

FCC ID TEST REPORT

for

7" LCD Tablet PC with Wi-Fi

Model: APX071- Olympia

FCC ID: RAQAPX071

Prepared for: Giant Telecom Limited
33/F., Two Landmark East, 100 How Ming Road, Kwun Tong,
Kowloon, Hong Kong

Prepared by: Shenzhen TCT Testing Technology Co.,Ltd
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Report Number: TCT130802044F2-3
Date of Test: August 5~21, 2013
Date of Report: August 21, 2013

The results detailed in this test report relate only to the specific sample(s) tested. It is the Application's responsibility to ensure that all production units are manufactured with equivalent EMC characteristics. This report is not to be reproduced except in full, without written approval from TCT Testing Technology.

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1.0 General Details

1.1 Test Lab Details

Name :	Shenzhen Tongce Testing Lab
Address:	1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China
Telephone:	13410377511
Fax:	--

The test facility is recognized, certified, or accredited by the following organizations:

FCC Registration Number: 572331

Shenzhen TCT Testing Technology Co., Ltd., Shenzhen EMC Laboratory: Shenzhen Tongce Testing Lab
The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

Registration Number: 572331

Industry Canada (IC)

Site Listed with Industry Canada of Ottawa, Canada

Registration Number IC: 10668A-1

For 3m chamber

1.2 Applicant Details

Applicant:	Giant Telecom Limited
Address:	33/F., Two Landmark East, 100 How Ming Road, Kwun Tong, Kowloon, Hong Kong
Telephone:	26095070
Fax:	26095367

Manufacturer:	DONGGUAN WISETRONICS TELECOM EQUIPMENT CO. LTD
Address:	Elite Industrial City, Melin District, Dailing Mount Town, Dongguan Guangdong, China
Telephone:	--
Fax:	--

1.3 Description of EUT

Product:	7" LCD Tablet PC with Wi-Fi
Model No.:	APX071- Olympia
Additional Model:	APX071- HAVOC, R07- Aspera, TW1000- Intouch, AQX071- Olympia, ARX071- Olympia, ASX071- Olympia, APX-071- GTL, ATX071- GTL, AUX071- GTL, AP7- GTL, BP7- GTL, AX71- GTL, BX71- GTL
Rating:	DC 7.4V Via Lithium Battery & DC 12V Via Adapter Adapter Information Model:HK-AX-120A200-US Brand Name: HON-KWANG Input: AC 100-240V 0.8A, Output: DC 12V 2.0A
Operation Frequency:	13.56MHz
Antenna Designation:	A loop antenna and the maximum gain is 0 dBi.
Model Difference:	All modes above are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.

1.4 Submitted Sample(s): 1pcs

1.5 Test Duration

August 5, 2013 to August 21, 2013

1.6 Test Engineer

The sample tested by



Printed name: Jack Kang

2.0 Test equipments and Associated Equipment used during the test.

2.1 Test Equipments

Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	July 07, 2013	July 06, 2014
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	July 07, 2013	July 06, 2014
Pre-amplifier	Teseq	LAN6900	--	July 08, 2013	July 07, 2014
Pre-amplifier	Agilent	8447D	83153007374	July 08, 2013	July 07, 2014
Pre-amplifier	Agilent	8449B	3008A01738	July 08, 2013	July 07, 2014
Triple-loop antenna	ROHDE&SCHWARZ	HM020	843885/002	July 08, 2013	July 07, 2014
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	July 08, 2013	July 07, 2014
Horn Antenna	ETS LINDGREN	3117	--	July 08, 2013	July 07, 2014
Temperature/Humidity chamber	Shenzhen hongjian	SDJ-80L	SDJ-80J	Feb. 20, 2013	Feb. 19, 2014
EMI Test Receiver	R&S	ESCS30	100139	July 7, 2013	July 6, 2014
LISN	AFJ	LS16C	16010222119	July 7, 2013	July 6, 2014

2.2 AE used during the test

Equipment type	Manufacturer	Model
N.A.		

2.3. Block Diagram of EUT Configuration



3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications

Requirement	CFR 47 Section	Result	Notes
Conduction Emission, 0.15MHz to 30MHz	15.207	PASS	Complies
Radiation Emission	15.225(a) (b) (c) (d), 15.209,15.35	PASS	Complies
Frequency Stability Over Extreme Temperature And Voltage Conditions	15.225(e)	PASS	Complies
Occupied Bandwidth	15.215	PASS	Complies
Antenna Requirements	15.203	PASS	Complies

3.2 Test Standards

FCC Part 15:2012 Subpart C, Paragraph 15.225

4.0 EUT Modification

No modification by Shenzhen TCT Testing Technology Co., Ltd

5.0 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	MU
1.	Radio Frequency	$\pm 1 \times 10^{-9}$
2.	Temperature	$\pm 0.1^\circ\text{C}$
3.	Humidity	$\pm 1.0\%$
4.	RF power, conducted	$\pm 0.34\text{dB}$
5.	RF power density, conducted	$\pm 1.45\text{dB}$
6.	Spurious emissions, conducted	$\pm 3.70\text{dB}$
7.	All emissions, radiated	$\pm 4.50\text{dB}$

Note: 1) The EUT is a 7"LCD Tablet PC With NFC function.

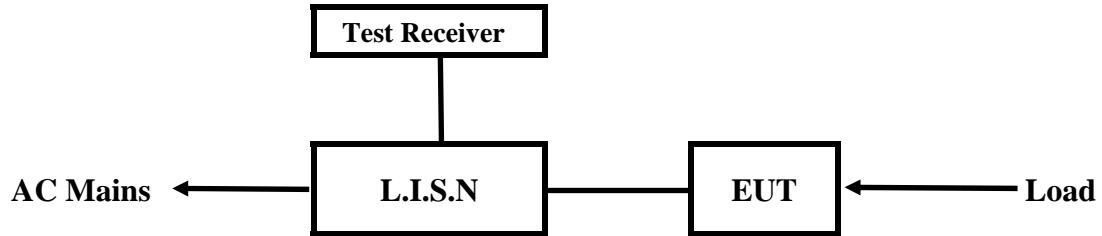
2) Working transmission frequency: 13.56MHz

3) N.A. means Not Applicable.

4) The EUT is a portable device, and measurements were conducted in all three axis (X, Y, Z), and the worst case (X axis) was submitted only.

6.0 Power Line Conducted Emission Test

6.1 Schematics of the test



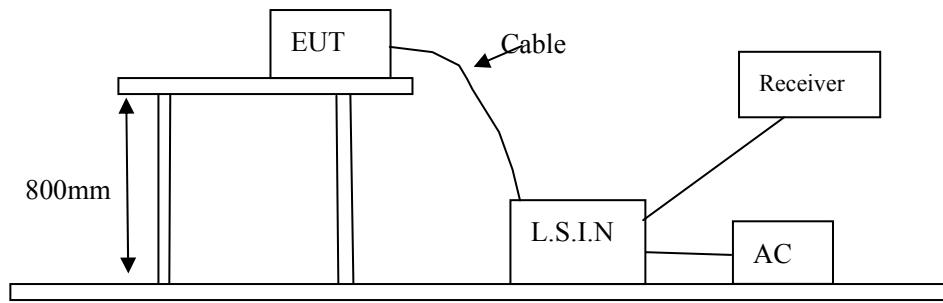
EUT: Equipment Under Test

6.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2009. The Frequency spectrum From 0.15MHz to 30MHz was investigated.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



6.3 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2009

- 1) Setup the EUT and simulators as shown on the following
- 2) Enable AF signal and confirm EUT active to normal condition

6.4 Test Equipment

Please refer to the Section 2

6.5 Conducted Emission Limit

Frequency(MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

Notes: 1) *Decreasing linearly with logarithm of frequency.
2) The tighter limit shall apply at the transition frequencies

6.6 Test specification:

Environmental conditions: Temperature: 22° C Humidity: 52% Atmospheric pressure: 103kPa

Frequency range: 0.15 MHz – 30 MHz

The test was carried out in the following operation mode(s):

- NFC Tx Mode

6.7 Test result

Pass

Min. limit margin 9.88dB at 0.1578MHz

The requirements are FULFILLED

Remarks: _____

A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

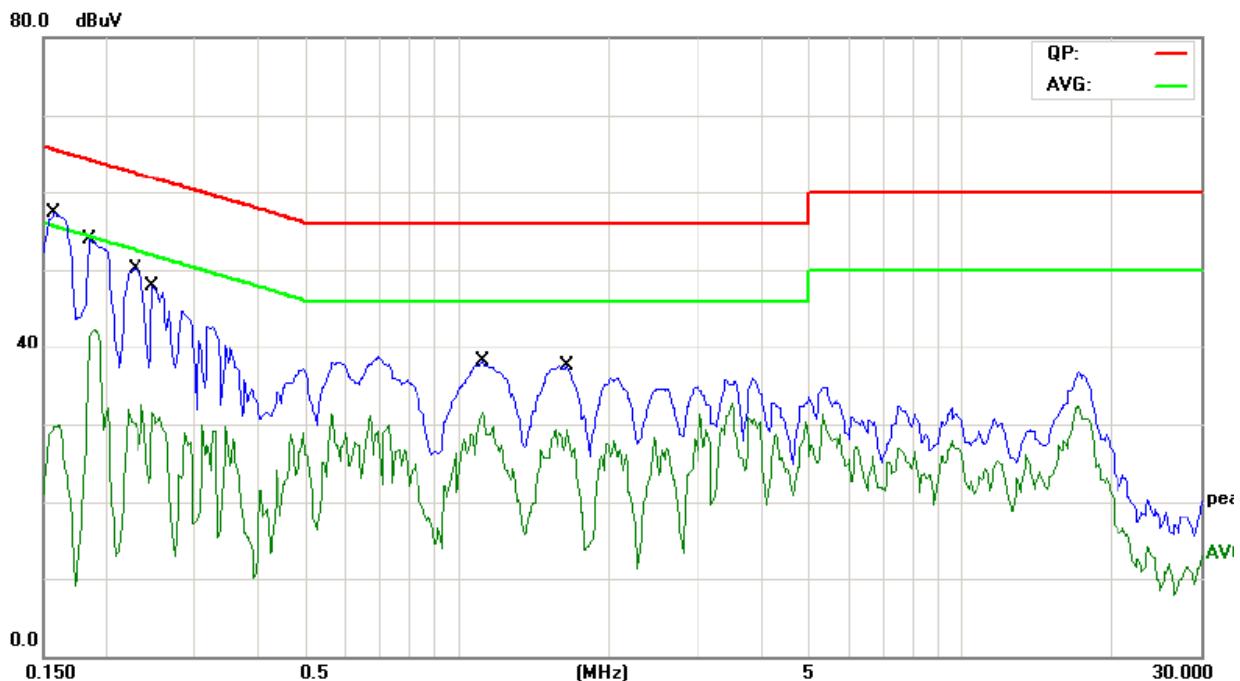
EUT Description: 7" LCD Tablet PC with Wi-Fi

Operation Mode: NFC Tx Mode

Tested By: Beryl Zhao

Test date: August 15, 2013

Start Frequency	Stop Frequency	Step	IF BW	Detector	Final M-Time
0.15MHz	30MHz	4.5KHz	10KHz	QP+AV	1s



Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.1578	55.69	38.35	--	--	65.57	55.57
0.1852	49.54	31.81	--	--	64.24	54.24
0.2281	47.02	34.51	--	--	62.52	52.52
0.2477	41.67	24.79	--	--	61.83	51.83
1.1227	35.77	27.46	--	--	56.00	46.00
1.6500	33.96	25.49	--	--	56.00	46.00

B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

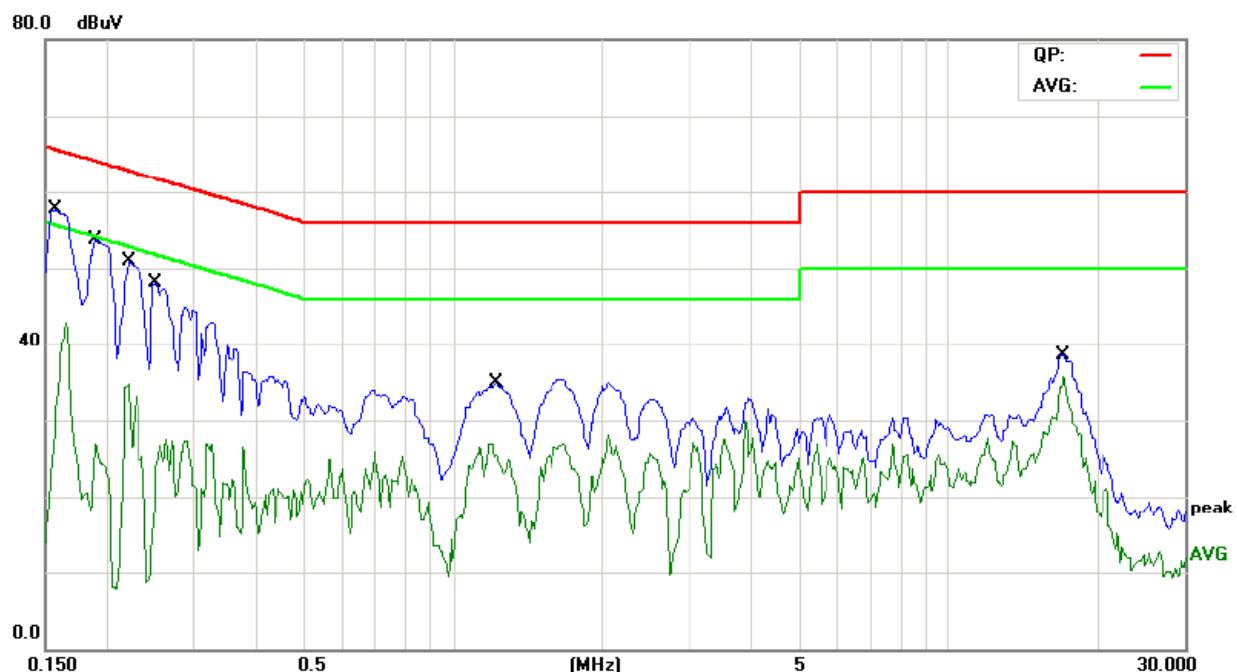
EUT Description: 7" LCD Tablet PC with Wi-Fi

Operation Mode: NFC Tx Mode

Tested By: Beryl Zhao

Test Data: August 15, 2013

Start Frequency	Stop Frequency	Step	IF BW	Detector	Final M-Time
0.15MHz	30MHz	4.5KHz	10KHz	QP+AV	1s



Frequency (MHz)	Reading(dB μ V)				Limit	
	Live		Neutral		(dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.1578	--	--	55.69	38.71	65.57	55.57
0.1891	--	--	51.53	32.65	64.07	54.07
0.2203	--	--	47.68	28.95	62.80	52.80
0.2516	--	--	44.45	27.18	61.70	51.70
1.2203	--	--	32.02	23.72	56.00	46.00
17.0937	--	--	38.52	27.13	60.00	50.00

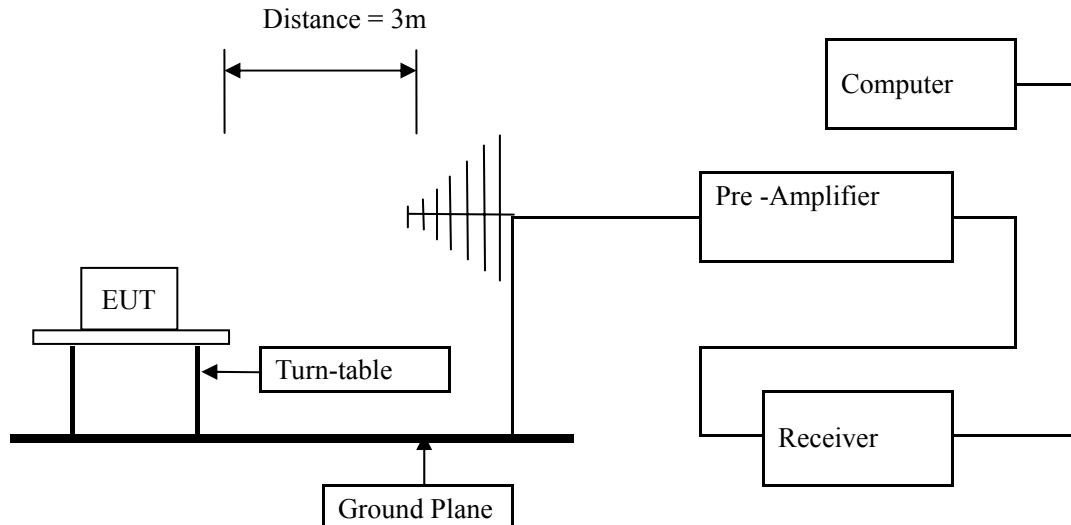
7.0 Radiated Emission Test

7.1 Test Method and test Procedure:

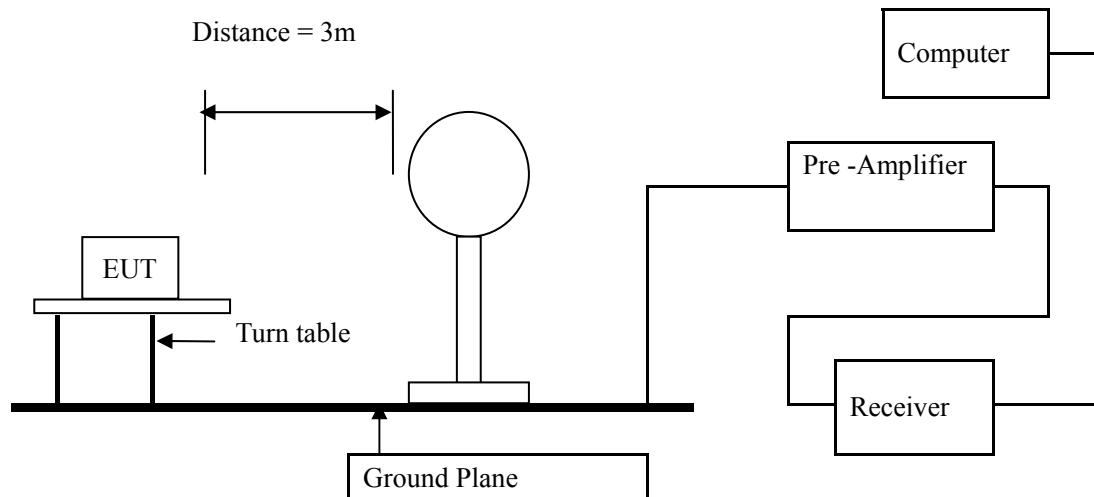
- 1) The EUT was tested according to ANSI C63.10 –2009.
- 2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2009.
- 3) The frequency spectrum from 9kHz to 5GHz was investigated. All readings from 9kHz to 30MHz are quasi-peak values with a resolution bandwidth of 10 kHz, measured with loop antenna. All readings from 30MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz, measured with Bi-log antenna. All readings are above 1 GHz are peak values with a resolution bandwidth of 1 MHz, measured with horn antenna.
- 4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for above 30MHz each frequency. The antenna high is 1 m to find the maximum emission for each frequency below 30MHz
- 5) Tested distance: 3 meters
- 6) The antenna polarization: Vertical polarization and Horizontal polarization.
- 7) Each azimuth of E.U.T will be tested.

7.2 Block diagram of Test setup

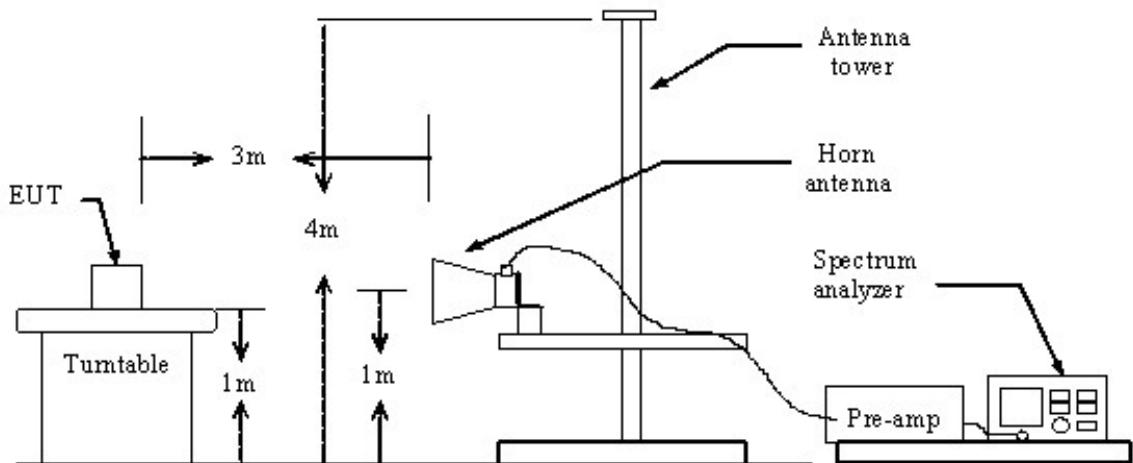
Block diagram of Test setup for frequency 30-1000MHz



Block diagram of Test setup for frequency below 30MHz



Block diagram of Test setup for frequency above 1GHz



7.3 Limit

According to 15.225,

- (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

Fundamental Frequency (MHz)	Filed Strength at 30m (microvolts/meter)	Filed Strength at 30m (dB _u V/m)	Filed Strength at 3m (dB _u V/m)
13.553–13.567	15,848	84	124
13.410–13.553	334	50.5	90.5
13.567–13.710			
13.110–13.410	106	40.5	80.5
13.710–14.010			

According to 15.35, on any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test.

According to 15.225,

- (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB _u V/m)
0.009-0.490	3	20log 2400/F (kHz) + 80
0.490-1.705	3	20log 24000/F (kHz) + 40
1.705-30	3	20log 30 + 40
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1) RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2) In the 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 EUT
- 4) The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
- 5) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula $Ld1 = Ld2 * (d2/d1)$

7.4 Test Equipment:

Please refer to the Section 2

7.5 Test specification:

Environmental conditions: Temperature 23° C Humidity: 50% Atmospheric pressure: 103kPa

7.6 Test result

Result: Pass

The data see the follows:

A Fundamental Radiated Emission

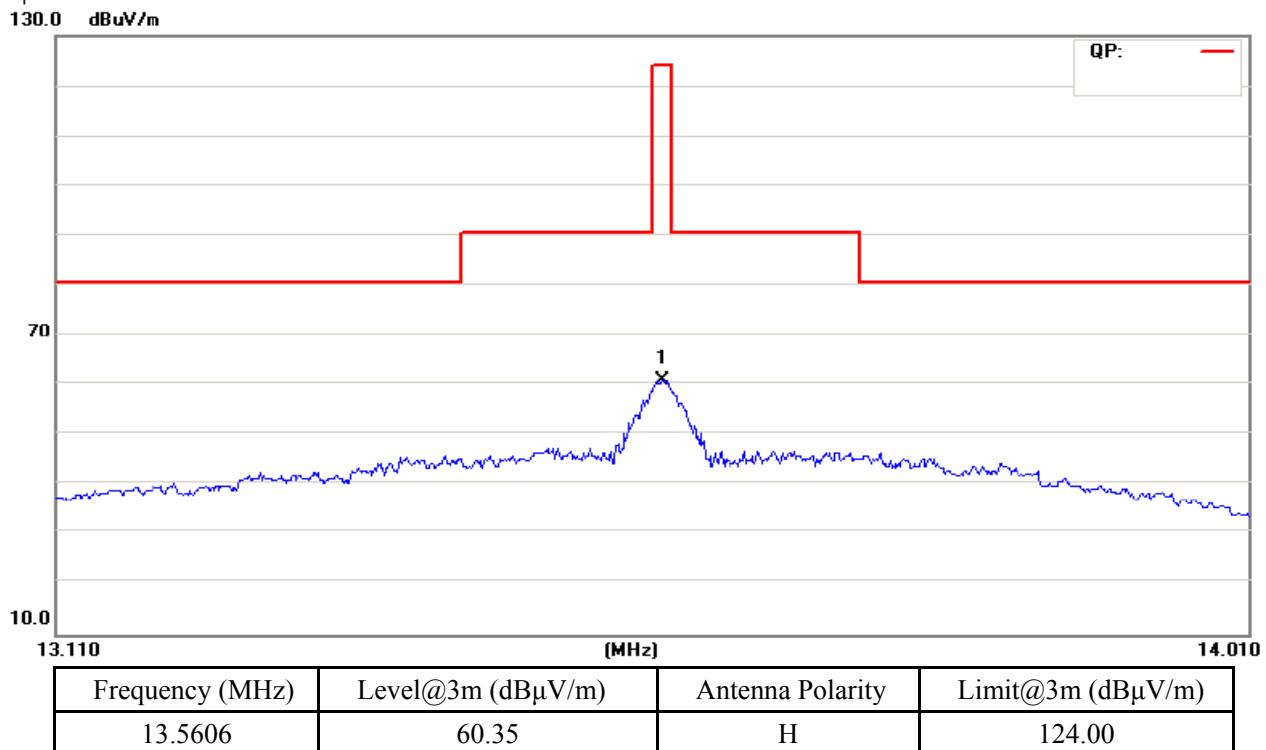
For Horizontal

EUT Description: 7" LCD Tablet PC with Wi-Fi

Operation Mode: NFC Tx Mode

Tested By: Beryl Zhao

Test Data: August 15, 2013



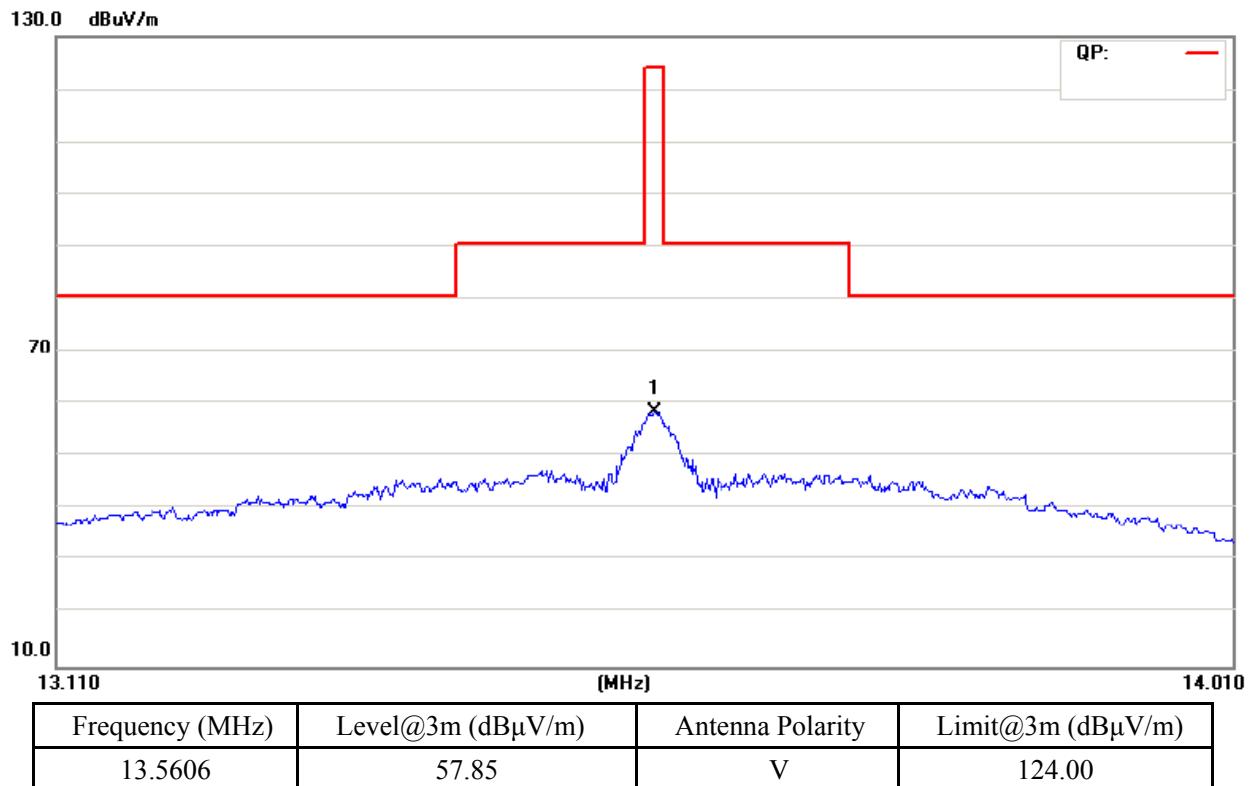
For Vertical

EUT Description: 7" LCD Tablet PC with Wi-Fi

Operation Mode: NFC Tx Mode

Tested By: Beryl Zhao

Test Data: August 15, 2013



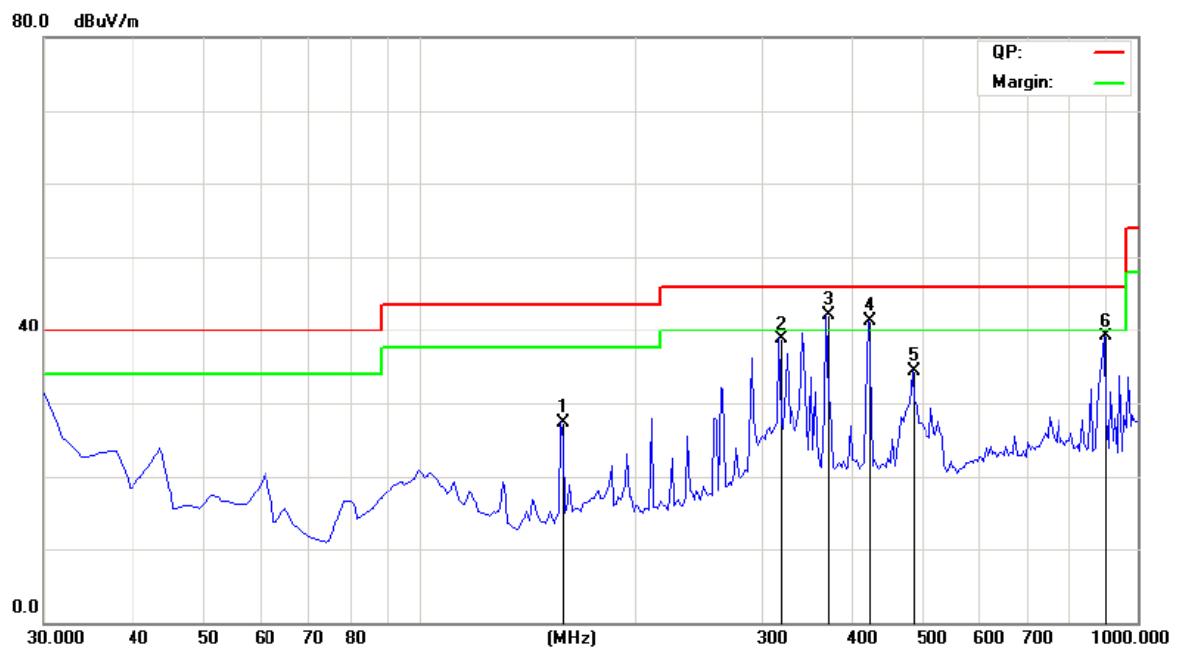
**B Spurious Radiated Emission - outside of the 13.110– 14.010 MHz
For 9kHz – 30MHz**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
20.3412	36.52	V	69.5
20.3425	40.17	H	69.5
27.1206	38.65	V	69.5
27.1235	42.16	H	69.5

Note: 1) Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor
2) The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

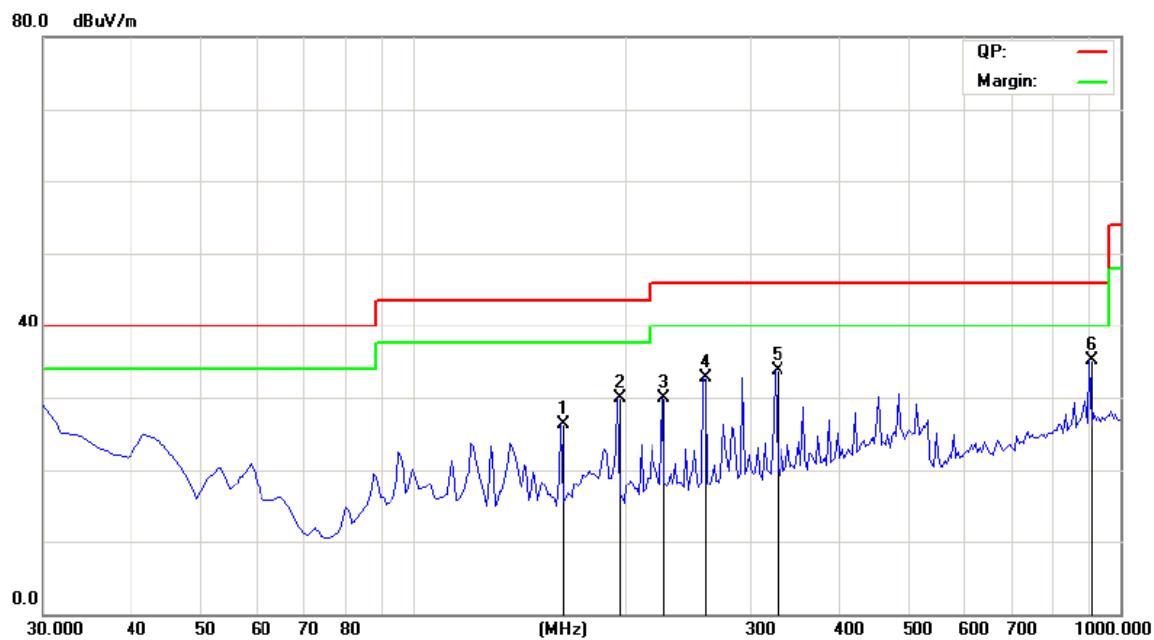
For 30MHz – 1000MHz

EUT Description: 7" LCD Tablet PC with Wi-Fi
 Operation Mode: NFC Tx Mode
 Tested By: Beryl Zhao
 Test Data: August 15, 2013



Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
158.2966	27.24	H	43.50
317.6954	38.74	H	46.00
370.1804	41.11	H	46.00
422.6653	41.02	H	46.00
486.8136	34.32	H	46.00
902.8056	39.18	H	46.00

EUT Description: 7" LCD Tablet PC with Wi-Fi
 Operation Mode: NFC Tx Mode
 Tested By: Beryl Zhao
 Test Data: August 15, 2013



Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
162.1844	26.29	V	43.50
195.2305	29.25	V	43.50
226.3326	30.00	V	46.00
259.3788	32.67	V	46.00
325.4710	33.66	V	46.00
906.6933	35.08	V	46.00

8.0 Occupied Bandwidth

8.1 Test Equipment

Please refer to the Section 2

8.2 Test Specification:

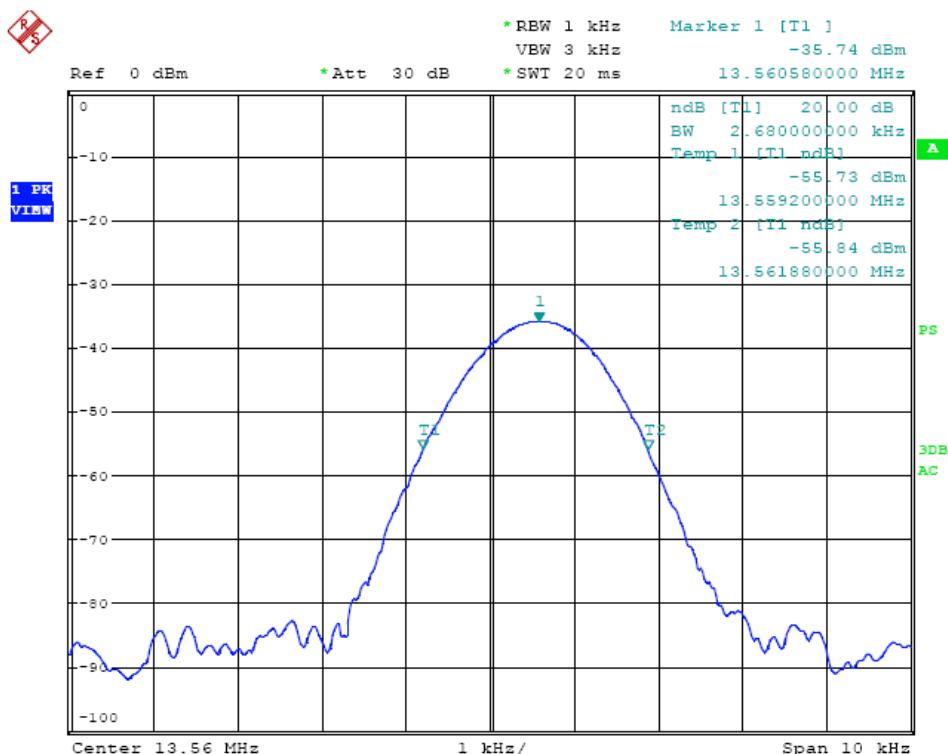
Environmental conditions: Temperature 22° C Humidity: 50% Atmospheric pressure: 103kPa

8.3 Limit

According to 15.215(c), Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

8.4 Test Result:

Frequency MHz	20dB Bandwidth (kHz)	Frequency range (MHz) $f_L > 13.553\text{MHz}$	Frequency range (MHz) $f_H < 13.567\text{MHz}$	Conclusion
13.56	2.680	13.55920	13.56188	PASS

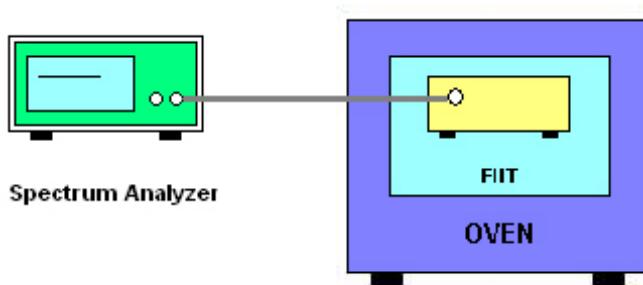


9.0 Frequency Stability Measurement

9.1 Test Method and test Procedure:

- 1) The transmitter output (antenna port) was connected to the spectrum analyzer.
- 2) EUT have transmitted absence of modulation signal and fixed channelize.
- 3) Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
- 4) Set RBW = 1 kHz, VBW = 1 kHz with peak detector and maxhold settings.
- 5) The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
- 6) Extreme temperature rule is -20°C~50°C.

9.2 Block diagram of Test setup



9.3 Test Specification:

Environmental conditions: Humidity: 50% Atmospheric pressure: 103kPa

9.4 Limit

According to 15.225(e), The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

9.5 Test Result:

Pass

Voltage vs. Frequency Stability (Test Temperature: 20°C)

Voltage(V)	Measurement Frequency (MHz)	Max. Deviation (MHz)	Limit(MHz)	Conclusion
7.4	13.56061	0.00071	0.001356	Pass
6.29	13.56063			
8.51	13.56071			

Temperature vs. Frequency Stability (Test Voltage: 7.4V)

Voltage(V)	Measurement Frequency (MHz)	Max. Deviation (MHz)	Limit(MHz)	Conclusion
-20°C	13.56021	0.00072	0.001356	Pass
-10°C	13.56043			
0°C	13.56061			
10°C	13.56061			
20°C	13.56061			
30°C	13.56067			
40°C	13.56070			
50°C	13.56072			

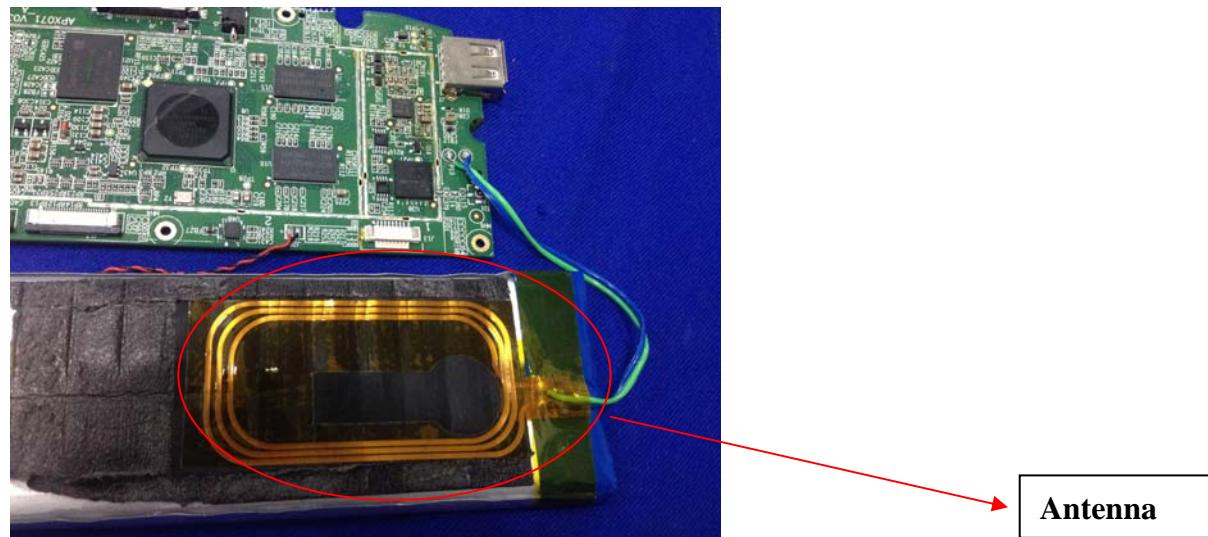
10.0 Antenna Requirement

10.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

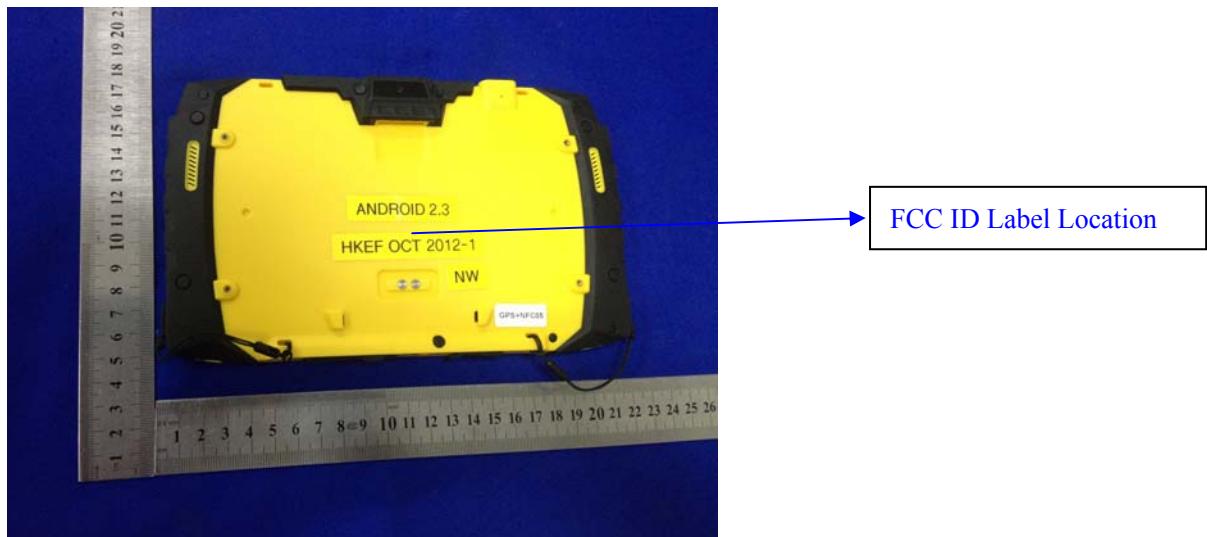
10.2 Antenna Specification

According to the manufacturer declared, the EUT has a loop antenna;



11.0 FCC ID Label**FCC ID: RAQAPX071**

The label must not be a stick-on paper label. 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.

Mark Location:**--End of the report--**