

FCC Part 15C


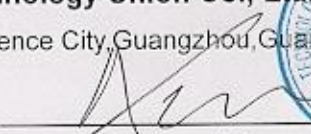

Measurement and Test Report

For

ONYX INTERNATIONAL INC.

7C1, Everbright Bank Of China Bldg, No.689 Tianhebei Rd, Guangzhou,China.

FCC ID: XR3BOOX60

Report Concerns: Original Report	Equipment Type: BOOX (eBook Reader)
Model:	BOOX 60
Report No.:	STUGZEFO090910700RF
Test /Witness Engineer:	
Test Date:	<u>2009-11-30 to 2009-12-01</u>
Issue Date:	<u>2009-12-02</u>
Prepared By:	<p>STU Standard Technology Union Co., Ltd No.202, Building A, Yushu Industrial Park, Science City, Guangzhou, Guangdong, China</p>
Approved & Authorized By:	<p> Allan Chen / Manager</p> 

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by STU Standard Technology Union Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ONYX INTERNATIONAL INC.
 Address of applicant: 7C1, Everbright Bank of China BLDG, NO.689 Tianhebei RD, Guangzhou, China.

Manufacturer: ONYX INTERNATIONAL INC.
 Address of manufacturer: 7C1, Everbright Bank of China BLDG, NO.689 Tianhebei RD, Guangzhou, China.

General Description of E.U.T

Items	Description
EUT Description:	BOOX (EBook Reader)
Trade Name:	BOOX
Model No.:	BOOX 60
Rated Voltage:	DC 5V
Max. Output Power	<10dBm
Antenna Gain:	2dBi
Frequency range:	2412~2462MHz
Number of channels:	11
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Size:	9.6x12.1x0.8 cm

Note: The test data gathered are from a production sample provided by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the ONYX INTERNATIONAL INC. in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Low Channel, Middle Channel and High Channel, accordingly in reference to the Operating Instructions.

1.5 Test Location

SEM.Test Compliance Services Co., Ltd.

3/f, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C.(518101)

Tel: +86-0755-33663308—807

Fax: +86-0755-33663309

Web: www.semtest.com.cn

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services 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 and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

1.6 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components.

1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
IBM	Notebook	T22	LV14893
Gi-Link	Router	RG2415	/
Lenovo	Printer	3110	OD65133711480

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.6	Shielded	With Core

2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 15.203; § 15.247(c)(1)(i)	Antenna Requirement	Compliant
§ 15.207	Conducted Emission	Compliant
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	Power Output	Compliant
§ 15.209(a)(d)	Radiated Emission	Compliant
§ 15.247(d)	Band edge	Compliant

3. CONDUCTED EMISSIONS

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 0.5 dB.

3.2 Test Equipment List and Details

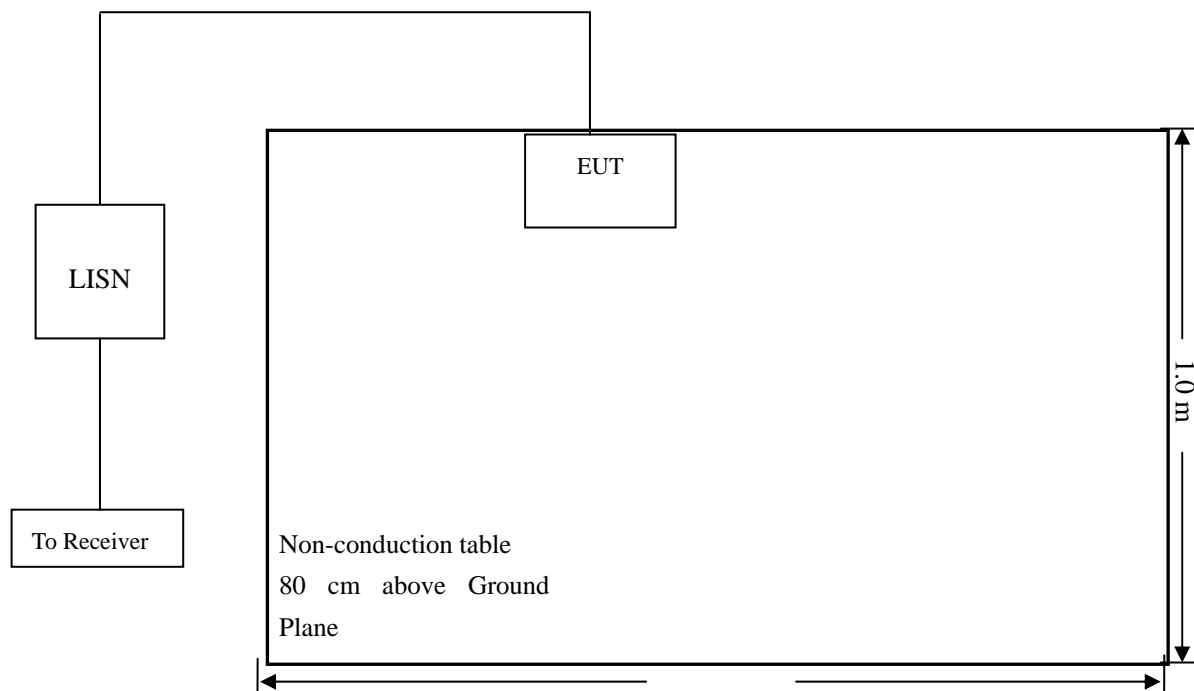
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2009-08-12	2010-08-11
Puls Limiter	Rohde & Schwarz	ESH3-Z2	100911	2009-08-12	2010-08-11
L.I.S.N.	SCHWARZBECK	NSLK8126	8126-224	2009-08-12	2010-08-11
L.I.S.N.	EMCO	3825/2	11967C	2009-08-12	2010-08-11

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

-10.00 dBµV at 0.82 MHz in the Line Peak Detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Conducted Disturbance

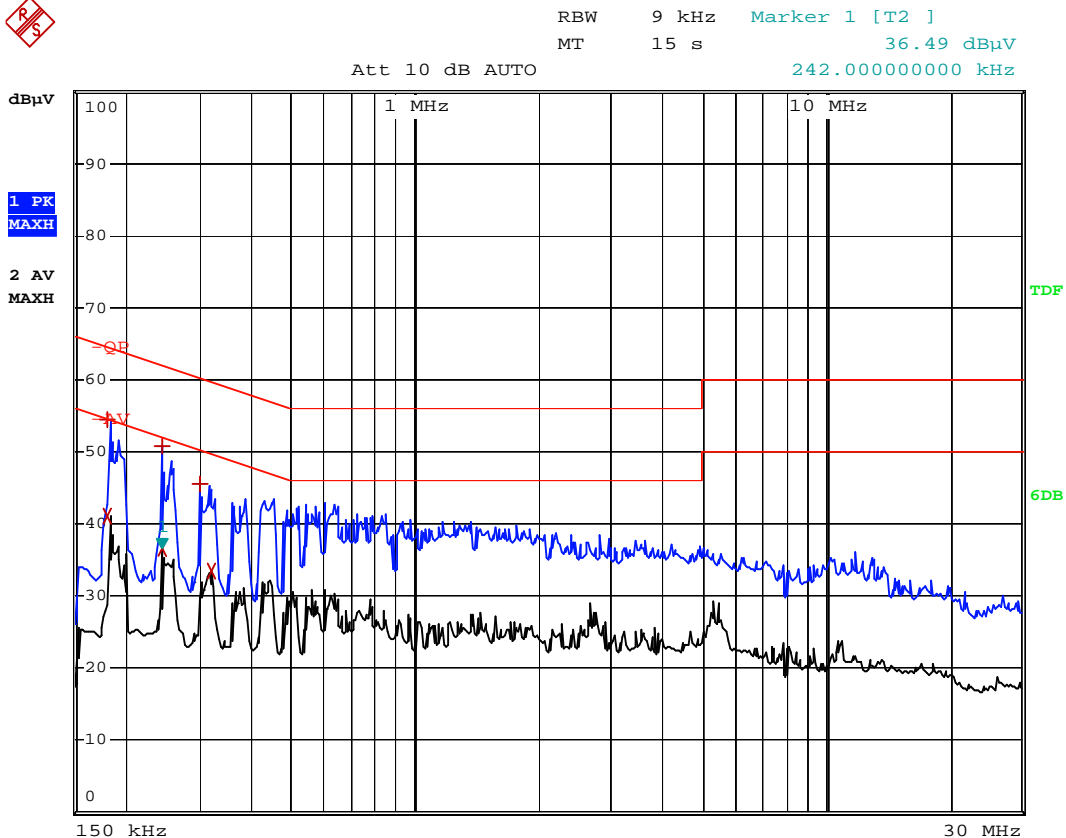
EUT: BOOX (EBook Reader)

M/N: BOOX 60

Operating Condition: Operating

Test Specification: L

Comment: AC 120V/60Hz Adapter DC 5V



Date: 30.NOV.2009 17:31:45

EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBuV	DELTA LIMIT dB
1 Max Peak	182 kHz	54.38	-10.00
2 Average	182 kHz	41.04	-13.35
1 Max Peak	242 kHz	50.69	-11.33
2 Average	242 kHz	36.49	-15.53
1 Max Peak	298 kHz	45.60	-14.69
2 Average	318 kHz	33.46	-16.29

Date: 30.NOV.2009 17:31:34

Plot of Conducted Emissions Test Data

Conducted Disturbance

EUT: BOOX (EBook Reader)

M/N: BOOX 60

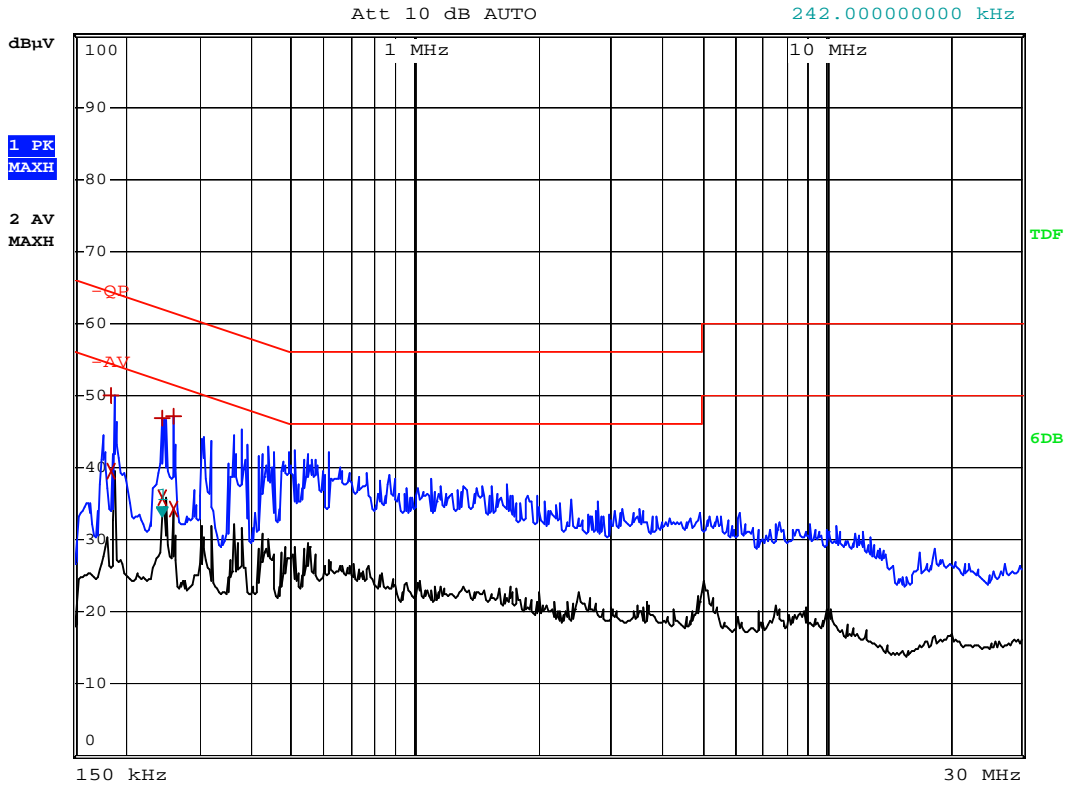
Operating Condition: Operating

Test Specification: N

Comment: AC 120V/60Hz Adapter DC 5V



RBW 9 kHz Marker 1 [T2]
MT 15 s 33.17 dBµV
242.00000000 kHz



Date: 30.NOV.2009 17:33:10

EDIT PEAK LIST (Prescan Results)			
TRACE	FREQUENCY	LEVEL dBuV	DELTA LIMIT dB
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
1 Max Peak	186 kHz	49.96	-14.25
2 Average	186 kHz	39.43	-14.78
1 Max Peak	242 kHz	46.76	-15.26
2 Average	246 kHz	35.73	-16.15
1 Max Peak	258 kHz	46.99	-14.49
2 Average	258 kHz	34.28	-17.20

Date: 30.NOV.2009 17:32:59

4. §15.203 - ANTENNA REQUIREMENT

4.1 Standard Applicable

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

4.2 Test Result

This product has a unique and integral antenna, fulfill the requirement of this section.

5. POWER SPECTRAL DENSITY

5.1 Standard Applicable

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2009-08-12	2010-08-11
RF Limiter	Agilent	11867A	MY42241685	2009-08-12	2010-08-11
RMS/PEAK Voltmeter	Rohde & Schwarz	URE3	826135/008	2009-08-12	2010-08-11

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

5.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=3KHz, Span = 20MHz.
4. Repeat above procedures until all frequency measured was complete.

5.4 Environmental Conditions

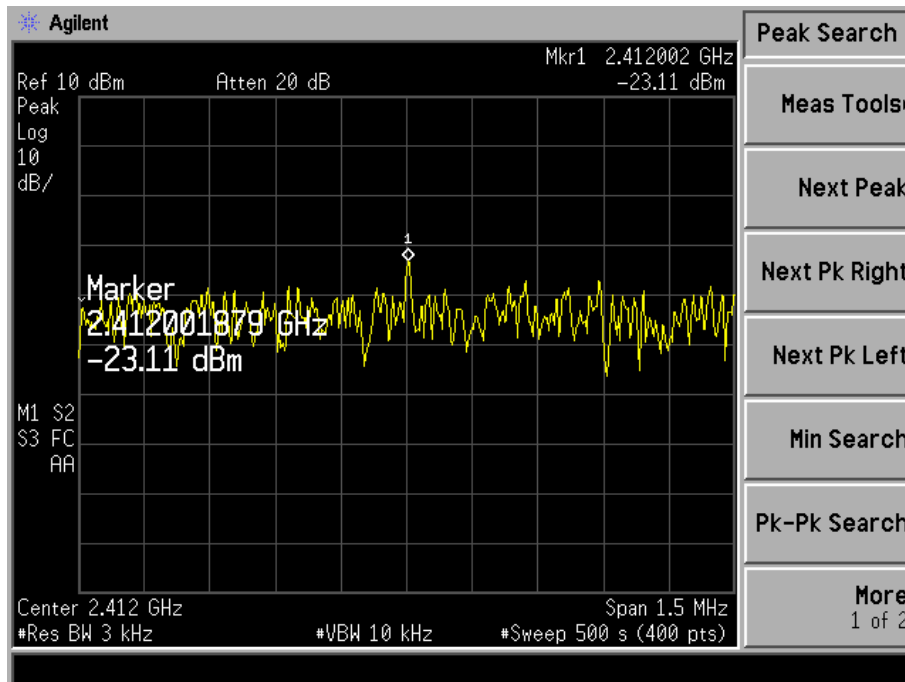
Temperature:	20° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

5.5 Summary of Test Results/Plots

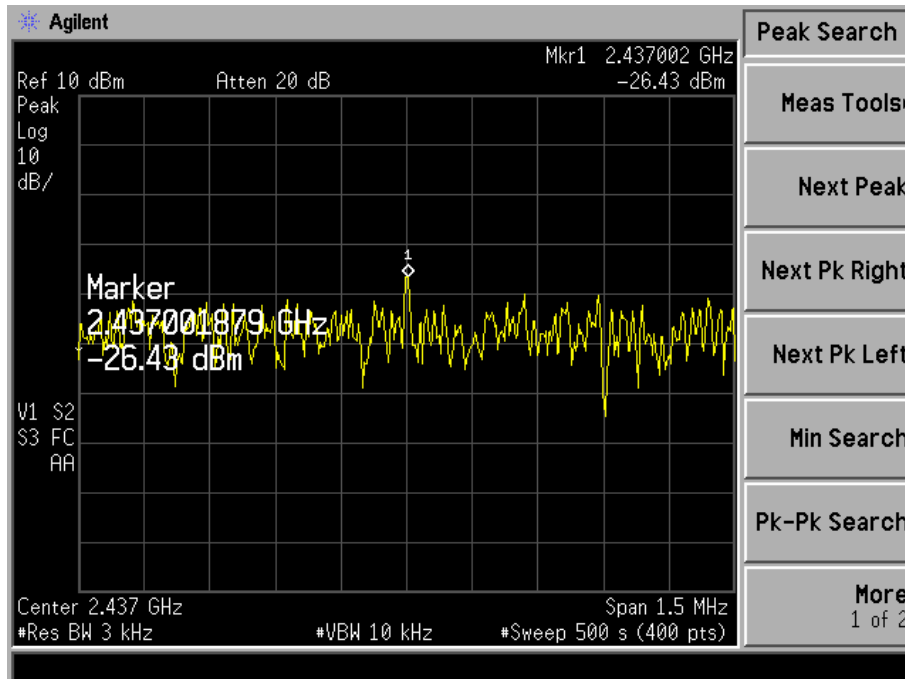
Test mode	Test channel	Reading dBm/3kHz	Limit dBm/3kHz
802.11b	Low channel (2412MHz)	-23.11	8
	Middle channel (2437MHz)	-26.43	8
	High channel (2462MHz)	-26.60	8
802.11g	Low channel (2412MHz)	-23.99	8
	Middle channel (2437MHz)	-27.03	8
	High channel (2462MHz)	-27.63	8

For 802.11b

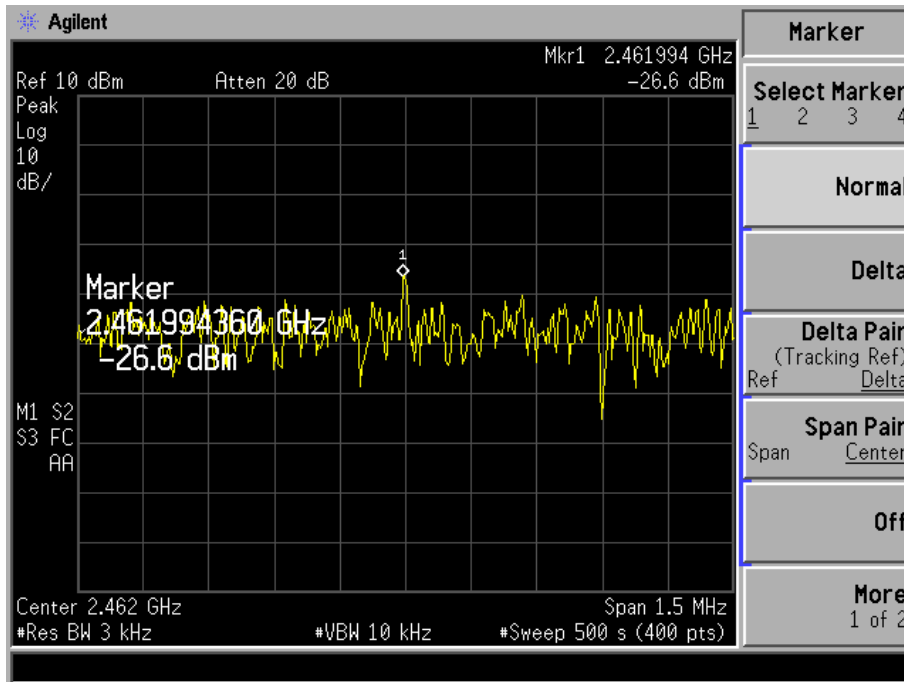
Low Channel:



Middle Channel:

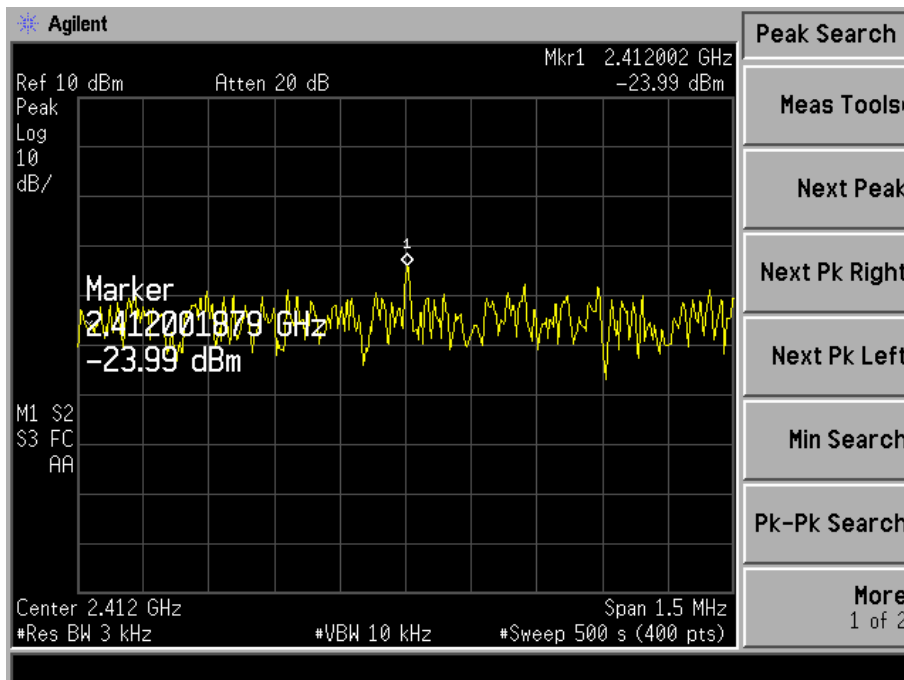


High Channel:

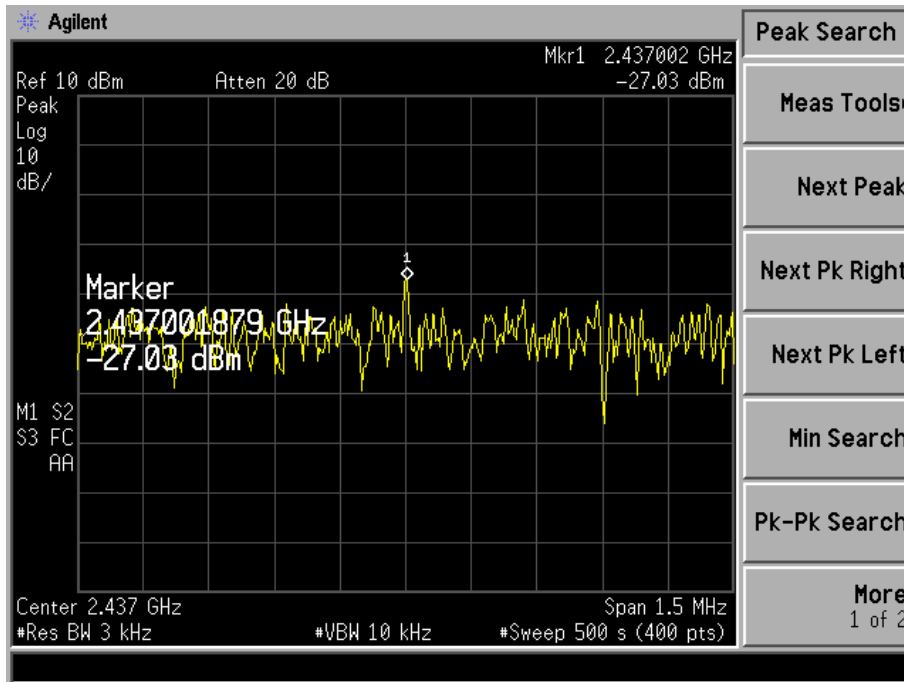


For 802.11g

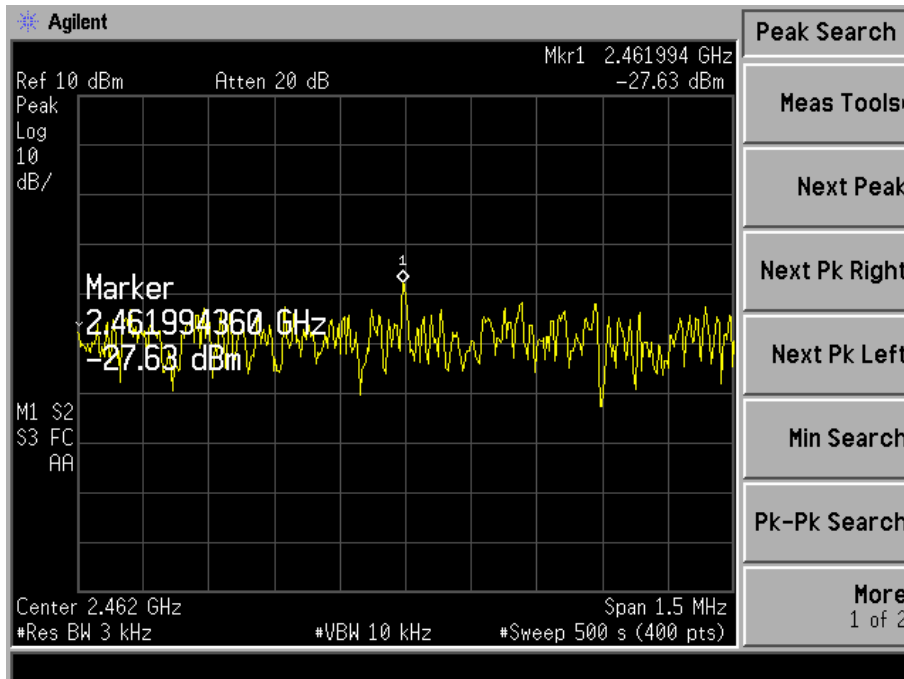
Low Channel:



Middle Channel:



High Channel:



6. 6-dB BANDWIDTH

6.1 Standard Applicable

According to 15.247(a)(2). Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

6.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2009-08-12	2010-08-11
RF Limiter	Agilent	11867A	MY42241685	2009-08-12	2010-08-11

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

6.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=300KHz (1 % of Bandwidth.), Sweep=auto
4. Mark the peak frequency and –6dB (upper and lower) frequency.

6.4 Environmental Conditions

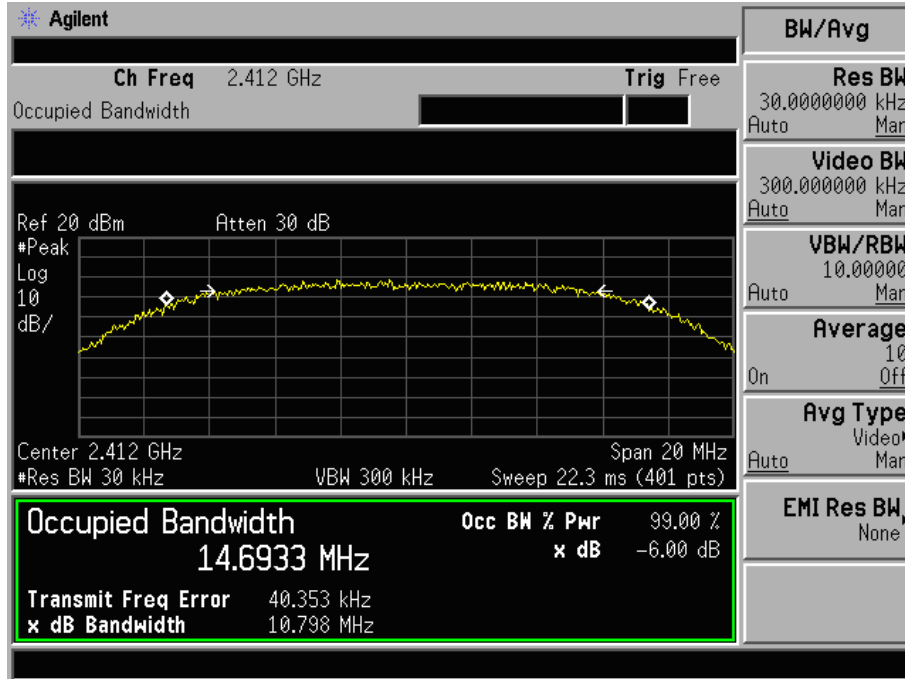
Temperature:	24° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

6.5 Summary of Test Results/Plots

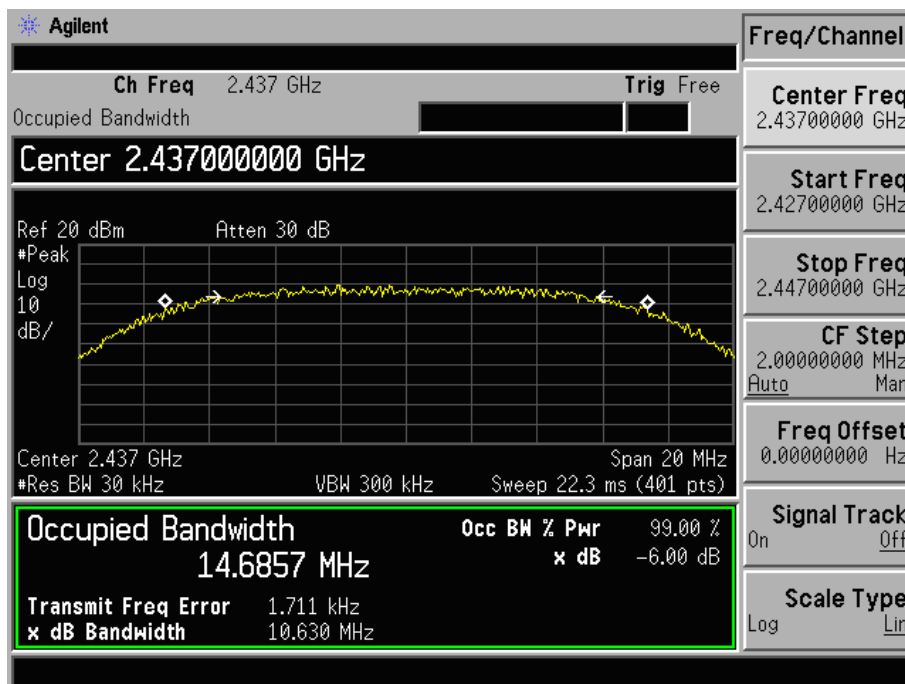
Test mode	Frequency MHz	6 dB Bandwidth kHz	Limit kHz
802.11b	2412	10798.0	500
	2437	10630.0	500
	2462	11049.0	500
802.11g	2412	16525.0	500
	2437	16528.0	500
	2462	16533.0	500

For 802.11b

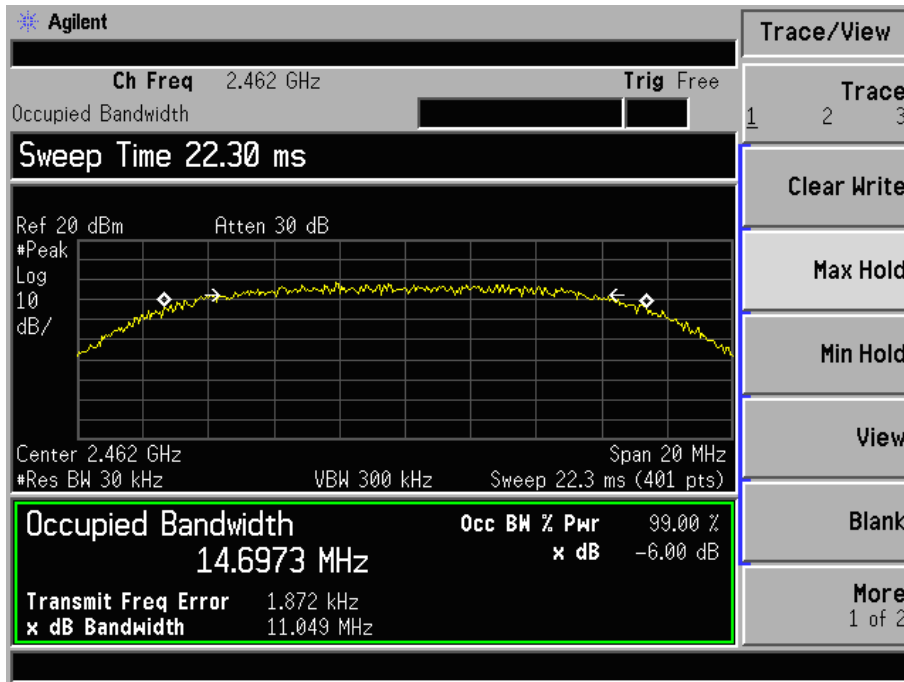
Low Channel:



Mid Channel:

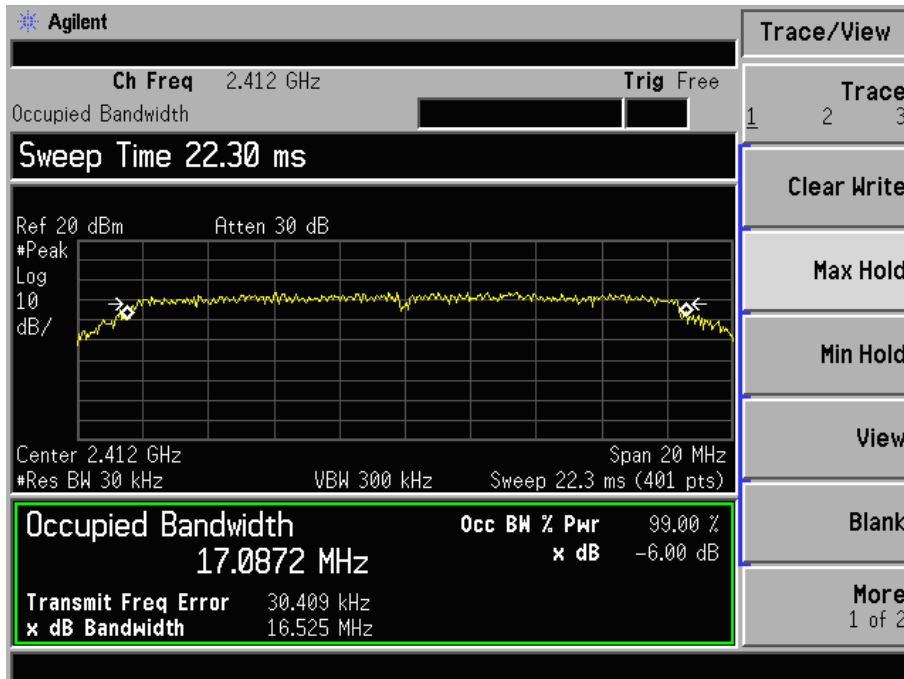


High Channel:

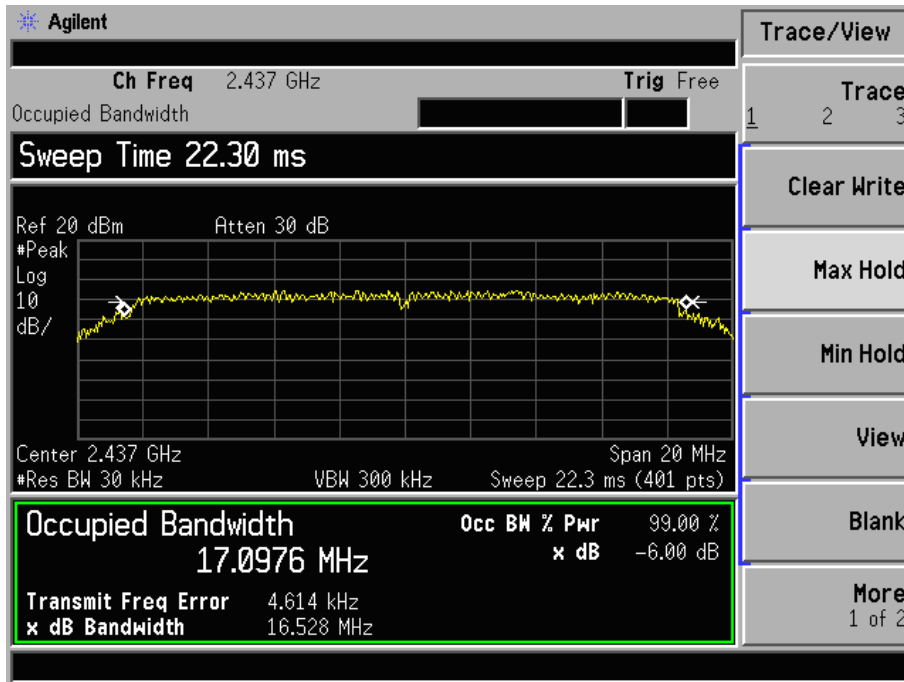


For 802.11g

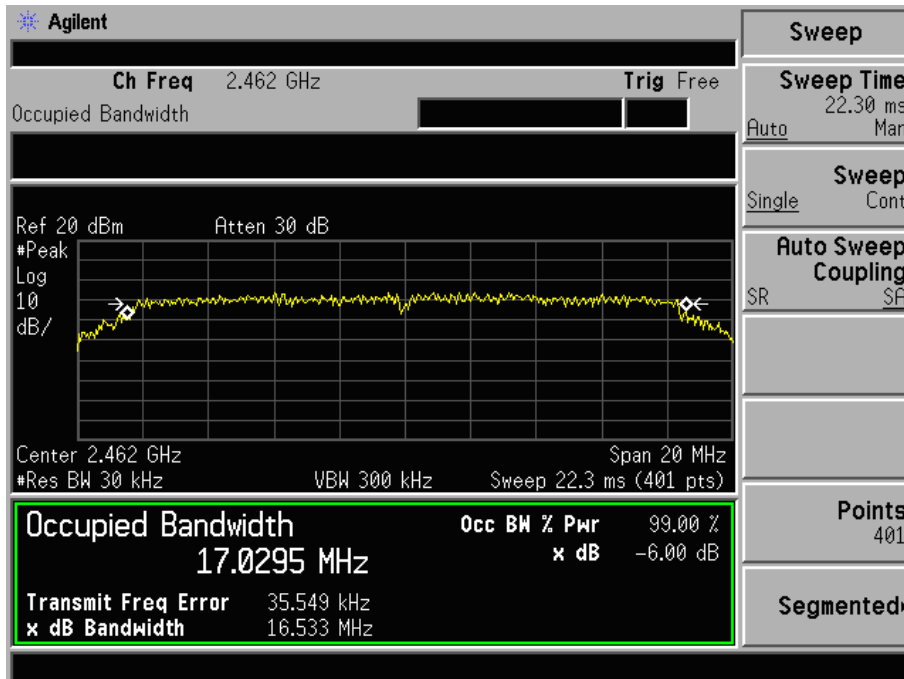
Low Channel:



Mid Channel:



High Channel:



7. POWER OUTPUT

7.1 Standard Applicable

According to 15.247(b)(3). For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

7.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2009-08-12	2010-08-11
RF Limiter	Agilent	11867A	MY42241685	2009-08-12	2010-08-11

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

7.3 Test Procedure

The device under test has an integral antenna and the power was measured on a radiated basis.

7.4 Environmental Conditions

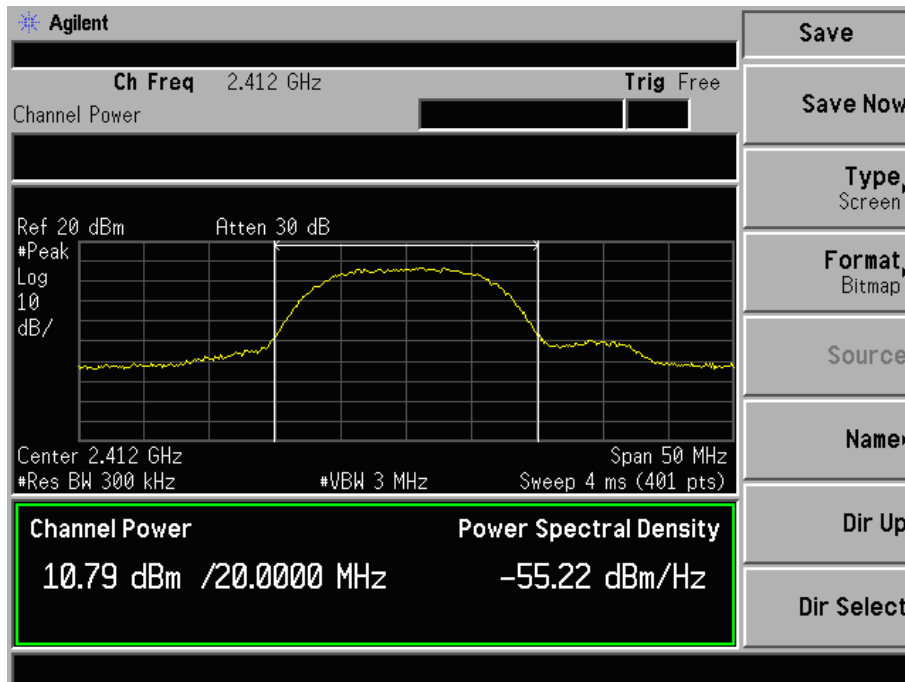
Temperature:	21° C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

7.5 Summary of Test Results/Plots

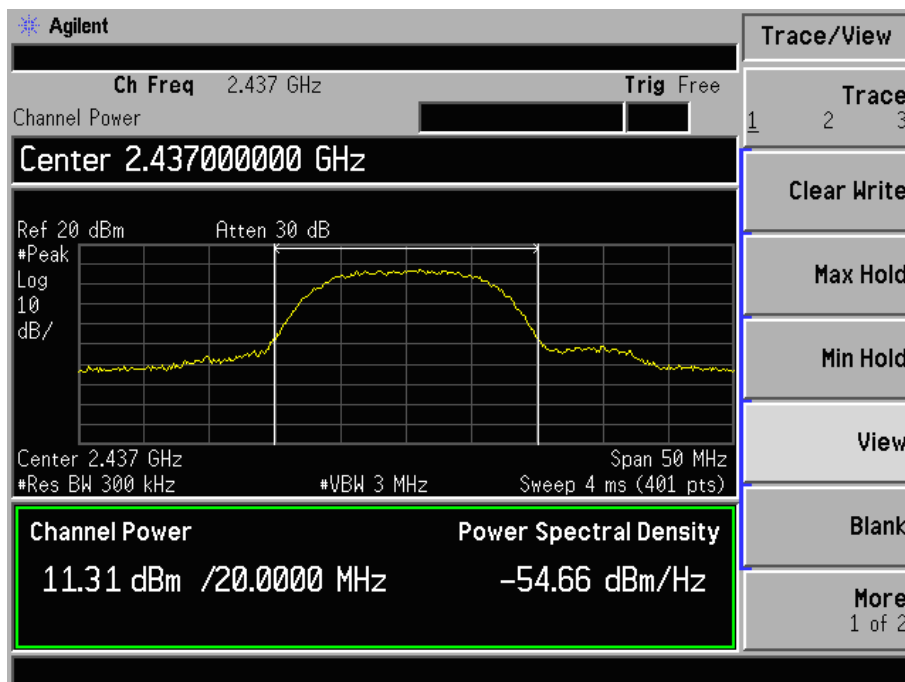
Test mode	Frequency MHz	Reading dBm	Output power W	Limit W
802.11b	2412	10.79	0.011995	1
	2437	11.31	0.013521	1
	2462	10.21	0.010495	1
802.11g	2412	8.24	0.006668	1
	2437	9.09	0.00811	1
	2462	8.27	0.006714	1

For 802.11b

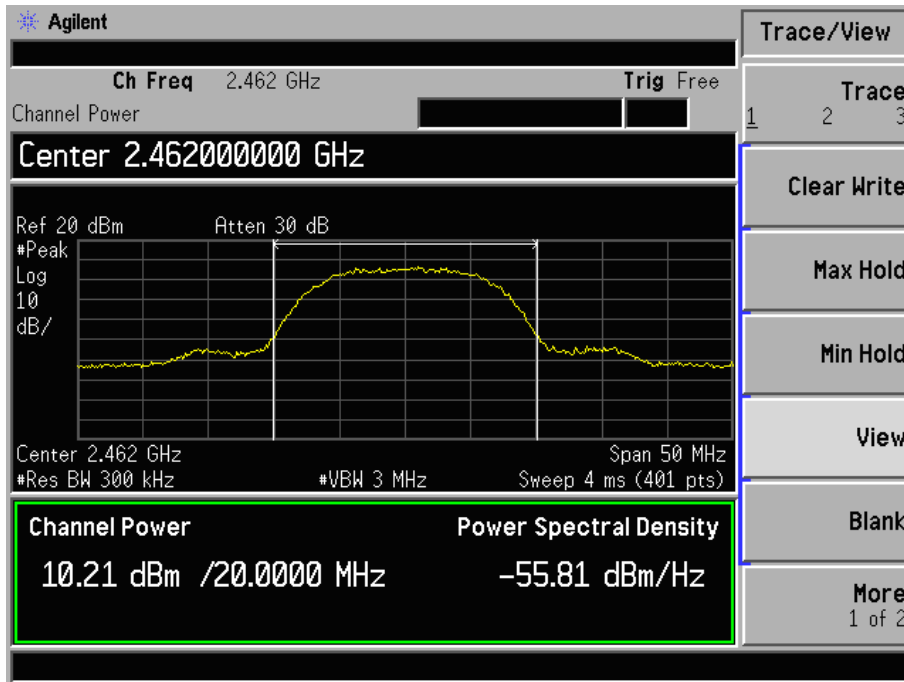
Low Channel:



Middle Channel:

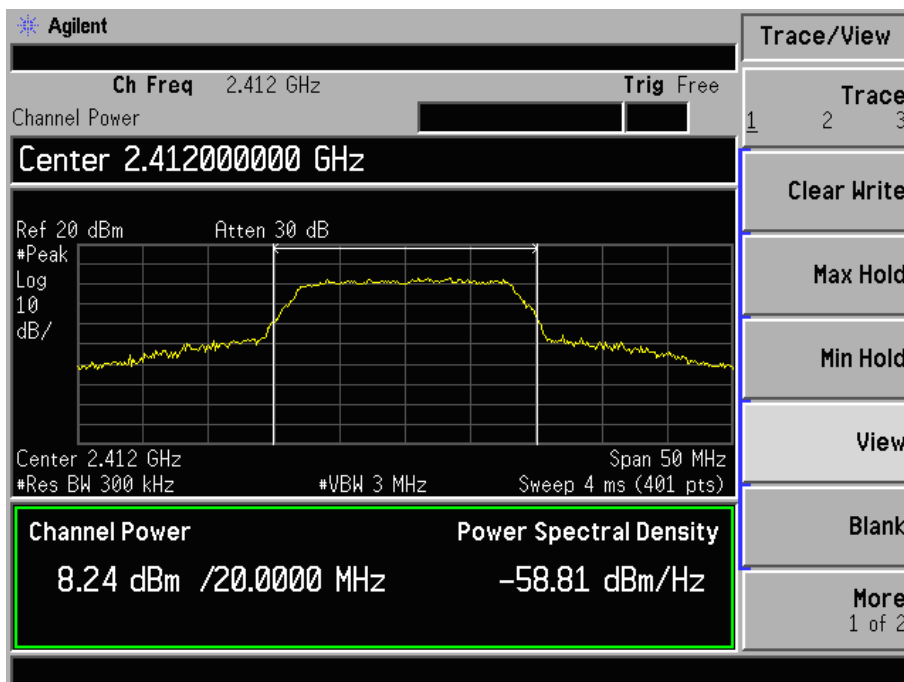


High Channel:

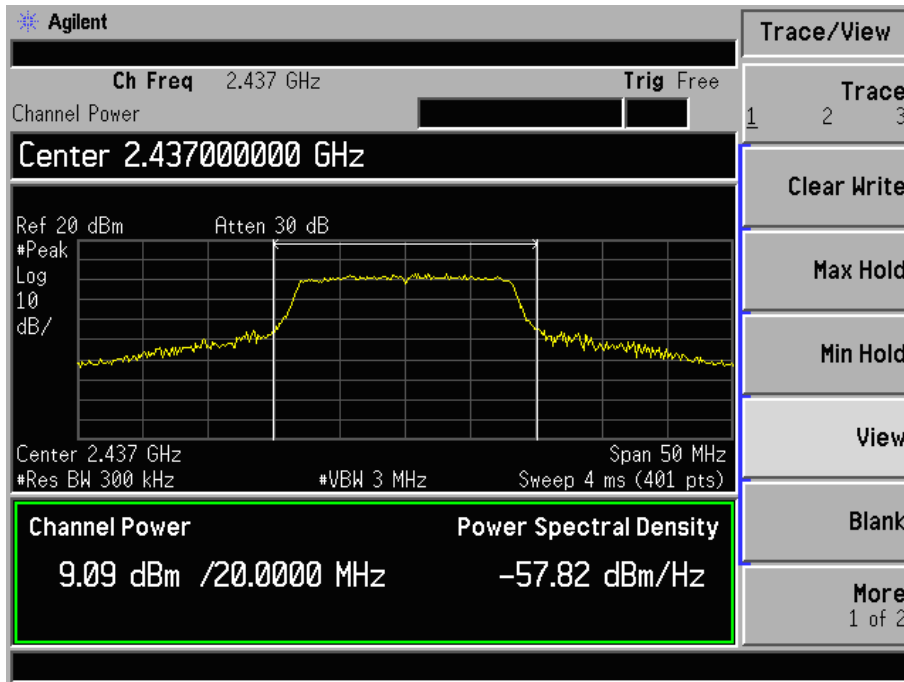


For 802.11g

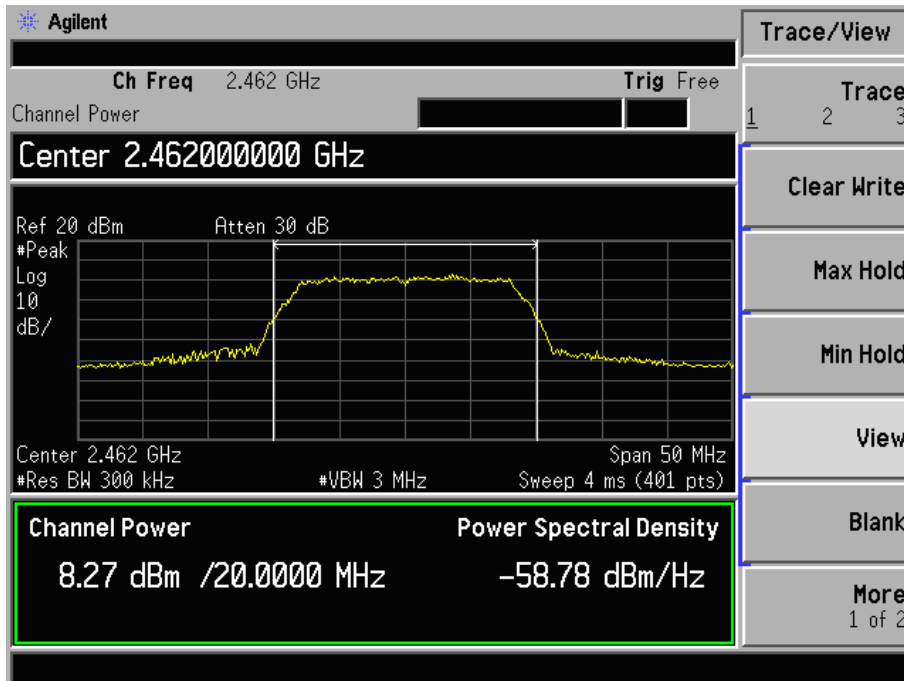
Low Channel:



Middle Channel:



High Channel:



8. FIELD STRENGTH OF SPURIOUS EMISSIONS

8.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 3.0 dB.

8.2 Standard Applicable

According to §15.247(c), 15.205 15.209(b) & 15.35 (b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Section 15.209:

30 - 88 MHz 40 dBuV/m @3M

88 -216 MHz 43.5 dBuV/m @3M

216 -960 MHz 46 dBuV/m @3M

Above 960 MHz 54dBuV/m @3M

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

Emissions that fall in the restricted bands (15.205) must be less than 54dBuV/m otherwise the spurious and harmonics must be attenuated by at least 20dB.

8.3 Test Equipment List and Details

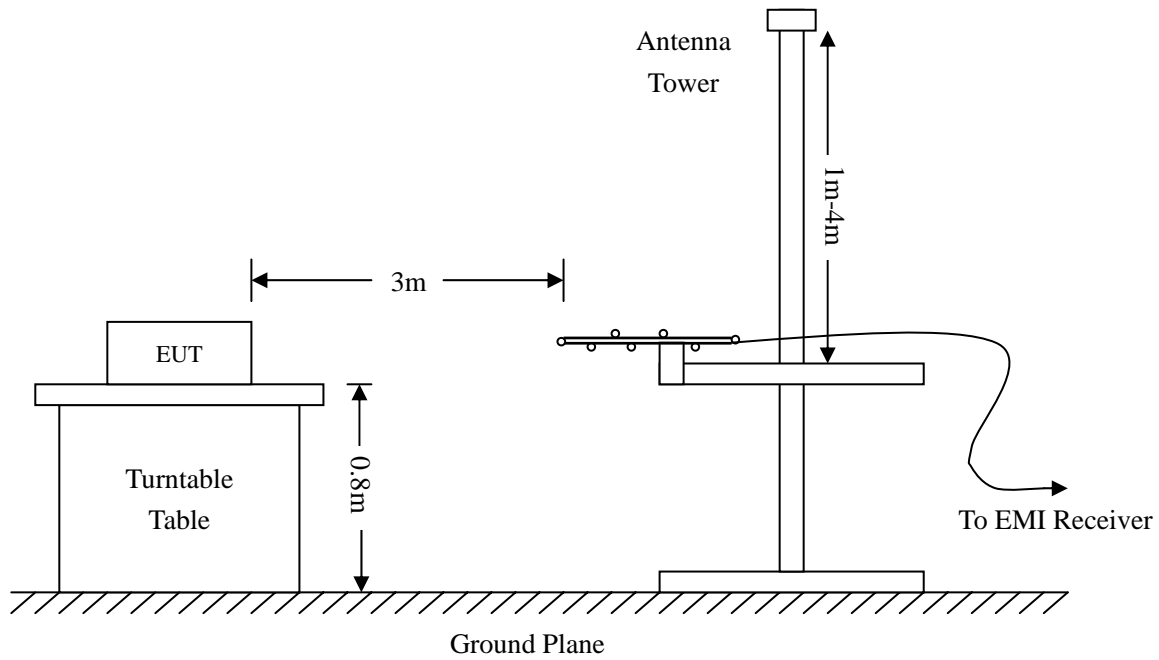
Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2009-08-12	2010-08-11
Positioning Controller	C&C	CC-C-1F	N/A	2009-08-12	2010-08-11
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2009-08-12	2010-08-11
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2009-08-12	2010-08-11
RF Switch	EM	EMSW18	SW060023	2009-08-12	2010-08-11
Amplifier	Agilent	8447F	3113A06717	2009-08-12	2010-08-11
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2009-08-12	2010-08-11
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2009-08-12	2010-08-11

8.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



During the radiation emission test, the test receiver was set with the following configurations:

Below 1GHz

- Start Frequency 30 MHz
- Stop Frequency..... 1000 MHz
- Quasi-Peak Detector RBW 120 kHz
- Quasi-Peak Detector VBW 1000 kHz
- Sweep Speed Auto

Above 1GHz

- Peak Detector RBW 1000 kHz
- Peak Detector VBW 3000 kHz
- Sweep Speed Auto

- Average Detector RBW..... 0.01 kHz
- Average Detector VBW 1000 kHz
- Sweep Speed Auto

8.5 Corrected Amplitude & Margin Calculation

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

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

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

8.6 Environmental Conditions

Temperature:	22° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

8.7 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst margin of:

-2.23 dB μ V at 958.7943 MHz in the Horizontal polarization, Transmitting 802.11g Low Channel test mode, 30 MHz to 25 GHz, 3Meters

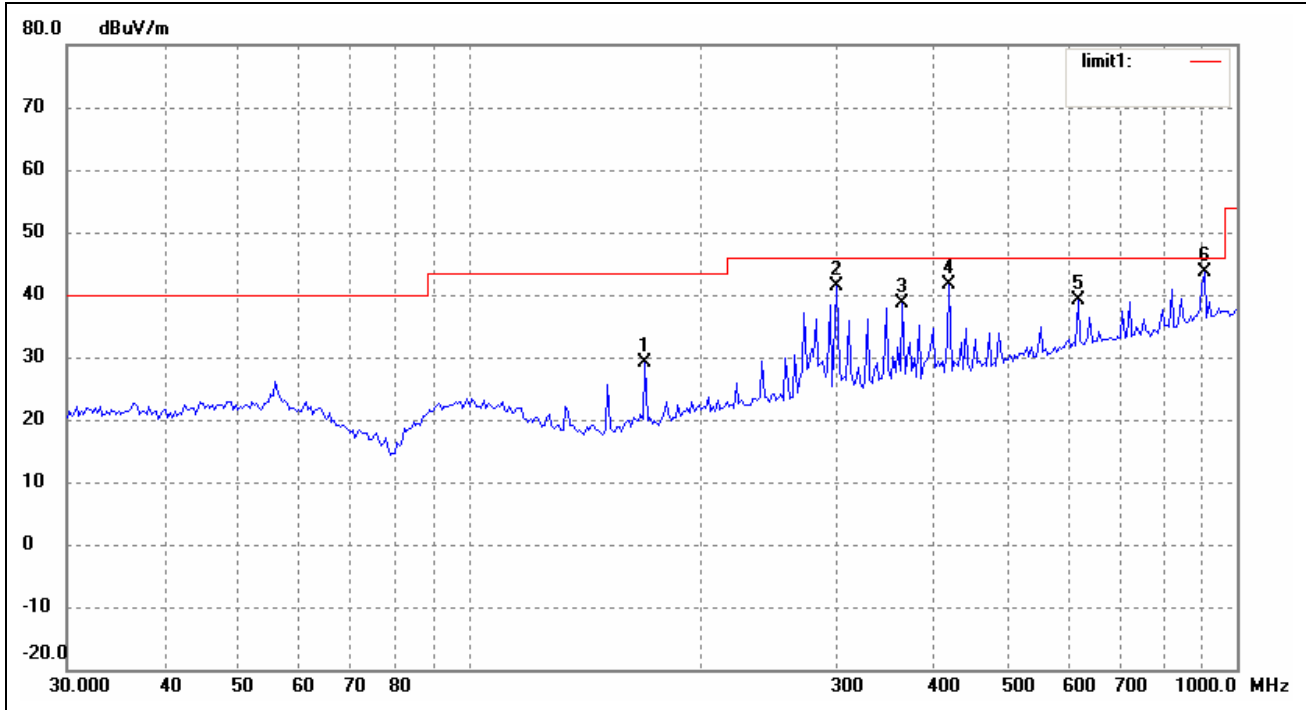
Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b)

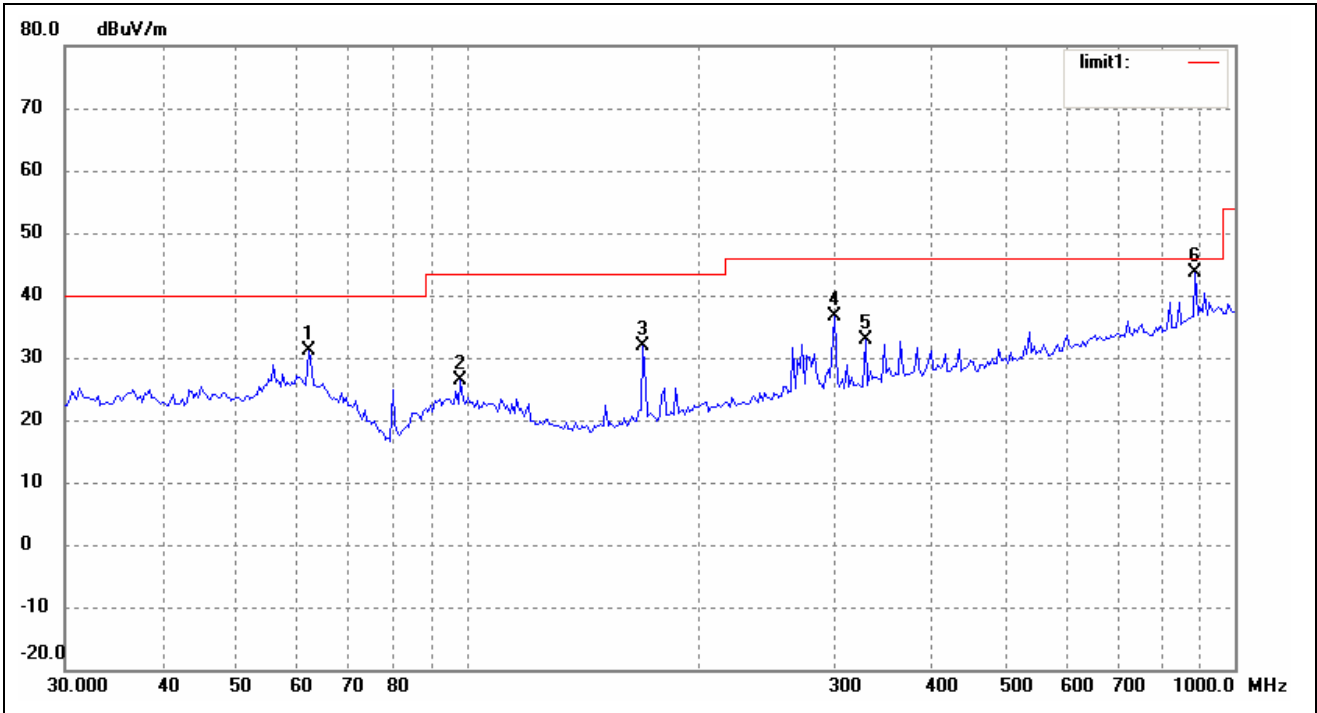
Comment: Low Channel

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	169.5990	24.30	4.87	29.17	43.50	-14.33	65	100	QP
2	301.4224	30.66	10.65	41.31	46.00	-4.69	10	100	QP
3	366.8231	26.47	12.16	38.63	46.00	-7.37	15	100	QP
4	422.0577	29.11	12.57	41.68	46.00	-4.32	20	100	QP
5	620.7096	22.78	16.25	39.03	46.00	-6.97	12	100	QP
6	906.4824	22.93	20.75	43.68	46.00	-2.32	15	100	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	62.2128	24.41	6.67	31.08	40.00	-8.92	10	100	peak
2	98.1419	18.02	8.30	26.32	43.50	-17.18	36	100	peak
3	169.5990	27.06	4.87	31.93	43.50	-11.57	45	100	peak
4	301.4224	26.05	10.65	36.70	46.00	-9.30	59	100	peak
5	330.1949	21.77	11.02	32.79	46.00	-13.21	360	100	peak

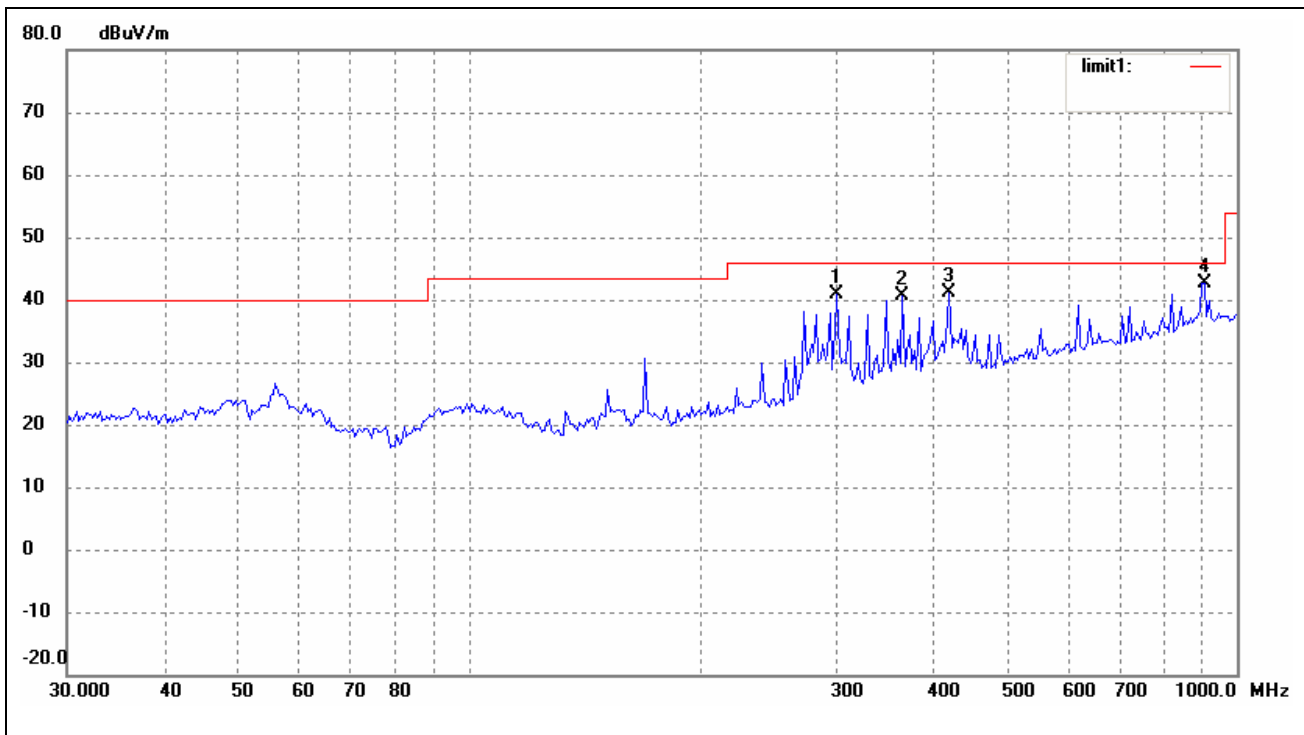
Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b)

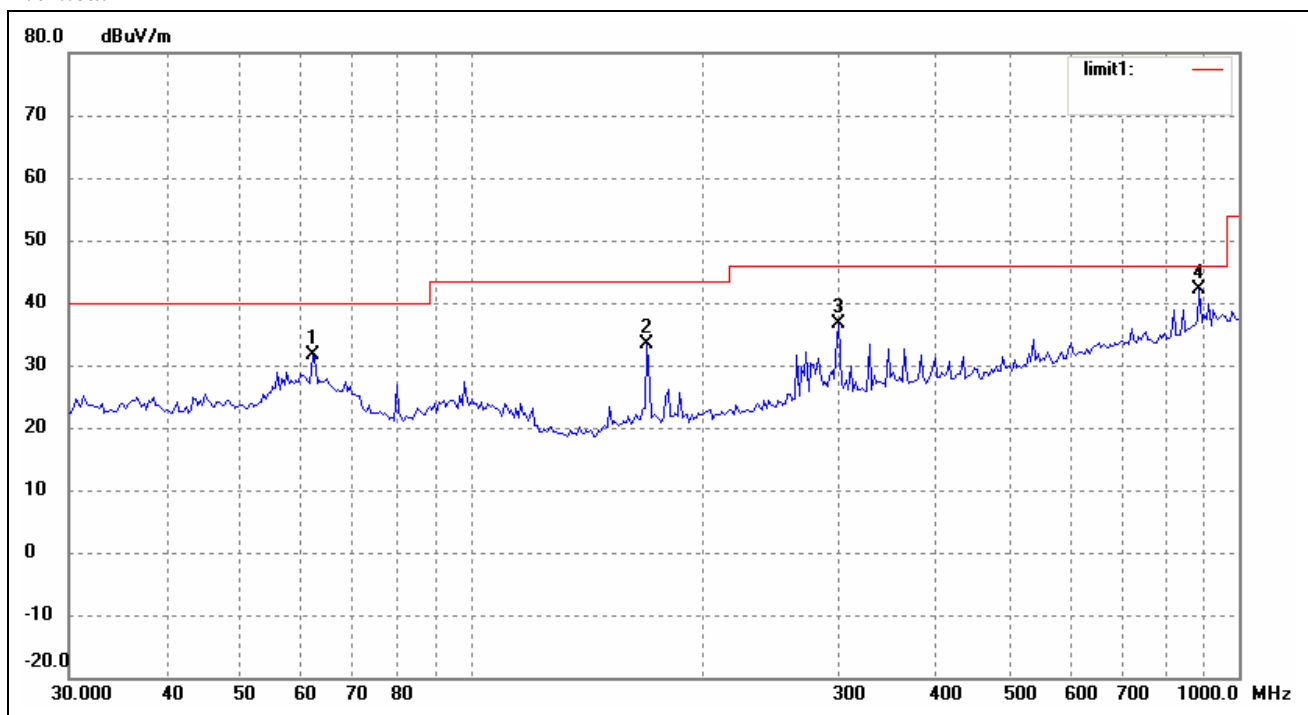
Comment: Middle Channel

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	301.4223	30.16	10.65	40.81	46.00	-5.19	15	100	QP
2	366.8231	28.47	12.16	40.63	46.00	-5.37	100	100	QP
3	422.0577	28.61	12.57	41.18	46.00	-4.82	1	100	QP
4	906.4823	21.93	20.75	42.68	46.00	-3.32	210	100	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	62.2128	24.91	6.67	31.58	40.00	-8.42	10	100	peak
2	169.5990	28.56	4.87	33.43	43.50	-10.07	36	100	peak
3	301.4224	26.05	10.65	36.70	46.00	-9.30	45	100	QP
4	887.6099	21.76	20.44	42.20	46.00	-3.80	59	100	QP

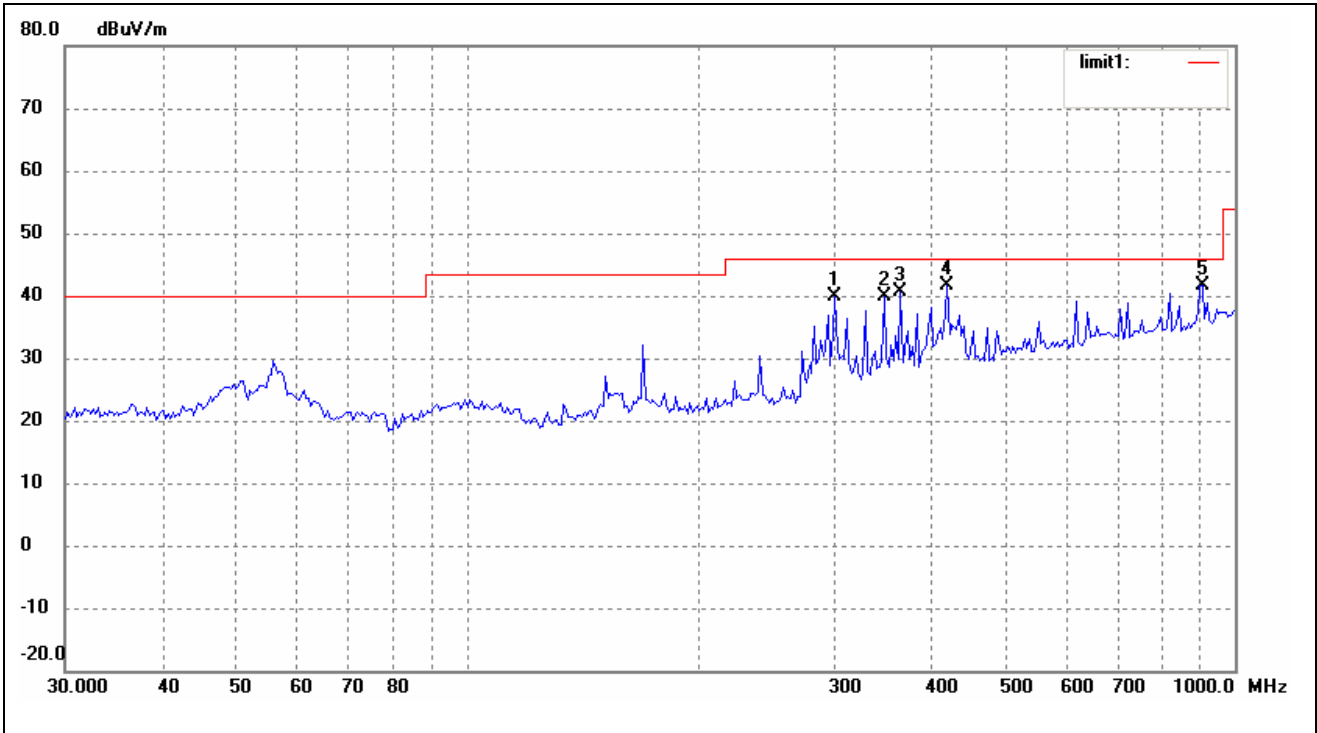
Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b)

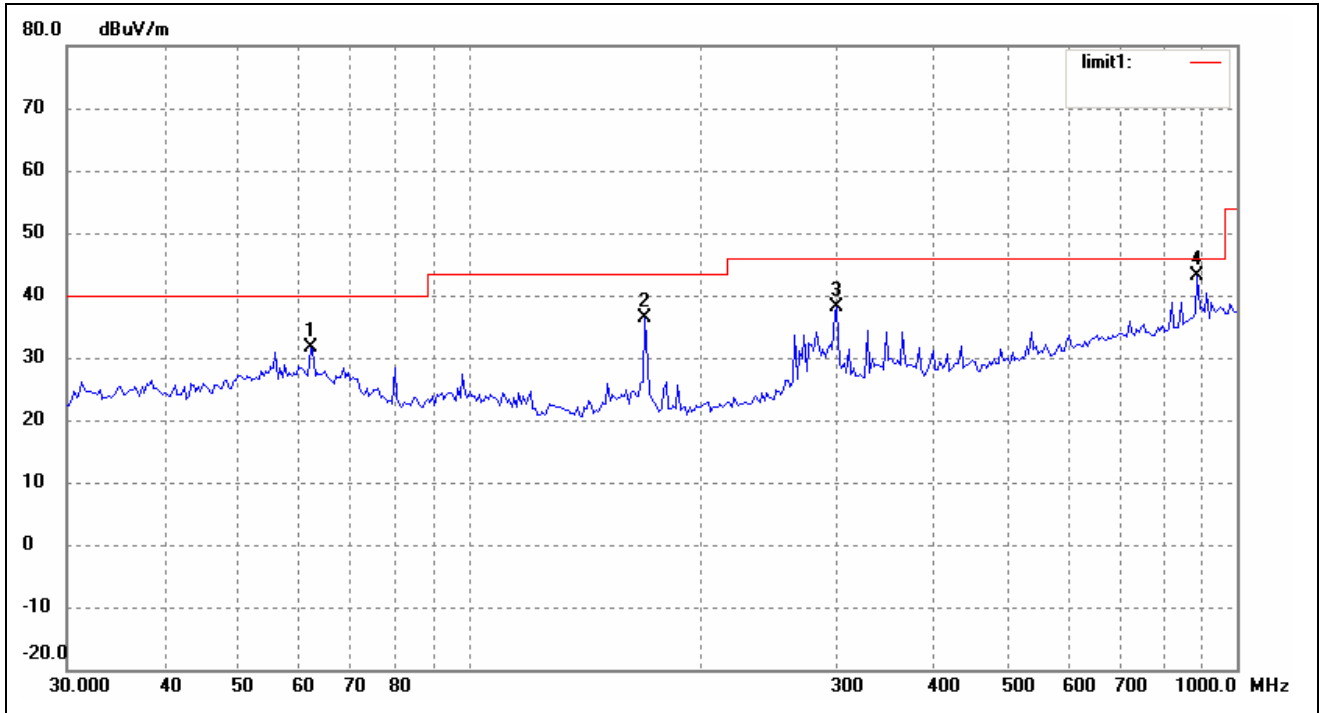
Comment: High Channel

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	301.4223	29.16	10.65	39.81	46.00	-6.19	23	100	QP
2	349.2500	28.00	11.85	39.85	46.00	-6.15	25	100	peak
3	366.8231	28.47	12.16	40.63	46.00	-5.37	69	100	QP
4	422.0577	29.11	12.57	41.68	46.00	-4.32	55	100	QP
5	906.4823	20.93	20.75	41.68	46.00	-4.32	46	100	QP

Vertical



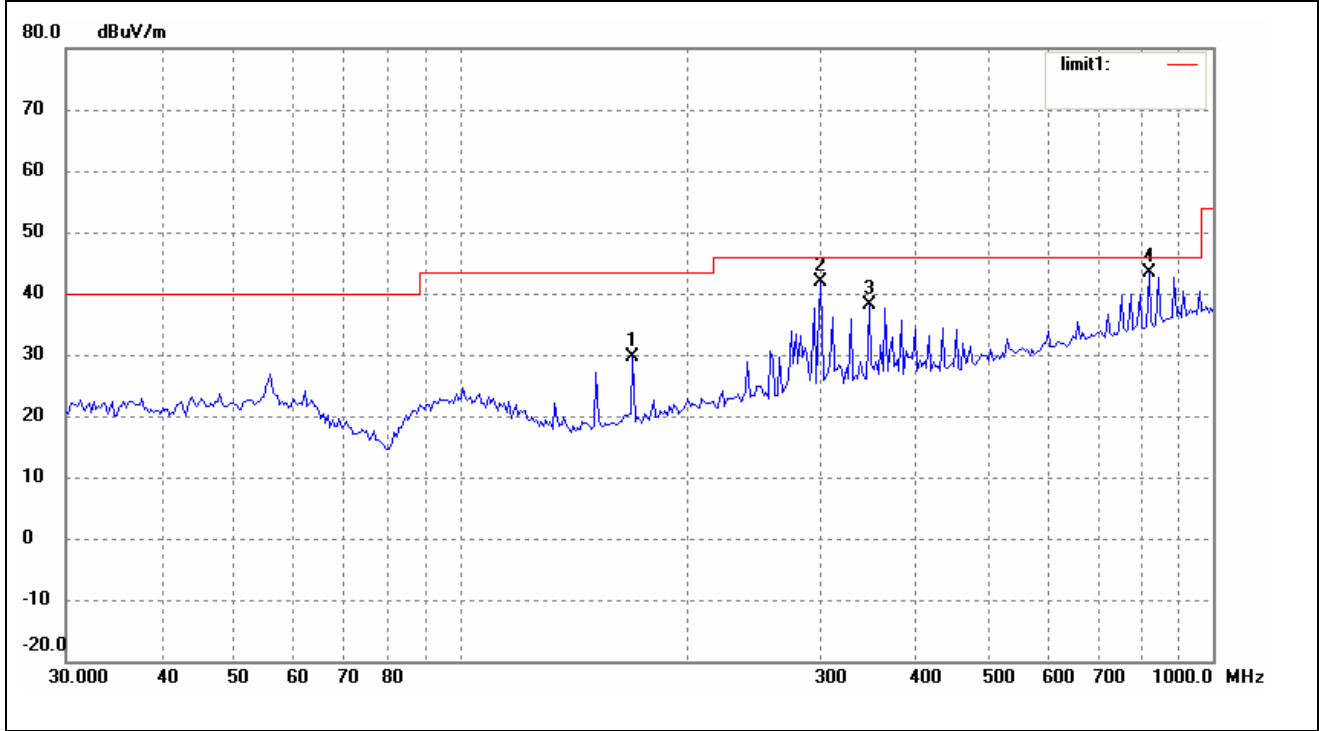
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	62.2128	24.91	6.67	31.58	40.00	-8.42	15	100	peak
2	169.5990	31.56	4.87	36.43	43.50	-7.07	54	100	QP
3	301.4224	27.55	10.65	38.20	46.00	-7.80	65	100	QP
4	887.6099	22.76	20.44	43.20	46.00	-2.80	41	100	QP

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g)

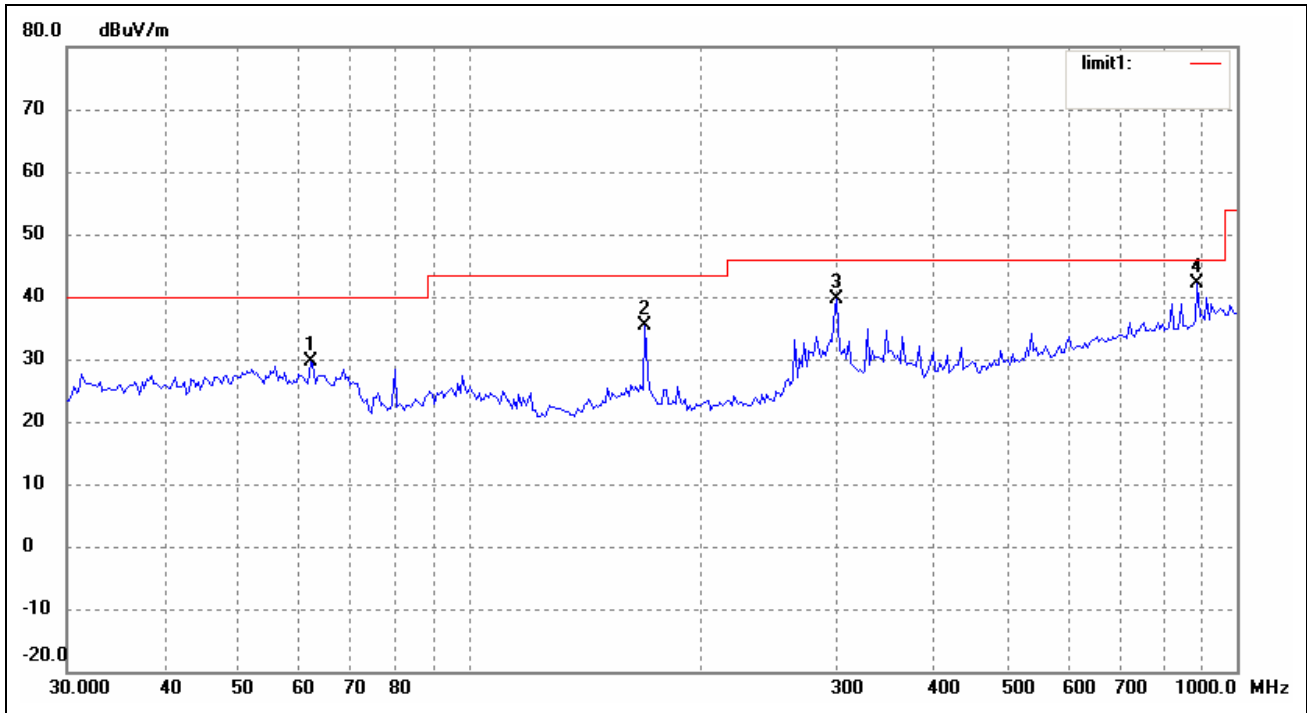
Comment: Low Channel

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	169.5990	24.75	4.87	29.62	43.50	-13.88	10	100	peak
2	301.4224	31.26	10.65	41.91	46.00	-4.09	28	100	QP
3	349.2500	26.33	11.85	38.18	46.00	-7.82	45	100	QP
4	821.7104	24.27	19.07	43.34	46.00	-2.66	200	100	QP

Vertical



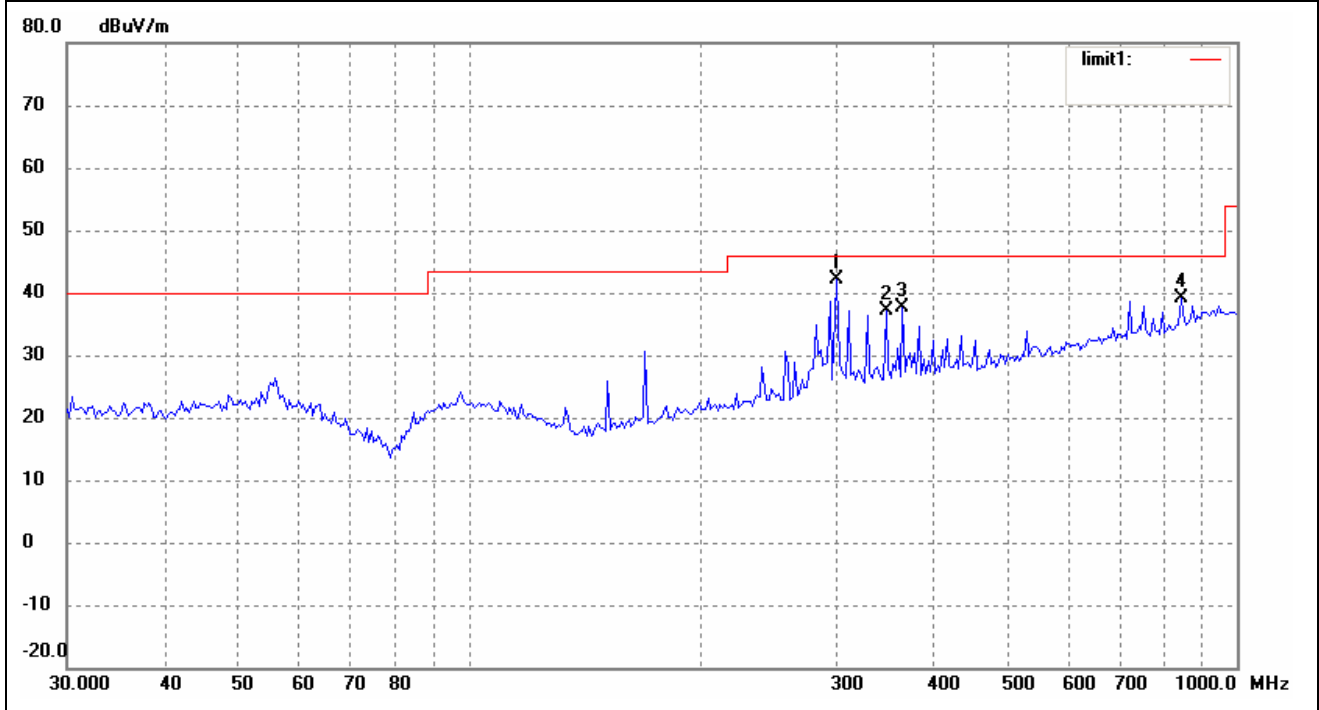
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	62.2128	22.91	6.67	29.58	40.00	-10.42	250	100	peak
2	169.5990	30.56	4.87	35.43	43.50	-8.07	63	100	QP
3	301.4224	29.05	10.65	39.70	46.00	-6.30	320	100	QP
4	887.6099	21.76	20.44	42.20	46.00	-3.80	122	100	QP

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g)

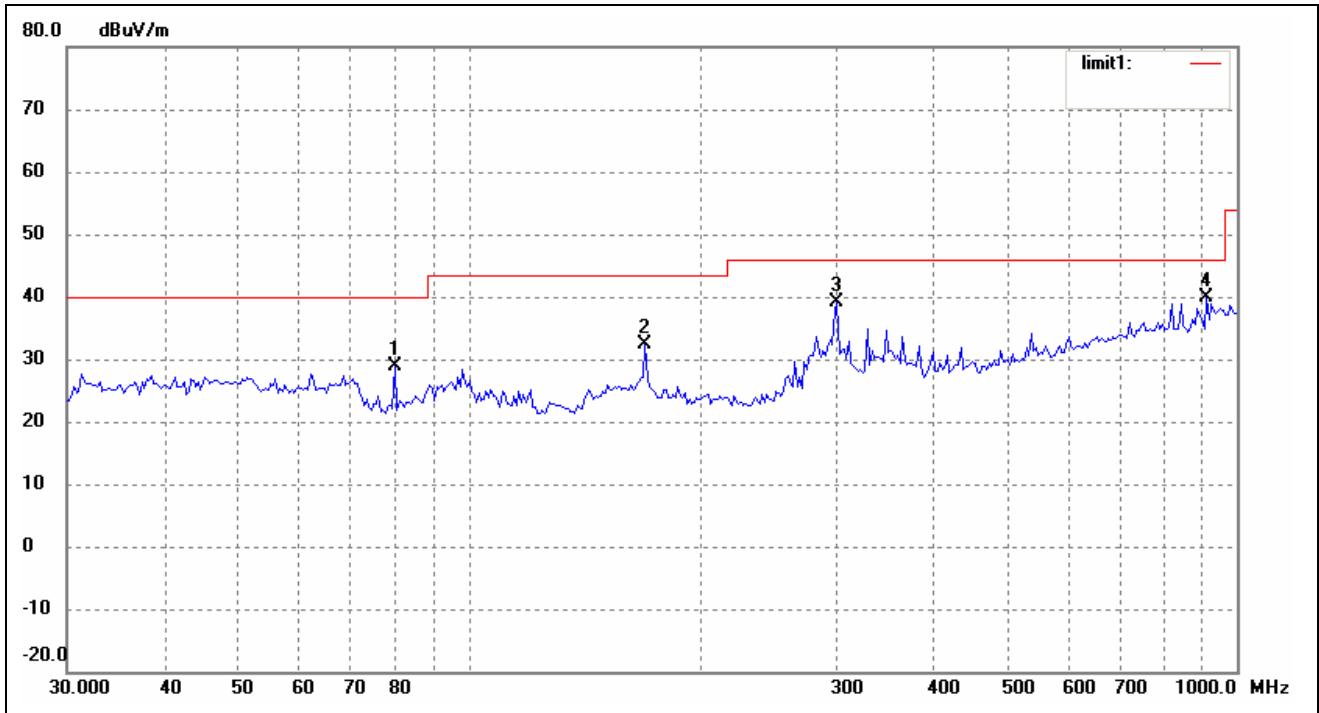
Comment: Middle Channel

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	301.4224	31.39	10.65	42.04	46.00	-3.96	10	100	QP
2	349.2500	25.33	11.85	37.18	46.00	-8.82	28	100	QP
3	366.8231	25.57	12.16	37.73	46.00	-8.27	45	100	QP
4	845.0878	19.60	19.54	39.14	46.00	-6.86	200	100	QP

Vertical



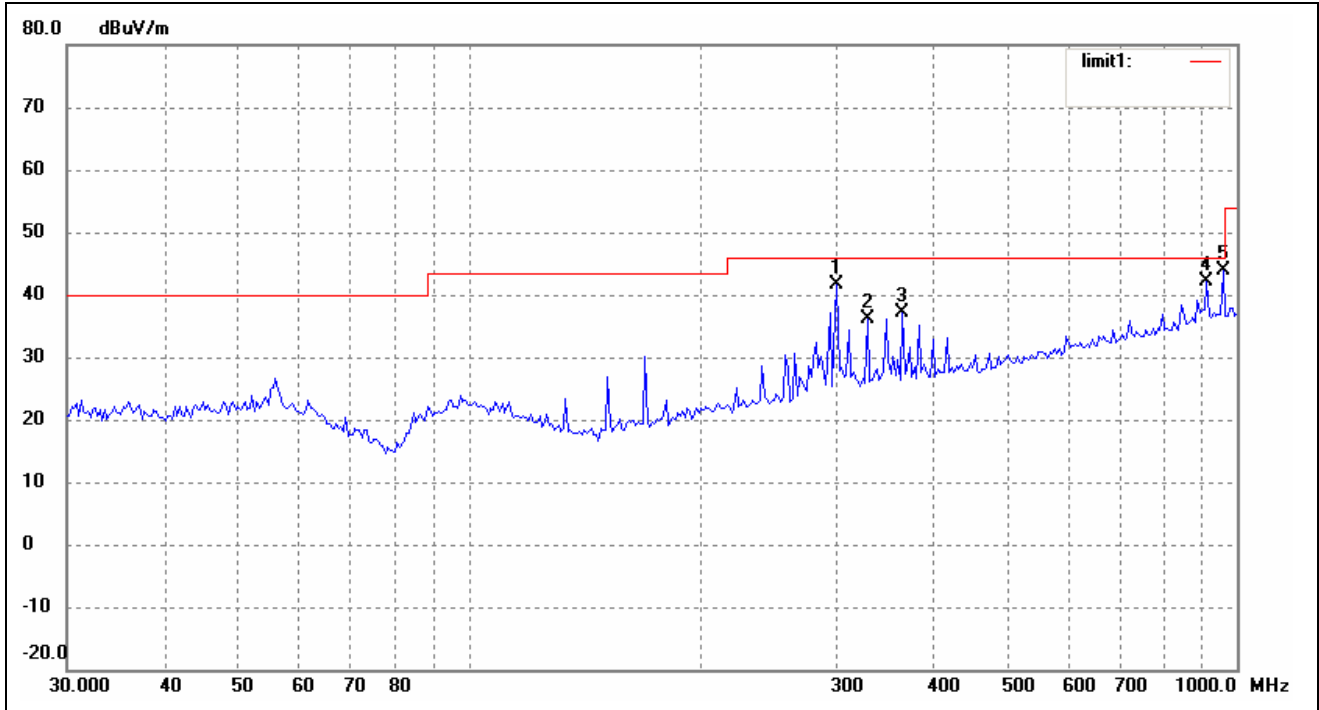
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	80.0806	28.27	0.70	28.97	40.00	-11.03	50	100	peak
2	169.5990	27.56	4.87	32.43	43.50	-11.07	263	100	peak
3	301.4224	28.55	10.65	39.20	46.00	-6.80	30	100	QP
4	912.8620	19.18	20.79	39.97	46.00	-6.03	12	100	QP

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g)

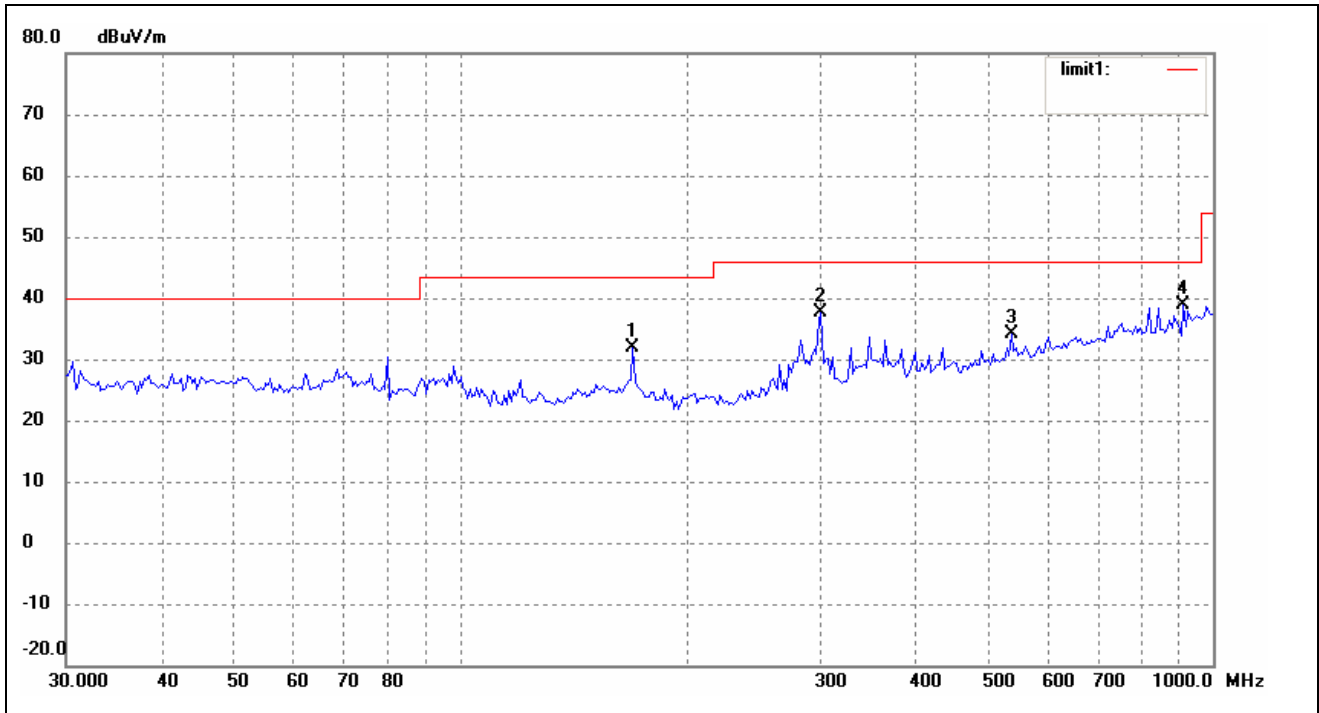
Comment: High Channel

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	301.4224	31.06	10.65	41.71	46.00	-4.29	10	100	QP
2	330.1949	25.07	11.02	36.09	46.00	-9.91	28	100	Peak
3	366.8231	25.00	12.16	37.16	46.00	-8.84	45	100	QP
4	912.8620	21.39	20.79	42.18	46.00	-3.82	200	100	QP
5	958.7943	22.62	21.15	43.77	46.00	-2.23	25	100	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	169.5990	27.06	4.87	31.93	43.50	-11.57	50	100	peak
2	301.4224	27.05	10.65	37.70	46.00	-8.30	263	100	QP
3	539.4775	19.38	14.85	34.23	46.00	-11.77	30	100	peak
4	912.8620	18.18	20.79	38.97	46.00	-7.03	12	100	QP

Spurious Emission Above 1GHz

Test Mode: Transmitting (802.11b)

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	55.1	90	V	34.1	5.2	33.0	61.4	74	-12.6
7236.0	PK	51.2	270	V	37.4	6.1	33.5	61.2	74	-12.8
7236.0	PK	50	180	H	37.4	6.1	33.5	60.0	74	-14.0
4824.0	PK	54.4	45	H	34.1	5.2	33.0	60.7	74	-13.3
4824.0	AV	45.7	270	V	34.1	5.2	33.0	52.0	54	-2.0
7236.0	AV	41.4	90	V	37.4	6.1	33.5	51.4	54	-2.6
7236.0	AV	40.2	45	H	37.4	6.1	33.5	50.2	54	-3.8
4824.0	AV	44.4	60	H	34.1	5.2	33.0	50.7	54	-3.3
Middle Channel (1G to 25GHz)										
7311.0	PK	51.8	45	V	37.4	6.1	33.5	61.8	74	-12.2
4874.0	PK	54.0	270	V	34.1	5.2	33.0	60.3	74	-13.7
7311.0	PK	49.5	45	H	37.4	6.1	33.5	59.5	74	-14.5
4874.0	PK	53.9	180	H	34.1	5.2	33.0	60.2	74	-13.8
7311.0	AV	42.6	270	V	37.4	6.1	33.5	52.6	54	-1.4
4874.0	AV	45.5	90	V	34.1	5.2	33.0	51.8	54	-2.2
7311.0	AV	40.2	60	H	37.4	6.1	33.5	50.2	54	-3.8
4874.0	AV	42.4	45	H	34.1	5.2	33.0	48.7	54	-5.3
High Channel (1G to 25GHz)										
4924.0	PK	55.4	270	V	34.1	5.2	33.0	61.7	74	-12.3
7386.0	PK	51.5	45	V	37.4	6.1	33.5	61.5	74	-12.5
4924.0	PK	53.8	180	H	34.1	5.2	33.0	60.1	74	-13.9
7386.0	PK	49.7	45	H	37.4	6.1	33.5	59.7	74	-14.3
4924.0	AV	46.4	90	V	34.1	5.2	33.0	52.7	54	-1.3
7386.0	AV	41.8	270	V	37.4	6.1	33.5	51.8	54	-2.2
4924.0	AV	45.0	60	H	34.1	5.2	33.0	51.3	54	-2.7
7386.0	AV	40.6	60	H	37.4	6.1	33.5	50.6	54	-3.4

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

Spurious Emission Above 1GHz

Test Mode: Transmitting (802.11g)

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	56.0	90	V	34.1	5.2	33.0	62.3	74	-11.7
7236.0	PK	51.8	270	V	37.4	6.1	33.5	61.8	74	-12.2
7236.0	PK	50.5	180	H	37.4	6.1	33.5	60.5	74	-13.5
4824.0	PK	56.2	45	H	34.1	5.2	33.0	62.5	74	-11.5
4824.0	AV	46.3	270	V	34.1	5.2	33.0	52.6	54	-1.4
7236.0	AV	41.8	90	V	37.4	6.1	33.5	51.8	54	-2.2
7236.0	AV	40.9	45	H	37.4	6.1	33.5	50.9	54	-3.1
4824.0	AV	45.1	60	H	34.1	5.2	33.0	51.4	54	-2.6
Middle Channel (1G to 25GHz)										
7311.0	PK	52.6	45	V	37.4	6.1	33.5	62.6	74	-11.4
4874.0	PK	55.2	270	V	34.1	5.2	33.0	61.5	74	-12.5
7311.0	PK	50.5	45	H	37.4	6.1	33.5	60.5	74	-13.5
4874.0	PK	54.8	180	H	34.1	5.2	33.0	61.1	74	-12.9
7311.0	AV	42.4	270	V	37.4	6.1	33.5	52.4	54	-1.6
4874.0	AV	45.2	90	V	34.1	5.2	33.0	51.5	54	-2.5
7311.0	AV	40.7	60	H	37.4	6.1	33.5	50.7	54	-3.3
4874.0	AV	43.3	45	H	34.1	5.2	33.0	49.6	54	-4.4
High Channel (1G to 25GHz)										
4924.0	PK	55.6	270	V	34.1	5.2	33.0	61.9	74	-12.1
7386.0	PK	51.7	45	V	37.4	6.1	33.5	61.7	74	-12.3
4924.0	PK	54.5	180	H	34.1	5.2	33.0	60.8	74	-13.2
7386.0	PK	50.5	45	H	37.4	6.1	33.5	60.5	74	-13.5
4924.0	AV	46.0	90	V	34.1	5.2	33.0	52.3	54	-1.7
7386.0	AV	41.4	270	V	37.4	6.1	33.5	51.4	54	-2.6
4924.0	AV	44.9	60	H	34.1	5.2	33.0	51.2	54	-2.8
7386.0	AV	40.3	60	H	37.4	6.1	33.5	50.3	54	-3.7

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

9. OUT OF BAND EMISSIONS

9.1 Standard Applicable

According to §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

9.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2009-07-08	2010-07-07
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2009-07-08	2010-07-07
Positioning Controller	C&C	CC-C-1F	N/A	2009-07-08	2010-07-07
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2009-07-08	2010-07-07
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2009-07-08	2010-07-07
RF Switch	EM	EMSW18	SW060023	2009-07-08	2010-07-07
Amplifier	Agilent	8447F	3113A06717	2009-07-08	2010-07-07
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2009-07-08	2010-07-07
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2009-07-08	2010-07-07

9.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW, VBW=100KHz, Span=50MHz, Sweep = auto
3. Set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2438.5MHz, then mark the higher-level emission for comparing with the FCC rules.

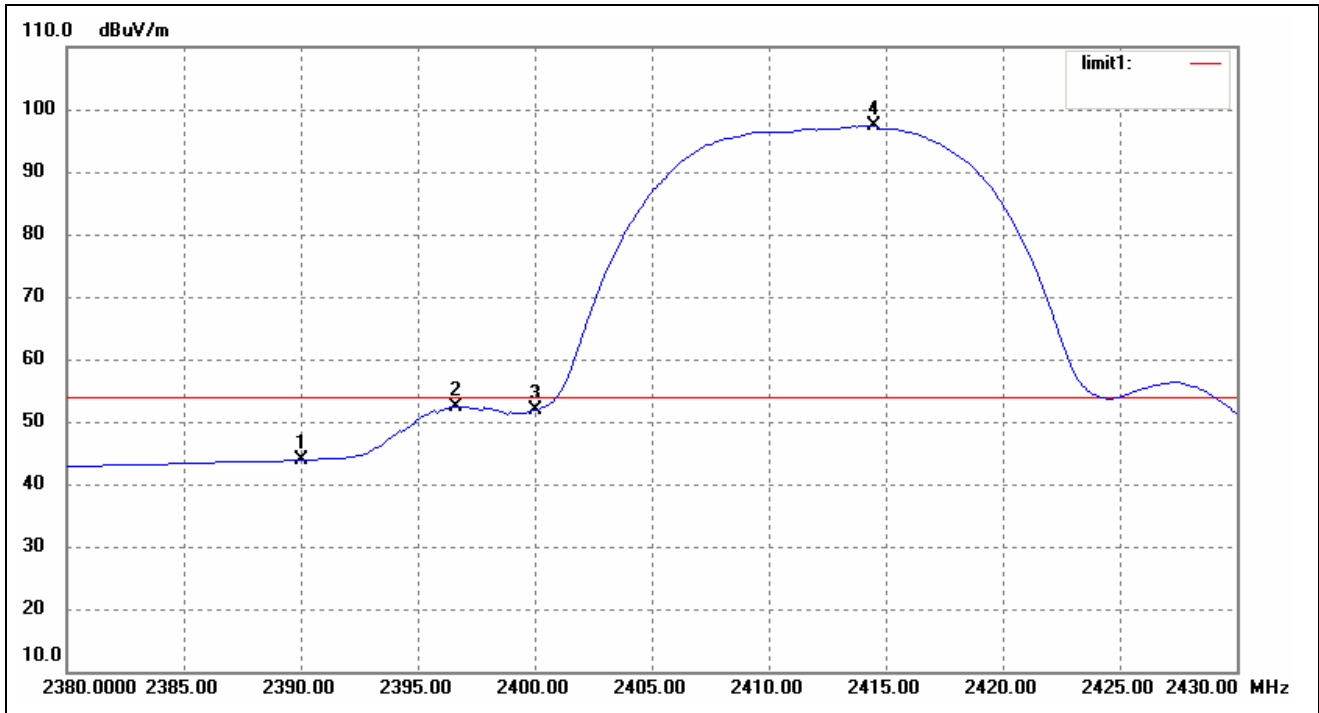
9.4 Environmental Conditions

Temperature:	21° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

9.5 Summary of Test Results/Plots

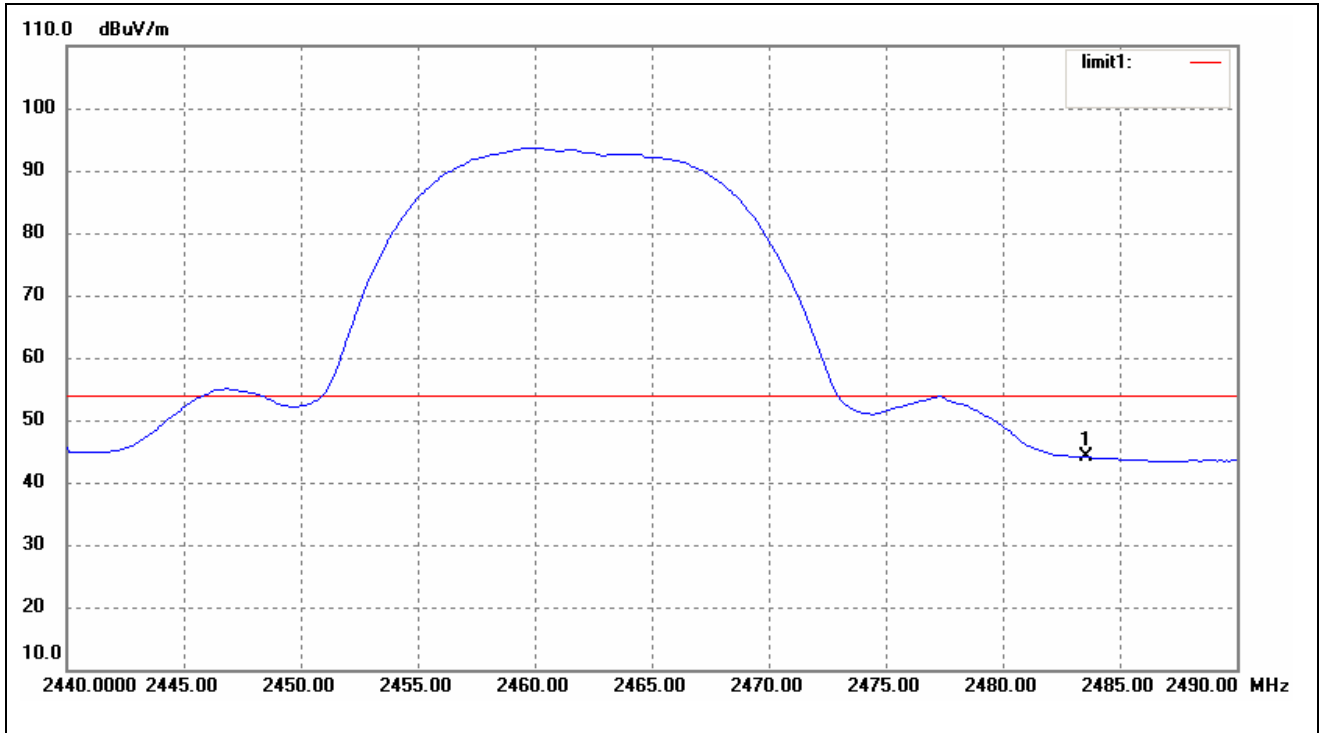
Test mode	Frequency MHz	Limit dBuV /dB	Result
802.11b	2390.00	<54dBuv	Pass
	2400.00	>20dB	Pass
	2483.50	<54dBuv	Pass
802.11g	2390.00	<54dBuv	Pass
	2400.00	>20dB	Pass
	2483.50	<54dBuv	Pass

For 802.11b
Lowest Bandedge



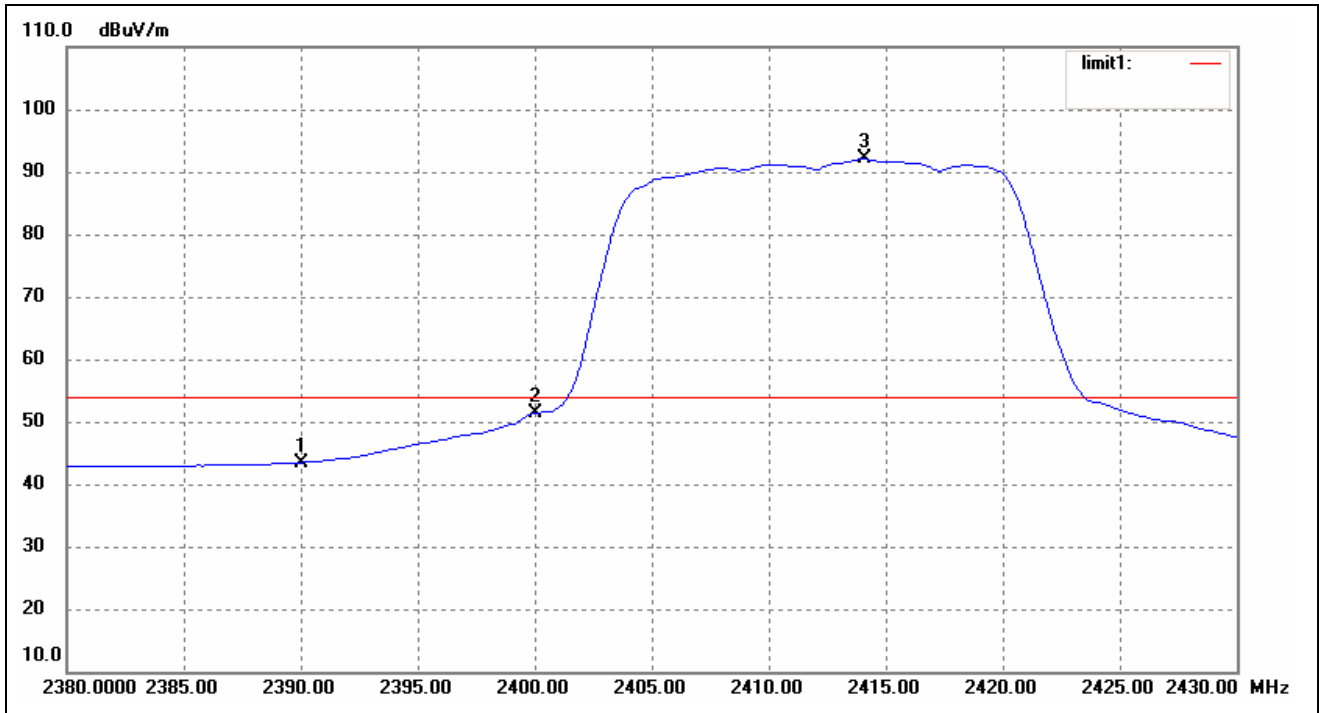
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	2390.000	8.31	35.59	43.90	54.00	-10.10	224	149	Ave
	2390.000	20.31	35.59	55.90	74.00	-18.10	224	149	peak
2	2396.633	16.74	35.65	52.39	54.00	-1.61	159	126	Ave
3	2400.000	16.17	35.68	51.85	54.00	-2.15	98	120	Ave
4	2414.369	61.66	35.73	97.39	/	/	/	/	Ave

Highest Bandedge



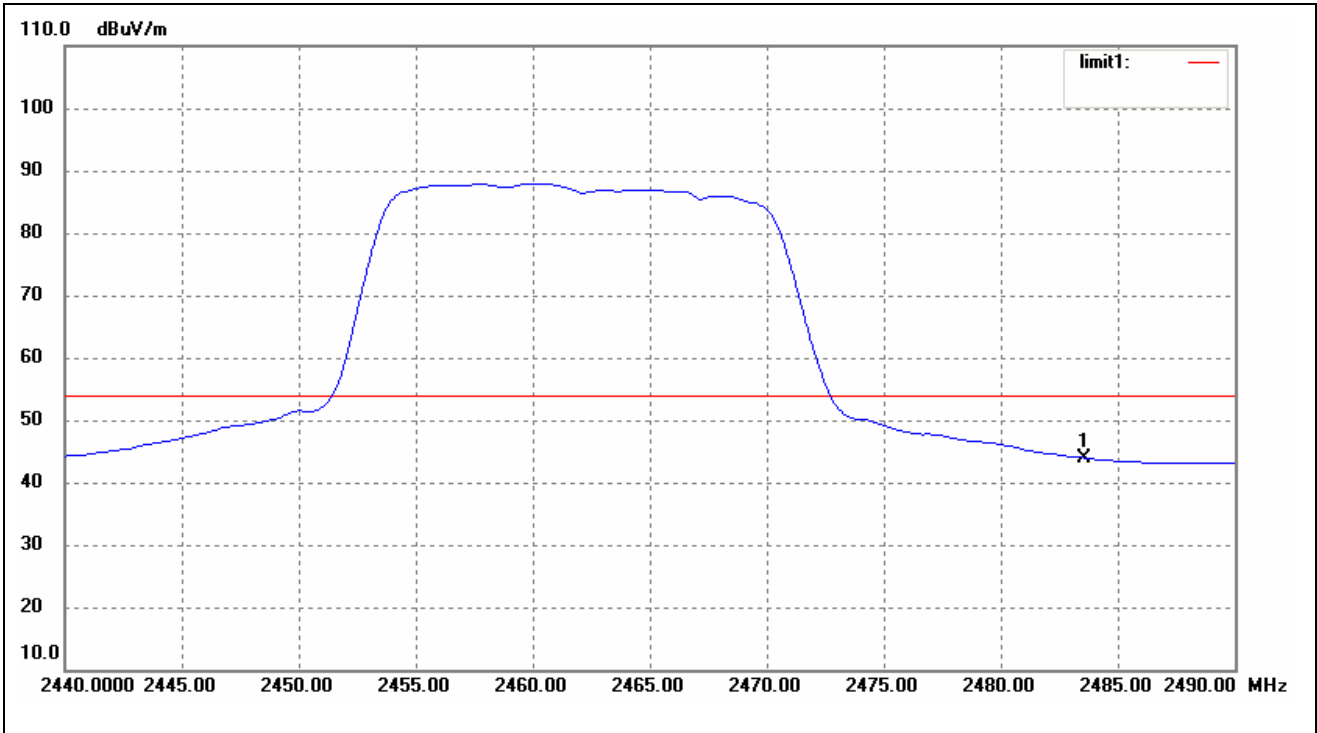
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	2483.500	8.11	35.97	44.08	54.00	-9.92	100	144	Ave
	2483.500	21.01	35.97	56.98	74.00	-17.02	100	144	peak

For 802.11g
Lowest Bandedge



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	2390.000	7.90	35.59	43.49	54.00	-10.51	134	110	Ave
	2390.000	18.91	35.59	54.50	74.00	-19.5	159	120	peak
2	2400.000	15.77	35.68	51.45	54.00	-2.55	222	110	Ave
3	2413.968	56.30	35.73	92.03	/	/	/	/	Ave

Highest Bandedge



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	2483.500	7.98	35.97	43.95	54.00	-10.05	147	150	Ave
	2483.500	19.25	35.97	55.22	74.00	-18.78	147	150	peak

EXHIBIT 1- PRODUCT LABELING

Proposed FCC ID Label Format

FCC ID: XR3BOOX60

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.

Specifications: Text is Black in color and justified. Labels are printed in indelible ink on permanent adhesive silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT.

Proposed Label Location on EUT

FCC ID Label Location

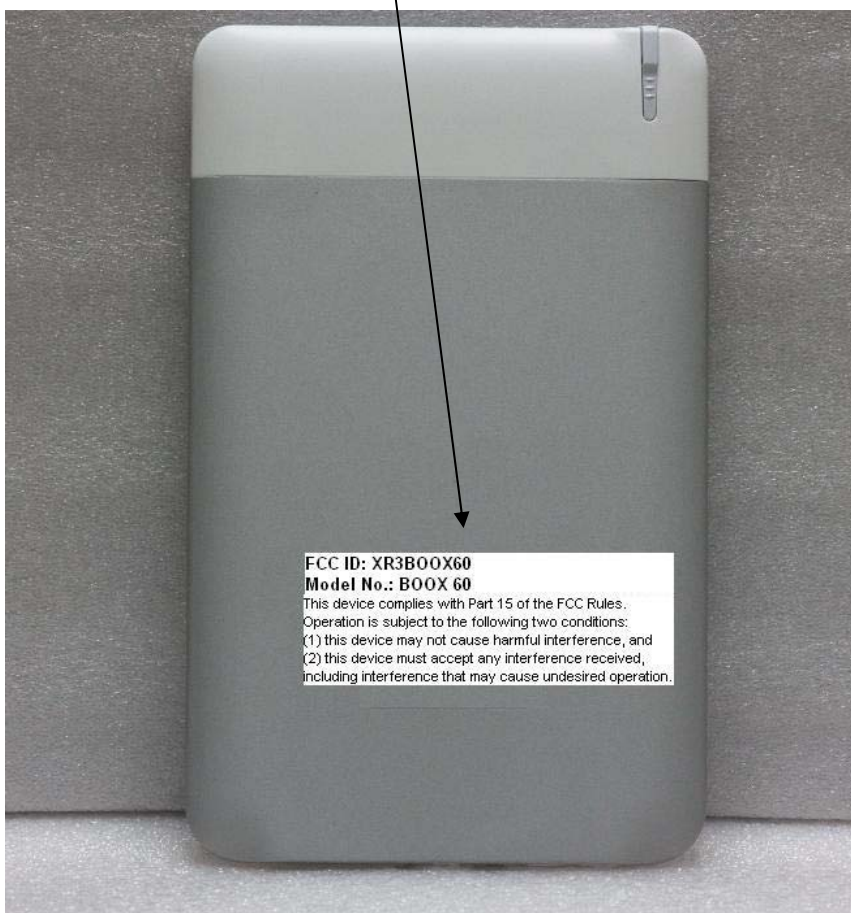


EXHIBIT 2 - EUT EXTERNAL PHOTOGRAPHS

EUT View



EUT View 1



EUT View 2



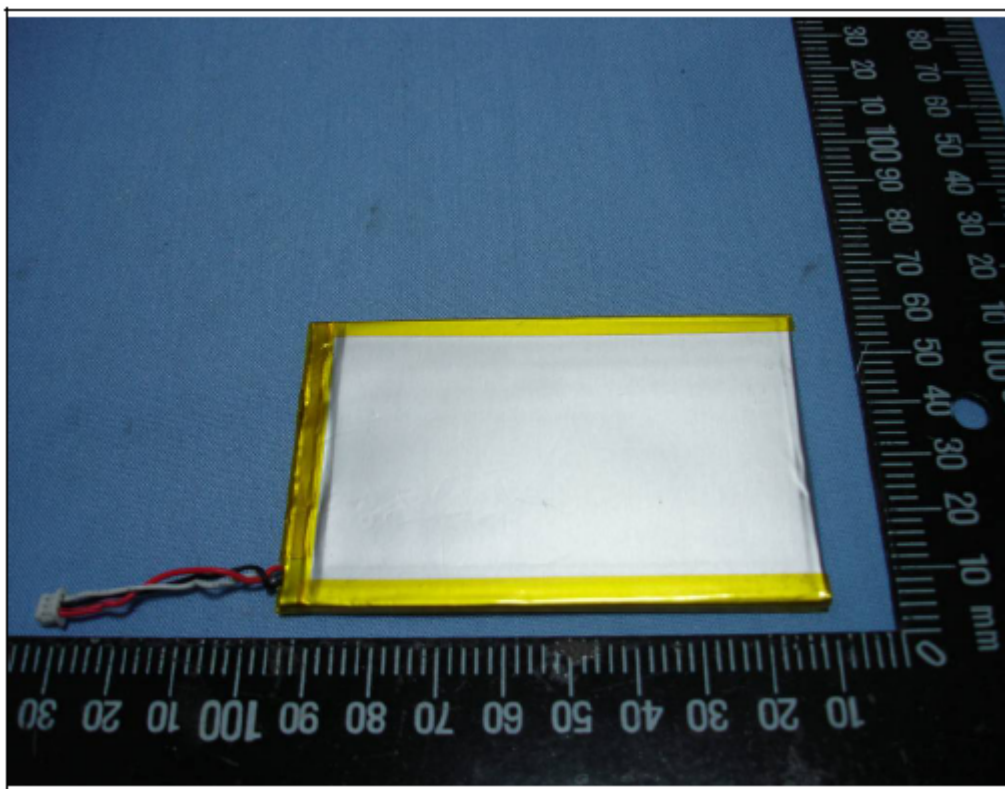
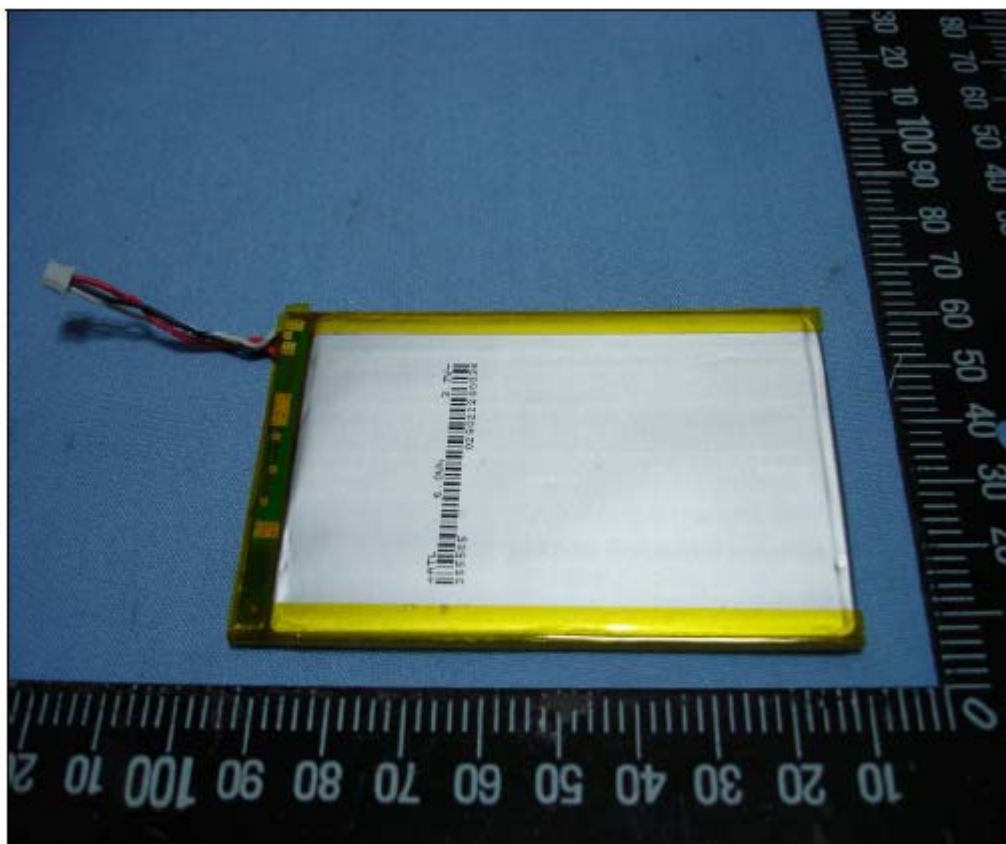
EUT View 3



EUT View 4

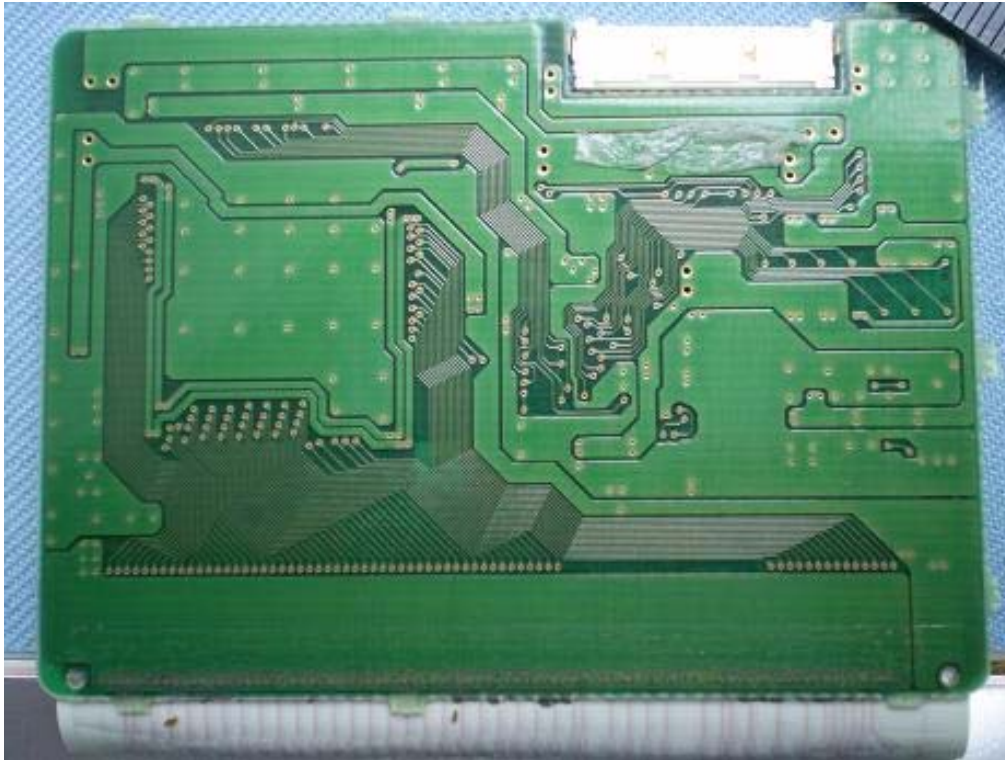


EXHIBIT 3 - EUT INTERNAL PHOTOGRAPHS

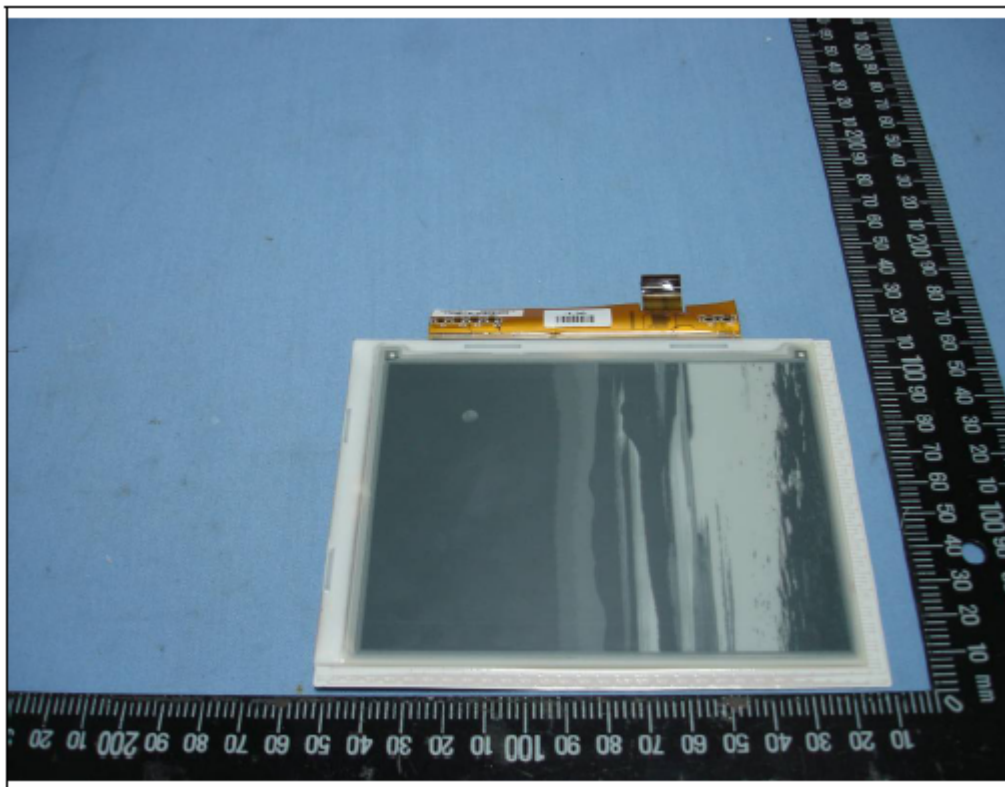


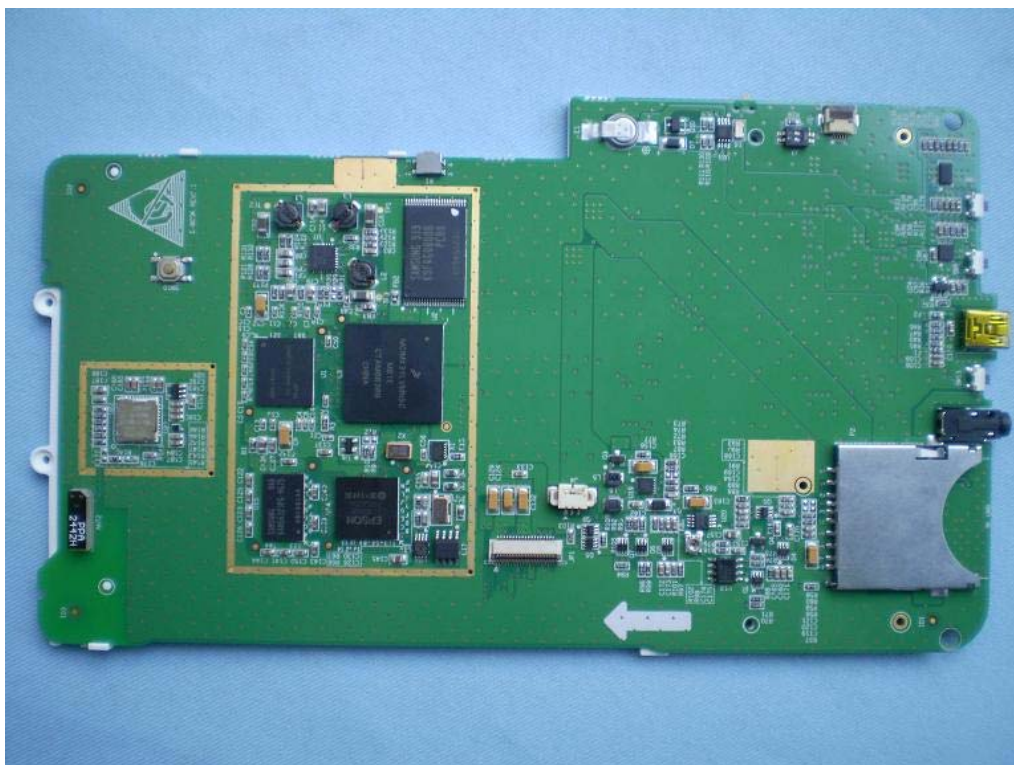
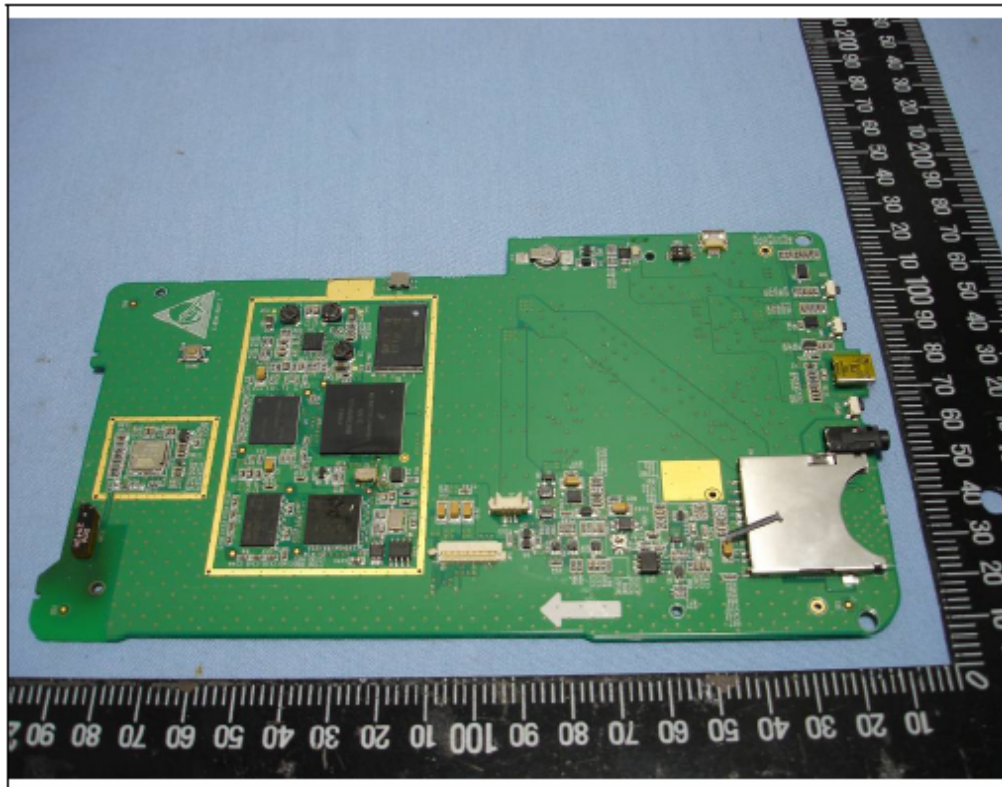


(Touch Screen 1)



(Touch Screen 2)







(Note:1. Nand Flash; 2. DDR; 3. CPU; 4.SDRAM; 5. Display Controller; 6.WiFi Module)



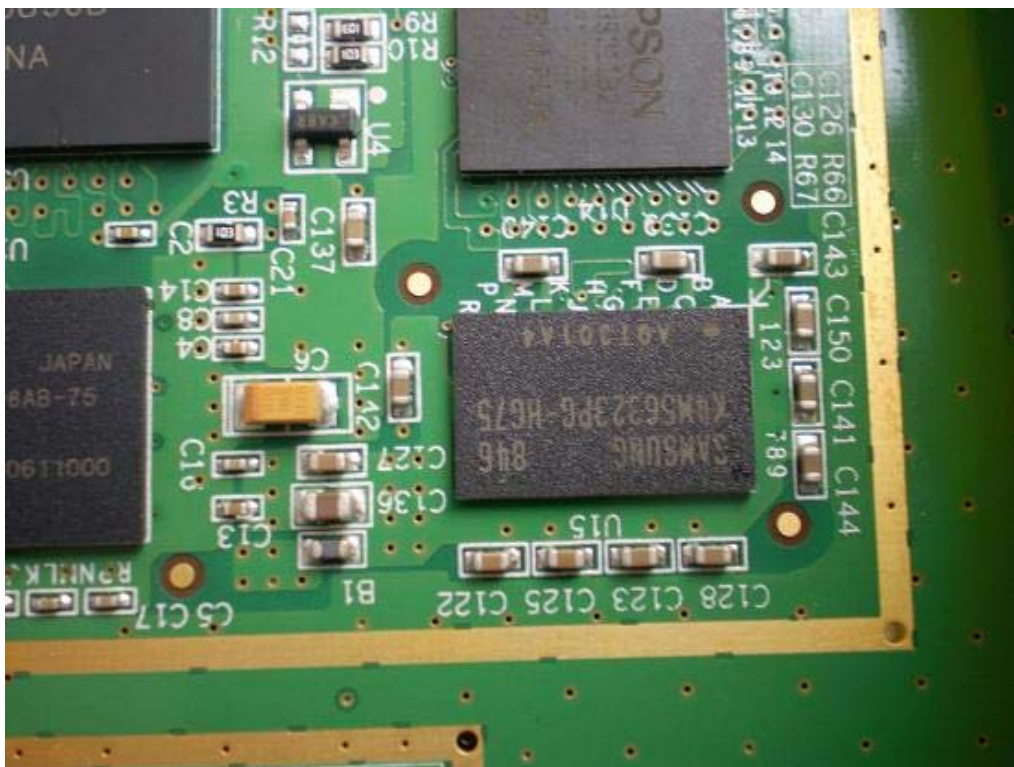
(1. Nand Flash (Samsung K9F4G08U0B))



(2. DDR)



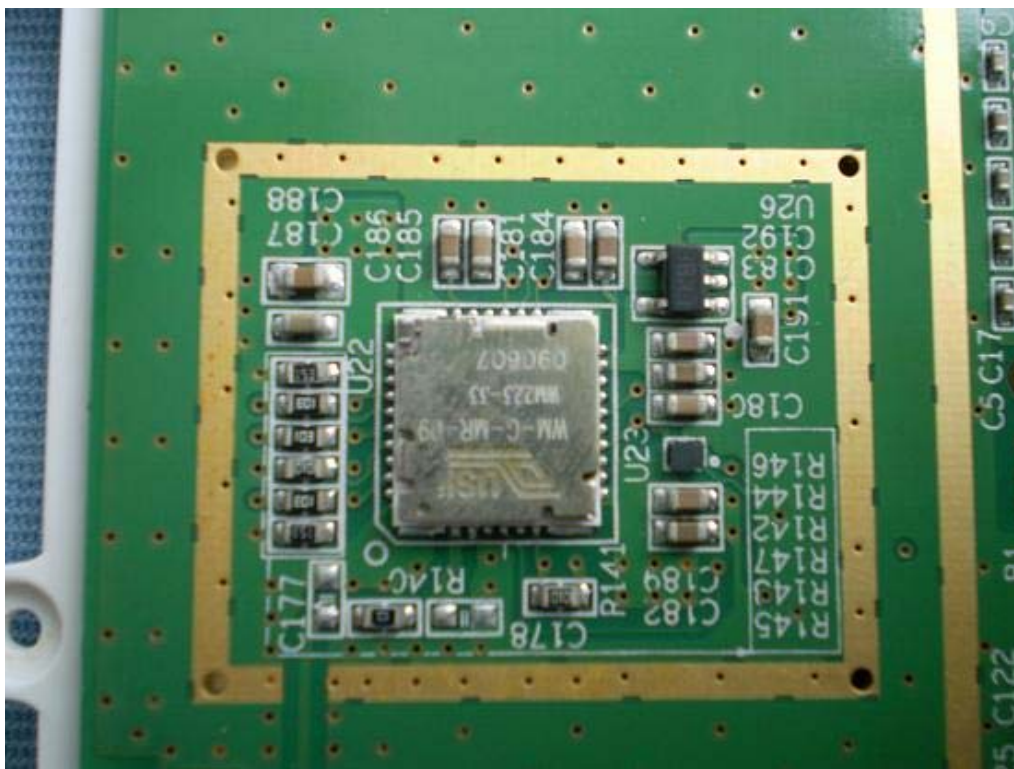
(3. CPU (Freescale i.MX31L Multimedia Applications Processor))



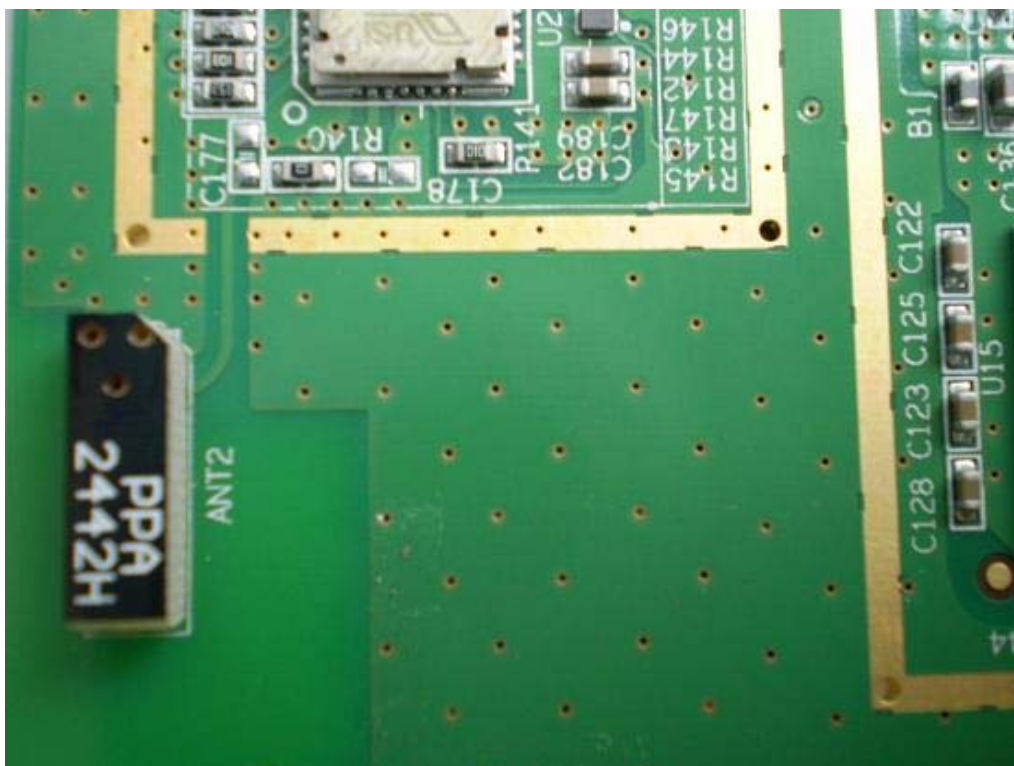
(4. SDRAM)



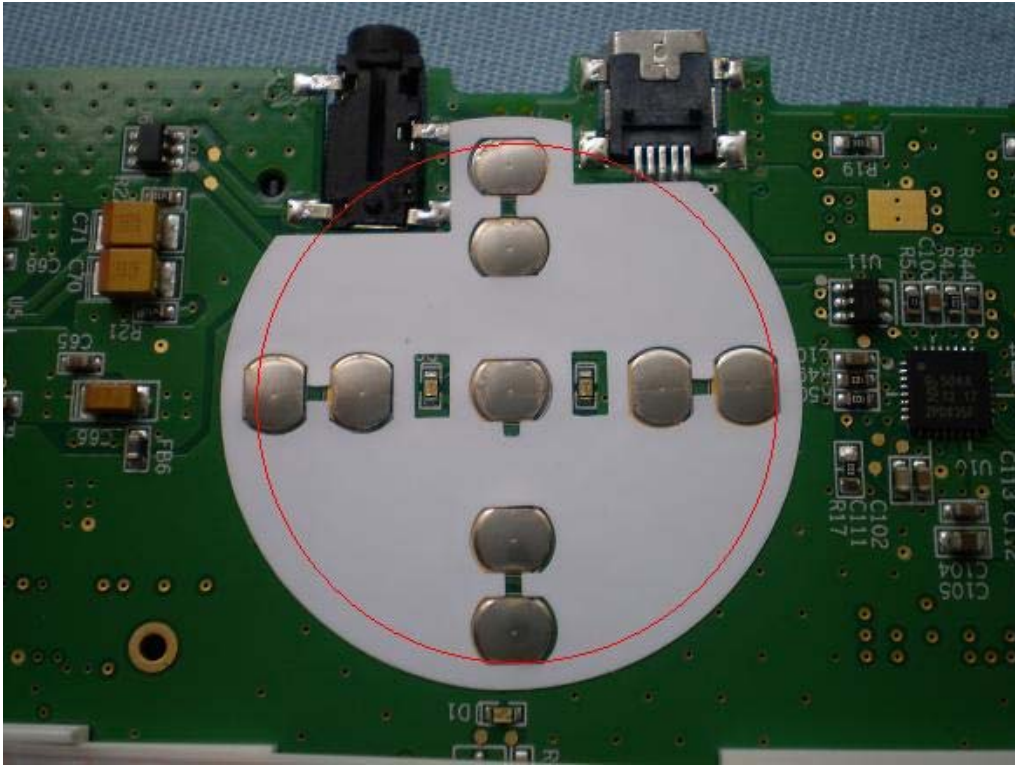
(5. Epson/E-ink S1D13521 Display Controller)



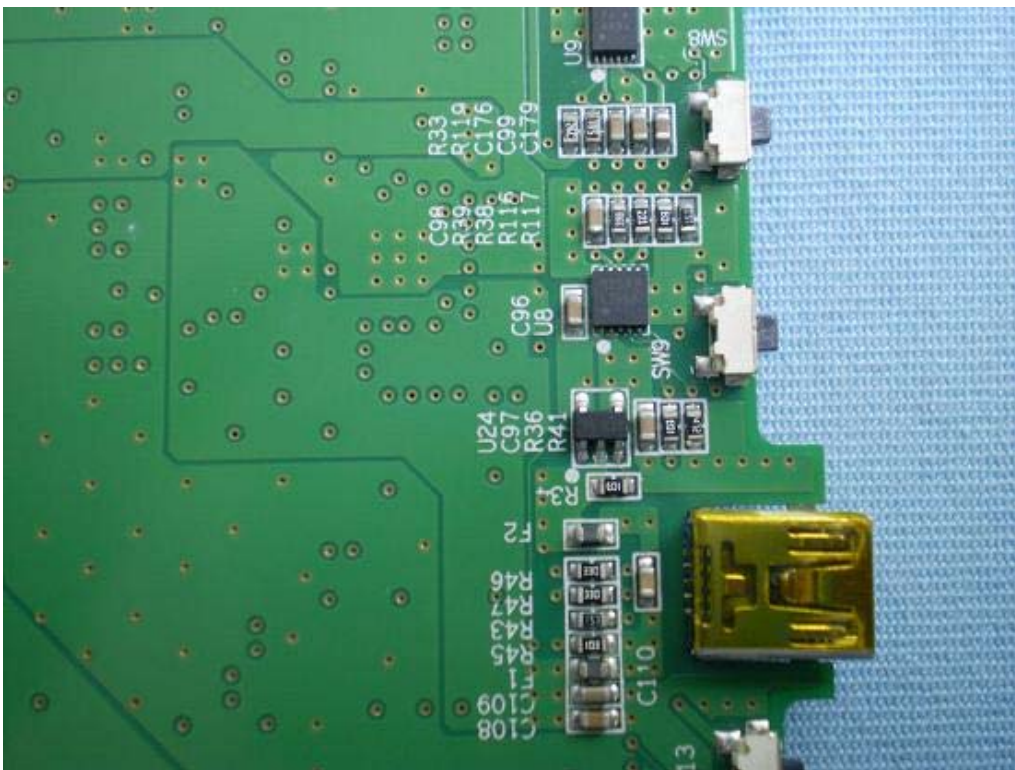
(6. 802.11b/g WiFi Module (WM-G-MR-09))



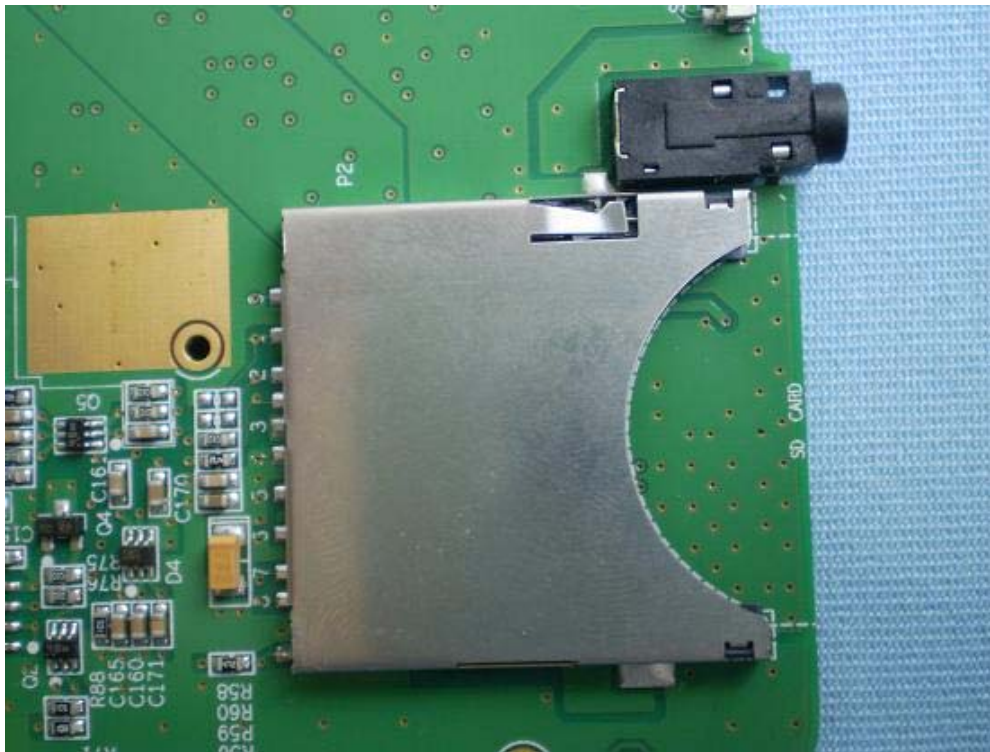
(7. Antenna)



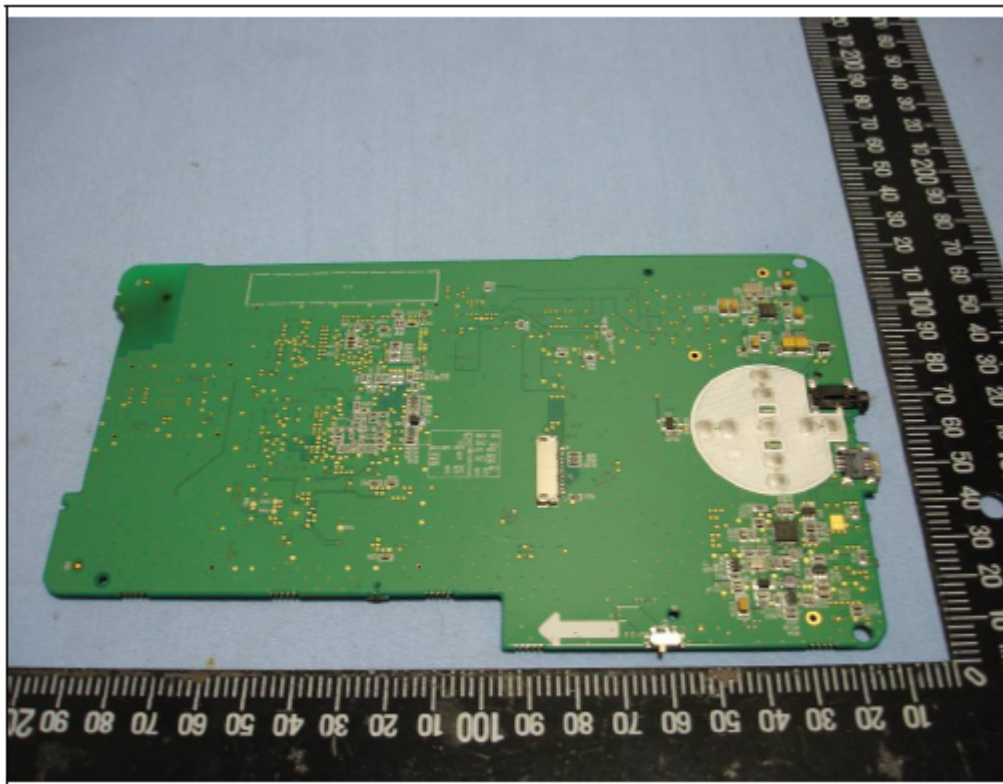
(Keypad)



(USB)



(SD / MMC)



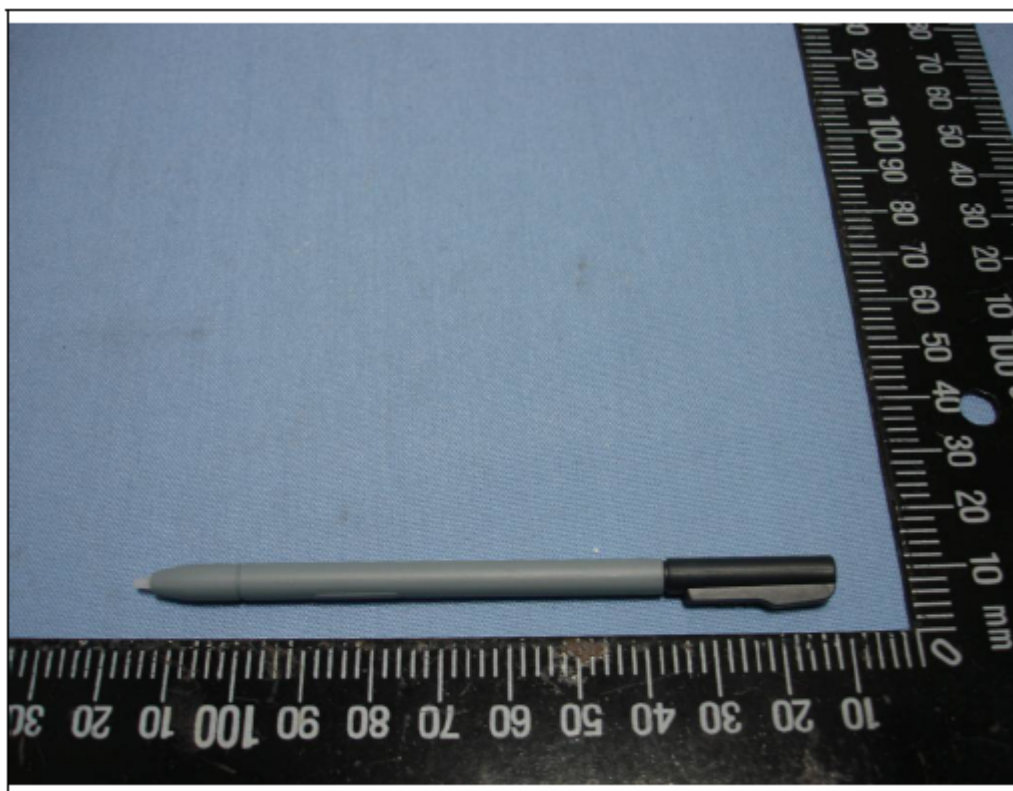
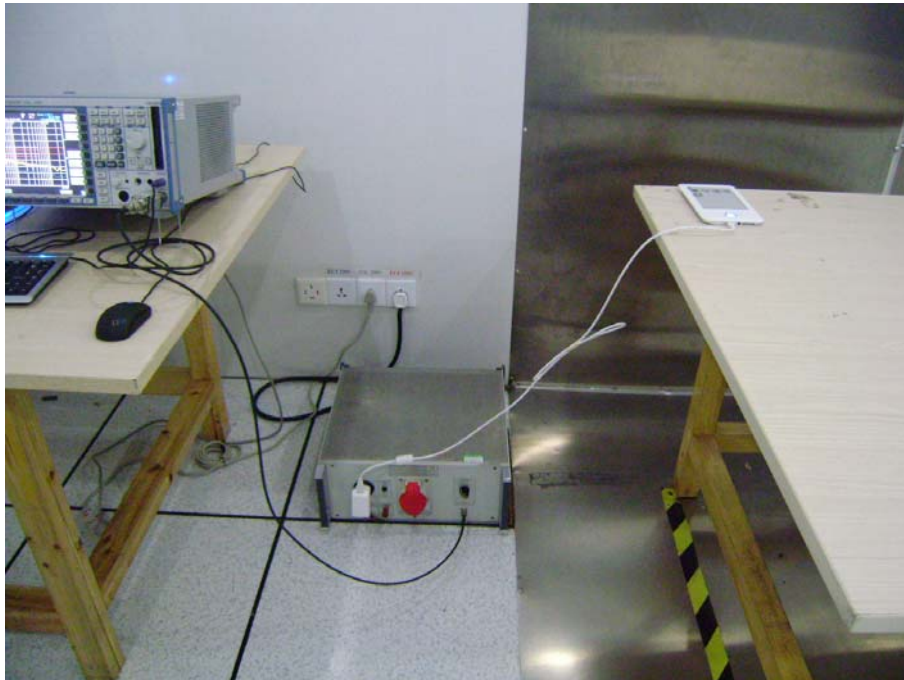
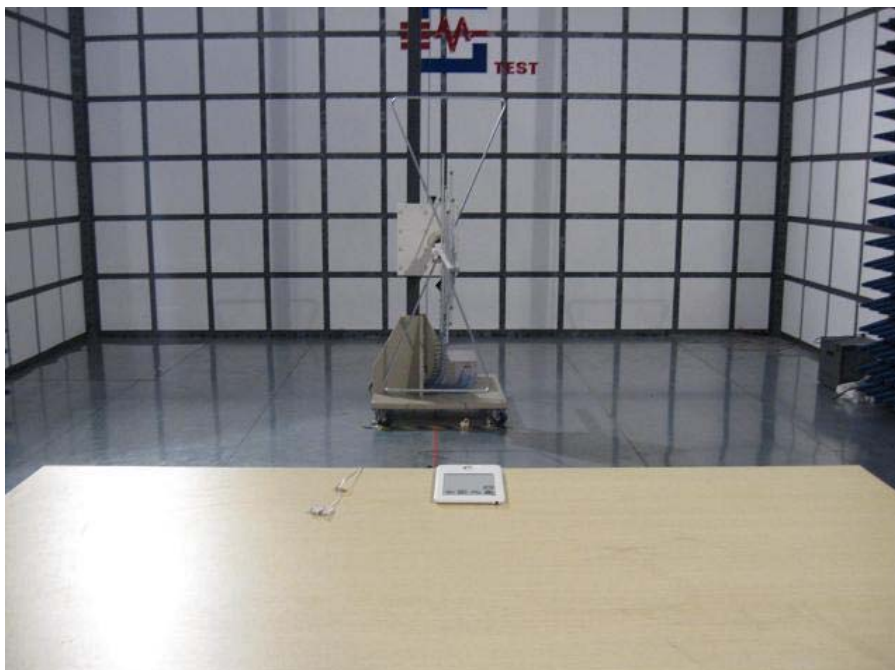


EXHIBIT 4 - TEST SETUP PHOTOGRAPHS

Conducted Emission Test Setup (150kHz to 30MHz)



Radiation Emission Test Setup (30MHz to 1GHz)



Radiation Emission Test Setup (Above 1GHz)



***** End of Report *****