



Nemko Korea Co., Ltd.

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TEL : + 82 31 330 1700 FAX : + 82 31 322 2332

FCC EVALUATION REPORT FOR CERTIFICATION

Applicant :

Samsung Electronics Co., Ltd.
129, Samsung-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
Attn : Mr. Kwanbae Kim

Dates of Issue : January 31, 2019

Test Report No. : NK-18-E-0815

Test Site : Nemko Korea Co., Ltd.

EMC site, Korea

FCC ID

A3LSM-R375

Brand Name

Samsung

Contact Person

Samsung Electronics Co., Ltd.
129, Samsung-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
Mr. Kwanbae Kim
Telephone No. : +82 31 301 5140

Applied Standard :

FCC 47 CFR Part 15 Subpart B & Part 2, ICES-003 Issue 6

Classification :

FCC Class B Device

EUT Type :

Galaxy Fit e

The device bearing the brand name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2014.

The test results of this report are deemed satisfactory evidence of compliance with Industry Canada Interference-causing Equipment Standard ICES-003.

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.


Jan 31, 2019
Tested By : Sangkyu Lee
Engineer


Jan. 31, 2019
Reviewed By : Hyojung Lee
Technical Manager

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SCOPE

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.

Responsible Party :	Samsung Electronics Co., Ltd.
Contact Person :	Mr. Kwanbae Kim Tel No.: + 82 31 301 5140
Manufacturer :	Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea

- FCC ID: A3LSM-R375
- Model: SM-R375
- EUT Type: Galaxy Fit e
- Brand Name: Samsung
- Rating: d.c. 5 V, 140 mA
- Test Voltage & Power Frequency: Charging mode : a.c. 120 V, 60 Hz (Host Unit)
Battery mode : d.c. 3.85 V
- Classification: FCC Class B Device
- Applied Standard: FCC 47 CFR Part 15 Subpart B & Part 2, ICES-003 Issue 6
- Test Procedure(s): ANSI C63.4-2014
- Dates of Test: December 12, 2018 to January 19, 2019
- Place of Tests: Nemko Korea Co., Ltd. EMC Site
- Test Report No.: NK-18-E-0815

INTRODUCTION

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2014) was used in determining radiated and conducted emissions emanating from **Samsung Electronics Co., Ltd.**

FCC ID : A3LSM-R375, Galaxy Fit e.

These measurement tests were conducted at **Nemko Korea Co., Ltd. EMC Laboratory.**

The site address is 155, 153 and 159, Osan-ro, Mohyeon-eup, Cheoin-gu, Yongin-si, Gyeonggi-do 16885 Republic of Korea

The area of Nemko Korea Corporation Ltd. EMC Test Site is located in a mountain area at 80 kilometers (48 miles) southeast and Incheon International Airport (Incheon Airport), 30 kilometers (18 miles) south-southeast from central Seoul.

The Nemko Korea Co., Ltd. Has been accredited as a Conformity Assessment Body (CAB).



Nemko Korea Co., Ltd.
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Fig. 1. The map above shows the Seoul in Korea vicinity area.
The map also shows Nemko Korea Corporation Ltd. EMC Lab and Incheon Airport.

TEST CONDITIONS & EUT INFORMATION

Operating During Test

Charging mode : The EUT was tested in a charging state.

Battery mode : The test was performed in a connecting state the EUT and
a Galaxy Note Fan Edition via Bluetooth using the program provided
by the manufacturer.

Support Equipment

[Charging mode]

Galaxy Fit e (EUT)	Samsung Electronics Co., Ltd. Model : SM-R375	FCC ID : A3LSM-R375
Charger	Samsung Electronics Co., Ltd. Model : EP-QR375 0.2 m length shielded USB cable	S/N : N/A
Galaxy Note Fan Edition	Samsung Electronics Co., Ltd. Model : SM-N935K	S/N : R39J60EGRC
Travel Adapter	Samsung Electronics Co., Ltd. Model : EP-TA200	S/N : N/A

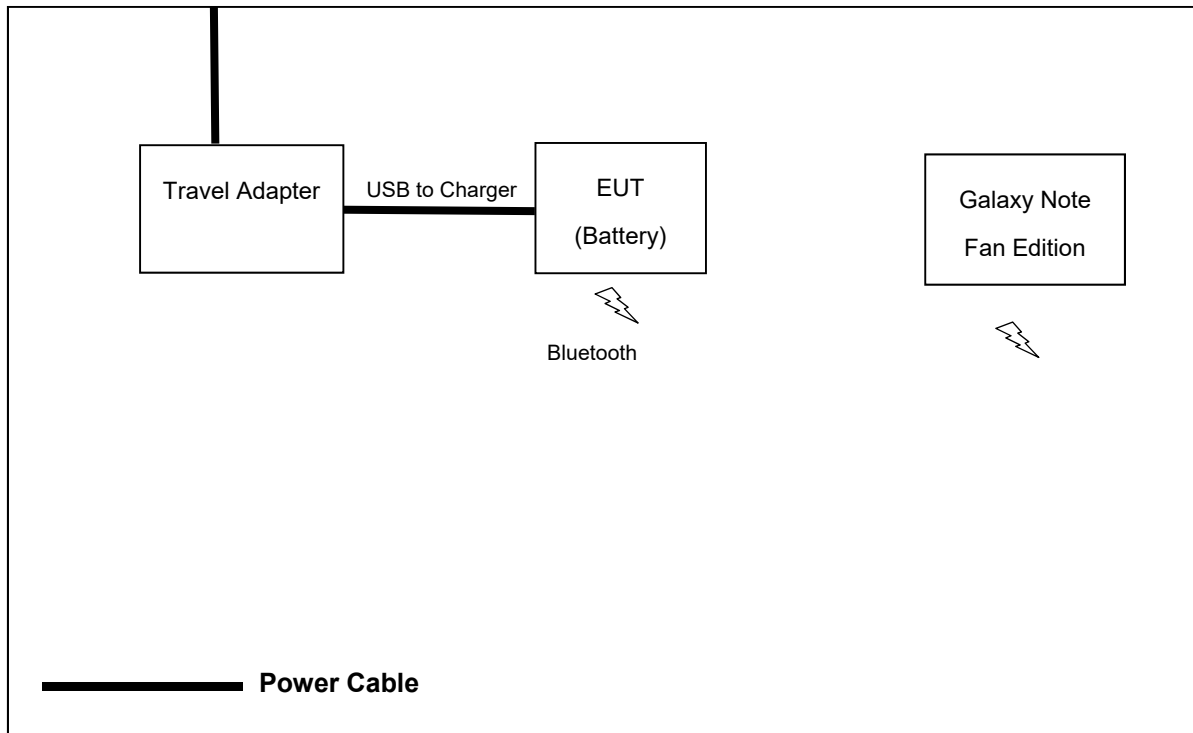
[Battery mode]

Galaxy Fit e (EUT)	Samsung Electronics Co., Ltd. Model : SM-R375	FCC ID : A3LSM-R375
Galaxy Note Fan Edition	Samsung Electronics Co., Ltd. Model : SM-N935K	S/N : R39J60EGRC

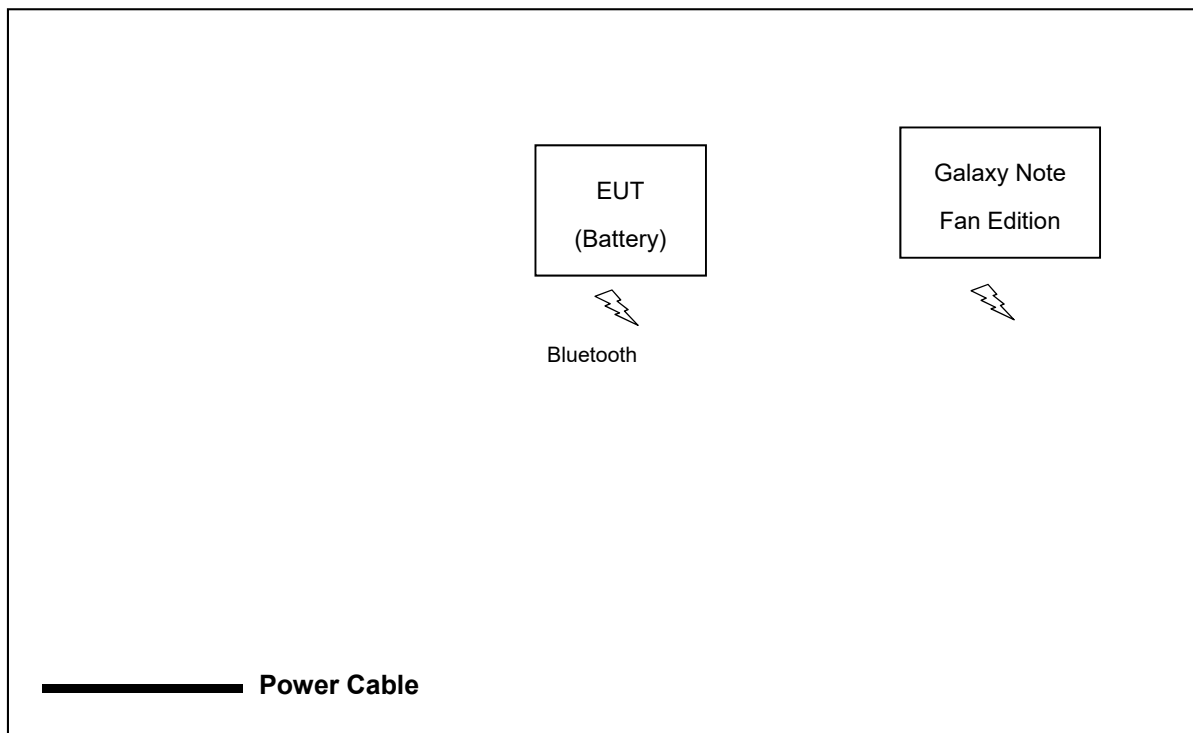
Component List

Item	Model	Manufacturer	Serial Number
Main Board	SM-R375_MAIN_02A	SAMSUNG	N/A
PMOLED	OEL2M7033-W-E	TRULY	N/A
Battery Pack	EB-BR375ABU	ATL	N/A
Charger	EP-QR375	SAMSUNG	N/A

Setup Drawing



[Charging mode]



[Battery mode]

SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specification:

Name of Test	Paragraph No.	Result	Remark
Conducted Emission	15.107(a)	Complies	-
Radiated Emission	15.109(g)	Complies	Below 1 GHz
Radiated Emission	15.109(a)	Complies	Above 1 GHz

RECOMMENDATION/CONCLUSION

The data collected shows that the **Samsung Electronics Co., Ltd.**

FCC ID : A3LSM-R375, Galaxy Fit e.

The highest emission observed was at **0.15 MHz** for conducted emissions with a QP margin of **28.6 dB**, at **883.63 MHz** for radiated emissions with a QP margin of **6.21 dB**.

SAMPLE CALCULATION

$$\text{dB } \mu\text{V} = 20 \log_{10} (\mu\text{V}/\text{m})$$

$$\mu\text{V} = 10^{(\text{dB } \mu\text{V}/20)}$$

EX. 1.

@165.0 MHz

Class B limit = 30.0 dB $\mu\text{V}/\text{m}$

Reading = 38.2 dB μV (calibrated level)

Antenna factor + Cable Loss + Amplifier Gain = -12.9 dB

Total = 25.30 dB $\mu\text{V}/\text{m}$

Margin = 30.0 – 25.30 = 4.70

4.70 dB below the limit

DESCRIPTION OF TESTS

Conducted Emissions

The Line conducted emission test facility is located inside a 5.1 x 8.1 x 4.6 m shielded enclosure.

It is manufactured by SY corporation. The shielding effectiveness of the shielded room is in accordance with MIL-STD-285 or NSA 65-6.

A 1 m x 1.5 m wooden table 0.8 m height is placed 0.4 m away from the vertical wall and 0.5 m away from the side of wall of the shielded room Rohde & Schwarz (ENV216) of the 50 ohm / 50 uH Line Impedance Stabilization Network(LISN) are bonded to the shielded room. The EUT is powered from the Rohde & Schwarz (ENV216) LISN.

Power to the LISN s are filtered by high-current high insertion loss power line filters.

The purpose of filter is to attenuate ambient signal interference and this filter is also bonded to shielded enclosure. All electrical cables are shielded by tinned copper zipper tubing with inner diameter of 1/2 ".

If d.c. power device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the LISNs,

All interconnecting cables more than 1 m were shortened by non-inductive bundling (serpentine fashion) to a 1 m length.

Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT. The spectrum was scanned from 150 kHz to 30 MHz with 200 ms sweep time.

The frequency producing the maximum level was re-examined using the EMI test receiver. (Rohde & Schwarz ESCI).

The detector functions were set to quasi-peak mode & CISPR average mode.

The bandwidth of receiver was set to 9 kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.

Each emission was maximized by; switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux a.c. outlet, if applicable; whichever determined the worst case emission.

Each EME reported was calibrated using the R&S signal generator.

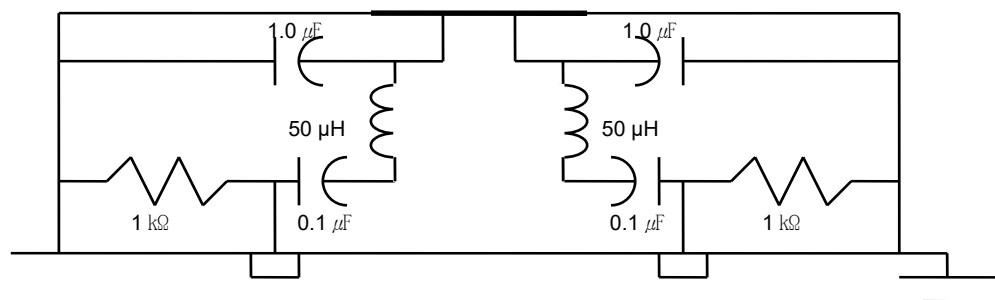


Fig. 2. LISN Schematic Diagram

DESCRIPTION OF TESTS

Radiated Emissions

Measurement were made indoors at 10 m & 3 m using antenna, signal conditioning unit and EMI test receiver to determine the frequency producing the maximum EME.

Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The Technology configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna was note for each frequency found.

The test receiver was scanned from 30 MHz to 1 000 MHz using TRILOG Broadband Test Antenna (Schwarzbeck, VULB 9163). Above 1 GHz, Double Ridged Broadband Horn Antenna (Schwarzbeck, HF907) was used.

The test equipment was placed on a wooden table.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

Each frequency found during scan measurements was reexamined and investigated using EMI test receiver. (ESW 8 (Below 1 GHz), ESU 40 (Above 1 GHz)).

The detector function were set to Quasi-peak and peak, CISPR average mode and the bandwidth of the receiver were set to 120 kHz and 1 MHz depending on the frequency or type of signal.

The EUT support equipment and interconnecting cables were re configured to the setup producing the maximum emission for the frequency and were placed on top of a 0.8 m high non- metallic 1.0 m x 1.5 m table.

The EUT, support equipment and interconnecting cables were re-arranged and manipulated to maximize each EME emission.

The turn table containing the Technology was rotated; the antenna height was varied 1 to 4 meter and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by : switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux a.c. outlet, if applicable; whichever determined the worst case emission.

Each EME reported was calibrated using the R/S signal generator.

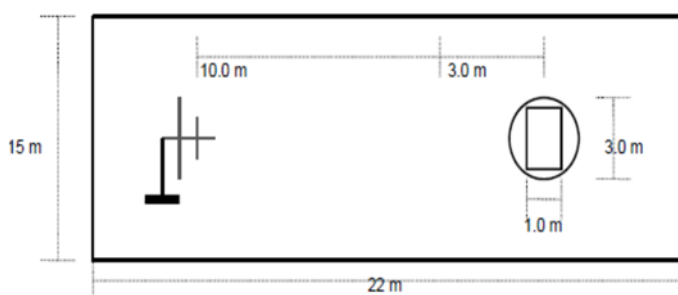


Fig. 3. Dimensions of 10 semi anechoic chamber

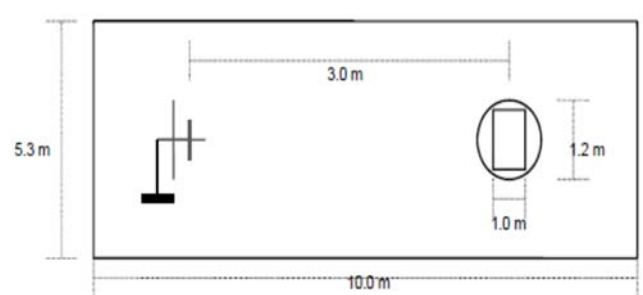
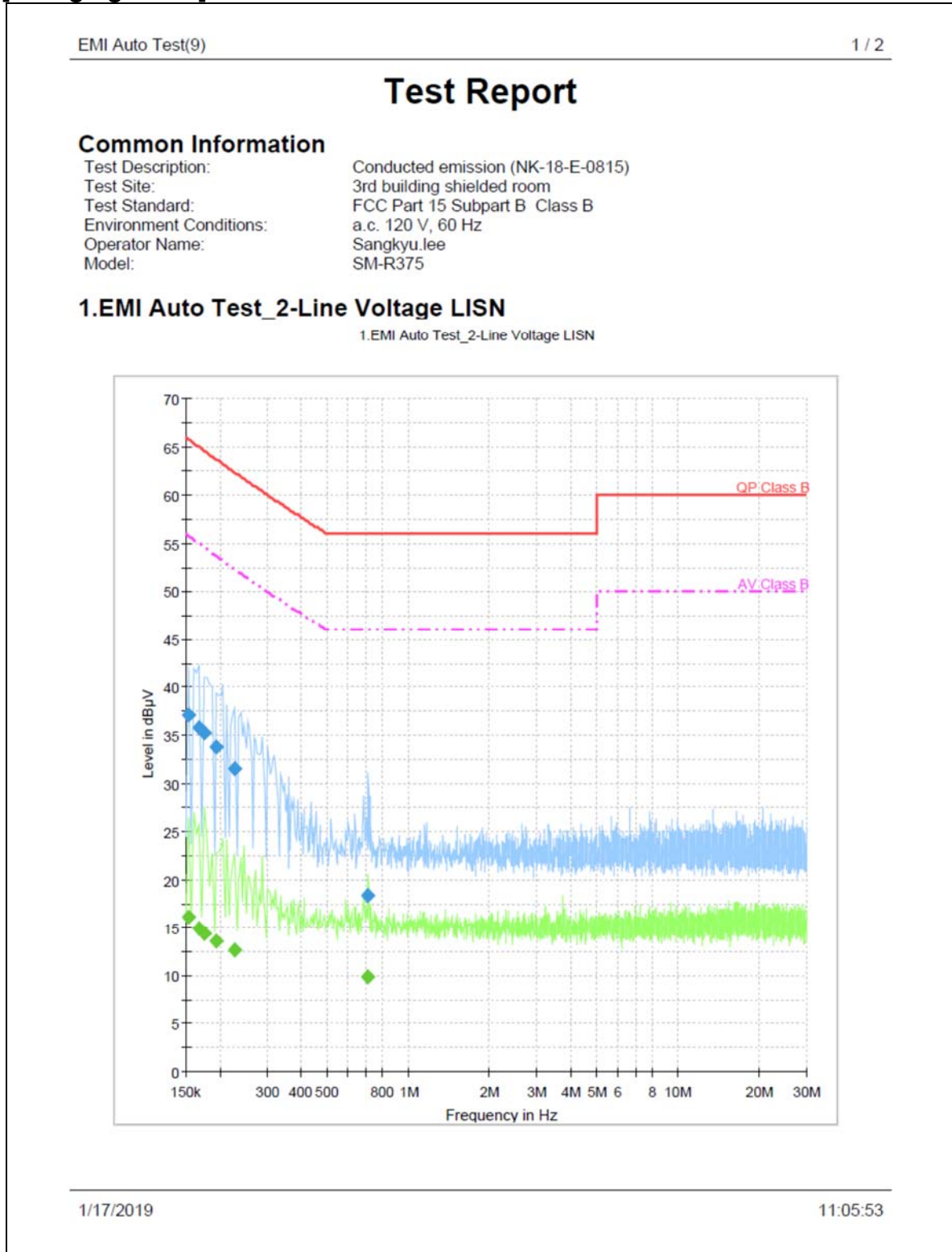


Fig. 4. Dimensions of 3 m full anechoic chamber

TEST DATA

Conducted Emissions

[Charging mode]



EMI Auto Test(9)

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Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.153731	37.2	15000.0	On	L1	9.8	28.6	65.8	
0.168656	35.8	15000.0	On	L1	10.0	29.1	65.0	
0.176119	35.2	15000.0	On	L1	10.0	29.4	64.6	
0.194775	33.8	15000.0	On	L1	9.9	29.9	63.7	
0.228356	31.5	15000.0	On	L1	9.7	30.8	62.3	
0.709688	18.4	15000.0	On	N	9.8	37.6	56.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.153731	16.1	15000.0	On	L1	9.8	39.7	55.8	
0.168656	14.8	15000.0	On	L1	10.0	40.1	54.9	
0.176119	14.4	15000.0	On	L1	10.0	40.2	54.6	
0.194775	13.6	15000.0	On	L1	9.9	40.1	53.7	
0.228356	12.7	15000.0	On	L1	9.7	39.6	52.3	
0.709688	9.8	15000.0	On	N	9.8	36.2	46.0	

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Table 1. Line Conducted Emissions Tabulated Data

NOTES:

- 1. Measurements using CISPR quasi-peak mode & average mode.**
- 2. All modes of operation were investigated and the worst -case emission are reported.**
- 3. LINE : L1 = Line , N = Neutral**
- 4. The limit for Class B device is on the FCC Part section 15.107(a).**

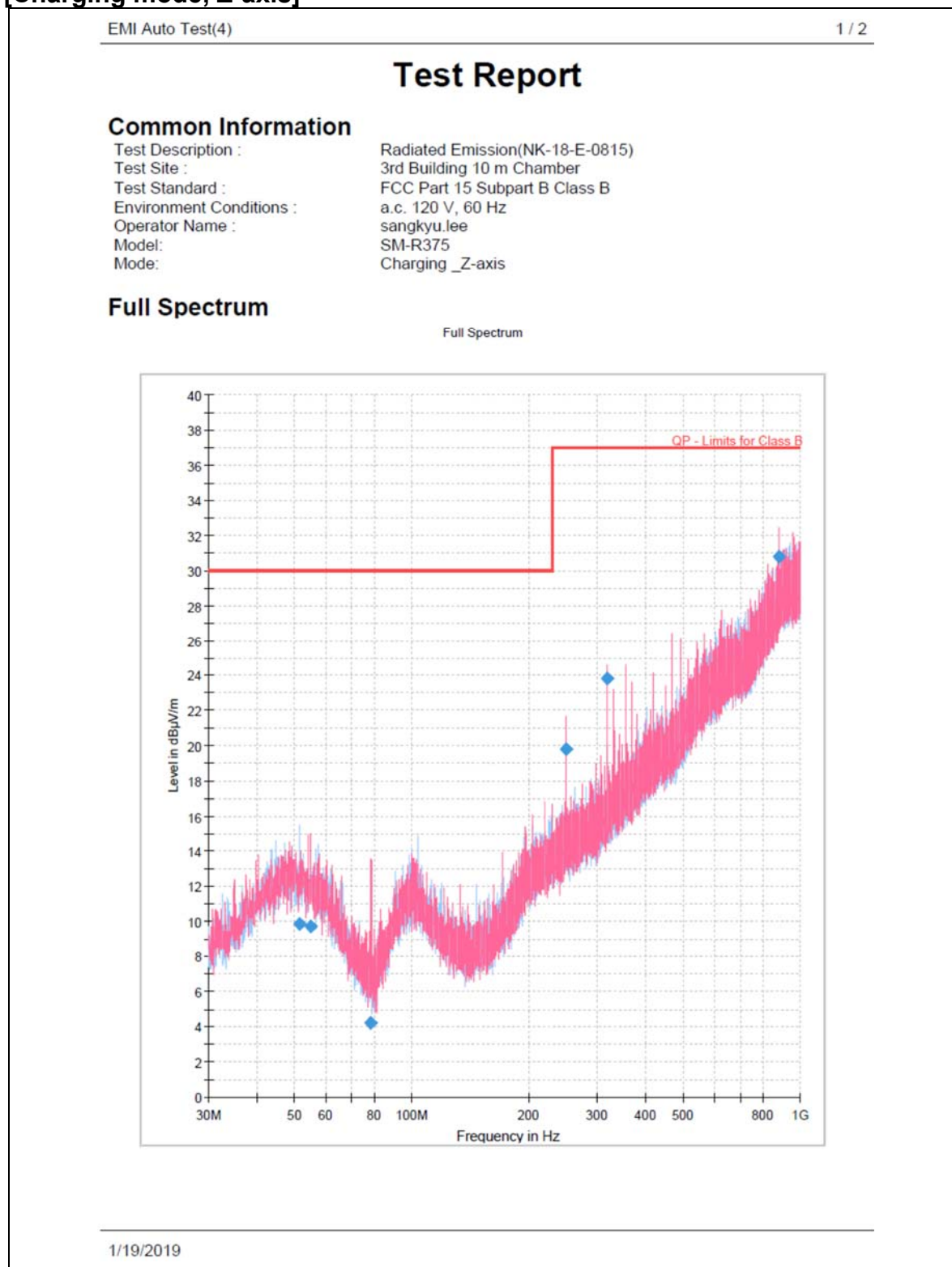
A blue ink signature, likely of Sangkyu Lee, written in a cursive style.

Tested by : Sangkyu Lee

TEST DATA

Radiated Emissions (Below 1 GHz)

[Charging mode, Z-axis]



EMI Auto Test(4)

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Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.469333	9.84	30.00	20.16	15000.0	120.000	202.0	H	-11.0	-21.3
54.961333	9.70	30.00	20.30	15000.0	120.000	107.0	V	246.0	-21.6
78.597000	4.21	30.00	25.79	15000.0	120.000	277.0	V	25.0	-27.0
249.996000	19.80	37.00	17.20	15000.0	120.000	170.0	V	130.0	-18.7
319.092333	23.85	37.00	13.15	15000.0	120.000	277.0	V	110.0	-16.4
883.632333	30.79	37.00	6.21	15000.0	120.000	107.0	V	111.0	-3.0

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
51.469333	
54.961333	
78.597000	
249.996000	
319.092333	
883.632333	

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Table 2. Radiated Measurements at 10 meters

[Battery mode, Y-axis]

EMI Auto Test(4)

1 / 2

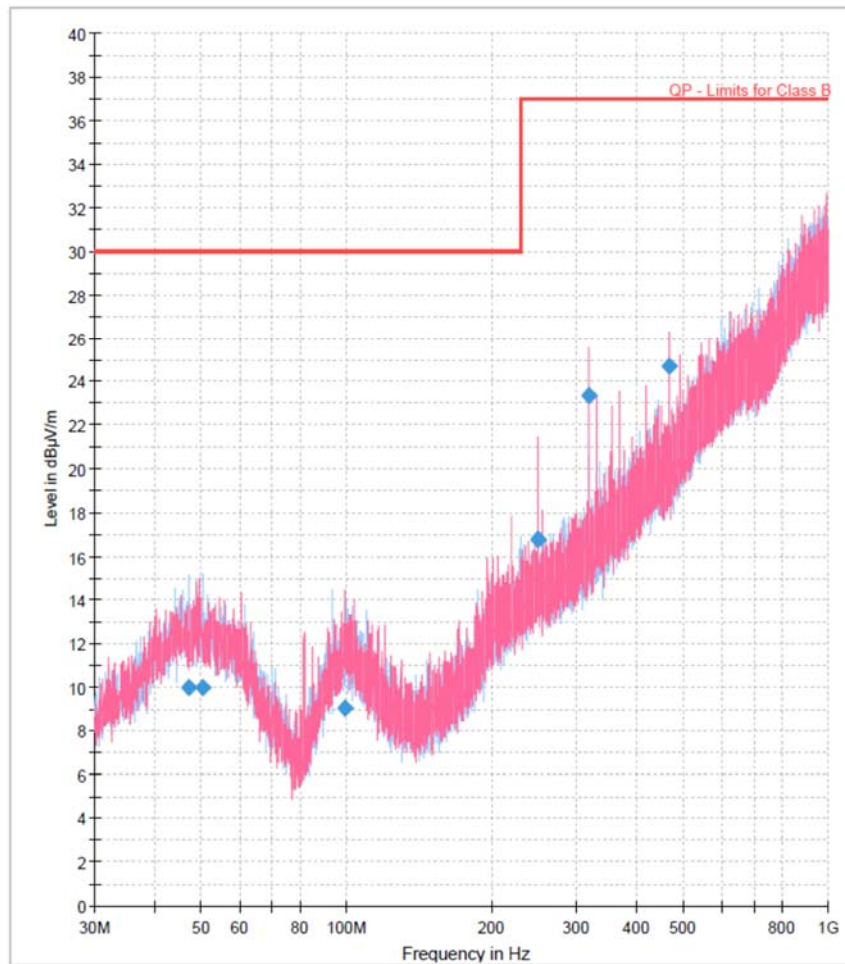
Test Report

Common Information

Test Description :	Radiated Emission(NK-18-E-0815)
Test Site :	3rd Building 10 m Chamber
Test Standard :	FCC Part 15 Subpart B Class B
Environment Conditions :	Battery
Operator Name :	sangkyu.lee
Model:	SM-R375
Mode:	Bluetooth_Y-axis

Full Spectrum

Full Spectrum



1/19/2019

EMI Auto Test(4)

2 / 2

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.104333	10.01	30.00	19.99	15000.0	120.000	176.0	H	151.0	-21.1
50.305333	10.00	30.00	20.00	15000.0	120.000	376.0	H	248.0	-21.0
99.064000	9.05	30.00	20.95	15000.0	120.000	130.0	V	259.0	-22.1
249.931333	16.79	37.00	20.21	15000.0	120.000	177.0	V	55.0	-18.7
319.060000	23.36	37.00	13.64	15000.0	120.000	277.0	V	344.0	-16.4
466.370667	24.68	37.00	12.32	15000.0	120.000	276.0	V	342.0	-11.3

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
47.104333	
50.305333	
99.064000	
249.931333	
319.060000	
466.370667	

1/19/2019

Table 3. Radiated Measurements at 10 meters

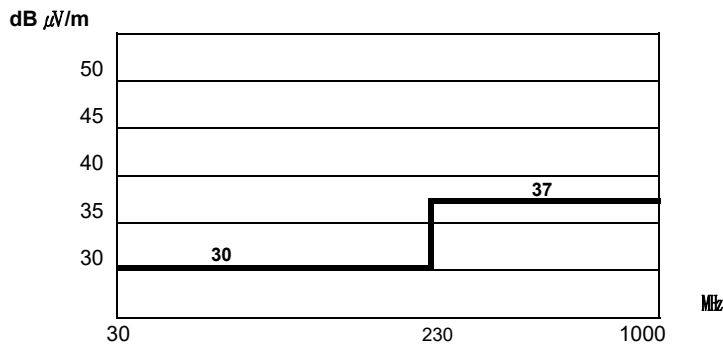


Fig. 5. Limits at 10 meters

NOTES:

1. Below 1 GHz, the radiated limits are shown on Figure 5.
2. CISPR 22 limit will be applied for radiated emission test

NOTES:

1. *Pol. H = Horizontal V = Vertical
2. **Corr. = Antenna Factor + Cable Loss + Amplifier.
3. Measurements using Quasi-peak mode below 1 GHz.
4. The limit for Class B device is on the FCC Part section 15.109(g).
5. It was tested at X, Y, Z-axis and the worst data was recorded in the test report.

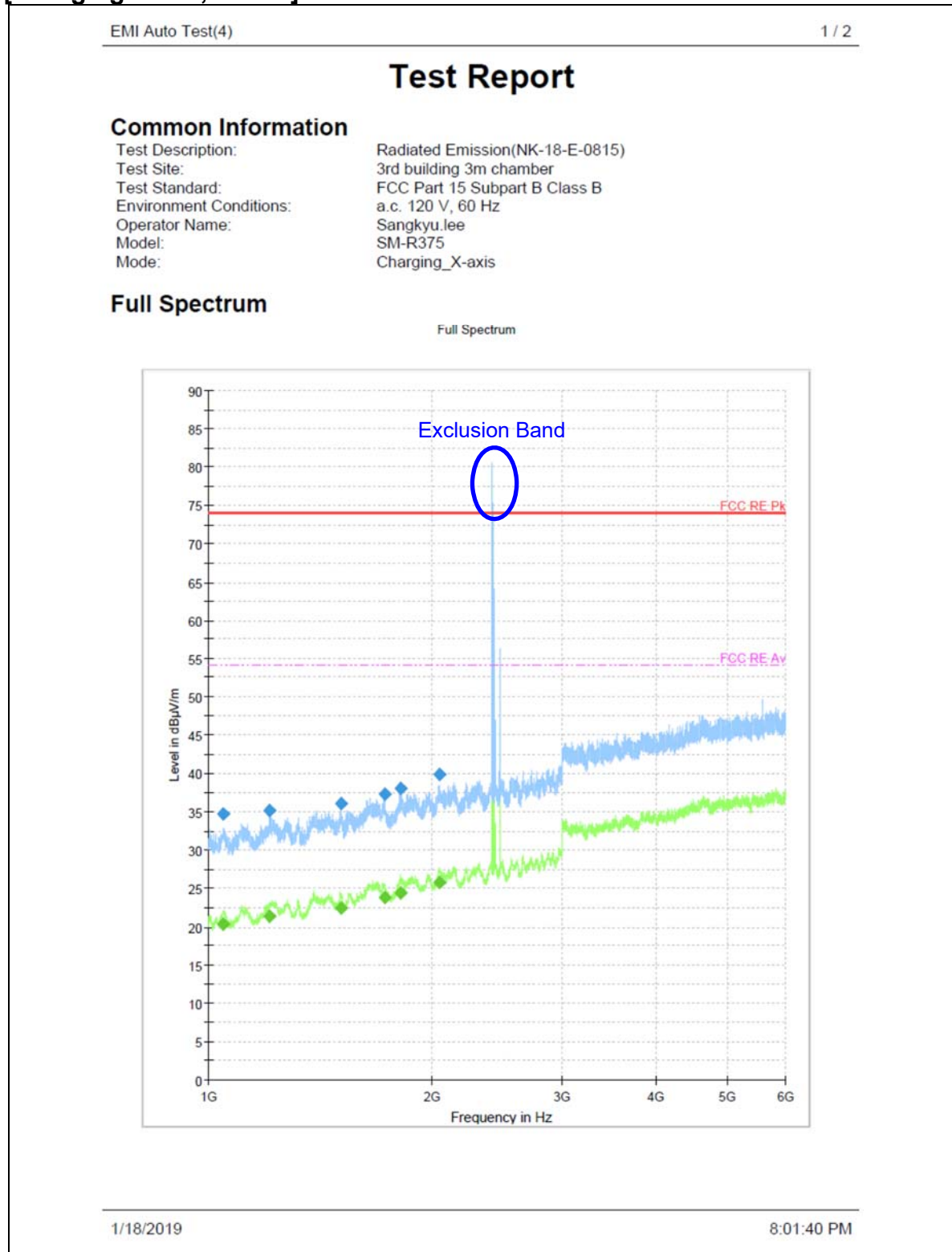


Tested by : Sangkyu Lee

TEST DATA

Radiated Emissions (Above 1 GHz)

[Charging mode, X-axis]



EMI Auto Test(4)

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Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
1048.000000	---	20.44	54.00	33.56	15000.0	1000.000	99.9	V
1048.000000	34.72	---	74.00	39.28	15000.0	1000.000	99.9	V
1208.750000	---	21.49	54.00	32.51	15000.0	1000.000	299.9	V
1208.750000	35.25	---	74.00	38.75	15000.0	1000.000	299.9	V
1509.000000	36.03	---	74.00	37.97	15000.0	1000.000	400.0	V
1509.000000	---	22.50	54.00	31.50	15000.0	1000.000	400.0	V
1725.000000	37.29	---	74.00	36.71	15000.0	1000.000	300.0	H
1725.000000	---	23.82	54.00	30.18	15000.0	1000.000	300.0	H
1814.750000	38.12	---	74.00	35.88	15000.0	1000.000	300.0	H
1814.750000	---	24.48	54.00	29.52	15000.0	1000.000	300.0	H
2046.750000	39.83	---	74.00	34.17	15000.0	1000.000	200.1	H
2046.750000	---	25.83	54.00	28.17	15000.0	1000.000	200.1	H

(continuation of the "Final_Result" table from column 14 ...)

Frequency (MHz)	Azimuth (deg)	Corr. (dB)	Comment
1048.000000	180.0	-17.4	
1048.000000	180.0	-17.4	
1208.750000	135.0	-16.2	
1208.750000	135.0	-16.2	
1509.000000	315.0	-14.9	
1509.000000	315.0	-14.9	
1725.000000	180.0	-13.1	
1725.000000	180.0	-13.1	
1814.750000	225.0	-12.6	
1814.750000	225.0	-12.6	
2046.750000	45.0	-11.1	
2046.750000	45.0	-11.1	

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Table 6. Radiated Measurements at 3 meters

[Battery mode, X-axis]

EMI Auto Test(4)

1 / 2

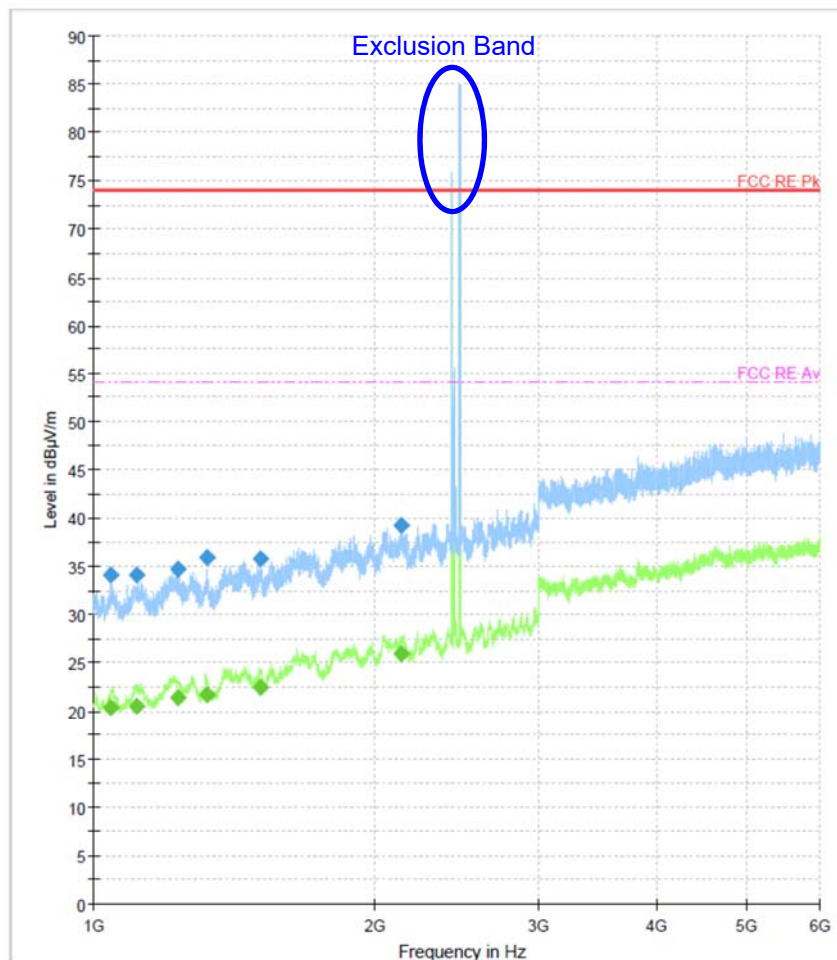
Test Report

Common Information

Test Description:	Radiated Emission(NK-18-E-0815)
Test Site:	3rd building 3m chamber
Test Standard:	FCC Part 15 Subpart B Class B
Environment Conditions:	Battery
Operator Name:	Sangkyu.lee
Model:	SM-R375
Mode:	Bluetooth_X-axis

Full Spectrum

Full Spectrum



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EMI Auto Test(4)

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Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
1044.250000	---	20.40	54.00	33.60	15000.0	1000.000	99.9	H
1044.250000	34.11	---	74.00	39.89	15000.0	1000.000	99.9	H
1110.000000	---	20.60	54.00	33.40	15000.0	1000.000	99.9	V
1110.000000	34.10	---	74.00	39.90	15000.0	1000.000	99.9	V
1230.500000	---	21.39	54.00	32.61	15000.0	1000.000	400.1	H
1230.500000	34.67	---	74.00	39.33	15000.0	1000.000	400.1	H
1321.750000	35.92	---	74.00	38.08	15000.0	1000.000	99.9	H
1321.750000	---	21.71	54.00	32.29	15000.0	1000.000	99.9	H
1508.000000	---	22.57	54.00	31.43	15000.0	1000.000	199.9	V
1508.000000	35.74	---	74.00	38.26	15000.0	1000.000	199.9	V
2138.250000	39.32	---	74.00	34.68	15000.0	1000.000	299.9	H
2138.250000	---	25.93	54.00	28.07	15000.0	1000.000	299.9	H

(continuation of the "Final_Result" table from column 14 ...)

Frequency (MHz)	Azimuth (deg)	Corr. (dB)	Comment
1044.250000	90.0	-17.4	
1044.250000	90.0	-17.4	
1110.000000	135.0	-17.2	
1110.000000	135.0	-17.2	
1230.500000	225.0	-16.2	
1230.500000	225.0	-16.2	
1321.750000	315.0	-15.8	
1321.750000	315.0	-15.8	
1508.000000	180.0	-14.9	
1508.000000	180.0	-14.9	
2138.250000	135.0	-11.0	
2138.250000	135.0	-11.0	

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Table 7. Radiated Measurements at 3 meters

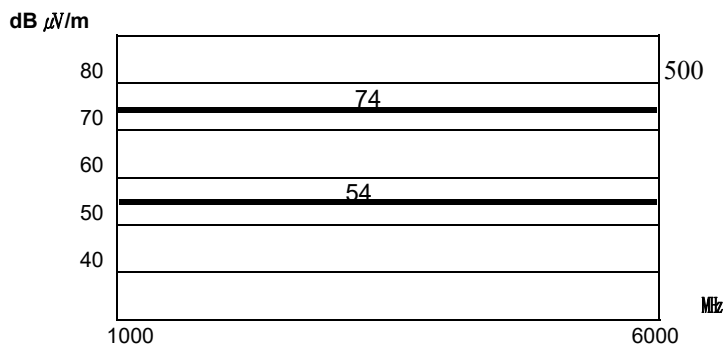


Fig. 6. Limits at 3 meters

NOTES:

1. Above 1 GHz, the radiated limits are shown on Figure 6.

NOTES:

1. Polarization : H = Horizontal, V= Vertical
2. Corr. = Antenna Factor + Cable Loss + Amplifier.
3. The limit for Class B device is on the FCC Part section 15.109(a).
4. Above 1 GHz, peak detector function mode is used using a resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz, average detector function mode is used using a resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz.
Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.
5. It was tested at X, Y, Z-axis and the worst data was recorded in the test report.



Tested by : Sangkyu Lee

ACCURACY OF MEASUREMENT

The Measurement Uncertainties stated were calculated in accordance with the requirements of measurement uncertainty contained in CISPR 16-4-2 with the confidence level of 95 %

1. Conducted Uncertainty Calculation

Source of Uncertainty	X_i	Uncertainty of X_i		Coverage factor k	$u(X_i)$ (dB)	C_i	$C_i u(X_i)$ (dB)
		Value (dB)	Probability Distribution				
Receiver reading	R_i	± 0.24	normal 1	1.00	0.24	1	0.24
AMN Voltage division factor	L_{AMN}	± 1.6	normal 2	2.00	0.80	1	0.80
Sine wave voltage	dV_{SW}	± 0.17	normal 2	2.00	0.09	1	0.09
Pulse amplitude response	dV_{PA}	± 0.39	normal 2	2.00	0.20	1	0.20
Pulse repetition rate response	dV_{PR}	± 0.39	normal 2	2.00	0.20	1	0.20
Noise floor proximity	dV_{NF}	± 0.00	rectangular	$\sqrt{3}$	0.00	1	0.00
AMN VDF frequency interpolation	dV_{FI}	± 0.10	rectangular	$\sqrt{3}$	0.06	1	0.06
AMN Impedance	dZ	+ 2.60 - 2.70	Triangular	$\sqrt{6}$	1.10	1	1.10
Mismatch : AMN-Receiver	M	± 0.07	U-Shaped	$\sqrt{2}$	0.05	1	0.05
Remark	Using 50 Ω / 50 μ H AMN						
Combined Standard Uncertainty	Normal			$u_c = 1.41$ dB			
Expended Uncertainty U	Normal ($k = 2$)			$U = 2.9$ dB (CL is 95 %)			

2. Radiation Uncertainty Calculation (Below 1 GHz)

Source of Uncertainty	Xi	Uncertainty of Xi		Coverage factor k	u(Xi) (dB)	Ci	Ci u(Xi) (dB)
		Value (dB)	Probability Distribution				
Receiver reading	Ri	± 0.15	normal 1	1.00	0.15	1	0.15
Sine wave voltage	dVsw	± 0.17	normal 2	2.00	0.09	1	0.09
Pulse amplitude response	dVpa	± 0.54	normal 2	2.00	0.27	1	0.27
Pulse repetition rate response	dVpr	± 0.54	normal 2	2.00	0.27	1	0.27
Noise floor proximity	dVnf	± 0.50	normal 2	2.00	0.29	1	0.29
Antenna Factor Calibration	AF	± 1.50	rectangular	2.00	0.75	1	0.75
Antenna Directivity	AD	± 0.50	rectangular	$\sqrt{3}$	0.29	1	0.29
Antenna Factor Height Dependence	AH	± 0.50	rectangular	$\sqrt{3}$	0.29	1	0.29
Antenna Phase Centre Variation	AP	± 0.20	rectangular	$\sqrt{3}$	0.12	1	0.12
Antenna Factor Frequency Interpolation	Ai	± 0.3	rectangular	$\sqrt{3}$	0.17	1	0.17
Site Imperfections	Si	± 4.00	triangular	$\sqrt{6}$	1.63	1	1.63
Measurement Distance Variation	DV	± 0.60	rectangular	$\sqrt{3}$	0.35	1	0.35
Antenna Balance	Dbal	± 1.00	rectangular	$\sqrt{3}$	0.58	1	0.58
Cross Polarisation	DCross	± 0.90	rectangular	$\sqrt{3}$	0.52	1	0.52
Mismatch	M	+ 1.32 - 1.57	U-Shaped	$\sqrt{2}$	1.11	1	1.11
EUT Volume Diameter	Vd	0.33	normal 1	1.00	0.33	1	0.33
Combined Standard Uncertainty	Normal			$uc = 2.40$ dB			
Expended Uncertainty U	Normal (k = 2)			$U = 4.8$ dB (CL is 95 %)			

3. Radiation Uncertainty Calculation (Above 1 GHz)

Source of Uncertainty	X_i	Uncertainty of X_i		Coverage factor k	$u(X_i)$ (dB)	C_i	$C_i u(X_i)$ (dB)
		Value (dB)	Probability Distribution				
Receiver Reading	R_i	0.25	normal 1	1.00	0.25	1	0.25
Preamplifier gain	G_p	± 0.23	normal 2	2	0.12	1	0.12
Receiver Sine Wave	dV_{sw}	± 0.27	normal 2	2	0.14	1	0.14
Instability of preamp gain	dG_{pw}	± 1.2	rectangular	$\sqrt{3}$	0.70	1	0.70
Noise Floor Proximity	dV_{nf}	± 0.70	rectangular	$\sqrt{3}$	0.40	1	0.40
Antenna Factor Calibration	AF	± 1.50	normal 2	2	0.75	1	0.75
Directivity difference	A_D	± 3.00	rectangular	$\sqrt{3}$	0.87	1	0.87
Phase Centre location	AP	± 0.30	rectangular	$\sqrt{3}$	0.17	1	0.17
Antenna Factor Frequency Interpolation	A_i	± 0.30	rectangular	$\sqrt{3}$	0.17	1	0.17
Site Imperfections	S_i	± 3.00	triangular	$\sqrt{6}$	1.22	1	1.22
Effect of setup table material	d_{ANT}	± 1.50	rectangular	$\sqrt{3}$	0.87	1	0.87
Separation distance	dD	± 0.30	rectangular	$\sqrt{3}$	0.17	1	0.17
Cross Polarization	$DCross$	± 0.90	rectangular	$\sqrt{3}$	0.52	1	0.52
Mismatch (antenna-Preamplifier)	M	+ 1.30 - 1.50	U-Shaped	$\sqrt{2}$	1.06	1	1.06
Mismatch (preamplifier-receiver)	M	+ 1.20 - 1.40	U-Shaped	$\sqrt{2}$	0.99	1	0.99
Combined Standard Uncertainty	Normal			$uc = 2.86$ dB			
Expanded Uncertainty U	Normal ($k = 2$)			$U = 5.8$ dB (CL is 95 %)			

LIST OF TEST EQUIPMENT

No.	Instrument	Manufacturer	Model	Serial No.	Due to Calibration	Calibration Interval
1	EMI TEST RECEIVER	Rohde & Schwarz	ESCI	101041	Apr. 03 2019	1 year
2	Software	Rohde & Schwarz	EMC32	Version 8.53.0	-	-
3	TWO-LINE V-NETWORK	Rohde & Schwarz	ENV216	101156	Apr. 04 2019	1 year
4	EMI Test Receiver	Rohde & Schwarz	ESW8	100994	Apr. 03 2019	1 year
5	Software	Rohde & Schwarz	EMC32	Version 10.10.01	-	-
6	TRILOG Broadband Test Antenna	SCHWARZBECK	VULB 9163	9163-01027	Jan. 31 2020	2 year
7	ATTENUATOR	FAIRVIEW	SA3N5W-06	N/A	Jan. 09 2019	1 year
8	Controller	innco systems GmbH	CO2000-G	CO2000/562/23890210/L	-	-
9	Open Switch and Control Unit	Rohde & Schwarz	OSP-120	100015	-	-
10	Antenna Mast (Left)	innco systems GmbH	MA4000-EP	N/A	-	-
11	Turn Table	innco systems GmbH	DT3000-3T	N/A	-	-
12	Signal Conditioning Unit	Rohde & Schwarz	SCU 01	10030	Apr. 03 2019	1 year
13	EMI TEST RECEIVER	Rohde & Schwarz	ESU 40	100202	May. 24 2019	1 year
14	DOUBLE RIDGED HORN ANTENNA	SCHWARZBECK	HF907	102585	Apr. 18 2019	2 year
15	SWITCH AND POWER DETECTOR UNIT	Rohde & Schwarz	OSP-120	101766	-	-
16	Signal Conditioning Unit	Rohde & Schwarz	SCU 18	10065	Apr. 02 2019	1 year
17	WiFi Filter Bank	Rohde & Schwarz	U082	N/A	-	-
18	TILT ANTENNA MAST	innco systems GmbH	MA4640-XP-EP	N/A	-	-
19	CONTROLLER	innco systems GmbH	CO3000	CO3000/937/38330516/L	-	-
20	Turn Table	innco systems GmbH	DT2000-2t	N/A	-	-

APPENDIX A – SAMPLE LABEL

Labeling Requirements

The sample label shown shall be *permanently affixed* at a conspicuous location on the device and be readily visible to the user at the time of purchase.

FCC ID : A3LSM-R375



APPENDIX B – PHOTOGRAPHS OF TEST SET-UP

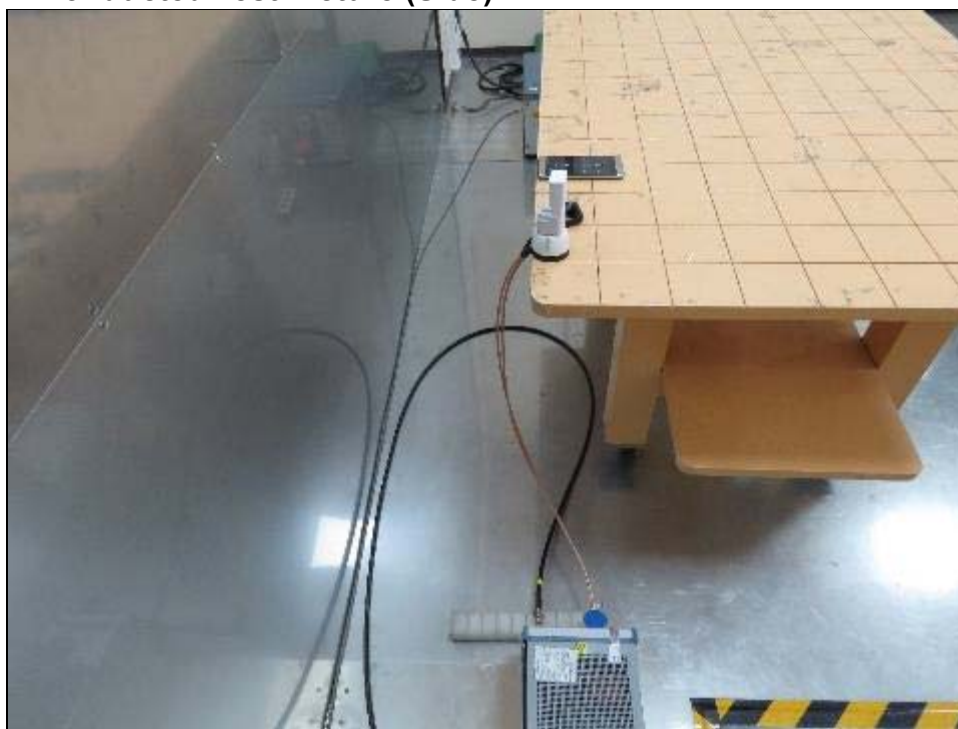
The **Conducted Test Picture** and **Radiated Test Picture** and show the worst-case configuration and cable placement.

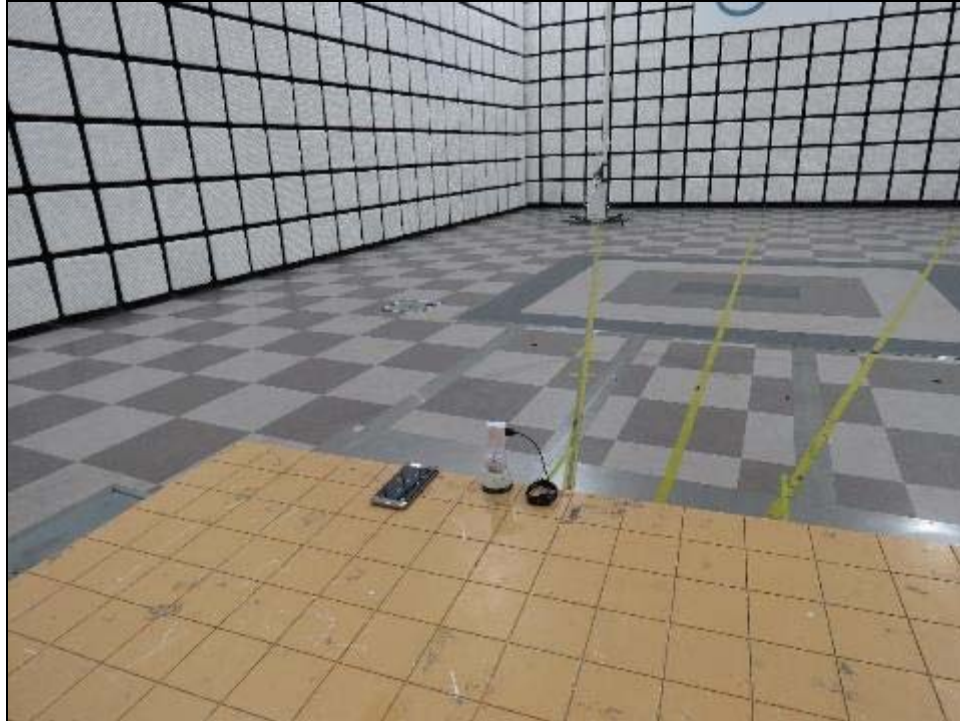
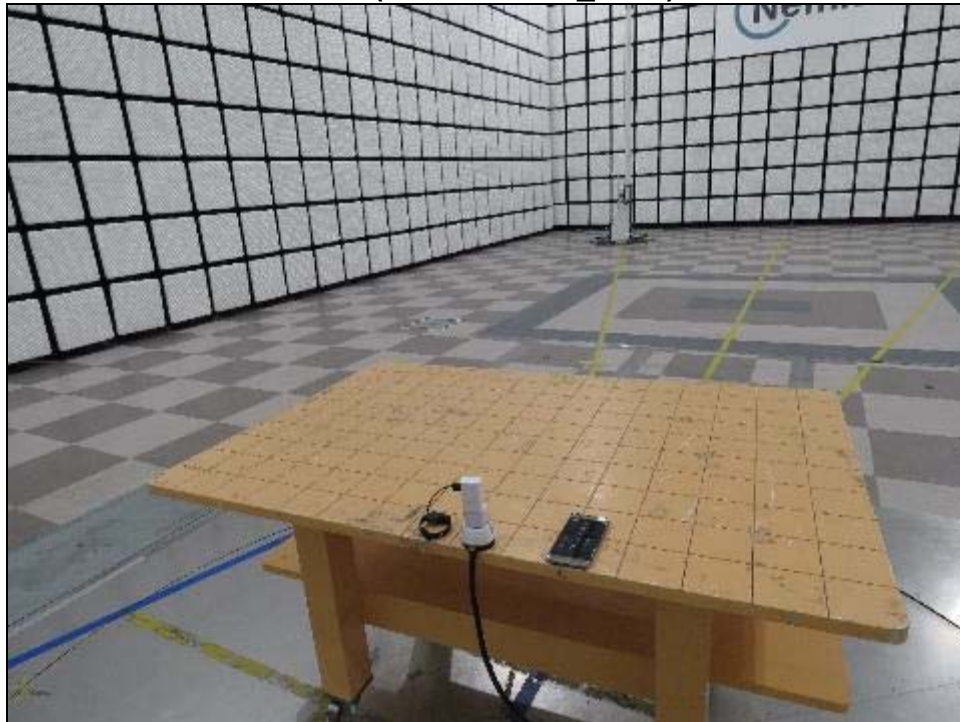
[Charging mode]

- **Conducted Test Picture (Front)**



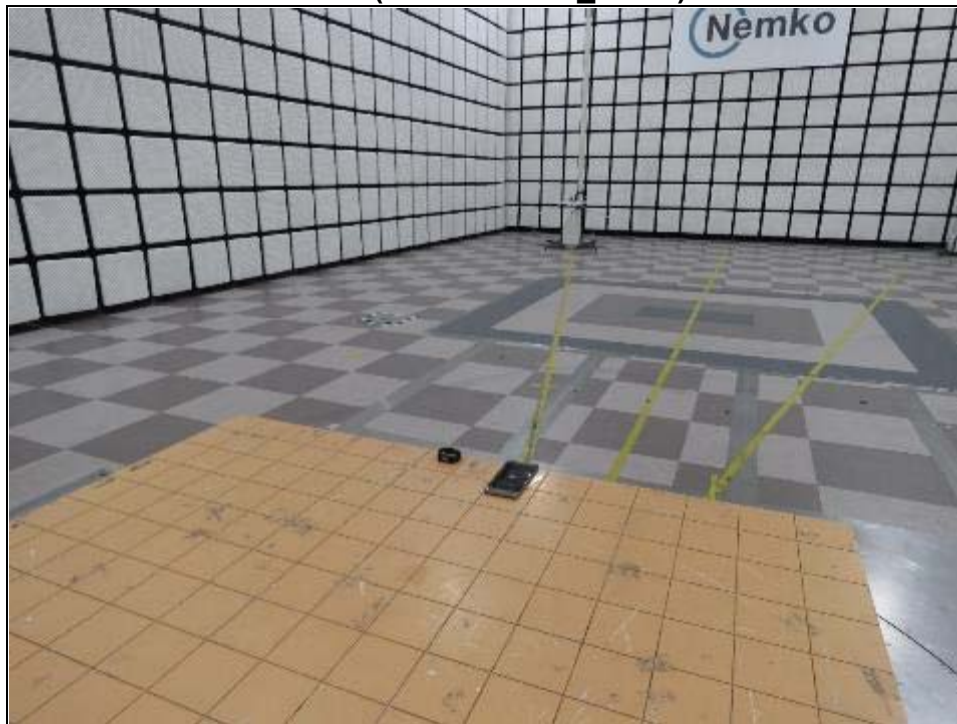
- **Conducted Test Picture (Side)**



[Charging mode]**• Radiated Test Picture (Below 1 GHz_Front)****• Radiated Test Picture (Below 1 GHz_Rear)**

[Battery mode]

- Radiated Test Picture (Below 1 GHz_Front)

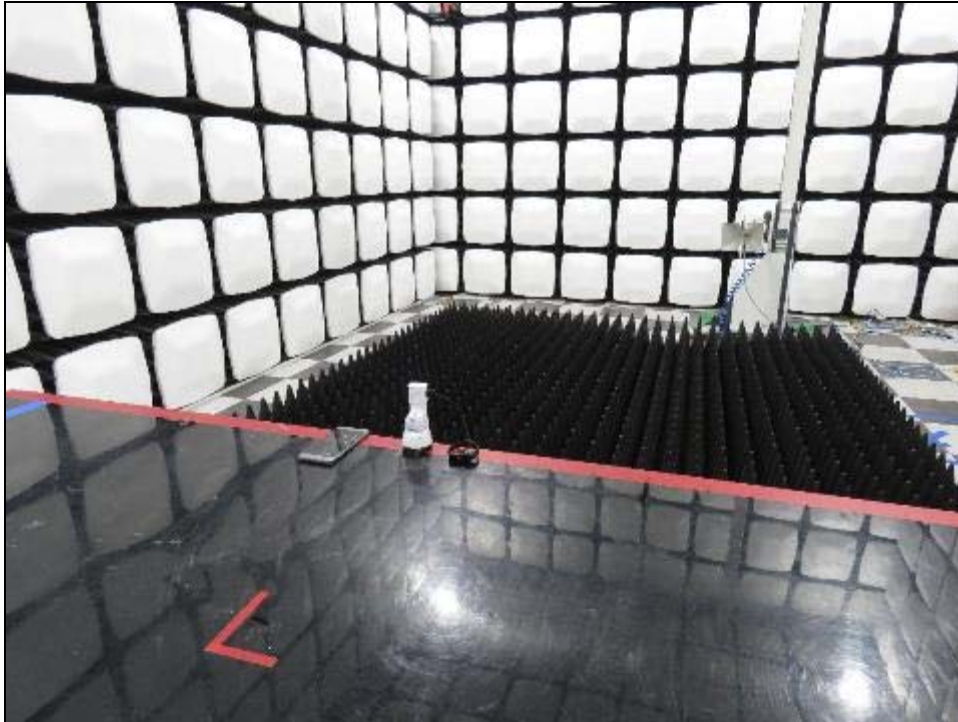


- Radiated Test Picture (Below 1 GHz_Rear)

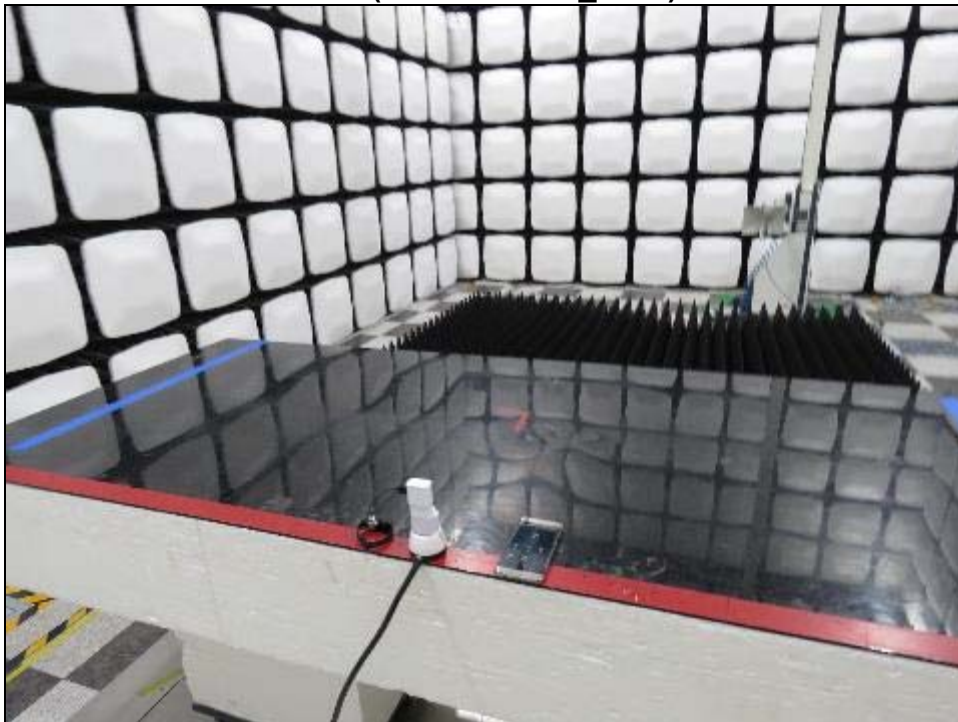


[Charging mode]

- Radiated Test Picture (Above 1 GHz_Front)

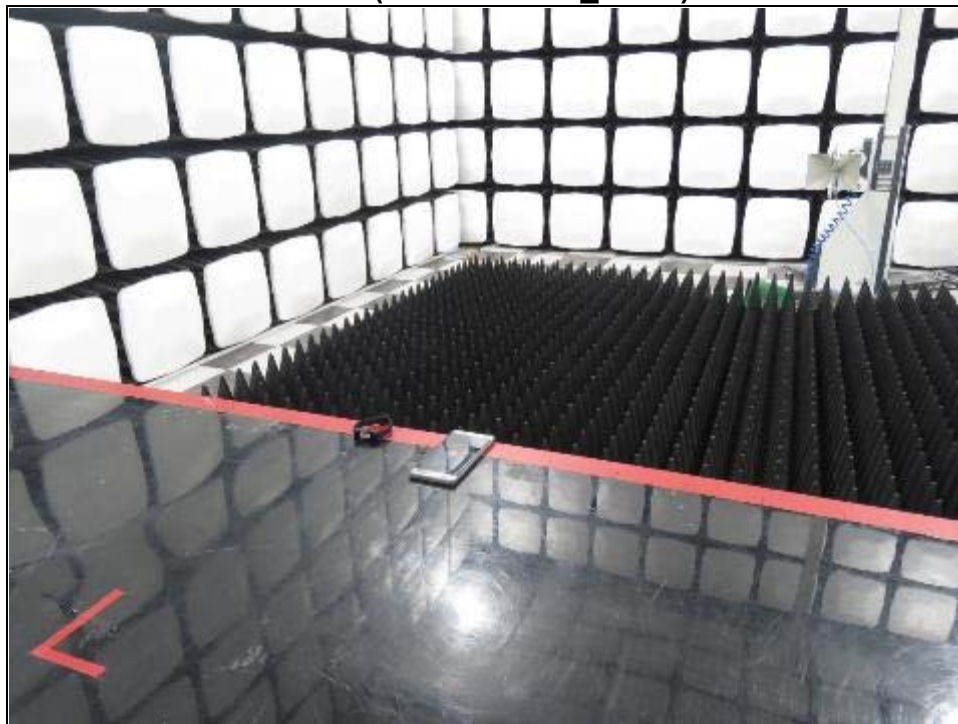


- Radiated Test Picture (Above 1 GHz_Rear)



[Battery mode]

- Radiated Test Picture (Above 1 GHz_Front)



- Radiated Test Picture (Above 1 GHz_Rear)



APPENDIX C – EUT PHOTOGRAPHS

Front View of EUT



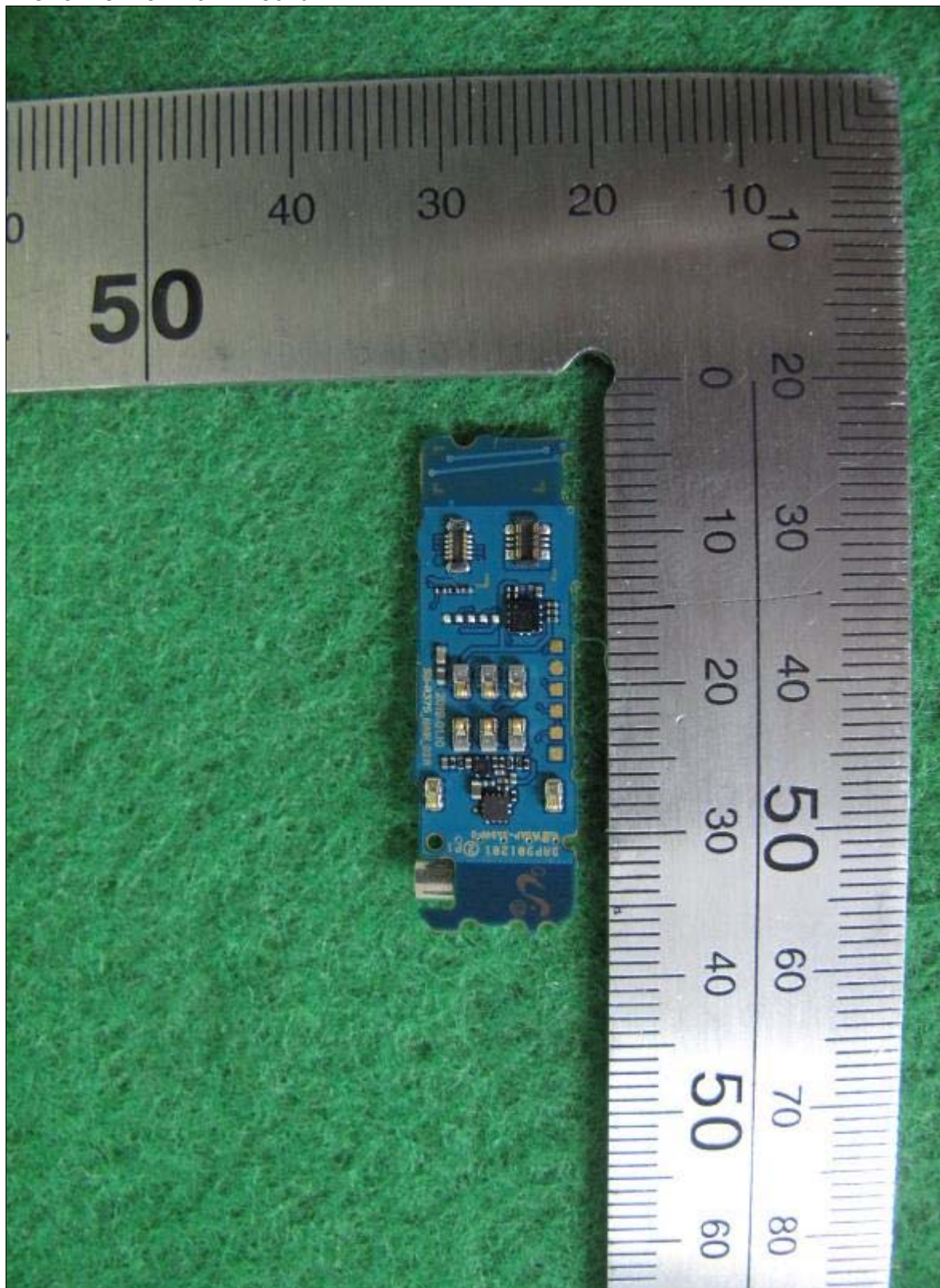
Rear View of EUT



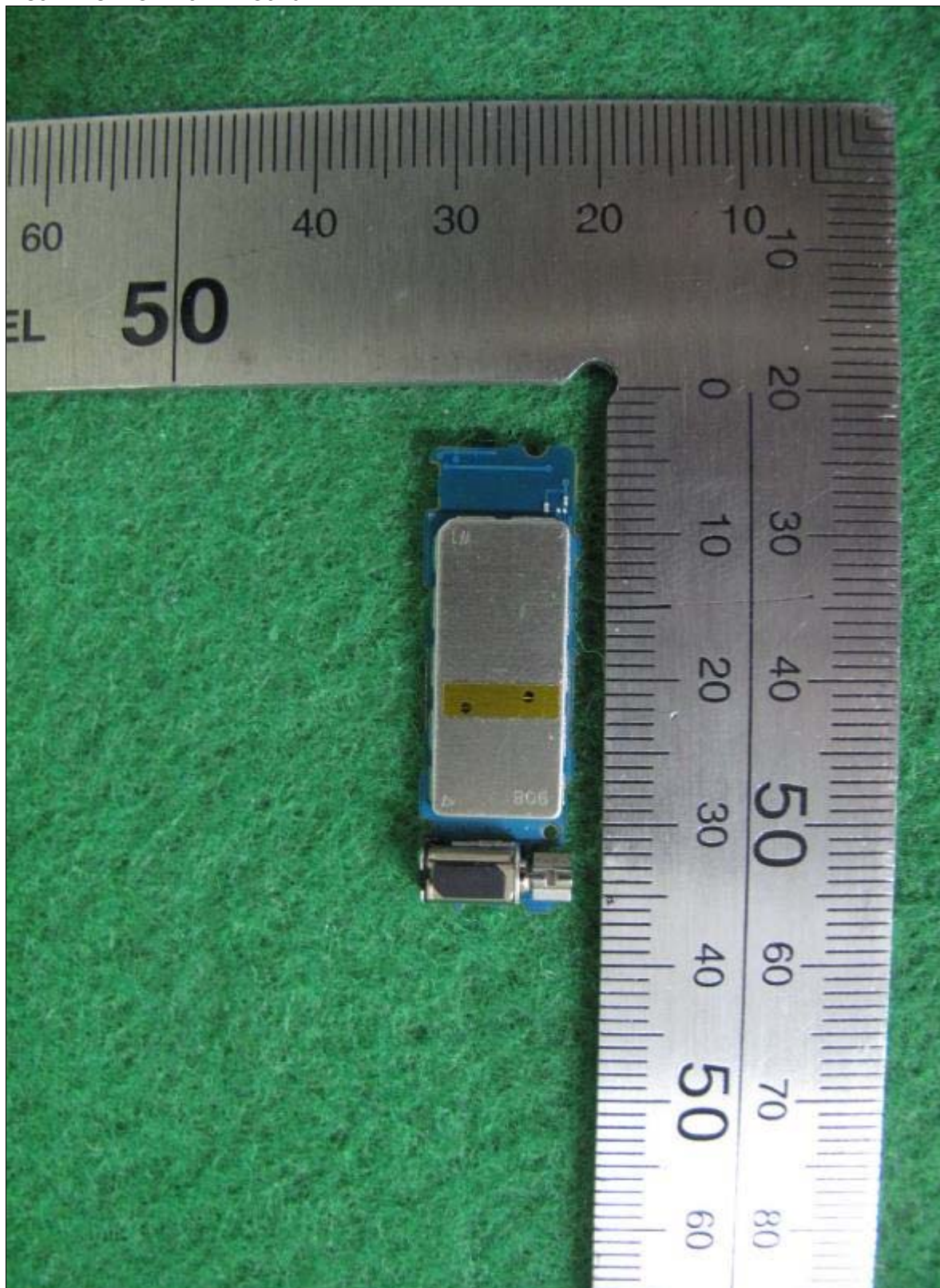
Inside View of EUT



Front View of Main Board



Rear View of Main Board



Rear View of Main Board without shield can

