

FCC TEST REPORT

for

Borqs BeiJing Ltd.

Bennu wireless charging

Model Number: XD6

FCC ID: 2ABDK-XD6

Prepared for : Borqs BeiJing Ltd.
Address : Tower A, Building B23, Universal Business Park, No. 10
Jiuxianqiao Road, Chaoyang District Beijing, 100015 China

Prepared by : Keyway Testing Technology Co., Ltd.
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Report No. : 15KWE042419F




Date of Test : Apr. 2~3, 2015

Date of Report : Apr. 7, 2015

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Keyway Testing Technology Co., Ltd.

| | | | |
|---|---|---|----------------|
| Applicant: | Borqs BeiJing Ltd. | | |
| Address: | Tower A, Building B23, Universal Business Park, No. 10 Jiuxianqiao Road, Chaoyang District Beijing, 100015 China | | |
| Manufacturer: | ShenZhen VLG Wireless Technology CO., LTD | | |
| Address: | 3rd floor, 1st Building, 1st Park of Taohuayuan Hi-tech and Innovation Park, Tiegang, Xixiang, Bao'an, Shenzhen, China 518102 | | |
| E.U.T: | Bennu wireless charging | | |
| Model Number: | XD6 | | |
| Trade Name: | ----- | Serial No.: | ----- |
| Date of Receipt: | Apr. 2, 2015 | Date of Test: | Apr. 2~3, 2015 |
| Test Specification: | FCC Part 15, October 1: 2014 ANSI C63.4:2014 | | |
| Test Result: | The equipment under test was found to be compliance with the requirements of the standards applied. | | |
| Issue Date: Apr. 7, 2015 | | | |
| Tested by: | Reviewed by: | Approved by: | |
|  |  |  | |
| Jack Bu / Engineer | Andy Gao / Supervisor | Jade Yang / Supervisor | |
| Other Aspects: | None. | | |
| <i>Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested</i> | | | |
| <i>This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd.</i> | | | |

1. GENERAL PRODUCT INFORMATION

1.1. Product Function

Refer to Technical Construction Form and User Manual.

1.2. Description of Device (EUT)

Description : Bennu wireless charging
Model No. : XD6
Power Input : DC 5.0V/ 900mA
Operation frequency : 110~200kHz

1.3. Independent Operation Mode

The basic operation mode is:

1.3.1. Charging

1.4. Difference between Model Numbers

None.

1.5. Test Supporting System

Note:

Adapter
Description : Switching Adapter
Model No. : ASUC41a-050120
Power Input : AC 100-240V~50/60Hz 0.2A
Output : DC 5.0V/ 1200mA
USB Line : Unshielded, Detachable 3m
Mobile phone
Applicant : Borqs BeiJing Ltd.
Description : 6" Tablet Remote
Model No. : XR6

2. TEST SITES

2.1. Test Facilities

Lab Qualifications : 944 Shielded Room built by ETS-Lindgren, USA
Date of completion: March 28, 2011

966 Chamber built by ETS-Lindgren, USA
Date of completion: March 28, 2011

Certificated by TUV Rheinland, Germany.
Registration No.: UA 50207153
Date of registration: July 13, 2011

Certificated by UL, USA
Registration No.: 100567237
Date of registration: September 5, 2012

Certificated by Intertek
Registration No.: 2011-RTL-L1-31
Date of registration: October 11, 2011

Certificated by Industry Canada
Registration No.: 9868A
Date of registration: December 8, 2011

Certificated by FCC, USA
Registration No.: 370994
Date of registration: February 21, 2012

Certificated by CNAS China
Registration No.: CNAS L5783
Date of registration: August 8, 2012

Name of Firm : Keyway Testing Technology Co., Ltd.

Site Location : Baishun Industrial Zone, Zhangmutou Town,
Dongguan, Guangdong, China

2.2. List of Test and Measurement Instruments

2.2.1. For conducted emission at the mains terminals test

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|--------------------------------|---------------|-----------|------------|------------|------------|
| EMI Test Receiver | Rohde&Schwarz | ESCI | 101156 | Apr. 27,14 | Apr. 27,15 |
| Artificial Mains Network | Rohde&Schwarz | ENV216 | 101315 | Apr. 27,14 | Apr. 27,15 |
| Artificial Mains Network (AUX) | Rohde&Schwarz | ENV216 | 101314 | Apr. 27,14 | Apr. 27,15 |
| RF Cable | FUJIKURA | 3D-2W | 944 Cable | Apr. 27,14 | Apr. 27,15 |

2.2.2. For radiated emission test

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|--------------------------|---------------|-----------|--------------|-----------|-----------|
| EMI Test Receiver | Rohde&Schwarz | ESCI | 101156 | Apr 27,14 | Apr 27,15 |
| Bilog Antenna | ETS-LINDGREN | 3142D | 00135452 | Apr 27,14 | Apr 27,15 |
| Spectrum Analyzer | Agilent | 8593E | 3911A04271 | Apr 27,14 | Apr 27,15 |
| 3m Semi-anechoic Chamber | ETS-LINDGREN | 966 | KW01 | Apr 27,14 | Apr 27,15 |
| Signal Amplifier | SONOMA | 310 | 187303 | Apr 27,14 | Apr 27,15 |
| RF Cable | IMRO | IMRO-400 | 966 Cable 1# | Apr 27,14 | Apr 27,15 |
| MULTI-DEVICE Controller | ETS-LINDGREN | 2090 | 126913 | N/A | N/A |
| Antenna Holder | ETS-LINDGREN | 2070B | 00109601 | N/A | N/A |

3. TEST SET-UP AND OPERATION MODES

3.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(EUT: Bennu wireless charging)

3.3. Test Operation Mode and Test Software

Refer to Test Setup in clause 4.

3.4. Special Accessories and Auxiliary Equipment

None.

3.5. Countermeasures to Achieve EMC Compliance

None.

4. EMISSION TEST RESULTS

4.1. Conducted Emission at the Mains Terminals Test

Result : **Pass**
Test Procedure : ANSI C63.4:2014
Frequency Range : 0.15 to 30 MHz
Test Site : 944 Shielded Room
Limits : FCC Part 15, October 1: 2014

Test Setup

M/N : XD6
Input Voltage : DC 5V from adapter input AC 120V/60Hz
Operation Mode : Charging

The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 1 m, the excess was folded back and forth parallel to the cable at the centre so as to form a bundle no longer than 0.4 m.

The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

The frequency range from 150 kHz to 30 MHz was investigated.

The bandwidth of the test receiver was set at 9 kHz.

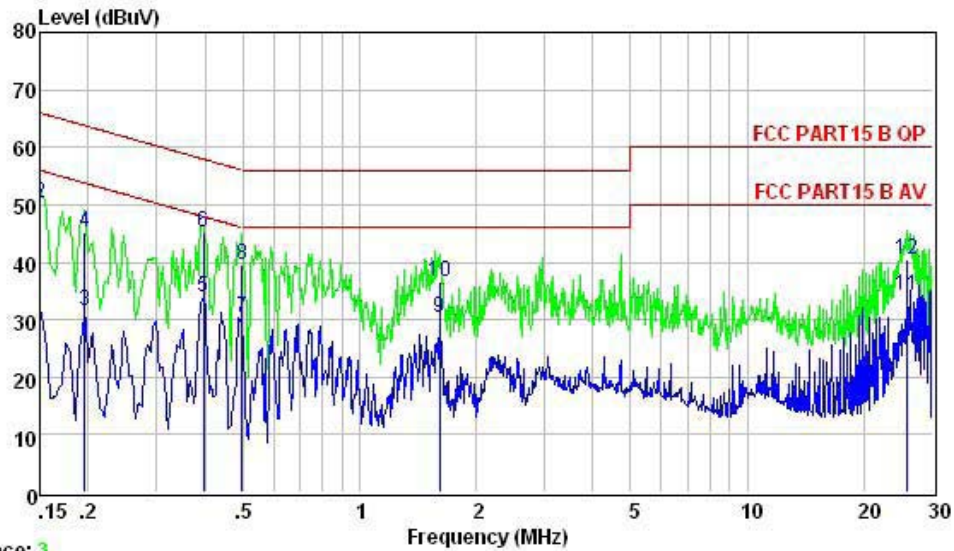
All the test data were reported on the following page.

Note: Measurement Uncertainty: ± 2.6 dB at a level of confidence of 95%.



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Data: 4 File: F:\944 Data\conduction\15Report\15KW033002B.EM6 (12)



Trace: 3

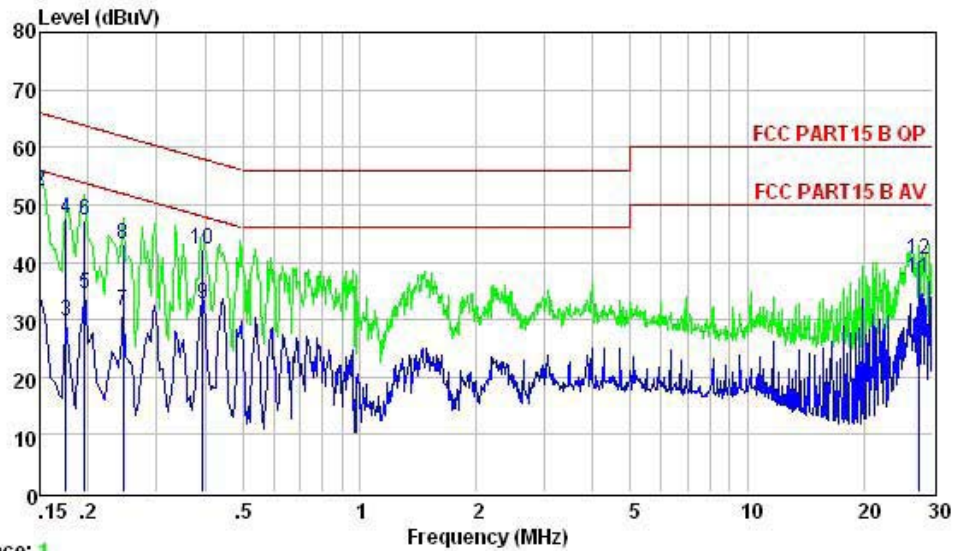
Site : 944 Shielded Room
 Condition : FCC PART15 B QP NEUTRAL
 EUT : Bennu wireless charging
 POWER : DC 5V from adapter input AC 120V/60Hz
 M/N : XD6
 Test Engineer: Jack
 Comment : Temp:24.9'; Humi:56%; Press:101.52kPa
 Test Mode : Charging

| | Freq | Level | Limit | Over | Remark |
|----|--------|-------|-------|--------|---------|
| | MHz | dBuV | dBuV | dB | |
| 1 | 0.150 | 31.74 | 56.00 | -24.26 | Average |
| 2 | 0.150 | 50.37 | 66.00 | -15.63 | QP |
| 3 | 0.195 | 31.53 | 53.80 | -22.27 | Average |
| 4 | 0.195 | 45.26 | 63.80 | -18.54 | QP |
| 5 | 0.396 | 33.99 | 47.95 | -13.96 | Average |
| 6 | 0.396 | 45.23 | 57.95 | -12.72 | QP |
| 7 | 0.499 | 30.40 | 46.01 | -15.61 | Average |
| 8 | 0.499 | 39.66 | 56.01 | -16.35 | QP |
| 9 | 1.610 | 30.38 | 46.00 | -15.62 | Average |
| 10 | 1.610 | 36.65 | 56.00 | -19.35 | QP |
| 11 | 25.727 | 34.12 | 50.00 | -15.88 | Average |
| 12 | 25.727 | 40.37 | 60.00 | -19.63 | QP |



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Data: 2 File: F:\944 Data\conduction\15Report\15KW033002B.EM6 (12)



Trace: 1

Site : 944 Shielded Room
 Condition : FCC PART15 B QP LINE
 EUT : Bennu wireless charging
 POWER : DC 5V from adapter input AC 120V/60Hz
 M/N : XD6
 Test Engineer: Jack
 Comment : Temp:24.9'; Humi:56%; Press:101.52kPa
 Test Mode : Charging

| | Freq | Level | Limit | Over | Remark |
|----|--------|-------|-------|--------|---------|
| | MHz | dBuV | dBuV | dB | |
| 1 | 0.150 | 33.97 | 56.00 | -22.03 | Average |
| 2 | 0.150 | 52.33 | 66.00 | -13.67 | QP |
| 3 | 0.175 | 29.62 | 54.72 | -25.10 | Average |
| 4 | 0.175 | 47.65 | 64.72 | -17.07 | QP |
| 5 | 0.195 | 34.63 | 53.80 | -19.17 | Average |
| 6 | 0.195 | 47.35 | 63.80 | -16.45 | QP |
| 7 | 0.246 | 31.54 | 51.91 | -20.37 | Average |
| 8 | 0.246 | 43.26 | 61.91 | -18.65 | QP |
| 9 | 0.393 | 32.63 | 47.99 | -15.36 | Average |
| 10 | 0.393 | 42.12 | 57.99 | -15.87 | QP |
| 11 | 27.708 | 37.12 | 50.00 | -12.88 | Average |
| 12 | 27.708 | 40.33 | 60.00 | -19.67 | QP |

4.2. Radiated Emission Test

Result : **Pass**
 Test Procedure : ANSI C63.4:2014
 Frequency Range : 0.009 to 1000 MHz
 Test Site : 966 Chamber
 Limits :

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|-----------------|----------------|--------------|---|--------------------------------------|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | 20log ^{(2400/F(kHz))} + 80 |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | 20log ^{(24000/F(kHz))} + 40 |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | 20log ⁽³⁰⁾ + 40 |
| 30 ~ 88 | 100 | 3 | 100 | 20log ⁽¹⁰⁰⁾ |
| 88 ~ 216 | 150 | 3 | 150 | 20log ⁽¹⁵⁰⁾ |
| 216 ~ 960 | 200 | 3 | 200 | 20log ⁽²⁰⁰⁾ |
| Above 960 | 500 | 3 | 500 | 20log ⁽⁵⁰⁰⁾ |

Test Setup

M/N : XD6
 Input Voltage : DC 5V from adapter input AC 120V/60Hz
 Operation Mode : Charging

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The highest frequency of the internal sources of the EUT was less than 108 MHz, so the measurement was only made up to 1 GHz.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

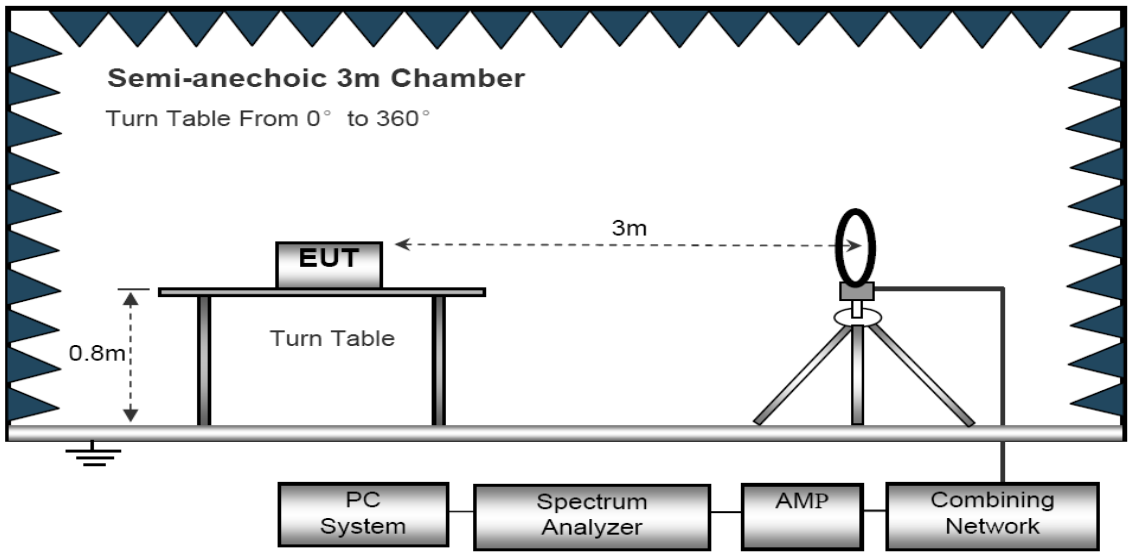
The bandwidth setting on the test receiver was 120 kHz.

All the test data were reported on the following pages.

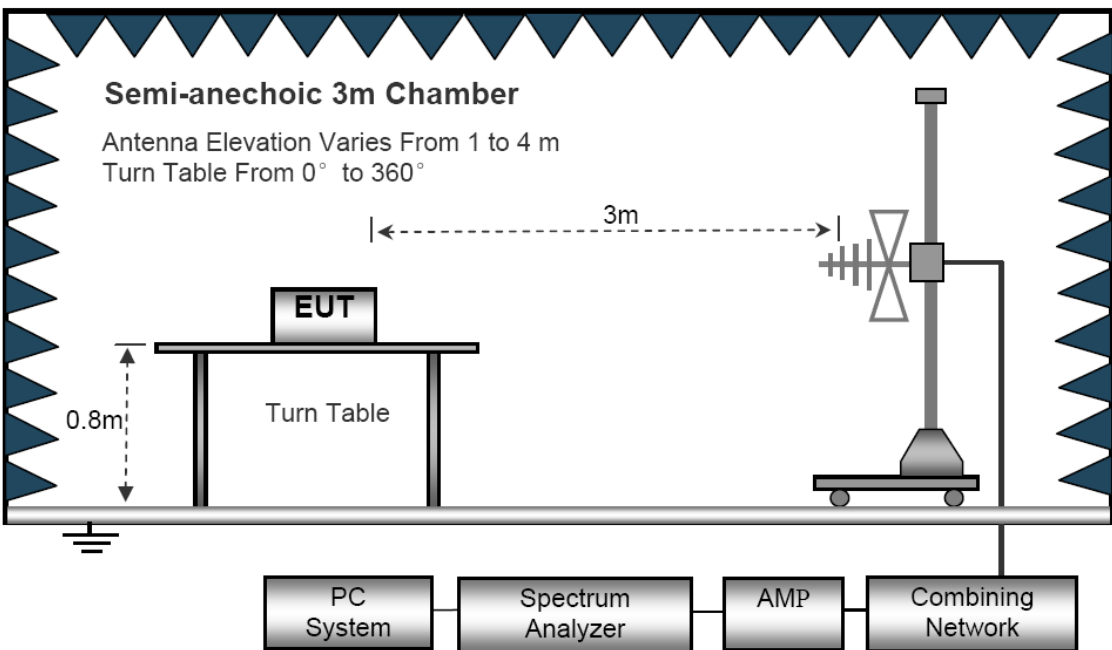
Notes:

1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.
2. Measurement Uncertainty: ±3.6 dB at a level of confidence of 95%.
3. The emission below 30MHz was background noise and met the limit, so no data show it.

Below 30MHz



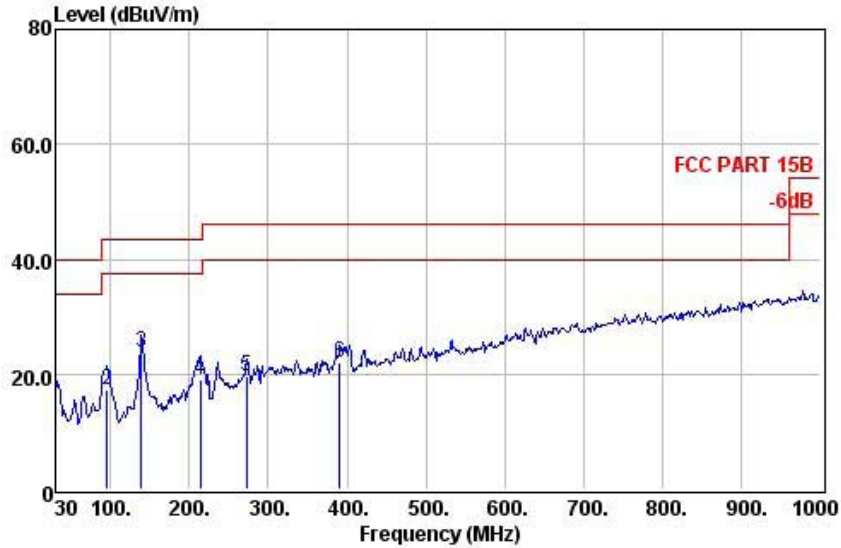
30MHz~1GHz





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Data: 2 File: D:\966 data\15Report\15KW033002B.EM6 (6)



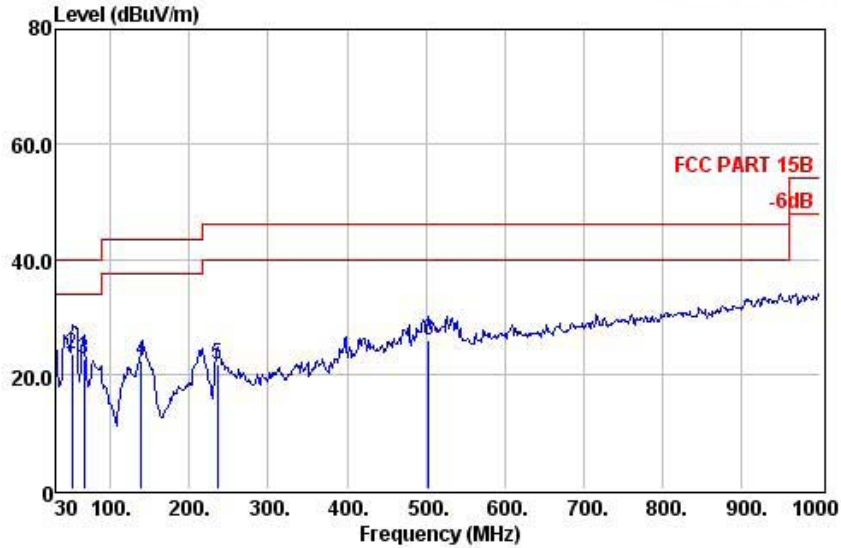
Site : 966 Chamber
 Condition: FCC PART 15B 3m 3142D HORIZONTAL
 EUT : Benu wireless charging
 M/N : XD6
 Power : DC 5V from adapter input AC 120V/60Hz
 Test By : Jack
 Comment : Temp:24.8°C Humi:56% Press:101.52kPa
 Test Mode: Charging

| | Preamp | Read | Cable | Limit | Over | | | |
|------|--------|-------|-------|--------|--------|--------|--------|----|
| Freq | Factor | Level | Loss | Line | Limit | Remark | | |
| MHz | dB | dBuV | dB | dBuV/m | dBuV/m | dB | | |
| 1 | 30.00 | 31.41 | 30.70 | 0.56 | 18.65 | 40.00 | -21.35 | QP |
| 2 | 95.96 | 31.35 | 38.40 | 0.94 | 17.39 | 43.50 | -26.11 | QP |
| 3 | 138.64 | 31.21 | 45.32 | 1.22 | 23.72 | 43.50 | -19.78 | QP |
| 4 | 214.30 | 31.04 | 36.95 | 1.53 | 19.13 | 43.50 | -24.37 | QP |
| 5 | 272.50 | 30.95 | 35.78 | 1.78 | 19.60 | 46.00 | -26.40 | QP |
| 6 | 390.84 | 30.63 | 34.05 | 2.37 | 22.05 | 46.00 | -23.95 | QP |



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Data: 1 File: D:\966 data\15Report\15KW033002B.EM6 (6)



Site : 966 Chamber
 Condition: FCC PART 15B 3m 3142D VERTICAL
 EUT : Bennu wireless charging
 M/N : XD6
 Power : DC 5V from adapter input AC 120V/60Hz
 Test By : Jack
 Comment : Temp:24.8°C Humi:56% Press:101.52kPa
 Test Mode: Charging

| | Preamp | Read | Cable | Limit | Over | |
|------|--------|-------|-------|--------|--------|-----------------|
| Freq | Factor | Level | Loss | Line | Limit | Remark |
| MHz | dB | dBuV | dB | dBuV/m | dBuV/m | dB |
| 1 | 30.00 | 31.41 | 40.00 | 0.56 | 27.95 | 40.00 -12.05 QP |
| 2 | 51.34 | 31.38 | 45.62 | 0.75 | 23.59 | 40.00 -16.41 QP |
| 3 | 66.86 | 31.31 | 45.71 | 0.85 | 22.69 | 40.00 -17.31 QP |
| 4 | 138.64 | 31.21 | 43.97 | 1.22 | 22.37 | 43.50 -21.13 QP |
| 5 | 235.64 | 30.94 | 38.59 | 1.61 | 21.76 | 46.00 -24.24 QP |
| 6 | 503.36 | 30.60 | 34.98 | 2.85 | 26.00 | 46.00 -20.00 QP |

5. PHOTOGRAPHS OF TEST SET-UP

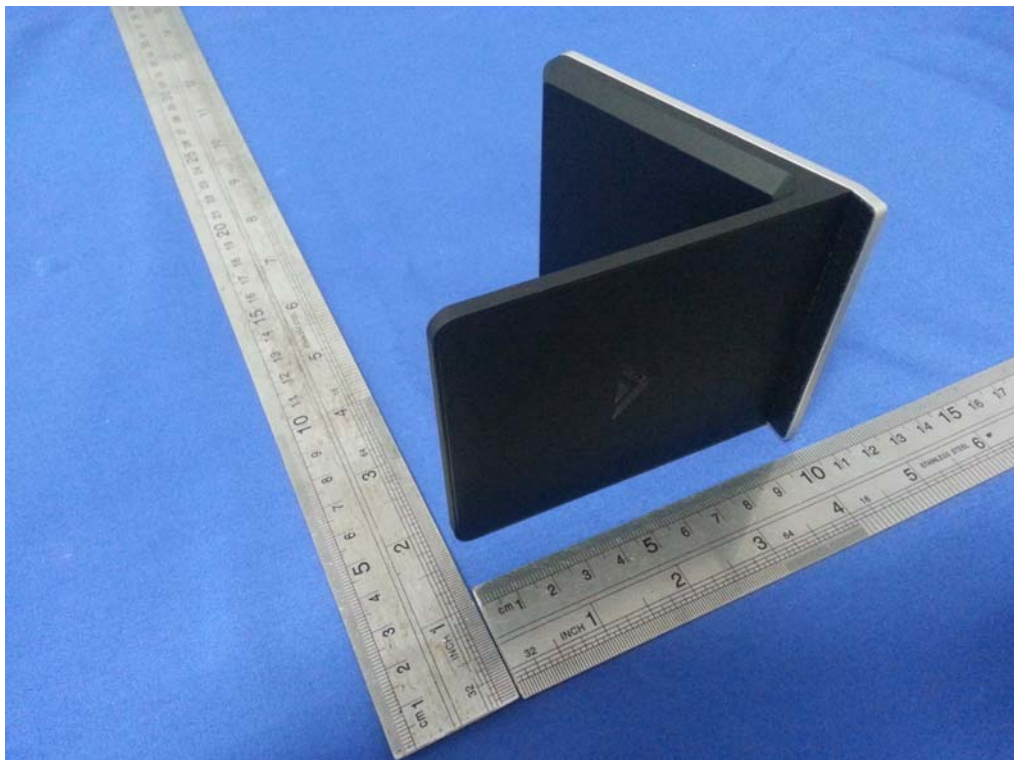
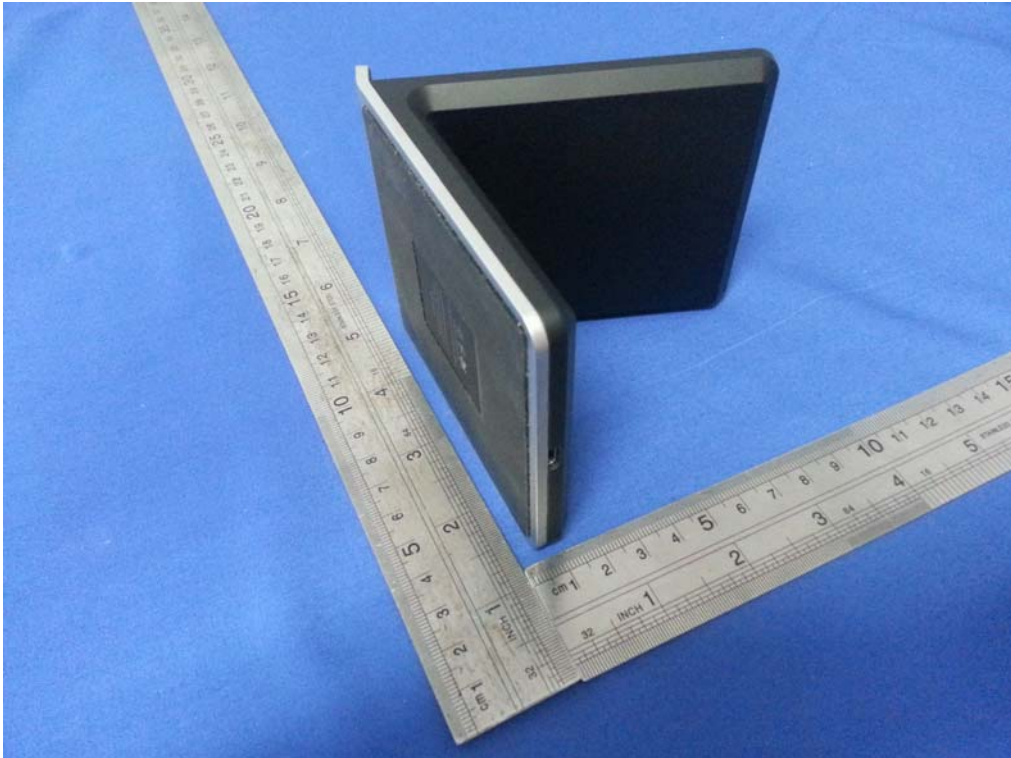
Conducted Emission at the Mains Terminals Test

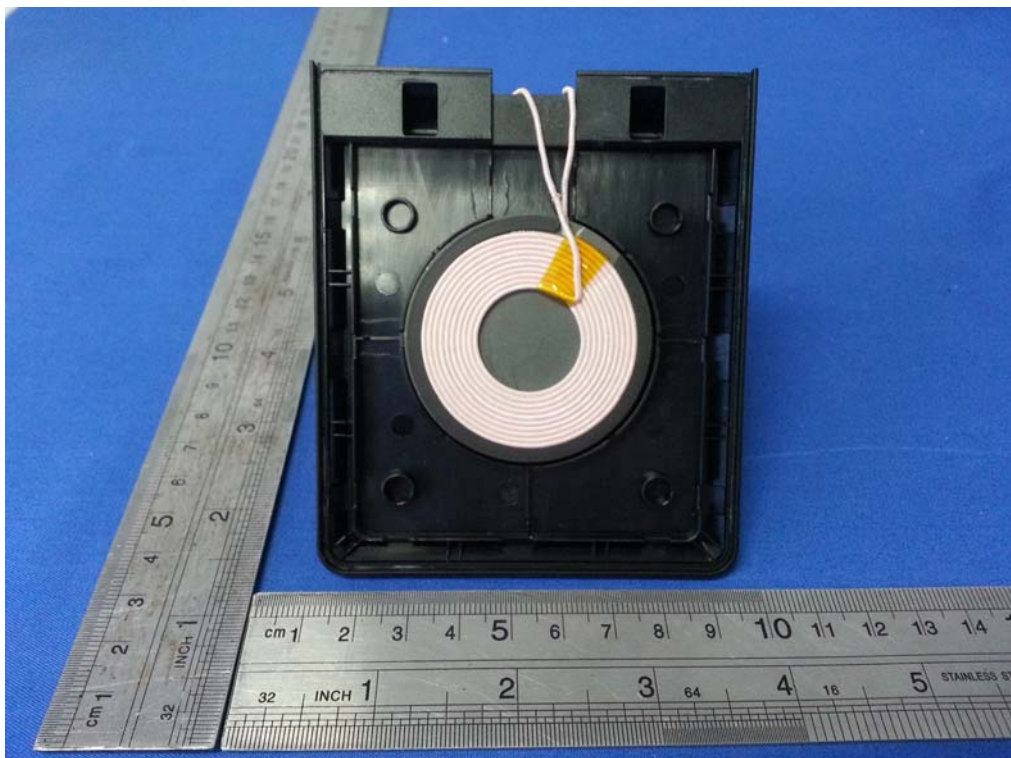
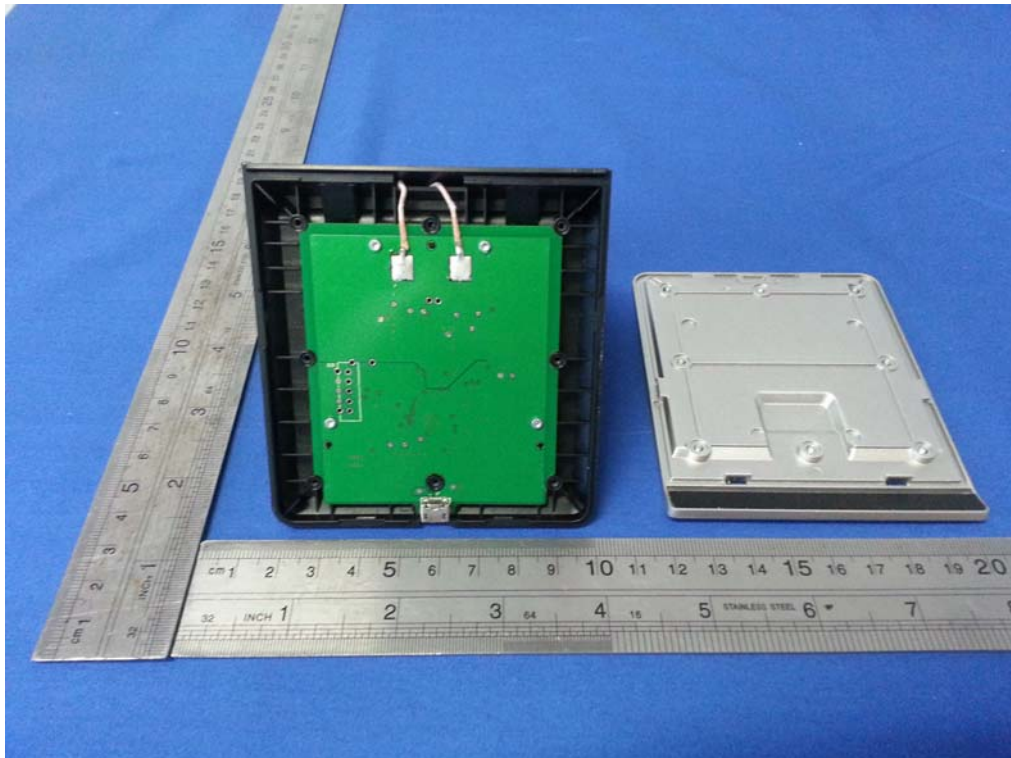


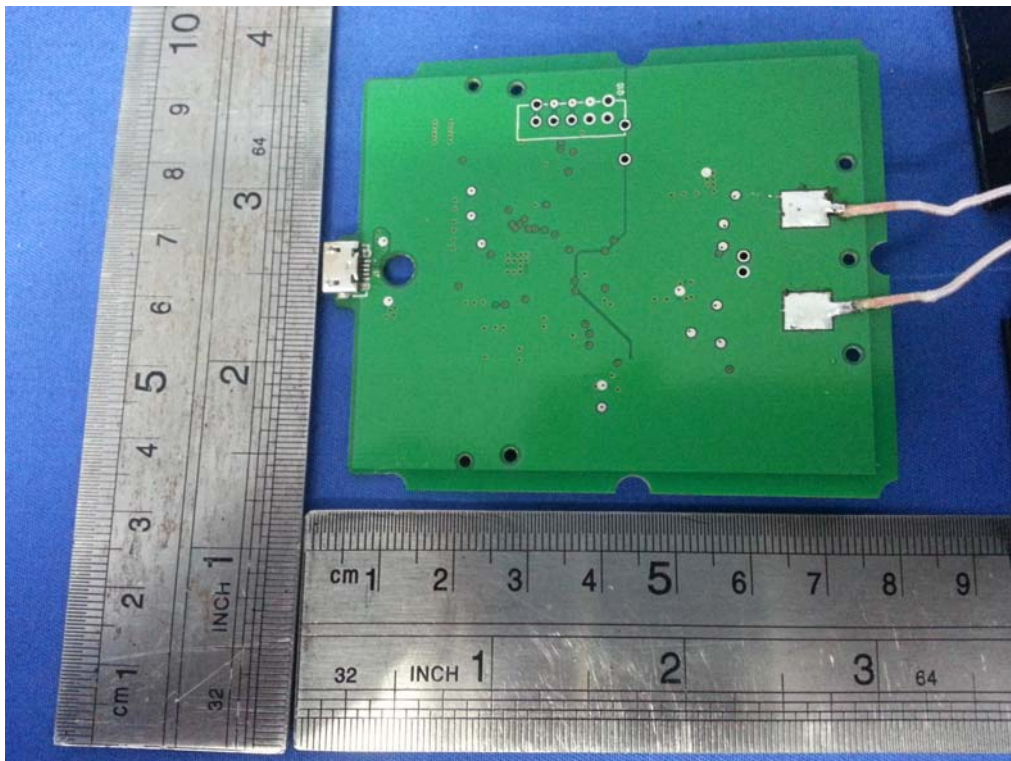
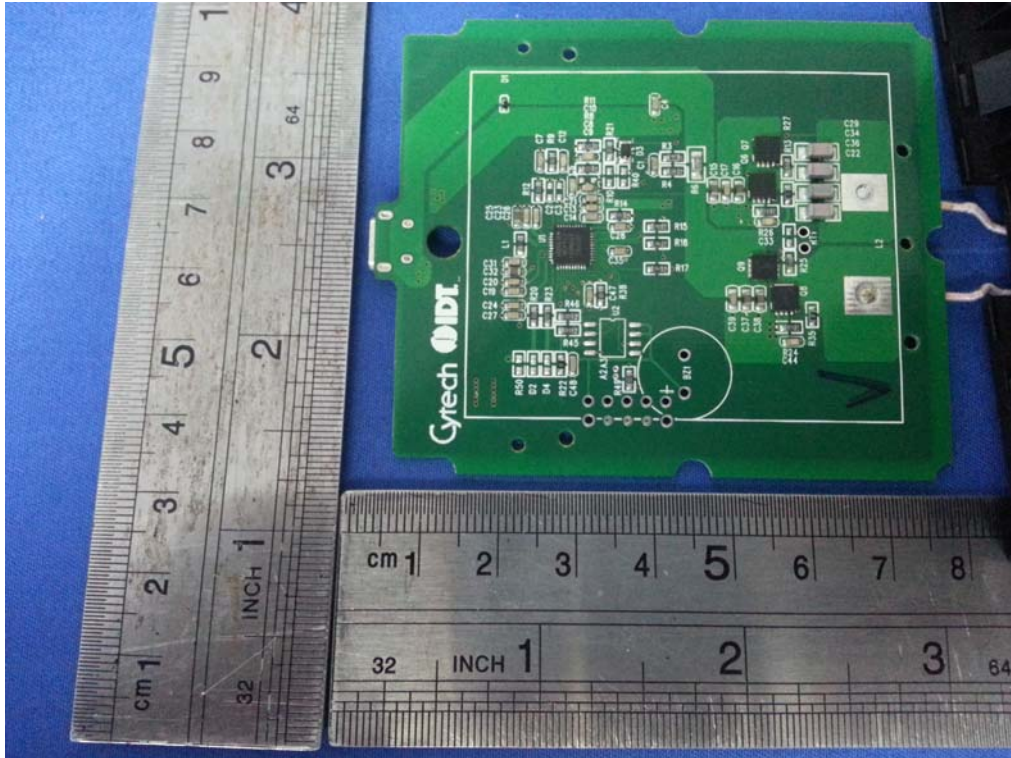
Radiated Emission Test



6. PHOTOGRAPHS OF THE EUT







END