Report No: GTSE11120100101

FCC REPORT (WiFi)

Applicant:	DELTA NETWORK PTE. LTD.
Address of Applicant:	2 INTERNATIONAL BUSINESS PARK #01-23 STRATEGY, THE SINGAPORE 609930

Equipment Under Test (EUT)

Product Name:	MOBILE PHONE
Model No.:	COOL
Trade mark :	ALVO
FCC ID:	Z6PALVOCOOL
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2010
Date of sample receipt:	Dec. 12, 2011
Date of Test:	Dec. 13-20, 2011
Date of report issued:	Dec. 21, 2011
Test Result :	PASS *

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

Authorized Signature:

Stephen Guo
Laboratory Manager

2 Version

Version No.	Date	Description
00	Dec. 21, 2011	*Original*

Prepared By: Collin.He ***Date:*** Dec. 21, 2011

Project Engineer

Check By: Hans.Hu ***Date:*** Dec. 21, 2011

Reviewer

3 Contents

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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
6dB Occupied 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:	DELTA NETWORK PTE. LTD.
Address of Applicant:	2 INTERNATIONAL BUSINESS PARK #01-23 STRATEGY, THE SINGAPORE 609930
Manufacturer:	SHENZHEN UNITED TIME TECHNOLOGY CO.,LTD.
Address of Manufacturer/	Room 1001 Microprofit Building,6 Gaoxin south Road, High-Tech Park, Nanshan district ,Shenzhen, P.R. China
Factory:	HUIZHOU UNITED TIME TECHNOLOGY CO.,LTD.
Address of Factory:	2# songbai road, south zone, Cyber Park, huizhou, Guangdong.

5.2 General Description of E.U.T.

Product Name:	MOBILE PHONE
Model No.:	COOL
Trade mark :	ALVO
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g)
Channel numbers:	11 for 802.11b/802.11g
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	CCK
Modulation technology: (IEEE 802.11g)	OFDM
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps
Antenna Type:	Integral
Antenna gain:	-3.05 dBi
AC adapter:	Trade mark: ALVO Model : COOL Input: AC 100-240V 50/60Hz Output: DC 5V 500mA
Power supply:	Type: lithium-ion 3.7V 1100mAh Voltage: DC 3.7V

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:

802.11b/802.11g

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz

5.3 Test mode

WIFI mode	Keep the EUT in communicating mode with wireless router device.
Transmitting mode	Keep the EUT in continuously transmitting mode of modulation with the fix frequency.

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

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.

5.4 Test Facility

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

● **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 out files. Registration 600491, July 20, 2010.

● **Industry Canada (IC)**

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
Tel: 0755-27798480
Fax: 0755-27798960

5.6 Other Information Requested by the Customer

None.

5.7 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. 30 2011	Mar. 29 2012
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 04 2011	Jul. 03 2012
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 26 2011	Feb. 25 2012
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 30 2011	June 29 2012
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2011	Mar. 29 2012
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Apr. 01 2011	Mar. 31 2012
9	Coaxial Cable	GTS	N/A	GTS211	Apr. 01 2011	Mar. 31 2012
10	Coaxial cable	GTS	N/A	GTS210	Apr. 01 2011	Mar. 31 2012
11	Coaxial Cable	GTS	N/A	GTS212	Apr. 01 2011	Mar. 31 2012
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2011	Jul. 03 2012
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2011	Jul. 03 2012
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 30 2011	June 29 2012
15	Band filter	Amindeon	82346	GTS219	Apr. 01 2011	Mar. 31 2012
16	Constant temperature and humidity box	Oregon Scientific	BA-888	GTS248	May 11 2011	May 10 2012
17	D.C. Power Supply	Instek	PS-3030	GTS232	May 11 2011	May 10 2012

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)	GTS252	Jul. 04 2011	Jul. 03 2012
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 04 2011	Jul. 03 2012
3	10dB Pulse Limit	Rohde & Schwarz	N/A	GTS224	Jul. 04 2011	Jul. 03 2012
4	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 04 2011	Jul. 03 2012
5	LISN	ETS-LINDGREN	3816/2	GTS232	Jul. 04 2011	Jul. 03 2012
6	Coaxial Cable	GTS	N/A	GTS227	Apr. 01 2011	Mar. 31 2012
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement:

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

15.203 requirement:

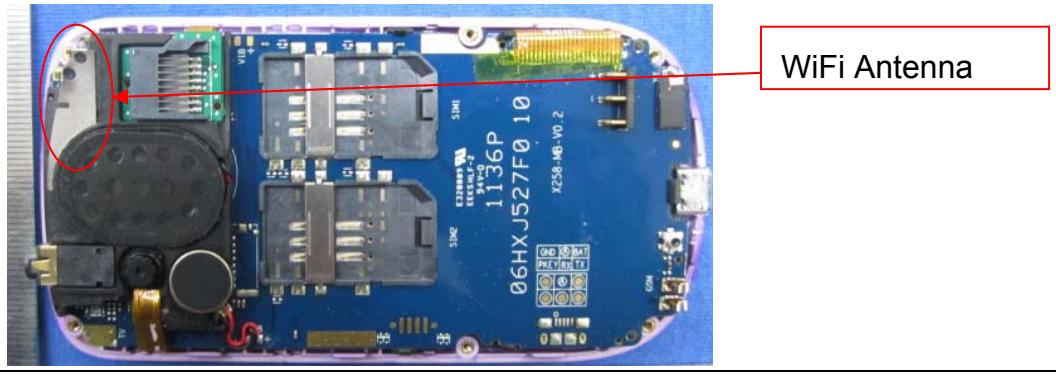
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit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

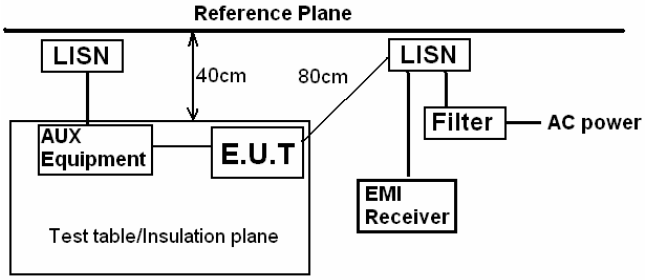
(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional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

E.U.T Antenna:

The antenna is a PIFA antenna which fixed on the main board, the best case gain of the antenna is -3.05 dBi

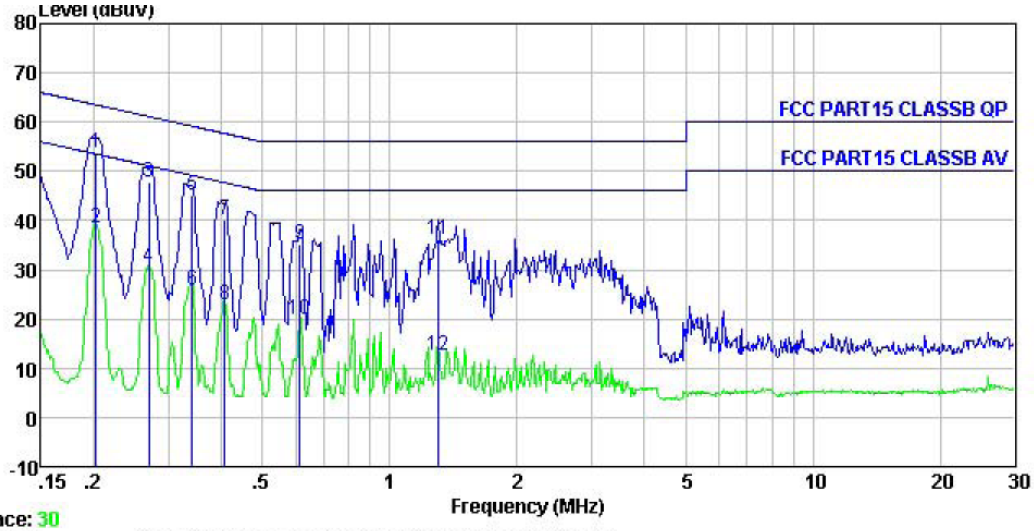


6.2 Conducted Emissions

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 5.7 for details
Test mode:	WiFi mode
Test results:	Pass

Measurement data:

Line:

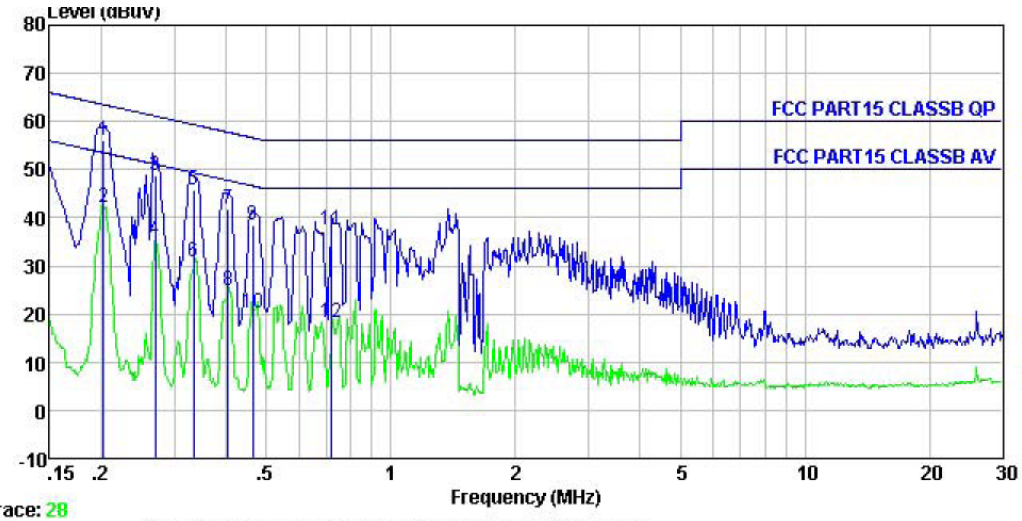


Trace: 30

Condition : FCC PART15 CLASSB QP LISN(2011) LINE
Job No. : 1001RF
Test Mode : WIFI mode
Test Engineer: Gavin

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.202	52.97	0.66	0.10	53.73	63.54	-9.81	QP
2	0.202	37.75	0.66	0.10	38.51	53.54	-15.03	Average
3	0.270	47.00	0.62	0.10	47.72	61.12	-13.40	QP
4	0.270	29.84	0.62	0.10	30.56	51.12	-20.56	Average
5	0.341	44.35	0.60	0.10	45.05	59.18	-14.13	QP
6	0.341	25.04	0.60	0.10	25.74	49.18	-23.44	Average
7	0.408	39.59	0.58	0.10	40.27	57.68	-17.41	QP
8	0.408	22.36	0.58	0.10	23.04	47.68	-24.64	Average
9	0.614	34.68	0.53	0.10	35.31	56.00	-20.69	QP
10	0.614	19.25	0.53	0.10	19.88	46.00	-26.12	Average
11	1.303	35.51	0.45	0.10	36.06	56.00	-19.94	QP
12	1.303	12.14	0.45	0.10	12.69	46.00	-33.31	Average

Neutral:



Trace: 28

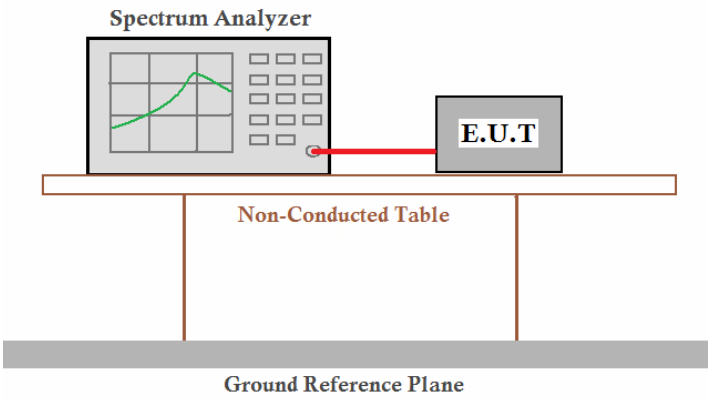
Condition : FCC PART15 CLASSB QP LISN(2011) NEUTRAL
Job No. : 1001RF
Test Mode : WIFI mode
Test Engineer: Gavin

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.202	55.16	0.66	0.10	55.92	63.54	-7.62	QP
2	0.202	41.42	0.66	0.10	42.18	53.54	-11.36	Average
3	0.270	48.16	0.62	0.10	48.88	61.12	-12.24	QP
4	0.270	34.90	0.62	0.10	35.62	51.12	-15.50	Average
5	0.334	45.01	0.60	0.10	45.71	59.35	-13.64	QP
6	0.334	30.18	0.60	0.10	30.88	49.35	-18.47	Average
7	0.404	41.18	0.58	0.10	41.86	57.77	-15.91	QP
8	0.404	24.35	0.58	0.10	25.03	47.77	-22.74	Average
9	0.464	37.80	0.56	0.10	38.46	56.63	-18.17	QP
10	0.464	19.58	0.56	0.10	20.24	46.63	-26.39	Average
11	0.720	36.81	0.51	0.10	37.42	56.00	-18.58	QP
12	0.720	17.47	0.51	0.10	18.08	46.00	-27.92	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss

6.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Transmitting mode
Test results:	Pass

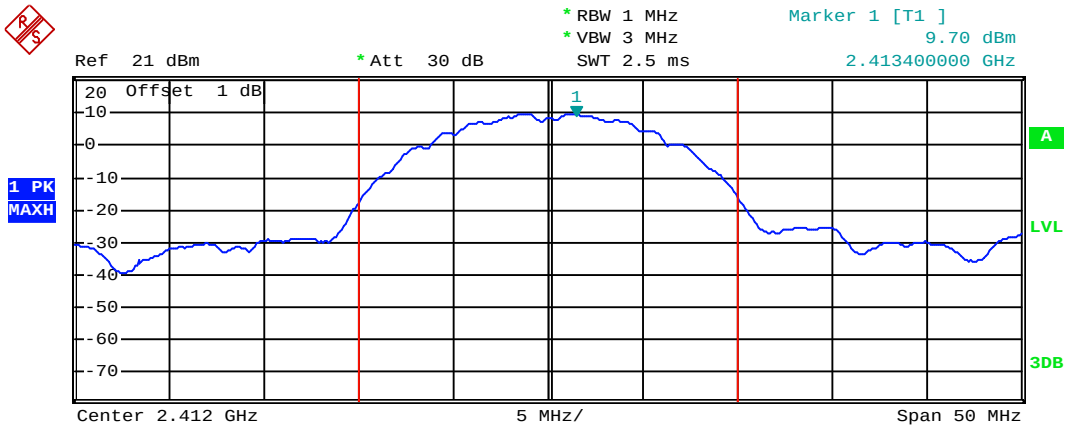
Measurement Data

Test CH	Peak Output Power (dBm)		Limit(dBm)	Result
	802.11b	802.11g		
Lowest	17.80	17.71	30.00	Pass
Middle	18.13	17.27		
Highest	18.43	17.89		

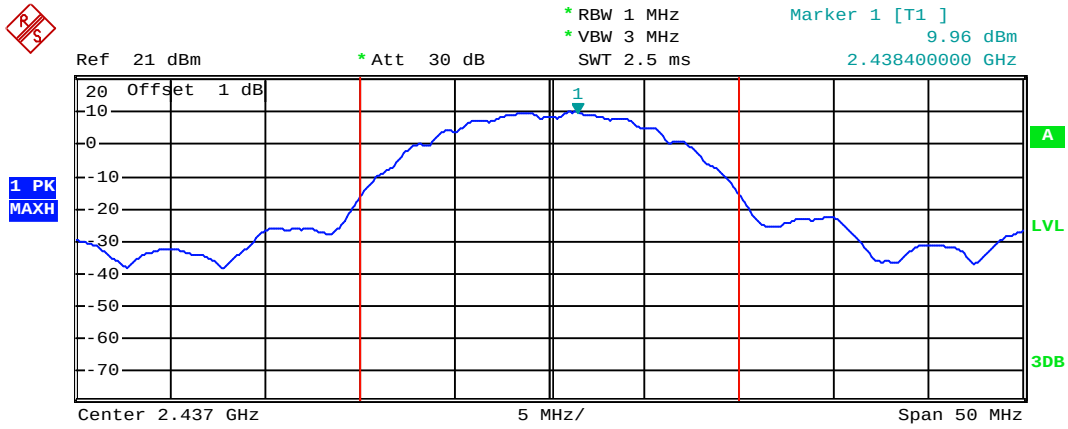
Test CH	Average Power (dBm)		Limit(dBm)	Result
	802.11b	802.11g		
Lowest	14.90	11.32	30.00	Pass
Middle	15.41	12.24		
Highest	15.65	12.94		

Test plot as follows:

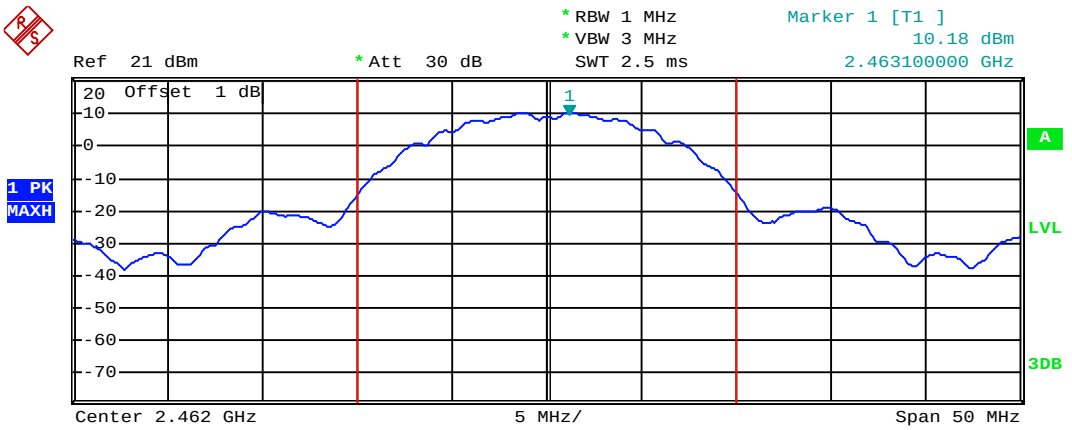
Test mode:	802.11b



Lowest channel

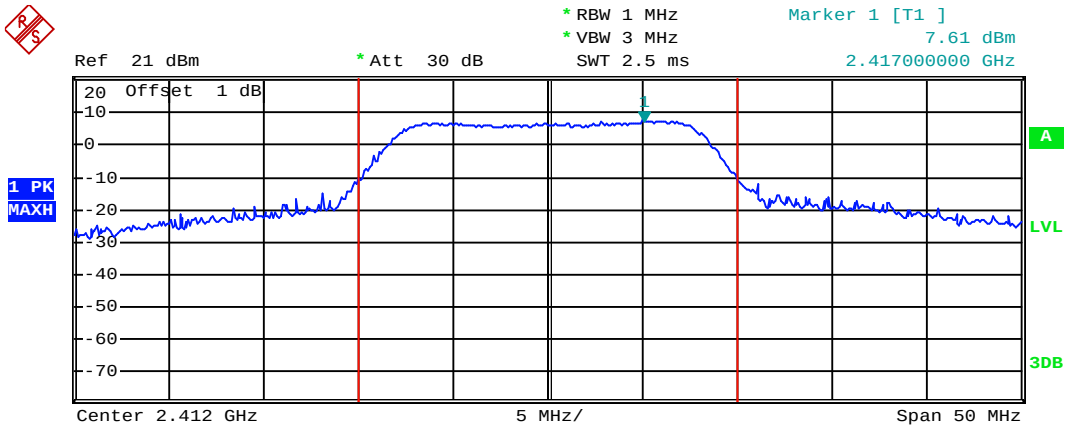


Middle channel

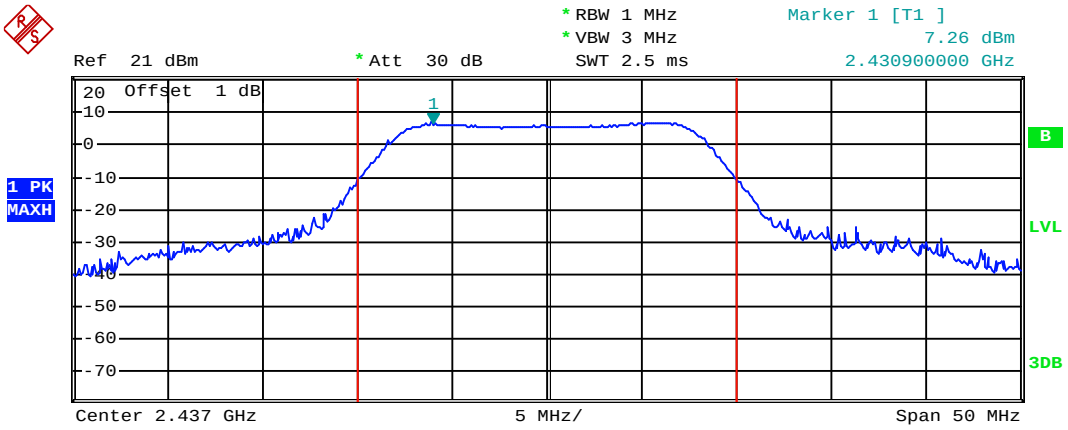


Highest channel

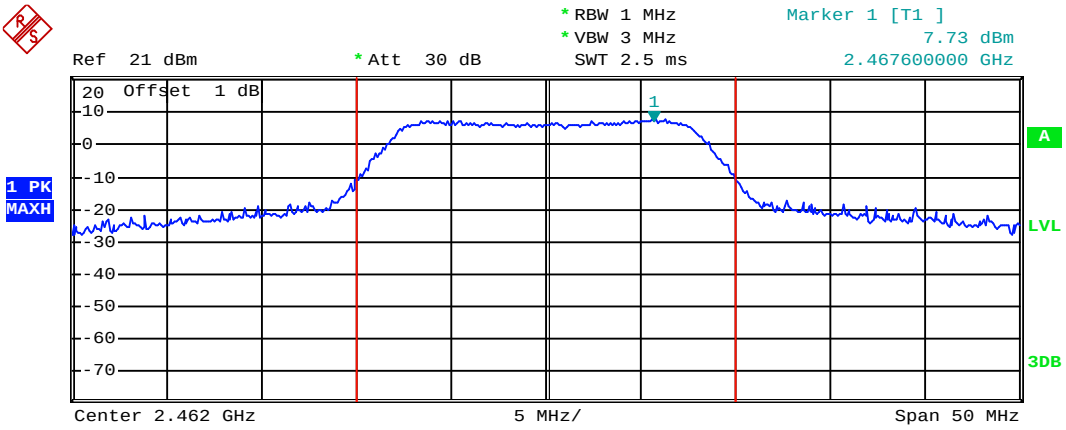
Test mode:	802.11g



Lowest channel

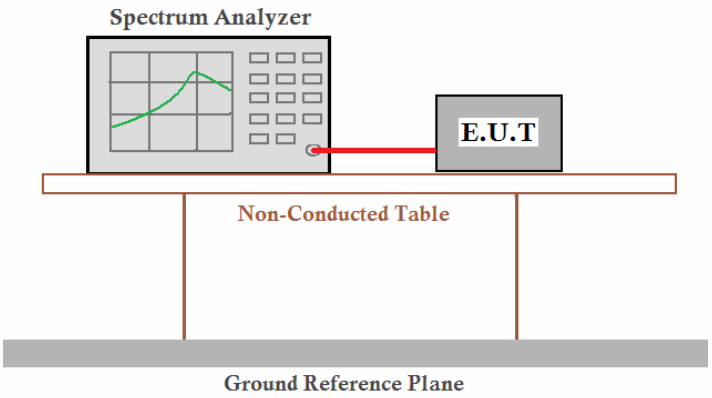


Middle channel



Highest channel

6.4 6dB Occupy Bandwidth

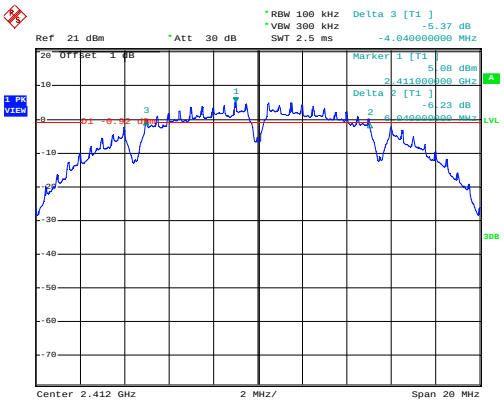
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Transmitting mode
Test results:	Pass

Measurement Data

Test CH	6dB Occupy Bandwidth (MHz)		Limit(KMHz)	Result
	802.11b	802.11g		
Lowest	10.08	16.48	>500	Pass
Middle	10.12	16.52		
Highest	10.12	16.48		

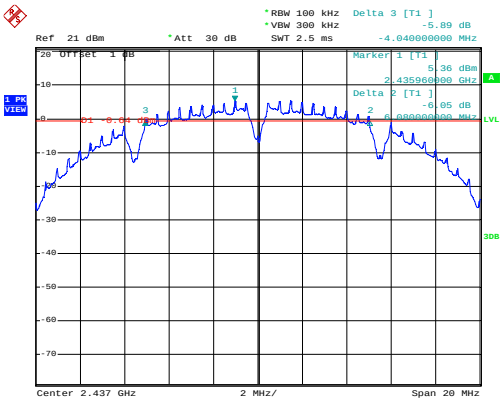
Test plot as follows:

Test mode:	802.11b



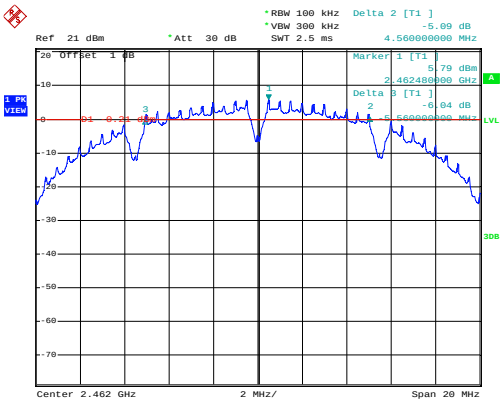
Date: 15.DEC.2011 02:12:29

Lowest channel



Date: 14.DEC.2011 10:04:47

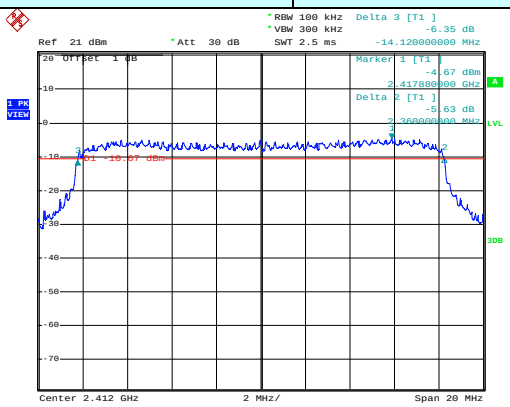
Middle channel



Date: 14.DEC.2011 10:13:52

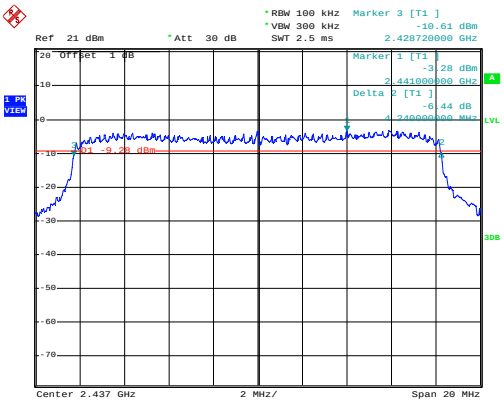
Highest channel

Test mode:	802.11g



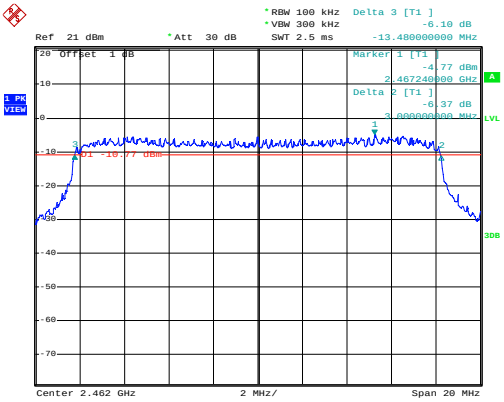
Date: 14.DEC.2011 10:25:40

Lowest channel



Date: 14.DEC.2011 10:32:04

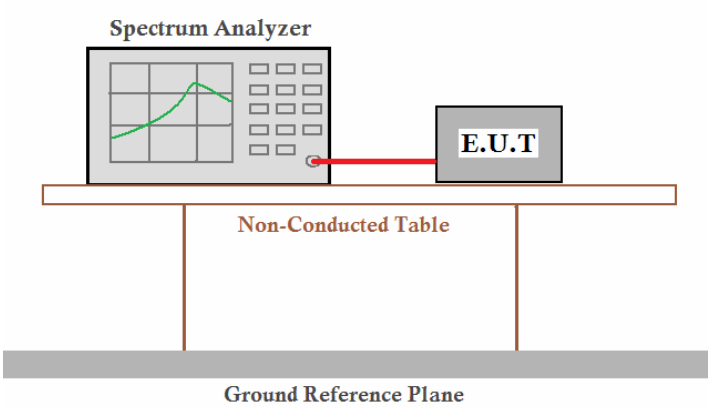
Middle channel



Date: 15.DEC.2011 01:58:49

Highest channel

6.5 Power Spectral Density

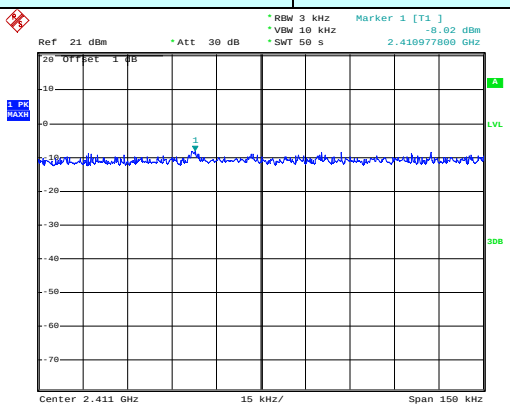
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	8dBm
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Transmitting mode
Test results:	Pass

Measurement Data

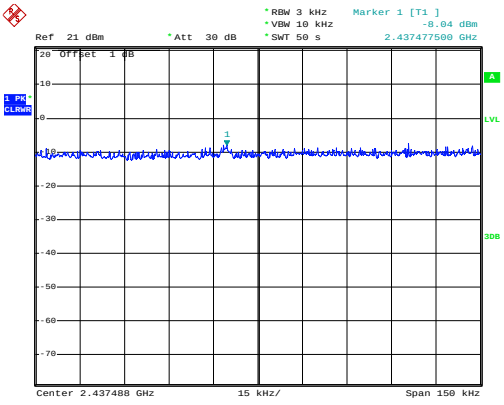
Test CH	Power Spectral Density (dBm)		Limit(dBm)	Result
	802.11b	802.11g		
Lowest	-8.02	-13.40	8.00	Pass
Middle	-8.04	-16.40		
Highest	-6.75	-14.54		

Test plot as follows:

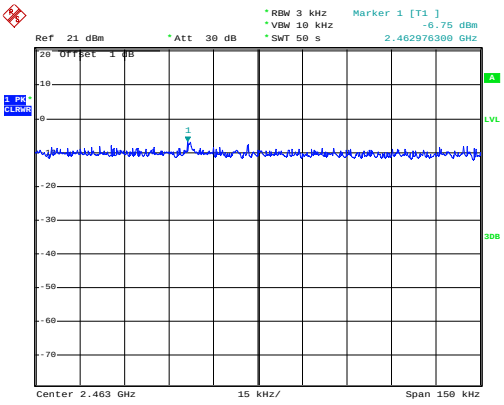
Test mode:	802.11b



Lowest channel

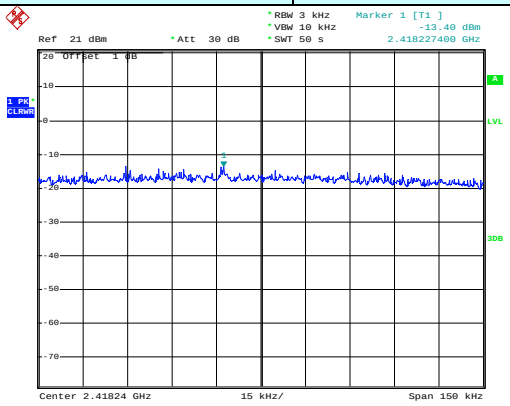


Middle channel



Highest channel

Test mode:	802.11g



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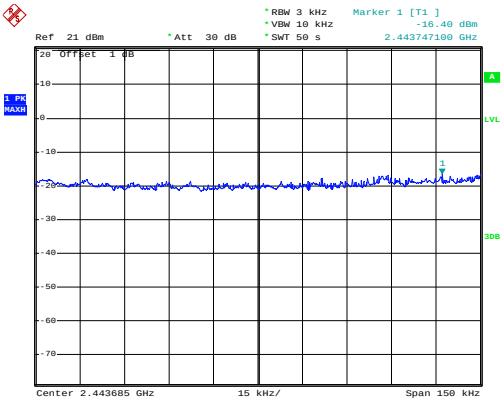
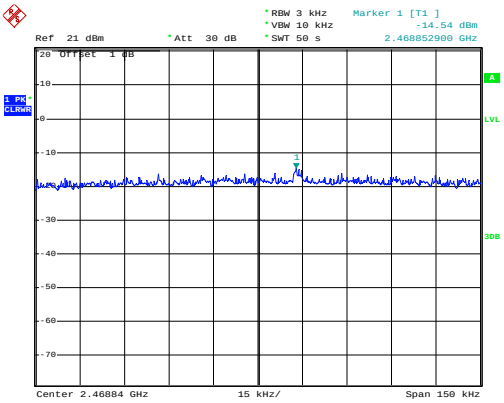
Lowest channel



Date: 14.DEC.2011 10:35:42

Middle channel

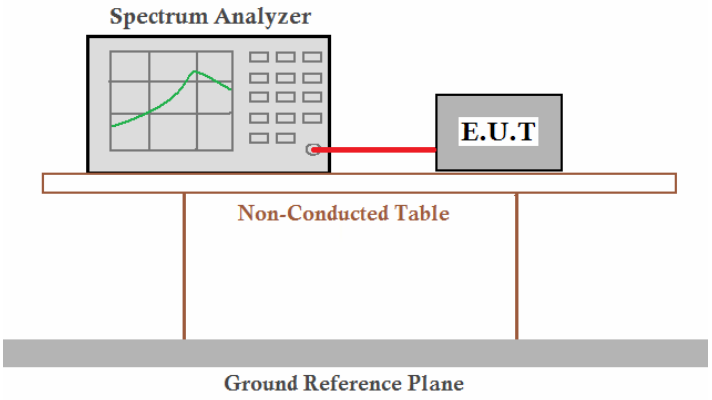


Date: 15.DEC.2011 02:03:01

Highest channel

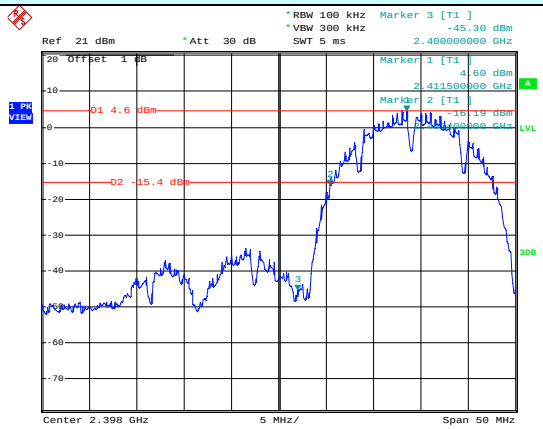
6.6 Band edges

6.6.1 Conducted Emission Method

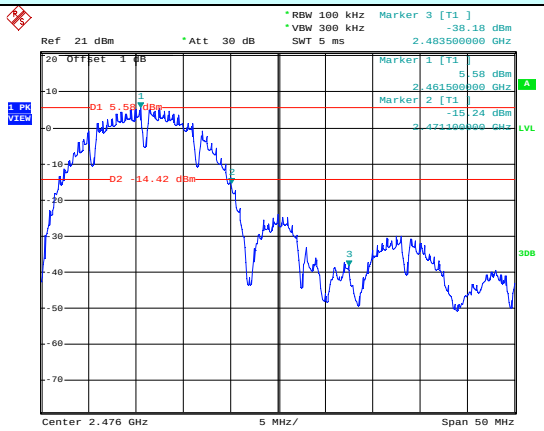
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 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 5.7 for details
Test mode:	Transmitting mode
Test results:	Pass

Test plot as follows:

Test mode:	802.11b

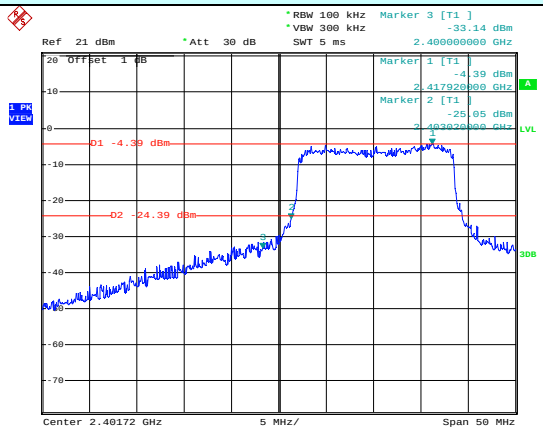


Lowest channel

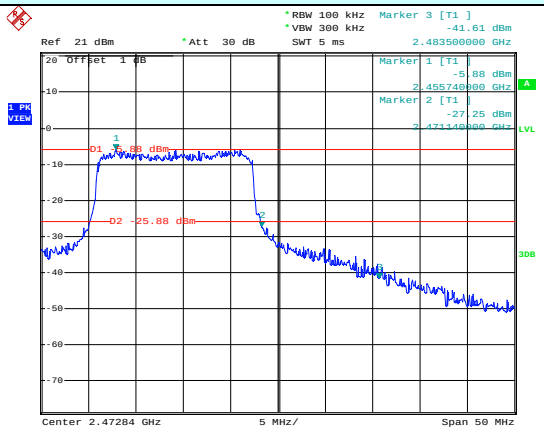


Highest channel

Test mode:	802.11g

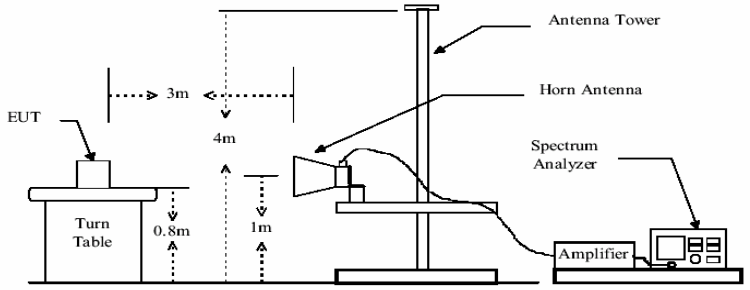


Lowest channel



Highest channel

6.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.4: 2003
Test Frequency Range:	2.3GHz to 2.5GHz
Test site:	Measurement Distance: 3m
Receiver setup:	Frequency / Detector / RBW / VBW / Remark Above 1GHz / Peak / 1MHz / 3MHz / Peak Value Above 1GHz / Peak / 1MHz / 10Hz / Average Value
Limit:	Frequency / Limit (dBuV/m @3m) / Remark Above 1GHz / 54.00 / Average Value Above 1GHz / 74.00 / Peak Value
Test setup:	
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.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Transmitting mode
Test results:	Passed

Remark:

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

Measurement data:

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	49.68	27.58	3.81	34.83	46.24	74.00	-27.76	Horizontal
2400.00	56.28	27.58	3.83	34.83	52.86	74.00	-21.14	Horizontal
2390.00	62.44	27.58	3.81	34.83	59.00	74.00	-15.00	Vertical
2400.00	64.91	27.58	3.83	34.83	61.49	74.00	-12.51	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	37.26	27.58	3.81	34.83	33.82	54.00	-20.18	Horizontal
2400.00	37.28	27.58	3.83	34.83	33.86	54.00	-20.14	Horizontal
2390.00	41.35	27.58	3.81	34.83	37.91	54.00	-16.09	Vertical
2400.00	40.34	27.58	3.83	34.83	36.92	54.00	-17.08	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	51.38	27.52	3.89	34.86	47.93	74.00	-26.07	Horizontal
2500.00	56.32	27.55	3.90	34.87	52.90	74.00	-21.10	Horizontal
2483.50	51.10	27.52	3.89	34.86	47.65	74.00	-26.35	Vertical
2500.00	53.26	27.55	3.90	34.87	49.84	74.00	-24.16	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
2483.50	42.31	27.52	3.89	34.86	38.86	54.00	-15.14	Horizontal
2500.00	38.36	27.55	3.90	34.87	34.94	54.00	-19.06	Horizontal
2483.50	42.35	27.52	3.89	34.86	38.90	54.00	-15.10	Vertical
2500.00	38.36	27.55	3.90	34.87	34.94	54.00	-19.06	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	48.17	27.58	3.81	34.83	44.73	74.00	-29.27	Horizontal
2400.00	55.85	27.58	3.83	34.83	52.43	74.00	-21.57	Horizontal
2390.00	63.35	27.58	3.81	34.83	59.91	74.00	-14.09	Vertical
2400.00	62.38	27.58	3.83	34.83	58.96	74.00	-15.04	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
2390.00	36.16	27.58	3.81	34.83	32.72	54.00	-21.28	Horizontal
2400.00	37.33	27.58	3.83	34.83	33.91	54.00	-20.09	Horizontal
2390.00	40.35	27.58	3.81	34.83	36.91	54.00	-17.09	Vertical
2400.00	40.34	27.58	3.83	34.83	36.92	54.00	-17.08	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	59.32	27.52	3.89	34.86	55.87	74.00	-18.13	Horizontal
2500.00	53.32	27.55	3.90	34.87	49.90	74.00	-24.10	Horizontal
2483.50	61.09	27.52	3.89	34.86	57.64	74.00	-16.36	Vertical
2500.00	47.65	27.55	3.90	34.87	44.23	74.00	-29.77	Vertical

Average value:

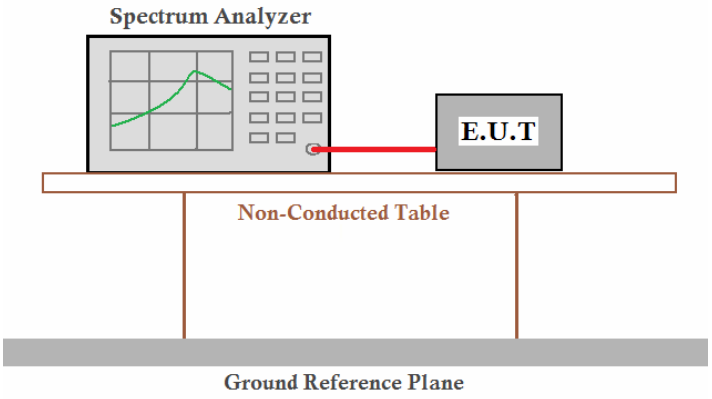
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	43.26	27.52	3.89	34.86	39.81	54.00	-14.19	Horizontal
2500.00	35.63	27.55	3.90	34.87	32.21	54.00	-21.79	Horizontal
2483.50	42.77	27.52	3.89	34.86	39.32	54.00	-14.68	Vertical
2500.00	36.26	27.55	3.90	34.87	32.84	54.00	-21.16	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.*

6.7 Spurious Emission

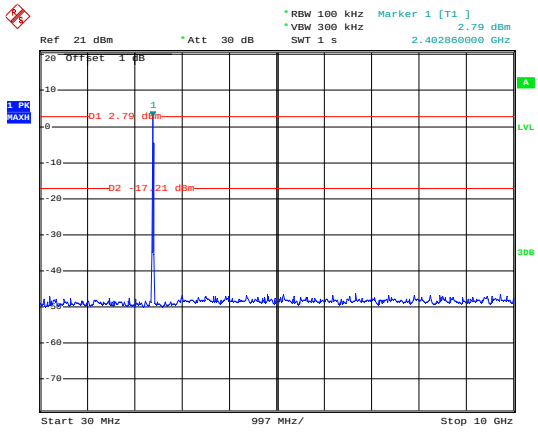
6.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074
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 5.7 for details
Test mode:	Transmitting mode
Test results:	Pass

Test plot as follows:

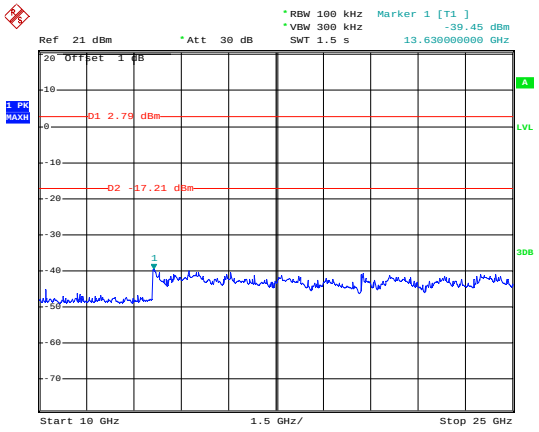
Test mode:	802.11b

Lowest channel



Date: 14.DEC.2011 10:01:33

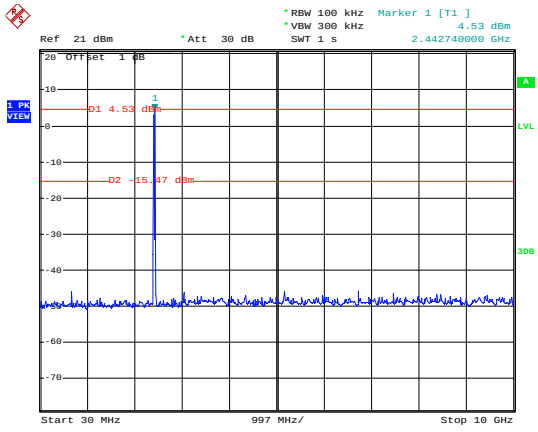
30MHz~10GHz



Date: 14.DEC.2011 10:02:06

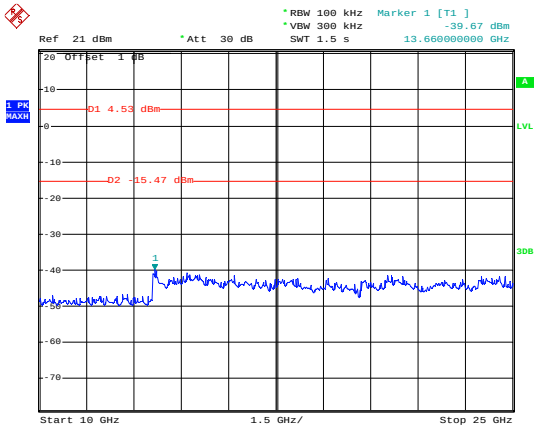
10GHz~25GHz

Middle channel



Date: 14.DEC.2011 10:10:21

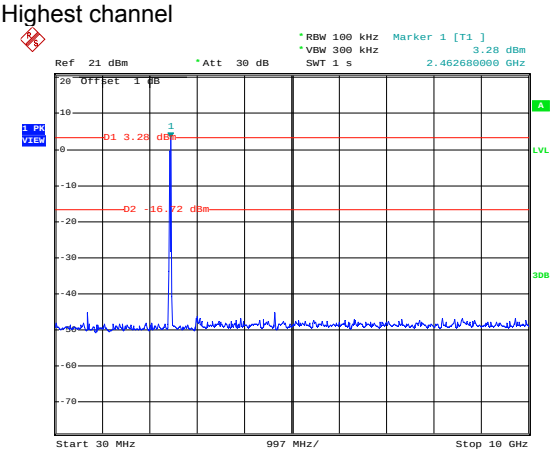
30MHz~10GHz



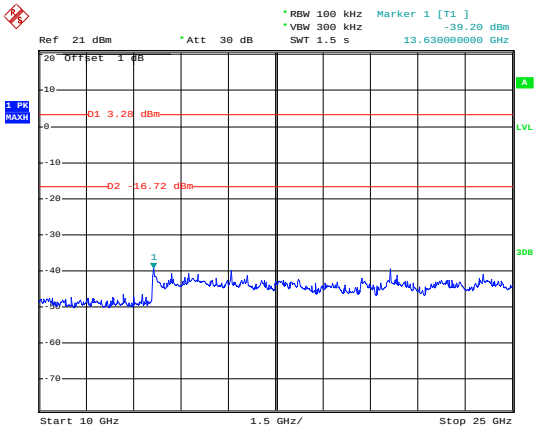
Date: 14.DEC.2011 10:10:44

10GHz~25GHz

Highest channel



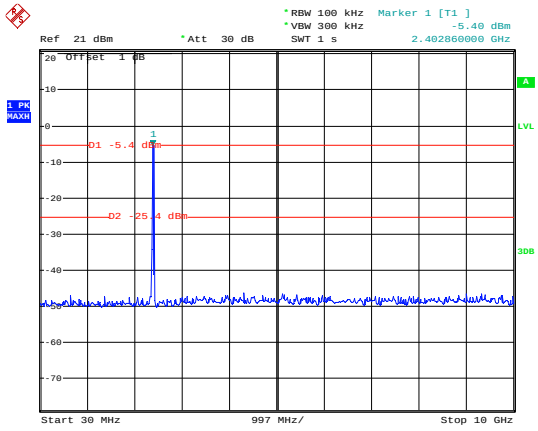
30MHz~10GHz



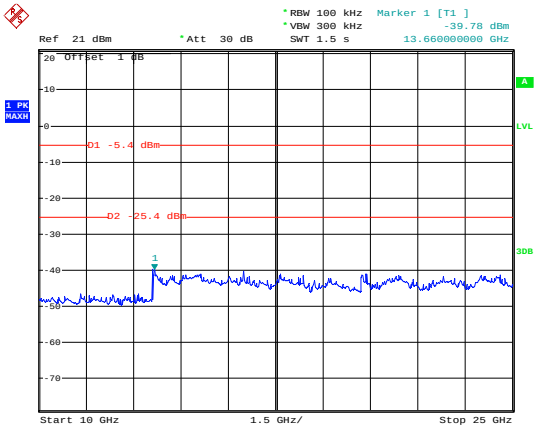
10GHz~25GHz

Test mode:	802.11g

Lowest channel

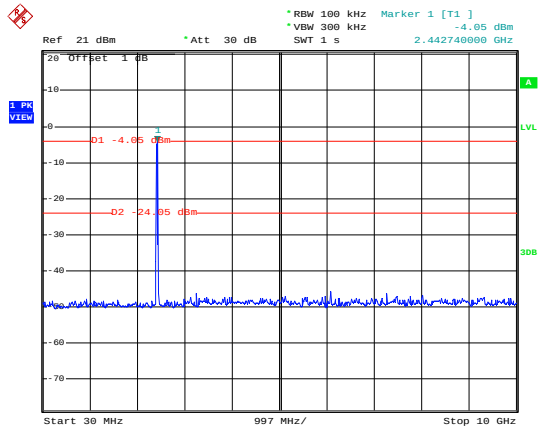


30MHz~10GHz



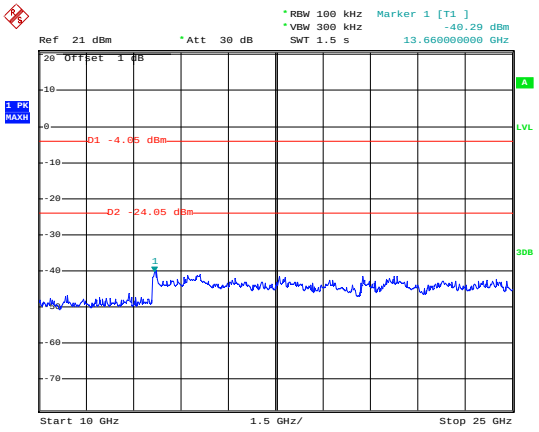
10GHz~25GHz

Middle channel



Date: 14.DEC.2011 10:36:45

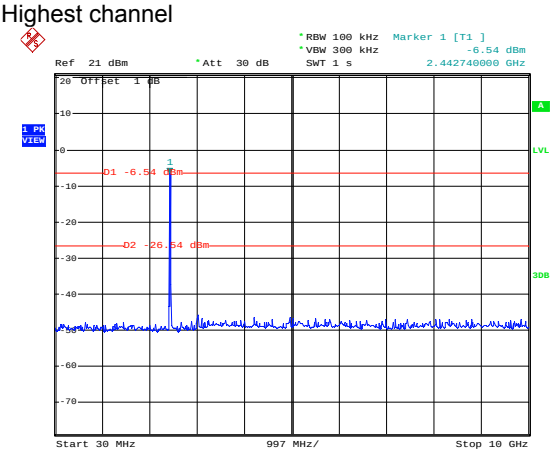
30MHz~10GHz



Date: 14.DEC.2011 10:37:03

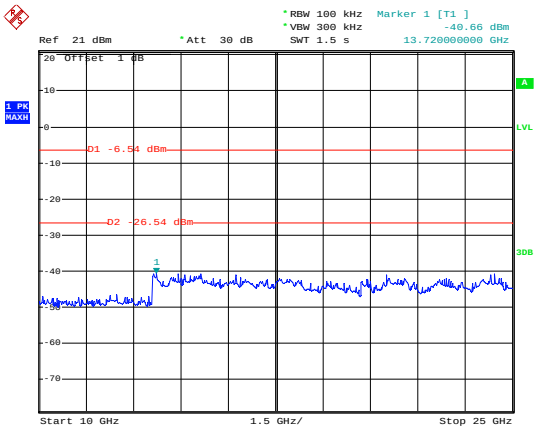
10GHz~25GHz

Highest channel



Date: 15.DEC.2011 02:04:42

30MHz~10GHz



Date: 15.DEC.2011 02:04:59

10GHz~25GHz

6.7.2 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:

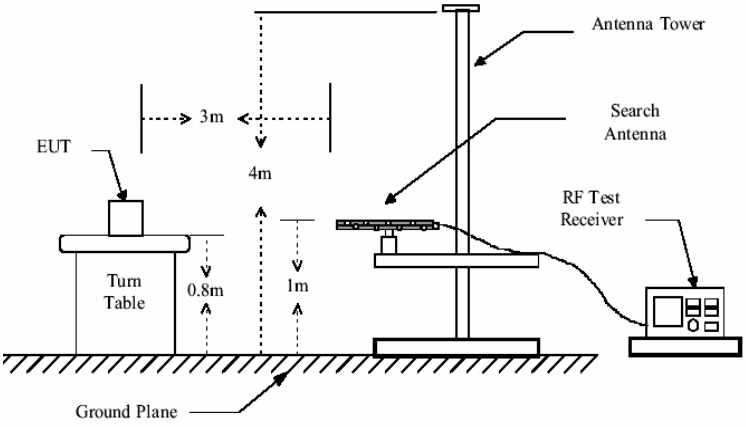
Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

Limit:

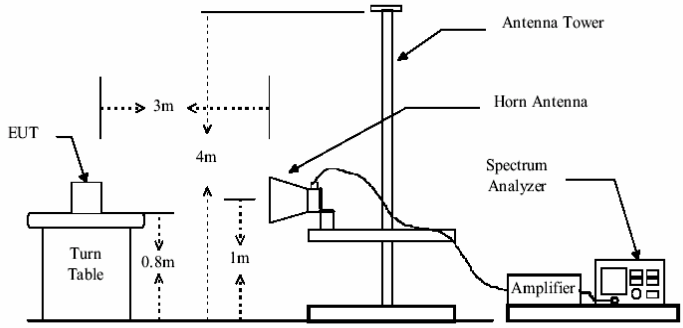
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test setup:

Below 1GHz



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.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Non-hopping mode
Test results:	Pass

Remark:

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

■ **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
77.87	55.68	11.26	0.42	31.83	35.53	40.00	-4.47	Vertical
129.92	45.61	9.03	0.56	31.86	23.34	43.50	-20.16	Vertical
181.92	53.41	9.84	0.67	32.17	31.75	43.50	-11.75	Vertical
207.85	53.89	10.81	0.74	32.27	33.17	43.50	-10.33	Vertical
234.17	52.72	11.83	0.85	32.28	33.12	46.00	-12.88	Vertical
260.14	44.00	12.16	0.95	32.29	24.82	46.00	-21.18	Vertical
77.87	56.80	11.26	0.42	31.83	36.65	40.00	-3.35	Horizontal
129.92	53.77	9.03	0.56	31.86	31.50	43.50	-12.00	Horizontal
181.92	56.50	9.84	0.67	32.17	34.84	43.50	-8.66	Horizontal
207.85	58.31	10.81	0.74	32.27	37.59	43.50	-5.91	Horizontal
234.17	60.65	11.83	0.85	32.28	41.05	46.00	-4.95	Horizontal
260.14	49.58	12.16	0.95	32.29	30.40	46.00	-15.60	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	41.23	31.79	5.34	24.07	54.29	74.00	-19.71	Vertical
7236.00	39.26	36.19	6.88	26.44	55.89	74.00	-18.11	Vertical
9648.00	32.46	38.07	8.96	25.36	54.13	74.00	-19.87	Vertical
12060.00	26.34	39.05	10.35	25.15	50.59	74.00	-23.41	Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	42.16	31.79	5.34	24.07	55.22	74.00	-18.78	Horizontal
7236.00	39.35	36.19	6.88	26.44	55.98	74.00	-18.02	Horizontal
9648.00	29.65	38.07	8.96	25.36	51.32	74.00	-22.68	Horizontal
12060.00	25.35	39.05	10.35	25.15	49.60	74.00	-24.40	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	21.26	31.79	5.34	24.07	34.32	54.00	-19.68	Vertical
7236.00	14.26	36.19	6.88	26.44	30.89	54.00	-23.11	Vertical
9648.00	13.21	38.07	8.96	25.36	34.88	54.00	-19.12	Vertical
12060.00	10.26	39.05	10.35	25.15	34.51	54.00	-19.49	Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	21.32	31.79	5.34	24.07	34.38	54.00	-19.62	Horizontal
7236.00	26.59	36.19	6.88	26.44	43.22	54.00	-10.78	Horizontal
9648.00	20.16	38.07	8.96	25.36	41.83	54.00	-12.17	Horizontal
12060.00	10.35	39.05	10.35	25.15	34.60	54.00	-19.40	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	38.56	31.85	5.40	24.01	51.80	74.00	-22.20	Vertical
7311.00	32.26	36.37	6.90	26.58	48.95	74.00	-25.05	Vertical
9688.00	24.26	38.13	8.98	25.34	46.03	74.00	-27.97	Vertical
12185.00	20.16	38.92	10.38	25.04	44.42	74.00	-29.58	Vertical
14682.00	*					74.00		Vertical
17179.00	*					74.00		Vertical
4874.00	38.26	31.85	5.40	24.01	51.50	74.00	-22.50	Horizontal
7311.00	28.35	36.37	6.90	26.58	45.04	74.00	-28.96	Horizontal
9688.00	29.09	38.13	8.98	25.34	50.86	74.00	-23.14	Horizontal
12185.00	25.79	38.92	10.38	25.04	50.05	74.00	-23.95	Horizontal
14682.00	*					74.00		Horizontal
17179.00	*					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	21.02	31.85	5.40	24.01	34.26	54.00	-19.74	Vertical
7311.00	16.32	36.37	6.90	26.58	33.01	54.00	-20.99	Vertical
9688.00	11.14	38.13	8.98	25.34	32.91	54.00	-21.09	Vertical
12185.00	10.68	38.92	10.38	25.04	34.94	54.00	-19.06	Vertical
14682.00	*					54.00		Vertical
17179.00	*					54.00		Vertical
4874.00	22.35	31.85	5.40	24.01	35.59	54.00	-18.41	Horizontal
7311.00	17.26	36.37	6.90	26.58	33.95	54.00	-20.05	Horizontal
9688.00	12.30	38.13	8.98	25.34	34.07	54.00	-19.93	Horizontal
12185.00	10.23	38.92	10.38	25.04	34.49	54.00	-19.51	Horizontal
14682.00	*					54.00		Horizontal
17179.00	*					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	38.26	31.89	5.46	23.96	51.65	74.00	-22.35	Vertical
7386.00	31.81	36.49	6.93	26.79	48.44	74.00	-25.56	Vertical
9848.00	26.35	38.24	9.05	25.30	48.34	74.00	-25.66	Vertical
12310.00	28.34	38.83	10.41	24.90	52.68	74.00	-21.32	Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	38.26	31.89	5.46	23.96	51.65	74.00	-22.35	Horizontal
7386.00	33.76	36.49	6.93	26.79	50.39	74.00	-23.61	Horizontal
9848.00	25.26	38.24	9.05	25.30	47.25	74.00	-26.75	Horizontal
12310.00	24.35	38.83	10.41	24.90	48.69	74.00	-25.31	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	25.26	31.89	5.46	23.96	38.65	54.00	-15.35	Vertical
7386.00	17.35	36.49	6.93	26.79	33.98	54.00	-20.02	Vertical
9848.00	10.26	38.24	9.05	25.30	32.25	54.00	-21.75	Vertical
12310.00	10.32	38.83	10.41	24.90	34.66	54.00	-19.34	Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	24.97	31.89	5.46	23.96	38.36	54.00	-15.64	Horizontal
7386.00	19.35	36.49	6.93	26.79	35.98	54.00	-18.02	Horizontal
9848.00	12.35	38.24	9.05	25.30	34.34	54.00	-19.66	Horizontal
12310.00	11.39	38.83	10.41	24.90	35.73	54.00	-18.27	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	36.59	31.79	5.34	24.07	49.65	74.00	-24.35	Vertical
7236.00	32.16	36.19	6.88	26.44	48.79	74.00	-25.21	Vertical
9648.00	29.35	38.07	8.96	25.36	51.02	74.00	-22.98	Vertical
12060.00	27.26	39.05	10.35	25.15	51.51	74.00	-22.49	Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	39.26	31.79	5.34	24.07	52.32	74.00	-21.68	Horizontal
7236.00	31.26	36.19	6.88	26.44	47.89	74.00	-26.11	Horizontal
9648.00	28.50	38.07	8.96	25.36	50.17	74.00	-23.83	Horizontal
12060.00	22.36	39.05	10.35	25.15	46.61	74.00	-27.39	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	21.35	31.79	5.34	24.07	34.41	54.00	-19.59	Vertical
7236.00	15.38	36.19	6.88	26.44	32.01	54.00	-21.99	Vertical
9648.00	12.34	38.07	8.96	25.36	34.01	54.00	-19.99	Vertical
12060.00	10.28	39.05	10.35	25.15	34.53	54.00	-19.47	Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertica
4824.00	22.35	31.79	5.34	24.07	35.41	54.00	-18.59	Horizontal
7236.00	21.29	36.19	6.88	26.44	37.92	54.00	-16.08	Horizontal
9648.00	12.35	38.07	8.96	25.36	34.02	54.00	-19.98	Horizontal
12060.00	10.32	39.05	10.35	25.15	34.57	54.00	-19.43	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	42.35	31.85	5.40	24.01	55.59	74.00	-18.41	Vertical
7311.00	40.26	36.37	6.90	26.58	56.95	74.00	-17.05	Vertical
9688.00	32.12	38.13	8.98	25.34	53.89	74.00	-20.11	Vertical
12185.00	22.39	38.92	10.38	25.04	46.65	74.00	-27.35	Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4874.00	42.16	31.85	5.40	24.01	55.40	74.00	-18.60	Horizontal
7311.00	39.35	36.37	6.90	26.58	56.04	74.00	-17.96	Horizontal
9688.00	30.16	38.13	8.98	25.34	51.93	74.00	-22.07	Horizontal
12185.00	28.26	38.92	10.38	25.04	52.52	74.00	-21.48	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
4874.00	20.35	31.85	5.40	24.01	33.59	54.00	-20.41	Vertical
7311.00	17.06	36.37	6.90	26.58	33.75	54.00	-20.25	Vertical
9688.00	13.11	38.13	8.98	25.34	34.88	54.00	-19.12	Vertical
12185.00	10.88	38.92	10.38	25.04	35.14	54.00	-18.86	Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4874.00	22.36	31.85	5.40	24.01	35.60	54.00	-18.40	Horizontal
7311.00	18.94	36.37	6.90	26.58	35.63	54.00	-18.37	Horizontal
9688.00	14.83	38.13	8.98	25.34	36.60	54.00	-17.40	Horizontal
12185.00	12.44	38.92	10.38	25.04	36.70	54.00	-17.30	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:	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	37.12	31.89	5.46	23.96	50.51	74.00	-23.49	Vertical
7386.00	32.67	36.49	6.93	26.79	49.30	74.00	-24.70	Vertical
9848.00	30.84	38.24	9.05	25.30	52.83	74.00	-21.17	Vertical
12310.00	28.17	38.83	10.41	24.90	52.51	74.00	-21.49	Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	39.84	31.89	5.46	23.96	53.23	74.00	-20.77	Horizontal
7386.00	32.85	36.49	6.93	26.79	49.48	74.00	-24.52	Horizontal
9848.00	30.74	38.24	9.05	25.30	52.73	74.00	-21.27	Horizontal
12310.00	29.35	38.83	10.41	24.90	53.69	74.00	-20.31	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	20.35	31.89	5.46	23.96	33.74	54.00	-20.26	Vertical
7386.00	15.36	36.49	6.93	26.79	31.99	54.00	-22.01	Vertical
9848.00	12.32	38.24	9.05	25.30	34.31	54.00	-19.69	Vertical
12310.00	12.00	38.83	10.41	24.90	36.34	54.00	-17.66	Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	20.35	31.89	5.46	23.96	33.74	54.00	-20.26	Horizontal
7386.00	18.35	36.49	6.93	26.79	34.98	54.00	-19.02	Horizontal
9848.00	12.35	38.24	9.05	25.30	34.34	54.00	-19.66	Horizontal
12310.00	10.35	38.83	10.41	24.90	34.69	54.00	-19.31	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.*