FCC Test Report

Report No.:	RF200110D01
FCC ID:	K7SWIA003
Test Model:	WIA003
Received Date:	Jan. 10, 2020
Test Date:	Feb. 5 to 14, 2020
Issued Date:	Feb. 19, 2020
Applicant:	Belkin International, Inc.
Address:	12045 East Waterfront Drive, Playa Vista, CA. 90094, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
FCC Registration / Designation Number:	198487 / TW2021

Testing Laboratory
2021

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Report Issue History Record

Issue No.	Description	Date Issued
RF200110D01	Original release.	Feb. 19, 2020

Release Control Record

Issue No.	Description	Date Issued
RF200110D01	Original release.	Feb. 19, 2020

1 Certificate of Conformity

Product:	BOOST↑CHARGE™ Wireless Charging Pad 7.5W Special Edition
Brand:	belkin
Test Model:	WIA003
Sample Status:	Engineering sample
Applicant:	Belkin International, Inc.
Test Date:	Feb. 5 to 14, 2020
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:** Feb. 19, 2020

Annie Chang / Senior Specialist

Approved by : Rex. Lai , **Date:** Feb. 19, 2020

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 -8.84dB at 0.17708MHz
15.209	Radiated Emission Test	Pass	Meet the requirement of limit. Minimum passing margin is -7.98dB at 60.89MHz

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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	3.00 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.61 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	BOOST↑CHARGE™ Wireless Charging Pad 7.5W Special Edition
Brand	belkin
Test Model	WIA003
Sample Status	Engineering sample
Power Supply Rating	I/P rating: 15Vdc, 1.5A O/P rating: 10W
Modulation Type	FSK
Operating Frequency	127.8 kHz
Antenna Type	Coil antenna
Field Strength	74.7dBuV/m
Dimensions	15.1976cm^2 (diameter = 44mm)
Accessory Device	Wall charger
Data Cable Supplied	N/A
Maximum Power Output from the Charging Coil	10W

Note:

1. The EUT is a BOOST↑CHARGE™ Wireless Charging Pad 7.5W Special Edition with Qi charging function.

2. The EUT consumes power from a Wall charger, as the following:

Brand	Model	Specification
belkin	2ADH023H NJ	AC I/P: 100-240V, 50/60Hz, 0.7A DC O/P: 15V, 1.5A Non-shielded DC cable (1.5m) attached on Wall charger

3.2 Description of Test Modes

The following test frequency is provided to this EUT:

Operating Frequency (kHz)	Test Mode
127.8	Charging Mode with max Load
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 max Load
B	√	√	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
B	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	Environmental Conditions	Input Power	Tested by
RE<1G	19 deg. C, 79% RH	120Vac, 60Hz	Ian Chang
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Ian Chang

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.

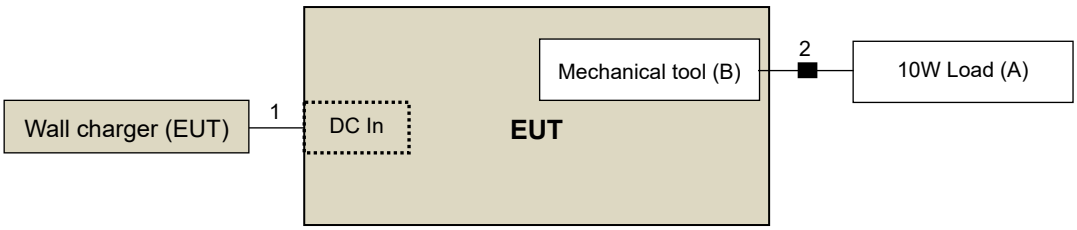
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Load	N/A	N/A	N/A	N/A	Supplied by client (10W max load)
B.	Mechanical tool	N/A	N/A	N/A	N/A	Supplied by client

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/ No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.5	N	0	Supplied by client
2.	DC cable	1	0.1	N	1	Supplied by client

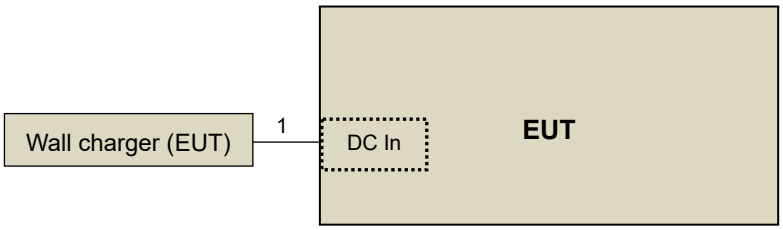
Note: The core(s) is(are) originally attached to the cable(s).

3.3.1 Configuration of System under Test

Charging Mode:
Test Mode A:



Standby Mode:
Test Mode B:



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. 7, 2019	Nov. 6, 2020
Schwarzbeck Antenna	VHBA 9123	480	Jun. 3, 2019	Jun. 2, 2021
Schwarzbeck Horn Antenna	BBHA-9170	212	Nov. 24, 2019	Nov. 23, 2020
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Nov. 24, 2019	Nov. 23, 2020
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	Jul. 10, 2019	Jul. 9, 2020
SUHNER RF cable With 3/4dB PAD	SF102	Cable-CH8-3.6m	Jul. 10, 2019	Jul. 9, 2020
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	Jun. 11, 2019	Jun. 10, 2020
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 30, 2019	Jul. 29, 2020
Loop Antenna EMCI	LPA600	270	Aug. 23, 2019	Aug. 22, 2021

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:

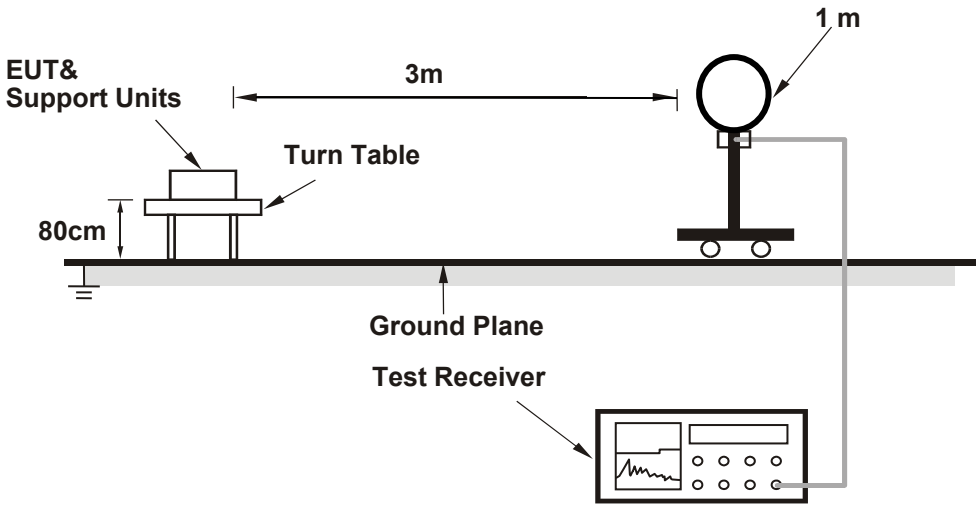
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 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

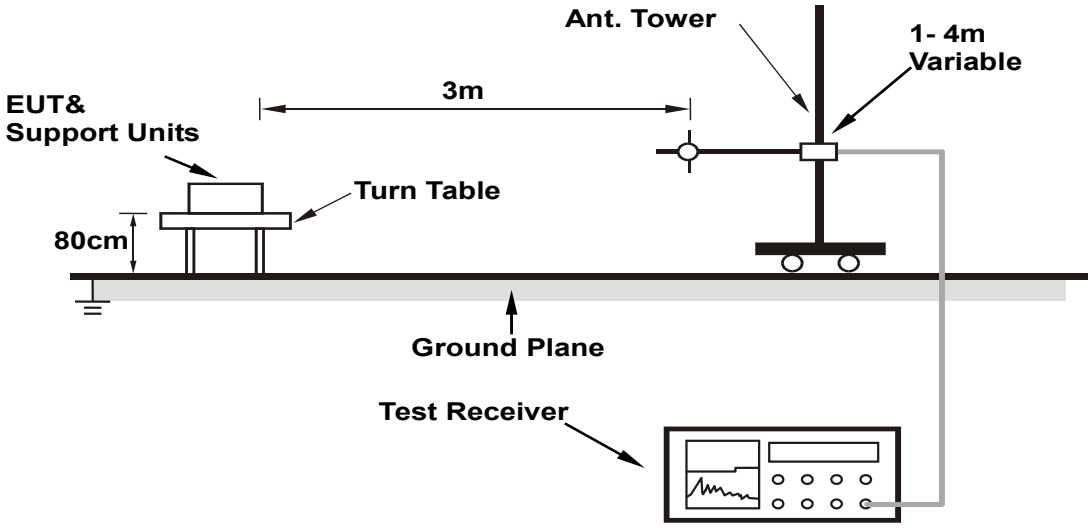
No deviation.

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:
Put the Load on the EUT (wireless charging) during the test.

Test Mode B:
Set the EUT under standby condition.

4.1.7 Test Results

Below 30MHz Data:

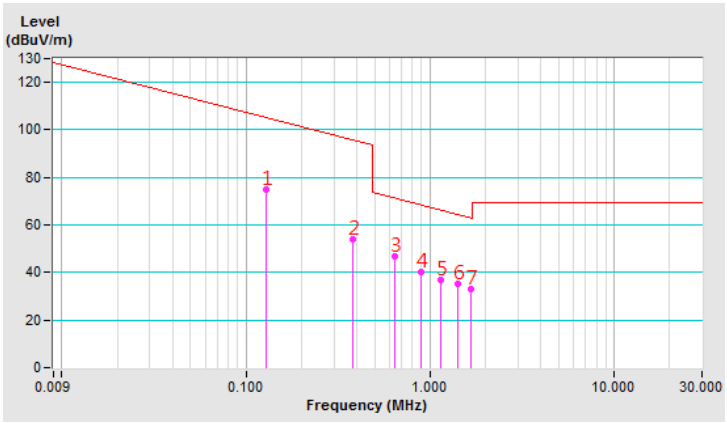
Charging Mode

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	74.70 QP	105.47	-30.77	1.00	360	55.46	19.24
2	0.3834	54.21 QP	95.93	-41.72	1.00	160	43.39	10.82
3	0.6390	46.76 QP	71.49	-24.73	1.00	136	39.10	7.66
4	0.8946	40.30 QP	68.57	-28.27	1.00	121	34.66	5.64
5	1.1502	36.71 QP	66.39	-29.68	1.00	110	32.17	4.54
6	1.4058	35.05 QP	64.65	-29.60	1.00	98	30.95	4.10
7	1.6614	32.79 QP	63.19	-30.40	1.00	86	29.13	3.66

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

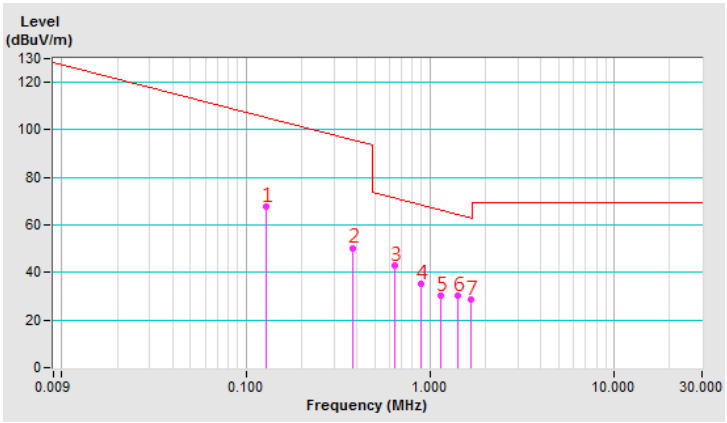


Test Frequency	127.8kHz	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 30MHz		
Test Mode	A		

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	67.49 QP	105.47	-37.98	1.00	184	48.25	19.24
2	0.3834	50.39 QP	95.93	-45.54	1.00	347	39.57	10.82
3	0.6390	43.05 QP	71.49	-28.44	1.00	320	35.39	7.66
4	0.8946	35.00 QP	68.57	-33.57	1.00	311	29.36	5.64
5	1.1502	30.51 QP	66.39	-35.88	1.00	301	25.97	4.54
6	1.4058	30.43 QP	64.65	-34.22	1.00	293	26.33	4.10
7	1.6614	28.51 QP	63.19	-34.68	1.00	285	24.85	3.66

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

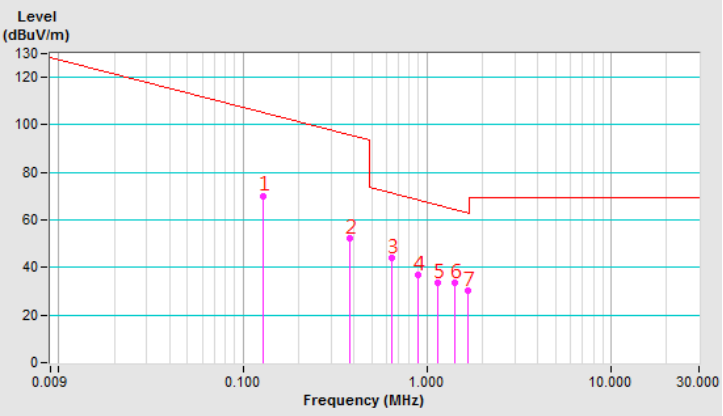


Test Frequency	127.8kHz	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 30MHz		
Test Mode	A		

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	70.23 QP	105.47	-35.24	1.00	325	50.99	19.24
2	0.3834	52.31 QP	95.93	-43.62	1.00	106	41.49	10.82
3	0.6390	44.12 QP	71.49	-27.37	1.00	95	36.46	7.66
4	0.8946	37.03 QP	68.57	-31.54	1.00	85	31.39	5.64
5	1.1502	33.72 QP	66.39	-32.67	1.00	72	29.18	4.54
6	1.4058	33.36 QP	64.65	-31.29	1.00	54	29.26	4.10
7	1.6614	30.09 QP	63.19	-33.10	1.00	33	26.43	3.66

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



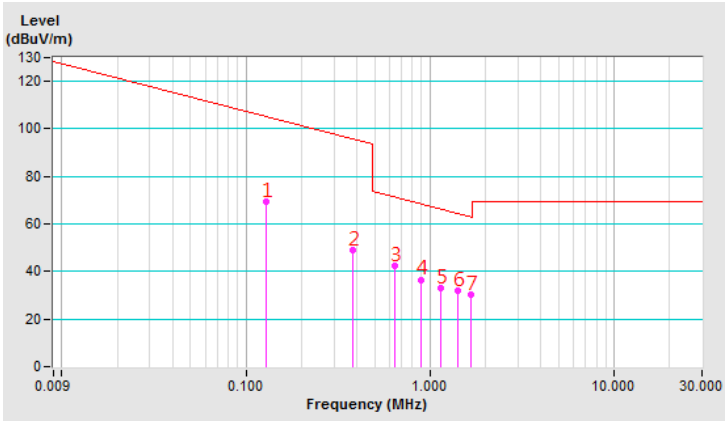
Standby Mode

Test Frequency	127.8kHz	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 30MHz		
Test Mode	B		

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	69.44 QP	105.47	-36.03	1.00	163	50.20	19.24
2	0.3834	49.15 QP	95.93	-46.78	1.00	350	38.33	10.82
3	0.6390	42.22 QP	71.49	-29.27	1.00	312	34.56	7.66
4	0.8946	36.62 QP	68.57	-31.95	1.00	287	30.98	5.64
5	1.1502	32.86 QP	66.39	-33.53	1.00	270	28.32	4.54
6	1.4058	31.71 QP	64.65	-32.94	1.00	253	27.61	4.10
7	1.6614	30.05 QP	63.19	-33.14	1.00	235	26.39	3.66

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

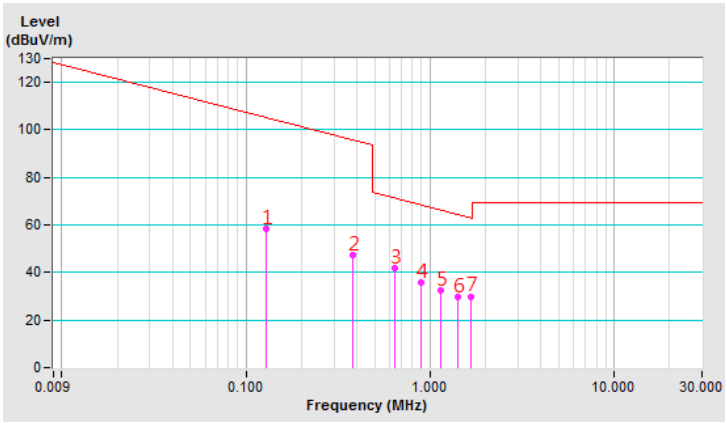


Test Frequency	127.8kHz	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 30MHz		
Test Mode	B		

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	58.43 QP	105.47	-47.04	1.00	198	39.19	19.24
2	0.3834	47.48 QP	95.93	-48.45	1.00	331	36.66	10.82
3	0.6390	41.71 QP	71.49	-29.78	1.00	303	34.05	7.66
4	0.8946	35.55 QP	68.57	-33.02	1.00	291	29.91	5.64
5	1.1502	32.42 QP	66.39	-33.97	1.00	280	27.88	4.54
6	1.4058	29.84 QP	64.65	-34.81	1.00	265	25.74	4.10
7	1.6614	29.99 QP	63.19	-33.20	1.00	253	26.33	3.66

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

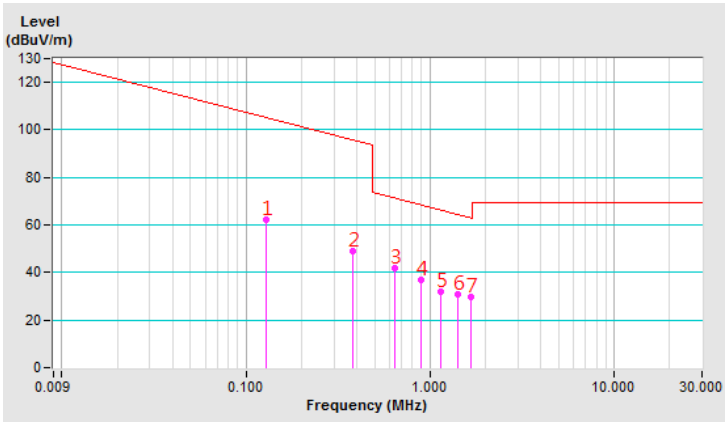


Test Frequency	127.8kHz	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 30MHz		
Test Mode	B		

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	62.19 QP	105.47	-43.28	1.00	134	42.95	19.24
2	0.3834	48.80 QP	95.93	-47.13	1.00	172	37.98	10.82
3	0.6390	41.65 QP	71.49	-29.84	1.00	161	33.99	7.66
4	0.8946	36.87 QP	68.57	-31.70	1.00	148	31.23	5.64
5	1.1502	32.00 QP	66.39	-34.39	1.00	137	27.46	4.54
6	1.4058	30.94 QP	64.65	-33.71	1.00	92	26.84	4.10
7	1.6614	29.80 QP	63.19	-33.39	1.00	36	26.14	3.66

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:

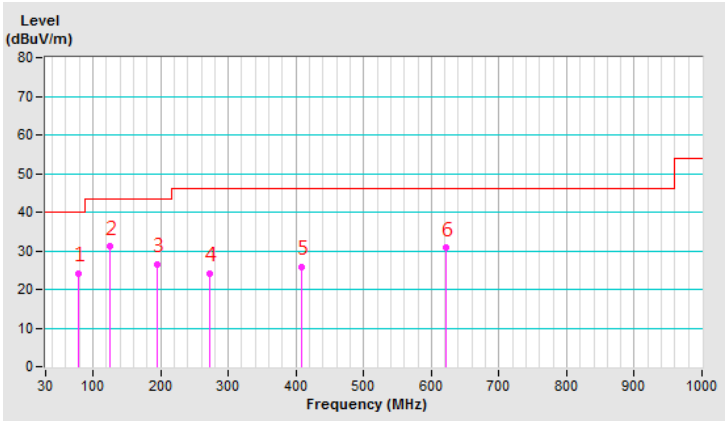
Charging Mode

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	77.53	24.08 QP	40.00	-15.92	2.25 H	267	34.94	-10.86
2	125.30	31.04 QP	43.50	-12.46	2.36 H	253	39.67	-8.63
3	195.63	26.61 QP	43.50	-16.89	1.92 H	274	36.04	-9.43
4	273.08	24.01 QP	46.00	-21.99	1.81 H	253	29.72	-5.71
5	409.22	25.82 QP	46.00	-20.18	1.03 H	360	28.71	-2.89
6	621.31	30.69 QP	46.00	-15.31	1.74 H	241	28.35	2.34

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.

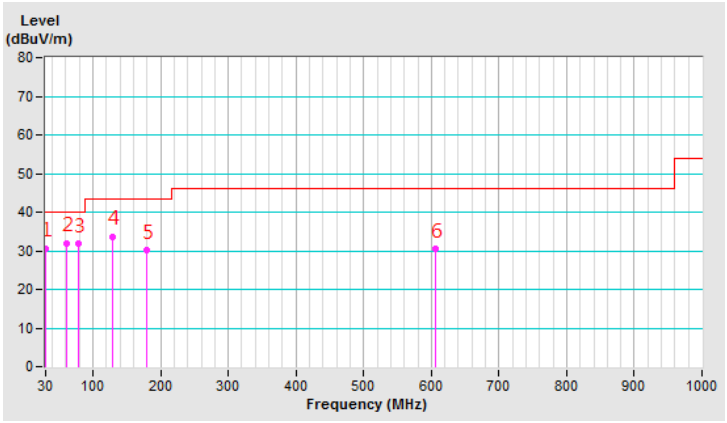


Test Frequency	127.8kHz	**Detector Function**	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz		
Test Mode	A		

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	30.73	30.63 QP	40.00	-9.37	1.82 V	360	39.50	-8.87
2	**60.89**	**32.02 QP**	**40.00**	**-7.98**	**1.06 V**	**42**	**39.81**	**-7.79**
3	78.65	31.72 QP	40.00	-8.28	1.40 V	54	42.83	-11.11
4	128.70	33.56 QP	43.50	-9.94	1.87 V	307	41.89	-8.33
5	179.87	30.07 QP	43.50	-13.43	1.74 V	154	38.12	-8.05
6	605.50	30.41 QP	46.00	-15.59	1.06 V	49	28.55	1.86

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.



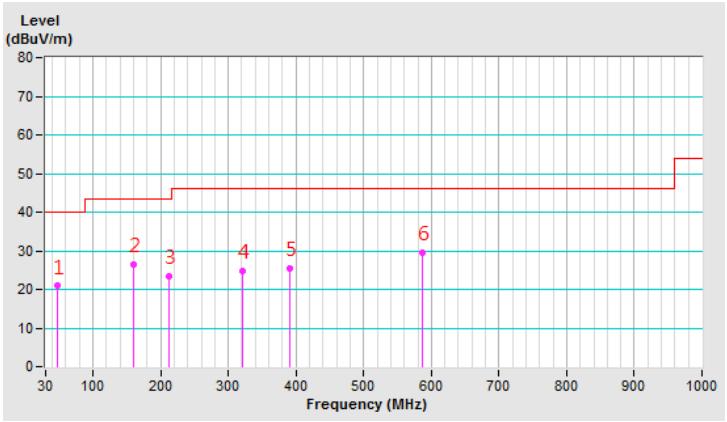
Standby Mode

Test Frequency	127.8kHz	**Detector Function**	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz		
Test Mode	B		

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	47.56	20.87 QP	40.00	-19.13	1.48 H	183	27.97	-7.10
2	159.98	26.59 QP	43.50	-16.91	1.58 H	252	33.07	-6.48
3	212.75	23.42 QP	43.50	-20.08	2.33 H	235	32.44	-9.02
4	321.58	24.90 QP	46.00	-21.10	1.82 H	156	29.20	-4.30
5	391.13	25.56 QP	46.00	-20.44	1.17 H	192	28.63	-3.07
6	585.91	29.66 QP	46.00	-16.34	1.92 H	41	28.12	1.54

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.

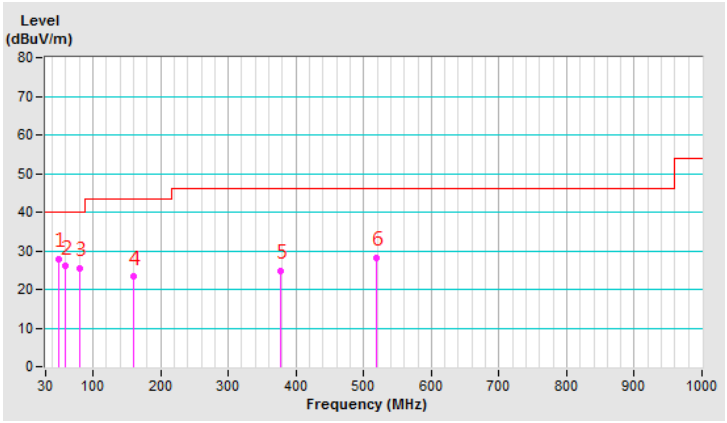


Test Frequency	127.8kHz	Detector Function	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz		
Test Mode	B		

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	49.21	27.90 QP	40.00	-12.10	1.15 V	25	34.96	-7.06
2	59.39	25.98 QP	40.00	-14.02	1.24 V	235	33.52	-7.54
3	79.95	25.52 QP	40.00	-14.48	1.67 V	240	36.94	-11.42
4	160.03	23.29 QP	43.50	-20.21	1.82 V	314	29.78	-6.49
5	377.31	24.87 QP	46.00	-21.13	1.91 V	225	28.20	-3.33
6	518.44	28.27 QP	46.00	-17.73	2.06 V	116	28.57	-0.30

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	ESCS30	100276	Apr. 8, 2019	Apr. 7, 2020
SCHWARZBECK Artificial Mains Network (for EUT)	NSLK 8128	8128-244	Nov. 11, 2019	Nov. 10, 2020
LISN With Adapter (for EUT)	AD10	C05Ada-001	Nov. 11, 2019	Nov. 10, 2020
ROHDE & SCHWARZ Artificial Mains Network (for peripheral)	ESH3-Z5	100220	Nov. 18, 2019	Nov. 17, 2020
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C05.01	Jan. 30, 2020	Jan. 29, 2021
LYNICS Terminator (For R&S LISN)	0900510	E1-01-305	Feb. 18, 2019	Feb. 17, 2020

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. 5.

4.2.3 Test Procedures

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

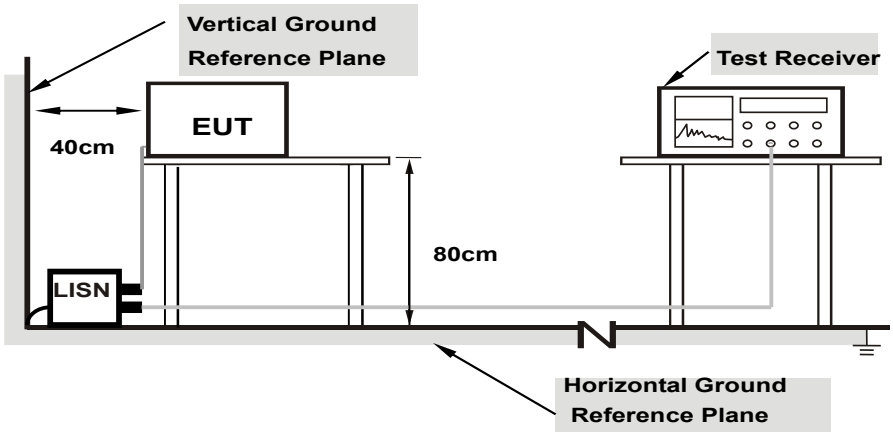
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

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

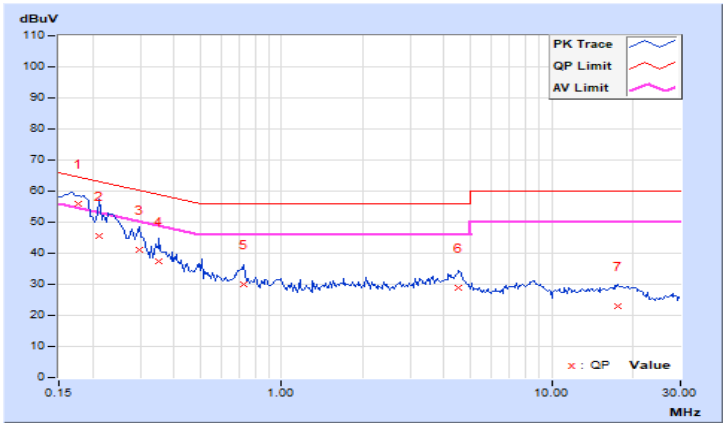
Charging Mode

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	**0.17708**	**9.88**	**45.90**	**30.32**	**55.78**	**40.20**	**64.62**	**54.62**	**-8.84**	**-14.42**
2	0.21250	9.88	35.65	14.34	45.53	24.22	63.11	53.11	-17.58	-28.89
3	0.29844	9.88	31.39	15.73	41.27	25.61	60.29	50.29	-19.02	-24.68
4	0.35313	9.89	27.64	15.19	37.53	25.08	58.89	48.89	-21.36	-23.81
5	0.72422	9.92	19.95	13.03	29.87	22.95	56.00	46.00	-26.13	-23.05
6	4.53906	10.08	18.80	10.70	28.88	20.78	56.00	46.00	-27.12	-25.22
7	17.66016	10.72	12.34	6.80	23.06	17.52	60.00	50.00	-36.94	-32.48

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

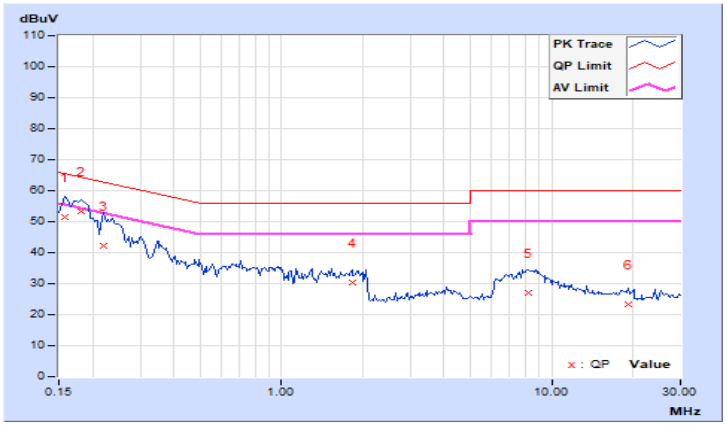


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	A		

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	0.15781	9.89	41.69	7.84	51.58	17.73	65.58	55.58	-14.00	-37.85
2	0.18125	9.88	43.54	4.39	53.42	14.27	64.43	54.43	-11.01	-40.16
3	0.22031	9.88	32.23	12.28	42.11	22.16	62.81	52.81	-20.70	-30.65
4	1.82422	9.97	20.27	12.57	30.24	22.54	56.00	46.00	-25.76	-23.46
5	8.23438	10.29	16.92	14.15	27.21	24.44	60.00	50.00	-32.79	-25.56
6	19.23047	10.93	12.29	11.97	23.22	22.90	60.00	50.00	-36.78	-27.10

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



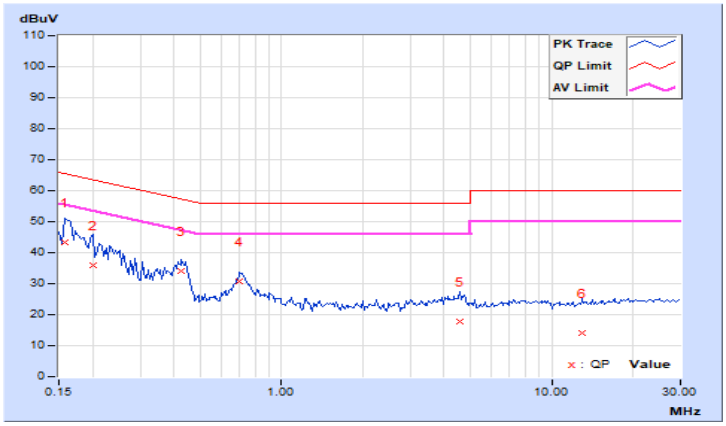
Standby Mode

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	0.15781	9.88	33.53	7.35	43.41	17.23	65.58	55.58	-22.17	-38.35
2	0.20078	9.88	26.14	2.77	36.02	12.65	63.58	53.58	-27.56	-40.93
3	0.42734	9.89	24.07	7.28	33.96	17.17	57.30	47.30	-23.34	-30.13
4	0.70078	9.92	20.87	13.35	30.79	23.27	56.00	46.00	-25.21	-22.73
5	4.54688	10.08	7.84	5.39	17.92	15.47	56.00	46.00	-38.08	-30.53
6	13.04297	10.50	3.47	1.27	13.97	11.77	60.00	50.00	-46.03	-38.23

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

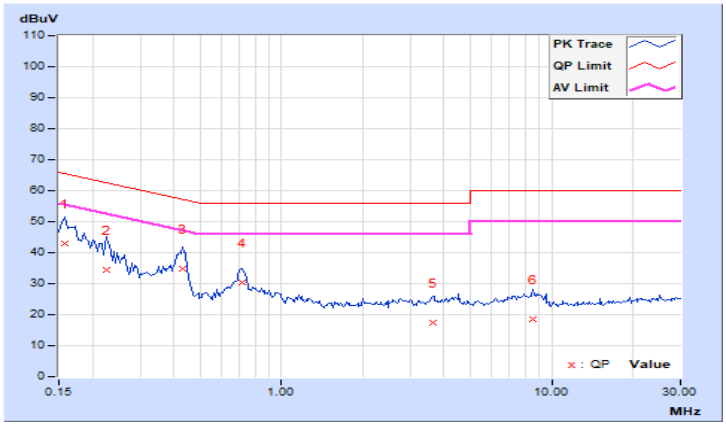


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	B		

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	9.89	33.15	7.79	43.04	17.68	65.58	55.58	-22.54	-37.90
2	0.22422	9.88	24.45	4.39	34.33	14.27	62.66	52.66	-28.33	-38.39
3	0.43125	9.90	25.05	8.06	34.95	17.96	57.23	47.23	-22.28	-29.27
4	0.71250	9.93	20.62	13.50	30.55	23.43	56.00	46.00	-25.45	-22.57
5	3.64844	10.05	7.18	6.91	17.23	16.96	56.00	46.00	-38.77	-29.04
6	8.48828	10.30	8.21	6.67	18.51	16.97	60.00	50.00	-41.49	-33.03

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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