TEST REPORT

OF

FCC Part 18 Subpart C § 18.305

FCC ID: A3LEPP5200

Equipment Under Test	:	WIRELESS CHARGER
Model Name	:	EP-P5200
Applicant	:	Samsung Electronics Co., Ltd.
Manufacturer	:	Samsung Electronics Co., Ltd.
Date of Receipt	:	2018.12.13
Date of Test(s)	:	2018.12.14 ~ 2019.01.03
Date of Issue	:	2019.01.21

In the configuration tested, the EUT complied with the standards specified above.

Tested By: **Date:** **2019.01.21**

Nancy Park

Technical Manager: **Date:** **2019.01.21**

Hyunchae You

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.

Phone No. : +82 31 688 0901
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1.2. Details of applicant

Applicant : Samsung Electronics Co., Ltd.
Address : 19 Chapin Rd., Building D, Pine Brook, New Jersey, United States, 07058
Contact Person : Chun, Jenni
Phone No. : +1 973 808 6362

1.3. Details of manufacturer

Company : Samsung Electronics Co., Ltd.
Address : Yen Phong 1 Industrial park, Yen Phong District Ninh Province, VIETNAM

1.4. Description of EUT

Kind of Product	WIRELESS CHARGER		
Model Name	EP-P5200		
Power Supply	DC 12.0 V		
Frequency Range	Normal charging (DC 5.0 V)	Fast charging (DC 9.0 V)	Fast charging 2.0 (DC 12.0 V)
	Ant. 1: 110 ㎑ ~ 148 ㎑	Ant. 1: 110 ㎑ ~ 148 ㎑	Ant. 1: 110 ㎑ ~ 148 ㎑
	Ant. 2: 110 ㎑ ~ 148 ㎑	Ant. 2: 110 ㎑ ~ 148 ㎑	-
	Ant. 3: 125 ㎑ ~ 148 ㎑	-	-
Antenna Type	Internal Type		

1.5. Declaration by the manufacturer

- The EUT has 3 inductive loop coil antennas and can be operating maximum 2 antennas simultaneously. (For the details, please refer to Test setup photo)
- EUT is operated with input DC 12.0 V but internal circuit of EUT can divide DC 5.0 V, DC 9.0 V and DC 12.0 V depend on client devices.

1.6. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Spectrum Analyzer	R&S	FSV30	100768	Mar. 12, 2018	Annual	Mar. 12, 2019
Signal Generator	R&S	SMBV100A	259067	Jun. 15, 2018	Annual	Jun. 15, 2019
Test Receiver	R&S	ESU26	100109	Feb. 07, 2018	Annual	Feb. 07, 2019
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 23, 2017	Biennial	Aug. 23, 2019
Turn Table	Innco systems GmbH	DS 1200 S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/38330516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	SUCOFLEX	104 (3 m)	MY3258414	Jul. 04, 2018	Semi-annual	Jan. 4, 2019
Coaxial Cable	SUCOFLEX	104 (10 m)	MY3145814	Jul. 04, 2018	Semi-annual	Jan. 4, 2019
Test Receiver	R&S	ESCI 7	100911	Feb. 20, 2018	Annual	Feb. 20, 2019
Two-Line V-Network	R&S	ENV216	100190	May 14, 2018	Annual	May 14, 2019
Shield Room	SY Corporation	L × W × H (6.5 m × 3.5 m × 3.5 m)	N/A	N.C.R.	N/A	N.C.R.

▶ **Support equipment**

Description	Manufacturer	Model	FCC ID
Samsung Mobile Phone	Samsung Electronics Co., Ltd.	SM-G960U	A3LSMG960U
Samsung Mobile Phone	Samsung Electronics Co., Ltd.	SM-N960U	A3LSMN960U
Smart Wearable Device	Samsung Electronics Co., Ltd.	SM-R805U	A3LSMR805U
C type USB Cable	RFTECH, KSD, CRESYN, NINGBO BROAD TELECOMMUNICATION, LUXSHARE ICT	EP-DN930CWE	-
TRAVEL ADAPTER	Samsung Electronics Co., Ltd.	EP-TA300	-

1.7. Sample calculation

Where relevant, the following sample calculation is provided:
Field strength level (dBμV/m) = Measured level (dBμV) + Antenna factor (dB) + Cable loss (dB)

1.8. Worst case of test configurations

<table>
<tr><th>Charging mode
with client device</th><th colspan="3">Mode</th><th>Description</th></tr>
<tr><td rowspan="5">Model: SM-G960U
FCC ID: A3LSMG960U

Model: SM-N960U
FCC ID: A3LSMN960U

Model: SM-R805U
FCC ID: A3LSMR805U</td><td colspan="3">SISO</td><td rowspan="5">1 % of battery
50 % of battery
99 % of battery</td></tr>
<tr><td>Operating
DC 5 V</td><td>Operating
DC 9 V</td><td>Operating
DC 12 V</td></tr>
<tr><td>(Ant. 1)
(Ant. 2)
(Ant. 3)</td><td>(Ant. 1)
(Ant. 2)</td><td>(Ant. 1)</td></tr>
<tr><td colspan="3">MIMO</td></tr>
<tr><td colspan="3">(Ant. 1_DC 5 V + Ant. 2_DC 5 V)
(Ant. 1_DC 5 V + Ant. 2_DC 9 V)
(Ant. 1_DC 5 V + Ant. 3_DC 5 V)
(Ant. 1_DC 9 V + Ant. 2_DC 5 V)
(Ant. 1_DC 9 V + Ant. 2_DC 9 V)
(Ant. 1_DC 9 V + Ant. 3_DC 5 V)
(Ant. 1_DC 12 V + Ant. 3_DC 5 V)</td></tr>
</table>

Note;

EUT was investigated with client device under normal charging condition as above then worst value was only reported.

1.9. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 18 Subpart C		
Section	**Test Item**	**Result**
18.305	Field Strength of Fundamental and Spurious emissions	Complied
18.307	AC Conducted Power Line Emissions	Complied

1.10. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty (㏈)
Conducted Disturbance	± 3.30
Radiated Disturbance, 9 ㎑ to 30 ㎒	±3.59

Uncertainty figures are valid to a confidence level of 95 %.

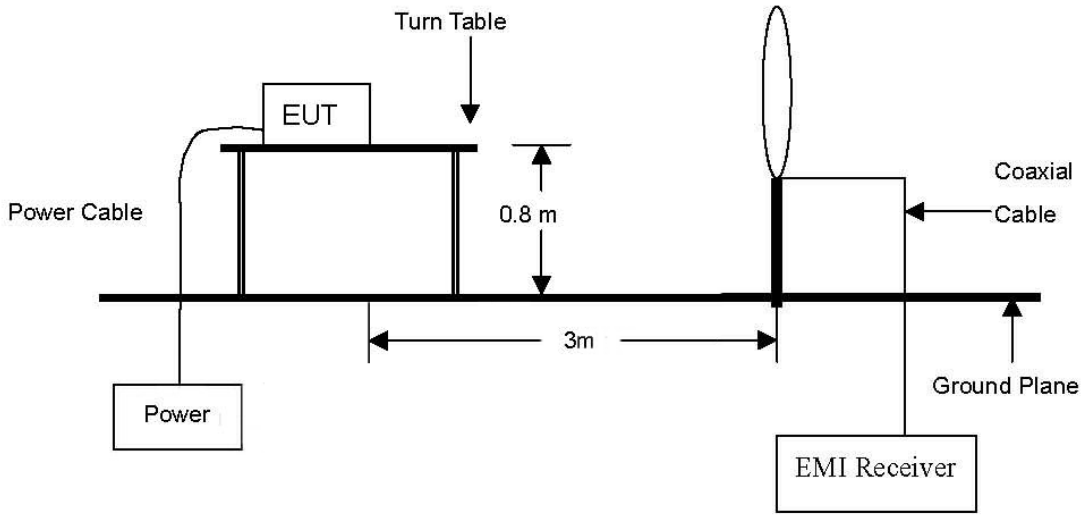
1.11. Test Report Revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL013446	2019.01.21	Initial

2. Field Strength of Fundamental and Spurious emissions

2.1. Test Setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒.



2.2. Radiated emission limit

According to §18.305 (b), The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

Equipment	Operating frequency	RF power generated by equipment (watts)	Field strength limit (㎶/m)	Distance (meter)
Any type unless otherwise specified(miscellaneous)	Any ISM frequency	Below 500 500 or more	25 25 x SQRT (power/500)	300 [1]300
	Any non-ISM frequency	**Below 500** 500 or more	**15** 15 x SQRT (power/500)	**300** [1]300
Industrial heaters and RF stabilized arc welders	On or below 5,725 ㎒ Above 5,725 ㎒	Any Any	10 ([2])	1600 ([2])
Medical diathermy	Any ISM frequency Any non-ISM Frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 ㎑	Below 500 500 or more	2,400/F(㎑) 2,400/F(㎑) x SQRT(power/500)	300 [3]300
	490 to 1,600 ㎑ Above 1,600 ㎑	Any Any	24,000/F(㎑) 15	30 30
Induction cooking ranges	Below 90 ㎑ On or above 90 ㎑	Any Any	1,500 300	[4]30 [4]30

[1]Field strength may not exceed 10 ㎶/m at 1 600 meters. Consumer equipment operating below 1 000 ㎒ is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

[2]Reduced to the greatest extent possible.

[3]Field strength may not exceed 10 ㎶/m at 1 600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.

[4]Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

2.3. Test Procedures for emission from 9 ㎑ to 30 ㎒

Radiated emissions from the EUT were measured according to the dictates of MP-5 measurement.

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. Then antenna is a loop antenna is set from 1 meter to 2 meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
c. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
d. The test-receiver system was set to average detect function and specified bandwidth with maximum hold mode.
e. The test data of the worst-case condition was recorded.

2.4. Field Strength of Fundamental Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical. The field strength of spurious emission was measured in one orthogonal EUT position (X-axis).

Test Condition: DC 5 V Operating mode with client device (1 % battery status of client device)

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
Ant. 1 (110 ㎑ – 148 ㎑)									
0.110	53.90	Average	H	19.70	0.05	73.65	-6.35	23.52	29.87
Ant. 2 (110 ㎑ – 148 ㎑)									
0.148	58.60	Average	H	19.68	0.09	78.37	-1.63	23.52	25.15
Ant. 3 (125 ㎑ – 148 ㎑)									
0.125	56.40	Average	H	19.69	0.07	76.16	-3.84	23.52	27.36

Test Condition: DC 9 V Operating mode with client device (1 % battery status of client device)

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
Ant. 1 (110 ㎑ – 148 ㎑)									
0.148	63.10	Average	H	19.68	0.09	82.87	2.87	23.52	20.65
Ant. 2 (110 ㎑ – 148 ㎑)									
0.148	65.80	Average	H	19.68	0.09	85.57	5.57	23.52	17.95

Test Condition: DC 12 V Operating mode with client device (1 % battery status of client device)

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
Ant. 1 (110 ㎑ – 148 ㎑)									
0.111	56.30	Average	H	19.69	0.05	76.04	-3.96	23.52	27.48

Test Condition: MIMO Operating mode with client device (1 % battery status of client device)

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 5 V (110 ㎑ – 148 ㎑)									
0.137	62.10	Average	H	19.68	0.08	81.86	1.86	23.52	21.66
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 9 V (110 ㎑ – 148 ㎑)									
0.111	63.70	Average	H	19.69	0.05	83.44	3.44	23.52	20.08
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)									
0.148	56.50	Average	H	19.68	0.09	76.27	-3.73	23.52	27.25
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 5 V (110 ㎑ – 148 ㎑)									
0.111	62.60	Average	H	19.69	0.05	82.34	2.34	23.52	21.18
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 9 V (110 ㎑ – 148 ㎑)									
0.137	67.70	Average	H	19.68	0.08	87.46	7.46	23.52	16.06
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)									
0.125	65.30	Average	H	19.69	0.07	85.06	5.06	23.52	18.46
Ant. 1_DC 12 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)									
0.125	64.70	Average	H	19.69	0.07	84.46	4.46	23.52	19.06

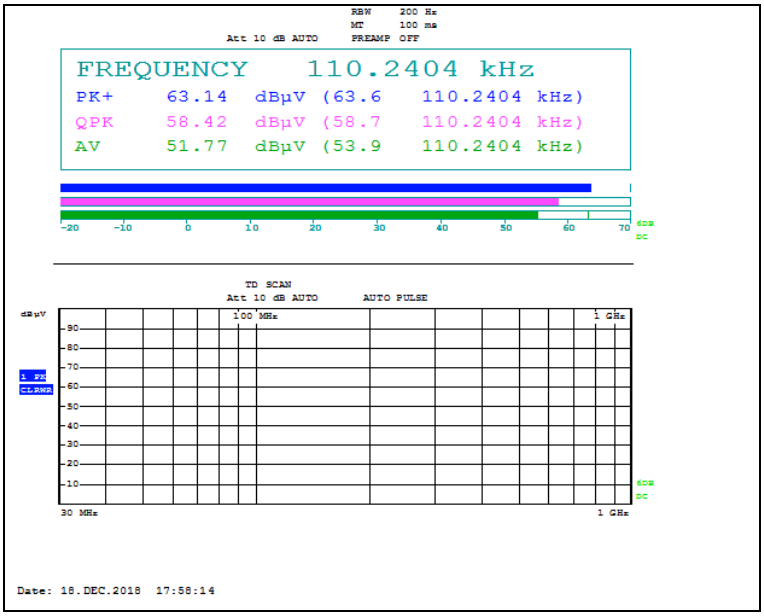
Remark;

1. Result at 300 m [dB㎶/m]= Actual at 3 m [dB㎶/m] + 40 log(300/3)
2. According to clause 2.2.2. of MP-5(1986). The detector function selector shall be set to average.
3. The limit above was calculated based on table §18.305(b)

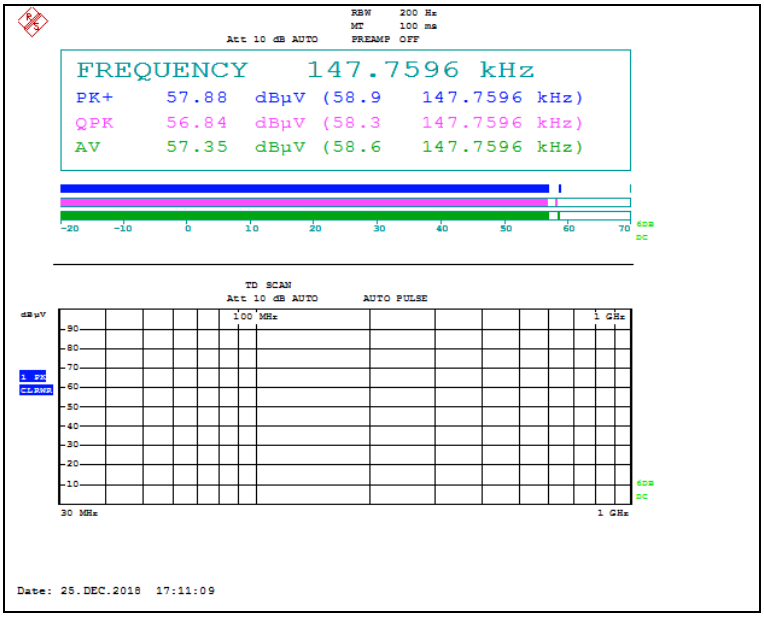
- Test plots

Test Condition: DC 5 V Operating mode with client device (1 % battery status of client device)

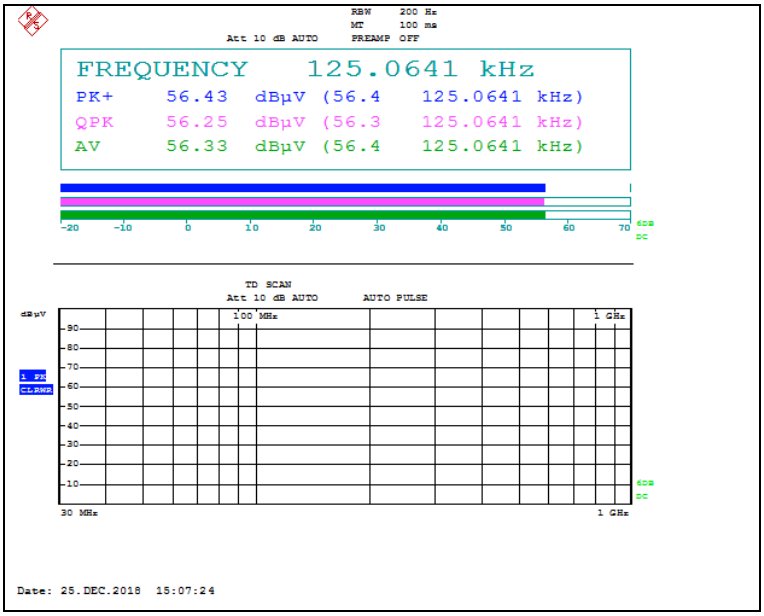
Ant. 1



Ant. 2

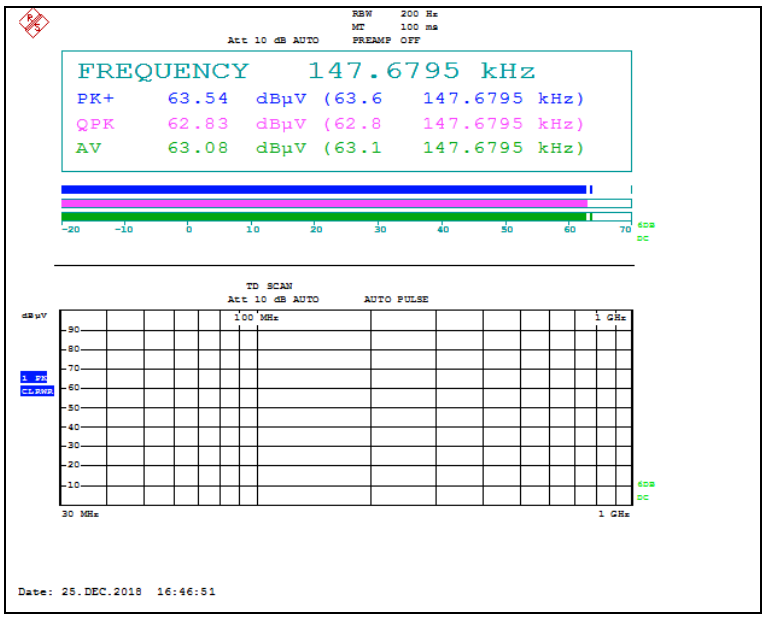


Ant. 3

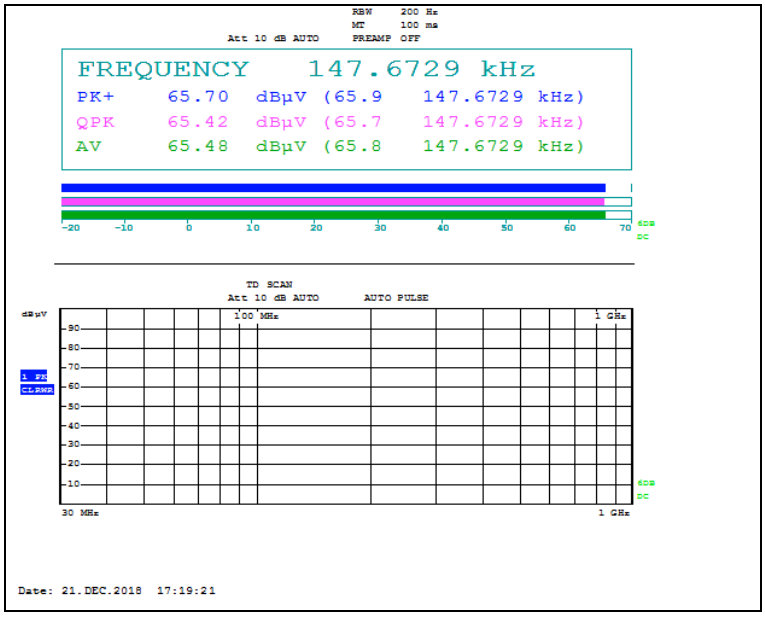

RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 125.0641 kHz
PK+ 56.43 dBµV (56.4 125.0641 kHz)
QPK 56.25 dBµV (56.3 125.0641 kHz)
AV 56.33 dBµV (56.4 125.0641 kHz)
-20 -10 0 10 20 30 40 50 60 70
TD SCAN
Att 10 dB AUTO AUTO PULSE
dBµV
100 MHz
1 GHz
90 80 70 60 50 40 30 20 10
30 MHz
1 GHz
Date: 25.DEC.2018 15:07:24

Test Condition: DC 9 V Operating mode with client device (1 % battery status of client device)

Ant. 1

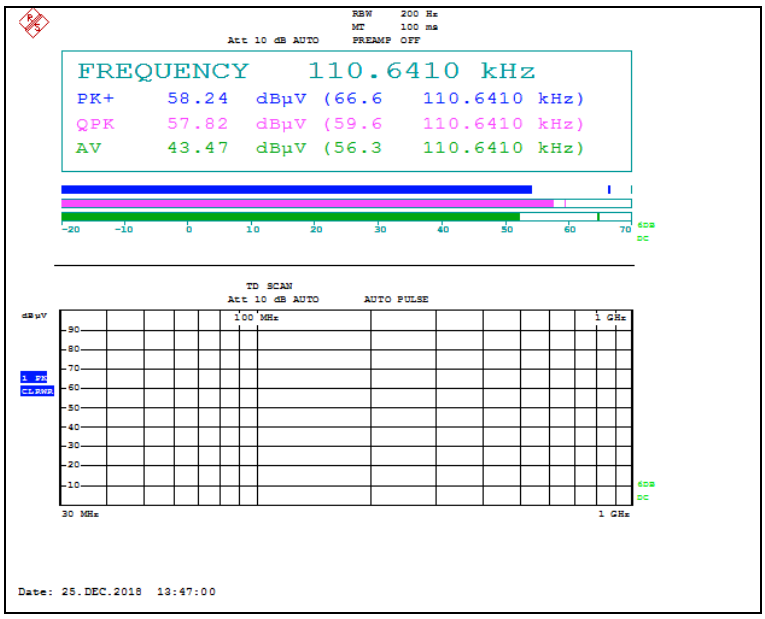


Ant. 2



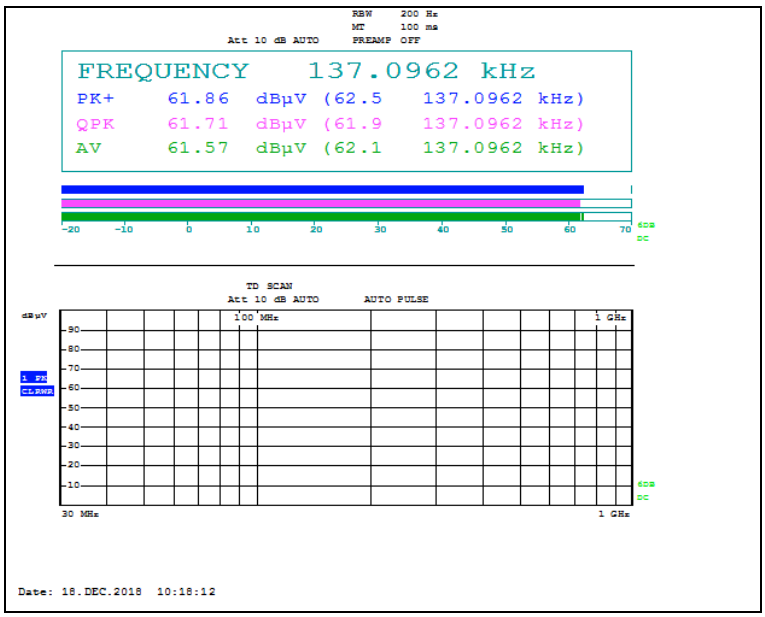
Test Condition: DC 12 V Operating mode with client device (1 % battery status of client device)

Ant. 1

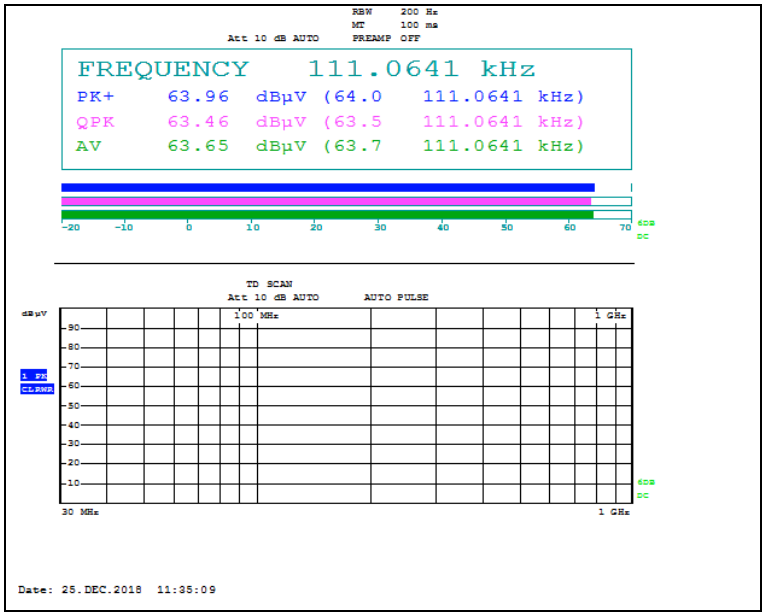


Test Condition: MIMO Operating mode with client device (1 % battery status of client device)

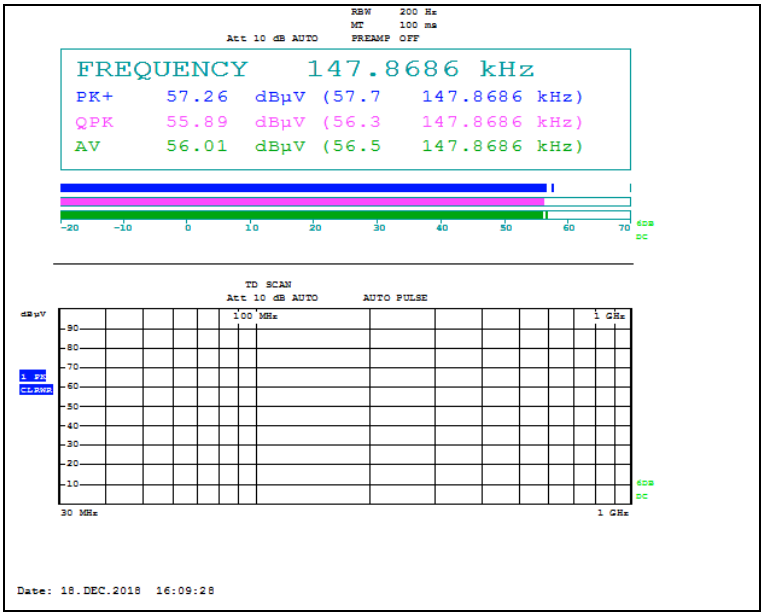
Ant. 1_DC 5 V + Ant. 2_DC 5 V



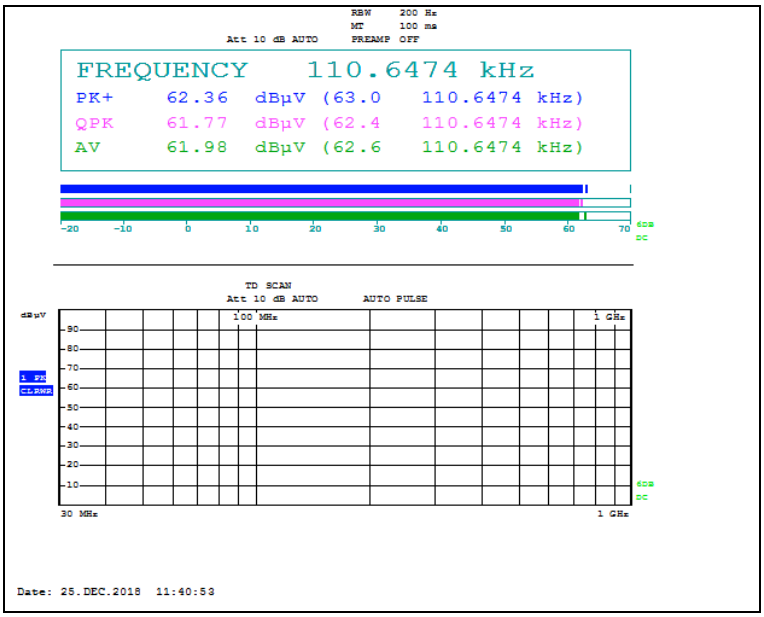
Ant. 1_DC 5 V + Ant. 2_DC 9 V



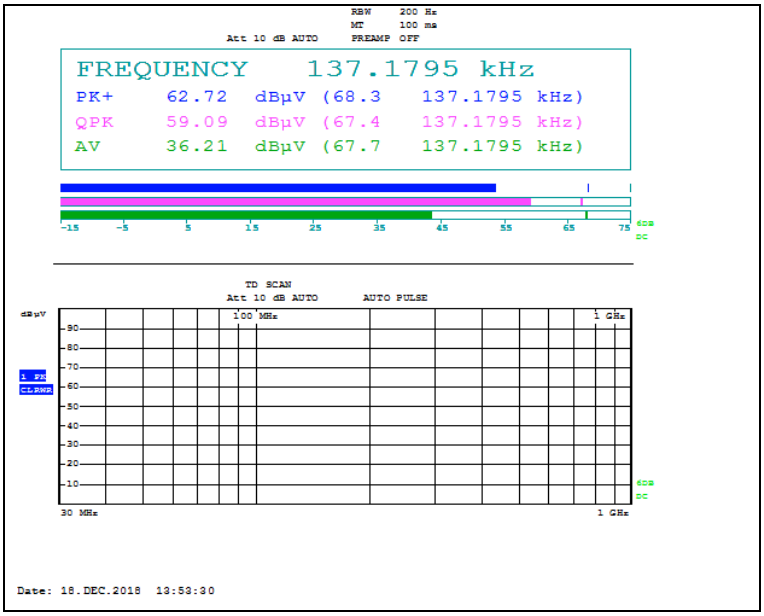
Ant. 1_DC 5 V + Ant. 3_DC 5 V



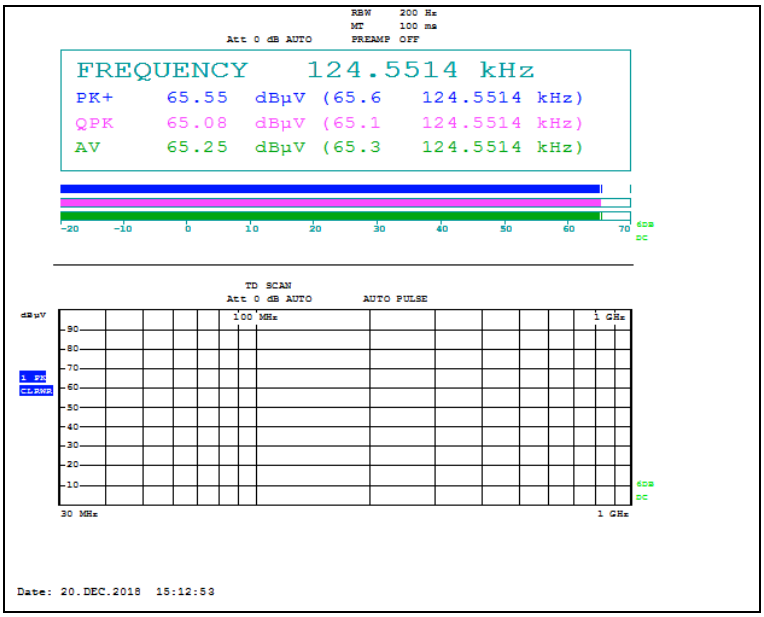
Ant. 1_DC 9 V + Ant. 2_DC 5 V



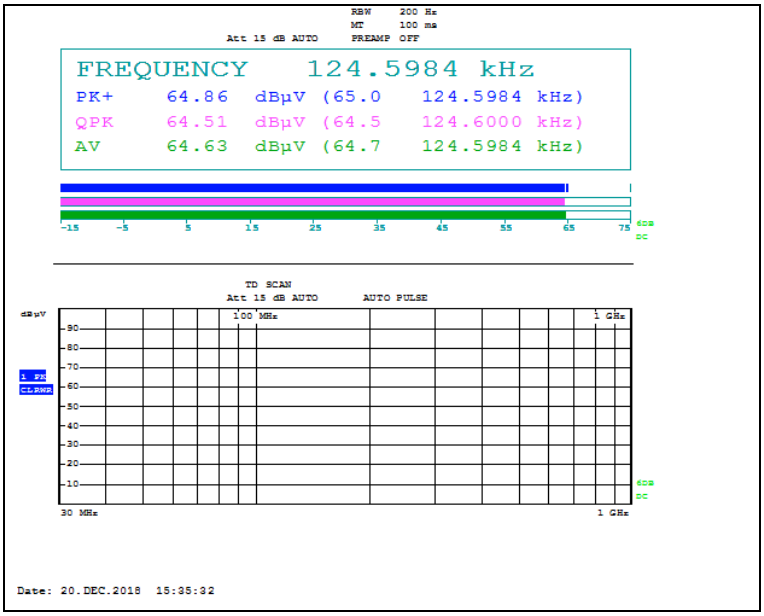
Ant. 1_DC 9 V + Ant. 2_DC 9 V



Ant. 1_DC 9 V + Ant. 3_DC 5 V



Ant. 1_DC 12 V + Ant. 3_DC 5 V



2.5. Spurious Emission Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical from 9 ㎑ to 30 ㎒.

Test Condition: DC 5 V Operating mode with client device (1 % battery status of client device)

Ant. 1

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
0.019	25.30	Average	H	19.97	0.01	45.28	-34.72	23.52	58.24
0.035	23.15	Average	H	19.79	0.02	42.96	-37.04	23.52	60.56
0.085	10.20	Average	H	19.72	0.04	29.96	-50.04	23.52	73.56
0.331	41.40	Average	H	19.60	0.25	61.25	-18.75	23.52	42.27
0.440	33.50	Average	H	19.60	0.34	53.44	-26.56	23.52	50.08
0.553	31.90	Average	H	19.61	0.43	51.94	-28.06	23.52	51.58
Above 0.600	Not detected	-	-	-	-	-	-	-	-

Ant. 2

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
0.019	27.40	Average	H	19.97	0.01	47.38	-32.62	23.52	56.14
0.035	22.80	Average	H	19.79	0.02	42.61	-37.39	23.52	60.91
0.048	16.80	Average	H	19.77	0.02	36.59	-43.41	23.52	66.93
0.444	37.60	Average	H	19.60	0.34	57.54	-22.46	23.52	45.98
0.738	28.10	Average	H	19.65	0.57	48.32	-31.68	23.52	55.20
1.034	20.30	Average	H	19.70	0.78	40.78	-39.22	23.52	62.74
Above 2.000	Not detected	-	-	-	-	-	-	-	-

Ant. 3

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.019	27.70	Average	H	19.97	0.01	47.68	-32.32	23.52	55.84
0.035	30.50	Average	H	19.79	0.02	50.31	-29.69	23.52	53.21
0.071	20.10	Average	H	19.74	0.03	39.87	-40.13	23.52	63.65
0.375	33.50	Average	H	19.60	0.29	53.39	-26.61	23.52	50.13
0.441	27.50	Average	H	19.60	0.34	47.44	-32.56	23.52	56.08
0.626	21.80	Average	H	19.63	0.49	41.92	-38.08	23.52	61.60
Above 0.700	Not detected	-	-	-	-	-	-	-	-

Test Condition: DC 9 V Operating mode with client device (1 % battery status of client device)

Ant. 1

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.019	27.30	Average	H	19.97	0.01	47.28	-32.72	23.52	56.24
0.035	33.22	Average	H	19.79	0.02	53.03	-26.97	23.52	50.49
0.071	24.00	Average	H	19.74	0.03	43.77	-36.23	23.52	59.75
0.442	41.60	Average	H	19.60	0.34	61.54	-18.46	23.52	41.98
0.738	31.20	Average	H	19.65	0.57	51.42	-28.58	23.52	52.10
1.032	22.60	Average	H	19.70	0.78	43.08	-36.92	23.52	60.44
Above 2.000	Not detected	-	-	-	-	-	-	-	-

Ant. 2

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.019	29.40	Average	H	19.97	0.01	49.38	-30.62	23.52	54.14
0.047	19.70	Average	H	19.78	0.02	39.50	-40.50	23.52	64.02
0.066	19.20	Average	H	19.75	0.03	38.98	-41.02	23.52	64.54
0.443	44.52	Average	H	19.60	0.34	64.46	-15.54	23.52	39.06
0.739	34.50	Average	H	19.65	0.57	54.72	-25.28	23.52	48.80
1.034	27.70	Average	H	19.70	0.78	48.18	-31.82	23.52	55.34
Above 2.000	Not detected	-	-	-	-	-	-	-	-

Test Condition: DC 12 V Operating mode with client device (1 % battery status of client device)

Ant. 1

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.019	27.20	Average	H	19.97	0.01	47.18	-32.82	23.52	56.34
0.066	18.60	Average	H	19.75	0.03	38.38	-41.62	23.52	65.14
0.329	42.50	Average	H	19.60	0.25	62.35	-17.65	23.52	41.17
0.551	32.10	Average	H	19.61	0.43	52.14	-27.86	23.52	51.38
0.770	21.10	Average	H	19.65	0.60	41.35	-38.65	23.52	62.17
Above 0.800	Not detected	-	-	-	-	-	-	-	-

Test Condition: MIMO Operating mode with client device (1 % battery status of client device)

Ant. 1_DC 5 V + Ant. 2_DC 5 V

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.022	26.10	Average	H	19.92	0.01	46.03	-33.97	23.52	57.49
0.035	28.90	Average	H	19.79	0.02	48.71	-31.29	23.52	54.81
0.069	19.50	Average	H	19.74	0.03	39.27	-40.73	23.52	64.25
0.411	41.10	Average	H	19.60	0.32	61.02	-18.98	23.52	42.50
0.686	31.20	Average	H	19.64	0.53	51.37	-28.63	23.52	52.15
0.960	24.60	Average	H	19.69	0.75	45.04	-34.96	23.52	58.48
Above 1.000	Not detected	-	-	-	-	-	-	-	-

Ant. 1_DC 5 V + Ant. 2_DC 9 V

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.019	23.50	Average	H	19.97	0.01	43.48	-36.52	23.52	60.04
0.069	19.50	Average	H	19.74	0.03	39.27	-40.73	23.52	64.25
0.077	17.30	Average	H	19.73	0.03	37.06	-42.94	23.52	66.46
0.222	32.90	Average	H	19.64	0.17	52.71	-27.29	23.52	50.81
0.333	45.70	Average	H	19.60	0.25	65.55	-14.45	23.52	37.97
0.553	37.80	Average	H	19.61	0.43	57.84	-22.16	23.52	45.68
Above 1.000	Not detected	-	-	-	-	-	-	-	-

Ant. 1_DC 5 V + Ant. 3_DC 5 V

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.019	26.40	Average	H	19.97	0.01	46.38	-33.62	23.52	57.14
0.035	25.40	Average	H	19.79	0.02	45.21	-34.79	23.52	58.31
0.067	18.40	Average	H	19.75	0.03	38.18	-41.82	23.52	65.34
0.443	36.00	Average	H	19.60	0.34	55.94	-24.06	23.52	47.58
0.740	25.70	Average	H	19.65	0.58	45.93	-34.07	23.52	57.59
1.037	17.00	Average	H	19.70	0.78	37.48	-42.52	23.52	66.04
Above 2.000	Not detected	-	-	-	-	-	-	-	-

Ant. 1_DC 9 V + Ant. 2_DC 5 V

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.035	25.80	Average	H	19.79	0.02	45.61	-34.39	23.52	57.91
0.073	17.20	Average	H	19.74	0.03	36.97	-43.03	23.52	66.55
0.332	46.20	Average	H	19.60	0.25	66.05	-13.95	23.52	37.47
0.553	37.30	Average	H	19.61	0.43	57.34	-22.66	23.52	46.18
0.776	31.40	Average	H	19.66	0.60	51.66	-28.34	23.52	51.86
Above 0.800	Not detected	-	-	-	-	-	-	-	-

Ant. 1_DC 9 V + Ant. 2_DC 9 V

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.022	23.00	Average	H	19.92	0.01	42.93	-37.07	23.52	60.59
0.035	23.90	Average	H	19.79	0.02	43.71	-36.29	23.52	59.81
0.076	18.00	Average	H	19.73	0.03	37.76	-42.24	23.52	65.76
0.410	45.00	Average	H	19.60	0.32	64.92	-15.08	23.52	38.60
0.686	34.10	Average	H	19.64	0.53	54.27	-25.73	23.52	49.25
0.961	25.40	Average	H	19.69	0.75	45.84	-34.16	23.52	57.68
Above 1.000	Not detected	-	-	-	-	-	-	-	-

Ant. 1_DC 9 V + Ant. 3_DC 5 V

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.022	26.60	Average	H	19.92	0.01	46.53	-33.47	23.52	56.99
0.047	18.00	Average	H	19.78	0.02	37.80	-42.20	23.52	65.72
0.069	20.80	Average	H	19.74	0.03	40.57	-39.43	23.52	62.95
0.256	31.10	Average	H	19.62	0.19	50.91	-29.09	23.52	52.61
0.380	34.30	Average	H	19.60	0.29	54.19	-25.81	23.52	49.33
0.509	25.40	Average	H	19.60	0.39	45.39	-34.61	23.52	58.13
Above 0.600	Not detected	-	-	-	-	-	-	-	-

Ant. 1_DC 12 V + Ant. 3_DC 5 V

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Actual (dB㎶/m) at 300 m	Margin (dB)
0.021	26.00	Average	H	19.94	0.01	45.95	-34.05	23.52	57.57
0.047	18.00	Average	H	19.78	0.02	37.80	-42.20	23.52	65.72
0.061	13.10	Average	H	19.76	0.03	32.89	-47.11	23.52	70.63
0.381	42.70	Average	H	19.60	0.29	62.59	-17.41	23.52	40.93
0.635	30.40	Average	H	19.63	0.49	50.52	-29.48	23.52	53.00
0.889	19.30	Average	H	19.68	0.69	39.67	-40.33	23.52	63.85
Above 0.900	Not detected	-	-	-	-	-	-	-	-

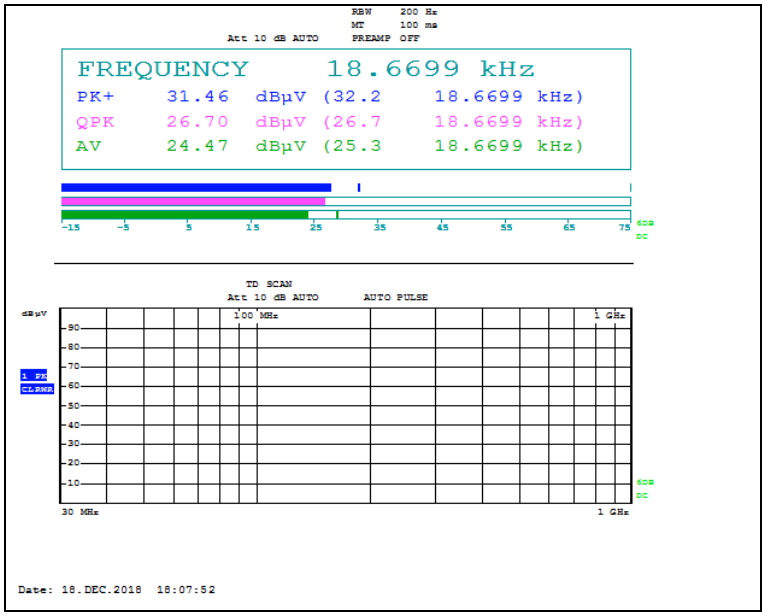
Remark;

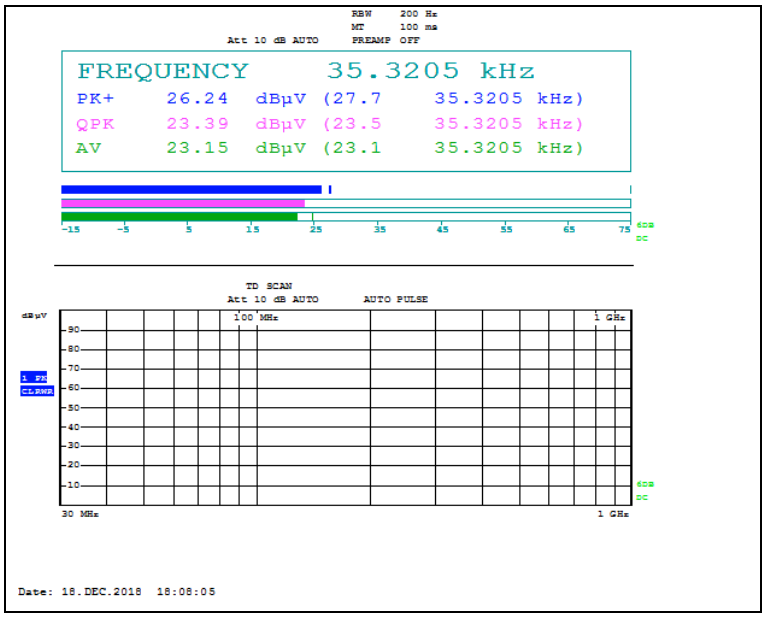
1. Result at 300 m [dB㎶/m]= Actual at 3 m [dB㎶/m] - 40 log(300/3)
2. According to clause 2.2.2. of MP-5(1986). The detector function selector shall be set to average.
3. The limit above was calculated based on table §18.305(b)

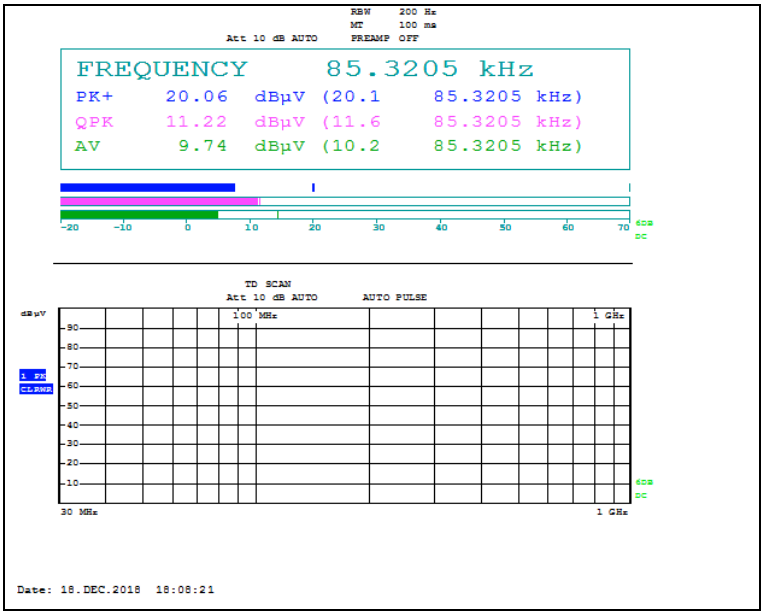
- Test plots

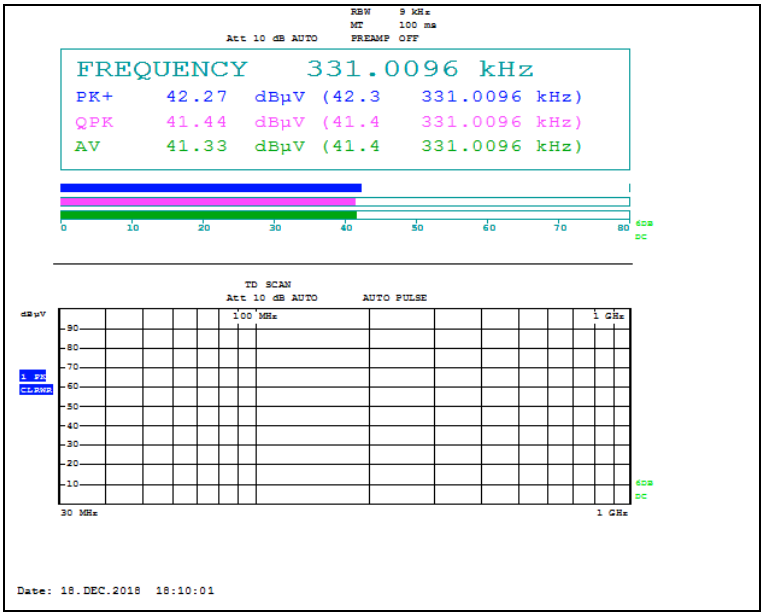
Test Condition: DC 5 V Operating mode with client device (1 % battery status of client device)

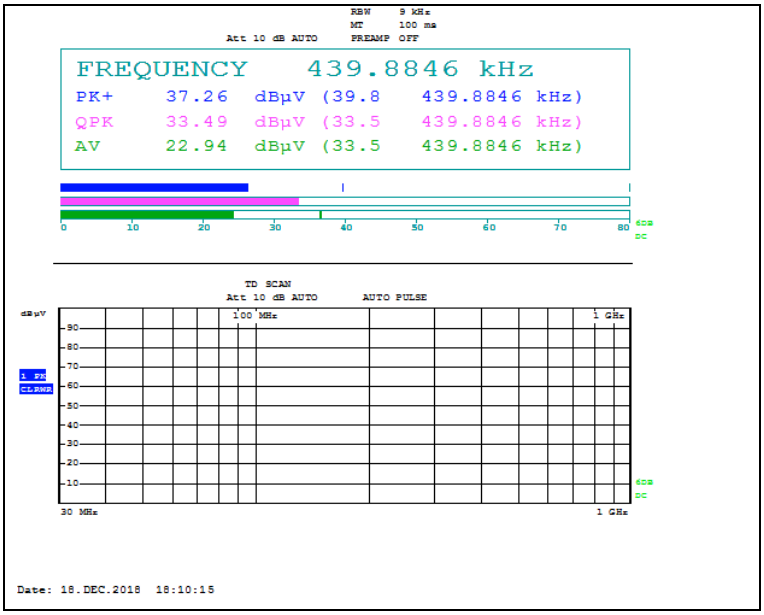
Ant. 1

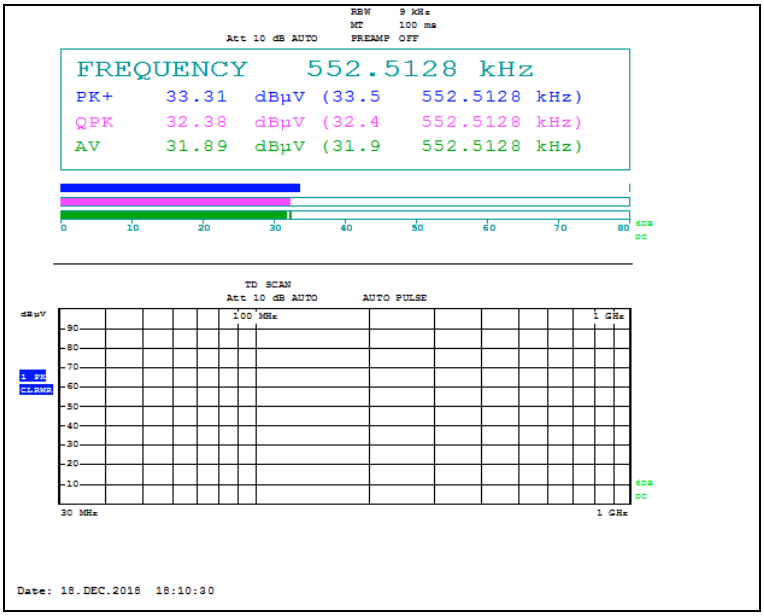




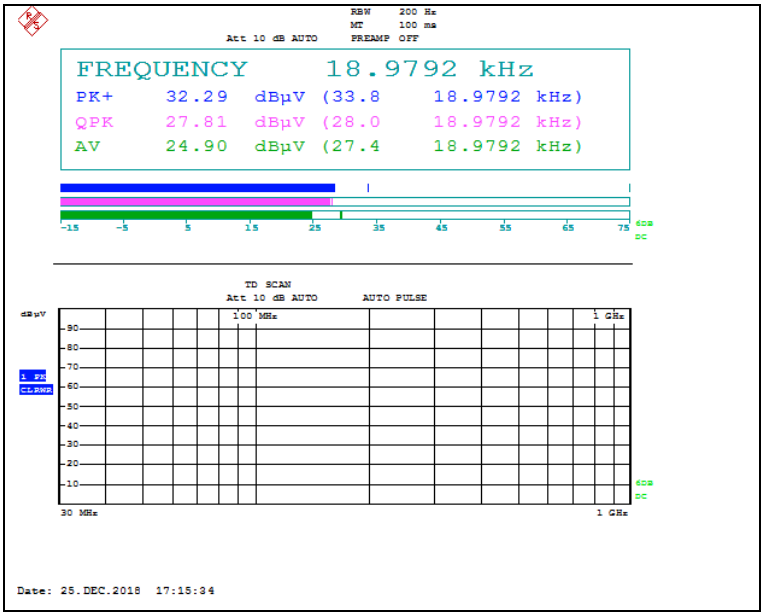


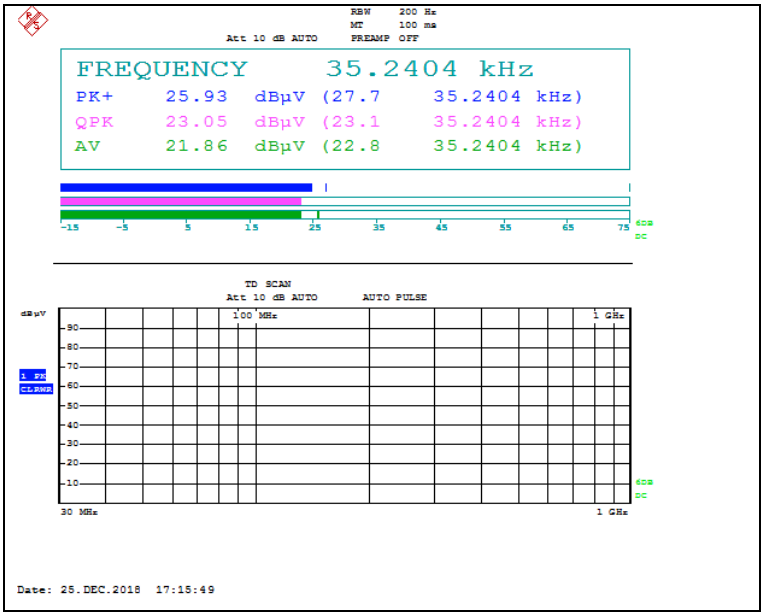


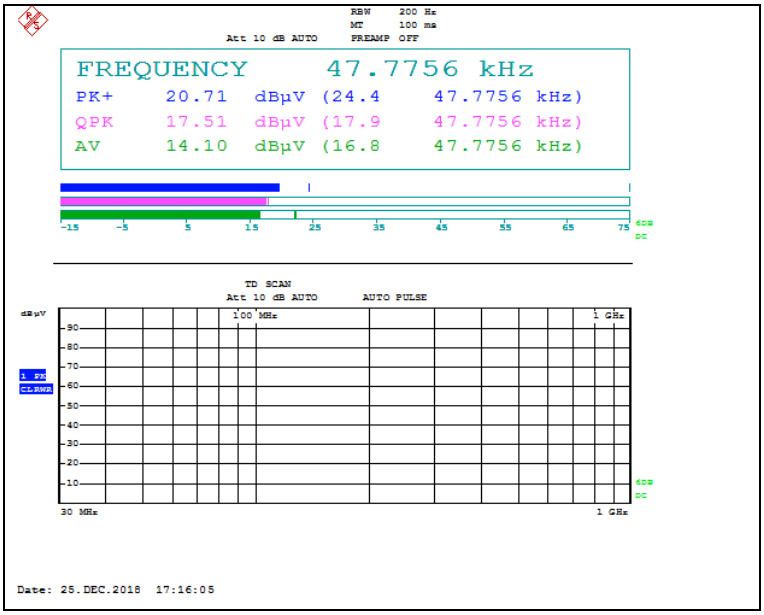


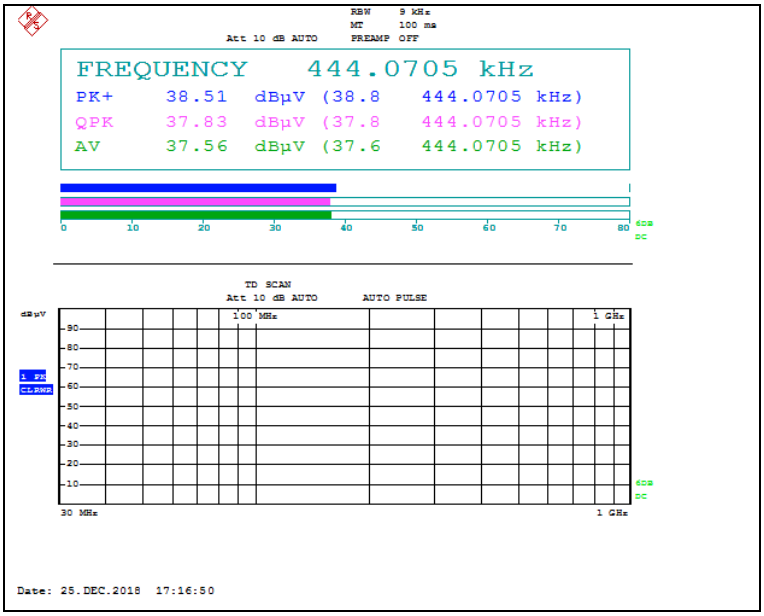


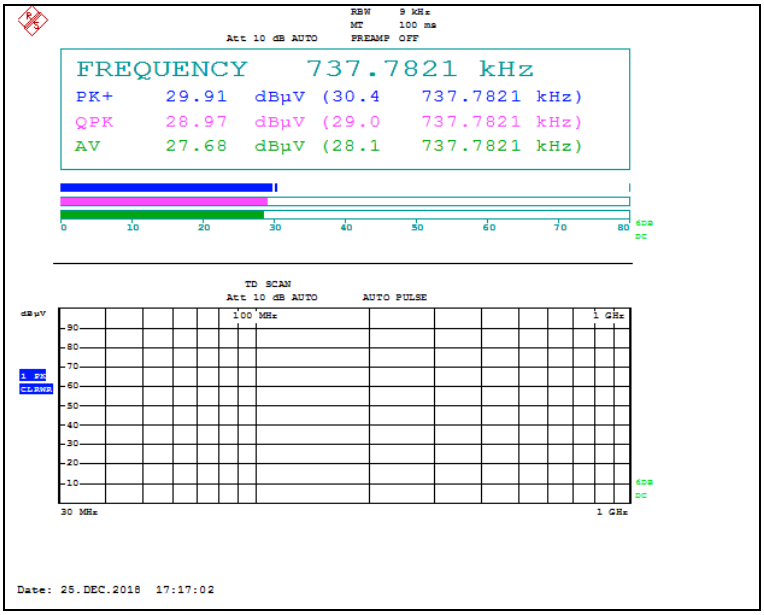
Ant. 2

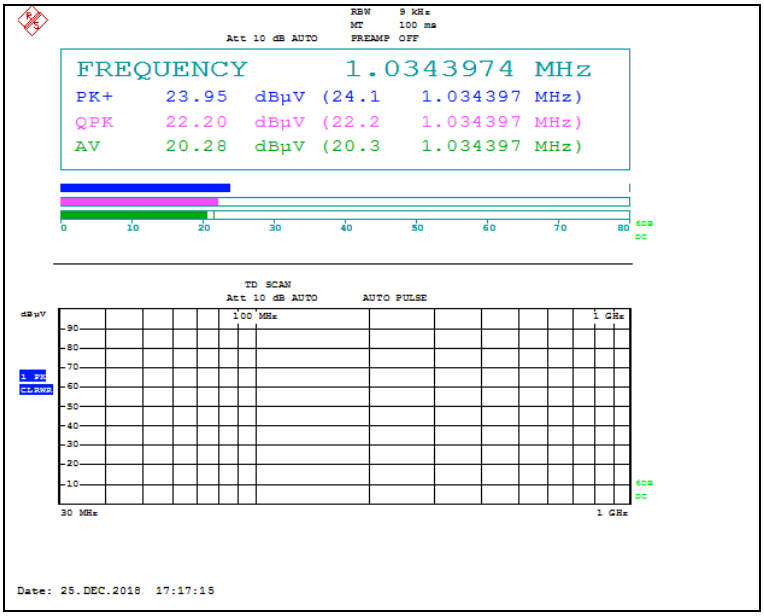




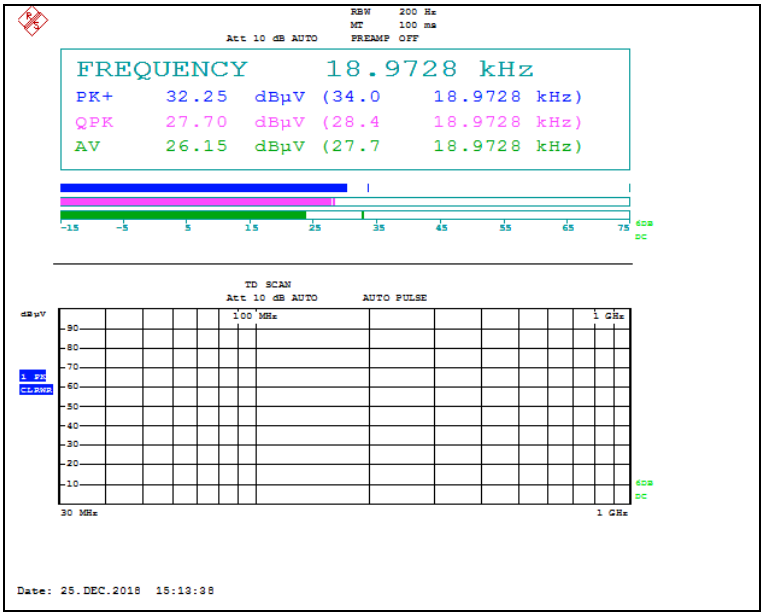


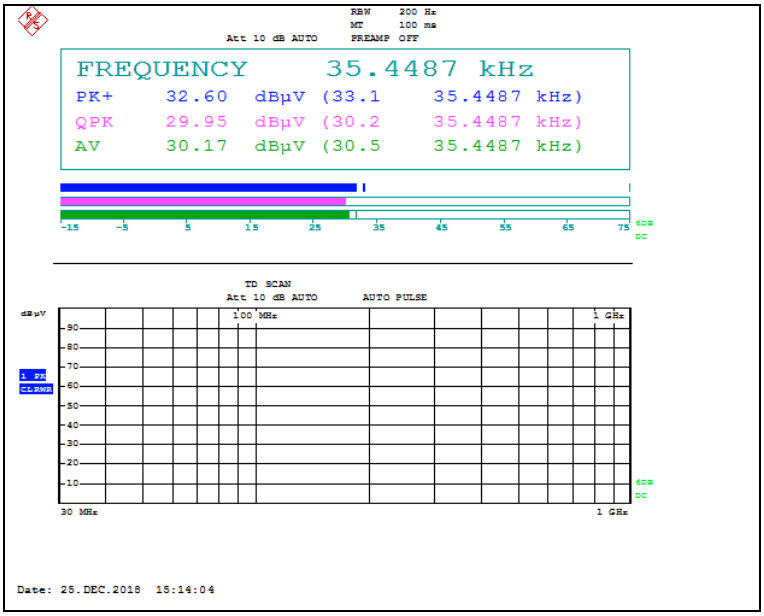


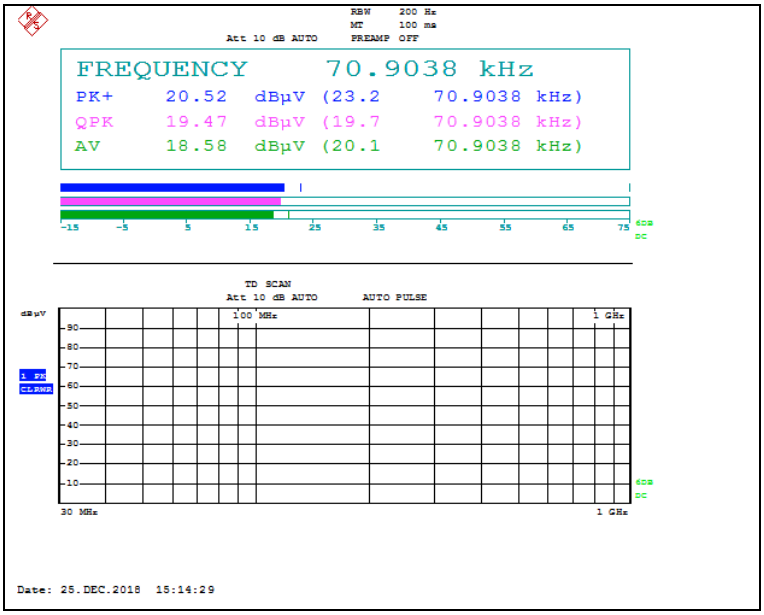


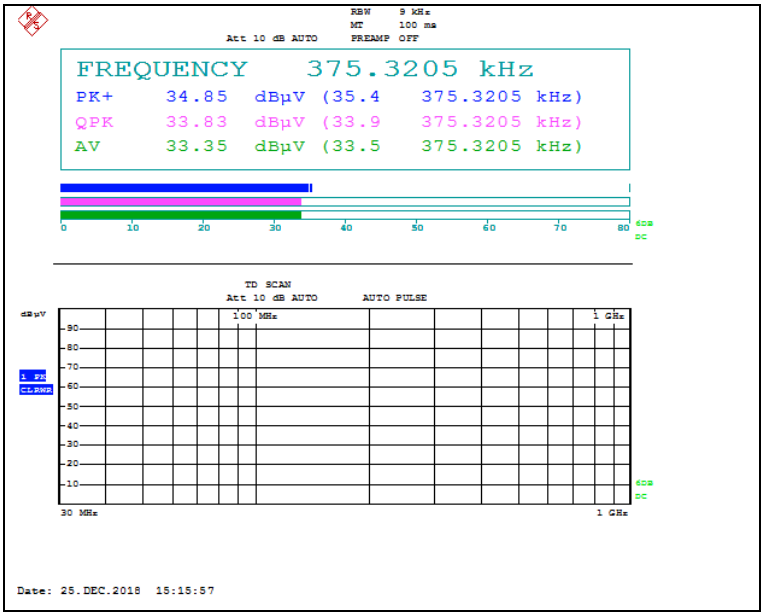


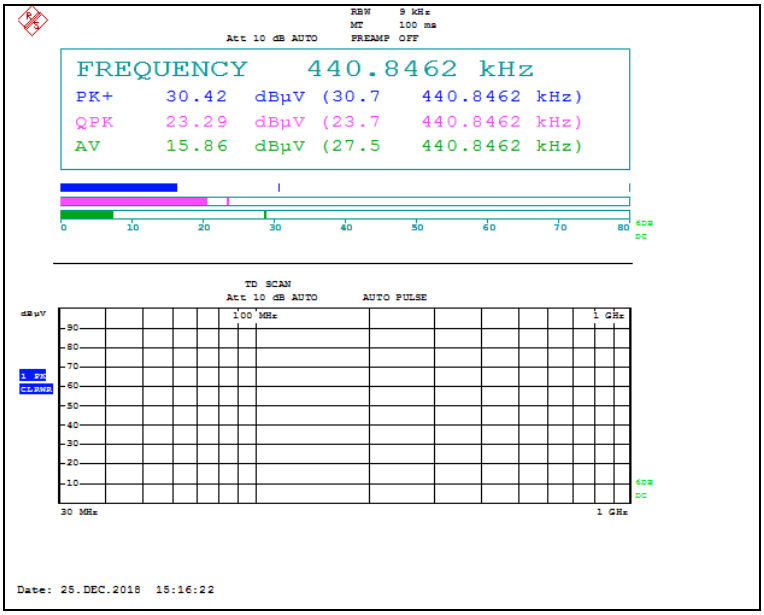
Ant. 3

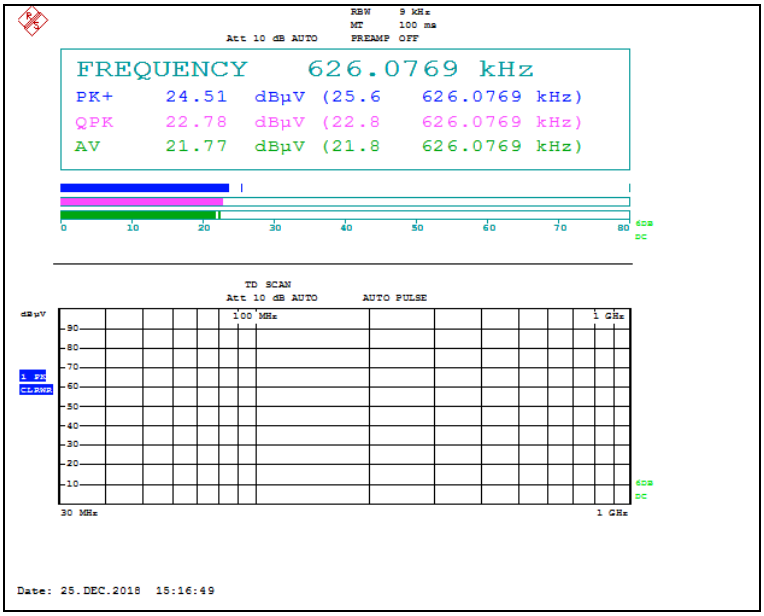

RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 18.9728 kHz
PK+ 32.25 dBµV (34.0 18.9728 kHz)
QPK 27.70 dBµV (28.4 18.9728 kHz)
AV 26.15 dBµV (27.7 18.9728 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz
Date: 25.DEC.2018 15:13:38


RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 35.4487 kHz
PK+ 32.60 dBµV (33.1 35.4487 kHz)
QPK 29.95 dBµV (30.2 35.4487 kHz)
AV 30.17 dBµV (30.5 35.4487 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz
Date: 25.DEC.2018 15:14:04



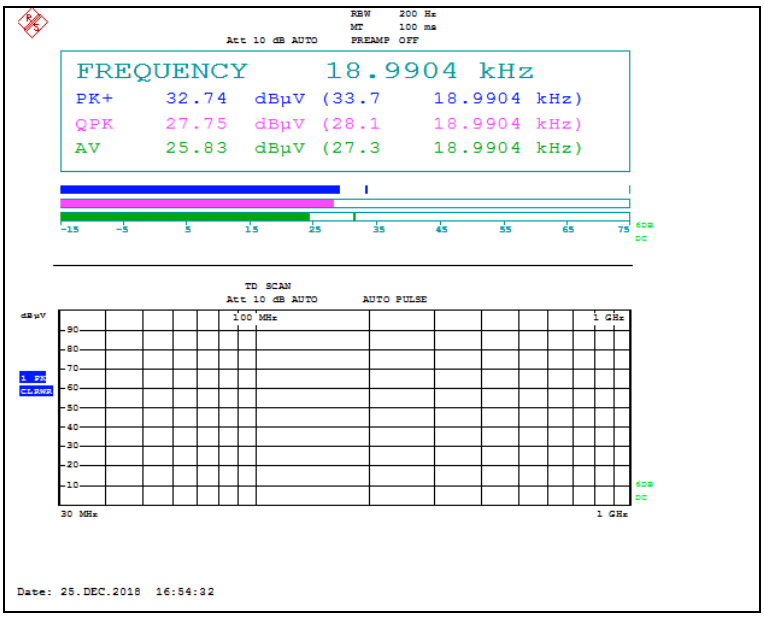


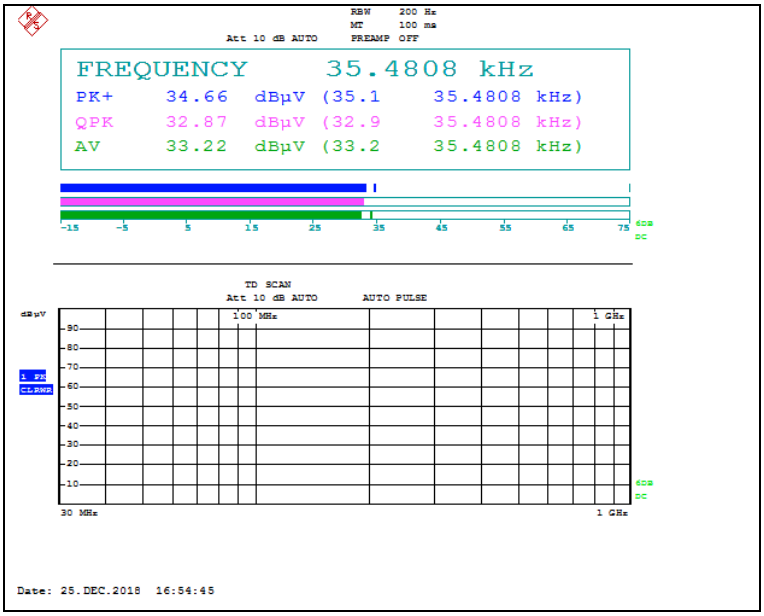


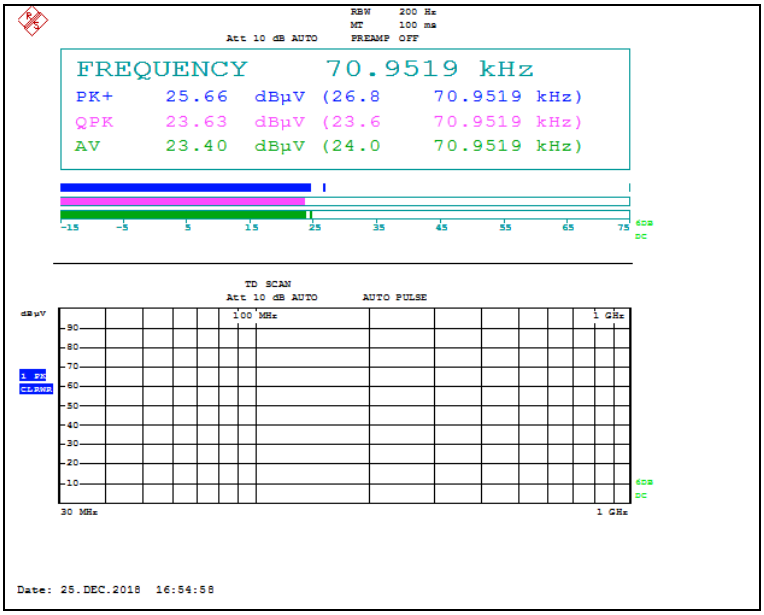


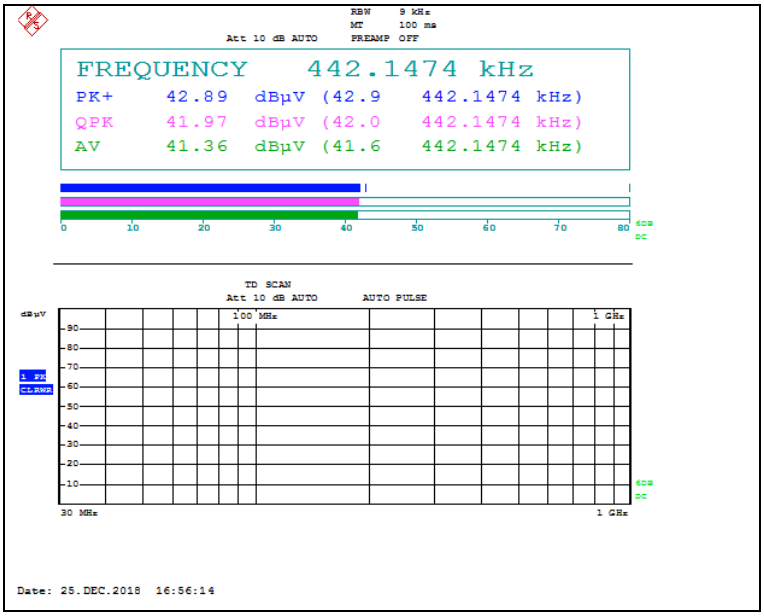
Test Condition: DC 9 V Operating mode with client device (1 % battery status of client device)

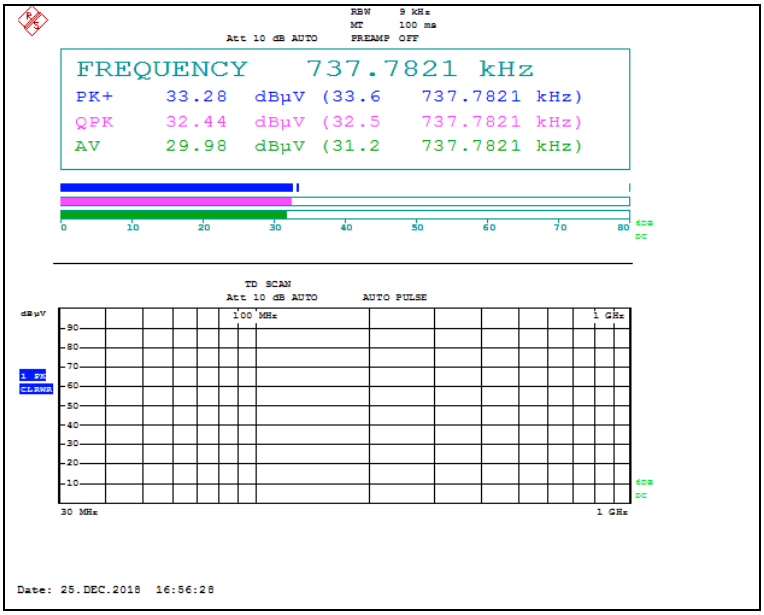
Ant. 1

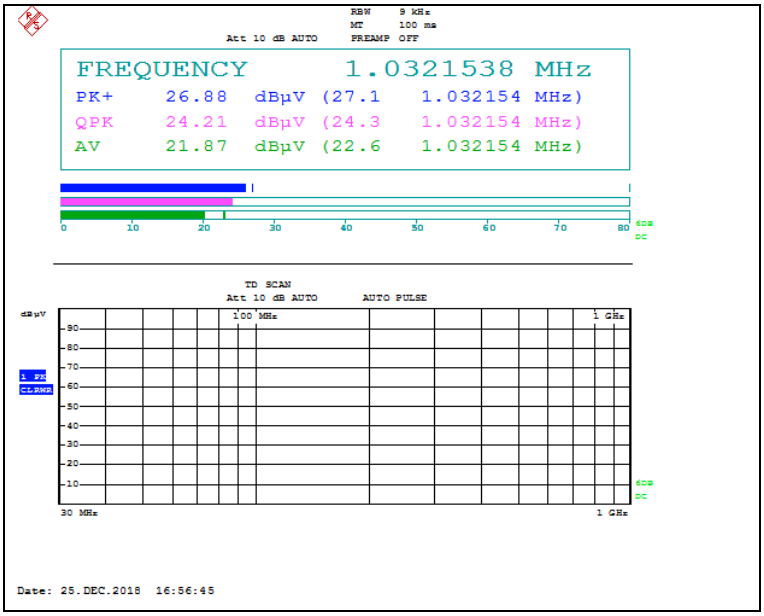




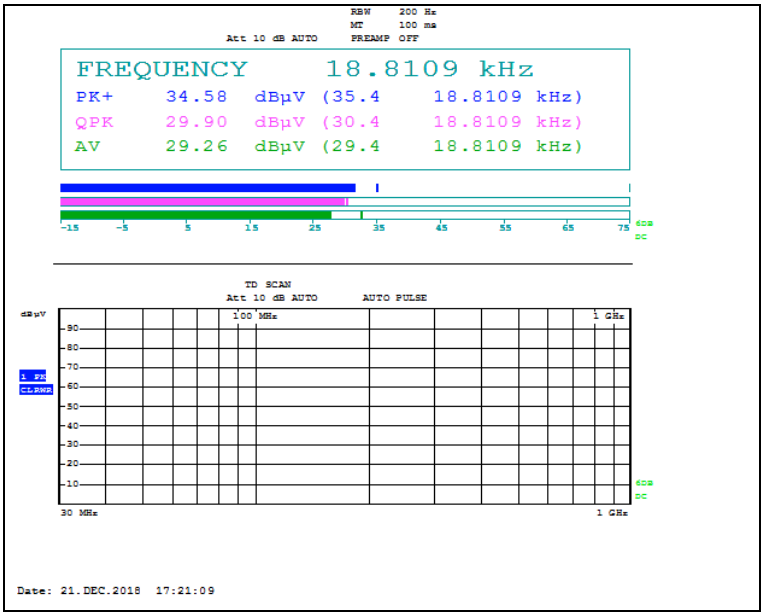


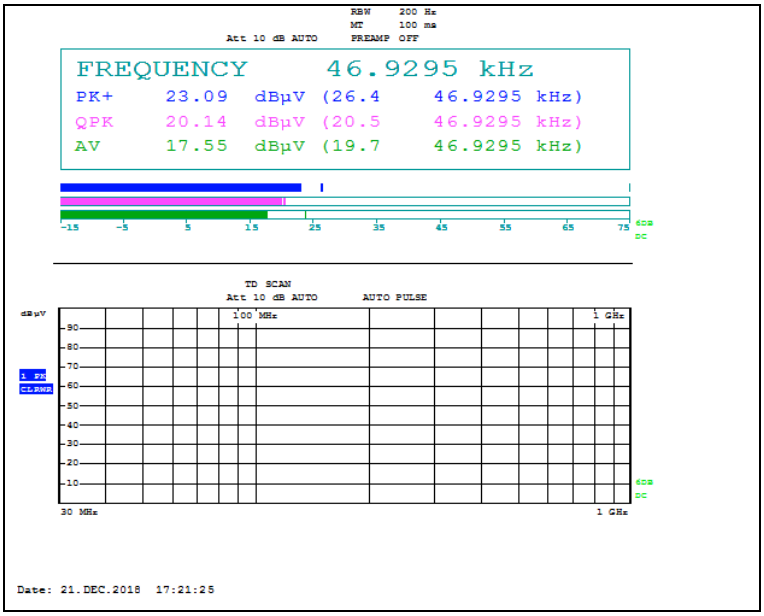


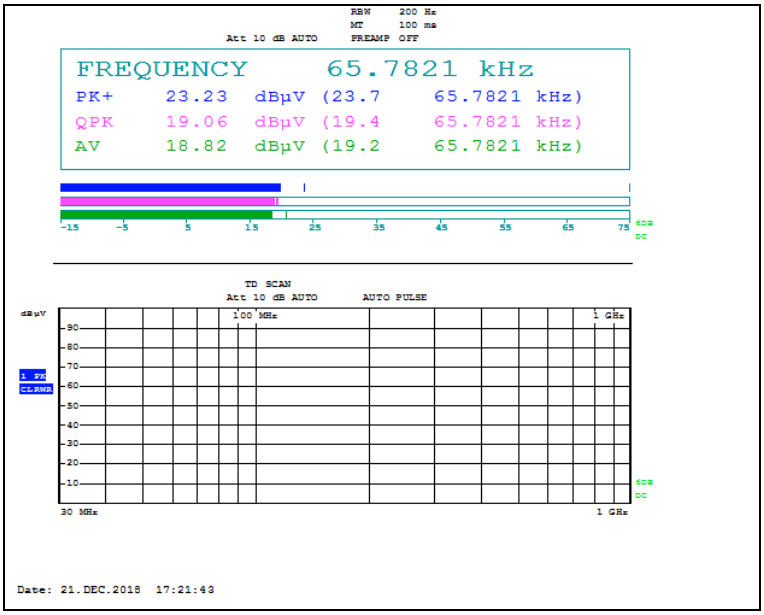


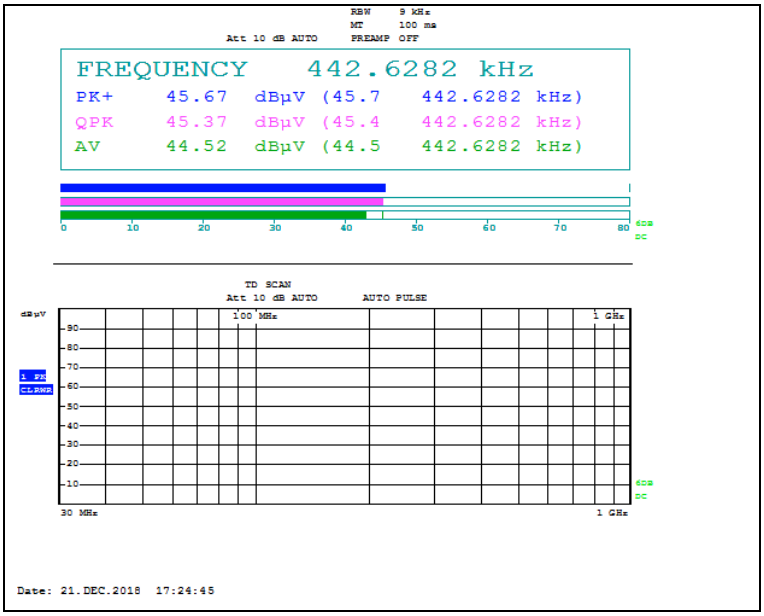


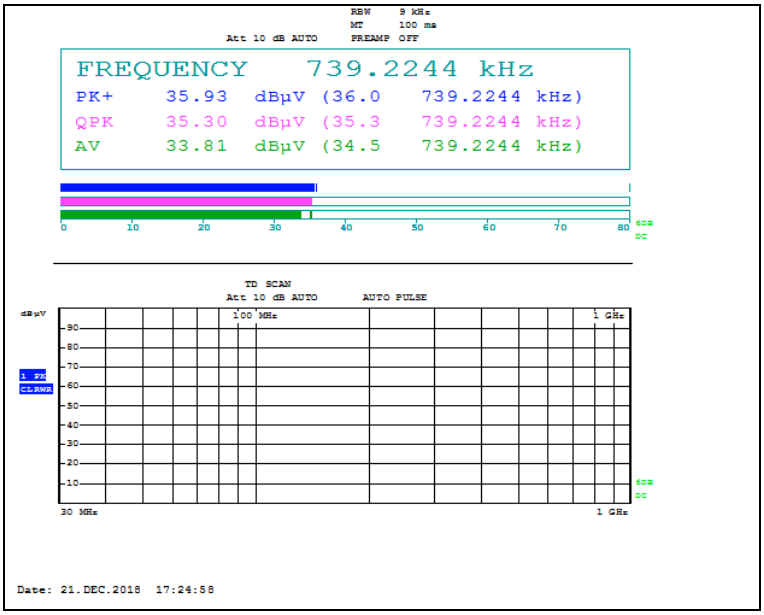
Ant. 2

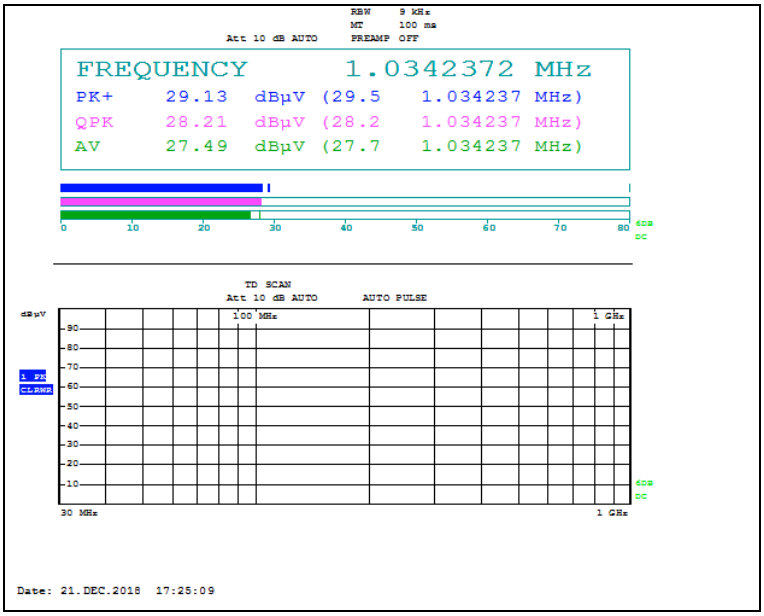






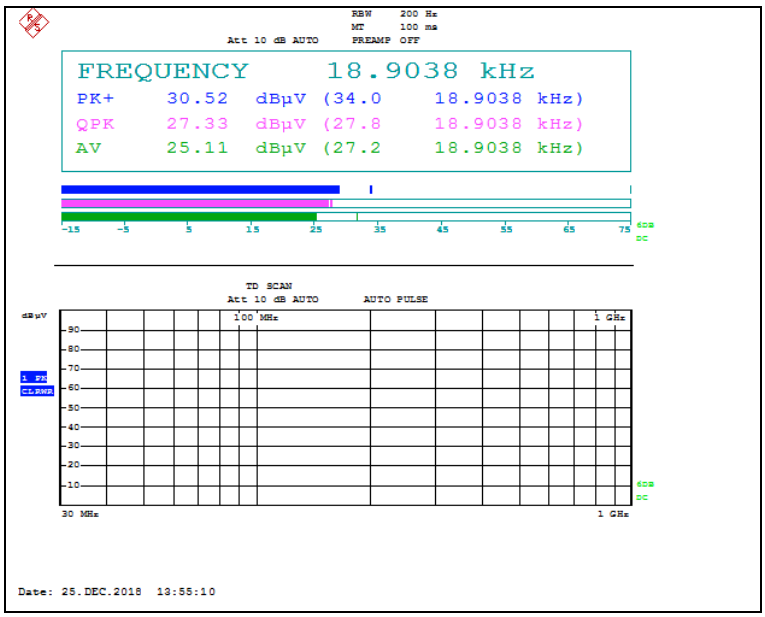


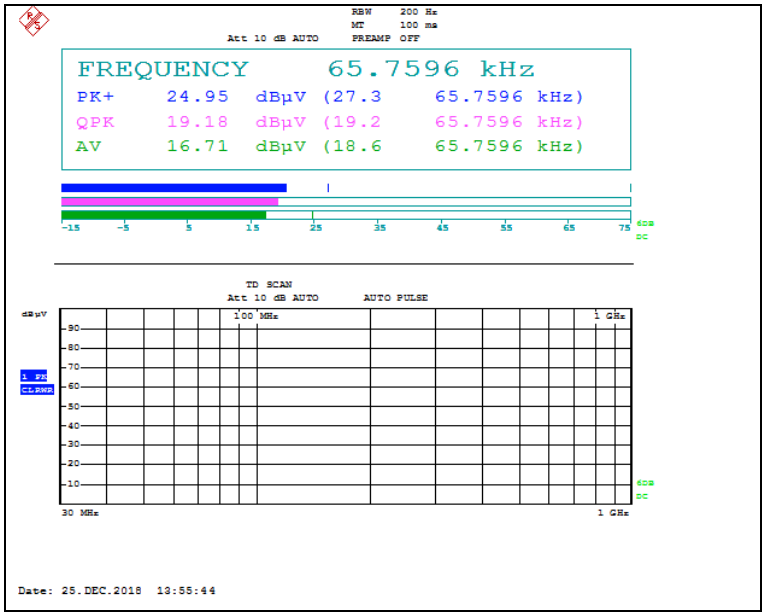


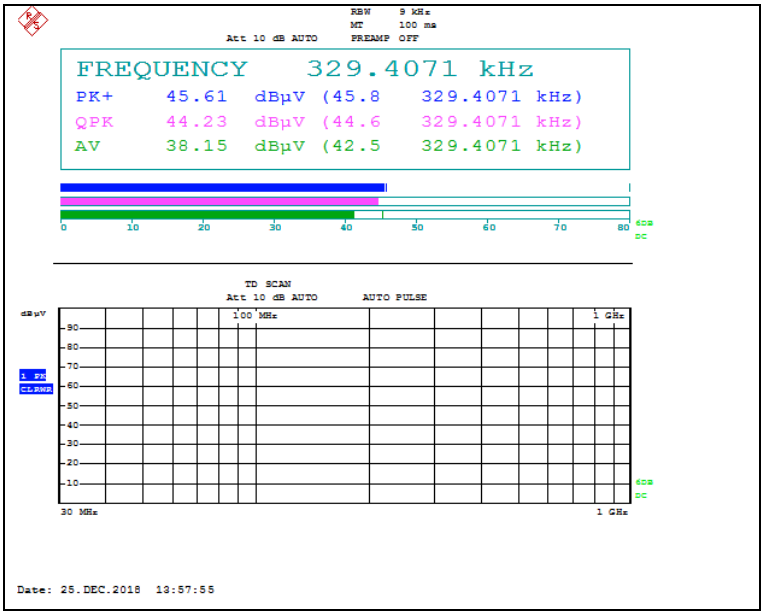


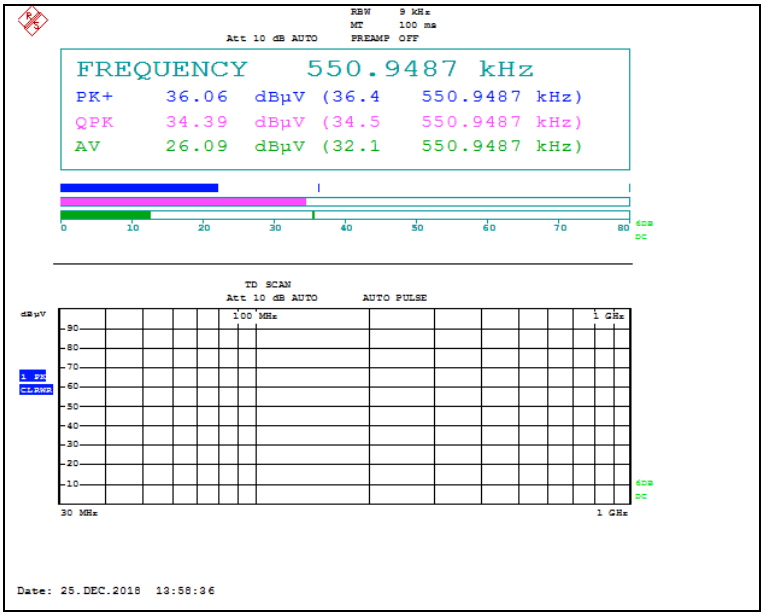
Test Condition: DC 12 V Operating mode with client device (1 % battery status of client device)

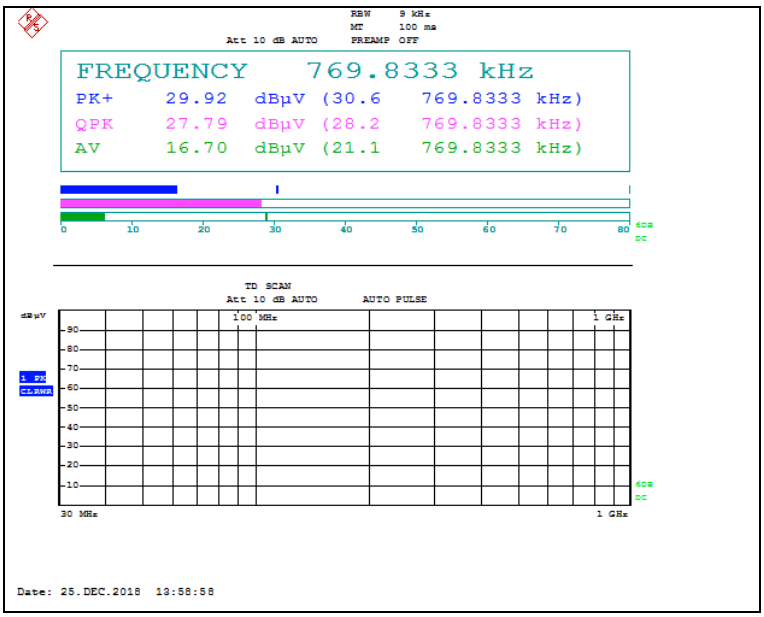
Ant. 1





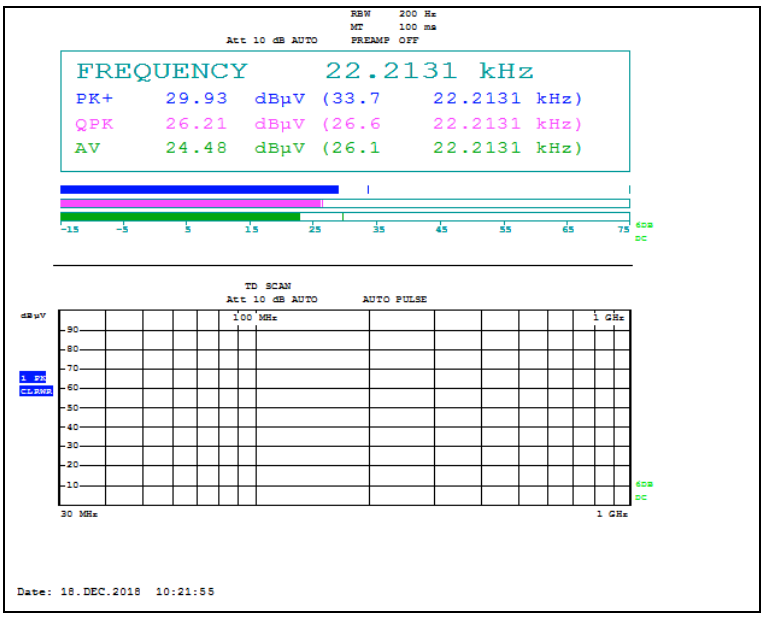


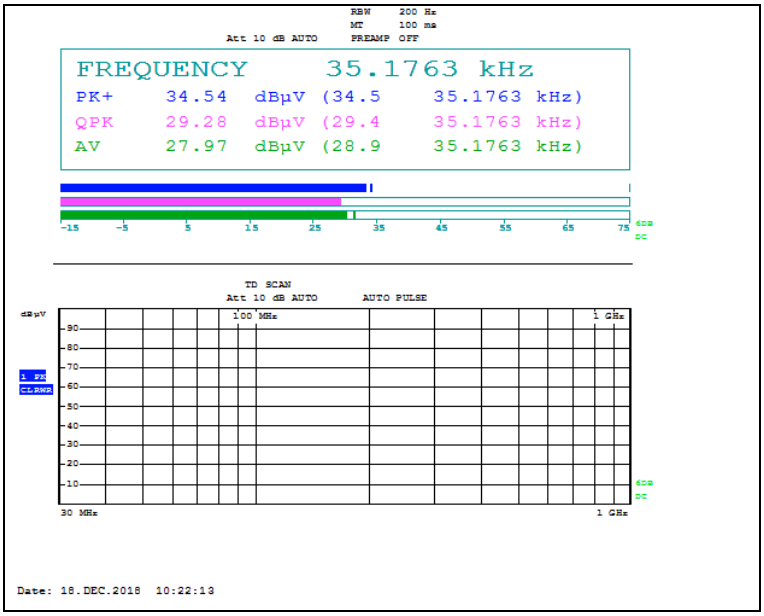


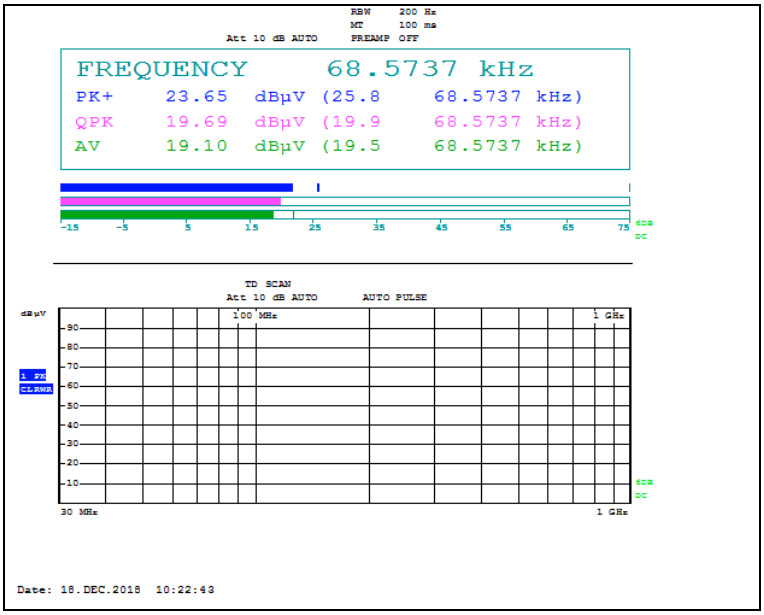


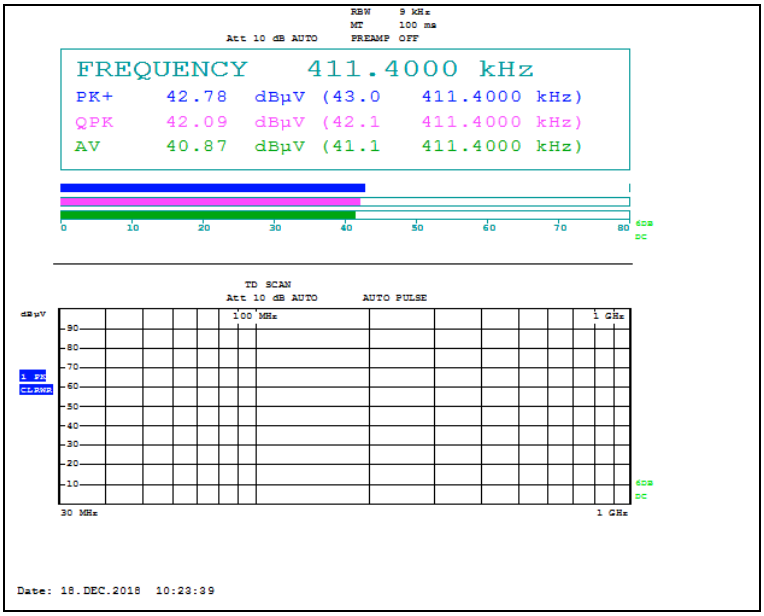
Test Condition: MIMO Operating mode with client device (1 % battery status of client device)

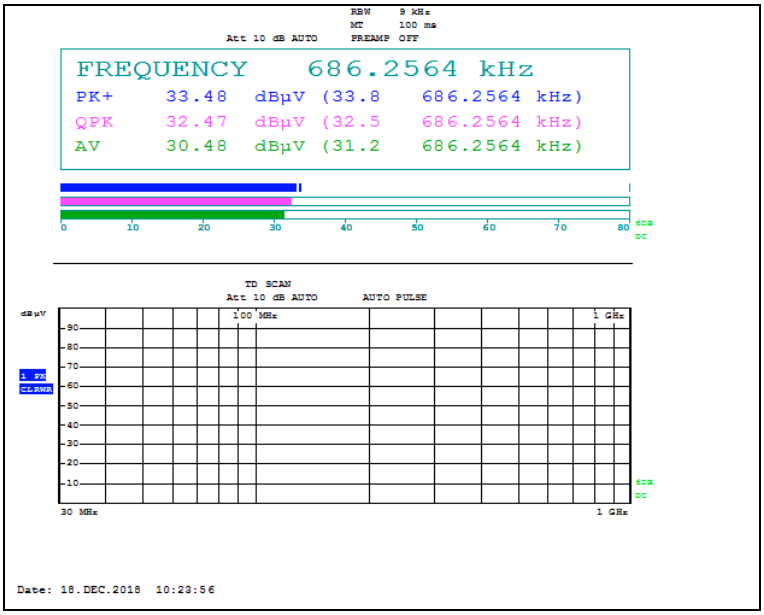
Ant. 1_DC 5 V + Ant. 2_DC 5 V

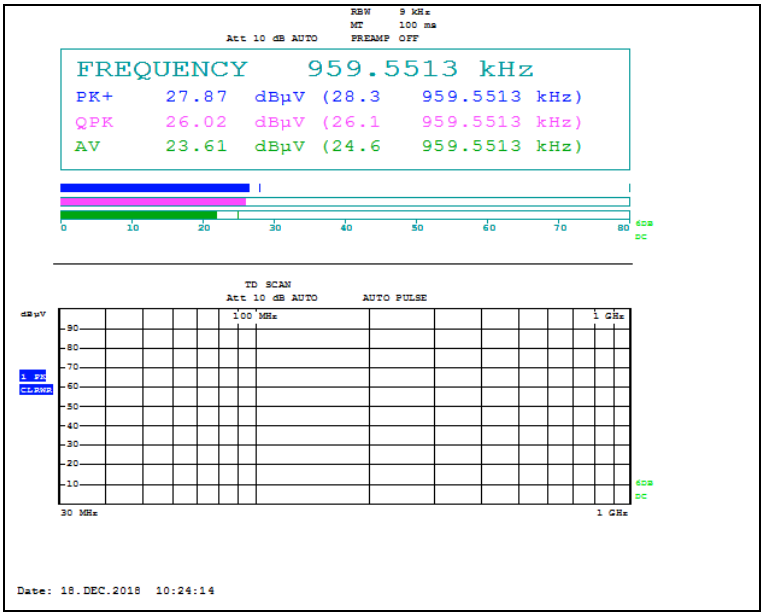




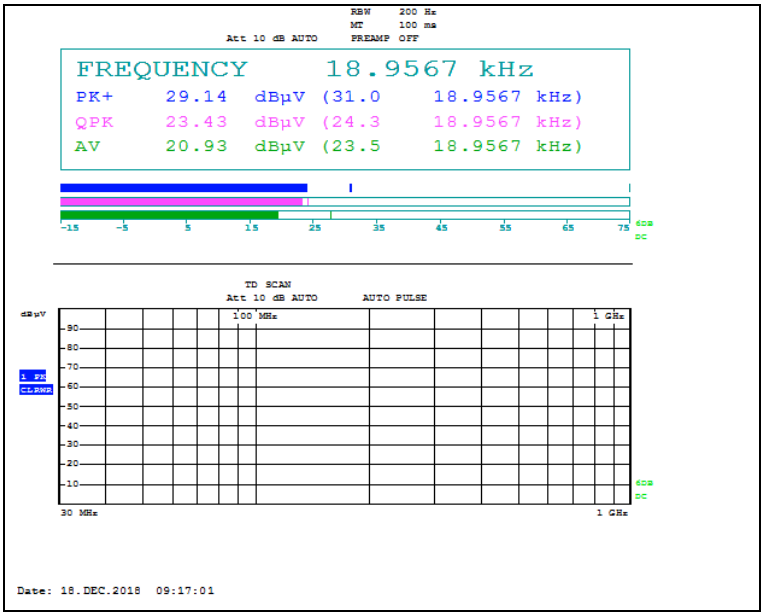


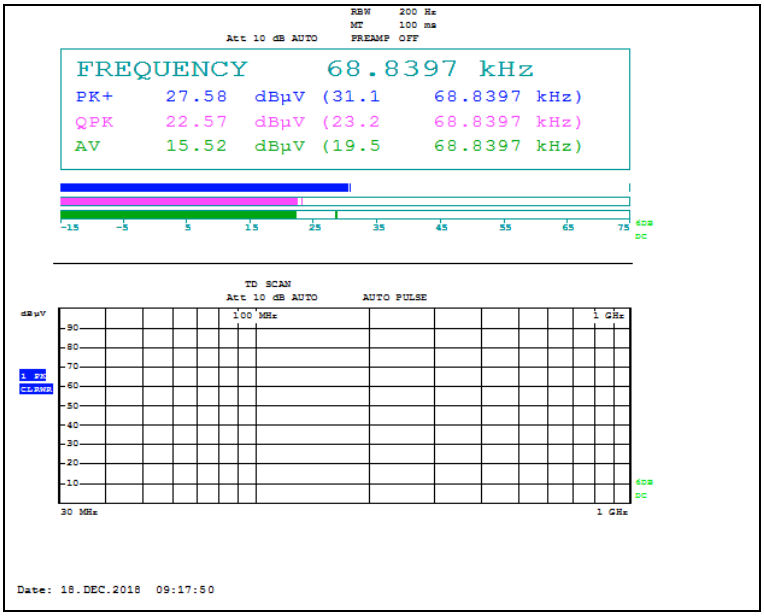


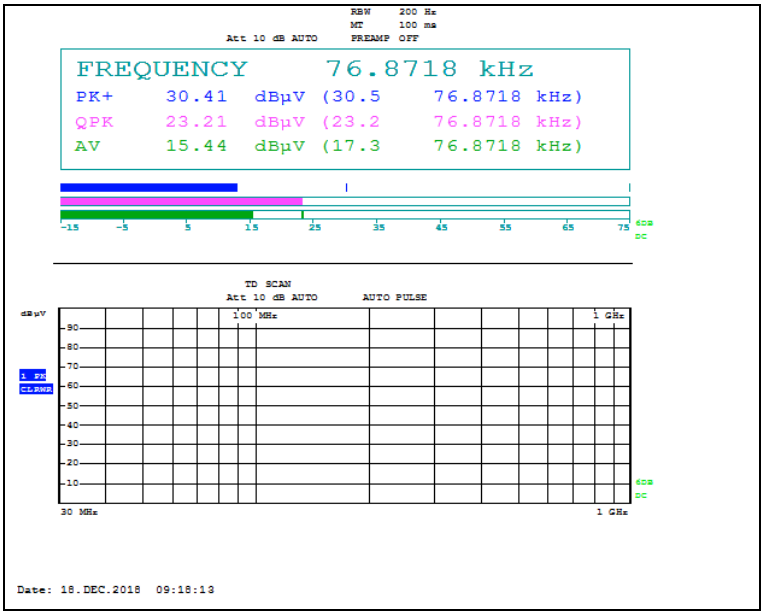


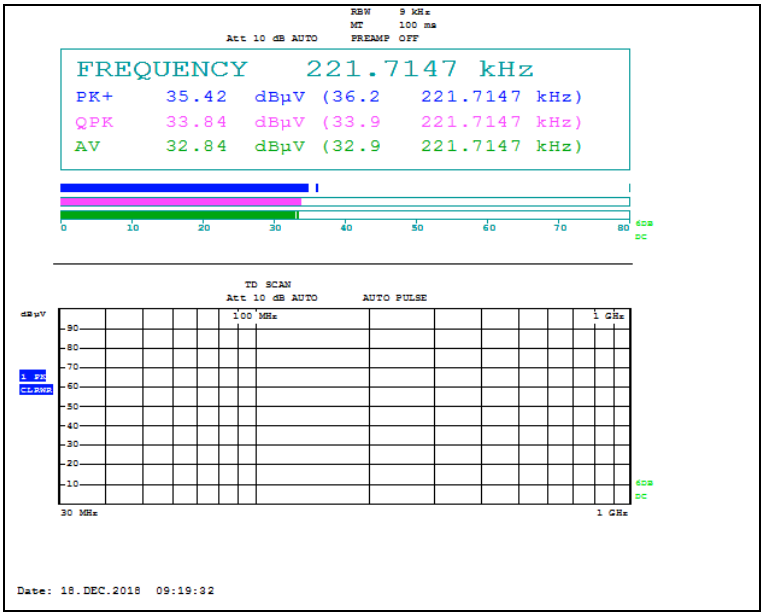


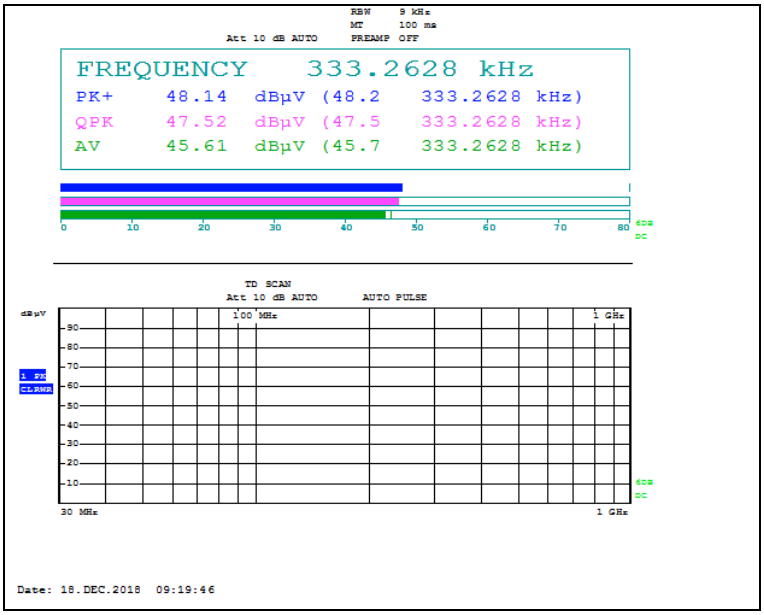
Ant. 1_DC 5 V + Ant. 2_DC 9 V

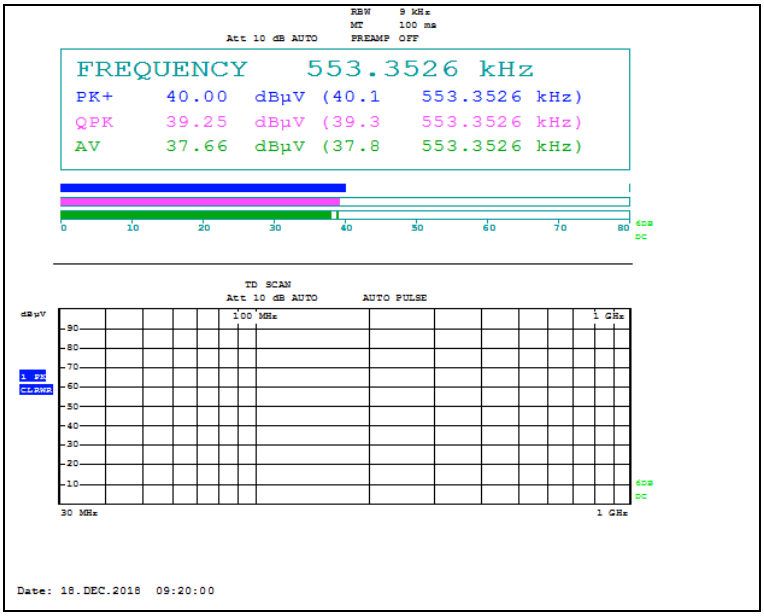




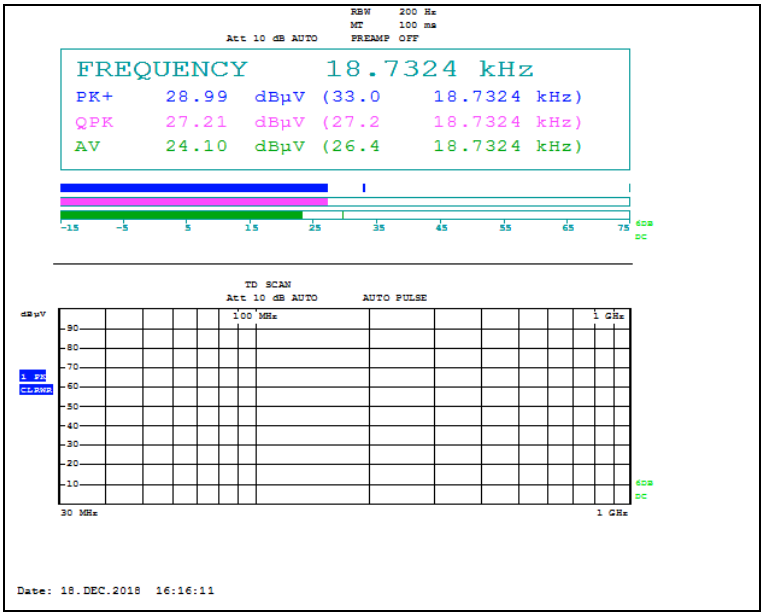


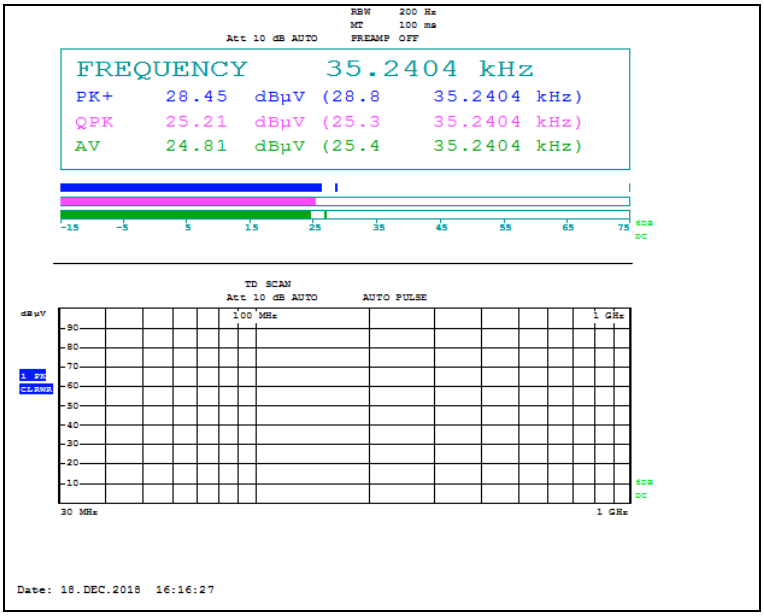


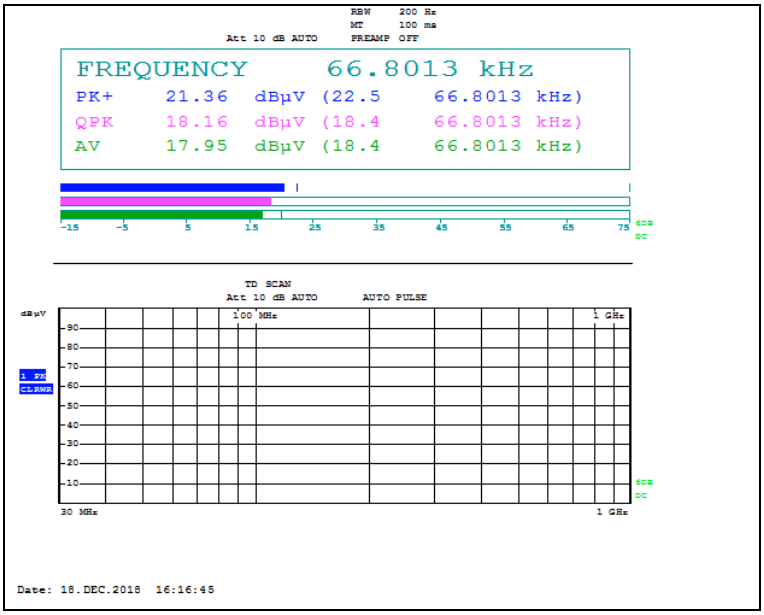


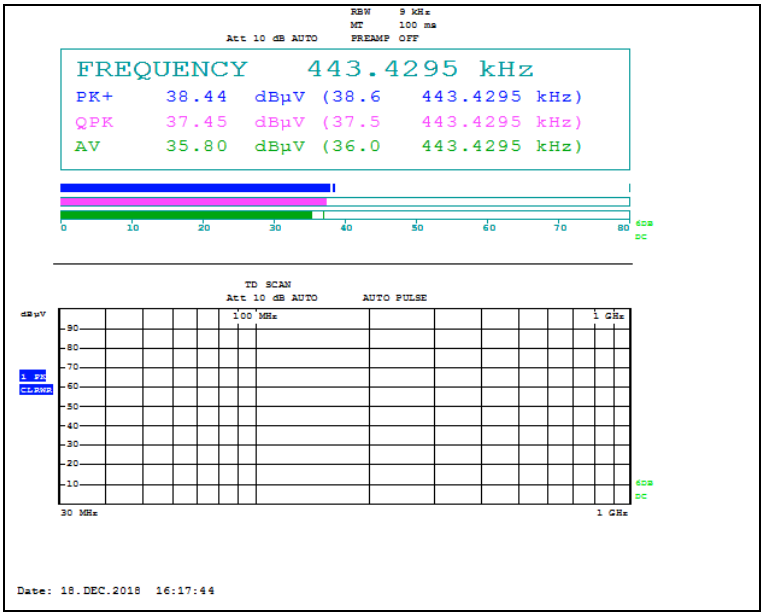


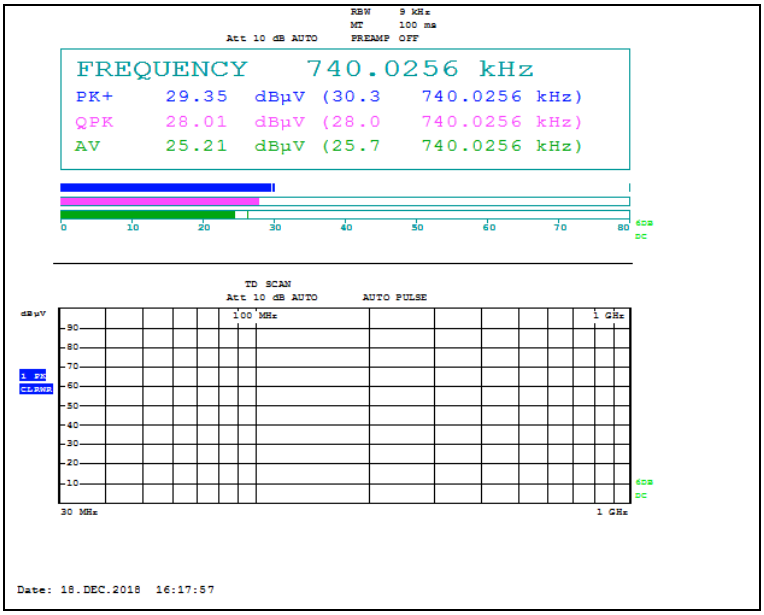
Ant. 1_DC 5 V + Ant. 3_DC 5 V

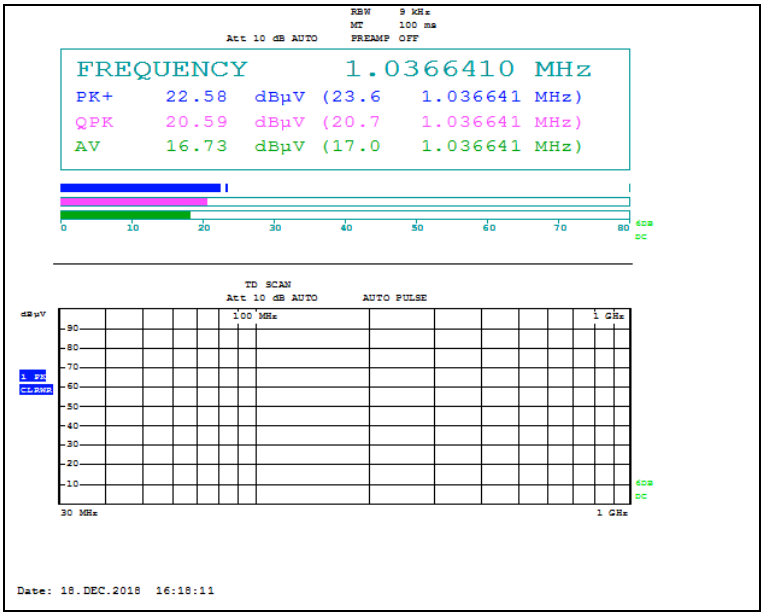




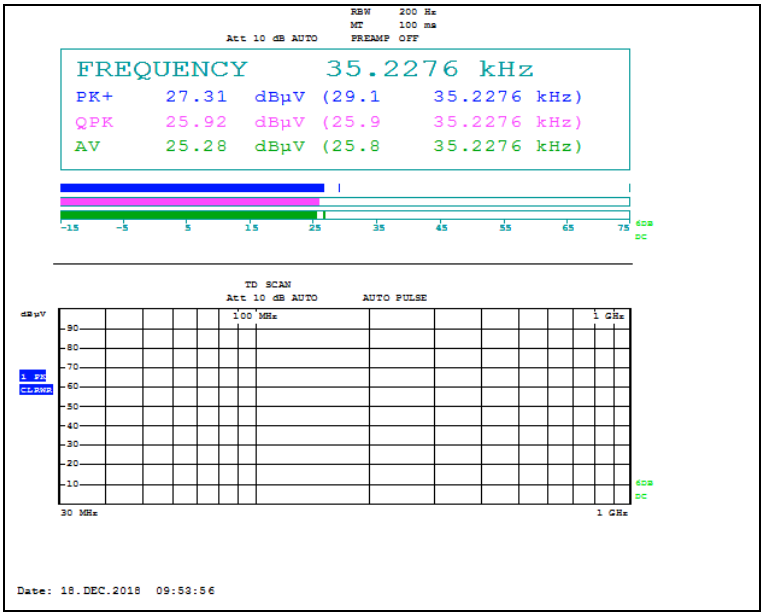


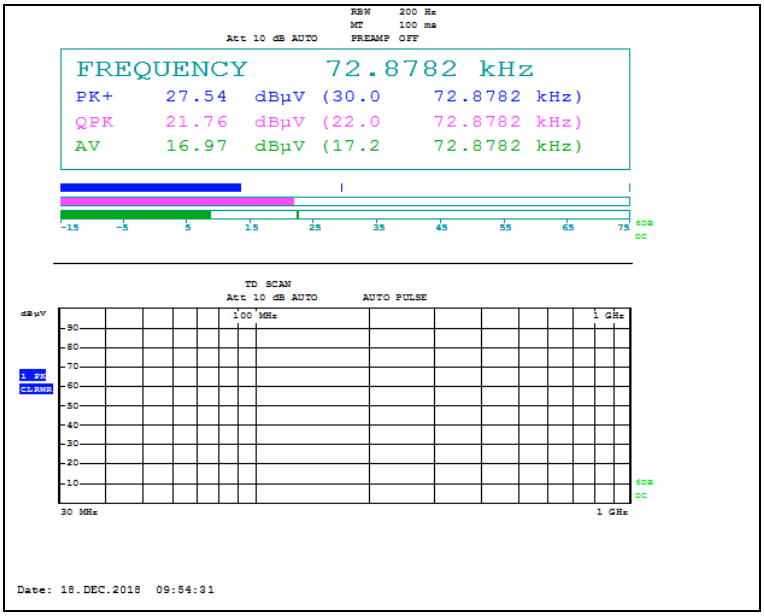


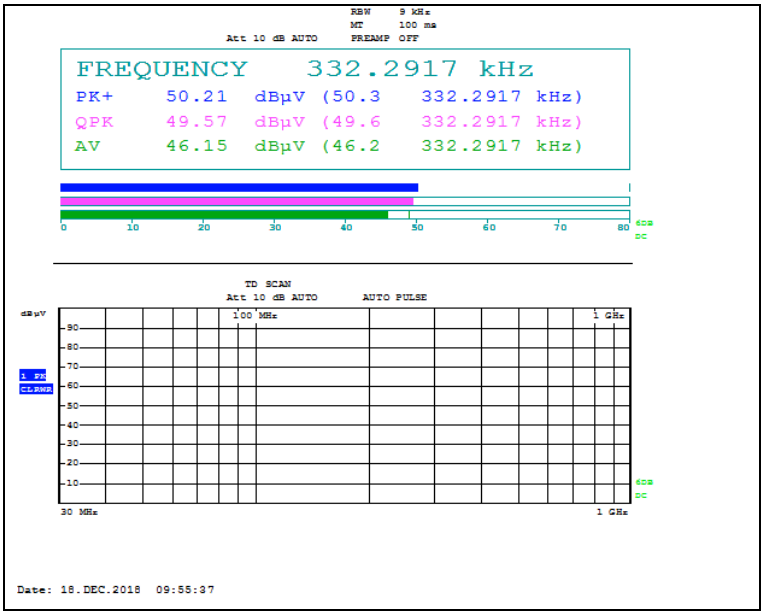


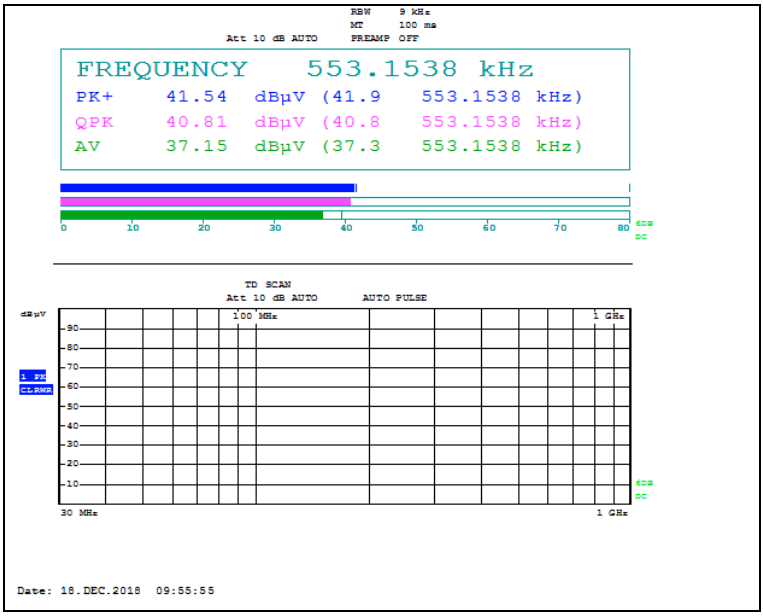


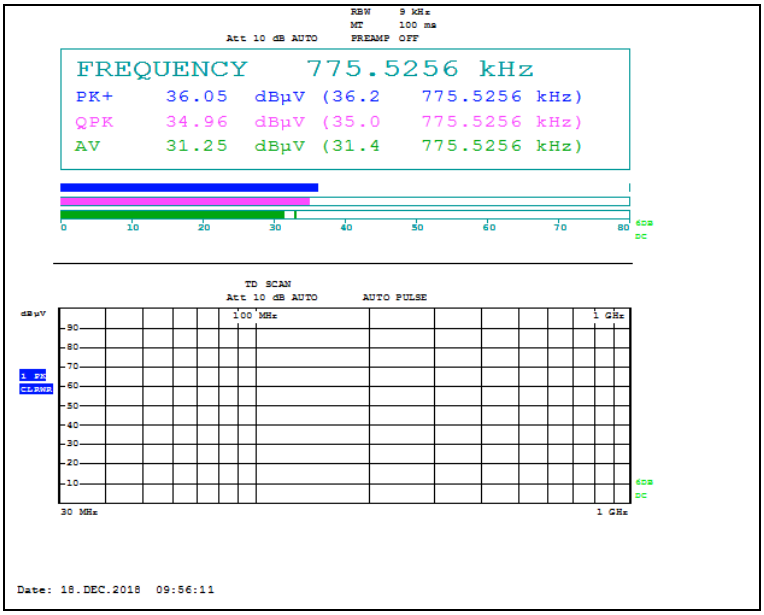
Ant. 1_DC 9 V + Ant. 2_DC 5 V



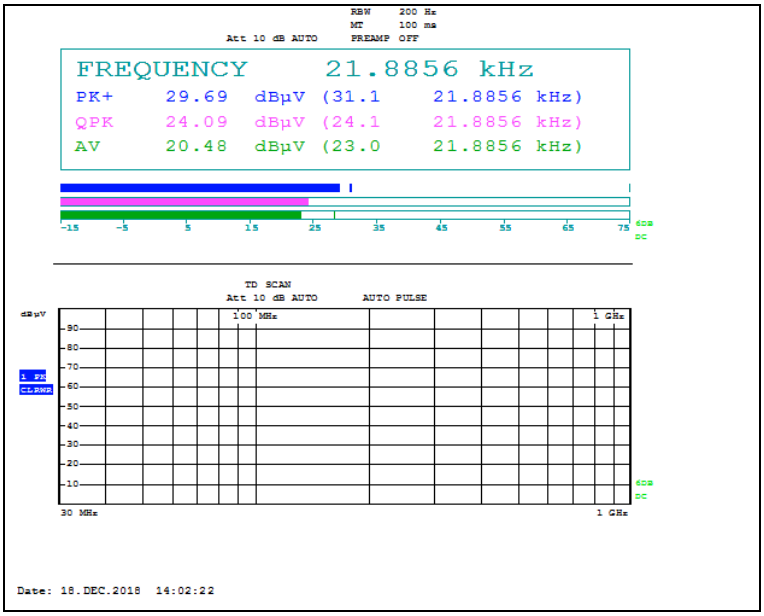


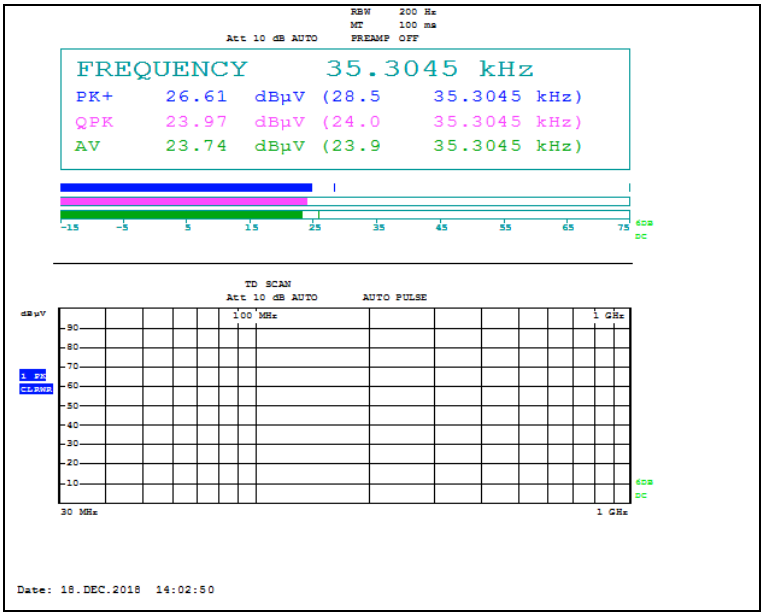


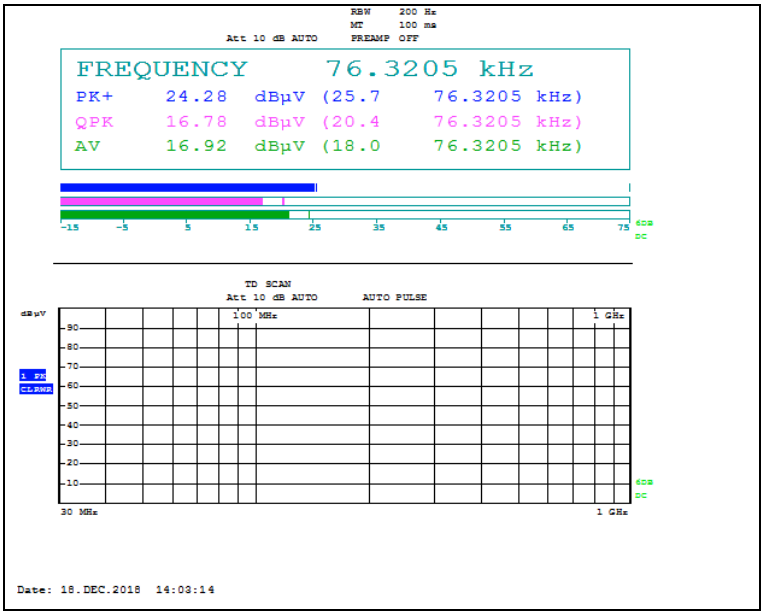


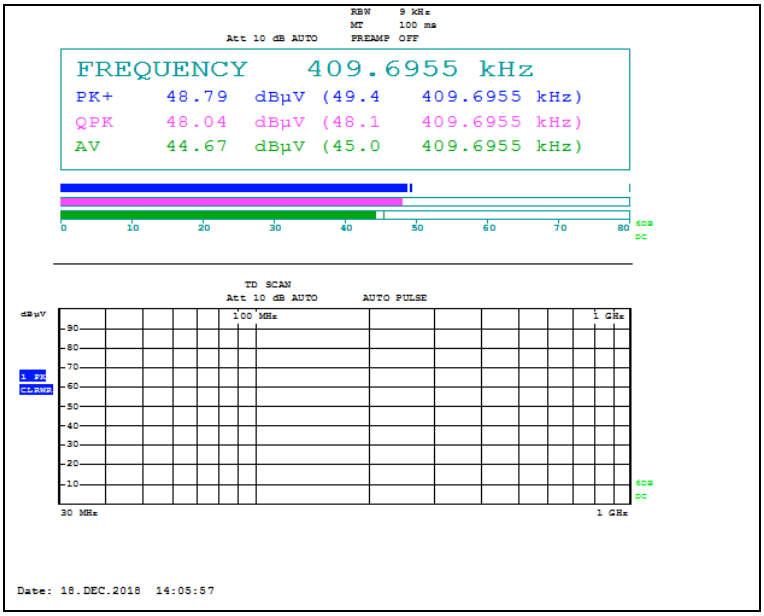


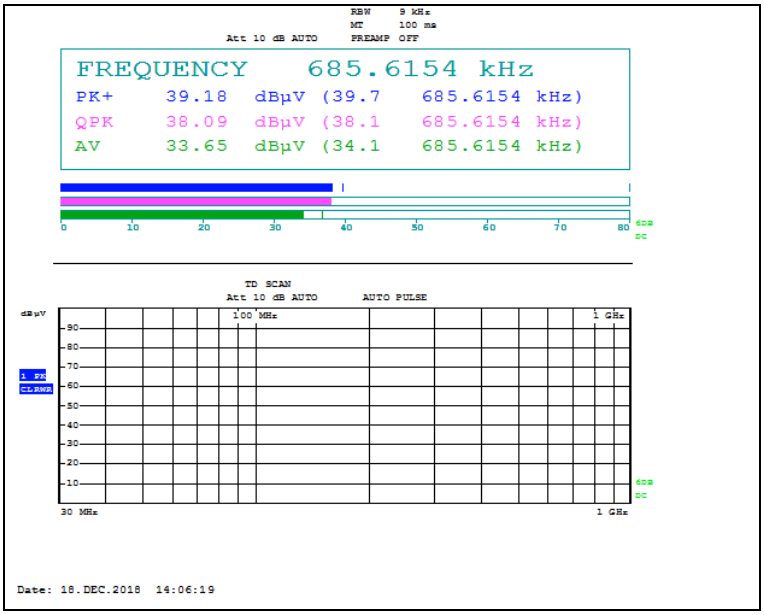
Ant. 1_DC 9 V + Ant. 2_DC 9 V

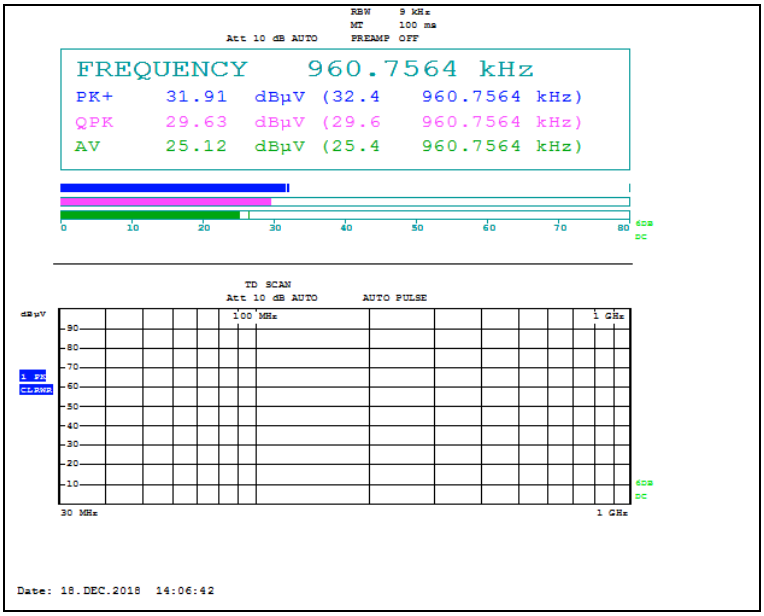




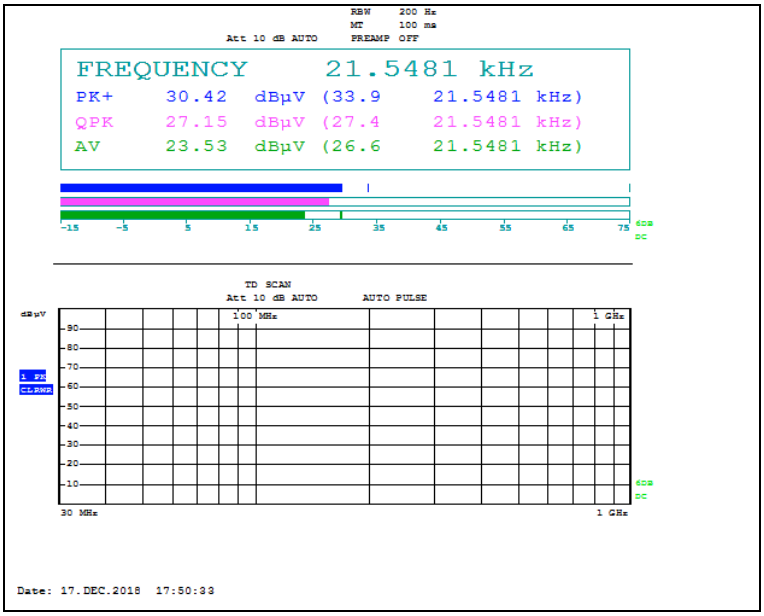


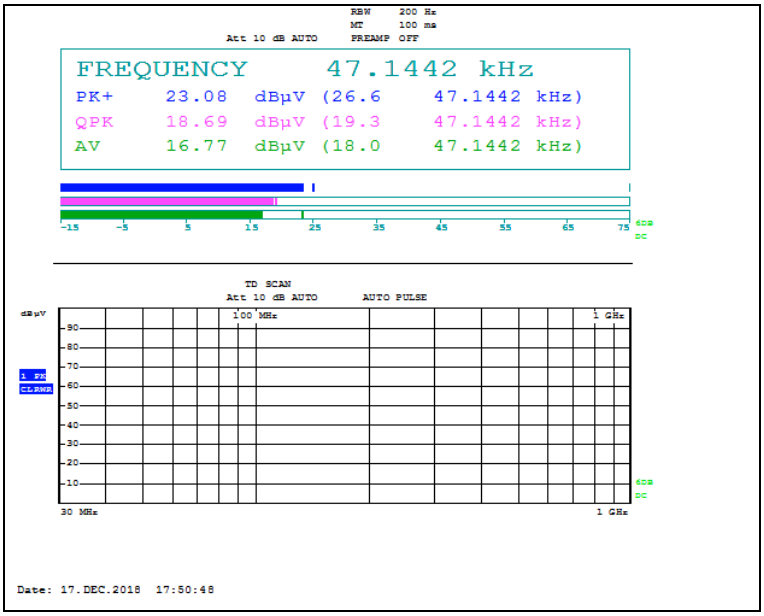


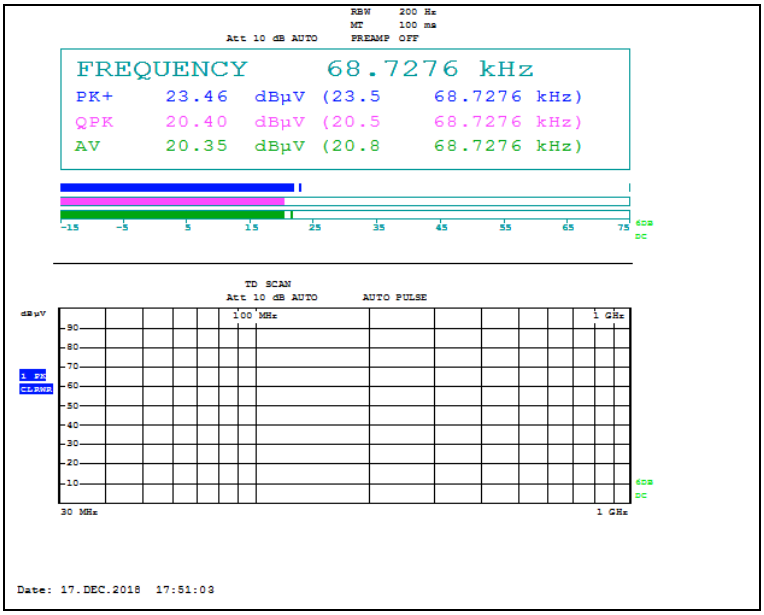


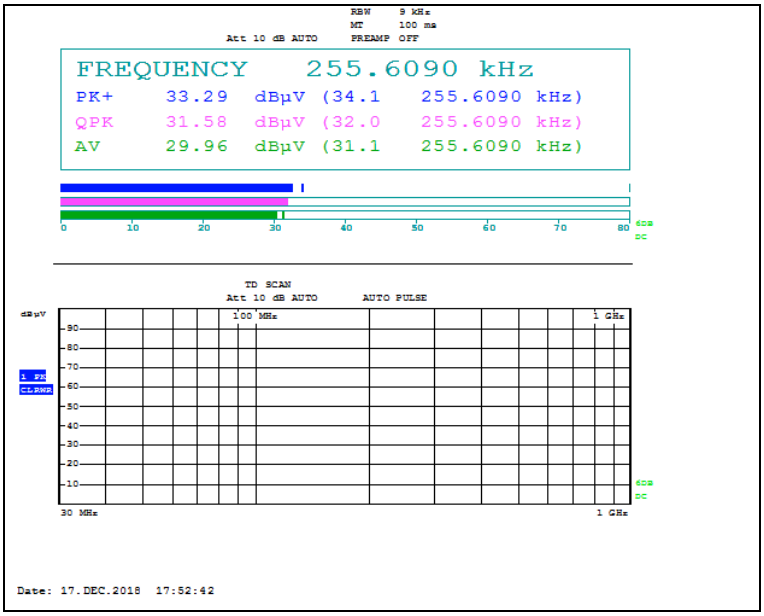


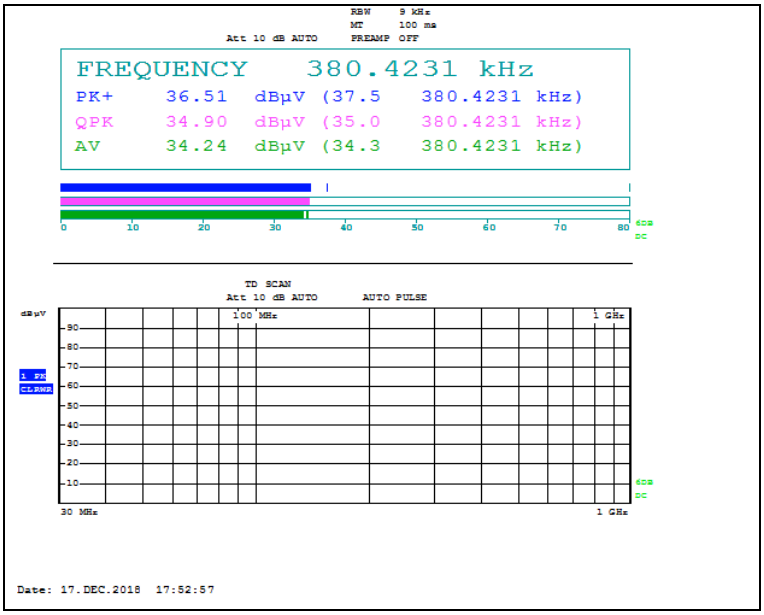
Ant. 1_DC 9 V + Ant. 3_DC 5 V

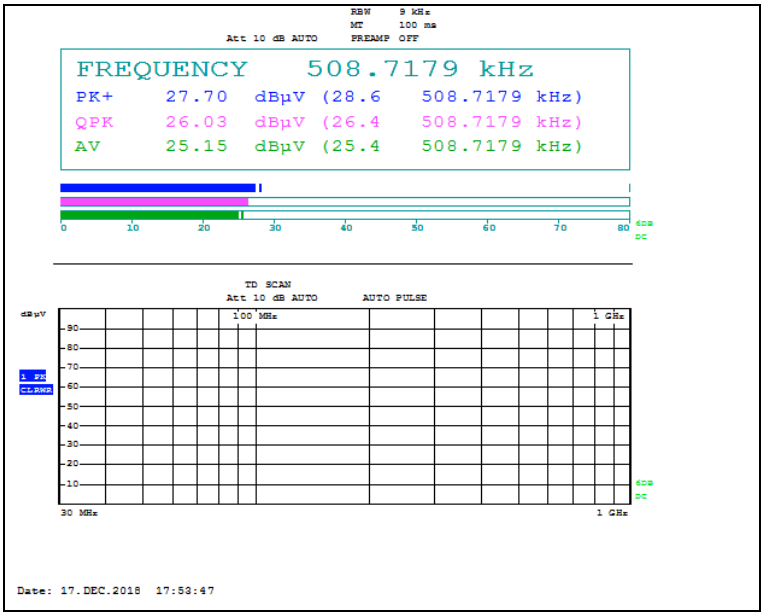




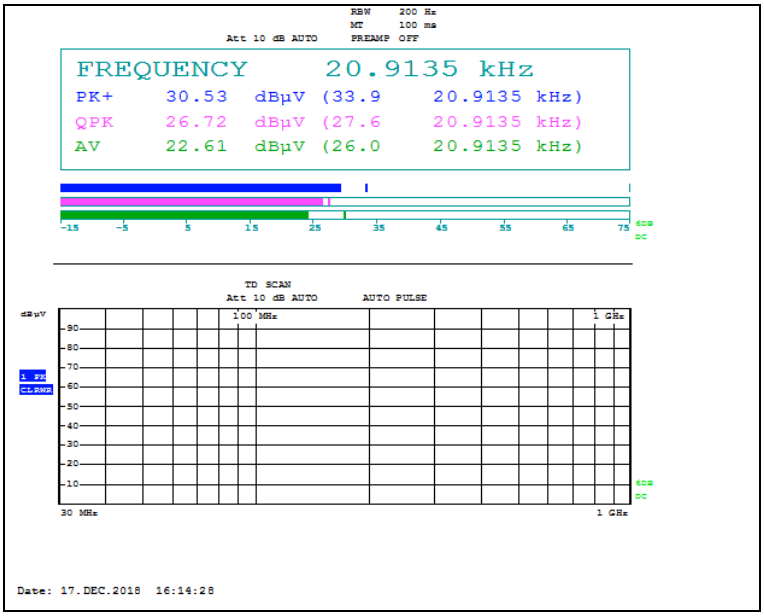


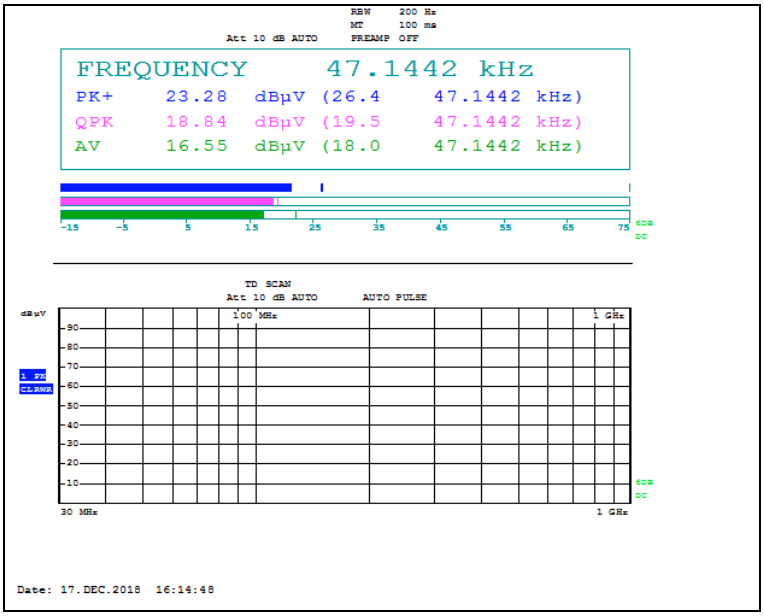


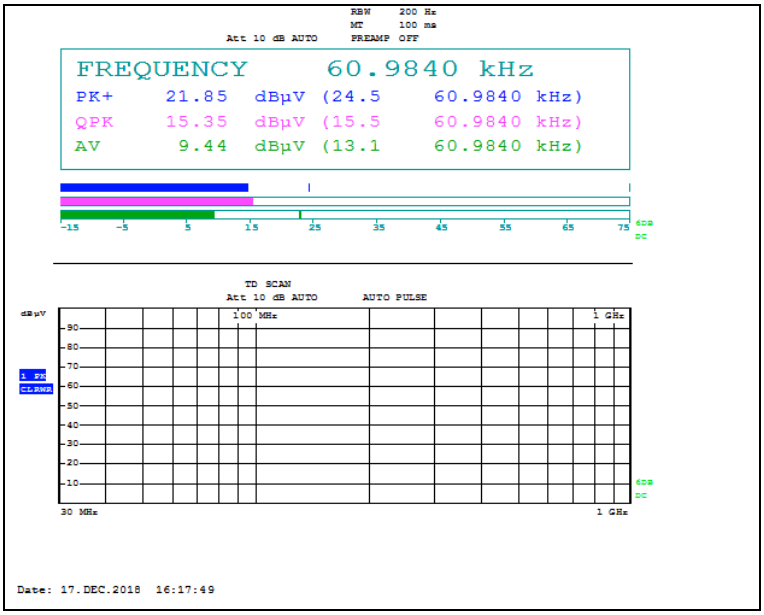


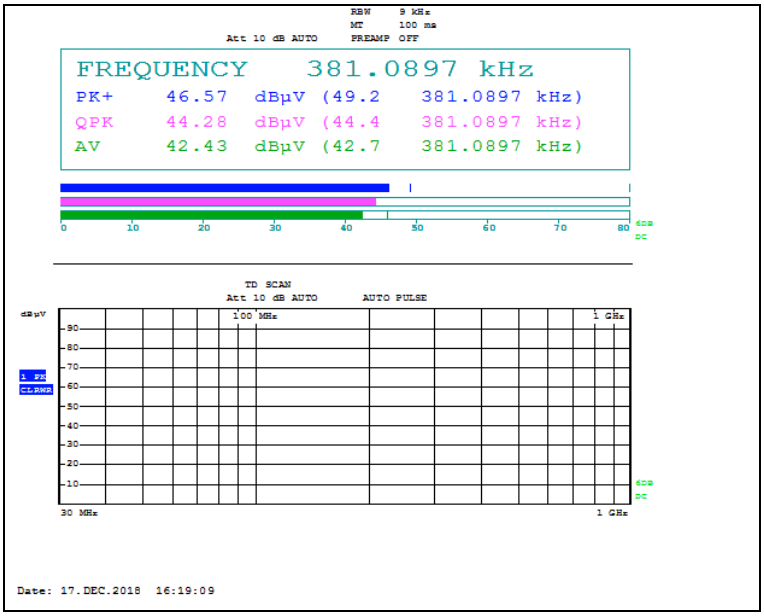


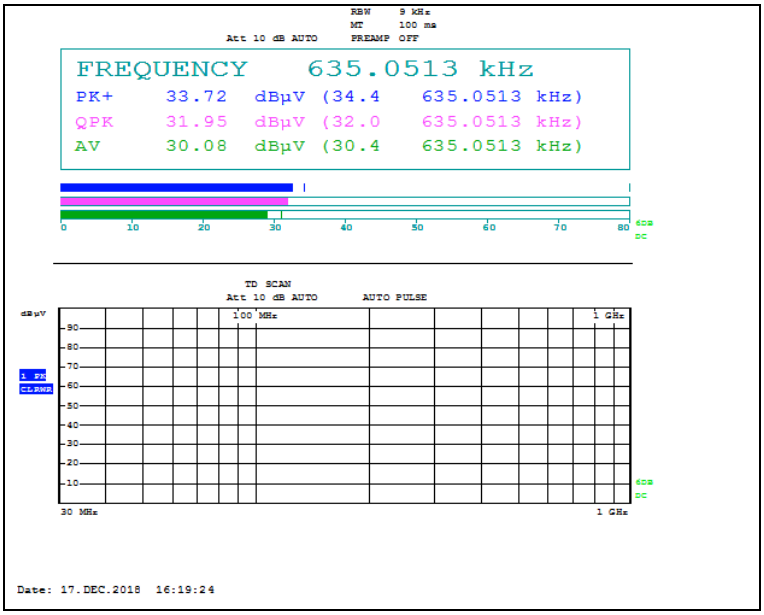
Ant. 1_DC 12 V + Ant. 3_DC 5 V

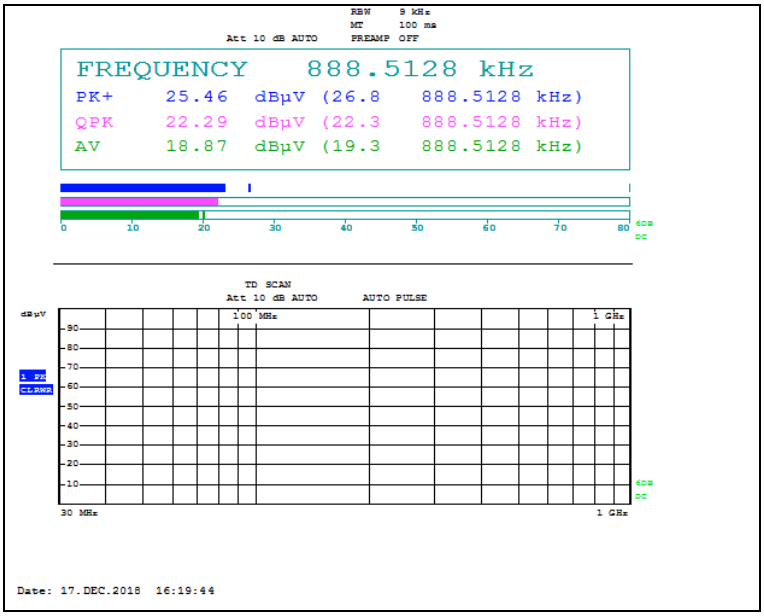






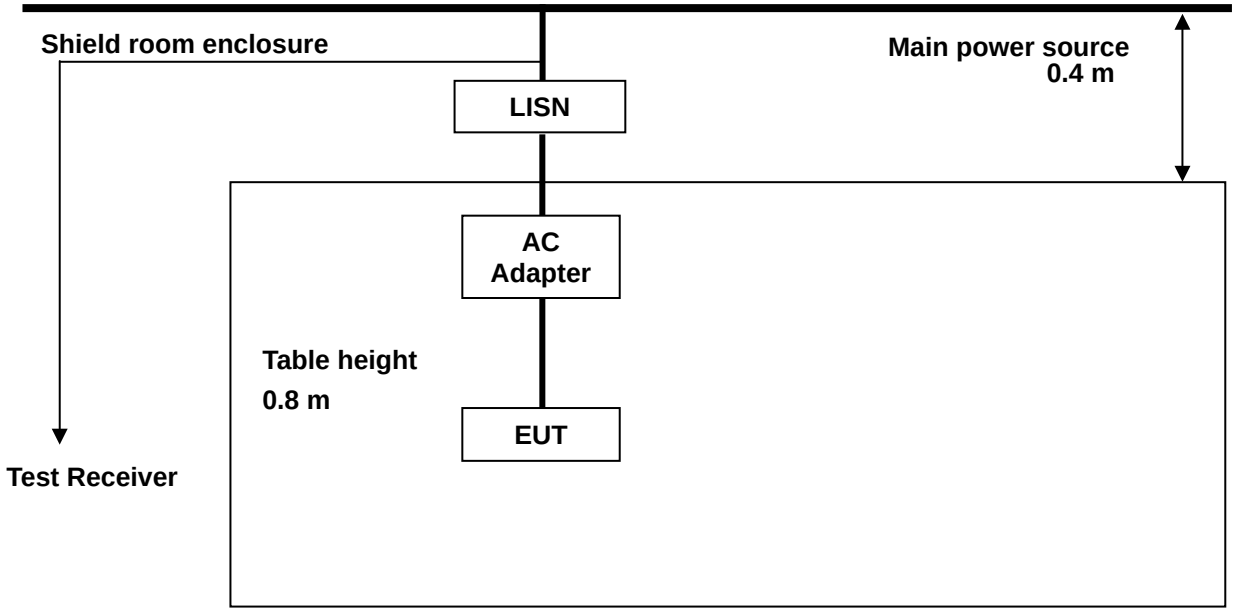






3. AC Conducted Power line Emissions

3.1. Test Setup



3.2. Limit

According to §18.307 for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).
Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

(b) All other part 18 consumer devices:

Frequency of Emission (㎒)	Conducted limit (㏈㎶)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

3.3. Test Procedures

AC conducted emissions from the EUT were measured according to the dictates of MP-5 measurement.

1. The test procedure is performed in a 6.5 m × 3.6 m × 3.6 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m(W) × 1.5 m(L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

3.4. Test Results

The following table shows the highest levels of conducted emissions on both phase of Hot and Neutral line.

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Frequency range : 0.15 ㎒ - 30 ㎒
Measured Bandwidth : 9 ㎑

Test Condition: DC 5 V Operating mode with Client device (1 % battery status of client device)

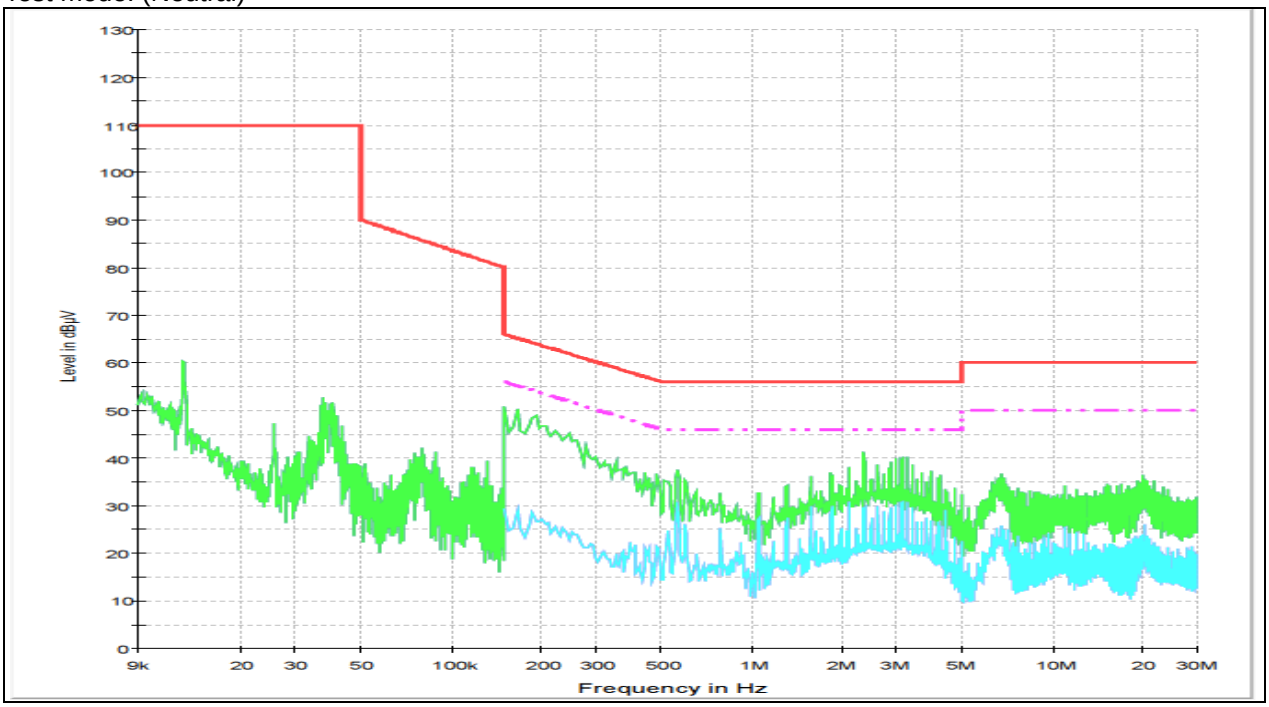
Ant. 1

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(㎒)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.56	38.80	31.30	N	56.00	46.00	17.20	14.70
1.05	29.70	26.30	N	56.00	46.00	26.30	19.70
1.84	34.10	28.90	N	56.00	46.00	21.90	17.10
2.36	36.10	29.30	N	56.00	46.00	19.90	16.70
3.16	36.20	25.70	N	56.00	46.00	19.80	20.30
6.59	29.40	22.90	N	60.00	50.00	30.60	27.10
0.29	30.60	16.60	H	60.52	50.52	29.92	33.92
0.56	38.30	28.90	H	56.00	46.00	17.70	17.10
1.05	28.80	21.80	H	56.00	46.00	27.20	24.20
2.34	32.10	24.00	H	56.00	46.00	23.90	22.00
6.55	31.20	24.00	H	60.00	50.00	28.80	26.00
19.98	28.30	21.60	H	60.00	50.00	31.70	28.40

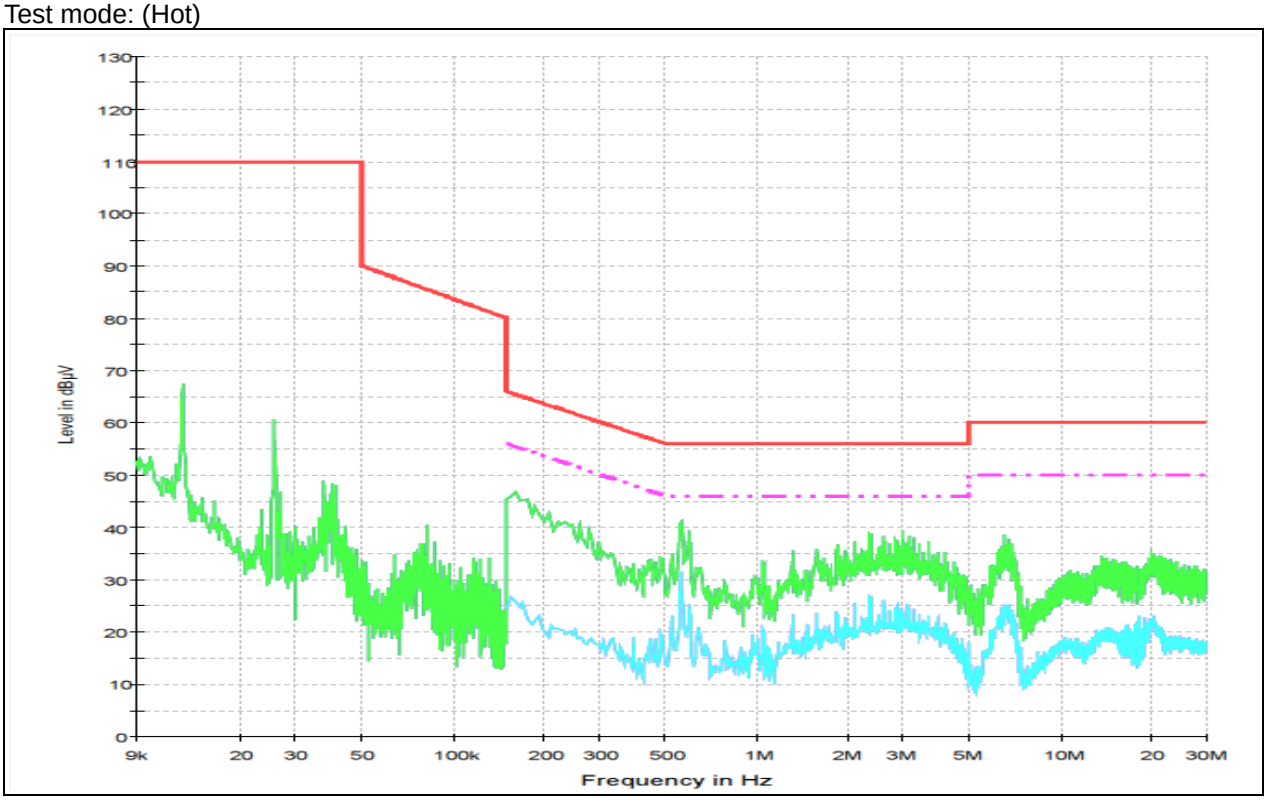
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



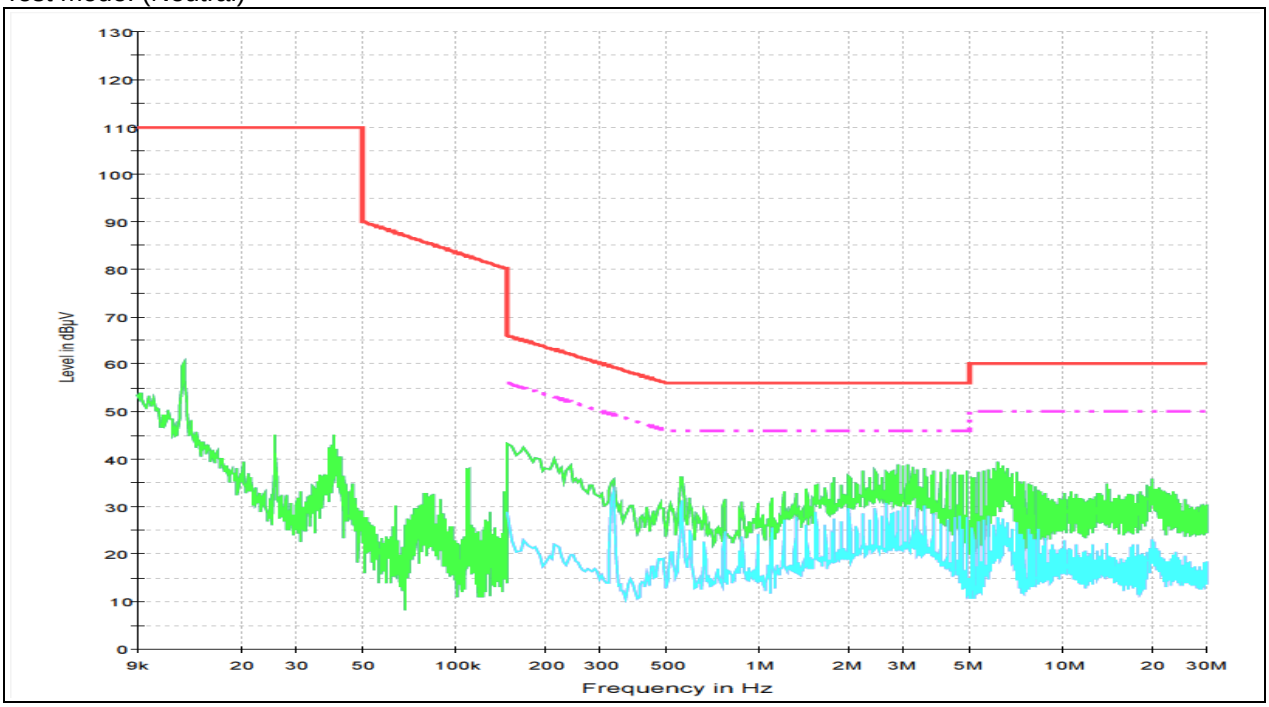
Ant. 2

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.33	30.10	16.90	N	59.45	49.45	29.35	32.55
0.56	31.30	25.50	N	56.00	46.00	24.70	20.50
1.23	23.00	17.10	N	56.00	46.00	33.00	28.90
2.99	27.20	20.50	N	56.00	46.00	28.80	25.50
6.22	37.20	31.20	N	60.00	50.00	22.80	18.80
19.97	23.90	19.70	N	60.00	50.00	36.10	30.30
0.34	31.90	26.10	H	59.20	49.20	27.30	23.10
0.56	39.40	31.40	H	56.00	46.00	16.60	14.60
0.60	36.30	32.40	H	56.00	46.00	19.70	13.60
1.55	27.90	20.70	H	56.00	46.00	28.10	25.30
6.53	32.30	24.50	H	60.00	50.00	27.70	25.50
19.73	28.60	21.70	H	60.00	50.00	31.40	28.30

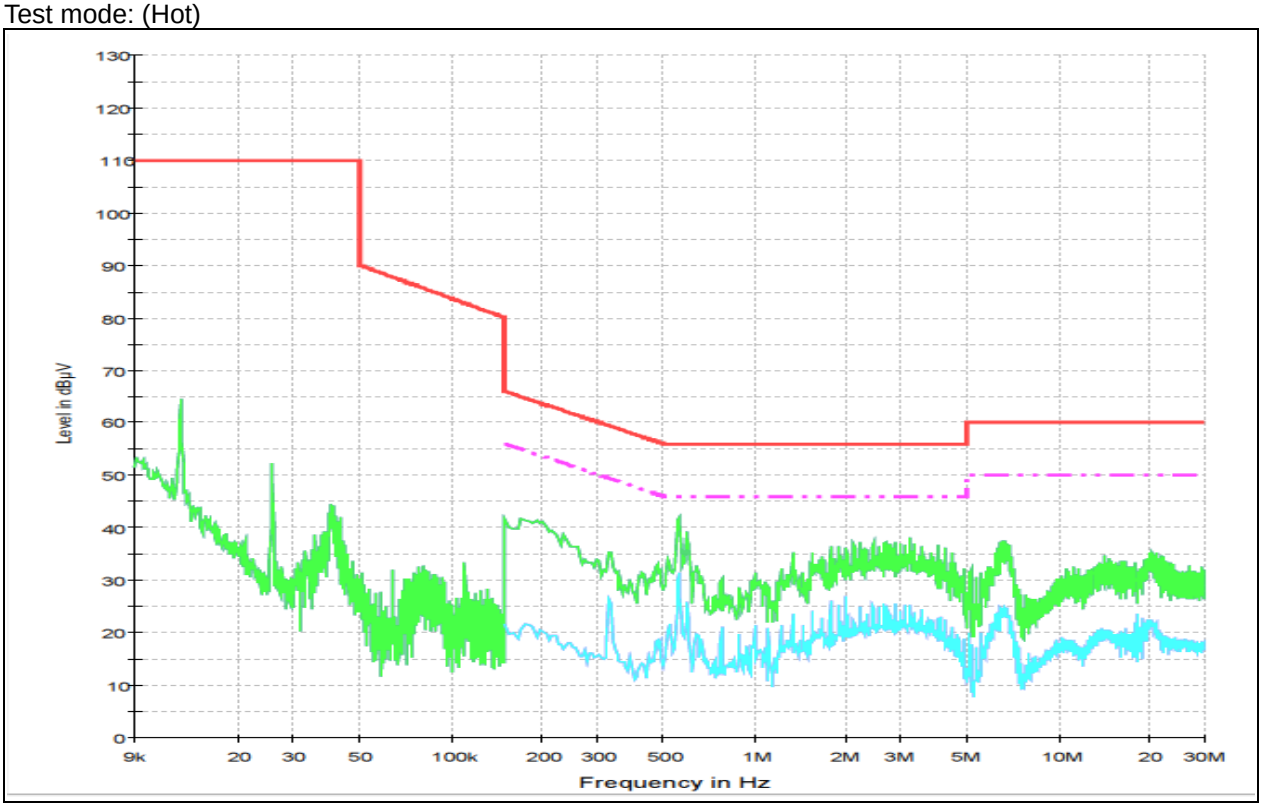
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



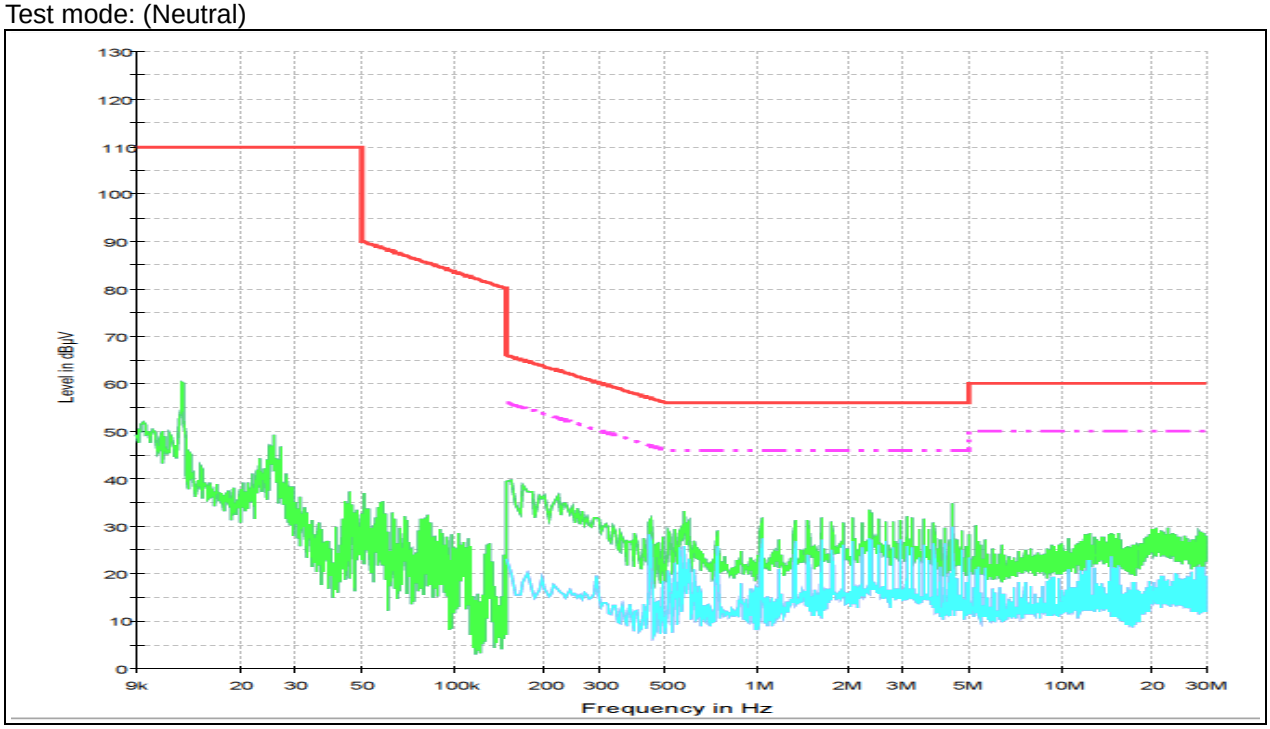
Ant. 3

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(㎒)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.44	26.90	25.80	N	57.06	47.06	30.16	21.26
0.74	27.60	26.70	N	56.00	46.00	28.40	19.30
1.03	20.10	17.70	N	56.00	46.00	35.90	28.30
2.36	23.50	18.50	N	56.00	46.00	32.50	27.50
4.40	27.60	24.80	N	56.00	46.00	28.40	21.20
20.49	23.50	16.00	N	60.00	50.00	36.50	34.00
0.45	28.70	23.80	H	56.88	46.88	28.18	23.08
0.58	37.00	28.80	H	56.00	46.00	19.00	17.20
0.74	25.70	20.60	H	56.00	46.00	30.30	25.40
1.64	32.50	28.20	H	56.00	46.00	23.50	17.80
2.23	28.40	23.10	H	56.00	46.00	27.60	22.90
2.89	23.10	15.90	H	56.00	46.00	32.90	30.10

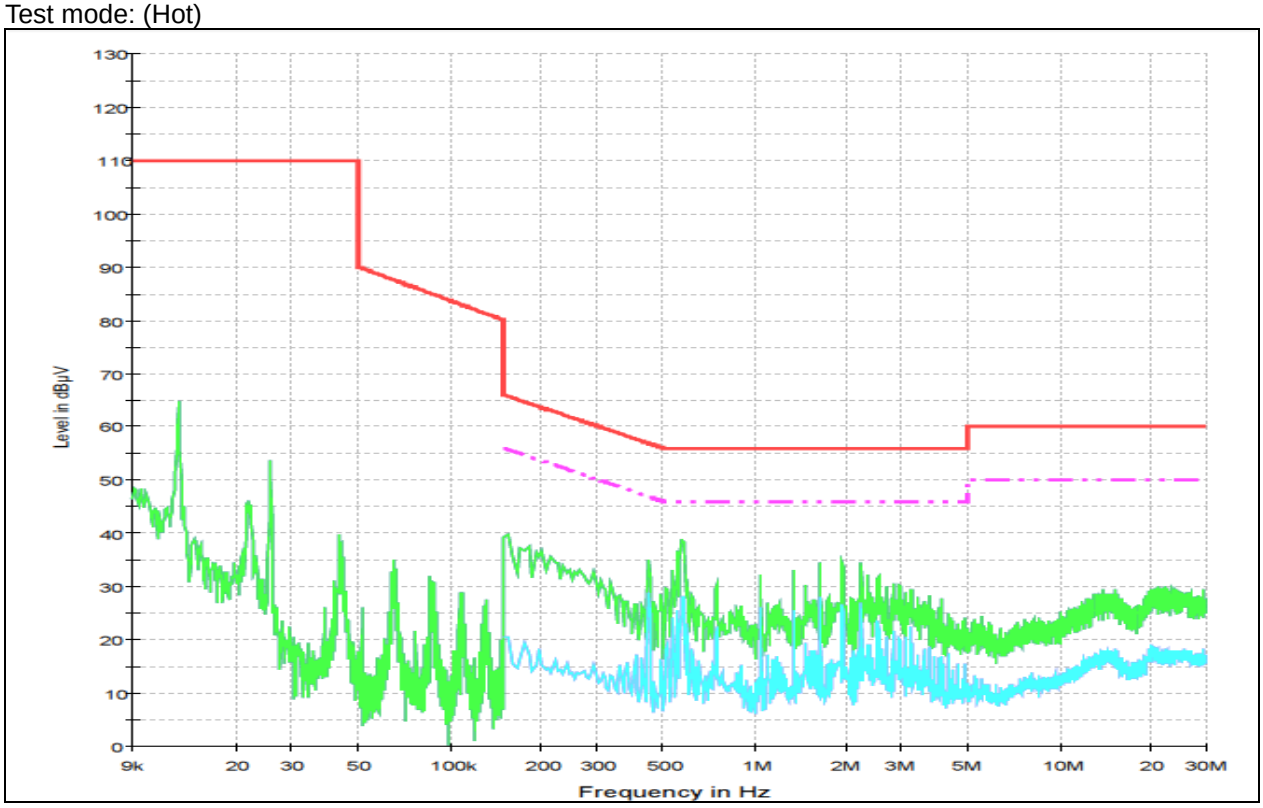
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



Test Condition: DC 9 V Operating mode with Client device (1 % battery status of client device)

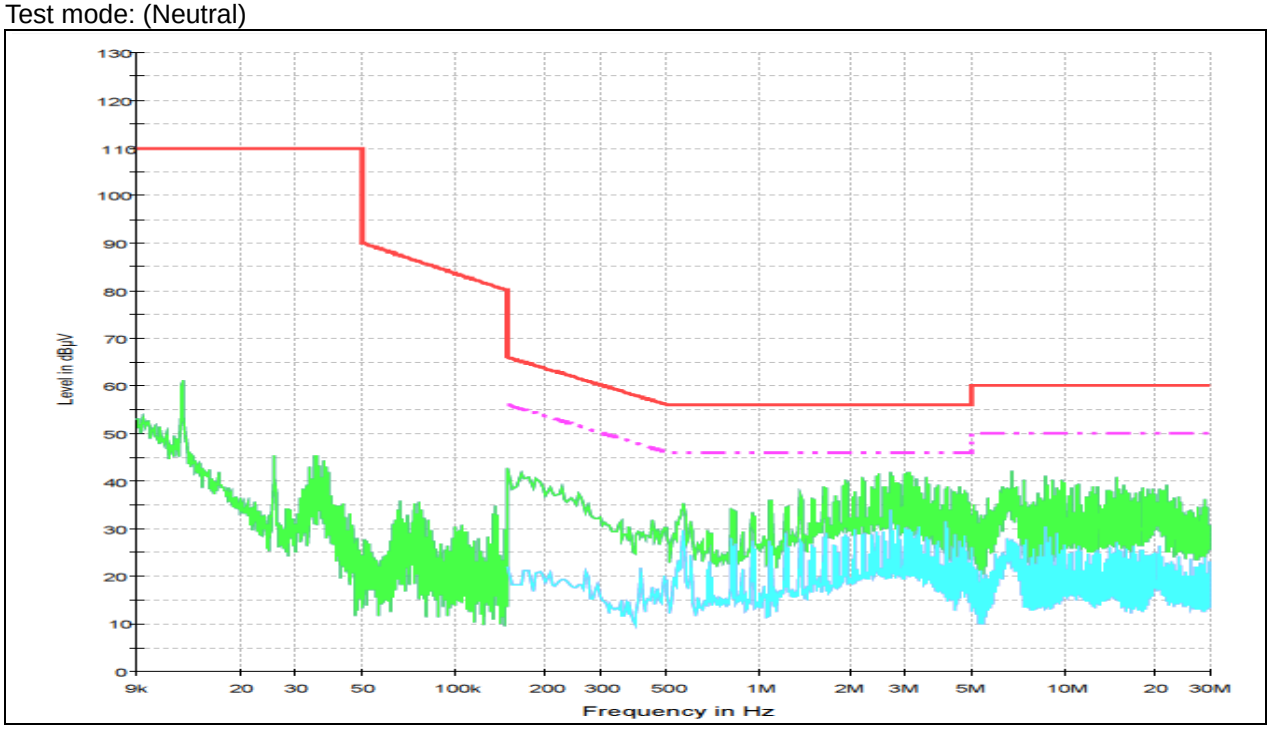
Ant. 1

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.55	32.10	25.70	N	56.00	46.00	23.90	20.30
0.83	20.90	16.10	N	56.00	46.00	35.10	29.90
2.20	29.10	21.30	N	56.00	46.00	26.90	24.70
3.01	28.70	22.30	N	56.00	46.00	27.30	23.70
6.71	32.10	24.40	N	60.00	50.00	27.90	25.60
21.23	30.70	19.90	N	60.00	50.00	29.30	30.10
0.57	37.70	28.80	H	56.00	46.00	18.30	17.20
0.81	26.30	17.30	H	56.00	46.00	29.70	28.70
1.64	32.80	23.00	H	56.00	46.00	23.20	23.00
2.17	33.40	24.00	H	56.00	46.00	22.60	22.00
6.84	29.70	20.30	H	60.00	50.00	30.30	29.70
19.78	28.20	21.50	H	60.00	50.00	31.80	28.50

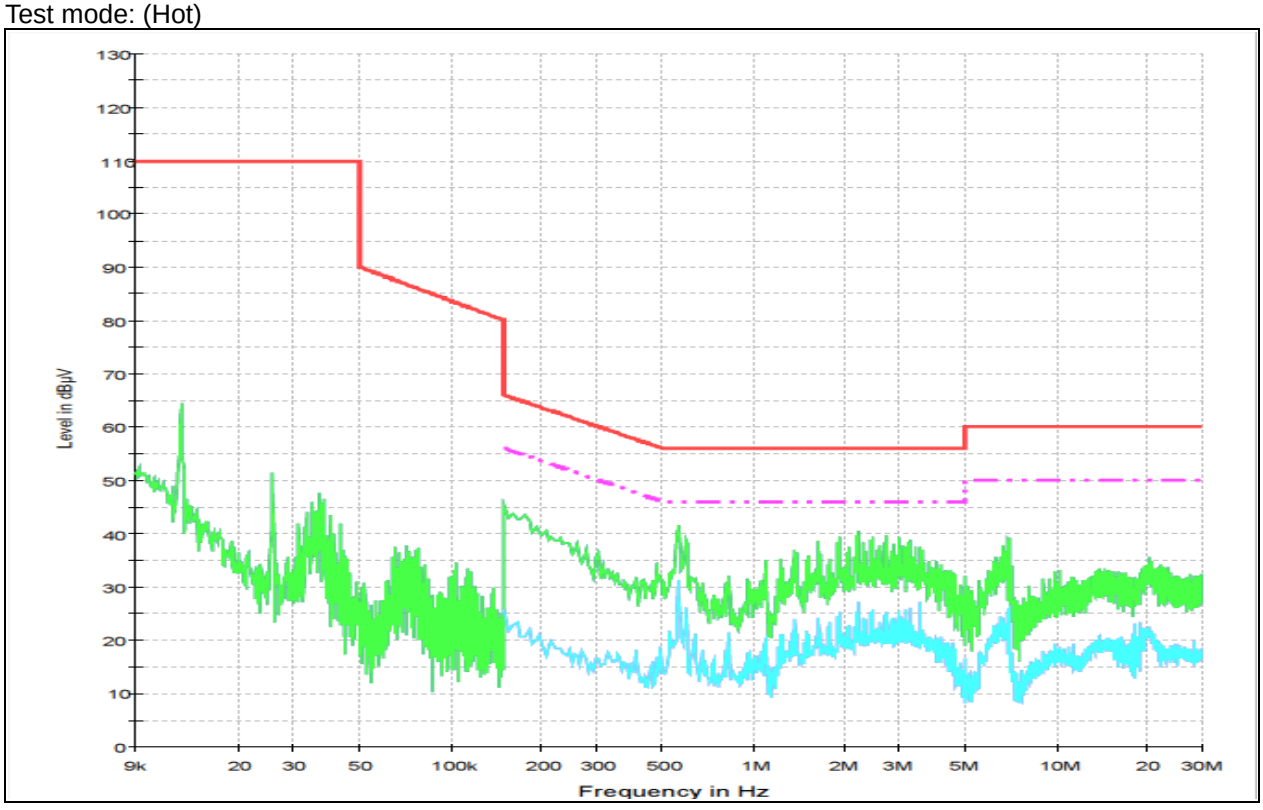
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



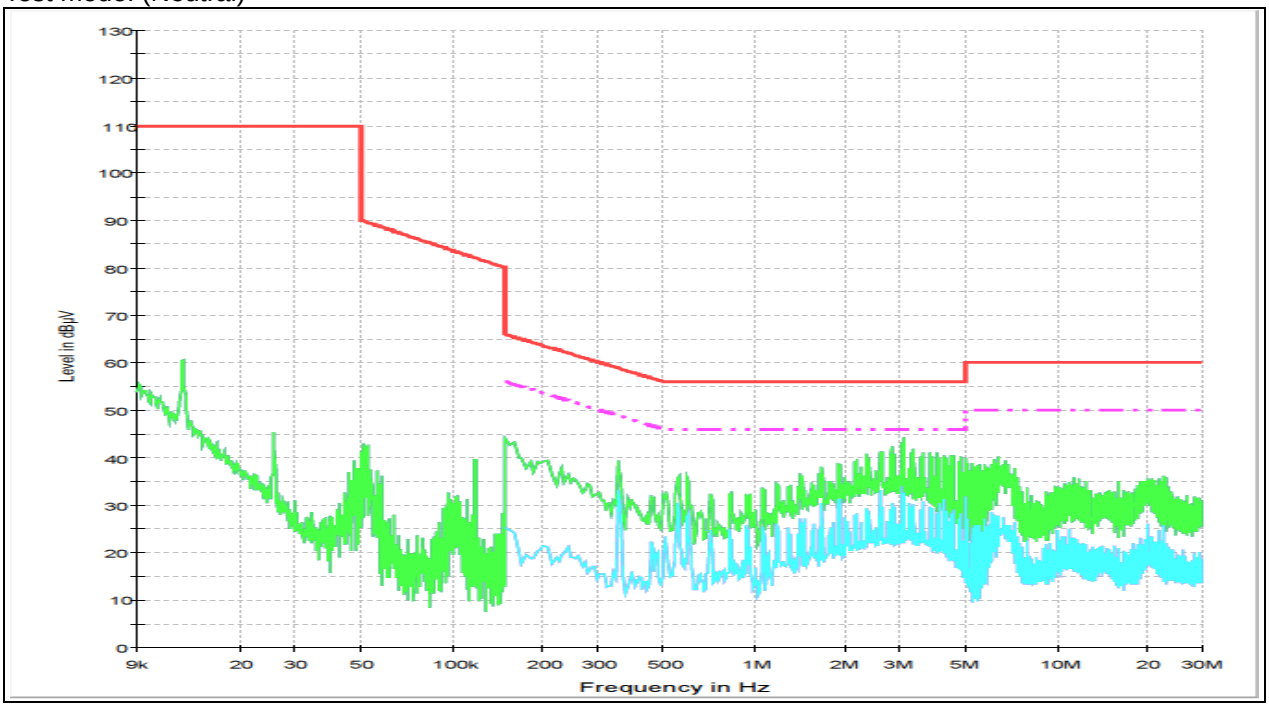
Ant. 2

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(㎒)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.35	37.10	30.70	N	58.96	48.96	21.86	18.26
0.56	32.20	27.80	N	56.00	46.00	23.80	18.20
1.90	34.90	27.40	N	56.00	46.00	21.10	18.60
3.08	38.80	30.50	N	56.00	46.00	17.20	15.50
6.77	34.90	25.10	N	60.00	50.00	25.10	24.90
19.88	30.50	22.60	N	60.00	50.00	29.50	27.40
0.36	35.40	30.60	H	58.73	48.73	23.33	18.13
0.55	38.90	29.40	H	56.00	46.00	17.10	16.60
0.84	26.30	18.70	H	56.00	46.00	29.70	27.30
2.80	31.60	23.00	H	56.00	46.00	24.40	23.00
6.37	35.80	26.40	H	60.00	50.00	24.20	23.60
19.84	29.70	22.30	H	60.00	50.00	30.30	27.70

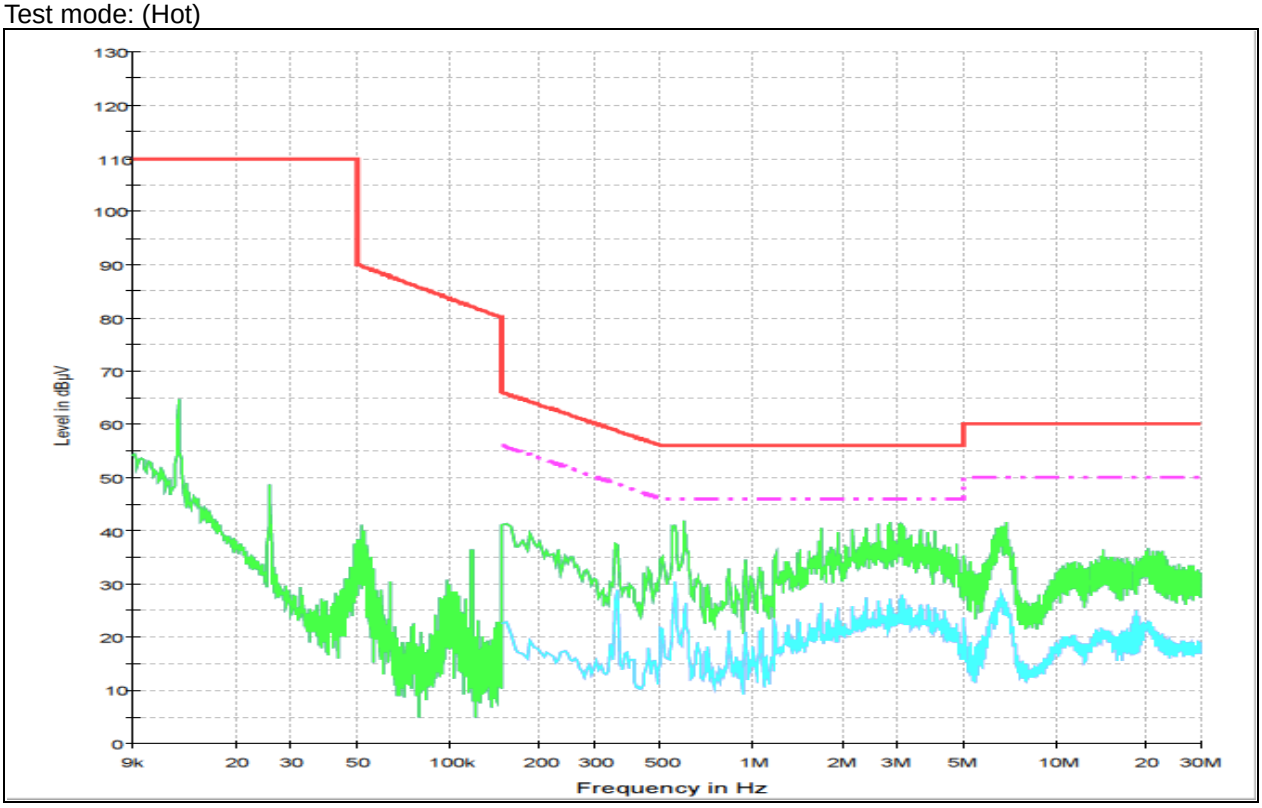
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



Test Condition: DC 12 V Operating mode with Client device (1 % battery status of client device)

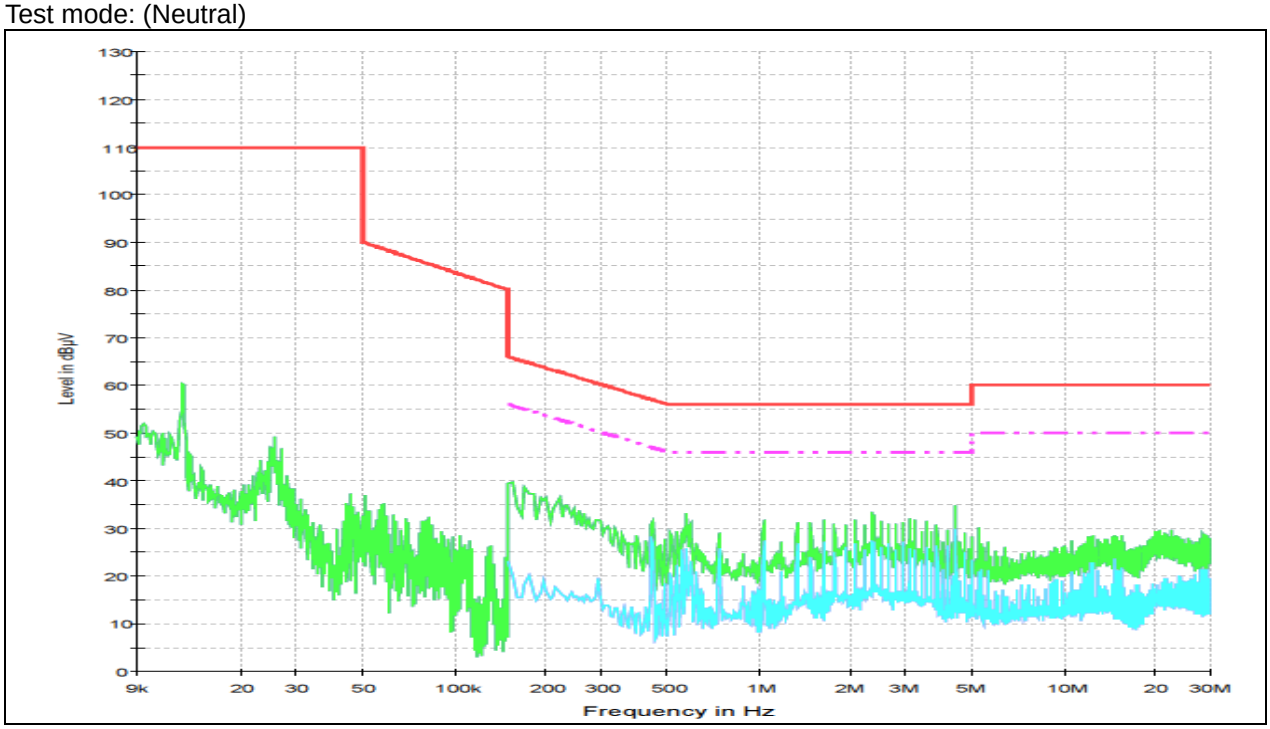
Ant. 1

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.33	33.40	29.30	N	59.45	49.45	26.05	20.15
0.78	36.70	32.30	N	56.00	46.00	19.30	13.70
1.01	36.80	31.10	N	56.00	46.00	19.20	14.90
6.78	37.30	29.40	N	60.00	50.00	22.70	20.60
12.04	30.80	22.90	N	60.00	50.00	29.20	27.10
19.57	32.80	22.90	N	60.00	50.00	27.20	27.10
0.34	32.80	26.40	H	59.20	49.20	26.40	22.80
0.77	30.50	21.10	H	56.00	46.00	25.50	24.90
1.01	33.60	24.20	H	56.00	46.00	22.40	21.80
6.67	39.30	31.90	H	60.00	50.00	20.70	18.10
12.45	31.70	24.40	H	60.00	50.00	28.30	25.60
19.95	34.10	26.60	H	60.00	50.00	25.90	23.40

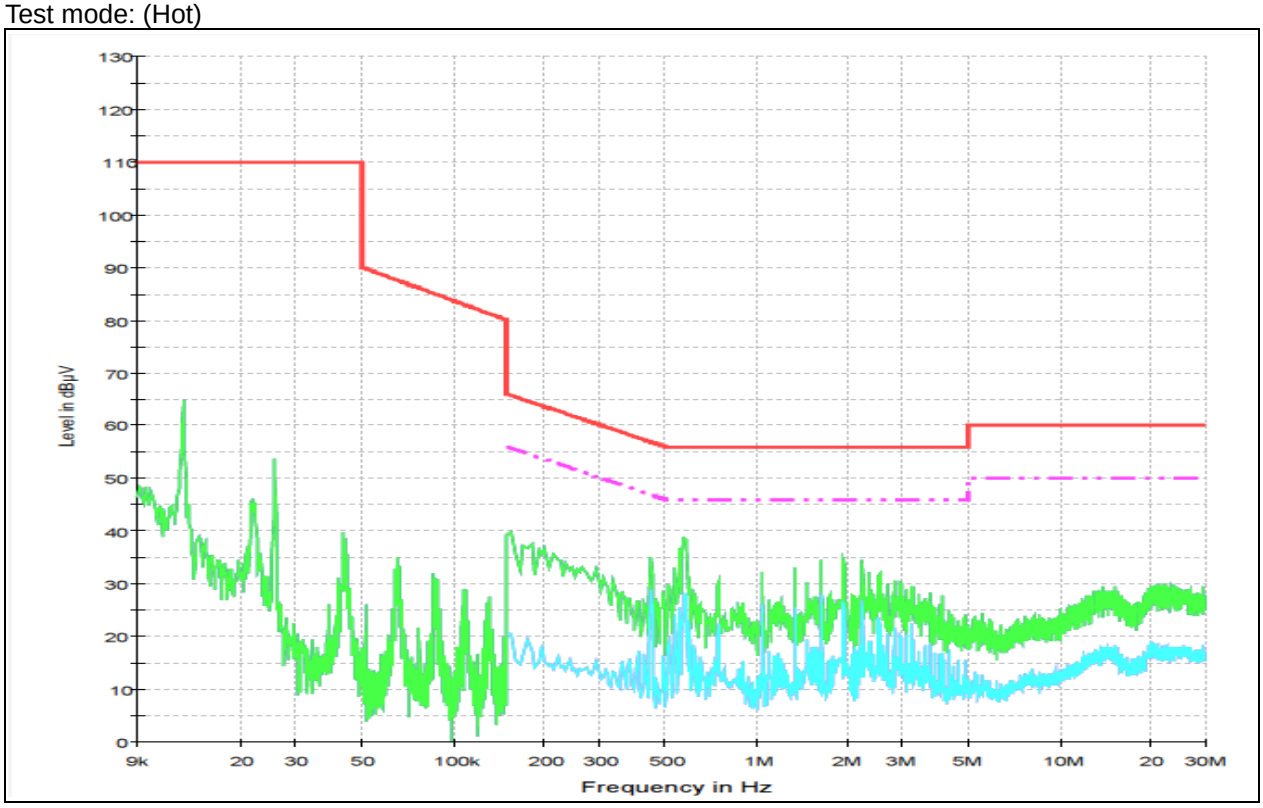
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



Test Condition: MIMO Operating mode with client device (1 % battery status of client device)

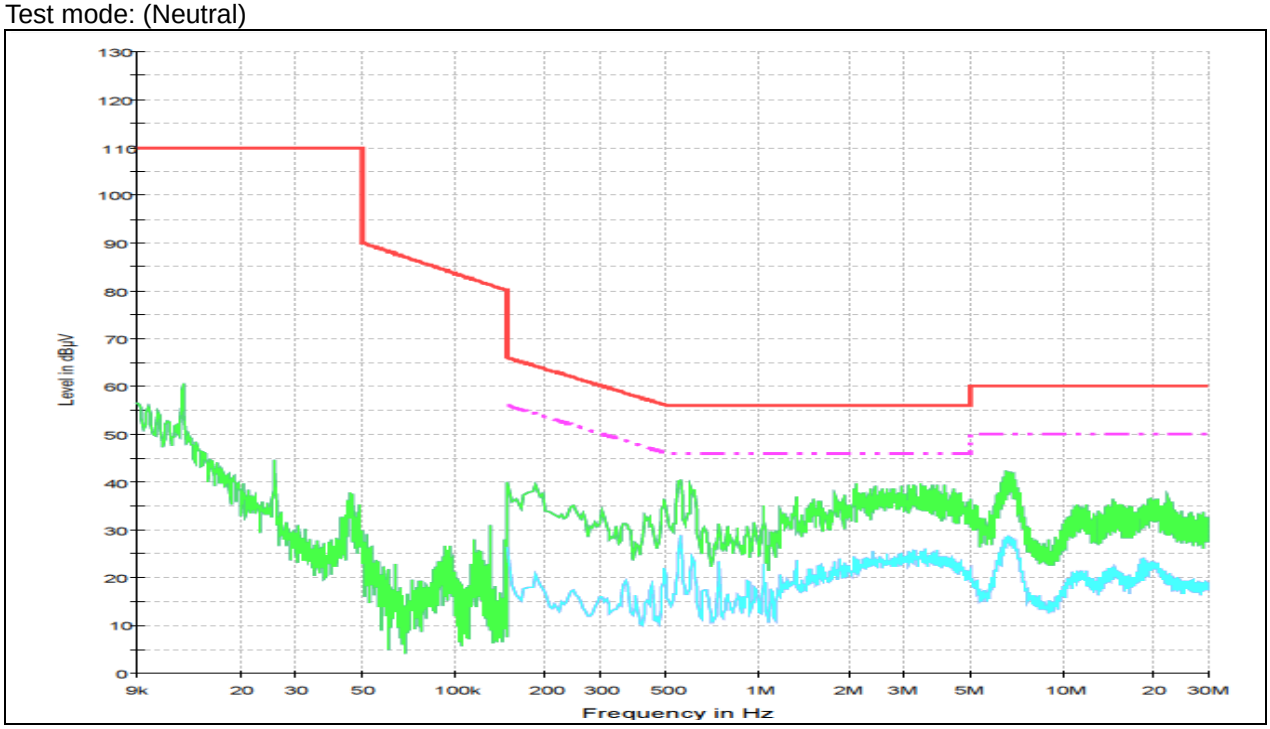
Ant. 1_DC 5 V + Ant. 2_DC 5 V

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.56	34.80	27.00	N	56.00	46.00	21.20	19.00
1.04	29.80	21.50	N	56.00	46.00	26.20	24.50
3.47	34.80	25.00	N	56.00	46.00	21.20	21.00
6.62	36.80	28.80	N	60.00	50.00	23.20	21.20
11.05	29.60	21.00	N	60.00	50.00	30.40	29.00
19.66	29.60	22.70	N	60.00	50.00	30.40	27.30
0.55	32.20	27.60	H	56.00	46.00	23.80	18.40
0.74	23.30	18.10	H	56.00	46.00	32.70	27.90
1.03	23.60	17.70	H	56.00	46.00	32.40	28.30
6.86	35.70	29.30	H	60.00	50.00	24.30	20.70
10.76	29.40	20.70	H	60.00	50.00	30.60	29.30
19.65	30.10	23.00	H	60.00	50.00	29.90	27.00

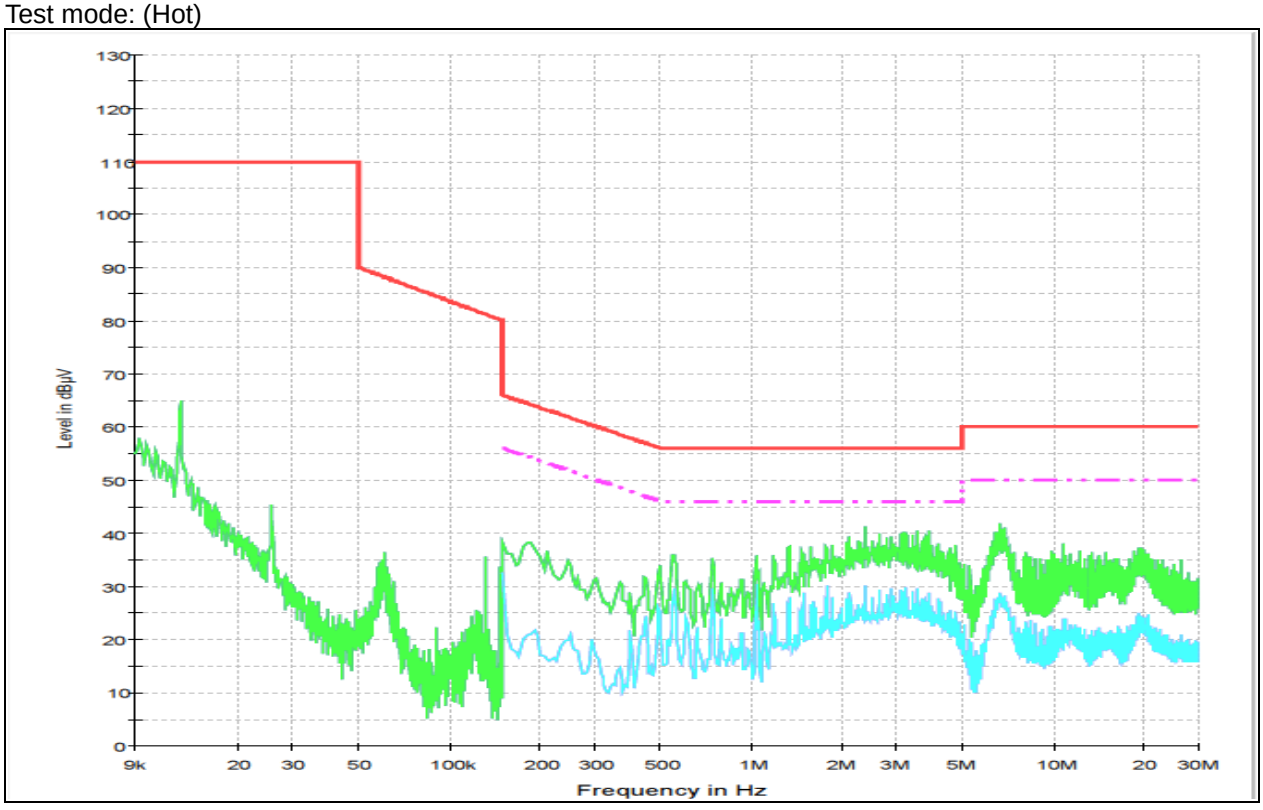
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



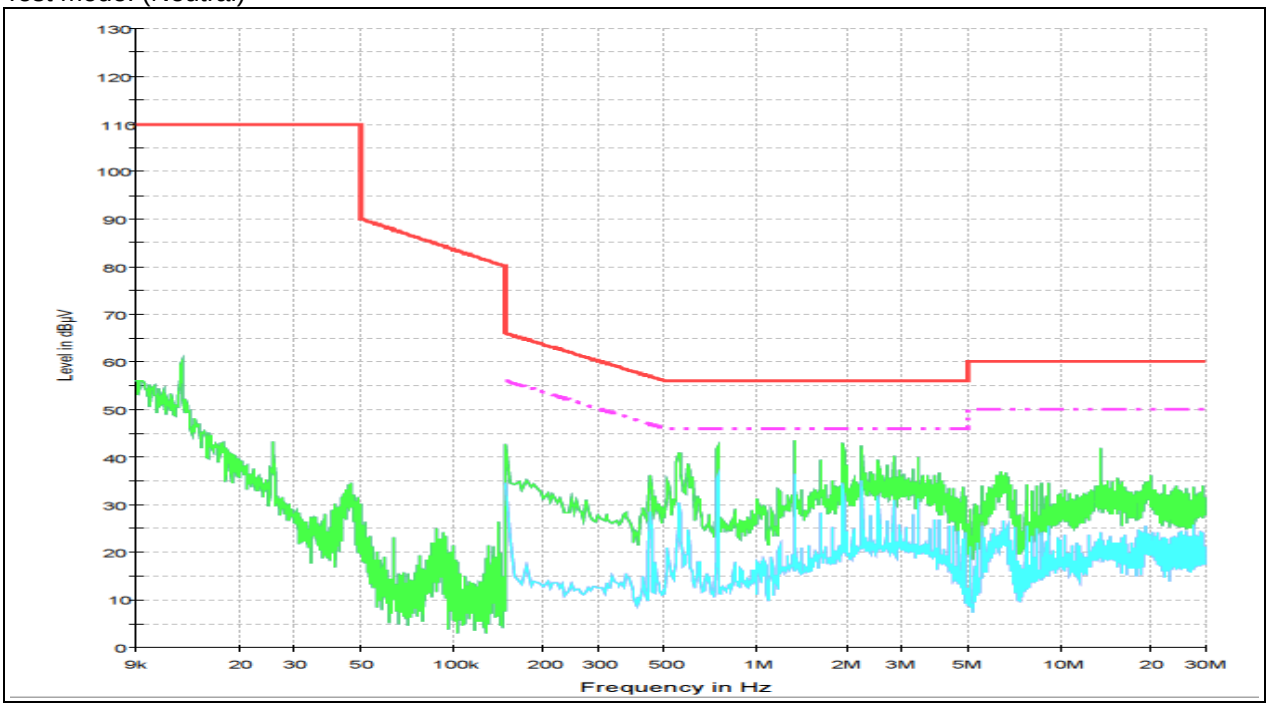
Ant. 1_DC 5 V + Ant. 2_DC 9 V

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(㎒)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.56	27.60	19.10	N	56.00	46.00	28.40	26.90
0.74	22.70	14.90	N	56.00	46.00	33.30	31.10
1.33	28.40	21.00	N	56.00	46.00	27.60	25.00
1.94	32.10	24.10	N	56.00	46.00	23.90	21.90
6.38	36.10	28.10	N	60.00	50.00	23.90	21.90
13.51	33.00	20.70	N	60.00	50.00	27.00	29.30
0.40	29.70	25.10	H	57.85	47.85	28.15	22.75
0.54	33.10	27.00	H	56.00	46.00	22.90	19.00
0.68	32.30	26.90	H	56.00	46.00	23.70	19.10
1.06	29.70	22.80	H	56.00	46.00	26.30	23.20
2.97	36.70	28.50	H	56.00	46.00	19.30	17.50
6.68	35.30	29.00	H	60.00	50.00	24.70	21.00

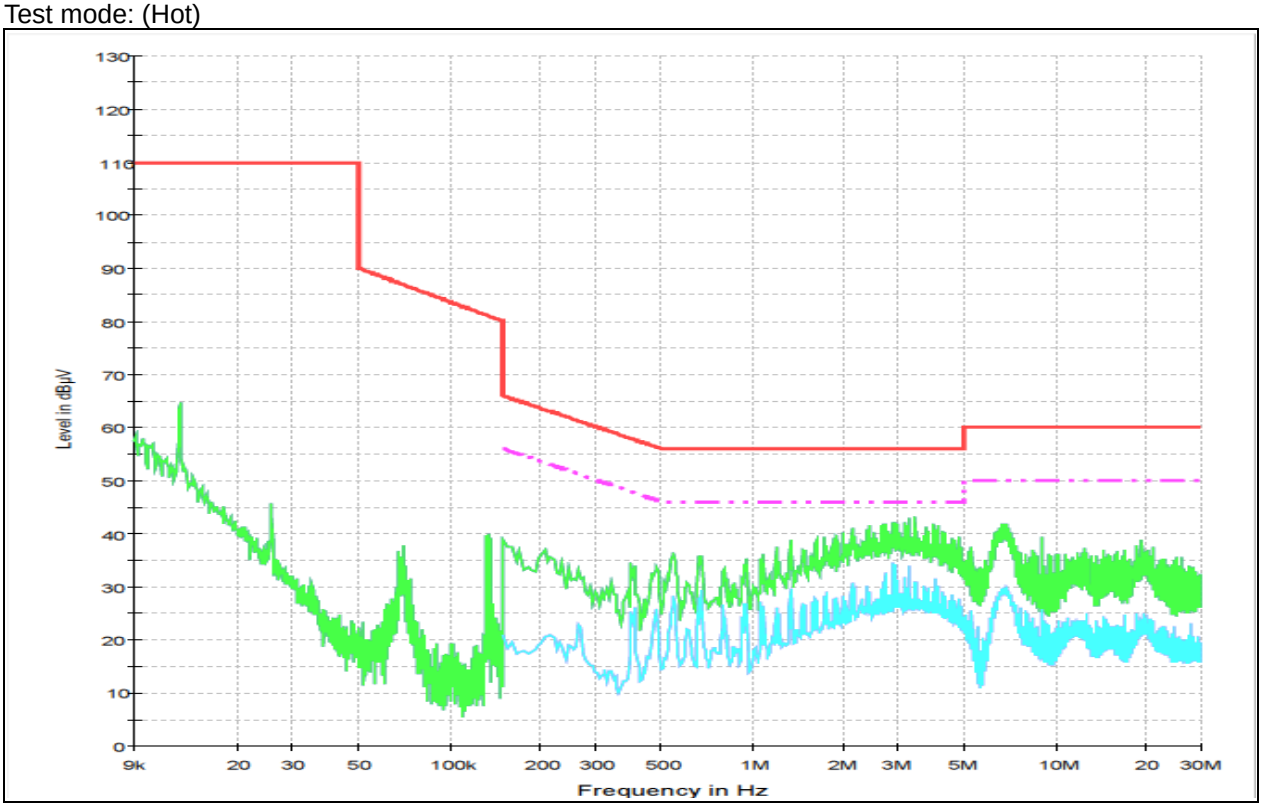
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



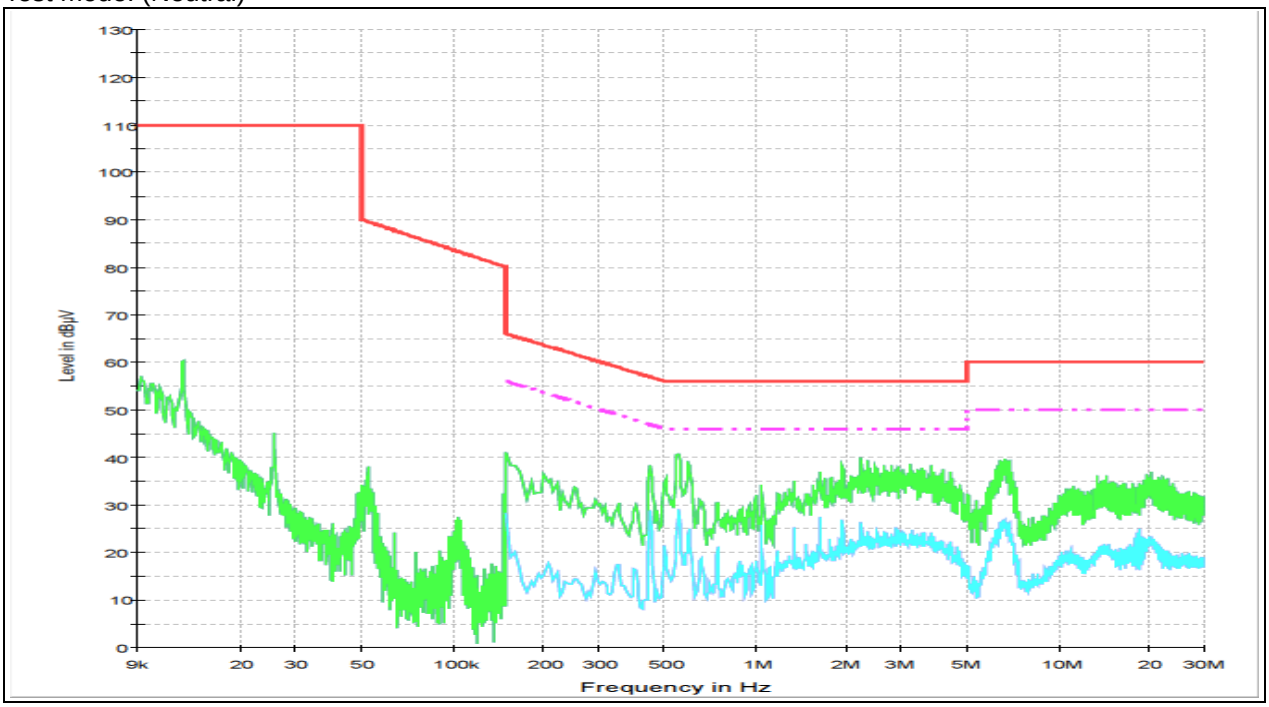
Ant. 1_DC 5 V + Ant. 3_DC 5 V

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.45	31.80	24.10	N	56.88	46.88	25.08	22.78
0.55	38.40	28.30	N	56.00	46.00	17.60	17.70
2.34	32.40	24.00	N	56.00	46.00	23.60	22.00
6.63	33.30	26.20	N	60.00	50.00	26.70	23.80
13.81	29.50	21.00	N	60.00	50.00	30.50	29.00
19.82	29.20	22.30	N	60.00	50.00	30.80	27.70
0.44	28.40	26.20	H	57.06	47.06	28.66	20.86
0.56	32.40	26.70	H	56.00	46.00	23.60	19.30
2.33	31.00	24.90	H	56.00	46.00	25.00	21.10
2.92	35.10	28.30	H	56.00	46.00	20.90	17.70
6.50	32.80	25.60	H	60.00	50.00	27.20	24.40
19.84	30.00	22.30	H	60.00	50.00	30.00	27.70

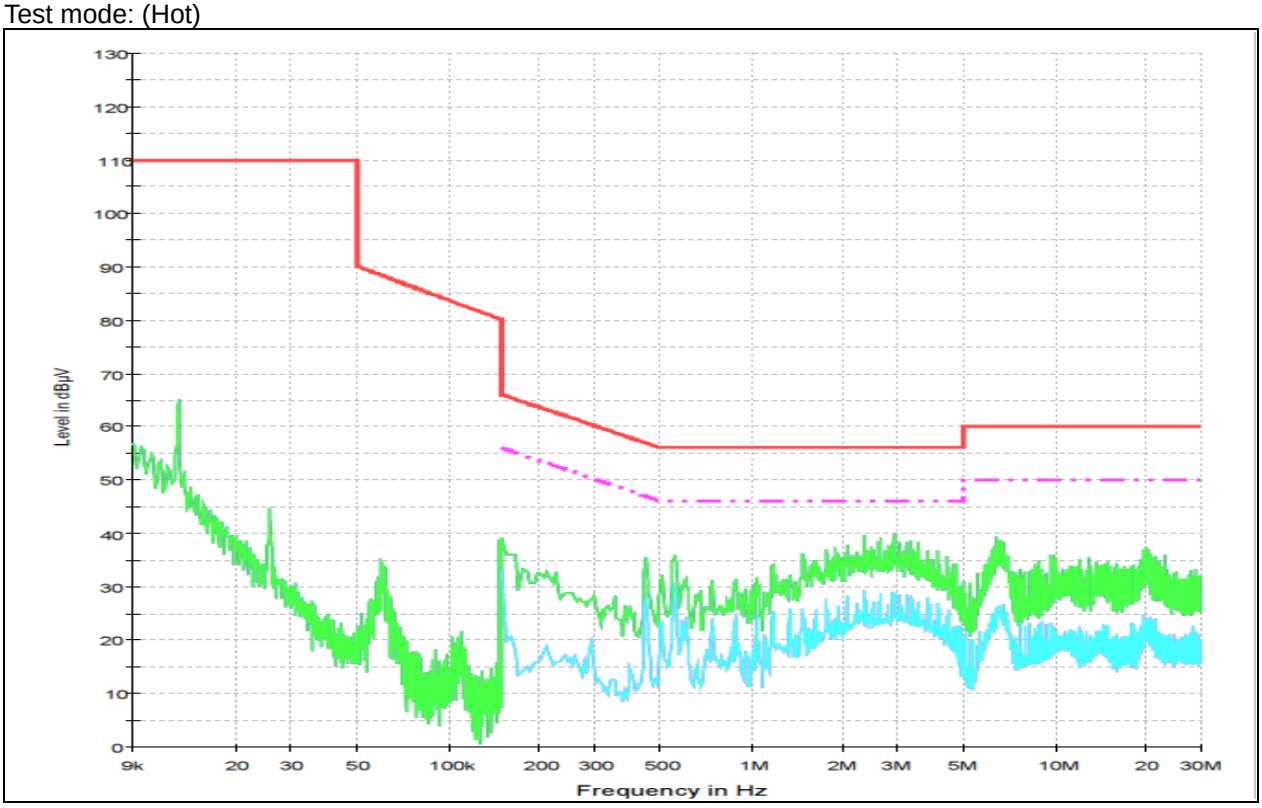
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



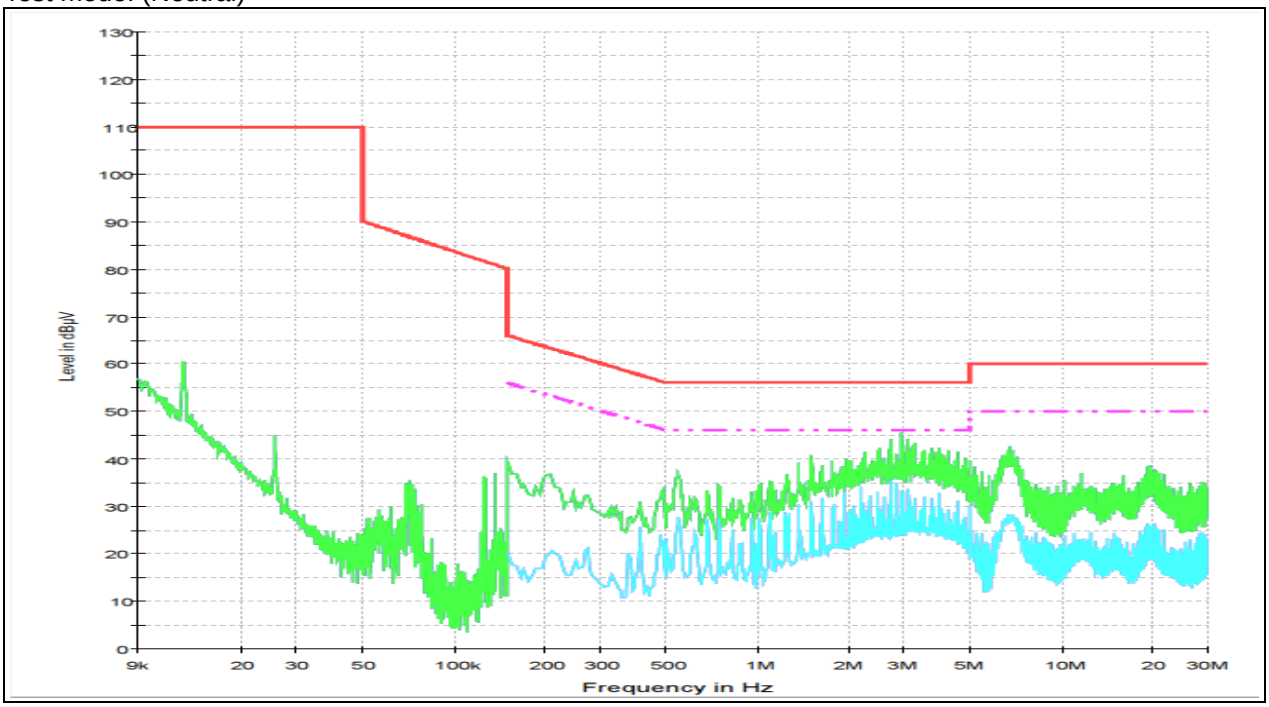
Ant. 1_DC 9 V + Ant. 2_DC 5 V

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.41	27.50	24.20	N	57.65	47.65	30.15	23.45
0.54	33.10	26.20	N	56.00	46.00	22.90	19.80
1.02	29.70	18.60	N	56.00	46.00	26.30	27.40
2.99	38.30	31.40	N	56.00	46.00	17.70	14.60
6.65	35.60	27.80	N	60.00	50.00	24.40	22.20
18.93	30.50	22.00	N	60.00	50.00	29.50	28.00
0.48	33.00	27.00	H	56.34	46.34	23.34	19.34
0.54	32.70	27.40	H	56.00	46.00	23.30	18.60
0.95	30.20	21.50	H	56.00	46.00	25.80	24.50
3.35	37.10	30.80	H	56.00	46.00	18.90	15.20
6.74	35.80	29.20	H	60.00	50.00	24.20	20.80
19.90	31.10	24.30	H	60.00	50.00	28.90	25.70

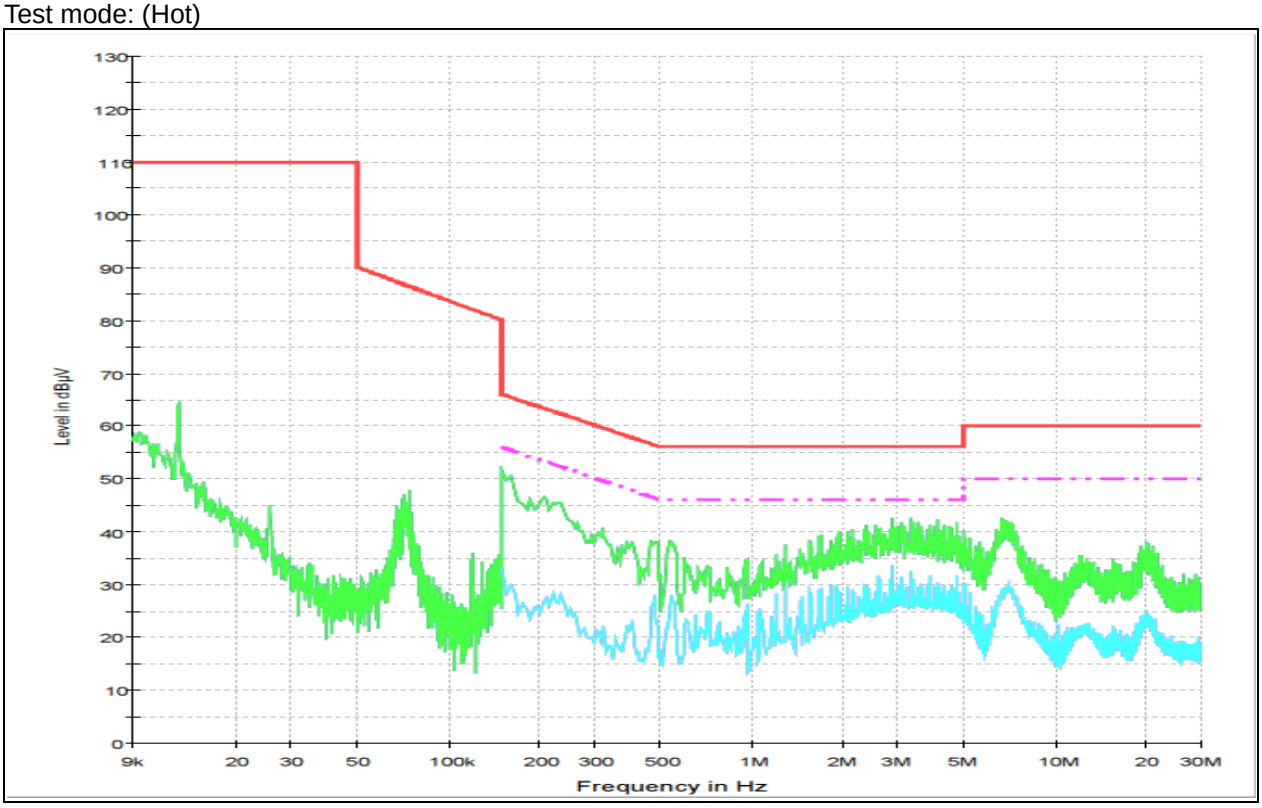
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



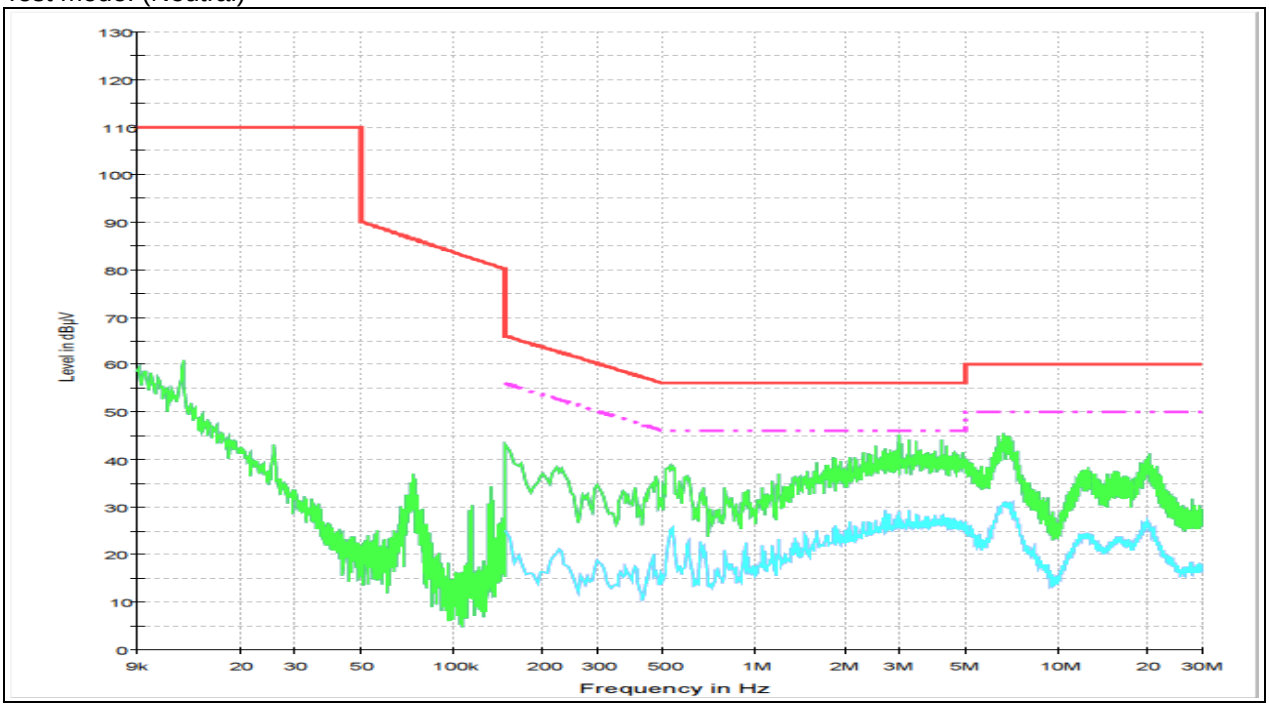
Ant. 1_DC 9 V + Ant. 2_DC 9 V

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.23	29.40	17.30	N	62.45	52.45	33.05	35.15
0.54	30.60	18.90	N	56.00	46.00	25.40	27.10
0.92	24.90	17.30	N	56.00	46.00	31.10	28.70
2.98	35.90	27.70	N	56.00	46.00	20.10	18.30
6.80	39.60	31.90	N	60.00	50.00	20.40	18.10
19.72	34.20	27.30	N	60.00	50.00	25.80	22.70
0.40	30.60	27.50	H	57.85	47.85	27.25	20.35
0.67	32.40	27.10	H	56.00	46.00	23.60	18.90
1.07	32.00	25.80	H	56.00	46.00	24.00	20.20
3.19	39.20	30.40	H	56.00	46.00	16.80	15.60
6.76	36.80	30.10	H	60.00	50.00	23.20	19.90
19.79	31.40	24.10	H	60.00	50.00	28.60	25.90

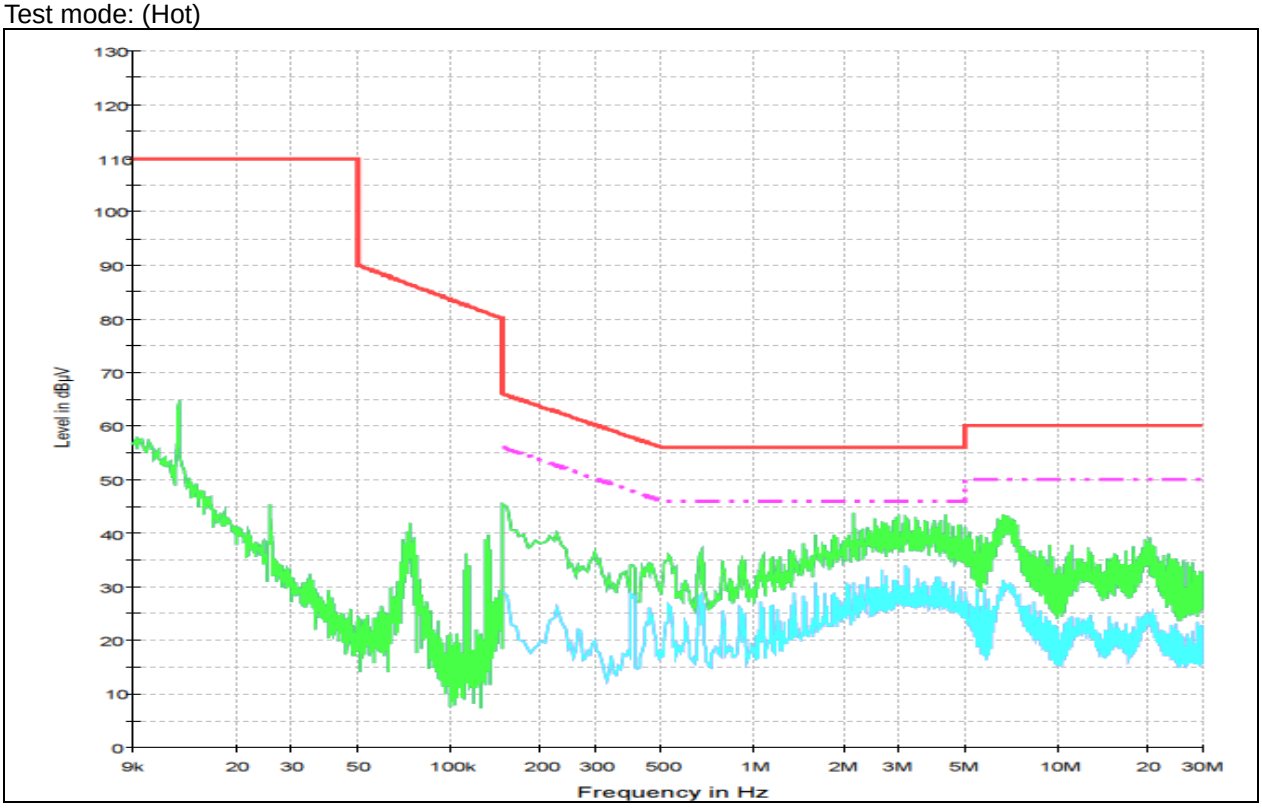
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



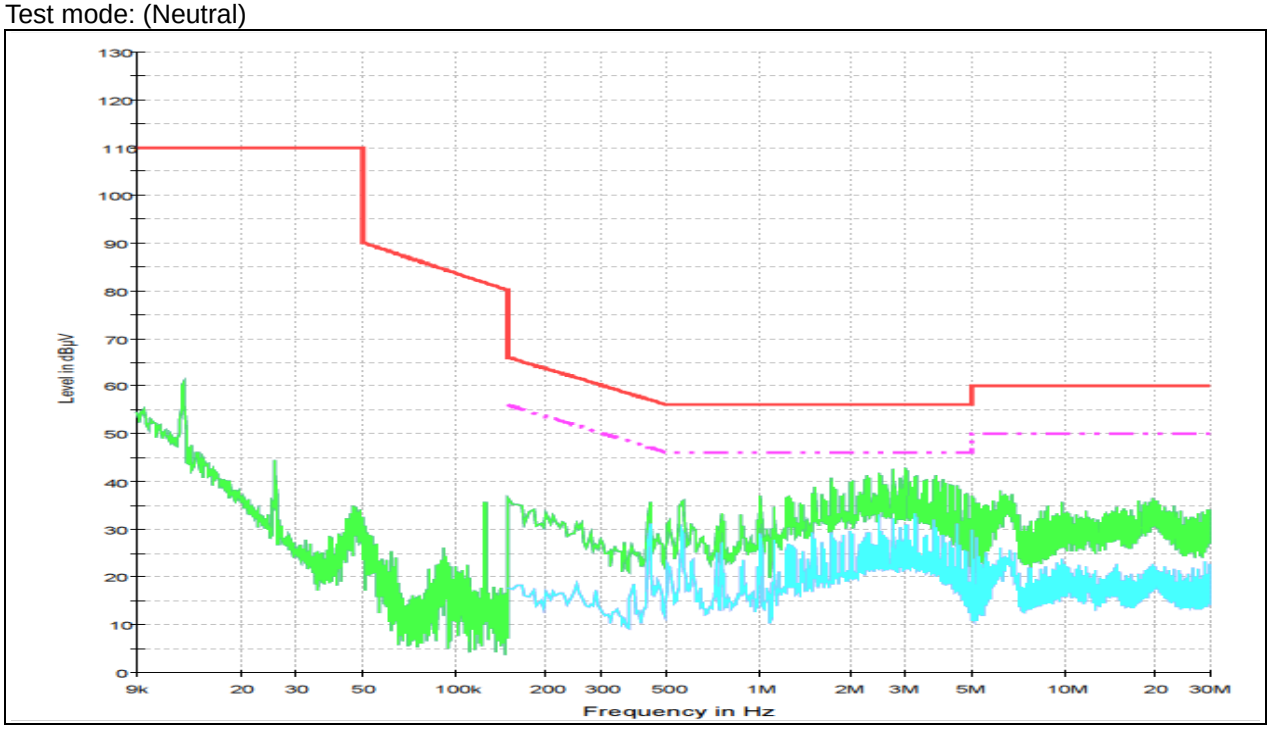
Ant. 1_DC 9 V + Ant. 3_DC 5 V

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.43	31.70	29.30	N	57.25	47.25	25.55	17.95
0.55	33.90	28.80	N	56.00	46.00	22.10	17.20
0.74	30.10	24.10	N	56.00	46.00	25.90	21.90
2.00	35.60	27.10	N	56.00	46.00	20.40	18.90
3.73	35.80	27.10	N	56.00	46.00	20.20	18.90
6.53	32.70	25.40	N	60.00	50.00	27.30	24.60
0.43	19.50	11.80	H	57.25	47.25	37.75	35.45
0.55	38.60	28.20	H	56.00	46.00	17.40	17.80
1.00	29.60	20.60	H	56.00	46.00	26.40	25.40
2.24	34.70	25.50	H	56.00	46.00	21.30	20.50
6.45	32.90	25.10	H	60.00	50.00	27.10	24.90
20.11	29.40	21.90	H	60.00	50.00	30.60	28.10

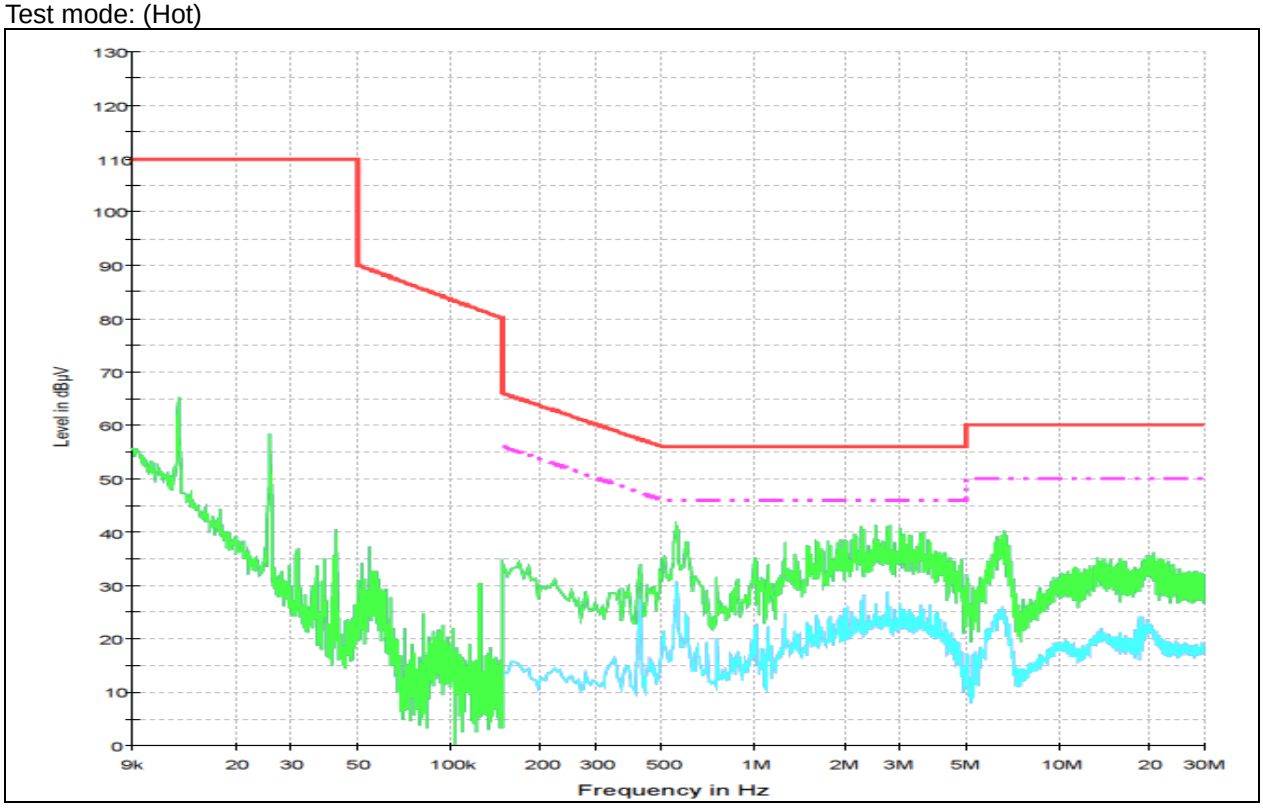
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



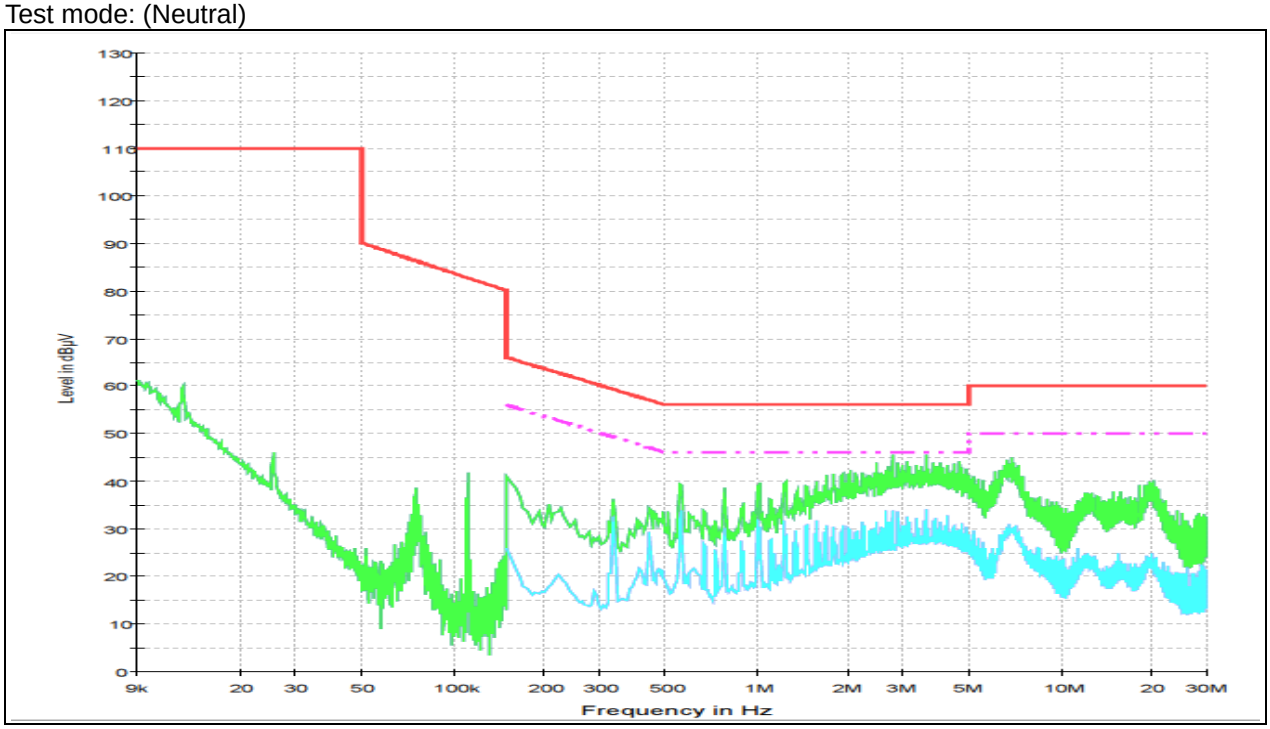
Ant. 1_DC 12 V + Ant. 3_DC 5 V

FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(MHz)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.33	33.30	29.10	N	59.45	49.45	26.15	20.35
0.56	36.70	33.50	N	56.00	46.00	19.30	12.50
0.79	33.80	24.60	N	56.00	46.00	22.20	21.40
2.81	40.20	30.80	N	56.00	46.00	15.80	15.20
6.67	38.00	29.60	N	60.00	50.00	22.00	20.40
19.51	32.90	22.60	N	60.00	50.00	27.10	27.40
0.34	21.00	12.70	H	59.20	49.20	38.20	36.50
0.45	43.30	36.90	H	56.88	46.88	13.58	9.98
0.56	39.20	31.10	H	56.00	46.00	16.80	14.90
0.78	19.40	12.00	H	56.00	46.00	36.60	34.00
6.75	28.20	18.60	H	60.00	50.00	31.80	31.40
19.51	29.50	22.30	H	60.00	50.00	30.50	27.70

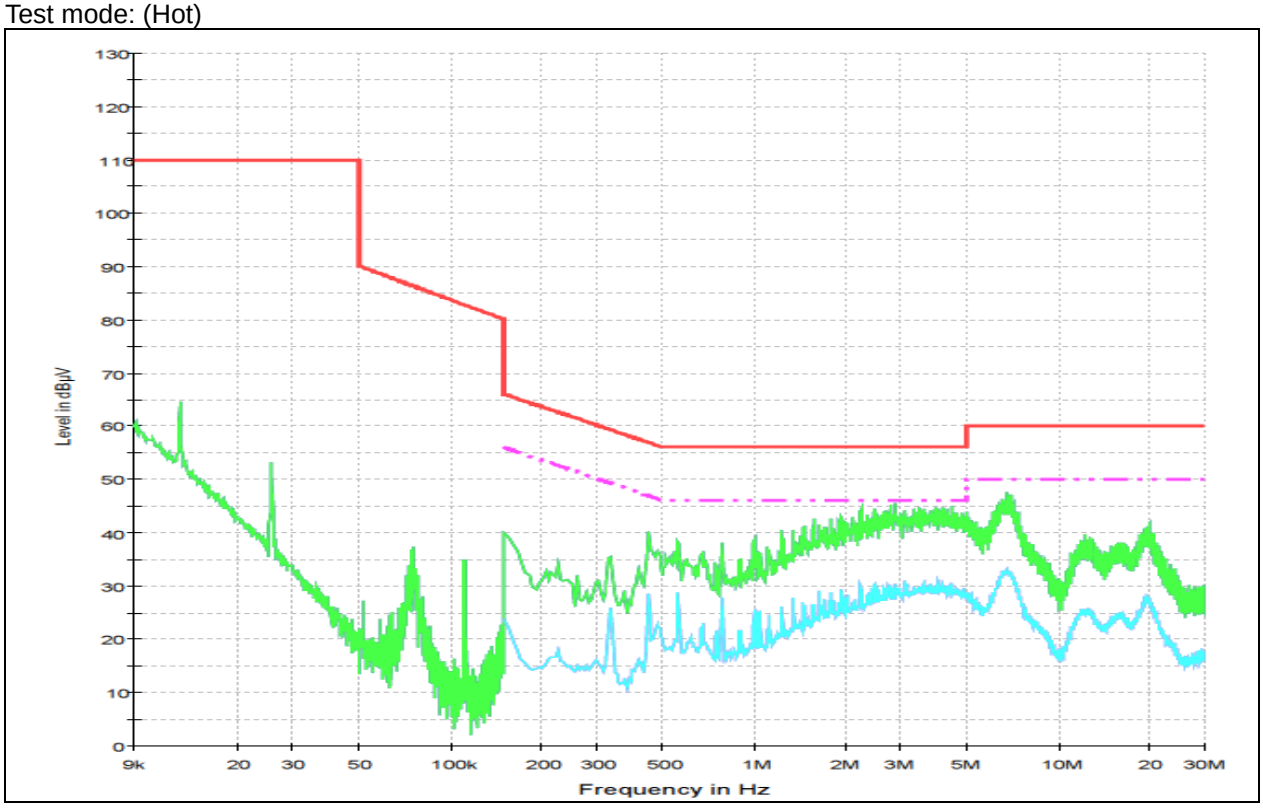
Remark;

1. Line (H): Hot, Line (N): Neutral
2. Each charging mode with client device (1 %, 50 % and 99 % of battery) was tested.
   As worst condition, charging mode with client device (1 %) is reported.
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
4. Traces shown in plot were made by using a peak detector and average detector.
5. Deviations to the Specifications: None.

Test mode: (Neutral)



Test mode: (Hot)



- End of the Test Report -