TEST REPORT

FCC NFC Test for SM-S931B/DS
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2410-FC068

DATE OF ISSUE
October 29, 2024

Tested by
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Additional Model
SM-S931B

Applicant	**SAMSUNG Electronics Co., Ltd.** 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Product Name Model Name	Mobile Phone SM-S931B/DS
FCC ID	A3LSMS931B
FCC Classification	Low Power Communication Device Transmitter (DXX)
Date of Test	September 04, 2024 ~ October 29, 2024
Test Results	PASS
Test Standard Used	FCC Part 15.225 Subpart C
Location of Test	■ Permanent Testing Lab ☐ On Site Testing Lab (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	October 29, 2024	Initial Release

Notice

Content
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. The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated. The test results have only been applied with the test methods required by the standard(s). The laboratory is not accredited for the test results marked *. Information provided by the applicant is marked **. Test results provided by external providers are marked ***. When confirmation of authenticity of this test report is required, please contact www.hct.co.kr The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

CONTENTS

1. EUT DESCRIPTION

Model	SM-S931B/DS
Additional Model	SM-S931B
EUT Type	Mobile Phone
Power Supply	DC 3.88 V
Frequency of Operation	13.56 MHz
Transmit Power	17.93 dBμV/m @30 m
Modulation Type	ASK
Serial number	Radiated : R3CX80V3LKN

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 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 March 11, 2024 (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)	1.98 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.58 (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 (μV/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 μV/m = 84.0 dBμV/m
2. 334 μV/m = 50.47 dBμV/m
3. 106μV/m = 40.51 dBμV/m

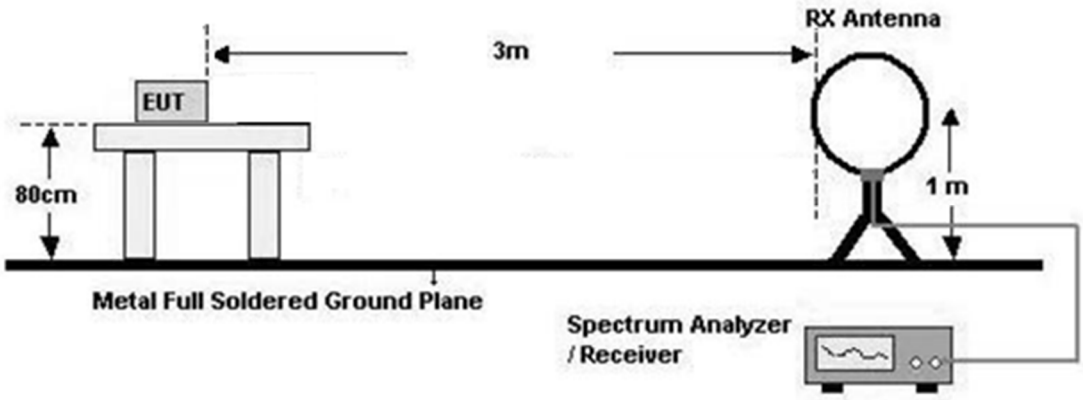
Limit(Radiated Spurious Emissions)

Frequency (MHz)	Field Strength (μV/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

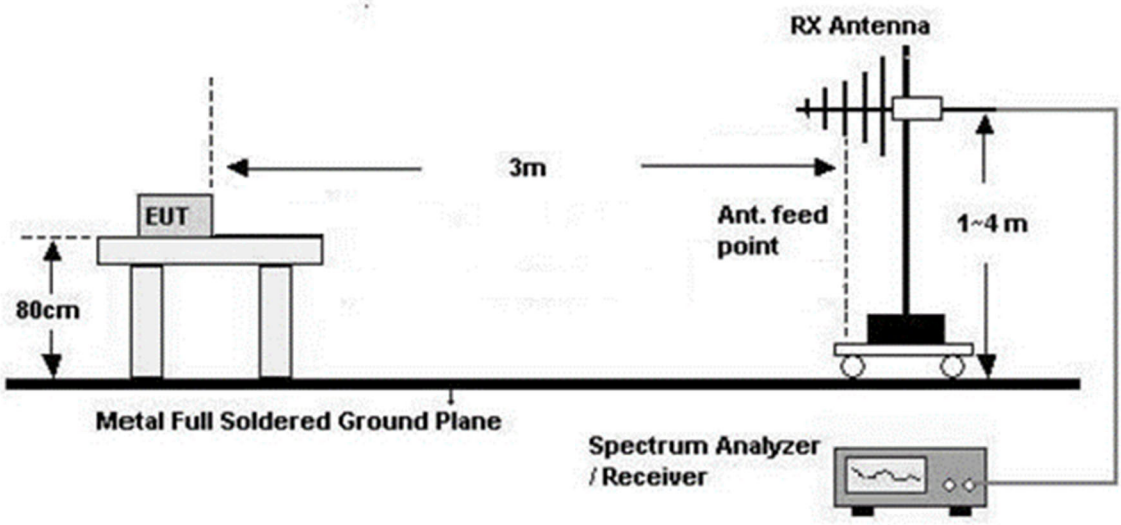
※: Exceptasprovidedin15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz,174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 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 0.8m 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(Below30 MHz)

7. Spectrum Setting

1) Frequency Range = 9 kHz ~ 150 kHz

- Detector = Peak
- Trace = Max hold
- RBW = 300 Hz
- VBW ≥ 3 x RBW

2) Frequency Range = 150 kHz ~ 30 MHz

- Detector = Peak
- Trace = Max hold
- RBW = 10 kHz
- VBW ≥ 3 x 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 0.8m 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

1) Frequency Range = 9 kHz ~ 150 kHz

- Detector = Peak
- Trace = Max hold
- RBW = 300 Hz
- VBW ≥ 3 x RBW

2) Frequency Range = 150 kHz ~ 30 MHz

- Detector = Peak
- Trace = Max hold
- RBW = 10 kHz
- VBW ≥ 3 x RBW

9. Total(Measurement Type : Peak)
   = 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

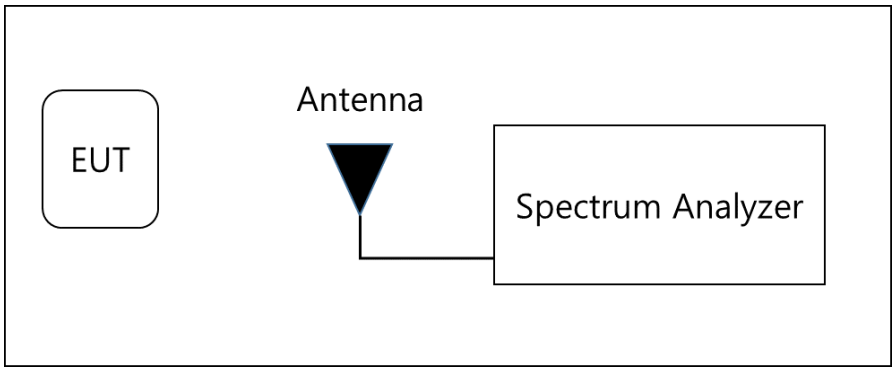
Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
OFS and chamber correlation testing had been performed and chamber measured test result is the worst 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 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3 m 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 = Max hold
   - RBW = 100 kHz
   - VBW ≥ 3 x RBW
7. Total = Measured Value
   - We apply to the offset in the range 30 MHz - 1 GHz.
   - The offset = 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 :

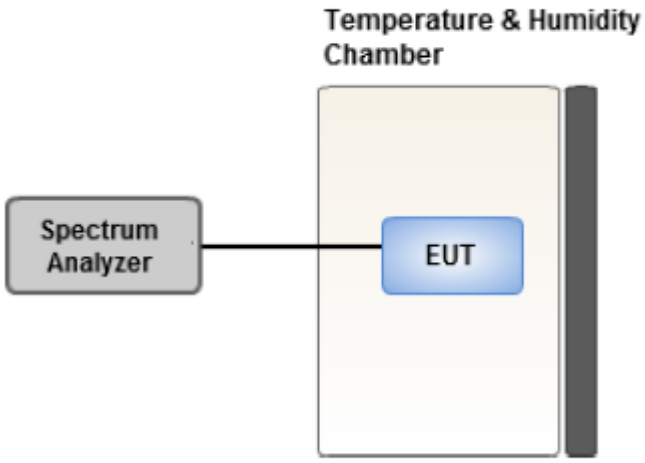
We tested Occupied Bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.

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 °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 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. Detector : 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
   - Worst case : Stand alone
2. EUT Axis : X
3. All type and bitrate were investigated and the worst case results are reported.
   - Worst case : Type A, 106 kbps
4. All mode of without tag and with tag were investigated and the worst case configuration results are reported.
   - Mode: Without Tag, With Tag
   - Worst case : 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
   - Worst case : Horizontal
6. SM-S931B/DS, SM-S931B were tested and the worst case results are reported.
(Worst case: SM-S931B/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
   - Worst case : Stand alone + Travel Adapter
2. SM-S931B/DS, SM-S931B were tested and the worst case results are reported.
(Worst case: SM-S931B/DS)

20 dB 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-S931B/DS, SM-S931B were tested and the worst case results are reported.
(Worst case: SM-S931B/DS)

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 ≤ 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 (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)
13.560	37.30	20.63	-40.00	H	17.93	84.00	66.07
13.560	34.21	20.63	-40.00	V	14.84	84.00	69.16

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)
13.553	30.74	20.63	-40.00	H	11.37	50.47	39.10
13.567	31.35	20.63	-40.00	H	11.98	50.47	38.49

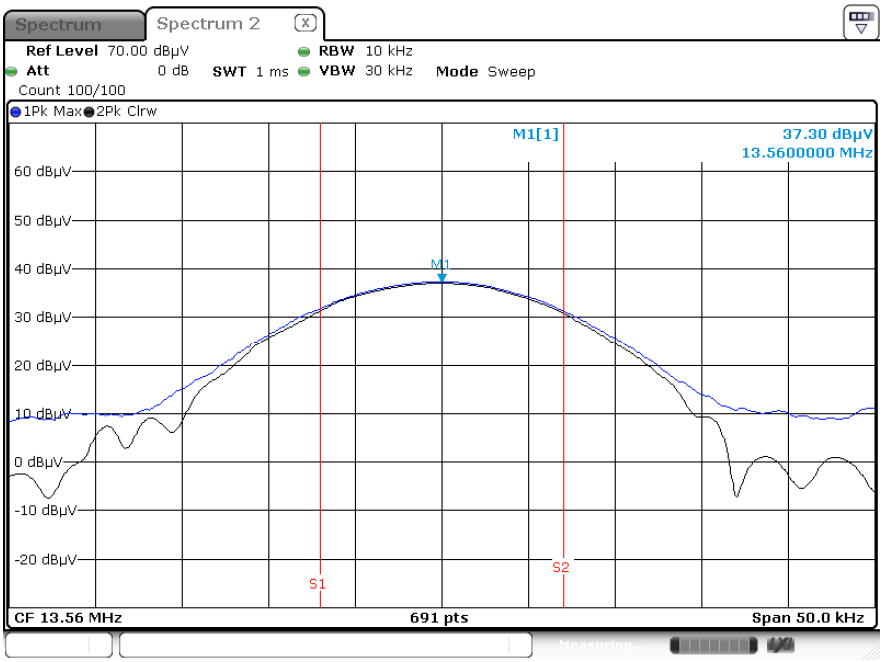
Measured Frequency Range : 13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz							
Frequency (MHz)	Measured Value (dBµV/m) @3 m	Ant. Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBµV/m) @30 m	Limit (dBµV/m) @30 m	Margin (dB)
13.347	20.12	20.63	-40.00	H	0.75	40.51	39.76
13.771	19.32	20.63	-40.00	H	-0.05	40.51	40.56

▣ Test Plot

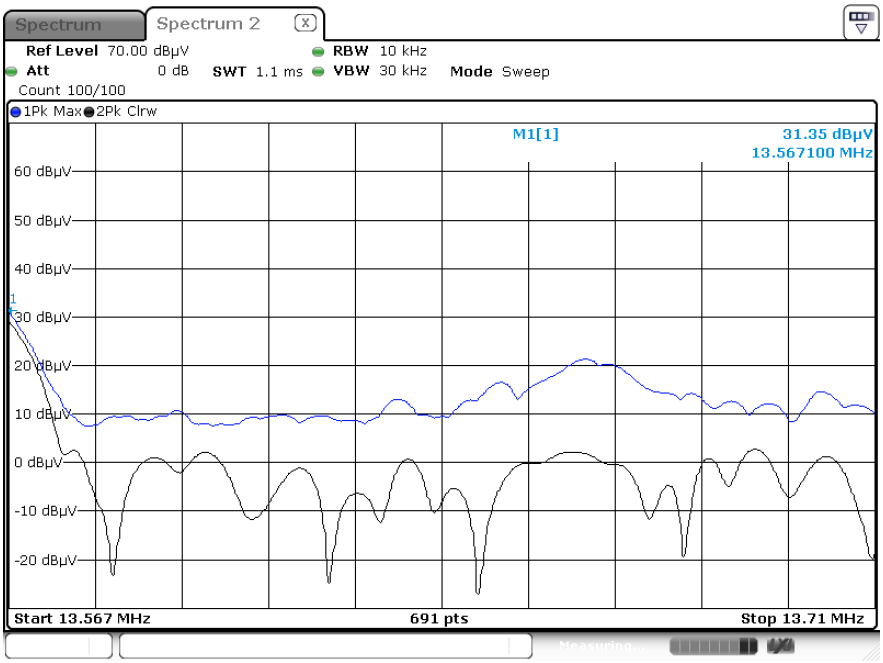
Note:

Plot of worst case are only reported.

13.553 MHz ~ 13.567 MHz



Worst Case (13.567 MHz - 13.710 MHz)



9.2. Radiated Emission 9 kHz – 30 MHz

Measured Frequency Range : 9 kHz - 30 MHz							
Frequency (kHz)	Measured Value (dBµV/m) @3 m	Ant. Factor +Cable Loss (dB/m)	Distance Correction (dB)	Ant. POL (H/V)	Total (dBµV/m) @300 m	Limit (dBµV/m) @300 m	Margin (dB)
9.748	10.00	20.710	-40.00	H	-9.29	29.54	38.83
17.261	11.06	20.629	-40.00	H	-8.311	29.54	37.85
27.115	10.53	20.836	-40.00	H	-8.634	29.54	38.17
27.118	10.01	20.836	-40.00	H	-9.154	29.54	38.69

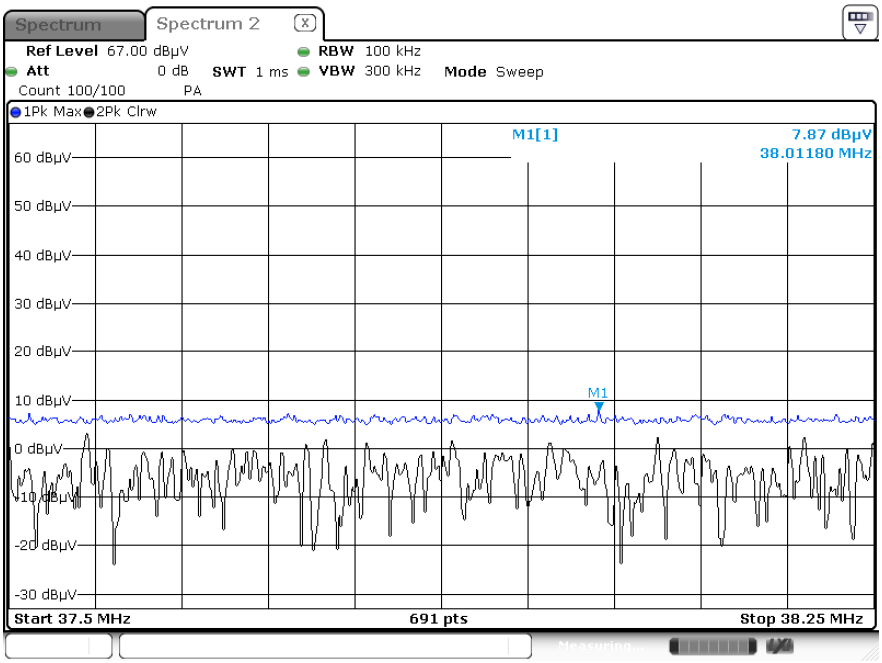
9.3. Radiated Emission 30 MHz – 1000 MHz

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)
# 38.0118	7.87	19.10	0.62	H	27.59	40.00	12.41
48.0820	6.93	19.80	0.74	H	27.47	40.00	12.53
94.5430	8.10	14.50	1.12	V	23.72	43.50	19.78
# 114.9090	7.570	16.60	1.16	H	25.33	43.5	18.17
# 131.6720	7.73	18.20	1.21	H	27.14	43.50	16.36
148.0660	7.12	19.40	1.30	V	27.82	43.50	15.68

Note:

1. # is the result for restricted band.

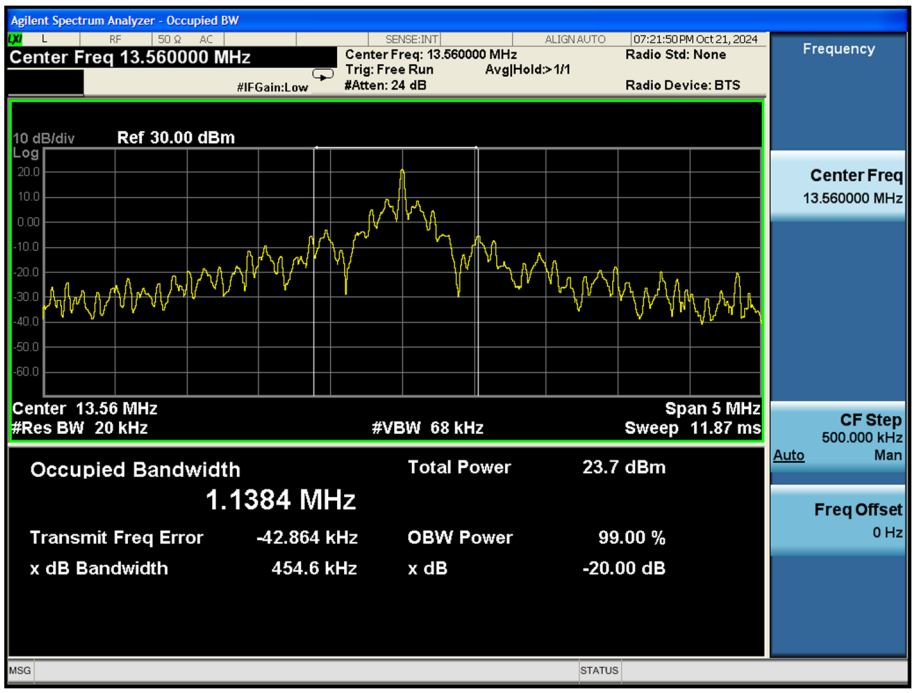
▣ **Test Plot**



Note:

Plot of worst case was only reported

9.4. 20 dB Bandwidth



9.5. Frequency Stability

Startup

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.88 VDC

DEVIATION LIMIT: ±0.01 % =±1356 Hz

Voltage	Power	Temp.	Frequency	Frequency Dev.	Frequency
(%)	(VDC)	(℃)	(MHz)	(Hz)	Dev (%)
100%	3.88	-20	13.560039	39	0.0002867
100%		-10	13.560039	39	0.0002865
100%		0	13.560055	55	0.0004060
100%		+10	13.560056	56	0.0004160
100%		+20(Ref.)	13.560046	46	0.0003413
100%		+30	13.560057	57	0.0004176
100%		+40	13.560055	55	0.0004049
100%		+50	13.560056	56	0.0004120
HIGH	4.45	+20	13.560059	59	0.0004355
LOW	3.70	+20	13.560059	59	0.0004344

2 minutes

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.88 VDC

DEVIATION LIMIT: ±0.01 % =±1356 Hz

Voltage	Power	Temp.	Frequency	Frequency Dev.	Frequency
(%)	(VDC)	(℃)	(MHz)	(Hz)	Dev (%)
100%	3.88	-20	13.560047	47	0.0003490
100%		-10	13.560048	48	0.0003547
100%		0	13.560064	64	0.0004738
100%		+10	13.560065	65	0.0004781
100%		+20(Ref.)	13.560053	53	0.0003923
100%		+30	13.560064	64	0.0004721
100%		+40	13.560064	64	0.0004690
100%		+50	13.560065	65	0.0004819
HIGH	4.45	+20	13.560067	67	0.0004922
LOW	3.70	+20	13.560065	65	0.0004797

5 minutes

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.88 VDC

DEVIATION LIMIT: ±0.01 % =±1356 Hz

Voltage	Power	Temp.	Frequency	Frequency Dev.	Frequency
(%)	(VDC)	(℃)	(MHz)	(Hz)	Dev (%)
100%	3.88	-20	13.560054	54	0.0003993
100%		-10	13.560054	54	0.0004016
100%		0	13.560070	70	0.0005190
100%		+10	13.560071	71	0.0005215
100%		+20(Ref.)	13.560061	61	0.0004504
100%		+30	13.560072	72	0.0005310
100%		+40	13.560073	73	0.0005364
100%		+50	13.560072	72	0.0005332
HIGH	4.45	+20	13.560072	72	0.0005342
LOW	3.70	+20	13.560073	73	0.0005402

10 minutes

PERATING FREQUENCY: 13.56 MHz

REFERENCE VOLTAGE: 3.88 VDC

DEVIATION LIMIT: ±0.01 % =±1356 Hz

Voltage	Power	Temp.	Frequency	Frequency Dev.	Frequency
(%)	(VDC)	(℃)	(MHz)	(Hz)	Dev (%)
100%	3.88	-20	13.560060	60	0.0004428
100%		-10	13.560061	61	0.0004507
100%		0	13.560076	76	0.0005599
100%		+10	13.560077	77	0.0005650
100%		+20(Ref.)	13.560066	66	0.0004902
100%		+30	13.560077	77	0.0005662
100%		+40	13.560076	76	0.0005573
100%		+50	13.560077	77	0.0005694
HIGH	4.45	+20	13.560080	80	0.0005893
LOW	3.70	+20	13.560078	78	0.0005729

9.6. POWERLINE CONDUCTED EMISSIONS

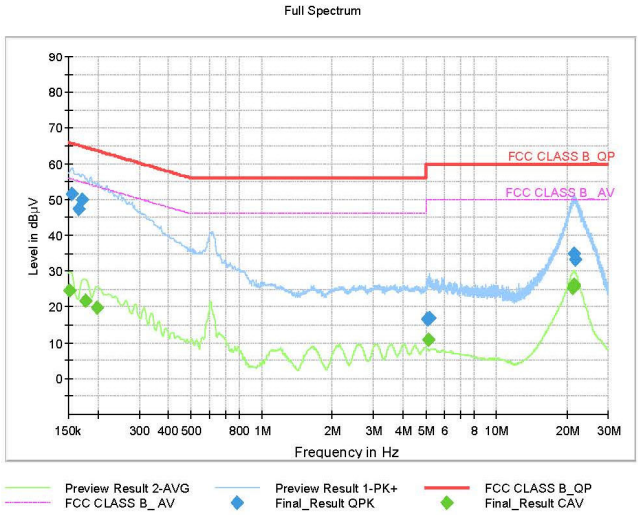
Conducted Emissions

Test 1 / 1

Test Report

Common Information

EUT : SM-S931B/DS
Operating Conditions : NFC Term Mode
Comment :



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	51.68	65.75	14.08	9.000	L1	9.6
0.1658	47.38	65.17	17.79	9.000	N	9.6
0.1725	50.04	64.84	14.80	9.000	N	9.6
5.0945	16.51	60.00	43.49	9.000	N	9.9
5.1395	16.66	60.00	43.34	9.000	N	9.9
5.1710	17.05	60.00	42.95	9.000	N	9.9
21.3665	34.93	60.00	25.07	9.000	N	10.6
21.4115	34.75	60.00	25.25	9.000	N	10.6
21.5645	33.35	60.00	26.65	9.000	N	10.6

Final_Result_CAV

Frequency (MHz)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	24.51	55.88	31.37	9.000	N	9.6
0.1770	21.67	54.63	32.95	9.000	N	9.6
0.1995	19.80	53.63	33.83	9.000	N	9.6
5.1125	10.80	50.00	39.20	9.000	N	9.9
5.1395	10.81	50.00	39.19	9.000	N	9.9
21.2765	25.34	50.00	24.66	9.000	N	10.6
21.3688	25.78	50.00	24.22	9.000	N	10.6
21.4070	25.89	50.00	24.11	9.000	N	10.6
21.4970	26.07	50.00	23.93	9.000	N	10.6

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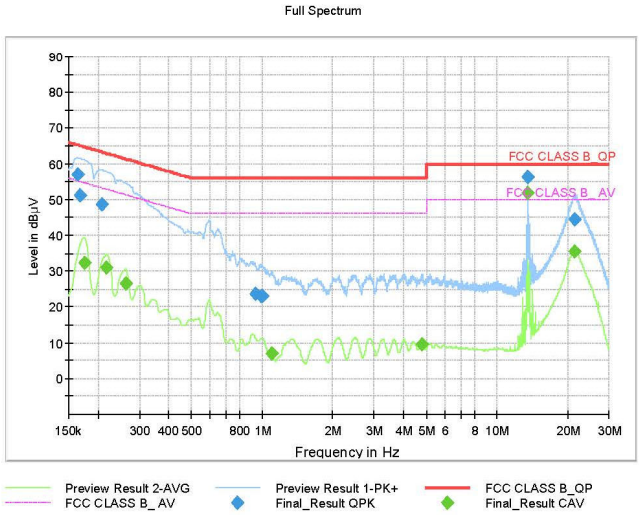
Test 1 / 1

Test Report

Common Information

EUT : SM-S931B/DS
Operating Conditions : NFC Unterm Mode
Comment :



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1635	56.87	65.28	8.42	9.000	L1	9.6
0.1680	51.34	65.06	13.72	9.000	N	9.6
0.2085	48.51	63.27	14.75	9.000	N	9.6
0.9343	23.80	56.00	32.20	9.000	L1	9.7
0.9973	22.87	56.00	33.13	9.000	L1	9.7
1.0018	23.05	56.00	32.95	9.000	L1	9.7
13.5590	56.35	60.00	3.65	9.000	N	10.2
21.3463	44.33	60.00	15.67	9.000	N	10.6
21.4408	44.39	60.00	15.61	9.000	N	10.6

Final_Result_CAV

Frequency (MHz)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1748	32.28	54.73	22.45	9.000	N	9.6
0.2175	31.07	52.91	21.84	9.000	N	9.6
0.2625	26.50	51.35	24.85	9.000	N	9.6
1.0940	6.99	46.00	39.01	9.000	L1	9.7
1.1008	6.93	46.00	39.07	9.000	L1	9.7
4.8110	9.69	46.00	36.31	9.000	N	9.9
13.5590	52.02	50.00	-2.02	9.000	N	10.2
21.2900	35.48	50.00	14.52	9.000	N	10.6
21.4565	35.50	50.00	14.50	9.000	N	10.6

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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	07/17/2025	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	07/02/2025	Annual
Temperature Chamber	SU-642	ESPEC	0093008124	02/19/2025	Annual
DC Power Supply	E3632A	Agilent	KR75303243	04/19/2025	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	08285	05/28/2025	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	CO3000	Innco system	CO3000-4p	N/A	N/A
Antenna Position Tower	MA4640/800-XP-EP	Innco system	S1AM	07/30/2025	Annual
Turn Table	DS2000-S-1t	Innco system	DS2000/572/54610422/P	N/A	N/A
Loop Antenna	1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-1135	08/19/2026	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-1300	01/03/2026	Biennial
Spectrum Analyzer	FSV(10 Hz ~ 40 GHz)	Rohde & Schwarz	101055	05/09/2025	Annual
Power Amplifier	310N	SONOMA INSTRUMENT	186169	02/14/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/17/2024	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	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-2410-FC068-P