RADIO PERFORMANCE TEST REPORT

Test Report No.	**: OT-218-RWD-112**
Reception No.	**: 2104003258**
Applicant	**: Sinjimoru Co.,Ltd**
Address	**: #321 DMC Hi-tech Industrial Center, Seongam-ro 330, Mapo-gu, 03920, Seoul, Korea**
Manufacturer	**: Sinjimoru Co.,Ltd**
Address	**: #321 DMC Hi-tech Industrial Center, Seongam-ro 330, Mapo-gu, 03920, Seoul, Korea**
Type of Equipment	**: M-Donut Fast Wireless Charger**
FCC ID.	**: 2AVNTSMA-CARM-DNUT**
Model Name	**: SMA_CARM_DNUT_BK_SJM**
Multiple Model Name	**: N/A**
Serial number	**: N/A**
Total page of Report	**: 36 pages (including this page)**
Date of Incoming	**: August 18, 2021**
Date of issue	**: August 31, 2021**

SUMMARY

The equipment complies with the regulation; **FCC CFR47 Part 15 Subpart C Section 15.207 and 15.209**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

Tested by	Reviewed by	Approved by
Joon-Woo, Kim / Assistant Manager	Tae-Ho, Kim / Senior Manager	Ki-Hong, Nam / General Manager
ONETECH Corp.	ONETECH Corp.	ONETECH Corp.

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-218-RWD-112	August 31, 2021	Initial Release	All

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1. VERIFICATION OF COMPLIANCE

APPLICANT	: Sinjimoru Co.,Ltd
ADDRESS	: #321 DMC Hi-tech Industrial Center, Seongam-ro 330, Mapo-gu, 03920, Seoul, Korea
CONTACT PERSON	: HANDAE, LIM / Assistant Supervisor
TELEPHONE NO	: +82-10-8557-4662
FCC ID	: 2AVNTSMA-CARM-DNUT
MODEL NAME	: SMA_CARM_DNUT_BK_SJM
BRAND NAME	: -
SERIAL NUMBER	: N/A
DATE	: August 31, 2021

EQUIPMENT CLASS	**DCD – Part 15 Low Power Transmitter Below 1 705 kHz**
KIND OF EQUIPMENT	M-Donut Fast Wireless Charger
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2020
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC&IC RULES PART(S)	FCC CFR47 Part 15 Subpart C Section 15.207 and 15.209
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. The equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.209, 15.209(a)	Radiated emission, Spurious Emission and Field Strength of Fundamental	Met the Limit / PASS
15.207	Transmitter AC Power Line Conducted Emission	Met the Limit / PASS

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC CFR47 Part 15 Subpart C Section 15.207 and 15.209.

2.5 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.10: 2020 at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

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3. GENERAL INFORMATION

3.1 Product Description

The Sinjimoru Co.,Ltd, Model: SMA_CARM_DNUT_BK_SJM (referred to as the EUT in this report) is an M-Donut Fast Wireless Charger. Product specification information described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	M-Donut Fast Wireless Charger
OPERATING FREQUENCY	110 kHz ~ 205 kHz
RATED RF OUTPUT POWER	77.9 dBμV/m
ANTENNA TYPE	Coil Antenna
MODULATION	ASK
RATED SUPPLY VOLTAGE	DC 5.0 V, DC 9.0 V

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None

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5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	N/A	4LABS-WPT510M	N/A

5.2 Peripheral equipment

-. None

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing, the EUT was set as following condition.

- Max Load, Middle Load, Min Load for DC 5.0 V.
- Max Load, Middle Load, Min Load for DC 9.0 V.

To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis.

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5.4 Configuration of Test System

Line Conducted Test : The EUT was tested in a charging mode. The EUT was connected to USB and the power of USB was connected to Adapter. All supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4: 2009 7.3.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2020 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 m Semi Anechoic Chamber.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

According to section 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.

Antenna Construction:

The antenna of the EUT is a Coil Antenna on the main board in the EUT, so no consideration of replacement by the user.

6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode & Charging Mode	X

6.2 General Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

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7. Spurious Emission Test

7.1 Regulation

According to §15.209(a), for an intentional device, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency [MHz]	Field strength [μ V/m]	Field strength [dBμ V/m]	Measurement distance [m]
0.009 ~ 0.490	2 400 / F (kHz)	48.52 ~ 13.80	300
0.490 ~ 1.705	24 000 / F (kHz)	33.8 ~ 22.97	30
1.705 ~ 30	30	29.50	30
30 ~ 88	*100	40.00	3
88 ~ 216	*150	43.52	3
216 ~ 960	*200	46.02	3
Above 960	500	53.98	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., Sections 15.231 and 15.241.

7.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30 kHz to 1 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 ms in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

7.3 Test date

August 25, 2021

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7.4 Test data for Using Max Load [DC 5.0 V]

7.4.1 Spurious Radiated Emission Below 30 MHz

Humidity Level : 50 % R.H. Temperature: 22 ºC

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency Range : 9 kHz ~ 30 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 300m (dBµV/m)	Limit at 300m (dBµV/m)	Margin (dB)
0.016	PK	41.4	19.0	1.1	61.5	-18.5	43.5	62.0
0.031	PK	38.5	19.2	1.8	59.5	-20.5	37.8	58.3
*0.145	PK	49.7	19.3	0.2	69.2	-10.8	24.4	35.2
0.419	PK	38.1	19.2	0.2	57.5	-22.5	15.2	37.7
0.717	PK	28.3	19.2	0.2	47.7	-32.3	-9.5	22.8

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
6.657	PK	14.9	19.3	0.6	34.8	-5.2	30.0	35.2

-. "*" Means Fundamental frequency

-. Emission Level at 3m [dB µ V/m] = Reading [dBµV] + Ant. Factor [dB/m] + Cable Loss [dB]

-. Margin [dB] = Emission Level at 300m [dBµV/m] – Limit at 300m [dBµV/m]

= Emission Level at 300m [dBµV/m] – Limit at 30m [dBµV/m]

-. Emission Level at 300m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (300/3), 80 dB for up to 0.49 MHz

-. Emission Level at 30m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (30/3), 40 dB for above 0.49 MHz, Below 30 MHz

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7.4.2 Spurious Radiated Emission below 1 GHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 50 % R.H. Temperature: 22 ºC

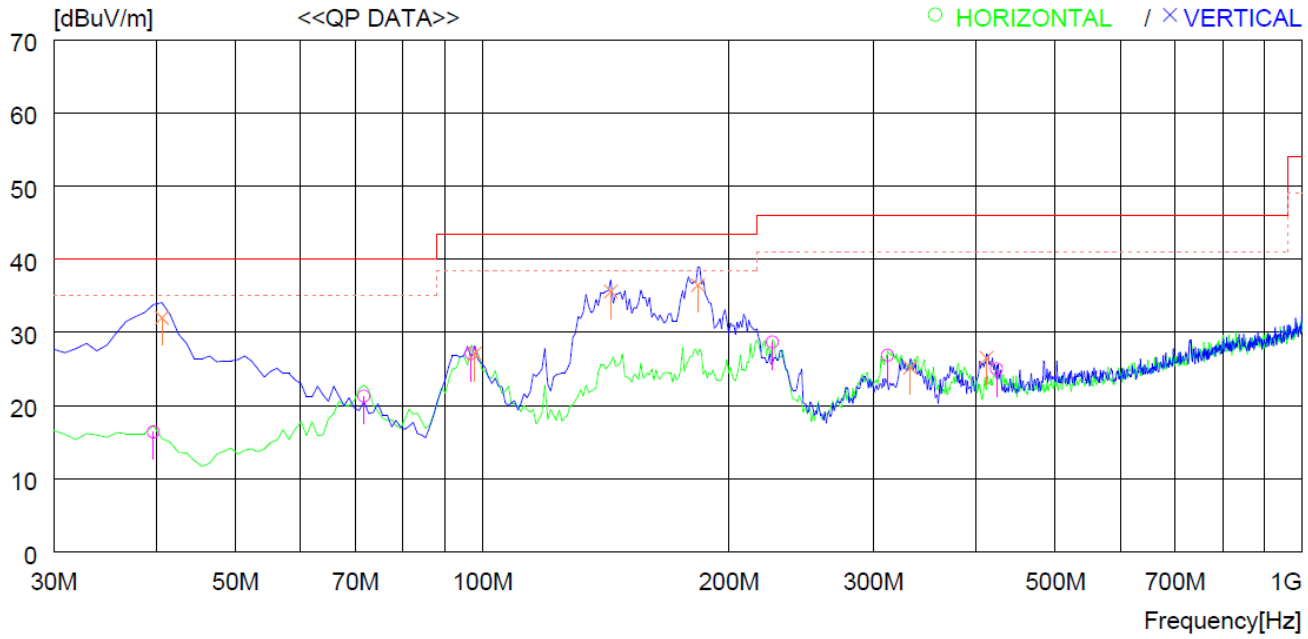
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency range : 30 MHz ~ 1 000 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode



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	39.700	29.8	17.4	1.8	32.6	16.4	40.0	23.6	200	341
2	71.710	38.4	12.9	2.5	32.5	21.3	40.0	18.7	300	0
3	96.930	42.1	14.7	2.8	32.5	27.1	43.5	16.4	200	2
4	225.940	40.9	15.9	4.4	32.5	28.7	46.0	17.3	100	99
5	312.270	34.7	19.4	5.2	32.4	26.9	46.0	19.1	100	0
6	423.821	29.8	21.6	6.0	32.4	25.0	46.0	21.0	100	51
----- Vertical ------										
7	40.670	45.7	17.0	1.8	32.5	32.0	40.0	8.0	100	359
8	97.900	41.8	14.9	2.9	32.5	27.1	43.5	16.4	100	359
9	143.490	45.5	19.1	3.5	32.5	35.6	43.5	7.9	100	359
10	183.260	48.8	16.3	3.9	32.5	36.5	43.5	7.0	100	225
11	332.640	32.4	19.8	5.4	32.4	25.2	46.0	20.8	200	0
12	412.181	31.9	21.1	5.9	32.4	26.5	46.0	19.5	200	0

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7.5 Test data for Using Middle Load [DC 5.0 V]

7.5.1 Spurious Radiated Emission Below 30 MHz

Humidity Level : 50 % R.H. Temperature: 22 ºC

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency Range : 9 kHz ~ 30 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 300m (dBµV/m)	Limit at 300m (dBµV/m)	Margin (dB)
0.016	PK	42.2	19.0	1.1	62.3	-17.7	43.5	61.2
0.031	PK	37.8	19.2	1.8	58.8	-21.2	37.8	59.0
*0.180	PK	59.8	19.3	0.3	79.4	-0.6	22.5	23.1
0.568	PK	39.5	19.2	0.2	58.9	-21.1	-7.5	13.6
1.344	PK	26.9	19.2	0.3	46.4	-33.6	45.0	78.6

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
6.896	PK	16.2	19.63	0.6	36.1	-3.9	30.0	33.9

-. "*" Means Fundamental frequency

-. Emission Level at 3m [dB µ V/m] = Reading [dBµV] + Ant. Factor [dB/m] + Cable Loss [dB]

-. Margin [dB] = Emission Level at 300m [dBµV/m] – Limit at 300m [dBµV/m]

= Emission Level at 300m [dBµV/m] – Limit at 30m [dBµV/m]

-. Emission Level at 300m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (300/3), 80 dB for up to 0.49 MHz

-. Emission Level at 30m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (30/3), 40 dB for above 0.49 MHz, Below 30 MHz

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7.5.2 Spurious Radiated Emission below 1 GHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 50 % R.H. Temperature: 22 ºC

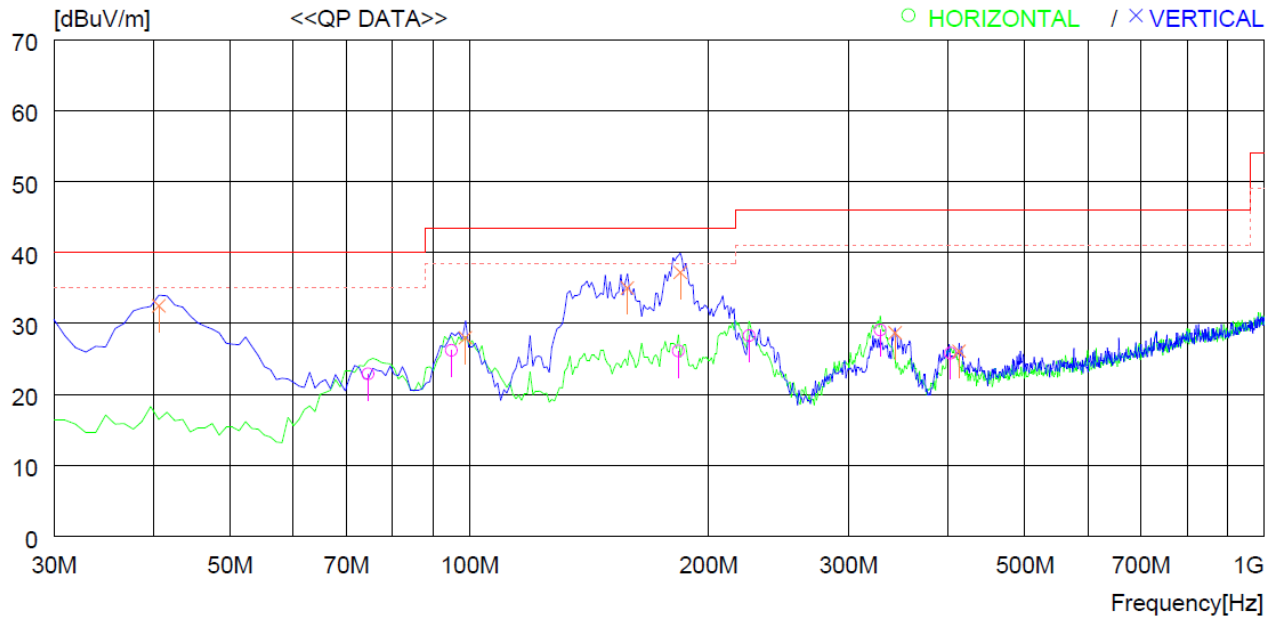
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency range : 30 MHz ~ 1 000 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode



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	74.620	40.1	12.8	2.5	32.5	22.9	40.0	17.1	300	354
2	94.990	41.6	14.3	2.8	32.5	26.2	43.5	17.3	200	19
3	183.260	38.4	16.3	3.9	32.5	26.1	43.5	17.4	200	234
4	224.970	40.5	15.9	4.4	32.5	28.3	46.0	17.7	100	0
5	328.760	36.5	19.7	5.3	32.4	29.1	46.0	16.9	100	74
6	403.450	31.5	20.8	5.8	32.3	25.8	46.0	20.2	300	75
----- Vertical ------										
7	40.670	46.2	17.0	1.8	32.5	32.5	40.0	7.5	100	100
8	98.870	42.5	15.1	2.9	32.5	28.0	43.5	15.5	200	242
9	158.040	45.7	18.1	3.7	32.5	35.0	43.5	8.5	100	359
10	184.230	49.5	16.3	3.9	32.5	37.2	43.5	6.3	100	177
11	343.310	35.9	19.9	5.4	32.5	28.7	46.0	17.3	200	0
12	413.151	31.4	21.2	5.9	32.4	26.1	46.0	19.9	100	356

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7.6 Test data for Using Min Load [DC 5.0 V]

7.6.1 Spurious Radiated Emission Below 30 MHz

Humidity Level : 50 % R.H. Temperature: 22 ºC

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency Range : 9 kHz ~ 30 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 300m (dBµV/m)	Limit at 300m (dBµV/m)	Margin (dB)
0.016	PK	42.7	19.0	1.1	62.8	-17.2	43.5	60.7
0.031	PK	39.0	19.2	1.8	60.0	-20.0	37.8	57.8
*0.180	PK	62.5	19.3	0.3	82.1	2.1	22.5	20.4
0.568	PK	41.7	19.2	0.2	61.1	-18.9	-7.5	11.4
1.344	PK	28.7	19.2	0.3	48.2	-31.8	-15.0	16.8

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
6.896	PK	10.9	19.3	0.6	30.8	-9.2	30.0	39.2

-. "*" Means Fundamental frequency

-. Emission Level at 3m [dB µ V/m] = Reading [dBµV] + Ant. Factor [dB/m] + Cable Loss [dB]

-. Margin [dB] = Emission Level at 300m [dBµV/m] – Limit at 300m [dBµV/m]

= Emission Level at 300m [dBµV/m] – Limit at 30m [dBµV/m]

-. Emission Level at 300m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (300/3), 80 dB for up to 0.49 MHz

-. Emission Level at 30m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (30/3), 40 dB for above 0.49 MHz, Below 30 MHz

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7.6.2 Spurious Radiated Emission below 1 GHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 50 % R.H. Temperature: 22 ºC

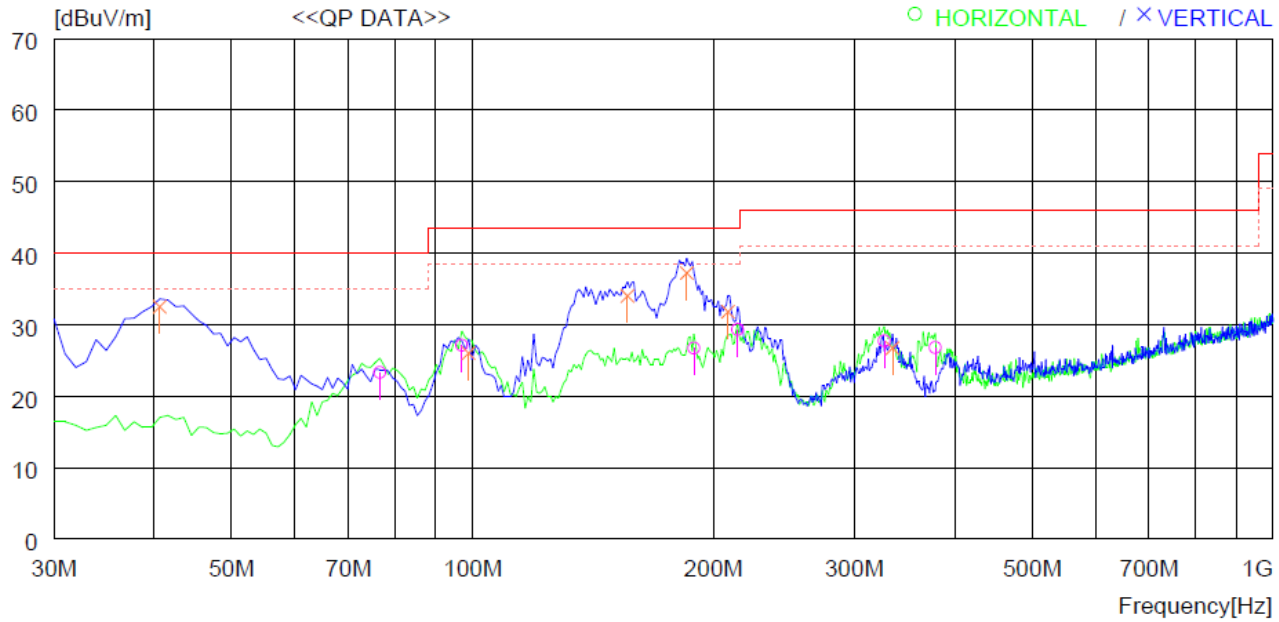
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency range : 30 MHz ~ 1 000 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode



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	76.560	40.4	12.8	2.6	32.5	23.3	40.0	16.7	400	192
2	96.930	42.1	14.7	2.8	32.5	27.1	43.5	16.4	400	359
3	189.080	39.3	15.9	4.0	32.5	26.7	43.5	16.8	200	236
4	214.300	42.0	15.6	4.2	32.5	29.3	43.5	14.2	100	88
5	326.820	35.2	19.6	5.3	32.4	27.7	46.0	18.3	100	46
6	378.230	33.0	20.5	5.7	32.4	26.8	46.0	19.2	100	144
----- Vertical ------										
7	40.670	46.2	17.0	1.8	32.5	32.5	40.0	7.5	100	46
8	98.870	40.5	15.1	2.9	32.5	26.0	43.5	17.5	200	0
9	156.100	44.5	18.3	3.7	32.5	34.0	43.5	9.5	100	296
10	185.200	49.5	16.2	4.0	32.5	37.2	43.5	6.3	100	138
11	208.480	44.6	15.5	4.2	32.5	31.8	43.5	11.7	100	359
12	334.580	34.0	19.8	5.4	32.5	26.7	46.0	19.3	200	6

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7.7 Test data for Using Max Load [DC 9.0 V]

7.7.1 Spurious Radiated Emission Below 30 MHz

Humidity Level : 50 % R.H. Temperature: 22 ºC

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency Range : 9 kHz ~ 30 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 300m (dBµV/m)	Limit at 300m (dBµV/m)	Margin (dB)
0.015	PK	44.8	18.7	0.4	63.9	-16.1	44.1	60.2
0.031	PK	40.5	18.9	0.4	59.8	-20.2	37.8	58.0
0.062	PK	30.0	18.9	0.4	49.3	-30.7	31.8	62.5
*0.180	PK	53.8	18.9	0.1	72.8	-7.2	22.5	29.7
0.508	PK	32.1	18.8	0.0	50.9	-29.1	-6.5	22.6
1.195	PK	18.5	18.8	0.1	37.4	-42.6	-13.9	28.7

-. "*" Means Fundamental frequency

-. Emission Level at 3m [dB µ V/m] = Reading [dBµV] + Ant. Factor [dB/m] + Cable Loss [dB]

-. Margin [dB] = Emission Level at 300m [dBµV/m] – Limit at 300m [dBµV/m]

= Emission Level at 300m [dBµV/m] – Limit at 30m [dBµV/m]

-. Emission Level at 300m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (300/3), 80 dB for up to 0.49 MHz

-. Emission Level at 30m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (30/3), 40 dB for above 0.49 MHz, Below 30 MHz

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7.7.2 Spurious Radiated Emission below 1 GHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 50 % R.H. Temperature: 22 ºC

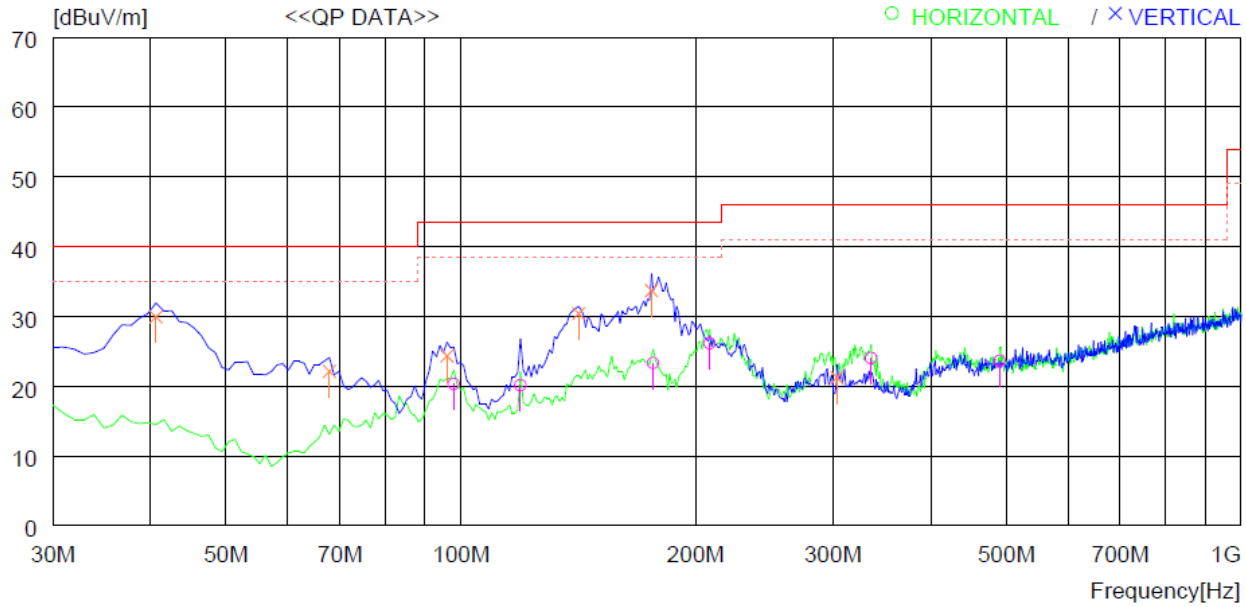
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency range : 30 MHz ~ 1 000 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode



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	97.900	35.0	14.9	2.9	32.5	20.3	43.5	23.2	400	358
2	119.240	30.9	18.5	3.2	32.5	20.1	43.5	23.4	200	0
3	176.470	35.2	16.7	3.9	32.5	23.3	43.5	20.2	200	47
4	208.480	38.8	15.6	4.2	32.5	26.1	43.5	17.4	200	64
5	335.550	31.4	19.7	5.4	32.5	24.0	46.0	22.0	100	359
6	490.751	26.4	23.0	6.6	32.4	23.6	46.0	22.4	100	2
----- Vertical ------										
7	40.670	43.7	16.9	1.8	32.5	29.9	40.0	10.1	100	205
8	67.830	39.4	12.7	2.5	32.5	22.1	40.0	17.9	100	272
9	95.960	39.5	14.5	2.8	32.5	24.3	43.5	19.2	100	0
10	141.550	40.1	19.3	3.5	32.5	30.4	43.5	13.1	100	114
11	175.500	45.5	16.8	3.9	32.5	33.7	43.5	9.8	100	146
12	303.540	29.3	19.2	5.1	32.4	21.2	46.0	24.8	100	124

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7.8 Test data for Using Middle Load [DC 9.0 V]

7.8.1 Spurious Radiated Emission Below 30 MHz

Humidity Level : 50 % R.H. Temperature: 22 ºC

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency Range : 9 kHz ~ 30 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 300m (dBµV/m)	Limit at 300m (dBµV/m)	Margin (dB)
0.015	PK	43.1	18.7	0.4	62.2	-17.8	44.1	61.9
0.031	PK	37.5	18.9	0.4	56.8	-23.2	37.8	61.0
*0.180	PK	59.7	18.9	0.1	78.7	-1.3	22.5	23.8
0.538	PK	38.5	18.8	0.0	57.3	-22.7	-7.0	15.7
1.374	PK	23.4	18.8	0.1	42.3	-37.7	-15.2	22.5

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
6.777	PK	17.5	19.2	0.5	37.2	-2.8	30.0	32.8

-. "*" Means Fundamental frequency

-. Emission Level at 3m [dB µ V/m] = Reading [dBµV] + Ant. Factor [dB/m] + Cable Loss [dB]

-. Margin [dB] = Emission Level at 300m [dBµV/m] – Limit at 300m [dBµV/m]

= Emission Level at 300m [dBµV/m] – Limit at 30m [dBµV/m]

-. Emission Level at 300m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (300/3), 80 dB for up to 0.49 MHz

-. Emission Level at 30m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (30/3), 40 dB for above 0.49 MHz, Below 30 MHz

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7.8.2 Spurious Radiated Emission below 1 GHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 50 % R.H. Temperature: 22 ºC

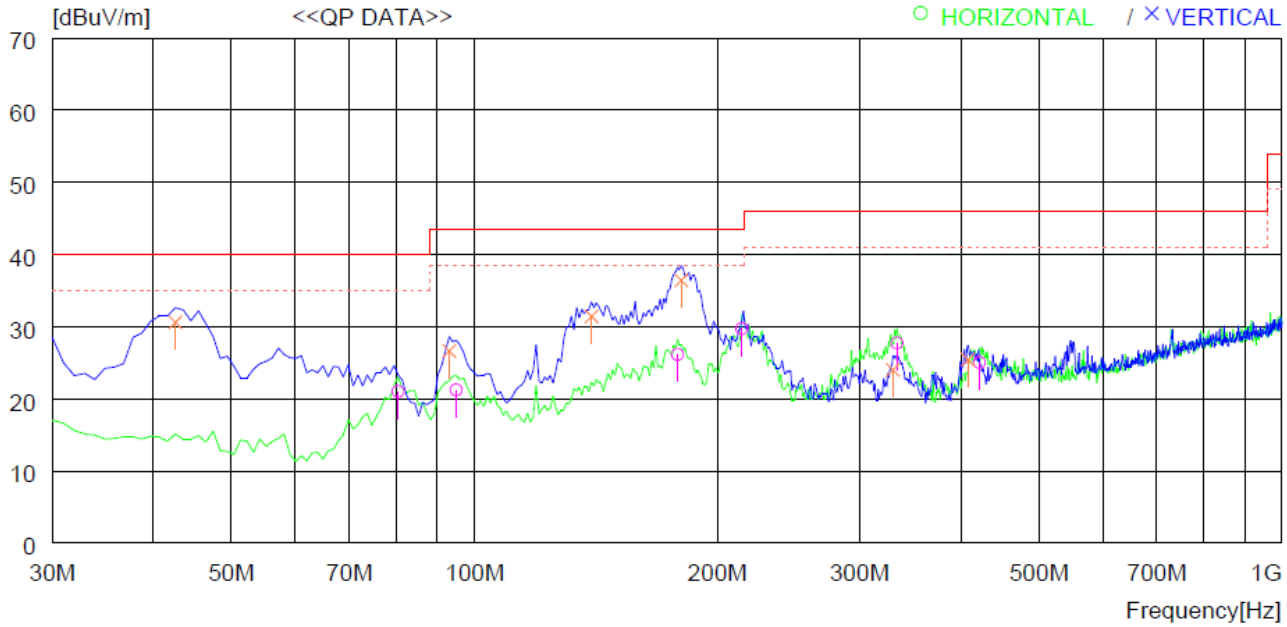
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency range : 30 MHz ~ 1 000 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode



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	80.440	37.9	12.9	2.7	32.5	21.0	40.0	19.0	300	359
2	94.990	36.6	14.3	2.8	32.5	21.2	43.5	22.3	400	0
3	178.410	38.1	16.6	3.9	32.5	26.1	43.5	17.4	200	44
4	214.300	42.4	15.6	4.2	32.5	29.7	43.5	13.8	200	0
5	333.610	35.1	19.7	5.4	32.5	27.7	46.0	18.3	100	159
6	421.881	29.9	21.5	6.0	32.4	25.0	46.0	21.0	100	359
----- Vertical ------										
7	42.610	45.1	16.1	1.9	32.5	30.6	40.0	9.4	100	0
8	93.050	42.4	13.9	2.8	32.5	26.6	43.5	16.9	100	0
9	139.610	41.0	19.4	3.5	32.5	31.4	43.5	12.1	100	81
10	180.350	48.5	16.5	3.9	32.5	36.4	43.5	7.1	100	359
11	329.730	31.5	19.6	5.3	32.4	24.0	46.0	22.0	100	230
12	408.300	31.0	20.9	5.9	32.4	25.4	46.0	20.6	200	359

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7.9 Test data for Using Min Load [DC 9.0 V]

7.9.1 Spurious Radiated Emission Below 30 MHz

Humidity Level : 50 % R.H. Temperature: 22 ºC

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency Range : 9 kHz ~ 30 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 300m (dBµV/m)	Limit at 300m (dBµV/m)	Margin (dB)
0.015	PK	43.3	19.0	0.9	63.2	-16.8	44.1	60.9
0.031	PK	38.6	19.2	1.8	59.6	-20.4	37.8	58.2
0.062	PK	29.7	19.3	0.3	49.3	-30.7	31.8	62.5
*0.180	PK	50.3	19.3	0.3	69.9	-10.1	22.5	32.6
0.538	PK	27.4	19.2	0.2	46.8	-33.2	-7.0	26.2

Frequency (MHz)	Detector	Reading (dBµV)	Ant. Factor (dB/m)	Cable Loss	Emission Level at 3m (dBµV/m)	Emission Level at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
2.210	PK	17.3	19.1	0.3	36.7	-3.3	30.0	33.3

-. "*" Means Fundamental frequency

-. Emission Level at 3m [dB µ V/m] = Reading [dBµV] + Ant. Factor [dB/m] + Cable Loss [dB]

-. Margin [dB] = Emission Level at 300m [dBµV/m] – Limit at 300m [dBµV/m]

= Emission Level at 300m [dBµV/m] – Limit at 30m [dBµV/m]

-. Emission Level at 300m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (300/3), 80 dB for up to 0.49 MHz

-. Emission Level at 30m [dBµV/m] = Emission Level at 3m [dBµV/m] - 40log (30/3), 40 dB for above 0.49 MHz, Below 30 MHz

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7.9.2 Spurious Radiated Emission below 1 GHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 50 % R.H. Temperature: 22 ºC

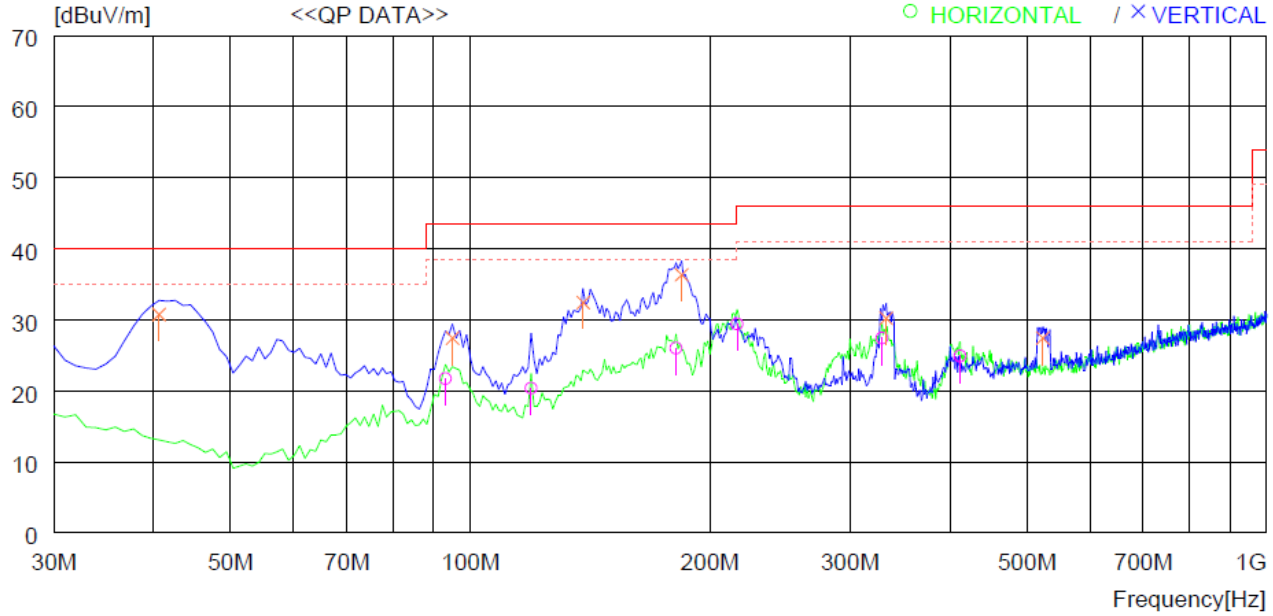
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209

Frequency range : 30 MHz ~ 1 000 MHz

Result : PASSED

EUT : M-Donut Fast Wireless Charger

Operating Condition : Transmitting Mode



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	93.050	37.5	13.9	2.8	32.5	21.7	43.5	21.8	300	359
2	119.240	31.2	18.5	3.2	32.5	20.4	43.5	23.1	300	63
3	181.320	38.2	16.4	3.9	32.5	26.0	43.5	17.5	100	30
4	216.240	41.9	15.7	4.3	32.5	29.4	46.0	16.6	200	45
5	328.760	34.9	19.6	5.3	32.4	27.4	46.0	18.6	100	359
6	412.181	30.4	21.0	5.9	32.4	24.9	46.0	21.1	100	86
----- Vertical ------										
7	40.670	44.5	16.9	1.8	32.5	30.7	40.0	9.3	100	0
8	94.990	42.8	14.3	2.8	32.5	27.4	43.5	16.1	100	299
9	138.640	42.0	19.4	3.5	32.5	32.4	43.5	11.1	100	91
10	184.230	48.7	16.2	3.9	32.5	36.3	43.5	7.2	100	348
11	332.640	37.5	19.7	5.4	32.4	30.2	46.0	15.8	100	208
12	523.730	29.8	23.4	6.7	32.5	27.4	46.0	18.6	100	0

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8. CONDUCTED EMISSION TEST

8.1 Operating environment

Temperature	:	22 °C
Relative humidity	:	50 % R.H

8.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

8.3 Test equipment used

All test equipment used is calibrated on a regular basis.

8.4 Test date

August 25, 2021

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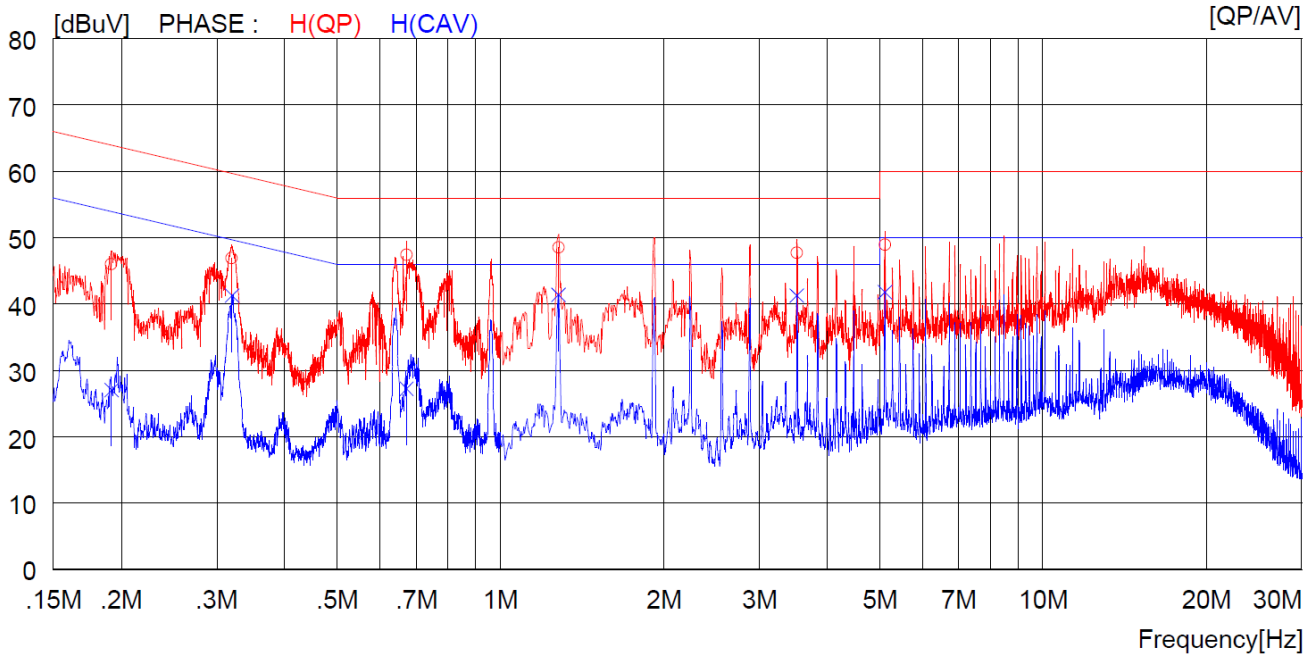
8.5 Test data for Max Load [DC 5.0 V]

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19200	36.0	----	10.0	46.0	----	63.9	----	17.9	----	H(QP)
2	0.32000	36.9	----	10.0	46.9	----	59.7	----	12.8	----	H(QP)
3	0.67200	37.4	----	10.0	47.4	----	56.0	----	8.6	----	H(QP)
4	1.28000	38.4	----	10.1	48.5	----	56.0	----	7.5	----	H(QP)
5	3.52000	37.6	----	10.1	47.7	----	56.0	----	8.3	----	H(QP)
6	5.11500	38.7	----	10.2	48.9	----	60.0	----	11.1	----	H(QP)
7	0.19200	----	17.0	10.0	----	27.0	----	53.9	----	26.9	H(CAV)
8	0.32000	----	31.3	10.0	----	41.3	----	49.7	----	8.4	H(CAV)
9	0.67200	----	17.2	10.0	----	27.2	----	46.0	----	18.8	H(CAV)
10	1.28000	----	31.3	10.1	----	41.4	----	46.0	----	4.6	H(CAV)
11	3.52000	----	31.2	10.1	----	41.3	----	46.0	----	4.7	H(CAV)
12	5.11500	----	31.6	10.2	----	41.8	----	50.0	----	8.2	H(CAV)

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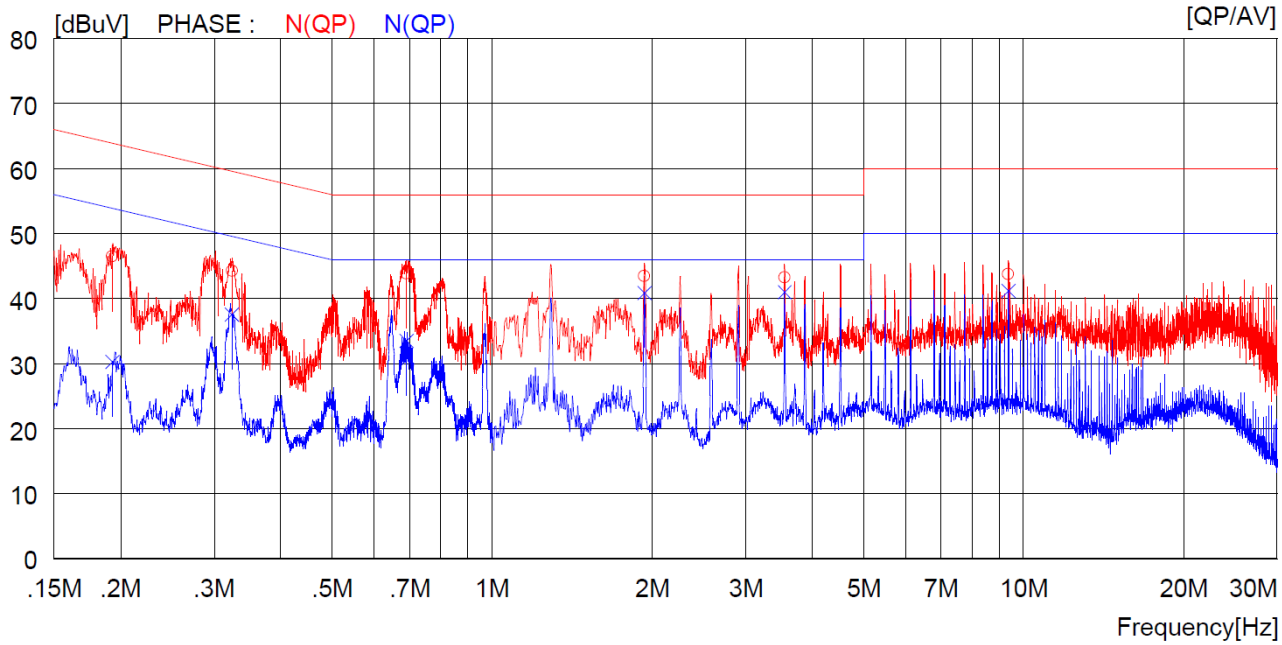
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19300	36.5	----	10.0	46.5	----	63.9	----	17.4	----	N(QP)
2	0.32400	34.2	----	10.0	44.2	----	59.6	----	15.4	----	N(QP)
3	0.69000	33.9	----	10.0	43.9	----	56.0	----	12.1	----	N(QP)
4	1.93600	33.4	----	10.1	43.5	----	56.0	----	12.5	----	N(QP)
5	3.55200	33.1	----	10.1	43.2	----	56.0	----	12.8	----	N(QP)
6	9.36500	33.6	----	10.2	43.8	----	60.0	----	16.2	----	N(QP)
7	0.19300	----	20.3	10.0	----	30.3	----	53.9	----	23.6	N(CAV)
8	0.32400	----	27.5	10.0	----	37.5	----	49.6	----	12.1	N(CAV)
9	0.69000	----	23.5	10.0	----	33.5	----	46.0	----	12.5	N(CAV)
10	1.93600	----	30.8	10.1	----	40.9	----	46.0	----	5.1	N(CAV)
11	3.55200	----	30.9	10.1	----	41.0	----	46.0	----	5.0	N(CAV)
12	9.36500	----	31.0	10.2	----	41.2	----	50.0	----	8.8	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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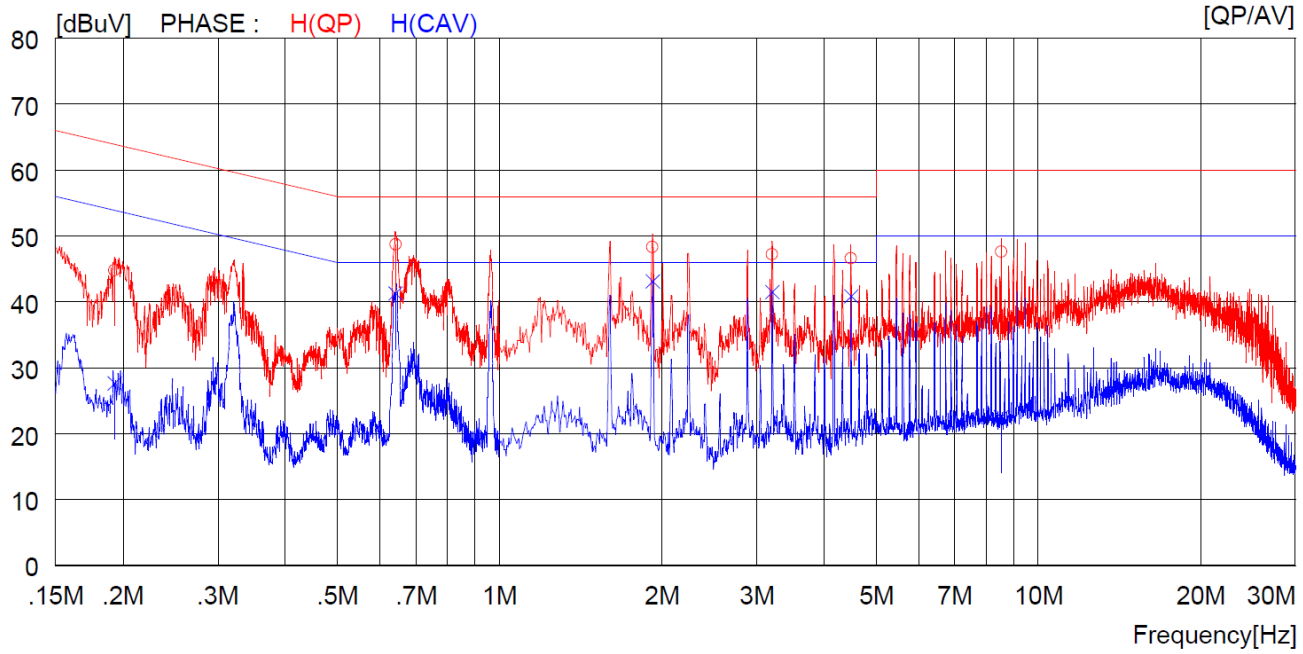
8.6 Test data for Middle Load [DC 5.0 V]

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19300	34.8	----	10.0	44.8	----	63.9	----	19.1	----	H(QP)
2	0.64100	38.7	----	10.0	48.7	----	56.0	----	7.3	----	H(QP)
3	1.92400	38.2	----	10.1	48.3	----	56.0	----	7.7	----	H(QP)
4	3.20800	37.1	----	10.1	47.2	----	56.0	----	8.8	----	H(QP)
5	4.49200	36.5	----	10.1	46.6	----	56.0	----	9.4	----	H(QP)
6	8.53000	37.4	----	10.2	47.6	----	60.0	----	12.4	----	H(QP)
7	0.19300	----	17.6	10.0	----	27.6	----	53.9	----	26.3	H(CAV)
8	0.64100	----	31.3	10.0	----	41.3	----	46.0	----	4.7	H(CAV)
9	1.92400	----	33.0	10.1	----	43.1	----	46.0	----	2.9	H(CAV)
10	3.20800	----	31.4	10.1	----	41.5	----	46.0	----	4.5	H(CAV)
11	4.49200	----	30.8	10.1	----	40.9	----	46.0	----	5.1	H(CAV)
12	8.53000	----	12.3	10.2	----	22.5	----	50.0	----	27.5	H(CAV)

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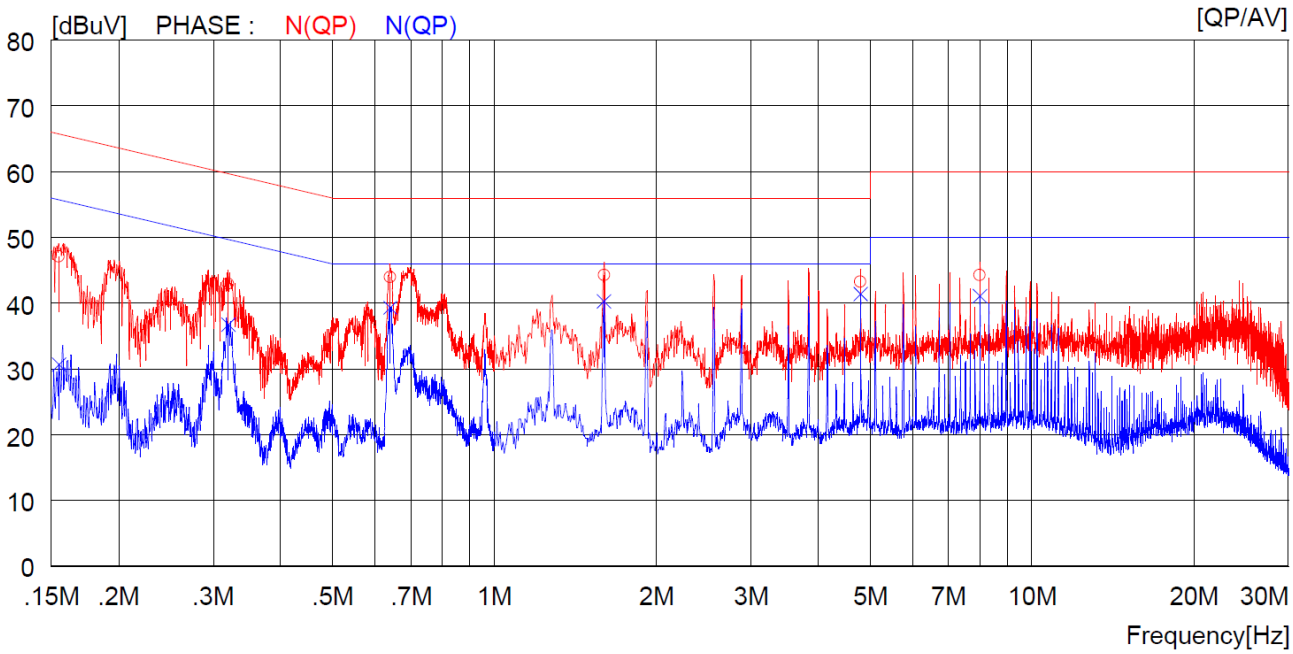
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15500	37.1	----	10.0	47.1	----	65.7	----	18.6	----	N(QP)
2	0.32000	33.0	----	10.0	43.0	----	59.7	----	16.7	----	N(QP)
3	0.64000	34.0	----	10.0	44.0	----	56.0	----	12.0	----	N(QP)
4	1.60000	34.2	----	10.1	44.3	----	56.0	----	11.7	----	N(QP)
5	4.80000	33.0	----	10.2	43.2	----	56.0	----	12.8	----	N(QP)
6	8.00000	34.0	----	10.2	44.2	----	60.0	----	15.8	----	N(QP)
7	0.15500	----	20.7	10.0	----	30.7	----	55.7	----	25.0	N(CAV)
8	0.32000	----	26.7	10.0	----	36.7	----	49.7	----	13.0	N(CAV)
9	0.64000	----	29.3	10.0	----	39.3	----	46.0	----	6.7	N(CAV)
10	1.60000	----	30.2	10.1	----	40.3	----	46.0	----	5.7	N(CAV)
11	4.80000	----	31.2	10.2	----	41.4	----	46.0	----	4.6	N(CAV)
12	8.00000	----	30.9	10.2	----	41.1	----	50.0	----	8.9	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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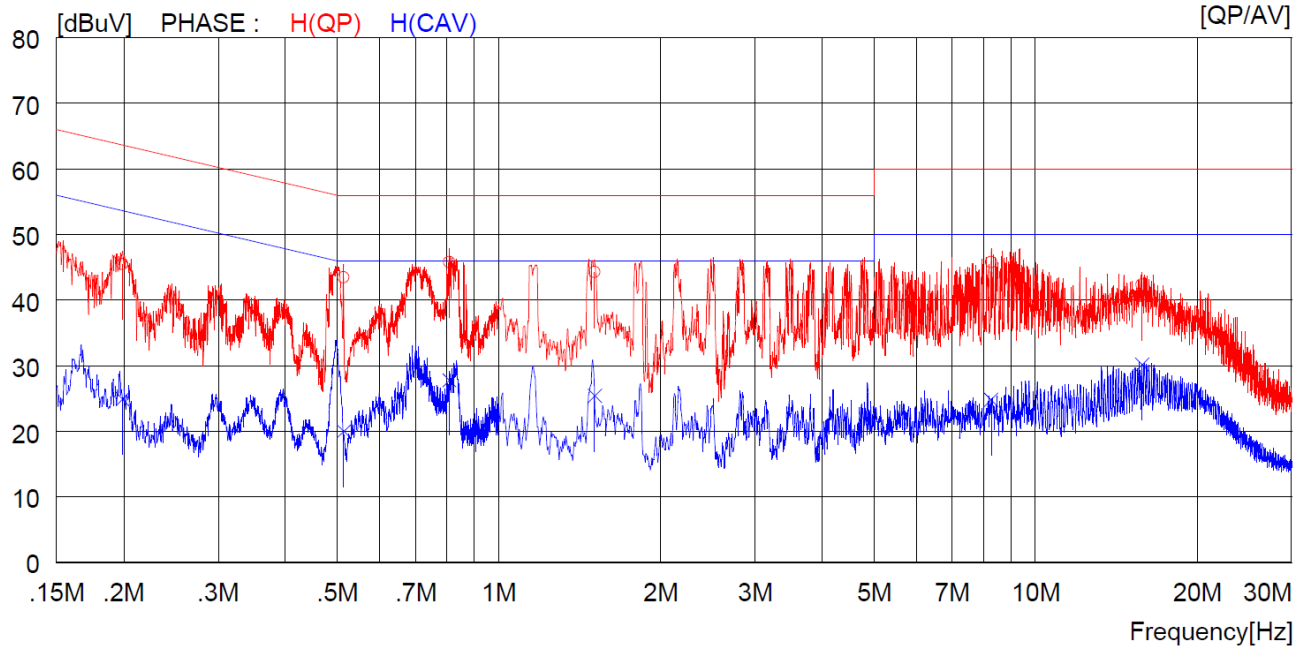
8.7 Test data for Min Load [DC 5.0 V]

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19900	35.5	----	10.0	45.5	----	63.7	----	18.2	----	H(QP)
2	0.51400	33.5	----	10.0	43.5	----	56.0	----	12.5	----	H(QP)
3	0.80900	35.8	----	10.0	45.8	----	56.0	----	10.2	----	H(QP)
4	1.50800	34.1	----	10.1	44.2	----	56.0	----	11.8	----	H(QP)
5	8.26500	35.6	----	10.2	45.8	----	60.0	----	14.2	----	H(QP)
6	15.79000	32.0	----	10.3	42.3	----	60.0	----	17.7	----	H(QP)
7	0.19900	----	14.9	10.0	----	24.9	----	53.7	----	28.8	H(CAV)
8	0.51400	----	10.0	10.0	----	20.0	----	46.0	----	26.0	H(CAV)
9	0.80900	----	17.8	10.0	----	27.8	----	46.0	----	18.2	H(CAV)
10	1.50800	----	15.3	10.1	----	25.4	----	46.0	----	20.6	H(CAV)
11	8.26500	----	14.6	10.2	----	24.8	----	50.0	----	25.2	H(CAV)
12	15.79000	----	19.9	10.3	----	30.2	----	50.0	----	19.8	H(CAV)

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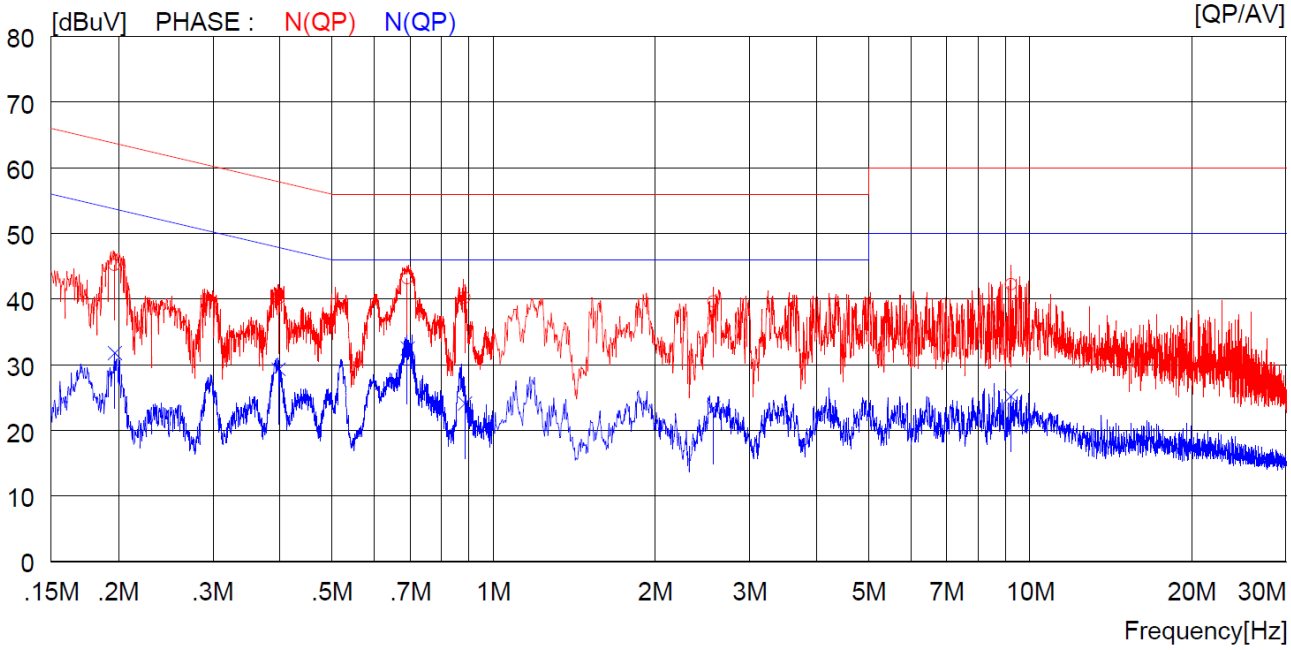
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19700	35.2	----	10.0	45.2	----	63.7	----	18.5	----	N(QP)
2	0.39800	30.1	----	10.0	40.1	----	57.9	----	17.8	----	N(QP)
3	0.69200	33.1	----	10.0	43.1	----	56.0	----	12.9	----	N(QP)
4	0.88500	30.2	----	10.0	40.2	----	56.0	----	15.8	----	N(QP)
5	2.57200	29.5	----	10.1	39.6	----	56.0	----	16.4	----	N(QP)
6	9.21500	32.0	----	10.2	42.2	----	60.0	----	17.8	----	N(QP)
7	0.19700	----	21.8	10.0	----	31.8	----	53.7	----	21.9	N(CAV)
8	0.39800	----	19.3	10.0	----	29.3	----	47.9	----	18.6	N(CAV)
9	0.69200	----	22.5	10.0	----	32.5	----	46.0	----	13.5	N(CAV)
10	0.88500	----	14.1	10.0	----	24.1	----	46.0	----	21.9	N(CAV)
11	2.57200	----	13.3	10.1	----	23.4	----	46.0	----	22.6	N(CAV)
12	9.21500	----	15.0	10.2	----	25.2	----	50.0	----	24.8	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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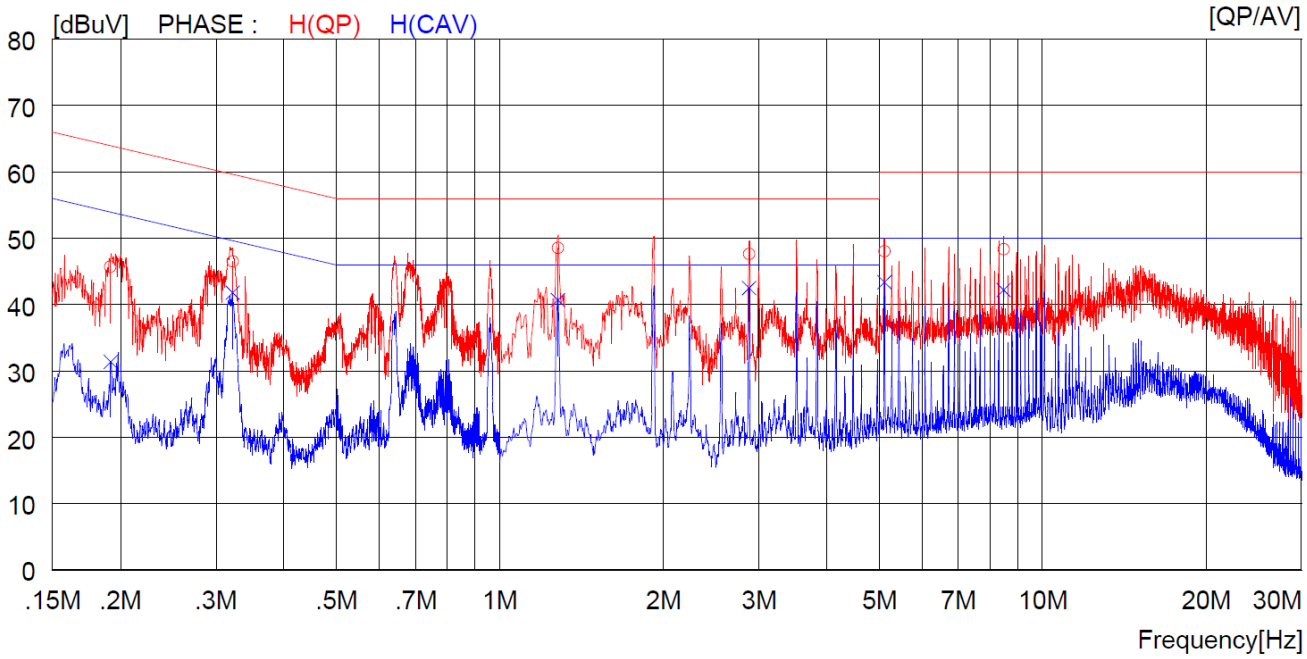
8.8 Test data for Max Load [DC 9.0 V]

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19200	35.7	----	10.0	45.7	----	63.9	----	18.2	----	H(QP)
2	0.32200	36.5	----	10.0	46.5	----	59.7	----	13.2	----	H(QP)
3	1.28000	38.4	----	10.1	48.5	----	56.0	----	7.5	----	H(QP)
4	2.88000	37.5	----	10.1	47.6	----	56.0	----	8.4	----	H(QP)
5	5.11500	37.8	----	10.2	48.0	----	60.0	----	12.0	----	H(QP)
6	8.47500	38.1	----	10.2	48.3	----	60.0	----	11.7	----	H(QP)
7	0.19200	----	21.4	10.0	----	31.4	----	53.9	----	22.5	H(CAV)
8	0.32200	----	31.8	10.0	----	41.8	----	49.7	----	7.9	H(CAV)
9	1.28000	----	30.6	10.1	----	40.7	----	46.0	----	5.3	H(CAV)
10	2.88000	----	32.4	10.1	----	42.5	----	46.0	----	3.5	H(CAV)
11	5.11500	----	33.2	10.2	----	43.4	----	50.0	----	6.6	H(CAV)
12	8.47500	----	32.0	10.2	----	42.2	----	50.0	----	7.8	H(CAV)

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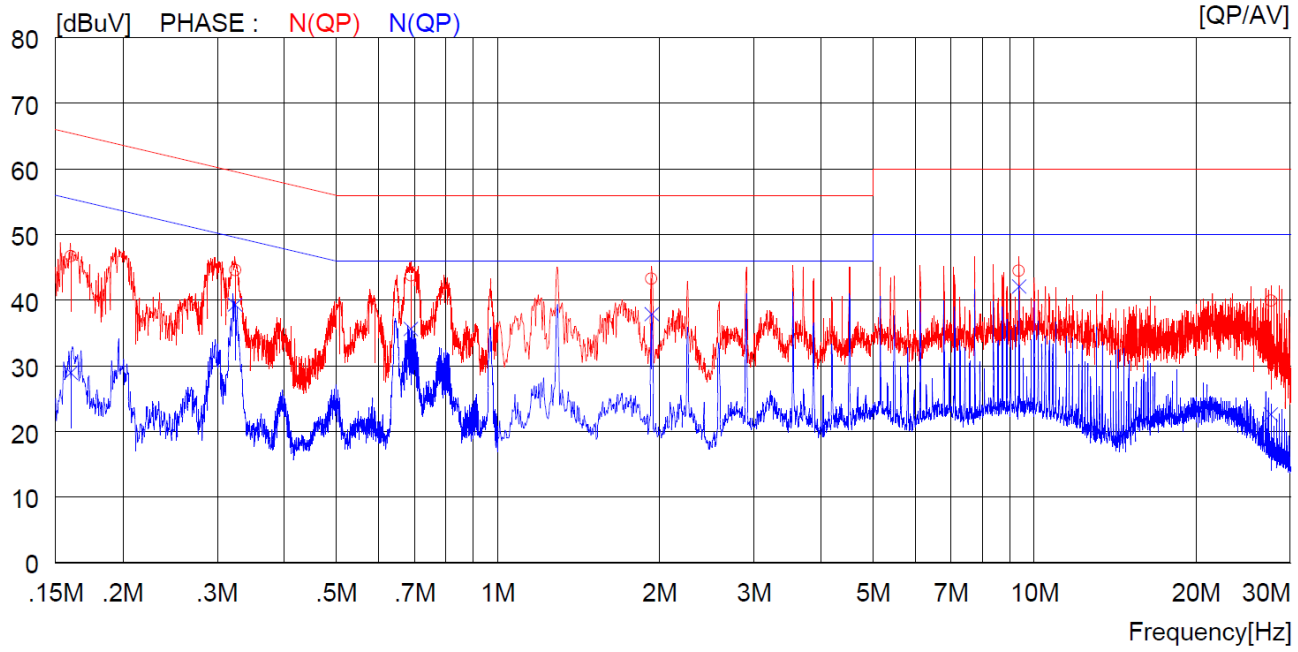
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.16000	36.7	----	10.0	46.7	----	65.5	----	18.8	----	N(QP)
2	0.32400	34.6	----	10.0	44.6	----	59.6	----	15.0	----	N(QP)
3	0.68900	33.8	----	10.0	43.8	----	56.0	----	12.2	----	N(QP)
4	1.93600	33.1	----	10.1	43.2	----	56.0	----	12.8	----	N(QP)
5	9.36000	34.3	----	10.2	44.5	----	60.0	----	15.5	----	N(QP)
6	27.60000	29.4	----	10.5	39.9	----	60.0	----	20.1	----	N(QP)
7	0.16000	----	18.9	10.0	----	28.9	----	55.5	----	26.6	N(CAV)
8	0.32400	----	29.3	10.0	----	39.3	----	49.6	----	10.3	N(CAV)
9	0.68900	----	25.6	10.0	----	35.6	----	46.0	----	10.4	N(CAV)
10	1.93600	----	27.8	10.1	----	37.9	----	46.0	----	8.1	N(CAV)
11	9.36000	----	31.9	10.2	----	42.1	----	50.0	----	7.9	N(CAV)
12	27.60000	----	12.1	10.5	----	22.6	----	50.0	----	27.4	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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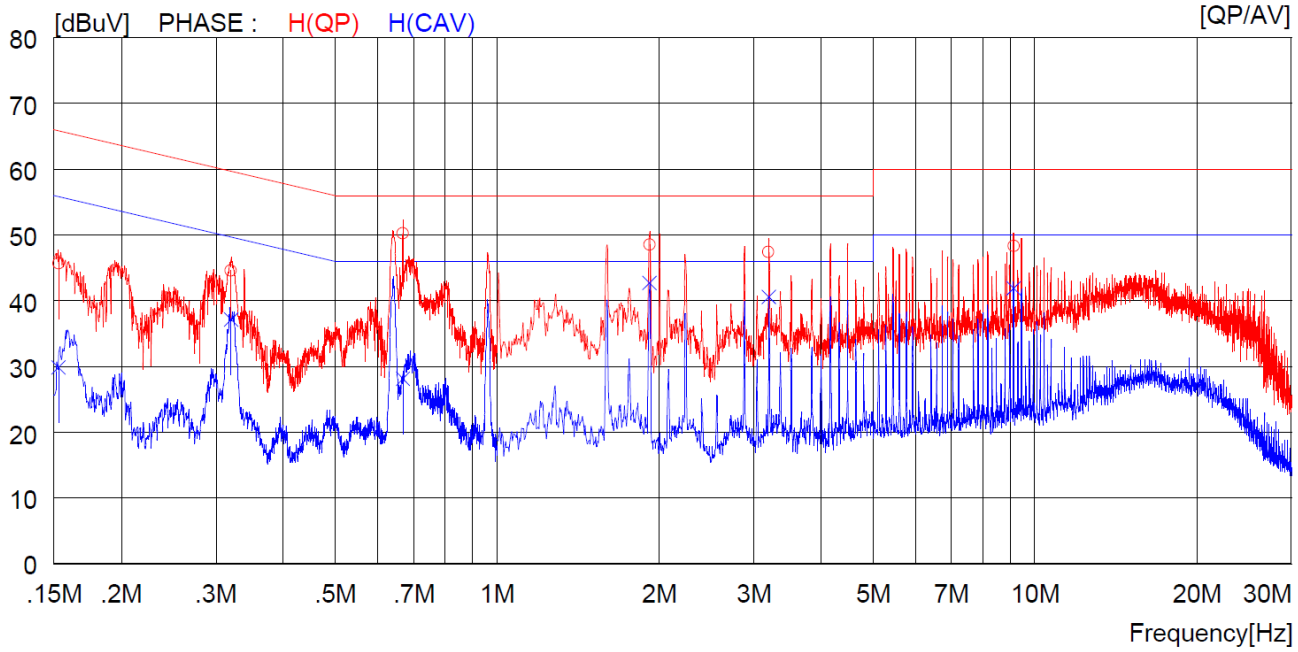
8.9 Test data for Middle Load [DC 9.0 V]

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15300	35.7	----	10.0	45.7	----	65.8	----	20.1	----	H(QP)
2	0.32000	34.6	----	10.0	44.6	----	59.7	----	15.1	----	H(QP)
3	0.66800	40.2	----	10.0	50.2	----	56.0	----	5.8	----	H(QP)
4	1.92000	38.4	----	10.1	48.5	----	56.0	----	7.5	----	H(QP)
5	3.20000	37.3	----	10.1	47.4	----	56.0	----	8.6	----	H(QP)
6	9.13000	38.1	----	10.2	48.3	----	60.0	----	11.7	----	H(QP)
7	0.15300	----	19.9	10.0	----	29.9	----	55.8	----	25.9	H(CAV)
8	0.32000	----	27.1	10.0	----	37.1	----	49.7	----	12.6	H(CAV)
9	0.66800	----	18.1	10.0	----	28.1	----	46.0	----	17.9	H(CAV)
10	1.92000	----	32.6	10.1	----	42.7	----	46.0	----	3.3	H(CAV)
11	3.20000	----	30.5	10.1	----	40.6	----	46.0	----	5.4	H(CAV)
12	9.13000	----	31.7	10.2	----	41.9	----	50.0	----	8.1	H(CAV)

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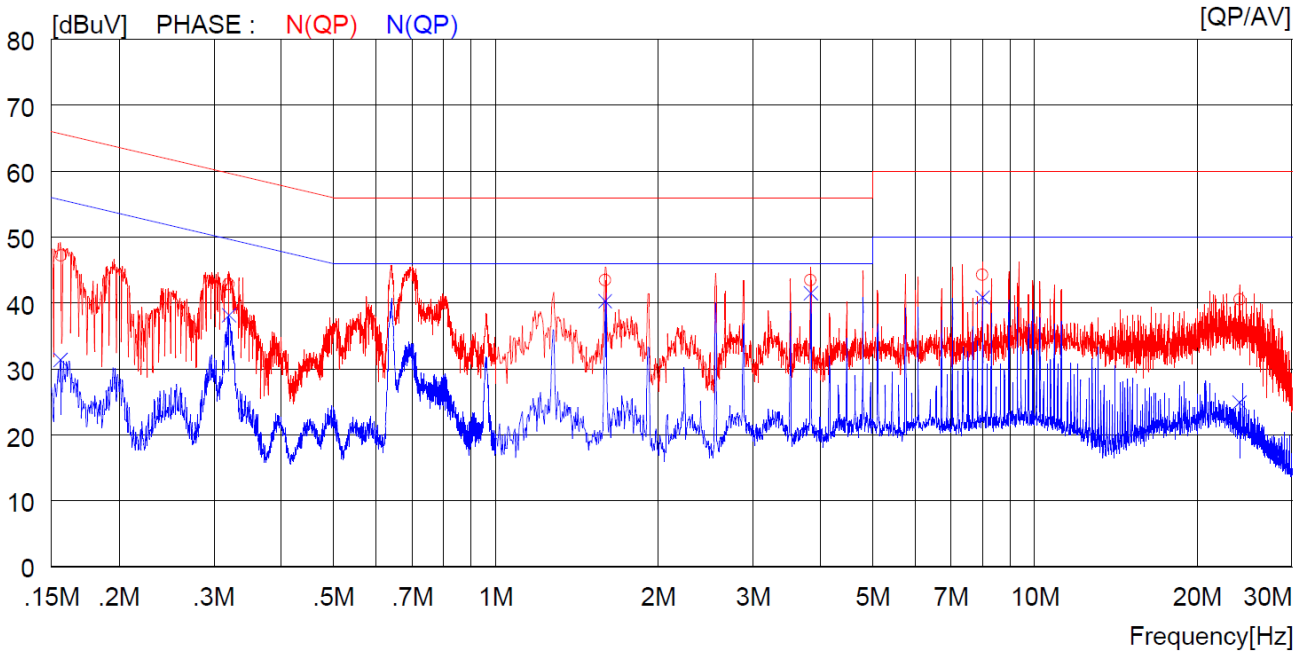
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15600	37.2	----	10.0	47.2	----	65.7	----	18.5	----	N(QP)
2	0.32000	32.8	----	10.0	42.8	----	59.7	----	16.9	----	N(QP)
3	1.59600	33.4	----	10.1	43.5	----	56.0	----	12.5	----	N(QP)
4	3.84000	33.3	----	10.1	43.4	----	56.0	----	12.6	----	N(QP)
5	7.99500	34.0	----	10.2	44.2	----	60.0	----	15.8	----	N(QP)
6	23.98000	30.0	----	10.5	40.5	----	60.0	----	19.5	----	N(QP)
7	0.15600	----	21.4	10.0	----	31.4	----	55.7	----	24.3	N(CAV)
8	0.32000	----	28.1	10.0	----	38.1	----	49.7	----	11.6	N(CAV)
9	1.59600	----	30.2	10.1	----	40.3	----	46.0	----	5.7	N(CAV)
10	3.84000	----	31.4	10.1	----	41.5	----	46.0	----	4.5	N(CAV)
11	7.99500	----	30.7	10.2	----	40.9	----	50.0	----	9.1	N(CAV)
12	23.98000	----	14.4	10.5	----	24.9	----	50.0	----	25.1	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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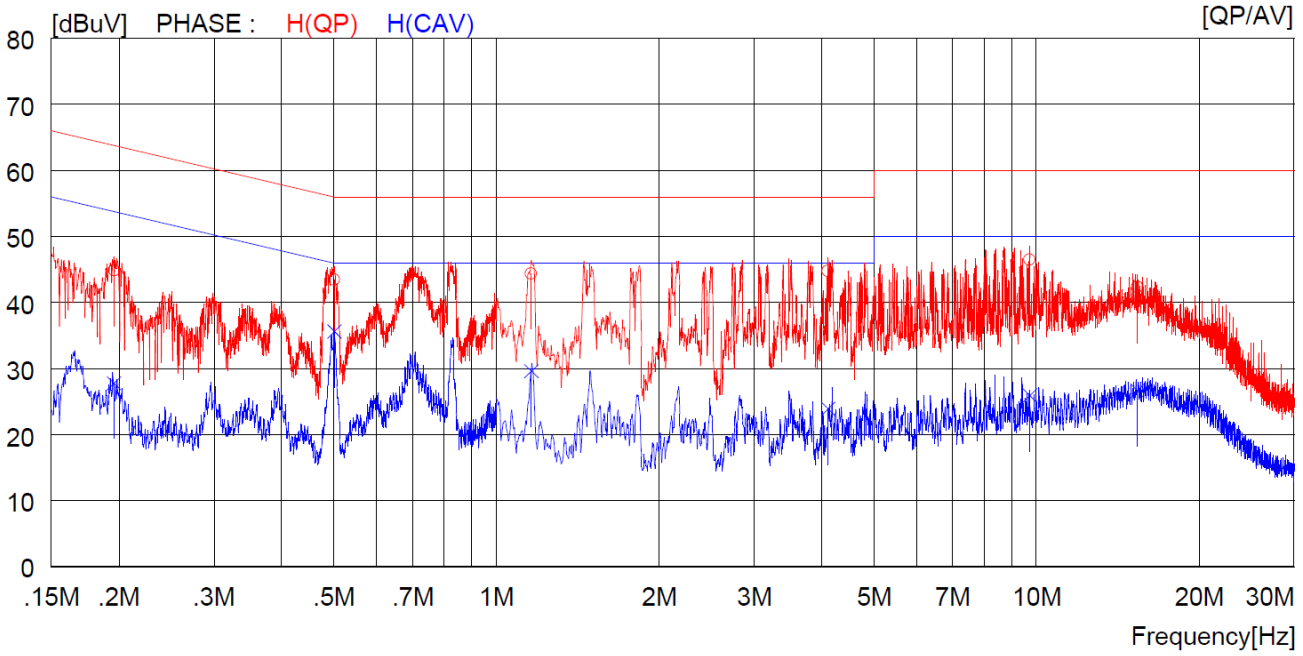
8.10 Test data for Min Load [DC 9.0 V]

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19600	34.9	----	10.0	44.9	----	63.8	----	18.9	----	H(QP)
2	0.50100	33.4	----	10.0	43.4	----	56.0	----	12.6	----	H(QP)
3	1.16000	34.3	----	10.1	44.4	----	56.0	----	11.6	----	H(QP)
4	4.11200	34.7	----	10.1	44.8	----	56.0	----	11.2	----	H(QP)
5	9.72000	36.3	----	10.2	46.5	----	60.0	----	13.5	----	H(QP)
6	15.38000	32.0	----	10.3	42.3	----	60.0	----	17.7	----	H(QP)
7	0.19600	----	17.8	10.0	----	27.8	----	53.8	----	26.0	H(CAV)
8	0.50100	----	25.6	10.0	----	35.6	----	46.0	----	10.4	H(CAV)
9	1.16000	----	19.5	10.1	----	29.6	----	46.0	----	16.4	H(CAV)
10	4.11200	----	13.8	10.1	----	23.9	----	46.0	----	22.1	H(CAV)
11	9.72000	----	15.7	10.2	----	25.9	----	50.0	----	24.1	H(CAV)
12	15.38000	----	16.3	10.3	----	26.6	----	50.0	----	23.4	H(CAV)

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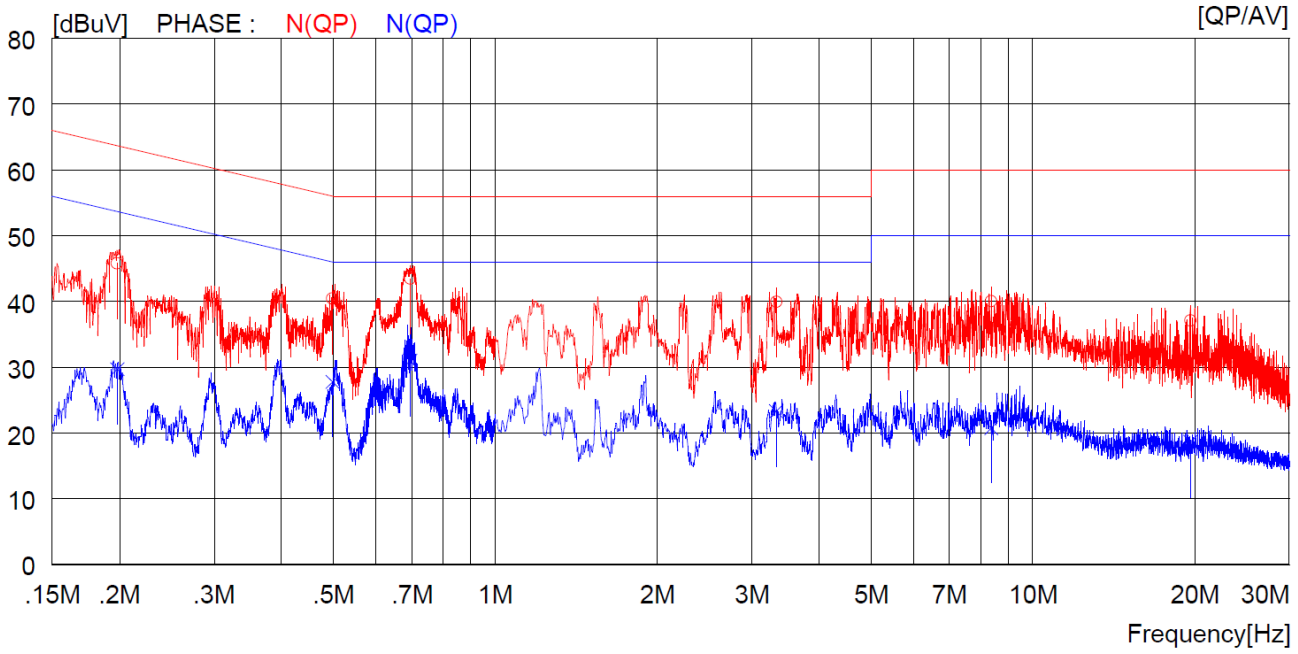
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.19800	35.8	----	10.0	45.8	----	63.7	----	17.9	----	N(QP)
2	0.49800	30.4	----	10.0	40.4	----	56.0	----	15.6	----	N(QP)
3	0.69500	33.5	----	10.0	43.5	----	56.0	----	12.5	----	N(QP)
4	3.33200	29.8	----	10.1	39.9	----	56.0	----	16.1	----	N(QP)
5	8.36500	29.8	----	10.2	40.0	----	60.0	----	20.0	----	N(QP)
6	19.64000	26.7	----	10.4	37.1	----	60.0	----	22.9	----	N(QP)
7	0.19800	----	19.7	10.0	----	29.7	----	53.7	----	24.0	N(CAV)
8	0.49800	----	17.8	10.0	----	27.8	----	46.0	----	18.2	N(CAV)
9	0.69500	----	21.0	10.0	----	31.0	----	46.0	----	15.0	N(CAV)
10	3.33200	----	13.2	10.1	----	23.3	----	46.0	----	22.7	N(CAV)
11	8.36500	----	10.6	10.2	----	20.8	----	50.0	----	29.2	N(CAV)
12	19.64000	----	8.2	10.4	----	18.6	----	50.0	----	31.4	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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9. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
ESR	R/S	Spectrum analyzer	101470	Oct. 20, 2021 (1Y)
310N	Sonoma Instrument	Pre-Amplifier	312545	Mar. 15 2021 (1Y)
HLP-2008	TDK	Hybrid Antenna	131314	Feb. 27, 2020 (2Y)
CO3000	Innco Systems GmbH	Controller	N/A	N/A
DT3000-3t	Innco System	Turn Table	DT3000/093	N/A
NSLK8128	Schwarzbeck	V - LISN (4*32/50A)	8128216	Mar. 16, 2021 (1Y)
ESH3-Z2	R/S	Pulse Limiter	100655	Mar. 15, 2021 (1Y)
MA-4000XPET	Innco System	Antenna Master	MA4000/ 332/27030611/L	N/A
FMZB 1513	Schwarzbeck	LOOP ANTENNA	1513-235	Mar. 24, 2020 (2Y)
GP-4303D	LG Precision Co.,Ltd	DC Power Supply	5071069	Jan. 06, 2021 (1Y)

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