FCC Part 15C Test Report

FCC ID: 2AGZ3S00911

Product Name:	Starry Launch
Trademark:	N/A
Model Name :	S00911 L36104HPWD
Prepared For :	Starry, Inc
Address :	38 Chauncy St Ste 200, Boston, MA 02111
Prepared By :	Shenzhen BCTC Testing Co., Ltd.
Address :	BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Date:	May 21 – May 31, 2018
Date of Report :	May 31, 2018
Report No.:	BCTC-LH180400858E

TEST RESULT CERTIFICATION

Applicant's name ..... :	Starry, Inc
Address ..... :	38 Chauncy St Ste 200, Boston, MA 02111
Manufacture's Name ..... :	ShenZhen Spacetek Technology Co.,Ltd
Address ..... :	3F, NO.2Huafeng first science&technology Park, SanWei, Baoan District ShenZhen, China
Product description	
Product name .....:	Starry Launch
Trademark .....:	N/A
Model and/or type reference :	S00911 L36104HPWD
Standards ..... :	FCC Part15.247 ANSI C63.10:2013

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Prepared by(Engineer):	Eric Yang	Eric Yang
Reviewer(Supervisor):	Rita Xiao	Rita Xiao
Approved(Manager):	Carson Zhang	Carson Zhang

BCTC APPROVED SHENZHEN BCTC TESTING CO., LTD

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APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (d)	Radiated Spurious Emission	PASS	
15.247 (e)	Power Spectral Density	PASS	
15.205	Restricted Band of Operation	PASS	
15.247 (d)	Band Edge (Out of Band Emissions)	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen BCTC Testing Co., Ltd.
Add. : BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Firm Registration Number: 712850
IC Registered No.: 23583

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>Starry Launch</td></tr>
<tr><td>Trade Name</td><td>N/A</td></tr>
<tr><td>Model Name</td><td>S00911</td></tr>
<tr><td>Serial Model</td><td>L36104HPWD</td></tr>
<tr><td>Model Difference</td><td>All the model are the same circuit and RF module, except mod el names</td></tr>
<tr><td>Product Description</td><td>The EUT is a Starry Launch
<table>
<tr><td>Operation Frequency:</td><td>802.11b/g/n20MHz:2412~2462 MHz
802.11n40MHz:2422~2452 MHz</td></tr>
<tr><td>Modulation Type:</td><td>WIFI: OFDM/DSSS</td></tr>
<tr><td>Bit Rate of Transmitter</td><td>802.11b:11/5.5/2/1 Mbps
802.11g:54/48/36/24/18/12/9/6Mbps
802.11n Up to 150Mbps</td></tr>
<tr><td>Number Of Channel</td><td>802.11b/g/n20MHz:11 CH
802.11n40MHz: 7 CH</td></tr>
<tr><td>Antenna Designation:</td><td>Please see Note 3.</td></tr>
</table>
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.</td></tr>
<tr><td>Channel List</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Power</td><td>DC 12V (from adapter)</td></tr>
<tr><td>adapter</td><td>--</td></tr>
<tr><td>hardware version</td><td>--</td></tr>
<tr><td>Software version</td><td>--</td></tr>
<tr><td>Serial number</td><td>--</td></tr>
<tr><td>Connecting I/O Port(s)</td><td>Please refer to the User's Manual</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

2.

Channel List for 802.11b/g/n(20)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

Channel List for 802.11n(40)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	05	2432	07	2442	09	2452
04	2427	06	2437	08	2447		

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	External antenna	N/A	5	
2	N/A	N/A	External antenna	N/A	5	

Note1: Directional Gain=5dBi+10log(2)=8.01dBi

Note2: The EUT 802.11n (20) and 802.11n(40) is support MIMO mode.

2.2 DESCRIPTION OF TEST MODES

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9

Note:

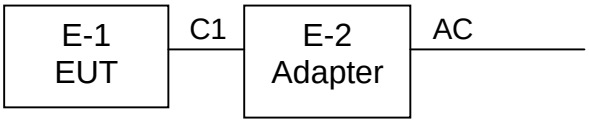
(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

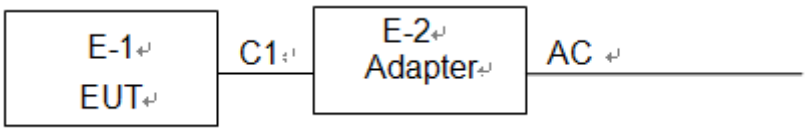
(3) According to ANSI C63.10 standards, the test results are both the “worst case” and “worst setup” 11Mbps for 802.11b,6Mbps for 802.11g,13Mbps for 802.11n(H20), 54Mbps for 802.11n(H40).

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test



2.4 DESCRIPTION OF TEST UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Starry Launch	N/A	S00911	N/A	EUT
E-2	Adapter	N/A	MKS-12010000S	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	1.2M	DC cable unshielded

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation test, Band-edge test and 6db bandwidth test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4407B	MY45108040	2017.08.27	2018.08.26
2	Test Receiver (9kHz-7GHz)	R&S	ESPI	101318	2017.08.27	2018.08.26
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB 9168	VULB91 68-438	2017.08.27	2018.08.26
4	Horn Antenna (1GHz-18GHz)	SCHWARZBECK	BBHA9120D	1201	2017.09..03	2018.09.03
5	Horn Antenna (14GHz-40GHz)	SCHWARZBECK	BBHA 9170	9170-181	2017.09..03	2018.09.03
6	Amplifier (9KHz-6GHz)	SCHWARZBECK	BBV9744	9744-0037	2017.08.27	2018.08.26
7	Amplifier (1GHz-18GHz)	SCHWARZBECK	BBV9718	9718-309	2017.08.27	2018.08.26
8	Amplifier (18GHz-40GHz)	SCHWARZBECK	BBV 9721	9721-205	2017.08.27	2018.08.26
9	Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	00014	2017.09..03	2018.09.03
10	RF cables1 (9kHz-1GHz)	R&S	R203	R20X	2017.08.27	2018.08.26
11	RF cables2 (1GHz-40GHz)	R&S	R204	R21X	2017.08.27	2018.08.26
12	Antenna connector	Florida RF Labs	N/A	RF 01#	2017.08.27	2018.08.26
13	Power Metter	ANRITSU	ML2487A	6K00001568	2017.08.27	2018.08.26
14	Power Sensor (AV)	ANRITSU	ML2491A	030989	2017.08.27	2018.08.26
15	Signal Analyzer 9kHz-26.5GHz	Agilent	N9010A	MY48030494	2017.08.27	2018.08.26
16	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	2017.08.27	2018.08.26
17	D.C. Power Supply	LongWei	PS-305D	010964729	2017.08.27	2018.08.26

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESCI	1166.5950K03-1 01165-ha	2017.08.27	2018.08.26
2	LISN	SCHWARZBECK	NSLK8127	8127739	2017.08.27	2018.08.26
3	LISN	R&S	NSLK8126	8126487	2017.08.27	2018.08.26
4	RF cables	R&S	R204	R20X	2017.08.27	2018.08.26
5	Attenuator	R&S	ESH3-Z2	143206	2017.08.27	2018.08.26

3. EMC EMISSION TEST

3.1CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limit(dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

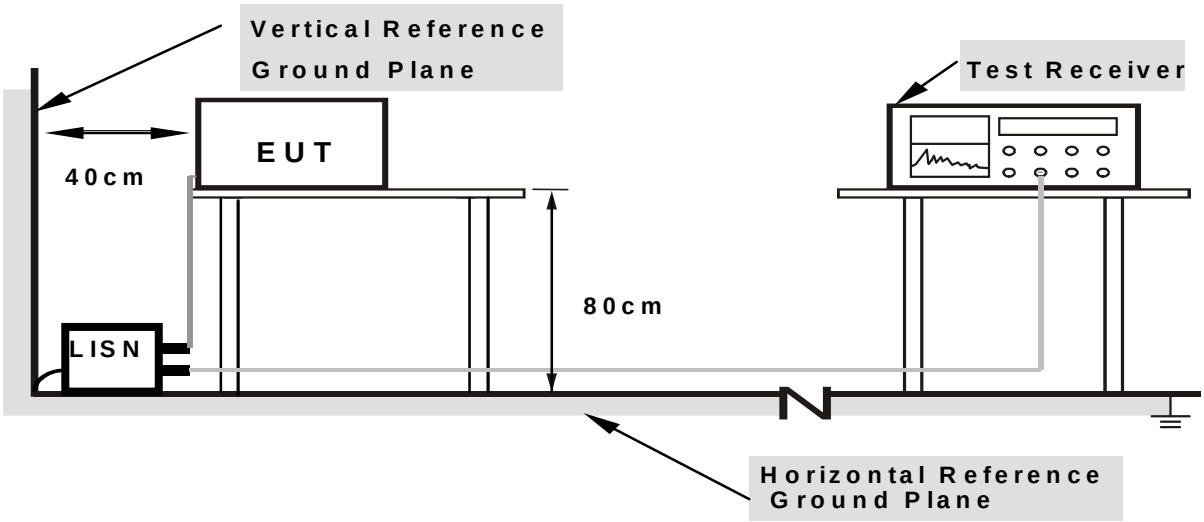
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

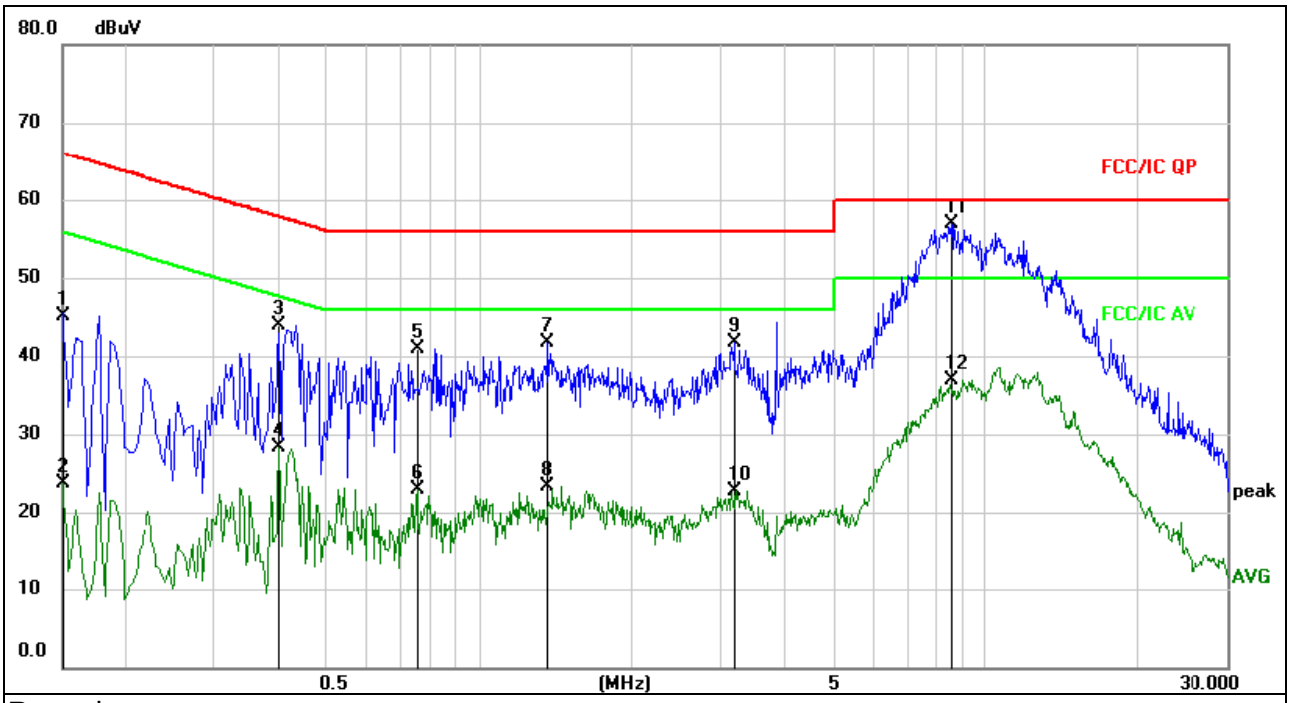
3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

3.1.6 TEST RESULTS

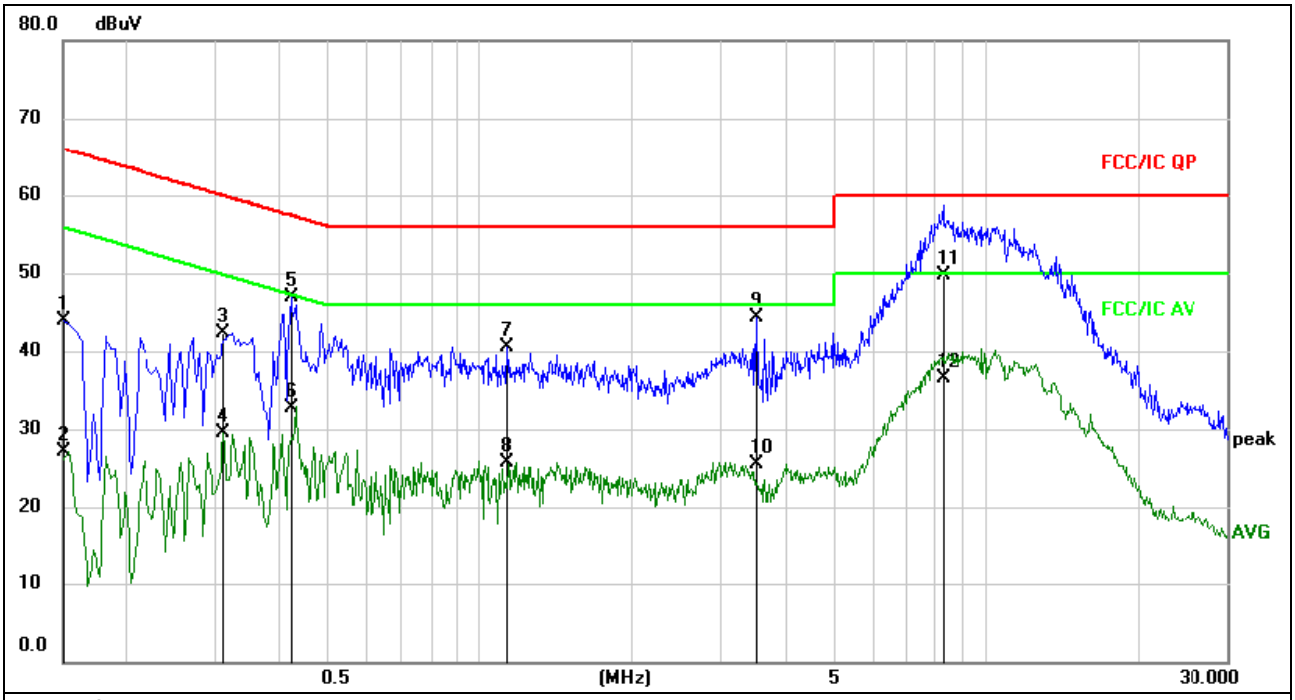
Temperature：	25 ℃	Relative Humidity：	54%
Pressure：	101KPa	Phase：	L
Test Voltage ：	AC120V/60Hz	Test Mode：	Mode 4



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	35.49	9.67	45.16	66.00	-20.84	QP	
2		0.1500	14.12	9.67	23.79	56.00	-32.21	AVG	
3		0.4020	34.19	9.67	43.86	57.81	-13.95	QP	
4		0.4020	18.54	9.67	28.21	47.81	-19.60	AVG	
5		0.7530	31.32	9.68	41.00	56.00	-15.00	QP	
6		0.7530	13.32	9.68	23.00	46.00	-23.00	AVG	
7		1.3695	31.94	9.70	41.64	56.00	-14.36	QP	
8		1.3695	13.65	9.70	23.35	46.00	-22.65	AVG	
9		3.1785	31.93	9.72	41.65	56.00	-14.35	QP	
10		3.1785	13.06	9.72	22.78	46.00	-23.22	AVG	
11	*	8.5740	47.04	9.81	56.85	60.00	-3.15	QP	
12		8.5740	27.19	9.81	37.00	50.00	-13.00	AVG	

Temperature：	25 ℃	Relative Humidity：	54%
Pressure：	101KPa	Phase：	N
Test Voltage ：	AC120V/60Hz	Test Mode：	Mode 4



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	34.30	9.67	43.97	66.00	-22.03	QP	
2		0.1500	17.46	9.67	27.13	56.00	-28.87	AVG	
3		0.3120	32.58	9.66	42.24	59.92	-17.68	QP	
4		0.3120	19.87	9.66	29.53	49.92	-20.39	AVG	
5		0.4245	37.20	9.67	46.87	57.36	-10.49	QP	
6		0.4245	23.13	9.67	32.80	47.36	-14.56	AVG	
7		1.1400	30.89	9.69	40.58	56.00	-15.42	QP	
8		1.1400	16.06	9.69	25.75	46.00	-20.25	AVG	
9		3.5205	34.60	9.73	44.33	56.00	-11.67	QP	
10		3.5205	15.69	9.73	25.42	46.00	-20.58	AVG	
11	*	8.2401	39.96	9.81	49.77	60.00	-10.23	QP	
12		8.2401	26.73	9.81	36.54	50.00	-13.46	AVG	

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	25GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

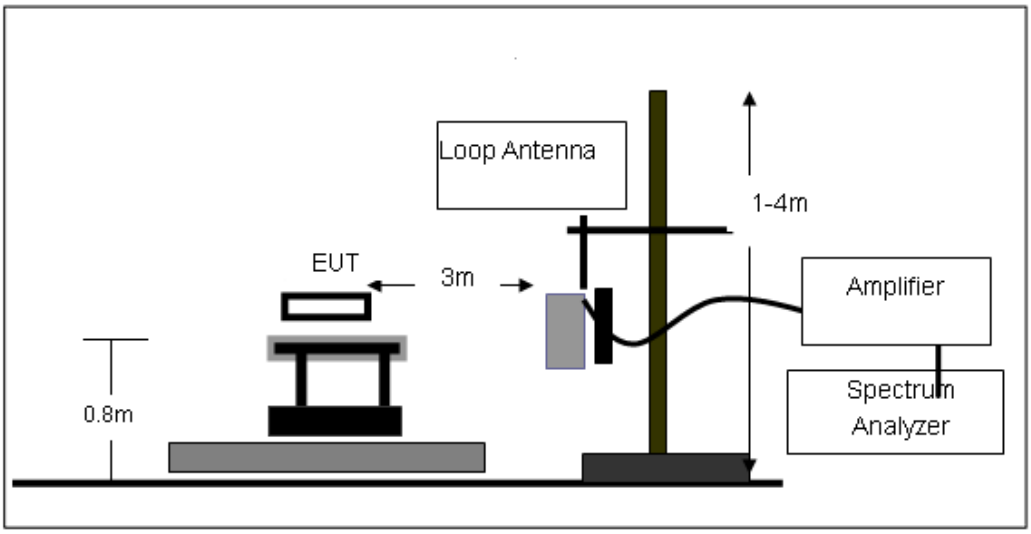
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported
We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in t he report.

3.2.3 3.2.3 DEVIATION FROM TEST STANDARD

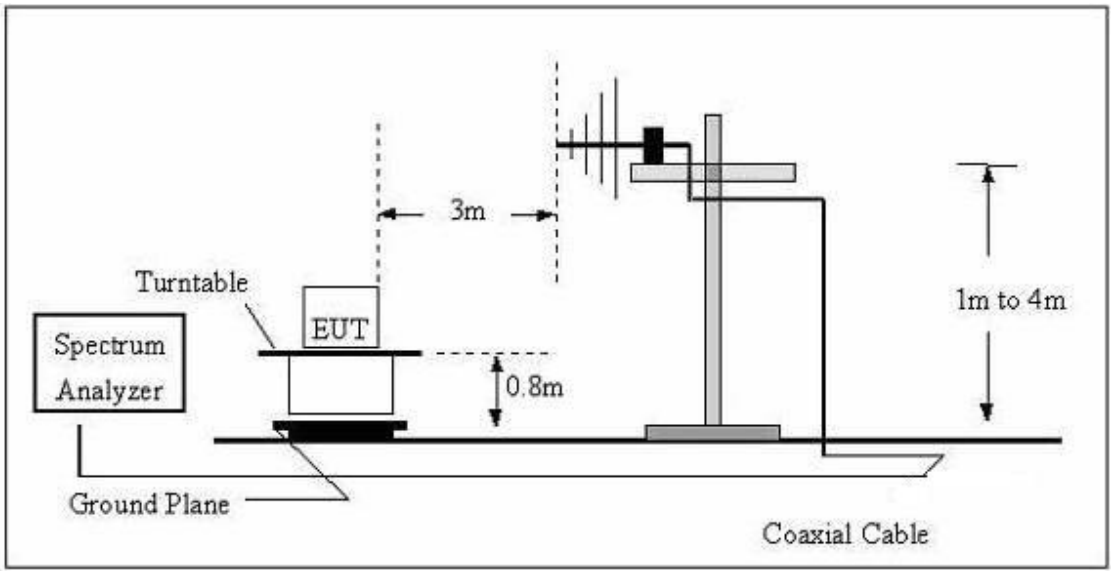
No deviation

3.2.4 3.2.4 TEST SETUP

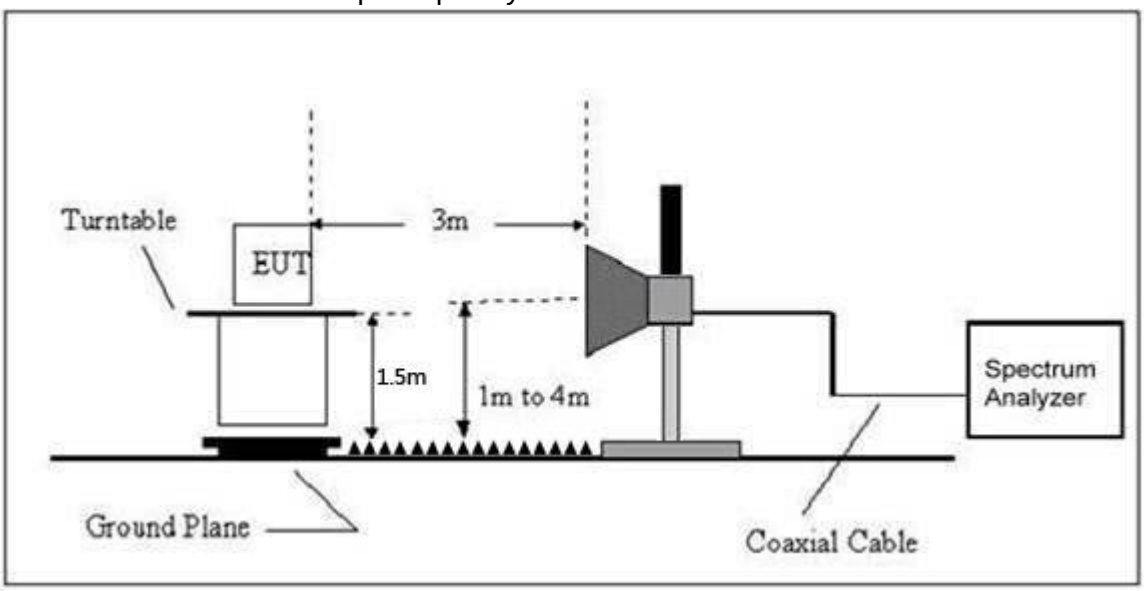
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.
For 802.11b/g, only the SISO mode was supported. And basing on the pre-scan, only the data for worst case configuration (ant 1 active) was listed below.
For 80211n, both SISO and MIMO were supported. And basing on the pre-scan, only the data for worst case configuration (MIMO mode) was listed below.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

Temperature:	20℃	Relative Humidtity:	48%
Pressure:	101KPa	Test Voltage :	DC 12V
Test Mode :	Mode 5	Polarization :	--

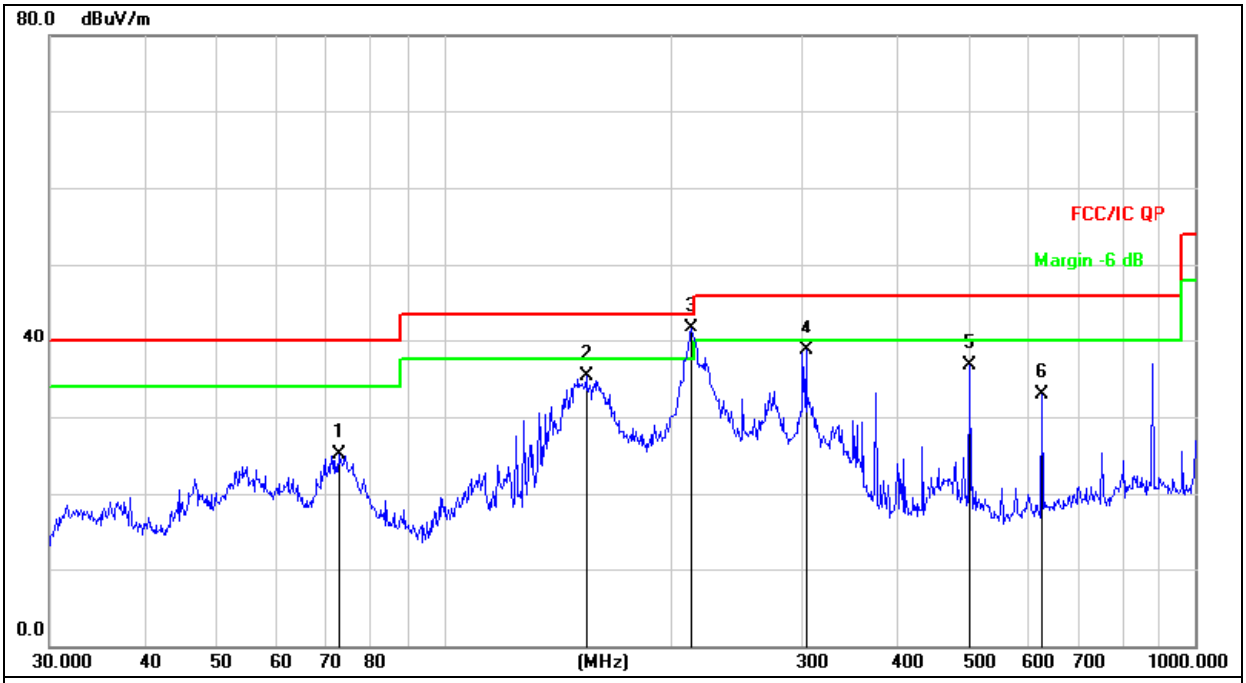
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

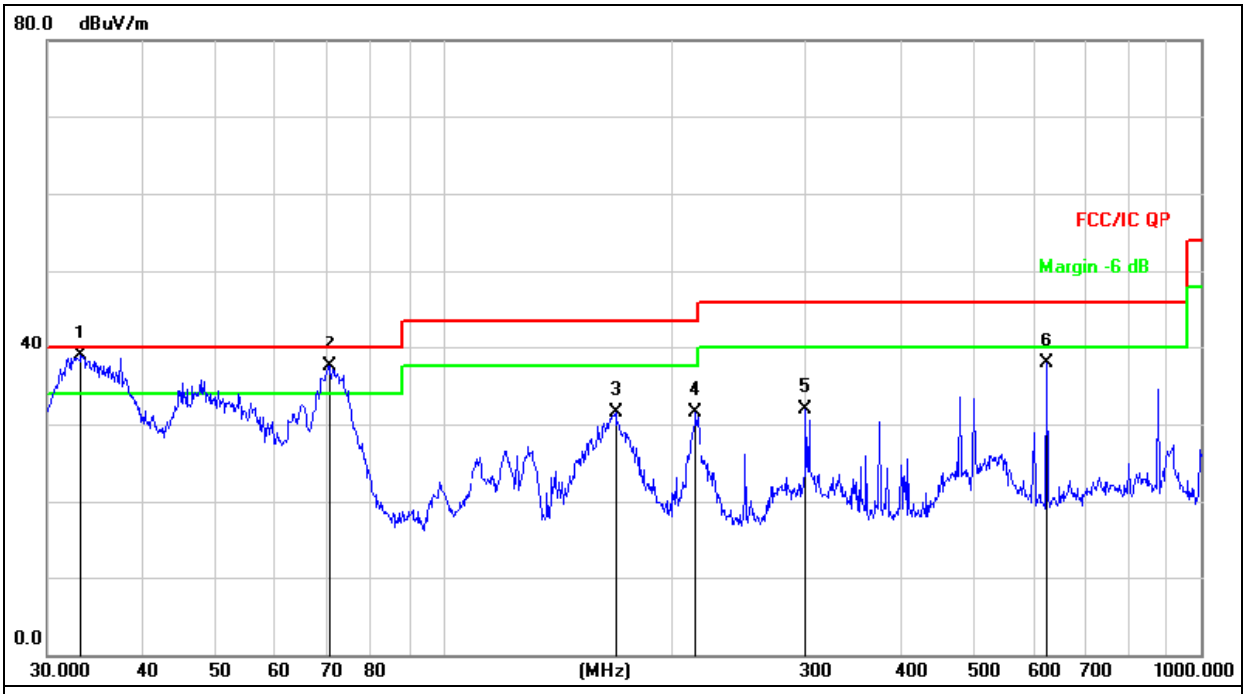
Temperature：	26℃	Relative Humidity：	54%
Pressure：	101KPa	Polarization：	Horizontal
Test Voltage ：	AC 120V/60Hz		
Test Mode ：	Mode 5		



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		72.5916	43.18	-18.12	25.06	40.00	-14.94	QP
2		154.8204	54.31	-19.02	35.29	43.50	-8.21	QP
3	*	213.0151	57.99	-16.21	41.78	43.50	-1.72	QP
4		303.5437	52.13	-13.47	38.66	46.00	-7.34	QP
5		501.1790	45.92	-9.29	36.63	46.00	-9.37	QP
6		625.0780	39.48	-6.49	32.99	46.00	-13.01	QP

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101KPa	Polarization：	Vertical
Test Voltage ：	AC 120V/60Hz		
Test Mode ：	Mode 5		



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	33.2112	55.57	-16.61	38.96	40.00	-1.04	QP
2	!	70.8315	55.31	-17.76	37.55	40.00	-2.45	QP
3		168.4138	50.20	-18.66	31.54	43.50	-11.96	QP
4		214.5143	47.64	-16.20	31.44	43.50	-12.06	QP
5		300.3672	45.30	-13.45	31.85	46.00	-14.15	QP
6		625.0780	44.36	-6.49	37.87	46.00	-8.13	QP

3.2.8 TEST RESULTS (1GHZ~25GHZ)

802.11b

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	66.82	39.55	7.85	25.66	60.78	74.00	-13.22	PK
V	4824.00	48.83	39.55	7.85	25.66	42.79	54.00	-11.21	AV
V	7236.00	67.04	38.33	7.52	24.55	60.78	74.00	-13.22	PK
V	7236.00	47.93	38.33	7.52	24.55	41.67	54.00	-12.33	AV
V	15448.00	44.91	35.23	6.75	26.59	43.02	74.00	-30.98	PK
H	4824.00	67.44	39.55	7.85	25.66	61.40	74.00	-12.60	PK
H	4824.00	49.80	39.55	7.85	25.66	43.76	54.00	-10.24	AV
H	7236.00	67.67	38.33	7.52	23.55	60.41	74.00	-13.59	PK
H	7236.00	44.72	38.33	7.52	23.22	37.13	54.00	-16.87	AV
H	15448.00	47.14	35.45	6.75	27.88	46.32	74.00	-27.68	PK
Middle Channel:2437MHz									
V	4874.00	67.83	38.89	7.57	25.45	61.96	74.00	-12.04	PK
V	4874.00	50.57	38.89	7.57	25.45	44.70	54.00	-9.30	AV
V	7311.00	67.19	38.78	7.35	24.78	60.54	74.00	-13.46	PK
V	7311.00	47.59	38.78	7.35	24.78	40.94	54.00	-13.06	AV
V	15448.00	46.39	35.89	6.42	26.47	43.39	74.00	-30.61	PK
H	4874.00	65.89	38.89	7.57	25.45	60.02	74.00	-13.98	PK
H	4874.00	48.97	38.89	7.57	25.45	43.10	54.00	-10.90	AV
H	7311.00	69.16	38.78	7.35	24.78	62.51	74.00	-11.49	PK
H	7311.00	48.25	38.78	7.35	24.78	41.60	54.00	-12.40	AV
H	15448.00	44.95	36.68	6.42	26.65	41.34	74.00	-32.66	PK
High Channel:2462MHz									
V	4924.00	66.94	38.75	7.46	25.45	61.10	74.00	-12.90	PK
V	4924.00	49.79	38.75	7.46	25.45	43.95	54.00	-10.05	AV
V	7386.00	65.77	38.65	7.22	24.78	59.12	74.00	-14.88	PK
V	7386.00	48.14	38.65	7.22	24.78	41.49	54.00	-12.51	AV
V	15448.00	46.46	35.58	6.35	26.47	43.70	74.00	-30.30	PK
H	4924.00	64.19	38.75	7.46	25.45	58.35	74.00	-15.65	PK
H	4924.00	48.60	38.75	7.46	25.45	42.76	54.00	-11.24	AV
H	7386.00	68.79	38.65	7.22	24.78	62.14	74.00	-11.86	PK
H	7386.00	46.91	38.65	7.22	24.78	40.26	54.00	-13.74	AV
H	15448.00	46.05	36.42	6.32	26.65	42.60	74.00	-31.40	PK

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

802.11g

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	66.29	39.55	7.85	25.66	60.25	74.00	-13.75	PK
V	4824.00	48.44	39.55	7.85	25.66	42.40	54.00	-11.60	AV
V	7236.00	66.51	38.33	7.52	24.55	60.25	74.00	-13.75	PK
V	7236.00	47.54	38.33	7.52	24.55	41.28	54.00	-12.72	AV
V	15448.00	44.55	35.23	6.75	26.59	42.66	74.00	-31.34	PK
H	4824.00	66.90	39.55	7.85	25.66	60.86	74.00	-13.14	PK
H	4824.00	49.40	39.55	7.85	25.66	43.36	54.00	-10.64	AV
H	7236.00	67.13	38.33	7.52	23.55	59.87	74.00	-14.13	PK
H	7236.00	44.36	38.33	7.52	23.22	36.77	54.00	-17.23	AV
H	15448.00	46.77	35.45	6.75	27.88	45.95	74.00	-28.05	PK
Middle Channel:2437MHz									
V	4874.00	67.29	38.89	7.57	25.45	61.42	74.00	-12.58	PK
V	4874.00	50.17	38.89	7.57	25.45	44.30	54.00	-9.70	AV
V	7311.00	66.65	38.78	7.35	24.78	60.00	74.00	-14.00	PK
V	7311.00	47.21	38.78	7.35	24.78	40.56	54.00	-13.44	AV
V	15448.00	46.02	35.89	6.42	26.47	43.02	74.00	-30.98	PK
H	4874.00	65.36	38.89	7.57	25.45	59.49	74.00	-14.51	PK
H	4874.00	48.58	38.89	7.57	25.45	42.71	54.00	-11.29	AV
H	7311.00	68.61	38.78	7.35	24.78	61.96	74.00	-12.04	PK
H	7311.00	47.86	38.78	7.35	24.78	41.21	54.00	-12.79	AV
H	15448.00	44.59	36.68	6.42	26.65	40.98	74.00	-33.02	PK
High Channel:2462MHz									
V	4924.00	66.41	38.75	7.46	25.45	60.57	74.00	-13.43	PK
V	4924.00	49.39	38.75	7.46	25.45	43.55	54.00	-10.45	AV
V	7386.00	65.25	38.65	7.22	24.78	58.60	74.00	-15.40	PK
V	7386.00	47.75	38.65	7.22	24.78	41.10	54.00	-12.90	AV
V	15448.00	46.09	35.58	6.35	26.47	43.33	74.00	-30.67	PK
H	4924.00	63.68	38.75	7.46	25.45	57.84	74.00	-16.16	PK
H	4924.00	48.21	38.75	7.46	25.45	42.37	54.00	-11.63	AV
H	7386.00	68.24	38.65	7.22	24.78	61.59	74.00	-12.41	PK
H	7386.00	46.54	38.65	7.22	24.78	39.89	54.00	-14.11	AV
H	15448.00	45.68	36.42	6.32	26.65	42.23	74.00	-31.77	PK

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

802.11n(20MHz)

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	64.99	39.55	7.85	25.66	58.95	74.00	-15.05	PK
V	4824.00	47.49	39.55	7.85	25.66	41.45	54.00	-12.55	AV
V	7236.00	65.20	38.33	7.52	24.55	58.94	74.00	-15.06	PK
V	7236.00	46.61	38.33	7.52	24.55	40.35	54.00	-13.65	AV
V	15448.00	43.68	35.23	6.75	26.59	41.79	74.00	-32.21	PK
H	4824.00	65.59	39.55	7.85	25.66	59.55	74.00	-14.45	PK
H	4824.00	48.43	39.55	7.85	25.66	42.39	54.00	-11.61	AV
H	7236.00	65.81	38.33	7.52	23.55	58.55	74.00	-15.45	PK
H	7236.00	43.49	38.33	7.52	23.22	35.90	54.00	-18.10	AV
H	15448.00	45.85	35.45	6.75	27.88	45.03	74.00	-28.97	PK
Middle Channel:2437MHz									
V	4874.00	65.97	38.89	7.57	25.45	60.10	74.00	-13.90	PK
V	4874.00	49.18	38.89	7.57	25.45	43.31	54.00	-10.69	AV
V	7311.00	65.35	38.78	7.35	24.78	58.70	74.00	-15.30	PK
V	7311.00	46.28	38.78	7.35	24.78	39.63	54.00	-14.37	AV
V	15448.00	45.11	35.89	6.42	26.47	42.11	74.00	-31.89	PK
H	4874.00	64.08	38.89	7.57	25.45	58.21	74.00	-15.79	PK
H	4874.00	47.63	38.89	7.57	25.45	41.76	54.00	-12.24	AV
H	7311.00	67.26	38.78	7.35	24.78	60.61	74.00	-13.39	PK
H	7311.00	46.92	38.78	7.35	24.78	40.27	54.00	-13.73	AV
H	15448.00	43.71	36.68	6.42	26.65	40.10	74.00	-33.90	PK
High Channel:2462MHz									
V	4924.00	65.11	38.75	7.46	25.45	59.27	74.00	-14.73	PK
V	4924.00	48.42	38.75	7.46	25.45	42.58	54.00	-11.42	AV
V	7386.00	63.97	38.65	7.22	24.78	57.32	74.00	-16.68	PK
V	7386.00	46.82	38.65	7.22	24.78	40.17	54.00	-13.83	AV
V	15448.00	45.18	35.58	6.35	26.47	42.42	74.00	-31.58	PK
H	4924.00	62.43	38.75	7.46	25.45	56.59	74.00	-17.41	PK
H	4924.00	47.27	38.75	7.46	25.45	41.43	54.00	-12.57	AV
H	7386.00	66.90	38.65	7.22	24.78	60.25	74.00	-13.75	PK
H	7386.00	45.63	38.65	7.22	24.78	38.98	54.00	-15.02	AV
H	15448.00	44.79	36.42	6.32	26.65	41.34	74.00	-32.66	PK

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

802.11n(40MHz)

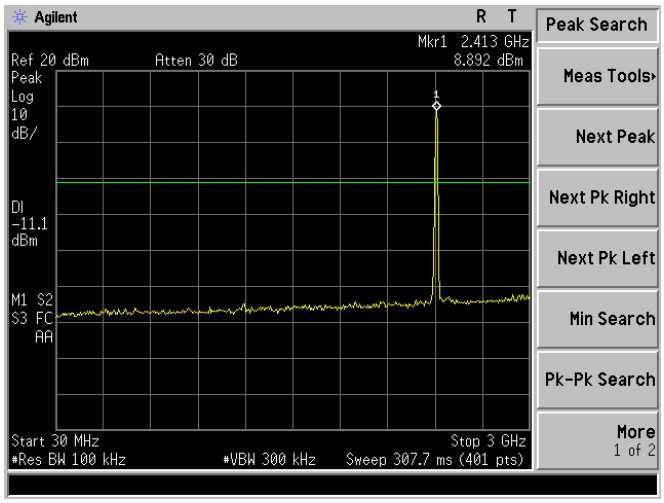
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2422MHz									
V	4844.000	64.24	39.55	7.77	25.66	58.12	74.00	-15.54	PK
V	4844.000	46.87	39.55	7.77	25.66	40.75	54.00	-13	AV
V	7266.000	64.18	38.33	7.30	24.55	57.70	74.00	-15.96	PK
V	7266.000	44.84	38.33	7.30	24.55	38.36	54.00	-15.4	AV
V	15448.00	46.72	35.23	6.60	26.59	44.68	74.00	-29.07	PK
H	4844.000	65.26	39.55	7.77	25.66	59.14	74.00	-14.51	PK
H	4844.000	42.29	39.55	7.77	25.66	36.17	54.00	-17.6	AV
H	7266.000	61.50	38.33	7.30	23.55	54.02	74.00	-19.65	PK
H	7266.000	45.94	38.33	7.30	23.22	38.13	54.00	-15.63	AV
H	15448.00	45.07	35.45	6.60	27.88	44.10	74.00	-29.66	PK
Middle Channel:2437MHz									
V	4874.00	64.30	38.89	7.57	25.45	58.43	74.00	-15.57	PK
V	4874.00	47.52	38.89	7.57	25.45	41.65	54.00	-12.35	AV
V	7311.00	67.28	38.78	7.35	24.78	60.63	74.00	-13.37	PK
V	7311.00	47.81	38.78	7.35	24.78	41.16	54.00	-12.84	AV
V	15448.00	47.22	35.89	6.42	26.47	44.22	74.00	-29.78	PK
H	4874.00	66.10	38.89	7.57	25.45	60.23	74.00	-13.77	PK
H	4874.00	47.45	38.89	7.57	25.45	41.58	54.00	-12.42	AV
H	7311.00	64.11	38.78	7.35	24.78	57.46	74.00	-16.54	PK
H	7311.00	48.00	38.78	7.35	24.78	41.35	54.00	-12.65	AV
H	15448.00	45.55	36.68	6.42	26.65	41.94	74.00	-32.06	PK
High Channel:2452MHz									
V	4904.00	65.28	38.75	7.38	25.45	59.36	74.00	-14.64	PK
V	4904.00	46.78	38.75	7.38	25.45	40.86	54.00	-13.14	AV
V	7356.00	61.70	38.65	7.15	24.78	54.98	74.00	-19.02	PK
V	7356.00	45.83	38.65	7.15	24.78	39.11	54.00	-14.89	AV
V	15448.00	47.14	35.58	6.25	26.47	44.28	74.00	-29.72	PK
H	4904.00	66.01	38.75	7.38	25.45	60.09	74.00	-13.91	PK
H	4904.00	43.13	38.75	7.38	25.45	37.21	54.00	-16.79	AV
H	7356.00	57.42	38.65	7.15	24.78	50.70	74.00	-23.30	PK
H	7356.00	45.11	38.65	7.15	24.78	38.39	54.00	-15.61	AV
H	15448.00	44.68	36.42	6.25	26.65	41.16	74.00	-32.84	PK

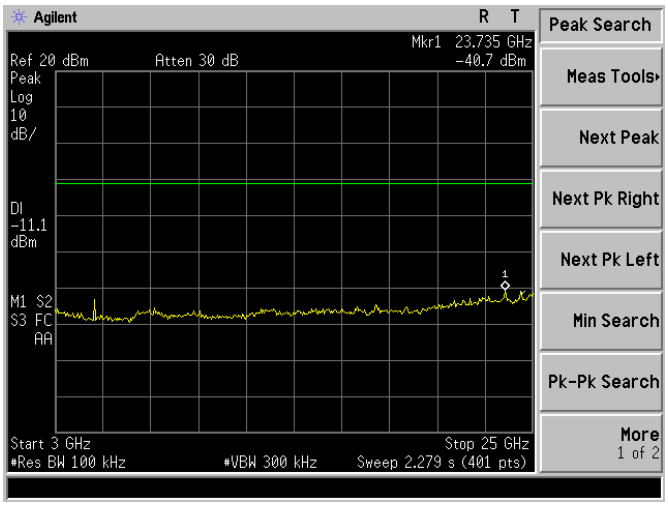
Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

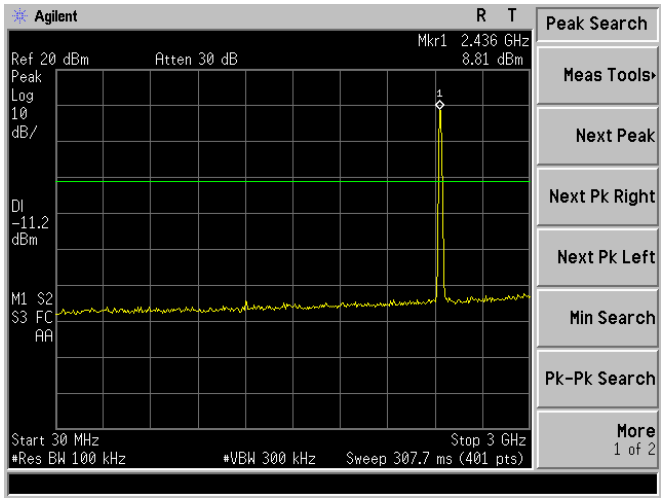
For Conducted
802.11b

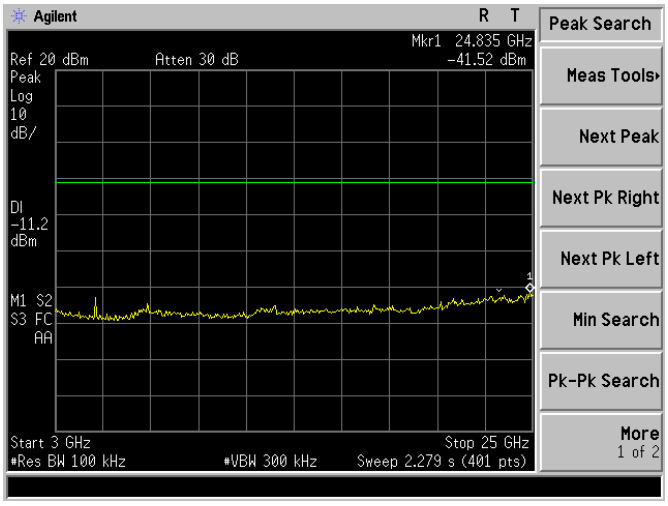
Low Channel 2412MHz



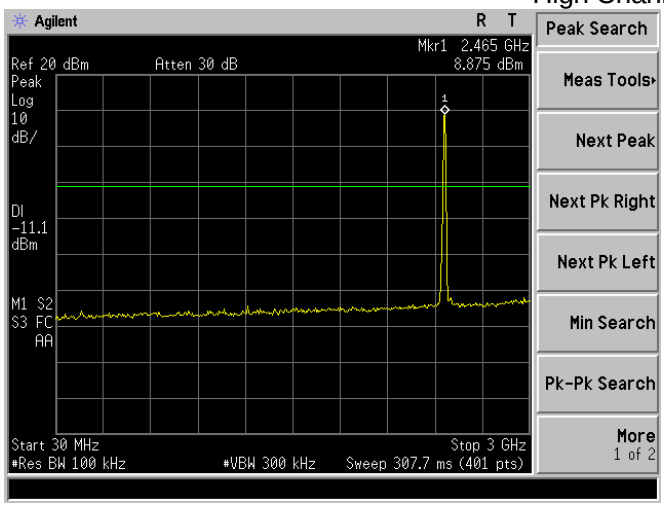


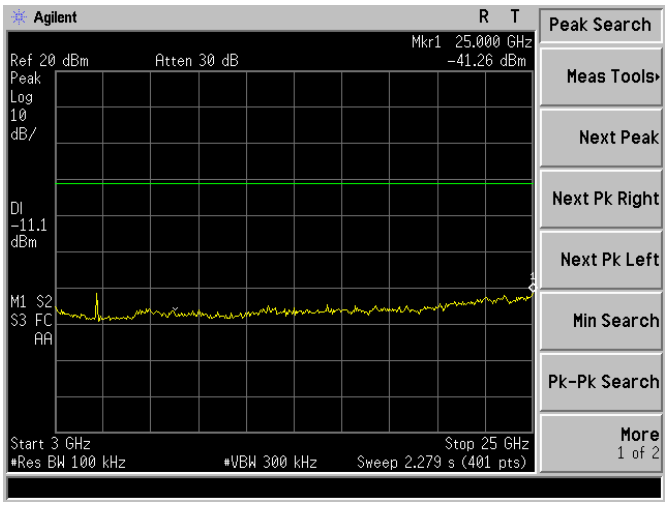
Middle Channel 2437MHz





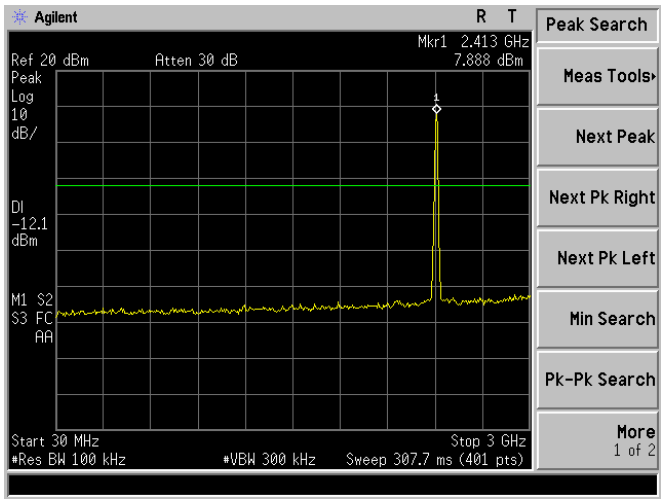
High Channel 2462MHz

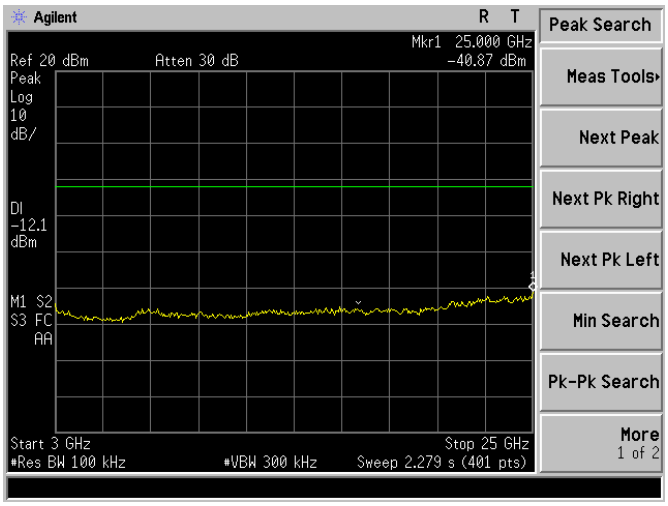




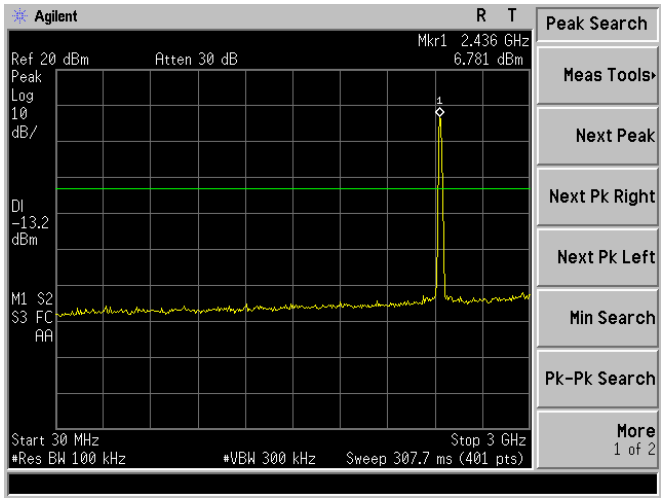
802.11g

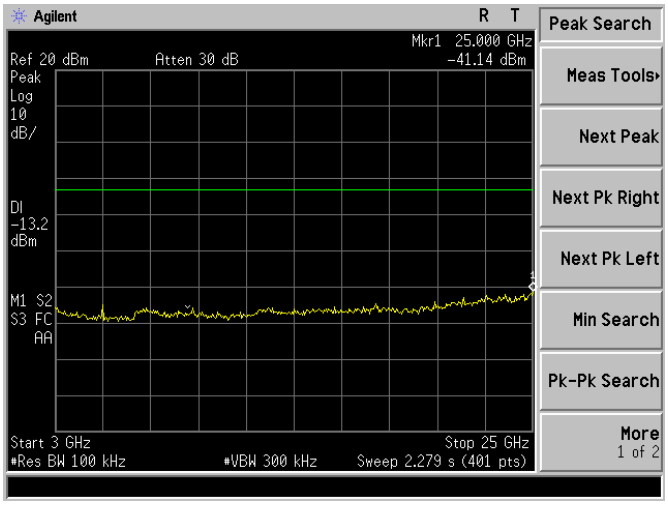
Low Channel 2412MHz



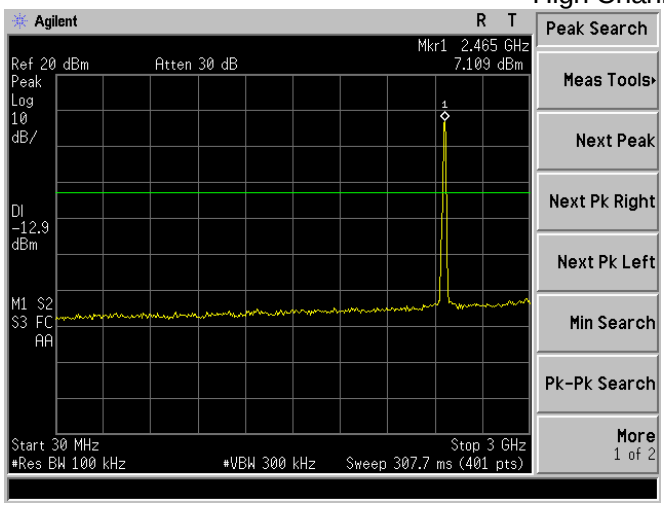


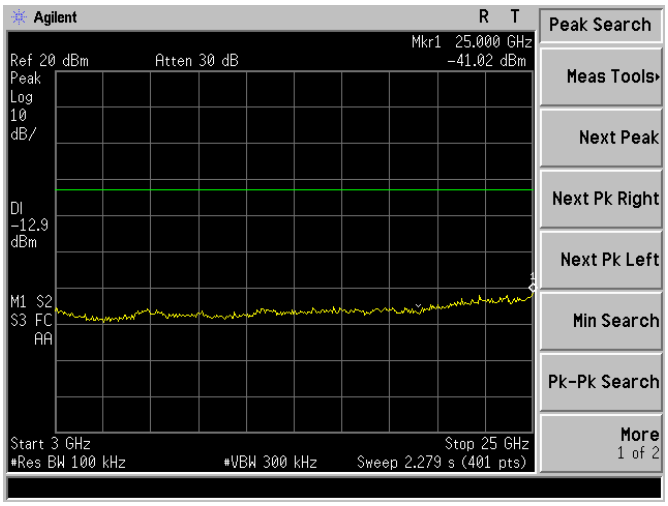
Middle Channel 2437MHz





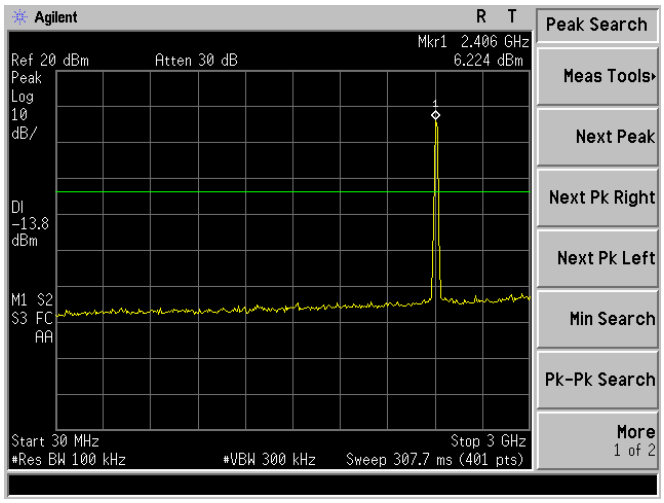
High Channel 2462MHz

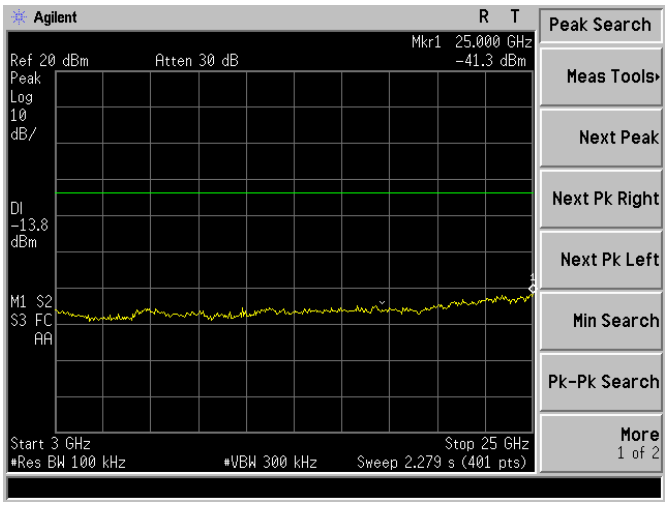




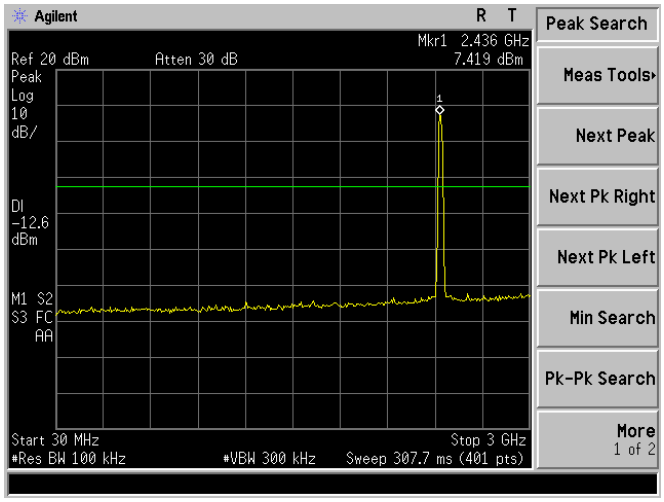
802.11n(**20MHz**)

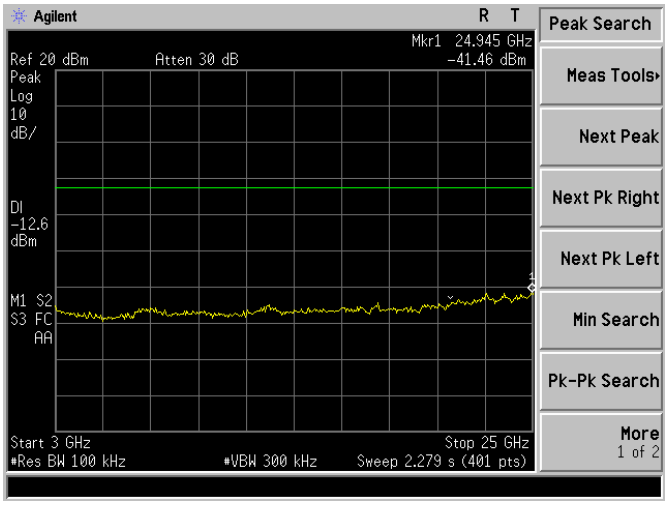
Low Channel 2412MHz



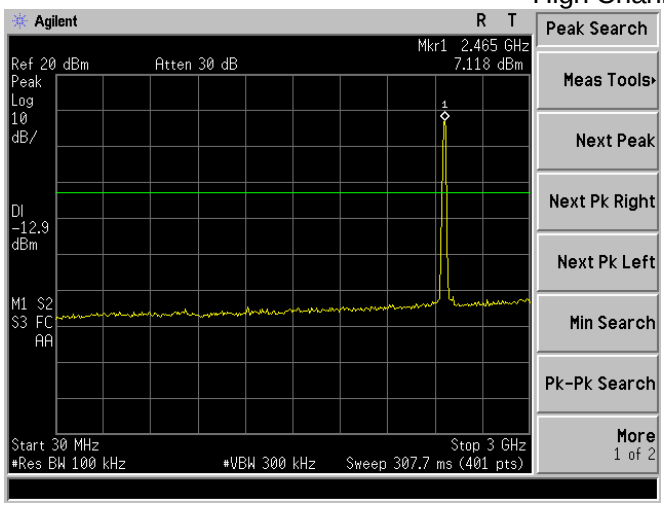


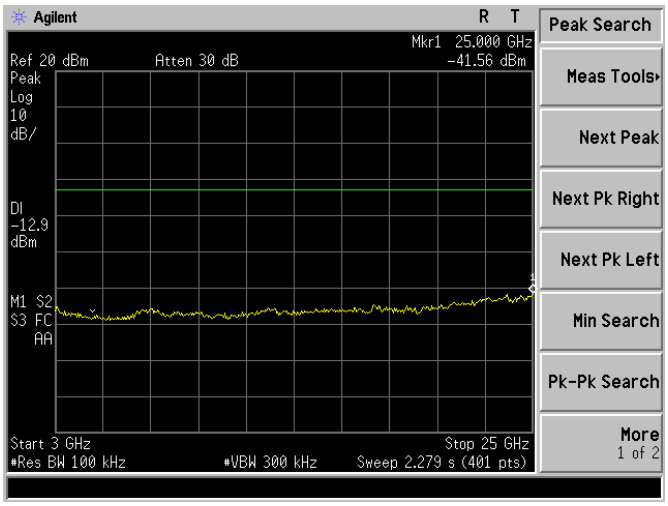
Middle Channel 2437MHz





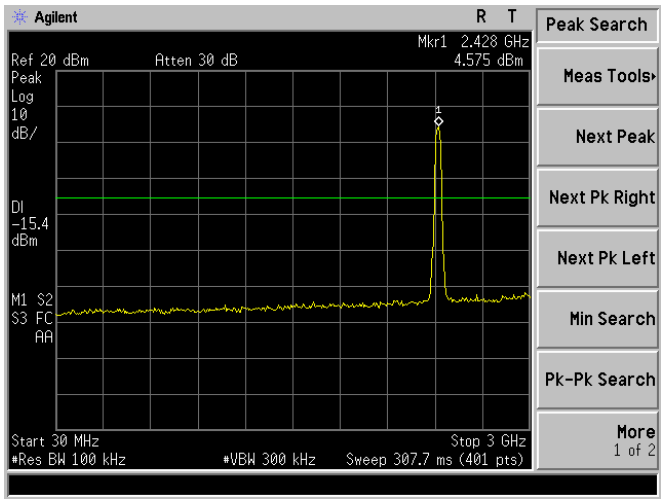
High Channel 2462MHz

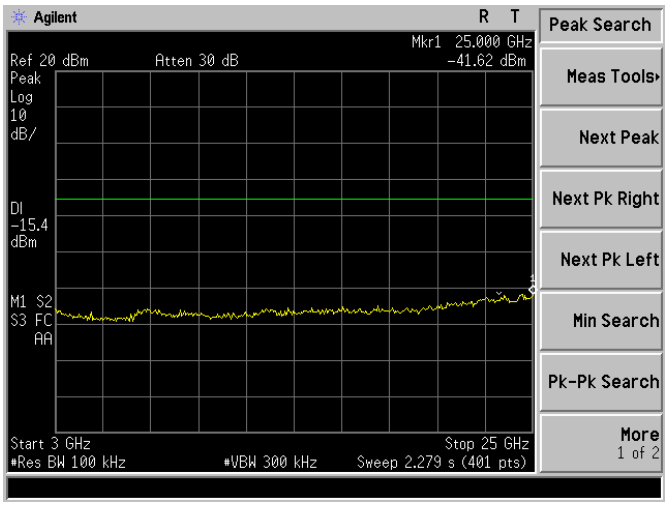




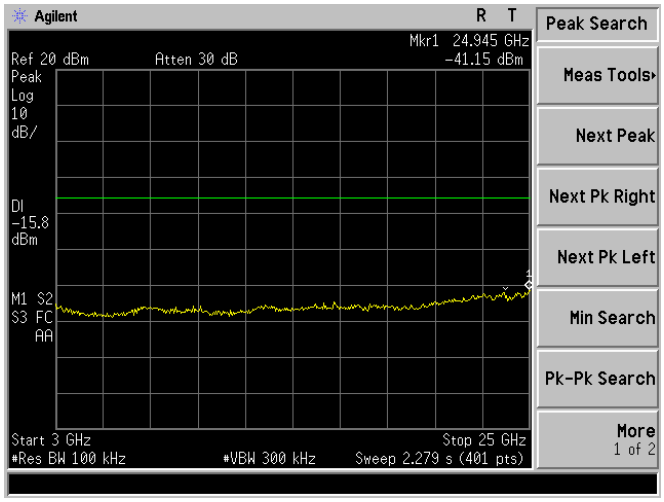
802.11n(**40MHz**)

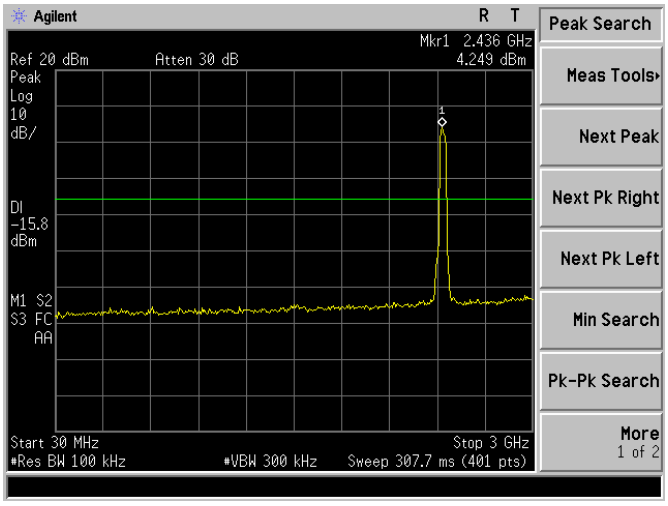
Low Channel 2422MHz



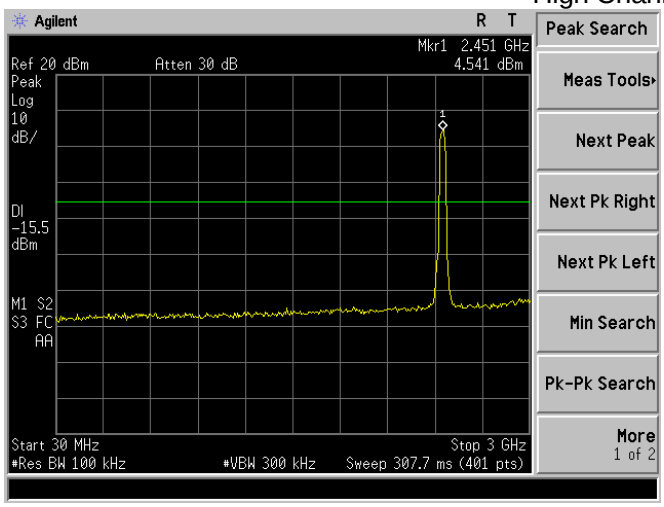


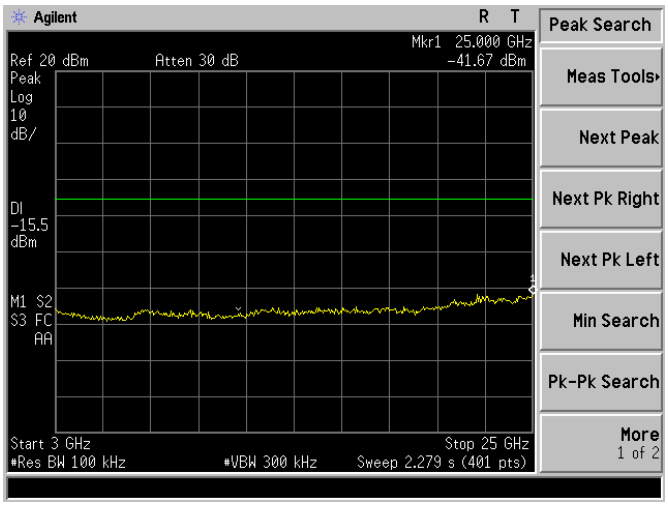
Middle Channel 2437MHz





High Channel 2452MHz





3.3 RADIATED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

3.3.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel,the Highest channel

Note:

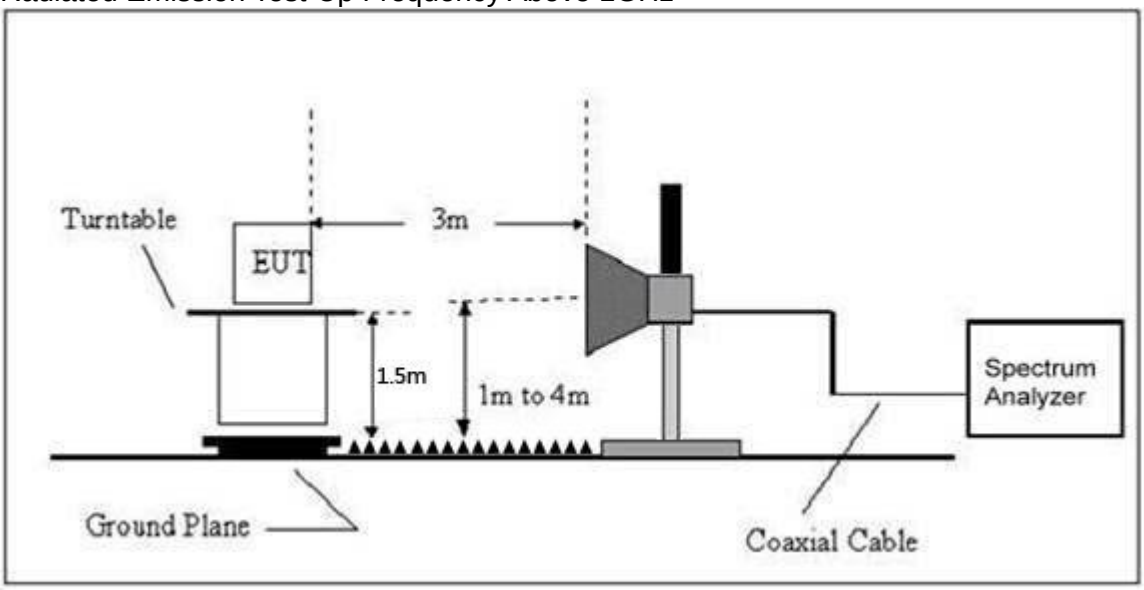
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



3.3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.6 TEST RESULT

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission evel (dBuV/m)	Limits (dBuV/m)		Result
							PK	PK	AV	
802.11b	**Low Channel 2412MHz**									
	H	2390.00	57.22	38.06	7.42	20.15	46.73	74.00	54.00	PASS
	H	2400.00	62.18	38.06	7.42	20.15	51.69	74.00	54.00	PASS
	V	2390.00	61.02	38.06	7.42	20.15	50.53	74.00	54.00	PASS
	V	2400.00	61.37	38.06	7.42	20.15	50.88	74.00	54.00	PASS
	High Channel 2462MHz									
	H	2483.50	61.99	38.17	7.45	20.54	51.81	74.00	54.00	PASS
	H	2485.50	59.54	38.17	7.45	20.54	49.36	74.00	54.00	PASS
	V	2483.50	60.44	38.20	7.45	20.54	50.23	74.00	54.00	PASS
	V	2485.50	60.37	38.20	7.45	20.54	50.16	74.00	54.00	PASS
802.11g	**Low Channel 2412MHz**									
	H	2390.00	60.09	38.06	7.42	20.15	49.60	74.00	54.00	PASS
	H	2400.00	61.91	38.06	7.42	20.15	51.42	74.00	54.00	PASS
	V	2390.00	60.25	38.06	7.42	20.15	49.76	74.00	54.00	PASS
	V	2400.00	61.82	38.06	7.42	20.15	51.33	74.00	54.00	PASS
	High Channel 2462MHz									
	H	2483.50	61.80	38.17	7.45	20.54	51.62	74.00	54.00	PASS
	H	2485.50	59.06	38.17	7.45	20.54	48.88	74.00	54.00	PASS
	V	2483.50	62.90	38.20	7.45	20.54	52.69	74.00	54.00	PASS
	V	2485.50	57.62	38.20	7.45	20.54	47.41	74.00	54.00	PASS
802.11n20	**Low Channel 2412MHz**									
	H	2390.00	60.96	38.06	7.42	20.15	50.47	74.00	54.00	PASS
	H	2400.00	61.46	38.06	7.42	20.15	50.97	74.00	54.00	PASS
	V	2390.00	60.20	38.06	7.42	20.15	49.71	74.00	54.00	PASS
	V	2400.00	61.75	38.06	7.42	20.15	51.26	74.00	54.00	PASS
	High Channel 2462MHz									
	H	2483.50	60.57	38.17	7.45	20.54	50.39	74.00	54.00	PASS
	H	2485.50	60.12	38.17	7.45	20.54	49.94	74.00	54.00	PASS
	V	2483.50	61.92	38.20	7.45	20.54	51.71	74.00	54.00	PASS
	V	2485.50	60.67	38.20	7.45	20.54	50.46	74.00	54.00	PASS
802.11n40	**Low Channel 2422MHz**									
	H	2390.00	57.46	38.06	7.42	20.15	46.97	74.00	54.00	PASS
	H	2400.00	57.78	38.06	7.42	20.15	47.29	74.00	54.00	PASS
	V	2390.00	56.69	38.06	7.42	20.15	46.20	74.00	54.00	PASS
	V	2400.00	58.44	38.06	7.42	20.15	47.95	74.00	54.00	PASS
	High Channel 2452MHz									
	H	2483.50	57.51	38.17	7.45	20.54	47.33	74.00	54.00	PASS
	H	2485.50	56.68	38.17	7.45	20.54	46.50	74.00	54.00	PASS
	V	2483.50	57.78	38.20	7.45	20.54	47.57	74.00	54.00	PASS
	V	2485.50	56.85	38.20	7.45	20.54	46.64	74.00	54.00	PASS

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

4.1.1.TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = RMS.
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 within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2. DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP

4.1.4 4.1.4 EUT OPERATION CONDITIONS

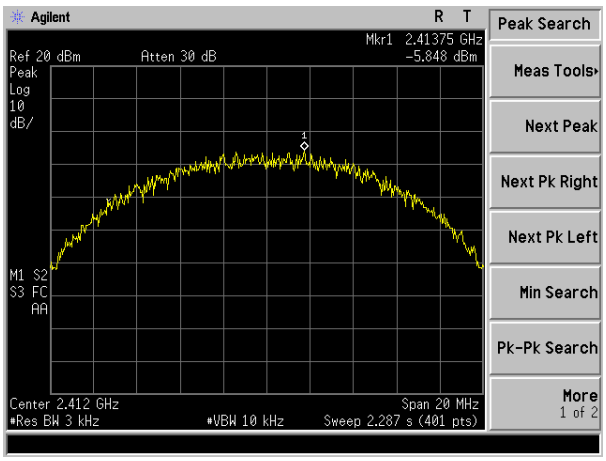
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.
we test all antenna's data, the data only show the antenna1 worst mode

4.1.5 TEST RESULTS

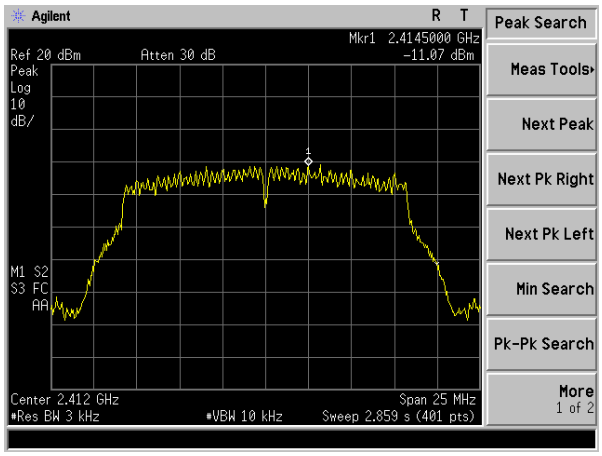
	Frequency	Power Spectral Density (dBm)		Total Power Spectral Density (dBm)	Limit (dBm)	Result
		ANT1	ANT2			
802.11b	2412 MHz	-5.848	-5.371	/	<8	PASS
	2437 MHz	-6.35	-4.399	/	<8	PASS
	2462 MHz	-5.771	-4.467	/	<8	PASS
802.11g	2412 MHz	-11.07	-9.525	/	<8	PASS
	2437 MHz	-11.86	-9.756	/	<8	PASS
	2462 MHz	-11.41	-10.13	/	<8	PASS
802.11n (20MHz)	2412 MHz	-10.89	-9.09	-6.89	<6	PASS
	2437 MHz	-10.8	-9.483	-7.08	<6	PASS
	2462 MHz	-11.17	-9.612	-7.31	<6	PASS
802.11n (40MHz)	2422 MHz	-12.86	-13.16	-10.00	<6	PASS
	2437 MHz	-13.77	-13.75	-10.75	<6	PASS
	2452 MHz	-13.88	-13.98	-10.92	<6	PASS

ANT 1

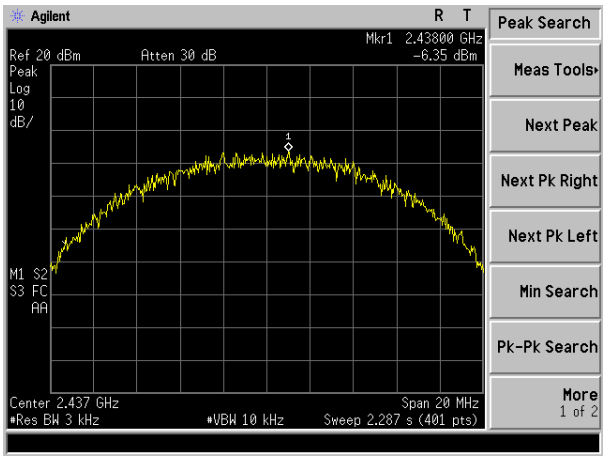
(802.11b) channel 1



(802.11g) channel 1



(802.11b) channel 6



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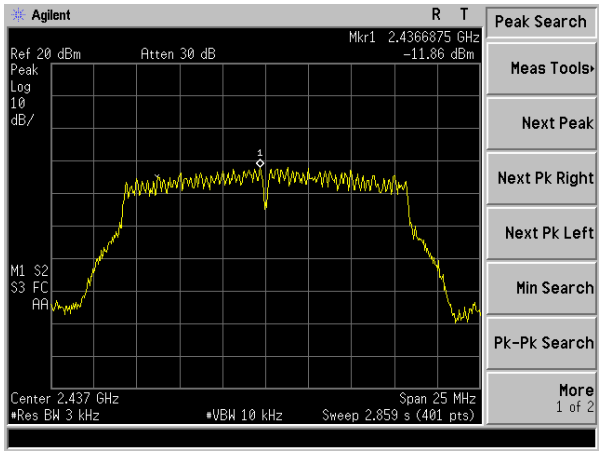
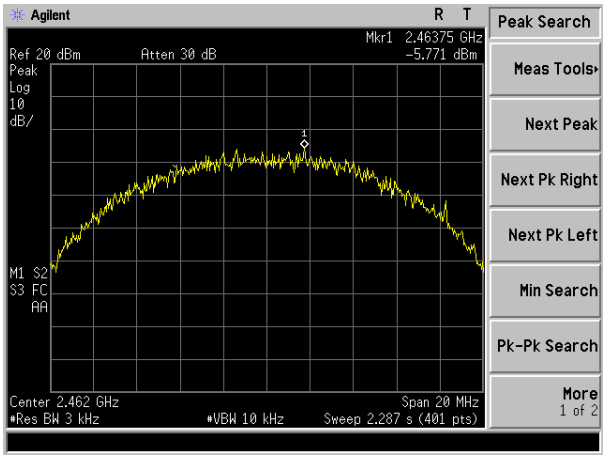
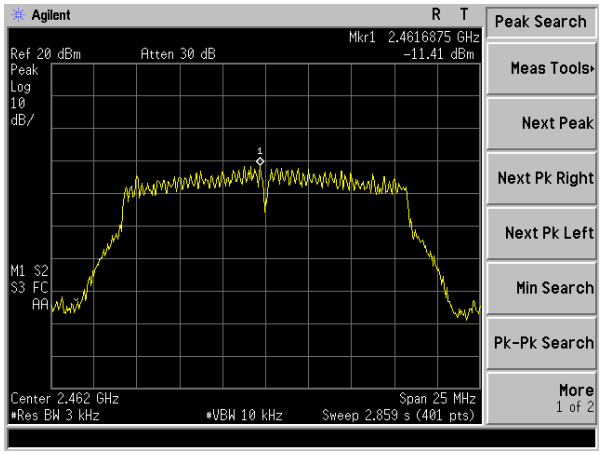


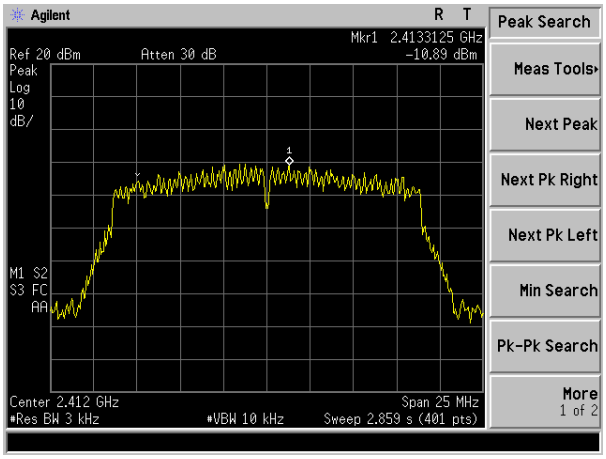
(802.11b) channel 11



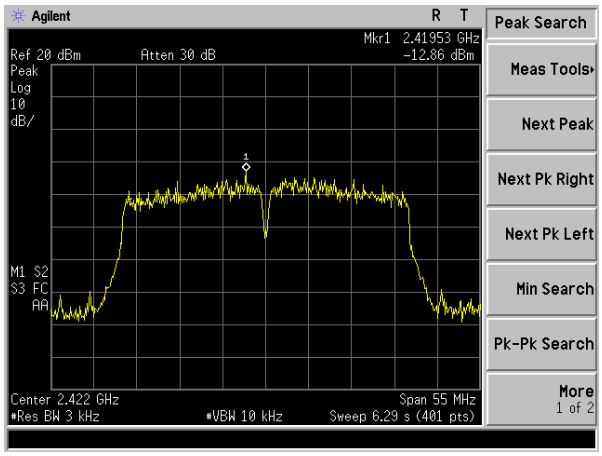
(802.11g) channel 11



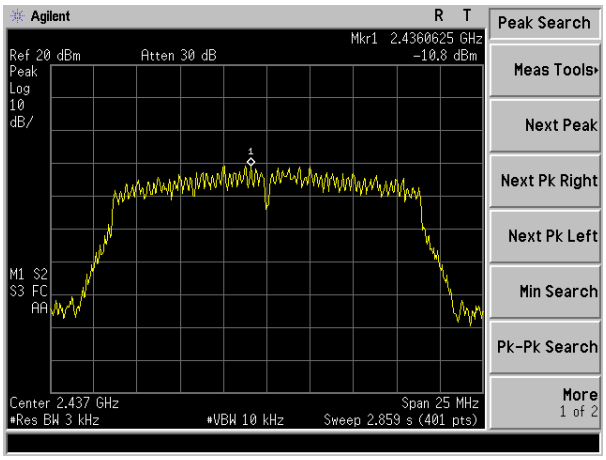
(802.11n20) channel 1



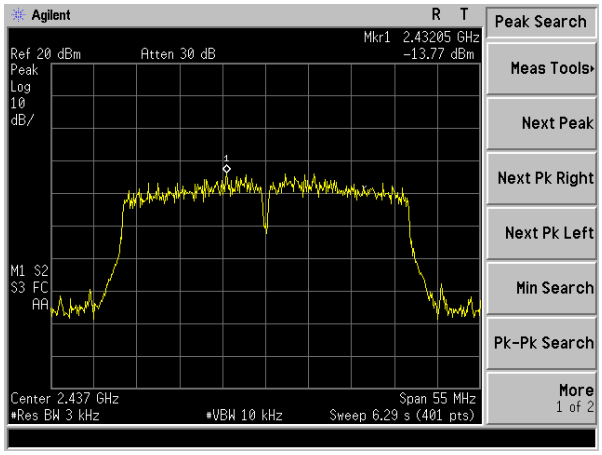
(802.11n40) channel 3



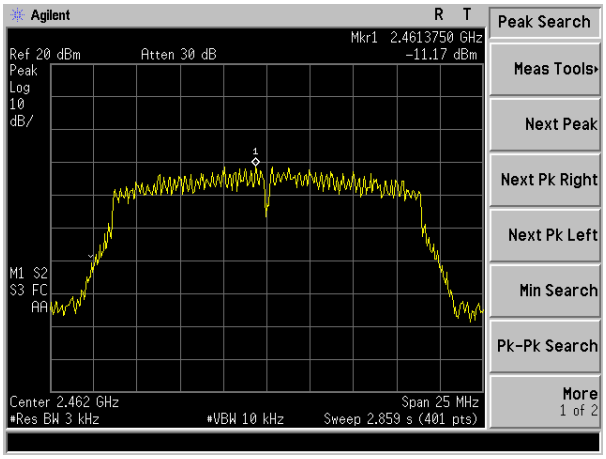
(802.11n20) channel 6



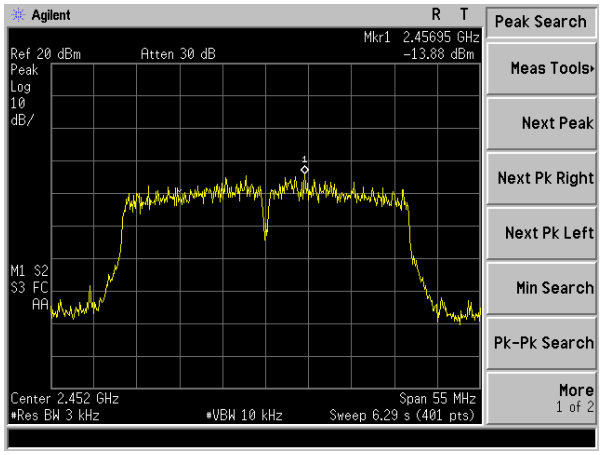
(802.11n40) channel 6



(802.11n20) channel 11

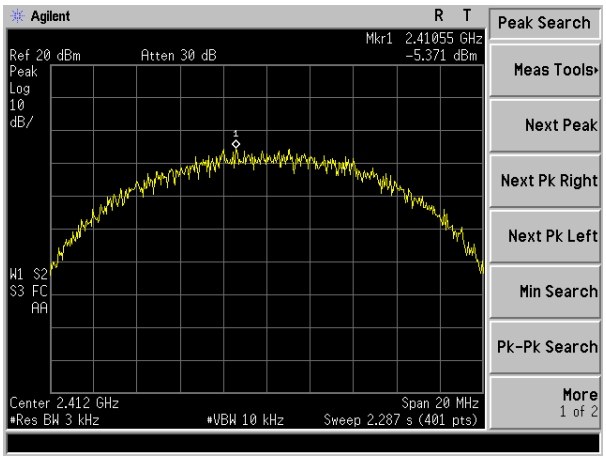


(802.11n40) channel 9

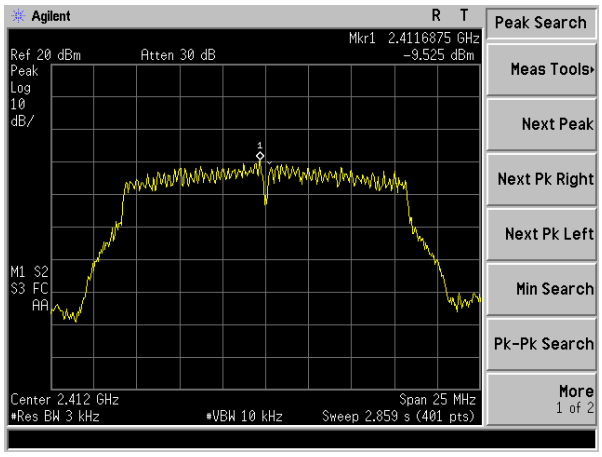


ANT 2

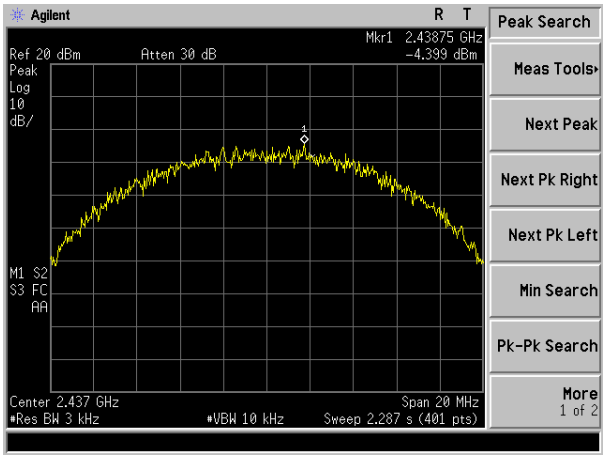
(802.11b) channel 1



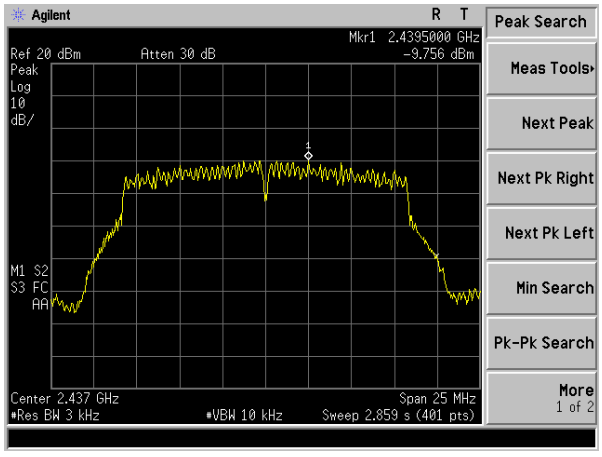
(802.11g) channel 1



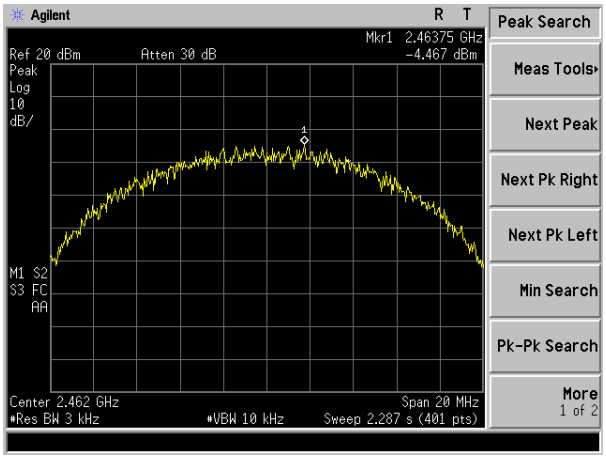
(802.11b) channel 6



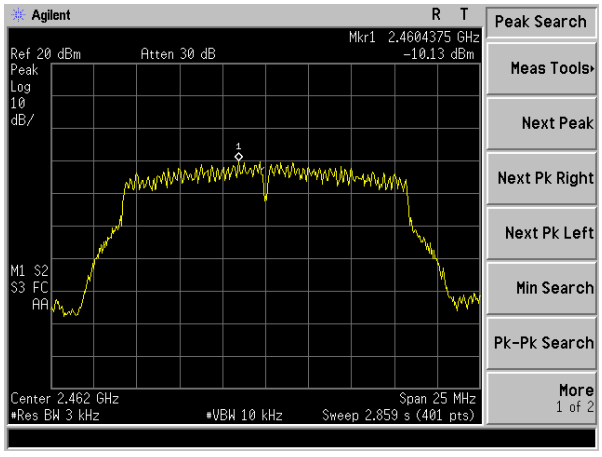
(802.11g) channel 6



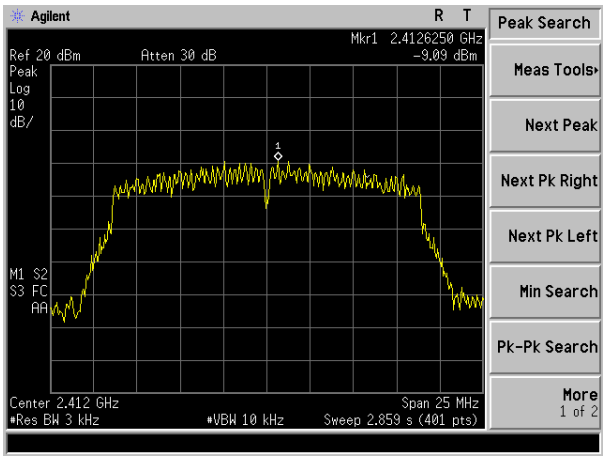
(802.11b) channel 11



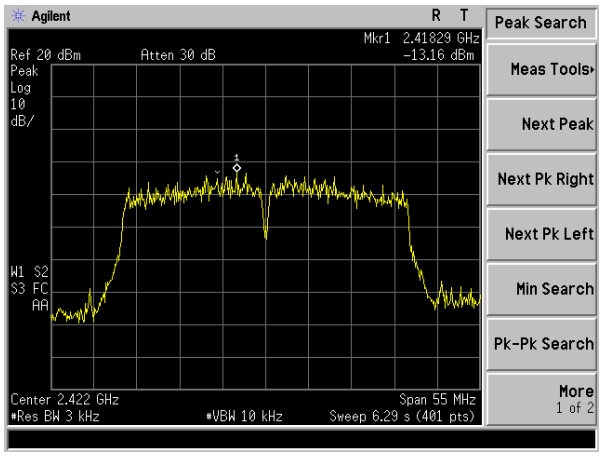
(802.11g) channel 11



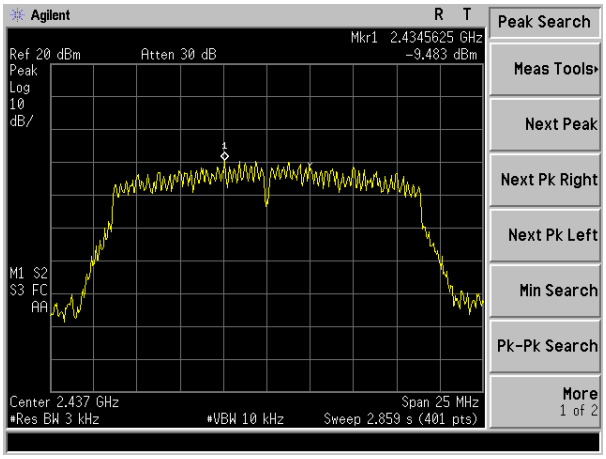
(802.11n20) channel 1



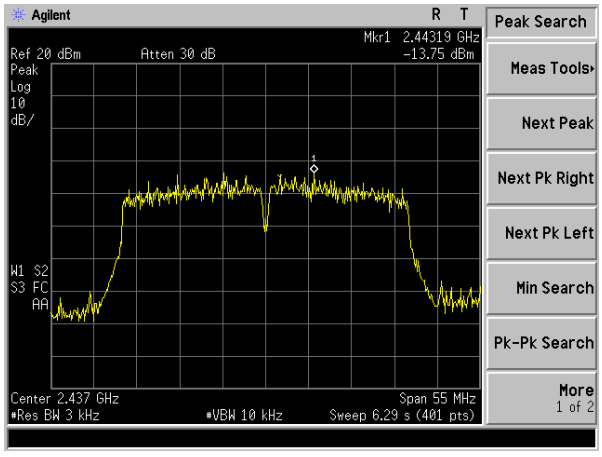
(802.11n40) channel 3



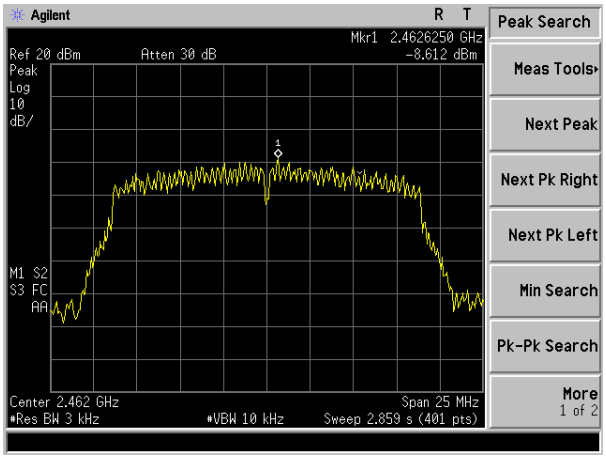
(802.11n20) channel 6



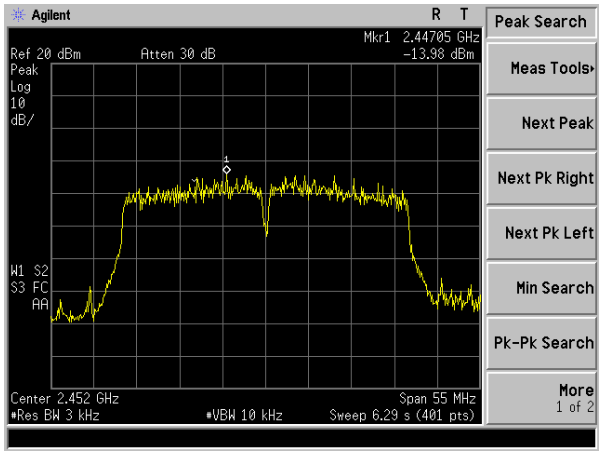
(802.11n40) channel 6



(802.11n20) channel 11



(802.11n40) channel 9



5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

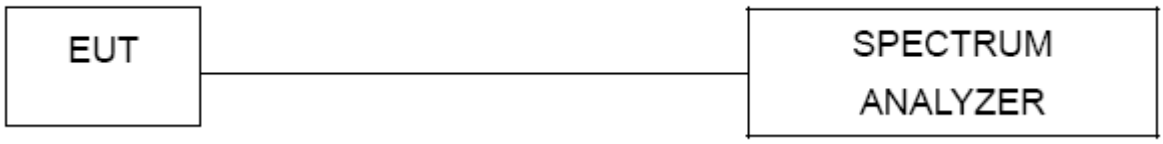
5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.1.2 5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

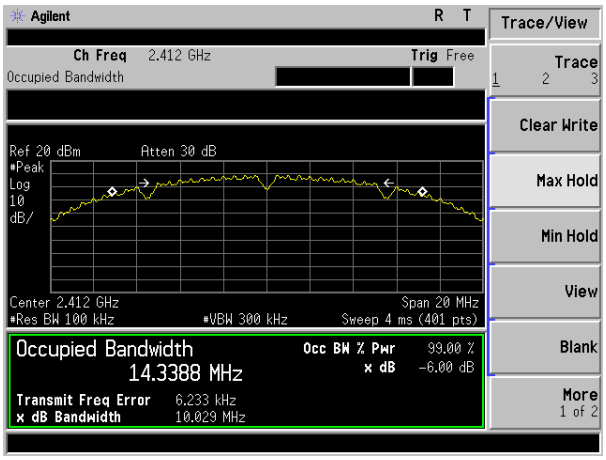
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.
we test all antenna's data, the data only show the antenna1 worst mode

5.1.5 TEST RESULTS

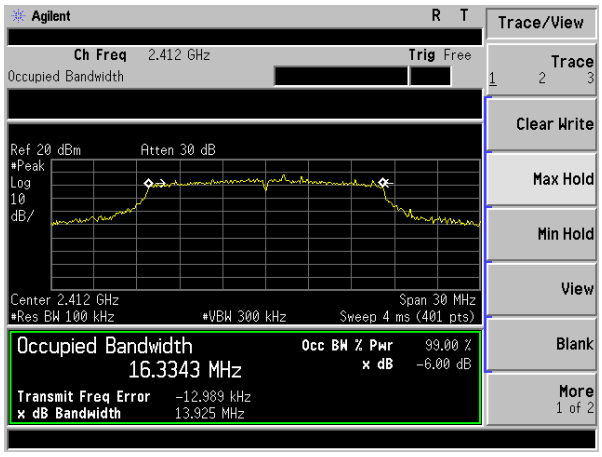
	Frequency (MHz)	6dB bandwidth (MHz)		Limit (kHz)	Result
		ANT1	ANT2		
802.11b	2412	10.029	9.590	>500	Pass
	2437	10.035	9.536	>500	Pass
	2462	9.593	9.603	>500	Pass
802.11g	2412	13.925	15.503	>500	Pass
	2437	12.386	12.726	>500	Pass
	2462	15.631	15.237	>500	Pass
802.11n20	2412	13.901	15.114	>500	Pass
	2437	13.293	15.140	>500	Pass
	2462	15.036	15.237	>500	Pass
802.11n40	2422	31.460	33.861	>500	Pass
	2437	35.123	32.836	>500	Pass
	2452	35.108	32.688	>500	Pass

ANT 1

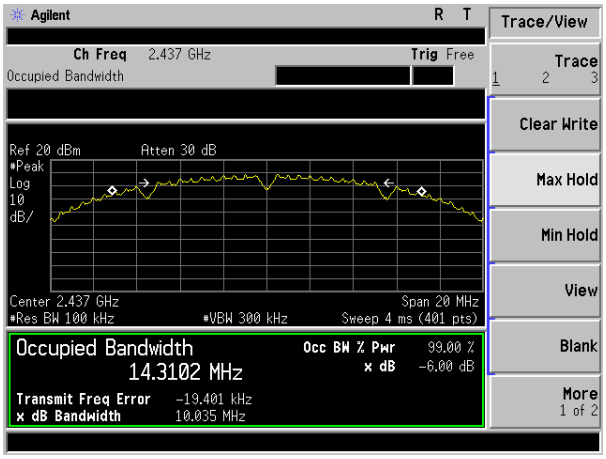
(802.11b) channel 1



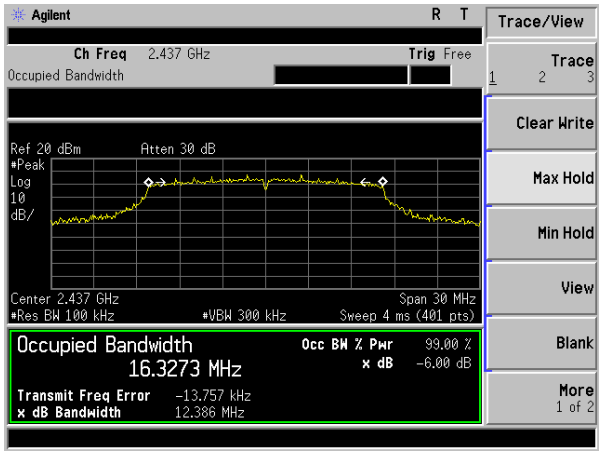
(802.11g) channel 1



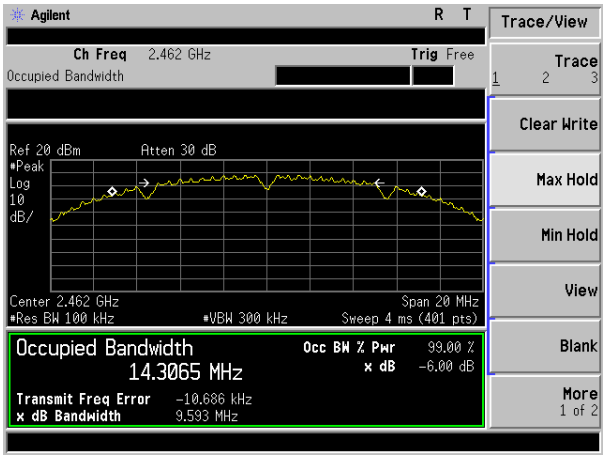
(802.11b) channel 6



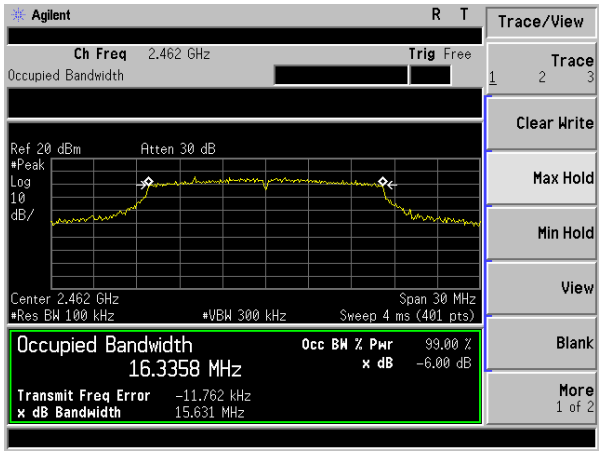
(802.11g) channel 6



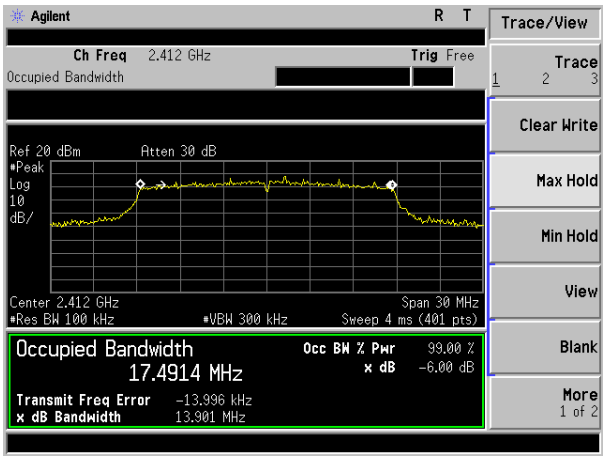
(802.11b) channel 11



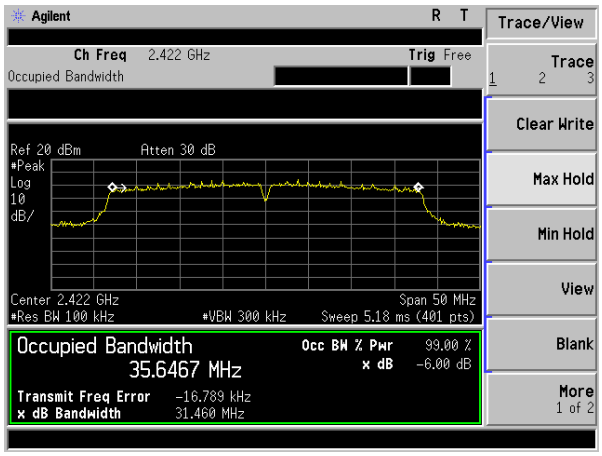
(802.11g) channel 11



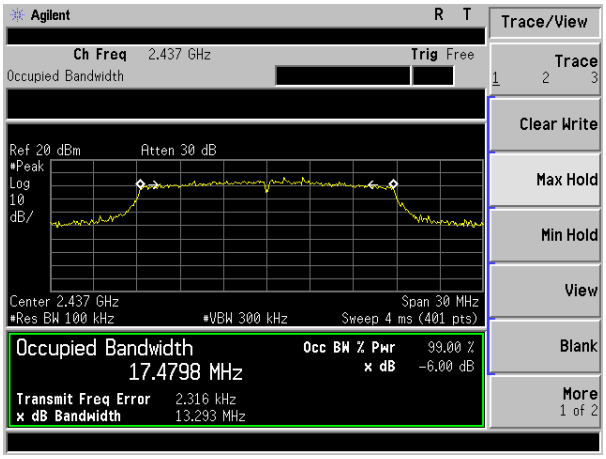
(802.11n20) channel 1



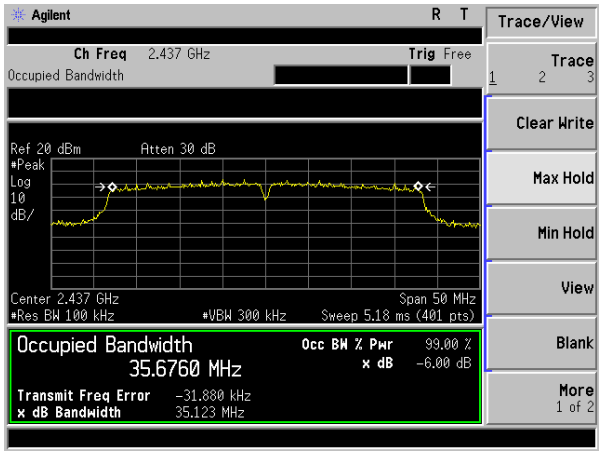
(802.11n40) channel 3



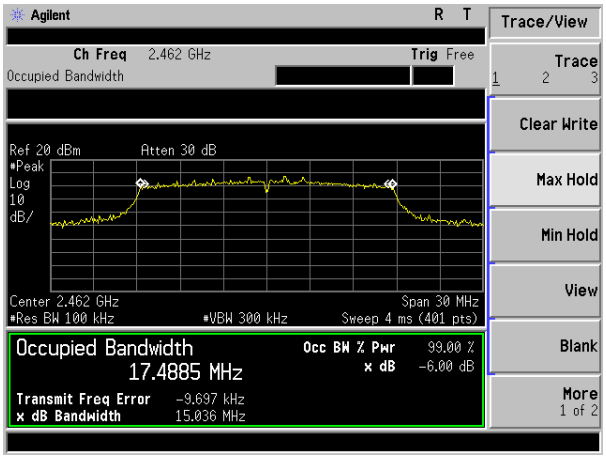
(802.11n20) channel 6



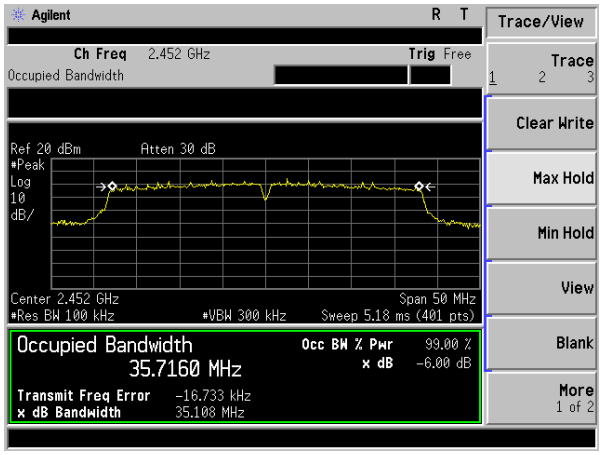
(802.11n40) channel 6



(802.11n20) channel 11

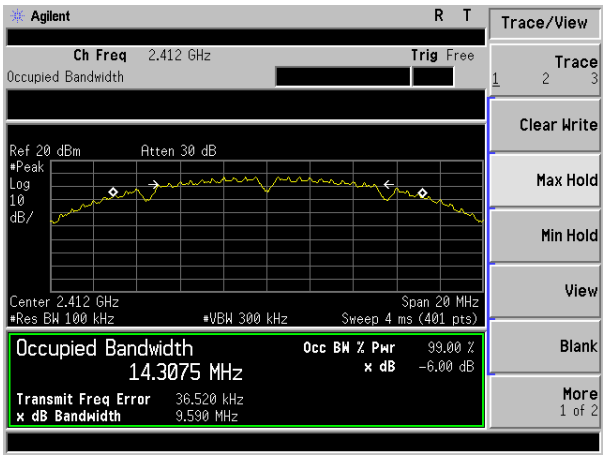


(802.11n40) channel 9

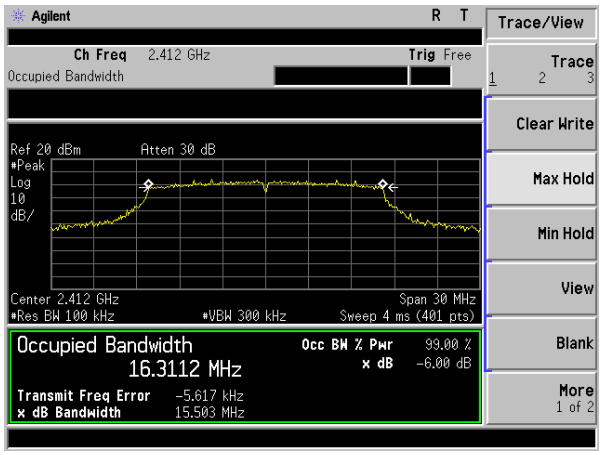


ANT 2

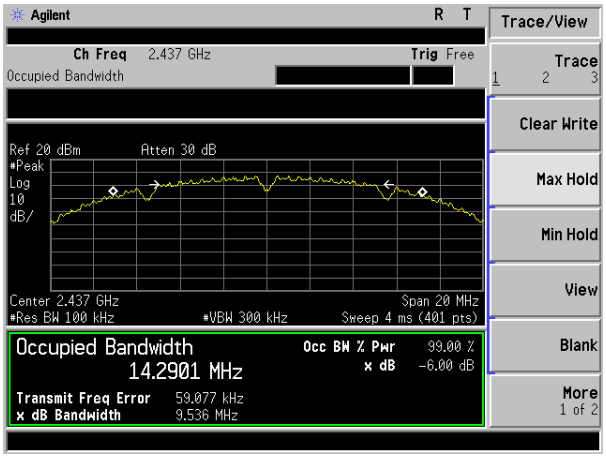
(802.11b) channel 1



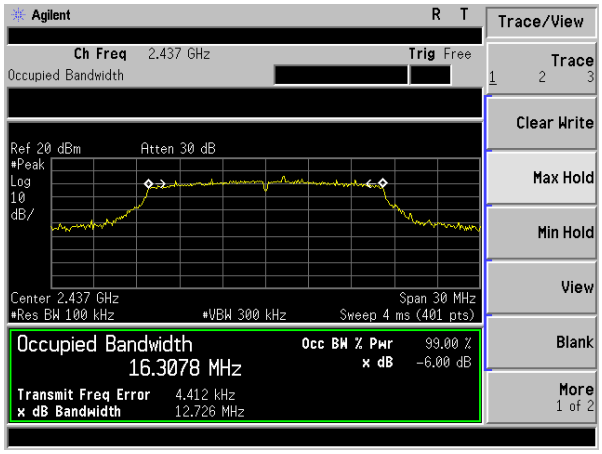
(802.11g) channel 1



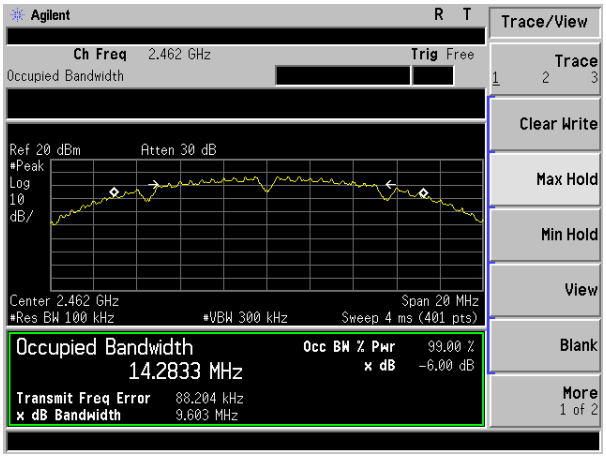
(802.11b) channel 6



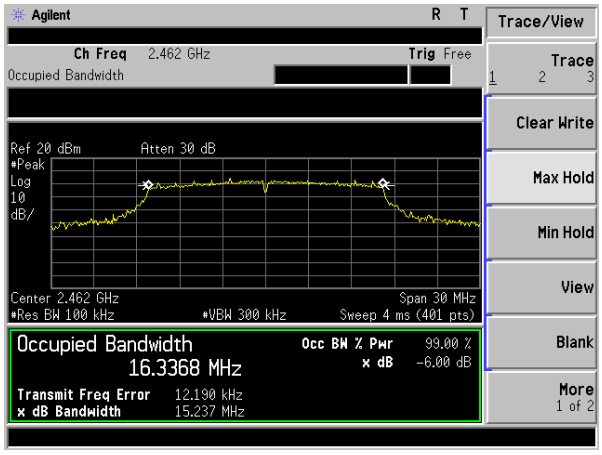
(802.11g) channel 6



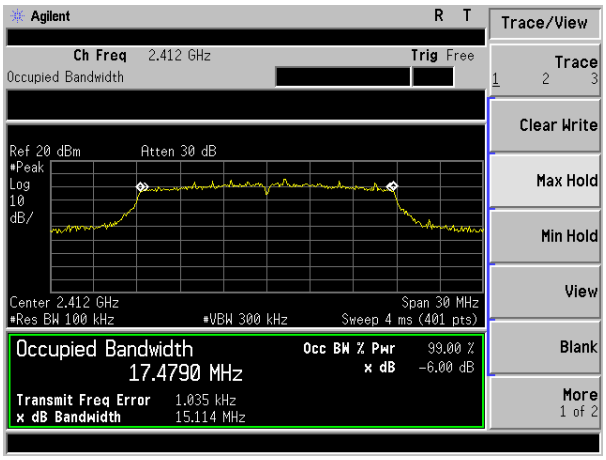
(802.11b) channel 11



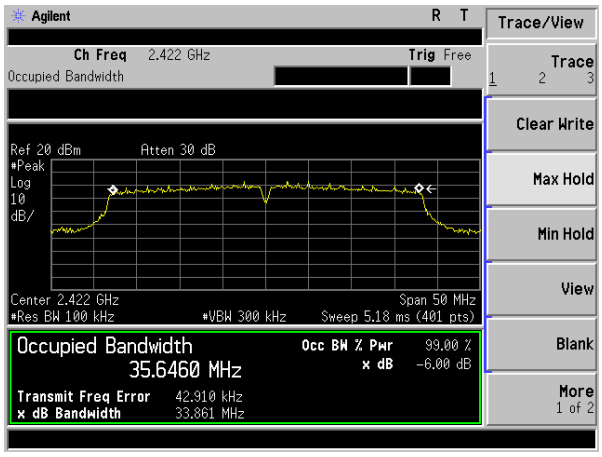
(802.11g) channel 11



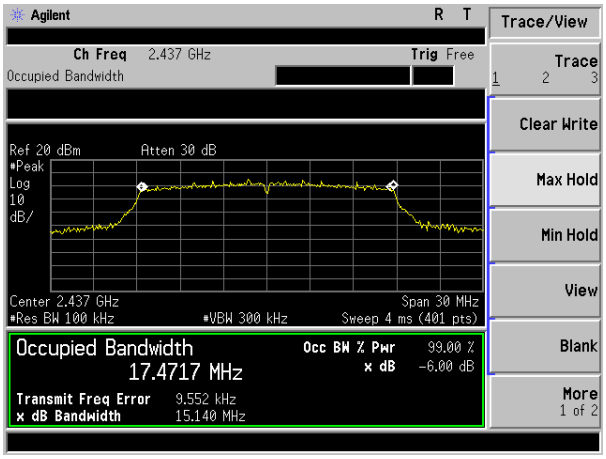
(802.11n20) channel 1



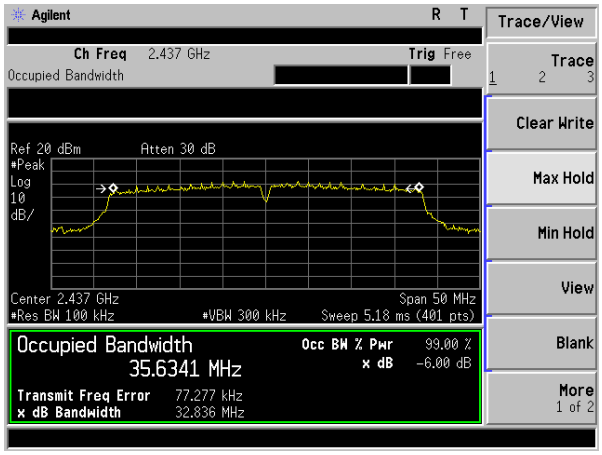
(802.11n40) channel 3



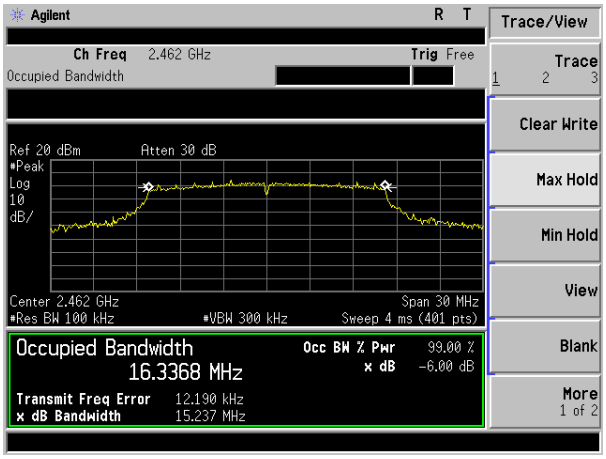
(802.11n20) channel 6



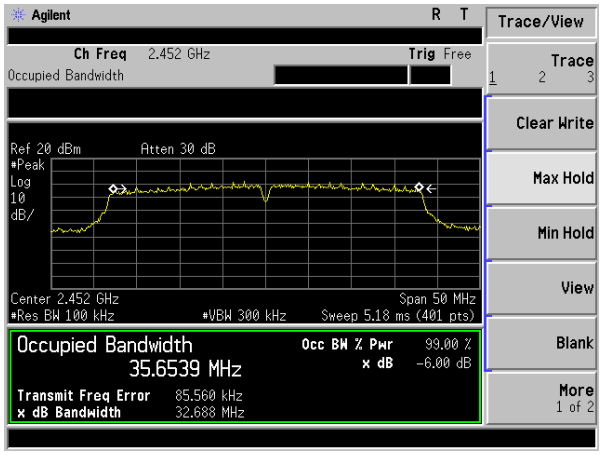
(802.11n40) channel 6



(802.11n20) channel 11



(802.11n40) channel 9



6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

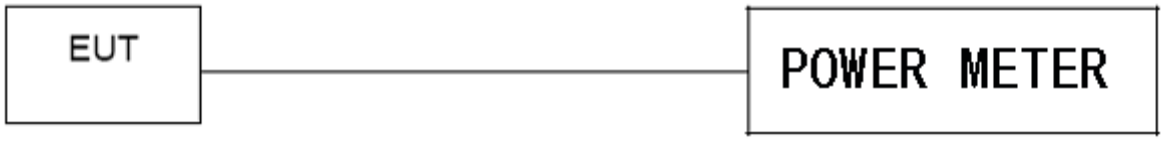
6.1.1 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

Temperature：	25℃	Relative Humidity：	60%
Pressure：	101KPa	Test Voltage ：	DC 12V

	Frequency (MHz)	Maximum Conducted Output Power(PK)(dBm)		Total Output Power (dBm)	LIMIT dBm
		ANT1	ANT2		
802.11b	2412	20.41	20.43	/	30
	2437	20.37	20.74	/	30
	2462	20.34	20.49	/	30
802.11g	2412	20.46	20.46	/	30
	2437	20.65	20.12	/	30
	2462	20.33	20.07	/	30
802.11n20	2412	20.05	19.74	22.91	28
	2437	19.57	20.25	22.93	28
	2462	19.36	19.52	22.45	28
802.11n40	2422	18.48	19.77	22.18	28
	2437	18.36	19.45	21.95	28
	2452	18.87	19.11	22.00	28

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

7.1 APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

7.2 TEST PROCEDURE

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b) 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.

c) Set RBW to 100 kHz and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.

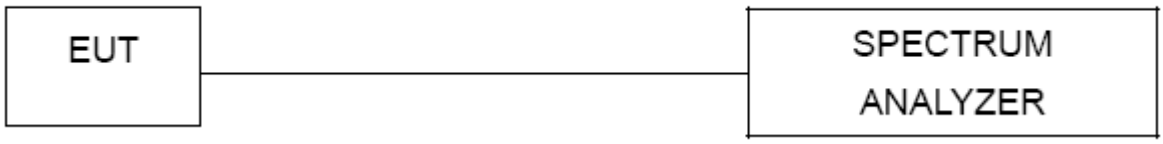
d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

e) Repeat above procedures until all measured frequencies were complete.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



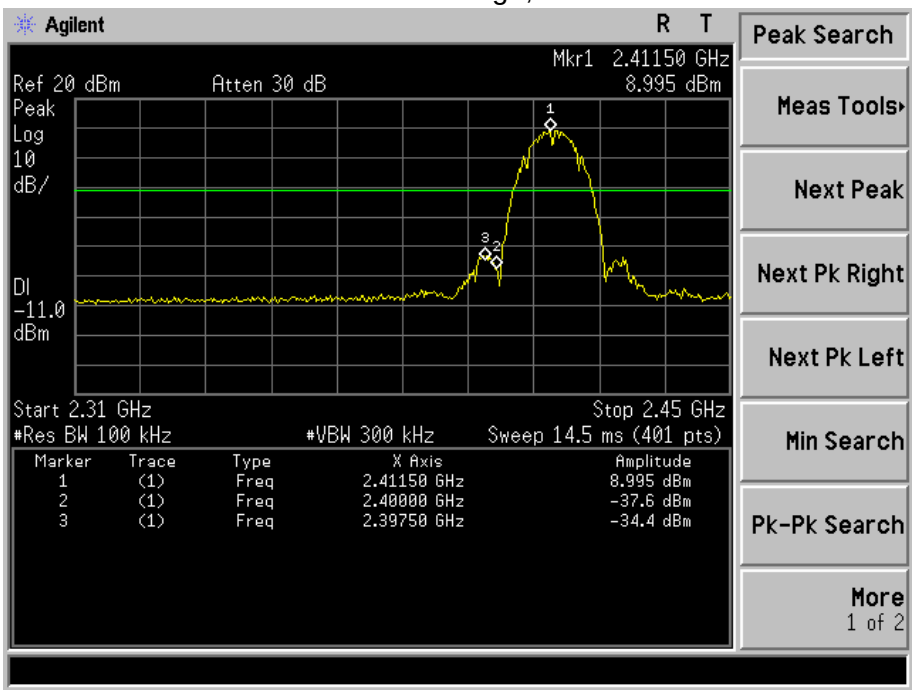
7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.
we test all antenna's data, the data only show the antenna1 worst mode

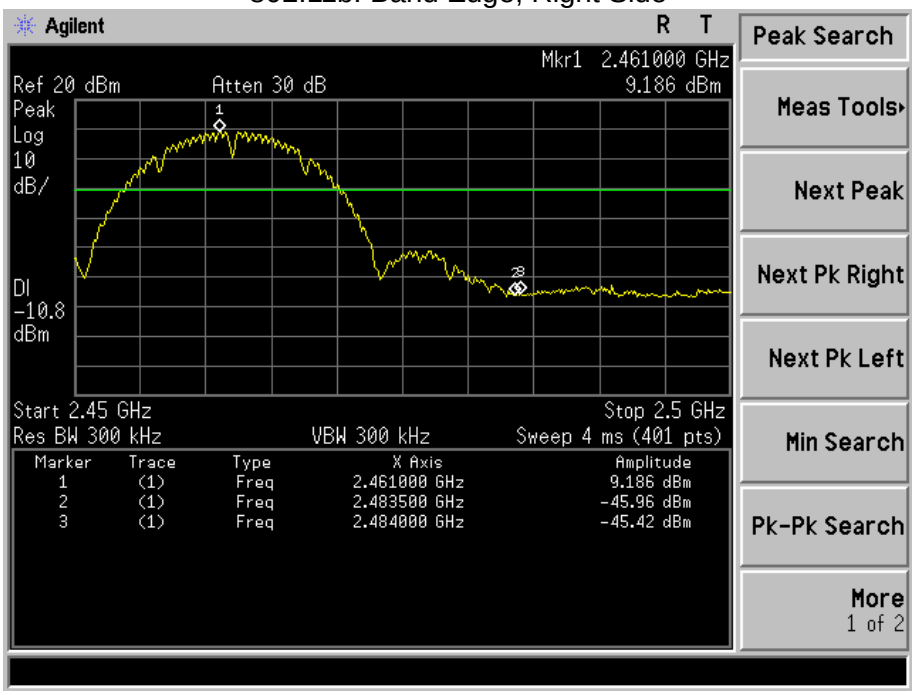
7.6 TEST RESULTS

ANT 1

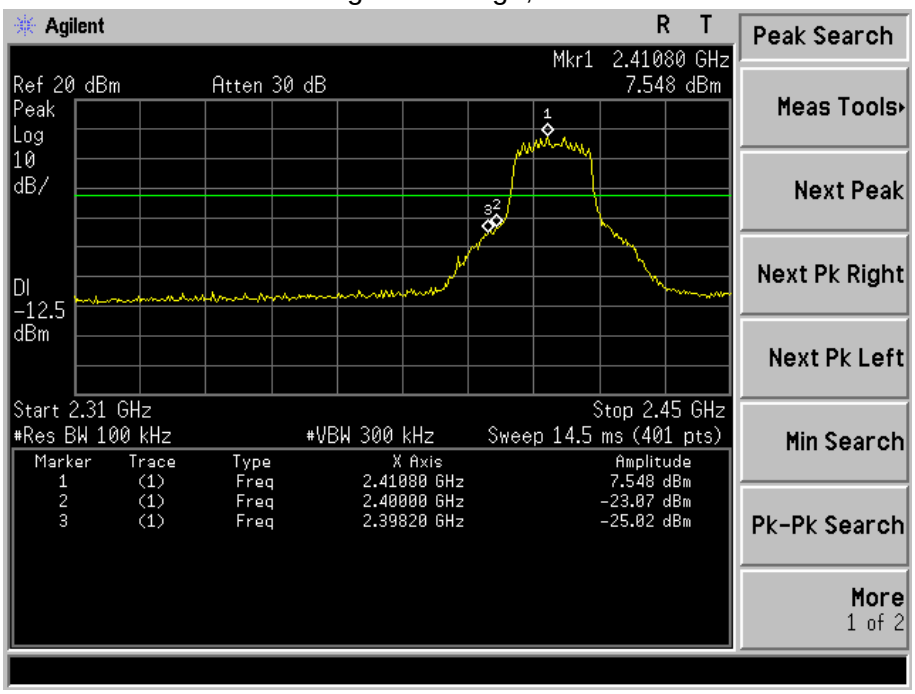
802.11b: Band Edge, Left Side



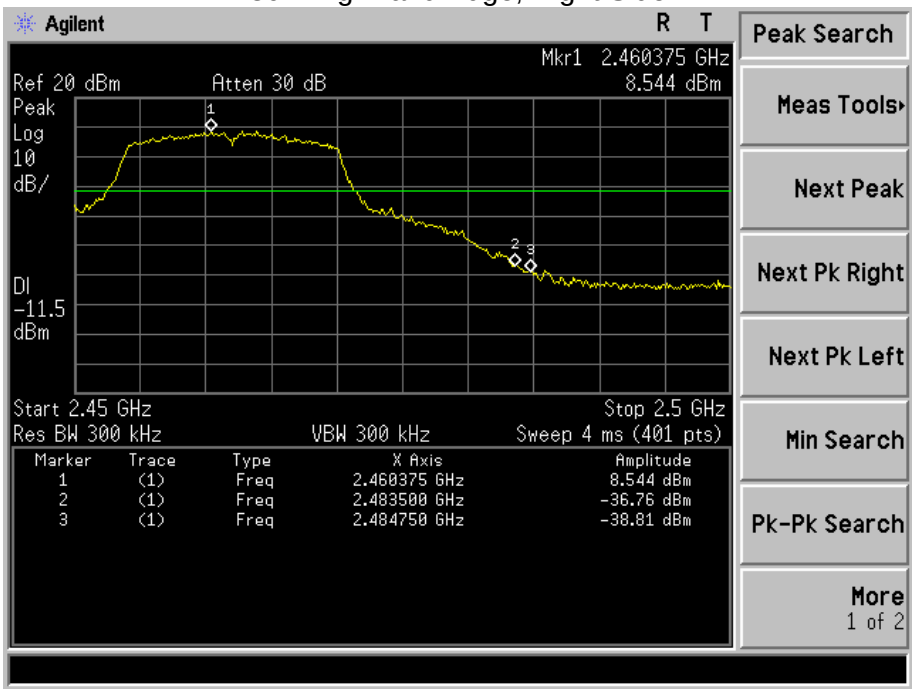
802.11b: Band Edge, Right Side



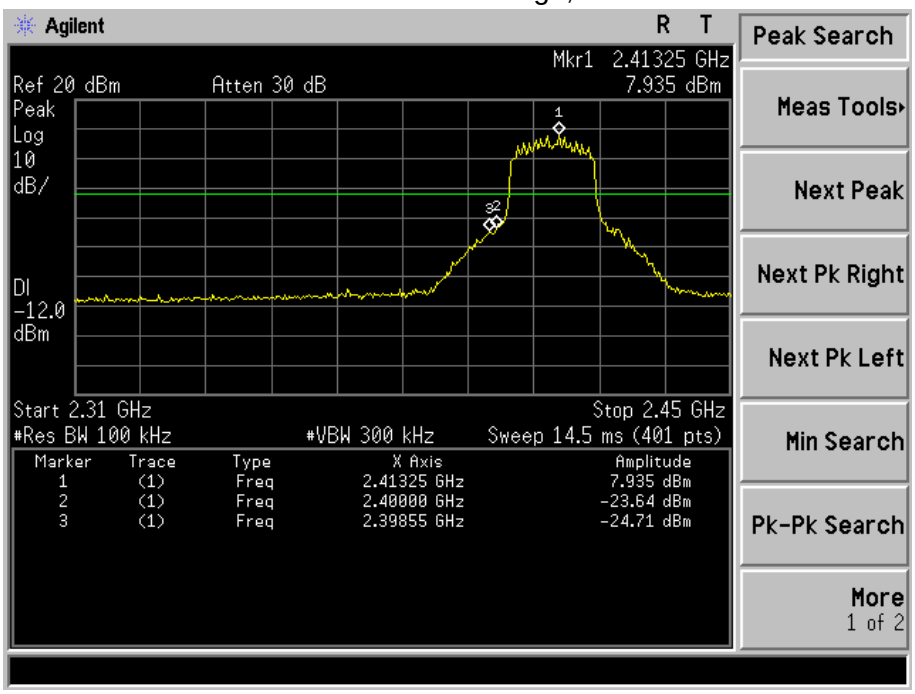
802.11g: Band Edge, Left Side



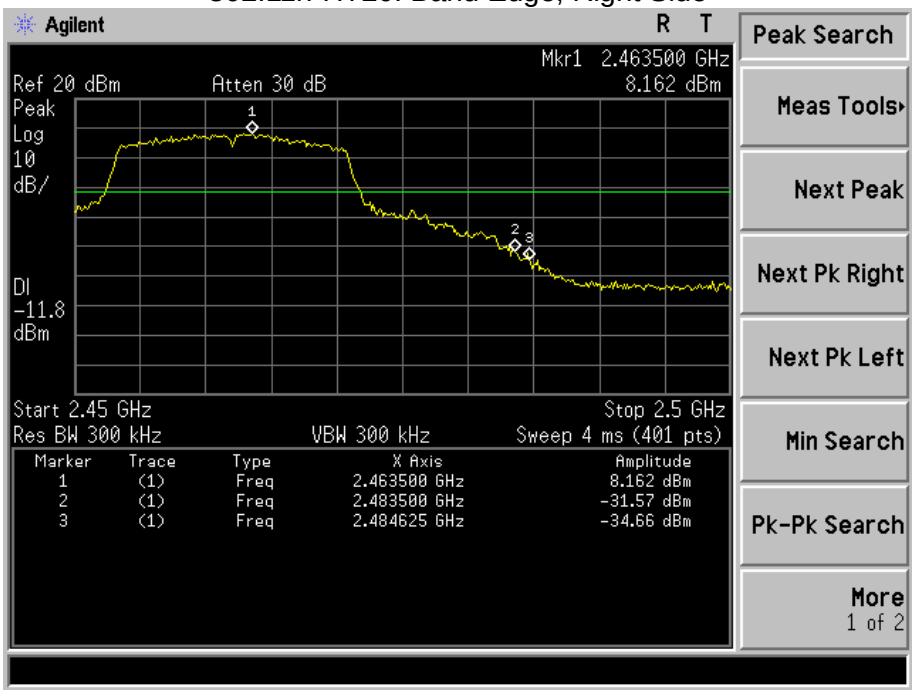
802.11g: Band Edge, Right Side



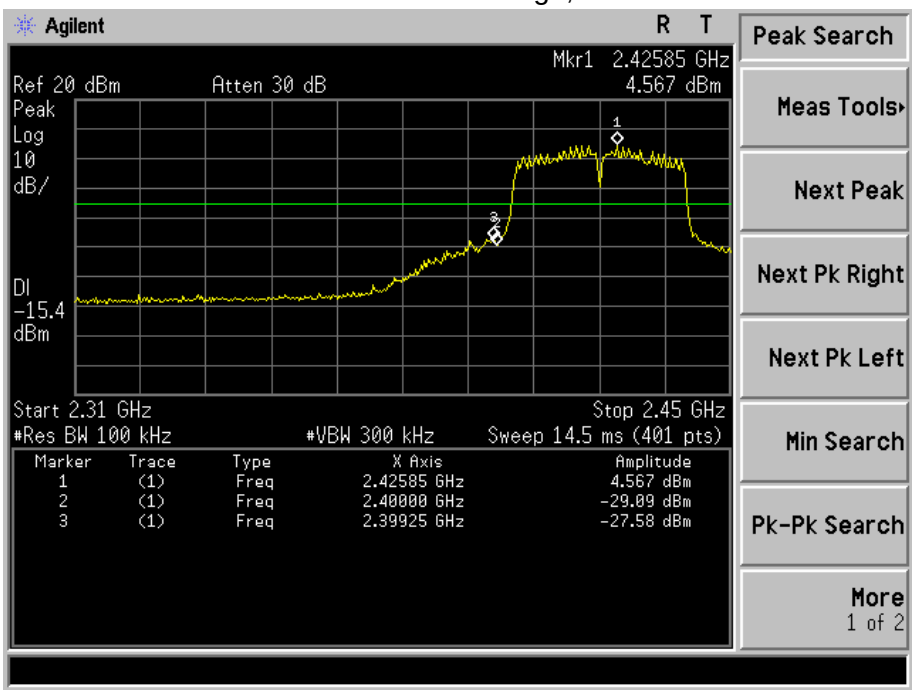
802.11n-HT20: Band Edge, Left Side



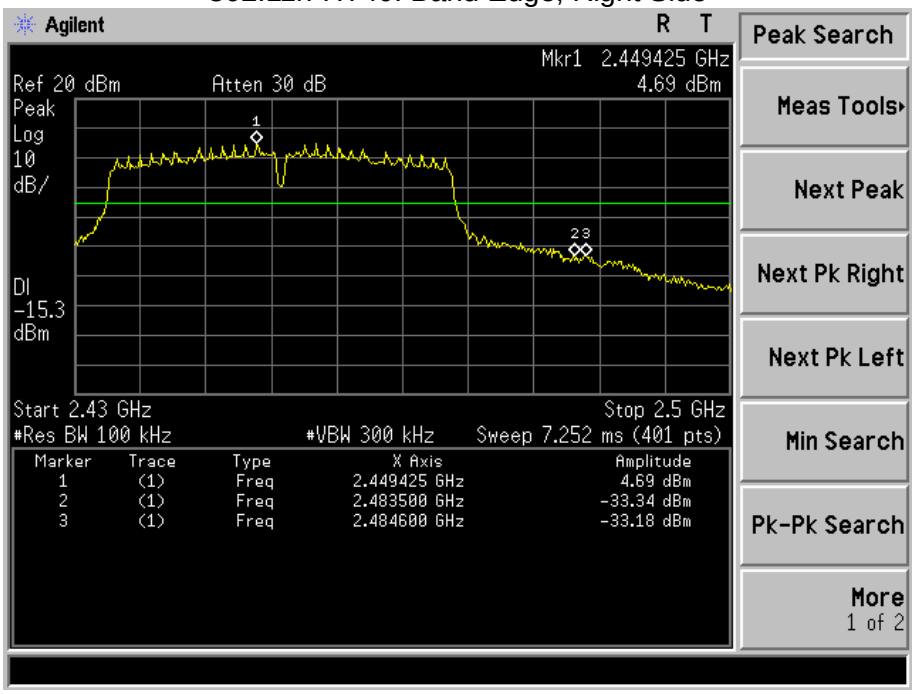
802.11n-HT20: Band Edge, Right Side



802.11n-HT40: Band Edge, Left Side

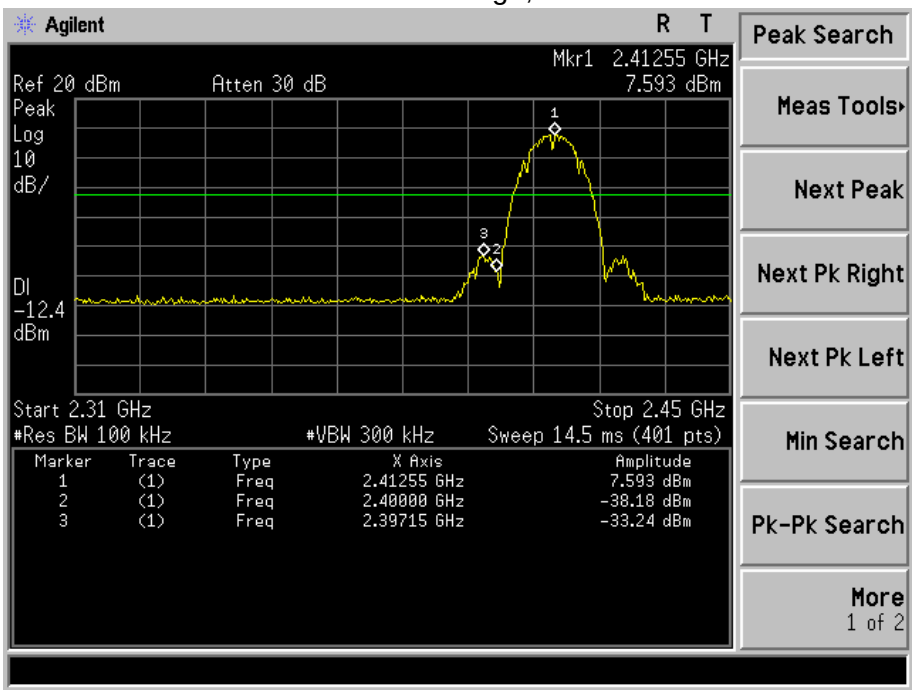


802.11n-HT40: Band Edge, Right Side

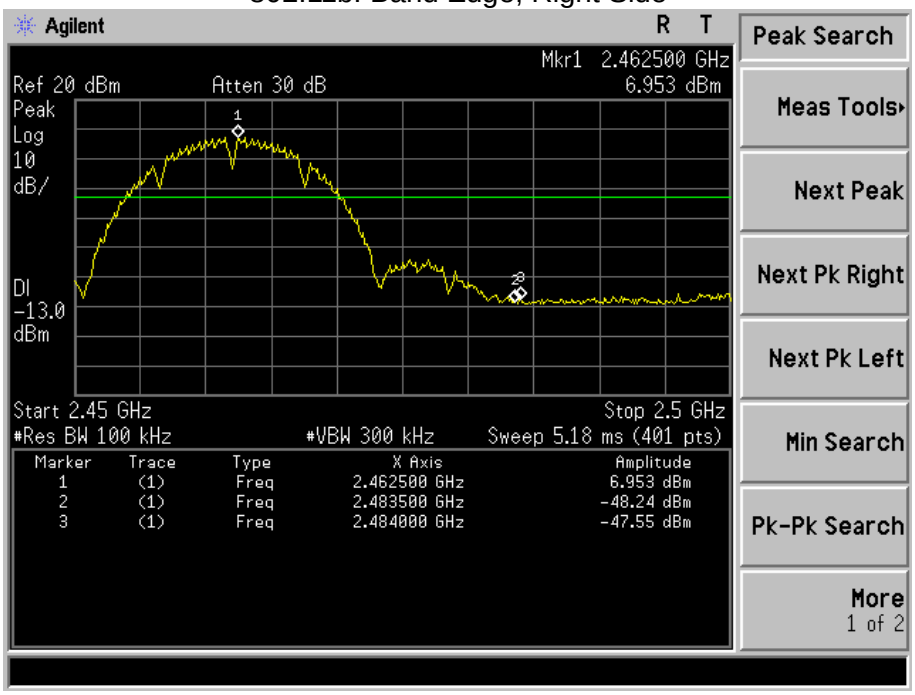


ANT 2

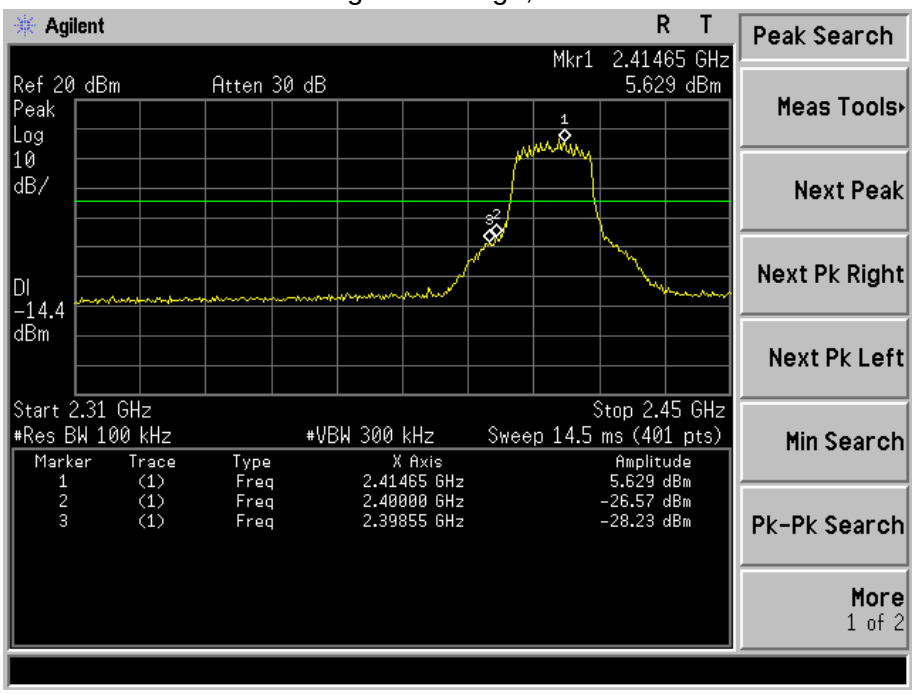
802.11b: Band Edge, Left Side



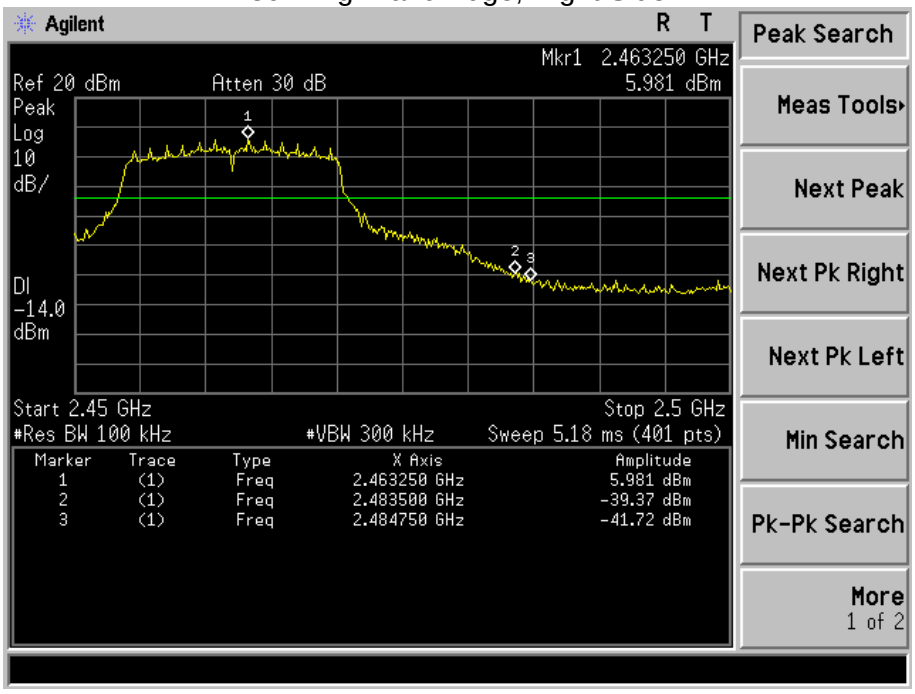
802.11b: Band Edge, Right Side



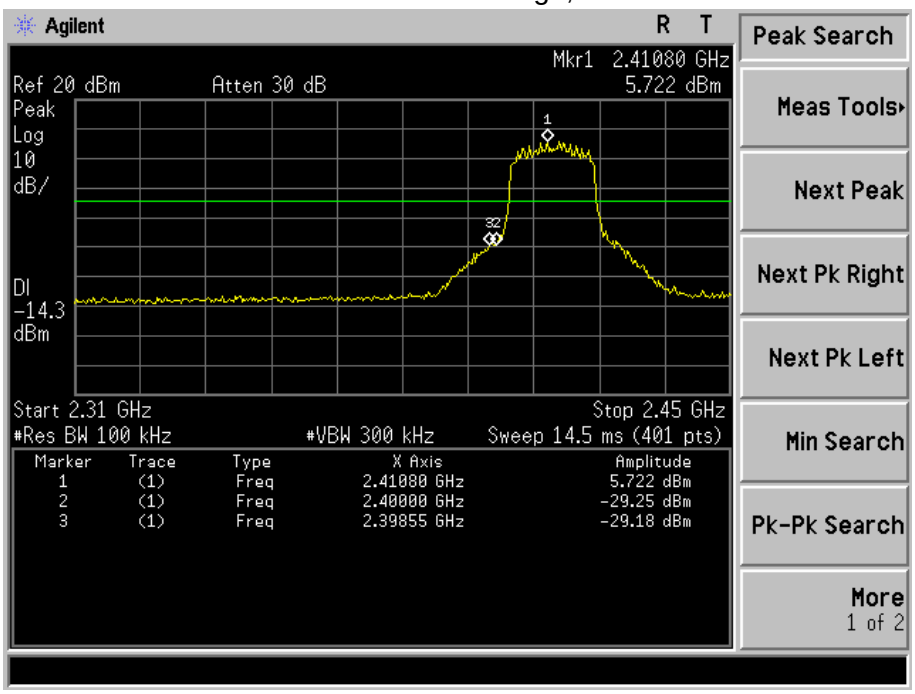
802.11g: Band Edge, Left Side



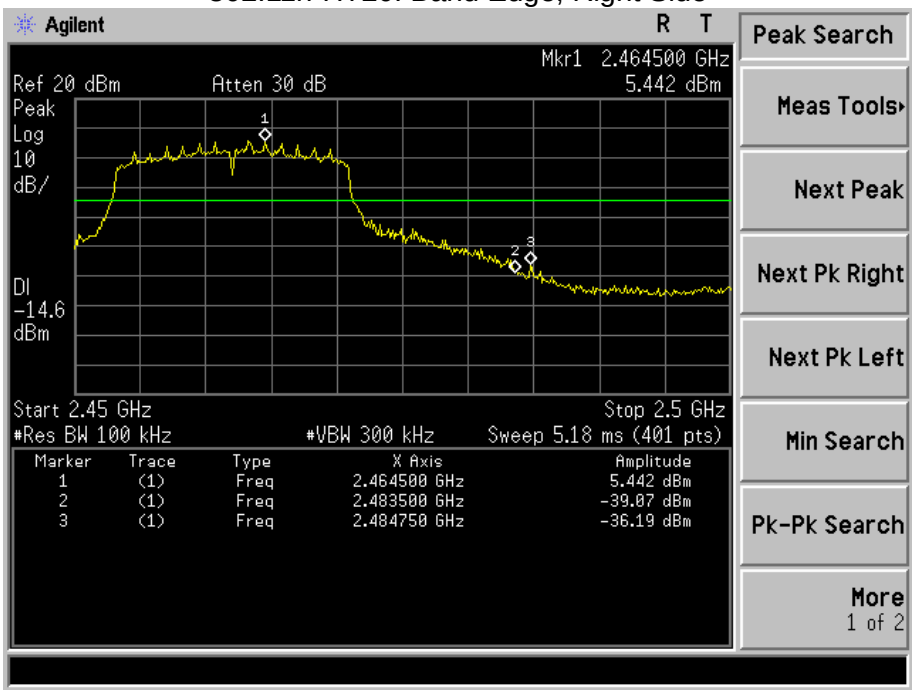
802.11g: Band Edge, Right Side



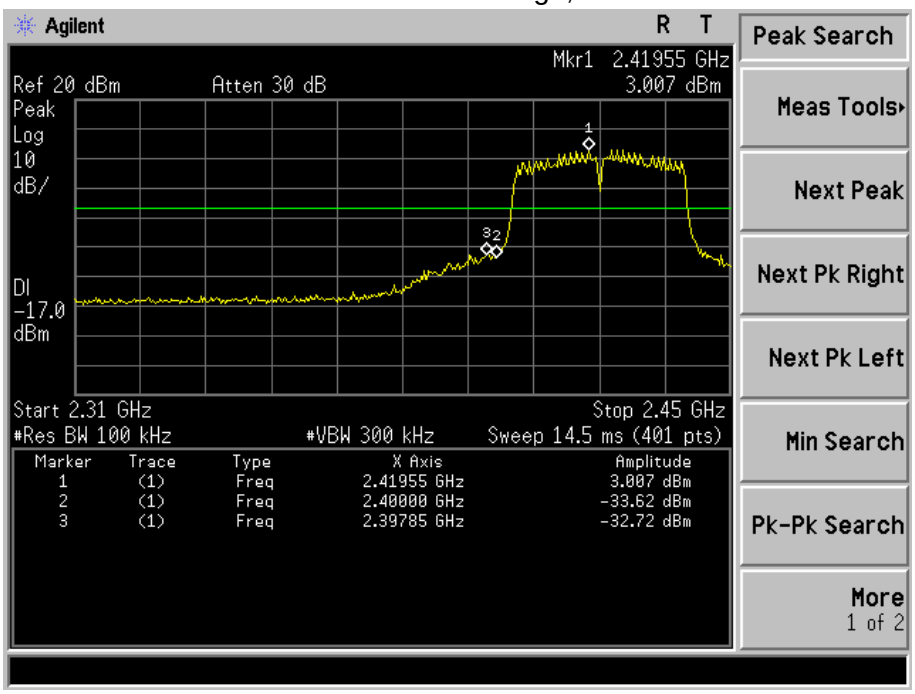
802.11n-HT20: Band Edge, Left Side



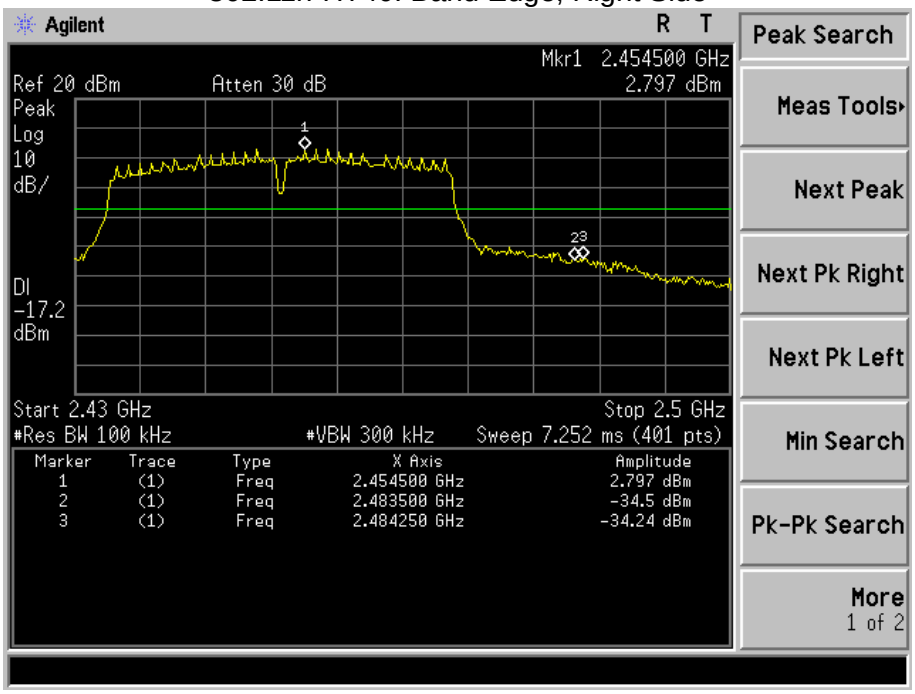
802.11n-HT20: Band Edge, Right Side



802.11n-HT40: Band Edge, Left Side



802.11n-HT40: Band Edge, Right Side



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, 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.

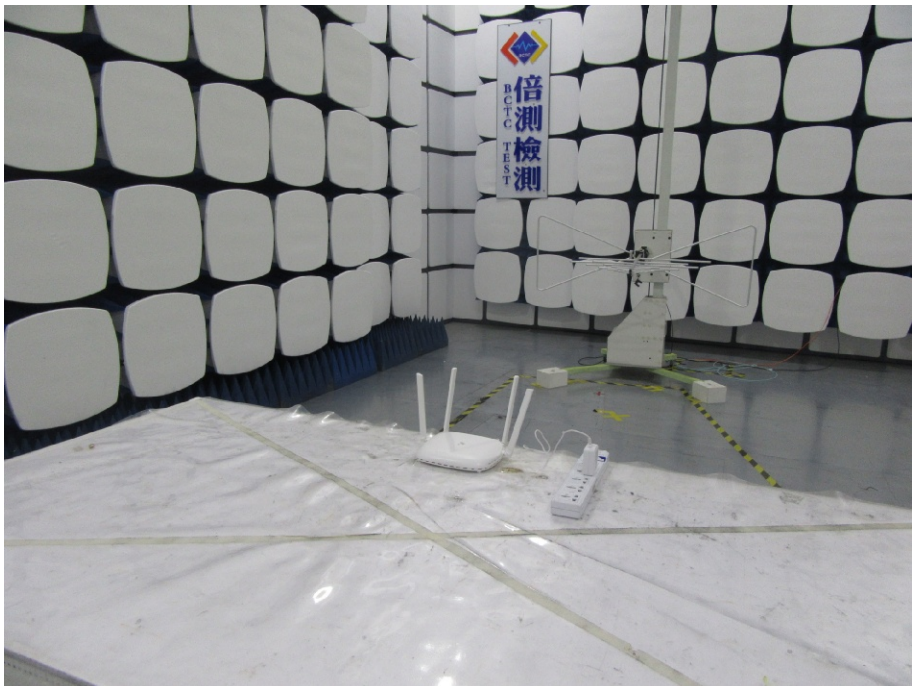
8.2 EUT ANTENNA

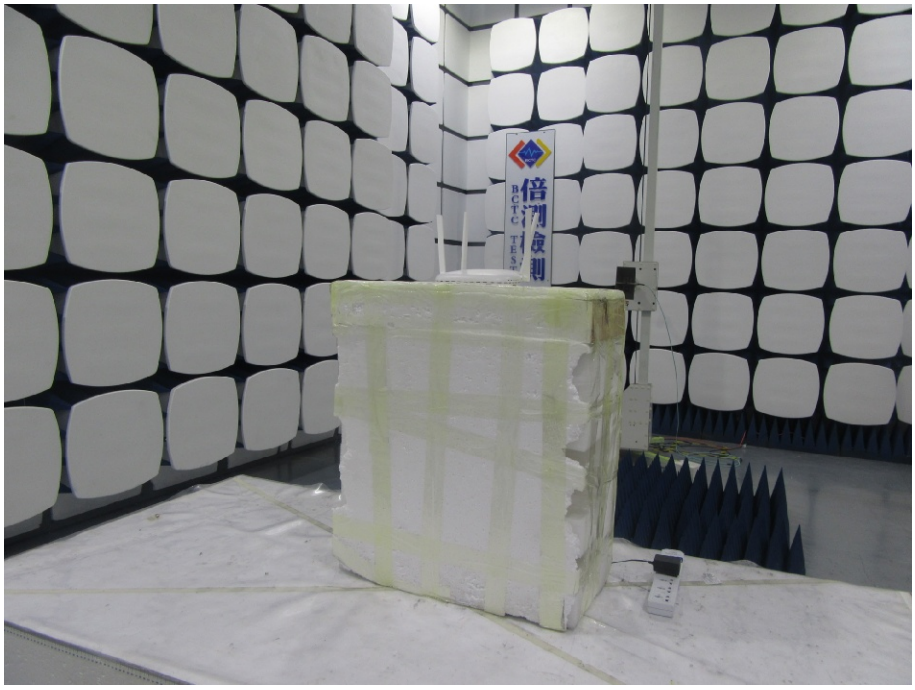
The EUT antenna is External antenna, It comply with the standard requirement.

9. EUT TEST PHOTO

Conducted Measurement Photos

Radiated Measurement Photos





10. EUT PHOTO

※※※※※ **END OF REPORT** ※※※※※