

EMC TEST REPORT

Project No.	LBE20210663	Issue No.	0
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	October 7, 2021	
EUT	Type of device	☒ All other receivers subject to Part 15 ☒ Class B personal computers and peripherals ☒ Other Class B digital devices and peripherals ☐ FM Broadcast Receiver	
	Equipment authorization	☒ Certification ☐ Supplier's Declaration of Conformity	
	FCC ID	A3LSMS908E	
	Kind of product	Mobile Phone	
	Model No.	SM-S908E/DS	
	Variant Model No.	Refer to clause 4.6	
	Manufacturer	Samsung Electronics Vietnam THAI NGUYEN Co. Ltd. Yen Binh industrial, Dong Tien Ward, Pho Yen Town, Thai Nguyen province, Viet Nam PT Samsung Electronics Indonesia(SEIN) CikarangIndustrial Estate, Jl. Jababeka RayaBlok F 29~33, Bekasi, West Java, Indonesia, Cikarang, IDN	
Applied Standards		47 CFR Part 15, Subpart B, Class B / ANSI C63.4-2014	
Test Period		October 7, 2021 ~ October 18, 2021	
Issue date		October 27, 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 : Soo-Joon Kim		Reviewed by : Sun-Ho Kim	
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Samsung Electronics Co., Ltd., Global CS Center (Maetan dong) 129, Samsung-ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do 16677, Korea			

Table of Contents

1. Report Information	3
1.1 Revision history	3
2. Summary of test results	3
2.1 Emission	3
3. General Information	3
3.1 Test facility	3
4. Test Setup configuration	4
4.1 Test Peripherals	4
4.2 EUT operating mode	5
4.3 Details of Sampling	5
4.4 Used cable description	6
4.5 Test arrangement	7
4.6 EUT Description	10
4.7 EUT Frequencies	10
4.8 Test configuration and condition	11
4.9 Measurement uncertainty	11
5. Results of individual test	12
5.1 Conducted Emission	12
5.2 Radiated Emission	17

1. Report Information

1.1 Revision history

No.	Date of Issue	Revised detailed information
Issue 0	October 27, 2021	There are no revisions and this version is basic test report.

※ Remark

Compliance with Part 15B requirements for the receiver part of the licensed transmitter (equipment code CXX) is covered by other test report.

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
Mobile Phone	SM-S908E/DS	-	SAMSUNG	A3LSMS908E
Battery	EB-BS908ABY	-	SDI	-
Headset	AMD-20HS	-	ALMUS	-
Data Cable	EP-DN980	-	RF TECH	-
Laptop Computer	Latitude5580	1WYRYM2	Dell	DoC
Laptop Computer	Latitude5580	D3HRYM2	Dell	DoC
Laptop AC Adapter	LA65NM130	5DEA	Dell	DoC
Laptop AC Adapter	LA65NM130	5B3C	Dell	DoC
Mouse	AA-SM7PCPB	CN57BA5903634ADV 8JJCD4371	SAMSUNG	DoC
Mouse	SMH-210UB	TAKGA05788Z	SAMSUNG	DoC
Router	DIR-806A	RF0F1D8018454	D-Link	DoC
Router	DIR-806A	RF0F1D8011504	D-Link	DoC
Travel Adapter	EP-TA800	R37NATTBDG8SE3	SoluM	-
DP Monitor	27DU88	711NTQD8H004	LG	DoC
DP Monitor Power Supply	LCAP31	EH8NN629490055062	LG	DoC
DP Cable	JCA141	BW2K1709000770	J5CREATE	DoC

4.2 EUT operating mode

To achieve compliance applied standard specification including CXX, 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) + Cellular receiver (LTE FDD26 Center Frequency)
2	Camera (Front) + Charging (w/TA)
3	Video + Audio playback from internal memory + Charging (w/TA)
4	USB data communication with PC (from internal memory)

4.2.2 Radiated Emission

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

4.3 Details of Sampling

Customer selected, single unit.

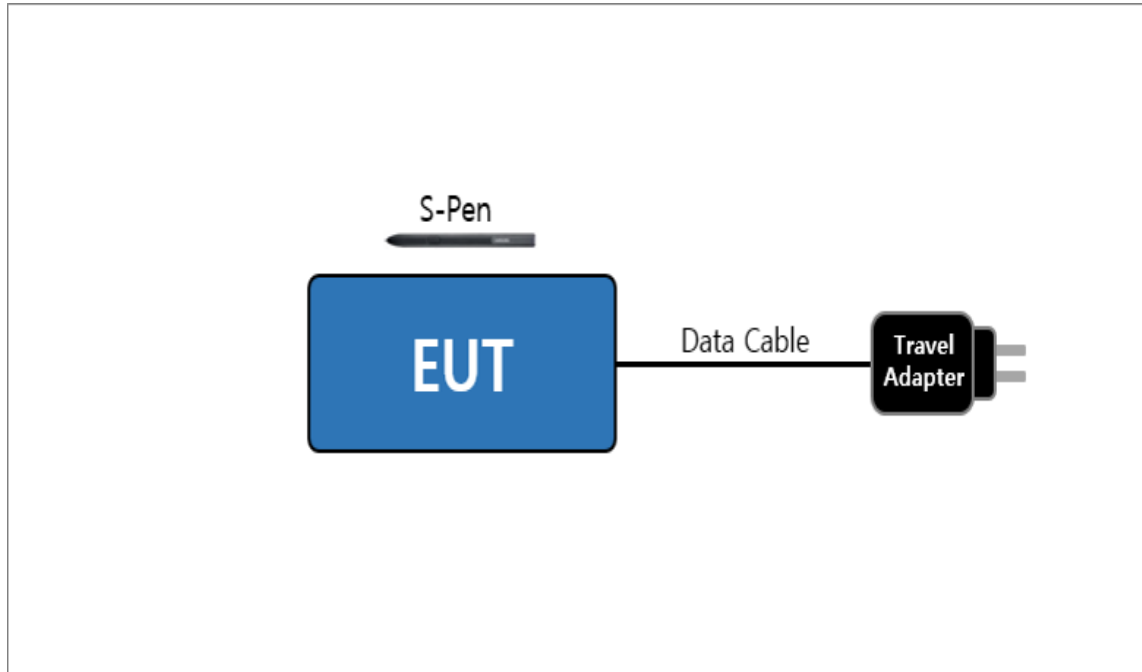
4.4 Used cable description

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:

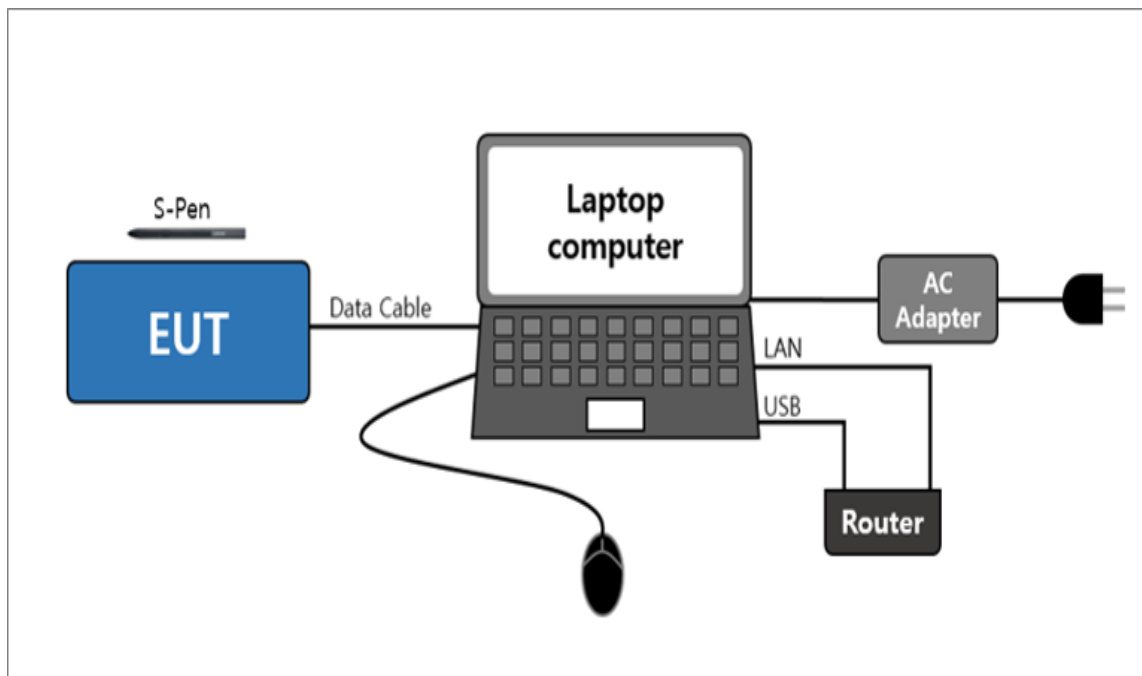
Connected cable	Length [m]	Shielded [Y/N]	Note
Data Cable	1.0	Y	From EUT to Laptop Computer or Travel Adapter
Headset	1.2	N	For EUT
Power	1.8	N	From Laptop Computer to AC Adapter
Power	1.5	N	For Laptop AC Adapter
LAN	1.5	N	From Laptop Computer to Router
USB	0.8	Y	From Laptop Computer to Router for DC Power
USB	1.8	Y	From Laptop Computer to Mouse
DP Cable	1.1	Y	DP Cable / From EUT to DP Monitor
Power	1.2	N	Power / From DP Monitor to Power Supply
Power	2.2	N	Power / For DP Monitor Power Supply.

4.5 Test arrangement

4.5.1 Conducted Emission

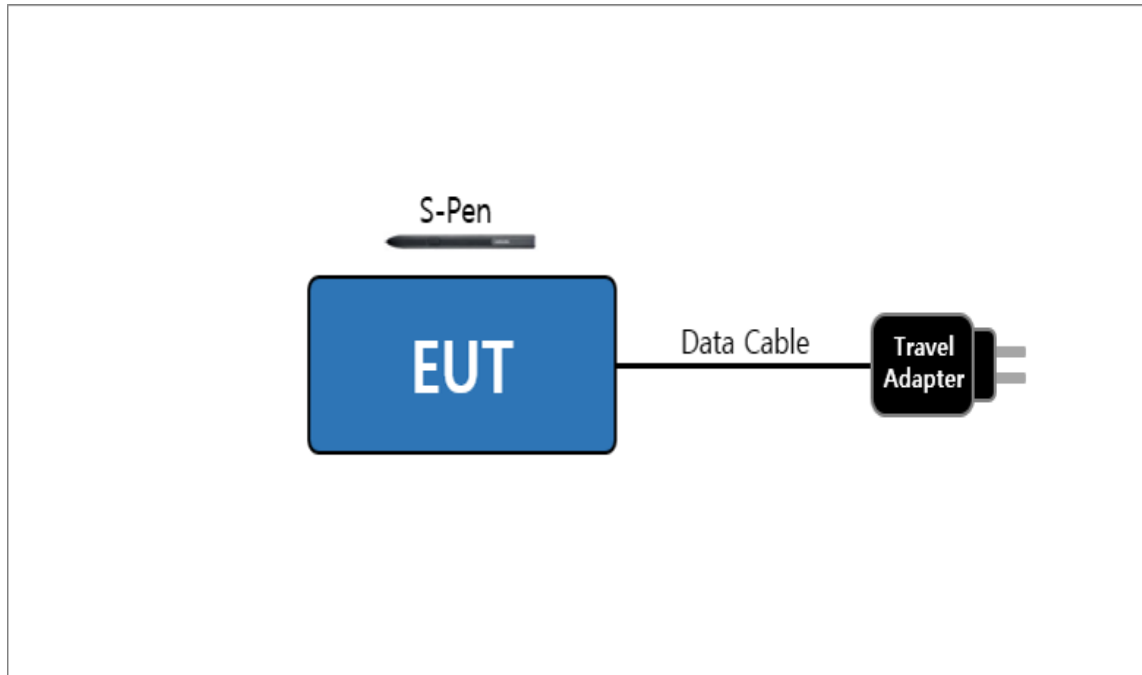


[Mode 1 – 3]

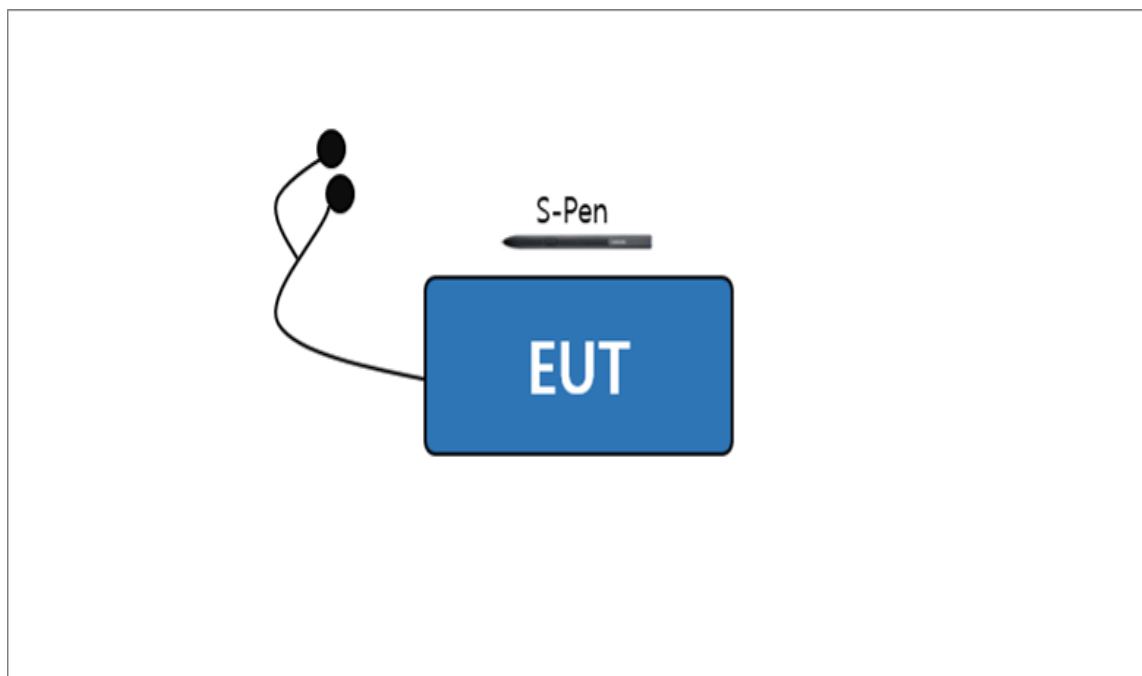


[Mode 4]

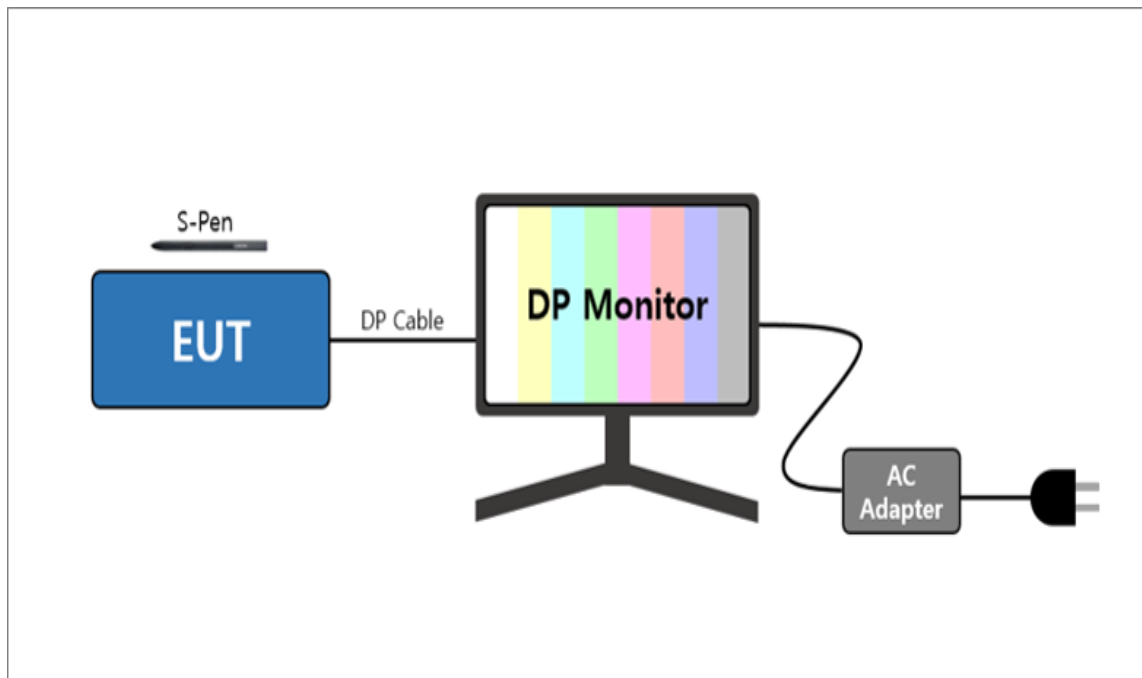
4.5.2 Radiated Emission



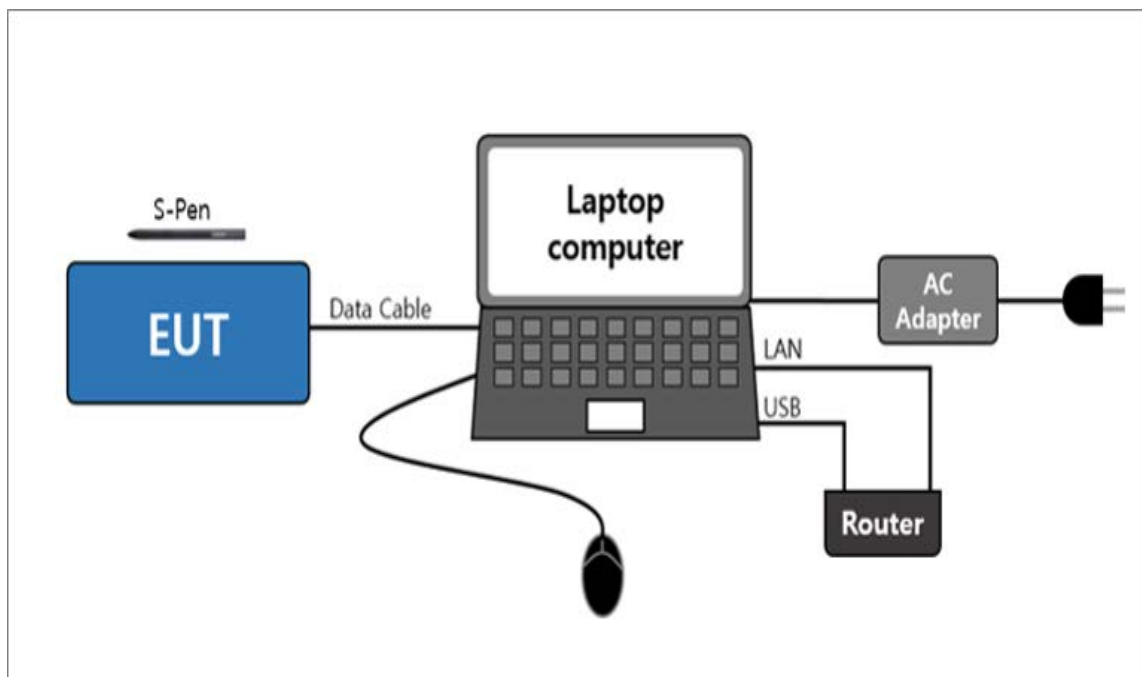
[Mode 1]



[Mode 2 – 3]



[Mode 4]



[Mode 5]

4.6 EUT Description

The EUT is a bar type mobile phone which can operate on GSM 850/900/1800/1900, WCDMA FDD 1/2/4/5/8, LTE FDD 1/2/3/4/5/7/8/12/13/17/18/19/20/25/26/28/66, LTE TDD 38/39/40/41, NR n1/2/3/5/7/8/12/20/25/28/38/40/41/66/77/78, and incorporates a Bluetooth, Wi-Fi (802.11 b/g/n/a/ac/ax), Camera, Audio, Video, GNSS, UWB, DP, S-Pen, NFC, Wireless Charging and Wireless power sharing.

4.6.1 The variant models

- SM-S908E

4.7 EUT Frequencies

The highest frequencies (Generated and used)	Frequency [MHz]
Wi-Fi	7 125
UWB	8 250

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.

RX mode(850MHz) testing was performed with the LTE FDD26 RX Test mode at center frequency. All licensed communication (850MHz) RX mode, GSM/WCDMA/LTE, test results are not significantly different.

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	4.06 dB
	Vertical	4.74 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 Ucispr 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

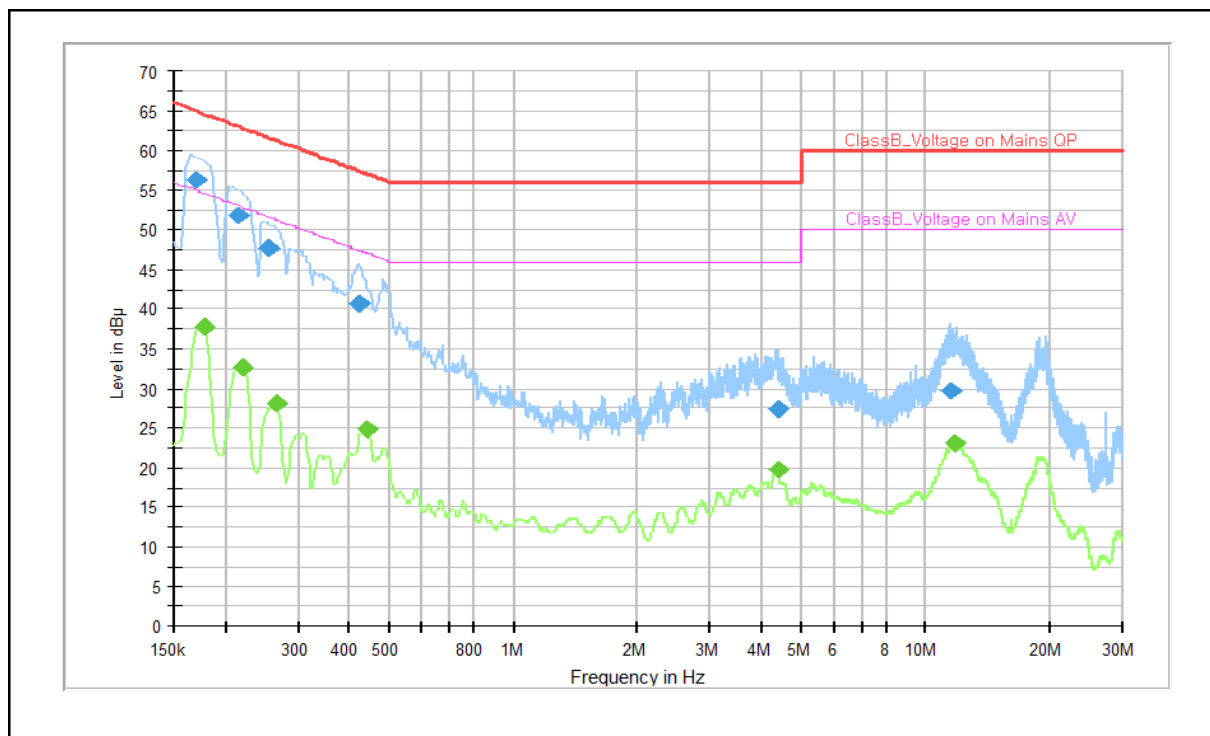
EMC No.	Test Instrument	Model name	Manufacturer	Serial No.	Next Calibration	
					Date	Interval (Month)
E5I-006	LTE Communicator	CMW500	R&S	132728	2022-04-06	12
E5I-127	Two-Line V-Network	ENV216	R&S	102061	2022-08-02	12
E5I-016	EMI Test Receiver	ESU8	R&S	100482	2022-06-03	12
-	Test software	EMC32	R&S	Ver 10.60.20	-	-

5.1.2 Temperature and humidity condition

Test date	2021-10-07	Test engineer	Soo-Joon Kim
Climate condition	Ambient temperature	(23.1 ± 0.5) °C	Limit (15.0 to 35.0) °C
	Relative humidity	(51.6 ± 0.5) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(102.1 ± 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



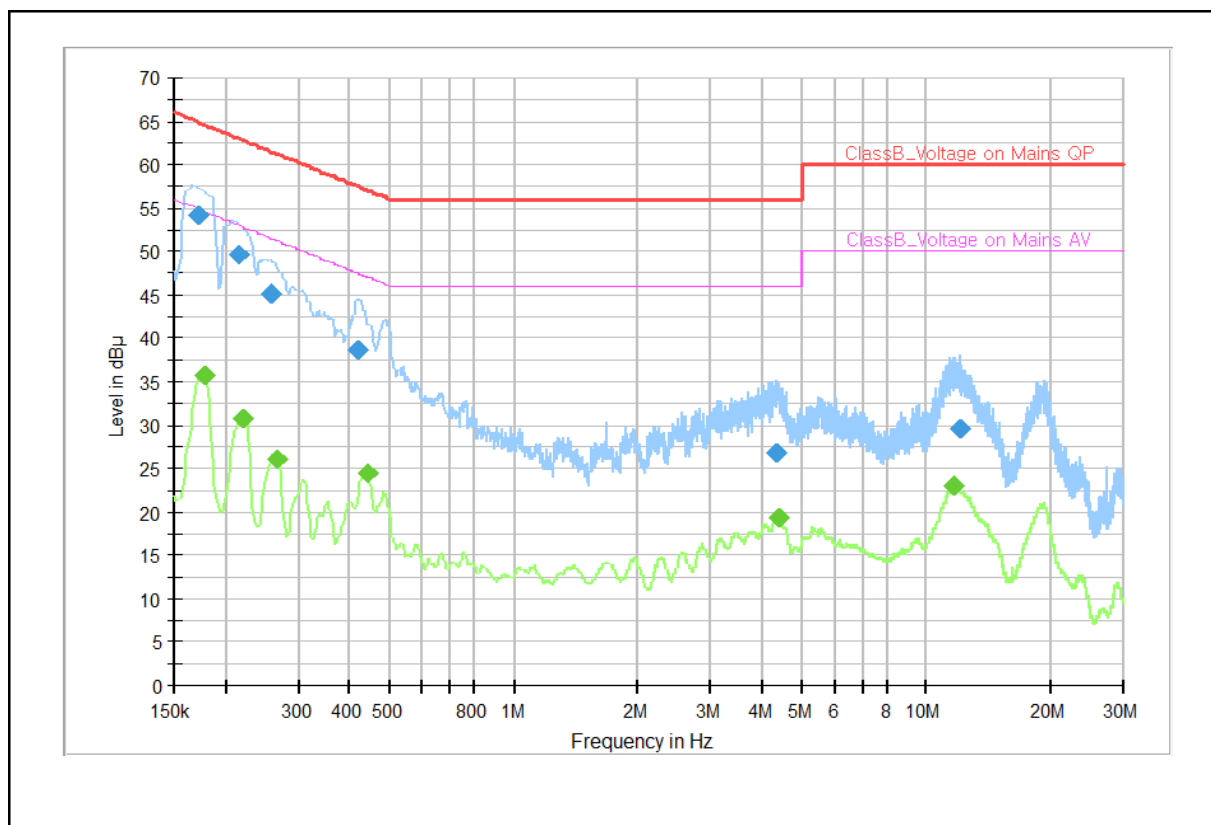
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.170	56.4	---	64.9	8.6	N	9.9
0.177	---	37.8	54.6	16.9	L1	10.0
0.215	51.9	---	63.0	11.1	N	9.9
0.220	---	32.6	52.8	20.3	L1	9.9
0.254	47.7	---	61.6	13.9	L1	9.8
0.265	---	28.1	51.3	23.2	L1	9.9
0.422	40.6	---	57.4	16.8	L1	10.2
0.440	---	24.8	47.1	22.2	N	10.1
4.362	27.4	---	56.0	28.6	N	9.9
4.371	---	19.7	46.0	26.3	N	9.9
11.501	29.8	---	60.0	30.2	N	10.2
11.762	---	23.0	50.0	27.0	N	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

□ Operating Mode 2: AC Mains



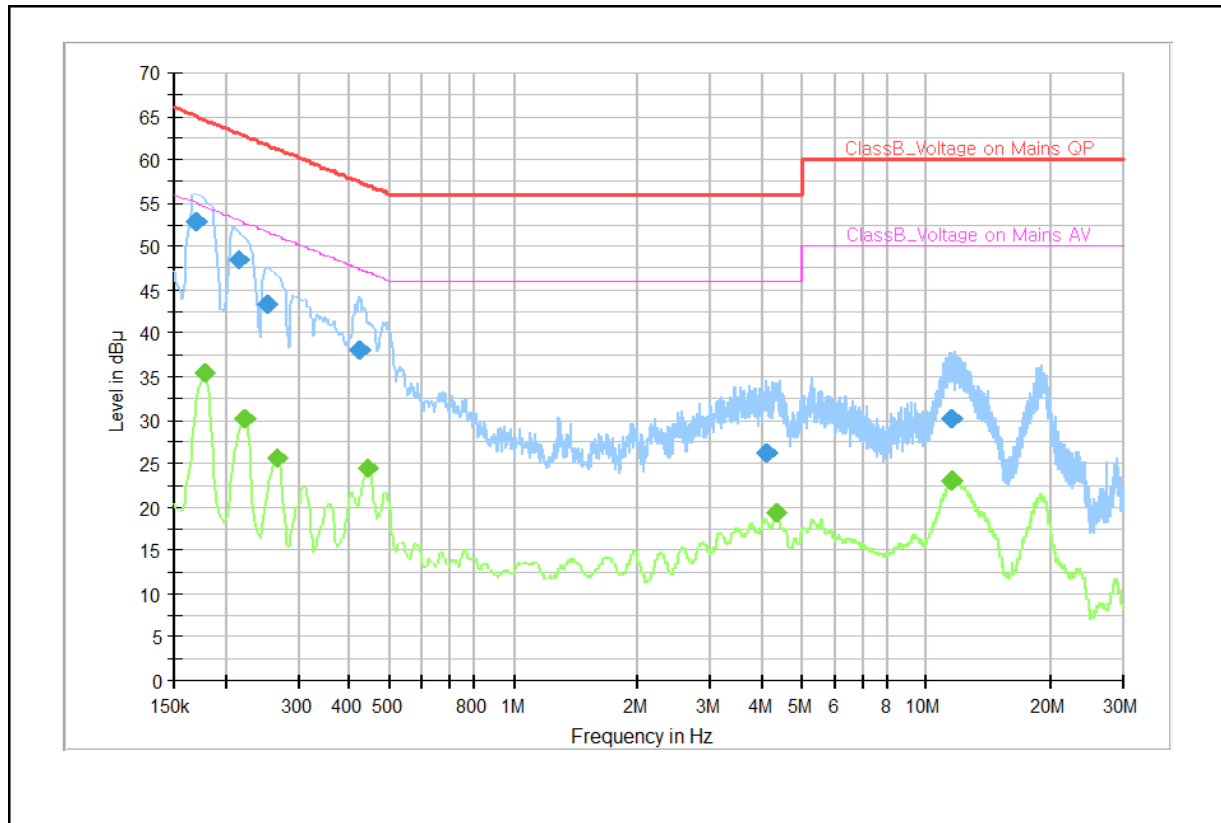
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.173	54.3	---	64.8	10.6	L1	10.0
0.177	---	35.8	54.6	18.8	N	9.9
0.215	49.7	---	63.0	13.3	L1	10.0
0.220	---	30.6	52.8	22.2	N	9.9
0.258	45.1	---	61.5	16.4	L1	9.9
0.265	---	26.0	51.3	25.3	N	9.8
0.418	38.7	---	57.5	18.8	L1	10.2
0.440	---	24.4	47.1	22.7	N	10.1
4.355	26.8	---	56.0	29.2	N	9.9
4.364	---	19.3	46.0	26.7	N	9.9
11.724	---	23.0	50.0	27.0	N	10.2
12.084	29.5	---	60.0	30.5	N	10.3

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



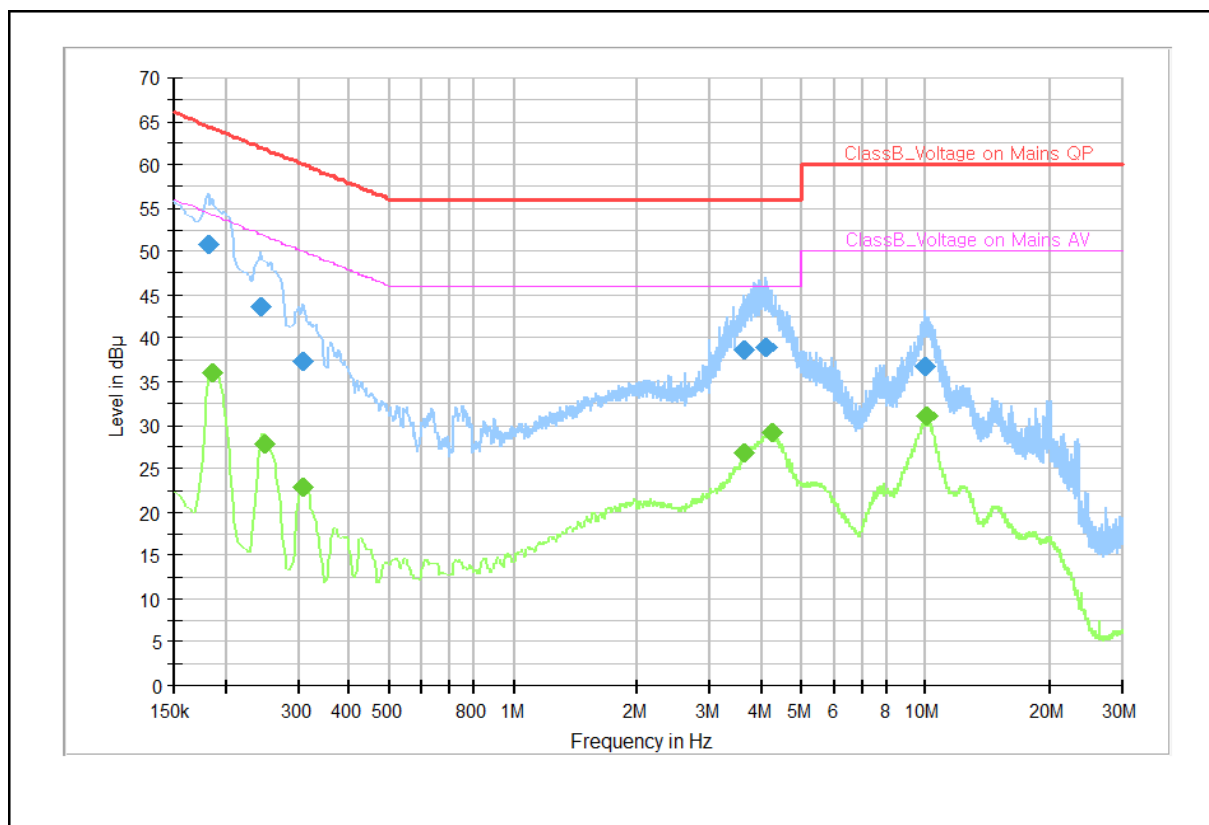
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.170	52.8	---	64.9	12.1	L1	10.0
0.177	---	35.5	54.6	19.1	L1	10.0
0.215	48.5	---	63.0	14.5	L1	10.0
0.222	---	30.2	52.7	22.5	L1	9.9
0.251	43.4	---	61.7	18.3	L1	9.8
0.265	---	25.6	51.3	25.7	L1	9.9
0.425	38.1	---	57.4	19.3	L1	10.2
0.440	---	24.5	47.1	22.5	N	10.1
4.090	26.2	---	56.0	29.8	N	9.9
4.331	---	19.4	46.0	26.6	N	9.9
11.474	---	23.2	50.0	26.8	N	10.2
11.551	30.0	---	60.0	30.0	N	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

□ 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)
0.182	50.8	---	64.4	13.6	N	9.9
0.186	---	36.0	54.2	18.2	L1	9.9
0.242	43.5	---	62.0	18.5	N	9.7
0.249	---	27.7	51.8	24.1	L1	9.7
0.310	---	22.8	50.0	27.1	L1	9.9
0.310	37.4	---	60.0	22.6	N	9.9
3.602	---	26.8	46.0	19.2	L1	9.8
3.602	38.8	---	56.0	17.2	L1	9.8
4.115	39.0	---	56.0	17.0	N	9.7
4.256	---	29.1	46.0	16.9	N	9.7
9.989	36.7	---	60.0	23.3	L1	9.9
10.064	---	31.1	50.0	18.9	L1	9.9

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 [kHz]	Video Bandwidth [kHz]	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 [$\text{dB}(\mu\text{V/m})$]	10 m [$\text{dB}(\mu\text{V/m})$]
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-021	EMI Test Receiver	ESU40	R&S	100376	2022-02-04	12
E5I-020	EMI Test Receiver	ESU40	R&S	100375	2022-09-23	12
E5I-018	EMI Test Receiver	ESU8	R&S	100484	2022-05-26	12
E5I-072	BiLog Antenna	CBL6112D	TESEQ	36009	2022-05-15	24
E5I-223	6 dB Fixed Attenuator	8491B-006	Agilent	58359	2022-05-15	24
E5I-120	BiLog Antenna	CBL6112D	TESEQ	36997	2022-05-15	24
E5I-189	6 dB Fixed Attenuator	8491A	Keysight	MY52462295	2022-05-15	24
E5I-093	Preamplifier	310N	SONOMA	273122	2022-01-21	12
E5I-094	Preamplifier	310N	SONOMA	282363	2022-01-21	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	-	-

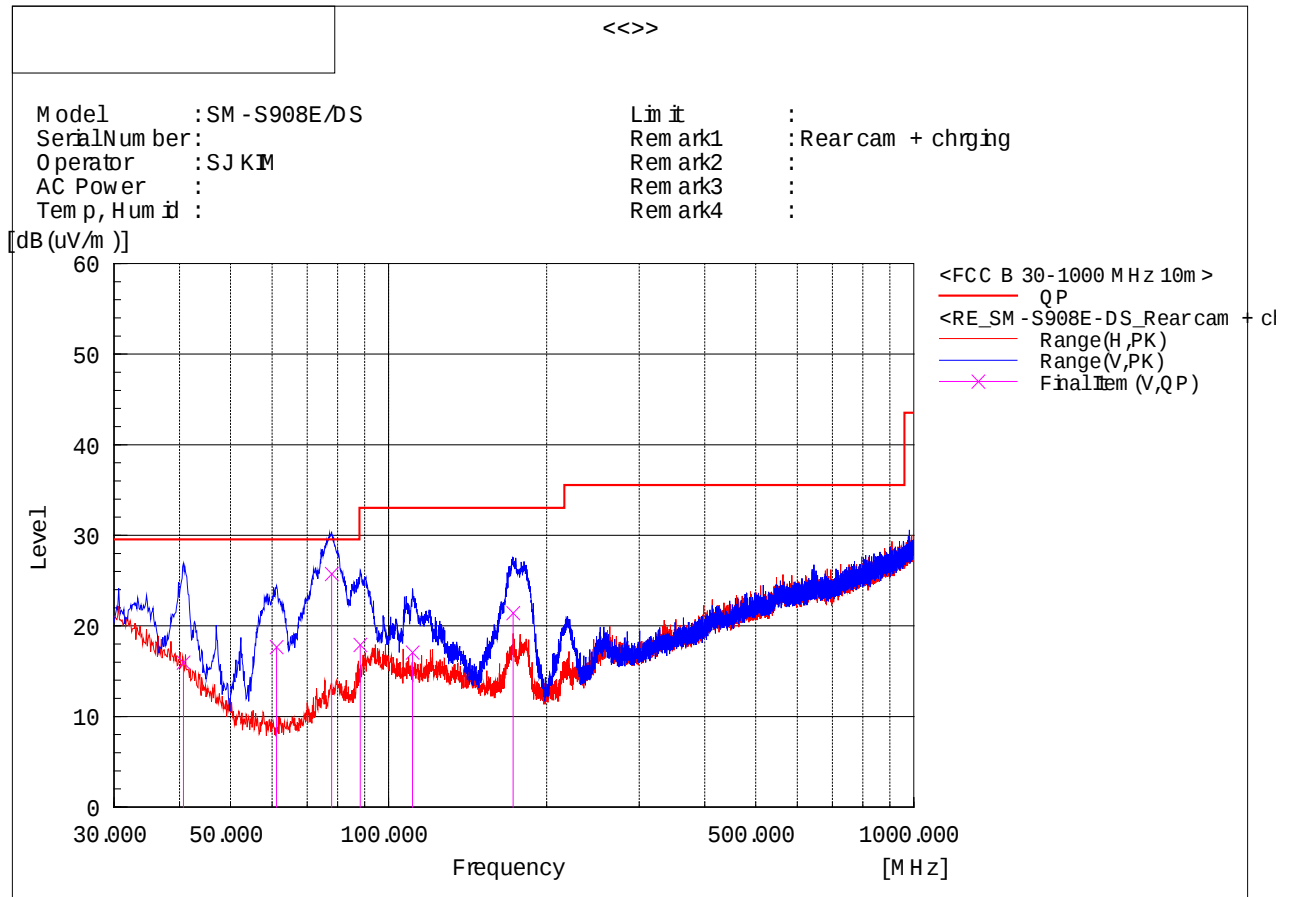
5.2.1 Temperature and humidity condition

Test date	2021-10-12 ~ 2021-10-18	Test engineer	Soo-Joon Kim
Climate condition	Ambient temperature	(22.6 ± 0.5) °C	Limit (15.0 to 35.0) °C
	Relative humidity	(47.9 ± 0.5) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(101.6 ± 0.5) kPa	Limit (86.0 to 106.0) kPa
Test place	Semi-Anechoic Chamber (SAC5)		

5.2.3 Test Results

□ Operating Mode 1

- Frequencies below 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	40.670	V	28.3	-12.3	16.0	29.5	13.5	100	23	2
2	61.161	V	36.7	-19.0	17.7	29.5	11.8	134	100	2
3	77.894	V	43.5	-17.8	25.7	29.5	3.8	126	9	2
4	88.321	V	34.0	-16.1	17.9	33.0	15.1	132	1	2
5	110.995	V	30.1	-13.0	17.1	33.0	15.9	108	60	2
6	172.711	V	35.7	-14.3	21.4	33.0	11.6	102	351	2

Note1) Receiving antenna polarization : Horizontal, Vertical

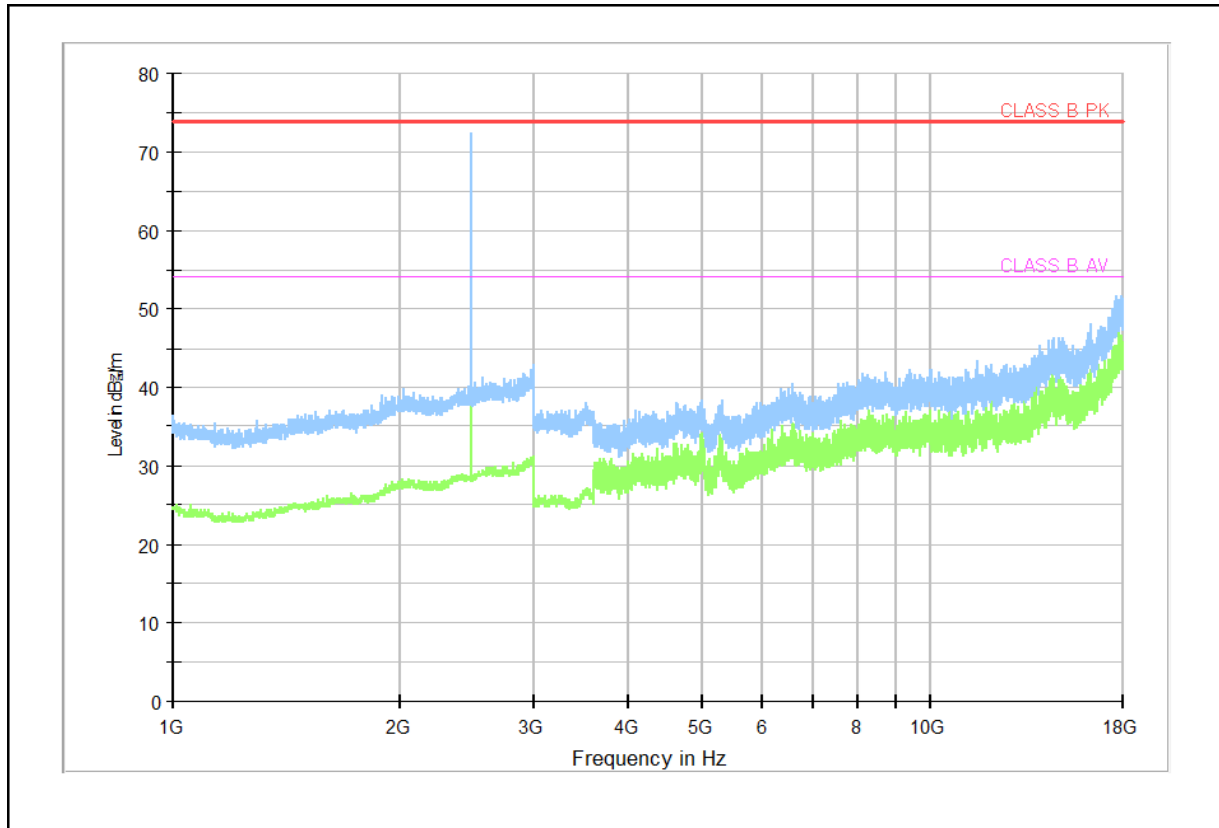
Test Distance : 10 m, Antenna Height : 1 to 4 meters

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

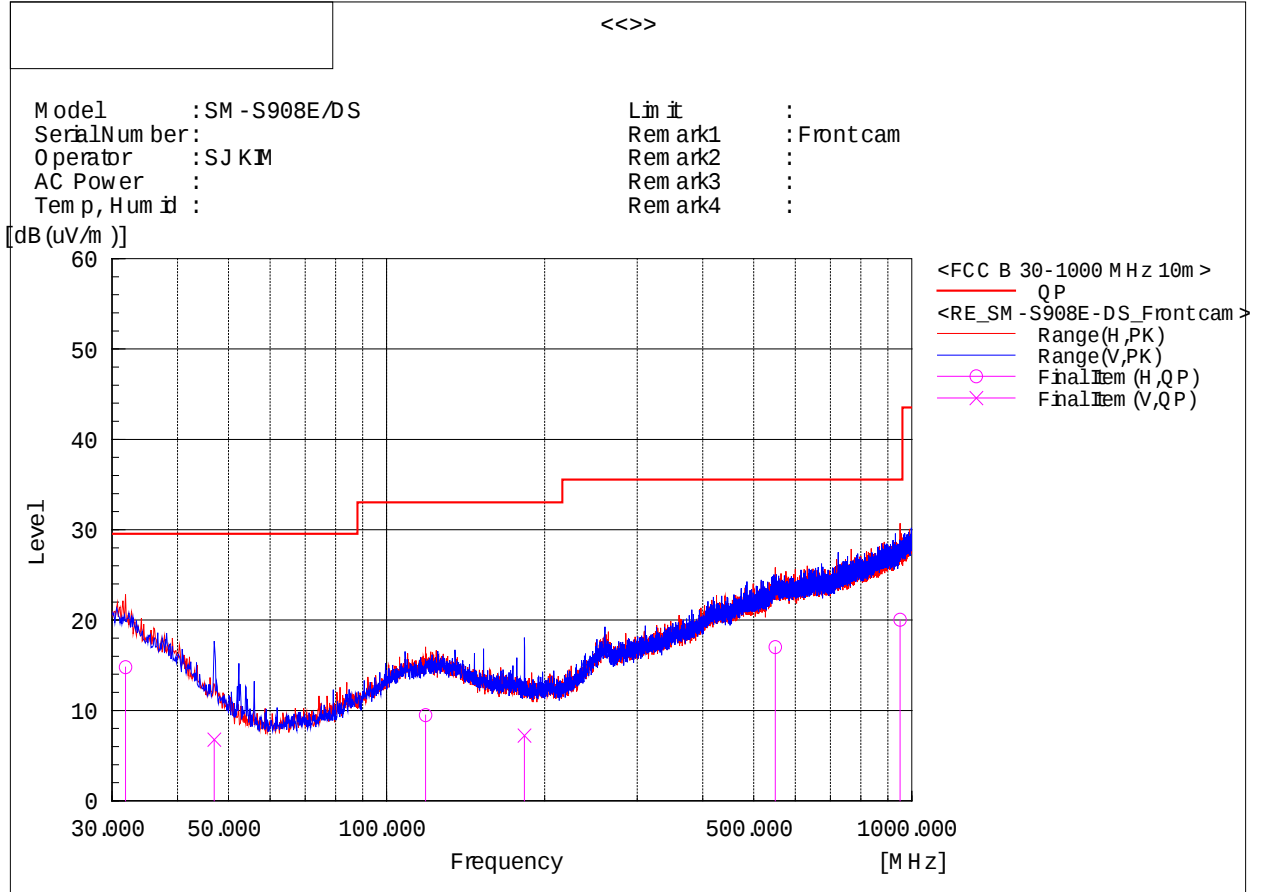
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- 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(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	31.819	H	22.6	-7.8	14.8	29.5	14.7	372	0	1
2	46.975	V	22.6	-15.8	6.8	29.5	22.7	121	0	2
3	118.634	H	22.1	-12.6	9.5	33.0	23.5	373	216	1
4	183.018	V	22.1	-14.9	7.2	33.0	25.8	270	0	2
5	549.799	H	21.0	-4.0	17.0	35.5	18.5	379	0	1
6	949.924	H	19.8	0.2	20.0	35.5	15.5	202	60	1

Note1) Receiving antenna polarization : Horizontal, Vertical

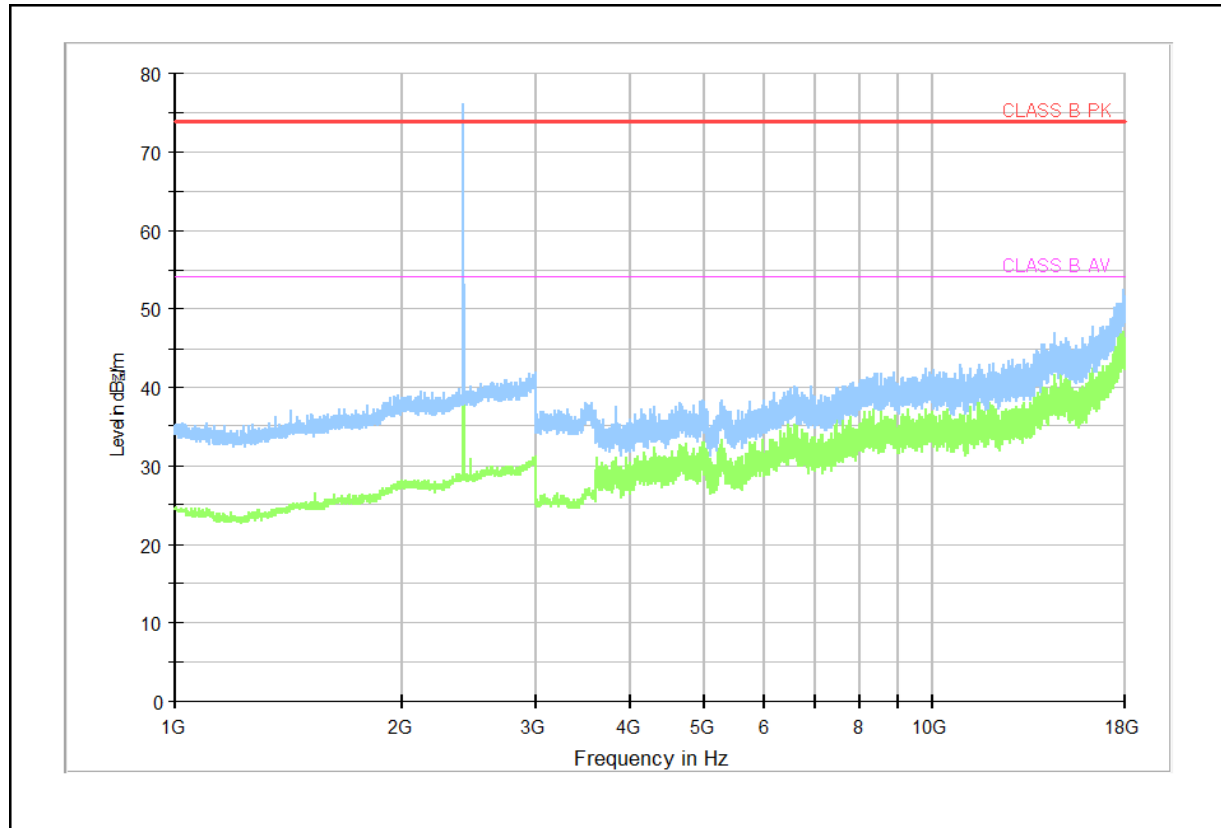
Test Distance : 10 m, Antenna Height : 1 to 4 meters

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

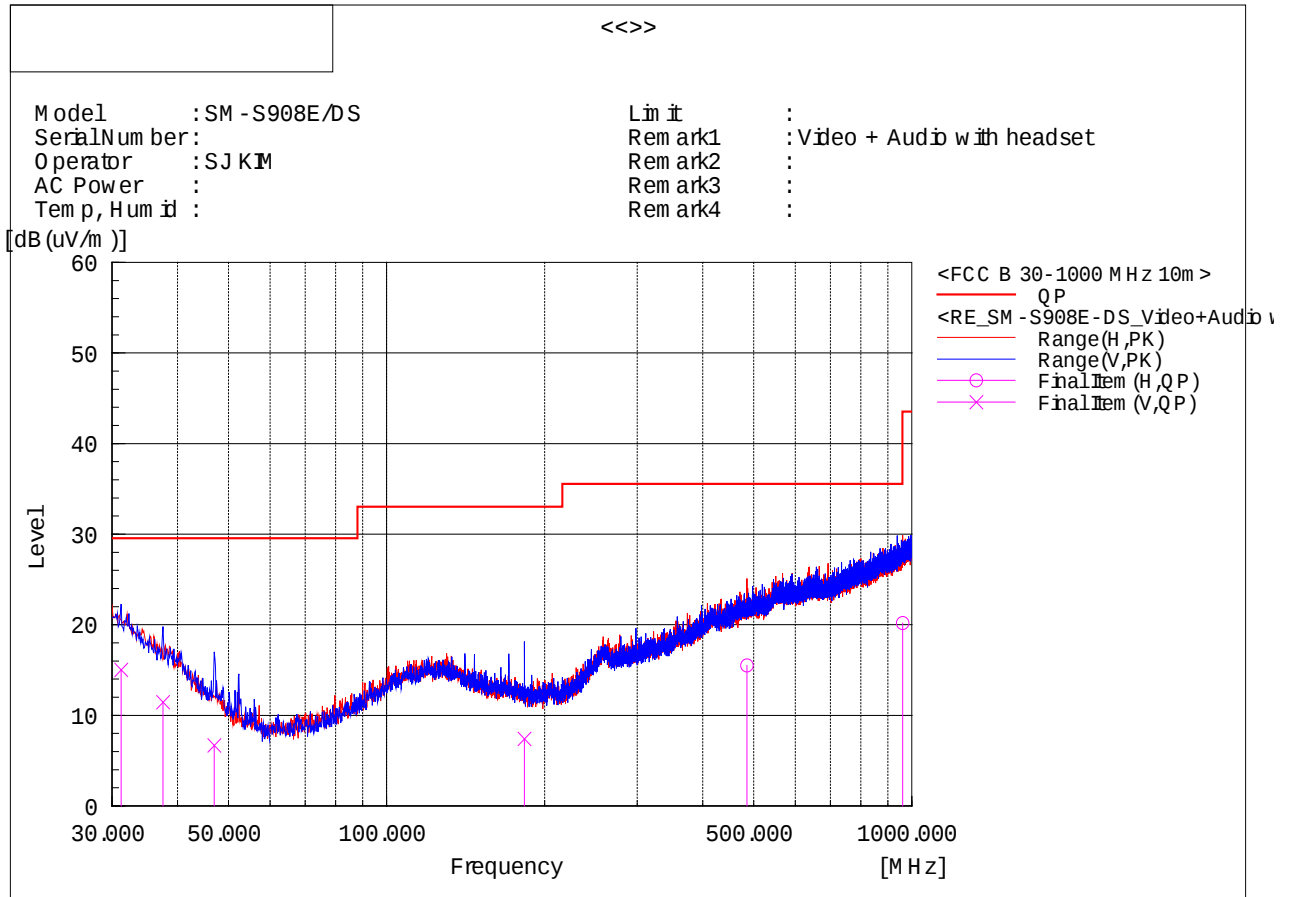
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- 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	31.213	V	22.5	-7.5	15.0	29.5	14.5	301	360	2
2	37.518	V	22.1	-10.6	11.5	29.5	18.0	206	360	2
3	46.975	V	22.5	-15.8	6.7	29.5	22.8	169	250	2
4	183.018	V	22.3	-14.9	7.4	33.0	25.6	170	258	2
5	485.536	H	21.2	-5.7	15.5	35.5	20.0	389	360	1
6	960.715	H	19.8	0.4	20.2	43.5	23.3	376	360	1

Note1) Receiving antenna polarization : Horizontal, Vertical

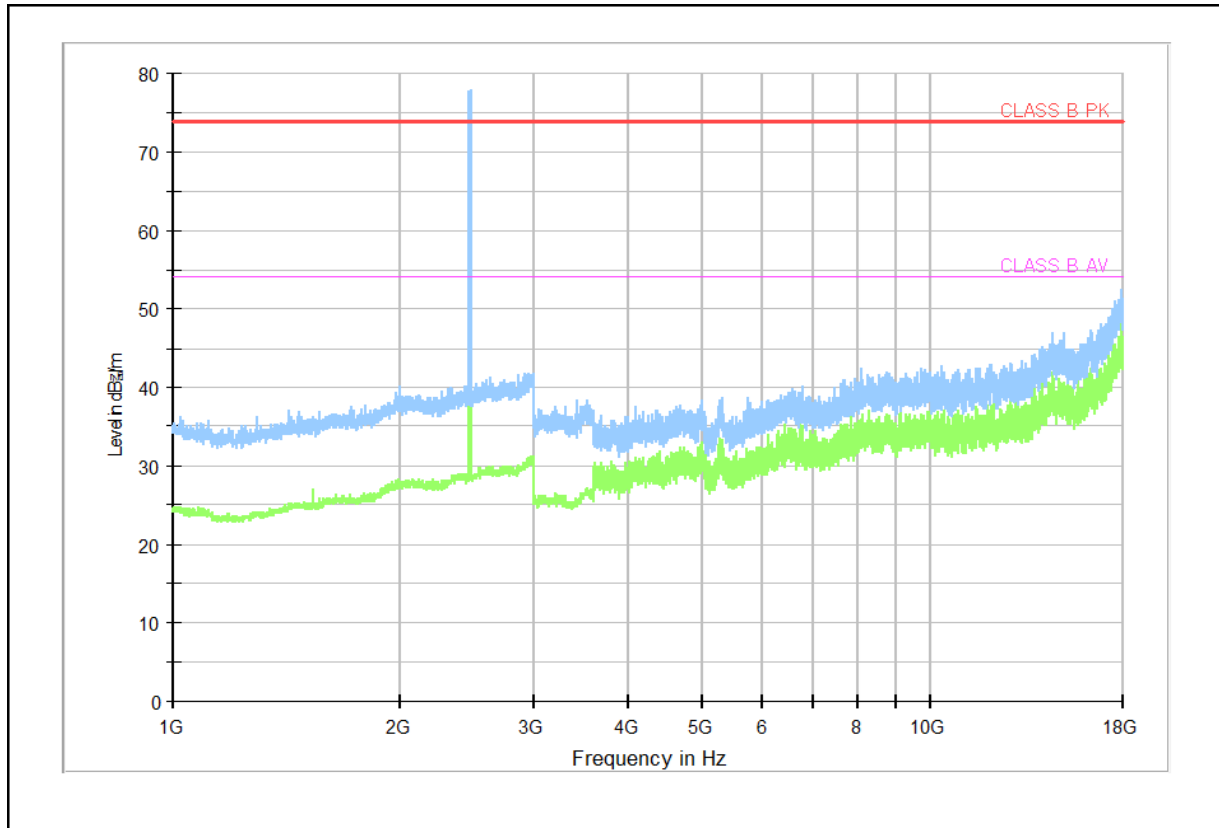
Test Distance : 10 m, Antenna Height : 1 to 4 meters

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

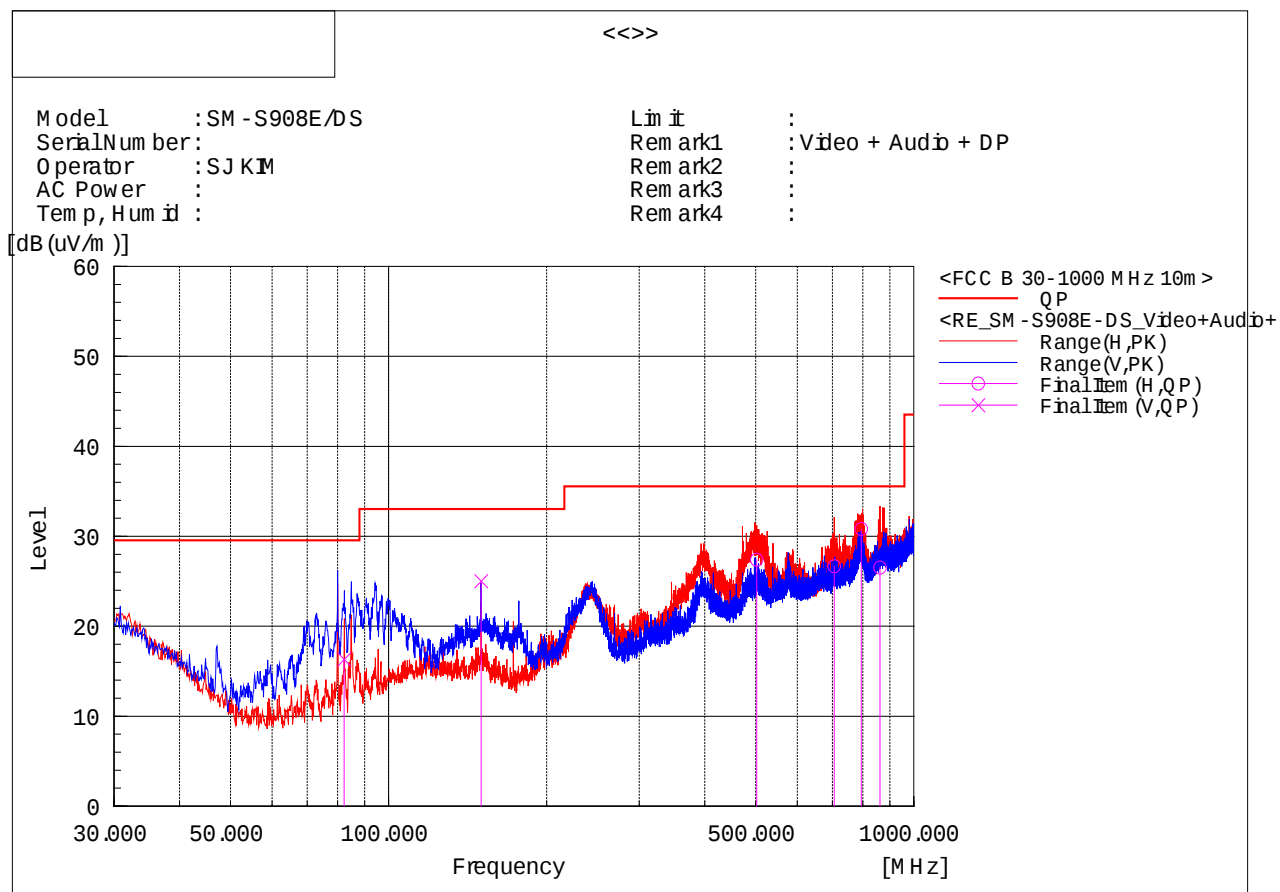
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

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

: Operating frequencies (2 400 ~ 2 483.5) MHz

□ Operating Mode 4

- Frequencies below 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	82.304	V	33.4	-17.1	16.3	29.5	13.2	290	272	2
2	150.002	V	38.9	-13.9	25.0	33.0	8.0	100	355	2
3	502.084	H	33.1	-5.7	27.4	35.5	8.1	193	346	1
4	705.130	H	30.0	-3.3	26.7	35.5	8.8	157	147	1
5	794.227	H	32.5	-1.7	30.8	35.5	4.7	123	153	1
6	861.935	H	27.6	-1.1	26.5	35.5	9.0	102	141	1

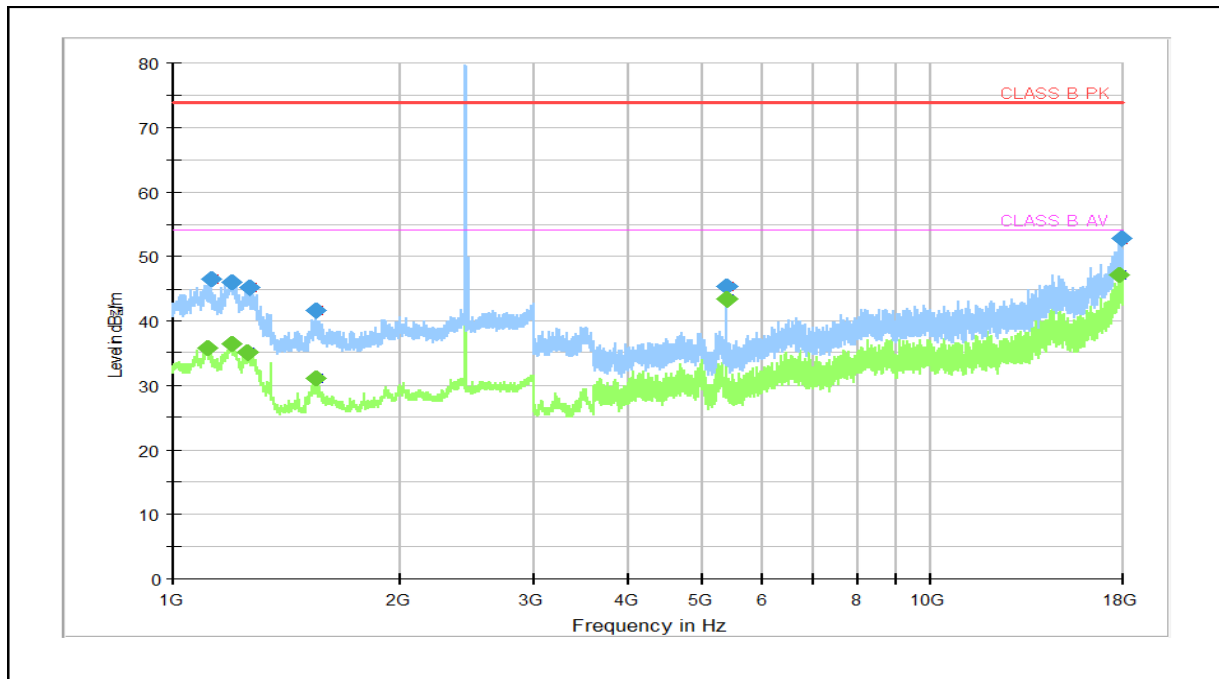
Note1) Receiving antenna polarization : Horizontal, Vertical

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

Frequency (MHz)	PK (dBμV/m)	CAV (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1 106.500	---	35.69	54.00	18.31	101.50	V	233.00	6.30
1 121.000	46.38	---	74.00	27.62	100.00	V	233.00	6.20
1 193.500	---	36.41	54.00	17.59	101.50	V	233.00	6.00
1 194.000	46.11	---	74.00	27.89	101.50	V	233.00	6.00
1 255.000	---	35.18	54.00	18.82	101.50	V	233.00	6.40
1 263.000	45.16	---	74.00	28.84	110.00	H	225.00	6.50
1 543.000	---	31.07	54.00	22.93	101.50	V	233.00	8.80
1 543.000	41.47	---	74.00	32.53	106.20	H	237.00	8.80
5 400.000	45.28	---	74.00	28.72	100.00	H	126.00	6.20
5 400.000	---	43.40	54.00	10.60	101.50	V	233.00	6.20
17 825.500	---	47.07	54.00	6.93	101.50	V	233.00	38.70
17 909.500	52.64	---	74.00	21.36	105.30	V	167.00	38.80

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

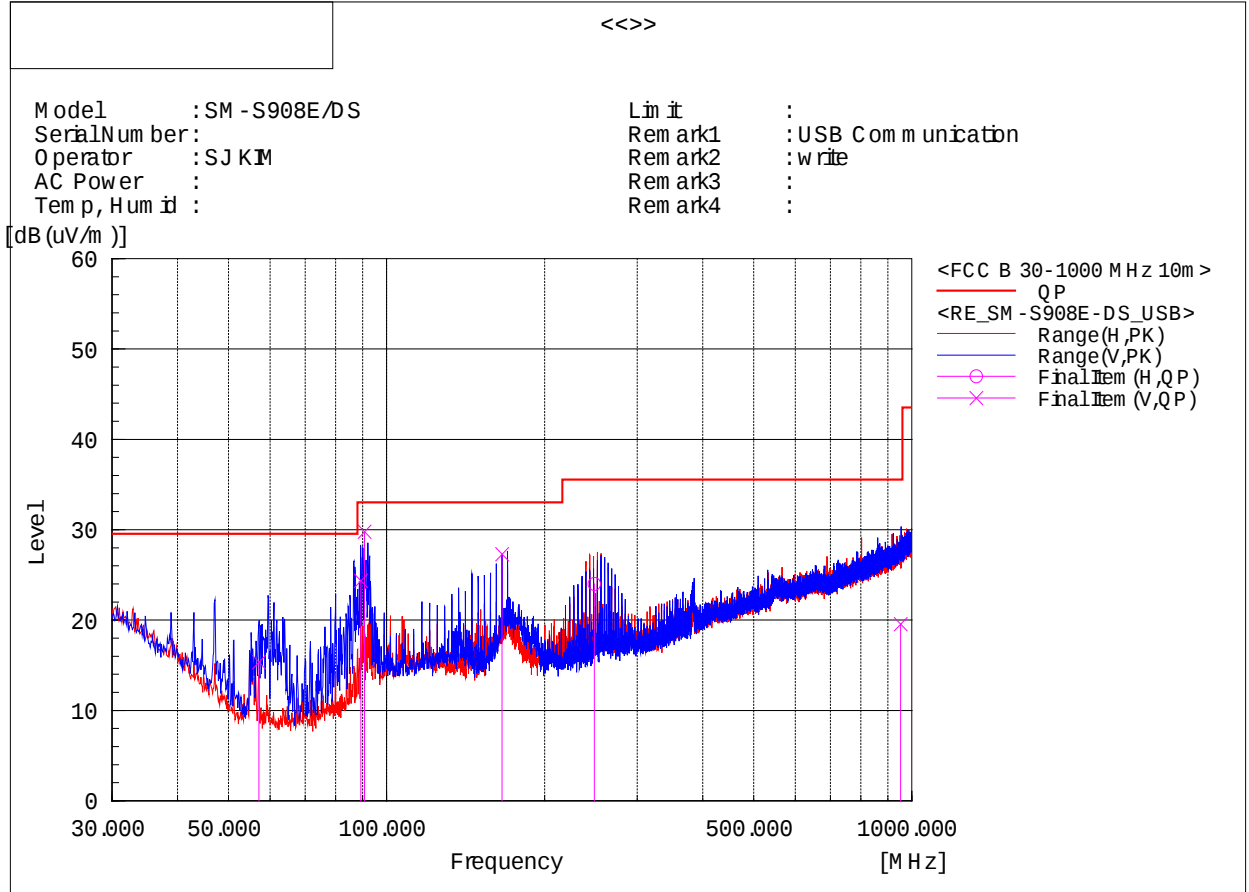
Note 3) Radiated emissions (Tx / Rx frequency) from the transceiver shall be ignored.

- 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(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	57.098	V	34.4	-19.0	15.4	29.5	14.1	270	126	2
2	89.289	V	40.4	-16.0	24.4	33.0	8.6	177	246	2
3	90.749	V	45.5	-15.7	29.8	33.0	3.2	178	267	2
4	165.874	V	41.5	-14.2	27.3	33.0	5.7	100	196	2
5	248.552	H	35.8	-11.8	24.0	35.5	11.5	319	300	1
6	951.997	V	18.9	0.7	19.6	35.5	15.9	272	184	2

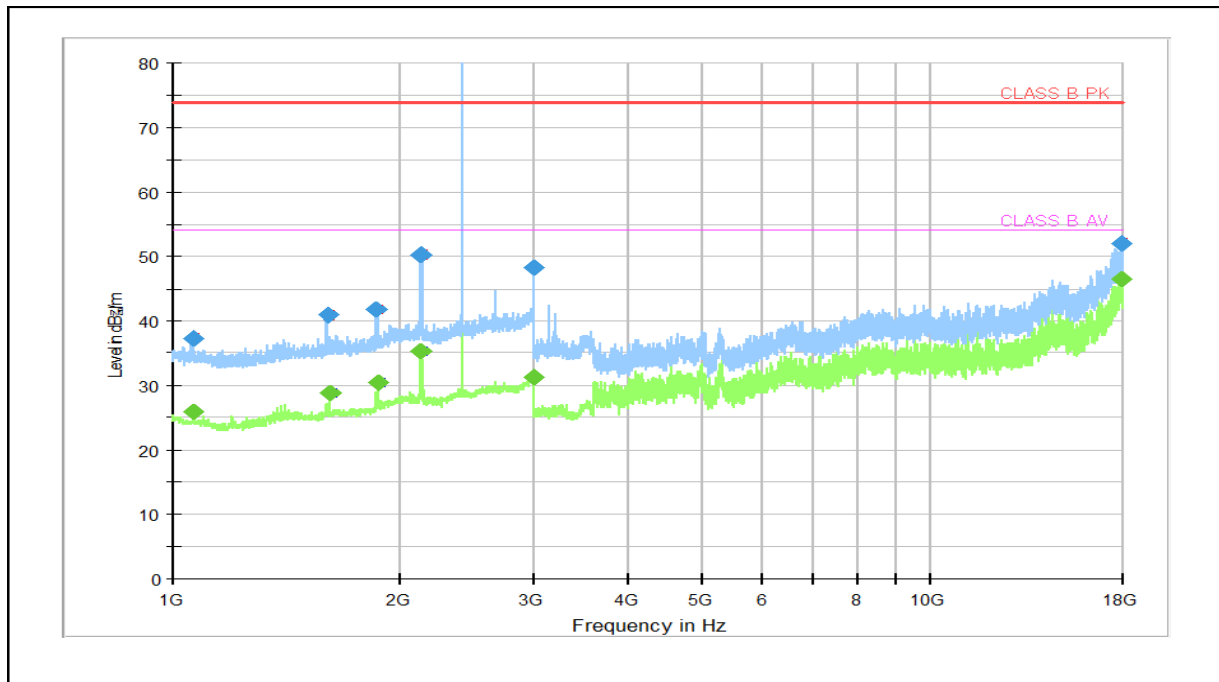
Note1) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 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)
1 062.500	---	25.81	54.00	28.19	100.00	V	184.00	6.10
1 065.000	37.35	---	74.00	36.65	100.00	V	184.00	6.20
1 598.500	40.79	---	74.00	33.21	110.00	V	78.00	9.30
1 613.500	---	28.82	54.00	25.18	100.00	V	184.00	9.40
1 859.500	41.79	---	74.00	32.21	100.00	V	67.00	10.40
1 864.500	---	30.37	54.00	23.63	100.00	V	184.00	10.40
2 123.500	50.35	---	74.00	23.65	110.10	V	144.00	11.90
2 124.500	---	35.40	54.00	18.60	100.00	V	184.00	11.90
2 988.500	---	31.22	54.00	22.78	100.00	V	184.00	15.60
2 989.500	48.30	---	74.00	25.70	100.00	V	0.00	15.70
17 866.500	---	46.51	54.00	7.49	100.00	V	184.00	38.80
17 899.500	52.02	---	74.00	21.98	101.20	H	249.00	38.90

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