

FCC Part 15C

Measurement and Test Report

For
Sunlike Technology Co., Ltd.

FCC ID: 2APOS-SL-PWW-10

FCC Rules: FCC Part 15C

Product Description: Fast Wireless Charging Station

Tested Model: SL-PWW-10

Report No.: BSL18038502700001Y-ER-3

Tested Date: Apr. 16~20, 2018

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Sunlike Technology Co., Ltd.
 Building 3, Shi'ao 2nd Industrial Zone, DaLang Street,
 LongHua New District.Shenzhen City, Guangdong
 Address of applicant: Province, China 518109

Manufacturer: Sunlike Technology Co., Ltd.
 Building 3, Shi'ao 2nd Industrial Zone, DaLang Street,
 LongHua New District.Shenzhen City, Guangdong
 Address of manufacturer: Province, China 518109

| General Description of EUT | |
|--|--------------------------------|
| Product Name: | Fast Wireless Charging Station |
| Trade Name: | ZYD |
| Model No.: | SL-PWW-10 |
| Adding Model(s): | N/A |
| <i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i> | |

| Technical Characteristics of EUT | |
|----------------------------------|-------------------------|
| Frequency Range: | 112~205KHz |
| Rated Voltage: | DC 5V (Wireless output) |
| Rated Current: | 1A (Wireless output) |
| Rated Power: | 5W (Wireless output) |

1.2 Test Standards

The following report is prepared on behalf of the Dolphin Electronics Co., Ltd in accordance with Part 2, Subpart J, and FCC Part 15, Subpart B, Subpart C, and section 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.207, and 15.209 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices, and ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

BSL Testing Co.,LTD.
NO. 24, ZH Park, Nantou, Shenzhen, 518000 China
Designation Number : CN1217
Test Firm Registration Number: 866035
Tel: 86- 755-26508703
Fax: 86- 755-26508703

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

| Test Mode | Description | Remark |
|-----------|-------------|-------------------|
| TM1 | Charging | With load |
| TM2 | Charging | With mobile phone |

Note: Test was performed with TM1 and TM2, TM1 is the worst case so it is only showed in this report.

EUT Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|-------------------|------------|---------------------|------------------------|
| AUX Cable | 0.8 | Unshielded | Without Ferrite |

Auxiliary Equipment List and Details

| Description | Manufacturer | Model | Serial Number |
|--------------|--------------|---------|---------------|
| Mobile Phone | SAMSUNG | SM-920V | / |
| Adapter | / | / | / |

Special Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|-------------------|------------|---------------------|------------------------|
| / | / | / | / |

1.6 Measurement Uncertainty

| Measurement uncertainty | | |
|--------------------------------|------------|---------------------|
| Parameter | Conditions | Uncertainty |
| Conducted Emissions | Conducted | $\pm 2.88\text{dB}$ |
| Transmitter Spurious Emissions | Radiated | $\pm 5.1\text{dB}$ |

1.7 Test Equipment List and Details

| Description | Manufacturer | Model | Serial Number | Cal Date | Due Date |
|--------------------|---------------------|--------------|----------------------|-----------------|-----------------|
| Spectrum Analyzer | Agilent | E4407B | MY41440400 | 2017-06-17 | 2018-06-16 |
| Spectrum Analyzer | Rohde & Schwarz | FSP | 836079/035 | 2017-06-17 | 2018-06-16 |
| EMI Test Receiver | Rohde & Schwarz | ESVB | 825471/005 | 2017-06-17 | 2018-06-16 |
| Amplifier | Agilent | 8447F | 3113A06717 | 2017-06-17 | 2018-06-16 |
| Amplifier | C&D | PAP-1G18 | 2002 | 2017-06-17 | 2018-06-16 |
| Broadband Antenna | Schwarz beck | VULB9163 | 9163-333 | 2017-06-17 | 2018-06-16 |
| Horn Antenna | ETS | 3117 | 00086197 | 2017-06-17 | 2018-06-16 |
| Loop Antenna | Schwarz beck | FMZB 1516 | 9773 | 2017-06-17 | 2018-06-16 |
| EMI Test Receiver | Rohde & Schwarz | ESPI | 101611 | 2017-06-17 | 2018-06-16 |
| L.I.S.N | Schwarz beck | NSLK8126 | 8126-224 | 2017-06-17 | 2018-06-16 |
| Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100911 | 2017-06-17 | 2018-06-16 |

2. SUMMARY OF TEST RESULTS

| Description of Test | Result |
|--------------------------------|---------------|
| §15.207 (a) Conducted Emission | Compliant |
| §15.209(a) Radiated Emission | Compliant |

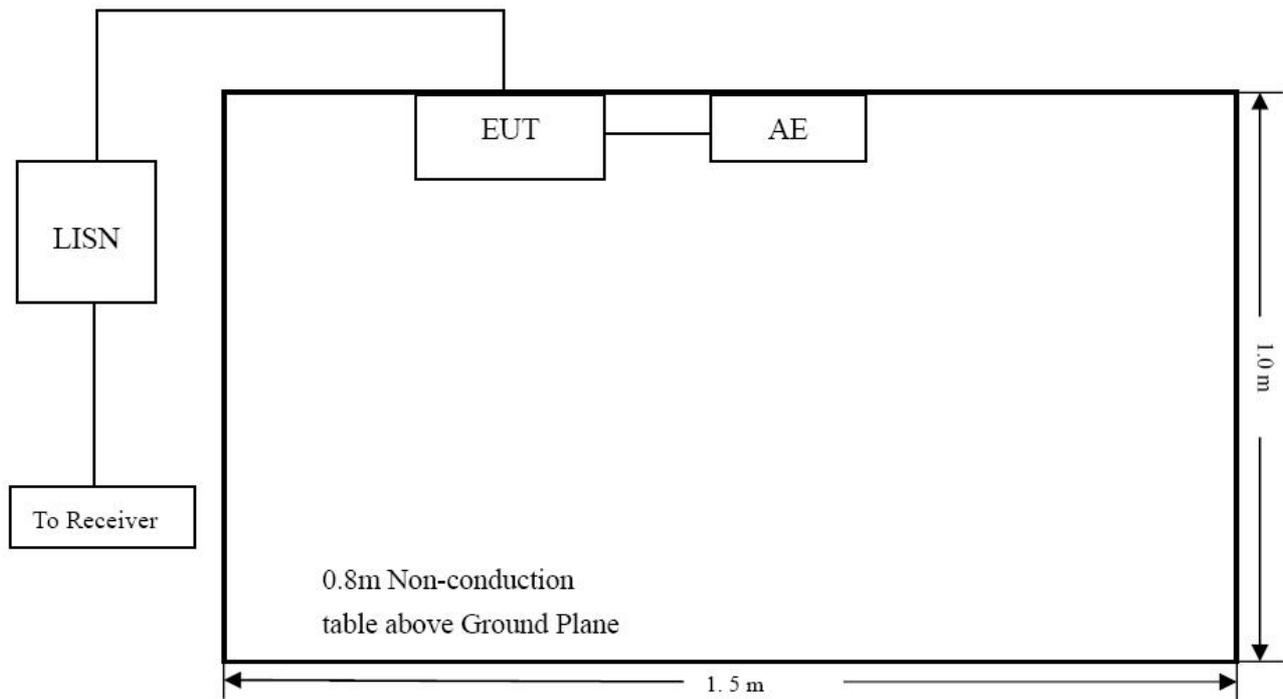
N/A: not applicable

3. CONDUCTED EMISSIONS

3.1 Test Procedure

Test is conducting under the description of ANSI C63.10-2013, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 23 °C |
| Relative Humidity: | 52% |
| ATM Pressure: | 1011 mbar |

3.4 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the FCC Part 15.207(a) Conducted margin for this device, with the *worst* margin reading of:

-19.30 dB at 0.4500 MHz in the **Neutral, QP** detector, 0.15-30MHz

3.5 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

EUT: *Fast Wireless Charging Station*

Tested Model: *SL-PWW-10*

Operating Condition: *TMI*

Comment: *120V/60Hz; Adapter DC 9V*

Test Specification: *Neutral*

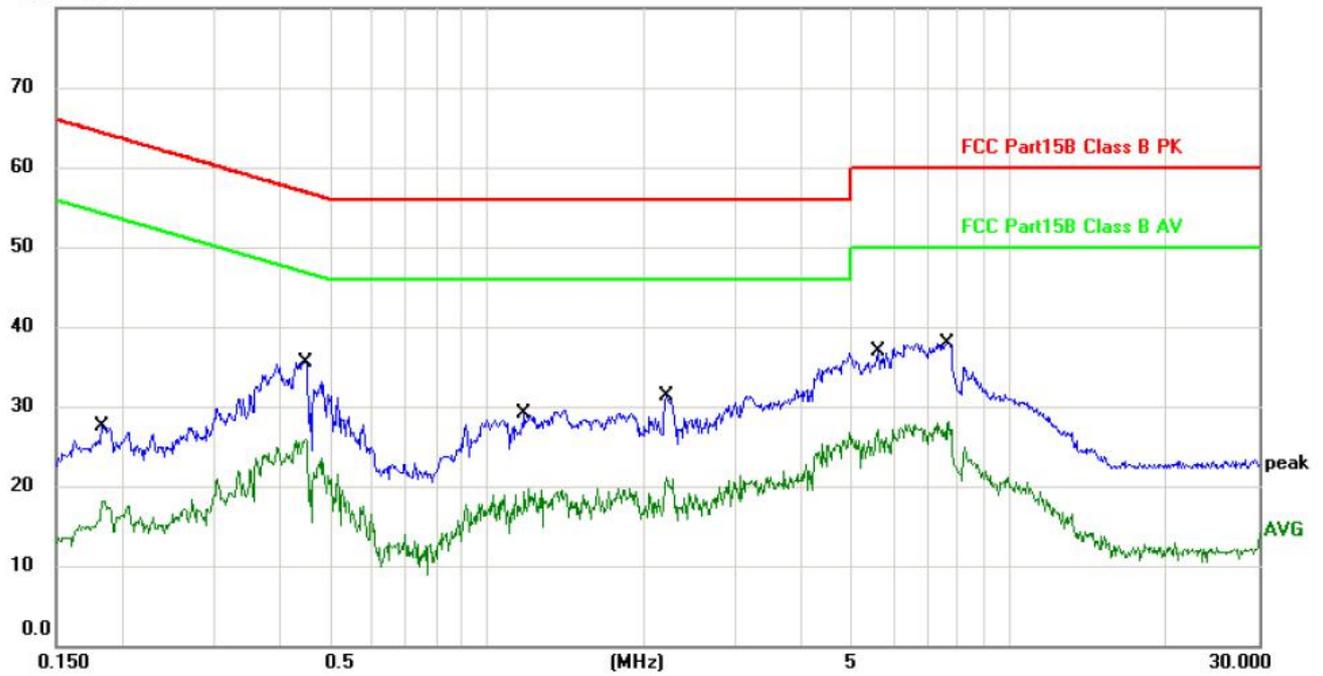


| No. | Mk. | Freq. MHz | Measure- ment | | Over dB | Detector | Comment |
|-----|-----|--------------|------------------|---------------|------------|----------|---------|
| | | | dBuV | Limit dBuV | | | |
| 1 | | 0.2740 | 27.80 | 60.99 | -33.19 | QP | |
| 2 | | 0.2740 | 16.05 | 50.99 | -34.94 | AVG | |
| 3 | * | 0.4500 | 37.57 | 56.87 | -19.30 | QP | |
| 4 | | 0.4500 | 17.41 | 46.87 | -29.46 | AVG | |
| 5 | | 1.1820 | 34.05 | 56.00 | -21.95 | QP | |
| 6 | | 1.1820 | 23.22 | 46.00 | -22.78 | AVG | |
| 7 | | 2.9980 | 36.02 | 56.00 | -19.98 | QP | |
| 8 | | 2.9980 | 24.39 | 46.00 | -21.61 | AVG | |
| 9 | | 4.4939 | 36.29 | 56.00 | -19.71 | QP | |
| 10 | | 4.4939 | 24.51 | 46.00 | -21.49 | AVG | |
| 11 | | 7.5739 | 39.99 | 60.00 | -20.01 | QP | |
| 12 | | 7.5739 | 22.16 | 50.00 | -27.84 | AVG | |

Test Specification:

Line

80.0 dBuV



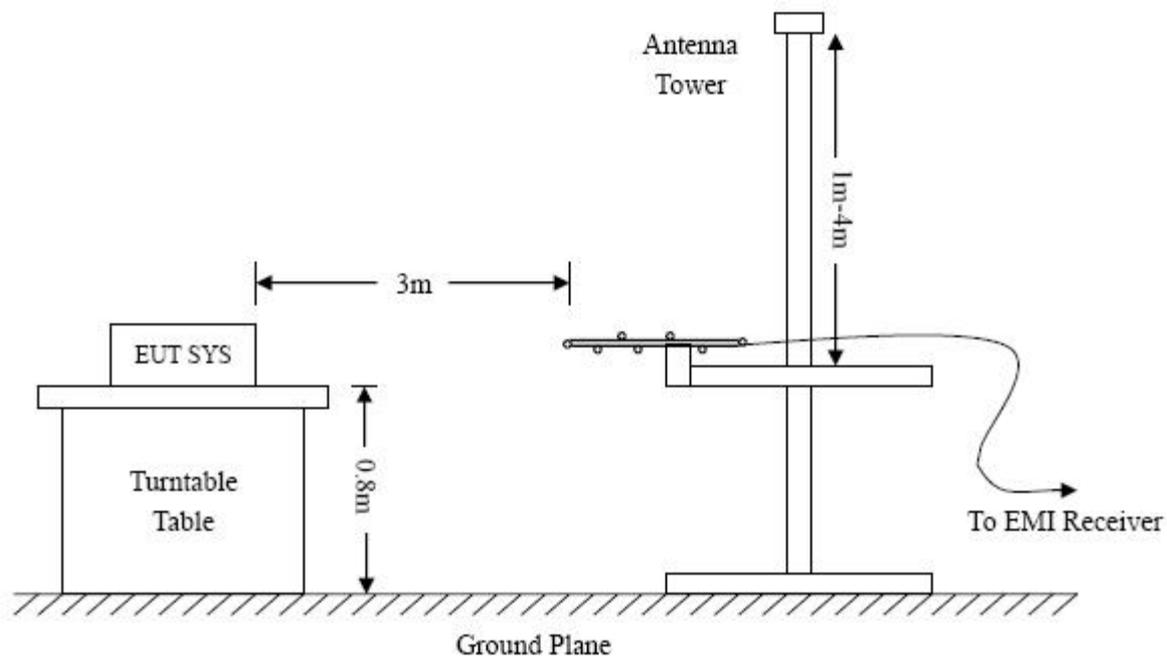
| No. | Mk. | Freq. | Measure- ment | Limit | Over | Detector | Comment |
|-----|-----|--------|------------------|-------|--------|----------|---------|
| | | MHz | dBuV | dBuV | dB | | |
| 1 | | 0.1833 | 27.53 | 64.33 | -36.80 | QP | |
| 2 | | 0.1833 | 15.98 | 54.33 | -38.35 | AVG | |
| 3 | * | 0.4500 | 35.57 | 56.87 | -21.30 | QP | |
| 4 | | 0.4500 | 15.10 | 46.87 | -31.77 | AVG | |
| 5 | | 1.1820 | 29.05 | 56.00 | -26.95 | QP | |
| 6 | | 1.1820 | 19.16 | 46.00 | -26.84 | AVG | |
| 7 | | 2.2060 | 31.30 | 56.00 | -24.70 | QP | |
| 8 | | 2.2060 | 16.50 | 46.00 | -29.50 | AVG | |
| 9 | | 5.6059 | 36.88 | 60.00 | -23.12 | QP | |
| 10 | | 5.6059 | 25.08 | 50.00 | -24.92 | AVG | |
| 11 | | 7.5739 | 37.99 | 60.00 | -22.01 | QP | |
| 12 | | 7.5739 | 24.83 | 50.00 | -25.17 | AVG | |

4. RADIATED EMISSION

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.



4.2 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for this device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.209(a) Limit}$$

4.4 Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 23 °C |
| Relative Humidity: | 55 % |
| ATM Pressure: | 1011 mbar |

4.5 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.209(a) rule, and had the worst margin of:

-9.88 dB at 679.9600 MHz in the Vertical polarization, 9 KHz to 1 GHz, 3Meters

Plot of Radiated Emissions Test Data(Below 30MHz)

EUT: *Fast Wireless Charging Station*

Tested Model: *SL-PWW-10*

Operating Condition: *TMI*

Comment: *120V/60Hz; Adapter DC 9V*

Test Specification: *Loop Antenna*

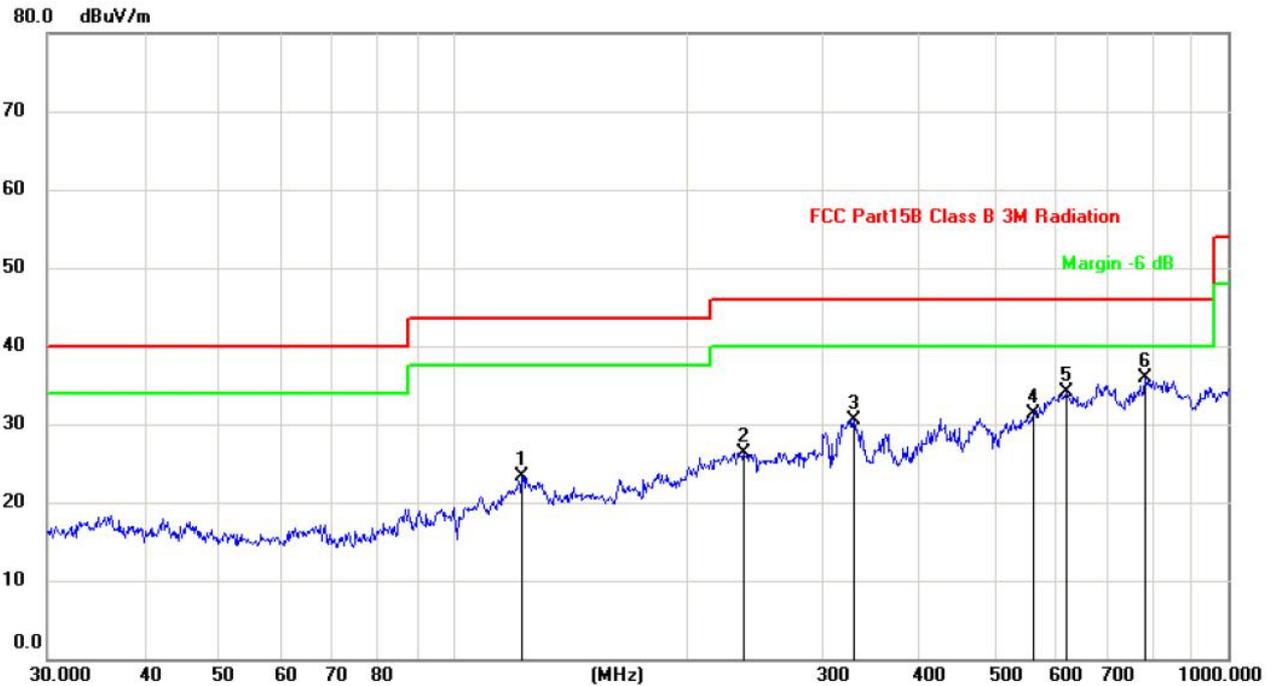
| No. | Frequency | Reading | Detector | Emission | Limit | Margin |
|-----|-----------|---------|-----------|----------|----------|--------|
| | (KHz) | (dBuV) | (PK/QP/A) | (dBuV/m) | (dBuV/m) | (dB) |
| 1 | 11 | 61.35 | AV | 82.52 | 126.78 | -44.26 |
| 2 | 26 | 66.25 | AV | 86.24 | 119.30 | -33.06 |
| 3 | 48 | 53.32 | AV | 71.84 | 113.98 | -42.14 |
| 4 | 112 | 48.15 | AV | 75.27 | 106.62 | -31.35 |
| 5 | 158 | 58.63 | AV | 73.01 | 103.63 | -30.62 |
| 6* | 245 | 70.52 | AV | 78.67 | 99.82 | -21.15 |
| 7 | 314 | 61.38 | AV | 66.84 | 97.67 | -30.83 |
| 8 | 675 | 52.36 | QP | 35.74 | 71.02 | -35.28 |
| 9 | 6523 | 37.95 | QP | 23.95 | 51.32 | -27.37 |

1. "*" Means Fundamental frequency

2. Emission Level [dB μ V/m] = Reading [dB μ V] + Ant. Factor [dB/m] + Cable Loss [dB]

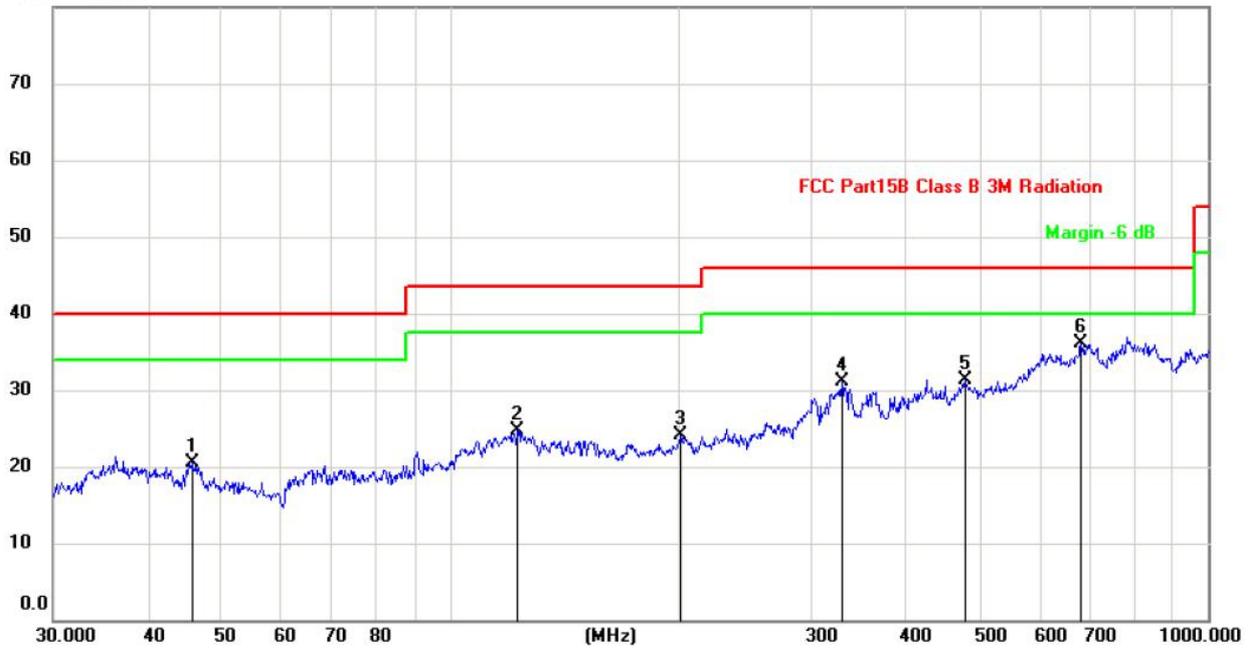
3. Margin [dB] = Emission Level [dB μ V/m] - Limit [dB μ V/m]

4. Limit calculation: Limit at specified distance + 40log (300/3) = Limit + 80 dB for up to 0.49 MHz Limit at specified distance + 40log (30/3) = Limit + 40 dB for above 0.49 MHz, Below 30 MHz

Plot of Radiated Emissions Test Data (From 30MHz to 1GHz)EUT: *Fast Wireless Charging Station*Tested Model: *SL-PWW-10*Operating Condition: *TM1*Comment: *120V/60Hz; Adapter DC 5V*Test Specification: *Horizontal*

| No. | Mk. | Freq. | Measure- ment | Limit | Over | Antenna Height | Table Degree | |
|-----|-----|----------|------------------|--------|--------|-------------------|-----------------|---------|
| | | MHz | dBuV/m | dBuV/m | dB | cm | degree | Comment |
| 1 | | 122.8340 | 23.26 | 43.50 | -20.24 | QP | | |
| 2 | | 237.4756 | 26.38 | 46.00 | -19.62 | QP | | |
| 3 | | 329.0389 | 30.55 | 46.00 | -15.45 | QP | | |
| 4 | | 560.6928 | 31.34 | 46.00 | -14.66 | QP | | |
| 5 | | 618.5366 | 34.10 | 46.00 | -11.90 | QP | | |
| 6 | * | 782.3451 | 35.87 | 46.00 | -10.13 | QP | | |

Test Specification: Vertical
80.0 dBuV/m



| No. | Mk. | Freq. | Measure- ment | Limit | Over | Antenna Height | Table Degree | |
|-----|-----|----------|------------------|--------|--------|-------------------|-----------------|---------|
| | | MHz | dBuV/m | dBuV/m | dB | cm | degree | Comment |
| 1 | | 45.6948 | 20.43 | 40.00 | -19.57 | QP | | |
| 2 | | 122.8340 | 24.76 | 43.50 | -18.74 | QP | | |
| 3 | | 201.3930 | 24.06 | 43.50 | -19.44 | QP | | |
| 4 | | 329.0389 | 31.05 | 46.00 | -14.95 | QP | | |
| 5 | | 478.8455 | 31.25 | 46.00 | -14.75 | QP | | |
| 6 | * | 679.9600 | 36.12 | 46.00 | -9.88 | QP | | |

***** END OF REPORT *****