FCC Part 15C Test Report

FCC ID: S74-W6

Product Name:	Compute Stick
Trademark:	N/A
Model Name :	W6, W5.
Prepared For : Address :	Fortune Joint Industry Co., Ltd Flat Rm 704, 7 F, Bright Way Tower, 33 Mong Kok Road, Mong Kok, KL, Hong Kong
Prepared By : Address :	Shenzhen BCTC Technology Co., Ltd. No.101,Yousong Road,Longhua New District, Shenzhen,China
Test Date:	Jan. 06 - Jan. 14, 2017
Date of Report :	Jan. 14, 2017
Report No.:	BCTC-FY161207052E

CERTIFICATION

Applicant's name ..... :	Fortune Joint Industry Co., Ltd
Address ..... :	Flat Rm 704, 7 F, Bright Way Tower, 33 Mong Kok Road, Mong Kok, KL, Hong Kong
Manufacture's Name ..... :	Fortune Joint Industry Co., Ltd
Address ..... :	No# 28 Tongchuang New Building, Pinghu Town, Longgang District, Shenzhen City, China
Product description	
Product name ..... :	Compute Stick
Trademark ..... :	N/A
Model and/or type reference :	W6
Standards ..... :	FCC Part15.247 ANSI C63.10:2013 KDB 558074 D01 DTS Meas Guidance v03r03

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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Testing Engineer	:	Eric Yang
Reviewer (Supervisor)	:	Jade Yang
Approved & Authorized Signer(Manager)	:	Carson Zhang

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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 RSS-GEN 8.8 RSS-247 3.1	Conducted Emission	PASS	
15.247 (a)(2) RSS-247 5.2 (1)	6dB Bandwidth	PASS	
15.247 (b) RSS-247 5.4 (3)	Peak Output Power	PASS	
15.247 (c) RSS-247 5.5	Radiated Spurious Emission	PASS	
15.247 (d) RSS-247 5.2 (2)	Power Spectral Density	PASS	
15.205 RSS-247 5.5	Band Edge Emission	PASS	
15.247 KDB 558074)6)b)	Duty Cycle	PASS	
15.203 RSS-247 5.4	Antenna Requirement	PASS	

NOTE:

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

1.1 TEST FACILITY

Shenzhen BCTC Technology Co., Ltd.
Add. : No.101,Yousong Road,Longhua New District, Shenzhen,China
FCC Registered No.: 187086
IC Registered No.: 12655A

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

2.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>Compute Stick</td></tr>
<tr><td>Trade Name</td><td>N/A</td></tr>
<tr><td>Model Name</td><td>W6</td></tr>
<tr><td>Serial Model</td><td>W5</td></tr>
<tr><td>Model Difference</td><td>All the models are the same circuit and RF module, except the model names and outlook color.</td></tr>
<tr><td>Product Description</td><td>The EUT is a Compute Stick
<table>
<tr><td>Operation Frequency:</td><td>802.11b/g/n20MHz:2412~2462 MHz
802.11n40MHz:2422~2452 MHz
BT:2402~2480MHz</td></tr>
<tr><td>Modulation Type:</td><td>WIFI: OFDM/DSSS
BT:GFSK</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
BT:2MHz</td></tr>
<tr><td>Number Of Channel</td><td>802.11b/g/n20MHz:11 CH
802.11n40MHz: 7 CH
BT:40 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 Source</td><td>DC 5V</td></tr>
<tr><td>Adapter</td><td>Model: GEO101U-050200U
I/P:AC 100-240V 50/60Hz 0.3A
O/P: DC 5V 2A</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		

Channel List for BT					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2402	10	2420	39	2478
02	2404	~	~	40	2480
~	~	20	2440		
9	2418	21	2442		

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
1	N/A	N/A	Internal antenna	1.0dBi	

2.2 DESCRIPTION OF TEST MODES

Pretest Mode	Description
Mode 1	802.11b CH01/ CH06/ CH11
Mode 2	802.11g CH01/ CH06/ CH11
Mode 3	802.11n20 CH01/ CH06/ CH11
Mode 4	802.11n40 CH03/ CH06/ CH09
Mode 5	BT CH01/CH20/CH40
Mode 6	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 6	Link Mode

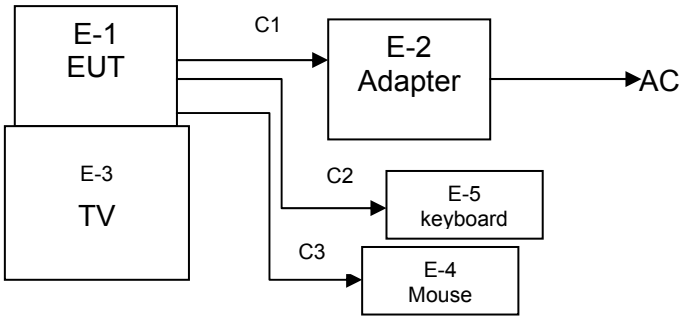
For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH01/ CH06/ CH11
Mode 2	802.11g CH01/ CH06/ CH11
Mode 3	802.11n20 CH01/ CH06/ CH11
Mode 4	802.11n40 CH03/ CH06/ CH09
Mode 5	BT CH01/CH20/CH40

Note:

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

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted/ Radiated Spurious Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	Compute Stick	N/A	W6	N/A	EUT
E-2	Adapter	N/A	GEO101U-050200U		
E-3	TV	PHILIPS	24PFL3543/T3	WJ3C1528000141	AC100-240V 50/60Hz 36W
E-4	Mouse	Minggaun	MG-020	N/A	1.5M
E-5	keyboard	Minggaun	MG-K50	N/A	1.5M

Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	1.0M	USB cable unshielded
C2	NO	NO	1.5M	USB cable unshielded
C3	NO	NO	1.5M	USB cable unshielded

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	MY45109572	2016.08.27	2017.08.26
2	Test Receiver	R&S	ESPI	101396	2016.08.27	2017.08.26
3	Bilog Antenna	SCHWARZBECK	VULB9160	VULB9160-3369	2016.08.27	2017.08.26
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.08.27	2017.08.26
5	Spectrum Analyzer	Agilent	N9020A	MY5051041	2016.08.27	2017.08.26
6	Horn Antenna	SCHWARZBECK	9120D	9120D-1275	2016.08.27	2017.08.26
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2016.08.25	2017.08.24
8	Amplifier	SCHWARZBECK	BBV9718	9718-270	2016.08.25	2017.08.24
9	Amplifier	SCHWARZBECK	BBV9743	9743-119	2016.08.25	2017.08.24
10	Loop Antenna	ARA	PLW630/B	1029	2016.08.25	2017.08.24
11	Power Meter	R&S	NRVS	100696	2016.08.27	2017.08.26
12	Power Sensor	R&S	URV5-Z4	0395.1619.05	2016.08.27	2017.08.26
13	RF cables	R&S	N/A	N/A	2016.08.27	2017.08.26

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESCI	1166.5950K03-101165-ha	2016.08.27	2017.08.26
2	LISN	R&S	NSLK8126	8126466	2016.08.27	2017.08.26
3	LISN	R&S	NSLK8126	8126487	2016.08.27	2017.08.26
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2016.08.27	2017.08.26
5	RF cables	R&S	R204	R20X	2016.08.27	2017.08.26

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

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

FREQUE CY (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.

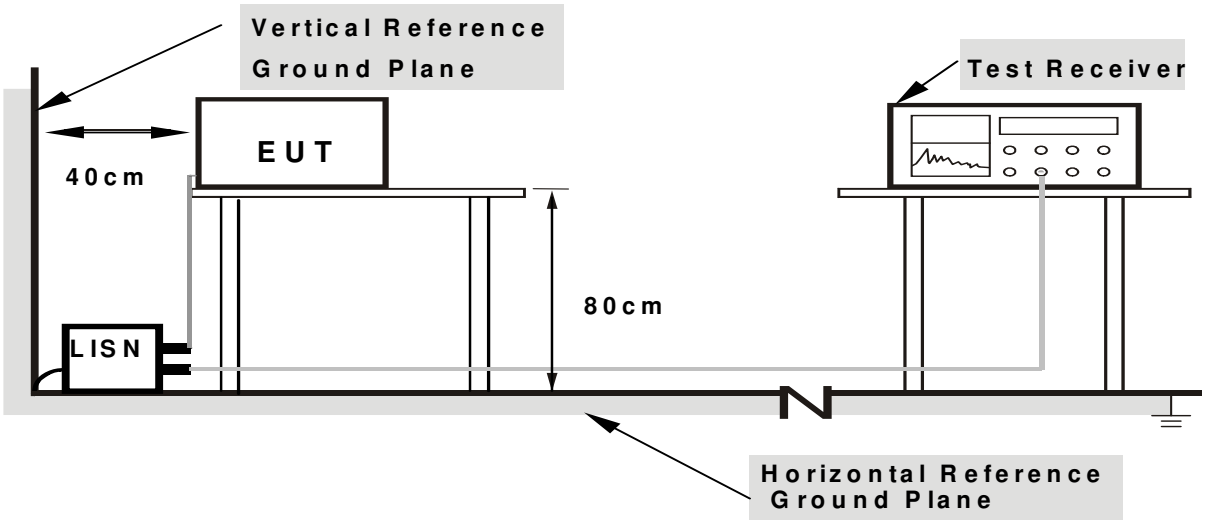
d. LISN at least 80 cm from nearest part of EUT chassis.

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

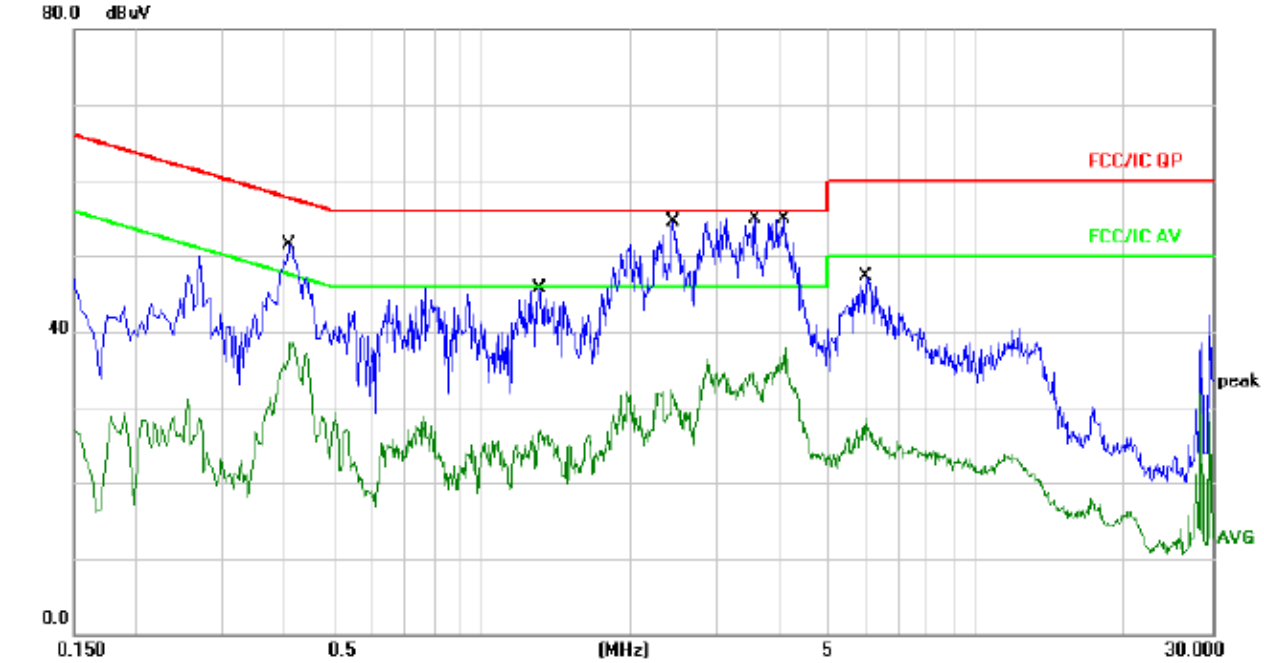
3.1.5 EUT OPERATING CONDITIONS

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

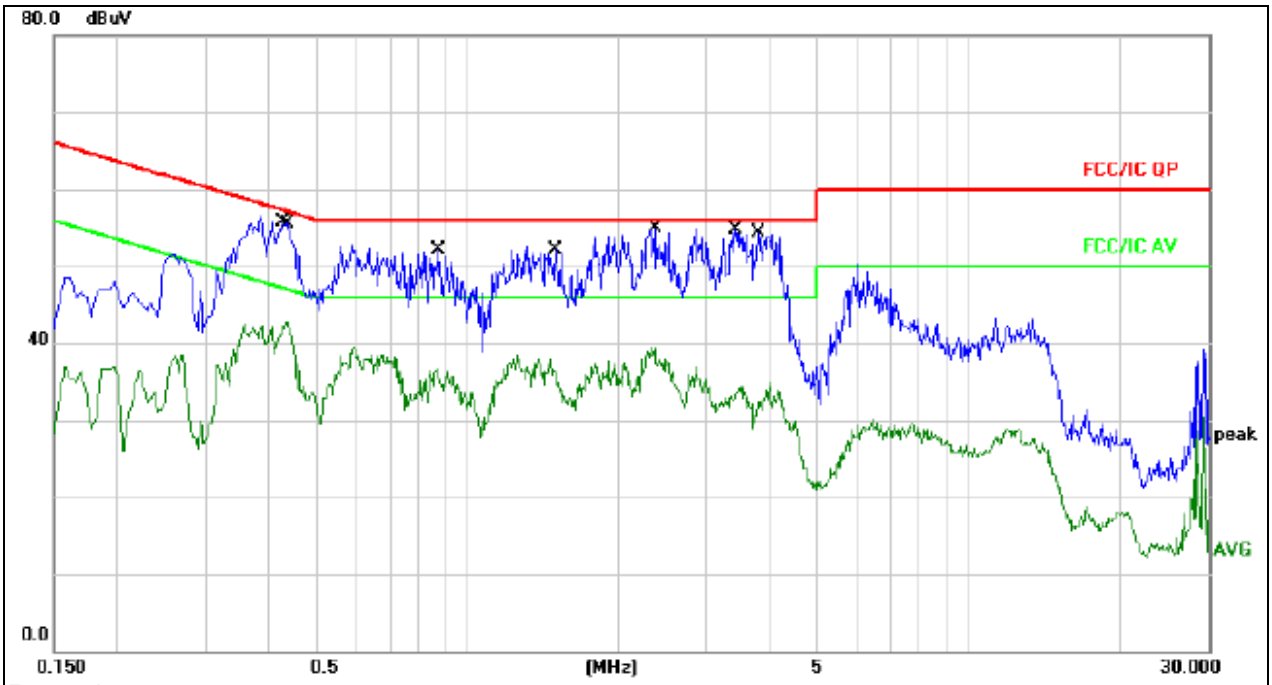
Temperature：	25 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	AC 120V/60Hz	Test Mode：	WIFI Mode 6



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		0.4105	41.76	9.67	51.43	57.64	-6.21	QP	
2		0.4105	28.88	9.67	38.55	47.64	-9.09	AVG	
3		1.3099	36.10	9.70	45.80	56.00	-10.20	QP	
4		1.3099	17.21	9.70	26.91	46.00	-19.09	AVG	
5		2.4460	44.76	9.72	54.48	56.00	-1.52	QP	
6		2.4460	22.67	9.72	32.39	46.00	-13.61	AVG	
7		3.5700	45.10	9.73	54.83	56.00	-1.17	QP	
8		3.5700	24.75	9.73	34.48	46.00	-11.52	AVG	
9	*	4.0820	45.19	9.73	54.92	56.00	-1.08	QP	
10		4.0820	28.18	9.73	37.91	46.00	-8.09	AVG	
11		5.9860	37.60	9.76	47.36	60.00	-12.64	QP	
12		5.9860	18.76	9.76	28.52	50.00	-21.48	AVG	

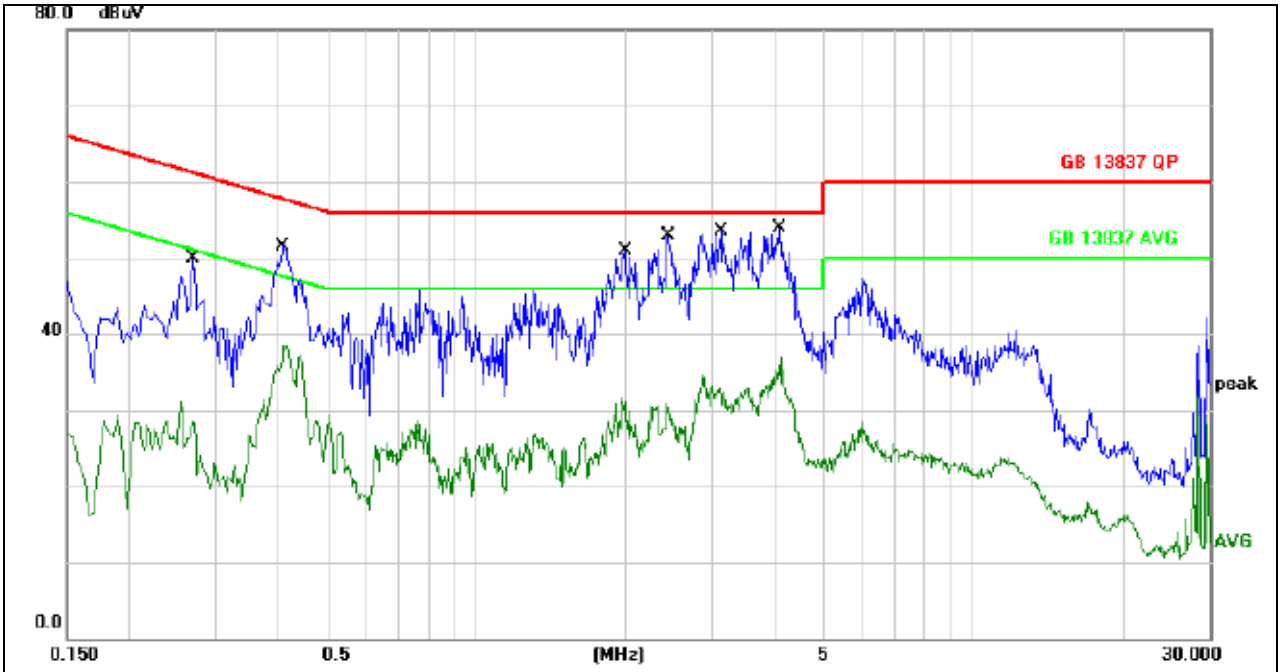
Temperature：	25 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	AC 120V/60Hz	Test Mode：	WIFI Mode 6



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		0.4300	45.94	9.67	55.61	57.25	-1.64	QP	
2		0.4380	33.06	9.67	42.73	47.10	-4.37	AVG	
3		0.8740	42.43	9.70	52.13	56.00	-3.87	QP	
4		0.8740	27.04	9.70	36.74	46.00	-9.26	AVG	
5		1.5020	42.49	9.71	52.20	56.00	-3.80	QP	
6		1.5020	28.17	9.71	37.88	46.00	-8.12	AVG	
7	*	2.3699	45.27	9.72	54.99	56.00	-1.01	QP	
8		2.3699	29.85	9.72	39.57	46.00	-6.43	AVG	
9		3.4260	44.95	9.73	54.68	56.00	-1.32	QP	
10		3.4260	24.79	9.73	34.52	46.00	-11.48	AVG	
11		3.8180	44.57	9.73	54.30	56.00	-1.70	QP	
12		3.8180	25.14	9.73	34.87	46.00	-11.13	AVG	

Temperature：	25 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	AC 120V/60Hz	Test Mode：	BT Mode 6

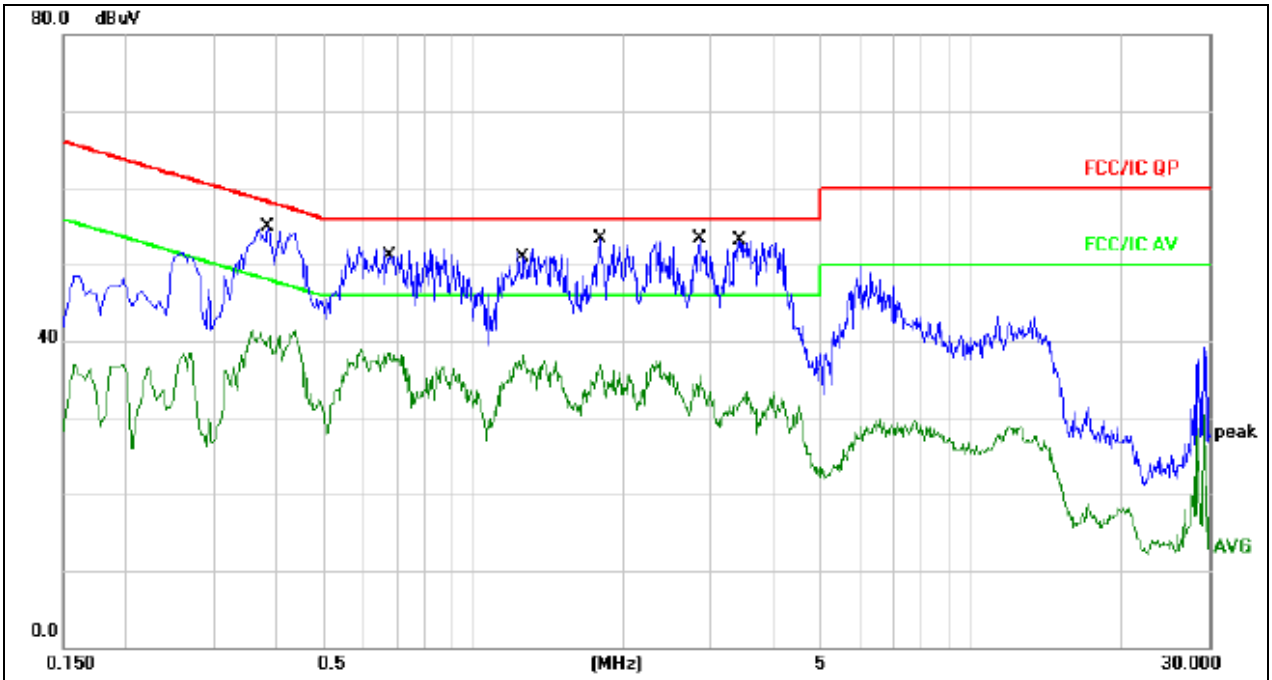


Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2686	40.18	9.66	49.84	61.16	-11.32	QP	
2		0.2686	21.44	9.66	31.10	51.16	-20.06	AVG	
3		0.4083	41.89	9.67	51.56	57.68	-6.12	QP	
4		0.4083	28.88	9.67	38.55	47.68	-9.13	AVG	
5		1.9906	41.24	9.71	50.95	56.00	-5.05	QP	
6		1.9906	21.92	9.71	31.63	46.00	-14.37	AVG	
7		2.4346	43.26	9.72	52.98	56.00	-3.02	QP	
8		2.4346	25.03	9.72	34.75	46.00	-11.25	AVG	
9		3.1066	43.69	9.72	53.41	56.00	-2.59	QP	
10		3.1066	24.08	9.72	33.80	46.00	-12.20	AVG	
11	*	4.0704	44.19	9.73	53.92	56.00	-2.08	QP	
12		4.0704	27.18	9.73	36.91	46.00	-9.09	AVG	

Temperature：	25 ℃	Relative Humidity：	54%

Pressure：	1010hPa	Phase：	N
Test Voltage ：	AC 120V/60Hz	Test Mode：	BT Mode 6



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		0.3860	45.24	9.66	54.90	58.15	-3.25	QP	
2		0.3860	31.74	9.66	41.40	48.15	-6.75	AVG	
3		0.6820	42.46	9.67	52.13	56.00	-3.87	QP	
4		0.6820	28.93	9.67	38.60	46.00	-7.40	AVG	
5		1.2579	42.39	9.71	52.10	56.00	-3.90	QP	
6		1.2579	28.35	9.71	38.06	46.00	-7.94	AVG	
7		1.7980	43.49	9.71	53.20	56.00	-2.80	QP	
8		1.7980	27.86	9.71	37.57	46.00	-8.43	AVG	
9	*	2.8420	43.63	9.72	53.35	56.00	-2.65	QP	
10		2.8420	25.74	9.72	35.46	46.00	-10.54	AVG	
11		3.4260	43.45	9.73	53.18	56.00	-2.82	QP	
12		3.4260	23.64	9.73	33.37	46.00	-12.63	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) (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 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:

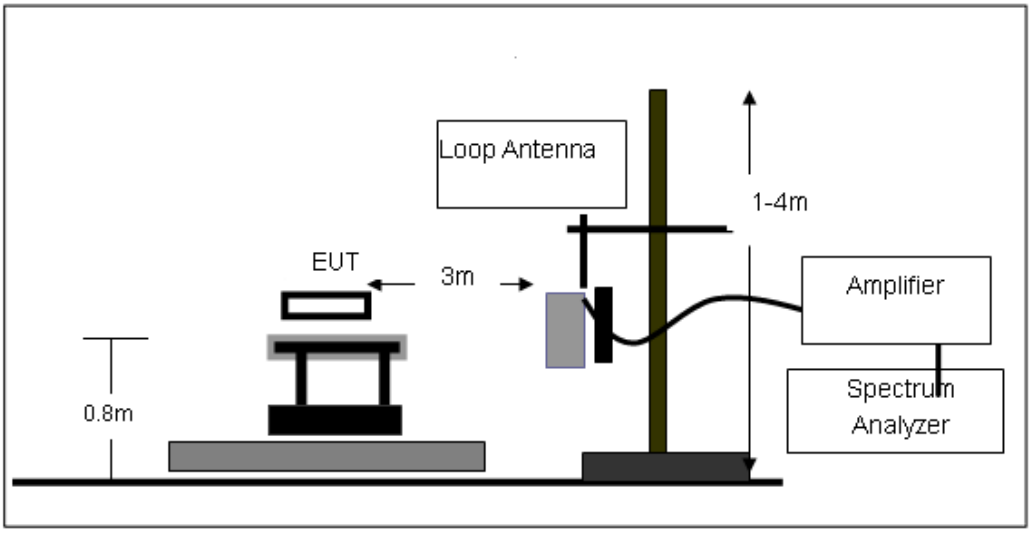
   Both horizontal and vertical antenna polarities were tested
   and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

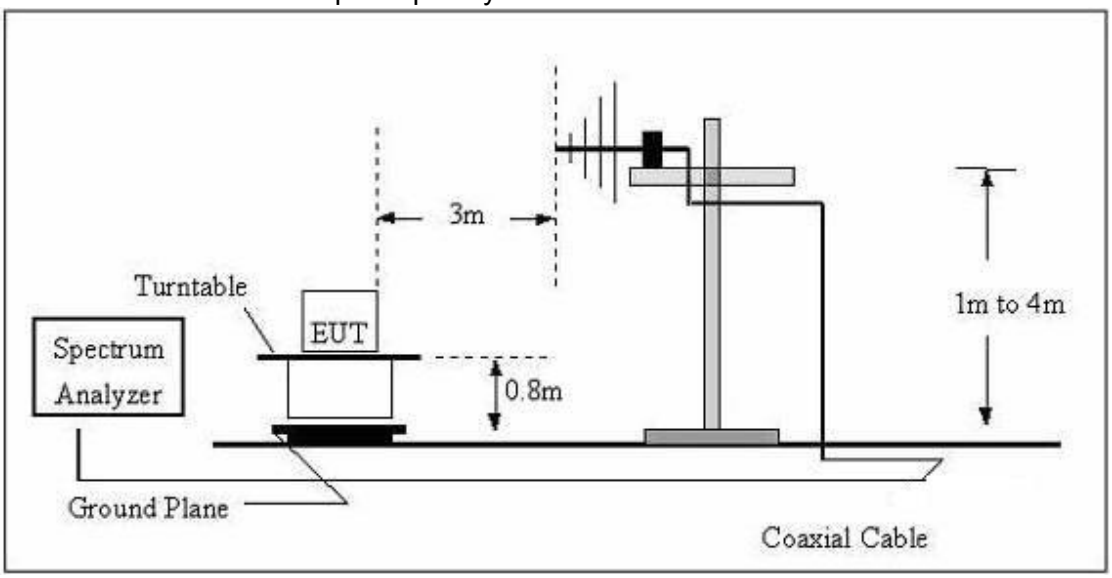
No deviation

3.2.4 TEST SETUP

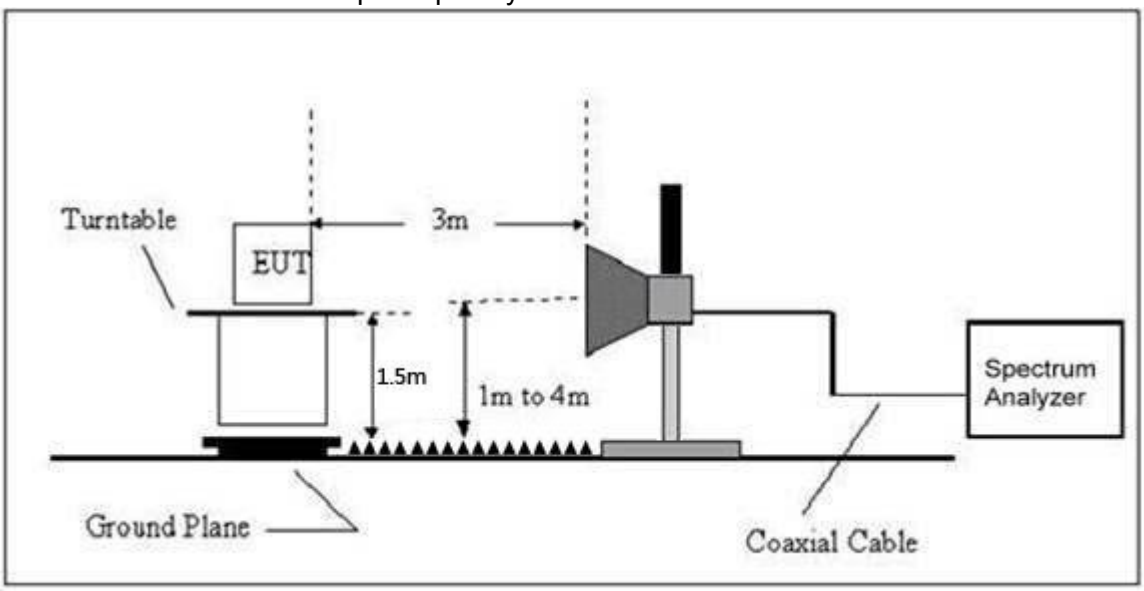
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 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.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

Temperature：	20℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 6	Polarization :	--

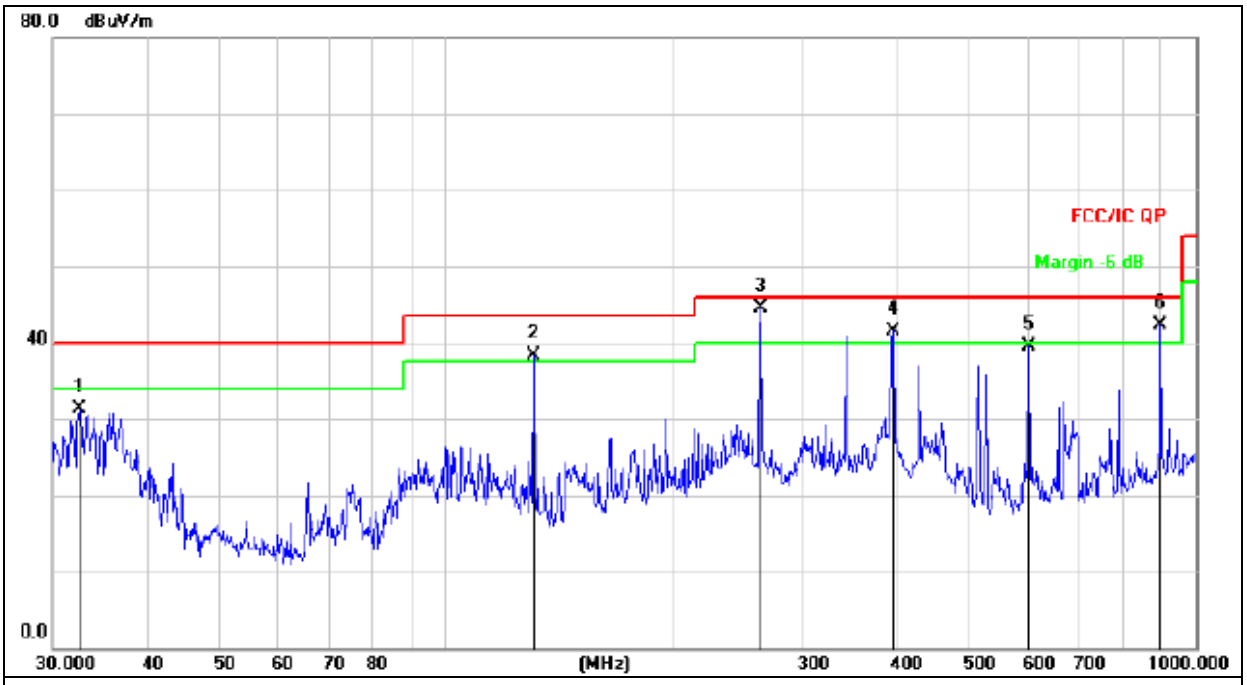
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

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)

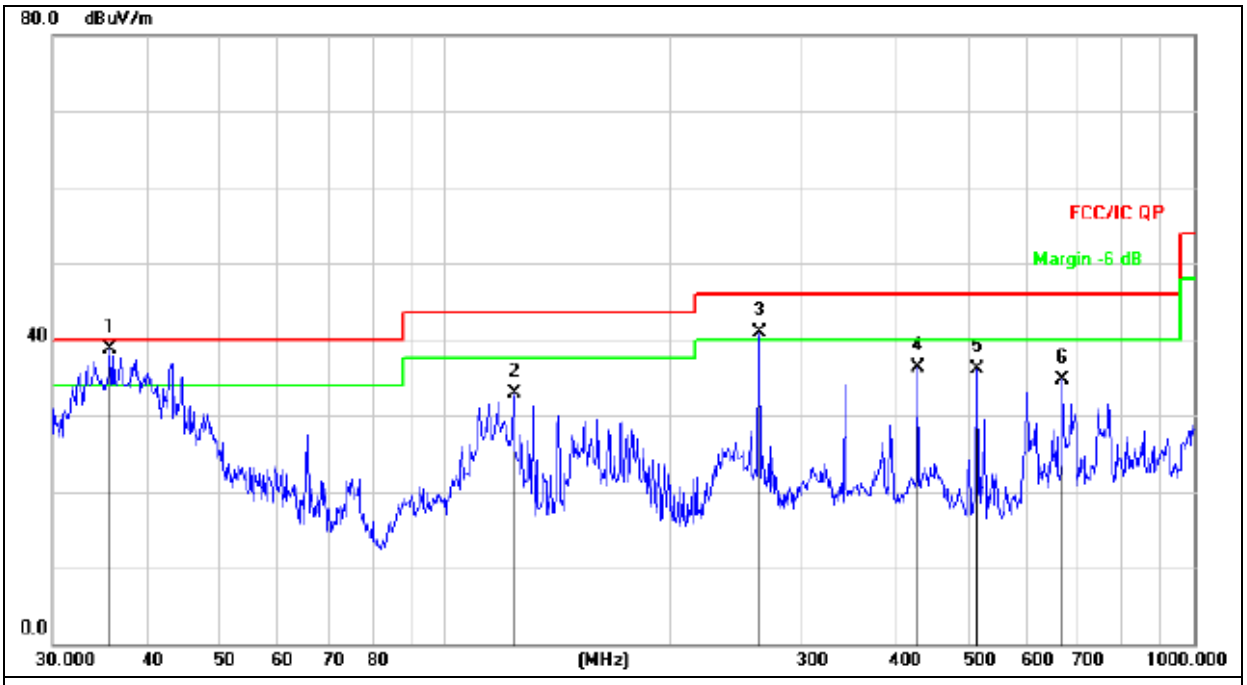
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization：	Horizontal
Test Voltage ：	DC 5V		
Test Mode ：	WIFI Mode 6		



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		32.5197	49.32	-17.96	31.36	40.00	-8.64	QP
2	!	131.2965	57.91	-19.60	38.31	43.50	-5.19	QP
3	*	262.8955	57.83	-13.30	44.53	46.00	-1.47	QP
4	!	394.8544	51.13	-9.59	41.54	46.00	-4.46	QP
5		599.3212	44.04	-4.50	39.54	46.00	-6.46	QP
6	!	896.9964	41.61	0.64	42.25	46.00	-3.75	QP

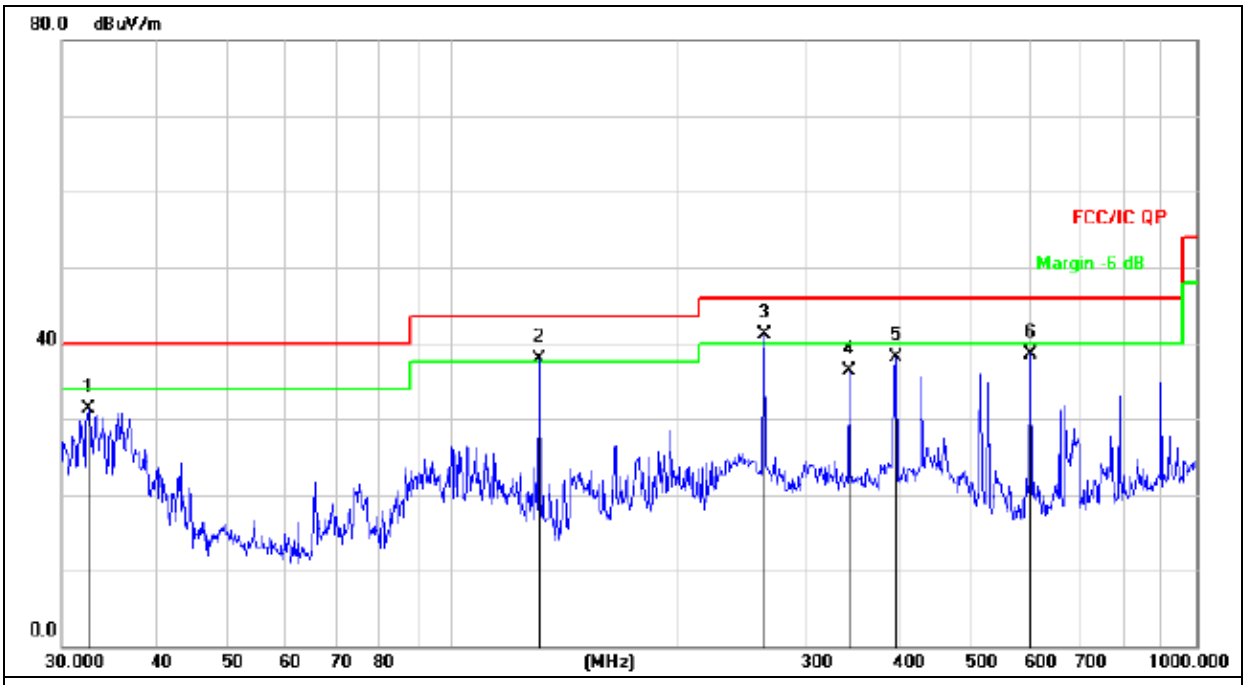
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization：	Vertical
Test Voltage ：	DC 5V		
Test Mode ：	WIFI Mode 6		



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	*	35.7490	55.86	-17.19	38.67	40.00	-1.33	QP
2		123.6985	51.72	-18.87	32.85	43.50	-10.65	QP
3	!	262.8955	54.23	-13.30	40.93	46.00	-5.07	QP
4		428.0193	44.92	-8.70	36.22	46.00	-9.78	QP
5		513.6331	42.90	-6.85	36.05	46.00	-9.95	QP
6		668.1423	38.24	-3.50	34.74	46.00	-11.26	QP

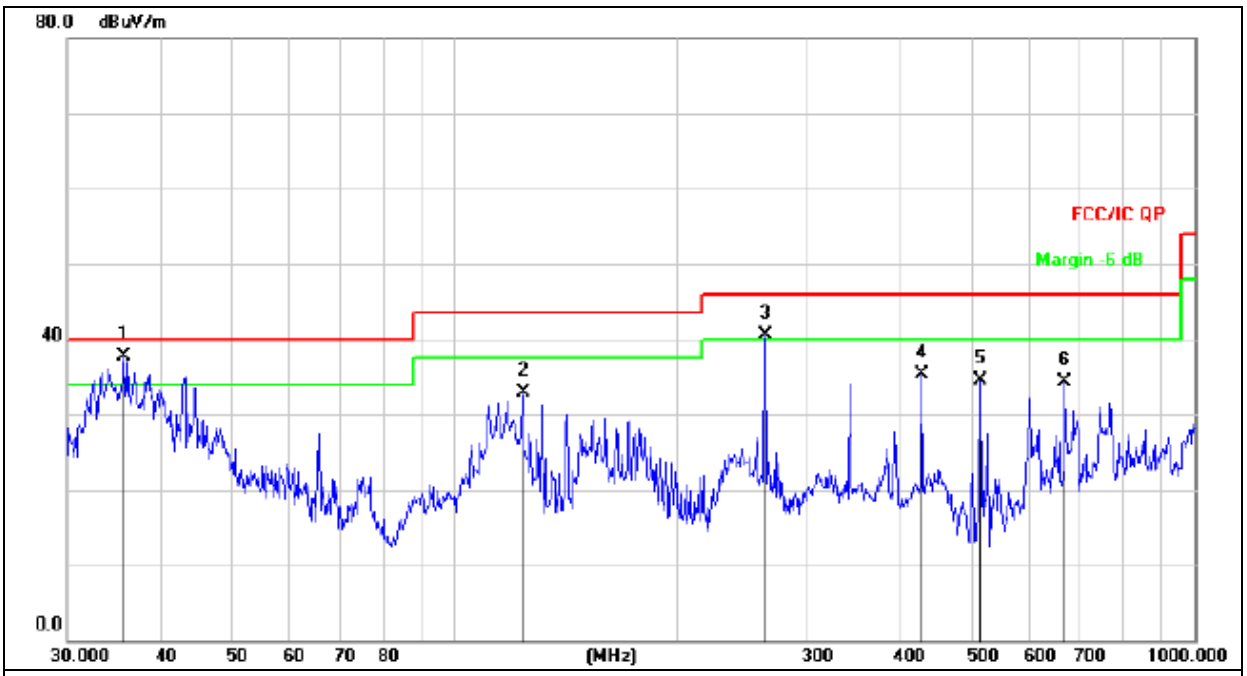
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization：	Horizontal
Test Voltage ：	DC 5V		
Test Mode ：	BT Mode 6		



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		32.5197	49.32	-17.96	31.36	40.00	-8.64	QP
2	!	131.2965	57.41	-19.60	37.81	43.50	-5.69	QP
3	*	262.8955	54.33	-13.30	41.03	46.00	-4.97	QP
4		341.9786	47.05	-10.67	36.38	46.00	-9.62	QP
5		394.8543	47.63	-9.59	38.04	46.00	-7.96	QP
6		599.3211	43.04	-4.50	38.54	46.00	-7.46	QP

Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization：	Vertical
Test Voltage ：	DC 5V		
Test Mode ：	BT Mode 6		



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	*	35.7490	54.86	-17.19	37.67	40.00	-2.33	QP
2		123.6984	51.72	-18.87	32.85	43.50	-10.65	QP
3	!	262.8955	53.73	-13.30	40.43	46.00	-5.57	QP
4		428.0192	43.92	-8.70	35.22	46.00	-10.78	QP
5		513.6331	41.40	-6.85	34.55	46.00	-11.45	QP
6		668.1422	37.74	-3.50	34.24	46.00	-11.76	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
operation frequency:2412									
V	4824.00	66.94	39.55	7.85	25.66	60.90	74	-13.10	PK
V	4824.00	48.75	39.55	7.85	25.66	42.71	54	-11.29	AV
V	7236.00	68.01	38.33	7.52	24.55	61.75	74	-12.25	PK
V	7236.00	48.24	38.33	7.52	24.55	41.98	54	-12.02	AV
V	15450.00	51.32	35.23	6.75	26.59	49.43	74	-24.57	PK
H	4824.00	68.47	39.55	7.85	25.66	62.43	74	-11.57	PK
H	4824.00	49.22	39.55	7.85	25.66	43.18	54	-10.82	AV
H	7236.00	69.21	38.33	7.52	23.55	61.95	74	-12.05	PK
H	7236.00	52.51	38.33	7.52	23.22	44.92	54	-9.08	AV
H	15450.00	47.56	35.45	6.75	27.88	46.74	74	-27.26	PK
operation frequency:2437									
V	4874.00	65.26	38.89	7.57	25.45	59.39	74	-14.61	PK
V	4874.00	48.42	38.89	7.57	25.45	42.55	54	-11.45	AV
V	7311.00	66.37	38.78	7.35	24.78	59.72	74	-14.28	PK
V	7311.00	48.02	38.78	7.35	24.78	41.37	54	-12.63	AV
V	15450.00	52.12	35.89	6.42	26.47	49.12	74	-24.88	PK
H	4874.00	64.59	38.89	7.57	25.45	58.72	74	-15.28	PK
H	4874.00	49.31	38.89	7.57	25.45	43.44	54	-10.56	AV
H	7311.00	70.03	38.78	7.35	24.78	63.38	74	-10.62	PK
H	7311.00	48.58	38.78	7.35	24.78	41.93	54	-12.07	AV
H	15450.00	48.46	36.68	6.45	26.65	44.88	74	-29.12	PK
operation frequency:2462									
V	4924.00	68.05	38.75	7.46	25.45	62.21	74	-11.79	PK
V	4924.00	50.55	38.75	7.46	25.45	44.71	54	-9.29	AV
V	7386.00	67.43	38.65	7.22	24.78	60.78	74	-13.22	PK
V	7386.00	49.12	38.65	7.22	24.78	42.47	54	-11.53	AV
V	15450.00	53.37	35.58	6.35	26.47	50.61	74	-23.39	PK
H	4924.00	65.91	38.75	7.46	25.45	60.07	74	-13.93	PK
H	4924.00	50.15	38.75	7.46	25.45	44.31	54	-9.69	AV
H	7386.00	69.37	38.65	7.22	24.78	62.72	74	-11.28	PK
H	7386.00	48.01	38.65	7.22	24.78	41.36	54	-12.64	AV
H	15450.00	50.25	36.42	6.32	26.65	46.80	74	-27.20	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
operation frequency:2412									
V	4824.00	65.78	39.55	7.85	25.66	59.74	74	-14.26	PK
V	4824.00	49.24	39.55	7.85	25.66	43.20	54	-10.80	AV
V	7236.00	65.94	38.33	7.52	24.55	59.68	74	-14.32	PK
V	7236.00	47.35	38.33	7.52	24.55	41.09	54	-12.91	AV
V	15450.00	50.61	35.23	6.75	26.59	48.72	74	-25.28	PK
H	4824.00	62.83	39.55	7.85	25.66	56.79	74	-17.21	PK
H	4824.00	49.15	39.55	7.85	25.66	43.11	54	-10.89	AV
H	7236.00	68.89	38.33	7.52	23.55	61.63	74	-12.37	PK
H	7236.00	50.14	38.33	7.52	23.22	42.55	54	-11.45	AV
H	15450.00	45.48	35.45	6.75	27.88	44.66	74	-29.34	PK
operation frequency:2437									
V	4874.00	66.22	38.89	7.57	25.45	60.35	74	-13.65	PK
V	4874.00	48.92	38.89	7.57	25.45	43.05	54	-10.95	AV
V	7311.00	67.08	38.78	7.35	24.78	60.43	74	-13.57	PK
V	7311.00	47.43	38.78	7.35	24.78	40.78	54	-13.22	AV
V	15450.00	52.49	35.89	6.42	26.47	49.49	74	-24.51	PK
H	4874.00	64.90	38.89	7.57	25.45	59.03	74	-14.97	PK
H	4874.00	49.15	38.89	7.57	25.45	43.28	54	-10.72	AV
H	7311.00	68.86	38.78	7.35	24.78	62.21	74	-11.79	PK
H	7311.00	47.95	38.78	7.35	24.78	41.30	54	-12.70	AV
H	15450.00	49.03	36.68	6.42	26.65	45.42	74	-28.58	PK
operation frequency:2462									
V	4924.00	67.43	38.75	7.46	25.45	61.59	74	-12.41	PK
V	4924.00	48.12	38.75	7.46	25.45	42.28	54	-11.72	AV
V	7386.00	68.11	38.65	7.22	24.78	61.46	74	-12.54	PK
V	7386.00	49.44	38.65	7.22	24.78	42.79	54	-11.21	AV
V	15450.00	53.30	35.58	6.35	26.47	50.54	74	-23.46	PK
H	4924.00	66.10	38.75	7.46	25.45	60.26	74	-13.74	PK
H	4924.00	50.11	38.75	7.46	25.45	44.27	54	-9.73	AV
H	7386.00	68.91	38.65	7.22	24.78	62.26	74	-11.74	PK
H	7386.00	48.55	38.65	7.22	24.78	41.90	54	-12.10	AV
H	15450.00	49.40	36.42	6.32	26.65	45.95	74	-28.05	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
operation frequency:2412									
V	4824.00	67.45	39.55	7.85	25.66	61.41	74	-12.59	PK
V	4824.00	48.45	39.55	7.85	25.66	42.41	54	-11.59	AV
V	7236.00	68.15	38.33	7.52	24.55	61.89	74	-12.11	PK
V	7236.00	48.32	38.33	7.52	24.55	42.06	54	-11.94	AV
V	15450.00	51.55	35.23	6.75	26.59	49.66	74	-24.34	PK
H	4824.00	68.04	39.55	7.85	25.66	62.00	74	-12.00	PK
H	4824.00	49.41	39.55	7.85	25.66	43.37	54	-10.63	AV
H	7236.00	69.05	38.33	7.52	23.55	61.79	74	-12.21	PK
H	7236.00	52.24	38.33	7.52	23.22	44.65	54	-9.35	AV
H	15450.00	47.63	35.45	6.75	27.88	46.81	74	-27.19	PK
operation frequency:2437									
V	4874.00	66.41	38.89	7.57	25.45	60.54	74	-13.46	PK
V	4874.00	49.41	38.89	7.57	25.45	43.54	54	-10.46	AV
V	7311.00	67.06	38.78	7.35	24.78	60.41	74	-13.59	PK
V	7311.00	47.23	38.78	7.35	24.78	40.58	54	-13.42	AV
V	15450.00	52.12	35.89	6.42	26.47	49.12	74	-24.88	PK
H	4874.00	65.29	38.89	7.57	25.45	59.42	74	-14.58	PK
H	4874.00	49.43	38.89	7.57	25.45	43.56	54	-10.44	AV
H	7311.00	69.44	38.78	7.35	24.78	62.79	74	-11.21	PK
H	7311.00	48.59	38.78	7.35	24.78	41.94	54	-12.06	AV
H	15450.00	49.40	36.68	6.42	26.65	45.79	74	-28.21	PK
operation frequency:2462									
V	4924.00	68.46	38.75	7.46	25.45	62.62	74	-11.38	PK
V	4924.00	50.15	38.75	7.46	25.45	44.31	54	-9.69	AV
V	7386.00	67.45	38.65	7.22	24.78	60.80	74	-13.20	PK
V	7386.00	49.34	38.65	7.22	24.78	42.69	54	-11.31	AV
V	15450.00	53.14	35.58	6.35	26.47	50.38	74	-23.62	PK
H	4924.00	66.47	38.75	7.46	25.45	60.63	74	-13.37	PK
H	4924.00	50.29	38.75	7.46	25.45	44.45	54	-9.55	AV
H	7386.00	68.97	38.65	7.22	24.78	62.32	74	-11.68	PK
H	7386.00	48.15	38.65	7.22	24.78	41.50	54	-12.50	AV
H	15450.00	49.93	36.42	6.32	26.65	46.48	74	-27.52	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
operation frequency:2422									
V	4844.000	68.83	39.55	7.77	25.66	62.71	74	-11.29	PK
V	4844.000	48.84	39.55	7.77	25.66	42.72	54	-11.28	AV
V	7266.000	67.81	38.33	7.30	24.55	61.33	74	-12.67	PK
V	7266.000	48.55	38.33	7.30	24.55	42.07	54	-11.93	AV
V	15450.00	51.95	35.23	6.60	26.59	49.91	74	-24.09	PK
H	4844.000	69.04	39.55	7.77	25.66	62.92	74	-11.08	PK
H	4844.000	49.57	39.55	7.77	25.66	43.45	54	-10.55	AV
H	7266.000	70.02	38.33	7.30	23.55	62.54	74	-11.46	PK
H	7266.000	52.75	38.33	7.30	23.22	44.94	54	-9.06	AV
H	15450.00	48.62	35.45	6.60	27.88	47.65	74	-26.35	PK
operation frequency:2437									
V	4874.00	67.01	38.89	7.57	25.45	61.14	74	-12.86	PK
V	4874.00	49.86	38.89	7.57	25.45	43.99	54	-10.01	AV
V	7311.00	67.92	38.78	7.35	24.78	61.27	74	-12.73	PK
V	7311.00	47.93	38.78	7.35	24.78	41.28	54	-12.72	AV
V	15450.00	52.56	35.89	6.42	26.47	49.56	74	-24.44	PK
H	4874.00	65.47	38.89	7.57	25.45	59.60	74	-14.40	PK
H	4874.00	49.86	38.89	7.57	25.45	43.99	54	-10.01	AV
H	7311.00	70.23	38.78	7.35	24.78	63.58	74	-10.42	PK
H	7311.00	48.42	38.78	7.35	24.78	41.77	54	-12.23	AV
H	15450.00	49.65	36.68	6.42	26.65	46.04	74	-27.96	PK
operation frequency:2452									
V	4904.00	68.84	38.75	7.38	25.45	62.92	74	-11.08	PK
V	4904.00	50.55	38.75	7.38	25.45	44.63	54	-9.37	AV
V	7356.00	67.90	38.65	7.15	24.78	61.18	74	-12.82	PK
V	7356.00	50.14	38.65	7.15	24.78	43.42	54	-10.58	AV
V	15450.00	53.65	35.58	6.25	26.47	50.79	74	-23.21	PK
H	4904.00	66.97	38.75	7.38	25.45	61.05	74	-12.95	PK
H	4904.00	51.14	38.75	7.38	25.45	45.22	54	-8.78	AV
H	7356.00	70.03	38.65	7.15	24.78	63.31	74	-10.69	PK
H	7356.00	48.75	38.65	7.15	24.78	42.03	54	-11.97	AV
H	15450.00	50.57	36.42	6.25	26.65	47.05	74	-26.95	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.

BT

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
operation frequency:2402									
V	4804.00	59.39	38.53	7.78	23.25	51.89	74	-22.11	PK
V	4804.00	45.76	38.53	7.78	23.25	38.26	54	-15.74	AV
V	7206.00	67.89	38.33	7.52	24.55	61.63	74	-12.37	PK
V	7206.00	48.15	38.33	7.52	24.55	41.89	54	-12.11	AV
V	16132.00	49.96	38.75	10.36	26.57	48.14	74	-25.86	PK
H	4804.00	60.22	38.53	7.78	23.25	52.72	74	-21.28	PK
H	4804.00	45.64	38.53	7.78	23.25	38.14	54	-15.86	AV
H	7206.00	68.93	38.33	7.52	23.55	61.67	74	-12.33	PK
H	7206.00	52.15	38.33	7.52	23.22	44.56	54	-9.44	AV
H	16132.00	49.70	38.75	10.36	26.57	47.88	74	-26.12	PK
operation frequency:2440									
V	4880.00	60.32	38.65	7.78	23.61	53.06	74	-20.94	PK
V	4880.00	45.80	38.65	7.78	23.61	38.54	54	-15.46	AV
V	7320.00	66.94	38.78	7.35	24.78	60.29	74	-13.71	PK
V	7320.00	47.15	38.78	7.35	24.78	40.50	54	-13.50	AV
V	16132.00	48.21	38.75	10.36	26.57	46.39	74	-27.61	PK
H	4880.00	61.38	38.65	7.78	23.61	54.12	74	-19.88	PK
H	4880.00	46.52	38.65	7.78	23.61	39.26	54	-14.74	AV
H	7320.00	69.32	38.78	7.35	24.78	62.67	74	-11.33	PK
H	7320.00	48.50	38.78	7.35	24.78	41.85	54	-12.15	AV
H	16132.00	49.87	38.75	10.36	26.57	48.05	74	-25.95	PK
operation frequency:2480									
V	4960.00	61.23	38.69	7.78	23.83	54.15	74	-19.85	PK
V	4960.00	46.16	38.69	7.78	23.83	39.08	54	-14.92	AV
V	7440.00	67.44	38.65	7.22	24.78	60.79	74	-13.21	PK
V	7440.00	49.33	38.65	7.22	24.78	42.68	54	-11.32	AV
V	16132.00	50.20	38.75	10.36	26.57	48.38	74	-25.62	PK
H	4960.00	61.43	38.69	7.78	23.83	54.35	74	-19.65	PK
H	4960.00	46.19	38.69	7.78	23.83	39.11	54	-14.89	AV
H	7440.00	68.97	38.65	7.22	24.78	62.32	74	-11.68	PK
H	7440.00	48.14	38.65	7.22	24.78	41.49	54	-12.51	AV
H	16132.00	50.52	38.75	10.36	26.57	48.70	74	-25.30	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.

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) (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:

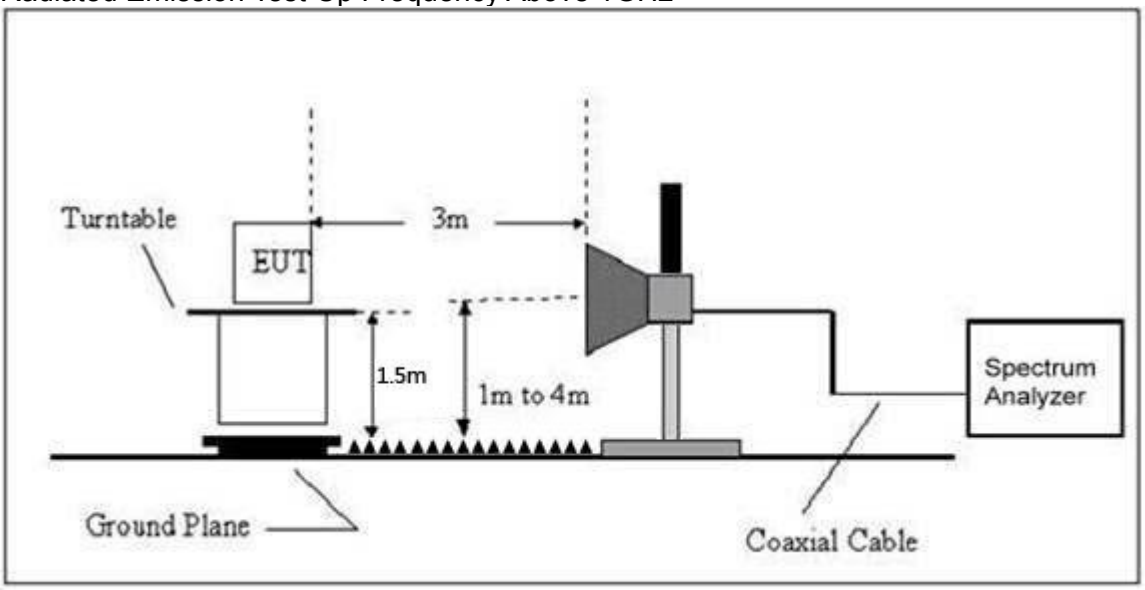
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

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

802.11b

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detec or Type
operation frequency:2412							
V	2390.00	37.42	13.83	51.25	74.00	-22.75	PK
V	2390.00	26.00	13.83	39.83	54.00	-14.17	AV
V	2400.00	37.63	13.85	51.48	74.00	-22.52	PK
V	2400.00	25.58	13.85	39.43	54.00	-14.57	AV
H	2390.00	37.72	13.83	51.55	74.00	-22.45	PK
H	2390.00	26.03	13.83	39.86	54.00	-14.14	AV
H	2400.00	37.58	13.85	51.43	74.00	-22.57	PK
H	2400.00	25.97	13.85	39.82	54.00	-14.18	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2462							
V	2483.50	37.63	14.02	51.65	74.00	-22.35	PK
V	2483.50	26.24	14.02	40.26	54.00	-13.74	AV
V	2500.00	37.57	14.06	51.63	74.00	-22.37	PK
V	2500.00	25.69	14.06	39.75	54.00	-14.25	AV
H	2483.50	37.76	14.02	51.78	74.00	-22.22	PK
H	2483.50	26.28	14.02	40.30	54.00	-13.70	AV
H	2500.00	37.37	14.06	51.43	74.00	-22.57	PK
H	2500.00	26.53	14.06	40.59	54.00	-13.41	AV

Remark:

1. Emission Level = Meter Reading + Factor, 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)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2412							
V	2390.00	37.12	13.83	50.95	74.00	-23.05	PK
V	2390.00	25.79	13.83	39.62	54.00	-14.38	AV
V	2400.00	37.32	13.85	51.17	74.00	-22.83	PK
V	2400.00	25.37	13.85	39.22	54.00	-14.78	AV
H	2390.00	37.41	13.83	51.24	74.00	-22.76	PK
H	2390.00	25.82	13.83	39.65	54.00	-14.35	AV
H	2400.00	37.27	13.85	51.12	74.00	-22.88	PK
H	2400.00	25.76	13.85	39.61	54.00	-14.39	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2462							
V	2483.50	37.32	14.02	51.34	74.00	-22.66	PK
V	2483.50	26.03	14.02	40.05	54.00	-13.95	AV
V	2500.00	37.26	14.06	51.32	74.00	-22.68	PK
V	2500.00	25.48	14.06	39.54	54.00	-14.46	AV
H	2483.50	37.45	14.02	51.47	74.00	-22.53	PK
H	2483.50	26.07	14.02	40.09	54.00	-13.91	AV
H	2500.00	37.07	14.06	51.13	74.00	-22.87	PK
H	2500.00	26.32	14.06	40.38	54.00	-13.62	AV

Remark:

1. Emission Level = Meter Reading + Factor, 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)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2412							
V	2390.00	37.22	13.83	51.05	74.00	-22.95	PK
V	2390.00	25.87	13.83	39.70	54.00	-14.30	AV
V	2400.00	37.43	13.85	51.28	74.00	-22.72	PK
V	2400.00	25.44	13.85	39.29	54.00	-14.71	AV
H	2390.00	37.52	13.83	51.35	74.00	-22.65	PK
H	2390.00	25.90	13.83	39.73	54.00	-14.27	AV
H	2400.00	37.38	13.85	51.23	74.00	-22.77	PK
H	2400.00	25.84	13.85	39.69	54.00	-14.31	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2462							
V	2483.50	37.43	14.02	51.45	74.00	-22.55	PK
V	2483.50	26.10	14.02	40.12	54.00	-13.88	AV
V	2500.00	37.37	14.06	51.43	74.00	-22.57	PK
V	2500.00	25.55	14.06	39.61	54.00	-14.39	AV
H	2483.50	37.56	14.02	51.58	74.00	-22.42	PK
H	2483.50	26.14	14.02	40.16	54.00	-13.84	AV
H	2500.00	37.17	14.06	51.23	74.00	-22.77	PK
H	2500.00	26.39	14.06	40.45	54.00	-13.55	AV

Remark:

1. Emission Level = Meter Reading + Factor, 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)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2422							
V	2390.00	37.54	13.83	51.37	74.00	-22.63	PK
V	2390.00	26.08	13.83	39.91	54.00	-14.09	AV
V	2400.00	37.75	13.85	51.60	74.00	-22.40	PK
V	2400.00	25.66	13.85	39.51	54.00	-14.49	AV
H	2390.00	37.84	13.83	51.67	74.00	-22.33	PK
H	2390.00	26.10	13.83	39.93	54.00	-14.07	AV
H	2400.00	37.70	13.85	51.55	74.00	-22.45	PK
H	2400.00	26.05	13.85	39.90	54.00	-14.10	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2452							
V	2483.50	37.75	14.02	51.77	74.00	-22.23	PK
V	2483.50	26.32	14.02	40.34	54.00	-13.66	AV
V	2500.00	37.69	14.06	51.75	74.00	-22.25	PK
V	2500.00	25.76	14.06	39.82	54.00	-14.18	AV
H	2483.50	37.88	14.02	51.90	74.00	-22.10	PK
H	2483.50	26.36	14.02	40.38	54.00	-13.62	AV
H	2500.00	37.49	14.06	51.55	74.00	-22.45	PK
H	2500.00	26.61	14.06	40.67	54.00	-13.33	AV

Remark:

1. Emission Level = Meter Reading + Factor, 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.

BT

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2402							
V	2390.00	37.58	13.83	51.41	74.00	-22.59	PK
V	2390.00	26.11	13.83	39.94	54.00	-14.06	AV
V	2400.00	37.79	13.85	51.64	74.00	-22.36	PK
V	2400.00	25.69	13.85	39.54	54.00	-14.46	AV
H	2390.00	37.88	13.83	51.71	74.00	-22.29	PK
H	2390.00	26.13	13.83	39.96	54.00	-14.04	AV
H	2400.00	37.74	13.85	51.59	74.00	-22.41	PK
H	2400.00	26.08	13.85	39.93	54.00	-14.07	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2480							
V	2483.50	37.79	14.02	51.81	74.00	-22.19	PK
V	2483.50	26.35	14.02	40.37	54.00	-13.63	AV
V	2500.00	37.73	14.06	51.79	74.00	-22.21	PK
V	2500.00	25.79	14.06	39.85	54.00	-14.15	AV
H	2483.50	37.92	14.02	51.94	74.00	-22.06	PK
H	2483.50	26.39	14.02	40.41	54.00	-13.59	AV
H	2500.00	37.53	14.06	51.59	74.00	-22.41	PK
H	2500.00	26.64	14.06	40.70	54.00	-13.30	AV

Remark:

1. Emission Level = Meter Reading + Factor, 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.

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

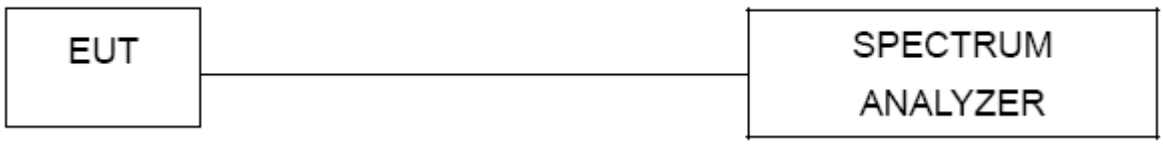
4.1.1 TEST PROCEDURE

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 = 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 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 EUT OPERATION CONDITIONS

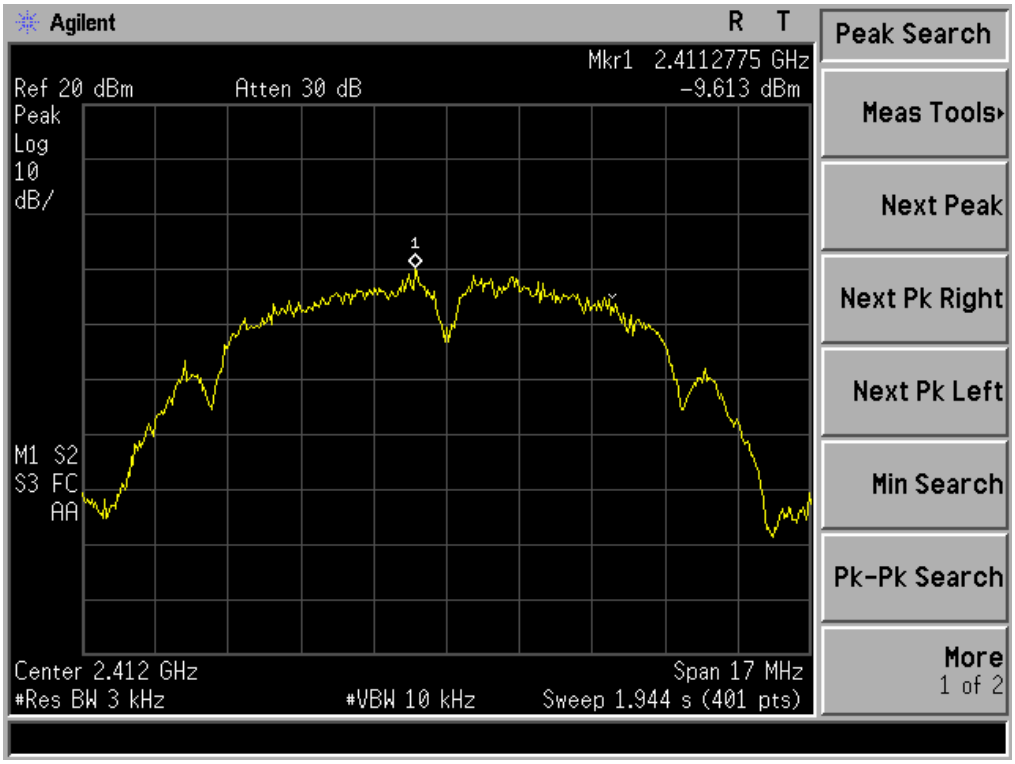
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

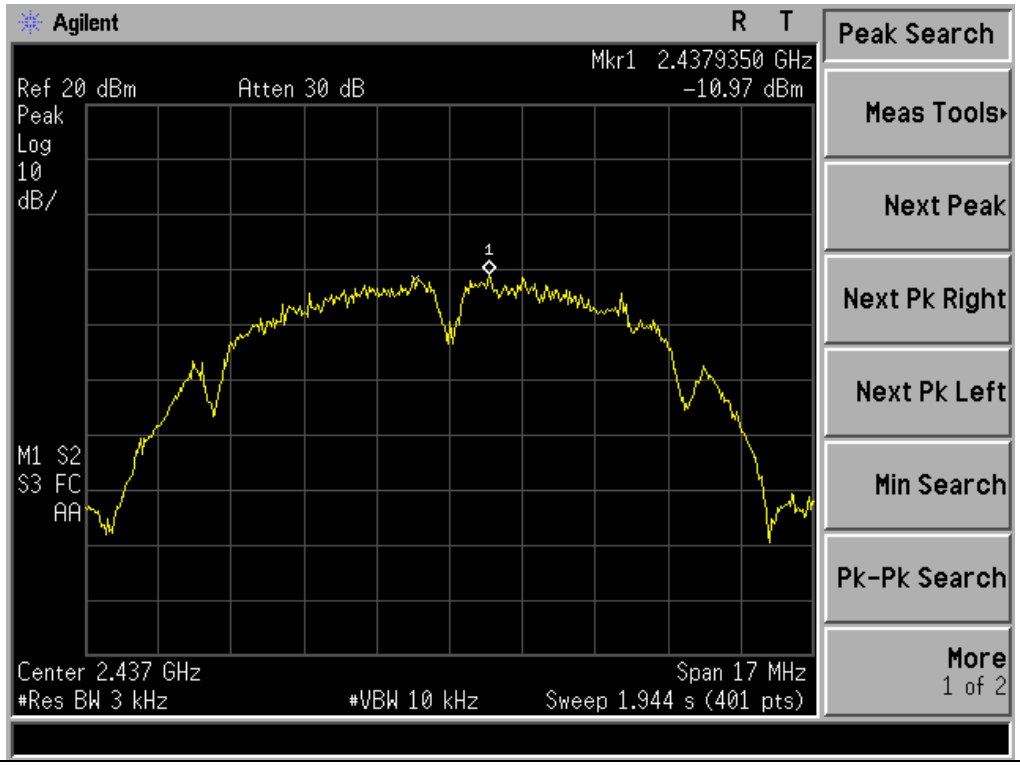
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX b Mode		

Frequency	Power Spectral Density(dBm)	Limit (dBm)	Result
2412 MHz	-9.61	8	PASS
2437 MHz	-10.97	8	PASS
2462 MHz	-10.29	8	PASS

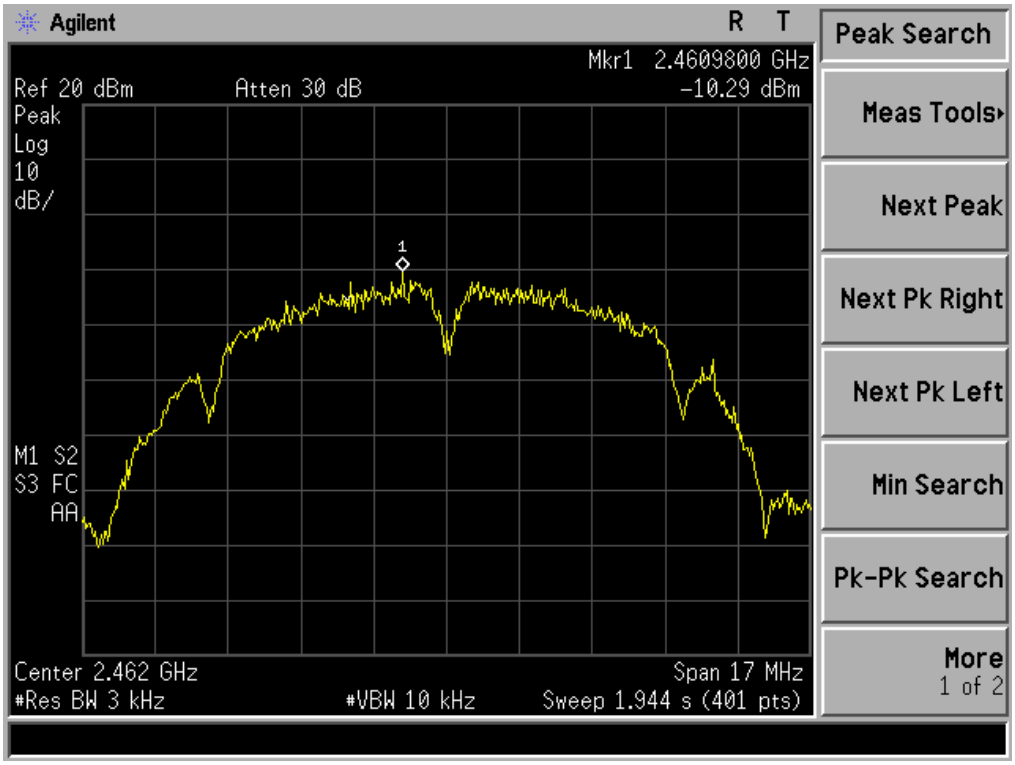
TX CH01



TX CH06



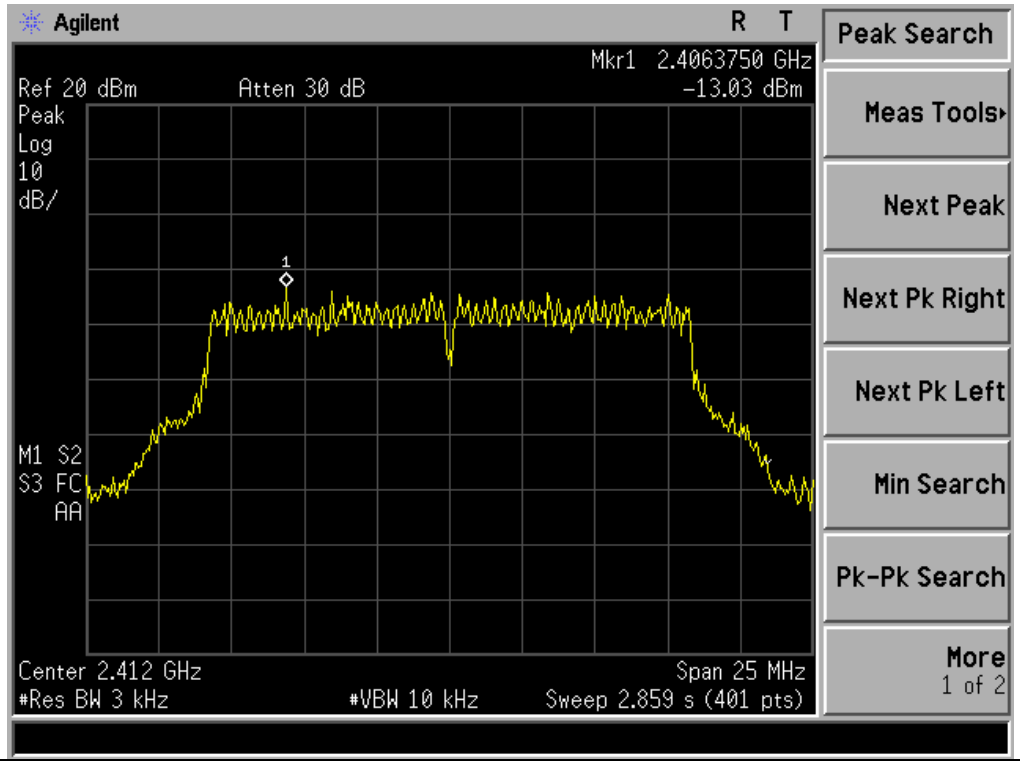
TX CH11



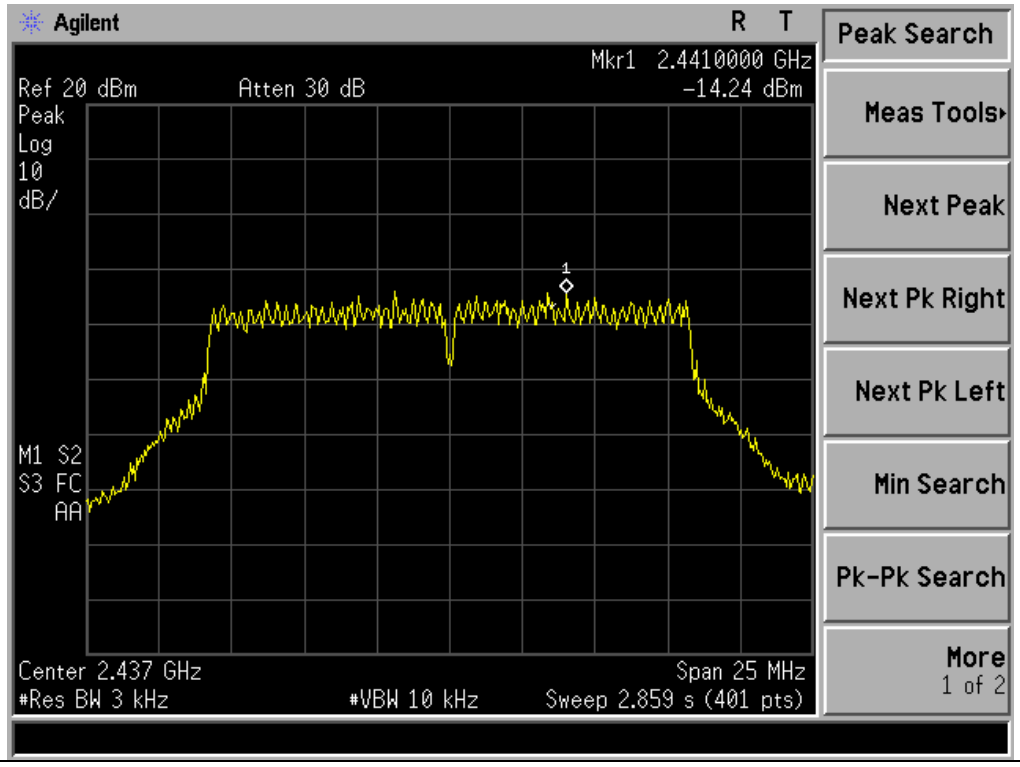
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX g Mode		

Frequency	Power Spectral Density(dBm)	Limit (dBm)	Result
2412 MHz	-13.03	8	PASS
2437 MHz	-14.24	8	PASS
2462 MHz	-17.22	8	PASS

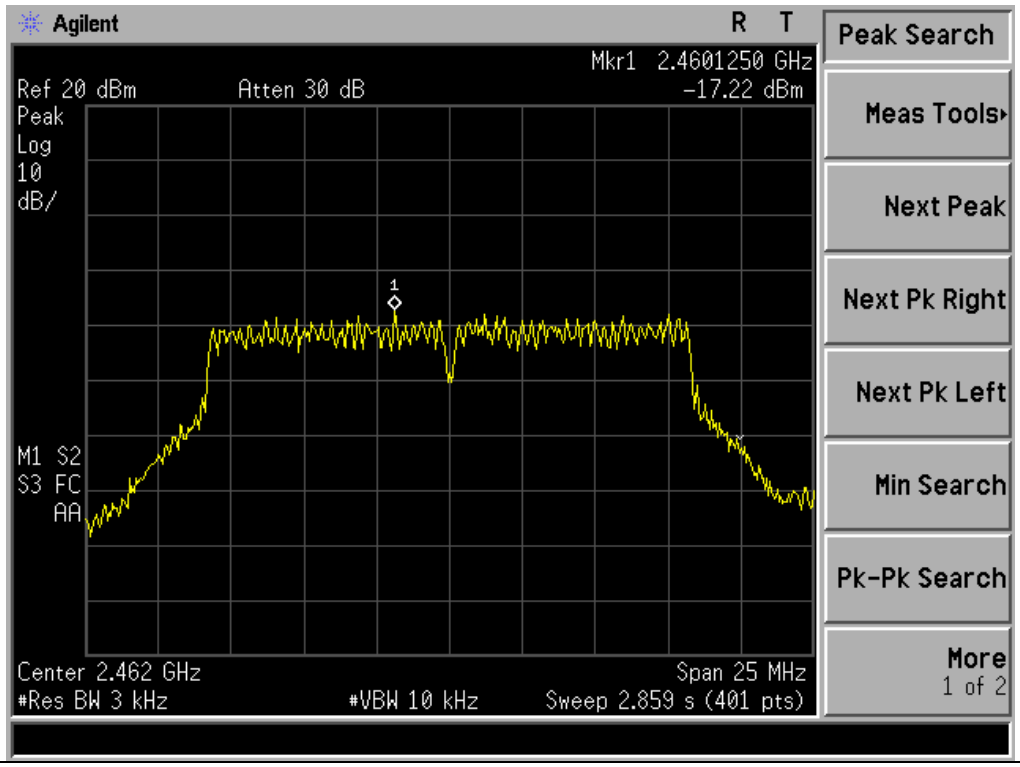
TX CH01



TX CH06



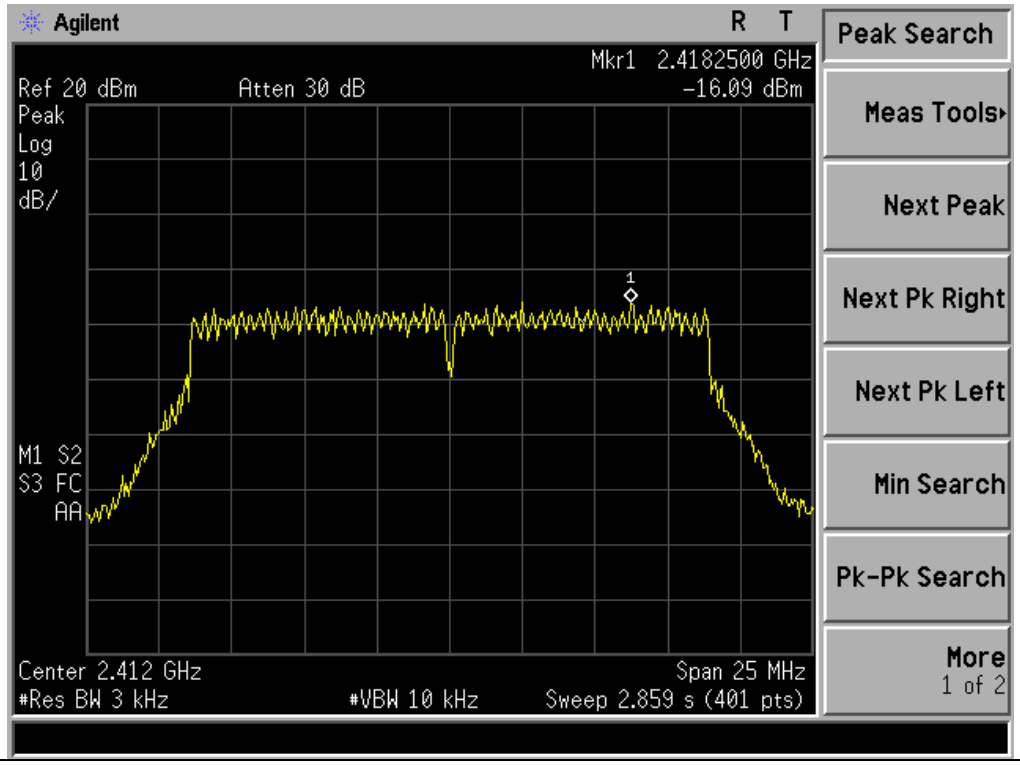
TX CH11



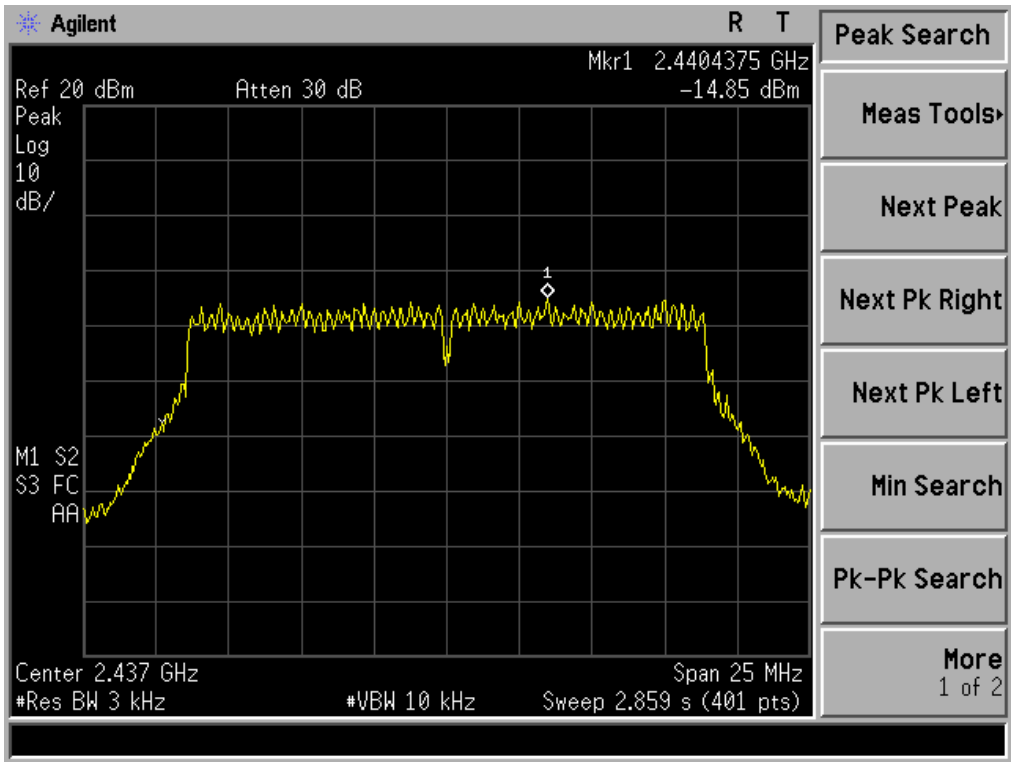
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX n Mode(20M)		

Frequency	Power Spectral Density(dBm)	Limit (dBm)	Result
2412 MHz	-16.09	8	PASS
2437 MHz	-14.85	8	PASS
2462 MHz	-16.03	8	PASS

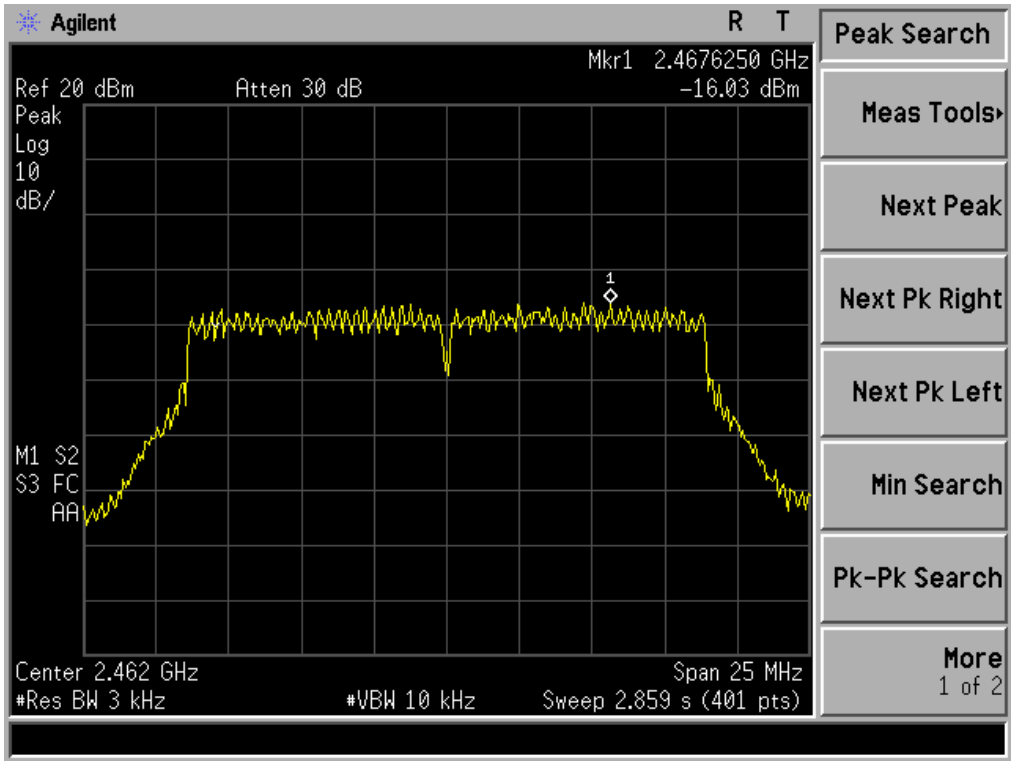
TX CH01



TX CH06



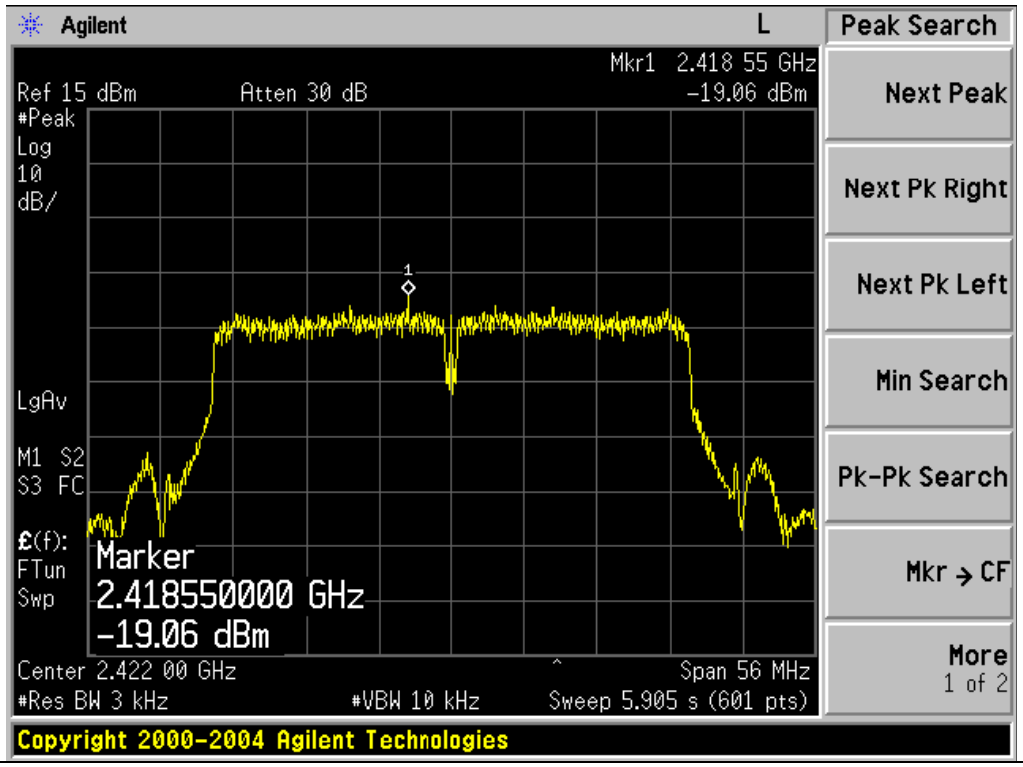
TX CH11



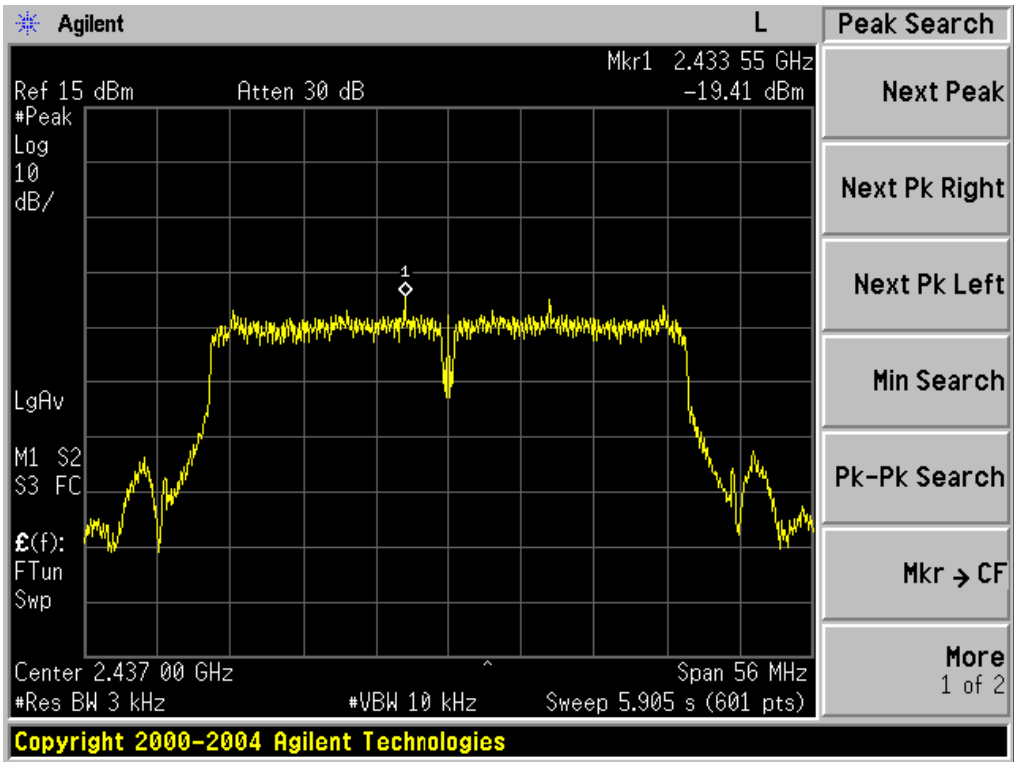
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX n Mode(40M)		

Frequency	Power Spectral Density(dBm)	Limit (dBm)	Result
2422 MHz	-19.06	8	PASS
2437 MHz	-19.41	8	PASS
2452 MHz	--21.67	8	PASS

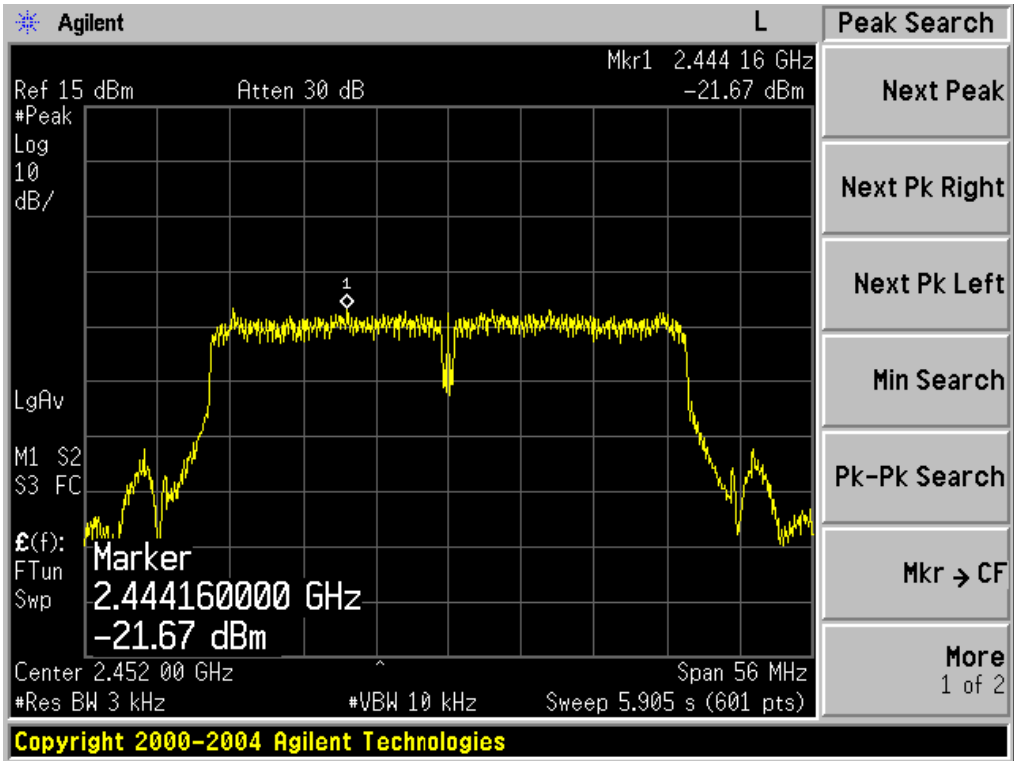
TX CH03



TX CH06



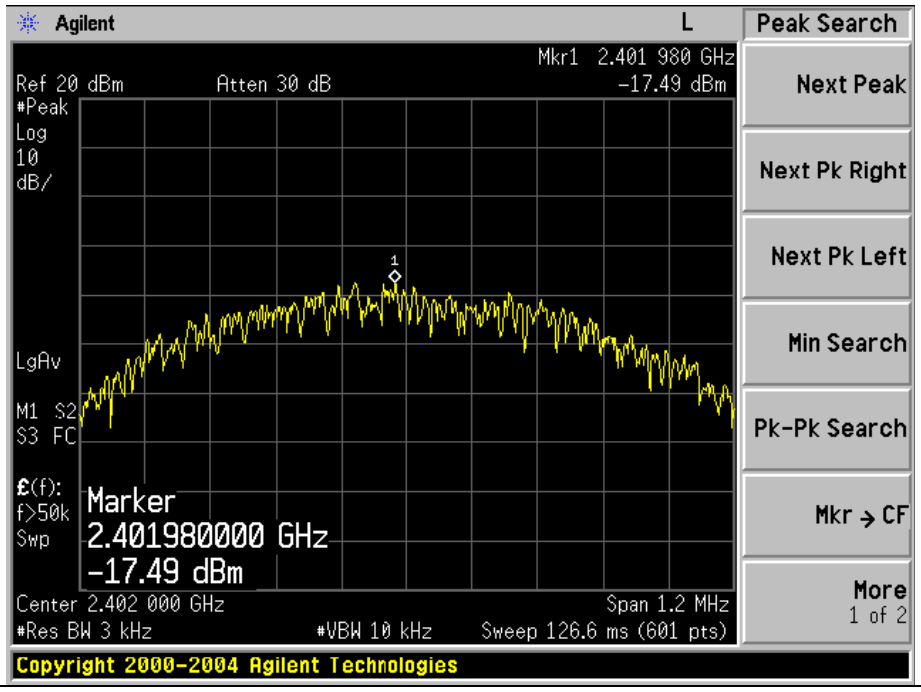
TX CH09



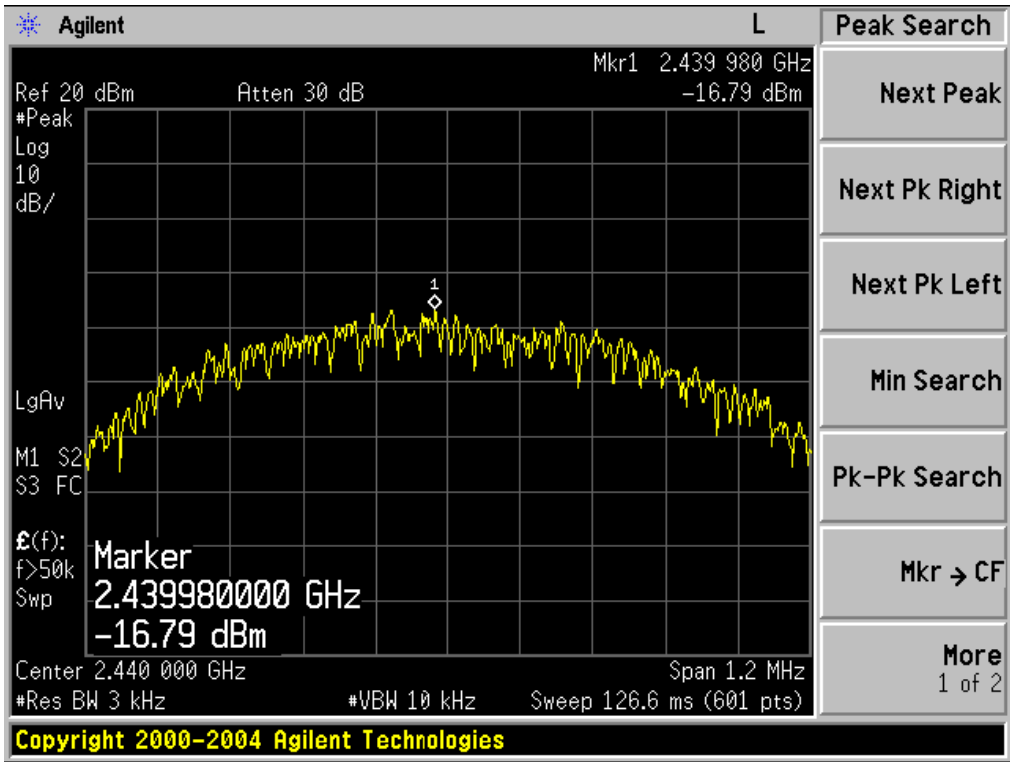
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V
Test Mode ：	BT		

Frequency	Power Spectral Density(dBm)	Limit (dBm)	Result
2402 MHz	-17.49	8	PASS
2440 MHz	-16.79	8	PASS
2480 MHz	-18.80	8	PASS

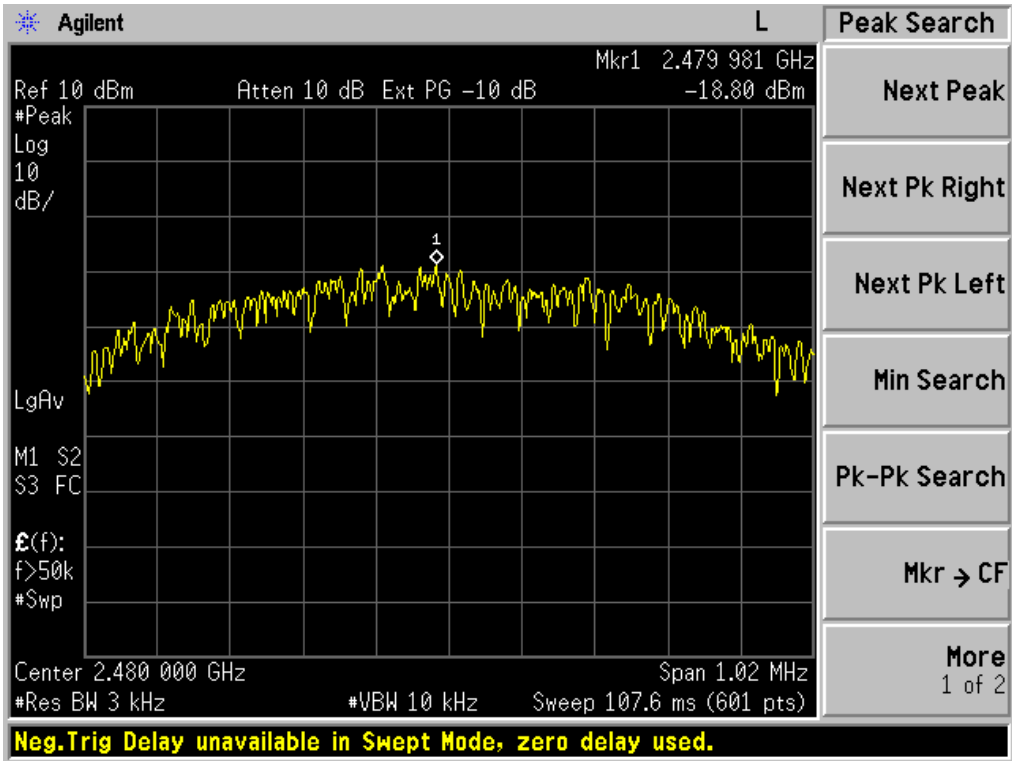
TX CH01



TX CH20



TX CH40



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

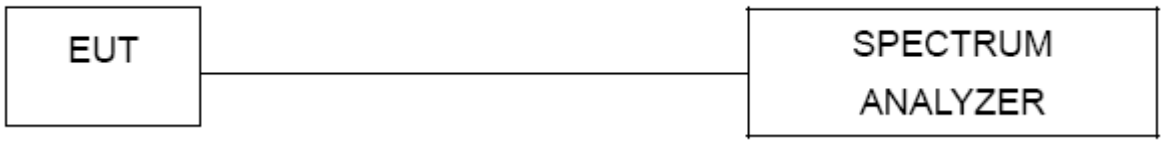
5.1.1 TEST PROCEDURE

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 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

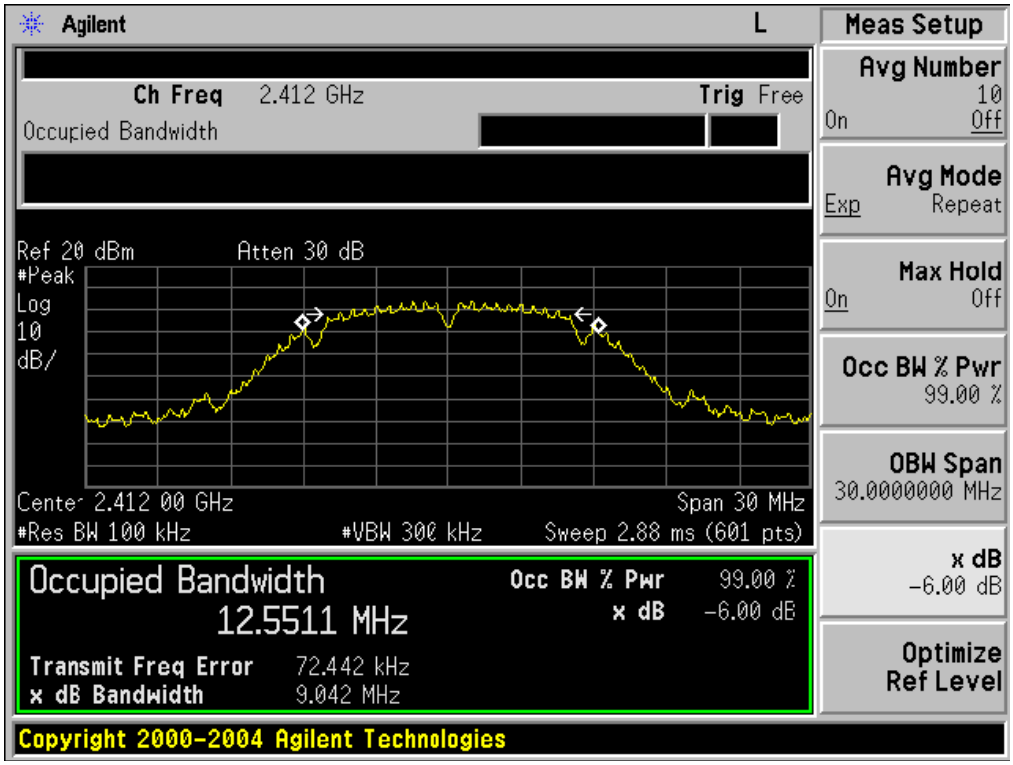
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 TEST RESULTS

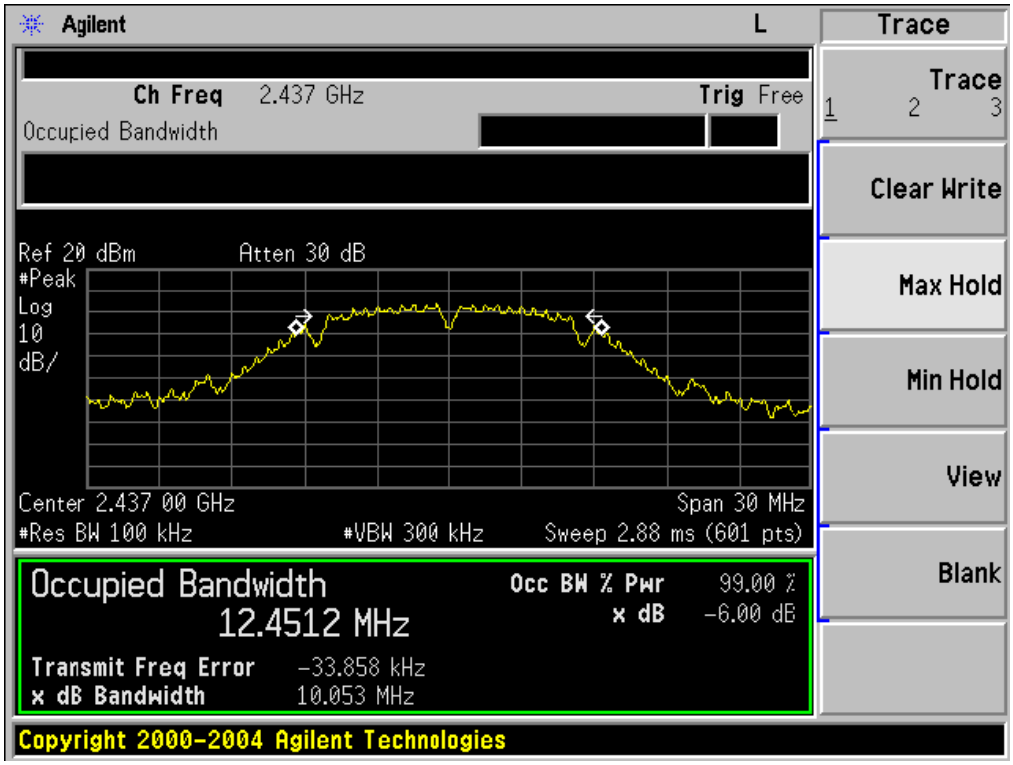
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX b Mode		

Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
2412	9.042	500	Pass
2437	10.053	500	Pass
2462	9.504	500	Pass

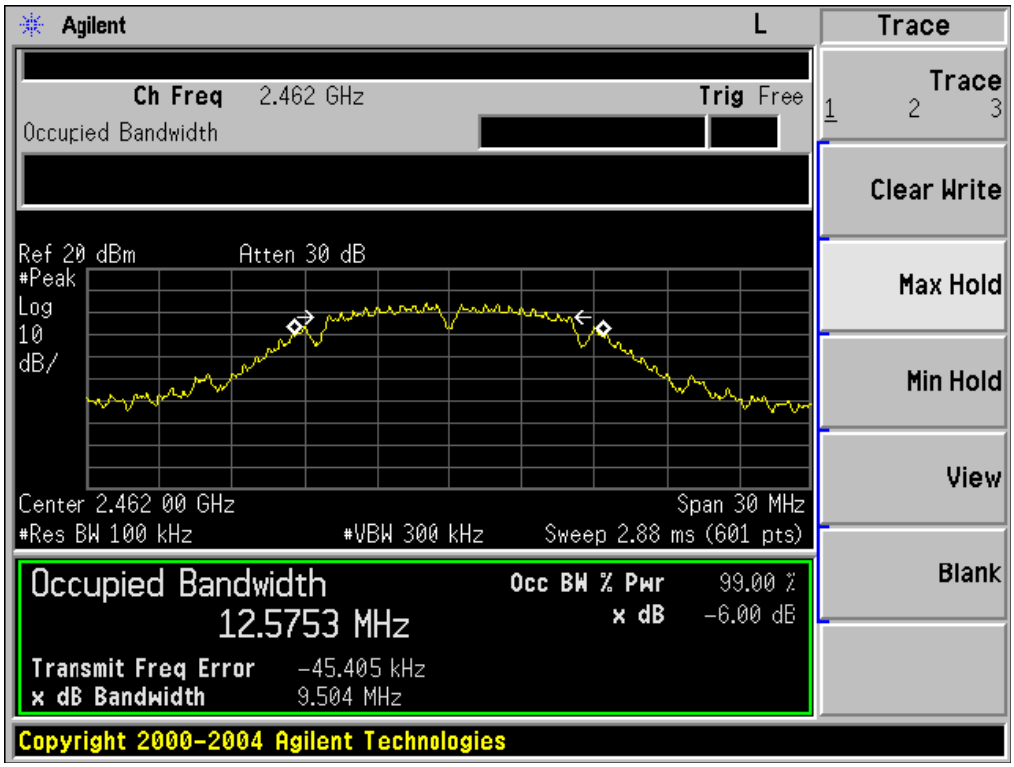
TX CH 01



TX CH 06



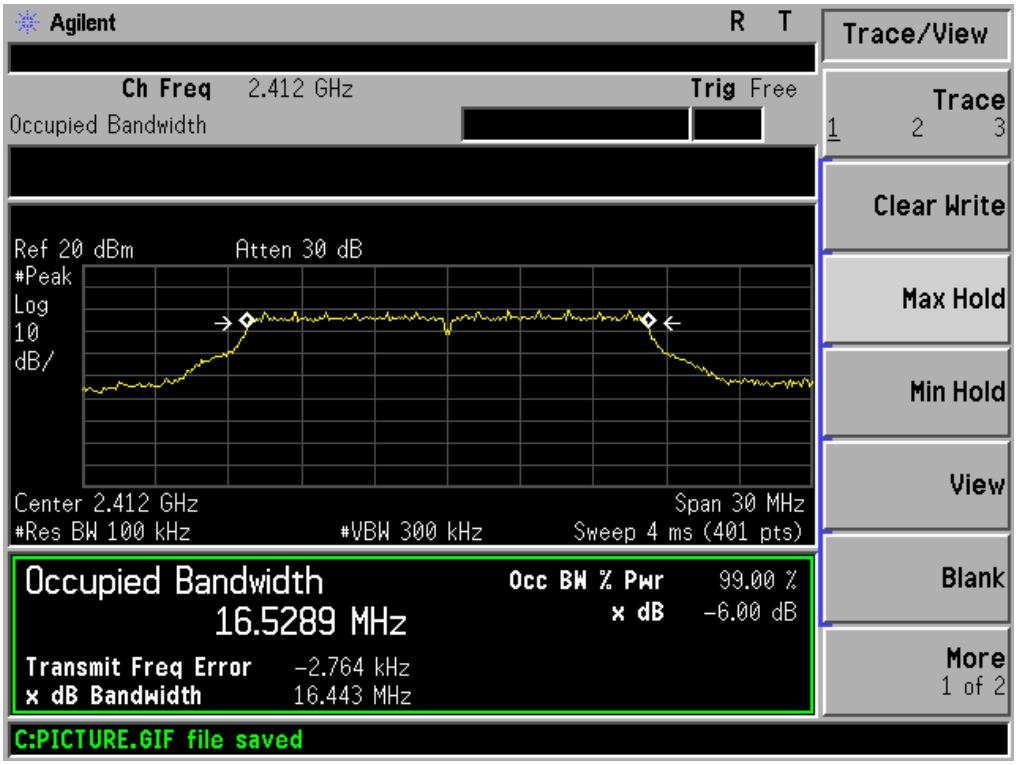
TX CH 11



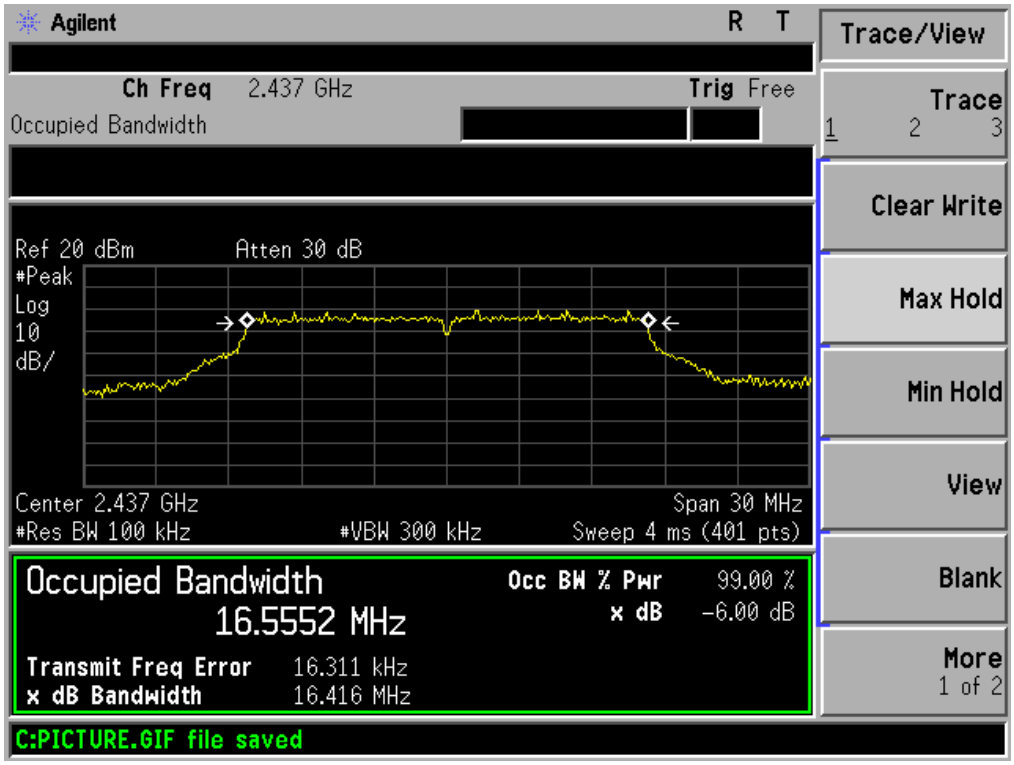
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX g Mode		

Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
2412	16.443	500	Pass
2437	16.416	500	Pass
2462	16.417	500	Pass

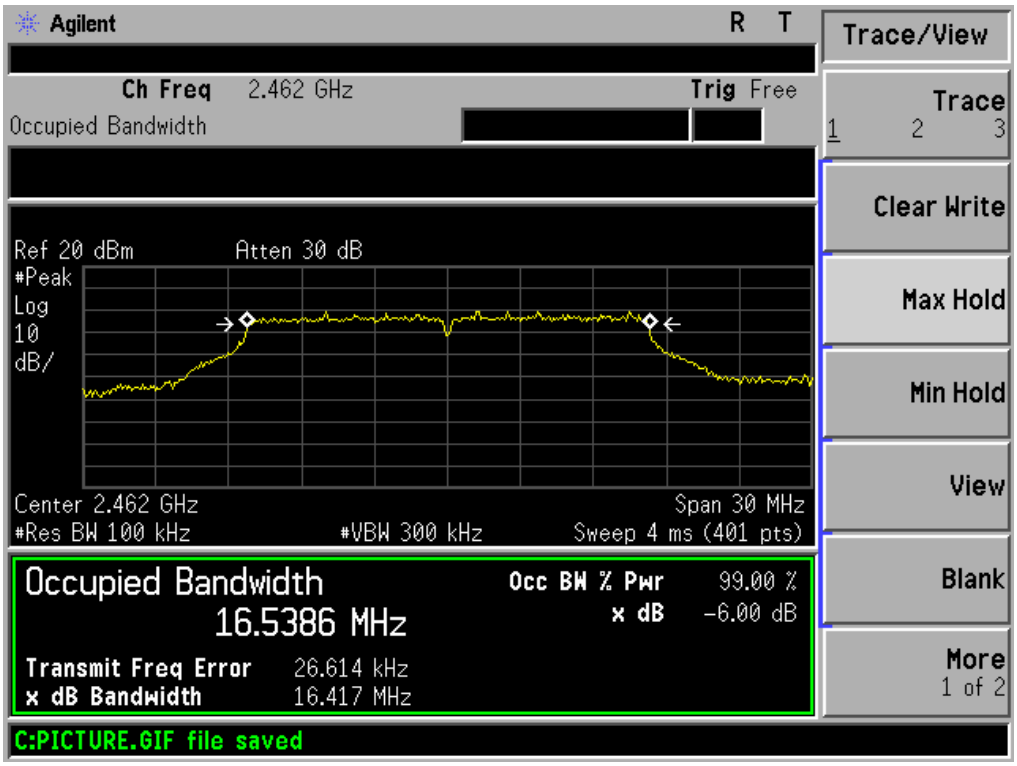
TX CH 01



TX CH 06



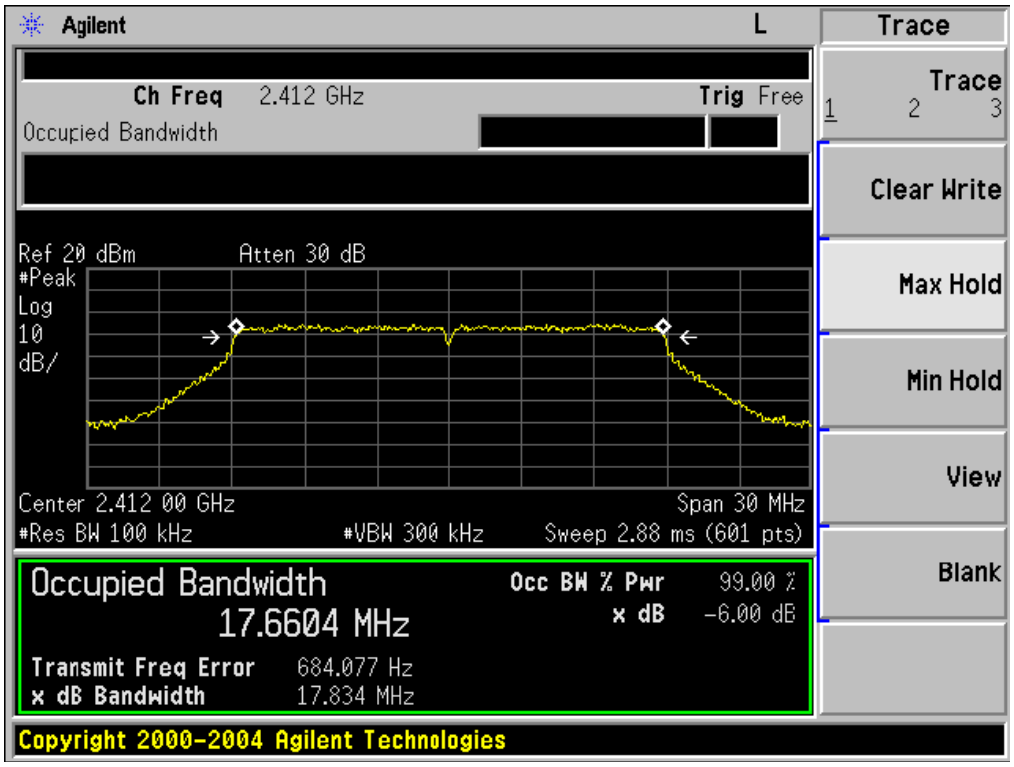
TX CH 11



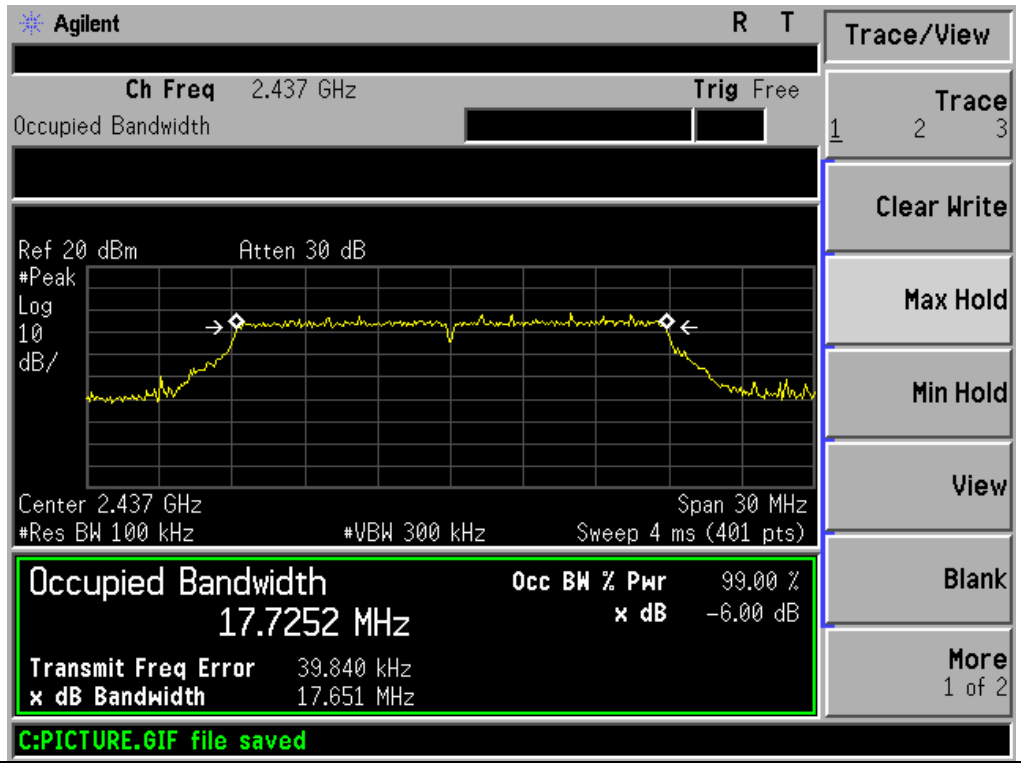
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX n Mode(20M)		

Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
2412	17.834	500	Pass
2437	17.651	500	Pass
2462	17.639	500	Pass

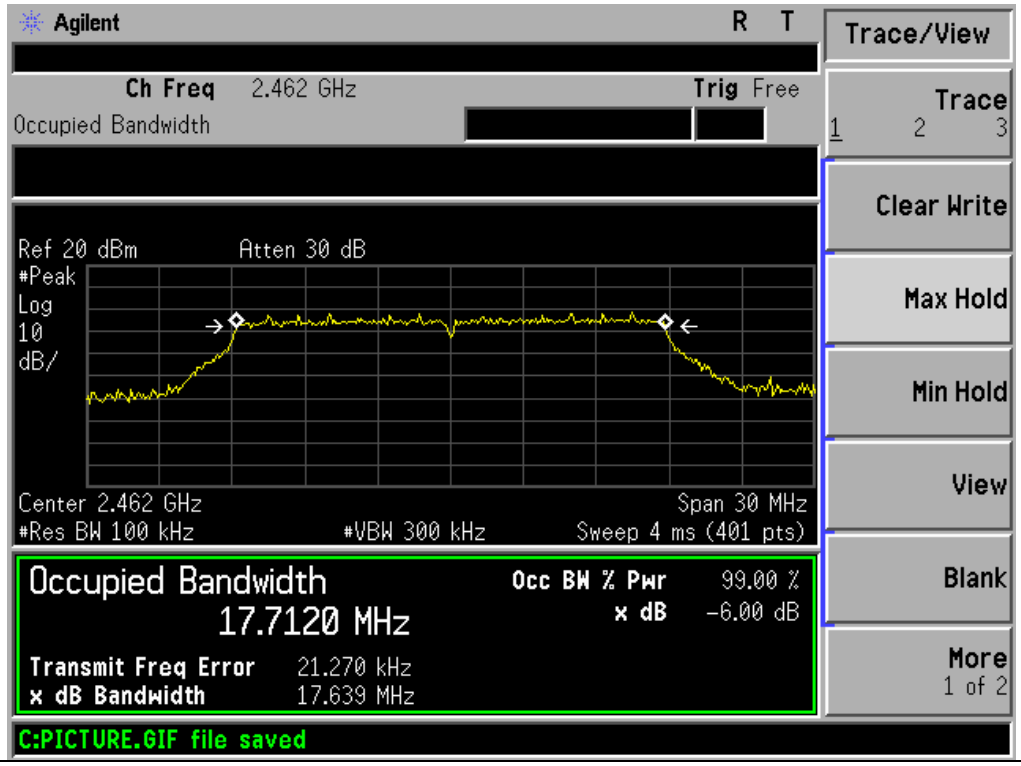
TX CH 01



TX CH 06



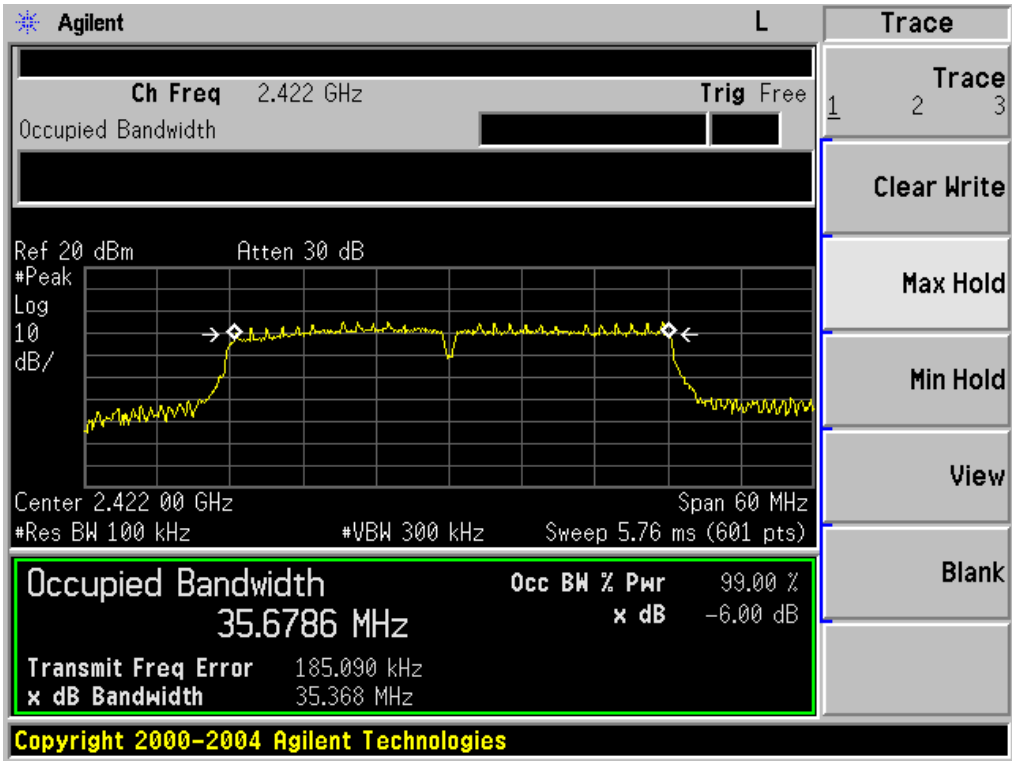
TX CH 11



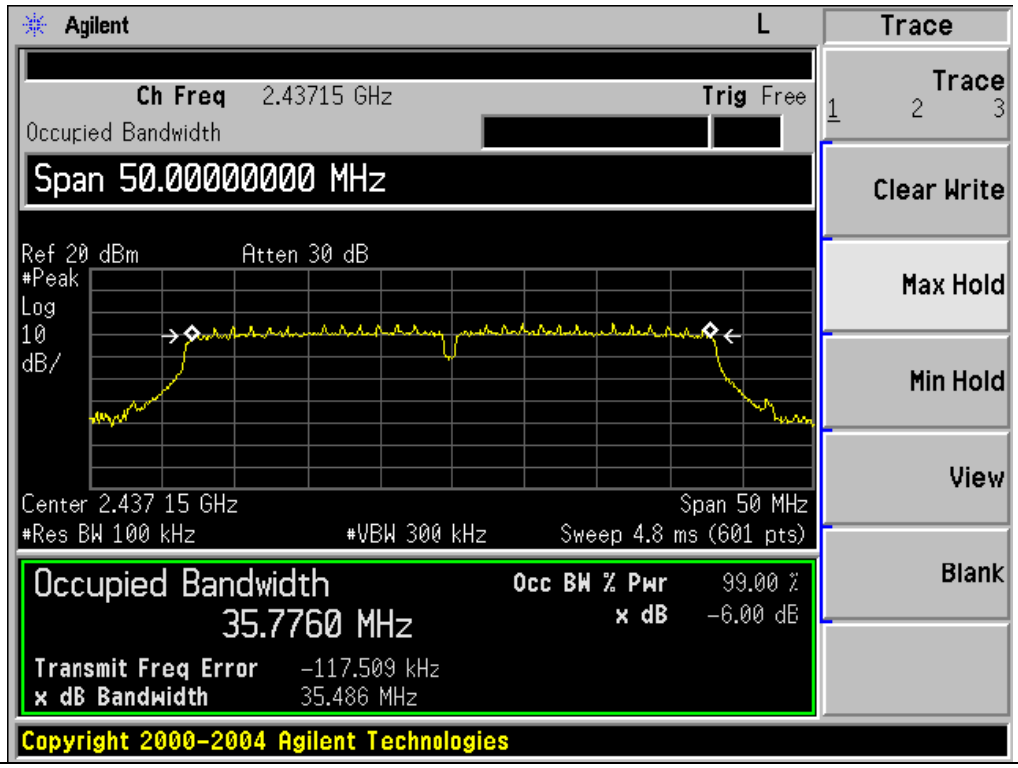
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V
Test Mode ：	TX n Mode(40M)		

Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
2422	35.368	500	Pass
2437	35.486	500	Pass
2452	35.203	500	Pass

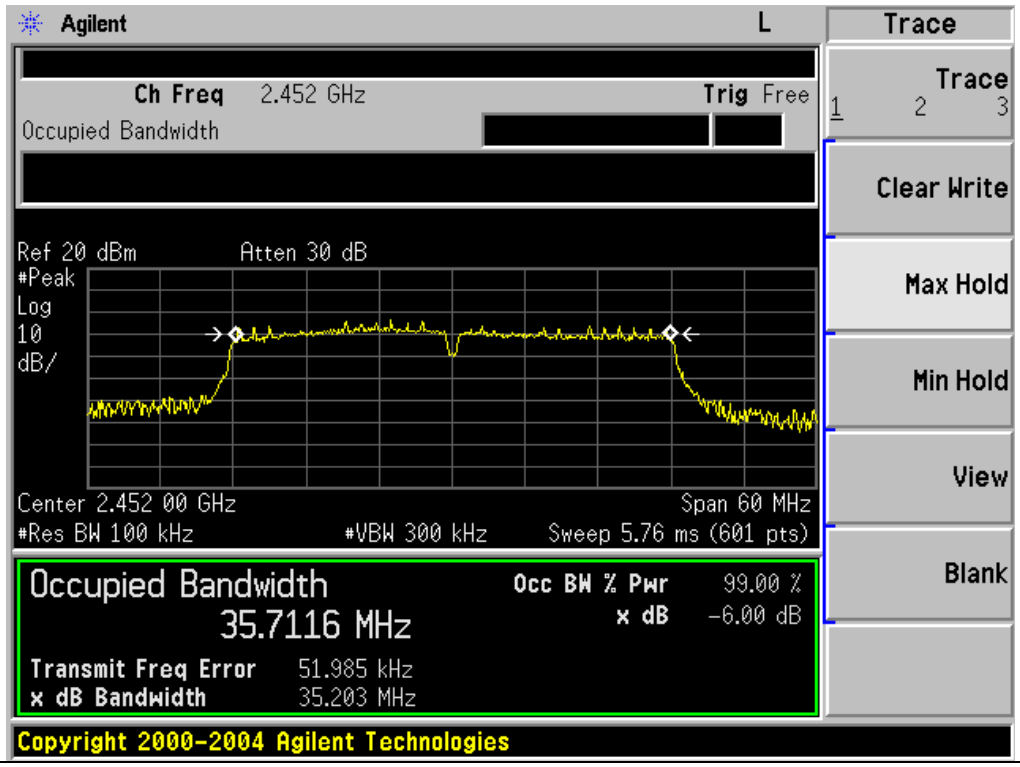
TX CH 03



TX CH 06



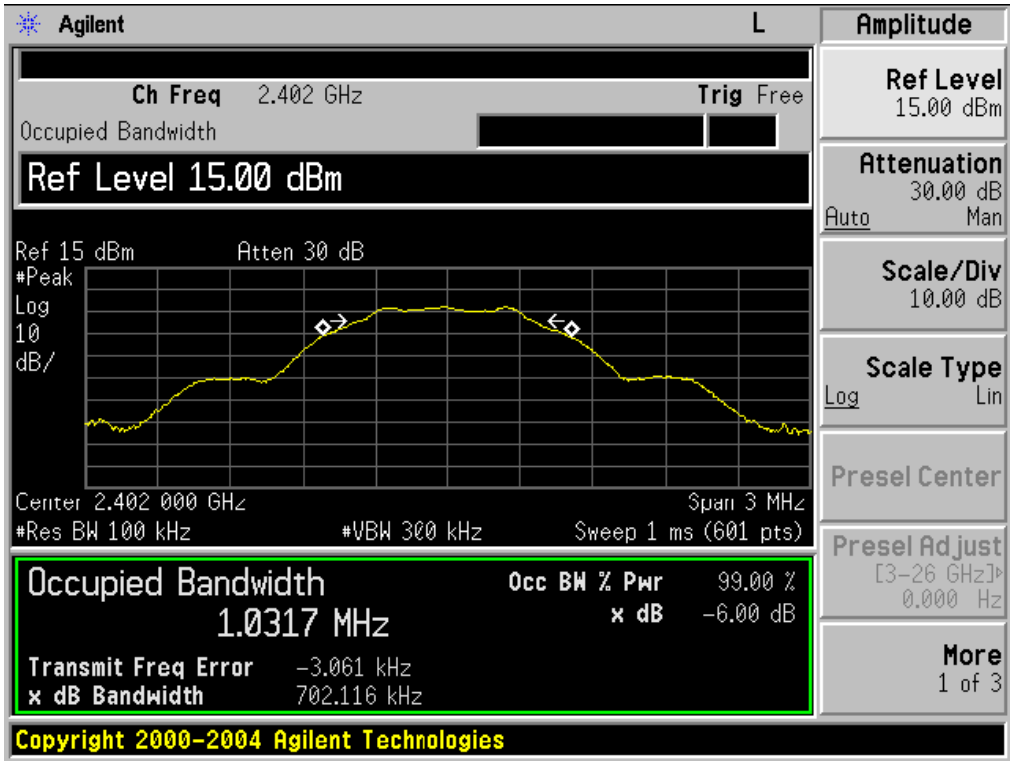
TX CH 09



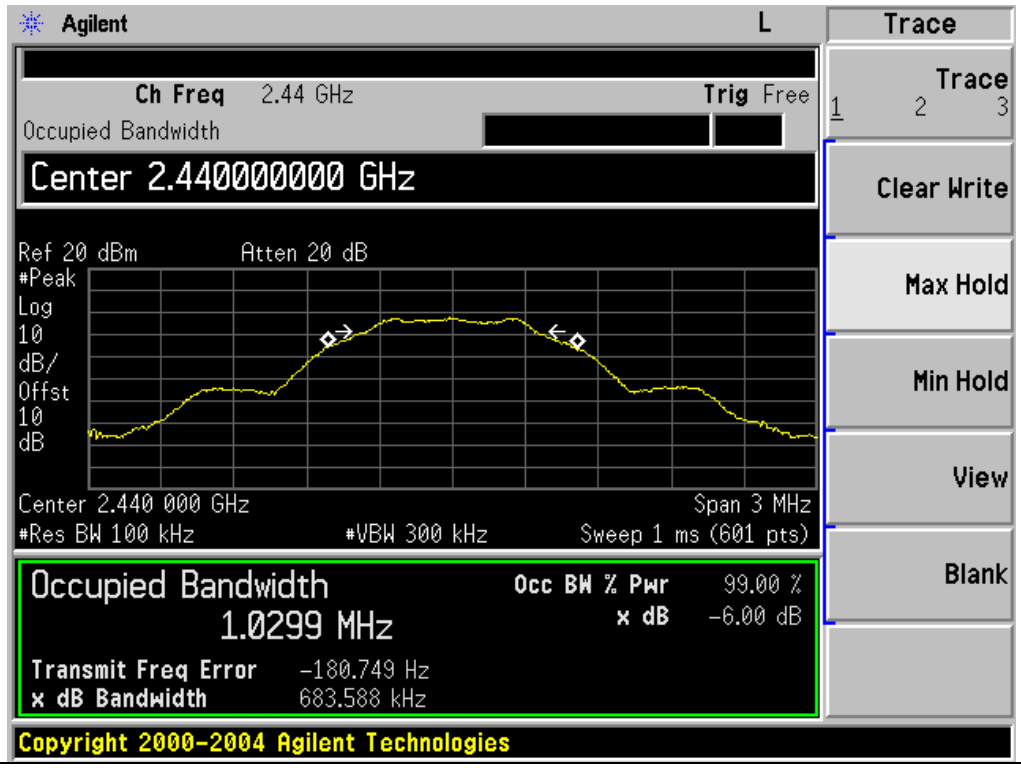
Temperature：	25℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V
Test Mode ：	BT		

Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
2402	0.702	500	Pass
2440	0.684	500	Pass
2480	0.701	500	Pass

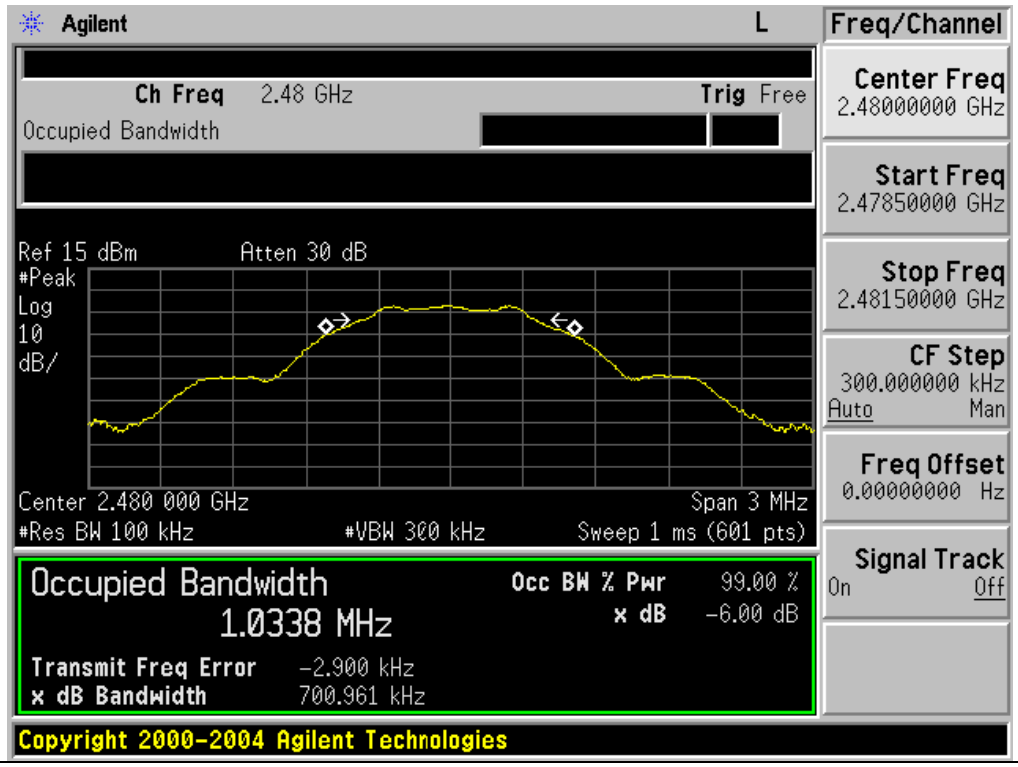
TX CH 01



TX CH 20



TX CH 40



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

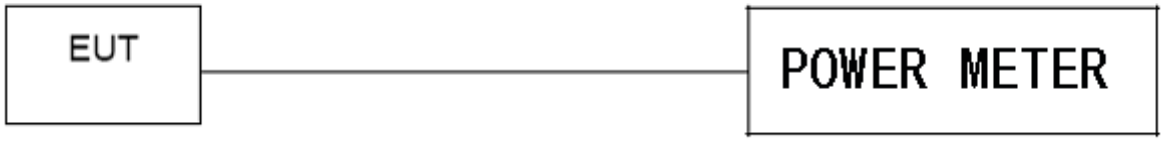
6.1.1 TEST PROCEDURE

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 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：	1012 hPa	Test Voltage ：	DC 5V

	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	dBm
802.11b	2412	12.56	30
	2437	12.68	30
	2462	12.45	30
802.11g	2412	10.68	30
	2437	10.35	30
	2462	10.47	30
802.11n20	2412	9.58	30
	2437	9.42	30
	2462	9.79	30
802.11n40	2422	8.76	30
	2437	8.73	30
	2452	8.75	30
BT	2402	0.86	30
	2440	0.59	30
	2480	0.65	30

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 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.

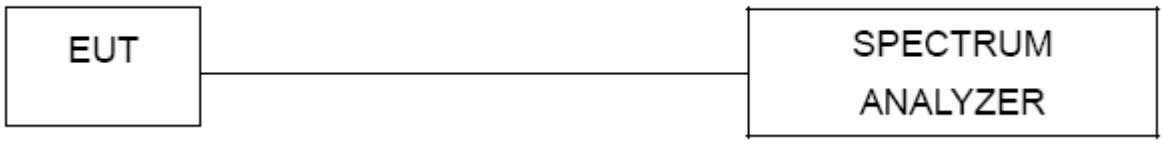
d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

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

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP

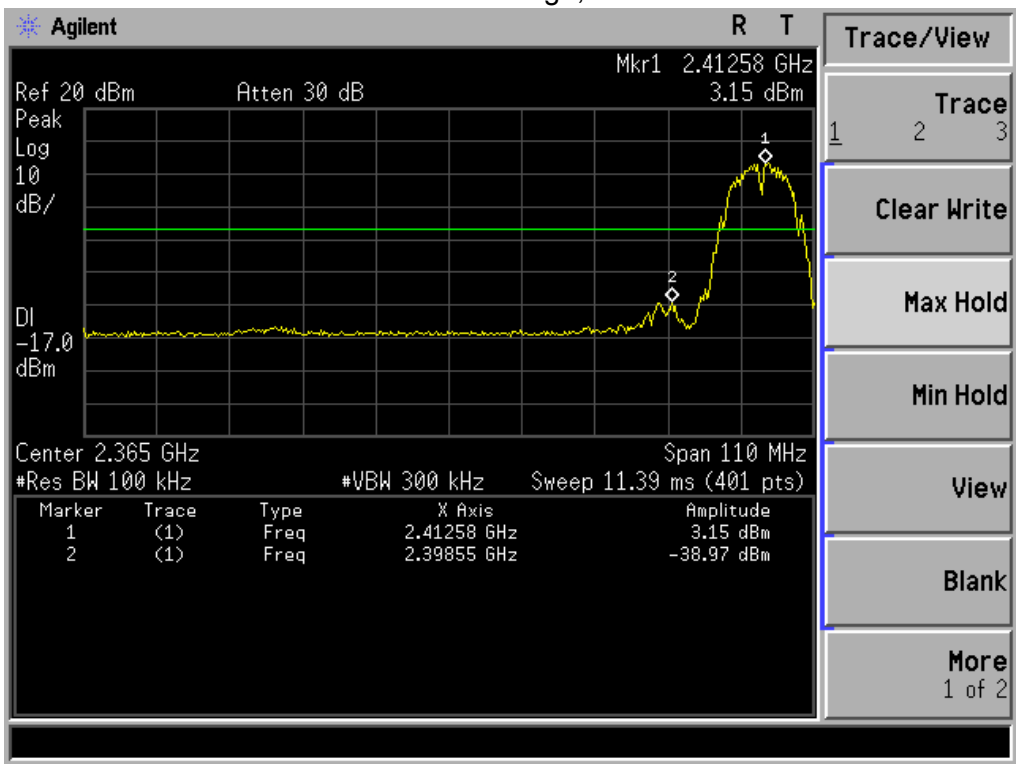


7.5 EUT OPERATION CONDITIONS

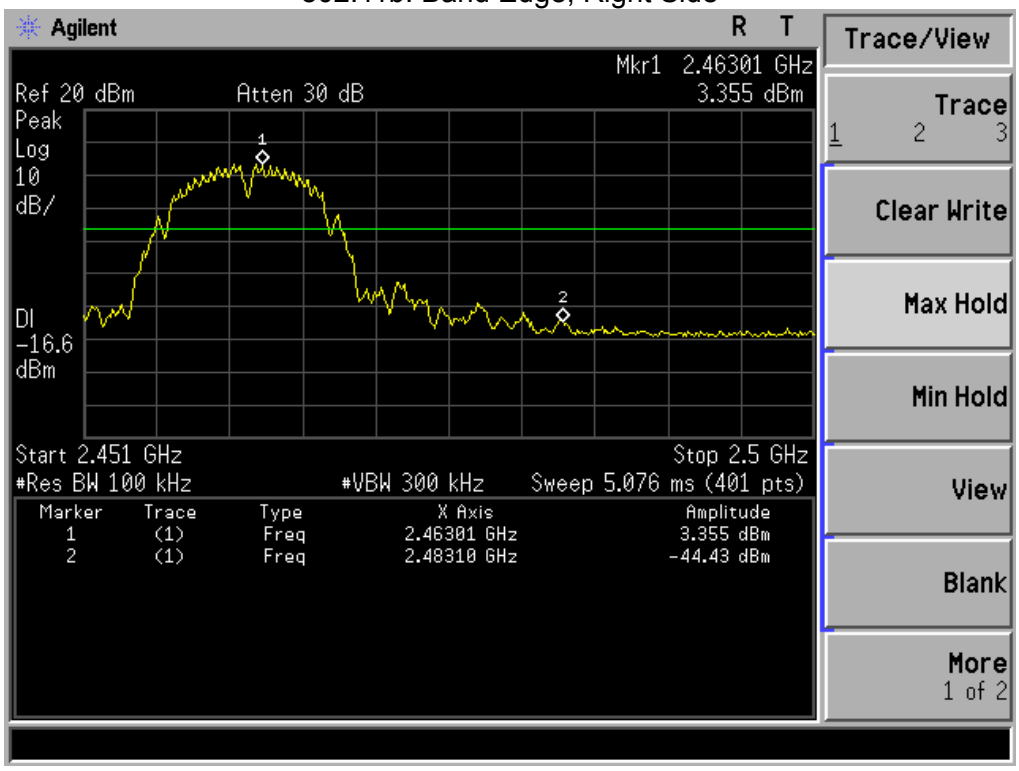
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1 TEST RESULTS

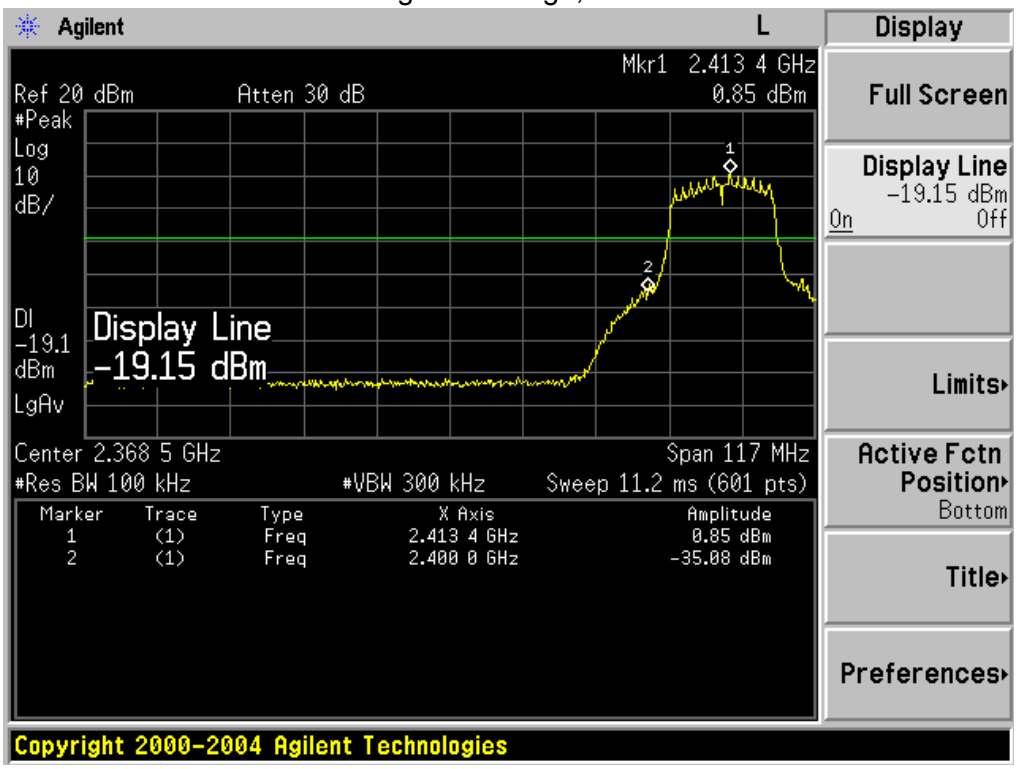
802.11b: Band Edge, Left Side



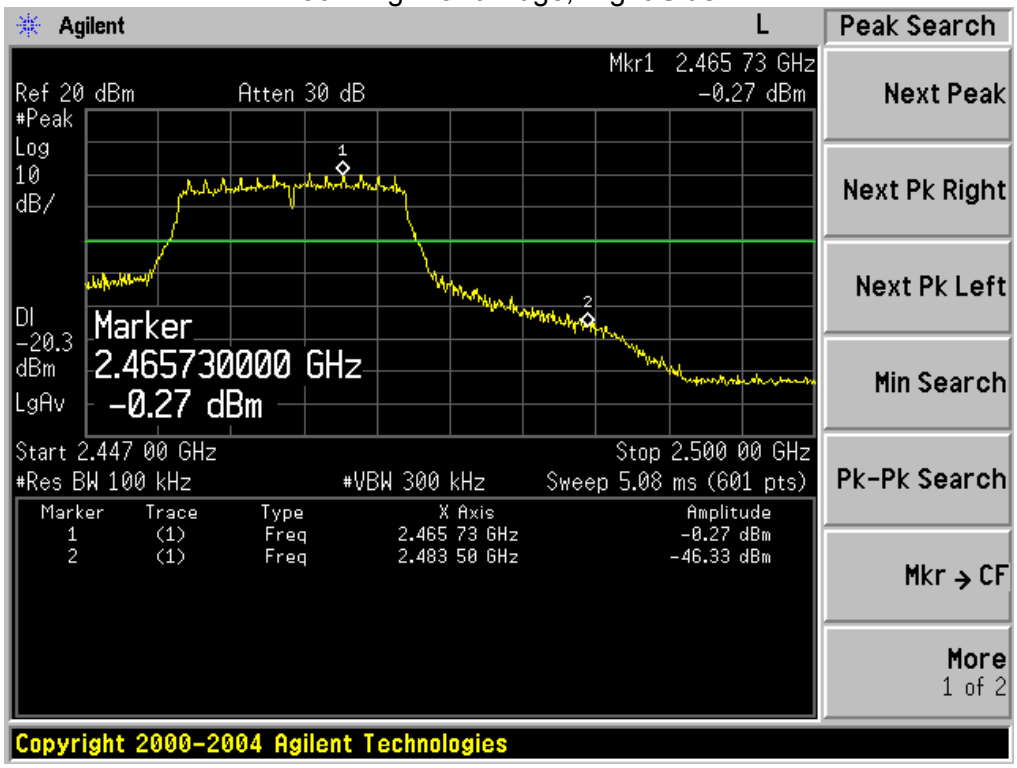
802.11b: Band Edge, Right Side



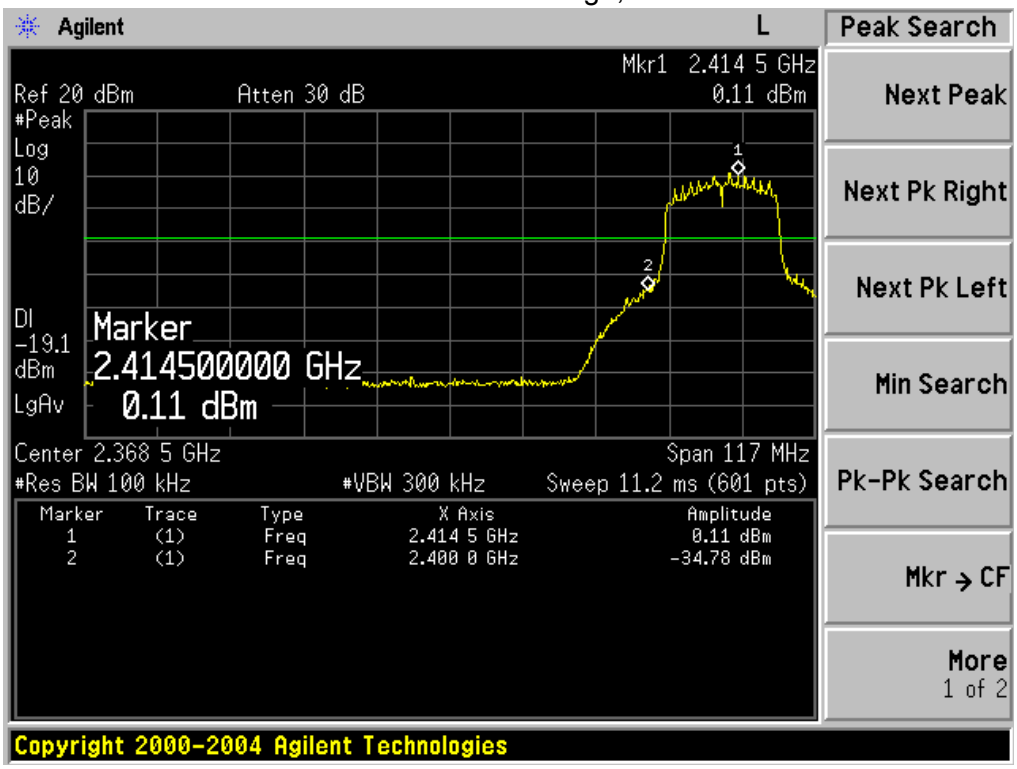
802.11g: Band Edge, Left Side



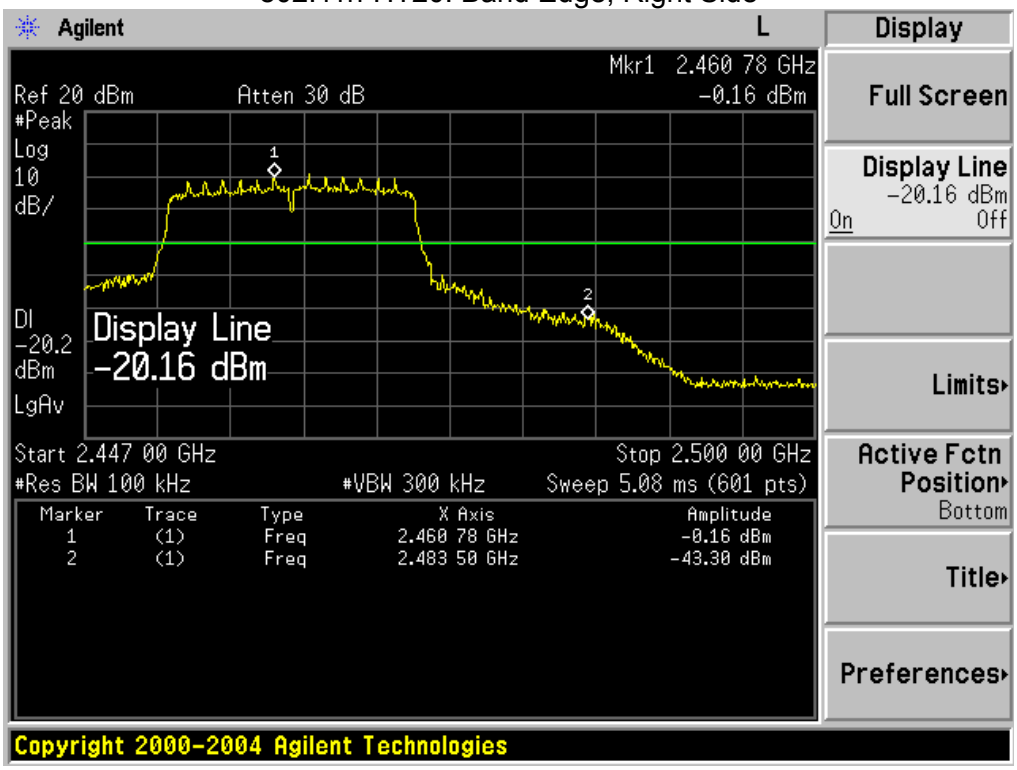
802.11g: Band Edge, Right Side



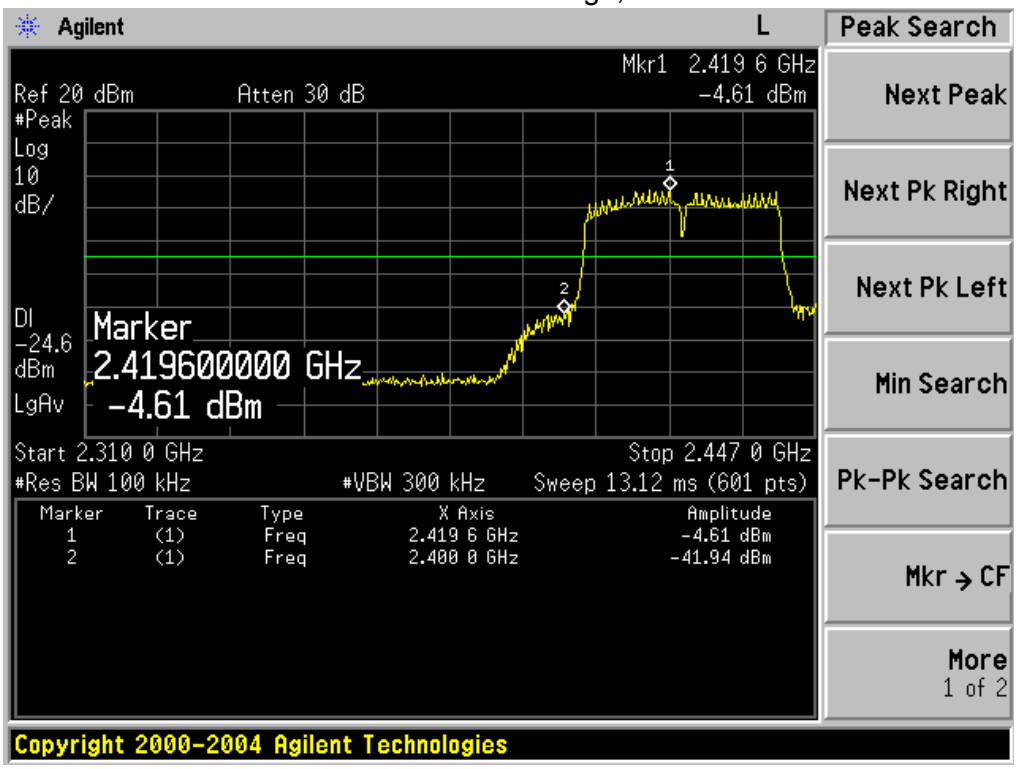
802.11n-HT20: Band Edge, Left Side



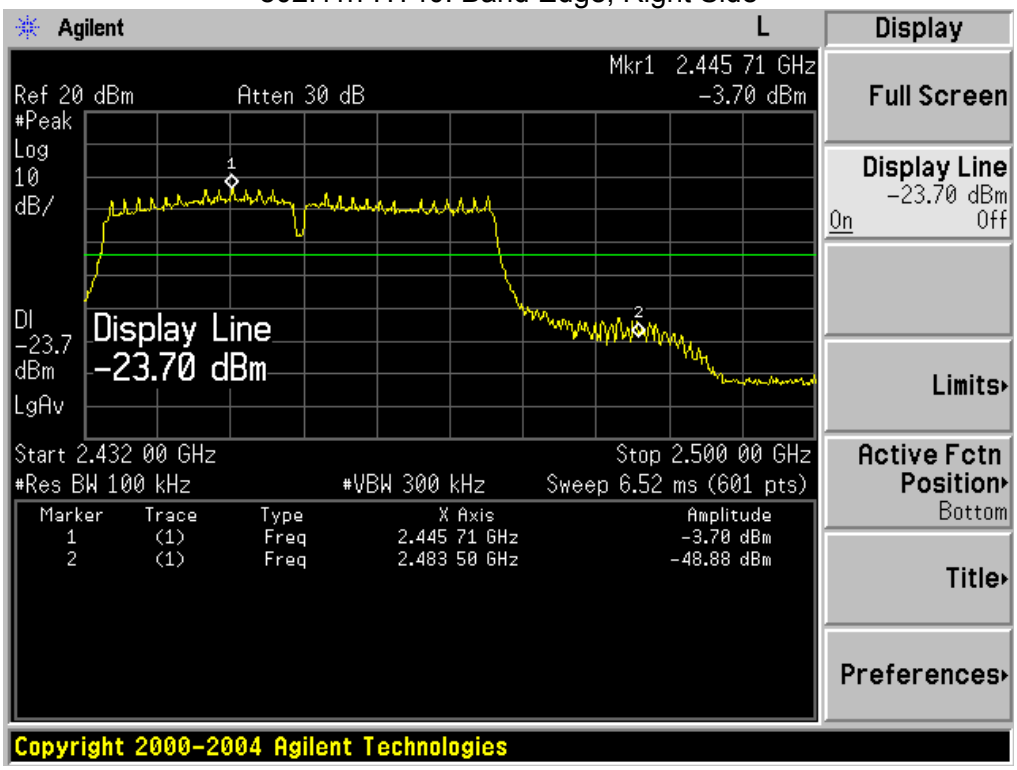
802.11n-HT20: Band Edge, Right Side



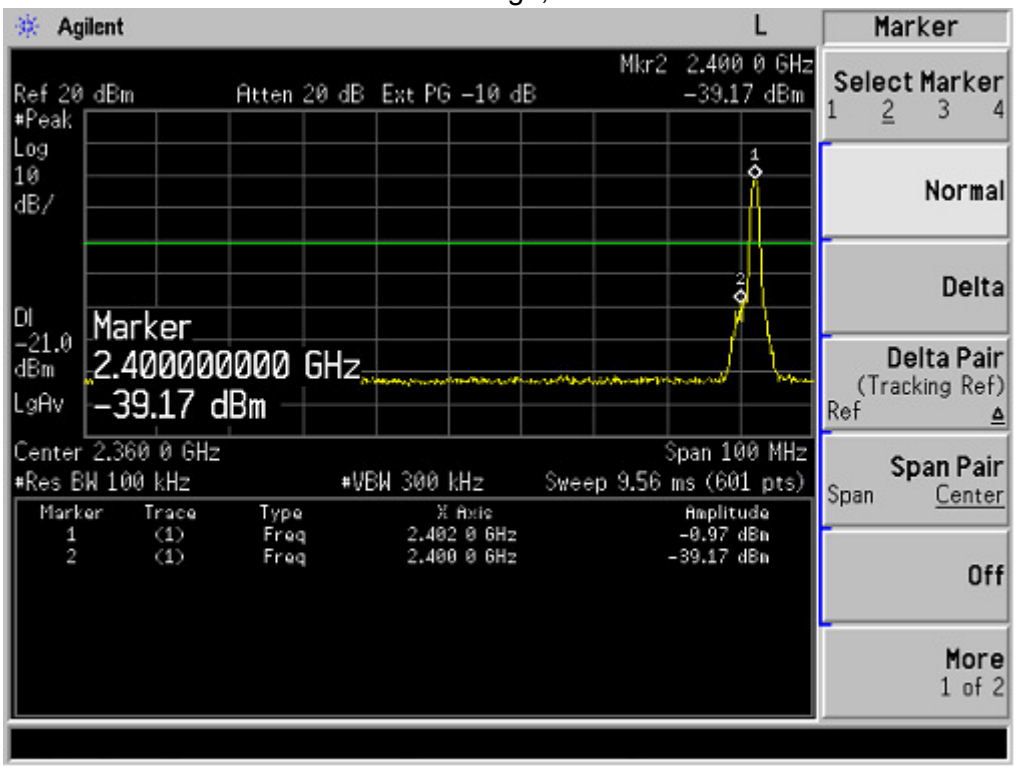
802.11n-HT40: Band Edge, Left Side



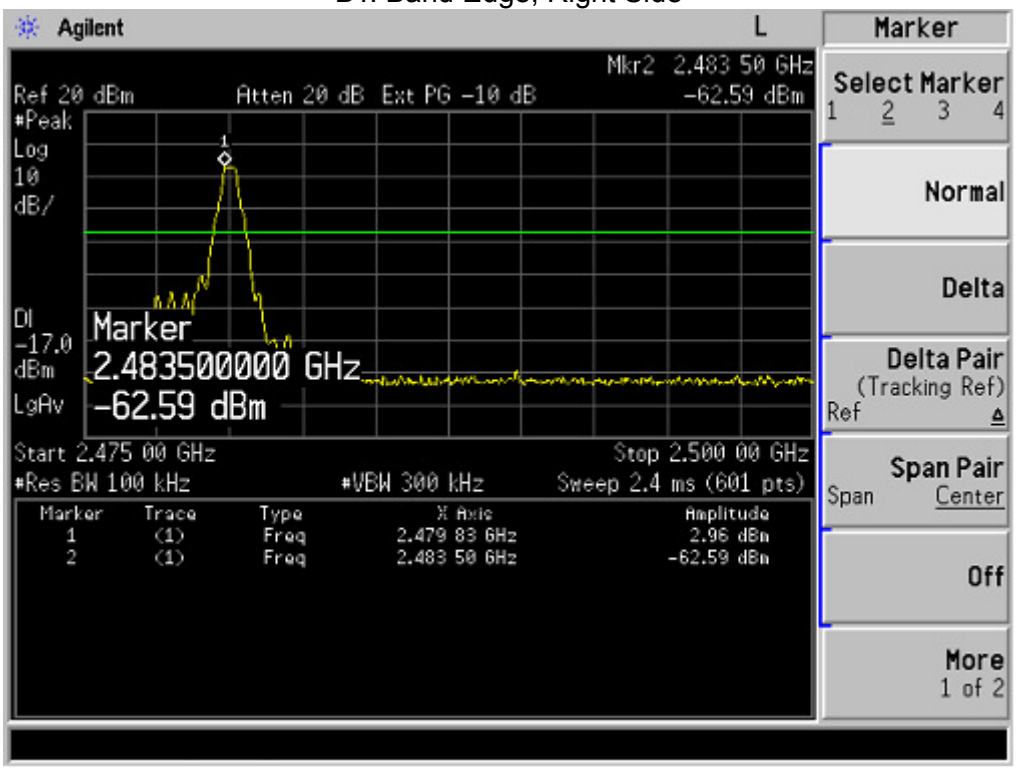
802.11n-HT40: Band Edge, Right Side



BT: Band Edge, Left Side



BT: Band Edge, Right Side



8. DUTY CYCLE OF TEST SIGNAL

8.1 STANDARD REQUIREMENT

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

8.2 FORMULA:

Duty Cycle = Ton / (Ton+Toff)

Measurement Procedure:

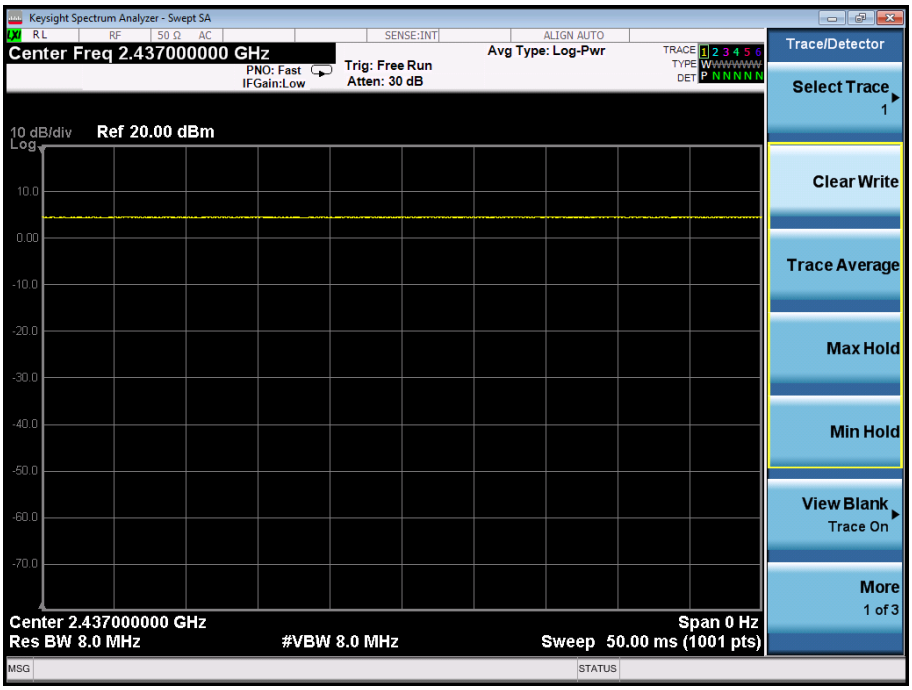
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

Duty Cycle:

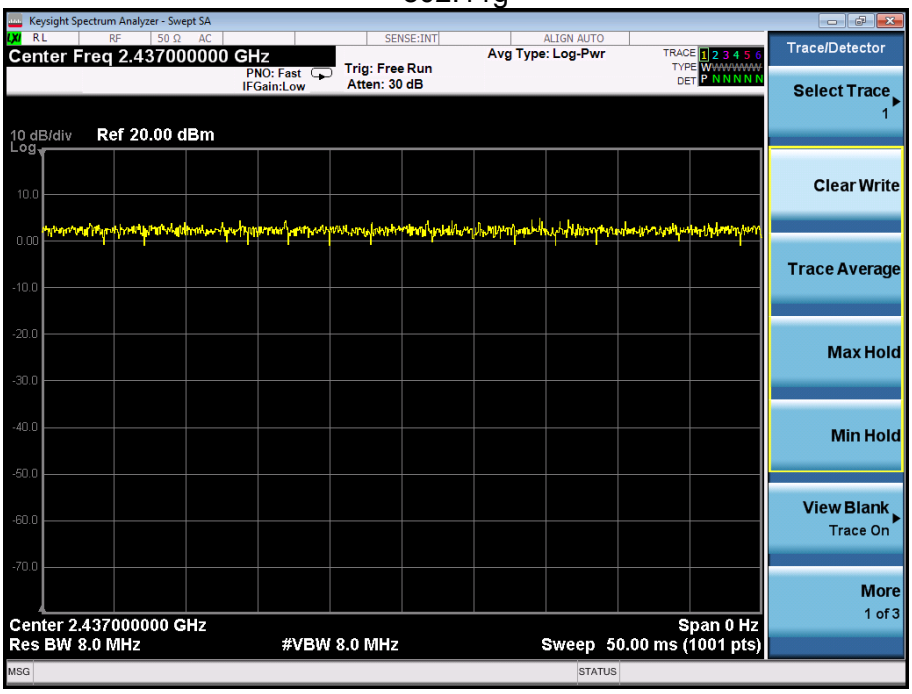
WIFI	Duty Cycle	Duty Fator (dB)
802.11b	100%	0
802.11g	100%	0
802.11n(HT20)	100%	0
802.11n(HT40)	100%	0

BT	Duty Cycle	Duty Fator (dB)
BLE	100%	0

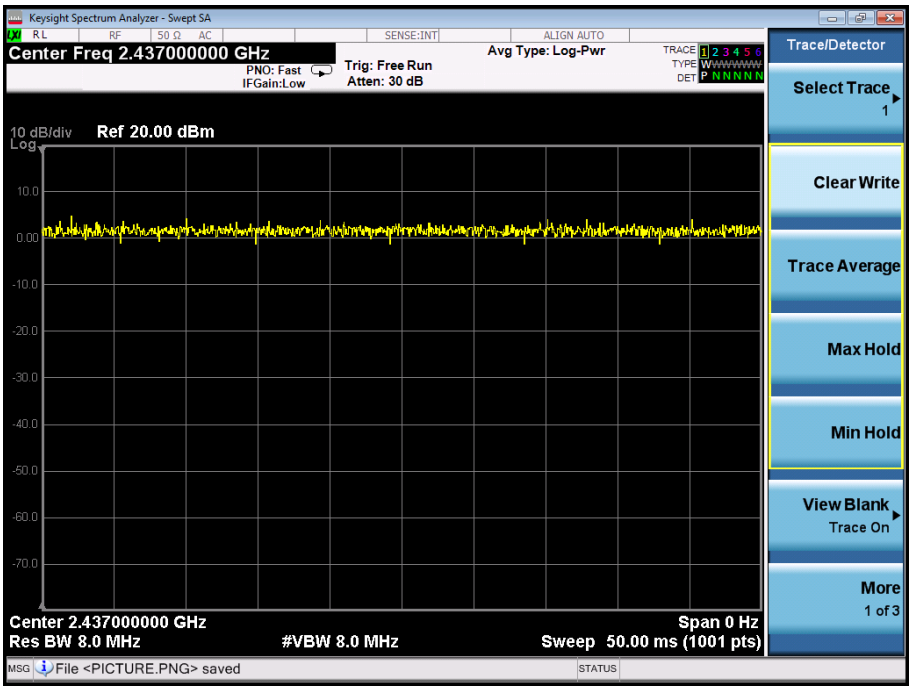
802.11b



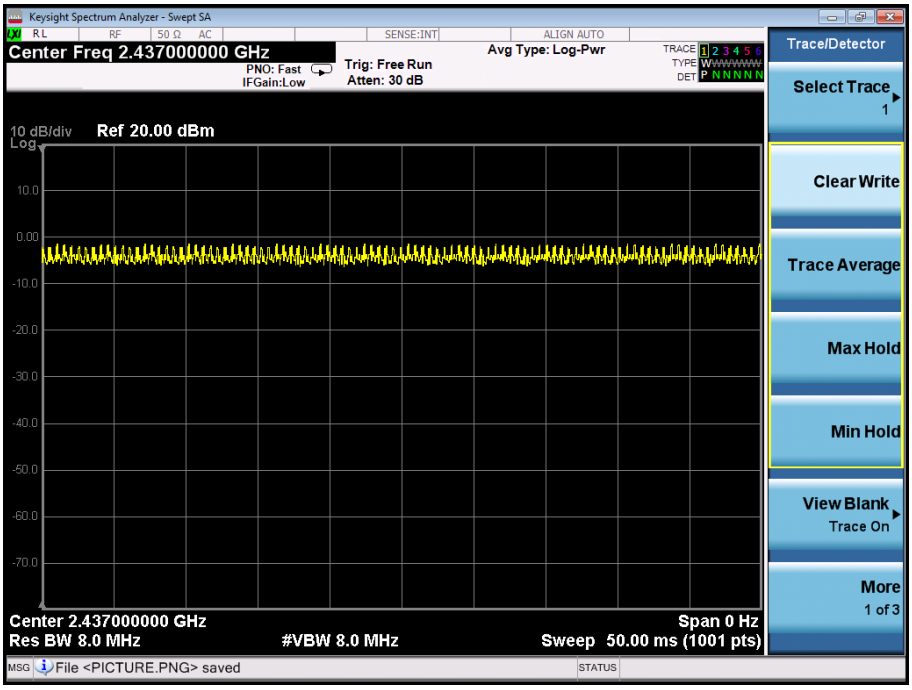
802.11g



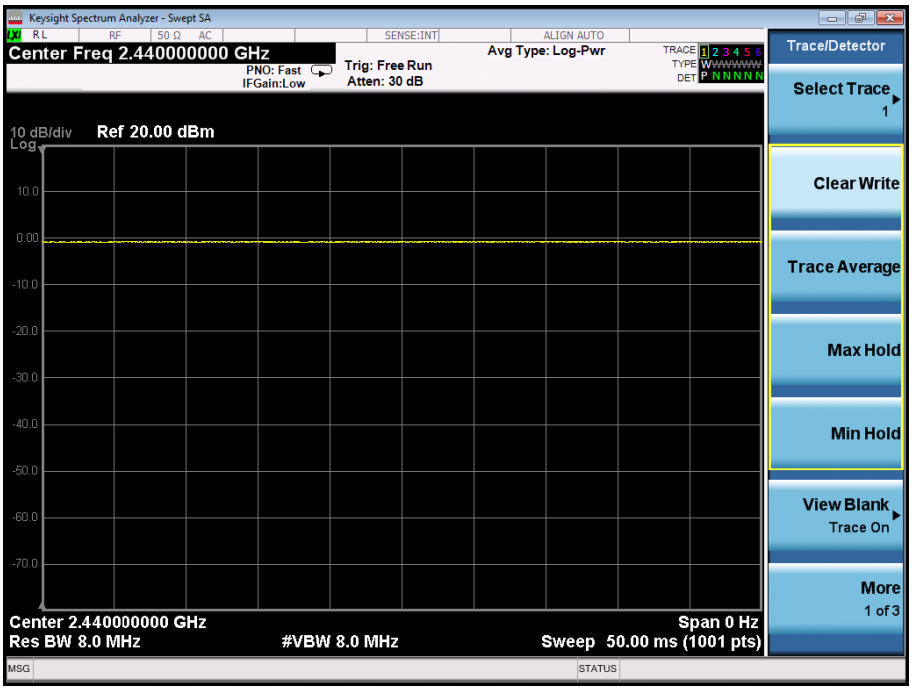
802.11n20



802.11n40



BT


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.440000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Trace/Detector
Select Trace
1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank
Trace On
More
1 of 3
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.440000000 GHz
Res BW 8.0 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 50.00 ms (1001 pts)

9. ANTENNA REQUIREMENT

9.1 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.

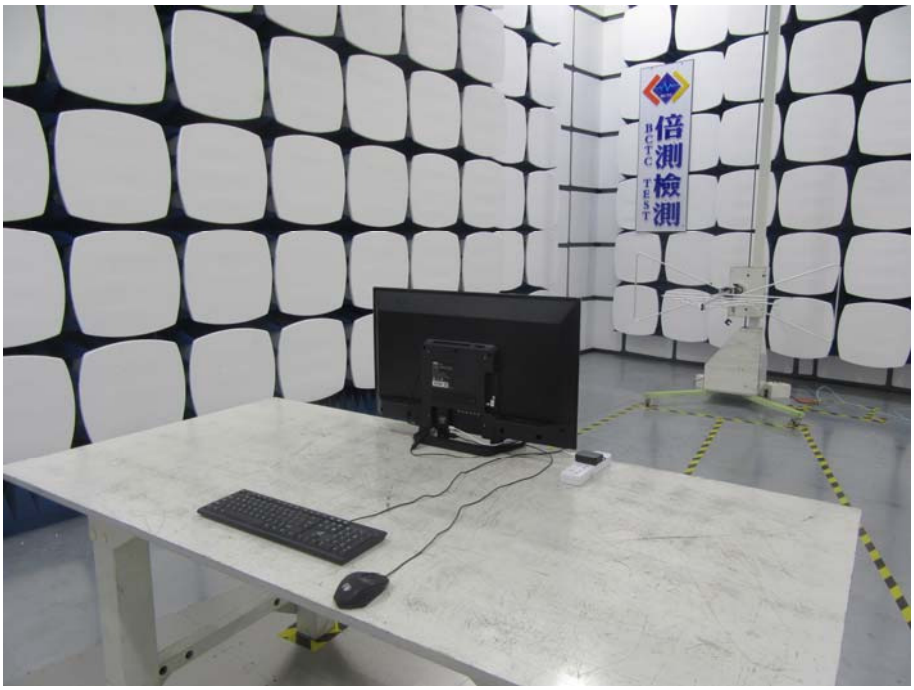
9.2 EUT ANTENNA

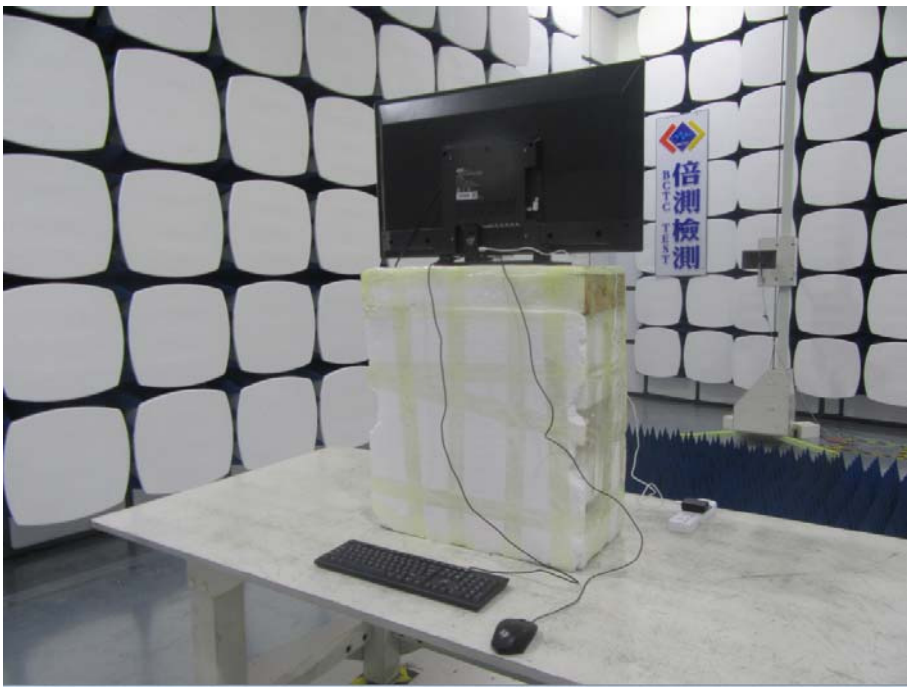
The EUT antenna is internal antenna, It comply with the standard requirement.

10. EUT TEST PHOTO

Conducted Emission

Radiated Measurement Photos





AOC

11. EUT PHOTO

※※※※※ **END OF REPORT** ※※※※※