

FCC Report

Product Description: MID

Model No.: UD-I7059

FCC ID: ZGAGX-7059

Applicant: Gardex Electronics Co., Ltd.

**Address: No.0309 Bldg B, Marina Bay Center, Haixiu Rd, Baoan District Center,
Shenzhen, China.**

Applicable standards: FCC Part 15 Subpart C Section 15.247:2012

Test Date: 2 December ~ 9 December, 2013

Issued Date: 9 December, 2013

Test Result: Complied



Jackson Long
Laboratory Manager

The test result in this test report relate only to the tested samples in this report .

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2 Version

<i>Version No.</i>	<i>Date</i>	<i>Description</i>
00	9 Decmber, 2013	Original

Prepared By:

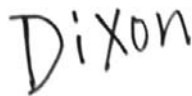
A handwritten signature in black ink that reads "Martin".

Date:

9 Decmber, 2013

Martin Ao
Project Engineer

Check By:

A handwritten signature in black ink that reads "Dixon".

Date:

9 Decmber, 2013

Dixon Hao
Reviewer

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4 Test Summary

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

Complied: The EUT has complied with the essential requirements in the standard.

N/A: Not Applicable.

5 General Information

5.1 Client Information

Applicant:	Gardex Electronics Co., Ltd
Address:	No.0309 Bldg B, Marina Bay Center, Haixiu Rd, Baoan District Center, Shenzhen, China.
Manufacturer:	Gardex Electronics Co., Ltd
Address:	No.0309 Bldg B, Marina Bay Center, Haixiu Rd, Baoan District Center, Shenzhen, China.
Factory:	Gardex Electronics Co., Ltd
Address:	No.0309 Bldg B, Marina Bay Center, Haixiu Rd, Baoan District Center, Shenzhen, China.

5.2 General Description of EUT

Product Name:	MID
Model No.:	UD-I7059
WiFi	
Support Protocol:	802.11b/g/n(H20)/n(H40)
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	11 for 802.11b/802.11g /802.11n(H20) 7 for 802.11(H40)
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Antenna Type:	Integral
Antenna gain:	2dBi (declare by Applicant)
Power supply:	DC 3.7V
Adapter information:	Model No.: BLT-XC0520B Input: AC 110~240V 50/60Hz Output: DC 5V 2A

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(H20)	802.11n(H40)
Lowest channel	2412	2422
Middle channel	2437	2437
Highest channel	2462	2452

5.3 Test Mode

Transmitting mode	Keep the EUT in continuously transmitting mode
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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:

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

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13.0Mbps

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 1Mbps for 802.11b, 6Mbps for 802.11g , 6.5Mbps for 802.11n(H20), 13Mbps for 802.11n(H40)

5.4 Test Facility

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

■ **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. to ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

■ **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013

■ **Industry Canada (IC) —Registration No.: 9079A-1**

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-1.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China


6 Test Instruments list

Radiated Emission				
Instrument	Manufacturer	Model No.	Inventory No.	Next Cal. Date
3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 28 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A
Spectrum Analyzer	Agilent	E4440A	GTS533	Dec. 5, 2014
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 01 2014
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 23 2014
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	Mar. 08 2014
Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 28 2014
EMI Test Software	AUDIX	E3	N/A	N/A
Coaxial Cable	GTS	N/A	GTS213	Mar. 29 2014
Coaxial Cable	GTS	N/A	GTS211	Mar. 29 2014
Coaxial cable	GTS	N/A	GTS210	Mar. 29 2014
Coaxial Cable	GTS	N/A	GTS212	Mar. 29 2014
Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 01 2014
Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 01 2014
Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 27 2014
Band filter	Amindeon	82346	GTS219	Mar. 29 2014

Conducted Emission				
Instrument	Manufacturer	Model No.	Inventory No.	Next Cal. Date
Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS264	Sep. 07 2014
EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 01 2014
10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jul. 01 2014
Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 01 2014
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 01 2014
Coaxial Cable	GTS	N/A	GTS227	Jul. 01 2014
EMI Test Software	AUDIX	E3	N/A	N/A

7 Measurement Data and Test Results

7.1 Antenna requirement:

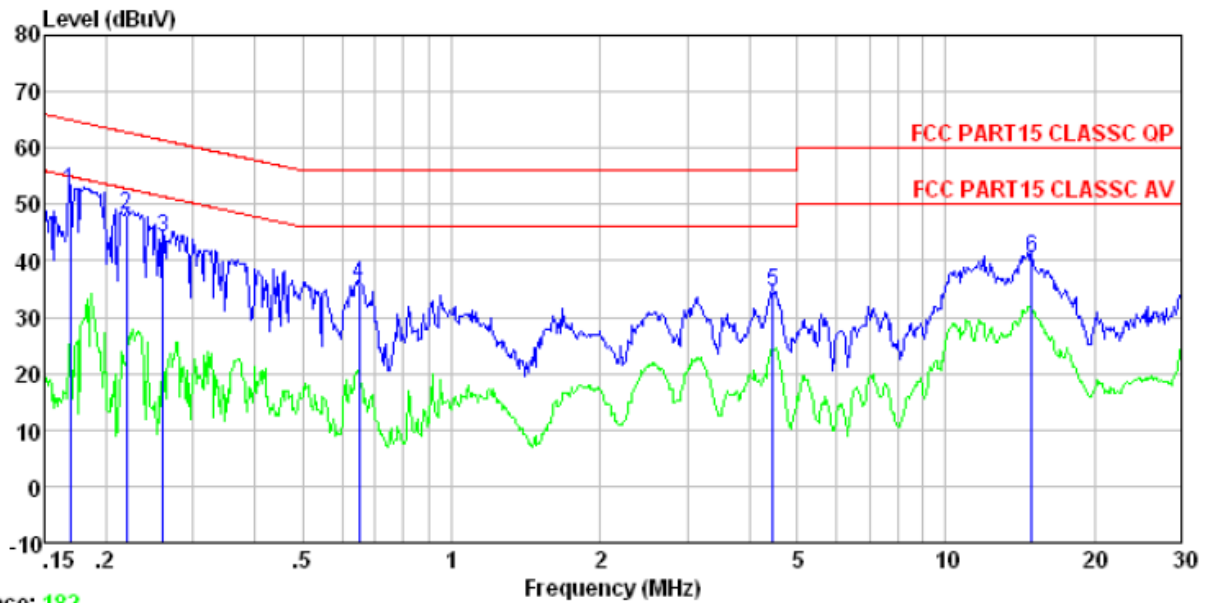
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement:</p> <p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that 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.</p> <p>15.247(c) (1)(i) requirement:</p> <p>(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.</p>	
E.U.T Antenna:	
<p><i>The antenna is Integral antenna, the best case gain of the antenna is 2dBi</i></p> 	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207																
Test Method:	ANSI C63.4:2003																
Test Frequency Range:	150KHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto																
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table> <p>* Decreases with the logarithm of the frequency.</p>			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
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															
Test setup:	<div><p style="text-align: center;">Reference Plane</p></div> <p><i>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</i></p>																
Test procedure:	<ol style="list-style-type: none">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 C63.4: 2003 on conducted measurement.																
Test Instruments:	Refer to section 6 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Pass																

Measurement data:

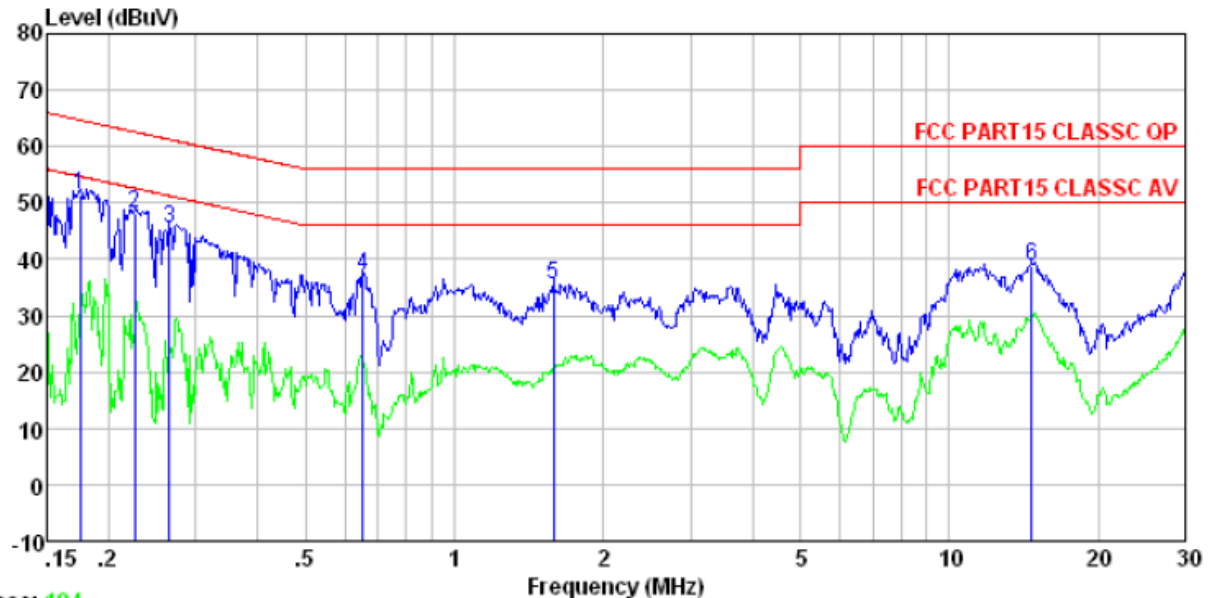
Line:



Condition : FCC PART15 CLASSC QP LISN-2012 LINE
Job No. : 0932RF
Test mode : WiFi mode
Test Engineer: Yang

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.169	52.75	-0.26	0.10	52.59	64.99	-12.40	QP
2	0.220	48.28	-0.23	0.10	48.15	62.83	-14.68	QP
3	0.260	44.24	-0.23	0.10	44.11	61.42	-17.31	QP
4	0.651	35.91	-0.20	0.10	35.81	56.00	-20.19	QP
5	4.478	34.65	-0.29	0.10	34.46	56.00	-21.54	QP
6	14.907	40.96	-0.52	0.20	40.64	60.00	-19.36	QP

Neutral:



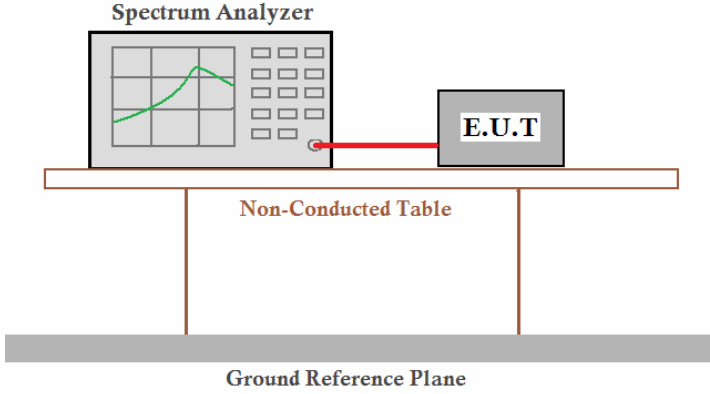
Trace: 184
Condition : FCC PART15 CLASSC QP LISN-2012 NEUTRAL
Job No. : 0932RF
Test mode : WiFi mode
Test Engineer: Yang

	Read	LISN	Cable		Limit	Over		
Freq	Level	Factor	Loss	Level	Line	Limit	Remark	
MHz	dBuV	dB	dB	dBuV	dBuV	dB		
1	0.175	51.47	-0.09	0.10	51.48	64.72	-13.24	QP
2	0.226	48.14	-0.09	0.10	48.15	62.61	-14.46	QP
3	0.266	45.29	-0.09	0.10	45.30	61.25	-15.95	QP
4	0.654	37.26	-0.08	0.10	37.28	56.00	-18.72	QP
5	1.585	35.47	-0.10	0.10	35.47	56.00	-20.53	QP
6	14.672	39.05	-0.41	0.20	38.84	60.00	-21.16	QP

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:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V02
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

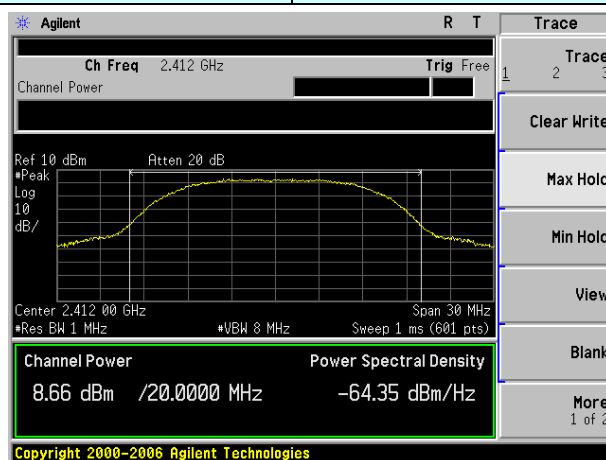
Measurement Data

Test CH	Peak Output Power (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	8.66	8.50	8.37	8.15	30.00	Pass
Middle	8.05	8.44	8.23	8.07		
Highest	8.07	8.48	7.88	8.03		

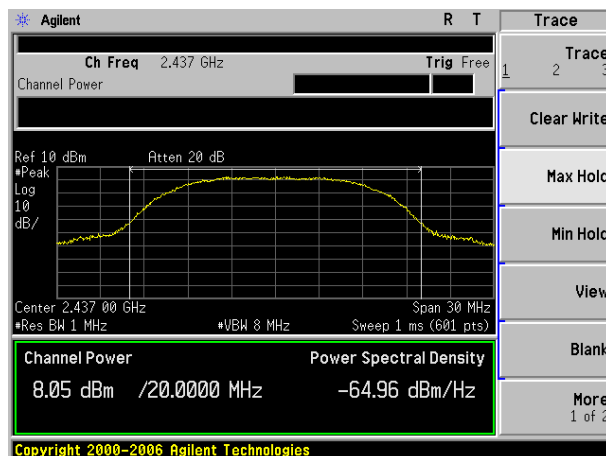
Test plot as follows:

Test mode:

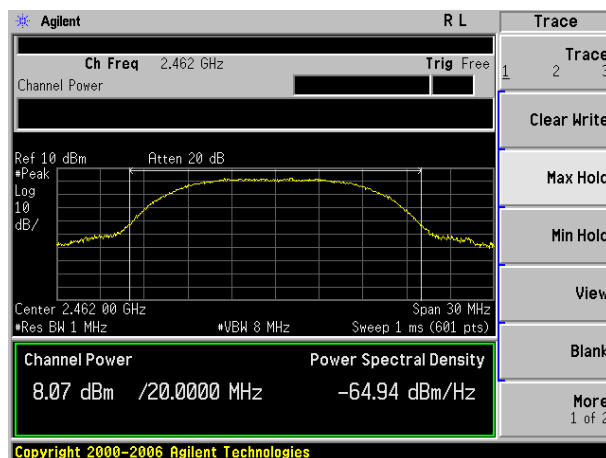
802.11b



Lowest channel



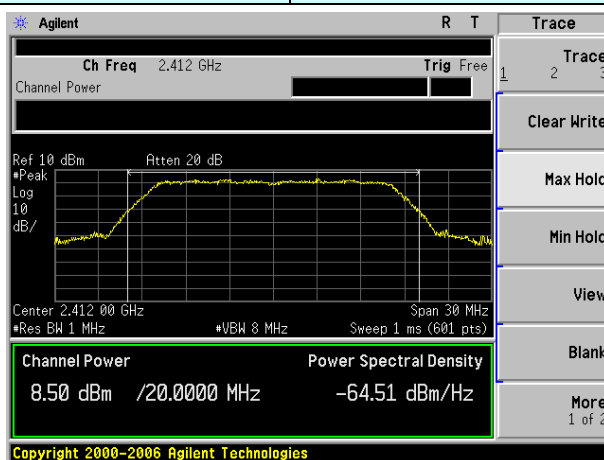
Middle channel



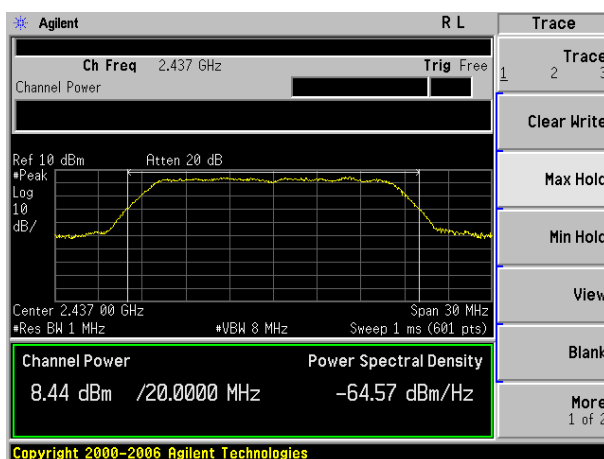
Highest channel

Test mode:

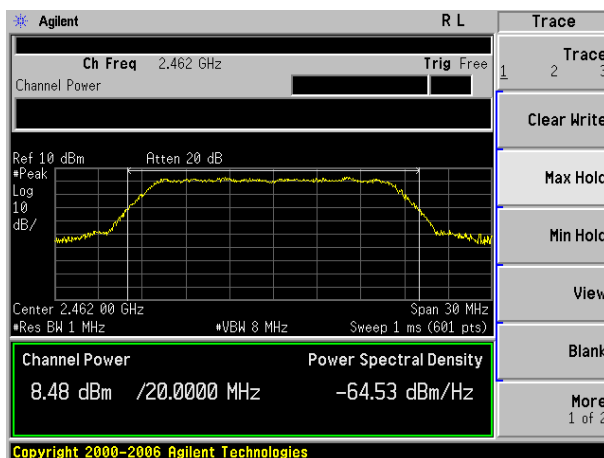
802.11g



Lowest channel



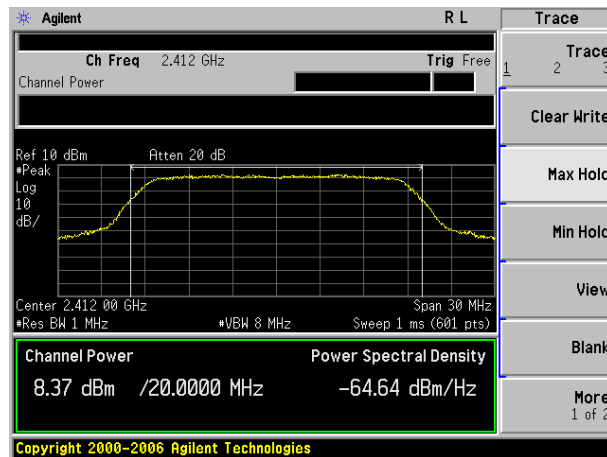
Middle channel



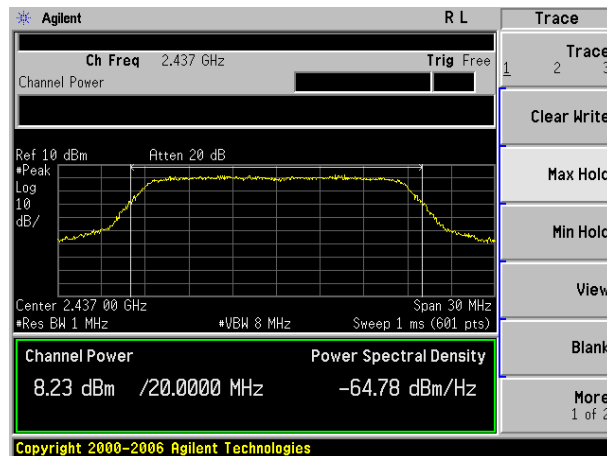
Highest channel

Test mode:

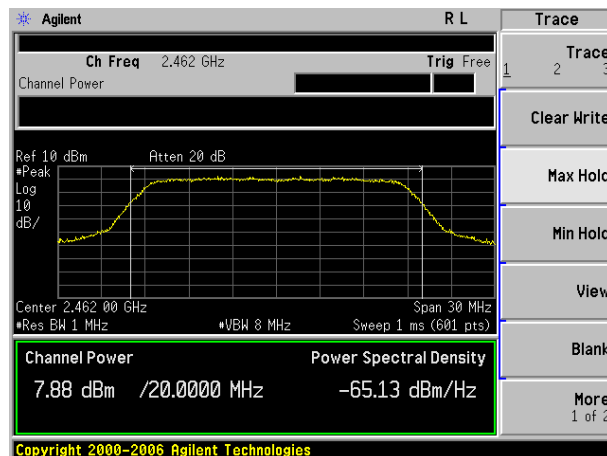
802.11n(HT20)



Lowest channel



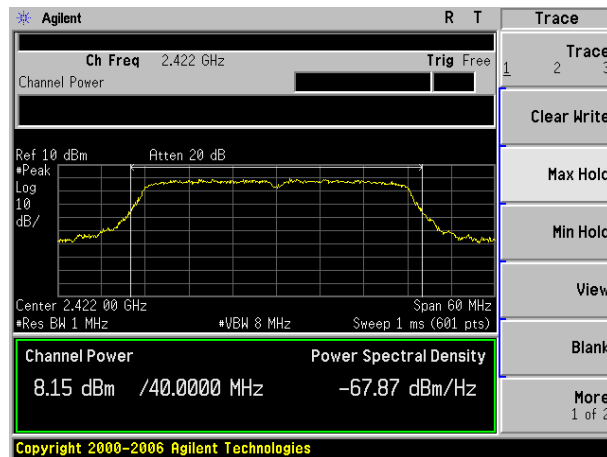
Middle channel



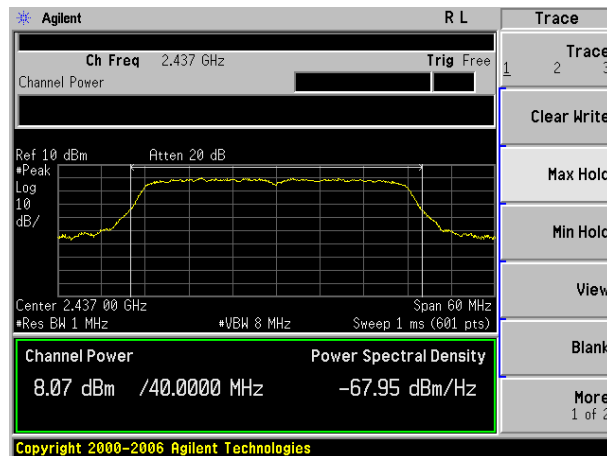
Highest channel

Test mode:

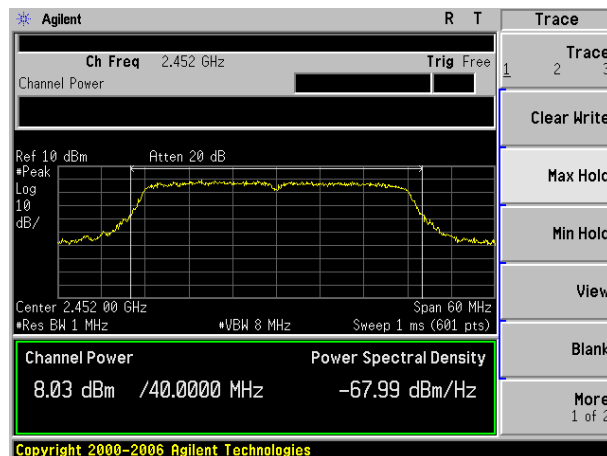
802.11n(HT40)



Lowest channel

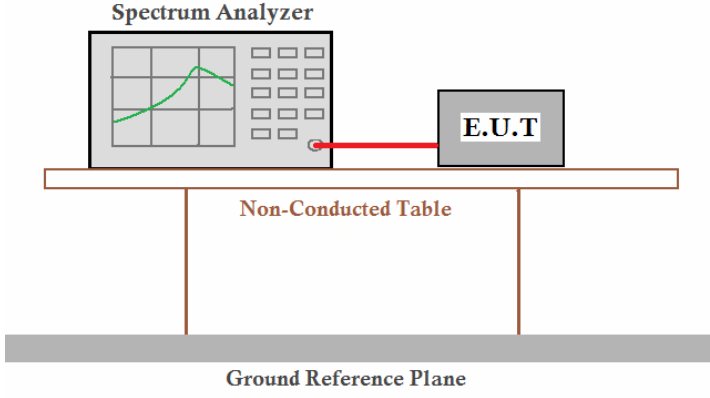


Middle channel



Highest channel

7.4 Channel Bandwidth

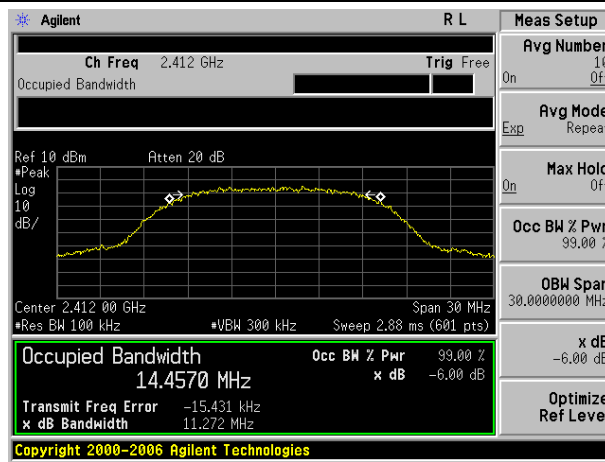
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V02
Limit:	>500KHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

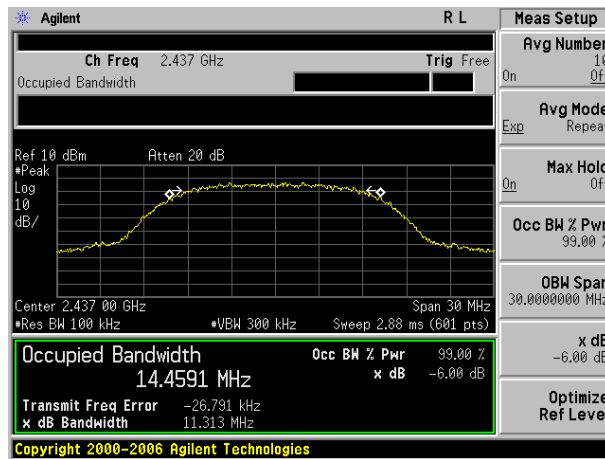
Test CH	Emission Bandwidth (MHz)				Limit(KHz)	Result
	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	11.272	16.520	17.720	36.347	>500	Pass
Middle	11.313	16.506	17.679	36.355		
Highest	11.278	16.502	17.652	36.074		

Test plot as follows:

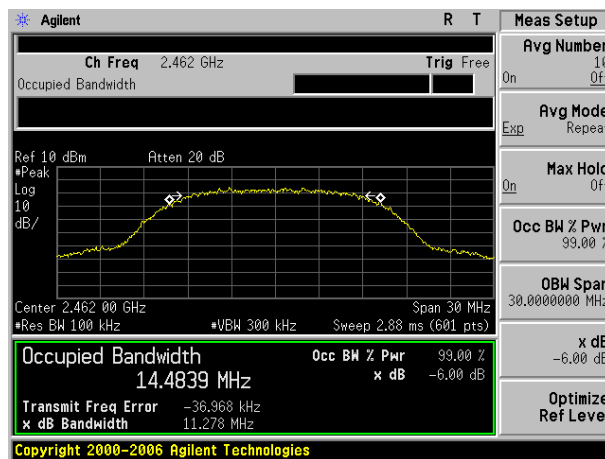
Test mode:	802.11b
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Lowest channel

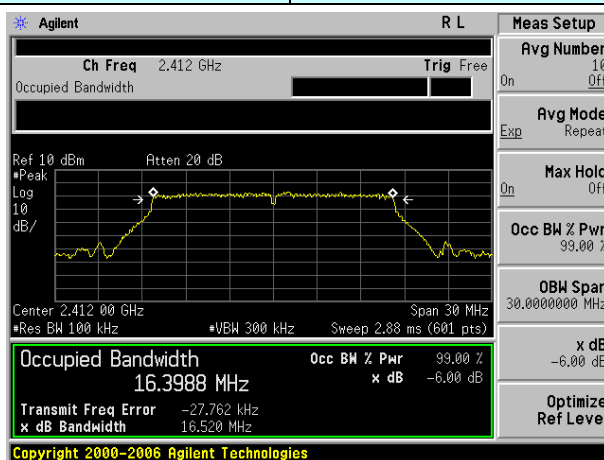


Middle channel

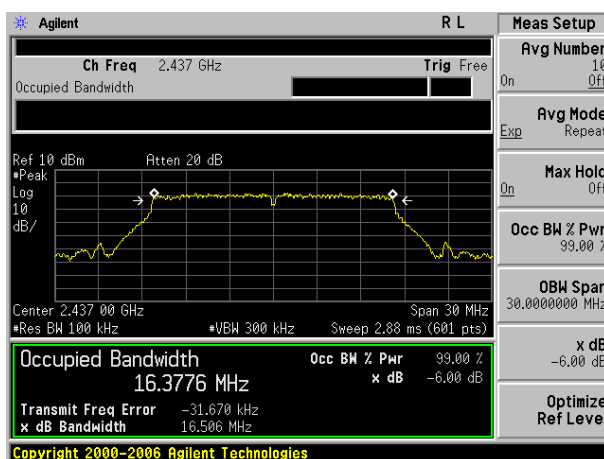


Highest channel

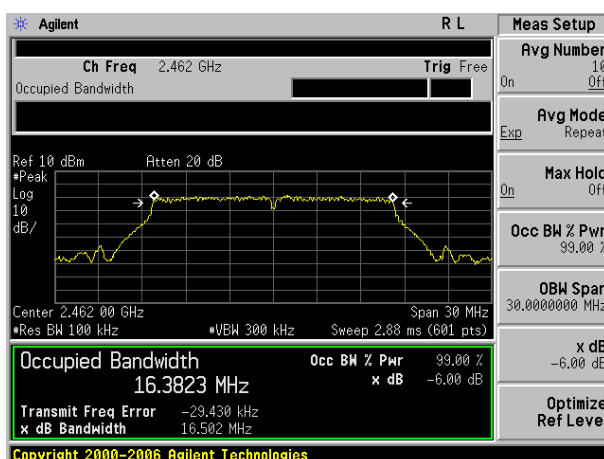
Test mode:	802.11g
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Lowest channel



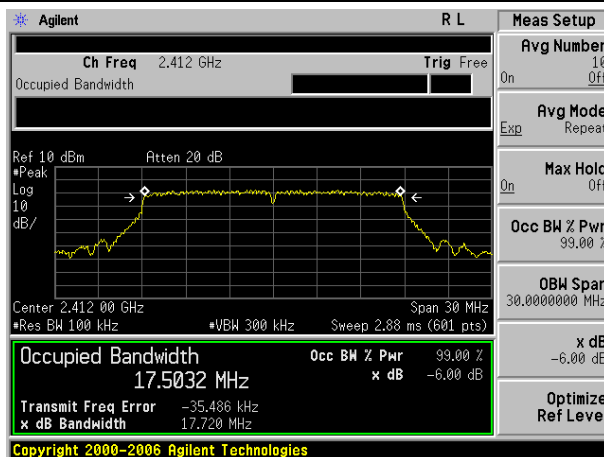
Middle channel



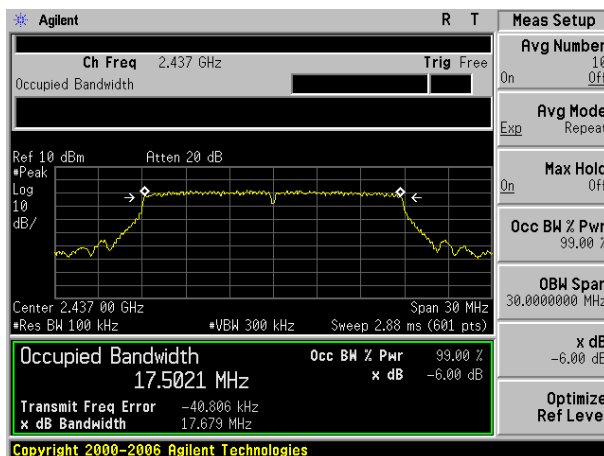
Highest channel

Test mode:

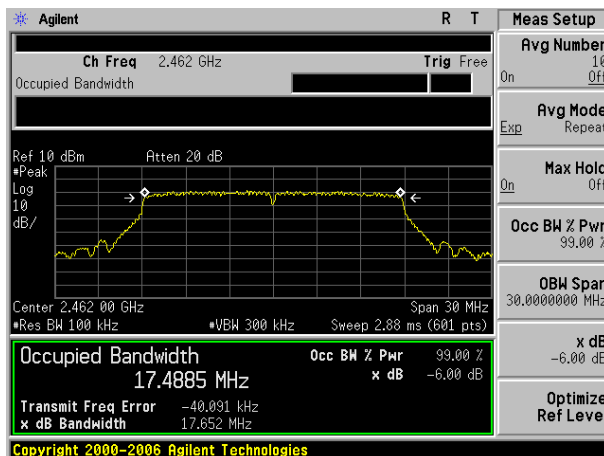
802.11n(HT20)



Lowest channel



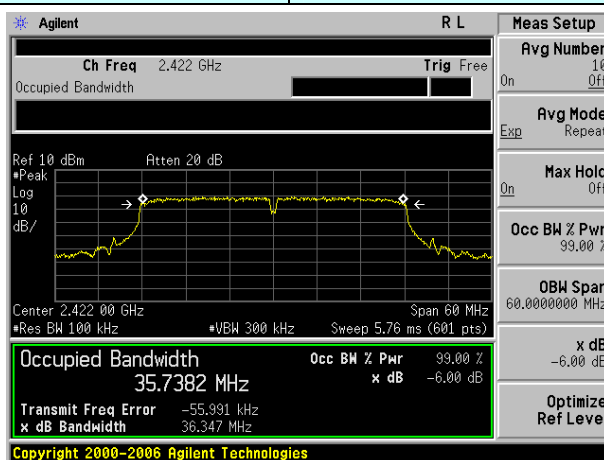
Middle channel



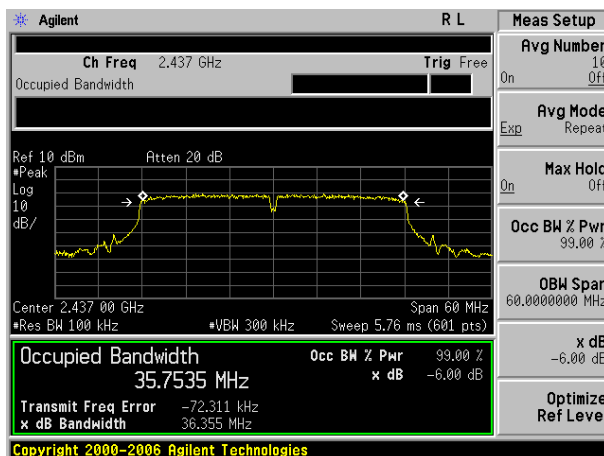
Highest channel

Test mode:

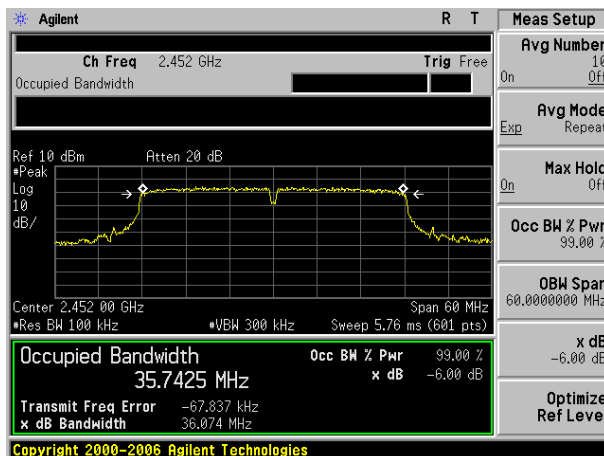
802.11n(HT40)



Lowest channel

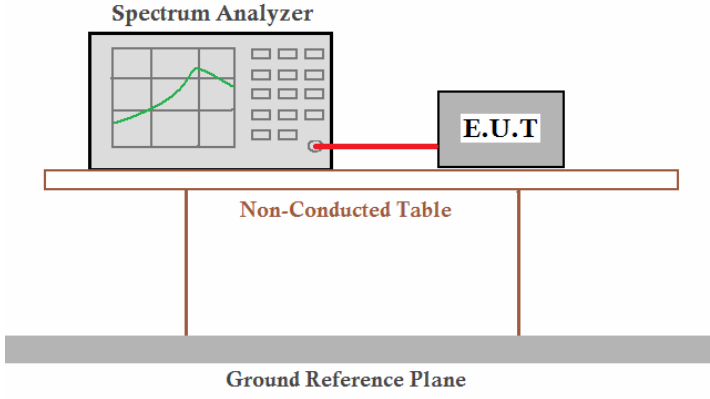


Middle channel



Highest channel

7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V02
Limit:	8dBm
Test setup:	
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

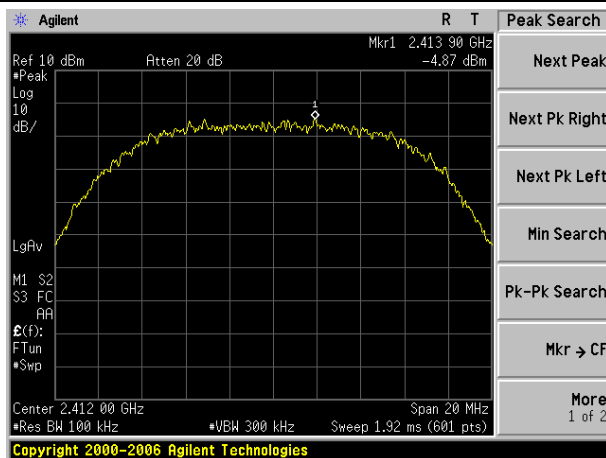
Measurement Data

Test CH	Power Spectral Density (dBm)				Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	-4.87	-6.77	-6.65	-10.66	8.00	Pass
Middle	-5.21	-6.95	-6.67	-10.24		
Highest	-5.88	-7.68	-7.54	-10.73		

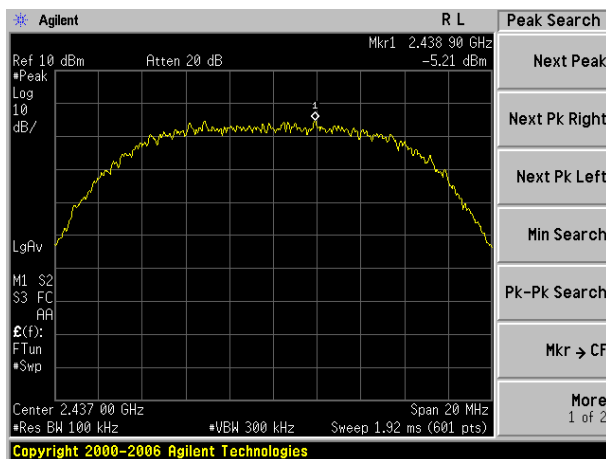
Test plot as follows:

Test mode:

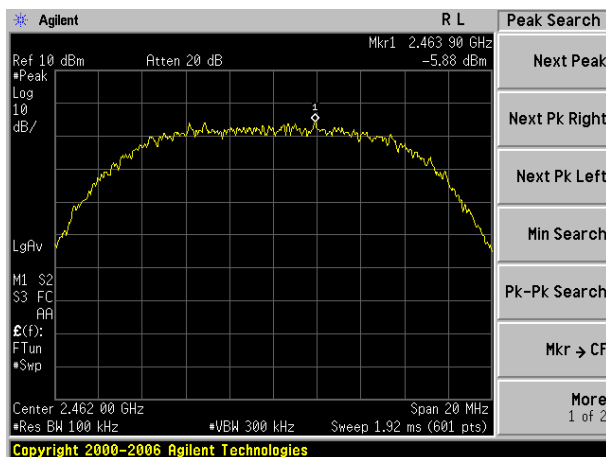
802.11b



Lowest channel

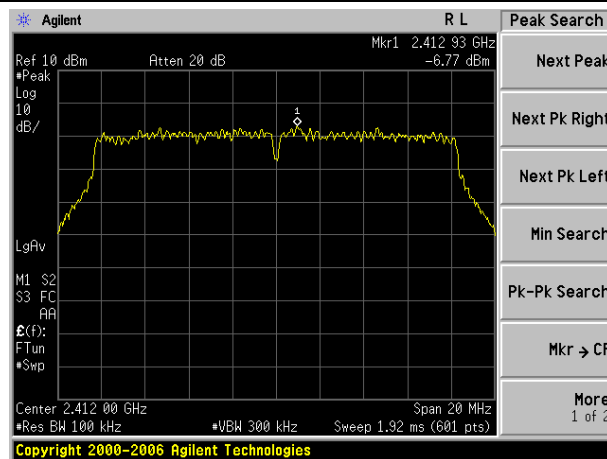


Middle channel

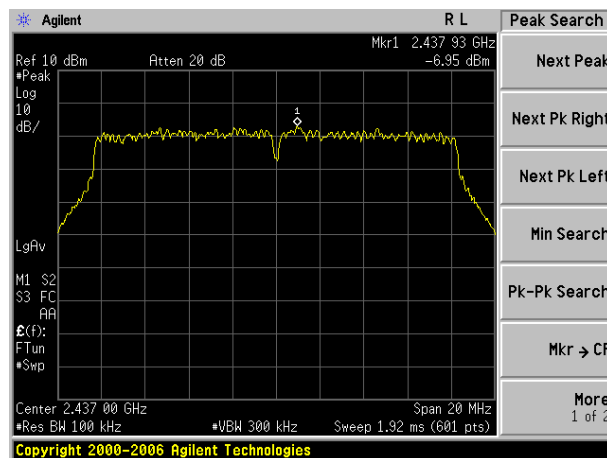


Highest channel

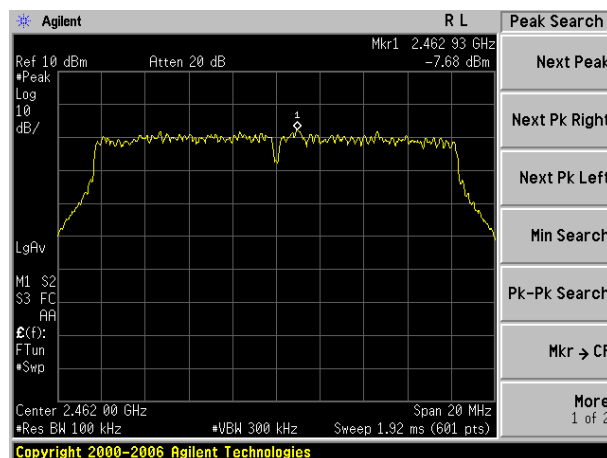
Test mode:	802.11g
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Lowest channel



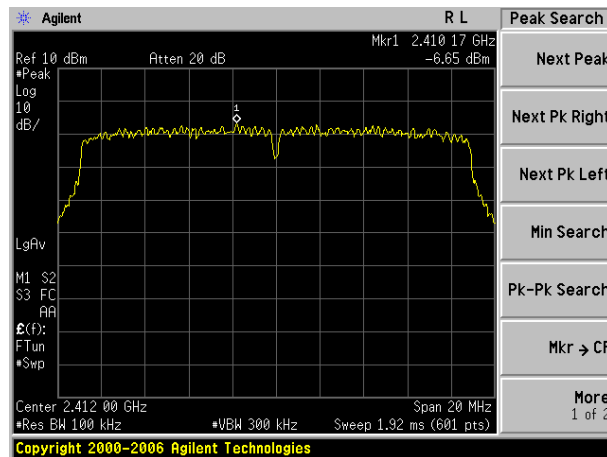
Middle channel



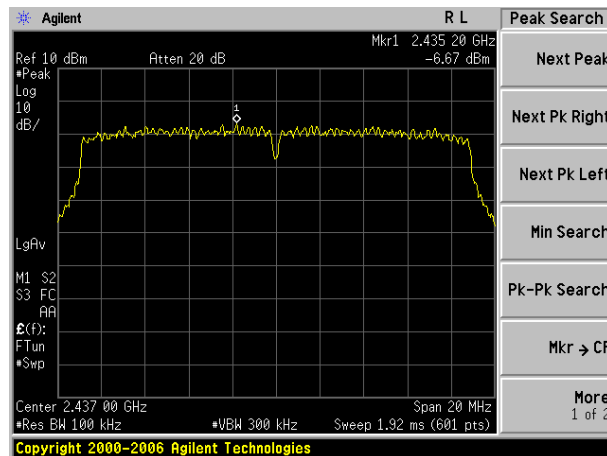
Highest channel

Test mode:

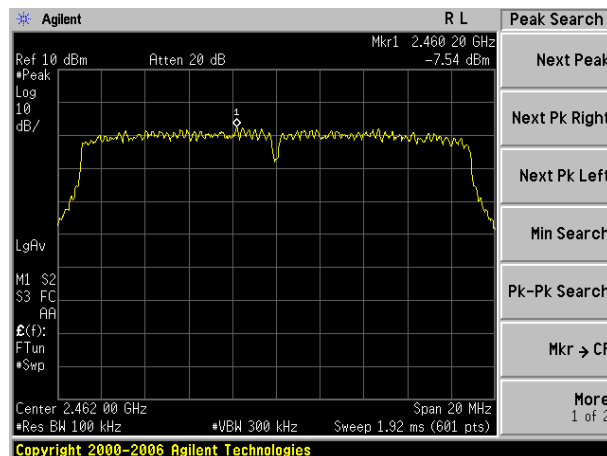
802.11n(HT20)



Lowest channel



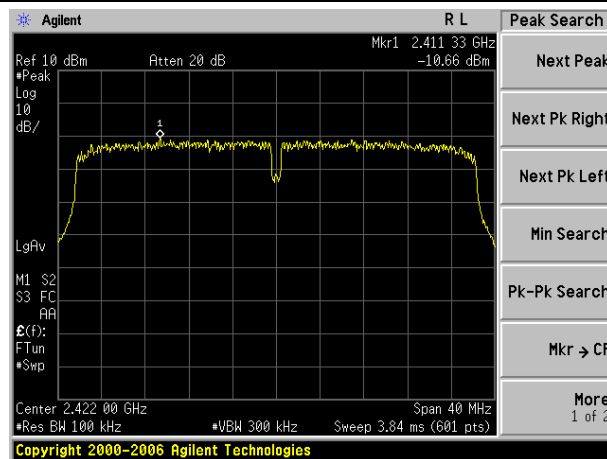
Middle channel



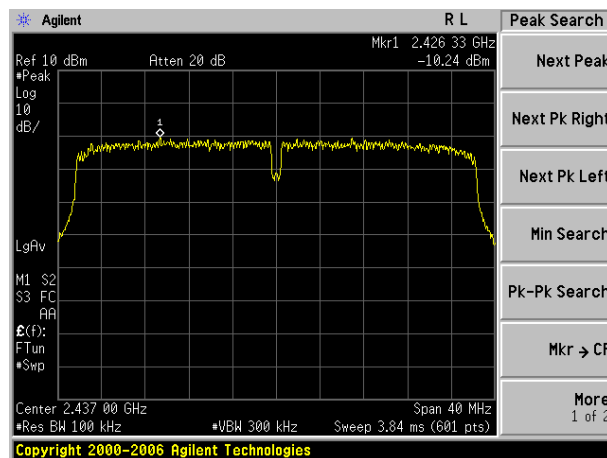
Highest channel

Test mode:

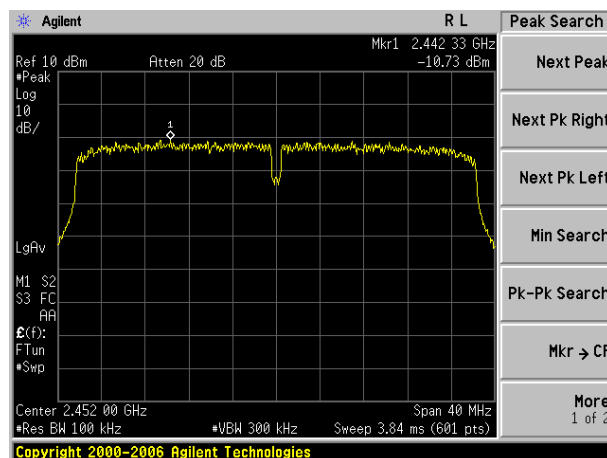
802.11n(HT40)



Lowest channel



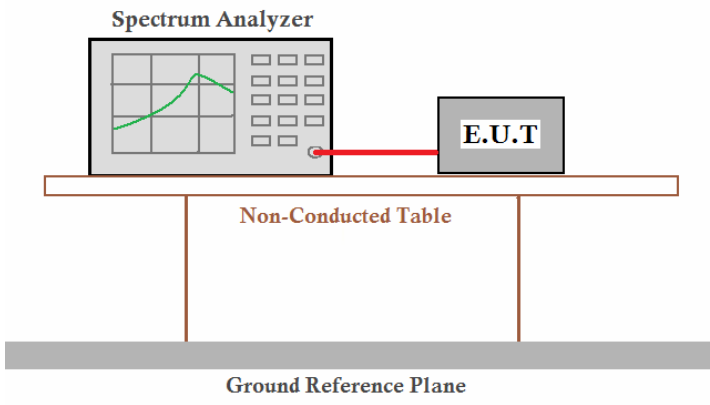
Middle channel



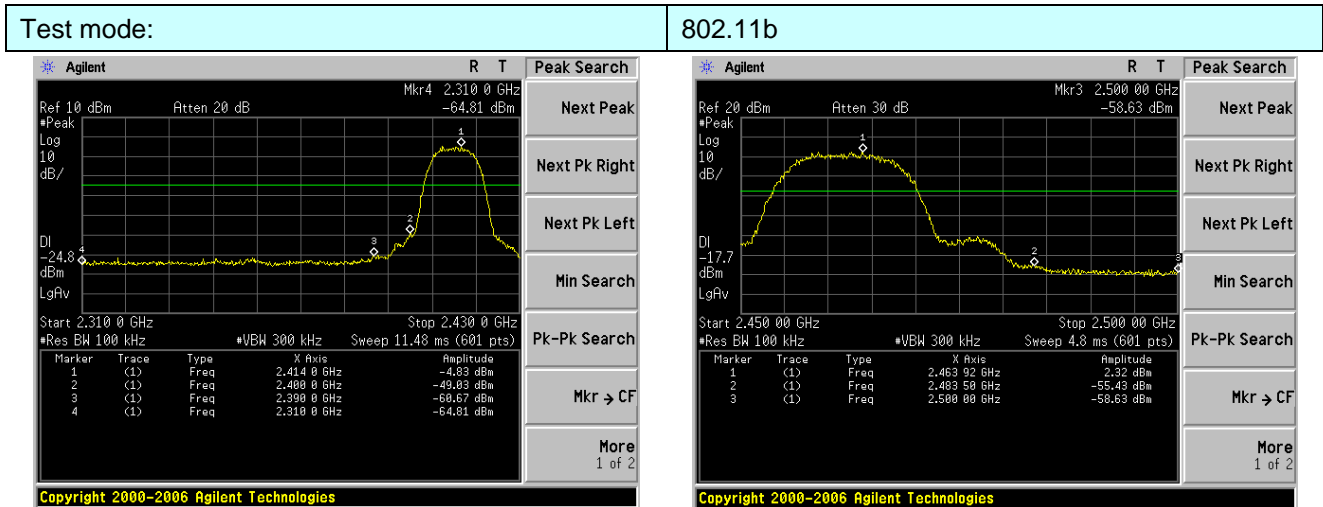
Highest channel

7.6 Band edges

7.6.1 Conducted Emission Method

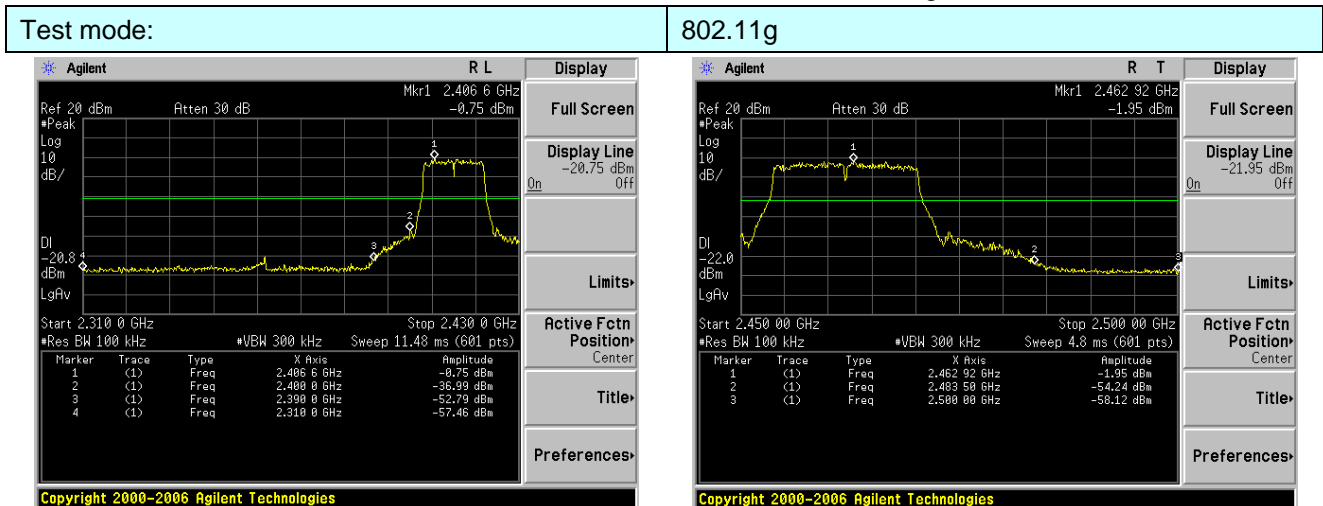
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V02
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional 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:	 <p>The diagram illustrates the test setup for conducted emission measurement. A Spectrum Analyzer is connected via a red cable to an E.U.T (Equipment Under Test). Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Test plot as follows:



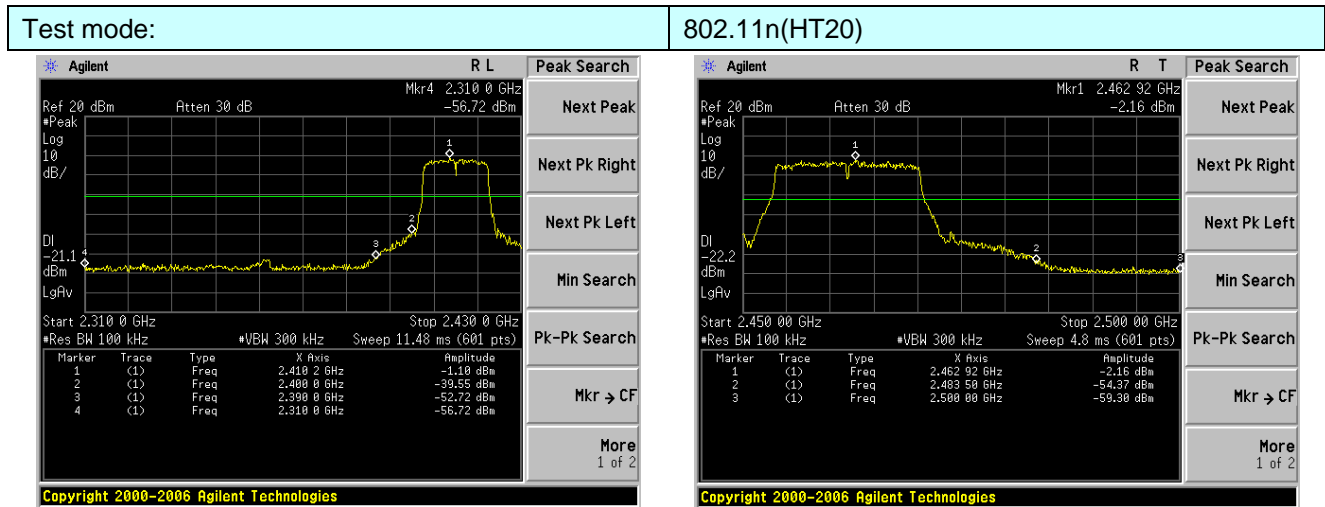
Lowest channel

Highest channel



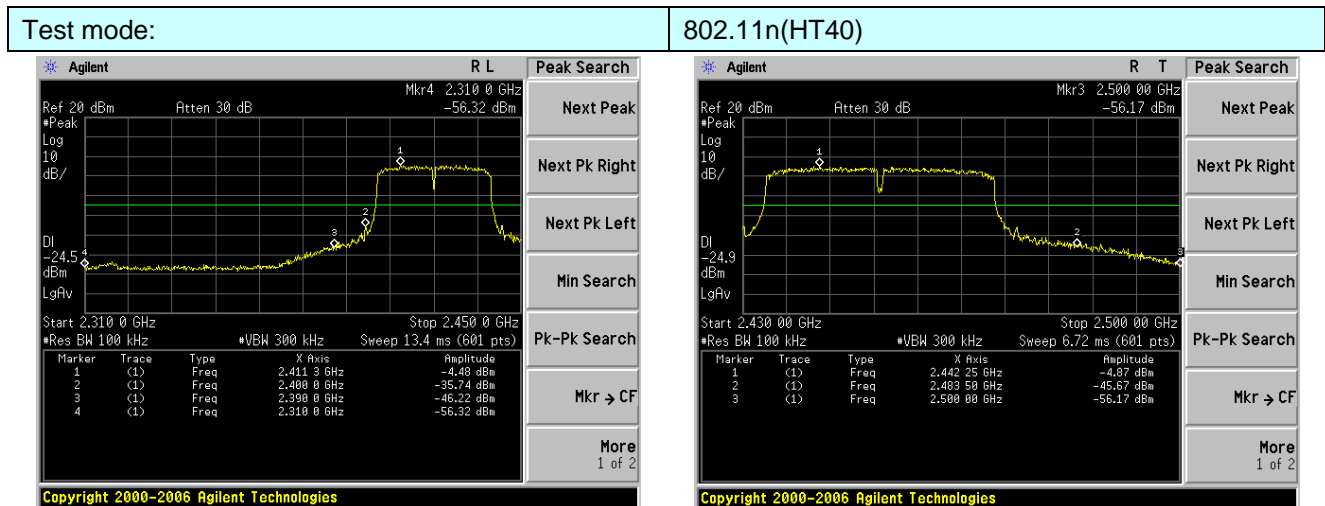
Lowest channel

Highest channel



Lowest channel

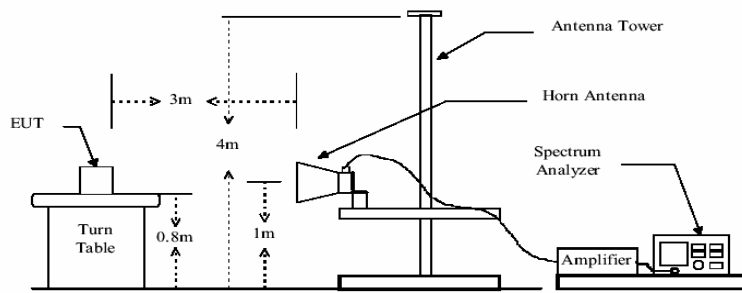
Highest channel



Lowest channel

Highest channel

7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.4: 2003				
Test Frequency Range:	30MHz to 25GHz, only worse case is reported				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	Above 1GHz		54.00		Average Value
			74.00		Peak Value
Test setup:					
Test Procedure:	<div>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>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.</div>				
Test Instruments:	Refer to section 6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Pass				

Remark:

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

Measurement data:

Test mode:	802.11b	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	42.49	27.59	5.38	30.18	45.28	74.00	-28.72	Horizontal
2400.00	60.03	27.58	5.39	30.18	62.82	74.00	-11.18	Horizontal
2390.00	45.15	27.59	5.38	30.18	47.94	74.00	-26.06	Vertical
2400.00	61.04	27.58	5.39	30.18	63.83	74.00	-10.17	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	30.24	27.59	5.38	30.18	33.03	54.00	-20.97	Horizontal
2400.00	41.66	27.58	5.39	30.18	44.45	54.00	-9.55	Horizontal
2390.00	32.17	27.59	5.38	30.18	34.96	54.00	-19.04	Vertical
2400.00	43.66	27.58	5.39	30.18	46.45	54.00	-7.55	Vertical

Test mode:	802.11b	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	42.90	27.53	5.47	29.93	45.97	74.00	-28.03	Horizontal
2500.00	39.30	27.55	5.49	29.93	42.41	74.00	-31.59	Horizontal
2483.50	44.78	27.53	5.47	29.93	47.85	74.00	-26.15	Vertical
2500.00	41.47	27.55	5.49	29.93	44.58	74.00	-29.42	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	30.82	27.53	5.47	29.93	33.89	54.00	-20.11	Horizontal
2500.00	27.13	27.55	5.49	29.93	30.24	54.00	-23.76	Horizontal
2483.50	32.63	27.53	5.47	29.93	35.70	54.00	-18.30	Vertical
2500.00	29.09	27.55	5.49	29.93	32.20	54.00	-21.80	Vertical

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 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
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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	53.86	27.59	5.38	30.18	56.65	74.00	-17.35	Horizontal
2400.00	62.10	27.58	5.39	30.18	64.89	74.00	-9.11	Horizontal
2390.00	56.72	27.59	5.38	30.18	59.51	74.00	-14.49	Vertical
2400.00	63.05	27.58	5.39	30.18	65.84	74.00	-8.16	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	35.01	27.59	5.38	30.18	37.80	54.00	-16.20	Horizontal
2400.00	40.91	27.58	5.39	30.18	43.70	54.00	-10.30	Horizontal
2390.00	37.04	27.59	5.38	30.18	39.83	54.00	-14.17	Vertical
2400.00	42.95	27.58	5.39	30.18	45.74	54.00	-8.26	Vertical

Test mode:	802.11g	Test channel:	Highest
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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	60.02	27.53	5.47	29.93	63.09	74.00	-10.91	Horizontal
2500.00	41.36	27.55	5.49	29.93	44.47	74.00	-29.53	Horizontal
2483.50	61.90	27.53	5.47	29.93	64.97	74.00	-9.03	Vertical
2500.00	43.53	27.55	5.49	29.93	46.64	74.00	-27.36	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	34.22	27.53	5.47	29.93	37.29	54.00	-16.71	Horizontal
2500.00	27.66	27.55	5.49	29.93	30.77	54.00	-23.23	Horizontal
2483.50	36.03	27.53	5.47	29.93	39.10	54.00	-14.90	Vertical
2500.00	29.62	27.55	5.49	29.93	32.73	54.00	-21.27	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(H20)	Test channel:	Lowest
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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	55.21	27.59	5.38	30.18	58.00	74.00	-16.00	Horizontal
2400.00	62.37	27.58	5.39	30.18	65.16	74.00	-8.84	Horizontal
2390.00	58.07	27.59	5.38	30.18	60.86	74.00	-13.14	Vertical
2400.00	63.32	27.58	5.39	30.18	66.11	74.00	-7.89	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	34.24	27.59	5.38	30.18	37.03	54.00	-16.97	Horizontal
2400.00	39.31	27.58	5.39	30.18	42.10	54.00	-11.90	Horizontal
2390.00	36.27	27.59	5.38	30.18	39.06	54.00	-14.94	Vertical
2400.00	41.35	27.58	5.39	30.18	44.14	54.00	-9.86	Vertical

Test mode:	802.11n(H20)	Test channel:	Highest
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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	56.13	27.53	5.47	29.93	59.20	74.00	-14.80	Horizontal
2500.00	43.13	27.55	5.49	29.93	46.24	74.00	-27.76	Horizontal
2483.50	58.01	27.53	5.47	29.93	61.08	74.00	-12.92	Vertical
2500.00	45.30	27.55	5.49	29.93	48.41	74.00	-25.59	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	33.67	27.53	5.47	29.93	36.74	54.00	-17.26	Horizontal
2500.00	27.32	27.55	5.49	29.93	30.43	54.00	-23.57	Horizontal
2483.50	35.48	27.53	5.47	29.93	38.55	54.00	-15.45	Vertical
2500.00	29.28	27.55	5.49	29.93	32.39	54.00	-21.61	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(H40)	Test channel:	Lowest
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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	58.59	27.59	5.38	30.18	61.38	74.00	-12.62	Horizontal
2400.00	62.07	27.58	5.39	30.18	64.86	74.00	-9.14	Horizontal
2390.00	61.45	27.59	5.38	30.18	64.24	74.00	-9.76	Vertical
2400.00	63.02	27.58	5.39	30.18	65.81	74.00	-8.19	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	36.12	27.59	5.38	30.18	38.91	54.00	-15.09	Horizontal
2400.00	37.16	27.58	5.39	30.18	39.95	54.00	-14.05	Horizontal
2390.00	38.15	27.59	5.38	30.18	40.94	54.00	-13.06	Vertical
2400.00	39.20	27.58	5.39	30.18	41.99	54.00	-12.01	Vertical

Test mode:	802.11n(H40)	Test channel:	Highest
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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	61.10	27.53	5.47	29.93	64.17	74.00	-9.83	Horizontal
2500.00	49.92	27.55	5.49	29.93	53.03	74.00	-20.97	Horizontal
2483.50	62.98	27.53	5.47	29.93	66.05	74.00	-7.95	Vertical
2500.00	52.09	27.55	5.49	29.93	55.20	74.00	-18.80	Vertical

Average value:

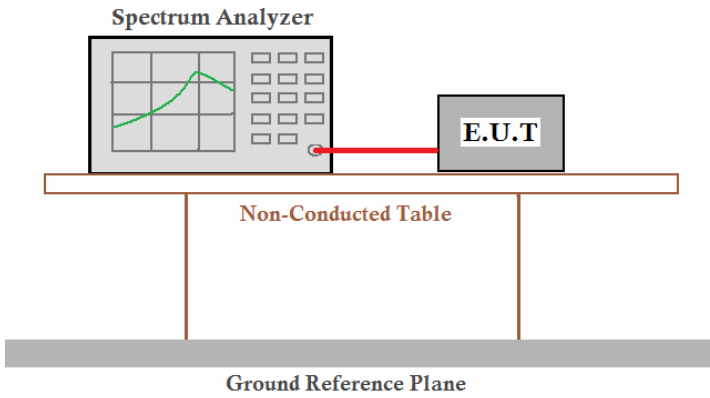
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	35.21	27.53	5.47	29.93	38.28	54.00	-15.72	Horizontal
2500.00	30.11	27.55	5.49	29.93	33.22	54.00	-20.78	Horizontal
2483.50	37.02	27.53	5.47	29.93	40.09	54.00	-13.91	Vertical
2500.00	32.07	27.55	5.49	29.93	35.18	54.00	-18.82	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

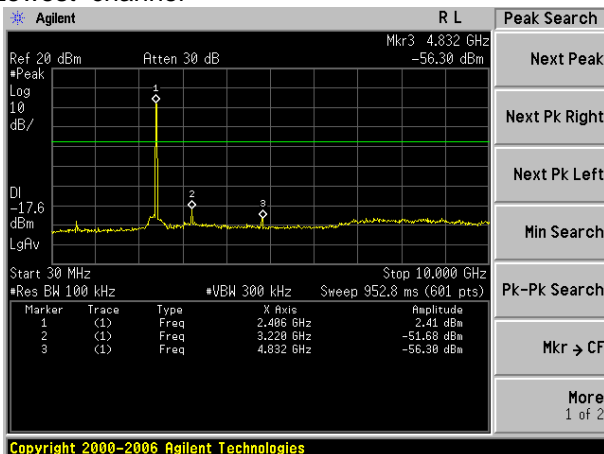
7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V02
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:	 <p>The diagram illustrates the test setup for conducted emission measurement. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table, which sits on a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

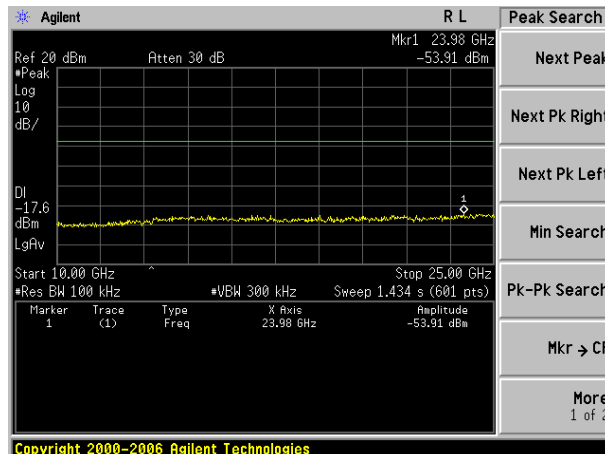
Test plot as follows:

Test mode:	802.11b
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Lowest channel

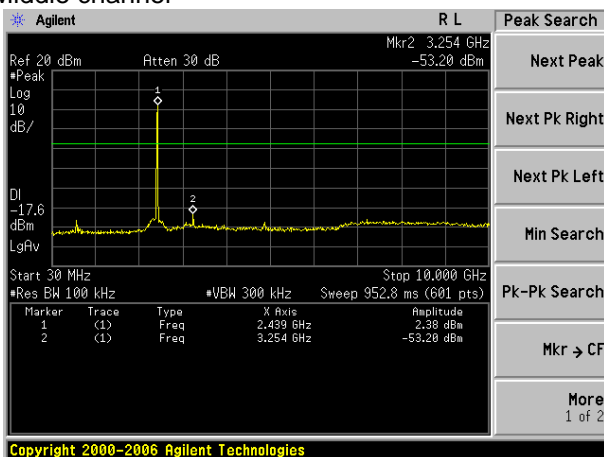


30MHz~10GHz

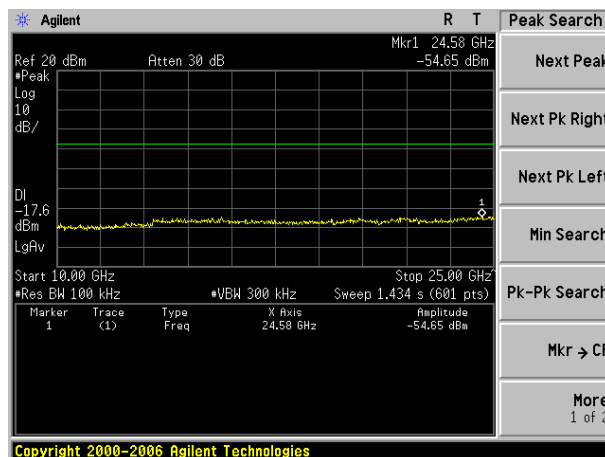


10GHz~25GHz

Middle channel

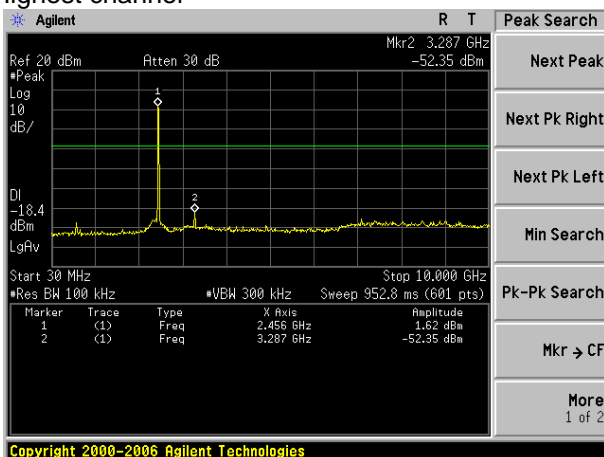


30MHz~10GHz

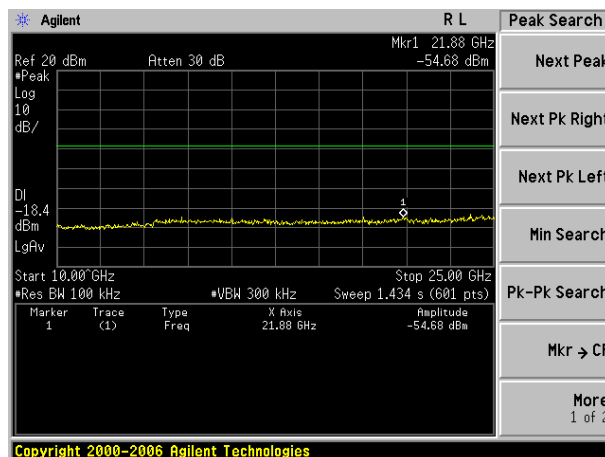


10GHz~25GHz

Highest channel



30MHz~10GHz

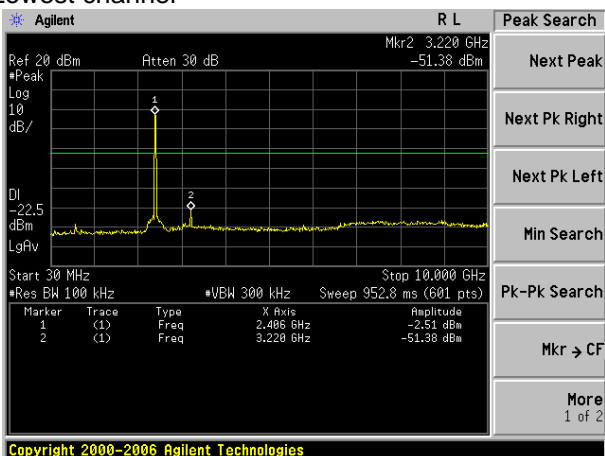


10GHz~25GHz

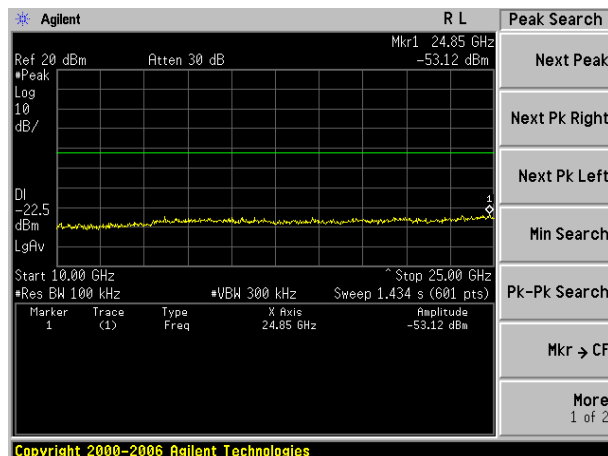
Test mode:

802.11g

Lowest channel

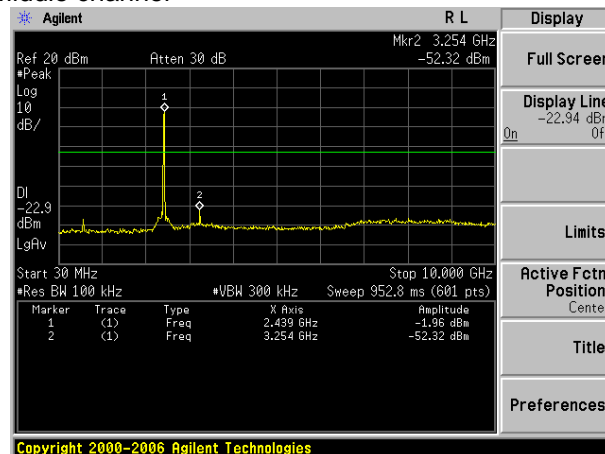


30MHz~10GHz

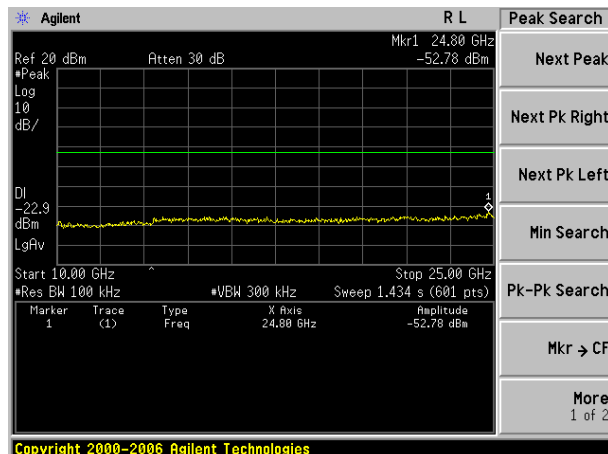


10GHz~25GHz

Middle channel

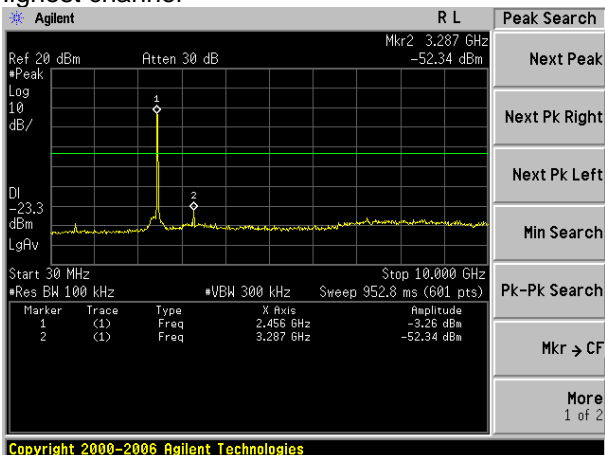


30MHz~10GHz

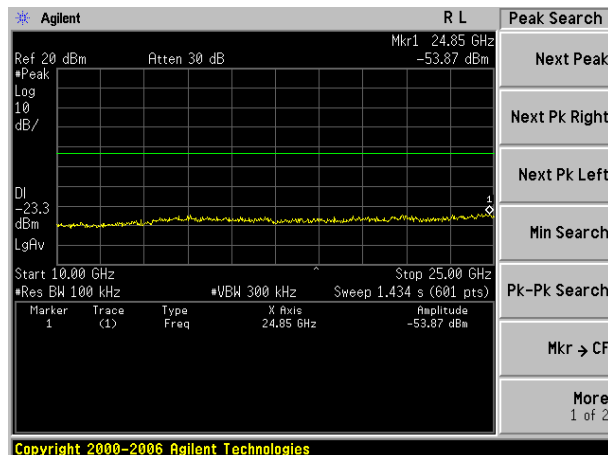


10GHz~25GHz

Highest channel



30MHz~10GHz

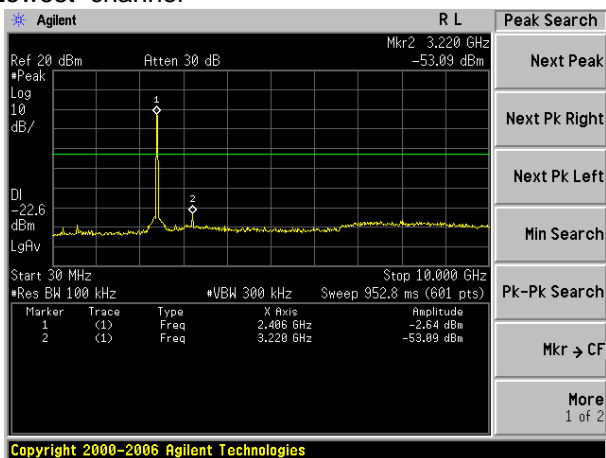


10GHz~25GHz

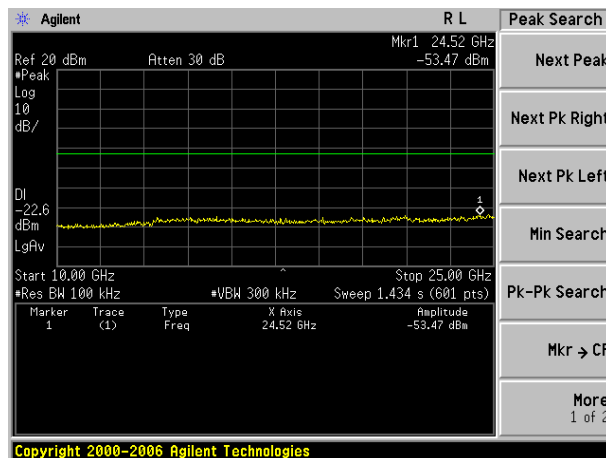
Test mode:

802.11n(HT20)

Lowest channel

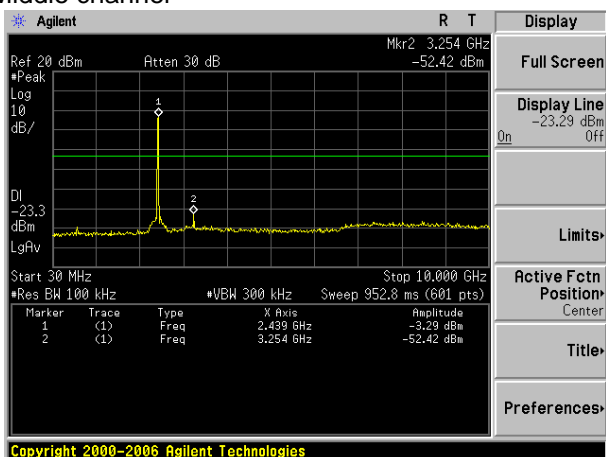


30MHz~10GHz

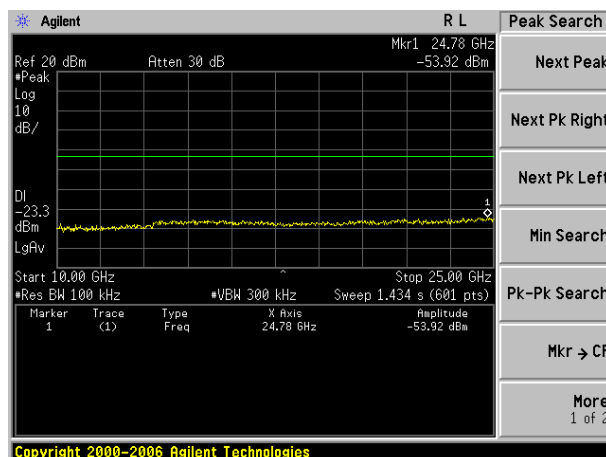


10GHz~25GHz

Middle channel

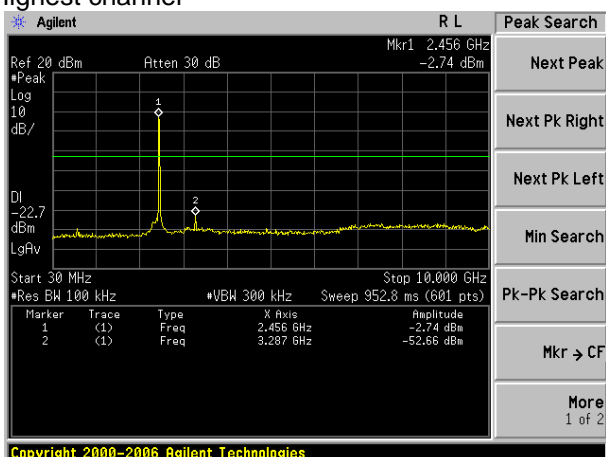


30MHz~10GHz

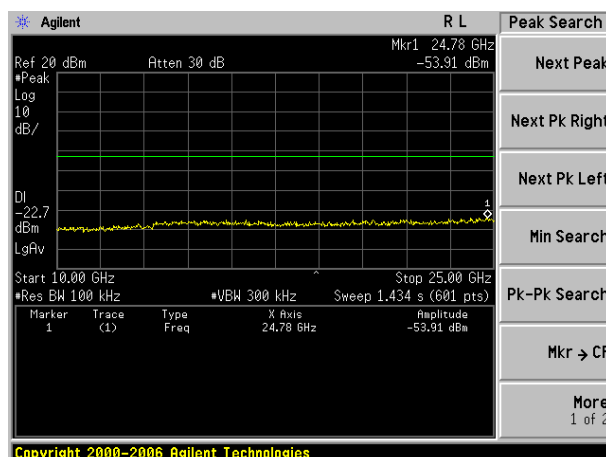


10GHz~25GHz

Highest channel



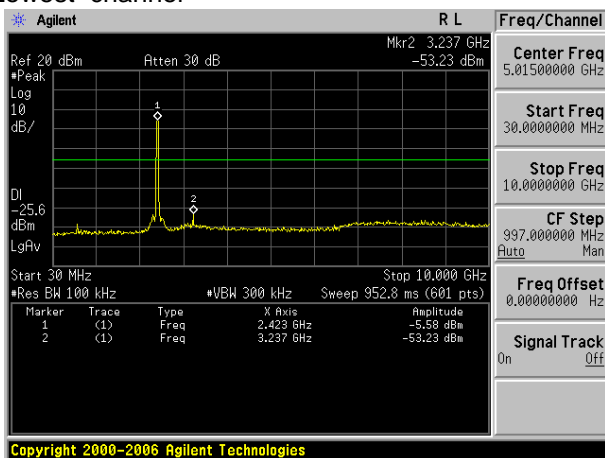
30MHz~10GHz



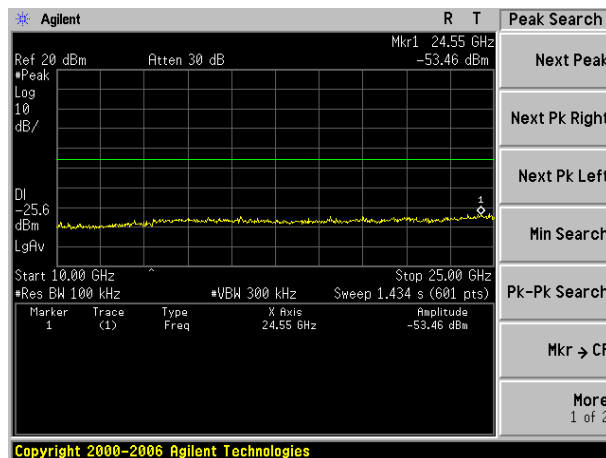
10GHz~25GHz

Test mode:	802.11n(HT40)
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Lowest channel

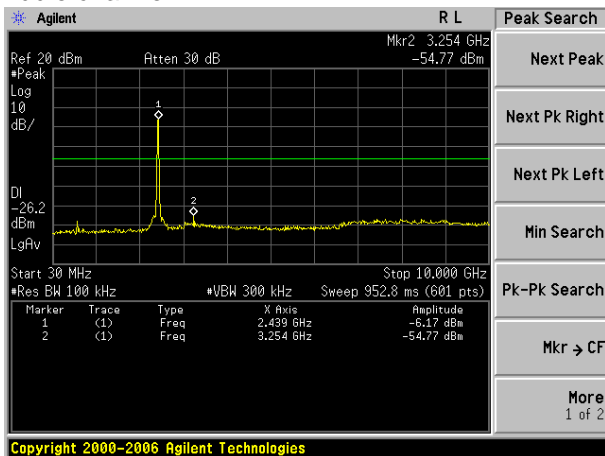


30MHz~10GHz

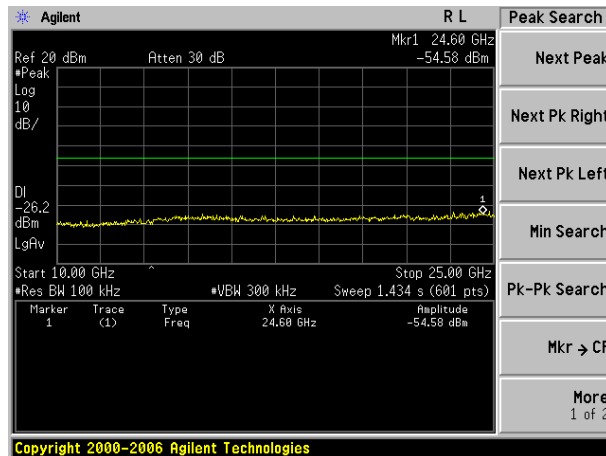


10GHz~25GHz

Middle channel

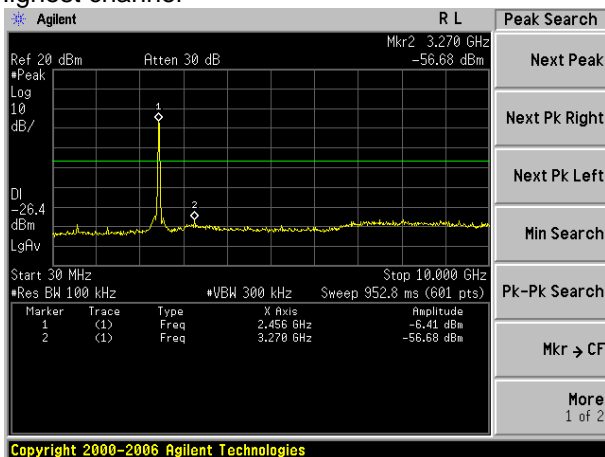


30MHz~10GHz

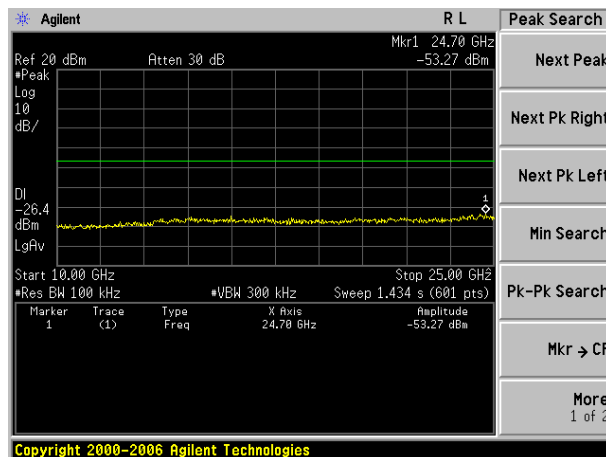


10GHz~25GHz

Highest channel

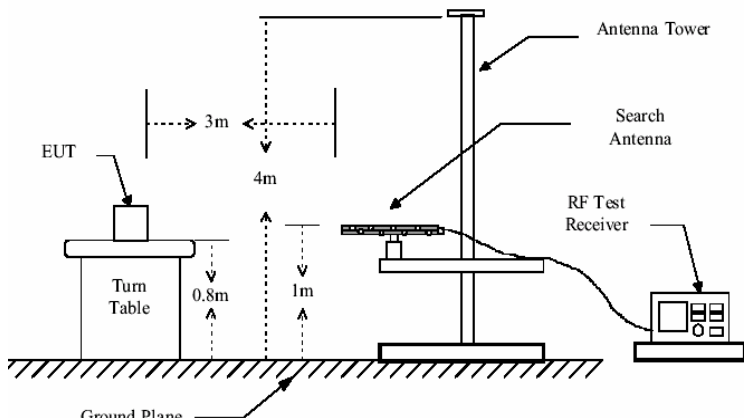
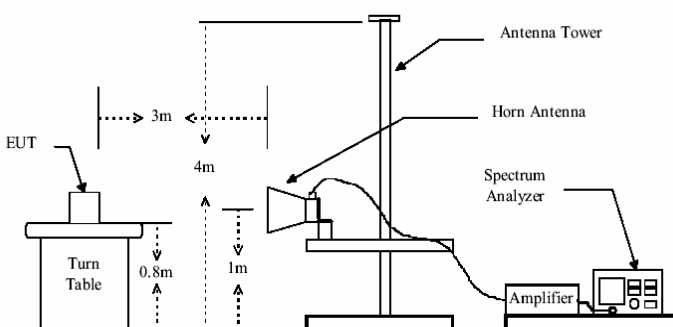


30MHz~10GHz



10GHz~25GHz

7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.4: 2003				
Test Frequency Range:	30MHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		54.0		Average Value
			74.0		Peak Value
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.				

	<ol style="list-style-type: none"> 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.
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Remark:

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

Below 1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
119.86	42.48	12.48	1.36	31.86	24.46	43.50	-19.04	Vertical
167.82	43.30	10.90	1.67	32.04	23.83	43.50	-19.67	Vertical
221.39	43.03	13.25	1.97	32.15	26.10	46.00	-19.90	Vertical
360.45	42.06	16.43	2.67	32.00	29.16	46.00	-16.84	Vertical
866.09	45.09	22.78	4.73	31.23	41.37	46.00	-4.63	Vertical
962.16	43.15	23.49	5.09	31.22	40.51	54.00	-13.49	Vertical
56.99	39.77	14.89	0.84	31.95	23.55	40.00	-16.45	Horizontal
158.11	49.18	10.58	1.62	32.01	29.37	43.50	-14.13	Horizontal
221.39	49.15	13.25	1.97	32.15	32.22	46.00	-13.78	Horizontal
263.82	50.21	14.17	2.19	32.17	34.40	46.00	-11.60	Horizontal
410.38	51.03	17.26	2.91	31.86	39.34	46.00	-6.66	Horizontal
903.31	46.50	23.12	4.87	31.18	43.31	46.00	-2.69	Horizontal

Above 1GHz

Test mode:	802.11b	Test channel:	Lowest
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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	36.94	31.28	8.62	24.17	52.67	74.00	-21.33	Vertical
7236.00	37.95	35.36	11.68	26.52	58.47	74.00	-15.53	Vertical
9648.00	36.34	37.44	14.16	25.44	62.50	74.00	-11.50	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	33.37	31.28	8.62	24.17	49.10	74.00	-24.90	Horizontal
7236.00	34.56	35.36	11.68	26.52	55.08	74.00	-18.92	Horizontal
9648.00	30.36	37.44	14.16	25.44	56.52	74.00	-17.48	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	20.76	31.28	8.62	24.17	36.49	54.00	-17.51	Vertical
7236.00	20.86	35.36	11.68	26.52	41.38	54.00	-12.62	Vertical
9648.00	17.71	37.44	14.16	25.44	43.87	54.00	-10.13	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	19.46	31.28	8.62	24.17	35.19	54.00	-18.81	Horizontal
7236.00	20.48	35.36	11.68	26.52	41.00	54.00	-13.00	Horizontal
9648.00	16.80	37.44	14.16	25.44	42.96	54.00	-11.04	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
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	37.37	32.02	8.66	24.12	53.93	74.00	-20.07	Vertical
7311.00	37.87	36.64	11.71	26.71	59.51	74.00	-14.49	Vertical
9748.00	33.55	38.54	14.25	25.38	60.96	74.00	-13.04	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	33.33	32.02	8.66	24.12	49.89	74.00	-24.11	Horizontal
7311.00	33.38	36.64	11.71	26.71	55.02	74.00	-18.98	Horizontal
9748.00	28.92	38.54	14.25	25.38	56.33	74.00	-17.67	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	21.19	32.02	8.66	24.12	37.75	54.00	-16.25	Vertical
7311.00	20.78	36.64	11.71	26.71	42.42	54.00	-11.58	Vertical
9748.00	14.92	38.54	14.25	25.38	42.33	54.00	-11.67	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	19.42	32.02	8.66	24.12	35.98	54.00	-18.02	Horizontal
7311.00	18.67	36.64	11.71	26.71	40.31	54.00	-13.69	Horizontal
9748.00	14.95	38.54	14.25	25.38	42.36	54.00	-11.64	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
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	37.87	32.14	8.70	24.05	54.66	74.00	-19.34	Vertical
7386.00	39.76	36.75	11.76	26.90	61.37	74.00	-12.63	Vertical
9848.00	33.11	38.79	14.31	25.30	60.91	74.00	-13.09	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	34.14	32.14	8.70	24.05	50.93	74.00	-23.07	Horizontal
7386.00	35.40	36.75	11.76	26.90	57.01	74.00	-16.99	Horizontal
9848.00	29.13	38.79	14.31	25.30	56.93	74.00	-17.07	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	21.69	32.14	8.70	24.05	38.48	54.00	-15.52	Vertical
7386.00	22.67	36.75	11.76	26.90	44.28	54.00	-9.72	Vertical
9848.00	14.48	38.79	14.31	25.30	42.28	54.00	-11.72	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	20.23	32.14	8.70	24.05	37.02	54.00	-16.98	Horizontal
7386.00	21.32	36.75	11.76	26.90	42.93	54.00	-11.07	Horizontal
9848.00	15.57	38.79	14.31	25.30	43.37	54.00	-10.63	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 too weak instrument of signal is unable to test.

Test mode:	802.11g	Test channel:	lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	37.48	31.28	8.62	24.17	53.21	74.00	-20.79	Vertical
7236.00	38.58	35.36	11.68	26.52	59.10	74.00	-14.90	Vertical
9648.00	37.06	37.44	14.16	25.44	63.22	74.00	-10.78	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	34.11	31.28	8.62	24.17	49.84	74.00	-24.16	Horizontal
7236.00	35.25	35.36	11.68	26.52	55.77	74.00	-18.23	Horizontal
9648.00	30.94	37.44	14.16	25.44	57.10	74.00	-16.90	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	21.30	31.28	8.62	24.17	37.03	54.00	-16.97	Vertical
7236.00	21.49	35.36	11.68	26.52	42.01	54.00	-11.99	Vertical
9648.00	18.43	37.44	14.16	25.44	44.59	54.00	-9.41	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	20.20	31.28	8.62	24.17	35.93	54.00	-18.07	Horizontal
7236.00	21.17	35.36	11.68	26.52	41.69	54.00	-12.31	Horizontal
9648.00	17.38	37.44	14.16	25.44	43.54	54.00	-10.46	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 too weak instrument of signal is unable to test.

Test mode:	802.11g	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	37.84	32.02	8.66	24.12	54.40	74.00	-19.60	Vertical
7311.00	38.49	36.64	11.71	26.71	60.13	74.00	-13.87	Vertical
9748.00	33.94	38.54	14.25	25.38	61.35	74.00	-12.65	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	33.94	32.02	8.66	24.12	50.50	74.00	-23.50	Horizontal
7311.00	34.13	36.64	11.71	26.71	55.77	74.00	-18.23	Horizontal
9748.00	29.26	38.54	14.25	25.38	56.67	74.00	-17.33	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	21.66	32.02	8.66	24.12	38.22	54.00	-15.78	Vertical
7311.00	21.40	36.64	11.71	26.71	43.04	54.00	-10.96	Vertical
9748.00	15.31	38.54	14.25	25.38	42.72	54.00	-11.28	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	20.03	32.02	8.66	24.12	36.59	54.00	-17.41	Horizontal
7311.00	20.05	36.64	11.71	26.71	41.69	54.00	-12.31	Horizontal
9748.00	15.70	38.54	14.25	25.38	43.11	54.00	-10.89	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
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	38.71	32.14	8.70	24.05	55.50	74.00	-18.50	Vertical
7386.00	40.48	36.75	11.76	26.90	62.09	74.00	-11.91	Vertical
9848.00	33.77	38.79	14.31	25.30	61.57	74.00	-12.43	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	34.71	32.14	8.70	24.05	51.50	74.00	-22.50	Horizontal
7386.00	35.88	36.75	11.76	26.90	57.49	74.00	-16.51	Horizontal
9848.00	29.76	38.79	14.31	25.30	57.56	74.00	-16.44	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	22.53	32.14	8.70	24.05	39.32	54.00	-14.68	Vertical
7386.00	23.39	36.75	11.76	26.90	45.00	54.00	-9.00	Vertical
9848.00	15.14	38.79	14.31	25.30	42.94	54.00	-11.06	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	20.80	32.14	8.70	24.05	37.59	54.00	-16.41	Horizontal
7386.00	21.80	36.75	11.76	26.90	43.41	54.00	-10.59	Horizontal
9848.00	15.20	38.79	14.31	25.30	43.00	54.00	-11.00	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 too weak instrument of signal is unable to test.

Test mode:	802.11n(H20)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	36.68	31.28	8.62	24.17	52.41	74.00	-21.59	Vertical
7236.00	37.58	35.36	11.68	26.52	58.10	74.00	-15.90	Vertical
9648.00	35.90	37.44	14.16	25.44	62.06	74.00	-11.94	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	33.04	31.28	8.62	24.17	48.77	74.00	-25.23	Horizontal
7236.00	34.37	35.36	11.68	26.52	54.89	74.00	-19.11	Horizontal
9648.00	30.11	37.44	14.16	25.44	56.27	74.00	-17.73	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	20.50	31.28	8.62	24.17	36.23	54.00	-17.77	Vertical
7236.00	20.49	35.36	11.68	26.52	41.01	54.00	-12.99	Vertical
9648.00	17.27	37.44	14.16	25.44	43.43	54.00	-10.57	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	19.13	31.28	8.62	24.17	34.86	54.00	-19.14	Horizontal
7236.00	20.29	35.36	11.68	26.52	40.81	54.00	-13.19	Horizontal
9648.00	16.55	37.44	14.16	25.44	42.71	54.00	-11.29	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(H20)	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	36.96	32.02	8.66	24.12	53.52	74.00	-20.48	Vertical
7311.00	37.51	36.64	11.71	26.71	59.15	74.00	-14.85	Vertical
9748.00	33.24	38.54	14.25	25.38	60.65	74.00	-13.35	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	32.82	32.02	8.66	24.12	49.38	74.00	-24.62	Horizontal
7311.00	33.00	36.64	11.71	26.71	54.64	74.00	-19.36	Horizontal
9748.00	28.63	38.54	14.25	25.38	56.04	74.00	-17.96	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	20.78	32.02	8.66	24.12	37.34	54.00	-16.66	Vertical
7311.00	20.42	36.64	11.71	26.71	42.06	54.00	-11.94	Vertical
9748.00	14.61	38.54	14.25	25.38	42.02	54.00	-11.98	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	18.91	32.02	8.66	24.12	35.47	54.00	-18.53	Horizontal
7311.00	18.92	36.64	11.71	26.71	40.56	54.00	-13.44	Horizontal
9748.00	14.07	38.54	14.25	25.38	41.48	54.00	-12.52	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(H20)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	37.42	32.14	8.70	24.05	54.21	74.00	-19.79	Vertical
7386.00	39.20	36.75	11.76	26.90	60.81	74.00	-13.19	Vertical
9848.00	32.81	38.79	14.31	25.30	60.61	74.00	-13.39	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	33.43	32.14	8.70	24.05	50.22	74.00	-23.78	Horizontal
7386.00	34.58	36.75	11.76	26.90	56.19	74.00	-17.81	Horizontal
9848.00	28.45	38.79	14.31	25.30	56.25	74.00	-17.75	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	21.24	32.14	8.70	24.05	38.03	54.00	-15.97	Vertical
7386.00	22.11	36.75	11.76	26.90	43.72	54.00	-10.28	Vertical
9848.00	14.18	38.79	14.31	25.30	41.98	54.00	-12.02	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	19.52	32.14	8.70	24.05	36.31	54.00	-17.69	Horizontal
7386.00	20.50	36.75	11.76	26.90	42.11	54.00	-11.89	Horizontal
9848.00	13.89	38.79	14.31	25.30	41.69	54.00	-12.31	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(H40)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844.00	37.79	31.40	8.63	24.04	53.78	74.00	-20.22	Vertical
7266.00	38.71	35.96	11.69	26.47	59.89	74.00	-14.11	Vertical
9688.00	37.01	37.71	14.21	25.30	63.63	74.00	-10.37	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4844.00	34.14	31.40	8.63	24.04	50.13	74.00	-23.87	Horizontal
7266.00	35.10	35.96	11.69	26.47	56.28	74.00	-17.72	Horizontal
9688.00	31.19	37.71	14.21	25.30	57.81	74.00	-16.19	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844.00	21.61	31.40	8.63	24.04	37.60	54.00	-16.40	Vertical
7266.00	21.62	35.96	11.69	26.47	42.80	54.00	-11.20	Vertical
9688.00	18.38	37.71	14.21	25.30	45.00	54.00	-9.00	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4844.00	20.23	31.40	8.63	24.04	36.22	54.00	-17.78	Horizontal
7266.00	21.02	35.96	11.69	26.47	42.20	54.00	-11.80	Horizontal
9688.00	17.63	37.71	14.21	25.30	44.25	54.00	-9.75	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 too weak instrument of signal is unable to test.

Test mode:	802.11n(H40)	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	38.49	32.02	8.66	24.12	55.05	74.00	-18.95	Vertical
7311.00	38.91	36.64	11.71	26.71	60.55	74.00	-13.45	Vertical
9748.00	34.80	38.54	14.25	25.38	62.21	74.00	-11.79	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	34.41	32.02	8.66	24.12	50.97	74.00	-23.03	Horizontal
7311.00	34.60	36.64	11.71	26.71	56.24	74.00	-17.76	Horizontal
9748.00	30.08	38.54	14.25	25.38	57.49	74.00	-16.51	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	22.31	32.02	8.66	24.12	38.87	54.00	-15.13	Vertical
7311.00	21.82	36.64	11.71	26.71	43.46	54.00	-10.54	Vertical
9748.00	16.17	38.54	14.25	25.38	43.58	54.00	-10.42	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	20.50	32.02	8.66	24.12	37.06	54.00	-16.94	Horizontal
7311.00	20.52	36.64	11.71	26.71	42.16	54.00	-11.84	Horizontal
9748.00	16.52	38.54	14.25	25.38	43.93	54.00	-10.07	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(H40)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904.00	39.42	32.08	8.68	23.97	56.21	74.00	-17.79	Vertical
7356.00	41.50	36.69	11.74	26.73	63.20	74.00	-10.80	Vertical
9808.00	35.09	38.60	14.29	25.22	62.76	74.00	-11.24	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4904.00	35.50	32.08	8.68	23.97	52.29	74.00	-21.71	Horizontal
7356.00	36.67	36.69	11.74	26.73	58.37	74.00	-15.63	Horizontal
9808.00	31.00	38.60	14.29	25.22	58.67	74.00	-15.33	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)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904.00	23.24	32.08	8.68	23.97	40.03	54.00	-13.97	Vertical
7356.00	24.41	36.69	11.74	26.73	46.11	54.00	-7.89	Vertical
9808.00	16.46	38.60	14.29	25.22	44.13	54.00	-9.87	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4904.00	21.59	32.08	8.68	23.97	38.38	54.00	-15.62	Horizontal
7356.00	22.59	36.69	11.74	26.73	44.29	54.00	-9.71	Horizontal
9808.00	15.44	38.60	14.29	25.22	43.11	54.00	-10.89	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.

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