



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

wireless watchdock duo with integrated Watch charger

MODEL NUMBER: FD11, FD11A, 203731, 200847, 228015, 247173, 257836, 234197

FCC ID: 2ASH9WATCHDOCKDUO2

REPORT NUMBER: 4789172805.2-1

ISSUE DATE: January 21, 2020

Prepared for

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Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	01/21/2020	Initial Issue	



Summary of Test Results		
Description of Test Item	Standard	Results
Power Line Conducted Emission Test	FCC 15.207	PASS
Radiated Emission Test	FCC 15.209	PASS
20dB Bandwidth	FCC 15.215	PASS
This test report is only published to and used by the applicant, and it is not for evidence purpose in China.		



TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	7
4.1. MEASURING INSTRUMENT CALIBRATION	7
4.2. MEASUREMENT UNCERTAINTY	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT	8
5.2. TEST MODE	8
5.3. TEST ENVIRONMENT	9
5.4. ACCESSORY	9
5.5. MEASURING INSTRUMENT LIST	11
6. 20dB BANDWIDTH TEST	13
7. EMISSION TEST	16
7.1. SPURIOUS EMISSIONS BELOW 30MHz	19
7.2. SPURIOUS EMISSIONS 30MHz - 1GHz	31
8. AC POWER LINE CONDUCTED EMISSIONS	33



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: TESSCO Technologies
Address: 375 W. Padonia Rd. Lutherville-Timonium, MD 21093 United States

Manufacturer Information 1

Company Name: Shenzhen Wireless Technology Co., Ltd
Address: 3rd Floor, A2 Building, A Area, Fangxing Science and Technology Park, No.13 Baonan Road, Longgang Street, Longgang District, Shenzhen

Manufacturer Information 2

Company Name: SEOSIN ELECTRONICS VINA CO., LTD
Address: Chau Son Industrial Park, Le Chan Road, Le Hong Phong Ward, Phu Ly City, Ha Nam Province, Viet Nam

EUT Description

EUT Name: wireless watchdock duo with integrated Watch charger
Model: FD11
Serial Model: FD11A, 203731, 200847, 228015, 247173, 257836, 234197
Model Difference: All the same except for the model name.
Brand Name: ventev
Sample Status: Normal
Sample ID: 2558149
Sample Received Date: September 17, 2019
Date of Tested: September 23, 2019 ~ January 21, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS

Prepared By:

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Project Engineer
Approved By:

Stephen Guo
Laboratory Manager

Checked By:

Shawn Wen
Laboratory Leader



2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC CFR 47 Part 2, FCC CFR 47 Part 15C KDB414788 D01 Radiated Test Site v01 and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Accreditation Certificate	A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules IC(Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320. VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011

Note:

1. All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
2. The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.
3. For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	3.62
Radiated disturbance test	9kHz-150kHz	2	3.32
	150kHz-30MHz	2	3.72
Radiated Emission Test	30MHz~1GHz	2	4.00

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	wireless watchdock duo with integrated Watch charger
EUT Description	The EUT is a wireless charger.
Model:	FD11
Serial Model:	FD11A, 203731, 200847, 228015, 247173, 257836, 234197
Model Difference:	All the same except for the model name.
Operation Frequency	110 ~ 205kHz for mobile phone 326.5kHz for Watch
Rated Input Power	DC 5V/3A & DC 9V 2A
Rated Output Power	Maximum 10W for mobile phone Maximum 5W for Watch
Antenna type	Coil

5.2. TEST MODE

Config	Test Mode	Description
Mode 1	Standby	EUT alone powered by AC/DC adapter (DC 5V/2.5A Output)
Mode 2	Standby	EUT alone powered by AC/DC adapter (DC 9V/2A Output)
Mode 3	Operating	EUT with iPhone and Apple Watch powered by AC/DC adapter (DC 5V/2.5A Output)
Mode 4	Operating	EUT with iPhone and Apple Watch by AC/DC adapter (DC 9V/2A Output)
Mode 5	Operating	EUT with 10W load and Apple Watch powered by AC/DC adapter (DC 5V/2.5A Output)
Mode 6	Operating	EUT with 10W load and Apple Watch powered by AC/DC adapter (DC 9V/2A Output)
Mode 7	Operating	EUT with Apple Watch powered by AC/DC adapter (DC 5V/2.5A Output)
Mode 8	Operating	EUT with Apple Watch powered by AC/DC adapter (DC 9V/2A Output)
Mode 9	Operating	EUT with 10W load powered by AC/DC adapter (DC 5V/2.5A Output)
Mode 10	Operating	EUT with 10W load powered by AC/DC adapter (DC 9V/2A Output)



5.3. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65%	
Atmospheric Pressure:	1018Pa	
Temperature	TN	22 ~ 28°C
Voltage :	VL	/
	VN	DC 5V & DC 9V
	VH	/

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage
VH= Upper Extreme Test Voltage
TN= Normal Temperature

5.4. ACCESSORY

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Mobile Phone	Apple	iPhone XS	/
2	Watch	Apple	Watch	/
3	10W Load	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	DC	USB	Unshielded	1.0 m	/

ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	AC Power Adapter	/	GW-TCQC3-A	Input: 100~240V, 50~60Hz, 0.8A MAX Output: 5V/3A, 9V/2A, 12V/1.5A

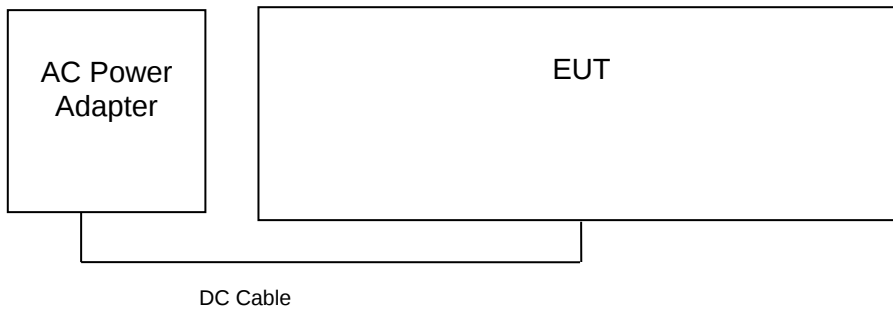
TEST SETUP

The EUT support wireless charging.

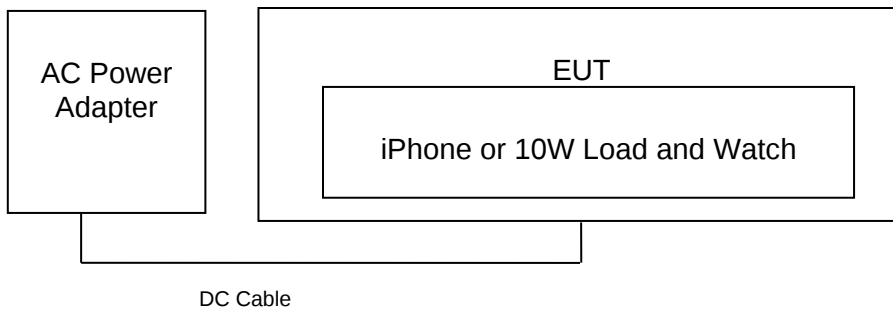


SETUP DIAGRAM FOR TEST

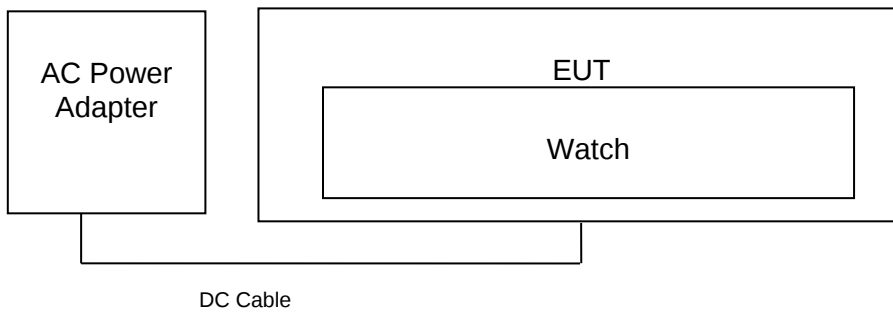
Mode 1 and Mode 2:



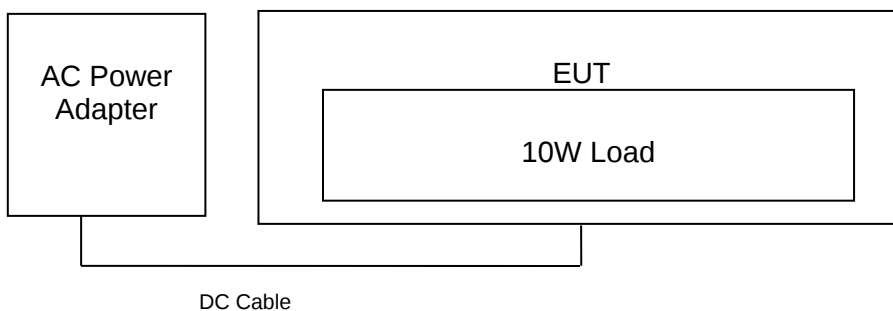
Mode 3 to Mode 6:



Mode 7 and Mode 8:



Mode 7 and Mode 8:





5.5. MEASURING INSTRUMENT LIST

Last time calibration information:

Conducted Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☒	EMI Test Receiver	R&S	ESR3	101961	Dec.10,2018	Dec.10,2019
☒	Two-Line V- Network	R&S	ENV216	101983	Dec.10,2018	Dec.10,2019
Software						
Used	Description		Manufacturer	Name		Version
☒	Test Software for Conducted disturbance		Farad	EZ-EMC		Ver. UL-3A1
Radiated Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☒	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Dec.10,2018	Dec.10,2019
☒	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Sep.17,2018	Sep.17,2021
☒	Preamplifier	HP	8447D	2944A09099	Dec.10,2018	Dec.10,2019
☒	Loop antenna	Schwarzbeck	1519B	00008	Jan.17, 2019	Jan.17,2022
☒	Preamplifier	TDK	PA-02-001- 3000	TRS-302- 00050	Jan. 07,2019	Jan.07,2020
Software						
Used	Description		Manufacturer	Name		Version
☒	Test Software for Radiated disturbance		Farad	EZ-EMC		Ver. UL-3A1
Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☒	Spectrum Analyzer	R&S	FSV40	101117	Dec.10,2018	Dec.10,2019



This time calibration information:

Conducted Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☒	EMI Test Receiver	R&S	ESR3	101961	Dec.5, 2019	Dec.5, 2020
☒	Two-Line V- Network	R&S	ENV216	101983	Dec.5, 2019	Dec.5, 2020
Software						
Used	Description		Manufacturer	Name		Version
☒	Test Software for Conducted disturbance		Farad	EZ-EMC		Ver. UL-3A1
Radiated Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☒	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Dec.5, 2019	Dec.5, 2020
☒	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Sep.17,2018	Sep.17,2021
☒	Preamplifier	HP	8447D	2944A09099	Dec.5, 2019	Dec.5, 2020
☒	Loop antenna	Schwarzbeck	1519B	00008	Jan.17, 2019	Jan.17,2022
☒	Preamplifier	TDK	PA-02-001- 3000	TRS-302- 00050	Dec.5, 2019	Dec.5, 2020
Software						
Used	Description		Manufacturer	Name		Version
☒	Test Software for Radiated disturbance		Farad	EZ-EMC		Ver. UL-3A1
Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☒	Spectrum Analyzer	R&S	FSV40	101117	Dec.6, 2019	Dec.6, 2020
☒	Spectrum Analyzer	KESIGHT	N9020A	MY49100060	Feb.25, 2019	Feb.25, 2019



6. 20dB BANDWIDTH TEST

LIMITS

20dB Bandwidth

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.215, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

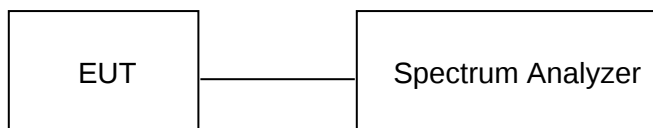
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	1% to 5% of the occupied bandwidth
VBW	approximately 3×RBW
Trace	Max hold
Sweep	Auto couple

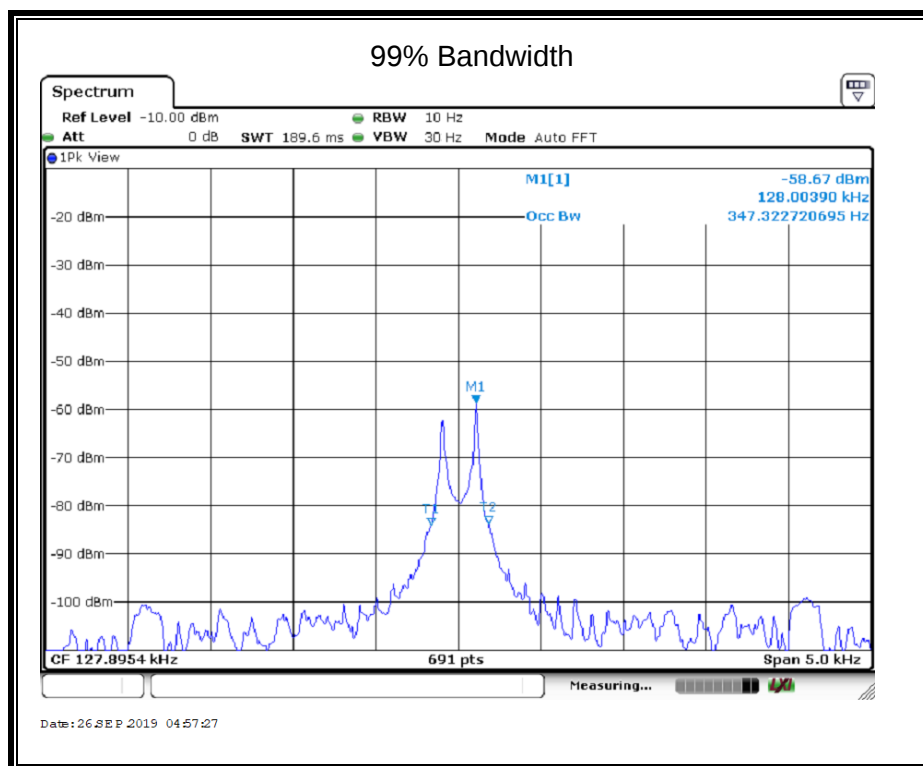
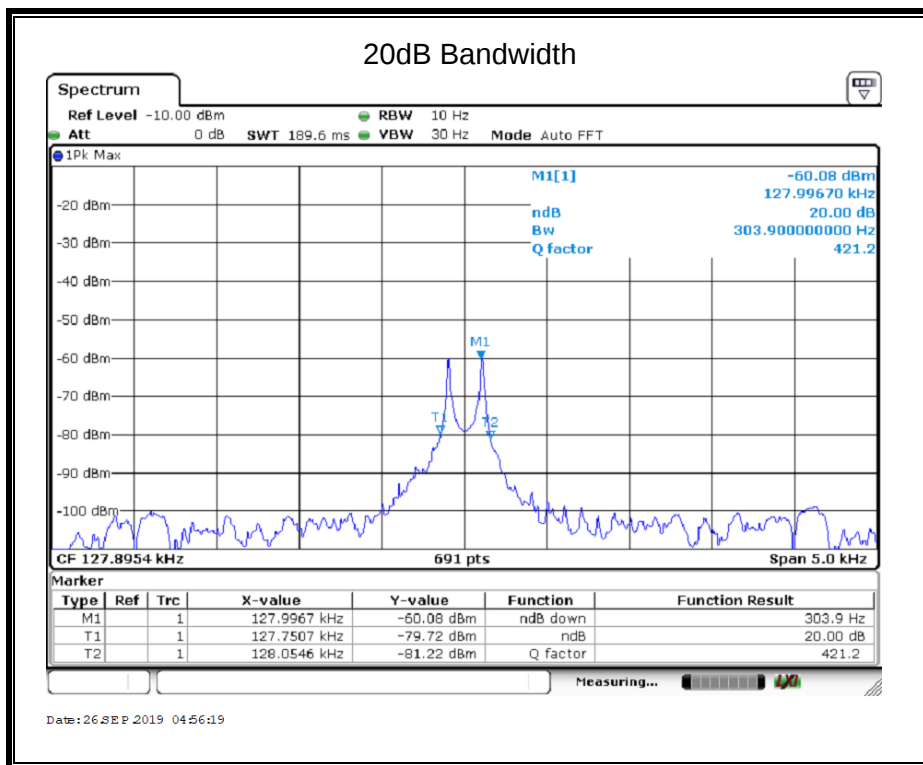
Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 99%/20 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP

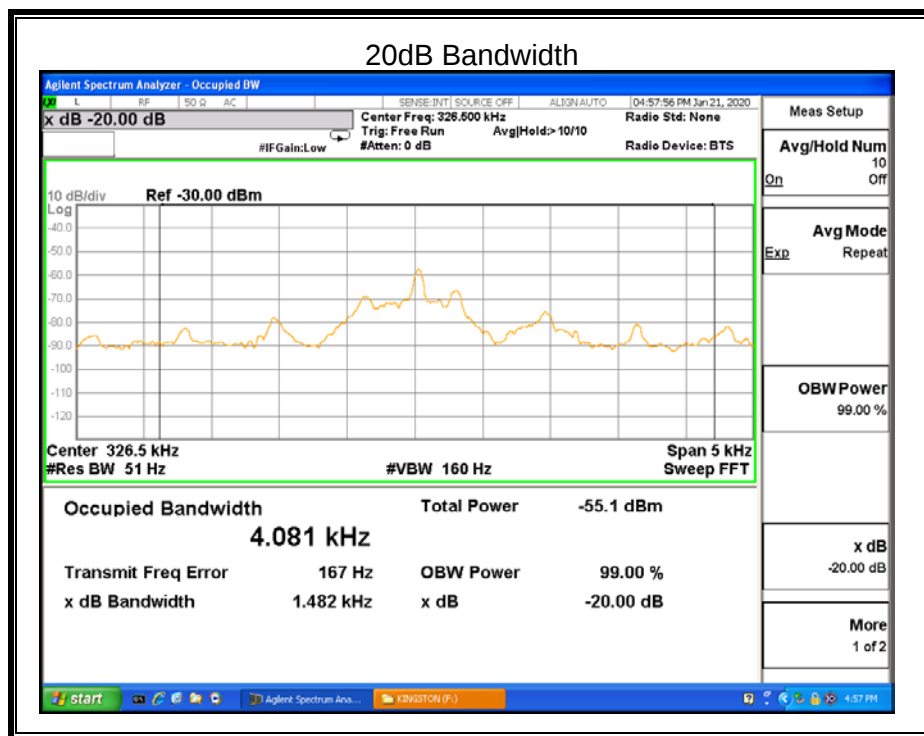


RESULTS

Item	Frequency (kHz)	20dB Bandwidth (Hz)	99% Bandwidth (Hz)
Mobile phone charging	127.9	303.900	347.323



Item	Frequency (KHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
Watch charging	326.5	1.482	4.081



Note: All the modes have been tested, only the worst data record in the report.



7. EMISSION TEST

LIMITS

Please refer to FCC §15.205 and §15.209

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

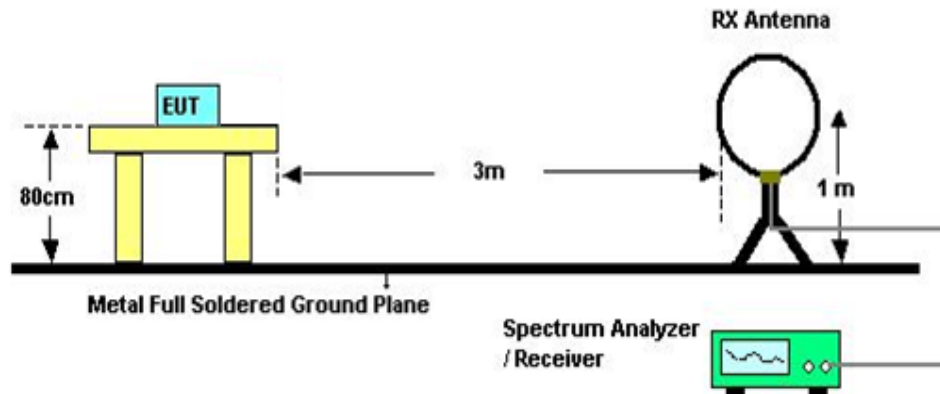
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

TEST SETUP AND PROCEDURE

Below 30MHz (Loop Antenna)

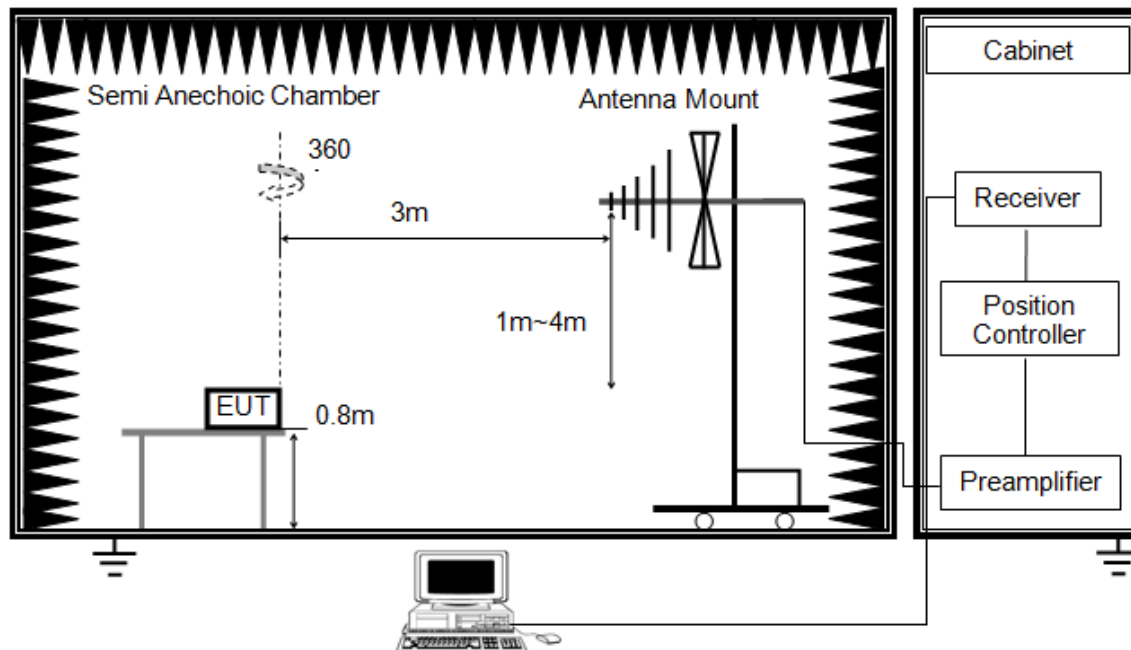


The setting of the spectrum analyzer

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 and 414788 D01 Radiated Test Site v01.
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m height antenna tower.
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

Below 1G and above 30MHz



The setting of the spectrum analyzer

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8m above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

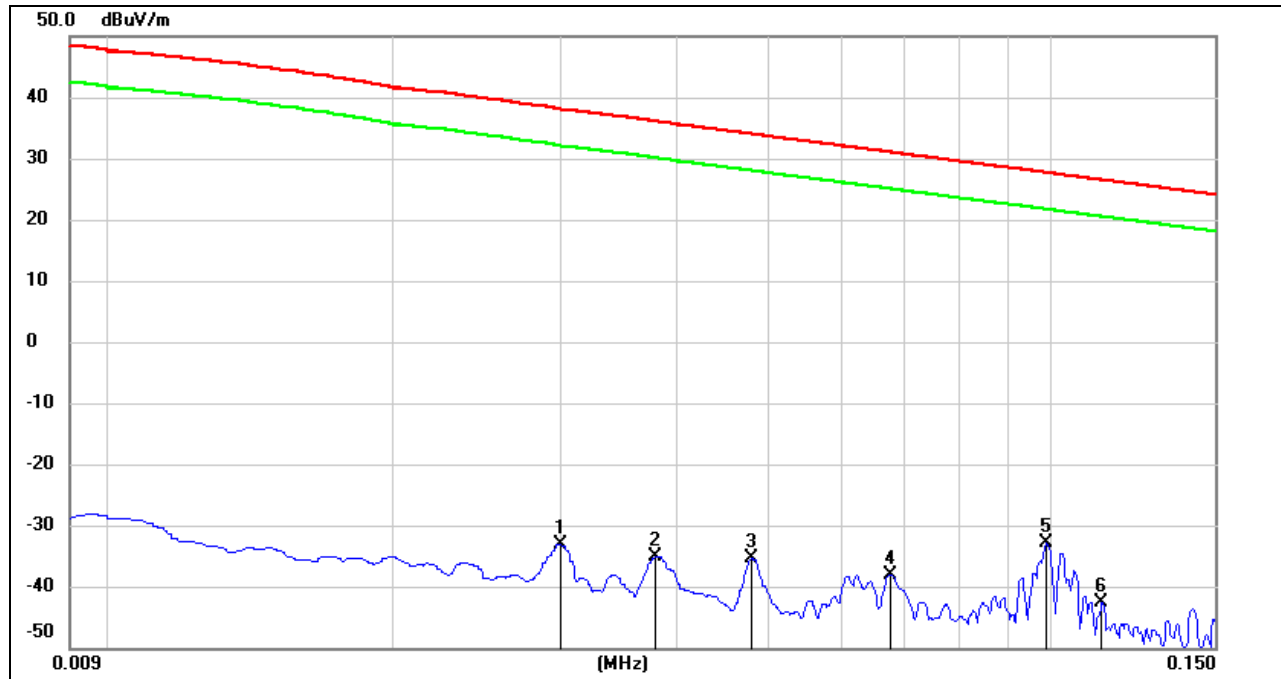


RESULTS

7.1. SPURIOUS EMISSIONS BELOW 30MHz

**FCC PART 15C BELOW 30MHz SPURIOUS EMISSIONS (MODE 2 (Standby mode), LOOP ANTENNA
FACE ON TO THE EUT, WORST-CASE CONFIGURATION)**

9kHz~ 150kHz



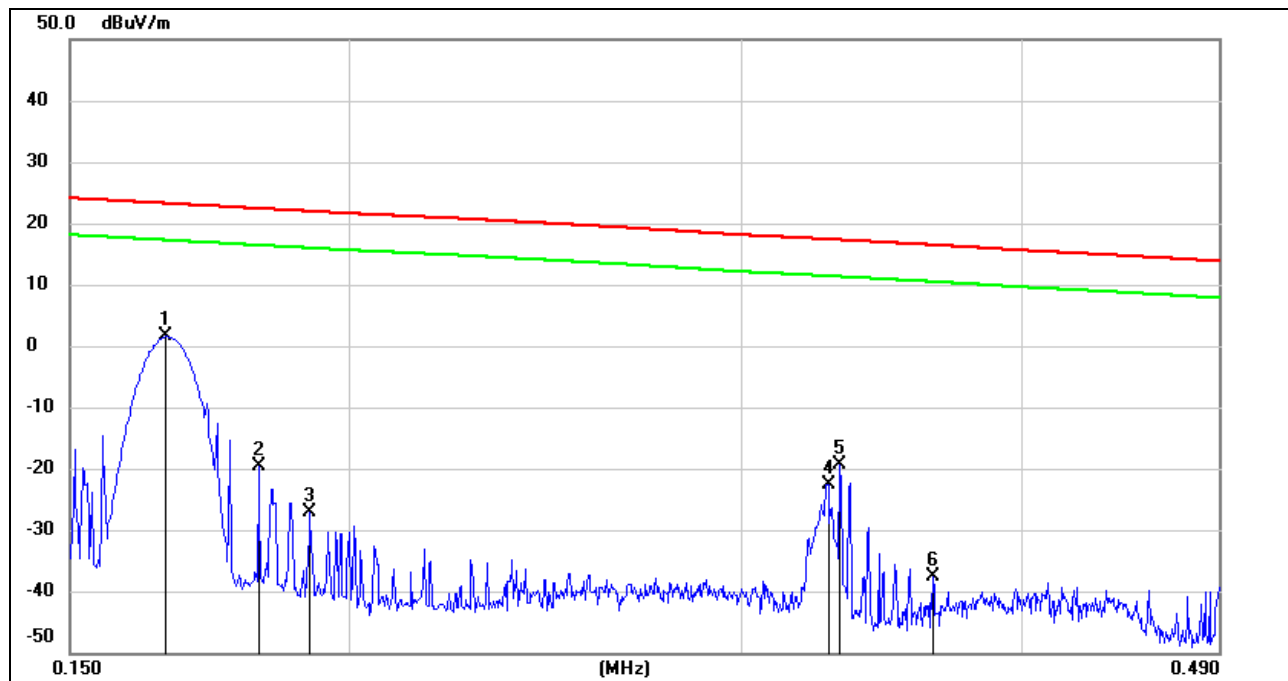
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1*	0.0300	67.94	-101.11	-33.17	38.06	-71.23	peak
2	0.0379	66.12	-101.22	-35.10	36.09	-71.19	peak
3	0.0480	65.89	-101.35	-35.46	34.01	-69.47	peak
4	0.0675	62.84	-101.03	-38.19	31.03	-69.22	peak
5	0.0991	68.46	-101.27	-32.81	27.68	-60.49	peak
6	0.1137	58.90	-101.45	-42.55	26.50	-69.05	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4*. Point 1 was created from the digital circuit. It is not created by wireless charging modes.

150kHz ~ 490kHz

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1655	103.39	-101.87	1.52	23.23	-21.71	peak
2	0.1823	82.14	-101.86	-19.72	22.39	-42.11	peak
3	0.1922	74.65	-101.85	-27.20	21.93	-49.13	peak
4	0.3277	79.24	-101.77	-22.53	17.37	-39.90	peak
5	0.3316	82.36	-101.77	-19.41	17.27	-36.68	peak
6	0.3652	64.06	-101.75	-37.69	16.43	-54.12	peak

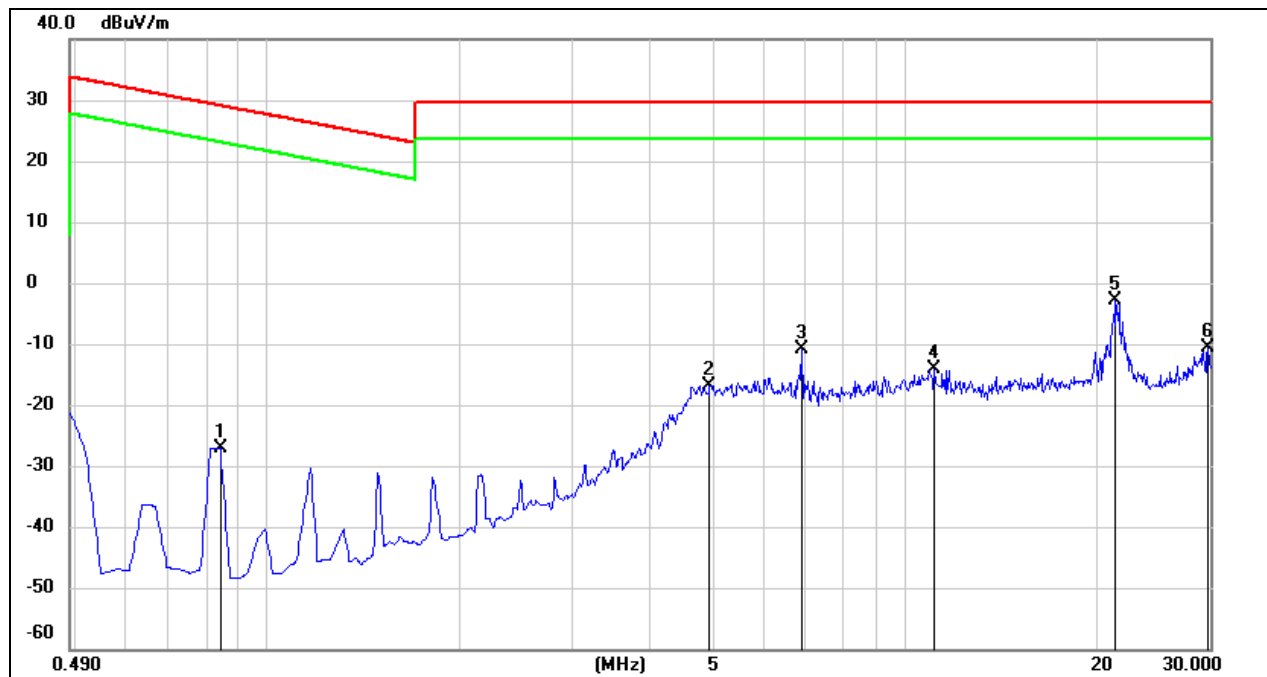
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



490kHz ~ 30MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.8441	71.78	-98.95	-27.17	29.09	-56.26	peak
2	4.9460	45.50	-62.39	-16.89	29.54	-46.43	peak
3	6.8937	50.72	-61.65	-10.93	29.54	-40.47	peak
4	11.1135	47.20	-61.26	-14.06	29.54	-43.60	peak
5	21.3536	58.09	-61.06	-2.97	29.54	-32.51	peak
6	29.8525	50.05	-60.66	-10.61	29.54	-40.15	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



**FCC PART 15C BELOW 30MHz SPURIOUS EMISSIONS (MODE 6 (EUT with 10W loading & watch),
LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)**

9kHz~ 150kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.0299	71.76	-101.11	-29.35	38.10	-67.45	peak
2	0.0555	84.93	-101.27	-16.34	32.75	-49.09	peak
3	0.0644	71.21	-101.09	-29.88	31.45	-61.33	peak
4	0.1074	75.12	-101.37	-26.25	26.99	-53.24	peak
5	0.1218	64.60	-101.55	-36.95	25.90	-62.85	peak
6	0.1414	99.80	-101.79	-1.99	24.60	-26.59	peak

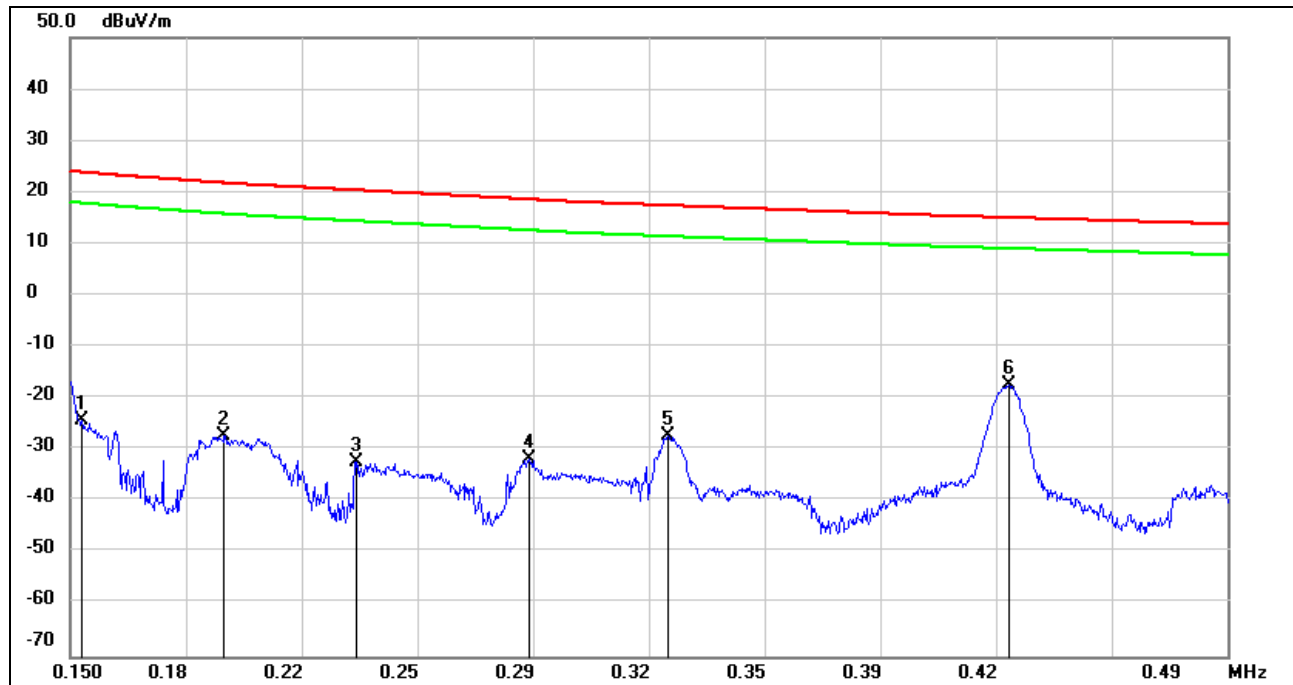
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



150kHz ~ 490kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1534	77.69	-101.89	-24.20	23.89	-48.09	peak
2	0.1952	74.57	-101.84	-27.27	21.80	-49.07	peak
3	0.2340	69.44	-101.81	-32.37	20.38	-52.75	peak
4	0.2850	70.17	-101.78	-31.61	18.59	-50.20	peak
5	0.3254	74.39	-101.77	-27.38	17.42	-44.80	peak
6*	0.4257	84.32	-101.73	-17.41	15.06	-32.47	peak

Note: 1. Measurement = Reading Level + Correct Factor.

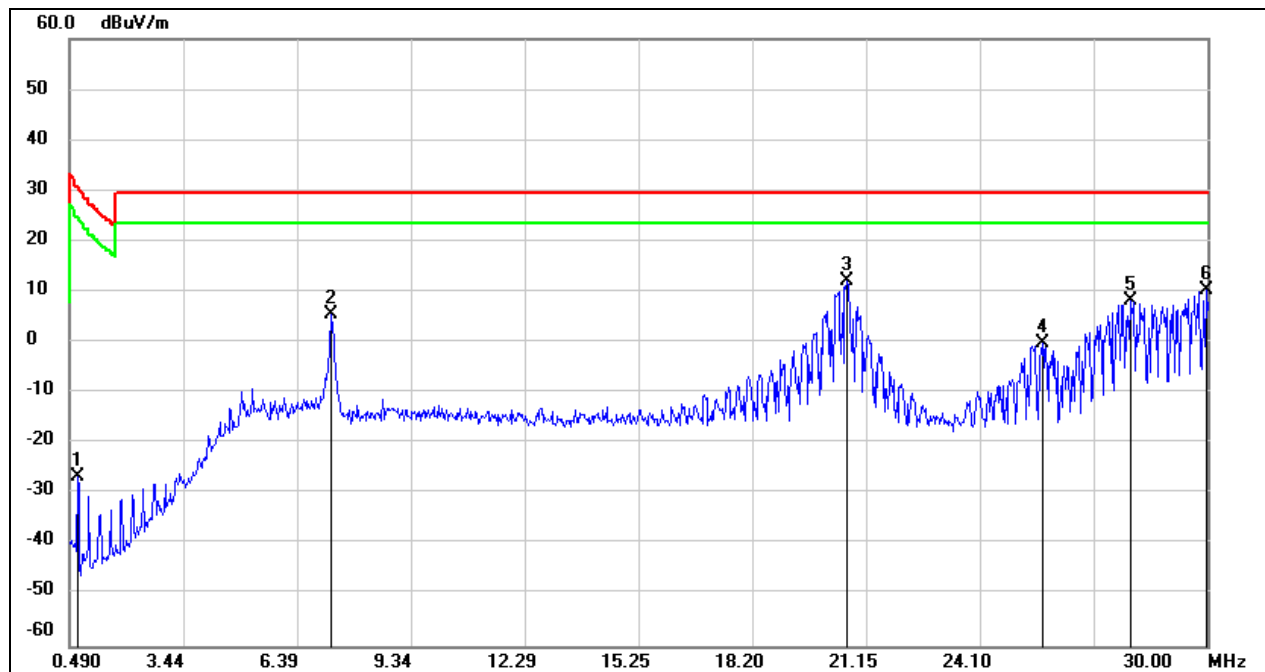
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4*. Point 6 created by mobile phone wireless charging circuit and is not created by Watch wireless charging circuit. It has been verified on mode 8 and mode 10 measurement.



490kHz ~ 30MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.6966	73.81	-100.25	-26.44	30.75	-57.19	peak
2*	7.2773	67.05	-61.60	5.45	29.54	-24.09	peak
3*	20.6453	73.16	-61.08	12.08	29.54	-17.46	peak
4*	25.7211	60.79	-60.93	-0.14	29.54	-29.68	peak
5*	27.9933	69.14	-60.78	8.36	29.54	-21.18	peak
6*	29.9705	71.14	-60.65	10.49	29.54	-19.05	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

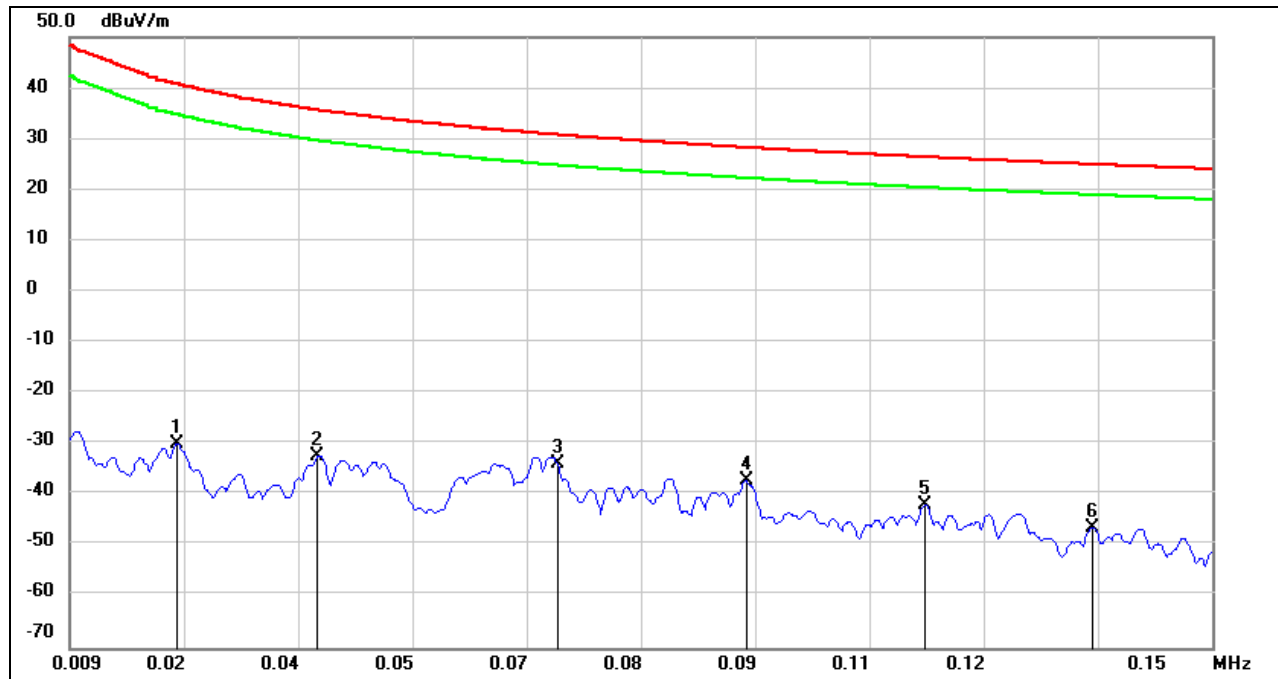
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4*. Point 2 to Point 6 were created from the digital circuit. It is not created by wireless charging modes.



**FCC PART 15C BELOW 30MHz SPURIOUS EMISSIONS (MODE 8 (EUT with watch), LOOP ANTENNA
FACE ON TO THE EUT, WORST-CASE CONFIGURATION)**

9kHz~ 150kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.0223	71.08	-101.01	-29.93	40.77	-70.70	peak
2	0.0396	69.04	-101.24	-32.20	35.66	-67.86	peak
3	0.0692	67.00	-100.99	-33.99	30.81	-64.80	peak
4	0.0923	63.90	-101.16	-37.26	28.31	-65.57	peak
5	0.1145	59.46	-101.46	-42.00	26.44	-68.44	peak
6	0.1352	55.33	-101.71	-46.38	24.99	-71.37	peak

Note: 1. Measurement = Reading Level + Correct Factor.

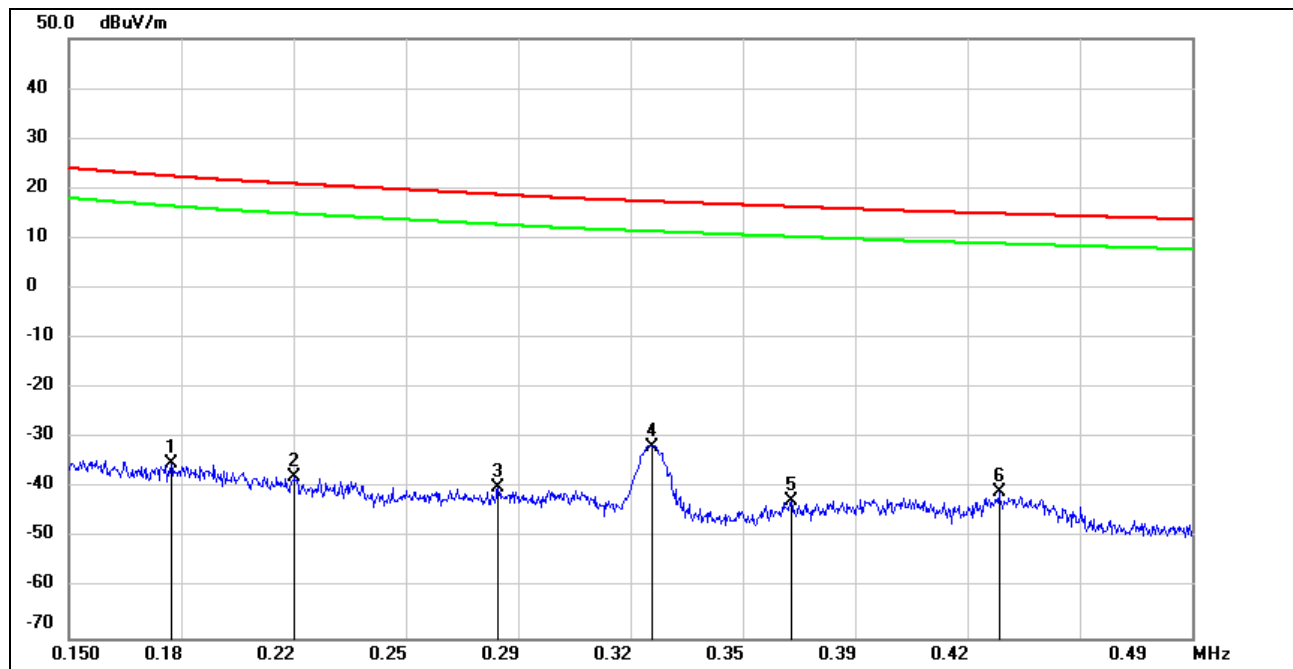
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4. Point 1 was created from the digital circuit. It is not created by wireless charging modes.



150kHz ~ 490kHz

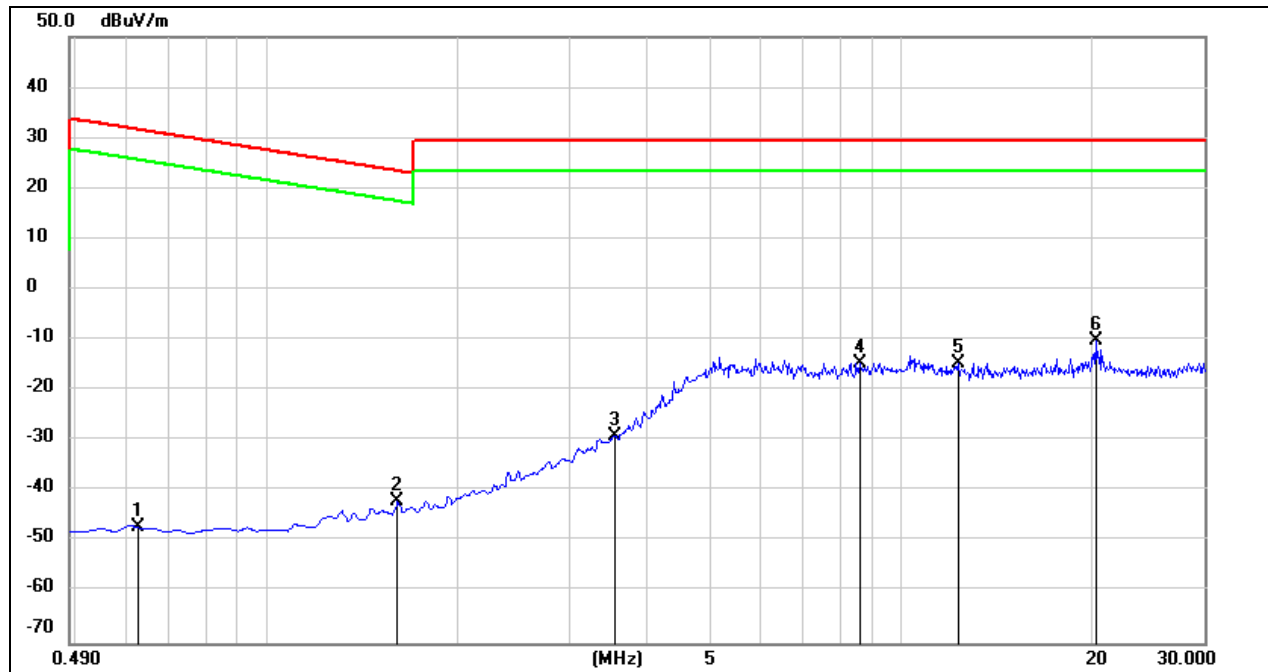


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1809	66.68	-101.86	-35.18	22.46	-57.64	peak
2	0.2183	64.18	-101.82	-37.64	20.94	-58.58	peak
3	0.2799	61.83	-101.78	-39.95	18.77	-58.72	peak
4	0.3265	70.08	-101.77	-31.69	17.40	-49.09	peak
5	0.3686	59.29	-101.75	-42.46	16.34	-58.80	peak
6	0.4315	60.97	-101.73	-40.76	14.94	-55.70	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

490kHz ~ 30MHz

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.6298	53.55	-100.72	-47.17	31.64	-78.81	peak
2	1.6114	49.98	-91.84	-41.86	23.46	-65.32	peak
3	3.5590	45.59	-74.73	-29.14	29.54	-58.68	peak
4*	8.6053	46.79	-61.41	-14.62	29.54	-44.16	peak
5*	12.2940	46.69	-61.34	-14.65	29.54	-44.19	peak
6*	20.2322	50.93	-61.09	-10.16	29.54	-39.70	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

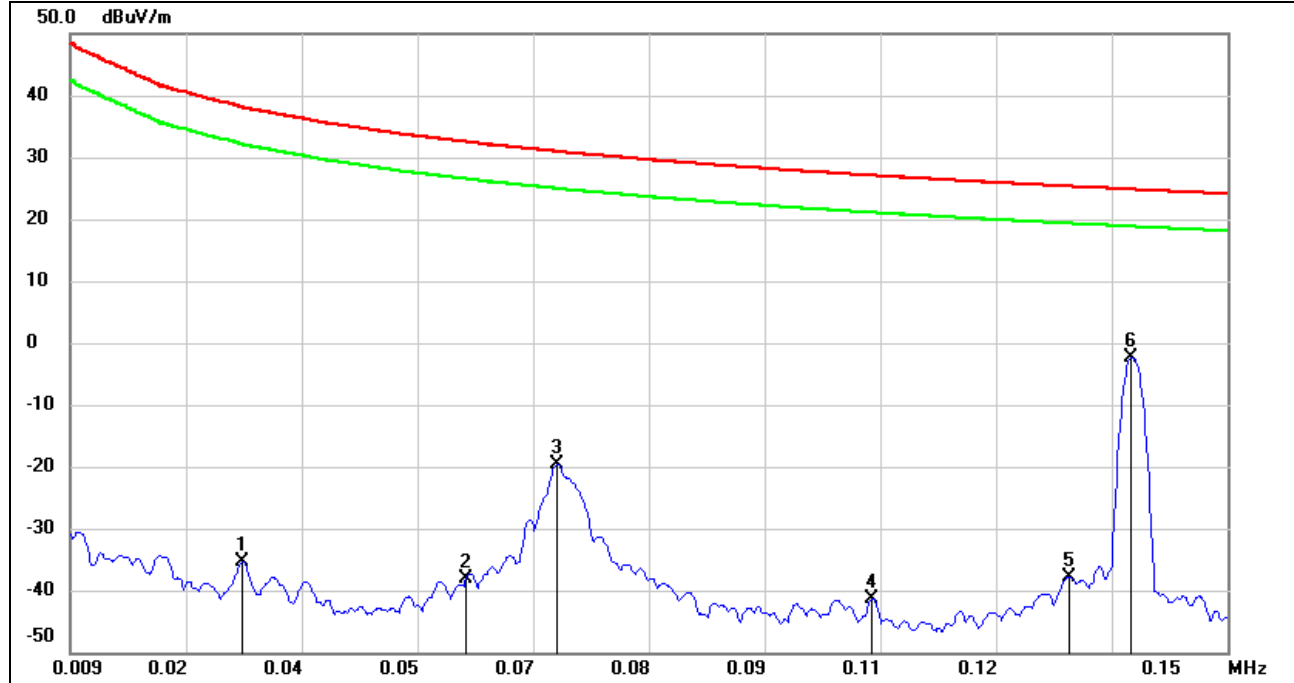
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4*. Point 3 to Point 6 were created from the digital circuit. It is not created by wireless charging modes.



FCC PART 15C BELOW 30MHz SPURIOUS EMISSIONS (MODE 10 (EUT with 10W loading) , LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)

9kHz~ 150kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1*	0.0300	65.69	-101.11	-35.42	38.06	-73.48	peak
2	0.0572	63.08	-101.24	-38.16	32.48	-70.64	peak
3	0.0684	81.31	-101.01	-19.70	30.91	-50.61	peak
4	0.1067	60.02	-101.36	-41.34	27.05	-68.39	peak
5	0.1307	63.82	-101.66	-37.84	25.28	-63.12	peak
6	0.1383	99.31	-101.75	-2.44	24.79	-27.23	peak

Note: 1. Measurement = Reading Level + Correct Factor.

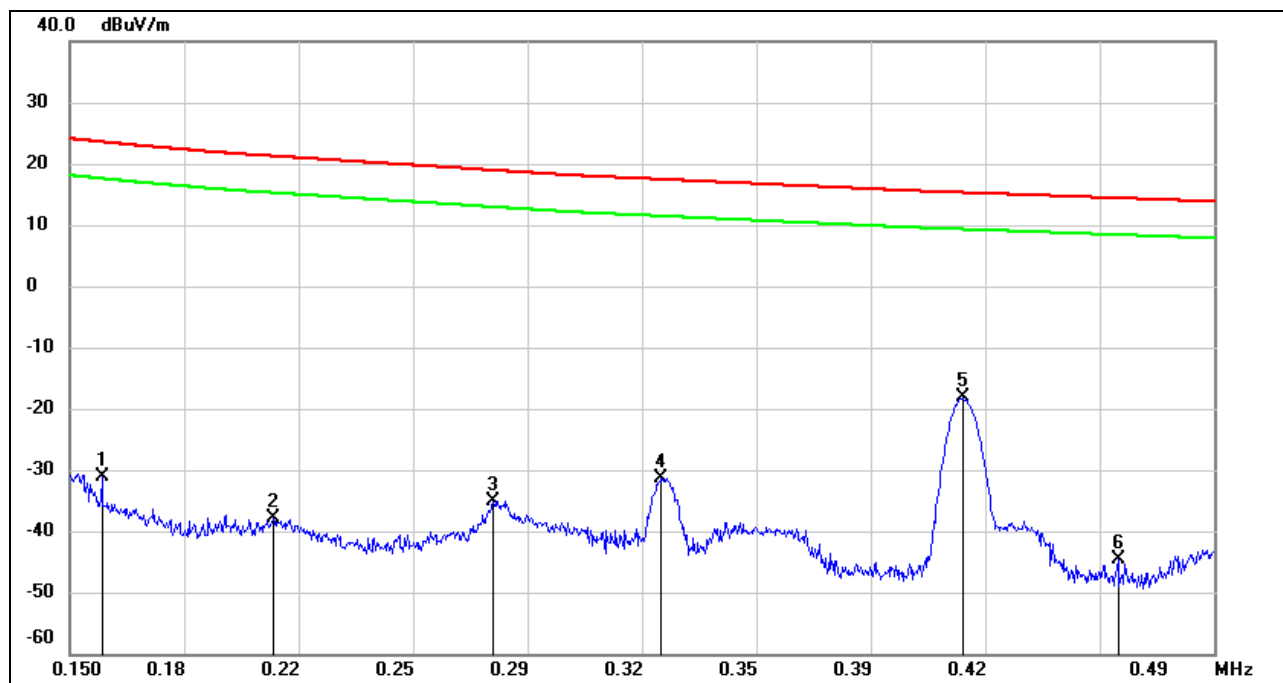
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4*. Point 1 was created from the digital circuit. It is not created by wireless charging modes.



150kHz ~ 490kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1595	70.81	-101.88	-31.07	23.55	-54.62	peak
2	0.2105	64.06	-101.83	-37.77	21.21	-58.98	peak
3	0.2758	66.75	-101.78	-35.03	18.91	-53.94	peak
4	0.3258	70.47	-101.77	-31.30	17.41	-48.71	peak
5*	0.4152	83.54	-101.73	-18.19	15.26	-33.45	peak
6	0.4614	57.07	-101.72	-44.65	14.36	-59.01	peak

Note: 1. Measurement = Reading Level + Correct Factor.

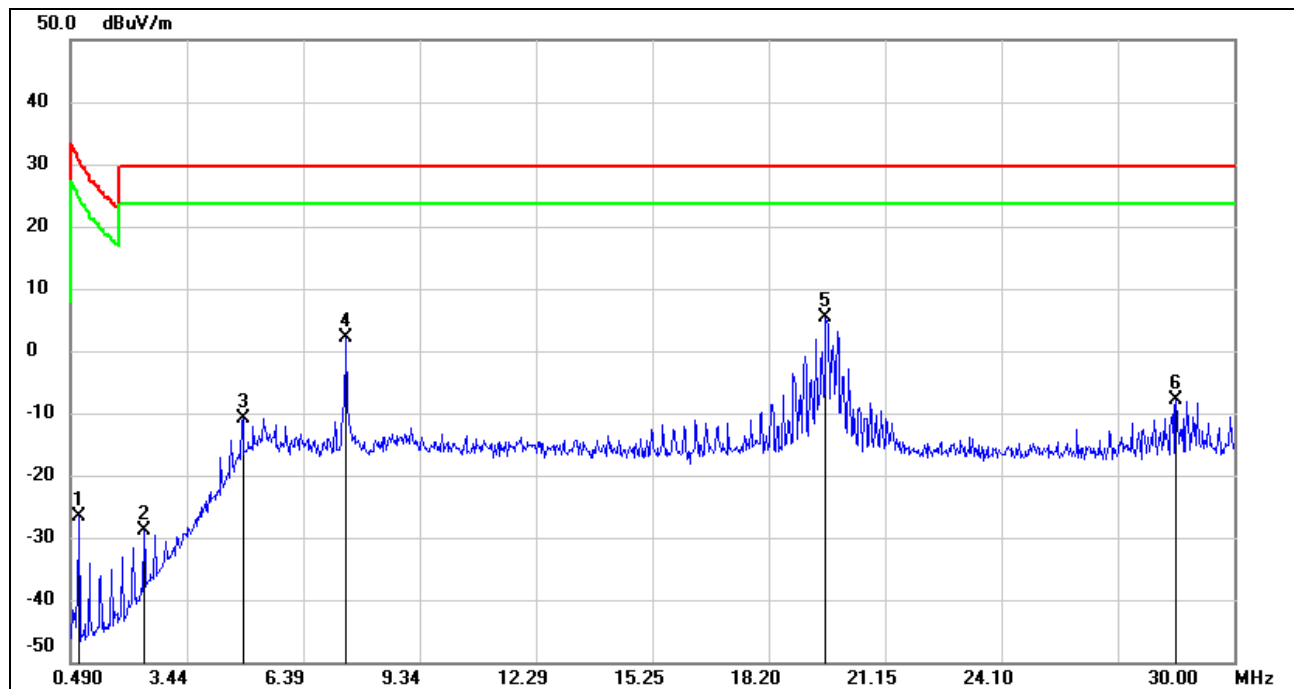
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4*. Point 5 created by mobile phone wireless charging circuit.



490kHz ~ 30MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.6966	73.56	-100.25	-26.69	30.75	-57.44	peak
2	2.3491	56.43	-85.36	-28.93	29.54	-58.47	peak
3	4.8575	52.41	-63.18	-10.77	29.54	-40.31	peak
4*	7.4839	63.75	-61.56	2.19	29.54	-27.35	peak
5*	19.6420	66.40	-61.12	5.28	29.54	-24.26	peak
6*	28.5245	52.94	-60.75	-7.81	29.54	-37.35	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

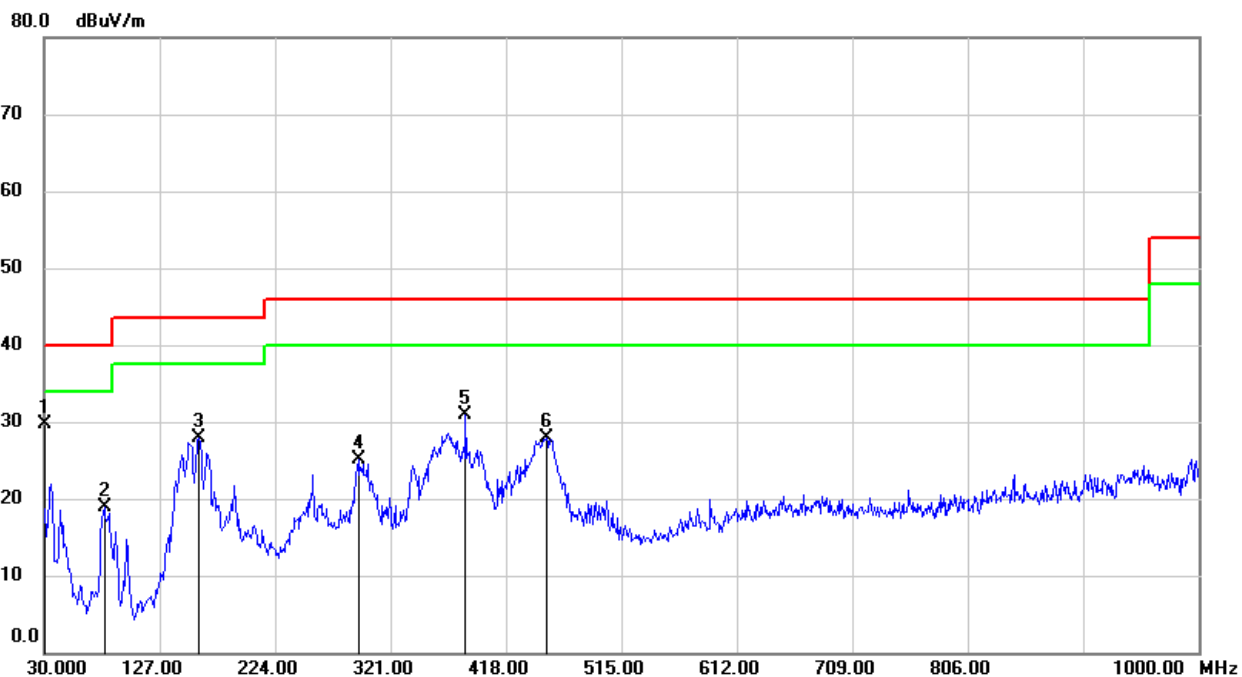
4*. Point 4 and Point 5 were created from the digital circuit. It is not created by wireless charging modes. Point 6 was not created from the watch wireless charging circuit.

Note: All the modes have been tested, only the worst data record in the report.



7.2. SPURIOUS EMISSIONS 30MHz - 1GHz

FCC PART15C SPURIOUS EMISSIONS (MODE 6, WORST-CASE CONFIGURATION, HORIZONTAL)

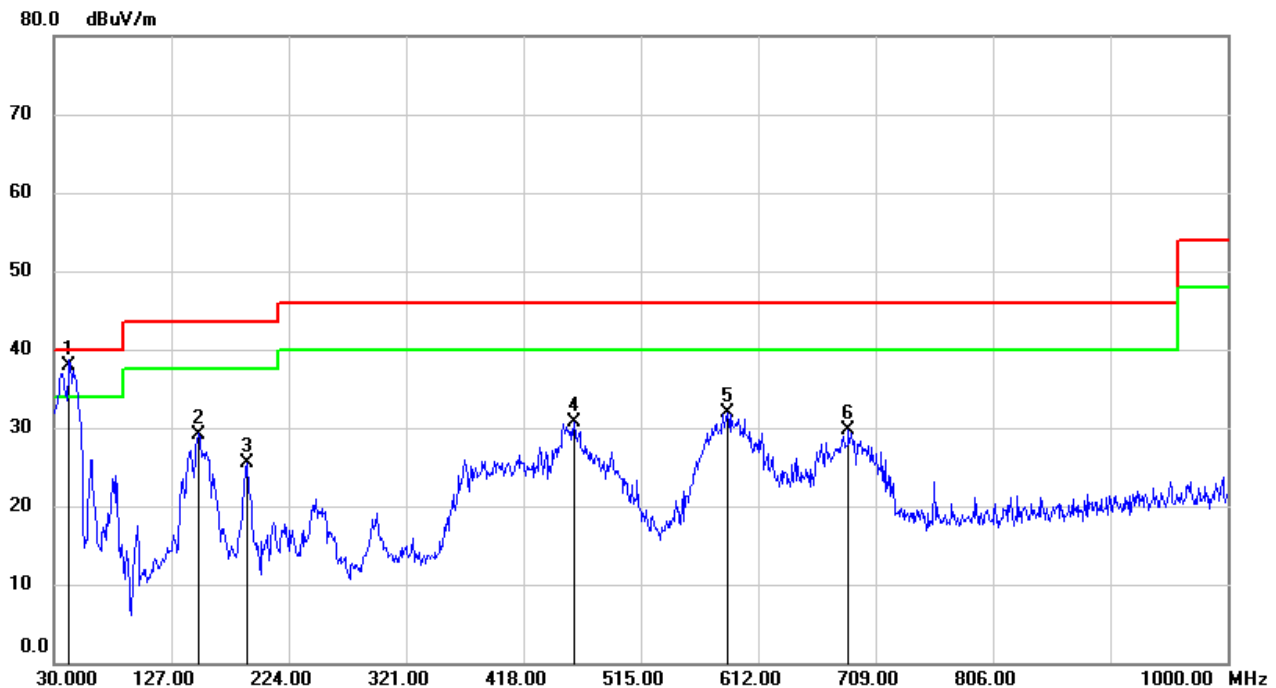


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	46.65	-17.00	29.65	40.00	-10.35	QP
2	80.4400	39.33	-20.52	18.81	40.00	-21.19	QP
3	159.9800	45.62	-17.77	27.85	43.50	-15.65	QP
4	293.8400	39.29	-14.22	25.07	46.00	-20.93	QP
5	384.0500	43.57	-12.60	30.97	46.00	-15.03	QP
6	451.9500	39.38	-11.41	27.97	46.00	-18.03	QP

Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
4. All these noise were created from the digital circuit. It is not created by wireless charging mode.



FCC PART15C SPURIOUS EMISSIONS (MODE 6, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	42.6100	56.01	-18.03	37.98	40.00	-2.02	QP
2	149.3100	47.55	-18.35	29.20	43.50	-14.30	QP
3	190.0500	41.97	-16.47	25.50	43.50	-18.00	QP
4	459.7100	42.12	-11.44	30.68	46.00	-15.32	QP
5	586.7800	40.66	-8.67	31.99	46.00	-14.01	QP
6	686.6900	36.64	-6.90	29.74	46.00	-16.26	QP

Note: 1. Result Level = Read Level + Correct Factor.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

4. All these noise were created from the digital circuit. It is not created by wireless charging mode.

Note: All the modes had been tested, but only the worst data recorded in the report.

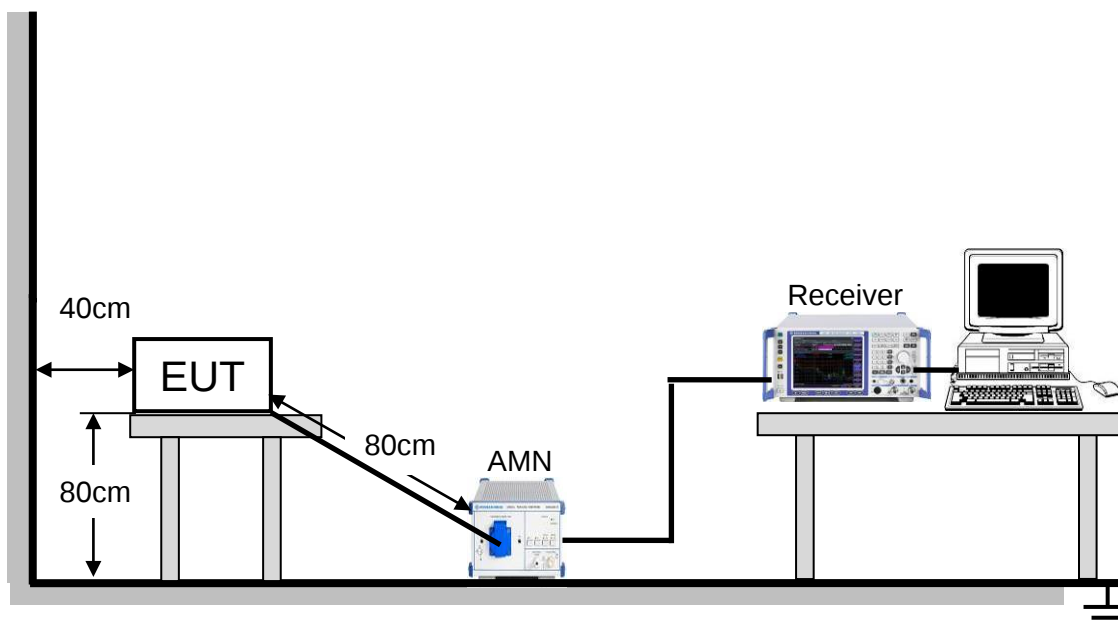
8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to FCC §15.207 (a) .

FREQUENCY (MHz)	(dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

TEST SETUP AND PROCEDURE

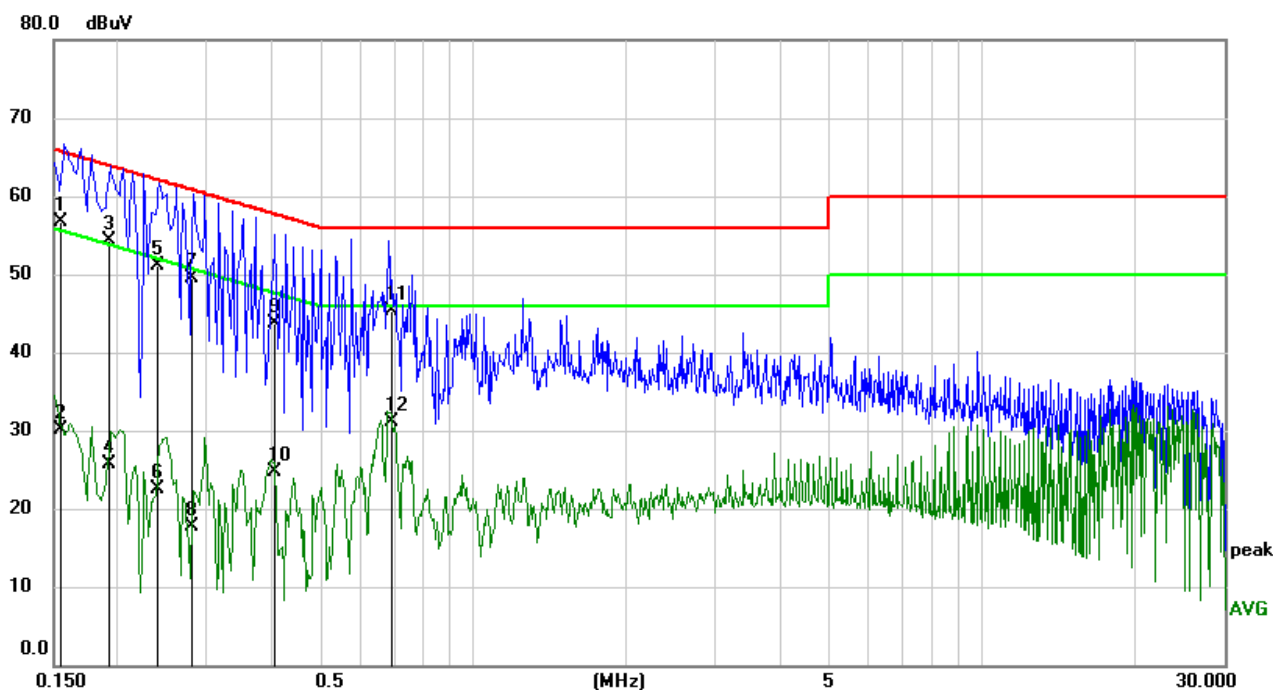


The EUT is put on a table of non-conducting material that is 0.8m high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.). An EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz. The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.



TEST RESULTS

LINE L RESULTS (MODE 6, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1546	47.07	9.61	56.68	65.75	-9.07	QP
2	0.1546	20.56	9.61	30.17	55.75	-25.58	AVG
3	0.1921	44.68	9.60	54.28	63.95	-9.67	QP
4	0.1921	16.17	9.60	25.77	53.95	-28.18	AVG
5	0.2396	41.42	9.60	51.02	62.11	-11.09	QP
6	0.2396	12.81	9.60	22.41	52.11	-29.70	AVG
7	0.2798	39.86	9.60	49.46	60.82	-11.36	QP
8	0.2798	8.05	9.60	17.65	50.82	-33.17	AVG
9	0.4063	34.08	9.60	43.68	57.72	-14.04	QP
10	0.4063	15.19	9.60	24.79	47.72	-22.93	AVG
11	0.6939	35.61	9.60	45.21	56.00	-10.79	QP
12	0.6939	21.53	9.60	31.13	46.00	-14.87	AVG

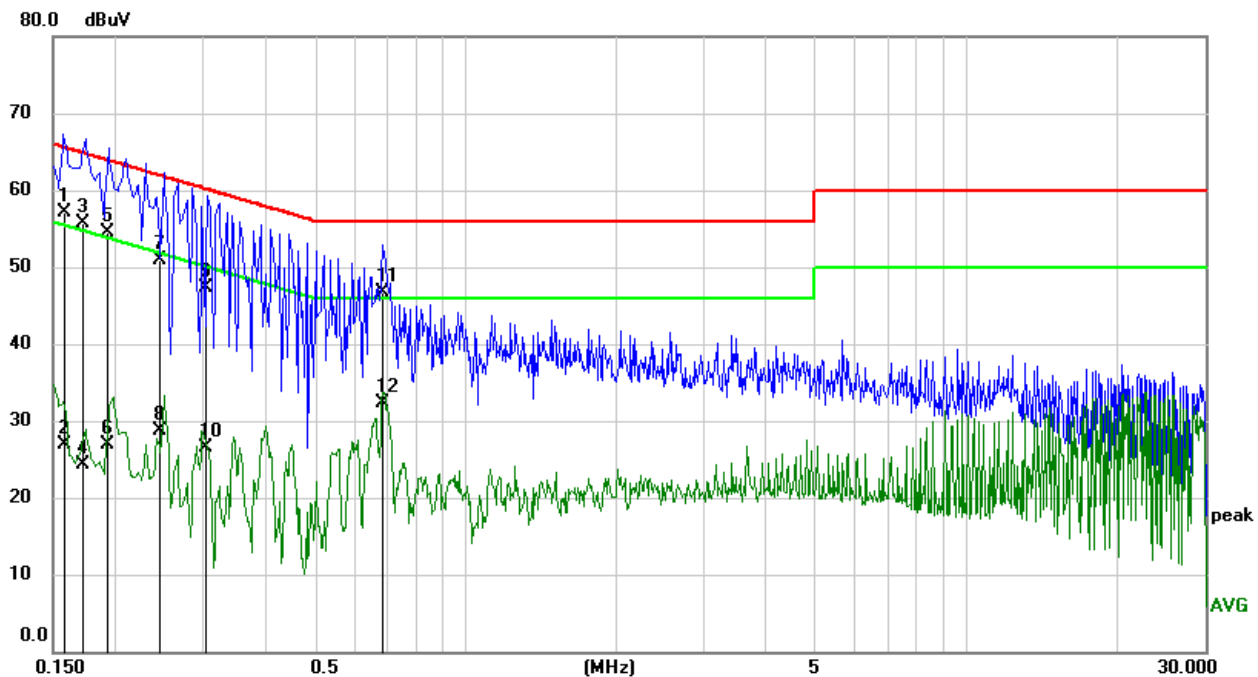
Note: 1. Result = Reading +Correct Factor.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

5. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.

**LINE N RESULTS (MODE 6, WORST-CASE CONFIGURATION)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1587	47.59	9.60	57.19	65.53	-8.34	QP
2	0.1587	17.36	9.60	26.96	55.53	-28.57	AVG
3	0.1712	46.05	9.60	55.65	64.90	-9.25	QP
4	0.1712	14.74	9.60	24.34	54.90	-30.56	AVG
5	0.1917	44.82	9.60	54.42	63.96	-9.54	QP
6	0.1917	17.28	9.60	26.88	53.96	-27.08	AVG
7	0.2458	41.39	9.60	50.99	61.90	-10.91	QP
8	0.2458	19.19	9.60	28.79	51.90	-23.11	AVG
9	0.3020	37.71	9.60	47.31	60.19	-12.88	QP
10	0.3020	16.89	9.60	26.49	50.19	-23.70	AVG
11	0.6857	37.17	9.60	46.77	56.00	-9.23	QP
12	0.6857	22.75	9.60	32.35	46.00	-13.65	AVG

Note: 1. Result = Reading +Correct Factor.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

5. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.

Note: All the modes had been tested, but only the worst data recorded in the report.

END OF REPORT