

FCC Test Report

Report No.: RF190729D01

FCC ID: 2ADB4TM0007P

Test Model: TM0007P

Received Date: Jul. 29, 2019

Test Date: Aug. 1 to 6, 2019

Issued Date: Aug. 7, 2019

Applicant: Foxconn Interconnect Technology Limited Taiwan Branch

Address: No. 66-1, JHONGSHAN RD., TUCHENG DIST., NEW TAIPEI CITY 23680, TAIWAN (R.O.C.)

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

**FCC Registration /
Designation Number:** 198487 / TW2021



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Release Control Record

Issue No.	Description	Date Issued
RF190729D01	Original release.	Aug.7, 2019

1 Certificate of Conformity

Product: Wireless Charging Pad 10W

Brand: **GO
TO**

Test Model: TM0007P

Sample Status: Engineering sample

Applicant: Foxconn Interconnect Technology Limited Taiwan Branch

Test Date: Aug. 1 to 6, 2019

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.209)
ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Annie Chang, **Date:** Aug. 7, 2019
Annie Chang / Senior Specialist

Approved by : Rex Lai, **Date:** Aug. 7, 2019
Rex Lai / Associate Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.209)

FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -10.54dB at 0.16172MHz.
15.209	Radiated Emission Test	Pass	Meet the requirement of limit. Minimum passing margin is -10.16dB at 83.16MHz

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.77 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.38 dB
	30MHz ~ 1000MHz	5.43 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Charging Pad 10W
Brand	GO TO
Test Model	TM0007P
Sample Status	Engineering sample
Power Supply Rating	Input: +5Vdc, 3A or +9Vdc, 2A or 12Vdc, 1.5A (from adapter) Output: 10W
Modulation Type	FSK
Operating Frequency	127.8 kHz
Antenna Type	Coil antenna
Field Strength	52.86dBuV/m
Dimensions	17.35cm ² (diameter = 47mm)
Accessory Device	Adapter
Data Cable Supplied	Shielded USB cable (1.2m)
Maximum Power Output from the Charging Coil	10W

Note:

1. The EUT is a Wireless Charging Pad 10W.
2. The EUT uses following adapter.

Brand	DVE
Model	DSA-18QFB FUS A
Input Power	100-240Vac, 50/60Hz, 0.8A (AC 2 Pin)
Output Power	+5Vdc, 3A or +9Vdc, 2A or 12Vdc, 1.5A

3.2 Description of Test Modes

The following test frequency is provided to this EUT:

Operating Frequency (kHz)	Test Mode
127.8	Charging Mode
127.8	Standby Mode

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To		Description
	RE<1G	PLC	
A	√	√	Charging Mode with Adapter
B	-	√	Charging Mode with Notebook
C	√	-	Standby Mode

Where **RE<1G**: Radiated Emission below 1GHz **PLC**: Power Line Conducted Emission

Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Operating Frequency (kHz)	Tested Frequency (kHz)
A	127.8	127.8
C	127.8	127.8

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Operating Frequency (kHz)	Tested Frequency (kHz)
A	127.8	127.8
B	127.8	127.8

Test Condition:

Applicable To	EUT Configure Mode	Environmental Conditions	Input Power	Tested by
RE<1G	A & C	25 deg. C, 76% RH	120Vac, 60Hz	Ian Chang
	A	25 deg. C, 75% RH	120Vac, 60Hz	StarItaly Wu
PLC	B	25 deg. C, 75% RH	120Vac, 60Hz (System)	StarItaly Wu

3.3 Description of Support Units

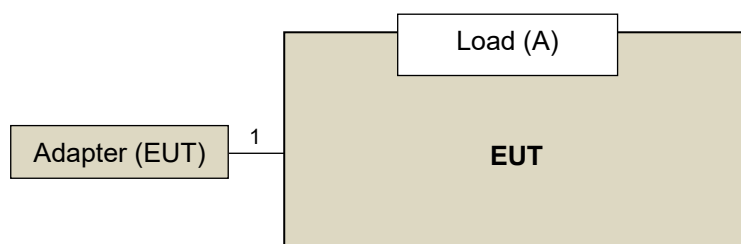
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Load	NA	NA	NA	NA	Supplied by client (10W max load)
B.	Notebook	ASUS	F3J	F3APT2YDD-FBQCCCA4266	N/A	Provided by Lab

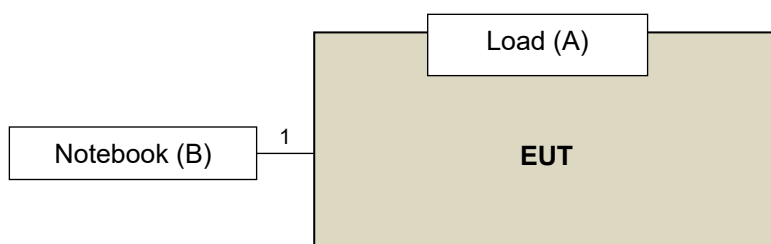
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	1.2	Y	0	Supplied by client

3.3.1 Configuration of System under Test

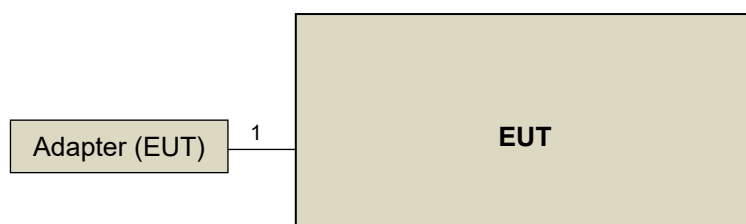
Test Mode A:



Test Mode B:



Test Mode C:



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR FCC Part 15, Subpart C (Section 15.209)

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

For Frequency Below 30MHz

Frequency (MHz)	Field Strength (dBuV/m)		Measurement Distance (meters)
	uV/m	dBuV/m	
0.009 – 0.490	2400 / F (kHz)	48.52-13.80	300
0.490 – 1.705	24000 / F (kHz)	33.80-22.97	30
1.705 – 30.0	30	29.54	30

For Frequency Between 30-1000MHz

Frequency (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
30-88	90	39.1	100	40.0
88-216	150	43.5	150	43.5
216-960	210	46.4	200	46.0
Above 960	300	49.5	500	54.0

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 20, 2019	Feb. 19, 2020
HP Preamplifier	8449B	3008A01201	Feb. 21, 2019	Feb. 20, 2020
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 20, 2019	Feb. 19, 2020
Agilent TEST RECEIVER	N9038A	MY51210129	Mar. 05, 2019	Mar. 04, 2020
Schwarzbeck Antenna	VULB 9168	139	Nov. 26, 2018	Nov. 25, 2019
Schwarzbeck Antenna	VHBA 9123	480	Jun. 3, 2019	Jun. 2, 2021
Schwarzbeck Horn Antenna	BBHA-9170	212	Nov. 25, 2018	Nov. 24, 2019
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Nov. 25, 2018	Nov. 24, 2019
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF102	Cable-CH6-01	Aug. 13, 2018	Aug. 12, 2019
SUHNER RF cable With 3/4dB PAD	SF102	Cable-CH8-3.6m	Aug. 13, 2018	Aug. 12, 2019
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	Jun. 11, 2019	Jun. 10, 2020
Loop Antenna EMCI	LPA600	270	Aug. 11, 2017	Aug. 10, 2019

- NOTE:** 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200Hz at frequency range 9kHz to 150kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency range 150kHz to 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

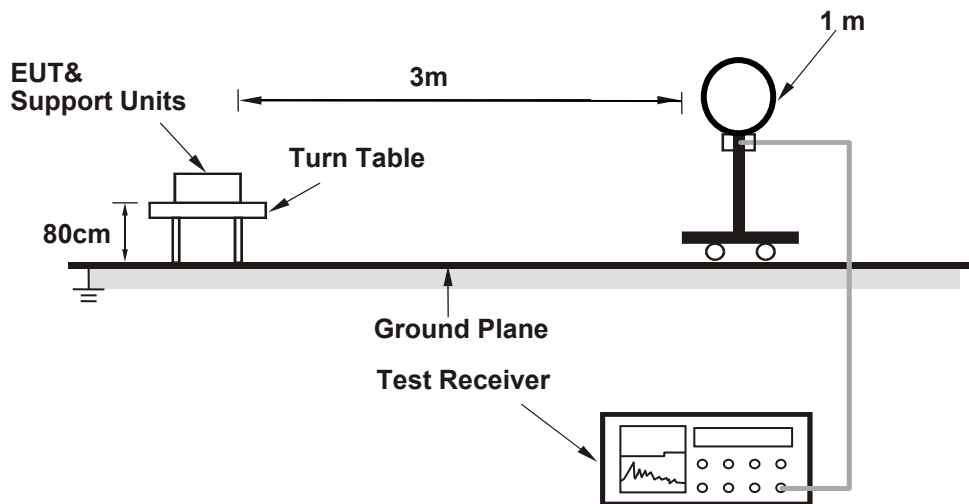
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

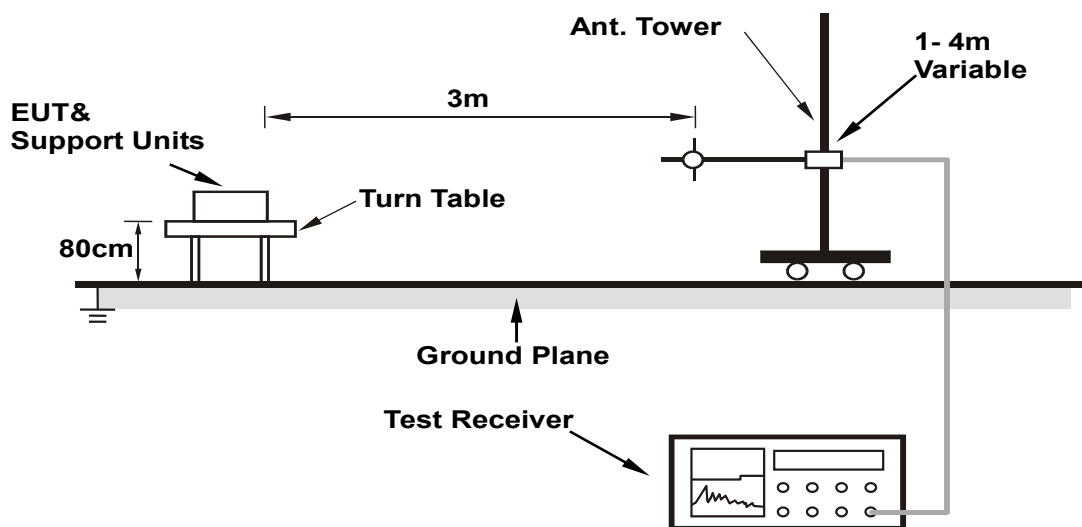
No deviation.

4.1.5 Test Set Up

For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

Test Mode A & B:

- The EUT powered by adapter or Notebook.
- Put the Load on the EUT (wireless charging) during the test.

Test Mode C:

- The EUT powered by adapter.
- Set the EUT under standby condition.

4.1.7 Test Results

Below 30MHz Data:

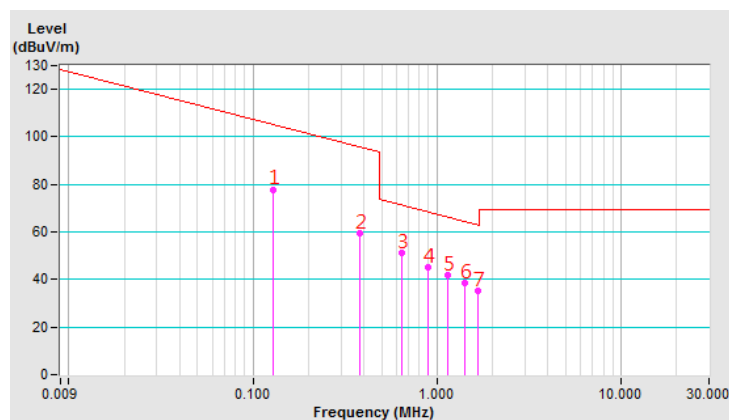
Charging Mode

TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 30MHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA PARALLEL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.1278	77.92 QP	105.47	-27.55	1.00	0	58.05	19.87
2	0.3834	59.49 QP	95.93	-36.44	1.00	321	48.62	10.87
3	0.6390	51.19 QP	71.49	-20.30	1.00	272	43.44	7.75
4	0.8946	45.34 QP	68.57	-23.23	1.00	247	39.71	5.63
5	1.1502	41.66 QP	66.39	-24.73	1.00	219	36.71	4.95
6	1.4058	38.37 QP	64.65	-26.28	1.00	194	34.01	4.36
7	1.6614	35.40 QP	63.19	-27.79	1.00	172	31.64	3.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80
8. Limit @3m=Limit@30m+40log(30 / 3)=Limit@30m+40

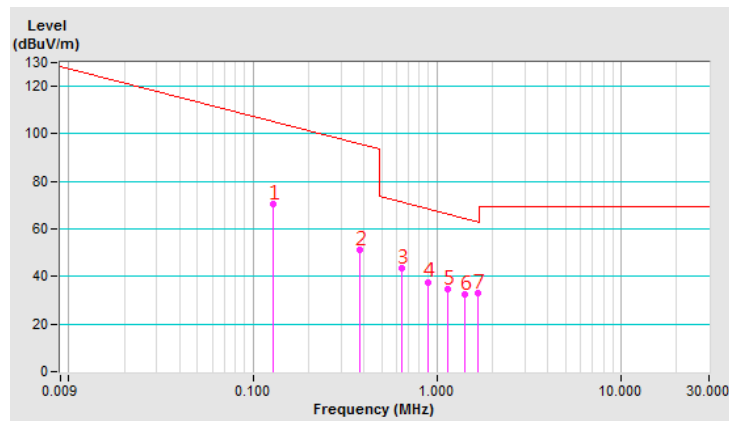


TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 30MHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA PERPENDICULAR AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.1278	70.60 QP	105.47	-34.87	1.00	321	50.73	19.87
2	0.3834	51.37 QP	95.93	-44.56	1.00	326	40.50	10.87
3	0.6390	43.27 QP	71.49	-28.22	1.00	288	35.52	7.75
4	0.8946	37.71 QP	68.57	-30.86	1.00	266	32.08	5.63
5	1.1502	34.61 QP	66.39	-31.78	1.00	248	29.66	4.95
6	1.4058	32.73 QP	64.65	-31.92	1.00	223	28.37	4.36
7	1.6614	33.12 QP	63.19	-30.07	1.00	202	29.36	3.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80
8. Limit @3m=Limit@30m+40log(30 / 3)=Limit@30m+40

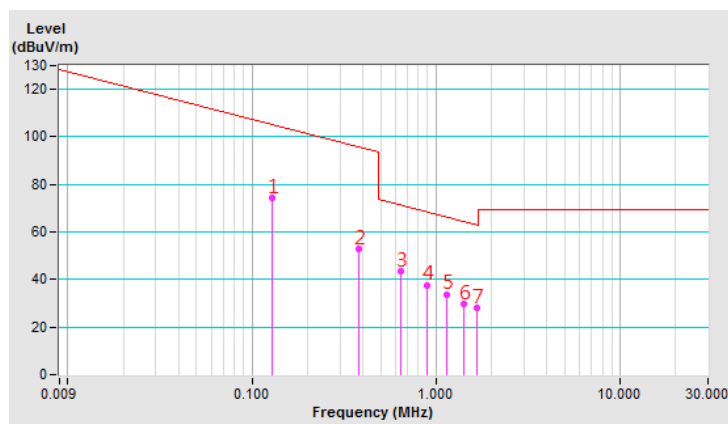


TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 30MHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA GROUND-PARALLEL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.1278	74.30 QP	105.47	-31.17	1.00	309	54.43	19.87
2	0.3834	52.87 QP	95.93	-43.06	1.00	360	42.00	10.87
3	0.6390	43.36 QP	71.49	-28.13	1.00	280	35.61	7.75
4	0.8946	37.73 QP	68.57	-30.84	1.00	248	32.10	5.63
5	1.1502	33.84 QP	66.39	-32.55	1.00	227	28.89	4.95
6	1.4058	29.69 QP	64.65	-34.96	1.00	194	25.33	4.36
7	1.6614	28.04 QP	63.19	-35.15	1.00	159	24.28	3.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80
8. Limit @3m=Limit@30m+40log(30 / 3)=Limit@30m+40



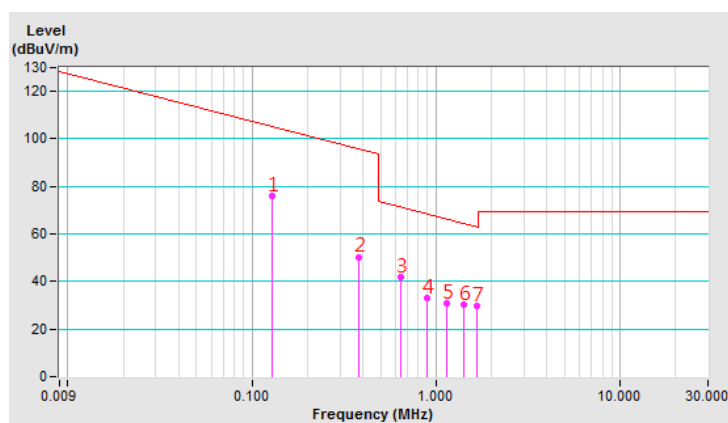
Standby Mode

TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 30MHz		
TEST MODE	C		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA PARALLEL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.1278	76.09 QP	105.47	-29.38	1.00	18	56.22	19.87
2	0.3834	50.37 QP	95.93	-45.56	1.00	127	39.50	10.87
3	0.6390	41.84 QP	71.49	-29.65	1.00	161	34.09	7.75
4	0.8946	33.07 QP	68.57	-35.50	1.00	230	27.44	5.63
5	1.1502	30.66 QP	66.39	-35.73	1.00	263	25.71	4.95
6	1.4058	30.45 QP	64.65	-34.20	1.00	293	26.09	4.36
7	1.6614	29.96 QP	63.19	-33.23	1.00	320	26.20	3.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80
8. Limit @3m=Limit@30m+40log(30 / 3)=Limit@30m+40

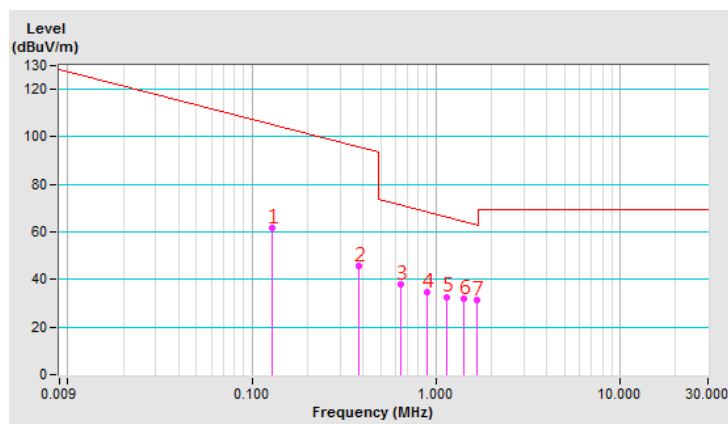


TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 30MHz		
TEST MODE	C		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA PERPENDICULAR AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.1278	61.67 QP	105.47	-43.80	1.00	8	41.80	19.87
2	0.3834	45.63 QP	95.93	-50.30	1.00	304	34.76	10.87
3	0.6390	37.95 QP	71.49	-33.54	1.00	360	30.20	7.75
4	0.8946	34.43 QP	68.57	-34.14	1.00	344	28.80	5.63
5	1.1502	32.74 QP	66.39	-33.65	1.00	46	27.79	4.95
6	1.4058	31.99 QP	64.65	-32.66	1.00	23	27.63	4.36
7	1.6614	31.17 QP	63.19	-32.02	1.00	2	27.41	3.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80
8. Limit @3m=Limit@30m+40log(30 / 3)=Limit@30m+40

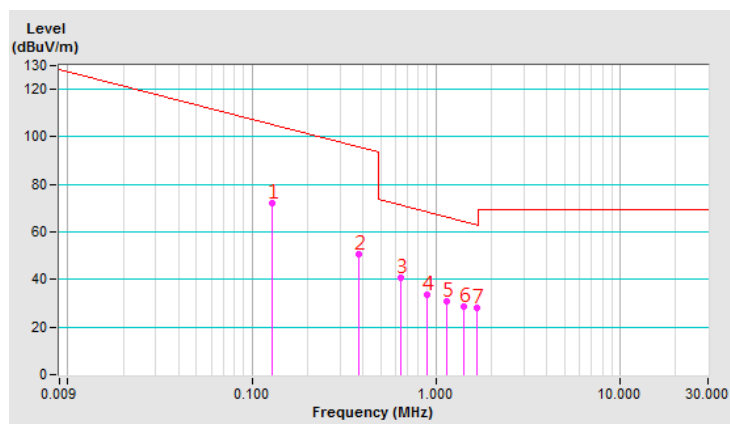


TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 30MHz		
TEST MODE	C		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA GROUND-PARALLEL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.1278	71.99 QP	105.47	-33.48	1.00	18	52.12	19.87
2	0.3834	50.54 QP	95.93	-45.39	1.00	138	39.67	10.87
3	0.6390	40.51 QP	71.49	-30.98	1.00	157	32.76	7.75
4	0.8946	33.83 QP	68.57	-34.74	1.00	178	28.20	5.63
5	1.1502	30.60 QP	66.39	-35.79	1.00	207	25.65	4.95
6	1.4058	28.72 QP	64.65	-35.93	1.00	263	24.36	4.36
7	1.6614	28.16 QP	63.19	-35.03	1.00	294	24.40	3.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80
8. Limit @3m=Limit@30m+40log(30 / 3)=Limit@30m+40



Above 30MHz Data:

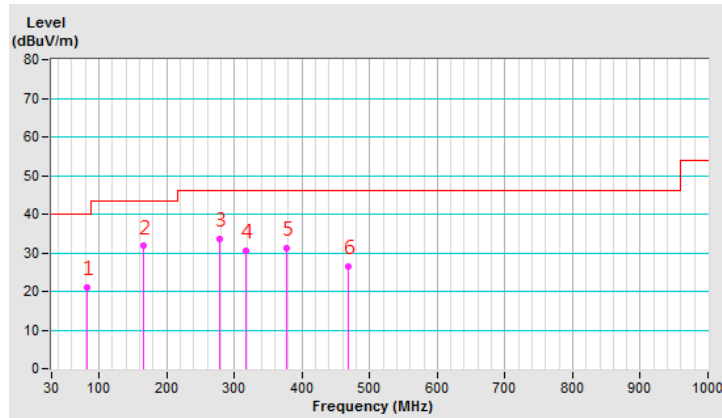
Charging Mode

TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	83.16	21.04 QP	40.00	-18.96	1.95 H	209	33.13	-12.09
2	165.56	31.75 QP	43.50	-11.75	2.43 H	70	38.52	-6.77
3	277.69	33.64 QP	46.00	-12.36	1.81 H	230	39.18	-5.54
4	316.83	30.65 QP	46.00	-15.35	1.04 H	236	35.10	-4.45
5	378.18	31.23 QP	46.00	-14.77	1.40 H	105	34.68	-3.45
6	468.49	26.46 QP	46.00	-19.54	1.15 H	197	27.65	-1.19

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.

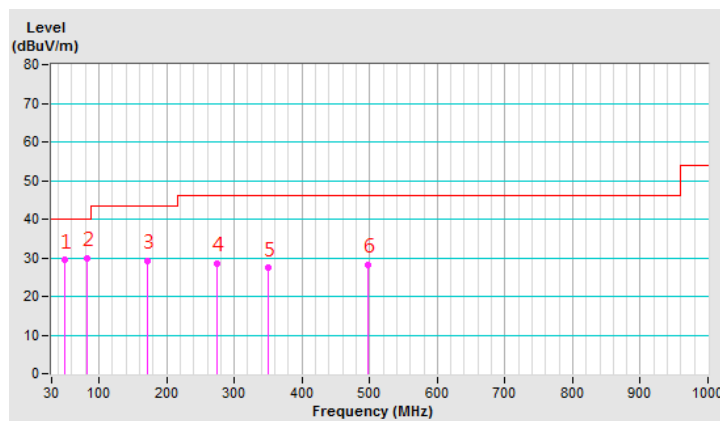


TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	49.45	29.35 QP	40.00	-10.65	1.34 V	309	36.56	-7.21
2	83.16	29.84 QP	40.00	-10.16	1.52 V	240	41.93	-12.09
3	172.10	29.20 QP	43.50	-14.30	1.18 V	360	36.33	-7.13
4	274.15	28.50 QP	46.00	-17.50	1.24 V	186	34.19	-5.69
5	350.15	27.31 QP	46.00	-18.69	1.62 V	145	31.49	-4.18
6	497.30	28.16 QP	46.00	-17.84	1.85 V	230	28.88	-0.72

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.



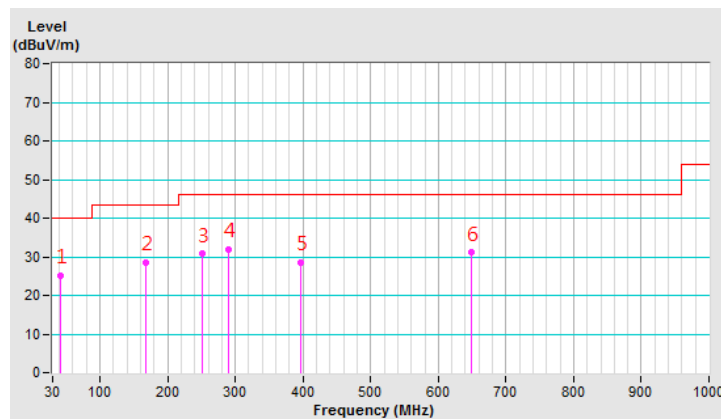
Standby Mode

TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TEST MODE	C		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.86	25.08 QP	40.00	-14.92	1.69 H	252	32.70	-7.62
2	166.77	28.47 QP	43.50	-15.03	1.38 H	69	35.28	-6.81
3	251.79	30.69 QP	46.00	-15.31	2.08 H	207	37.49	-6.80
4	289.91	31.90 QP	46.00	-14.10	2.15 H	153	37.08	-5.18
5	395.84	28.44 QP	46.00	-17.56	1.78 H	116	31.52	-3.08
6	649.35	31.10 QP	46.00	-14.90	1.00 H	360	28.51	2.59

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.

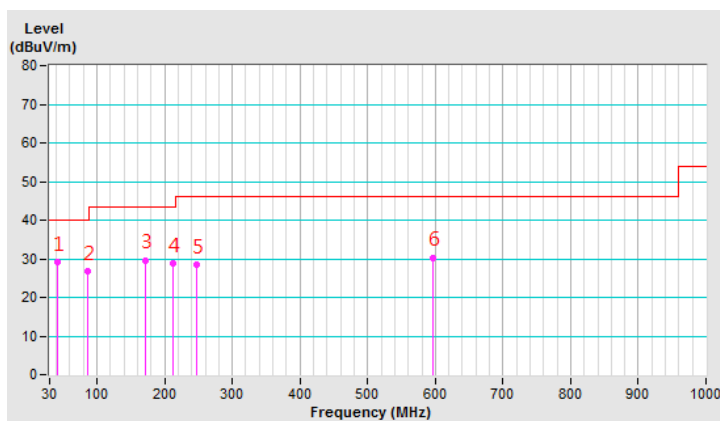


TEST FREQUENCY	127.8kHz	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TEST MODE	C		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.72	29.06 QP	40.00	-10.94	1.24 V	304	36.73	-7.67
2	86.07	26.69 QP	40.00	-13.31	1.35 V	279	39.01	-12.32
3	172.25	29.66 QP	43.50	-13.84	1.58 V	14	36.80	-7.14
4	213.14	28.68 QP	43.50	-14.82	1.42 V	219	37.31	-8.63
5	247.72	28.37 QP	46.00	-17.63	1.87 V	242	35.31	-6.94
6	596.97	30.14 QP	46.00	-15.86	1.28 V	228	28.43	1.71

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	838251/021	Nov. 1, 2018	Oct. 31, 2019
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ENV216	101195	May 9, 2019	May 8, 2020
LISN With Adapter (for EUT)	101195	N/A	May 9, 2019	May 8, 2020
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	Jul. 31, 2019	Jul. 30, 2020
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 14, 2019	May 13, 2020
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C03.01	Sep. 18, 2018	Sep. 17, 2019
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-300	Jan. 25, 2019	Jan. 24, 2020
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-301	Jan. 25, 2019	Jan. 24, 2020
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 21, 2018	Nov. 20, 2019
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 21, 2018	Nov. 20, 2019

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in Shielded Room No. 3.

3. Tested Date: Aug. 6, 2019

4.2.3 Test Procedures

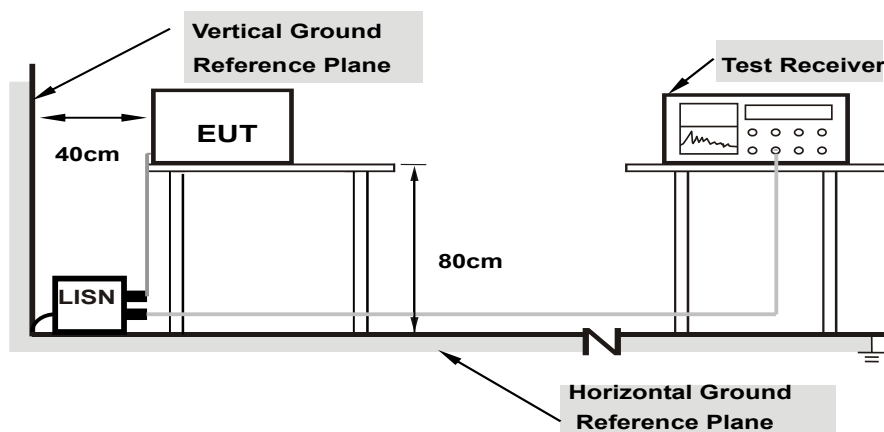
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as item 4.1.6.

4.2.7 Test Results

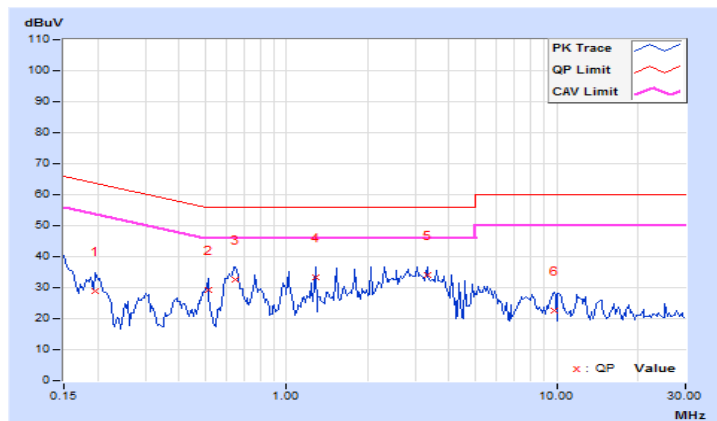
Charging Mode

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	A		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	9.65	19.16	5.25	28.81	14.90	63.74	53.74	-34.93	-38.84
2	0.51328	9.71	19.53	13.06	29.24	22.77	56.00	46.00	-26.76	-23.23
3	0.65000	9.73	22.76	15.73	32.49	25.46	56.00	46.00	-23.51	-20.54
4	1.27734	9.81	23.56	19.24	33.37	29.05	56.00	46.00	-22.63	-16.95
5	3.32031	9.94	24.17	20.37	34.11	30.31	56.00	46.00	-21.89	-15.69
6	9.84375	10.12	12.64	4.53	22.76	14.65	60.00	50.00	-37.24	-35.35

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

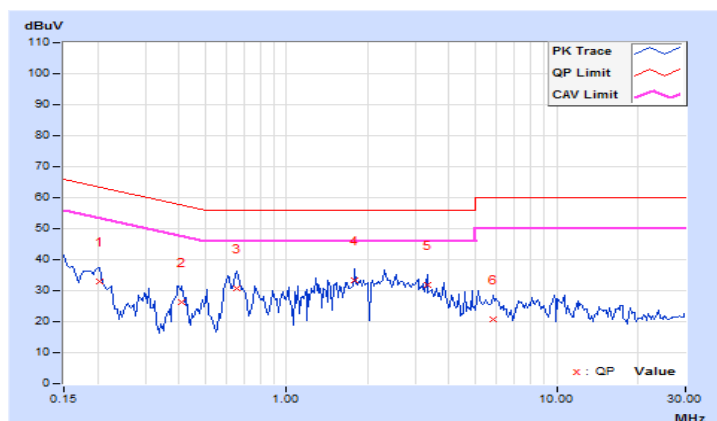


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	A		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20469	9.65	23.46	7.07	33.11	16.72	63.42	53.42	-30.31	-36.70
2	0.41172	9.69	16.55	5.64	26.24	15.33	57.61	47.61	-31.37	-32.28
3	0.65781	9.72	20.85	13.54	30.57	23.26	56.00	46.00	-25.43	-22.74
4	1.78906	9.83	23.38	16.94	33.21	26.77	56.00	46.00	-22.79	-19.23
5	3.32422	9.91	21.78	16.98	31.69	26.89	56.00	46.00	-24.31	-19.11
6	5.82422	9.98	10.72	1.53	20.70	11.51	60.00	50.00	-39.30	-38.49

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



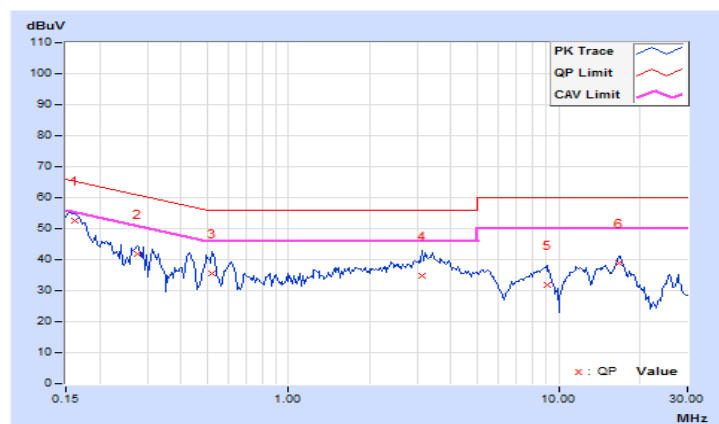
Standby Mode

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	B		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.62	42.83	35.22	52.45	44.84	65.38	55.38	-12.93	-10.54
2	0.27500	9.62	32.20	23.18	41.82	32.80	60.97	50.97	-19.15	-18.17
3	0.52109	9.64	26.04	19.37	35.68	29.01	56.00	46.00	-20.32	-16.99
4	3.12109	9.75	24.93	19.06	34.68	28.81	56.00	46.00	-21.32	-17.19
5	9.04297	9.86	21.92	16.86	31.78	26.72	60.00	50.00	-28.22	-23.28
6	16.74609	9.91	28.96	24.74	38.87	34.65	60.00	50.00	-21.13	-15.35

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

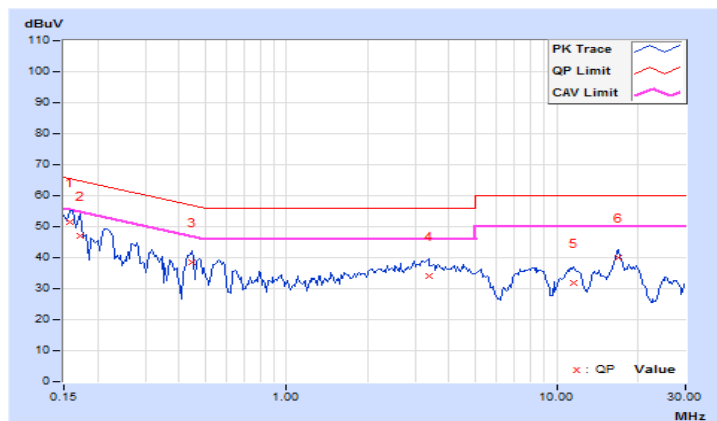


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	B		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	9.60	42.02	32.73	51.62	42.33	65.58	55.58	-13.96	-13.25
2	0.17344	9.60	37.50	20.00	47.10	29.60	64.79	54.79	-17.69	-25.19
3	0.44688	9.61	28.78	21.70	38.39	31.31	56.93	46.93	-18.54	-15.62
4	3.36719	9.74	24.26	18.18	34.00	27.92	56.00	46.00	-22.00	-18.08
5	11.59766	9.89	22.00	16.86	31.89	26.75	60.00	50.00	-28.11	-23.25
6	16.85938	9.94	30.02	26.52	39.96	36.46	60.00	50.00	-20.04	-13.54

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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