FCC Report (WIFI)

Applicant:	VIAROOM NETWORKS
Address of Applicant:	36, STIRBEI VODA STREET, FLOOR 2, OFFICE 5-B, 010113 BUCHAREST, ROMANIA
Manufacturer:	VIAROOM NETWORKS
Address of Manufacturer:	36, STIRBEI VODA STREET, FLOOR 2, OFFICE 5-B, 010113 BUCHAREST, ROMANIA
Factory:	SHENZHEN GIEC DIGITAL CO., LTD
Address of Factory:	1 Building,Factory,.7 District,Dayang Development Areas, Fuyong Street, Bao'an, Shenzhen, Guangdong, China

Equipment Under Test (EUT)

Product Name:	VIAROOM Home
Model No.:	VH-1
FCC ID:	2AOK3-VH1
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247:2017
Date of sample receipt:	January 08, 2018
Date of Test:	January 09-15, 2018
Date of report issued:	January 15, 2018
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	*January 15, 2018*	*Original*

Prepared By:	Bill. Yuan	***Date:***	*January 15, 2018*
	Project Engineer		
Check By:	Andy. wu	***Date:***	*January 15, 2018*
	Reviewer		

3 Contents

Page

1 COVER PAGE 1

2 VERSION 2

3 CONTENTS 3

4 TEST SUMMARY 4

5 GENERAL INFORMATION 5

5.1 GENERAL DESCRIPTION OF EUT 5
5.2 TEST MODE 6
5.3 DESCRIPTION OF SUPPORT UNITS 6
5.4 TEST FACILITY 7
5.5 TEST LOCATION 7
5.6 ADDITIONAL INSTRUCTIONS 8

6 TEST INSTRUMENTS LIST 9

7 TEST RESULTS AND MEASUREMENT DATA 10

7.1 ANTENNA REQUIREMENT 10
7.2 CONDUCTED EMISSIONS 11
7.3 CONDUCTED PEAK OUTPUT POWER 14
7.4 CHANNEL BANDWIDTH 15
7.5 POWER SPECTRAL DENSITY 20
7.6 BAND EDGES 25
7.6.1 Conducted Emission Method 25
7.6.2 Radiated Emission Method 28
7.7 SPURIOUS EMISSION 33
7.7.1 Conducted Emission Method 33
7.7.2 Radiated Emission Method 38

8 TEST SETUP PHOTO 54

9 EUT CONSTRUCTIONAL DETAILS 56

4 Test Summary

Test Item	Section in CFR 47	Tested Samples ID	Result
Antenna requirement	15.203/15.247 (c)	GTS201712000084-1	Pass
AC Power Line Conducted Emission	15.207	GTS201712000084-1	Pass
Conducted Peak Output Power	15.247 (b)(3)	GTS201712000084-1	Pass
Channel Bandwidth	15.247 (a)(2)	GTS201712000084-1	Pass
Power Spectral Density	15.247 (e)	GTS201712000084-1	Pass
Band Edge	15.247(d)	GTS201712000084-1	Pass
Spurious Emission	15.205/15.209	GTS201712000084-1	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.4:2014 and ANSI C63.10:2013.

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	VIAROOM Home
Model No.:	VH-1
Sample(s) Status:	Engineer sample
Quantity of tested samples	1
Serial No.:	VH-12018012500001
Tested Sample(s) ID:	GTS201712000084-1
Operation Frequency:	802.11b/802.11g/802.11n(HT20): 2412MHz~2462MHz 802.11n(HT40):2422MHz~2452MHz
Channel numbers:	802.11b/802.11g /802.11n(HT20): 11 802.11n(HT40):9
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(H20)/802.11n(HT40): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	Integral antenna
Antenna gain:	2.0 dBi(declare by Applicant)
Power supply:	SWITCHING ADAPTOR MODEL: FJ-SW1260502000DN INPUT: 100-240V 50/60Hz 0.4A Max OUTPUT: 5V 2000mA

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	**Frequency (MHz)**	
	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the dutycycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

5.3 Description of Support Units

None

5.4 Test Facility

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

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383, January 08, 2018.

● **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.5 Test Location

All tests were performed at:

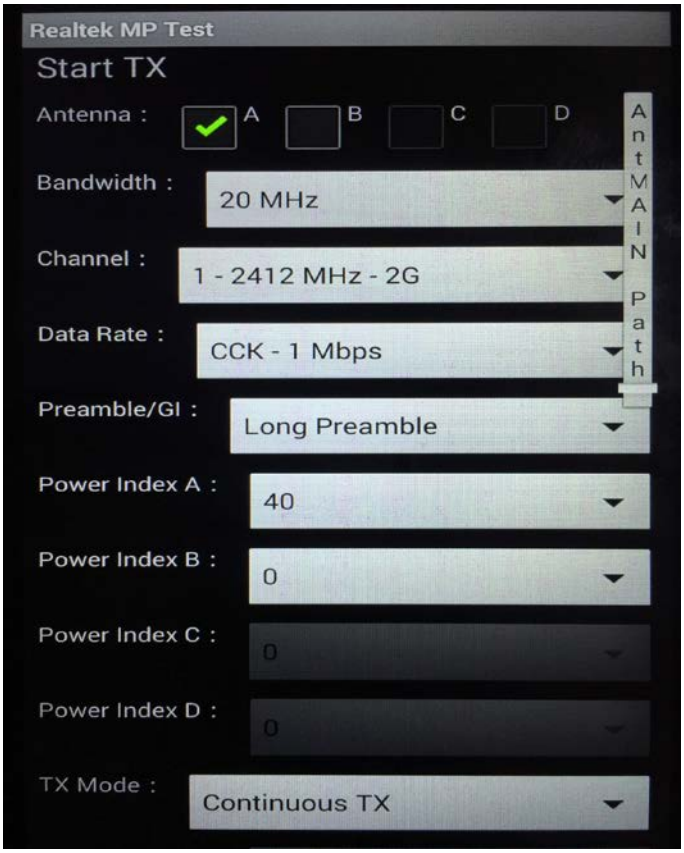
Global United Technology Services Co., Ltd.
Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

5.6 Additional Instructions

Software (Used for test) from client

Mode	Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.		
Power level setup in software			
Test Software Name	RtkWiFiTest		
Test Software Version	v1.8.1		
Support Units (Software installation media)	Description	Manufacturer	Model
	LCD TV	PHILIPS	AU1A1212002906
Mode	Channel	Frequency (MHz)	Soft Set
802.11b/g/n(HT20)	CH1	2412	TX level is built-in set parameters and cannot be changed and selected.
	CH6	2437	
	CH11	2462	
802.11n(HT40)	CH3	2422	
	CH6	2437	
	CH9	2452	

Run Software



6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	July. 03 2015	July 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	June 28 2017	June 27 2018
4	Loop Antenna	Zhinan	ZN30900A	GTS534	June 28 2017	June 27 2018
5	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	June 28 2017	June 27 2018
6	Double-ridged horn antenna	SCHWARZBECK	9120D	GTS208	June 28 2017	June 27 2018
7	Horn Antenna	ETS-LINDGREN	3160-09	GTS218	June 28 2017	June 27 2018
8	RF Amplifier	HP	8347A	GTS204	June 28 2017	June 27 2018
9	RF Amplifier	HP	8349B	GTS206	June 28 2017	June 27 2018
10	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	June 28 2017	June 27 2018
11	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	June 28 2017	June 27 2018
12	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
13	Coaxial Cable	GTS	N/A	GTS210	June 28 2017	June 27 2018
14	Coaxial Cable	GTS	N/A	GTS211	June 28 2017	June 27 2018
15	Coaxial Cable	GTS	N/A	GTS210	June 28 2017	June 27 2018
16	Coaxial Cable	GTS	N/A	GTS212	June 28 2017	June 27 2018
17	Thermo meter	N/A	N/A	GTS256	June 28 2017	June 27 2018
18	D.C. Power Supply	Instek	PS-3030	GTS232	June 28 2017	June 27 2018

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2014	May 15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June 28 2017	June 27 2018
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 28 2017	June 27 2018
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June 28 2017	June 27 2018
5	High voltage probe	SCHWARZBECK	TK9420	GTS537	June 28 2017	June 27 2018
6	ISN	SCHWARZBECK	NTFM 8158	GTS565	June 28 2017	June 27 2018
7	Coaxial Cable	GTS	N/A	GTS227	June 28 2017	June 27 2018
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Thermo meter	KTJ	TA328	GTS233	June 28 2017	June 27 2018
10	10dB Pulse Limiter	Rohde & Schwarz	N/A	GTS224	June 28 2017	June 27 2018

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Barometer	ChangChun	DYM3	GTS257	June 28 2017	June 27 2018

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

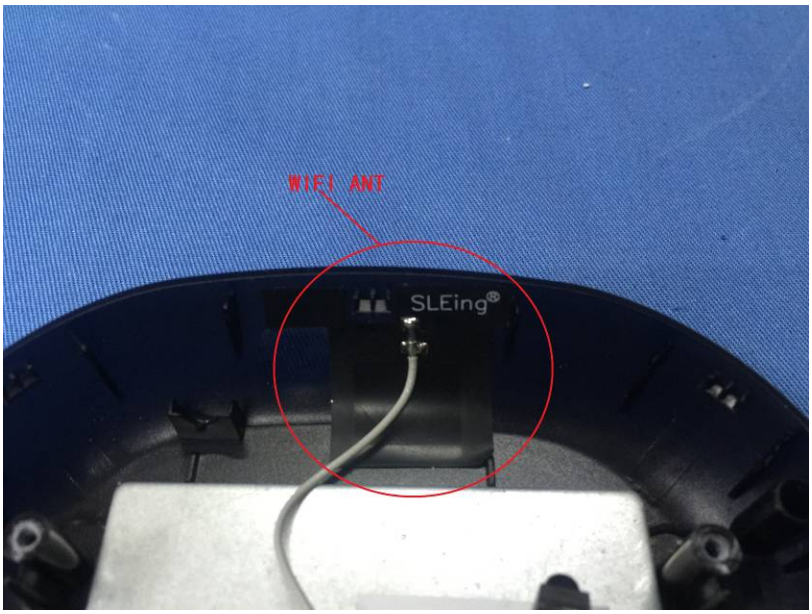
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

EUT Antenna:

The antenna is Integral antenna, the best case gain of the antenna is 2.0 dBi



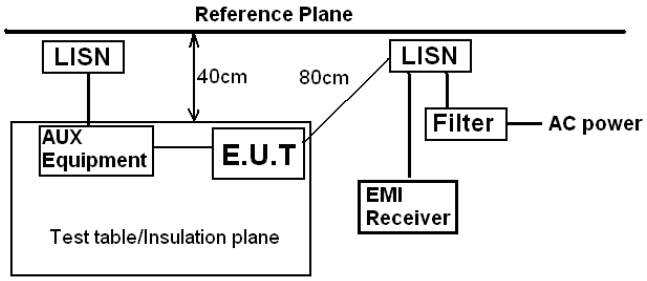
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test setup:



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

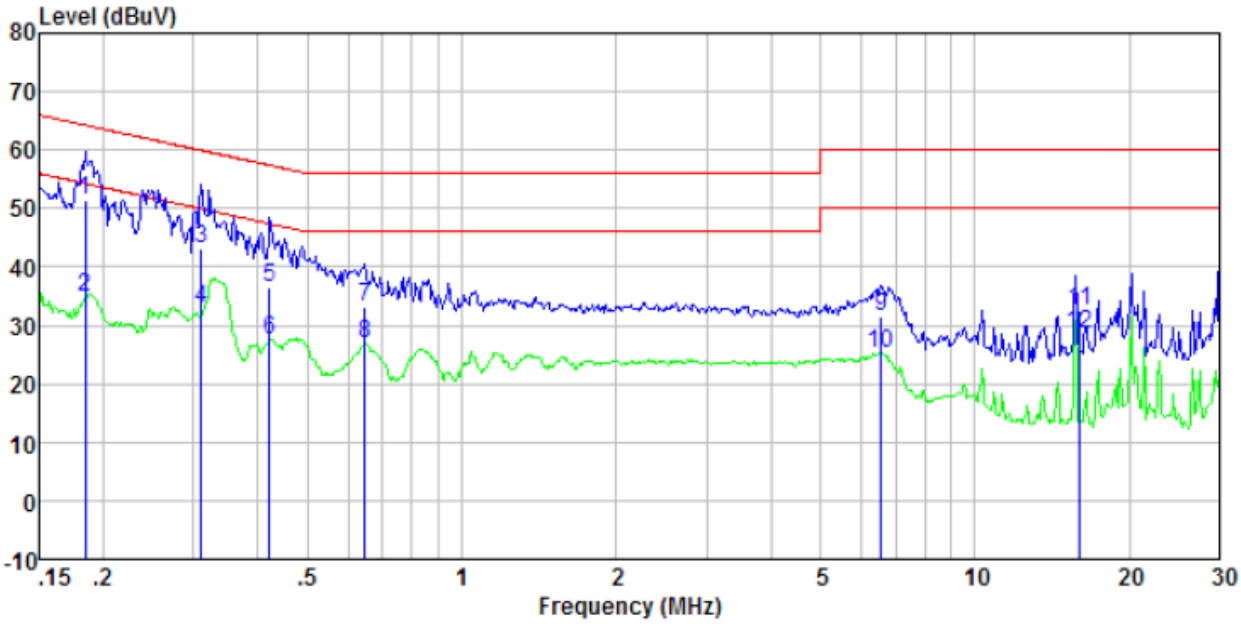
Test procedure:

1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.

Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

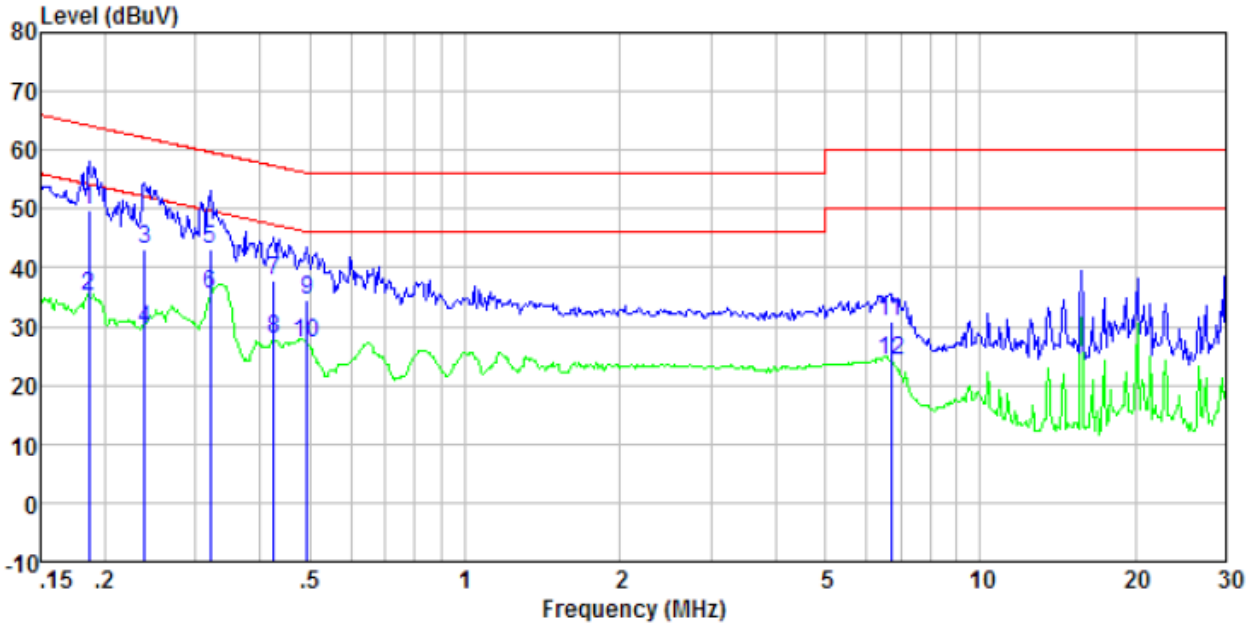
Measurement data

Line:



Freq MHz	Reading level dBuV	lISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.184	50.81	0.40	0.10	51.31	64.28	-12.97	QP
0.184	34.20	0.40	0.10	34.70	54.28	-19.58	Average
0.310	42.76	0.39	0.10	43.25	59.97	-16.72	QP
0.310	32.48	0.39	0.10	32.97	49.97	-17.00	Average
0.421	36.08	0.34	0.11	36.53	57.42	-20.89	QP
0.421	26.93	0.34	0.11	27.38	47.42	-20.04	Average
0.647	32.65	0.27	0.12	33.04	56.00	-22.96	QP
0.647	26.47	0.27	0.12	26.86	46.00	-19.14	Average
6.557	31.14	0.20	0.18	31.52	60.00	-28.48	QP
6.557	24.75	0.20	0.18	25.13	50.00	-24.87	Average
16.000	32.20	0.22	0.21	32.63	60.00	-27.37	QP
16.000	28.02	0.22	0.21	28.45	50.00	-21.55	Average

Neutral:

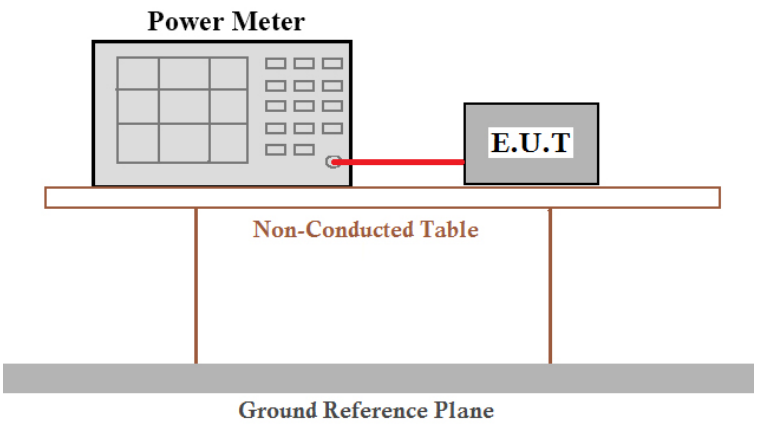


Freq MHz	Reading level dBuV	lISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.186	49.32	0.40	0.10	49.82	64.20	-14.38	QP
0.186	34.60	0.40	0.10	35.10	54.20	-19.10	Average
0.239	42.50	0.40	0.11	43.01	62.13	-19.12	QP
0.239	28.99	0.40	0.11	29.50	52.13	-22.63	Average
0.320	42.78	0.39	0.10	43.27	59.71	-16.44	QP
0.320	34.86	0.39	0.10	35.35	49.71	-14.36	Average
0.426	37.41	0.34	0.11	37.86	57.33	-19.47	QP
0.426	27.33	0.34	0.11	27.78	47.33	-19.55	Average
0.494	34.02	0.32	0.11	34.45	56.10	-21.65	QP
0.494	26.64	0.32	0.11	27.07	46.10	-19.03	Average
6.698	30.37	0.20	0.18	30.75	60.00	-29.25	QP
6.698	23.94	0.20	0.18	24.32	50.00	-25.68	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

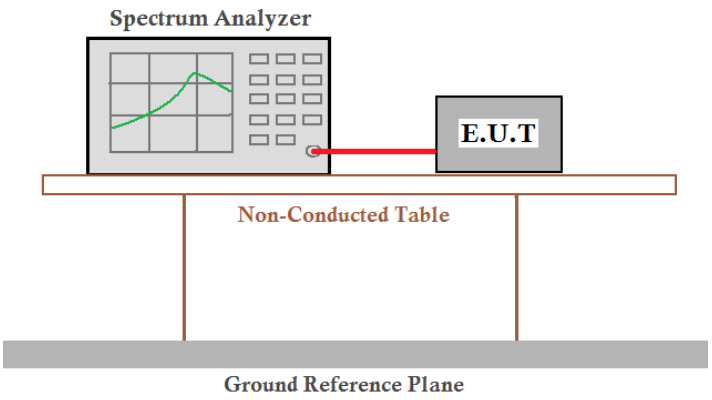
7.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074 D01 DTS Meas Guidance V03
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Test CH	Peak Output Power (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	17.27	16.46	15.14	14.67	30.00	Pass
Middle	16.91	16.23	15.04	14.37		
Highest	16.90	15.95	14.99	14.07		

7.4 Channel Bandwidth

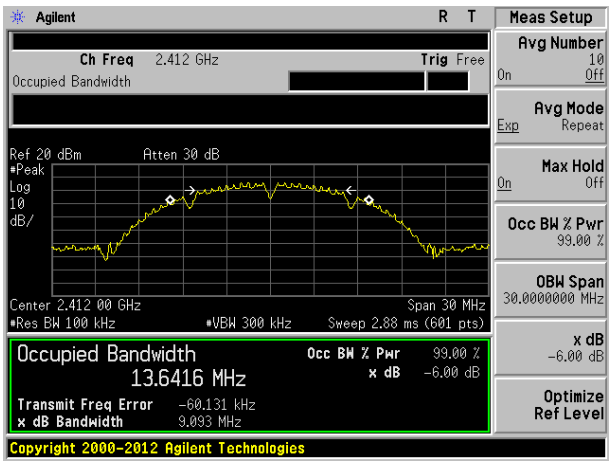
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB558074 D01 DTS Meas Guidance V03
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

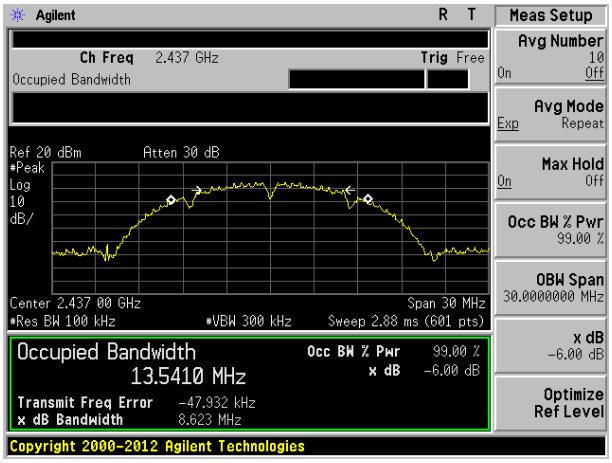
Test CH	Channel Bandwidth (MHz)				Limit(KHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	9.093	16.388	17.540	36.059	>500	Pass
Middle	8.623	16.348	17.349	36.591		
Highest	9.066	16.403	17.576	36.031		

Test plot as follows:

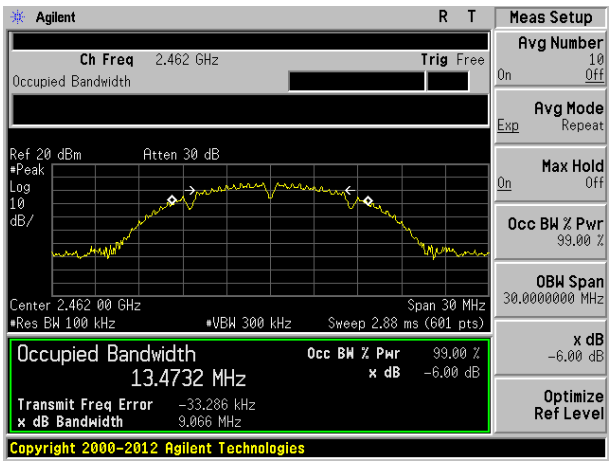
Test mode:	802.11b



Lowest channel

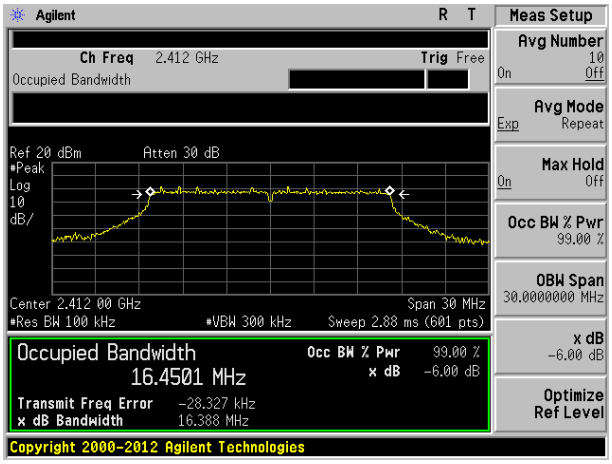


Middle channel

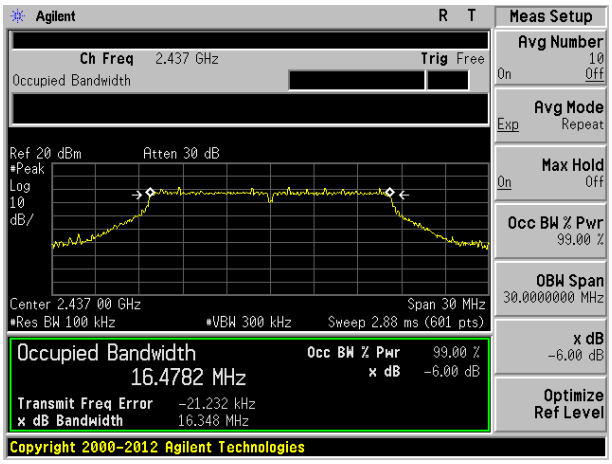


Highest channel

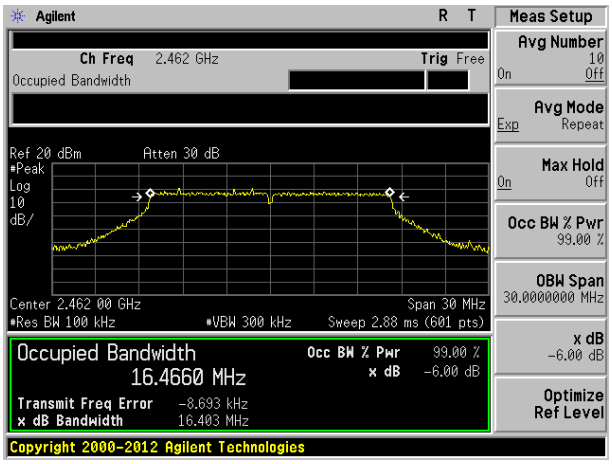
Test mode:	802.11g



Lowest channel

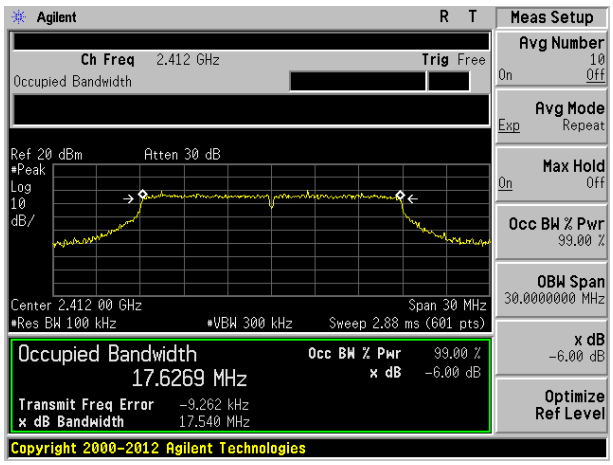


Middle channel

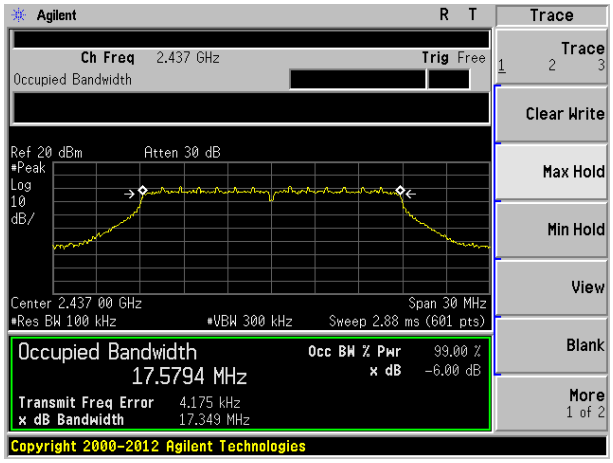


Highest channel

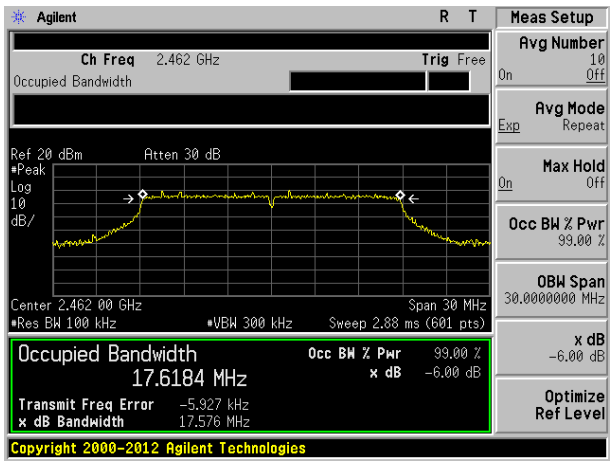
Test mode:	802.11n(HT20)



Lowest channel

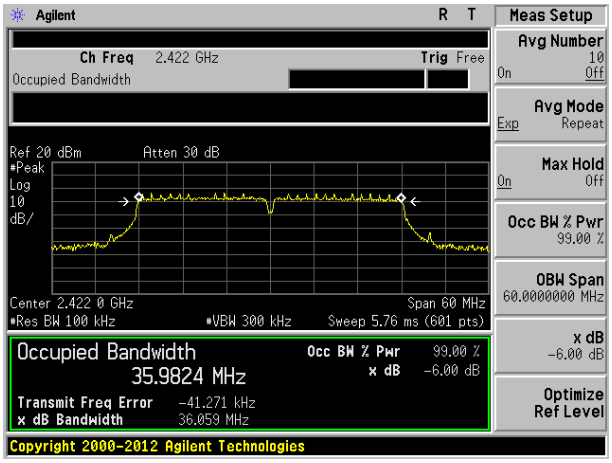


Middle channel

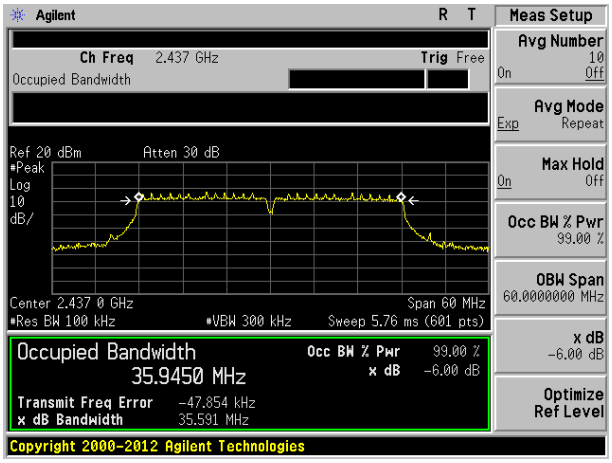


Highest channel

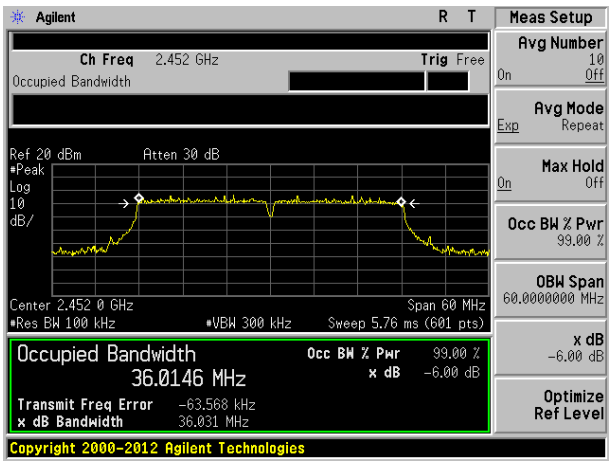
Test mode:	802.11n(HT40)



Lowest channel

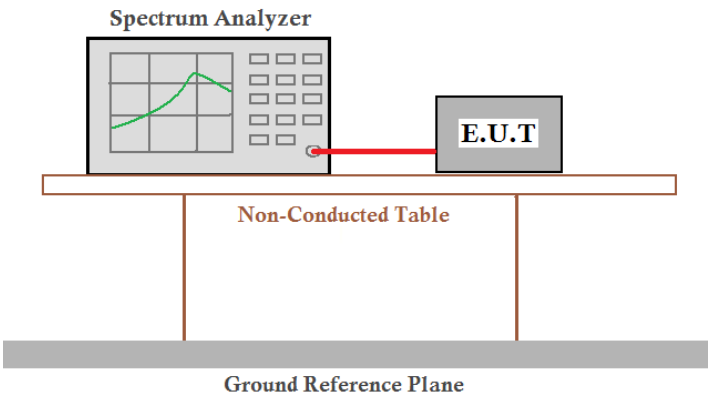


Middle channel



Highest channel

7.5 Power Spectral Density

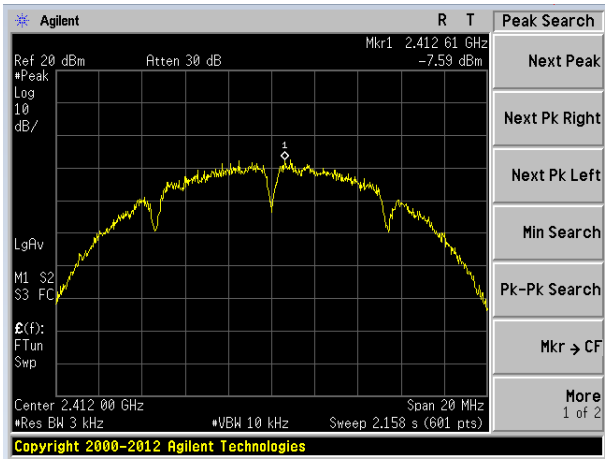
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB558074 D01 DTS Meas Guidance V03
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

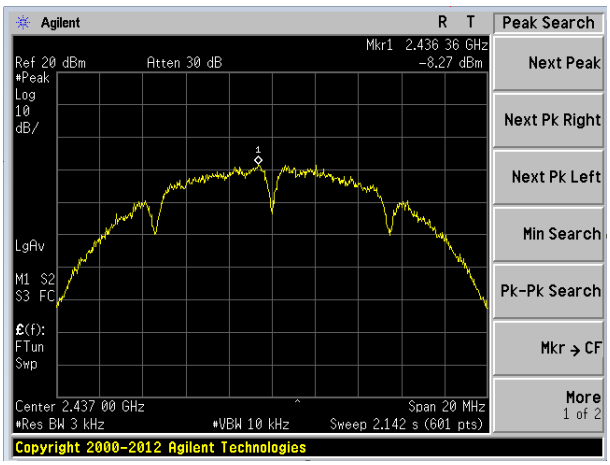
Test CH	Power Spectral Density (dBm)				Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	-7.59	-12.44	-14.74	-18.36	8.00	Pass
Middle	-8.27	-12.94	-14.30	-18.31		
Highest	-5.96	-13.48	-14.76	-18.44		

Test plot as follows:

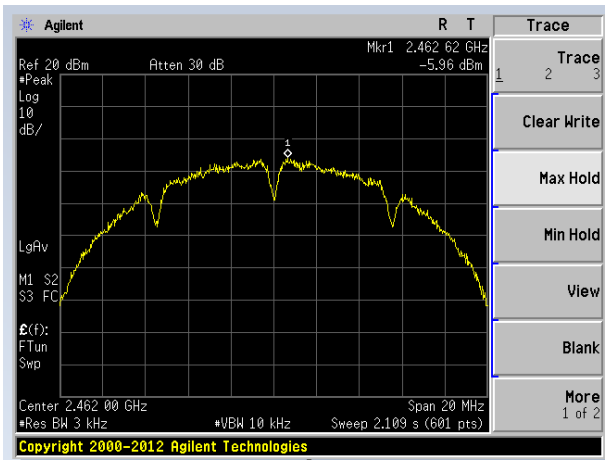
Test mode:	802.11b



Lowest channel

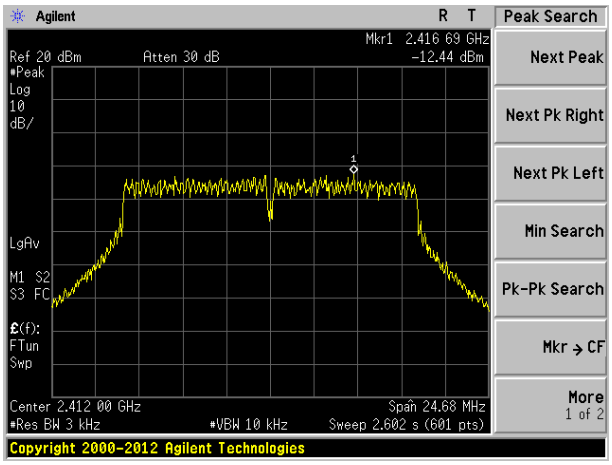


Middle channel

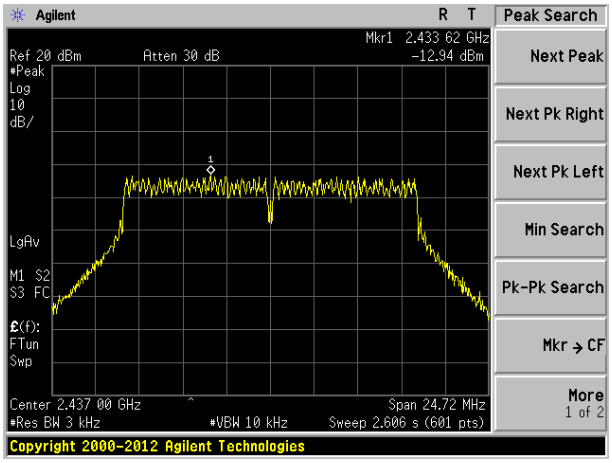


Highest channel

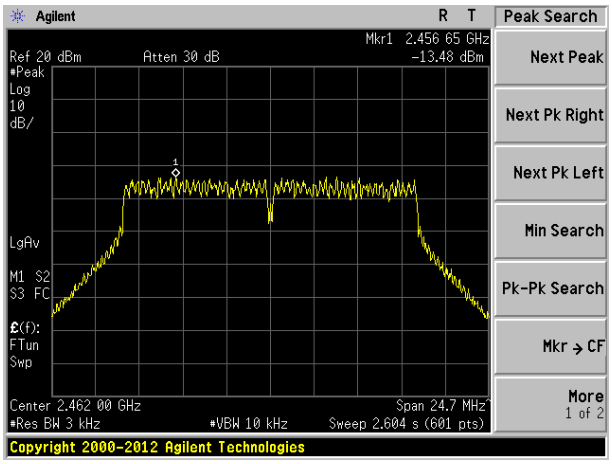
Test mode:	802.11g



Lowest channel

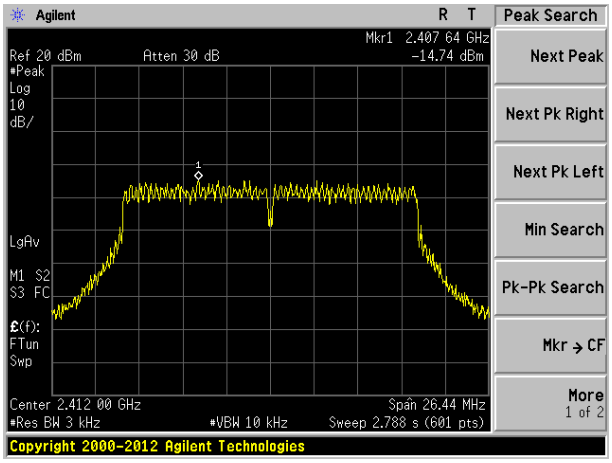


Middle channel

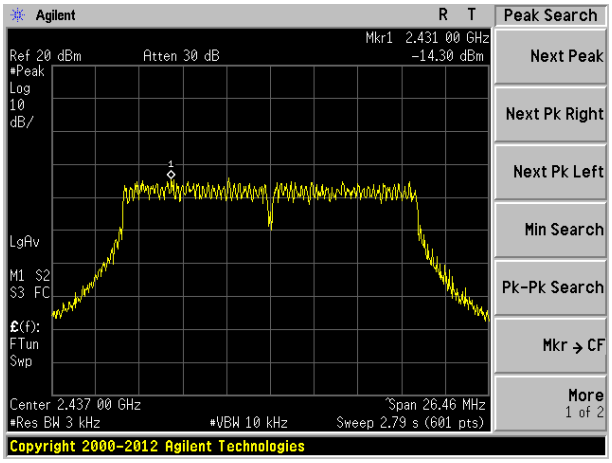


Highest channel

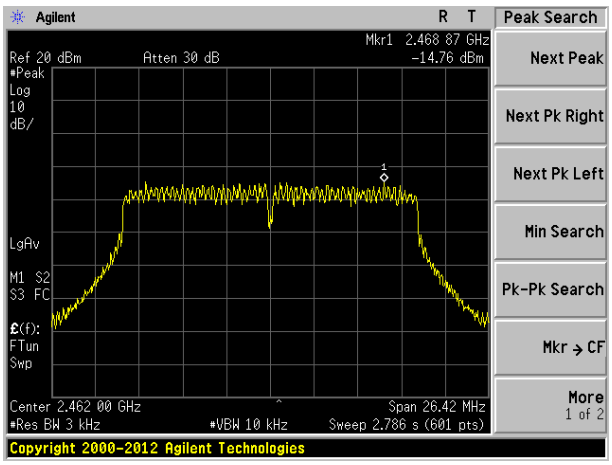
Test mode:	802.11n(HT20)



Lowest channel

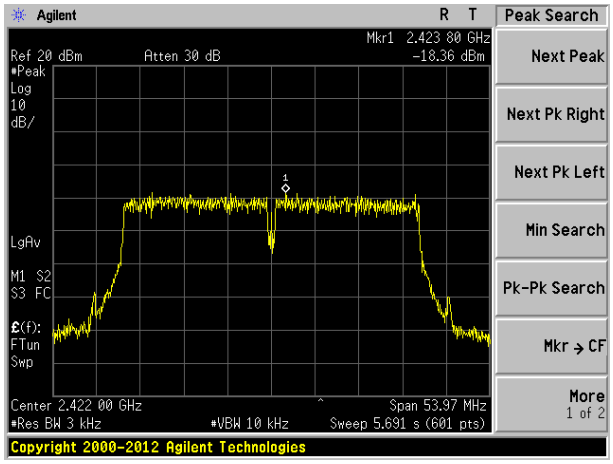


Middle channel

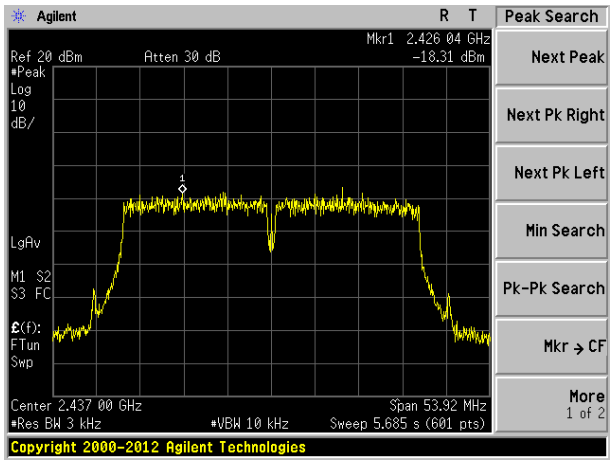


Highest channel

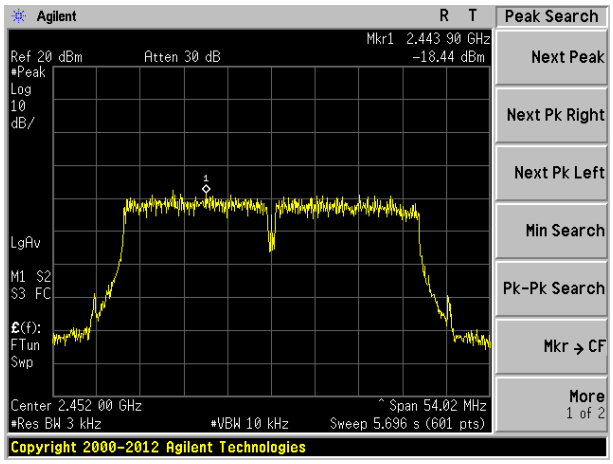
Test mode:	802.11n(HT40)



Lowest channel



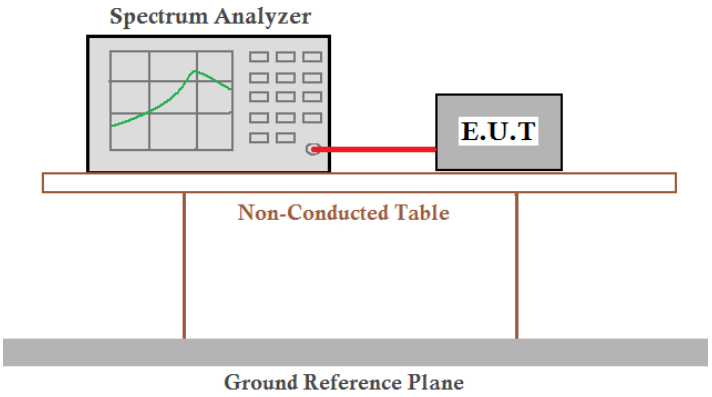
Middle channel



Highest channel

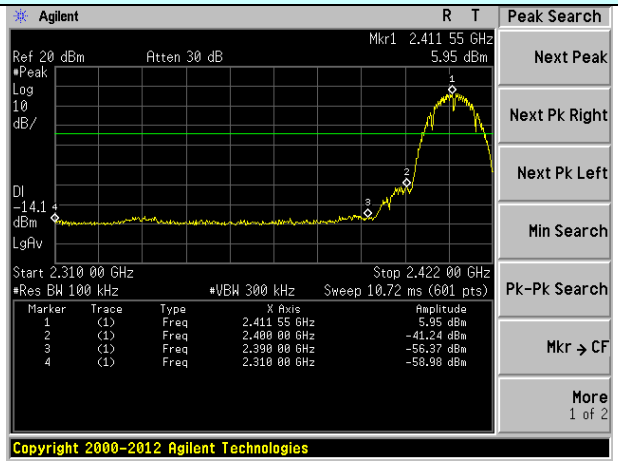
7.6 Band edges

7.6.1 Conducted Emission Method

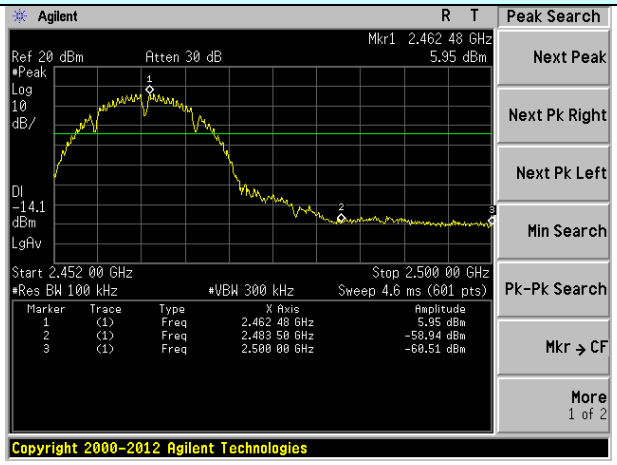
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D01 DTS Meas Guidance V03
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be 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.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

Test mode:	802.11b

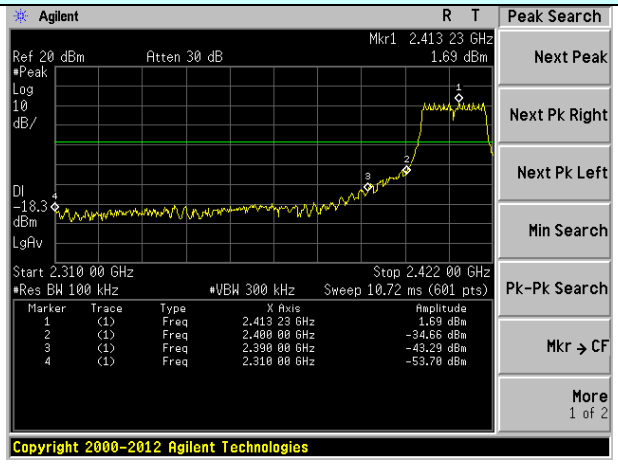


Lowest channel

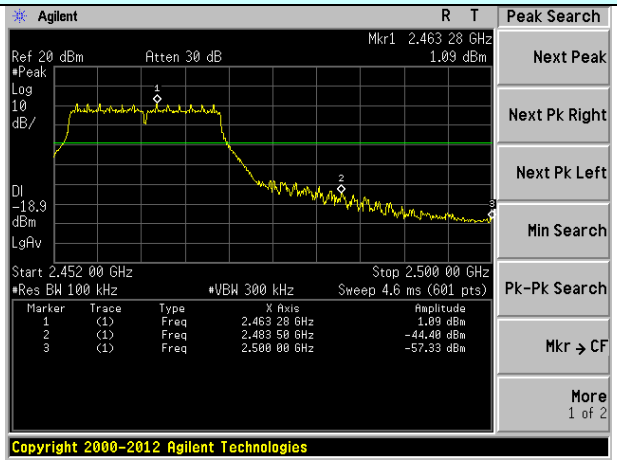


Highest channel

Test mode:	802.11g

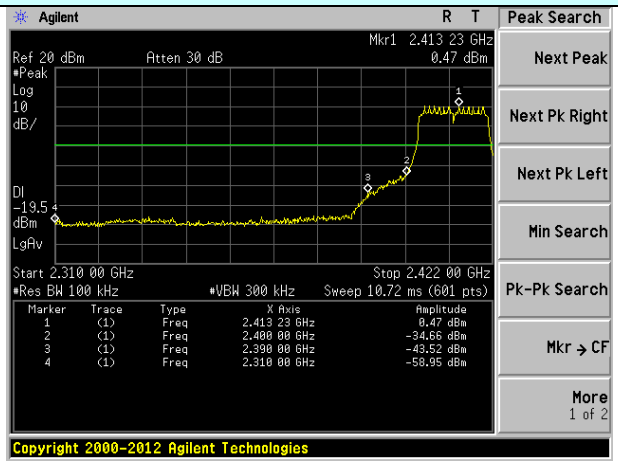


Lowest channel

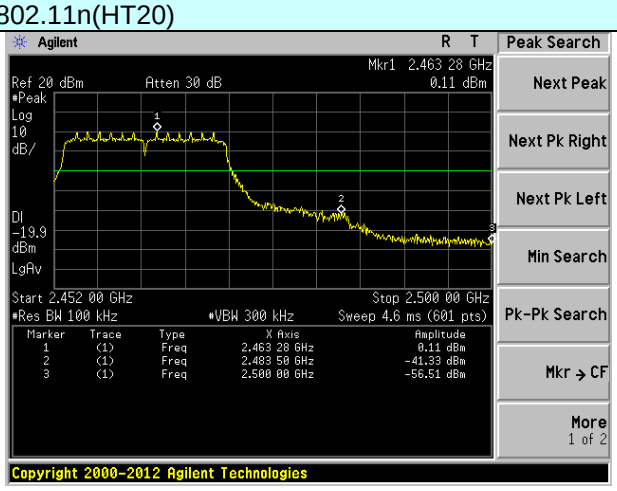


Highest channel

Test mode:	802.11n(HT20)

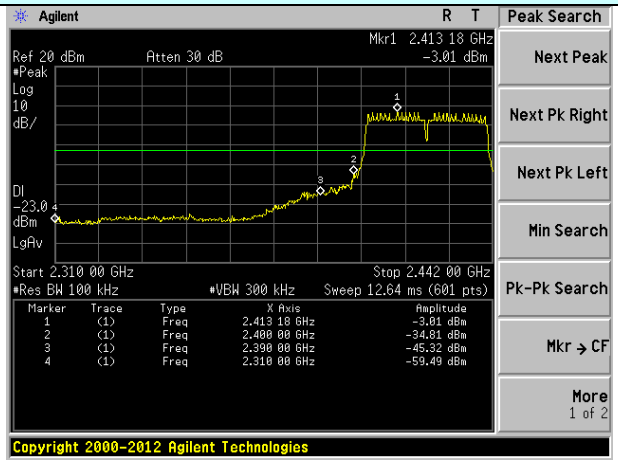


Lowest channel

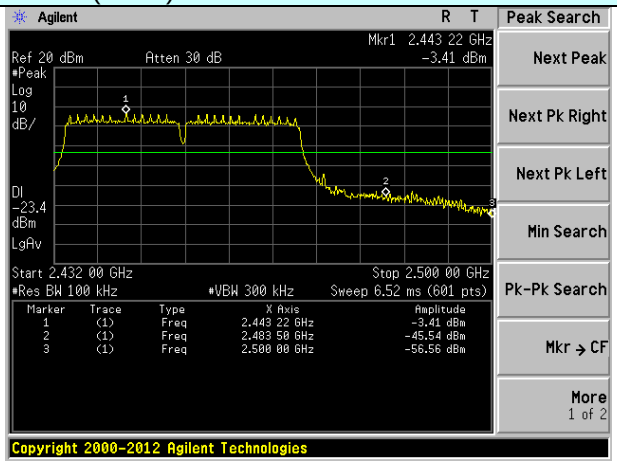


Highest channel

Test mode:	802.11n(HT40)



Lowest channel



Highest channel

7.6.2 Radiated Emission Method

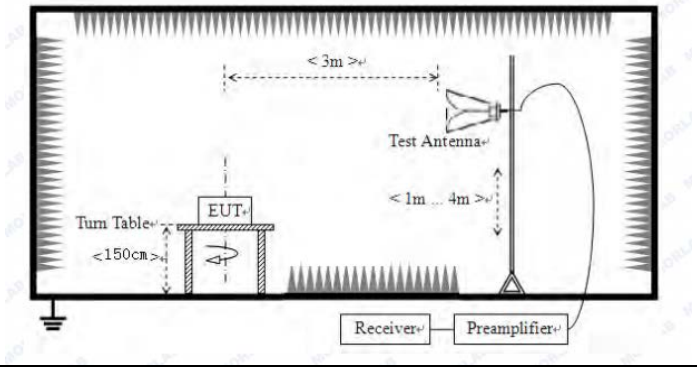
Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10:2013
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
Above 1GHz	Peak	1MHz	3MHz	Peak
	RMS	1MHz	3MHz	Average

Limit:

Frequency	Limit (dBuV/m @3m)	Value
Above 1GHz	54.00	Average
	74.00	Peak

Test setup:



Test Procedure:

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.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. 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.
4. 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.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. 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.
7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

Remark: The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

Test mode:	802.11b	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	53.71	27.59	5.38	34.01	52.67	74.00	-21.33	Horizontal
2400.00	63.41	27.58	5.39	34.01	62.37	74.00	-11.63	Horizontal
2390.00	55.53	27.59	5.38	34.01	54.49	74.00	-19.51	Vertical
2400.00	65.76	27.58	5.39	34.01	64.72	74.00	-9.28	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	39.88	27.59	5.38	34.01	38.84	54.00	-15.16	Horizontal
2400.00	48.39	27.58	5.39	34.01	47.35	54.00	-6.65	Horizontal
2390.00	41.86	27.59	5.38	34.01	40.82	54.00	-13.18	Vertical
2400.00	49.68	27.58	5.39	34.01	48.64	54.00	-5.36	Vertical

Test mode:	802.11b	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	55.25	27.53	5.47	33.92	54.33	74.00	-19.67	Horizontal
2500.00	50.42	27.55	5.49	29.93	53.53	74.00	-20.47	Horizontal
2483.50	57.93	27.53	5.47	33.92	57.01	74.00	-16.99	Vertical
2500.00	53.31	27.55	5.49	29.93	56.42	74.00	-17.58	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	40.55	27.53	5.47	33.92	39.63	54.00	-14.37	Horizontal
2500.00	36.26	27.55	5.49	29.93	39.37	54.00	-14.63	Horizontal
2483.50	42.68	27.53	5.47	33.92	41.76	54.00	-12.24	Vertical
2500.00	38.22	27.55	5.49	29.93	41.33	54.00	-12.67	Vertical

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test mode:	802.11g	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	52.16	27.59	5.38	34.01	51.12	74.00	-22.88	Horizontal
2400.00	61.34	27.58	5.39	34.01	60.30	74.00	-13.70	Horizontal
2390.00	53.88	27.59	5.38	34.01	52.84	74.00	-21.16	Vertical
2400.00	63.27	27.58	5.39	34.01	62.23	74.00	-11.77	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	38.77	27.59	5.38	34.01	37.73	54.00	-16.27	Horizontal
2400.00	47.12	27.58	5.39	34.01	46.08	54.00	-7.92	Horizontal
2390.00	40.63	27.59	5.38	34.01	39.59	54.00	-14.41	Vertical
2400.00	48.29	27.58	5.39	34.01	47.25	54.00	-6.75	Vertical

Test mode:	802.11g	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	53.03	27.53	5.47	33.92	52.11	74.00	-21.89	Horizontal
2500.00	48.70	27.55	5.49	29.93	51.81	74.00	-22.19	Horizontal
2483.50	55.39	27.53	5.47	33.92	54.47	74.00	-19.53	Vertical
2500.00	51.30	27.55	5.49	29.93	54.41	74.00	-19.59	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	39.21	27.53	5.47	33.92	38.29	54.00	-15.71	Horizontal
2500.00	35.22	27.55	5.49	29.93	38.33	54.00	-15.67	Horizontal
2483.50	41.21	27.53	5.47	33.92	40.29	54.00	-13.71	Vertical
2500.00	37.12	27.55	5.49	29.93	40.23	54.00	-13.77	Vertical

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test mode:	802.11n(HT20)	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	51.37	27.59	5.38	34.01	50.33	74.00	-23.67	Horizontal
2400.00	60.29	27.58	5.39	34.01	59.25	74.00	-14.75	Horizontal
2390.00	53.03	27.59	5.38	34.01	51.99	74.00	-22.01	Vertical
2400.00	62.01	27.58	5.39	34.01	60.97	74.00	-13.03	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	38.21	27.59	5.38	34.01	37.17	54.00	-16.83	Horizontal
2400.00	46.48	27.58	5.39	34.01	45.44	54.00	-8.56	Horizontal
2390.00	40.01	27.59	5.38	34.01	38.97	54.00	-15.03	Vertical
2400.00	47.58	27.58	5.39	34.01	46.54	54.00	-7.46	Vertical

Test mode:	802.11n(HT20)	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	51.91	27.53	5.47	33.92	50.99	74.00	-23.01	Horizontal
2500.00	47.82	27.55	5.49	29.93	50.93	74.00	-23.07	Horizontal
2483.50	54.11	27.53	5.47	33.92	53.19	74.00	-20.81	Vertical
2500.00	50.28	27.55	5.49	29.93	53.39	74.00	-20.61	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	38.53	27.53	5.47	33.92	37.61	54.00	-16.39	Horizontal
2500.00	34.69	27.55	5.49	29.93	37.80	54.00	-16.20	Horizontal
2483.50	40.46	27.53	5.47	33.92	39.54	54.00	-14.46	Vertical
2500.00	36.56	27.55	5.49	29.93	39.67	54.00	-14.33	Vertical

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test mode:	802.11n(HT40)	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	49.98	27.59	5.38	34.01	48.94	74.00	-25.06	Horizontal
2400.00	58.43	27.58	5.39	34.01	57.39	74.00	-16.61	Horizontal
2390.00	51.54	27.59	5.38	34.01	50.50	74.00	-23.50	Vertical
2400.00	59.77	27.58	5.39	34.01	58.73	74.00	-15.27	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	37.22	27.59	5.38	34.01	36.18	54.00	-17.82	Horizontal
2400.00	45.33	27.58	5.39	34.01	44.29	54.00	-9.71	Horizontal
2390.00	38.90	27.59	5.38	34.01	37.86	54.00	-16.14	Vertical
2400.00	46.33	27.58	5.39	34.01	45.29	54.00	-8.71	Vertical

Test mode:	802.11n(HT40)	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	49.91	27.53	5.47	33.92	48.99	74.00	-25.01	Horizontal
2500.00	46.28	27.55	5.49	29.93	49.39	74.00	-24.61	Horizontal
2483.50	51.83	27.53	5.47	33.92	50.91	74.00	-23.09	Vertical
2500.00	48.47	27.55	5.49	29.93	51.58	74.00	-22.42	Vertical

Average value:

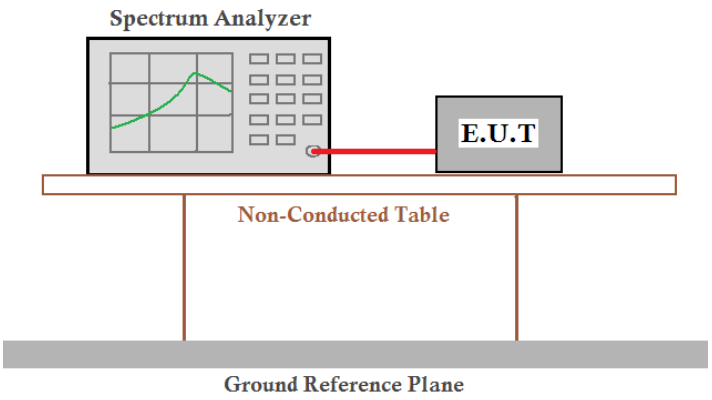
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.33	27.53	5.47	33.92	36.41	54.00	-17.59	Horizontal
2500.00	33.75	27.55	5.49	29.93	36.86	54.00	-17.14	Horizontal
2483.50	39.13	27.53	5.47	33.92	38.21	54.00	-15.79	Vertical
2500.00	35.57	27.55	5.49	29.93	38.68	54.00	-15.32	Vertical

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

7.7 Spurious Emission

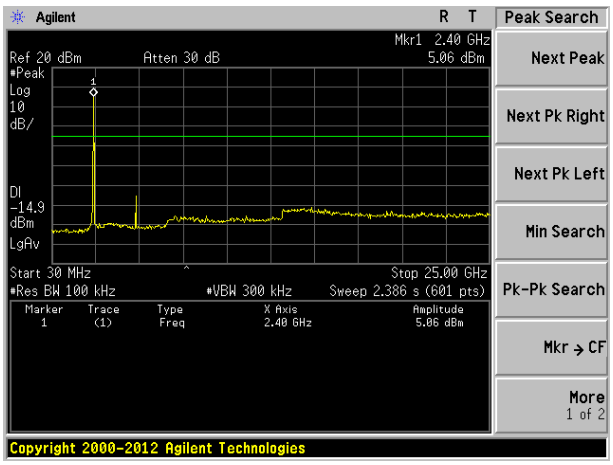
7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D01 DTS Meas Guidance V03
Limit:	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.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

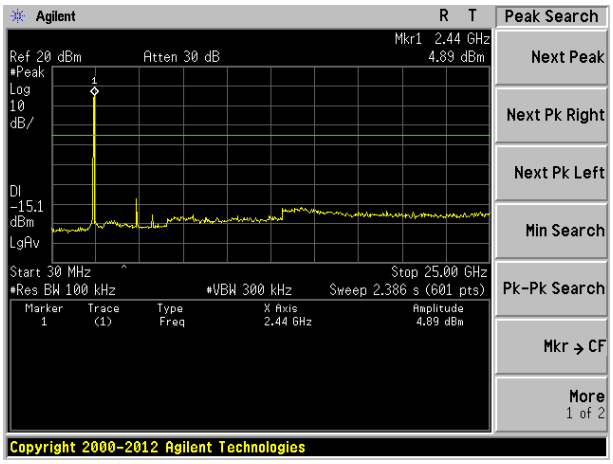
Test mode:	802.11b

Lowest channel



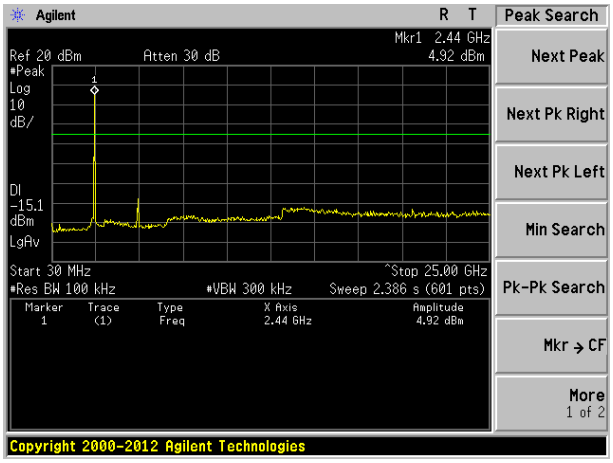
30MHz~25GHz

Middle channel



30MHz~25GHz

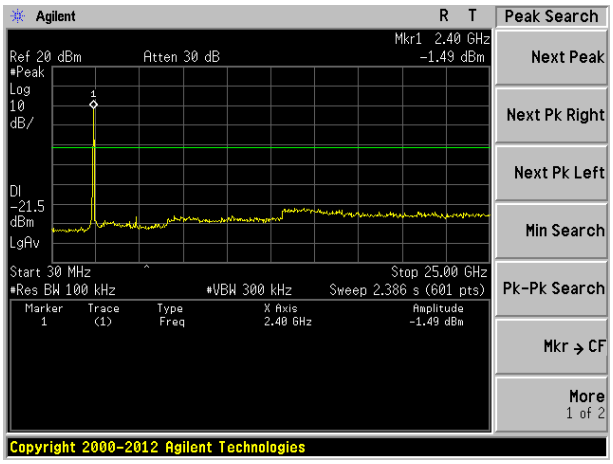
Highest channel



30MHz~25GHz

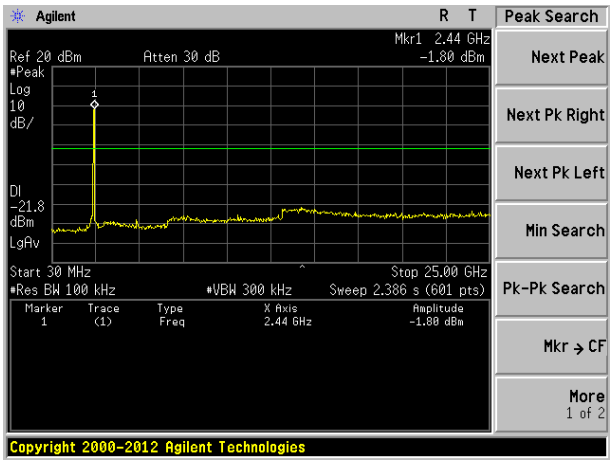
Test mode:	802.11g

Lowest channel



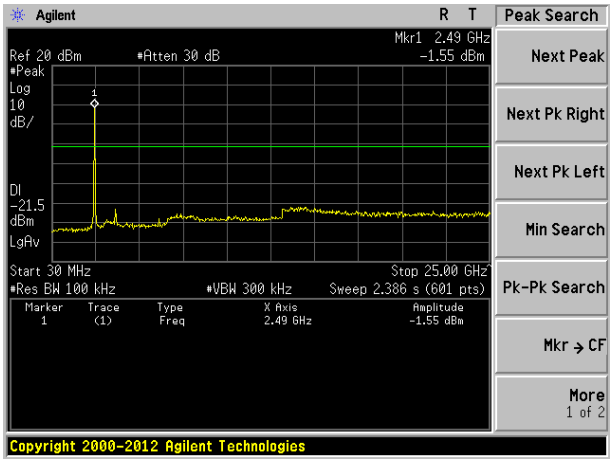
30MHz~25GHz

Middle channel



30MHz~25GHz

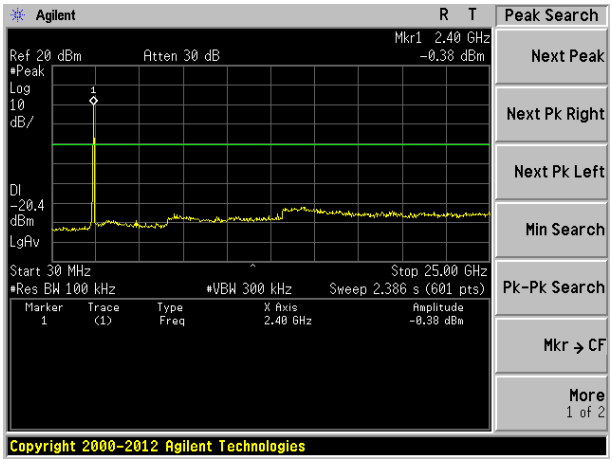
Highest channel



30MHz~25GHz

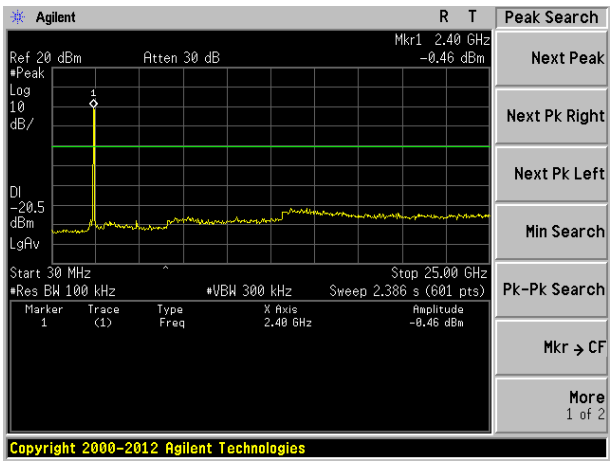
Test mode:	802.11n(HT20)

Lowest channel



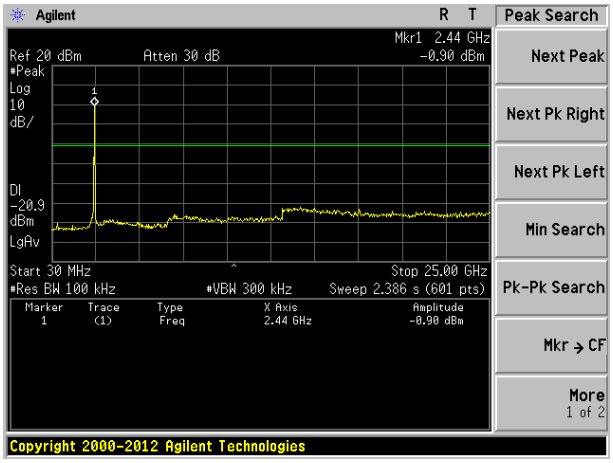
30MHz~25GHz

Middle channel



30MHz~25GHz

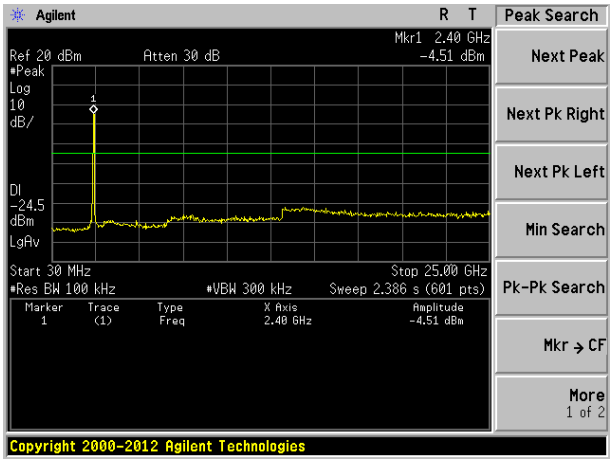
Highest channel



30MHz~25GHz

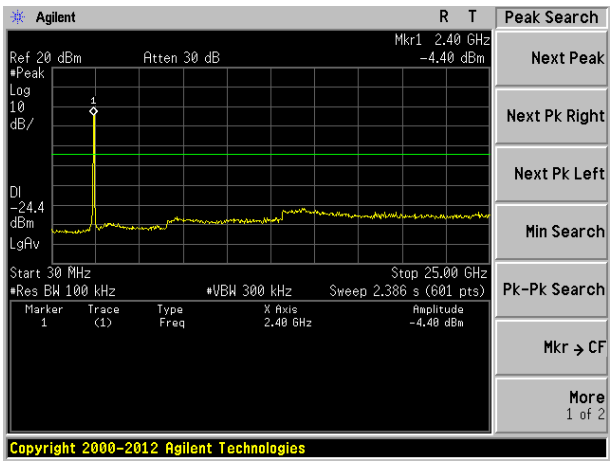
Test mode:	802.11n(HT40)

Lowest channel



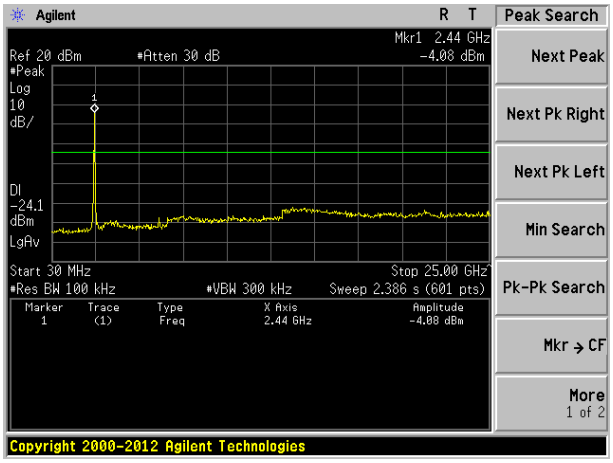
30MHz~25GHz

Middle channel



30MHz~25GHz

Highest channel



30MHz~25GHz

7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	30MHz to 25GHz
Test site:	Measurement Distance: 3m
Receiver setup:	

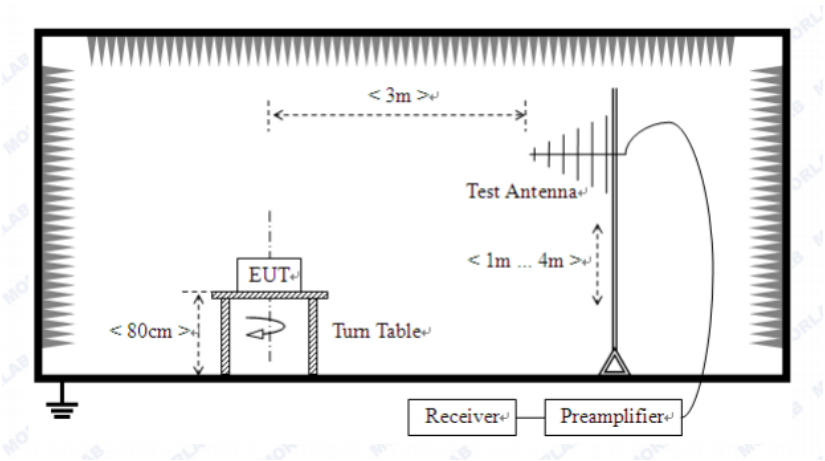
Frequency	Detector	RBW	VBW	Value
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	RMS	1MHz	3MHz	Average

Limit:

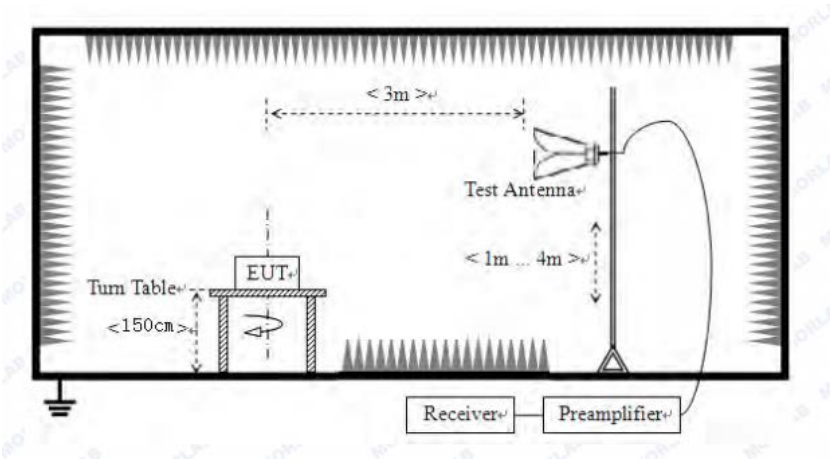
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

Test setup:

Below 1GHz



Above 1GHz

	
Test Procedure:	1. The EUT was placed on the top of a rotating table(0.8 meters below 1G and 1.5 meters above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. 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. 4. 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. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. 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. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

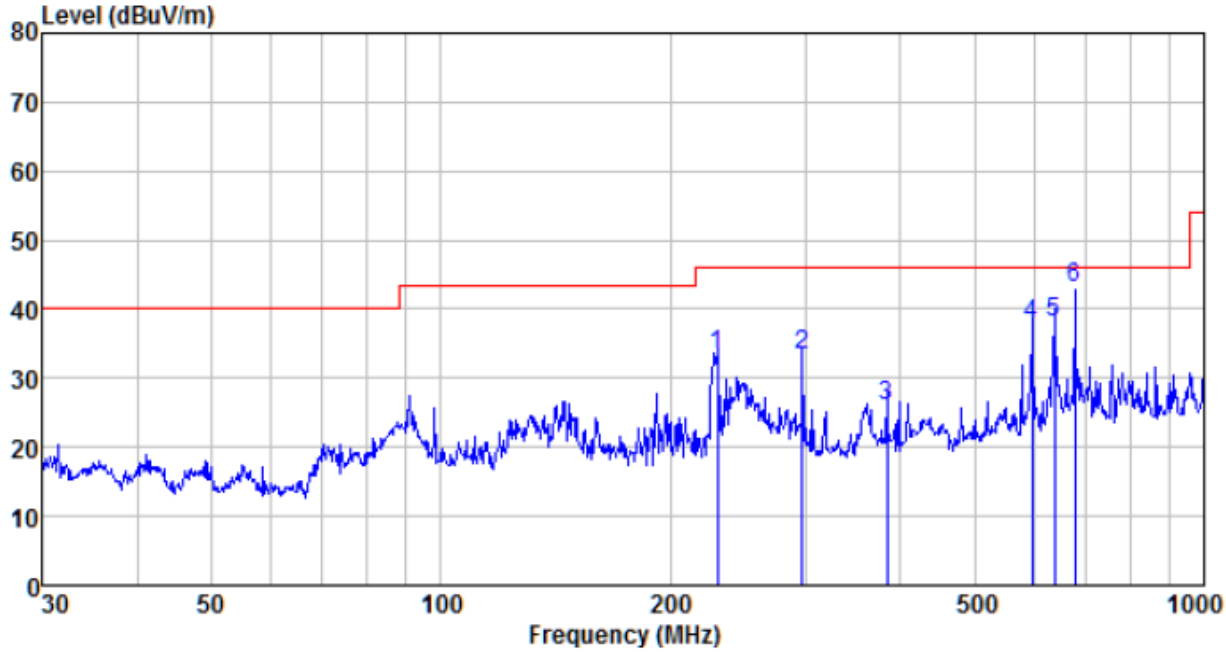
Remark:

Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement Data

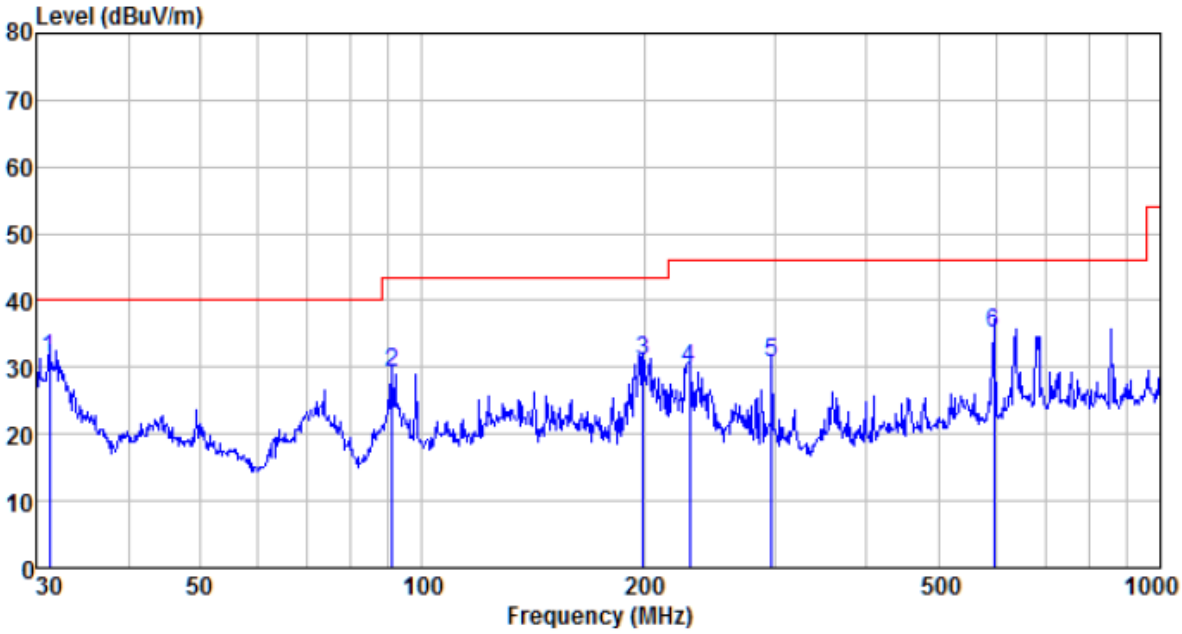
■ **Below 1GHz**

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
230.099	57.45	11.17	2.02	37.36	33.28	46.00	-12.72	QP
297.224	54.99	13.40	2.35	37.42	33.32	46.00	-12.68	QP
383.932	45.63	15.15	2.78	37.51	26.05	46.00	-19.95	QP
595.133	52.34	19.19	3.70	37.54	37.69	46.00	-8.31	QP
636.134	52.26	19.48	3.86	37.57	38.03	46.00	-7.97	QP
677.580	56.90	19.68	4.00	37.61	42.97	46.00	-3.03	QP

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
31.289	54.51	11.30	0.57	35.10	31.28	40.00	-8.72	QP
91.175	53.70	10.98	1.12	36.65	29.15	43.50	-14.35	QP
199.286	56.33	10.20	1.84	37.33	31.04	43.50	-12.46	QP
230.099	54.00	11.17	2.02	37.36	29.83	46.00	-16.17	QP
297.224	52.43	13.40	2.35	37.42	30.76	46.00	-15.24	QP
595.133	49.91	19.19	3.70	37.54	35.26	46.00	-10.74	QP

■ **Above 1GHz**

Test mode:	802.11b	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	43.26	31.79	8.62	32.10	51.57	74.00	-22.43	Vertical
7236.00	36.09	36.19	11.68	31.97	51.99	74.00	-22.01	Vertical
9648.00	34.05	38.07	14.16	31.56	54.72	74.00	-19.28	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	41.46	31.79	8.62	32.10	49.77	74.00	-24.23	Horizontal
7236.00	35.61	36.19	11.68	31.97	51.51	74.00	-22.49	Horizontal
9648.00	33.53	38.07	14.16	31.56	54.20	74.00	-19.80	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	32.11	31.79	8.62	32.10	40.42	54.00	-13.58	Vertical
7236.00	24.89	36.19	11.68	31.97	40.79	54.00	-13.21	Vertical
9648.00	24.35	38.07	14.16	31.56	45.02	54.00	-8.98	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	30.85	31.79	8.62	32.10	39.16	54.00	-14.84	Horizontal
7236.00	24.14	36.19	11.68	31.97	40.04	54.00	-13.96	Horizontal
9648.00	23.23	38.07	14.16	31.56	43.90	54.00	-10.10	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11b	Test channel:	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	41.80	31.85	8.66	32.12	50.19	74.00	-23.81	Vertical
7311.00	35.84	36.37	11.71	31.91	52.01	74.00	-21.99	Vertical
9748.00	34.84	38.27	14.25	31.56	55.80	74.00	-18.20	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	41.90	31.85	8.66	32.12	50.29	74.00	-23.71	Horizontal
7311.00	34.29	36.37	11.71	31.91	50.46	74.00	-23.54	Horizontal
9748.00	34.64	38.27	14.25	31.56	55.60	74.00	-18.40	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	32.46	31.85	8.66	32.12	40.85	54.00	-13.15	Vertical
7311.00	24.10	36.37	11.71	31.91	40.27	54.00	-13.73	Vertical
9748.00	24.05	38.27	14.25	31.56	45.01	54.00	-8.99	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	31.88	31.85	8.66	32.12	40.27	54.00	-13.73	Horizontal
7311.00	23.33	36.37	11.71	31.91	39.50	54.00	-14.50	Horizontal
9748.00	24.32	38.27	14.25	31.56	45.28	54.00	-8.72	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11b	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	49.10	31.90	8.70	32.15	57.55	74.00	-16.45	Vertical
7386.00	37.64	36.49	11.76	31.83	54.06	74.00	-19.94	Vertical
9848.00	38.94	38.62	14.31	31.77	60.10	74.00	-13.90	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	47.75	31.90	8.70	32.15	56.20	74.00	-17.80	Horizontal
7386.00	36.20	36.49	11.76	31.83	52.62	74.00	-21.38	Horizontal
9848.00	34.96	38.62	14.31	31.77	56.12	74.00	-17.88	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	39.69	31.90	8.70	32.15	48.14	54.00	-5.86	Vertical
7386.00	27.46	36.49	11.76	31.83	43.88	54.00	-10.12	Vertical
9848.00	27.36	38.62	14.31	31.77	48.52	54.00	-5.48	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	37.89	31.90	8.70	32.15	46.34	54.00	-7.66	Horizontal
7386.00	25.52	36.49	11.76	31.83	41.94	54.00	-12.06	Horizontal
9848.00	24.16	38.62	14.31	31.77	45.32	54.00	-8.68	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11g	Test channel:	lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	42.28	31.79	8.62	32.10	50.59	74.00	-23.41	Vertical
7236.00	35.48	36.19	11.68	31.97	51.38	74.00	-22.62	Vertical
9648.00	33.61	38.07	14.16	31.56	54.28	74.00	-19.72	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	40.64	31.79	8.62	32.10	48.95	74.00	-25.05	Horizontal
7236.00	35.07	36.19	11.68	31.97	50.97	74.00	-23.03	Horizontal
9648.00	33.12	38.07	14.16	31.56	53.79	74.00	-20.21	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	31.21	31.79	8.62	32.10	39.52	54.00	-14.48	Vertical
7236.00	24.30	36.19	11.68	31.97	40.20	54.00	-13.80	Vertical
9648.00	23.92	38.07	14.16	31.56	44.59	54.00	-9.41	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertica
4824.00	30.08	31.79	8.62	32.10	38.39	54.00	-15.61	Horizontal
7236.00	23.62	36.19	11.68	31.97	39.52	54.00	-14.48	Horizontal
9648.00	22.84	38.07	14.16	31.56	43.51	54.00	-10.49	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11g	Test channel:	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	41.00	31.85	8.66	32.12	49.39	74.00	-24.61	Vertical
7311.00	35.33	36.37	11.71	31.91	51.50	74.00	-22.50	Vertical
9748.00	34.48	38.27	14.25	31.56	55.44	74.00	-18.56	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	41.22	31.85	8.66	32.12	49.61	74.00	-24.39	Horizontal
7311.00	33.84	36.37	11.71	31.91	50.01	74.00	-23.99	Horizontal
9748.00	34.31	38.27	14.25	31.56	55.27	74.00	-18.73	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	31.72	31.85	8.66	32.12	40.11	54.00	-13.89	Vertical
7311.00	23.61	36.37	11.71	31.91	39.78	54.00	-14.22	Vertical
9748.00	23.70	38.27	14.25	31.56	44.66	54.00	-9.34	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	31.24	31.85	8.66	32.12	39.63	54.00	-14.37	Horizontal
7311.00	22.90	36.37	11.71	31.91	39.07	54.00	-14.93	Horizontal
9748.00	24.00	38.27	14.25	31.56	44.96	54.00	-9.04	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11g	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	47.72	31.90	8.70	32.15	56.17	74.00	-17.83	Vertical
7386.00	36.76	36.49	11.76	31.83	53.18	74.00	-20.82	Vertical
9848.00	38.31	38.62	14.31	31.77	59.47	74.00	-14.53	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	46.58	31.90	8.70	32.15	55.03	74.00	-18.97	Horizontal
7386.00	35.43	36.49	11.76	31.83	51.85	74.00	-22.15	Horizontal
9848.00	34.38	38.62	14.31	31.77	55.54	74.00	-18.46	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	38.41	31.90	8.70	32.15	46.86	54.00	-7.14	Vertical
7386.00	26.61	36.49	11.76	31.83	43.03	54.00	-10.97	Vertical
9848.00	26.76	38.62	14.31	31.77	47.92	54.00	-6.08	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	36.80	31.90	8.70	32.15	45.25	54.00	-8.75	Horizontal
7386.00	24.78	36.49	11.76	31.83	41.20	54.00	-12.80	Horizontal
9848.00	23.60	38.62	14.31	31.77	44.76	54.00	-9.24	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11n(HT20)	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	40.59	31.79	8.62	32.10	48.90	74.00	-25.10	Vertical
7236.00	34.41	36.19	11.68	31.97	50.31	74.00	-23.69	Vertical
9648.00	32.85	38.07	14.16	31.56	53.52	74.00	-20.48	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	39.22	31.79	8.62	32.10	47.53	74.00	-26.47	Horizontal
7236.00	34.13	36.19	11.68	31.97	50.03	74.00	-23.97	Horizontal
9648.00	32.42	38.07	14.16	31.56	53.09	74.00	-20.91	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	29.65	31.79	8.62	32.10	37.96	54.00	-16.04	Vertical
7236.00	23.27	36.19	11.68	31.97	39.17	54.00	-14.83	Vertical
9648.00	23.19	38.07	14.16	31.56	43.86	54.00	-10.14	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	28.74	31.79	8.62	32.10	37.05	54.00	-16.95	Horizontal
7236.00	22.71	36.19	11.68	31.97	38.61	54.00	-15.39	Horizontal
9648.00	22.16	38.07	14.16	31.56	42.83	54.00	-11.17	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11n(HT20)	Test channel:	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	39.60	31.85	8.66	32.12	47.99	74.00	-26.01	Vertical
7311.00	34.45	36.37	11.71	31.91	50.62	74.00	-23.38	Vertical
9748.00	33.84	38.27	14.25	31.56	54.80	74.00	-19.20	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	40.04	31.85	8.66	32.12	48.43	74.00	-25.57	Horizontal
7311.00	33.07	36.37	11.71	31.91	49.24	74.00	-24.76	Horizontal
9748.00	33.73	38.27	14.25	31.56	54.69	74.00	-19.31	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	30.43	31.85	8.66	32.12	38.82	54.00	-15.18	Vertical
7311.00	22.76	36.37	11.71	31.91	38.93	54.00	-15.07	Vertical
9748.00	23.09	38.27	14.25	31.56	44.05	54.00	-9.95	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	30.14	31.85	8.66	32.12	38.53	54.00	-15.47	Horizontal
7311.00	22.15	36.37	11.71	31.91	38.32	54.00	-15.68	Horizontal
9748.00	23.44	38.27	14.25	31.56	44.40	54.00	-9.60	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11n(HT20)	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	45.31	31.90	8.70	32.15	53.76	74.00	-20.24	4924.00
7386.00	35.24	36.49	11.76	31.83	51.66	74.00	-22.34	7386.00
9848.00	37.22	38.62	14.31	31.77	58.38	74.00	-15.62	9848.00
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	44.55	31.90	8.70	32.15	53.00	74.00	-21.00	Horizontal
7386.00	34.10	36.49	11.76	31.83	50.52	74.00	-23.48	Horizontal
9848.00	33.38	38.62	14.31	31.77	54.54	74.00	-19.46	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	36.19	31.90	8.70	32.15	44.64	54.00	-9.36	Vertical
7386.00	25.14	36.49	11.76	31.83	41.56	54.00	-12.44	Vertical
9848.00	25.72	38.62	14.31	31.77	46.88	54.00	-7.12	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	34.89	31.90	8.70	32.15	43.34	54.00	-10.66	Horizontal
7386.00	23.48	36.49	11.76	31.83	39.90	54.00	-14.10	Horizontal
9848.00	22.63	38.62	14.31	31.77	43.79	54.00	-10.21	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

Remark:

1 Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

2 "", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11n(HT40)	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844.00	40.17	31.81	8.63	32.11	48.50	74.00	-25.50	Vertical
7266.00	34.14	36.28	11.69	31.94	50.17	74.00	-23.83	Vertical
9688.00	32.66	38.13	14.21	31.52	53.48	74.00	-20.52	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4844.00	38.85	31.81	8.63	32.11	47.18	74.00	-26.82	Horizontal
7266.00	33.90	36.28	11.69	31.94	49.93	74.00	-24.07	Horizontal
9688.00	32.24	38.13	14.21	31.52	53.06	74.00	-20.94	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844.00	29.26	31.81	8.63	32.11	37.59	54.00	-16.41	Vertical
7266.00	23.01	36.28	11.69	31.94	39.04	54.00	-14.96	Vertical
9688.00	23.00	38.13	14.21	31.52	43.82	54.00	-10.18	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4844.00	28.40	31.81	8.63	32.11	36.73	54.00	-17.27	Horizontal
7266.00	22.48	36.28	11.69	31.94	38.51	54.00	-15.49	Horizontal
9688.00	21.99	38.13	14.21	31.52	42.81	54.00	-11.19	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11n(HT40)	Test channel:	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	39.24	31.85	8.66	32.12	47.63	74.00	-26.37	Vertical
7311.00	34.22	36.37	11.71	31.91	50.39	74.00	-23.61	Vertical
9748.00	33.68	38.27	14.25	31.56	54.64	74.00	-19.36	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	39.74	31.85	8.66	32.12	48.13	74.00	-25.87	Horizontal
7311.00	32.87	36.37	11.71	31.91	49.04	74.00	-24.96	Horizontal
9748.00	33.58	38.27	14.25	31.56	54.54	74.00	-19.46	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	30.11	31.85	8.66	32.12	38.50	54.00	-15.50	Vertical
7311.00	22.54	36.37	11.71	31.91	38.71	54.00	-15.29	Vertical
9748.00	22.94	38.27	14.25	31.56	43.90	54.00	-10.10	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	29.86	31.85	8.66	32.12	38.25	54.00	-15.75	Horizontal
7311.00	21.96	36.37	11.71	31.91	38.13	54.00	-15.87	Horizontal
9748.00	23.29	38.27	14.25	31.56	44.25	54.00	-9.75	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test mode:	802.11n(HT40)	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904.00	44.70	31.88	8.68	32.13	53.13	74.00	-20.87	Vertical
7356.00	34.85	36.45	11.75	31.86	51.19	74.00	-22.81	Vertical
9808.00	36.95	38.43	14.29	31.68	57.99	74.00	-16.01	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4904.00	44.03	31.88	8.68	32.13	52.46	74.00	-21.54	Horizontal
7356.00	33.76	36.45	11.75	31.86	50.10	74.00	-23.90	Horizontal
9808.00	33.12	38.43	14.29	31.68	54.16	74.00	-19.84	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904.00	35.63	31.88	8.68	32.13	44.06	54.00	-9.94	Vertical
7356.00	24.77	36.45	11.75	31.86	41.11	54.00	-12.89	Vertical
9808.00	25.45	38.43	14.29	31.68	46.49	54.00	-7.51	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4904.00	34.40	31.88	8.68	32.13	42.83	54.00	-11.17	Horizontal
7356.00	23.16	36.45	11.75	31.86	39.50	54.00	-14.50	Horizontal
9808.00	22.39	38.43	14.29	31.68	43.43	54.00	-10.57	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

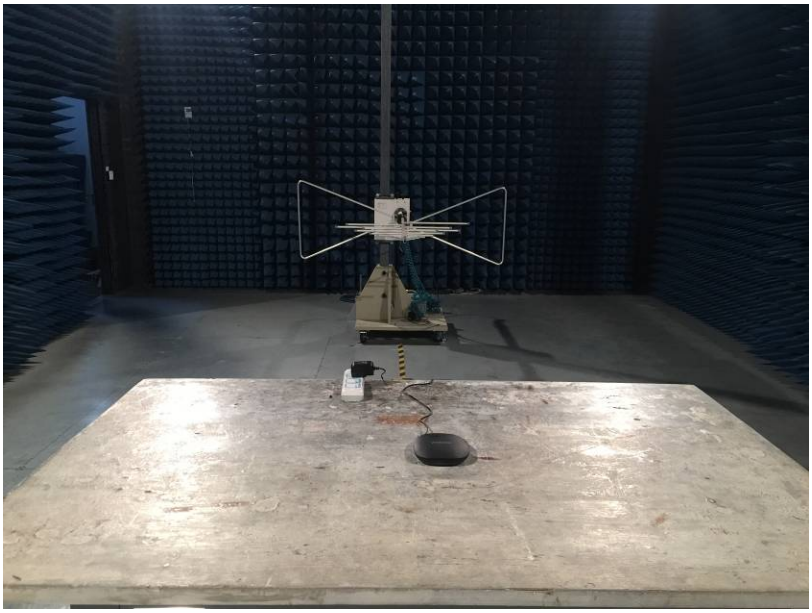
Remark:

1 Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

2 "", means this data is the too weak instrument of signal is unable to test.*

8 Test Setup Photo

Radiated Emission



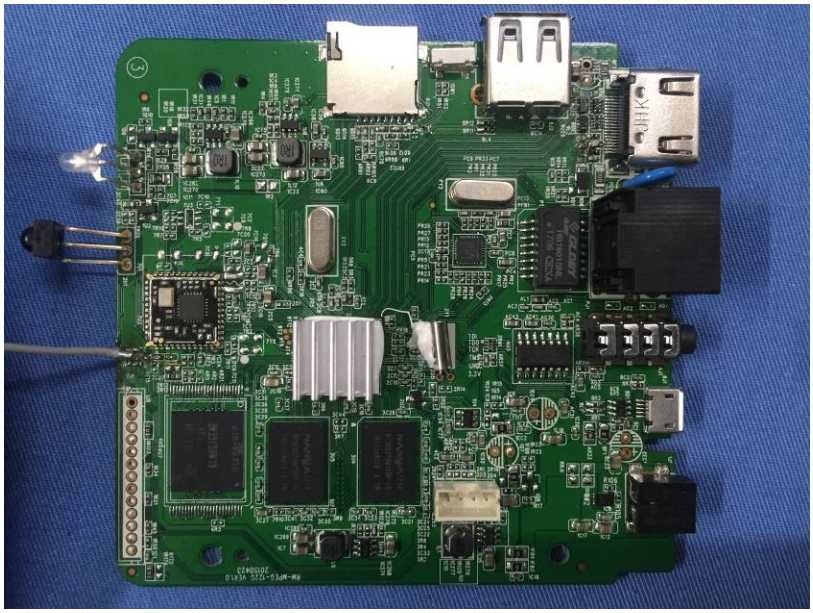
Conducted Emission

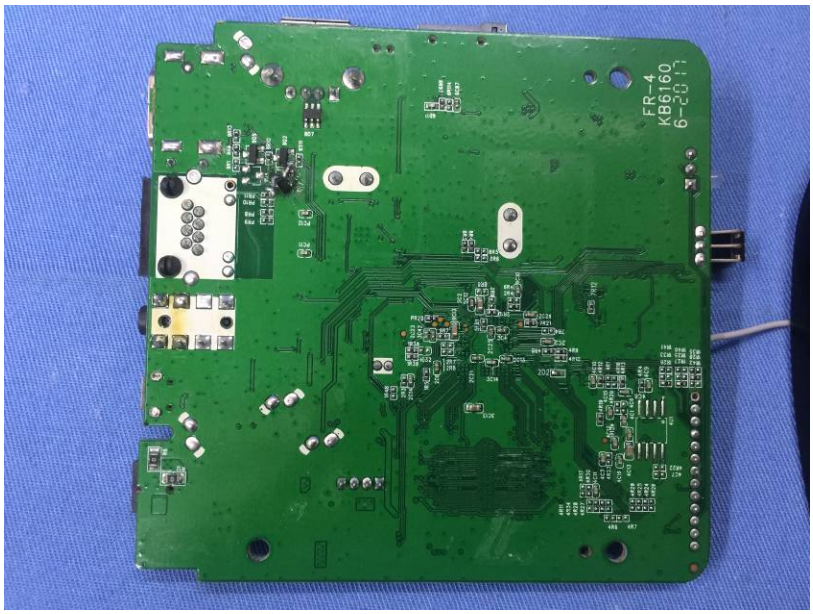
9 EUT Constructional Details

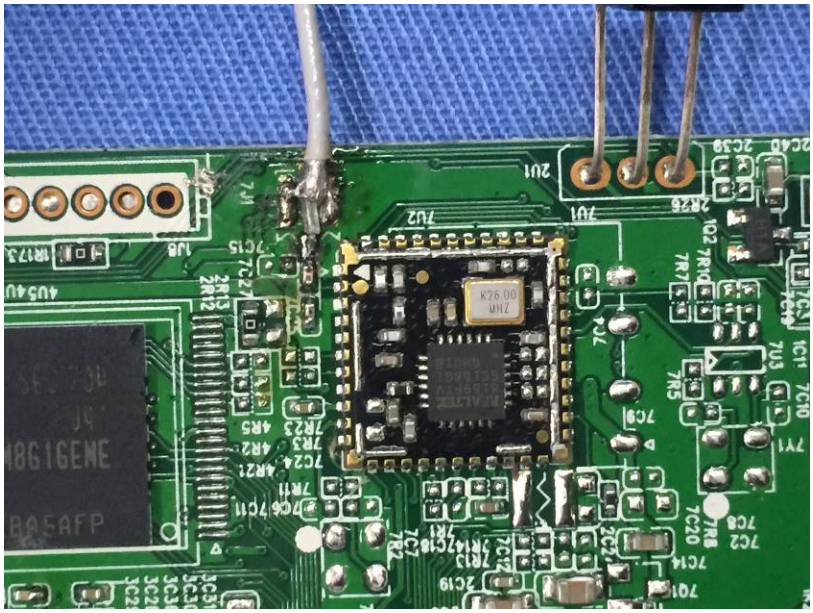
VIAROOM
VIAROOM Home
Model VH-1
5V⎓2A
Designed in France
Made in China
FCC ID:
This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference,
and
(2) this device must accept any interference received,
including interference that may cause undesired
operation.

VIAROOM

VIARCOM




FR-4
KB6160



SWITCHING ADAPTOR
MODEL:FJ-SW1260502000DN
INPUT:100-240V~
50/60Hz 0.4A Max
OUTPUT:5V ⎓ 2000mA
LISTED
Made in China
SHENZHEN FUJIA APPLIANCE CO.,LTD.

------End------