

FCC NFC REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Date of Issue:
January 07, 2022

Address:
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Report No.: HCT-RF-2201-FC039

FCC ID: A3LSMA336B

APPLICANT: SAMSUNG Electronics Co., Ltd.

According to the Evaluation report, all of the data contained herein is reused from the reference
FCC ID : A3LSMA336M report.

Model: SM-A336B/DSN
Additional Model: SM-A336B
EUT Type: Mobile Phone
RF Output Field Strength: 12.06 dBμV/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.

Report No.: HCT-RF-2201-FC039

REVIEWED BY



Report prepared by : Jeong Ho Kim
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)

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2201-FC039	January 07, 2022	- First Approval Report

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1. EUT DESCRIPTION

Model	SM-A336B/DSN
Additional Model	SM-A336B
EUT Type	Mobile Phone
Power Supply	DC 3.86 V
Frequency of Operation	13.56 MHz
Transmit Power	12.06 dBμV/m @30 m
Modulation Type	ASK
Date(s) of Tests	December 08, 2021 ~ January 06, 2022
Serial number	Radiated : R3CRA0TYEFE Conducted: 5b225620bb337ece

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 30 MHz 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 equipment, 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 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05 (Confidence level about 95 %, $k=2$)

7. DESCRIPTION OF TESTS

7.1. Radiated Test

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

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
13.553 – 13.567	15,848	30
13.410 $\leq f \leq$ 13.553 13.567 $\leq f \leq$ 13.710	334	30
13.110 $\leq f \leq$ 13.410 13.710 $\leq f \leq$ 14.010	106	30

Note:

1. 15,848 $\mu\text{V/m}$ = 84.0 dB $\mu\text{V/m}$
2. 334 $\mu\text{V/m}$ = 50.47 dB $\mu\text{V/m}$
3. 106 $\mu\text{V/m}$ = 40.51 dB $\mu\text{V/m}$

Limit (Radiated Spurious Emissions)

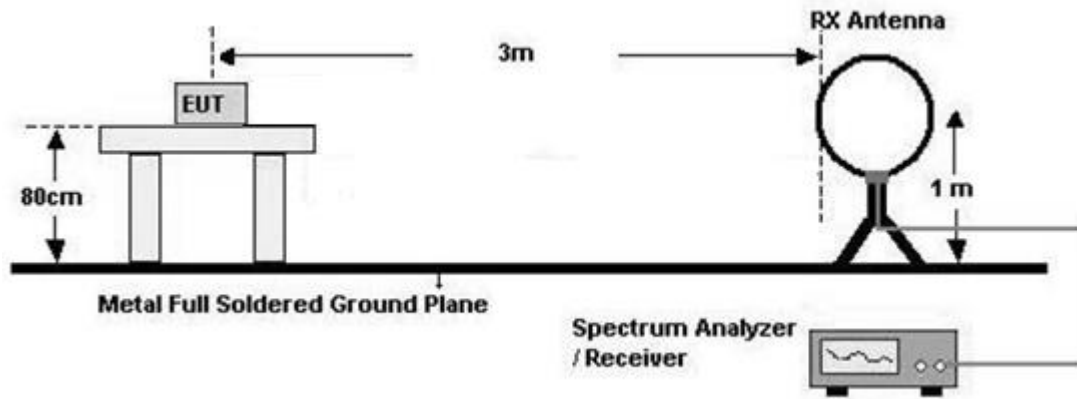
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	* 100	3
88-216	* 150	3
216-960	* 200	3
Above 960	500	3

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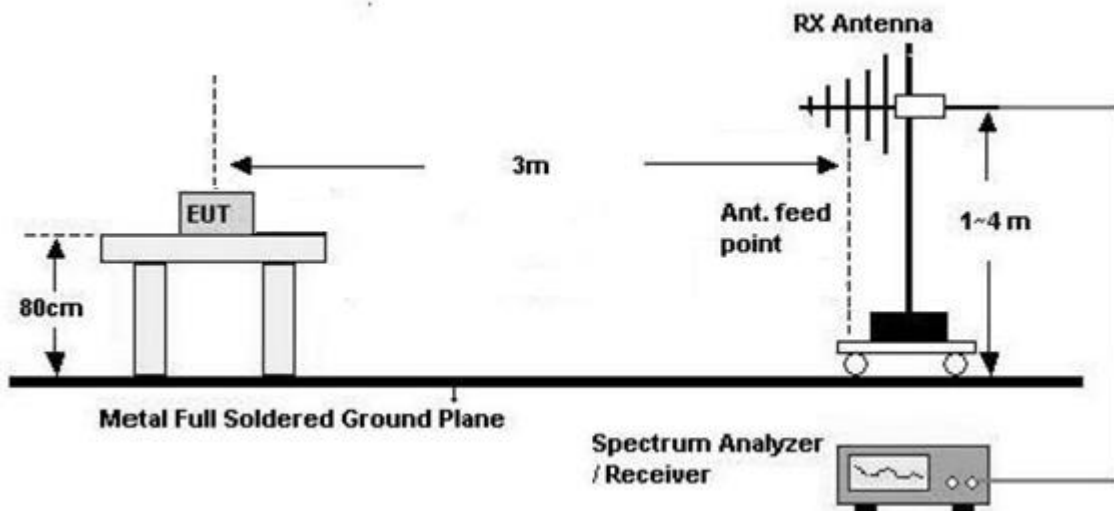
Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

Test Configuration

Below 30 MHz



30 MHz - 1 GHz



Test Procedure of in-band

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m 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 = $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$
Measurement Distance : 3 m (Below 30 MHz)

7. Spectrum Setting

- Detector = Peak
- Trace = Max Hold
- RBW = 9 kHz
- VBW $\geq 3 \times$ RBW

8. Total = Measured 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 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m 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) = $40\log(3 \text{ m}/300 \text{ m}) = - 80 \text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = $40\log(3 \text{ m}/30 \text{ m}) = - 40 \text{ dB}$
Measurement Distance : 3 m
8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Max hold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Total = Measured 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.

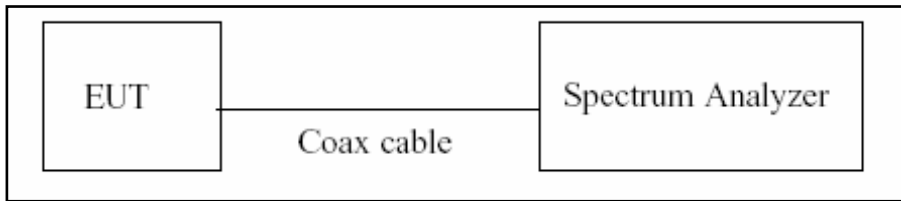
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

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 0.8 m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m 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 = Max hold
 - RBW = 100 kHz
 - VBW $\geq 3 \times$ RBW
7. Total = Measured 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. 20 dB 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 :

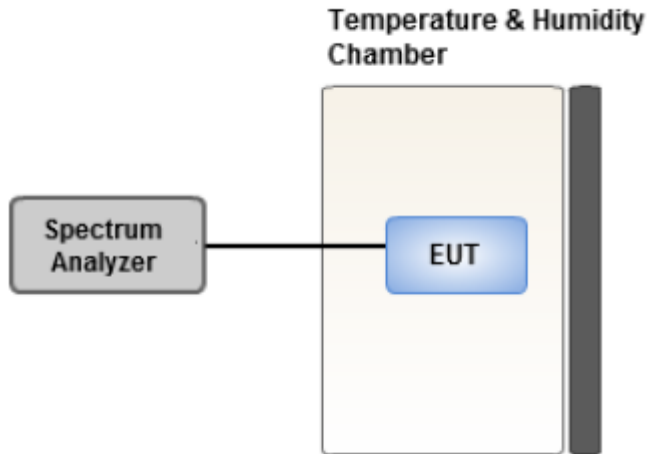
We tested Occupied Bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.

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 $+50^{\circ}\text{C}$ 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 battery 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 μ H/50 ohms line impedance stabilization network (LISN).

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

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

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

Test Configuration

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

Test Procedure

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

Sample Calculation

Quasi-peak(Final Result) = Measured 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 : Z
3. All type and bitrate were investigated and the worst case results are reported.
 - Worstcase : Type A, 106 kbps
4. All mode of without tag and with tag were investigated and the worst case configuration results are reported.
 - Worstcase : Without Tag
5. 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
6. SM-A336B/DSN, SM-A336B were tested and the worst case results are reported.
(Worst case : SM-A336B/DSN)

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-A336B/DSN, SM-A336B were tested and the worst case results are reported.
(Worst case : SM-A336B/DSN)

20 dB Bandwidth & Frequency Stability

1. All type and bitrate were investigated and the worst case results are reported.
 - Worstcase : Type A, 106 kbps
2. SM-A336B/DSN, SM-A336B were tested and the worst case results are reported.
(Worst case : SM-A336B/DSN)

8. TEST SUMMARY

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

9. TEST RESULT

9.1. Operation within the band 13.110 MHz – 14.010 MHz

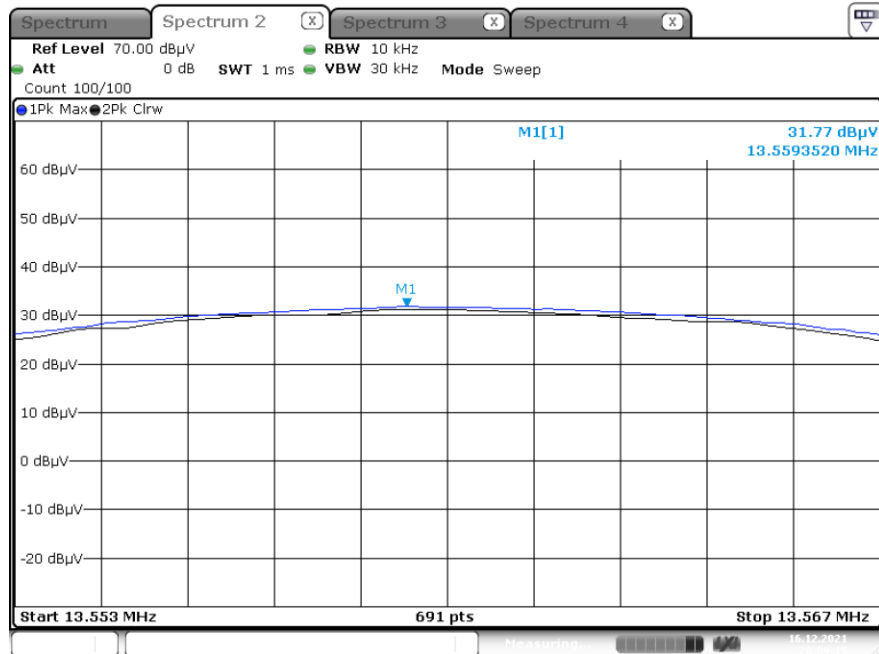
Measured Frequency Range : 13.553 MHz-13.567 MHz							
Frequency (MHz)	Measured Value (dBμV/m) @3 m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBμV/m) @30 m	Limit (dBμV/m) @30 m	Margin (dB)
13.5594	31.77	20.29	-40.00	Z-H	12.06	84.00	71.94
13.5605	27.49	20.29	-40.00	Z-V	7.78	84.00	76.22

Measured Frequency Range : 13.410 MHz-13.553 MHz and 13.567 MHz-13.710 MHz							
Frequency (MHz)	Measured Value (dBμV/m) @3 m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBμV/m) @30 m	Limit (dBμV/m) @30 m	Margin (dB)
13.5529	26.10	20.29	-40.00	Z-H	6.39	50.47	44.08
13.5671	25.95	20.29	-40.00	Z-H	6.24	50.47	44.23

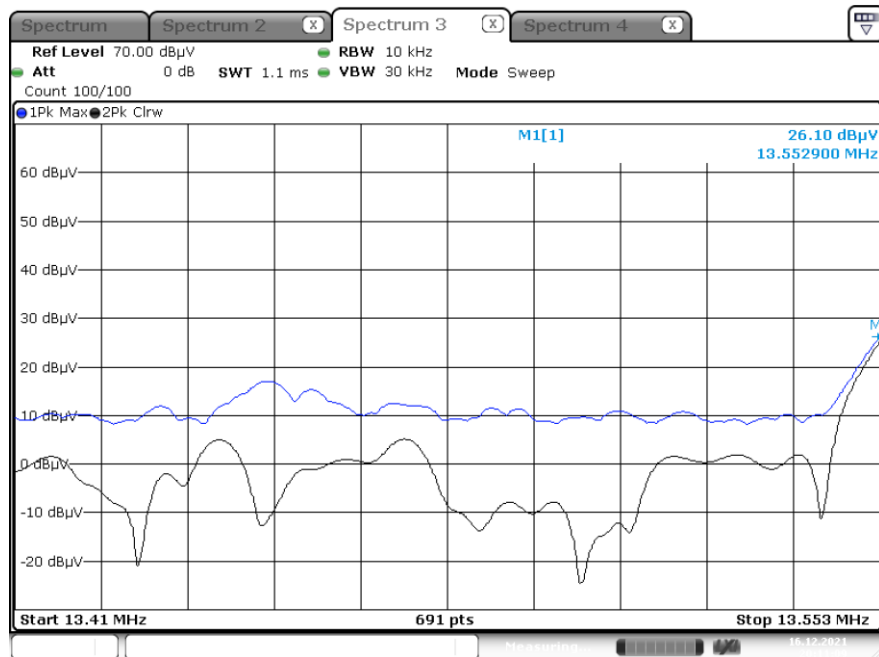
Measured Frequency Range : 13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz							
Frequency (MHz)	Measured Value (dBμV/m) @3 m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBμV/m) @30 m	Limit (dBμV/m) @30 m	Margin (dB)
13.3477	15.32	20.29	-40.00	Z-H	-4.39	40.51	44.90
13.7714	14.53	20.29	-40.00	Z-H	-5.18	40.51	45.69

Test Plot

13.553 MHz ~ 13.567 MHz



Worst Case (13.410 MHz-13.553 MHz)



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)	Measured Value (dBμV/m) @3 m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBμV/m) @30 m	Limit (dBμV/m) @30 m	Margin (dB)
7.4490	15.65	20.24	-40.00	Z-H	-4.11	29.54	33.65
17.9400	17.51	20.64	-40.00	Z-H	-1.85	29.54	31.39
27.1037	9.44	20.79	-40.00	Z-H	-9.77	29.54	39.31
27.1074	9.35	20.79	-40.00	Z-V	-9.86	29.54	39.40

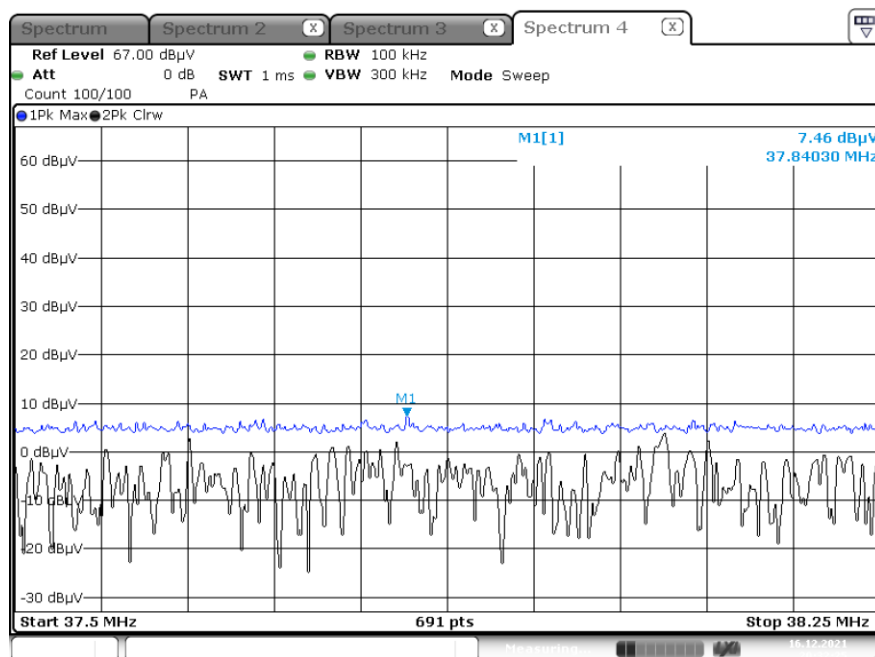
9.3. Radiated Emission 30 MHz – 1000 MHz

Measured Frequency Range : 30 MHz - 1000 MHz							
Frequency (MHz)	Measured Value (dBμV/m) @3 m	Ant.Factor (dB/m)	Cable Loss (dB)	Ant. Pol (H/V)	Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)
36.9520	6.54	18.90	0.74	H	26.18	40.00	13.82
#37.8403	7.46	19.07	0.75	H	27.28	40.00	12.72
102.7070	7.34	15.44	1.18	H	23.96	43.50	19.54
#118.2780	6.74	16.73	1.26	H	24.73	43.50	18.77
#126.4410	6.76	17.54	1.31	H	25.61	43.50	17.89
159.8190	6.81	18.72	1.45	H	26.98	43.50	16.52

Note:

- # is the result for restricted band.

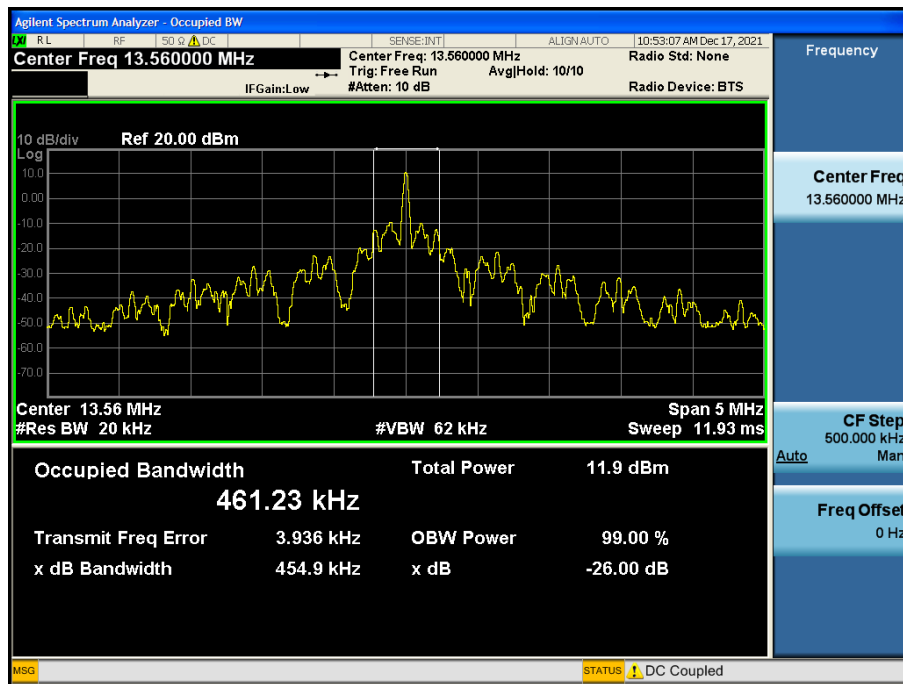
Test Plot



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: $\pm 0.01 \% = \pm 1356 \text{ Hz}$

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560055	55	0.0004074
100%		-10	13.560049	49	0.0003597
100%		0	13.560045	45	0.0003296
100%		+10	13.560041	41	0.0003010
100%		+20(Ref.)	13.560039	39	0.0002874
100%		+30	13.560042	42	0.0003116
100%		+40	13.560052	52	0.0003808
100%		+50	13.560057	57	0.0004170
LOW	3.65	+20	13.560058	58	0.0004268
HIGH	4.40	+20	13.560059	59	0.0004321

2 minutes

PERATING FREQUENCY: 13.56 MHz
 REFERENCE VOLTAGE: 3.86 VDC
 DEVIATION LIMIT: $\pm 0.01 \% = \pm 1356 \text{ Hz}$

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560059	59	0.0004334
100%		-10	13.560053	53	0.0003935
100%		0	13.560049	49	0.0003618
100%		+10	13.560045	45	0.0003353
100%		+20(Ref.)	13.560042	42	0.0003065
100%		+30	13.560044	44	0.0003271
100%		+40	13.560054	54	0.0004018
100%		+50	13.560059	59	0.0004366
LOW	3.65	+20	13.560060	60	0.0004445
HIGH	4.40	+20	13.560059	59	0.0004364

5 minutes

PERATING FREQUENCY: 13.56 MHz
 REFERENCE VOLTAGE: 3.86 VDC
 DEVIATION LIMIT: $\pm 0.01 \% = \pm 1356 \text{ Hz}$

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560061	61	0.0004506
100%		-10	13.560054	54	0.0004015
100%		0	13.560050	50	0.0003718
100%		+10	13.560048	48	0.0003509
100%		+20(Ref.)	13.560043	43	0.0003181
100%		+30	13.560048	48	0.0003556
100%		+40	13.560058	58	0.0004286
100%		+50	13.560062	62	0.0004541
LOW	3.65	+20	13.560062	62	0.0004542
HIGH	4.40	+20	13.560064	64	0.0004721

10 minutes

PERATING FREQUENCY: 13.56 MHz
 REFERENCE VOLTAGE: 3.86 VDC
 DEVIATION LIMIT: $\pm 0.01 \% = \pm 1356 \text{ Hz}$

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560066	66	0.0004847
100%		-10	13.560061	61	0.0004466
100%		0	13.560057	57	0.0004190
100%		+10	13.560053	53	0.0003923
100%		+20(Ref.)	13.607061	47061	0.3470575
100%		+30	13.560051	51	0.0003780
100%		+40	13.560062	62	0.0004550
100%		+50	13.560065	65	0.0004794
LOW	3.65	+20	13.560066	66	0.0004838
HIGH	4.40	+20	13.560067	67	0.0004941

9.6. POWERLINE CONDUCTED EMISSIONS

Conducted Emissions (Line 1)

WLAN 5G MODE_L1

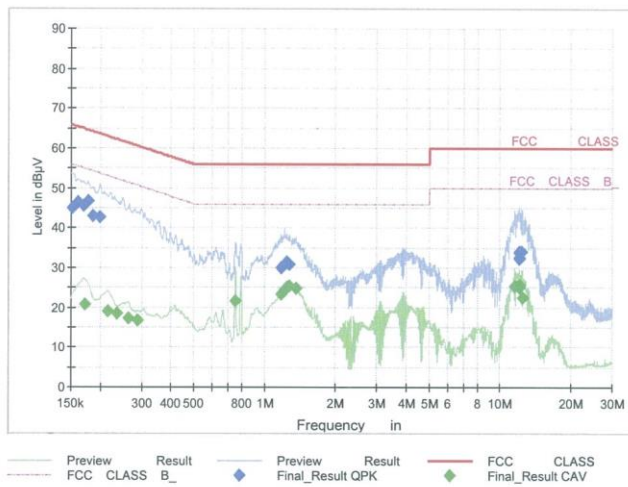
1 / 2

Test Report

Common Information

EUT : SM-A336M/DSN
Manufacturer : SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions : WLAN 5G MODE_L1

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	44.87	65.88	21.00	9.000	L1	OFF	9.6
0.1613	46.44	65.40	18.96	9.000	L1	OFF	9.6
0.1703	45.44	64.95	19.51	9.000	L1	OFF	9.6
0.1770	46.83	64.63	17.79	9.000	L1	OFF	9.6
0.1860	43.12	64.21	21.09	9.000	L1	OFF	9.6
0.1995	42.73	63.63	20.90	9.000	L1	OFF	9.6
1.1705	30.08	56.00	25.92	9.000	L1	OFF	9.7
1.2088	30.78	56.00	25.22	9.000	L1	OFF	9.7
1.2155	30.94	56.00	25.06	9.000	L1	OFF	9.7
1.2335	31.28	56.00	24.72	9.000	L1	OFF	9.7
1.2403	31.32	56.00	24.68	9.000	L1	OFF	9.7
1.2785	31.00	56.00	25.00	9.000	L1	OFF	9.7
12.0065	32.25	60.00	27.75	9.000	L1	OFF	10.1
12.0133	32.56	60.00	27.44	9.000	L1	OFF	10.1
12.0380	33.70	60.00	26.30	9.000	L1	OFF	10.1
12.0605	33.87	60.00	26.13	9.000	L1	OFF	10.1
12.0650	33.90	60.00	26.10	9.000	L1	OFF	10.1
12.2788	33.93	60.00	26.07	9.000	L1	OFF	10.1

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오전 3:46:27

WLAN 5G MODE_L1

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Final Result CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1725	20.88	54.84	33.96	9.000	L1	OFF	9.6
0.2153	19.05	53.00	33.95	9.000	L1	OFF	9.6
0.2355	18.37	52.25	33.89	9.000	L1	OFF	9.6
0.2625	17.42	51.35	33.94	9.000	L1	OFF	9.6
0.2895	16.87	50.54	33.67	9.000	L1	OFF	9.6
0.7520	21.51	46.00	24.49	9.000	L1	OFF	9.7
1.1705	23.26	46.00	22.74	9.000	L1	OFF	9.7
1.2088	24.44	46.00	21.56	9.000	L1	OFF	9.7
1.2178	24.56	46.00	21.44	9.000	L1	OFF	9.7
1.2403	25.01	46.00	20.99	9.000	L1	OFF	9.7
1.2785	25.25	46.00	20.75	9.000	L1	OFF	9.7
1.3618	24.72	46.00	21.29	9.000	L1	OFF	9.7
11.5520	25.33	50.00	24.67	9.000	L1	OFF	10.1
11.9953	25.24	50.00	24.76	9.000	L1	OFF	10.1
12.0380	25.81	50.00	24.19	9.000	L1	OFF	10.1
12.0628	25.74	50.00	24.26	9.000	L1	OFF	10.1
12.0785	25.61	50.00	24.39	9.000	L1	OFF	10.1
12.4340	22.62	50.00	27.38	9.000	L1	OFF	10.1

2021-12-18

오전 3:46:27

NFC INTERM MODE_L1

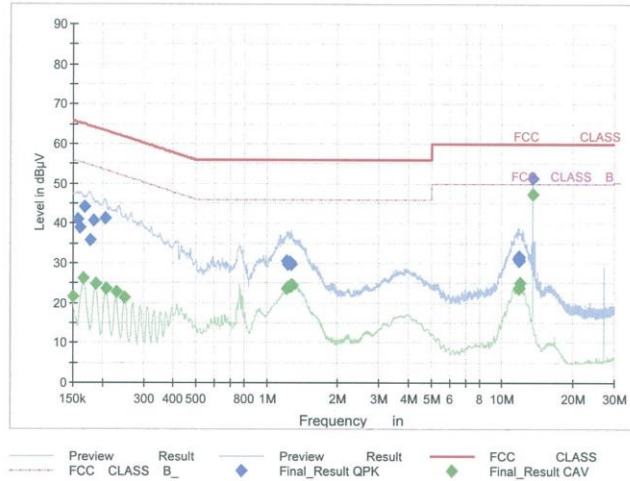
1 / 2

Test Report

Common Information

EUT : SM-A336M/DSN
Manufacturer : SAMSUNG
Test Site : SHIELD ROOM
Operating Conditions : NFC INTERM MODE_L1

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1568	40.97	65.63	24.66	9.000	L1	OFF	9.6
0.1613	38.84	65.40	26.56	9.000	L1	OFF	9.6
0.1680	44.24	65.06	20.82	9.000	L1	OFF	9.6
0.1770	35.64	64.63	28.98	9.000	L1	OFF	9.6
0.1838	40.80	64.31	23.52	9.000	L1	OFF	9.6
0.2063	41.35	63.36	22.00	9.000	L1	OFF	9.6
1.2178	30.47	56.00	25.53	9.000	L1	OFF	9.7
1.2245	30.28	56.00	25.72	9.000	L1	OFF	9.7
1.2313	29.84	56.00	26.16	9.000	L1	OFF	9.7
1.2358	30.18	56.00	25.82	9.000	L1	OFF	9.7
1.2538	30.20	56.00	25.80	9.000	L1	OFF	9.7
1.2740	29.65	56.00	26.35	9.000	L1	OFF	9.7
11.7208	31.21	60.00	28.79	9.000	L1	OFF	10.1
11.7410	30.85	60.00	29.15	9.000	L1	OFF	10.1
11.7500	30.62	60.00	29.38	9.000	L1	OFF	10.1
11.7635	31.44	60.00	28.56	9.000	L1	OFF	10.1
11.7680	31.66	60.00	28.34	9.000	L1	OFF	10.1
13.5590	51.41	60.00	8.59	9.000	L1	OFF	10.2

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오전 4:36:01

NFC UNTERM MODE_L1

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Final Result CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1500	21.52	56.00	34.48	9.000	L1	OFF	9.6
0.1658	26.39	55.17	28.78	9.000	L1	OFF	9.6
0.1883	24.70	54.11	29.41	9.000	L1	OFF	9.6
0.2085	23.75	53.27	29.51	9.000	L1	OFF	9.6
0.2288	22.71	52.50	29.78	9.000	L1	OFF	9.6
0.2490	21.42	51.79	30.37	9.000	L1	OFF	9.6
1.2178	23.67	46.00	22.33	9.000	L1	OFF	9.7
1.2313	23.84	46.00	22.16	9.000	L1	OFF	9.7
1.2538	24.28	46.00	21.72	9.000	L1	OFF	9.7
1.2650	24.64	46.00	21.36	9.000	L1	OFF	9.7
1.2785	24.36	46.00	21.64	9.000	L1	OFF	9.7
1.2898	24.55	46.00	21.45	9.000	L1	OFF	9.7
11.7838	23.82	50.00	26.18	9.000	L1	OFF	10.1
11.7905	23.65	50.00	26.35	9.000	L1	OFF	10.1
11.8108	23.70	50.00	26.30	9.000	L1	OFF	10.1
11.8535	23.85	50.00	26.15	9.000	L1	OFF	10.1
11.9795	25.23	50.00	24.77	9.000	L1	OFF	10.1
13.5590	47.19	50.00	2.81	9.000	L1	OFF	10.2

2021-12-18

오전 4:36:01

NFC TERM 45W MODE_L1

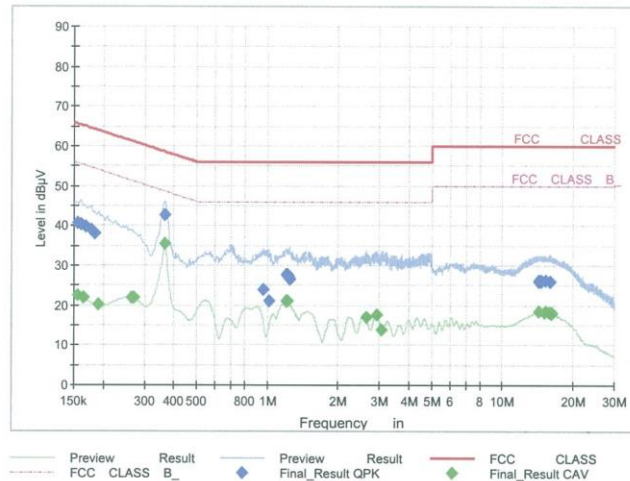
1 / 2

Test Report

Common Information

EUT : SM-A336M/DSN
 Manufacturer : SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions : NFC TERM 45W MODE_L1

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	40.57	65.75	25.19	9.000	L1	OFF	9.6
0.1613	40.27	65.40	25.13	9.000	L1	OFF	9.6
0.1680	39.68	65.06	25.38	9.000	L1	OFF	9.6
0.1770	38.83	64.63	25.80	9.000	L1	OFF	9.6
0.1838	38.21	64.31	26.11	9.000	L1	OFF	9.6
0.3638	42.78	58.64	15.86	9.000	L1	OFF	9.6
0.9568	23.82	56.00	32.18	9.000	L1	OFF	9.7
1.0175	21.17	56.00	34.83	9.000	L1	OFF	9.7
1.1975	27.83	56.00	28.17	9.000	L1	OFF	9.7
1.2178	27.60	56.00	28.41	9.000	L1	OFF	9.7
1.2358	27.08	56.00	28.92	9.000	L1	OFF	9.7
1.2470	26.66	56.00	29.34	9.000	L1	OFF	9.7
14.3150	26.02	60.00	33.98	9.000	L1	OFF	10.2
14.3398	26.20	60.00	33.80	9.000	L1	OFF	10.2
14.6030	26.15	60.00	33.85	9.000	L1	OFF	10.2
14.6818	26.10	60.00	33.90	9.000	L1	OFF	10.2
15.3478	26.20	60.00	33.80	9.000	L1	OFF	10.2
15.9665	25.93	60.00	34.07	9.000	L1	OFF	10.3

2021-12-26

오전 6:26:48

NFC TERM 45W MODE_L1

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Final_Result_CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	22.52	55.75	33.24	9.000	L1	OFF	9.6
0.1635	21.84	55.28	33.44	9.000	L1	OFF	9.6
0.1905	20.11	54.02	33.90	9.000	L1	OFF	9.6
0.2625	22.04	51.35	29.31	9.000	L1	OFF	9.6
0.2693	21.88	51.14	29.26	9.000	L1	OFF	9.6
0.3660	35.48	48.59	13.11	9.000	L1	OFF	9.6
1.1975	21.12	46.00	24.88	9.000	L1	OFF	9.7
1.2065	21.13	46.00	24.87	9.000	L1	OFF	9.7
1.2178	20.97	46.00	25.03	9.000	L1	OFF	9.7
2.6353	17.11	46.00	28.89	9.000	L1	OFF	9.8
2.9165	17.49	46.00	28.51	9.000	L1	OFF	9.8
3.0628	13.82	46.00	32.18	9.000	L1	OFF	9.8
14.3128	18.54	50.00	31.46	9.000	L1	OFF	10.2
15.0665	18.18	50.00	31.82	9.000	L1	OFF	10.2
15.3478	18.37	50.00	31.63	9.000	L1	OFF	10.2
15.7438	18.14	50.00	31.86	9.000	L1	OFF	10.3
16.0768	18.03	50.00	31.97	9.000	L1	OFF	10.3
16.0970	18.19	50.00	31.81	9.000	L1	OFF	10.3

2021-12-26

오전 6:26:48

NFC UNTERM 45W MODE_L1

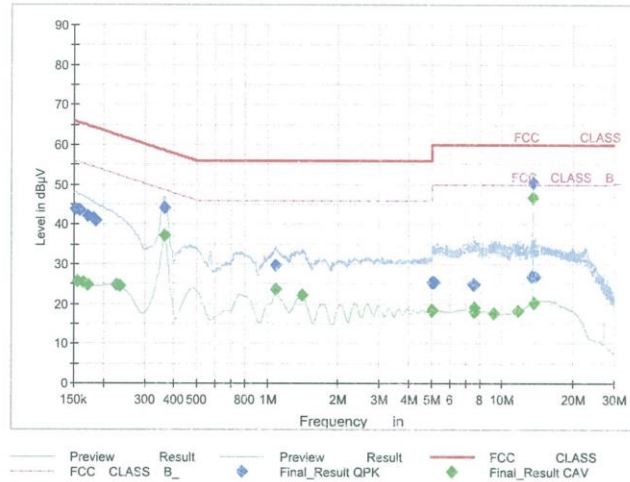
1 / 2

Test Report

Common Information

EUT : SM-A336M/DSN
 Manufacturer : SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions : NFC UNTERM 45W MODE_L1

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	43.81	65.88	22.06	9.000	L1	OFF	9.6
0.1590	43.44	65.52	22.08	9.000	L1	OFF	9.6
0.1725	42.22	64.84	22.62	9.000	L1	OFF	9.6
0.1815	41.54	64.42	22.88	9.000	L1	OFF	9.6
0.1860	41.06	64.21	23.16	9.000	L1	OFF	9.6
0.3638	44.10	58.64	14.55	9.000	L1	OFF	9.6
1.0895	29.79	56.00	26.21	9.000	L1	OFF	9.7
5.0203	25.32	60.00	34.68	9.000	L1	OFF	9.9
5.0540	25.25	60.00	34.75	9.000	L1	OFF	9.9
5.0788	25.37	60.00	34.63	9.000	L1	OFF	9.9
5.1035	25.24	60.00	34.76	9.000	L1	OFF	9.9
5.1395	25.41	60.00	34.59	9.000	L1	OFF	9.9
7.5358	24.99	60.00	35.01	9.000	L1	OFF	10.0
7.5605	24.77	60.00	35.23	9.000	L1	OFF	10.0
7.5830	24.89	60.00	35.11	9.000	L1	OFF	10.0
13.3475	26.75	60.00	33.25	9.000	L1	OFF	10.2
13.5590	50.59	60.00	9.41	9.000	L1	OFF	10.2
13.7728	26.97	60.00	33.03	9.000	L1	OFF	10.2

2021-12-26

오전 6:14:25

NFC UNTERM 45W MODE_L1

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Final_Result_CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	25.61	55.75	30.15	9.000	L1	OFF	9.6
0.1635	25.26	55.28	30.03	9.000	L1	OFF	9.6
0.1725	24.75	54.84	30.09	9.000	L1	OFF	9.6
0.2265	24.87	52.58	27.70	9.000	L1	OFF	9.6
0.2355	24.51	52.25	27.74	9.000	L1	OFF	9.6
0.3638	37.16	48.64	11.48	9.000	L1	OFF	9.6
1.0873	23.59	46.00	22.41	9.000	L1	OFF	9.7
1.4113	22.19	46.00	23.81	9.000	L1	OFF	9.7
5.0180	18.42	50.00	31.58	9.000	L1	OFF	9.9
5.0293	18.52	50.00	31.48	9.000	L1	OFF	9.9
5.0360	18.29	50.00	31.71	9.000	L1	OFF	9.9
5.0428	18.41	50.00	31.59	9.000	L1	OFF	9.9
7.5830	17.87	50.00	32.13	9.000	L1	OFF	10.0
7.5943	18.98	50.00	31.02	9.000	L1	OFF	10.0
9.2098	17.63	50.00	32.37	9.000	L1	OFF	10.0
11.6263	18.17	50.00	31.83	9.000	L1	OFF	10.1
13.5590	46.78	50.00	3.22	9.000	L1	OFF	10.2
13.6648	20.33	50.00	29.67	9.000	L1	OFF	10.2

2021-12-26

오전 6:14:25

Conducted Emissions (Line 2)

NFC TERM MODE_N

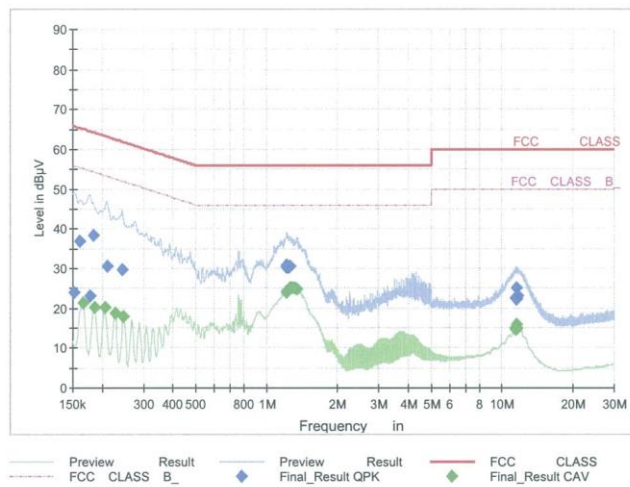
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Test Report

Common Information

EUT : SM-A336M/DSN
Manufacturer : SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions : NFC TERM MODE_N

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	24.01	65.88	41.87	9.000	N	OFF	9.6
0.1613	36.83	65.40	28.57	9.000	N	OFF	9.6
0.1770	23.15	64.63	41.48	9.000	N	OFF	9.6
0.1838	38.38	64.31	25.94	9.000	N	OFF	9.6
0.2108	30.55	63.18	32.62	9.000	N	OFF	9.6
0.2423	29.62	62.02	32.40	9.000	N	OFF	9.6
1.2110	30.27	56.00	25.73	9.000	N	OFF	9.7
1.2178	30.96	56.00	25.04	9.000	N	OFF	9.7
1.2223	30.51	56.00	25.49	9.000	N	OFF	9.7
1.2358	30.58	56.00	25.42	9.000	N	OFF	9.7
1.2470	30.25	56.00	25.75	9.000	N	OFF	9.7
1.2538	30.66	56.00	25.34	9.000	N	OFF	9.7
11.3585	22.46	60.00	37.54	9.000	N	OFF	10.1
11.4890	22.32	60.00	37.68	9.000	N	OFF	10.1
11.5160	22.64	60.00	37.36	9.000	N	OFF	10.1
11.5475	25.13	60.00	34.87	9.000	N	OFF	10.1
11.5678	22.28	60.00	37.72	9.000	N	OFF	10.1
11.6015	23.16	60.00	36.84	9.000	N	OFF	10.1

2021-12-18

오전 4:41:45

NFC TERM MODE_N

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Final Result CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1658	21.42	55.17	33.75	9.000	N	OFF	9.6
0.1860	20.28	54.21	33.93	9.000	N	OFF	9.6
0.2063	20.24	53.36	33.11	9.000	N	OFF	9.6
0.2265	18.87	52.58	33.71	9.000	N	OFF	9.6
0.2468	18.01	51.87	33.86	9.000	N	OFF	9.6
1.2088	23.94	46.00	22.06	9.000	N	OFF	9.7
1.2178	24.36	46.00	21.64	9.000	N	OFF	9.7
1.2538	25.00	46.00	21.00	9.000	N	OFF	9.7
1.2650	25.06	46.00	20.94	9.000	N	OFF	9.7
1.2898	25.21	46.00	20.79	9.000	N	OFF	9.7
1.3145	25.21	46.00	20.79	9.000	N	OFF	9.7
1.3505	24.74	46.00	21.26	9.000	N	OFF	9.7
11.3450	14.80	50.00	35.20	9.000	N	OFF	10.1
11.4440	15.12	50.00	34.88	9.000	N	OFF	10.1
11.4643	14.88	50.00	35.12	9.000	N	OFF	10.1
11.4688	15.84	50.00	34.16	9.000	N	OFF	10.1
11.4890	14.93	50.00	35.07	9.000	N	OFF	10.1
11.5070	14.83	50.00	35.17	9.000	N	OFF	10.1

2021-12-18

오전 4:41:45

NFC INTERM MODE_N

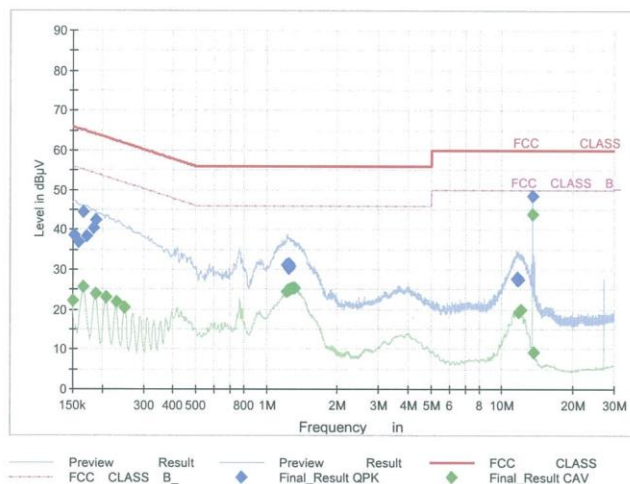
1 / 2

Test Report

Common Information

EUT : SM-A336M/DSN
 Manufacturer : SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions : NFC INTERM MODE_N

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	38.55	65.88	27.33	9.000	N	OFF	9.6
0.1590	36.79	65.52	28.73	9.000	N	OFF	9.6
0.1658	44.30	65.17	20.87	9.000	N	OFF	9.6
0.1725	38.36	64.84	26.48	9.000	N	OFF	9.6
0.1838	40.32	64.31	24.00	9.000	N	OFF	9.6
0.1883	42.42	64.11	21.69	9.000	N	OFF	9.6
1.2178	31.19	56.00	24.81	9.000	N	OFF	9.7
1.2313	30.82	56.00	25.18	9.000	N	OFF	9.7
1.2380	31.48	56.00	24.52	9.000	N	OFF	9.7
1.2425	30.95	56.00	25.05	9.000	N	OFF	9.7
1.2493	30.37	56.00	25.63	9.000	N	OFF	9.7
1.2538	31.00	56.00	25.00	9.000	N	OFF	9.7
11.5250	27.76	60.00	32.24	9.000	N	OFF	10.1
11.6083	27.34	60.00	32.66	9.000	N	OFF	10.1
11.7028	28.01	60.00	31.99	9.000	N	OFF	10.1
11.7545	27.35	60.00	32.65	9.000	N	OFF	10.1
11.7793	27.37	60.00	32.63	9.000	N	OFF	10.1
13.5590	48.43	60.00	11.57	9.000	N	OFF	10.2

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NFC UNTERM MODE_N

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Final Result CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1500	22.20	56.00	33.80	9.000	N	OFF	9.6
0.1658	25.74	55.17	29.43	9.000	N	OFF	9.6
0.1883	24.05	54.11	30.06	9.000	N	OFF	9.6
0.2085	22.93	53.27	30.33	9.000	N	OFF	9.6
0.2288	22.00	52.50	30.49	9.000	N	OFF	9.6
0.2490	20.62	51.79	31.17	9.000	N	OFF	9.6
1.2178	24.45	46.00	21.55	9.000	N	OFF	9.7
1.2313	24.73	46.00	21.27	9.000	N	OFF	9.7
1.2403	24.89	46.00	21.11	9.000	N	OFF	9.7
1.2538	25.00	46.00	21.00	9.000	N	OFF	9.7
1.2898	25.45	46.00	20.55	9.000	N	OFF	9.7
1.3145	25.26	46.00	20.74	9.000	N	OFF	9.7
11.7793	19.39	50.00	30.61	9.000	N	OFF	10.1
11.7838	19.21	50.00	30.79	9.000	N	OFF	10.1
12.0335	19.98	50.00	30.02	9.000	N	OFF	10.2
12.0515	20.04	50.00	29.96	9.000	N	OFF	10.2
13.5590	43.83	50.00	6.17	9.000	N	OFF	10.2
13.6648	9.18	50.00	40.82	9.000	N	OFF	10.2

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NFC TERM 45W MODE_N

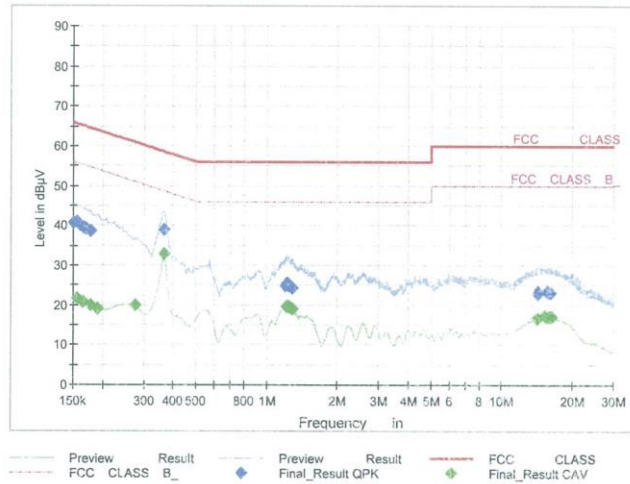
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Test Report

Common Information

EUT : SM-A336M/DSN
Manufacturer : SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions : NFC TERM 45W MODE_N

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1500	40.57	66.00	25.43	9.000	N	OFF	9.6
0.1545	40.83	65.75	24.93	9.000	N	OFF	9.6
0.1613	40.09	65.40	25.31	9.000	N	OFF	9.6
0.1658	39.46	65.17	25.71	9.000	N	OFF	9.6
0.1703	39.18	64.95	25.77	9.000	N	OFF	9.6
0.1770	38.68	64.63	25.95	9.000	N	OFF	9.6
0.3660	39.04	58.59	19.55	9.000	N	OFF	9.6
1.2020	24.87	56.00	31.13	9.000	N	OFF	9.7
1.2178	25.33	56.00	30.67	9.000	N	OFF	9.7
1.2290	25.33	56.00	30.67	9.000	N	OFF	9.7
1.2380	24.98	56.00	31.02	9.000	N	OFF	9.7
1.2470	24.90	56.00	31.10	9.000	N	OFF	9.7
1.2920	24.16	56.00	31.84	9.000	N	OFF	9.7
14.2318	23.27	60.00	36.73	9.000	N	OFF	10.2
14.2430	22.85	60.00	37.15	9.000	N	OFF	10.2
15.6470	23.27	60.00	36.73	9.000	N	OFF	10.3
15.8608	23.19	60.00	36.81	9.000	N	OFF	10.3
16.1398	23.14	60.00	36.86	9.000	N	OFF	10.3

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NFC TERM 45W MODE_N

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Final_Result_CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	21.57	55.75	34.18	9.000	N	OFF	9.6
0.1635	20.91	55.28	34.37	9.000	N	OFF	9.6
0.1770	19.84	54.63	34.78	9.000	N	OFF	9.6
0.1905	19.08	54.02	34.93	9.000	N	OFF	9.6
0.2760	19.80	50.94	31.14	9.000	N	OFF	9.6
0.3660	32.90	48.59	15.69	9.000	N	OFF	9.6
1.2088	19.64	46.00	26.36	9.000	N	OFF	9.7
1.2178	19.71	46.00	26.29	9.000	N	OFF	9.7
1.2290	19.67	46.00	26.33	9.000	N	OFF	9.7
1.2403	19.65	46.00	26.35	9.000	N	OFF	9.7
1.2538	19.39	46.00	26.61	9.000	N	OFF	9.7
1.2898	19.01	46.00	26.99	9.000	N	OFF	9.7
14.1913	16.71	50.00	33.29	9.000	N	OFF	10.2
14.2183	16.69	50.00	33.31	9.000	N	OFF	10.2
15.3455	17.37	50.00	32.63	9.000	N	OFF	10.3
15.4783	17.02	50.00	32.98	9.000	N	OFF	10.3
15.8900	17.06	50.00	32.94	9.000	N	OFF	10.3
16.3940	17.08	50.00	32.92	9.000	N	OFF	10.3

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NFC UNTERM 45W MODE_N

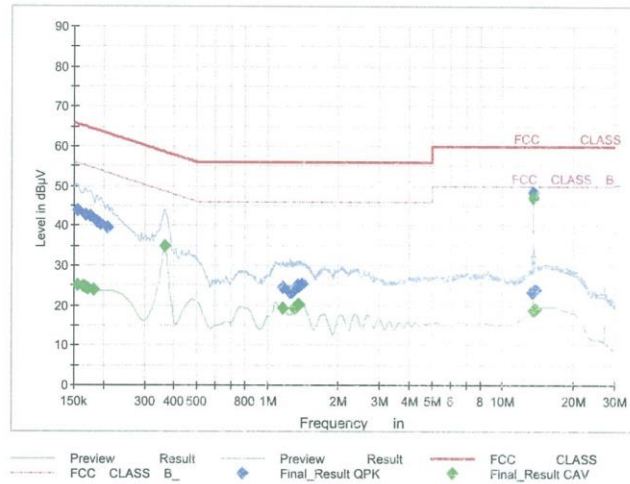
1 / 2

Test Report

Common Information

EUT : SM-A336M/DSN
Manufacturer : SAMSUNG
Test Site: SHIELD ROOM
Operating Conditions : NFC UNTERM 45W MODE_N

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	43.96	65.75	21.79	9.000	N	OFF	9.6
0.1680	42.80	65.06	22.26	9.000	N	OFF	9.6
0.1748	42.32	64.73	22.41	9.000	N	OFF	9.6
0.1883	40.98	64.11	23.13	9.000	N	OFF	9.6
0.1950	40.52	63.82	23.30	9.000	N	OFF	9.6
0.2085	39.39	63.27	23.87	9.000	N	OFF	9.6
1.1593	24.50	56.00	31.50	9.000	N	OFF	9.7
1.2493	23.33	56.00	32.67	9.000	N	OFF	9.7
1.2673	23.43	56.00	32.57	9.000	N	OFF	9.7
1.3505	25.10	56.00	30.90	9.000	N	OFF	9.7
1.3573	24.84	56.00	31.16	9.000	N	OFF	9.7
1.4068	25.38	56.00	30.62	9.000	N	OFF	9.7
13.3498	23.36	60.00	36.64	9.000	N	OFF	10.2
13.4465	23.50	60.00	36.50	9.000	N	OFF	10.2
13.4533	23.37	60.00	36.63	9.000	N	OFF	10.2
13.5613	48.45	60.00	11.55	9.000	N	OFF	10.2
13.6670	23.71	60.00	36.29	9.000	N	OFF	10.2
13.7705	23.95	60.00	36.05	9.000	N	OFF	10.2

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NFC UNTERM 45W MODE_N

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Final Result CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	25.13	55.75	30.63	9.000	N	OFF	9.6
0.1635	24.76	55.28	30.53	9.000	N	OFF	9.6
0.1680	24.39	55.06	30.67	9.000	N	OFF	9.6
0.1725	24.17	54.84	30.67	9.000	N	OFF	9.6
0.1815	23.95	54.42	30.46	9.000	N	OFF	9.6
0.3660	34.80	48.59	13.79	9.000	N	OFF	9.6
1.1593	19.33	46.00	26.67	9.000	N	OFF	9.7
1.1683	19.20	46.00	26.80	9.000	N	OFF	9.7
1.3033	19.26	46.00	26.74	9.000	N	OFF	9.7
1.3258	19.75	46.00	26.25	9.000	N	OFF	9.7
1.3505	20.07	46.00	25.93	9.000	N	OFF	9.7
1.3618	20.09	46.00	25.91	9.000	N	OFF	9.7
13.4645	18.72	50.00	31.28	9.000	N	OFF	10.2
13.5590	47.14	50.00	2.86	9.000	N	OFF	10.2
13.6288	18.92	50.00	31.08	9.000	N	OFF	10.2
13.6603	18.89	50.00	31.11	9.000	N	OFF	10.2
13.6738	18.88	50.00	31.12	9.000	N	OFF	10.2
13.7750	18.90	50.00	31.10	9.000	N	OFF	10.2

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10. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	08/23/2022	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	06/17/2022	Annual
Temperature Chamber	SU-642	ESPEC	0093000718	03/15/2022	Annual
Signal Analyzer	N9020A	Agilent	MY51110085	05/03/2022	Annual
DC Power Supply	E3632A	HP	MY40004427	09/15/2022	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	07560	06/18/2022	Annual
Software	EMC32	Rohde & Schwarz	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.

Radiated Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller(Antenna mast)	CO3000	Innco system	CO3000-4p	N/A	N/A
Antenna Position Tower	MA4640/800-XP-EP	Innco system	N/A	N/A	N/A
Controller	EM1000	Audix	060520	N/A	N/A
Turn Table	N/A	Audix	N/A	N/A	N/A
Loop Antenna	FMZB 1513	Schwarzbeck	1513-333	03/19/2022	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-1039	09/03/2023	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-1151	07/29/2023	Biennial
Spectrum Analyzer	FSV(10 Hz ~ 40 GHz)	Rohde & Schwarz	101055	05/14/2022	Annual
Signal Analyzer	N9030A	Agilent	MY49432108	03/09/2022	Annual
Attenuator (3 dB)	2-3	Weinschel	BR0617	09/29/2022	Annual
Attenuator(10 dB)	5910-N-50-010	H+S	None	10/29/2022	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/02/2022	Annual

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-2201-FC039-P