

FCC PART 15.247
EMI MEASUREMENT AND TEST REPORT
For

Victory Electronics Hong Kong Co., Ltd.
Room 1102-1103, 11/F, Kowloon Building, 555 Nathan Road, Mongkok, Kowloon, Hong Kong

FCC ID: PU6-ATVD

December 13, 2012

This Report Concerns: Original Report	Equipment Type: Android TV dongle
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Test Engineer of performing the tests:	Adam Yang <i>Adam Yang</i>
Report No.:	BST12091024Y-1E-3
Receive EUT Date/Test Date:	December 2, 2012 / December 3-12, 2012
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1. GENERAL INFORMATION

1.1. Report information

1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of Shenzhen Certification Technology Service Co., Ltd (FCC Registered Test Site Number: 197647) on 2F, Building B, East Area of Nanchang Second Industrial Zone, Gushu 2nd Road, Bao'an District, shenzhen 518126, China

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

(95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.50dB
Uncertainty for Radiation Emission test (30MHz to 1GHz)	3.04 dB (Polarize: V)
	3.02 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz to 25GHz)	3.84dB (Polarize: H)
	3.56dB (Polarize: V)
Uncertainty for radio frequency	1×10^{-9}
Uncertainty for test site temperature and humidity	0.6°C
	3%

2. PRODUCT DESCRIPTION

2.1. EUT Description

Applicant	:	Victory Electronics Hong Kong Co., Ltd.
Address	:	Room 1102-1103, 11/F, Kowloon Building, 555 Nathan Road, Mongkok, Kowloon, Hong Kong
Manufacturer	:	Victory Electronics Hong Kong Co., Ltd.
Address	:	Room 1102-1103, 11/F, Kowloon Building, 555 Nathan Road, Mongkok, Kowloon, Hong Kong
EUT Description	:	Android TV dongle
Trade Name	:	N/A
Modulation type	:	802.11b: DSSS (BPSK / QPSK / CCK) 802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data rate	:	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n: Up to 135Mbps
Wi-fi Frequency Band	:	IEEE 802.11b/g: 2412-2462MHz IEEE802.11n HT20: 2412-2462MHz IEEE802.11n HT40: 2422-2452MHz
Number of Channels	:	IEEE 802.11b/g: 11 Channels IEEE802.11n HT20: 11 Channels IEEE802.11n HT40: 7 Channels
Model Number	:	ATVD-001, ATVD-002, ATVD-003, ATVD-004, ATVD-005, ATVD-006, ATVD-007, ATVD-008, ATVD-009
Power Supply	:	DC 5V (Powered by Adapter)
Antenna gain	:	0dBi

The series products have the same circuit diagram, PCB layout, software, RF Module, Features and functionality. The differences are the model name, so, we select ATVD-001 to test.

2.2. Block Diagram of EUT Configuration

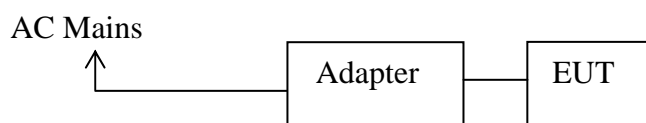


Figure 1 EUT SETUP

2.3. Support Equipment List

Table 2 Ancillary Equipment

Name	Model No	S/N	Manufacturer	Used “Yes/No”
Adapter Input: AC 100-240V, 50/60Hz Output: DC 5V	CYY-0501000	--	Victory Electronics Hong Kong Co., Ltd.	Yes

2.4. Test Conditions

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-25
Humidity (%RH)	25-75	50-63
Barometric pressure (mbar)	860-1060	950-1000

After the preliminary test, we found to emit the worst emissions and therefore had been tested under operating condition.

IEEE 802.11b:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT20:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT40:

Channel Low (2422MHz), Channel Mid 2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

3. TEST RESULTS SUMMARY

FCC 15 Subpart C, Paragraph 15.247

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247 (i) , §1.1307 (b) (1), §2.1093	RF Exposure	PASS
§15.203	Antenna Requirement	PASS
§15.207 (a)	Conducted Emissions	PASS
§15.247(d)	Spurious Emissions at Antenna Port	PASS
§15.205	Restricted Bands	PASS
§15.209, §15.205, §15.247(d)	Spurious Emissions	PASS
§15.247 (a)(2)	6 dB Bandwidth	PASS
§15.247(b)(3)	Maximum Peak Output Power	PASS
§15.247(d)	Bandwidth of Frequency Band Edge	PASS
§15.247(e)	Power Spectral Density	PASS

Statement: The EUT was setup according to ANSI C63.4-2003 and tested according to tested according to DTS test procedure of KDB558074 D01 DTS Meas Guidance v02 for compliance to FCC 47CFR 15.247 requirements

Modifications

No modification was made.

4. TEST EQUIPMENT USED

Equipment/Facilities	Manufacturer	Model	Serial no.	Date of Cal.	Cal. Interval
3m Semi-Anechoic Chamber	Changzhou Chengyu	EC3048	N/A	May 5, 2012	1 Year
Broadband antenna	SCHWARZBECK	VULB 9168	VULB9168-438	Aug. 14, 2012	1 Year
Horn antenna	R&S	HF906	10027	Aug. 14, 2012	1 Year
ETS Horn Antenna	ETS	3160	SEL0076	May 8, 2012	1 Year
Loop Antenna	SCHWARZECK	HFRA 5165	9365	Feb. 25, 2012	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Apr. 6, 2012	1 Year
Spectrum analyzer	Agilent	E4443A	MY46185649	Apr. 6, 2012	1 Year
Spectrum analyzer	Agilent	E4440A	MY46187335	Apr. 6, 2012	1 Year
Test receiver	R&S	ESCI	100492	Apr. 6, 2012	1 Year
Test receiver	R&S	ESCI	101202	Apr. 6, 2012	1 Year
Power Meter	Anritsu	ML2487A	6K00001491	Mar.19, 2012	1 Year
Power Sensor	Anritsu	MA2491A	30619	Mar.19, 2012	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Apr. 6, 2012	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126487	Apr. 6, 2012	1 Year
Cable	Resenberger	N/A	NO.1	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Apr. 6, 2012	1 Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Apr. 6, 2012	1 Year
Pre-amplifier	R&S	AFS33-1800 2650-30-8P-44	SEL0080	Apr. 6, 2012	1 Year

5. §15.203 - ANTENNA REQUIREMENT

5.1. Standard Applicable

According to § 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2. Antenna Connector Construction

The antenna used for this product is a PCB antenna. The antenna is permanently attached. Refer to the product photo.

6. §15.207 - CONDUCTED EMISSIONS

6.1. Applicable Standard

The specification used was with the FCC Part 15.207 limits.

6.2. Test Procedure

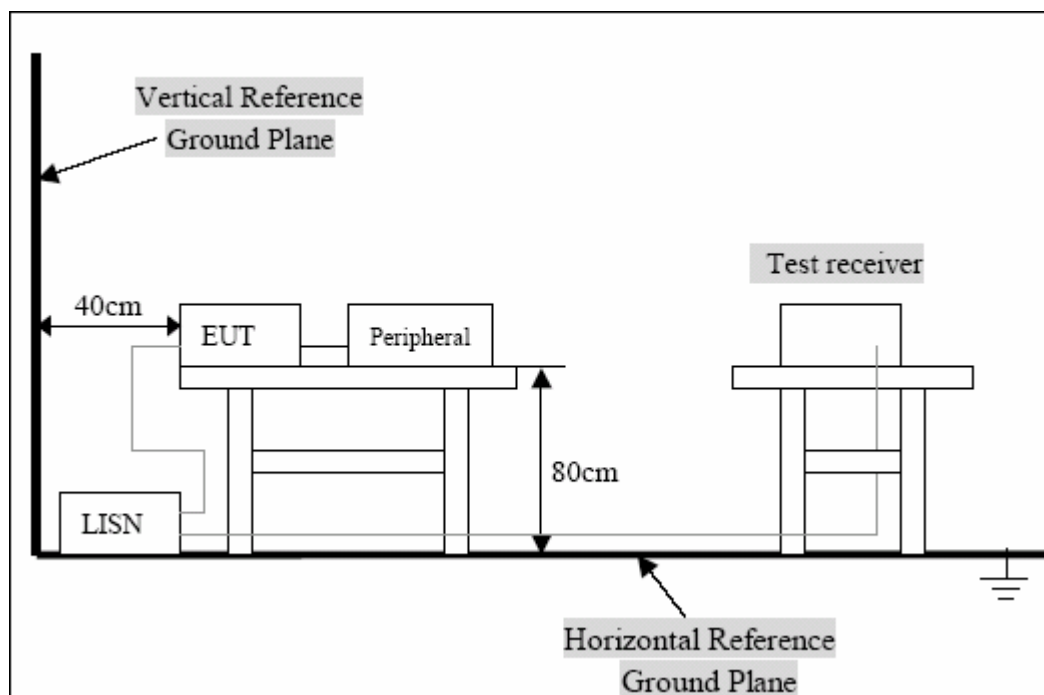
During the conducted emission test, the EUT was connected to the outlet of the LISN. Maximizing procedure was performed on the six (6) highest emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

6.3. Conducted Power line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency Range (MHz)	Class A QP/AV	Class B QP/AV
0.15-0.5	79/66	65-56/56-46
0.5-5.0	73/60	56-46
5.0-3.0	73/60	60-50

Note: In the above table, the tighter limit applies at the band edges.

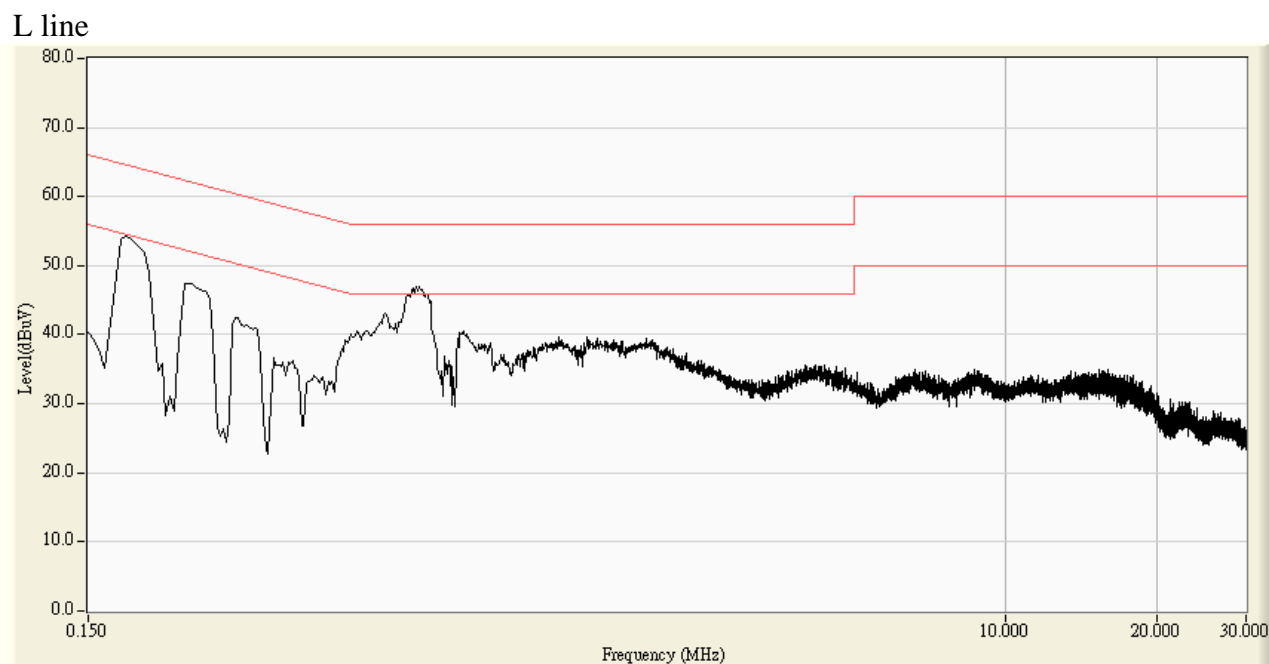
6.4. Block Diagram of Test Setup



6.5. Conducted Power Line Test Result

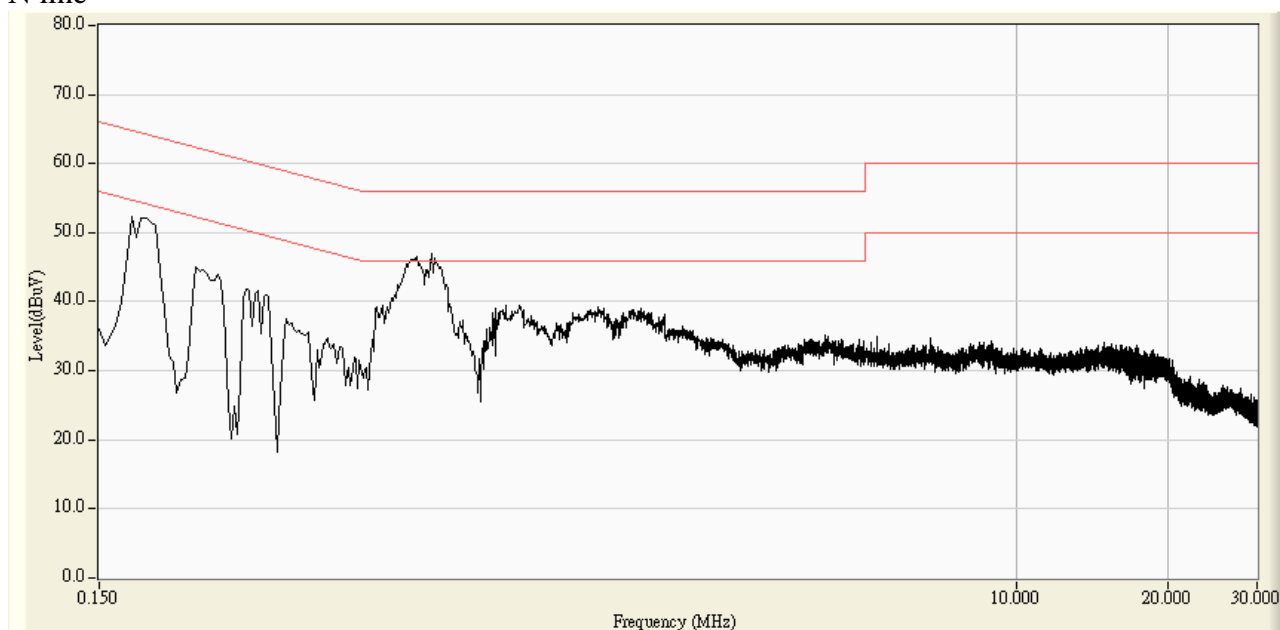
Pass.

The worst test mode: Wi-Fi TX 802.11b 2437MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.178	9.852	41.300	51.152	-13.426	64.578	QUASIPeAK
2		0.234	9.450	33.800	43.250	-19.057	62.307	QUASIPeAK
3		0.298	9.503	29.600	39.102	-21.196	60.298	QUASIPeAK
4		0.350	9.537	22.000	31.537	-27.425	58.962	QUASIPeAK
5		0.422	9.578	20.900	30.478	-26.931	57.409	QUASIPeAK
6	*	0.674	9.672	34.800	44.472	-11.528	56.000	QUASIPeAK
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.178	9.852	27.900	37.752	-16.826	54.578	AVERAGE
2		0.234	9.450	18.100	27.550	-24.757	52.307	AVERAGE
3		0.298	9.503	17.800	27.302	-22.996	50.298	AVERAGE
4		0.350	9.537	15.400	24.937	-24.025	48.962	AVERAGE
5		0.422	9.578	10.400	19.978	-27.431	47.409	AVERAGE
6	*	0.674	9.672	21.700	31.372	-14.628	46.000	AVERAGE

N line



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.186	9.732	39.100	48.832	-15.381	64.213	QUASIPeAK
2		0.234	9.580	32.400	41.980	-20.327	62.307	QUASIPeAK
3		0.294	9.598	28.300	37.898	-22.513	60.411	QUASIPeAK
4		0.354	9.605	24.800	34.405	-24.463	58.868	QUASIPeAK
5	*	0.686	9.761	33.200	42.961	-13.039	56.000	QUASIPeAK
6		1.026	9.780	27.600	37.380	-18.620	56.000	QUASIPeAK
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.186	9.732	27.500	37.232	-16.981	54.213	AVERAGE
2		0.234	9.580	16.700	26.280	-26.027	52.307	AVERAGE
3		0.294	9.598	15.300	24.898	-25.513	50.411	AVERAGE
4		0.354	9.605	13.300	22.905	-25.963	48.868	AVERAGE
5	*	0.686	9.761	21.300	31.061	-14.939	46.000	AVERAGE
6		1.026	9.780	17.000	26.780	-19.220	46.000	AVERAGE

7. §15.209, §15.205, §15.247(D) - Spurious Emissions

7.1. Test Equipment

Please refer to section 2 this report.

7.2. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

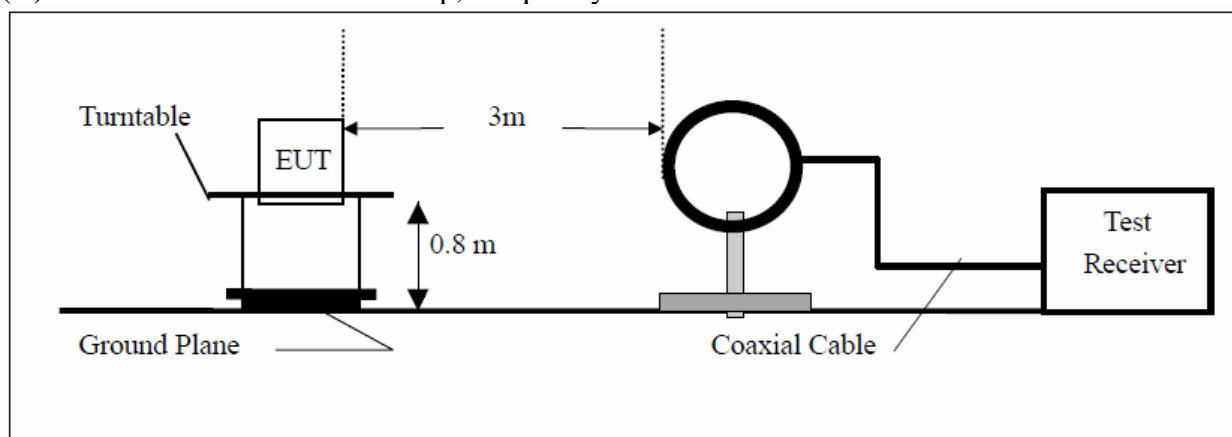
The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

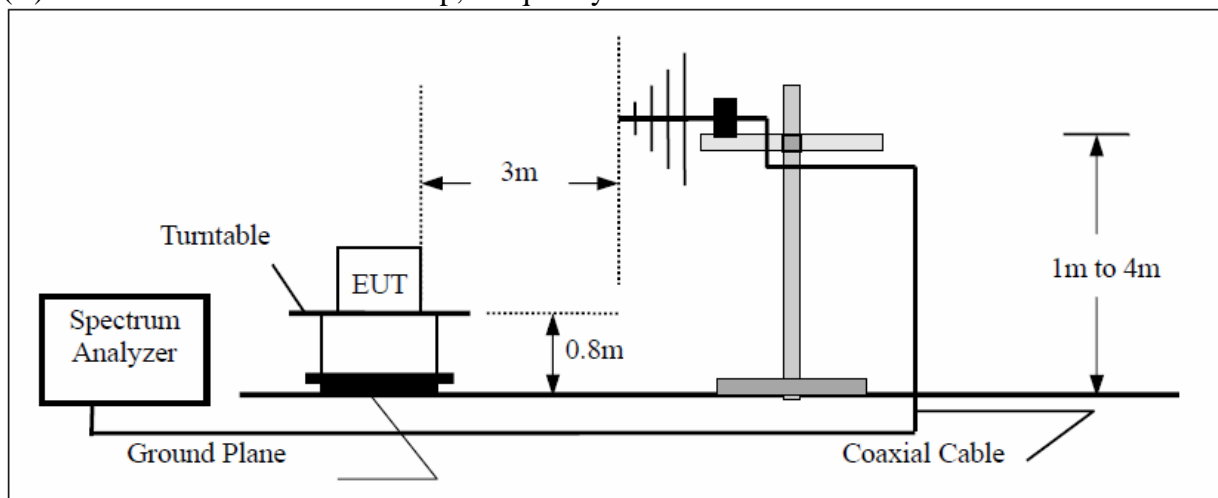
Through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit. Pretest x, y, z position of EUT, final, select the worst case x position test and record the test results in the report.

7.3. Radiated Test Setup

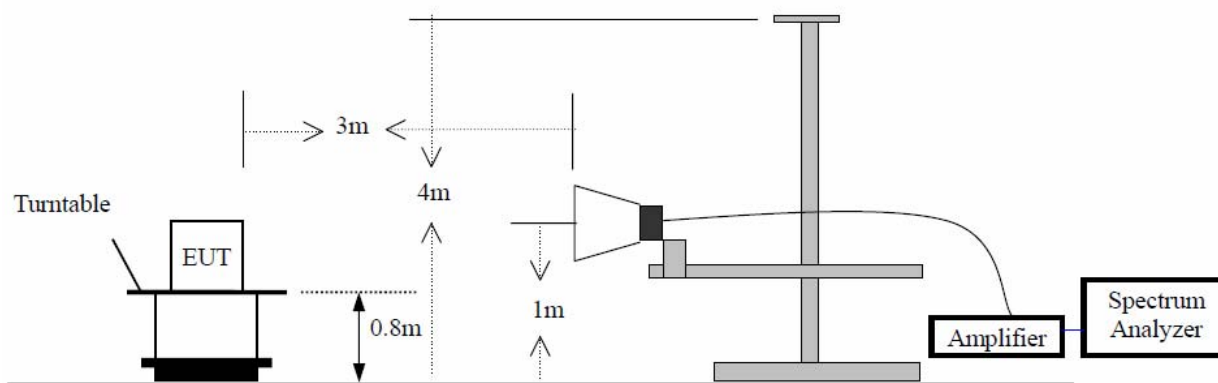
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



7.4. Radiated Emission Limit

Frequency (MHz)	Limit			The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB μ V/m)	Measurement distance (m)	
0.009 - 0.490	2400/F(kHz)	/	300	
0.490 - 1.705	24000/F(kHz)	/	30	
1.705-30	30	29.5	30	
30 - 88	100	40	3	
88 - 216	150	43.5	3	
216 - 960	200	46	3	
Above 960	500	54	3	

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)

(2) In the Above Table,the tighter limit applies at the band edges.

(3) Distagnce refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

7.5. Radiated Emission Test Result

Pass.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11b Channel Low 2412MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	0.428	47.890	48.319	-25.681	74.000
7236.000	7.177	49.090	56.267	-17.733	74.000
9648.000	8.019	39.280	47.300	-26.700	74.000
Average Detector:					
7236.000	7.177	42.470	49.647	-4.353	54.000
Vertical					
Peak Detector:					
4824.000	0.836	53.350	54.187	-19.813	74.000
7236.000	7.676	47.390	55.066	-18.934	74.000
9648.000	8.556	39.120	47.677	-26.323	74.000
Average Detector:					
4824.000	0.836	49.570	50.407	-3.593	54.000
7236.000	7.676	40.470	48.146	-5.854	54.000

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11b Channel Middle 2437MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4874.000	0.076	48.000	48.077	-25.923	74.000
7311.000	7.512	42.390	49.902	-24.098	74.000
9748.000	7.630	37.440	45.070	-28.930	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	0.532	52.270	52.802	-21.198	74.000
7311.000	8.089	42.680	50.769	-23.231	74.000
9748.000	8.266	38.210	46.477	-27.523	74.000
Average Detector:					
--					

- Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11b Channel High 2462MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	0.191	47.850	48.041	-25.959	74.000
7386.000	8.373	38.060	46.434	-27.566	74.000
9848.000	7.964	38.650	46.614	-27.386	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.805	53.270	54.075	-19.925	74.000
7386.000	9.180	40.960	50.140	-23.860	74.000
9848.000	8.801	38.490	47.291	-26.709	74.000
Average Detector:					
4924.000	0.805	49.380	50.185	-3.815	54.000

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11g Channel Low 2412MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	0.428	47.860	48.289	-25.711	74.000
7236.000	7.177	40.550	47.727	-26.273	74.000
9648.000	8.019	38.860	46.880	-27.120	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	0.836	51.140	51.977	-22.023	74.000
7236.000	7.676	48.970	56.646	-17.354	74.000
9648.000	8.556	39.150	47.707	-26.293	74.000
Average Detector:					
7236.000	7.676	30.690	38.366	-15.634	54.000

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11g Channel Middle 2437MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4874.000	0.076	46.050	46.127	-27.873	74.000
7311.000	7.512	39.840	47.352	-26.648	74.000
9748.000	7.630	38.240	45.870	-28.130	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	0.532	50.460	50.992	-23.008	74.000
7311.000	8.089	40.000	48.089	-25.911	74.000
9748.000	8.266	38.720	46.987	-27.013	74.000
Average Detector:					
--					

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11g Channel High 2462MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	0.191	45.470	45.661	-28.339	74.000
7386.000	8.373	40.260	48.634	-25.366	74.000
9848.000	7.964	39.450	47.414	-26.586	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.805	49.600	50.405	-23.595	74.000
7386.000	9.180	43.450	52.630	-21.370	74.000
9848.000	8.801	39.500	48.301	-25.699	74.000
Average Detector:					
--					

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT20 Channel Low 2412MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	0.428	46.990	47.419	-26.581	74.000
7236.000	7.177	47.080	54.257	-19.743	74.000
9648.000	8.019	38.500	46.520	-27.480	74.000
Average Detector:					
7236.000	7.177	30.720	37.897	-16.103	54.000
Vertical					
Peak Detector:					
4824.000	0.836	49.890	50.727	-23.273	74.000
7236.000	7.676	49.460	57.136	-16.864	74.000
9648.000	8.556	39.480	48.037	-25.963	74.000
Average Detector:					
7236.000	7.676	32.010	39.686	-14.314	54.000

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	<u>Deceber 10, 2012</u>	Temperature:	<u>24°C</u>
EUT:	<u>Android TV dongle</u>	Humidity:	<u>58%</u>
Model No.:	<u>ATVD-001</u>	Power Supply:	<u>AC 120V/60Hz</u>
Test Mode:	<u>802.11n HT20 Channel Middle 2437MHz</u>	Test Engineer:	<u>Adam Yang</u>

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4874.000	0.076	46.480	46.557	-27.443	74.000
7311.000	7.512	40.980	48.492	-25.508	74.000
9748.000	7.630	38.450	46.080	-27.920	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	0.532	50.450	50.982	-23.018	74.000
7311.000	8.089	35.150	43.239	-30.761	74.000
9748.000	8.266	40.450	48.717	-25.283	74.000
Average Detector:					
--					

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT20 Channel High 2462MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	0.191	44.050	44.241	-29.759	74.000
7386.000	8.373	39.340	47.714	-26.286	74.000
9848.000	7.964	38.780	46.744	-27.256	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.805	50.800	51.605	-22.395	74.000
7386.000	9.180	42.590	51.770	-22.230	74.000
9848.000	8.801	40.480	49.281	-24.719	74.000
Average Detector:					
--					

- Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT40 Channel Low 2422MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal**Peak Detector:**

4844.000	0.280	42.140	42.421	-31.579	74.000
7266.000	7.106	40.480	47.586	-26.414	74.000
9688.000	7.663	39.110	46.773	-27.227	74.000

Average**Detector:**

--

Vertical**Peak Detector:**

4844.000	0.707	43.450	44.158	-29.842	74.000
7266.000	7.626	40.560	48.186	-25.814	74.000
9688.000	8.284	38.490	46.774	-27.226	74.000

Average**Detector:**

--

- Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT40 Channel Middle 2437MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	35.060	38.097	-35.903	74.000
7311.000	11.795	32.830	44.624	-29.376	74.000
9748.000	12.635	34.200	46.835	-27.165	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	34.980	40.791	-33.209	74.000
7311.000	12.630	32.760	45.389	-28.611	74.000
9748.000	13.126	34.090	47.216	-26.784	74.000
Average Detector:					
--					

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT40 Channel High 2452MHz	Test Engineer:	Adam Yang

For below 1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Correct Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

For 1GHz-25GHz

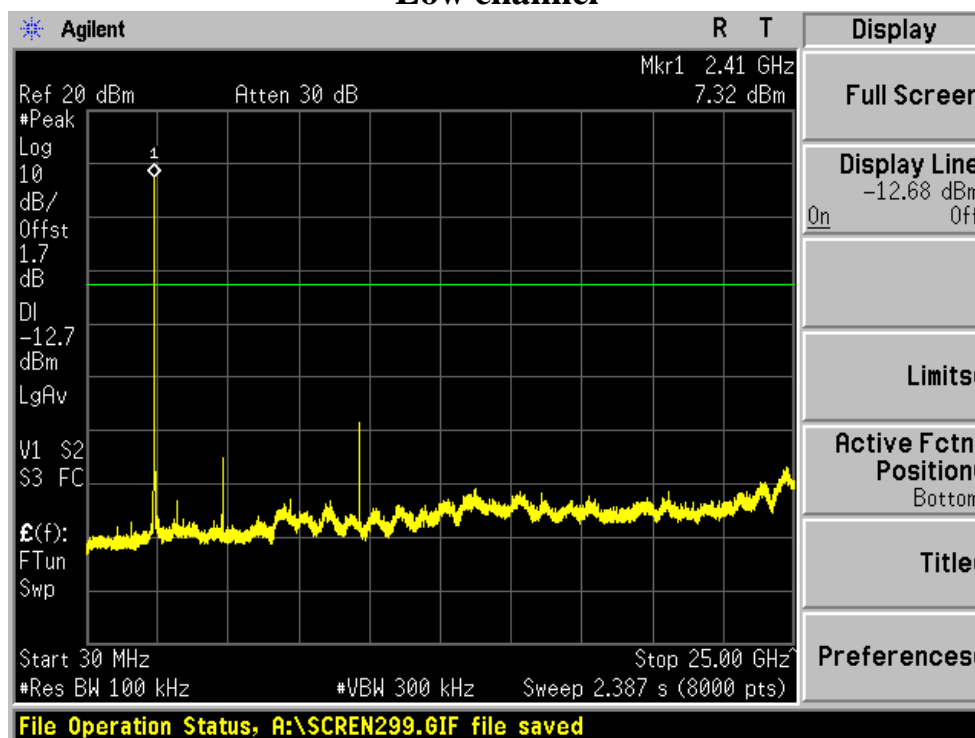
Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4904.000	2.914	35.240	38.155	-35.845	74.000
7356.000	11.995	33.320	45.314	-28.686	74.000
9808.000	12.475	34.080	46.555	-27.445	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	34.990	40.521	-33.479	74.000
7356.000	13.005	33.540	46.544	-27.456	74.000
9808.000	12.901	34.690	47.591	-26.409	74.000
Average Detector:					
--					

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. Measurement Level = Reading Level + Correct Factor.
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

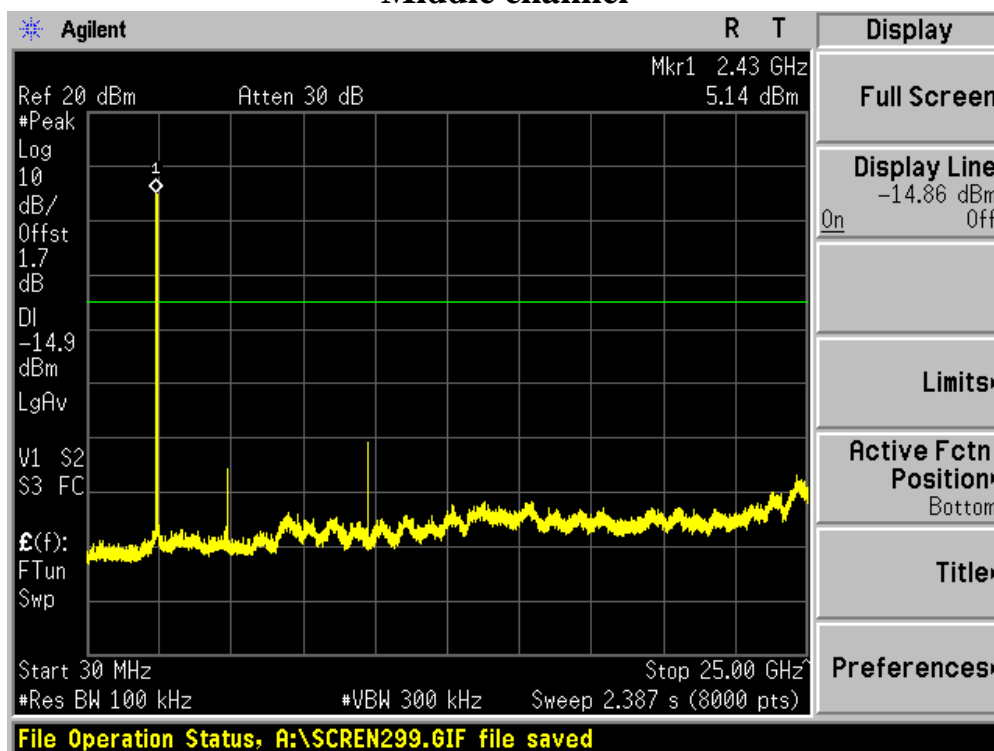
Antenna port conducted spurious emissions

802.11b mode:

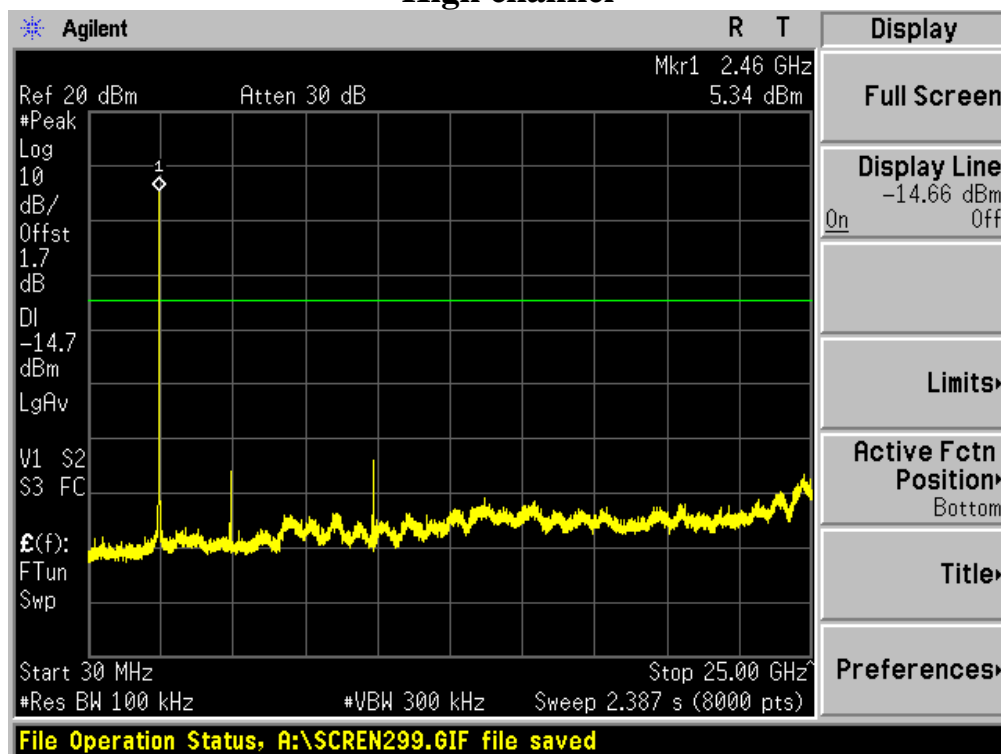
Low channel



Middle channel

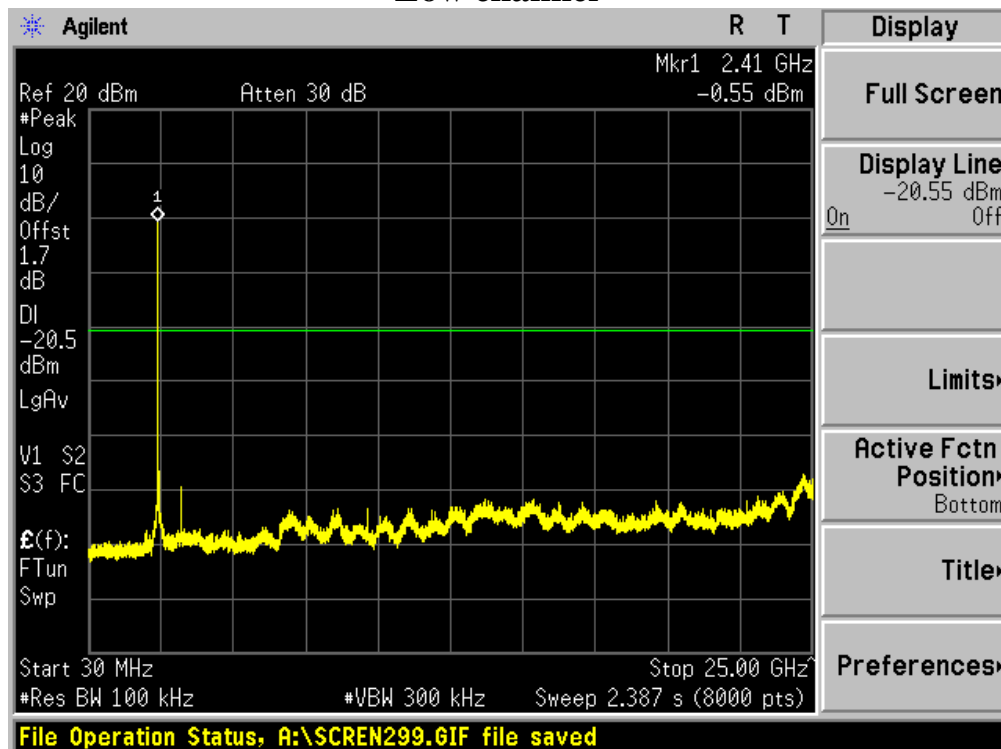


High channel

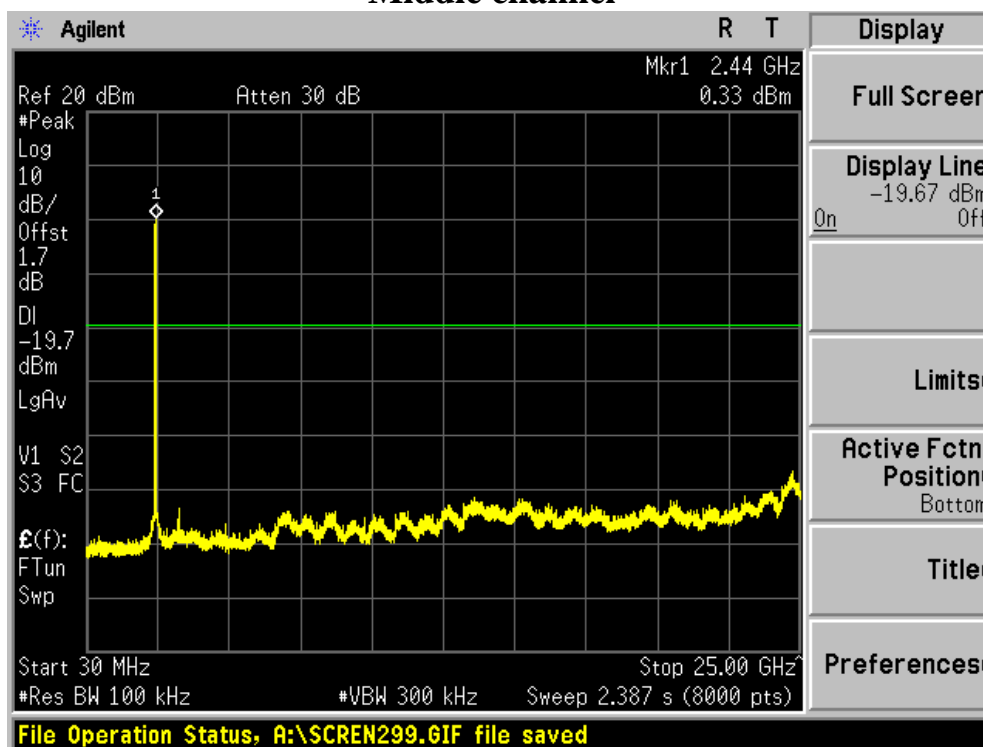


802.11g mode:

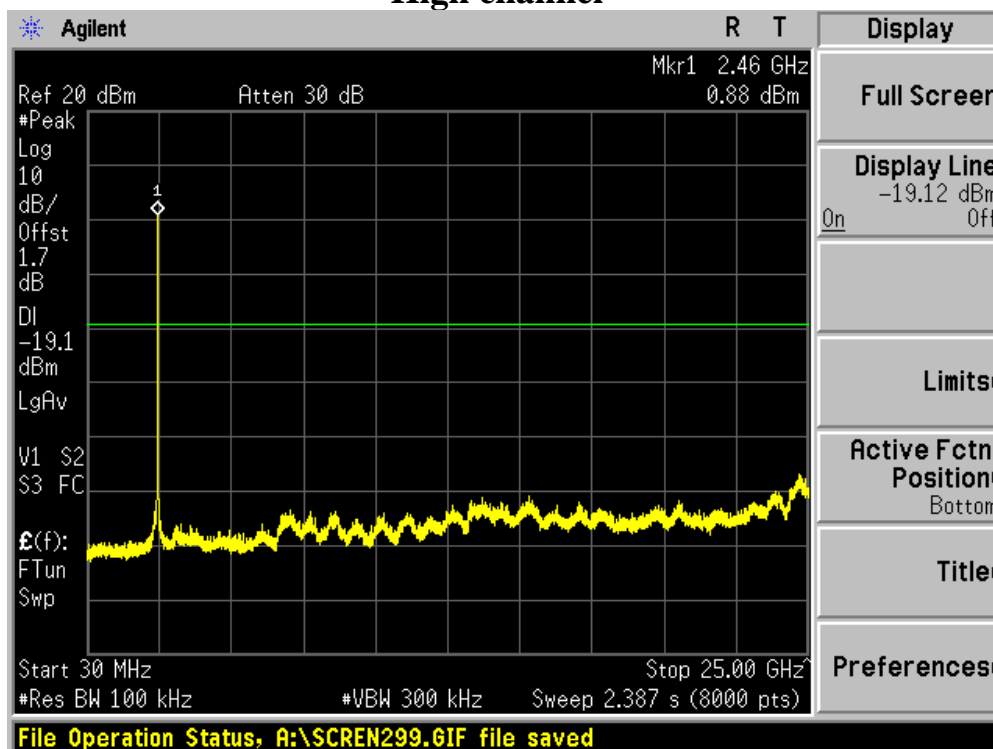
Low channel



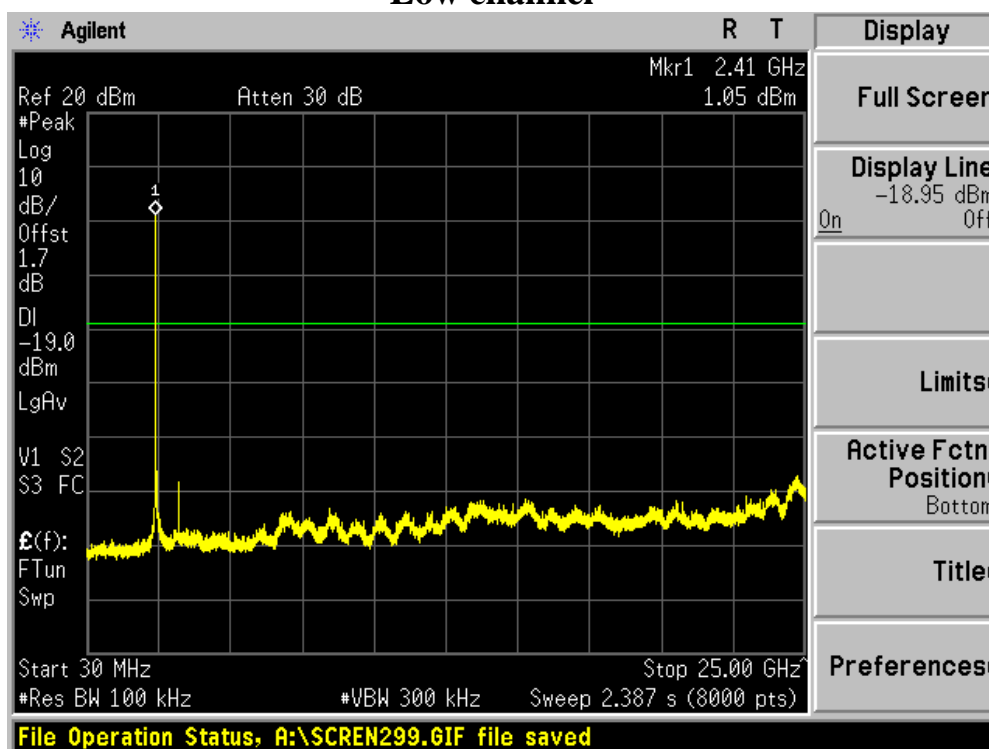
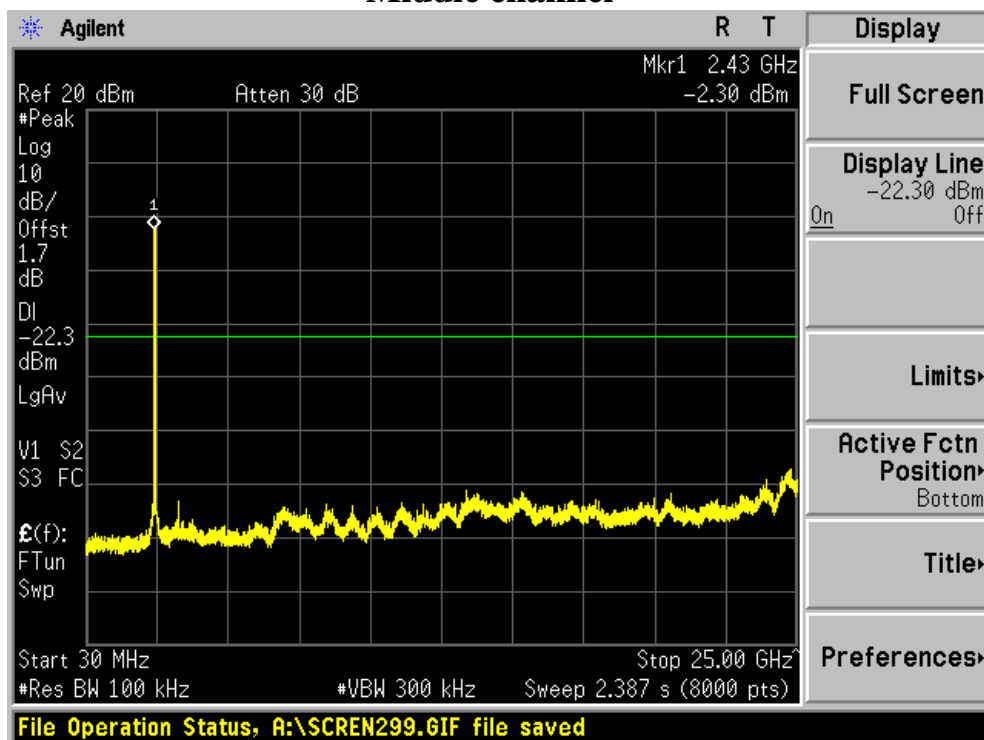
Middle channel



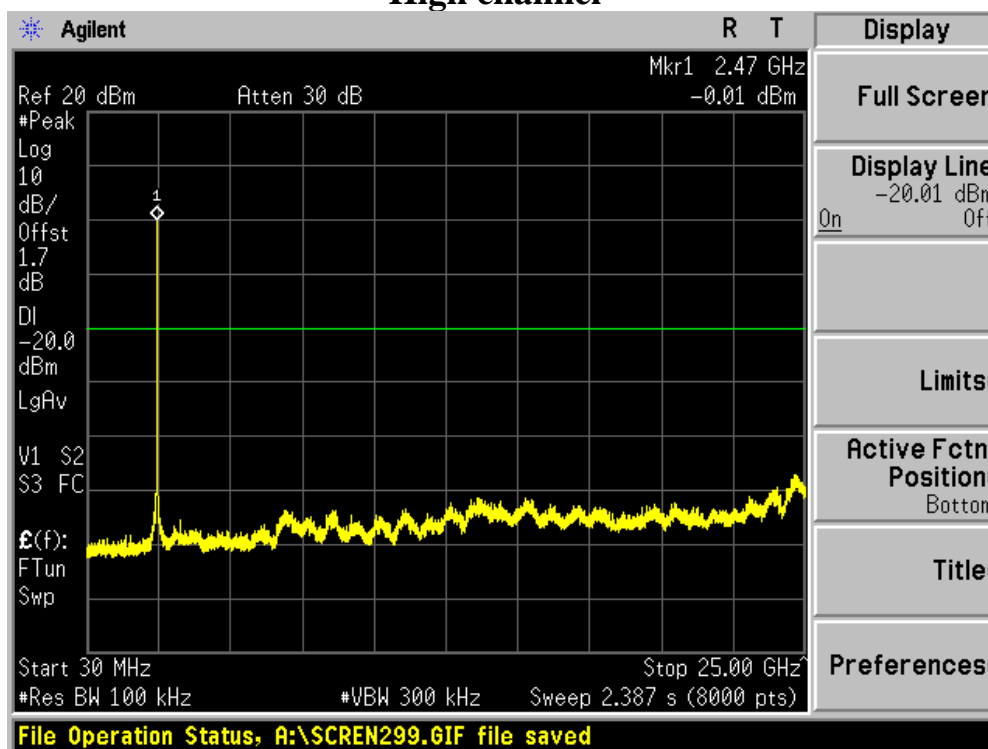
High channel



802.11n (20M) mode:

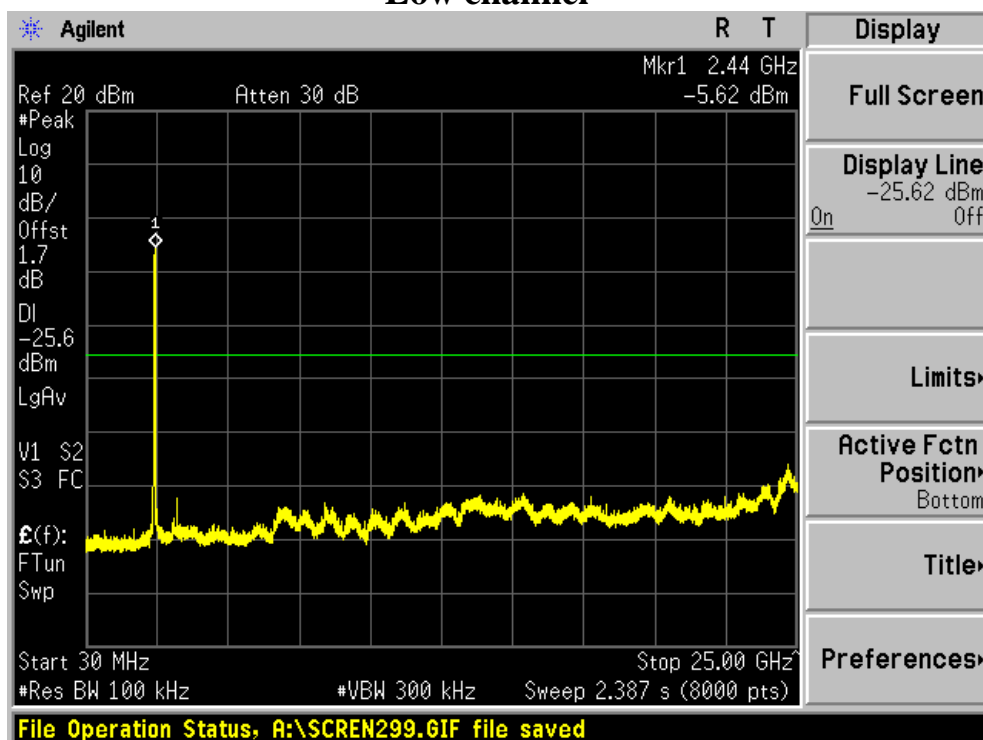
Low channel**Middle channel**

High channel

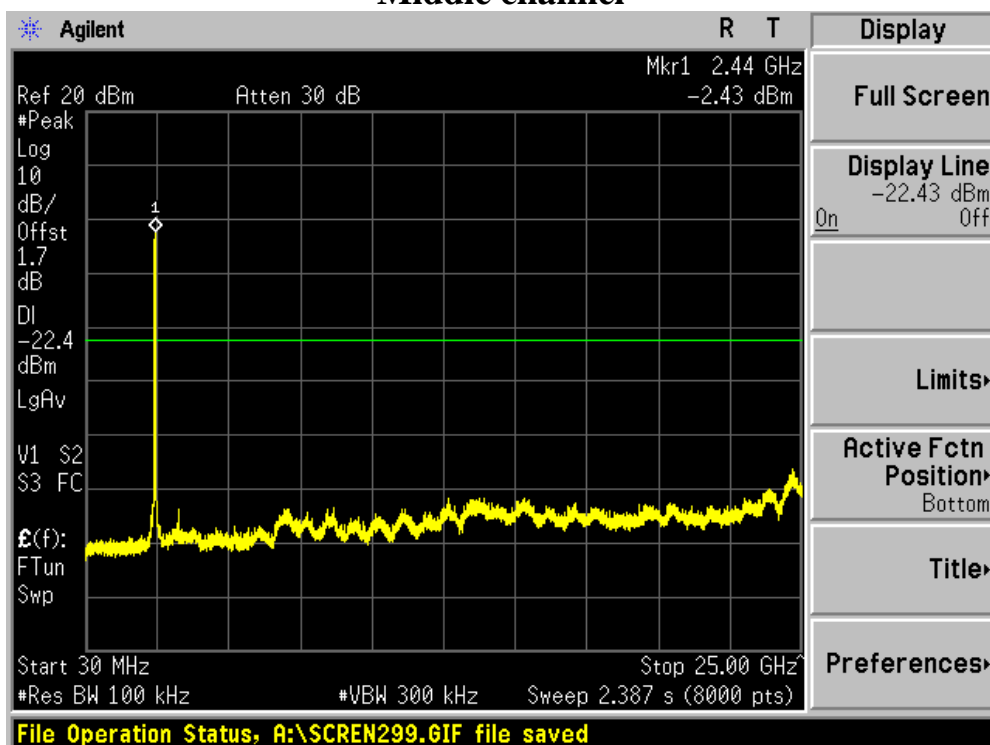


802.11n (40M) mode:

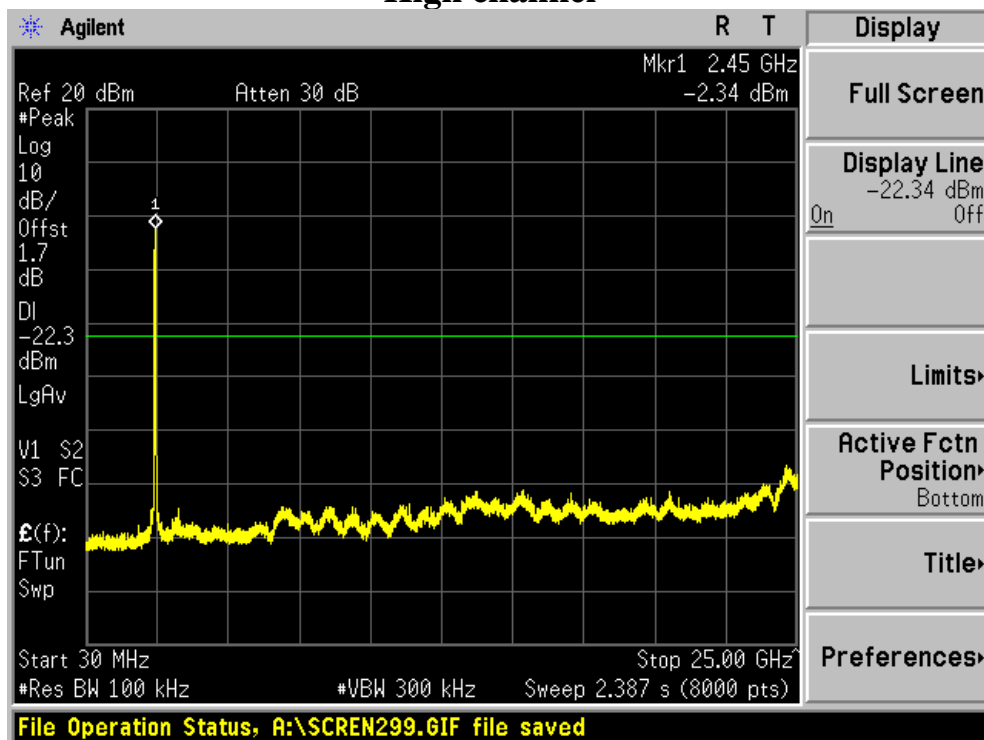
Low channel



Middle channel



High channel



8. §15.247(A) (2) – 6DB BANDWIDTH TESTING

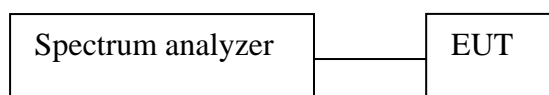
8.1. Test Equipment

Please refer to Section 4 this report.

8.2. Test Procedure

1. Set EUT in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as $RBW=100\text{KHz}$, $VBW \geq RBW$, $\text{Span}=50\text{MHz}$, $\text{Sweep}=\text{auto}$.
4. Mark the peak frequency and -6dB(upper and lower)frequency.
5. Repeat until all the rest channels are investigated.

8.3. Test Setup



8.4. Applicable Standard

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.

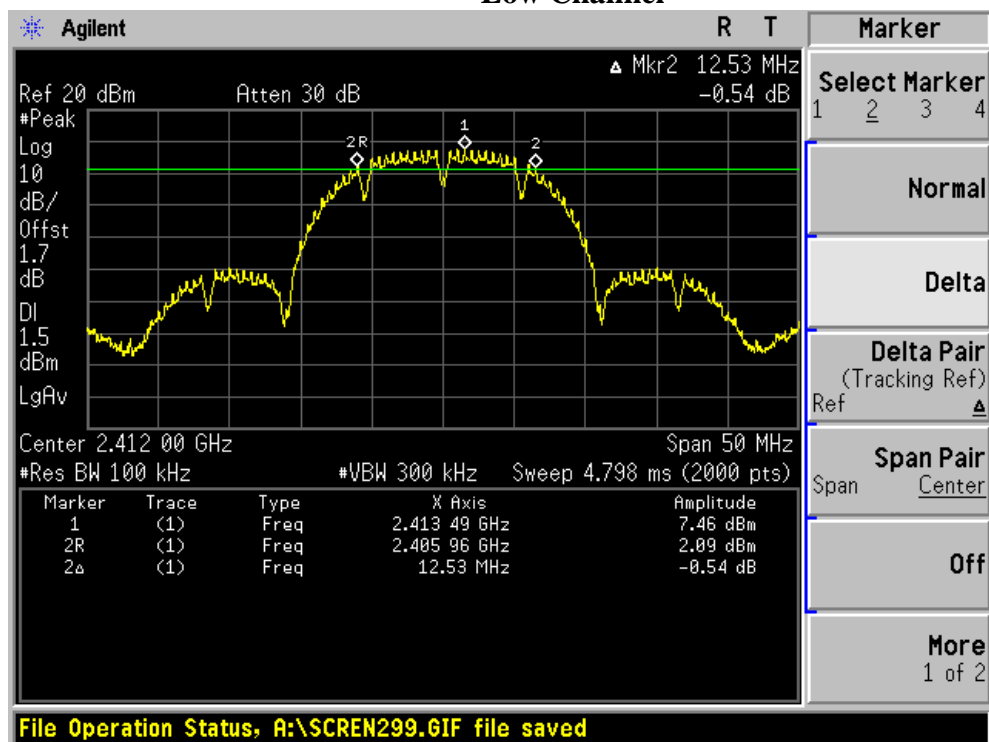
8.5. Test Result:Pass.

Please refer to the following tables

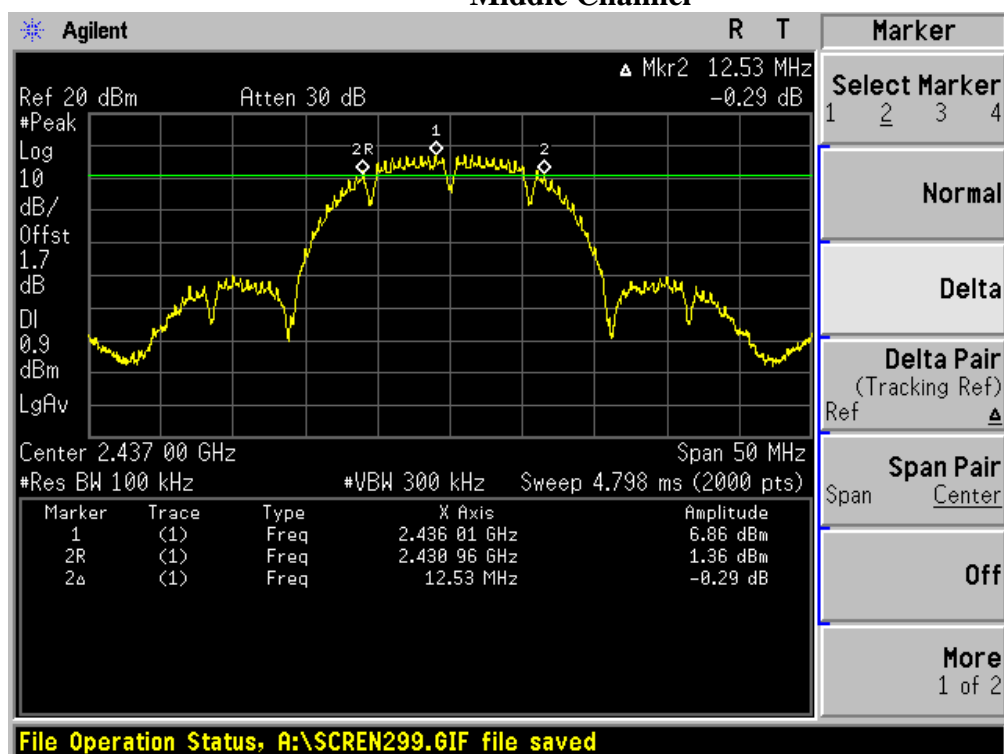
Channel Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (kHz)	Limit (kHz)	Result
802.11b Mode				
2412	1	12530	> 500	Pass
2437	1	12530	> 500	Pass
2462	1	13010	> 500	Pass
802.11g Mode				
2412	6	16530	> 500	Pass
2437	6	16460	> 500	Pass
2462	6	16460	> 500	Pass
802.11n (20M) Mode				
2412	6.5	17630	> 500	Pass
2437	6.5	17630	> 500	Pass
2462	6.5	17630	> 500	Pass
802.11n (40M) Mode				
2422	13.5	36150	> 500	Pass
2437	13.5	36240	> 500	Pass
2452	13.5	36290	> 500	Pass

802.11b Mode:

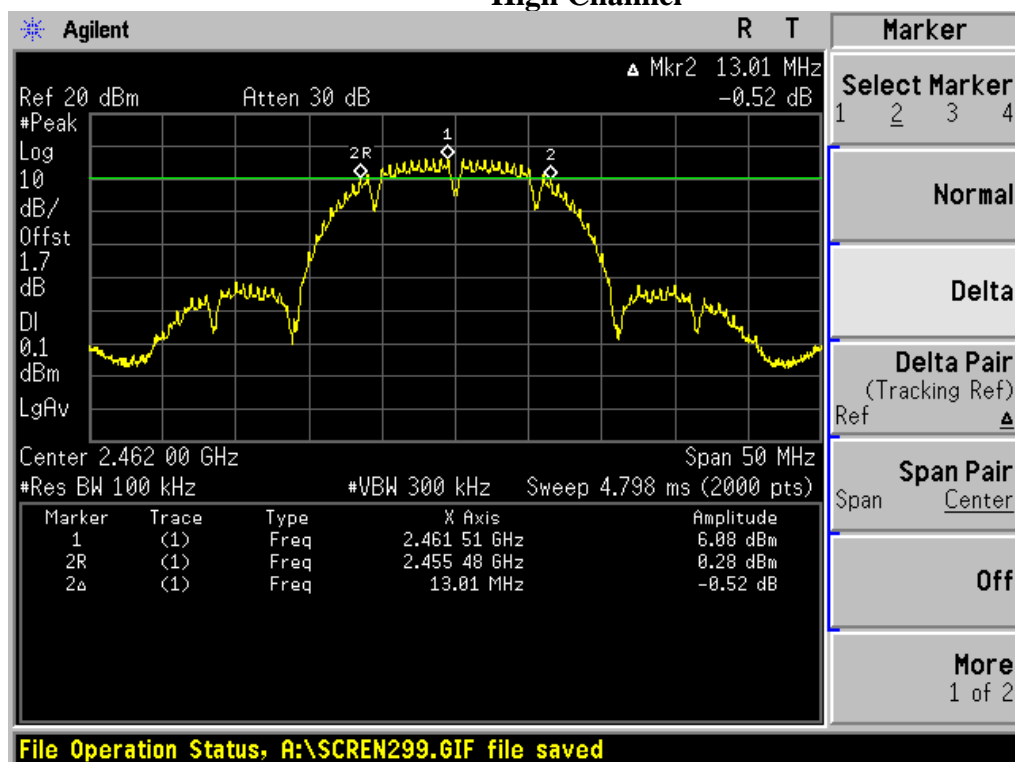
Low Channel



Middle Channel

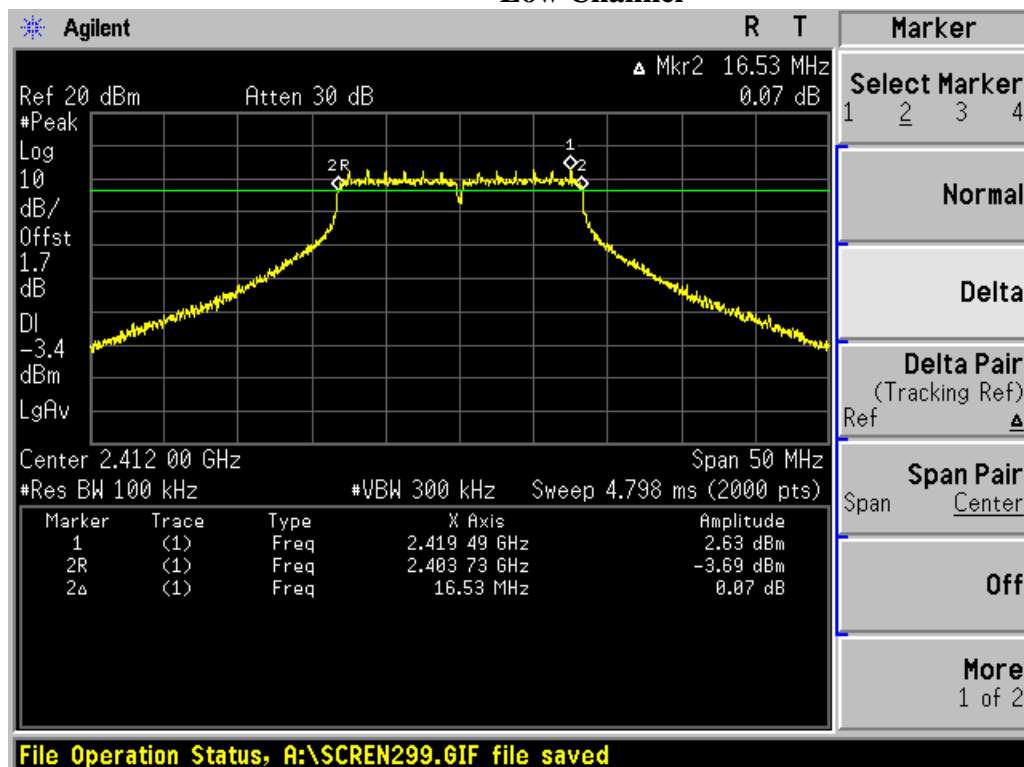


High Channel

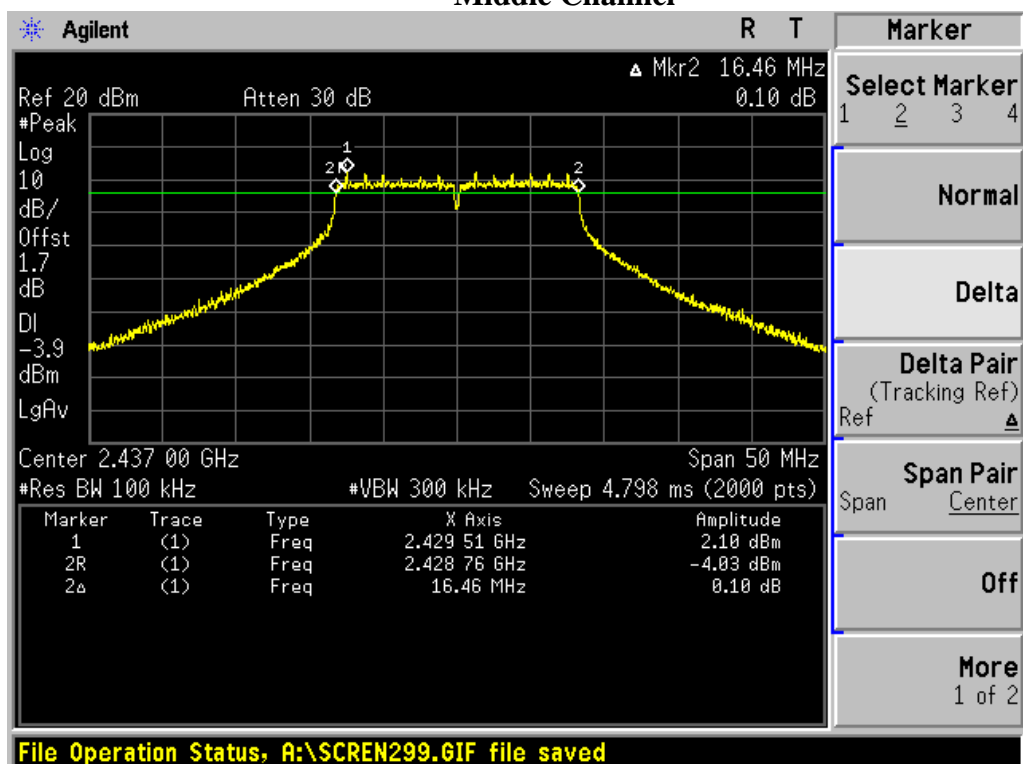


802.11g Mode:

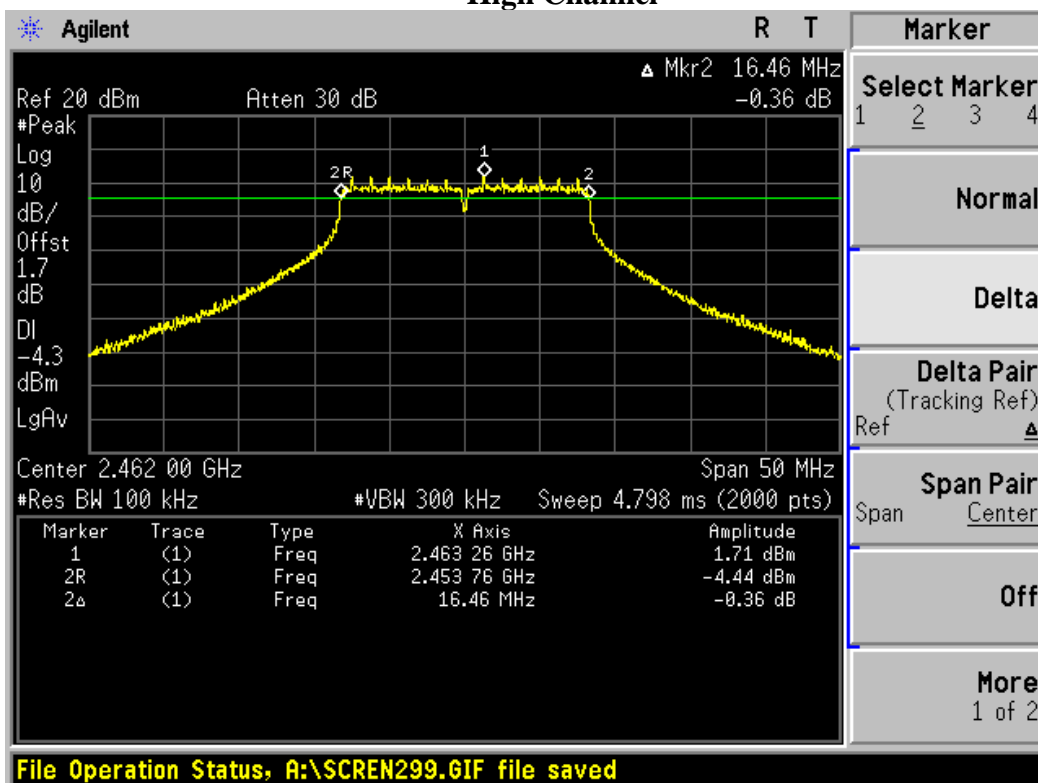
Low Channel



Middle Channel

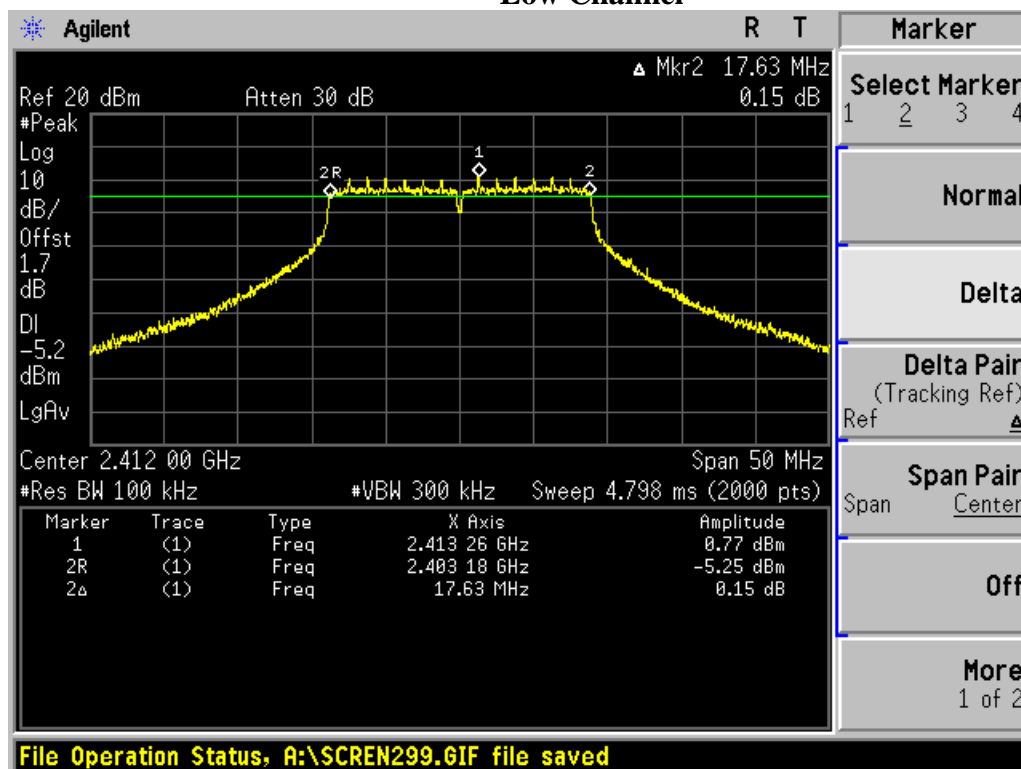


High Channel

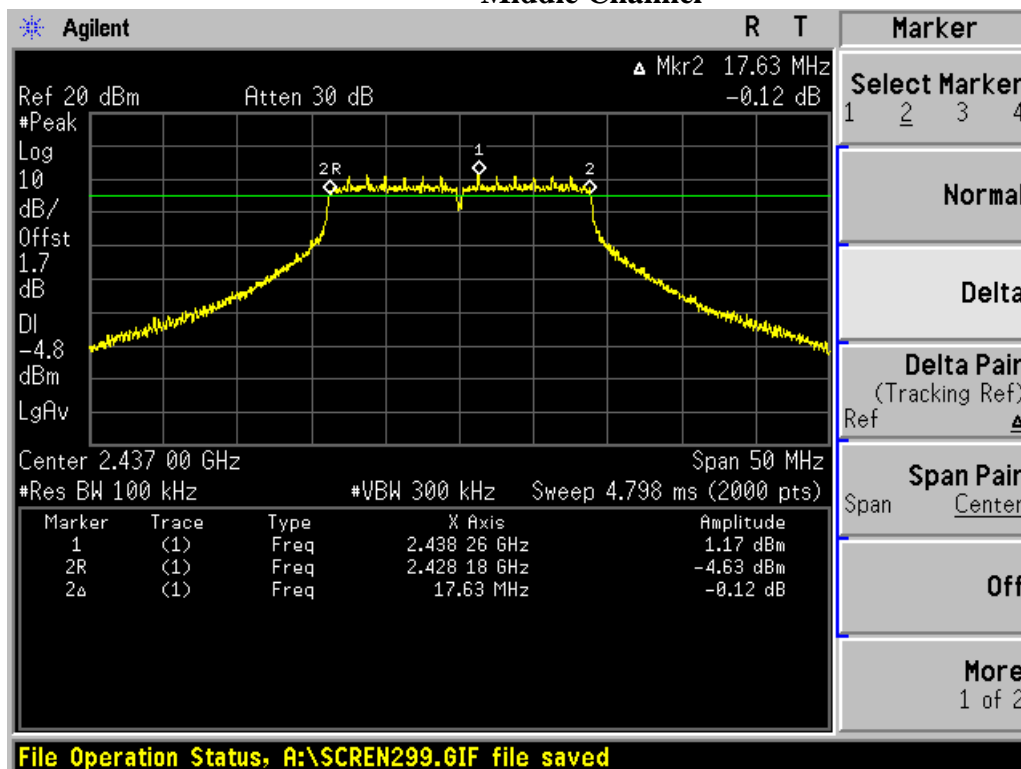


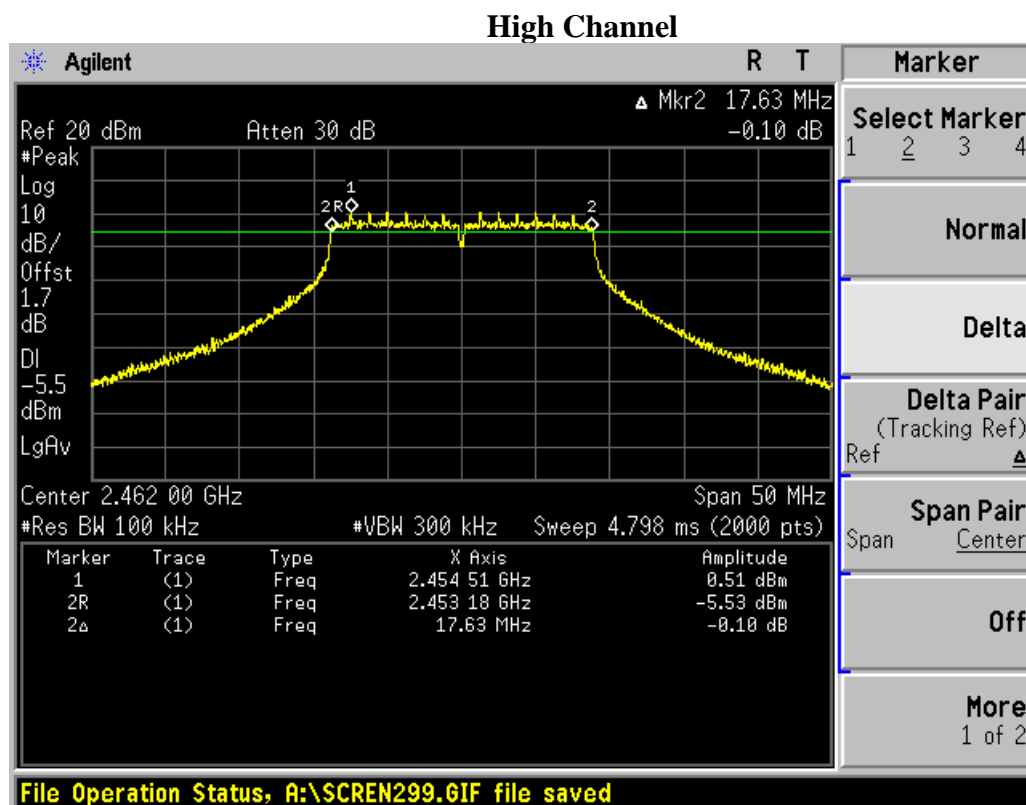
802.11n (20M) Mode:

Low Channel

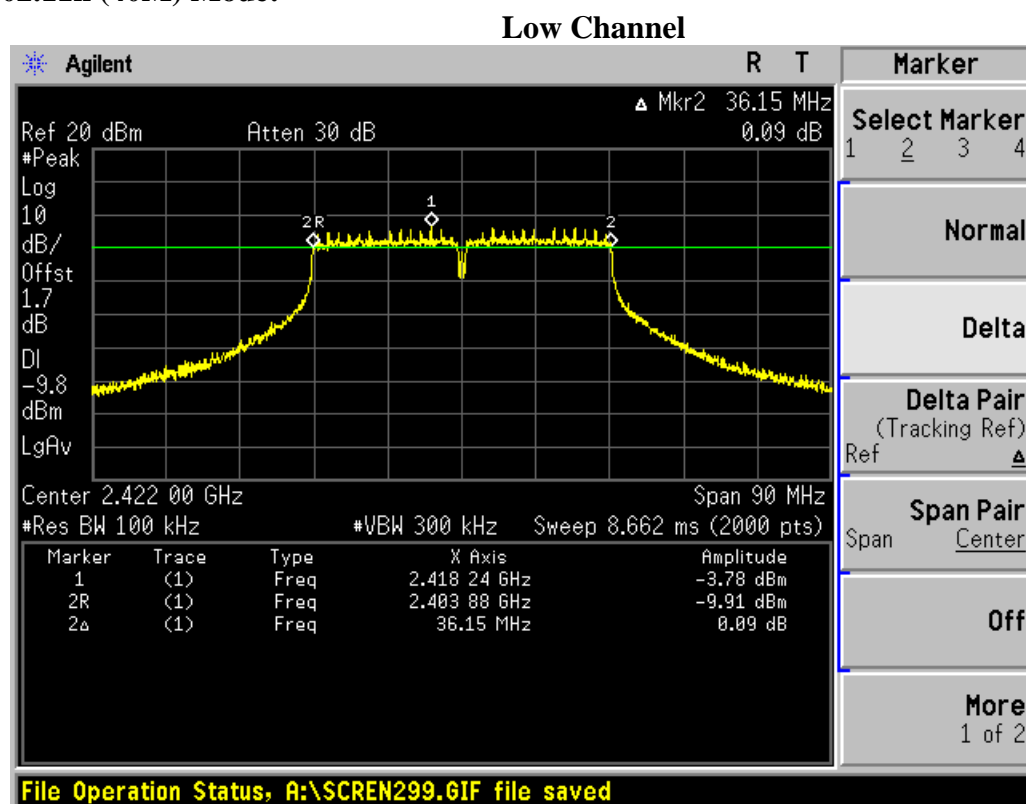


Middle Channel

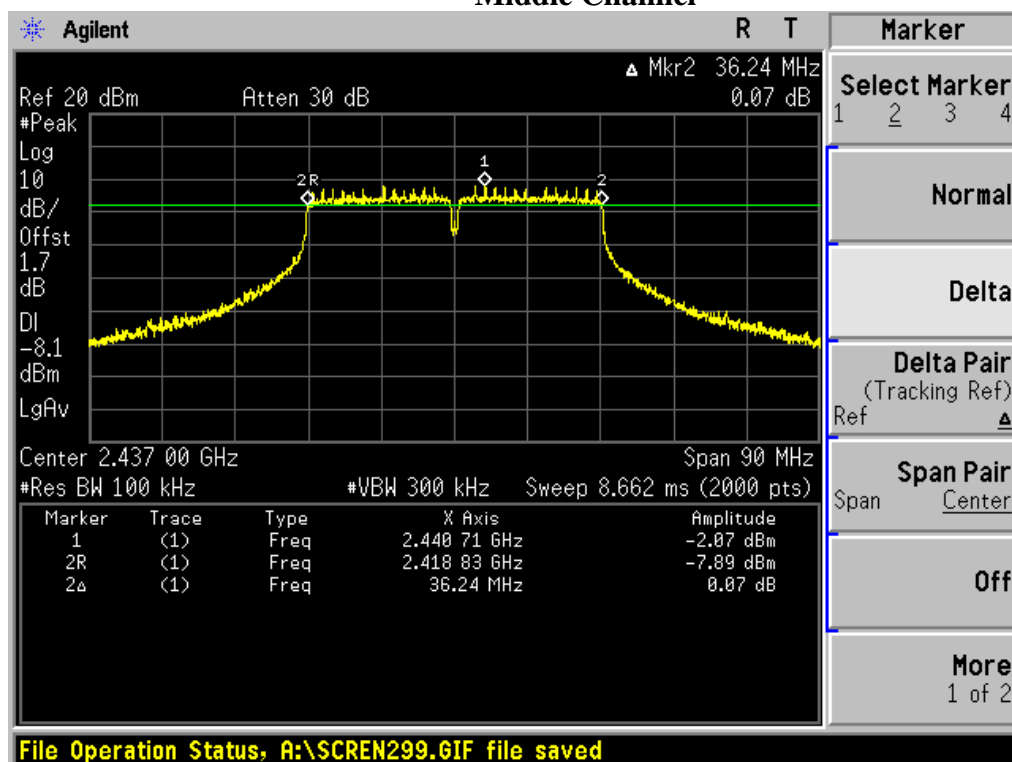




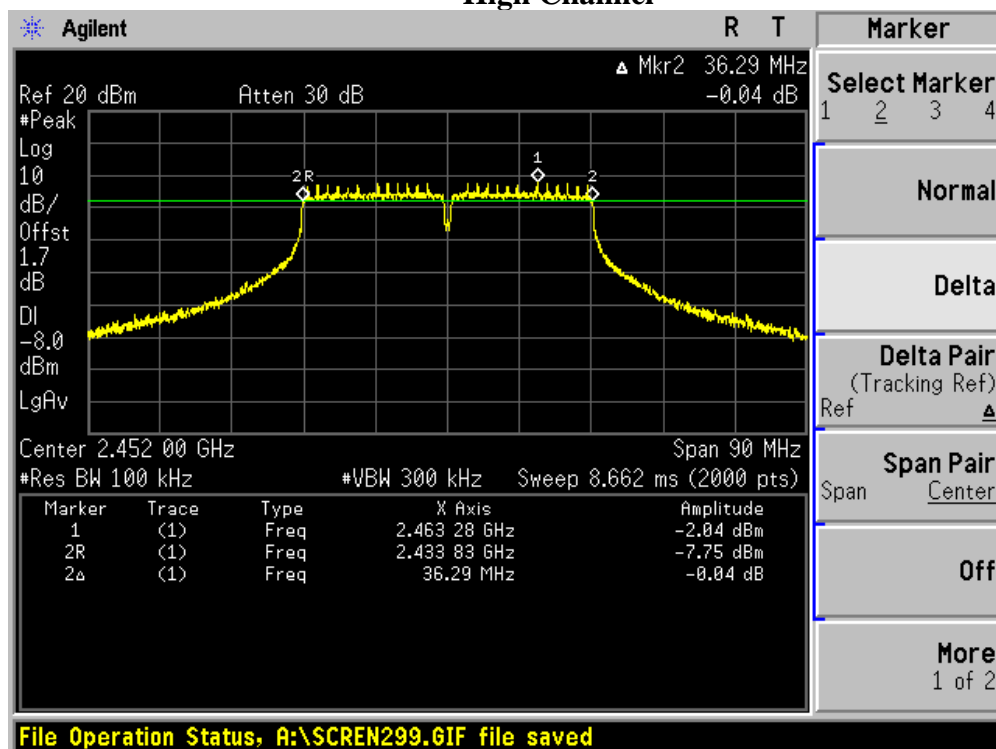
802.11n (40M) Mode:



Middle Channel



High Channel



9. §15.247(B) (3) - Maximum Peak Output Power

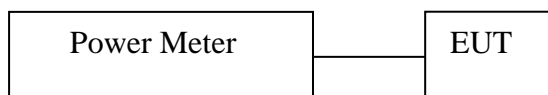
9.1. Test Equipment

Please refer to Section 4 this report.

9.2. Test Procedure

1. The testing follows FCC KDB558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power by power meter.

9.3. Test Setup



9.4. Applicable Standard

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. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

9.5. Test Result**Pass****802.11b Mode:**

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Power (dBm)	Limit (dBm)
Low	2412	1	11.78	30
Mid	2437	1	11.63	30
High	2462	1	11.42	30

802.11g Mode:

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Power (dBm)	Limit (dBm)
Low	2412	6	10.89	30
Mid	2437	6	11.12	30
High	2462	6	10.97	30

802.11n (20M) Mode:

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Power (dBm)	Limit (dBm)
Low	2412	6.5	9.68	30
Mid	2437	6.5	9.34	30
High	2462	6.5	9.41	30

802.11n (40M) Mode:

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Power (dBm)	Limit (dBm)
Low	2422	13.5	9.27	30
Mid	2437	13.5	8.94	30
High	2452	13.5	9.15	30

10. §15.247(D) –Bandwidth of Frequency Band Edge

10.1.Test Equipment

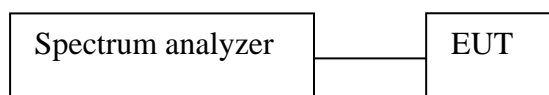
Please refer to Section 4 this report.

10.2.Test Procedure

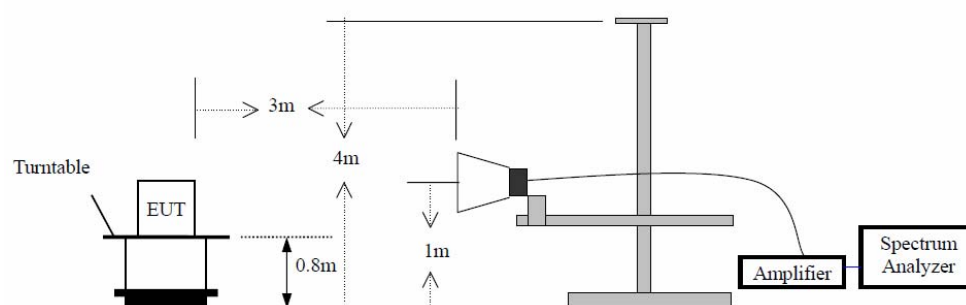
- 1, Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2, Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- 3, Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
Note: For Rdstricted Band
RBW=1MHz
VBW=1 MHz
- 4, Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5, Repeat above procedures until all measured frequencies were complete.

10.3.Test Setup

10.3.1 Conducted test:



10.3.1 Radiated test:



10.4.Applicable Standard

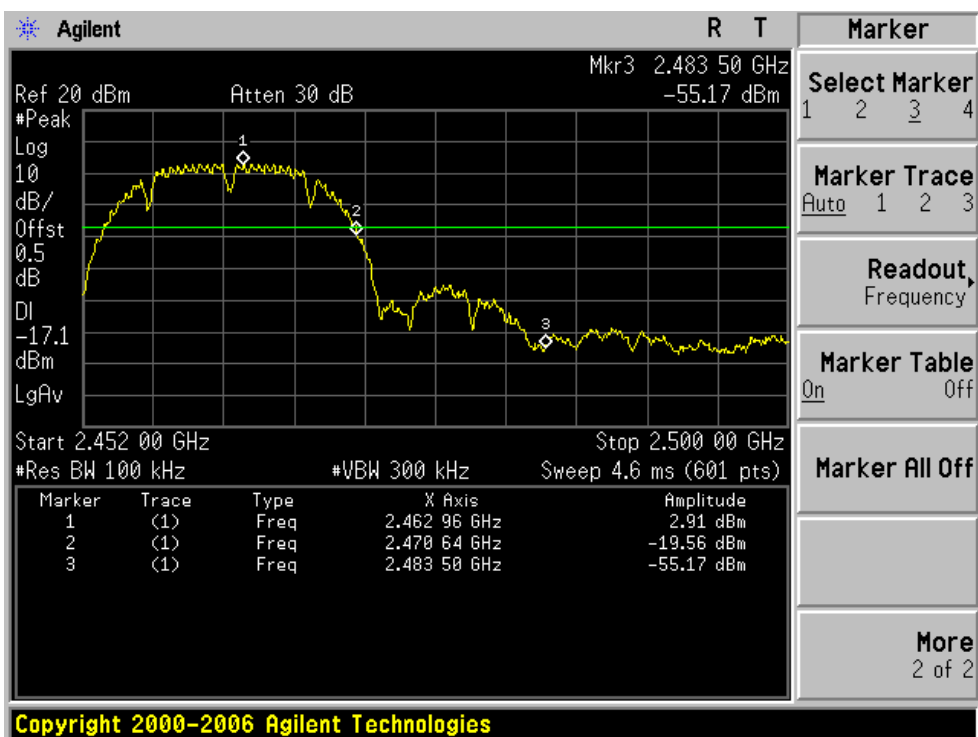
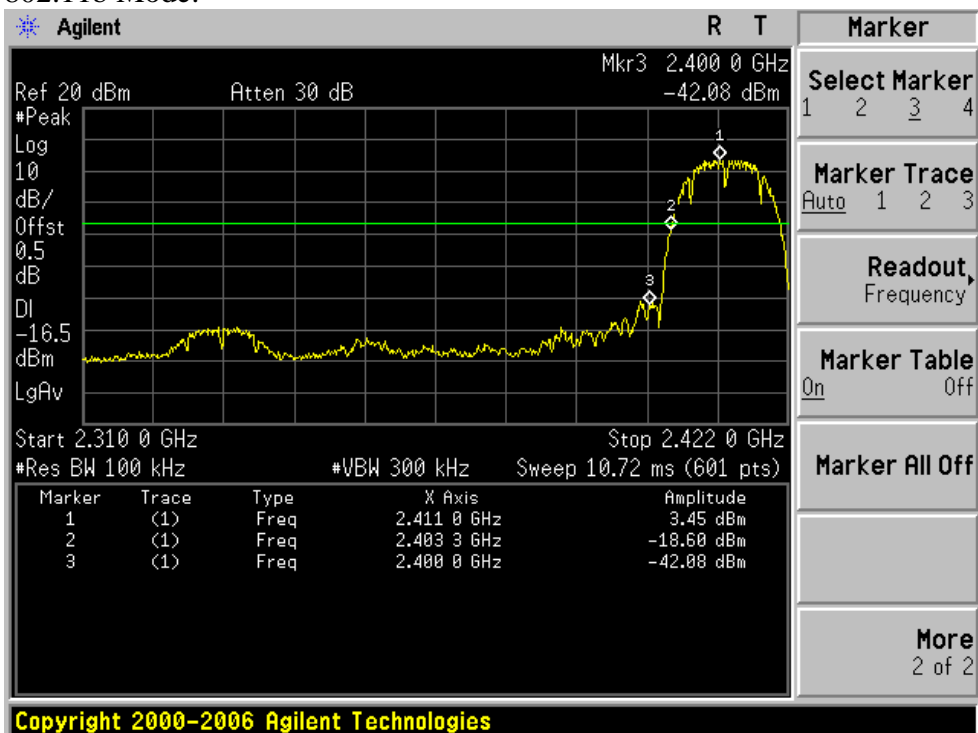
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

10.5.Test Result

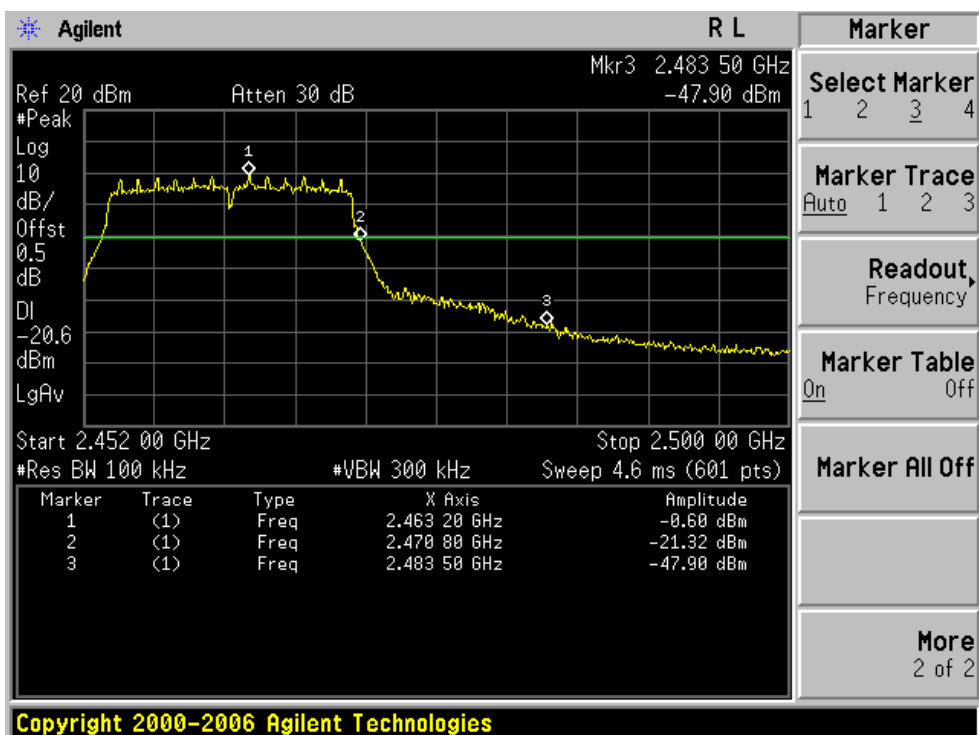
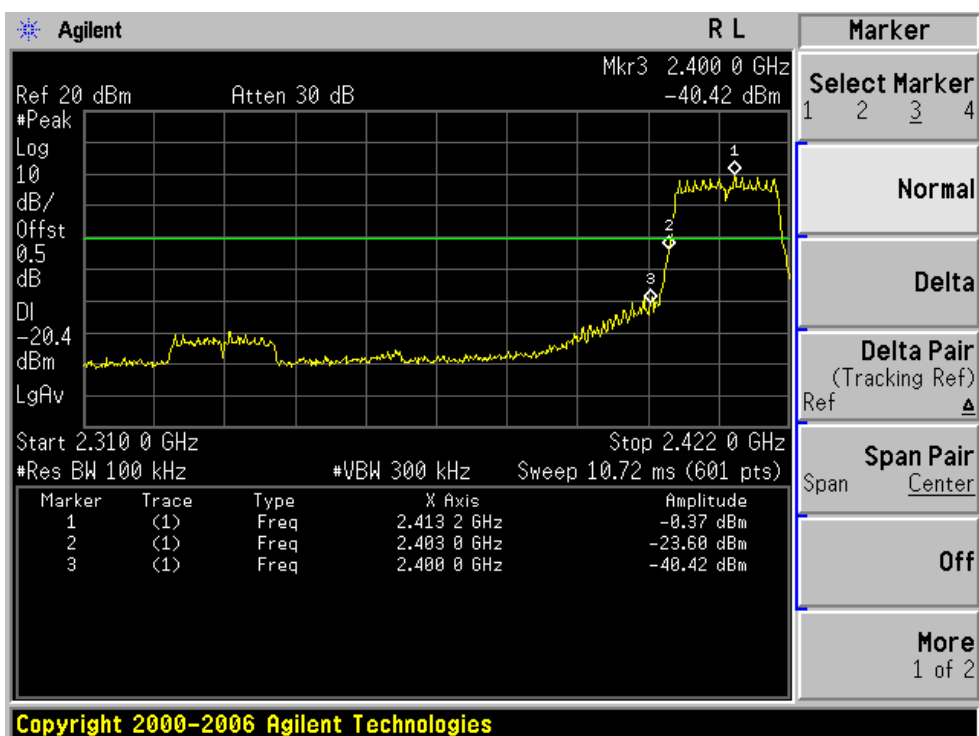
Pass.

Conducted test

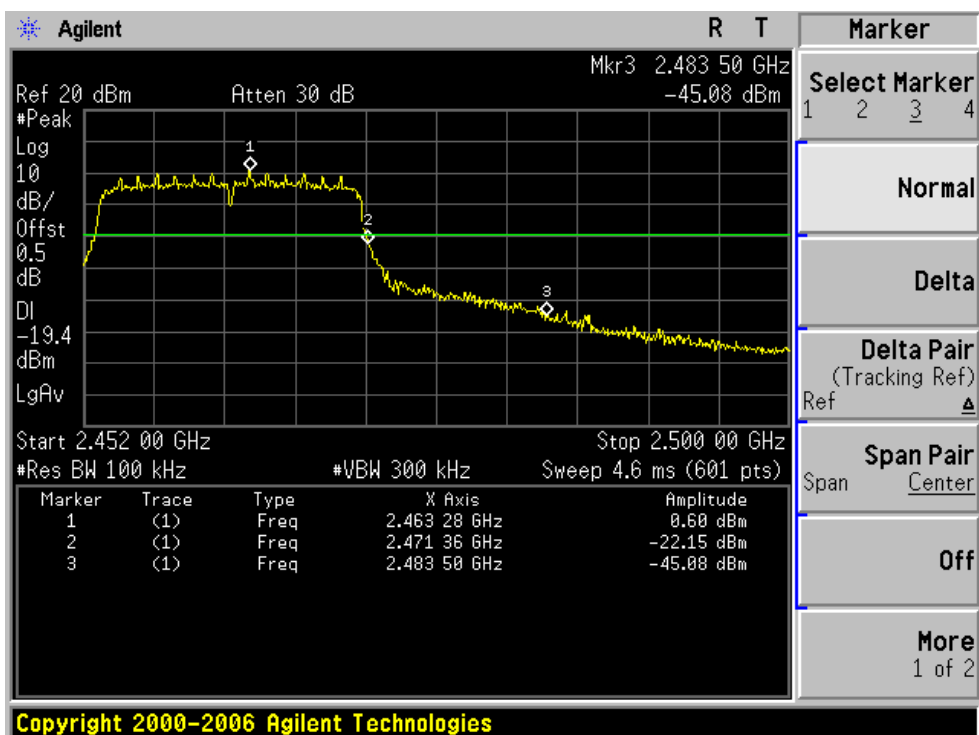
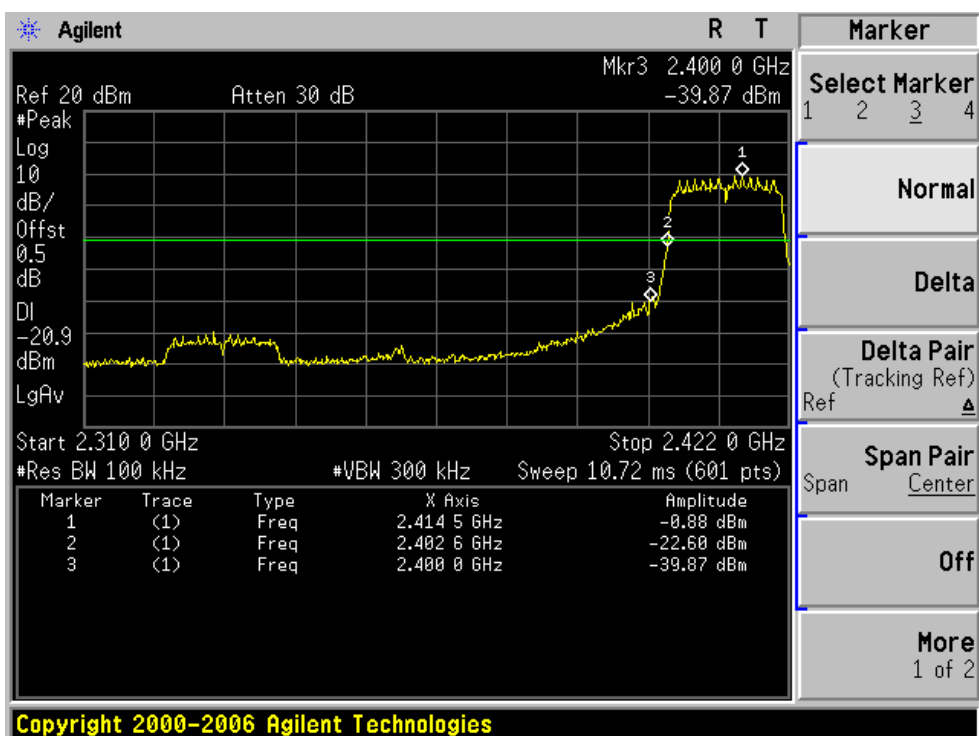
802.11b Mode:



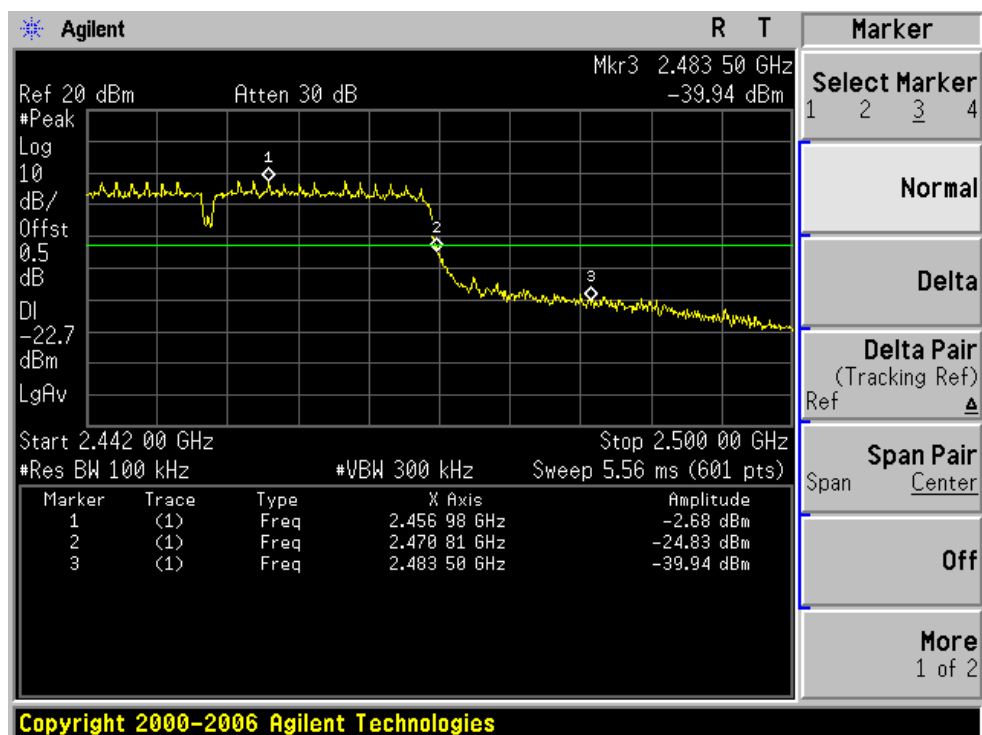
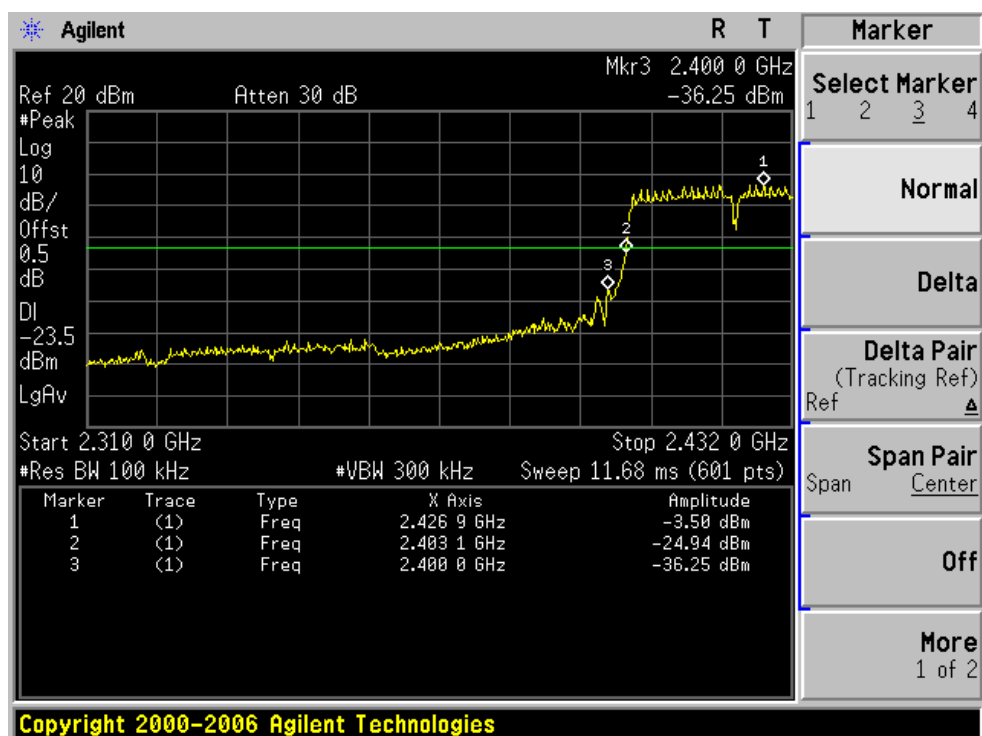
802.11g Mode:



802.11n (20M) Mode:

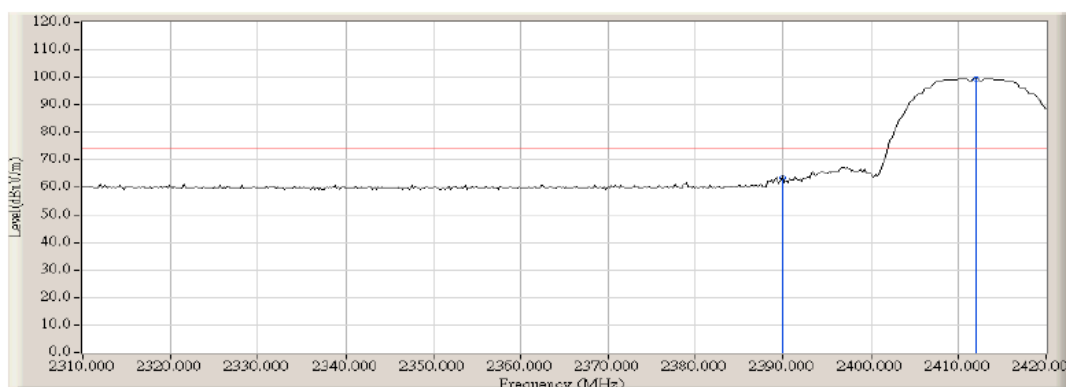


802.11n (40M) Mode:

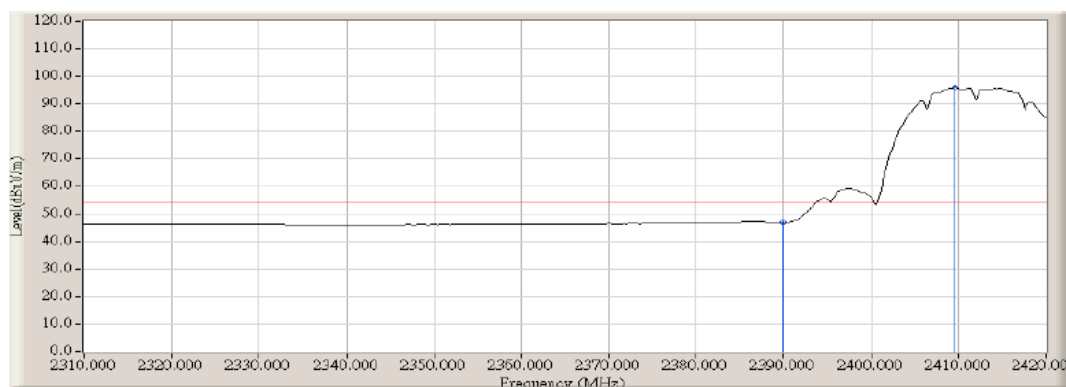


Radiated test

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11b Channel Low 2412MHz	Polarization:	HORIZONTAL



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	2390.000	32.722	30.671	63.393	-10.577	73.970	PEAK
2	* 2411.933	32.731	66.830	99.562	N/A	N/A	PEAK

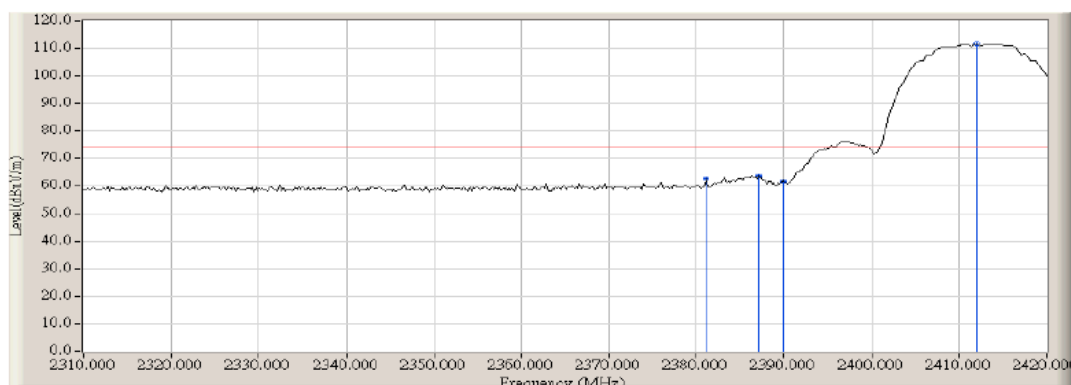


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	2390.000	32.722	14.179	46.901	-7.069	53.970	AVERAGE
2	* 2409.550	32.729	63.193	95.922	N/A	N/A	AVERAGE

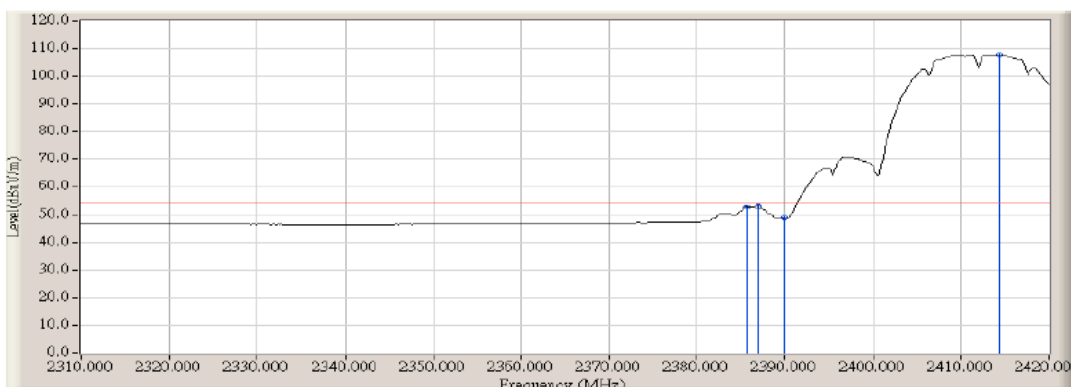
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11b Channel Low 2412MHz	Polarization:	VERTICAL



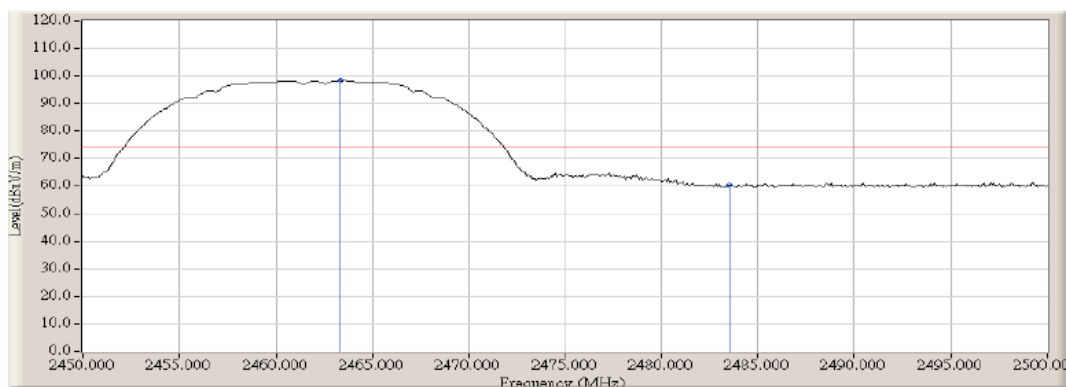
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2381.133	32.728	29.944	62.672	-11.298	73.970	PEAK
2		2387.183	32.724	31.070	63.794	-10.176	73.970	PEAK
3		2390.000	32.722	29.178	61.900	-12.070	73.970	PEAK
4	*	2411.933	32.731	78.965	111.697	N/A	N/A	PEAK



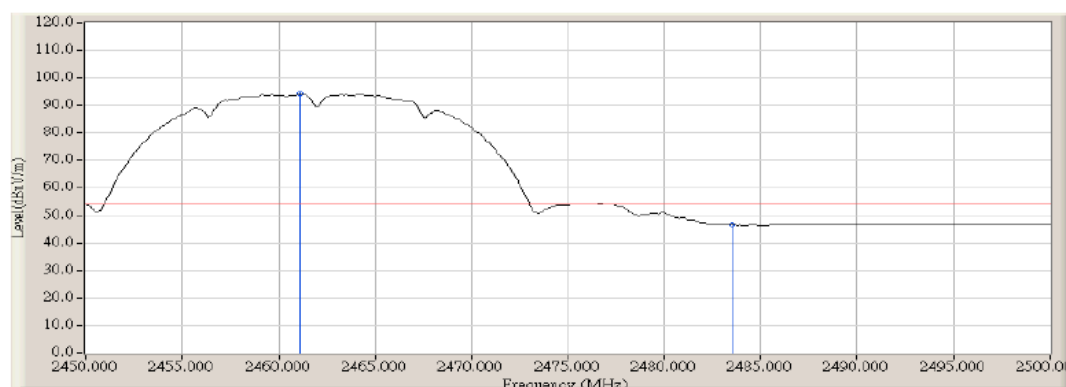
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2385.717	32.725	20.129	52.854	-1.116	53.970	AVERAGE
2		2387.000	32.724	20.276	53.000	-0.970	53.970	AVERAGE
3		2390.000	32.722	16.022	48.744	-5.226	53.970	AVERAGE
4	*	2414.317	32.736	75.101	107.837	N/A	N/A	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test: Deceber 10, 2012Temperature: 24°CEUT: Android TV dongleHumidity: 58%Model No.: ATVD-001Power Supply: AC 120V/60HzTest Mode: 802.11b Channel High 2462MHzPolarization: HORIZONTAL

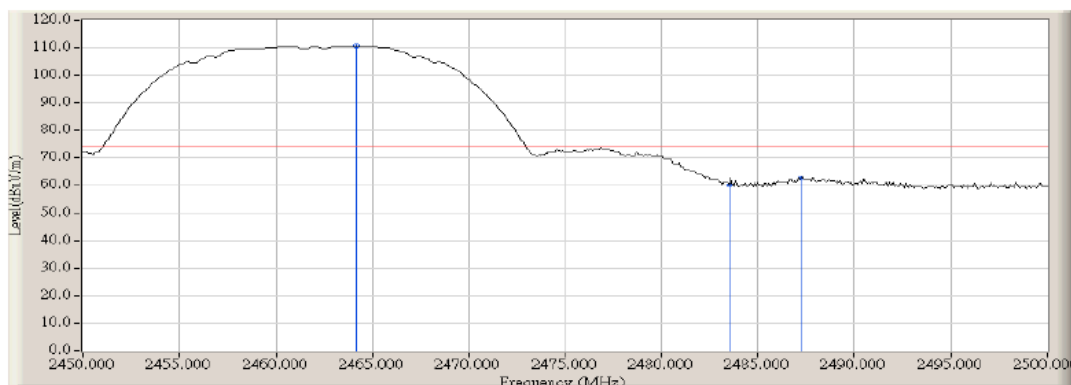
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2463.333	32.790	65.514	98.304	N/A	N/A	PEAK
2		2483.500	32.787	27.551	60.338	-13.632	73.970	PEAK



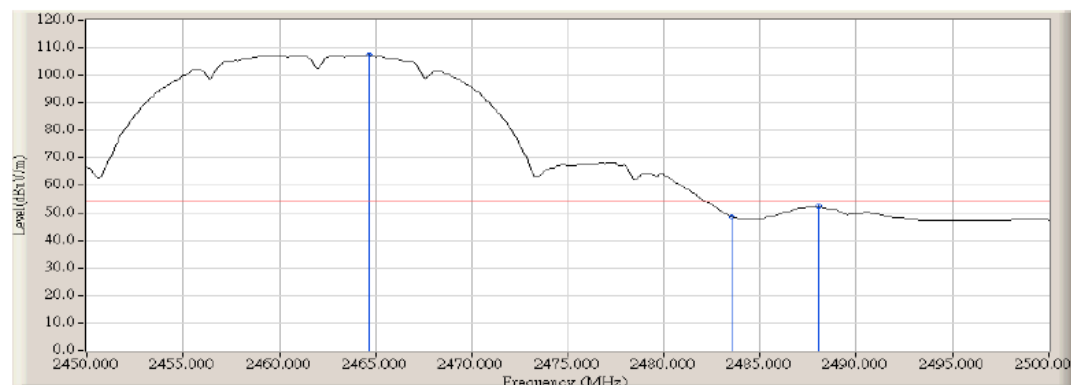
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.083	32.789	61.405	94.194	N/A	N/A	AVERAGE
2		2483.500	32.787	13.727	46.514	-7.456	53.970	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test: Deceber 10, 2012Temperature: 24°CEUT: Android TV dongleHumidity: 58%Model No.: ATVD-001Power Supply: AC 120V/60HzTest Mode: 802.11b Channel High 2462MHzPolarization: VERTICAL

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2464.167	32.790	77.814	110.604	N/A	N/A	PEAK
2		2483.500	32.787	27.270	60.057	-13.913	73.970	PEAK
3		2487.250	32.785	30.053	62.838	-11.132	73.970	PEAK



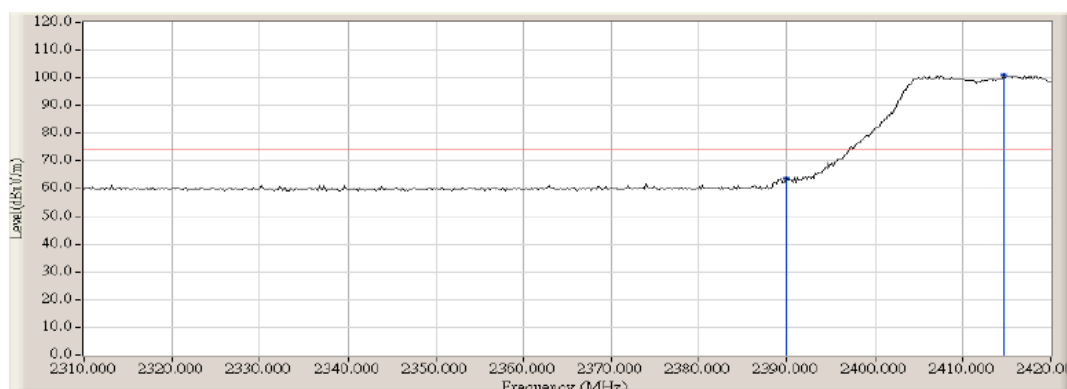
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2464.667	32.790	74.553	107.343	N/A	N/A	AVERAGE
2		2483.500	32.787	15.889	48.676	-5.294	53.970	AVERAGE
3		2488.083	32.785	19.594	52.379	-1.591	53.970	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Radiated test

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11g Channel Low 2412MHz	Polarization:	HORIZONTAL



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		2390.000	32.722	30.932	63.654	-10.316	73.970	PEAK
2	*	2414.683	32.737	68.442	101.179	N/A	N/A	PEAK



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		2390.000	32.722	14.974	47.696	-6.274	53.970	AVERAGE
2	*	2405.333	32.726	56.762	89.489	N/A	N/A	AVERAGE

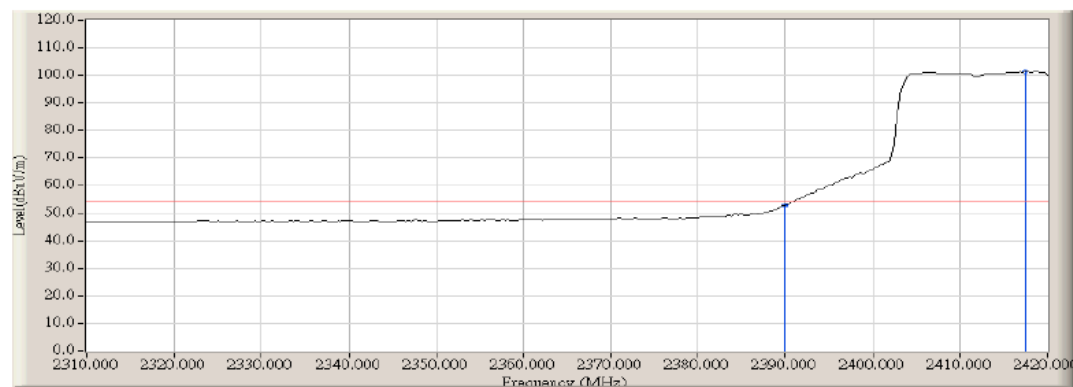
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11g Channel Low 2412MHz	Polarization:	VERTICAL



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	37.835	70.557	-3.413	73.970	PEAK
2	*	2415.050	32.738	80.336	113.073	N/A	N/A	PEAK

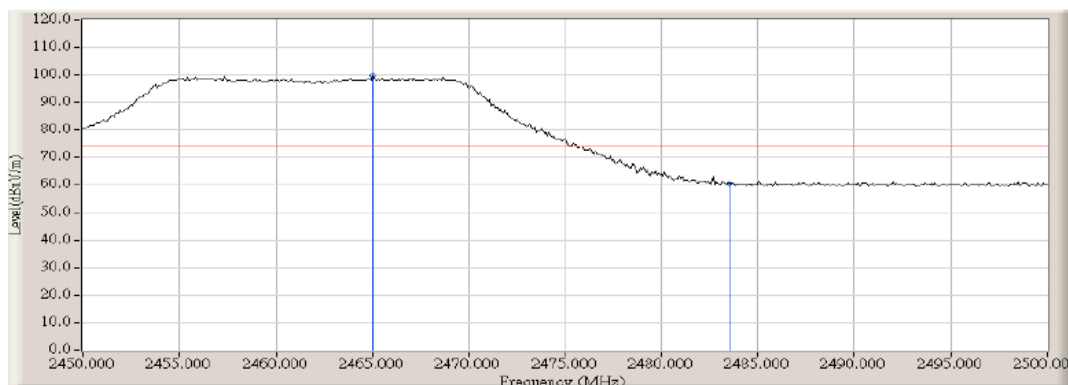


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	20.175	52.897	-1.073	53.970	AVERAGE
2	*	2417.433	32.741	68.530	101.271	N/A	N/A	AVERAGE

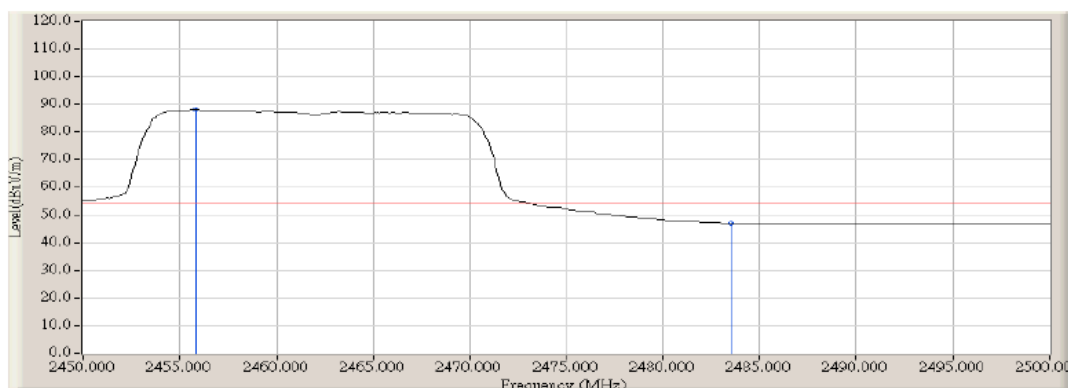
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11g Channel High 2462MHz	Polarization:	HORIZONTAL



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2465.000	32.790	67.082	99.872	N/A	N/A	PEAK
2		2483.500	32.787	27.607	60.394	-13.576	73.970	PEAK

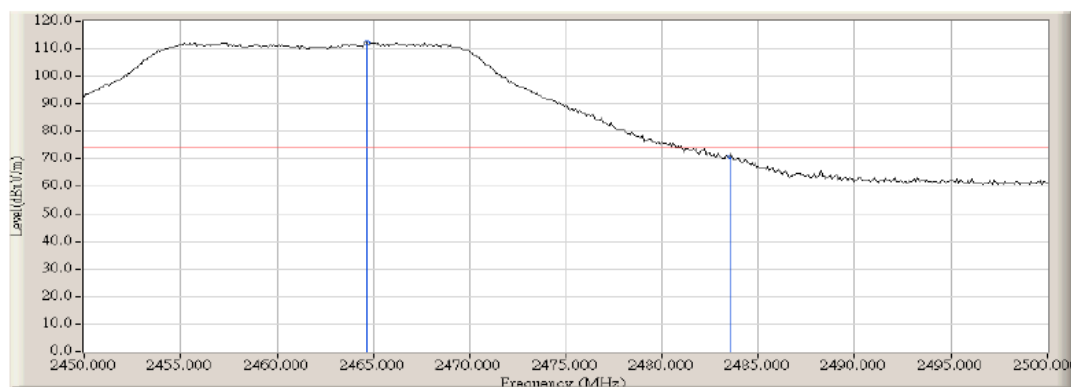


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2455.833	32.786	55.392	88.178	N/A	N/A	AVERAGE
2		2483.500	32.787	14.192	46.979	-6.991	53.970	AVERAGE

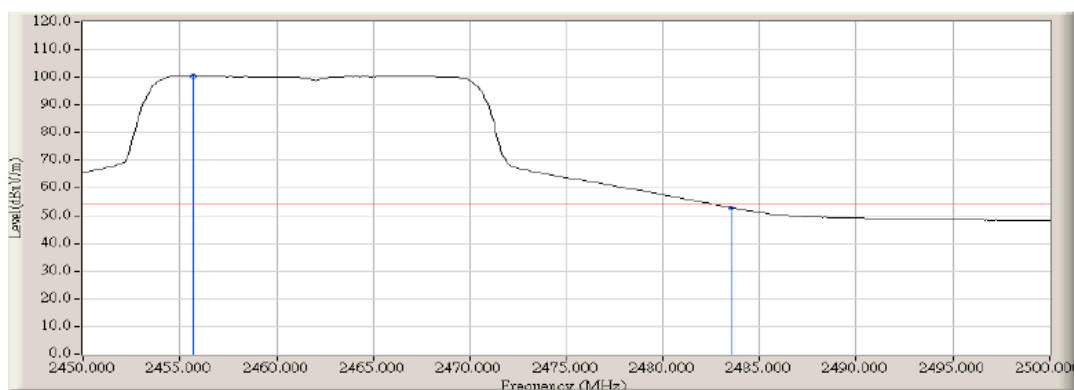
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11g Channel High 2462MHz	Polarization:	VERTICAL



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2464.667	32.790	79.617	112.407	N/A	N/A	PEAK
2		2483.500	32.787	37.854	70.641	-3.329	73.970	PEAK

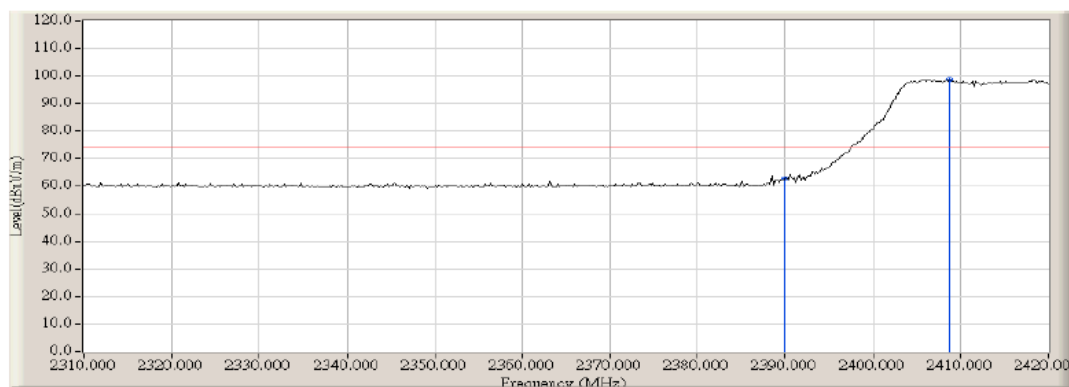


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2455.667	32.786	67.678	100.464	N/A	N/A	AVERAGE
2		2483.500	32.787	20.129	52.916	-1.054	53.970	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.
 2. The average measurement was not performed when the peak measured data under the limit of average detection.

Radiated test

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT20 Channel Low 2412MHz	Polarization:	HORIZONTAL



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	2390.000	32.722	30.062	62.784	-11.186	73.970	PEAK
2	* 2408.817	32.728	66.167	98.896	N/A	N/A	PEAK

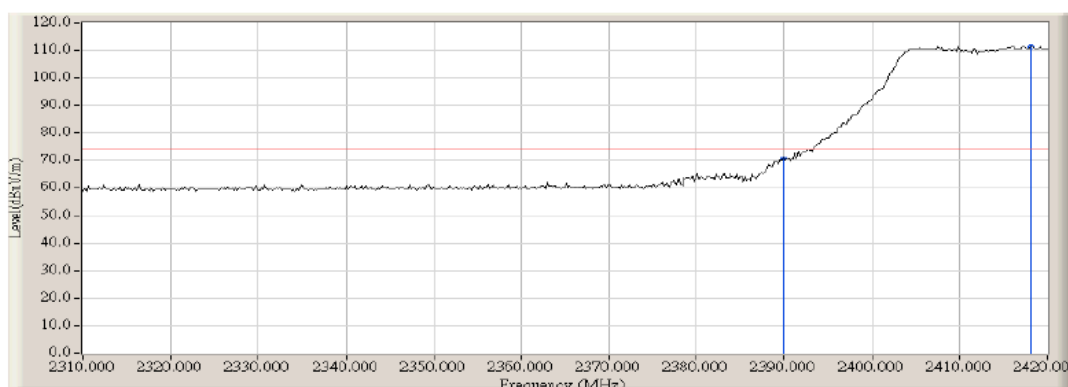


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	2390.000	32.722	14.980	47.702	-6.268	53.970	AVERAGE
2	* 2404.967	32.727	54.666	87.392	N/A	N/A	AVERAGE

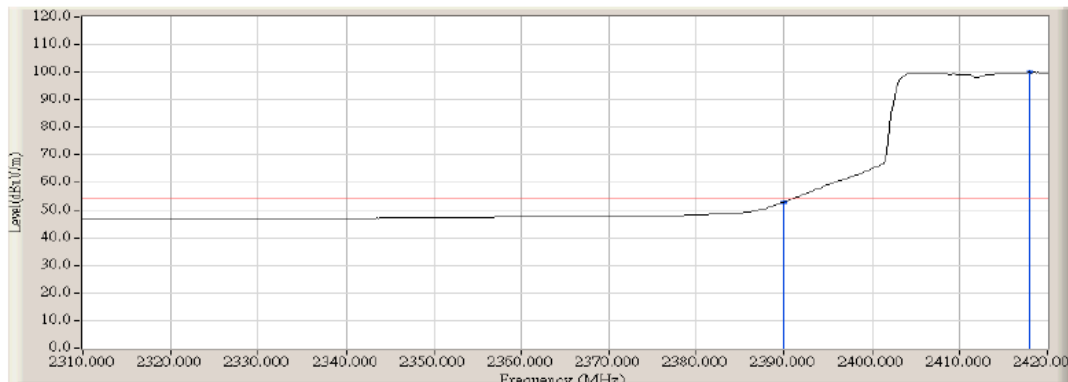
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT20 Channel Low 2412MHz	Polarization:	VERTICAL



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	37.932	70.654	-3.316	73.970	PEAK
2	*	2418.167	32.743	78.667	111.410	N/A	N/A	PEAK

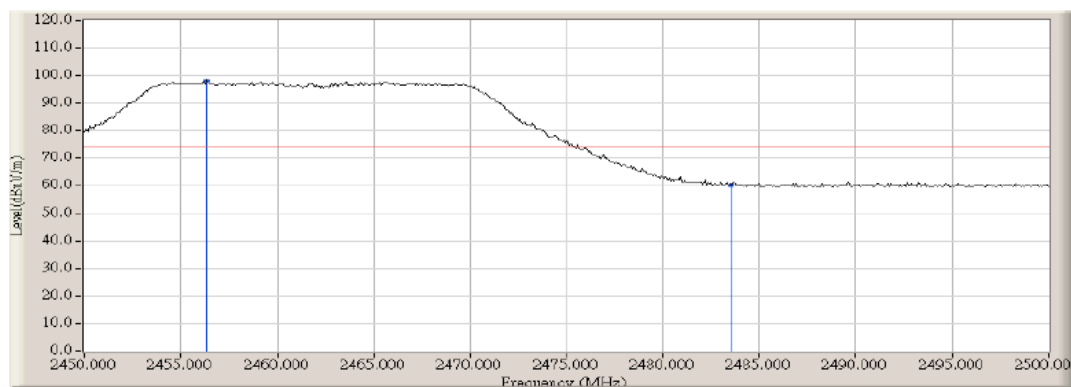


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	20.193	52.915	-1.055	53.970	AVERAGE
2	*	2417.983	32.742	67.163	99.905	N/A	N/A	AVERAGE

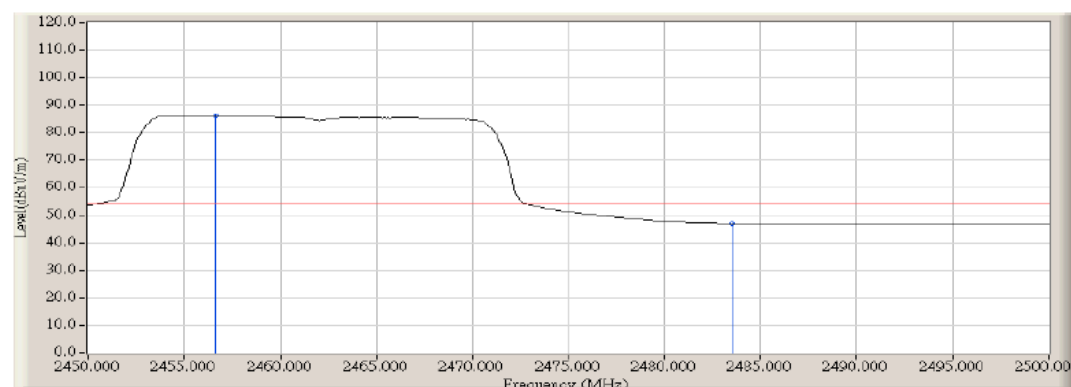
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT20 Channel High 2462MHz	Polarization:	HORIZONTAL



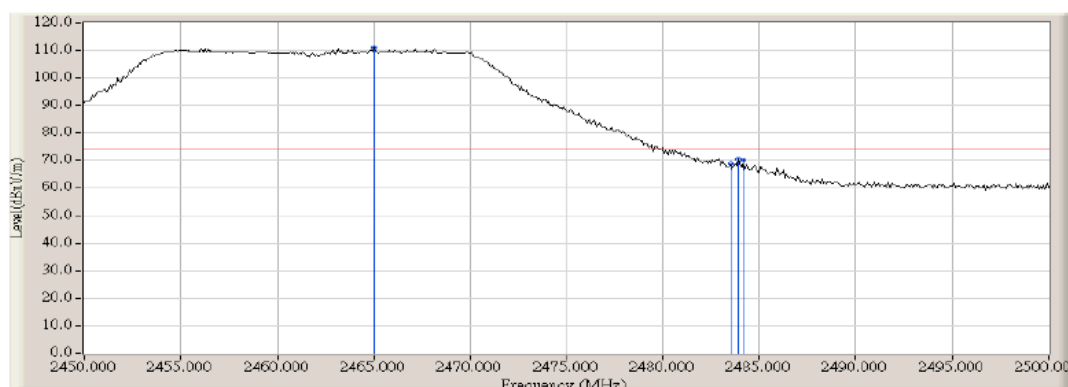
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2456.333	32.787	65.245	98.032	N/A	N/A	PEAK
2		2483.500	32.787	27.482	60.269	-13.701	73.970	PEAK



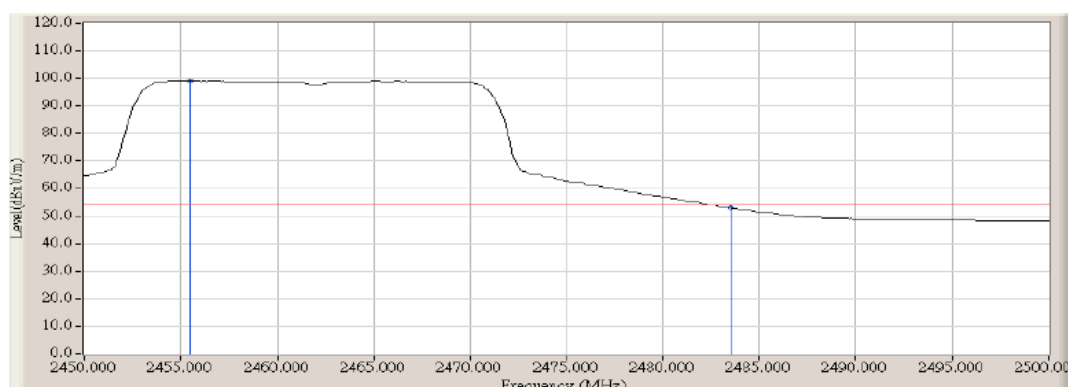
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2456.667	32.787	53.584	86.371	N/A	N/A	AVERAGE
2		2483.500	32.787	14.189	46.976	-6.994	53.970	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test: Deceber 10, 2012Temperature: 24°CEUT: Android TV dongleHumidity: 58%Model No.: ATVD-001Power Supply: AC 120V/60HzTest Mode: 802.11n HT20 Channel High 2462MHzPolarization: VERTICAL

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2465.000	32.790	78.245	111.035	N/A	N/A	PEAK
2		2483.500	32.787	35.982	68.769	-5.201	73.970	PEAK
3		2483.917	32.787	37.638	70.425	-3.545	73.970	PEAK
4		2484.167	32.787	37.505	70.292	-3.678	73.970	PEAK

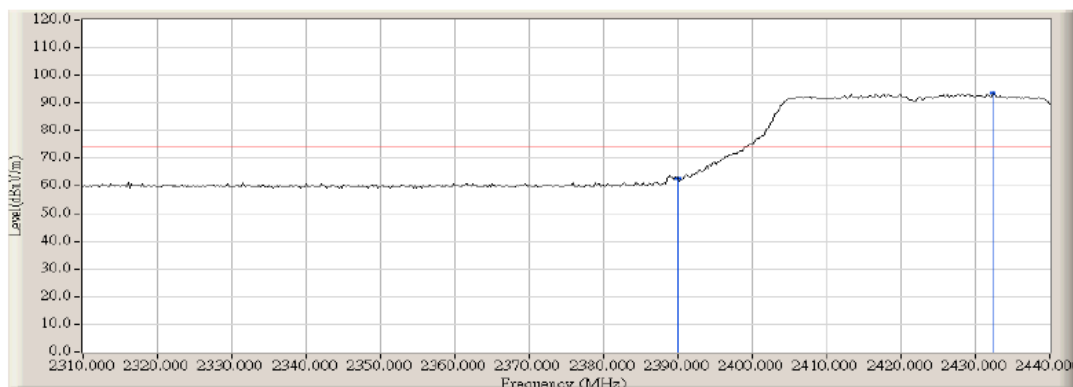


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2455.500	32.786	66.315	99.101	N/A	N/A	AVERAGE
2		2483.500	32.787	20.147	52.934	-1.036	53.970	AVERAGE

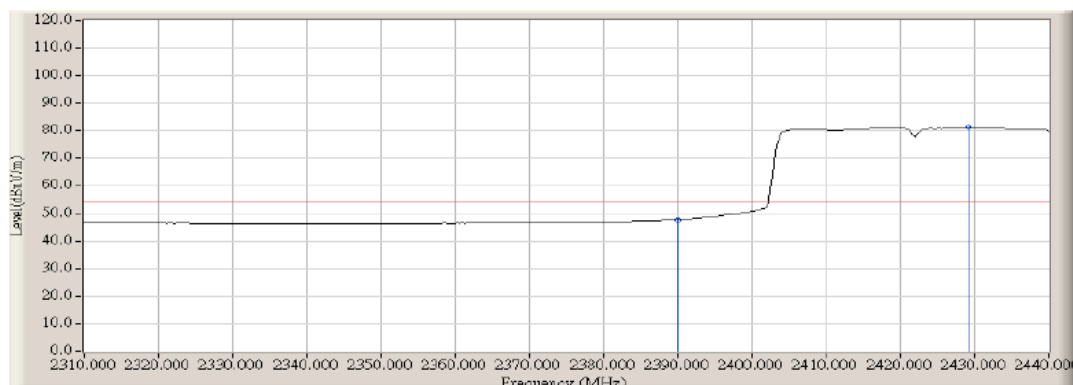
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT40 Channel Low 2422MHz	Polarization:	HORIZONTAL



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	30.112	62.834	-11.136	73.970	PEAK
2	*	2432.417	32.765	60.861	93.626	N/A	N/A	PEAK

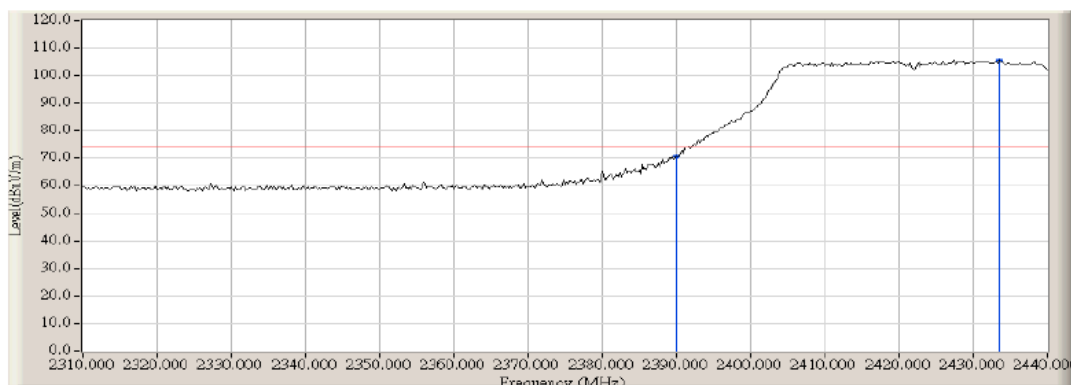


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	14.984	47.706	-6.264	53.970	AVERAGE
2	*	2429.167	32.761	48.649	81.410	N/A	N/A	AVERAGE

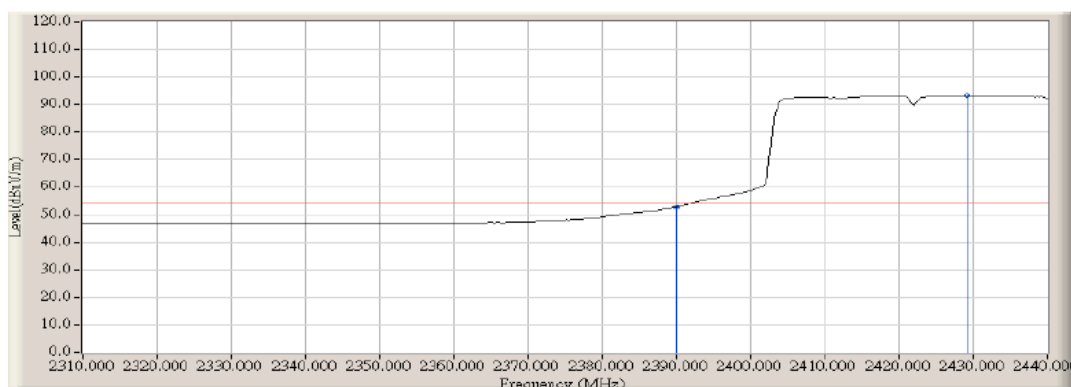
Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT40 Channel Low 2422MHz	Polarization:	VERTICAL



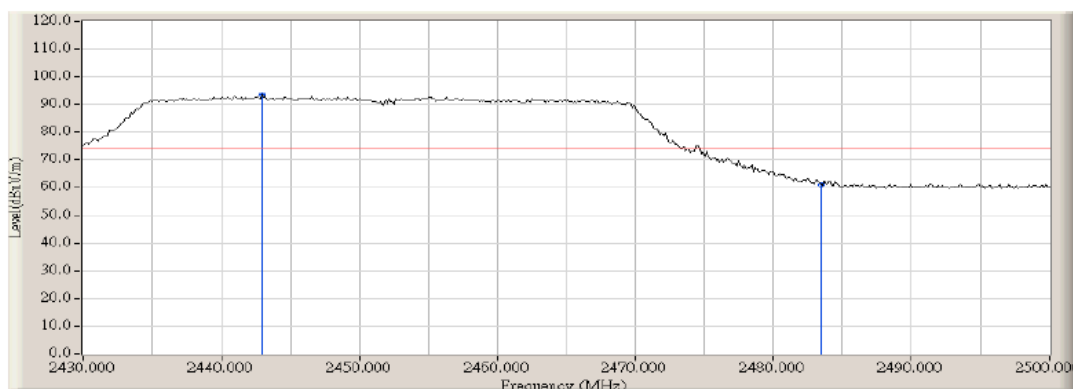
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2390.000	32.722	38.056	70.778	-3.192	73.970	PEAK
2	* 2433.500	32.767	72.730	105.496	N/A	N/A	PEAK



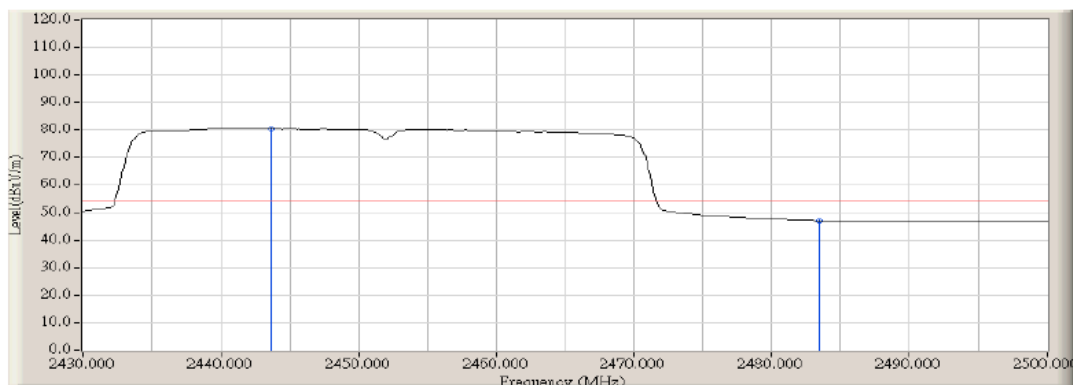
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2390.000	32.722	20.180	52.902	-1.068	53.970	AVERAGE
2	* 2429.167	32.761	60.668	93.429	N/A	N/A	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.
 2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT40 Channel High 2452MHz	Polarization:	HORIZONTAL



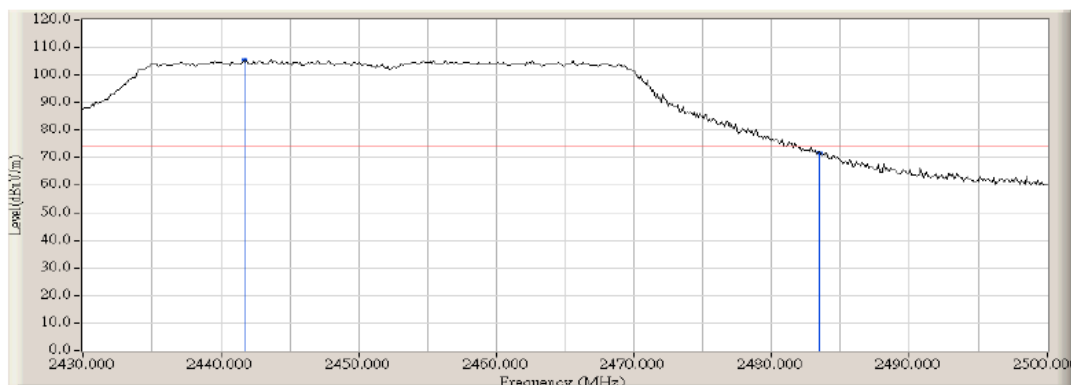
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2442.950	32.777	60.830	93.608	N/A	N/A	PEAK
2		2483.500	32.787	28.197	60.984	-12.986	73.970	PEAK



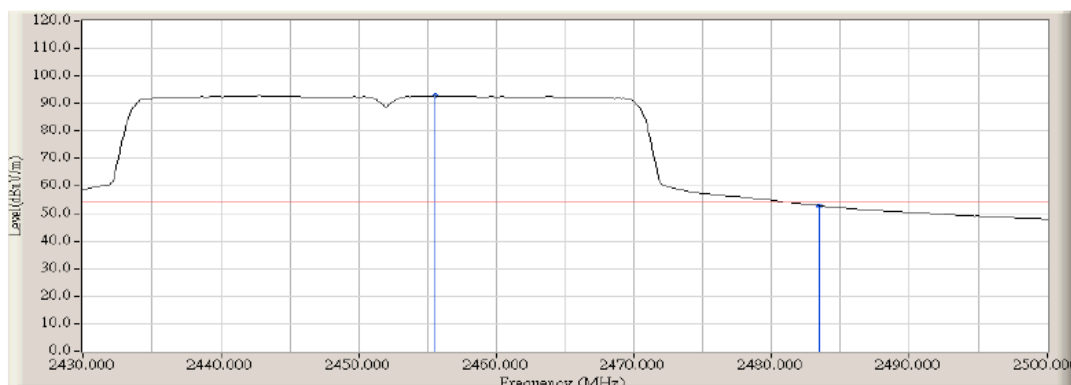
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2443.650	32.779	47.809	80.587	N/A	N/A	AVERAGE
2		2483.500	32.787	14.300	47.087	-6.883	53.970	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.
 2. The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	802.11n HT40 Channel High 2452MHz	Polarization:	VERTICAL



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2441.667	32.776	72.753	105.529	N/A	N/A	PEAK
2		2483.500	32.787	39.068	71.855	-2.115	73.970	PEAK



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2455.550	32.786	60.050	92.836	N/A	N/A	AVERAGE
2		2483.500	32.787	19.979	52.766	-1.204	53.970	AVERAGE

Note: 1. Measurement Level = Reading Level + Correct Factor.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

11. §15.247(E) - Power Spectral Density

11.1. Test Equipment

Please refer to Section 4 this report.

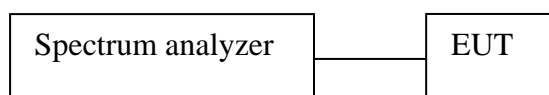
11.2. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 D01 DTS V02 Section 9.0 for compliance to FCC 47CFR 15.247 requirements.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW = 100 kHz.
4. Set the VBW = 300 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{ dB}$.

11.3. Test Setup



11.4. Applicable Standard

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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

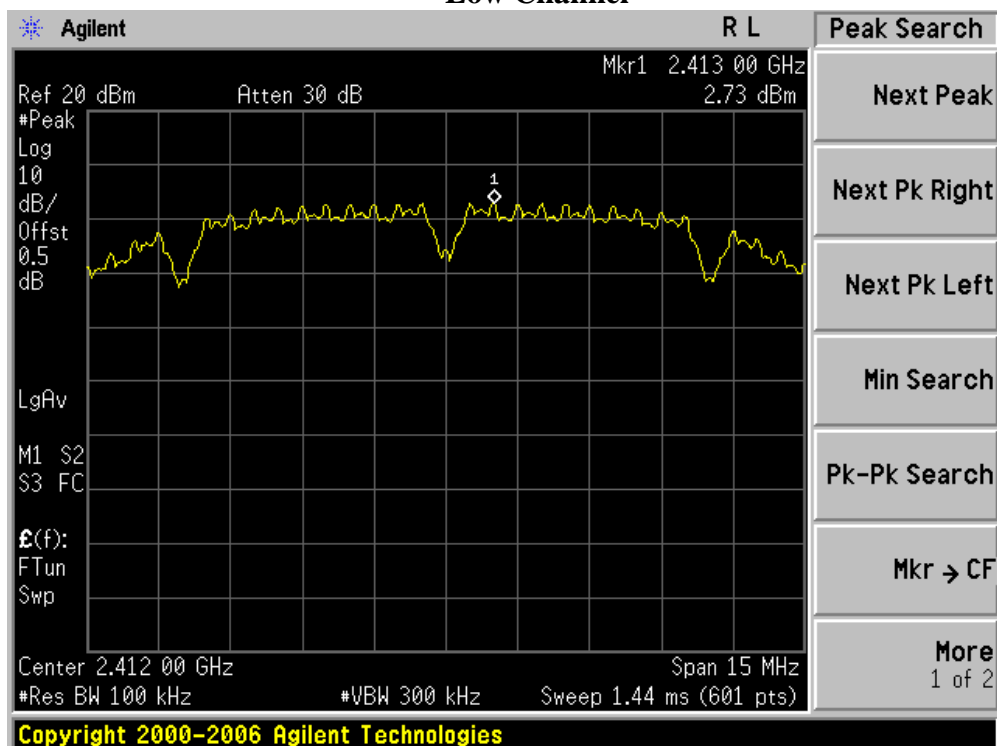
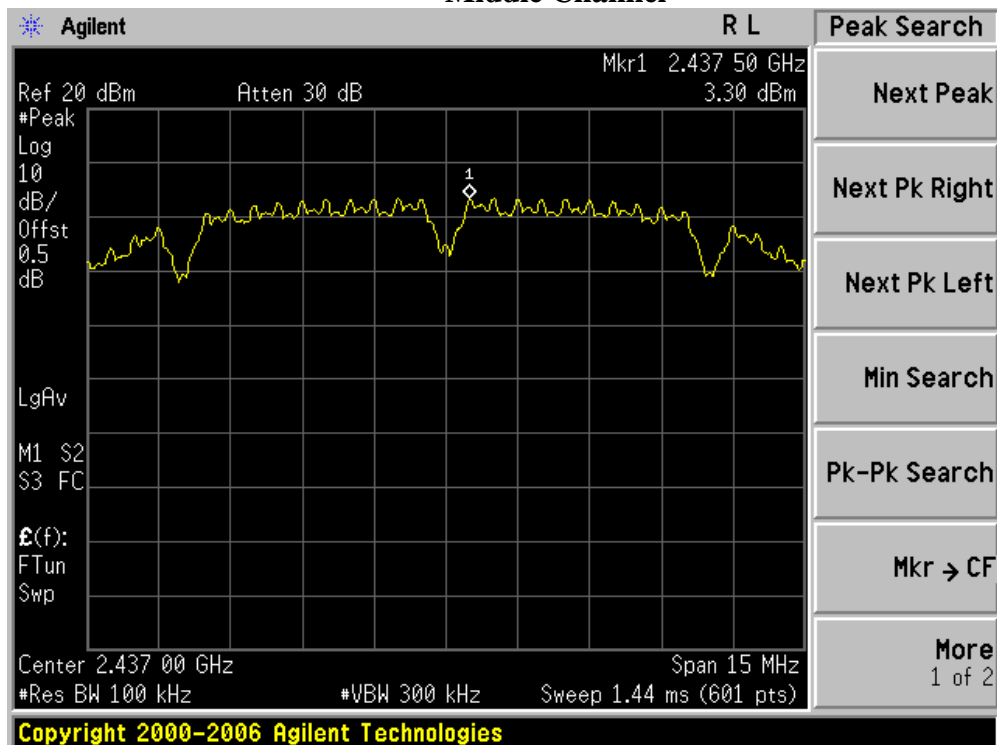
11.5.Test Result**PASS**

Channel Frequency (MHz)	Data Rate (Mbps)	Reading dBm/100kHz	Corrected dBm/3kHz	Limit (dBm/3kHz)	RESULT
802.11b Mode					
2412	1	2.73	-12.47	8	Compliant
2437	1	3.30	-11.90	8	Compliant
2462	1	4.41	-10.79	8	Compliant
802.11g Mode					
2412	6	-0.96	-16.16	8	Compliant
2437	6	0.33	-14.87	8	Compliant
2462	6	-0.21	-15.41	8	Compliant
802.11n (20M) Mode					
2412	6.5	-0.53	-15.73	8	Compliant
2437	6.5	-0.41	-15.61	8	Compliant
2462	6.5	0.56	-14.64	8	Compliant
802.11n (40M) Mode					
2422	13.5	-3.38	-18.58	8	Compliant
2437	13.5	-3.15	-18.35	8	Compliant
2452	13.5	-2.96	-18.16	8	Compliant

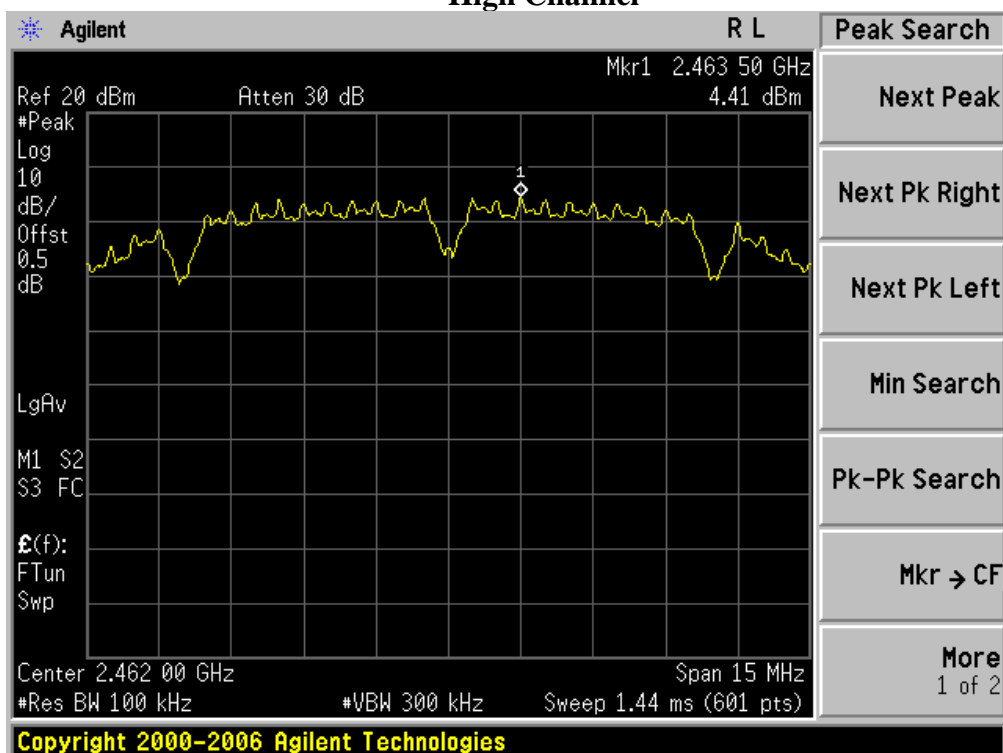
Note:

1. Scale the observed power level in 100 kHz to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$.
2. Above testing data has been considered with 0.5dB cable loss which between antenna port and spectrum.

802.11b Mode:

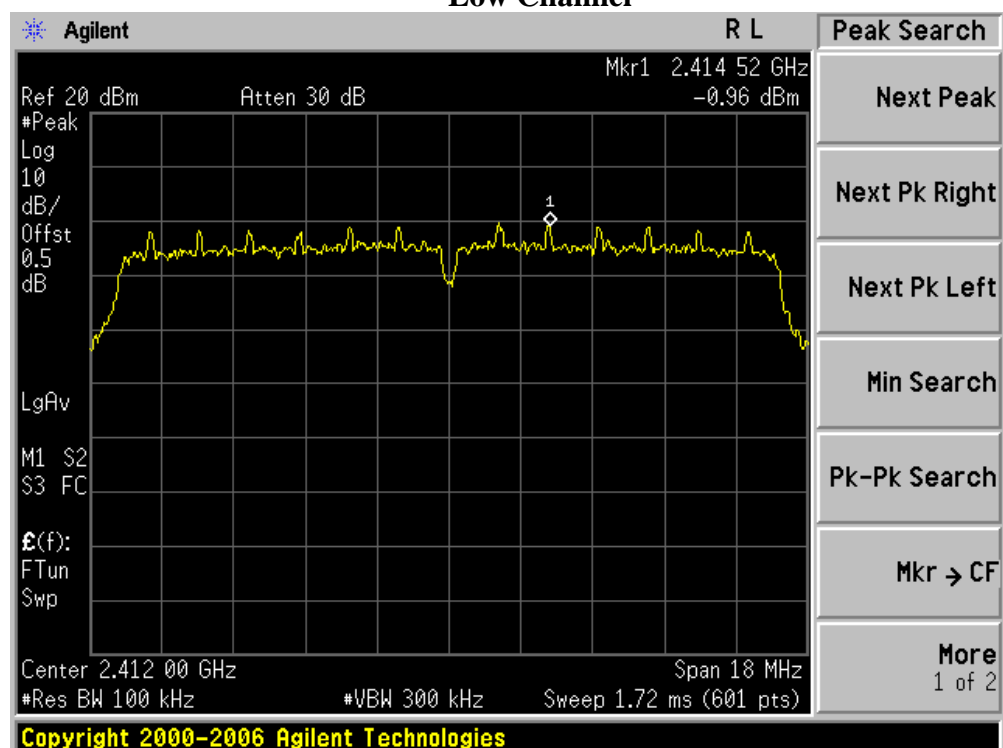
Low Channel**Middle Channel**

High Channel

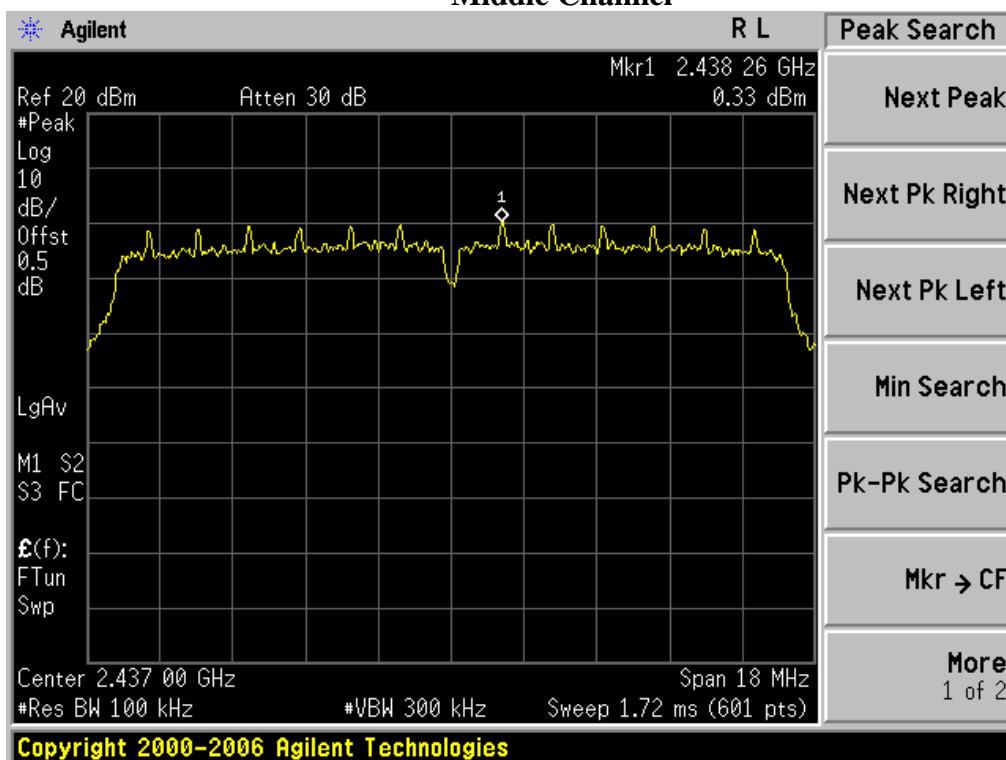


802.11g Mode:

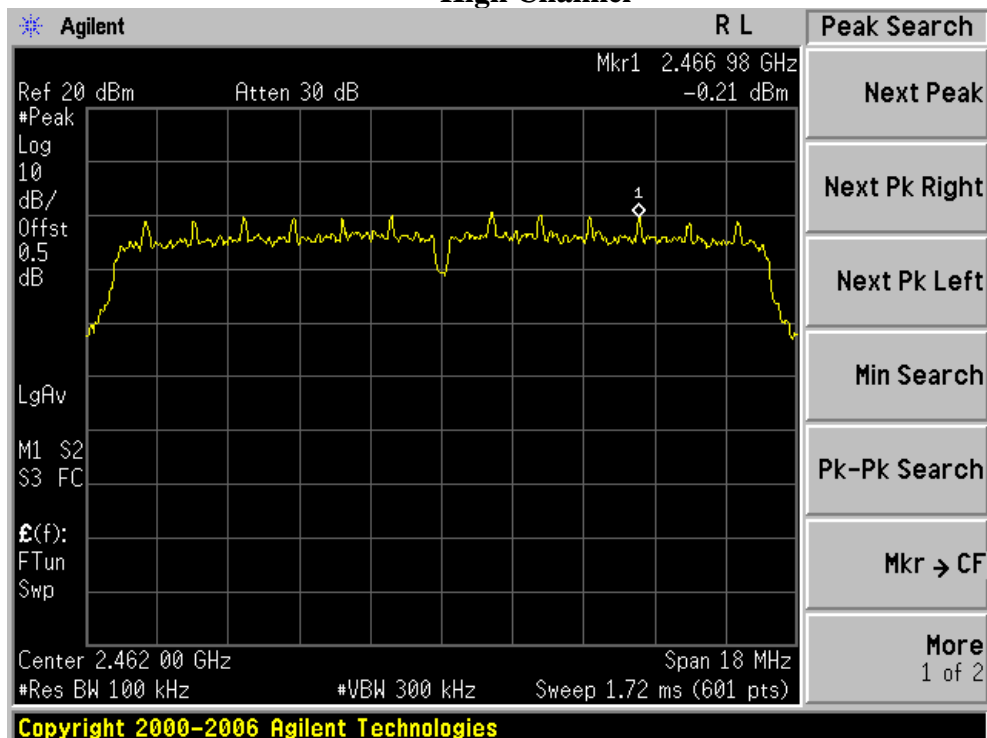
Low Channel



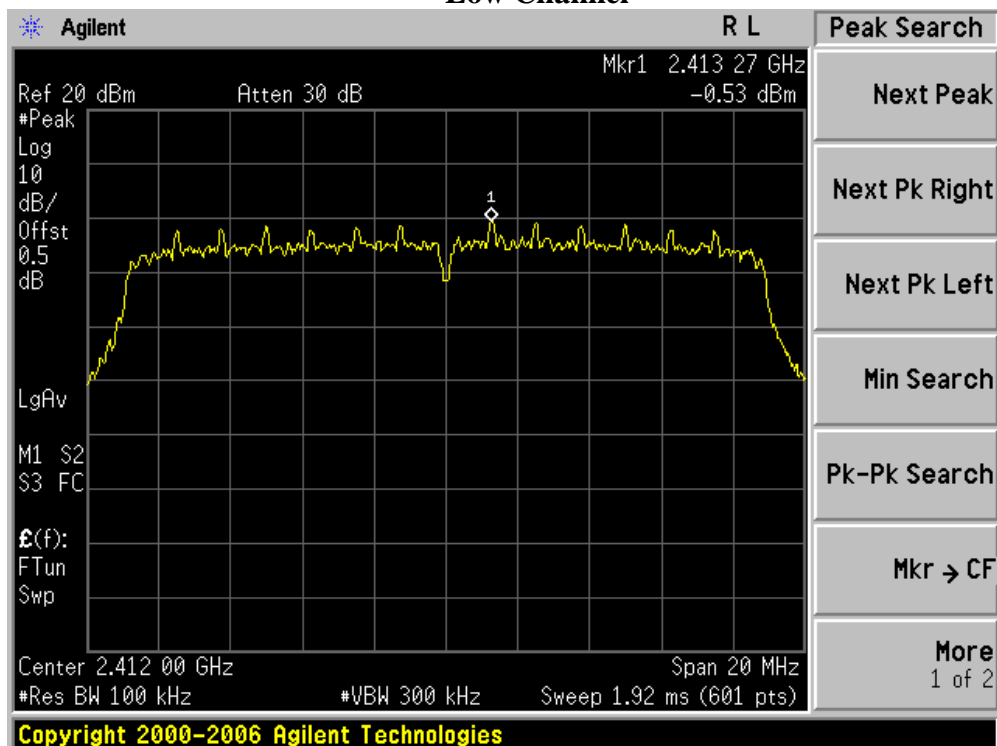
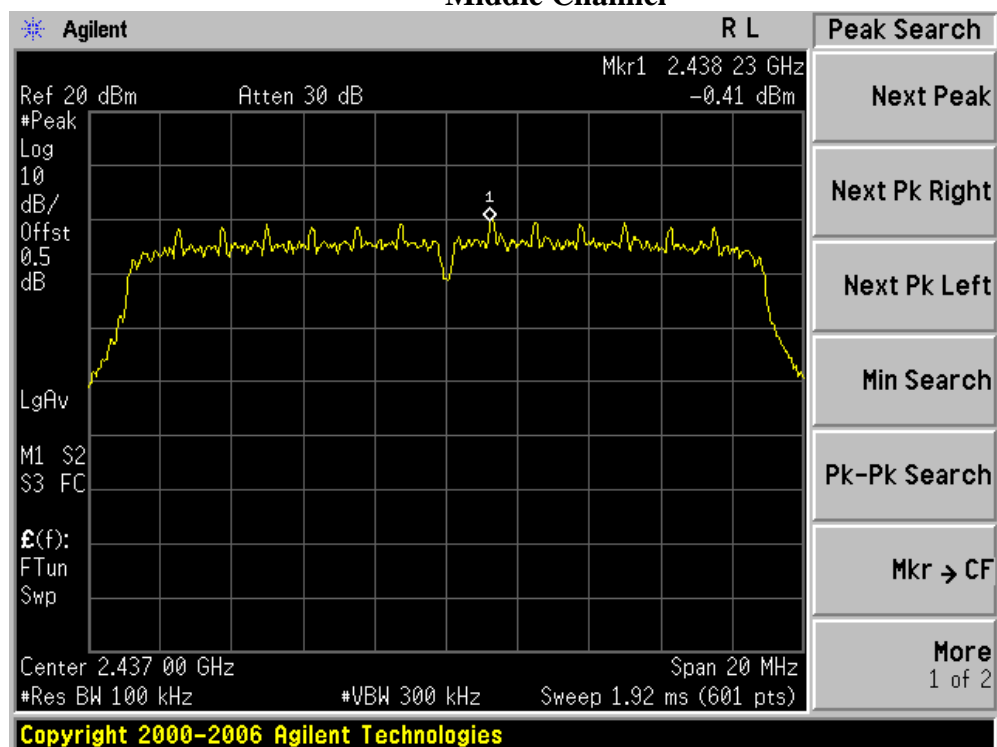
Middle Channel

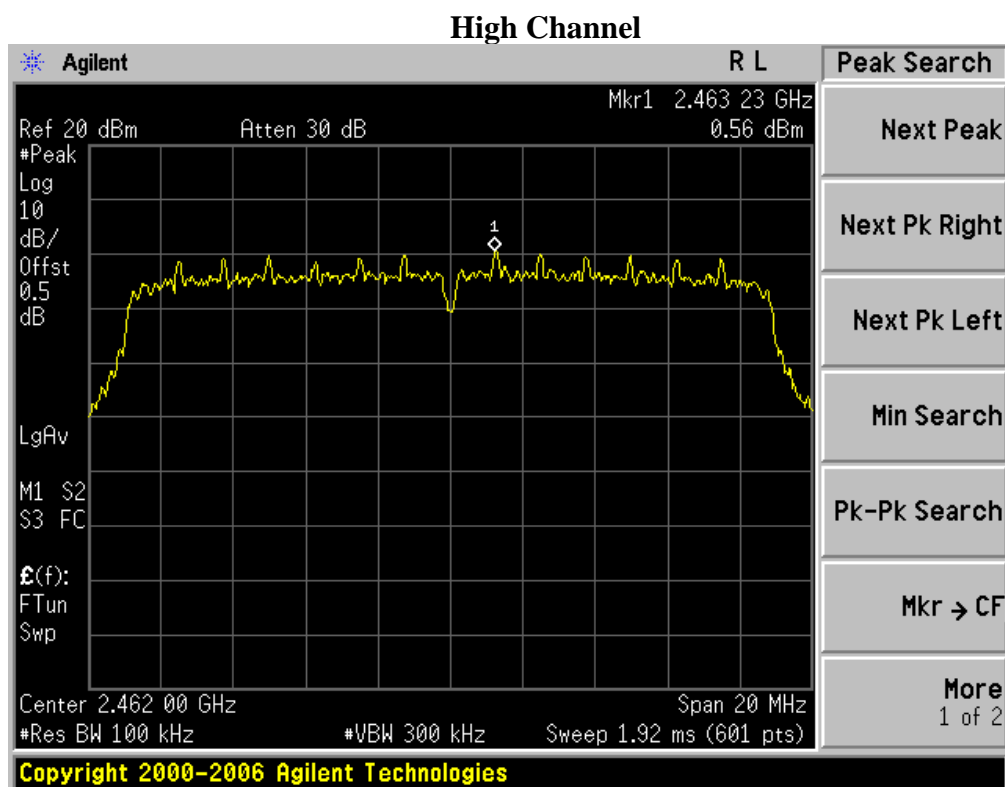


High Channel

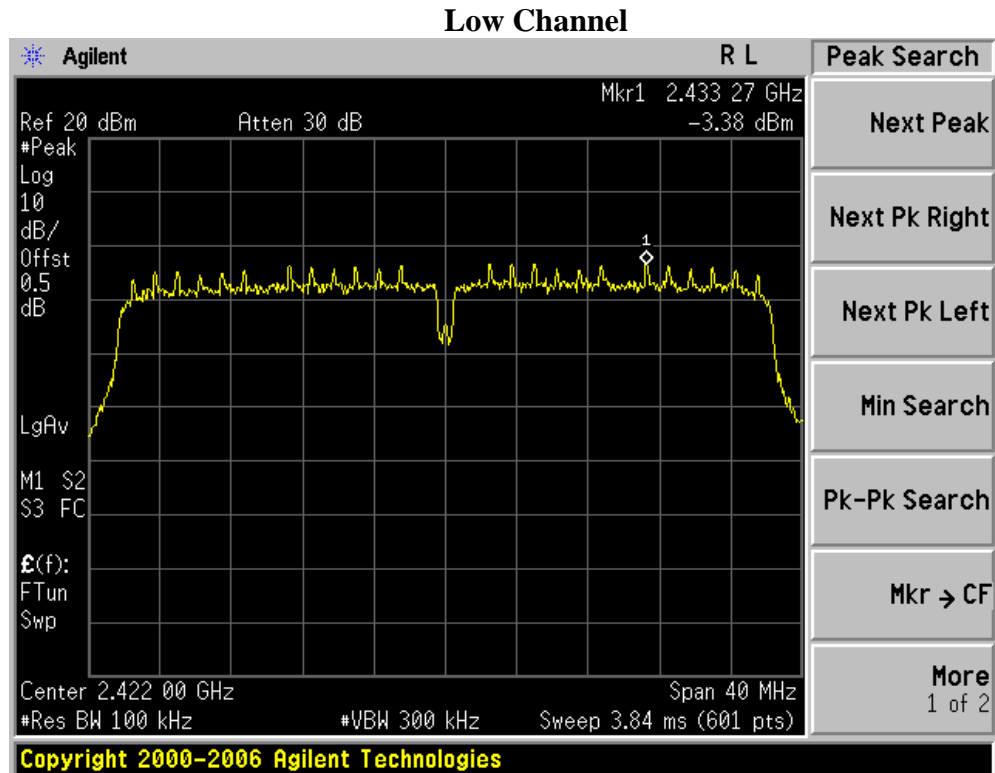


802.11n (20M) Mode:

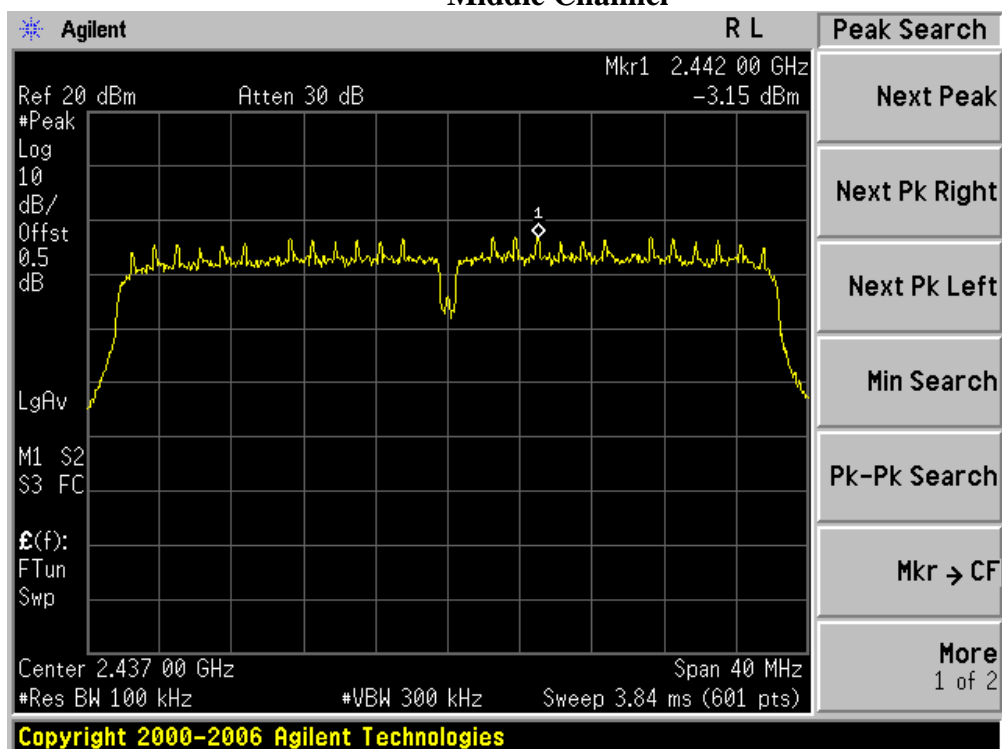
Low Channel**Middle Channel**



802.11n (40M) Mode:



Middle Channel



High Channel

