RF Exposure Test Report

Report No.:	SA181018C34
FCC ID:	K7SF8J233
Test Model:	F8J233
Received Date:	Oct. 18, 2018
Test Date:	Nov. 2, 2018
Issued Date:	Nov. 23, 2018
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
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

Testing Laboratory
2021

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The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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Release Control Record

Issue No.	Description	Date Issued
SA181018C34	Original release	Nov. 23, 2018

1 Certificate of Conformity

Product:	BOOST↑CHARGE™
Brand:	belkin
Test Model:	F8J233
Sample Status:	Engineering sample
Applicant:	Belkin International, Inc.
Test Date:	Nov. 2, 2018
Standards:	FCC Part 1 (Section 1.1307(b), 1.1310)

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 : _____ , **Date:** Nov. 23, 2018

Celia Chen / Supervisor

Approved by : _____ , **Date:** Nov. 23, 2018

Rex Lai / Associate Technical Manager

2 General Information

2.1 General Description of EUT

Product	BOOST↑CHARGE™
Test Model	F8J233
Sample Status	Engineering sample
Power Supply Rating	5Vdc (Adapter) 3.83Vdc (Battery)
Modulation Type	FSK
Operating Frequency	326.5 kHz
Antenna Type	Coil antenna
Field Strength	49.5dBuV/m
Dimension	7.95cm^2 (diameter = 31.82mm)
Accessory Device	N/A
Data Cable Supplied	0.17m shielded USB cable without core
Maximum Power Output for Apple watch inductive coil	Less than 5W

Note:

1. The EUT uses following battery.

Brand	Dongguan Amperex Technology Limited
Model	B03543
Power Rating	3.83Vdc, 2200mAh

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

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 RF Exposure

3.1 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	A1889	FH7V1006J97R	BCG-A1889	Supplied by client
B.	Adapter	Apple	A1385	NA	NA	Provided by Lab

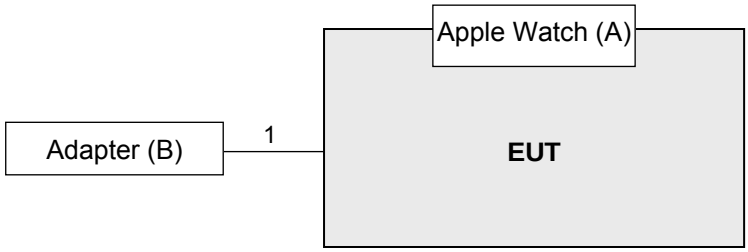
NOTE: All power cords of the above support units are non-shielded (1.8 m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	0.17	Y	0	Supplied by client

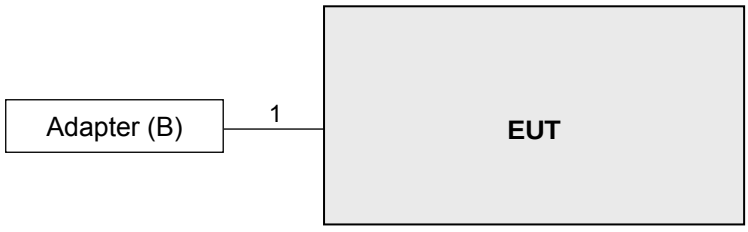
Note: The core(s) is(are) originally attached to the cable(s)

3.1.1 Configuration of System under Test

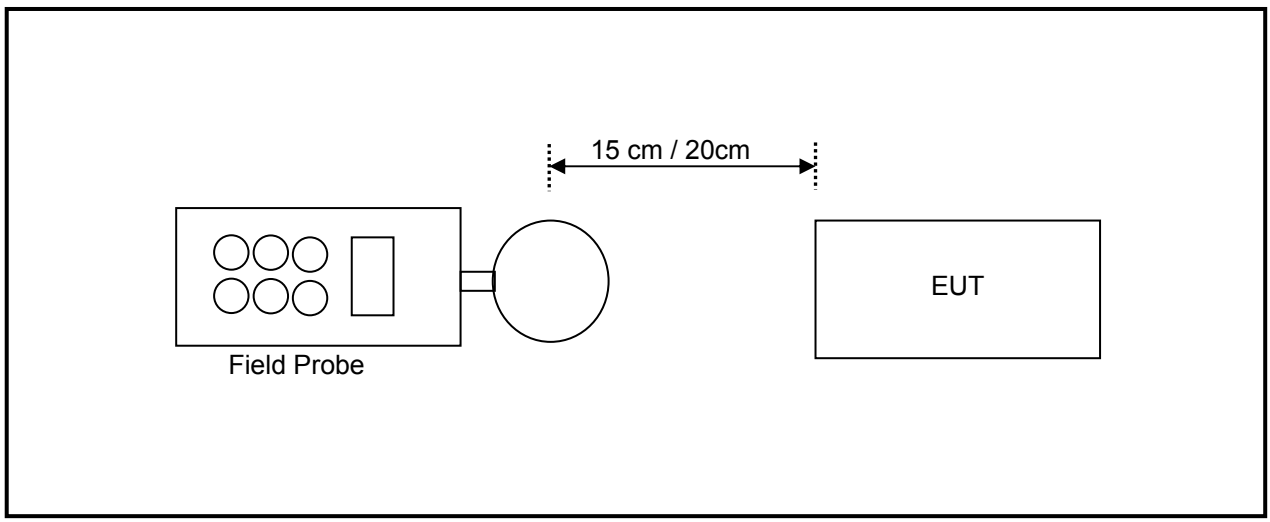
Charging Mode with Apple Watch



Standby Mode



3.2 Test Setup



Note: Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device.

3.3 Test Instruments

Description	Brand	Model No.	Frequency Range	Calibrated Date	Calibrated Until
Broadband Field Meter	NARDA	NBM-550	-	Mar. 28, 2018	Mar. 27, 2020
Magnetic Field Meter	NARDA	ELT-400	1 – 400kHz	Apr. 12, 2018	Apr. 11, 2020
Magnetic Probe	NARDA	HF-3061	300kHz – 30MHz	Apr. 16, 2018	Apr. 15, 2020
Magnetic Probe	NARDA	HF-0191	27 – 1000MHz	Apr. 17, 2018	Apr. 16, 2020
Broadband Field Meter	NARDA	NBM-550	-	Mar. 28, 2018	Mar. 27, 2020
Electric Field Meter	COMBINOVA	EFM 200	5Hz – 400kHz	Dec. 6, 2017	Dec. 5, 2019
E-Field Probe	NARDA	EF-0391	100kHz – 3GHz	Mar. 28, 2018	Mar. 27, 2020
E-Field Probe	NARDA	EF-6091	100MHz – 60GHz	Mar. 29, 2018	Mar. 28, 2020

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 test was performed in Chia Pau RF Chamber

3.4 Limits for Maximum Permissible Exposure (MPE)

§ 1.1310 The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency(RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f^2)	6
30–300	61.4	0.163	1.0	6
300–1500	.....	.....	f/300	6
1500–100,000	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	.....	.....	f/1500	30
1500–100,000	.....	.....	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

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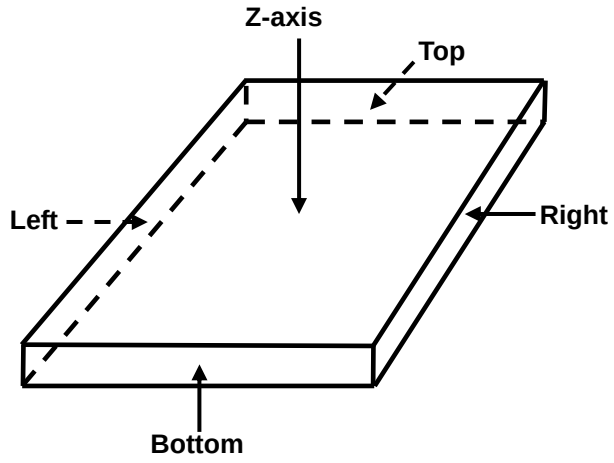
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

3.5 Test Point Description



4 Calculation Result of Maximum Conducted Power

Charging Mode with Apple Watch, battery 10% Charge

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	0.3500	0.1500	0.1800	0.4200	0.2600
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-613.6500	-613.8500	-613.8200	-613.5800	-613.7400
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-306.6500	-306.8500	-306.8200	-306.5800	-306.7400

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1450	0.1360	0.1410	0.1480	0.1520
Max H-field (A/m)	0.1160	0.1088	0.1128	0.1184	0.1216
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5140	-1.5212	-1.5172	-1.5116	-1.5084
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.6990	-0.7062	-0.7022	-0.6966	-0.6934

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

Charging Mode with Apple Watch, battery 50% Charge

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	0.3300	0.2600	0.2400	0.5100	0.3200
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-613.6700	-613.7400	-613.7600	-613.4900	-613.6800
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-306.6700	-306.7400	-306.7600	-306.4900	-306.6800

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1510	0.1340	0.1420	0.1580	0.1620
Max H-field (A/m)	0.1208	0.1072	0.1136	0.1264	0.1296
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5092	-1.5228	-1.5164	-1.5036	-1.5004
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.6942	-0.7078	-0.7014	-0.6886	-0.6854

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

Charging Mode with Apple Watch, battery 90% Charge

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	0.4300	0.2800	0.2600	0.5300	0.3900
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-613.5700	-613.7200	-613.7400	-613.4700	-613.6100
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-306.5700	-306.7200	-306.7400	-306.4700	-306.6100

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1570	0.1520	0.1510	0.1620	0.1690
Max H-field (A/m)	0.1256	0.1216	0.1208	0.1296	0.1352
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5044	-1.5084	-1.5092	-1.5004	-1.4948
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.6894	-0.6934	-0.6942	-0.6854	-0.6798

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

Standby Mode

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	0.1600	0.1000	0.1200	0.3100	0.1500
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-613.8400	-613.9000	-613.8800	-613.6900	-613.8500
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-306.8400	-306.9000	-306.8800	-306.6900	-306.8500

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1480	0.1340	0.1350	0.1520	0.1560
Max H-field (A/m)	0.1184	0.1072	0.1080	0.1216	0.1248
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5116	-1.5228	-1.5220	-1.5084	-1.5052
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.6966	-0.7078	-0.7070	-0.6934	-0.6902

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

5 Photographs of the Test Configuration

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

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