



## **FCC 47 CFR PART 15 SUBPART C**

### **CERTIFICATION TEST REPORT**

*For*

**Car Wireless Charger**

**MODEL NUMBER: CHG-WIRELESS 3.0**

**FCC ID: 2AEQT-KEAG66CHX**

**REPORT NUMBER: 4790338311.2-1**

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*Prepared for*

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	04/20/2022	Initial Issue	



Summary of Test Results		
Description of Test Item	Standard	Results
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.		



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## 1. ATTESTATION OF TEST RESULTS

### Applicant Information

Company Name: Huizhou Desay SV Automotive Co., Ltd.  
Address: NO.103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou, Guangdong, P.R. China

### Manufacturer Information

Company Name: Huizhou Desay SV Automotive Co., Ltd.  
Address: NO.103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou, Guangdong, P.R. China

### EUT Information

EUT Name: Car Wireless Charger  
Model: CHG-WIRELESS 3.0  
Brand: DESAY SV  
Sample Received Date: April 1, 2022  
Sample Status: Normal  
Sample ID: 4822219  
Date of Tested: April 8, 2022 ~ April 20, 2022

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

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Laboratory Leader

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## 2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC CFR 47 Part 2, KDB 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 15, ANSI C63.10-2013.

## 3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p><b>A2LA (Certificate No.: 4102.01)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1187)</b> 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</p> <p><b>ISED (Company No.: 21320)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p><b>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)</b> 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</p>
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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

Note 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.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz 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	Uncertainty
Conduction Emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
DTS and 99% Occupied Bandwidth	±0.0196%
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	Car Wireless Charger	
Model	CHG-WIRELESS 3.0	
Product Description	Operation Frequency	125.95 kHz and 127.7 kHz
Rated Output Power	15 W	
Antenna type	Coil	
Ratings	DC 12 V	

Note 1: The EUT have 3 coils, but only 1 coil was active at the same time, all the coils and circuit before antenna are the same.

Note 2: Because of the limited of the circuit, the 3 coils can't be active at the same time.

Note 3: All the 3 coils were tested, but only the worst data was recorded in the report.

### 5.2. TEST MODE

Test Mode	Description
Mode 1	Charging with 15 W wireless charging load (Full Load)
Mode 2	Charging with 15 W wireless charging load (Half Load)
Mode 3	Charging with 15 W wireless charging load (No Load)

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





### 5.3. ACCESSORY

#### SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Series No.
1	Wireless charger RX artificial load	/	/	/

#### I/O CABLES

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

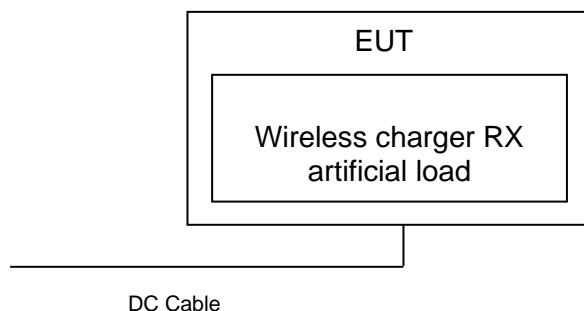
#### ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
/	/	/	/	/

#### TEST SETUP

The EUT support wireless charging.

#### SETUP DIAGRAM FOR TEST





#### 5.4. MEASURING INSTRUMENT LIST

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.30, 2021	Oct.29, 2022
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug.02, 2021	Aug.01, 2024
Preamplifier	HP	8447D	2944A09099	Oct.30, 2021	Oct.29, 2022
Loop antenna	Schwarzbeck	1519B	00008	Dec.14, 2021	Dec.13, 2024
Preamplifier	TDK	PA-02-001-3000	TRS-305-00067	Oct.31, 2021	Oct.30, 2022
Software					
Description			Manufacturer	Name	Version
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1

Other Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
<input checked="" type="checkbox"/>	Signal & Spectrum analyzer	R&S	FSW	1312.8000K26-103950-sj	Oct.31, 2021	Oct.30, 2022



## 6. 20dB BANDWIDTH TEST

### LIMITS

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.

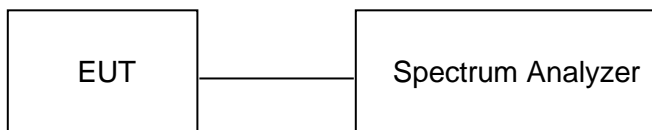
### TEST PROCEDURE

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 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

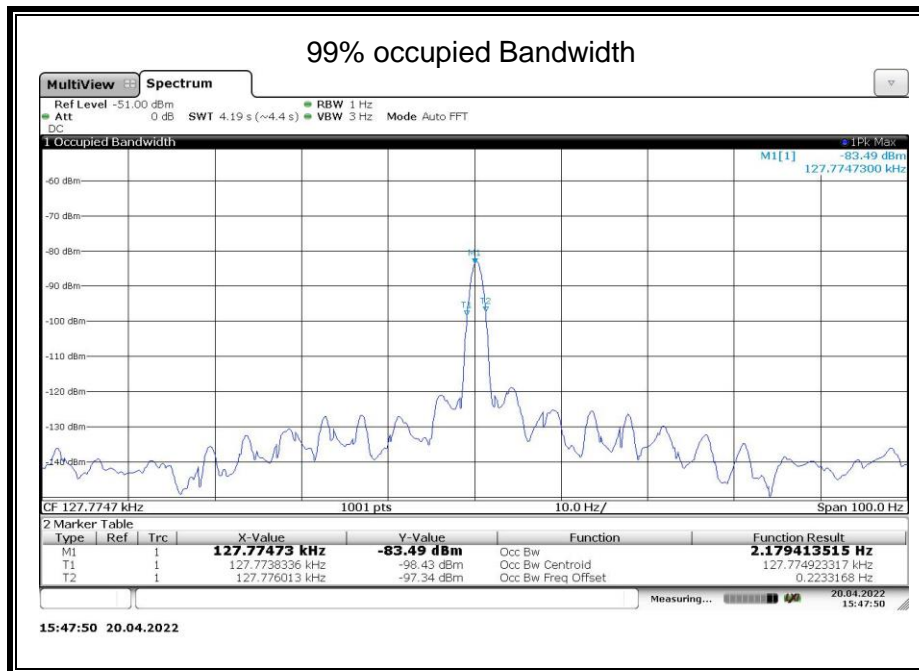
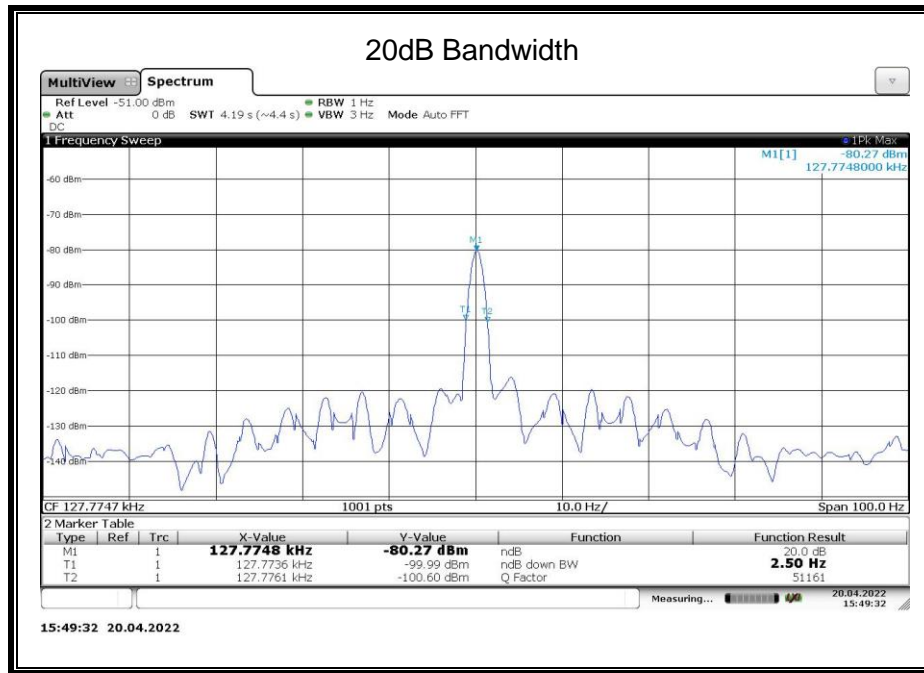


### TEST ENVIRONMENT

Temperature	24.5 °C	Relative Humidity	57 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 12 V

### RESULTS

Frequency (kHz)	20dB Bandwidth (Hz)	99% occupied Bandwidth (Hz)
127.7	2.5	2.1794



## 7. RADIATED EMISSION TEST

### LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

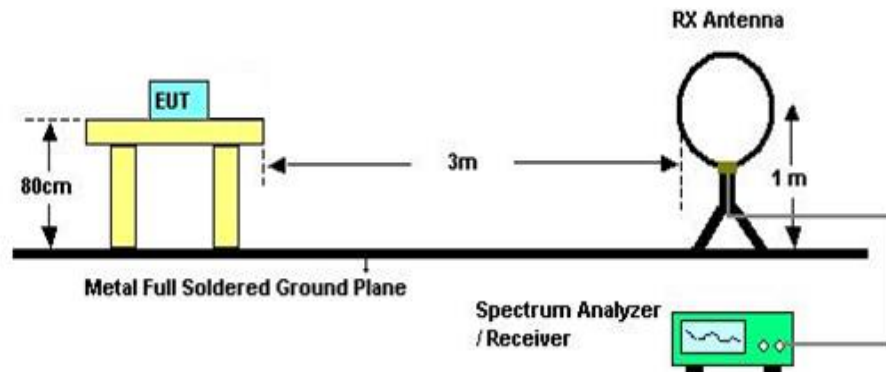
Radiated emissions limits for FCC (Class B) (9 kHz ~ 1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

Emissions radiated outside of the specified frequency bands below 30 MHz		
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

## TEST SETUP AND PROCEDURE

Below 30 MHz

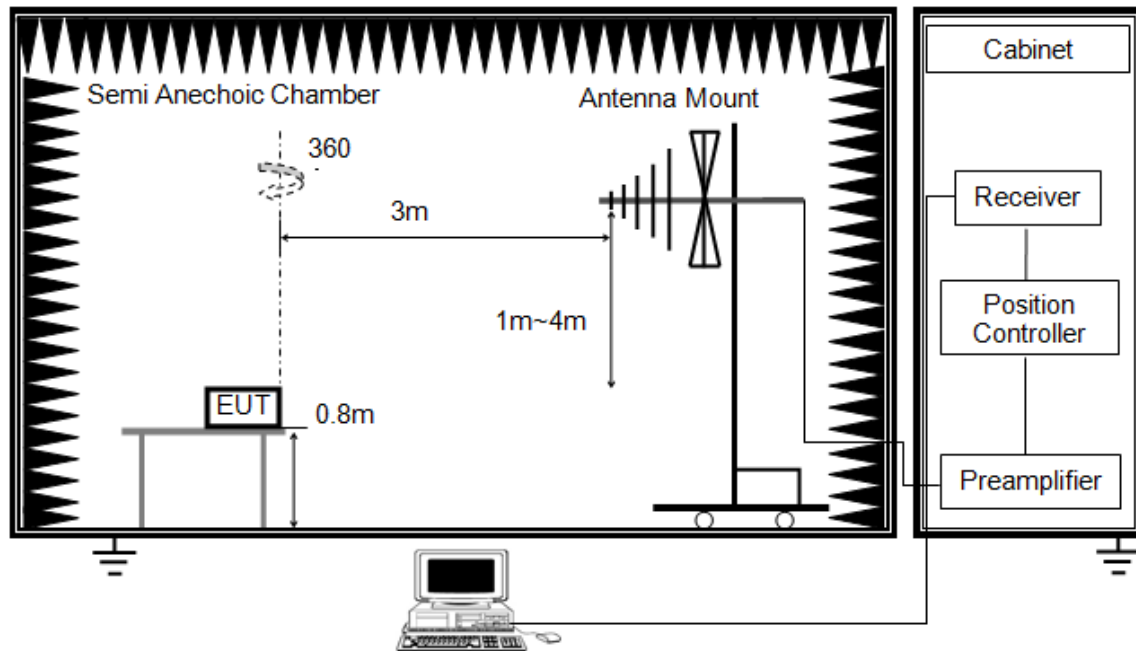


The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.
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 above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m 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 1 GHz, 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 and average 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 and average detector and reported.
7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field 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 site based on KDB 414788.

Below 1 GHz and above 30 MHz



The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.
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 80 cm 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 1 GHz, 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.



**TEST ENVIRONMENT**

Temperature	22.1 °C	Relative Humidity	56 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 12 V

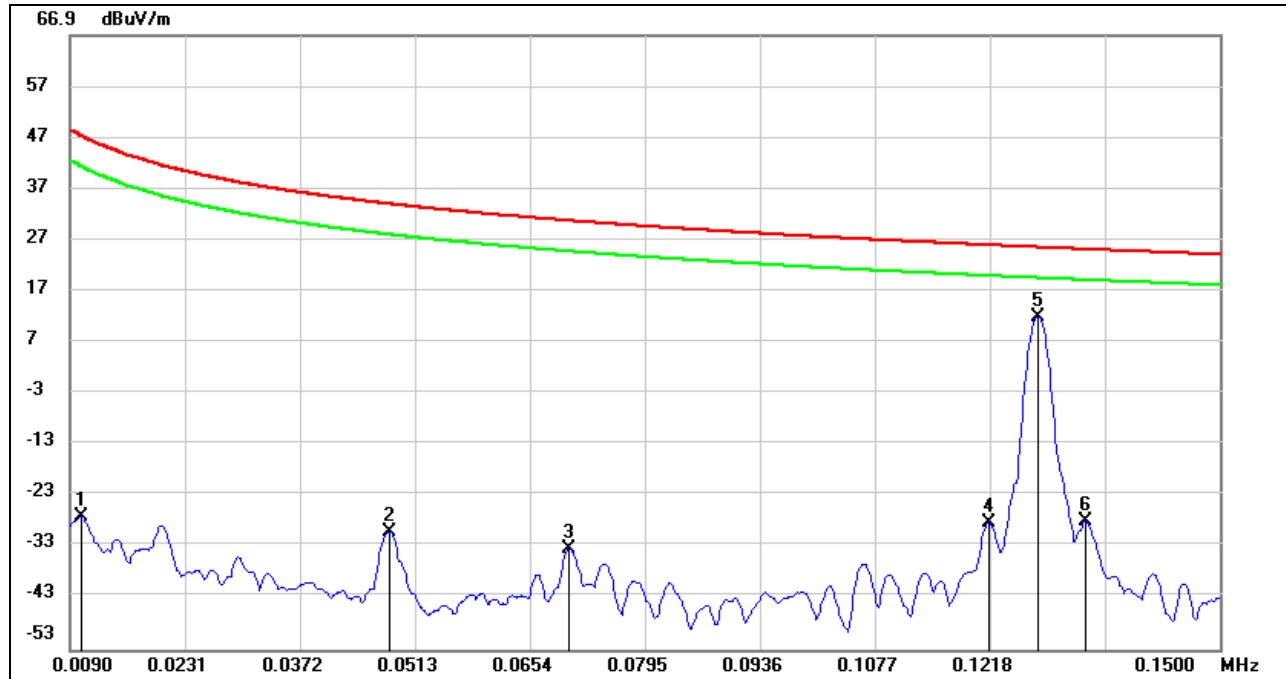
**RESULTS**



## 7.1. SPURIOUS EMISSIONS BELOW 30 MHz

### FCC PART 15C BELOW 30MHz SPURIOUS EMISSIONS (LOOP ANTENNA FACE ON TO THE EUT)

9 kHz ~ 150 kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0103	74.47	-101.56	-27.09	47.34	-74.43	peak
2	0.0481	71.33	-101.35	-30.02	33.96	-63.98	peak
3	0.0702	67.58	-100.97	-33.39	30.68	-64.07	peak
4	0.1217	73.17	-101.55	-28.38	25.90	-54.28	peak
5	0.1277	113.58	-101.62	11.96	25.49	-13.53	peak
6	0.1335	73.66	-101.69	-28.03	25.10	-53.13	peak

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

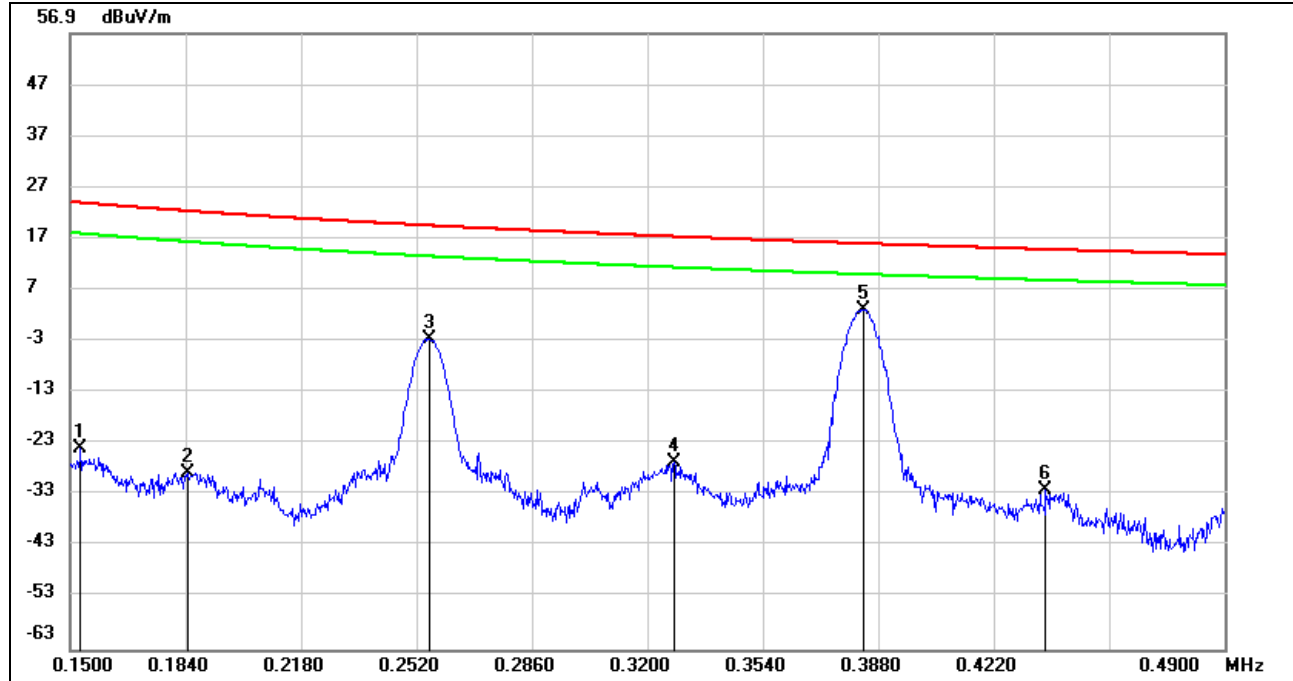
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

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. The test was performed at 3 m test site, but we added the corresponding factor to extrapolated the result to the specified distance according to FCC 15.31(f)(2).

5.  $\text{dBuA/m} = \text{dBuV/m} - 20\log_{10}(120\pi) = \text{dBuV/m} - 51.5$ .

### 150 kHz ~ 490 kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1531	78.04	-101.89	-23.85	23.90	-47.75	peak
2	0.1847	73.14	-101.86	-28.72	22.28	-51.00	peak
3	0.2556	99.27	-101.79	-2.52	19.45	-21.97	peak
4	0.3277	75.04	-101.77	-26.73	17.29	-44.02	peak
5	0.3836	104.84	-101.75	3.09	15.92	-12.83	peak
6	0.4373	69.81	-101.73	-31.92	14.79	-46.71	peak

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

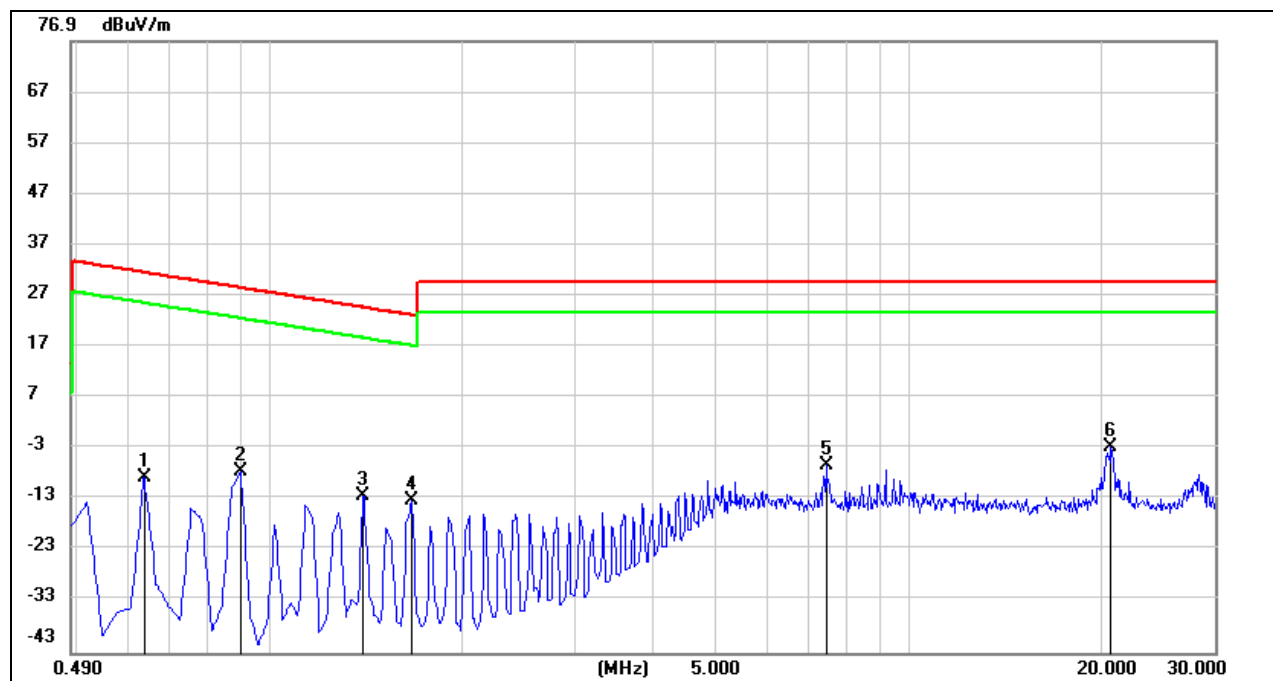
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

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. The test was performed at 3 m test site, but we added the corresponding factor to extrapolated the result to the specified distance according to FCC 15.31(f)(2).

5.  $\text{dBuA/m} = \text{dBuV/m} - 20\log_{10}(120\pi) = \text{dBuV/m} - 51.5$ .

### 490 kHz ~ 30 MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.6375	91.95	-100.66	-8.71	31.51	-40.22	peak
2	0.9031	90.78	-98.36	-7.58	28.49	-36.07	peak
3	1.4048	81.39	-93.70	-12.31	24.65	-36.96	peak
4	1.6704	78.07	-91.30	-13.23	23.15	-36.38	peak
5	7.4249	55.27	-61.57	-6.30	29.54	-35.84	peak
6	20.6748	58.42	-61.08	-2.66	29.54	-32.20	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.

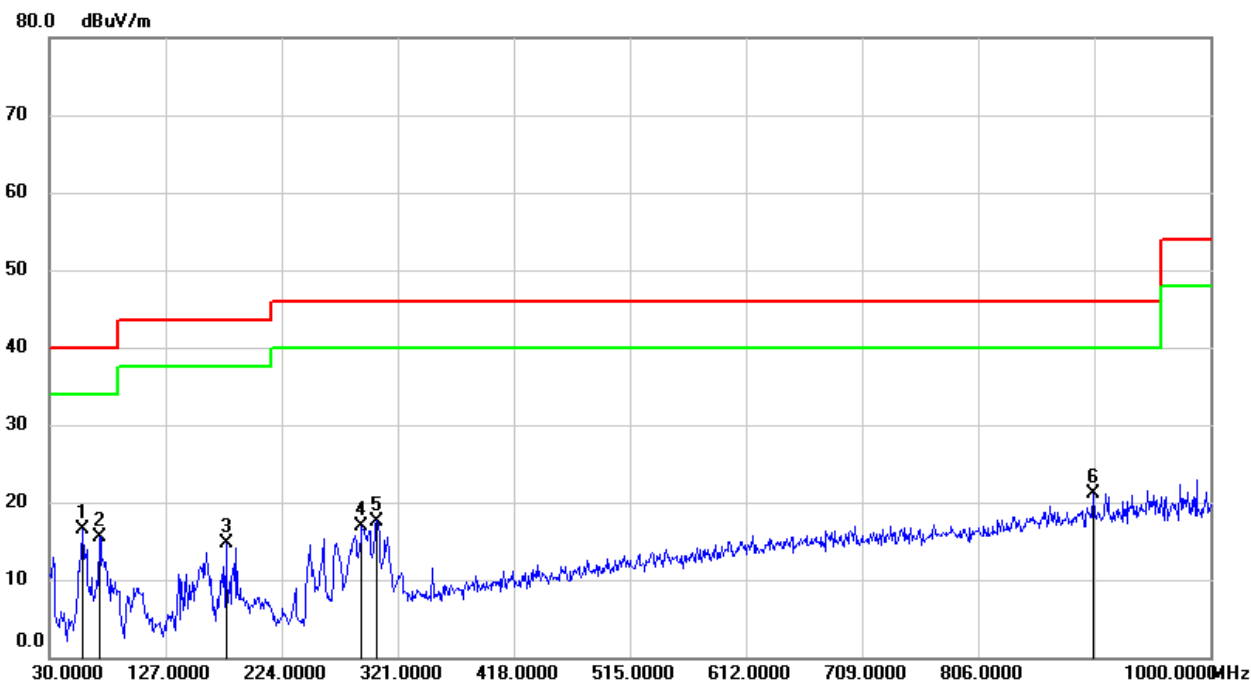
4. The test was performed at 3 m test site, but we added the corresponding factor to extrapolated the result to the specified distance according to FCC 15.31(f)(2).

5.  $\text{dBuA/m} = \text{dBuV/m} - 20\log_{10}(120\pi) = \text{dBuV/m} - 51.5$ .



## 7.2. SPURIOUS EMISSIONS 30 MHz ~ 1 GHz

### FCC PART15C SPURIOUS EMISSIONS (HORIZONTAL)



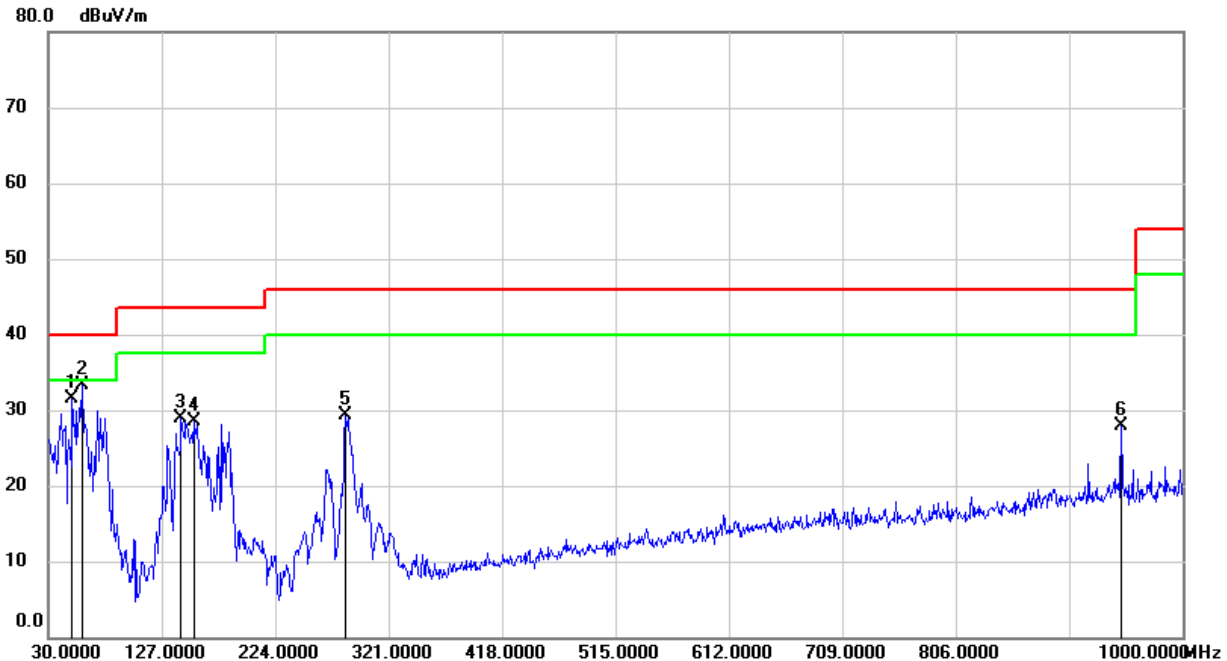
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	58.1300	37.06	-20.55	16.51	40.00	-23.49	QP
2	71.7100	36.22	-20.70	15.52	40.00	-24.48	QP
3	177.4400	31.67	-16.97	14.70	43.50	-28.80	QP
4	290.9300	32.72	-15.84	16.88	46.00	-29.12	QP
5	303.5400	32.82	-15.22	17.60	46.00	-28.40	QP
6	902.0300	26.22	-5.16	21.06	46.00	-24.94	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 the noise are created from the digital circuit. It is not created by wireless charging circuit.

**FCC PART15C SPURIOUS EMISSIONS (VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	50.3700	52.18	-20.76	31.42	40.00	-8.58	QP
2	59.1000	53.78	-20.52	33.26	40.00	-6.74	QP
3	143.4900	47.60	-18.66	28.94	43.50	-14.56	QP
4	154.1600	46.49	-18.06	28.43	43.50	-15.07	QP
5	284.1400	45.57	-16.36	29.21	46.00	-16.79	QP
6	947.6200	32.34	-4.43	27.91	46.00	-18.09	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 the noise are created from the digital circuit. It is not created by wireless charging circuit.

**END OF REPORT**