

RF TEST REPORT

Test Equipment : Wireless Charger
Model Name : Q900D
Variant Model Name : Q901, P900
FCC ID : 2ASYJQ900D
Date of receipt : 2019.03.19
Test duration : 2019.03.29 ~ 2019.04.04
Date of issue : 2019.04.11

Applicant : ORORAMOBILE CO., Ltd

e-Biz center 1105, Yangsanro 4, Yeongdeunpo-gu, Seoul, South Korea

Test Laboratory : Lab-T, Inc.

2182-42 Baegok-daero, Mohyeon-myeon, Cheoin-gu, Yongin-si
Gyeonggi-do 17036, South Korea

Test specification : FCC CFR Title 47 Part 15 Subpart C 15.203
FCC CFR Title 47 Part 15 Subpart C 15.207
FCC CFR Title 47 Part 15 Subpart C 15.209
Test result : Pass

The above equipment was tested by Lab-T Testing Laboratory for compliance
with the requirements of FCC Rules and Regulations.
The test results presented in this test report are limited only to the sample supplied by applicant
and the use of this test report is inhibited other than its purpose.
This test report shall not be reproduced except in full, without the written approval of Lab-T, Inc

Tested by:



Engineer
Namhyoung Kwon

Reviewed by:



Technical Manager
SangHoon Yu

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1. Applicant Information

Applicant : ORORAMOBILE CO., Ltd
Address : e-Biz center 1105, Yangsanro 4, Yeongdeunpo-gu, Seoul, South Korea
Telephone No. : +82-70-4066-2054
Person in charge : jonansa@empas.com

Manufacturer : ORORAMOBILE CO., Ltd
Address : e-Biz center 1105, Yangsanro 4, Yeongdeunpo-gu, Seoul, South Korea

2. Laboratory Information

Test Laboratory : Lab-T, Inc.
Address : 2182-42 Baegok-daero, Mohyeon-myeon, Cheoin-gu, Yongin-si
Gyeonggi-do 17036, South Korea
Telephone No. : +82 31-322-6767
Facsimile No. : +82 31-322-6768

Certificate

Designation No. : KR0159
Registration No. : 133186

3. Information About Test Equipment

3.1 Equipment Information

Equipment type	Wireless Charger
Equipment model name	Q900D
Variant model name	Q901, P900
Frequency range	110 kHz ~ 205 kHz
Modulation type	ASK
Power supply	DC 5.00 V, DC 9.00 V

Note1:The above EUT information was declared by the manufacturer.

Note2: The housing shape and color of variant models listed in the report is different from main-test model, but the circuit and the electronic construction do not change.

3.2 Antenna Information

type	Inductive Loop Coil Antenna
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3.3 Tested Companion Device Information

Type	Manufacturer	Model	Note
Smart phone	Samsung	SM-N920L	-
Adapter	Dongguan Yingju Power Co., Ltd.	EP-TA20KBK	-

4. Test Report

4.1 Summary

FCC Part 15			
Reference	Parameter	Clause	Status
Transmitter Requirements			
2.1049	20 dB Bandwidth	4.4.1	C
15.209(a)	Radiated Emission	4.4.2	C
15.207(a)	Conducted Emissions	4.4.3	C
15.203	Antenna Requirements	4.4.4	C
NOTE 1 : C = Comply N/C = Not Comply N/T = Not Tested N/A = Not Applicable			

* The general test methods used to test this device is ANSI C63.10:2013

4.2 Measurement Uncertainty

Measurement items	Expanded Uncertainty
Radiated Spurious Emissions (1 GHz under)	± 4.88 dB (The confidence level is about 95 %, $k=2$)
Conducted emission	± 2.34 dB (The confidence level is about 95 %, $k=2$)

4.3 Test Report Version

Test Report No.	Date	Description
TRRFCC19-0020	19.04.11	Initial issue

4.4 Test Report

4.4.1 20 dB Bandwidth

4.4.1.1 Measurement Procedure

The 20 dB Bandwidth is measured with a spectrum analyzer connected via a receiving antenna placed near the EUT while the EUT is operating.

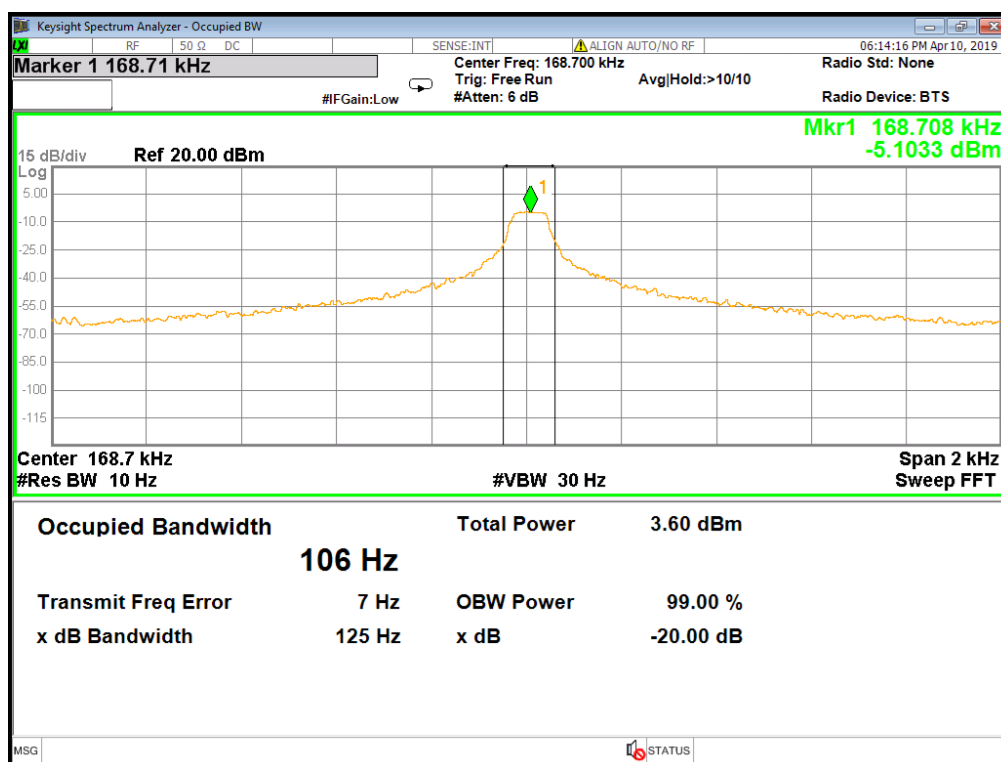
4.4.1.2 Result

Comply (measurement data : refer to below)

4.4.1.3 Measurement data

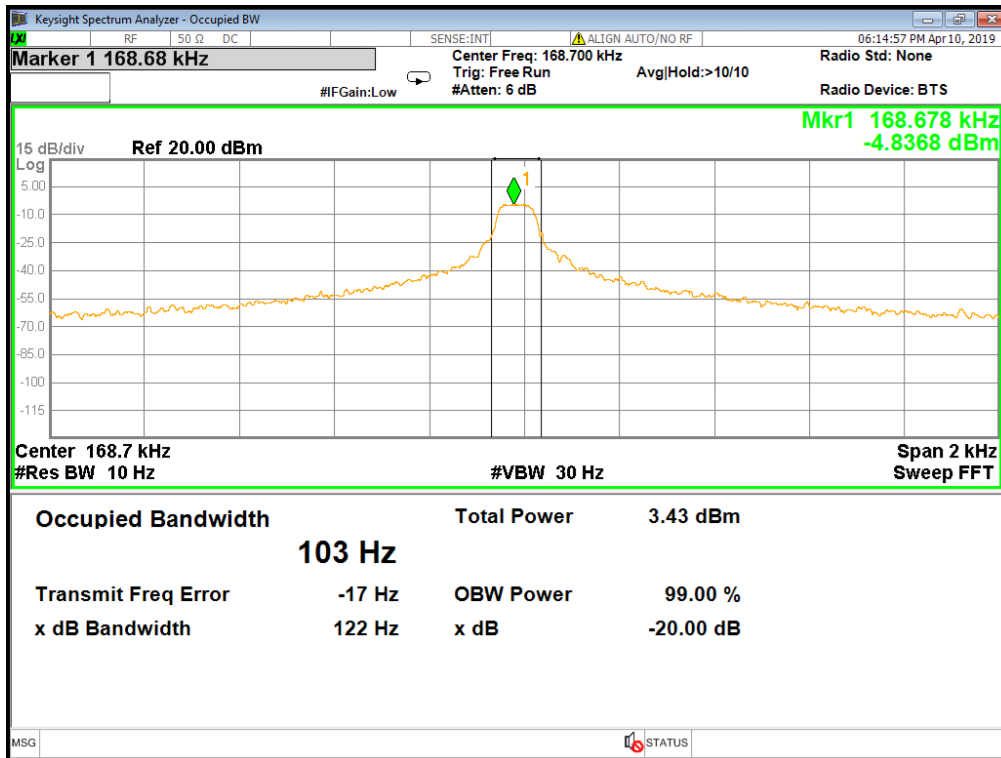
Test mode : 5 V Charging Mode

Tested Frequency(kHz)	Test Results(kHz)
168.7	0.125



Test mode : 9 V Charging Mode

Tested Frequency(kHz)	Test Results(kHz)
168.7	0.122



4.4.2 Radiated Emission

4.4.2.1 Regulation

According to §15.209(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009 - 0.490	2 400/F(kHz)	300
0.490 - 1.705	24 000/F(kHz)	30
1.705 - 30.0	30	30
30 – 88	100**	3
88 – 216	150**	3
216 - 960	200**	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

4.4.2.2 Measurement Procedure

- 1) The EUT was placed on a turn table which is 0.8m above ground plane.
- 2) Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- 3) And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4) Repeat above procedures until all frequency measurements have been completed.

4.4.2.3 Test mode

In order to check all kinds of possible configurations, EUT was evaluated with appropriate client and under each charging condition as below table.

EUT Voltage	Cal.Date
5 V Charging Mode	Battery less than 1% charged
	Battery less than 50% charged
	Battery 100% fully charged
9 V Charging Mode	Battery less than 1% charged
	Battery less than 50% charged
	Battery 100% fully charged

4.4.2.4 Result

Comply (measurement data : refer to the next page)

4.4.2.5 Measurement data_Radiated Spurious Emissions

Test mode : 5 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 1% charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 300m (dBμV/m)	Limit at 300m (dBμV/m)	Margin (dB)
0.169	QP	F	H	61.9	11.3	0.1	73.3	-6.7	23.0	29.7
0.169	QP	F	V	52.5	11.3	0.1	63.9	-16.1	23.0	39.1

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 30m (dBμV/m)	Limit at 30m (dBμV/m)	Margin (dB)
0.504	QP	S	H	45.3	11.1	0.1	56.5	16.5	33.6	17.1
0.504	QP	S	V	37.7	11.1	0.1	48.9	8.9	33.6	24.7
0.844	QP	S	H	38.5	11.1	0.1	49.7	9.7	29.1	19.4
11.985	QP	S	V	34.2	9.5	0.5	44.2	4.2	29.5	25.3

Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Result : Reading + Ant Factor + Cable Loss

Note 3 : According to §15.31 (f)(2);

Result at 30m (dBμV/m) = Result at 3m(dBμV/m)-40log(30/3) (dBμV/m)

Result at 300m (dBμV/m) = Result at 3m(dBμV/m)-40log(300/3) (dBμV/m)

Note 4 : The radiation measurements are performed in X, Y, Z axis positioning. And worst case mode is recorded in the report.

Test mode : 5 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 50% charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 300m (dBμV/m)	Limit at 300m (dBμV/m)	Margin (dB)
0.169	QP	F	H	61.5	11.3	0.1	72.9	-7.1	23.0	30.1
0.169	QP	F	V	51.8	11.3	0.1	63.2	-16.8	23.0	39.8

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 30m (dBμV/m)	Limit at 30m (dBμV/m)	Margin (dB)
0.501	QP	S	H	45.0	11.1	0.1	56.2	16.2	33.6	17.4
0.501	QP	S	V	40.3	11.1	0.1	51.5	11.5	33.6	22.1
0.833	QP	S	H	41.0	11.1	0.1	52.2	12.2	29.2	17.0
12.022	QP	S	V	35.8	9.5	0.5	45.8	5.8	29.5	23.7

Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Result : Reading + Ant Factor + Cable Loss

Note 3 : According to §15.31 (f)(2);

Result at 30m (dBμV/m) = Result at 3m(dBμV/m)-40log(30/3) (dBμV/m)

Result at 300m (dBμV/m) = Result at 3m(dBμV/m)-40log(300/3) (dBμV/m)

Note 4 : The radiation measurements are performed in X, Y, Z axis positioning. And worst case mode is recorded in the report.

Test mode : 5 V Charging Mode_9 kHz ~ 30 MHz (Battery 100% fully charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 300m (dBμV/m)	Limit at 300m (dBμV/m)	Margin (dB)
0.169	QP	F	H	65.5	11.3	0.1	76.9	-3.1	23.0	26.1
0.169	QP	F	V	58.0	11.3	0.1	69.4	-10.6	23.0	33.6

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 30m (dBμV/m)	Limit at 30m (dBμV/m)	Margin (dB)
0.516	QP	S	H	47.2	11.1	0.1	58.4	18.4	33.4	15.0
0.516	QP	S	V	42.2	11.1	0.1	53.4	13.4	33.4	20.0
0.863	QP	S	H	40.7	11.1	0.1	51.9	11.9	28.9	17.0
0.863	QP	S	V	33.2	11.1	0.1	44.4	4.4	28.9	24.5

Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Result : Reading + Ant Factor + Cable Loss

Note 3 : According to §15.31 (f)(2);

Result at 30m (dBμV/m) = Result at 3m(dBμV/m)-40log(30/3) (dBμV/m)

Result at 300m (dBμV/m) = Result at 3m(dBμV/m)-40log(300/3) (dBμV/m)

Note 4 : The radiation measurements are performed in X, Y, Z axis positioning. And worst case mode is recorded in the report.

Test mode : 9 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 1% charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 300m (dBμV/m)	Limit at 300m (dBμV/m)	Margin (dB)
0.165	QP	F	H	64.3	11.3	0.1	75.7	-4.3	23.3	27.6
0.165	QP	F	V	55.9	11.3	0.1	67.3	-12.7	23.3	36.0

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 30m (dBμV/m)	Limit at 30m (dBμV/m)	Margin (dB)
0.497	QP	S	H	46.2	11.1	0.1	57.4	17.4	33.7	16.3
0.497	QP	S	V	41.1	11.1	0.1	52.3	12.3	33.7	21.4
0.833	QP	S	H	40.3	11.1	0.1	51.5	11.5	29.2	17.7
0.833	QP	S	V	32.2	11.1	0.1	43.4	3.4	29.2	25.8

Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Result : Reading + Ant Factor + Cable Loss

Note 3 : According to §15.31 (f)(2);

Result at 30m (dBμV/m) = Result at 3m(dBμV/m)-40log(30/3) (dBμV/m)

Result at 300m (dBμV/m) = Result at 3m(dBμV/m)-40log(300/3) (dBμV/m)

Note 4 : The radiation measurements are performed in X, Y, Z axis positioning. And worst case mode is recorded in the report.

Test mode : 9 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 50% charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 300m (dBμV/m)	Limit at 300m (dBμV/m)	Margin (dB)
0.165	QP	F	H	64.3	11.3	0.1	75.7	-4.3	23.3	27.6
0.165	QP	F	V	56.9	11.3	0.1	68.3	-11.7	23.3	35.0

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 30m (dBμV/m)	Limit at 30m (dBμV/m)	Margin (dB)
0.501	QP	S	H	44.1	11.1	0.1	55.3	15.3	33.6	18.3
0.501	QP	S	V	40.9	11.1	0.1	52.1	12.1	33.6	21.5
0.833	QP	S	H	40.2	11.1	0.1	51.4	11.4	29.2	17.8
12.022	QP	S	V	36.9	9.5	0.5	46.9	6.9	29.5	22.6

Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Result : Reading + Ant Factor + Cable Loss

Note 3 : According to §15.31 (f)(2);

Result at 30m (dBμV/m) = Result at 3m(dBμV/m)-40log(30/3) (dBμV/m)

Result at 300m (dBμV/m) = Result at 3m(dBμV/m)-40log(300/3) (dBμV/m)

Note 4 : The radiation measurements are performed in X, Y, Z axis positioning. And worst case mode is recorded in the report.

Test mode : 9 V Charging Mode_9 kHz ~ 30 MHz (Battery 100% fully charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 300m (dBμV/m)	Limit at 300m (dBμV/m)	Margin (dB)
0.165	QP	F	H	64.8	11.3	0.1	76.2	-3.8	23.3	27.1
0.165	QP	F	V	57.1	11.3	0.1	68.5	-11.5	23.3	34.8

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Cable Loss (dB)	Result at 3m (dBμV/m)	Result at 30m (dBμV/m)	Limit at 30m (dBμV/m)	Margin (dB)
0.497	QP	S	V	40.8	11.1	0.1	52.0	12.0	33.7	21.7
0.501	QP	S	H	45.3	11.1	0.1	56.5	16.5	33.6	17.1
0.833	QP	S	H	38.9	11.1	0.1	50.1	10.1	29.2	19.1
0.833	QP	S	V	31.4	11.1	0.1	42.6	2.6	29.2	26.6

Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Result : Reading + Ant Factor + Cable Loss

Note 3 : According to §15.31 (f)(2);

Result at 30m (dBμV/m) = Result at 3m(dBμV/m)-40log(30/3) (dBμV/m)

Result at 300m (dBμV/m) = Result at 3m(dBμV/m)-40log(300/3) (dBμV/m)

Note 4 : The radiation measurements are performed in X, Y, Z axis positioning. And worst case mode is recorded in the report.

Test mode : : 5 V Charging Mode_30 MHz ~ 1 GHz (Worst Case : Battery 100% fully charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Loss (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.243	QP	S	V	46.2	11.0	-23.5	33.7	40.0	6.3
34.123	QP	S	H	32.3	11.2	-23.6	19.9	40.0	20.1
37.396	QP	S	V	48.0	11.6	-23.7	35.9	40.0	4.1

Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Loss : Cable loss - Amp gain

Note 3 : Result : Reading + Ant Factor + Loss

Test mode : : 9 V Charging Mode_30 MHz ~ 1 GHz (Worst Case : Battery 100% fully charged)

Frequency (MHz)	Detector	Note 1	Pol. (V/H)	Reading (dBμV)	Ant Factor (dB)	Loss (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.243	QP	S	V	45.8	11.0	-23.5	33.3	40.0	6.7
38.003	QP	S	V	47.2	11.7	-23.7	35.2	40.0	4.8
134.879	QP	S	H	34.6	12.1	-22.4	24.3	43.5	19.2

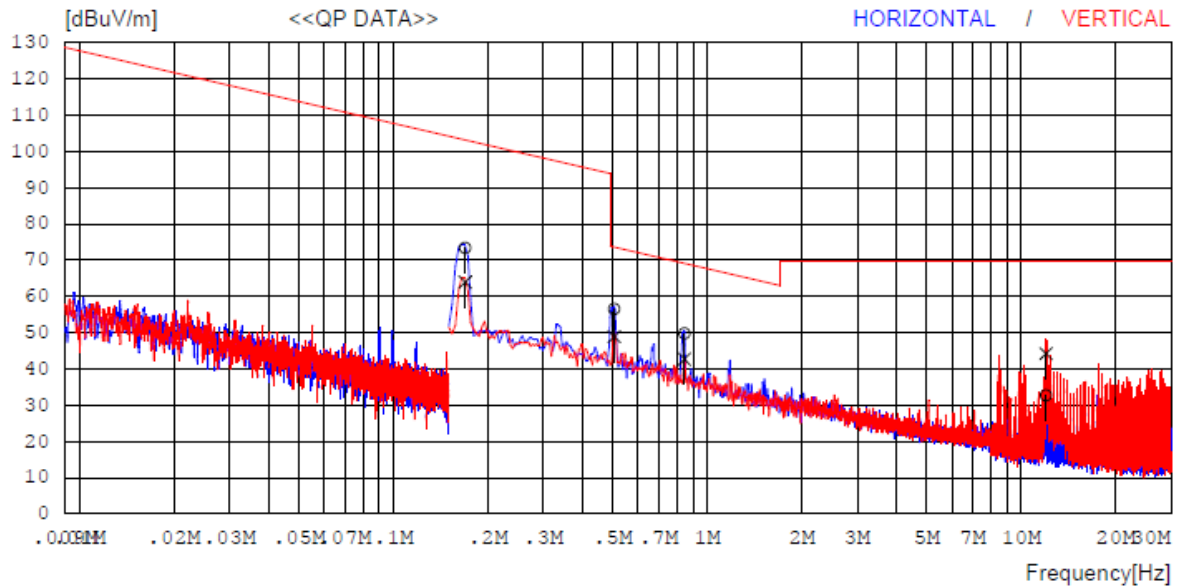
Note 1 : "F" : Fundamental, "S" : Spurious

Note 2 : Loss : Cable loss - Amp gain

Note 3 : Result : Reading + Ant Factor + Loss

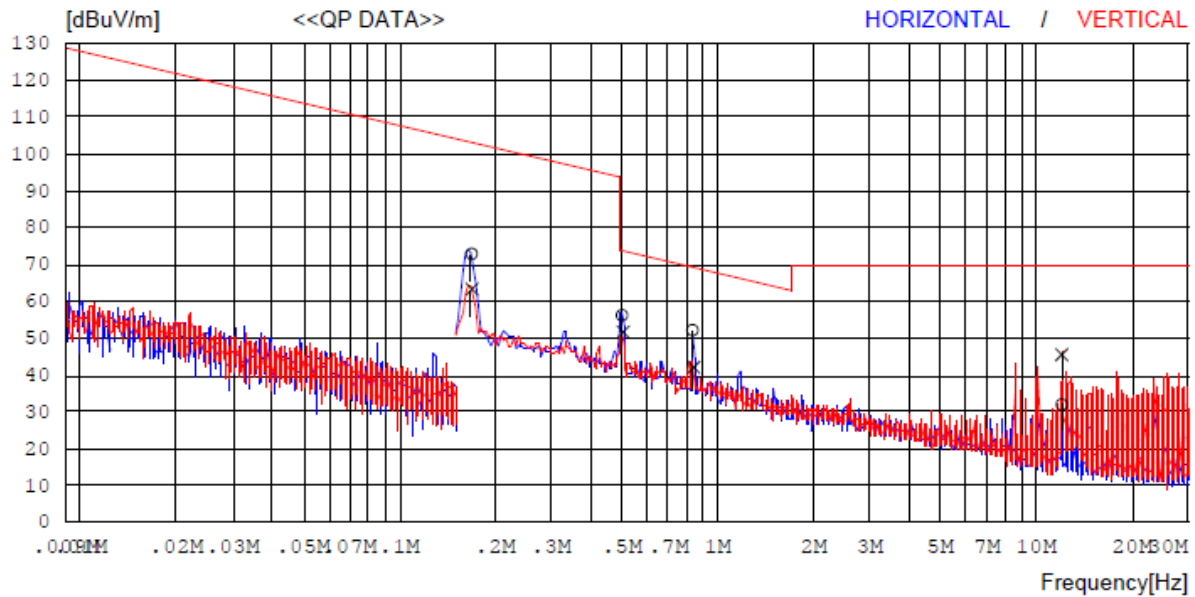
4.4.2.5 Measurement Plot

Test mode : 5 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 1% charged)



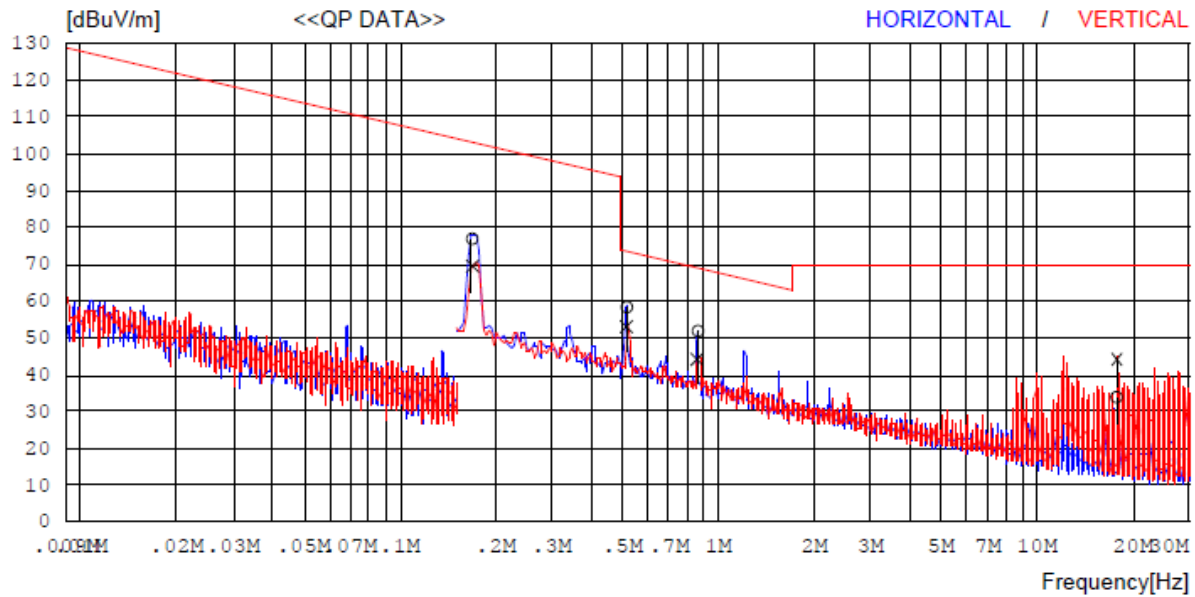
No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	0.169	61.9	11.3	0.1	0.0	73.3	103.0	29.7	100	21
2	0.504	45.3	11.1	0.1	0.0	56.5	73.6	17.1	100	21
3	0.844	38.5	11.1	0.1	0.0	49.7	69.1	19.4	100	180
4	11.985	22.7	9.5	0.5	0.0	32.7	69.5	36.8	100	317
----- Vertical -----										
5	0.169	52.5	11.3	0.1	0.0	63.9	103.0	39.1	100	118
6	0.504	37.7	11.1	0.1	0.0	48.9	73.6	24.7	100	92
7	0.844	31.5	11.1	0.1	0.0	42.7	69.1	26.4	100	87
8	11.985	34.2	9.5	0.5	0.0	44.2	69.5	25.3	100	359

Test mode : 5 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 50% charged)



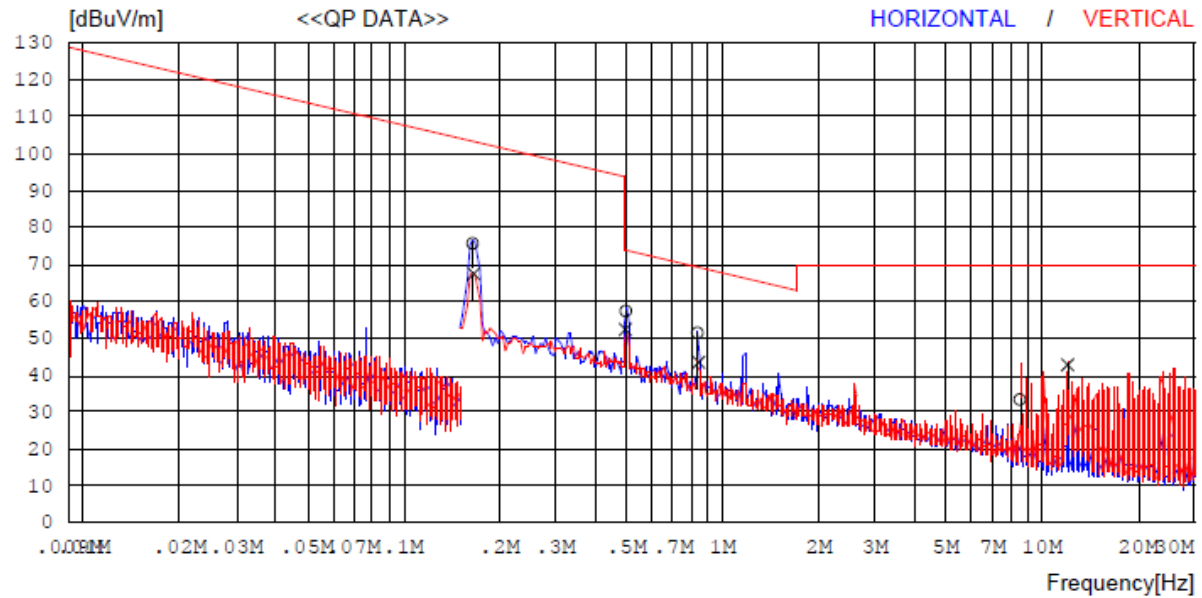
No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	0.169	61.5	11.3	0.1	0.0	72.9	103.0	30.1	100	5
2	0.501	45.0	11.1	0.1	0.0	56.2	73.6	17.4	100	340
3	0.833	41.0	11.1	0.1	0.0	52.2	69.2	17.0	100	152
4	12.026	22.0	9.5	0.5	0.0	32.0	69.5	37.5	100	163
----- Vertical -----										
5	0.169	51.8	11.3	0.1	0.0	63.2	103.0	39.8	100	117
6	0.501	40.3	11.1	0.1	0.0	51.5	73.6	22.1	100	117
7	0.833	31.1	11.1	0.1	0.0	42.3	69.2	26.9	100	182
8	12.022	35.8	9.5	0.5	0.0	45.8	69.5	23.7	100	0

Test mode : 5 V Charging Mode_9 kHz ~ 30 MHz (Battery 100% fully charged)



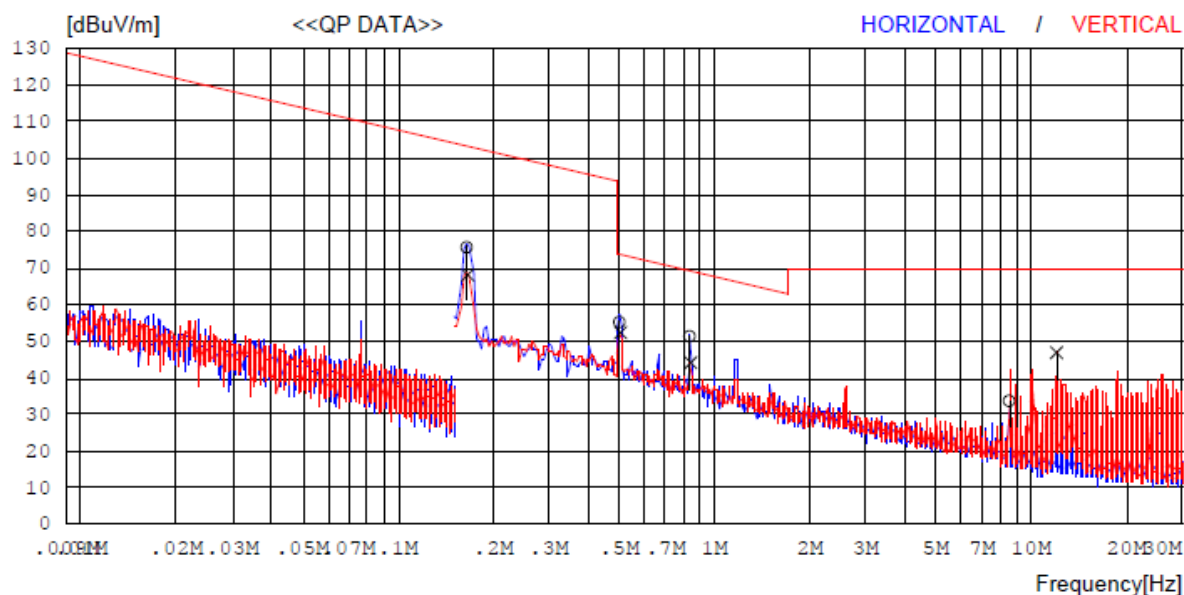
No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	0.169	65.5	11.3	0.1	0.0	76.9	103.0	26.1	100	55
2	0.516	47.2	11.1	0.1	0.0	58.4	73.4	15.0	100	55
3	0.863	40.7	11.1	0.1	0.0	51.9	68.9	17.0	100	118
4	17.760	24.5	8.8	0.6	0.0	33.9	69.5	35.6	100	61
----- Vertical -----										
5	0.169	58.0	11.3	0.1	0.0	69.4	103.0	33.6	100	146
6	0.516	42.2	11.1	0.1	0.0	53.4	73.4	20.0	100	61
7	0.863	33.2	11.1	0.1	0.0	44.4	68.9	24.5	100	24
8	17.775	34.8	8.8	0.6	0.0	44.2	69.5	25.3	100	281

Test mode : 9 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 1% charged)



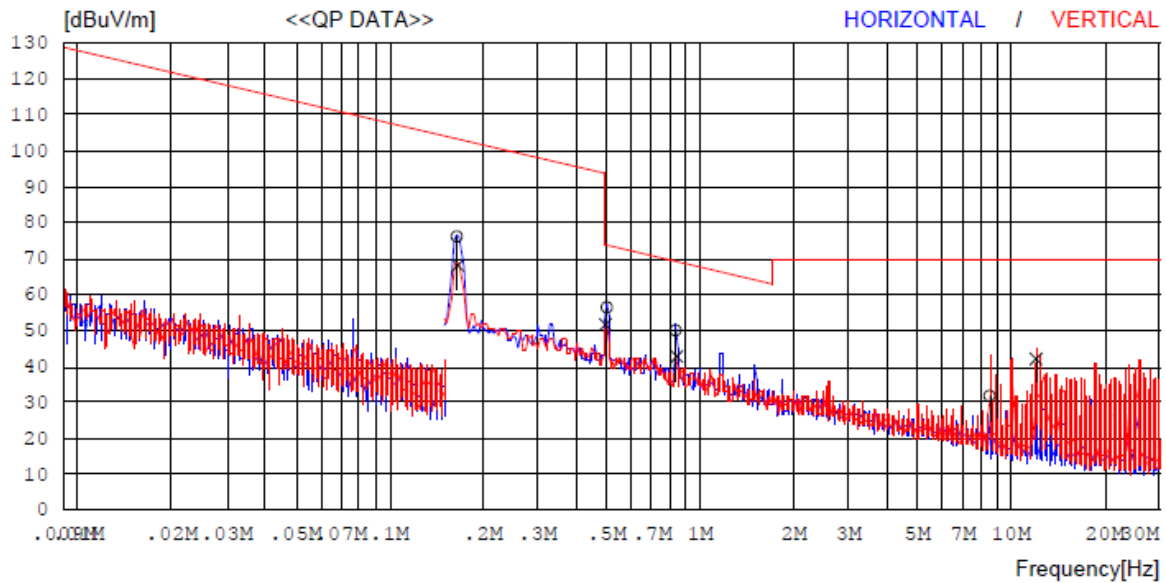
No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	0.165	64.3	11.3	0.1	0.0	75.7	103.3	27.6	100	55
2	0.497	46.2	11.1	0.1	0.0	57.4	73.7	16.3	100	5
3	0.833	40.3	11.1	0.1	0.0	51.5	69.2	17.7	100	150
4	8.515	22.9	10.1	0.4	0.0	33.4	69.5	36.1	100	228
----- Vertical -----										
5	0.165	55.9	11.3	0.1	0.0	67.3	103.3	36.0	100	91
6	0.497	41.1	11.1	0.1	0.0	52.3	73.7	21.4	100	249
7	0.833	32.2	11.1	0.1	0.0	43.4	69.2	25.8	100	187
8	12.030	33.1	9.5	0.5	0.0	43.1	69.5	26.4	100	0

Test mode : 9 V Charging Mode_9 kHz ~ 30 MHz (Battery less than 50% charged)



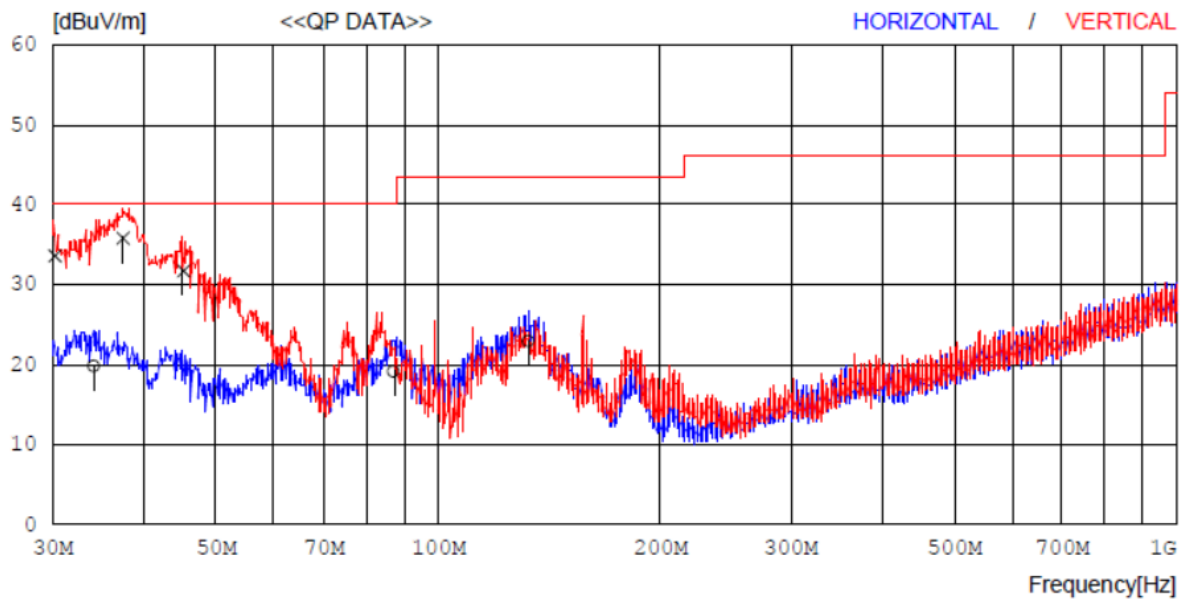
No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	0.165	64.3	11.3	0.1	0.0	75.7	103.3	27.6	100	55
2	0.501	44.1	11.1	0.1	0.0	55.3	73.6	18.3	100	0
3	0.833	40.2	11.1	0.1	0.0	51.4	69.2	17.8	100	120
4	8.515	23.2	10.1	0.4	0.0	33.7	69.5	35.8	100	39
----- Vertical -----										
5	0.165	56.9	11.3	0.1	0.0	68.3	103.3	35.0	100	147
6	0.501	40.9	11.1	0.1	0.0	52.1	73.6	21.5	100	116
7	0.833	32.9	11.1	0.1	0.0	44.1	69.2	25.1	100	214
8	12.022	36.9	9.5	0.5	0.0	46.9	69.5	22.6	100	328

Test mode : 9 V Charging Mode_9 kHz ~ 30 MHz (Battery 100% fully charged)



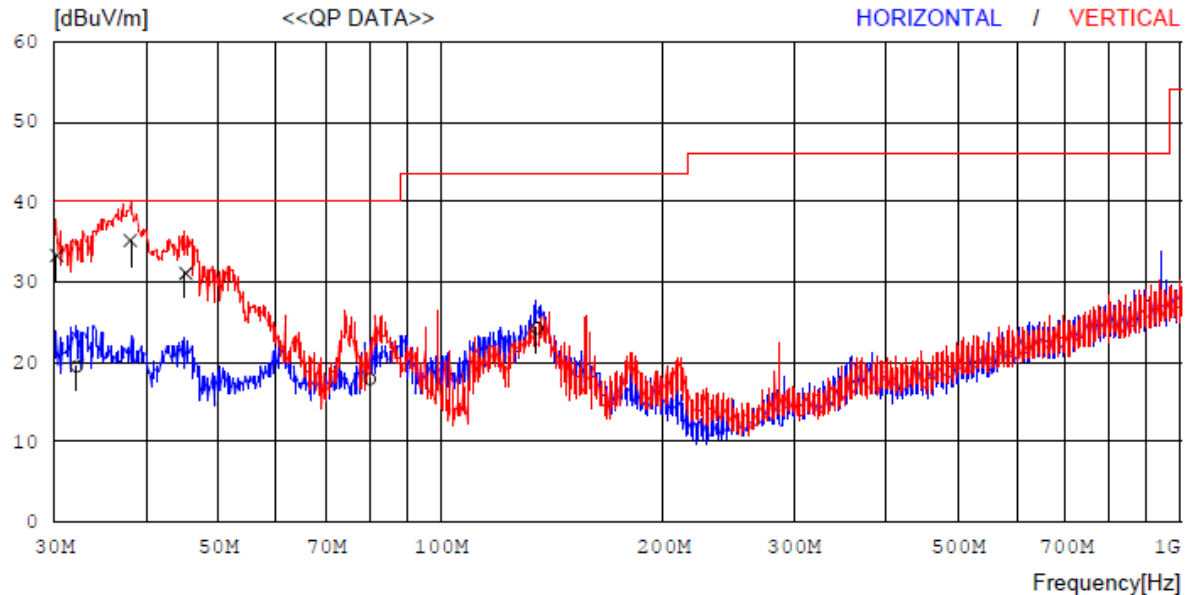
No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	0.165	64.8	11.3	0.1	0.0	76.2	103.3	27.1	100	29
2	0.501	45.3	11.1	0.1	0.0	56.5	73.6	17.1	100	0
3	0.833	38.9	11.1	0.1	0.0	50.1	69.2	19.1	100	118
4	8.515	21.4	10.1	0.4	0.0	31.9	69.5	37.6	100	359
----- Vertical -----										
5	0.165	57.1	11.3	0.1	0.0	68.5	103.3	34.8	100	146
6	0.497	40.8	11.1	0.1	0.0	52.0	73.7	21.7	100	277
7	0.833	31.4	11.1	0.1	0.0	42.6	69.2	26.6	100	209
8	12.026	32.3	9.5	0.5	0.0	42.3	69.5	27.2	100	1

Test mode : 5 V Charging Mode_30 MHz ~ 1 GHz (Worst Case : Battery 100% fully charged)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	34.123	32.3	11.2	-23.6	0.0	19.9	40.0	20.1	300	99
2	86.866	33.9	8.0	-22.7	0.0	19.2	40.0	20.8	400	359
3	132.333	33.6	11.9	-22.5	0.0	23.0	43.5	20.5	400	359
----- Vertical -----										
4	30.243	46.2	11.0	-23.5	0.0	33.7	40.0	6.3	100	0
5	37.396	48.0	11.6	-23.7	0.0	35.9	40.0	4.1	100	135
6	45.035	43.2	12.1	-23.5	0.0	31.8	40.0	8.2	200	0

Test mode : 9 V Charging Mode_30 MHz ~ 1 GHz (Worst Case : Battery 100% fully charged)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	32.183	31.9	11.1	-23.5	0.0	19.5	40.0	20.5	200	109
2	80.076	32.8	8.2	-23.1	0.0	17.9	40.0	22.1	400	77
3	134.879	34.6	12.1	-22.4	0.0	24.3	43.5	19.2	300	109
----- Vertical -----										
4	30.243	45.8	11.0	-23.5	0.0	33.3	40.0	6.7	100	0
5	38.003	47.2	11.7	-23.7	0.0	35.2	40.0	4.8	100	181
6	45.035	42.6	12.1	-23.5	0.0	31.2	40.0	8.8	200	359

4.4.3 Conducted Emission

4.4.3.1 Regulation

According to §15.207(a), 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 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	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.

According to §15.107(a), for unintentional device, except for Class A digital devices, line conducted emission limits are the same as the above table.

4.4.3.2 Measurement Procedure

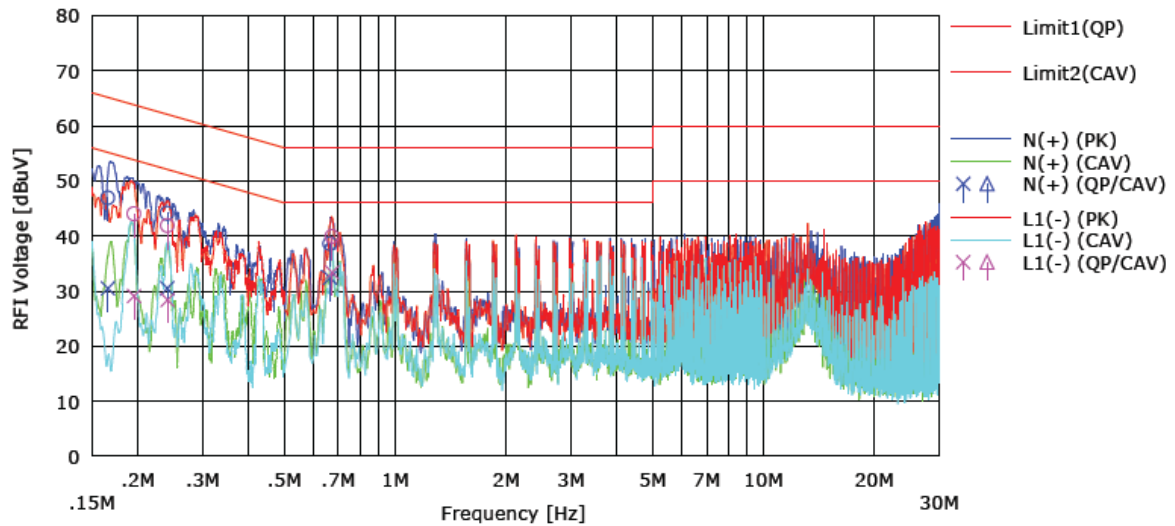
- 1) The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5 m away from the side wall of the shielded room.
- 2) Each current-carrying conductor of the EUT power cord was individually connected through a 50 Ω /50 μ H LISN, which is an input transducer to a Spectrum Analyzer or an EMI/Field Intensity Meter, to the input power source.
- 3) Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
- 4) The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
- 5) The measurements were made with the detector set to PEAK amplitude within a bandwidth of 10 kHz or to QUASIPEAK and AVERAGE within a bandwidth of 9 kHz. The EUT was in transmitting mode during the measurements.

4.4.3.3 Result

Test Condition : refer to the clause 4.4.2.3 test conditions

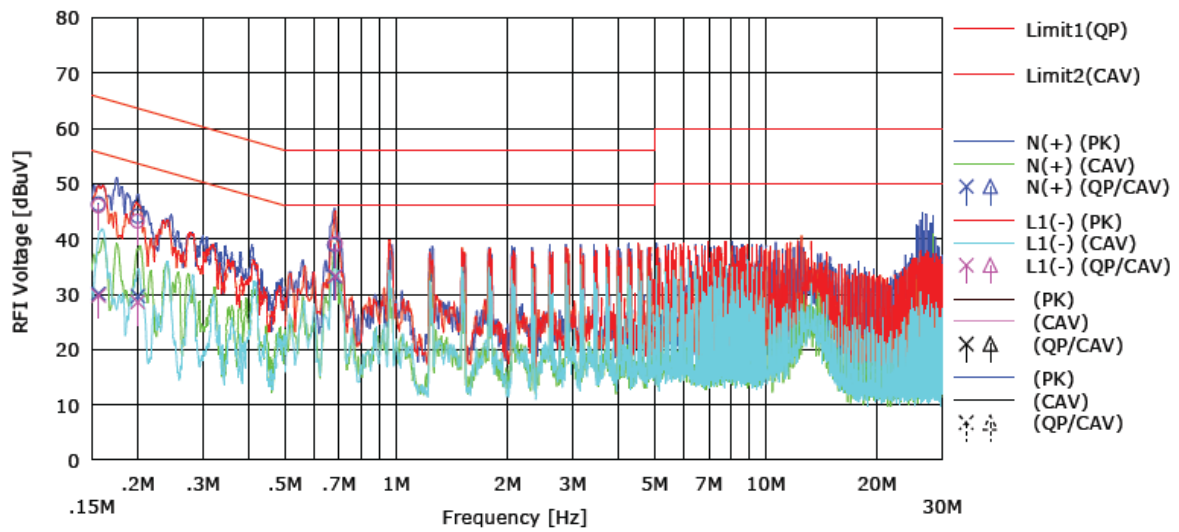
Comply (measurement data : refer to below)

Test mode : 5 V Charging Mode (Worst Case : Battery 100% fully charged)



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.16563	26.8	10.4	20.1	46.9	30.5	65.2	55.2	18.3	24.7	N(+)
2	0.24010	24.3	10.7	19.8	44.1	30.5	62.1	52.1	18.0	21.6	N(+)
3	0.66463	18.5	12.3	20.1	38.6	32.4	56.0	46.0	17.4	13.6	N(+)
4	0.19493	24.3	9.4	19.7	44.0	29.1	63.8	53.8	19.8	24.7	L1(-)
5	0.24045	22.2	8.7	19.7	41.9	28.4	62.1	52.1	20.2	23.7	L1(-)
6	0.67301	20.1	13.6	19.8	39.9	33.4	56.0	46.0	16.1	12.6	L1(-)

Test mode : 9 V Charging Mode (Worst Case : Battery 100% fully charged)



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.15630	26.4	10.2	19.9	46.3	30.1	65.7	55.7	19.4	25.6	N (+)
2	0.19970	24.1	9.7	20.0	44.1	29.7	63.6	53.6	19.5	23.9	N (+)
3	0.68000	18.8	13.1	20.1	38.9	33.2	56.0	46.0	17.1	12.8	N (+)
4	0.15630	26.3	10.1	19.7	46.0	29.8	65.7	55.7	19.7	25.9	L1 (-)
5	0.19935	23.5	8.9	19.7	43.2	28.6	63.6	53.6	20.4	25.0	L1 (-)
6	0.68450	19.3	13.5	19.8	39.1	33.3	56.0	46.0	16.9	12.7	L1 (-)

4.4.4 Antenna Requirements

4.4.4.1 Regulation

According to §15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

4.4.4.2 Result

Comply (The antenna of this EUT is Inductive Loop Coil Antenna Type. Therefore the antenna is permanently attached. Please refer to the internal photo. Therefore this EUT Complies with the requirement of §15.203)

APPENDIX I

TEST EQUIPMENT USED FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

Equipment	Manufacturer	Model	Serial No.	Cal. Date (yy.mm.dd)	Next Cal.Date (yy.mm.dd)
PXA Signal Analyzer	KEYSIGHT	N9030A	MY54410264	19.01.10	20.01.10
AC POWER SUPPLY	PCR 500L	KIKUSUI	FE002647	18.04.24	19.04.24
HUMIDITY/TEMP DATA RECORDER	LUTRON	MHB-382SD	79735	18.04.24	19.04.24
Digital MultiMeter	HP	34401A	US36025428	19.01.10	20.01.10
Signal Generator	ROHDE&SCHWARZ	SMB100A	178384	18.10.15	19.10.15
EMI Test Receiver	ROHDE&SCHWARZ	ESU40	100445	19.12.14	19.12.14
BiLog Antenna	Schwarzbeck	VULB9160	3381	17.06.15	19.06.15
Preamplifier	TSJ	MLA-10k01- b01-27	1870369	18.04.23	19.04.23
Antenna Mast(10 m)	TOKIN	5977	-	-	-
Controller(10 m)	TOKIN	5909L	141909L-1	-	-
Turn Table(10 m)	TOKIN	5983-1.5	-	-	-
10 m Semi-Anechoic Chamber	SY CORPORATION	-	-	-	-
Active Loop H-Field	ETS	6502	00150598	17.06.01	19.06.01