

EMC TEST REPORT

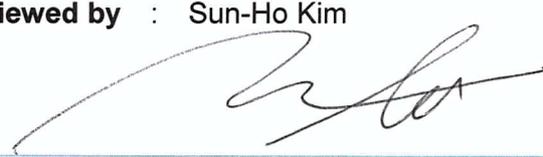
Project No.	LBE20210735	Issue No.	1
Applicant	Name of organization	Samsung Electronics Co., Ltd.	
	Address	(Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea	
	Date of receipt	November 4, 2021	
EUT	Type of device	<input type="checkbox"/> All other receivers subject to Part 15 <input checked="" type="checkbox"/> Class B personal computers and peripherals <input checked="" type="checkbox"/> Other Class B digital devices and peripherals <input type="checkbox"/> FM Broadcast Receiver	
	Equipment authorization	<input checked="" type="checkbox"/> Certification <input type="checkbox"/> Supplier's Declaration of Conformity	
	FCC ID	A3LSMX800	
	Kind of product	Portable Device	
	Model No.	SM-X800	
	Variant Model No.	Refer to clause 4.6	
	Manufacturer	Samsung Electronics Vietnam THAI NGUYEN Co., Ltd. Yen Binh Industrial Zone Pho Ten Dist., Thai Nguyen Province, Vietnam	
Applied Standards	47 CFR Part 15, Subpart B, Class B / ANSI C63.4-2014		
Test Period	November 4, 2021 ~ November 8, 2021		
Issue date	November 29, 2021		
Test result : Complied The equipment under test has found to be compliant with the applied standards. (Refer to the attached test result for more detail.)			
Tested by : Chang-Eun Park C. E. Park		Reviewed by : Sun-Ho Kim 	
The test results in this report only apply to the tested sample. This report must not be reproduced, except in full, without written permission from Global CS center. * Not KOLAS report			
Samsung Electronics Co., Ltd., Global CS Center (Maetan dong) 129, Samsung-ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do 16677, Korea			

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1. Report Information

1.1 Revision history

No.	Date of Issue	Revised detailed information
Issue 0	November 12, 2021	There are no revisions and this version is basic test report.
Issue 1	November 29, 2021	The model name of S-Pen is modified. ([Manufacturer's P/N] : CP-911B-15B → EJ-PT870)

2. Summary of test results

2.1 Emission

The EUT has been tested according to the following specifications:

Applied	Test type	Applied standard	Result
■	Conducted Emission (Mains port)	47 CFR Part 15 Subpart B / ANSI C63.4-2014 (Class B)	Complied
■	Radiated Emission		Complied

3. General Information

3.1 Test facility

The Global CS Center is located on Samsung Electronics Co., Ltd. at (Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea.

All testing are performed in Semi-anechoic chambers conforming to the site attenuation characteristics defined by ANSI C63.4, CISPR 32, CISPR 16-1-4 and Shielded rooms.

And all antennas are properly calibrated using ANSI C63.5:2017.

The Global CS Center is an ISO/IEC 17025 accredited testing laboratory by the National Radio Research Agency with designation No. KR0004. for EMC testing.

4. Test Setup configuration

4.1 Test Peripherals

The cables used for these peripherals are either permanently attached by the peripheral manufacturer or coupled with an assigned cable as defined below.

The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

Description	Model No.	Serial No.	Manufacturer / Trademark	FCC ID
Portable Device	SM-X800	-	SAMSUNG	A3LSMX800
Battery	EB-BT975ABY	-	SDI	-
Headset	GHSS028-K7	-	BUJEON	-
Data Cable	EP-DW767	-	RF TECH	-
Laptop Computer	Latitude5580	1CHRYM2	Dell	DoC
Laptop Computer	Latitude5580	1WYRYM2	Dell	DoC
Laptop Computer	Latitude5580	D3HRYM2	Dell	DoC
Laptop AC Adapter	LA65NM130	5D77	Dell	DoC
Laptop AC Adapter	LA65NM130	5DEA	Dell	DoC
Laptop AC Adapter	LA65NM130	5B3C	Dell	DoC
Mouse	AA-SM7PCPB	CNBA5903634ADV8J 31O3050	SAMSUNG	DoC
Mouse	AA-SM7PCPB	CN57BA5903634ADV 8JJCD4371	SAMSUNG	DoC
Mouse	SMH-210UB	TAKGA05788Z	SAMSUNG	DoC
Router	DIR-806A	RF0F1D8011501	D-Link	DoC
Router	DIR-806A	RF0F1D8018454	D-Link	DoC
Router	DIR-806A	RF0F1D8011504	D-Link	DoC
Travel Adapter	EP-TA800	R37N9AQ9158SE3	SoluM	DoC
DP Monitor	27DU88	711NTQD8H004	LG	DoC
DP Monitor Power Supply	LCAP31	EH8NN629490055062	LG	DoC
DP Cable	JCA141	BW2K1709000770	J5CREATE	-
Keyboard	EF-DT970	-	SAMSUNG	DoC
S-Pen	EJ-PT870	-	WACOMM	-

This tablet device does not contain the minimum number of ports required for personal computer testing per ANSI C63.4, but the EUT is attached to a computer through its only available port, which represents worst case emissions. All other aspects of C63.4 testing requirements were maintained..

4.2 EUT operating mode

To achieve compliance applied standard specification including JAB and JBP requirement, the following mode(s) were made during compliance testing:

4.2.1 Conducted Emission

No.	Operating mode
1	Camera (Rear) + Charging (w/TA) + Book cover keyboard (Pogo pin)
2	Camera (Front) + Charging (w/TA) + Book cover keyboard (Pogo pin)
3	Video + Audio playback from internal memory + Charging (w/TA) + Book cover keyboard (Pogo pin)
4	USB data communication with PC (from external memory) + Book cover keyboard (Pogo pin)

4.2.2 Radiated Emission

No.	Operating mode
1	Camera (Rear) + Charging (w/TA) + Book cover keyboard (Pogo pin)
2	Camera (Front) (w/Headset) + Book cover keyboard (Pogo pin)
3	Video + Audio playback from internal memory (w/Headset) + Book cover keyboard (Pogo pin)
4	Video + Audio playback from internal memory + Display out (w/ USB to Direct DP cable) + Book cover keyboard (Pogo pin)
5	USB data communication with PC (from external memory) + Book cover keyboard (Pogo pin)

4.3 Details of Sampling

Customer selected, single unit.

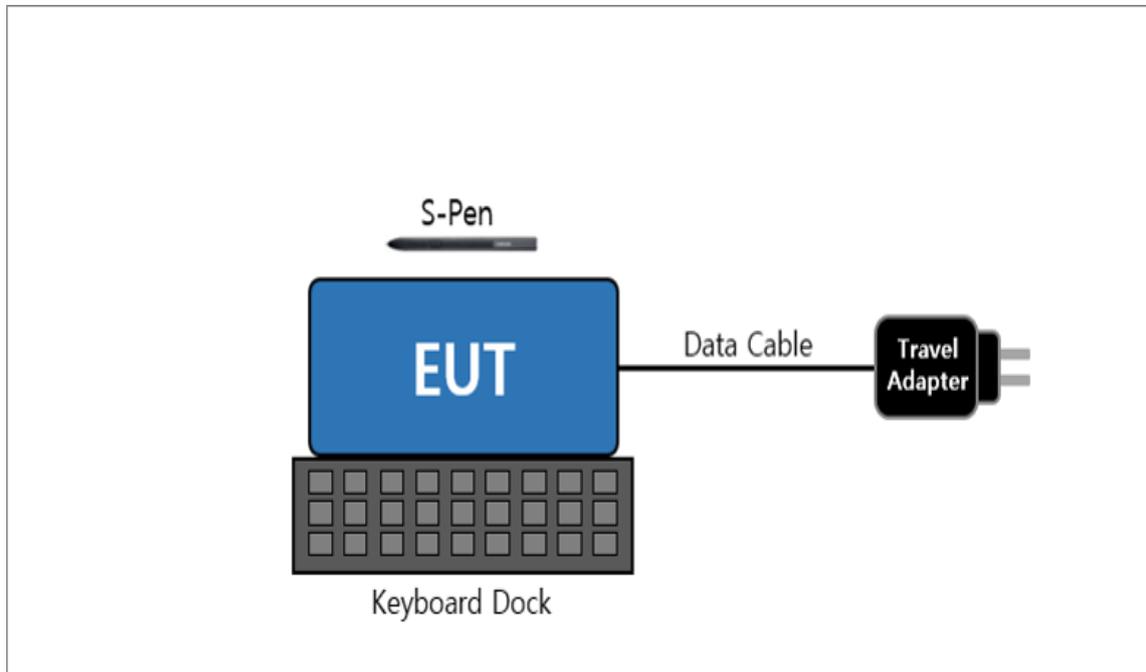
4.4 Used cable description

The EUT is configured, installed, arranged and operated in a manner consistent with typical applications. Interface cables/loads/devices are connected to at least one of each type of interface port of the EUT, and where practical, each cable shall be terminated in a device typical of actual usage. The type(s) of interconnecting cables to be used and the interface port (of the EUT) to which these were connected:

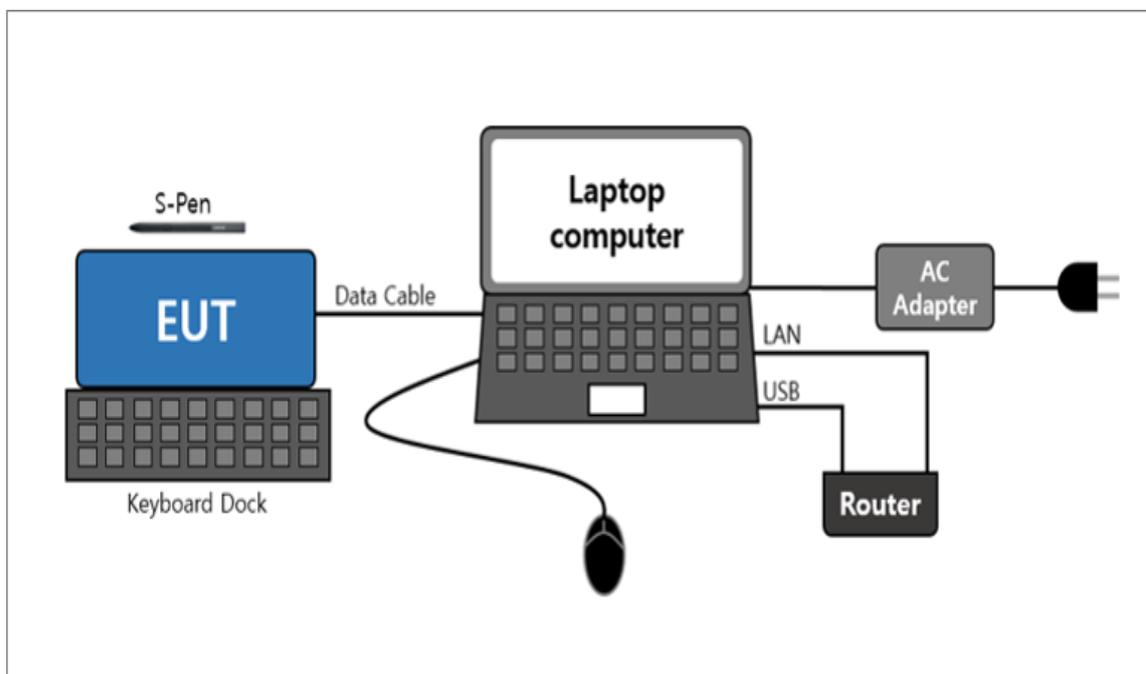
Connected cable	Length [m]	Shielded [Y/N]	Note
Data Cable	1.8	Y	From EUT to Laptop Computer or Travel Adapter
Headset	1.2	N	For EUT
Power	1.8	N	From Laptop Computer to AC Adapter
Power	1.5	N	For Laptop AC Adapter
LAN	1.5	N	From Laptop Computer to Router
USB	0.8	Y	From Laptop Computer to Router for DC Power
USB	1.8	Y	From Laptop Computer to Mouse
DP Cable	1.1	Y	From EUT to DP Monitor
Power	1.2	N	From DP Monitor to Power Supply
Power	2.2	N	For DP Monitor Power Supply

4.5 Test arrangement

4.5.1 Conducted Emission

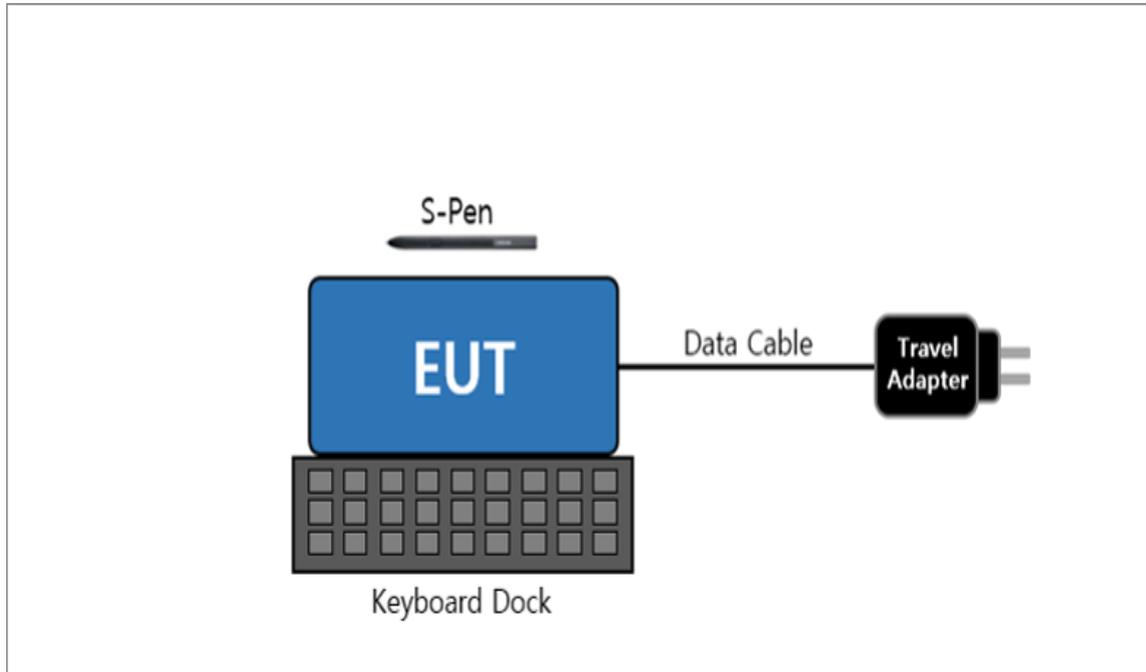


[Mode 1 – 3]

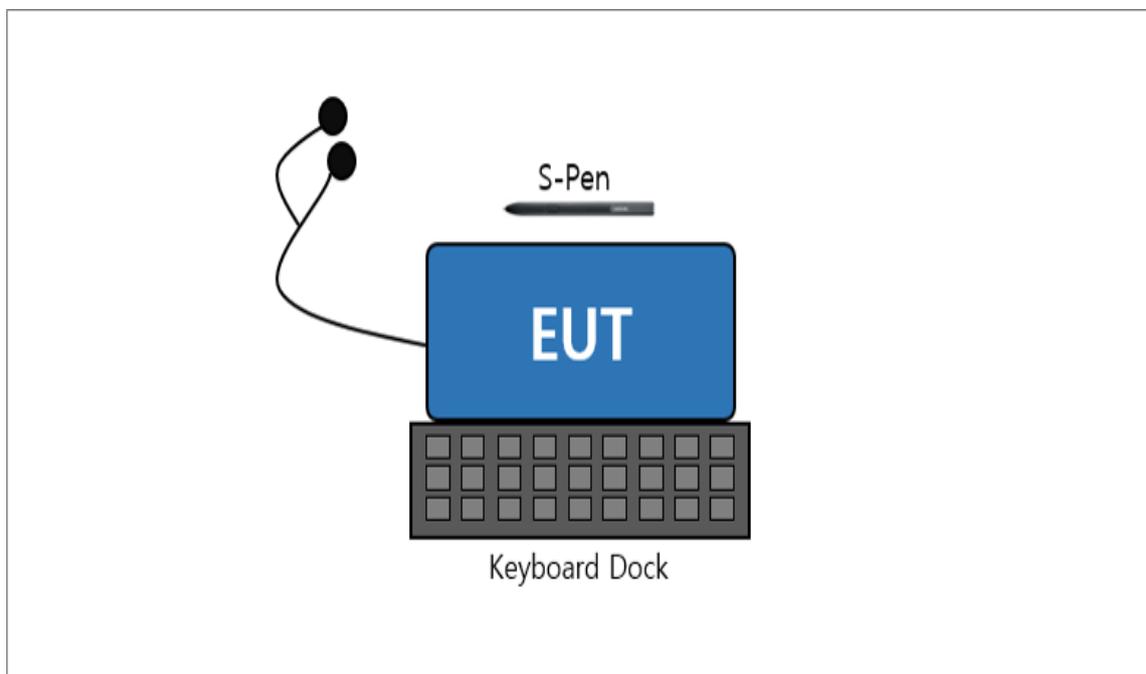


[Mode 4]

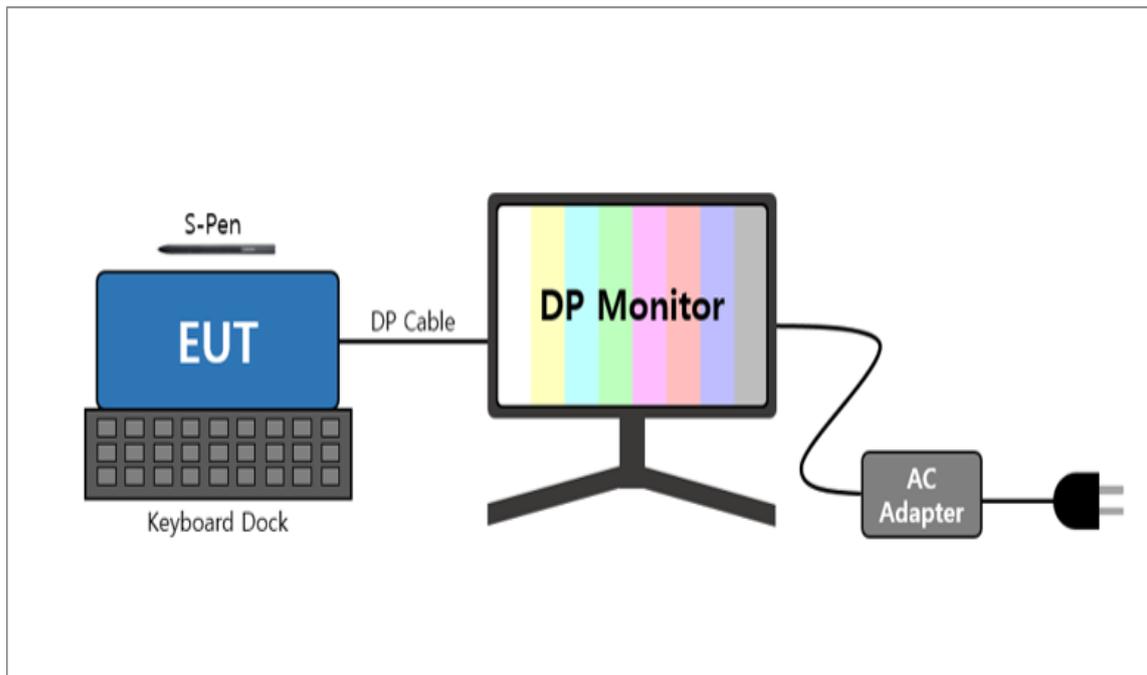
4.5.2 Radiated Emission



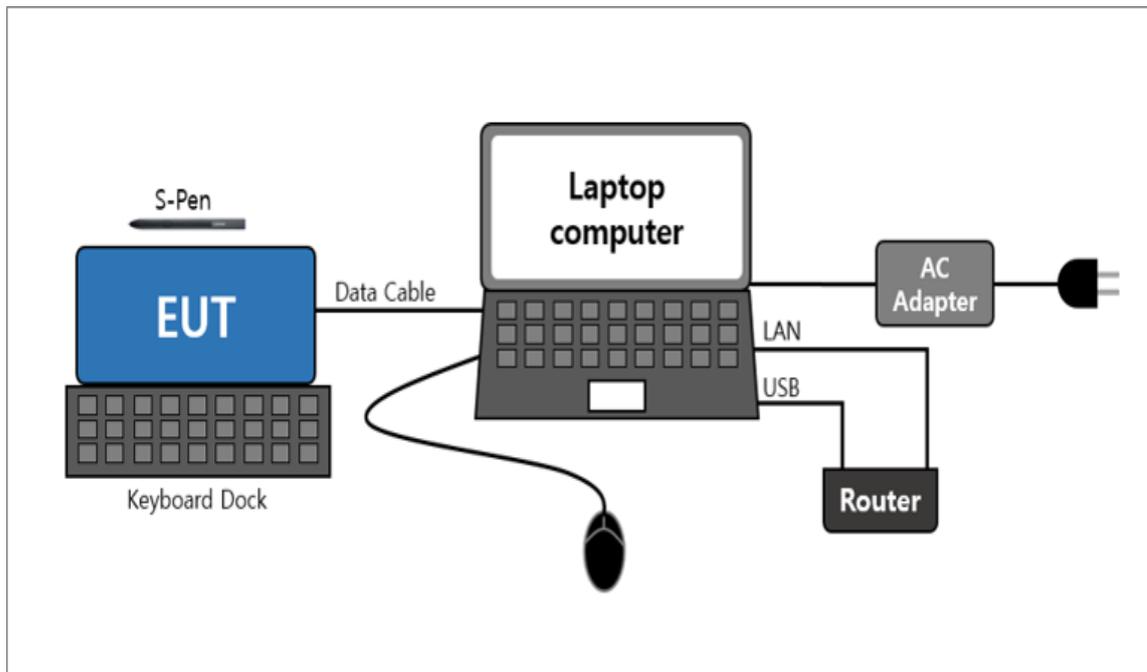
[Mode 1]



[Mode 2 – 3]



[Mode 4]



[Mode 5]

4.6 EUT Description

The EUT is a tablet type portable device which can incorporate a Bluetooth, GNSS, DP, Wi-Fi (802.11 b/g/n/a/ac/ax), Camera, Audio, Video, SD Card, Pogo Pin and S-Pen.

4.6.1 The variant models

- None

4.7 EUT Frequencies

The highest frequencies (Generated and used)	Frequency [MHz]
Wi-Fi	7 125

4.8 Test configuration and condition

The system was configured for testing in a typical fashion that a customer would normally use. Cables were attached to each of the available I/O Ports. Where applicable, peripherals were attached to the I/O cables.

All the external I/O ports are exercised, as well as internal and the external SD card(if available), by writing and reading arbitrary data or charging with TA.

The EUT was investigated in three orientations and the worst case orientation is reported.

The video and audio were repetitively played with the earphone connected.

The video and audio were played on monitor through display out function using direct DP cable.

The camera of the EUT was operated continuously.

Power source for the EUT operating was supplied by CVCF made by the Pacific Corp.

- Test Voltage : AC 120 V, 60 Hz

4.9 Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus : (According to CISPR 16-4-2 and UKAS M3003)

Test type		Measurement uncertainty (C.L. approximately 95 %, $k = 2$)
Conducted Emission	AC Mains	2.82 dB
Radiated Emission (Below 1 GHz)	Horizontal	4.12 dB
	Vertical	4.44 dB
Radiated Emission (Above 1 GHz)	Horizontal	4.99 dB
	Vertical	4.99 dB

* Remark

- 1) The values for uncertainty of conducted and radiated emissions are less than the Corresponding values of U_{cispr} given in CISPR 16-4-2. Therefore no adjustment of measurement results is necessary when comparing them with the relevant limits.

5. Results of individual test

5.1 Conducted Emission

The EUT is connected to a LISN via travel adapter. If the EUT is connected to the Laptop Computer USB port, the Laptop AC adapter is connected to a LISN.

Both conducted lines are measured in Quasi-Peak and CISPR-Average mode, including the worst-case data points for each tested configuration. The EUT measured in accordance with the methods described in standards.

Limits for Conducted emission at the mains ports of Class B

Frequency range Limits [MHz]	Resolution Bandwidth [kHz]	Limits [dB(μV)]	
		Quasi-peak	Average
0.15 to 0.50	9	66 to 56	56 to 46
0.50 to 5	9	56	46
5 to 30	9	60	50

NOTE 1 The lower limit shall apply at the transition frequency.

NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

5.1.1 Test instrumentation

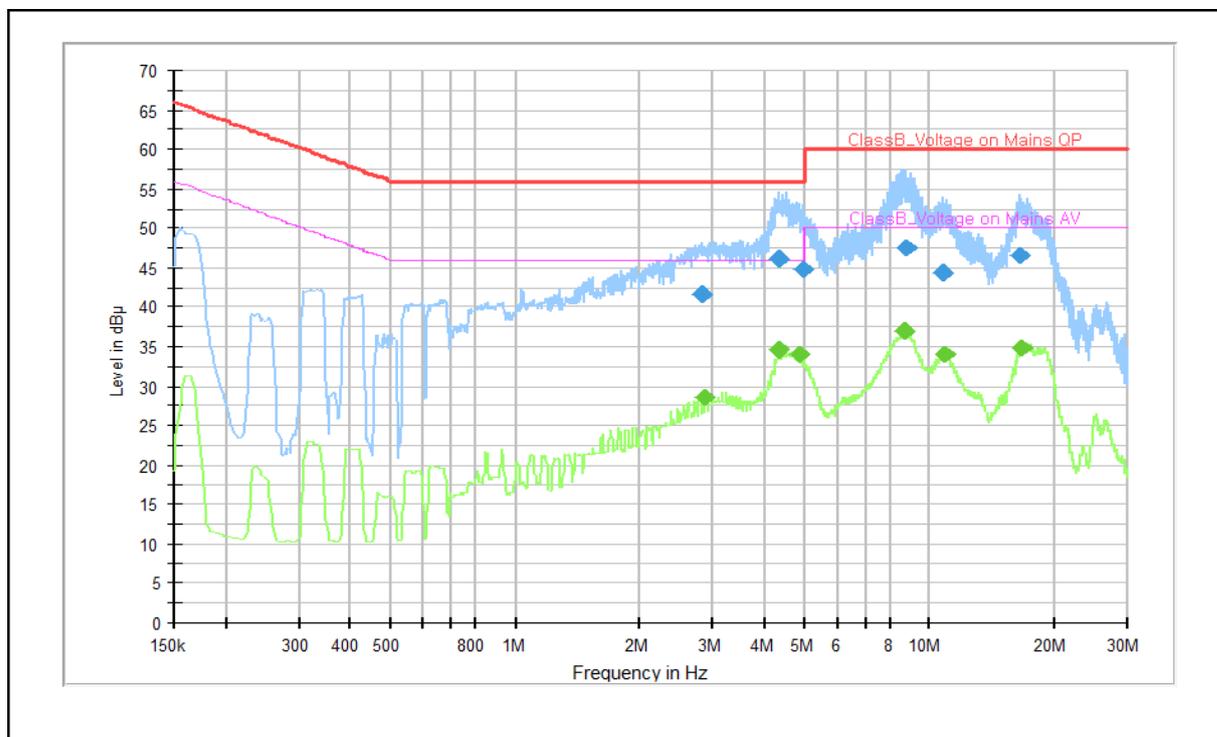
EMC No.	Test Instrument	Model name	Manufacturer	Serial No.	Next Calibration	
					Date	Interval (Month)
E5I-127	Two-Line V-Network	ENV216	R&S	102061	2022-08-02	12
E5I-016	EMI Test Receiver	ESU8	R&S	100482	2022-06-03	12
-	Test software	EMC32	R&S	Ver 10.60.20	-	-

5.1.2 Temperature and humidity condition

Test date	2021-11-08	Test engineer	Chang-Eun Park
Climate condition	Ambient temperature	(23.5 ± 0.5) °C	Limit (15.0 to 35.0) °C
	Relative humidity	(37.9 ± 0.5) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(100.9 ± 0.5) kPa	Limit (86.0 to 106.0) kPa
Test place	Shield Room (SR8)		

5.1.3 Test Results

□ Operating Mode 1: AC Mains



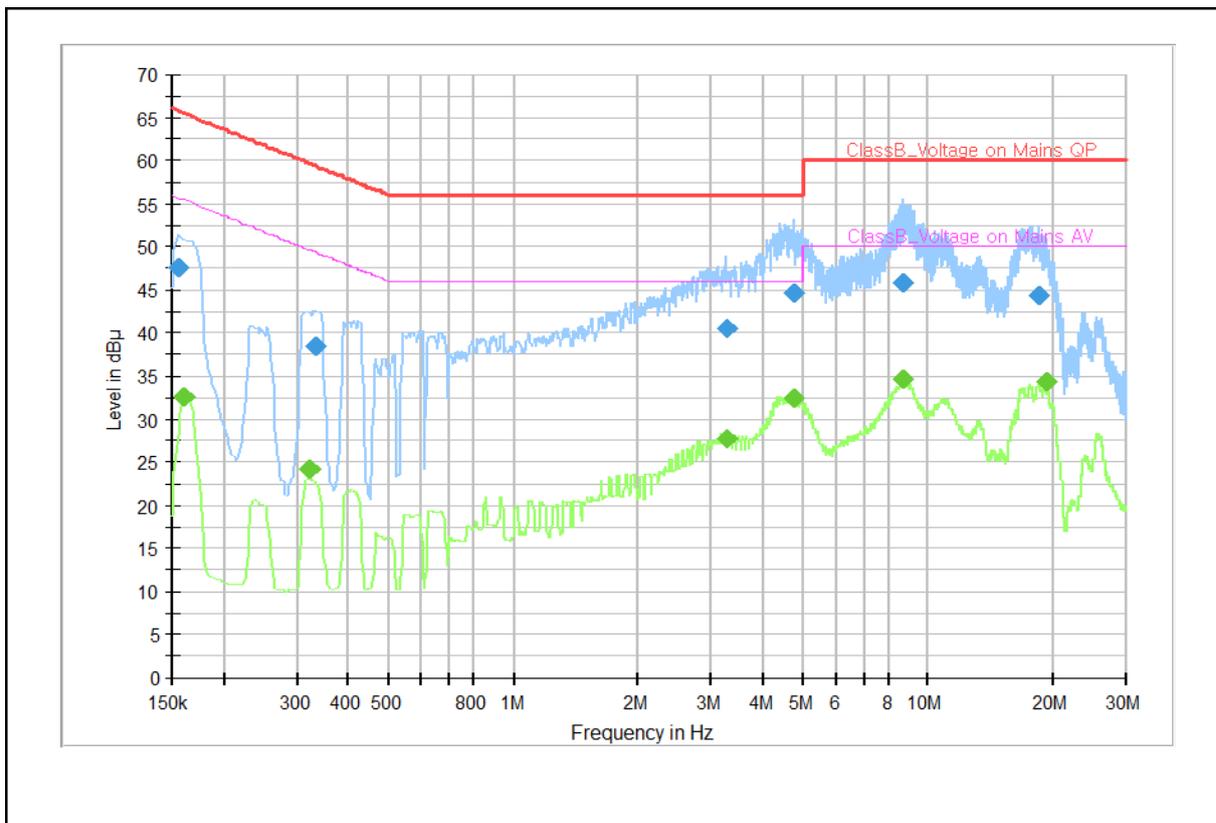
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
2.823	41.7	---	56.0	14.3	L1	9.9
2.861	---	28.5	46.0	17.5	N	9.9
4.333	46.2	---	56.0	9.8	L1	9.9
4.340	---	34.5	46.0	11.5	L1	9.9
4.857	---	34.0	46.0	12.0	N	9.9
4.943	44.7	---	56.0	11.3	L1	9.9
8.702	---	36.9	50.0	13.1	L1	10.1
8.822	47.6	---	60.0	12.4	L1	10.1
10.802	44.4	---	60.0	15.6	L1	10.2
10.867	---	34.1	50.0	15.9	L1	10.2
16.611	46.5	---	60.0	13.5	L1	10.4
16.676	---	34.9	50.0	15.1	L1	10.4

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)
 Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)
 QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

□ **Operating Mode 2: AC Mains**



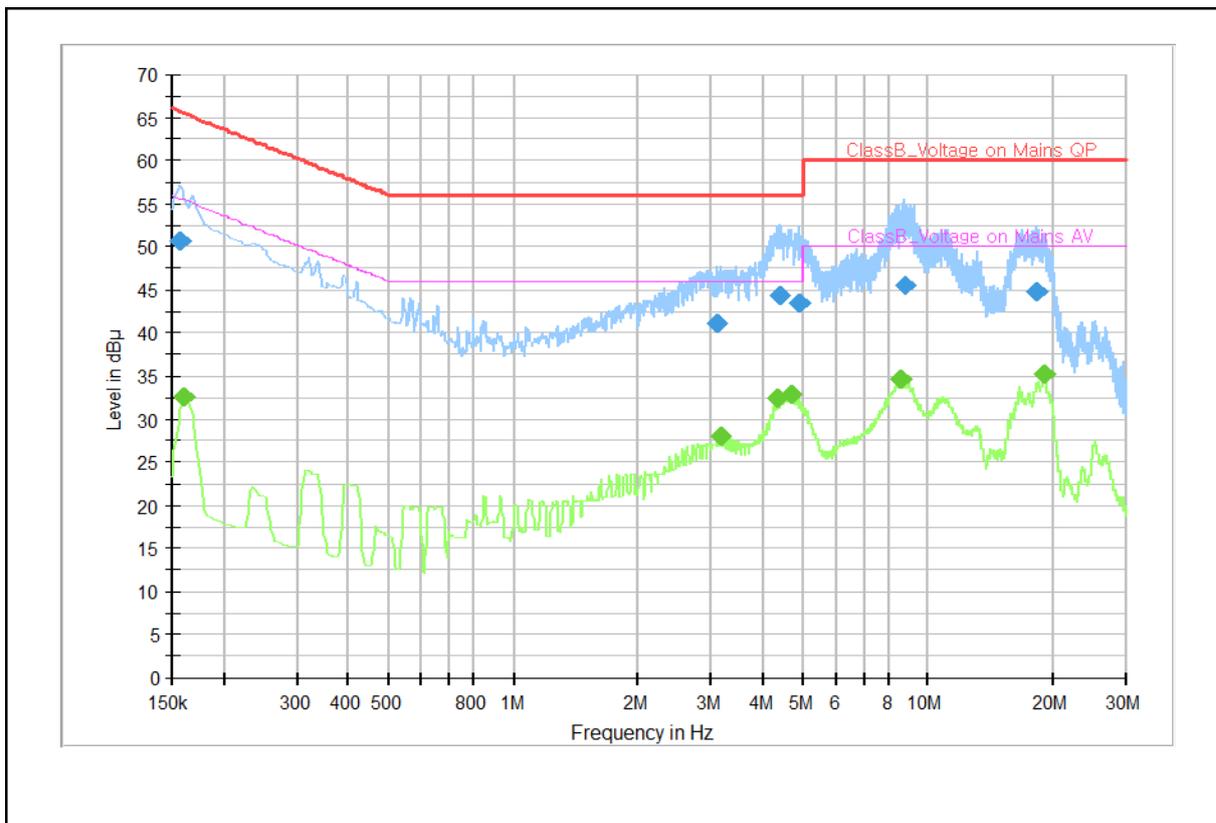
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.155	47.5	---	65.8	18.3	L1	9.9
0.161	---	32.7	55.4	22.7	N	9.9
0.323	---	24.3	49.6	25.3	N	10.0
0.332	38.5	---	59.4	20.9	L1	10.1
3.262	---	27.7	46.0	18.3	N	9.9
3.269	40.4	---	56.0	15.6	L1	9.9
4.722	44.6	---	56.0	11.4	L1	9.9
4.724	---	32.6	46.0	13.4	N	9.9
8.669	45.8	---	60.0	14.2	L1	10.1
8.745	---	34.7	50.0	15.3	L1	10.1
18.555	44.3	---	60.0	15.7	L1	10.5
19.257	---	34.5	50.0	15.5	L1	10.5

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)
 Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)
 QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

□ **Operating Mode 3: AC Mains**



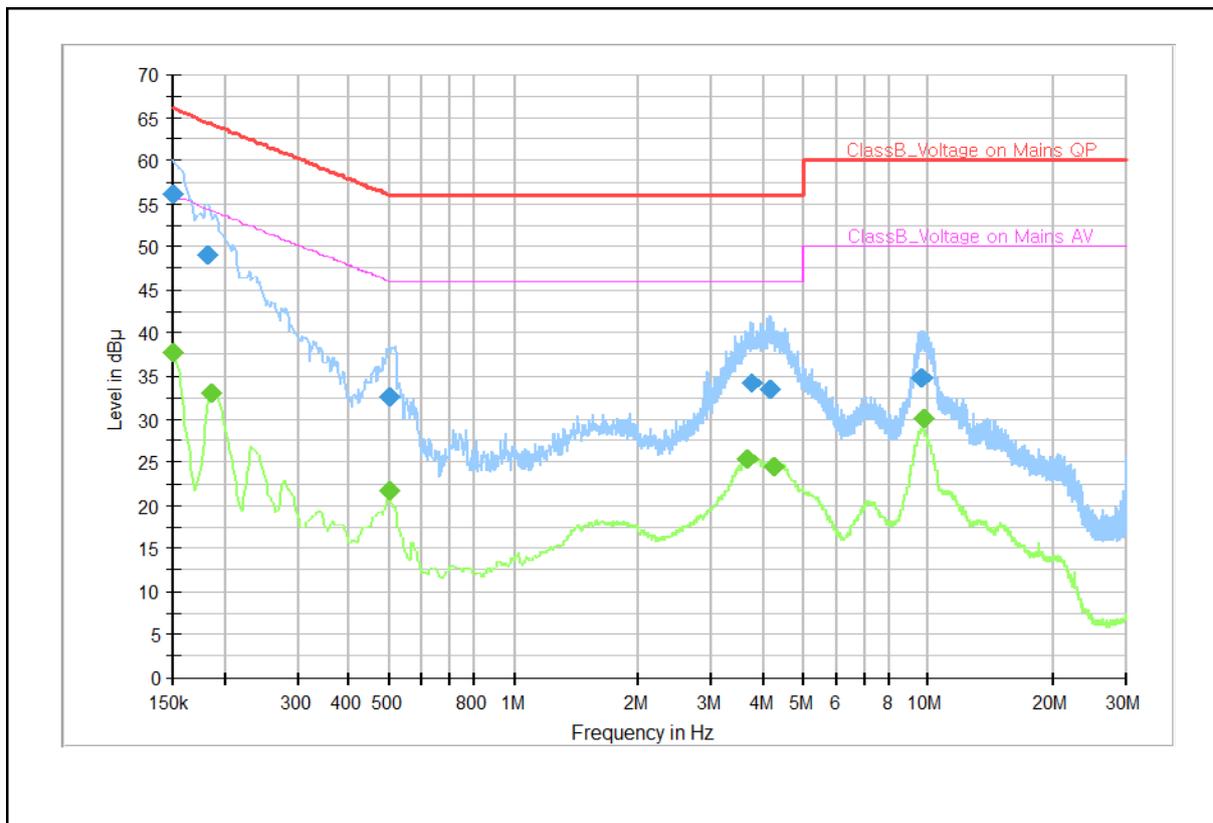
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.157	50.6	---	65.6	15.0	N	9.9
0.161	---	32.7	55.4	22.7	N	9.9
3.084	41.0	---	56.0	15.0	L1	9.9
3.165	---	28.0	46.0	18.0	N	9.9
4.333	---	32.4	46.0	13.6	L1	9.9
4.371	44.4	---	56.0	11.6	L1	9.9
4.709	---	32.8	46.0	13.2	N	9.9
4.891	43.4	---	56.0	12.6	L1	9.9
8.639	---	34.6	50.0	15.4	L1	10.1
8.790	45.6	---	60.0	14.4	L1	10.1
18.303	44.8	---	60.0	15.2	L1	10.5
19.030	---	35.3	50.0	14.7	L1	10.5

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)
 Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)
 QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

□ **Operating Mode 4: AC Mains**



Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.150	56.0	---	66.0	10.0	N	9.8
0.150	---	37.7	56.0	18.3	L1	9.9
0.182	49.2	---	64.4	15.2	N	10.0
0.186	---	33.1	54.2	21.1	N	10.0
0.499	---	21.7	46.0	24.3	L1	10.2
0.501	32.6	---	56.0	23.4	L1	10.2
3.644	---	25.4	46.0	20.6	N	9.9
3.728	34.3	---	56.0	21.7	N	9.9
4.164	33.5	---	56.0	22.5	L1	9.9
4.254	---	24.5	46.0	21.5	L1	9.9
9.641	34.8	---	60.0	25.2	L1	10.2
9.753	---	30.1	50.0	19.9	L1	10.2

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)
 Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)
 QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

5.2 Radiated Emission

The following data lists the significant emission frequencies, measured levels, correction factors (for antenna and cables), orientation of table, polarization and height of antenna, the corrected reading, the limit, and the amount of margin.

Peak measurements were made over the changeable frequency range 30 MHz to 1 GHz at a measurement distance of 10 m for the following antenna and turntable arrangements:

Antenna Height [cm]	Antenna Polarization	Resolution Bandwidth [kHz]	Video Bandwidth [kHz]	Turntable position [degrees]
100 ~ 400	Horizontal, Vertical	120	300	Continuous

Measurements within 6 dB of the limit were then maximized by adjusting turntable position.

Final measurements were made using quasi-peak detector.

Peak/CISPR-Average measurements were made over the changeable frequency range 1 GHz to 40 GHz or 5th harmonics of the highest frequency generated or used in the device or on which the device operates or tunes at a measurement distance of 3 m for the following antenna and turntable arrangements. The measurements above 1 GHz were performed with the bore-sighting antenna aimed at the EUT.

Antenna Height [cm]	Antenna Polarization	Resolution Bandwidth [MHz]	Video Bandwidth [MHz]	Turntable position [degrees]
100 ~ 400	Horizontal, Vertical	1	3	Continuous

Measurements within 6 dB of the limit were then maximized by adjusting turntable position.

Final measurements were made using peak and CISPR-average detectors.

Limits for Radiated emission of Class B at a measuring distance of 3 m and 10 m

Frequency range Limits [MHz]	Field Strength		
	3 m [$\mu\text{V/m}$]	3 m [dB($\mu\text{V/m}$)]	10 m [dB($\mu\text{V/m}$)]
30 to 88	100	40.0	29.5
88 to 216	150	43.5	33.0
216 to 960	200	46.0	35.5
Above 960	500	54.0	43.5

Note) Distance correction formula from D1(3m) to D2(10m)

: Limit at D2 = Limit at D1 + 20Log(D1 /D2)

Results checked manually; and points close to the limit line were re-measured.

5.2.1 Test instrumentation

EMC No.	Test Instrument	Model name	Manufacturer	Serial No.	Next Calibration	
					Date	Interval (Month)
E5I-015	EMI Test Receiver	ESU8	R&S	100481	2022-06-25	12
E5I-017	EMI Test Receiver	ESU8	R&S	100483	2022-01-22	12
E5I-020	EMI Test Receiver	ESU40	R&S	100375	2022-09-23	12
E5I-121	BiLog Antenna	CBL6112D	TESEQ	36999	2023-07-12	24
E5I-137	6 dB Fixed Attenuator	8491A	Keysight	MY52462298	2023-07-12	24
E5I-070	BiLog Antenna	CBL6112D	TESEQ	35383	2023-07-12	24
E5I-228	6 dB Fixed Attenuator	8491B-006	Agilent	58358	2023-07-12	24
E5I-073	Preamplifier	310N	SONOMA	332016	2022-05-10	12
E5I-074	Preamplifier	310N	SONOMA	332017	2022-05-10	12
E5I-149	Horn Antenna	HF907	R&S	102525	2022-07-10	24
E5I-040	Signal Conditioning Unit	SCU-18	R&S	10210	2022-04-06	12
E5I-037	WideBand Horn Antenna	WBH 18-40K	R&S	11201	2023-02-15	24
E5I-042	Signal Conditioning Unit	SCU-40A	R&S	10004	2022-09-10	12
-	Test software	EP7RE	TOYO	Ver 8.0.20	-	-
-	Test software	EMC32	R&S	Ver 9.25.00	-	-

5.2.1 Temperature and humidity condition

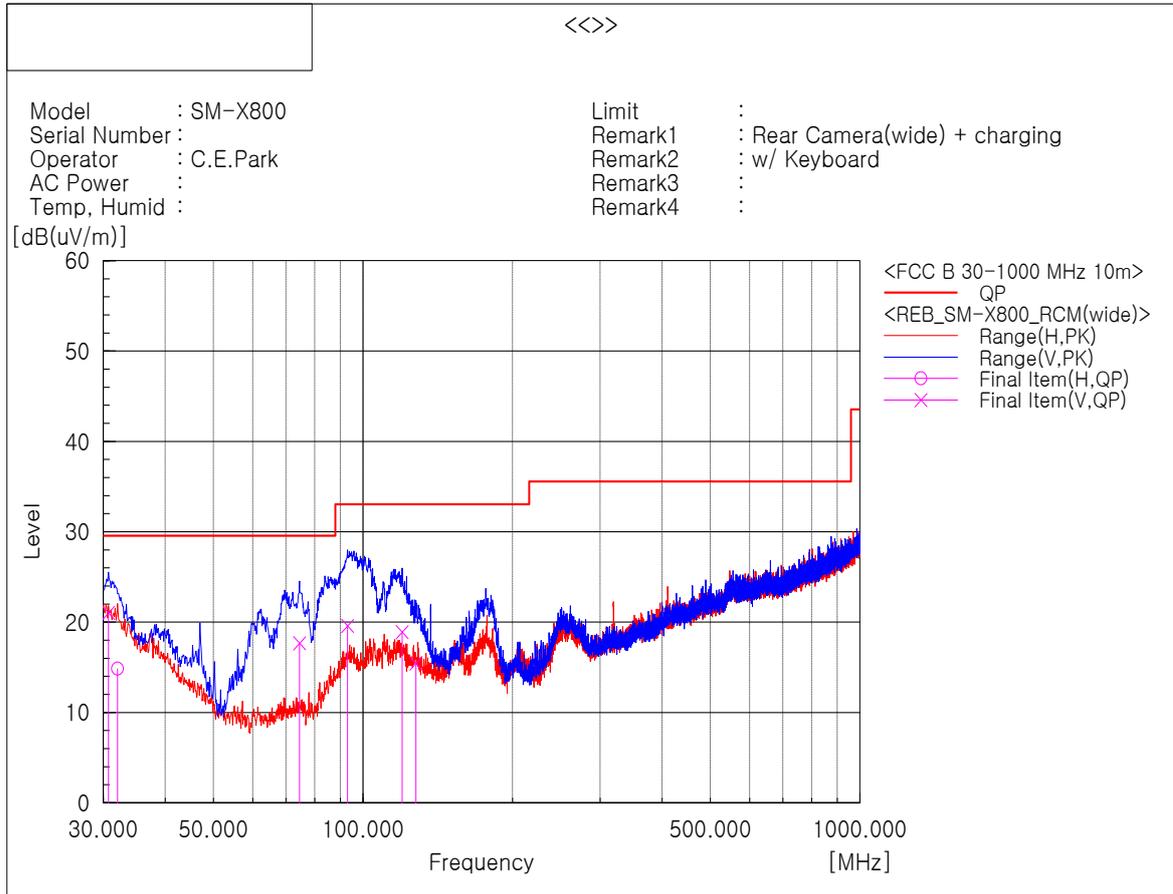
Test date	2021-11-04	Test engineer	Chang-Eun Park
Climate condition	Ambient temperature	(23.0 ± 0.5) °C	Limit (15.0 to 35.0) °C
	Relative humidity	(42.3 ± 0.5) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(101.1 ± 0.5) kPa	Limit (86.0 to 106.0) kPa
Test place	Semi-Anechoic Chamber (SAC5)		

Test date	2021-11-05	Test engineer	Chang-Eun Park
Climate condition	Ambient temperature	(22.6 ± 0.5) °C	Limit (15.0 to 35.0) °C
	Relative humidity	(40.2 ± 0.5) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(101.2 ± 0.5) kPa	Limit (86.0 to 106.0) kPa
Test place	Semi-Anechoic Chamber (SAC4)		

5.2.3 Test Results

□ Operating Mode 1

- Frequencies below 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	30.728	V	28.2	-7.2	21.0	29.5	8.5	102	154	2
2	32.061	H	22.7	-7.9	14.8	29.5	14.7	174	336	1
3	74.499	V	35.9	-18.2	17.7	29.5	11.8	141	40	2
4	93.050	V	34.9	-15.3	19.6	33.0	13.4	130	317	2
5	119.846	V	31.3	-12.4	18.9	33.0	14.1	116	6	2
6	127.728	V	27.8	-12.4	15.4	33.0	17.6	100	5	2

Note1) Receiving antenna polarization : Horizontal, Vertical

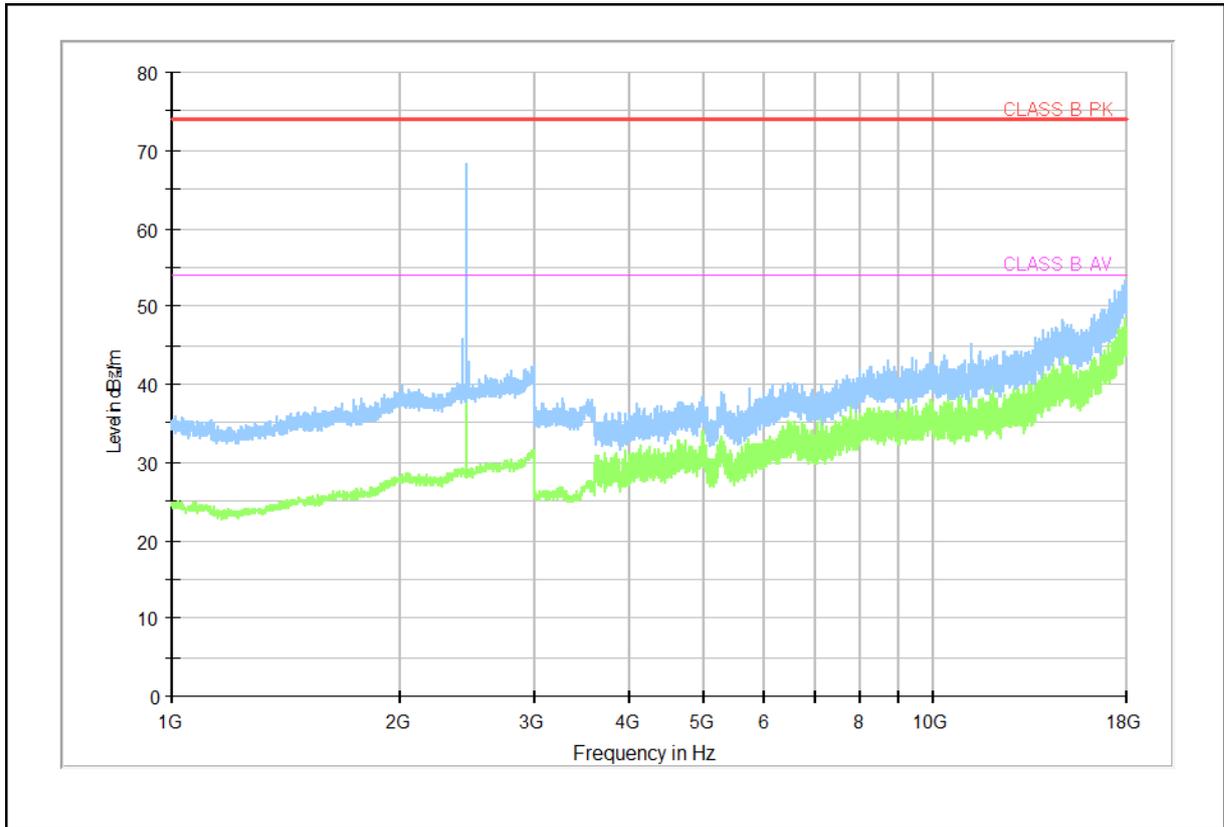
Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz



Note 1) We have also tested from 18 GHz to 40 GHz and found no emissions.

Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

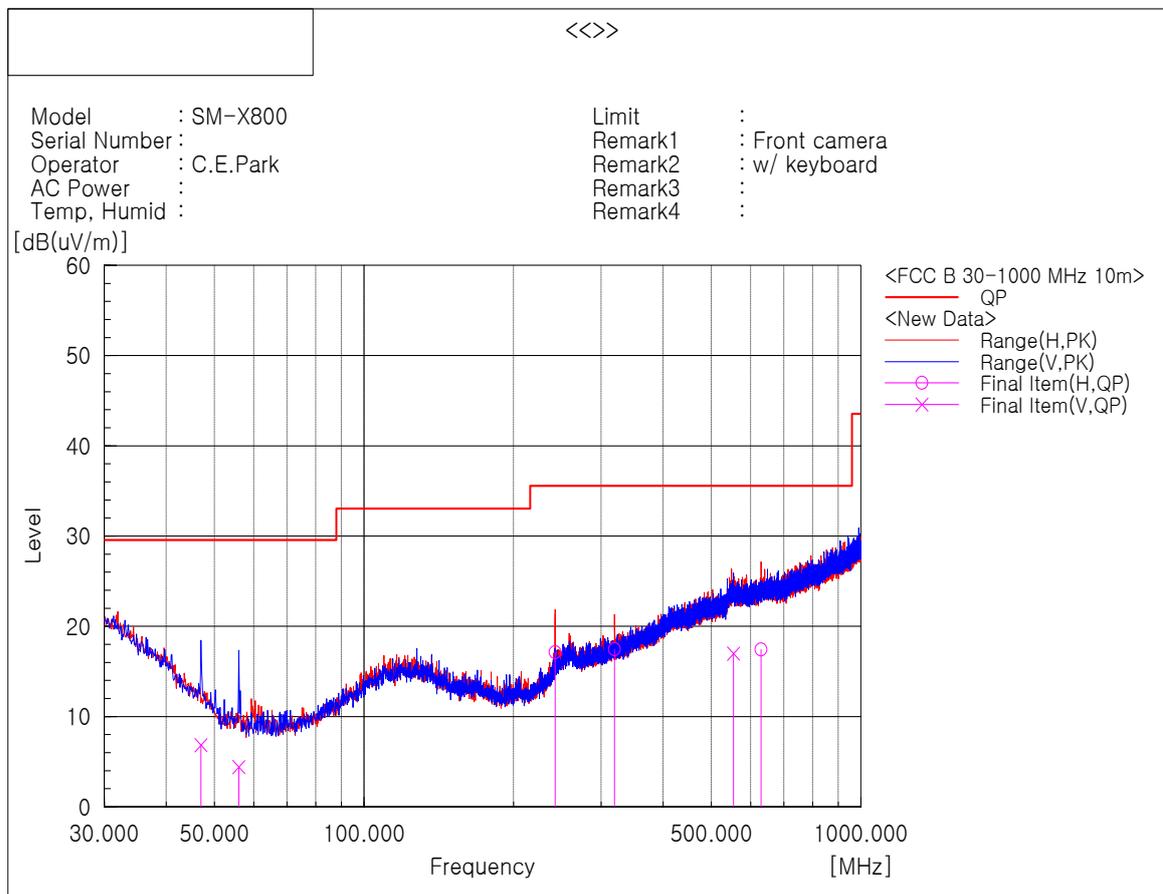
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- Data transmission in the 2.4 GHz ISM band (Bluetooth/Wi-Fi)

: Operating frequencies (2 400 ~ 2 483.5) MHz

□ Operating Mode 2

- Frequencies below 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	46.975	V	22.6	-15.8	6.8	29.5	22.7	111	23	2
2	55.948	V	23.3	-18.9	4.4	29.5	25.1	371	13	2
3	242.309	H	29.8	-12.7	17.1	35.5	18.4	279	320	1
4	319.060	H	27.5	-10.0	17.5	35.5	18.0	230	342	1
5	554.164	V	20.5	-3.5	17.0	35.5	18.5	258	9	2
6	629.824	H	21.1	-3.7	17.4	35.5	18.1	330	347	1

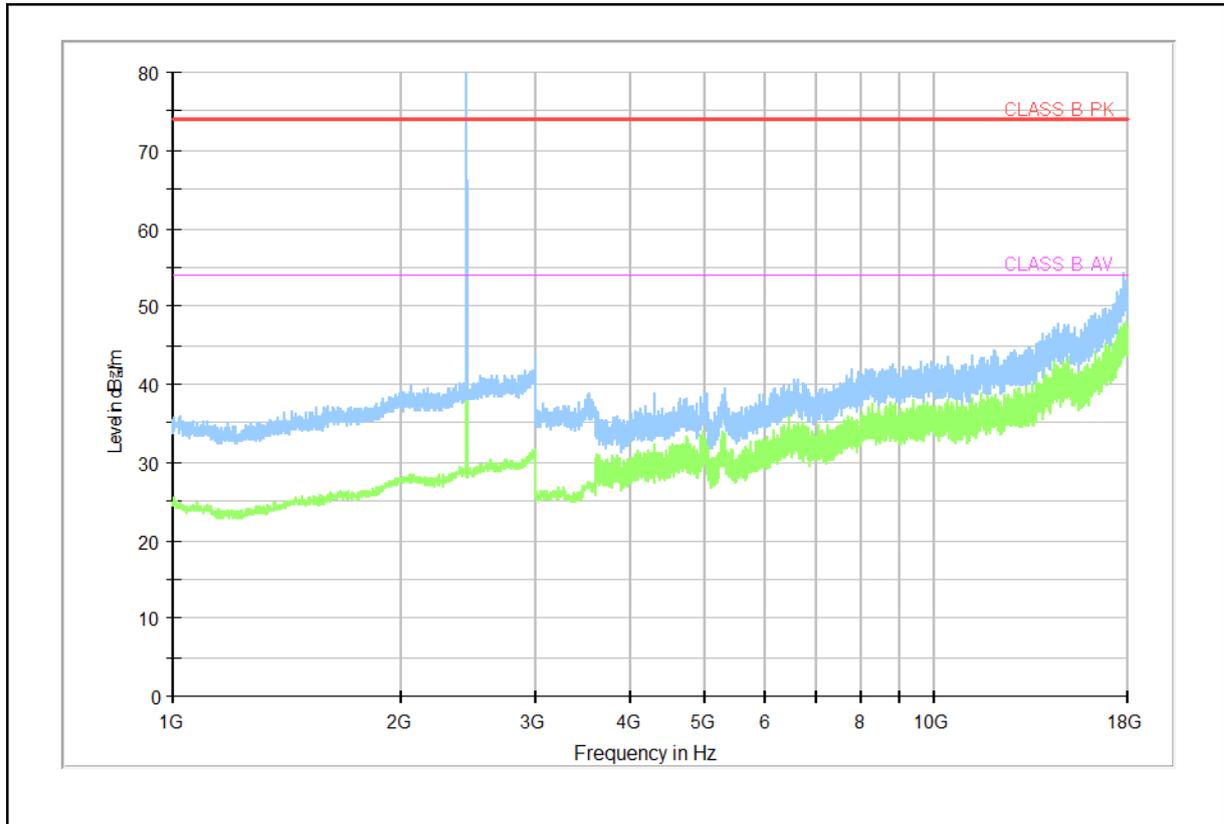
Note1) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz

Note 1) We have also tested from 18 GHz to 40 GHz and found no emissions.

Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

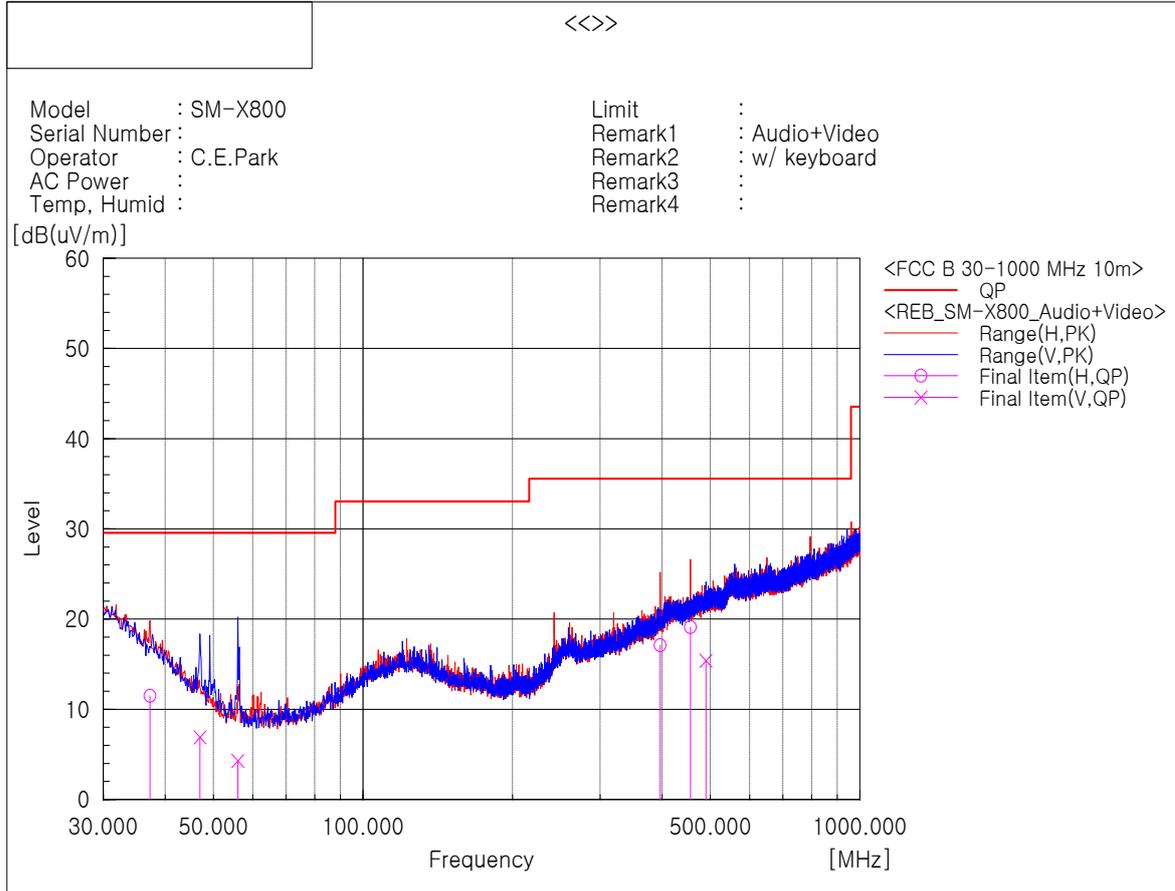
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- Data transmission in the 2.4 GHz ISM band (Bluetooth/Wi-Fi)

: Operating frequencies (2 400 ~ 2 483.5) MHz

□ Operating Mode 3

- Frequencies below 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	37.275	H	22.1	-10.6	11.5	29.5	18.0	327	23	1
2	46.975	V	22.7	-15.8	6.9	29.5	22.6	124	147	2
3	55.948	V	23.2	-18.9	4.3	29.5	25.2	100	8	2
4	396.175	H	25.1	-8.0	17.1	35.5	18.4	230	313	1
5	455.951	H	25.6	-6.5	19.1	35.5	16.4	213	215	1
6	490.144	V	20.6	-5.2	15.4	35.5	20.1	303	91	2

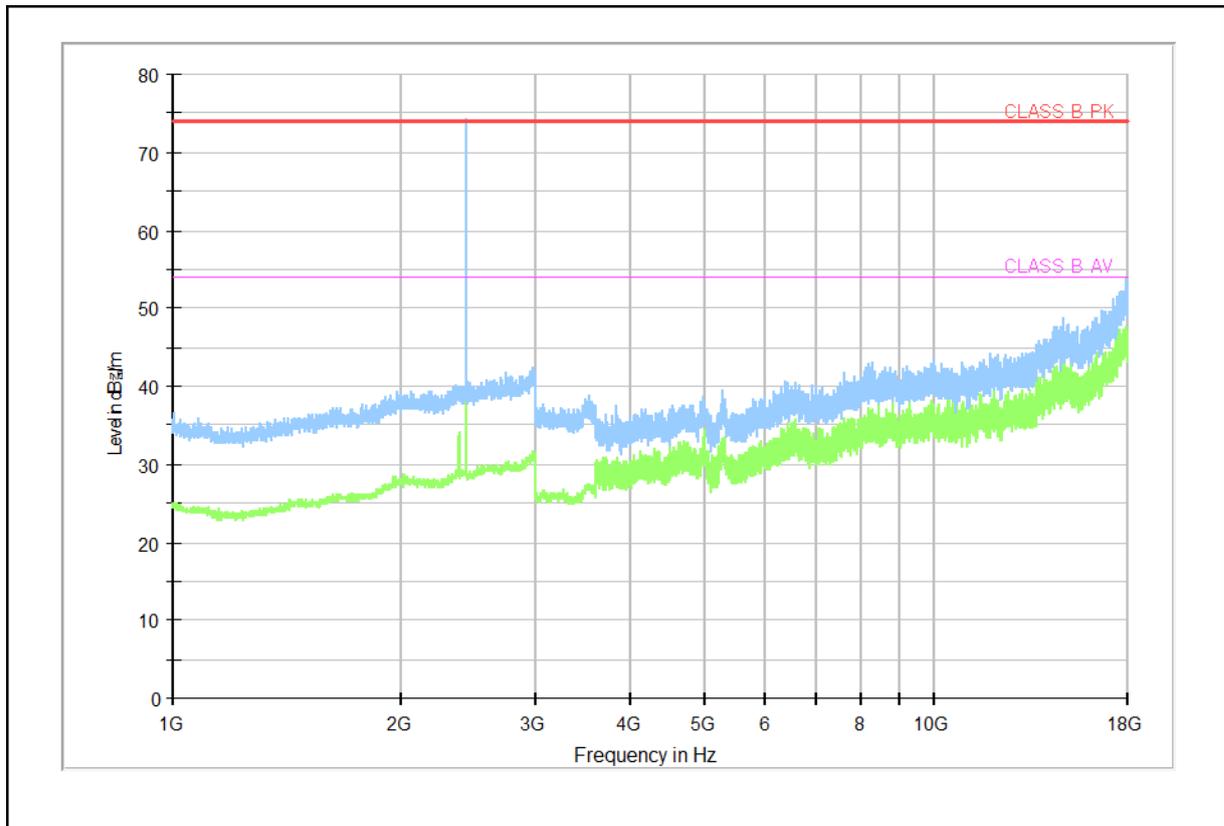
Note1) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz

Note 1) We have also tested from 18 GHz to 40 GHz and found no emissions.

Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

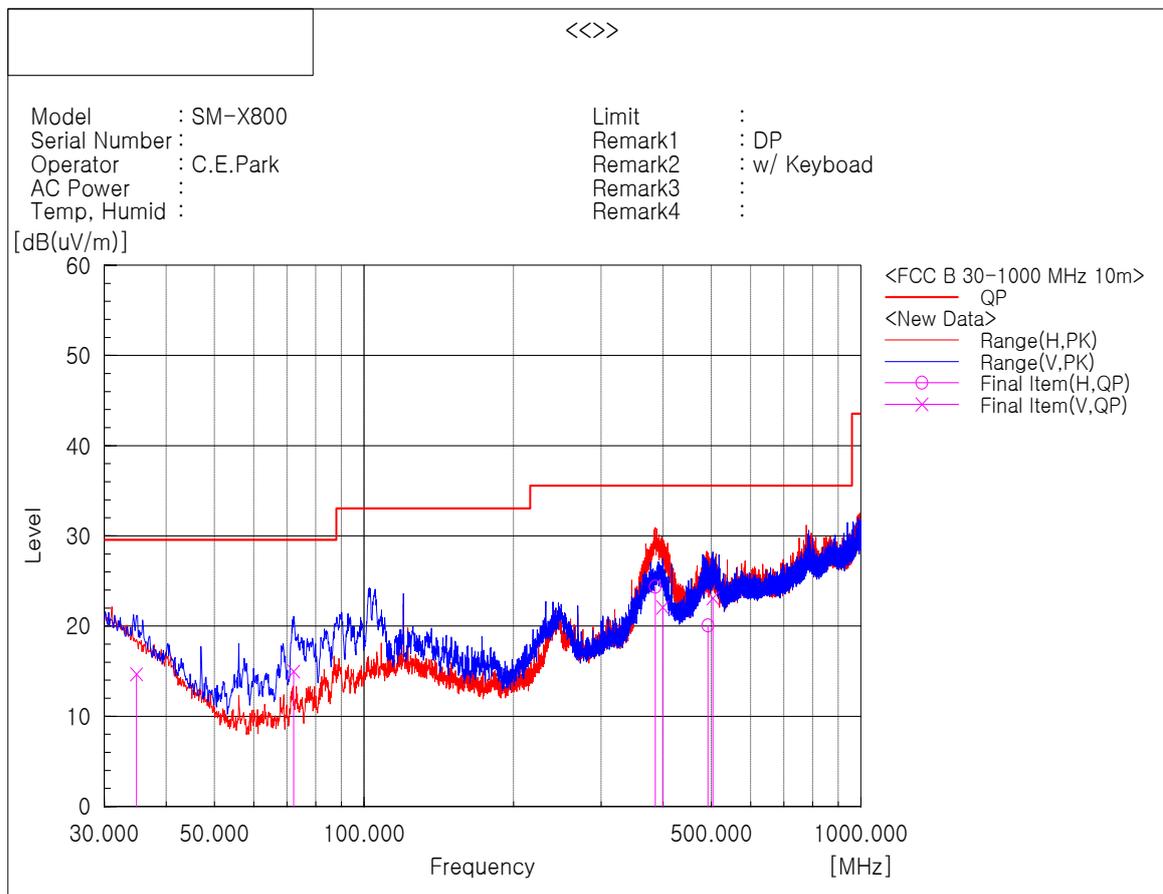
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- Data transmission in the 2.4 GHz ISM band (Bluetooth/Wi-Fi)

: Operating frequencies (2 400 ~ 2 483.5) MHz

□ Operating Mode 4

- Frequencies below 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	34.850	V	23.9	-9.2	14.7	29.5	14.8	174	322	2
2	72.195	V	33.4	-18.4	15.0	29.5	14.5	187	48	2
3	385.384	H	32.8	-8.5	24.3	35.5	11.2	230	320	1
4	398.964	V	29.4	-7.3	22.1	35.5	13.4	100	314	2
5	491.841	H	25.8	-5.7	20.1	35.5	15.4	195	351	1
6	503.724	V	28.1	-5.0	23.1	35.5	12.4	100	347	2

Note1) Receiving antenna polarization : Horizontal, Vertical

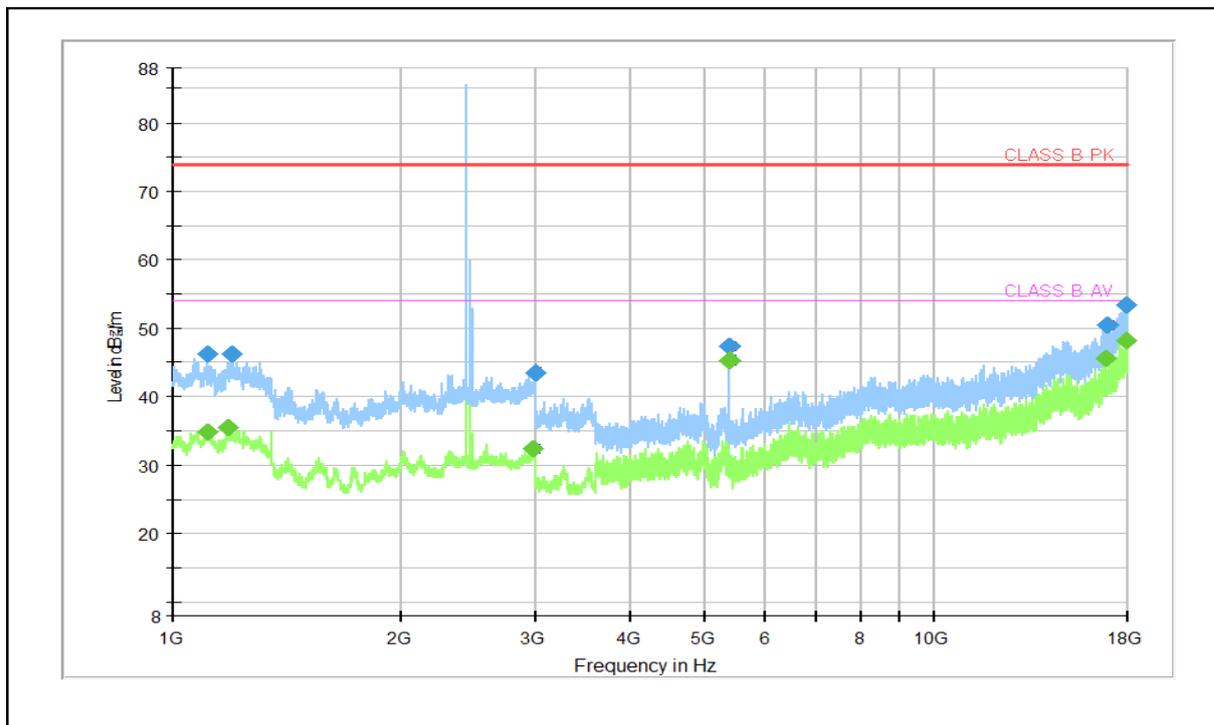
Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz



Frequency (MHz)	PK (dBµV/m)	CAV (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1 106.500	---	34.79	54.00	19.21	108.40	V	302.00	6.35
1 110.500	46.23	---	74.00	27.77	101.90	V	299.00	6.31
1 176.500	---	35.49	54.00	18.51	105.50	V	187.00	5.96
1 194.500	46.23	---	74.00	27.77	114.50	V	190.00	5.96
2 975.000	---	32.34	54.00	21.66	115.60	H	107.00	15.51
2 983.500	43.52	---	74.00	30.48	110.30	V	125.00	15.59
5 399.500	47.25	---	74.00	26.75	102.20	H	126.00	6.22
5 400.000	---	45.26	54.00	8.74	114.70	H	126.00	6.21
16 826.500	---	45.45	54.00	8.55	105.40	H	191.00	34.05
16 879.500	50.39	---	74.00	23.61	109.10	V	28.00	33.93
17 886.000	---	48.29	54.00	5.71	114.00	H	42.00	38.88
17 890.500	53.29	---	74.00	20.71	116.00	V	59.00	38.89

Note 1) We have also tested from 18 GHz to 40 GHz and found no emissions.

Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

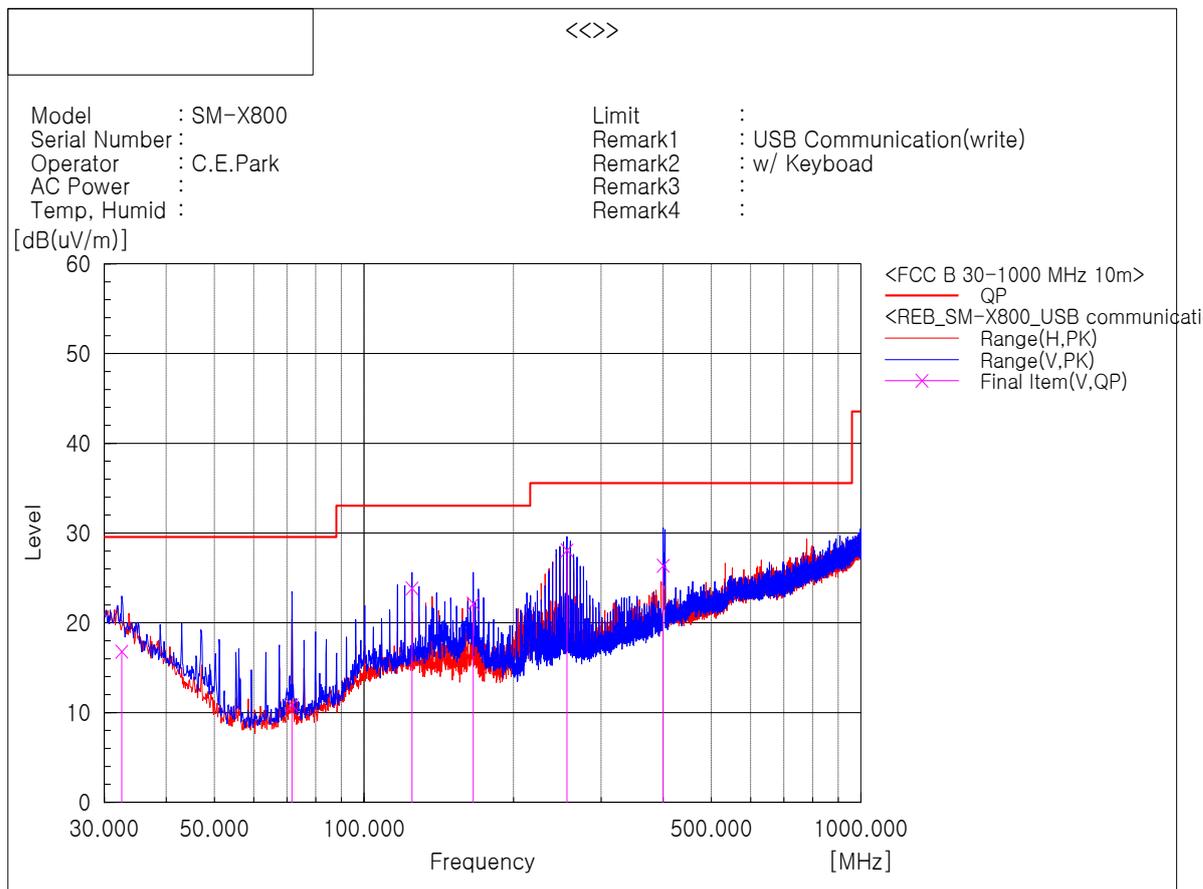
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- Data transmission in the 2.4 GHz ISM band (Bluetooth/Wi-Fi)

: Operating frequencies (2 400 ~ 2 483.5) MHz

□ Operating Mode 5

- Frequencies below 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	32.546	V	24.9	-8.1	16.8	29.5	12.7	202	256	2
2	71.589	V	29.3	-18.5	10.8	29.5	18.7	176	253	2
3	124.939	V	36.2	-12.3	23.9	33.0	9.1	100	356	2
4	165.921	V	36.3	-14.2	22.1	33.0	10.9	102	309	2
5	256.010	V	38.7	-10.6	28.1	35.5	7.4	100	195	2
6	400.055	V	33.6	-7.2	26.4	35.5	9.1	100	180	2

Note1) Receiving antenna polarization : Horizontal, Vertical

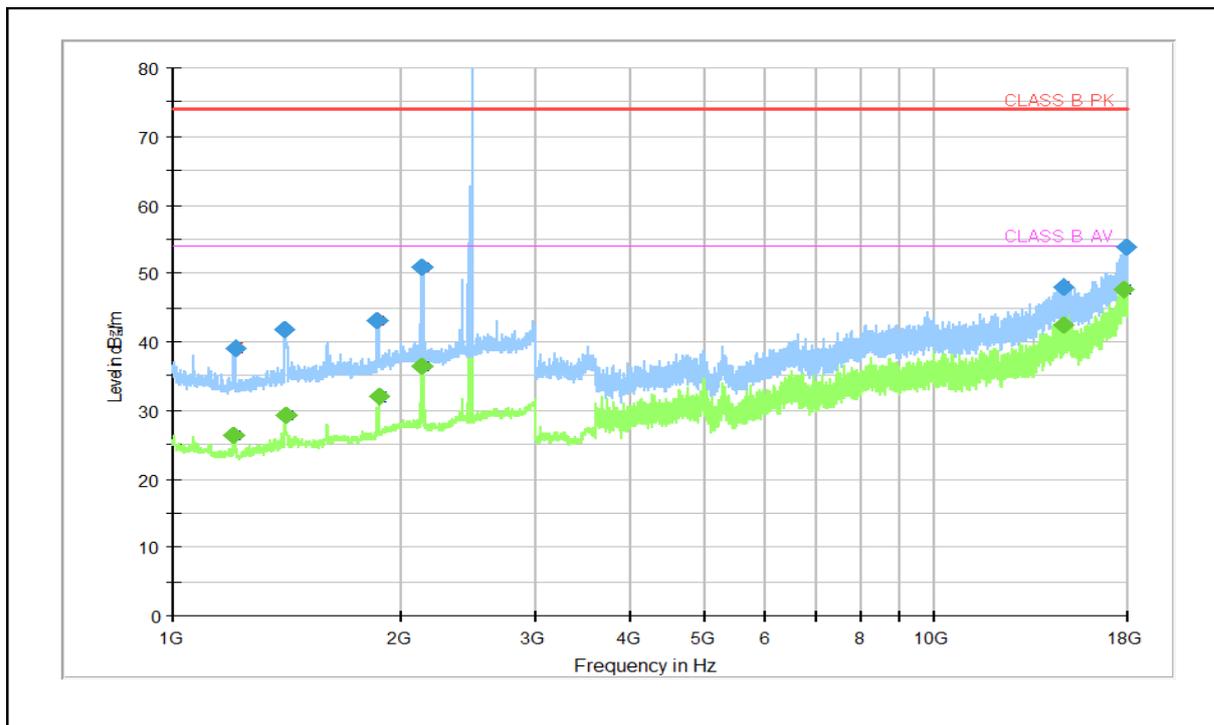
Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz



Frequency (MHz)	PK (dBµV/m)	CAV (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1 204.000	---	26.33	54.00	27.67	103.00	V	343.00	5.99
1 209.500	39.14	---	74.00	34.86	110.20	V	343.00	6.04
1 401.500	41.68	---	74.00	32.32	118.90	V	334.00	7.58
1 411.000	---	29.38	54.00	24.62	106.80	V	334.00	7.74
1 861.000	43.22	---	74.00	30.78	107.30	V	68.00	10.38
1 862.500	---	31.96	54.00	22.04	104.20	V	110.00	10.40
2 125.000	50.85	---	74.00	23.15	100.10	V	19.00	11.89
2 128.500	---	36.36	54.00	17.64	118.00	V	19.00	11.90
14 791.000	48.13	---	74.00	25.87	119.70	V	295.00	30.64
14 797.500	---	42.51	54.00	11.49	106.90	H	0.00	30.68
17 792.500	---	47.68	54.00	6.32	109.00	V	53.00	38.61
17 846.500	53.93	---	74.00	20.07	116.30	H	309.00	38.81

Note 1) We have also tested from 18 GHz to 40 GHz and found no emissions.

Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- Data transmission in the 2.4 GHz ISM band (Bluetooth/Wi-Fi)

: Operating frequencies (2 400 ~ 2 483.5) MHz