

FCC NFC REPORT

FCC Certification

Applicant Name: SAMSUNG Electronics Co.,Ltd.	Date of Issue: May 29, 2015
Address: 129, Samsung-ro, Yeongtong-gu Suwon-si, Gyeonggi-do 443-742 Rep. of Korea	Test Site/Location: HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
	Report No.: HCT-R-1505-F004-1
	HCT FRN: 0005866421

FCC ID:	A3LSMG361F
APPLICANT:	SAMSUNG Electronics Co.,Ltd.

FCC Model(s):	SM-G361F
EUT Type:	Mobile Phone
RF Output Field Strength:	8.91 dBuV/m @30 m
Frequency of Operation:	13.5601 MHz
Modulation type:	ASK
FCC Classification:	Low Power Communication Device – Transmitter
FCC Rule Part(s):	FCC Part 15.225 Subpart C

Engineering Statement:

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
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Approved by
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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1505-F004	May 08, 2015	- First Approval Report
HCT-R-1505-F004-1	May 29, 2015	- Revised the states of the antenna in Section.

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1. GENERAL INFORMATION

Applicant: SAMSUNG Electronics Co.,Ltd.
Address: 129, Samsung-ro, Yeongtong-gu Suwon-Si, Gyeonggi-do, 443-742 Rep. of Korea
FCC ID: A3LSMG361F
EUT Type: Mobile Phone
Model name(s): SM-G361F
Date(s) of Tests: April 27, 2015 ~ May 06, 2015
Place of Tests: HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
(IC Recognition No. : 5944A-3)

2. EUT DESCRIPTION

FCC Model Name	SM-G361F
EUT Type	Mobile Phone
Power Supply	DC 3.85 V
Battery Type	Li-ion Battery(Standard)
Frequency of Operation	13.5601 MHz
Transmit Power	8.91 dBuV/m @30 m
Modulation Type	ASK
Antenna Specification	Manufacturer: AQ Corporation Antenna type: NFC Loop Antenna

3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices(ANSI C63.10-2009).

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 :2009) 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: 2009).

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.

3.5 STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance With
FCC Part 15.Subpart C

Regulation	Measurement standard	Range
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(a)	ANSI C63.10:2009	13.553MHz to 13.567MHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(d)	ANSI C63.10:2009	outside of the 13.110-14.010 MHz band
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209	ANSI C63.10:2009	9kHz to 30MHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209	ANSI C63.10:2009	30MHz to 1GHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.207	ANSI C63.10:2009	150kHz to 30MHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(e)	ANSI C63.10:2009	0.01% of nominal
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.215(c)	ANSI C63.10:2009	-

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.

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. Detailed description of test facilities was submitted to the Commission and accepted dated February 28, 2014 (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 detachable.

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

7. 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 Emissions	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

8. 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

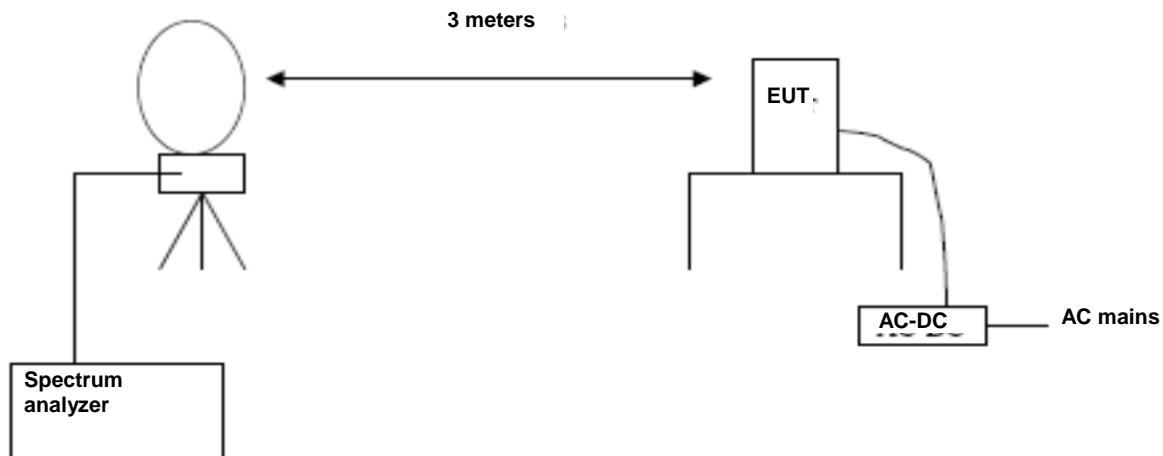
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

15.225 Operation within the band 13.110 – 14.010 MHz.

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter (= 84 dBuV/m) at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 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 13.710-14.010 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 13.110-14.010 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.

8.1. RADIATED EMISSION 9 kHz – 30 MHz

Test Set-up



Test Procedure

The EUT was placed on a non-conductive table located on a large open test site. 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(dB μ V/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

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)
13.5601(H)	28.54	20.37	-40	8.91	84.00	75.09
13.5596(V)	24.91	20.37	-40	5.28	84.00	78.72

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	16.55	20.37	-40	-3.08	50.47	53.55
13.5670	16.61	20.37	-40	-3.02	50.47	53.49

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)
13.3488	16.00	20.37	-40	-3.63	40.51	44.14
13.7730	13.28	20.37	-40	-6.35	40.51	46.86

9 kHz -30 MHz

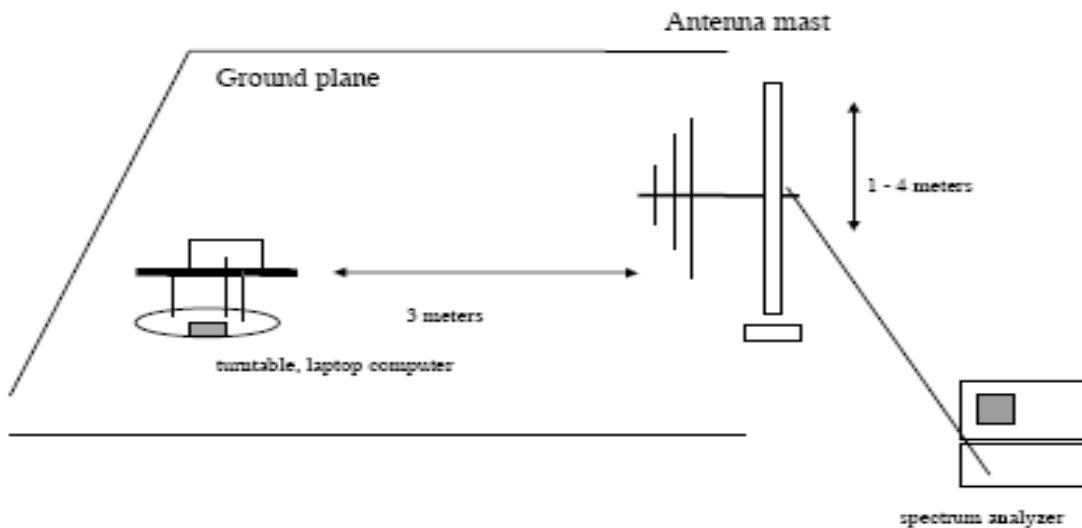
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
12.5618	7.41	20.62	-40	-11.97	29.54	41.51
14.5264	8.76	20.34	-40	-10.9	29.54	40.44
27.1237	7.61	20.65	-40	-11.74	29.54	41.28
27.1288	7.21	20.65	-40	-12.14	29.54	41.68

Note :

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

8.2. 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.

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
*37.63	19.91	11.95	0.66	H	32.52	40.00	7.48
43.55	19.65	12.3	0.66	H	32.61	40.00	7.39
78.93	18.55	8.19	0.78	V	27.52	40.00	12.48
89.69	19.95	7.73	0.86	H	28.54	40.00	11.46
122.94	20.41	11.64	0.96	H	33.01	43.50	10.49
*137.9	20.65	12.84	1.03	V	34.52	43.50	8.98

Remark

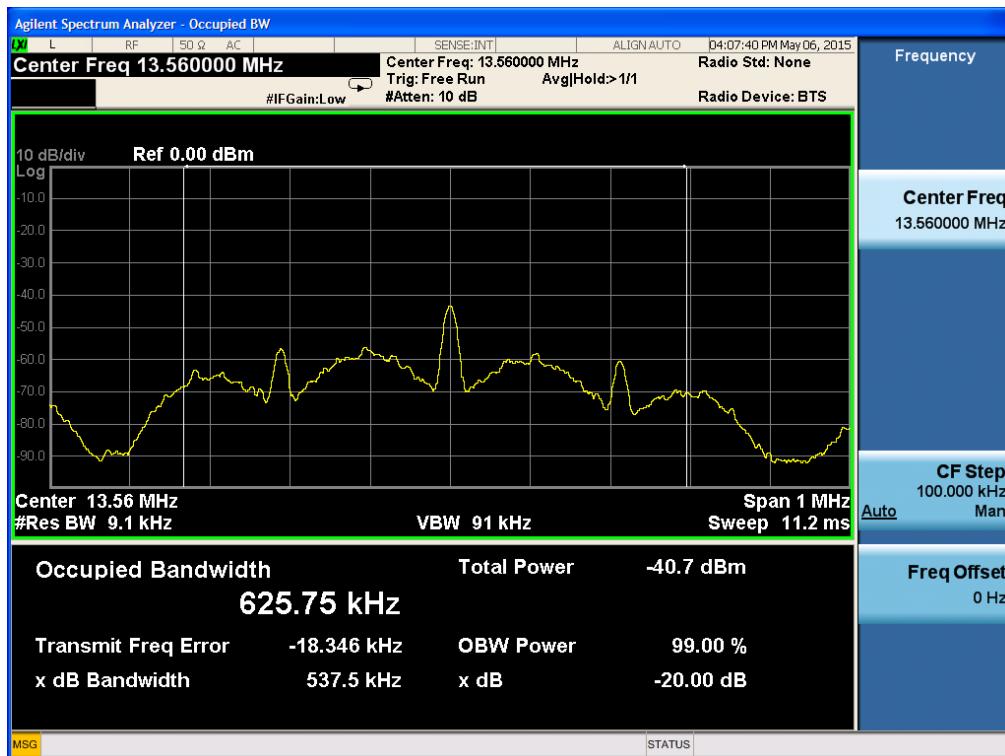
1. Result Level = Read Level + (Antenna Factor+ Cable Loss)
2. Margin = Limit – Result Level
3. '*' is the result for restricted band.

9. 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.



10. FREQUENCY TOLERANCE

Procedure: Part 15.225, ANSI 63.10

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.

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

Measurement Result:

VOLTAGE	POWER	Temperature	Frequency	Frequency Error
(%)	(VDC)	(°C)	(MHz)	(Hz)
100%	3.85	-20	13.560155	155.00
100%		-10	13.560170	170.00
100%		0	13.560182	182.00
100%		10	13.560196	196.00
100%		20	13.560210	210.00
100%		30	13.560225	225.00
100%		40	13.560237	237.00
100%		50	13.560250	250.00
Batt. Endpoint		20	13.560195	195.00

11. 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 with a detachable antenna 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)

NFC UNTERMINATION_N

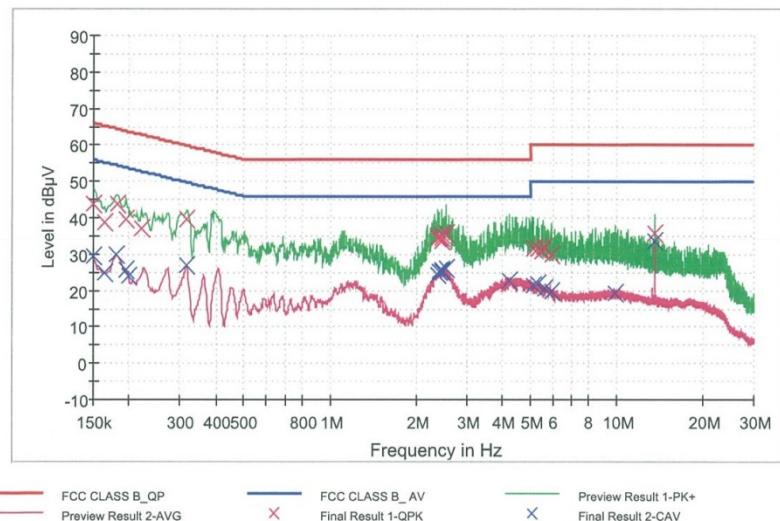
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HCT TEST Report

Common Information

EUT: SM-G361F
 Manufacturer: SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE (UNTERMINATION)
 Operator Name: SK LEE

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	N	9.6	22.3	66.0
0.164000	38.8	9.000	Off	N	9.6	26.5	65.3
0.182000	43.9	9.000	Off	N	9.6	20.5	64.4
0.194000	39.4	9.000	Off	N	9.6	24.5	63.9
0.220000	36.9	9.000	Off	N	9.6	25.9	62.8
0.318000	39.8	9.000	Off	N	9.7	20.0	59.8
2.370000	34.5	9.000	Off	N	9.8	21.5	56.0
2.402000	34.8	9.000	Off	N	9.8	21.2	56.0
2.452000	34.6	9.000	Off	N	9.8	21.4	56.0
2.460000	35.3	9.000	Off	N	9.8	20.7	56.0
2.464000	33.8	9.000	Off	N	9.8	22.2	56.0
2.552000	36.0	9.000	Off	N	9.8	20.0	56.0
5.146000	31.6	9.000	Off	N	9.9	28.4	60.0
5.324000	31.4	9.000	Off	N	9.9	28.6	60.0
5.508000	30.6	9.000	Off	N	9.9	29.4	60.0
5.552000	31.9	9.000	Off	N	9.9	28.1	60.0

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NFC UNTERMINATION_N

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Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
5.910000	30.1	9.000	Off	N	9.9	29.9	60.0
13.560000	35.8	9.000	Off	N	10.1	24.2	60.0

Final Result 2

Frequency (MHz)	CAverage (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150000	29.5	9.000	Off	N	9.6	26.5	56.0
0.164000	25.1	9.000	Off	N	9.6	30.2	55.3
0.180000	30.0	9.000	Off	N	9.6	24.5	54.5
0.194000	25.6	9.000	Off	N	9.6	28.3	53.9
0.198000	24.1	9.000	Off	N	9.6	29.6	53.7
0.316000	27.0	9.000	Off	N	9.7	22.8	49.8
2.370000	24.4	9.000	Off	N	9.8	21.6	46.0
2.402000	25.2	9.000	Off	N	9.8	20.8	46.0
2.452000	25.6	9.000	Off	N	9.8	20.4	46.0
2.462000	25.2	9.000	Off	N	9.8	20.8	46.0
2.552000	26.0	9.000	Off	N	9.8	20.0	46.0
4.246000	22.9	9.000	Off	N	9.8	23.1	46.0
5.146000	21.5	9.000	Off	N	9.9	28.5	50.0
5.326000	21.8	9.000	Off	N	9.9	28.2	50.0
5.596000	20.7	9.000	Off	N	9.9	29.3	50.0
5.912000	19.7	9.000	Off	N	9.9	30.3	50.0
9.924000	19.6	9.000	Off	N	10.0	30.4	50.0
13.560000	33.6	9.000	Off	N	10.1	16.4	50.0

Conducted Emissions (Line 2)

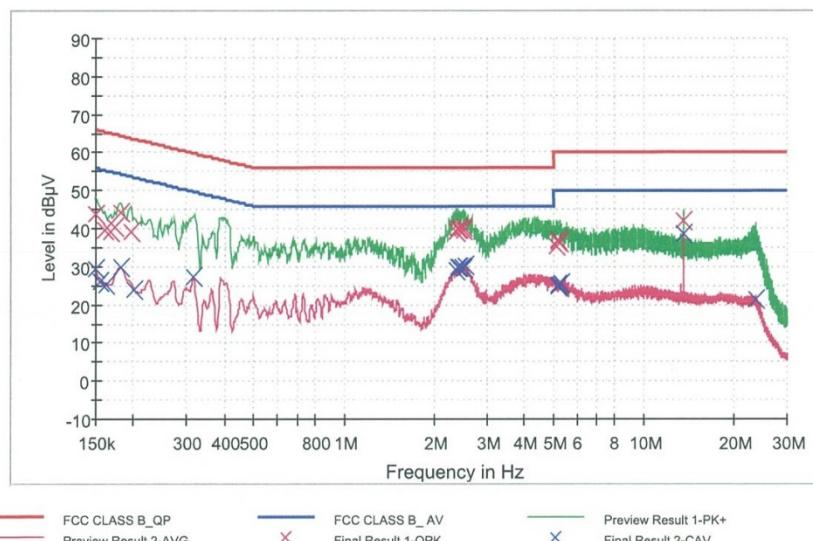
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HCT TEST Report**Common Information**

EUT: SM-G361F
Manufacturer: SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions: NFC MODE (UNTERMINATION)
Operator Name: SK LEE

FCC CLASS B

**Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150000	43.9	9.000	Off	L1	9.6	22.1	66.0
0.160000	39.4	9.000	Off	L1	9.6	26.1	65.5
0.168000	39.3	9.000	Off	L1	9.6	25.8	65.1
0.174000	40.6	9.000	Off	L1	9.6	24.2	64.8
0.182000	44.0	9.000	Off	L1	9.6	20.4	64.4
0.196000	39.2	9.000	Off	L1	9.6	24.6	63.8
2.388000	39.3	9.000	Off	L1	9.8	16.7	56.0
2.400000	40.2	9.000	Off	L1	9.8	15.8	56.0
2.440000	40.1	9.000	Off	L1	9.8	15.9	56.0
2.486000	40.2	9.000	Off	L1	9.8	15.8	56.0
2.502000	40.2	9.000	Off	L1	9.8	15.8	56.0
2.528000	39.8	9.000	Off	L1	9.8	16.2	56.0
5.142000	35.6	9.000	Off	L1	9.9	24.4	60.0
5.166000	36.9	9.000	Off	L1	9.9	23.1	60.0
5.176000	36.8	9.000	Off	L1	9.9	23.2	60.0
5.236000	36.4	9.000	Off	L1	9.9	23.6	60.0

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NFC UNTERMINATION_L1

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Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
13.558000	42.1	9.000	Off	L1	10.1	17.9	60.0
13.562000	42.1	9.000	Off	L1	10.1	17.9	60.0

Final Result 2

Frequency (MHz)	CAverage (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150000	29.5	9.000	Off	L1	9.6	26.5	56.0
0.156000	26.1	9.000	Off	L1	9.6	29.6	55.7
0.162000	25.2	9.000	Off	L1	9.6	30.2	55.4
0.182000	30.0	9.000	Off	L1	9.6	24.4	54.4
0.202000	24.1	9.000	Off	L1	9.7	29.4	53.5
0.316000	27.3	9.000	Off	L1	9.7	22.5	49.8
2.364000	28.9	9.000	Off	L1	9.8	17.1	46.0
2.400000	29.9	9.000	Off	L1	9.8	16.1	46.0
2.442000	29.8	9.000	Off	L1	9.8	16.2	46.0
2.494000	30.0	9.000	Off	L1	9.8	16.0	46.0
2.528000	29.4	9.000	Off	L1	9.8	16.6	46.0
2.550000	30.4	9.000	Off	L1	9.8	15.6	46.0
5.166000	24.7	9.000	Off	L1	9.9	25.3	50.0
5.174000	25.3	9.000	Off	L1	9.9	24.7	50.0
5.236000	25.4	9.000	Off	L1	9.9	24.6	50.0
5.306000	25.6	9.000	Off	L1	9.9	24.4	50.0
13.560000	38.6	9.000	Off	L1	10.1	11.4	50.0
23.640000	21.3	9.000	Off	L1	10.4	28.7	50.0

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Terminate the Antenna
Conducted Emissions (Line 1)

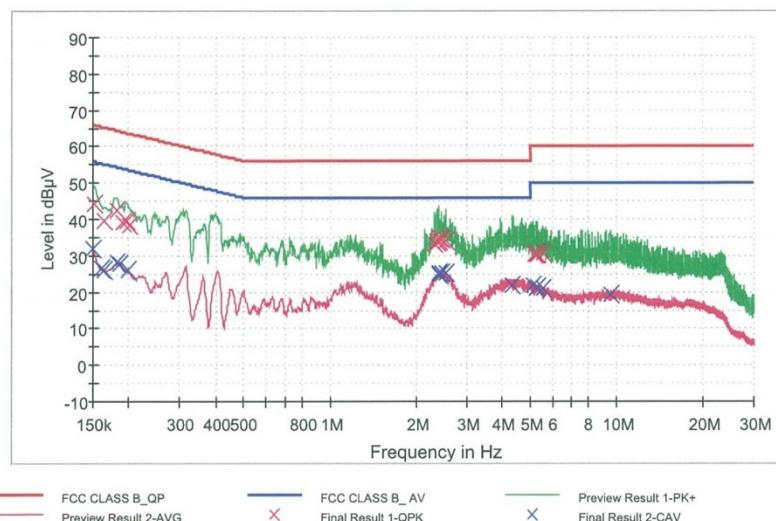
NFC TERMINATION N

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HCT TEST Report**Common Information**

EUT: SM-G361F
Manufacturer: SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions: NFC MODE (TERMINATION)
Operator Name: SK LEE

FCC CLASS B

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	44.2	9.000	Off	N	9.6	21.7	65.9
0.164000	39.5	9.000	Off	N	9.6	25.8	65.3
0.182000	42.4	9.000	Off	N	9.6	22.0	64.4
0.190000	39.4	9.000	Off	N	9.6	24.6	64.0
0.196000	39.8	9.000	Off	N	9.6	24.0	63.8
0.202000	38.4	9.000	Off	N	9.6	25.1	63.5
2.318000	33.3	9.000	Off	N	9.8	22.7	56.0
2.364000	33.5	9.000	Off	N	9.8	22.5	56.0
2.402000	35.1	9.000	Off	N	9.8	20.9	56.0
2.414000	34.1	9.000	Off	N	9.8	21.9	56.0
2.452000	34.5	9.000	Off	N	9.8	21.5	56.0
2.546000	34.0	9.000	Off	N	9.8	22.0	56.0
5.186000	30.4	9.000	Off	N	9.9	29.6	60.0
5.268000	30.4	9.000	Off	N	9.9	29.6	60.0
5.272000	30.7	9.000	Off	N	9.9	29.3	60.0
5.276000	30.6	9.000	Off	N	9.9	29.4	60.0

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NFC TERMINATION N

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Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
5.322000	30.4	9.000	Off	N	9.9	29.6	60.0
5.550000	31.0	9.000	Off	N	9.9	29.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150000	31.9	9.000	Off	N	9.6	24.1	56.0
0.160000	26.6	9.000	Off	N	9.6	28.9	55.5
0.164000	26.2	9.000	Off	N	9.6	29.1	55.3
0.182000	28.2	9.000	Off	N	9.6	26.2	54.4
0.186000	27.8	9.000	Off	N	9.6	26.4	54.2
0.198000	26.1	9.000	Off	N	9.6	27.6	53.7
2.404000	25.4	9.000	Off	N	9.8	20.6	46.0
2.414000	24.8	9.000	Off	N	9.8	21.2	46.0
2.452000	25.5	9.000	Off	N	9.8	20.5	46.0
2.542000	25.2	9.000	Off	N	9.8	20.8	46.0
2.546000	25.4	9.000	Off	N	9.8	20.6	46.0
4.320000	22.1	9.000	Off	N	9.8	23.9	46.0
5.136000	22.0	9.000	Off	N	9.9	28.0	50.0
5.268000	21.3	9.000	Off	N	9.9	28.7	50.0
5.276000	21.2	9.000	Off	N	9.9	28.8	50.0
5.322000	21.7	9.000	Off	N	9.9	28.3	50.0
5.550000	21.1	9.000	Off	N	9.9	28.9	50.0
9.558000	19.6	9.000	Off	N	10.0	30.4	50.0

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Conducted Emissions (Line 2)

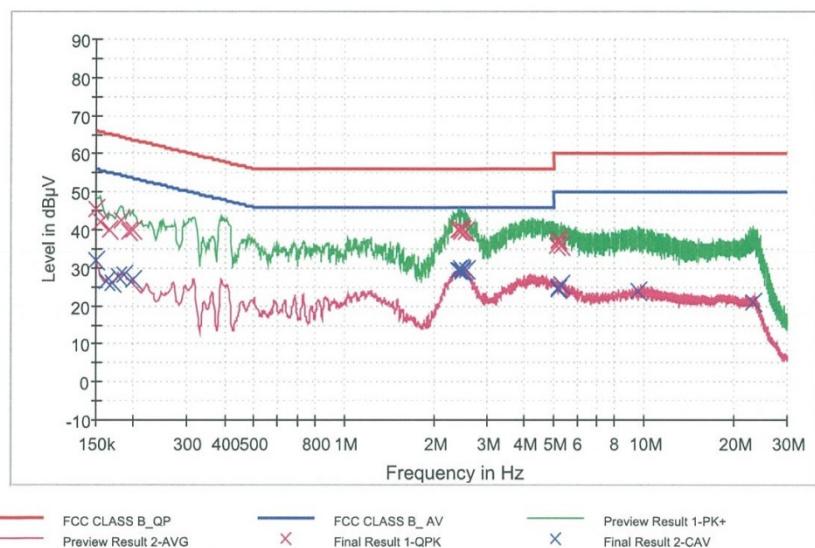
NFC TERMINATION L1

1 / 2

HCT TEST Report**Common Information**

EUT: SM-G361F
Manufacturer: SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions: NFC MODE (TERMINATION)
Operator Name: SK LEE

FCC CLASS B

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.5	9.000	Off	L1	9.6	20.5	66.0
0.156000	41.9	9.000	Off	L1	9.6	23.8	65.7
0.166000	39.9	9.000	Off	L1	9.6	25.3	65.2
0.182000	42.7	9.000	Off	L1	9.6	21.7	64.4
0.192000	39.7	9.000	Off	L1	9.6	24.2	63.9
0.198000	40.0	9.000	Off	L1	9.6	23.7	63.7
2.394000	40.2	9.000	Off	L1	9.8	15.8	56.0
2.432000	40.0	9.000	Off	L1	9.8	16.0	56.0
2.442000	40.2	9.000	Off	L1	9.8	15.8	56.0
2.458000	39.7	9.000	Off	L1	9.8	16.3	56.0
2.476000	40.0	9.000	Off	L1	9.8	16.0	56.0
2.546000	39.7	9.000	Off	L1	9.8	16.3	56.0
5.144000	35.8	9.000	Off	L1	9.9	24.2	60.0
5.164000	37.0	9.000	Off	L1	9.9	23.0	60.0
5.168000	37.3	9.000	Off	L1	9.9	22.7	60.0
5.172000	37.2	9.000	Off	L1	9.9	22.8	60.0

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NFC TERMINATION L1

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Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
5.176000	37.0	9.000	Off	L1	9.9	23.0	60.0
5.312000	36.0	9.000	Off	L1	9.9	24.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150000	32.0	9.000	Off	L1	9.6	24.0	56.0
0.162000	26.4	9.000	Off	L1	9.6	29.0	55.4
0.170000	26.2	9.000	Off	L1	9.6	28.8	55.0
0.178000	28.0	9.000	Off	L1	9.6	26.6	54.6
0.186000	28.3	9.000	Off	L1	9.6	25.9	54.2
0.198000	27.0	9.000	Off	L1	9.6	26.7	53.7
2.396000	29.5	9.000	Off	L1	9.8	16.5	46.0
2.440000	29.6	9.000	Off	L1	9.8	16.4	46.0
2.444000	29.7	9.000	Off	L1	9.8	16.3	46.0
2.472000	28.9	9.000	Off	L1	9.8	17.1	46.0
2.476000	29.4	9.000	Off	L1	9.8	16.6	46.0
2.558000	29.4	9.000	Off	L1	9.8	16.6	46.0
5.164000	24.5	9.000	Off	L1	9.9	25.5	50.0
5.172000	25.0	9.000	Off	L1	9.9	25.0	50.0
5.312000	25.8	9.000	Off	L1	9.9	24.2	50.0
5.316000	25.8	9.000	Off	L1	9.9	24.2	50.0
9.516000	24.1	9.000	Off	L1	10.0	25.9	50.0
23.160000	21.2	9.000	Off	L1	10.4	28.8	50.0

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12. LIST OF TEST EQUIPMENT

12.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216/ LISN	01/13/2015	Annual	100073
Agilent	E4440A/ Spectrum Analyzer	03/18/2015	Annual	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	05/23/2014	Annual	MY51110063
Agilent	N1911A/Power Meter	01/15/2015	Annual	MY45100523
Agilent	N1921A /POWER SENSOR	07/09/2014	Annual	MY45241059
Agilent	87300B/Directional Coupler	12/08/2014	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	05/19/2014	Annual	11275
ITECH	IT6720 / DC POWER SUPPLY	11/04/2014	Annual	010002156287001199
Agilent	8493C / Attenuator(10 dB)	07/21/2014	Annual	76649

12.2 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
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	09/04/2014	Annual	10094
CERNEX	CBL18265035 / POWER AMP	07/23/2014	Annual	22966
Schwarzbeck	BBHA 9120D/ Horn Antenna	07/05/2013	Biennial	1151
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	07/05/2013	Biennial	BBHA9170541
Rohde & Schwarz	FSP / Spectrum Analyzer	10/23/2014	Annual	836650/016
Wainwright Instrument	WHF3.0/18G-10EF / High Pass Filter	06/23/2014	Annual	8
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	06/17/2014	Annual	1
Rohde & Schwarz	LOOP ANTENNA	09/03/2014	Biennial	1513-175
CERNEX	CBL06185030 / POWER AMP	07/21/2014	Annual	22965
CERNEX	CBLU1183540 / POWER AMP	07/21/2014	Annual	22964