FCC REPORT

Applicant:	DigitalZone. Co., Ltd.
Address of Applicant:	NO.506 E&C Venture Dream Tower 2, 197-10, Guro-dong, Guro-gu, Seoul, 152-719, Korea

Equipment Under Test (EUT)

Product Name:	Android Hybrid Box
Model No.:	S20A, S20
Trade Mark:	TizzBird/WeVO AIRLink
FCC ID:	2ABDI-S20A
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247:2012
Date of sample receipt:	November 19, 2013
Date of Test:	November 19-25, 2013
Date of report issued:	November 26, 2013
Test Result :	PASS *

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

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*November 26, 2013*	*Original*

Prepared By: *Hank. Yan* ***Date:*** *November 26, 2013*

Project Engineer

Check By: *Hans. Hu* ***Date:*** *November 26, 2013*

Reviewer

3 Contents

4 Test Summary

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

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

5 General Information

5.1 Client Information

Applicant:	DigitalZone. Co., Ltd.
Address of Applicant:	NO.506 E&C Venture Dream Tower 2, 197-10, Guro-dong, Guro-gu, Seoul, 152-719, Korea
Manufacturer:	DigitalZone. Co., Ltd.
Address of Manufacturer:	NO.506 E&C Venture Dream Tower 2, 197-10, Guro-dong, Guro-gu, Seoul, 152-719, Korea

5.2 General Description of EUT

Product Name:	Android Hybrid Box
Model No.:	S20A, S20
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): 7
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(H20)/802.11n(H40): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	Integral Antenna
Antenna gain:	2.00dBi (declare by Applicant)
Power supply:	Model No.: NSA15EU-050200 Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 5.0V, 2A

REMARK : The product model S20 and S20A are electrically identical except the model S20 don't include TV ATSC module but Model S20A include TV ATSC module.And S20 and S20A are tested ,only list the worse case Model S20A 's result in report .

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

5.3 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, 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:

Per-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

5.4 Description of Support Units

None.

5.5 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 fuly 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-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, June 26, 2013.

5.6 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
Tel: 0755-27798480
Fax: 0755-27798960

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	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 29 2013	Mar. 28 2014
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	Dec. 5, 2013	Dec. 4 2014
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 02 2013	Jul. 01 2014
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 24 2013	Feb. 23 2014
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 28 2013	June 27 2014
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 29 2013	Mar. 28 2014
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	Mar. 30 2013	Mar. 29 2014
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 30 2013	Mar. 29 2014
11	Coaxial cable	GTS	N/A	GTS210	Mar. 30 2013	Mar. 29 2014
12	Coaxial Cable	GTS	N/A	GTS212	Mar. 30 2013	Mar. 29 2014
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 02 2013	Jul. 01 2014
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 02 2013	Jul. 01 2014
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 28 2013	June 27 2014
16	Band filter	Amindeon	82346	GTS219	Mar. 30 2013	Mar. 29 2014

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	7.0(L)x3.0(W)x3.0(H)	GTS264	Sep. 07 2013	Sep. 06 2015
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 02 2013	Jul. 01 2014
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jul. 02 2013	Jul. 01 2014
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 02 2013	Jul. 01 2014
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 02 2013	Jul. 01 2014
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 02 2013	Jul. 01 2014
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

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	July 09 2013	July 08 2014

7 Test results and Measurement Data

7.1 Antenna requirement:

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

15.203 requirement:

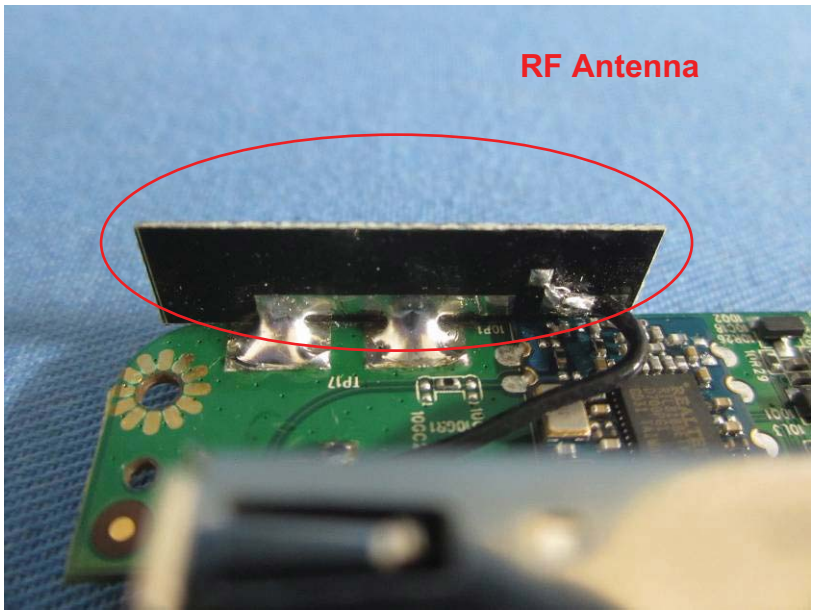
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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:

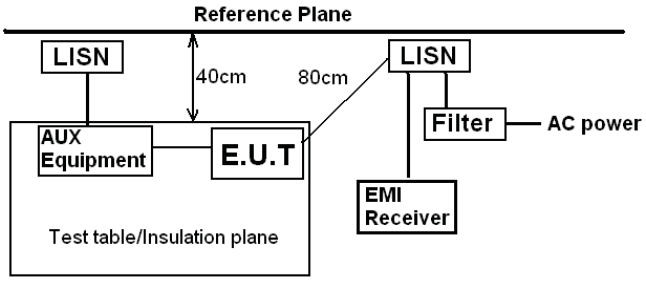
(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional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

E.U.T Antenna:

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

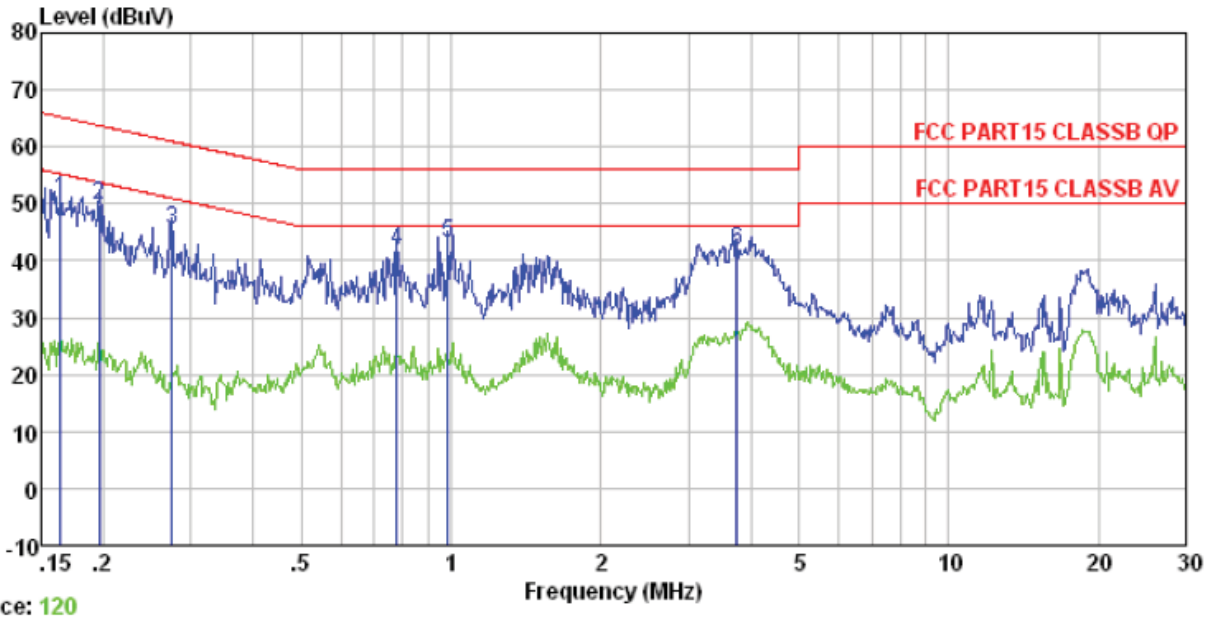


7.2 Conducted Emissions

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:	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 C63.4: 2003 on conducted measurement.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement data

Line:

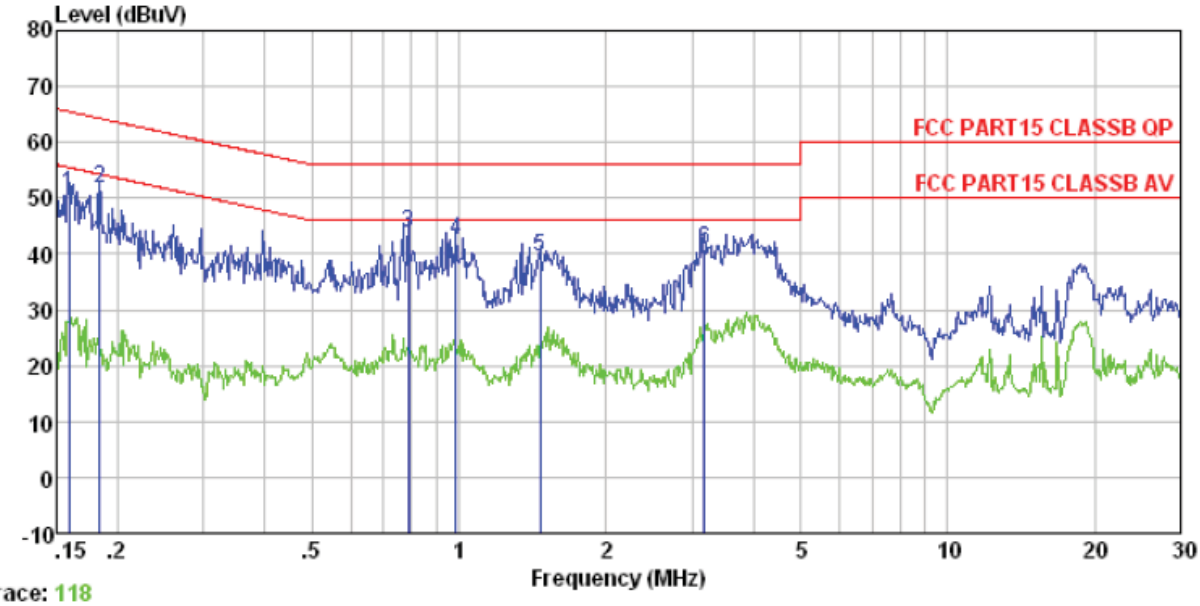


Trace: 120

Condition : FCC PART15 CLASSB QP LISN-2013 LINE
Job.No : 1787RF
Test mode : WiFi mode
Test Engineer: Bing

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.164	50.47	0.15	0.12	50.74	65.25	-14.51	QP
2	0.197	49.50	0.14	0.13	49.77	63.76	-13.99	QP
3	0.274	45.39	0.11	0.10	45.60	60.98	-15.38	QP
4	0.779	41.56	0.14	0.13	41.83	56.00	-14.17	QP
5	0.984	43.00	0.14	0.13	43.27	56.00	-12.73	QP
6	3.759	41.42	0.19	0.15	41.76	56.00	-14.24	QP

Neutral:



Trace: 118

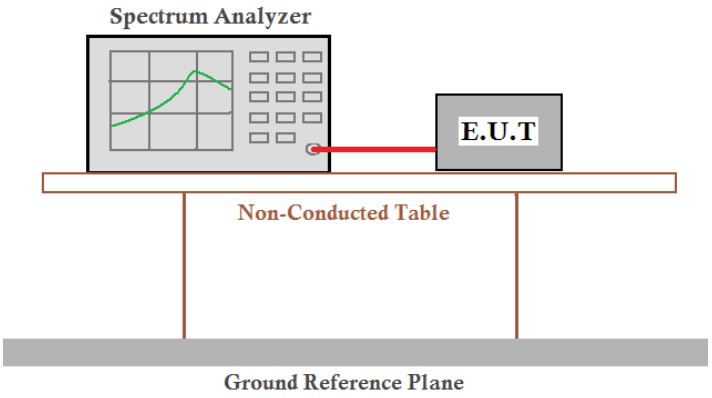
Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL
Job.No : 1787RF
Test mode : WiFi mode
Test Engineer: Bing

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.159	50.59	0.07	0.12	50.78	65.52	-14.74	QP
2	0.183	51.58	0.07	0.13	51.78	64.33	-12.55	QP
3	0.788	43.48	0.07	0.13	43.68	56.00	-12.32	QP
4	0.984	42.25	0.07	0.13	42.45	56.00	-13.55	QP
5	1.464	39.10	0.09	0.13	39.32	56.00	-16.68	QP
6	3.173	40.67	0.12	0.15	40.94	56.00	-15.06	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

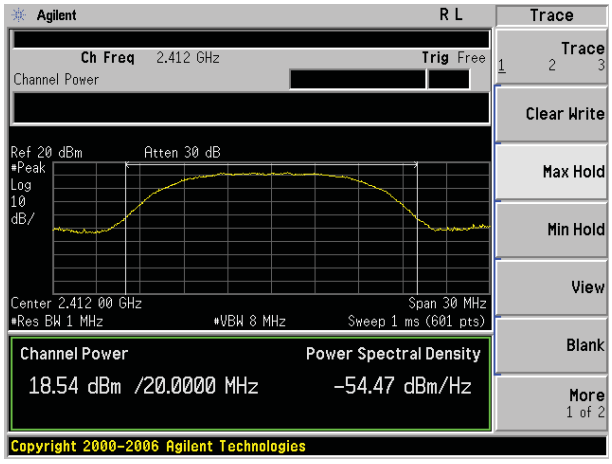
Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V03
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

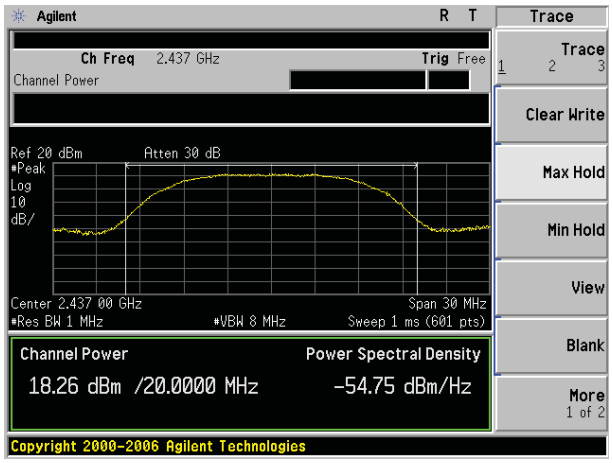
Test CH	Peak Output Power (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	18.54	16.65	16.37	16.38	30.00	Pass
Middle	18.26	16.25	16.19	16.24		
Highest	18.07	15.64	15.51	15.88		

Test plot as follows:

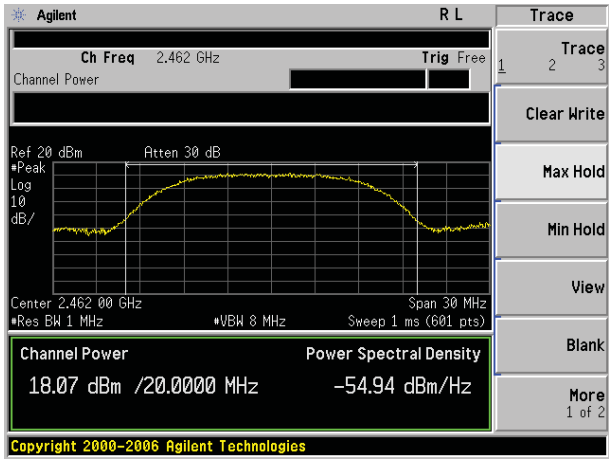
Test mode:	802.11b



Lowest channel

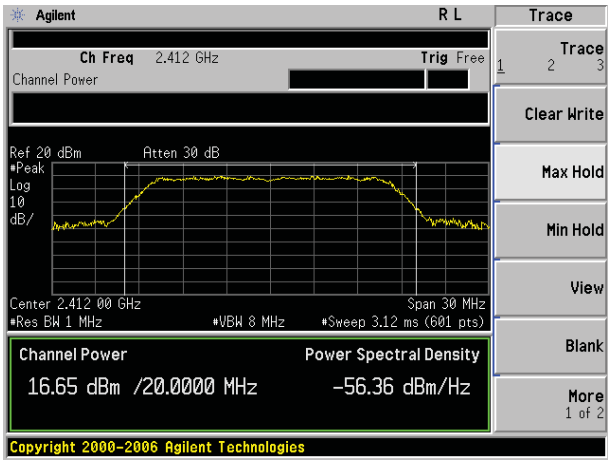


Middle channel

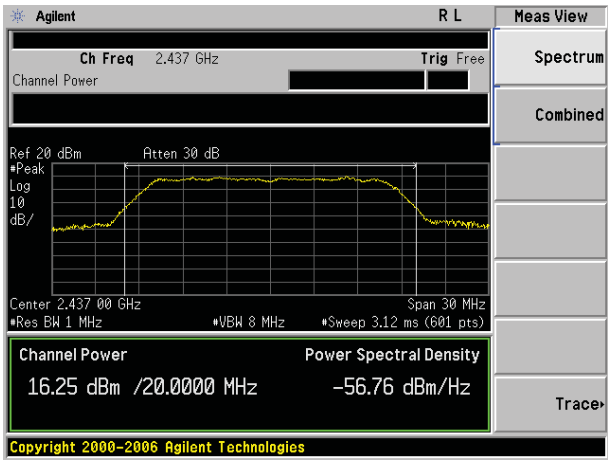


Highest channel

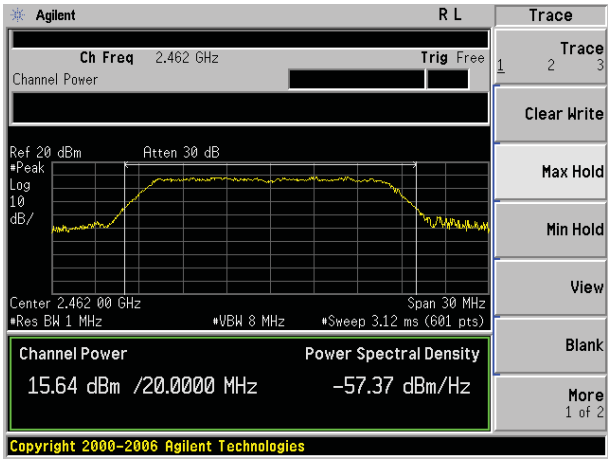
Test mode:	802.11g



Lowest channel

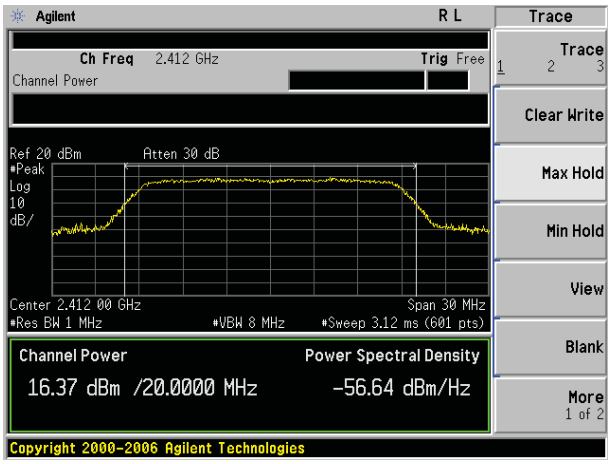


Middle channel

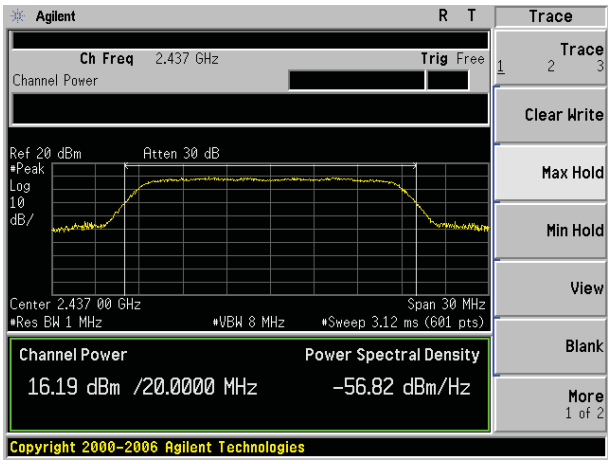


Highest channel

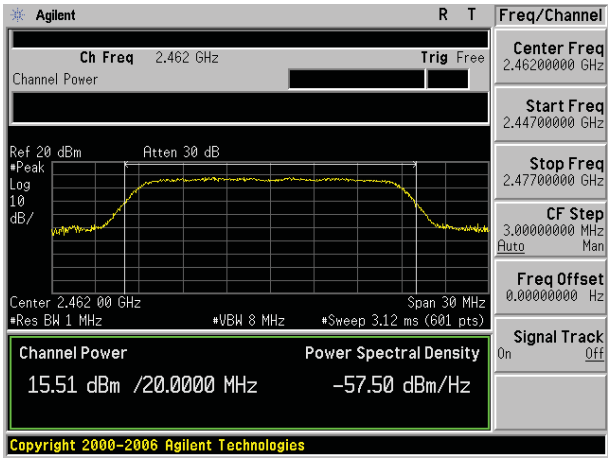
Test mode:	802.11n(HT20)



Lowest channel

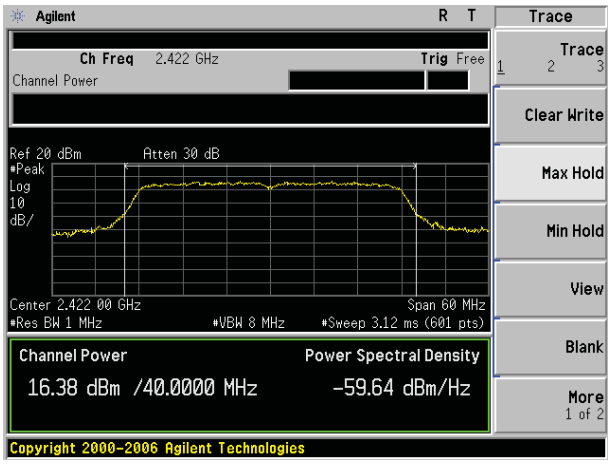


Middle channel

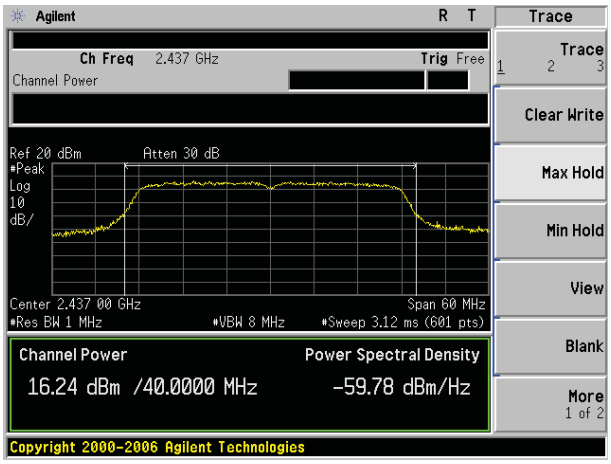


Highest channel

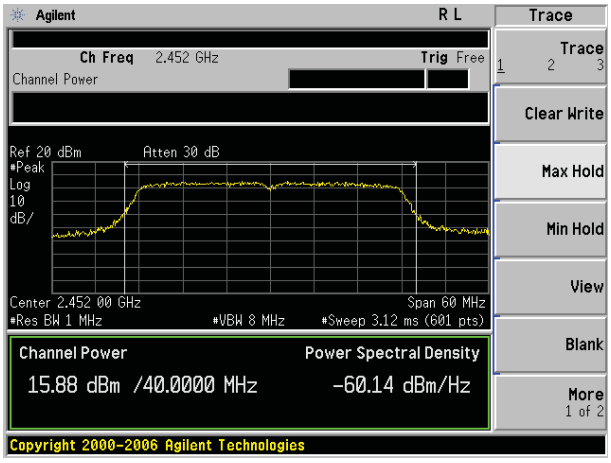
Test mode:	802.11n(HT40)



Lowest channel

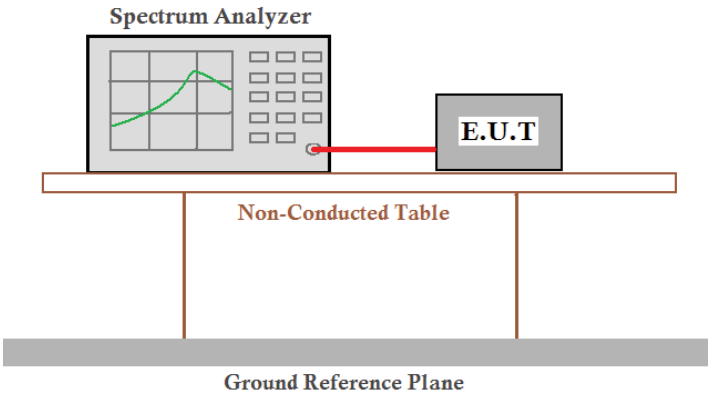


Middle channel



Highest channel

7.4 Channel Bandwidth

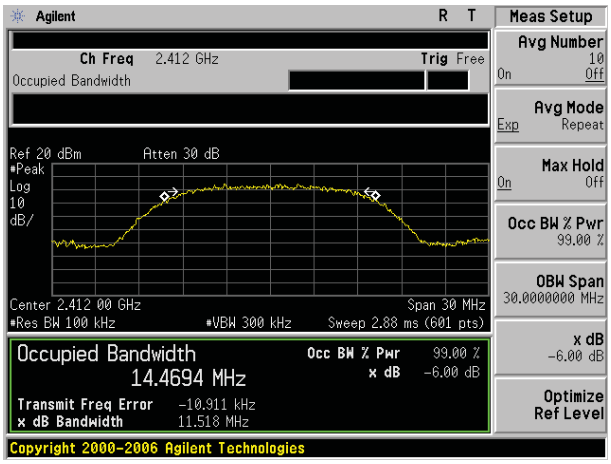
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V03
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

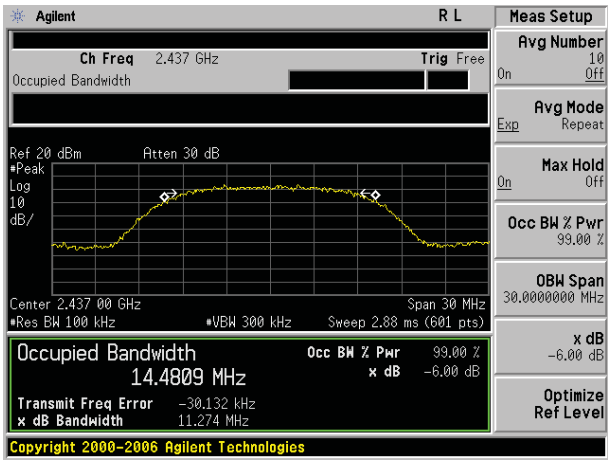
Test CH	Channel Bandwidth (MHz)				Limit(KHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	11.518	16.495	17.672	36.362	>500	Pass
Middle	11.274	16.507	17.669	36.339		
Highest	11.269	16.487	17.683	36.074		

Test plot as follows:

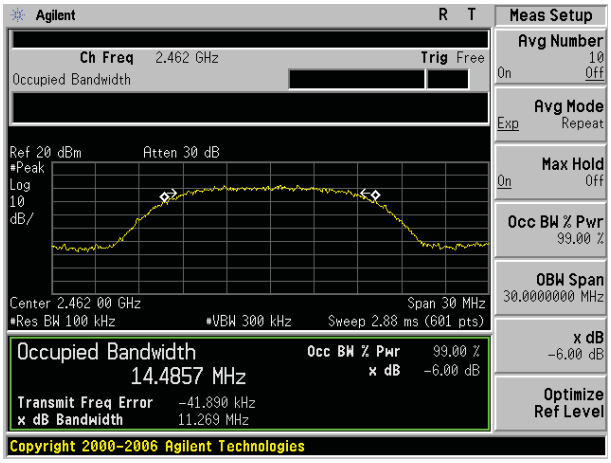
Test mode:	802.11b



Lowest channel

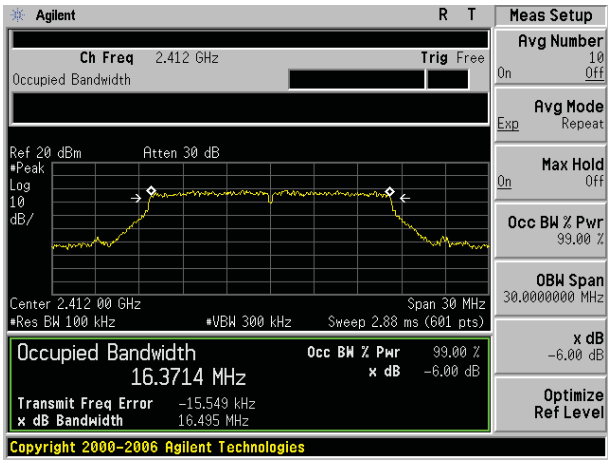


Middle channel

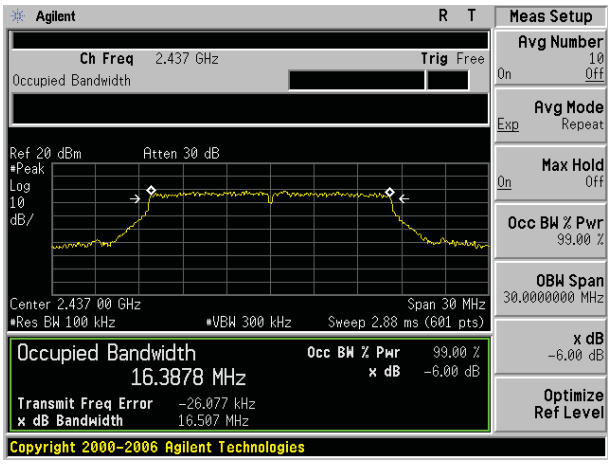


Highest channel

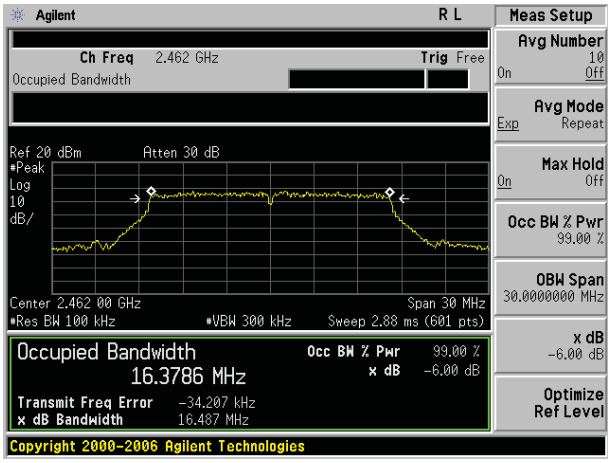
Test mode:	802.11g



Lowest channel

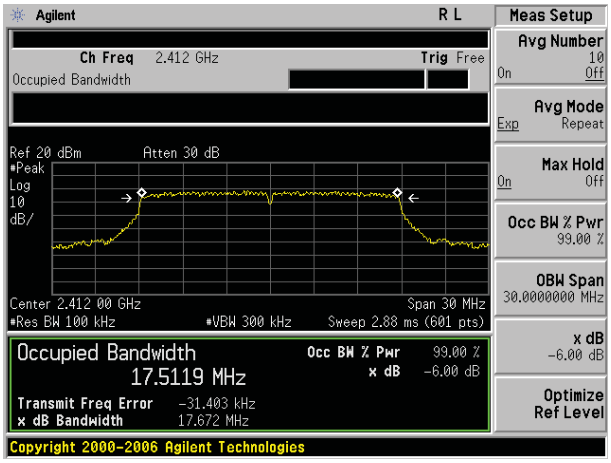


Middle channel

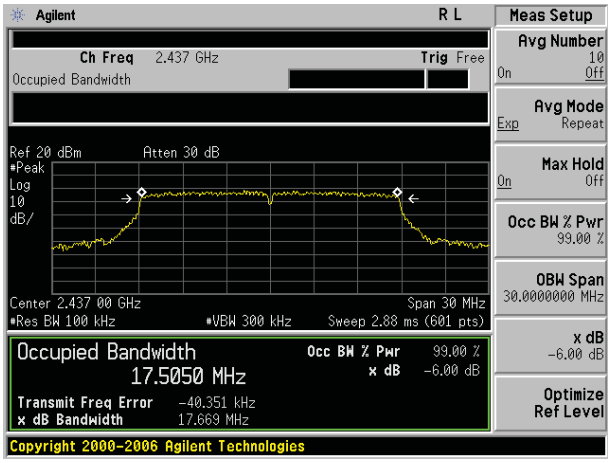


Highest channel

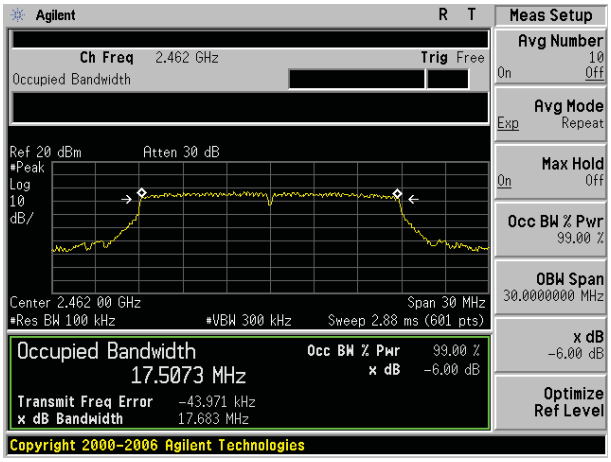
Test mode:	802.11n(HT20)



Lowest channel

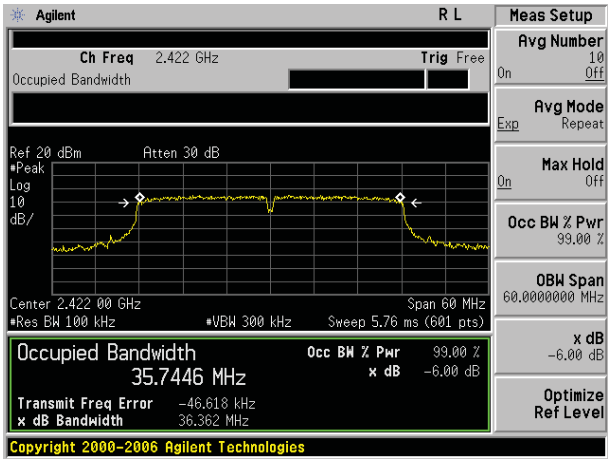


Middle channel

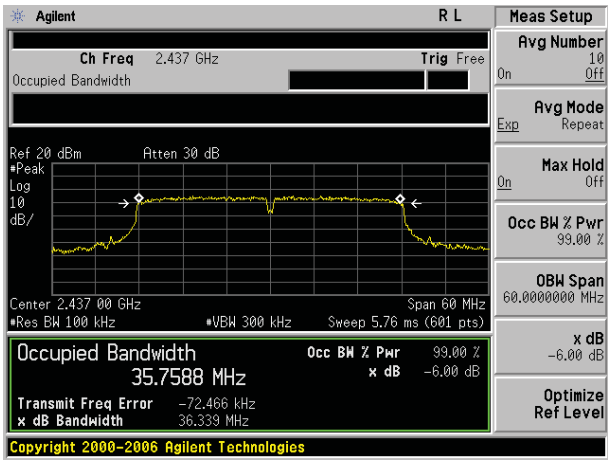


Highest channel

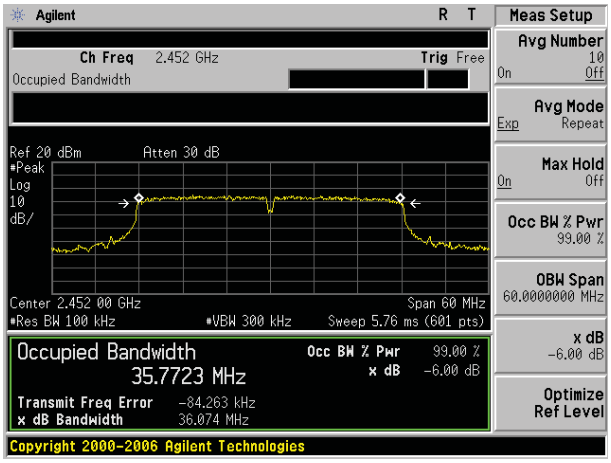
Test mode:	802.11n(HT40)



Lowest channel

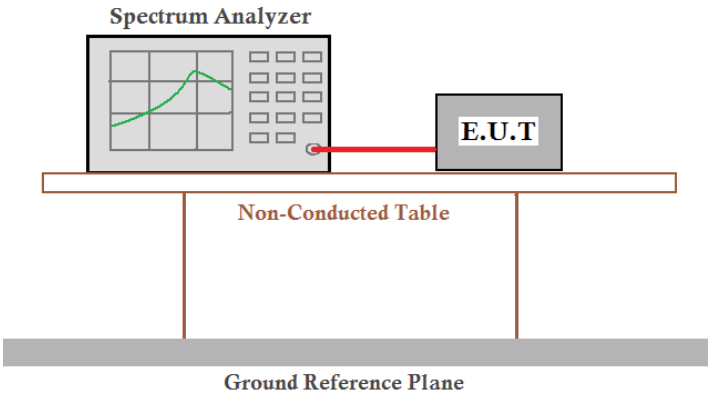


Middle channel



Highest channel

7.5 Power Spectral Density

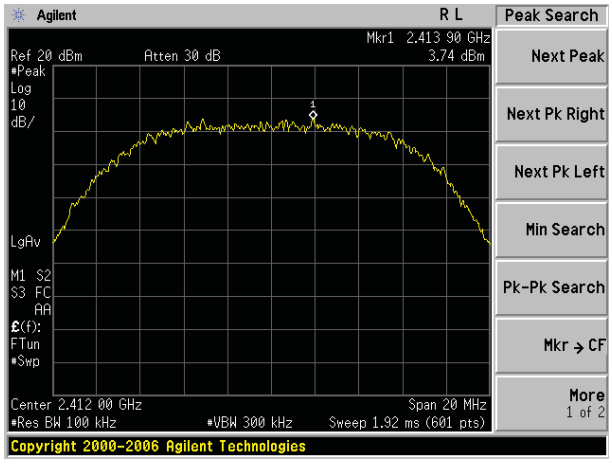
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V03
Limit:	8dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

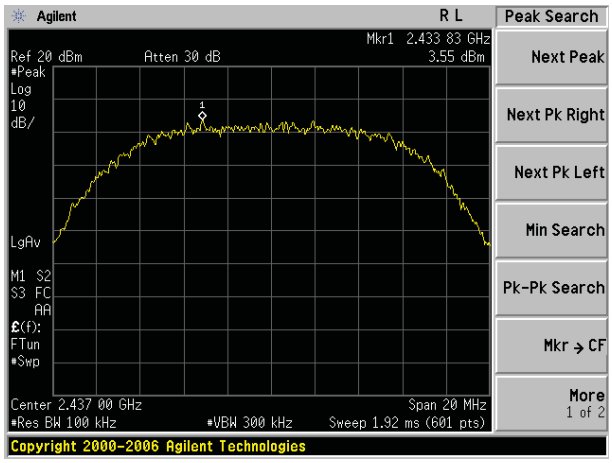
Test CH	Power Spectral Density (dBm)				Limit(dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	3.74	-0.24	-1.07	-4.09	8.00	Pass
Middle	3.55	-0.39	-1.87	-4.55		
Highest	2.49	-1.47	-1.94	-3.81		

Test plot as follows:

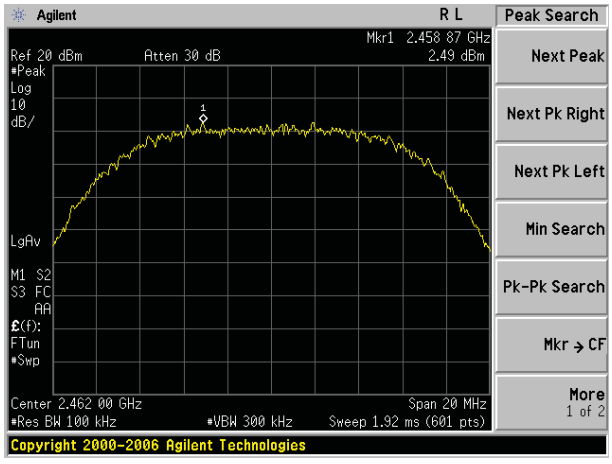
Test mode:	802.11b



Lowest channel

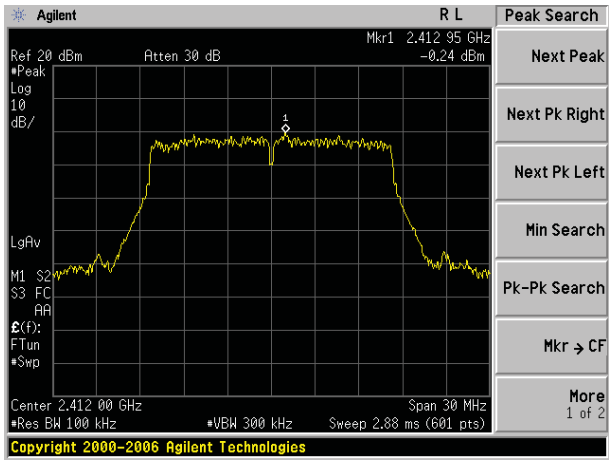


Middle channel

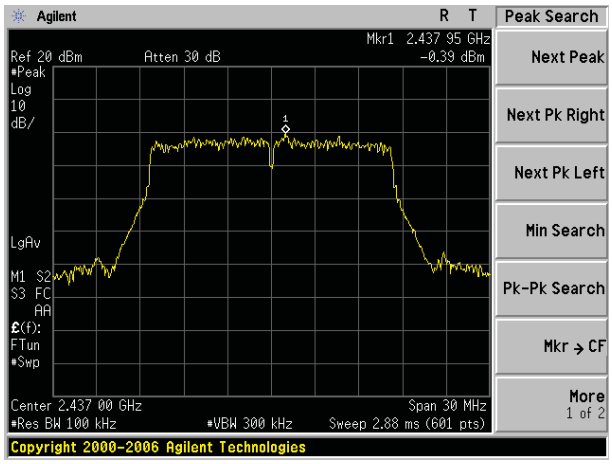


Highest channel

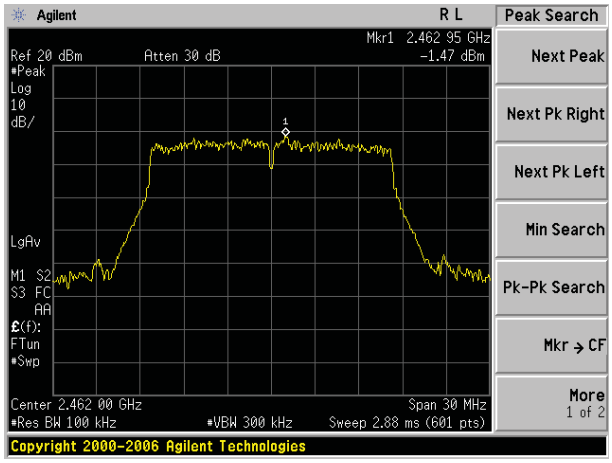
Test mode:	802.11g



Lowest channel

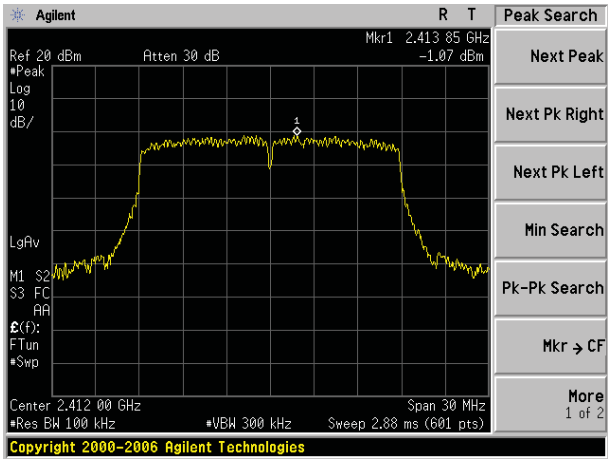


Middle channel

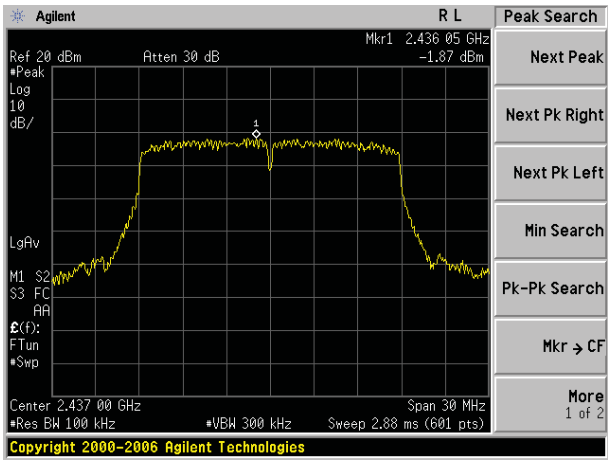


Highest channel

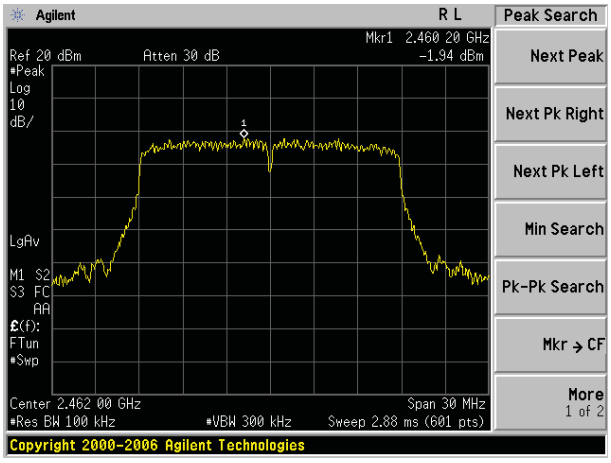
Test mode:	802.11n(HT20)



Lowest channel

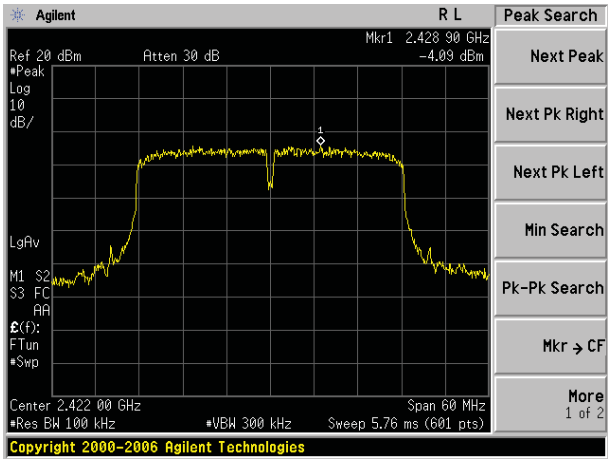


Middle channel

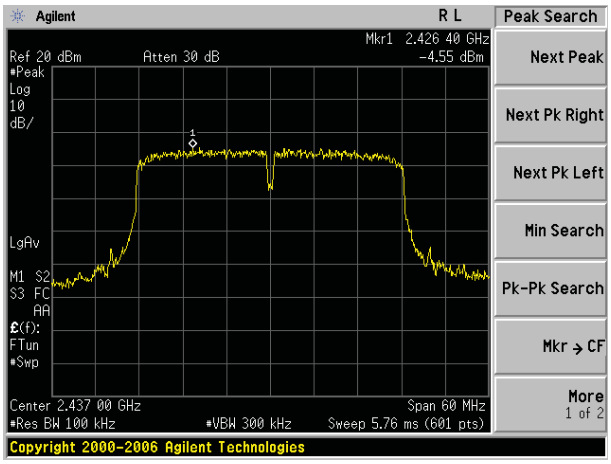


Highest channel

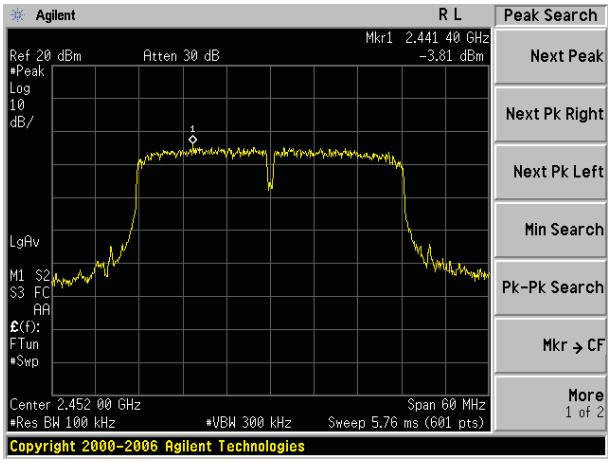
Test mode:	802.11n(HT40)



Lowest channel



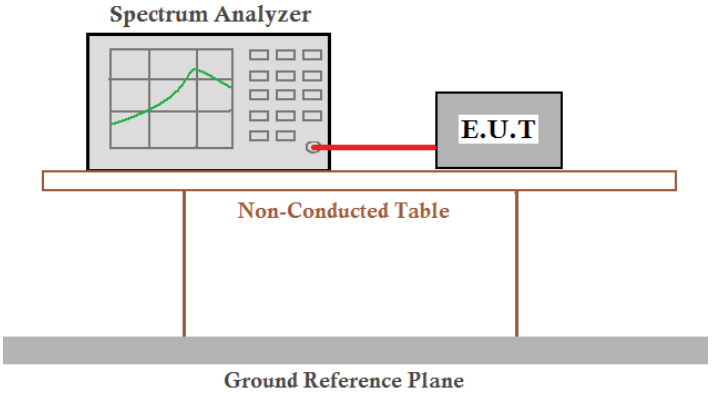
Middle channel



Highest channel

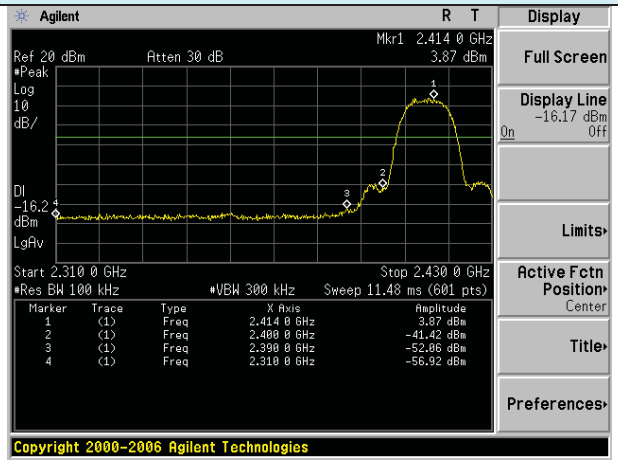
7.6 Band edges

7.6.1 Conducted Emission Method

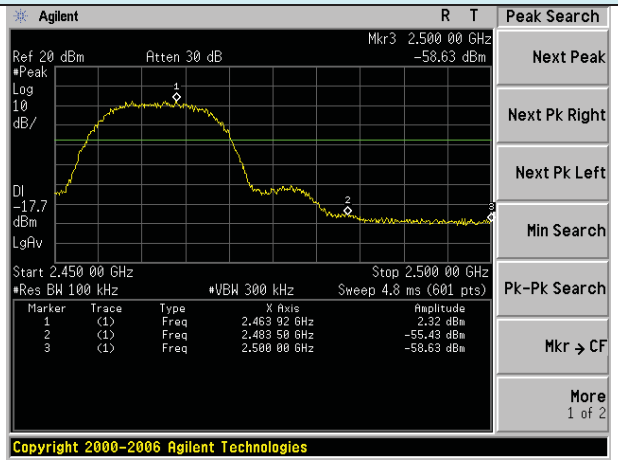
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance V03
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional 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 5.3 for details
Test results:	Pass

Test plot as follows:

Test mode:	802.11b

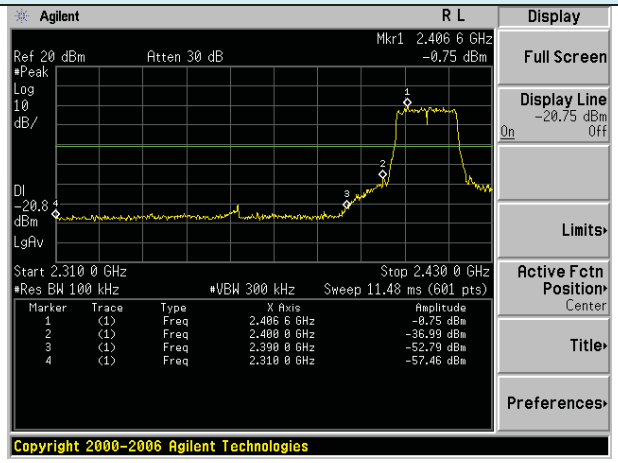


Lowest channel

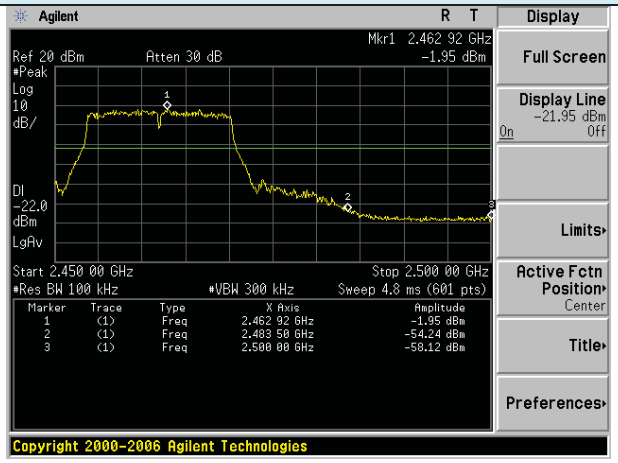


Highest channel

Test mode:	802.11g

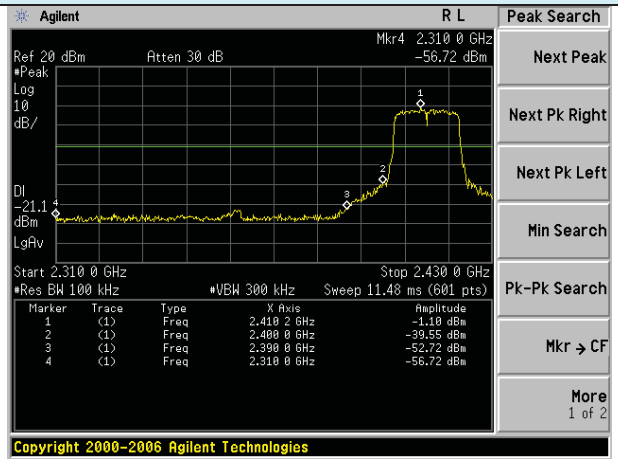


Lowest channel

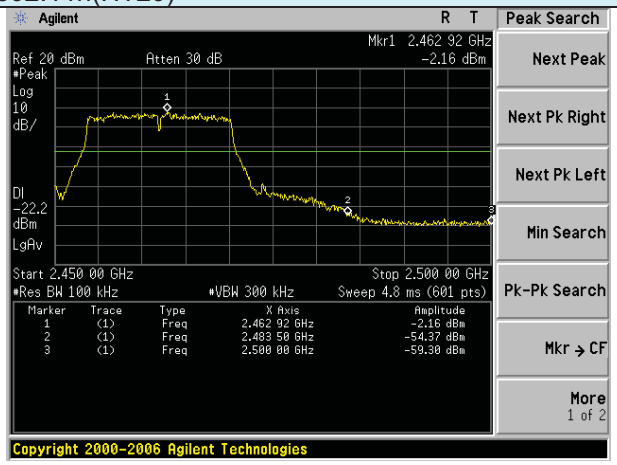


Highest channel

Test mode:	802.11n(HT20)

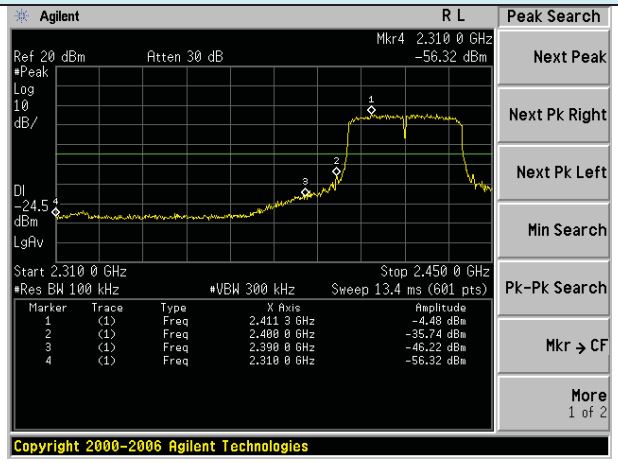


Lowest channel

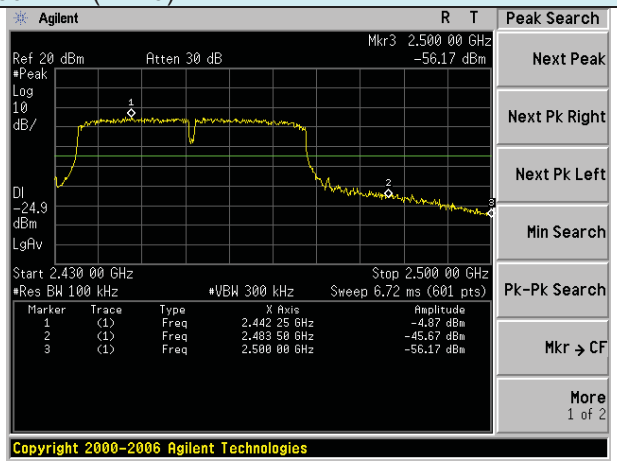


Highest channel

Test mode:	802.11n(HT40)

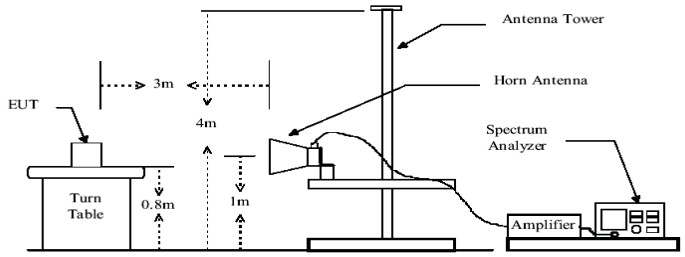


Lowest channel



Highest channel

7.6.2 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4: 2003</td></tr>
<tr><td>Test Frequency Range:</td><td>All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average</td></tr>
<tr><td>74.00</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td> 
</td></tr>
<tr><td>Test Procedure:</td><td>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.
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 X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6.0 for details</td></tr>
<tr><td>Test mode:</td><td>Refer to section 5.3 for details</td></tr>
<tr><td>Test results:</td><td>Pass</td></tr>
</table>

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	51.80	27.59	5.38	30.18	54.59	74.00	-19.41	Horizontal
2400.00	60.87	27.58	5.39	30.18	63.66	74.00	-10.34	Horizontal
2390.00	53.50	27.59	5.38	30.18	56.29	74.00	-17.71	Vertical
2400.00	62.71	27.58	5.39	30.18	65.50	74.00	-8.50	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	38.52	27.59	5.38	30.18	41.31	54.00	-12.69	Horizontal
2400.00	46.83	27.58	5.39	30.18	49.62	54.00	-4.38	Horizontal
2390.00	40.35	27.59	5.38	30.18	43.14	54.00	-10.86	Vertical
2400.00	47.97	27.58	5.39	30.18	50.76	54.00	-3.24	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	52.53	27.53	5.47	29.93	55.60	74.00	-18.40	Horizontal
2500.00	48.30	27.55	5.49	29.93	51.41	74.00	-22.59	Horizontal
2483.50	54.82	27.53	5.47	29.93	57.89	74.00	-16.11	Vertical
2500.00	50.84	27.55	5.49	29.93	53.95	74.00	-20.05	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	38.91	27.53	5.47	29.93	41.98	54.00	-12.02	Horizontal
2500.00	34.98	27.55	5.49	29.93	38.09	54.00	-15.91	Horizontal
2483.50	40.87	27.53	5.47	29.93	43.94	54.00	-10.06	Vertical
2500.00	36.87	27.55	5.49	29.93	39.98	54.00	-14.02	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	50.67	27.59	5.38	30.18	53.46	74.00	-20.54	Horizontal
2400.00	59.35	27.58	5.39	30.18	62.14	74.00	-11.86	Horizontal
2390.00	52.28	27.59	5.38	30.18	55.07	74.00	-18.93	Vertical
2400.00	60.89	27.58	5.39	30.18	63.68	74.00	-10.32	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	37.71	27.59	5.38	30.18	40.50	54.00	-13.50	Horizontal
2400.00	45.90	27.58	5.39	30.18	48.69	54.00	-5.31	Horizontal
2390.00	39.45	27.59	5.38	30.18	42.24	54.00	-11.76	Vertical
2400.00	46.95	27.58	5.39	30.18	49.74	54.00	-4.26	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	50.91	27.53	5.47	29.93	53.98	74.00	-20.02	Horizontal
2500.00	47.05	27.55	5.49	29.93	50.16	74.00	-23.84	Horizontal
2483.50	52.96	27.53	5.47	29.93	56.03	74.00	-17.97	Vertical
2500.00	49.37	27.55	5.49	29.93	52.48	74.00	-21.52	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	37.93	27.53	5.47	29.93	41.00	54.00	-13.00	Horizontal
2500.00	34.22	27.55	5.49	29.93	37.33	54.00	-16.67	Horizontal
2483.50	39.79	27.53	5.47	29.93	42.86	54.00	-11.14	Vertical
2500.00	36.06	27.55	5.49	29.93	39.17	54.00	-14.83	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	50.26	27.59	5.38	30.18	53.05	74.00	-20.95	Horizontal
2400.00	58.81	27.58	5.39	30.18	61.60	74.00	-12.40	Horizontal
2390.00	51.85	27.59	5.38	30.18	54.64	74.00	-19.36	Vertical
2400.00	60.24	27.58	5.39	30.18	63.03	74.00	-10.97	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	37.42	27.59	5.38	30.18	40.21	54.00	-13.79	Horizontal
2400.00	45.57	27.58	5.39	30.18	48.36	54.00	-5.64	Horizontal
2390.00	39.13	27.59	5.38	30.18	41.92	54.00	-12.08	Vertical
2400.00	46.59	27.58	5.39	30.18	49.38	54.00	-4.62	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	50.33	27.53	5.47	29.93	53.40	74.00	-20.60	Horizontal
2500.00	46.60	27.55	5.49	29.93	49.71	74.00	-24.29	Horizontal
2483.50	52.30	27.53	5.47	29.93	55.37	74.00	-18.63	Vertical
2500.00	48.85	27.55	5.49	29.93	51.96	74.00	-22.04	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	37.58	27.53	5.47	29.93	40.65	54.00	-13.35	Horizontal
2500.00	33.95	27.55	5.49	29.93	37.06	54.00	-16.94	Horizontal
2483.50	39.40	27.53	5.47	29.93	42.47	54.00	-11.53	Vertical
2500.00	35.77	27.55	5.49	29.93	38.88	54.00	-15.12	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	48.33	27.59	5.38	30.18	51.12	74.00	-22.88	Horizontal
2400.00	56.23	27.58	5.39	30.18	59.02	74.00	-14.98	Horizontal
2390.00	49.78	27.59	5.38	30.18	52.57	74.00	-21.43	Vertical
2400.00	57.13	27.58	5.39	30.18	59.92	74.00	-14.08	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	36.05	27.59	5.38	30.18	38.84	54.00	-15.16	Horizontal
2400.00	43.98	27.58	5.39	30.18	46.77	54.00	-7.23	Horizontal
2390.00	37.60	27.59	5.38	30.18	40.39	54.00	-13.61	Vertical
2400.00	44.85	27.58	5.39	30.18	47.64	54.00	-6.36	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	47.56	27.53	5.47	29.93	50.63	74.00	-23.37	Horizontal
2500.00	44.45	27.55	5.49	29.93	47.56	74.00	-26.44	Horizontal
2483.50	49.14	27.53	5.47	29.93	52.21	74.00	-21.79	Vertical
2500.00	46.33	27.55	5.49	29.93	49.44	74.00	-24.56	Vertical

Average value:

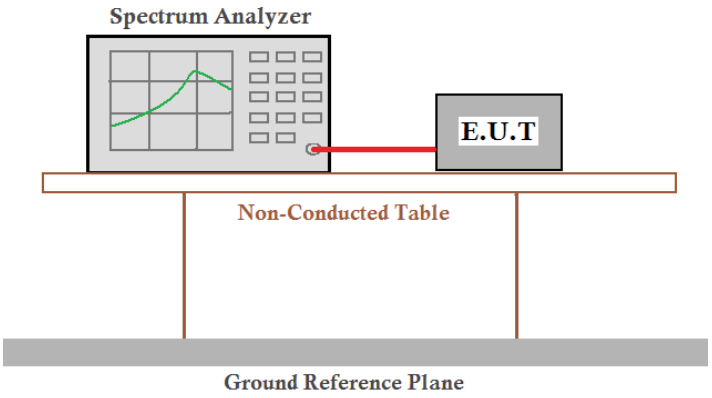
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	35.91	27.53	5.47	29.93	38.98	54.00	-15.02	Horizontal
2500.00	32.64	27.55	5.49	29.93	35.75	54.00	-18.25	Horizontal
2483.50	37.56	27.53	5.47	29.93	40.63	54.00	-13.37	Vertical
2500.00	34.39	27.55	5.49	29.93	37.50	54.00	-16.50	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

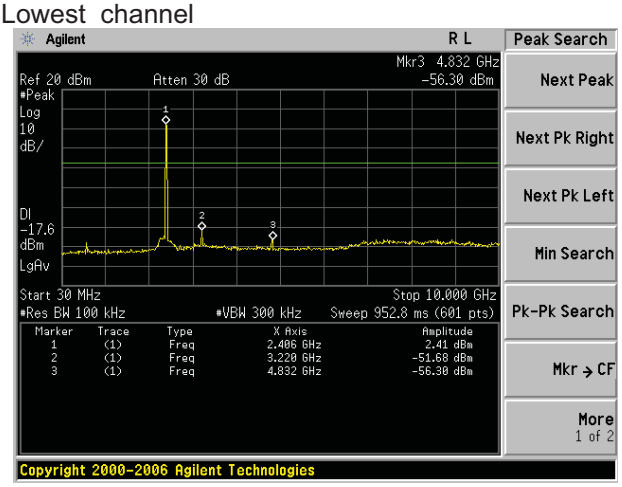
7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance 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 5.3 for details
Test results:	Pass

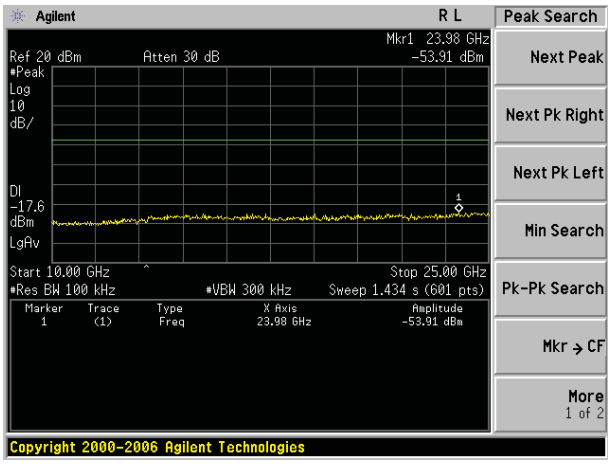
Test plot as follows:

Test mode:	802.11b

Lowest channel

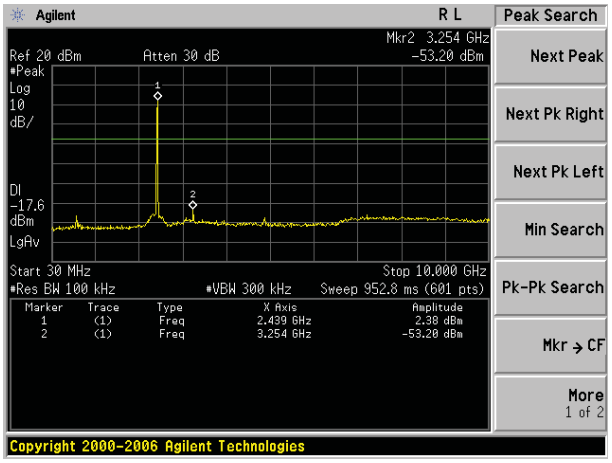


30MHz~10GHz

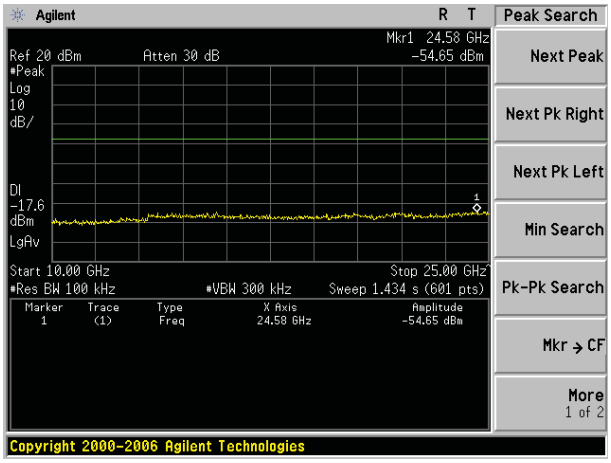


10GHz~25GHz

Middle channel

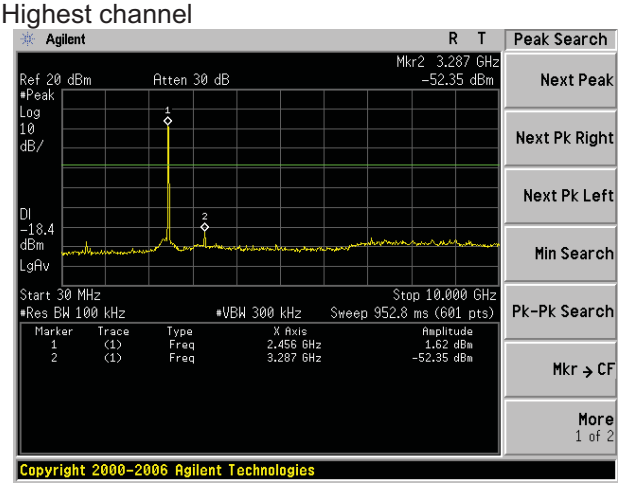


30MHz~10GHz

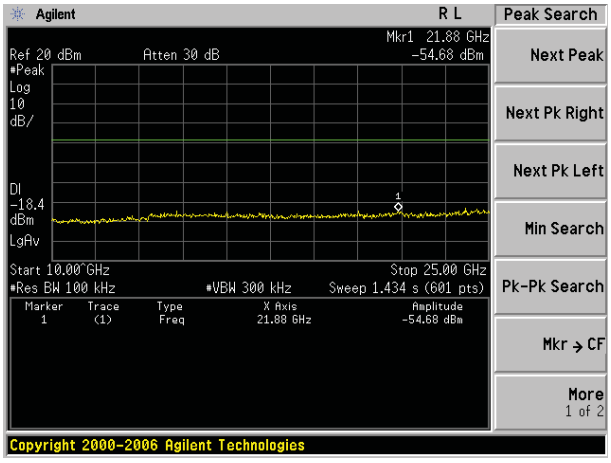


10GHz~25GHz

Highest channel



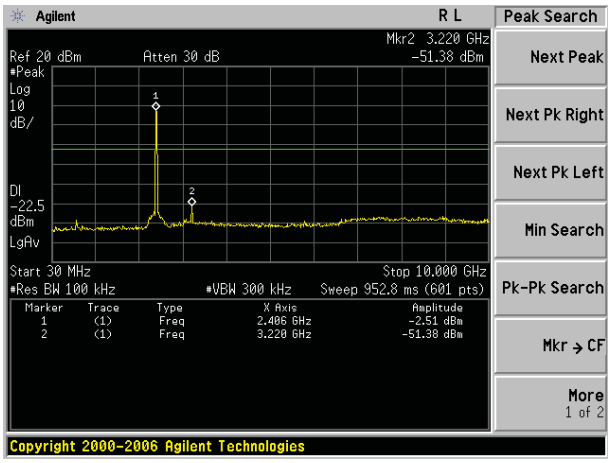
30MHz~10GHz



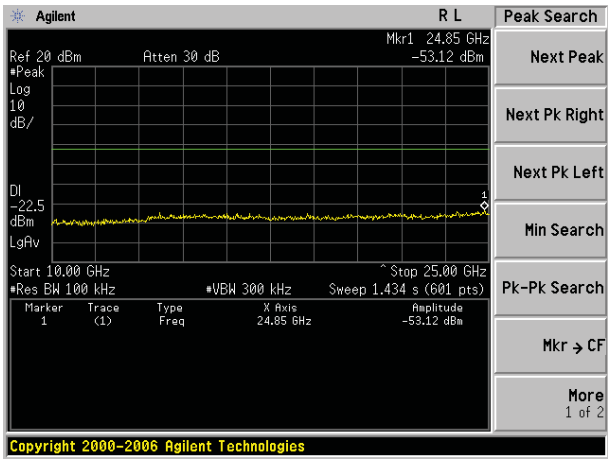
10GHz~25GHz

Test mode:	802.11g

Lowest channel

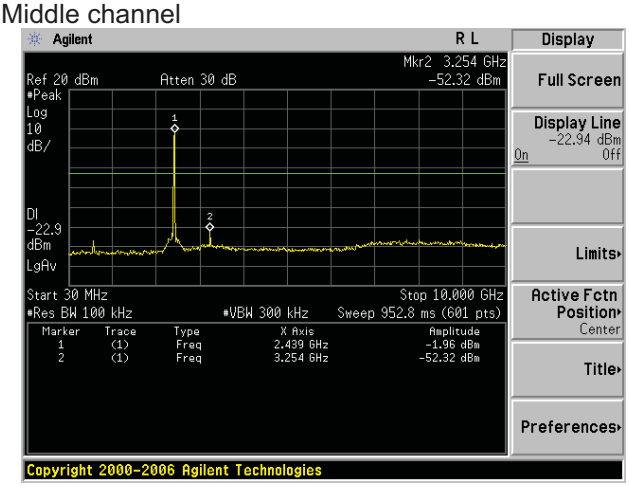


30MHz~10GHz

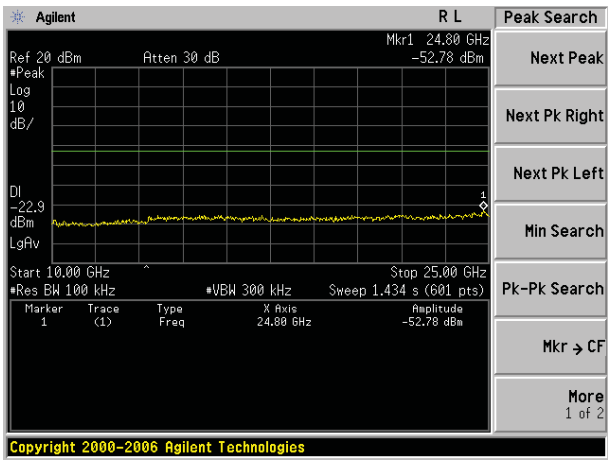


10GHz~25GHz

Middle channel

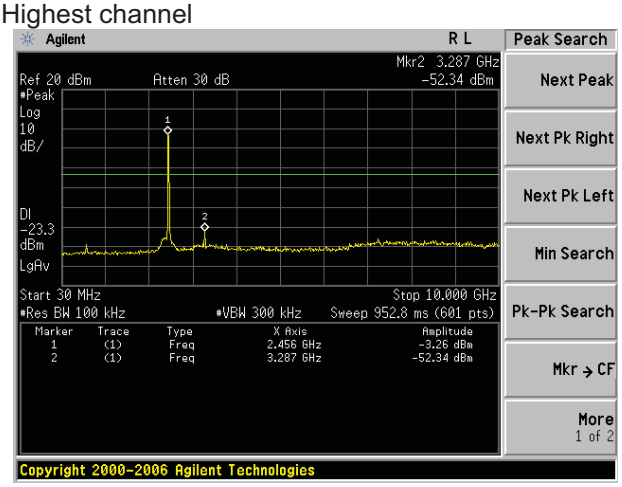


30MHz~10GHz

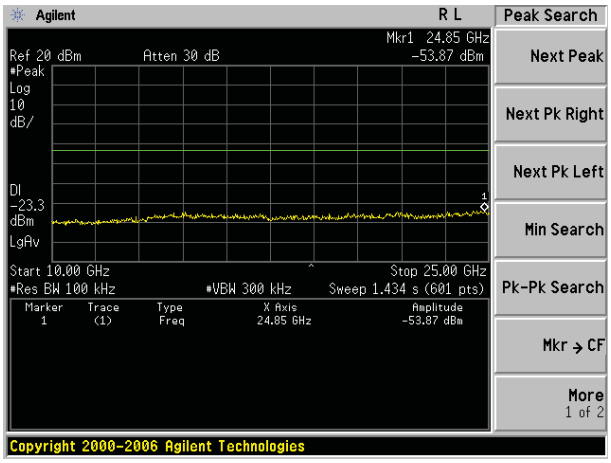


10GHz~25GHz

Highest channel



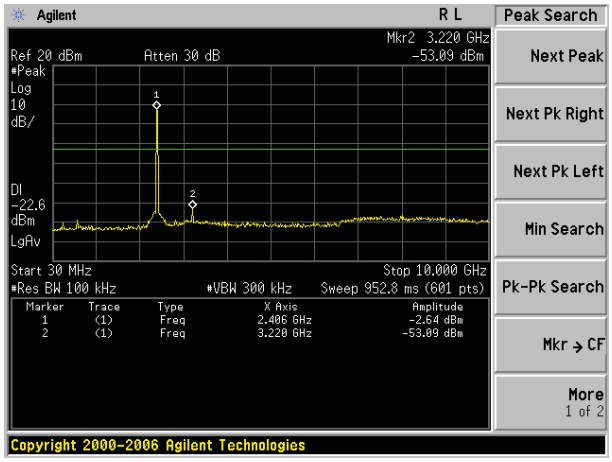
30MHz~10GHz



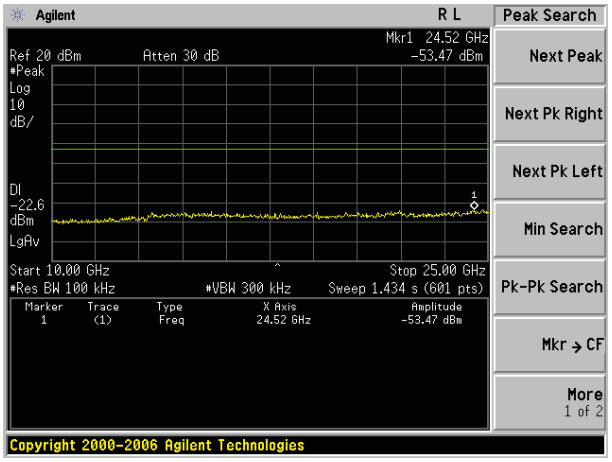
10GHz~25GHz

Test mode:	802.11n(HT20)

Lowest channel

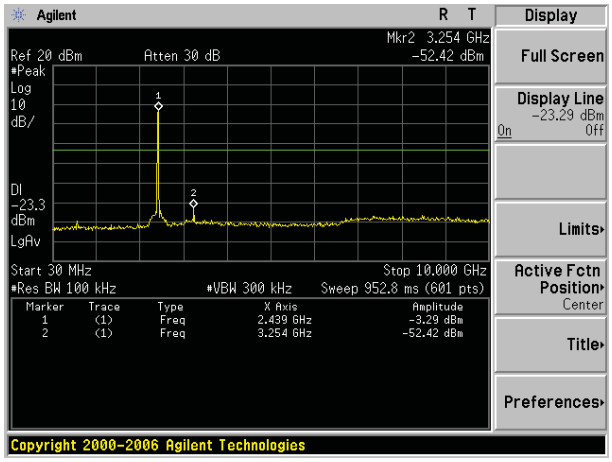


30MHz~10GHz

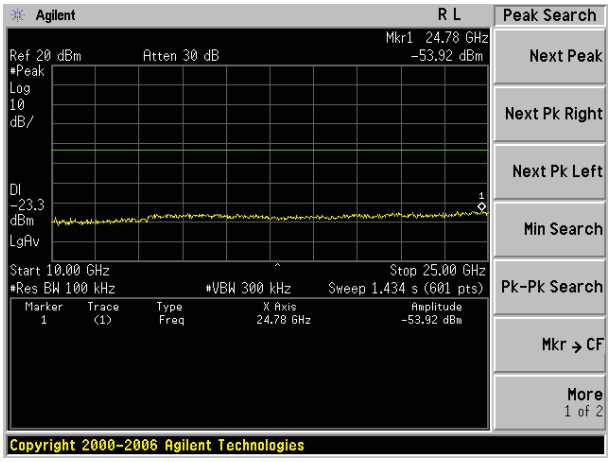


10GHz~25GHz

Middle channel

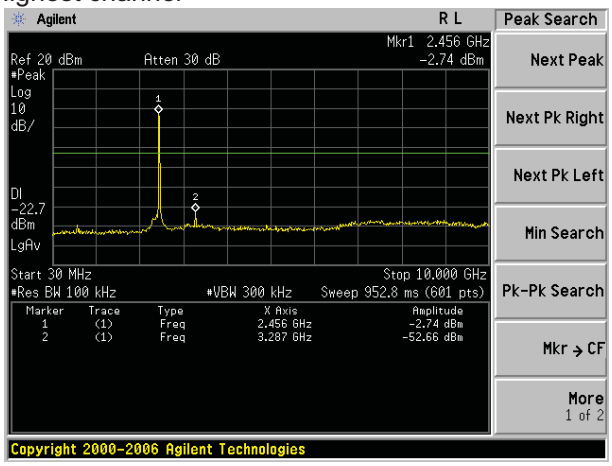


30MHz~10GHz

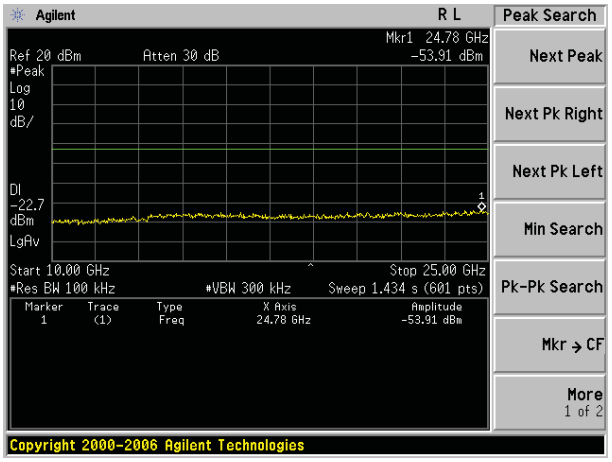


10GHz~25GHz

Highest channel



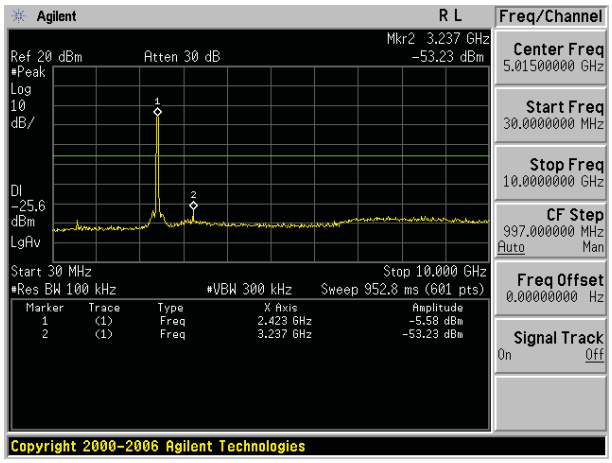
30MHz~10GHz



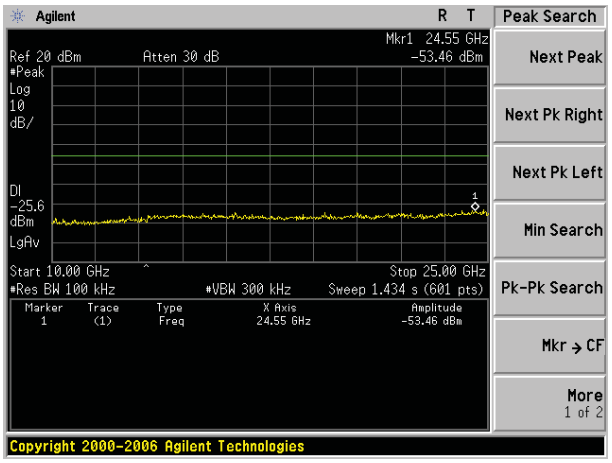
10GHz~25GHz

Test mode:	802.11n(HT40)

Lowest channel

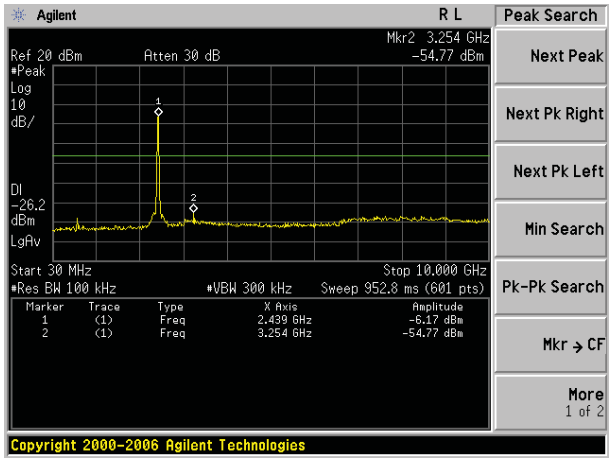


30MHz~10GHz

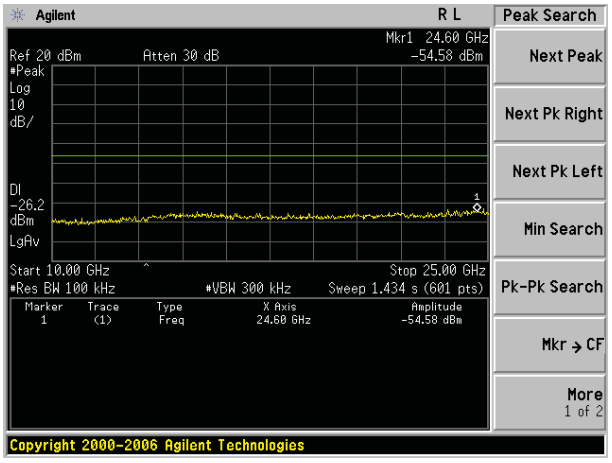


10GHz~25GHz

Middle channel

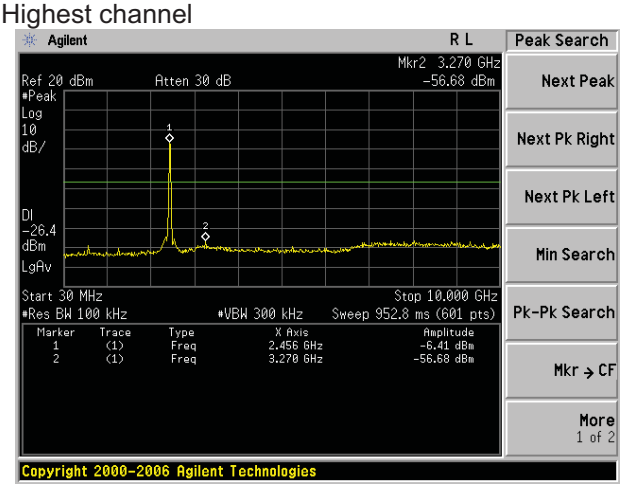


30MHz~10GHz

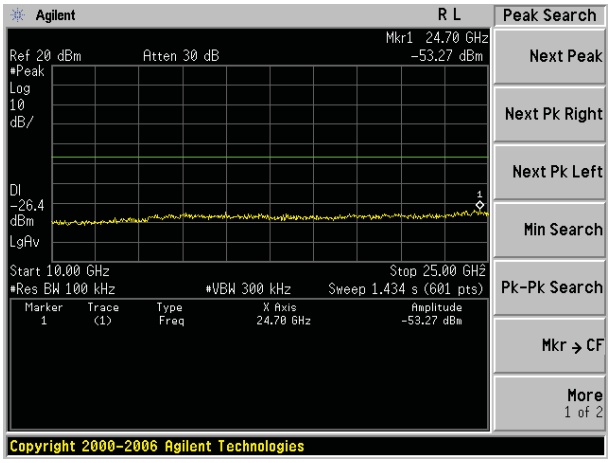


10GHz~25GHz

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:

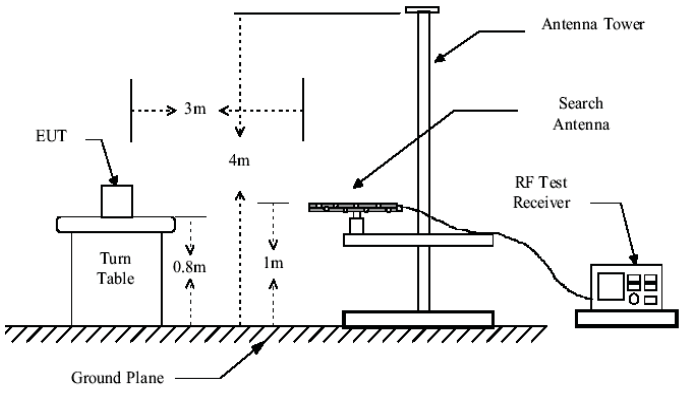
Frequency	Detector	RBW	VBW	Value
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

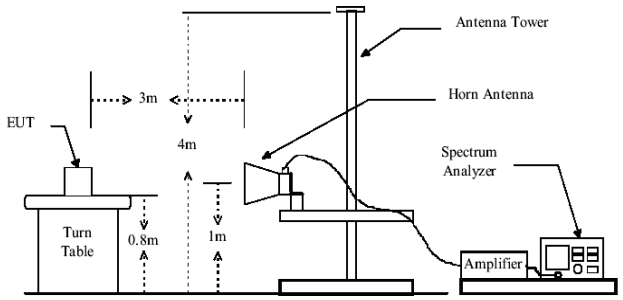
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

Test setup:

Below 1GHz



Above 1GHz



Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters 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 X 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 5.3 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

■ **Below 1GHz**

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
74.66	57.47	9.80	0.98	31.82	36.43	40.00	-3.57	Vertical
145.35	57.56	10.23	1.54	31.96	37.37	43.50	-6.13	Vertical
455.91	49.47	17.58	3.11	31.70	38.46	46.00	-7.54	Vertical
487.32	51.92	18.26	3.25	31.60	41.83	46.00	-4.17	Vertical
744.87	43.81	21.39	4.26	31.25	38.21	46.00	-7.79	Vertical
975.75	46.46	23.59	5.14	31.23	43.96	54.00	-10.04	Vertical
75.45	55.59	9.91	0.99	31.82	34.67	40.00	-5.33	Horizontal
152.13	50.55	10.35	1.58	31.99	30.49	43.50	-13.01	Horizontal
202.81	50.03	12.64	1.86	32.14	32.39	43.50	-11.11	Horizontal
252.95	50.33	14.06	2.14	32.16	34.37	46.00	-11.63	Horizontal
408.95	47.15	17.26	2.90	31.86	35.45	46.00	-10.55	Horizontal
744.87	46.49	21.39	4.26	31.25	40.89	46.00	-5.11	Horizontal

■ **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	40.82	31.79	8.62	32.10	49.13	74.00	-24.87	Vertical
7236.00	27.61	36.19	11.68	31.97	43.51	74.00	-30.49	Vertical
9648.00	28.24	38.07	14.16	31.56	48.91	74.00	-25.09	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	38.34	31.79	8.62	32.10	46.65	74.00	-27.35	Horizontal
7236.00	27.44	36.19	11.68	31.97	43.34	74.00	-30.66	Horizontal
9648.00	27.80	38.07	14.16	31.56	48.47	74.00	-25.53	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	29.05	31.79	8.62	32.10	37.36	54.00	-16.64	Vertical
7236.00	17.15	36.19	11.68	31.97	33.05	54.00	-20.95	Vertical
9648.00	17.40	38.07	14.16	31.56	38.07	54.00	-15.93	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	27.13	31.79	8.62	32.10	35.44	54.00	-18.56	Horizontal
7236.00	16.73	36.19	11.68	31.97	32.63	54.00	-21.37	Horizontal
9648.00	16.42	38.07	14.16	31.56	37.09	54.00	-16.91	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	39.45	31.85	8.66	32.12	47.84	74.00	-26.16	Vertical
7311.00	28.49	36.37	11.71	31.91	44.66	74.00	-29.34	Vertical
9748.00	28.16	38.27	14.25	31.56	49.12	74.00	-24.88	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	38.61	31.85	8.66	32.12	47.00	74.00	-27.00	Horizontal
7311.00	27.23	36.37	11.71	31.91	43.40	74.00	-30.60	Horizontal
9748.00	28.09	38.27	14.25	31.56	49.05	74.00	-24.95	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	29.07	31.85	8.66	32.12	37.46	54.00	-16.54	Vertical
7311.00	16.83	36.37	11.71	31.91	33.00	54.00	-21.00	Vertical
9748.00	17.44	38.27	14.25	31.56	38.40	54.00	-15.60	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	27.95	31.85	8.66	32.12	36.34	54.00	-17.66	Horizontal
7311.00	16.34	36.37	11.71	31.91	32.51	54.00	-21.49	Horizontal
9748.00	17.83	38.27	14.25	31.56	38.79	54.00	-15.21	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	48.67	31.90	8.70	32.15	57.12	74.00	-16.88	Vertical
7386.00	28.58	36.49	11.76	31.83	45.00	74.00	-29.00	Vertical
9848.00	31.04	38.62	14.31	31.77	52.20	74.00	-21.80	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	45.70	31.90	8.70	32.15	54.15	74.00	-19.85	Horizontal
7386.00	27.66	36.49	11.76	31.83	44.08	74.00	-29.92	Horizontal
9848.00	27.29	38.62	14.31	31.77	48.45	74.00	-25.55	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	37.46	31.90	8.70	32.15	45.91	54.00	-8.09	Vertical
7386.00	18.55	36.49	11.76	31.83	34.97	54.00	-19.03	Vertical
9848.00	19.58	38.62	14.31	31.77	40.74	54.00	-13.26	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	34.73	31.90	8.70	32.15	43.18	54.00	-10.82	Horizontal
7386.00	17.08	36.49	11.76	31.83	33.50	54.00	-20.50	Horizontal
9848.00	16.58	38.62	14.31	31.77	37.74	54.00	-16.26	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	32.54	31.79	8.62	32.10	40.85	74.00	-33.15	Vertical
7236.00	27.25	36.19	11.68	31.97	43.15	74.00	-30.85	Vertical
9648.00	27.97	38.07	14.16	31.56	48.64	74.00	-25.36	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	31.99	31.79	8.62	32.10	40.30	74.00	-33.70	Horizontal
7236.00	27.11	36.19	11.68	31.97	43.01	74.00	-30.99	Horizontal
9648.00	27.55	38.07	14.16	31.56	48.22	74.00	-25.78	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	22.43	31.79	8.62	32.10	30.74	54.00	-23.26	Vertical
7236.00	16.79	36.19	11.68	31.97	32.69	54.00	-21.31	Vertical
9648.00	17.14	38.07	14.16	31.56	37.81	54.00	-16.19	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertica
4824.00	21.82	31.79	8.62	32.10	30.13	54.00	-23.87	Horizontal
7236.00	16.42	36.19	11.68	31.97	32.32	54.00	-21.68	Horizontal
9648.00	16.19	38.07	14.16	31.56	36.86	54.00	-17.14	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	32.60	31.85	8.66	32.12	40.99	74.00	-33.01	Vertical
7311.00	28.18	36.37	11.71	31.91	44.35	74.00	-29.65	Vertical
9748.00	27.94	38.27	14.25	31.56	48.90	74.00	-25.10	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	33.35	31.85	8.66	32.12	41.74	74.00	-32.26	Horizontal
7311.00	26.96	36.37	11.71	31.91	43.13	74.00	-30.87	Horizontal
9748.00	27.89	38.27	14.25	31.56	48.85	74.00	-25.15	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	23.59	31.85	8.66	32.12	31.98	54.00	-22.02	Vertical
7311.00	16.54	36.37	11.71	31.91	32.71	54.00	-21.29	Vertical
9748.00	17.23	38.27	14.25	31.56	38.19	54.00	-15.81	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	23.56	31.85	8.66	32.12	31.95	54.00	-22.05	Horizontal
7311.00	16.08	36.37	11.71	31.91	32.25	54.00	-21.75	Horizontal
9748.00	17.63	38.27	14.25	31.56	38.59	54.00	-15.41	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	36.86	31.90	8.70	32.15	45.31	74.00	-28.69	Vertical
7386.00	28.06	36.49	11.76	31.83	44.48	74.00	-29.52	Vertical
9848.00	30.67	38.62	14.31	31.77	51.83	74.00	-22.17	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	36.64	31.90	8.70	32.15	45.09	74.00	-28.91	Horizontal
7386.00	27.20	36.49	11.76	31.83	43.62	74.00	-30.38	Horizontal
9848.00	26.94	38.62	14.31	31.77	48.10	74.00	-25.90	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	28.02	31.90	8.70	32.15	36.47	54.00	-17.53	Vertical
7386.00	18.04	36.49	11.76	31.83	34.46	54.00	-19.54	Vertical
9848.00	19.22	38.62	14.31	31.77	40.38	54.00	-13.62	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	27.16	31.90	8.70	32.15	35.61	54.00	-18.39	Horizontal
7386.00	16.64	36.49	11.76	31.83	33.06	54.00	-20.94	Horizontal
9848.00	16.25	38.62	14.31	31.77	37.41	54.00	-16.59	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	32.22	31.79	8.62	32.10	40.53	74.00	-33.47	Vertical
7236.00	27.04	36.19	11.68	31.97	42.94	74.00	-31.06	Vertical
9648.00	27.83	38.07	14.16	31.56	48.50	74.00	-25.50	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	31.72	31.79	8.62	32.10	40.03	74.00	-33.97	Horizontal
7236.00	26.94	36.19	11.68	31.97	42.84	74.00	-31.16	Horizontal
9648.00	27.42	38.07	14.16	31.56	48.09	74.00	-25.91	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	22.13	31.79	8.62	32.10	30.44	54.00	-23.56	Vertical
7236.00	16.60	36.19	11.68	31.97	32.50	54.00	-21.50	Vertical
9648.00	17.00	38.07	14.16	31.56	37.67	54.00	-16.33	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	21.57	31.79	8.62	32.10	29.88	54.00	-24.12	Horizontal
7236.00	16.24	36.19	11.68	31.97	32.14	54.00	-21.86	Horizontal
9648.00	16.06	38.07	14.16	31.56	36.73	54.00	-17.27	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	32.34	31.85	8.66	32.12	40.73	74.00	-33.27	Vertical
7311.00	28.02	36.37	11.71	31.91	44.19	74.00	-29.81	Vertical
9748.00	27.82	38.27	14.25	31.56	48.78	74.00	-25.22	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	33.13	31.85	8.66	32.12	41.52	74.00	-32.48	Horizontal
7311.00	26.82	36.37	11.71	31.91	42.99	74.00	-31.01	Horizontal
9748.00	27.78	38.27	14.25	31.56	48.74	74.00	-25.26	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	23.35	31.85	8.66	32.12	31.74	54.00	-22.26	Vertical
7311.00	16.38	36.37	11.71	31.91	32.55	54.00	-21.45	Vertical
9748.00	17.11	38.27	14.25	31.56	38.07	54.00	-15.93	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	23.35	31.85	8.66	32.12	31.74	54.00	-22.26	Horizontal
7311.00	15.94	36.37	11.71	31.91	32.11	54.00	-21.89	Horizontal
9748.00	17.53	38.27	14.25	31.56	38.49	54.00	-15.51	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	36.41	31.90	8.70	32.15	44.86	74.00	-29.14	4924.00
7386.00	27.77	36.49	11.76	31.83	44.19	74.00	-29.81	7386.00
9848.00	30.46	38.62	14.31	31.77	51.62	74.00	-22.38	9848.00
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	36.25	31.90	8.70	32.15	44.70	74.00	-29.30	Horizontal
7386.00	26.95	36.49	11.76	31.83	43.37	74.00	-30.63	Horizontal
9848.00	26.75	38.62	14.31	31.77	47.91	74.00	-26.09	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	27.59	31.90	8.70	32.15	36.04	54.00	-17.96	Vertical
7386.00	17.76	36.49	11.76	31.83	34.18	54.00	-19.82	Vertical
9848.00	19.02	38.62	14.31	31.77	40.18	54.00	-13.82	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	26.80	31.90	8.70	32.15	35.25	54.00	-18.75	Horizontal
7386.00	16.39	36.49	11.76	31.83	32.81	54.00	-21.19	Horizontal
9848.00	16.06	38.62	14.31	31.77	37.22	54.00	-16.78	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	31.73	31.81	8.63	32.11	40.06	74.00	-33.94	Vertical
7266.00	26.73	36.28	11.69	31.94	42.76	74.00	-31.24	Vertical
9688.00	27.60	38.13	14.21	31.52	48.42	74.00	-25.58	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4844.00	31.30	31.81	8.63	32.11	39.63	74.00	-34.37	Horizontal
7266.00	26.66	36.28	11.69	31.94	42.69	74.00	-31.31	Horizontal
9688.00	27.21	38.13	14.21	31.52	48.03	74.00	-25.97	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	21.68	31.81	8.63	32.11	30.01	54.00	-23.99	Vertical
7266.00	16.30	36.28	11.69	31.94	32.33	54.00	-21.67	Vertical
9688.00	16.79	38.13	14.21	31.52	37.61	54.00	-16.39	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4844.00	21.18	31.81	8.63	32.11	29.51	54.00	-24.49	Horizontal
7266.00	15.98	36.28	11.69	31.94	32.01	54.00	-21.99	Horizontal
9688.00	15.86	38.13	14.21	31.52	36.68	54.00	-17.32	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	31.93	31.85	8.66	32.12	40.32	74.00	-33.68	Vertical
7311.00	27.76	36.37	11.71	31.91	43.93	74.00	-30.07	Vertical
9748.00	27.64	38.27	14.25	31.56	48.60	74.00	-25.40	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	32.78	31.85	8.66	32.12	41.17	74.00	-32.83	Horizontal
7311.00	26.59	36.37	11.71	31.91	42.76	74.00	-31.24	Horizontal
9748.00	27.61	38.27	14.25	31.56	48.57	74.00	-25.43	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	22.97	31.85	8.66	32.12	31.36	54.00	-22.64	Vertical
7311.00	16.13	36.37	11.71	31.91	32.30	54.00	-21.70	Vertical
9748.00	16.93	38.27	14.25	31.56	37.89	54.00	-16.11	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	23.02	31.85	8.66	32.12	31.41	54.00	-22.59	Horizontal
7311.00	15.72	36.37	11.71	31.91	31.89	54.00	-22.11	Horizontal
9748.00	17.36	38.27	14.25	31.56	38.32	54.00	-15.68	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	35.70	31.88	8.68	32.13	44.13	74.00	-29.87	Vertical
7356.00	27.32	36.45	11.75	31.86	43.66	74.00	-30.34	Vertical
9808.00	30.14	38.43	14.29	31.68	51.18	74.00	-22.82	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4904.00	35.66	31.88	8.68	32.13	44.09	74.00	-29.91	Horizontal
7356.00	26.56	36.45	11.75	31.86	42.90	74.00	-31.10	Horizontal
9808.00	26.46	38.43	14.29	31.68	47.50	74.00	-26.50	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	26.94	31.88	8.68	32.13	35.37	54.00	-18.63	Vertical
7356.00	17.33	36.45	11.75	31.86	33.67	54.00	-20.33	Vertical
9808.00	18.72	38.43	14.29	31.68	39.76	54.00	-14.24	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4904.00	26.24	31.88	8.68	32.13	34.67	54.00	-19.33	Horizontal
7356.00	16.02	36.45	11.75	31.86	32.36	54.00	-21.64	Horizontal
9808.00	15.78	38.43	14.29	31.68	36.82	54.00	-17.18	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

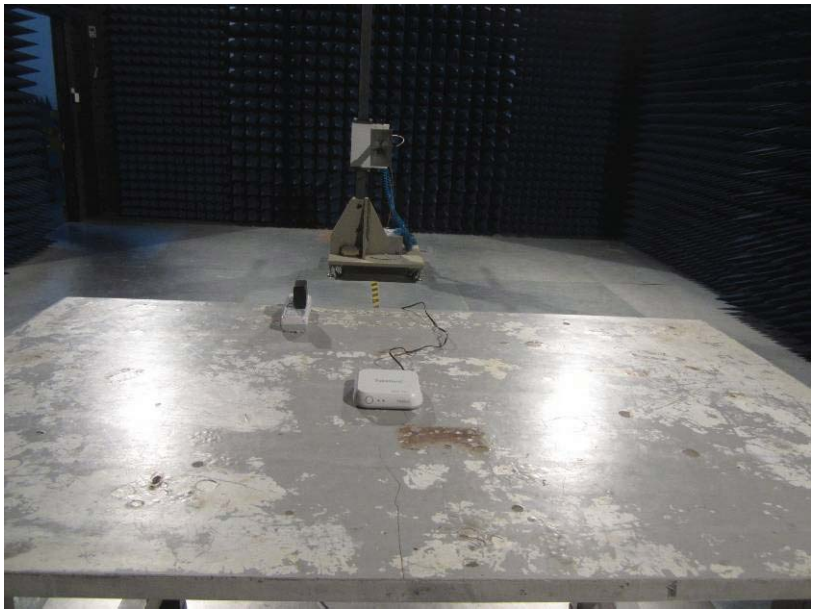
Remark:

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


TizzBird


DC-IN
AV OUT
HDMI
LAN
IN
ANT
OUT


OPTICAL
USB HOST
MICRO USB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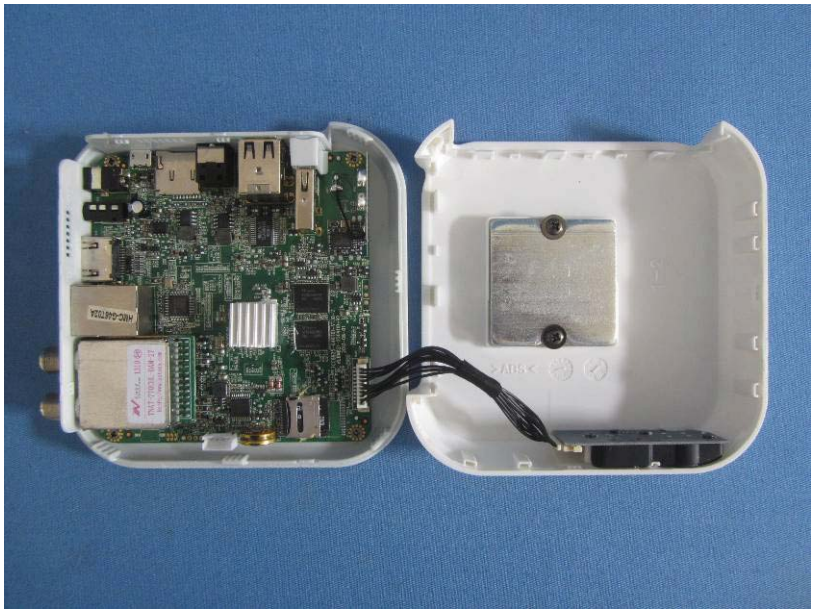

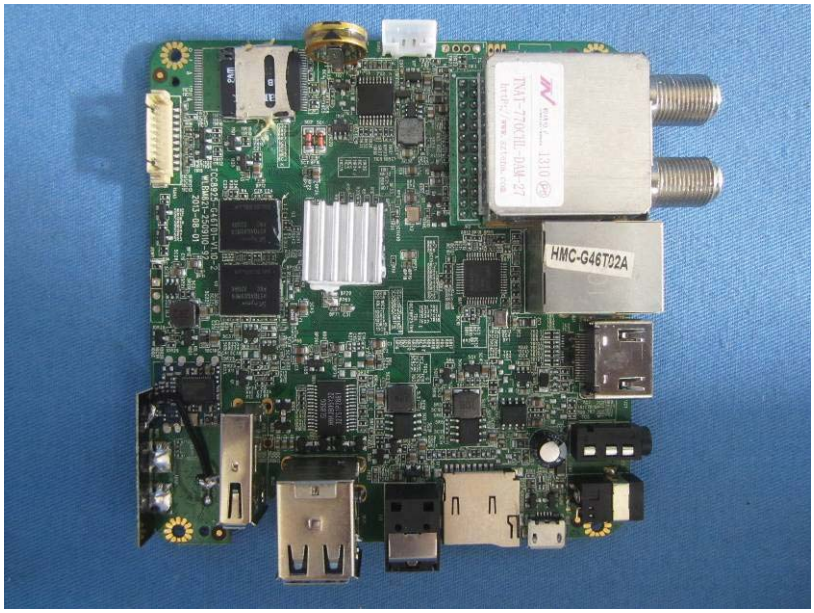
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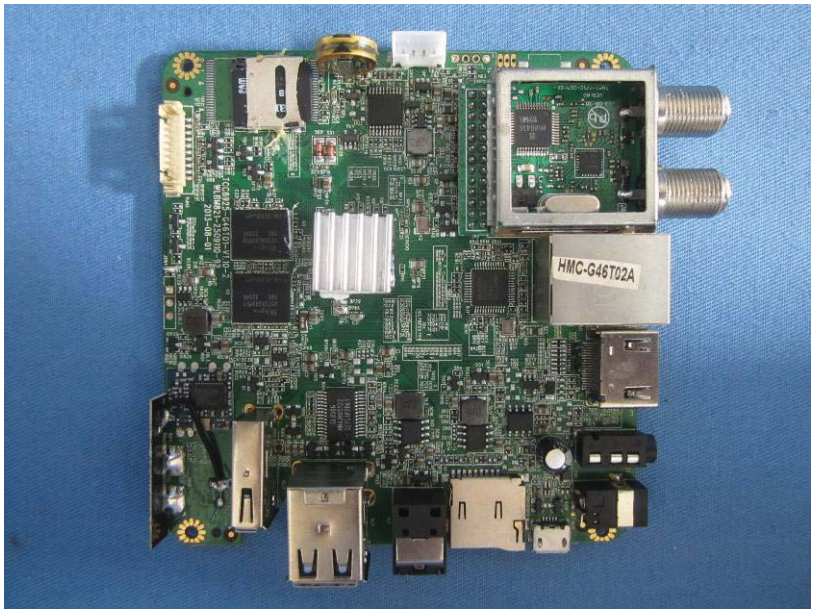
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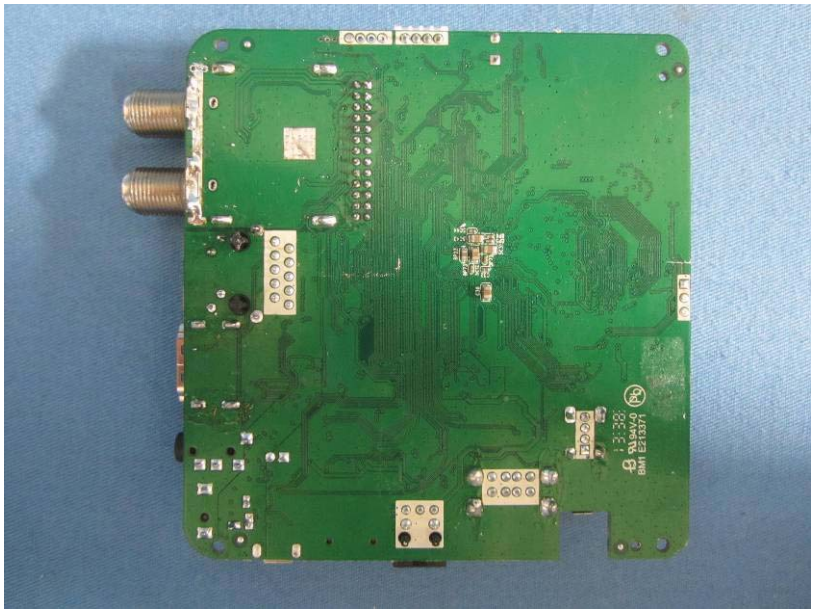

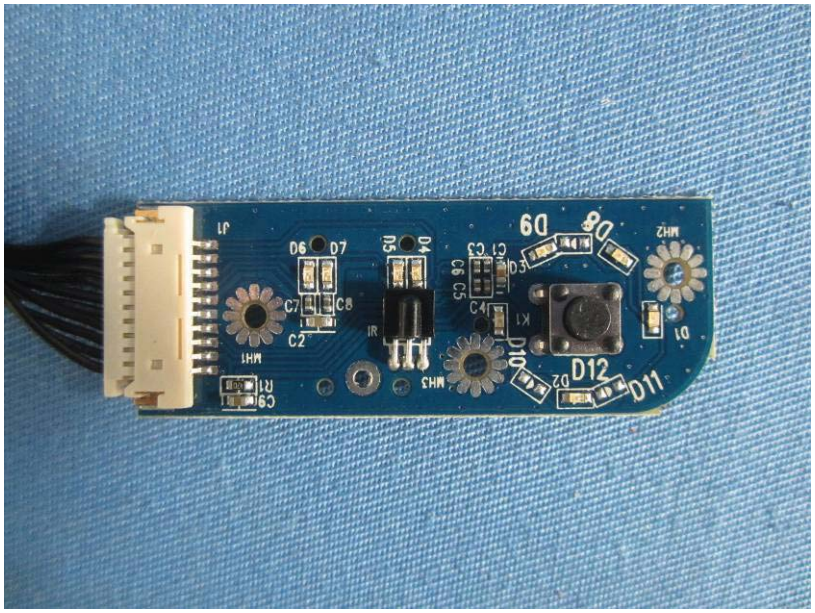
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D7
D5
D4
C7
C8
C2
C1
C3
C5
C6
C4
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MH3
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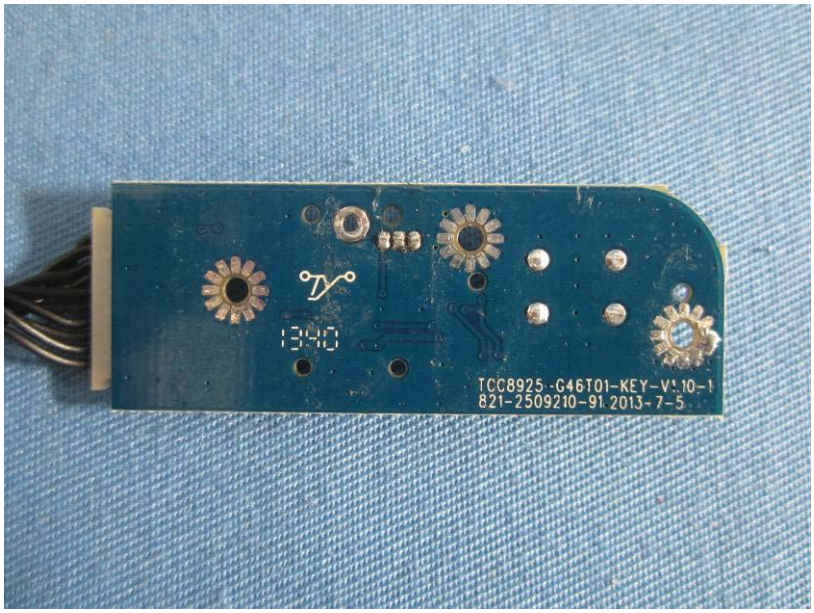
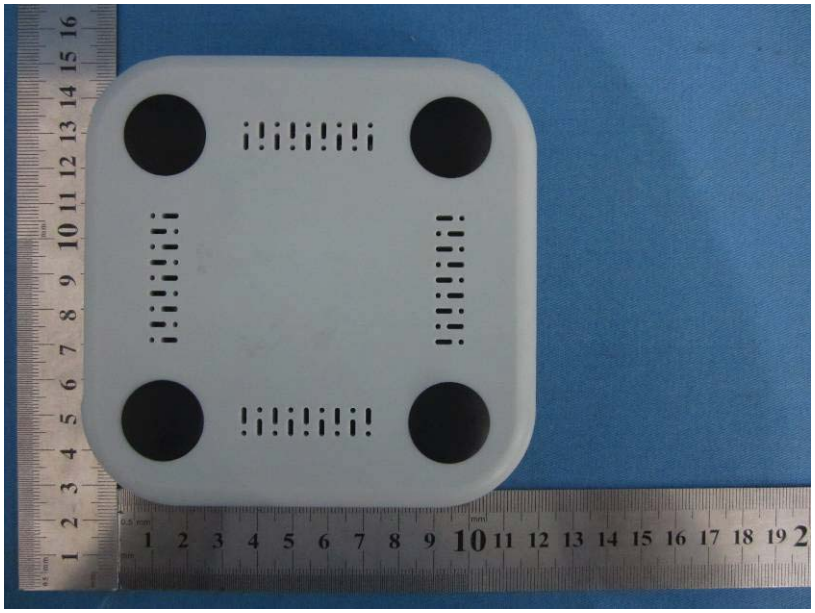
D2
D3
D8
D9
D10
D11
D12


TCC8925-G46T01-KEY-V1.10-1
821-2509210-91 2013-7-5


AC ADAPTOR
Model No.:NSA15EU-050200
Input: AC 100-240V~,50/60Hz,0.5A
Output: DC 5.0V⎓2.0A
Indoor use only
Made in China


Model No.: S20
TizzBird




TizzBird
TizzBird


TizzBird
DC IN
AV OUT
HDMI
LAN

------end------