HCT CO.,LTD.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 FAX: +82-31-645-6401

FCC NFC REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

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

Date of Issue:
January 26, 2021

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

Report No.: HCT-RF-2101-FC040-R2

FCC ID:	**A3LSMA725M**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**
Model:	SM-A725M/DS
Additional Model:	SM-A725M
EUT Type:	Mobile Phone
RF Output Field Strength:	11.41 dBuV/m @30 m
Frequency of Operation:	13.56 MHz
Modulation type:	ASK
FCC Classification:	Low Power Communication Device Transmitter (DXX)
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. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

REVIEWED BY

Report prepared by : Se Wook Park
Engineer of Telecommunication Testing Center

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

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

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2101-FC040	January 11, 2021	- First Approval Report
HCT-RF-2101-FC040-R1	January 25, 2021	- Revised the 20dB Bandwidth Plot (Page: 23) - Added Calibration Date (Page: 36)
HCT-RF-2101-FC040-R2	January 26, 2021	- Added Retest Date (Page: 5)

Table of Contents

1. EUT DESCRIPTION

Model	SM-A725M/DS
Additional Model	SM-A725M
EUT Type	Mobile Phone
Power Supply	DC 3.86 V
Frequency of Operation	13.56 MHz
Transmit Power	Without Tag: 9.85 dBuV/m @30 m With Tag: 11.41 dBuV/m @30 m
Modulation Type	ASK
Date(s) of Tests	December 03, 2020 ~ January 07, 2021 January 25, 2021 (Retest)
Serial number	Radiated : R38NA01DDMT Conducted : R38NA01D9JX

2. 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.

EUT CONFIGURATION

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

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.225 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

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

Radiated Emissions

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

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. INSTRUMENT CALIBRATION

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

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

4. FACILITIES AND ACCREDITATIONS

FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

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

EQUIPMENT

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

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

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

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

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

(1) The antennas of this E.U.T are permanently attached.

(2) The E.U.T Complies with the requirement of §15.203

6. MEASUREMENT UNCERTAINTY

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

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

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

.

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

7. DESCRIPTION OF TESTS

7.1. Radiated Test

Limit (Operation within the band 13.110 MHz – 14.010 MHz)

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
13.553 – 13.567	15,848	30
13.410 ≤ f ≤ 13.553 13.567 ≤ f ≤ 13.710	334	30
13.110 ≤ f ≤ 13.410 13.710 ≤ f ≤ 14.010	106	30

Note:

1. 15,848 uV/m = 84.0 dBuV/m
2. 334 uV/m = 50.47 dBuV/m
3. 106 uV/m = 40.51 dBuV/m

Limit (Radiated Spurious Emissions)

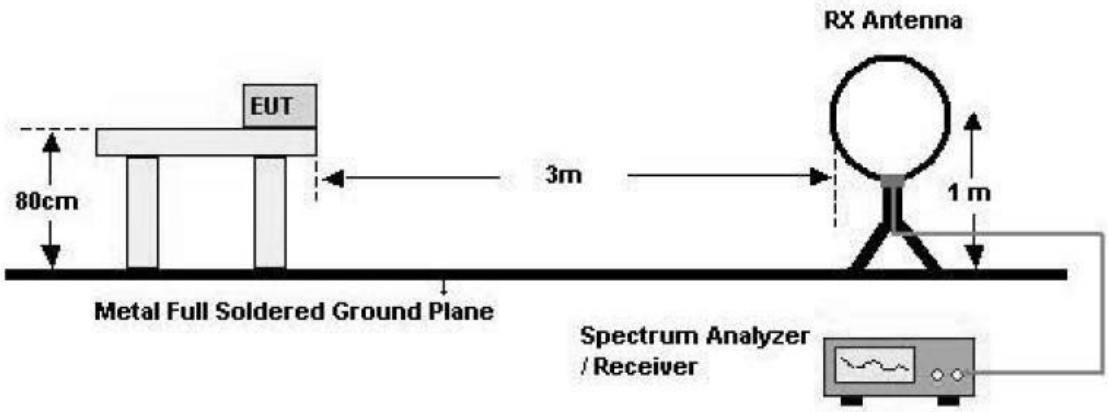
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	※100	3
88-216	※150	3
216-960	※200	3
Above 960	500	3

※:

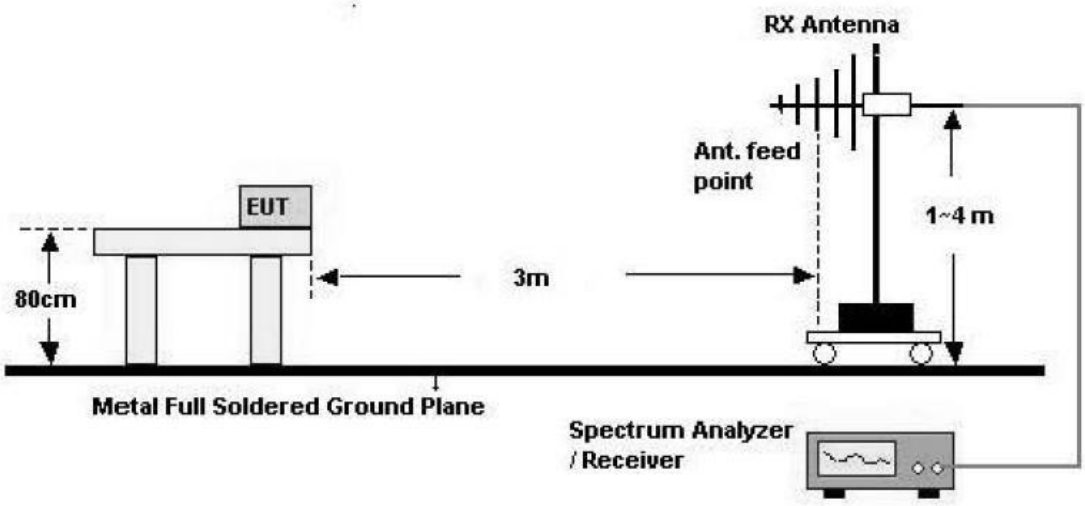
Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

Test Configuration

Below 30 MHz



30 MHz - 1 GHz



Test Procedure of inband

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor = 40log(3 m/30 m) = - 40 dB

   Measurement Distance : 3 m (Below 30 MHz)

7. Spectrum Setting
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 9 kHz
   - VBW ≥ 3 x RBW
8. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = 40log(3 m/300 m) = - 80 dB
   Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = 40log(3 m/30 m) = - 40 dB
   Measurement Distance : 3 m
8. Spectrum Setting
   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 9 kHz
   - VBW ≥ 3 x RBW
9. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

KDB 414788 OFS and Chamber Correlation Justification

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

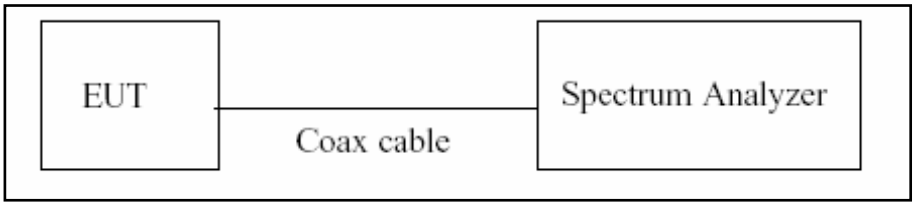
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Above 30 MHz)

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

7.2. 20dB Bandwidth

Test Configuration



Test Procedure

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

(Procedure 6.9.2 in ANSI 63.10-2013)

1) RBW = 1%~5% of the OBW
2) VBW = approximately three times RBW
3) Span =between two times and five times the OBW
4) Detector = Peak
5) Trace mode = Max hold
6) Allow the trace to stabilize

Note :

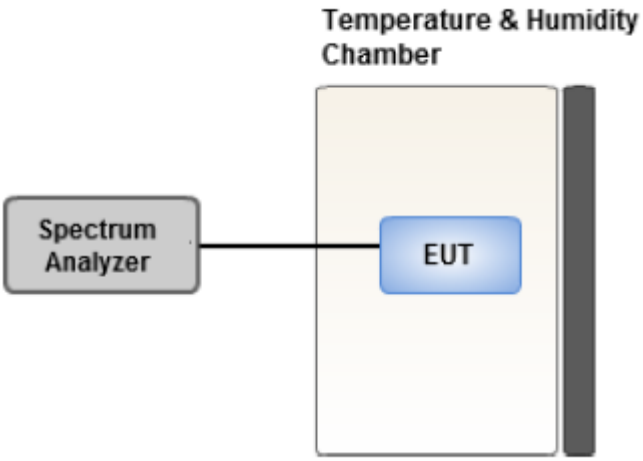
We tested Occupied Bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.

7.3. Frequency Stability

Limit

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency.

Test Configuration



Test Procedure.

For battery operated equipment, the equipment tests shall be performed using a new battery.

1) Turn the EUT OFF and place it inside the environmental temperature chamber.
   For devices that have oscillator heaters, energize only the heater circuit.
2) 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.
3) 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.
4) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency._

Note:

1) Temperature:
   The temperature is varied from -20°C to + 50°C using an environmental chamber.
2) Primary Supply Voltage :
   The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment.
   For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battety operating end point which shall be specified by the manufacturer.

7.4. AC Power line Conducted Emissions

Limit

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

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56[a]	56 to 46[a]
0.50 to 5	56	46
5 to 30	60	50

[a]Decreases with the logarithm of the frequency.

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

Test Configuration

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

Test Procedure

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

Sample Calculation

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

7.5. Worst case configuration and mode

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + external accessories(Earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis : Y
3. All type and bitrate were investigated and the worst case results are reported.
   (Worst case : Type A, 106 kbps)
4. All position of loop antenna were investigated and the worst case configuration results are reported.
   - Position : Horizontal, Vertical, Parallel to the ground plane
   - Worstcase : Horizontal
5. SM-A725M/DS, SM-A725M were tested and the worst case results are reported.
(Worst case : SM-A725M/DS)

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone+Earphone+Travel Adapter, Stand alone+Travel Adapter
   - Worstcase : Stand alone+Travel Adapter
2.. All modes(For unterminated the Antenna, terminated the Antenna) of operation were investigated and the worst case configuration results are reported.
   - Worstcase : unterminated the Antenna
3. SM-A725M/DS, SM-A725M were tested and the worst case results are reported.
(Worst case : SM-A725M/DS)

20dB Bandwidth & Frequency Stability

1. All type and bitrate were investigated and the worst case results are reported.
   (Worst case : Type A, 106 kbps)
2. SM-A725M/DS, SM-A725M were tested and the worst case results are reported.
(Worst case : SM-A725M/DS)

8. TEST SUMMARY

Regulation	Requirement	Result
Part 15.225 (a)	Radiated Electric Field Emissions (13.553MHz to 13.567MHz)	Pass
Part 15.225 (b)	Radiated Electric Field Emissions (13.410 ≤ f ≤ 13.553, 13.567 ≤ f ≤ 13.710)	Pass
Part 15.225 (c)	Radiated Electric Field Emissions (13.110 ≤ f ≤ 13.410, 13.710 ≤ f ≤ 14.010)	Pass
Part 15.209	Radiated Electric Field Emissions (9kHz to 30MHz)	Pass
Part 15.209	Radiated Electric Field Emissions (30MHz to 1GHz)	Pass
Part 15.225 (e)	Frequency Stability	Pass
Part 15.207	AC power conducted emissions (150kHz to 30MHz)	Pass
Part 15.215 (c)	20 dB Bandwidth	Pass

9. TEST RESULT

9.1. Operation within the band 13.110 MHz – 14.010 MHz

Measured Frequency Range : 13.553 MHz-13.567 MHz							
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL	Total (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.5607	32.88	18.53	-40.00	H	11.41	84.00	72.59
13.5596	28.33	18.53	-40.00	V	6.86	84.00	77.14

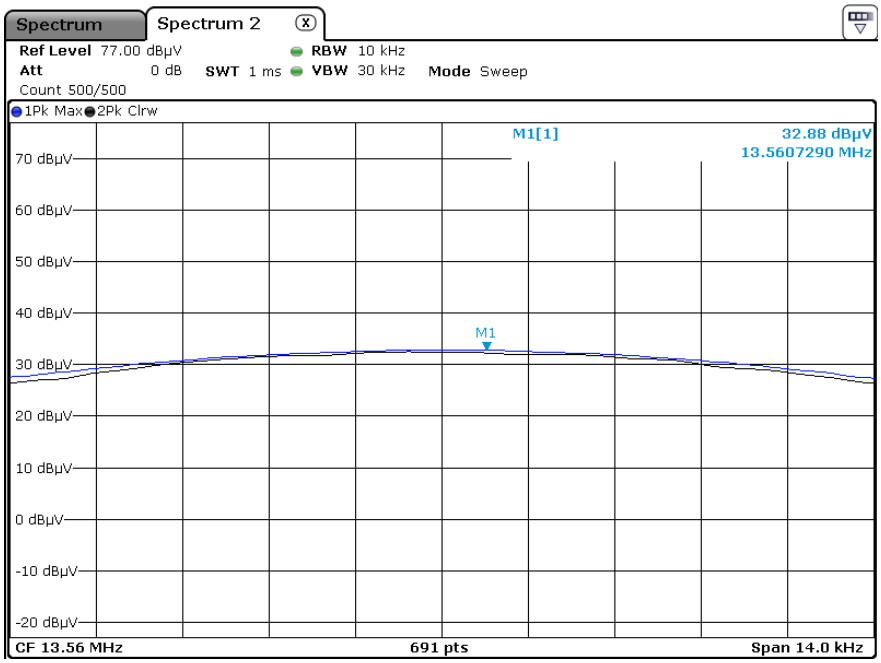
Measured Frequency Range : 13.410 MHz-13.553 MHz and 13.567 MHz-13.710 MHz							
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL	Total (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.5529	27.25	18.53	-40.00	H	5.78	50.47	44.69
13.5671	26.80	18.53	-40.00	H	5.33	50.47	45.14

Measured Frequency Range : 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)	Ant. POL	Total (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.3499	15.60	18.53	-40.00	H	-5.87	40.51	46.38
13.7710	15.56	18.53	-40.00	H	-5.91	40.51	46.42

Note:

With Tag (worst case)

▣ Test Plot



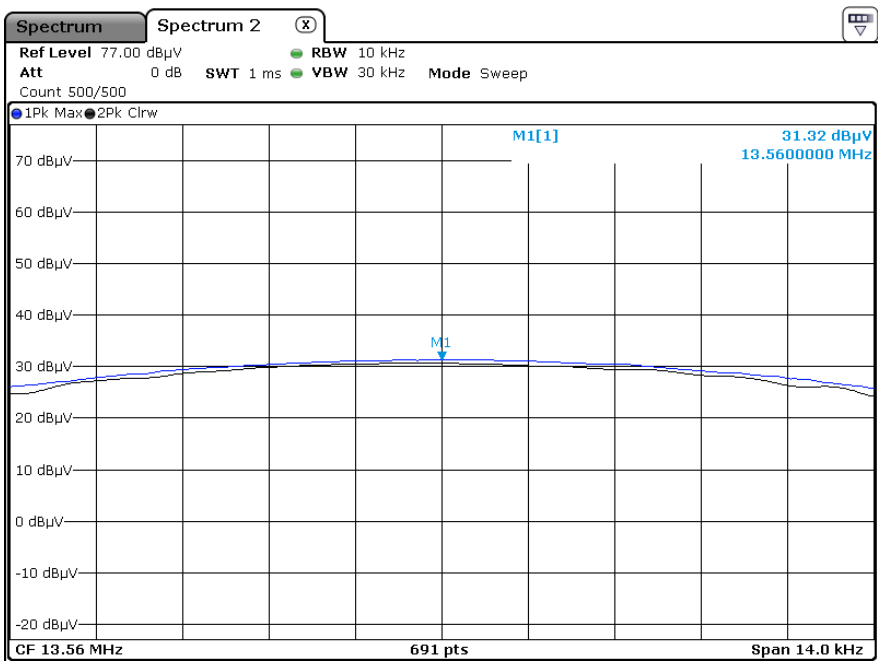
Note:

Plot of worst case are only reported.

Without Tag Mode (only fundamental)

Measured Frequency Range : 13.553 MHz-13.567 MHz							
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL	Total (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.5600	31.32	18.53	-40.00	H	9.85	84.00	74.15
13.5612	27.01	18.53	-40.00	V	5.54	84.00	78.46

▣ Test Plot



Note:

Plot of worst case are only reported.

9.2. Radiated Emission 9 kHz – 30 MHz

Measured Frequency Range : 9 kHz - 30 MHz							
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL	Total (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
11.3750	12.60	18.53	-40.00	H	-8.87	29.54	38.41
19.9460	12.21	18.53	-40.00	H	-9.26	29.54	38.80
27.1162	8.74	18.93	-40.00	H	-12.33	29.54	41.87
27.1493	8.58	18.93	-40.00	V	-12.49	29.54	42.03

Note:

1. With Tag (worst case)

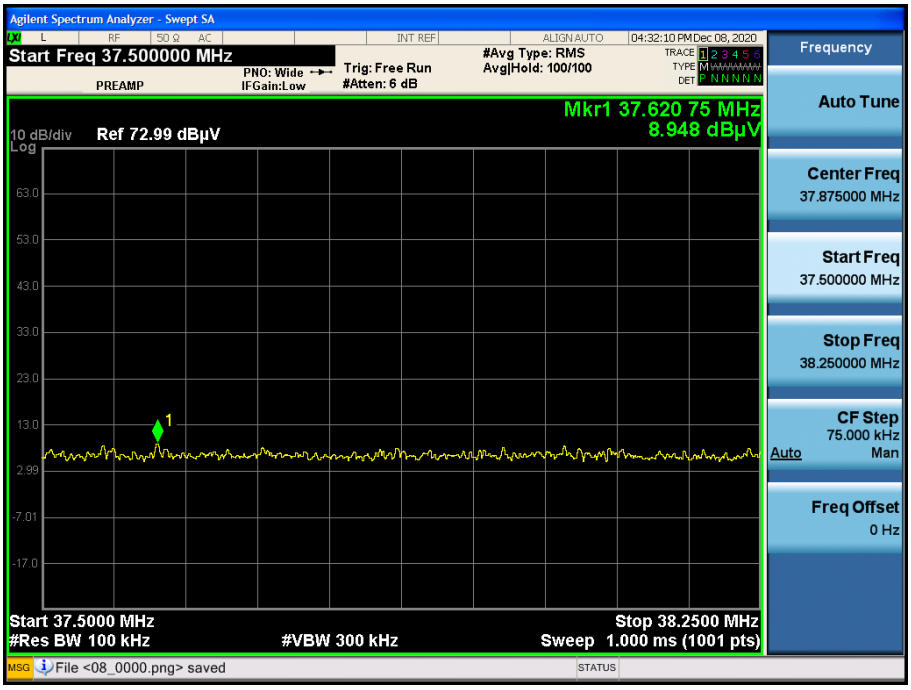
9.3. Radiated Emission 30 MHz – 1000 MHz

Measured Frequency Range : 30 MHz - 1000 MHz							
Frequency (MHz)	Read Level (dBuV/m) @3m	Ant.Factor (dB/m)	Cable Loss (dB)	Ant. Pol (H/V)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)
# 37.621	8.948	17.50	0.53	H	26.98	40.00	13.02
46.090	7.878	18.20	0.70	H	26.78	40.00	13.22
86.555	8.134	15.50	0.97	V	24.60	40.00	15.40
# 121.801	8.810	17.70	1.07	H	27.58	43.50	15.92
# 131.370	8.528	18.60	1.15	H	28.28	43.50	15.22
150.890	8.636	18.80	1.23	V	28.67	43.50	14.83

Note:

1. '#' is the result for restricted band.
2. With Tag (worst case)

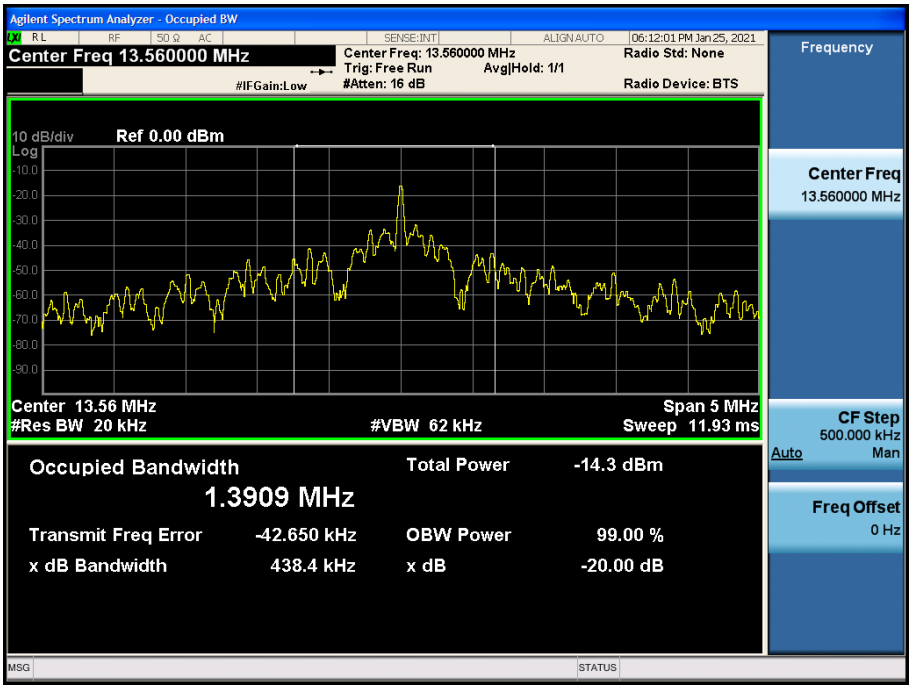
▣ Test Plot



Note:

Plot of worst case are only reported

9.4. 20 dB Bandwidth



9.5. Frequency Stability

Startup

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.86 VDC

DEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560112	112	0.0008260
100%		-10	13.560102	102	0.0007522
100%		0	13.560098	98	0.0007227
100%		+10	13.560087	87	0.0006416
100%		+20(Ref.)	13.560085	85	0.0006268
100%		+30	13.560076	76	0.0005605
100%		+40	13.560079	79	0.0005826
100%		+50	13.560082	82	0.0006047
End. Point	3.40	+20	13.560082	82	0.0006047

2 minutes

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.86 VDC

DEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560113	113	0.0008333
100%		-10	13.560108	108	0.0007965
100%		0	13.560095	95	0.0007006
100%		+10	13.560083	83	0.0006121
100%		+20(Ref.)	13.560080	80	0.0005900
100%		+30	13.560073	73	0.0005383
100%		+40	13.560075	75	0.0005531
100%		+50	13.560088	88	0.0006490
End. Point	3.40	+20	13.560092	92	0.0006785

5 minutes

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.86 VDC

DEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560098	98	0.0007227
100%		-10	13.560097	97	0.0007153
100%		0	13.560086	86	0.0006342
100%		+10	13.560080	80	0.0005900
100%		+20(Ref.)	13.560078	78	0.0005752
100%		+30	13.560077	77	0.0005678
100%		+40	13.560083	83	0.0006121
100%		+50	13.560089	89	0.0006563
End. Point	3.40	+20	13.560092	92	0.0006785

10 minutes

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.86 VDC

DEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560092	92	0.0006785
100%		-10	13.560087	87	0.0006416
100%		0	13.560085	85	0.0006268
100%		+10	13.560081	81	0.0005973
100%		+20(Ref.)	13.560075	75	0.0005531
100%		+30	13.560072	72	0.0005310
100%		+40	13.560078	78	0.0005752
100%		+50	13.560080	80	0.0005900
End. Point	3.40	+20	13.560082	82	0.0006047

9.6. POWERLINE CONDUCTE EMISSIONS

Conducted Emissions (Line 1)

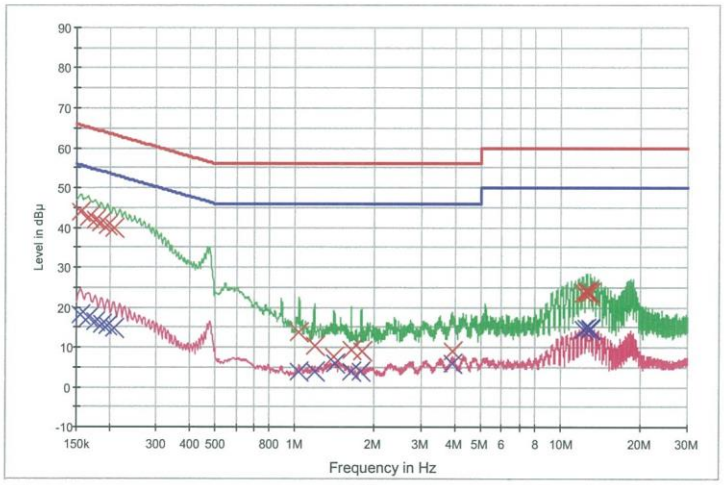
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-A725M/DS
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC L1

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154500	43.8	9.000	Off	L1	9.8	21.9	65.8
0.165750	42.6	9.000	Off	L1	9.8	22.6	65.2
0.177000	41.8	9.000	Off	L1	9.8	22.9	64.6
0.186000	41.1	9.000	Off	L1	9.8	23.1	64.2
0.197250	40.4	9.000	Off	L1	9.8	23.3	63.7
0.208500	39.8	9.000	Off	L1	9.8	23.5	63.3
1.037750	13.8	9.000	Off	L1	9.8	42.2	56.0
1.186250	10.3	9.000	Off	L1	9.8	45.7	56.0
1.406750	7.8	9.000	Off	L1	9.8	48.2	56.0
1.629500	9.4	9.000	Off	L1	9.8	46.6	56.0
1.780250	9.0	9.000	Off	L1	9.9	47.0	56.0
3.897500	8.9	9.000	Off	L1	9.9	47.1	56.0
12.141500	23.4	9.000	Off	L1	10.3	36.6	60.0
12.542000	23.9	9.000	Off	L1	10.3	36.2	60.0
12.553250	23.7	9.000	Off	L1	10.3	36.3	60.0
12.575750	23.4	9.000	Off	L1	10.3	36.6	60.0
12.931250	23.6	9.000	Off	L1	10.3	36.4	60.0
12.958250	23.6	9.000	Off	L1	10.3	36.4	60.0

2020-12-08 오후 4:45:55

Test 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154500	18.2	9.000	Off	L1	9.8	37.6	55.8
0.165750	17.3	9.000	Off	L1	9.8	37.8	55.2
0.177000	16.5	9.000	Off	L1	9.8	38.1	54.6
0.188250	15.9	9.000	Off	L1	9.8	38.2	54.1
0.197250	15.4	9.000	Off	L1	9.8	38.3	53.7
0.208500	14.9	9.000	Off	L1	9.8	38.4	53.3
1.037750	4.0	9.000	Off	L1	9.8	42.0	46.0
1.188500	4.0	9.000	Off	L1	9.8	42.0	46.0
1.409000	5.8	9.000	Off	L1	9.8	40.2	46.0
1.631750	4.0	9.000	Off	L1	9.8	42.0	46.0
1.778000	3.9	9.000	Off	L1	9.9	42.1	46.0
3.899750	5.8	9.000	Off	L1	9.9	40.2	46.0
12.137000	14.5	9.000	Off	L1	10.3	35.5	50.0
12.539750	14.8	9.000	Off	L1	10.3	35.2	50.0
12.929000	14.6	9.000	Off	L1	10.3	35.4	50.0
12.944750	14.7	9.000	Off	L1	10.3	35.3	50.0
12.956000	14.7	9.000	Off	L1	10.3	35.3	50.0
12.980750	14.5	9.000	Off	L1	10.3	35.5	50.0

2020-12-08 오후 4:45:55

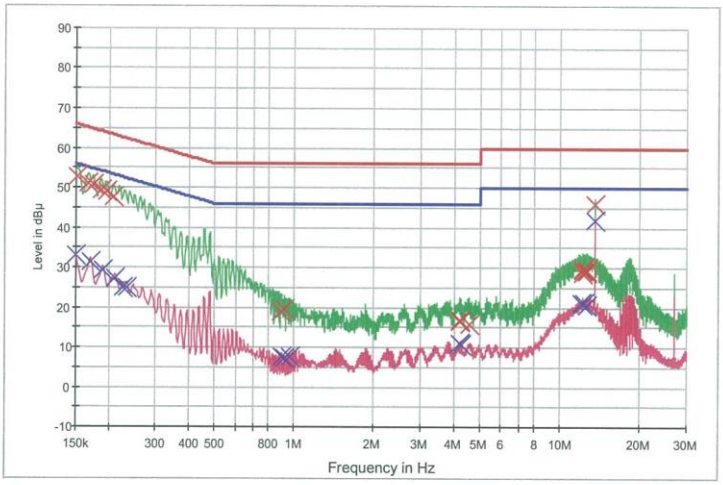
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-A725M/DS
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC UnT L1

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152250	52.8	9.000	Off	L1	9.8	13.1	65.9
0.165750	51.0	9.000	Off	L1	9.8	14.1	65.2
0.174750	50.7	9.000	Off	L1	9.8	14.0	64.7
0.188250	49.4	9.000	Off	L1	9.8	14.8	64.1
0.197250	49.1	9.000	Off	L1	9.8	14.6	63.7
0.208500	47.8	9.000	Off	L1	9.8	15.5	63.3
0.891500	18.9	9.000	Off	L1	9.8	37.1	56.0
0.916250	19.4	9.000	Off	L1	9.8	36.6	56.0
4.196750	16.6	9.000	Off	L1	10.0	39.4	56.0
4.214750	16.4	9.000	Off	L1	10.0	39.6	56.0
4.565750	15.8	9.000	Off	L1	10.0	40.2	56.0
4.572500	15.7	9.000	Off	L1	10.0	40.3	56.0
12.152750	29.4	9.000	Off	L1	10.3	30.6	60.0
12.193250	29.6	9.000	Off	L1	10.3	30.4	60.0
12.251750	28.6	9.000	Off	L1	10.3	31.4	60.0
12.647750	29.2	9.000	Off	L1	10.3	30.8	60.0
12.668000	29.1	9.000	Off	L1	10.3	30.9	60.0
13.559000	46.1	9.000	Off	L1	10.3	13.9	60.0

2020-12-08 오후 4:40:45

Test 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	33.0	9.000	Off	L1	9.8	23.0	56.0
0.170250	31.5	9.000	Off	L1	9.8	23.4	54.9
0.190500	29.2	9.000	Off	L1	9.8	24.8	54.0
0.210750	27.2	9.000	Off	L1	9.8	26.0	53.2
0.226500	25.0	9.000	Off	L1	9.8	27.6	52.6
0.233250	25.1	9.000	Off	L1	9.8	27.3	52.3
0.896000	7.6	9.000	Off	L1	9.8	38.4	46.0
0.916250	7.3	9.000	Off	L1	9.8	38.7	46.0
0.959000	7.8	9.000	Off	L1	9.8	38.2	46.0
4.194500	11.0	9.000	Off	L1	10.0	35.0	46.0
4.214750	10.9	9.000	Off	L1	10.0	35.1	46.0
4.257500	10.6	9.000	Off	L1	10.0	35.4	46.0
11.988500	21.1	9.000	Off	L1	10.3	28.9	50.0
12.254000	21.0	9.000	Off	L1	10.3	29.0	50.0
12.274250	21.1	9.000	Off	L1	10.3	28.9	50.0
12.296750	21.3	9.000	Off	L1	10.3	28.7	50.0
12.668000	20.7	9.000	Off	L1	10.3	29.3	50.0
13.559000	41.9	9.000	Off	L1	10.3	8.1	50.0

2020-12-08 오후 4:40:45

Conducted Emissions (Line 2)

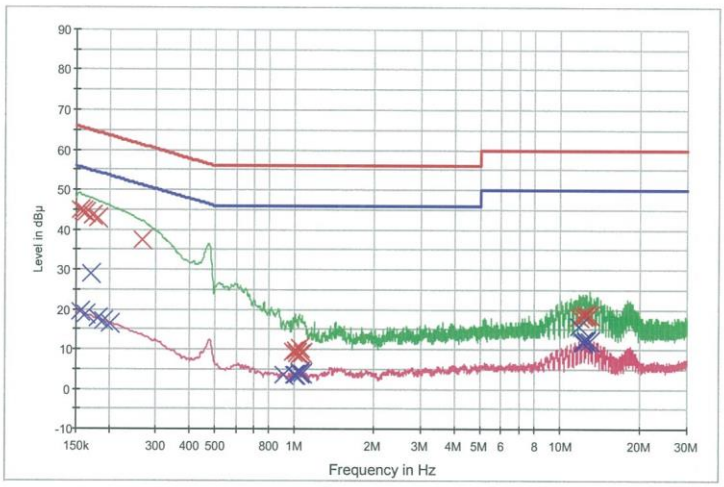
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-A725M/DS
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC N

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154500	44.9	9.000	Off	N	9.8	20.9	65.8
0.159000	44.6	9.000	Off	N	9.8	20.9	65.5
0.163500	44.3	9.000	Off	N	9.8	20.9	65.3
0.172500	43.7	9.000	Off	N	9.8	21.1	64.8
0.181500	43.0	9.000	Off	N	9.8	21.4	64.4
0.267000	37.5	9.000	Off	N	9.8	23.7	61.2
0.990500	9.4	9.000	Off	N	9.8	46.6	56.0
1.006250	9.5	9.000	Off	N	9.8	46.5	56.0
1.017500	9.1	9.000	Off	N	9.8	46.9	56.0
1.042250	10.3	9.000	Off	N	9.8	45.7	56.0
1.049000	8.8	9.000	Off	N	9.8	47.2	56.0
1.071500	8.9	9.000	Off	N	9.8	47.1	56.0
11.806250	18.1	9.000	Off	N	10.3	41.9	60.0
12.188750	18.5	9.000	Off	N	10.3	41.5	60.0
12.515000	18.5	9.000	Off	N	10.4	41.5	60.0
12.524000	18.7	9.000	Off	N	10.4	41.3	60.0
12.551000	18.9	9.000	Off	N	10.4	41.1	60.0
12.938000	18.6	9.000	Off	N	10.4	41.4	60.0

2020-12-08 오후 4:51:40

Test 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154500	19.4	9.000	Off	N	9.8	36.3	55.8
0.163500	18.8	9.000	Off	N	9.8	36.5	55.3
0.170250	29.0	9.000	Off	N	9.8	26.0	54.9
0.181500	17.6	9.000	Off	N	9.8	36.8	54.4
0.190500	17.1	9.000	Off	N	9.8	36.9	54.0
0.201750	16.5	9.000	Off	N	9.8	37.0	53.5
0.905000	3.4	9.000	Off	N	9.8	42.6	46.0
0.995000	3.6	9.000	Off	N	9.8	42.4	46.0
1.006250	3.7	9.000	Off	N	9.8	42.3	46.0
1.040000	4.1	9.000	Off	N	9.8	41.9	46.0
1.049000	3.8	9.000	Off	N	9.8	42.2	46.0
1.071500	3.8	9.000	Off	N	9.8	42.2	46.0
11.801750	15.8	9.000	Off	N	10.3	34.2	50.0
12.197750	11.9	9.000	Off	N	10.3	38.1	50.0
12.215750	11.8	9.000	Off	N	10.3	38.2	50.0
12.515000	12.0	9.000	Off	N	10.4	38.0	50.0
12.551000	12.3	9.000	Off	N	10.4	37.7	50.0
12.940250	12.2	9.000	Off	N	10.4	37.8	50.0

2020-12-08 오후 4:51:40

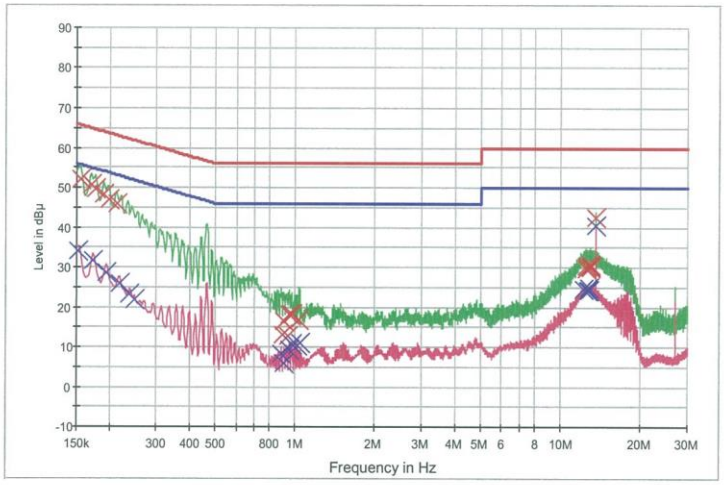
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SM-A725M/DS
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	NFC UnT N

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154500	52.2	9.000	Off	N	9.8	13.6	65.8
0.170250	50.8	9.000	Off	N	9.8	14.2	64.9
0.177000	49.8	9.000	Off	N	9.8	14.8	64.6
0.190500	48.3	9.000	Off	N	9.8	15.7	64.0
0.199500	47.0	9.000	Off	N	9.8	16.6	63.6
0.213000	45.9	9.000	Off	N	9.8	17.1	63.1
0.902750	13.0	9.000	Off	N	9.8	43.0	56.0
0.907250	16.4	9.000	Off	N	9.8	39.6	56.0
0.945500	12.7	9.000	Off	N	9.8	43.3	56.0
0.952250	18.2	9.000	Off	N	9.8	37.8	56.0
0.972500	18.0	9.000	Off	N	9.8	38.0	56.0
1.037750	16.9	9.000	Off	N	9.8	39.1	56.0
12.416000	29.7	9.000	Off	N	10.4	30.3	60.0
12.458750	30.2	9.000	Off	N	10.4	29.8	60.0
12.861500	30.8	9.000	Off	N	10.4	29.2	60.0
12.922250	30.4	9.000	Off	N	10.4	29.6	60.0
12.944750	30.2	9.000	Off	N	10.4	29.8	60.0
13.561250	42.5	9.000	Off	N	10.4	17.5	60.0

2020-12-08 오후 3:47:39

Test 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152250	33.9	9.000	Off	N	9.8	22.0	55.9
0.172500	31.8	9.000	Off	N	9.8	23.1	54.8
0.195000	28.8	9.000	Off	N	9.8	25.0	53.8
0.217500	25.9	9.000	Off	N	9.8	27.0	52.9
0.237750	23.2	9.000	Off	N	9.8	28.9	52.2
0.246750	21.8	9.000	Off	N	9.8	30.0	51.9
0.887000	8.3	9.000	Off	N	9.8	37.7	46.0
0.907250	5.9	9.000	Off	N	9.8	40.1	46.0
0.952250	9.4	9.000	Off	N	9.8	36.6	46.0
0.974750	10.6	9.000	Off	N	9.8	35.4	46.0
1.017500	10.3	9.000	Off	N	9.8	35.7	46.0
1.040000	11.1	9.000	Off	N	9.8	34.9	46.0
12.242750	24.5	9.000	Off	N	10.3	25.5	50.0
12.683750	24.3	9.000	Off	N	10.4	25.7	50.0
12.706250	24.4	9.000	Off	N	10.4	25.6	50.0
12.776000	24.9	9.000	Off	N	10.4	25.1	50.0
12.791750	24.8	9.000	Off	N	10.4	25.2	50.0
13.559000	40.5	9.000	Off	N	10.4	9.5	50.0

2020-12-08 오후 3:47:39

10. LIST OF TEST EQUIPMENT

Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	09/04/2020	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/10/2020	Annual	100584
ESPAC	SU-642 /Temperature Chamber	03/18/2020	Annual	0093008124
Agilent	N9030A / Signal Analyzer	01/13/2020	Annual	MY49431210
Hewlett Packard	E3632A / DC Power Supply	06/12/2020	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	06/26/2020	Annual	07560
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. N9030A : Updated calibration date due to retest (01/11/2021 ~ 01/11/2022)

Radiated Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	05/18/2020	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	03/22/2019	Biennial	760
Schwarzbeck	VULB 9160 / TRILOG Antenna	08/19/2020	Biennial	9160-3368
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	07/28/2020	Annual	102168
Agilent	N9030A / Signal Analyzer	01/13/2020	Annual	MY49431210
Api tech.	18B-03 / Attenuator (3 dB)	03/02/2020	Annual	1
Agilent	8493C-10 / Attenuator(10 dB)	03/02/2020	Annual	08285
CERNEX	CBLU1183540 / Power Amplifier	03/02/2020	Annual	22964

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).

11. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2101-FC040-P