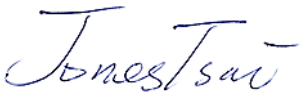
# FCC Test Report

| | | |
|---|---|---|
| APPLICANT | : | Chiaro Technology Ltd |
| EQUIPMENT | : | Elvie |
| BRAND NAME | : | Chiaro |
| MODEL NUMBER | : | EL02 |
| FCC ID | : | 2AEHI-EL0215 |
| STANDARD | : | FCC Part 15 Subpart C §15.209 |
| CLASSIFICATION | : | Part 15 Low Power Transmitter Below 1705 kHz (DCD) |

**The product was received on May 23, 2015 and completely tested on Jun. 26, 2015. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown the compliance with the applicable technical standards.**

**The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.**

**Reviewed by: Joseph Lin / Supervisor**



**Approved by: Jones Tsai / Manager**

***SPORTON INTERNATIONAL INC.***
***No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.***

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**APPENDIX A. SETUP PHOTOGRAPHS**

# Revision History

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FR552245-01 | Rev. 01 | Initial issue of report | Jul. 23, 2015 |
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# SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|---|---|---|---|---|---|
| 3.1 | 2.1049 | 20 dB Bandwidth | - | PASS | - |
| 3.1 | - | 99% Bandwidth | - | PASS | - |
| 3.2 | 15.207 | AC Conducted Emission | FCC Part 15.207(a) | PASS | Under limit 6.40 dB at 0.190 MHz |
| 3.3 | 15.209 | Radiated Emission | FCC Part 15.209(a) | PASS | Under limit 10.51 dB at 101.280 MHz |

# 1. General Description

## 1.1. Applicant

**Chiaro Technology Ltd**
2nd Floor, 5-9 Hatton Wall, London, United Kingdom, EC1N 8HX

## 1.2. Manufacturer

**FU GANG ELECTRONIC (KUNSHAN) CO., LTD**
NO. 6 Zheng Wei West Road, Jin Xi Town, Kun Shan City, Jiang Su Province, 215324, China

## 1.3. Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Elvie |
| **Brand Name** | Chiaro |
| **Model Name** | EL02 |
| **FCC ID** | 2AEHI-EL0215 |
| **EUT supports Radios application** | WPC |
| **EUT Stage** | Production Unit |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4. Feature of Equipment Under Test

| Product Feature & Specification | |
|---|---|
| **Tx Frequency Range** | 110 ~ 205 KHz |
| **Antenna Type** | Wire Antenna |
| **Type of Modulation** | ASK |

## 1.5. Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6. Test Site

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

| | | | |
|---|---|---|---|
| **Test Site** | SPORTON INTERNATIONAL INC. | | |
| **Test Site Location** | No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,<br>Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 | | |
| **Test Site No.** | **Sporton Site No.** | | |
| | TH02-HY | CO05-HY | 03CH07-HY |

**Note:** The test site complies with ANSI C63.4 2009 requirement.

## 1.7. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.209
- ANSI C63.10-2009

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

# 2. Test Configuration of Equipment Under Test

## 2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.10-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

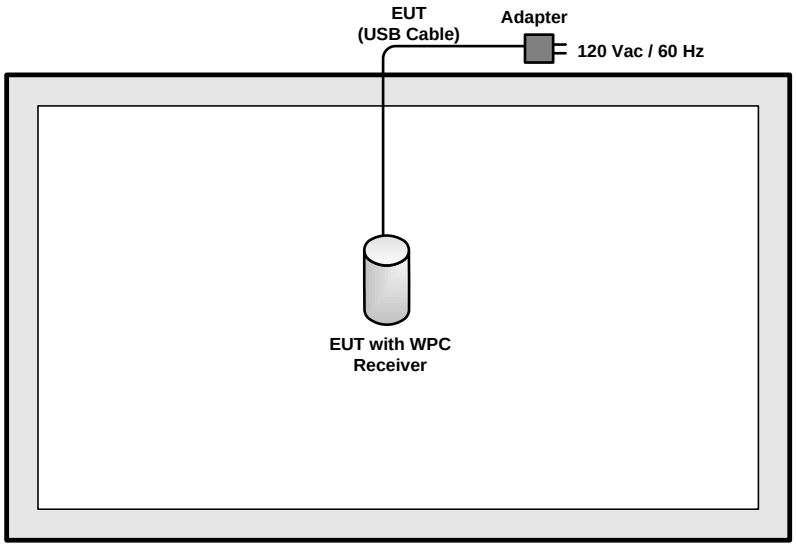
Frequency range investigated: radiation (9 kHz to 1000 MHz)

| Test Items | Function Type |
|---|---|
| AC Conducted Emission | Mode 1: EUT + WPC Charging from Notebook |
| Radiated Emissions | Mode 1: WPC |

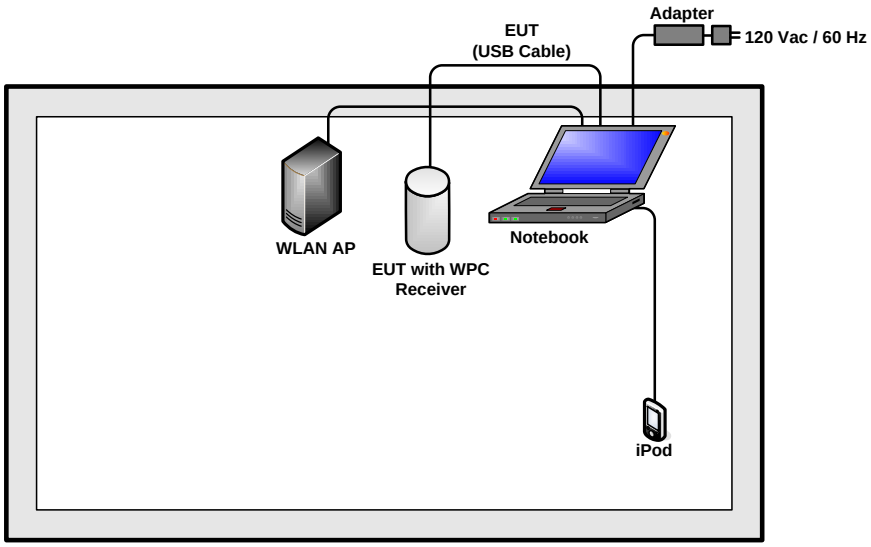
**Note:** KDB 680106 "Client Device Considerations" was considered and evaluation performed as applicable to this device. EUT is working in charging mode with the inductive charger. The inductive back cover (receiving hardware) is non-removable, is part of the phone.

## 2.2. Connection Diagram of Test System

**<WPC Tx Mode>**




**<AC Conducted Emission Mode>**




**Remark:** WPC Receiver was in the EUT during tests.

## 2.3. Ancillary Equipment List

| Item | Equipment | Trade Name | Model Name | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | WLAN AP | D-Link | DIR-865L | KA2IR865LA1 | N/A | Unshielded, 1.8 m |
| 2. | Notebook | DELL | Latitude E6320 | FCC DoC/ Contains FCC ID: QDS-BRCM1054 | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 3. | iPod | Apple | A1285 | FCC DoC | Shielded, 1.0 m | N/A |
| 4. | Adapter | Sony | EP800 | N/A | N/A | N/A |

# 3. Test Result

## 3.1. 20dB and 99% Bandwidth Measurement

### 3.1.1 Limit of 20dB and 99% Bandwidth

Reporting only

### 3.1.2 Measuring Instruments

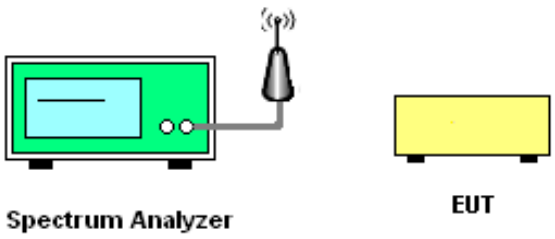
The measuring equipment is listed in the section 4 of this test report.

### 3.1.3 Test Procedures

1. The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT while wirelessly charging a charging board.
2. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
   For 99% Bandwidth measurement, the RBW=10kHz, and VBW = 30kHz. Sweep = auto;
3. Measure and record the results in the test report.

| Mode | Frequency | Occupied Bandwidth |
|---|---|---|
| Battery at 0% | 132.75 kHz | 23.25 kHz |
| Battery at 50% charge | 128.50 kHz | 23.00 kHz |
| Battery near 100% charge | 127.50 kHz | 23.25 kHz |

### 3.1.4 Test Setup

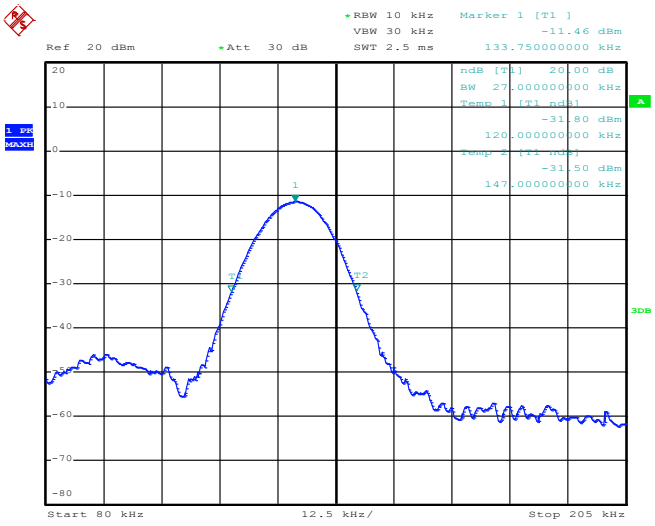


## 3.1.5 Test Result of 20dB and 99% Bandwidth

| Test Engineer : | Derek Hsu | Temperature : | 23~24℃ |
|---|---|---|---|
| | | Relative Humidity : | 52~54% |

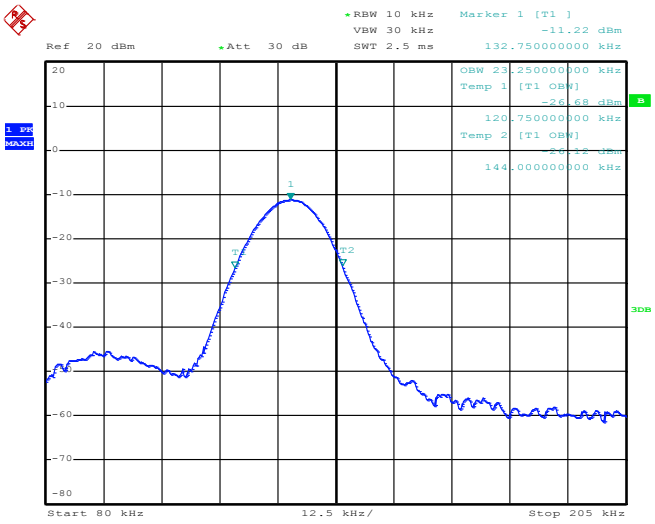
**Battery at 0%**

**20 dB Bandwidth Plot**




Date: 4.JUN.2015 09:02:50

**99% Occupied Bandwidth Plot**

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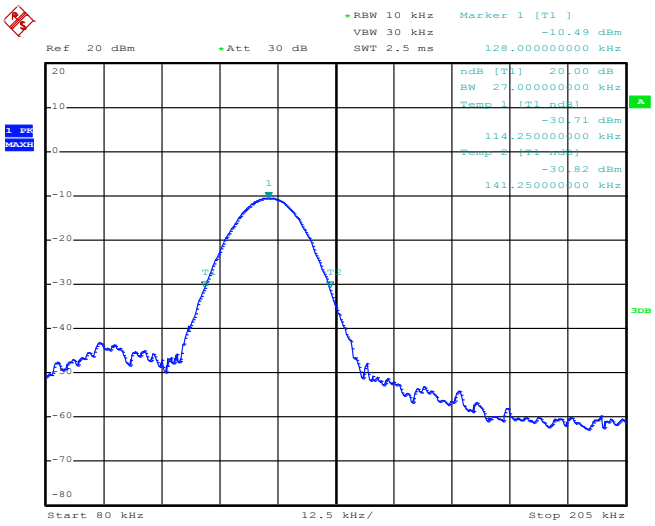
**Battery at 50% Charge**

**20 dB Bandwidth Plot**

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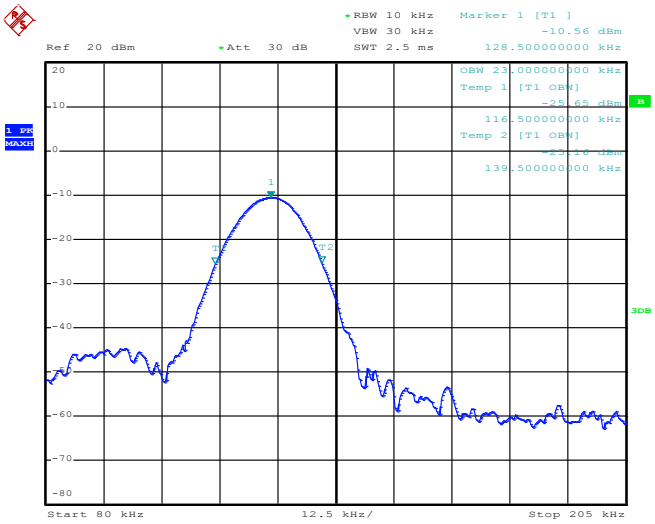
**99% Occupied Bandwidth Plot**

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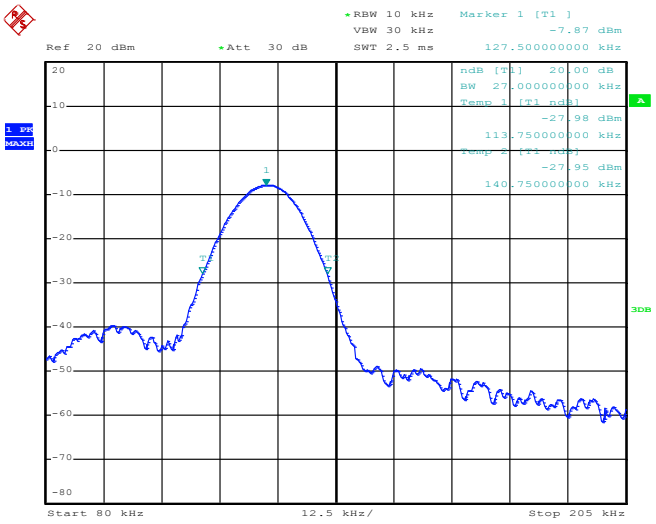
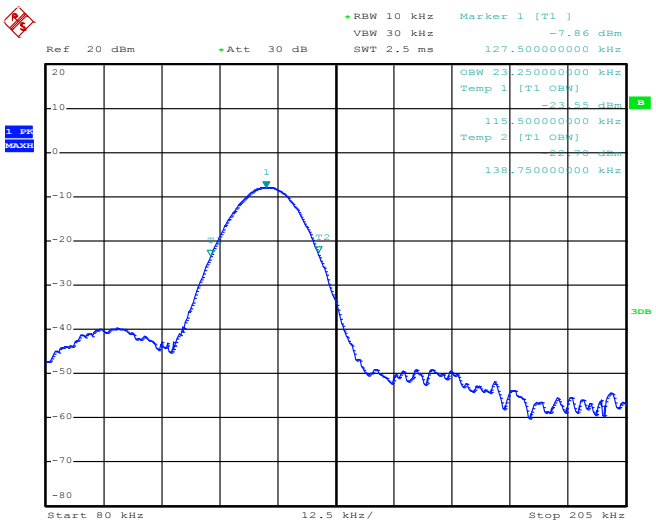
**Battery Near 100% Charge**

**20 dB Bandwidth Plot**




Date: 3.JUN.2015 18:09:45

**99% Occupied Bandwidth Plot**

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# 3.2. Test of AC Conducted Emission Measurement

## 3.2.1. Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of emission (MHz) | Conducted limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

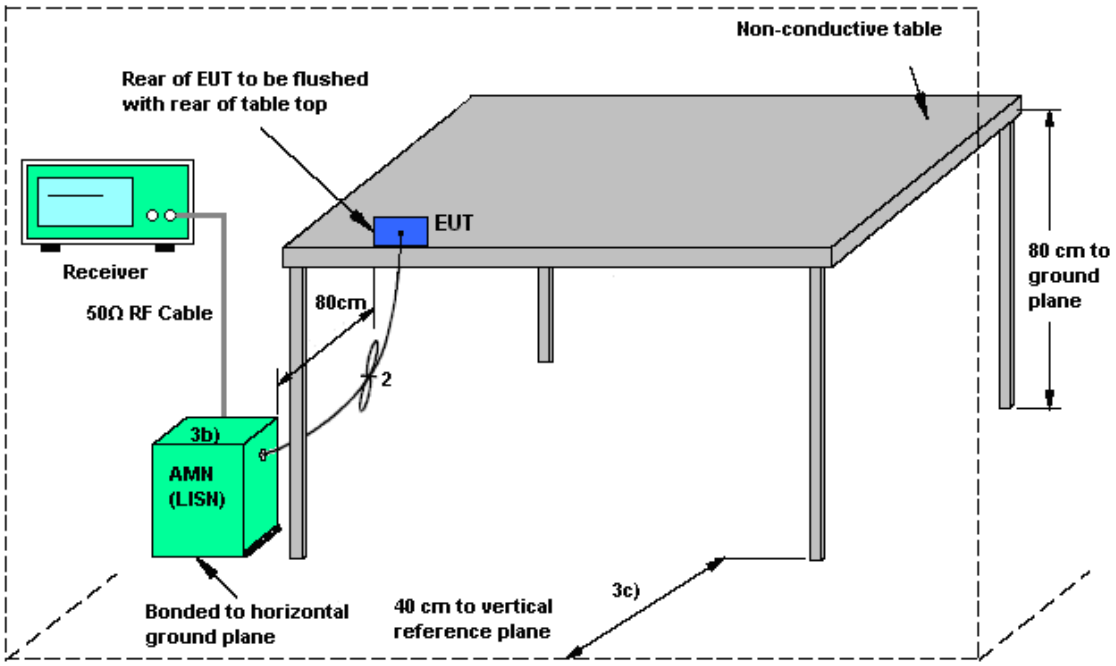
## 3.2.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

## 3.2.3. Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

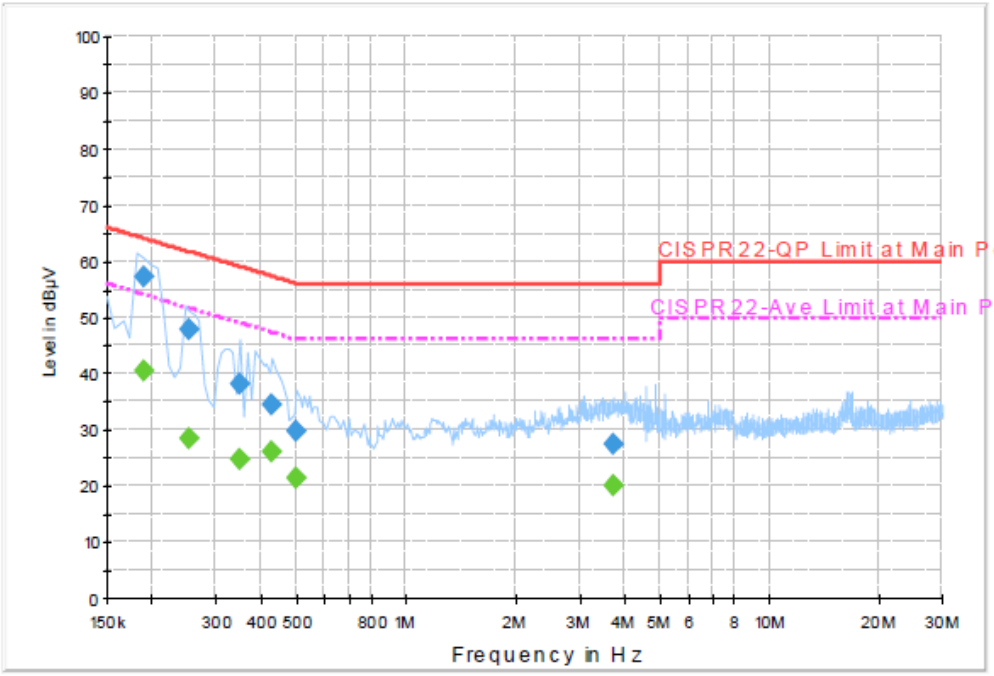
### 3.2.4. Test Setup




AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

## 3.2.5. Test Result of AC Conducted Emission

| Test Mode : | Mode 1 | Temperature : | 24~25℃ |
|---|---|---|---|
| Test Engineer : | Kai-Chun Chu | Relative Humidity : | 59~60% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Line |
| Function Type : | EUT + WPC Charging from Notebook | | |



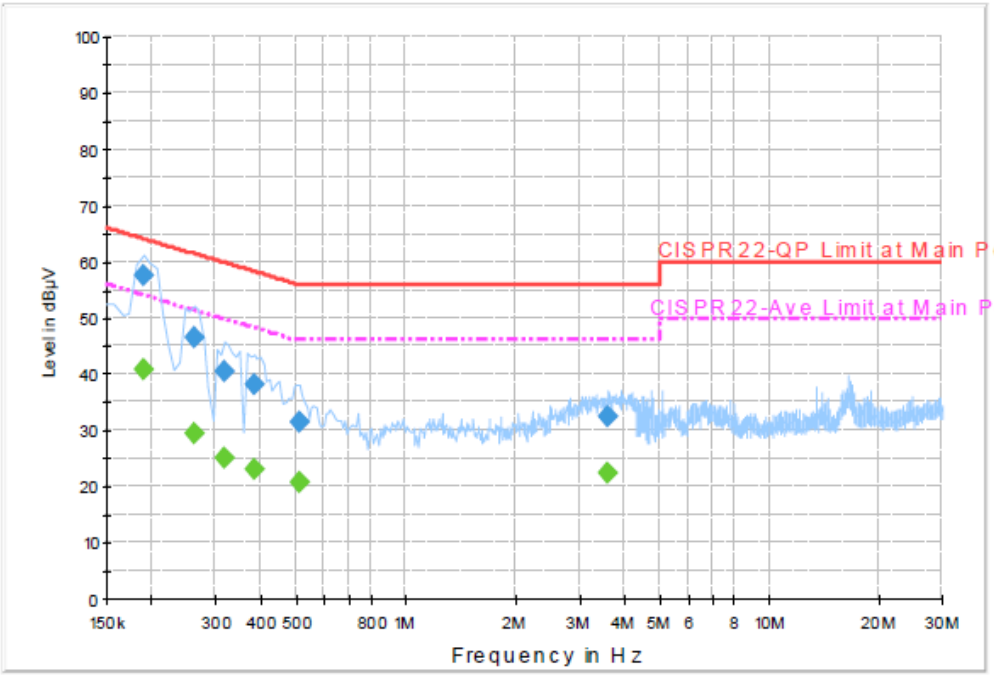

**Final Result : QuasiPeak**

| Frequency (MHz) | QuasiPeak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|
| 0.190000 | 57.1 | Off | L1 | 19.5 | 6.9 | 64.0 |
| 0.254000 | 47.8 | Off | L1 | 19.4 | 13.8 | 61.6 |
| 0.350000 | 38.1 | Off | L1 | 19.5 | 20.9 | 59.0 |
| 0.430000 | 34.6 | Off | L1 | 19.5 | 22.7 | 57.3 |
| 0.502000 | 29.8 | Off | L1 | 19.4 | 26.2 | 56.0 |
| 3.734000 | 27.3 | Off | L1 | 19.7 | 28.7 | 56.0 |

**Final Result 2 : Average**

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|
| 0.190000 | 40.4 | Off | L1 | 19.5 | 13.6 | 54.0 |
| 0.254000 | 28.3 | Off | L1 | 19.4 | 23.3 | 51.6 |
| 0.350000 | 24.8 | Off | L1 | 19.5 | 24.2 | 49.0 |
| 0.430000 | 26.0 | Off | L1 | 19.5 | 21.3 | 47.3 |
| 0.502000 | 21.2 | Off | L1 | 19.4 | 24.8 | 46.0 |
| 3.734000 | 20.1 | Off | L1 | 19.7 | 25.9 | 46.0 |

| Test Mode : | Mode 1 | Temperature : | 24~25℃ |
|---|---|---|---|
| Test Engineer : | Kai-Chun Chu | Relative Humidity : | 59~60% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Neutral |
| Function Type : | EUT + WPC Charging from Notebook | | |




**Final Result : QuasiPeak**

| Frequency (MHz) | QuasiPeak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|
| 0.190000 | 57.6 | Off | N | 19.5 | 6.4 | 64.0 |
| 0.262000 | 46.4 | Off | N | 19.5 | 15.0 | 61.4 |
| 0.318000 | 40.5 | Off | N | 19.5 | 19.3 | 59.8 |
| 0.382000 | 38.1 | Off | N | 19.5 | 20.1 | 58.2 |
| 0.510000 | 31.6 | Off | N | 19.5 | 24.4 | 56.0 |
| 3.622000 | 32.3 | Off | N | 19.7 | 23.7 | 56.0 |

**Final Result 2 : Average**

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|
| 0.190000 | 40.7 | Off | N | 19.5 | 13.3 | 54.0 |
| 0.262000 | 29.5 | Off | N | 19.5 | 21.9 | 51.4 |
| 0.318000 | 25.1 | Off | N | 19.5 | 24.7 | 49.8 |
| 0.382000 | 23.2 | Off | N | 19.5 | 25.0 | 48.2 |
| 0.510000 | 20.8 | Off | N | 19.5 | 25.2 | 46.0 |
| 3.622000 | 22.2 | Off | N | 19.7 | 23.8 | 46.0 |

# 3.3. Test of Radiated Emission Measurement

## 3.3.1. Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| 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 |
| Above 960 | 500 | 3 |

## 3.3.2. Measuring Instruments

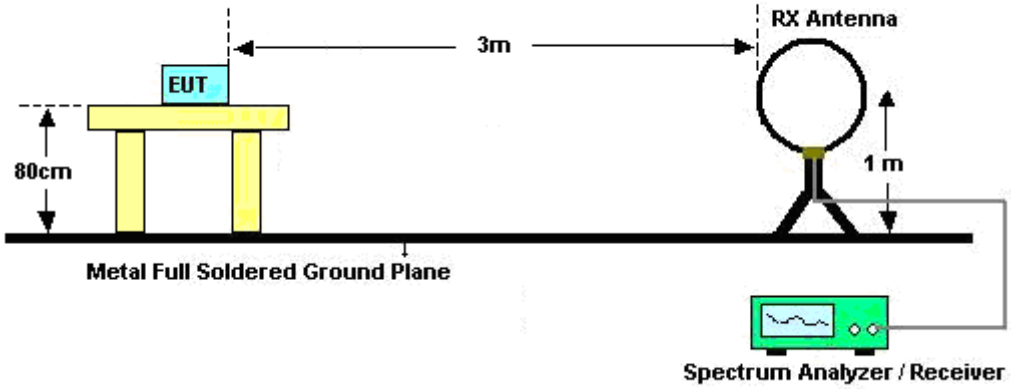
The measuring equipment is listed in the section 4 of this test report.

## 3.3.3. Test Procedures

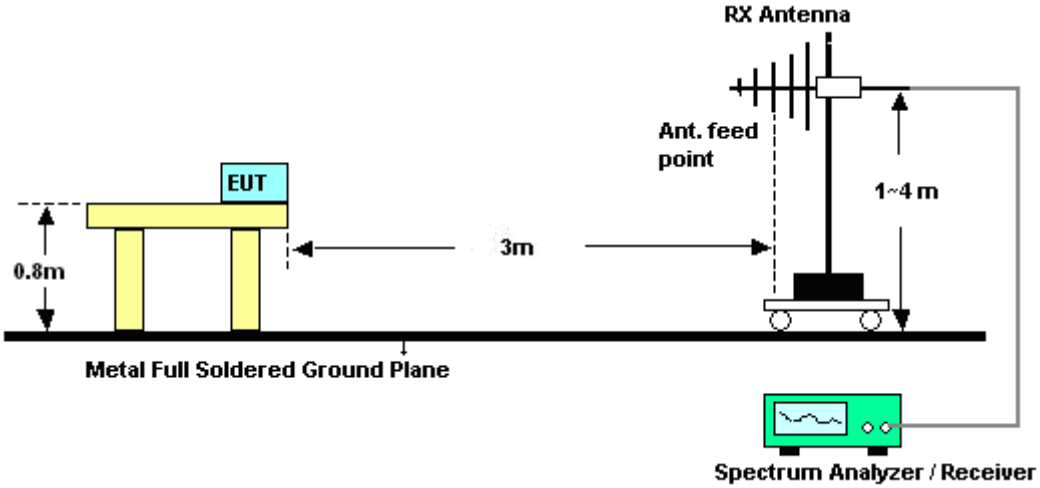
Follow the guidelines in ANSI C63.10-2009 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

## 3.3.4. Test Setup of Radiated Emission

**For radiated emissions below 30MHz**



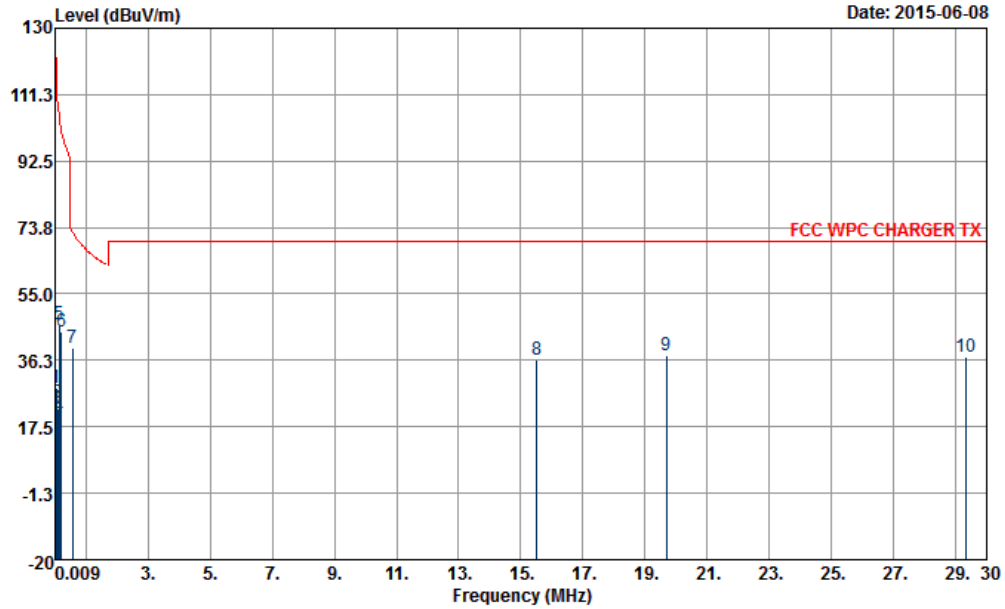

**For radiated emissions above 30MHz**



## 3.3.5. Test Result of Radiated Emission (9kHz ~ 30MHz)

**<Battery at 0%>**

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |

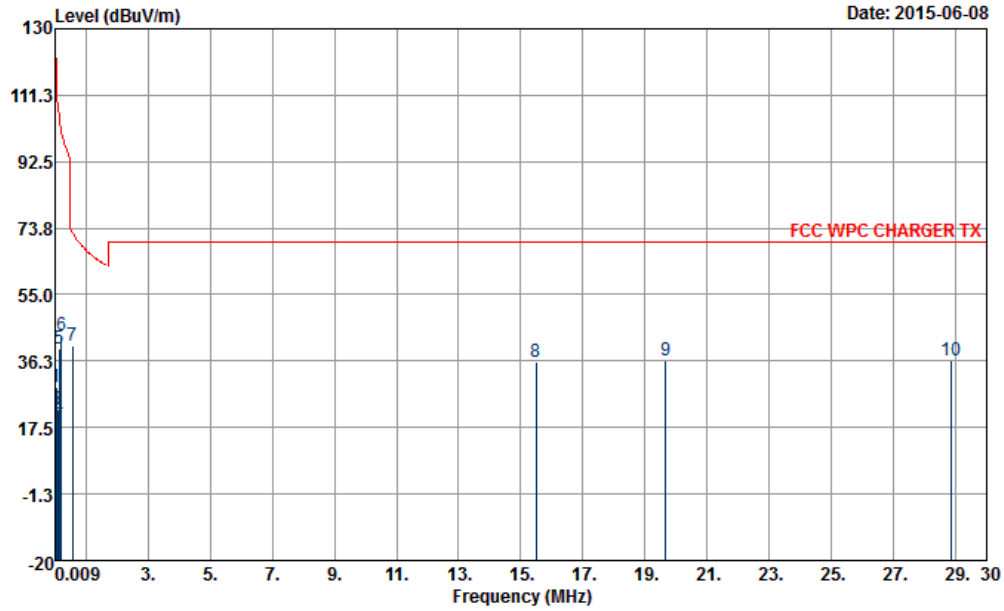



Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(H) HORIZONTAL

: 9kHz to 30MHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.04 | 28.26 | -86.66 | 114.92 | 7.89 | 20.08 | 0.29 | --- | --- | Average |
| 2 | 0.08 | 24.09 | -85.86 | 109.95 | 3.79 | 20.01 | 0.29 | --- | --- | Average |
| 3 | 0.10 | 22.81 | -84.86 | 107.67 | 2.56 | 19.96 | 0.29 | --- | --- | QP |
| 4 | 0.12 | 20.62 | -85.43 | 106.05 | 0.39 | 19.94 | 0.29 | --- | --- | Average |
| 5 | 0.13 | 46.47 | -58.86 | 105.33 | 26.24 | 19.94 | 0.29 | --- | --- | Average |
| 6 | 0.21 | 44.55 | -56.44 | 100.99 | 24.36 | 19.90 | 0.29 | --- | --- | Average |
| 7 | 0.57 | 39.63 | -32.93 | 72.56 | 19.44 | 19.88 | 0.31 | --- | --- | QP |
| 8 | 15.52 | 36.40 | -33.60 | 70.00 | 15.93 | 20.06 | 0.41 | --- | --- | QP |
| 9 | 19.70 | 37.77 | -32.23 | 70.00 | 16.93 | 20.41 | 0.43 | 100 | 0 | QP |
| 10 | 29.33 | 37.26 | -32.74 | 70.00 | 16.24 | 20.51 | 0.51 | --- | --- | QP |

| Test Mode : | Mode 1 | Temperature : | 21~23°C |
|---|---|---|---|
| Test Engineer : | Eric Shih | Relative Humidity : | 48~50% |
| Test Distance : | 3m | Polarization : | Vertical |
| Function Type : | WPC | | |



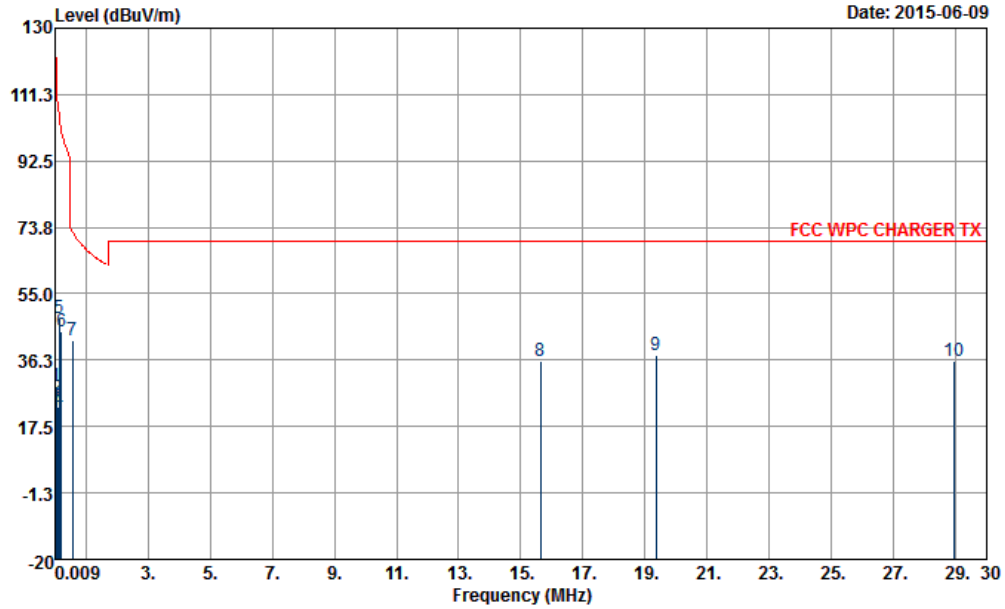

Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(V) VERTICAL

: 9kHz to 30MHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.04 | 29.07 | -85.87 | 114.94 | 8.66 | 20.12 | 0.29 | --- | --- | Average |
| 2 | 0.08 | 22.82 | -87.14 | 109.96 | 2.50 | 20.03 | 0.29 | --- | --- | Average |
| 3 | 0.10 | 22.59 | -85.06 | 107.65 | 2.31 | 19.99 | 0.29 | --- | --- | QP |
| 4 | 0.12 | 20.69 | -85.52 | 106.21 | 0.44 | 19.96 | 0.29 | --- | --- | Average |
| 5 | 0.13 | 39.66 | -65.71 | 105.37 | 19.41 | 19.96 | 0.29 | --- | --- | Average |
| 6 | 0.22 | 43.70 | -57.22 | 100.92 | 23.48 | 19.93 | 0.29 | --- | --- | Average |
| 7 | 0.58 | 40.57 | -31.76 | 72.33 | 20.36 | 19.90 | 0.31 | 100 | 0 | QP |
| 8 | 15.50 | 36.07 | -33.93 | 70.00 | 16.00 | 19.66 | 0.41 | --- | --- | QP |
| 9 | 19.65 | 36.38 | -33.62 | 70.00 | 16.06 | 19.89 | 0.43 | --- | --- | QP |
| 10 | 28.84 | 36.30 | -33.70 | 70.00 | 15.81 | 19.98 | 0.51 | --- | --- | QP |

**<Battery at 50% Charge>**

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |

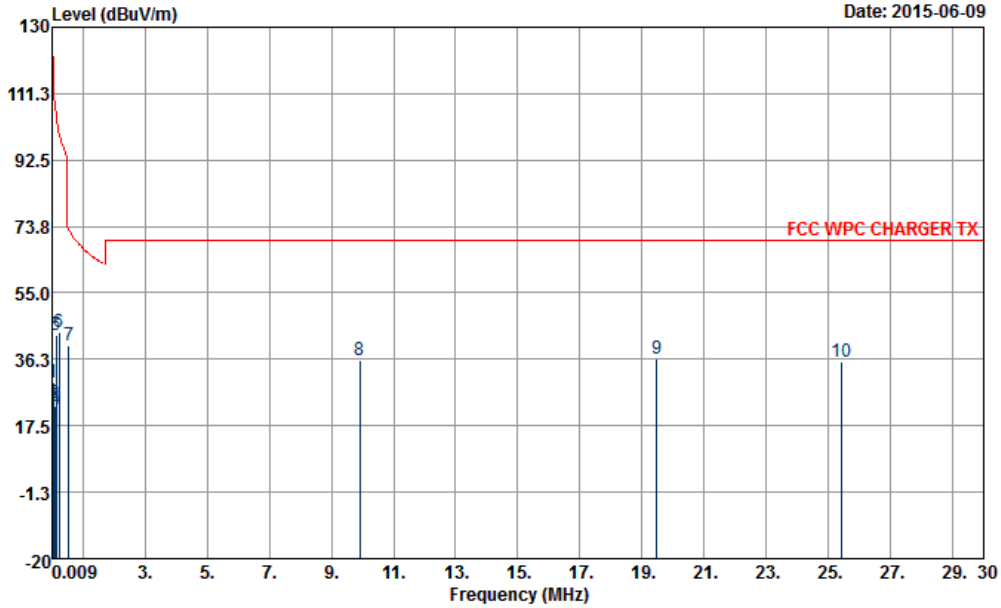



Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(H) HORIZONTAL

: 9kHz to 30MHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.04 | 28.71 | -86.16 | 114.87 | 8.34 | 20.08 | 0.29 | --- | --- | Average |
| 2 | 0.08 | 25.64 | -84.27 | 109.91 | 5.34 | 20.01 | 0.29 | --- | --- | Average |
| 3 | 0.10 | 22.90 | -84.59 | 107.49 | 2.65 | 19.96 | 0.29 | --- | --- | QP |
| 4 | 0.13 | 22.10 | -83.46 | 105.56 | 1.87 | 19.94 | 0.29 | --- | --- | Average |
| 5 | 0.13 | 48.20 | -56.98 | 105.18 | 27.97 | 19.94 | 0.29 | --- | --- | Average |
| 6 | 0.22 | 44.55 | -56.37 | 100.92 | 24.36 | 19.90 | 0.29 | --- | --- | Average |
| 7 | 0.57 | 41.86 | -30.70 | 72.56 | 21.67 | 19.88 | 0.31 | 100 | 0 | QP |
| 8 | 15.65 | 36.10 | -33.90 | 70.00 | 15.63 | 20.06 | 0.41 | --- | --- | QP |
| 9 | 19.36 | 37.74 | -32.26 | 70.00 | 16.95 | 20.36 | 0.43 | --- | --- | QP |
| 10 | 28.94 | 35.94 | -34.06 | 70.00 | 14.86 | 20.57 | 0.51 | --- | --- | QP |

| Test Mode : | Mode 1 | Temperature : | 21~23°C |
|---|---|---|---|
| Test Engineer : | Eric Shih | Relative Humidity : | 48~50% |
| Test Distance : | 3m | Polarization : | Vertical |
| Function Type : | WPC | | |



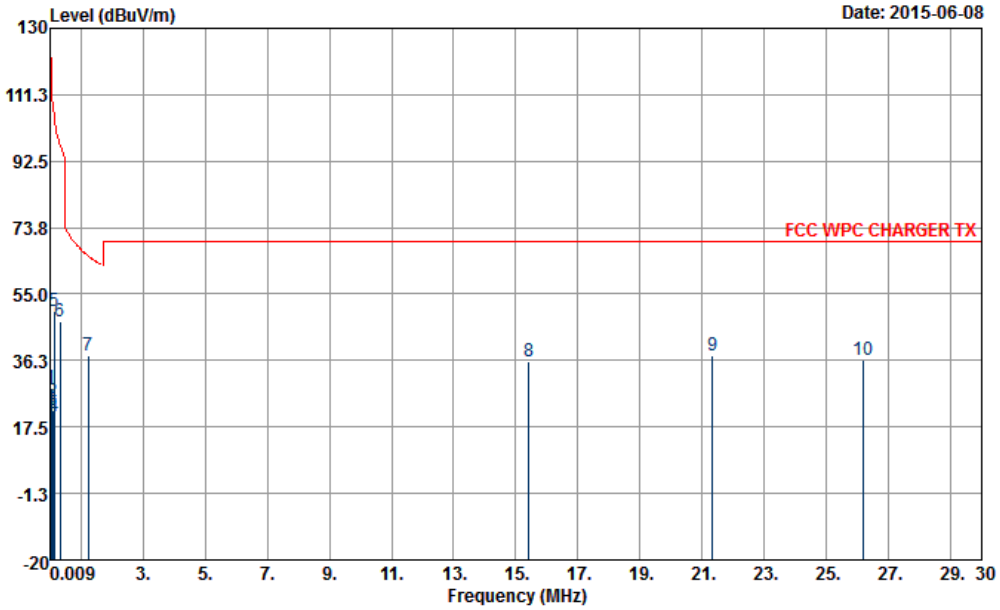

Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(V) VERTICAL

: 9kHz to 30MHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.04 | 29.67 | -85.26 | 114.93 | 9.26 | 20.12 | 0.29 | --- | --- | Average |
| 2 | 0.07 | 23.69 | -87.22 | 110.91 | 3.37 | 20.03 | 0.29 | --- | --- | Average |
| 3 | 0.10 | 22.91 | -84.81 | 107.72 | 2.63 | 19.99 | 0.29 | --- | --- | QP |
| 4 | 0.13 | 22.10 | -83.46 | 105.56 | 1.85 | 19.96 | 0.29 | --- | --- | Average |
| 5 | 0.13 | 43.20 | -61.97 | 105.17 | 22.95 | 19.96 | 0.29 | --- | --- | Average |
| 6 | 0.22 | 43.80 | -56.78 | 100.58 | 23.58 | 19.93 | 0.29 | --- | --- | Average |
| 7 | 0.55 | 40.13 | -32.67 | 72.80 | 19.92 | 19.90 | 0.31 | 100 | 0 | QP |
| 8 | 9.90 | 36.09 | -33.91 | 70.00 | 15.89 | 19.81 | 0.39 | --- | --- | QP |
| 9 | 19.47 | 36.61 | -33.39 | 70.00 | 16.31 | 19.87 | 0.43 | --- | --- | QP |
| 10 | 25.42 | 35.67 | -34.33 | 70.00 | 15.14 | 20.08 | 0.45 | --- | --- | QP |

**<Battery Near 100% Charge>**

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |

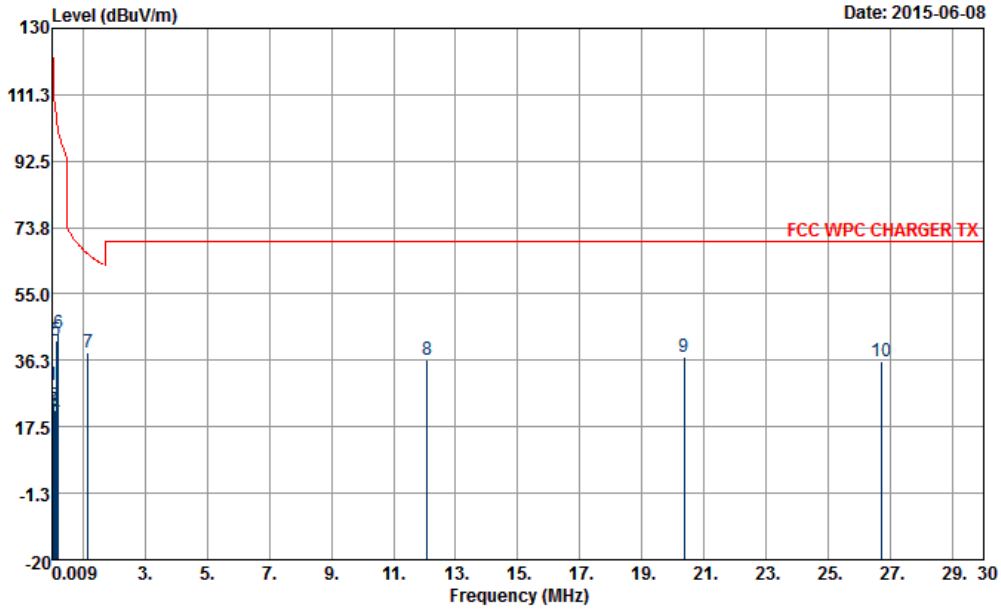



Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(H) HORIZONTAL

: 9kHz to 30MHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.04 | 28.67 | -86.27 | 114.94 | 8.30 | 20.08 | 0.29 | --- | --- | Average |
| 2 | 0.08 | 24.76 | -85.20 | 109.96 | 4.46 | 20.01 | 0.29 | --- | --- | Average |
| 3 | 0.10 | 22.30 | -85.35 | 107.65 | 2.05 | 19.96 | 0.29 | --- | --- | QP |
| 4 | 0.12 | 20.73 | -85.03 | 105.76 | 0.50 | 19.94 | 0.29 | --- | --- | Average |
| 5 | 0.13 | 50.01 | -55.24 | 105.25 | 29.78 | 19.94 | 0.29 | --- | --- | Average |
| 6 | 0.32 | 47.14 | -50.39 | 97.53 | 26.96 | 19.89 | 0.29 | --- | --- | Average |
| 7 | 1.23 | 37.67 | -28.11 | 65.78 | 17.46 | 19.90 | 0.31 | 100 | 0 | QP |
| 8 | 15.42 | 35.89 | -34.11 | 70.00 | 15.42 | 20.06 | 0.41 | --- | --- | QP |
| 9 | 21.33 | 37.84 | -32.16 | 70.00 | 16.86 | 20.55 | 0.43 | --- | --- | QP |
| 10 | 26.17 | 36.26 | -33.74 | 70.00 | 15.11 | 20.68 | 0.47 | --- | --- | QP |

| Test Mode : | Mode 1 | Temperature : | 21~23°C |
|---|---|---|---|
| Test Engineer : | Eric Shih | Relative Humidity : | 48~50% |
| Test Distance : | 3m | Polarization : | Vertical |
| Function Type : | WPC | | |




Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(V) VERTICAL

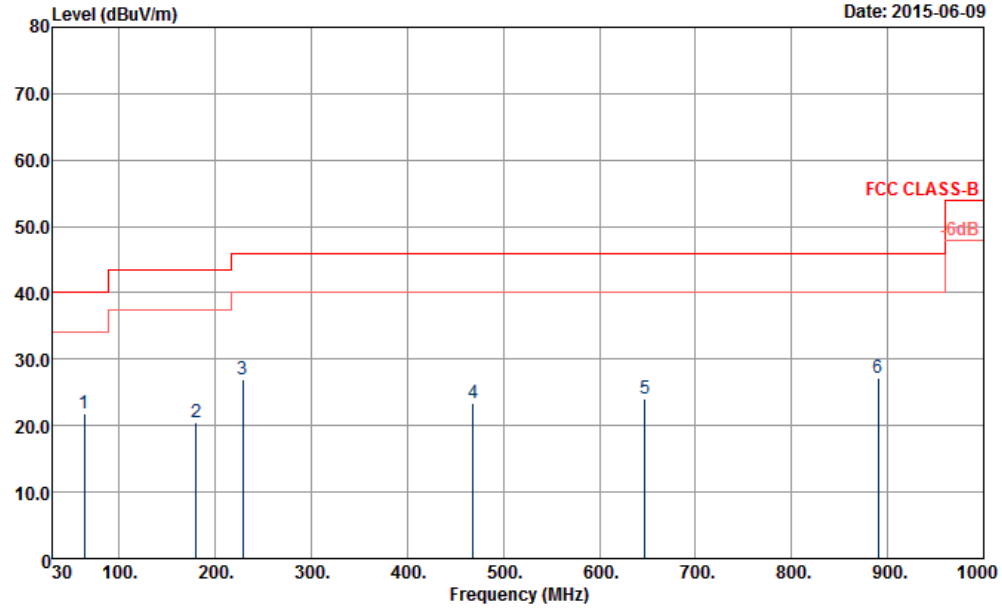
: 9kHz to 30MHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.01 | 29.23 | -95.74 | 124.97 | 8.68 | 20.26 | 0.29 | --- | --- | Average |
| 2 | 0.07 | 23.27 | -87.63 | 110.90 | 2.95 | 20.03 | 0.29 | --- | --- | Average |
| 3 | 0.10 | 22.17 | -85.49 | 107.66 | 1.89 | 19.99 | 0.29 | --- | --- | QP |
| 4 | 0.13 | 21.08 | -84.40 | 105.48 | 0.83 | 19.96 | 0.29 | --- | --- | Average |
| 5 | 0.13 | 41.97 | -63.23 | 105.20 | 21.72 | 19.96 | 0.29 | --- | --- | Average |
| 6 | 0.21 | 43.78 | -57.21 | 100.99 | 23.56 | 19.93 | 0.29 | --- | --- | Average |
| 7 | 1.17 | 38.60 | -27.67 | 66.27 | 18.37 | 19.92 | 0.31 | 100 | 0 | QP |
| 8 | 12.08 | 36.37 | -33.63 | 70.00 | 16.18 | 19.79 | 0.40 | --- | --- | QP |
| 9 | 20.35 | 37.11 | -32.89 | 70.00 | 16.72 | 19.96 | 0.43 | --- | --- | QP |
| 10 | 26.70 | 35.93 | -34.07 | 70.00 | 15.36 | 20.09 | 0.48 | --- | --- | QP |

## 3.3.6 Test Result of Radiated Emission (30MHz ~ 1000MHz)

**<Battery at 0%>**

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |

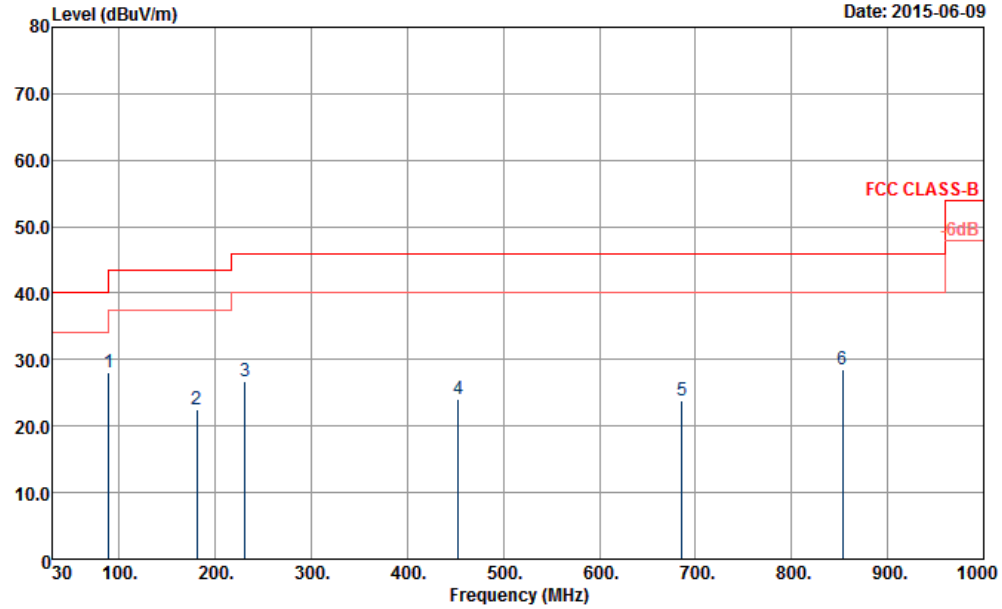



Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(131102) HORIZONTAL

: 30MHz to 1GHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 63.75 | 21.73 | -18.27 | 40.00 | 44.89 | 6.00 | 2.06 | 31.22 | 100 | 0 | Peak |
| 2 | 179.85 | 20.42 | -23.08 | 43.50 | 39.74 | 8.97 | 2.61 | 30.90 | --- | --- | Peak |
| 3 | 228.72 | 26.95 | -19.05 | 46.00 | 44.97 | 10.02 | 2.96 | 31.00 | --- | --- | Peak |
| 4 | 468.70 | 23.38 | -22.62 | 46.00 | 32.93 | 17.48 | 3.77 | 30.80 | --- | --- | Peak |
| 5 | 647.20 | 24.06 | -21.94 | 46.00 | 29.95 | 20.40 | 4.22 | 30.51 | --- | --- | Peak |
| 6 | 890.10 | 27.10 | -18.90 | 46.00 | 29.86 | 22.90 | 4.66 | 30.32 | --- | --- | Peak |

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Vertical |
| **Function Type :** | WPC | | |



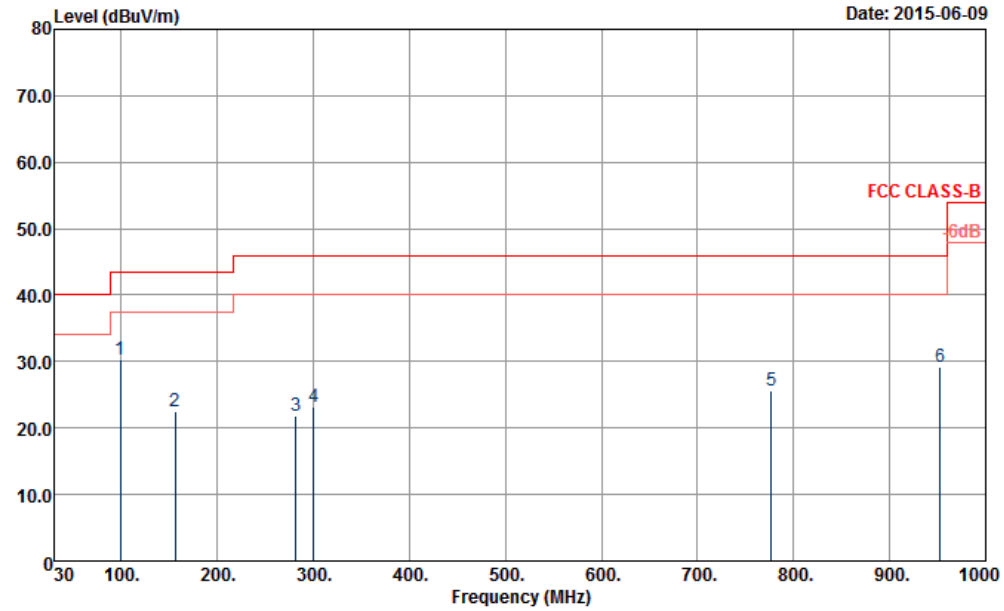

Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(131102) VERTICAL

: 30MHz to 1GHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 88.86 | 28.14 | -15.36 | 43.50 | 48.60 | 8.58 | 2.06 | 31.10 | 100 | 0 | Peak |
| 2 | 180.39 | 22.40 | -21.10 | 43.50 | 41.71 | 8.90 | 2.69 | 30.90 | --- | --- | Peak |
| 3 | 230.88 | 26.65 | -19.35 | 46.00 | 44.47 | 10.22 | 2.96 | 31.00 | --- | --- | Peak |
| 4 | 452.60 | 24.07 | -21.93 | 46.00 | 33.87 | 17.33 | 3.63 | 30.76 | --- | --- | Peak |
| 5 | 685.70 | 23.91 | -22.09 | 46.00 | 29.49 | 20.50 | 4.35 | 30.43 | --- | --- | Peak |
| 6 | 853.00 | 28.45 | -17.55 | 46.00 | 30.87 | 23.27 | 4.70 | 30.39 | --- | --- | Peak |

**<Battery at 50% Charge>**

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |

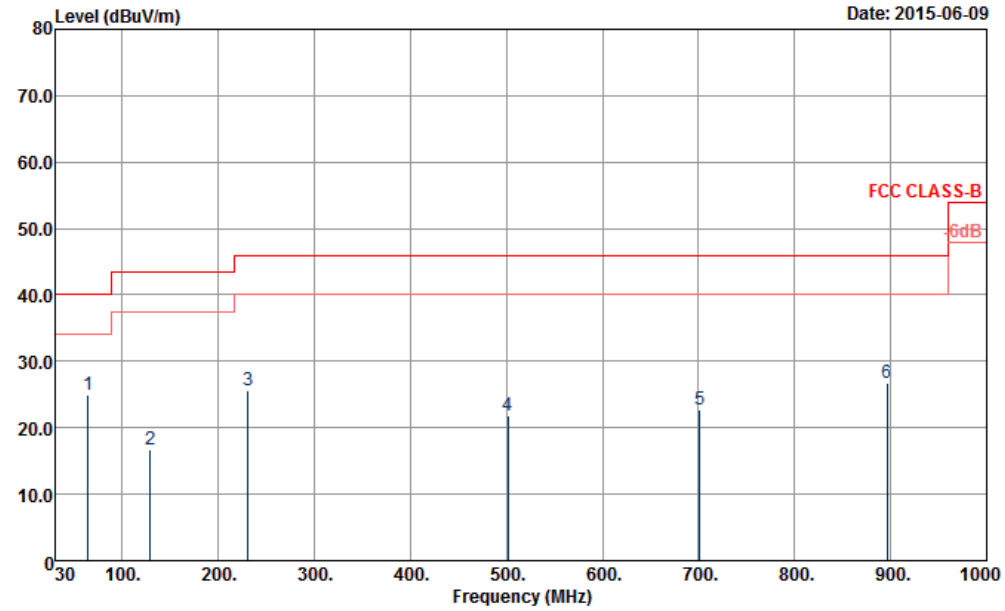



Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(131102) HORIZONTAL

: 30MHz to 1GHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 98.85 | 30.28 | -13.22 | 43.50 | 49.16 | 10.16 | 2.06 | 31.10 | 100 | 0 | Peak |
| 2 | 156.36 | 22.50 | -21.00 | 43.50 | 40.40 | 10.66 | 2.61 | 31.17 | --- | --- | Peak |
| 3 | 281.64 | 21.74 | -24.26 | 46.00 | 36.67 | 12.83 | 3.16 | 30.92 | --- | --- | Peak |
| 4 | 300.00 | 23.13 | -22.87 | 46.00 | 37.77 | 13.20 | 3.16 | 31.00 | --- | --- | Peak |
| 5 | 776.70 | 25.62 | -20.38 | 46.00 | 29.46 | 22.03 | 4.48 | 30.35 | --- | --- | Peak |
| 6 | 952.40 | 29.29 | -16.71 | 46.00 | 30.26 | 24.48 | 4.94 | 30.39 | --- | --- | Peak |

| Test Mode : | Mode 1 | Temperature : | 21~23°C |
|---|---|---|---|
| Test Engineer : | Eric Shih | Relative Humidity : | 48~50% |
| Test Distance : | 3m | Polarization : | Vertical |
| Function Type : | WPC | | |



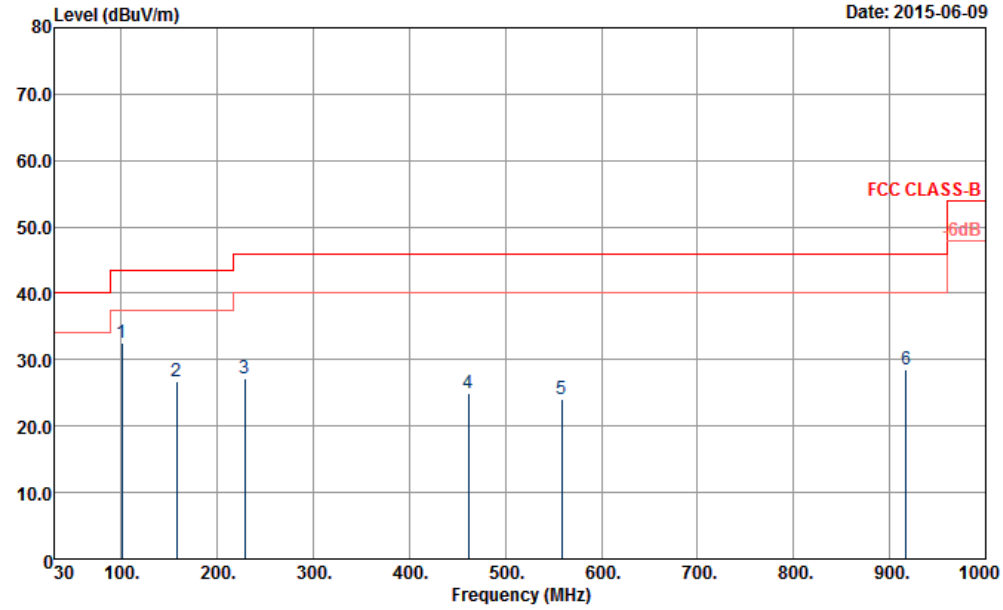

Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(131102) VERTICAL

: 30MHz to 1GHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 64.29 | 25.04 | -14.96 | 40.00 | 48.20 | 6.00 | 2.06 | 31.22 | 100 | 0 | Peak |
| 2 | 129.36 | 16.81 | -26.69 | 43.50 | 33.61 | 11.92 | 2.38 | 31.10 | --- | --- | Peak |
| 3 | 231.15 | 25.59 | -20.41 | 46.00 | 43.41 | 10.22 | 2.96 | 31.00 | --- | --- | Peak |
| 4 | 501.60 | 21.74 | -24.26 | 46.00 | 30.45 | 18.01 | 3.89 | 30.61 | --- | --- | Peak |
| 5 | 701.10 | 22.76 | -23.24 | 46.00 | 28.11 | 20.64 | 4.41 | 30.40 | --- | --- | Peak |
| 6 | 896.40 | 26.66 | -19.34 | 46.00 | 29.23 | 23.08 | 4.66 | 30.31 | --- | --- | Peak |

**<Battery Near 100% Charge>**

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |

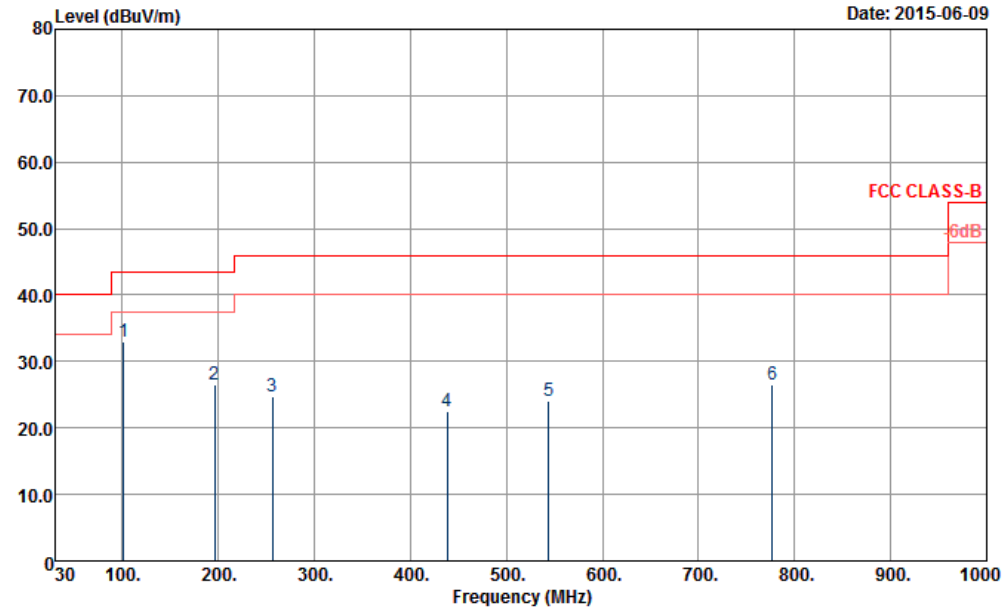



Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(131102) HORIZONTAL

: 30MHz to 1GHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 100.74 | 32.56 | -10.94 | 43.50 | 50.87 | 10.42 | 2.38 | 31.11 | 100 | 0 | Peak |
| 2 | 157.98 | 26.72 | -16.78 | 43.50 | 44.71 | 10.58 | 2.61 | 31.18 | --- | --- | Peak |
| 3 | 228.18 | 27.19 | -18.81 | 46.00 | 45.29 | 9.94 | 2.96 | 31.00 | --- | --- | Peak |
| 4 | 461.70 | 25.02 | -20.98 | 46.00 | 34.63 | 17.42 | 3.77 | 30.80 | --- | --- | Peak |
| 5 | 558.30 | 24.07 | -21.93 | 46.00 | 30.85 | 19.98 | 4.01 | 30.77 | --- | --- | Peak |
| 6 | 917.40 | 28.54 | -17.46 | 46.00 | 30.21 | 23.86 | 4.80 | 30.33 | --- | --- | Peak |

| Test Mode : | Mode 1 | Temperature : | 21~23°C |
|---|---|---|---|
| Test Engineer : | Eric Shih | Relative Humidity : | 48~50% |
| Test Distance : | 3m | Polarization : | Vertical |
| Function Type : | WPC | | |




Site : 03CH07-HY
Condition : FCC CLASS-B 3m LF-ANT(131102) VERTICAL

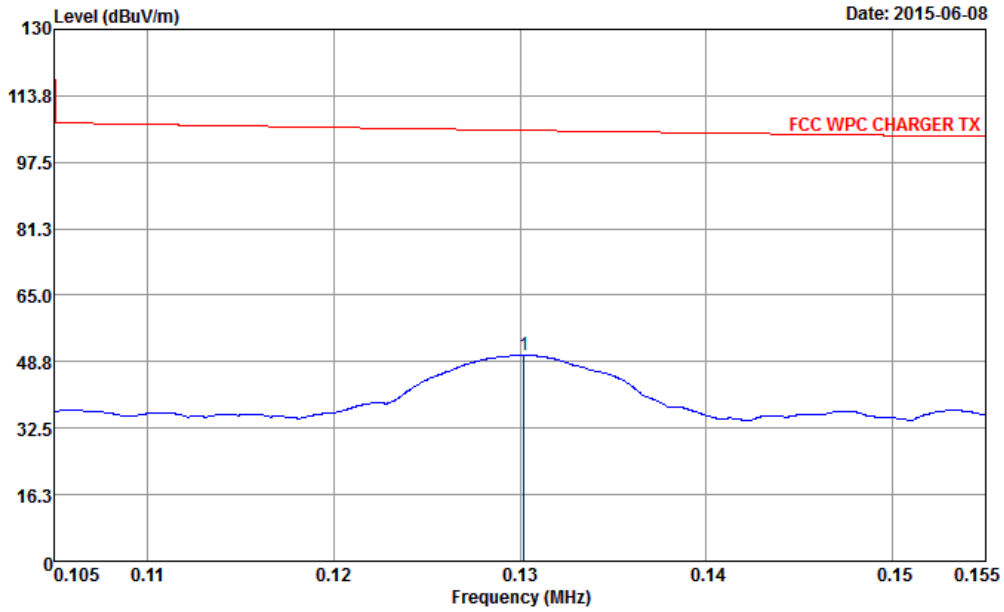
: 30MHz to 1GHz

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 101.28 | 32.99 | -10.51 | 43.50 | 51.30 | 10.42 | 2.38 | 31.11 | 100 | 0 | Peak |
| 2 | 196.05 | 26.50 | -17.00 | 43.50 | 45.93 | 8.98 | 2.69 | 31.10 | --- | --- | Peak |
| 3 | 256.26 | 24.75 | -21.25 | 46.00 | 39.43 | 13.36 | 2.96 | 31.00 | --- | --- | Peak |
| 4 | 438.60 | 22.62 | -23.38 | 46.00 | 32.72 | 16.98 | 3.63 | 30.71 | --- | --- | Peak |
| 5 | 544.30 | 24.05 | -21.95 | 46.00 | 31.74 | 19.08 | 4.01 | 30.78 | --- | --- | Peak |
| 6 | 776.70 | 26.56 | -19.44 | 46.00 | 30.40 | 22.03 | 4.48 | 30.35 | --- | --- | Peak |

### 3.3.7 Test Result of Field Strength of Fundamental Emissions

**<Battery at 0%>**

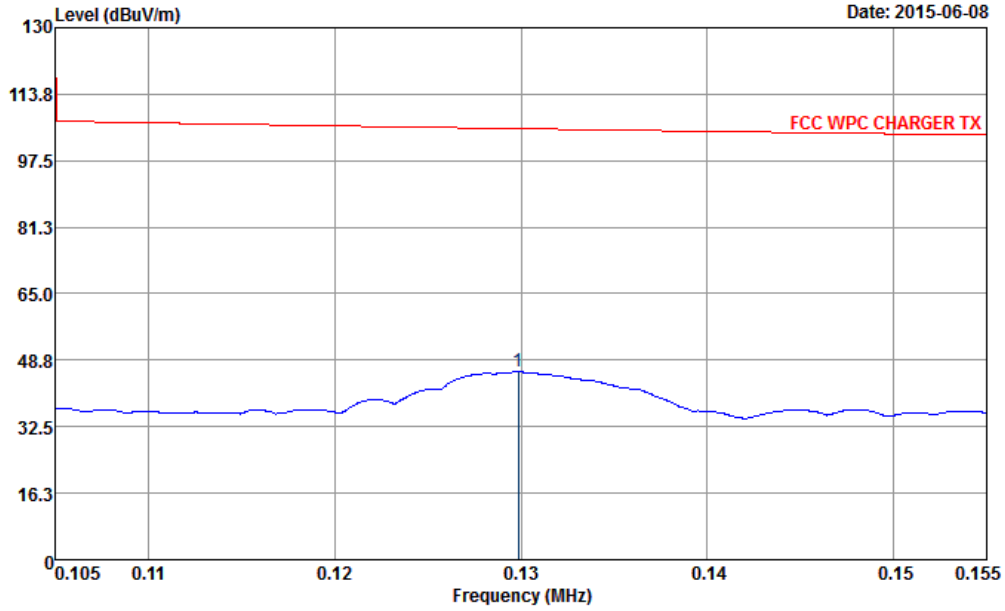
| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |




Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(H) HORIZONTAL

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.13 | 50.30 | -55.01 | 105.31 | 30.07 | 19.94 | 0.29 | 100 | 0 | QP |

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Vertical |
| **Function Type :** | WPC | | |

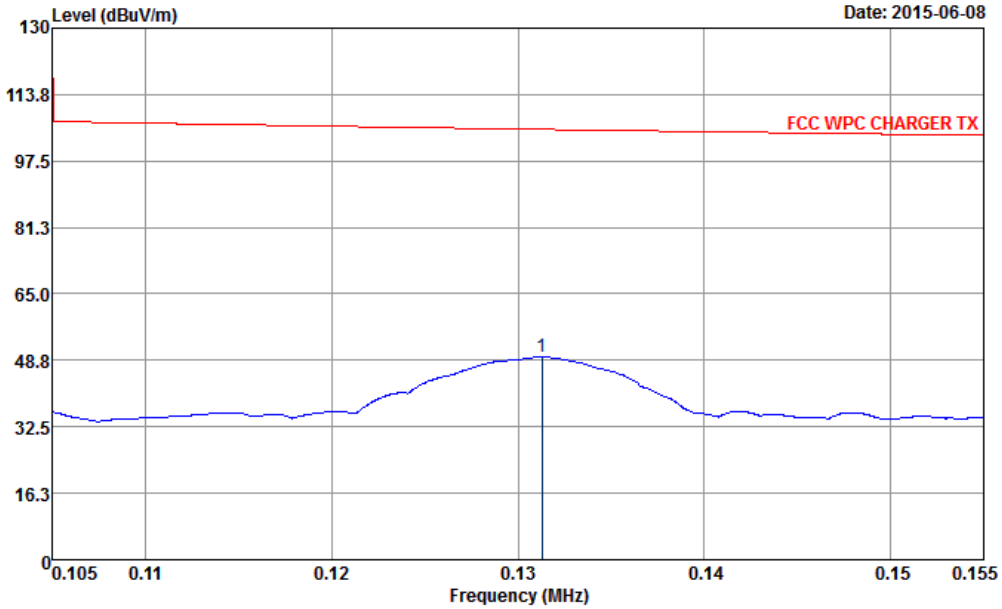



Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(V) VERTICAL

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.13 | 45.83 | -59.51 | 105.34 | 25.58 | 19.96 | 0.29 | 100 | 267 | QP |

**<Battery at 50% Charge>**

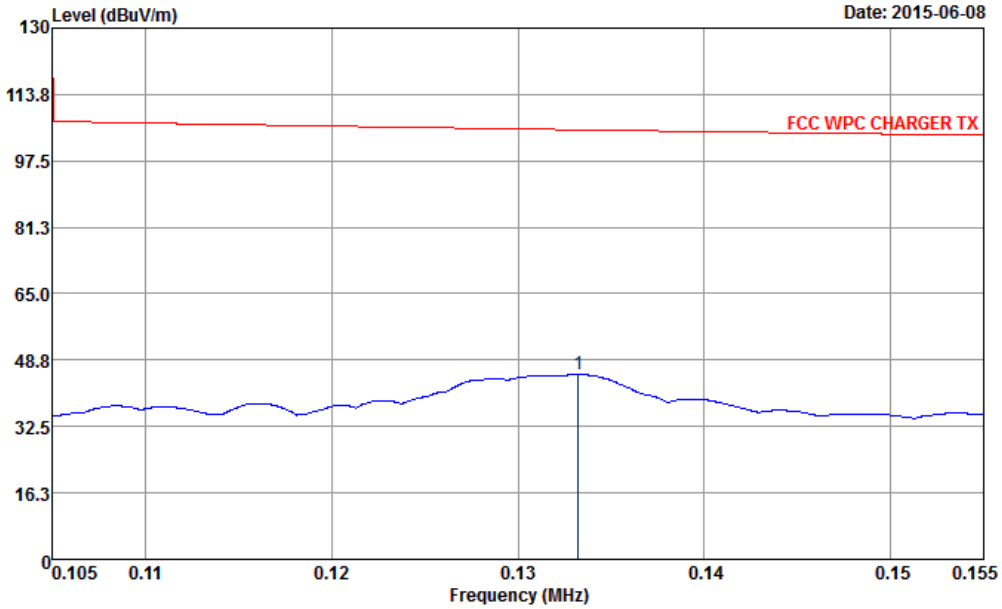
| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |




Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(H) HORIZONTAL

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.13 | 49.52 | -55.72 | 105.24 | 29.29 | 19.94 | 0.29 | 100 | 0 | QP |

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Vertical |
| **Function Type :** | WPC | | |

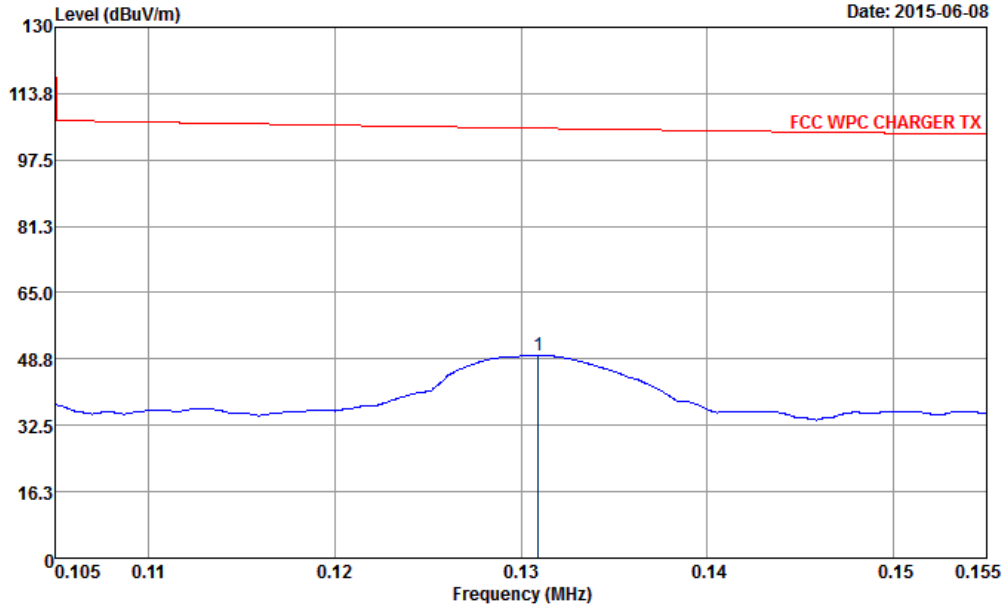



Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(V) VERTICAL

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.13 | 45.22 | -59.89 | 105.11 | 24.97 | 19.96 | 0.29 | 100 | 244 | QP |

**<Battery Near 100% Charge>**

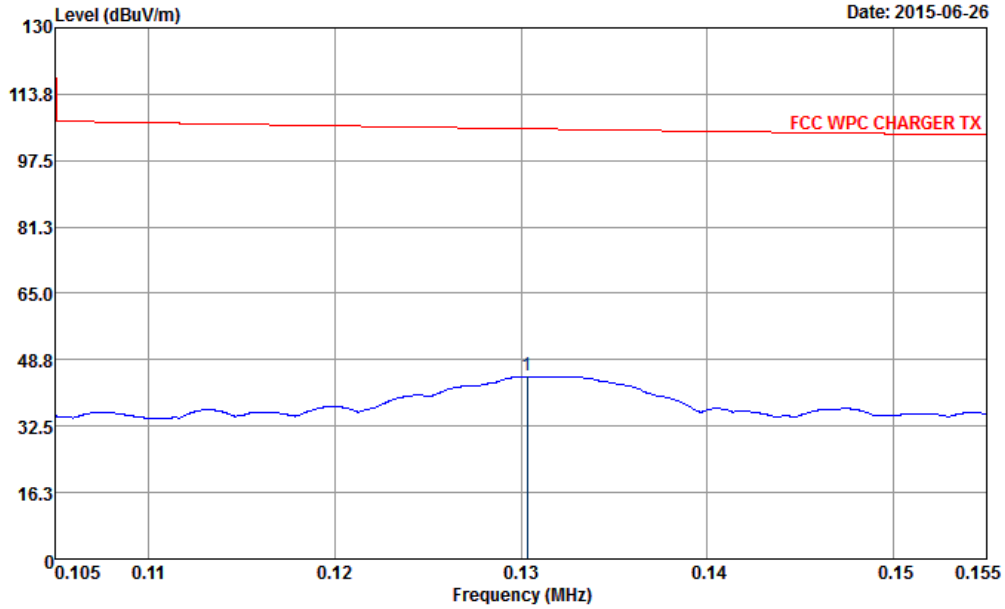
| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Horizontal |
| **Function Type :** | WPC | | |




Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(H) HORIZONTAL

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.13 | 49.64 | -55.62 | 105.26 | 29.41 | 19.94 | 0.29 | 100 | 0 | QP |

| | | | |
|---|---|---|---|
| **Test Mode :** | Mode 1 | **Temperature :** | 21~23°C |
| **Test Engineer :** | Eric Shih | **Relative Humidity :** | 48~50% |
| **Test Distance :** | 3m | **Polarization :** | Vertical |
| **Function Type :** | WPC | | |




Site : 03CH07-HY
Condition : FCC WPC CHARGER TX 3m LOOP_ANT_140728(V) VERTICAL

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | cm | deg | |
| 1 | 0.13 | 44.73 | -60.57 | 105.30 | 24.48 | 19.96 | 0.29 | 100 | 236 | QP |

# 4. List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100055 | 9kHz~40GHz | Jun. 09, 2014 | Jun. 03, 2015~ Jun. 04, 2015 | Jun. 08, 2015 | Conducted (TH02-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESCS 30 | 100356 | 9kHz – 2.75GHz | Dec. 01, 2014 | May 27, 2015 | Nov. 30, 2015 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100080 | 9kHz~30MHz | Dec. 02, 2014 | May 27, 2015 | Dec. 01, 2015 | Conduction (CO05-HY) |
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | May 27, 2015 | N/A | Conduction (CO05-HY) |
| LISN (for auxiliary equipment) | Rohde & Schwarz | ENV216 | 100081 | 9kHz~30MHz | Dec. 08, 2014 | May 27, 2015 | Dec. 07, 2015 | Conduction (CO05-HY) |
| LF Cable | HUBER + SUHNER | RG-214/U | LF01 | N/A | Jan. 02, 2015 | May 27, 2015 | Jan. 01, 2016 | Conduction (CO05-HY) |
| Bilog Antenna | Schaffner | CBL6111C | 2726 | 30MHz ~ 1GHz | Sep. 27, 2014 | Jun. 08, 2015 ~ Jun. 26, 2015 | Sep. 26, 2015 | Radiation (03CH07-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9 kHz~30 MHz | Jul. 28, 2014 | Jun. 08, 2015 ~ Jun. 26, 2015 | Jul. 27, 2015 | Radiation (03CH07-HY) |
| Preamplifier | COM-POWER | PA-103A | 161241 | 10MHz-1000MHz | Mar. 12, 2015 | Jun. 08, 2015 ~ Jun. 26, 2015 | Mar. 11, 2016 | Radiation (03CH07-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV 30 | 101749 | 10Hz~30GHz | Mar. 10, 2015 | Jun. 08, 2015 ~ Jun. 26, 2015 | Mar. 09, 2016 | Radiation (03CH07-HY) |
| Antenna Mast | Max-Full | MFA520BS | N/A | 1m~4m | N/A | Jun. 08, 2015 ~ Jun. 26, 2015 | N/A | Radiation (03CH07-HY) |
| Turn Table | ChainTek | Chaintek 3000 | N/A | 0~360 degree | N/A | Jun. 08, 2015 ~ Jun. 26, 2015 | N/A | Radiation (03CH07-HY) |

# 5. Uncertainty of Evaluation

**Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **2.26** |

**Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.2** |