



198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological  
Development District, Guangzhou, China 510663  
Telephone: +86 (0) 20 82155555  
Fax: +86 (0) 20 82075059  
Email: ee.guangzhou@sgs.com

Report No.: GZEM121000435101  
Page: 1 of 116  
FCC ID: R6Z2012777287

## TEST REPORT

<b>Application No.:</b>	GZEM1210004351RF
<b>Applicant:</b>	SHANTOU CITY HAPPY COW TOYS INDUSTRIAL CO., LTD
<b>Manufacturer:</b>	GOLD LIGHT TOYS FACTORY
<b>FCC ID:</b>	R6Z2012777287
<b>Product Name:</b>	REMOTE CONTROL TOYS
<b>Product Description:</b>	Wireless control toys with 2.4 GHz as carrier
<b>Model No.:</b>	777-287, 777-288, 777-289, 777-311, 777-312, 777-313, 777-315, 777-316, 777-802, 777-558, 777-559, 777-510, 777-174, 777-128, 777-215, 777-218, 777-219, 777-220, 777-532, 777-161, 777-531, 777-166, 777-210, 777-226, 777-317, 777-318, 777-319, 777-320, 777-321, 777-322, 777-323, 777-325, 777-326, 777-327, 777-328, 777-329, 777-330, 777-331, 777-332, 777-333 ♣
♣	Please refer to section 3 of this report for details
<b>Standards:</b>	47 CFR PART 15 Subpart C: 2011 section 15.247
<b>Date of Receipt:</b>	2012-10-26
<b>Date of Test:</b>	2012-10-27 to 2012-11-19
<b>Date of Issue:</b>	2012-11-28
<b>Test Result :</b>	<b>Pass*</b>

\* 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:

**Strong Yao**  
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.

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.



## 2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2012-11-28		Original

Authorized for issue by:			
Tested By		<hr/>	2012-10-27 to 2012-11-19
			Date
Prepared By		<hr/>	2012-11-20
			Date
Checked By		<hr/>	2012-11-28
			Date
		(Storm Shu) / Project Engineer	
		(Storm Shu)/ Project Engineer	
		(Strong Yao) / Reviewer	



### 3 Test Summary

TEST	TEST REQUIREMENT	TEST METHOD	RESULT
Antenna Requirement	FCC PART 15 C section 15.247 (c) and Section 15.203	FCC PART 15 C section 15.247 (c) and Section 15.203	PASS
6 dB Bandwidth	FCC PART 15 C section 15.247 (a)(2)	ANSI C63.10: Clause 6.9.1	PASS
Maximum Peak Output Power	FCC PART 15 C section 15.247(b)(3)	ANSI C63.10: Clause 6.10.3.1	PASS
Peak Power Spectral Density	FCC PART 15 C section 15.247(e)	ANSI C63.10: Clause 6.11.2.3	PASS
Conducted Spurious Emission (30MHz to 25GHz)	FCC PART 15 C section 15.209 &15.247(d)	ANSI C63.10: Clause 6.7	PASS
Radiated Spurious Emission 30 MHz to 25 GHz)	FCC PART 15 C section 15.209 &15.247(d)	ANSI C63.10: Clause 6.4, 6.5 and 6.6	PASS**
Band Edges Measurement	FCC PART 15 C section 15.247 (d) &15.205	ANSI C63.10: Clause 6.9.2	PASS

**Remark:**

N/A: not applicable. Refer to the relative section for the details.

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

ANSI C63.10: the detail version is ANSI C63.10:2009 in the whole report.

\*\* The EUT passed Unwanted emissions in the spurious domain test after retest.

♣Model No.: 777-287, 777-288, 777-289, 777-311, 777-312, 777-313, 777-315, 777-316, 777-802, 777-558, 777-559, 777-510, 777-174, 777-128, 777-215, 777-218, 777-219, 777-220, 777-532, 777-161, 777-531, 777-166, 777-210, 777-226, 777-317, 777-318, 777-319, 777-320, 777-321, 777-322, 777-323, 777-325, 777-326, 777-327, 777-328, 777-329, 777-330, 777-331, 777-332, 777-333

According to the confirmation from the applicant, since the electrical circuit design, layout, components used and internal wiring were identical for the above items, only difference is the appearance.

Therefore only one model 777-287 was tested in this report.



## 4 Contents

<b>1</b>	<b>COVER PAGE .....</b>	<b>1</b>
<b>2</b>	<b>VERSION.....</b>	<b>2</b>
<b>3</b>	<b>TEST SUMMARY .....</b>	<b>3</b>
<b>4</b>	<b>CONTENTS.....</b>	<b>4</b>
<b>5</b>	<b>GENERAL INFORMATION .....</b>	<b>5</b>
5.1	Client Information .....	5
5.2	General Description of E.U.T. ....	5
5.3	Details of E.U.T. ....	5
5.4	Description of Support Units .....	6
5.5	Deviation from Standards .....	6
5.6	Abnormalities from Standard Conditions .....	6
5.7	Other Information Requested by the Customer .....	6
5.8	Test Location .....	6
5.9	Test Facility .....	7
<b>6</b>	<b>EQUIPMENT USED DURING TEST .....</b>	<b>8</b>
<b>7</b>	<b>TEST RESULTS .....</b>	<b>9</b>
7.1	E.U.T. test conditions.....	9
7.2	Antenna Requirement .....	12
7.3	6 dB Bandwidth .....	13
7.4	Maximum Peak Output Power.....	21
7.5	Peak Power Spectral Density.....	30
7.6	Conducted Spurious Emissions .....	39
7.7	Radiated Spurious Emissions .....	58
7.8	Band Edges Requirement .....	111



## 5 General Information

### 5.1 Client Information

Applicant: SHANTOU CITY HAPPY COW TOYS INDUSTRIAL CO., LTD  
Address of Applicant: 7TH BLDG, CHOUSHA GARTH, SHANFEN ROAD, CHENGHAI, SHANTOU, G.D.CHINA  
Manufacturer: GOLD LIGHT TOYS FACTORY  
Address of Manufacturer: GANGXIA RD., PUMEI, CHENGHAI, SHANTOU CITY, G.D.CHINA

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

Product Name: REMOTE CONTROL TOYS  
Model No.: 777-287

### 5.3 Details of E.U.T.

Operating Frequency 2412 MHz to 2462 MHz for 802.11b/g/n(HT20)  
2422 MHz to 2452 MHz for 802.11n(HT40)  
Type of Modulation: 802.11b: DSSS(CCK/QPSK/BPSK)  
802.11g: OFDM(BPSK/QPSK/16QAM/64QAM)  
802.11n: MIMO OFDM (BPSK/QPSK/16QAM/64QAM)  
802.11b :1/2/5.5/11 Mbps  
Transmit Data Rate: 802.11g :6/9/12/18/24/36/48/54 Mbps  
802.11n(HT20): 7.2/14.4/21.7/28.9/43.3/57.8/65 Mbps  
802.11n(HT40): 15/30/45/60/90/120/135 Mbps  
Number of Channels 11 Channels for 802.11b/g/n(HT20)  
7 Channels for 802.11n(HT40)  
Channel Separation: 5 MHz  
Antenna Type Integral  
Antenna gain: 3.0 dBi  
Function: Wireless control toys with 2.4 GHz as carrier  
Power Supply: DC 9.0V = size "AA" batteries x 6



#### 5.4 Description of Support Units

None.

#### 5.5 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

#### 5.6 Abnormalities from Standard Conditions

None.

#### 5.7 Other Information Requested by the Customer

None.

#### 5.8 Test Location

All tests were performed at:

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

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

No tests were sub-contracted.

## 5.9 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.

- **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

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, C-2584, G-449 and T-1179 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, IEC 61010-1:2006-10 and Rules of procedure IEC 61010-2:2006-10, and the relevant IEC 61010-2 CB-Scheme Operational documents.

## 6 Equipment Used during Test

RE in Chamber						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date	Calibration Interval
					(YYYY-MM-DD)	
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2014-08-30	2Y
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2013-06-29	1Y
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	100236	2013-03-12	1Y
EMC0528	RI High frequency Cable	SGS	20 m	N/A	2013-06-01	1Y
EMC2025	Trilog Broadband Antenna 30-3000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9163	9163-450	2013-12-17	2Y
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	2013-11-27	2Y
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2013-03-26	2Y
EMC2026	Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	9120D-841	2013-11-28	2Y
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	2014-07-01	2Y
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	2013-03-12	1Y
EMC0049	Amplifier	Agilent	8447D	2944A10862	2013-03-12	1Y
EMC0075	310N Amplifier	Sonama	310N	272683	2013-03-12	1Y
EMC0523	Active Loop Antenna	EMCO	6502	42963	2014-04-07	2Y
EMC2041	Broad-Band Horn Antenna (14)15-26.5(40)GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9170	9170-375	2014-06-01	3Y
EMC0530	10m Semi-Anechoic Chamber	ETS	N/A	N/A	2014-04-27	2Y

General used equipment						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date	Calibration Interval
					(YYYY-MM-DD)	
EMC0006	DMM	Fluke	73	70681569	2013-11-5	1Y
EMC0007	DMM	Fluke	73	70671122	2013-11-5	1Y



## 7 Test Results

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

**Test Voltage:** DC 9.0V

**Temperature:** 20.0 -25.0 °C

**Humidity:** 38-50 % RH

**Atmospheric Pressure:** 1000 -1010 mbar

**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.

**Test frequencies and frequency range:**

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:

According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:



**Number of fundamental frequencies to be tested in EUT transmit band**

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz 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

**Frequency range of radiated emission measurements**

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified



**EUT channels and frequencies list:**

1. Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

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

2. Test frequencies are lowest channel: 2422 MHz, middle channel: 2437 MHz and highest channel: 2452 MHz for 802.11n(HT40)

Channel	Frequency (MHz)
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452

## 7.2 Antenna Requirement

### 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(c) (1)(i) requirement:

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

### EUT Antenna

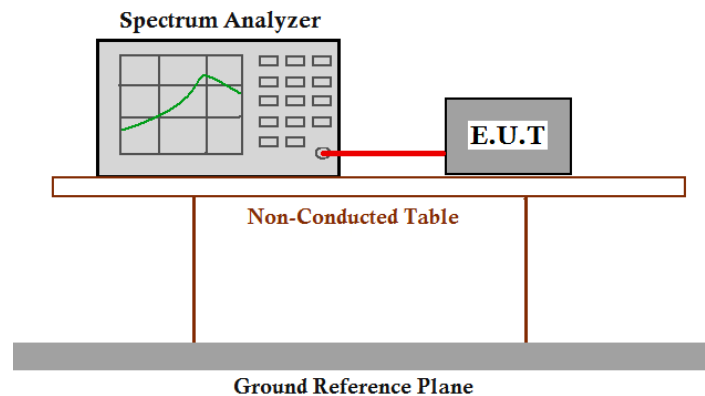
The antenna is an integral and no consideration of replacement. The best case gain of the antenna is 3.0 dBi.



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

### 7.3 6 dB Bandwidth

- Test Requirement: FCC Part 15 C section 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 C63.10: Clause 6.9.1
- 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 Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1.5dB) from the antenna port to the spectrum.
2. Set the spectrum analyzer:  
 Sweep = auto; Detector Function = Peak; ace = Max Hold  
 RBW: 1%~5% OBW; VBW:  $\geq 3 \times RBW$   
 Span: two times and five times the OBW.
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.



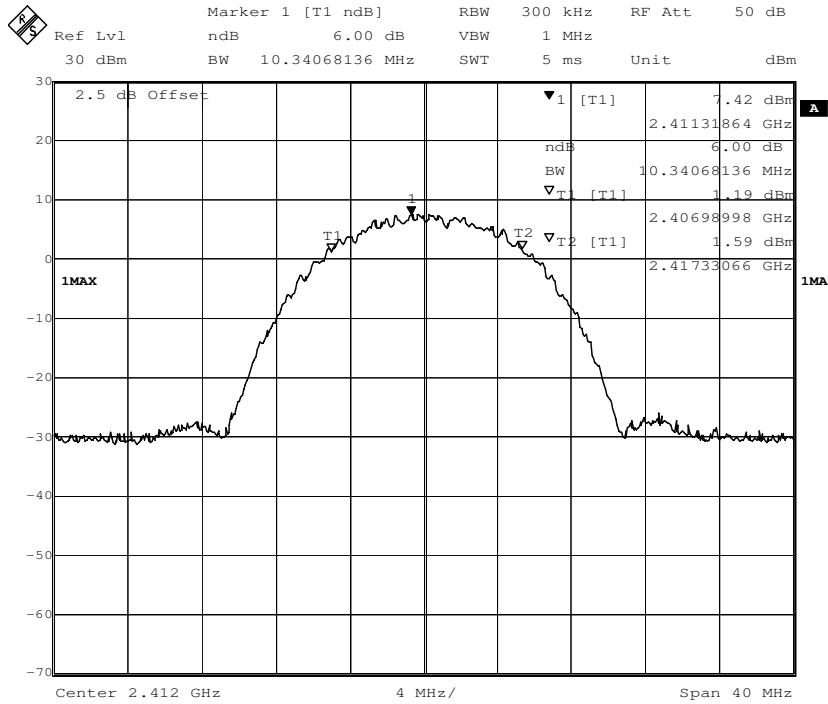
Channel No.	Frequency (MHz)	Mode	Data Rate	Measured 6dB bandwidth (MHz)	Limit	Result
1	2412	802.11b	11 Mbps	10.341	≥500KHz	Pass
6	2437		11 Mbps	9.860		Pass
11	2462		11 Mbps	10.501		Pass
1	2412	802.11g	54 Mbps	16.593	≥500KHz	Pass
6	2437		54 Mbps	16.683		Pass
11	2462		54 Mbps	16.603		Pass
1	2412	802.11n (HT20)	65 Mbps	17.796	≥500KHz	Pass
6	2437		65 Mbps	17.886		Pass
11	2462		65 Mbps	17.976		Pass
3	2422	802.11n (HT40)	135 Mbps	36.285	≥500KHz	Pass
6	2437		135 Mbps	36.605		Pass
9	2452		135 Mbps	36.713		Pass

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

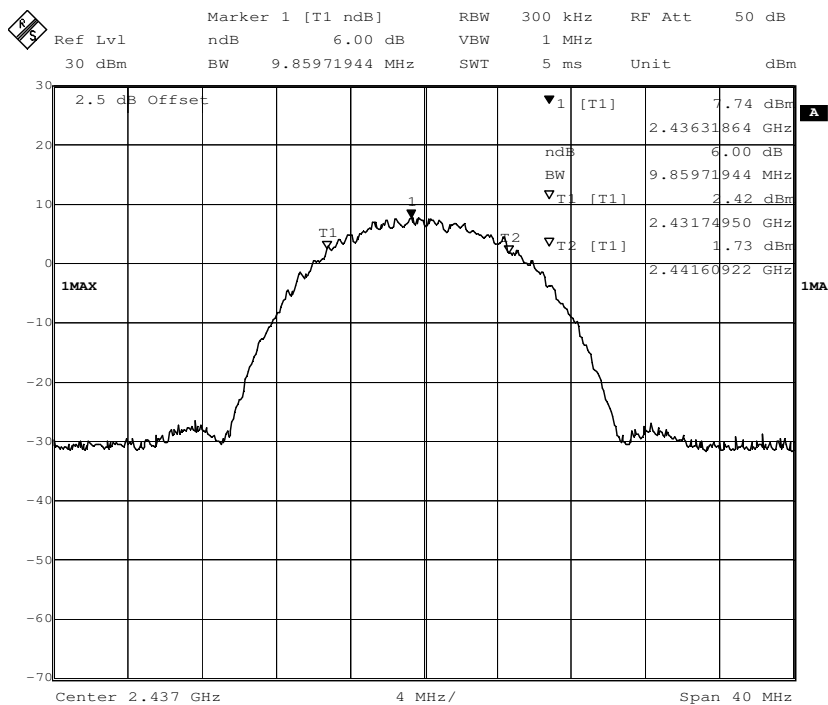
Result plot as follows:

802.11b mode with 11Mbps data rate

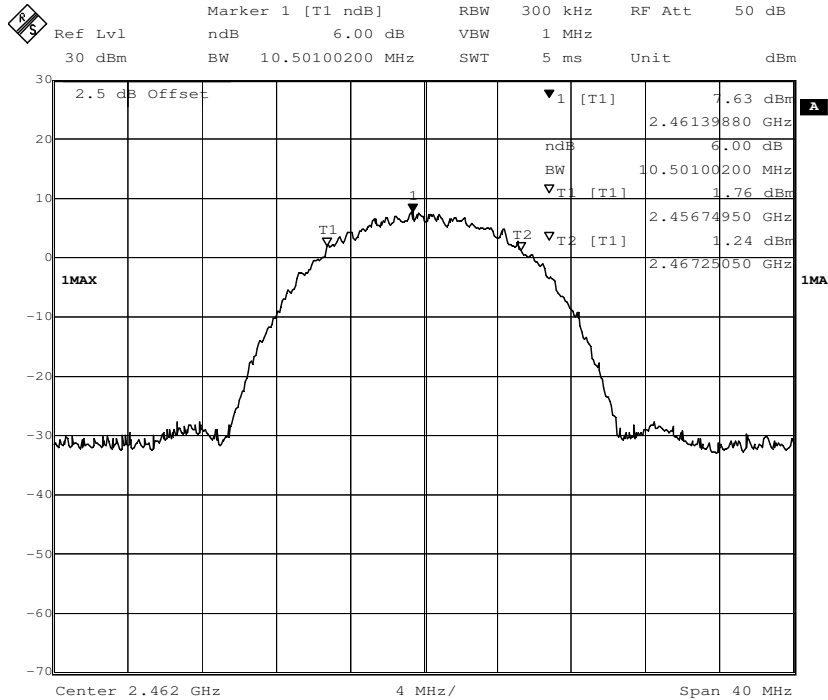
Channel 1: 2.412GHz:



Channel 6: 2.437GHz:

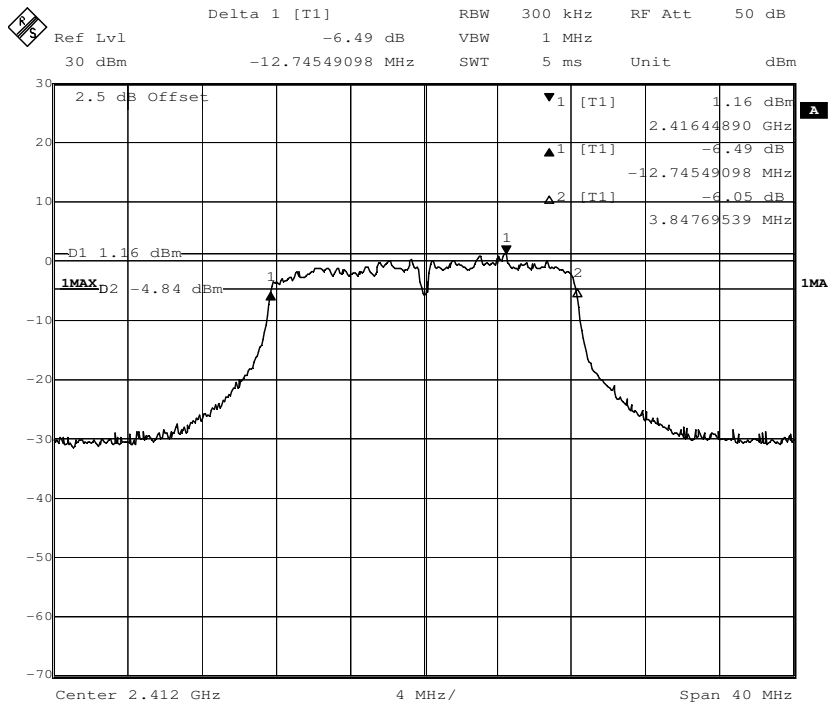


Channel 11: 2.462GHz:



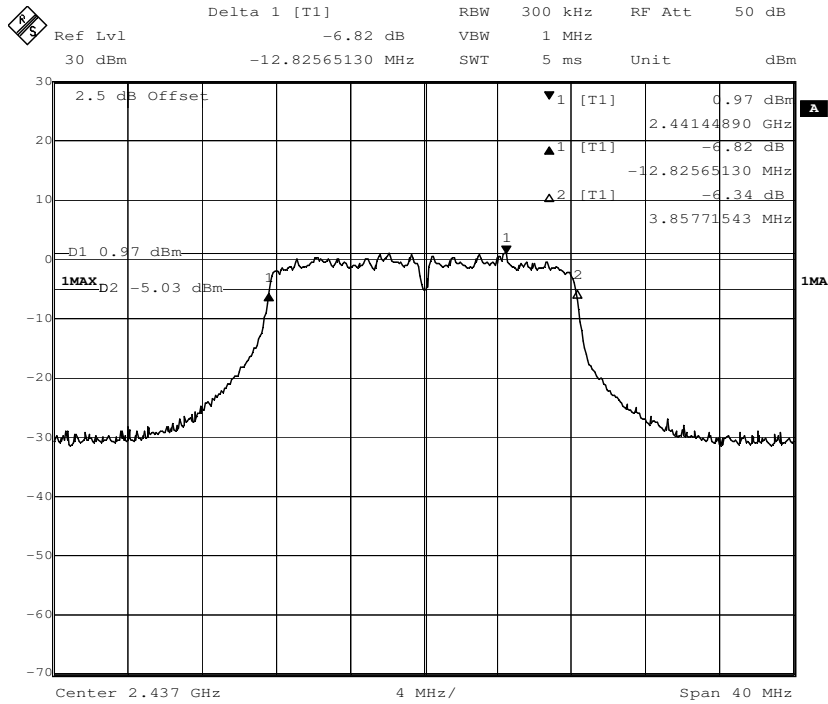
802.11g mode with 54Mbps data rate

Channel 1: 2.412GHz:

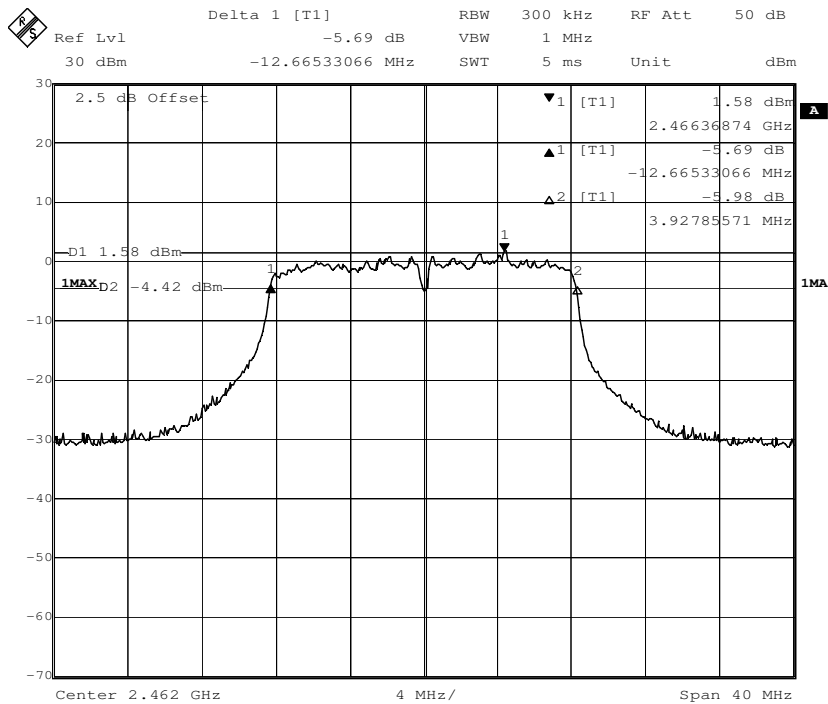




Channel 6: 2.437GHz:

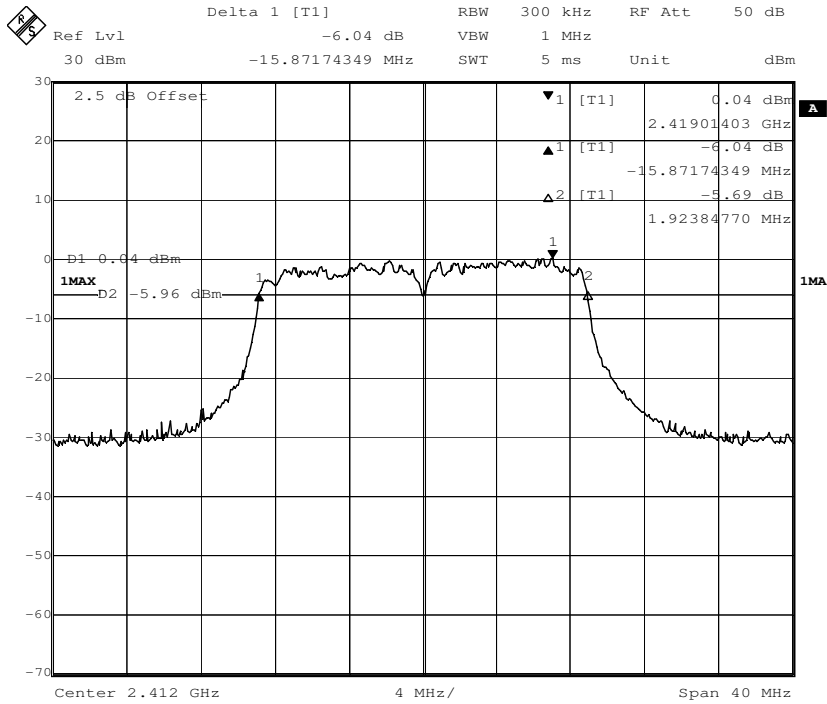


Channel 11: 2.462GHz:

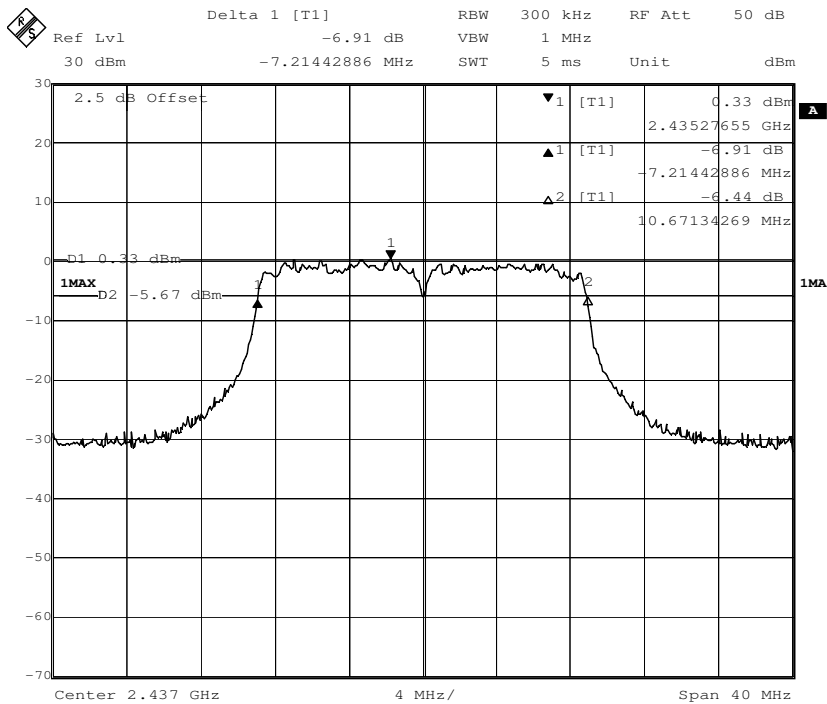


**802.11n(HT20) mode with 65Mbps data rate**

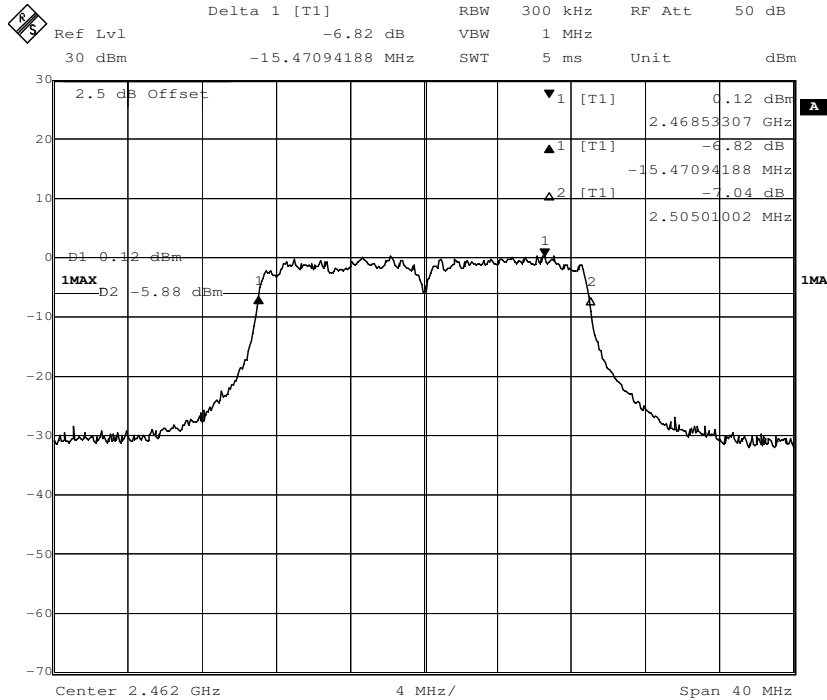
Channel 1: 2.412GHz:



Channel 6: 2.437GHz:

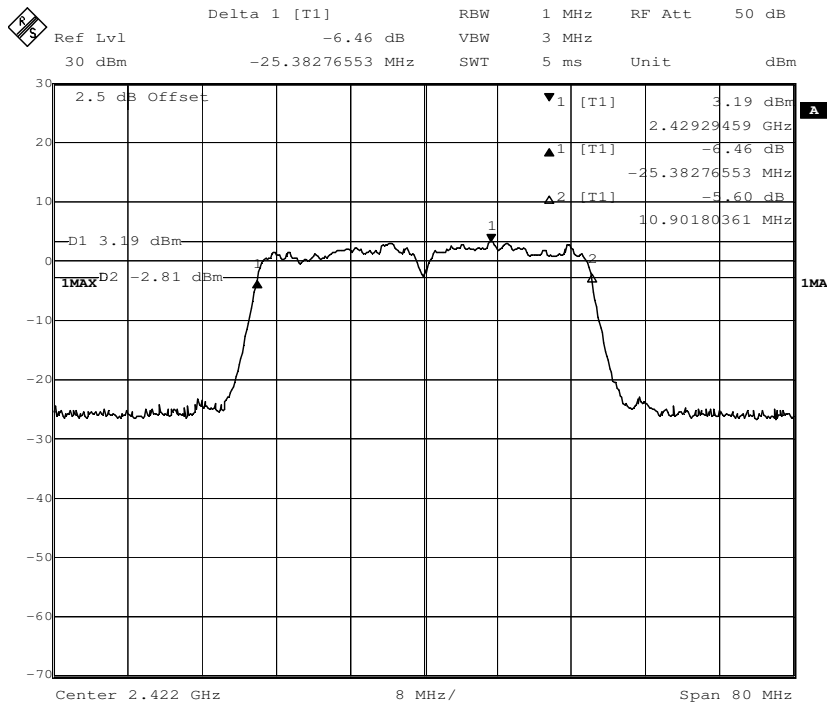


Channel 11: 2.462GHz:

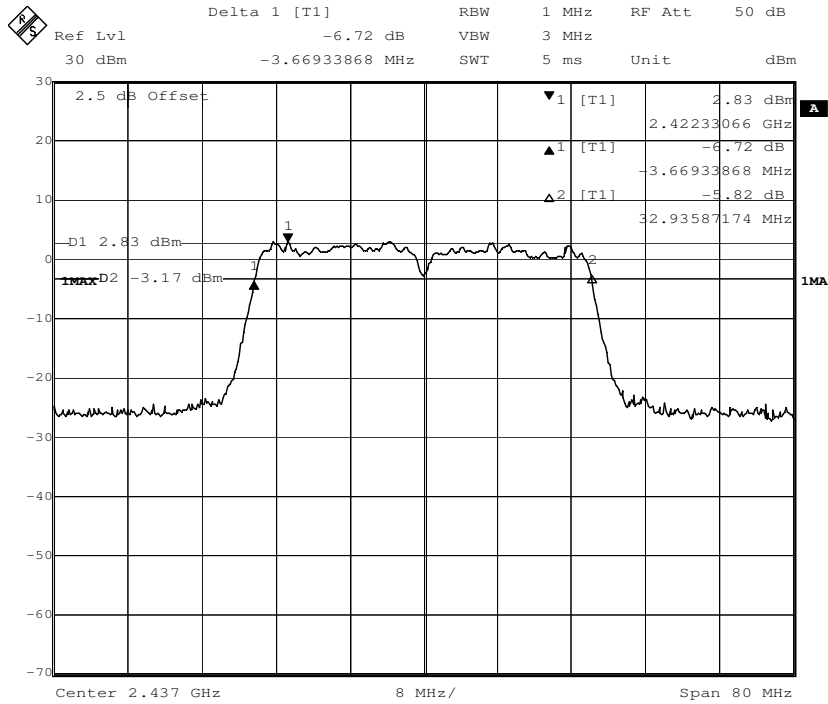


802.11n(HT40) mode with 135Mbps data rate

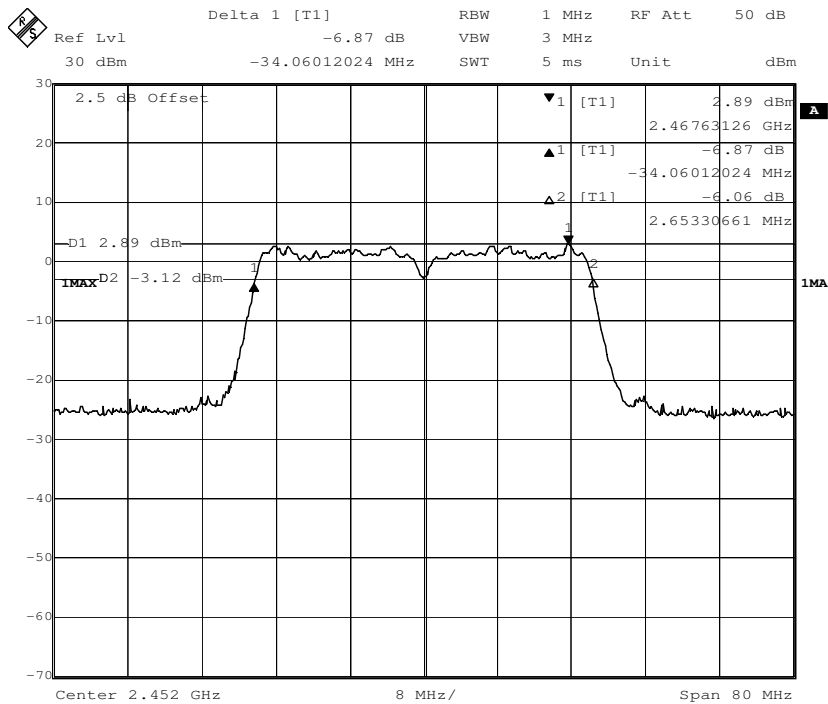
Channel 3: 2.422GHz:



Channel 6: 2.437GHz:



Channel 9: 2.452GHz:



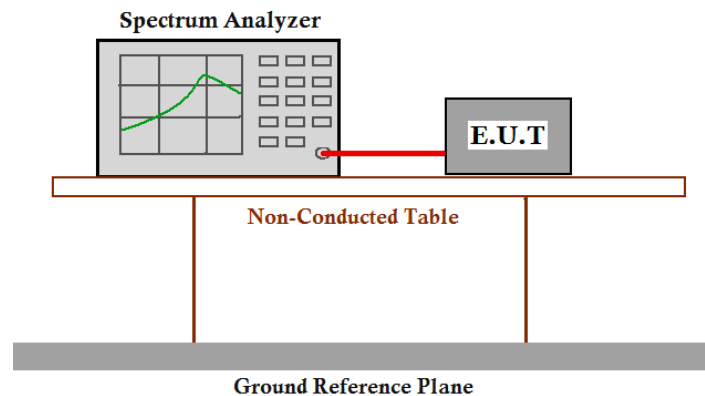
## 7.4 Maximum Peak Output Power

**Test Requirement:** FCC Part 15 C section 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 C63.10: Clause 6. 10. 3. 1 (Method 1—spectral trace averaging).

**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 Configuration:**





Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable 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.



Test result:

Channel No.	Frequency (MHz)	Mode	Data Rate	Measured Channel Power (dBm)	Limit	Result
1	2412	802.11b	11 Mbps	21.91	1W(30dBm)	Pass
6	2437		11 Mbps	20.68		Pass
11	2462		11 Mbps	21.08		Pass
1	2412	802.11g	54 Mbps	19.63		Pass
6	2437		54 Mbps	18.71		Pass
11	2462		54 Mbps	19.16		Pass
1	2412	802.11n (HT20)	65 Mbps	19.17		Pass
6	2437		65 Mbps	18.26		Pass
11	2462		65 Mbps	18.57		Pass
3	2422	802.11n (HT40)	135 Mbps	18.54		Pass
6	2437		135 Mbps	18.09		Pass
9	2452		135 Mbps	17.88		Pass

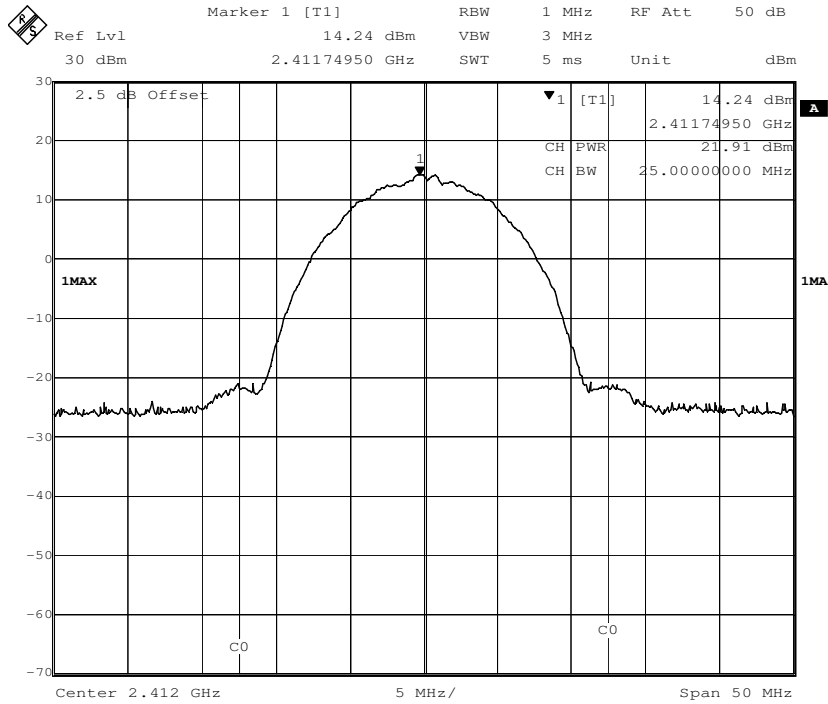
Remark: Level = Read Level + Cable Loss.

The unit does meet the FCC requirements.

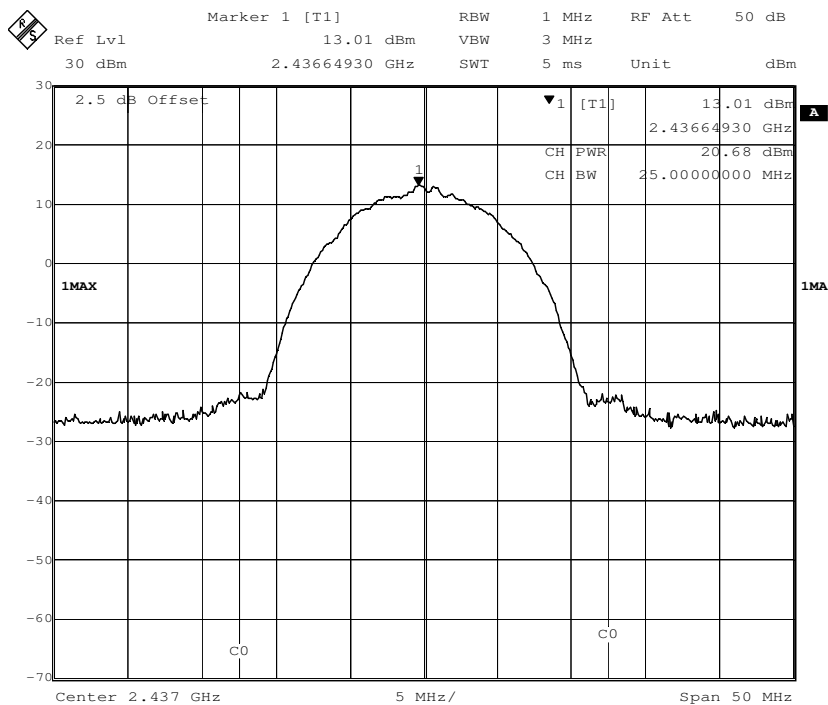
**Result plot as follows:**

**802.11b mode with 11Mbps data rate**

Channel 1: 2.412GHz:

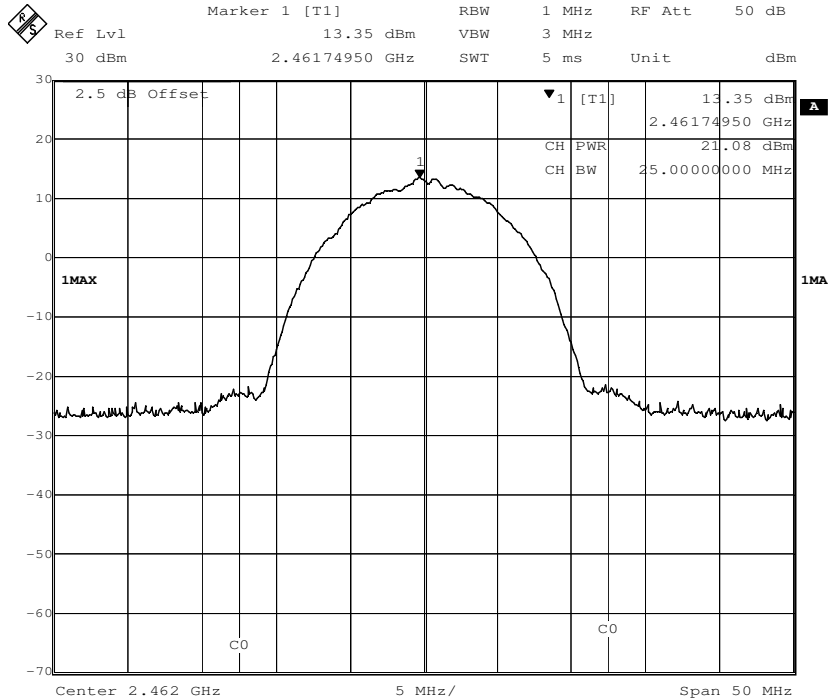


Channel 6: 2.437GHz:



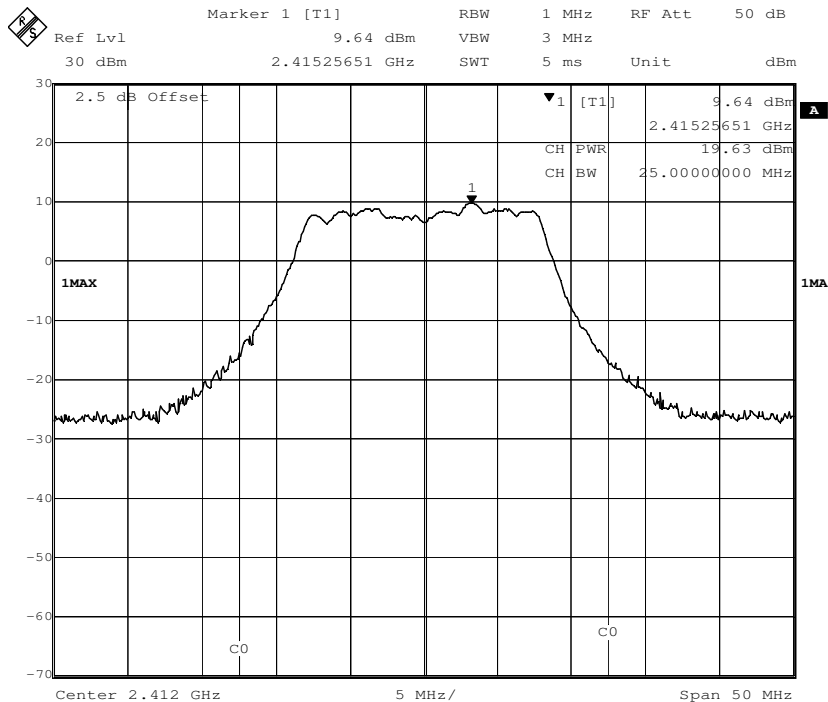


Channel 11: 2.462GHz:



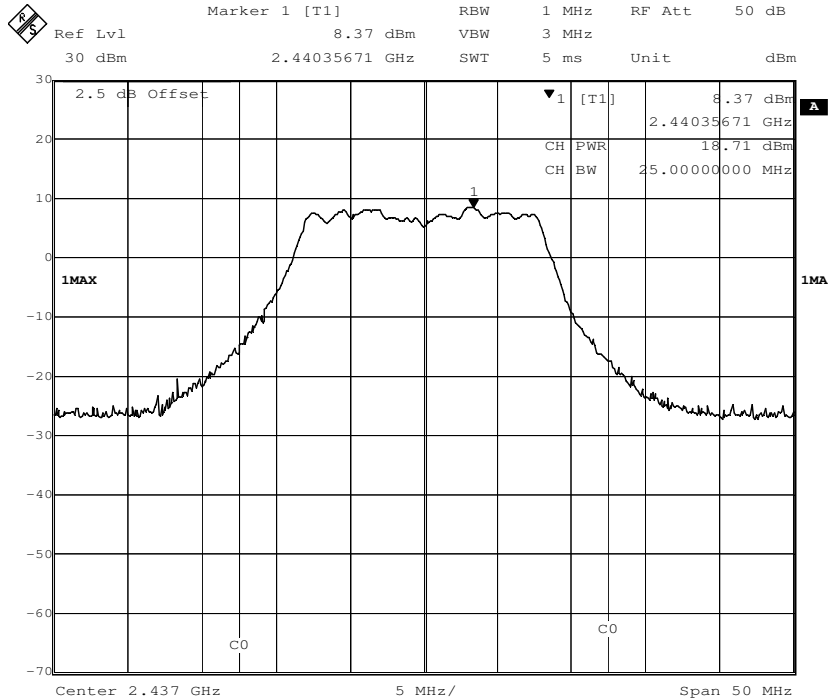
802.11g mode with 54Mbps data rate

Channel 1: 2.412GHz:

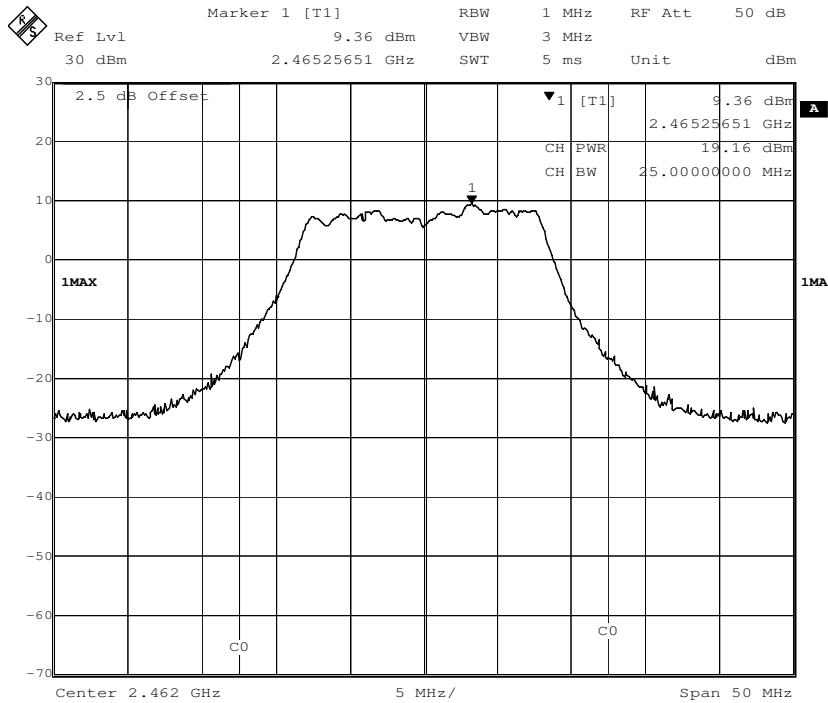




Channel 6: 2.437GHz:

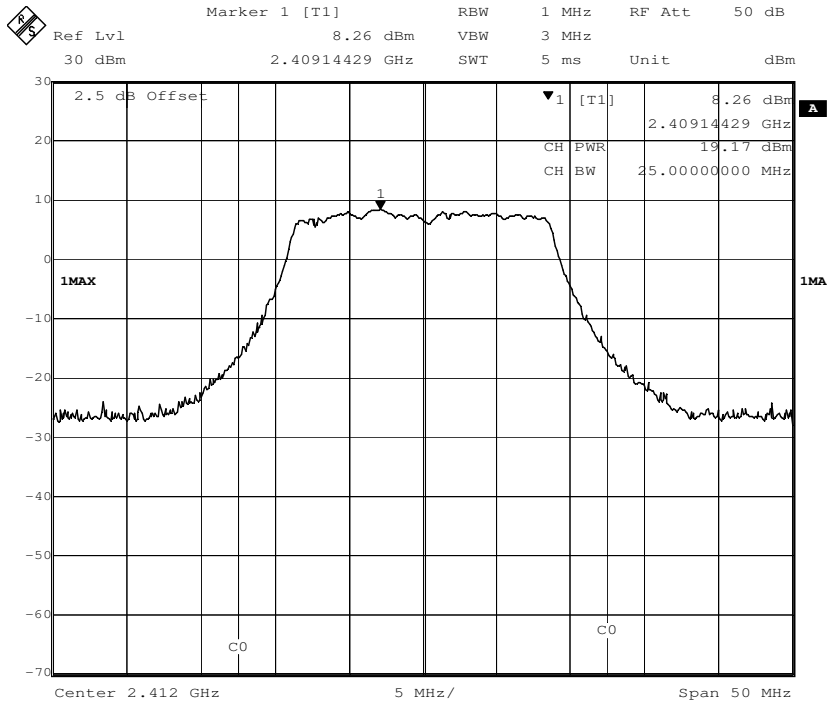


Channel 11: 2.462GHz:

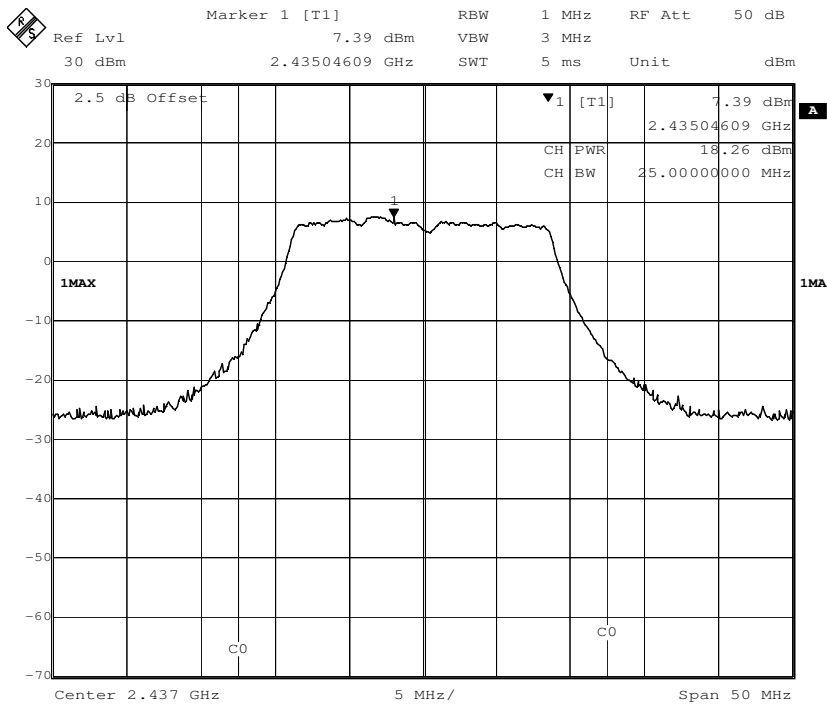


**802.11n(HT20) mode with 65Mbps data rate**

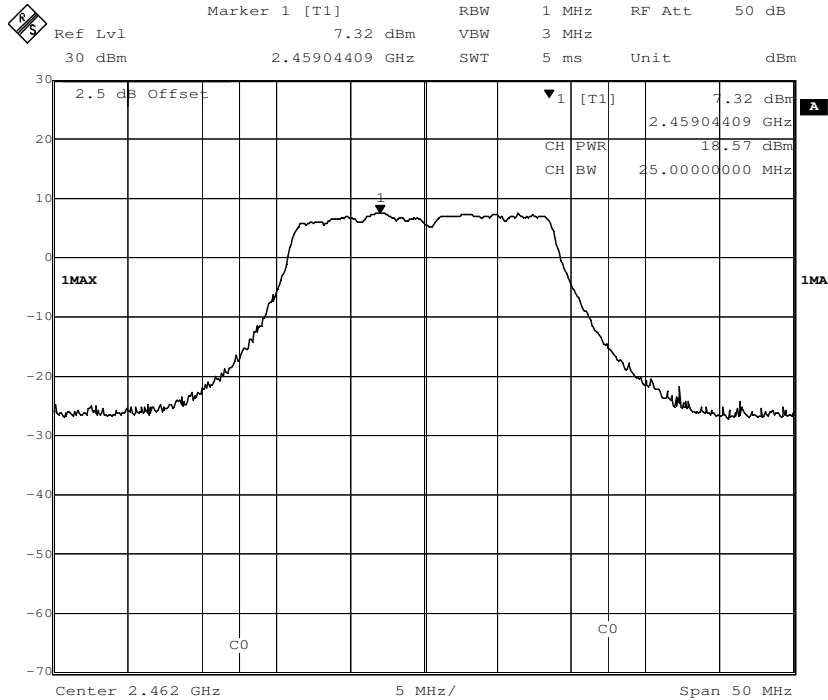
Channel 1: 2.412GHz:



Channel 6: 2.437GHz:

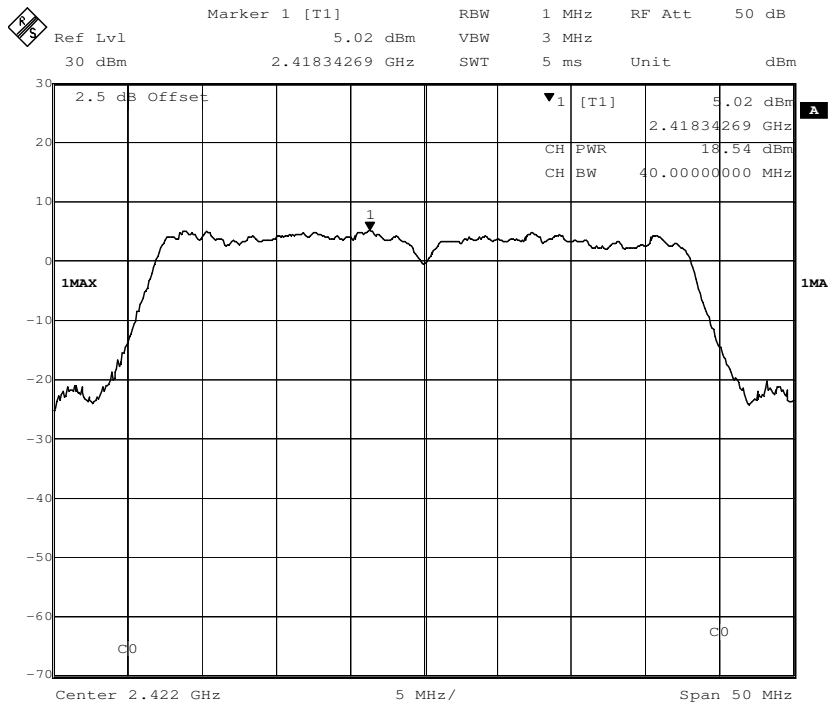


Channel 11: 2.462GHz:



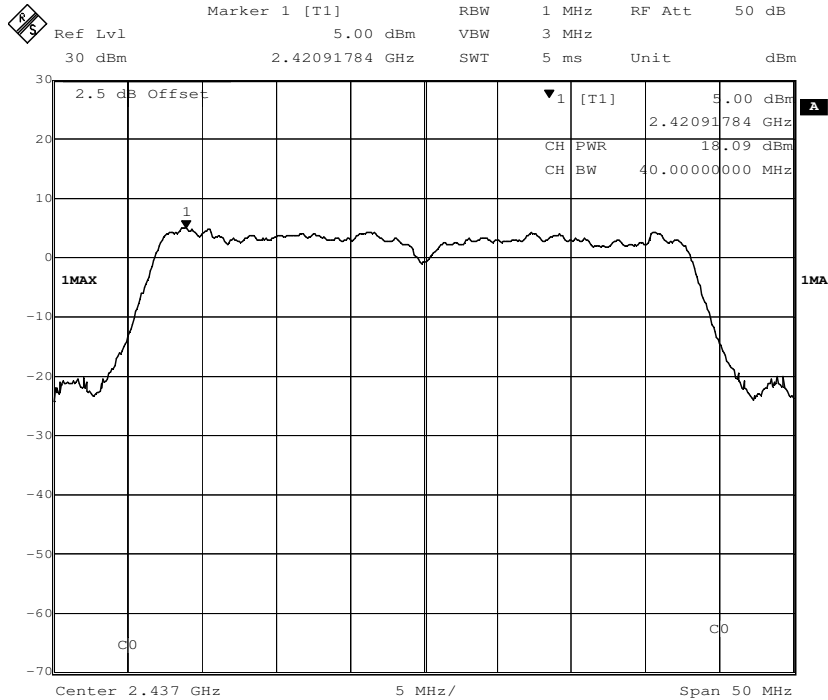
802.11n(HT40) mode with 135Mbps data rate

Channel 3: 2.422GHz:

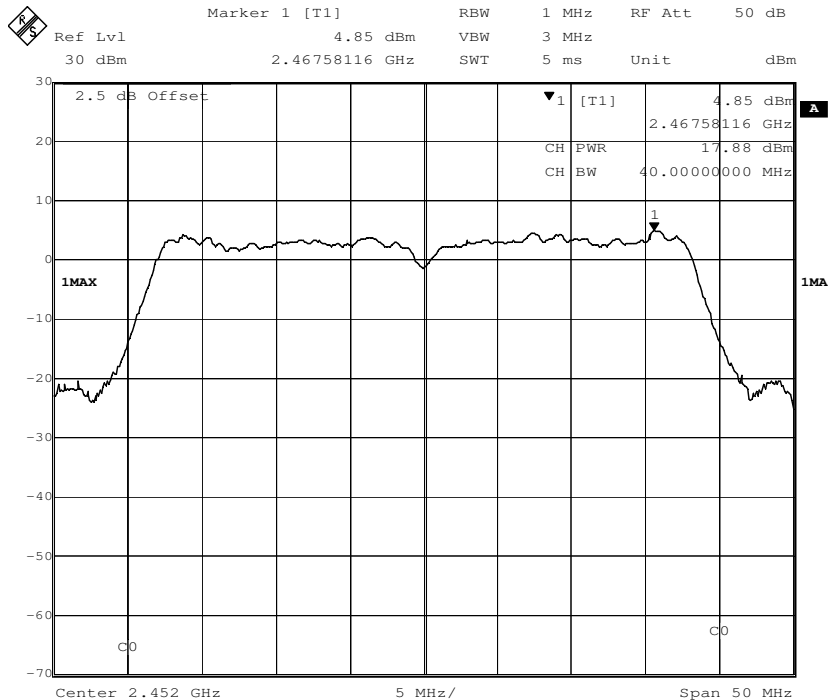




Channel 6: 2.437GHz:



Channel 9: 2.452GHz:



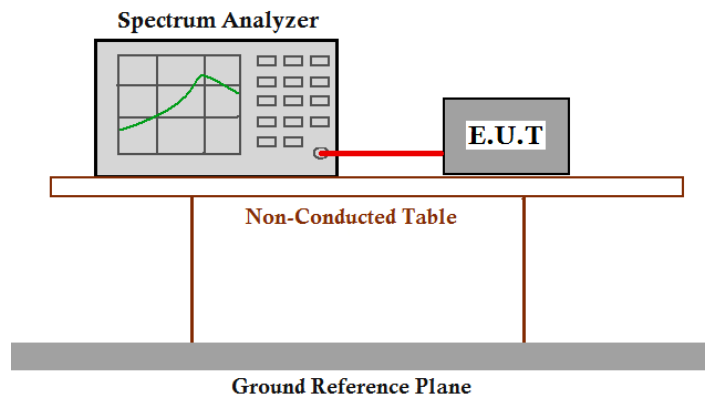
### 7.5 Peak Power Spectral Density

**Test Requirement:** FCC Part 15 C section 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 C63.10: Clause 6.11.2.3

**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 Configuration:**



## Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =2.5dB) from the antenna port to the spectrum analyzer or power meter.
2. Set the spectrum analyzer:
  - a) Set CENTER FREQUENCY = Frequency from Power Spectral Density Test Matrix (see 6.10.2)
  - b) Set SPAN = 20 MHz (For devices with a nominal 40 MHz BW, 50 MHz span will be needed)
  - c) Set REFERENCE LEVEL = 20 dBm
  - d) Set ATTENUATION = 0 dB (add internal attenuation, if necessary)
  - e) Set SWEEP TIME = Coupled
  - f) Set RBW = 3 kHz
  - g) Set VBW = 10 kHz
  - h) Set DETECTOR = Peak
  - i) Set MKR = Center Frequency
  - j) Set TRACE = CLEAR WRITE

Place the radio in continuous transmit mode. Set the TRACE to MAX HOLD, and after the trace stabilizes, the TRACE to VIEW. Set the marker on the peak of the signal and then adjust the center frequency of the spectrum analyzer to the marker frequency.

After viewing the EUT waveform on the spectrum analyzer, perform the following spectrum analyzer functions to capture the trace:

Set SPAN = 300 kHz

Set SWEEP TIME = 100 s

Set TRACE = MAX HOLD

Set MKR = PEAK SEARCH

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.



Channel No.	Frequency (MHz)	Mode	Data Rate	Measured Peak Power		Result
				Spectral Density (dBm/3KHz)	Limit	
1	2412	802.11b	11 Mbps	-9.52	8dBm/3KHz	Pass
6	2437		11 Mbps	-11.56		Pass
11	2462		11 Mbps	-10.40		Pass
1	2412	802.11g	54 Mbps	-16.36		Pass
6	2437		54 Mbps	-18.56		Pass
11	2462		54 Mbps	-16.72		Pass
1	2412	802.11n (HT20)	65 Mbps	-17.63		Pass
6	2437		65 Mbps	-18.74		Pass
11	2462		65 Mbps	-18.40		Pass
3	2422	802.11n (HT40)	135 Mbps	-20.32		Pass
6	2437		135 Mbps	-20.39		Pass
9	2452		135 Mbps	-21.36		Pass

**Test result: Level = Read Level + Cable Loss.**

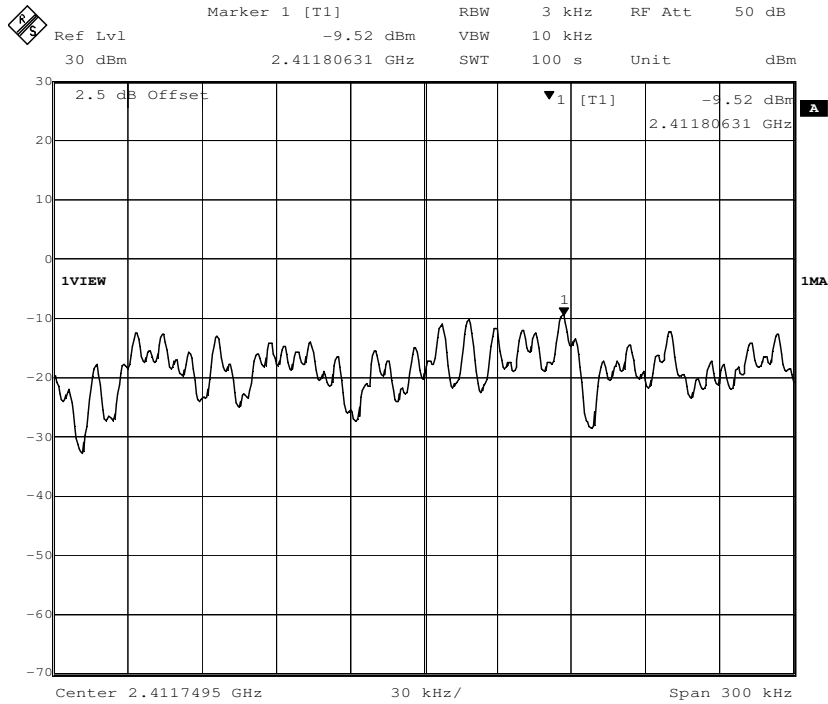
**The unit does meet the FCC requirements.**



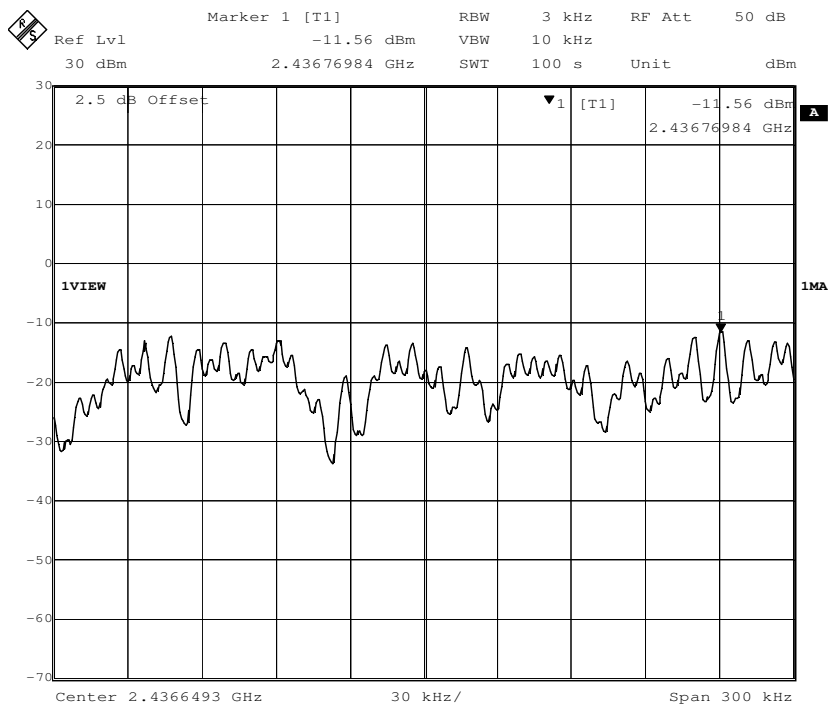
**Result plot as follows:**

**802.11b mode with 11Mbps data rate**

Channel 1: 2.412GHz:

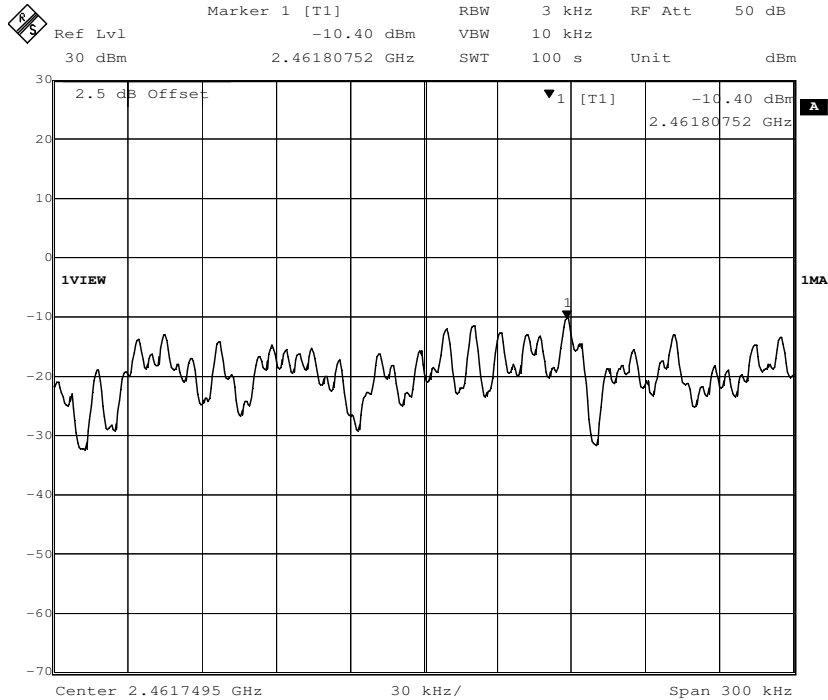


Channel 6: 2.437GHz:



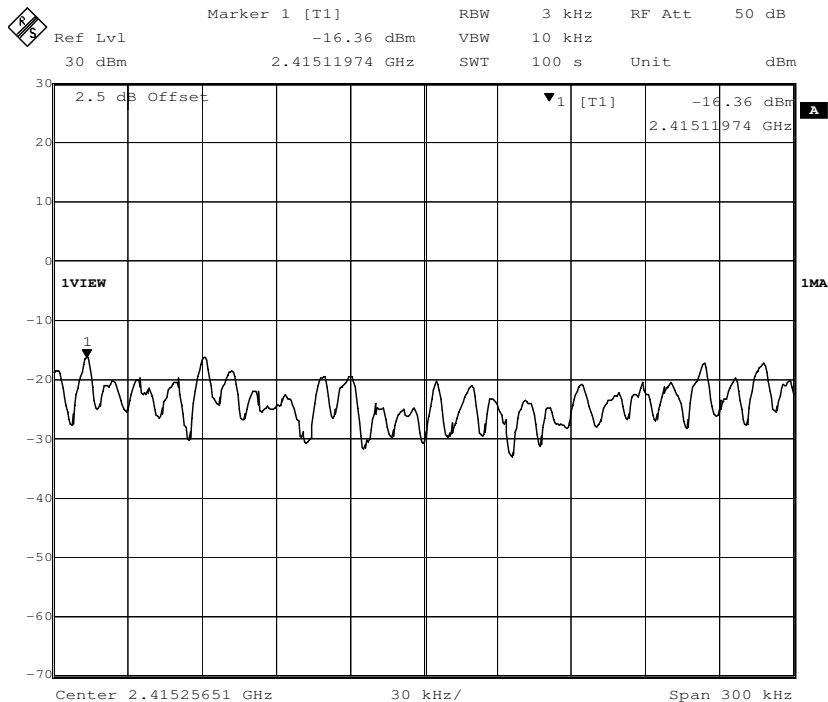


Channel 11: 2.462GHz:



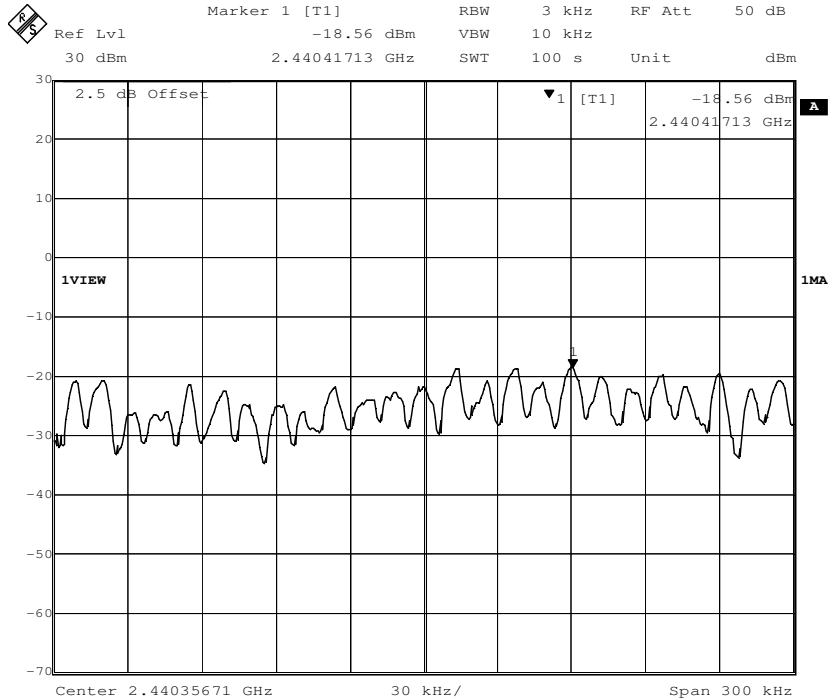
802.11g mode with 54Mbps data rate

Channel 1: 2.412GHz:

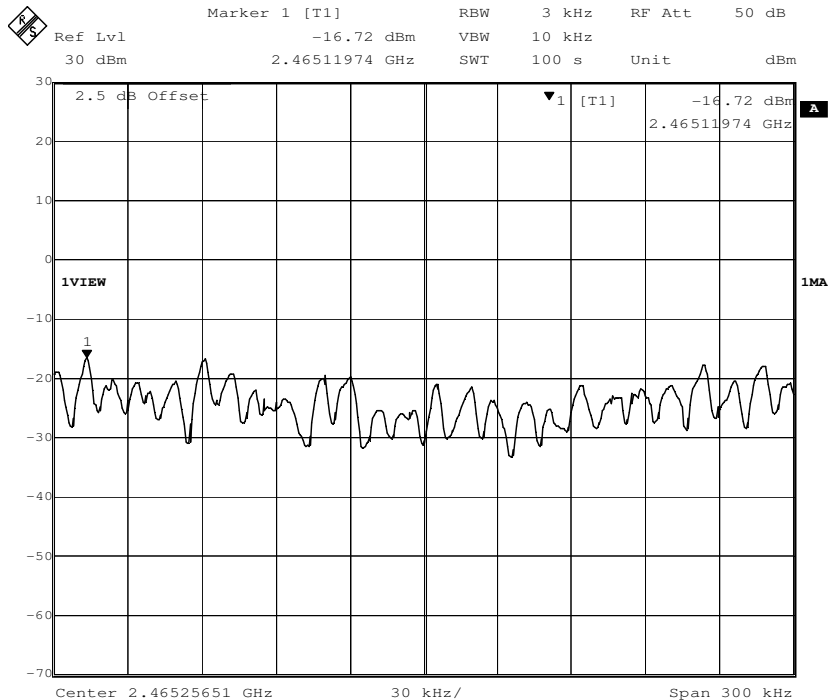




Channel 6: 2.437GHz:

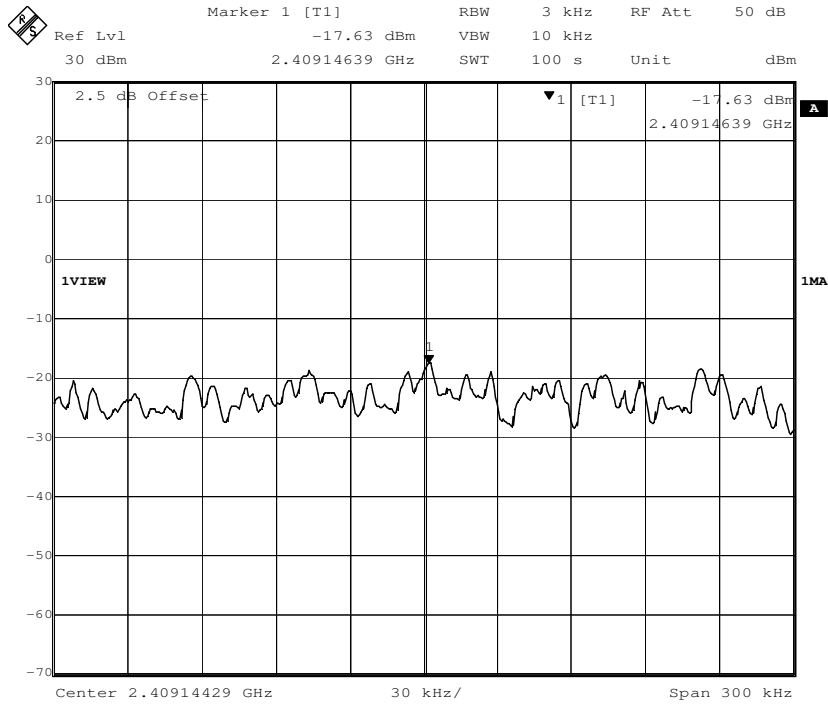


Channel 11: 2.462GHz:

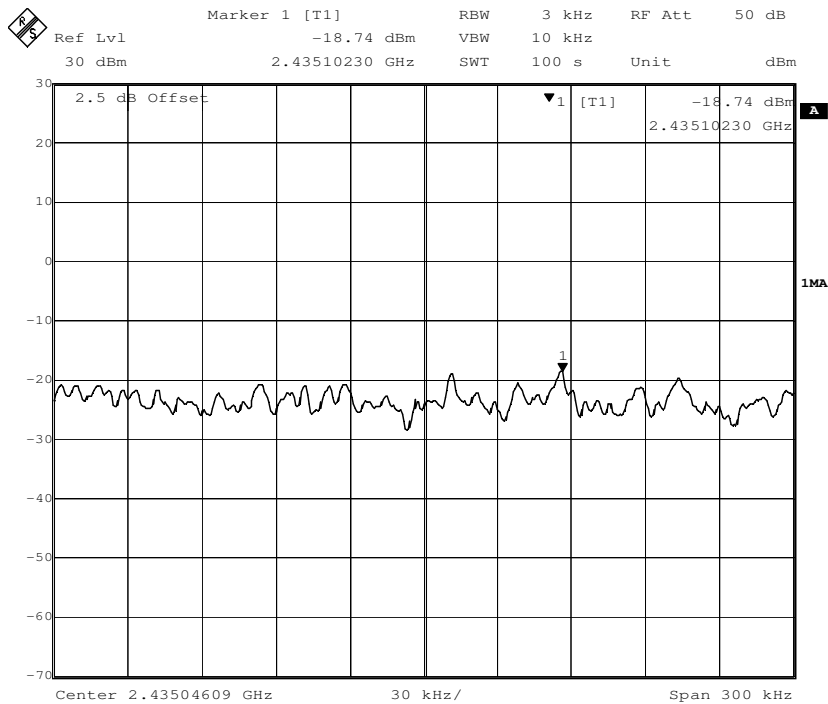


**802.11n(HT20) mode with 65Mbps data rate**

Channel 1: 2.412GHz:

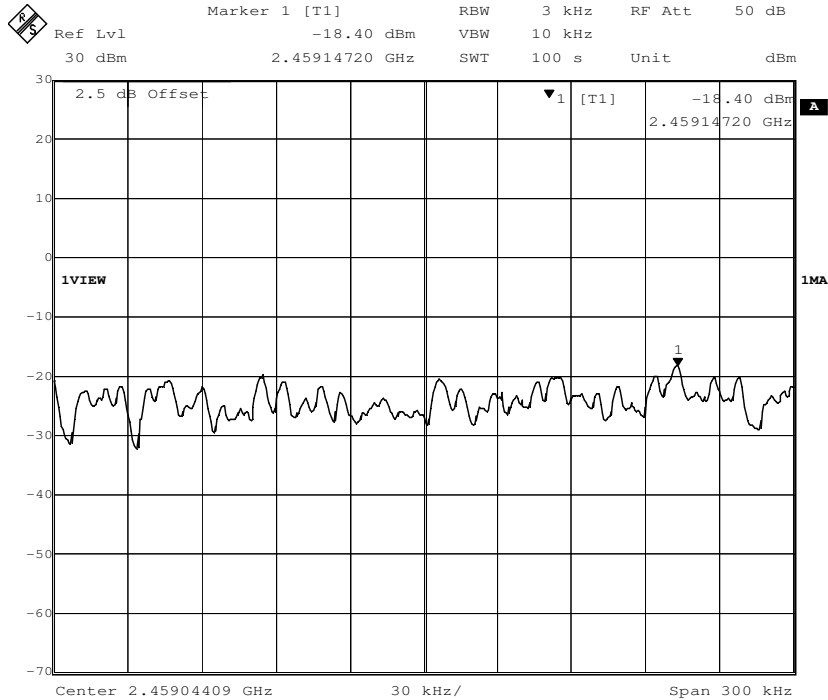


Channel 6: 2.437GHz:



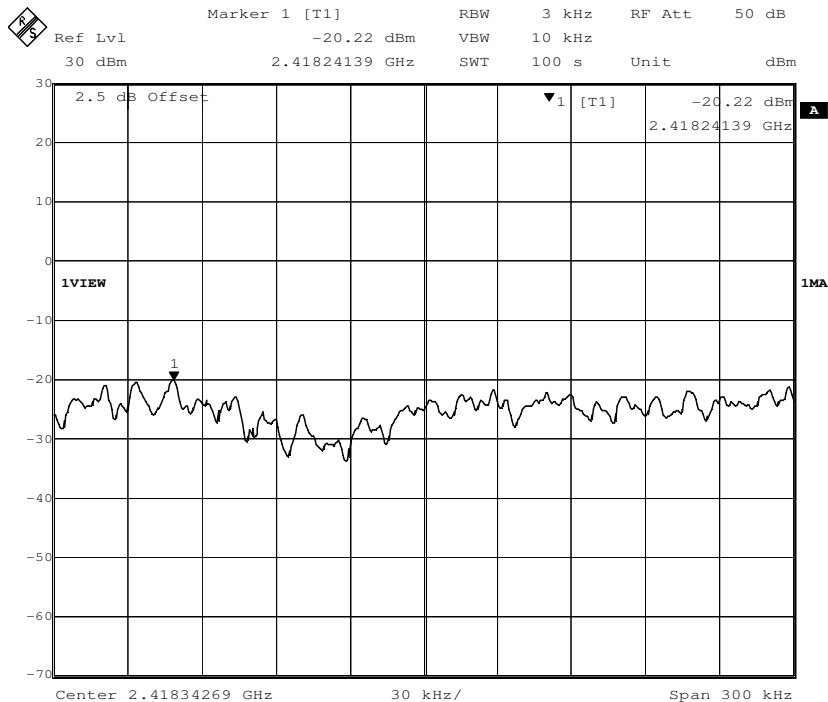


Channel 11: 2.462GHz:



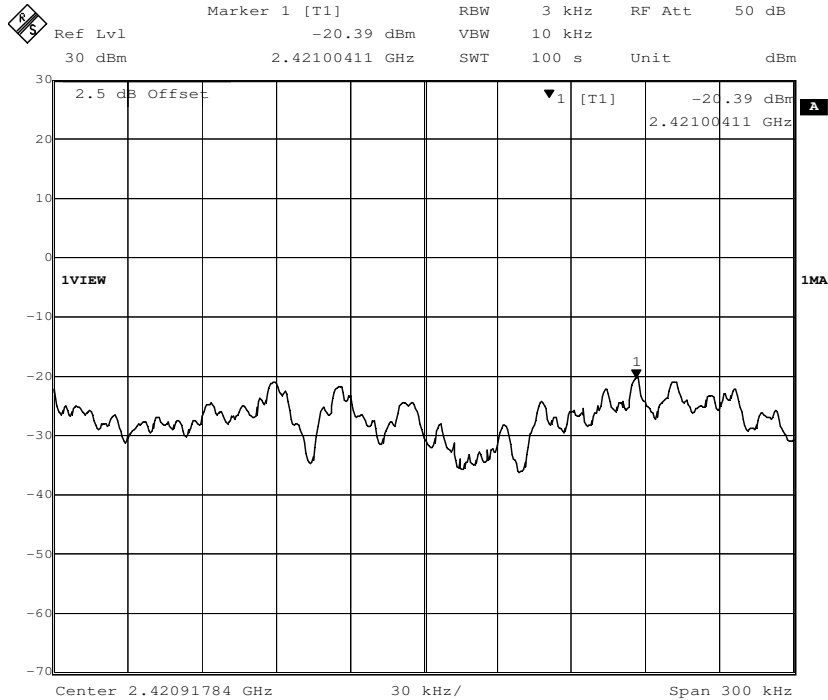
802.11n(HT40) mode with 135Mbps data rate

Channel 3: 2.422GHz:

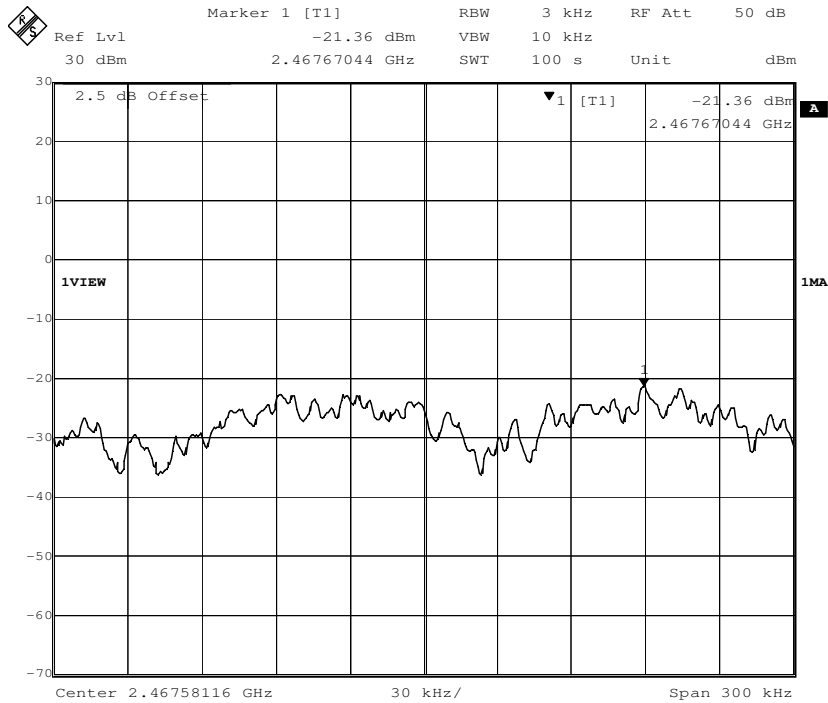




Channel 6: 2.437GHz:



Channel 9: 2.452GHz:



## 7.6 Conducted Spurious Emissions

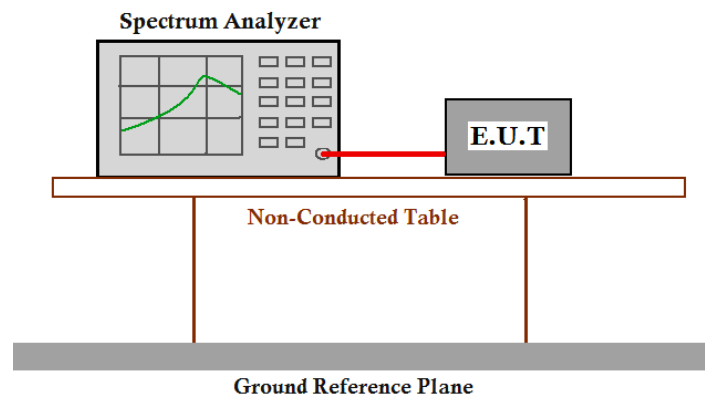
Test Requirement: FCC Part 15 C section 15.247

(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 C63.10: Clause 6.7

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 Configuration:



Test Procedure:

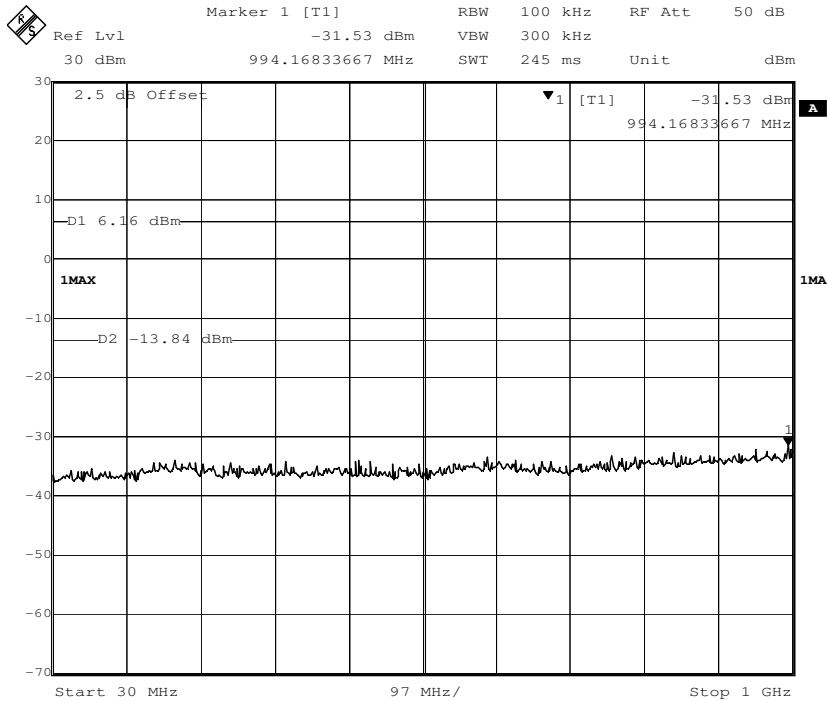
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer or power meter.
2. Set the spectrum analyzer: RBW=100 KHz, VBW = 300KHz. Sweep = auto; Detector Function = Peak. Trace = Max Hold, Scan up through 10th harmonic.
3. Measure the Conducted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

**Result plot as follows:**

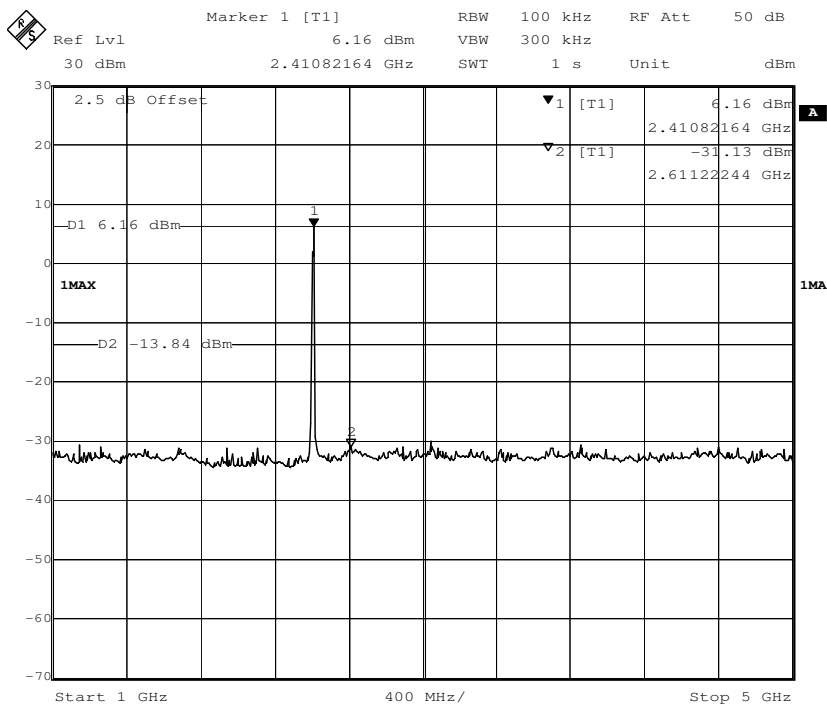
**802.11b mode with 11Mbps data rate**

Channel 1: 2.412GHz:

30 MHz to 1 GHz



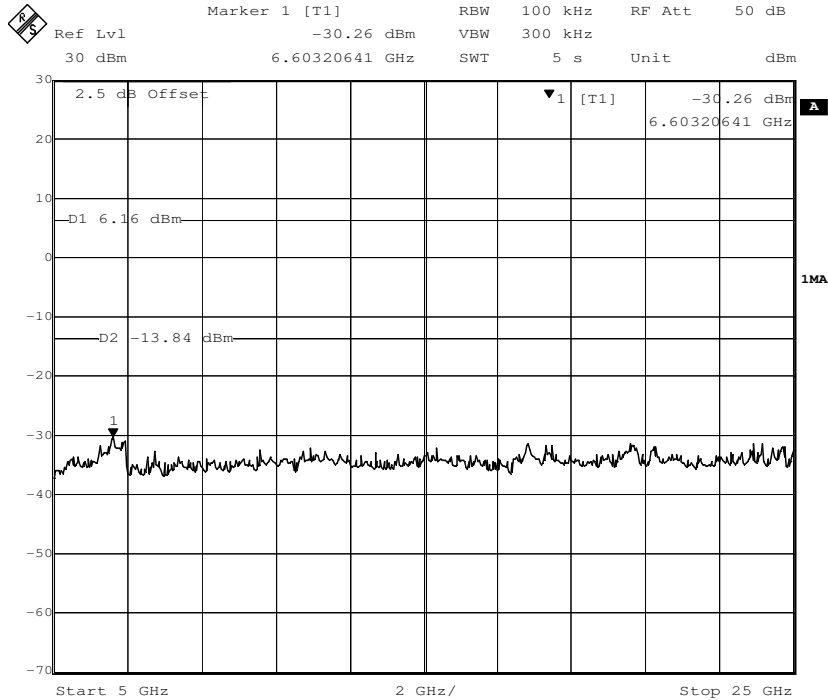
1 G to 5 GHz





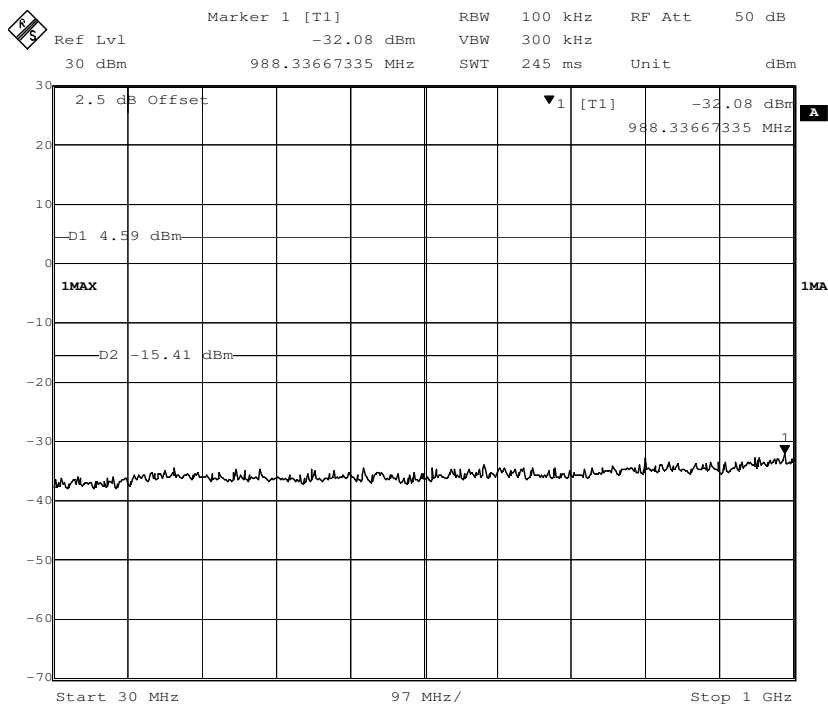


5 G to 25 GHz



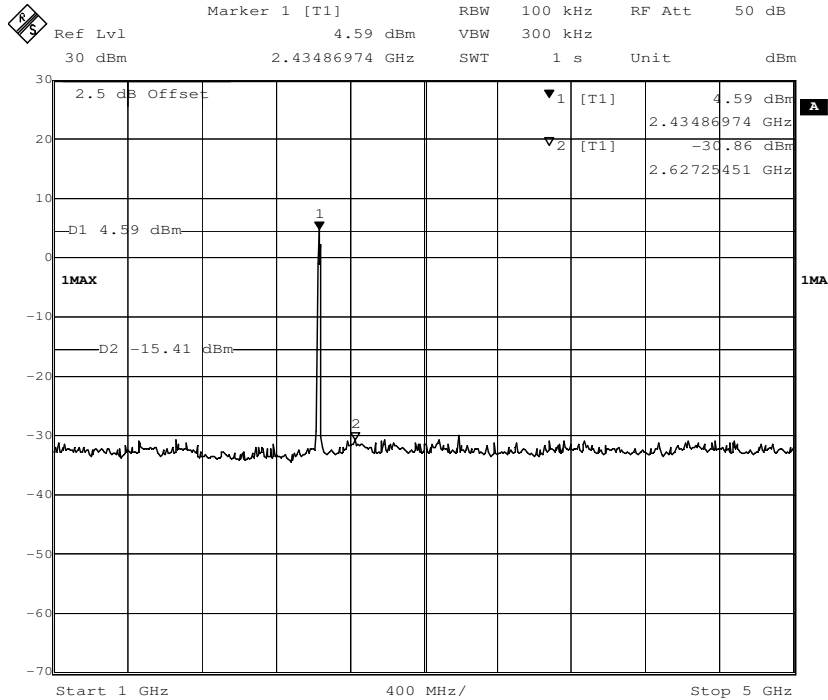
Channel 6: 2.437GHz:

30 MHz to 1 GHz

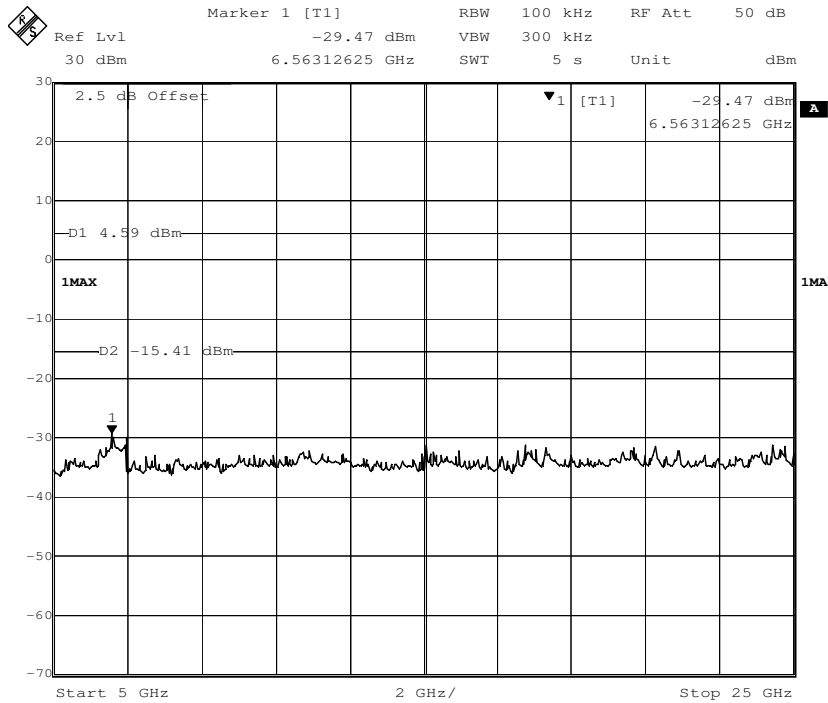




1 G to 5 GHz



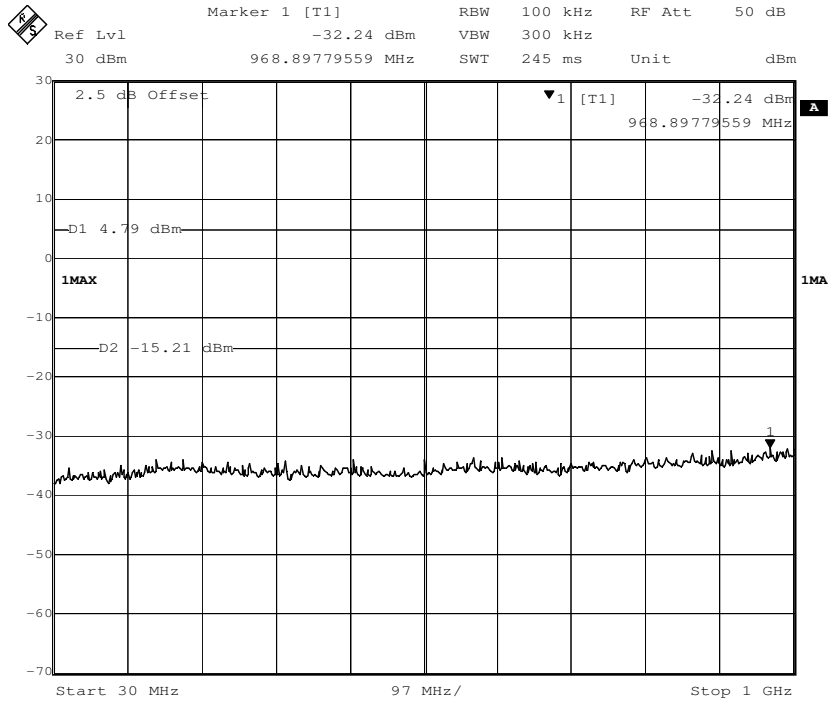
5 G to 25 GHz



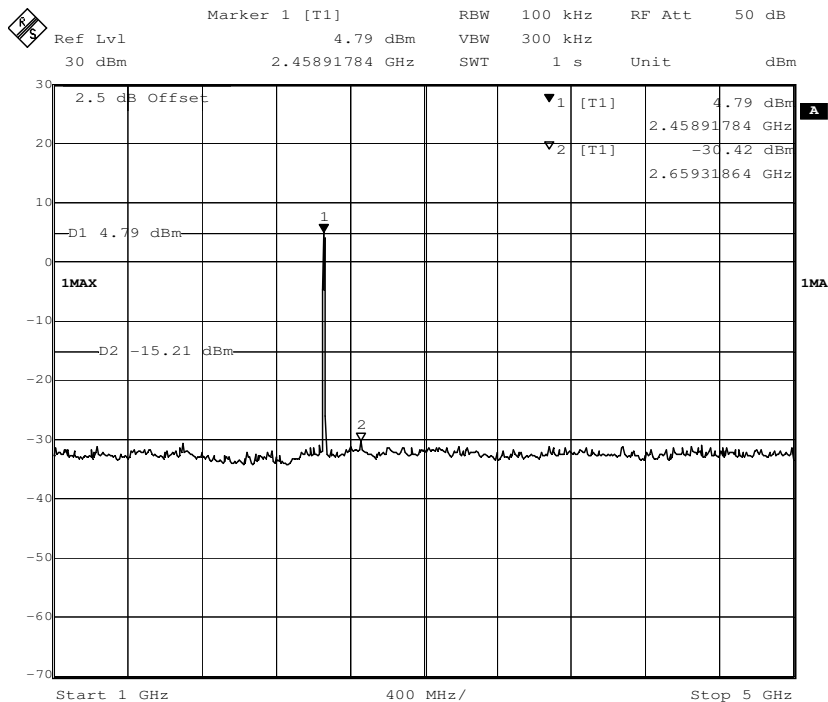


Channel 11:2.462 GHz

30 MHz to 1 GHz

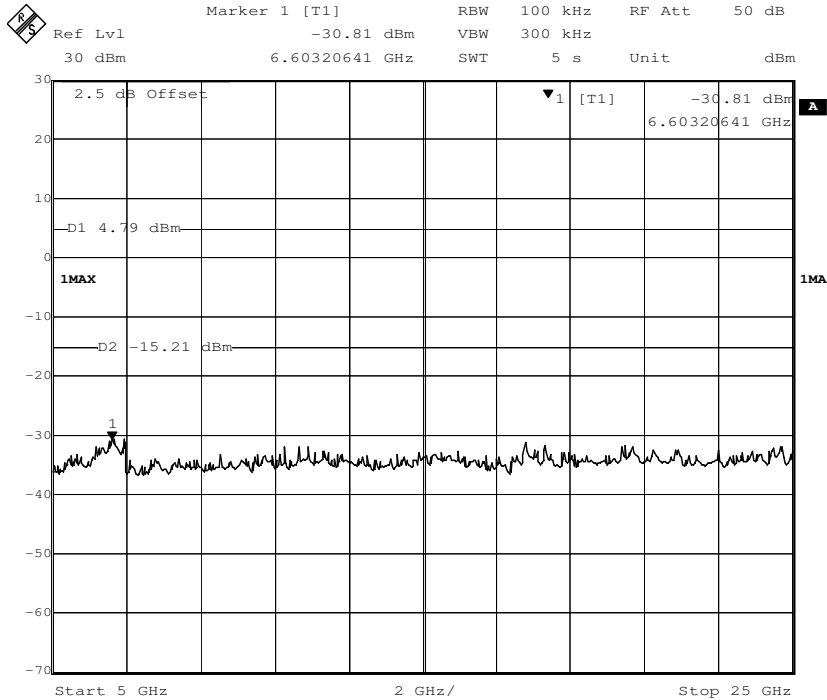


1 G to 5 GHz





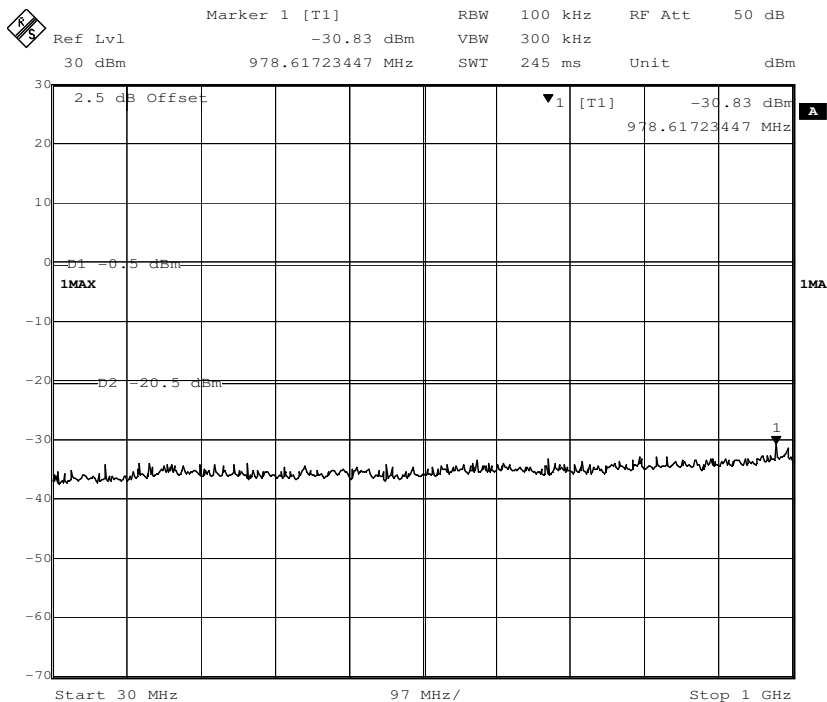
5 G to 25 GHz



802.11g mode with 54Mbps data rate

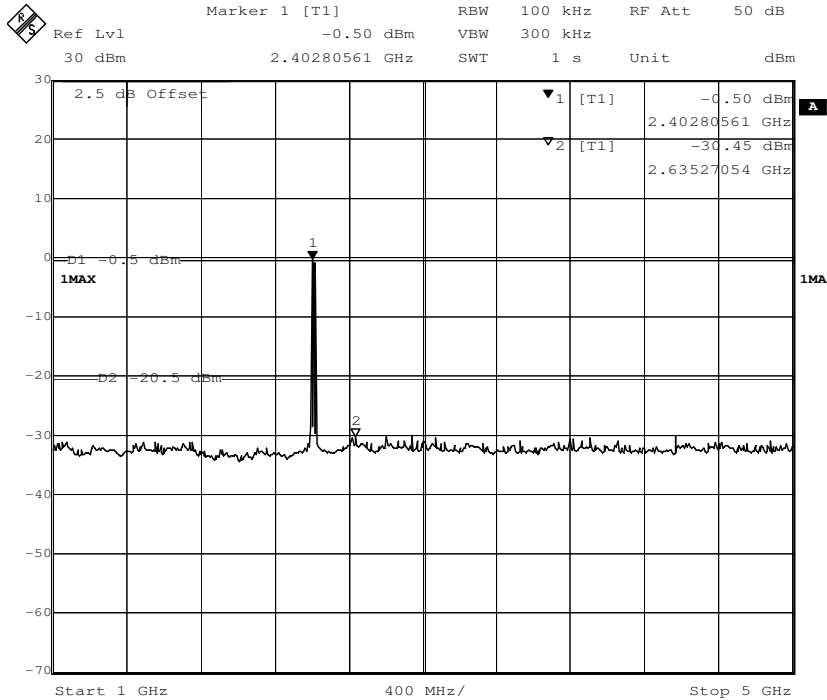
Channel 1: 2.412GHz:

30 MHz to 1 GHz

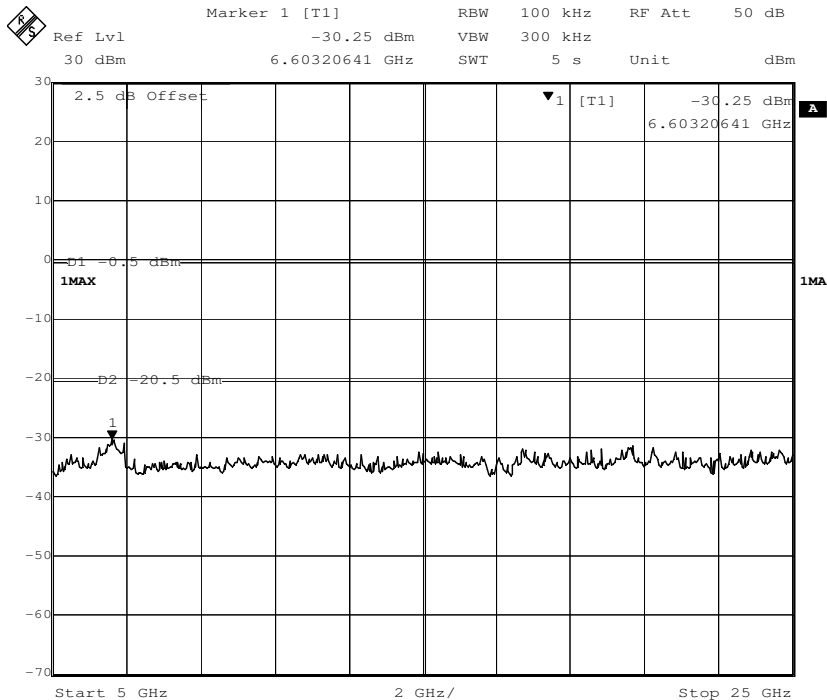




1 G to 5 GHz



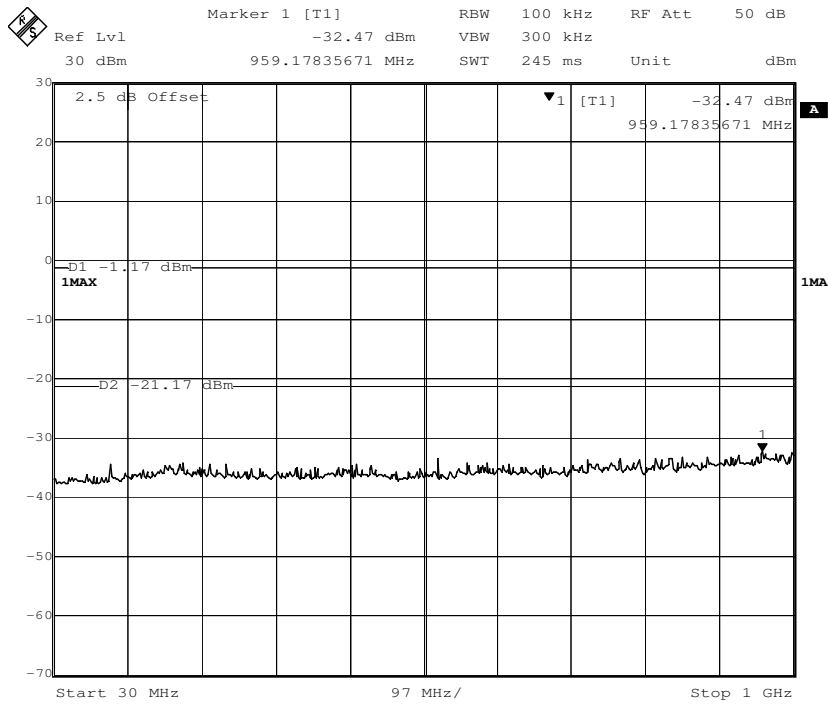
5 G to 25 GHz



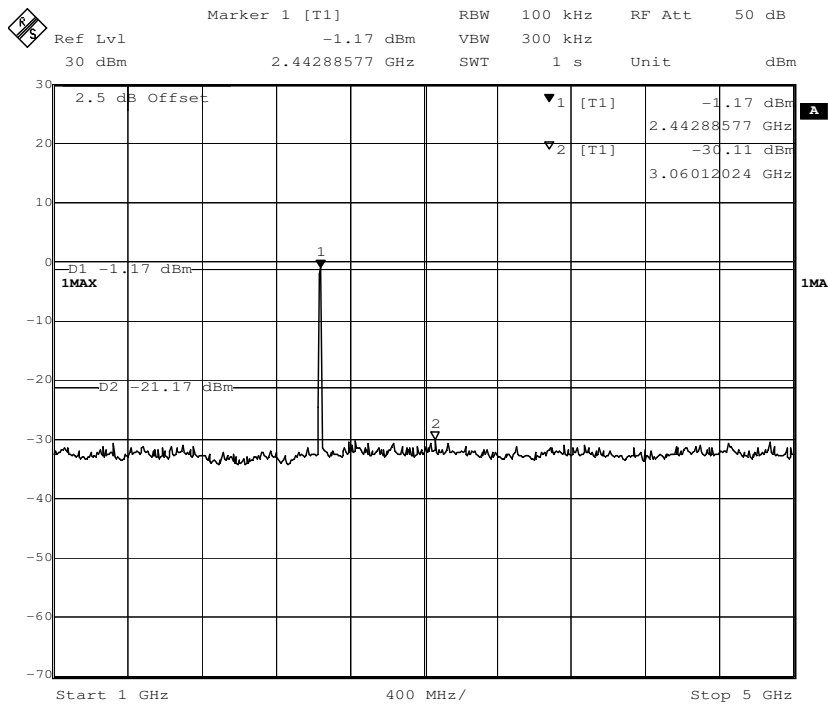


Channel 6: 2.437GHz:

30 MHz to 1 GHz

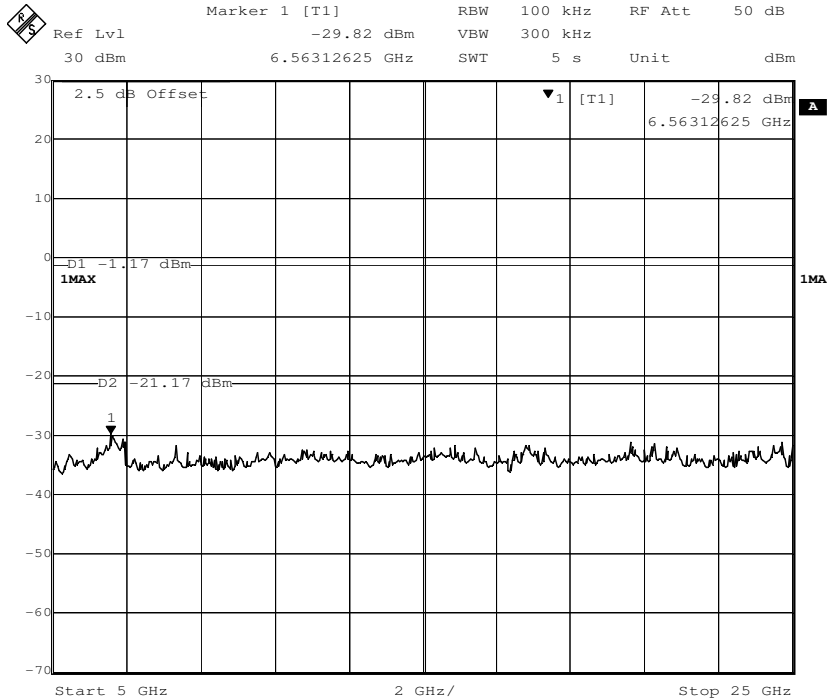


1 G to 5 GHz



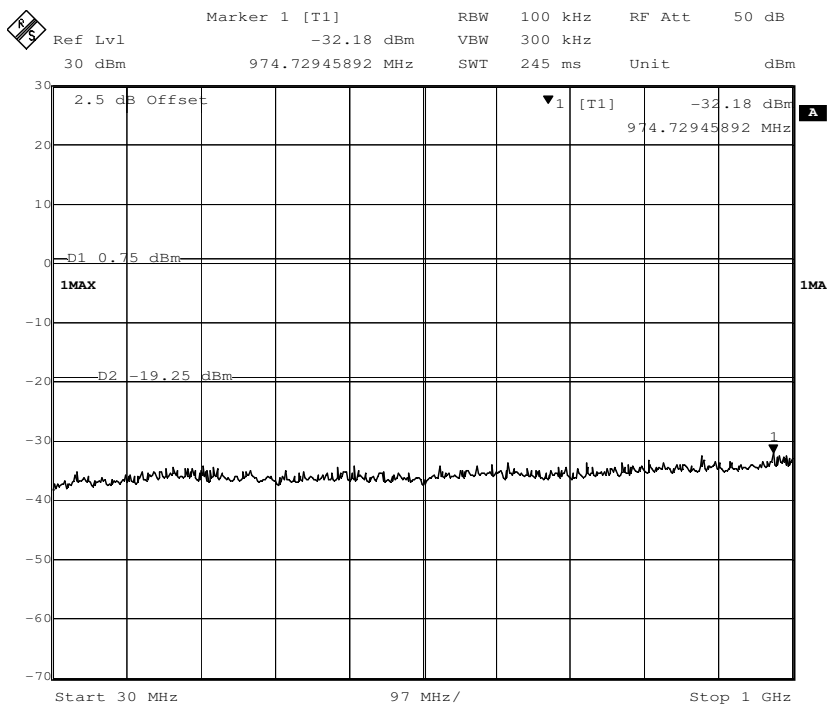


5 G to 25 GHz



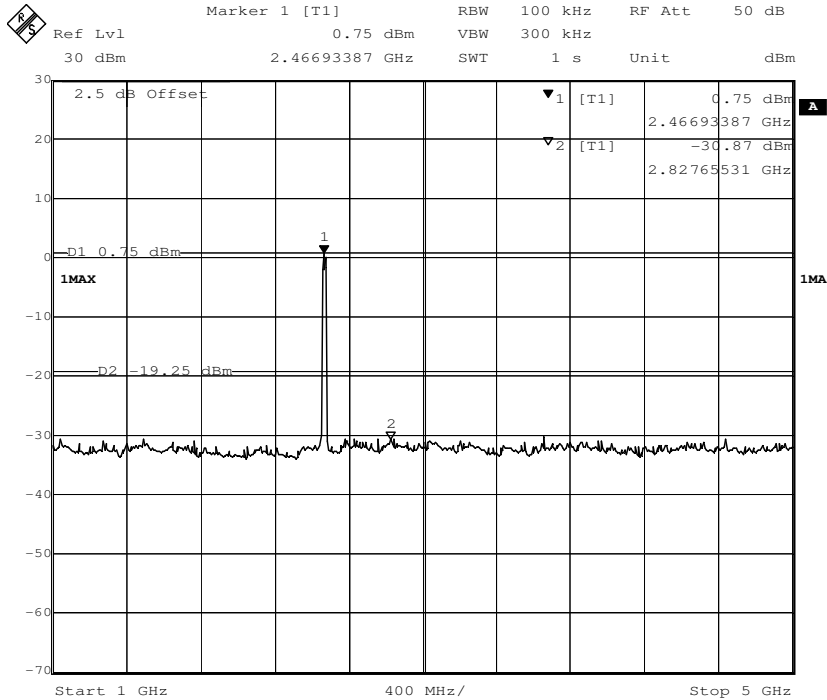
Channel 11:2.462 GHz

30 MHz to 1 GHz

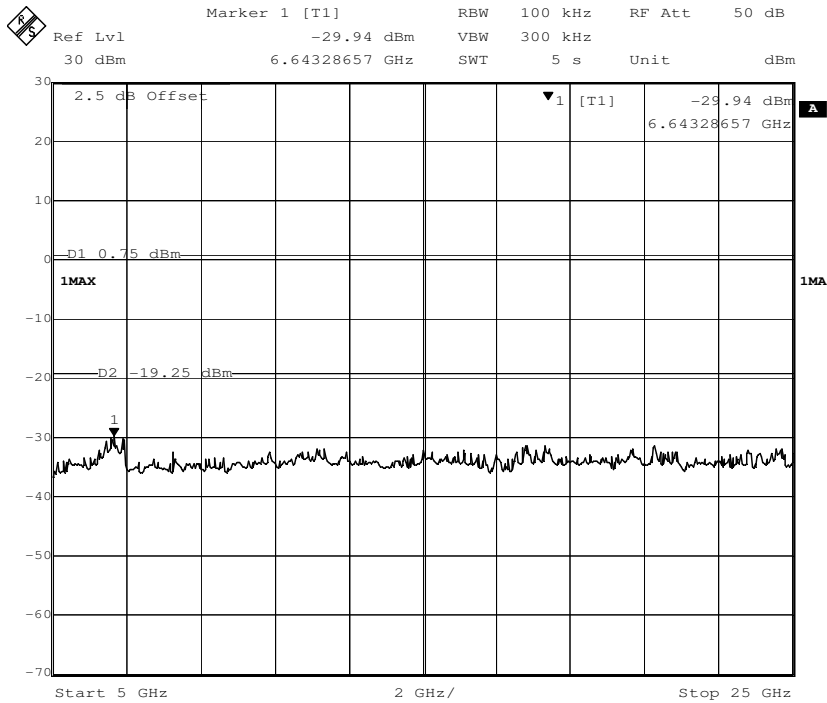




1 G to 5 GHz



5 G to 25 GHz

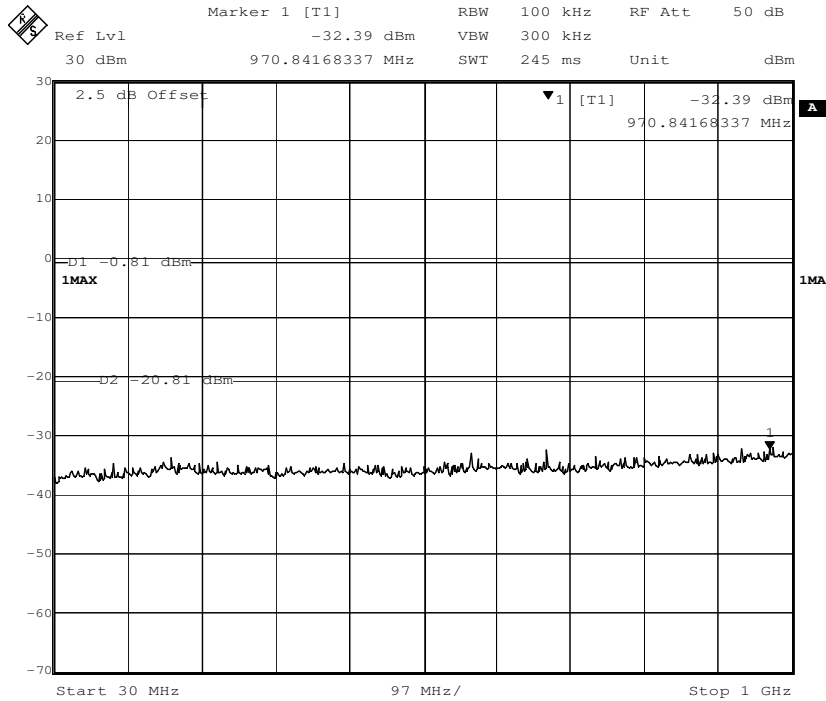




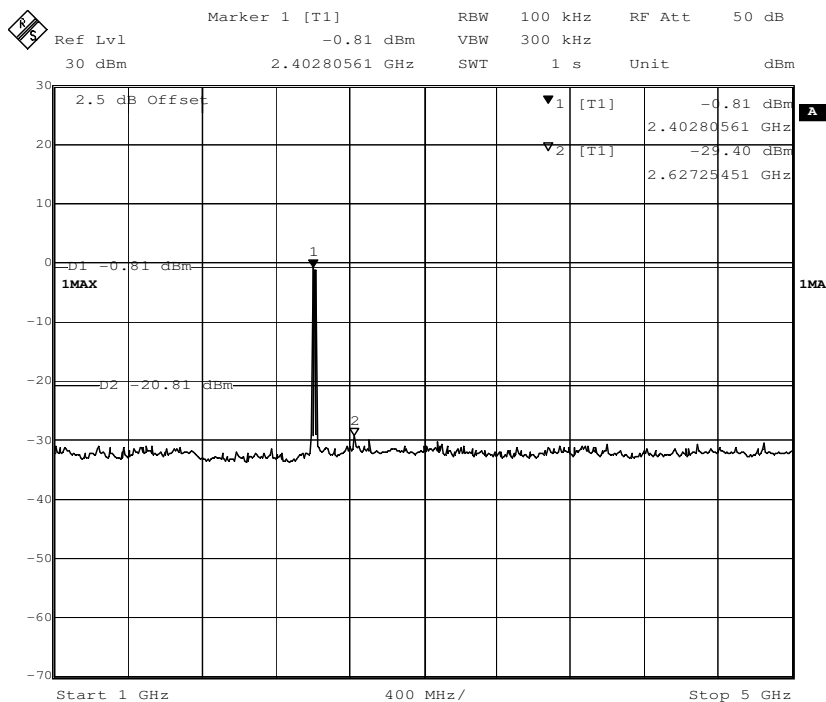
**802.11n(HT20) mode with 65Mbps data rate**

Channel 1: 2.412GHz:

30 MHz to 1 GHz

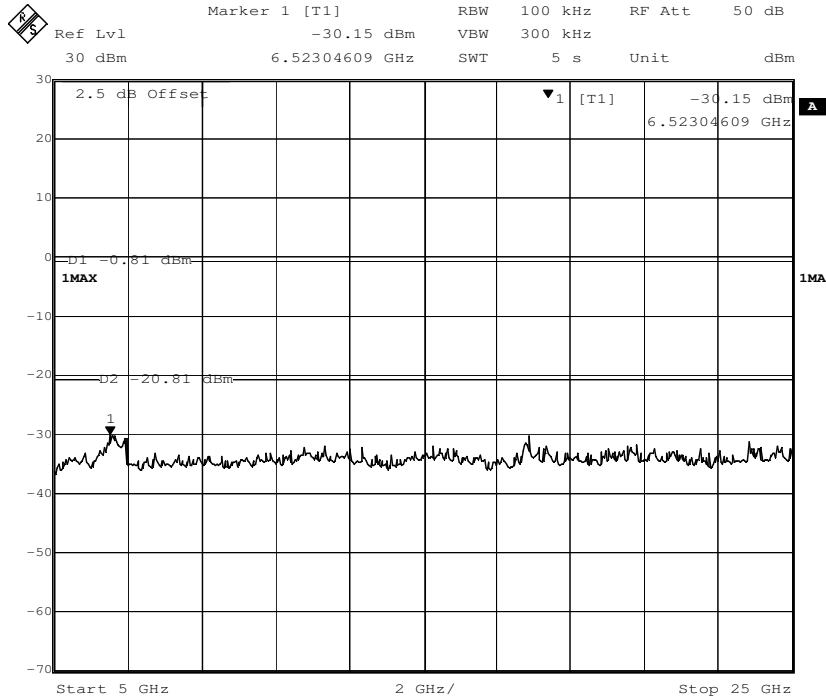


1 G to 5 GHz



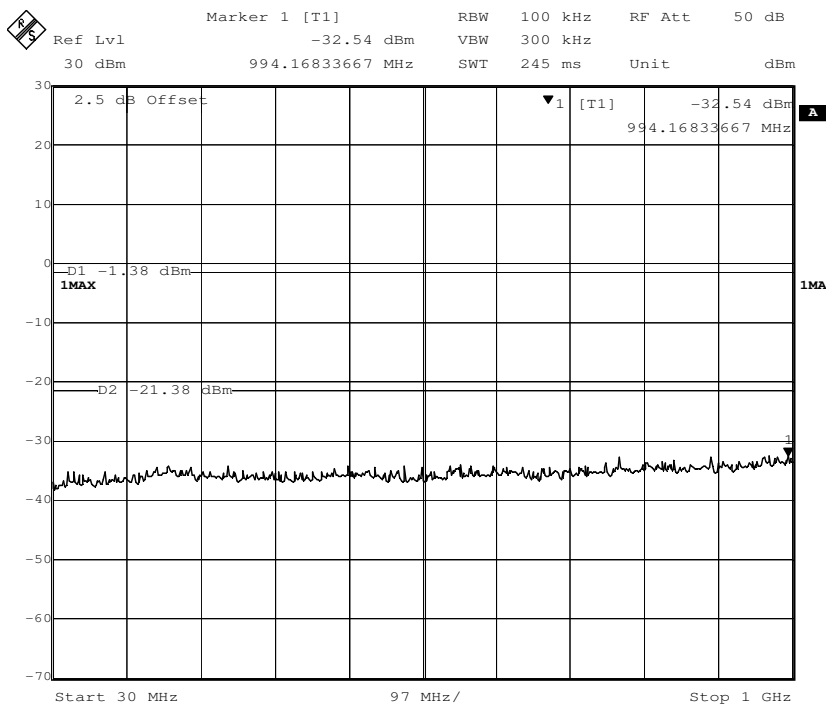


5 G to 25 GHz



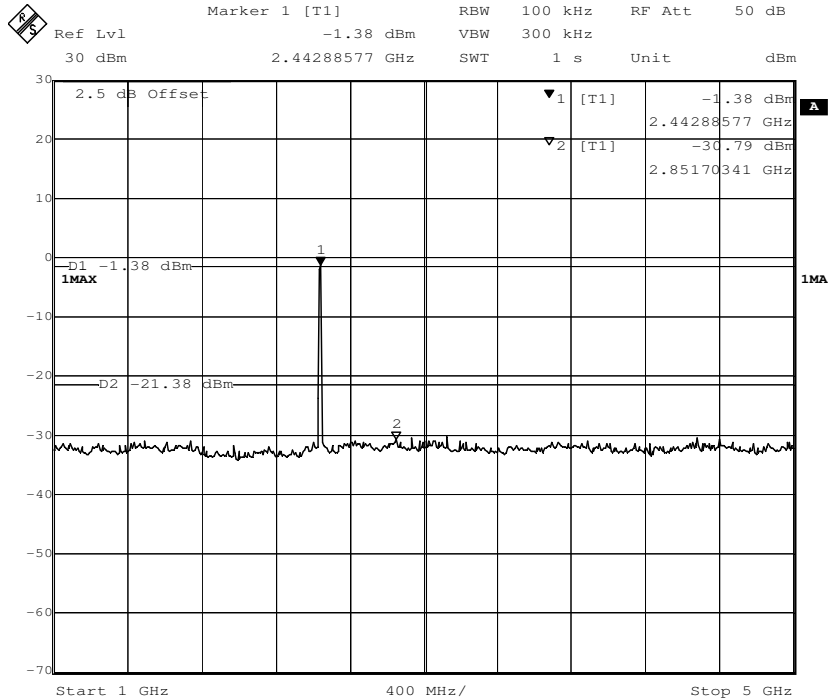
Channel 6: 2.437GHz:

30 MHz to 1 GHz

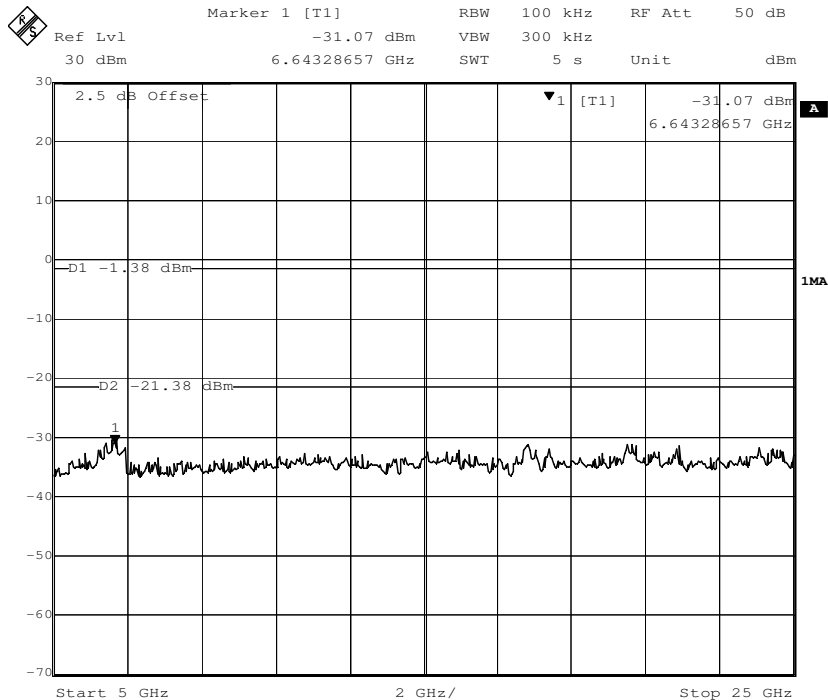




1 G to 5 GHz



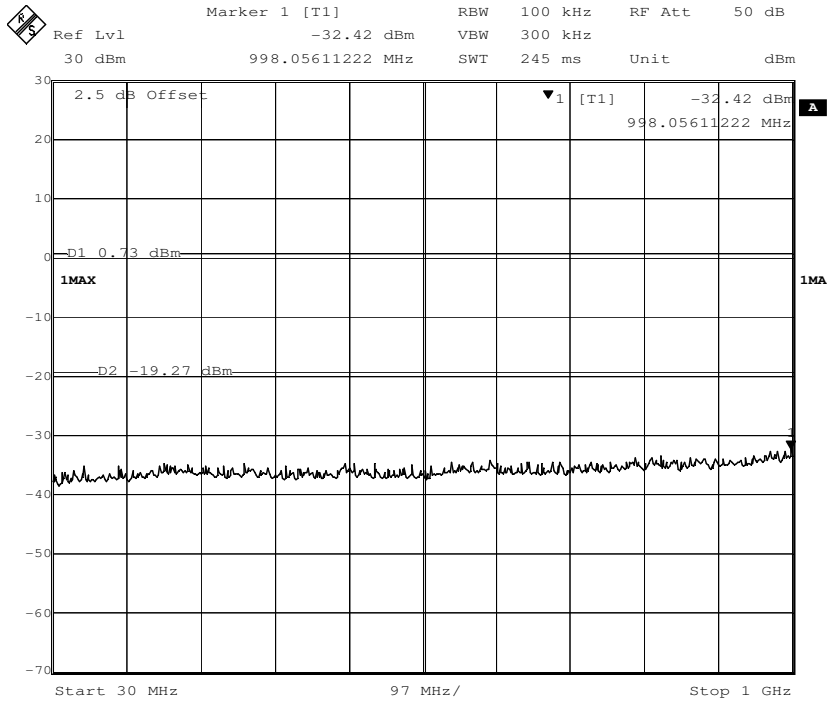
5 G to 25 GHz



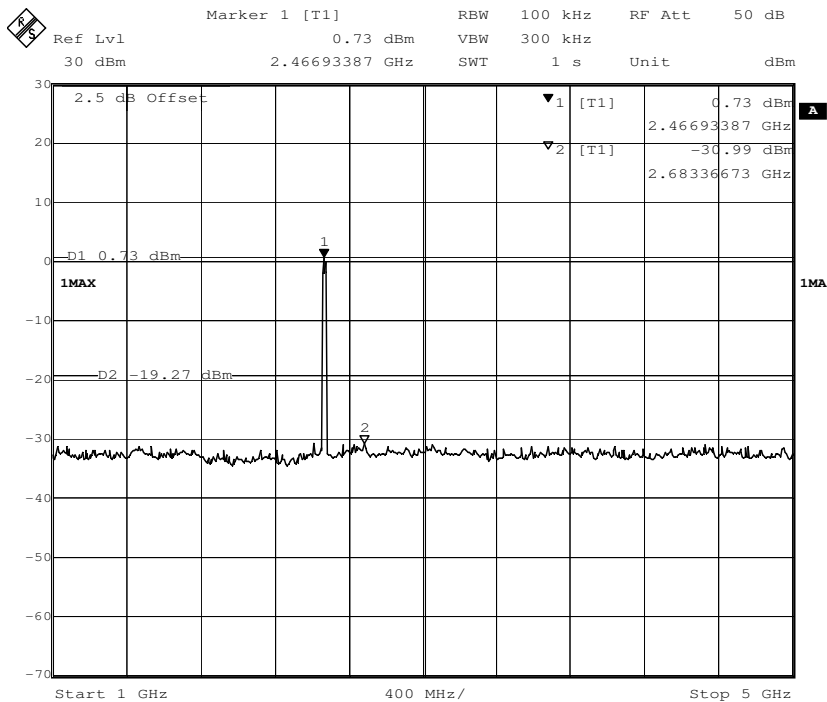


Channel 11:2.462 GHz

30 MHz to 1 GHz

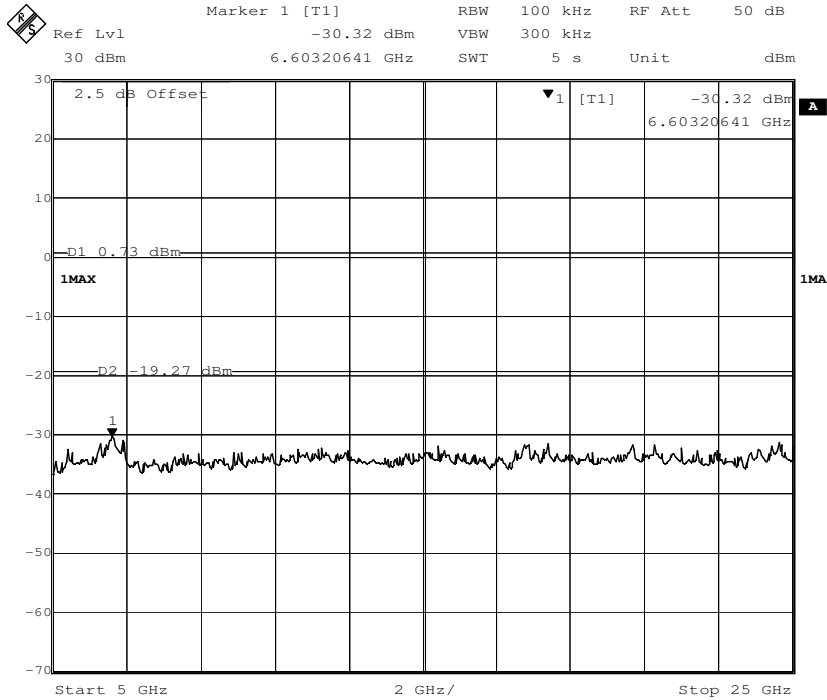


1 G to 5 GHz





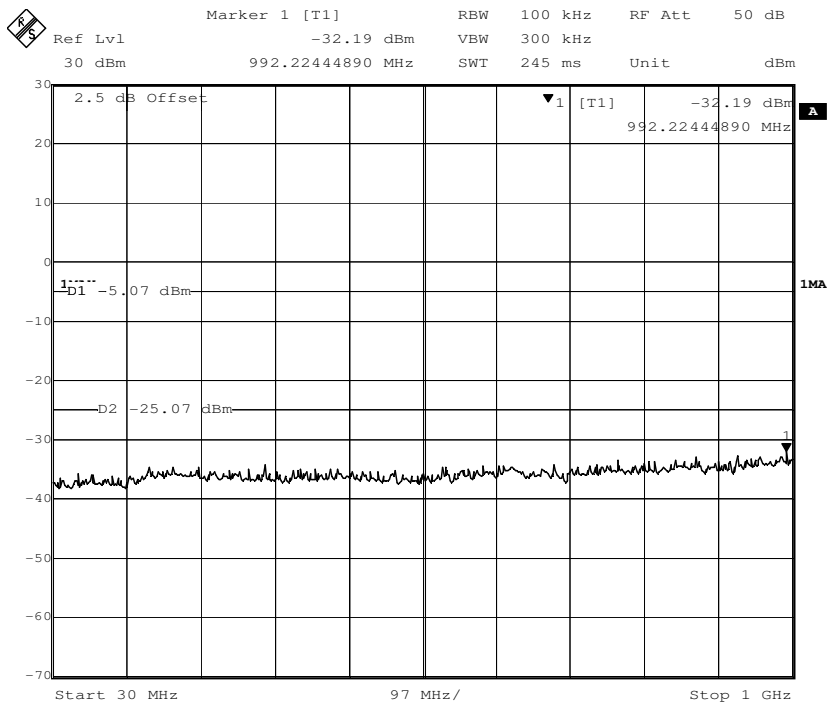
5 G to 25 GHz



802.11n(HT40) mode with 135Mbps data rate

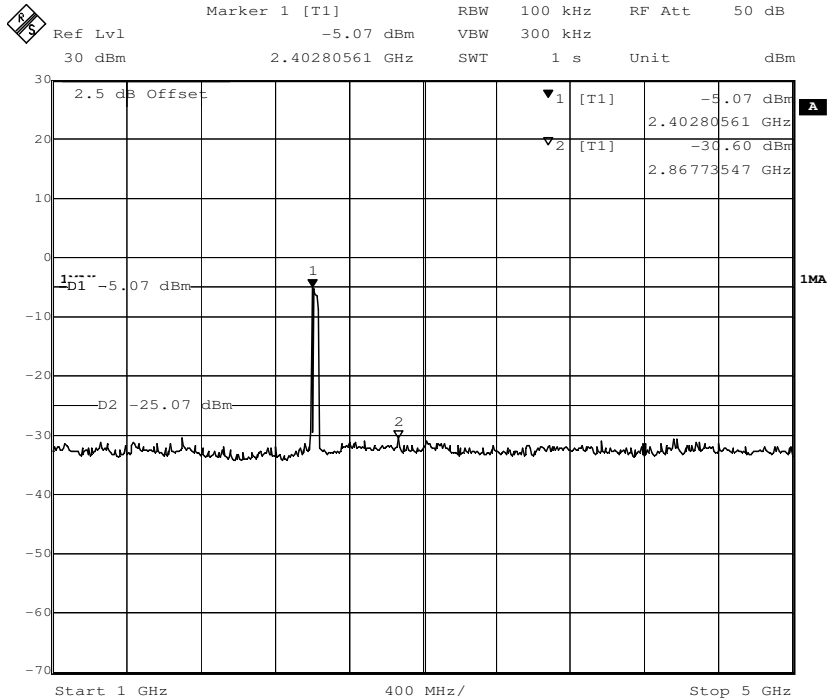
Channel 3: 2.422GHz:

30 MHz to 1 GHz

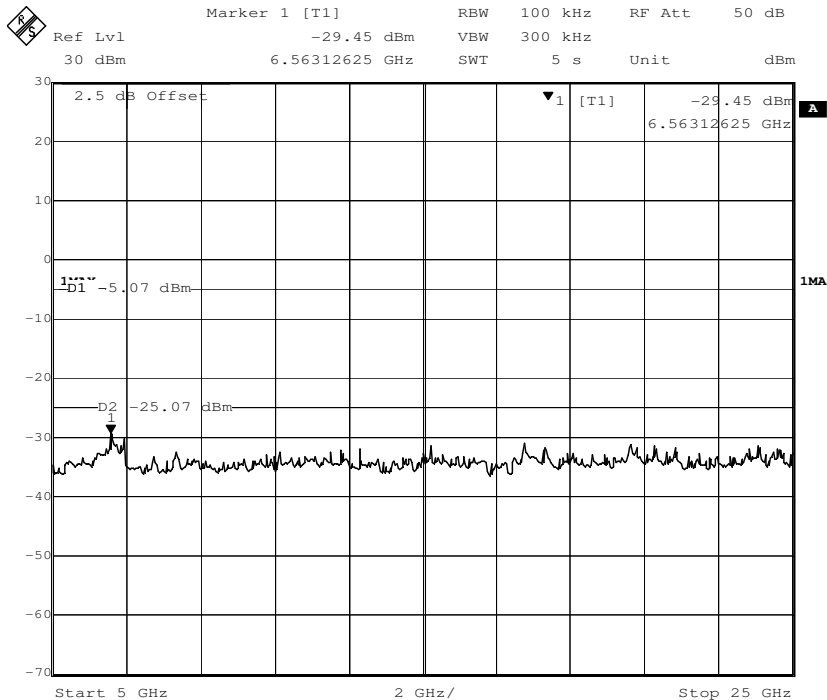




1 G to 5 GHz



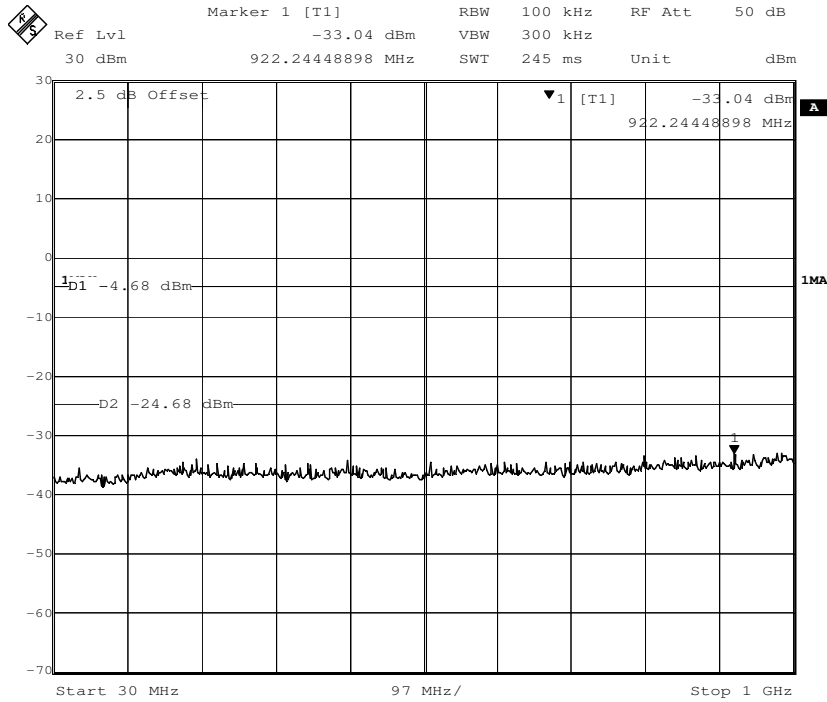
5 G to 25 GHz



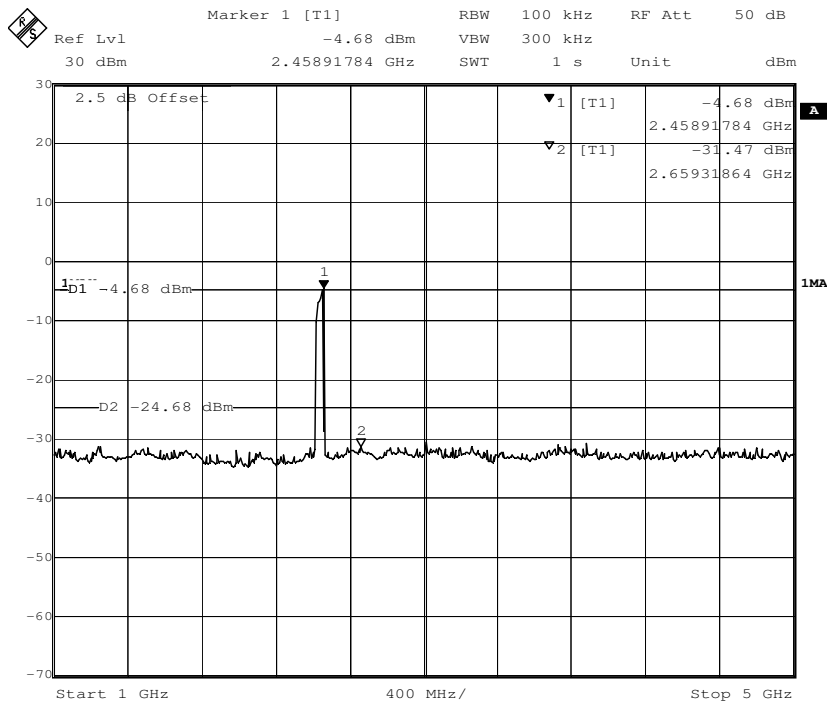


Channel 6: 2.437GHz:

30 MHz to 1 GHz

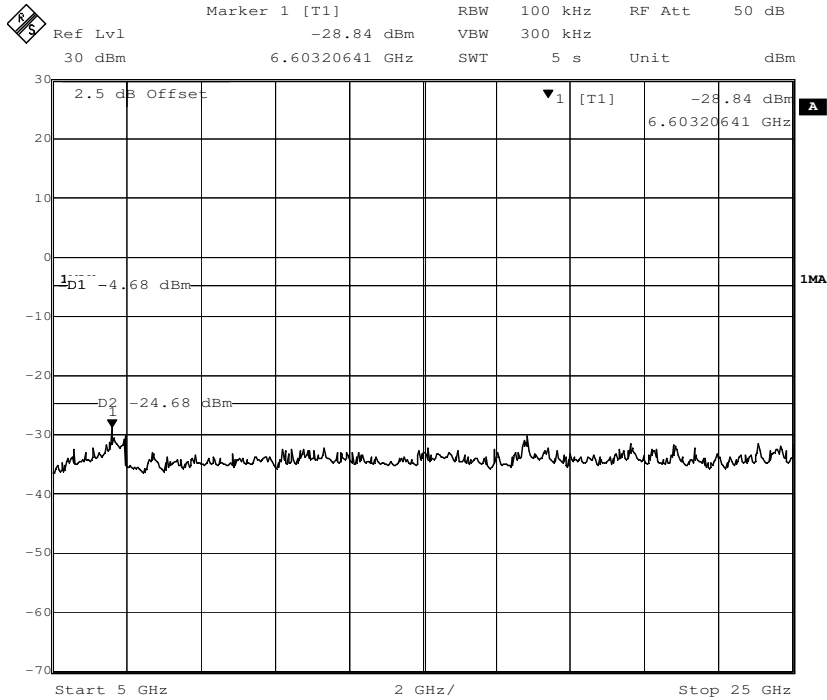


1 G to 5 GHz



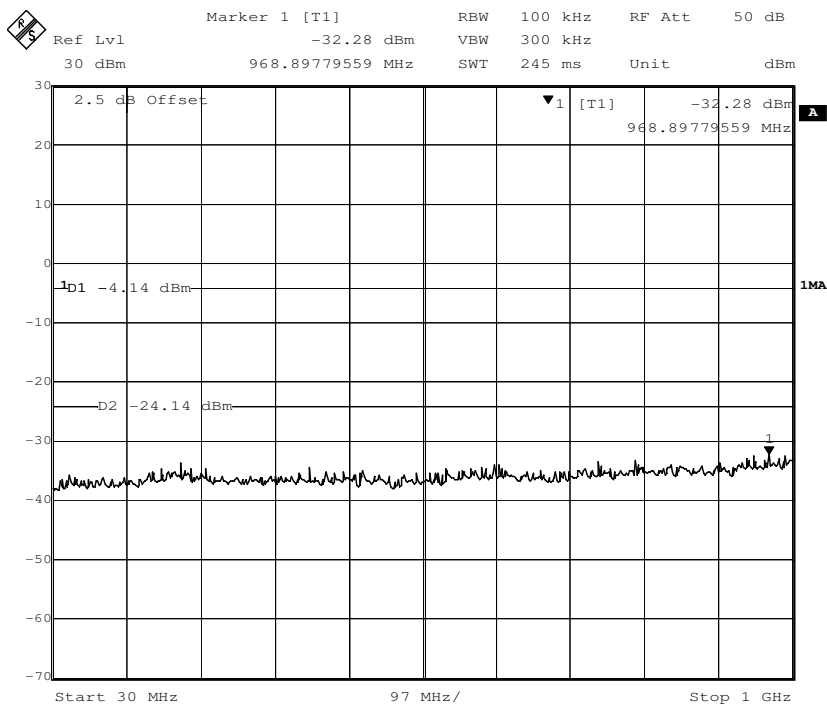


5 G to 25 GHz



Channel 9:2.452 GHz

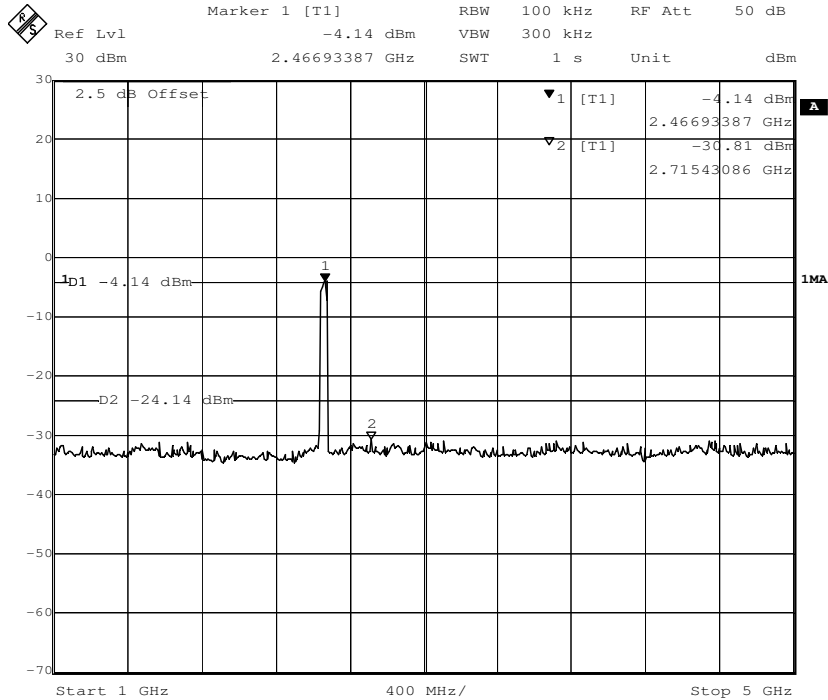
30 MHz to 1 GHz



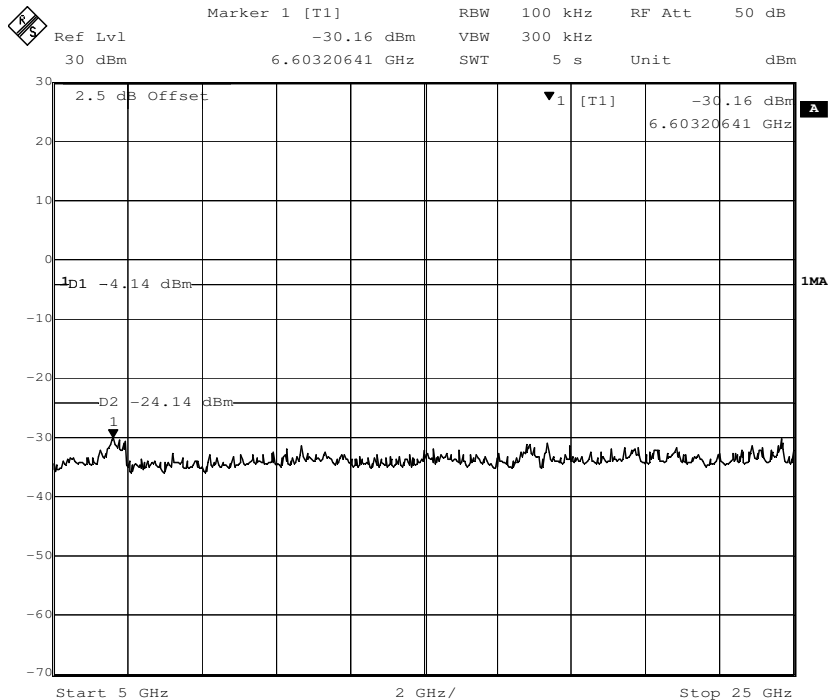




1 G to 5 GHz



5 G to 25 GHz

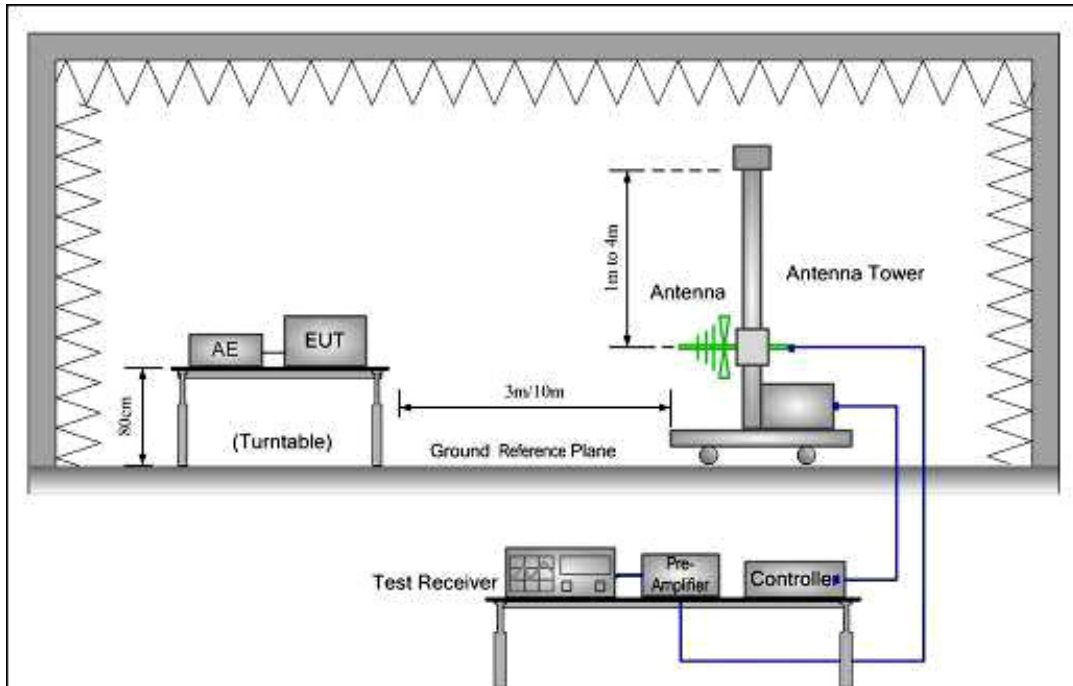


## 7.7 Radiated Spurious Emissions

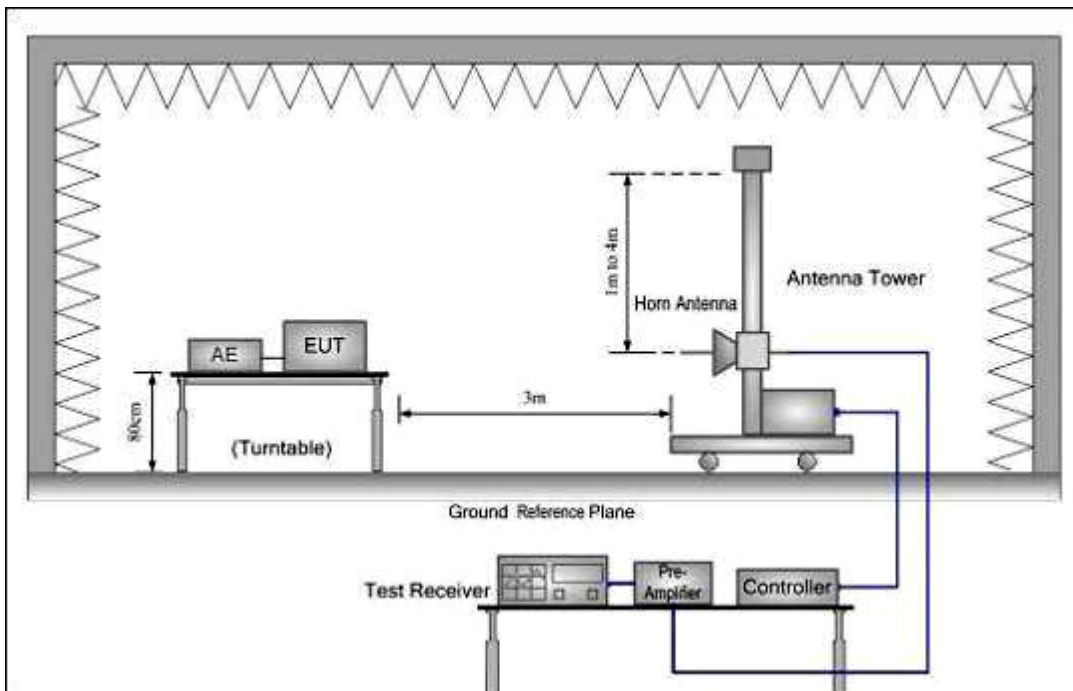
Test Requirement:	FCC Part 15 C section 15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 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, and provided the transmitter demonstrates compliance with the peak conducted power limits.
Test Method:	ANSI C63.10: Clause 6.4, 6.5 and 6.6
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.
Detector:	For PK value: RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz VBW $\geq$ RBW Sweep = auto Detector function = peak Trace = max hold For AV value: RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz VBW = 10Hz Sweep = auto Detector function = peak Trace = max hold
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

**Test Configuration:**

- 1) 30 MHz to 1 GHz emissions:



- 2) 1 GHz to 40 GHz emissions:





**Test Procedure:** 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.

### 7.7.1 Harmonic and other spurious emissions

#### 7.7.1.1 802.11b mode with 11Mbps data rate

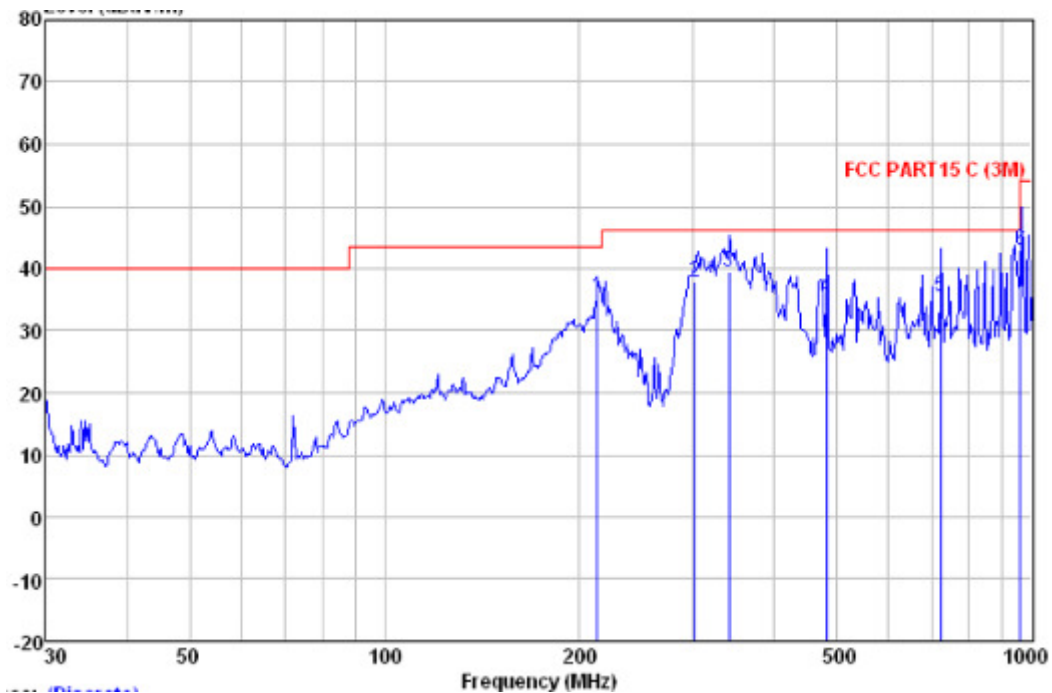
Test at Channel 1 (2.412 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

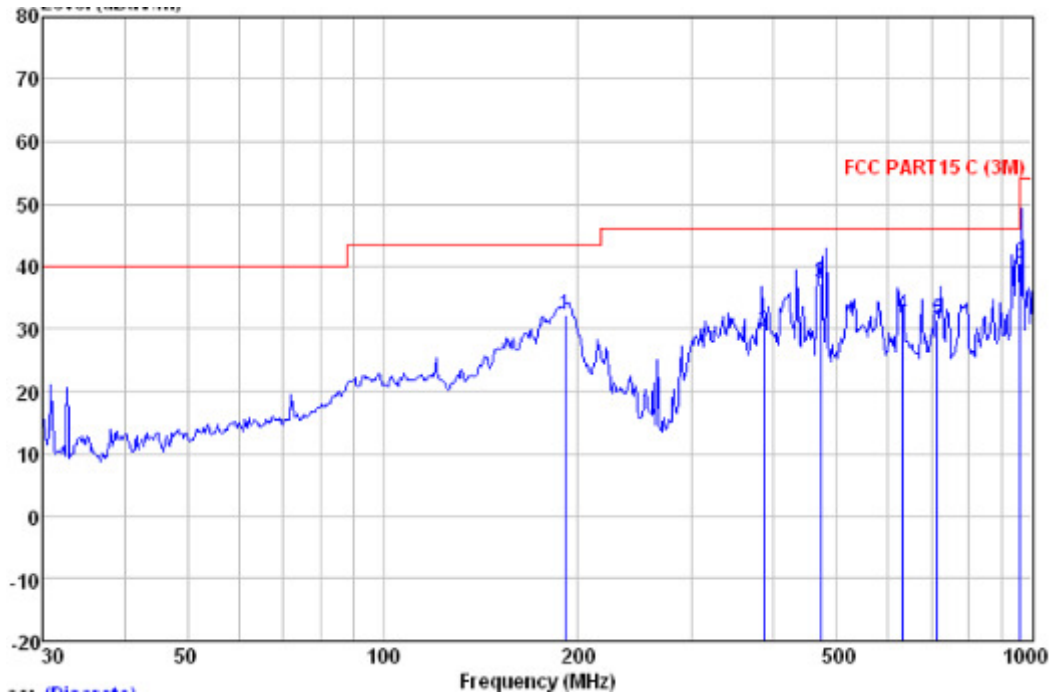
Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit	Remark
MHz	dBμV	dB/m	dB	dB	dBμV/m	dB	dBμV/m	
213.015	52.12	10.97	1.96	29.52	35.53	-7.97	43.50	QP
301.422	51.91	13.08	2.35	29.60	37.74	-8.26	46.00	QP
339.589	52.42	14.12	2.52	29.60	39.46	-6.54	46.00	QP
480.528	45.51	16.07	3.03	29.52	35.09	-10.91	46.00	QP
721.726	41.94	19.10	3.61	29.28	35.37	-10.63	46.00	QP
960.070	45.20	21.49	4.18	27.82	43.05	-10.95	54.00	QP



**Horizontal:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Over Level	Limit	Line	Remark
MHz	dBμV	dB/m	dB	dB	dBμV/m	dB	dBμV/m	
191.074	49.32	10.56	1.85	29.53	32.20	-11.30	43.50	QP
386.634	41.71	14.78	2.67	29.60	29.56	-16.44	46.00	QP
472.176	48.11	15.89	3.00	29.53	37.47	-8.53	46.00	QP
631.688	39.63	18.57	3.39	29.37	32.22	-13.78	46.00	QP
714.173	38.25	19.00	3.58	29.28	31.55	-14.45	46.00	QP
960.000	42.61	21.49	4.18	27.82	40.46	-5.54	46.00	QP



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4824.00	46.87	31.54	7.65	34.30	51.76	74	V
7236.00	39.08	36.48	8.80	34.30	50.06	74	V
4824.00	47.95	31.54	7.65	34.30	52.84	74	H
7236.00	37.72	36.48	8.80	34.30	48.70	74	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4824.00	44.19	31.54	7.65	34.30	49.08	54	V
7236.00	37.12	36.48	8.80	34.30	48.10	54	V
4824.00	44.28	31.54	7.65	34.30	49.17	54	H
7236.00	36.24	36.48	8.80	34.30	47.22	54	H

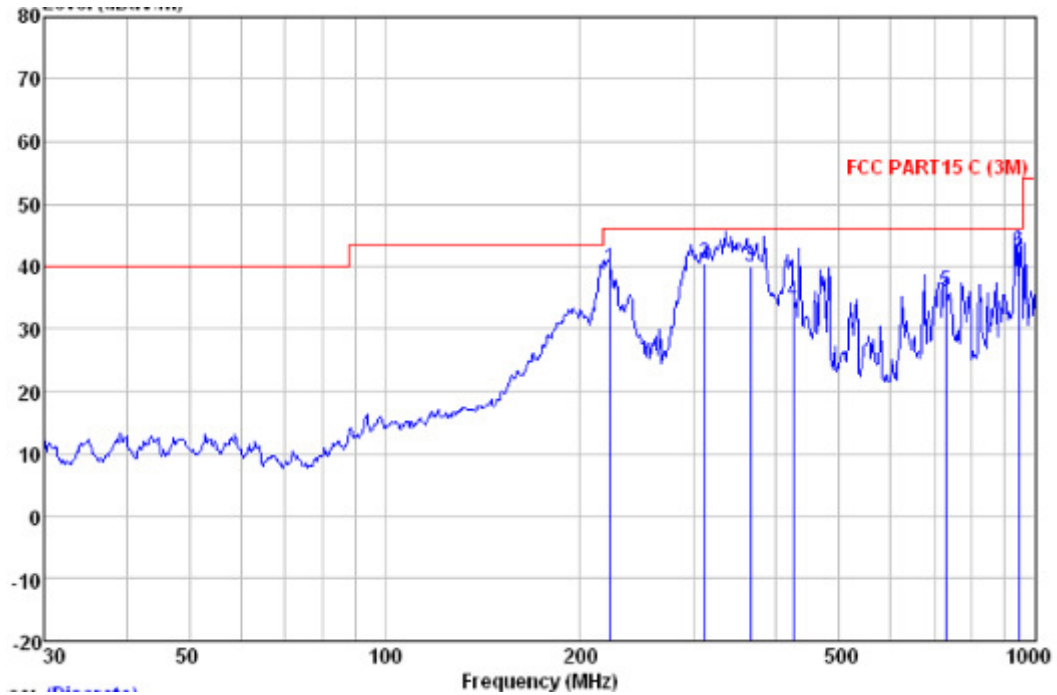
Test at Channel 6 (2.437 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dB $\mu$ V/m)



Quasi-peak measurement

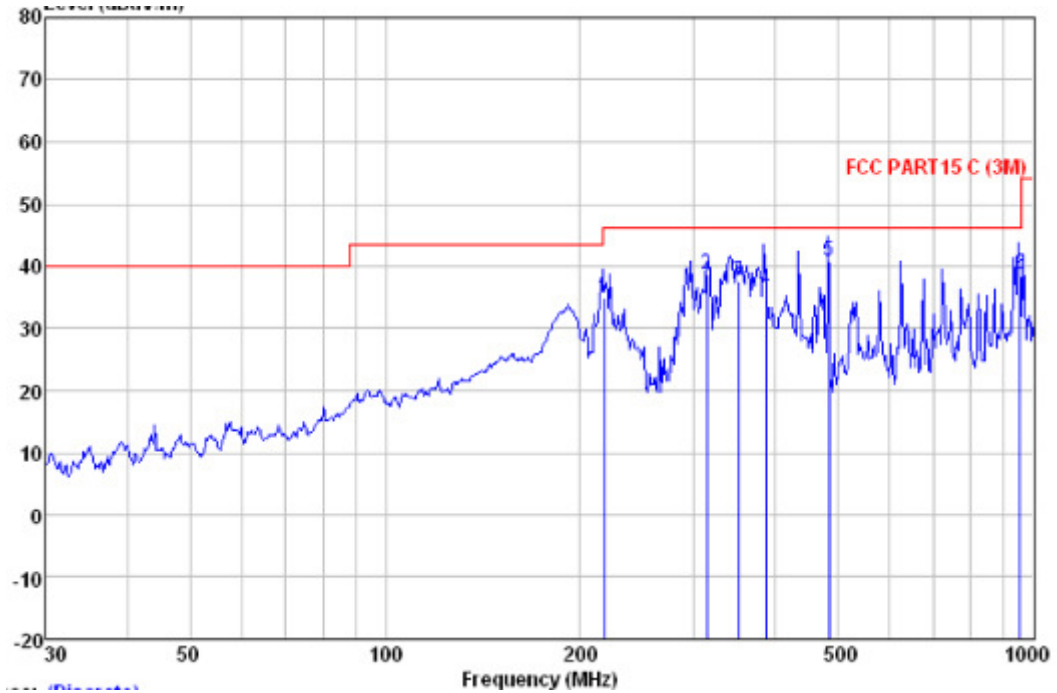
Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Over Level	Limit	Line	Remark
MHz	dB $\mu$ V	dB/m	dB	dB	dB $\mu$ V/m	dB	dB $\mu$ V/m	
222.170	55.90	11.25	2.01	29.53	39.63	-6.37	46.00	QP
309.998	54.54	13.19	2.39	29.60	40.52	-5.48	46.00	QP
364.260	52.48	14.46	2.60	29.60	39.94	-6.06	46.00	QP
425.028	45.65	15.49	2.82	29.57	34.39	-11.61	46.00	QP
729.358	42.46	19.19	3.64	29.27	36.02	-9.98	46.00	QP
945.440	44.75	21.40	4.12	27.92	42.35	-3.65	46.00	QP



**Horizontal:**

Peak scan

Level (dB $\mu$ V/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit	Line	Remark
MHz	dB $\mu$ V	dB/m	dB	dB	dB $\mu$ V/m	dB	dB $\mu$ V/m		
217.544	51.33	11.10	1.98	29.52	34.89	-11.11	46.00	QP	
313.276	52.58	13.24	2.41	29.60	38.63	-7.37	46.00	QP	
350.477	50.32	14.27	2.56	29.60	37.55	-8.45	46.00	QP	
386.634	48.54	14.78	2.67	29.60	36.39	-9.61	46.00	QP	
483.910	50.98	16.20	3.04	29.51	40.71	-5.29	46.00	QP	
952.094	40.97	21.43	4.13	27.87	38.66	-7.34	46.00	QP	



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4874.00	46.29	31.57	7.75	34.30	51.31	74.00	V
7311.00	39.08	36.49	8.80	34.30	50.07	74.00	V
4874.00	44.45	31.57	7.75	34.30	49.47	74.00	H
7311.00	39.70	36.49	8.80	34.30	50.69	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4874.00	44.13	31.57	7.75	34.30	49.15	54.00	V
7311.00	37.46	36.49	8.80	34.30	48.45	54.00	V
4874.00	42.22	31.57	7.75	34.30	47.24	54.00	H
7311.00	37.46	36.49	8.80	34.30	48.45	54.00	H

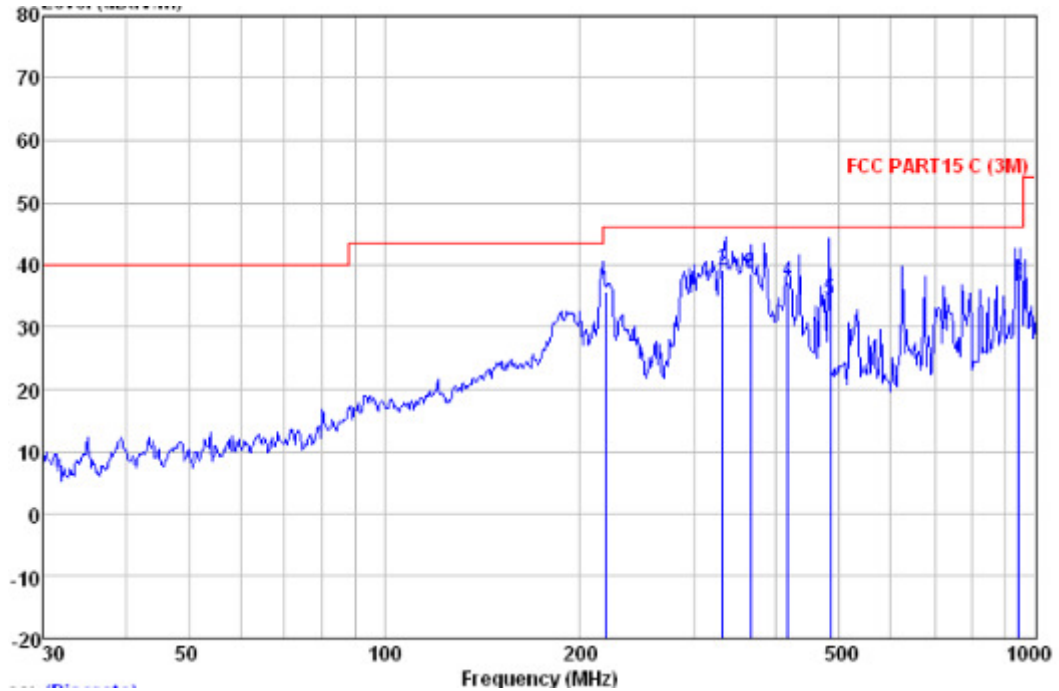
Test at Channel 11 (2.462 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dB $\mu$ V/m)



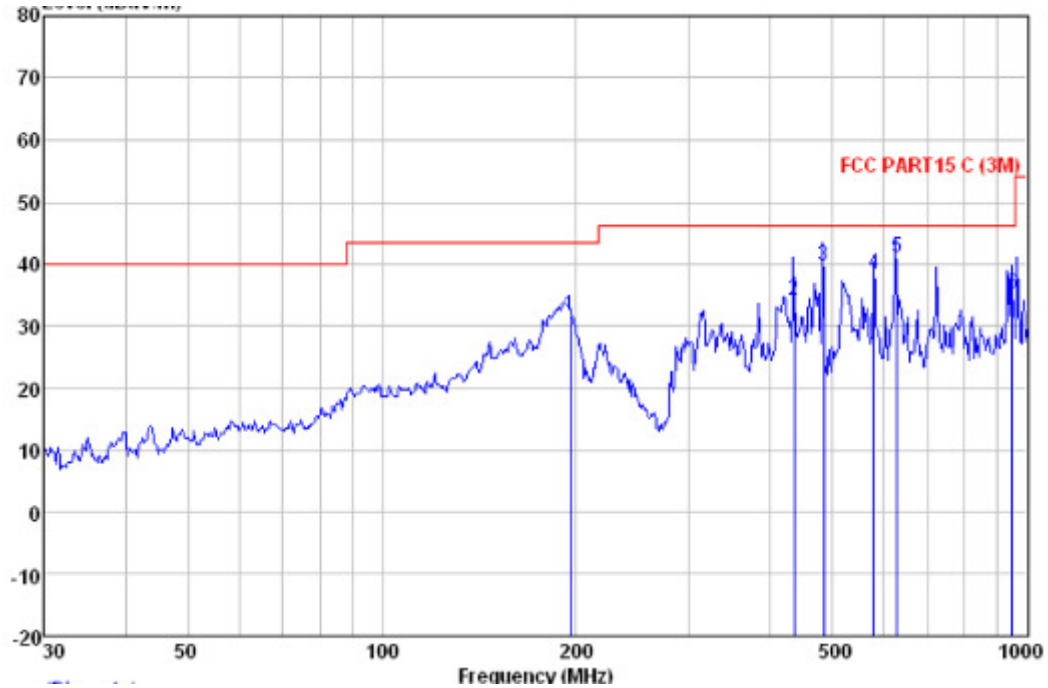
Quasi-peak measurement

Freq	ReadAntenna	Cable	Preamp	Over	Limit	Line	Remark
MHz	Level	Factor	Loss	Factor	Level	Limit	
	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m
219.075	52.01	11.17	1.99	29.52	35.65	-10.35	46.00 QP
331.355	52.65	13.79	2.48	29.60	39.32	-6.68	46.00 QP
364.260	51.12	14.46	2.60	29.60	38.58	-7.42	46.00 QP
416.179	48.72	15.39	2.78	29.58	37.31	-8.69	46.00 QP
483.910	44.55	16.20	3.04	29.51	34.28	-11.72	46.00 QP
942.131	39.65	21.37	4.12	27.95	37.19	-8.81	46.00 QP

**Horizontal:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit	Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m		
195.822	48.81	10.57	1.87	29.51	31.74	-11.76	43.50	QP	
435.590	45.26	15.54	2.87	29.56	34.11	-11.89	46.00	QP	
483.910	50.01	16.20	3.04	29.51	39.74	-6.26	46.00	QP	
578.670	46.41	18.09	3.20	29.42	38.28	-7.72	46.00	QP	
627.274	48.45	18.55	3.38	29.37	41.01	-4.99	46.00	QP	
948.761	37.48	21.40	4.11	27.90	35.09	-10.91	46.00	QP	



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

Peak Measurement:

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.00	43.68	31.65	7.80	34.30	48.83	74.00	V
7386.00	39.75	36.54	8.90	34.30	50.89	74.00	V
4924.00	44.68	31.65	7.80	34.30	49.83	74.00	H
7386.00	40.75	36.54	8.90	34.30	51.89	74.00	H

Average Measurement:

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.00	42.05	31.65	7.80	34.30	47.20	54.00	V
7386.00	38.48	36.54	8.90	34.30	49.62	54.00	V
4924.00	42.05	31.65	7.80	34.30	47.20	54.00	H
7386.00	38.48	36.54	8.90	34.30	49.62	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 Loss –Preamplifier Factor.

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.

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.

### 7.7.1.2 802.11g mode with 54Mbps data rate

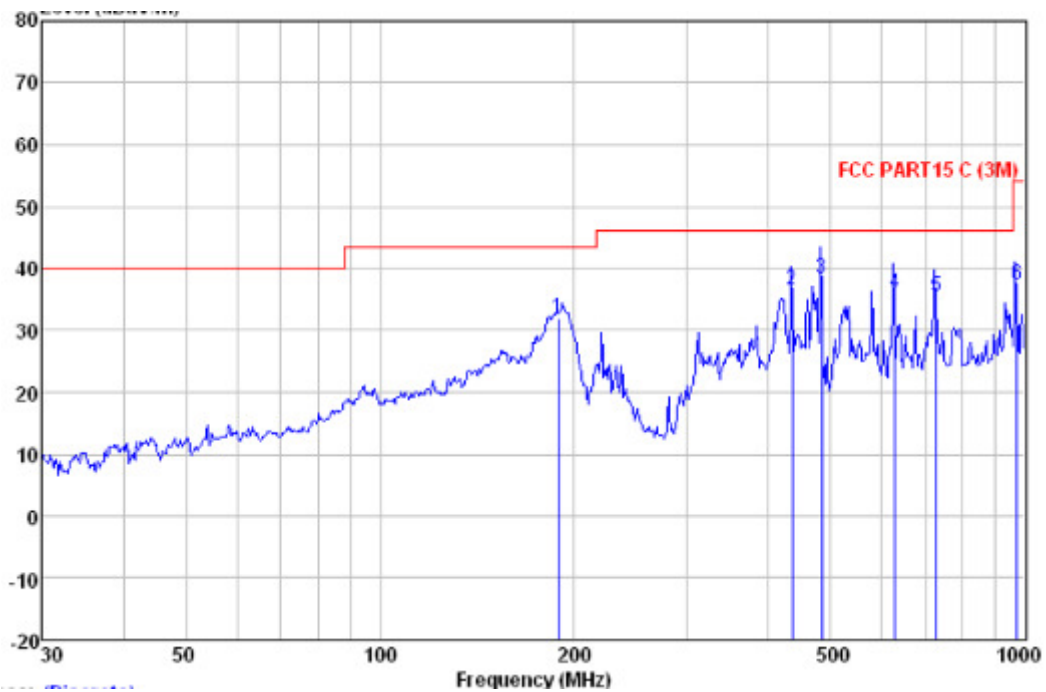
Test at Channel 1 (2.412 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

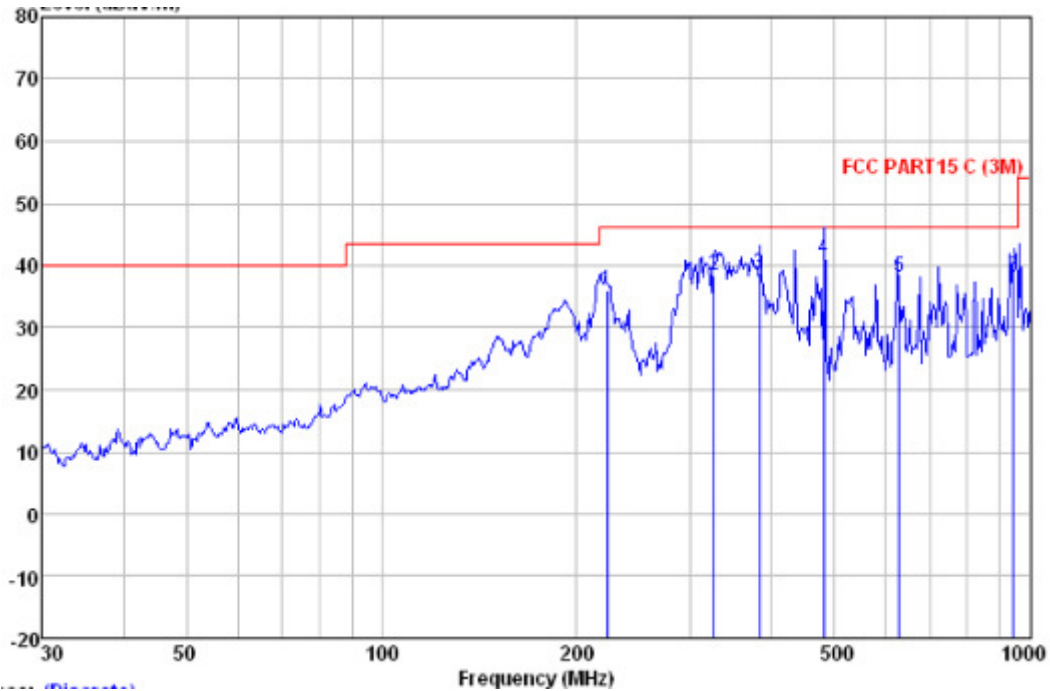
Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Over Level	Limit	Line	Remark
MHz	dBμV	dB/m	dB	dB	dBμV/m	dB	dBμV/m	
189.074	49.09	10.48	1.85	29.54	31.88	-11.62	43.50	QP
435.590	47.64	15.54	2.87	29.56	36.49	-9.51	46.00	QP
483.910	48.70	16.20	3.04	29.51	38.43	-7.57	46.00	QP
627.274	43.56	18.55	3.38	29.37	36.12	-9.88	46.00	QP
726.805	41.93	19.15	3.63	29.27	35.44	-10.56	46.00	QP
968.934	39.22	21.55	4.24	27.74	37.27	-16.73	54.00	QP



**Horizontal:**

Peak scan

Level (dBµV/m)



Quasi-peak measurement

ReadAntenna	Cable	Preamp	Over	Limit			
Freq	Level	Factor	Loss	Factor	Level	Limit	Line Remark
MHz	dBµV	dB/m	dB	dB	dBµV/m	dB	dBµV/m
222.950	52.16	11.30	2.01	29.53	35.94	-10.06	46.00 QP
325.596	52.00	13.59	2.46	29.60	38.45	-7.55	46.00 QP
382.588	51.01	14.68	2.66	29.60	38.75	-7.25	46.00 QP
480.528	51.51	16.07	3.03	29.52	41.09	-4.91	46.00 QP
627.274	45.52	18.55	3.38	29.37	38.08	-7.92	46.00 QP
942.131	40.64	21.37	4.12	27.95	38.18	-7.82	46.00 QP



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4824.00	45.64	31.54	7.65	34.30	50.53	74.00	V
7236.00	39.78	36.48	8.80	34.30	50.76	74.00	V
4824.00	45.36	31.54	7.65	34.30	50.25	74.00	H
7236.00	37.11	36.48	8.80	34.30	48.09	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4824.00	42.51	31.54	7.65	34.30	47.40	54.00	V
7236.00	36.54	36.48	8.80	34.30	47.52	54.00	V
4824.00	42.35	31.54	7.65	34.30	47.24	54.00	H
7236.00	34.25	36.48	8.80	34.30	45.23	54.00	H





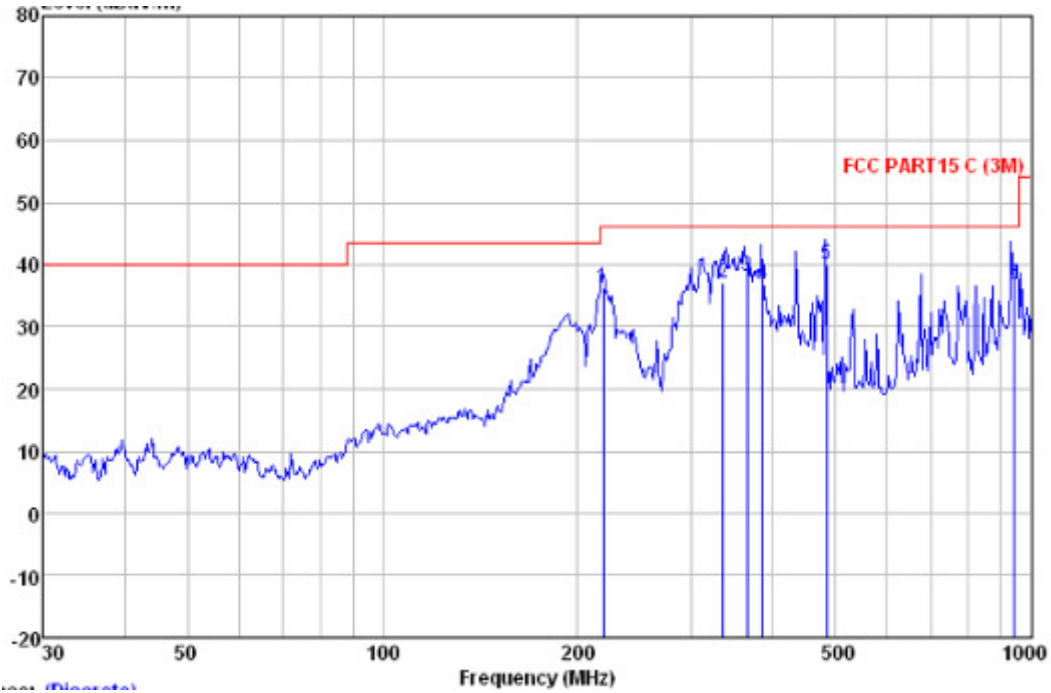
Test at Channel 6 (2.437GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

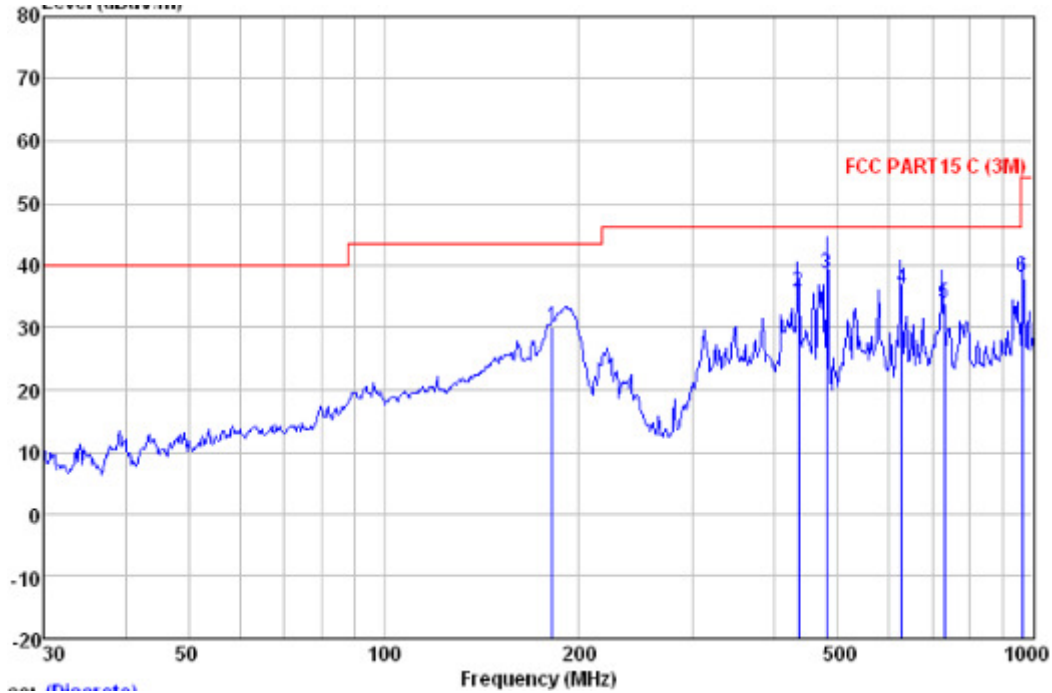
Freq	ReadAntenna	Cable	Preamp	Over	Limit	Limit	Line	Remark
MHz	Level	Factor	Loss	Factor	Level	Limit	dBuV/m	
	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
219.075	52.73	11.17	1.99	29.52	36.37	-9.63	46.00	QP
334.859	50.25	13.92	2.50	29.60	37.07	-8.93	46.00	QP
364.260	50.67	14.46	2.60	29.60	38.13	-7.87	46.00	QP
385.281	49.03	14.73	2.67	29.60	36.83	-9.17	46.00	QP
483.910	50.16	16.20	3.04	29.51	39.89	-6.11	46.00	QP
942.131	39.30	21.37	4.12	27.95	36.84	-9.16	46.00	QP



**Horizontal:**

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit Line	Remark
MHz	dBµV	dB/m	dB	dB	dBµV/m	dB	dBµV/m	
181.920	48.01	9.84	1.82	29.57	30.10	-13.40	43.50	QP
435.590	46.92	15.54	2.87	29.56	35.77	-10.23	46.00	QP
480.528	49.15	16.07	3.03	29.52	38.73	-7.27	46.00	QP
627.274	43.78	18.55	3.38	29.37	36.34	-9.66	46.00	QP
729.358	40.28	19.19	3.64	29.27	33.84	-12.16	46.00	QP
962.162	40.34	21.49	4.20	27.79	38.24	-15.76	54.00	QP



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4874.00	45.05	31.57	7.75	34.30	50.07	74.00	V
7311.00	40.25	36.49	8.80	34.30	51.24	74.00	V
4874.00	46.73	31.57	7.75	34.30	51.75	74.00	H
7311.00	38.99	36.49	8.80	34.30	49.98	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4874.00	42.52	31.57	7.75	34.30	47.54	54.00	V
7311.00	37.57	36.49	8.80	34.30	48.56	54.00	V
4874.00	42.66	31.57	7.75	34.30	47.68	54.00	H
7311.00	35.42	36.49	8.80	34.30	46.41	54.00	H

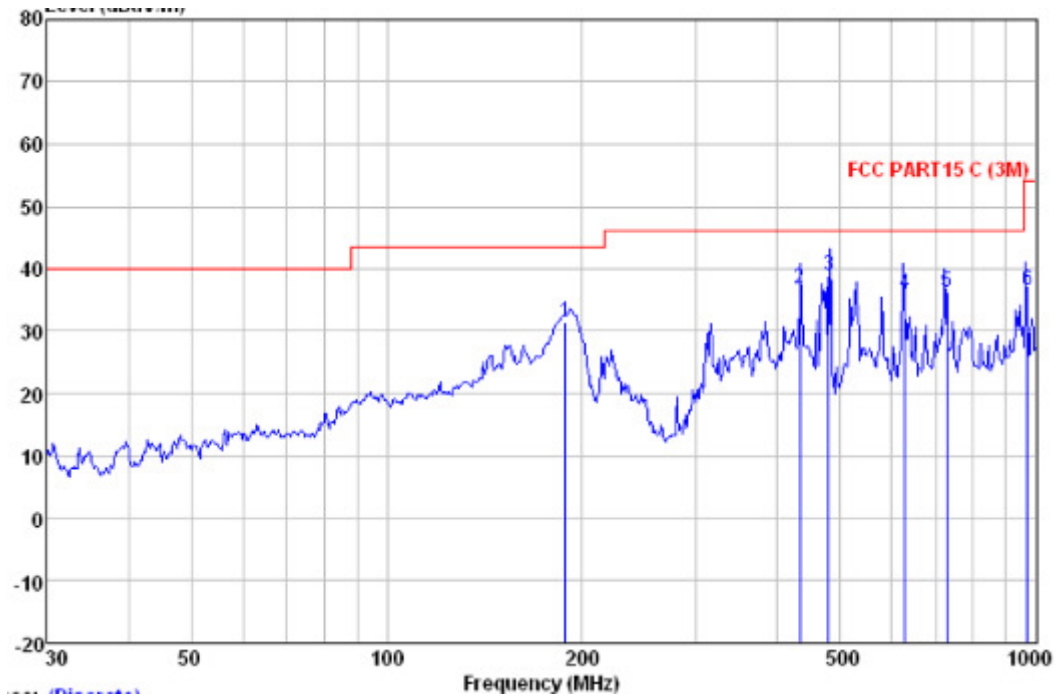
Test at Channel 11 (2.462 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dB $\mu$ V/m)



Quasi-peak measurement

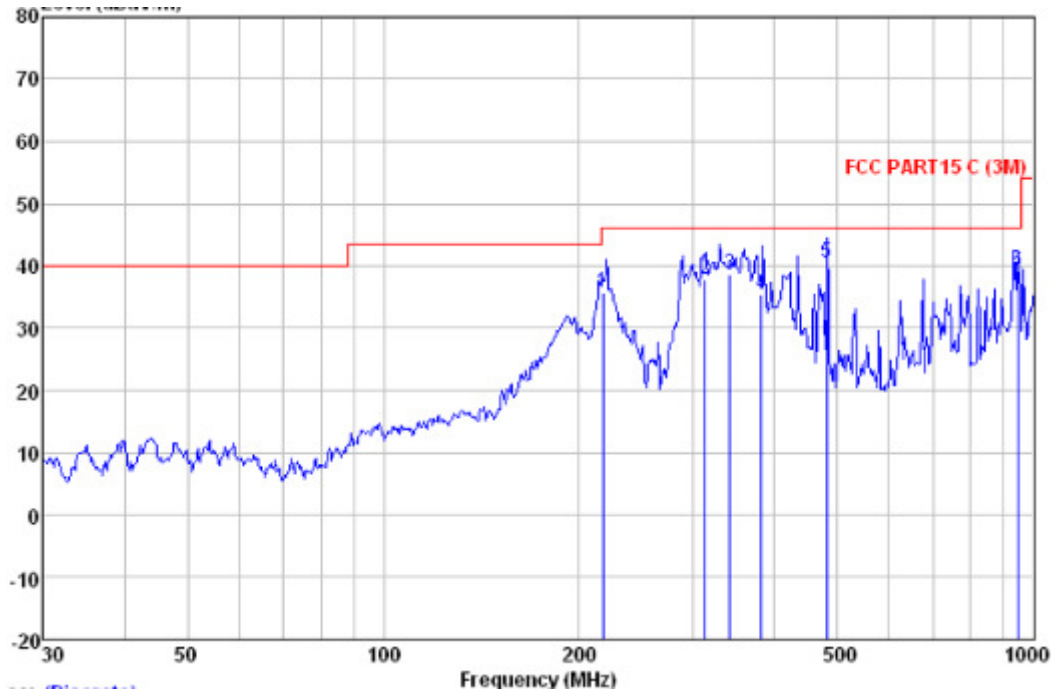
Freq	ReadAntenna Level	Cable Factor	Preamp Loss	Preamp Factor	Over Level	Over Limit	Limit Line	Remark
MHz	dB $\mu$ V	dB/m	dB	dB	dB $\mu$ V/m	dB	dB $\mu$ V/m	
188.413	48.79	10.40	1.84	29.54	31.49	-12.01	43.50	QP
432.546	48.07	15.53	2.86	29.57	36.89	-9.11	46.00	QP
478.846	49.27	16.07	3.03	29.52	38.85	-7.15	46.00	QP
627.274	43.32	18.55	3.38	29.37	35.88	-10.12	46.00	QP
729.358	42.59	19.19	3.64	29.27	36.15	-9.85	46.00	QP
968.934	38.50	21.55	4.24	27.74	36.55	-17.45	54.00	QP



**Horizontal:**

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit Line	Remark
MHz	dBµV	dB/m	dB	dB	dBµV/m	dB	dBµV/m	
217.544	52.25	11.10	1.98	29.52	35.81	-10.19	46.00	QP
312.179	51.95	13.22	2.40	29.60	37.97	-8.03	46.00	QP
340.782	51.47	14.15	2.52	29.60	38.54	-7.46	46.00	QP
381.249	47.76	14.64	2.65	29.60	35.45	-10.55	46.00	QP
480.528	51.05	16.07	3.03	29.52	40.63	-5.37	46.00	QP
945.440	41.55	21.40	4.12	27.92	39.15	-6.85	46.00	QP



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

Peak Measurement:

Frequency (MHz)	Reading Level (dBµV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBµV/m)	Limit (dBµV/m)	Antenna polarization
4924.00	44.54	31.65	7.80	34.30	49.69	74.00	V
7386.00	39.10	36.54	8.90	34.30	50.24	74.00	V
4924.00	46.02	31.65	7.80	34.30	51.17	74.00	H
7386.00	40.42	36.54	8.90	34.30	51.56	74.00	H

Average Measurement:

Frequency (MHz)	Reading Level (dBµV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBµV/m)	Limit (dBµV/m)	Antenna polarization
4924.00	40.34	31.65	7.80	34.30	45.49	54.00	V
7386.00	37.48	36.54	8.90	34.30	48.62	54.00	V
4924.00	43.05	31.65	7.80	34.30	48.20	54.00	H
7386.00	36.16	36.54	8.90	34.30	47.30	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.

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.

### 7.7.1.3 802.11n(HT20) mode with 65Mbps data rate

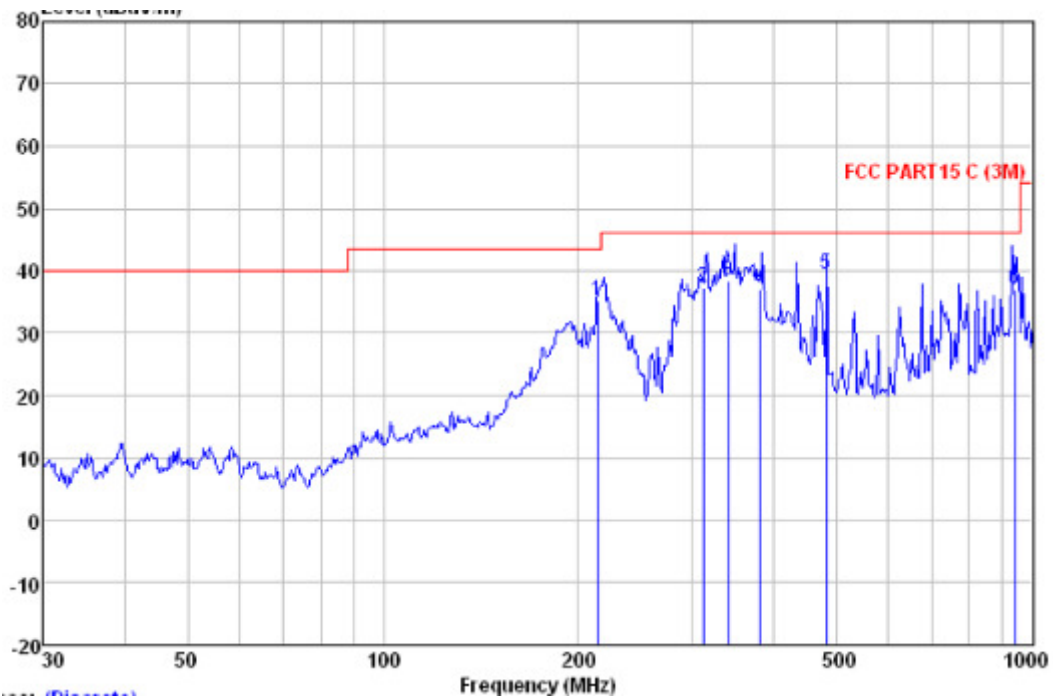
Test at Channel 1 (2.412 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dBμV/m)



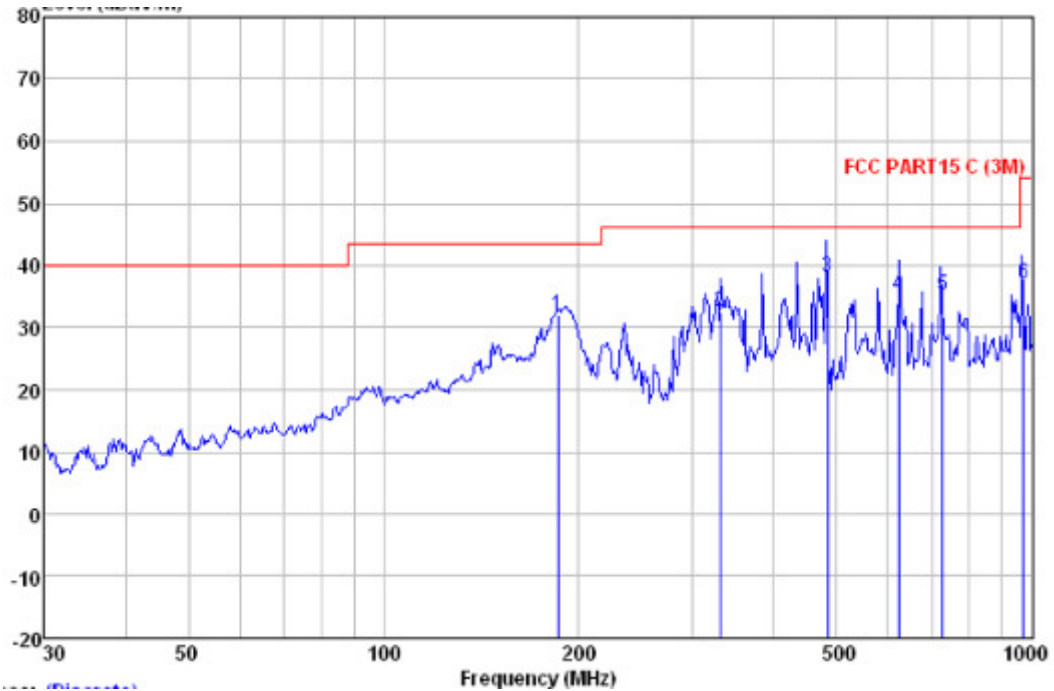
Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
213.763	51.69	11.00	1.96	29.52	35.13	-8.37	43.50	QP
311.087	51.21	13.22	2.40	29.60	37.23	-8.77	46.00	QP
339.589	51.47	14.12	2.52	29.60	38.51	-7.49	46.00	QP
381.249	49.50	14.64	2.65	29.60	37.19	-8.81	46.00	QP
480.528	49.86	16.07	3.03	29.52	39.44	-6.56	46.00	QP
938.833	39.56	21.34	4.13	27.98	37.05	-8.95	46.00	QP

**Horizontal:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit	Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m		
185.788	49.43	10.16	1.84	29.55	31.88	-11.62	43.50	QP	
330.195	45.90	13.79	2.48	29.60	32.57	-13.43	46.00	QP	
483.910	48.32	16.20	3.04	29.51	38.05	-7.95	46.00	QP	
622.890	42.60	18.54	3.36	29.38	35.12	-10.88	46.00	QP	
726.805	41.79	19.15	3.63	29.27	35.30	-10.70	46.00	QP	
968.934	39.08	21.55	4.24	27.74	37.13	-16.87	54.00	QP	





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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4824.00	54.94	31.54	7.65	34.30	59.83	74.00	V
7236.00	49.81	36.48	8.80	34.30	60.79	74.00	V
4824.00	52.05	31.54	7.65	34.30	56.94	74.00	H
7236.00	50.05	36.48	8.80	34.30	61.03	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4824.00	36.94	31.54	7.65	34.30	41.83	54.00	V
7236.00	32.81	36.48	8.80	34.30	43.79	54.00	V
4824.00	38.05	31.54	7.65	34.30	42.94	54.00	H
7236.00	34.05	36.48	8.80	34.30	45.03	54.00	H

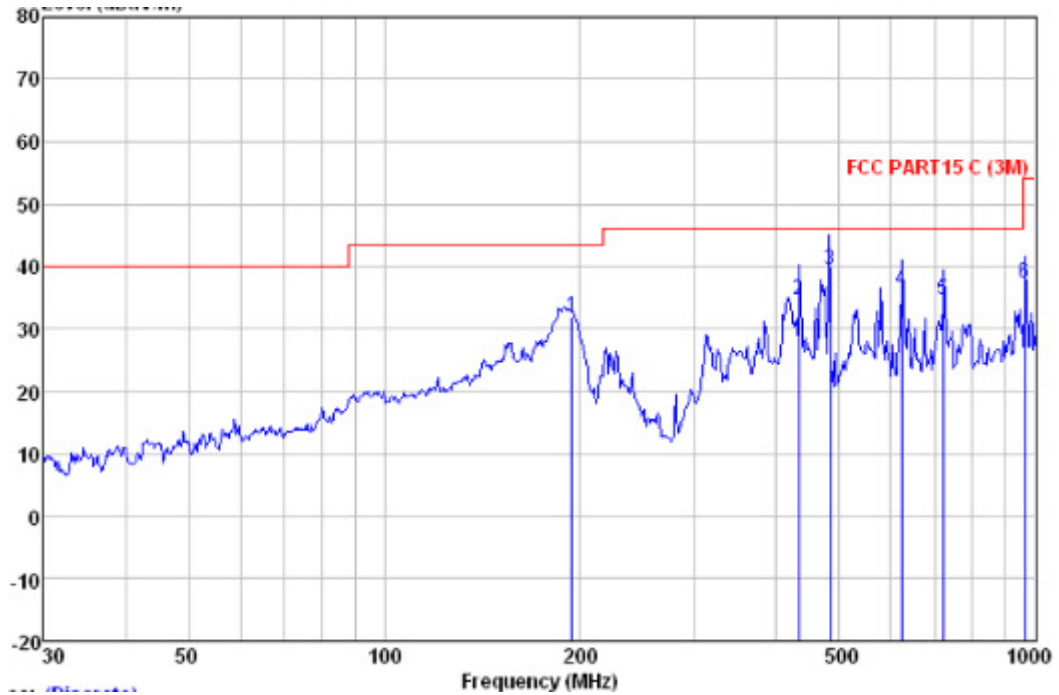
Test at Channel 6 (2.437 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dB $\mu$ V/m)



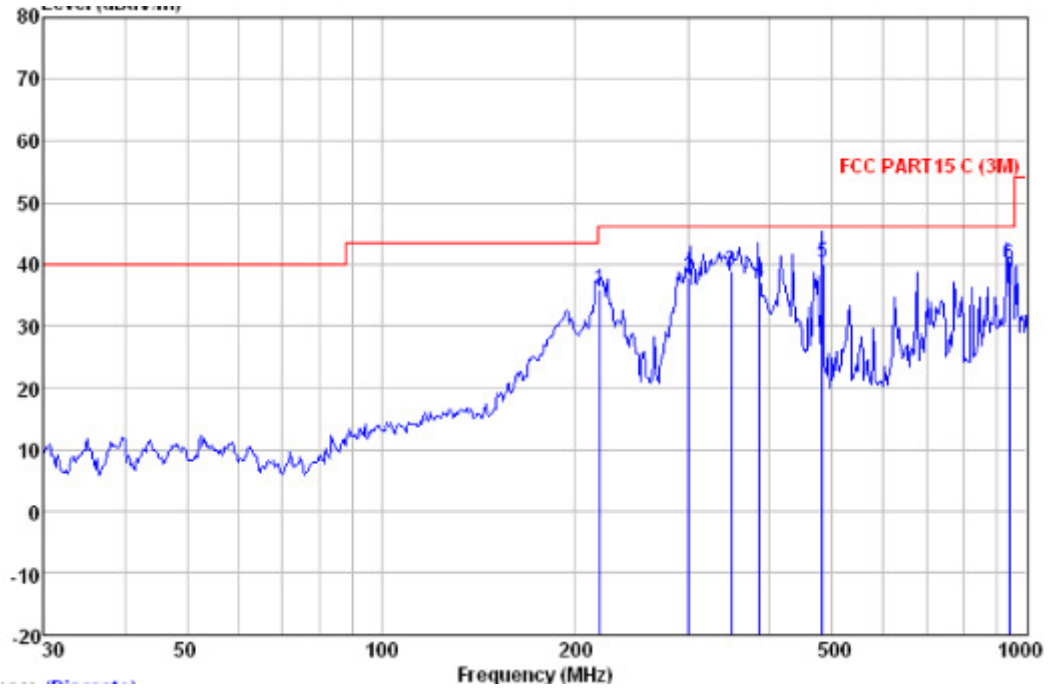
Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Over Level	Limit	Line	Remark
MHz	dB $\mu$ V	dB/m	dB	dB	dB $\mu$ V/m	dB	dB $\mu$ V/m	
193.773	48.97	10.56	1.86	29.52	31.87	-11.63	43.50	QP
432.546	45.76	15.53	2.86	29.57	34.58	-11.42	46.00	QP
483.910	49.87	16.20	3.04	29.51	39.60	-6.40	46.00	QP
622.890	43.84	18.54	3.36	29.38	36.36	-9.64	46.00	QP
721.726	41.15	19.10	3.61	29.28	34.58	-11.42	46.00	QP
962.162	39.46	21.49	4.20	27.79	37.36	-16.64	54.00	QP

**Horizontal:**

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Over Limit	Limit Line	Remark
MHz	dBµV	dB/m	dB	dB	dBµV/m	dB	dBµV/m	
218.309	52.50	11.13	1.99	29.52	36.10	-9.90	46.00	QP
299.316	52.03	13.03	2.35	29.60	37.81	-8.19	46.00	QP
348.027	51.86	14.25	2.55	29.60	39.06	-6.94	46.00	QP
385.281	49.34	14.73	2.67	29.60	37.14	-8.86	46.00	QP
482.216	50.70	16.13	3.04	29.52	40.35	-5.65	46.00	QP
938.833	42.47	21.34	4.13	27.98	39.96	-6.04	46.00	QP



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.00	49.71	31.57	7.75	34.30	54.73	74.00	V
7311.00	45.70	36.49	8.80	34.30	56.69	74.00	V
4874.00	45.09	31.57	7.75	34.30	50.11	74.00	H
7311.00	45.09	36.49	8.80	34.30	56.08	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.00	39.71	31.57	7.75	34.30	44.73	54.00	V
7311.00	34.70	36.49	8.80	34.30	45.69	54.00	V
4874.00	36.09	31.57	7.75	34.30	41.11	54.00	H
7311.00	33.09	36.49	8.80	34.30	44.08	54.00	H

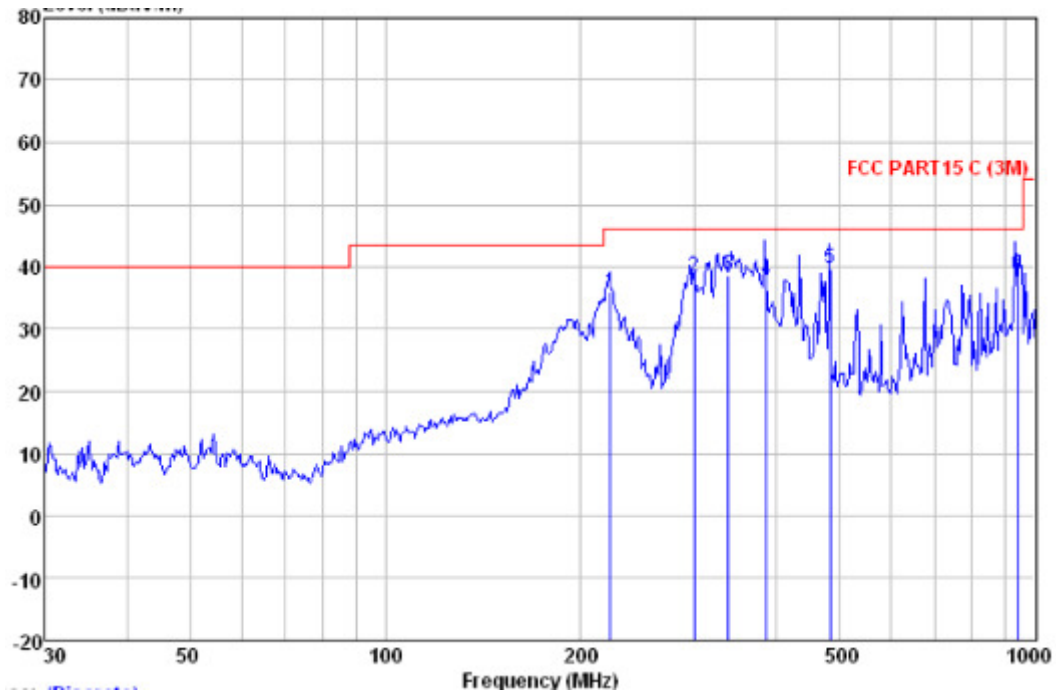
Test at Channel 11 (2.462 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dB $\mu$ V/m)



Quasi-peak measurement

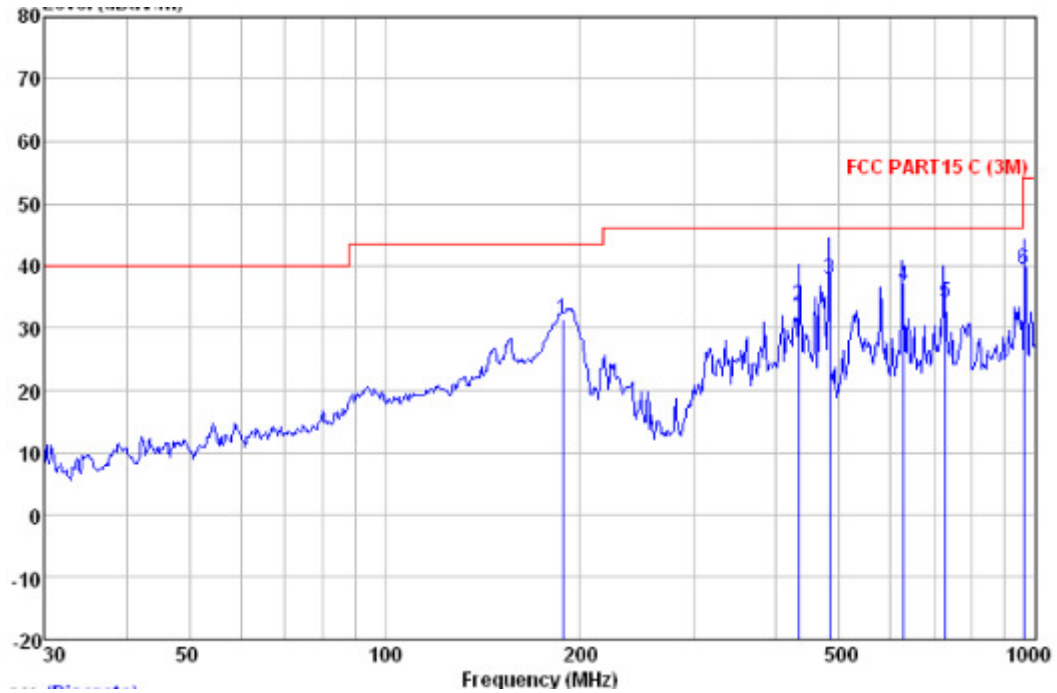
Freq	ReadAntenna Level	Cable Preamp Factor	Cable Loss	Preamp Factor	Over Limit	Limit	Line Remark
MHz	dB $\mu$ V	dB/m	dB	dB	dB $\mu$ V/m	dB	dB $\mu$ V/m
222.170	52.17	11.25	2.01	29.53	35.90	-10.10	46.00 QP
298.268	52.69	13.00	2.34	29.60	38.43	-7.57	46.00 QP
337.216	51.81	14.05	2.51	29.60	38.77	-7.23	46.00 QP
385.281	50.12	14.73	2.67	29.60	37.92	-8.08	46.00 QP
483.910	49.93	16.20	3.04	29.51	39.66	-6.34	46.00 QP
938.833	41.29	21.34	4.13	27.98	38.78	-7.22	46.00 QP



**Horizontal:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit	Remark
MHz	dBμV	dB/m	dB	dB	dBμV/m	dB	dBμV/m	
187.753	48.90	10.32	1.84	29.54	31.52	-11.98	43.50	QP
432.546	44.67	15.53	2.86	29.57	33.49	-12.51	46.00	QP
483.910	48.09	16.20	3.04	29.51	37.82	-8.18	46.00	QP
627.274	44.34	18.55	3.38	29.37	36.90	-9.10	46.00	QP
726.805	40.68	19.15	3.63	29.27	34.19	-11.81	46.00	QP
962.162	41.54	21.49	4.20	27.79	39.44	-14.56	54.00	QP



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

Peak Measurement:

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.00	46.11	31.65	7.80	34.30	51.26	74.00	V
7386.00	45.13	36.54	8.90	34.30	56.27	74.00	V
4924.00	45.82	31.65	7.80	34.30	50.97	74.00	H
7386.00	44.92	36.54	8.90	34.30	56.06	74.00	H

Average Measurement:

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4924.00	40.11	31.65	7.80	34.30	45.26	54.00	V
7386.00	30.13	36.54	8.90	34.30	41.27	54.00	V
4924.00	36.82	31.65	7.80	34.30	41.97	54.00	H
7386.00	33.92	36.54	8.90	34.30	45.06	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 Loss –Preamplifier Factor.

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.

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.

### 7.7.1.4 802.11n(HT40) mode with 135Mbps data rate

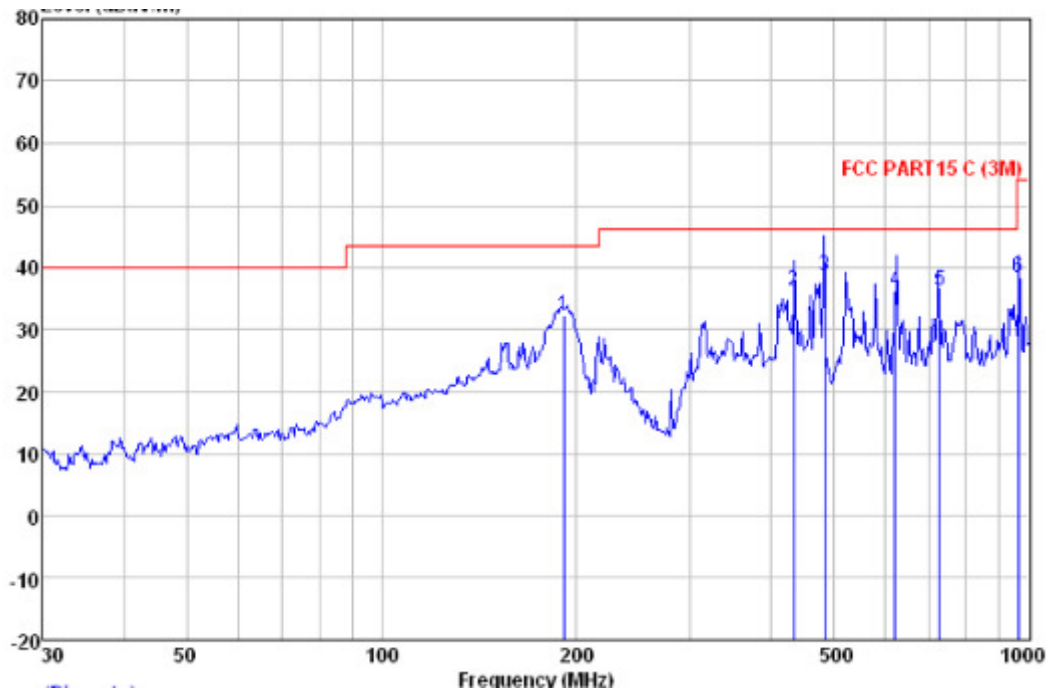
Test at Channel 3 (2.422 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	ReadAntenna	Cable Preamp	Over	Limit	Level	Limit	Line	Remark
MHz	Level	Factor	Loss	Factor	dB	dB	dB	
	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
191.074	49.46	10.56	1.85	29.53	32.34	-11.16	43.50	QP
432.546	47.33	15.53	2.86	29.57	36.15	-9.85	46.00	QP
483.910	48.87	16.20	3.04	29.51	38.60	-7.40	46.00	QP
620.710	43.79	18.53	3.35	29.38	36.29	-9.71	46.00	QP
726.805	42.67	19.15	3.63	29.27	36.18	-9.82	46.00	QP
962.162	40.61	21.49	4.20	27.79	38.51	-15.49	54.00	QP

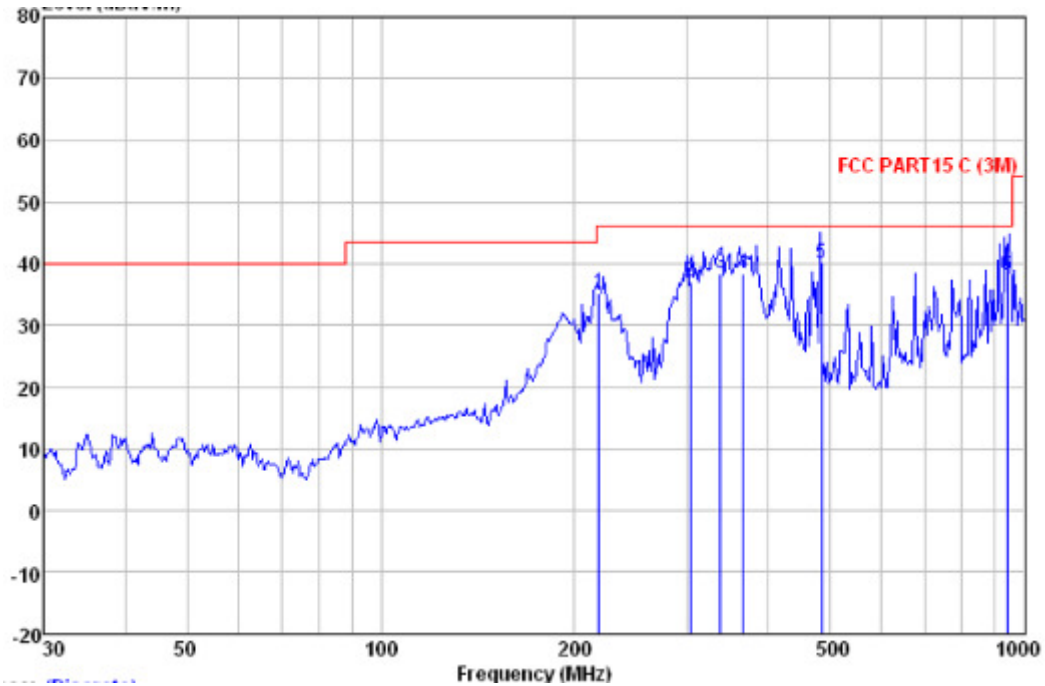




**Horizontal:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
218.309	51.49	11.13	1.99	29.52	35.09	-10.91	46.00	QP
302.481	51.15	13.08	2.36	29.60	36.99	-9.01	46.00	QP
337.216	51.57	14.05	2.51	29.60	38.53	-7.47	46.00	QP
365.539	50.93	14.48	2.61	29.60	38.42	-7.58	46.00	QP
483.910	50.36	16.20	3.04	29.51	40.09	-5.91	46.00	QP
938.833	40.77	21.34	4.13	27.98	38.26	-7.74	46.00	QP



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4844.00	47.85	31.56	7.70	34.30	52.81	74.00	V
7266.00	46.90	36.48	8.80	34.30	57.88	74.00	V
4844.00	45.14	31.56	7.70	34.30	50.10	74.00	H
7266.00	47.31	36.48	8.80	34.30	58.29	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dB $\mu$ V)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Antenna polarization
4844.00	41.85	31.56	7.70	34.30	46.81	54.00	V
7266.00	34.90	36.48	8.80	34.30	45.88	54.00	V
4844.00	41.14	31.56	7.70	34.30	46.10	54.00	H
7266.00	35.31	36.48	8.80	34.30	46.29	54.00	H



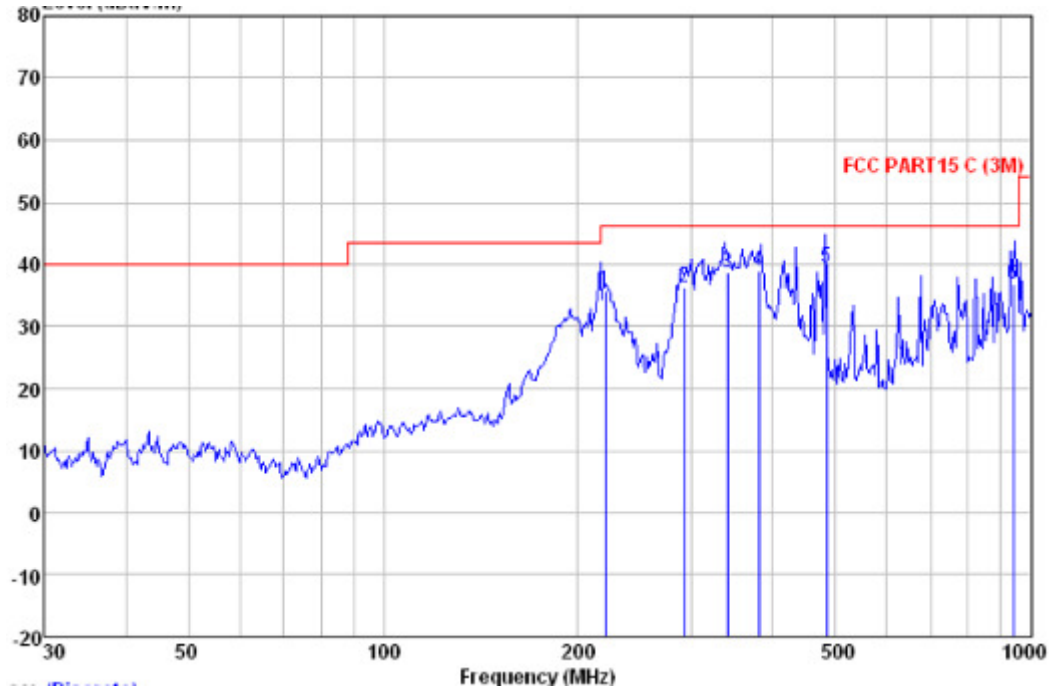
Test at Channel 6 (2.437 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

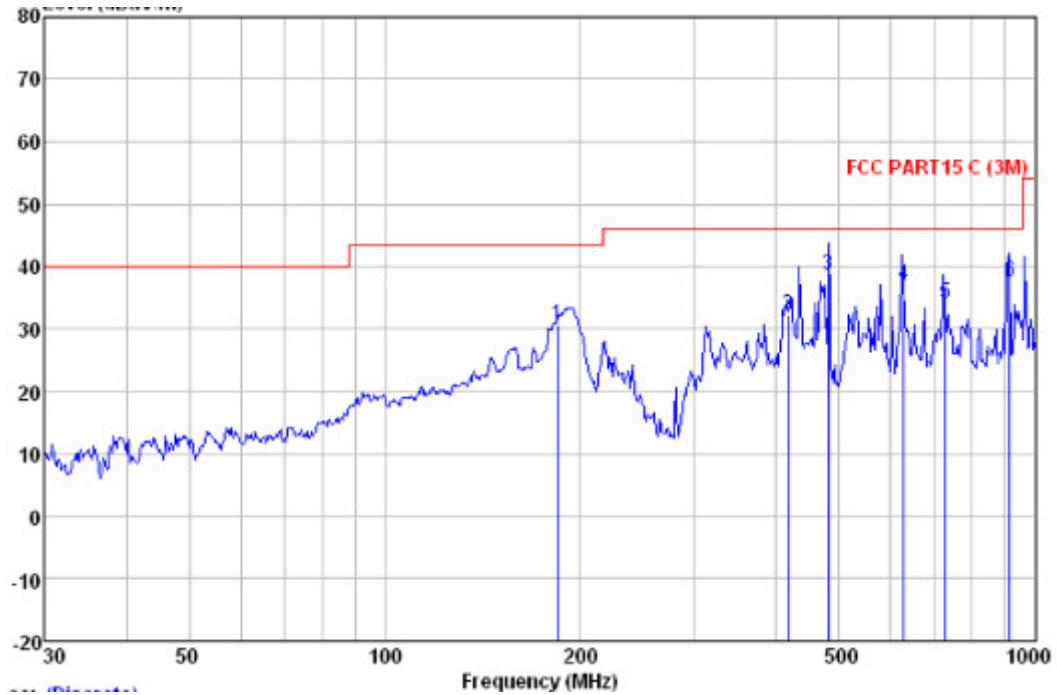
Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Over Level	Over Limit	Limit Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
219.845	52.06	11.17	1.99	29.52	35.70	-10.30	46.00	QP
292.058	50.73	12.89	2.32	29.59	36.35	-9.65	46.00	QP
339.589	51.52	14.12	2.52	29.60	38.56	-7.44	46.00	QP
379.914	51.42	14.59	2.65	29.60	39.06	-6.94	46.00	QP
483.910	49.64	16.20	3.04	29.51	39.37	-6.63	46.00	QP
938.833	39.40	21.34	4.13	27.98	36.89	-9.11	46.00	QP



**Horizontal:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Over Level	Limit	Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
184.490	48.28	10.08	1.83	29.56	30.63	-12.87	43.50	QP
417.641	43.74	15.43	2.79	29.58	32.38	-13.62	46.00	QP
480.528	49.02	16.07	3.03	29.52	38.60	-7.40	46.00	QP
627.274	44.39	18.55	3.38	29.37	36.95	-9.05	46.00	QP
726.805	40.59	19.15	3.63	29.27	34.10	-11.90	46.00	QP
916.069	40.32	21.21	4.16	28.16	37.53	-8.47	46.00	QP



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.00	48.57	31.57	9.33	34.30	55.17	74.00	V
7311.00	45.55	36.49	13.11	34.30	60.85	74.00	V
4874.00	44.18	31.57	9.33	34.30	50.78	74.00	H
7311.00	45.18	36.49	13.11	34.30	60.48	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4874.00	42.57	31.57	9.33	34.30	49.17	54.00	V
7311.00	31.55	36.49	13.11	34.30	46.85	54.00	V
4874.00	42.18	31.57	9.33	34.30	48.78	54.00	H
7311.00	30.18	36.49	13.11	34.30	45.48	54.00	H

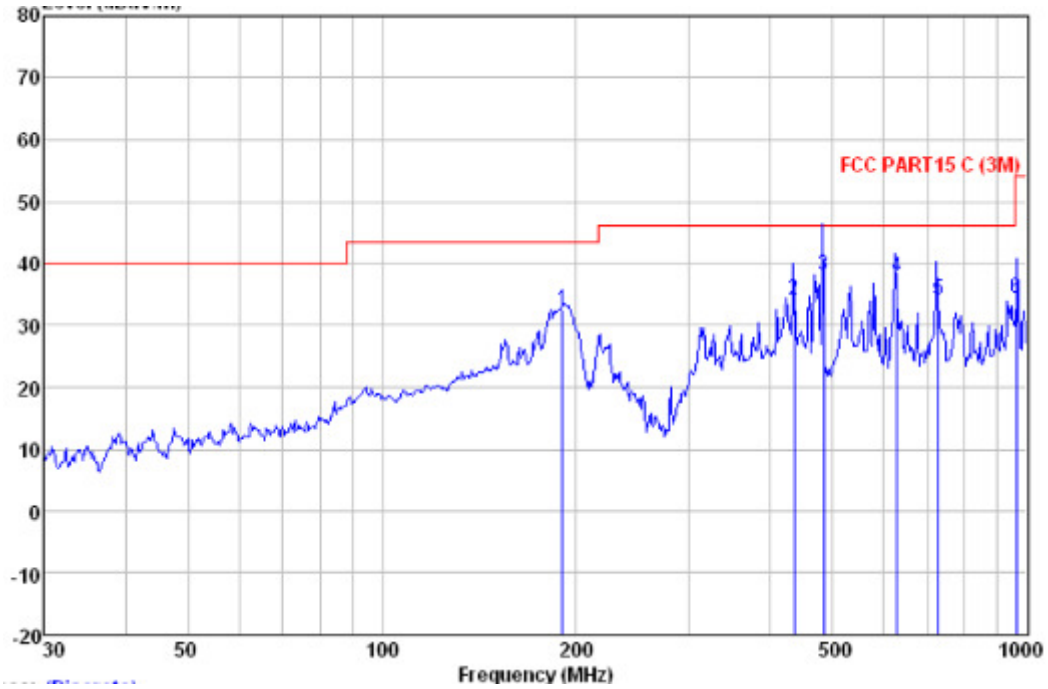
Test at Channel 9 (2.452 GHz) in transmitting status

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

**Vertical:**

Peak scan

Level (dBμV/m)



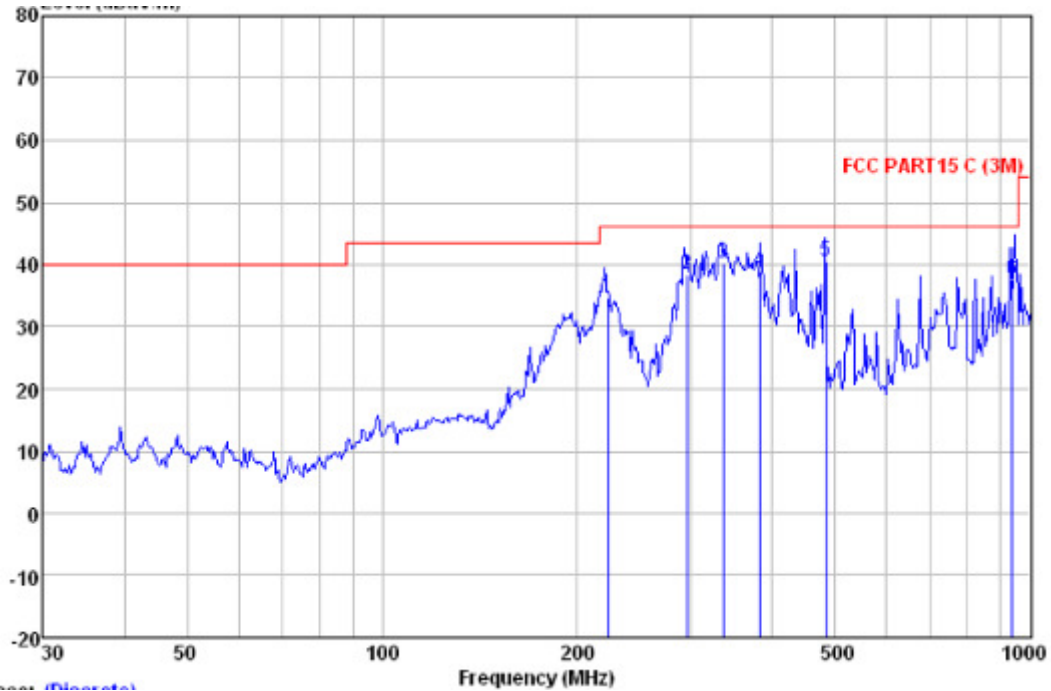
Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Over Level	Limit	Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
190.405	49.75	10.56	1.85	29.53	32.63	-10.87	43.50	QP
435.590	45.21	15.54	2.87	29.56	34.06	-11.94	46.00	QP
483.910	48.44	16.20	3.04	29.51	38.17	-7.83	46.00	QP
627.274	45.18	18.55	3.38	29.37	37.74	-8.26	46.00	QP
726.805	40.58	19.15	3.63	29.27	34.09	-11.91	46.00	QP
962.162	36.53	21.49	4.20	27.79	34.43	-19.57	54.00	QP

**Horizontal:**

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier	Over Level	Over Limit	Limit	Line	Remark
MHz	dBμV	dB/m	dB	dB	dBμV/m	dB	dBμV/m		
222.950	50.85	11.30	2.01	29.53	34.63	-11.37	46.00	QP	
295.147	52.77	12.95	2.33	29.60	38.45	-7.55	46.00	QP	
336.035	53.38	13.99	2.50	29.60	40.27	-5.73	46.00	QP	
382.588	51.10	14.68	2.66	29.60	38.84	-7.16	46.00	QP	
483.910	50.77	16.20	3.04	29.51	40.50	-5.50	46.00	QP	
935.546	40.00	21.34	4.13	28.00	37.47	-8.53	46.00	QP	



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

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4904.00	46.07	31.59	9.32	34.30	52.68	74.00	V
7356.00	44.98	36.51	13.12	34.30	60.31	74.00	V
4904.00	43.71	31.59	9.32	34.30	50.32	74.00	H
7356.00	49.95	36.51	13.12	34.30	65.28	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4904.00	40.17	31.59	9.32	34.30	46.78	54.00	V
7356.00	30.45	36.51	13.12	34.30	45.78	54.00	V
4904.00	40.71	31.59	9.32	34.30	47.32	54.00	H
7356.00	31.95	36.51	13.12	34.30	47.28	54.00	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 Loss – Pre-amplifier Factor.

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.

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) .For this intentional radiator operates below 25 GHz. The spectrum shall be investigated to the tenth harmonics 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.**

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.





### 7.7.2 Radiated Emissions which fall in the restricted bands

Test Requirement:	FCC Part 15 C 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 C63.10: Clause 6.4, 6.5 and 6.6
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.
Detector:	For PK value: RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz VBW $\geq$ RBW Sweep = auto Detector function = peak Trace = max hold For AV value: RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz VBW = 10Hz Sweep = auto Detector function = peak Trace = max hold



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		

**Test Result:**

**7.7.2.1 802.11b mode with 11Mbps data rate**

Test at Channel 1 (2.412 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	55.33	27.93	4.74	35.09	52.91	74.00	Vertical
2390.000	55.39	27.63	4.96	35.05	52.93	74.00	V
2483.500	55.46	27.55	4.9	34.99	52.92	74.00	V
2500.000	55.68	27.55	5.00	34.98	53.25	74.00	V
2310.000	54.14	27.93	4.74	35.09	51.72	74.00	Horizontal
2390.000	54.15	27.63	4.96	35.05	51.69	74.00	H
2483.500	54.37	27.55	4.9	34.99	51.83	74.00	H
2500.000	54.34	27.55	5.00	34.98	51.91	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	46.24	27.93	4.74	35.09	43.82	54.00	Vertical
2390.000	45.32	27.63	4.96	35.05	42.86	54.00	V
2483.500	45.12	27.55	4.9	34.99	42.58	54.00	V
2500.000	43.21	27.55	5.00	34.98	40.78	54.00	V
2310.000	42.22	27.93	4.74	35.09	39.80	54.00	Horizontal
2390.000	45.36	27.63	4.96	35.05	42.90	54.00	H
2483.500	46.39	27.55	4.9	34.99	43.85	54.00	H
2500.000	44.24	27.55	5.00	34.98	41.81	54.00	H



Test at Channel 6 (2.437 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	53.71	27.93	4.74	35.09	51.29	74.00	Vertical
2390.000	53.31	27.63	4.96	35.05	50.85	74.00	V
2483.500	53.54	27.55	4.90	34.99	51.00	74.00	V
2500.000	53.48	27.55	5.00	34.98	51.05	74.00	V
2310.000	51.79	27.93	4.74	35.09	49.37	74.00	Horizontal
2390.000	51.84	27.63	4.96	35.05	49.38	74.00	H
2483.500	52.09	27.55	4.90	34.99	49.55	74.00	H
2500.000	51.94	27.55	5.00	34.98	49.51	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	45.69	27.93	4.74	35.09	43.27	54.00	Vertical
2390.000	45.84	27.63	4.96	35.05	43.38	54.00	V
2483.500	44.61	27.55	4.90	34.99	42.07	54.00	V
2500.000	43.74	27.93	4.74	35.09	41.32	54.00	V
2310.000	41.26	27.93	4.74	35.09	38.84	54.00	Horizontal
2390.000	41.89	27.63	4.96	35.05	39.43	54.00	H
2483.500	43.12	27.55	4.90	34.99	40.58	54.00	H
2500.000	42.90	27.93	4.74	35.09	40.48	54.00	H



Test at Channel 11 (2.462 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	52.34	27.93	4.74	35.09	49.92	74.00	Vertical
2390.000	52.22	27.63	4.96	35.05	49.76	74.00	V
2483.500	52.47	27.55	4.90	34.99	49.93	74.00	V
2500.000	52.30	27.93	4.74	35.09	49.88	74.00	V
2310.000	51.30	27.93	4.74	35.09	48.88	74.00	Horizontal
2390.000	51.28	27.63	4.96	35.05	48.82	74.00	H
2483.500	51.31	27.55	4.90	34.99	48.77	74.00	H
2500.000	51.35	27.93	4.74	35.09	48.93	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	41.31	27.93	4.74	35.09	38.89	54.00	Vertical
2390.000	42.14	27.63	4.96	35.05	39.68	54.00	V
2483.500	44.44	27.55	4.90	34.99	41.90	54.00	V
2500.000	45.26	27.93	4.74	35.09	42.84	54.00	V
2310.000	44.24	27.93	4.74	35.09	41.82	54.00	Horizontal
2390.000	44.31	27.63	4.96	35.05	41.85	54.00	H
2483.500	43.47	27.55	4.90	34.99	40.93	54.00	H
2500.000	41.26	27.93	4.74	35.09	38.84	54.00	H

**7.7.2.2 802.11g mode with 54Mbps data rate**

Test at Channel 1 (2.412 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	53.18	27.93	4.74	35.09	50.76	74.00	Vertical
2390.000	53.22	27.63	4.96	35.05	50.76	74.00	V
2483.500	53.69	27.55	4.90	34.99	51.15	74.00	V
2500.000	53.54	27.55	5.00	34.98	51.11	74.00	V
2310.000	52.56	27.93	4.74	35.09	50.14	74.00	Horizontal
2390.000	52.71	27.63	4.96	35.05	50.25	74.00	H
2483.500	52.79	27.55	4.90	34.99	50.25	74.00	H
2500.000	52.66	27.55	5.00	34.98	50.23	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	44.63	27.93	4.74	35.09	42.21	54.00	Vertical
2390.000	43.46	27.63	4.96	35.05	41.00	54.00	V
2483.500	43.30	27.55	4.90	34.99	40.76	54.00	V
2500.000	42.19	27.55	5.00	34.98	39.76	54.00	V
2310.000	44.67	27.93	4.74	35.09	42.25	54.00	Horizontal
2390.000	44.82	27.63	4.96	35.05	42.36	54.00	H
2483.500	42.32	27.55	4.90	34.99	39.78	54.00	H
2500.000	45.68	27.55	5.00	34.98	43.25	54.00	H



Test at Channel 6 (2.437 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	53.78	27.93	4.74	35.09	51.36	74.00	Vertical
2390.000	53.70	27.63	4.96	35.05	51.24	74.00	V
2483.500	53.49	27.55	4.90	34.99	50.95	74.00	V
2500.000	53.33	27.55	5.00	34.98	50.90	74.00	V
2310.000	54.19	27.93	4.74	35.09	51.77	74.00	Horizontal
2390.000	54.26	27.63	4.96	35.05	51.80	74.00	H
2483.500	54.29	27.55	4.90	34.99	51.75	74.00	H
2500.000	54.34	27.55	5.00	34.98	51.91	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	43.66	27.93	4.74	35.09	41.24	54.00	Vertical
2390.000	44.56	27.63	4.96	35.05	42.10	54.00	V
2483.500	42.78	27.55	4.90	34.99	40.24	54.00	V
2500.000	43.67	27.55	5.00	34.98	41.24	54.00	V
2310.000	43.17	27.93	4.74	35.09	40.75	54.00	Horizontal
2390.000	44.35	27.63	4.96	35.05	41.89	54.00	H
2483.500	42.64	27.55	4.90	34.99	40.10	54.00	H
2500.000	41.18	27.55	5.00	34.98	38.75	54.00	H



Test at Channel 11 (2.462 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	52.32	27.93	4.74	35.09	49.90	74.00	Vertical
2390.000	52.53	27.63	4.96	35.05	50.07	74.00	V
2483.500	52.65	27.55	4.90	34.99	50.11	74.00	V
2500.000	52.24	27.55	5.00	34.98	49.81	74.00	V
2310.000	53.67	27.93	4.74	35.09	51.25	74.00	Horizontal
2390.000	53.63	27.63	4.96	35.05	51.17	74.00	H
2483.500	53.66	27.55	4.90	34.99	51.12	74.00	H
2500.000	53.60	27.55	5.00	34.98	51.17	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	45.42	27.93	4.74	35.09	43.00	54.00	Vertical
2390.000	42.54	27.63	4.96	35.05	40.08	54.00	V
2483.500	41.25	27.55	4.90	34.99	38.71	54.00	V
2500.000	40.12	27.55	5.00	34.98	37.69	54.00	V
2310.000	41.43	27.93	4.74	35.09	39.01	54.00	Horizontal
2390.000	43.16	27.63	4.96	35.05	40.70	54.00	H
2483.500	42.12	27.55	4.90	34.99	39.58	54.00	H
2500.000	40.98	27.55	5.00	34.98	38.55	54.00	H



### 7.7.2.3 802.11n(HT20) mode with 65Mbps data rate

Test at Channel 1 (2.412 GHz) in transmitting status

#### Peak Measurement:

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	62.32	27.93	4.74	35.09	59.90	74.00	Vertical
2390.000	62.26	27.63	4.96	35.05	59.80	74.00	V
2483.500	62.40	27.55	4.90	34.99	59.86	74.00	V
2500.000	62.30	27.55	5.00	34.98	59.87	74.00	V
2310.000	59.42	27.93	4.74	35.09	57.00	74.00	Horizontal
2390.000	59.41	27.63	4.96	35.05	56.95	74.00	H
2483.500	59.52	27.55	4.90	34.99	56.98	74.00	H
2500.000	59.31	27.55	5.00	34.98	56.88	74.00	H

#### Average Measurement:

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	48.22	27.93	4.74	35.09	45.80	54.00	Vertical
2390.000	50.24	27.63	4.96	35.05	47.78	54.00	V
2483.500	49.84	27.55	4.90	34.99	47.30	54.00	V
2500.000	49.21	27.55	5.00	34.98	46.78	54.00	V
2310.000	50.35	27.93	4.74	35.09	47.93	54.00	Horizontal
2390.000	49.46	27.63	4.96	35.05	47.00	54.00	H
2483.500	49.41	27.55	4.90	34.99	46.87	54.00	H
2500.000	49.32	27.55	5.00	34.98	46.89	54.00	H



Test at Channel 6 (2.437 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	57.21	27.93	4.74	35.09	54.79	74.00	Vertical
2390.000	57.25	27.63	4.96	35.05	54.79	74.00	V
2483.500	57.39	27.55	4.90	34.99	54.85	74.00	V
2500.000	57.25	27.55	5.00	34.98	54.82	74.00	V
2310.000	52.49	27.93	4.74	35.09	50.07	74.00	Horizontal
2390.000	52.55	27.63	4.96	35.05	50.09	74.00	H
2483.500	52.36	27.55	4.90	34.99	49.82	74.00	H
2500.000	52.48	27.55	5.00	34.98	50.05	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	46.30	27.93	4.74	35.09	43.88	54.00	Vertical
2390.000	46.20	27.63	4.96	35.05	43.74	54.00	V
2483.500	45.35	27.55	4.90	34.99	42.81	54.00	V
2500.000	45.14	27.55	5.00	34.98	42.71	54.00	V
2310.000	42.51	27.93	4.74	35.09	40.09	54.00	Horizontal
2390.000	41.50	27.63	4.96	35.05	39.04	54.00	H
2483.500	41.45	27.55	4.90	34.99	38.91	54.00	H
2500.000	40.59	27.55	5.00	34.98	38.16	54.00	H



Test at Channel 11 (2.462 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	53.72	27.93	4.74	35.09	51.30	74.00	Vertical
2390.000	53.35	27.63	4.96	35.05	50.89	74.00	V
2483.500	53.83	27.55	4.90	34.99	51.29	74.00	V
2500.000	53.64	27.55	5.00	34.98	51.21	74.00	V
2310.000	53.46	27.93	4.74	35.09	51.04	74.00	Horizontal
2390.000	53.52	27.63	4.96	35.05	51.06	74.00	H
2483.500	53.61	27.55	4.90	34.99	51.07	74.00	H
2500.000	53.48	27.55	5.00	34.98	51.05	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	40.15	27.93	4.74	35.09	37.73	54.00	Vertical
2390.000	41.45	27.63	4.96	35.05	38.99	54.00	V
2483.500	41.78	27.55	4.90	34.99	39.24	54.00	V
2500.000	39.62	27.55	5.00	34.98	37.19	54.00	V
2310.000	38.50	27.93	4.74	35.09	36.08	54.00	Horizontal
2390.000	41.65	27.63	4.96	35.05	39.19	54.00	H
2483.500	41.47	27.55	4.90	34.99	38.93	54.00	H
2500.000	41.46	27.55	5.00	34.98	39.03	54.00	H

**7.7.2.4 802.11n(HT40) mode with 135Mbps data rate**

Test at Channel 3 (2.422 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	55.43	27.93	4.74	35.09	53.01	74.00	Vertical
2390.000	55.52	27.63	4.96	35.05	53.06	74.00	V
2483.500	55.42	27.55	4.90	34.99	52.88	74.00	V
2500.000	55.54	27.55	5.00	34.98	53.11	74.00	V
2310.000	52.58	27.93	4.74	35.09	50.16	74.00	Horizontal
2390.000	52.54	27.63	4.96	35.05	50.08	74.00	H
2483.500	52.78	27.55	4.90	34.99	50.24	74.00	H
2500.000	52.48	27.55	5.00	34.98	50.05	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	43.28	27.93	4.74	35.09	40.86	54.00	Vertical
2390.000	43.34	27.63	4.96	35.05	40.88	54.00	V
2483.500	43.15	27.55	4.90	34.99	40.61	54.00	V
2500.000	42.87	27.55	5.00	34.98	40.44	54.00	V
2310.000	40.51	27.93	4.74	35.09	38.09	54.00	Horizontal
2390.000	40.45	27.63	4.96	35.05	37.99	54.00	H
2483.500	40.25	27.55	4.90	34.99	37.71	54.00	H
2500.000	39.87	27.55	5.00	34.98	37.44	54.00	H



Test at Channel 6 (2.437 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	55.48	27.93	4.74	35.09	53.06	74.00	Vertical
2390.000	55.64	27.63	4.96	35.05	53.18	74.00	V
2483.500	55.12	27.55	4.90	34.99	52.58	74.00	V
2500.000	55.21	27.55	5.00	34.98	52.78	74.00	V
2310.000	51.15	27.93	4.74	35.09	48.73	74.00	Horizontal
2390.000	51.48	27.63	4.96	35.05	49.02	74.00	H
2483.500	50.86	27.55	4.90	34.99	48.32	74.00	H
2500.000	50.25	27.55	5.00	34.98	47.82	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	42.56	27.93	4.74	35.09	40.14	54.00	Vertical
2390.000	42.78	27.63	4.96	35.05	40.32	54.00	V
2483.500	42.39	27.55	4.90	34.99	39.85	54.00	V
2500.000	41.35	27.55	5.00	34.98	38.92	54.00	V
2310.000	39.35	27.93	4.74	35.09	36.93	54.00	Horizontal
2390.000	40.37	27.63	4.96	35.05	37.91	54.00	H
2483.500	38.79	27.55	4.90	34.99	36.25	54.00	H
2500.000	38.48	27.55	5.00	34.98	36.05	54.00	H



Test at Channel 9 (2.452 GHz) in transmitting status

**Peak Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	53.35	27.93	4.74	35.09	50.93	74.00	Vertical
2390.000	53.36	27.63	4.96	35.05	50.90	74.00	V
2483.500	52.78	27.55	4.90	34.99	50.24	74.00	V
2500.000	52.87	27.55	5.00	34.98	50.44	74.00	V
2310.000	50.71	27.93	4.74	35.09	48.29	74.00	Horizontal
2390.000	50.48	27.63	4.96	35.05	48.02	74.00	H
2483.500	50.54	27.55	4.90	34.99	48.00	74.00	H
2500.000	50.43	27.55	5.00	34.98	48.00	74.00	H

**Average Measurement:**

Frequency (MHz)	Reading Level (dBμV)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2310.000	41.26	27.93	4.74	35.09	38.84	54.00	Vertical
2390.000	41.25	27.63	4.96	35.05	38.79	54.00	V
2483.500	39.49	27.55	4.90	34.99	36.95	54.00	V
2500.000	40.65	27.55	5.00	34.98	38.22	54.00	V
2310.000	39.78	27.93	4.74	35.09	37.36	54.00	Horizontal
2390.000	38.73	27.63	4.96	35.05	36.27	54.00	H
2483.500	39.68	27.55	4.90	34.99	37.14	54.00	H
2500.000	38.46	27.55	5.00	34.98	36.03	54.00	H

## 7.8 Band Edges Requirement

Test Requirement: FCC Part 15 C section 15.247

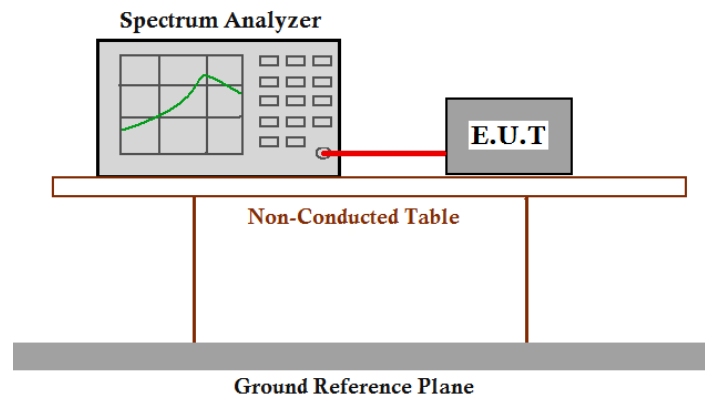
(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains 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: 2400 MHz to 2483.5 MHz

Test Method: ANSI C63.10: Clause 6.9.2

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 Configuration:



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 span to encompass the entire emission bandwidth (EBW) of the signal.
3.  $RBW \geq 1\%$  of spectrum analyzer display span;  $VBW \geq RBW$ .
4. Sweep=auto; Detector function=Peak; Trace=Max hold.
5. Measure the Conducted Spurious Emissions and Radiated Emissions of the test frequency with special test status.
6. Repeat until all the test status is investigated.
7. Report the worse.



**Test result with plots as follows:**

The band edges was measured and recorded Result:

The Lower Edges attenuated more than 20dB.

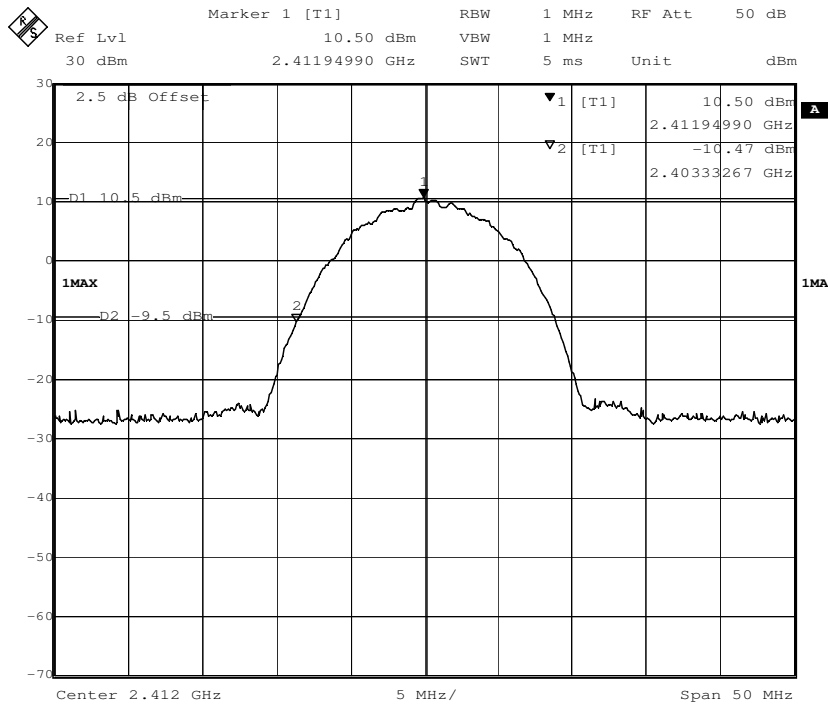
The Upper Edges attenuated more than 20dB.



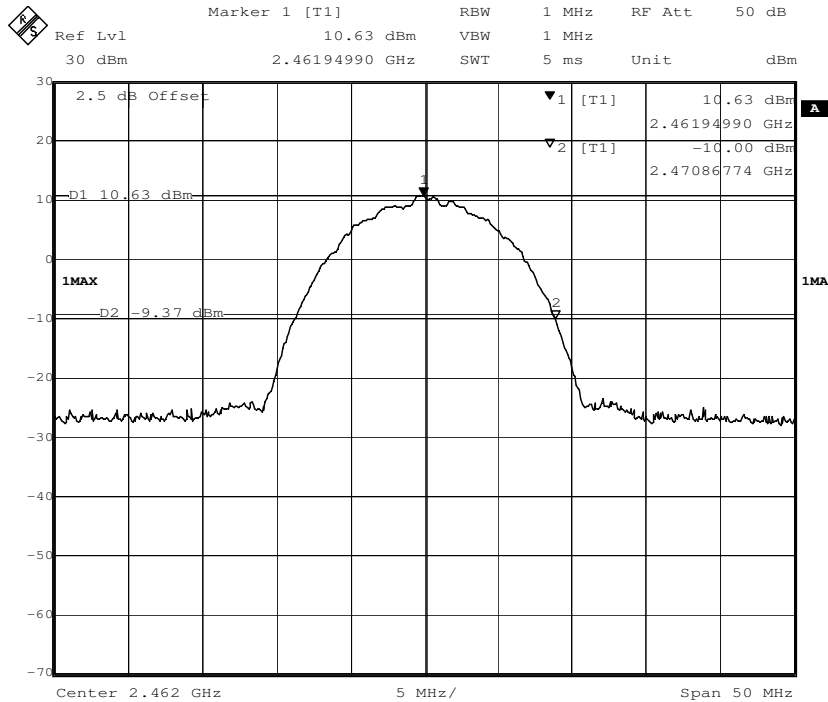
Result plot as follows:

802.11b mode with 11 Mbps data rate

Channel1: 2.412 GHz

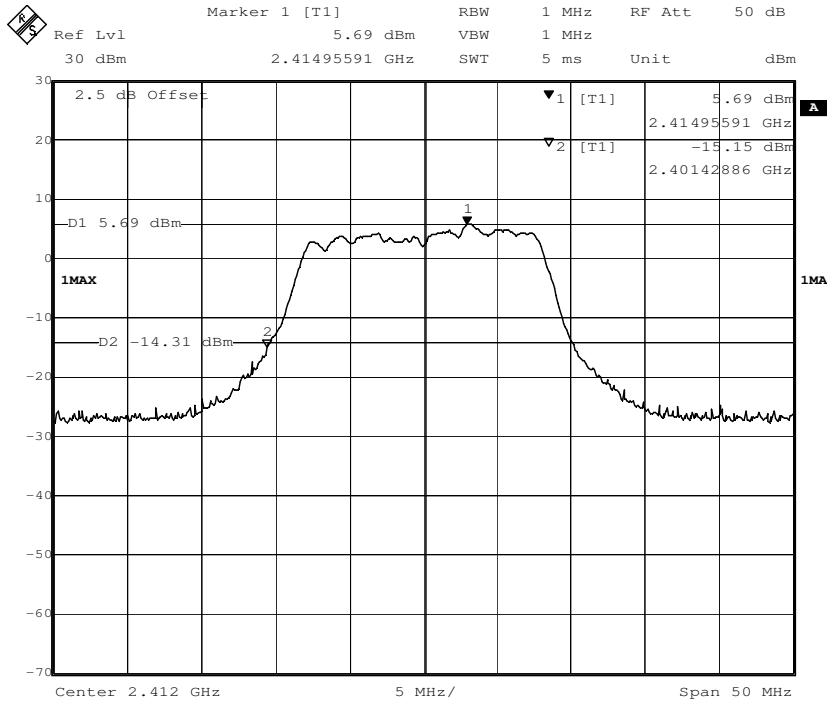


Channel 11: 2.462 GHz

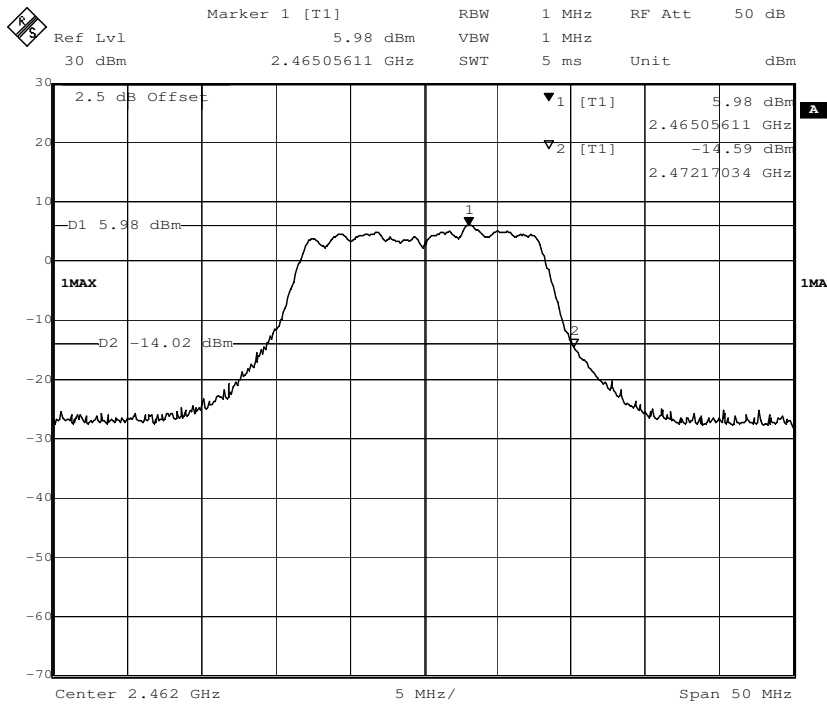


**802.11g mode with 54 Mbps data rate**

Channel1: 2.412 GHz

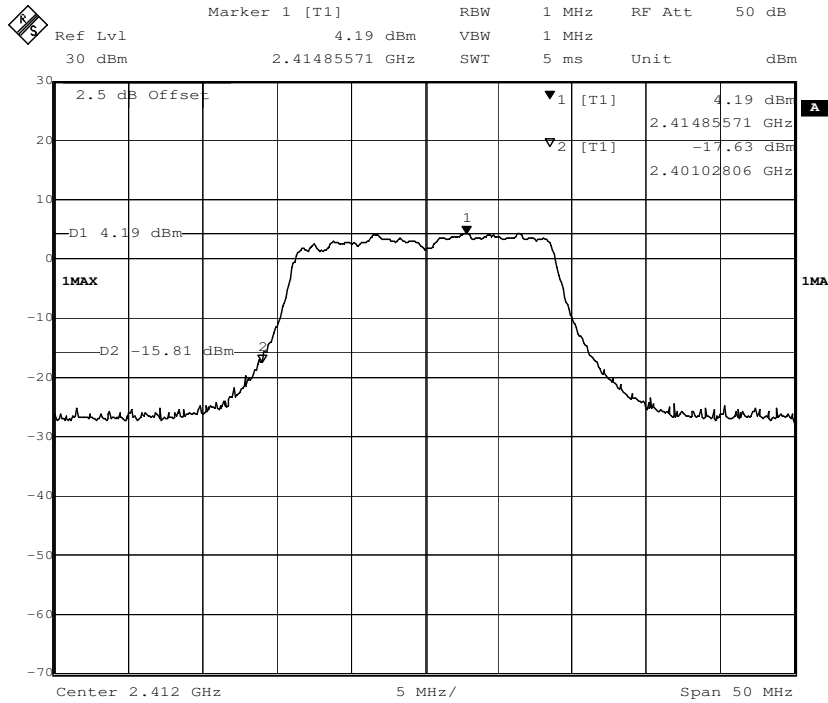


Channel 11: 2.462 GHz

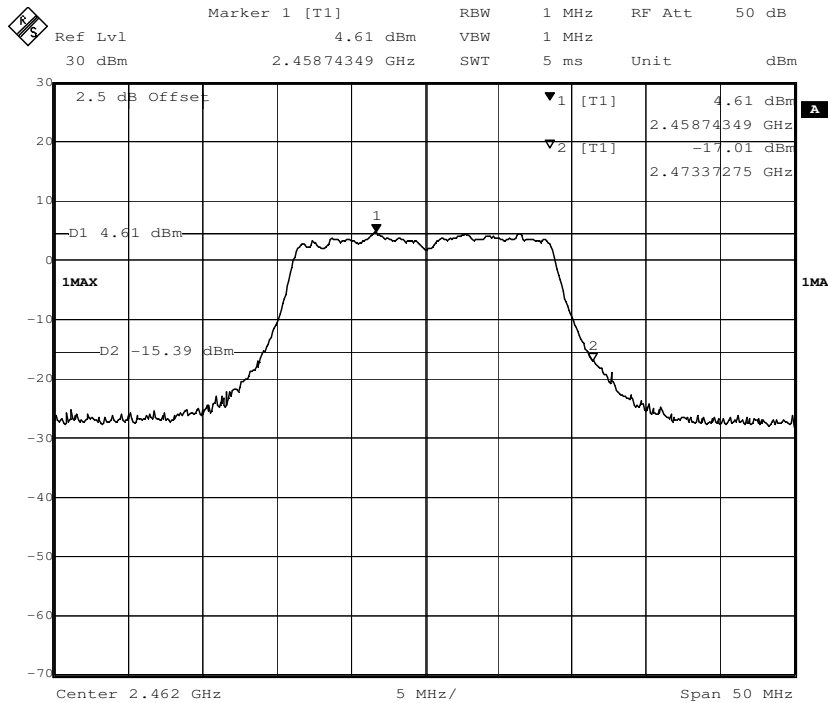


**802.11n(HT20) mode with 65Mbps data rate**

Channel1: 2.412 GHz

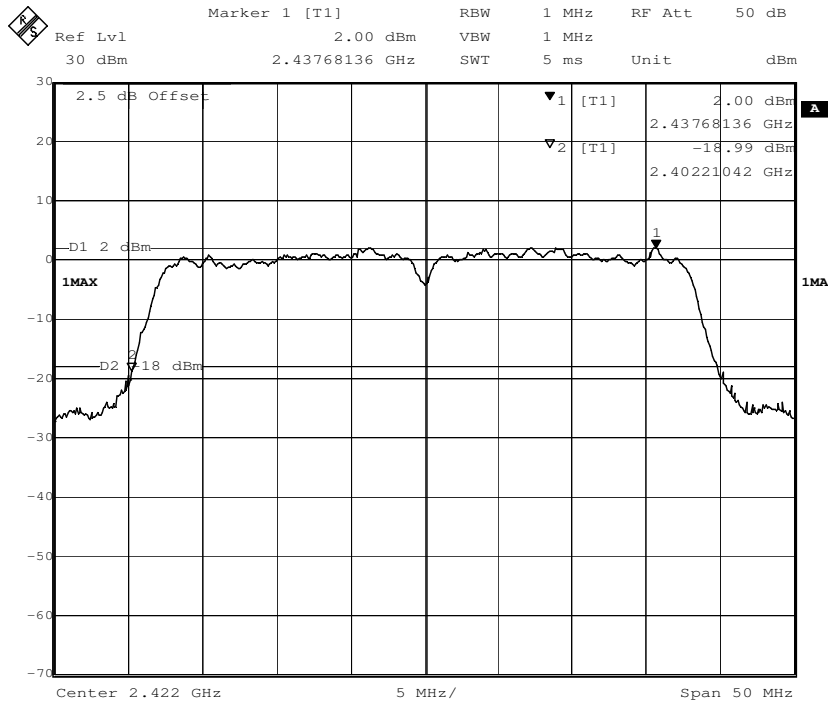


Channel 11: 2.462 GHz



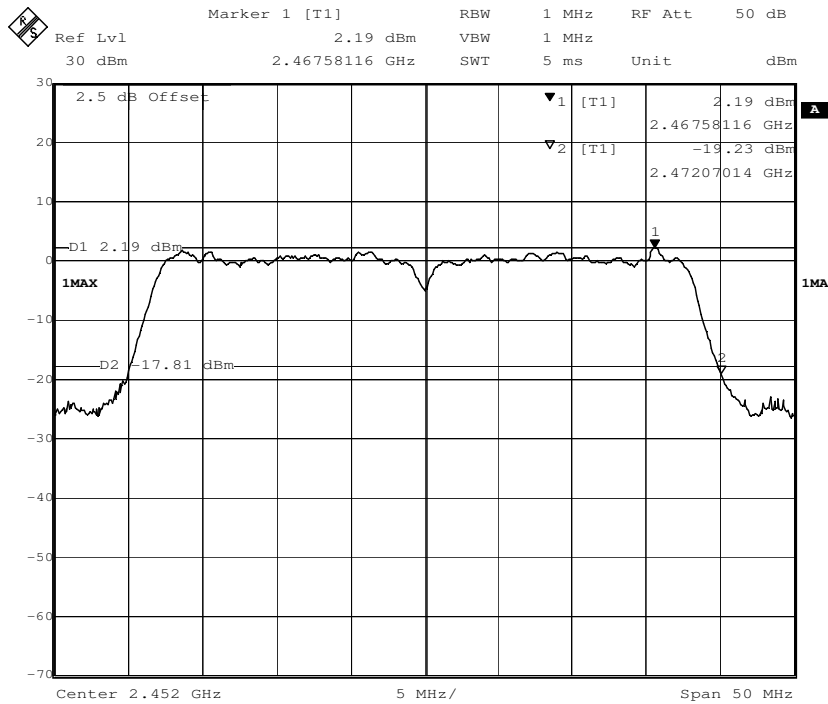
**802.11n(HT40) mode with 135Mbps data rate**

Channel 3: 2.422 GHz



Date: 22.AUG.2012 19:03:18

Channel 9: 2.452 GHz



**--End of Report--**