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Registration number: 282399

Report No.: GLEMO09080241401  
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FCC ID: NAM4780621

## TEST REPORT

**Application No. :** GLEMO090802414RF (SGS HK NO.: 2018939/EE)  
**Applicant:** Guillemot Corp S.A.  
**FCC ID:** NAM4780621  
**Frequency Range:** 2.412GHz to 2.462GHz  
**Equipment Under Test (EUT):**  
Name: Netbook  
Model No.: EC1000B  
**Standards:** FCC PART 15 Subpart C: 2008, Section 15.247  
**Date of Receipt:** 17 August 2009  
**Date of Test:** 19 August to 14 September 2009  
**Date of Issue:** 20 September 2009

<b>Test Result :</b>	<b>PASS *</b>
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\* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 3 of this report for further detail.

Authorized Signature:

Stephen Guo  
Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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## 2 Version

<b>Version No.</b>	<b>Date</b>	<b>Description</b>
01	20 September 2009	Original

**Prepared By:** *Kobe Jian* **Date** *20 September 2009*

*Project Engineer*

**Check By:** *Gavin Wu* **Date** *20 September 2009*

*Reviewer*



### 3 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Antenna Requirement	FCC PART 15 :2008	Section 15.247(b)(4)	PASS
Conducted Emission	FCC PART 15 :2008	Section 15.207	PASS
6dB Bandwidth	FCC PART 15 :2008	Section 15.247 (a)(2)	PASS
Maximum Peak Output Power	FCC PART 15 :2008	Section 15.247(b)(3)	PASS
Peak Power Spectral Density	FCC PART 15 :2008	Section 15.247(e)	PASS
Conducted Spurious Emission (30MHz to 25GHz)	FCC PART 15 :2008	Section 15.209 &15.247(d)	PASS
Band Edges Measurement	FCC PART 15 :2008	Section 15.247 (d) &15.205	PASS
Radiated Spurious Emission (30MHz to 25GHz)	FCC PART 15 :2008	Section 15.209 &15.247(d)	PASS



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## 5 General Information

### 5.1 Client Information

Applicant: Guillemot Corp S.A.  
 Address of Applicant: B.P 97143, Place du Granier, Chantepie, France, 35171

### 5.2 General Description of E.U.T.

Name: Netbook  
 Model No.: EC1000B  
 WLAN Model: 11b/g/n 1T1R WLAN Mini Card  
 Frequency Range: 802.11b mode: 2412MHz to 2462MHz  
 802.11g mode: 2412MHz to 2462MHz  
 802.11n mode: 2412MHz to 2462MHz for 20MHz bandwidth  
 802.11n mode: 2422MHz to 2452MHz for 40MHz bandwidth  
 Number of Channels: 11 channels for 20MHz bandwidth; 7 channels for 40MHz bandwidth  
 Type of Modulation: 802.11b: DSSS(CCK/QPSK/BPSK)  
 802.11g: OFDM(BPSK/QPSK/16QAM/64QAM)  
 802.11n: OFDM(BPSK/QPSK/16QAM/64QAM)  
 Transmit Data Rate: 802.11b : 1M/2M/5.5M/11M bps  
 802.11g : 6M/9M/12M/18M/24M/36M/48M/54M bps  
 802.11n(refer below table)

		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	
802.11b	Modulation	CCK(Long Package)							CCK(Short Package)					
	Data rate	1	2	5.5	11					1	2	5.5	11	
802.11g	Modulation	OFDM												
	Data rate	6	9	12	18	24	36	48	54					
802.11n	Modulation	HT-Mixed (20/40)												
	Data rate	6.5	13	19.5	26	39	52	58.5	65					



Antenna Type:	X10A WLAN
Antenna Gain:	Max 1.95dBi from 2402MHz to 2480MHz
Power supply:	AC 110-240V 50/60Hz by AC adaptor or DC 11.1V 4400mAh LI-ion recharge battery
Adapter:	Model: 0225C2040 Input: AC 100-240V 50Hz-60Hz 1.7A(1.7A) Output: DC 20V 2.0A(2.0A)
Battery detail:	Type: Lithium-Ion Model: SSBS16 Rating: 11.1V Capacity: 4400mAh
Power cord:	1.8m x 2 wires unscreened AC cable 1.8m x 2 wires unscreened DC cable

### **5.3 Description of Support Units**

The EUT has been tested as an independent unit.

### **5.4 Standards Applicable for Testing**

The customer requested FCC tests for the EUT.

The standard used was FCC PART 15 Subpart C: 2008 section 15.247.

### **5.5 Test Location**

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,  
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,  
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

### **5.6 Other Information Requested by the Customer**

None.



## 5.7 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC (Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

- **Industry Canada (Registration No.: 4620B-1)**

The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

Date of Registration: February 18, 2009. Valid until February 18, 2011.

- **VCCI (Registration No.: R-2460 and C-2584)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460 and C-2584 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01:2006-10 and Rules of procedure IECEE 02:2006-10, and the relevant IECEE CB-Scheme Operational documents.

This certificate was issued Dec.04.2006 and valid until Oct.12.2009.



## 6 Equipments Used during Test

No:	Test Equipment	Manufactory	Model No.	Serial No.	Cal. Date (dd-mm-yy)	Cal. due Date (dd-mm-yy)
EMC0039	Temperature Chamber	TERCHY	MHG-800RR	0118	05-12-2008	05-12-2009
EMC0009	D.C. Power Supply	Instek	PS-3030	9862036	Check when used	
EMC0007	DMM	Fluke	73	70671122	23-12-2008	23-12-2009
EMC0006	DMM	Fluke	73	70681569	23-12-2008	23-12-2009
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	N/A	N/A
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	10-08-2009	10-08-2010
EMC0502	Biconical Antenna (Rx)	Rohde & Schwarz	HK116	100032	12-08-2009	12-08-2010
EMC0503	Biconical Antenna (Tx)	Rohde & Schwarz	HK116	100033	12-08-2009	12-08-2010
EMC0504	Log-Perd. Dipole Antenna (Rx)	Rohde & Schwarz	HL223	100039	12-08-2009	12-08-2010
EMC0505	Log-Perd. Dipole Antenna (Tx)	Rohde & Schwarz	HL223	100040	12-08-2009	12-08-2010
EMC0517	Horn Antenna (Rx)	Rohde & Schwarz	HF906	100095	12-08-2009	12-08-2010
EMC0519	Bilog Type Antenna	Schaffner Chase	CBL6143	5070	12-08-2009	12-08-2010
EMC0520	0.1-1300 MHz Pre Amplifier	HP	8447D OPT 010	2944A06252	11-03-2009	11-03-2010
EMC0521	1-26.5GHz Pre Amplifier	Agilent	8449B	3008A01649	12-03-2009	12-03-2010
EMC0507	Antenna Mask (Tx)	HD-GmbH	AS620M	620/408	N/A	N/A
EMC0508	Antenna Mask (Rx)	HD-GmbH	MA240	240/619	N/A	N/A
EMC0509	Turntable	HD-GmbH	DT430	N/A	N/A	N/A
EMC0510	Turntable & Antenna Mask Controller	HD-GmbH	HD100	N/A	N/A	N/A
EMC0512	EMI Test Software	Rohde & Schwarz	ES-K1	N/A	N/A	N/A
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	05-12-2008	05-12-2009
EMC0040	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	05-12-2008	05-12-2009
EMC0516	Signal Generator	Rohde & Schwarz	SMR20	100416	28-03-2010	28-03-2010
EMC0032	Radio Communication Monitor	Rohde & Schwarz	CMS54	100137	2-12-2008	02-12-2009
EMC0904	Power Meter	Rohde & Schwarz	NRVS	825770/074	18-07-2009	18-07-2010
EMC0905	Power Sensor	Rohde & Schwarz	NRV-Z5	825802/013	05-11-2008	05-11-2009
EMC0906	Dual Directional Coupler	Werlatone Inc.	C1795	6634	20-11-2008	20-11-2009
EMC1508	Audio Analyzer	Rohde & Schwarz	UPL	100855	10-09-2009	10-09-2010
EMC1005	Digital Oscilloscope	Tektronix	TDS3012	B015508	18-07-2009	18-07-2010
EMC0523	Active Loop Antenna	EMCO	6502	00042963	09-08-2008	09-08-2010
EMC0001	Temp. Humidity/ Barometer	Oregon Scientific	BA-888	EMC0001	20-09-2008	20-09-2009





**SGS-CSTC Standards Technical Services Co., Ltd.**

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<b>Conducted Emission</b>						
<b>No:</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Cal. Date (dd-mm-yy)</b>	<b>Cal.Due date (dd-mm-yy)</b>
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m <sup>3</sup>	N/A	N/A	N/A
EMC0102	LISN	Schaffner Chase	MNZ050D/1	1421	14-12-2008	14-12-2009
EMC0118	Two-line v-netwok	Rohde & Schwarz	ENV216	3560.6550.02	18-08-2009	18-08-2010
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	14-12-2008	14-12-2009
EMC0107	Coaxial Cable	SGS	2m	N/A	26-11-2008	26-11-2009
EMC0106	Voltage Probe	SGS	N/A	N/A	N/A	N/A
EMC0120	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	20550	21-02-2009	21-02-2010
EMC0121	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	20549	21-02-2009	21-02-2010
EMC0122	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	20548	21-02-2009	21-02-2010

<b>General used equipment</b>						
<b>No:</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Cal. Date (dd-mm-yy)</b>	<b>Cal.Due date (dd-mm-yy)</b>
EMC0006	DMM	Fluke	73	70681569	23-12-2008	23-12-2009
EMC0007	DMM	Fluke	73	70671122	23-12-2008	23-12-2009



## 7 Test Results

### 7.1 E.U.T. test conditions

Power supply: 15.31(e)&15.32  
DC 11.1V 4400mAh LI-ion recharge batteries or by AC/DC adapter

Requirements: **15.31(e):** For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.  
**15.32:** Power supplies and CPU boards used with personal computers and for which separate authorizations are required to be obtained shall be tested as follows: Testing shall be in accordance with the procedures specified in Section 15.31 of this part.

Operating Environment:  
Temperature: 20.0 -25.0 °C  
Humidity: 38-52 % RH  
Atmospheric Pressure: 992 -1010 mbar  
Test frequencies: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

#### Antenna and Bandwidth

Antenna and Bandwidth	Single TX	
	20MHz	40MHz
802.11b	V	X
802.11g	V	X
11n2.4G ISM	V	V



EUT channels and frequencies list:

There are two bandwidth system for 11n 2.4G ISM

For both 20MHz bandwidth system, use channel 1~channel 11.

For both 40MHz bandwidth system, use channel 3~ channel 9

Frequency Band	Channel	Frequency (MHz)
2400MHz ~ 2483.5MHz	1	2412
	2	2417
	3	2422
	4	2427
	5	2432
	6	2437
	7	2442
	8	2447
	9	2452
	10	2457
	11	2462

For both 20MHz bandwidth system Test frequency is the lowest channel: channel 1(2412MHz), middle channel: channel 6(2437MHz) and highest channel: channel 11(2462MHz)

For both 40MHz bandwidth system Test frequency is the lowest channel: channel 3(2422MHz), middle channel: channel 6(2437MHz) and highest channel: channel 9(2452MHz)

## 7.2 Antenna Requirement

### 7.2.1 Standard requirement

15.203 requirement:

For intentional device. According to 15.203, 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.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 7.2.2 EUT Antenna

The antenna is detached which the model name is X10A WLAN and no consideration of replacement. The best case gain of the antenna is 1.95dBi.

**Main Antenna Photo**



**Aux Antenna Photo**



**Test result: The unit does meet the FCC requirements.**



### 7.3 Conducted Emissions at Mains Terminals 150 kHz to 30MHz

Test Requirement: FCC Part 15.207  
Test Method: ANSI C63.4  
Test Date: 19 August 2009  
Frequency Range: 150KHz to 30MHz  
Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

#### Test Limit

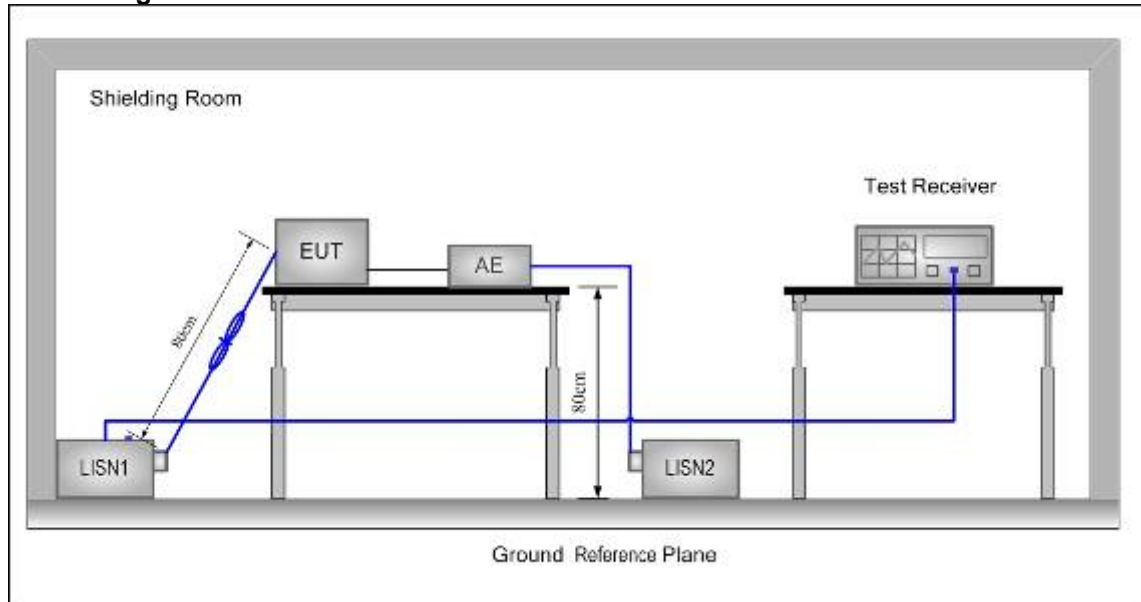
#### Limits for conducted disturbance at the mains ports of class B

Frequency Range (MHz)	Class B Limit (dBuV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

NOTE 1 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.

EUT Operation: Test in normal mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.  
Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

**Test Configuration:**



**Test procedure:**

1. The mains terminal disturbance voltage test was conducted in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.



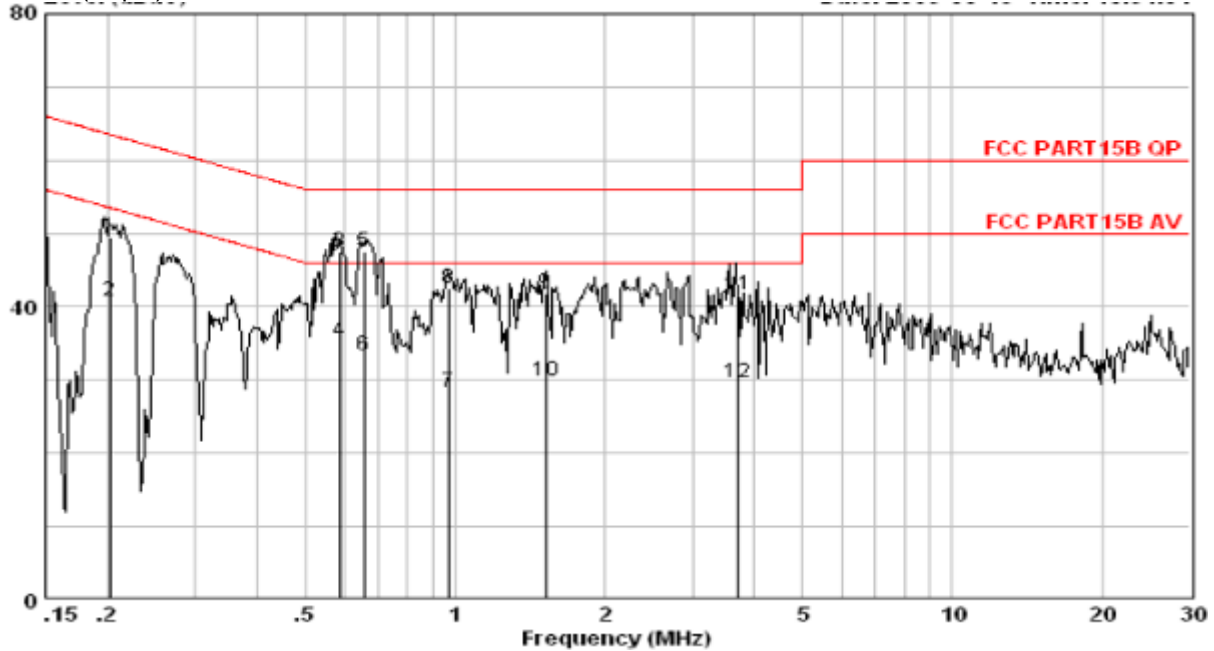
7.3.1.1 Measurement Data

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. For EUT the communicating was worst case mode.

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

Neutral Line  
Level (dBµV)



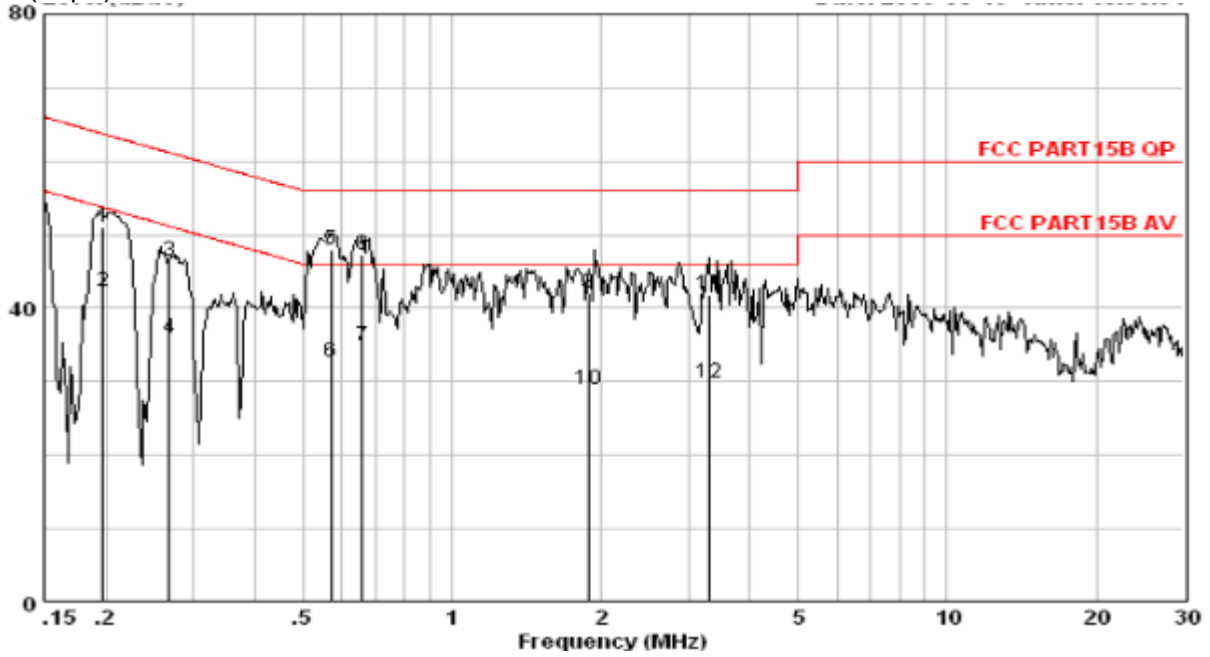
Measure data:

Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB	dB	dBµV	dBµV	dBµV	dB	
0.20160	0.04	-0.04	49.50	49.50	63.54	-14.05	QP
0.20160	0.04	-0.04	40.70	40.70	53.54	-12.85	Average
0.58440	0.06	-0.04	47.40	47.42	56.00	-8.58	QP
0.58440	0.06	-0.04	35.40	35.42	46.00	-10.58	Average
0.65620	0.06	-0.04	47.50	47.52	56.00	-8.48	QP
0.65620	0.06	-0.04	33.30	33.32	46.00	-12.68	Average
0.97070	0.08	-0.04	28.30	28.33	46.00	-17.67	Average
0.97070	0.08	-0.04	42.40	42.43	56.00	-13.57	QP
1.520	0.10	-0.05	41.90	41.95	56.00	-14.05	QP
1.520	0.10	-0.05	29.90	29.95	46.00	-16.05	Average
3.691	0.15	-0.09	41.50	41.56	56.00	-14.44	QP
3.691	0.15	-0.09	29.50	29.56	46.00	-16.44	Average



Live Line

Level (dBμV)



Measure result:

Freq MHz	Cable Loss dB	LISN Factor dB	Read Level dBμV	Level dBμV	Limit Line dBμV	Over Limit dB	Remark
0.19720	0.04	-0.05	51.10	51.09	63.73	-12.63	QP
0.19720	0.04	-0.05	42.20	42.19	53.73	-11.53	Average
0.26800	0.05	-0.04	46.40	46.40	61.18	-14.78	QP
0.26800	0.05	-0.04	36.00	36.00	51.18	-15.18	Average
0.56810	0.06	-0.04	48.00	48.02	56.00	-7.98	QP
0.56810	0.06	-0.04	32.70	32.72	46.00	-13.28	Average
0.65760	0.06	-0.05	34.90	34.91	46.00	-11.09	Average
0.65760	0.06	-0.05	47.30	47.31	56.00	-8.69	QP
1.883	0.11	-0.06	42.00	42.05	56.00	-13.95	QP
1.883	0.11	-0.06	29.00	29.05	46.00	-16.95	Average
3.300	0.15	-0.08	41.80	41.87	56.00	-14.13	QP
3.300	0.15	-0.08	29.80	29.87	46.00	-16.13	Average

Remark: Level = Real Level + Cable loss + LISN factor

**TEST RESULTS: The unit does meet the FCC requirements.**





## 7.4 6dB Bandwidth

**Test Requirement:** FCC Part 15.247(a)(2)  
 Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

**Test Method:** ANSI C63.4:2003 and KDB558074  
 Remark: KDB558074, DTS test procedure of Oct 2002 KDB558074

**Test Date:** 29 August 2009

**Test Status:** Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

**Test Procedure:**

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =0.1dB) from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW=100KHz. VBW = 300KHz. Sweep = auto; Detector Function = Peak. Trace = Max Hold, Set span to encompass the entire emission bandwidth of the signal.
3. Mark the peak power frequency and -6dB (upper and lower) power frequency.
4. Repeat until all the test status is investigated.
5. Report the worse case.

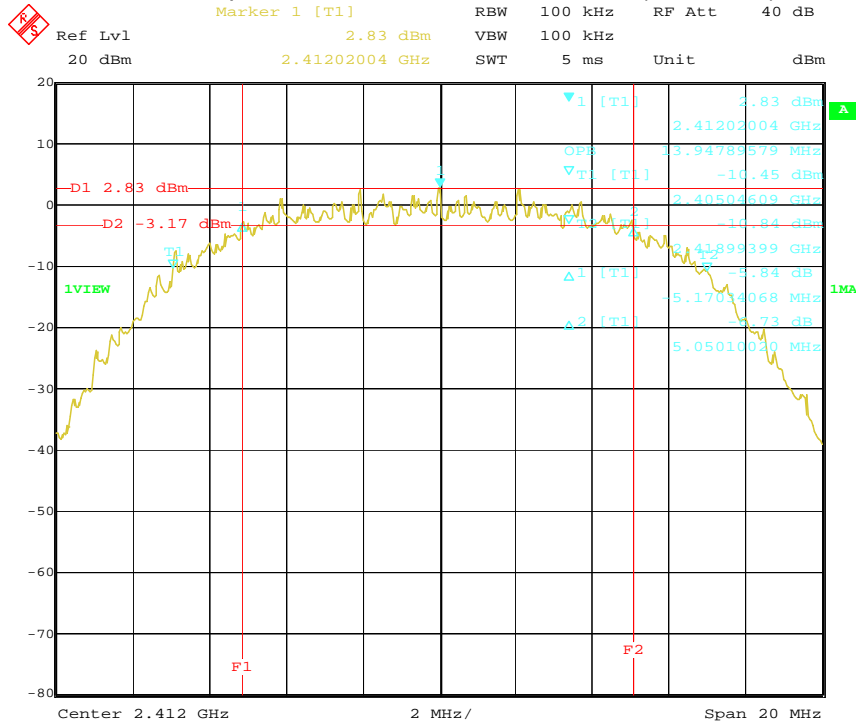
Channel No.	Frequency (MHz)	Mode	Bandwidth	Data Rate	Measured 6dB bandwidth (MHz)	Limit	Result
1	2412	802.11b	20MHz	11 Mbps	10.22044	≥500KHz	Pass
6	2437		20MHz	11 Mbps	10.18036		Pass
11	2462		20MHz	11 Mbps	10.30060		Pass
1	2412	802.11g	20MHz	54 Mbps	16.47294	≥500KHz	Pass
6	2437		20MHz	54 Mbps	16.47294		Pass
11	2462		20MHz	54 Mbps	16.43286		Pass
1	2412	802.11n	20MHz	39 Mbps	16.95390	≥500KHz	Pass
6	2437		20MHz	58.5 Mbps	16.87374		Pass
11	2462		20MHz	58.5 Mbps	17.27454		Pass
3	2422	802.11n	40MHz	58.5 Mbps	35.75150	≥500KHz	Pass
6	2437		40MHz	65 Mbps	35.66132		Pass
9	2452		40MHz	58.5 Mbps	35.39576		Pass

**Test result: The unit does meet the FCC requirements.**

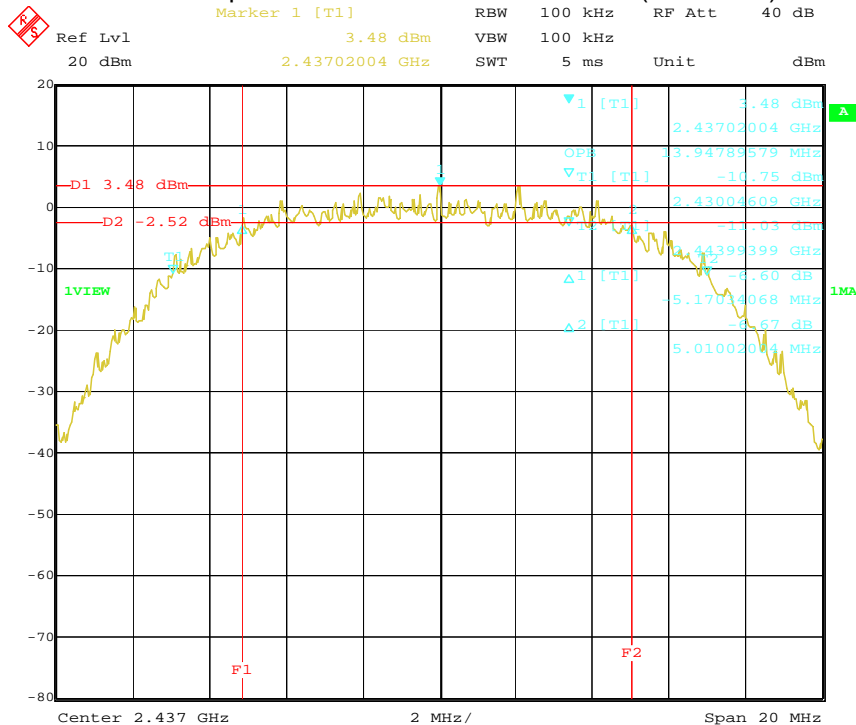


Result plot as follows:

802.11b mode with 11Mbps data rate for 20MHz Bandwidth (2.412GHz)

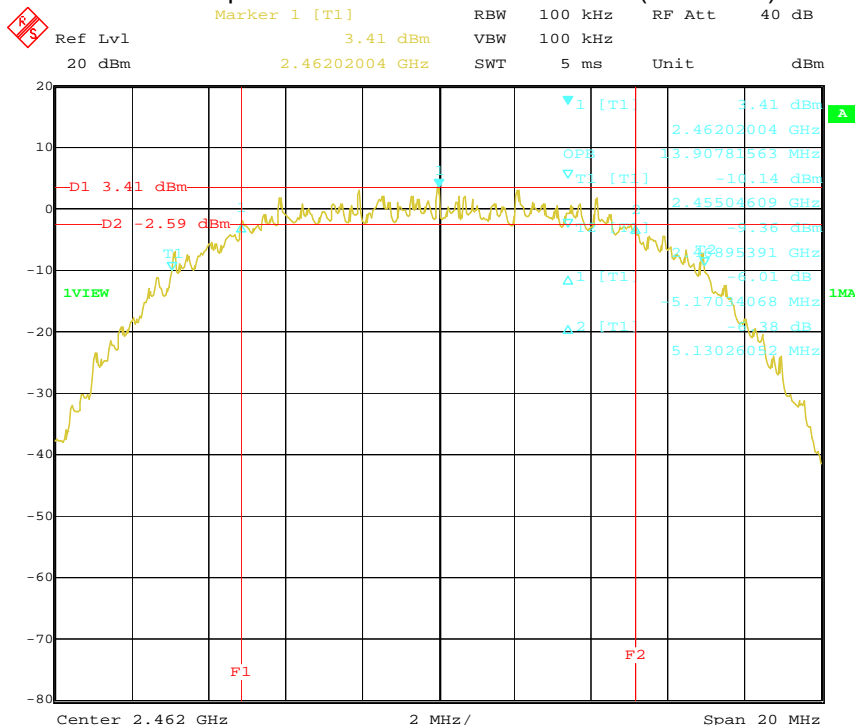


802.11b mode with 11Mbps data rate for 20MHz Bandwidth (2.437GHz)

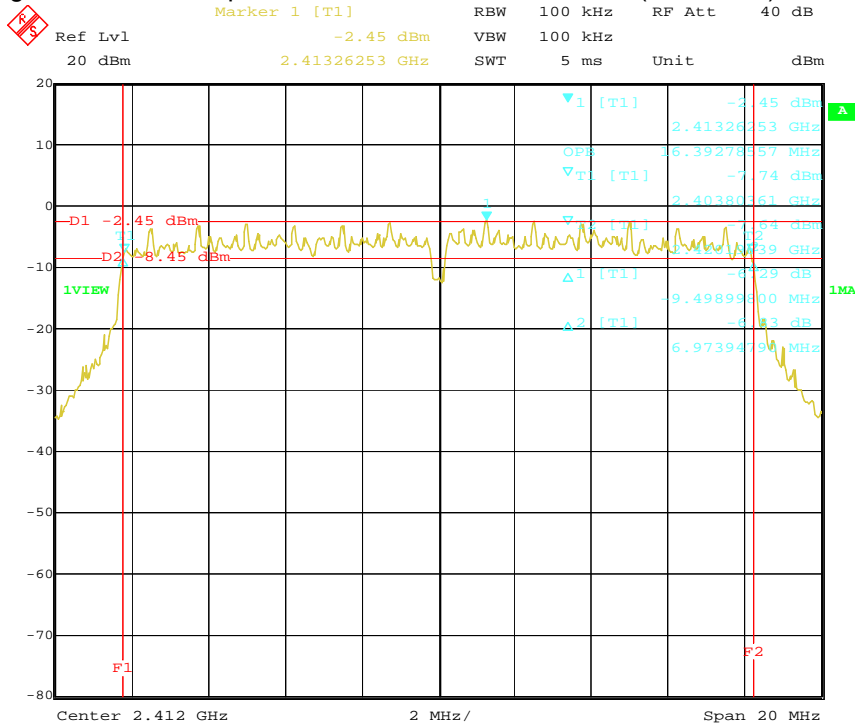




802.11b mode with 11Mbps data rate for 20MHz Bandwidth (2.462GHz)

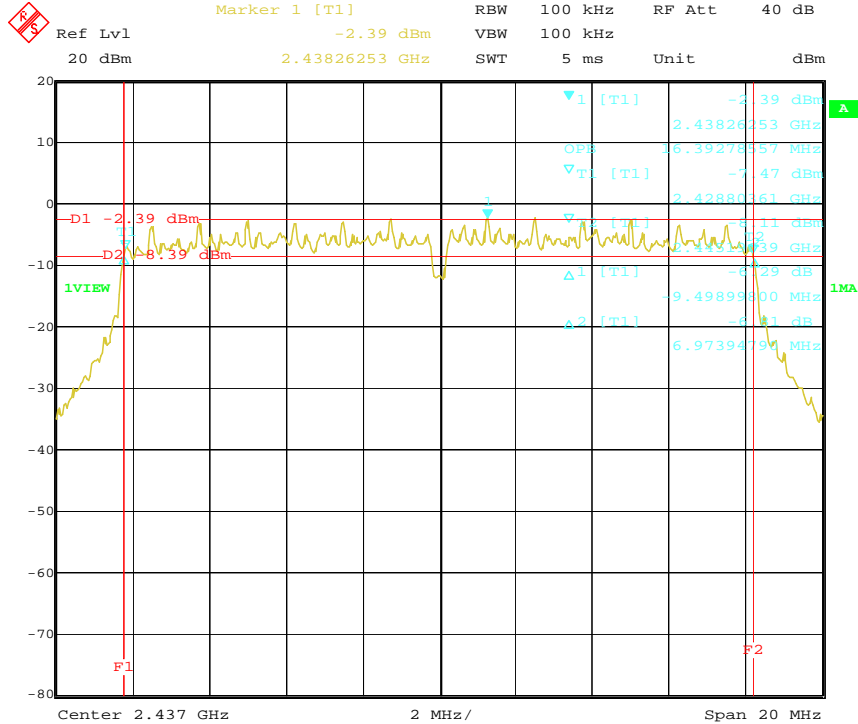


802.11g mode with 54Mbps data rate for 20MHz Bandwidth (2.412GHz)

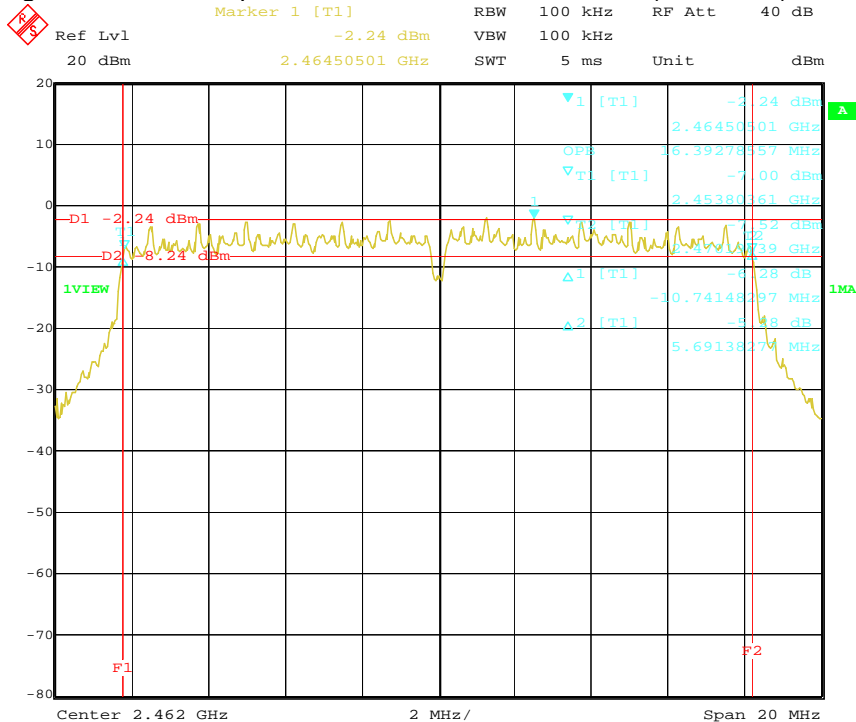




802.11g mode with 54Mbps data rate for 20MHz Bandwidth (2.437GHz)

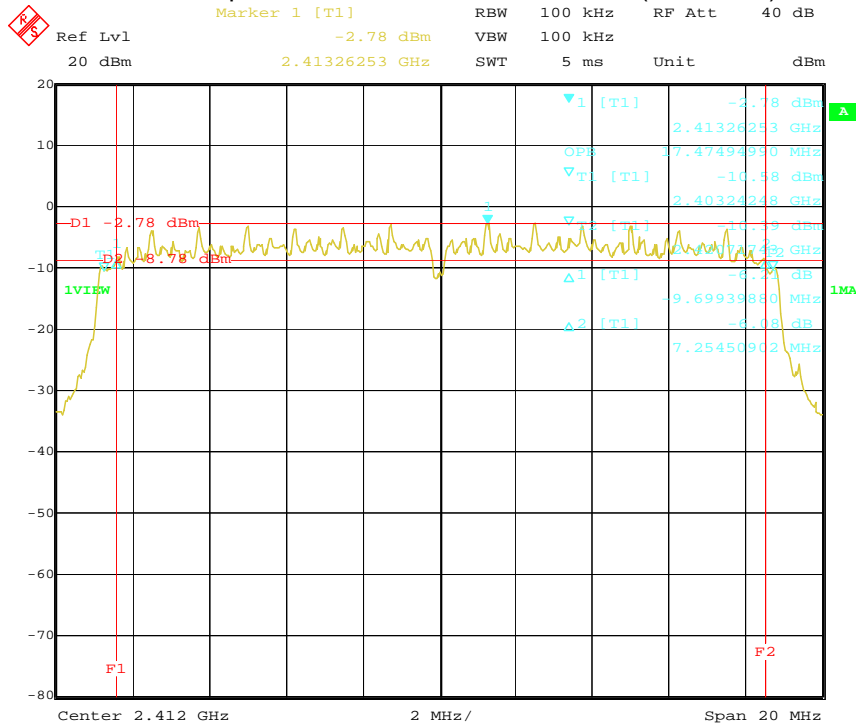


802.11g mode with 54Mbps data rate for 20MHz Bandwidth (2.462GHz)

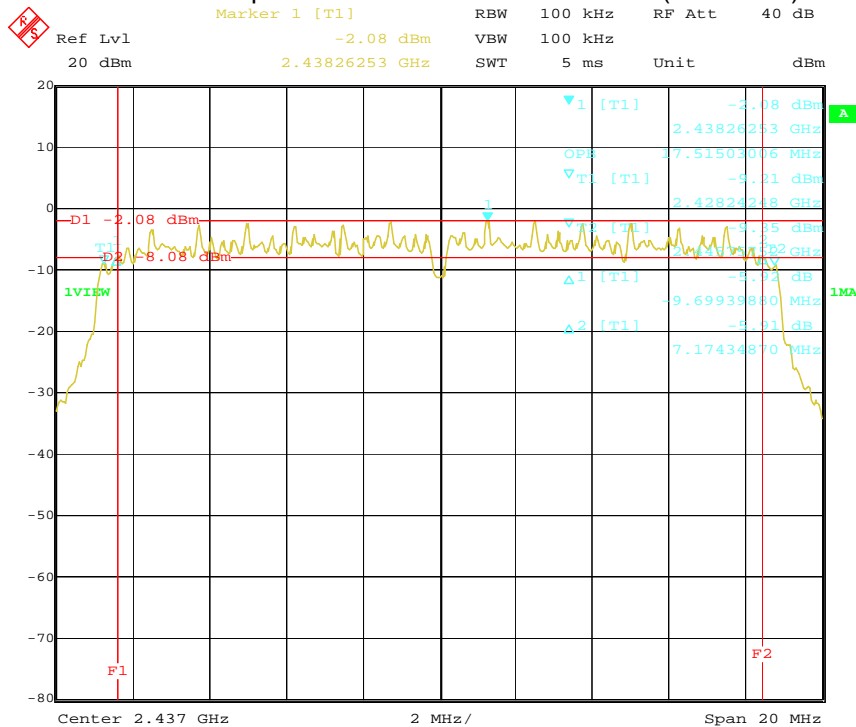




802.11n mode with 39Mbps data rate for 20MHz Bandwidth (2.412GHz)

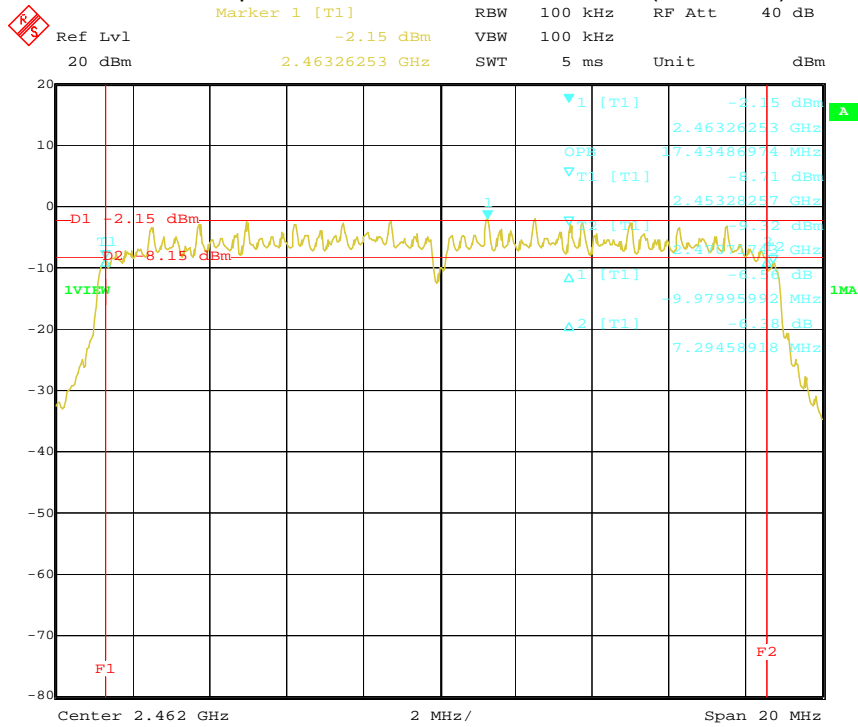


802.11n mode with 58.5Mbps data rate for 20MHz Bandwidth (2.437GHz)

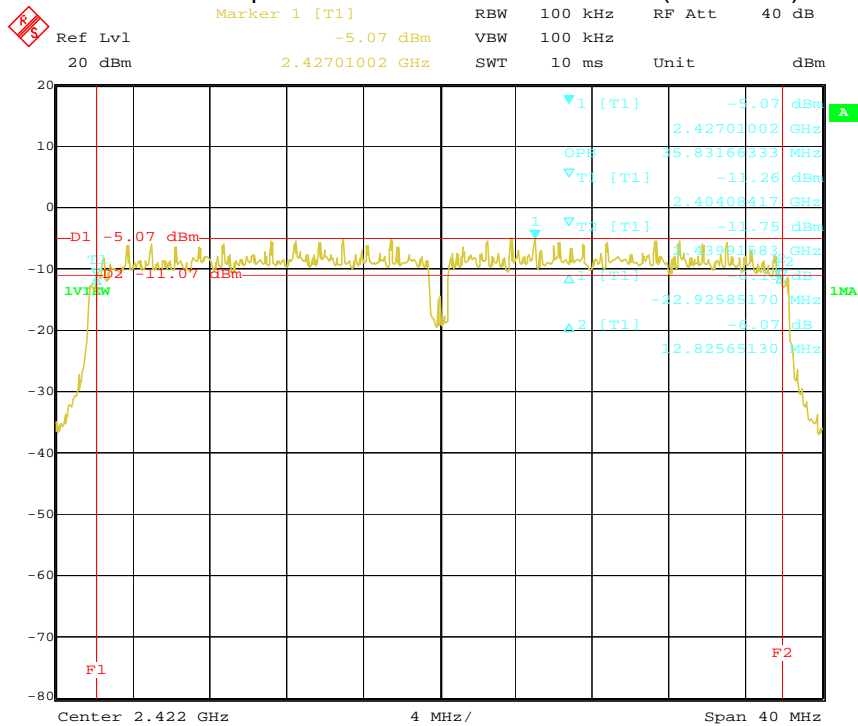




802.11n mode with 58.5Mbps data rate for 20MHz Bandwidth (2.462GHz)



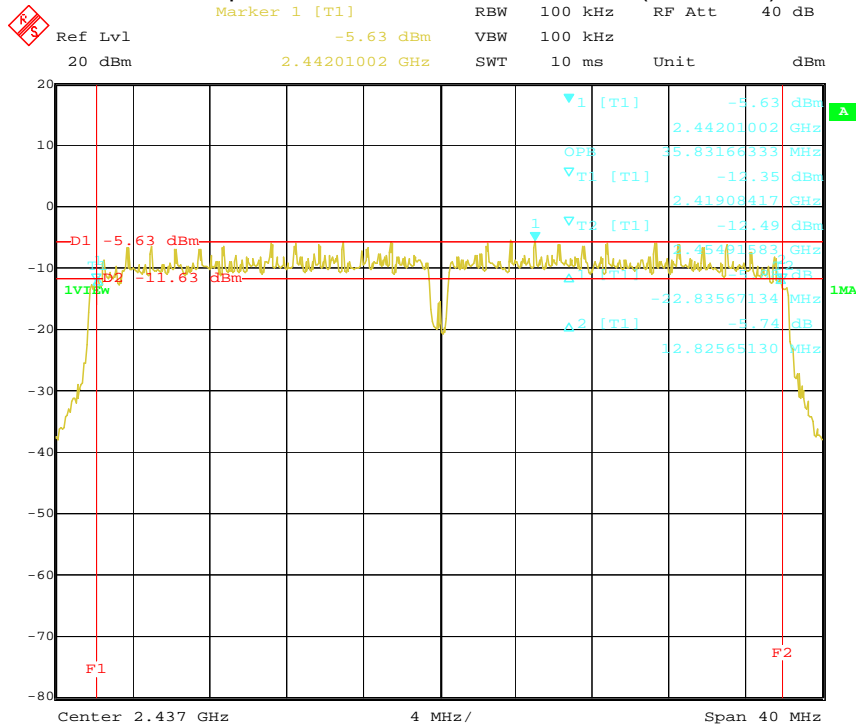
802.11n mode with 58.5Mbps data rate for 40MHz Bandwidth (2.422GHz)



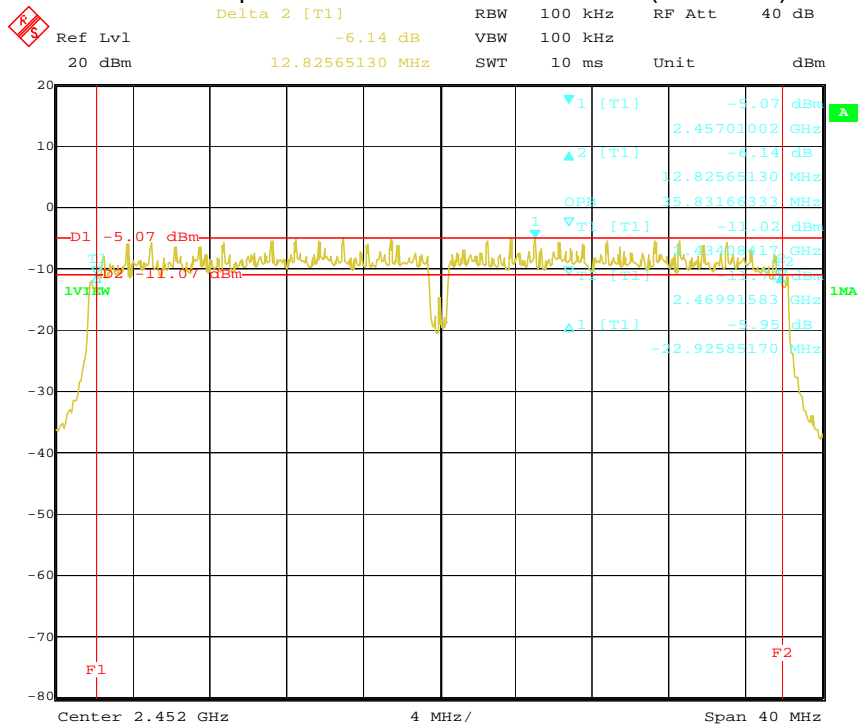
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



802.11n mode with 65Mbps data rate for 40MHz Bandwidth (2.437GHz)



802.11n mode with 58.5Mbps data rate for 40MHz Bandwidth (2.452GHz)





## 7.5 Maximum Conducted Output Power

Test Requirement:	FCC Part 15.247(b)(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
Test Method:	ANSI C63.4:2003 and KDB558074(Power Output Option 2-Method #1). Remark: KDB558074, DTS test procedure of Oct 2002 KDB558074
Test Date:	26 August 2009
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.





Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =0.1dB) from the antenna port to the spectrum.
2. Set span to encompass the entire emission bandwidth (EBW) of the signal.
3. Set RBW = 1 MHz.
4. Set VBW  $\geq$  3 MHz.
5. Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode.
6. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep.  
If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to "free run".
7. Trace average 100 traces in power averaging mode.
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.
9. Measure the channel power of the test frequency with special test status.
10. Repeat until all the test status is investigated.
11. Report the worse case.



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**Test result:**

**802.11b mode for 20MHz Bandwidth**

Channel No.	Frequency (MHz)	Mode	MCS	Data Rate	Measured Channel Power (dBm)	Limit	Result
1	2412	802.11b 20MHz Bandwidth	0	1Mbps	12.06	1W(30dBm)	Pass
6	2437				12.18		Pass
11	2462				11.98		Pass
1	2412		1	2Mbps	12.27		Pass
6	2437				12.39		Pass
11	2462				12.27		Pass
1	2412		2	5.5Mbps	13.10		Pass
6	2437				13.37		Pass
11	2462				12.87		Pass
1	2412		3	11Mbps	13.22		Pass
6	2437				13.63		Pass
11	2462				12.89		Pass
1	2412		8	1Mbps	12.02		Pass
6	2437				12.2		Pass
11	2462				12.04		Pass
1	2412		9	2Mbps	12.26		Pass
6	2437				12.31		Pass
11	2462				12.09		Pass
1	2412		10	5.5Mbps	13.03		Pass
6	2437				13.19		Pass
11	2462				12.95		Pass
1	2412		11	11Mbps	13.24		Pass
6	2437				13.46		Pass
11	2462				13.13		Pass



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**Test result:**

**802.11g mode for 20MHz Bandwidth**

Channel No.	Frequency (MHz)	Mode	MCS	Data Rate	Measured Channel Power (dBm)	Limit	Result
1	2412	802.11g 20MHz Bandwidth	0	6Mbps	9.92	1W(30dBm)	Pass
6	2437				9.57		Pass
11	2462				9.38		Pass
1	2412		1	9Mbps	9.52		Pass
6	2437				10.03		Pass
11	2462				9.55		Pass
1	2412		2	12Mbps	9.78		Pass
6	2437				10.37		Pass
11	2462				9.39		Pass
1	2412		3	18Mbps	9.8		Pass
6	2437				10.33		Pass
11	2462				10.16		Pass
1	2412		4	24Mbps	10.23		Pass
6	2437				10.12		Pass
11	2462				10.04		Pass
1	2412		5	36Mbps	10.45		Pass
6	2437				10.09		Pass
11	2462				9.82		Pass
1	2412		6	48Mbps	10.72		Pass
6	2437				10.48		Pass
11	2462				10.17		Pass
1	2412		7	54Mbps	10.82		Pass
6	2437				10.71		Pass
11	2462				10.61		Pass



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**Test result:**

**802.11n mode for 20MHz Bandwidth**

Channel No.	Frequency (MHz)	Mode	MCS	Data Rate	Measured Channel Power (dBm)	Limit	Result
1	2412	802.11n 20MHz Bandwidth	0	6.5Mbps	9.75	1W(30dBm)	Pass
6	2437				10.05		Pass
11	2462				10.27		Pass
1	2412		1	13Mbps	9.75		Pass
6	2437				10.20		Pass
11	2462				10.09		Pass
1	2412		2	19.5Mbps	9.70		Pass
6	2437				10.21		Pass
11	2462				10.07		Pass
1	2412		3	26Mbps	9.84		Pass
6	2437				10.73		Pass
11	2462				10.46		Pass
1	2412		4	39Mbps	10.58		Pass
6	2437				10.88		Pass
11	2462				10.63		Pass
1	2412		5	52Mbps	10.30		Pass
6	2437				10.81		Pass
11	2462				11.14		Pass
1	2412		6	58.5Mbps	10.04		Pass
6	2437				11.19		Pass
11	2462				11.38		Pass
1	2412	7	65Mbps	10.13	Pass		
6	2437			10.70	Pass		
11	2462			11.36	Pass		



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**Test result:**

**802.11n mode for 40MHz Bandwidth**

Channel No.	Frequency (MHz)	Mode	MCS	Data Rate	Measured Channel Power (dBm)	Limit	Result
3	2422	802.11n 40MHz Bandwidth	0	6.5Mbps	9.85	1W(30dBm)	Pass
6	2437				10.15		Pass
9	2452				10.37		Pass
3	2422		1	13Mbps	9.85		Pass
6	2437				10.3		Pass
9	2452				10.19		Pass
3	2422		2	19.5Mbps	9.8		Pass
6	2437				10.31		Pass
9	2452				10.17		Pass
3	2422		3	26Mbps	9.94		Pass
6	2437				10.83		Pass
9	2452				10.56		Pass
3	2422		4	39Mbps	10.68		Pass
6	2437				10.98		Pass
9	2452				10.73		Pass
3	2422		5	52Mbps	10.4		Pass
6	2437				10.91		Pass
9	2452				11.24		Pass
3	2422		6	58.5Mbps	10.14		Pass
6	2437				11.29		Pass
9	2452				11.48		Pass
3	2422		7	65Mbps	10.23		Pass
6	2437				10.8		Pass
9	2452				11.46		Pass

**Test result:**

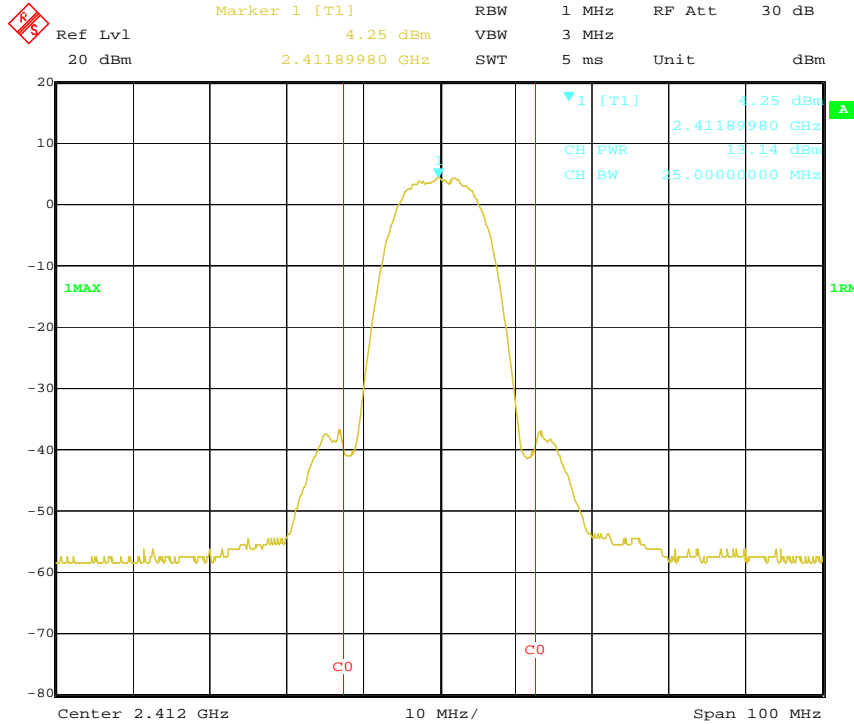
**Level = Read Level + Cable Loss.**

**The unit does meet the FCC requirements.**

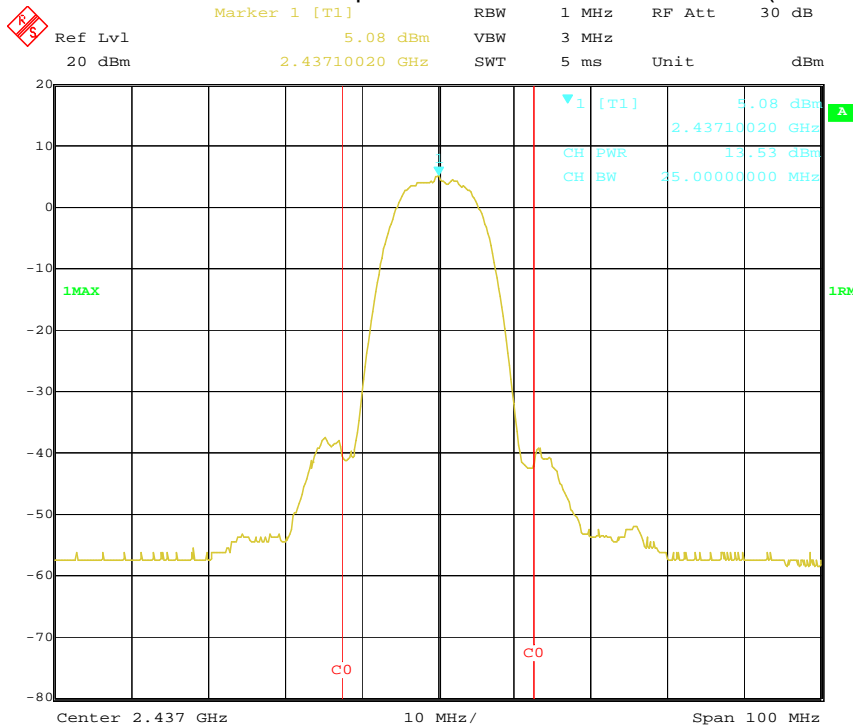


Max power result plots as follows:

802.11b mode with MCS11 11Mbps data rate for 20MHz Bandwidth (2.412GHz)

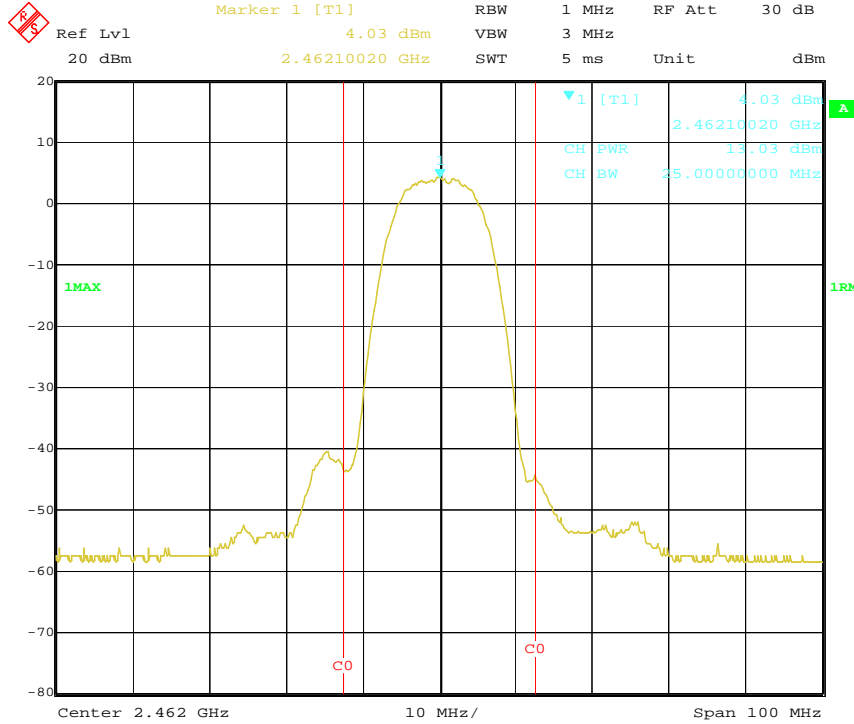


802.11b mode with MCS3 11Mbps data rate for 20MHz Bandwidth (2.437GHz)

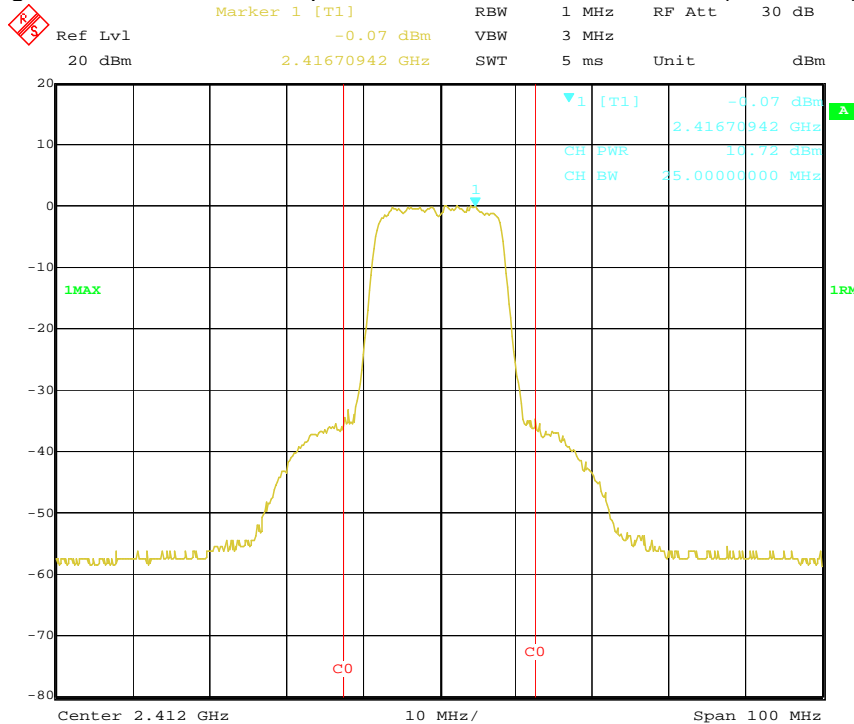




802.11b mode with MCS11 11Mbps data rate for 20MHz Bandwidth (2.462GHz)

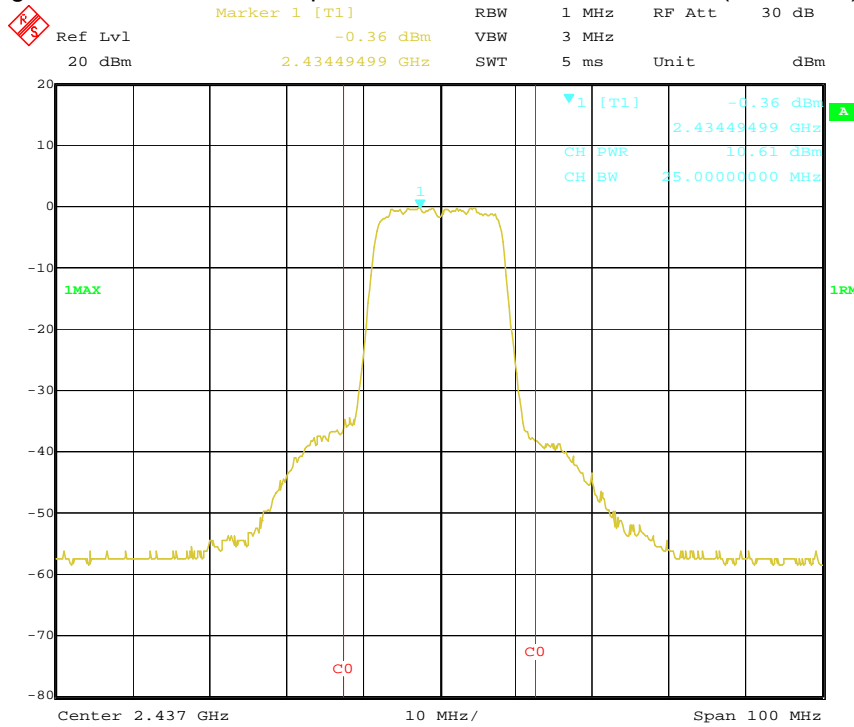


802.11g mode with MCS7 54Mbps data rate for 20MHz Bandwidth (2.412GHz)

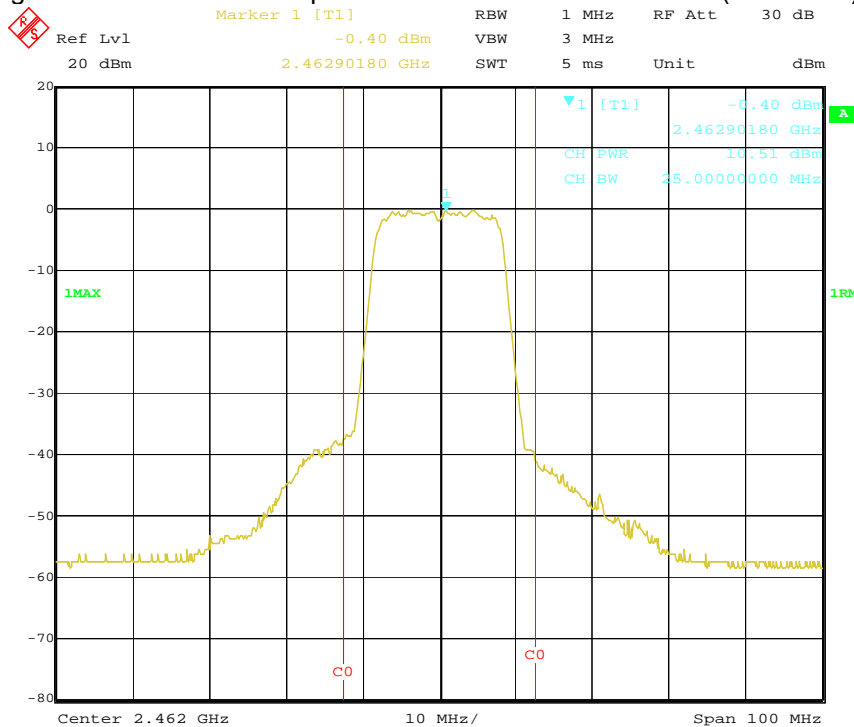




802.11g mode with MCS7 54Mbps data rate for 20MHz Bandwidth (2.437GHz)



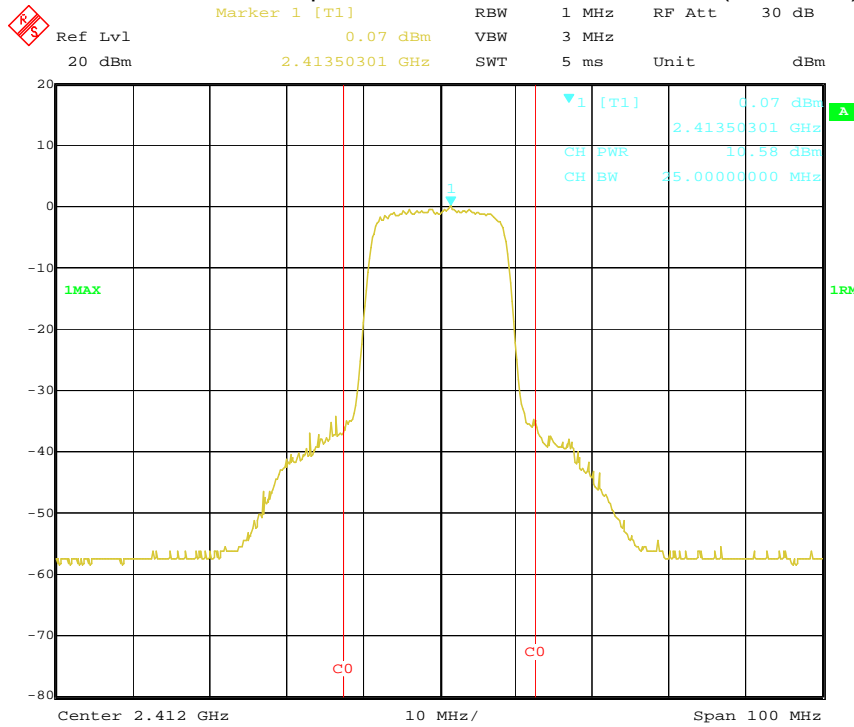
802.11g mode with MCS7 54Mbps data rate for 20MHz Bandwidth (2.462GHz)



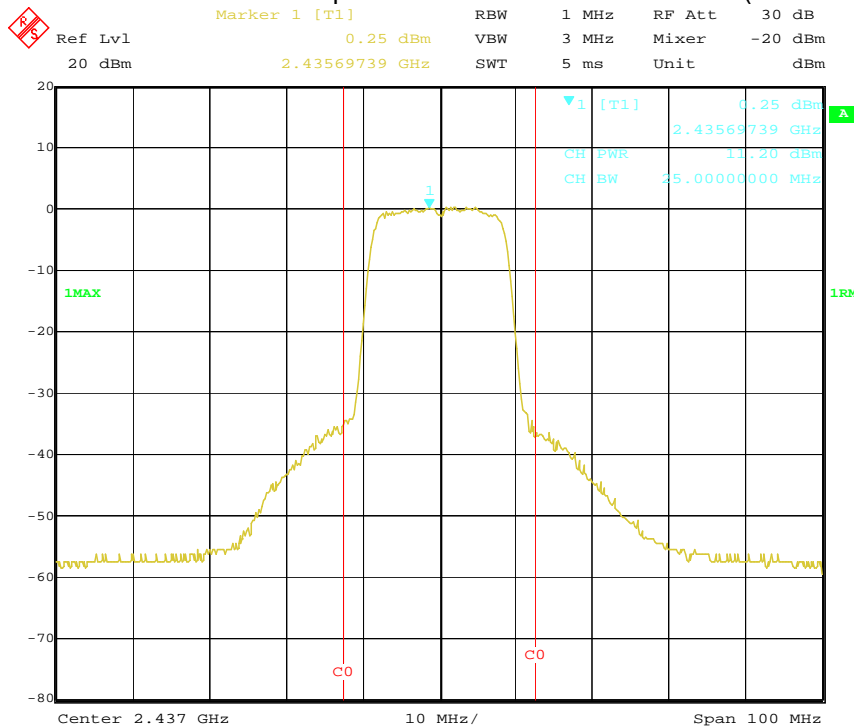




802.11n mode with MCS4 39Mbps data rate for 20MHz Bandwidth (2.412GHz)

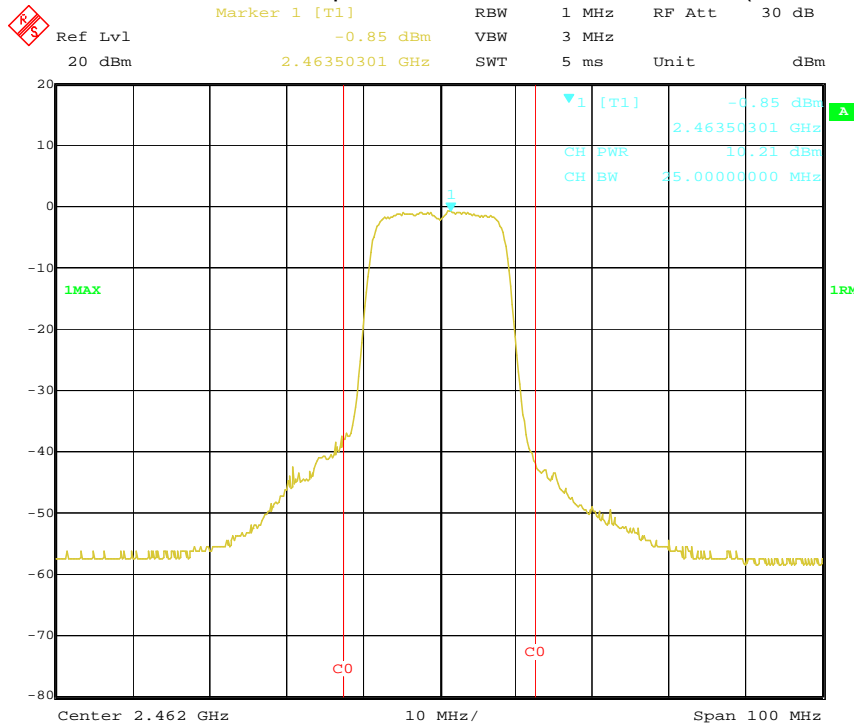


802.11n mode with MCS6 58.5Mbps data rate for 20MHz Bandwidth (2.437GHz)

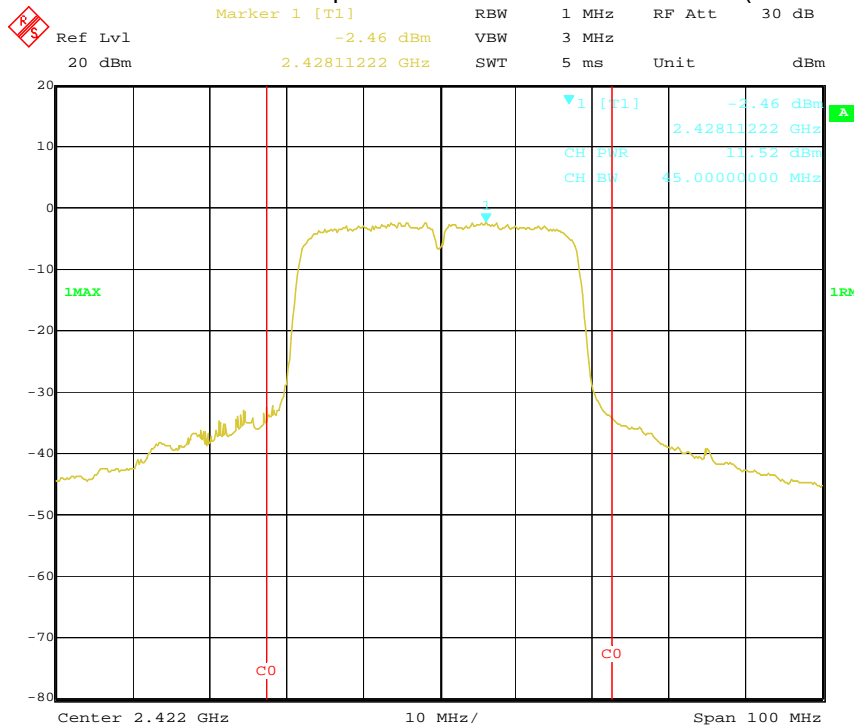




802.11n mode with MCS6 58.5Mbps data rate for 20MHz Bandwidth (2.462GHz)

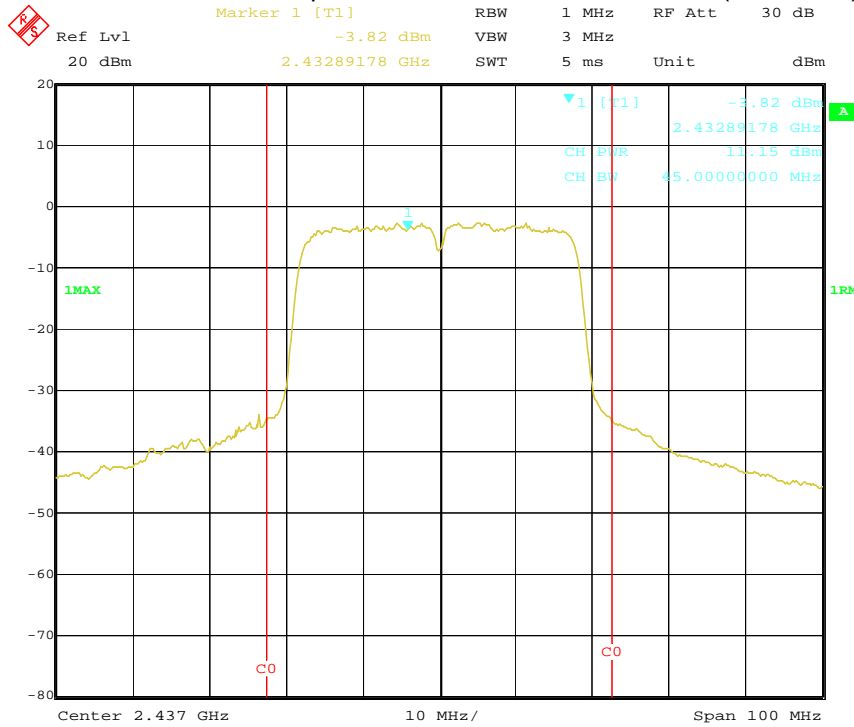


802.11n mode with MCS6 58.5Mbps data rate for 40MHz Bandwidth (2.422GHz)

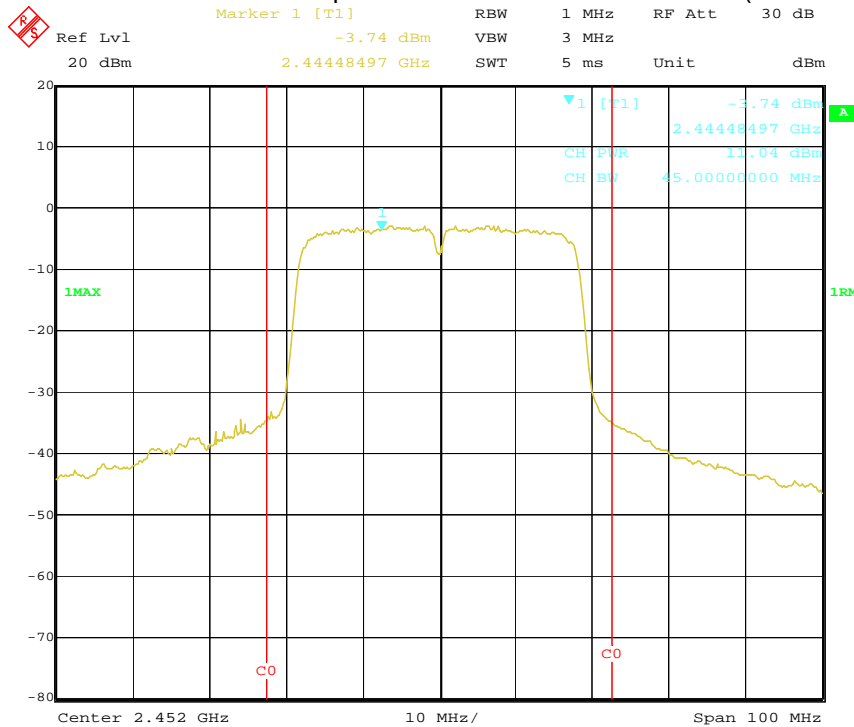




802.11n mode with MCS7 65Mbps data rate for 40MHz Bandwidth (2.437GHz)



802.11n mode with MCS6 58.5Mbps data rate for 40MHz Bandwidth (2.452GHz)





## 7.6 Peak Power Spectral Density

**Test Requirement:** FCC Part 15.247(e)  
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.  
This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

**Test Method:** ANSI C63.4:2003 and KDB558074( PSD Option 1).  
Remark: KDB558074, DTS test procedure of Mar 2005 KDB558074

**Test Date:** 29 August 2009

**Test Status:** Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

### Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =0.1dB) from the antenna port to the spectrum analyzer or power meter.
2. Set the spectrum analyzer: RBW=3KHz. VBW = 30KHz. sweep= (SPAN/3 kHz); Detector Function = Peak. Trace = Max Hold, Centre = the Peak Power of the signal.
3. Measure the Power Spectral Density of the test frequency with special test status.
4. Repeat until all the test status is investigated.
5. Report the worse case.



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Channel No.	Frequency (MHz)	Mode	Bandwidth	Data Rate	Measured Peak Power Spectral Density (dBm/3KHz)	Limit	Result
1	2412	802.11b	20MHz	11Mbps	2.511	8dBm/3KHz	Pass
6	2437		20MHz		2.542		Pass
11	2462		20MHz		2.564		Pass
1	2412	802.11g	20MHz	54Mbps	2.516	8dBm/3KHz	Pass
6	2437		20MHz		2.538		Pass
11	2462		20MHz		2.563		Pass
1	2412	802.11n	20MHz	39 Mbps	2.514	8dBm/3KHz	Pass
6	2437		20MHz	58.5 Mbps	2.540		Pass
11	2462		20MHz	58.5 Mbps	2.559		Pass
3	2422	802.11n	40MHz	58.5 Mbps	2.517	8dBm/3KHz	Pass
6	2437		40MHz	65 Mbps	2.526		Pass
9	2452		40MHz	58.5 Mbps	2.547		Pass

**Test result:**

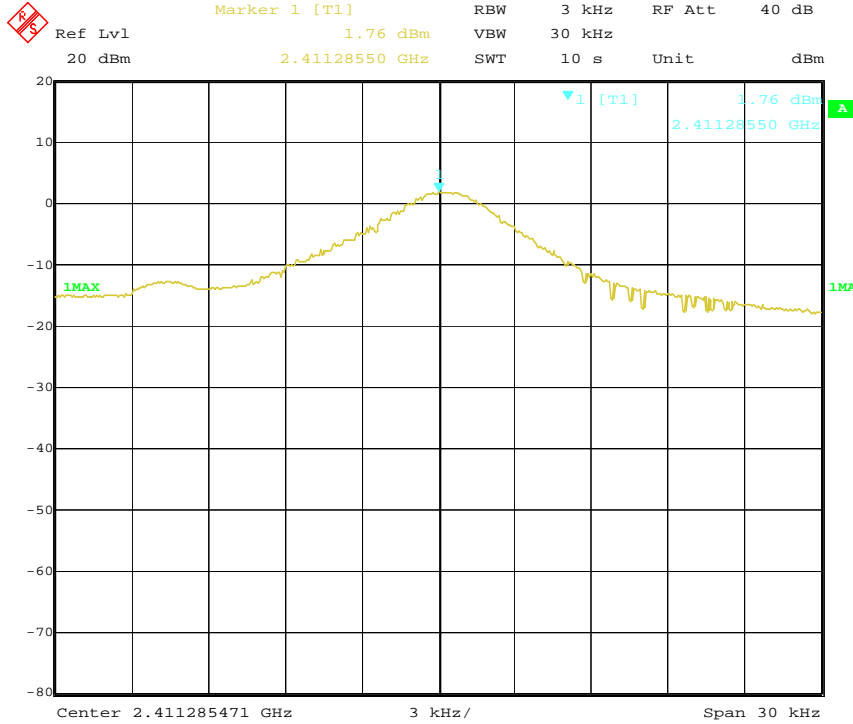
**Level = Read Level + Cable Loss.**

**The unit does meet the FCC requirements.**

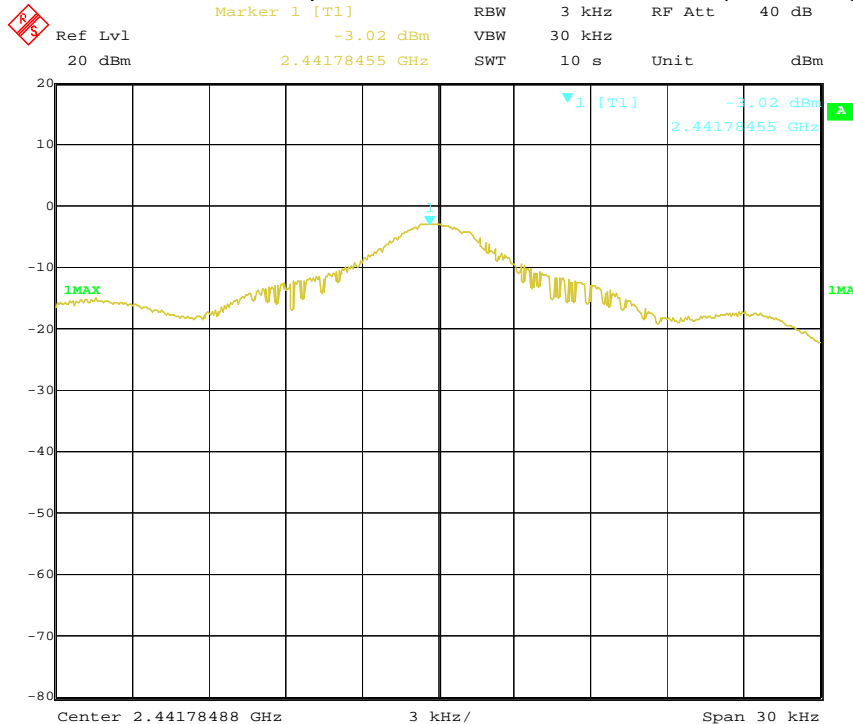
Result plots as follows:



802.11b mode with MCS11 11Mbps data rate for 20MHz Bandwidth (2.412GHz)

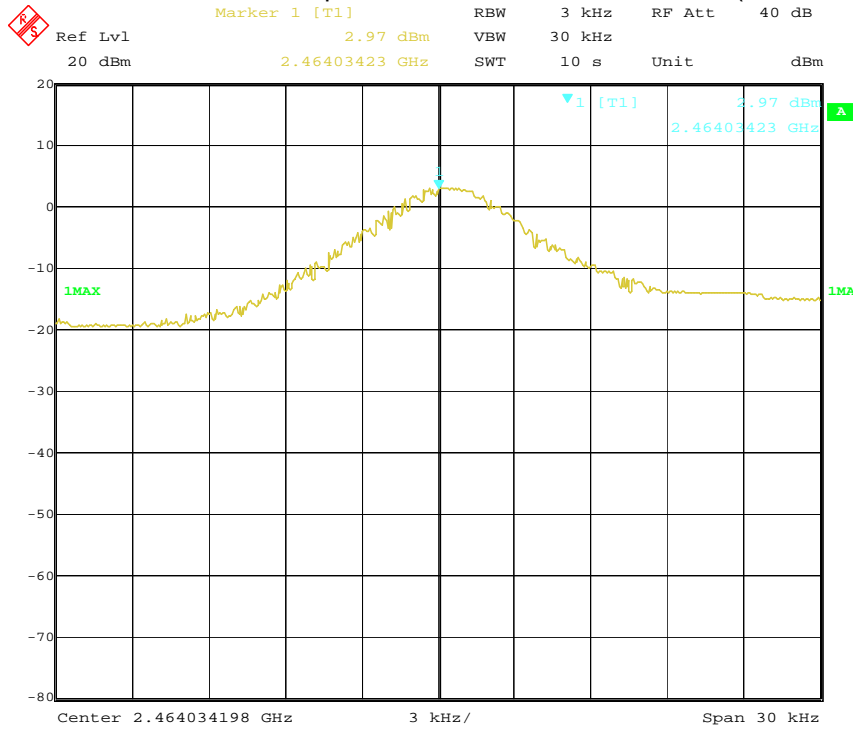


802.11b mode with MCS3 11Mbps data rate for 20MHz Bandwidth (2.437GHz)

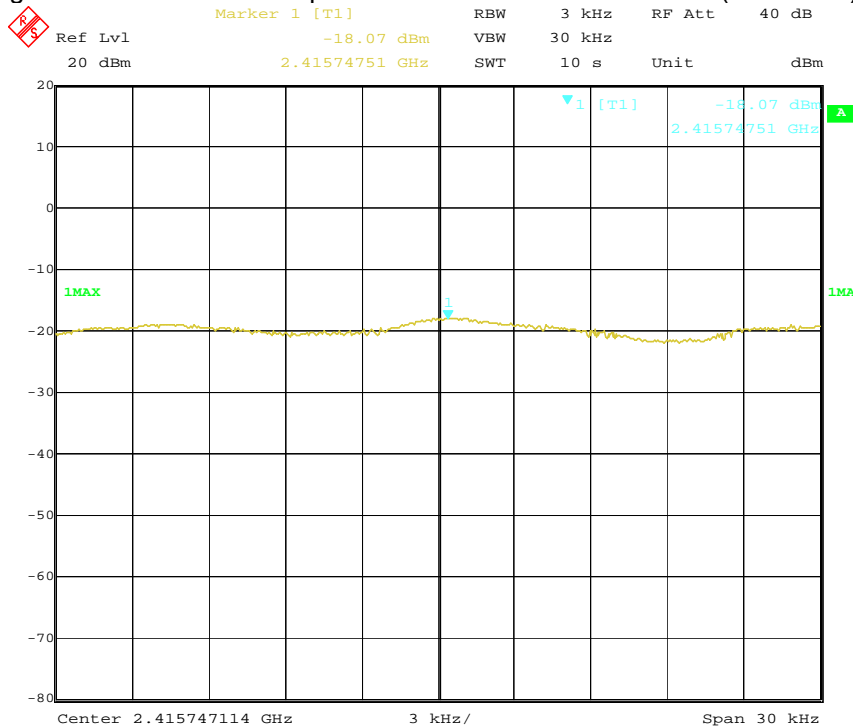




802.11b mode with MCS11 11Mbps data rate for 20MHz Bandwidth (2.462GHz)

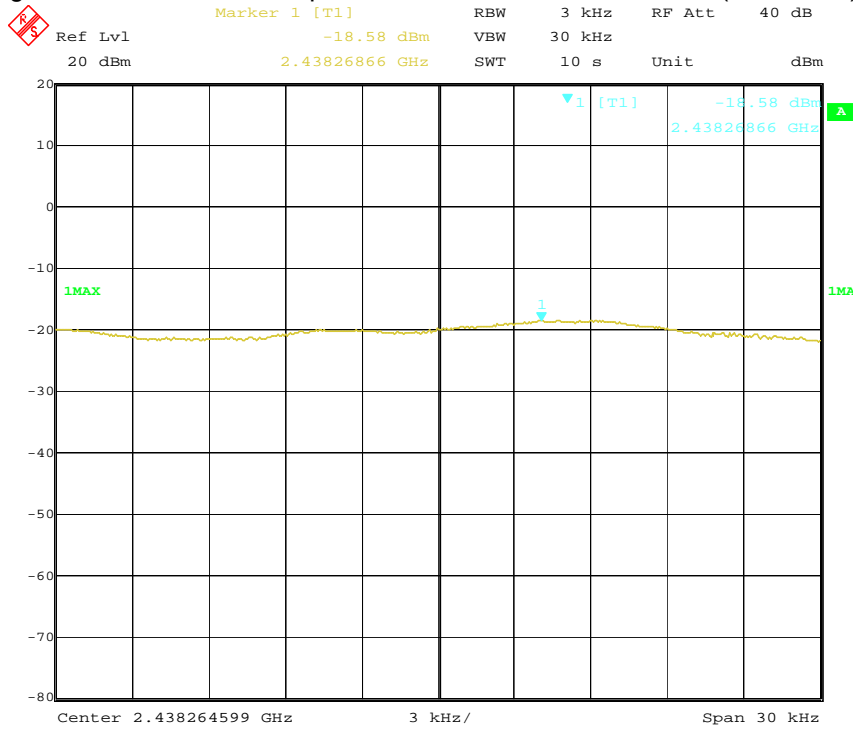


802.11g mode with MCS7 54Mbps data rate for 20MHz Bandwidth (2.412GHz)

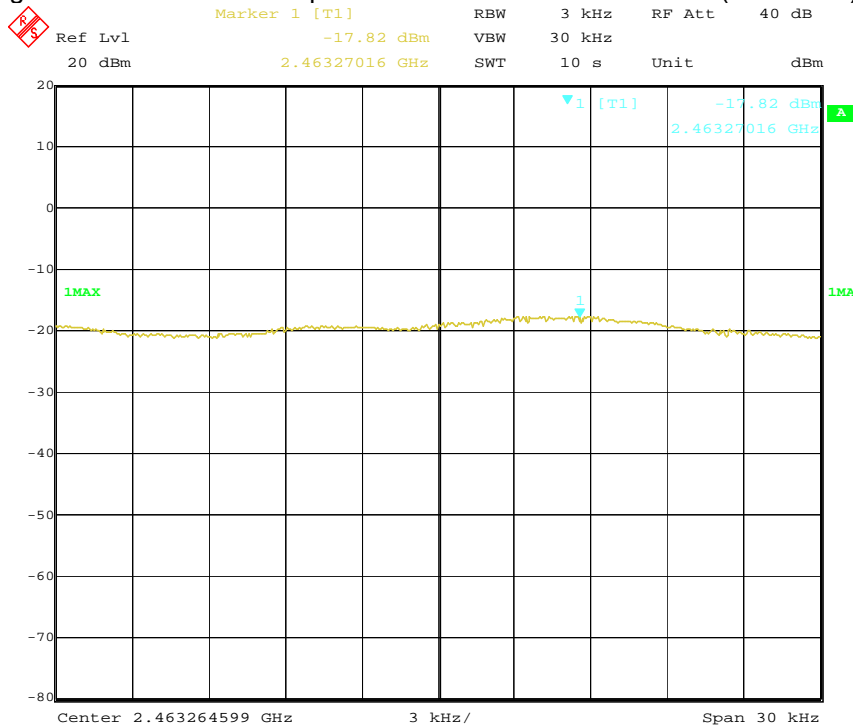




802.11g mode with MCS7 54Mbps data rate for 20MHz Bandwidth (2.437GHz)



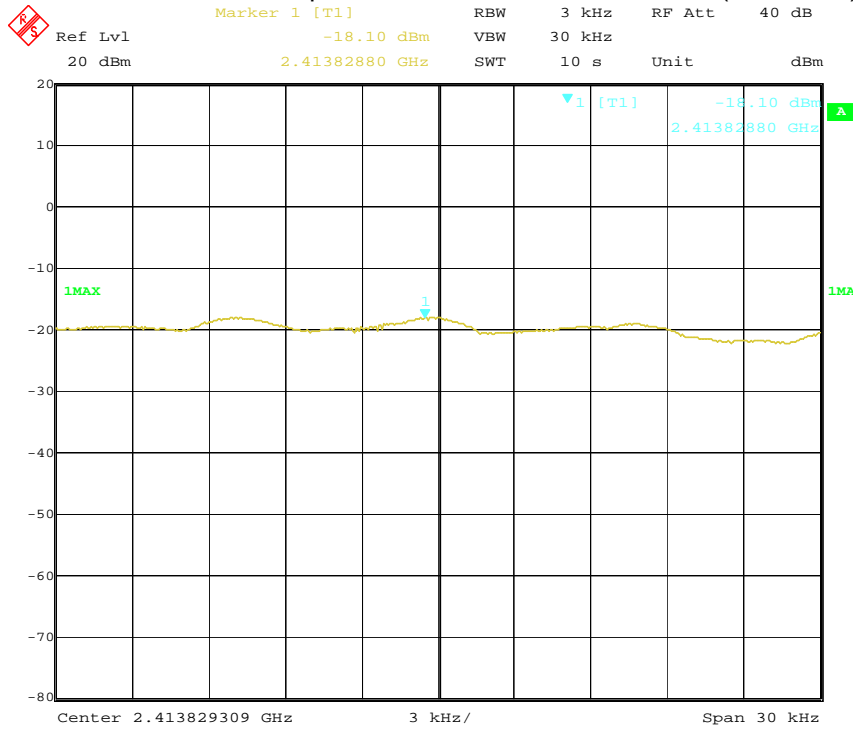
802.11g mode with MCS7 54Mbps data rate for 20MHz Bandwidth (2.462GHz)



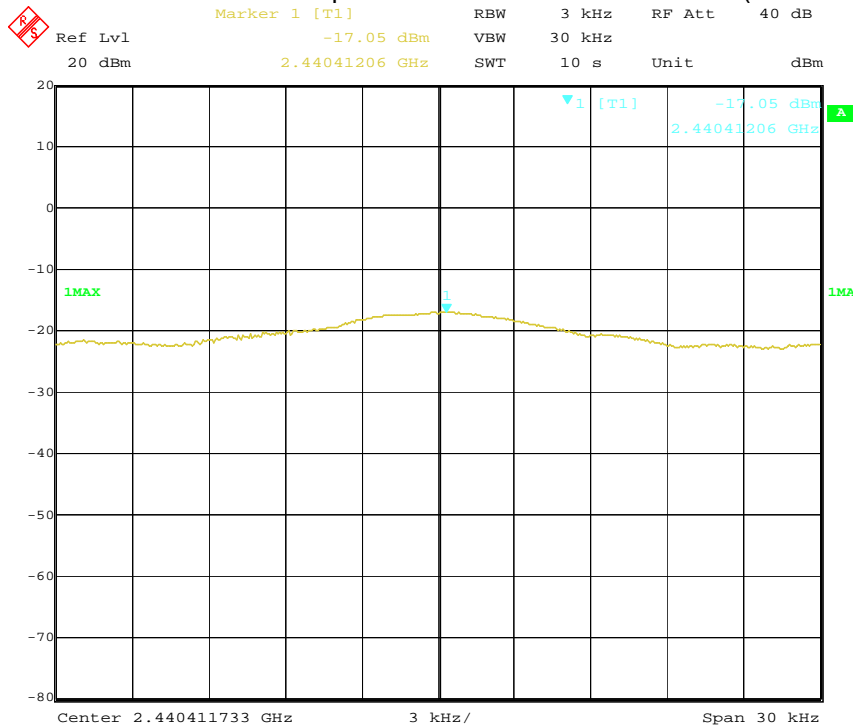




802.11n mode with MCS4 39Mbps data rate for 20MHz Bandwidth (2.412GHz)

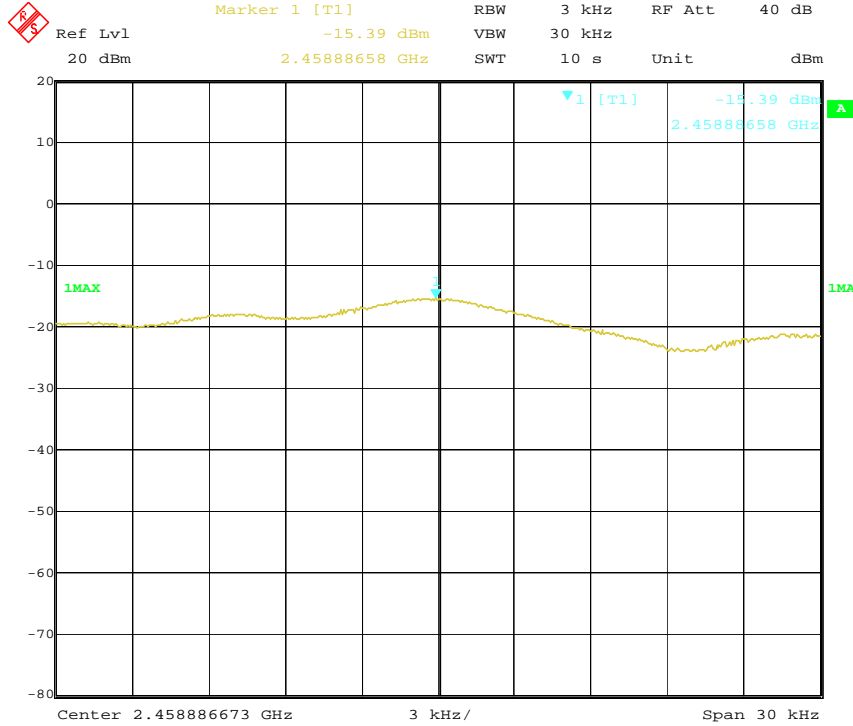


802.11n mode with MCS6 58.5Mbps data rate for 20MHz Bandwidth (2.437GHz)

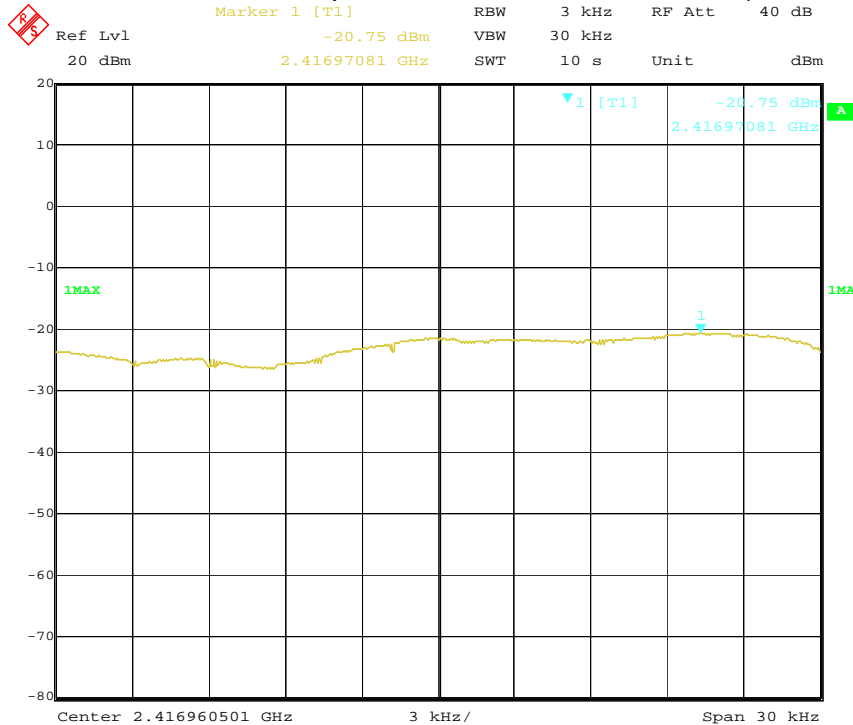




802.11n mode with MCS6 58.5Mbps data rate for 20MHz Bandwidth (2.462GHz)

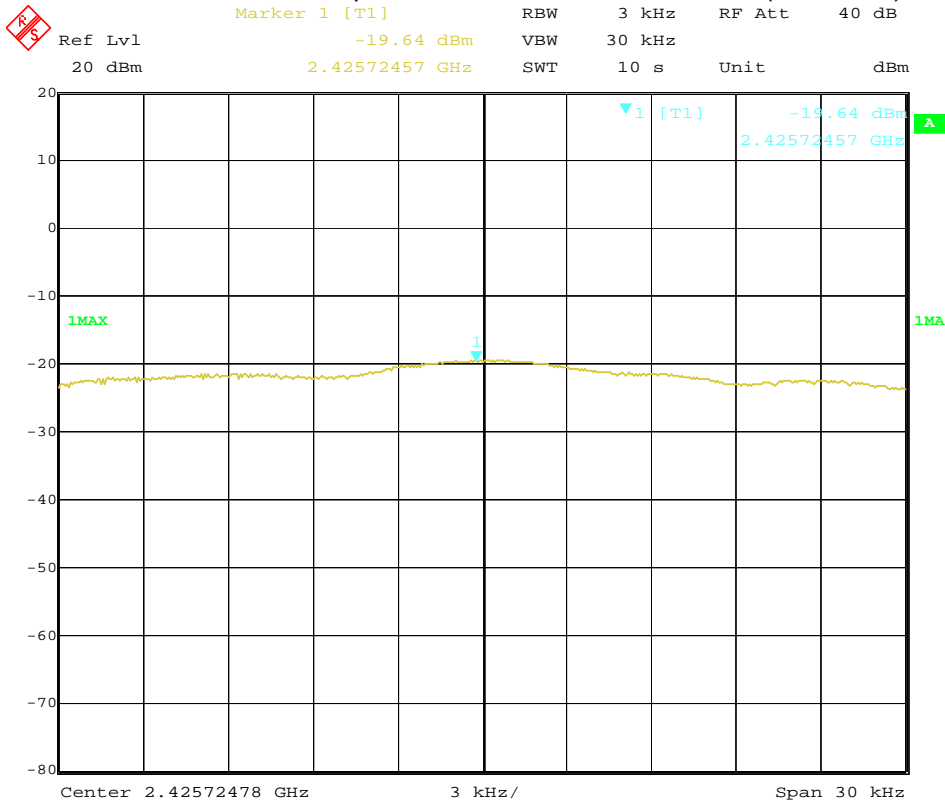


802.11n mode with MCS6 58.5Mbps data rate for 40MHz Bandwidth (2.422GHz)

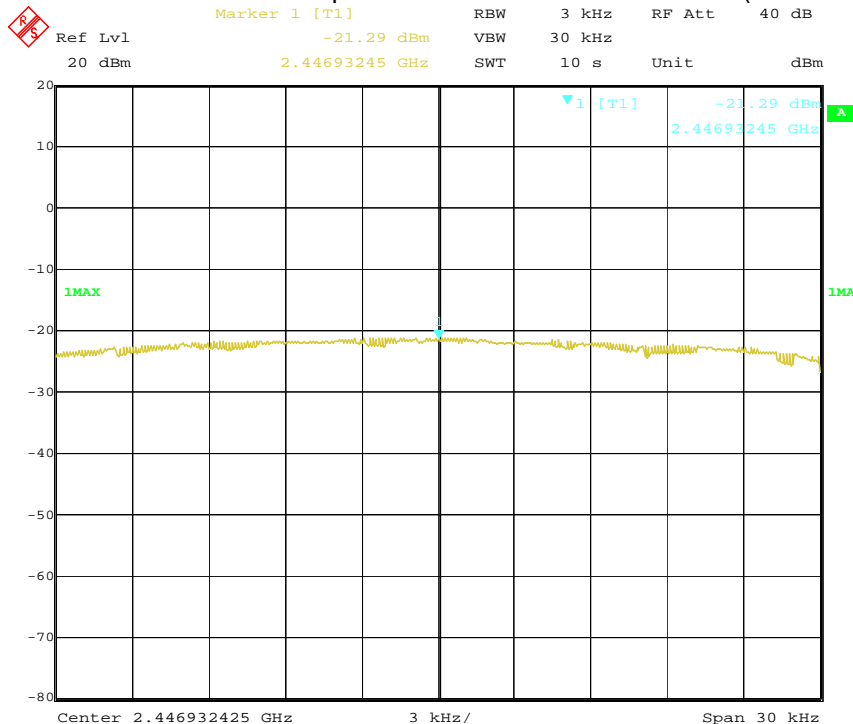




802.11n mode with MCS7 65Mbps data rate for 40MHz Bandwidth (2.437GHz)



802.11n mode with MCS6 58.5Mbps data rate for 40MHz Bandwidth (2.452GHz)





## 7.7 Conducted Spurious Emissions

Test Requirement: FCC Part 15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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. Provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Method: ANSI C63.4:2003 and KDB558074.

Test Date: 29 August 2009

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Procedure:

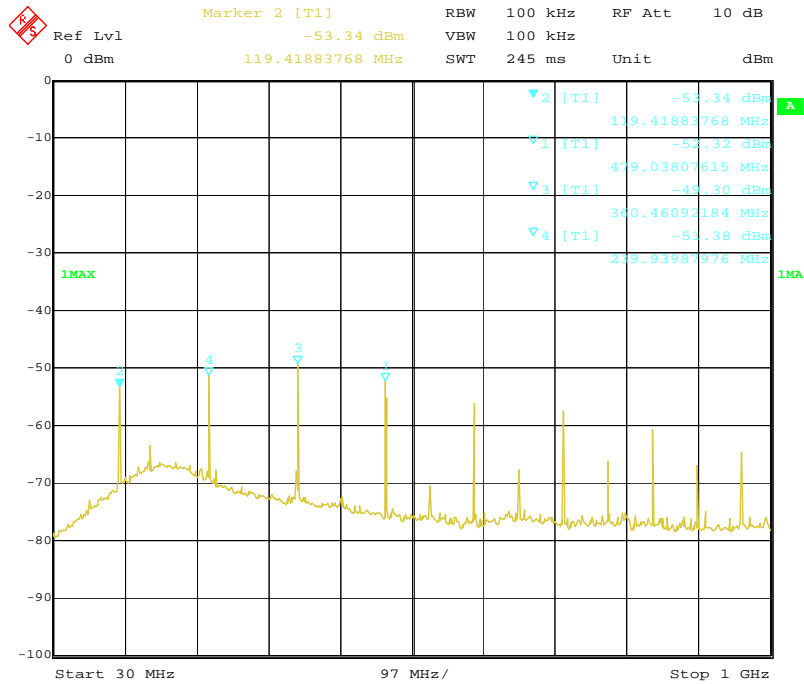
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer or power meter.
2. Set the spectrum analyzer: RBW=100 KHz, VBW = 300KHz. Sweep = auto; Detector Function = Peak. Trace = Max Hold, Scan up through 10th harmonic.
3. Measure the Conducted Spurious Emissions of the test frequency with special test status.
4. Repeat until all the test status is investigated.
5. Report the worse case.



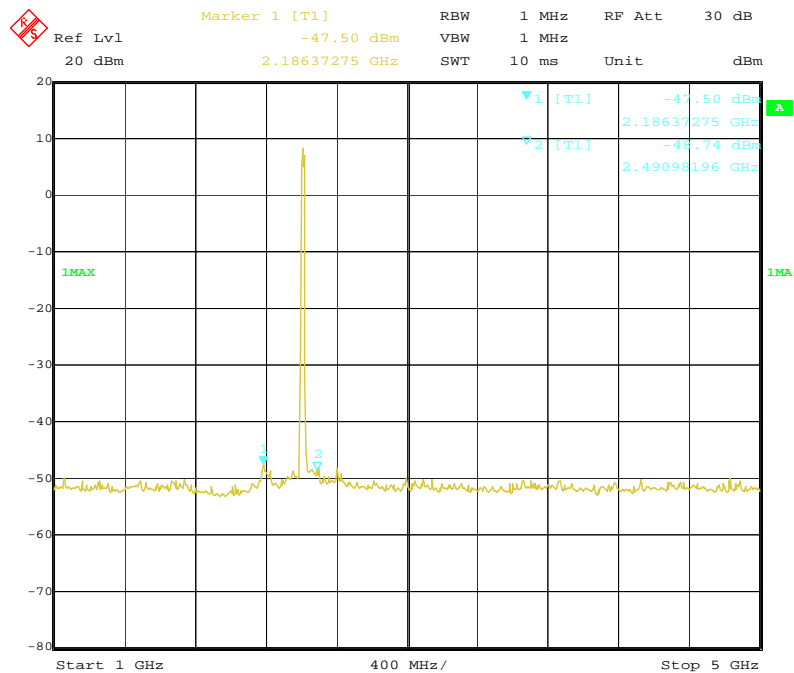
Test result plot as follows:

Lowest Channel 2412MHz-802.11b mode with 11Mbps data rate for 20MHz Bandwidth:

30M to 1GHz

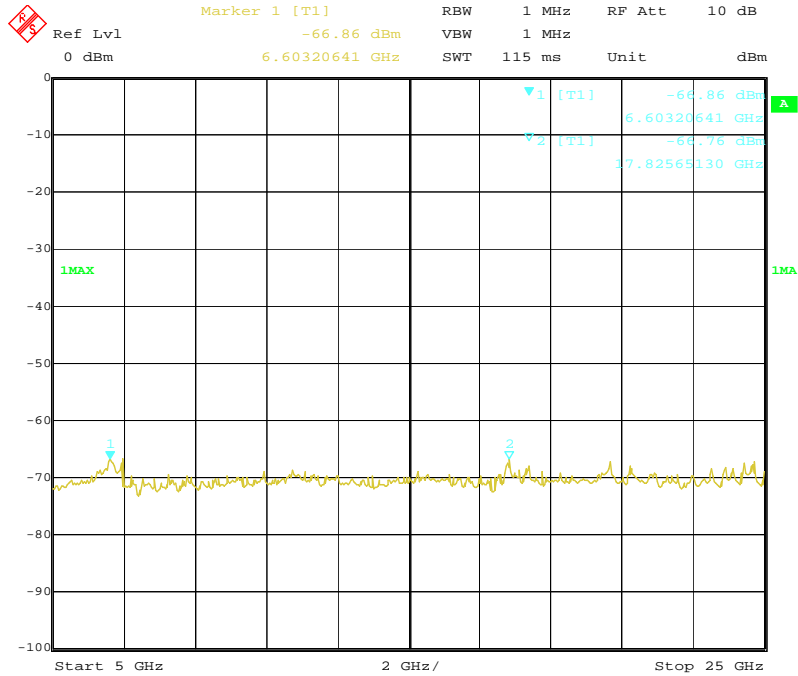


1G to 5GHz



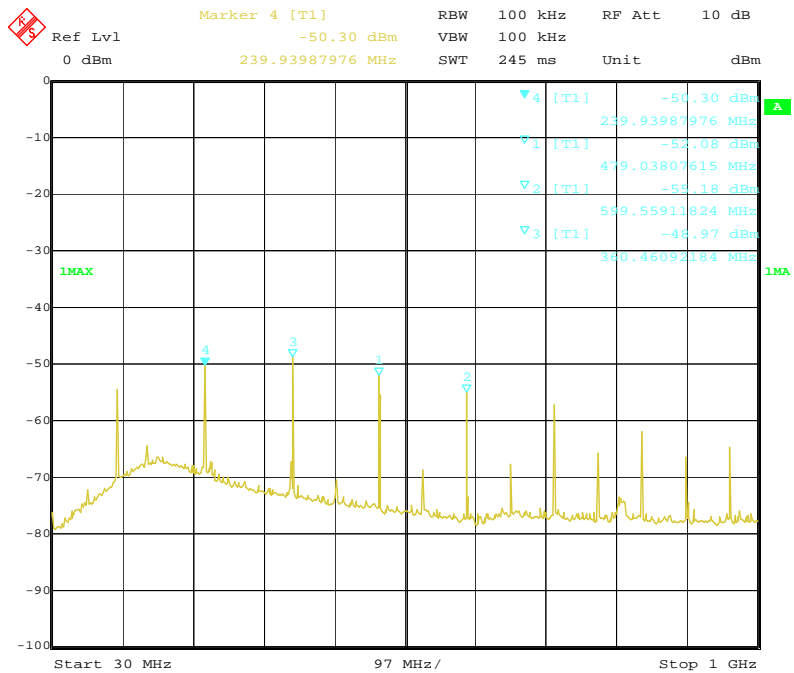


5G to 25GHz



Middle Channel 2437MHz-802.11b mode with 11Mbps data rate for 20MHz Bandwidth:

30MHz to 1GHz





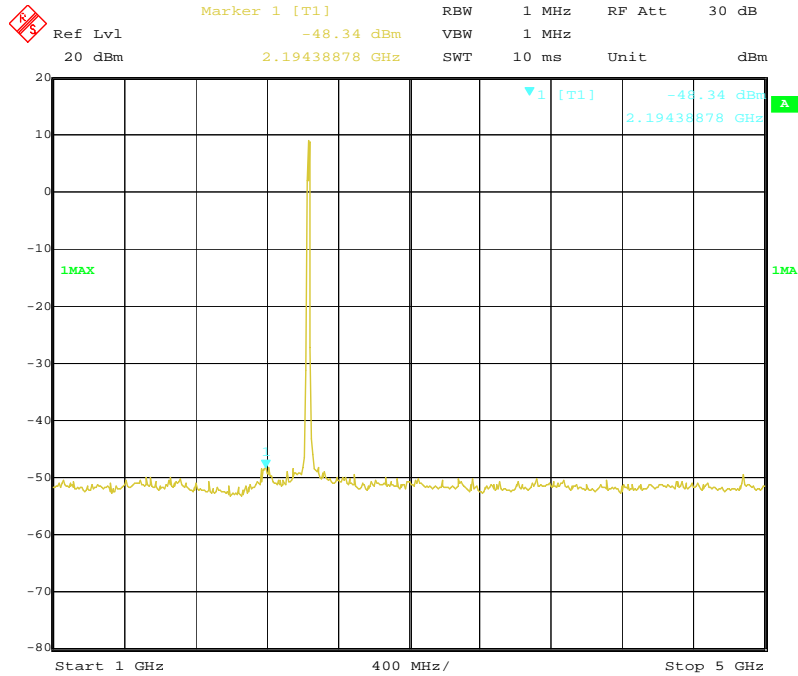
# SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09080241401

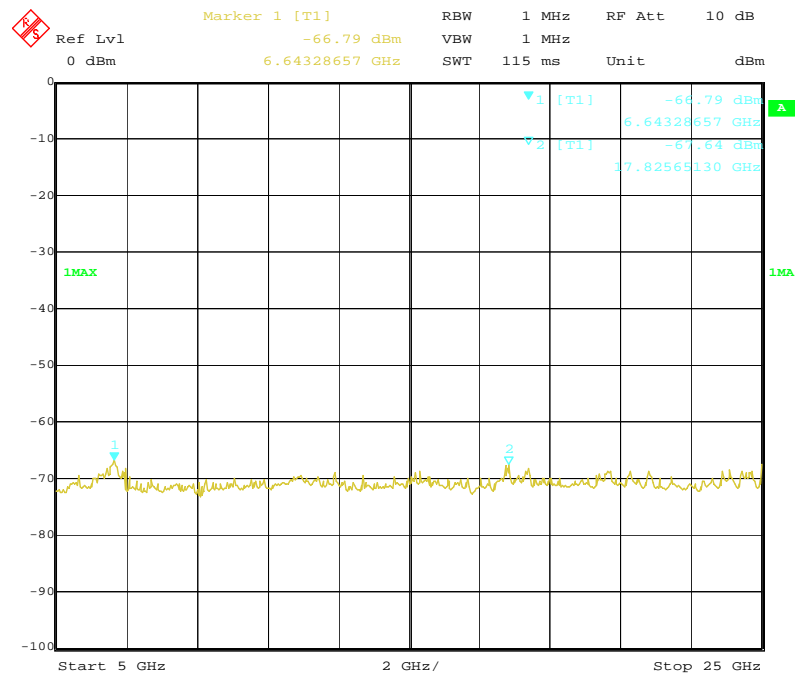
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## 1G to 5GHz



## 5G to 25GHz





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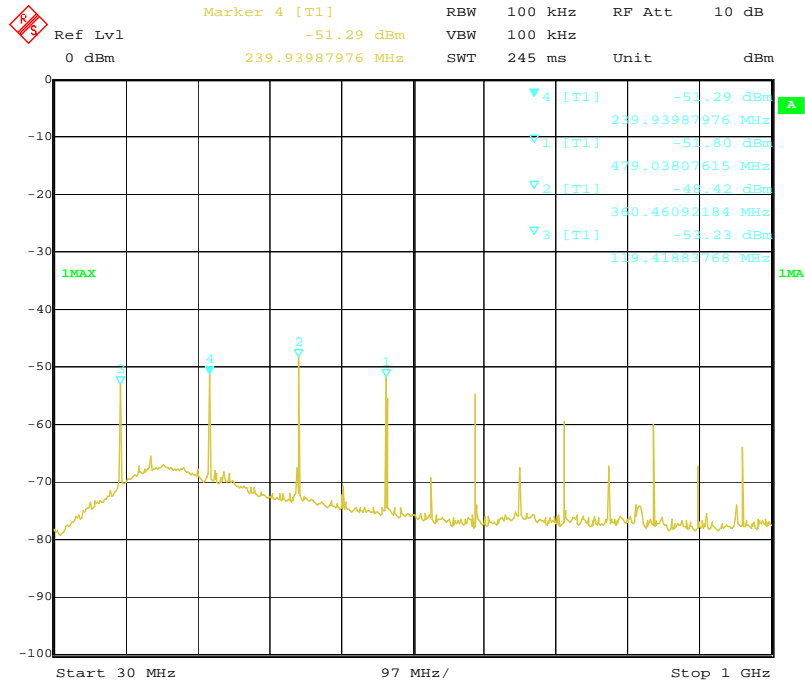
Report No.: GLEMO09080241401

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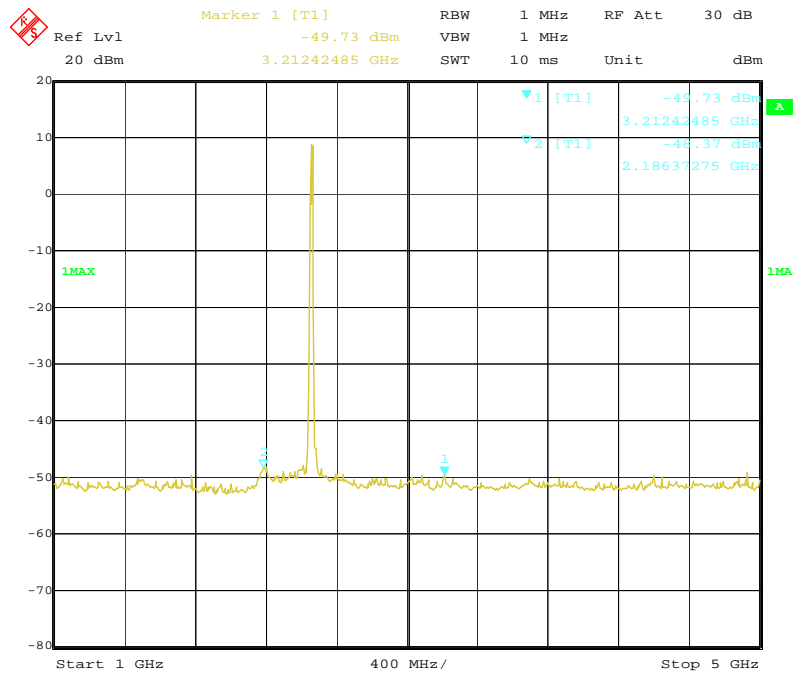
FCC ID: NAM4780621

Highest Channel 2462MHz-802.11b mode with 11Mbps data rate for 20MHz Bandwidth:

30MHz to 1GHz



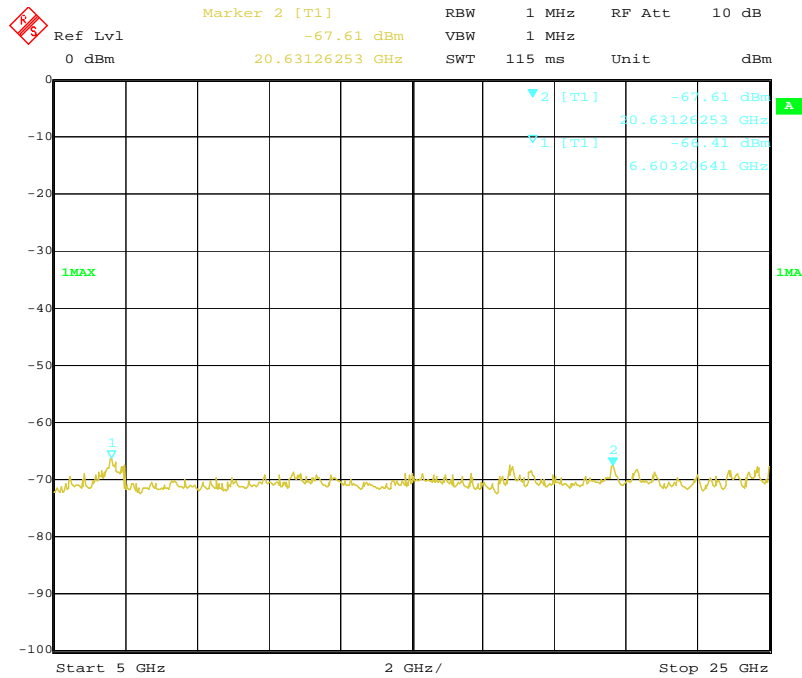
1G to 5GHz





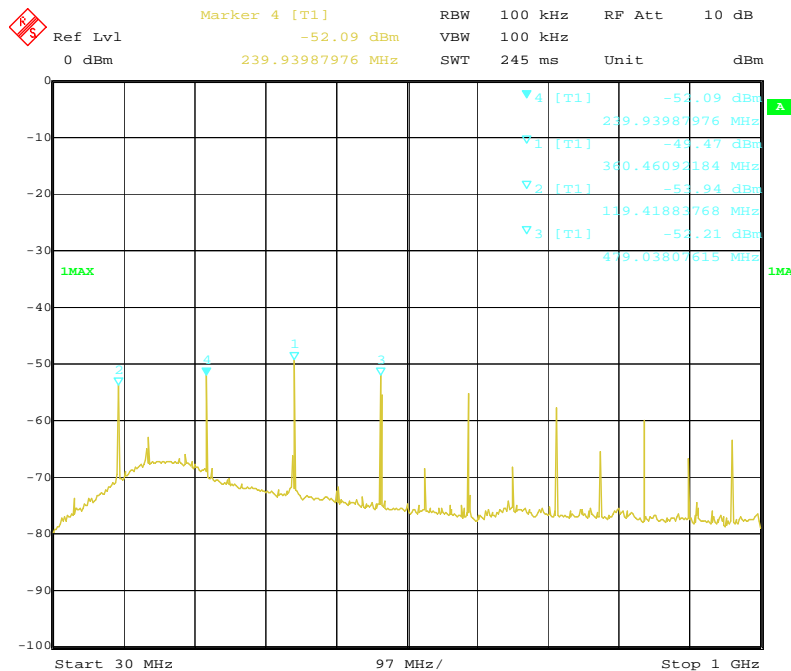


5G to 25GHz



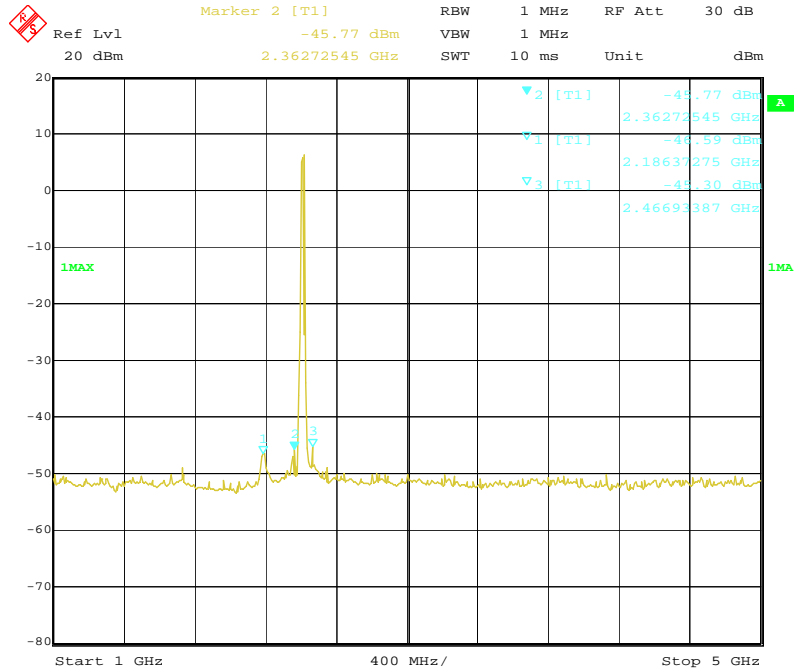
Lowest Channel 2412MHz-802.11g mode with 54Mbps data rate for 20MHz Bandwidth:

30M to 1GHz

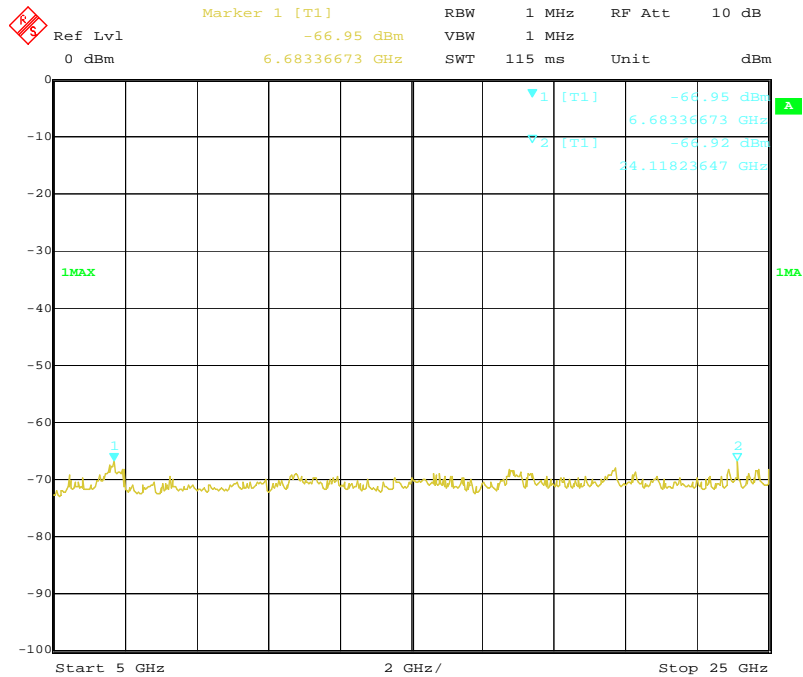




1G to 5GHz



5G to 25GHz





# SGS-CSTC Standards Technical Services Co., Ltd.

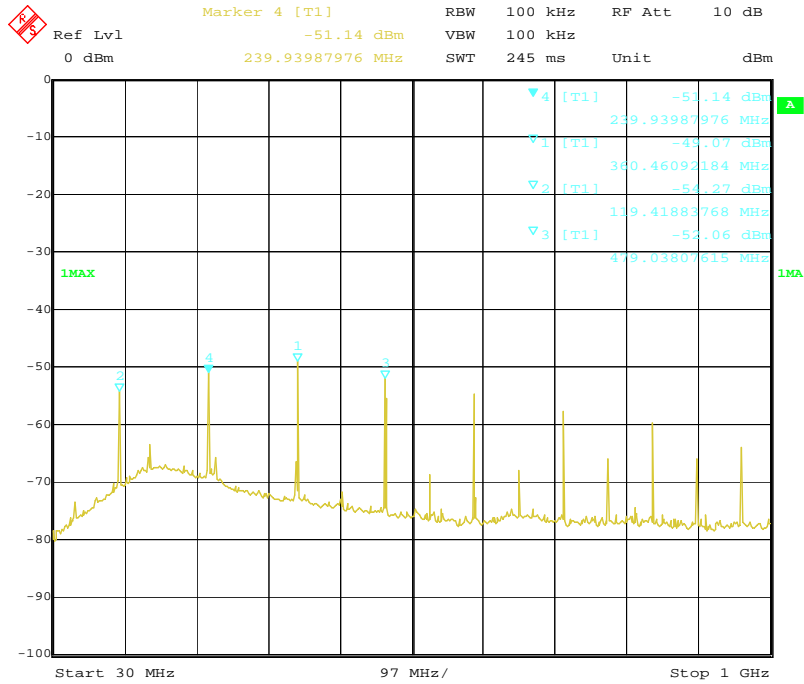
Report No.: GLEMO09080241401

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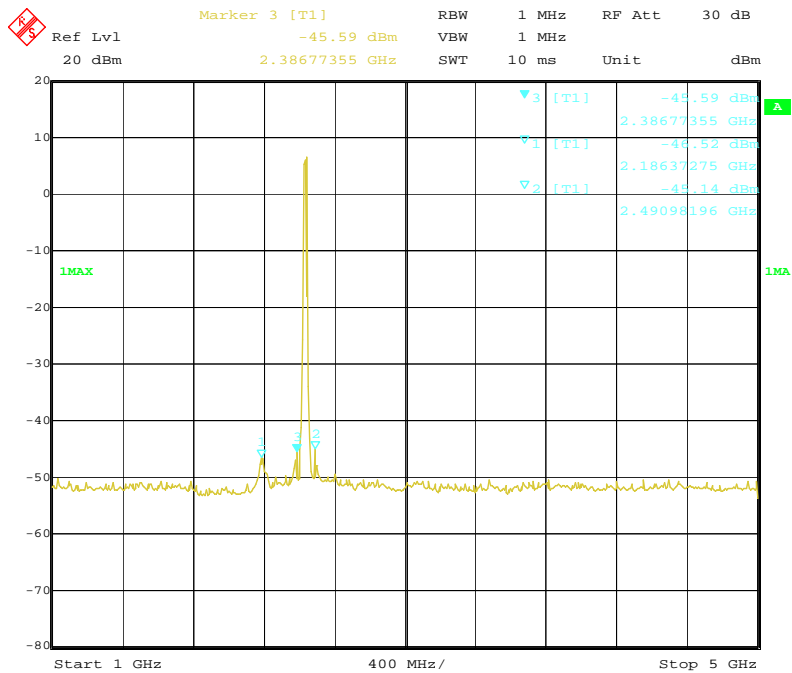
FCC ID: NAM4780621

Middle Channel 2437MHz-802.11g mode with 54Mbps data rate for 20MHz Bandwidth:

30MHz to 1GHz

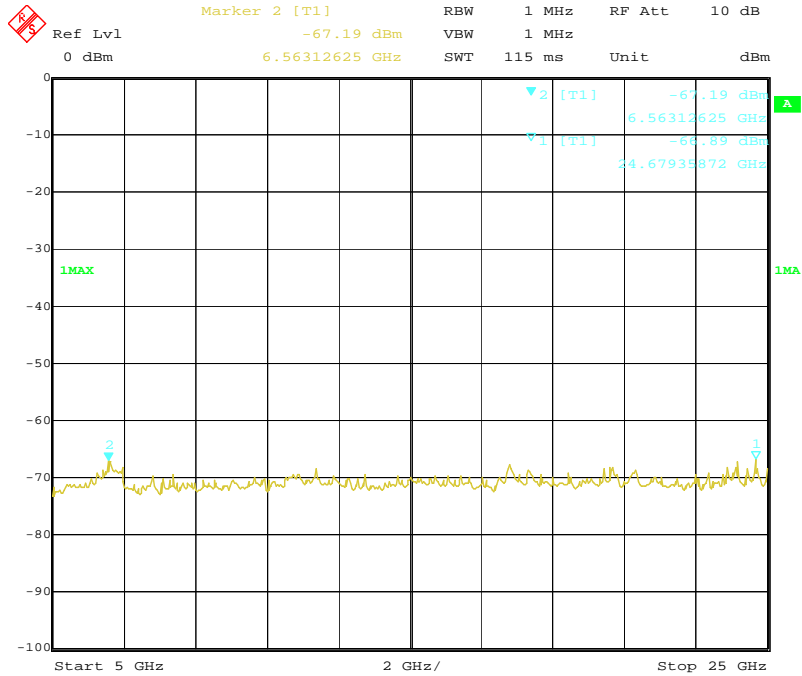


1G to 5GHz



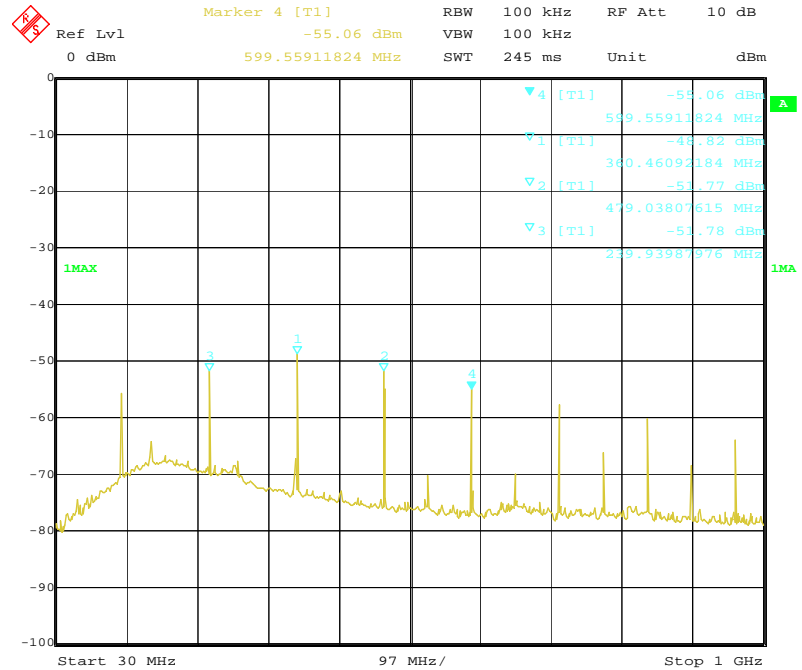


5G to 25GHz



Highest Channel 2462MHz-802.11g mode with 54Mbps data rate for 20MHz Bandwidth:

30MHz to 1GHz





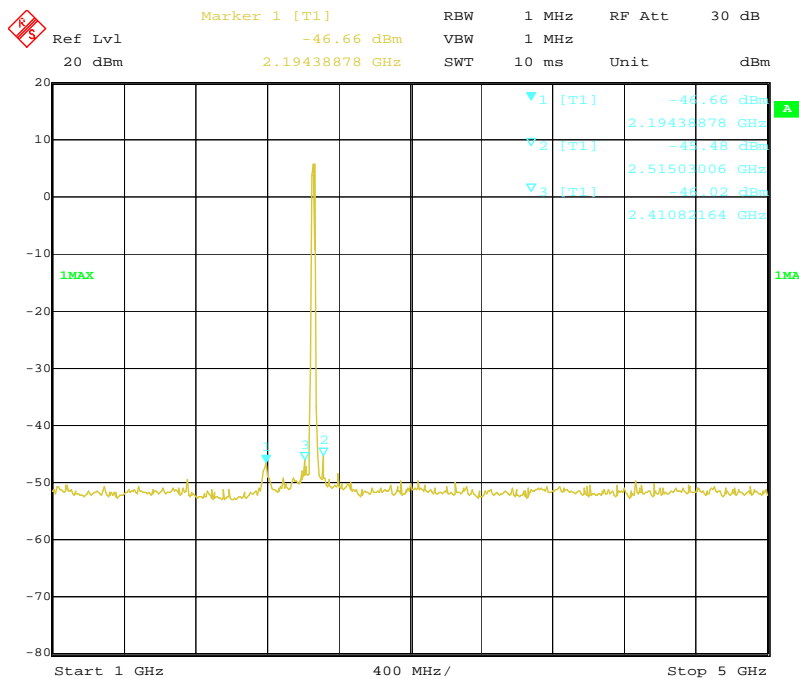
# SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09080241401

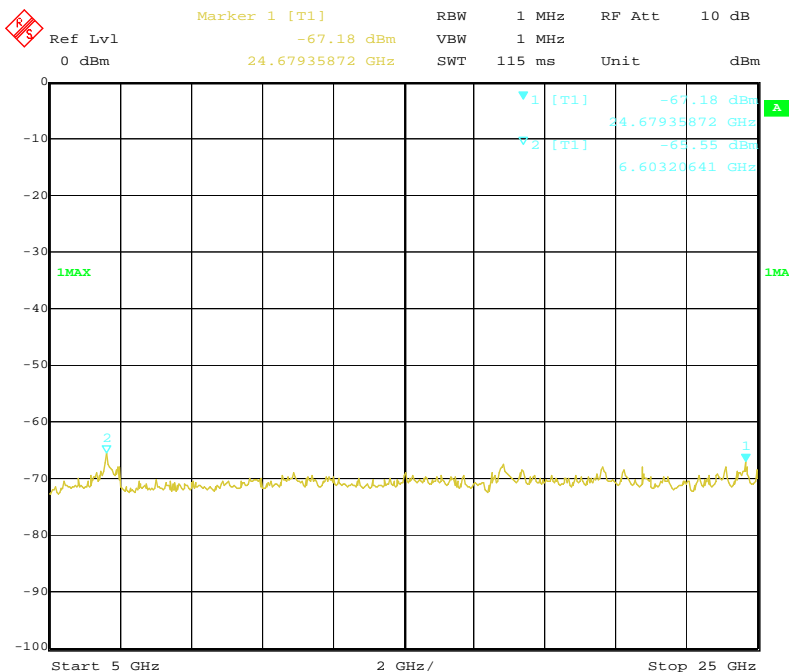
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FCC ID: NAM4780621

## 1G to 5GHz



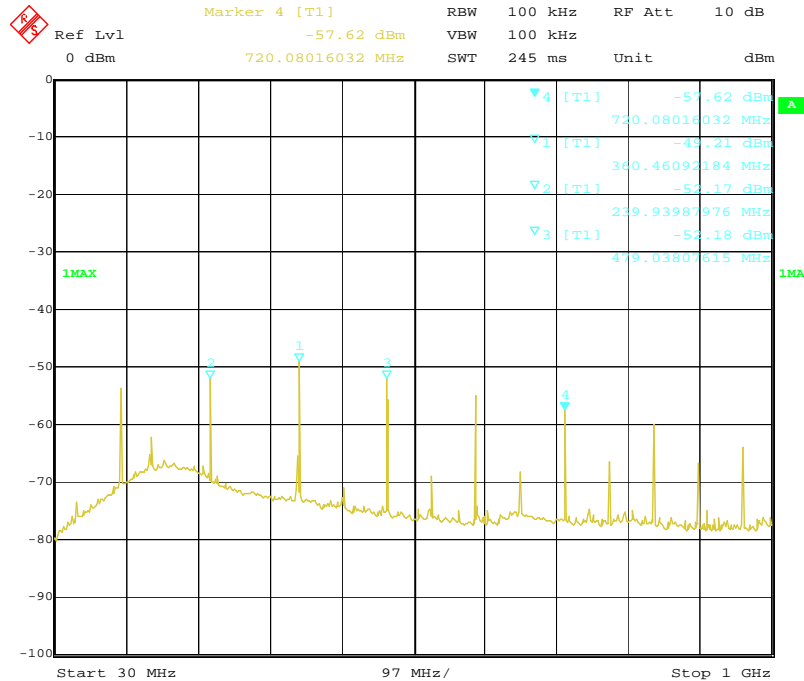
## 5G to 25GHz



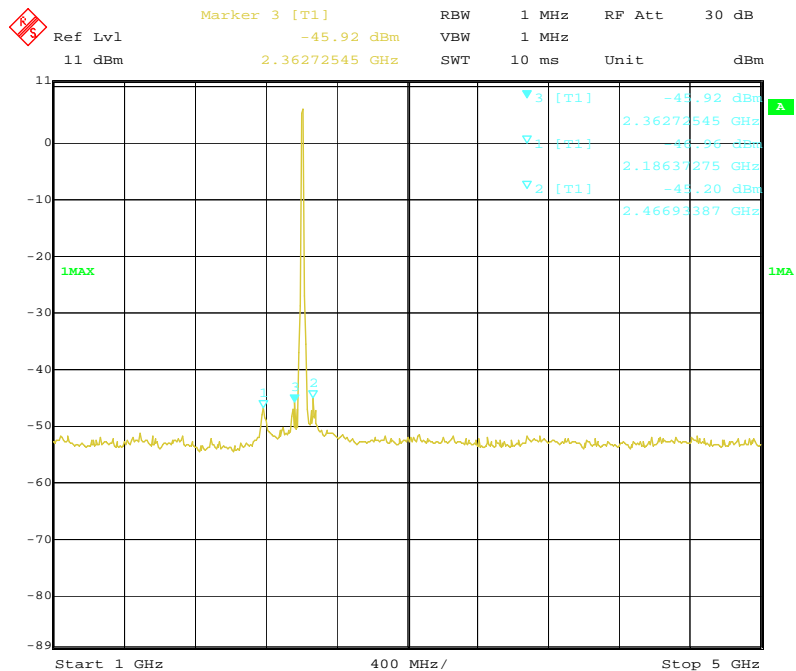


Lowest Channel 2412MHz-802.11n mode with 39Mbps data rate for 20MHz Bandwidth:

30M to 1GHz

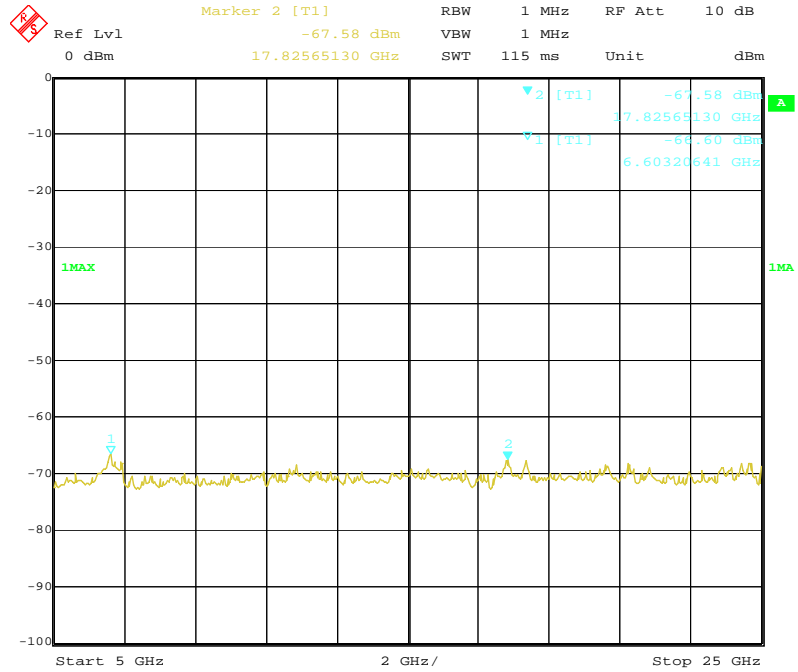


1G to 5GHz



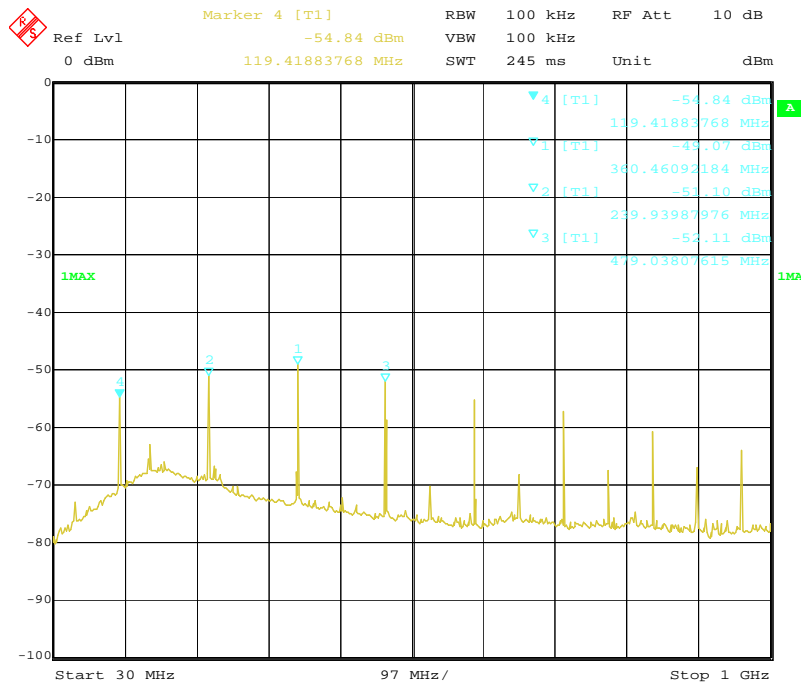


5G to 25GHz



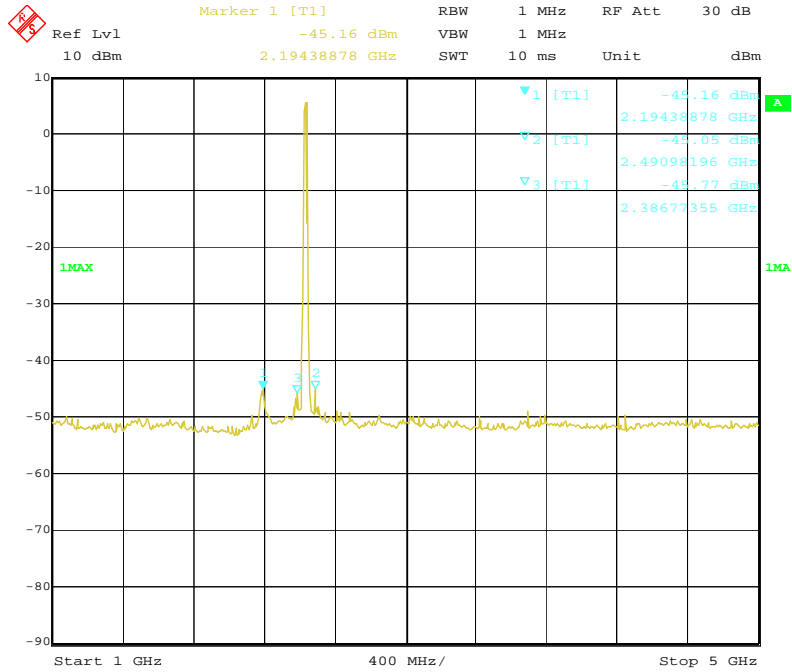
Middle Channel 2437MHz-802.11n mode with 58.5Mbps data rate for 20MHz Bandwidth:

30MHz to 1GHz

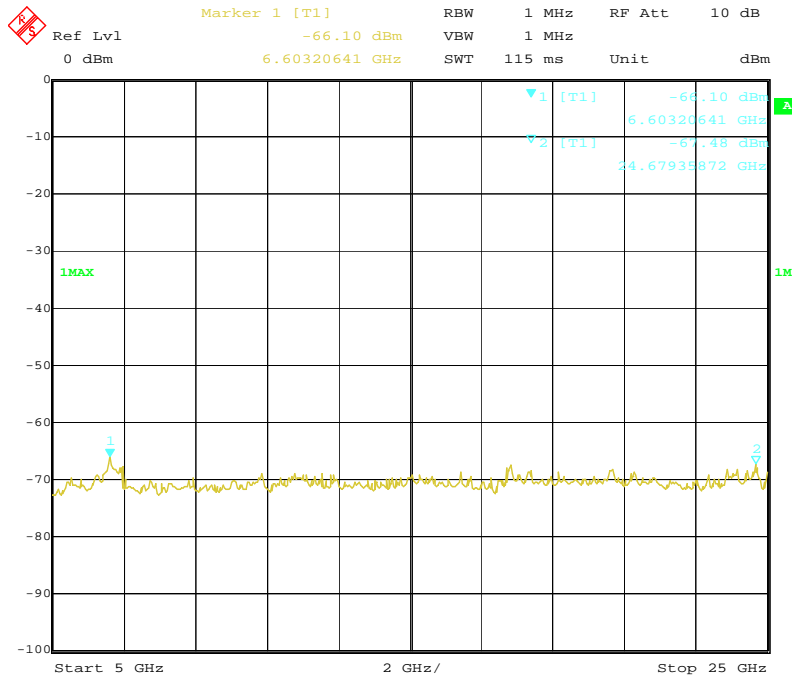




1G to 5GHz



5G to 25GHz







# SGS-CSTC Standards Technical Services Co., Ltd.

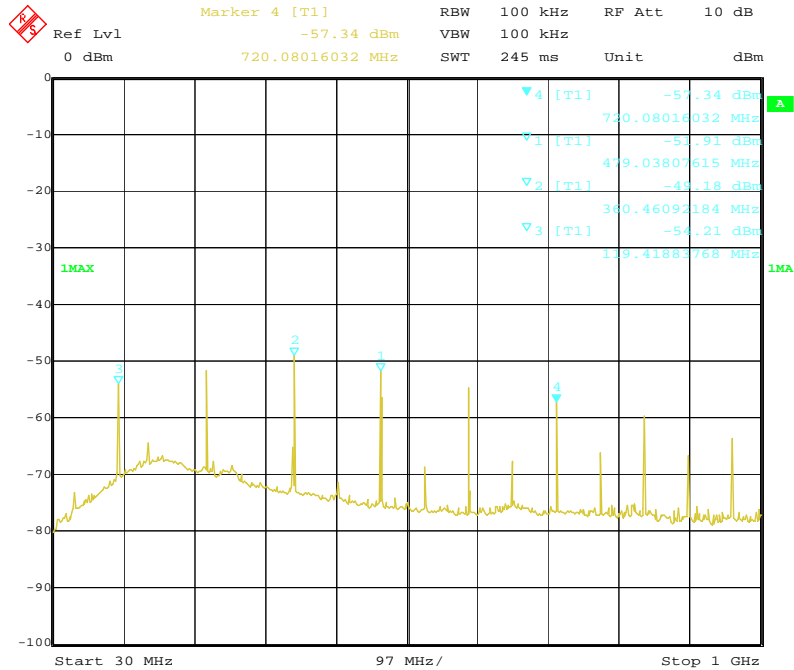
Report No.: GLEMO09080241401

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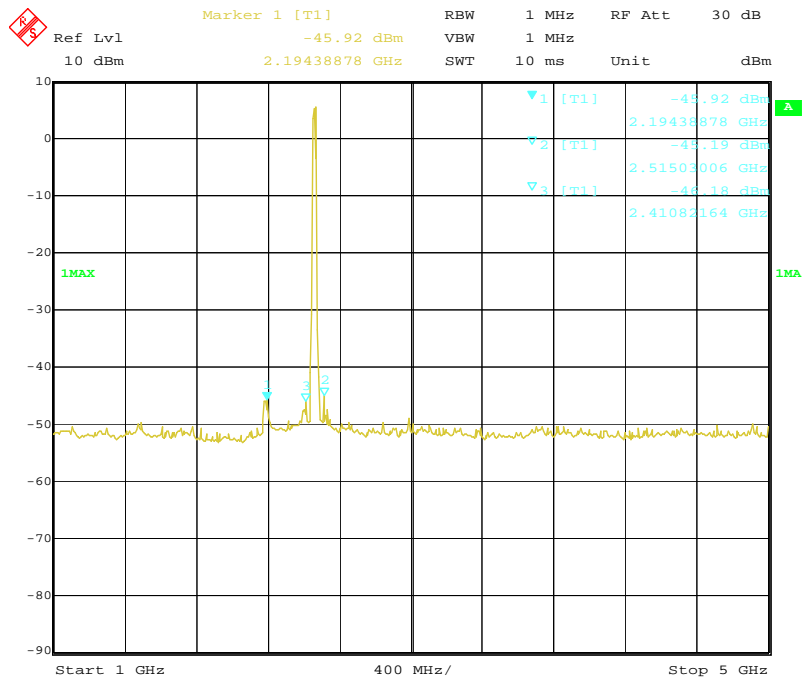
FCC ID: NAM4780621

Highest Channel 2462MHz-802.11n mode with 58.5Mbps data rate for 20MHz Bandwidth:

30MHz to 1GHz

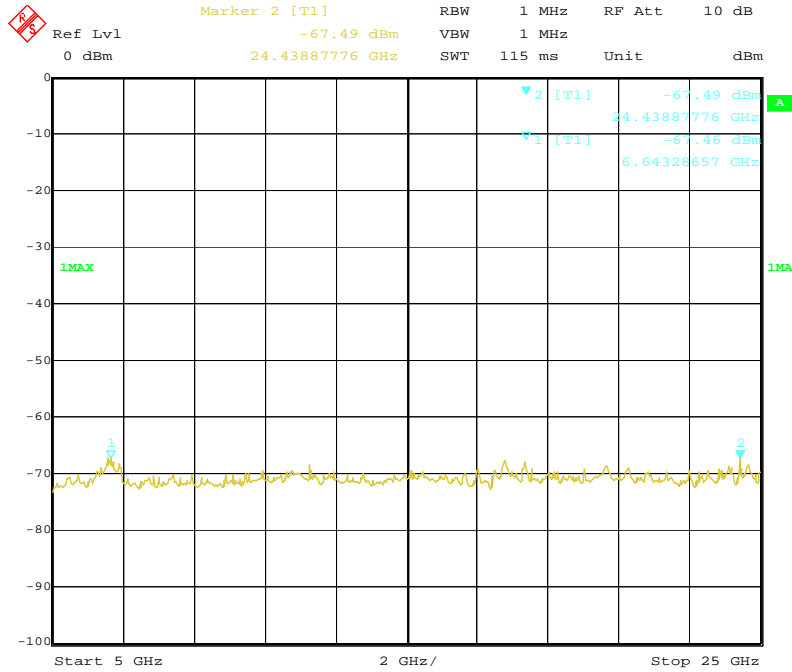


1G to 5GHz



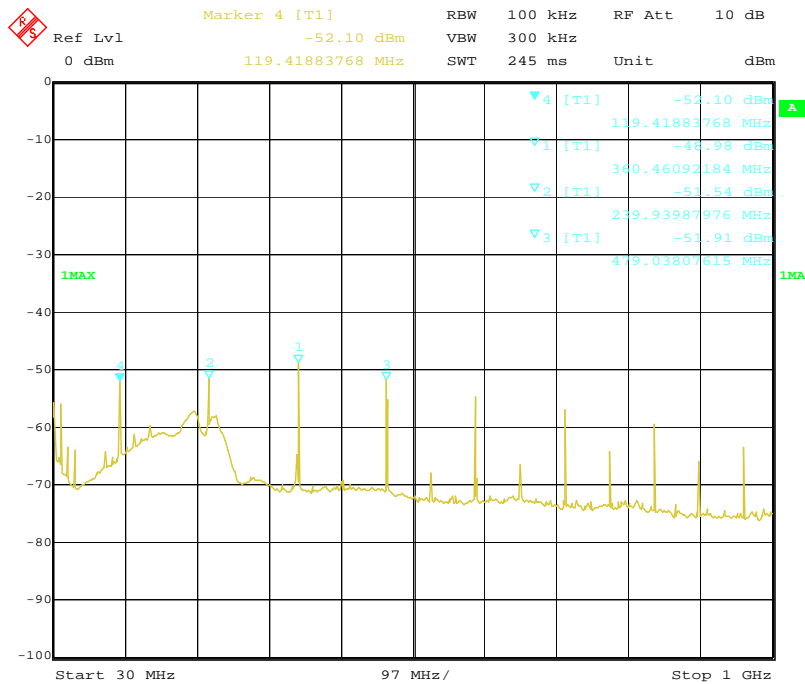


5G to 25GHz



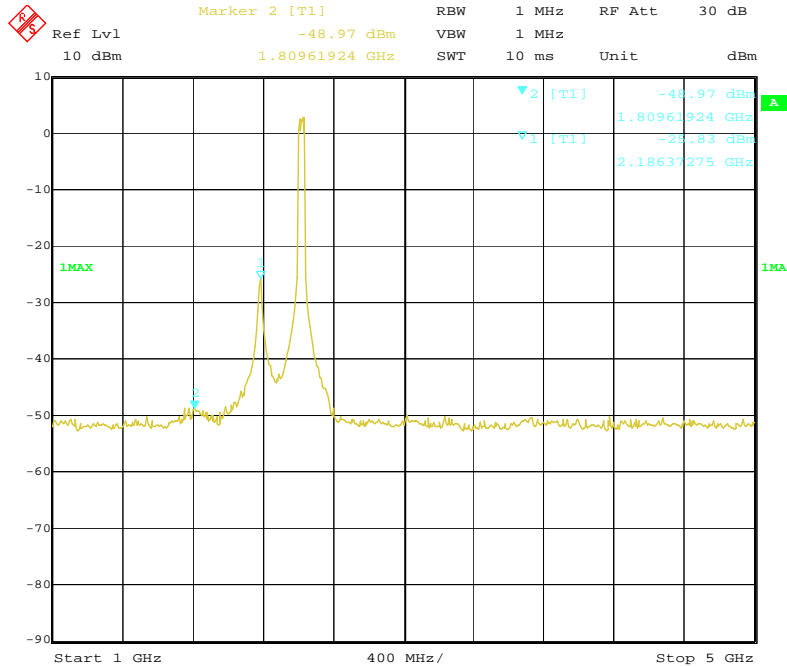
Lowest Channel 2422MHz-802.11n mode with 58.5Mbps data rate for 40MHz Bandwidth:

30M to 1GHz

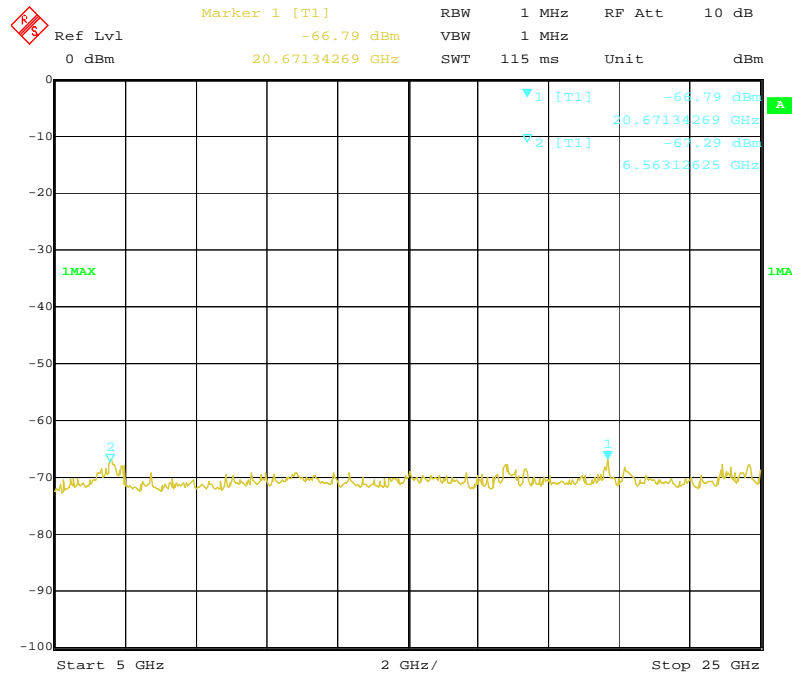




1G to 5GHz



5G to 25GHz





# SGS-CSTC Standards Technical Services Co., Ltd.

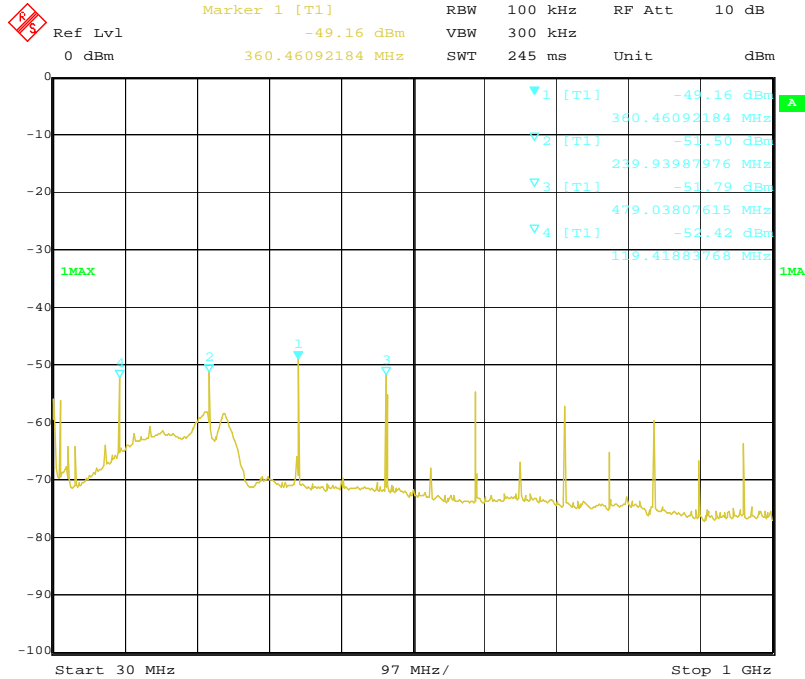
Report No.: GLEMO09080241401

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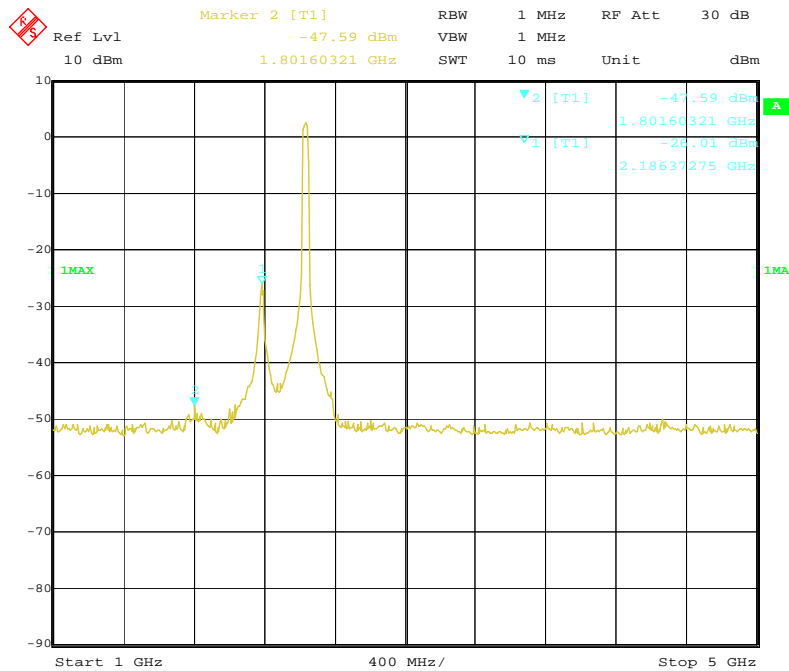
FCC ID: NAM4780621

Middle Channel 2437MHz-802.11n mode with 65Mbps data rate for 40MHz Bandwidth:

30MHz to 1GHz

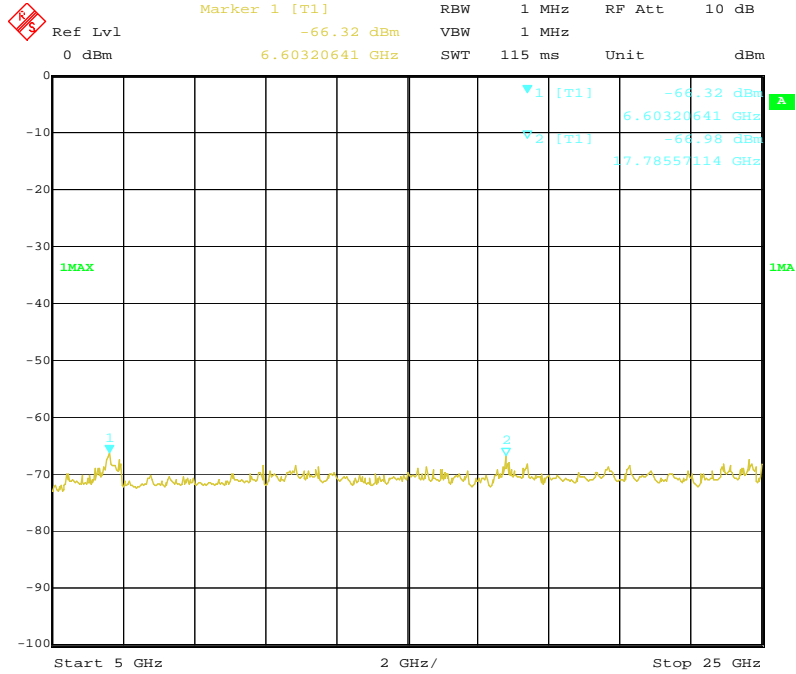


1G to 5GHz



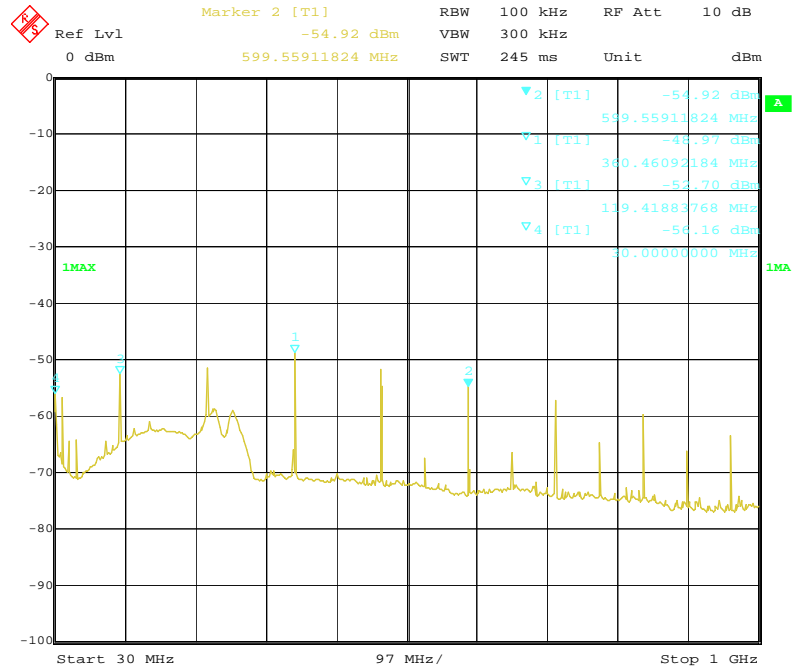


5G to 25GHz



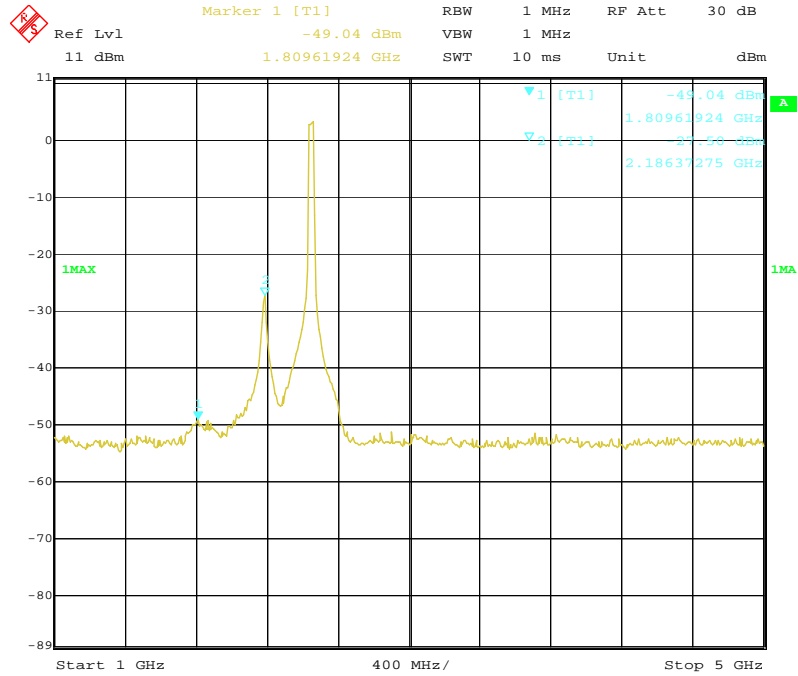
Highest Channel 2452MHz-802.11n mode with 58.5Mbps data rate for 40MHz Bandwidth:

30MHz to 1GHz

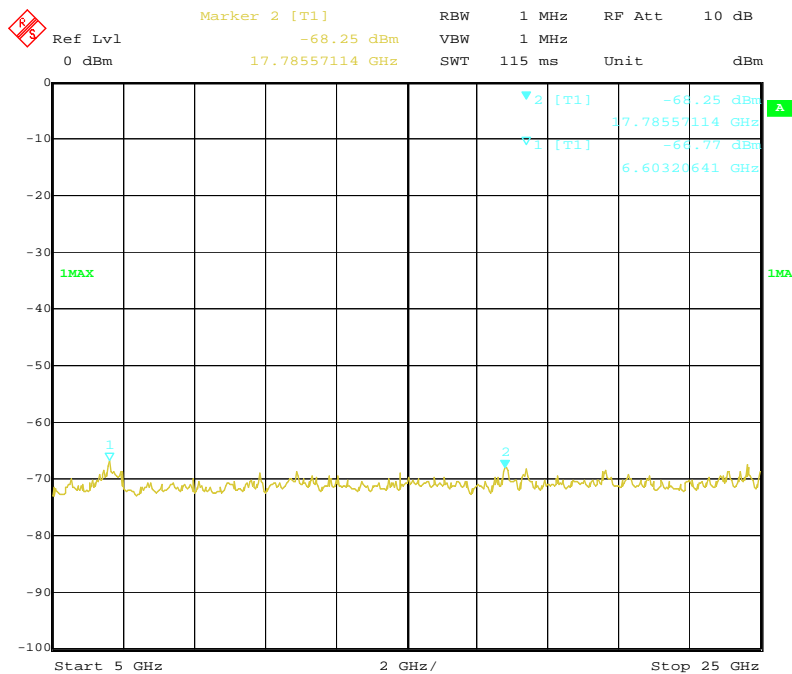




1G to 5GHz



5G to 25GHz



Test result: The unit does meet the FCC requirements.



## 7.8 Radiated Spurious Emissions

Test Requirement:	FCC Part 15.247(d) & 15.209
15.209 Limit:	40.0 dB $\mu$ V/m between 30MHz & 88MHz 43.5 dB $\mu$ V/m between 88MHz & 216MHz 46.0 dB $\mu$ V/m between 216MHz & 960MHz 54.0 dB $\mu$ V/m above 960MHz
15.247(d) limit:	(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, and provided the transmitter demonstrates compliance with the peak conducted power limits.
Test Method:	ANSI C63.4:2003 and KDB558074.
Test Date:	04 September 2009
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

**Test Procedure:** The procedure used was ANSI Standard C63.4-2003. The receiver was scanned from 30MHz to 25GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

From 30MHz to 1GHz, read the Quasi-Peak field strength of the emissions with receiver QP detector RBW=120KHz.

Above 1GHz, read the Peak field strength and Average field strength.

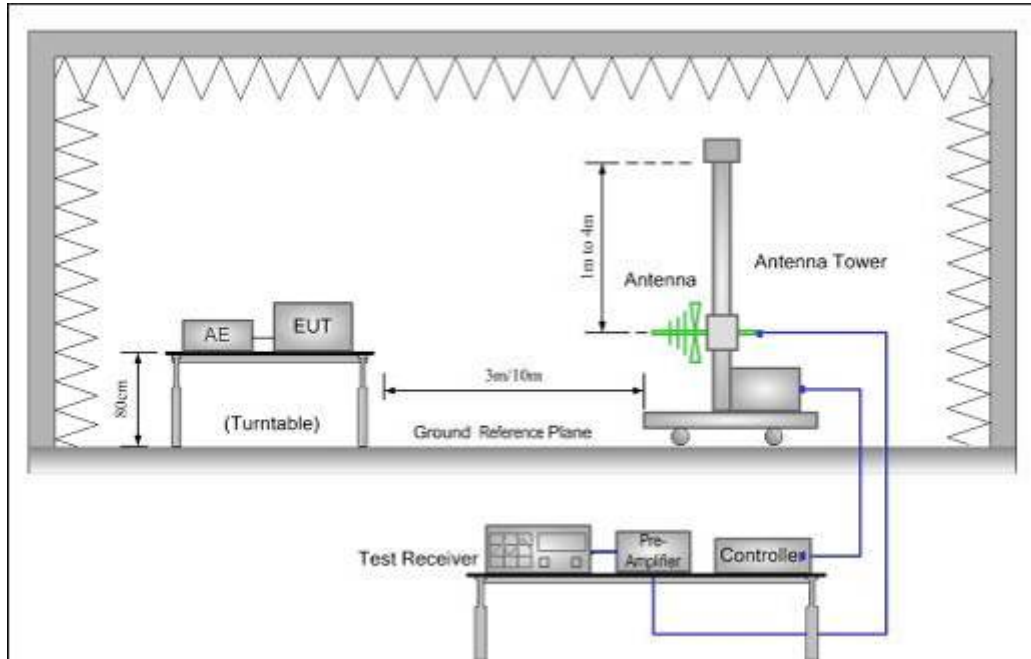
Read the Peak field strength through RBW=1MHz,VBW=3MHz in spectrum analyzer setting;

Read the Average field strength through RBW=1MHz,VBW=10Hz in spectrum analyzer setting;

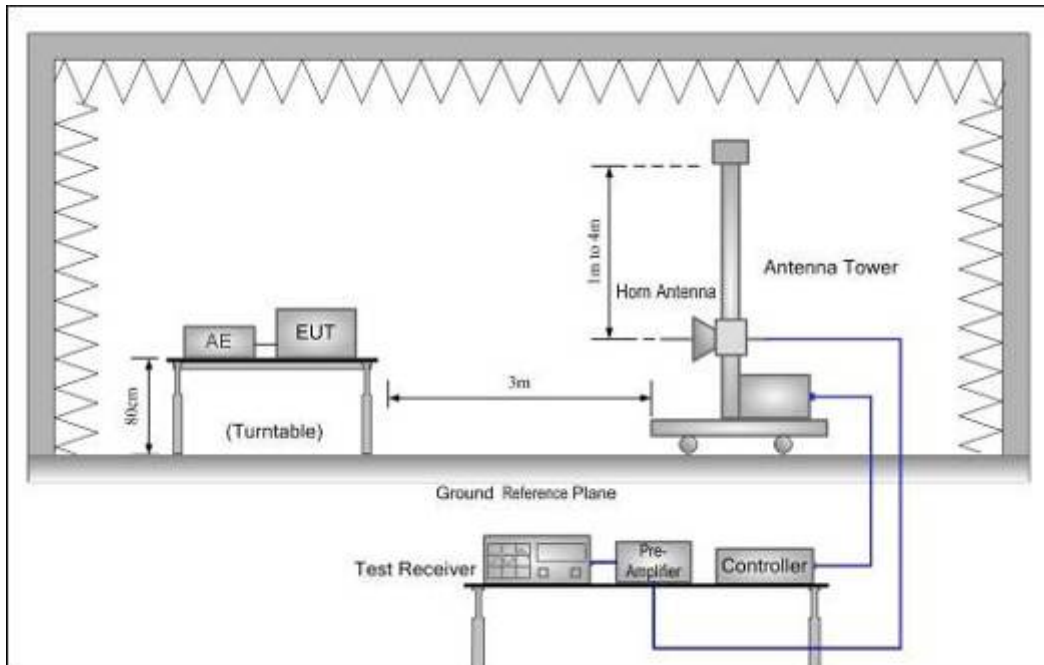
While maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the average field strength reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from  $20\log(\text{dwell time}/100 \text{ ms})$ , in an effort to demonstrate compliance with the 15.209 limit.

**Test Configuration:**

- 1) 30MHz to 1GHz emissions:



- 2) 1GHz to 40GHz emissions:







### 7.8.1 Harmonic and other spurious emissions

#### 7.8.1.1 Test in 802.11b mode lowest channel 2412MHz with 11Mbps data rate for 20MHz Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
128.94	12.26	1	24.4	50.71	39.57	43.5	Vertical
230.79	11.7	1.3	24.1	48.07	36.97	46	V
269.59	12.3	1.5	24	50.39	40.19	46	V
296.75	12.42	1.6	24.07	47.15	37.1	46	V
327.79	14	1.6	24.3	43.29	34.59	46	V
365.62	14.77	1.7	24.65	48.18	40	46	V
128.94	12.26	1	24.4	43.96	32.82	43.5	Horizontal
230.79	11.7	1.3	24.1	53.42	42.32	46	H
299.66	12.6	1.6	24.1	50.44	40.54	46	H
365.62	14.77	1.7	24.65	52.07	43.89	46	H
382.11	15.18	1.7	24.82	44.97	37.03	46	H
428.67	15.72	1.8	25.19	45.93	38.26	46	H

The field strength is calculated by adding the Antenna Factor. Cable Factor & Pre-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Pre-amplifier Factor.



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## 1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

### Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4824.000	33.18	6.1	36.33	62.88	65.83	74.00	Vertical
7236.000	36.09	7.37	36.13	59.91	67.24	74.00	V
9648.000	37.53	8.69	35.9	52.97	63.29	74.00	V
4824.000	33.18	6.1	36.33	62.88	65.83	74.00	Horizontal
7236.000	36.09	7.37	36.13	52.91	60.24	74.00	H
9648.000	37.53	8.69	35.9	50.97	61.29	74.00	H

### Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4824.000	33.18	6.1	36.33	42.18	45.13	54.00	Vertical
7236.000	36.09	7.37	36.13	38.91	46.24	54.00	V
9648.000	37.53	8.69	35.9	38.97	49.29	54.00	V
4824.000	33.18	6.1	36.33	41.88	44.83	54.00	Horizontal
7236.000	36.09	7.37	36.13	40.91	48.24	54.00	H
9648.000	37.53	8.69	35.9	29.97	40.29	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



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### 7.8.1.2 Test in 802.11b mode middle channel 2437MHz with 11Mbps data rate for 20MHz Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
269.59	12.3	1.5	24	50.39	40.19	46	Vertical
296.75	12.42	1.6	24.07	47.15	37.1	46	V
327.79	14	1.6	24.3	43.29	34.59	46	V
365.62	14.77	1.7	24.65	48.18	40	46	V
413.15	16.32	1.8	25.1	38.89	31.91	46	V
428.67	15.72	1.8	25.19	46.61	38.94	46	V
299.66	12.6	1.6	24.1	50.44	40.54	46	Horizontal
365.62	14.77	1.7	24.65	52.07	43.89	46	H
382.11	15.18	1.7	24.82	44.97	37.03	46	H
428.67	15.72	1.8	25.19	45.93	38.26	46	H
498.51	16.92	2	25.4	45.02	38.54	46	H
525.67	17.22	2	25.44	43.13	36.91	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	45.6	65.41	74.00	Vertical
7311.000	36.13	7.62	36.18	57.75	65.32	74.00	V
9748.000	37.53	8.69	35.9	53.7	64.02	74.00	V
4874.000	50.73	33.78	6.5	40.3	60.11	74.00	Horizontal
7311.000	36.13	7.62	36.18	56.66	66.41	74.00	H
9748.000	37.53	8.69	35.9	54.6	63.12	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	25.19	45.00	54.00	Vertical
7311.000	36.13	7.62	36.18	27.43	35.00	54.00	V
9748.000	37.53	8.69	35.9	23.8	34.12	54.00	V
4874.000	50.73	33.78	6.5	22.3	42.11	54.00	Horizontal
7311.000	36.13	7.62	36.18	30.39	40.14	54.00	H
9748.000	37.53	8.69	35.9	24.48	33.00	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



**7.8.1.3 Test in 802.11b mode highest channel 2462MHz with 11Mbps data rate for 20MHz Bandwidth:**

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
498.51	16.92	2	25.4	45.02	38.54	46	Vertical
525.67	17.22	2	25.44	43.13	36.91	46	V
564.47	18.15	2.1	25.45	41.63	36.43	46	V
598.42	18.38	2.2	25.5	42.07	37.15	46	V
622.67	18.57	2.3	25.4	43.66	39.13	46	V
630.43	18.5	2.3	25.4	40.07	35.47	46	V
428.67	15.72	1.8	25.19	46.61	38.94	46	Horizontal
471.35	16.62	1.9	25.31	40.21	33.42	46	H
497.54	16.93	2	25.4	44.16	37.69	46	H
528.58	17.28	2	25.41	41.33	35.2	46	H
563.5	18.16	2.1	25.44	40.36	35.18	46	H
595.51	18.35	2.1	25.5	39.28	34.23	46	H

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.



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## 1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

### Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.000	34.09	6.6	35.8	60.8	65.69	74.00	Vertical
7386.000	36.51	7.09	36.07	54.28	61.81	74.00	V
9848.000	37.44	8.56	35.9	53.27	63.37	74.00	V
4924.000	34.09	6.6	35.8	60.76	65.65	74.00	Horizontal
7386.000	36.51	7.09	36.07	54.08	61.61	74.00	H
9848.000	37.44	8.56	35.9	53.00	63.10	74.00	H

### Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.000	34.09	6.6	35.8	40.61	45.50	54.00	Vertical
7386.000	36.51	7.09	36.07	23.67	41.22	54.00	V
9848.000	37.44	8.56	35.9	23.01	33.12	54.00	V
4924.000	34.09	6.6	35.8	38.42	43.31	54.00	Horizontal
7386.000	36.51	7.09	36.07	22.58	40.13	54.00	H
9848.000	37.44	8.56	35.9	24.91	35.02	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



**7.8.1.4 Test in 802.11g mode lowest channel 2412MHz with 54Mbps data rate for 20MHz Bandwidth:**

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
327.79	14	1.6	24.3	43.29	34.59	46	Vertical
365.62	14.77	1.7	24.65	48.18	40	46	V
413.15	16.32	1.8	25.1	38.89	31.91	46	V
428.67	15.72	1.8	25.19	46.61	38.94	46	V
471.35	16.62	1.9	25.31	40.21	33.42	46	V
497.54	16.93	2	25.4	44.16	37.69	46	V
498.51	16.92	2	25.4	45.02	38.54	46	Horizontal
525.67	17.22	2	25.44	43.13	36.91	46	H
564.47	18.15	2.1	25.45	41.63	36.43	46	H
598.42	18.38	2.2	25.5	42.07	37.15	46	H
622.67	18.57	2.3	25.4	43.66	39.13	46	H
498.51	16.92	2	25.4	45.02	38.54	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4824.000	33.18	6.1	36.33	62.38	65.53	74.00	Vertical
7236.000	36.09	7.37	36.13	59.71	67.04	74.00	V
9648.000	37.53	8.69	35.9	52.77	63.09	74.00	V
4824.000	33.18	6.1	36.33	62.85	65.80	74.00	Horizontal
7236.000	36.09	7.37	36.13	52.87	60.20	74.00	H
9648.000	37.53	8.69	35.9	50.17	60.49	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4824.000	33.18	6.1	36.33	42.05	45.00	54.00	Vertical
7236.000	36.09	7.37	36.13	38.82	46.15	54.00	V
9648.000	37.53	8.69	35.9	38.75	49.07	54.00	V
4824.000	33.18	6.1	36.33	41.55	44.50	54.00	Horizontal
7236.000	36.09	7.37	36.13	40.90	48.23	54.00	H
9648.000	37.53	8.69	35.9	29.07	39.39	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.





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## 7.8.1.5 Test in 802.11g mode middle channel 2437MHz with 54Mbps data rate for 20MHz Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
630.43	18.5	2.3	25.4	39.03	34.43	46	Vertical
700.27	19.1	2.4	25.3	40.27	36.47	46	V
745.86	19.66	2.4	25.44	38.78	35.4	46	V
797.27	19.73	2.5	25.3	37.77	34.7	46	V
815.7	20.14	2.5	25.3	37.8	35.14	46	V
828.31	20.3	2.5	25.3	39.04	36.54	46	V
622.67	18.57	2.3	25.4	43.66	39.13	46	Horizontal
630.43	18.5	2.3	25.4	40.07	35.47	46	H
699.3	19.07	2.4	25.32	44.29	40.44	46	H
761.38	19.81	2.5	25.3	42.74	39.75	46	H
788.54	19.78	2.5	25.3	42.8	39.78	46	H
828.31	20.3	2.5	25.3	43.45	40.95	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	46.7	66.51	74.00	Vertical
7311.000	36.13	7.62	36.18	57.80	65.82	74.00	V
9748.000	37.53	8.69	35.9	53.9	64.22	74.00	V
4874.000	50.73	33.78	6.5	40.5	60.31	74.00	Horizontal
7311.000	36.13	7.62	36.18	56.86	66.61	74.00	H
9748.000	37.53	8.69	35.9	54.61	63.13	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	26.00	46.81	54.00	Vertical
7311.000	36.13	7.62	36.18	28.43	36.00	54.00	V
9748.000	37.53	8.69	35.9	23.60	33.92	54.00	V
4874.000	50.73	33.78	6.5	22.33	42.14	54.00	Horizontal
7311.000	36.13	7.62	36.18	30.30	40.05	54.00	H
9748.000	37.53	8.69	35.9	24.28	33.80	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



**7.8.1.6 Test in 802.11g mode highest channel 2462MHz with 6Mbps data rate for 20MHz Bandwidth:**

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
528.58	17.28	2	25.41	41.33	35.2	46	Vertical
563.5	18.16	2.1	25.44	40.36	35.18	46	V
595.51	18.35	2.1	25.5	39.28	34.23	46	V
622.67	18.57	2.3	25.4	45.16	40.63	46	V
630.43	18.5	2.3	25.4	39.03	34.43	46	V
700.27	19.1	2.4	25.3	40.27	36.47	46	V
428.67	15.72	1.8	25.19	45.93	38.26	46	Horizontal
498.51	16.92	2	25.4	45.02	38.54	46	H
525.67	17.22	2	25.44	43.13	36.91	46	H
564.47	18.15	2.1	25.45	41.63	36.43	46	H
598.42	18.38	2.2	25.5	42.07	37.15	46	H
622.67	18.57	2.3	25.4	43.66	39.13	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.000	34.09	6.6	35.8	61.11	66.00	74.00	Vertical
7386.000	36.51	7.09	36.07	54.27	61.80	74.00	V
9848.000	37.44	8.56	35.9	52.16	62.26	74.00	V
4924.000	34.09	6.6	35.8	61.85	66.65	74.00	Horizontal
7386.000	36.51	7.09	36.07	53.47	61.00	74.00	H
9848.000	37.44	8.56	35.9	54.11	64.21	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.000	34.09	6.6	35.8	41.11	46.00	54.00	Vertical
7386.000	36.51	7.09	36.07	24.76	42.31	54.00	V
9848.000	37.44	8.56	35.9	23.10	33.21	54.00	V
4924.000	34.09	6.6	35.8	38.00	42.89	54.00	Horizontal
7386.000	36.51	7.09	36.07	22.69	40.24	54.00	H
9848.000	37.44	8.56	35.9	24.10	34.21	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



7.8.1.7 Test in 802.11n mode lowest channel 2412MHz with 39Mbps data rate for 20MHz Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
365.62	48.18	14.77	1.7	24.65	40	46	Vertical
413.15	38.89	16.32	1.8	25.1	31.91	46	V
428.67	46.61	15.72	1.8	25.19	38.94	46	V
471.35	40.21	16.62	1.9	25.31	33.42	46	V
497.54	44.16	16.93	2	25.4	37.69	46	V
528.58	41.33	17.28	2	25.41	35.2	46	V
428.67	45.93	15.72	1.8	25.19	38.26	46	Horizontal
498.51	45.02	16.92	2	25.4	38.54	46	H
525.67	43.13	17.22	2	25.44	36.91	46	H
564.47	41.63	18.15	2.1	25.45	36.43	46	H
598.42	42.07	18.38	2.2	25.5	37.15	46	H
622.67	43.66	18.57	2.3	25.4	39.13	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4824.000	33.18	6.1	36.33	57.88	60.83	74.00	Vertical
7236.000	36.09	7.37	36.13	51.91	59.24	74.00	V
9648.000	37.53	8.69	35.9	32.97	43.29	74.00	V
4824.000	33.18	6.1	36.33	57.68	60.63	74.00	Horizontal
7236.000	36.09	7.37	36.13	50.91	58.24	74.00	H
9648.000	37.53	8.69	35.9	30.98	41.30	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4824.000	33.18	6.1	36.33	37.07	40.02	54.00	Vertical
7236.000	36.09	7.37	36.13	33.81	41.14	54.00	V
9648.000	37.53	8.69	35.9	28.88	39.20	54.00	V
4824.000	33.18	6.1	36.33	40.80	40.75	54.00	Horizontal
7236.000	36.09	7.37	36.13	32.81	40.14	54.00	H
9648.000	37.53	8.69	35.9	19.90	30.22	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



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## 7.8.1.8 Test in 802.11n mode middle channel 2437MHz with 58.5Mbps data rate for 20MHz

### Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
622.67	18.57	2.3	25.4	45.16	40.63	46	Vertical
630.43	18.5	2.3	25.4	39.03	34.43	46	V
700.27	19.1	2.4	25.3	40.27	36.47	46	V
745.86	19.66	2.4	25.44	38.78	35.4	46	V
797.27	19.73	2.5	25.3	37.77	34.7	46	V
815.7	20.14	2.5	25.3	37.8	35.14	46	V
598.42	18.38	2.2	25.5	42.07	37.15	46	Horizontal
622.67	18.57	2.3	25.4	43.66	39.13	46	H
630.43	18.5	2.3	25.4	40.07	35.47	46	H
699.3	19.07	2.4	25.32	44.29	40.44	46	H
761.38	19.81	2.5	25.3	42.74	39.75	46	H
788.54	19.78	2.5	25.3	42.8	39.78	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	45.44	65.25	74.00	Vertical
7311.000	36.13	7.62	36.18	57.43	65.00	74.00	V
9748.000	37.53	8.69	35.9	50.58	61.00	74.00	V
4874.000	50.73	33.78	6.5	41.43	61.24	74.00	Horizontal
7311.000	36.13	7.62	36.18	55.55	65.30	74.00	H
9748.000	37.53	8.69	35.9	50.61	59.13	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	20.30	40.11	54.00	Vertical
7311.000	36.13	7.62	36.18	27.43	35.00	54.00	V
9748.000	37.53	8.69	35.9	19.68	30.00	54.00	V
4874.000	50.73	33.78	6.5	19.19	39.00	54.00	Horizontal
7311.000	36.13	7.62	36.18	28.39	38.14	54.00	H
9748.000	37.53	8.69	35.9	28.62	34.14	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.





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## 7.8.1.9 Test in 802.11n mode highest channel 2462MHz with 58.5Mbps data rate for 20MHz

### Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
230.79	11.7	1.3	24.1	48.07	36.97	46	Vertical
269.59	12.3	1.5	24	50.39	40.19	46	V
296.75	12.42	1.6	24.07	47.15	37.1	46	V
327.79	14	1.6	24.3	43.29	34.59	46	V
365.62	14.77	1.7	24.65	48.18	40	46	V
413.15	16.32	1.8	25.1	38.89	31.91	46	V
230.79	11.7	1.3	24.1	53.42	42.32	46	Horizontal
299.66	12.6	1.6	24.1	50.44	40.54	46	H
365.62	14.77	1.7	24.65	52.07	43.89	46	H
382.11	15.18	1.7	24.82	44.97	37.03	46	H
428.67	15.72	1.8	25.19	45.93	38.26	46	H
498.51	16.92	2	25.4	45.02	38.54	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.000	34.09	6.6	35.8	61.29	66.18	74.00	Vertical
7386.000	36.51	7.09	36.07	54.67	62.20	74.00	V
9848.000	37.44	8.56	35.9	53.62	63.72	74.00	V
4924.000	34.09	6.6	35.8	61.08	65.97	74.00	Horizontal
7386.000	36.51	7.09	36.07	54.91	62.44	74.00	H
9848.000	37.44	8.56	35.9	53.28	63.38	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.000	34.09	6.6	35.8	41.54	46.43	54.00	Vertical
7386.000	36.51	7.09	36.07	23.83	41.38	54.00	V
9848.000	37.44	8.56	35.9	23.73	33.84	54.00	V
4924.000	34.09	6.6	35.8	39.06	43.95	54.00	Horizontal
7386.000	36.51	7.09	36.07	23.51	41.06	54.00	H
9848.000	37.44	8.56	35.9	25.56	35.67	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



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## 7.8.1.10 Test in 802.11n mode lowest channel 2422MHz with 58.5Mbps data rate for 40MHz

### Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
327.79	14	1.6	24.3	43.29	34.59	46	Vertical
365.62	14.77	1.7	24.65	48.18	40	46	V
413.15	16.32	1.8	25.1	38.89	31.91	46	V
428.67	15.72	1.8	25.19	46.61	38.94	46	V
471.35	16.62	1.9	25.31	40.21	33.42	46	V
497.54	16.93	2	25.4	44.16	37.69	46	V
365.62	14.77	1.7	24.65	52.07	43.89	46	Horizontal
382.11	15.18	1.7	24.82	44.97	37.03	46	H
428.67	15.72	1.8	25.19	45.93	38.26	46	H
498.51	16.92	2	25.4	45.02	38.54	46	H
525.67	17.22	2	25.44	43.13	36.91	46	H
564.47	18.15	2.1	25.45	41.63	36.43	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4844.000	34.62	6.6	35.8	52.52	57.94	74.00	Vertical
7266.000	36.14	7.7	36.2	57.14	64.78	74.00	V
9688.000	37.55	8.73	35.9	53.49	63.87	74.00	V
4844.000	34.62	6.6	35.8	53.03	58.45	74.00	Horizontal
7266.000	36.14	7.7	36.2	56.99	64.63	74.00	H
9688.000	37.55	8.73	35.9	53.11	63.49	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4844.000	34.62	6.6	35.8	42.21	47.63	54.00	Vertical
7266.000	36.14	7.7	36.2	37.07	44.71	54.00	V
9688.000	37.55	8.73	35.9	33.27	43.65	54.00	V
4844.000	34.62	6.6	35.8	42.97	48.39	54.00	Horizontal
7266.000	36.14	7.7	36.2	36.48	44.12	54.00	H
9688.000	37.55	8.73	35.9	33.66	44.04	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



**7.8.1.11 Test in 802.11n mode middle channel 2437MHz with 65Mbps data rate for 40MHz Bandwidth:**

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
564.47	18.15	2.1	25.45	41.63	36.43	46	Vertical
598.42	18.38	2.2	25.5	42.07	37.15	46	V
622.67	18.57	2.3	25.4	43.66	39.13	46	V
630.43	18.5	2.3	25.4	40.07	35.47	46	V
699.3	19.07	2.4	25.32	44.29	40.44	46	V
761.38	19.81	2.5	25.3	42.74	39.75	46	V
497.54	16.93	2	25.4	44.16	37.69	46	Horizontal
528.58	17.28	2	25.41	41.33	35.2	46	H
563.5	18.16	2.1	25.44	40.36	35.18	46	H
595.51	18.35	2.1	25.5	39.28	34.23	46	H
622.67	18.57	2.3	25.4	45.16	40.63	46	H
630.43	18.5	2.3	25.4	39.03	34.43	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	45.98	65.79	74.00	Vertical
7311.000	36.13	7.62	36.18	58.34	65.91	74.00	V
9748.000	37.53	8.69	35.9	50.62	61.04	74.00	V
4874.000	50.73	33.78	6.5	41.62	61.43	74.00	Horizontal
7311.000	36.13	7.62	36.18	55.84	65.59	74.00	H
9748.000	37.53	8.69	35.9	51.24	59.76	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.000	50.73	33.78	6.5	20.96	40.77	54.00	Vertical
7311.000	36.13	7.62	36.18	28.01	35.58	54.00	V
9748.000	37.53	8.69	35.9	20.65	30.97	54.00	V
4874.000	50.73	33.78	6.5	19.73	39.54	54.00	Horizontal
7311.000	36.13	7.62	36.18	28.91	38.66	54.00	H
9748.000	37.53	8.69	35.9	28.72	34.24	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.



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## 7.8.1.12 Test in 802.11n mode highest channel 2452MHz with 58.5Mbps data rate for 40MHz

### Bandwidth:

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
700.27	19.1	2.4	25.3	40.27	36.47	46	Vertical
745.86	19.66	2.4	25.44	38.78	35.4	46	V
797.27	19.73	2.5	25.3	37.77	34.7	46	V
815.7	20.14	2.5	25.3	37.8	35.14	46	V
828.31	20.3	2.5	25.3	39.04	36.54	46	V
700.27	19.1	2.4	25.3	40.27	36.47	46	V
622.67	18.57	2.3	25.4	43.66	39.13	46	Horizontal
630.43	18.5	2.3	25.4	40.07	35.47	46	H
699.3	19.07	2.4	25.32	44.29	40.44	46	H
761.38	19.81	2.5	25.3	42.74	39.75	46	H
788.54	19.78	2.5	25.3	42.8	39.78	46	H
828.31	20.3	2.5	25.3	43.45	40.95	46	H

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.



1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4904.000	34.09	6.6	35.8	52.06	56.95	74.00	Vertical
7356.000	36.47	7.18	35.87	54.95	62.73	74.00	V
9808.000	36.41	8.51	35.39	53.79	63.32	74.00	V
4904.000	34.09	6.6	35.8	52.98	57.87	74.00	Horizontal
7356.000	36.47	7.18	35.87	55.97	63.74	74.00	H
9808.000	36.41	8.51	35.39	53.86	63.38	74.00	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4904.000	34.09	6.6	35.8	37.61	43.50	54.00	Vertical
7356.000	36.47	7.18	35.87	25.53	33.32	54.00	V
9808.000	36.41	8.51	35.39	24.21	33.74	54.00	V
4904.000	34.09	6.6	35.8	33.36	38.26	54.00	Horizontal
7356.000	36.47	7.18	35.87	26.79	34.56	54.00	H
9808.000	36.41	8.51	35.39	24.43	33.95	54.00	H

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.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.





Remark:

- 1). N/A: For this intentional radiator operates below 25 GHz. The spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 3<sup>rd</sup> harmonic.
- 2). As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.
- 3). The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

**Test result: The unit does meet the FCC requirements.**



**7.8.2 Radiated Emissions which fall in the restricted bands**

Test Requirement: Section 15.247(d)  
 In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Test Method: ANSI 63.4:2003

Test Date: 04 September 2009

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit: 40.0 dB $\mu$ V/m between 30MHz & 88MHz;  
 43.5 dB $\mu$ V/m between 88MHz & 216MHz;  
 46.0 dB $\mu$ V/m between 216MHz & 960MHz;  
 54.0 dB $\mu$ V/m above 960MHz.

Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section. only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	
13.36 - 13.41	322 - 335.4		



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## Test Result:

### Vertical:

#### Test in 802.11b mode lowest channel 2412MHz with 11Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	50.50	31.20	48.73	29.43
2310.000	28.32	4.23	37.03	51.00	32.45	46.52	27.97
2350.000	28.42	4.30	37.10	50.40	31.50	46.02	27.12
2490.000	28.83	4.40	37.00	50.90	32.10	47.13	28.33
2500.000	28.83	4.40	37.00	51.77	32.25	48.00	28.48
2483.500	28.74	4.80	34.73	52.4	34.00	51.21	32.81

#### Test in 802.11b mode middle channel 2437MHz with 11Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	51.45	32.15	49.68	30.38
2310.000	28.32	4.23	37.03	51.10	32.54	46.62	28.06
2350.000	28.42	4.30	37.10	50.30	31.48	45.92	27.1
2490.000	28.83	4.40	37.00	51.00	32.68	47.23	28.91
2500.000	28.83	4.40	37.00	52.80	31.64	48.03	27.87
2483.500	28.74	4.80	34.73	52.69	34.02	51.50	32.83

#### Test in 802.11b mode highest channel 2462MHz with 11Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	51.56	33.14	49.79	31.37
2310.000	28.32	4.23	37.03	51.50	33.51	47.02	29.03
2350.000	28.42	4.30	37.10	51.13	31.98	46.75	27.60
2490.000	28.83	4.40	37.00	51.06	33.05	47.29	29.28
2500.000	28.83	4.40	37.00	53.25	32.45	48.48	28.68
2483.500	28.74	4.80	34.73	53.48	34.09	52.29	32.9

Remark: No any other emission which falls in restricted bands can be detected and be reported.



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### Test in 802.11g mode lowest channel 2412MHz with 54Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	51.81	32.63	50.04	30.86
2310.000	28.32	4.23	37.03	52.10	33.13	47.62	28.6
2350.000	28.42	4.30	37.10	52.39	33.84	48.01	29.46
2490.000	28.83	4.40	37.00	52.53	33.90	48.76	30.13
2500.000	28.83	4.40	37.00	53.09	34.84	49.32	31.07
2483.500	28.74	4.80	34.73	53.20	34.64	52.01	33.45

### Test in 802.11g mode middle channel 2437MHz with 54Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	52.20	32.86	50.43	31.09
2310.000	28.32	4.23	37.03	52.42	33.79	47.94	29.31
2350.000	28.42	4.30	37.10	52.80	33.97	48.42	29.59
2490.000	28.83	4.40	37.00	53.22	34.21	49.45	30.44
2500.000	28.83	4.40	37.00	54.09	34.57	50.32	30.80
2483.500	28.74	4.80	34.73	52.84	34.64	51.65	33.45

### Test in 802.11g mode highest channel 2462MHz with 54Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	51.98	32.84	50.21	31.07
2310.000	28.32	4.23	37.03	52.24	33.34	47.76	28.86
2350.000	28.42	4.30	37.10	53.06	33.59	48.68	29.21
2490.000	28.83	4.40	37.00	53.98	34.51	50.21	30.74
2500.000	28.83	4.40	37.00	54.69	35.30	50.92	31.53
2483.500	28.74	4.80	34.73	53.29	35.33	52.10	34.14

Remark: No any other emission which falls in restricted bands can be detected and be reported.



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**Test in 802.11n mode lowest channel 2412MHz with 39Mbps data rate for 20MHz Bandwidth:**

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	51.83	33.59	50.06	31.82
2310.000	28.32	4.23	37.03	52.39	34.50	47.91	30.02
2350.000	28.42	4.30	37.10	53.25	35.03	48.87	30.65
2490.000	28.83	4.40	37.00	53.98	35.34	50.21	31.57
2500.000	28.83	4.40	37.00	54.84	36.01	51.07	32.24
2483.500	28.74	4.80	34.73	53.89	34.99	52.70	33.80

**Test in 802.11n mode middle channel 2437MHz with 58.5Mbps data rate for 20MHz Bandwidth:**

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	52.75	33.22	50.98	31.45
2310.000	28.32	4.23	37.03	53.62	33.93	49.14	29.45
2350.000	28.42	4.30	37.10	53.62	33.97	49.24	29.59
2490.000	28.83	4.40	37.00	53.76	34.12	49.99	30.35
2500.000	28.83	4.40	37.00	53.81	34.94	50.04	31.17
2483.500	28.74	4.80	34.73	53.40	34.91	52.21	33.72

**Test in 802.11n mode highest channel 2462MHz with 58.5Mbps data rate for 20MHz Bandwidth:**

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	50.85	31.57	49.08	29.80
2310.000	28.32	4.23	37.03	51.64	31.74	47.16	27.26
2350.000	28.42	4.30	37.10	52.47	32.28	48.09	27.90
2490.000	28.83	4.40	37.00	53.14	32.91	49.37	29.14
2500.000	28.83	4.40	37.00	53.41	33.17	49.64	29.40
2483.500	28.74	4.80	34.73	53.04	34.44	51.85	33.25

Remark: No any other emission which falls in restricted bands can be detected and be reported.



Test in 802.11n mode lowest channel 2422MHz with 58.5Mbps data rate for 40MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	50.60	31.50	48.83	29.73
2310.000	28.32	4.23	37.03	51.40	32.07	46.92	27.59
2350.000	28.42	4.30	37.10	52.30	32.28	47.92	27.90
2490.000	28.83	4.40	37.00	52.45	33.07	48.68	29.30
2500.000	28.83	4.40	37.00	53.00	33.89	49.23	30.12
2483.500	28.74	4.80	34.73	52.75	34.51	51.56	33.32

Test in 802.11n mode middle channel 2437MHz with 65Mbps data rate for 40MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	51.27	31.41	49.50	29.64
2310.000	28.32	4.23	37.03	52.23	31.69	47.75	27.21
2350.000	28.42	4.30	37.10	52.58	32.07	48.20	27.69
2490.000	28.83	4.40	37.00	52.97	32.18	49.20	28.41
2500.000	28.83	4.40	37.00	53.04	32.75	49.27	28.98
2483.500	28.74	4.80	34.73	53.20	34.82	52.01	33.63

Test in 802.11n mode highest channel 2452MHz with 58.5Mbps data rate for 40MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	50.84	31.78	49.07	30.01
2310.000	28.32	4.23	37.03	51.79	32.54	47.31	28.06
2350.000	28.42	4.30	37.10	52.27	33.29	47.89	28.91
2490.000	28.83	4.40	37.00	53.03	34.21	49.26	30.44
2500.000	28.83	4.40	37.00	53.55	34.56	49.78	30.79
2483.500	28.74	4.80	34.73	52.47	34.77	51.28	33.58

Remark: No any other emission which falls in restricted bands can be detected and be reported.



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## Horizontal:

### Test in 802.11b mode lowest channel 2412MHz with 11Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	50.56	31.43	48.79	29.66
2310.000	28.32	4.23	37.03	51.67	32.45	47.19	27.97
2350.000	28.42	4.30	37.10	50.40	32.08	46.02	27.70
2490.000	28.83	4.40	37.00	51.73	32.89	47.96	29.12
2500.000	28.83	4.40	37.00	52.64	32.51	48.87	28.74
2483.500	28.74	4.80	34.73	53.03	34.15	51.84	32.96

### Test in 802.11b mode middle channel 2437MHz with 11Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	52.29	32.77	50.52	31.00
2310.000	28.32	4.23	37.03	67.19	33.22	62.71	28.74
2350.000	28.42	4.30	37.10	67.55	31.49	63.17	27.11
2490.000	28.83	4.40	37.00	67.45	33.12	63.68	29.35
2500.000	28.83	4.40	37.00	67.49	32.20	63.72	28.43
2483.500	28.74	4.80	34.73	52.69	34.71	51.50	33.52

### Test in 802.11b mode highest channel 2462MHz with 11Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	52.14	33.20	50.37	31.43
2310.000	28.32	4.23	37.03	67.05	32.69	62.57	28.21
2350.000	28.42	4.30	37.10	67.52	33.71	63.14	29.33
2490.000	28.83	4.40	37.00	67.96	34.20	64.19	30.43
2500.000	28.83	4.40	37.00	67.01	35.00	63.24	31.23
2483.500	28.74	4.80	34.73	54.21	34.34	53.02	33.15

Remark: No any other emission which falls in restricted bands can be detected and be reported.



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## Test in 802.11g mode lowest channel 2412MHz with 54Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	52.58	32.73	50.81	30.96
2310.000	28.32	4.23	37.03	52.93	33.46	48.45	28.93
2350.000	28.42	4.30	37.10	52.96	33.93	48.58	29.55
2490.000	28.83	4.40	37.00	52.92	34.11	49.15	30.34
2500.000	28.83	4.40	37.00	53.10	35.13	49.33	31.36
2483.500	28.74	4.80	34.73	53.33	35.40	52.14	34.21

## Test in 802.11g mode middle channel 2437MHz with 54Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	52.66	33.42	50.89	31.65
2310.000	28.32	4.23	37.03	53.37	34.37	48.89	29.89
2350.000	28.42	4.30	37.10	52.91	34.25	48.53	29.87
2490.000	28.83	4.40	37.00	54.03	34.29	50.26	30.52
2500.000	28.83	4.40	37.00	54.62	35.19	50.85	31.42
2483.500	28.74	4.80	34.73	53.27	34.99	52.08	33.80

## Test in 802.11g mode highest channel 2462MHz with 54Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390.000	27.88	4.65	34.30	52.15	33.21	50.38	31.44
2310.000	28.32	4.23	37.03	52.87	34.32	48.39	29.84
2350.000	28.42	4.30	37.10	53.37	33.63	48.99	29.25
2490.000	28.83	4.40	37.00	54.04	34.90	50.27	31.13
2500.000	28.83	4.40	37.00	55.53	36.23	51.76	32.46
2483.500	28.74	4.80	34.73	54.12	36.27	52.93	35.08

Remark: No any other emission which falls in restricted bands can be detected and be reported.





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## Test in 802.11n mode lowest channel 2412MHz with 39Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	52.51	34.15	50.74	32.38
2310.000	28.32	4.23	37.03	53.35	34.91	48.87	30.43
2350.000	28.42	4.30	37.10	53.39	35.44	49.01	31.06
2490.000	28.83	4.40	37.00	54.93	35.69	51.16	31.92
2500.000	28.83	4.40	37.00	55.58	36.96	51.81	33.19
2483.500	28.74	4.80	34.73	53.98	35.61	52.79	34.42

## Test in 802.11n mode middle channel 2437MHz with 58.5Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	53.01	33.34	51.24	31.57
2310.000	28.32	4.23	37.03	54.22	34.26	49.74	29.78
2350.000	28.42	4.30	37.10	54.40	34.40	50.02	30.02
2490.000	28.83	4.40	37.00	54.50	34.53	50.73	30.76
2500.000	28.83	4.40	37.00	53.94	35.89	50.17	32.12
2483.500	28.74	4.80	34.73	54.08	35.59	52.89	34.40

## Test in 802.11n mode highest channel 2462MHz with 58.5Mbps data rate for 20MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	51.80	31.62	50.03	29.85
2310.000	28.32	4.23	37.03	52.34	32.11	47.86	27.63
2350.000	28.42	4.30	37.10	52.89	32.86	48.51	28.48
2490.000	28.83	4.40	37.00	53.23	32.91	49.46	29.14
2500.000	28.83	4.40	37.00	54.26	33.67	50.49	29.90
2483.500	28.74	4.80	34.73	53.75	34.61	52.56	33.42

Remark: No any other emission which falls in restricted bands can be detected and be reported.



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## Test in 802.11n mode lowest channel 2422MHz with 58.5Mbps data rate for 40MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	50.65	32.22	48.88	30.45
2310.000	28.32	4.23	37.03	52.11	32.68	47.63	28.20
2350.000	28.42	4.30	37.10	52.44	32.78	48.06	28.40
2490.000	28.83	4.40	37.00	52.89	33.89	49.12	30.12
2500.000	28.83	4.40	37.00	53.71	34.15	49.94	30.38
2483.500	28.74	4.80	34.73	53.30	35.08	52.11	33.89

## Test in 802.11n mode middle channel 2437MHz with 65Mbps data rate for 40MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	51.91	31.53	50.14	29.76
2310.000	28.32	4.23	37.03	52.52	31.73	48.04	27.25
2350.000	28.42	4.30	37.10	52.64	32.23	48.26	27.85
2490.000	28.83	4.40	37.00	53.39	32.26	49.62	28.49
2500.000	28.83	4.40	37.00	53.71	33.44	49.94	29.67
2483.500	28.74	4.80	34.73	54.19	35.12	53.00	33.93

## Test in 802.11n mode highest channel 2452MHz with 58.5Mbps data rate for 40MHz Bandwidth:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2390.000	27.88	4.65	34.30	50.85	32.60	49.08	30.83
2310.000	28.32	4.23	37.03	52.77	32.70	48.29	28.22
2350.000	28.42	4.30	37.10	52.37	34.07	47.99	29.69
2490.000	28.83	4.40	37.00	53.52	34.90	49.75	31.13
2500.000	28.83	4.40	37.00	54.51	35.14	50.74	31.37
2483.500	28.74	4.80	34.73	53.19	35.19	52.00	34.00

Remark: No any other emission which falls in restricted bands can be detected and be reported.

**The unit does meet the FCC requirements.**



## 7.9 Band Edges Requirement

Test Requirement:	FCC Part 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits.
Frequency Band:	2400MHz to 2483.5MHz
Test Method:	ANSI C63.4:2003 and KDB558074.
Test Date:	29 August 2009
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

### Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer or power meter.
2. Set RBW=100 kHz , VBW=100KHz ,suitable frequency span including 100 kHz bandwidth from band edge..
3. Measure the Conducted Spurious Emissions and Radiated Emissions of the test frequency with special test status.
4. Repeat until all the test status is investigated.
5. Report the worse.

### Test result with plots as follows:

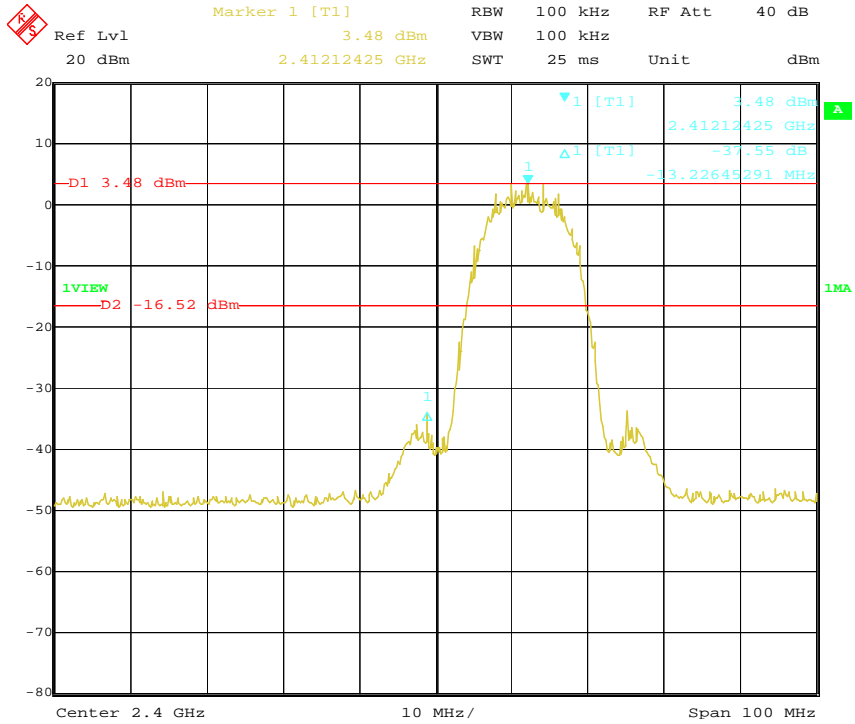
The band edges was measured and recorded Result:

The Lower Edges attenuated more than 20dB.

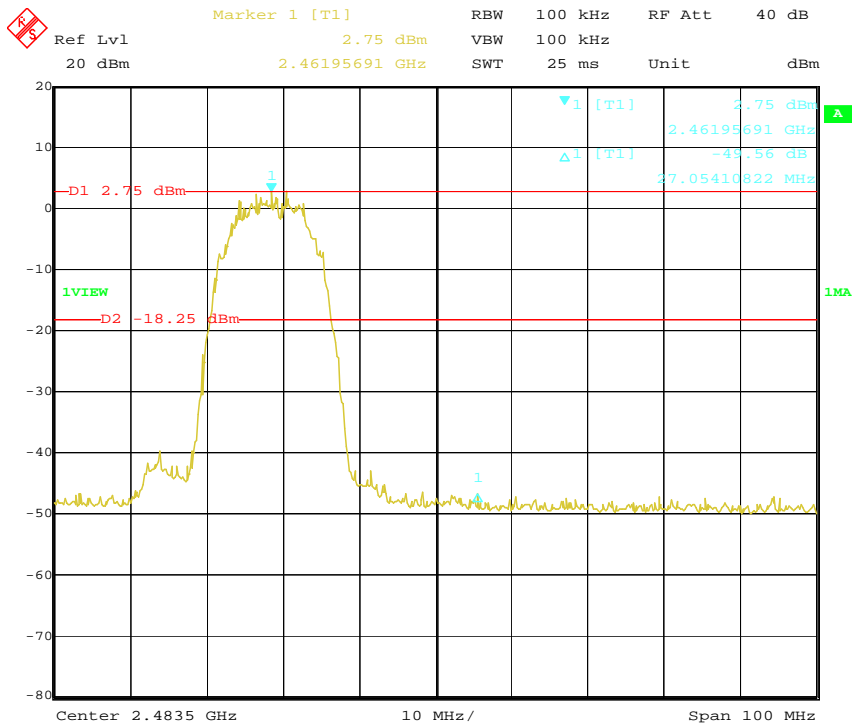
The Upper Edges attenuated more than 20dB.



802.11b mode: Lower edge, lowest channel 2412MHz with 11Mbps data rates for 20MHz Bandwidth:

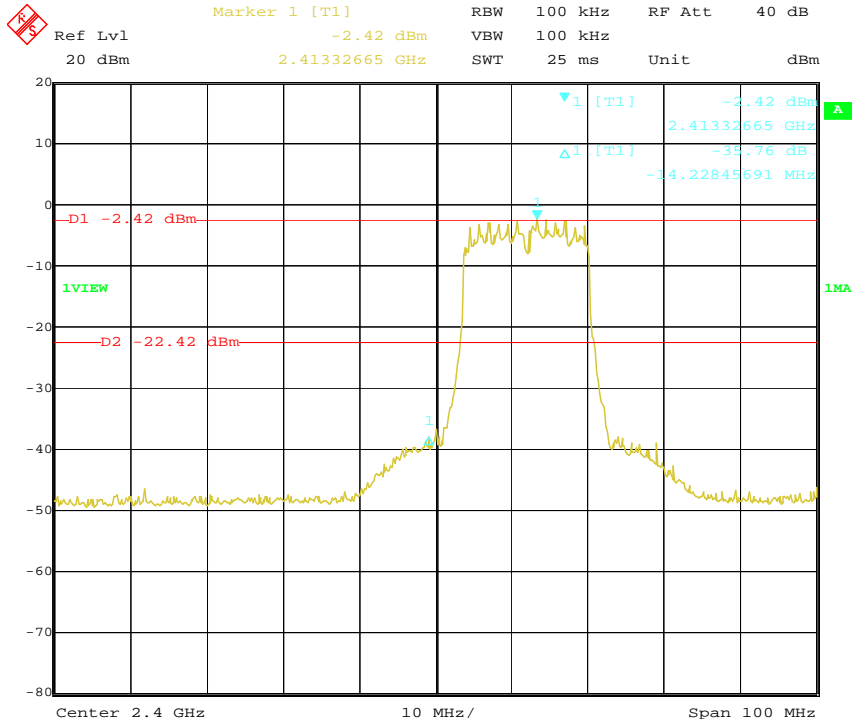


802.11b mode: Higher edge, lowest channel 2462MHz with 11Mbps data rates for 20MHz Bandwidth

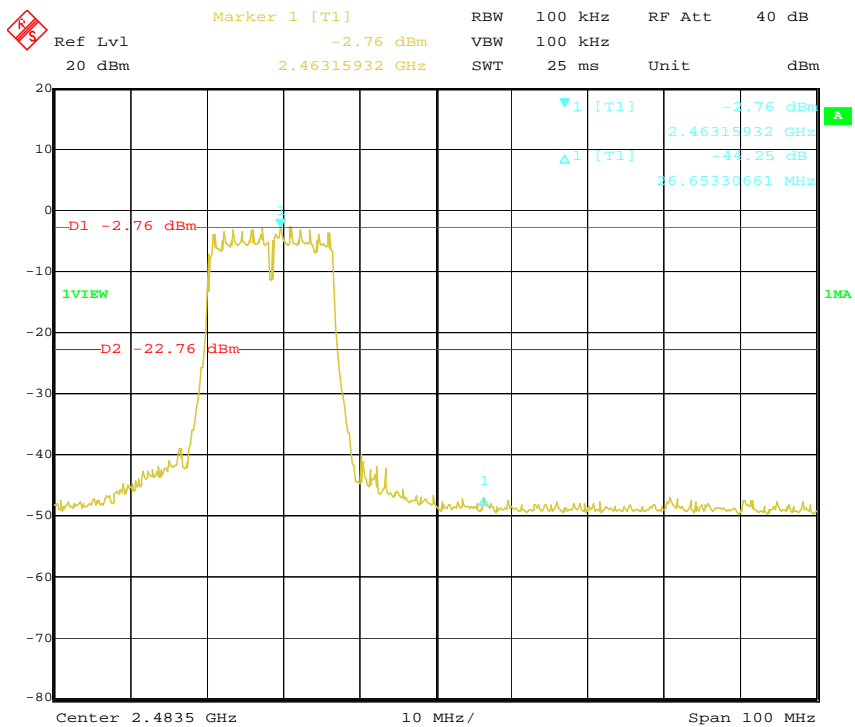




802.11g mode: Lower edge, lowest channel 2412MHz with 54Mbps data rates for 20MHz Bandwidth

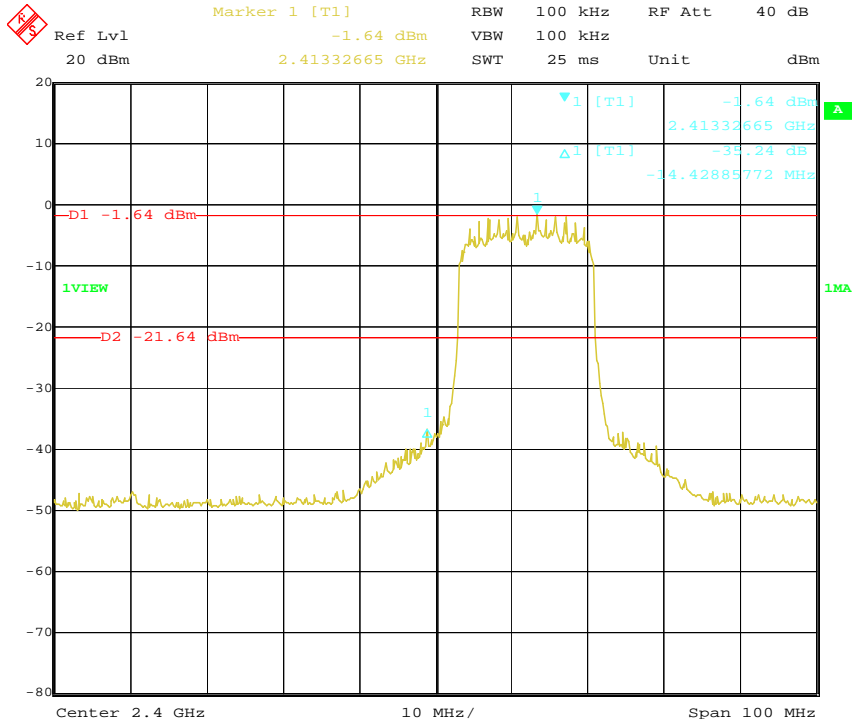


802.11g mode: Higher edge, lowest channel 2462MHz with 54Mbps data rates for 20MHz Bandwidth

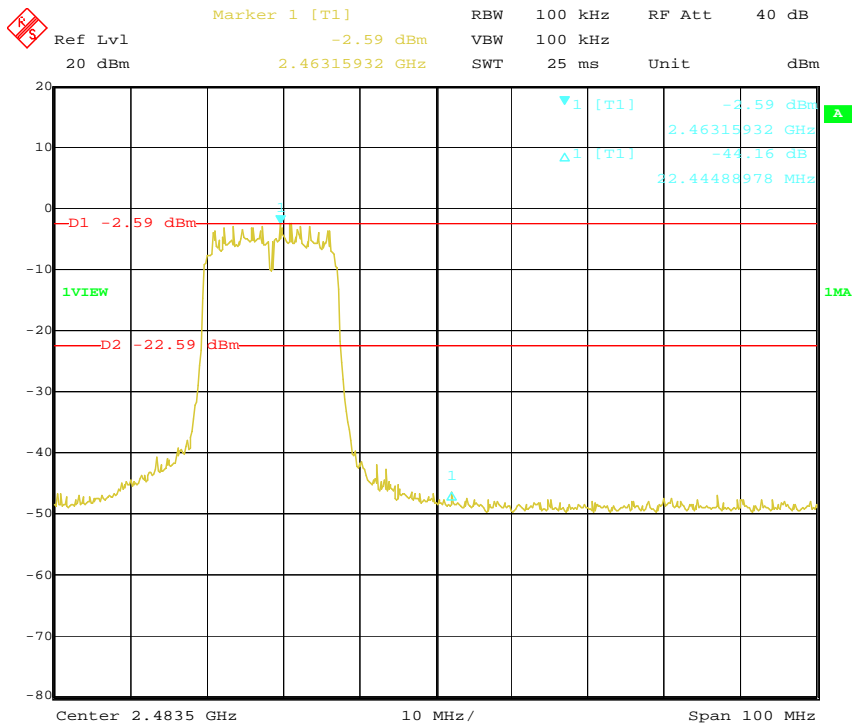




802.11n mode: Lower edge, lowest channel 2412MHz with 39Mbps data rates for 20MHz Bandwidth

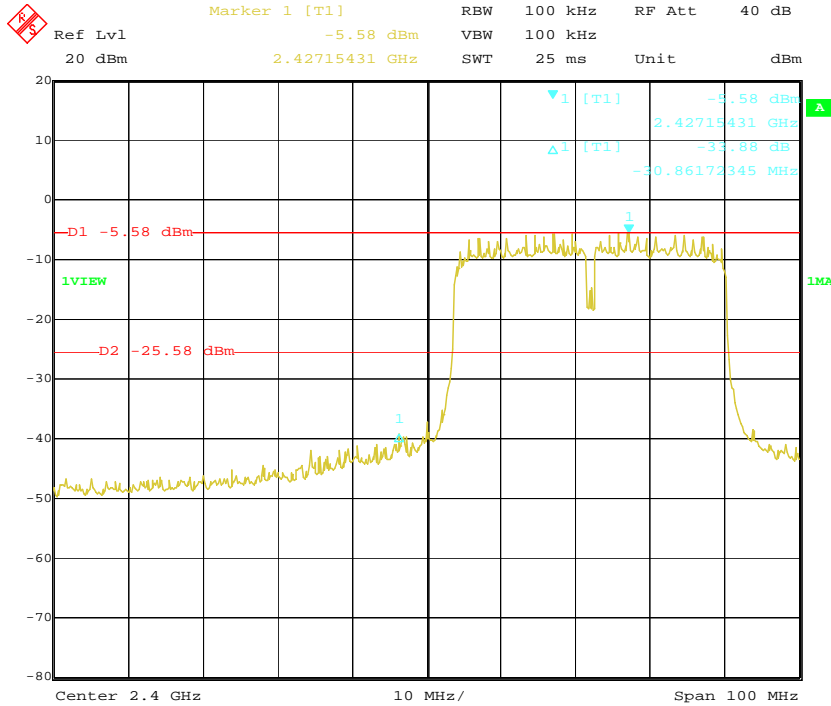


802.11n mode: Higher edge, lowest channel 2462MHz with 58.5Mbps data rates for 20MHz Bandwidth

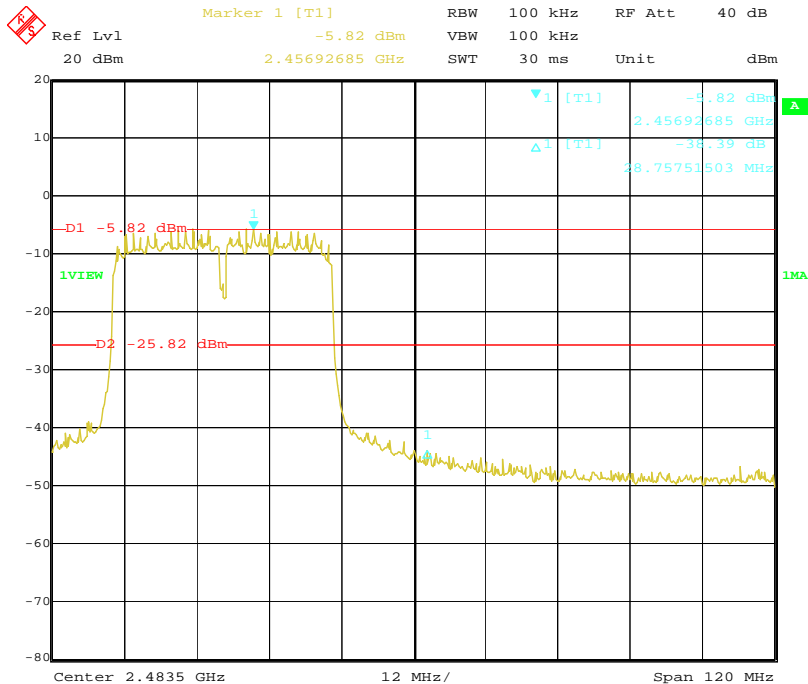




802.11n mode: Lower edge, lowest channel 2422MHz with 58.5Mbps data rates for 40MHz Bandwidth



802.11n mode: Higher edge, lowest channel 2452MHz with 58.5Mbps data rates for 40MHz Bandwidth



--- End of the Report---