EMC TEST REPORT

Project No.	LBE20191218	**Issue No.**	2
Applicant	**Name of organization**	Samsung Electronics Co., Ltd.	
	Address	(Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea	
	Date of application	October 28, 2019	
EUT	**Type of device**	☒ All other Receivers subject to part15 ☒ 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	A3LSMA515FN	
	Kind of product	Mobile Phone	
	Model No.	SM-A515F/DSN	
	Variant Model No.	Refer to clause 4.6	
	Manufacturer	SAMSUNG ELECTRONICS VIETNAM CO.,LTD. Kcn Yen Binh1, huyen pho Yen Tinh Thai Nguyen VIETNAM	
Applied Standards		47 CFR Part 15, Subpart B, Class B / ANSI C63.4-2014	
Test Period		October 28, 2019 ~ October 30, 2019	
Issue date		November 25, 2019	

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 : Eun-Kyung Oh	**Reviewed by** : Sung-Wook Choi

Global CS Center of Samsung Electronics Co., Ltd.
(Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea

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1. Report Information

1.1 Revision history

No.	Date of Issue	Revised detailed information
Issue 0	31 October 2019	There are no revisions and this version is basic test report.
Issue 1	20 November 2019	Added variant model as per customer's request.
Issue 2	25 November 2019	Removed variant model as per customer's request. (SM-A515X)

1.2 RSE test report no.

No.	Remark
KR19-SRF0167 KR19-SRF0168	The cellular receiver mode refers to the radiated spurious emissions 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 Disturbance (Mains port)	47 CFR Part 15 Subpart B / ANSI C63.4-2014 (Class B)	Complied
☒	Radiated Disturbance		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, Republic of 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 17025:2005 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:

Mark	Description	Model No.	Serial No.	Manufacturer / Trademark	FCC ID
A	Mobile Phone	SM-A515F/DSN	-	SAMSUNG	A3LSMA515FN
B	Battery	EB-BA515ABY	-	SAMSUNG	-
C	Headset	EHS61ASFBE	-	SAMSUNG	-
D	Data Cable	EP-DR140ABE	-	SAMSUNG	-
E	Micro SD Card	64GB	-	SAMSUNG	DoC
F	Laptop Computer	Latitude5580	1CHRYM2	Dell	DoC
			D3HRYM2	Dell	DoC
G	Laptop AC Adapter	LA65NM130	5D77	Dell	DoC
			5B3C	Dell	DoC
H	Mouse	AA-SM7PCPB	CN57BA5903634ADV 8JJCD4371	SAMSUNG	DoC
		SNJ-B138	Z5F8353	SAMSUNG	DoC
I	OTG Gender	EE-UG970	-	SAMSUNG	DoC
J	Router	DIR-806A	RF0F1D5000688	D-Link	DoC
			RF0F1D8011504	D-Link	DoC
K	Travel Adapter	EP-TA200	R37M17A01P1RC3	SAMSUNG	-

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 (LTE26 Center Frequency) + FM (Low Ch.)
2	Camera (front) + Charging (w/ TA) + FM (Mid Ch.)
3	Charging (w/ TA) + FM (High Ch.)
4	Video + Audio playback from internal memory data + Charging (w/ TA)
5	USB Data Communication with PC (from external memory data)

4.2.2 Radiated Emission

No.	Operating mode
1	Camera (rear) + Charging (w/ TA) + FM (Low Ch.)
2	Camera (front) + FM (Mid Ch.)
3	FM (High Ch.)
4	Video + Audio playback from internal memory data
5	USB Data Communication with PC (from external memory data)

4.3 Details of Sampling

Customer selected, single unit.

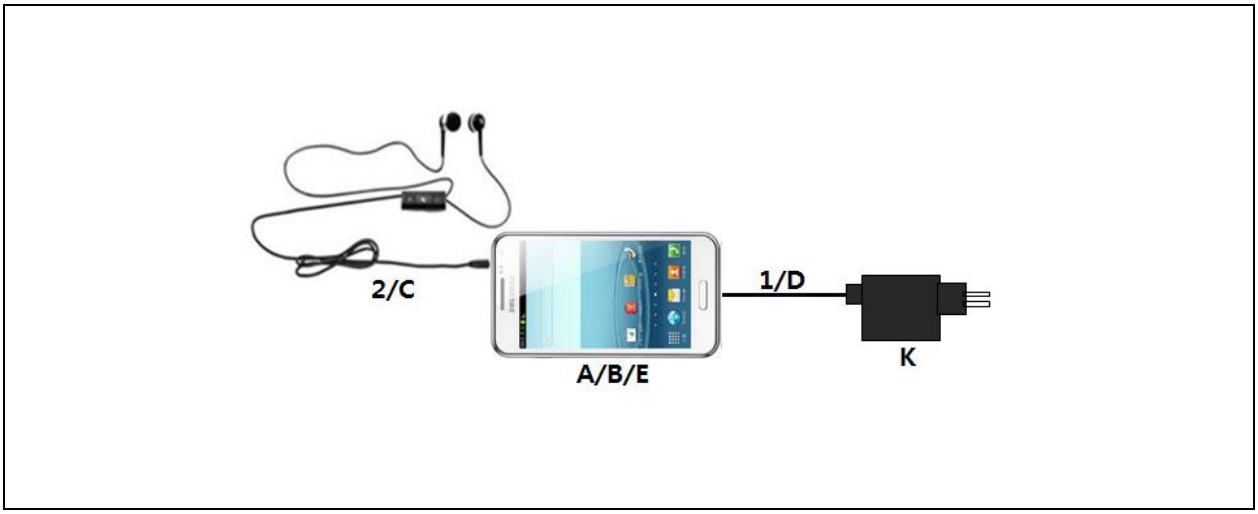
4.4 Used cable description

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:

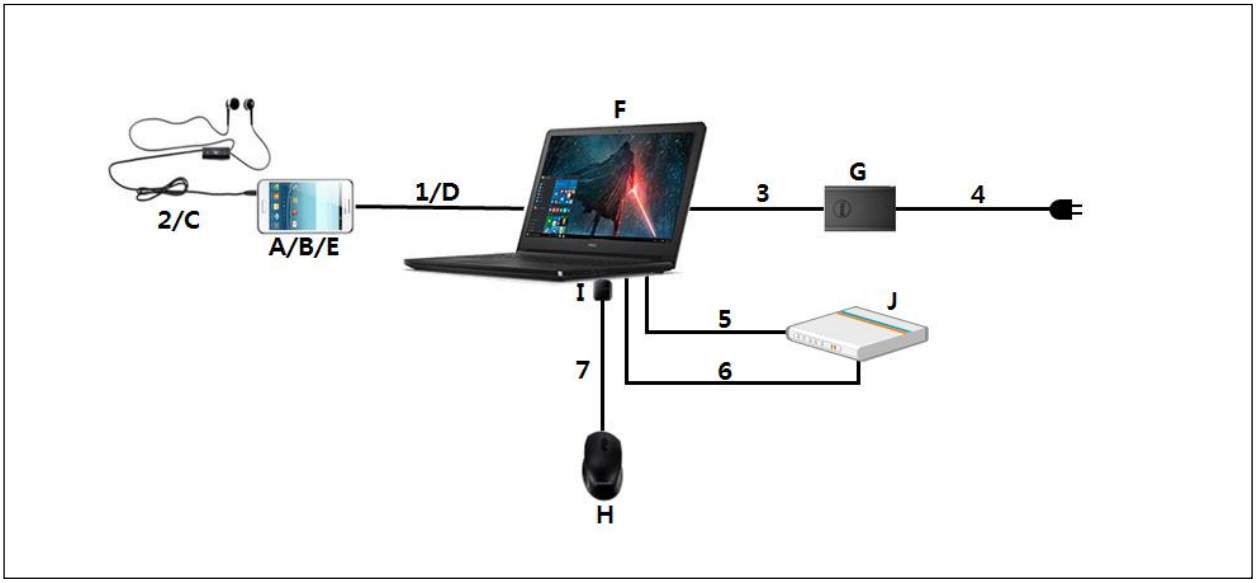
No.	Connected cable	Length [m]	Shielded [Y/N]	Note
1	Data Cable	0.8	Y	From EUT to Laptop Computer
2	Headset	1.6	N	For EUT
3	Power	1.8	N	For Laptop Computer to Laptop AC Adapter
4	Power	1.5	N	For Laptop AC Adapter
5	LAN	1.5	N	From Laptop Computer to Router
6	USB	0.8	N	From Laptop Computer to Router for DC Power
7	USB	1.8	N	From OTG Gender to Mouse

4.5 Test arrangement

4.5.1 Conducted Emission

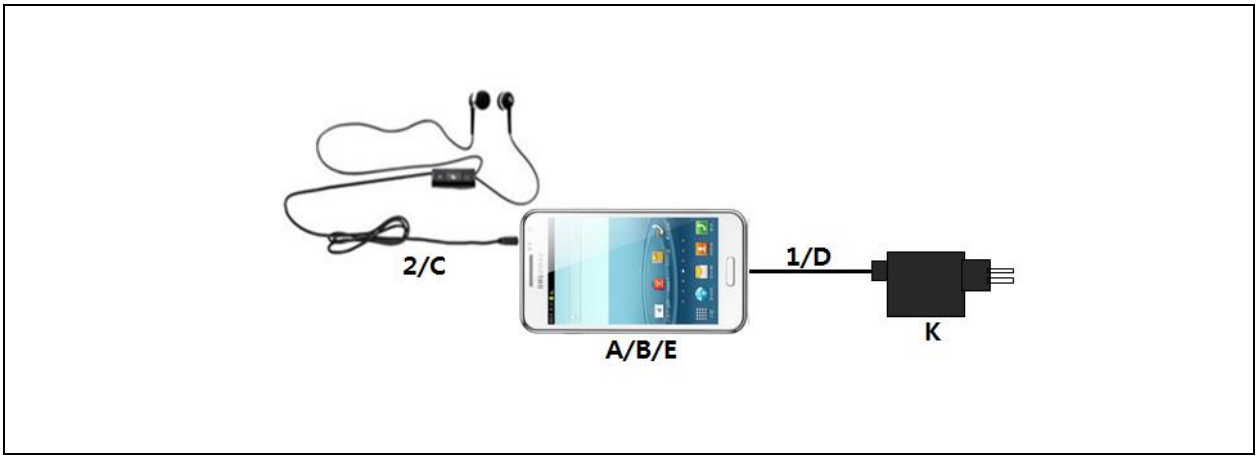


[Mode 1 - 4]

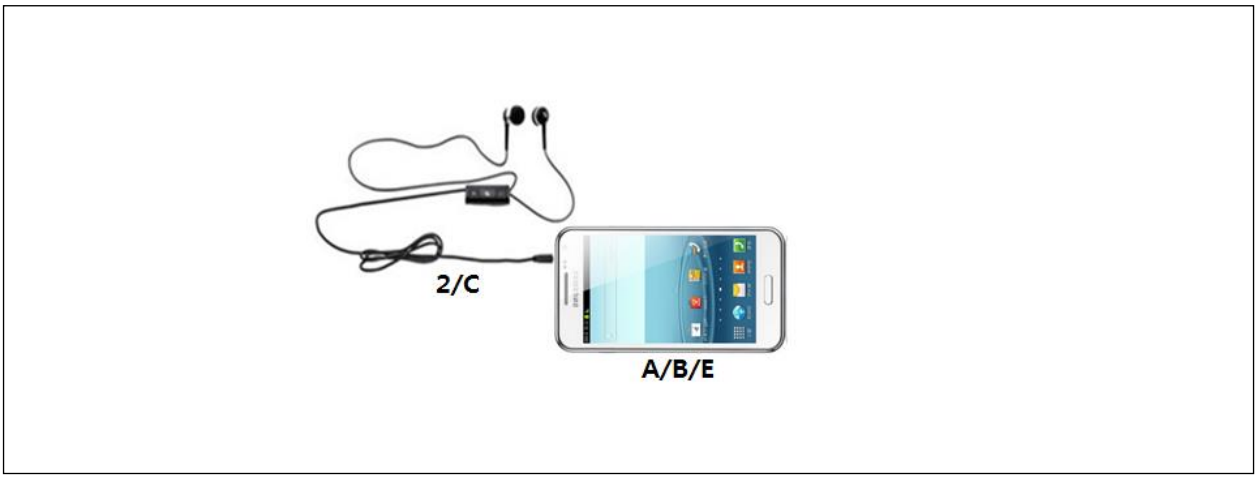


[Mode 5]

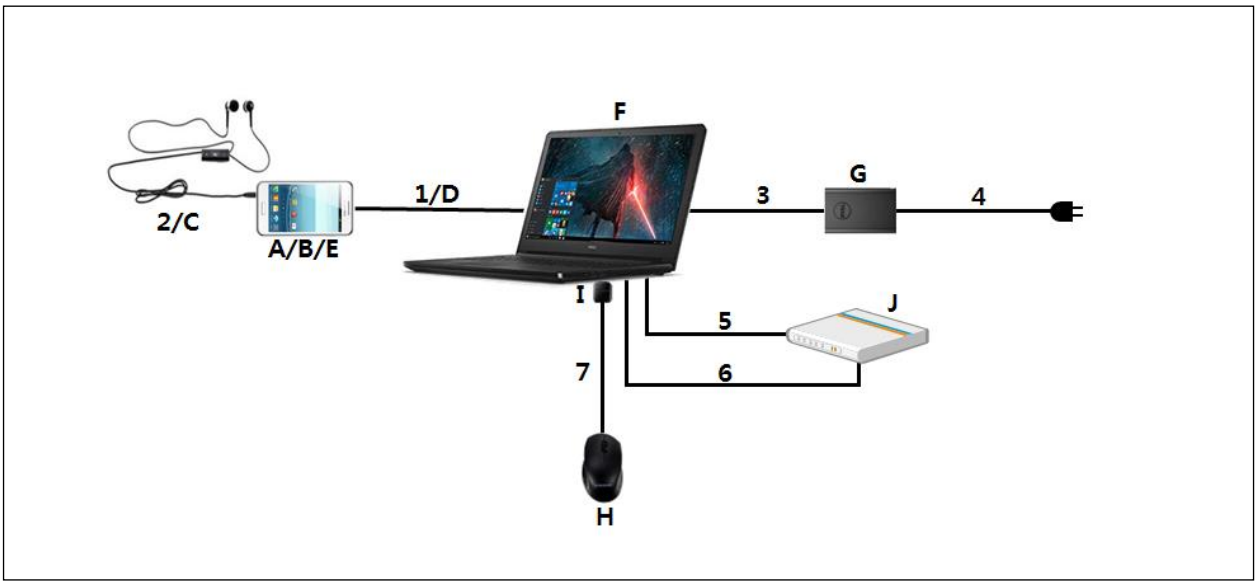
4.5.2 Radiated Emission



[Mode 1]



[Mode 2 - 4]



[Mode 5]

4.6 EUT Description

The EUT is a bar type Mobile Phone which can operate on GSM850/900/1800/1900, WCDMA FDD1/2/4/5/8, LTE FDD1/2/3/4/5/7/8/12/13/17/20/26/28/66, LTE TDD38/40/41 and Incorporates a camera, Bluetooth, ANT+, Wi-Fi, FM Radio, GNSS, NFC, MST, Audio and Video.

4.6.1 The variant models

- SM-A515F/N

4.7 EUT Frequencies

The highest frequencies (Generated and used)	Frequency [MHz]
Wi-Fi	5 825

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, by writing and reading arbitrary data or charging with TA.

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

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

The FM radio mode radiated testing was performed with the Low/Mid/High channel.

The video and music were repetitively played connected to the earphone.

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)

4.9.1 Emission

Test type		Measurement uncertainty (C.L. 95 %, k = 2)
Conducted disturbance	AC Mains	2.83 dB
Radiated Disturbance (Below 1 GHz)	Horizontal	4.99 dB
	Vertical	4.90 dB
Radiated Disturbance (Above 1 GHz)	Horizontal	5.13 dB
	Vertical	5.12 dB

5. Results of individual test

5.1 Conducted disturbance

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 disturbance at the mains ports of Class B ITE

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

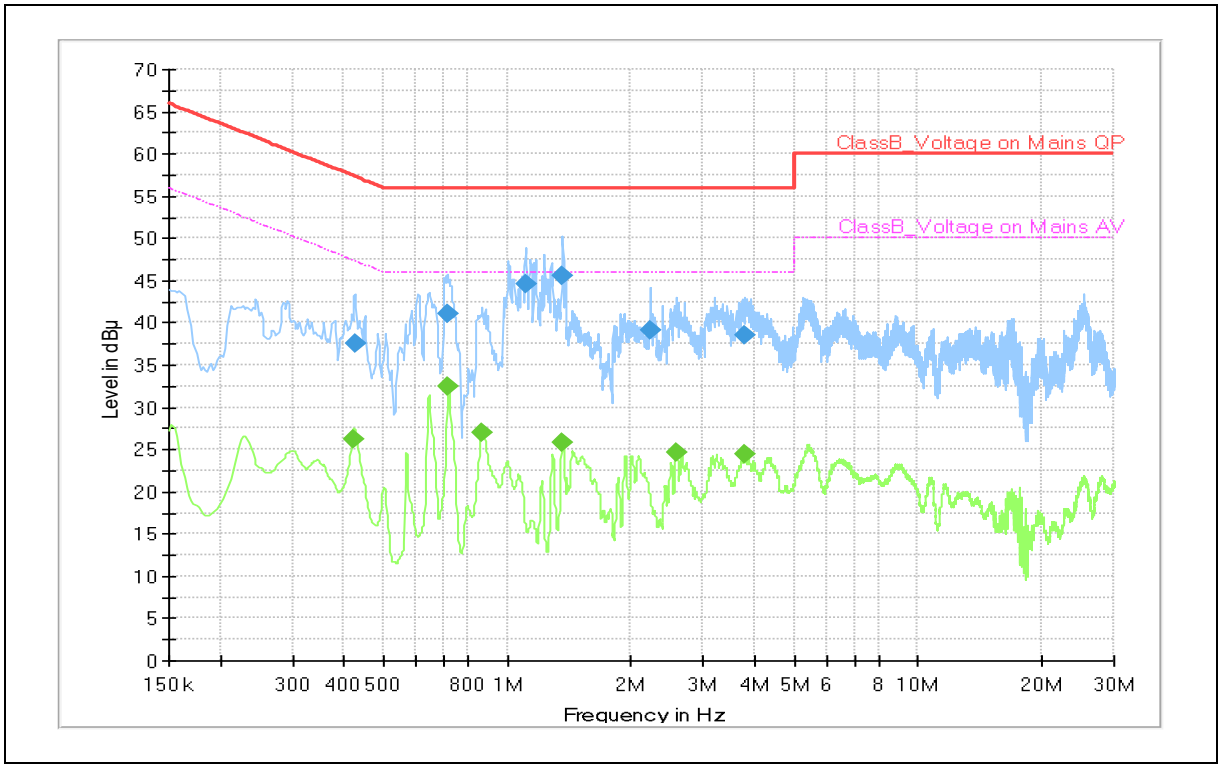
EMC No.	Test Instrument	Model name	Manufacturer	Serial No.	Calibration	
					Date	Interval (Month)
E5I-002	Universal Radio Communicator	CMU200	R&S	100612	2019-08-14	12
E5I-171	LTE Communicator	CMW500	R&S	154667	2019-08-06	12
E5I-017	EMI Test Receiver	ESU8	R&S	100483	2019-01-16	12
E5I-127	Two-Line V-Network	ENV216	R&S	102061	2019-08-01	12
-	Test software	EMC32	R&S	Ver 9.26.01	-	-

5.1.2 Temperature and humidity condition

Test date	2019-10-30	Test engineer	Eun-Kyung Oh
Climate condition	Ambient temperature	(26.6 ~ 26.9) ℃	Limit (15.0 to 35.0) ℃
	Relative humidity	(39.3 ~ 39.6) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(101.4 ~ 101.7) kPa	Limit (86.0 to 106.0) kPa
Test place	Shield Room (SR8)		

5.1.3 Test results

☐ Operating Mode 1: AC Mains



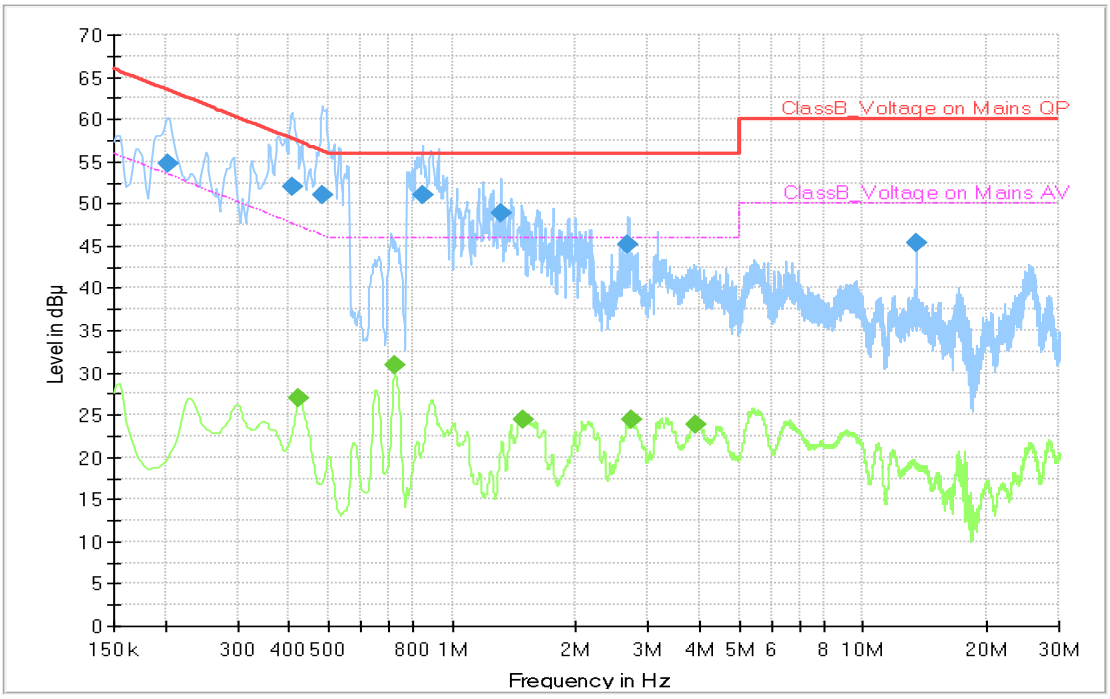
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.425	---	26.3	47.4	21.1	N	10.2
0.427	37.5	---	57.3	19.8	L1	10.1
0.713	41.1	---	56.0	14.9	N	10.1
0.719	---	32.4	46.0	13.6	N	10.1
0.868	---	27.1	46.0	18.9	N	10.0
1.109	44.7	---	56.0	11.3	L1	9.9
1.365	---	25.8	46.0	20.2	N	10.0
1.365	45.5	---	56.0	10.5	N	10.0
2.229	39.1	---	56.0	16.9	L1	9.9
2.578	---	24.7	46.0	21.3	N	9.9
3.802	---	24.4	46.0	21.6	L1	9.9
3.804	38.6	---	56.0	17.4	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

☐ Operating Mode 2: AC Mains



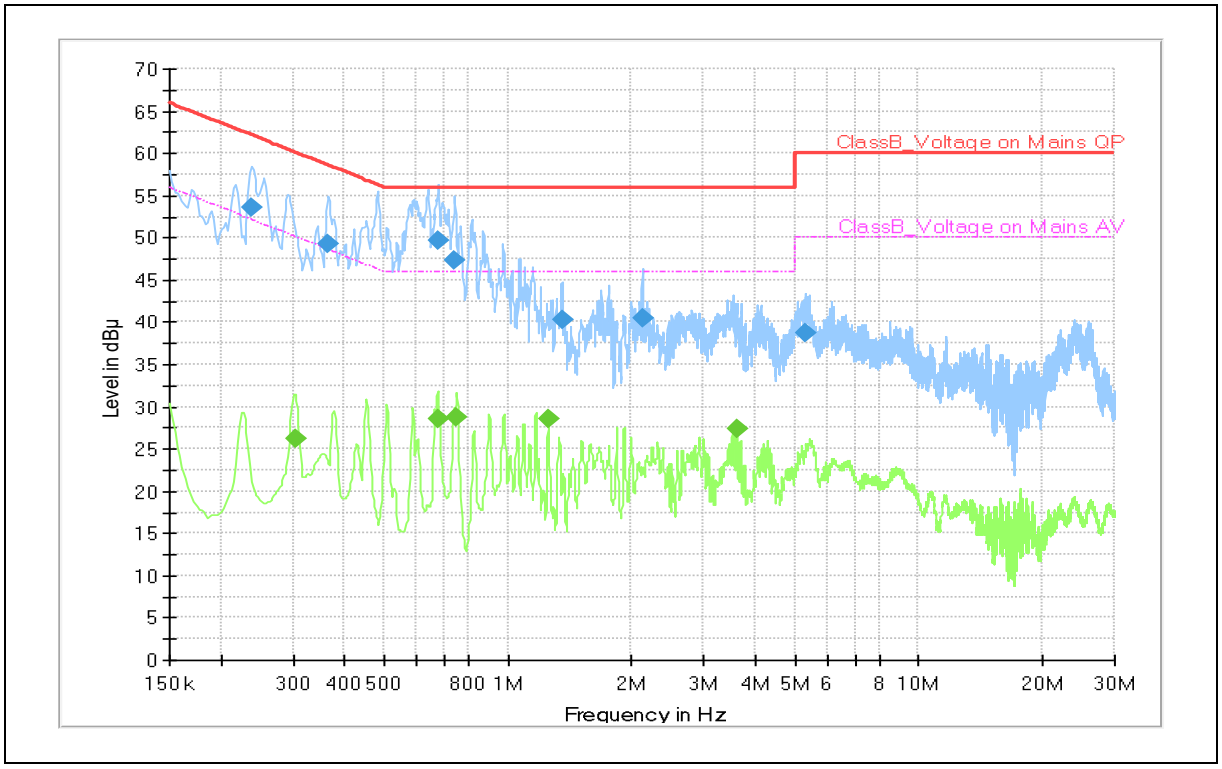
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.204	54.8	---	63.4	8.6	N	10.0
0.407	52.0	---	57.7	5.7	L1	10.1
0.425	---	26.9	47.4	20.5	N	10.2
0.483	51.0	---	56.3	5.3	L1	10.1
0.726	---	30.8	46.0	15.2	N	10.1
0.848	51.1	---	56.0	4.9	N	10.0
1.316	48.9	---	56.0	7.1	N	10.0
1.484	---	24.5	46.0	21.5	N	10.0
2.686	45.1	---	56.0	10.9	N	9.9
2.733	---	24.4	46.0	21.6	N	9.9
3.914	---	23.9	46.0	22.1	L1	9.9
13.560	45.4	---	60.0	14.6	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

☐ Operating Mode 3: AC Mains



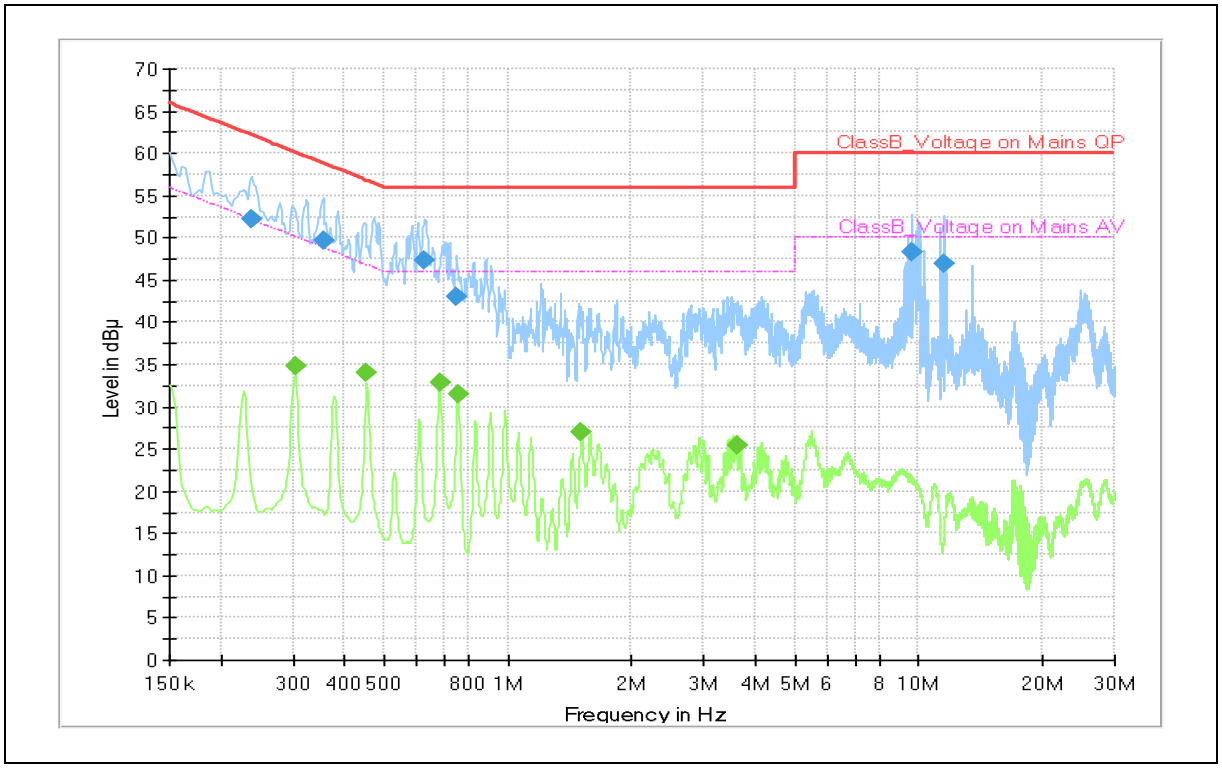
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.238	53.5	---	62.2	8.7	N	9.9
0.303	---	26.2	50.2	24.0	N	10.0
0.366	49.3	---	58.6	9.3	N	10.2
0.677	---	28.5	46.0	17.5	N	10.2
0.679	49.7	---	56.0	6.3	N	10.2
0.742	47.3	---	56.0	8.7	N	10.1
0.751	---	28.7	46.0	17.3	N	10.1
1.253	---	28.6	46.0	17.4	L1	9.9
1.354	40.3	---	56.0	15.7	N	10.0
2.126	40.5	---	56.0	15.5	N	9.9
3.604	---	27.4	46.0	18.6	L1	9.9
5.296	38.8	---	60.0	21.2	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

☐ Operating Mode 4: AC Mains



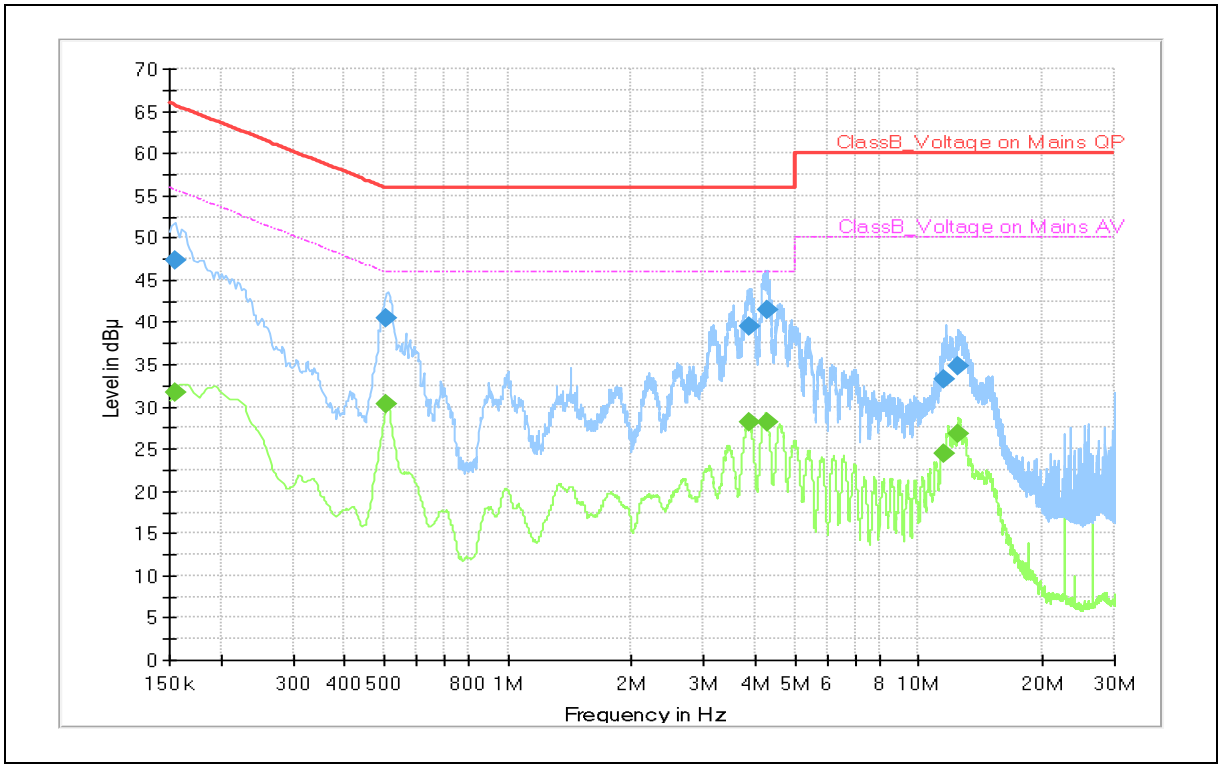
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

QP / CAV final measurement results table:

Frequency (MHz)	QP (dBµV)	CAV (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.238	52.3	---	62.2	9.9	N	9.9
0.303	---	34.9	50.2	15.3	N	10.0
0.355	49.6	---	58.9	9.3	N	10.1
0.454	---	34.0	46.8	12.8	N	10.2
0.629	47.4	---	56.0	8.6	N	10.2
0.683	---	32.8	46.0	13.2	N	10.2
0.751	43.1	---	56.0	12.9	N	10.1
0.758	---	31.4	46.0	14.6	N	10.1
1.511	---	27.0	46.0	19.0	N	10.0
3.606	---	25.5	46.0	20.5	N	10.0
9.679	48.2	---	60.0	11.8	L1	10.0
11.553	46.9	---	60.0	13.1	L1	10.1

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 5: 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	47.3	---	65.8	18.5	N	9.9
0.155	---	31.7	55.8	24.1	N	9.9
0.508	40.4	---	56.0	15.6	L1	10.1
0.508	---	30.4	46.0	15.6	L1	10.1
3.865	---	28.1	46.0	17.9	N	9.8
3.865	39.6	---	56.0	16.4	N	9.8
4.279	---	28.2	46.0	17.8	N	9.8
4.279	41.5	---	56.0	14.5	N	9.8
11.481	33.3	---	60.0	26.7	L1	9.9
11.481	---	24.5	50.0	25.5	L1	9.9
12.415	34.7	---	60.0	25.3	L1	9.9
12.415	---	26.7	50.0	23.3	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 disturbance

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 Polarisation	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 operate 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 Polarisation	Resolution Bandwidth [MHz]	Video Bandwidth [MHz]	Turntable position
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 disturbance of Class B ITE at a measuring distance of 3 m and 10 m

Frequency range Limits [MHz]	Field Strength		
	3 m [μV/m]	3 m [dB(μV/m)]	10 m [dB(μV/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 fomula from D_1(3m) to D_2(10m)
: Limit at D_2 = Limit at D_1 + 20Log(D_1 /D_2)

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.	Calibration	
					Date	Interval (Month)
E5I-002	Universal Radio Communicator	CMU200	R&S	100612	2019-08-14	12
E5I-016	EMI Test Receiver	ESU8	R&S	100482	2019-05-29	12
E5I-021	EMI Test Receiver	ESU40	R&S	100376	2019-01-30	12
E5I-149	Horn Antenna	HF907	R&S	102525	2018-06-15	24
E5I-039	Signal Conditioning Unit	SCU-18	R&S	10211	2019-01-23	12
E5I-037	WideBand Horn Antenna	WBH 18-40K	R&S	11201	2019-01-31	24
E5I-042	Signal Conditioning Unit	SCU-40A	R&S	10004	2019-09-11	12
E5I-120	BiLog Antenna	CBL6112D	TESEQ	36997	2018-04-23	24
E5I-072	BiLog Antenna	CBL6112D	TESEQ	36009	2018-04-23	24
E5I-073	Preamplifier	310N	SONOMA	332016	2019-05-09	12
E5I-074	Preamplifier	310N	SONOMA	332017	2019-05-09	12
-	Test software	EP7RE	TOYO	Ver 5.8.2	-	-
-	Test software	EMC32	R&S	Ver 9.25.00	-	-

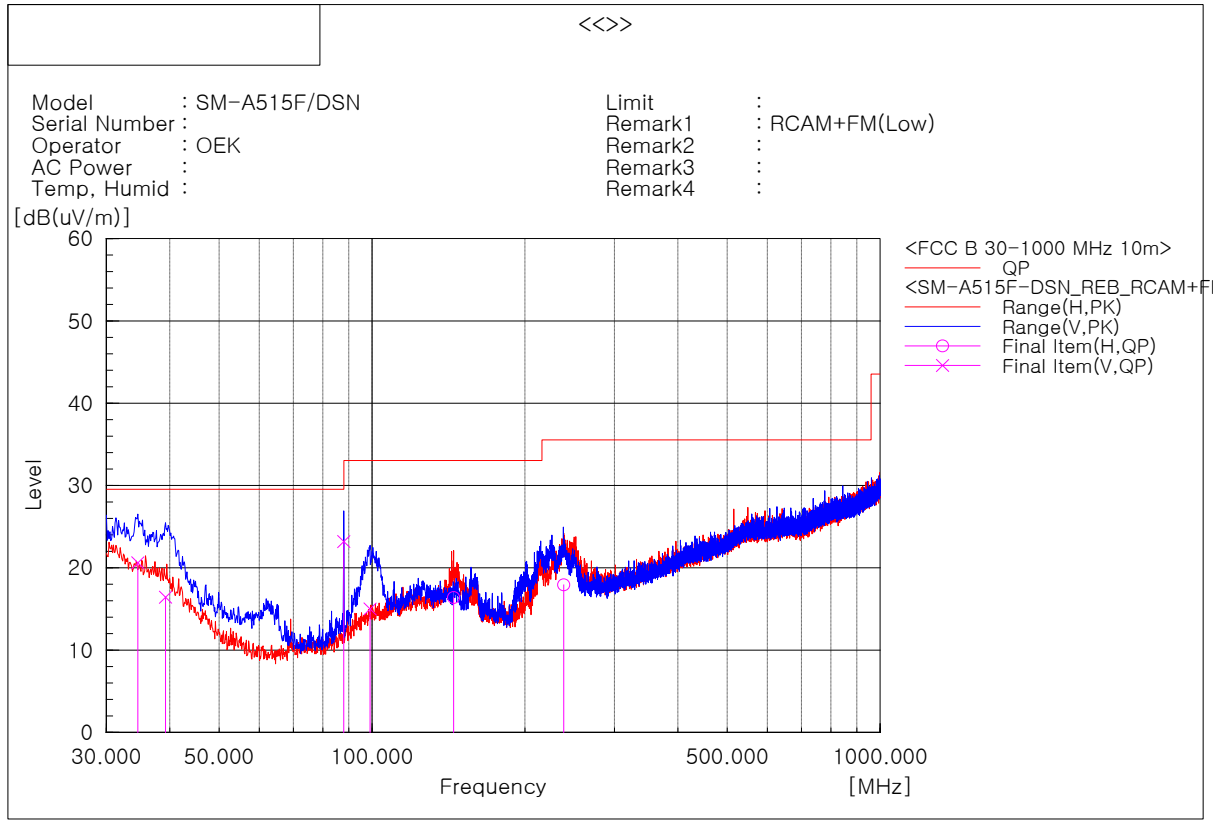
5.2.2 Temperature and humidity condition

Test date	2019-10-28	Test engineer	Eun-Kyung Oh
Climate condition	Ambient temperature	(22.5 ~ 22.8) ℃	Limit (15.0 to 35.0) ℃
	Relative humidity	(47.2 ~ 47.5) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(101.3 ~ 101.6) 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



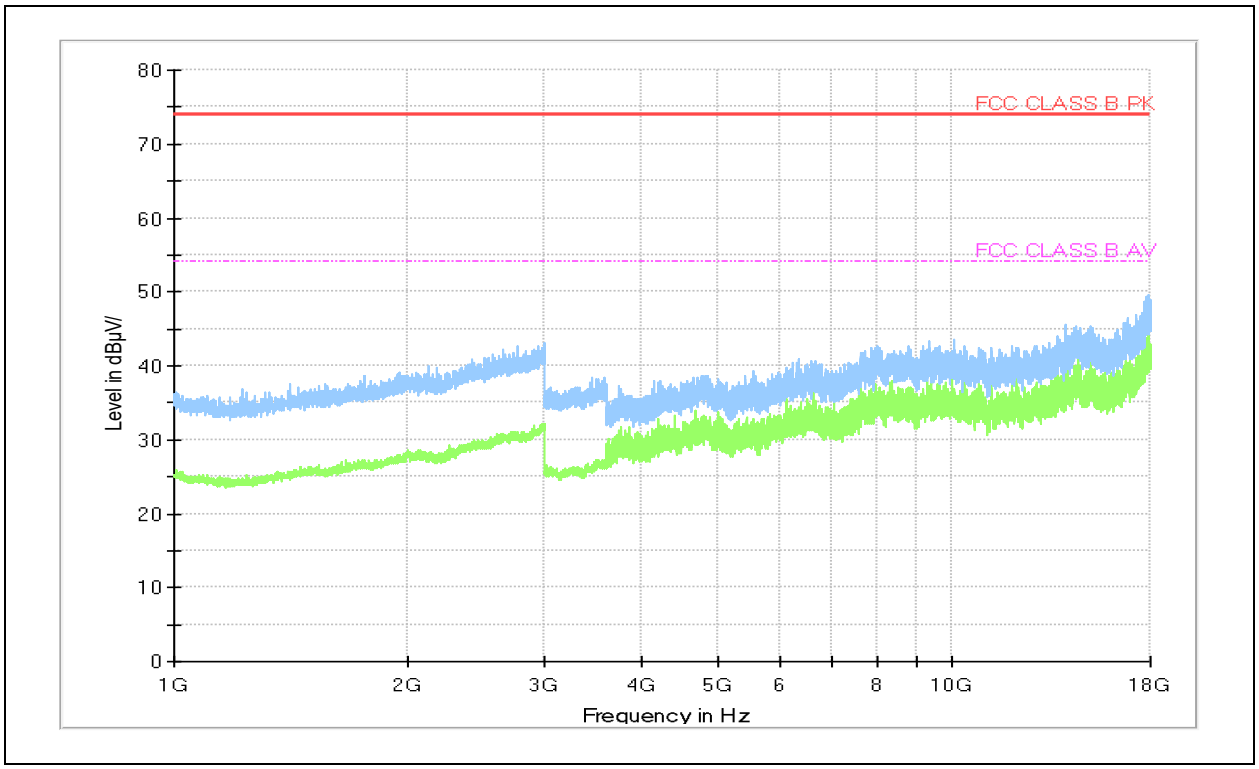
Final Result

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	34.608	V	28.0	-7.4	20.6	29.5	8.9	175	196	2
2	39.215	V	25.9	-9.5	16.4	29.5	13.1	102	357	2
3	87.958	V	38.7	-15.5	23.2	29.5	6.3	140	357	2
4	99.112	V	28.4	-13.4	15.0	33.0	18.0	130	267	2
5	144.703	H	30.2	-13.8	16.4	33.0	16.6	400	249	1
6	238.429	H	30.3	-12.4	17.9	35.5	17.6	267	67	1

* Radiated emissions (Rx frequency 87.958 MHz) from the transceiver shall be ignored

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 30 GHz and found no emissions

Note 2) Receiving antenna polarization : Horizontal, Vertical

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

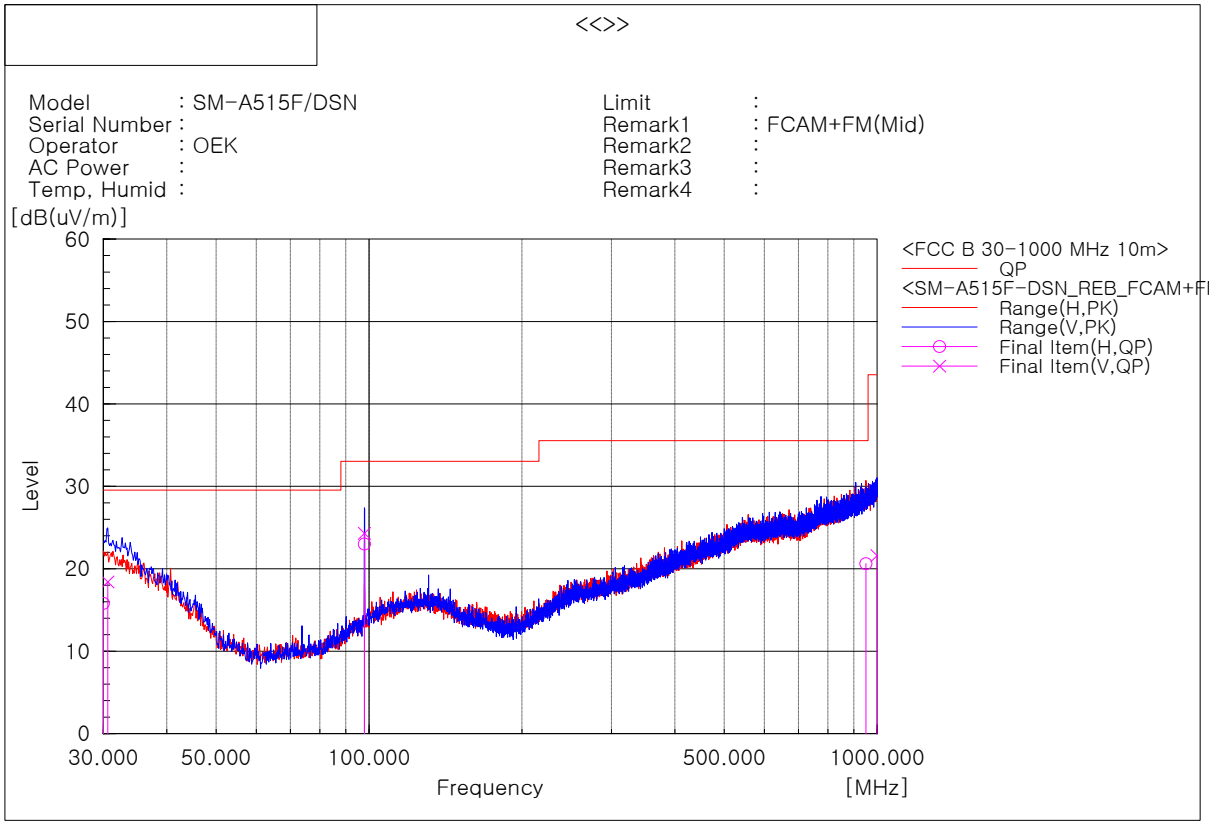
Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

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

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

☐ Operating Mode 2

- Frequencies below 1 GHz



Final Result

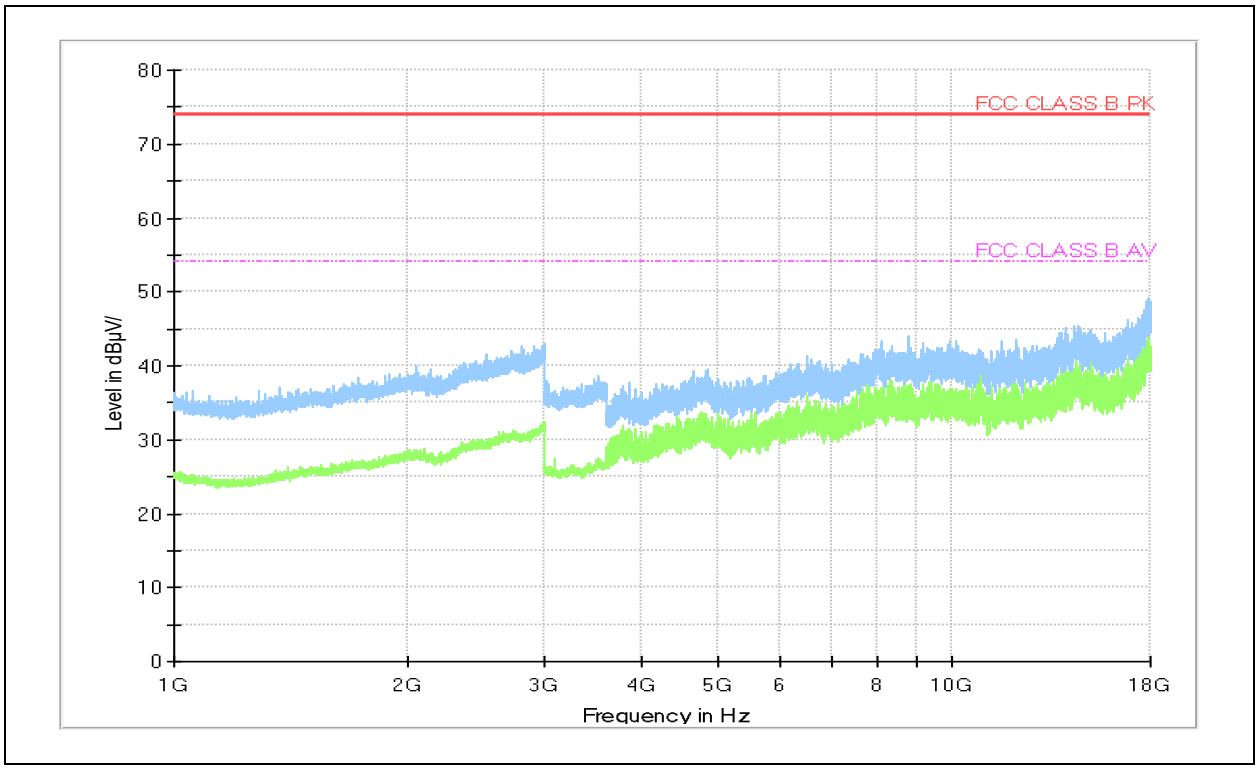
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	30.000	H	23.1	-7.3	15.8	29.5	13.7	300	226	1
2	30.606	V	24.4	-6.0	18.4	29.5	11.1	100	96	2
3	97.900	H	37.9	-14.9	23.0	33.0	10.0	400	51	1
4	97.900	V	37.9	-13.6	24.3	33.0	8.7	100	2	2
5	950.772	H	20.7	-0.1	20.6	35.5	14.9	200	315	1
6	999.636	V	18.8	2.8	21.6	43.5	21.9	200	2	2

* Radiated emissions (Rx frequency 97.900 MHz) from the transceiver shall be ignored

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 30 GHz and found no emissions

Note 2) Receiving antenna polarization : Horizontal, Vertical

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

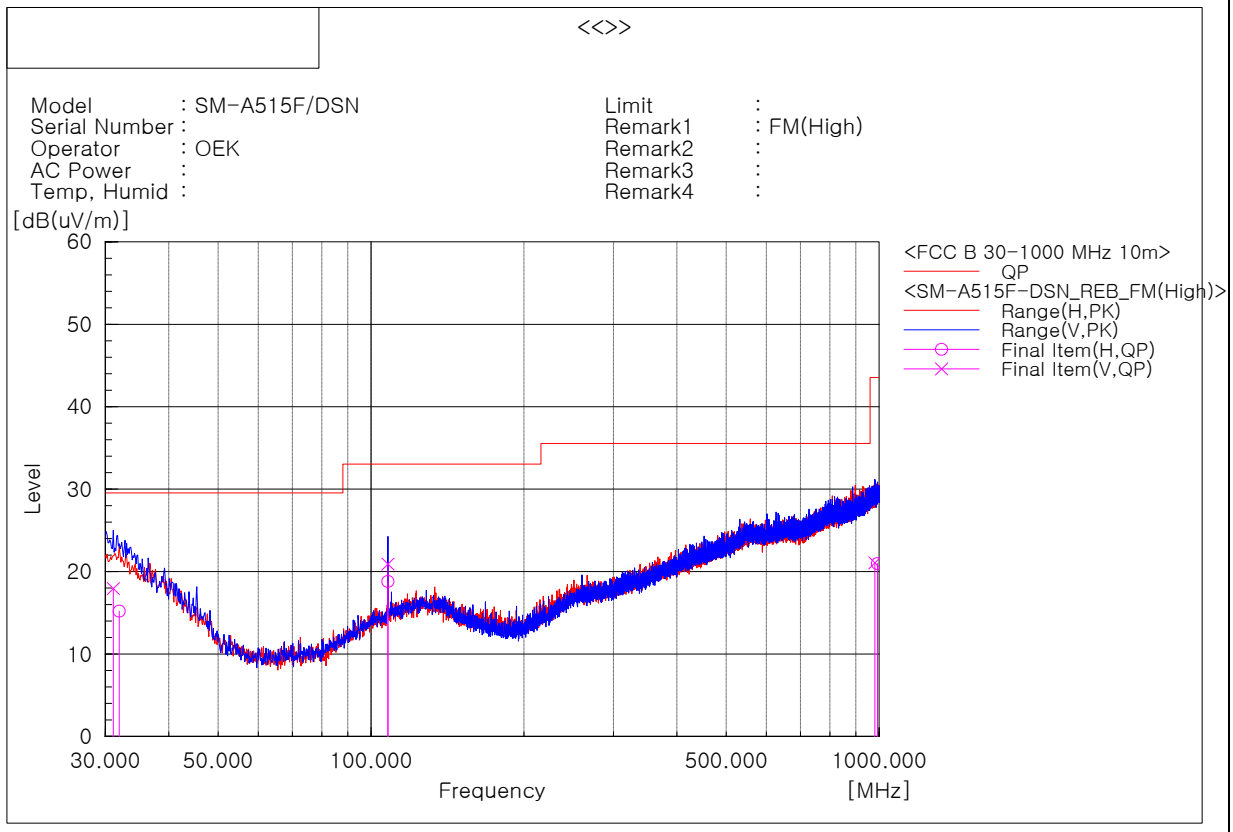
Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

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

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

☐ Operating Mode 3

- Frequencies below 1 GHz



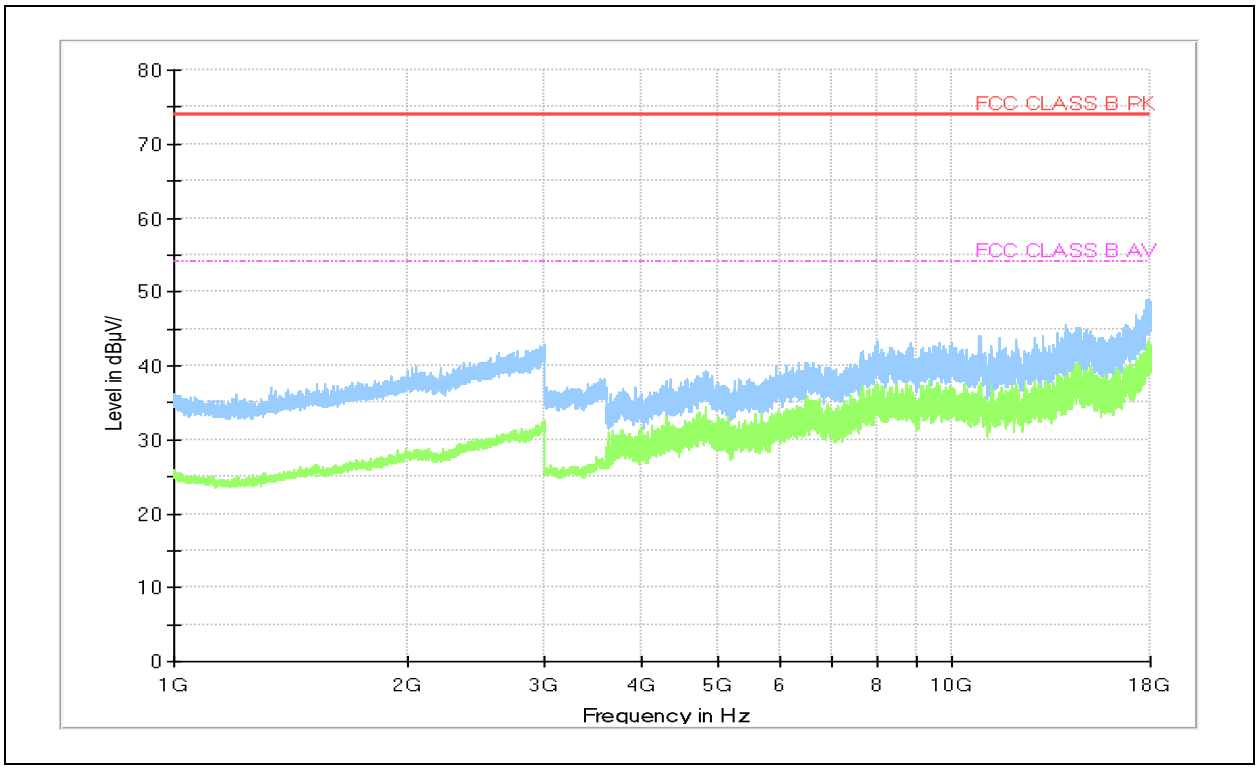
Final Result

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	31.940	H	23.2	-8.0	15.2	29.5	14.3	200	299	1
2	31.091	V	24.1	-6.2	17.9	29.5	11.6	100	228	2
3	107.964	H	32.6	-13.8	18.8	33.0	14.2	400	40	1
4	107.964	V	33.2	-12.3	20.9	33.0	12.1	100	360	2
5	992.361	H	20.0	1.0	21.0	43.5	22.5	100	48	1
6	980.721	V	19.0	2.1	21.1	43.5	22.4	300	72	2

* Radiated emissions (Rx frequency 107.964 MHz) from the transceiver shall be ignored

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 30 GHz and found no emissions

Note 2) Receiving antenna polarization : Horizontal, Vertical

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

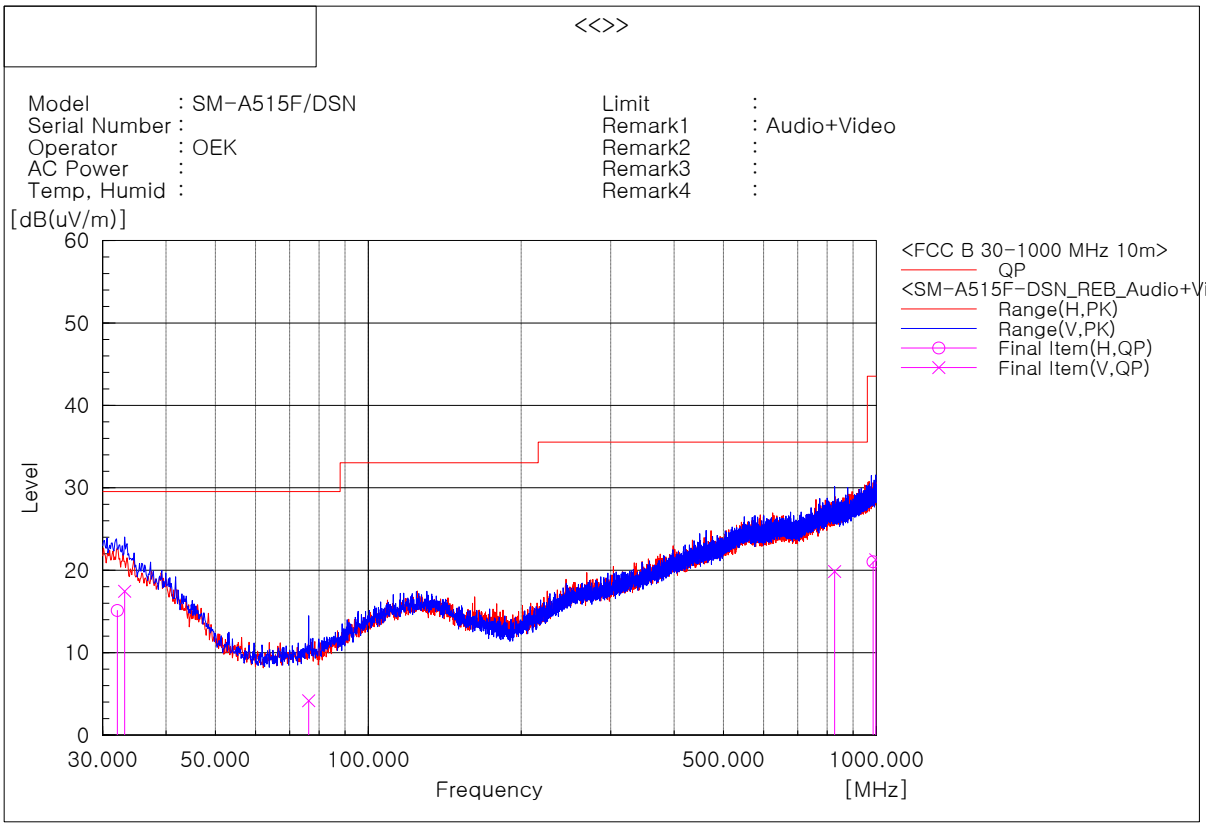
Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

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

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

☐ Operating Mode 4

- Frequencies below 1 GHz

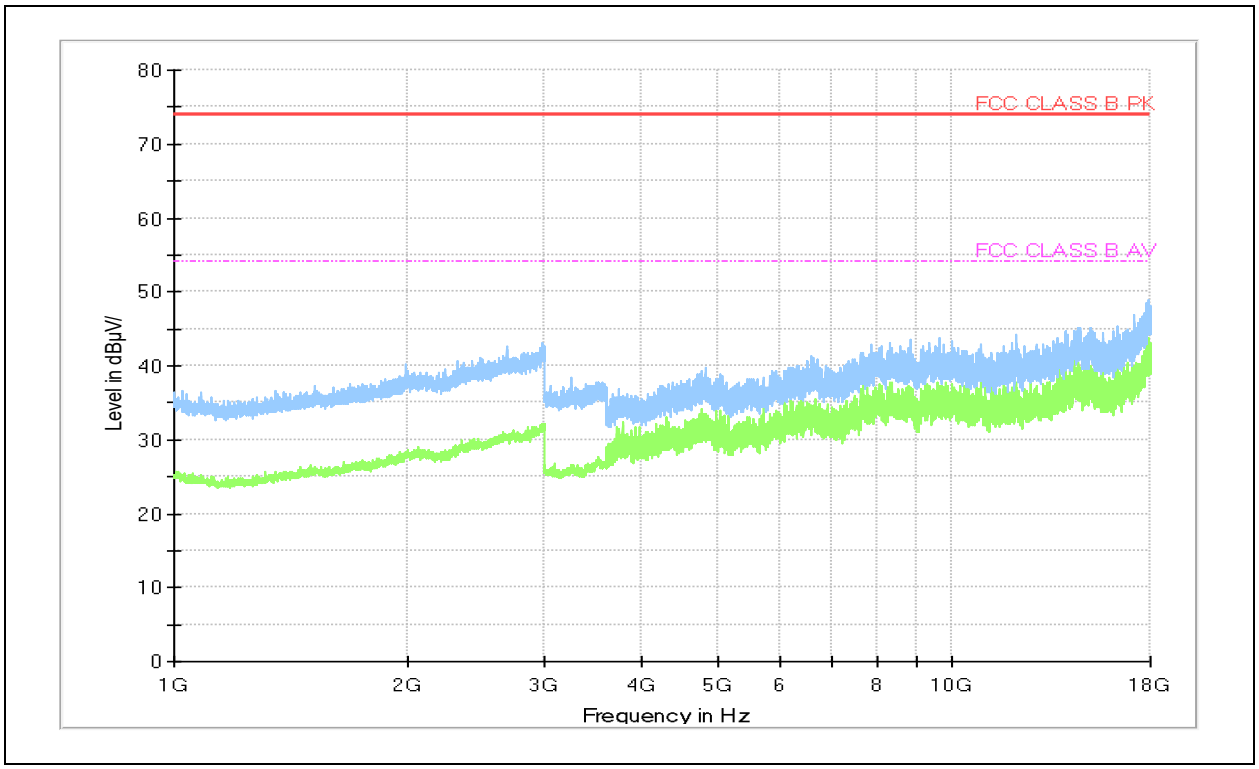


Final Result

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	32.061	H	23.1	-8.0	15.1	29.5	14.4	100	278	1
2	33.153	V	24.3	-6.9	17.4	29.5	12.1	200	334	2
3	76.318	V	21.4	-17.2	4.2	29.5	25.3	100	295	2
4	827.704	V	19.8	0.0	19.8	35.5	15.7	300	249	2
5	985.329	H	20.2	0.8	21.0	43.5	22.5	100	258	1
6	997.211	V	18.6	2.7	21.3	43.5	22.2	200	105	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 30 GHz and found no emissions

Note 2) Receiving antenna polarization : Horizontal, Vertical

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

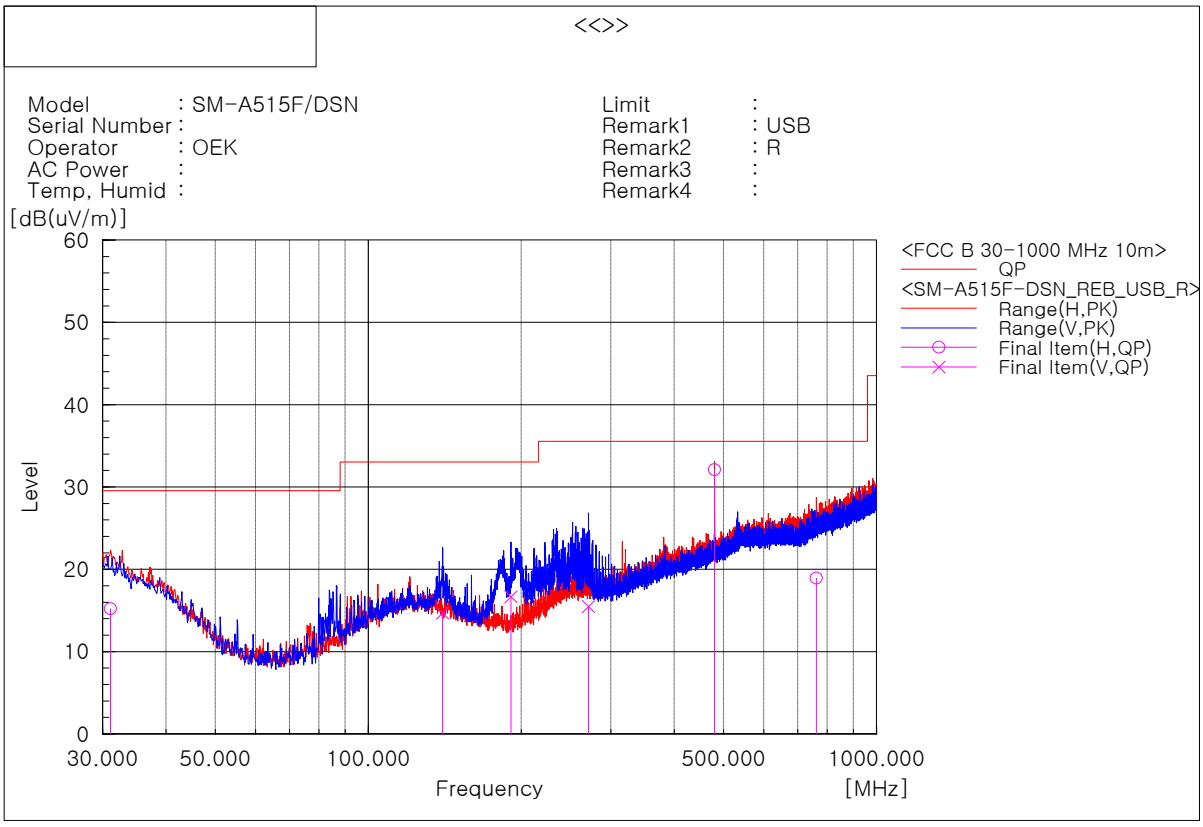
Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

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

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

☐ Operating Mode 5

- Frequencies below 1 GHz

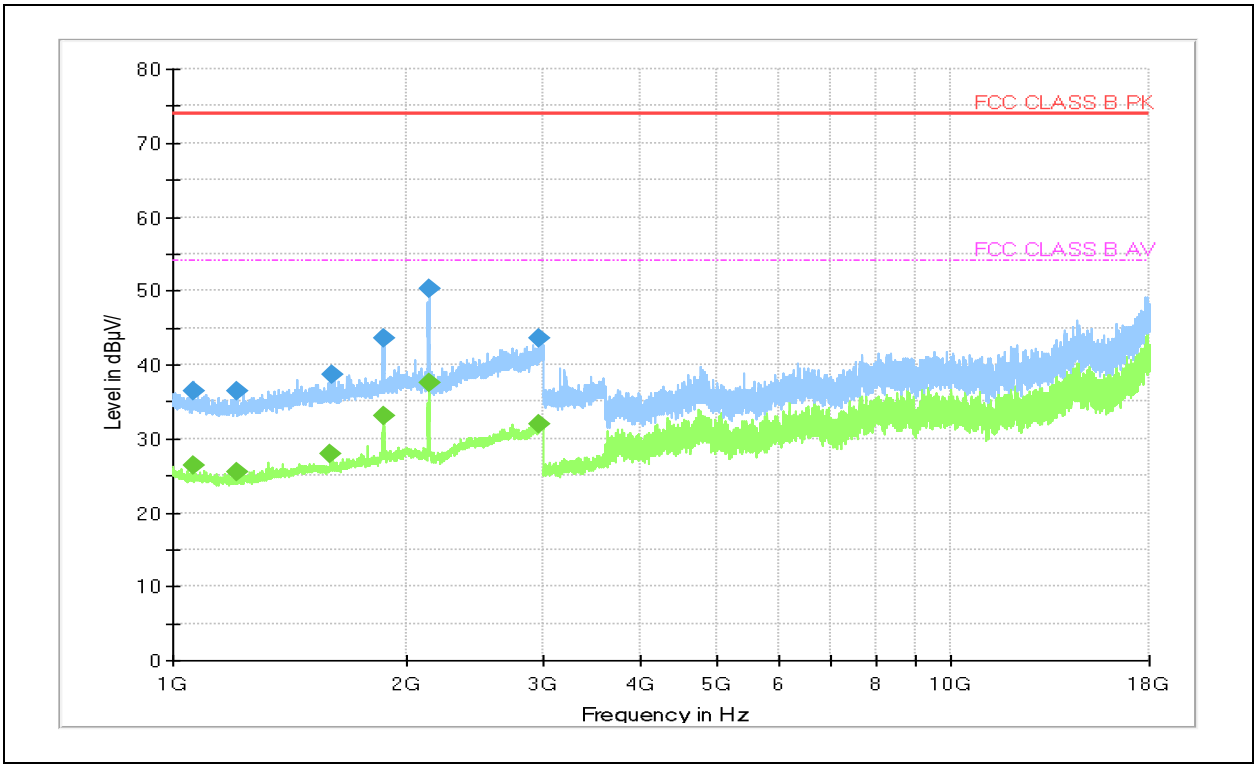


Final Result

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	31.091	H	23.0	-7.8	15.2	29.5	14.3	100	168	1
2	139.974	V	27.2	-12.5	14.7	33.0	18.3	100	289	2
3	190.778	V	31.6	-14.9	16.7	33.0	16.3	100	326	2
4	271.166	V	25.8	-10.3	15.5	35.5	20.0	100	334	2
5	479.959	H	38.0	-5.9	32.1	35.5	3.4	200	52	1
6	761.259	H	21.0	-2.1	18.9	35.5	16.6	400	353	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)
1 064.400	36.3	---	74.0	37.7	121.0	V	282.0	7.1
1 065.200	---	26.3	54.0	27.7	165.0	V	142.0	7.1
1 207.200	---	25.5	54.0	28.5	146.0	V	138.0	7.4
1 211.600	36.3	---	74.0	37.7	281.0	V	0.0	7.4
1 596.800	---	27.9	54.0	26.1	226.0	V	75.0	10.1
1 598.400	38.6	---	74.0	35.4	108.0	V	78.0	10.1
1 862.000	---	33.0	54.0	21.0	194.0	V	354.0	11.7
1 864.400	43.5	---	74.0	30.5	313.0	V	354.0	11.7
2 130.400	---	37.5	54.0	16.5	262.0	V	142.0	12.9
2 132.800	50.2	---	74.0	23.8	135.0	V	142.0	12.9
2 951.600	---	32.0	54.0	22.0	194.0	H	282.0	16.4
2 953.600	43.6	---	74.0	30.4	126.0	H	106.0	16.4

Note 1) We have also tested from 18 GHz to 30 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