBuV/m	dB
*38.0124	12.68	11.72	0.66	H	25.06	40	14.94
51.3346	11.67	12.38	0.7	H	24.75	40	15.25
100.9452	17.27	8.19	0.78	V	26.24	40	13.76
*119.3314	15.24	11.64	0.81	H	27.69	43.5	15.81
*130.5686	14.88	12.84	0.88	H	28.6	43.5	14.9
160.6631	14.34	13.41	0.95	V	28.7	43.5	14.8

Remark

1. Result Level = Read Level + (Antenna Factor+ Cable Loss)
2. Margin = Limit – Result Level
3. '*' is the result for restricted band.

■ RESULT PLOTS

Worst Plot for Radiated Emissions



Note : Only the worst case plots for Radiated Emissions.

10. EMISSION BANDWIDTH PLOT

Requirement(s):

Test Set-up: The EUT was connected to a spectrum analyzer.

Test Procedure: The 20 dB bandwidth was measured by using a spectrum analyzer.

RBW = Auto

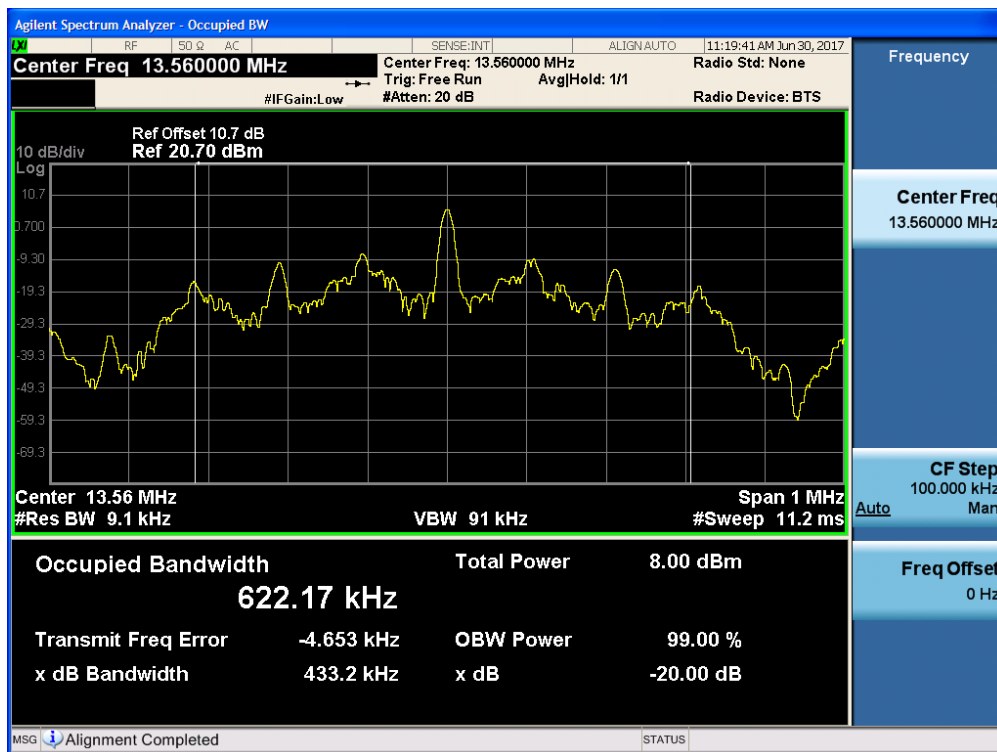
VBW = Auto

Span = Adequately in the operating Tx.

Detector = Peak

Trace mode = Max hold

Allow the trace to stabilize



11. FREQUENCY TOLERANCE

Procedure: Part 15.225, ANSI 63.10 (Version : 2013)

If required, the operating or transmitting frequency of an intentional radiator should be measured in accordance with the following procedure to ensure that the device operates outside certain precluded frequency bands and within the frequency range. No modulation needs to be supplied to the intentional radiator during these tests, unless modulation is required to produce an output, e.g., single-sideband suppressed carrier transmitters.

The frequency stability of the transmitter is measured by:

- a) Temperature: The temperature is varied from -20°C to + 50°C using an environmental chamber.
- b) For battery operated equipment, the equipment tests shall be performed using a new battery.
- c) Test Procedure
 - Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
 - Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
 - While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
- d) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

Note : Below the measurement result is worst value of the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized

Startup

Measurement Result:

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.85 VDC

DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.85	-20	13.560105	105	0.0007743
100%		-10	13.560097	97	0.0007153
100%		0	13.560089	89	0.0006563
100%		+10	13.560077	77	0.0005678
100%		+20(Ref.)	13.560063	63	0.0004646
100%		+30	13.560053	53	0.0003909
100%		+40	13.560040	40	0.0002950
100%		+50	13.560031	31	0.0002286
115%	4.4	+20	13.560073	73	0.0005383
85%	3.6	+20	13.560088	88	0.0006490

2 minutes

Measurement Result:

OPERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.85 VDC

DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.85	-20	13.560116	116	0.0008555
100%		-10	13.560107	107	0.0007891
100%		0	13.560096	96	0.0007080
100%		+10	13.560083	83	0.0006121
100%		+20(Ref.)	13.560070	70	0.0005162
100%		+30	13.560061	61	0.0004499
100%		+40	13.560053	53	0.0003909
100%		+50	13.560044	44	0.0003245
115%	4.4	+20	13.560087	87	0.0006416
85%	3.6	+20	13.560101	101	0.0007448

5 minutes

Measurement Result:

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.85 VDC

DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.85	-20	13.560122	122	0.0008997
100%		-10	13.560111	111	0.0008186
100%		0	13.560103	103	0.0007596
100%		+10	13.560095	95	0.0007006
100%		+20(Ref.)	13.560077	77	0.0005678
100%		+30	13.560069	69	0.0005088
100%		+40	13.560058	58	0.0004277
100%		+50	13.560051	51	0.0003761
115%	4.4	+20	13.560098	98	0.0007227
85%	3.6	+20	13.560113	113	0.0008333

10 minutes

Measurement Result:

OPERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.85 VDC

DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.85	-20	13.560125	125	0.0009218
100%		-10	13.560113	113	0.0008333
100%		0	13.560104	104	0.0007670
100%		+10	13.560096	96	0.0007080
100%		+20(Ref.)	13.560077	77	0.0005678
100%		+30	13.560070	70	0.0005162
100%		+40	13.560058	58	0.0004277
100%		+50	13.560052	52	0.0003835
115%	4.4	+20	13.560097	97	0.0007153
85%	3.6	+20	13.560114	114	0.0008407

12. POWERLINE CONDUCTE EMISSIONS

LIMIT

For an intentional radiator which 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 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

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

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 Appendix 1 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 Plots

Underminate the Antenna

Conducted Emissions (Line 1)

EMI Auto Test(13)

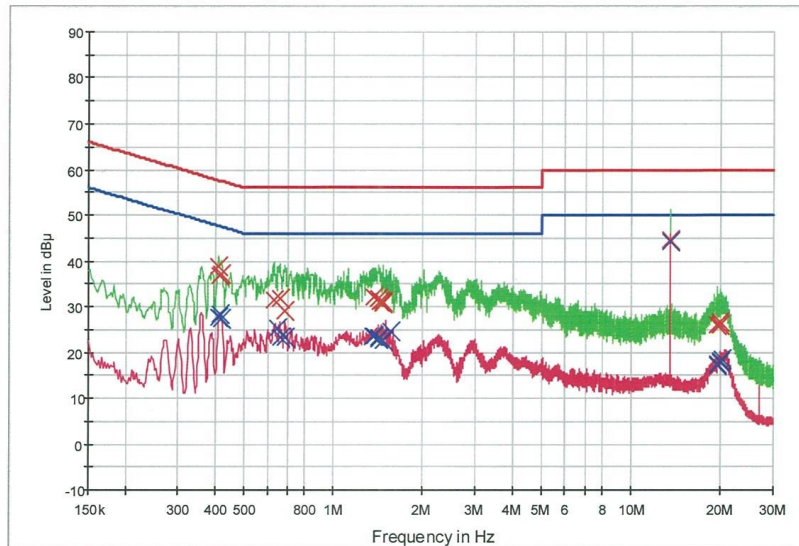
1 / 2

HCT TEST Report

Common Information

EUT: SM-J330L
Manufacturer: SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions: NFC INTERMINATION MODE

FCC CLASS B



— 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 (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.410000	38.8	9.000	Off	L1	9.7	18.9	57.6
0.416000	36.8	9.000	Off	L1	9.7	20.8	57.5
0.420000	37.2	9.000	Off	L1	9.7	20.2	57.4
0.630000	31.2	9.000	Off	L1	9.7	24.8	56.0
0.662000	31.8	9.000	Off	L1	9.7	24.2	56.0
0.686000	29.0	9.000	Off	L1	9.7	27.0	56.0
1.370000	32.2	9.000	Off	L1	9.7	23.8	56.0
1.412000	31.8	9.000	Off	L1	9.7	24.2	56.0
1.416000	31.6	9.000	Off	L1	9.7	24.4	56.0
1.440000	30.9	9.000	Off	L1	9.7	25.1	56.0
1.470000	30.9	9.000	Off	L1	9.7	25.1	56.0
1.474000	30.6	9.000	Off	L1	9.7	25.4	56.0
13.560000	44.5	9.000	Off	L1	10.2	15.5	60.0
19.398000	26.0	9.000	Off	L1	10.3	34.0	60.0
19.488000	25.9	9.000	Off	L1	10.3	34.1	60.0
19.824000	26.7	9.000	Off	L1	10.3	33.3	60.0
19.862000	26.6	9.000	Off	L1	10.3	33.4	60.0
20.030000	26.0	9.000	Off	L1	10.4	34.0	60.0

Final Result 2

2017-06-14

오후 8:31:46

EMI Auto Test(13)

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Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.412000	27.7	9.000	Off	L1	9.7	20.0	47.6
0.416000	28.3	9.000	Off	L1	9.7	19.3	47.5
0.420000	27.4	9.000	Off	L1	9.7	20.1	47.4
0.650000	25.4	9.000	Off	L1	9.7	20.6	46.0
0.662000	23.1	9.000	Off	L1	9.7	22.9	46.0
0.686000	23.1	9.000	Off	L1	9.7	22.9	46.0
1.358000	23.5	9.000	Off	L1	9.7	22.5	46.0
1.362000	23.6	9.000	Off	L1	9.7	22.4	46.0
1.412000	23.2	9.000	Off	L1	9.7	22.8	46.0
1.416000	23.0	9.000	Off	L1	9.7	23.0	46.0
1.470000	22.6	9.000	Off	L1	9.7	23.4	46.0
1.560000	24.6	9.000	Off	L1	9.8	21.4	46.0
13.560000	44.3	9.000	Off	L1	10.2	5.7	50.0
19.398000	17.2	9.000	Off	L1	10.3	32.8	50.0
19.488000	17.4	9.000	Off	L1	10.3	32.6	50.0
19.862000	17.9	9.000	Off	L1	10.3	32.1	50.0
20.030000	18.0	9.000	Off	L1	10.4	32.0	50.0
20.118000	18.5	9.000	Off	L1	10.4	31.5	50.0

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Conducted Emissions (Line 2)

EMI Auto Test(13)

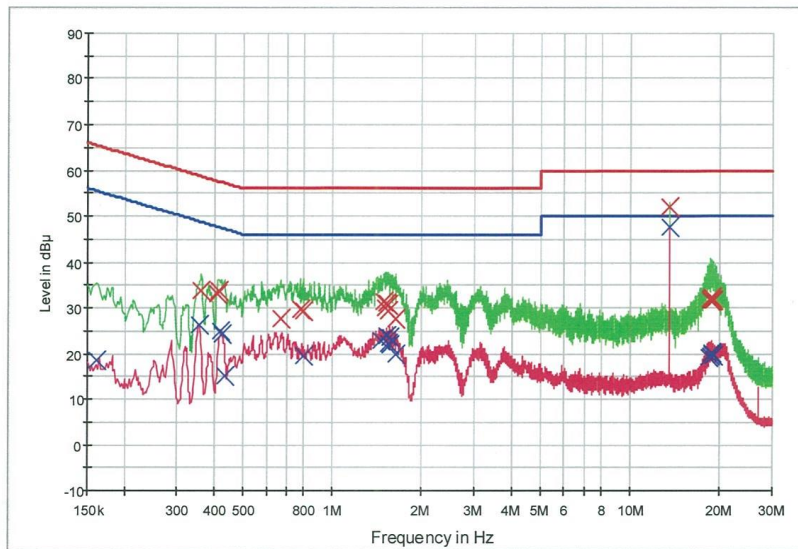
1 / 2

HCT TEST Report

Common Information

EUT: SM-J330L
Manufacturer: SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions: NFC UNTERMINATION MODE

FCC CLASS B



— 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 (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.362000	33.6	9.000	Off	N	9.7	25.1	58.7
0.412000	33.0	9.000	Off	N	9.7	24.6	57.6
0.416000	33.7	9.000	Off	N	9.7	23.8	57.5
0.668000	27.5	9.000	Off	N	9.7	28.5	56.0
0.776000	29.8	9.000	Off	N	9.7	26.2	56.0
0.796000	29.4	9.000	Off	N	9.7	26.6	56.0
1.486000	31.2	9.000	Off	N	9.7	24.8	56.0
1.502000	30.0	9.000	Off	N	9.7	26.0	56.0
1.516000	31.0	9.000	Off	N	9.7	25.0	56.0
1.536000	29.3	9.000	Off	N	9.7	26.7	56.0
1.542000	30.6	9.000	Off	N	9.7	25.4	56.0
1.626000	27.6	9.000	Off	N	9.7	28.4	56.0
13.560000	52.0	9.000	Off	N	10.2	8.0	60.0
18.644000	31.8	9.000	Off	N	10.3	28.2	60.0
18.654000	32.1	9.000	Off	N	10.3	27.9	60.0
18.728000	32.4	9.000	Off	N	10.3	27.6	60.0
18.878000	31.7	9.000	Off	N	10.3	28.3	60.0
18.912000	31.6	9.000	Off	N	10.3	28.4	60.0

Final Result 2

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EMI Auto Test(13)

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Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.160000	18.6	9.000	Off	N	9.6	36.9	55.5
0.358000	26.1	9.000	Off	N	9.7	22.7	48.8
0.420000	25.1	9.000	Off	N	9.7	22.4	47.4
0.424000	24.2	9.000	Off	N	9.7	23.2	47.4
0.434000	15.0	9.000	Off	N	9.7	32.2	47.2
0.796000	19.5	9.000	Off	N	9.7	26.5	46.0
1.446000	22.8	9.000	Off	N	9.7	23.2	46.0
1.522000	23.8	9.000	Off	N	9.7	22.2	46.0
1.542000	22.3	9.000	Off	N	9.7	23.7	46.0
1.554000	23.4	9.000	Off	N	9.7	22.6	46.0
1.558000	22.0	9.000	Off	N	9.7	24.0	46.0
1.626000	19.8	9.000	Off	N	9.7	26.2	46.0
13.560000	47.7	9.000	Off	N	10.2	2.3	50.0
18.438000	19.3	9.000	Off	N	10.3	30.7	50.0
18.498000	19.4	9.000	Off	N	10.3	30.6	50.0
18.728000	20.3	9.000	Off	N	10.3	29.7	50.0
18.876000	19.9	9.000	Off	N	10.3	30.1	50.0
18.912000	19.5	9.000	Off	N	10.3	30.5	50.0

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Terminate the Antenna Conducted Emissions (Line 1)

EMI Auto Test(13)

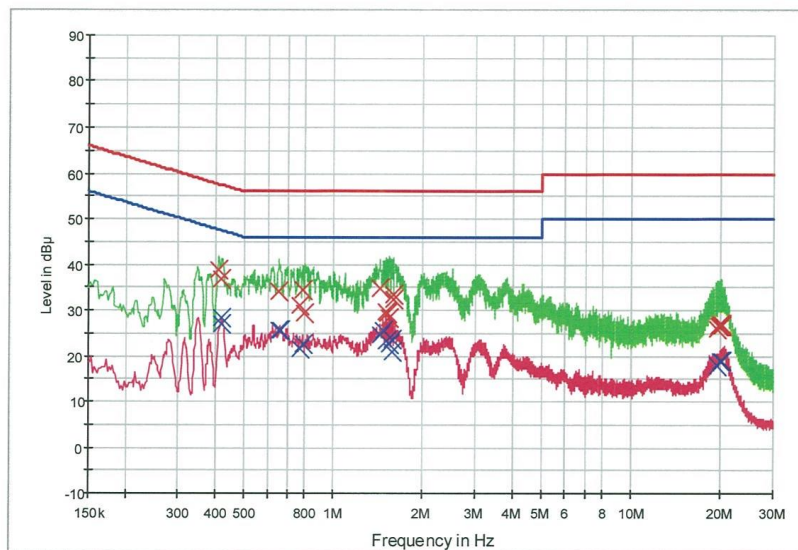
1 / 2

HCT TEST Report

Common Information

EUT: SM-J330L
Manufacturer: SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions: NFC TERMINATION MODE

FCC CLASS B



— 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)
0.412000	38.7	9.000	Off	L1	9.7	18.9	57.6
0.422000	36.7	9.000	Off	L1	9.7	20.7	57.4
0.656000	34.0	9.000	Off	L1	9.7	22.0	56.0
0.772000	31.1	9.000	Off	L1	9.7	24.9	56.0
0.790000	34.4	9.000	Off	L1	9.7	21.6	56.0
0.802000	29.3	9.000	Off	L1	9.7	26.7	56.0
1.434000	34.8	9.000	Off	L1	9.7	21.2	56.0
1.508000	29.7	9.000	Off	L1	9.8	26.3	56.0
1.512000	29.4	9.000	Off	L1	9.8	26.6	56.0
1.544000	28.3	9.000	Off	L1	9.8	27.7	56.0
1.584000	33.3	9.000	Off	L1	9.8	22.7	56.0
1.588000	32.4	9.000	Off	L1	9.8	23.6	56.0
19.444000	26.1	9.000	Off	L1	10.3	33.9	60.0
19.624000	26.5	9.000	Off	L1	10.3	33.5	60.0
20.006000	27.1	9.000	Off	L1	10.4	32.9	60.0
20.038000	26.5	9.000	Off	L1	10.4	33.5	60.0
20.190000	26.8	9.000	Off	L1	10.4	33.2	60.0
20.220000	26.8	9.000	Off	L1	10.4	33.2	60.0

Final Result 2

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EMI Auto Test(13)

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Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.418000	28.4	9.000	Off	L1	9.7	19.1	47.5
0.422000	26.9	9.000	Off	L1	9.7	20.5	47.4
0.656000	25.5	9.000	Off	L1	9.7	20.5	46.0
0.660000	25.6	9.000	Off	L1	9.7	20.4	46.0
0.772000	21.6	9.000	Off	L1	9.7	24.4	46.0
0.790000	22.7	9.000	Off	L1	9.7	23.3	46.0
1.428000	24.7	9.000	Off	L1	9.7	21.3	46.0
1.472000	25.6	9.000	Off	L1	9.7	20.4	46.0
1.508000	23.3	9.000	Off	L1	9.8	22.7	46.0
1.544000	22.6	9.000	Off	L1	9.8	23.4	46.0
1.572000	20.8	9.000	Off	L1	9.8	25.2	46.0
1.580000	23.6	9.000	Off	L1	9.8	22.4	46.0
19.444000	17.8	9.000	Off	L1	10.3	32.2	50.0
19.998000	18.8	9.000	Off	L1	10.3	31.2	50.0
20.038000	19.0	9.000	Off	L1	10.4	31.0	50.0
20.088000	18.9	9.000	Off	L1	10.4	31.1	50.0
20.132000	18.8	9.000	Off	L1	10.4	31.2	50.0
20.188000	18.9	9.000	Off	L1	10.4	31.1	50.0

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Conducted Emissions (Line 2)

EMI Auto Test(13)

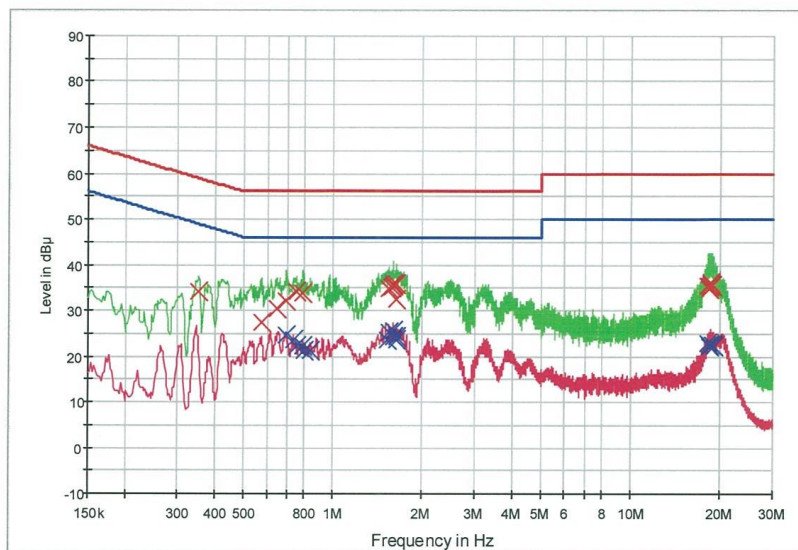
1 / 2

HCT TEST Report

Common Information

EUT: SM-J330L
Manufacturer: SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions: NFC TERMINATION MODE

FCC CLASS B



— 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)
0.354000	34.1	9.000	Off	N	9.7	24.8	58.9
0.574000	27.2	9.000	Off	N	9.7	28.8	56.0
0.646000	30.5	9.000	Off	N	9.7	25.5	56.0
0.698000	32.1	9.000	Off	N	9.7	23.9	56.0
0.752000	34.2	9.000	Off	N	9.7	21.8	56.0
0.794000	33.6	9.000	Off	N	9.7	22.4	56.0
1.536000	34.6	9.000	Off	N	9.7	21.4	56.0
1.582000	35.2	9.000	Off	N	9.7	20.8	56.0
1.586000	35.4	9.000	Off	N	9.7	20.6	56.0
1.590000	35.7	9.000	Off	N	9.7	20.3	56.0
1.628000	35.9	9.000	Off	N	9.7	20.1	56.0
1.636000	32.5	9.000	Off	N	9.7	23.5	56.0
18.196000	35.5	9.000	Off	N	10.3	24.5	60.0
18.426000	34.8	9.000	Off	N	10.3	25.2	60.0
18.446000	35.6	9.000	Off	N	10.3	24.4	60.0
18.632000	36.0	9.000	Off	N	10.3	24.0	60.0
18.672000	35.8	9.000	Off	N	10.3	24.2	60.0
18.684000	35.5	9.000	Off	N	10.3	24.5	60.0

Final Result 2

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EMI Auto Test(13)

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Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.698000	24.5	9.000	Off	N	9.7	21.5	46.0
0.734000	23.5	9.000	Off	N	9.7	22.5	46.0
0.752000	22.3	9.000	Off	N	9.7	23.7	46.0
0.792000	22.4	9.000	Off	N	9.7	23.6	46.0
0.796000	21.3	9.000	Off	N	9.7	24.7	46.0
0.838000	21.2	9.000	Off	N	9.7	24.8	46.0
1.528000	23.7	9.000	Off	N	9.7	22.3	46.0
1.536000	25.1	9.000	Off	N	9.7	20.9	46.0
1.586000	25.6	9.000	Off	N	9.7	20.4	46.0
1.590000	24.2	9.000	Off	N	9.7	21.8	46.0
1.630000	24.2	9.000	Off	N	9.7	21.8	46.0
1.634000	23.5	9.000	Off	N	9.7	22.5	46.0
18.196000	22.9	9.000	Off	N	10.3	27.1	50.0
18.264000	22.3	9.000	Off	N	10.3	27.7	50.0
18.426000	22.5	9.000	Off	N	10.3	27.5	50.0
18.886000	22.5	9.000	Off	N	10.3	27.5	50.0
18.890000	22.5	9.000	Off	N	10.3	27.5	50.0
19.084000	22.3	9.000	Off	N	10.3	27.7	50.0

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13. LIST OF TEST EQUIPMENT

13.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/23/2016	Annual	100073
Rohde & Schwarz	ESCI / Test Receiver	12/23/2016	Annual	100584
Agilent	N9020A / Signal Analyzer	06/13/2017	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/30/2016	Annual	MY49431210
Agilent	N1911A / Power Meter	04/17/2017	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/17/2017	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/23/2016	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/12/2017	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	07/07/2016	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/15/2016	Annual	07560
Rohde & Schwarz	EMC32 / Software	-	-	-

13.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Audix	AM4000 / Antenna Position Tower	N/A	N/A	N/A
Audix	Turn Table	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Rohde & Schwarz	Loop Antenna	04/19/2017	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/06/2017	Biennial	760
Schwarzbeck	BBHA 9120D / Horn Antenna	08/25/2016	Biennial	9120D-1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	09/04/2015	Biennial	BBHA9170541
Rohde & Schwarz	FSP / Spectrum Analyzer	09/10/2016	Annual	100688
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/23/2016	Annual	101068-SZ
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	06/12/2017	Annual	8
Wainwright Instruments	WHFX7.0/18G-8SS / High Pass Filter	05/15/2017	Annual	29
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	07/06/2016	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/24/2017	Annual	2
Agilent	8493C-10 / Attenuator(10 dB)	08/11/2016	Annual	76649
CERNEX	CBLU1183540 / Power Amplifier	07/15/2016	Annual	22964
CERNEX	CBL06185030 / Power Amplifier	07/15/2016	Annual	22965
CERNEX	CBL18265035 / Power Amplifier	01/23/2017	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	07/11/2016	Annual	25956