

# 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:** August 19, 2021  
**Test Site/Location:** 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA

**Report No.:** HCHCT-RF-2108-FC010

<b>FCC ID:</b>	<b>A3LSMM526B</b>
<b>APPLICANT:</b>	<b>SAMSUNG Electronics Co., Ltd.</b>
<b>Model:</b>	SM-M526B/DS
<b>EUT Type:</b>	Mobile Phone
<b>RF Output Field Strength:</b>	12.91 dB $\mu$ V/m @30 m
<b>Frequency of Operation:</b>	13.56 MHz
<b>Modulation type:</b>	ASK
<b>FCC Classification:</b>	Low Power Communication Device Transmitter (DXX)
<b>FCC Rule Part(s):</b>	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-2108-FC010

---

REVIEWED BY



---

Report prepared by : Woong Jin Kim  
Engineer of Telecommunication Testing Center

---

Report approved by : Kwon Jeong  
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)

\* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

## Version

TEST REPORT NO.	DATE	DESCRIPTION
HCHCT-RF-2108-FC010	August 19, 2021	- First Approval Report

# Table of Contents

REVIEWED BY .....	2
1. EUT DESCRIPTION .....	5
2. TEST METHODOLOGY .....	6
EUT CONFIGURATION .....	6
EUT EXERCISE .....	6
GENERAL TEST PROCEDURES .....	6
DESCRIPTION OF TEST MODES .....	6
3. INSTRUMENT CALIBRATION.....	7
4. FACILITIES AND ACCREDITATIONS .....	7
FACILITIES .....	7
EQUIPMENT .....	7
5. ANTENNA REQUIREMENTS .....	7
6. MEASUREMENT UNCERTAINTY .....	8
7. DESCRIPTION OF TESTS.....	9
8. TEST SUMMARY .....	17
9. TEST RESULT .....	18
9.1. Operation within the band 13.110 MHz – 14.010 MHz.....	18
9.2. Radiated Emission 9 kHz – 30 MHz .....	20
9.3. Radiated Emission 30 MHz – 1000 MHz .....	21
9.4. 20 dB Bandwidth .....	22
9.5. Frequency Stability .....	23
9.6. POWERLINE CONDUCTED EMISSIONS .....	27
10. LIST OF TEST EQUIPMENT .....	35
11. ANNEX A_ TEST SETUP PHOTO .....	37

## 1. EUT DESCRIPTION

<b>Model</b>	SM-M526B/DS
<b>Additional Model</b>	-
<b>EUT Type</b>	Mobile Phone
<b>Power Supply</b>	DC 3.86 V
<b>Frequency of Operation</b>	13.56 MHz
<b>Transmit Power</b>	12.91 dB $\mu$ V/m @30 m
<b>Modulation Type</b>	ASK
<b>Date(s) of Tests</b>	July 20, 2021 ~ August 13, 2021
<b>Serial number</b>	Radiated: RCR41328LB Conducted: R3CR41329HN

## **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  $U_{\text{CISPR}}$  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)

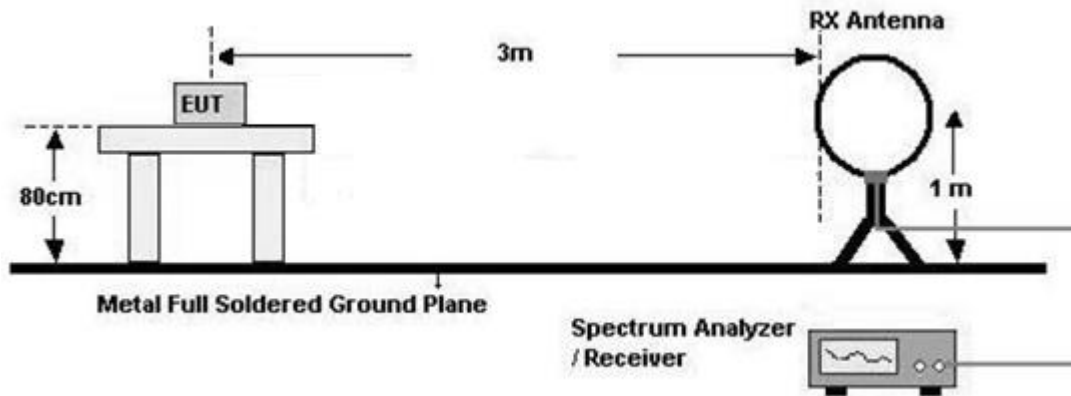
Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ )	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	* 100	3
88-216	* 150	3
216-960	* 200	3
Above 960	500	3

※.

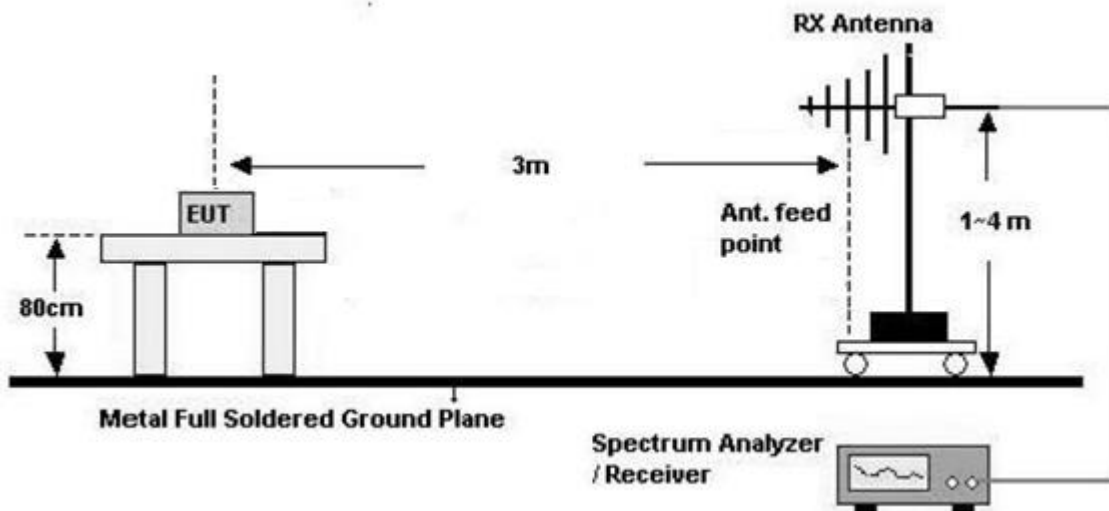
Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

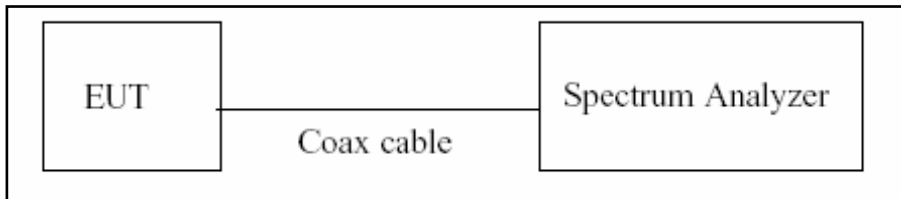
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

**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 x 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 :

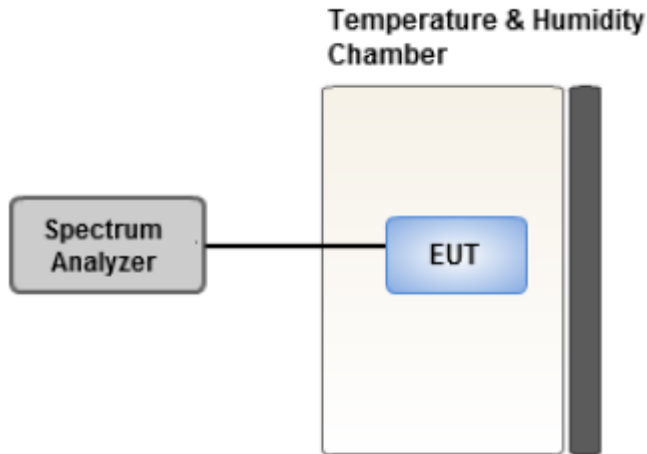
We tested Occupied Bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.

### 7.3. Frequency Stability

#### Limit

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01$  % 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  $\pm 0.01$  % 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 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  $\mu$ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 <sup>(a)</sup>	56 to 46 <sup>(a)</sup>
0.50 to 5	56	46
5 to 30	60	50

<sup>(a)</sup>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

### **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

### **20 dB Bandwidth & Frequency Stability**

1. All type and bitrate were investigated and the worst case results are reported.
  - Worstcase : Type A, 106 kbps



## 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

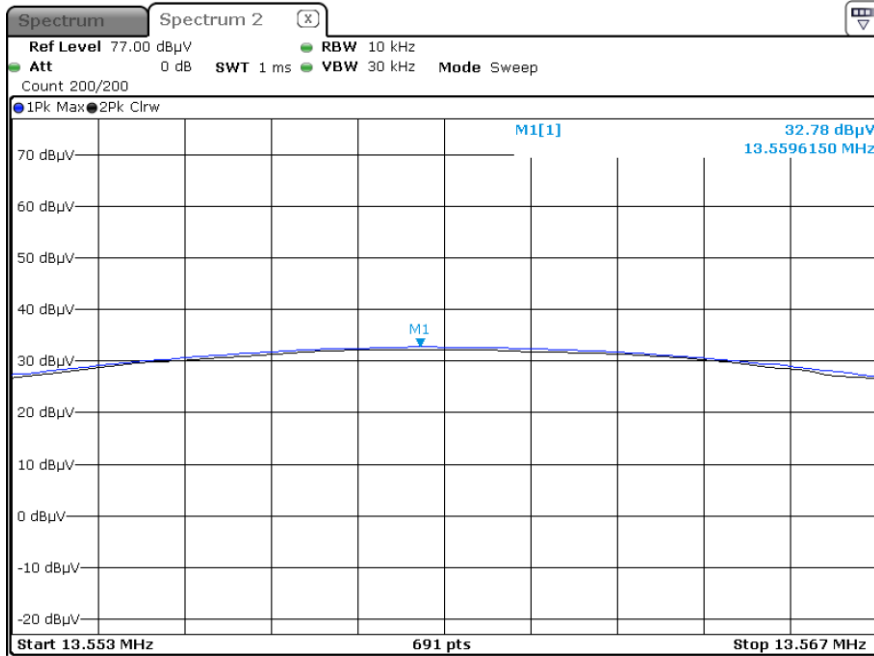
Measured Frequency Range :							
13.553 MHz-13.567 MHz							
Frequency (MHz)	Measured Value (dBμV/m) @3 m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBμV/m) @30 m	Limit (dBμV/m) @30 m	Margin (dB)
13.5596	32.78	20.13	-40.00	H	12.91	84.00	71.09
13.5603	27.91	20.13	-40.00	V	8.04	84.00	75.96

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	27.15	20.13	-40.00	H	7.28	50.47	43.19
13.5671	26.70	20.13	-40.00	H	6.83	50.47	43.64

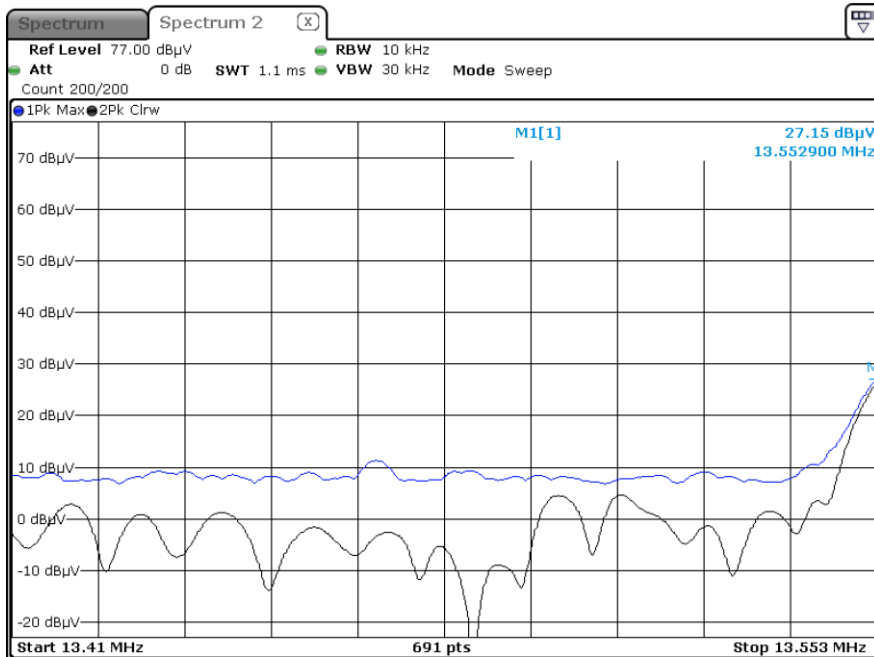
Measured Frequency Range :							
13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz							
Frequency (MHz)	Measured Value (dBμV/m) @3 m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBμV/m) @30 m	Limit (dBμV/m) @30 m	Margin (dB)
13.3473	13.79	20.13	-40.00	H	-6.08	40.51	46.59
13.7714	15.87	20.13	-40.00	H	-4.00	40.51	44.51

## 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 (dB $\mu$ V/m) @3 m	Ant.Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dB $\mu$ V/m) @30 m	Limit (dB $\mu$ V/m) @30 m	Margin (dB)
11.6049	11.15	20.13	-40.00	H	-8.72	29.54	38.26
14.4294	12.32	20.13	-40.00	H	-7.55	29.54	37.09
27.0709	9.08	20.63	-40.00	H	-10.29	29.54	39.83
27.0655	8.24	20.63	-40.00	V	-11.13	29.54	40.67

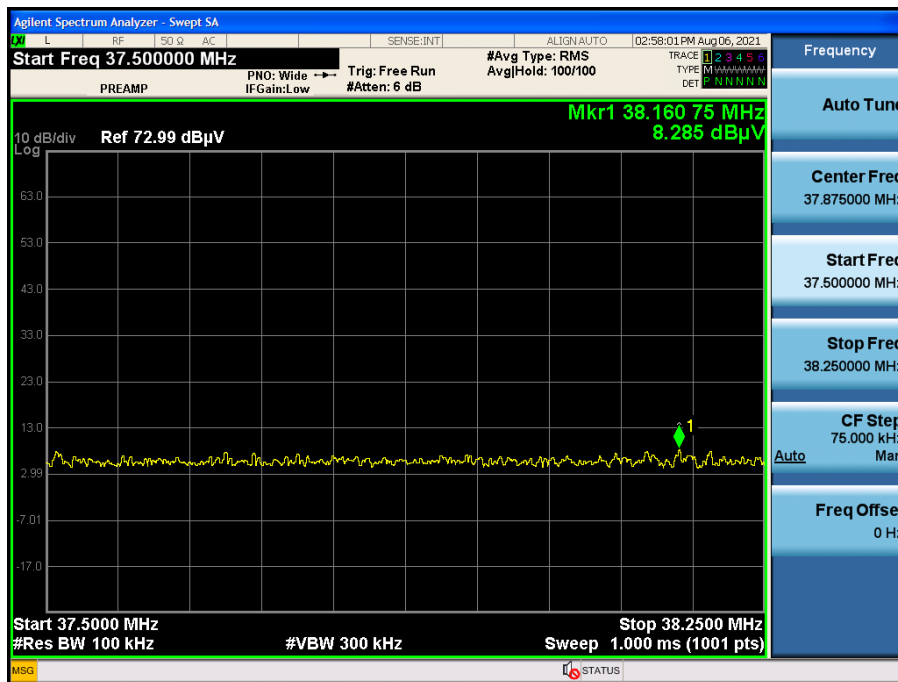
### 9.3. Radiated Emission 30 MHz – 1000 MHz

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)
# 38.1608	8.285	19.50	0.49	H	28.275	40.00	11.725
50.1256	7.252	20.23	0.56	H	28.042	40.00	11.958
96.3589	8.244	15.54	0.78	V	24.564	43.50	18.936
# 110.2030	8.848	17.32	0.86	H	27.028	43.50	16.472
# 132.1050	8.658	19.25	0.91	H	28.818	43.50	14.682
154.8000	8.271	20.16	0.98	V	29.411	43.50	14.089

**Note:**

- # is the result for restricted band.

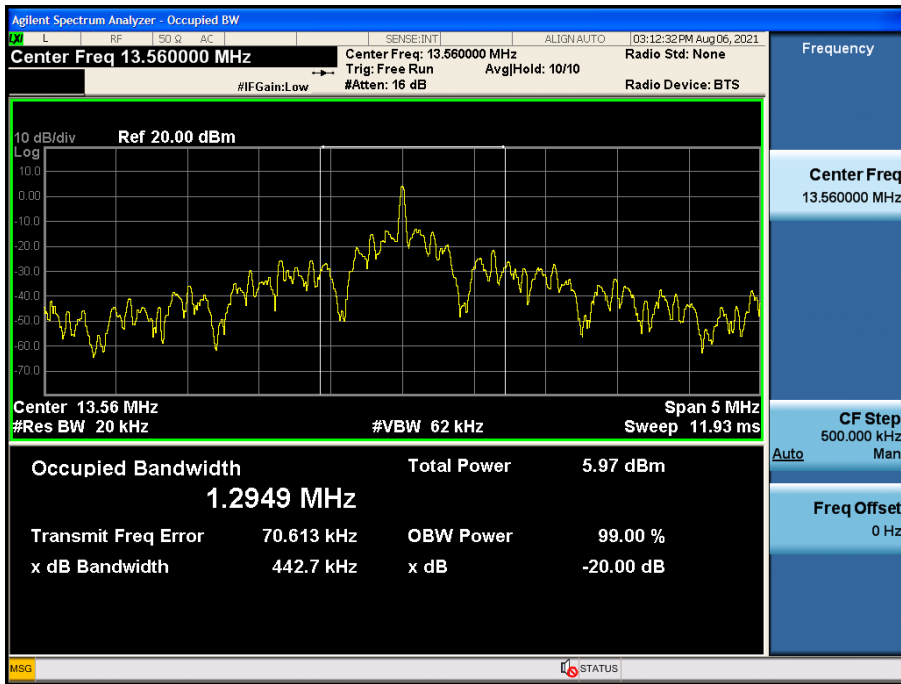
**Test Plot**



**Note:**

Plot of worst case are only reported

### 9.4. 20 dB Bandwidth



## 9.5. Frequency Stability

### Startup

OPERATING FREQUENCY: 13.56 MHz  
REFERENCE VOLTAGE: 3.86 VDC  
DEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560053	53	0.0003909
100%		-10	13.560050	50	0.0003687
100%		0	13.560048	48	0.0003540
100%		+10	13.560047	47	0.0003466
100%		+20(Ref.)	13.560038	38	0.0002802
100%		+30	13.560045	45	0.0003319
100%		+40	13.560051	51	0.0003761
100%		+50	13.560055	55	0.0004056
LOW	3.65	+20	13.560054	54	0.0003982
HIGH	4.40	+20	13.560039	39	0.0002876

**2 minutes**OPERATING FREQUENCY: 13.56 MHzREFERENCE VOLTAGE: 3.86 VDCDEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560064	64	0.0004720
100%		-10	13.560062	62	0.0004572
100%		0	13.560051	51	0.0003761
100%		+10	13.560048	48	0.0003540
100%		+20(Ref.)	13.560046	46	0.0003392
100%		+30	13.560047	47	0.0003466
100%		+40	13.560048	48	0.0003540
100%		+50	13.560051	51	0.0003761
LOW		3.65	+20	13.560047	47
HIGH	4.40	+20	13.560048	48	0.0003540



**5 minutes**OPERATING FREQUENCY: 13.56 MHzREFERENCE VOLTAGE: 3.86 VDCDEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560064	64	0.0004720
100%		-10	13.560062	62	0.0004572
100%		0	13.560057	57	0.0004204
100%		+10	13.560051	51	0.0003761
100%		+20(Ref.)	13.560048	48	0.0003540
100%		+30	13.560053	53	0.0003909
100%		+40	13.560051	51	0.0003761
100%		+50	13.560034	34	0.0002507
LOW		3.65	+20	13.560049	49
HIGH	4.40	+20	13.560048	48	0.0003540

**10 minutes**OPERATING FREQUENCY: 13.56 MHzREFERENCE VOLTAGE: 3.86 VDCDEVIATION LIMIT: ±0.01 % = ±1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100%	3.86	-20	13.560064	64	0.0004720
100%		-10	13.560062	62	0.0004572
100%		0	13.560059	59	0.0004351
100%		+10	13.560054	54	0.0003982
100%		+20(Ref.)	13.560050	50	0.0003687
100%		+30	13.560053	53	0.0003909
100%		+40	13.560048	48	0.0003540
100%		+50	13.560038	38	0.0002802
LOW	3.65	+20	13.560051	51	0.0003761
HIGH	4.40	+20	13.560052	52	0.0003835

## 9.6. POWERLINE CONDUCTED EMISSIONS

### Conducted Emissions (Line 1)

Test

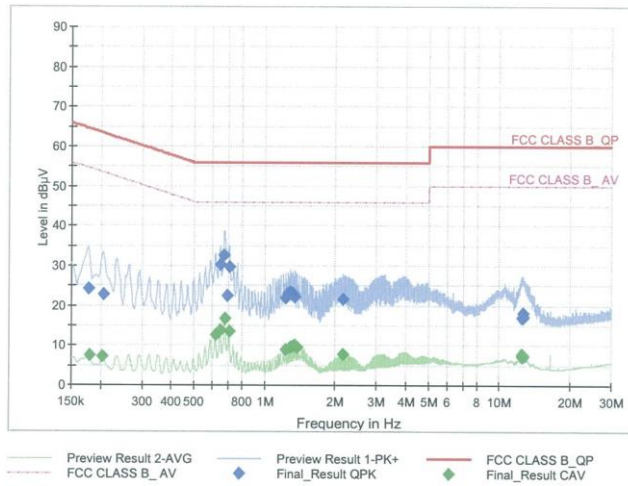
1 / 2

## Test Report

### Common Information

EUT : SM-M526B/DS  
 Manufacturer : SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions : NFC TERM L1 MODE  
 Operator Name:  
 Comment:

Full Spectrum



### Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1770	24.28	64.63	40.34	9.000	L1	OFF	9.6
0.2063	22.85	63.36	40.50	9.000	L1	OFF	9.6
0.6463	30.28	56.00	25.72	9.000	L1	OFF	9.7
0.6733	32.64	56.00	23.36	9.000	L1	OFF	9.7
0.6958	22.59	56.00	33.41	9.000	L1	OFF	9.7
0.7048	29.72	56.00	26.28	9.000	L1	OFF	9.7
1.2335	21.94	56.00	34.06	9.000	L1	OFF	9.7
1.2605	23.00	56.00	33.00	9.000	L1	OFF	9.7
1.2898	23.22	56.00	32.78	9.000	L1	OFF	9.7
1.3190	23.04	56.00	32.96	9.000	L1	OFF	9.7
1.3505	22.13	56.00	33.87	9.000	L1	OFF	9.7
2.1695	21.59	56.00	34.41	9.000	L1	OFF	9.7
12.4588	16.95	60.00	43.05	9.000	L1	OFF	10.1
12.5713	17.08	60.00	42.92	9.000	L1	OFF	10.2
12.6050	17.23	60.00	42.77	9.000	L1	OFF	10.2
12.6253	18.15	60.00	41.85	9.000	L1	OFF	10.2
12.6365	17.25	60.00	42.75	9.000	L1	OFF	10.2
12.6635	17.13	60.00	42.87	9.000	L1	OFF	10.2

2021-07-26

오전 10:34:19

Test

2 / 2

**Final Result\_CAV**

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1793	7.53	54.52	46.99	9.000	L1	OFF	9.6
0.2040	7.33	53.45	46.12	9.000	L1	OFF	9.6
0.6170	12.59	46.00	33.41	9.000	L1	OFF	9.7
0.6463	13.96	46.00	32.04	9.000	L1	OFF	9.7
0.6755	16.87	46.00	29.13	9.000	L1	OFF	9.7
0.7048	13.44	46.00	32.56	9.000	L1	OFF	9.7
1.2313	9.06	46.00	36.94	9.000	L1	OFF	9.7
1.2898	9.64	46.00	36.36	9.000	L1	OFF	9.7
1.3213	9.71	46.00	36.29	9.000	L1	OFF	9.7
1.3505	10.02	46.00	35.98	9.000	L1	OFF	9.7
1.3775	9.43	46.00	36.57	9.000	L1	OFF	9.7
2.1695	7.77	46.00	38.23	9.000	L1	OFF	9.7
12.4340	7.18	50.00	42.82	9.000	L1	OFF	10.1
12.4543	7.58	50.00	42.42	9.000	L1	OFF	10.1
12.4588	7.79	50.00	42.21	9.000	L1	OFF	10.1
12.5713	7.26	50.00	42.74	9.000	L1	OFF	10.2
12.6298	7.49	50.00	42.51	9.000	L1	OFF	10.2
12.6568	7.33	50.00	42.67	9.000	L1	OFF	10.2

2021-07-26

오전 10:34:19

Test

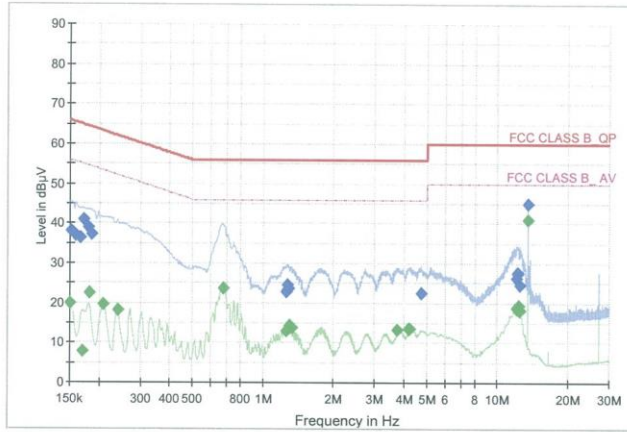
1 / 2

## Test Report

### Common Information

EUT : SM-M526B/DS  
 Manufacturer : SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions : NFC INTERM L1 MODE  
 Operator Name:  
 Comment:

Full Spectrum



— Preview Result 2-AVG    ◆ Preview Result 1-PK+ Final\_Result QPK    — FCC CLASS B\_QP  
- - - FCC CLASS B\_AV    ◆ Final\_Result CAV

### Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	38.14	65.88	27.73	9.000	L1	OFF	9.6
0.1590	37.05	65.52	28.46	9.000	L1	OFF	9.6
0.1658	36.37	65.17	28.80	9.000	L1	OFF	9.6
0.1725	41.09	64.84	23.75	9.000	L1	OFF	9.6
0.1793	38.85	64.52	25.67	9.000	L1	OFF	9.6
0.1860	37.34	64.21	26.87	9.000	L1	OFF	9.6
1.2583	22.69	56.00	33.31	9.000	L1	OFF	9.7
1.2673	23.42	56.00	32.58	9.000	L1	OFF	9.7
1.2718	24.61	56.00	31.39	9.000	L1	OFF	9.7
1.2763	23.30	56.00	32.70	9.000	L1	OFF	9.7
1.2830	23.75	56.00	32.25	9.000	L1	OFF	9.7
4.7323	22.51	56.00	33.49	9.000	L1	OFF	9.9
12.0650	26.13	60.00	33.87	9.000	L1	OFF	10.1
12.1708	27.32	60.00	32.68	9.000	L1	OFF	10.1
12.1753	27.75	60.00	32.25	9.000	L1	OFF	10.1
12.2068	27.54	60.00	32.46	9.000	L1	OFF	10.1
12.4385	24.54	60.00	35.46	9.000	L1	OFF	10.1
13.5590	45.14	60.00	14.86	9.000	L1	OFF	10.2

2021-07-26

오전 10:39:59

Test

2 / 2

**Final Result CAV**

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1500	20.03	56.00	35.97	9.000	L1	OFF	9.7
0.1703	7.75	54.95	47.20	9.000	L1	OFF	9.6
0.1815	22.36	54.42	32.06	9.000	L1	OFF	9.6
0.2085	19.55	53.27	33.71	9.000	L1	OFF	9.6
0.2400	18.18	52.10	33.92	9.000	L1	OFF	9.6
0.6800	23.57	46.00	22.43	9.000	L1	OFF	9.7
1.2628	13.03	46.00	32.97	9.000	L1	OFF	9.7
1.2943	14.36	46.00	31.64	9.000	L1	OFF	9.7
1.3235	13.80	46.00	32.20	9.000	L1	OFF	9.7
3.7648	13.25	46.00	32.75	9.000	L1	OFF	9.8
4.1900	13.45	46.00	32.55	9.000	L1	OFF	9.8
4.2215	13.66	46.00	32.34	9.000	L1	OFF	9.8
12.1235	18.79	50.00	31.21	9.000	L1	OFF	10.1
12.1550	18.48	50.00	31.52	9.000	L1	OFF	10.1
12.2203	19.10	50.00	30.90	9.000	L1	OFF	10.1
12.3103	19.27	50.00	30.73	9.000	L1	OFF	10.1
12.4385	18.09	50.00	31.91	9.000	L1	OFF	10.1
13.5590	41.05	50.00	8.95	9.000	L1	OFF	10.2

2021-07-26

오전 10:39:59

**Conducted Emissions (Line 2)**

Test

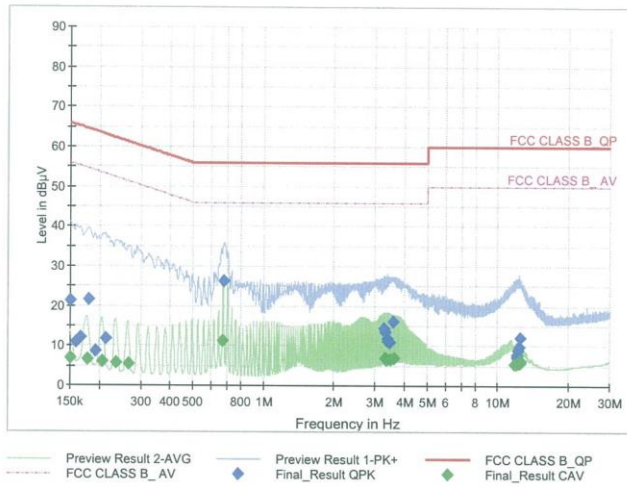
1 / 2

**Test Report**

**Common Information**

EUT : SM-M526B/DS  
 Manufacturer : SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions : NFC TERM N MODE  
 Operator Name:  
 Comment:

Full Spectrum



**Final Result QPK**

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1500	21.22	66.00	44.78	9.000	N	OFF	9.6
0.1590	10.84	65.52	54.68	9.000	N	OFF	9.6
0.1658	12.16	65.17	53.02	9.000	N	OFF	9.6
0.1793	21.65	64.52	42.87	9.000	N	OFF	9.6
0.1928	8.78	63.92	55.14	9.000	N	OFF	9.6
0.2130	11.78	63.09	51.31	9.000	N	OFF	9.6
0.6800	26.21	56.00	29.79	9.000	N	OFF	9.6
3.2810	14.29	56.00	41.71	9.000	N	OFF	9.8
3.3103	13.60	56.00	42.40	9.000	N	OFF	9.8
3.3688	11.75	56.00	44.25	9.000	N	OFF	9.8
3.3980	11.19	56.00	44.81	9.000	N	OFF	9.8
3.4565	10.84	56.00	45.16	9.000	N	OFF	9.8
3.5803	16.29	56.00	39.71	9.000	N	OFF	9.8
12.0110	7.31	60.00	52.69	9.000	N	OFF	10.2
12.1078	7.69	60.00	52.31	9.000	N	OFF	10.2
12.2428	9.08	60.00	50.92	9.000	N	OFF	10.2
12.3733	9.88	60.00	50.12	9.000	N	OFF	10.2
12.4520	12.13	60.00	47.87	9.000	N	OFF	10.2

2021-07-26

오전 10:29:21

Test

2 / 2

**Final Result CAV**

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1500	6.98	56.00	49.02	9.000	N	OFF	9.6
0.1770	6.67	54.63	47.96	9.000	N	OFF	9.6
0.2063	6.02	53.36	47.33	9.000	N	OFF	9.6
0.2355	5.66	52.25	46.60	9.000	N	OFF	9.6
0.2648	5.51	51.28	45.77	9.000	N	OFF	9.6
0.6733	11.11	46.00	34.89	9.000	N	OFF	9.6
3.3125	6.88	46.00	39.12	9.000	N	OFF	9.8
3.3418	6.63	46.00	39.37	9.000	N	OFF	9.8
3.4003	6.76	46.00	39.24	9.000	N	OFF	9.8
3.4880	6.74	46.00	39.26	9.000	N	OFF	9.8
3.5173	6.61	46.00	39.39	9.000	N	OFF	9.8
3.6343	6.79	46.00	39.21	9.000	N	OFF	9.8
11.8085	5.39	50.00	44.61	9.000	N	OFF	10.2
12.0425	5.36	50.00	44.64	9.000	N	OFF	10.2
12.3643	5.91	50.00	44.09	9.000	N	OFF	10.2
12.4520	6.29	50.00	43.71	9.000	N	OFF	10.2
12.5105	5.95	50.00	44.05	9.000	N	OFF	10.2
12.5398	5.86	50.00	44.14	9.000	N	OFF	10.2

2021-07-26

오전 10:29:21



Test

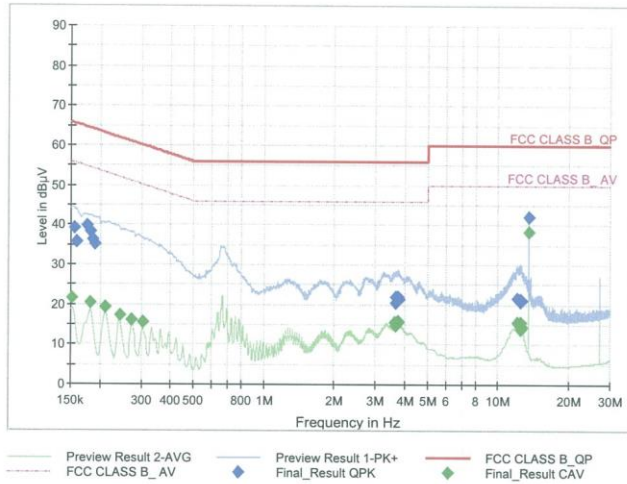
1 / 2

## Test Report

### Common Information

EUT : SM-M526B/DS  
 Manufacturer : SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions : NFC UNTERM N MODE  
 Operator Name:  
 Comment:

Full Spectrum



### Final Result QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	39.25	65.75	26.51	9.000	N	OFF	9.6
0.1590	35.88	65.52	29.64	9.000	N	OFF	9.6
0.1748	39.83	64.73	24.90	9.000	N	OFF	9.6
0.1815	38.22	64.42	26.19	9.000	N	OFF	9.6
0.1860	36.25	64.21	27.96	9.000	N	OFF	9.6
0.1905	35.15	64.02	28.87	9.000	N	OFF	9.6
3.6433	21.97	56.00	34.03	9.000	N	OFF	9.8
3.6793	20.57	56.00	35.43	9.000	N	OFF	9.8
3.7265	21.34	56.00	34.66	9.000	N	OFF	9.8
3.7558	21.93	56.00	34.07	9.000	N	OFF	9.8
3.7625	21.58	56.00	34.42	9.000	N	OFF	9.8
3.7940	21.42	56.00	34.58	9.000	N	OFF	9.8
12.1010	21.75	60.00	38.25	9.000	N	OFF	10.2
12.3508	21.03	60.00	38.97	9.000	N	OFF	10.2
12.4250	21.25	60.00	38.75	9.000	N	OFF	10.2
12.4745	20.66	60.00	39.34	9.000	N	OFF	10.2
12.5510	21.13	60.00	38.87	9.000	N	OFF	10.2
13.5590	42.08	60.00	17.92	9.000	N	OFF	10.3

2021-07-26

오전 10:45:01

Test

2 / 2

**Final Result CAV**

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	21.72	55.88	34.16	9.000	N	OFF	9.6
0.1815	20.50	54.42	33.92	9.000	N	OFF	9.6
0.2108	19.46	53.18	33.71	9.000	N	OFF	9.6
0.2423	17.31	52.02	34.71	9.000	N	OFF	9.6
0.2738	16.14	51.00	34.86	9.000	N	OFF	9.6
0.3030	15.45	50.16	34.71	9.000	N	OFF	9.6
3.6388	15.68	46.00	30.32	9.000	N	OFF	9.8
3.6658	14.66	46.00	31.34	9.000	N	OFF	9.8
3.6703	14.66	46.00	31.34	9.000	N	OFF	9.8
3.6995	15.62	46.00	30.38	9.000	N	OFF	9.8
3.7265	15.69	46.00	30.31	9.000	N	OFF	9.8
3.7580	15.88	46.00	30.12	9.000	N	OFF	9.8
12.1010	15.66	50.00	34.34	9.000	N	OFF	10.2
12.4588	15.47	50.00	34.53	9.000	N	OFF	10.2
12.5060	14.28	50.00	35.72	9.000	N	OFF	10.2
12.5420	13.72	50.00	36.28	9.000	N	OFF	10.2
12.5510	14.39	50.00	35.61	9.000	N	OFF	10.2
13.5590	38.28	50.00	11.72	9.000	N	OFF	10.3

2021-07-26

오전 10:45:01

## 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	ESR / EMI Test Receiver	06/17/2021	Annual	101910
ESPACE	SU-642 / Temperature Chamber	03/15/2021	Annual	0093008124
Agilent	N9030A / Signal Analyzer	01/11/2021	Annual	MY49431210
Hewlett Packard	E3632A / DC Power Supply	02/16/2021	Annual	MY50360067
Hewlett Packard	8493C / Attenuator(10 dB)	06/18/2021	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.

**Radiated Test**

<b>Manufacturer</b>	<b>Model / Equipment</b>	<b>Calibration Date</b>	<b>Calibration Interval</b>	<b>Serial No.</b>
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	03/19/2020	Biennial	1513-333
Schwarzbeck	VULB 9168 / Hybrid Antenna	02/22/2021	Biennial	760
Schwarzbeck	BBHA 9120D / Horn Antenna	05/19/2020	Biennial	02299
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	07/05/2021	Annual	102168
Agilent	N9030A / Signal Analyzer	01/11/2021	Annual	MY49431210
Api tech.	18B-03 / Attenuator (3 dB)	02/03/2021	Annual	1
Agilent	8493C-10 / Attenuator(10 dB)	02/03/2021	Annual	08285
CERNEX	CBLU1183540 / Power Amplifier	02/03/2021	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	HCHCT-RF-2108-FC010-P