

# ***FCC TEST REPORT***

**FCC ID** : ZWUM501-7  
**Applicant** : Everbest Co., Ltd.  
**Address** : Unit 704, 7/FL., Vanta Industrial Centre, 21-33 Tai Lin Pai Road, Kwai  
Chung, New Territories, Hong Kong

**Equipment Under Test (EUT) :**

Product Name : Mobile Internet Device  
Model No. : M501-7, MXXX, SX-SP700A, SX-M728

**Standards** : FCC CFR47 Part 15 Section 15.109:2009

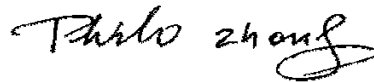
**Date of Test** : August 16, 2011 ~ August 20, 2011

**Date of Issue** : August 23, 2011

**Test Engineer** : Hunk yan



**Reviewed By** : Philo zhong



<b>Test Result</b>	<b>: PASS</b>
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**Prepared By:**

**Waltek Services (Shenzhen) Co., Ltd.**

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- ✧ The sample detailed above has been tested to the requirements of Council Directives ANSI C63.4:2003. The test results have been reviewed against the Directives above and found to meet their essential requirements.

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Reference No.: WT11052343-D-E-F

## 2 Test Summary

Test Items	Test Requirement	Test Method	Result
Radiated Emission (9kHz to 5GHz)	Part 15 Section 15.109	ANSI C63.4: 2003	PASS
Conducted Emission (150KHz to 30MHz)	Part 15 Section 15.107	ANSI C63.4: 2003	PASS

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## 4 General Information

### 4.1 Client Information

**Applicant** : Everbest Co., Ltd.  
**Address of Applicant** : Unit 704, 7/FL., Vanta Industrial Centre, 21-33 Tai Lin Pai Road, Kwai Chung, New Territories, Hong Kong

**Manufacturer** : YONGGUAN ELECTRONIC TECHNOLOGY(D.G) LTD.  
**Address of Manufacturer** : No.1, 2nd Industrial Zone, Xinfeng Rd., Mowu Village, Wanjiang District, Dong Guan City, Guang Dong, China

### 4.2 General Description of E.U.T.

**Product Name** : Mobile Internet Device  
**Model No.** : M501-7, MXXX, SX-SP700A, SX-M728  
**Difference Description** : All the models are exactly the same excepte different model names

### 4.3 Details of E.U.T.

**Technical Data** : Adapter Input: 100 ~ 240VAC, 50/60Hz, 0.4A Max  
Adapter Output: 5VDC, 2A  
Internal Battery: 3.7V

### 4.4 Description of Support Units

The EUT has been tested as an independent unit.

### 4.5 Standards Applicable for Testing

The customer requested FCC tests for a Mobile Internet Device. The standards used were FCC CFR47 Part 15 Section 15.109 and Section 15.107.

#### **4.6 Test Facility**

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: IC7760A**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, August 3, 2010.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

#### **4.7 Test Location**

All the tests were performed at:

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen, China

## 5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114943	W2008001	9k-26.5GHz	Aug. 2, 2011	Aug. 1, 2012	Wws20081596	±1dB
Trilog Broadband Antenne	SCHWARZBECK MESS-ELEKTROM / VULB9163	336	W2008002	30-3000 MHz	Aug. 2, 2011	Aug. 1, 2012	-	±1dB
Broad-band Horn Antenna	SCHWARZBECK MESS-ELEKTROM / BBHA 9120D(1201)	667	W2008003	1-18GHz	Aug. 2, 2011	Aug. 1, 2012	-	f<10 GHz: ±1dB 10GHz<f<18 GHz: ±1.5dB
Broadband Preamplifier	SCHWARZBECK MESS-ELEKTROM / BBV 9718	9718-148	W2008004	0.5-18GHz	Aug. 2, 2011	Aug. 1, 2012	-	±1.2dB
10m Coaxial Cable with N-male Connectors	SCHWARZBECK MESS-ELEKTROM / AK 9515 H	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-	-
10m 50 Ohm Coaxial Cable	SCHWARZBECK MESS-ELEKTROM / AK 9513	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-	-
Positioning Controller	C&C LAB/ CC-C-IF	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-	-
Color Monitor	SUNSPOT/ SP-14C	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-	-
Test Receiver	ROHDE&SCHWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug. 2, 2011	Aug. 1, 2012	Wws20080942	±1dB
EMI Receiver	Beijingkehuan	KH3931	-	9k-1GHz	Aug. 2, 2011	Aug. 1, 2012	-	-
Two-Line V-Network	ROHDE&SCHWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug. 2, 2011	Aug. 1, 2012	Wws20080941	±10%
RF Generator	TESEQ GmbH/ NSG4070	25781	W2008008	Fraq-range: 9K-1GHz RF voltage: -60 dBm-+10dBm	Aug. 2, 2011	Aug. 1, 2012	Wws20081890	Power_freq distinguish0.1Hz RFelectricity distinguish 0.1 B
Attenuator 6dB	TESEQ GmbH/ ATN6050	25365	-	-	Aug. 2, 2011	Aug. 1, 2012	Wws20081597	-

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
All Modules Generator	SCHAFFNER/6150	34579	W2008006	voltage:200V -4.4KV Pulse current: 100A-2.2KA	Aug. 2, 2011	Aug. 1, 2012	Wwc20 082401	voltage: ±10% Pulse current: ±10%
Capacitive Coupling Clamp	SCHAFFNER/ CDN 8014	25311	-	-	Aug. 2, 2011	Aug. 1, 2012	Wwc20 082398	-
Signal and Data Line Coupling Network	SCHAFFNER/ CDN 117	25627	W2008011	1.2/50μS	Aug. 2, 2011	Aug. 1, 2012	Wwc20 082399	-
AC Power Supply	TONGYUN/ DTDGC-4	-	-	-	Aug. 2, 2011	Aug. 1, 2012	Wws20 080944	-
PC	Lenovo	T2900D	-	-	Aug. 2, 2011	Aug. 1, 2012	-	±1dB
Display	ViewSonic	S27996-1W	-	-	Aug. 2, 2011	Aug. 1, 2012	-	±0.5dB
K/B	Dell	L100	-	-	Aug. 2, 2011	Aug. 1, 2012	-	±0.5dB
Mouse	Acer	M-UVACR1	-	-	Aug. 2, 2011	Aug. 1, 2012	-	±0.5dB

## 6 Conducted Emission Data

Test Requirement:	FCC CFR47 Part 15 Section 15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB $\mu$ V between 0.15MHz & 0.5MHz 56 dB $\mu$ V between 0.5MHz & 5MHz 60 dB $\mu$ V between 5MHz & 30MHz The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

### 6.1 E.U.T. Operation

#### Operating Environment:

Temperature: 25.5 °C  
Humidity: 51 % RH  
Atmospheric Pressure: 1012 mbar

#### EUT Operation:

The Pre-test was performance in charging mode, charging and playing 75% colorbar mode, charging and communication with PC mode, the worst case is charging and communication with PC mode, so the report show that data only.

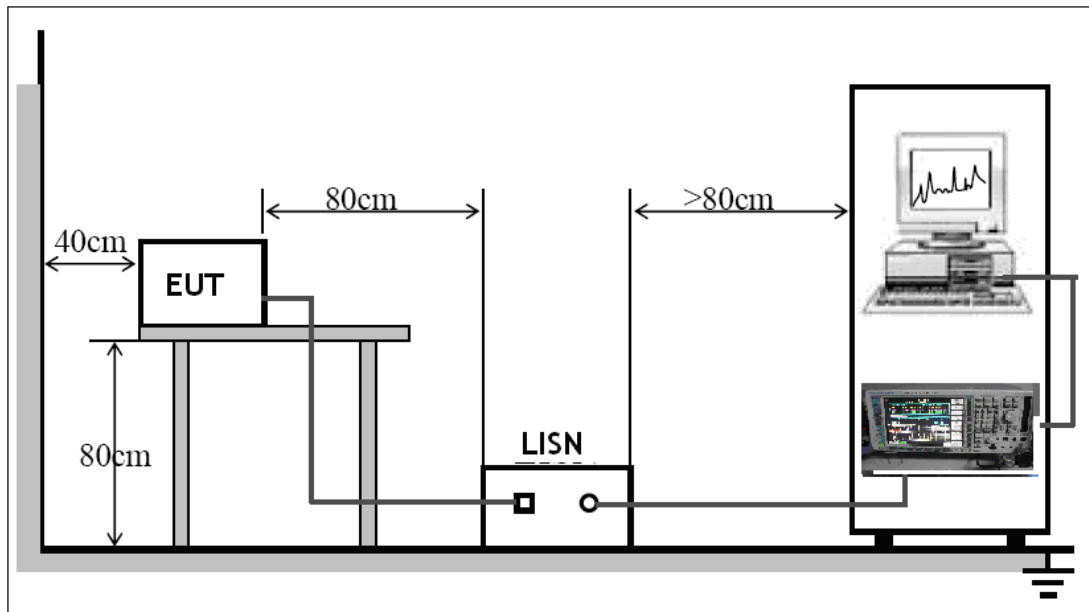
The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.



## 6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC CFR47 Part 15 Section 15.107 limits.

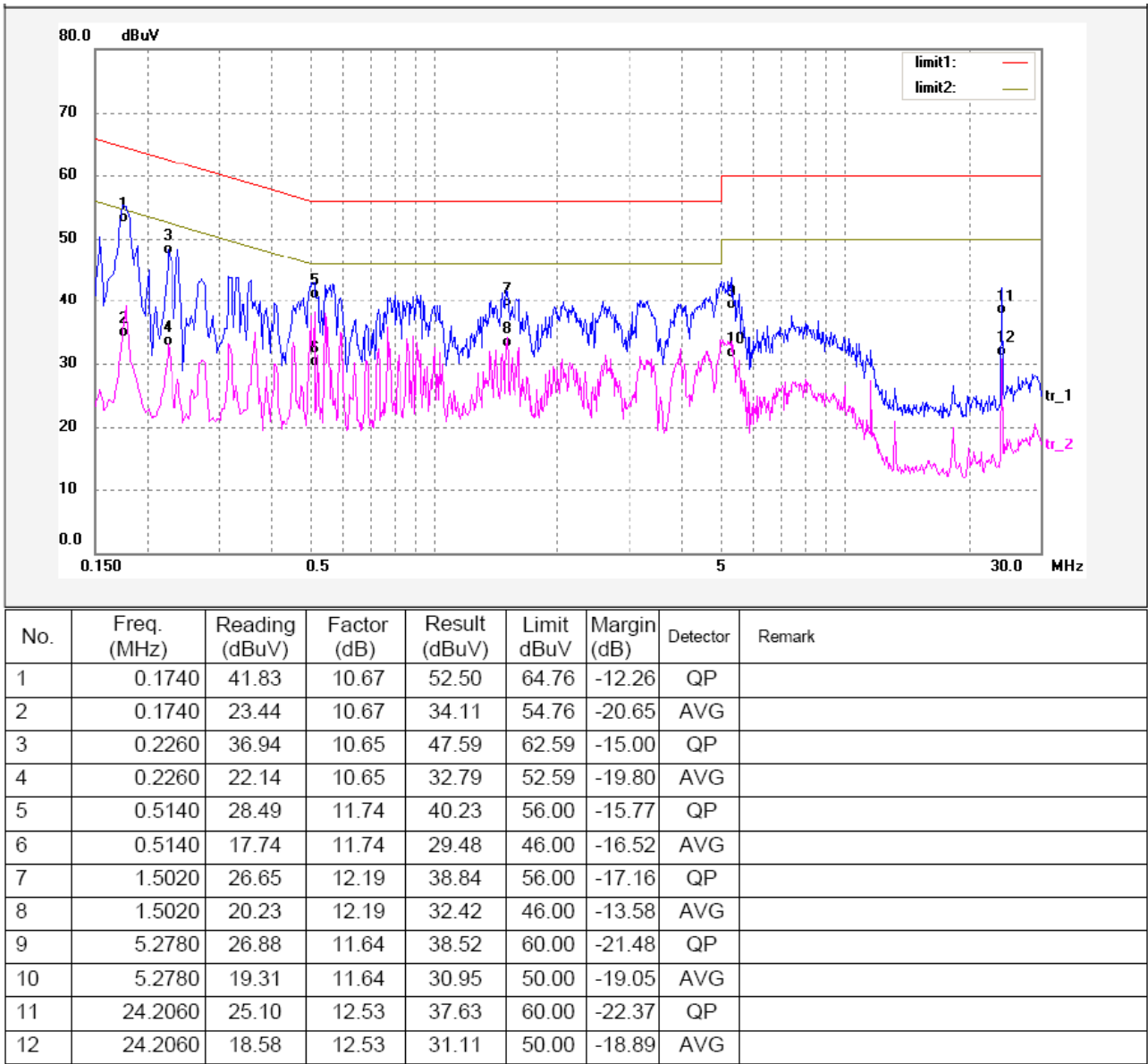


The EUT was placed on the test table in shielding room

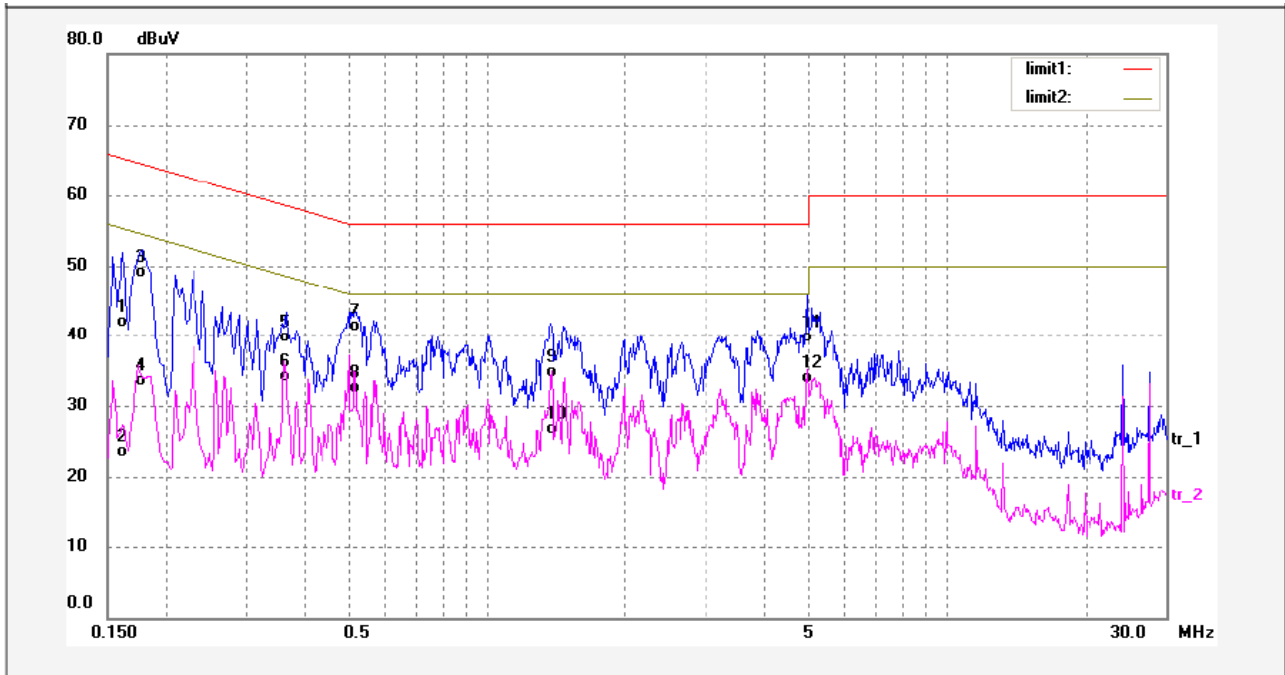
## 6.3 Conducted Emission Test Result

An initial pre-scan was performed on the live and neutral lines.

Live line:



Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1620	30.55	10.62	41.17	65.36	-24.19	QP	
2	0.1620	12.17	10.62	22.79	55.36	-32.57	AVG	
3	0.1780	37.58	10.66	48.24	64.57	-16.33	QP	
4	0.1780	22.07	10.66	32.73	54.57	-21.84	AVG	
5	0.3660	28.24	10.73	38.97	58.59	-19.62	QP	
6	0.3660	22.63	10.73	33.36	48.59	-15.23	AVG	
7	0.5220	28.83	11.68	40.51	56.00	-15.49	QP	
8	0.5220	19.93	11.68	31.61	46.00	-14.39	AVG	
9	1.3779	21.66	12.19	33.85	56.00	-22.15	QP	
10	1.3779	13.68	12.19	25.87	46.00	-20.13	AVG	
11	4.9660	27.28	11.69	38.97	56.00	-17.03	QP	
12	4.9660	21.35	11.69	33.04	46.00	-12.96	AVG	

#### 6.4 Photograph – Conducted Emission Test Setup



## 7 Radiation Emission Data

Test Requirement:	FCC CFR47 Part 15 Section15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	9kHz to 5GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB $\mu$ V/m between 30MHz & 88MHz 43.5 dB $\mu$ V/m between 88MHz & 216MHz 46.0 dB $\mu$ V/m between 216MHz & 960MHz 54.0 dB $\mu$ V/m above 960MHz 74.0 dB $\mu$ V/m above 1GHz for peak 54.0 dB $\mu$ V/m above 1GHz for AV The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (120kHz resolution bandwidth in below 1GHz and 1MHz resolution bandwidth in above 1GHz)

### EUT Operation :

#### Operating Environment:

Temperature:	25.5 °C
Humidity:	51 % RH
Atmospheric Pressure:	1012 mbar

### EUT Operation:

The Pre-test was performance in playing 75% colorbar and powered by internal battery mode, communication with PC and powered by internal battery mode, charging and playing 75% colorbar mode, and charging and communication with PC mode, the worst case was charging and communication with PC mode, so the report show that data only.

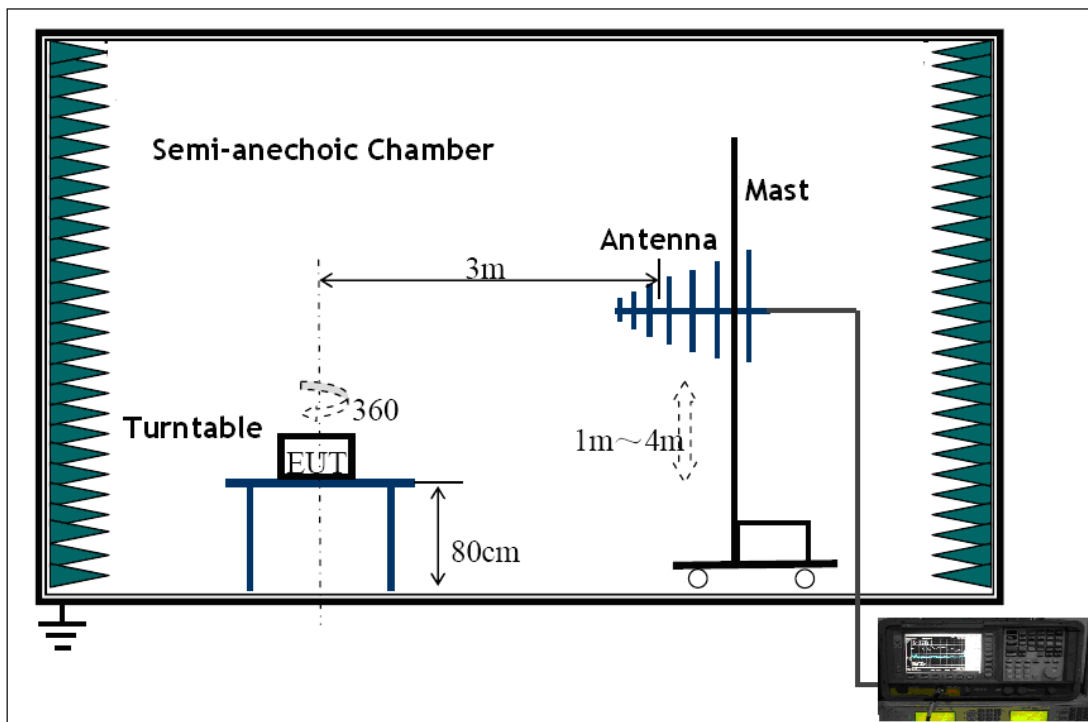
## 7.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is  $\pm 5.03\text{dB}$ .

## 7.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC CFR 47 Part 15 Section 15.109 limits.



The EUT was placed on the test table in shielding room.

### 7.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 9kHz to 5000MHz.

9kHz ~ 30MHz

Start Frequency .....	9kHz
Stop Frequency .....	30MHz
Sweep Speed .....	Auto
IF Bandwidth .....	10KHz
Video Bandwidth .....	10KHz
Resolution Bandwidth .....	10KHz

30MHz ~ 1GHz

Start Frequency .....	30 MHz
Stop Frequency .....	1000MHz
Sweep Speed .....	Auto
IF Bandwidth .....	120 KHz
Video Bandwidth .....	100KHz
Quasi-Peak Adapter Bandwidth .....	120 KHz
Quasi-Peak Adapter Mode .....	Normal
Resolution Bandwidth .....	100KHz

Above 1GHz

Start Frequency .....	1000 MHz
Stop Frequency .....	5000MHz
Sweep Speed .....	Auto
IF Bandwidth .....	120 KHz
Video Bandwidth .....	1MHz
Quasi-Peak Adapter Bandwidth .....	120 KHz
Quasi-Peak Adapter Mode .....	Normal
Resolution Bandwidth .....	1MHz

#### 7.4 Test Procedure

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 moved from 1m to 4m to find out the maximum 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. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X(normal uses) axis positioning. And all the modes was tested in the report. Only the worst case is shown in the report.

#### 7.5 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$



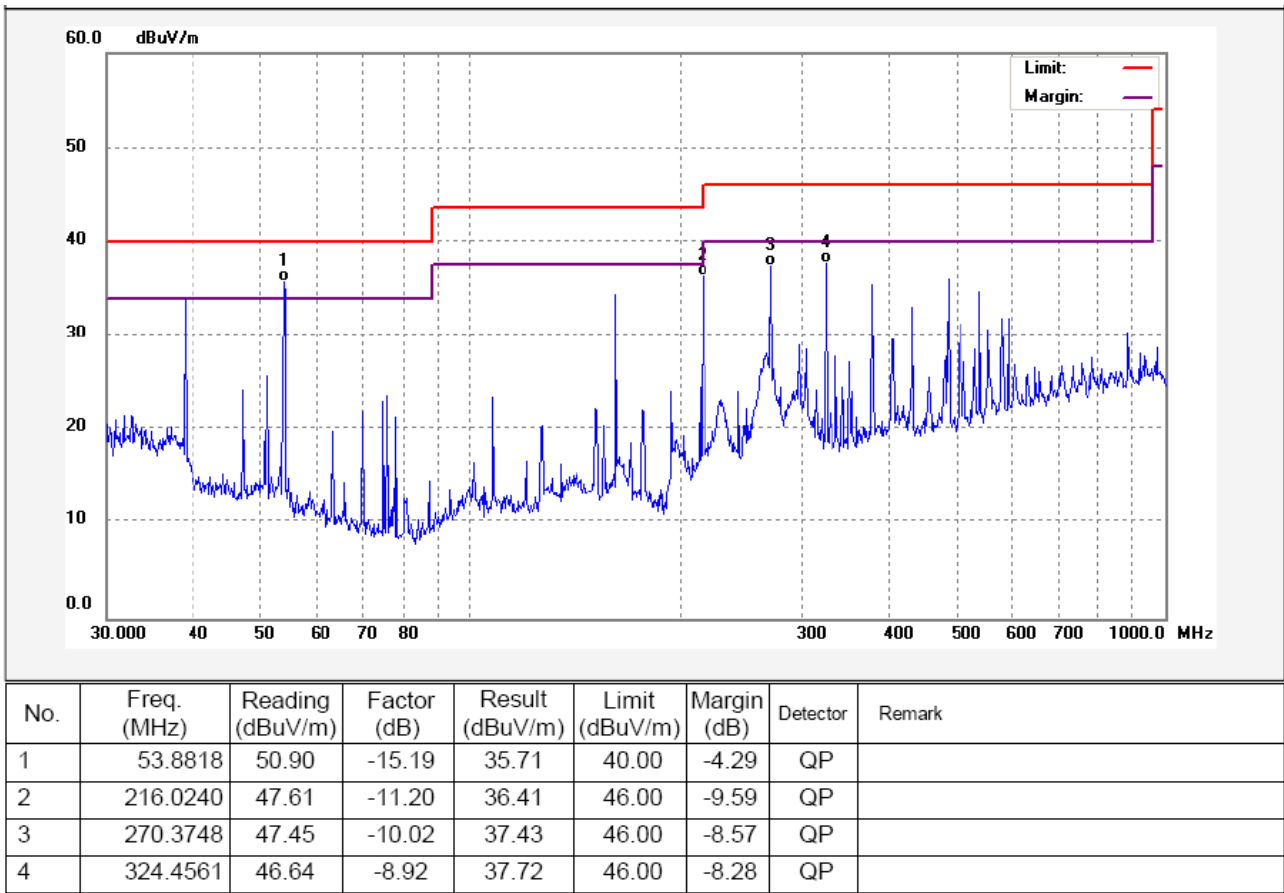
7.6 Summary of Test Results

According to the data in this section, the EUT complied with the FCC Part15 B standards.

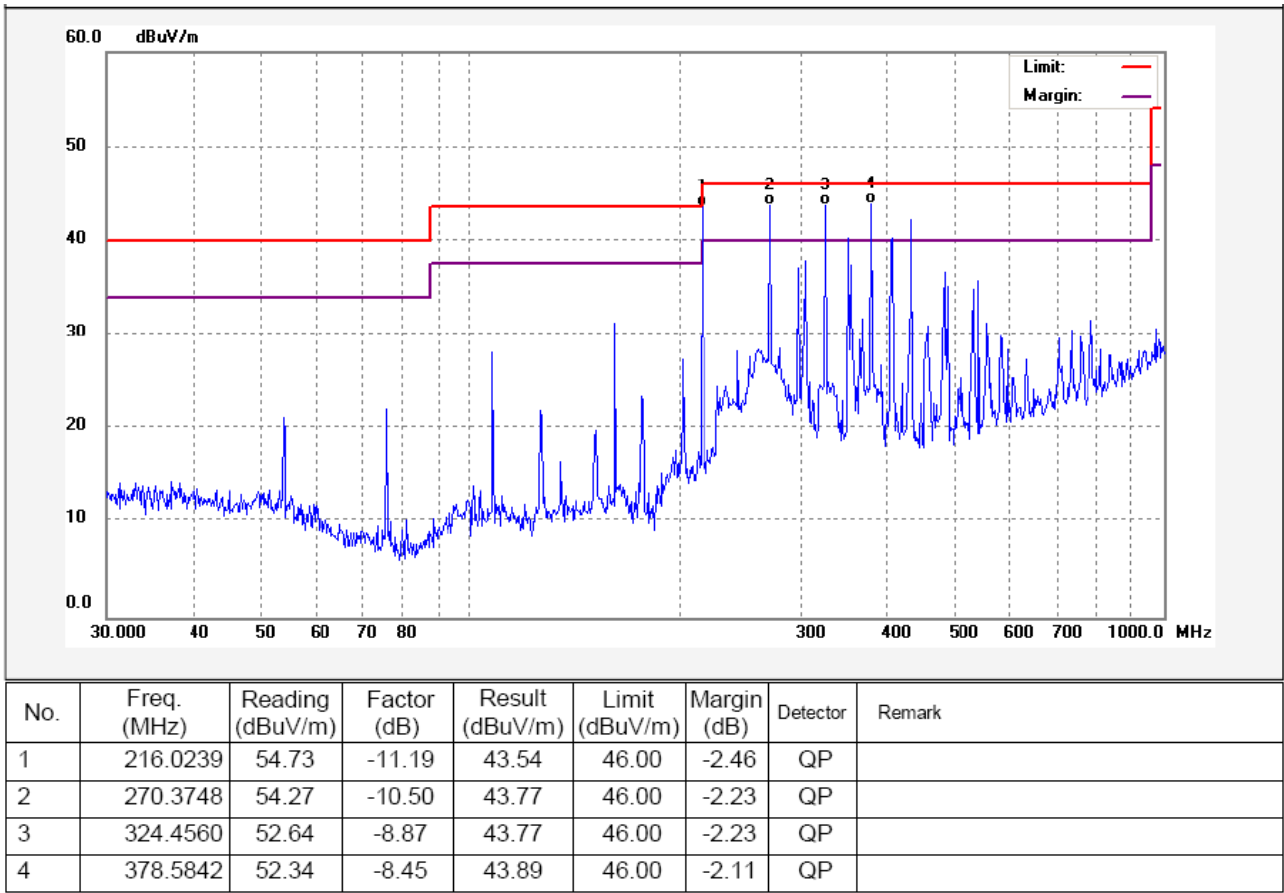
Remark: Because the emissions below 30MHz are more than 20dB below the limit, the data is not show in the report.

Test Frequency: 30MHz ~ 1000MHz

Antenna polarization: Vertical

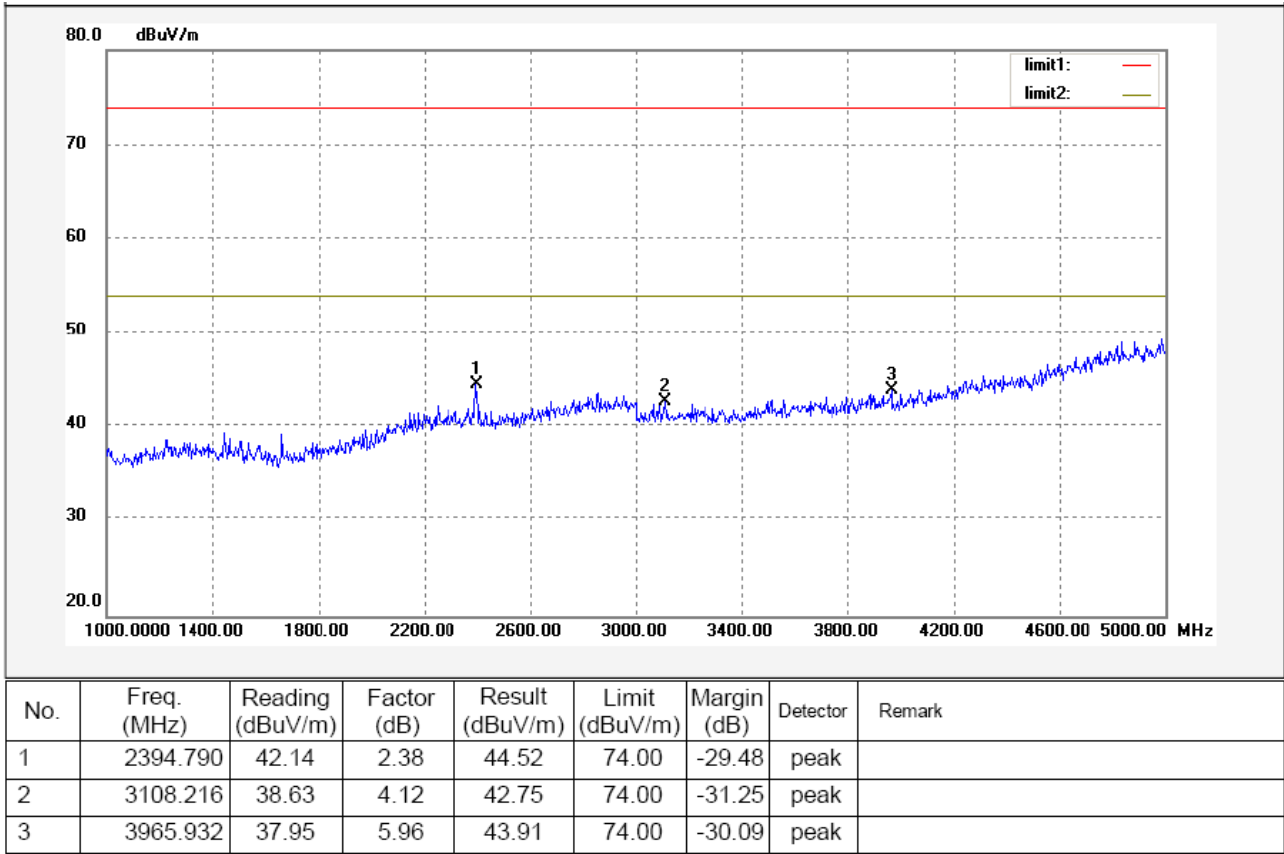


Antenna polarization: Horizontal

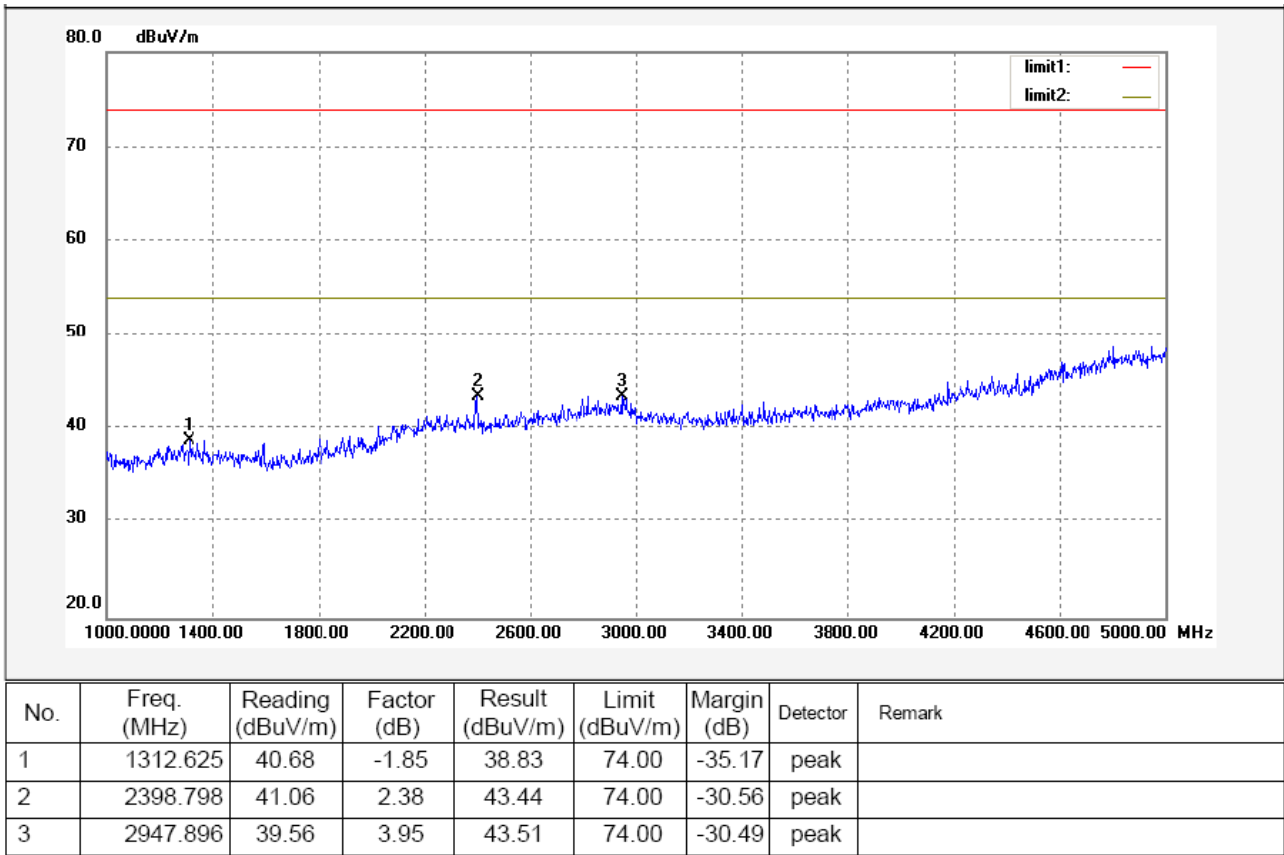


Test Frequency: 1GHz ~ 5GHz

Antenna polarization: Vertical

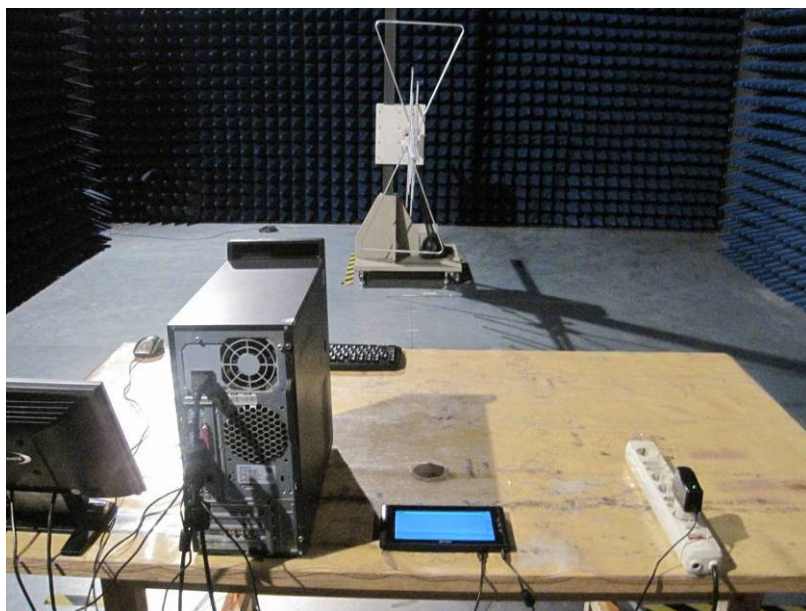


Antenna polarization: Horizontal

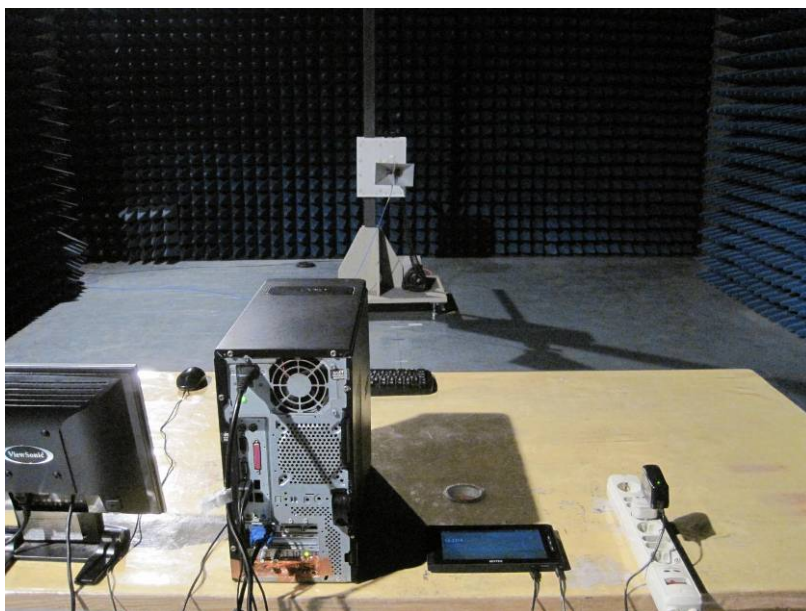


## 7.7 Photograph – Radiation Emission Test Setup

Below 1GHz



Above 1GHz



## 8 Photographs - Constructional Details

### 8.1 Product View

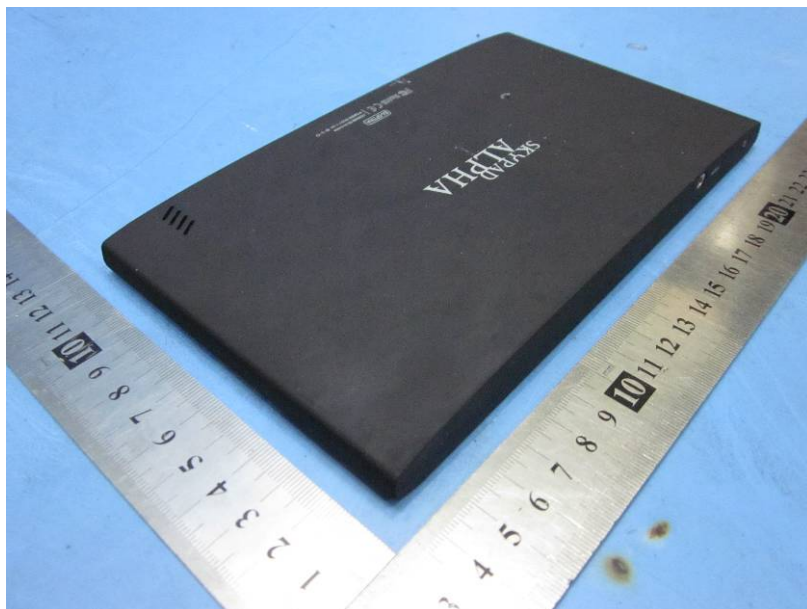


### 8.2 EUT - Front View





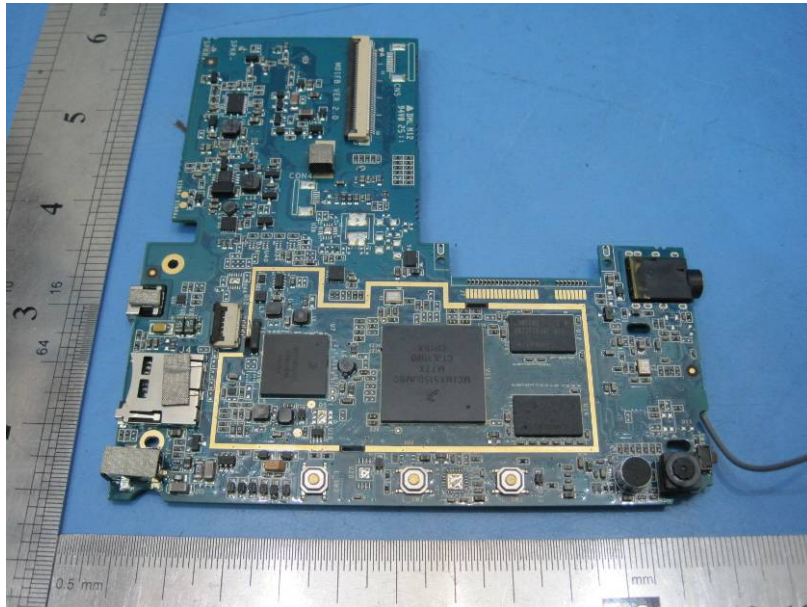
### 8.3 EUT - Back View



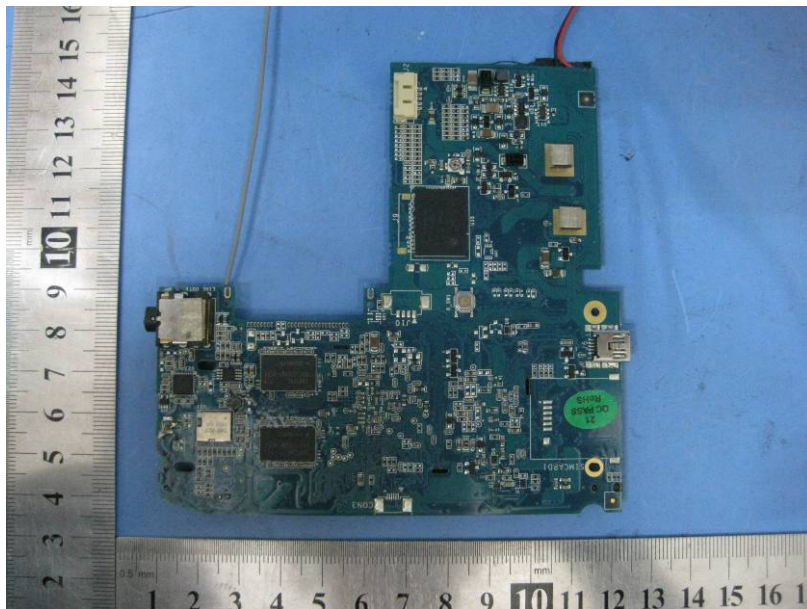
### 8.4 EUT - Open View



## 8.5 PCB - Front View



## 8.6 PCB - Back View





## 8.7 Adapter - Front View



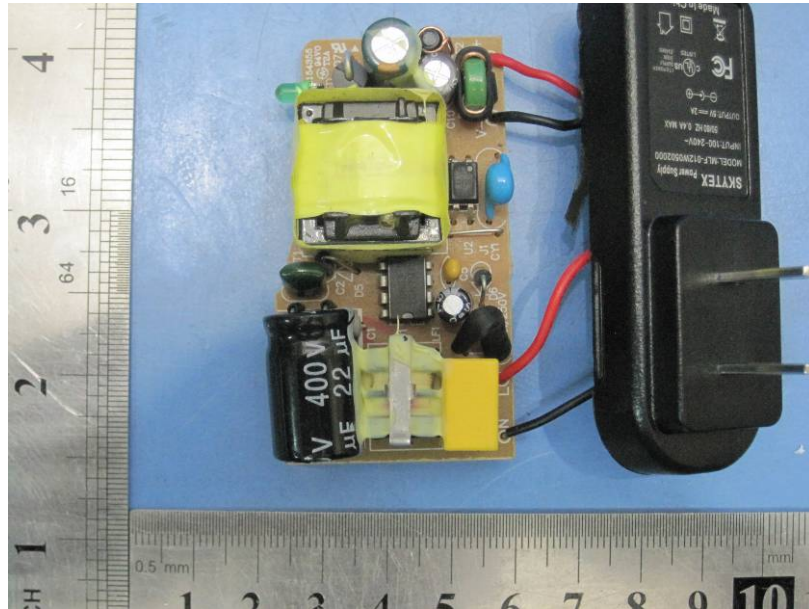
## 8.8 Adapter - Back View



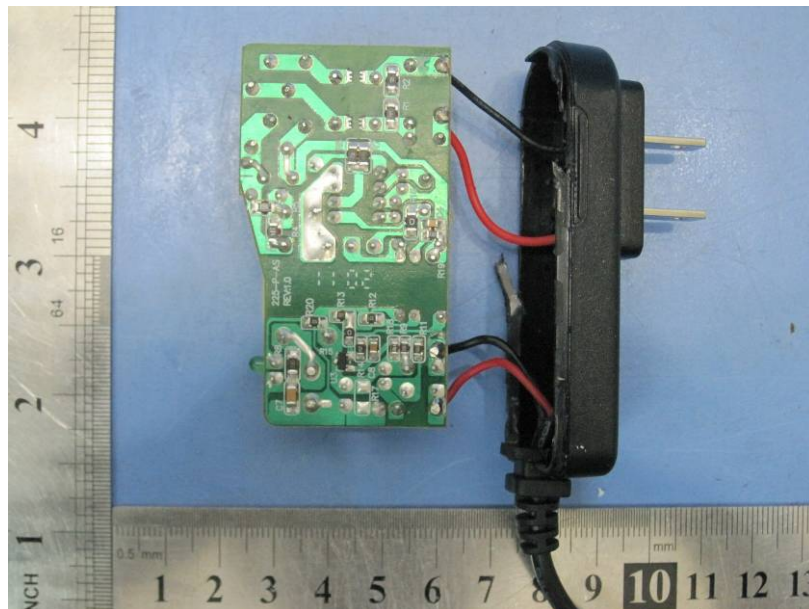
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Reference No.: WT11052343-D-E-F

## 8.9 PCB of Adapter - Front View



## 8.10 PCB of Adapter - Back View



## 9 FCC Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

