

EMC TEST REPORT

Report Number: 103156434LAX-010

Project Number: G103156434

Report Issue Date: October 17, 2017

Model(s) Tested: SF-02W/SF-02C

Model Not Tested: SF-01W/SF-01C

Standards: FCC CFR47 Part 15 Subpart C

Intentional Radiator

§15.231 Periodic operation in the band 40.66-40.70 MHz and above 70 MHz

Industry Canada RSS-210 Issue 9

License-exempt Radio Apparatus: Category I Equipment

Annex A – Momentarily Operated and Remote Control Devices

Tested by:
Intertek
25791 Commercentre Drive
Lake Forest, CA 92630
USA

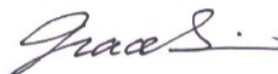
Client:
Water Pik, Inc.
1730 E. Prospect Rd.
Fort Collins, CO 80553
USA

Report prepared by



Martin Liu
EMC Project Engineer

Report reviewed by



Grace Lin
EMC Staff Engineer

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
6	Transmitter Deactivation Time (FCC §15.231(a)(1) and ISED RSS-210 Issue 9 §A.1.1(a))	Compliant
7	Occupied Bandwidths (FCC §15.215(c); ISED RSS-Gen Issue 4 §6.6)	Compliant
8	Field Strength of Fundamental (FCC §15.231(b); ISED RSS-210 Issue 9 §A.1.2(a))	Compliant
9	Radiated Spurious Emissions (FCC §15.231(b); ISED RSS-210 Issue 9 §A.1.2(a))	Compliant
10	AC Power Line Conducted Emissions (FCC §15.207, FCC §15.107; ISED RSS-Gen Issue 4 §8.8, ISED ICES-003 §6.1)	Compliant

3 Client Information

This EUT was tested at the request of:

Client: Water Pik, Inc.
1730 E. Prospect Rd.
Fort Collins, CO 80553
USA

Contact: Tom Graves
Telephone: (970) 221-7072
Email: tgraves@waterpik.com

4 Description of Equipment Under Test and Variant Models

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Waterflosser	Water Pik, Inc.	SF-02W/SF-02C	EB-3 AD-10
Waterflosser	Water Pik, Inc.	SF-02W/SF-02C	EB3 AD-02 (for TX deactivation time, BWs)

Receive Date:	07/28/2017, 10/06/2017	Test Started:	08/02/2017
Received Condition:	Good	Test Completed:	10/11/2017
Type:	Production		

Description of Equipment Under Test

The equipment under test (EUT) is an oral health home appliance operating at 433.45 MHz. Please refer to the user's manual for the details.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
2.4 V DC (handle)	N/A	N/A	N/A
100 – 240V AC (base)	< 1 A	50 Hz / 60 Hz	Single

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Continuously Transmit.
2	Normal Operation Mode: Power handle is off base. Power handle is attached to water tube. Brush head is attached to power handle. Both the floss motor and the brush motor are on.

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	Mode 1 was programmed to transmit continuously during testing.
2	Mode 2 was activated by the handle Tx signal.

Radio Characteristics	
Frequency Band(s)	433.325 MHz – 433.575 MHz
Modulation Type(s)	FSK
Test Channels	433.45 MHz ± 65 kHz
Equipment Type	Standalone
Antenna Type and Gain	Integral, PCB loop antenna, -10 dBd

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

There is no electronic difference between the water flossing base unit for SF-01W/SF-01C and SF-02W/SF-02C.

SF-02W is identical to SF-02C. SF-01W is identical to SF-01C. Different designators are used for different markets.

5 System Setup and Method

Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
1	Power Cord (attached)	1.25	No	No	Yes

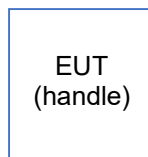
Support Equipment			
Description	Manufacturer	Model Number	Serial Number
None	N/A	N/A	N/A

5.1 Method:

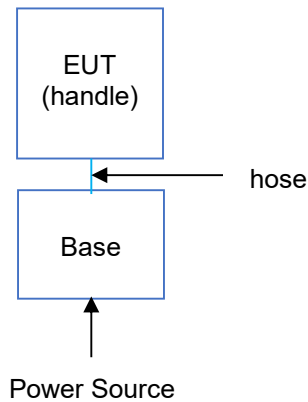
Configuration as required by ANSI C63.10-2013.

5.2 EUT Block Diagram:

TX Mode



Normal Operation Mode



6 Transmitter Deactivation Time

6.1 Performance Requirement(s)

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

A transmitter activated automatically shall cease transmission within 5 seconds after activation.

6.2 Method

Tests are performed in accordance with ANSI C63.10-2013.

TEST SITE:

The test is performed in the 3 meter semi-anechoic chamber located at 25791 Commercentre Drive, Lake Forest, California 92630 USA. This test facility meets the requirements of CISPR 16-1-4 and has been accredited by A2LA.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
Radiated Emissions, 3m	30-1000 MHz	4.2	6.3 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

6.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
637	3m Semi-anechoic Chamber	Panashield	3 meter	25 331-D-Z	August 2017	August 2018
1140	EMI Test Receiver	R&S	ESC17	100825	2/21/2017	2/21/2018
1147	Bilog Antenna	TESEQ GmbH	CBL 6112D	32852	11/03/2016	11/03/2017
1518	Cable	R&S	TSPR-B7	101529	07/13/2017	07/13/2018
1002	Barometer Temp/Humidity	Omega	IBTHX-W	0440776	01/22/2017	01/22/2018

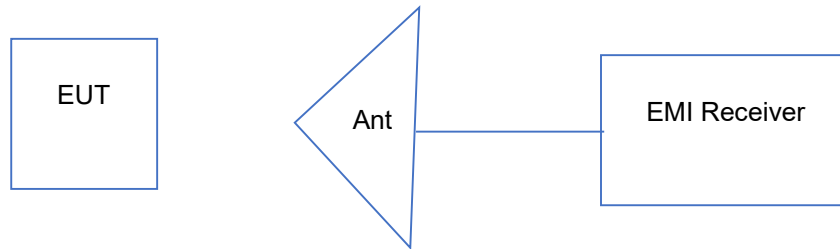
Software Utilized:

Name	Manufacturer	Version	Profile
N/A	N/A	N/A	N/A

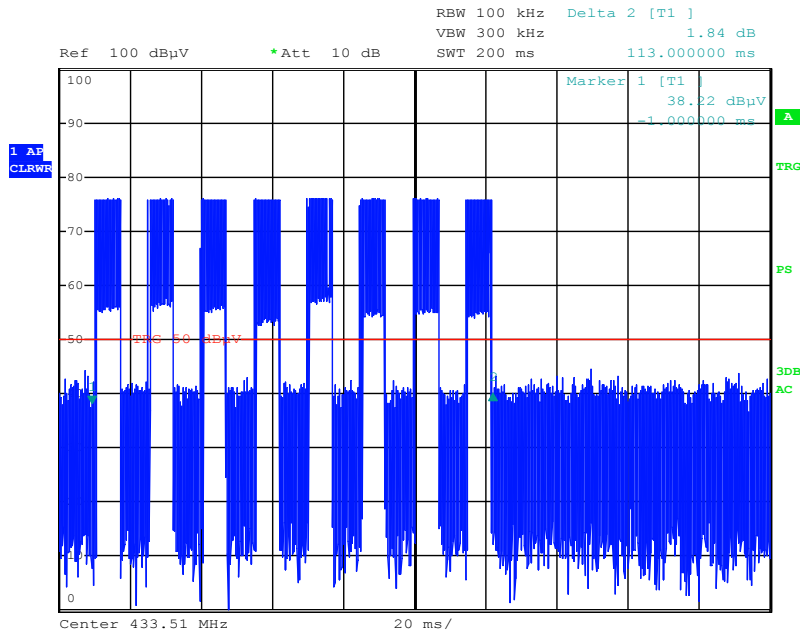
6.4 Results:

The sample tested was found to comply. Plot showing the transmitting (with 8 pulses) duration is less than 5 second.

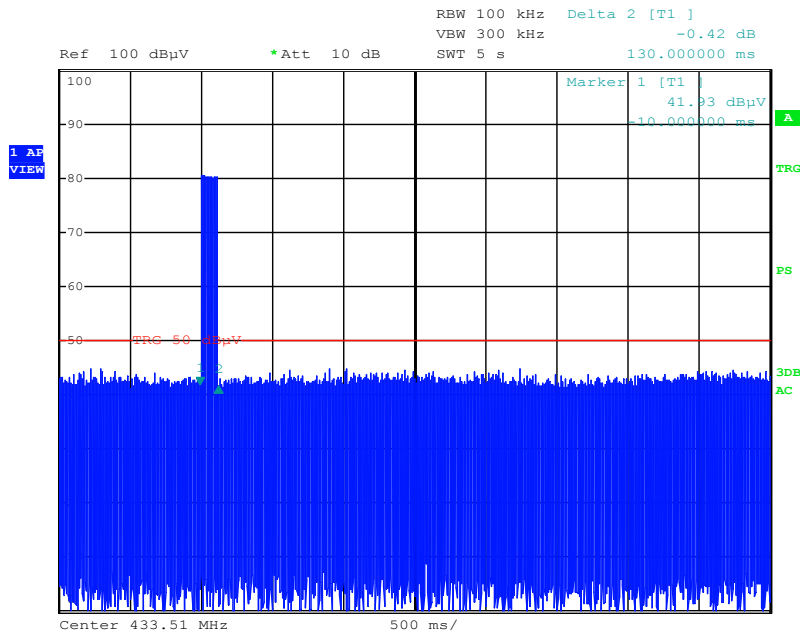
6.5 Setup Diagram:



6.6 Plots/Data:



Date: 7.OCT.2017 22:05:22



Date: 7.OCT.2017 22:02:49

Test Personnel:	Martin Liu	Test Date:	10/07/2017
Product Standard:	FCC 15.231, ISED RSS-210	Limit Applied:	FCC 15.231(a), ISED RSS-210
Input Voltage:	2.4 Vdc Battery	Ambient Temperature:	24.9 °C
Pretest Verification w/		Relative Humidity:	28 %
BB Source:	Yes	Atmospheric Pressure:	982.7 mbars

Deviations, Additions, or Exclusions: None

7 Occupied Bandwidth

7.1 Performance Requirement(s)

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. (FCC §15.215(c))

The transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured. (ISED RSS-Gen Issue 4 §6.6)

7.2 Method

Tests are performed in accordance with ANSI C63.10-2013.

TEST SITE:

The test is performed in the 3 meter semi-anechoic chamber located at 25791 Commercentre Drive, Lake Forest, California 92630 USA. This test facility meets the requirements of CISPR 16-1-4 and has been accredited by A2LA.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
Radiated Emissions, 3m	30-1000 MHz	4.2	6.3 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

7.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
637	3m Semi-anechoic Chamber	Panashield	3 meter	25 331-D-Z	August 2017	August 2018
1140	EMI Test Receiver	R&S	ESC17	100825	2/21/2017	2/21/2018
1147	Bilog Antenna	TESEQ GmbH	CBL 6112D	32852	11/03/2016	11/03/2017
1518	Cable	R&S	TSPR-B7	101529	07/13/2017	07/13/2018
1002	Barometer Temp/Humidity	Omega	IBTHX-W	0440776	01/22/2017	01/22/2018

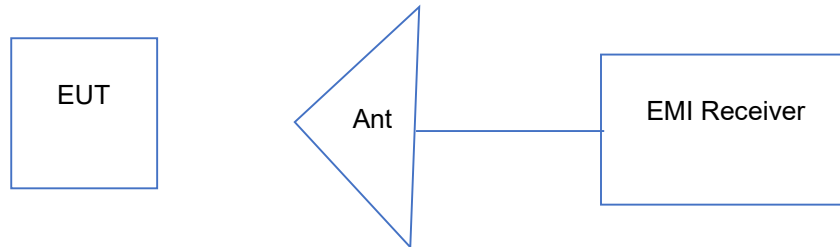
Software Utilized:

Name	Manufacturer	Version	Profile
N/A	N/A	N/A	N/A

7.4 Results:

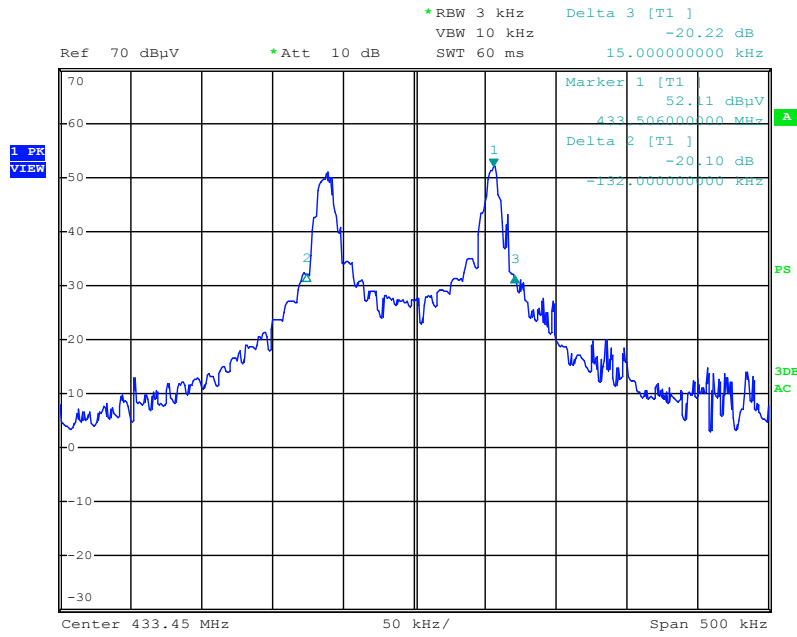
The sample tested was found to comply. The 20 dB and 99% bandwidth of the fundamental frequency remain inside the band of operation.

7.5 Setup Diagram:



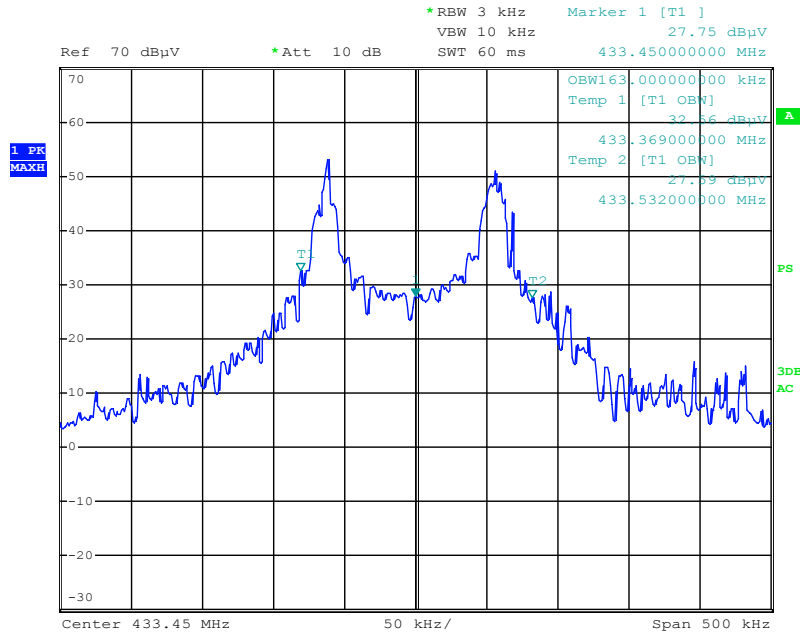
7.6 Plots/Data:

20 dB Bandwidth:



Date: 11.OCT.2017 11:55:12

99% Bandwidth:



Date: 11.OCT.2017 12:00:03

Test Personnel:	Martin Liu	Test Date:	10/11/2017
Product Standard:	FCC 15.231, ISED RSS-210	Limit Applied:	FCC 15.215(c), ISED RSS-Gen
Input Voltage:	2.4 Vdc Battery	Ambient Temperature:	24 °C
Pretest Verification w/		Relative Humidity:	52 %
BB Source:	Yes	Atmospheric Pressure:	998 mbars

Deviations, Additions, or Exclusions: None

8 Fundamental Field Strength

8.1 Performance Requirement(s)

The field strength of emissions, measured at 3 meters, from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	¹ 1,250 to 3,750	¹ 125 to 375
174-260	3,750	375
260-470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

¹Linear interpolations.

8.2 Method

Tests are performed in accordance with ANSI C63.10-2013.

The EUT was placed on a non-conducting table 80 cm (below 1 GHz) or 1.5 meters (above 1 GHz) above the ground plane (turntable). The antenna to EUT distance was 3 meters.

The transmitter configured to transmit continuously. The turntable containing the EUT was rotated through 360 degrees and the receive antenna height was varied from 1 to 4 meters to locate the worst-case emissions levels. Measurements were made with the antenna in both the horizontal and vertical polarizations. EUT was tested at horizontal and vertical orientations, the possible orientations used by the end users. The worst-case data is recorded in this report.

New or fully charged batteries were used during measurement.

TEST SITE:

The test is performed in the 3 meter semi-anechoic chamber located at 25791 Commercentre Drive, Lake Forest, California 92630 USA. This test facility meets the requirements of CISPR 16-1-4 and has been accredited by A2LA.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	U _{CISPR}
Radiated Emissions, 3m	30-1000 MHz	4.2	6.3 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
 AF = 7.4 dB/m
 CF = 1.6 dB
 AG = 29.0 dB
 FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μ V
 NF = Net Reading in dB μ V

Example:

$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$
 $UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$

8.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
637	3m Semi-anechoic Chamber	Panashield	3 meter	25 331-D-Z	August 2017	August 2018
1140	EMI Test Receiver	R&S	ESCI7	100825	02/21/2017	02/21/2018
1147	Bilog Antenna	TESEQ Gmbh	CBL 6112D	32852	11/03/2016	11/03/2017
1518	Cable	R&S	TSPR-B7	101529	07/13/2017	07/13/2018
1568	Pre-amp	Rhode & Schwarz	TS-PR1	102061	12/28/2016	12/28/2017
1002	Barometer Temp/Humidity	Omega	IBTHX-W	0440776	01/22/2017	01/22/2018

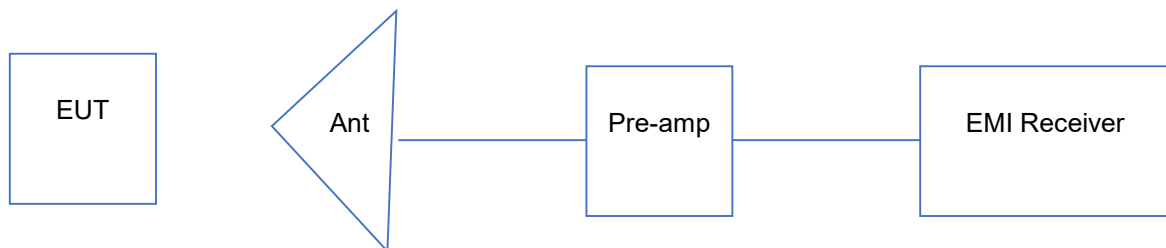
Software Utilized:

Name	Manufacturer	Version	Profile
N/A	N/A	N/A	N/A

8.4 Results:

The sample tested was found to comply.

8.5 Setup Diagram:



8.6 Plots/Data:

Field Strength at Fundamental, 433.54 MHz

Antenna Polarization	Frequency (MHz)	EUT Orientation	EUT Power Setting	Measured Data dB(uV/m)	Limit@3m dB(uV/m)	Margin (dB)	Turntable (Degree)	Antenna Height (cm)	Detector
V	433.54	V	Normal	67.6	80.8	-13.2	291	100	PK

<p>Test Personnel: <u>Martin Liu</u></p> <p>Product Standard: <u>FCC 15.231, ISED RSS-210</u></p> <p>Input Voltage: <u>2.4 Vdc Battery</u></p> <p>Pretest Verification <u>w/</u></p> <p>BB Source: <u>Yes</u></p>	<p>Test Date: <u>10/08/2017</u></p> <p>Limit Applied: <u>FCC 15.231(b), ISED RSS-210</u></p> <p>Ambient Temperature: <u>23 °C</u></p> <p>Relative Humidity: <u>53 %</u></p> <p>Atmospheric Pressure: <u>997 mbars</u></p>
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Deviations, Additions, or Exclusions: None

9 Radiated Spurious Emissions

9.1 Performance Requirement(s)

The field strength of emissions, measured at 3 meters, from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	¹ 1,250 to 3,750	¹ 125 to 375
174-260	3,750	375
260-470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

¹Linear interpolations.

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

9.2 Method

Tests are performed according to the procedures in ANSI C63.10-2013.

The EUT was placed on a non-conducting table 80 cm (below 1 GHz) or 1.5 meters (above 1 GHz) above the ground plane (turntable). Radiated test was performed at an antenna to EUT distance of 3 meters.

The spectrum from 30 MHz to the 10th harmonic was investigated with the transmitter configured to continuously transmit. The turntable containing the EUT was rotated through 360 degrees and the receive antenna height was varied from 1 to 4 meters to locate the worst-case emissions levels. Measurements were made with the antenna in both the horizontal and vertical polarizations. EUT was tested at horizontal and vertical orientations, the possible orientations used by the end users. The worst-case data is recorded in this report.

New or fully charged batteries were used during measurement.

TEST SITE:

The test is performed in the 3 meter semi-anechoic chamber located at 25791 Commercentre Drive, Lake Forest, California 92630 USA. This test facility meets the requirements of CISPR 16-1-4 and has been accredited by A2LA.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	U _{CISPR}
Radiated Emissions, 3m	30-1000 MHz	4.2	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7	5.2 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
 AF = 7.4 dB/m
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 FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μ V
 NF = Net Reading in dB μ V

Example:

$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$
 $UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$

9.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
637	3m Semi-anechoic Chamber	Panashield	3 meter	25 331-D-Z	August 2015	August 2018
1140	EMI Test Receiver	R&S	ESCI7	100825	02/21/2017	02/21/2018
1147	Bilog Antenna	TESEQ Gmbh	CBL 6112D	32852	11/03/2016	11/03/2017
1568	Pre-amp	Rhode & Schwarz	TS-PR1	102061	12/28/2016	12/28/2017
-	Pre-amp	Rhode & Schwarz	TS-PR18	102144	07/29/2017	07/29/2018
1093	DRG Horn Antenna	A.H System	SAS 571	1513	03/15/2017	03/15/2018
1517	Cable	R&S	TSPR-B7	101528	07/13/2017	07/13/2018
1518	Cable	R&S	TSPR-B7	101529	07/13/2017	07/13/2018
1002	Barometer Temp/Humidity	Omega	IBTHX-W	0440776	01/22/2017	01/22/2018

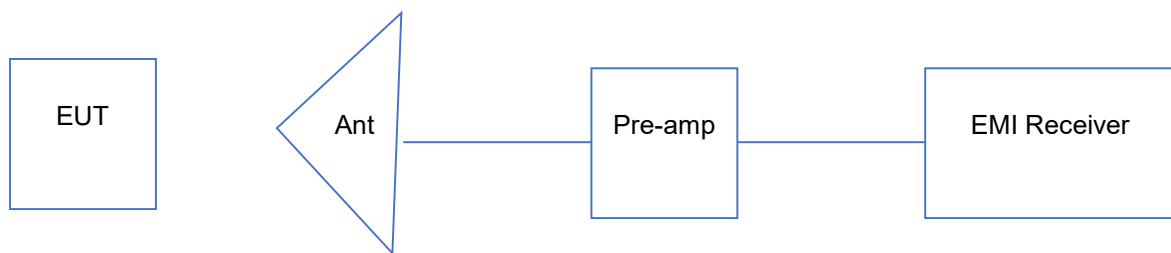
Software Utilized:

Name	Manufacturer	Version	Profile
Tile	Quantum Change	4.1	FCC 30 to 1000 FCC Part 15 1-6GHz

9.4 Results:

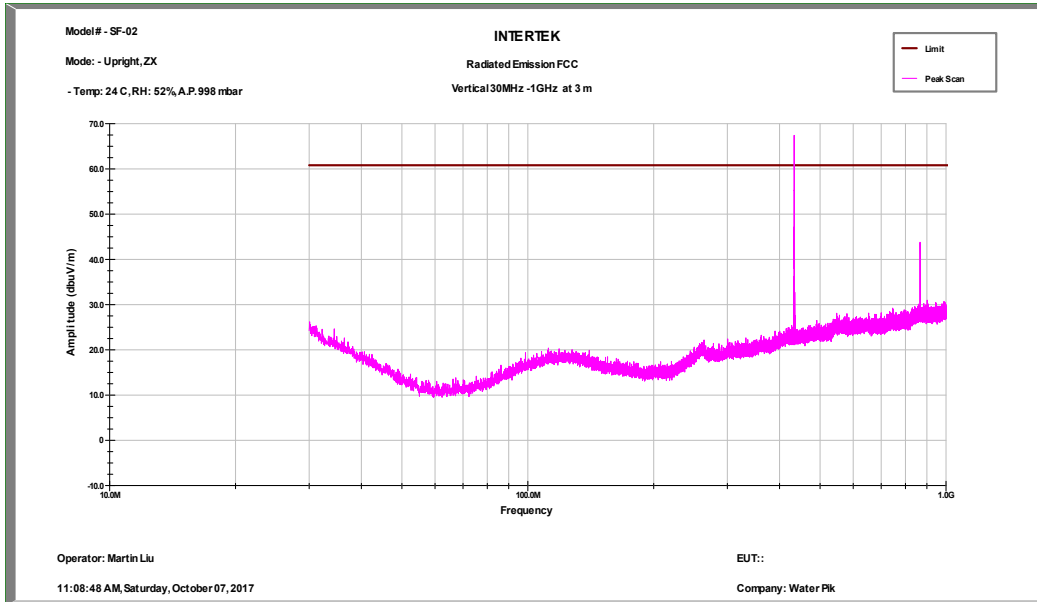
The sample tested was found to comply.

9.5 Setup Diagram:



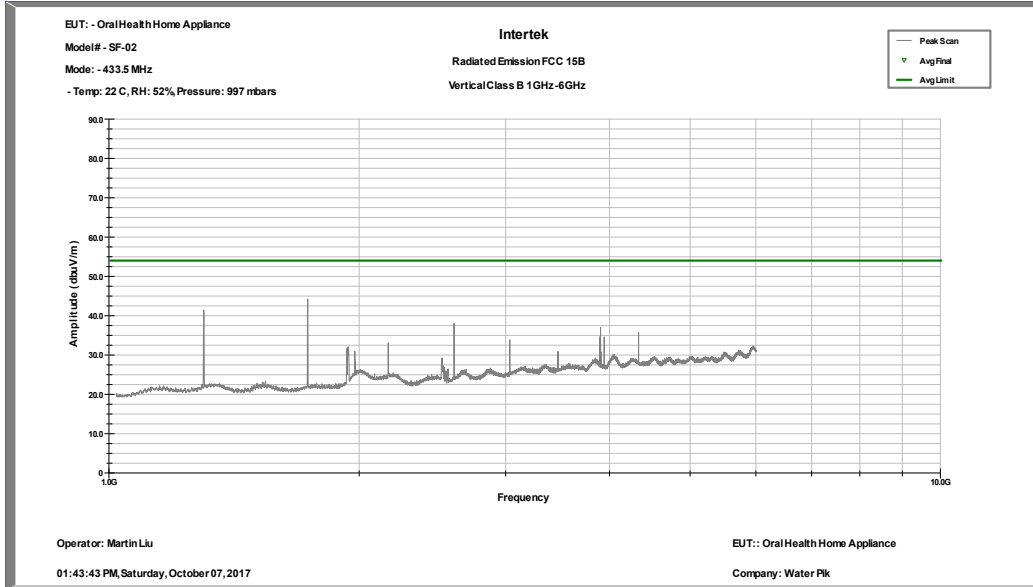
9.6 Plots/Data:

30 MHz – 1 GHz

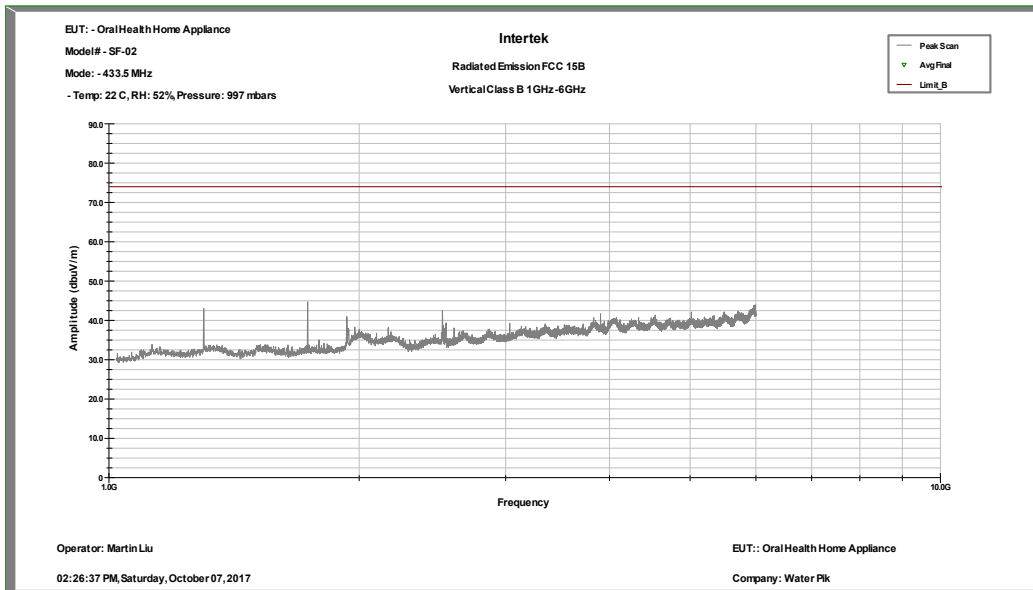


9.6 Plots/Data (Continued):

1 – 6 GHz, Average



1 – 6 GHz, Peak



TX Radiated Spurious Emissions, 433.54 MHz

Antenna	Frequency	EUT	EUT Power	Measured Data	Limit@3m	Margin	Turntable	Antenna	Detector
Polarization	(MHz)	Orientation	Setting	dB(uV/m)	dB(uV/m)	dB	Degree	Height (cm)	Setting
V	867.08	upright	normal	48.45	60.8	-12.4	109	115	PK
V	1300.6	upright	normal	44.4	74.0	-29.7	114	277	PK
V	1300.6	upright	normal	36.7	54.0	-17.4	114	277	AV
V	1734.4	upright	normal	45.5	80.8	-35.3	181	171	PK
V	1734.4	upright	normal	38.5	60.8	-22.3	181	171	AV
V	3894.4	upright	normal	41.3	74.0	-32.7	57	172	PK
V	3894.4	upright	normal	26.9	54.0	-27.1	57	172	AV
V	3901.9	upright	normal	40.2	74.0	-33.8	111	173	PK
V	3901.9	upright	normal	32.5	54.0	-21.5	111	173	AV
H	3941.1	upright	normal	37.4	74.0	-36.6	298	234	PK
H	3941.1	upright	normal	27.3	54.0	-26.7	298	234	AV

Test Personnel: Martin Liu
 Product Standard: FCC 15.231, ISED RSS-210
 Input Voltage: 2.4 Vdc Battery
 Pretest Verification w/
 BB Source: Yes

Test Date: 10/08/2017
 Limit Applied: FCC 15.231(b), ISED RSS-210
 Ambient Temperature: 23 °C
 Relative Humidity: 53 %
 Atmospheric Pressure: 997 mbars

Deviations, Additions, or Exclusions: None

10 AC Mains Conducted Emissions

10.1 Method

Tests are performed in accordance with ANSI C63.4.

TEST SITE:

The test is performed in the 3 meter semi-anechoic chamber located at 25791 Commercentre Drive, Lake Forest, California 92630 USA. This test facility meets the requirements of CISPR 16-1-4 and has been accredited by A2LA.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted Emissions	150 kHz - 30 MHz	2.1 dB	3.4dB
Telco Port Emissions	150 kHz - 30 MHz	2.6 dB	5.0dB

As shown in the table above our conducted emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

Sample Calculations

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB μ V

RF = Reading from receiver in dB μ V

LF = LISN or ISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB μ V

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 285.1 \mu\text{V/m}$$

10.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
637	3m Semi-anechoic Chamber	Panashield	3 meter	25 331-D-Z	12/21/2015	12/21/2018
1140	EMI Test Receiver	R&S	ESCI7	100825	02/21/2017	02/21/2018
666	LISN	Teseq	NNB 51	36058	08/26/2016	08/26/2017
1470	RF Cable	Megaphase	TM18-N1N1-600	none	06/15/2016	06/16/2018
1536	Barometer/ Humidity	Omega	iBTHX-W	1541000	01/09/2017	01/09/2018

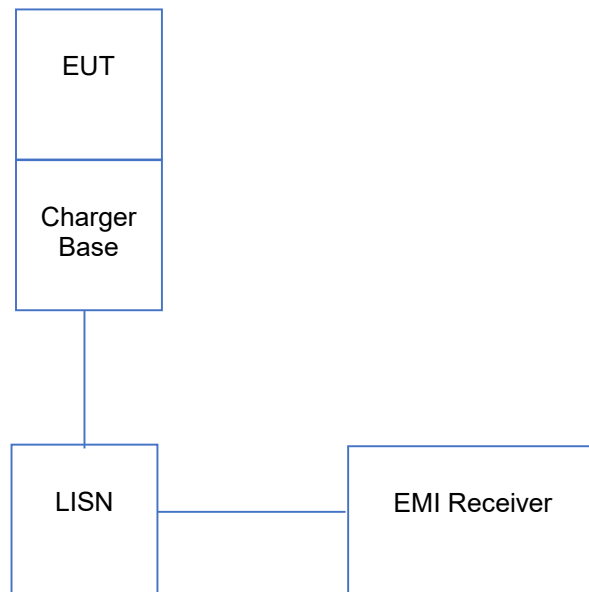
Software Utilized:

Name	Manufacturer	Version	Profile
Tile	Quantum Change	4.1	Master CE CISPR 11

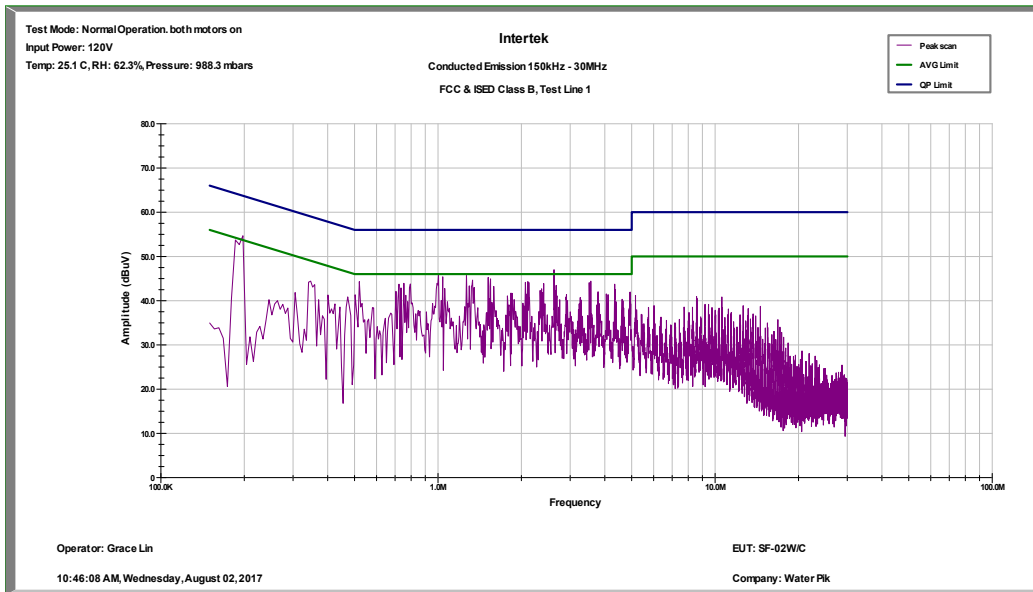
10.3 Results:

The sample tested was found.

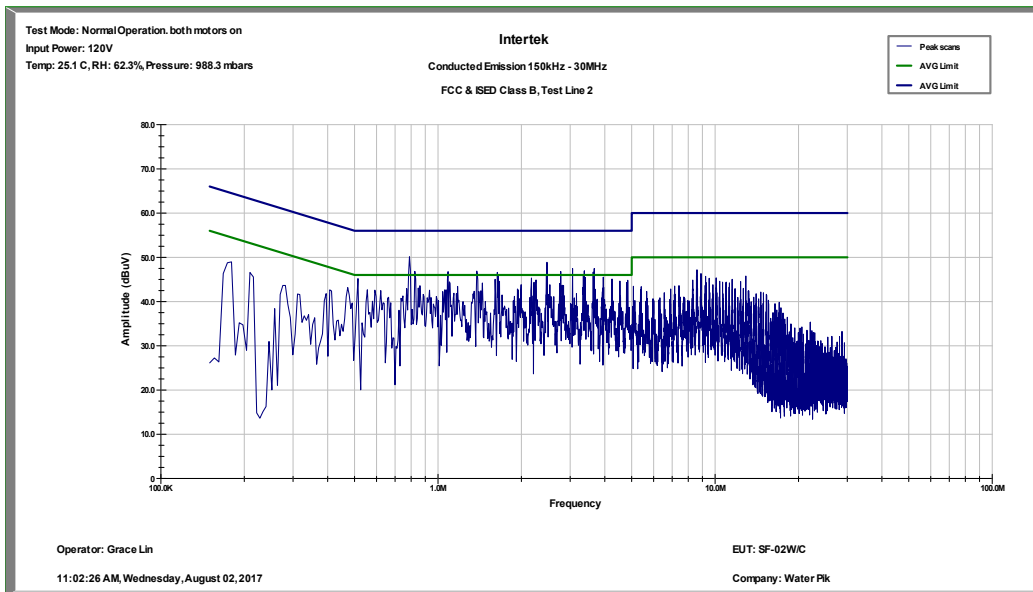
10.4 Setup Diagram:



10.5 Plots/Data:



Conducted Emissions, Normal Operation Mode, Peak Scan- Line 1



Conducted Emissions, Normal Operation Mode, Peak Scan- Line 2

10.5 Plots/Data (Continued):

AC Power Line Conducted Emission, Normal Operation Mode (Line 1)						
Frequency	AV Level	QP Level	AV Limit	QP Limit	AV Margin	QP Margin
MHz	dBuV	dBuV	dBuV	dBuV	dB	dB
0.188	32.1	52.1	54.9	64.9	-22.8	-12.8
0.197	30.6	50.6	54.6	64.6	-24.0	-14.1
0.524	25.8	38.9	46.0	56.0	-20.2	-17.1
0.996	28.4	41.6	46.0	56.0	-17.6	-14.4
1.328	28.0	39.1	46.0	56.0	-18.0	-16.9
1.511	28.0	40.6	46.0	56.0	-18.0	-15.4
2.620	26.9	38.2	46.0	56.0	-19.1	-17.8
Bandwidths RBW/VBW = 9/30 kHz						

AC Power Line Conducted Emission, Normal Operation Mode (Line 2)						
Frequency	AV Level	QP Level	AV Limit	QP Limit	AV Margin	QP Margin
MHz	dBuV	dBuV	dBuV	dBuV	dB	dB
0.182	31.1	51.0	55.1	65.1	-24.0	-14.1
0.789	29.1	43.9	46.0	56.0	-16.9	-12.1
1.085	30.3	44.4	46.0	56.0	-15.7	-11.6
1.384	29.9	43.0	46.0	56.0	-16.1	-13.0
1.633	29.5	42.8	46.0	56.0	-16.5	-13.2
2.455	29.9	42.3	46.0	56.0	-16.1	-13.7
2.768	29.3	39.4	46.0	56.0	-16.7	-16.6
3.364	29.1	39.7	46.0	56.0	-16.9	-16.3
3.644	29.3	40.1	46.0	56.0	-16.7	-15.9
Bandwidths RBW/VBW = 9/30 kHz						

Test Personnel:	Grace Lin	Test Date:	08/02/2017
Product Standard:	FCC 15.231, ISED RSS-210	Limit Applied:	FCC §15.207; ISED RSS-Gen Issue 4 §8.8
Input Voltage:	120 VAC / 60 Hz charger	Ambient Temperature:	24 °C
Pretest Verification w/		Relative Humidity:	56 %
BB Source:	Yes	Atmospheric Pressure:	989 mbars

Deviations, Additions, or Exclusions: None

11 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	10/17/2017	103156434LAX-010	ML	GL	Initial Release