TEST REPORT

KCTL Inc.
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2019-10-07

2. Use of Report : -

3. Name of Product and Model : Mobile phone / SM-A515F/DS

4. Manufacturer and Country of Origin : SAMSUNG ELECTRONICS VIETNAM CO.,LTD. / Vietnam

5. Date of Test : 2019-11-11 to 2019-11-12

6. Test method used : ANSI C63.4:2014, Class B

7. FCC ID : A3LSMA515F

8. Test Results : Refer to the test result in the test report

Affirmation	Tested by Name : Jinwon Kim (Signature)	Technical Manager Name : Gunsu Park (Signature)

2019-11-13

KCTL Inc.

REPORT REVISION HISTORY

Date	Revision	Page No
2019-11-13	Originally issued	-

Contents

1. Applicant information

Applicant:	Samsung Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
E-mail:	yongil89.heo@samsung.com
Contact name:	Yongil Heo

Manufacturer:	SAMSUNG ELECTRONICS VIETNAM CO.,LTD.
Address:	Kcn Yen Binh1, huyen pho Yen Tinh Thai Nguyen Vietnam

2. Laboratory information

Address

KCTL Inc. (Suwon Lab.)

65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea

Telephone Number: 82 31 285 0894

Facsimile Number: 82 505 299 8311

FCC Site Designation No: KR0040

VCCI Registration No.: R-20080, G-20078, C-20059, T-20056

Industry Canada Registration No. : 8035A

KOLAS NO.: KT231

SITE MAP

3. Test system configuration

3.1 Operation environment

	Temperature	Humidity	Pressure
Chamber 10 m (RE)	23.9 °C / 23.5 °C	39.2 % R.H./ 38.8 % R.H.	-
Shielded room(CE)	24.7 °C	40.1 % R.H.	-

Test site

These testing items were performed following locations;

Test item	Test site
Conducted Emission	Shielded Room
Radiated Emission	10 m Chamber

3.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.
The factors contributing to uncertainties are test receiver, cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability. Based on CISPR 16-4-2, the measurement uncertainty level with a 95 % confidence level was applied.

Conducted Emission measurement (Confidence level about 95 %, k = 2)		
Shielded Room (CE#1)	9 kHz ~ 150 kHz: 3.66 dB	
	150 kHz ~ 30 MHz: 3.26 dB	
Shielded Room (CE#2)	9 kHz ~ 150 kHz: 3.48 dB	
	150 kHz ~ 30 MHz: 3.06 dB	
Radiated Emission measurement (Confidence level about 95 %, k = 2)		
10 m Chamber (4F)	30 MHz ~ 300 MHz	3 m: 5.32 dB
		10 m: 5.32 dB
	300 MHz ~ 1 000 MHz	3 m: 5.46 dB
		10 m: 5.34 dB
	1 GHz ~ 6 GHz	3 m: 6.32 dB
	6 GHz ~ 18 GHz	3 m: 6.66 dB
	18 GHz ~ 40 GHz	3 m: 6.74 dB
10 m Chamber (2F)	30 MHz ~ 300 MHz	3 m: 4.98 dB
		10 m: 4.96 dB
	300 MHz ~ 1 000 MHz	3 m: 5.14 dB
		10 m: 5.00 dB
	1 GHz ~ 6 GHz	3 m: 6.34 dB
	6 GHz ~ 18 GHz	3 m: 6.68 dB
3 m Chamber (3F)	30 MHz ~ 300 MHz	3 m: 4.90 dB
	300 MHz ~ 1 000 MHz	3 m: 5.06 dB
	1 GHz ~ 6 GHz	3 m: 6.70 dB
	6 GHz ~ 18 GHz	3 m: 6.60 dB

3.3 Measurement Program

These test items were performed by software programs;

Test item	Measurement Program		Used
Conducted Emission	EP5CE_V 5.4.0(TOYO)		☒
Radiated Emission	2F	EP5RE_V 4.6.0(TOYO)	☒
	4F	EP5RE_V 5.11.10(TOYO)	

4. Description of EUT

4.1 General information

Declared Hardware Version	REV1.0
Declared Software Version	A515F.001
IMEI No	352332110063360/01
Operating Band(s)	GSM 850/1900 WCDMA FDD 1/2/4/5/8 LTE FDD 1/2/3/4/5/7/8/12/13/17/20/26/28/66 LTE TDD 38/40/41
Testing Band(s)	GSM 850 WCDMA FDD 5 LTE FDD 5/26

4.2 Product description

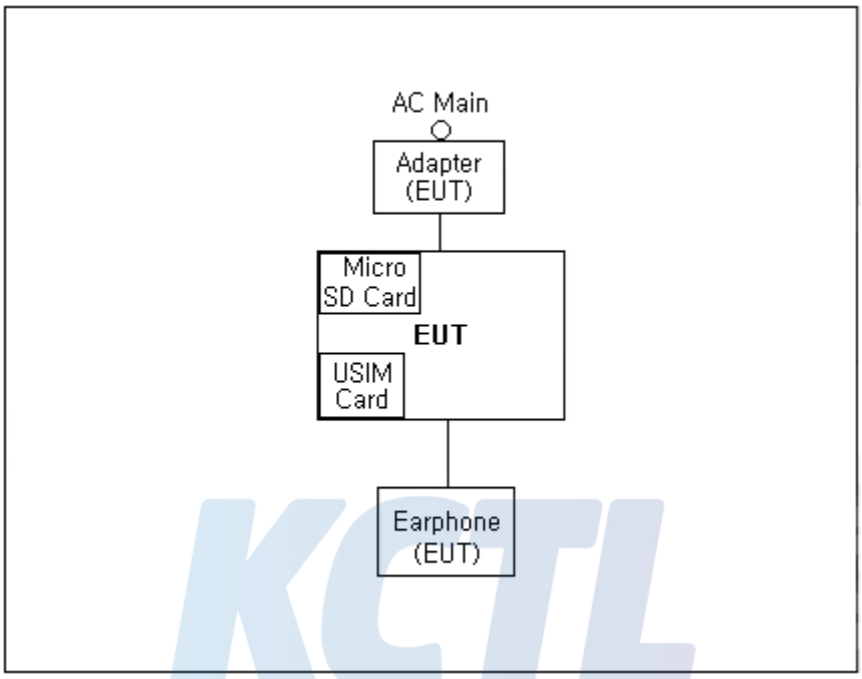
Type of product	Mobile phone
Model name (Basic)	SM-A515F/DS
Model name (Variant)	SM-A515F
Difference	SIM Tray difference
Serial no	-
Testing voltage	120 V, 60 Hz / DC 3.4 V
Input/Output rating	Adapter (EP-TA200) Input: AC 100 - 240 V, 50-60 Hz, 0.5 A Output: DC 9.0 V, 1.67 A or DC 5.0 V, 2.0 A Battery: DC 3.4 V
Internal clock frequency	Above 108 MHz
RF Frequency	5 825 MHz
Note	-

4.3 Auxiliary equipments

Type	Model / Part #	S/N	Manufacturer
Adapter(EUT)	EP-TA200	R37M6AS5E41DK3	SAMSUNG
Battery(EUT)	EB-BA515ABY	-	SAMSUNG
USB Cable(EUT)	EP-DR140ABE	-	SAMSUNG
Earphone(EUT)	EHS61ASFBE	-	SAMSUNG
USIM Card	-	-	-
Micro SD Card	-	-	-
Note PC #1	MS-16J-2	-	MSI
Adapter #1	A14-150P1A	-	Chicony Power Technology Co.,LTD.

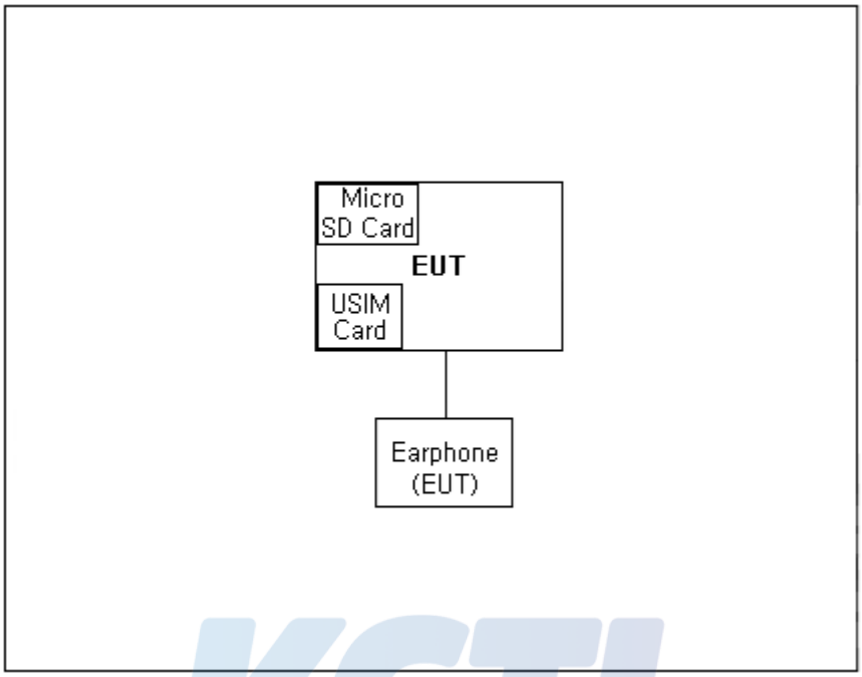
4.4 Test configuration

[Test #1 ~ Test #4_CE / Test #1_RE]



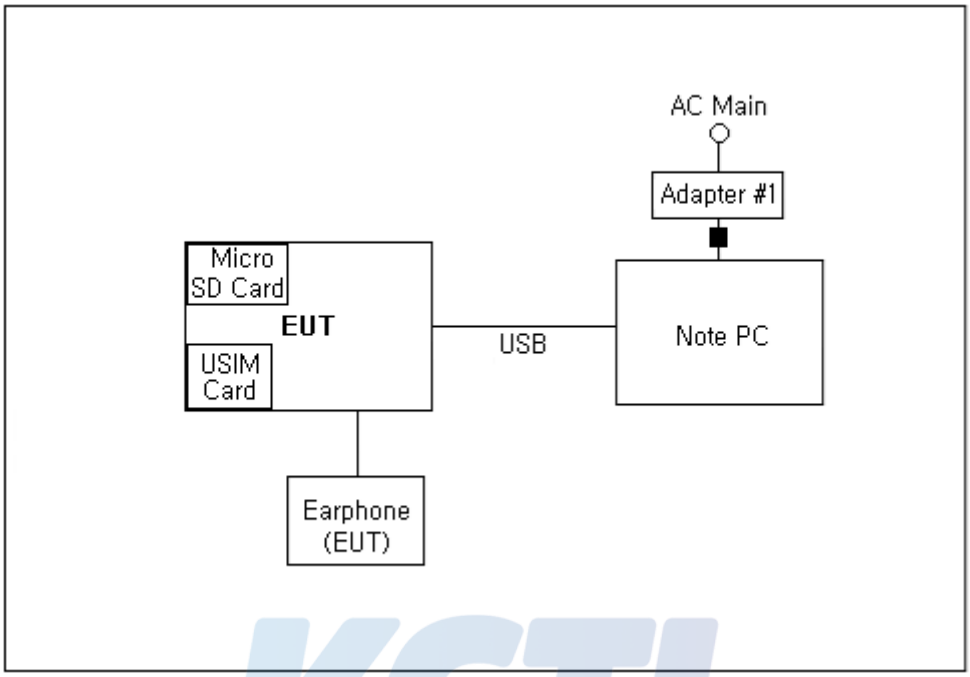
	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	**EUT**	Power	Adapter(EUT)	USB	0.9	Shield
2		USIM	USIM Card	-	Direct	-
3		Micro SD	Micro SD Card	-	Direct	-
4		Earphone	Earphone(EUT)	-	1.5	Unshield
5	Adapter (EUT)	Power	AC Main	-	Direct	-

[Test #2 ~ Test #4_RE]



	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	**EUT**	USIM	USIM Card	-	Direct	-
2		Micro SD	Micro SD Card	-	Direct	-
3		Earphone	Earphone(EUT)	-	1.5	Unshield

[Test #5_CE, RE]



	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT	USB	Note PC	USB	0.9	Shield
2		USIM	USIM Card	-	Direct	-
3		Micro SD	Micro SD Card	-	Direct	-
4		Earphone	Earphone(EUT)	-	1.5	Unshield
5	Note PC	Power	Adapter #1	-	1.2	Unshield (Core)

4.5 Operating conditions

The EUT was configured as normal intended use.

Test mode		Normal operating
Test #1	CE Test	Camera(Rear) + Charging(w/TA) + FM(Low Ch.)
Test #2		Camera(Front) + Charging(w/TA) + FM(Mid Ch.)
Test #3		Charging(w/TA) + FM(High Ch.)
Test #4		Video + Audio playback from internal memory data + Charging (w/TA)
Test #5		USB Data Communication with PC(from external memory data)
Test #1	RE Test	Camera(Rear) + Charging(w/TA) + FM(Low Ch.)
Test #2		Camera(Front) + FM(Mid Ch.)
Test #3		FM(High Ch.)
Test #4		Video + Audio playback from internal memory data
Test #5		USB Data Communication with PC(from external memory data)

Compliance with Part 15 B requirements for the receiver part of the licensed transmitter (equipment code CXX) is covered by other test report(s). [Report No.: KR19-SEF0188]

5. Summary of test results

5.1 Summary of EMI emission test results

Applied	Test items	Test method	Result
☒	Conducted Emission	ANSI C63.4:2014, Class B FCC Part 15 Subpart B	Pass
☒	Radiated Emission	ANSI C63.4:2014, Class B FCC Part 15 Subpart B	Pass

6. Test results

6.1 Conducted Emissions

Test specification	ANSI C63.4:2014, Class B FCC Part 15 Subpart B		
Testing voltage	120 V, 60 Hz		
Test facility	Shielded room (CE#1)		
Date	2019-11-11		
Temperature (°C)	24.7 °C	Humidity (% R.H.)	40.1 % R.H.
Remarks	Pass		

6.1.1 Limits of conducted emissions measurement

Frequency [MHz]	Class A (dB(μV))		Class B (dB(μV))	
	Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.5	79	66	66 ~ 56[1)]	56 ~ 46[1)]
0.5 ~ 5	73	60	56	46
5 ~ 30	73	60	60	50

[1)] The limit decreases linearly with the logarithm of frequency

6.1.2 Measurement procedure

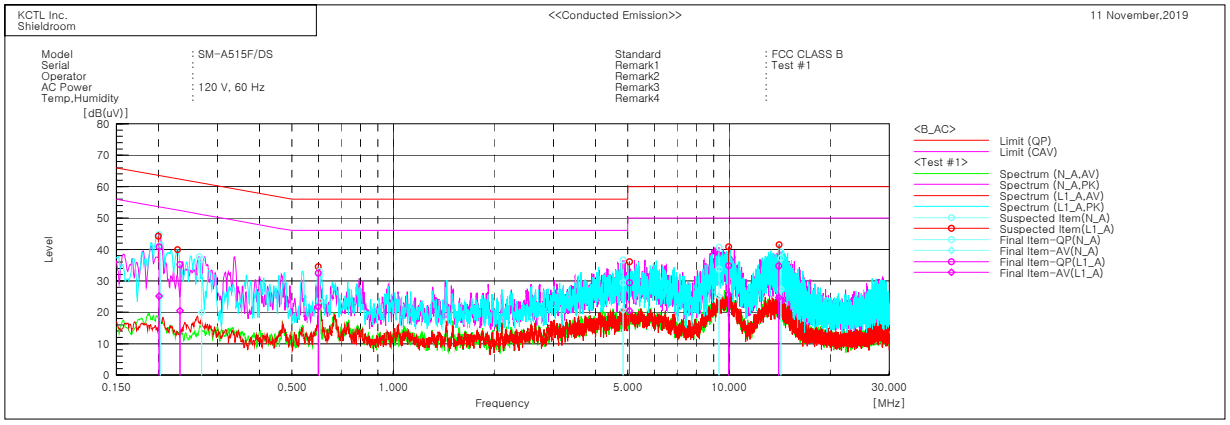
The measurements were performed in a shielded room. EUT was setup as shown in photograph and placed on a non-metallic table height of 0.8 m above the reference ground plane. The rear of table was located 0.4 m to the vertical conducted plane. EUT was power through the LISN, which was bonded to the ground plane. The LISN power was filtered. Each EUT power lead, except ground (safety) lead was individually connected through a LISN to input power source. EUT signal cables that hung closer than 0.4 m to the Horizontal metal ground 0.3 m ~ 0.4 m long. The power cord was bundles in the center. All peripheral equipment was powered from a sub LISN. The LISN and ISN were positioned 0.8 m from the EUT. Peak and Average detection were used in preliminary testing and Quasi-peak and Average detections were used at final measurement.

6.1.3 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
EMI TEST RECEIVER	ESCI	100001	R&S	2020.08.22	☒
TWO-LINE V-NETWORK	ENV216	101358	R&S	2020.10.02	☒
TWO-LINE V-NETWORK	ENV216	101352	R&S	2020.04.05	☐

6.1.4 Conducted emissions measurement result

AC Main



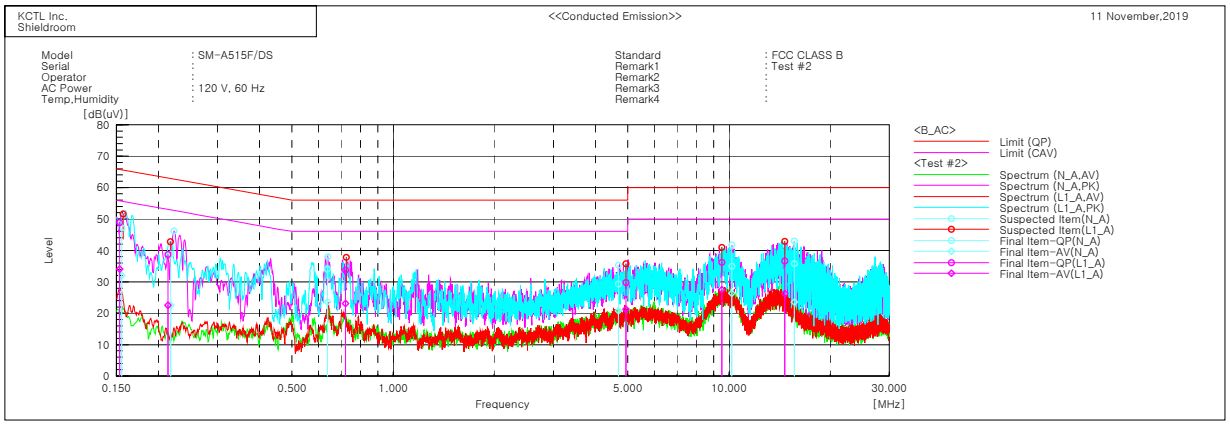
Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.20305	31.1	14.9	10.2	41.3	25.1	63.5	53.5	22.2	28.4
2	0.2691	26.8	9.9	10.0	36.8	19.9	61.1	51.1	24.3	31.2
3	0.60376	22.7	13.4	10.3	33.0	23.7	56.0	46.0	23.0	22.3
4	4.84077	19.1	10.4	10.3	29.4	20.7	56.0	46.0	26.6	25.3
5	9.3486	23.2	14.4	10.6	33.8	25.0	60.0	50.0	26.2	25.0
6	14.27324	26.3	16.5	10.9	37.2	27.4	60.0	50.0	22.8	22.6

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.20082	30.7	14.9	10.2	40.9	25.1	63.6	53.6	22.7	28.5
2	0.23192	25.2	10.5	10.0	35.2	20.5	62.4	52.4	27.2	31.9
3	0.59865	22.1	11.4	10.3	32.4	21.7	56.0	46.0	23.6	24.3
4	5.05884	19.1	10.0	10.4	29.5	20.4	60.0	50.0	30.5	29.6
5	9.96854	24.2	15.0	10.7	34.9	25.7	60.0	50.0	25.1	24.3
6	14.07992	23.8	13.7	10.9	34.7	24.6	60.0	50.0	25.3	25.4



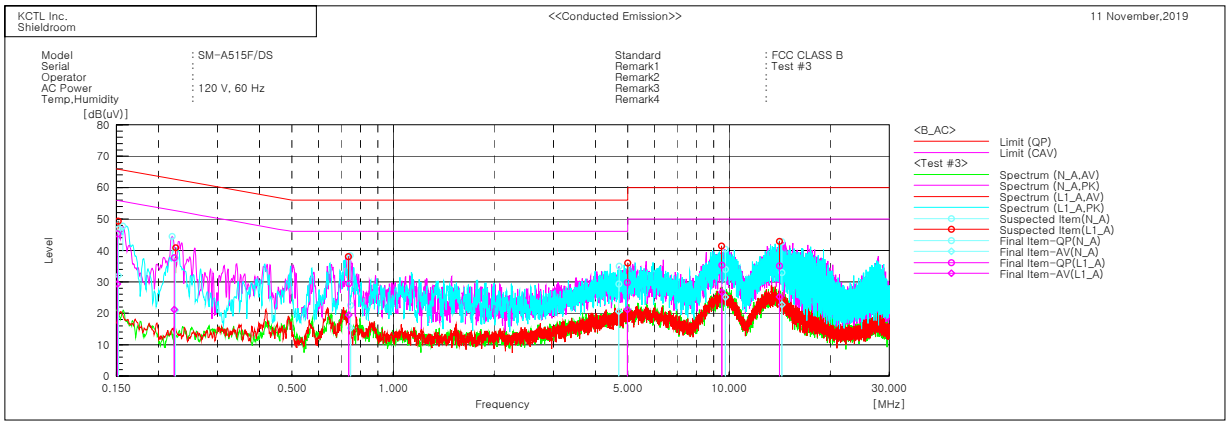
Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15543	37.0	21.8	10.2	47.2	32.0	65.7	55.7	18.5	23.7
2	0.218	28.7	12.4	10.1	38.8	22.5	62.9	52.9	24.1	30.4
3	0.63812	23.8	13.2	10.3	34.1	23.5	56.0	46.0	21.9	22.5
4	4.68662	19.0	10.6	10.3	29.3	20.9	56.0	46.0	26.7	25.1
5	10.18897	24.2	15.6	10.7	34.9	26.3	60.0	50.0	25.1	23.7
6	15.64227	24.7	12.6	11.0	35.7	23.6	60.0	50.0	24.3	26.4

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15329	38.7	23.9	10.1	48.8	34.0	65.8	55.8	17.0	21.8
2	0.21377	28.6	12.4	10.1	38.7	22.5	63.1	53.1	24.4	30.6
3	0.72217	23.4	12.8	10.3	33.7	23.1	56.0	46.0	22.3	22.9
4	4.92939	19.3	10.8	10.4	29.7	21.2	56.0	46.0	26.3	24.8
5	9.52685	25.5	16.8	10.7	36.2	27.5	60.0	50.0	23.8	22.5
6	14.65717	25.7	15.3	11.0	36.7	26.3	60.0	50.0	23.3	23.7



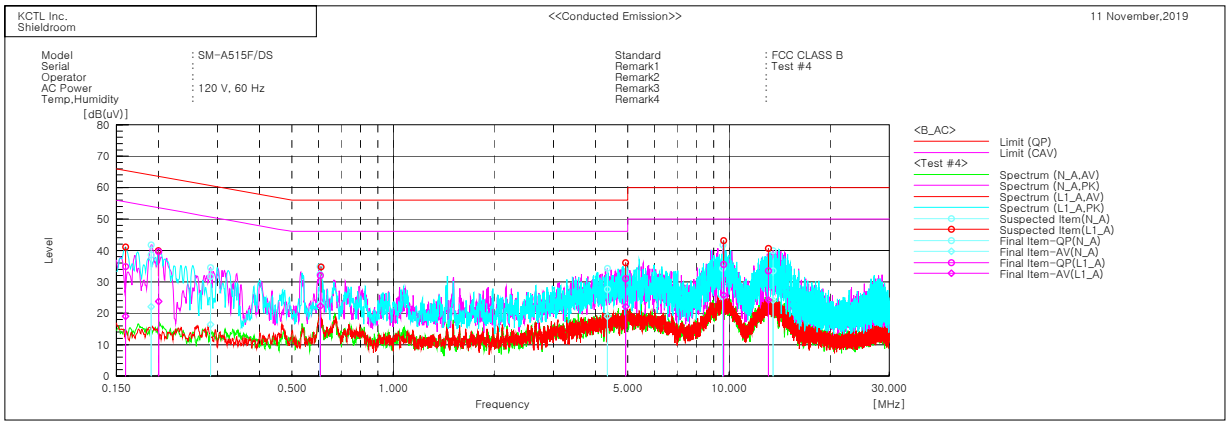
Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15218	36.7	22.0	10.1	46.8	32.1	65.9	55.9	19.1	23.8
2	0.22461	27.4	10.9	10.0	37.4	20.9	62.6	52.6	25.2	31.7
3	0.74634	12.2	5.0	10.3	22.5	15.3	56.0	46.0	33.5	30.7
4	4.70177	19.0	10.3	10.3	29.3	20.6	56.0	46.0	26.7	25.4
5	9.75996	23.2	14.4	10.7	33.9	25.1	60.0	50.0	26.1	24.9
6	14.36592	22.0	11.8	10.9	32.9	22.7	60.0	50.0	27.1	27.3

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15099	35.3	19.3	10.0	45.3	29.3	65.9	55.9	20.6	26.6
2	0.22297	27.7	11.2	10.0	37.7	21.2	62.7	52.7	25.0	31.5
3	0.73716	19.2	9.2	10.3	29.5	19.5	56.0	46.0	26.5	26.5
4	4.98481	19.3	10.8	10.4	29.7	21.2	56.0	46.0	26.3	24.8
5	9.51276	24.6	16.0	10.7	35.3	26.7	60.0	50.0	24.7	23.3
6	14.11629	24.2	14.3	10.9	35.1	25.2	60.0	50.0	24.9	24.8



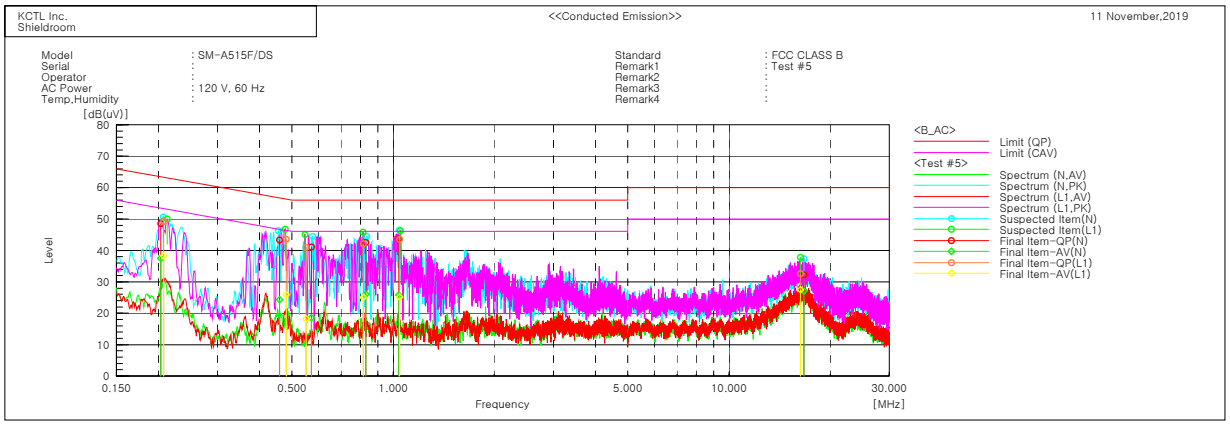
Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.19033	28.3	11.7	10.3	38.6	22.0	64.0	54.0	25.4	32.0
2	0.28595	21.6	6.4	10.0	31.6	16.4	60.6	50.6	29.0	34.2
3	0.60589	22.1	12.8	10.3	32.4	23.1	56.0	46.0	23.6	22.9
4	4.34931	17.4	8.7	10.3	27.7	19.0	56.0	46.0	28.3	27.0
5	9.58188	23.7	14.5	10.6	34.3	25.1	60.0	50.0	25.7	24.9
6	13.51716	22.7	13.3	10.8	33.5	24.1	60.0	50.0	26.5	25.9

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15988	24.5	8.7	10.3	34.8	19.0	65.5	55.5	30.7	36.5
2	0.20027	29.4	13.6	10.2	39.6	23.8	63.6	53.6	24.0	29.8
3	0.60773	21.7	11.9	10.3	32.0	22.2	56.0	46.0	24.0	23.8
4	4.91852	20.6	11.6	10.4	31.0	22.0	56.0	46.0	25.0	24.0
5	9.6459	24.8	15.1	10.7	35.5	25.8	60.0	50.0	24.5	24.2
6	13.10482	22.6	13.3	10.9	33.5	24.2	60.0	50.0	26.5	25.8



Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.20323	38.6	27.5	9.9	48.5	37.4	63.5	53.5	15.0	16.1
2	0.45833	33.5	14.6	9.8	43.3	24.4	56.7	46.7	13.4	22.3
3	0.57122	31.2	8.7	9.9	41.1	18.6	56.0	46.0	14.9	27.4
4	0.8301	32.7	16.3	9.8	42.5	26.1	56.0	46.0	13.5	19.9
5	1.04064	33.9	16.0	9.8	43.7	25.8	56.0	46.0	12.3	20.2
6	16.73603	22.3	17.1	9.9	32.2	27.0	60.0	50.0	27.8	23.0

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.20754	39.4	28.3	9.9	49.3	38.2	63.3	53.3	14.0	15.1
2	0.481	33.7	16.2	9.8	43.5	26.0	56.3	46.3	12.8	20.3
3	0.55136	31.0	8.3	9.9	40.9	18.2	56.0	46.0	15.1	27.8
4	0.81515	32.3	15.2	9.8	42.1	25.0	56.0	46.0	13.9	21.0
5	1.0461	33.7	15.4	9.8	43.5	25.2	56.0	46.0	12.5	20.8
6	16.31254	22.5	17.4	10.0	32.5	27.4	60.0	50.0	27.5	22.6

6.2 Radiated Emission

Test specification		ANSI C63.4:2014, Class B FCC Part 15 Subpart B		
Testing voltage		120 V, 60 Hz / DC 3.4 V		
Test facility		10 m Chamber (4F)		
Test distance		3 m		
Date		2019-11-12		
30 MHz ~ 1000 MHz	Temperature (°C)	23.9 °C	Humidity (% R.H.)	39.2 % R.H.
1 GHz ~ 30 GHz		23.5 °C		38.8 % R.H.
Remarks		Pass		

6.2.1 Limits of radiated emission measurement

Frequency [MHz]	Class A (dB(μV/m)) @ 10 m	Class B (dB(μV/m)) @ 3 m
30-88	39	40
88-216	43.5	43.5
216-960	46.4	46
Above 960	49.5	54

Note- Alternative standard: CISPR, Pub. 22

6.2.2 Measurement procedure

The test was done at a 10 m chamber with a quasi-peak detector. EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane. Cables were folded back and forth forming a bundle 0.3 m to 0.4 m long and were hanged at a 0.4 m height to the ground plane.

Cables connected to EUT were fixed to cause maximum emission. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

6.2.3 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
EMI TEST RECEIVER	ESR7	101078	R&S	2020.08.22	☒
Bilog Antenna	CBL 6112D	37876	TESEQ	2020.07.20	☒
AMPLIFIER	310N	293004	SONOMA	2020.08.22	☒
ATTENUATOR	8491B	MY39270292	AGILENT	-	☒
Antenna Mast	MA4640-XP-ET	-	Innco Systems	-	☒
Turn Table	TT 3.0-3t	-	MATURO	-	☒
AMPLIFIER	JS44-18004000-33-8P	2000996	L-3Narda-MITEQ	2020.01.28	☒
Horn antenna	3116	00086635	ETS-LINDGREN	2020.05.09	☒
DOUBLE RIDGED HORN ANTENNA	3117-PA	00161083	ETS-LINDGREN	2020.09.18	☒
Spectrum Analyzer	FSV40	100988	R&S	2020.01.04	☒

6.2.4 Sample calculation

The field strength is calculated adding the antenna Factor, cable loss and, Antenna pad adding, subtracting the amplifier gain from the measured reading.

The sample calculation is as follow:

Result = M.R + C.F(A.F + C.L + 6 dB Att – A.G)

M.R = Meter Reading

C.F = Correction Factor

A.F = Antenna Factor

C.L = Cable Loss

A.G = Amplifier Gain

6 dB Att = 6 dB Attenuator

If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 6 dB, A.G 35 dB

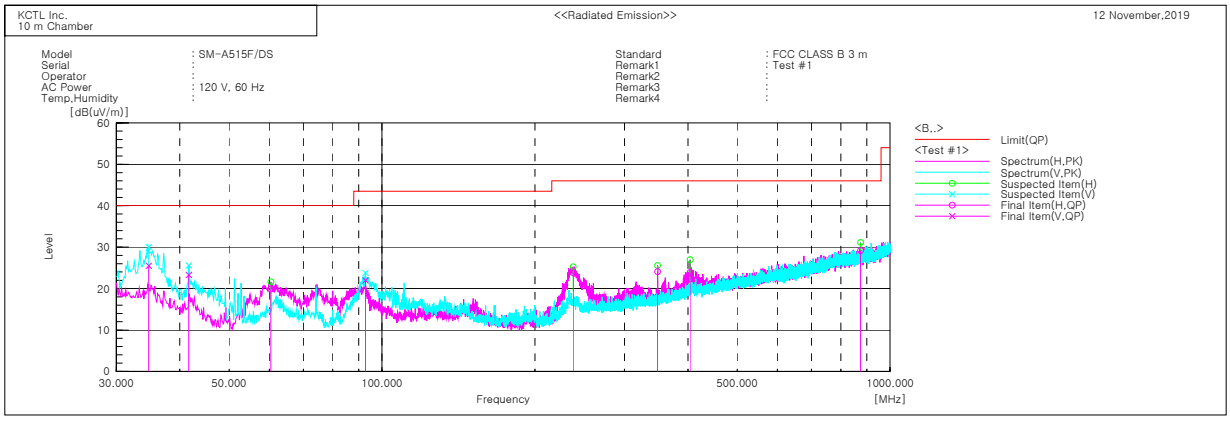
The result is 30 + 12 + 5 + 6 – 35 = 18 dB (μN/m)

Bilog Antenna and ATTENUATOR (6 dB) were calibrated together.

AV = CAV : Abbreviation of CISPR Average

6.2.5 Radiated emission measurement result

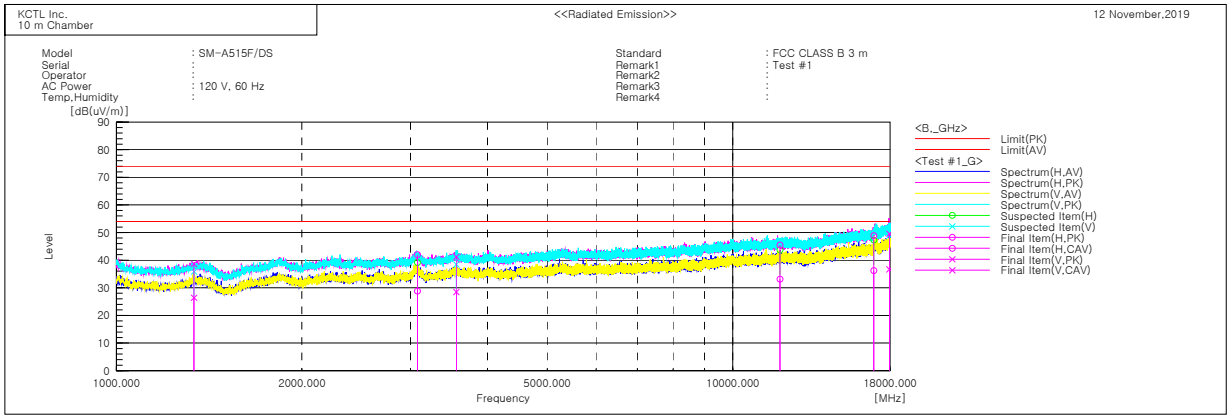
30 MHz ~ 1 GHz



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]
1	34.729	V	32.9	-7.4	25.5	40.0	14.5	106.0	86.0
2	41.640	V	34.2	-10.9	23.3	40.0	16.7	110.0	18.0
3	60.434	H	36.6	-16.7	19.9	40.0	20.1	323.0	122.0
4	92.808	V	34.6	-12.6	22.0	43.5	21.5	187.0	188.0
5	237.944	H	31.9	-8.1	23.8	46.0	22.2	400.0	247.0
6	348.645	H	28.1	-4.0	24.1	46.0	21.9	309.0	51.0
7	404.056	H	25.6	-1.7	23.9	46.0	22.1	318.0	5.0
8	874.749	H	20.5	8.7	29.2	46.0	16.8	100.0	191.0

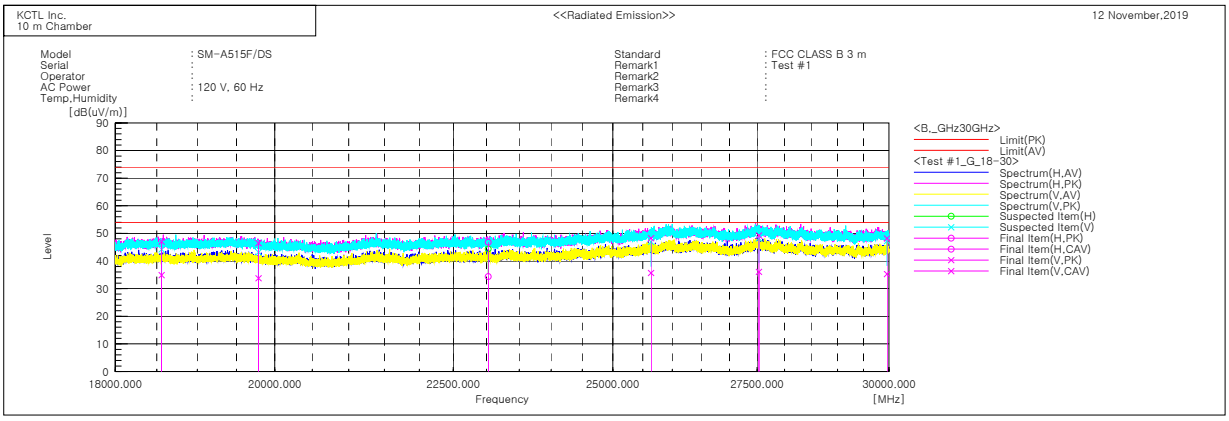
1 GHz ~ 18 GHz



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(uV)]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[dB]	[cm]	[deg]
1	1335.767	V	54.6	42.3	-15.9	38.7	26.4	74.0	54.0	35.3	27.6	105.0	57.0
2	3080.054	H	50.7	37.5	-8.7	42.0	28.8	74.0	54.0	32.0	25.2	292.0	216.0
3	3559.478	V	48.6	35.9	-7.4	41.2	28.5	74.0	54.0	32.8	25.5	191.0	7.0
4	11927.300	H	45.1	32.7	0.4	45.5	33.1	74.0	54.0	28.5	20.9	100.0	105.0
5	16934.040	H	41.6	28.9	7.3	48.9	36.2	74.0	54.0	25.1	17.8	393.0	314.0
6	17944.750	V	40.2	27.3	9.4	49.6	36.7	74.0	54.0	24.4	17.3	205.0	355.0

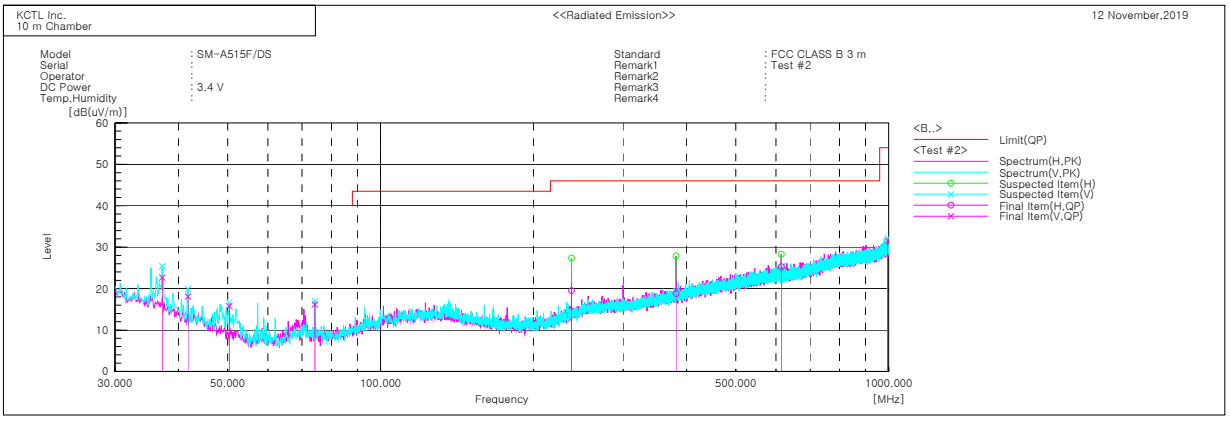
18 GHz ~ 30 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	18557.430	V	41.1	28.9	6.0	47.1	34.9	74.0	54.0	26.9	19.1	218.0	225.0
2	19785.690	V	40.6	27.9	5.9	46.5	33.8	74.0	54.0	27.5	20.2	213.0	352.0
3	23026.450	H	39.4	27.0	7.4	46.8	34.4	74.0	54.0	27.2	19.6	400.0	312.0
4	25638.380	V	36.7	24.1	11.6	48.3	35.7	74.0	54.0	25.7	18.3	290.0	86.0
5	27530.880	V	35.5	22.3	13.8	49.3	36.1	74.0	54.0	24.7	17.9	105.0	31.0
6	29958.600	V	36.1	23.2	12.1	48.2	35.3	74.0	54.0	25.8	18.7	121.0	343.0

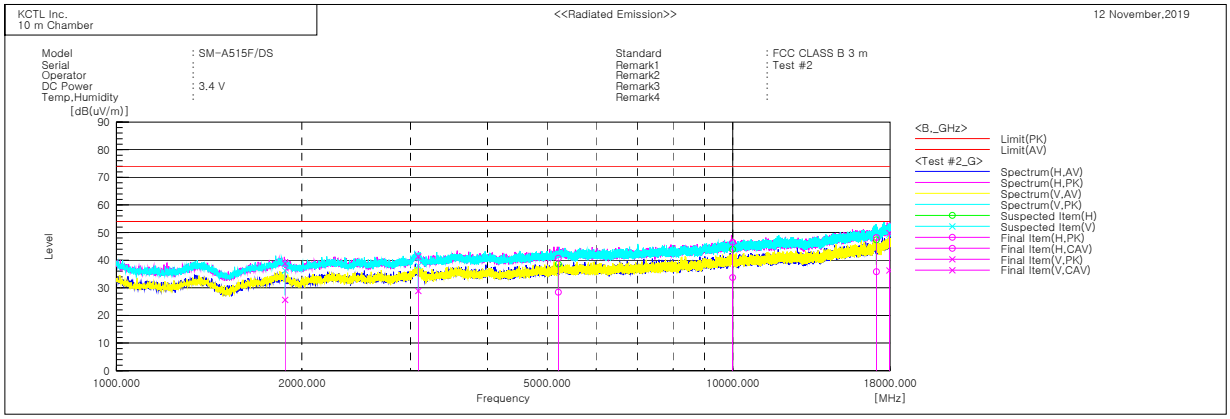
30 MHz ~ 1 GHz



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]
1	37.154	V	31.3	-8.6	22.7	40.0	17.3	103.0	312.0
2	41.761	V	29.1	-11.0	18.1	40.0	21.9	175.0	86.0
3	50.370	V	31.0	-15.2	15.8	40.0	24.2	118.0	82.0
4	74.256	V	32.2	-16.0	16.2	40.0	23.8	100.0	186.0
5	237.459	H	27.6	-8.1	19.5	46.0	26.5	389.0	351.0
6	381.746	H	21.4	-2.6	18.8	46.0	27.2	193.0	289.0
7	614.668	H	21.7	3.6	25.3	46.0	20.7	400.0	275.0
8	994.908	V	20.2	11.4	31.6	54.0	22.4	296.0	341.0

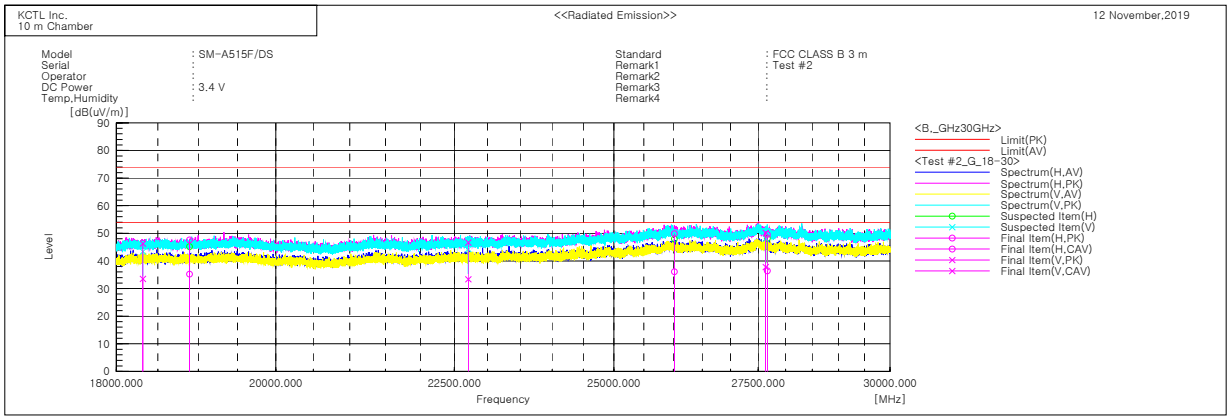
1 GHz ~ 18 GHz



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(uV)]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[dB]	[cm]	[deg]
1	1878.094	V	52.0	38.8	-13.2	38.8	25.6	74.0	54.0	35.2	28.4	108.0	104.0
2	3087.704	V	50.1	37.7	-8.8	41.3	28.9	74.0	54.0	32.7	25.1	186.0	109.0
3	5211.960	H	45.4	33.1	-4.7	40.7	28.4	74.0	54.0	33.3	25.6	398.0	319.0
4	9992.599	H	45.4	32.6	1.1	46.5	33.7	74.0	54.0	27.5	20.3	100.0	195.0
5	17100.650	H	40.4	28.0	7.8	48.2	35.8	74.0	54.0	25.8	18.2	313.0	2.0
6	17951.550	V	40.5	26.9	9.4	49.9	36.3	74.0	54.0	24.1	17.7	203.0	311.0

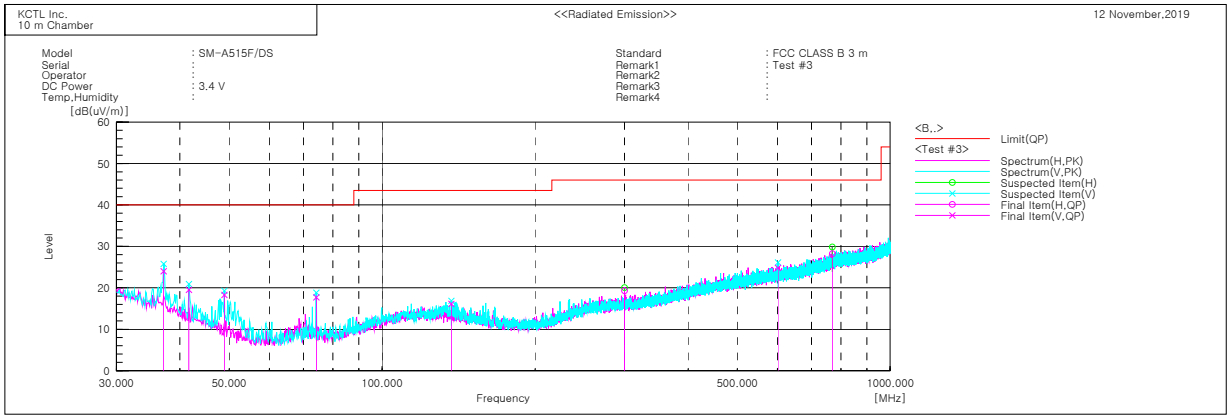
18 GHz ~ 30 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	18317.410	V	40.5	27.7	5.8	46.3	33.5	74.0	54.0	27.7	20.5	193.0	247.0
2	18890.440	H	41.8	29.4	5.8	47.6	35.2	74.0	54.0	26.4	18.8	100.0	63.0
3	22707.230	V	39.3	26.0	7.4	46.7	33.4	74.0	54.0	27.3	20.6	210.0	344.0
4	26018.800	H	37.2	23.4	12.7	49.9	36.1	74.0	54.0	24.1	17.9	315.0	335.0
5	27633.480	V	36.3	24.0	13.8	50.1	37.8	74.0	54.0	23.9	16.2	110.0	324.0
6	27664.080	H	35.8	22.6	13.8	49.6	36.4	74.0	54.0	24.4	17.6	197.0	34.0

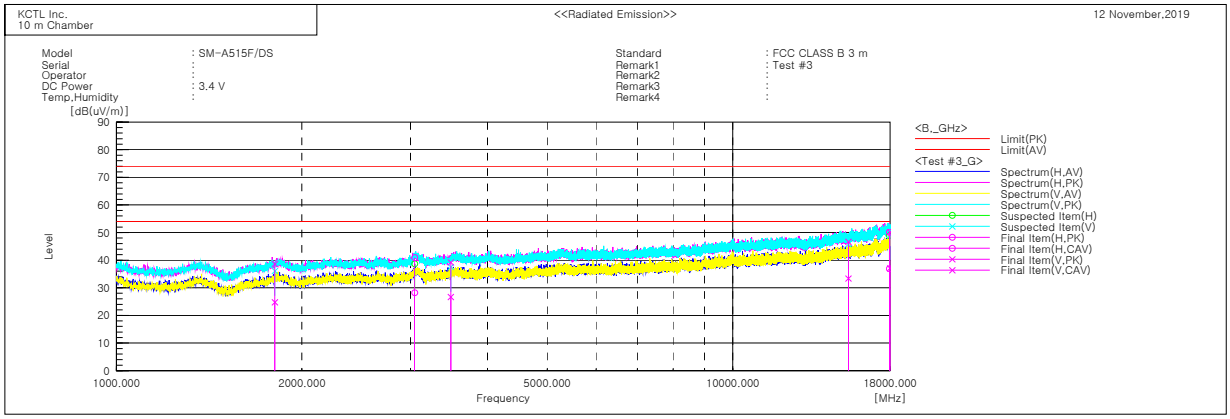
30 MHz ~ 1 GHz



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]
1	37.154	V	32.6	-8.6	24.0	40.0	16.0	108.0	72.0
2	41.640	V	30.4	-10.9	19.5	40.0	20.5	304.0	213.0
3	48.915	V	32.9	-14.6	18.3	40.0	21.7	204.0	307.0
4	74.256	V	33.7	-16.0	17.7	40.0	22.3	100.0	269.0
5	136.821	V	25.6	-9.5	16.1	43.5	27.4	298.0	346.0
6	300.024	H	24.8	-5.5	19.3	46.0	26.7	387.0	335.0
7	601.573	V	21.5	3.3	24.8	46.0	21.2	197.0	7.0
8	769.383	H	21.2	7.0	28.2	46.0	17.8	192.0	330.0

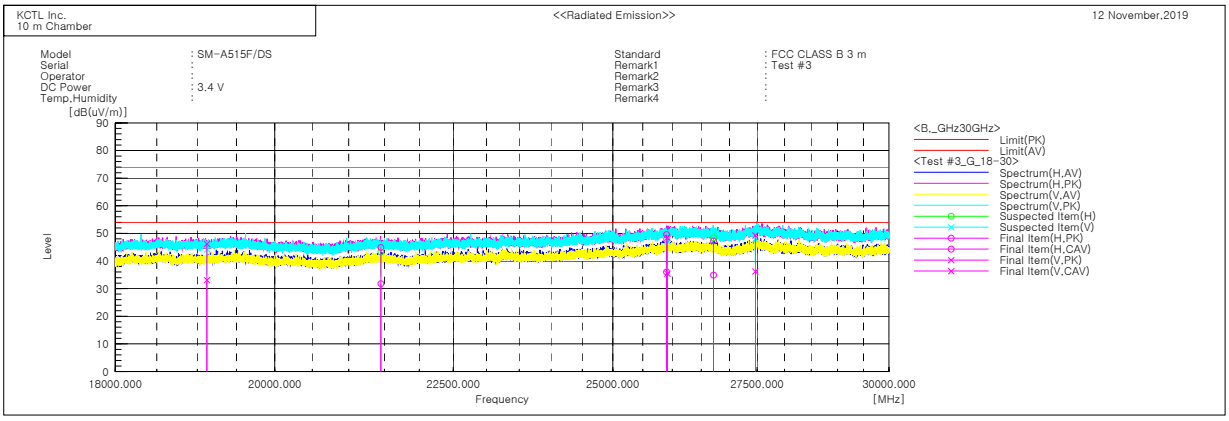
1 GHz ~ 18 GHz



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(uV)]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[dB]	[cm]	[deg]
1	1807.540	V	52.0	38.2	-13.4	38.6	24.8	74.0	54.0	35.4	29.2	192.0	136.0
2	3048.602	H	49.4	36.7	-8.5	40.9	28.2	74.0	54.0	33.1	25.8	216.0	202.0
3	3487.224	V	47.2	34.7	-8.0	39.2	26.7	74.0	54.0	34.8	27.3	398.0	252.0
4	15405.670	V	44.3	31.0	2.4	46.7	33.4	74.0	54.0	27.3	20.6	311.0	283.0
5	17952.400	H	40.7	27.5	9.4	50.1	36.9	74.0	54.0	23.9	17.1	197.0	47.0
6	17986.400	V	40.7	27.6	9.5	50.2	37.1	74.0	54.0	23.8	16.9	300.0	354.0

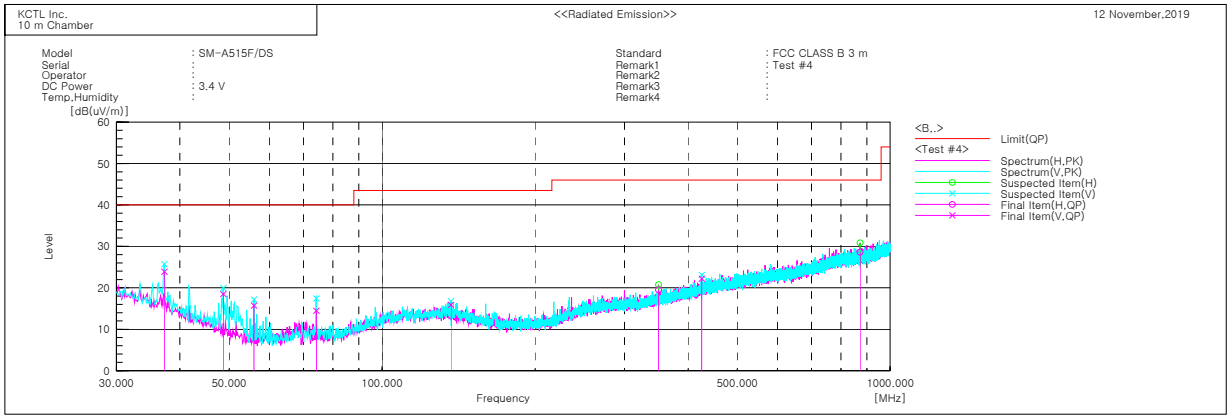
18 GHz ~ 30 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	19122.650	V	40.2	27.1	6.0	46.2	33.1	74.0	54.0	27.8	20.9	294.0	245.0
2	21448.970	H	38.2	25.1	6.7	44.9	31.8	74.0	54.0	29.1	22.2	108.0	298.0
3	25903.000	H	37.1	23.5	12.5	49.6	36.0	74.0	54.0	24.4	18.0	293.0	343.0
4	25916.200	V	36.0	22.9	12.5	48.5	35.4	74.0	54.0	25.5	18.6	100.0	1.0
5	26720.840	H	34.7	22.3	12.6	47.3	34.9	74.0	54.0	26.7	19.1	391.0	59.0
6	27466.670	V	35.5	22.4	13.8	49.3	36.2	74.0	54.0	24.7	17.8	113.0	73.0

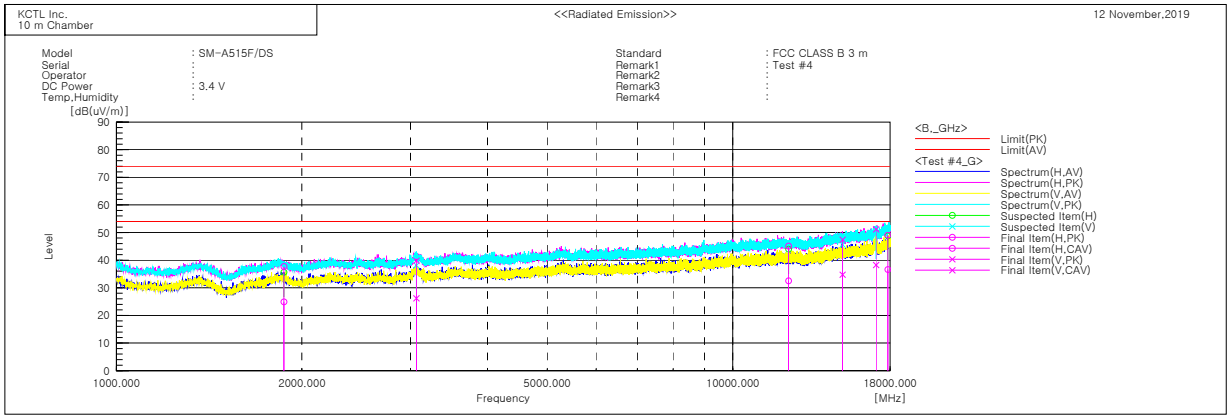
30 MHz ~ 1 GHz



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]
1	37.275	V	32.5	-8.6	23.9	40.0	16.1	100.0	213.0
2	48.673	V	33.0	-14.5	18.5	40.0	21.5	118.0	77.0
3	55.948	V	32.3	-16.6	15.7	40.0	24.3	211.0	99.0
4	74.256	V	30.5	-16.0	14.5	40.0	25.5	107.0	318.0
5	136.700	V	25.4	-9.5	15.9	43.5	27.6	293.0	165.0
6	349.979	H	23.4	-3.9	19.5	46.0	26.5	389.0	26.0
7	425.760	V	23.2	-1.0	22.2	46.0	23.8	314.0	338.0
8	872.566	H	19.9	8.7	28.6	46.0	17.4	110.0	124.0

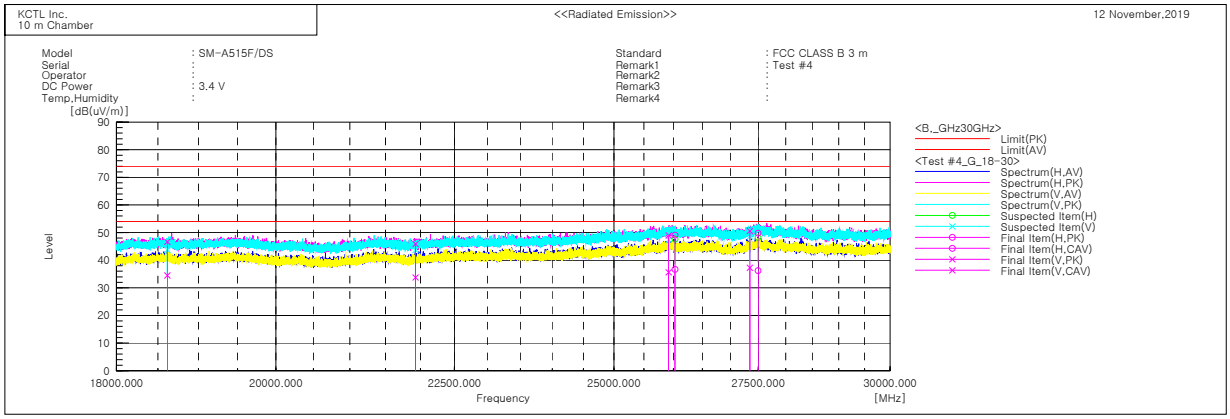
1 GHz ~ 18 GHz



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(uV)]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[dB]	[cm]	[deg]
1	1870.443	H	50.8	38.0	-13.1	37.7	24.9	74.0	54.0	36.3	29.1	100.0	127.0
2	3066.453	V	48.3	34.7	-8.5	39.8	26.2	74.0	54.0	34.2	27.8	116.0	75.0
3	12317.470	H	44.5	31.9	0.6	45.1	32.5	74.0	54.0	28.9	21.5	217.0	79.0
4	15067.350	V	45.5	32.9	1.9	47.4	34.8	74.0	54.0	26.6	19.2	400.0	219.0
5	17074.300	V	43.5	30.6	7.7	51.2	38.3	74.0	54.0	22.8	15.7	310.0	69.0
6	17856.340	H	40.1	27.6	9.0	49.1	36.6	74.0	54.0	24.9	17.4	193.0	332.0

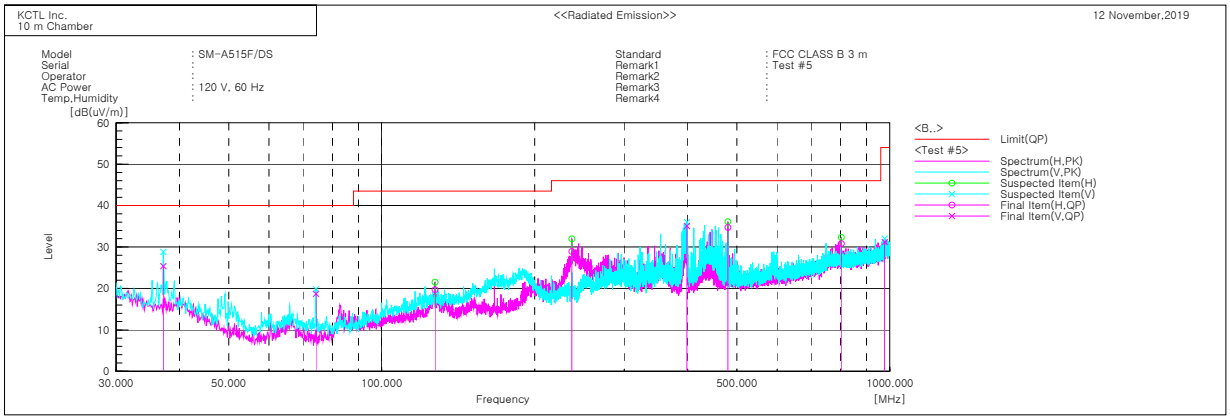
18 GHz ~ 30 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	18615.030	V	40.7	28.5	6.0	46.7	34.5	74.0	54.0	27.3	19.5	189.0	89.0
2	21929.000	V	39.4	27.3	6.5	45.9	33.8	74.0	54.0	28.1	20.2	105.0	237.0
3	25917.400	V	36.5	23.1	12.5	49.0	35.6	74.0	54.0	25.0	18.4	214.0	25.0
4	26029.600	H	36.4	24.0	12.7	49.1	36.7	74.0	54.0	24.9	17.3	289.0	193.0
5	27346.070	V	37.2	23.9	13.4	50.6	37.3	74.0	54.0	23.4	16.7	100.0	272.0
6	27496.080	H	36.0	22.4	13.8	49.8	36.2	74.0	54.0	24.2	17.8	390.0	271.0

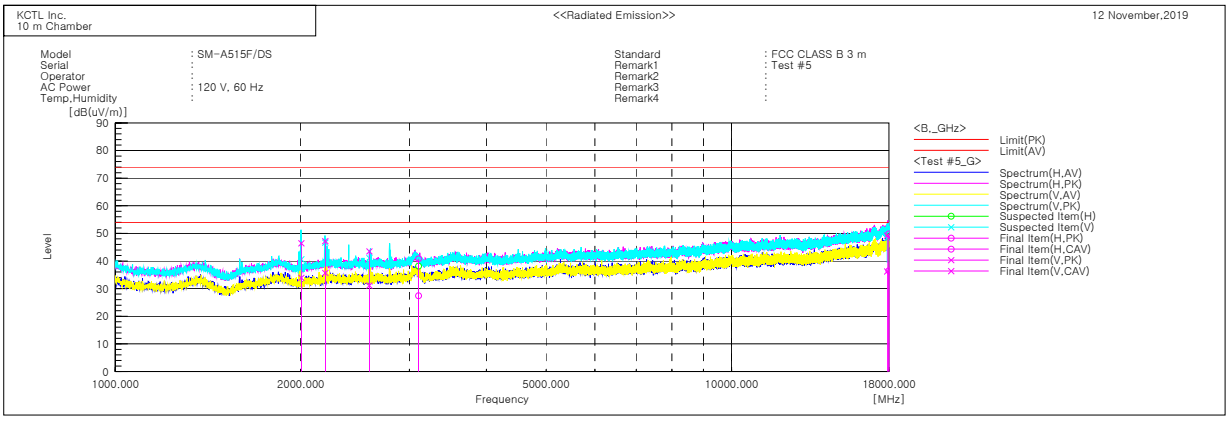
30 MHz ~ 1 GHz



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]
1	37.154	V	34.0	-8.6	25.4	40.0	14.6	105.0	131.0
2	74.256	V	34.7	-16.0	18.7	40.0	21.3	108.0	215.0
3	127.364	H	29.0	-9.3	19.7	43.5	23.8	192.0	342.0
4	236.731	H	37.1	-8.2	28.9	46.0	17.1	317.0	304.0
5	398.843	V	37.0	-1.9	35.1	46.0	10.9	100.0	297.0
6	480.080	H	34.1	0.6	34.7	46.0	11.3	389.0	339.0
7	802.726	H	23.0	7.8	30.8	46.0	15.2	296.0	252.0
8	976.720	V	20.3	10.9	31.2	54.0	22.8	184.0	15.0

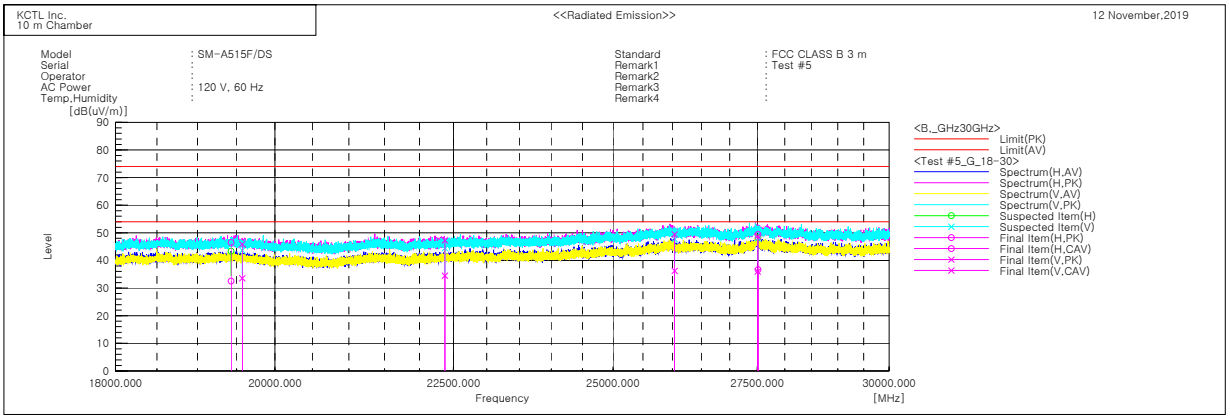
1 GHz ~ 18 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	2003.050	V	60.2	47.7	-13.8	46.4	33.9	74.0	54.0	27.6	20.1	104.0	234.0
2	2190.910	V	60.0	48.5	-12.8	47.2	35.7	74.0	54.0	26.8	18.3	121.0	344.0
3	2582.779	V	55.6	43.2	-12.1	43.5	31.1	74.0	54.0	30.5	22.9	211.0	146.0
4	3104.705	H	49.9	36.5	-9.1	40.8	27.4	74.0	54.0	33.2	26.6	317.0	18.0
5	17878.440	V	40.1	27.1	9.1	49.2	36.2	74.0	54.0	24.8	17.8	293.0	36.0
6	17990.650	H	40.3	27.0	9.5	49.8	36.5	74.0	54.0	24.2	17.5	293.0	228.0

18 GHz ~ 30 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	19428.670	H	40.0	26.0	6.5	46.5	32.5	74.0	54.0	27.5	21.5	216.0	338.0
2	19570.880	V	39.4	27.1	6.5	45.9	33.6	74.0	54.0	28.1	20.4	108.0	176.0
3	22372.420	V	40.2	27.4	7.1	47.3	34.5	74.0	54.0	26.7	19.5	291.0	256.0
4	26036.200	V	36.8	23.5	12.7	49.5	36.2	74.0	54.0	24.5	17.8	100.0	188.0
5	27504.480	V	35.0	22.2	13.8	48.8	36.0	74.0	54.0	25.2	18.0	387.0	249.0
6	27511.680	H	35.6	22.9	13.8	49.4	36.7	74.0	54.0	24.6	17.3	108.0	88.0