HCT CO.,LTD
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
TEL: +82-31-645-6300 **FAX: +82-31-645-6401**

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:
May 17, 2016
Test Site/Location:
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
Report No.: HCT-R-1605-F014-1
HCT FRN: 0005866421
IC Recognition No.: 5944A-5

FCC ID	**: A3LSMC5000**
APPLICANT	**: SAMSUNG Electronics Co.,Ltd.**

Model(s):	SM-C5000
EUT Type:	Mobile Phone
RF Output Field Strength:	20.18 dBuV/m @30 m
Frequency of Operation:	13.5593 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)

Report prepared by	**Approved by**
: Ji Eun Park	**: Jong Seok Lee**
Test Engineer of RF Team	**Manager of RF Team**

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1605-F014	May 16, 2016	- First Approval Report
HCT-R-1605-F014-1	May 17, 2016	- Revised the battery information page 4.

Table of Contents

1. GENERAL INFORMATION 4
2. EUT DESCRIPTION 4
3. TEST METHODOLOGY 5
3.1 EUT CONFIGURATION 5
3.2 EUT EXERCISE 5
3.3 GENERAL TEST PROCEDURES 5
3.4 DESCRIPTION OF TEST MODES 5
4. INSTRUMENT CALIBRATION 6
5. FACILITIES AND ACCREDITATIONS 6
5.1 FACILITIES 6
5.2 EQUIPMENT 6
6. ANTENNA REQUIREMENTS 6
7. MEASUREMENT UNCERTAINTY 7
8. TEST SUMMARY 8
9. RADIATED EMISSION MEASUREMENT 9
9.1. RADIATED EMISSION 9 kHz – 30 MHz 10
9.2. RADIATED EMISSION 30 MHz – 1000 MHz 13
10. EMISSION BANDWIDTH PLOT 15
11. FREQUENCY TOLERANCE 16
12. POWERLINE CONDUCTE EMISSIONS 21
13. LIST OF TEST EQUIPMENT 30
13.1 LIST OF TEST EQUIPMENT(Conducted Test) 30
13.2 LIST OF TEST EQUIPMENT(Radiated Test) 31

1. GENERAL INFORMATION

Applicant:	SAMSUNG Electronics Co.,Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMC5000
EUT Type:	Mobile Phone
Model (s):	SM-C5000
Date(s) of Tests:	April 19, 2016 ~ May 10, 2016
Place of Tests:	HCT Co., Ltd. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea (IC Recognition No. : 5944A-5)

2. EUT DESCRIPTION

Model	SM-C5000
EUT Type	Mobile Phone
Power Supply	DC 3.85 V
Battery Infomation	Model: EB-BC500ABE Type: Secondary Li-ion Battery
Frequency of Operation	13.5593 MHz
Transmit Power	20.18 dBuV/m @30 m
Modulation Type	ASK
Antenna Specification	Manufacturer: Partron Antenna type: FPCB Antenna

3. TEST METHODOLOGY

The measurement procedure described in ANSI C63.10(Version :2013) 'the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices'.

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. 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)	6.07

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

(a) 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.

(b) 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.

(c) 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.

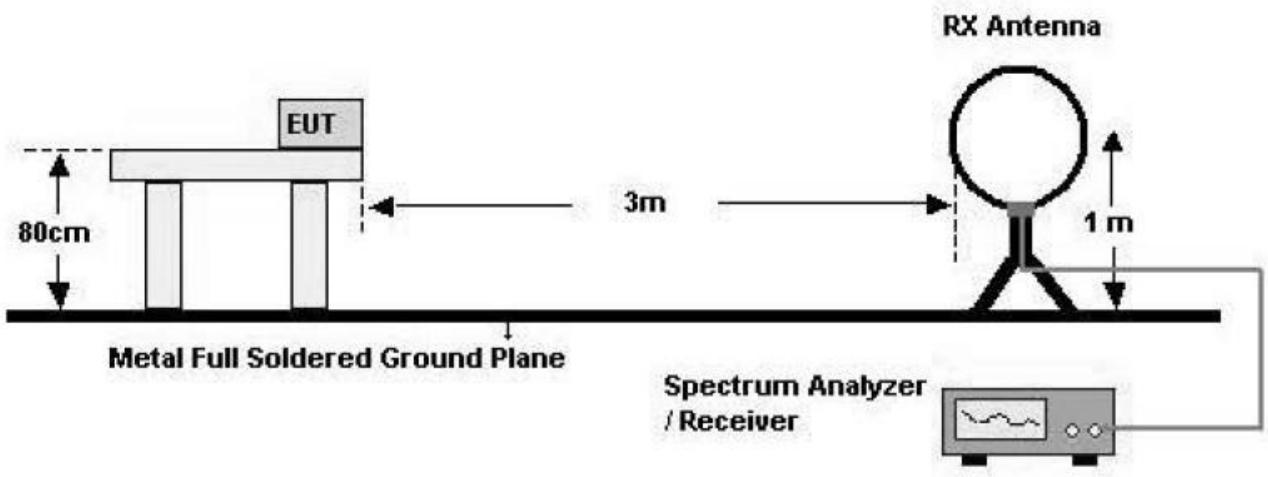
(d) The field strength of any emissions appearing outside of the 13.110 MHz-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

(e) 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.

(f) 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 : z-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)
13.5593(H)	38.85	21.33	-40.00	20.18	84.00	63.82
13.5591(V)	35.11	21.33	-40.00	16.44	84.00	67.56

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)
13.5530	28.48	21.33	-40.00	9.81	50.47	40.66
13.5670	24.2	21.33	-40.00	5.53	50.47	44.94

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)
13.1364	24.35	21.33	-40.00	5.68	40.51	34.83
13.7700	21.52	21.33	-40.00	2.85	40.51	37.66

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)
12.299	13.96	21.35	-40.00	-4.69	29.54	34.23
14.404	10.59	21.33	-40.00	-8.08	29.54	37.62
27.121	7.10	21.75	-40.00	-11.15	29.54	40.69
27.081	6.38	21.75	-40.00	-11.87	29.54	41.41

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

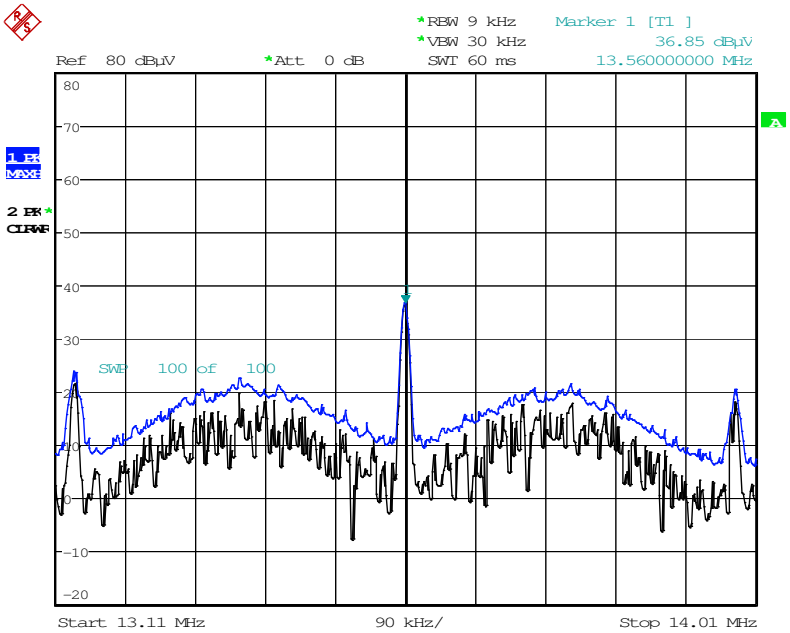
The result on OATS is about 2 dB higher than semi-anechoic chamber(10 m chamber)

1. Distance Correction Below 30 MHz = 40log(3 m/30 m) = - 40 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

Radiated Emissions (9 kHz~30 MHz) plot

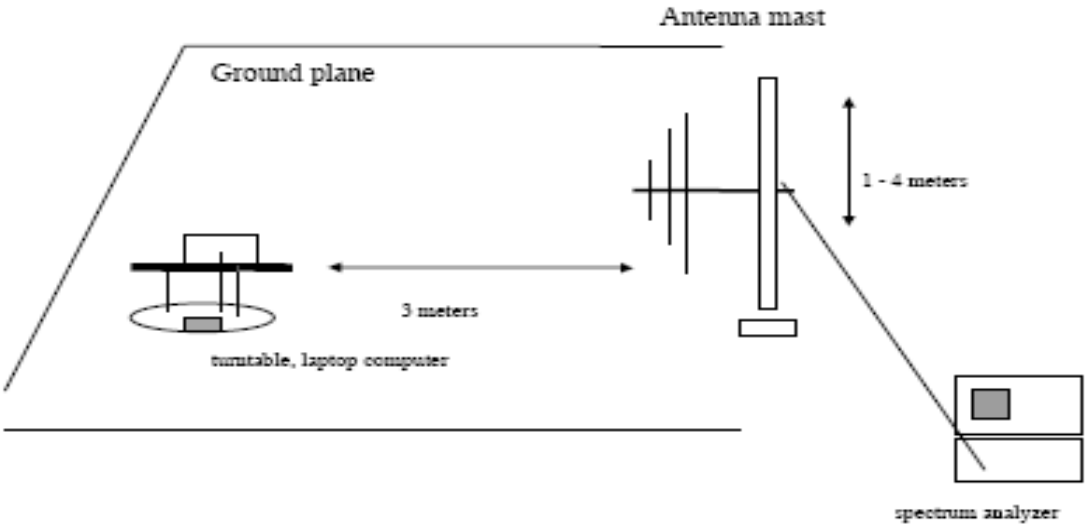


Date: 29.APR.2016 15:10:15

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

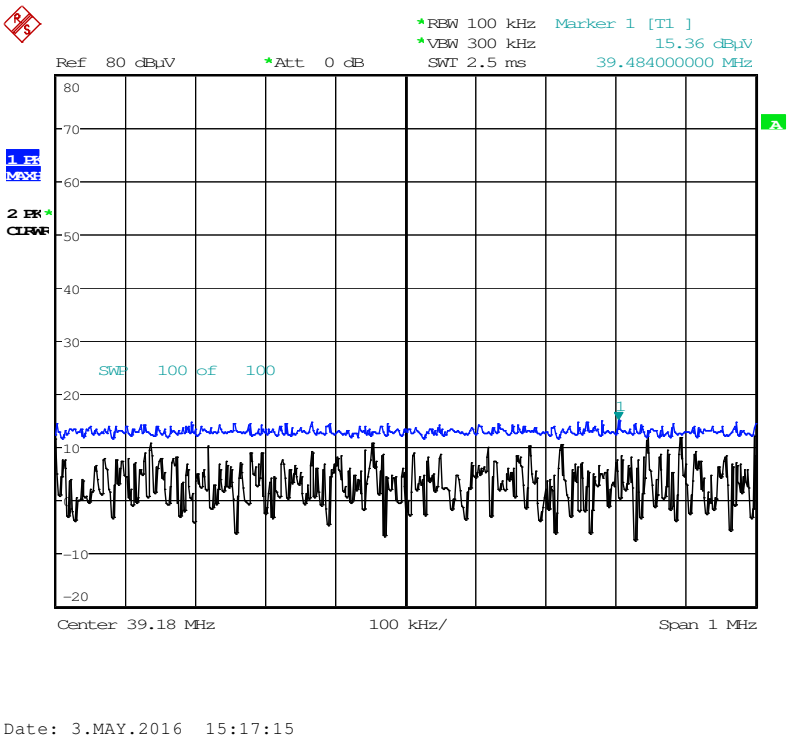
Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV	dB/m	dB	(H/V)	dBuV/m	dBuV/m	dB
39.48	15.36	11.95	0.66	H	27.97	40.0	12.03
52.73	14.35	12.38	0.70	H	27.43	40.0	12.57
*73.52	15.16	10.32	0.77	V	26.25	40.0	13.75
*115.94	14.29	11.64	0.97	H	26.9	43.5	16.6
139.61	15.21	12.84	1.03	H	29.08	43.5	14.42
*165.33	15.14	13.41	1.12	V	29.67	43.5	13.83

Remark

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

▣ RESULT PLOTS

Radiated Emissions (30 MHz ~ 1000 MHz) plot



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

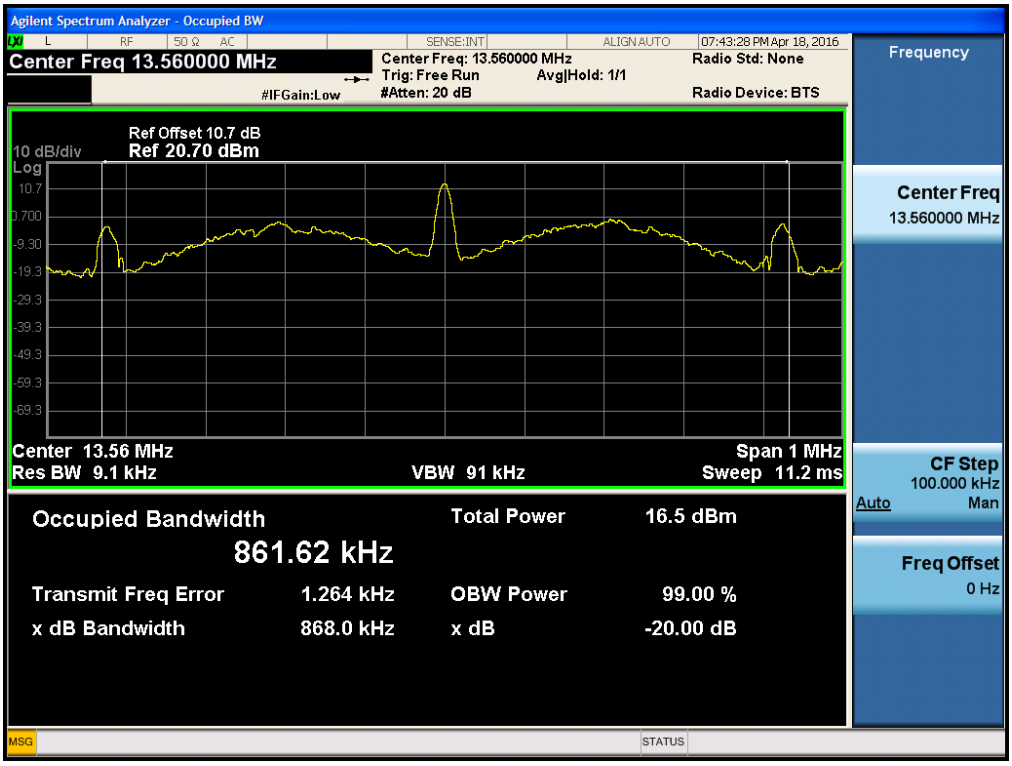
VBW = Auto

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 regulatoryrequirements for the type of device and allow the oscillator heater and the chamber temperatureto 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 afterthe 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	13.559293	-707	-0.0052139
100		-10	13.559296	-704	-0.0051917
100		0	13.559298	-702	-0.0051770
100		+10	13.559301	-699	-0.0051549
100		+20(Ref.)	13.559304	-696	-0.0051327
100		+30	13.559306	-694	-0.0051180
100		+40	13.559308	-692	-0.0051032
100		+50	13.559312	-688	-0.0050737
Maximum	4.40	+20	13.559305	-695	-0.0051254
End point	3.60	+20	13.559304	-696	-0.0051327

2 minutes

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	13.559308	-692	-0.0051032
100		-10	13.559302	-698	-0.0051475
100		0	13.559306	-694	-0.0051180
100		+10	13.559309	-691	-0.0050959
100		+20(Ref.)	13.559312	-688	-0.0050737
100		+30	13.559334	-666	-0.0049115
100		+40	13.559338	-662	-0.0048820
100		+50	13.559343	-657	-0.0048451
Maximum	4.40	+20	13.559313	-687	-0.0050664
End point	3.60	+20	13.559316	-684	-0.0050442

5 minutes

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	13.559301	-699	-0.0051549
100		-10	13.559304	-696	-0.0051327
100		0	13.559306	-694	-0.0051180
100		+10	13.559309	-691	-0.0050959
100		+20(Ref.)	13.559311	-689	-0.0050811
100		+30	13.559313	-687	-0.0050664
100		+40	13.559316	-684	-0.0050442
100		+50	13.559318	-682	-0.0050295
Maximum	4.40	+20	13.559312	-688	-0.0050737
End point	3.60	+20	13.559329	-671	-0.0049484

10 minutes

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	13.559299	-701	-0.0051696
100		-10	13.559301	-699	-0.0051549
100		0	13.559303	-697	-0.0051401
100		+10	13.559307	-693	-0.0051106
100		+20(Ref.)	13.559309	-691	-0.0050959
100		+30	13.559312	-688	-0.0050737
100		+40	13.559316	-684	-0.0050442
100		+50	13.559318	-682	-0.0050295
Maximum	4.40	+20	13.559311	-689	-0.0050811
End point	3.60	+20	13.559312	-688	-0.0050737

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 (dBµV)	
	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

Unterminate the Antenna

Conducted Emissions (Line 1)

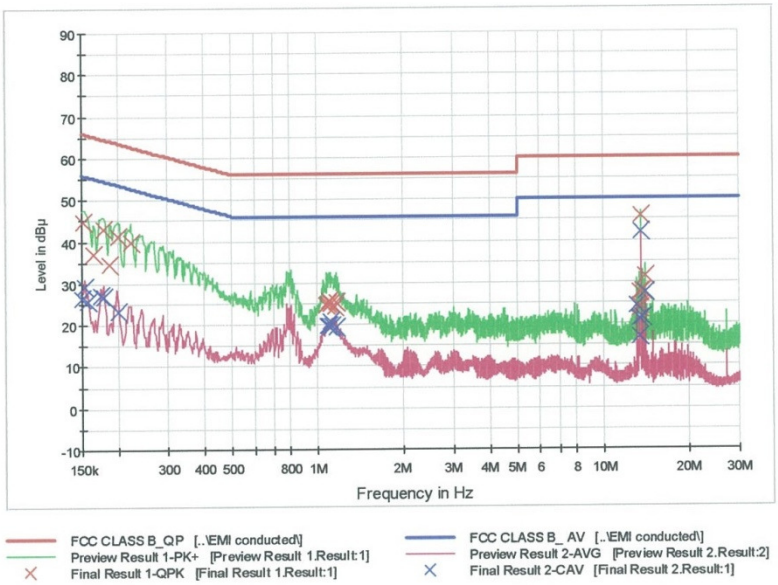
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-C5000
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC MODE _ UNTERMINATION

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	44.6	9.000	Off	N	9.6	21.3	65.9
0.164000	37.0	9.000	Off	N	9.6	28.3	65.3
0.178000	43.0	9.000	Off	N	9.6	21.6	64.6
0.188000	34.6	9.000	Off	N	9.6	29.6	64.1
0.200000	41.4	9.000	Off	N	9.6	22.2	63.6
0.222000	39.8	9.000	Off	N	9.6	22.9	62.7
1.076000	24.6	9.000	Off	N	9.7	31.4	56.0
1.084000	25.1	9.000	Off	N	9.7	30.9	56.0
1.096000	25.5	9.000	Off	N	9.7	30.5	56.0
1.108000	25.1	9.000	Off	N	9.7	30.9	56.0
1.146000	24.4	9.000	Off	N	9.7	31.6	56.0
1.166000	25.5	9.000	Off	N	9.7	30.5	56.0
13.348000	27.6	9.000	Off	N	10.1	32.4	60.0
13.364000	24.2	9.000	Off	N	10.1	35.8	60.0
13.396000	23.6	9.000	Off	N	10.1	36.4	60.0
13.560000	46.0	9.000	Off	N	10.1	14.0	60.0
13.770000	27.8	9.000	Off	N	10.1	32.2	60.0
13.984000	31.4	9.000	Off	N	10.1	28.6	60.0

Final Result 2

2016-04-29 오전 10:46:33

Test 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	26.6	9.000	Off	N	9.6	29.4	56.0
0.154000	29.3	9.000	Off	N	9.6	26.4	55.8
0.158000	25.7	9.000	Off	N	9.6	29.9	55.6
0.174000	27.0	9.000	Off	N	9.6	27.8	54.8
0.178000	26.9	9.000	Off	N	9.6	27.7	54.6
0.202000	23.4	9.000	Off	N	9.6	30.1	53.5
1.086000	19.7	9.000	Off	N	9.7	26.3	46.0
1.100000	19.5	9.000	Off	N	9.7	26.5	46.0
1.108000	19.5	9.000	Off	N	9.7	26.5	46.0
1.114000	20.6	9.000	Off	N	9.7	25.4	46.0
1.124000	19.7	9.000	Off	N	9.7	26.3	46.0
1.166000	19.2	9.000	Off	N	9.7	26.8	46.0
13.136000	24.2	9.000	Off	N	10.1	25.8	50.0
13.346000	21.0	9.000	Off	N	10.1	29.0	50.0
13.358000	17.0	9.000	Off	N	10.1	33.0	50.0
13.560000	42.0	9.000	Off	N	10.1	8.0	50.0
13.772000	21.5	9.000	Off	N	10.1	28.5	50.0
13.984000	27.3	9.000	Off	N	10.1	22.7	50.0

2016-04-29 오전 10:46:33

Conducted Emissions (Line 2)

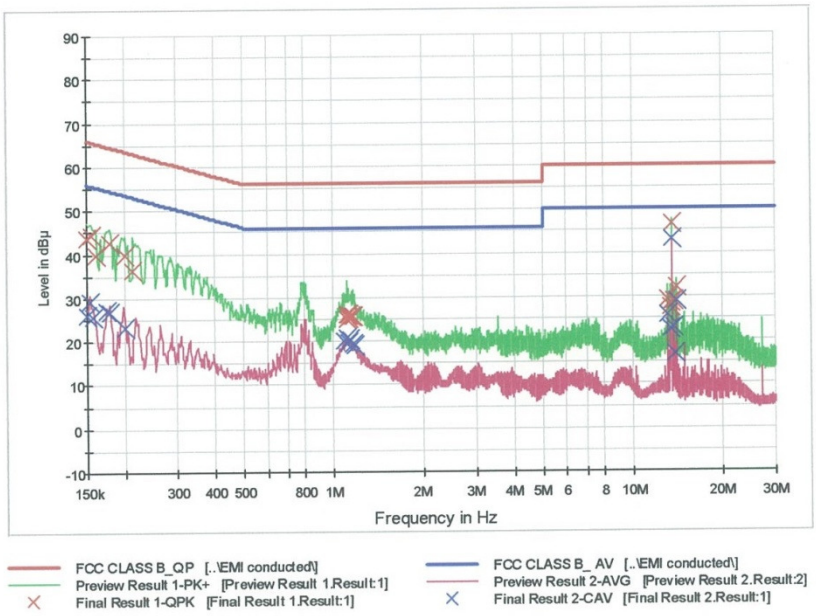
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-C5000
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC MODE _ UNTERMINATION

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	43.7	9.000	Off	L1	9.7	22.3	66.0
0.156000	44.3	9.000	Off	L1	9.6	21.4	65.7
0.160000	39.7	9.000	Off	L1	9.6	25.8	65.5
0.178000	42.8	9.000	Off	L1	9.6	21.8	64.6
0.202000	39.8	9.000	Off	L1	9.6	23.8	63.5
0.214000	36.4	9.000	Off	L1	9.6	26.6	63.0
1.106000	25.1	9.000	Off	L1	9.7	30.9	56.0
1.112000	26.1	9.000	Off	L1	9.7	29.9	56.0
1.120000	25.2	9.000	Off	L1	9.7	30.8	56.0
1.126000	26.1	9.000	Off	L1	9.7	29.9	56.0
1.150000	25.7	9.000	Off	L1	9.7	30.3	56.0
1.158000	25.6	9.000	Off	L1	9.7	30.4	56.0
13.136000	29.3	9.000	Off	L1	10.1	30.7	60.0
13.346000	28.4	9.000	Off	L1	10.1	31.6	60.0
13.350000	27.3	9.000	Off	L1	10.1	32.7	60.0
13.560000	46.6	9.000	Off	L1	10.1	13.4	60.0
13.772000	29.0	9.000	Off	L1	10.1	31.0	60.0
13.984000	32.1	9.000	Off	L1	10.1	27.9	60.0

Final Result 2

2016-04-29 오전 10:55:42

Test 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	26.2	9.000	Off	L1	9.7	29.8	56.0
0.154000	29.3	9.000	Off	L1	9.6	26.5	55.8
0.158000	25.8	9.000	Off	L1	9.6	29.7	55.6
0.174000	27.1	9.000	Off	L1	9.6	27.7	54.8
0.178000	26.8	9.000	Off	L1	9.6	27.8	54.6
0.202000	23.4	9.000	Off	L1	9.6	30.2	53.5
1.088000	20.1	9.000	Off	L1	9.7	25.9	46.0
1.112000	20.9	9.000	Off	L1	9.7	25.1	46.0
1.120000	19.5	9.000	Off	L1	9.7	26.5	46.0
1.136000	20.2	9.000	Off	L1	9.7	25.8	46.0
1.164000	19.2	9.000	Off	L1	9.7	26.8	46.0
1.172000	19.1	9.000	Off	L1	9.7	26.9	46.0
13.136000	25.7	9.000	Off	L1	10.1	24.3	50.0
13.346000	22.4	9.000	Off	L1	10.1	27.6	50.0
13.558000	43.1	9.000	Off	L1	10.1	6.9	50.0
13.770000	22.7	9.000	Off	L1	10.1	27.3	50.0
13.822000	16.9	9.000	Off	L1	10.1	33.1	50.0
13.982000	28.7	9.000	Off	L1	10.1	21.3	50.0

2016-04-29 오전 10:55:42

Terminate the Antenna

Conducted Emissions (Line 1)

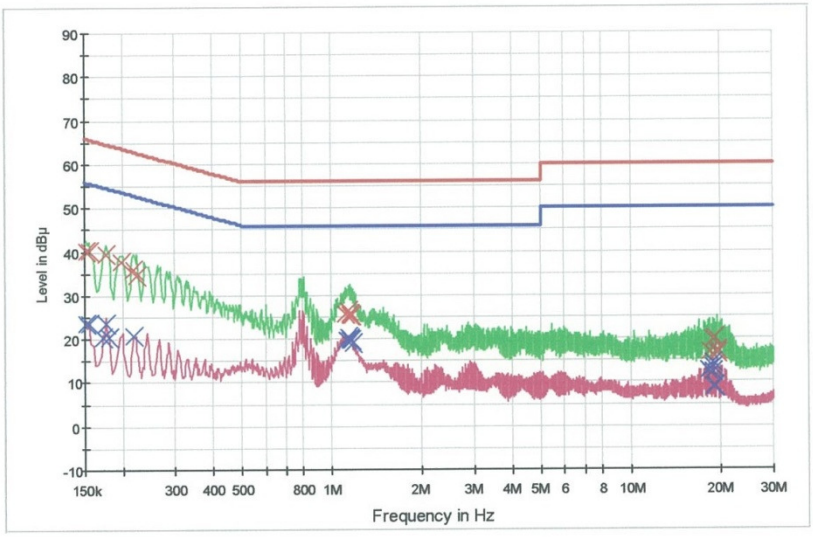
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-C5000
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC MODE _ TERMINATION

FCC CLASS B



FCC CLASS B_QP [..\EMI conducted\]
Preview Result 1-PK+ [Preview Result 1.Result:1]
Final Result 1-QPK [Final Result 1.Result:1]
FCC CLASS B_ AV [..\EMI conducted\]
Preview Result 2-AVG [Preview Result 2.Result:2]
Final Result 2-CAV [Final Result 2.Result:1]

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	40.1	9.000	Off	N	9.6	25.8	65.9
0.156000	40.1	9.000	Off	N	9.6	25.5	65.7
0.176000	39.3	9.000	Off	N	9.6	25.4	64.7
0.198000	37.8	9.000	Off	N	9.6	25.9	63.7
0.218000	36.1	9.000	Off	N	9.6	26.8	62.9
0.224000	34.4	9.000	Off	N	9.6	28.3	62.7
1.102000	25.8	9.000	Off	N	9.7	30.2	56.0
1.134000	26.3	9.000	Off	N	9.7	29.7	56.0
1.142000	25.6	9.000	Off	N	9.7	30.4	56.0
1.146000	25.4	9.000	Off	N	9.7	30.6	56.0
1.152000	25.2	9.000	Off	N	9.7	30.8	56.0
1.156000	25.3	9.000	Off	N	9.7	30.7	56.0
18.316000	16.7	9.000	Off	N	10.2	43.3	60.0
18.784000	19.6	9.000	Off	N	10.2	40.4	60.0
18.894000	19.8	9.000	Off	N	10.2	40.2	60.0
18.918000	20.0	9.000	Off	N	10.2	40.0	60.0
19.470000	16.6	9.000	Off	N	10.3	43.4	60.0
19.562000	17.3	9.000	Off	N	10.3	42.7	60.0

Final Result 2

2016-04-29 오전 11:06:47

Test 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	23.7	9.000	Off	N	9.6	32.2	55.9
0.156000	23.5	9.000	Off	N	9.6	32.2	55.7
0.172000	20.5	9.000	Off	N	9.6	34.3	54.9
0.176000	23.5	9.000	Off	N	9.6	31.1	54.7
0.180000	20.4	9.000	Off	N	9.6	34.1	54.5
0.218000	20.7	9.000	Off	N	9.6	32.2	52.9
1.128000	19.6	9.000	Off	N	9.7	26.4	46.0
1.134000	20.5	9.000	Off	N	9.7	25.5	46.0
1.142000	20.0	9.000	Off	N	9.7	26.0	46.0
1.146000	19.5	9.000	Off	N	9.7	26.5	46.0
1.158000	19.6	9.000	Off	N	9.7	26.4	46.0
1.174000	19.0	9.000	Off	N	9.7	27.0	46.0
18.224000	12.7	9.000	Off	N	10.2	37.3	50.0
18.784000	14.5	9.000	Off	N	10.2	35.5	50.0
18.848000	13.5	9.000	Off	N	10.2	36.5	50.0
18.872000	12.3	9.000	Off	N	10.2	37.7	50.0
18.954000	9.0	9.000	Off	N	10.2	41.0	50.0
19.000000	8.9	9.000	Off	N	10.2	41.1	50.0

2016-04-29 오전 11:06:47

Conducted Emissions (Line 2)

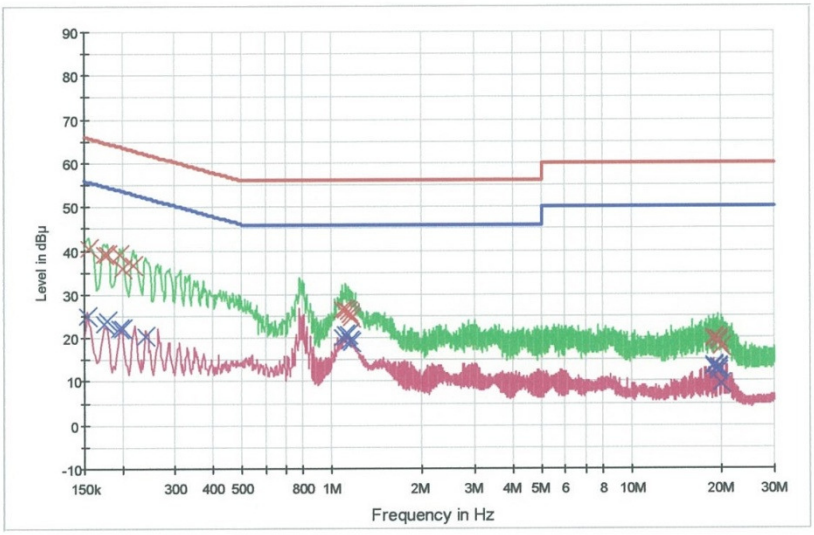
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-C5000
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC MODE _ TERMINATION

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.156000	40.5	9.000	Off	L1	9.6	25.2	65.7
0.174000	39.2	9.000	Off	L1	9.6	25.5	64.8
0.178000	39.2	9.000	Off	L1	9.6	25.4	64.6
0.196000	39.0	9.000	Off	L1	9.6	24.7	63.8
0.202000	35.9	9.000	Off	L1	9.6	27.6	63.5
0.218000	36.7	9.000	Off	L1	9.6	26.2	62.9
1.086000	26.3	9.000	Off	L1	9.7	29.7	56.0
1.110000	26.2	9.000	Off	L1	9.7	29.8	56.0
1.114000	26.3	9.000	Off	L1	9.7	29.7	56.0
1.132000	25.9	9.000	Off	L1	9.7	30.1	56.0
1.146000	25.3	9.000	Off	L1	9.7	30.8	56.0
1.168000	24.5	9.000	Off	L1	9.7	31.5	56.0
18.766000	19.9	9.000	Off	L1	10.2	40.1	60.0
18.854000	19.9	9.000	Off	L1	10.2	40.1	60.0
18.870000	19.8	9.000	Off	L1	10.2	40.2	60.0
19.440000	19.1	9.000	Off	L1	10.2	40.9	60.0
19.570000	19.5	9.000	Off	L1	10.2	40.5	60.0
19.992000	17.8	9.000	Off	L1	10.2	42.2	60.0

Final Result 2

2016-04-29 오전 11:15:47

Test 2 / 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	25.1	9.000	Off	L1	9.6	30.7	55.8
0.174000	23.1	9.000	Off	L1	9.6	31.6	54.8
0.178000	23.8	9.000	Off	L1	9.6	30.8	54.6
0.196000	22.2	9.000	Off	L1	9.6	31.6	53.8
0.200000	22.2	9.000	Off	L1	9.6	31.4	53.6
0.240000	20.6	9.000	Off	L1	9.6	31.5	52.1
1.086000	19.9	9.000	Off	L1	9.7	26.1	46.0
1.110000	20.6	9.000	Off	L1	9.7	25.4	46.0
1.116000	20.3	9.000	Off	L1	9.7	25.7	46.0
1.132000	20.6	9.000	Off	L1	9.7	25.4	46.0
1.146000	19.5	9.000	Off	L1	9.7	26.5	46.0
1.168000	18.9	9.000	Off	L1	9.7	27.1	46.0
18.762000	13.8	9.000	Off	L1	10.2	36.2	50.0
18.850000	13.3	9.000	Off	L1	10.2	36.7	50.0
19.440000	12.3	9.000	Off	L1	10.2	37.7	50.0
19.500000	13.3	9.000	Off	L1	10.2	36.7	50.0
19.570000	13.1	9.000	Off	L1	10.2	36.9	50.0
19.874000	9.5	9.000	Off	L1	10.2	40.5	50.0

2016-04-29 오전 11:15:47

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	12/28/2015	Annual	100073
Rohde & Schwarz	ESCI / TEST RECEIVER	12/28/2015	Annual	100584
Agilent	E4440A/ Spectrum Analyzer	03/18/2016	Annual	US45303008
Agilent	N9020A / SIGNAL ANALYZER	06/30/2015	Annual	MY51110085
Agilent	N9030A / SIGNAL ANALYZER	11/24/2015	Annual	MY49431210
Agilent	N1911A / Power Meter	07/09/2015	Annual	MY45100523
Agilent	N1921A / Power Sensor	03/11/2016	Annual	MY52260025
Agilent	87300B/Directional Coupler	11/30/2015	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/15/2015	Annual	5001
Hewlett Packard	E3632A / DC POWER SUPPLY	03/09/2016	Annual	KR75303962
Agilent	8493C / Attenuator(10 dB)	07/23/2015	Annual	07560
Rohde & Schwarz	CBT / BLUETOOTH TESTER	05/11/2015	Annual	100422
ESPAC.	SH-642 / Temp & Humidity Chamber	07/23/2015	Annual	93000717

13.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Schwarzbeck	VULB 9160/ TRILOG Antenna	10/10/2014	Biennial	3368
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
CERNEX	CBL18265035 / POWER AMP	07/27/2015	Annual	22966
Schwarzbeck	BBHA 9120D/ Horn Antenna	05/07/2015	Biennial	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	04/30/2015	Biennial	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	01/15/2016	Annual	839117/011
Rohde & Schwarz	Loop Antenna	02/23/2016	Biennial	1513-175
CERNEX	CBLU1183540 / Power Amplifier	07/21/2015	Annual	22964