

EMC TEST REPORT



Report No.: 14021149-FCC-E

Supersede Report No.: N/A

Applicant	Beneworld International (HK) Co., Limited		
Product Name	7inch Tablet PC		
Main Model	BW9		
Test Standard	FCC Part 15 Subpart B Class B:2014, ANSI C63.4: 2009		
Test Date	November 11, 2014		
Issue Date	November 14, 2014		
Test Result	☒ Pass ☐ Fail		
Equipment complied with the specification		☒	
Equipment did not comply with the specification		☐	
			
Deon Dai Test Engineer		Alex Liu Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only			

Issued by:
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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
14021149-FCC-E	NONE	Original	November 14, 2014

2. Customer information

Applicant Name	Beneworld International (HK) Co., Limited
Applicant Add	Unit 04, 7/F, Bright Way Tower, No. 33 Mong Kok Road, Kowloon, Hong Kong
Manufacturer	Shenzhen Beneworld Technology Co. Ltd.
Manufacturer Add	Building 3, Huangtian Industrial Park, Xixiang, Baoan District, Shenzhen, Guangdong, China

3. Test site information

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	986914
IC Test Site No.	4842B-1
Test Software	Labview of SIEMIC version 1.0

4. Equipment under Test (EUT) Information

Description of EUT:	7inch Tablet PC
Main Model:	BW9
Serial Model:	BW7D9, BW7D19, BW7D29, BW7D61, BW7D62, BW7D66, BW7D68,BW7D69, BW7D70, BW7D71
Date EUT received:	November 03, 2014
Test Date(s):	November 11, 2014
Antenna Gain:	GSM850: -0.46 dBi PCS1900:1.19 dBi UMTS-FDD Band II: 1.3 dBi Bluetooth/ WIFI&BLE: 1.56 dBi
Type of Modulation:	GSM / GPRS: GMSK UMTS-FDD: QPSK 802.11b/g/n: DSSS/OFDM Bluetooth: GFSK& π /4DQPSK&8DPSK BLE: GFSK
RF Operating Frequency (ies):	GSM850 TX : 824.2 ~ 848.8 MHz; RX : 869.2 ~ 893.8 MHz PCS1900 TX : 1850.2 ~ 1909.8 MHz; RX : 1930.2 ~ 1989.8 MHz UMTS-FDD Band II TX :1852.4 ~ 1907.6 MHz; RX : 1932.4 ~ 1987.6 MHz 802.11b/g/n(20M): 2412-2462 MHz(TX/RX) 802.11n(40M): 2422-2452 MHz (TX/RX) Bluetooth&BLE: 2402-2480 MHz(TX/RX)
Number of Channels:	299CH (PCS1900) and 124CH (GSM850) UMTS-FDD BandII : 277CH 802.11b/g/n(20M): 11CH 802.11n(40M): 7CH Bluetooth: 79CH BLE: 40CH
Port:	USB Port, Earphone Port
Input Power:	Adapter: Model: XHY050200UUCH Input: AC 100-240V 50/60Hz 0.5A MAX Output: DC 5V 2.0A BATTERY: 3.7V 5200mAh
Trade Name :	N/A
FCC ID:	2AANC-BENEWORLD-BW9

Note: the difference between these models please refer to Annex E. DECLARATION OF SIMILARITY.

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5. Test Summary

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.107; ANSI C63.4: 2009	AC Power Line Conducted Emissions	Compliance
§15.109; ANSI C63.4: 2009	Radiated Emissions	Compliance

Measurement Uncertainty

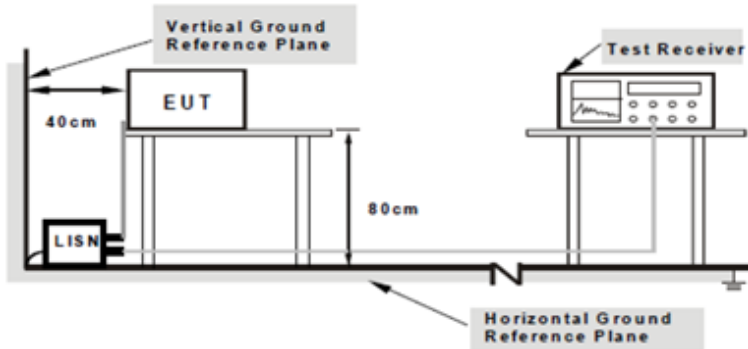
Test Item	Description	Uncertainty
Radiated Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	3.952dB

6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	November 11, 2014
Tested By :	Deon Dai

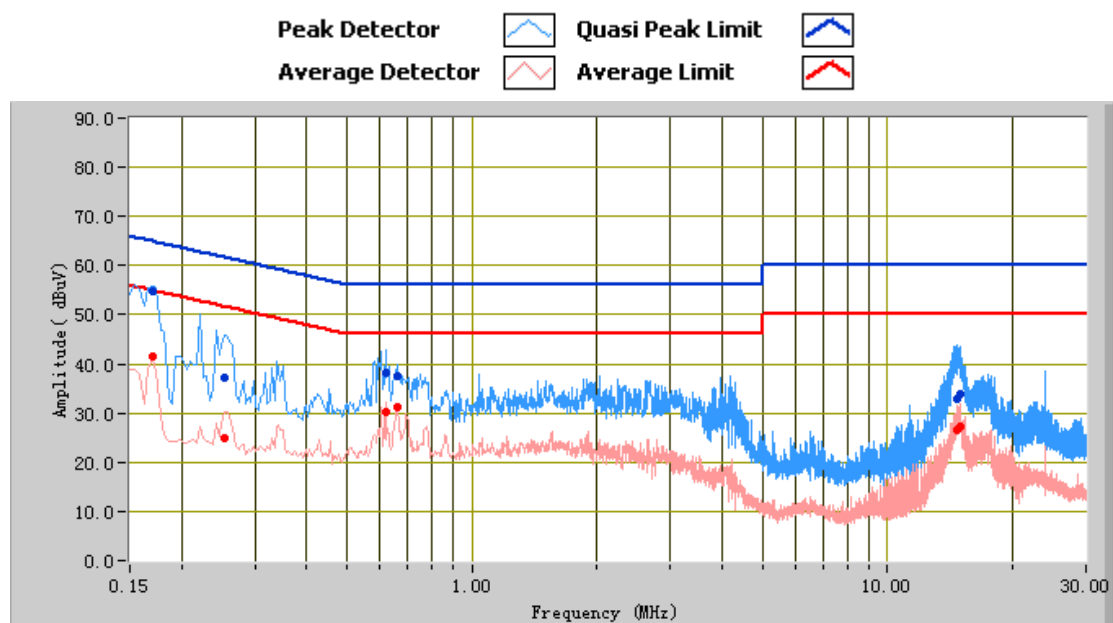
Requirement(s):

Spec	Item	Requirement	Applicable														
47CFR§15.107	a)	1. For Low-power radio-frequency devices 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, as measured using a 50 [mu]H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.	☒														
		<table><tr><th rowspan="2">Frequency ranges (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>QP</th><th>Average</th></tr><tr><td>0.15 ~ 0.5</td><td>66 – 56</td><td>56 – 46</td></tr><tr><td>0.5 ~ 5</td><td>56</td><td>46</td></tr><tr><td>5 ~ 30</td><td>60</td><td>50</td></tr></table>		Frequency ranges (MHz)	Limit (dBμV)		QP	Average	0.15 ~ 0.5	66 – 56	56 – 46	0.5 ~ 5	56	46	5 ~ 30	60	50
		Frequency ranges (MHz)			Limit (dBμV)												
				QP	Average												
		0.15 ~ 0.5		66 – 56	56 – 46												
0.5 ~ 5	56	46															
5 ~ 30	60	50															
Test Setup	 Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.																
Procedure		2. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.															
		3. The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains.															
		4. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.															
		5. All other supporting equipment were powered separately from another main supply.															
		6. The EUT was switched on and allowed to warm up to its normal operating condition.															
		7. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.															
		8. High peaks, relative to the limit line, were then selected, The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10kHz.															
		9. Steps 6-7 were repeated for the LIVE line (for AC mains) or DC line (for DC power).															

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Remark	
Result	☒ Pass ☐ Fail
Test Data	☒ Yes ☐ N/A
Test Plot	☒ Yes ☐ N/A

Test Mode:	Charging and Downloading(Worse Case)
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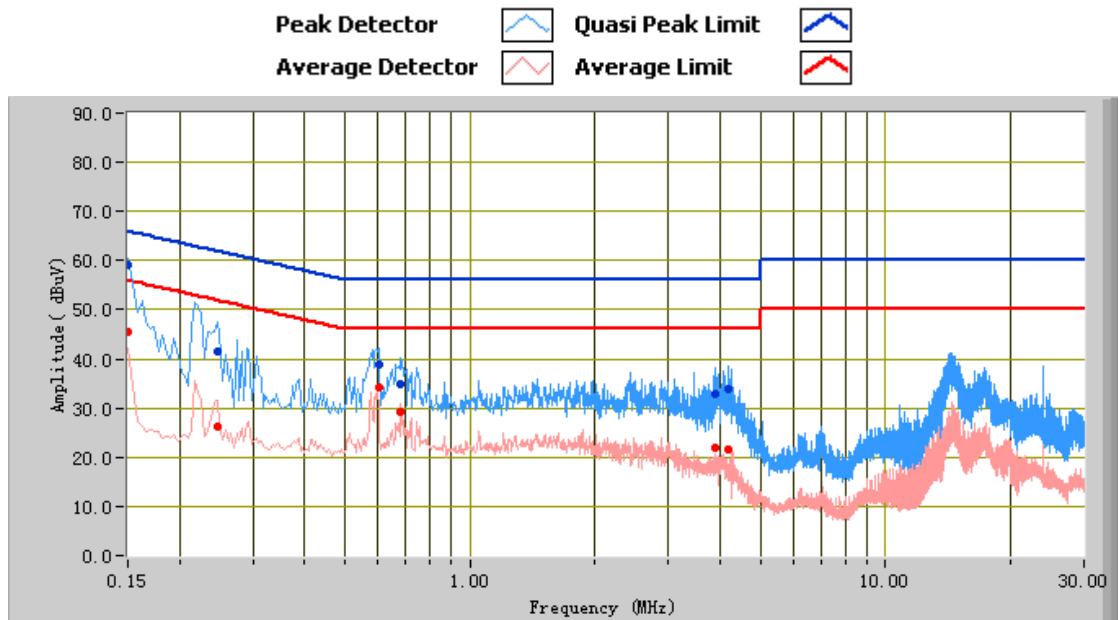


Test Data

Phase Line Plot at 120Vac, 60Hz

Frequency (MHz)	Quasi Peak (dBμV)	Limit (dBμV)	Margin (dB)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Factors (dB)
0.17	54.79	64.96	-10.17	41.54	54.96	-13.42	11.93
0.62	38.17	56.00	-17.83	30.28	46.00	-15.72	10.99
0.25	37.03	61.62	-24.59	25.02	51.62	-26.61	11.45
0.66	37.37	56.00	-18.63	31.17	46.00	-14.83	10.96
14.71	32.77	60.00	-27.23	26.58	50.00	-23.42	11.39
14.93	33.93	60.00	-26.07	27.16	50.00	-22.84	11.41

Test Mode: Charging and Downloading(Worse Case)



Test Data

Phase Neutral Plot at 120Vac, 60Hz

Frequency (MHz)	Quasi Peak (dBμV)	Limit (dBμV)	Margin (dB)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Factors (dB)
0.15	59.16	66.00	-6.84	45.62	56.00	-10.38	12.21
0.60	39.01	56.00	-16.99	34.20	46.00	-11.80	10.99
0.25	41.54	61.89	-20.35	26.21	51.89	-25.68	11.46
0.68	34.88	56.00	-21.12	29.08	46.00	-16.92	10.93
4.18	33.93	56.00	-22.07	21.49	46.00	-24.51	10.94
3.87	32.82	56.00	-23.18	21.79	46.00	-24.21	10.94

6.2 Radiated Emissions

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	November 11, 2014
Tested By :	Deon Dai

Requirement(s):

Spec	Item	Requirement	Applicable	
47CFR§15.10 7(d)	a)	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges		
		Frequency range (MHz)		Field Strength (µV/m)
		30 – 88		100
		88 – 216		150
		216 960		200
		Above 960		500

Test Setup	
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Procedure	- The EUT was switched on and allowed to warm up to its normal operating condition. - The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: - Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. - The EUT was then rotated to the direction that gave the maximum emission. - Finally, the antenna height was adjusted to the height that gave the maximum emission. - For emission frequencies measured below and above 1GHz, set the spectrum analyzer on a 100kHz and 1MHz resolution bandwidth respectively for each frequency measured. - Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
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Remark	
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Result	☒ Pass ☐ Fail
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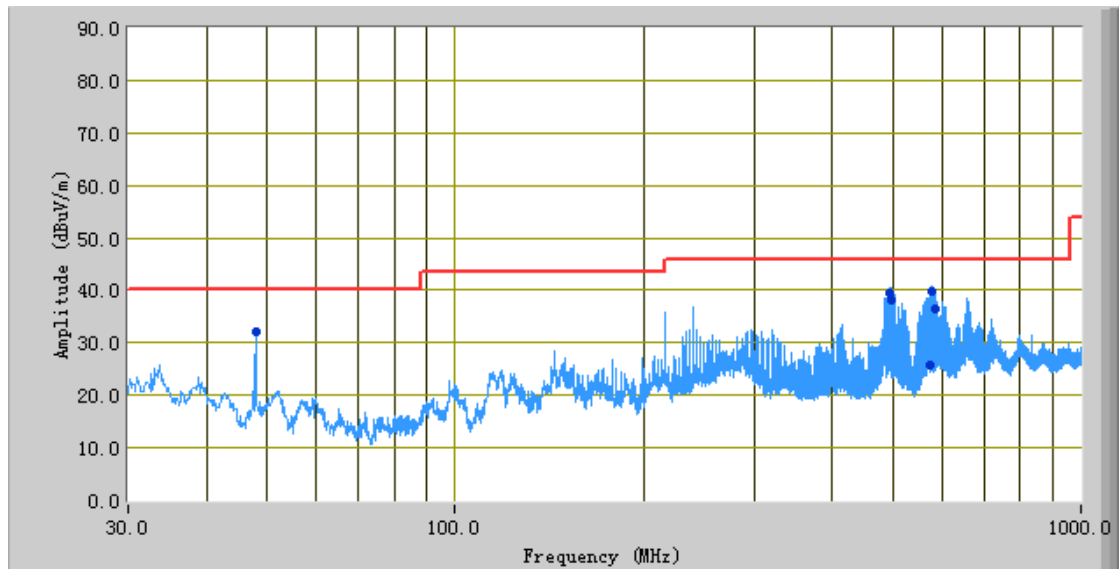
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Mode:	Charging and Downloading(Worse Case)
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(Below 1GHz)

Peak Detector 
Quasi Peak Limit 



Test Data

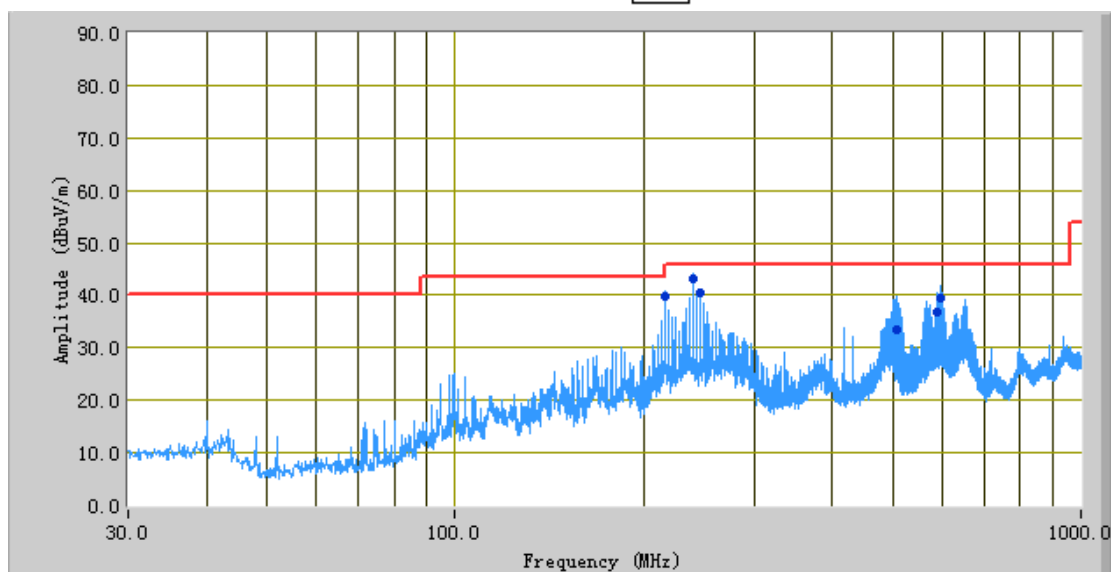
Vertical Polarity Plot @3m

Frequency (MHz)	Quasi Peak (dBμV/m)	Azimuth	Polarity (H/V)	Height (cm)	Factors (dB)	Limit (dBμV/m)	Margin (dB)
578.53	39.69	40.00	V	117.00	-24.75	46.00	-6.31
495.31	39.38	71.00	V	191.00	-28.67	46.00	-6.62
498.22	38.18	78.00	V	177.00	-28.69	46.00	-7.82
584.41	36.38	45.00	V	118.00	-24.30	46.00	-9.62
572.58	25.62	81.00	V	164.00	-25.20	46.00	-20.38
48.02	32.05	112.00	V	100.00	-33.43	40.00	-7.95

Test Mode:	Charging and Downloading(Worse Case)
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(Below 1GHz)

Peak Detector 
Quasi Peak Limit 



Test Data

Horizontal Polarity Plot @3m

Frequency (MHz)	Quasi Peak (dBμV/m)	Azimuth	Polarity (H/V)	Height (cm)	Factors (dB)	Limit (dBμV/m)	Margin (dB)
239.98	43.30	146.00	H	130.00	-28.50	46.00	-2.70
596.14	39.40	3.00	H	303.00	-21.00	46.00	-6.60
216.42	39.96	73.00	H	173.00	-30.30	46.00	-6.04
590.03	36.80	1.00	H	106.00	-21.42	46.00	-9.20
246.17	40.38	189.00	H	117.00	-28.56	46.00	-5.62
506.99	33.30	98.00	H	166.00	-28.38	46.00	-12.70

Note: The data above 1 GHz which below 20 dB to the limit was not recorded.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
R&S EMI Test Receiver	ESPI3	101216	09/27/2014	09/26/2015	☒
V-LISN	ESH3-Z5	838979/005	09/27/2014	09/26/2015	☒
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/09/2014	10/08/2014	☒
SIEMIC Labview Conducted Emissions software	V1.0	N/A	N/A	N/A	☒
Radiated Emissions					
Hp Spectrum Analyzer	8563E	3821A09023	09/27/2014	09/26/2015	☒
R&S EMI Receiver	ESPI3	101216	09/27/2014	09/26/2015	☒
Antenna (30MHz~6GHz)	JB6	A121411	04/15/2014	04/14/2015	☒
EMCO Horn Antenna (1 ~18GHz)	3115	N/A	10/09/2014	10/08/2015	☒
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/09/2014	10/08/2015	☒
Horn Antenna (18~40GHz)	AH-840	101013	04/22/2014	04/22/2015	☒
Microwave Pre-Amp (18~40GHz)	PA-840	181250	05/29/2014	05/28/2015	☒
Hp Agilent Pre-Amplifier	8447F	1937A01160	10/27/2014	10/26/2015	☒
MITEQ Pre-Amplifier (0.1 ~ 18GHz)	LPA-6-30	1451709	06/25/2014	06/24/2015	☒
SIEMIC Labview Radiated Emissions software	V1.0	N/A	N/A	N/A	☒

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph EUT Internal Photo



All Packages – Front View

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Front View of EUT



Rear View of EUT

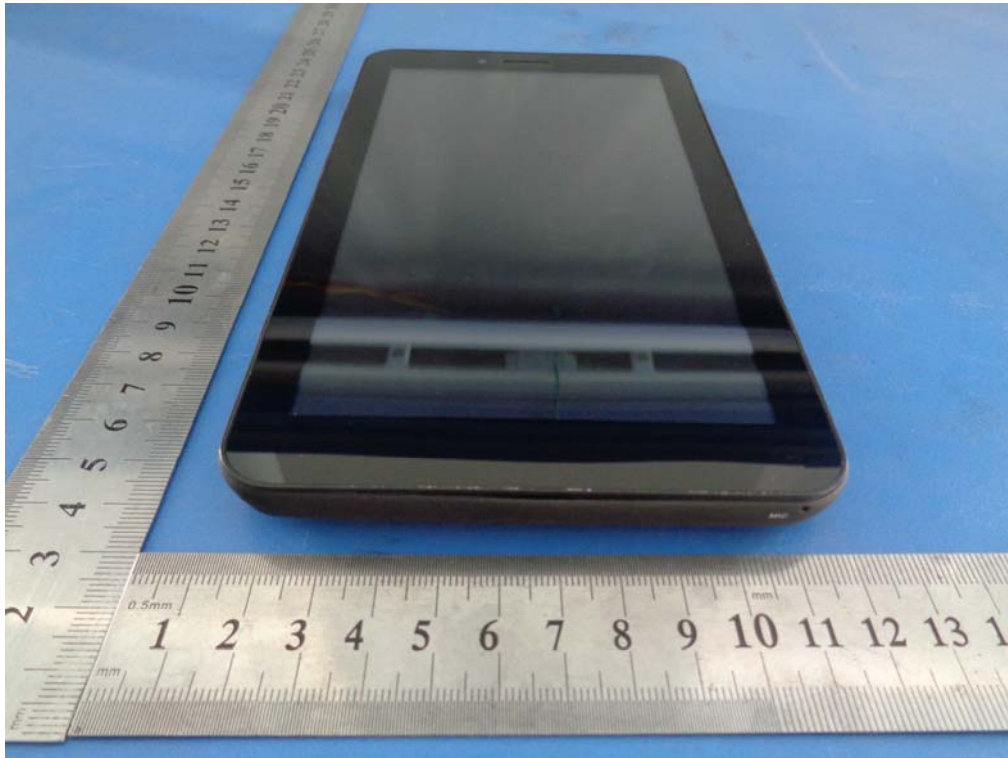


Top View of EUT

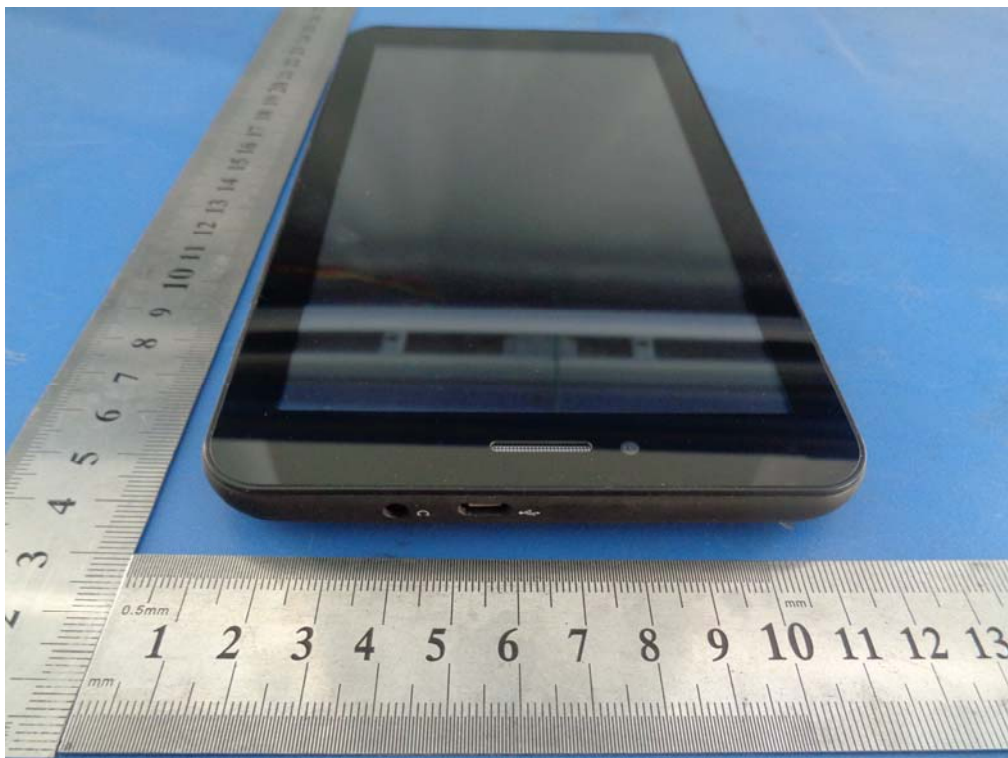


Bottom View of EUT

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Left View of EUT

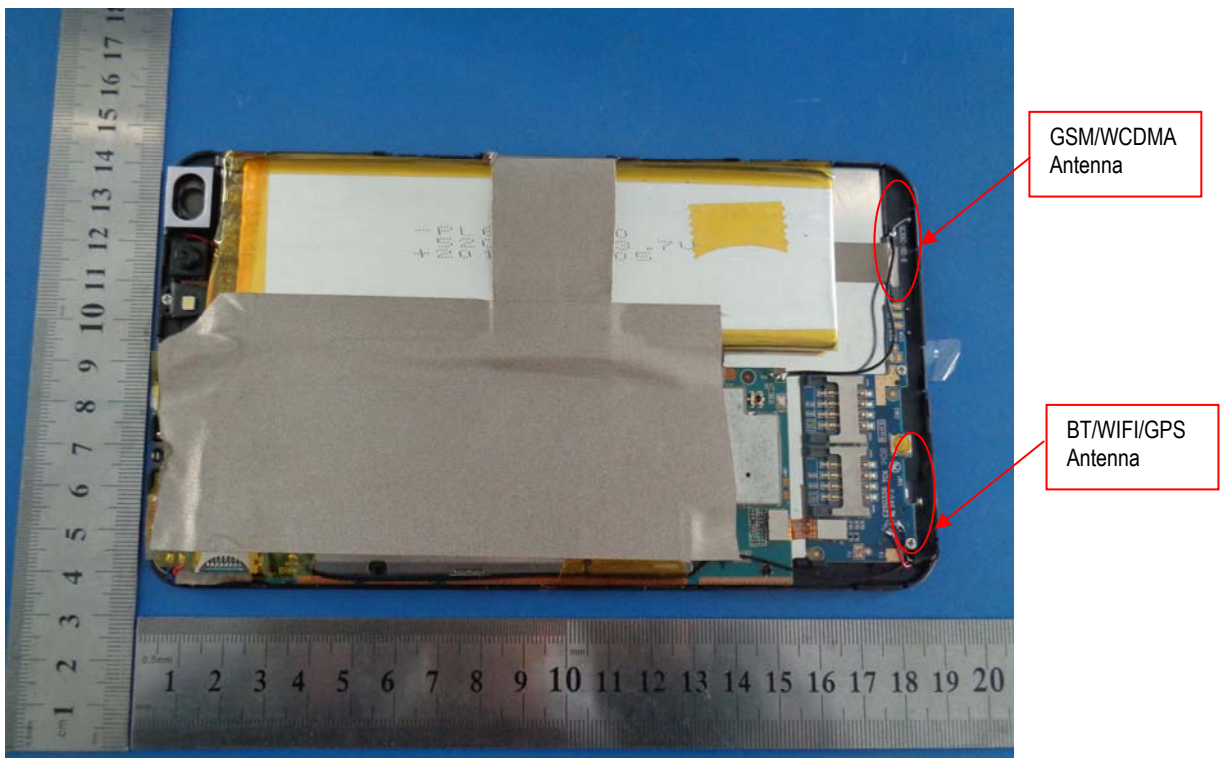


Right View of EUT

Annex B.ii. Photograph EUT Internal Photo



Uncover- Front View 1

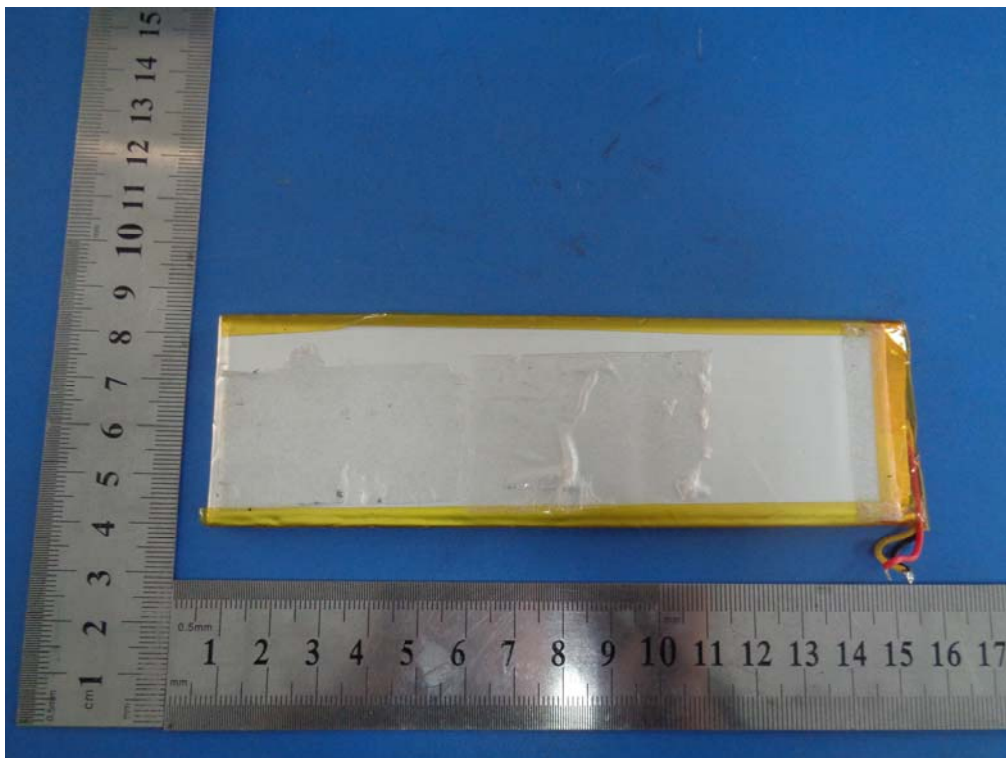


Uncover- Front View 2

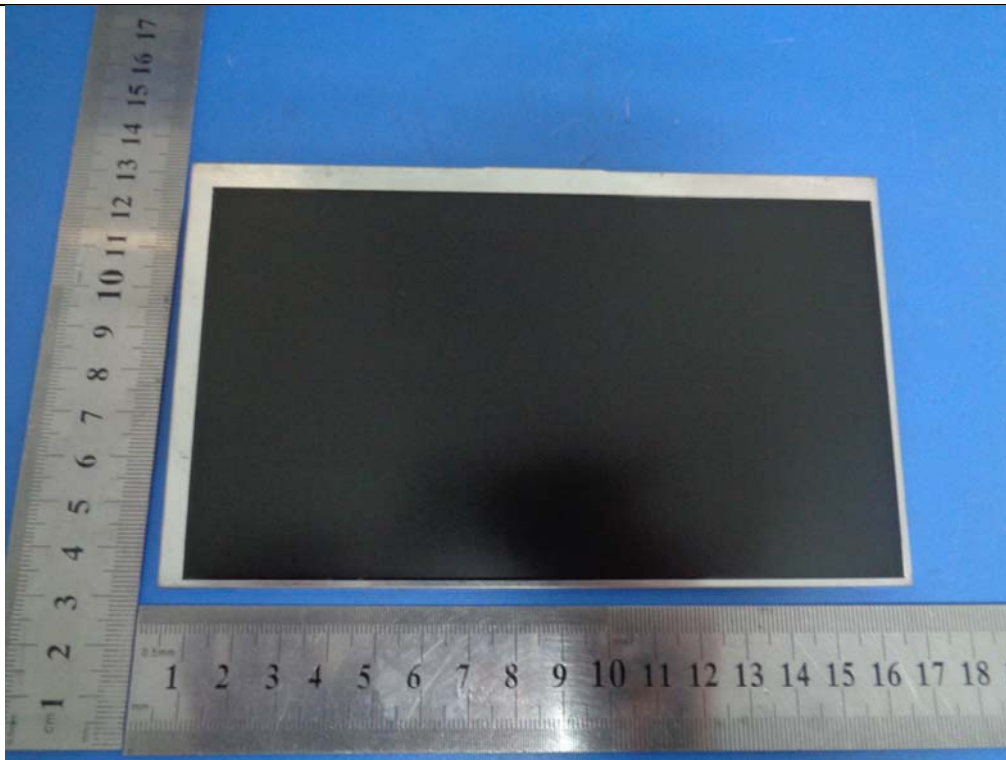
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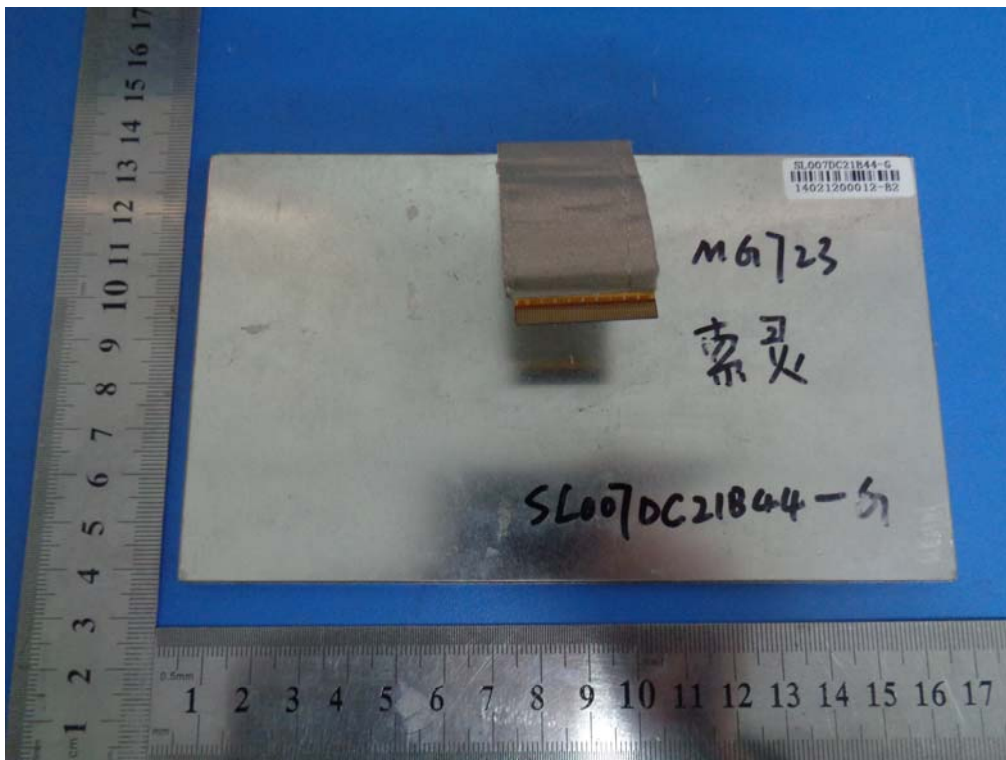
Battery- Front View



Battery- Rear View

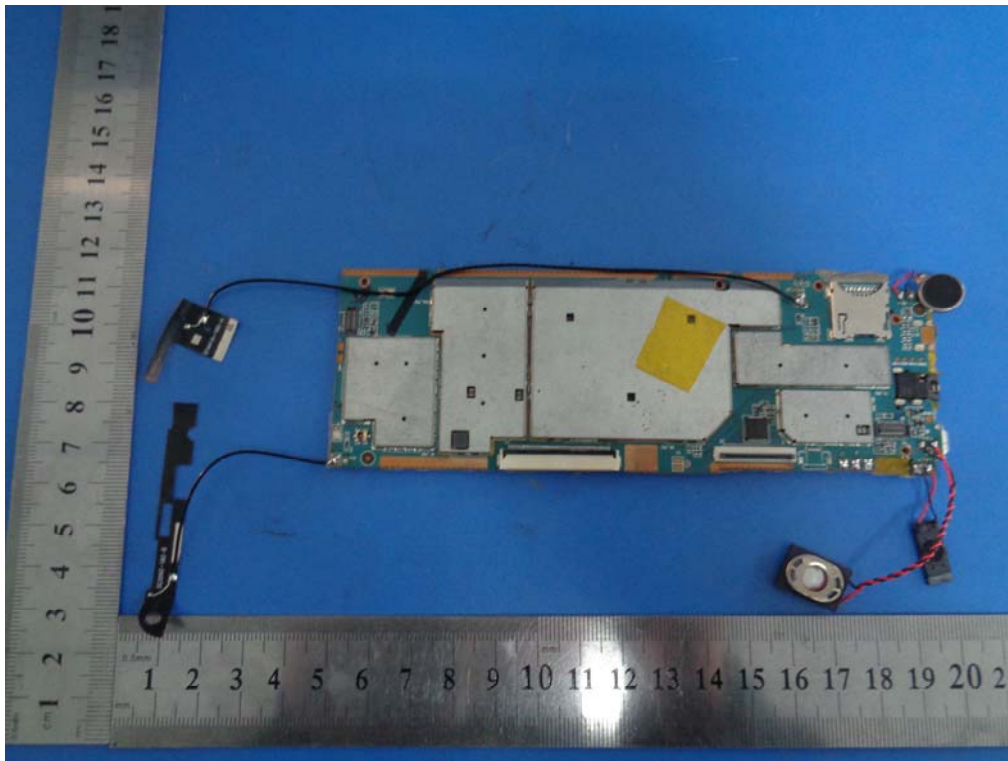


LCD – Front View

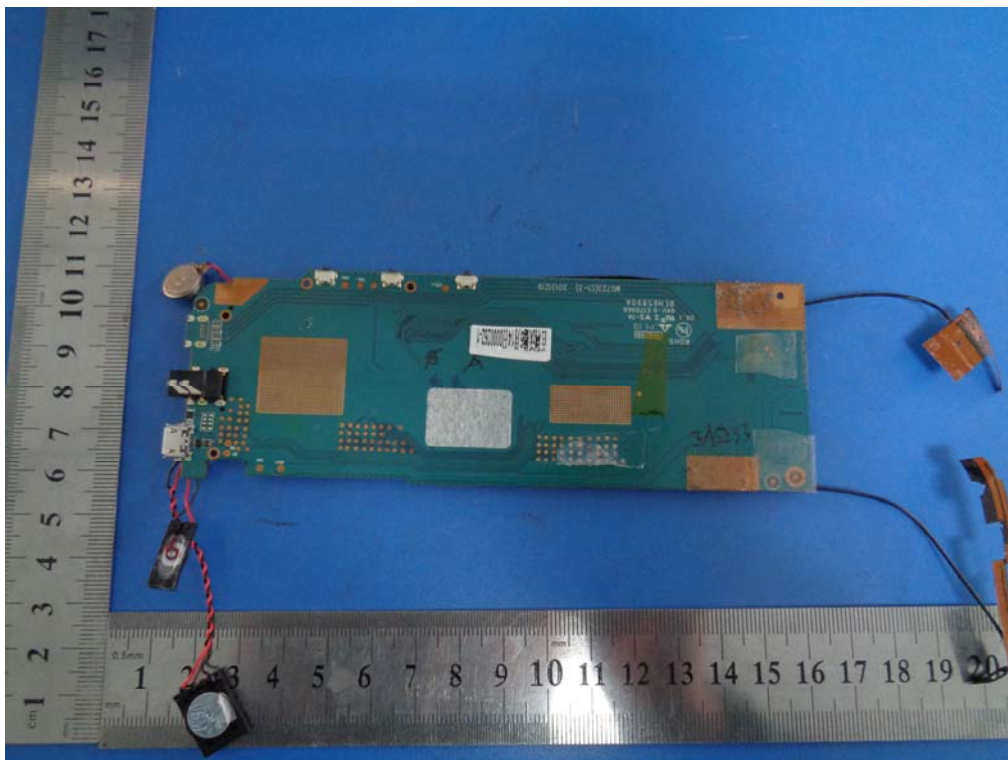


LCD – Rear View

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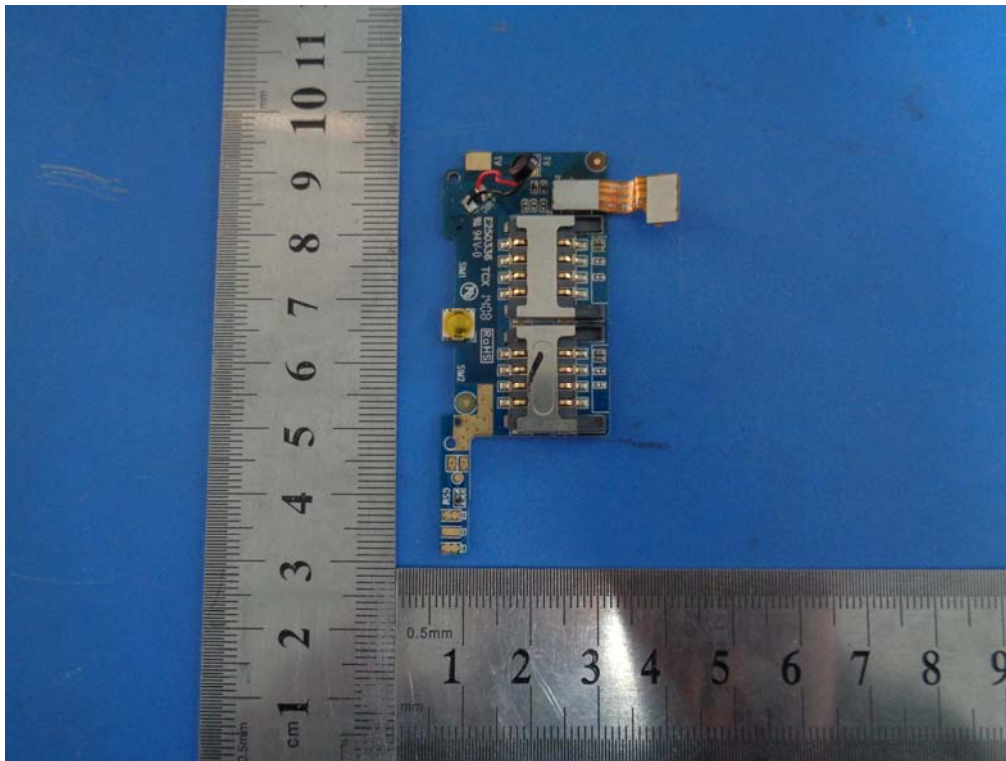


EUT PCB 1 – Front View

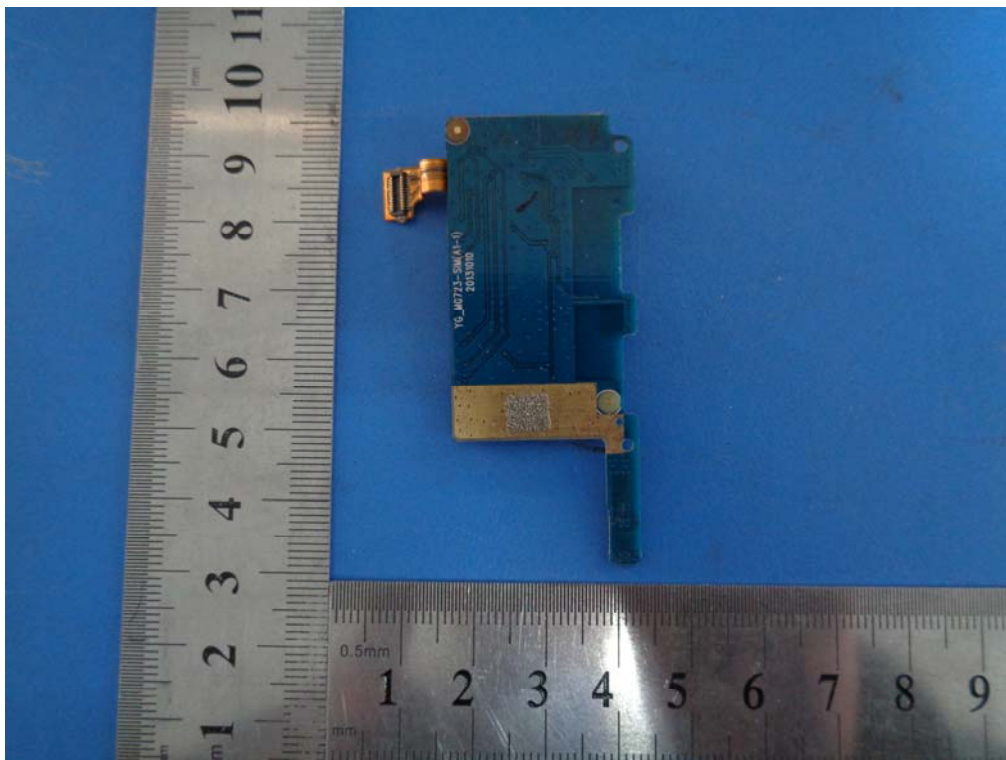


EUT PCB 1 – Rear View

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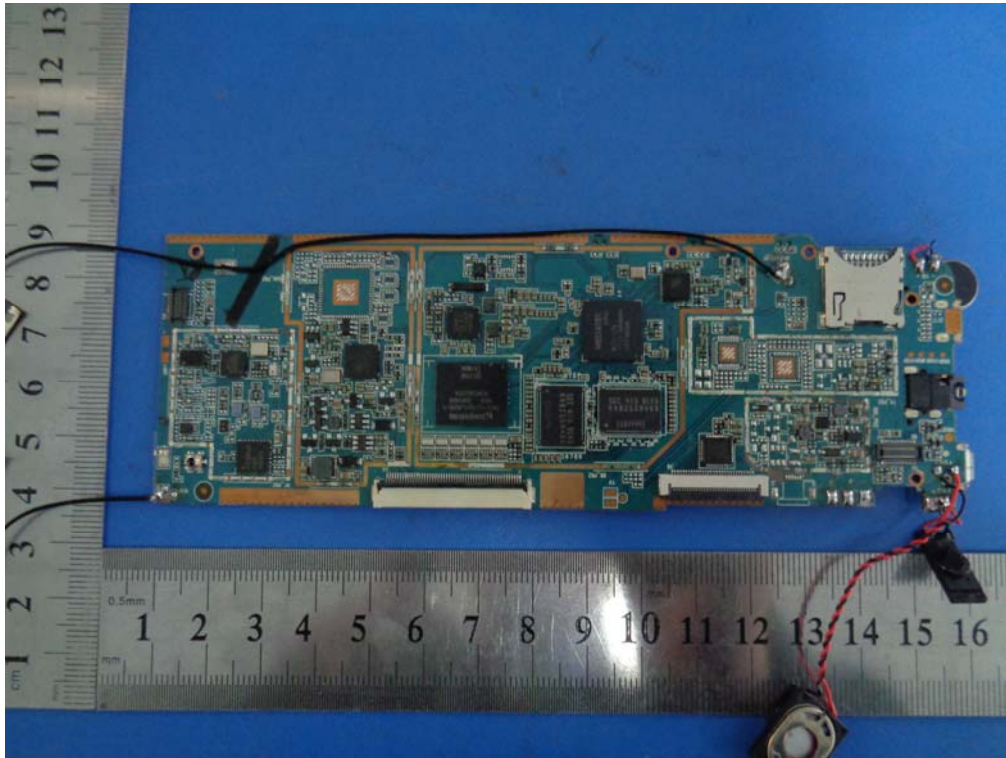


EUT PCB 2 – Front View



EUT PCB 2 – Rear View

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EUT PCB 1 – Without Shielding Front View

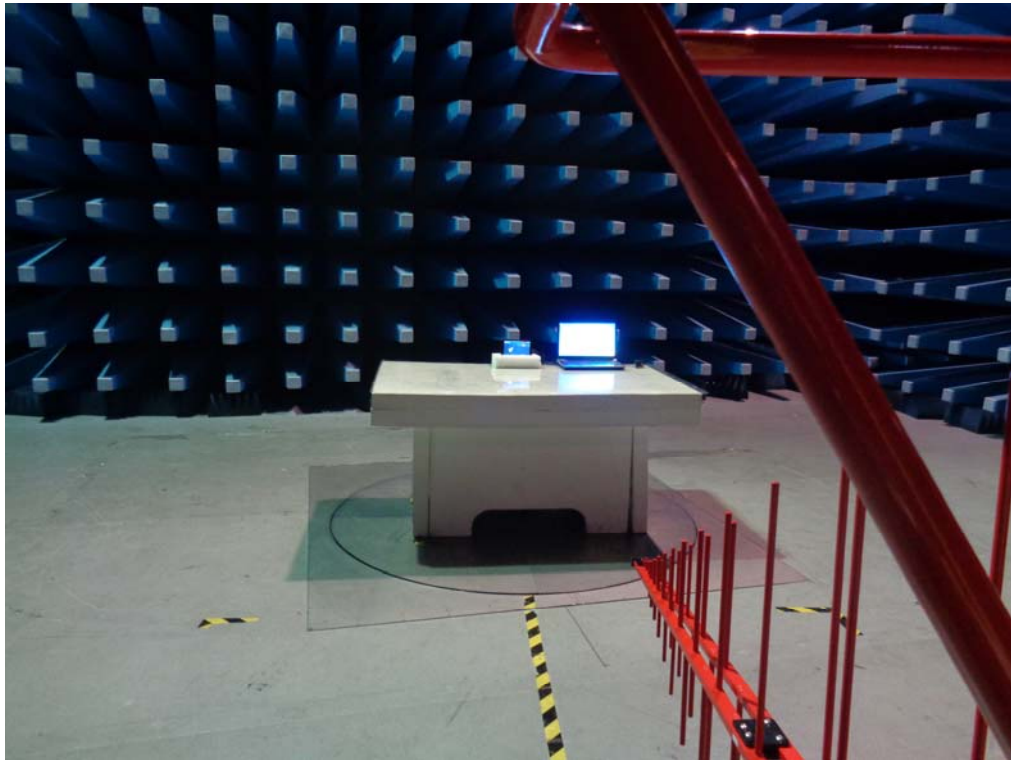
Annex B.iii. Photograph: Test Setup Photo



Conducted Emissions Setup Front View



Conducted Emissions Setup Side View



Radiated Emissions Setup Below 1GHz Front View

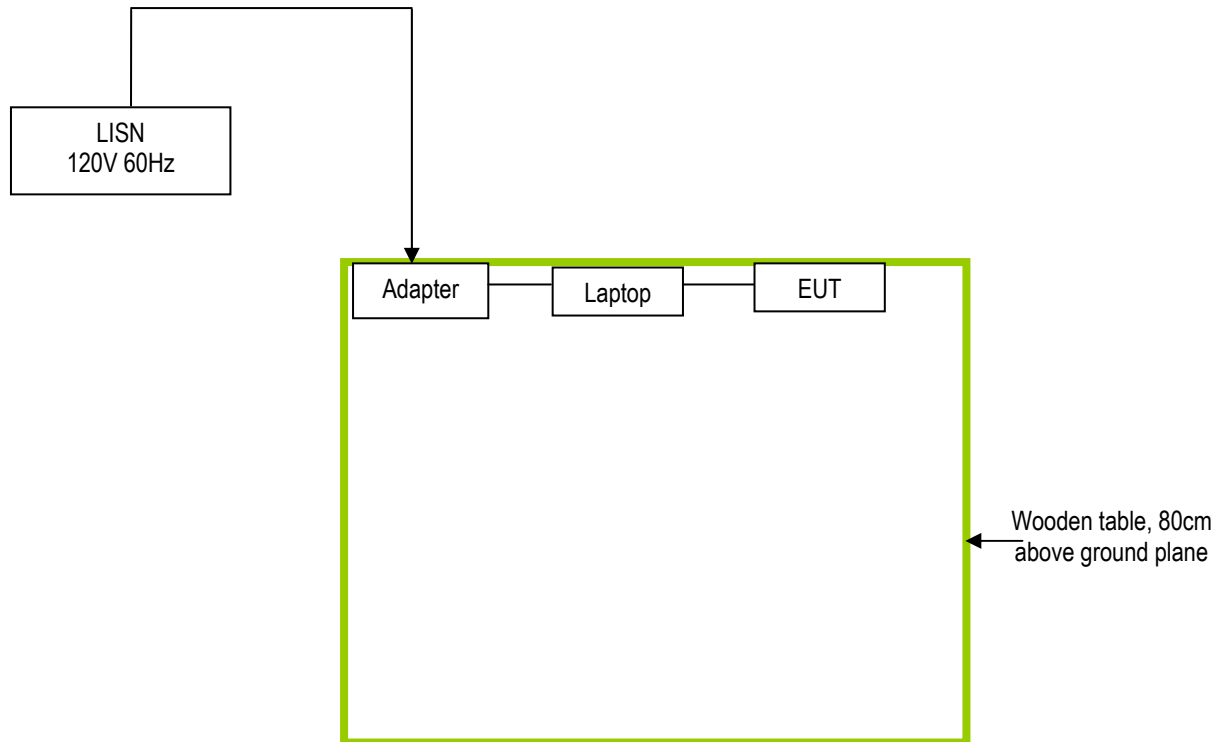


Radiated Emissions Setup Above 1GHz Front View

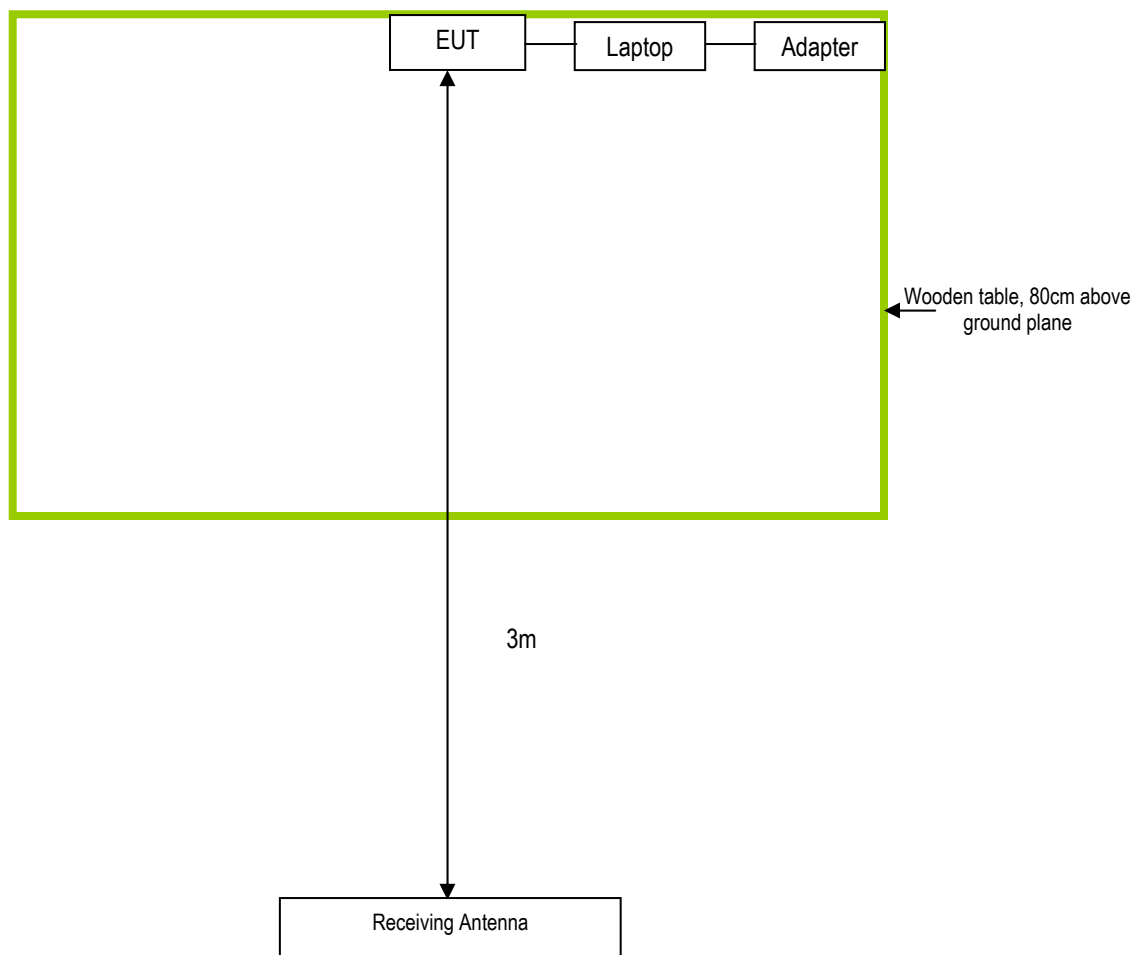
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.i. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



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Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model	Calibration Date
Gateway	Gateway Laptop	MS2288 & LXWHF02013951C3CA92200	N/A

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Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see Attachment

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Annex E. DECLARATION OF SIMILARITY

Beneworld International(HK) Co., Limited

HK: Unit 04, 7/F, Bright Way Tower, No. 33 Mong Kok Road, Kowloon, Hong Kong
TEL: +852-69172443/ 30772819 **FAX:** +852-30772819

Statement

To whom it may concern

Date: November 18, 2014

We hereby state that the 7inch Tablet PC of our model number BW9 and serial numbers BW7D9, BW7D19, BW7D29, BW7D61, BW7D62, BW7D66, BW7D68, BW7D69, BW7D70, BW7D71 have the same constructions, circuit diagram and PCB layout. Only model name are different.

Sincerely,

Stephen Tang