

FCC Test Report

Report No.: RF160705C03A

FCC ID: K7SF8J201

Test Model: F8J201

Received Date: May 17, 2018

Test Date: May 24 ~ May 28, 2018

Issued Date: Jun. 05, 2018

Applicant: Belkin International, Inc.

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

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FCC Registration / 788550 / TW0003
Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
RF160705C03A	Original release	Jun. 05, 2018

1 Certificate of Conformity

Product: Valet Charger™ Power Pack 6700 mAh for Apple Watch + iPhone

Brand: belkin

Model No.: F8J201

Sample Status: Engineering sample

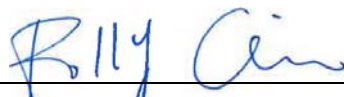
Applicant: Belkin International, Inc.

Test Date: May 24 ~ May 28, 2018

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.

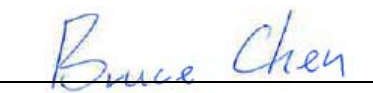
Prepared by :


Polly Chien / Specialist

Date:

Jun. 05, 2018

Approved by :


Bruce Chen / Project Engineer

Date:

Jun. 05, 2018

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 -19.49dB at 0.16569MHz.
15.209	Radiated Emission Test	Pass	Meet the requirement of limit. Minimum passing margin is -12.5dB at 57.07MHz.

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	2.94 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Valet Charger™ Power Pack 6700 mAh for Apple Watch + iPhone
Test Model	F8J201
Sample Status	Engineering sample
Power Supply Rating	I/P: 5Vdc, 2.4A O/P: USB port with load 1A and wireless output with Apple watch 3.63Vdc (Battery)
Modulation Type	FSK
Operating Frequency	326.5 kHz
Antenna Type	Coil antenna
Field Strength	69.4dBuV/m
Dimensions	7.95cm ² (diameter = 31.82mm)
Accessory Device	Battery
Data Cable Supplied	1m shielded USB cable without core
Maximum Power Output from the Charging Coil	Less than 5W.

Note:

1. The EUT uses following battery.

Battery	
Brand	LG CHEM, LTD.
Model	INR18650F1L
Rating	3.63Vdc, 3350mAh

2. The EUT has a wireless inductive charging coil for charging Apple watch.

3.2 Description of Test Modes

1 channel is provided to this EUT

Channel	Freq. (kHz)
1	326.5

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO		DESCRIPTION
	RE<1G	PLC	
A	√	-	Charging Mode
B	√	√	Standby Mode

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

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
2. "-" means no effect.

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	Available Channel	Tested Channel
A, B	1	1

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	Available Channel	Tested Channel
B	1	1

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE<1G	25 deg. C, 68% RH	120Vac, 60Hz	Willy Cheng
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Willy Cheng

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.

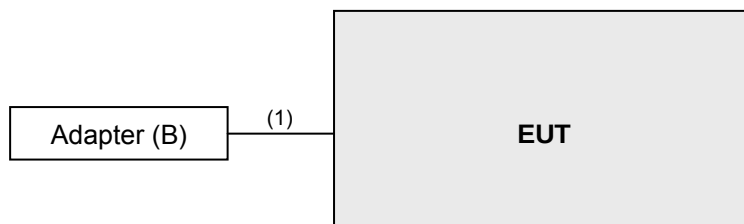
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Apple Watch	Apple	A1553	NA	NA	Provided by client
B.	Adapter	Apple	A1401	NA	NA	-
C.	iPhone X	Apple	A1901	NA	NA	-

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	1	Y	0	Accessory of EUT
2.	USB cable	1	1.8	Y	0	-

3.3.1 Configuration of System under Test

Conducted Emission test

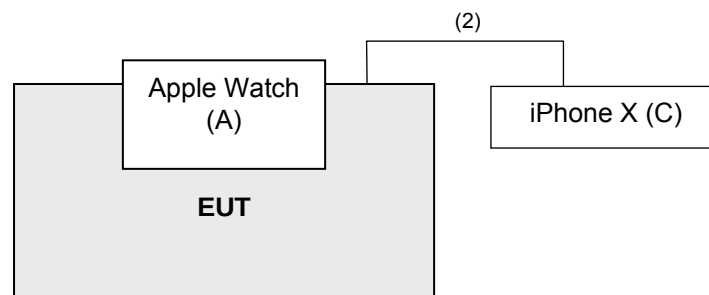
Test Mode B



Radiated Emission test

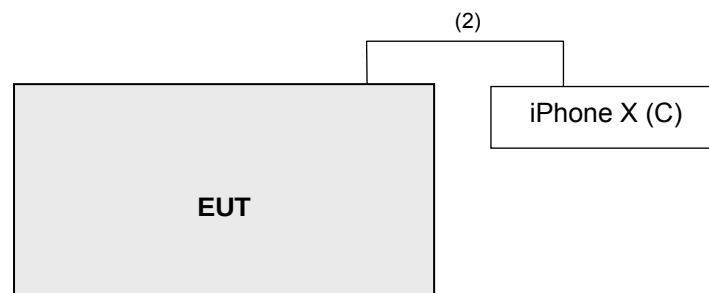
Charging Mode

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:

FCC Part 15, Subpart C (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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 17, 2017	Oct. 16, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Dec. 12, 2017	Dec. 11, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	9120D	209	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 21, 2017	Aug. 20, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Apr. 03, 2018	Apr. 02, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 21, 2017	Aug. 20, 2018
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM-8 000	Cable-CH3-03 (309224+170907)	Sep.11, 2017	Sep. 10, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

- 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 HwaYa Chamber 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
5. The IC Site Registration No. is IC 7450F-3.

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 9kHz at frequency below 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:

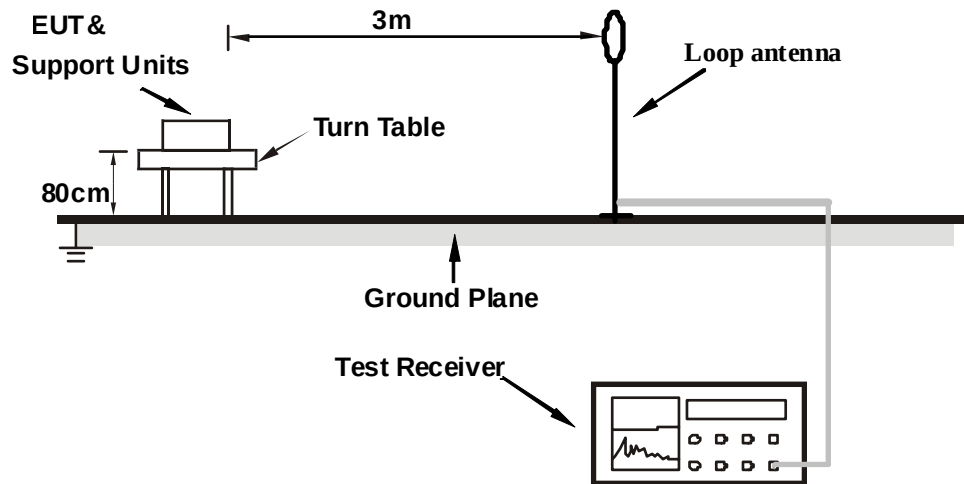
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

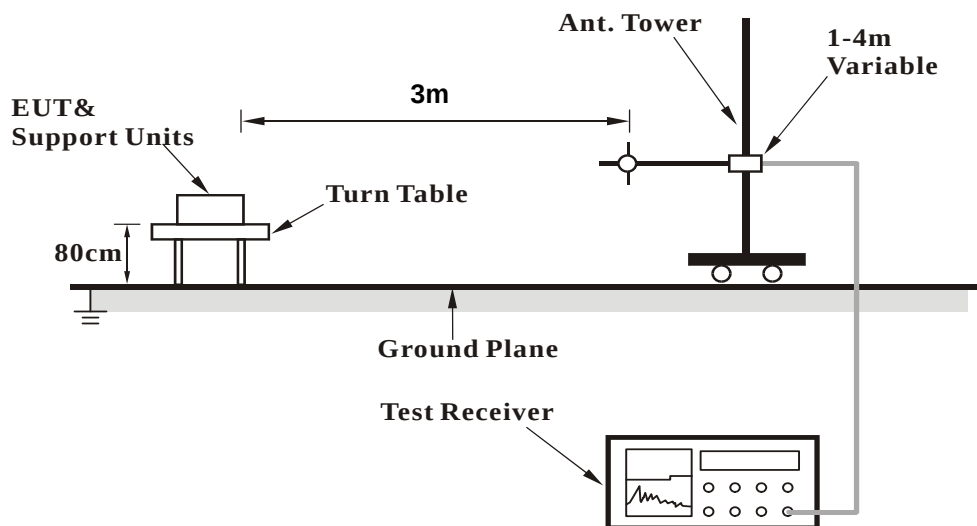
No deviation.

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

- The EUT powered by battery.
- Placed the Apple Watch on the EUT (wireless charging) during the test.
- The iPhone was charging by EUT via USB cable.

Test Mode B

- The EUT powered by battery.
- The iPhone was connected with EUT via USB cable.

4.1.7 Test Results

Below 30MHz Data:

Charging Mode

Channel	TX Channel 1	Detector Function	Quasi-Peak
Frequency Range	9 kHz ~ 30 MHz		
Test Mode	A		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3m								
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	*0.3265	69.4	97.3	-27.9	1.00	89	49.1	20.3
2	1.329	45.9	65.1	-19.2	1.00	354	25.6	20.3
3	3.548	40.1	69.5	-29.4	1.00	157	19.7	20.4
4	4.448	39.0	69.5	-30.5	1.00	170	18.5	20.5
5	6.487	38.3	69.5	-31.2	1.00	326	17.8	20.5
6	18.963	36.8	69.5	-32.7	1.00	34	16.3	20.5
7	25.081	36.1	69.5	-33.4	1.00	9	15.5	20.6
ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE AT 3m								
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	*0.3265	64.6	97.3	-32.7	1.00	359	44.3	20.3
2	2.348	41.2	69.5	-28.3	1.00	323	20.9	20.3
3	3.728	39.7	69.5	-29.8	1.00	142	19.3	20.4
4	5.347	36.8	69.5	-32.7	1.00	245	16.3	20.5
5	11.825	35.7	69.5	-33.8	1.00	163	15.2	20.5
6	18.483	36.0	69.5	-33.5	1.00	58	15.5	20.5
7	23.642	37.0	69.5	-32.5	1.00	200	16.5	20.5
ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA GROUND-PARALLEL AT 3m								
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	*0.3265	58.5	97.3	-38.8	1.00	276	38.2	20.3
2	1.509	45.2	64.0	-18.8	1.00	19	24.9	20.3
3	3.728	40.1	69.5	-29.4	1.00	7	19.7	20.4
4	5.647	37.2	69.5	-32.3	1.00	36	16.7	20.5
5	11.106	35.9	69.5	-33.6	1.00	7	15.4	20.5
6	18.783	36.5	69.5	-33.0	1.00	13	16.0	20.5
7	25.861	35.4	69.5	-34.1	1.00	30	14.7	20.7

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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

Channel	TX Channel 1	Detector Function	Quasi-Peak
Frequency Range	9 kHz ~ 30 MHz		
Test Mode	B		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3m

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	*0.3265	28.4	97.3	-68.9	1.00	282	8.1	20.3
2	0.653	47.7	71.3	-23.6	1.00	289	27.4	20.3
3	2.168	41.3	69.5	-28.2	1.00	251	21.0	20.3
4	5.887	38.0	69.5	-31.5	1.00	337	17.5	20.5
5	11.046	36.1	69.5	-33.4	1.00	281	15.6	20.5
6	15.544	36.3	69.5	-33.2	1.00	342	15.7	20.6
7	22.142	36.6	69.5	-32.9	1.00	60	16.1	20.5

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE AT 3m

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	*0.3265	24.8	97.3	-72.5	1.00	171	4.5	20.3
2	0.653	45.9	71.3	-25.4	1.00	184	25.6	20.3
3	1.748	44.9	69.5	-24.6	1.00	118	24.6	20.3
4	4.388	38.1	69.5	-31.4	1.00	3	17.6	20.5
5	8.586	37.1	69.5	-32.4	1.00	103	16.7	20.4
6	16.324	36.4	69.5	-33.1	1.00	27	15.8	20.6
7	25.441	36.0	69.5	-33.5	1.00	45	15.3	20.7

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA GROUND-PARALLEL AT 3m

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	*0.3265	32.4	97.3	-64.9	1.00	278	12.1	20.3
2	0.653	45.4	71.3	-25.9	1.00	139	25.1	20.3
3	1.509	45.2	64.0	-18.8	1.00	19	24.9	20.3
4	7.027	35.7	69.5	-33.8	1.00	30	15.3	20.4
5	13.745	35.7	69.5	-33.8	1.00	7	15.2	20.5
6	15.484	37.1	69.5	-32.4	1.00	30	16.6	20.5
7	23.162	36.0	69.5	-33.5	1.00	15	15.5	20.5

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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

Below 1GHz Data:

Charging Mode

Channel	TX Channel 1	Detector Function	Quasi-Peak
Frequency Range	30 MHz ~ 1GHz		
Test Mode	A		

Antenna Polarity & Test Distance: Horizontal At 3m								
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	57.07	27.5 QP	40.0	-12.5	2.00 H	262	41.9	-14.4
2	70.65	24.8 QP	40.0	-15.2	2.00 H	86	40.9	-16.1
3	86.17	19.9 QP	40.0	-20.1	2.00 H	214	39.3	-19.4
4	365.59	23.4 QP	46.0	-22.6	1.01 H	7	35.1	-11.7
5	449.03	27.6 QP	46.0	-18.4	1.50 H	5	37.7	-10.1
6	798.30	27.4 QP	46.0	-18.6	1.50 H	5	31.8	-4.4
Antenna Polarity & Test Distance: Vertical At 3m								
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	39.60	24.8 QP	40.0	-15.2	1.00 V	2	39.8	-15.0
2	128.86	19.2 QP	43.5	-24.3	1.00 V	9	34.7	-15.5
3	322.90	25.3 QP	46.0	-20.7	1.00 V	48	37.5	-12.2
4	439.32	22.6 QP	46.0	-23.4	1.00 V	236	32.8	-10.2
5	633.36	27.2 QP	46.0	-18.8	1.00 V	43	33.8	-6.6
6	796.36	29.2 QP	46.0	-16.8	1.49 V	163	33.6	-4.4

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Standby Mode

Channel	TX Channel 1	Detector Function	Quasi-Peak
Frequency Range	30 MHz ~ 1GHz		
Test Mode	B		

Antenna Polarity & Test Distance: Horizontal At 3m								
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	57.07	23.6 QP	40.0	-16.4	1.00 H	10	38.0	-14.4
2	70.65	20.0 QP	40.0	-20.0	1.99 H	289	36.1	-16.1
3	130.80	15.2 QP	43.5	-28.3	1.00 H	8	30.5	-15.3
4	243.34	16.1 QP	46.0	-29.9	1.00 H	334	30.9	-14.8
5	421.86	20.2 QP	46.0	-25.8	1.50 H	177	30.9	-10.7
6	633.36	22.7 QP	46.0	-23.3	1.99 H	23	29.3	-6.6
Antenna Polarity & Test Distance: Vertical At 3m								
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	57.07	23.2 QP	40.0	-16.8	1.00 V	238	37.6	-14.4
2	70.65	18.4 QP	40.0	-21.6	1.49 V	224	34.5	-16.1
3	243.34	15.3 QP	46.0	-30.7	1.00 V	346	30.1	-14.8
4	404.40	19.9 QP	46.0	-26.1	1.49 V	6	31.0	-11.1
5	482.01	20.3 QP	46.0	-25.7	1.00 V	224	30.0	-9.7
6	796.36	26.9 QP	46.0	-19.1	2.00 V	274	31.3	-4.4

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

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
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 06, 2018	Mar. 05, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

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 HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

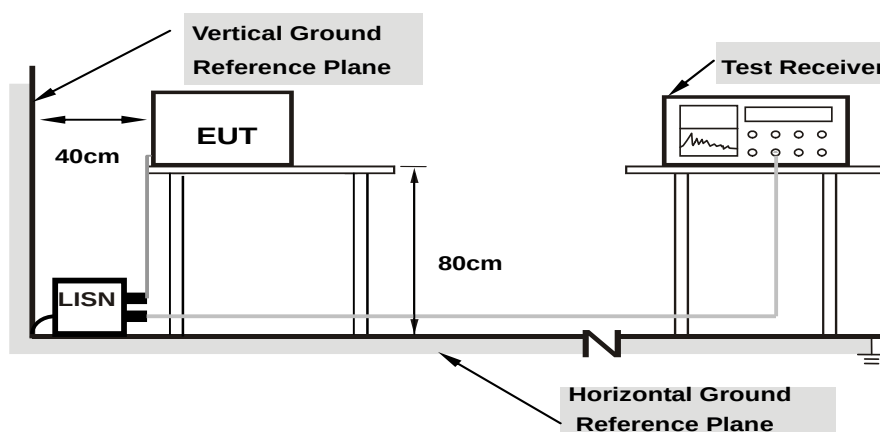
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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: 1.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

- The EUT powered by adapter.

4.2.7 Test Results

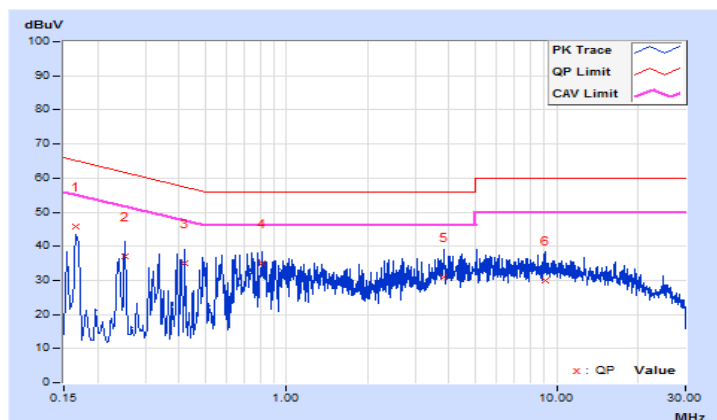
Standby Mode

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16569	10.16	35.52	21.91	45.68	32.07	65.17	55.17	-19.49	-23.10
2	0.25166	10.17	26.89	9.20	37.06	19.37	61.70	51.70	-24.64	-32.33
3	0.41979	10.20	24.70	3.80	34.90	14.00	57.45	47.45	-22.55	-33.45
4	0.81470	10.18	24.95	15.26	35.13	25.44	56.00	46.00	-20.87	-20.56
5	3.84104	10.34	20.51	11.75	30.85	22.09	56.00	46.00	-25.15	-23.91
6	9.04134	10.60	19.31	11.53	29.91	22.13	60.00	50.00	-30.09	-27.87

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.

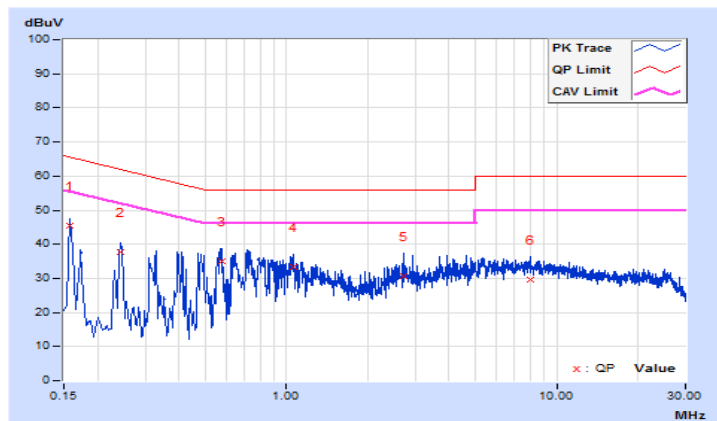


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15802	10.15	35.46	20.90	45.61	31.05	65.57	55.57	-19.96	-24.52
2	0.24384	10.17	27.42	15.63	37.59	25.80	61.96	51.96	-24.37	-26.16
3	0.58010	10.20	24.72	8.19	34.92	18.39	56.00	46.00	-21.08	-27.61
4	1.05712	10.20	23.29	12.61	33.49	22.81	56.00	46.00	-22.51	-23.19
5	2.73060	10.27	20.30	12.51	30.57	22.78	56.00	46.00	-25.43	-23.22
6	7.96218	10.49	19.13	11.93	29.62	22.42	60.00	50.00	-30.38	-27.58

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 on 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:

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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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