Global United Technology Services Co., Ltd.

Report No: GTSE11100084103

FCC REPORT（WiFi）

Applicant:	Corporativo Lanix S.A. de C.V.
Address of Applicant:	Carrtera internacional Hermosillo-Nogale Km 8.5 Hermosillo Mexico
Equipment Under Test (EUT)	
Product Name:	GSM Dual Band GPRS Digital Mobile Phone
Model No.:	SL20
Trade mark:	LANIX
FCC ID:	ZC4SL20
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247:2010
Date of sample receipt:	Oct. 11 , 2011
Date of Test:	Oct.11-13, 2011
Date of report issued:	Oct.14, 2011
Test Result :	Pass *

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

Authorized Signature:

Stephen Guo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	*Oct.14, 2011*	*Original*

Prepared By:	Collin. He	*Date:*	Oct.14, 2011
	Project Engineer		
Check By:	Hans. Hu	*Date:*	Oct.14, 2011
	Reviewer		

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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:	Corporativo Lanix S.A. de C.V.
Address of Applicant:	Carrtera internacional Hermosillo-Nogale Km 8.5 Hermosillo Mexico
Manufacturer:	ShenZhen Konka Telecommunication Technology Co.,Ltd
Address of Manufacturer:	No.9008 Shennan Road,Overseas Chinese Town, ShenZhen, Guangdong,China
Factory:	SHENZHEN KONKA TELECOMMUNICATION TECHNOLOGY CO.,LTD
Address of Factory:	No.9008 Shennan Road,Overseas Chinese Town, ShenZhen, GuangDong,China

5.2 General Description of E.U.T.

Product Name:	GSM Dual Band GPRS Digital Mobile Phone
Model No.:	SL20
Trade mark:	LANIX
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g)
Channel numbers:	11 for 802.11b/802.11g
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
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:	2dBi (declare by Applicant)
Power supply:	Type:Li-on SL20-BAT 3.7V 850mA Voltage:DC 3.7V

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

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 environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
WIFI mode	Keep the EUT in communicating mode on WIFI function.

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 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 Test Instruments list

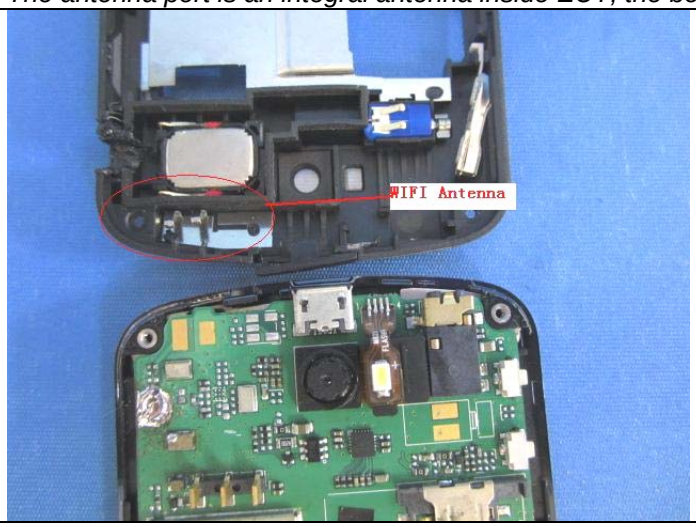
Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2011	Mar. 29 2012
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	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
9	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	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 30 2011	June 29 2012
15	Band filter	Amindeon	82346	GTS219	June 30 2011	June 29 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 Limita	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	Coaxial Cable	GTS	N/A	GTS227	Apr. 01 2011	Mar. 31 2012
6	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 port is an integral antenna inside EUT, the best case gain of the antenna is 2.0dBi.	

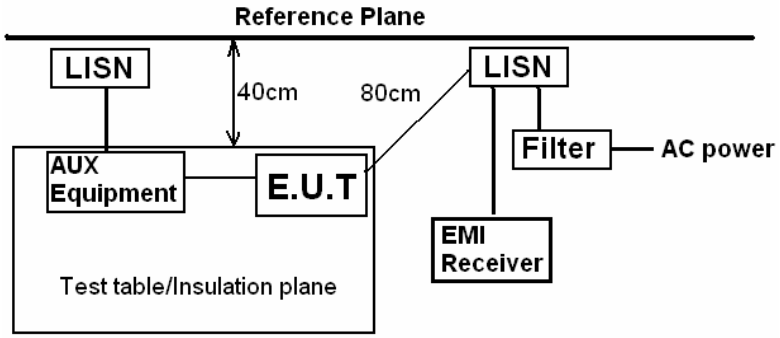


6.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.4: 2009
Test Frequency Range:	150KHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9KHz, VBW=30KHz
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

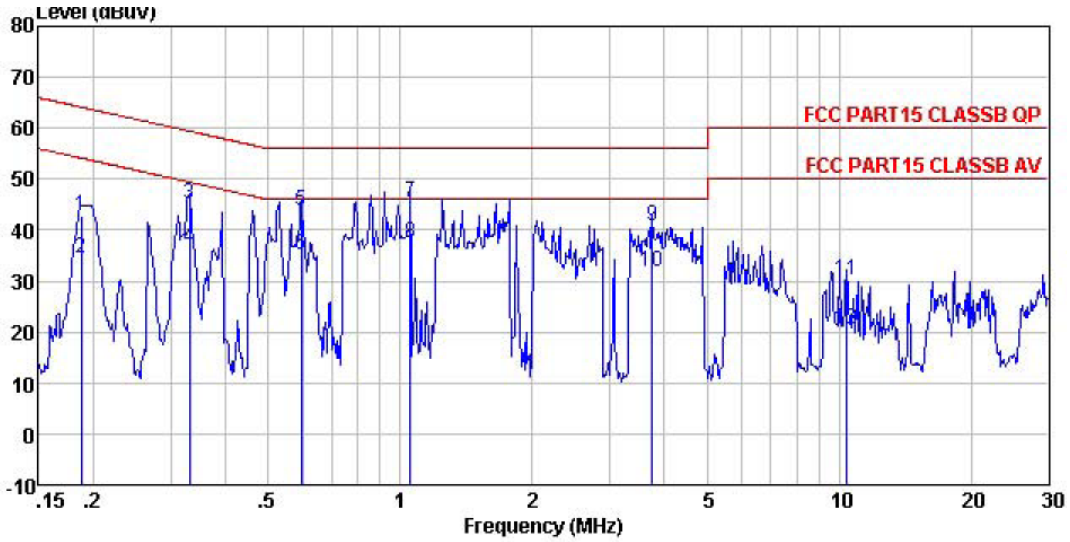
* Decreases with the logarithm of the frequency.

Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 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: 2009 on conducted measurement.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

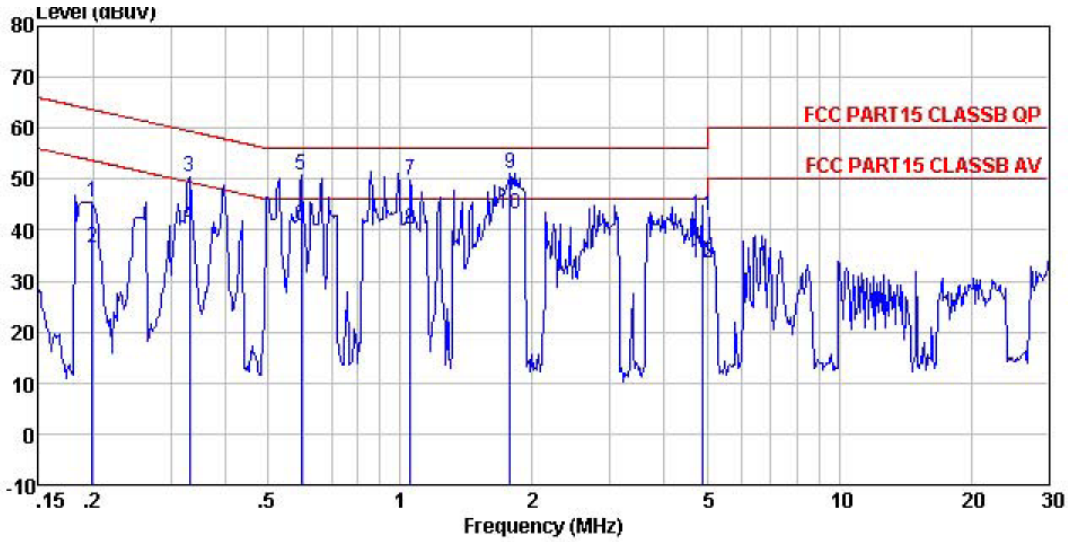
Line:



Condition : FCC PART15 CLASSB QP LISN(2011) LINE
Job No. : 841RF
Test Mode : Wifi mode
Test Engineer: Osccar

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.187	42.16	0.66	0.10	42.92	64.15	-21.23	QP
2	0.187	33.64	0.66	0.10	34.40	54.15	-19.75	Average
3	0.330	44.29	0.60	0.10	44.99	59.44	-14.45	QP
4	0.330	35.67	0.60	0.10	36.37	49.44	-13.07	Average
5	0.595	43.17	0.53	0.10	43.80	56.00	-12.20	QP
6	0.595	34.49	0.53	0.10	35.12	46.00	-10.88	Average
7	1.054	45.03	0.47	0.10	45.60	56.00	-10.40	QP
8	1.054	36.97	0.47	0.10	37.54	46.00	-8.46	Average
9	3.759	40.27	0.33	0.10	40.70	56.00	-15.30	QP
10	3.759	31.49	0.33	0.10	31.92	46.00	-14.08	Average
11	10.397	29.62	0.22	0.20	30.04	60.00	-29.96	QP
12	10.397	20.17	0.22	0.20	20.59	50.00	-29.41	Average

Neutral:



Condition : FCC PART15 CLASSB QP LISN(2011) NEUTRAL
Job No. : 841RF
Test Mode : Wifi mode
Test Engineer: Osccar

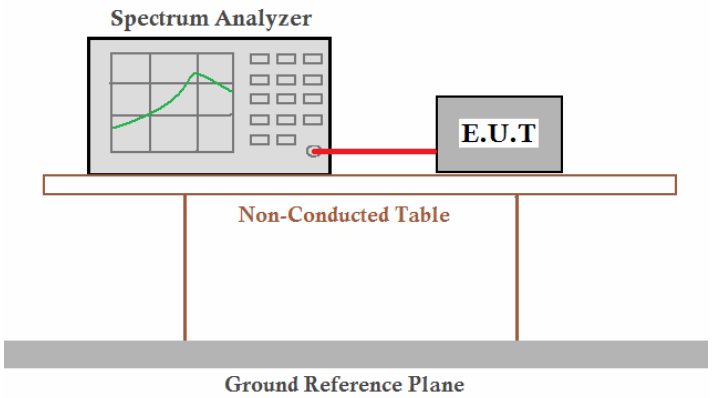
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.199	44.82	0.66	0.10	45.58	63.67	-18.09	QP
2	0.199	35.61	0.66	0.10	36.37	53.67	-17.30	Average
3	0.330	49.74	0.60	0.10	50.44	59.44	-9.00	QP
4	0.330	40.18	0.60	0.10	40.88	49.44	-8.56	Average
5	0.595	50.11	0.53	0.10	50.74	56.00	-5.26	QP
6	0.595	40.17	0.53	0.10	40.80	46.00	-5.20	Average
7	1.054	49.25	0.47	0.10	49.82	56.00	-6.18	QP
8	1.054	39.57	0.47	0.10	40.14	46.00	-5.86	Average
9	1.781	50.51	0.41	0.10	51.02	56.00	-4.98	QP
10	1.781	42.59	0.41	0.10	43.10	46.00	-2.90	Average
11	4.874	42.29	0.30	0.10	42.69	56.00	-13.31	QP
12	4.874	33.19	0.30	0.10	33.59	46.00	-12.41	Average

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

6.3 Conducted Peak Output Power

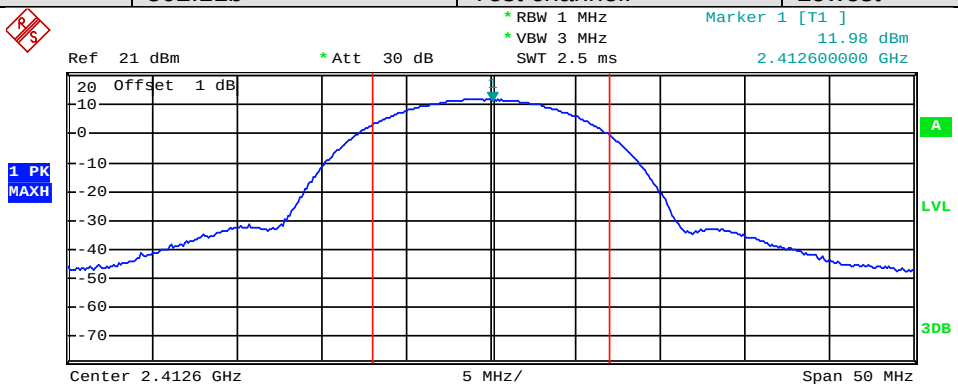
Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

802.11b mode			
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	20.22	30.00	Pass
Middle	20.49	30.00	Pass
Highest	20.23	30.00	Pass
802.11g mode			
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	21.95	30.00	Pass
Middle	22.54	30.00	Pass
Highest	22.81	30.00	Pass

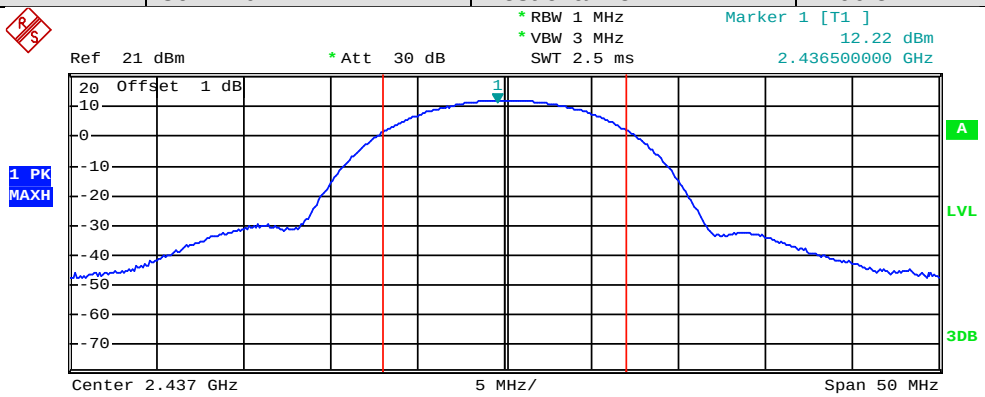
Test plot as follows:

Test mode:	802.11b	Test channel:	Lowest



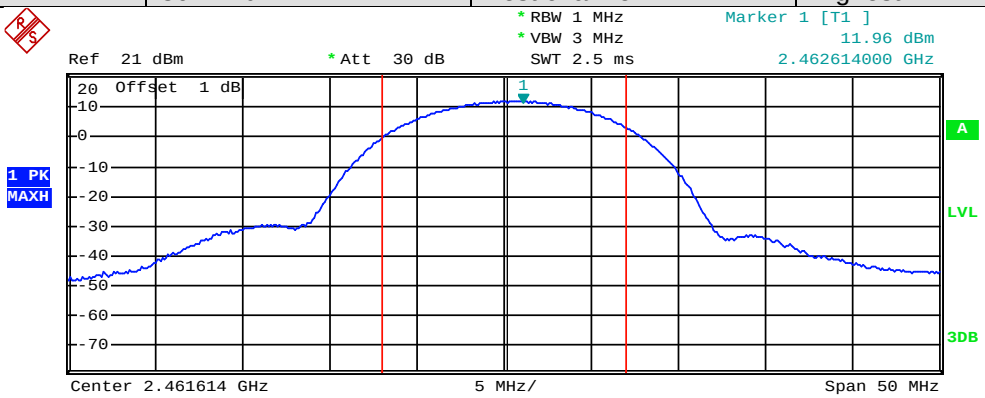
Tx Channel
Bandwidth 14 MHz Power 20.22 dBm

Test mode:	802.11b	Test channel:	Middle



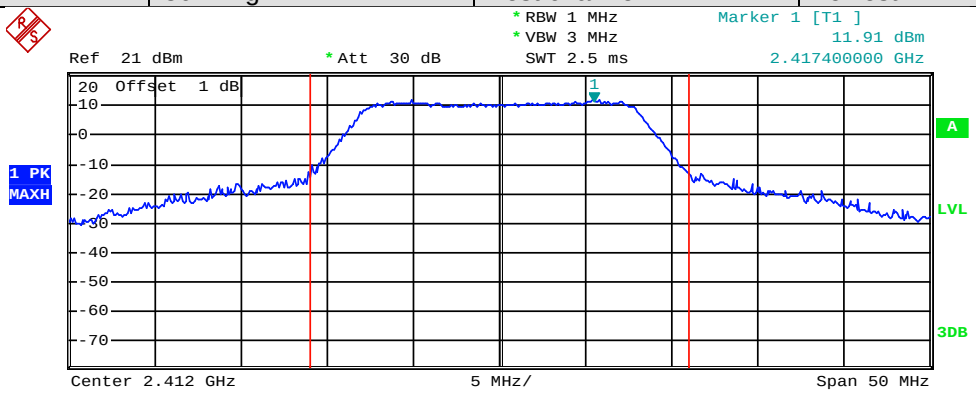
Tx Channel
Bandwidth 14 MHz Power 20.49 dBm

Test mode:	802.11b	Test channel:	Highest



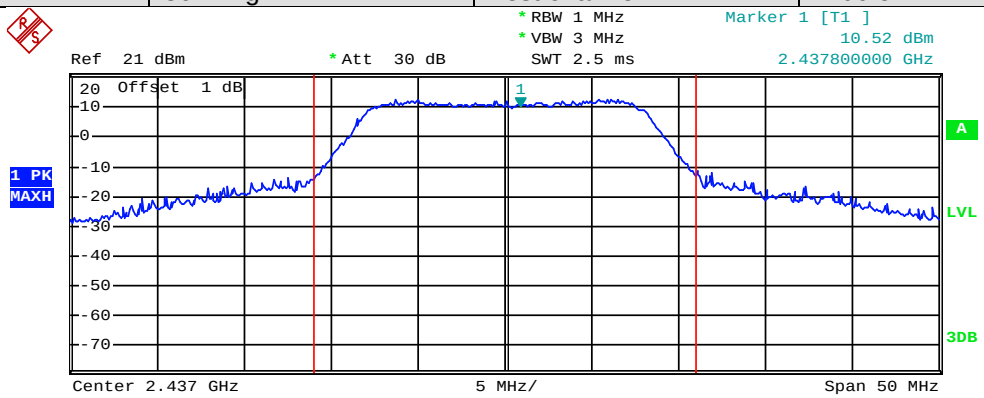
Tx Channel
Bandwidth 14 MHz Power 20.23 dBm

Test mode:	802.11g	Test channel:	Lowest



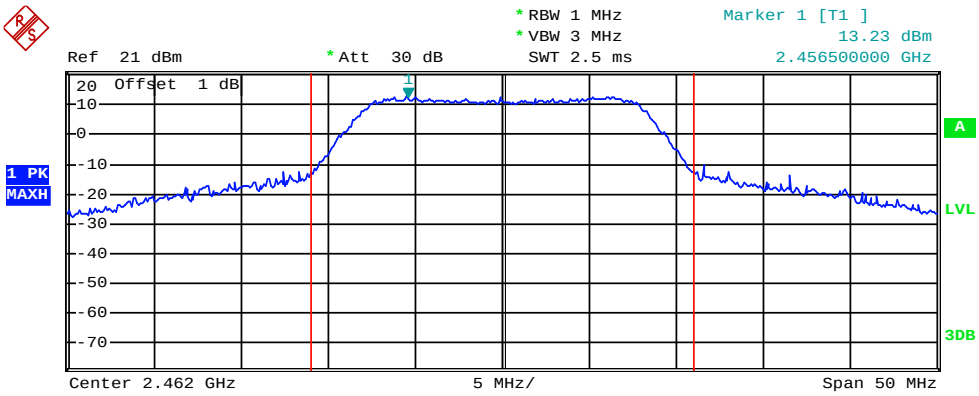
Tx Channel
Bandwidth 22 MHz Power 21.95 dBm

Test mode:	802.11g	Test channel:	Middle



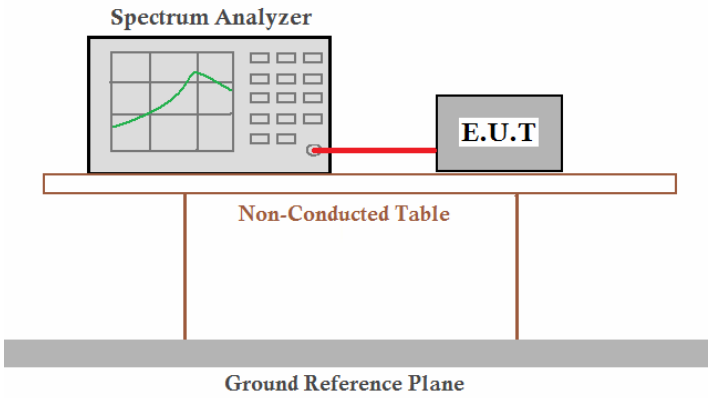
Tx Channel
Bandwidth 22 MHz Power 22.54 dBm

Test mode:	802.11g	Test channel:	Highest



Tx Channel
Bandwidth 22 MHz Power 22.81 dBm

6.4 6dB Occupy Bandwidth

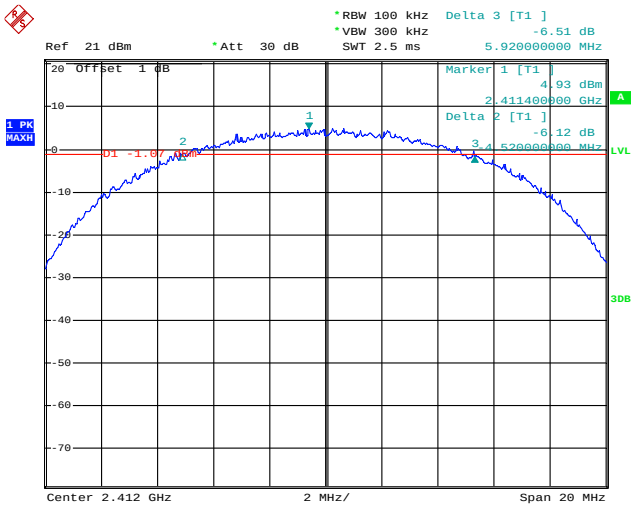
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

802.11b mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (KHz)	Result
Lowest	10.44	>500	Pass
Middle	10.24	>500	Pass
Highest	9.68	>500	Pass
802.11g mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (KHz)	Result
Lowest	16.56	>500	Pass
Middle	16.52	>500	Pass
Highest	16.56	>500	Pass

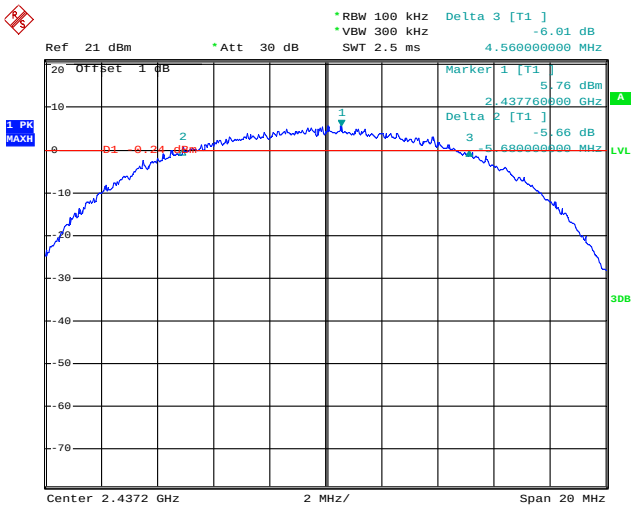
Test plot as follows:

Test mode:	802.11b	Test channel:	Lowest



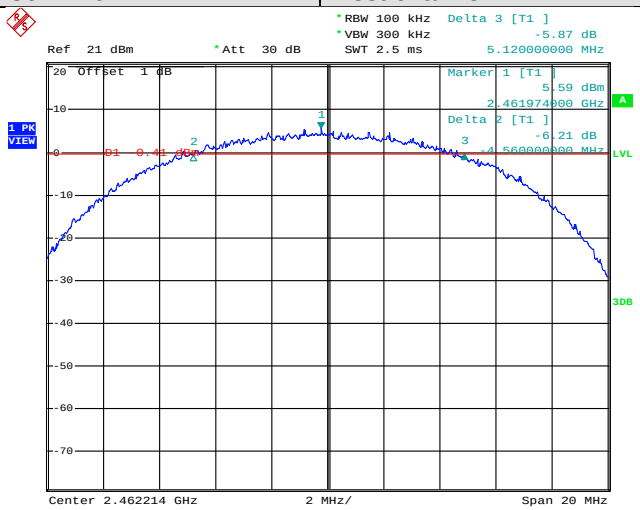
Date: 12.OCT.2011 02:59:19

Test mode:	802.11b	Test channel:	Middle



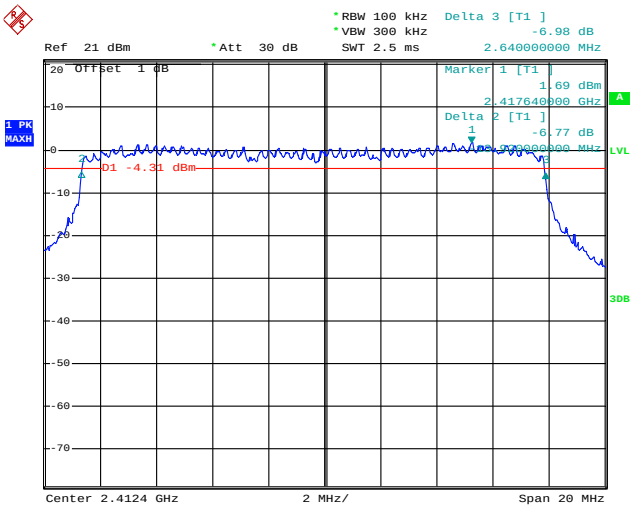
Date: 12.OCT.2011 03:09:11

Test mode:	802.11b	Test channel:	Highest



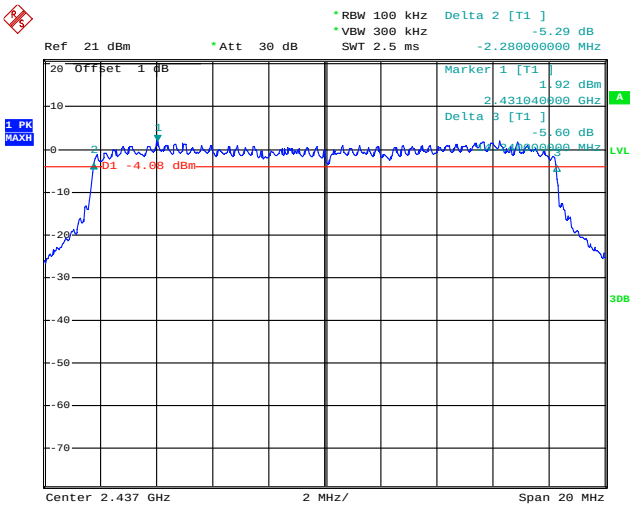
Date: 12.OCT.2011 03:16:11

Test mode:	802.11g	Test channel:	Lowest



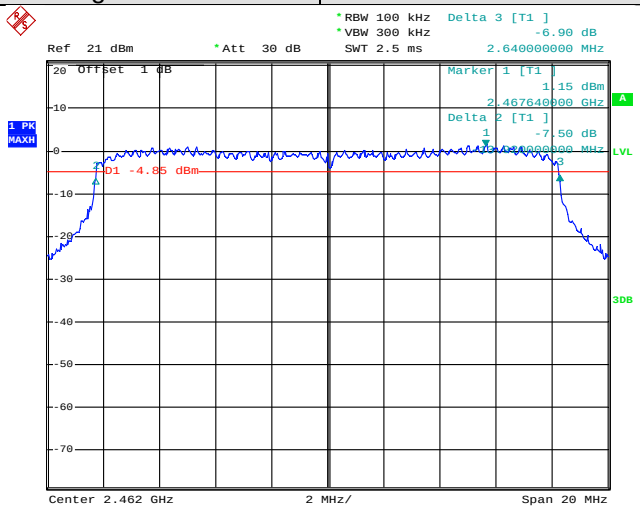
Date: 12.OCT.2011 03:38:43

Test mode:	802.11g	Test channel:	Middle



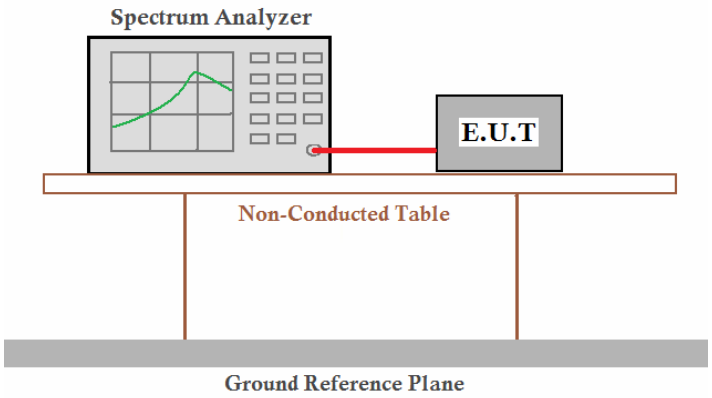
Date: 12.OCT.2011 03:46:02

Test mode:	802.11g	Test channel:	Highest



Date: 12.OCT.2011 03:58:38

6.5 Power Spectral Density

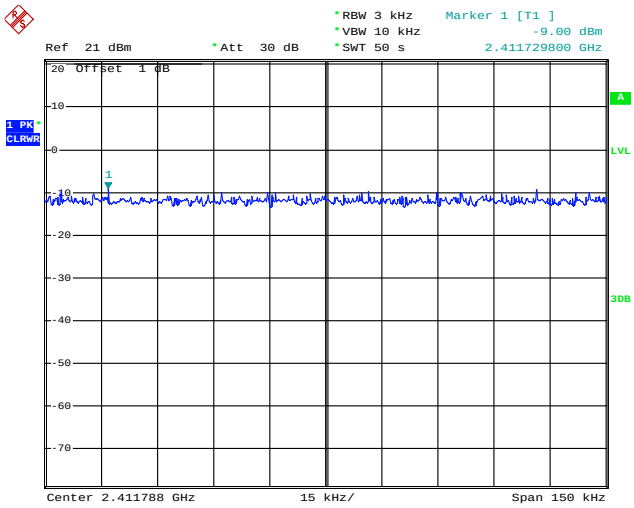
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	8dBm
Test setup:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

802.11b mode			
Test channel	Power Spectral Density (dBm)	Limit (dBm)	Result
Lowest	-9.00	8.00	Pass
Middle	-8.80	8.00	Pass
Highest	-9.11	8.00	Pass
802.11g mode			
Test channel	Power Spectral Density (dBm)	Limit (dBm)	Result
Lowest	-12.00	8.00	Pass
Middle	-9.97	8.00	Pass
Highest	-12.49	8.00	Pass

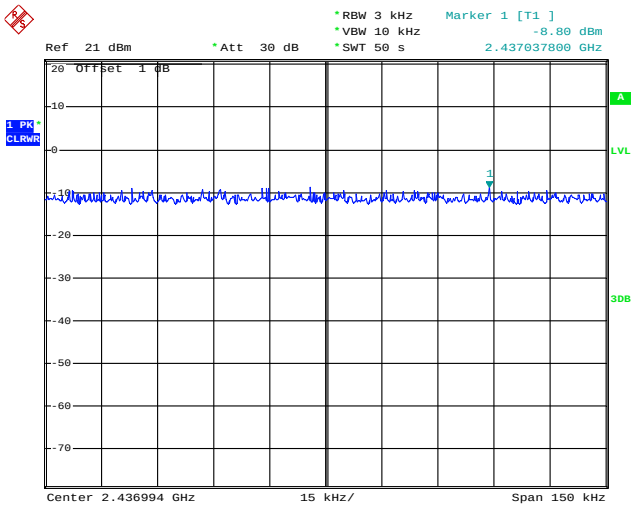
Test plot as follows:

Test mode:	802.11b	Test channel:	Lowest



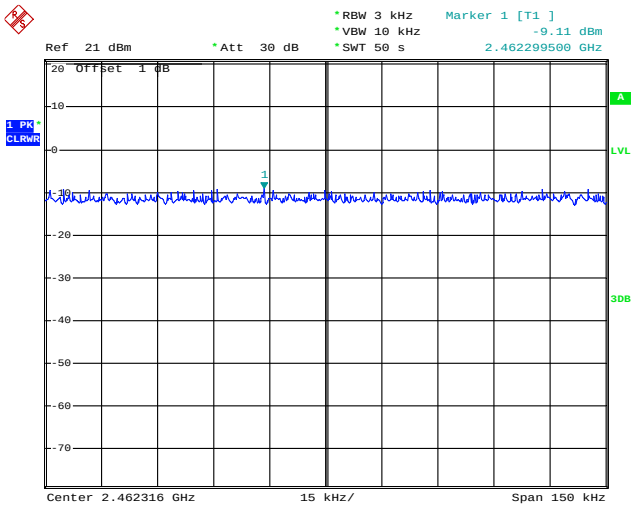
Date: 12.OCT.2011 03:04:12

Test mode:	802.11b	Test channel:	Middle



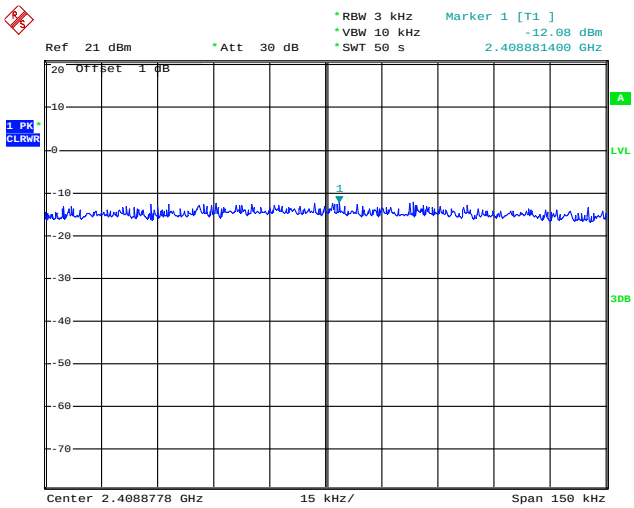
Date: 12.OCT.2011 03:12:52

Test mode:	802.11b	Test channel:	Highest



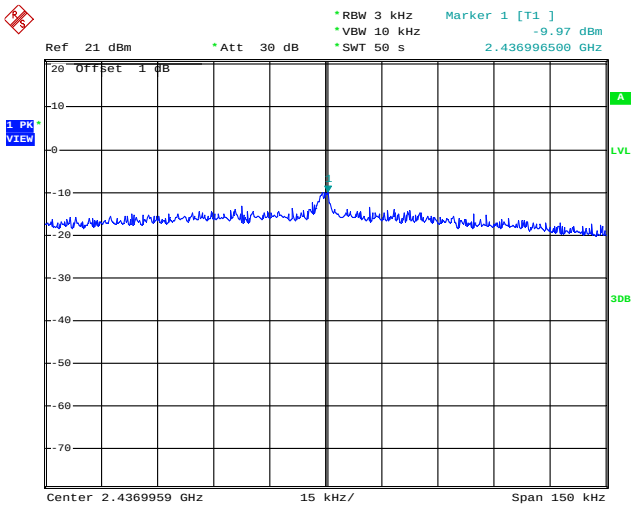
Date: 12.OCT.2011 03:23:22

Test mode:	802.11g	Test channel:	Lowest



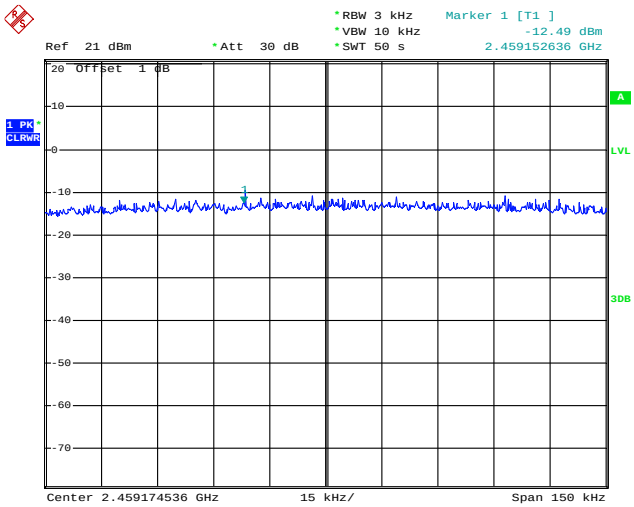
Date: 12.OCT.2011 03:43:37

Test mode:	802.11g	Test channel:	Middle



Date: 12.OCT.2011 03:54:08

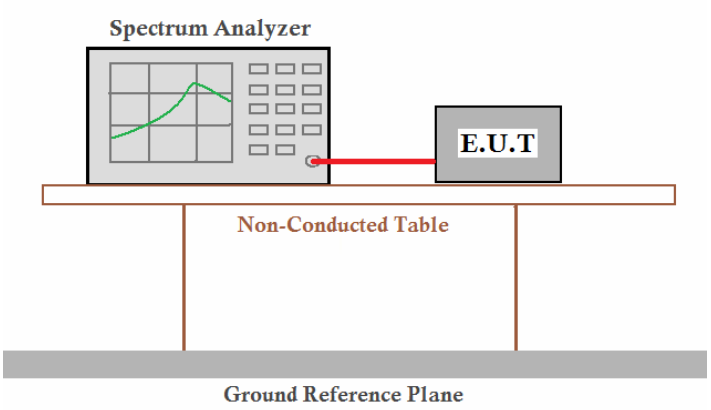
Test mode:	802.11g	Test channel:	Highest



Date: 12.OCT.2011 04:04:48

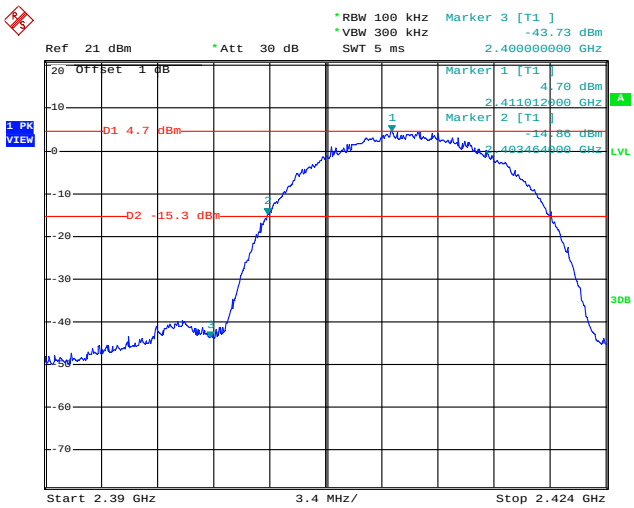
6.6 Band Edge

6.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2009 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 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

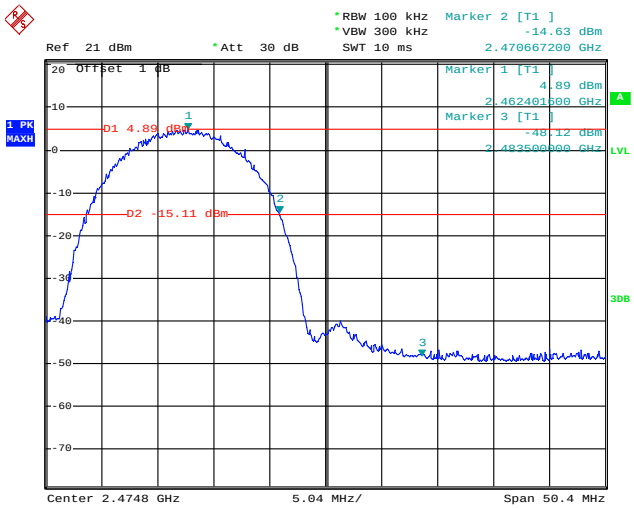
Test plot as follows:

Test mode:	802.11b	Test channel:	Lowest



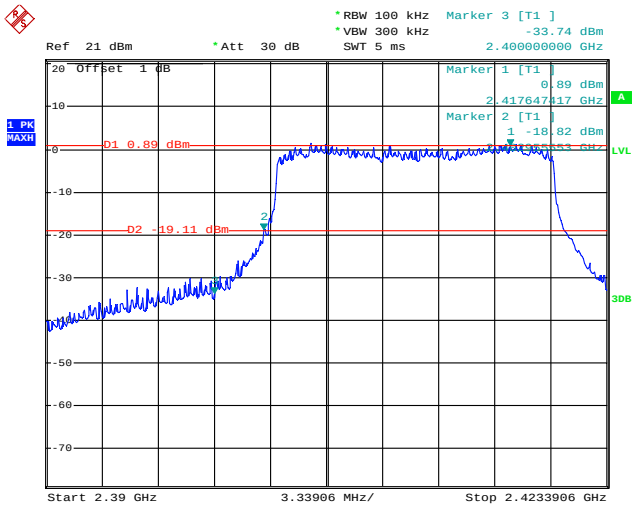
Date: 12.OCT.2011 03:00:40

Test mode:	802.11b	Test channel:	Highest



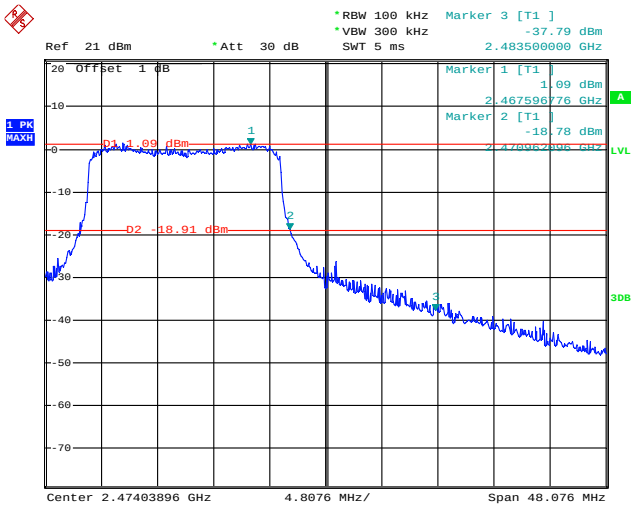
Date: 12.OCT.2011 03:19:06

Test mode:	802.11g	Test channel:	Lowest



Date: 12.OCT.2011 03:41:36

Test mode:	802.11g	Test channel:	Highest



Date: 12.OCT.2011 04:02:30

6.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.4: 2009
Test Frequency Range:	2.3GHz to 2.5GHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Receiver setup:	

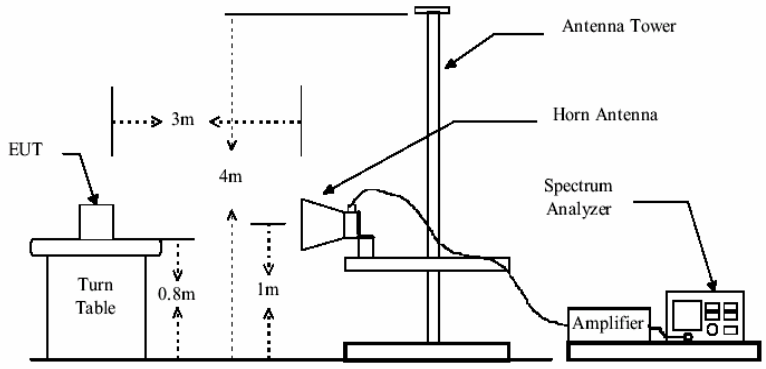
Frequency	Detector	RBW	VBW	Remark
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Average	1MHz	10Hz	Average Value

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Procedure:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test setup:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

Measurement data:

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

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	51.76	27.59	3.33	30.10	52.58	74.00	-21.42	Vertical
2400.00	55.92	27.58	3.37	30.10	56.77	74.00	-17.23	Vertical
2390.00	53.11	27.59	3.33	30.10	53.93	74.00	-20.07	Horizontal
2400.00	56.98	27.58	3.37	30.10	57.83	74.00	-16.17	Horizontal

Test mode:	802.11b	Test channel:	Lowest	Remark:	Average

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2390.00	35.40	27.59	3.33	30.10	36.22	54.00	-17.78	Vertical
2400.00	38.91	27.58	3.37	30.10	39.76	54.00	-14.24	Vertical
2390.00	36.75	27.59	3.33	30.10	37.57	54.00	-16.43	Horizontal
2400.00	39.97	27.58	3.37	30.10	40.82	54.00	-13.18	Horizontal

Test mode:	802.11b	Test channel:	Highest	Remark:	Average

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	56.20	27.53	3.49	29.93	57.29	74.00	-16.71	Vertical
2500.00	52.30	27.55	3.52	30.70	52.67	74.00	-21.33	Vertical
2483.50	57.36	27.53	3.49	29.93	58.45	74.00	-15.55	Horizontal
2500.00	53.70	27.55	3.52	30.70	54.07	74.00	-19.93	Horizontal

Test mode:	802.11b	Test channel:	Highest	Remark:	Average

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	39.13	27.53	3.49	29.93	40.22	54.00	-13.78	Vertical
2500.00	34.63	27.55	3.52	30.70	35.00	54.00	-19.00	Vertical
2483.50	40.62	27.53	3.49	29.93	41.71	54.00	-12.29	Horizontal
2500.00	35.85	27.55	3.52	30.70	36.22	54.00	-17.78	Horizontal

Test mode:	802.11g	Test channel:	Lowest	Remark:	Peak			
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	50.21	27.59	3.33	30.10	51.03	74.00	-22.97	Vertical
2400.00	54.30	27.58	3.37	30.10	55.15	74.00	-18.85	Vertical
2390.00	51.75	27.59	3.33	30.10	52.57	74.00	-21.43	Horizontal
2400.00	55.58	27.58	3.37	30.10	56.43	74.00	-17.57	Horizontal

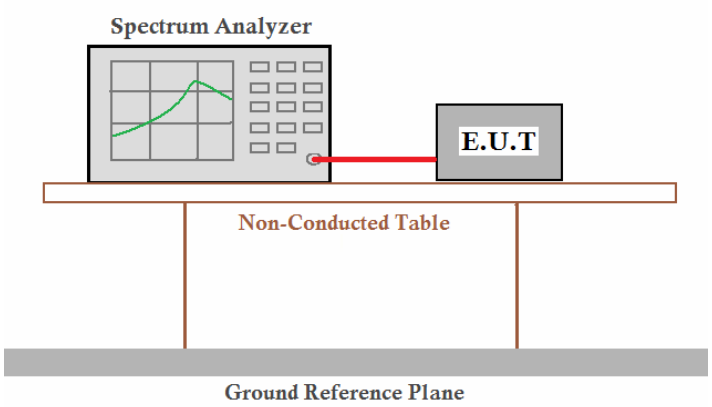
Test mode:	802.11g	Test channel:	Lowest	Remark:	Average			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2390.00	35.47	27.59	3.33	30.10	36.29	54.00	-17.71	Vertical
2400.00	39.39	27.58	3.37	30.10	40.24	54.00	-13.76	Vertical
2390.00	37.45	27.59	3.33	30.10	38.27	54.00	-15.73	Horizontal
2400.00	41.20	27.58	3.37	30.10	42.05	54.00	-11.95	Horizontal

Test mode:	802.11g	Test channel:	Highest	Remark:	Peak			
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
2483.5	54.99	27.55	3.49	30.7	55.33	74	-18.67	Vertical
2500	51.04	27.53	3.52	29.93	52.16	74	-21.84	Vertical
2483.5	56.25	27.55	3.49	30.7	56.59	74	-17.41	Horizontal
2500	52.64	27.53	3.52	29.93	53.76	74	-20.24	Horizontal

Test mode:	802.11g	Test channel:	Highest	Remark:	Average			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	40.58	27.53	3.49	29.93	41.67	54.00	-12.33	Vertical
2500.00	36.32	27.55	3.52	30.70	36.69	54.00	-17.31	Vertical
2483.50	40.89	27.53	3.49	29.93	41.98	54.00	-12.02	Horizontal
2500.00	36.46	27.55	3.52	30.70	36.83	54.00	-17.17	Horizontal

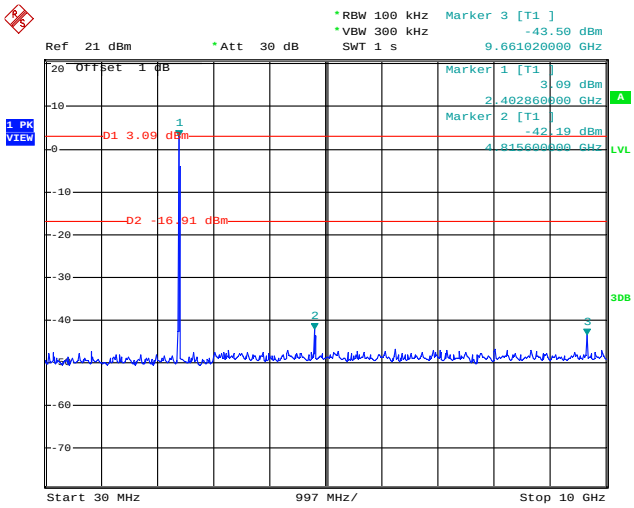
6.7 Spurious Emission

6.7.1 Conducted Emission Method

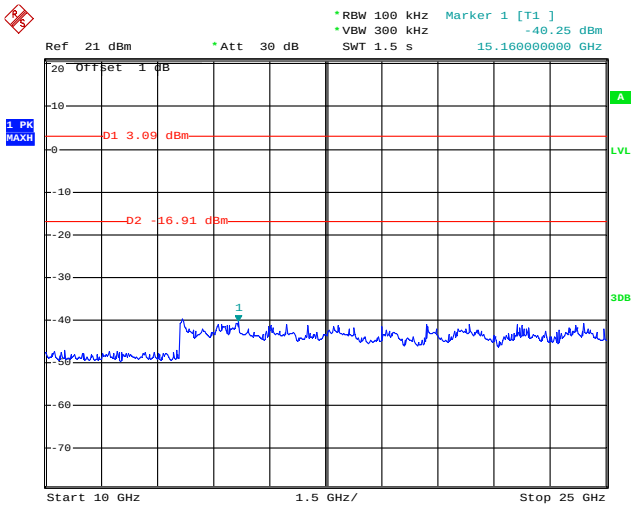
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 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 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Test plot as follows:

Test mode:	802.11b	Test channel:	Lowest

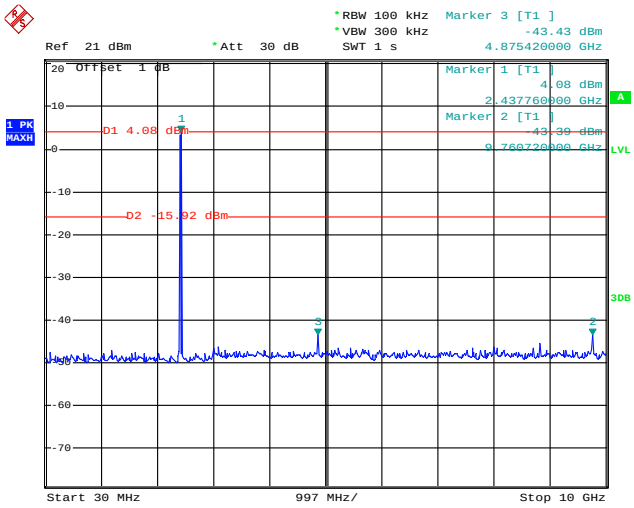


Date: 12.OCT.2011 03:01:38

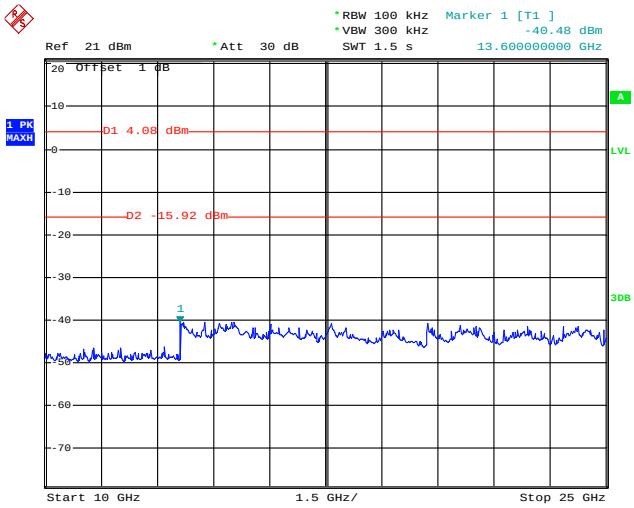


Date: 12.OCT.2011 03:01:56

Test mode:	802.11b	Test channel:	Middle

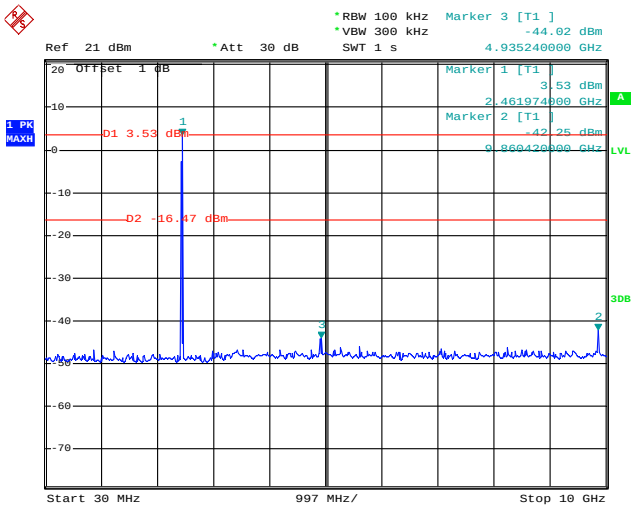


Date: 12.OCT.2011 03:10:32

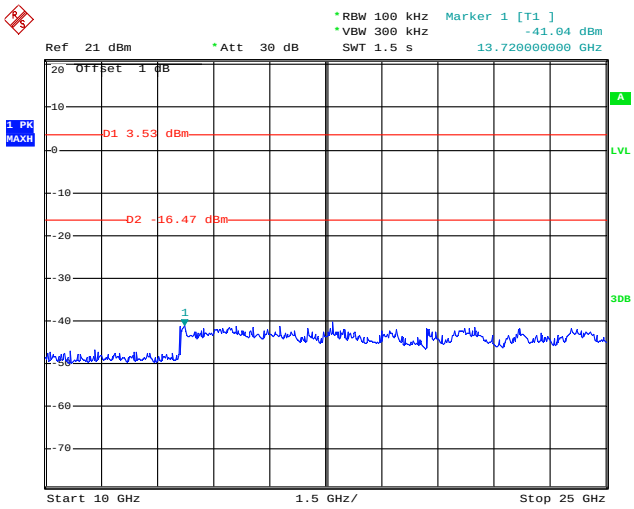


Date: 12.OCT.2011 03:10:49

Test mode:	802.11b	Test channel:	Highest

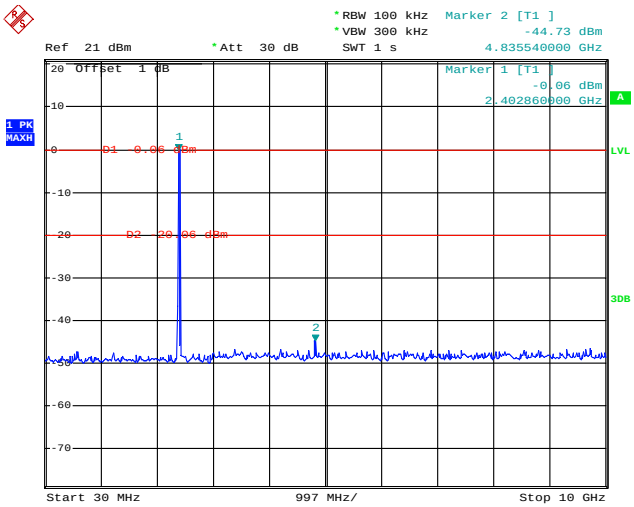


Date: 12.OCT.2011 03:17:33

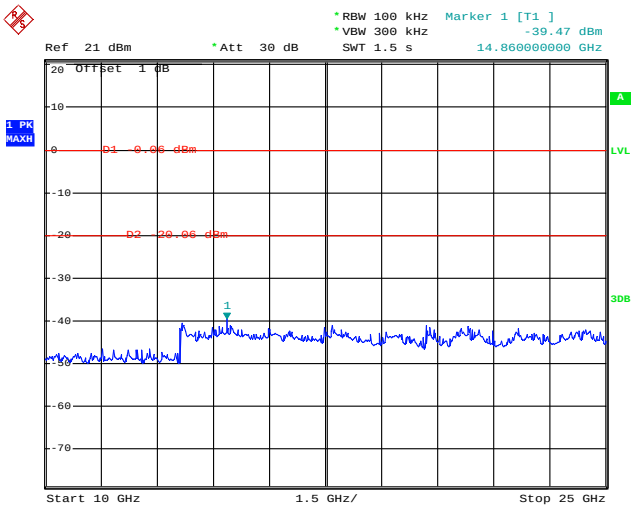


Date: 12.OCT.2011 03:17:47

Test mode:	802.11g	Test channel:	Lowest

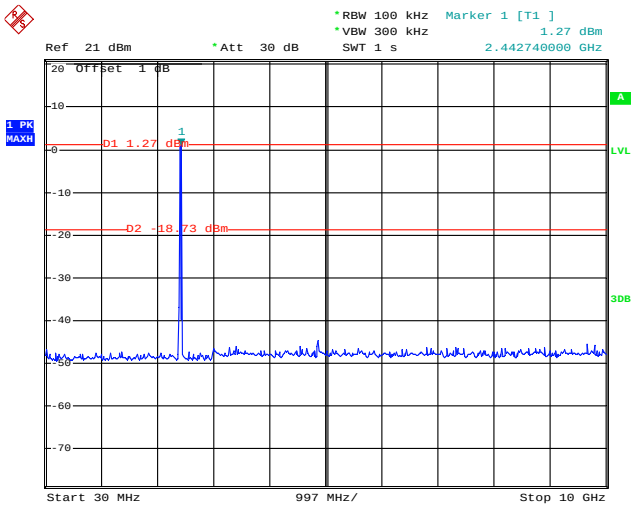


Date: 12.OCT.2011 03:39:39

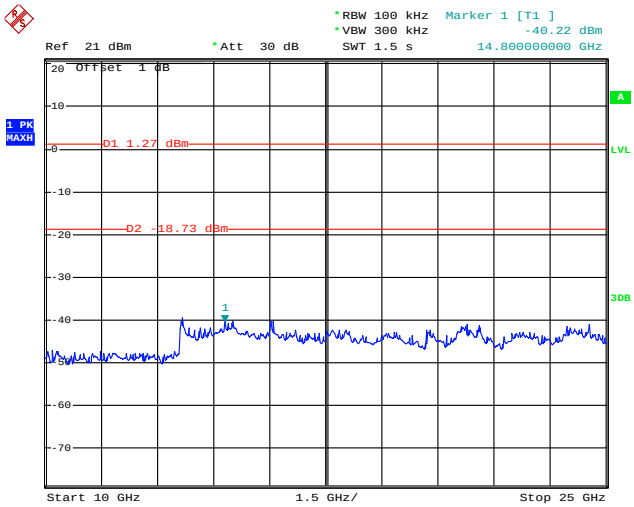


Date: 12.OCT.2011 03:39:53

Test mode:	802.11g	Test channel:	Middle

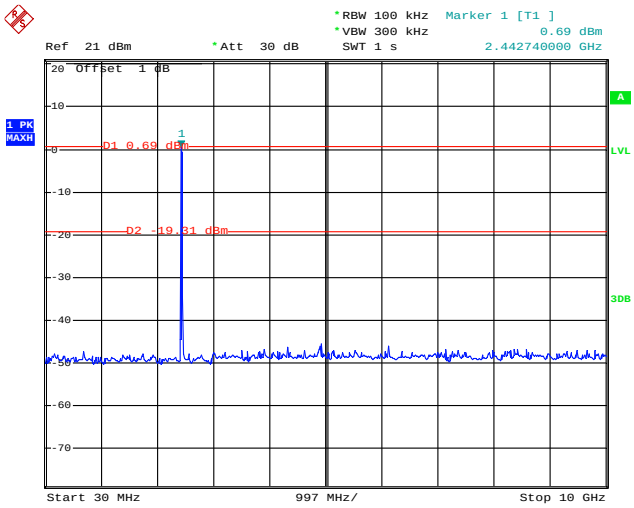


Date: 12.OCT.2011 03:48:05

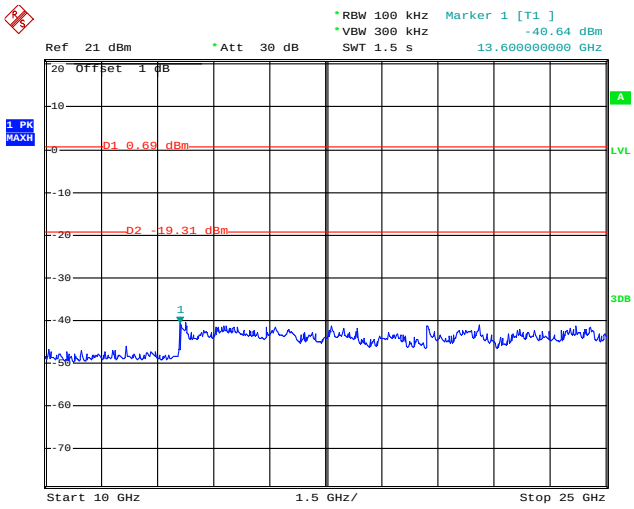


Date: 12.OCT.2011 03:48:17

Test mode:	802.11g	Test channel:	Highest



Date: 12.OCT.2011 03:59:41



Date: 12.OCT.2011 03:59:59

6.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.4:2009
Test Frequency Range:	30MHz to 25GHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Receiver setup:	

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

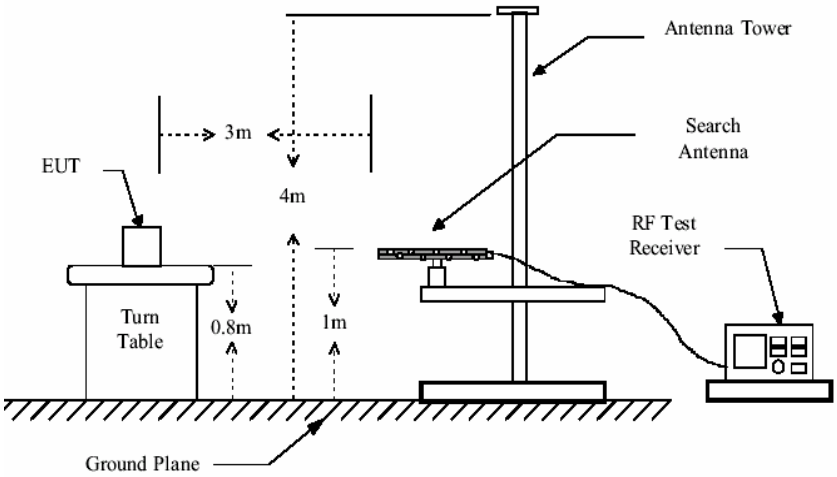
Limit:

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

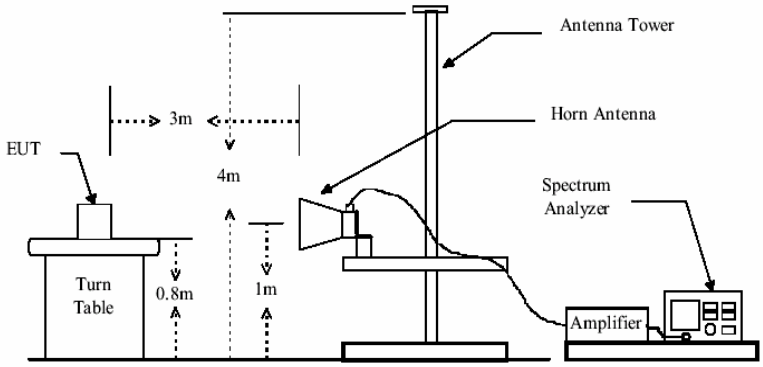
Test Procedure:

g. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
h. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
i. 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.
j. 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 rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
k. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
l. 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 setup: Below 1GHz



Above 1GHz



Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

Below 1GHz

Test in WIFI mode.

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
33.85	47.02	14.37	0.60	32.27	29.72	40.00	-10.28	Vertical
55.13	42.81	15.84	0.68	31.99	27.34	40.00	-12.66	Vertical
132.40	44.25	10.30	1.34	31.83	24.06	43.50	-19.44	Vertical
323.28	41.45	12.71	2.10	32.30	23.96	46.00	-22.04	Vertical
379.03	42.99	14.20	2.26	32.32	27.13	46.00	-18.87	Vertical
664.75	39.15	19.98	2.89	31.64	30.38	46.00	-15.62	Vertical
32.64	36.53	15.88	0.60	32.27	20.74	40.00	-19.26	Horizontal
65.43	41.04	10.66	0.76	31.93	20.53	40.00	-19.47	Horizontal
132.40	43.89	10.52	1.34	31.83	23.92	43.50	-19.58	Horizontal
215.02	43.34	10.82	1.83	32.27	23.72	43.50	-19.78	Horizontal
312.48	48.99	13.09	2.08	32.30	31.86	46.00	-14.14	Horizontal
465.91	44.56	19.45	2.34	31.92	34.43	46.00	-11.57	Horizontal

Above 1GHz

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

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	42.51	31.79	5.34	24.07	55.57	74.00	-18.43	Vertical
7236.00	33.69	36.19	6.88	26.44	50.32	74.00	-23.68	Vertical
9648.00	32.21	38.07	8.96	25.36	53.88	74.00	-20.12	Vertical
12060.00	31.02	39.05	10.35	25.15	55.27	74.00	-18.73	Vertical
14472.00	---					74.00		Vertical
16884.00	---					74.00		Vertical
4824.00	44.02	31.79	5.34	24.07	57.08	74.00	-16.92	Horizontal
7236.00	35.11	36.19	6.88	26.44	51.74	74.00	-22.26	Horizontal
9648.00	33.55	38.07	8.96	25.36	55.22	74.00	-18.78	Horizontal
12060.00	32.13	39.05	10.35	25.15	56.38	74.00	-17.62	Horizontal
14472.00	---					74.00		Horizontal
16884.00	---					74.00		Horizontal

Test mode:	802.11b	Test channel:	Lowest	Remark:	Average

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	24.28	31.79	5.34	24.07	37.34	54.00	-16.66	Vertical
7236.00	19.28	36.19	6.88	26.44	35.91	54.00	-18.09	Vertical
9648.00	17.38	38.07	8.96	25.36	39.05	54.00	-14.95	Vertical
12060.00	16.18	39.05	10.35	25.15	40.43	54.00	-13.57	Vertical
14472.00	---					54.00		Vertical
16884.00	---					54.00		Vertical
4824.00	26.02	31.79	5.34	24.07	39.08	54.00	-14.92	Horizontal
7236.00	20.81	36.19	6.88	26.44	37.44	54.00	-16.56	Horizontal
9648.00	18.69	38.07	8.96	25.36	40.36	54.00	-13.64	Horizontal
12060.00	17.42	39.05	10.35	25.15	41.67	54.00	-12.33	Horizontal
14472.00	---					54.00		Horizontal
16884.00	---					54.00		Horizontal

Test mode:	802.11b	Test channel:	Middle	Remark:	Peak

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	42.80	31.85	5.40	24.01	56.04	74.00	-17.96	Vertical
7311.00	31.38	36.37	6.90	26.58	48.07	74.00	-25.93	Vertical
9688.00	30.74	38.13	8.98	25.34	52.51	74.00	-21.49	Vertical
12185.00	28.94	38.92	10.38	25.04	53.20	74.00	-20.80	Vertical
14682.00	---					74.00		Vertical
17179.00	---					74.00		Vertical
4874.00	44.81	31.85	5.40	24.01	58.05	74.00	-15.95	Horizontal
7311.00	33.34	36.37	6.90	26.58	50.03	74.00	-23.97	Horizontal
9688.00	32.66	38.13	8.98	25.34	54.43	74.00	-19.57	Horizontal
12185.00	30.67	38.92	10.38	25.04	54.93	74.00	-19.07	Horizontal
14682.00	42.80					74.00		Horizontal
17179.00	31.38					74.00		Horizontal

Test mode:	802.11b	Test channel:	Middle	Remark:	Average

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	25.70	31.85	5.40	24.01	38.94	54.00	-15.06	Vertical
7311.00	18.99	36.37	6.90	26.58	35.68	54.00	-18.32	Vertical
9688.00	15.37	38.13	8.98	25.34	37.14	54.00	-16.86	Vertical
12185.00	16.55	38.92	10.38	25.04	40.81	54.00	-13.19	Vertical
14682.00	---					54.00		Vertical
17179.00	---					54.00		Vertical
4874.00	27.87	31.85	5.40	24.01	41.11	54.00	-12.89	Horizontal
7311.00	20.94	36.37	6.90	26.58	37.63	54.00	-16.37	Horizontal
9688.00	17.09	38.13	8.98	25.34	38.86	54.00	-15.14	Horizontal
12185.00	18.19	38.92	10.38	25.04	42.45	54.00	-11.55	Horizontal
14682.00	---					54.00		Horizontal
17179.00	---					54.00		Horizontal

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

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	40.61	31.89	5.46	23.96	54.00	74.00	-20.00	Vertical
7386.00	32.93	36.49	6.93	26.79	49.56	74.00	-24.44	Vertical
9848.00	29.95	38.24	9.05	25.30	51.94	74.00	-22.06	Vertical
12310.00	28.66	38.83	10.41	24.90	53.00	74.00	-21.00	Vertical
14772.00	---					74.00		Vertical
17234.00	---					74.00		Vertical
4924.00	42.52	31.89	5.46	23.96	55.91	74.00	-18.09	Horizontal
7386.00	34.81	36.49	6.93	26.79	51.44	74.00	-22.56	Horizontal
9848.00	31.81	38.24	9.05	25.30	53.80	74.00	-20.20	Horizontal
12310.00	30.35	38.83	10.41	24.90	54.69	74.00	-19.31	Horizontal
14772.00	---					74.00		Horizontal
17234.00	---					74.00		Horizontal

Test mode:	802.11b	Test channel:	Highest	Remark:	Average

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	24.47	31.89	5.46	23.96	37.86	54.00	-16.14	Vertical
7386.00	19.53	36.49	6.93	26.79	36.16	54.00	-17.84	Vertical
9848.00	20.85	38.24	9.05	25.30	42.84	54.00	-11.16	Vertical
12310.00	17.45	38.83	10.41	24.90	41.79	54.00	-12.21	Vertical
14772.00	---					54.00		Vertical
17234.00	---					54.00		Vertical
4924.00	26.56	31.89	5.46	23.96	39.95	54.00	-14.05	Horizontal
7386.00	21.39	36.49	6.93	26.79	38.02	54.00	-15.98	Horizontal
9848.00	22.47	38.24	9.05	25.30	44.46	54.00	-9.54	Horizontal
12310.00	18.98	38.83	10.41	24.90	43.32	54.00	-10.68	Horizontal
14772.00	---					54.00		Horizontal
17234.00	---					54.00		Horizontal

Test mode:	802.11g	Test channel:	Lowest	Remark:	Peak

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	38.57	31.79	5.34	24.07	51.63	74.00	-22.37	Vertical
7236.00	34.34	36.19	6.88	26.44	50.97	74.00	-23.03	Vertical
9648.00	30.93	38.07	8.96	25.36	52.60	74.00	-21.40	Vertical
12060.00	29.81	39.05	10.35	25.15	54.06	74.00	-19.94	Vertical
14472.00	---					74.00		Vertical
16884.00	---					74.00		Vertical
4824.00	38.85	31.79	5.34	24.07	51.91	74.00	-22.09	Horizontal
7236.00	33.63	36.19	6.88	26.44	50.26	74.00	-23.74	Horizontal
9648.00	32.03	38.07	8.96	25.36	53.70	74.00	-20.30	Horizontal
12060.00	30.57	39.05	10.35	25.15	54.82	74.00	-19.18	Horizontal
14472.00	---					74.00		Horizontal
16884.00	---					74.00		Horizontal

Test mode:	802.11g	Test channel:	Lowest	Remark:	Average

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	25.79	31.79	5.34	24.07	38.85	54.00	-15.15	Vertical
7236.00	22.17	36.19	6.88	26.44	38.80	54.00	-15.20	Vertical
9648.00	17.91	38.07	8.96	25.36	39.58	54.00	-14.42	Vertical
12060.00	16.86	39.05	10.35	25.15	41.11	54.00	-12.89	Vertical
14472.00	---					54.00		Vertical
16884.00	---					54.00		Vertical
4824.00	27.53	31.79	5.34	24.07	40.59	54.00	-13.41	Horizontal
7236.00	23.70	36.19	6.88	26.44	40.33	54.00	-13.67	Horizontal
9648.00	19.22	38.07	8.96	25.36	40.89	54.00	-13.11	Horizontal
12060.00	18.10	39.05	10.35	25.15	42.35	54.00	-11.65	Horizontal
14472.00	---					54.00		Horizontal
16884.00	---					54.00		Horizontal

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

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	37.48	31.85	5.40	24.01	50.72	74.00	-23.28	Vertical
7311.00	31.47	36.37	6.90	26.58	48.16	74.00	-25.84	Vertical
9688.00	27.86	38.13	8.98	25.34	49.63	74.00	-24.37	Vertical
12185.00	29.09	38.92	10.38	25.04	53.35	74.00	-20.65	Vertical
14472.00	---					74.00		Vertical
16884.00	---					74.00		Vertical
4874.00	39.48	31.85	5.40	24.01	52.72	74.00	-21.28	Horizontal
7311.00	32.73	36.37	6.90	26.58	49.42	74.00	-24.58	Horizontal
9688.00	28.00	38.13	8.98	25.34	49.77	74.00	-24.23	Horizontal
12185.00	28.96	38.92	10.38	25.04	53.22	74.00	-20.78	Horizontal
14472.00	---					74.00		Horizontal
16884.00	---					74.00		Horizontal

Test mode:	802.11g	Test channel:	Middle	Remark:	Average

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	24.31	31.85	5.40	24.01	37.55	54.00	-16.45	Vertical
7311.00	21.74	36.37	6.90	26.58	38.43	54.00	-15.57	Vertical
9688.00	17.34	38.13	8.98	25.34	39.11	54.00	-14.89	Vertical
12185.00	16.32	38.92	10.38	25.04	40.58	54.00	-13.42	Vertical
14472.00	---					54.00		Vertical
16884.00	---					54.00		Vertical
4874.00	26.48	31.85	5.40	24.01	39.72	54.00	-14.28	Horizontal
7311.00	23.69	36.37	6.90	26.58	40.38	54.00	-13.62	Horizontal
9688.00	19.06	38.13	8.98	25.34	40.83	54.00	-13.17	Horizontal
12185.00	17.96	38.92	10.38	25.04	42.22	54.00	-11.78	Horizontal
14472.00	---					54.00		Horizontal
16884.00	---					54.00		Horizontal

Test mode:	802.11g	Test channel:	Highest	Remark:	Peak

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	38.58	31.89	5.46	23.96	51.97	74.00	-22.03	Vertical
7386.00	35.05	36.49	6.93	26.79	51.68	74.00	-22.32	Vertical
9848.00	32.57	38.24	9.05	25.30	54.56	74.00	-19.44	Vertical
12310.00	30.01	38.83	10.41	24.90	54.35	74.00	-19.65	Vertical
14772.00	---					74.00		Vertical
17234.00	---					74.00		Vertical
4924.00	41.43	31.89	5.46	23.96	54.82	74.00	-19.18	Horizontal
7386.00	35.30	36.49	6.93	26.79	51.93	74.00	-22.07	Horizontal
9848.00	32.47	38.24	9.05	25.30	54.46	74.00	-19.54	Horizontal
12310.00	29.73	38.83	10.41	24.90	54.07	74.00	-19.93	Horizontal
14772.00	---					74.00		Horizontal
17234.00	---					74.00		Horizontal

Test mode:	802.11g	Test channel:	Highest	Remark:	Average			
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	23.68	31.89	5.46	23.96	37.07	54.00	-16.93	Vertical
7386.00	22.36	36.49	6.93	26.79	38.99	54.00	-15.01	Vertical
9848.00	19.17	38.24	9.05	25.30	41.16	54.00	-12.84	Vertical
12310.00	17.84	38.83	10.41	24.90	42.18	54.00	-11.82	Vertical
14772.00	---					54.00		Vertical
17234.00	---					54.00		Vertical
4924.00	25.77	31.89	5.46	23.96	39.16	54.00	-14.84	Horizontal
7386.00	24.22	36.49	6.93	26.79	40.85	54.00	-13.15	Horizontal
9848.00	20.79	38.24	9.05	25.30	42.78	54.00	-11.22	Horizontal
12310.00	19.37	38.83	10.41	24.90	43.71	54.00	-10.29	Horizontal
14772.00	---					54.00		Horizontal
17234.00	---					54.00		Horizontal

Remark”---“ means that the emission level is too low to be measured