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Report No.: 1606RSU03201
Report Version: V02
Issue Date: 07-18-2016

MEASUREMENT REPORT

FCC PART 15.209

FCC ID: 2AIY7-CD-1014

APPLICANT: Shenzhen Uniwins Technology Co., Limited

Application Type: Certification

Product: Wireless Qi Charging Power Bank

Model No.: CD-1014

FCC Classification: Part 15 Low Power Transmitter Below 1705 kHz (DCD)

FCC Rule Part(s): FCC Part 15.209

Test Procedure(s): ANSI C63.10-2013

Test Date: June 04 ~ 11, 2016

Reviewed By : Robin Wu

(Robin Wu)

Approved By : Marlin Chen

(Marlin Chen)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
1606RSU03201	Rev. 01	Initial report	07-13-2016	Invalid
1606RSU03201	Rev. 02	Add test item "Emission Bandwidth"	07-18-2016	Valid

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§2.1033 General Information

Applicant:	Shenzhen Uniwins Technology Co., Limited
Applicant Address:	2-3/F., Bldg. B, Quanyuanfa Industrial Park, Zhucun, Guanlan Avenue, Guanlan Town, Longhua New District, Shenzhen, China
Manufacturer:	Shenzhen Uniwins Technology Co., Limited
Manufacturer Address:	2-3/F., Bldg. B, Quanyuanfa Industrial Park, Zhucun, Guanlan Avenue, Guanlan Town, Longhua New District, Shenzhen, China
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
MRT FCC Registration No.:	809388
FCC Rule Part(s):	Part 15.209
Model No.	CD-1014
FCC ID:	2AIY7-CD-1014
Test Device Serial No.:	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering
FCC Classification:	Part 15 Low Power Transmitter Below 1705 kHz (DCD)

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 809388) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.



1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	Wireless Qi Charging Power Bank
Model No.	CD-1014
Frequency Range	110kHz ~ 205kHz
Antenna Type	Coil

Note: Wireless Charging frequencies are variable frequency range (110kHz ~ 205kHz), and the charging frequency is 125kHz.

2.2. Test Standards

The following report is prepared on behalf of the **Shenzhen Uniwins Technology Co., Limited** in accordance with FCC Part 15, Subpart C, FCC Part 15.215(c) and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, FCC Part 15.215(c) and 15.209 of the Federal Communication Commissions rules.

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

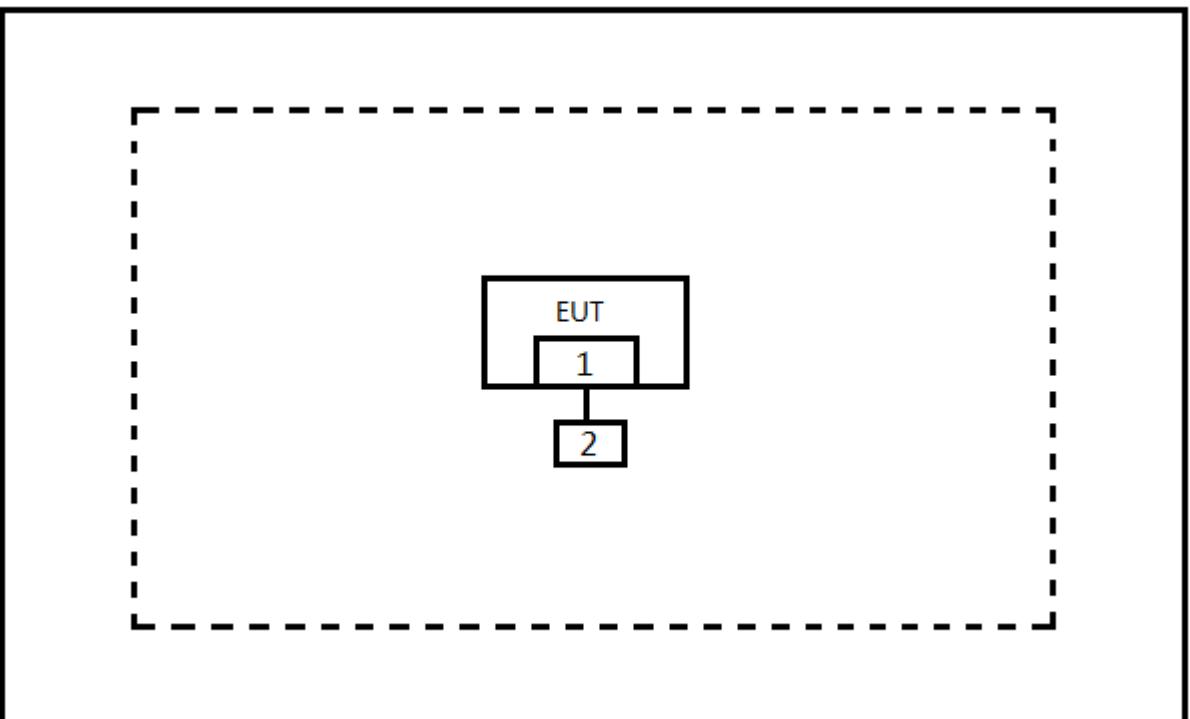
2.3. Test Methodology

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013).

Deviation from measurement procedure.....None

2.4. Test Configuration of Equipment under Test

2.4.1 Configuration of Tested System

Connection Diagram (Mode 1)	
Signal Cable Type	Signal Cable Description
N/A	

2.4.2 Test System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Wireless Charging	Uniwins	N/A	N/A	N/A
2 Mobile Phone	Apple	A1530	N/A	N/A

3. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antenna of the **Wireless Qi Charging Power Bank** is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The Wireless Qi Charging Power Bank **FCC ID: 2AIY7-CD-1014** unit complies with the requirement of §15.203.

4. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2016/11/03
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2016/11/03
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2016/11/03
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06182	1 year	2016/12/20
Shielding Anechoic Chamber	Mikebang	Chamber-SR2	MRTSUE06215	1 year	2017/05/10

Radiated Disturbance - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2016/08/03
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2017/03/28
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2016/12/14
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2016/12/11
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06183	1 year	2016/12/20
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2017/05/10

20dB Bandwidth Measurement - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2016/08/03
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2016/12/14
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06183	1 year	2016/12/20
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2017/05/10

Software	Version	Function
e3	V8.3.5	EMI Test Software

5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement - SR2
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 150kHz~30MHz: 3.5 dB
Radiated Emission Measurement - AC1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): Horizontal: 9kHz~1GHz: 4.07 dB Vertical: 30MHz~1GHz: 4.18 dB

6. TEST RESULT

6.1. Summary

Company Name: Shenzhen Uniwins Technology Co., Limited

FCC ID: 2AIY7-CD-1014

FCC Part Section(s)	Test Description	Test Condition	Test Result
15.207	Conducted Emissions	Conducted	Pass
15.209	Radiated Spurious Emissions	Radiated	Pass
15.215(c)	Emission Bandwidth	Radiated	Pass

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

6.2. Radiated Emissions

6.2.1. Standard Applicable

According to §15.209, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

FCC Part 15 Subpart B Paragraph 15.209 Limits		
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	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

1. RF Voltage (dB μ V) = 20 log RF Voltage (μ V)
2. Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

6.2.2. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement. The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

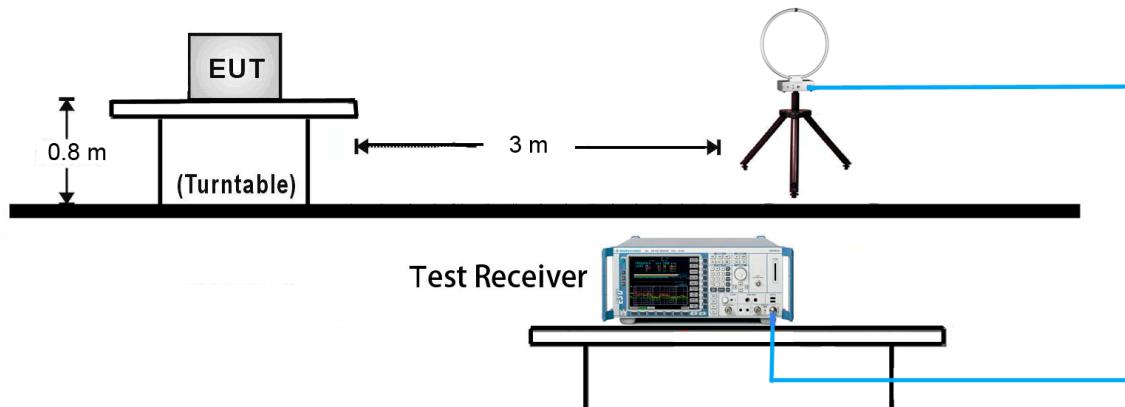
The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 9 KHz to 10th Harmonic of fundamental was investigated.

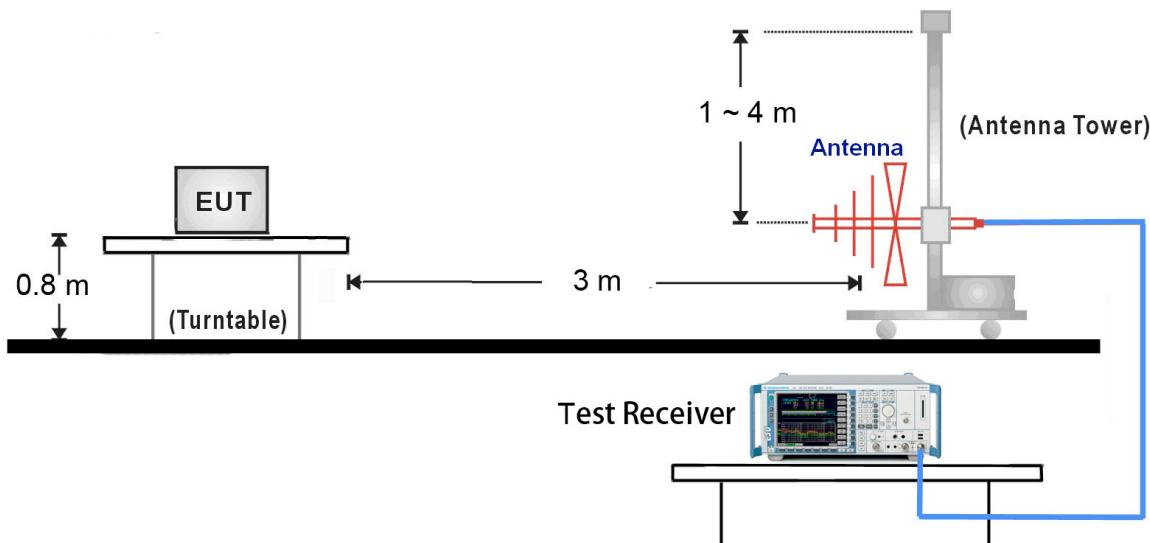
6.2.3. Test Setup

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

9kHz ~ 30MHz Test Setup:



30MHz ~ 1GHz Test Setup:



6.2.4. Test Results

Fundamental Emission

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
X Axis							
0.125	52.1	20.2	72.3	125.7	-53.4	PK	Face on
0.125	56.2	20.2	76.4	125.7	-49.3	PK	Face off
Y Axis							
0.125	48.3	20.2	68.5	125.7	-57.2	PK	Face on
0.125	52.6	20.2	72.8	125.7	-52.9	PK	Face off
Z Axis							
0.125	47.6	20.2	67.8	125.7	-57.9	PK	Face on
0.125	51.2	20.2	71.4	125.7	-54.3	PK	Face off

Note:

1. Limit=25.666dB μ v/m + 40*Log (300(m)/3(m)) = 105.7dB μ v/m (Average detector),
125.67dB μ v/m (Peak detector).
2. Measurement Level = Reading Level + Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

General Radiated Emission 9kHz ~ 30MHz

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
0.250	17.8	20.3	38.1	99.6	-61.5	PK	Face on
0.375	26.5	20.3	46.8	96.1	-49.3	PK	Face on
0.500	18.4	20.4	38.8	73.6	-34.8	QP	Face on
0.625	19.4	20.5	39.9	71.7	-31.8	QP	Face on
0.750	10.8	20.6	31.4	70.1	-38.7	QP	Face on
0.875	15.8	20.6	36.4	68.8	-32.4	QP	Face on
1.000	14.6	20.6	35.2	67.6	-32.4	QP	Face on
1.125	13.5	20.5	34.0	66.6	-32.6	QP	Face on
1.250	10.0	20.5	30.5	65.7	-35.2	QP	Face on
0.250	16.6	20.3	36.9	99.6	-62.7	PK	Face off
0.375	29.1	20.3	49.4	96.1	-46.7	PK	Face off
0.500	12.4	20.4	32.8	73.6	-40.8	QP	Face off
0.625	22.5	20.5	43.0	71.7	-28.7	QP	Face off
0.750	9.8	20.6	30.4	70.1	-39.7	QP	Face off
0.875	18.6	20.6	39.2	68.8	-29.6	QP	Face off
1.000	9.3	20.5	29.8	67.6	-37.8	QP	Face off
1.125	14.4	20.5	34.9	66.6	-31.7	QP	Face off
1.250	10.5	20.5	31.0	65.7	-34.7	QP	Face off

Note:

1. Measurement Level = Reading Level + Factor.
2. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

General Radiated Emission 30MHz ~ 1GHz

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
49.4	3.3	14.1	17.4	40.0	-22.6	QP	Horizontal
101.3	7.6	11.1	18.7	43.5	-24.8	QP	Horizontal
149.3	3.3	15.1	18.4	43.5	-25.1	QP	Horizontal
254.1	10.6	13.0	23.6	46.0	-22.4	QP	Horizontal
307.4	6.4	14.5	20.9	46.0	-25.1	QP	Horizontal
478.1	4.5	18.1	22.6	46.0	-23.4	QP	Horizontal
41.6	9.4	14.4	23.8	40.0	-16.2	QP	Vertical
50.9	12.3	14.0	26.3	40.0	-13.7	QP	Vertical
63.0	8.7	12.8	21.5	40.0	-18.5	QP	Vertical
101.3	12.6	11.1	23.7	43.5	-19.8	QP	Vertical
308.4	7.7	14.5	22.2	46.0	-23.8	QP	Vertical
587.3	3.9	20.2	24.1	46.0	-21.9	QP	Vertical

Note:

1. Measurement Level = Reading Level + Factor.
2. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

6.3. AC Conducted Emissions Measurement

6.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.3.2. Test Procedure

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

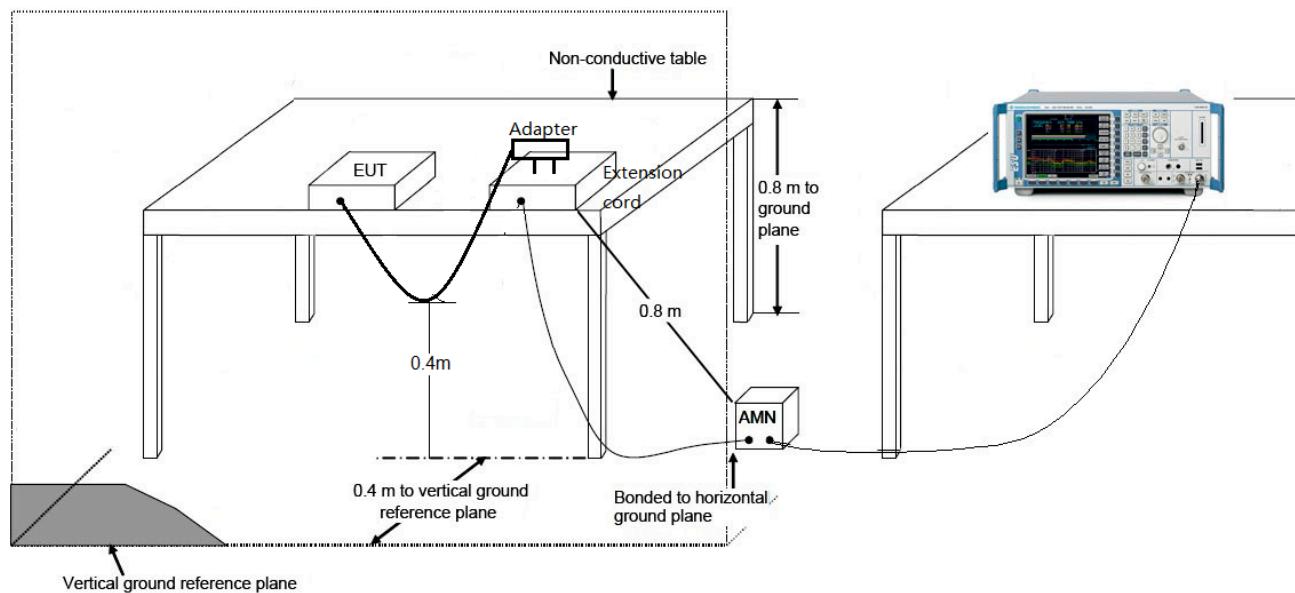
The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable

configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

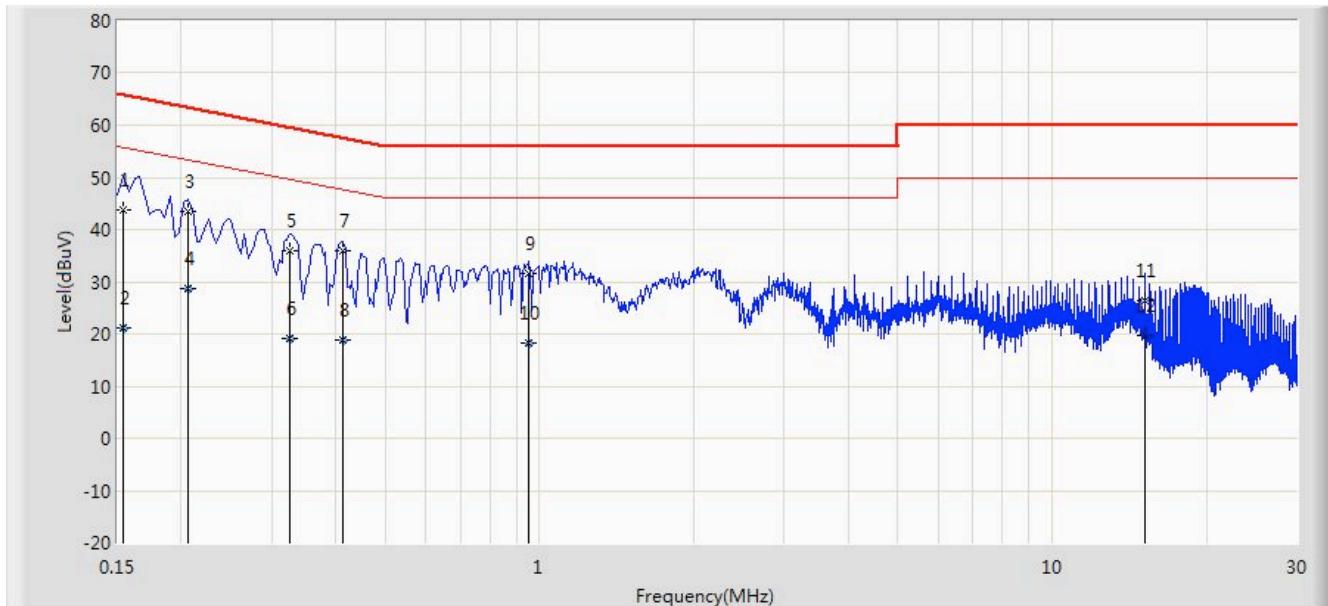
An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

6.3.3. Test Setup



6.3.4. Test Result

Site: SR2	Time: 2016/07/04 - 13:20
Limit: FCC_Part15.207_CE_AC Power	Engineer: Line Chen
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: Wireless Qi Charging Power Bank	Power: AC 120V/60Hz
Note: Test Mode 1	

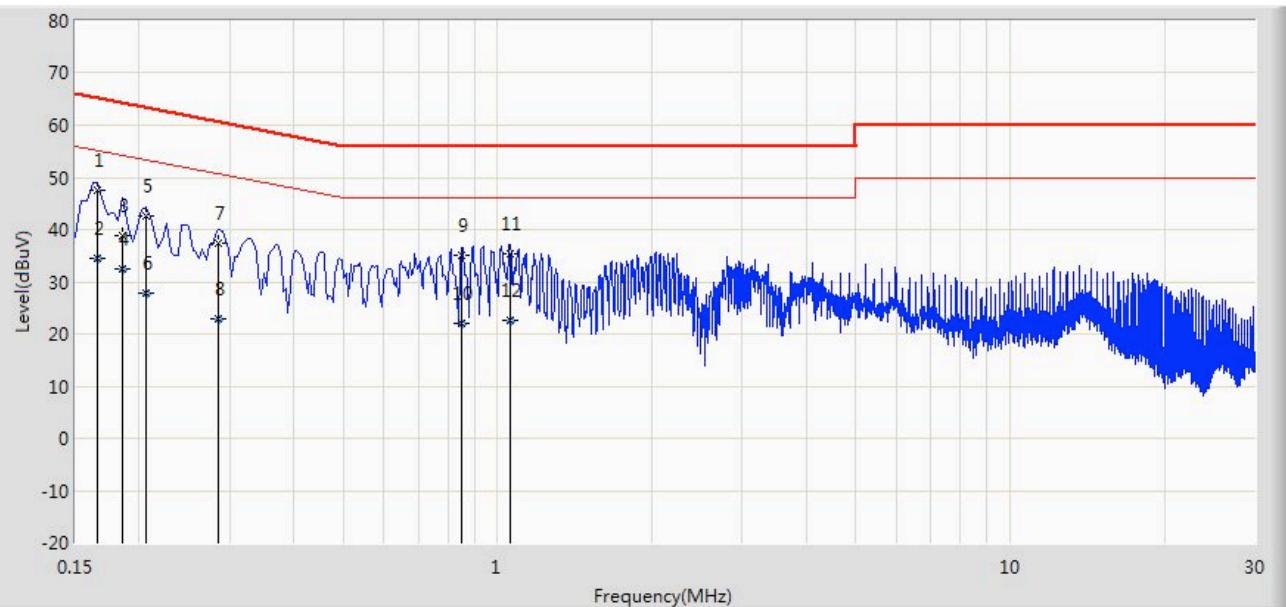


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V)	Reading Level (dB μ V)	Over Limit (dB)	Limit (dB μ V)	Factor (dB)	Type
1			0.154	43.627	32.887	-22.154	65.781	10.740	QP
2			0.154	21.254	10.515	-34.527	55.781	10.740	AV
3	*		0.206	43.464	33.484	-19.901	63.365	9.981	QP
4			0.206	28.600	18.620	-24.765	53.365	9.981	AV
5			0.326	35.989	25.964	-23.564	59.552	10.025	QP
6			0.326	19.192	9.167	-30.360	49.552	10.025	AV
7			0.414	35.853	25.756	-21.715	57.568	10.097	QP
8			0.414	18.888	8.791	-28.679	47.568	10.097	AV
9			0.954	31.509	21.577	-24.491	56.000	9.932	QP
10			0.954	18.330	8.398	-27.670	46.000	9.932	AV
11			15.138	26.469	16.404	-33.531	60.000	10.065	QP
12			15.138	19.816	9.751	-30.184	50.000	10.065	AV

Note: Measure Level (dB μ V) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Site: SR2	Time: 2016/07/04 - 13:24
Limit: FCC_Part15.207_CE_AC Power	Engineer: Line Chen
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: Wireless Qi Charging Power Bank	Power: AC 120V/60Hz
Note: Test Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.166	47.392	37.321	-17.766	65.158	10.071	QP
2			0.166	34.361	24.290	-20.797	55.158	10.071	AV
3			0.186	38.717	28.682	-25.497	64.213	10.035	QP
4			0.186	32.601	22.566	-21.613	54.213	10.035	AV
5			0.206	42.574	32.573	-20.791	63.365	10.001	QP
6			0.206	27.898	17.896	-25.467	53.365	10.001	AV
7			0.286	37.497	27.470	-23.142	60.640	10.027	QP
8			0.286	22.907	12.879	-27.733	50.640	10.027	AV
9			0.850	35.149	25.157	-20.851	56.000	9.992	QP
10			0.850	21.949	11.957	-24.051	46.000	9.992	AV
11			1.058	35.298	25.391	-20.702	56.000	9.907	QP
12			1.058	22.753	12.845	-23.247	46.000	9.907	AV

Note: Measure Level (dB μ V) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

6.4. Emissions Bandwidth

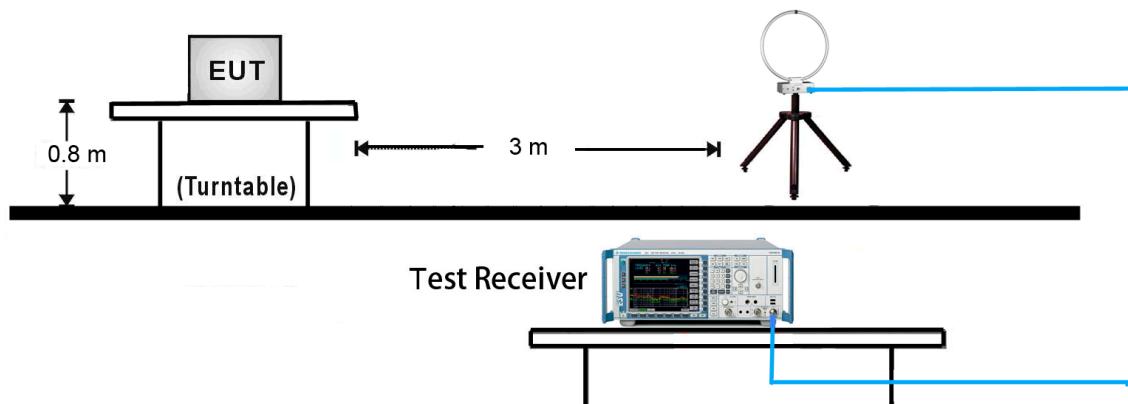
6.4.1. Test Limit

N/A

6.4.2. Test Procedure

1. For Emission Bandwidth refer ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
2. For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the EUT to be measured. The test antenna shall be oriented to obtain the maximum emitted field strength level.

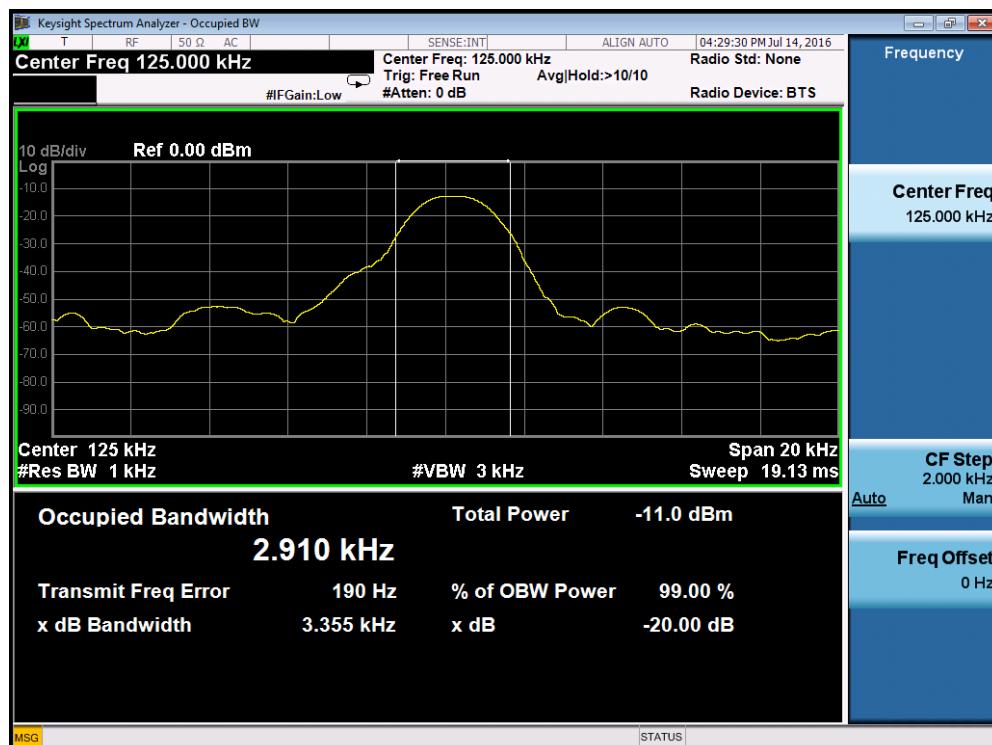
6.4.3. Test Setup



6.4.4. Test Result

Test Frequency (kHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
125	3.36	2.91

20dB Bandwidth Test Plot



7. CONCLUSION

The data collected relate only the item(s) tested and show that the **Wireless Qi Charging Power Bank FCC ID: 2AIY7-CD-1014** is in compliance with FCC Part 15.209 of the FCC Rules.

The End
