



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

## **TEST REPORT**

**for**

**TX wireless charger**

**Model: 50-6AT05**

**Trade Name: Philips/Primax**

**Test Report Number:**

**C130527Z02-RP1**

Issued for:

**Primax Electronics Ltd.**

**No.669, Ruey Kuang Road, Neihu, Taipei, Taiwan, R.O.C**

Issued by

**COMPLIANCE CERTIFICATION SERVICES (SHENZHEN) INC.**

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**Issued Date: July 8, 2013**



TESTING CERT #2861.01

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**Revision History**

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	C130527Z02-RP1	Initial Issue	ALL	Nancy Fu



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# 1 TEST RESULT CERTIFICATION

<b>Product</b>	TX wireless charger
<b>Model</b>	50-6AT05
<b>Brand</b>	Philips/Primax
<b>Tested</b>	May 27~July 5, 2013
<b>Applicant</b>	<b>Primax Electronics Ltd.</b> No.669, Ruey Kuang Road, Neihu, Taipei, Taiwan, R.O.C
<b>Manufacturer</b>	<b>Dongguan Primax Electronic &amp; Telecommunication Products Ltd.</b> (1). Liu Wu District, Shek Kit Town, Dongguan City, Guang Dong Province, P.R.China (2). YuHong Industrial Zone, ChenDong, ShekKit Town, DongGuan City, GuangDong, P.R.China

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209..

The test results of this report relate only to the tested sample identified in this report.

**Approved by:**

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**Tom Gan**  
Supervisor of EMC Dept.  
Compliance Certification Service Inc.

**Reviewed by:**

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**Ruby Zhang**  
Supervisor of Report Dept.  
Compliance Certification Service Inc.



## 2 EUT DESCRIPTION

<b>Product</b>	TX wireless charger
<b>Model Number</b>	50-6AT05
<b>Brand</b>	Philips/Primax
<b>Model Discrepancy</b>	N/A
<b>Identify Number</b>	C130527Z02-RP1
<b>Power Supply</b>	DC5V Supplied by the adapter
<b>Adapter Manufacturer/Model Name</b>	Dongguan City Yingju Electronics Co., Ltd./ YJC010C-0502000U I/P: 100-240Vac, 50/60Hz, 350mA O/P: 5Vdc, 2000mA
<b>Received Date</b>	May 27, 2013
<b>Operating Frequency Range</b>	112kHz-205kHz
<b>Antenna Specification</b>	Coil antenna
<b>Temperature Range</b>	0°C ~ +45°C

**Remark:**

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: **EMJC50-6AT05** filing to comply with Section 15.209 of the FCC Part 15, Subpart C Rules.*



### **3 TEST METHODOLOGY**

The tests documented in this report were performed in accordance with ANSI C63.4 (2003) and FCC CFR 47 Part 2, 15.207, 15.209.

#### **3.1. EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2. EUT EXERCISE**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

#### **3.3. GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 (2003). Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4 (2003).



### 3.4. FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41	322 - 335.4		

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

### 3.5. DESCRIPTION OF TEST MODES

The EUT (model: 50-6AT05) had been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below 1GHz.

RF ID: Channel 175kHz was chosen for full testing.



### 4 INSTRUMENT CALIBRATION

#### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

#### 4.2. MEASUREMENT EQUIPMENT USED

##### Equipment Used for Emissions Measurement

Radiated Emission Test Site 966(2)					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	03/09/2013	03/08/2014
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	03/09/2013	03/08/2014
Amplifier	MITEQ	AM-1604-3000	1123808	03/18/2013	03/18/2014
High Noise Amplifier	Agilent	8449B	3008A01838	03/18/2013	03/18/2014
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	06/21/2013	06/21/2014
Bilog Antenna	SCHAFFNER	CBL6143	5082	03/02/2013	03/01/2014
Horn Antenna	SCHWARZBECK	BBHA9120	D286	03/02/2013	03/01/2014
Loop Antenna	A, R, A	PLA-1030/B	1029	03/23/2013	03/23/2014
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	03/04/2013	03/03/2014
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The FCC Site Registration number is 101879.  
 3. N.C.R = No Calibration Required.

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	03/09/2013	03/08/2014
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	04/20/2013	04/19/2014
LISN	EMCO	3825/2	8901-1459	03/09/2013	03/08/2014
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	03/04/2013	03/03/2014
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. N.C.R = No Calibration Request.





## **5 FACILITIES AND ACCREDITATIONS**

### **5.1. FACILITIES**

All measurement facilities used to collect the measurement data are located at **No.10-1, Mingkeda Logistics Park, No.18, Huanguan South Rd., Guan Lan Town, Baoan District, Shenzhen, China**

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

### **5.2. EQUIPMENT**

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### **5.3. TABLE OF ACCREDITATIONS AND LISTINGS**

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

<b>USA</b>	<b>A2LA</b>
<b>China</b>	<b>CNAS</b>

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

<b>USA</b>	<b>FCC</b>
<b>Japan</b>	<b>VCCI(C-3478, R-3135, T-652, G-624)</b>
<b>Canada</b>	<b>INDUSTRY CANADA</b>
<b>Taiwan</b>	<b>BSMI</b>
<b>Norway</b>	<b>Nemko</b>

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>



**5.4. MEASUREMENT UNCERTAINTY**

<b>Parameter</b>	<b>Uncertainty</b>
Radiated Emission, 30 to 200 MHz Test Site : 966(2)	+/-3.6880dB
Radiated Emission, 200 to 1000 MHz Test Site : 966(2)	+/-3.6695dB
Radiated Emission, 1 to 8 GHz	+/-5.1782dB
Radiated Emission, 8 to 18 GHz	+/-5.2173dB
Conducted Emissions	+/-3.6836dB
Band Width	178kHz
Peak Output Power MU	+/-1.906dB
Band Edge MU	+/-0.182dB
Channel Separation MU	416.178Hz
Duty Cycle MU	0.054ms
Frequency Stability MU	226Hz

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

The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.



## 6 SETUP OF EQUIPMENT UNDER TEST

### 6.1. SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### 6.2. SUPPORT EQUIPMENT

No.	Equipment	Model No.	Serial No.	FCC ID	Brand	Data Cable	Power Cord
1	Windows Phone	Lumia 920	N/A	N/A	N/A	N/A	N/A

*Remark: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*



## 7 FCC PART 15.209 REQUIREMENTS

### 7.1. RADIATED EMISSIONS

#### LIMIT

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)
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

**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

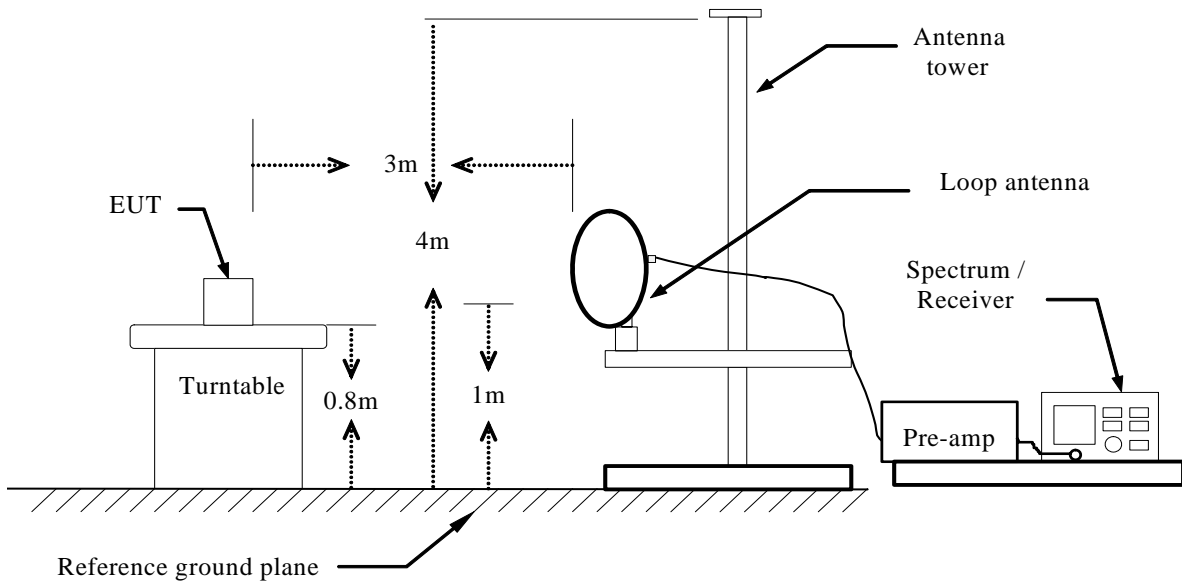
2. In the emission table above, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

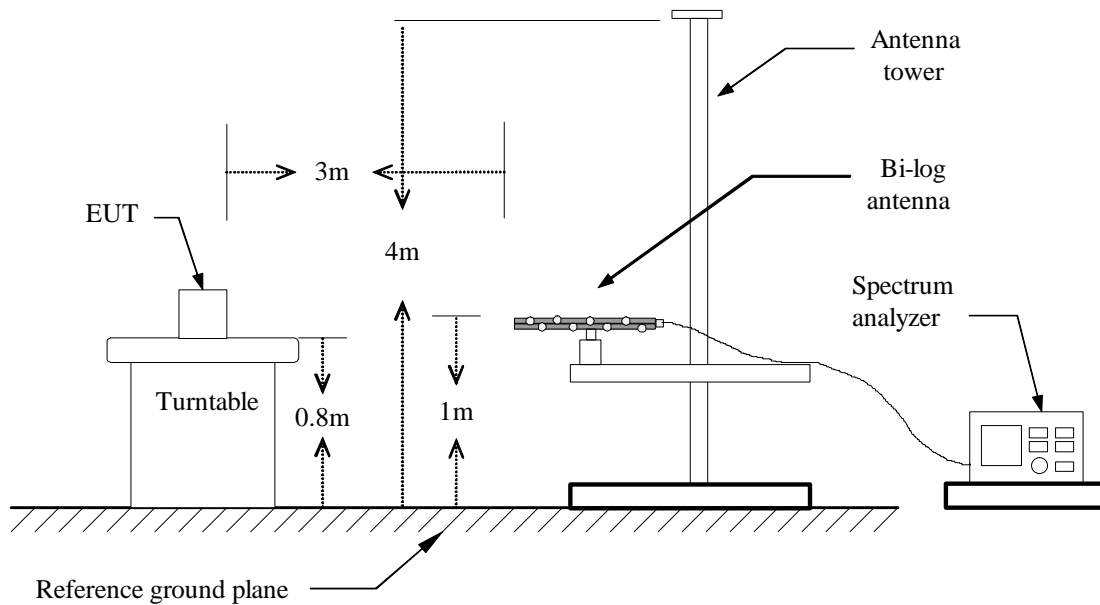


### TEST CONFIGURATION

9kHz ~ 30MHz



30MHz ~ 1 GHz





## **TEST PROCEDURE**

For 9kHz ~ 30MHz

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, The center of the loop shall be 1 m above the ground then to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by rotated of receiving antenna axis
6. Set the spectrum analyzer in the following setting as:  
RBW=10kHz / VBW=30kHz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

For 30MHz ~ 1GHz

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:  
RBW=100kHz / VBW=300kHz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

## **TEST RESULTS**

*No non-compliance noted.*



**TEST DATA**

**Operation Mode:** TX mode                      **Test Date:** July 5, 2013  
**Temperature:** 24°C                              **Tested by:** Mack Li  
**Humidity:** 52 % RH                              **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Detector Mode (PK/QP/AVG)
0.0142	35.29	82.46	117.75	122.26	-4.51	Peak
0.0687	24.95	70.49	95.44	100.69	-5.25	Peak
0.1023	22.45	66.31	88.76	95.24	-6.48	Peak
0.1500	23.64	62.70	86.34	90.00	-3.66	Peak
3.4334	14.59	40.29	54.88	69.50	-14.62	Peak
7.1150	14.76	34.71	49.47	69.50	-20.03	Peak

**Remark:** 1. Measuring frequencies from 9kHz to the 30MHz.  
2. Radiated emissions measured in frequency range from 9kHz to 1000MHz were made with an instrument using peak/quasi-peak/average detector mode.  
3. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.  
4. Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).



**Operation Mode:** Normal Link                      **Test Date:** June 5, 2013  
**Temperature:** 24°C                                      **Tested by:** Mack Li  
**Humidity:** 52 % RH                                      **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBµV)	Correction Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
41.3167	52.65	-14.73	37.92	40.00	-2.08	V	QP
199.7500	45.74	-18.72	27.02	43.50	-16.48	V	QP
409.9166	32.91	-15.24	17.67	46.00	-28.33	V	QP
539.2500	33.11	-14.14	18.97	46.00	-27.03	V	QP
717.0833	33.63	-10.92	22.71	46.00	-23.29	V	QP
776.9000	33.33	-11.31	22.02	46.00	-23.98	V	QP
60.7167	45.17	-21.49	23.68	40.00	-16.32	H	QP
202.9832	50.02	-18.43	31.59	43.50	-11.91	H	QP
361.4166	36.73	-16.78	19.95	46.00	-26.05	H	QP
506.9167	33.07	-14.46	18.61	46.00	-27.39	H	QP
605.5333	33.56	-12.58	20.98	46.00	-25.02	H	QP
684.7500	32.92	-11.04	21.88	46.00	-24.12	H	QP

- Remark:**
1. Measuring frequencies from 30 MHz to the 1GHz.
  2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
  3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
  4. The IF bandwidth of receiver between 30MHz to 1GHz was 100kHz.





## 7.2. POWERLINE CONDUCTED EMISSIONS

### LIMIT

For an intentional radiator which 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 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### TEST CONFIGURATION

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

### TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.



TEST DATA

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Operation Mode: Charge Test Date: June 13, 2013
Temperature: 22°C Tested by: Sun Guo
Humidity: 45% RH

Table with 11 columns: Frequency (MHz), QuasiPeak Reading (dBuV), Average Reading (dBuV), Correction Factor (dB), QuasiPeak Result (dBuV), Average Result (dBuV), QuasiPeak Limit (dBuV), Average Limit (dBuV), QuasiPeak Margin (dB), Average Margin (dB), Line (L1/L2). Rows include frequencies like 0.4660, 0.5899, 1.1900, 2.1180, 4.7020, 13.5540, 0.5860, 0.6700, 0.9900, 1.2020, 2.3780, 2.8820.

Remark:

- 1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)