SGS-CSTC Standards Technical Services
(Shanghai) Co., Ltd.

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1 Cover Page

RF TEST REPORT

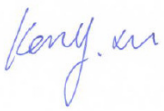
Application No.:	SHEM1503000726CR
Applicant:	UTC FIRE & SECURITY AMERICAS CORPORATION, INC.
FCC ID:	2AENJ-WEDGE180
Equipment Under Test (EUT): **NOTE:** The following sample(s) was/were submitted and identified by the client as	
Product Name:	IR Network Camera
Model No.(EUT):	TVW-3130
Add Model No.:	TVW-1130
Standards:	FCC PART 15 Subpart C: 2014
Date of Receipt:	March 20, 2015
Date of Test:	April 07, 2015 to April 17, 2015
Date of Issue:	July 13, 2015
Test Result:	**Pass***

*In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00	/	July 13, 2015	/	Original

Authorized for issue by:				
Engineer		Eddy Zong **Print Name**		
Clerk		Susie Liu **Print Name**		
Reviewer		Keny Xu **Print Name**		

3 Test Summary

Test Item	FCC Requirement	Test method	Result
Antenna Requirement	FCC Part 15, Subpart C Section 15.203/15.247 (c)	---	PASS
AC Power Line Conducted Emission	FCC Part 15, Subpart C Section 15.207	ANSI C63.10 (2013) Section 6.2	PASS
Minimum 6dB Bandwidth	FCC Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 (2013) Section 11.8.1	PASS
Conducted Peak Output Power	FCC Part 15, Subpart C Section 15.247 (b)(3)	ANSI C63.10 (2013) Section 11.9.1.2	PASS
Power Spectrum Density	FCC Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 (2013) Section 11.10.2	PASS
RF Conducted Spurious Emissions and Band-edge	FCC Part 15, Subpart C Section 15.247(d)	ANSI C63.10 (2013) Section 11.12.2.4	PASS
Radiated Spurious Emissions and Band-edge	FCC Part 15, Subpart C Section 15.209&15.205	ANSI C63.10 (2013) Section 6.4&6.5&6.6&6.10	PASS

Note: There are 2 models mentioned in this report, and they are the similar in electrical and electronic characters. Only the model TVW-3130 was tested since their differences were the software version, their naming and color silk.

4 Contents

5 General Information

5.1 Client Information

Applicant:	UTC FIRE & SECURITY AMERICAS CORPORATION, INC.
Address of Applicant:	2955 Red Hill Ave., Costa Mesa, CA92626, USA
Manufacturer:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Manufacturer:	700 Dongliu Road, Binjiang, Hangzhou, 310052 Zhejiang, China
Factory:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Factory:	700 Dongliu Road, Binjiang, Hangzhou, 310052 Zhejiang, China

5.2 General Description of E.U.T.

Product Description:	Fixed product with WiFi function	
Power Supply:	DC 12V 1A	
Adapter:	Rated Input:	AC 100V-240V 50/60Hz 500mA
	Rated Output:	DC 12V 1A
	Cable Length:	AC port: 2 Wires
		DC port: 140cm

5.3 Technical Specifications

Operation Frequency:	802.11 b/g/n20: 2412MHz-2462MHz 802.11 n40: 2422MHz-2452MHz
Modulation Technique:	802.11 b: DSSS(CCK, DQPSK, DBPSK) 802.11 g/n20/n40: OFDM(64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	802.11 b/g/n20: 11 802.11 n40: 7
Data Rate:	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n20: 13/26/39/52/78/104/117/135Mbps 802.11n40: 27/54/81/108/162/216/243/270Mbps
Antenna Type:	Integral
Antenna Gain:	2.24dBi

5.4 Test Mode

Test Mode	Description of Test Mode
Engineering mode	Using test software was control EUT work in continuous transmitter and mode.

5.5 Test Channel

	802.11 b/g/n20					802.11 n40		
	Channel	Frequency	Data rate			Channel	Frequency	Data rate
			b	g	n20			
lowest channel	CH01	2412MHz	1Mbps	6Mbps	MCS0	CH03	2422MHz	MCS0
Middle channel	CH06	2437MHz	1Mbps	6Mbps	MCS0	CH06	2437MHz	MCS0
Highest channel	CH11	2462MHz	1Mbps	6Mbps	MCS0	CH09	2452MHz	MCS0

Remark: Preliminary tests were performed in all tests in different data rata and antenna configurations at lowest channel, the data rates of worse case as above were chosen for final test.

5.6 Description of Support Units

The EUT has been tested with support equipments as below.

Description	Manufacturer	Model No.	Supplied By
Laptop	Lenovo	ThinkPad X 100e	SGS
AC to DC Adapter	Acepower	BSW0127-1210002W	SGS

Software name	Manufacturer	Version	Supplied By
Command Processor	Microsoft	1.3.3.0881	SGS

5.7 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
No.588 West Jindu Road, Songjiang District, Shanghai, China.201612.
Tel: +86 21 6191 5666
Fax: +86 21 6191 5678

5.8 Test Facility

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

- **CNAS (No. CNAS L0599)**

  CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2017-07-14.

- **FCC – Registration No.: 402683**

  SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

- **VCCI (Member No.: 3061)**

  The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868, C-4336, T-2221, G-830 respectively. Date of Expiry: 2017-11-16.

5.9 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty
1	Radio Frequency	$< \pm 1 \times 10^{-5}$
2	Total RF power, conducted	< ±1.5 dB
3	RF power density, conducted	< ±3 dB
4	Spurious emissions, conducted	< ±3 dB
5	All emissions, radiated	< ±6 dB (30MHz – 1GHz) < ±6 dB (above 1GHz)
6	Temperature	< ±1°C
7	Humidity	< ±5 %
8	DC and low frequency voltages	< ±3 %

6 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2015-01-22	2016-01-21
2	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127490	2015-01-22	2016-01-21
3	Line impedance stabilization network	ETS	3816/2	00034161	2015-01-22	2016-01-21
4	Spectrum Analyzer	Rohde & Schwarz	FSP-30	2705121009	2015-01-22	2016-01-21
5	EMI test receiver	Rohde & Schwarz	ESU40	100109	2015-02-13	2016-02-12
6	Active Loop Antenna (9kHz to 30MHz)	Schwarzbeck - Mess-Elektronik	FMZB 1519	1519-034	2015-02-07	2016-02-06
7	Broadband UHF-VHF ANTENNA (25MHz to 2GHz)	SCHWARZBECK	VULB9168	9168-313	2015-02-07	2016-02-06
8	Ultra broadband antenna (25MHz to3GHz)	Rohde & Schwarz	HL562	100227	2014-08-30	2015-08-29
9	Horn Antenna (1GHz to 18GHz)	Rohde & Schwarz	HF906	100284	2015-02-07	2016-02-06
10	Horn Antenna (1GHz to 18GHz)	SCHWARZBECK	BBHA9120D	9120D-679	2015-02-07	2016-02-06
11	Horn Antenna (14GHz to 40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170373	2015-02-13	2016-02-12
12	Pre-amplifier (9KHz – 2GHz)	LNA6900	TESEQ	71033	2014-12-27	2015-12-27
13	Pre-amplifier (1GHz – 26.5GHz)	Rohde & Schwarz	SCU-F0118-G40-BZ4-CSS(F)	10001	2015-01-22	2016-01-21
14	Pre-amplifier (14GHz – 40GHz)	Rohde & Schwarz	SCU-F1840-G35-BZ3-CSS(F)	10001	2015-01-22	2016-01-21
15	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/880.0-0.2/40-5SSK	9170397	/	/
16	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	/	/
17	High-low temperature cabinet	Suzhou Zhihe	TL-40	50110050	2014-09-11	2015-09-10
18	AC power stabilizer	WOCEN	6100	51122	2015-01-02	2016-01-01
19	DC power	QJE	QJ30003SII	611145	2015-01-02	2016-01-01
20	Signal Generator (Interferer)	Agilent	SMR40	100555	2014-08-10	2015-08-09
21	Signal Generator (Blocker)	Rohde & Schwarz	SMJ100A	02.20.360.142	2015-01-22	2016-01-21
22	Splitter	Anritsu	MA1612A	M12265	/	/
23	Coupler	e-meca	803-S-1	900-M01	/	/

7 Test Results

7.1 E.U.T. test conditions

Test Power: AC 120V, 60Hz

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.

Operating Environment:

Temperature:	20.0 -25.0 °C
Humidity:	35-75 % RH
Atmospheric Pressure:	99.2 -102 kPa

Test frequencies: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. if required. reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

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

Pursuant to Part 15.31(c) For swept frequency equipment, measurements shall be made with the frequency sweep stopped at those frequencies chosen for the measurements to be reported.

7.2 Antenna Requirement

Standard requirement:

15.203 requirement:

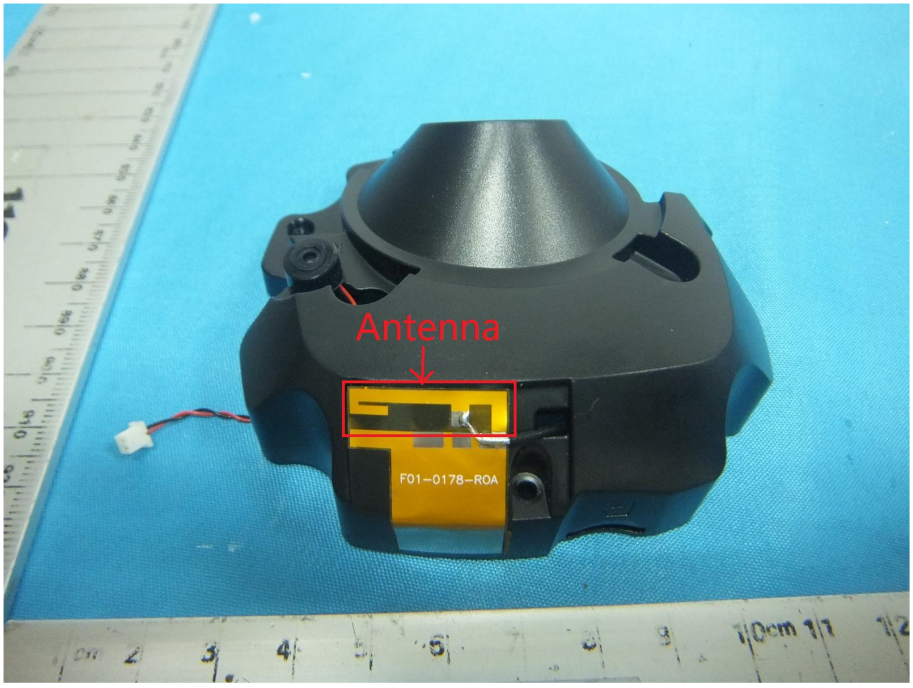
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is Plug-in antenna. The gain of the antenna is less than 2.24 dBi.



7.3 Conducted Emissions on Mains Terminals

Frequency Range: 150 KHz to 30 MHz

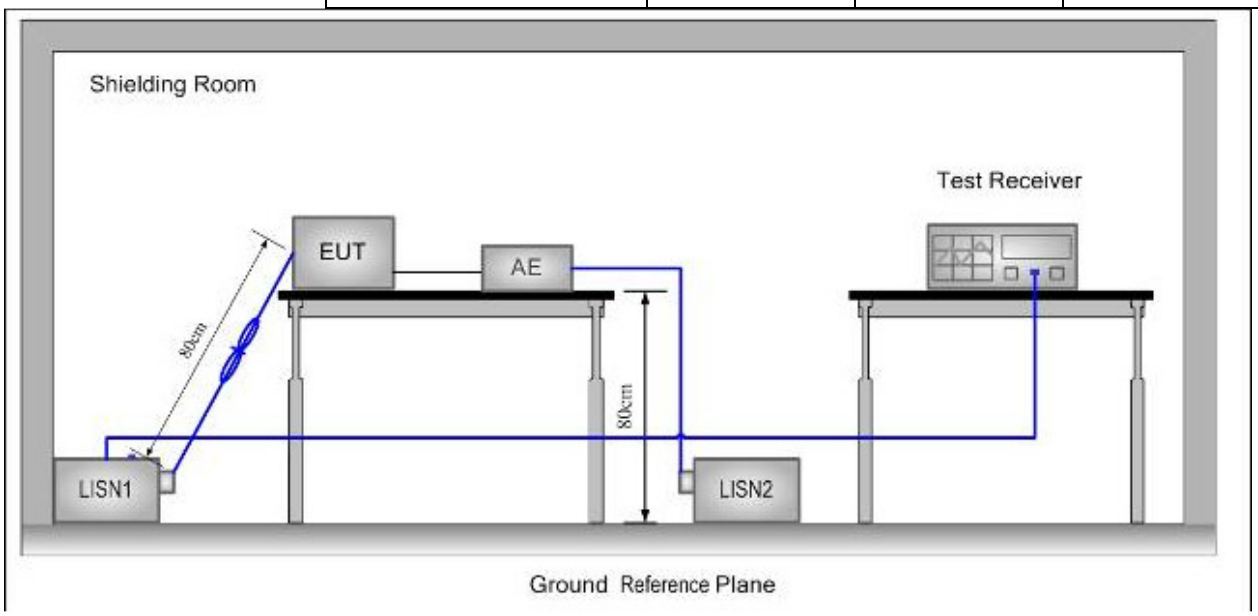
Class/Severity: Class B

Limit:

Frequency range MHz	Class B Limits: dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz. Note2: The lower limit is applicable at the transition frequency.		

Test site/setup: Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
9KHz to 150Hz	Quasi-peak	200Hz	500Hz
150KHz to 30MHz	Quasi-peak	9kHz	30kHz



Test Procedure:

1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane.

And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

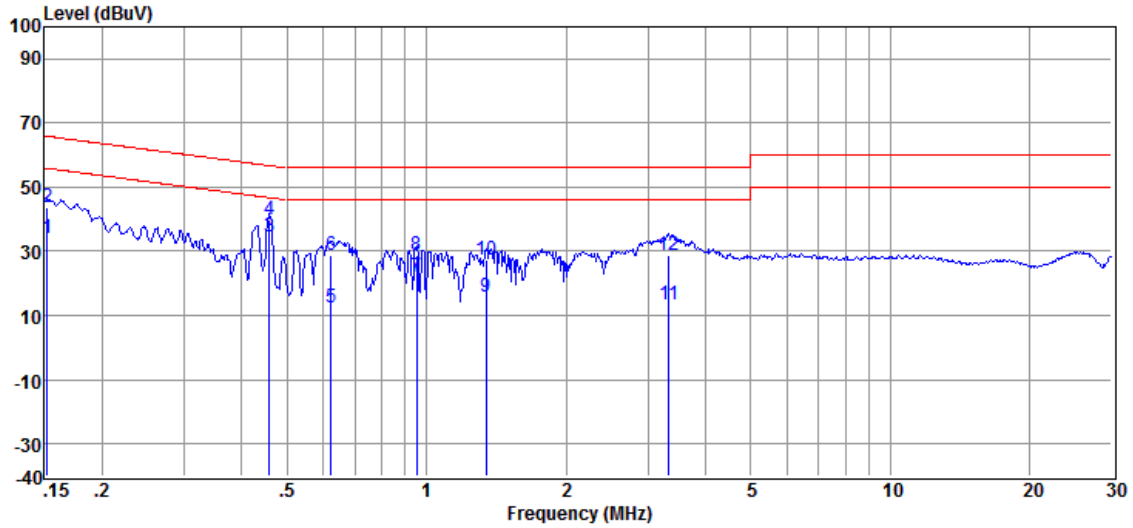
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment were at least 0.8 m from the LISN.

Remark: Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected. Pretest under all modes; choose the worst case mode (802.11b in Middle channel) record on the report. Please see the attached Quasi-peak and Average test results.

Test Result: Pass

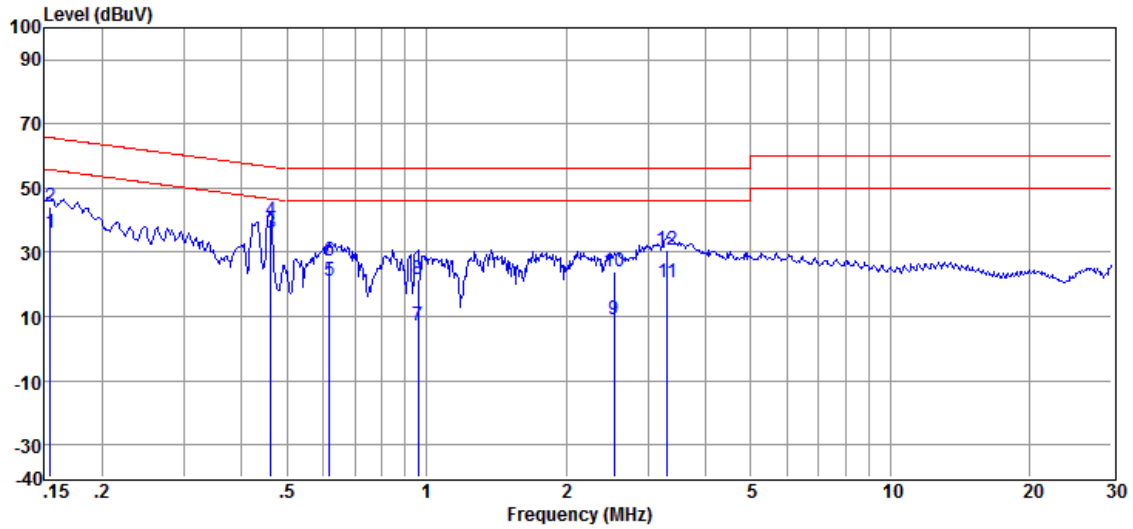
Test Data:

Test Mode:	802.11b	Test Channel:	Middle
Test Port:	AC Live Line		



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB)	(dB)	(dBµV)	(dBµV)	(dB)	
1	0.152	33.60	0.33	0.10	34.03	55.87	-21.84	Average
2	0.152	43.33	0.33	0.10	43.76	65.87	-22.11	QP
3	0.459	34.29	0.25	0.10	34.64	46.71	-12.07	Average
4	0.459	39.43	0.25	0.10	39.78	56.71	-16.93	QP
5	0.624	11.91	0.23	0.10	12.24	46.00	-33.76	Average
6	0.624	28.53	0.23	0.10	28.86	56.00	-27.14	QP
7	0.953	21.78	0.18	0.10	22.06	46.00	-23.94	Average
8	0.953	28.66	0.18	0.10	28.94	56.00	-27.06	QP
9	1.345	15.23	0.25	0.10	15.58	46.00	-30.42	Average
10	1.345	27.06	0.25	0.10	27.41	56.00	-28.59	QP
11	3.328	12.68	0.38	0.16	13.22	46.00	-32.78	Average
12	3.328	28.42	0.38	0.16	28.96	56.00	-27.04	QP

Test Port: AC Neutral Line

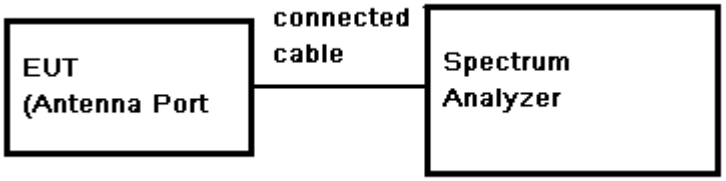


Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB)	(dB)	(dBµV)	(dBµV)	(dB)	
1	0.155	35.48	0.33	0.10	35.91	55.74	-19.83	Average
2	0.155	43.62	0.33	0.10	44.05	65.74	-21.69	QP
3	0.461	35.79	0.30	0.10	36.19	46.67	-10.48	Average
4	0.461	39.24	0.30	0.10	39.64	56.67	-17.03	QP
5	0.617	20.61	0.23	0.10	20.94	46.00	-25.06	Average
6	0.617	26.86	0.23	0.10	27.19	56.00	-28.81	QP
7	0.958	6.92	0.22	0.10	7.24	46.00	-38.76	Average
8	0.958	21.13	0.22	0.10	21.45	56.00	-34.55	QP
9	2.540	8.27	0.85	0.13	9.25	46.00	-36.75	Average
10	2.540	22.86	0.85	0.13	23.84	56.00	-32.16	QP
11	3.310	19.63	0.68	0.15	20.46	46.00	-25.54	Average
12	3.310	29.88	0.68	0.15	30.71	56.00	-25.29	QP

Remark: Level = Read Level + LISN/ISN Factor + Cable Loss.

7.4 6dB Occupied Bandwidth

Test Configuration:



Test Procedure:

1). Place the EUT on the table and set it in transmitting mode.
2). Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3). Set the spectrum analyzer as RBW=300KHz, VBW≥3* RBW, Span=30/50MHz, Sweep=auto
4). Mark the peak frequency and –6dB (upper and lower) frequency.
5). Repeat above procedures until all frequency measured was complete.

Limit: ≥ 500 kHz

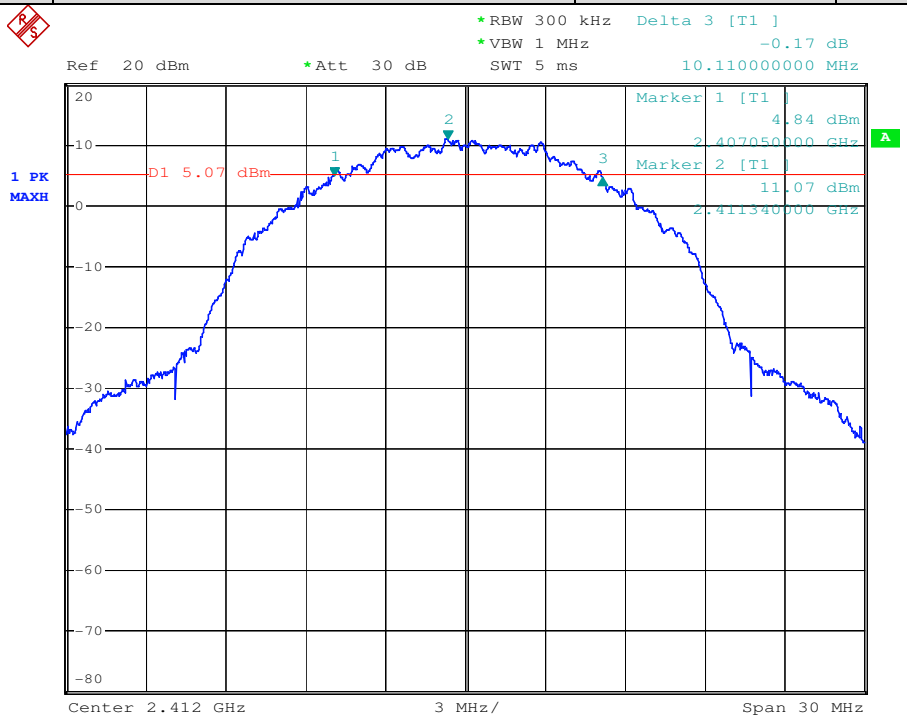
Test Result: Pass

Test Data:

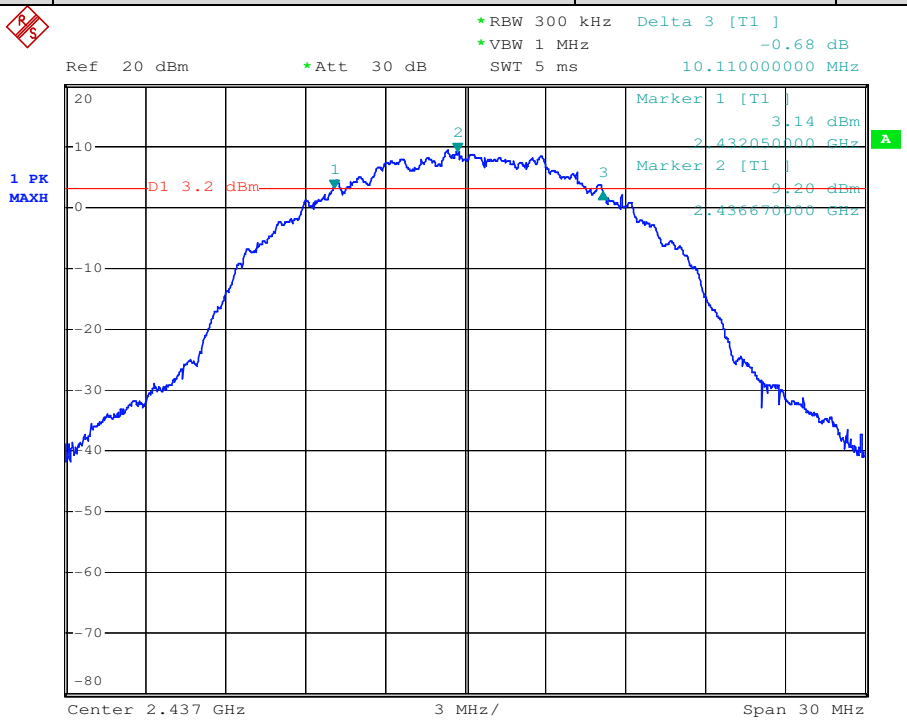
Test Mode	Test Frequency (MHz)	Bandwidth (MHz)	Limit (KHz)	Result
802.11b	2412	10.11	500	Pass
	2437	10.11		Pass
	2462	10.29		Pass
802.11g	2412	16.83		Pass
	2437	16.86		Pass
	2462	16.83		Pass
802.11n20	2412	17.88		Pass
	2437	17.82		Pass
	2462	17.88		Pass
802.11n40	2422	36.48		Pass
	2437	36.64		Pass
	2452	36.48		Pass

Test plot as follows:

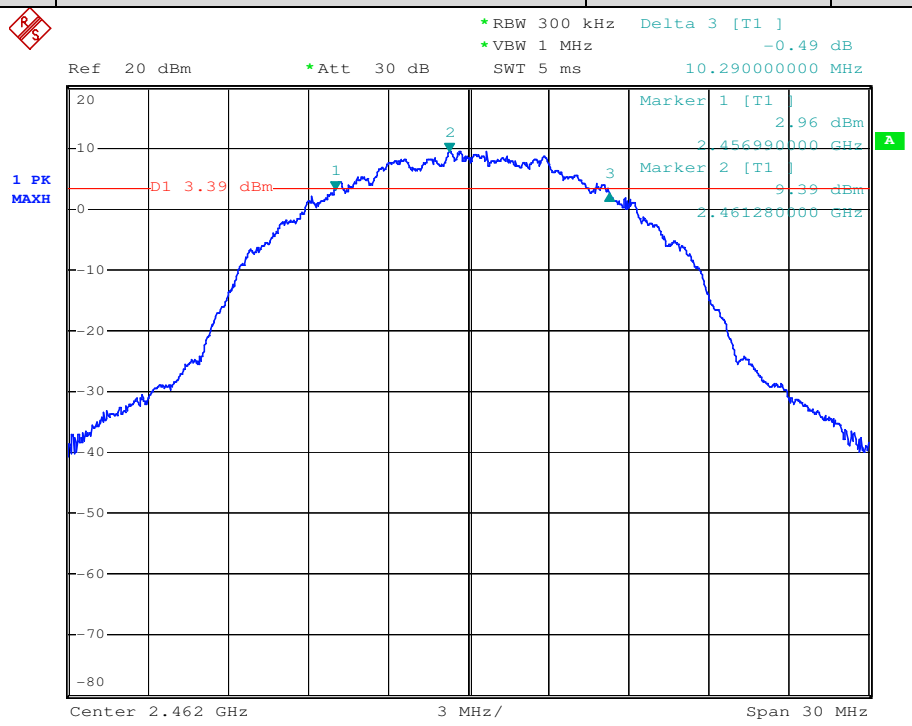
Test mode:	802.11b	Channel:	Lowest



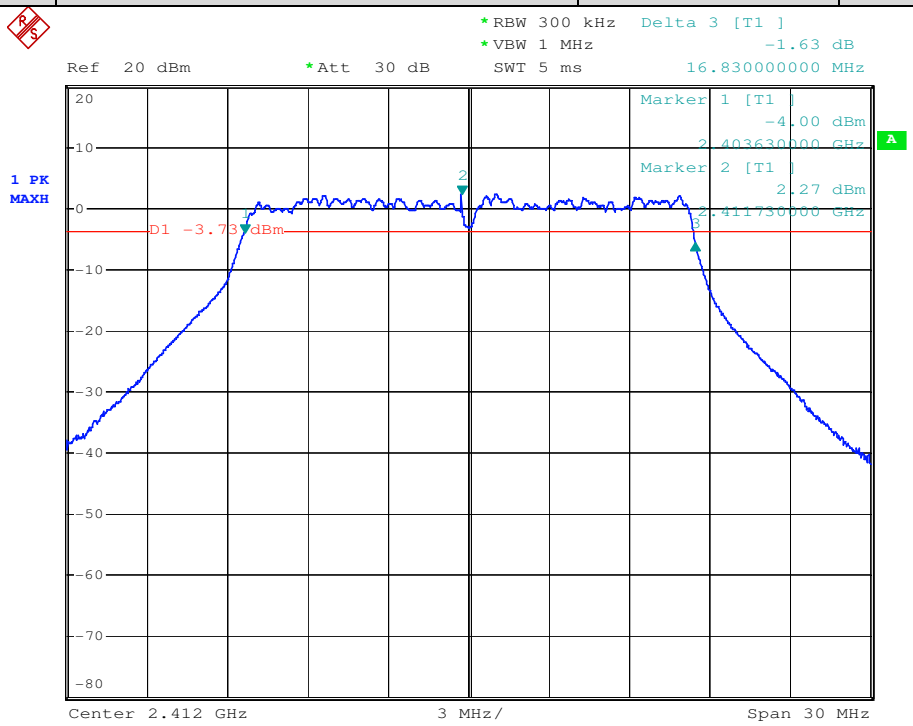
Test mode:	802.11b	Channel:	Middle



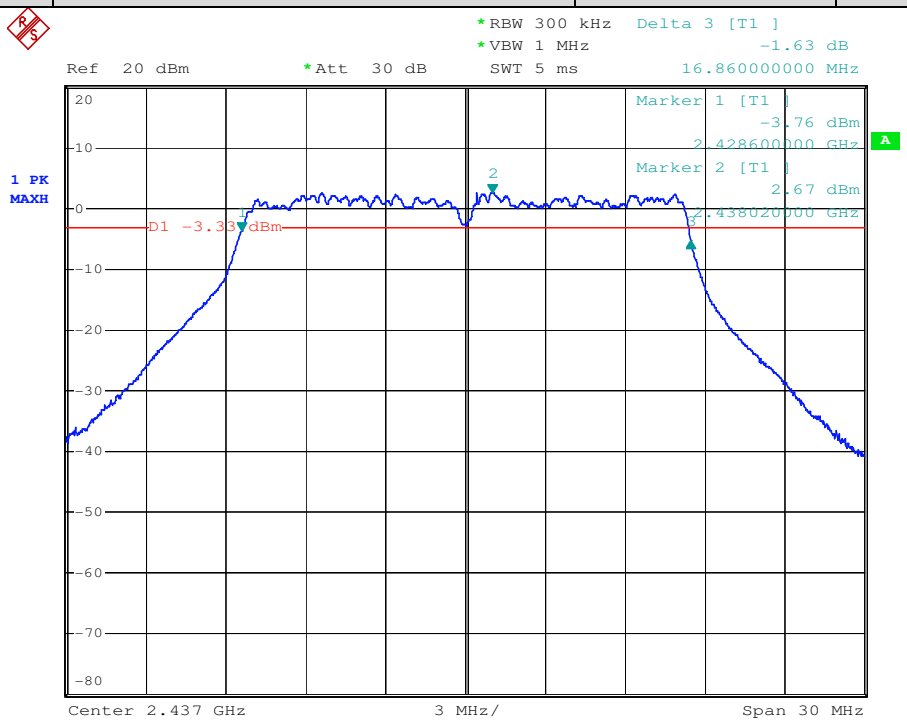
Test mode:	802.11b	Channel:	Highest



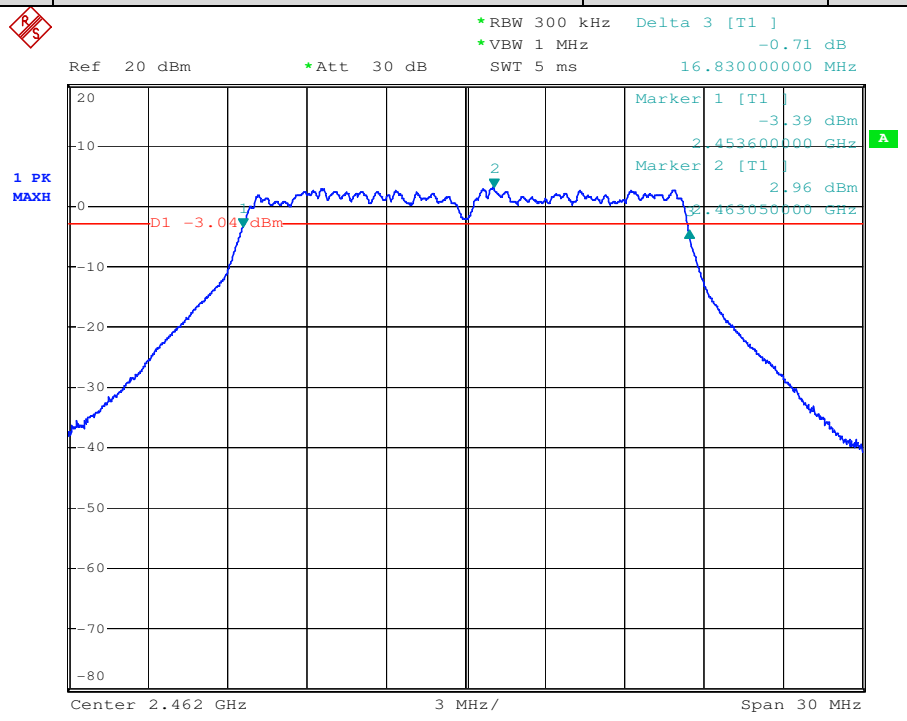
Test mode:	802.11g	Channel:	Lowest



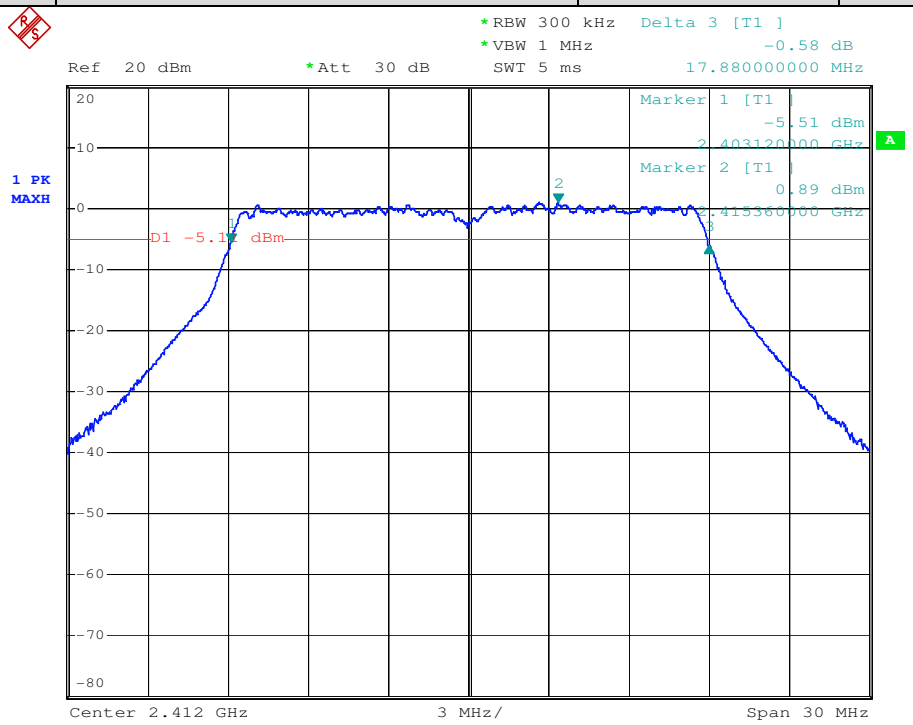
Test mode:	802.11g	Channel:	Middle



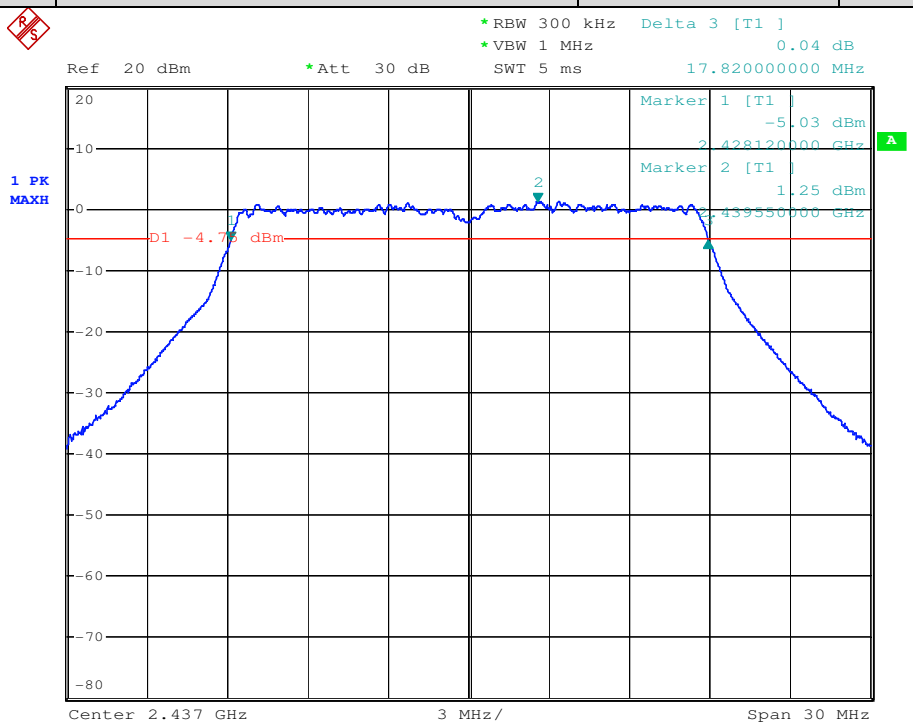
Test mode:	802.11g	Channel:	Highest



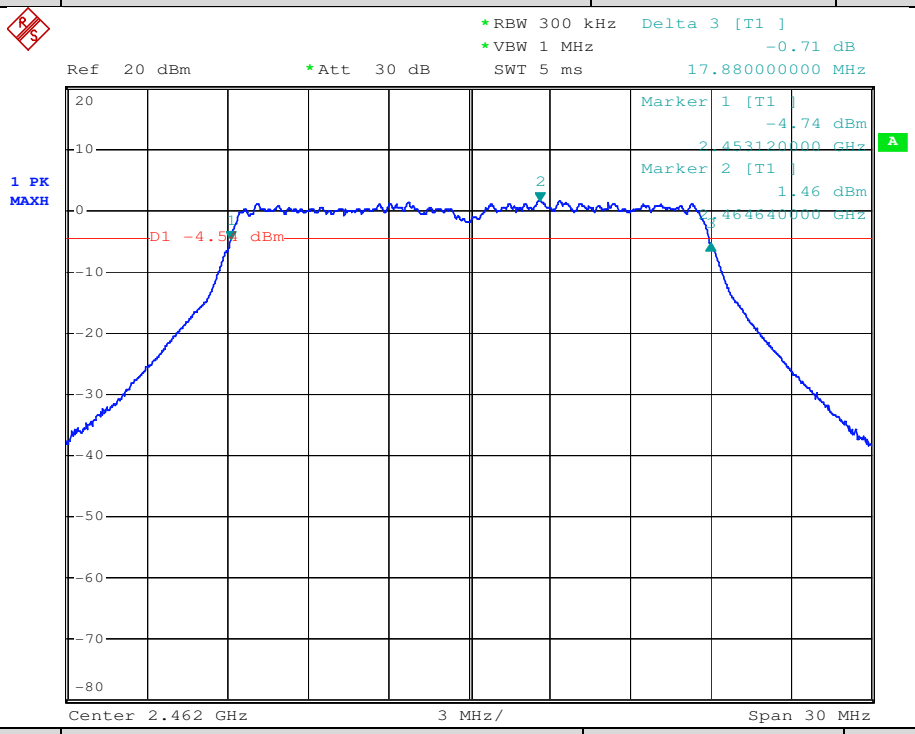
Test mode:	802.11n20	Channel:	Lowest



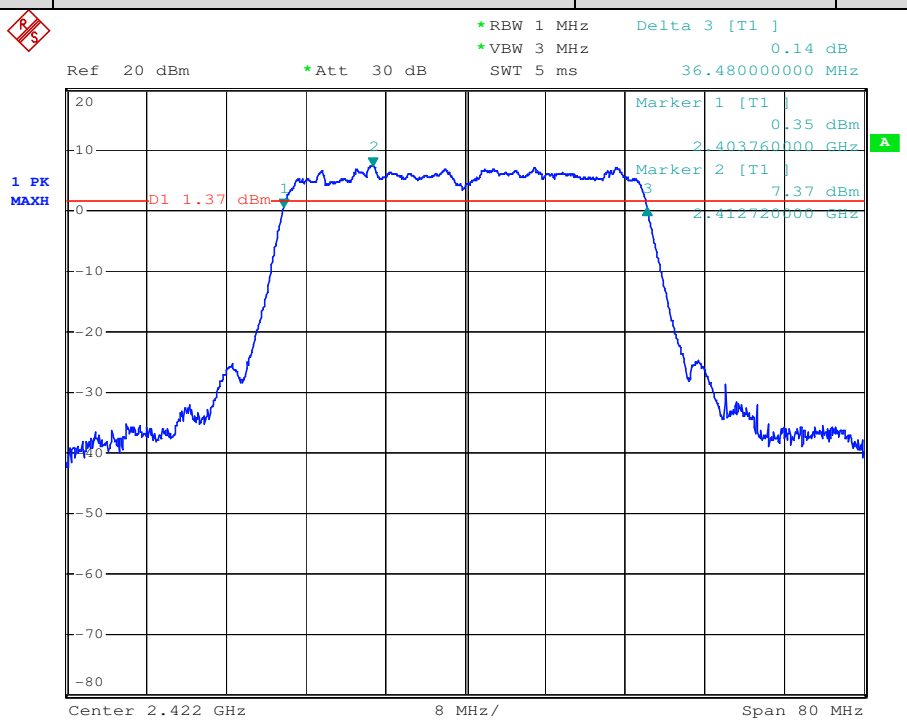
Test mode:	802.11n20	Channel:	Middle



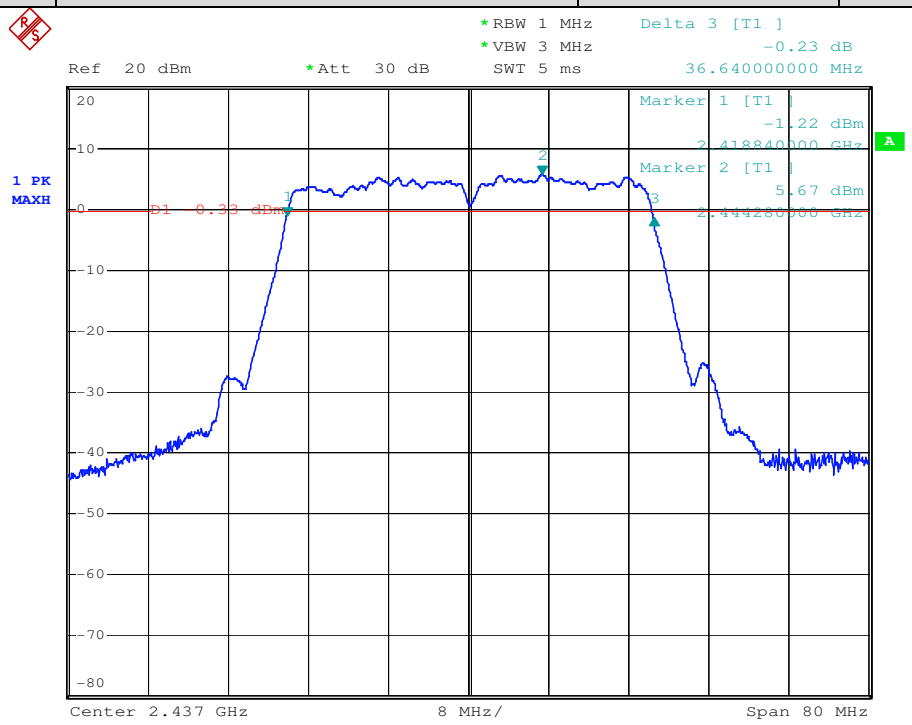
Test mode:	802.11n20	Channel:	Highest



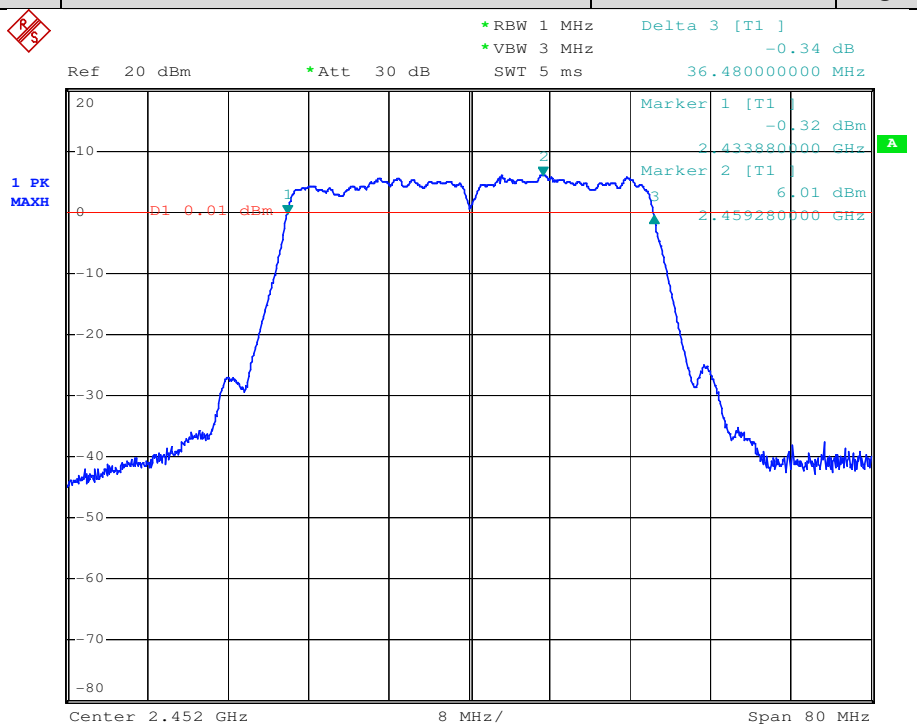
Test mode:	802.11n40	Channel:	Lowest



Test mode:	802.11n40	Channel:	Middle

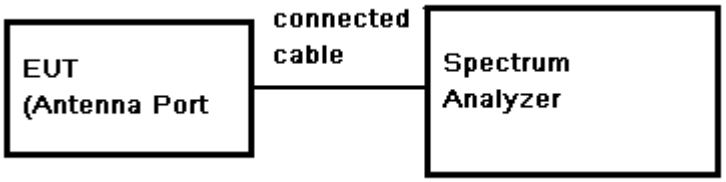


Test mode:	802.11n40	Channel:	Highest



7.5 Conducted Peak Output Power

Test Configuration:



Test Procedure:

1) Place the EUT on the table and set it in transmitting mode.
2) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.
3) Set the occur band to the entire emission 6dB bandwidth of the signal.
4) Record the max. Power channel reading.
5) Repeat above procedures until all the frequency measured were complete.

Test Limit: 30dBm

Test Result: Pass

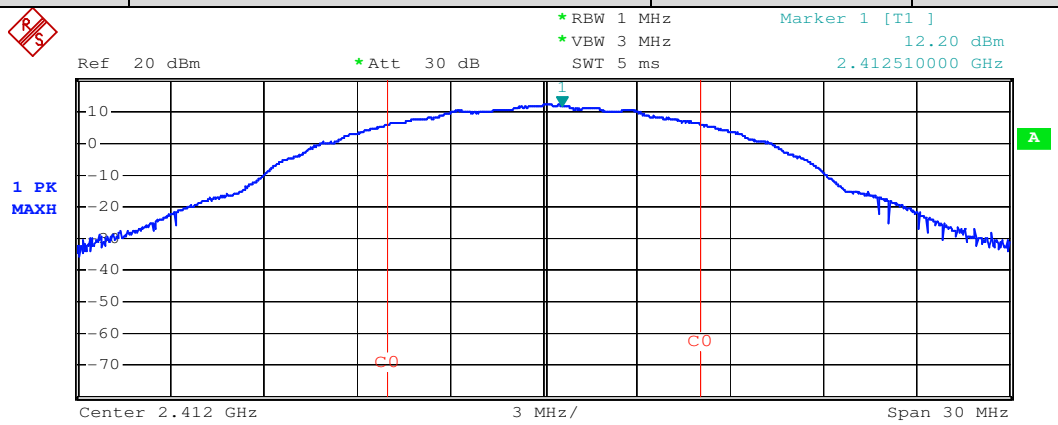
Test Data:

Test mode	Channel	Reading Peak Power (dBm)	Cable Loss (dB)	Output Power (dBm)	Output Peak Power (mW)	Peak Power Limit (dBm)	Result
802.11b	Low	19.18	0.5	19.68	92.90	30	PASS
	Mid	19.85	0.5	20.35	108.39		PASS
	High	19.92	0.5	20.42	110.15		PASS
802.11g	Low	19.15	0.5	19.65	92.26		PASS
	Mid	19.75	0.5	20.25	105.93		PASS
	High	**20.04**	**0.5**	**20.54**	**113.24**		PASS
802.11n20	Low	18.13	0.5	18.63	72.95		PASS
	Mid	18.46	0.5	18.96	78.70		PASS
	High	18.69	0.5	19.19	82.99		PASS
802.11n40	Low	18.54	0.5	19.04	80.17		PASS
	Mid	19.06	0.5	19.56	90.36		PASS
	High	19.45	0.5	19.95	98.86		PASS

Remark: 1) Output Peak Power = Reading Peak Power + Cable loss
2) Cable loss=0.5dB

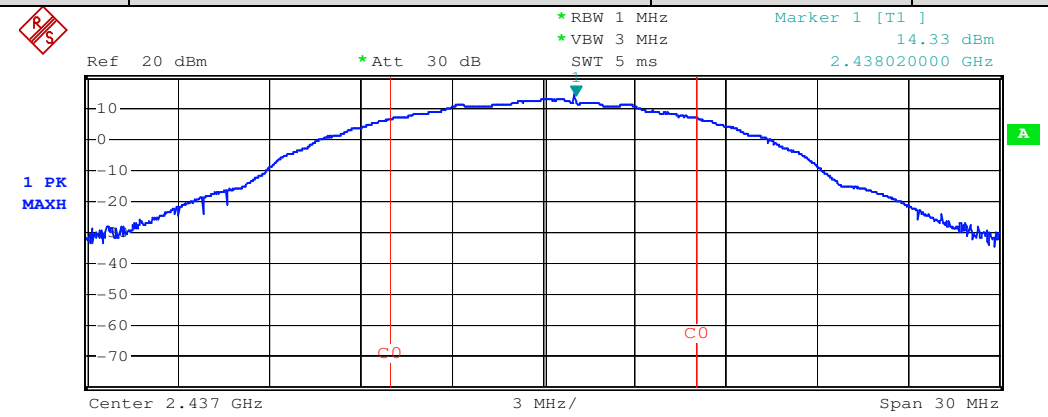
Test result plot as follows:

Test mode:	802.11b	Channel:	Lowest



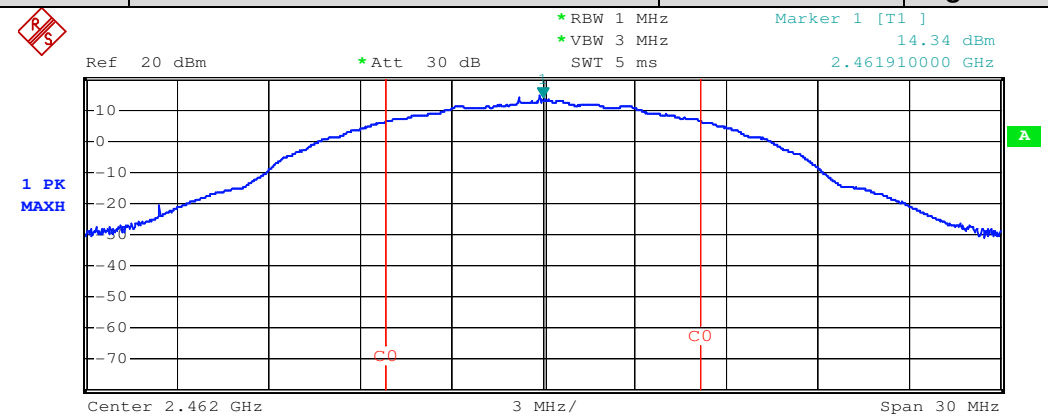
Tx Channel
Bandwidth 10.11 MHz
Power 19.18 dBm

Test mode:	802.11b	Channel:	Middle



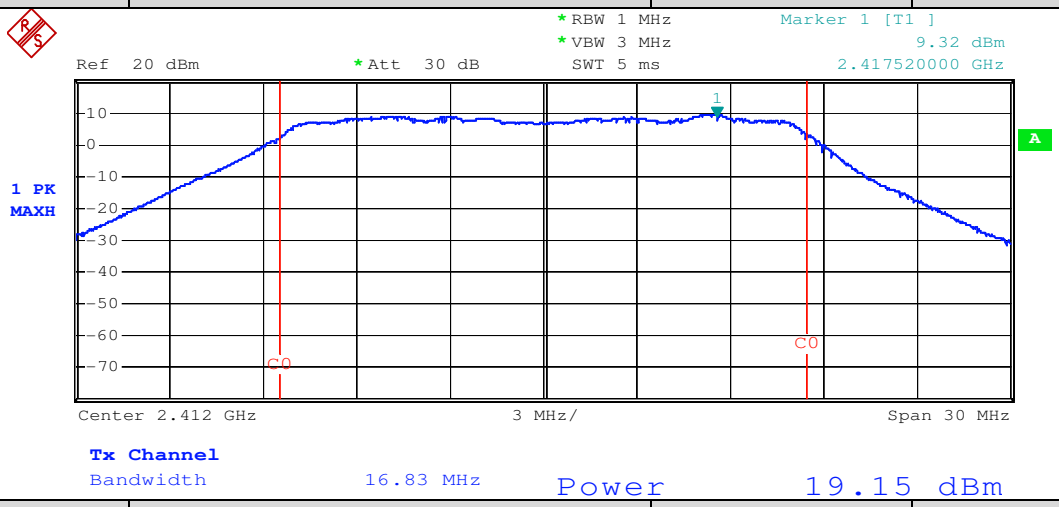
Tx Channel
Bandwidth 10.11 MHz
Power 19.85 dBm

Test mode:	802.11b	Channel:	Highest



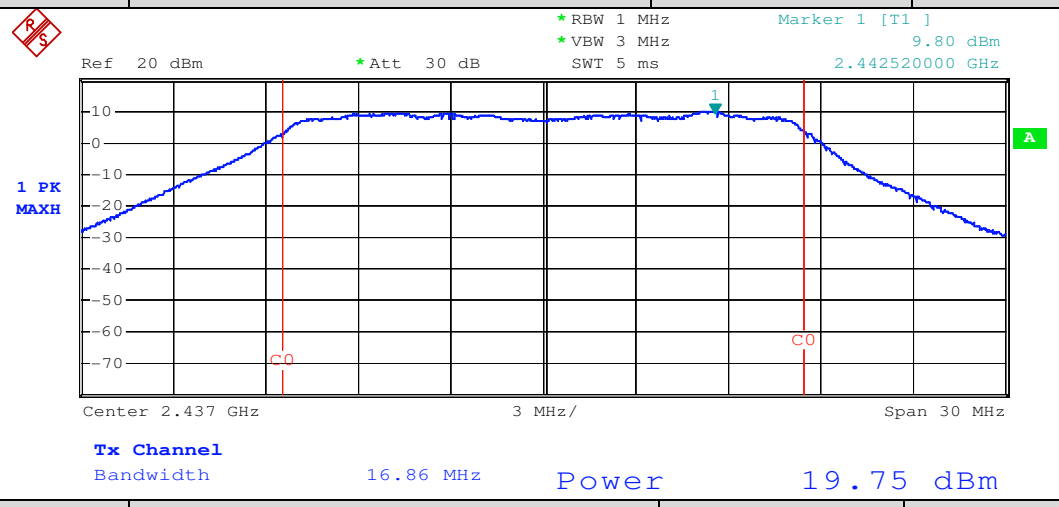
Tx Channel
Bandwidth 10.29 MHz
Power 19.92 dBm

Test mode:	802.11g	Channel:	Lowest



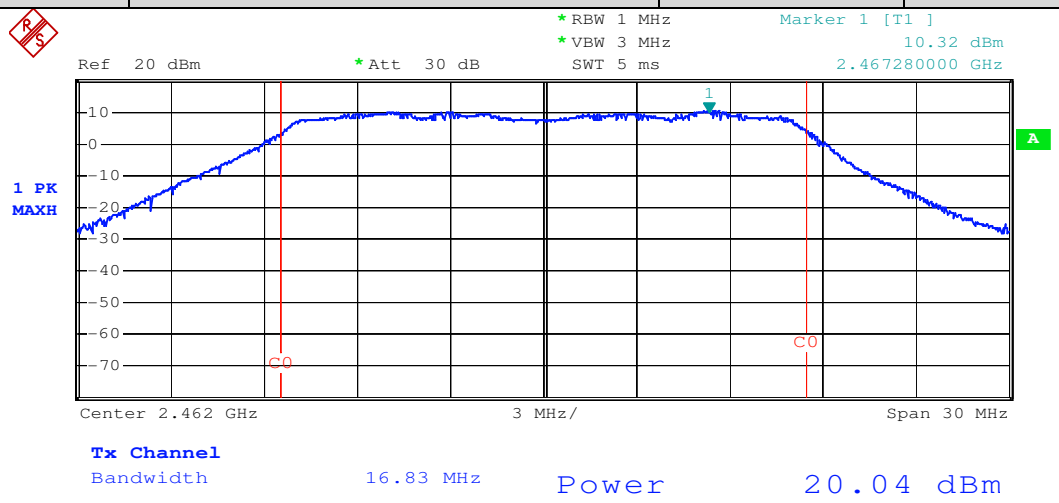
Tx Channel
Bandwidth 16.83 MHz
Power 19.15 dBm

Test mode:	802.11g	Channel:	Middle



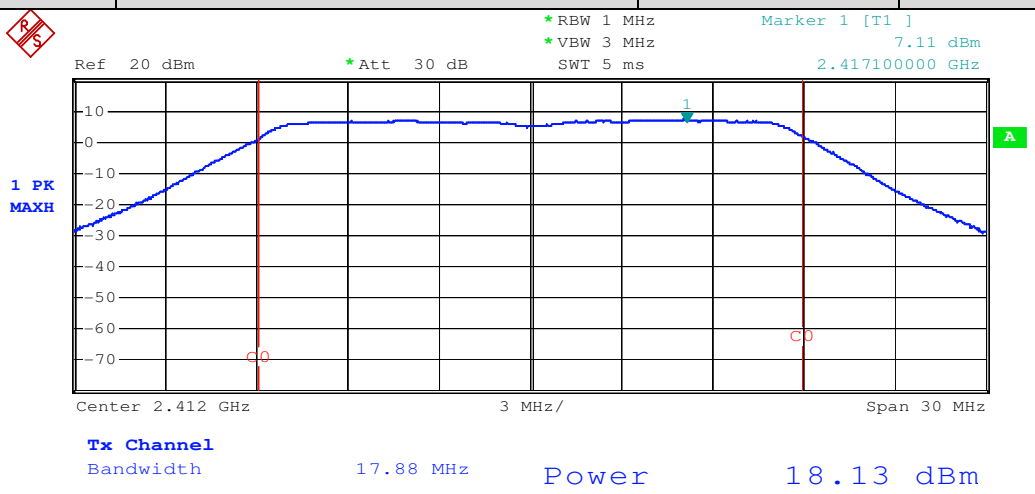
Tx Channel
Bandwidth 16.86 MHz
Power 19.75 dBm

Test mode:	802.11g	Channel:	Highest

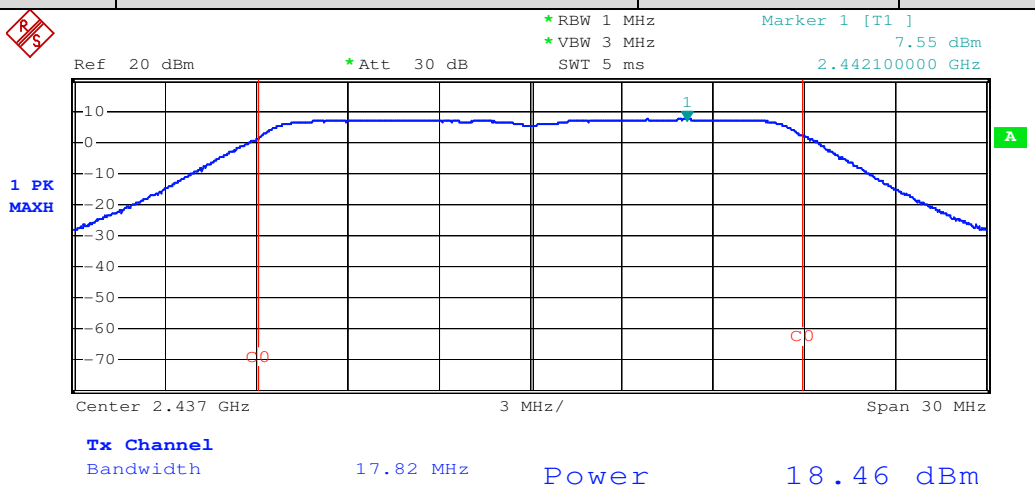


Tx Channel
Bandwidth 16.83 MHz
Power 20.04 dBm

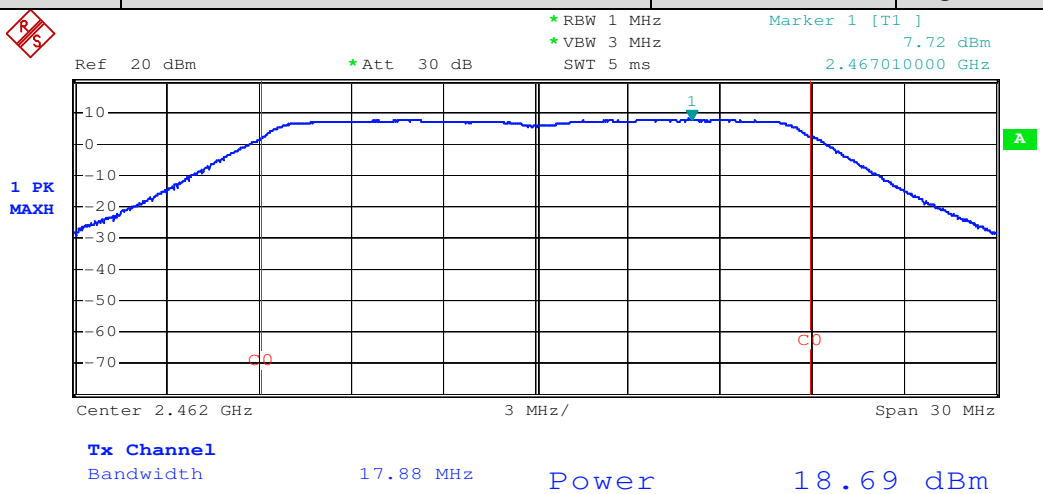
Test mode:	802.11n20	Channel:	Lowest



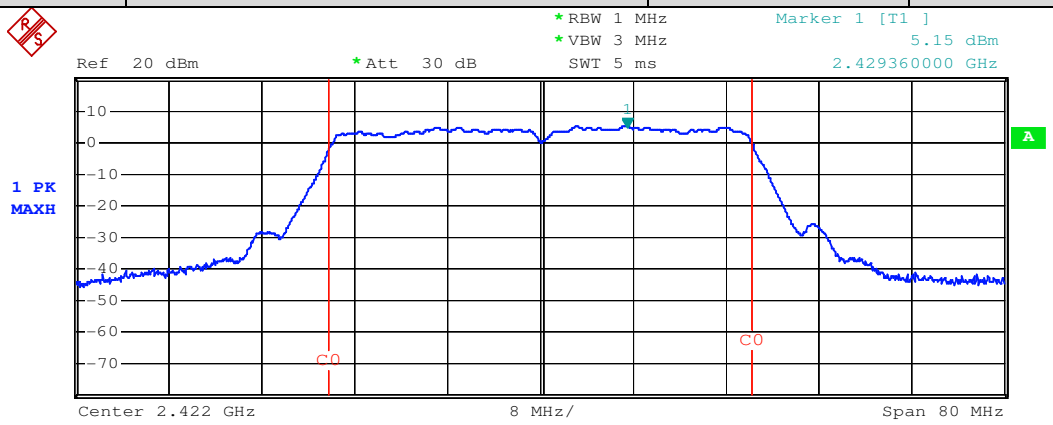
Test mode:	802.11n20	Channel:	Middle



Test mode:	802.11n20	Channel:	Highest

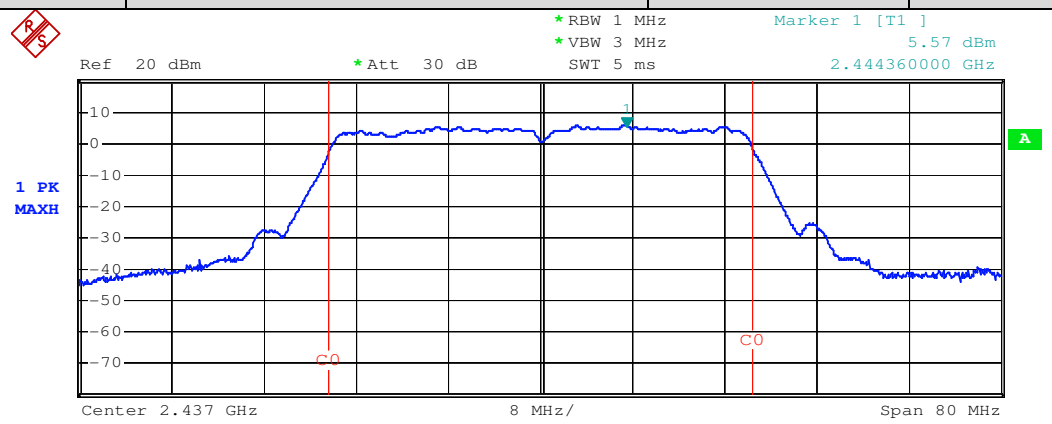


Test mode:	802.11n40	Channel:	Lowest



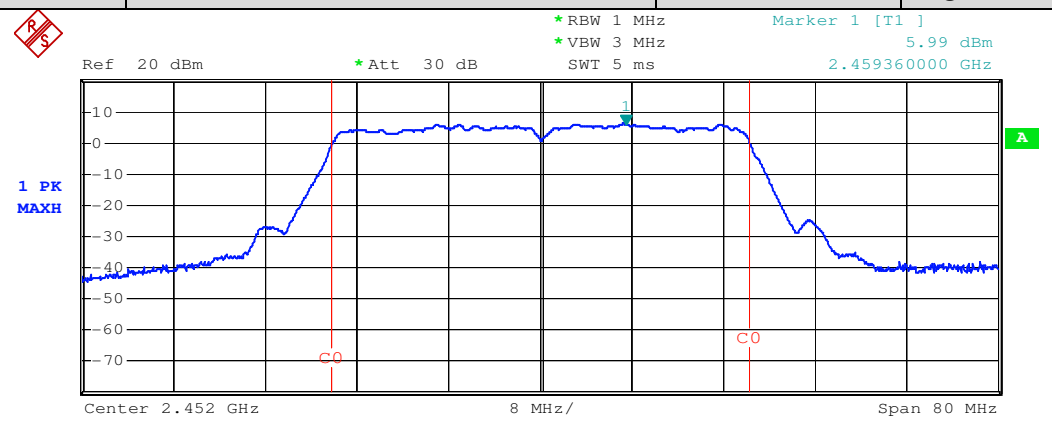
Tx Channel
Bandwidth 36.48 MHz Power 18.54 dBm

Test mode:	802.11n40	Channel:	Middle



Tx Channel
Bandwidth 36.64 MHz Power 19.06 dBm

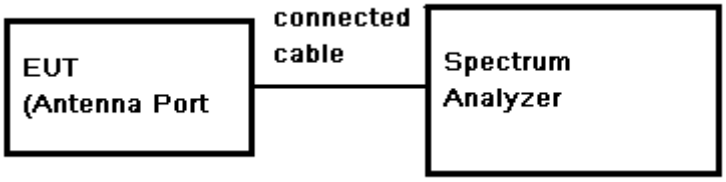
Test mode:	802.11n40	Channel:	Highest



Tx Channel
Bandwidth 36.48 MHz Power 19.45 dBm

7.6 Peak Power Spectral Density

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.
2) Set the spectrum analyzer: Center Frequency= Channel Frequency, RBW = 3 kHz VBW = 10 kHz. Span= fully encompass the bandwidth, Sweep = auto; Detector Function = Peak; Trace mode=max hold, MKR=Center Frequency, Trace=Clear Write.
3) Set the marker on the peak of the signal and then adjust the center frequency of the spectrum analyzer to the marker frequency.
4) Adjust the Span = 300 kHz, Sweep Time=100s, Trace=Max Hold, MKR=Peak Search.
5) Record the marker level for the particular mode.
6) Repeat these steps for other channel and device modes.

Test Limit: 8dBm/3kHz

Test Result: Pass

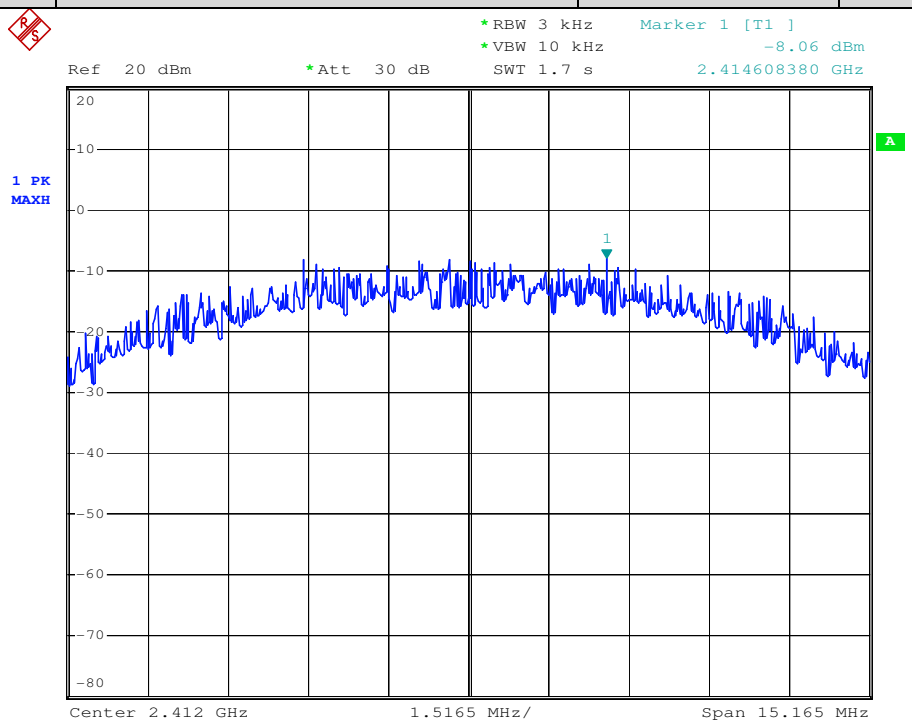
Test Data:

Test Mode	Test Frequency (MHz)	Reading PSD (dBm/3KHz)	Cable Loss (dB)	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b	2412	-8.06	0.5	-7.56	8	Pass
	2437	-7.73	0.5	-7.23		Pass
	2462	-7.58	0.5	-7.08		Pass
802.11g	2412	-16.37	0.5	-15.87		Pass
	2437	-15.53	0.5	-15.03		Pass
	2462	-15.35	0.5	-14.85		Pass
802.11n20	2412	-17.49	0.5	-16.99		Pass
	2437	-16.49	0.5	-15.99		Pass
	2462	-16.73	0.5	-16.23		Pass
802.11n40	2412	-18.77	0.5	-18.27		Pass
	2437	-18.17	0.5	-17.67		Pass
	2462	-17.84	0.5	-17.34		Pass

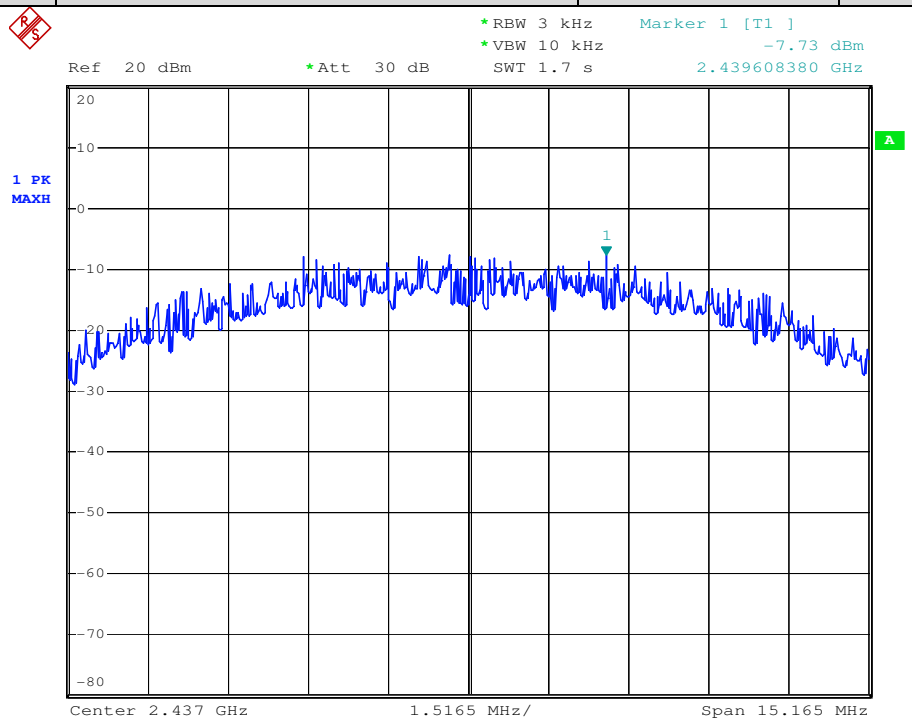
Remark: RF Power Density = Reading + Cable loss
Cable loss = 0.5dB

Test result plot as follows:

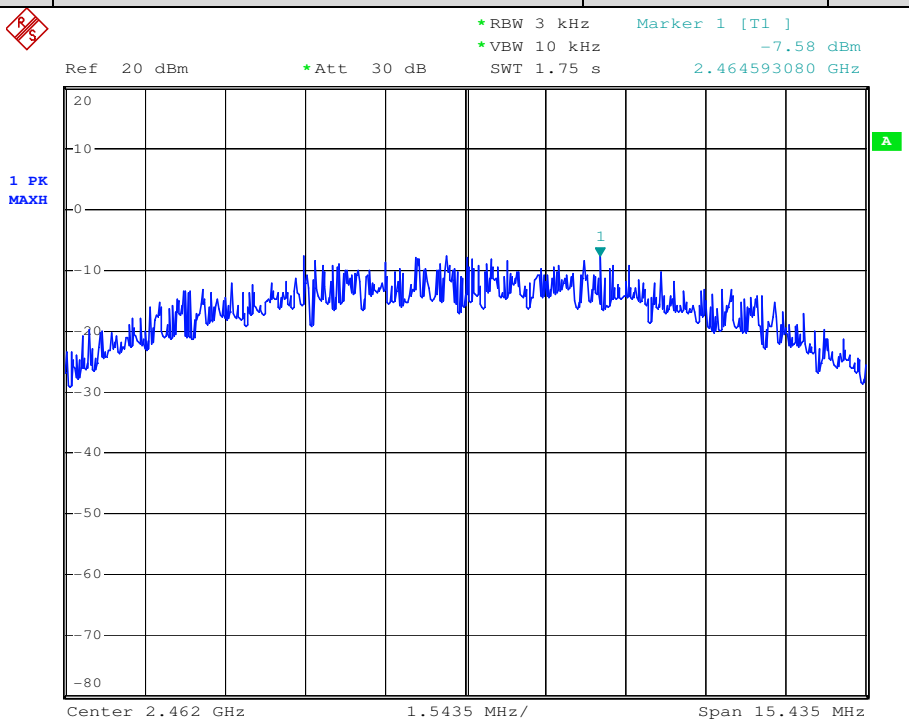
Test mode:	802.11b	Channel:	Lowest



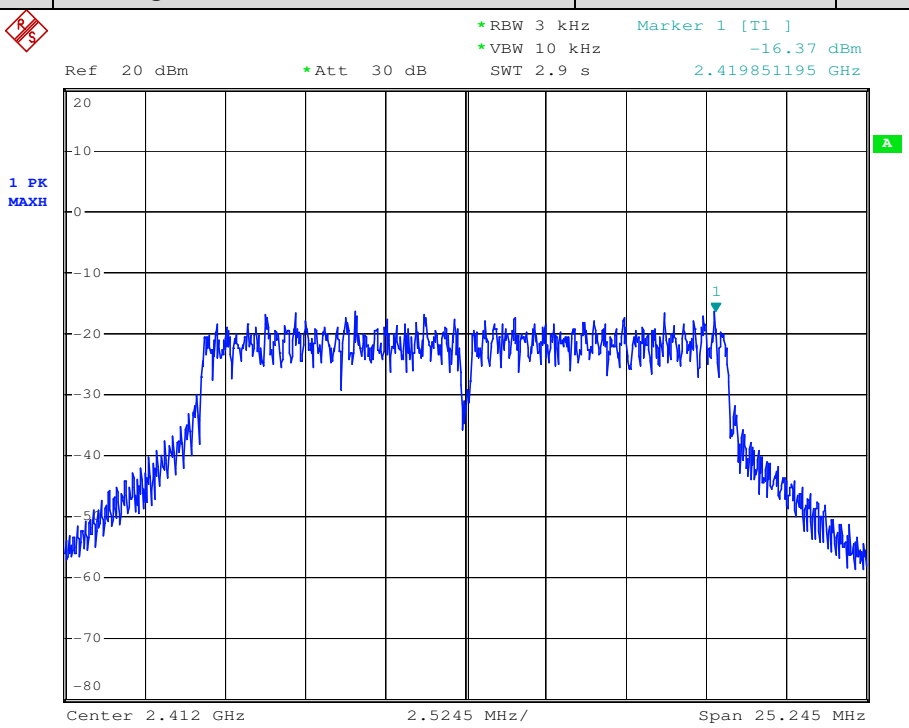
Test mode:	802.11b	Channel:	Middle



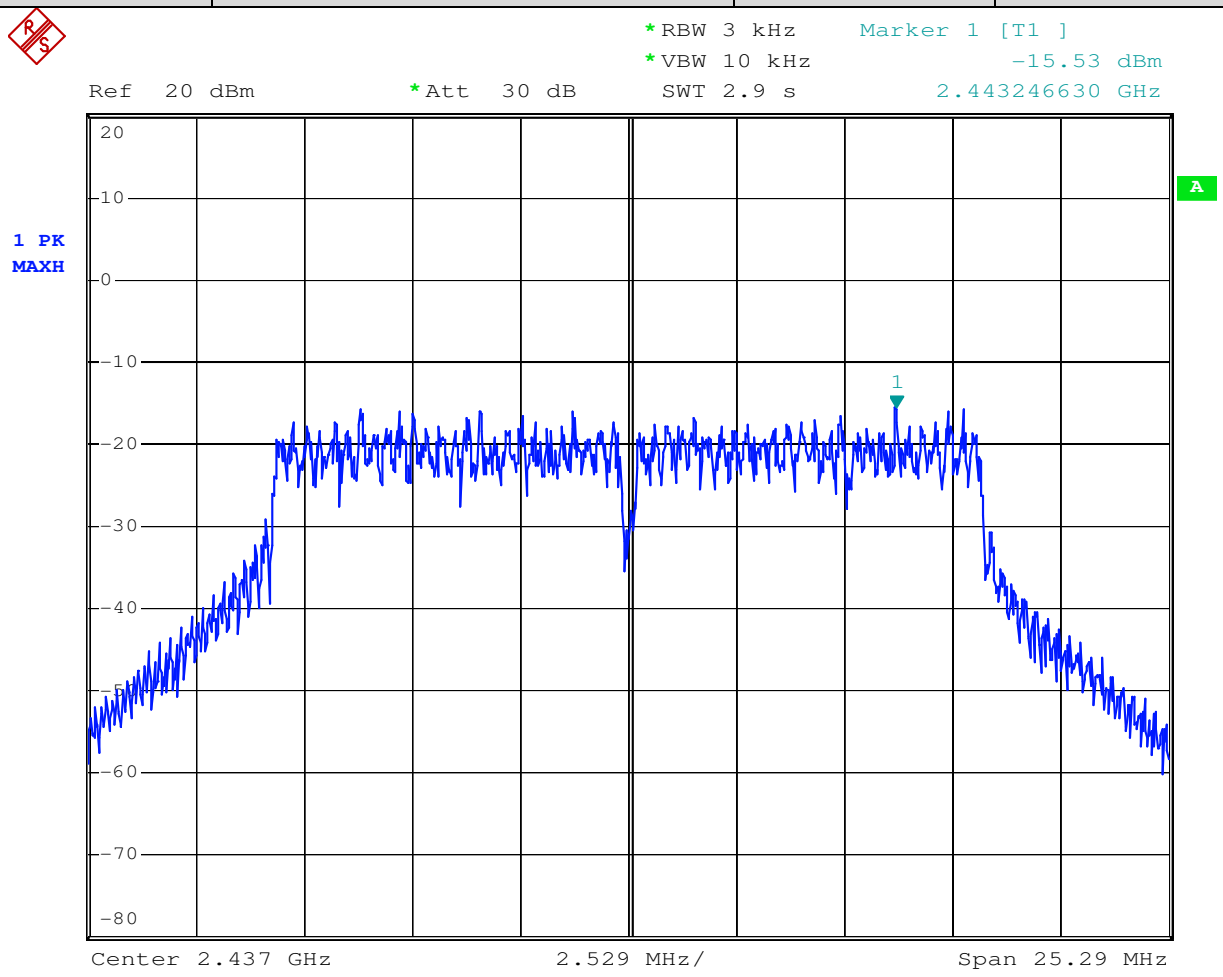
Test mode:	802.11b	Channel:	Highest



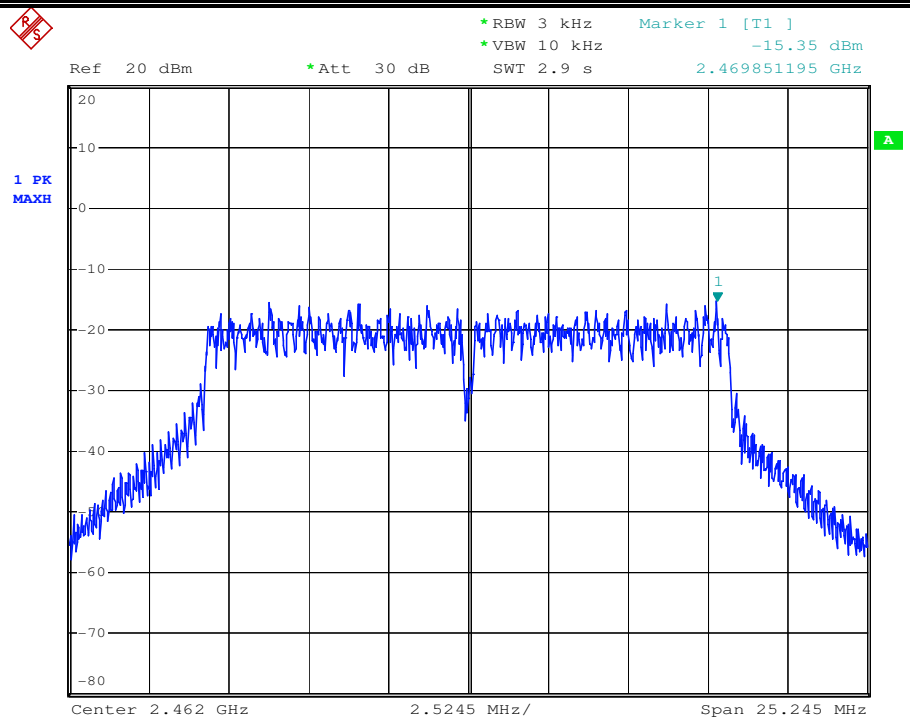
Test mode:	802.11g	Channel:	Lowest



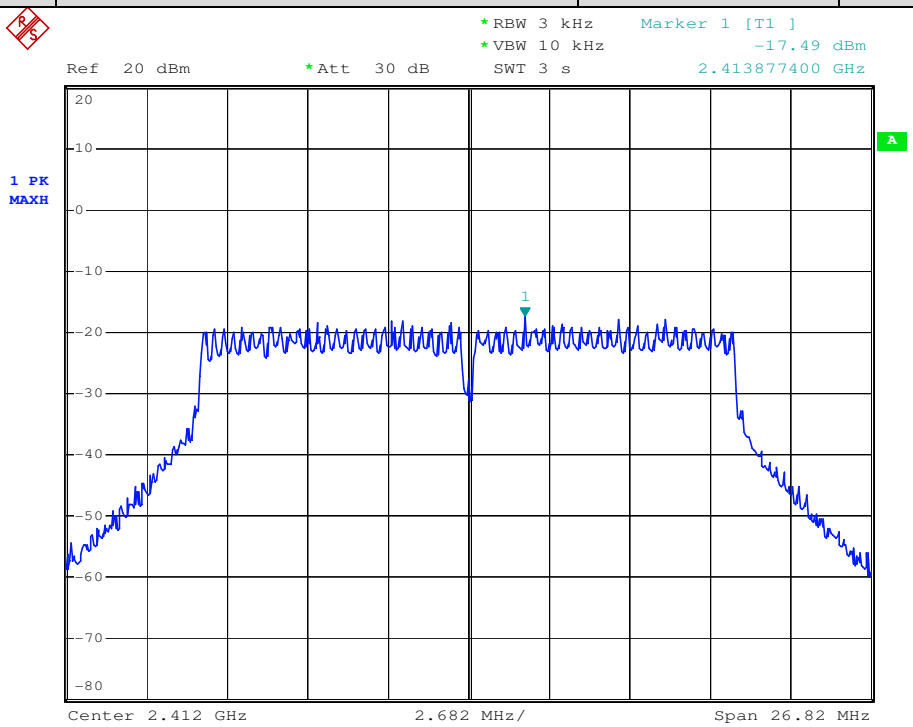
Test mode:	802.11g	Channel:	Middle



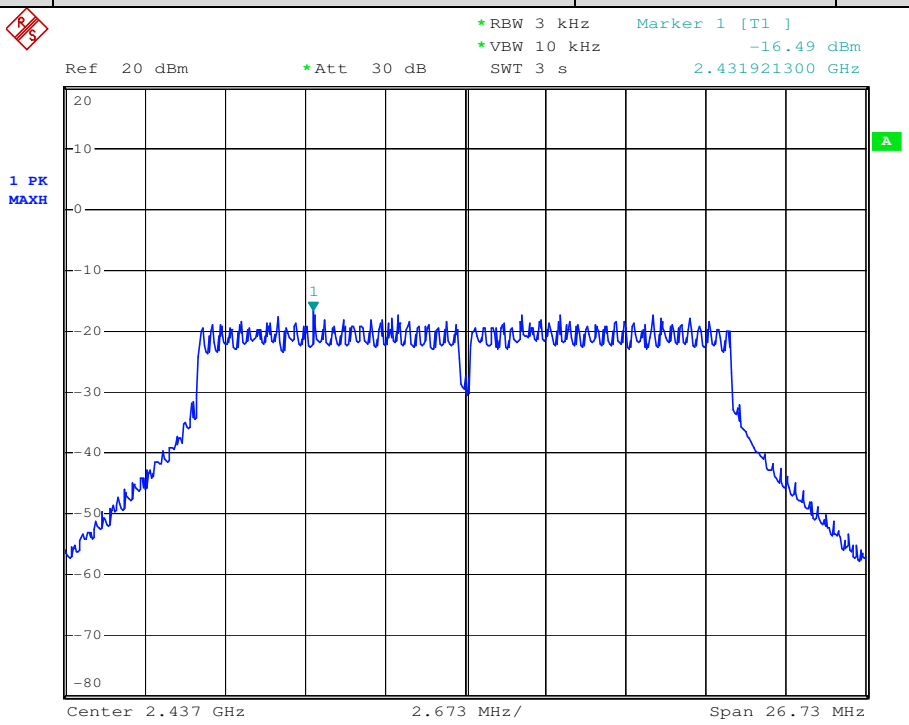
Test mode:	802.11g	Channel:	Highest



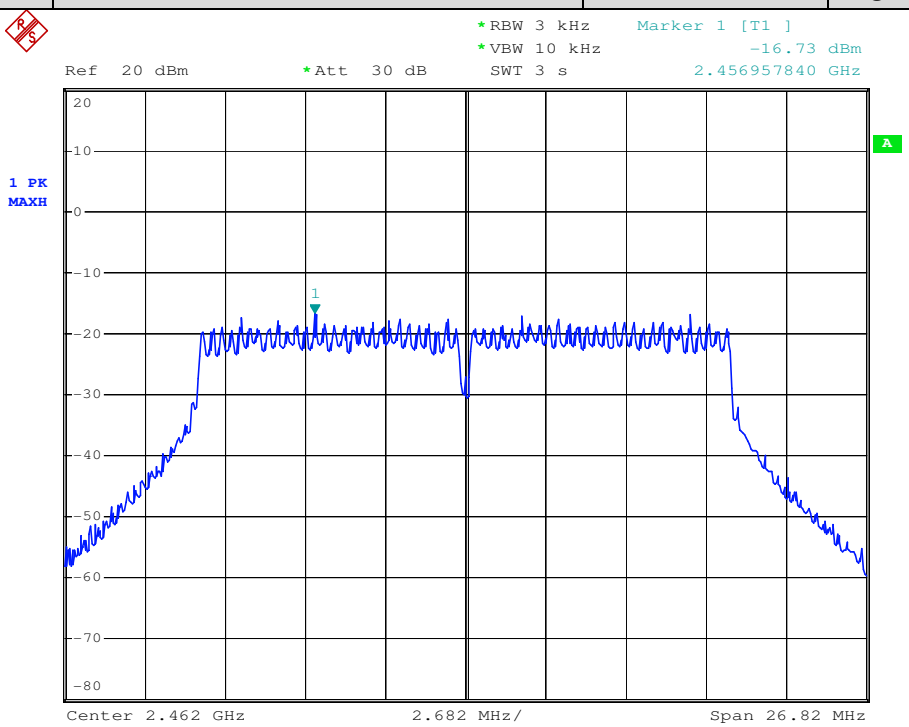
Test mode:	802.11n20	Channel:	Lowest



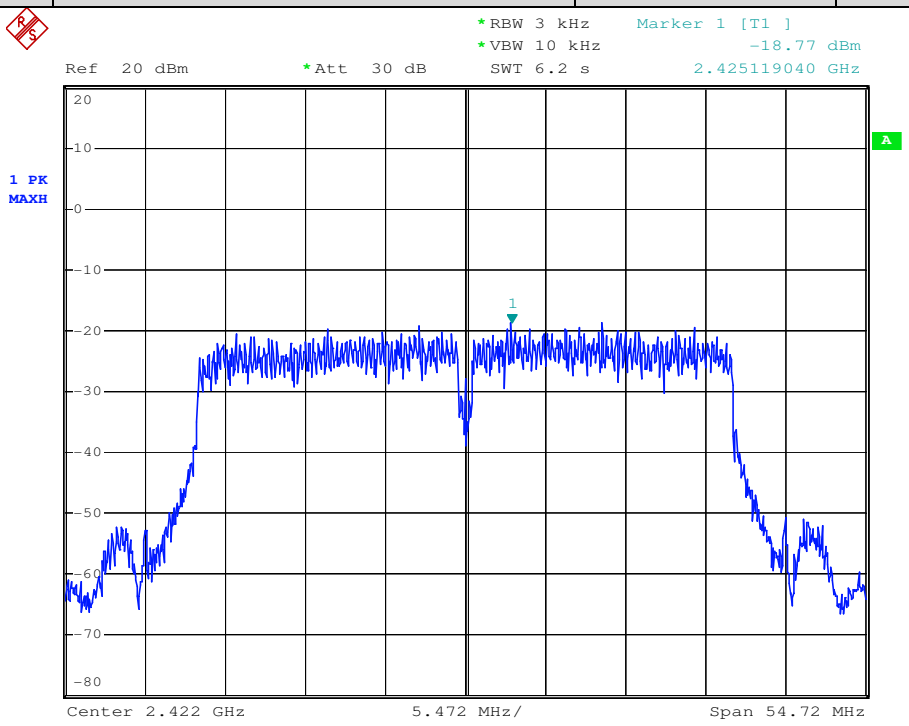
Test mode:	802.11n20	Channel:	Middle



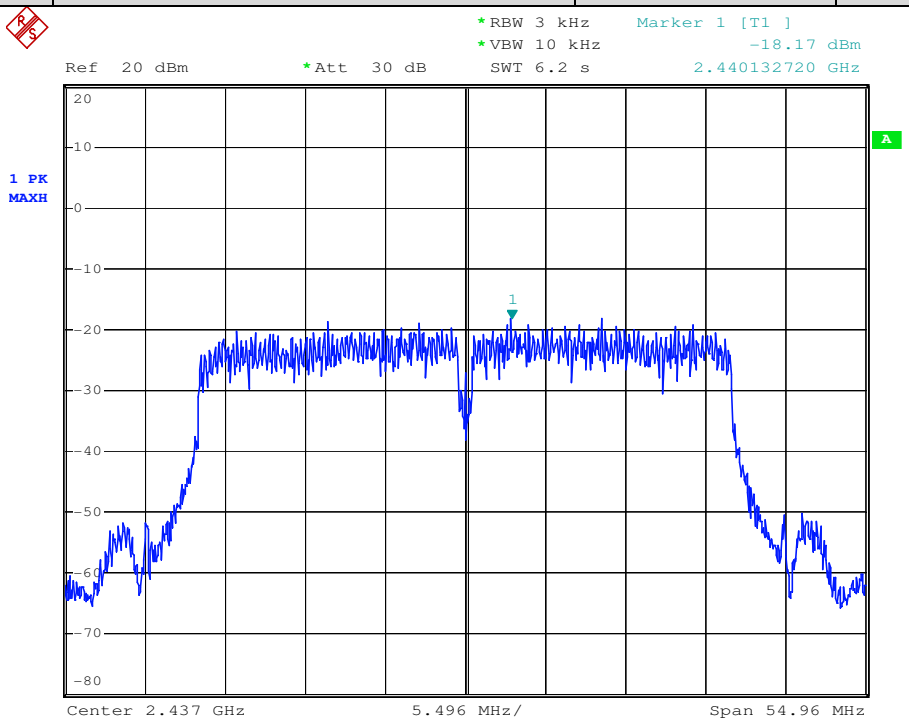
Test mode:	802.11n20	Channel:	Highest



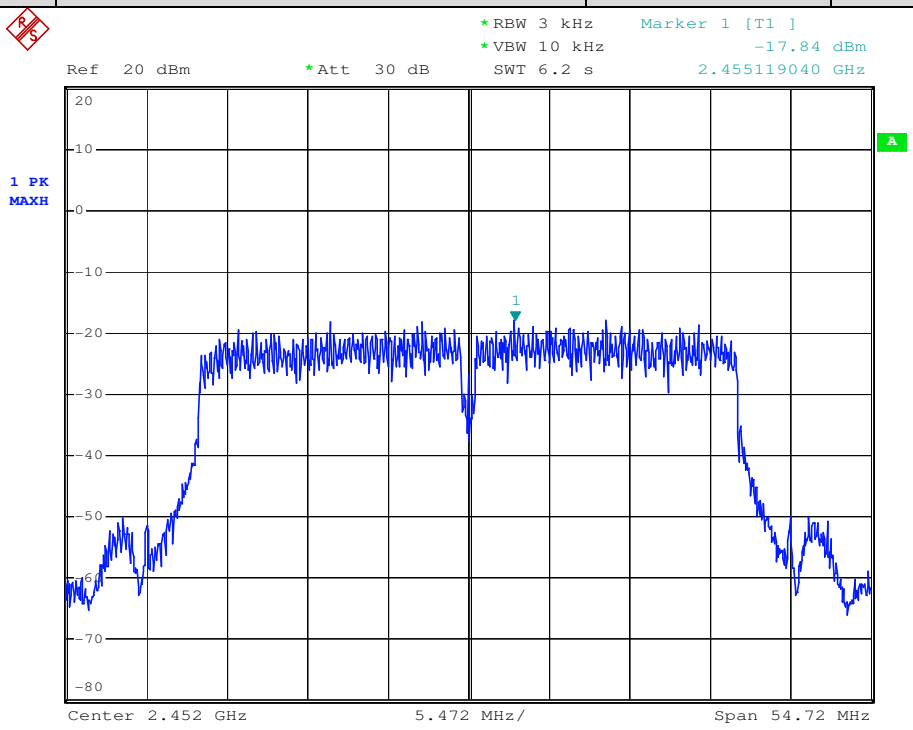
Test mode:	802.11n40	Channel:	Lowest



Test mode:	802.11n40	Channel:	Middle

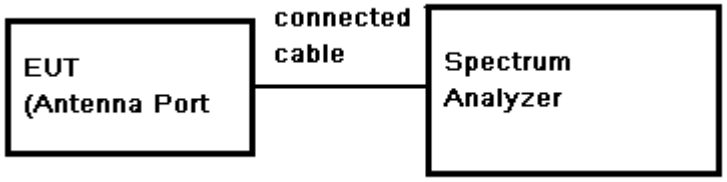


Test mode:	802.11n40	Channel:	Highest



7.7 Conducted Spurious Emissions and Band-edge

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.
2). Set the spectrum analyzer: RBW = 100KHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold).

Limit: (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the Highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

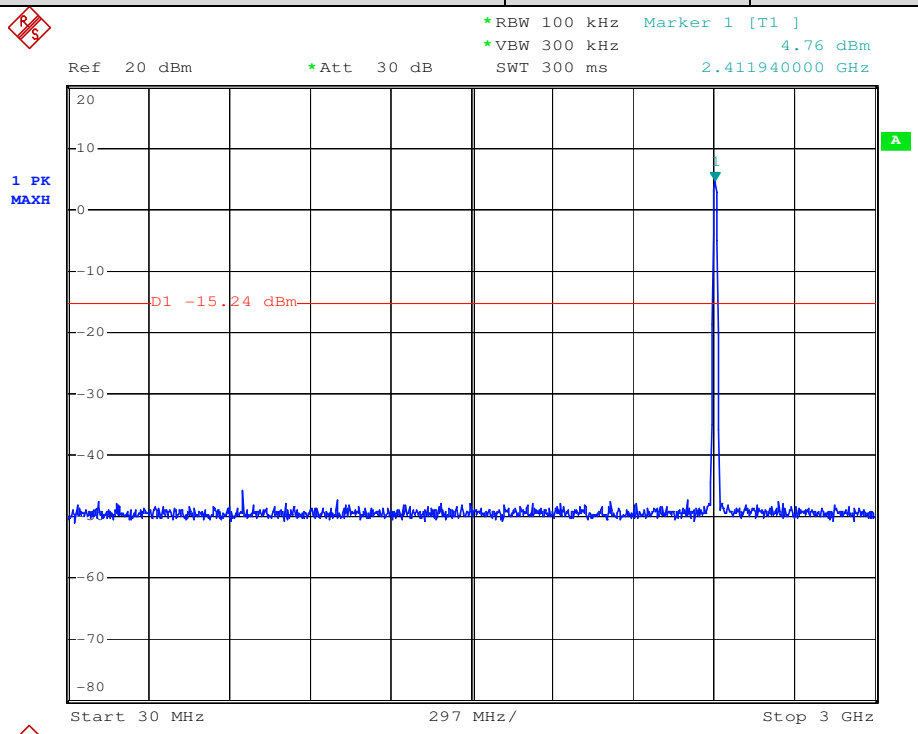
Test Result: Pass

7.7.1 Conducted spurious emission

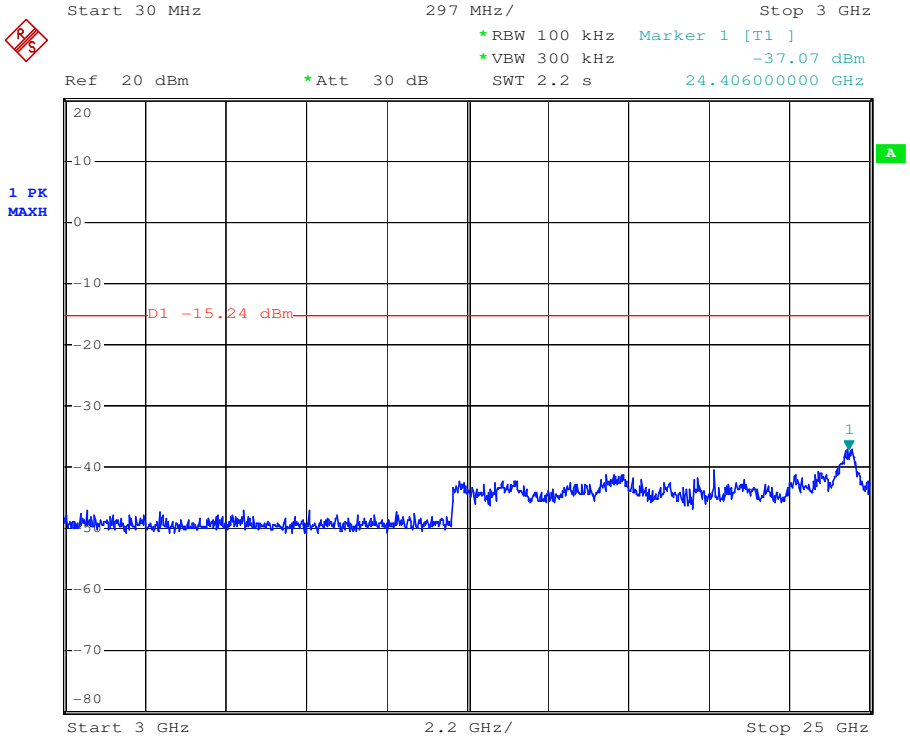
Test plot as follows:

Test mode:	802.11b	Channel:	Lowest

30MHz-3GHz:

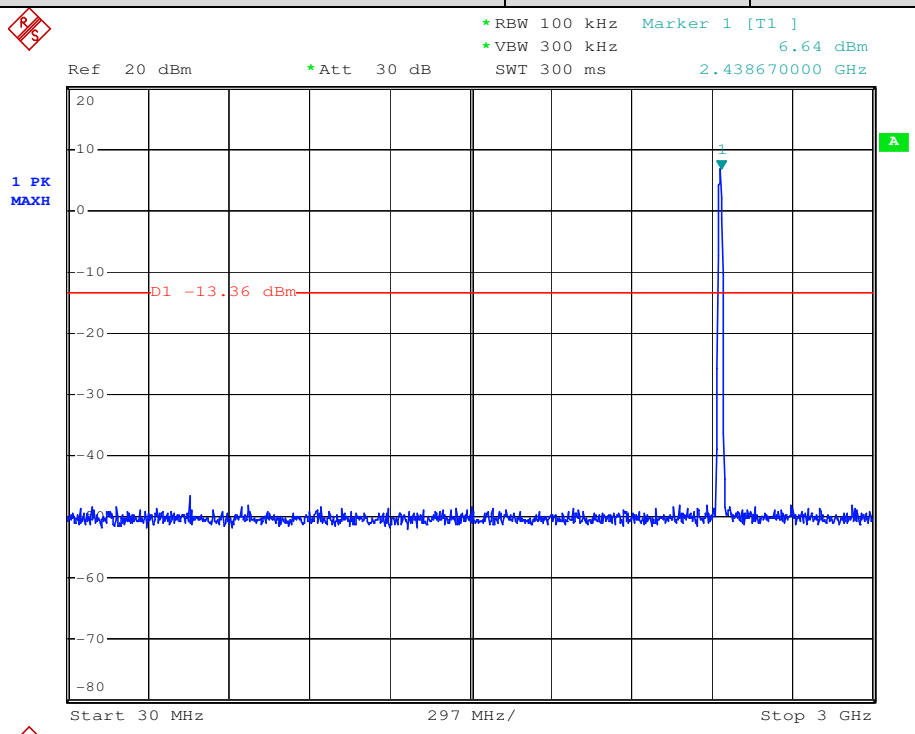


3GHz-25GHz:

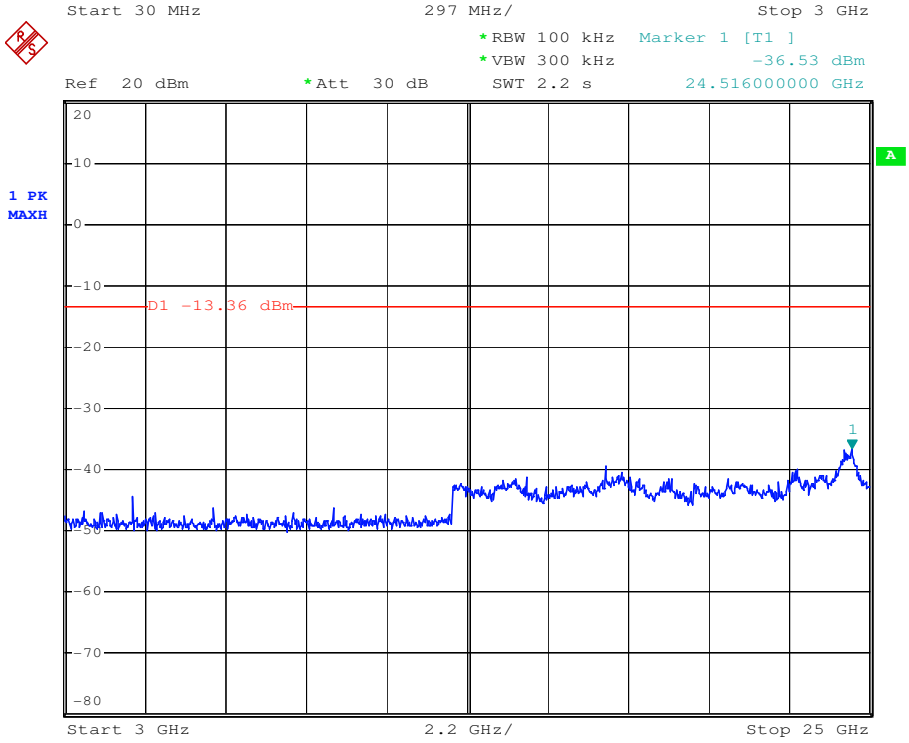


Test mode:	802.11b	Channel:	Middle

30MHz-3GHz:

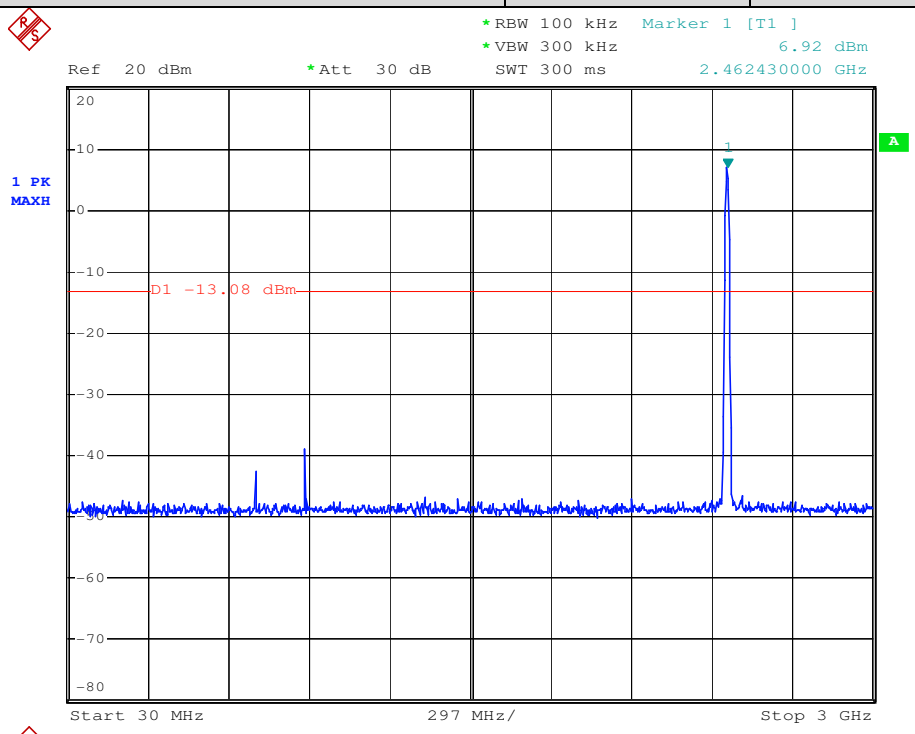


3GHz-25GHz:

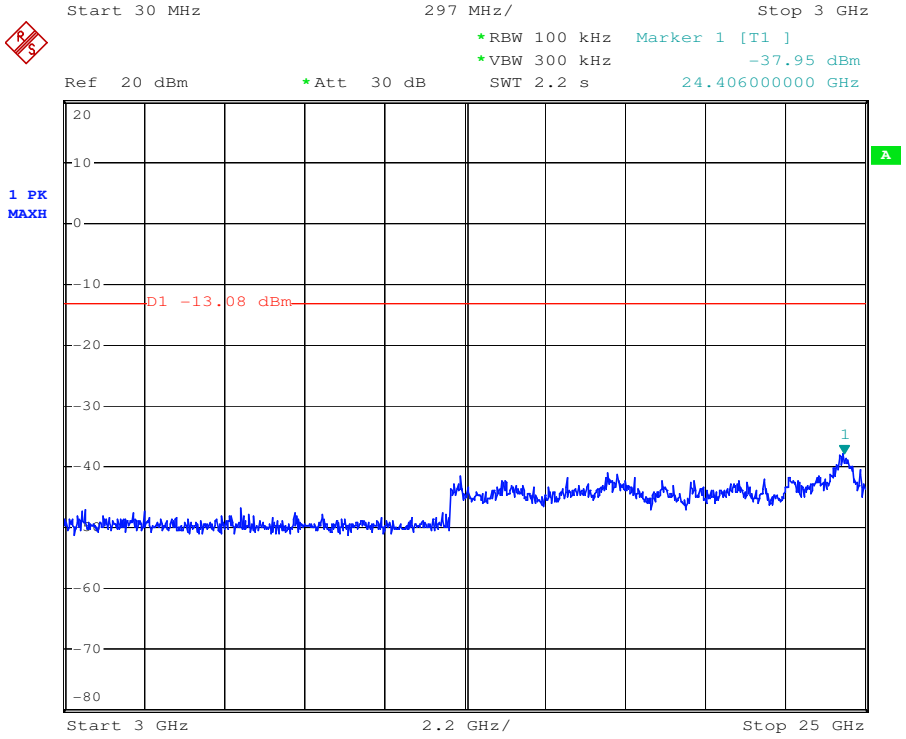


Test mode:	802.11b	Channel:	Highest

30MHz-3GHz:

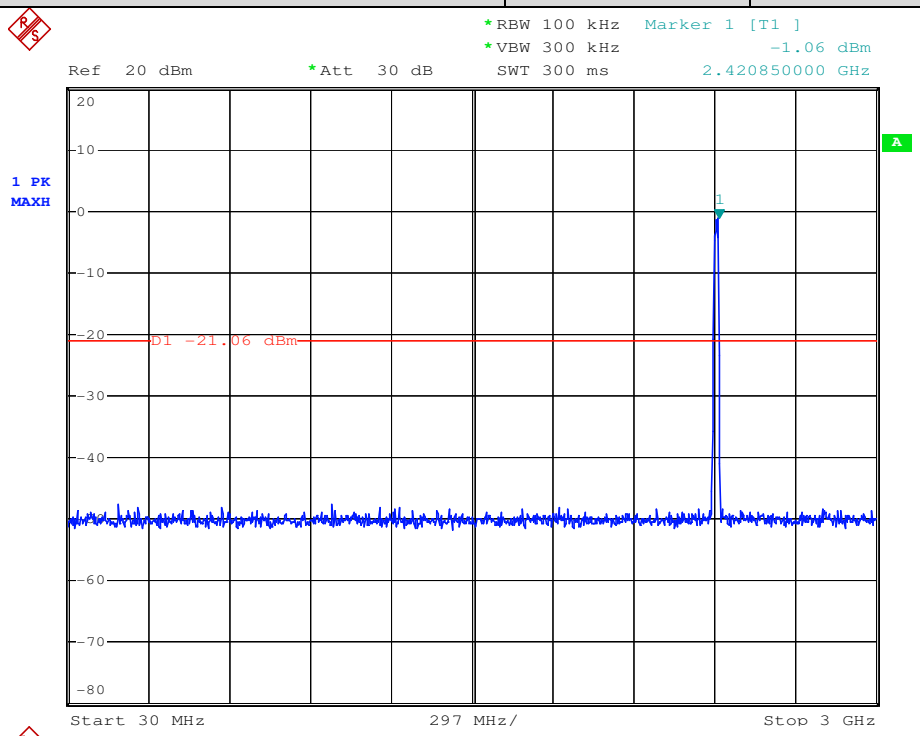


3GHz-25GHz:

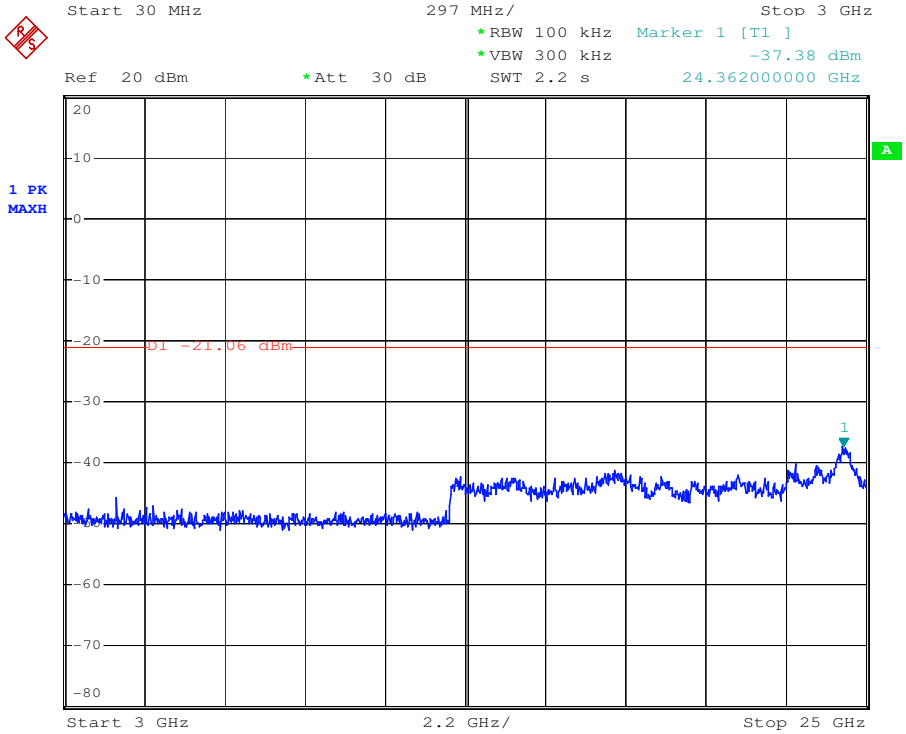


Test mode:	802.11g	Channel:	Lowest

30MHz-3GHz:

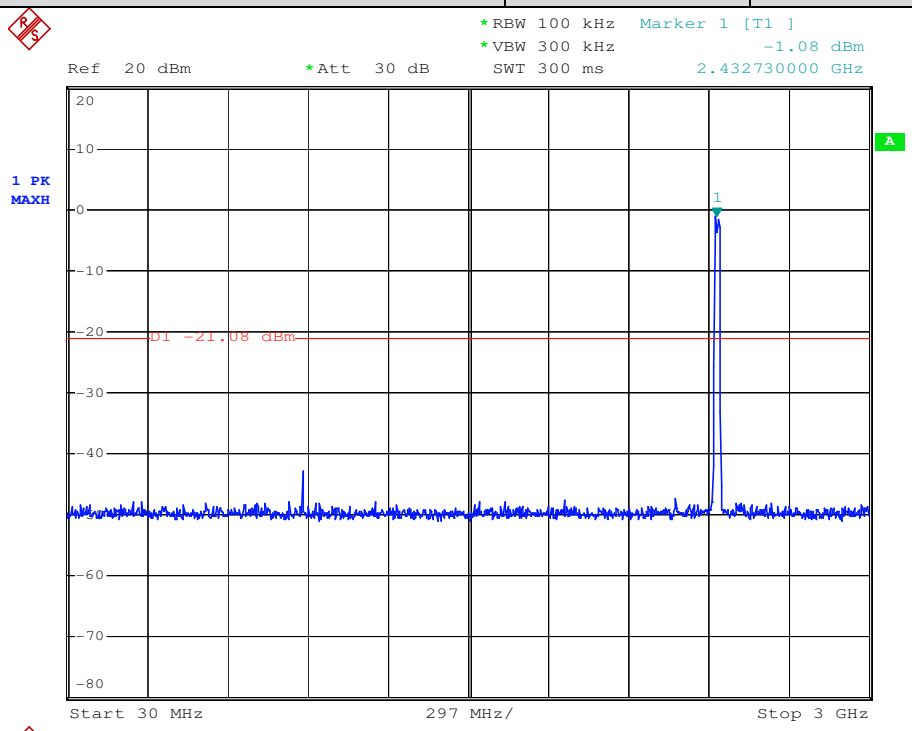


3GHz-25GHz:

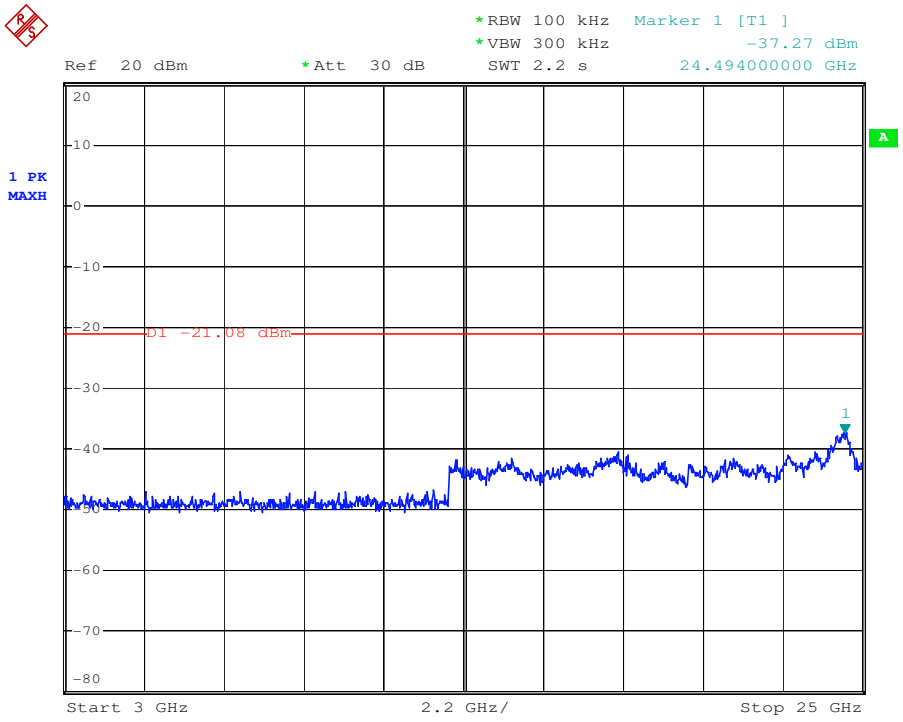


Test mode:	802.11g	Channel:	Middle

30MHz-3GHz:

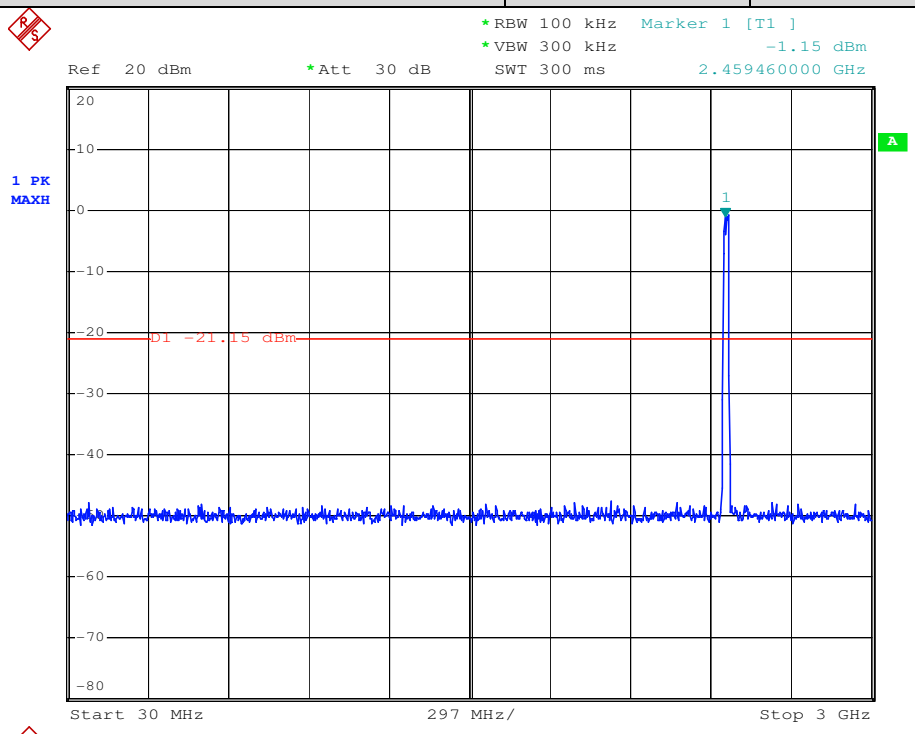


3GHz-25GHz:

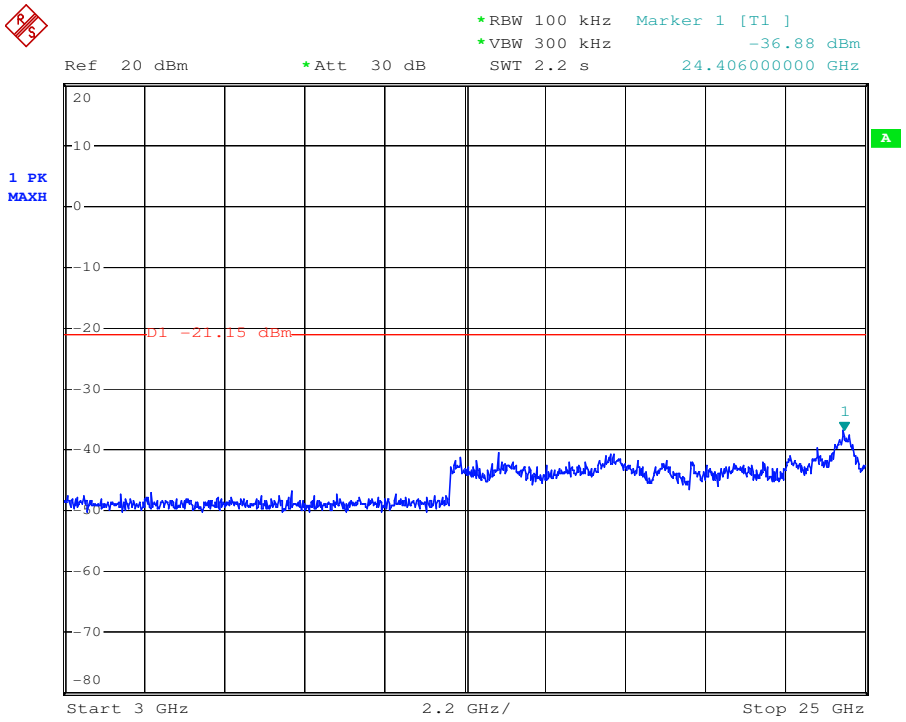


Test mode:	802.11g	Channel:	Highest

30MHz-3GHz:

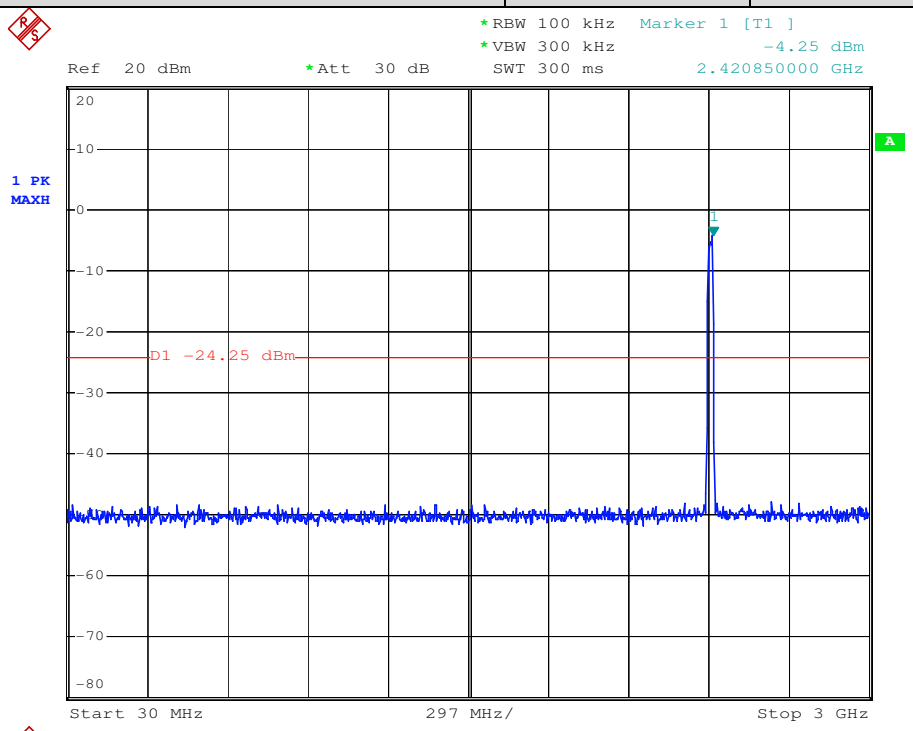


3GHz-25GHz:

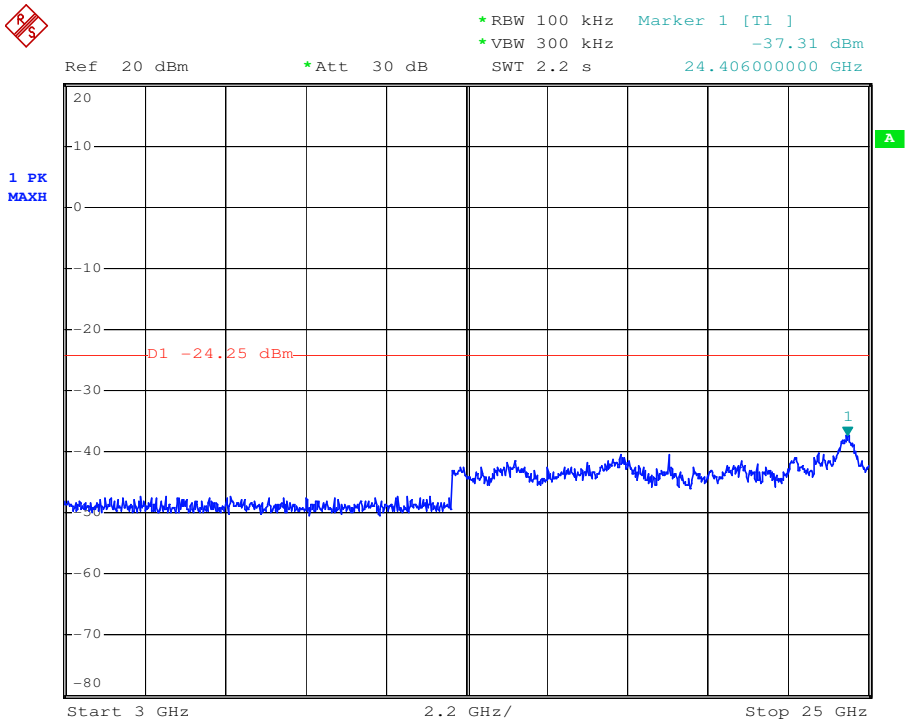


Test mode:	802.11n20	Channel:	Lowest

30MHz-3GHz:

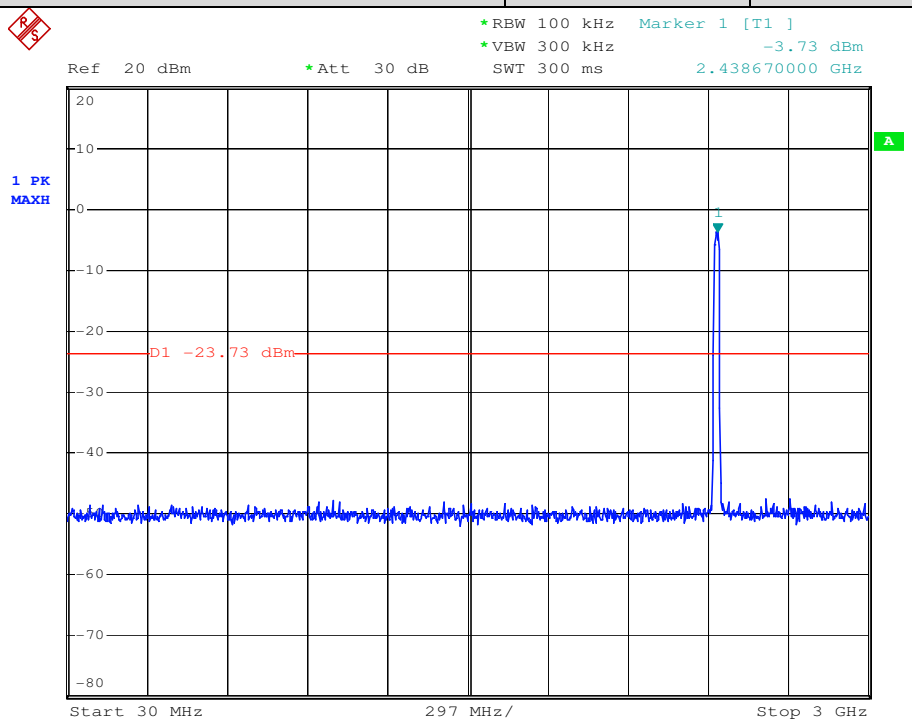


3GHz-25GHz:

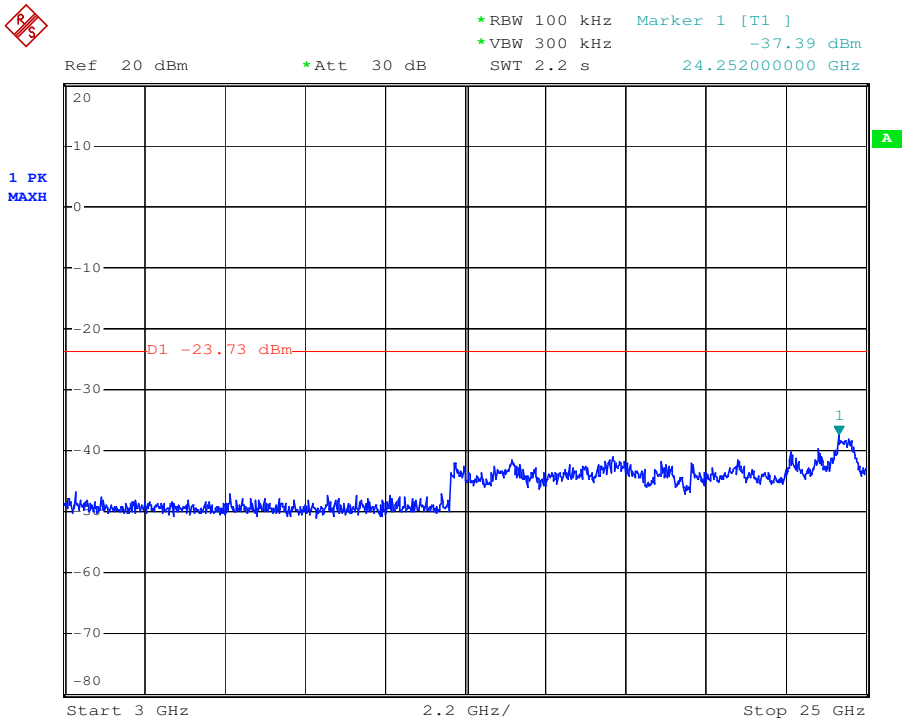


Test mode:	802.11n20	Channel:	Middle

30MHz-3GHz:

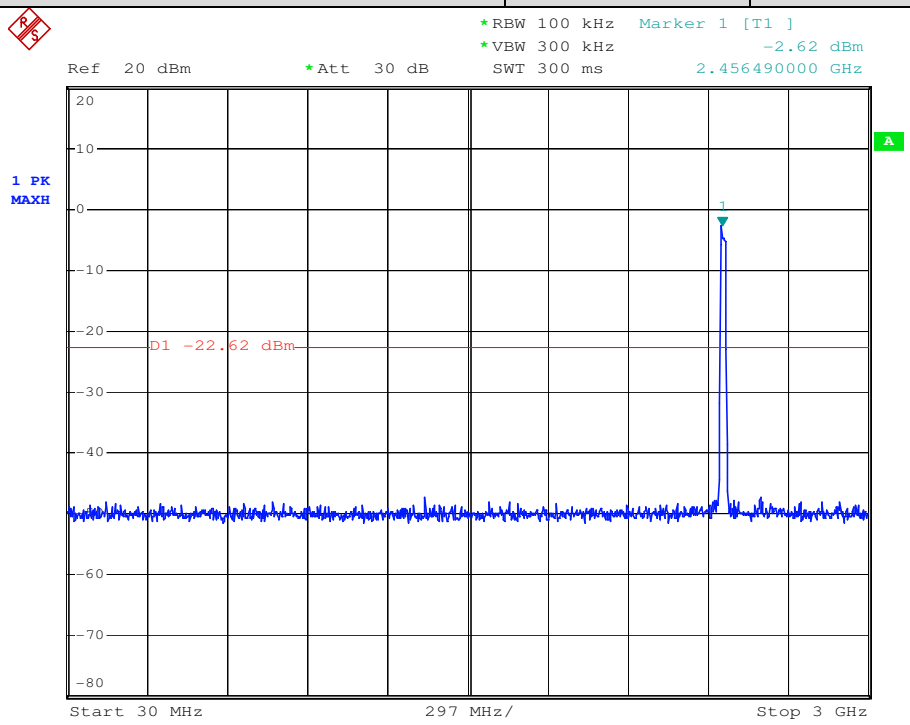


3GHz-25GHz:

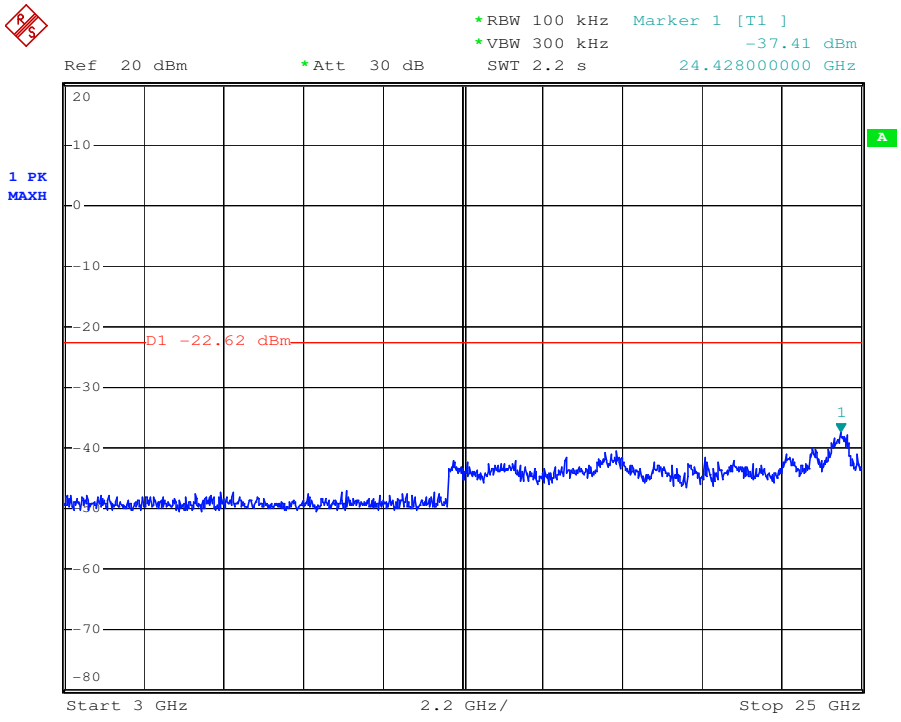


Test mode:	802.11n20	Channel:	Highest

30MHz-3GHz:

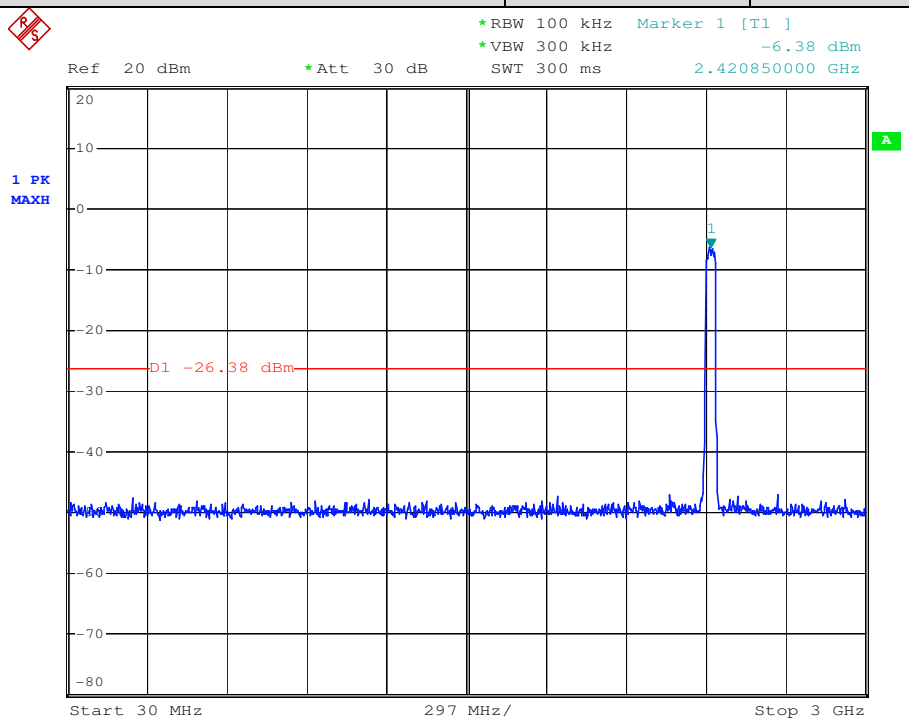


3GHz-25GHz:

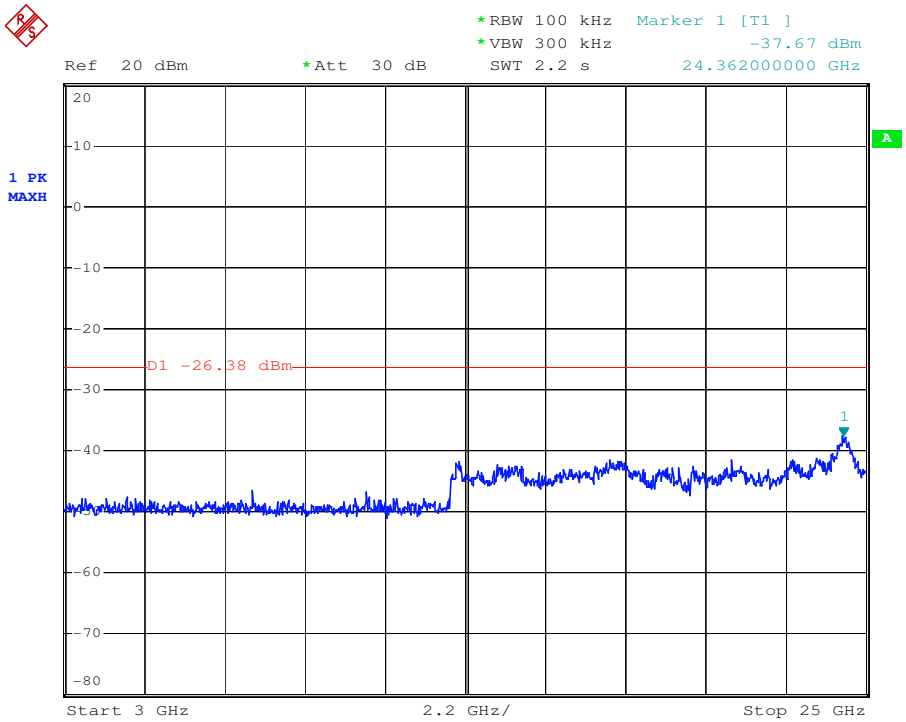


Test mode:	802.11n40	Channel:	Lowest

30MHz-3GHz:

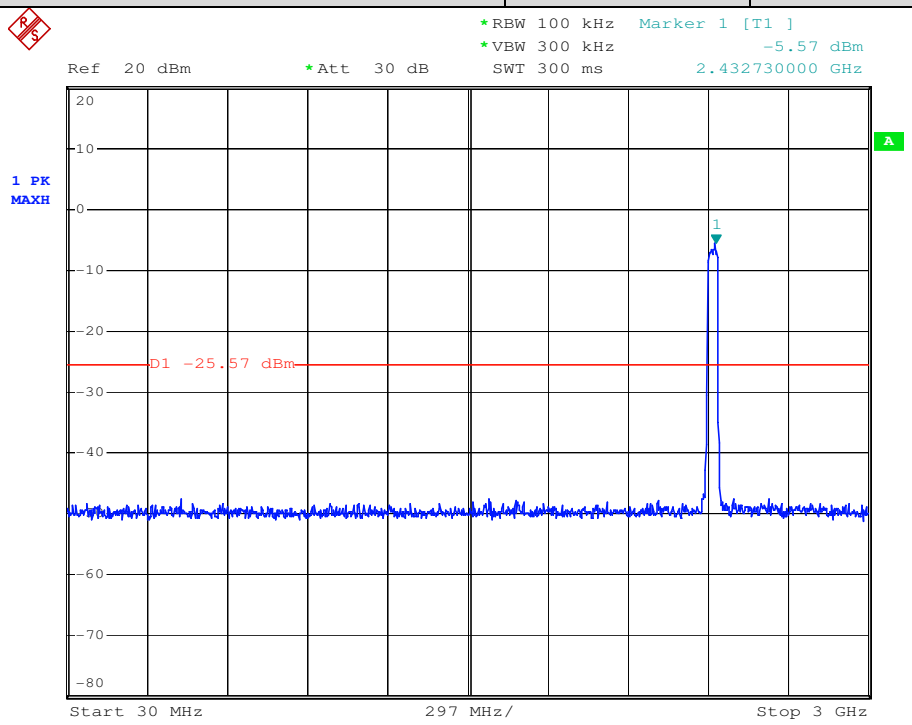


3GHz-25GHz:

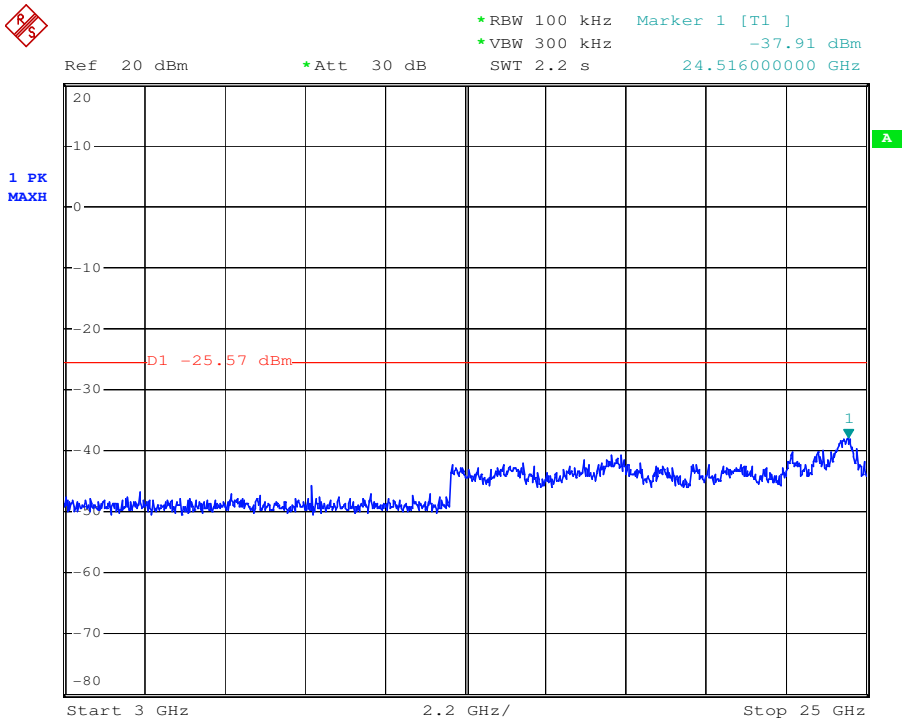


Test mode:	802.11n40	Channel:	Middle

30MHz-3GHz:

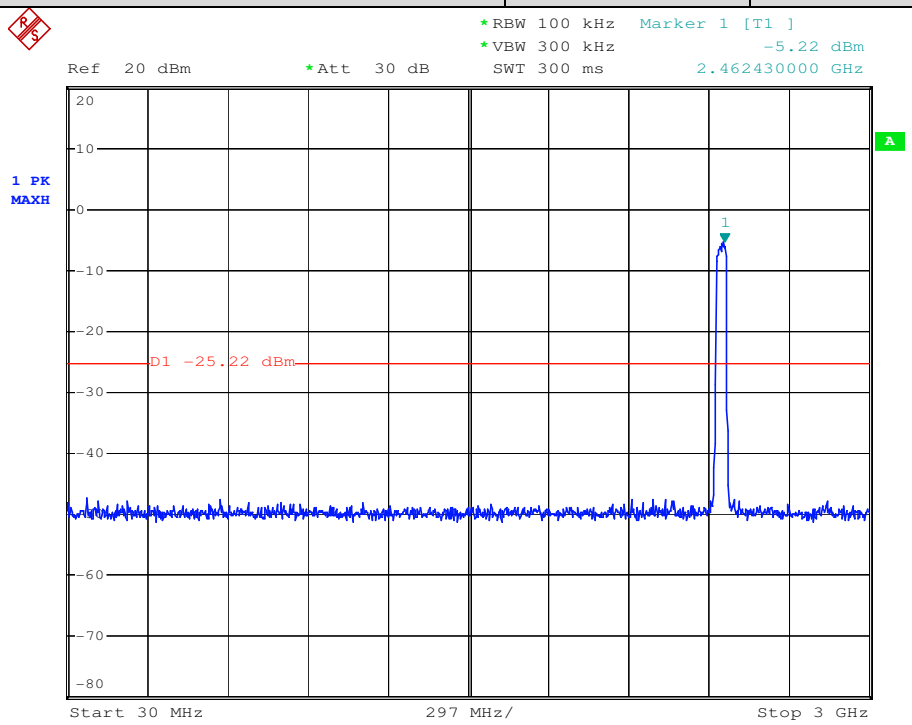


3GHz-25GHz:

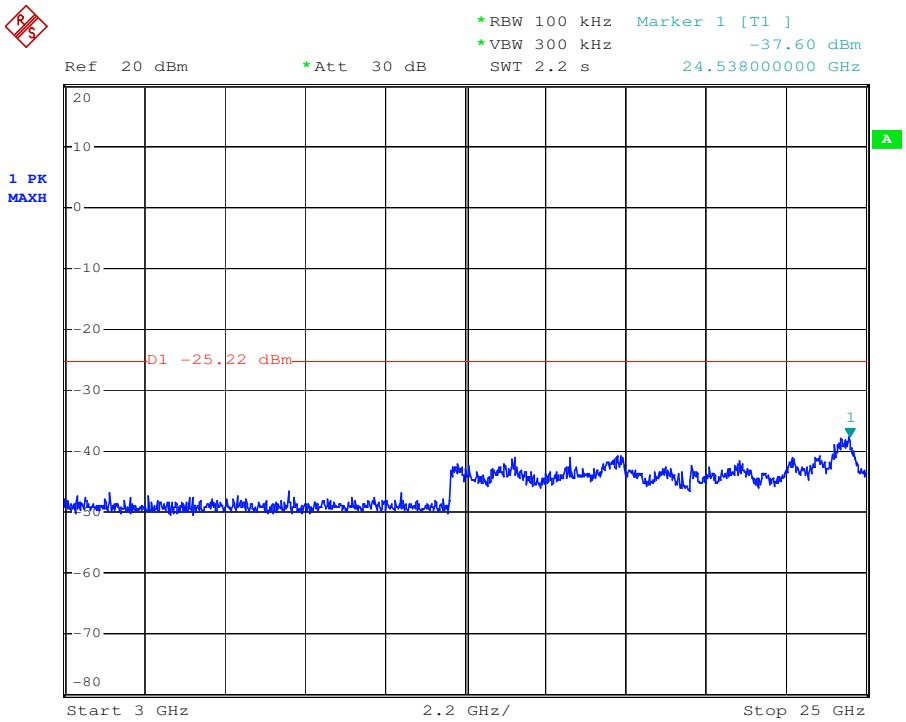


Test mode:	802.11n40	Channel:	Highest

30MHz-3GHz:



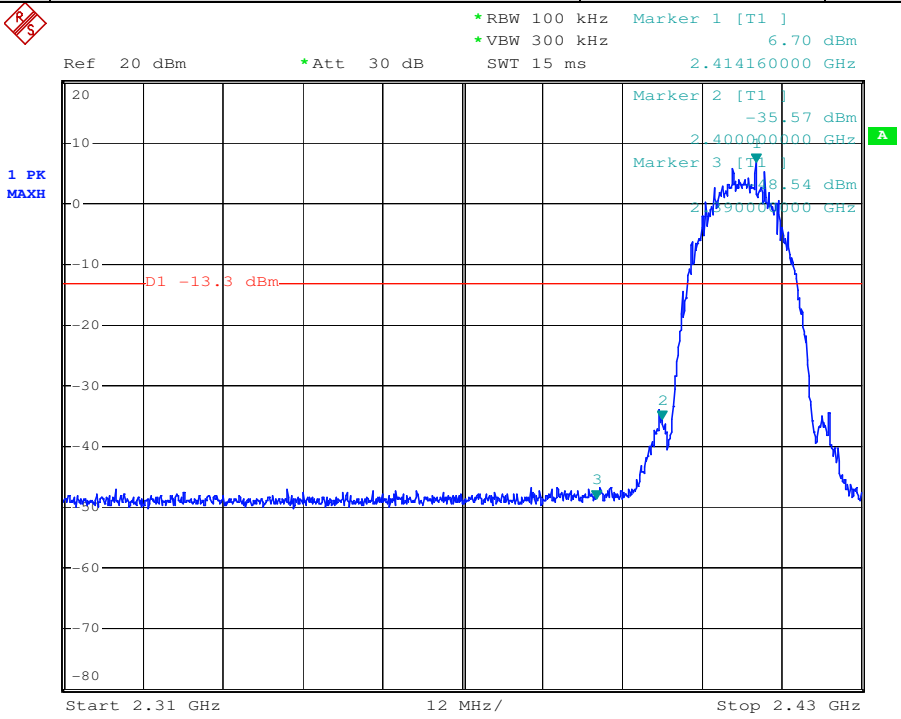
3GHz-25GHz:



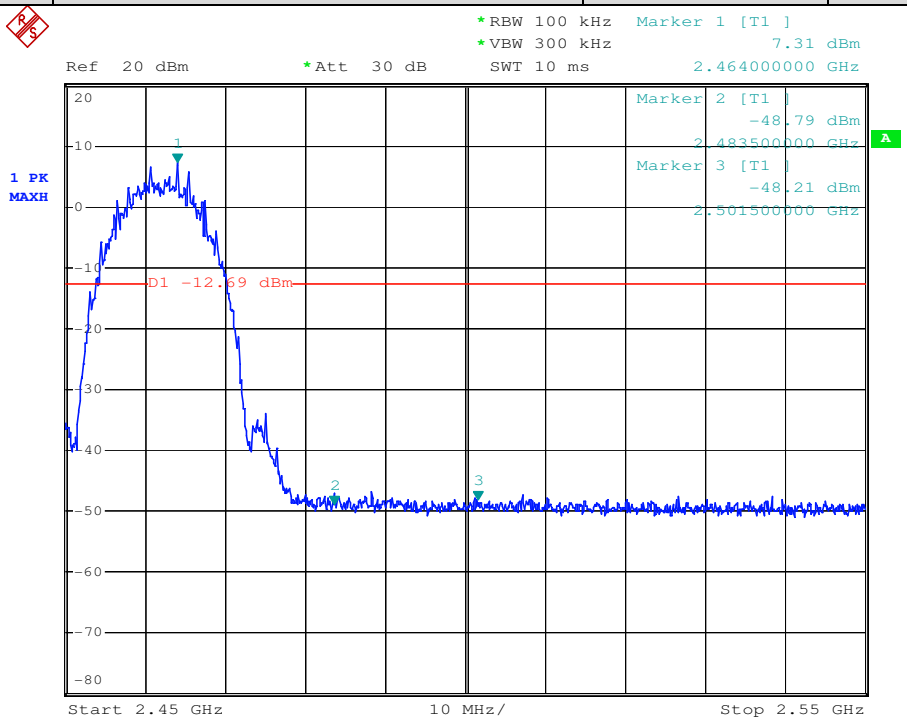
7.7.2 Conducted Band-edge

Test plot as follows:

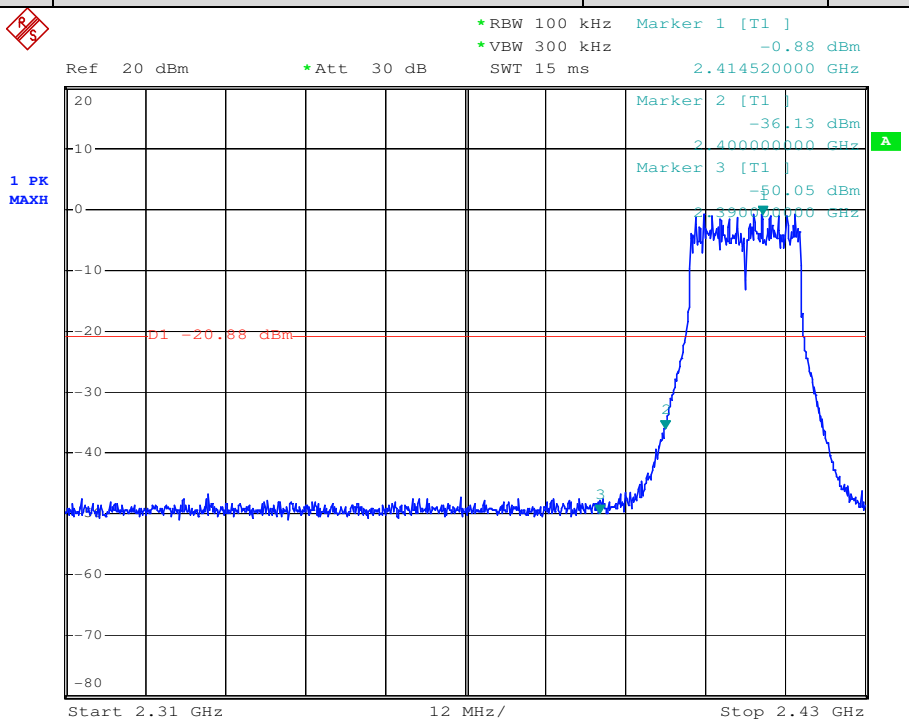
Test mode:	802.11b	Channel:	Lowest



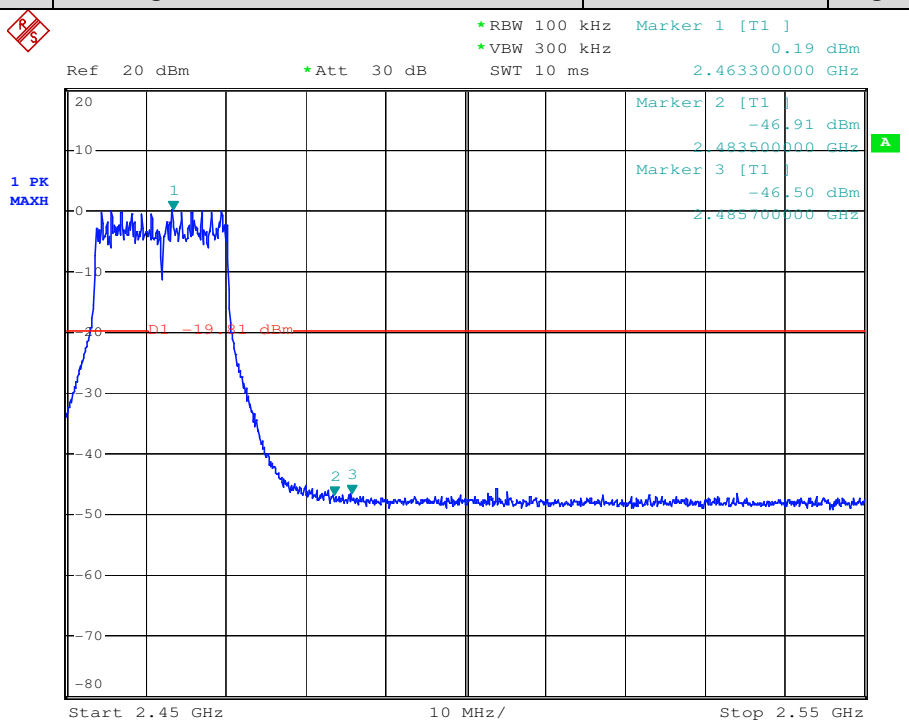
Test mode:	802.11b	Channel:	Highest



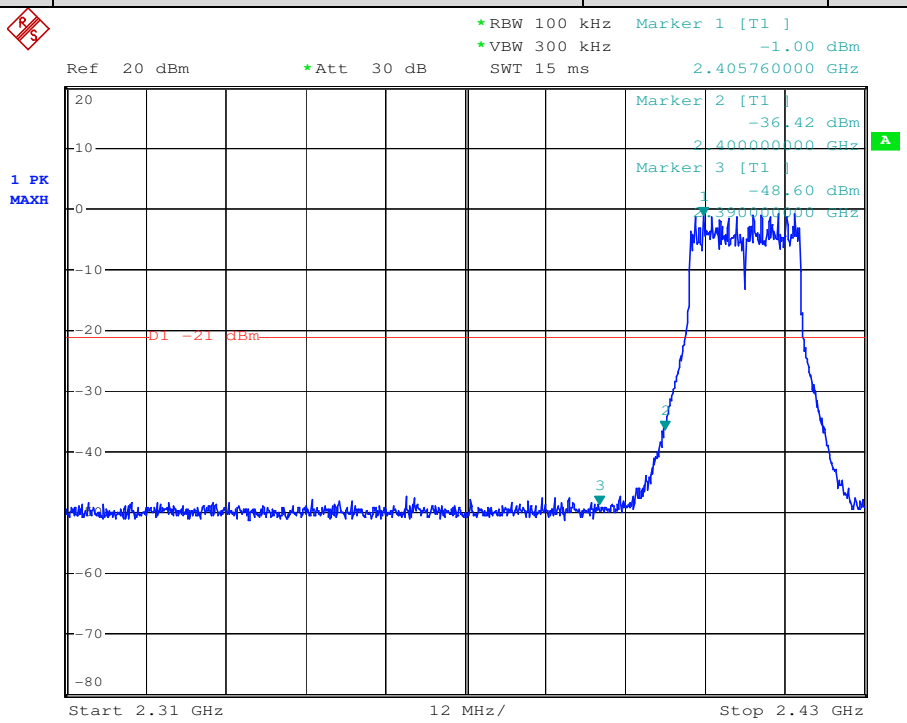
Test mode:	802.11g	Channel:	Lowest



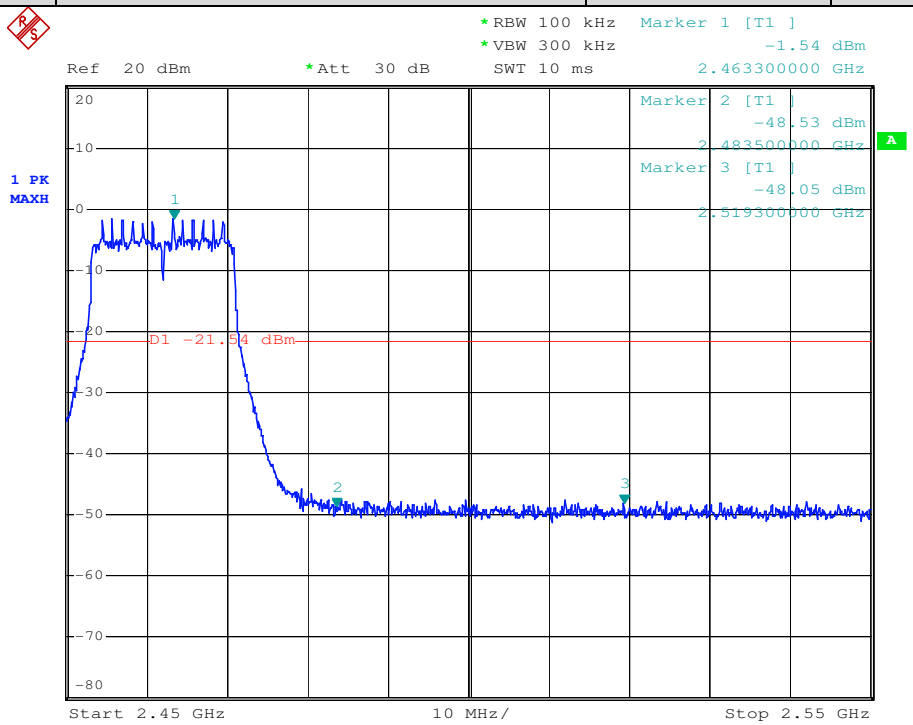
Test mode:	802.11g	Channel:	Highest



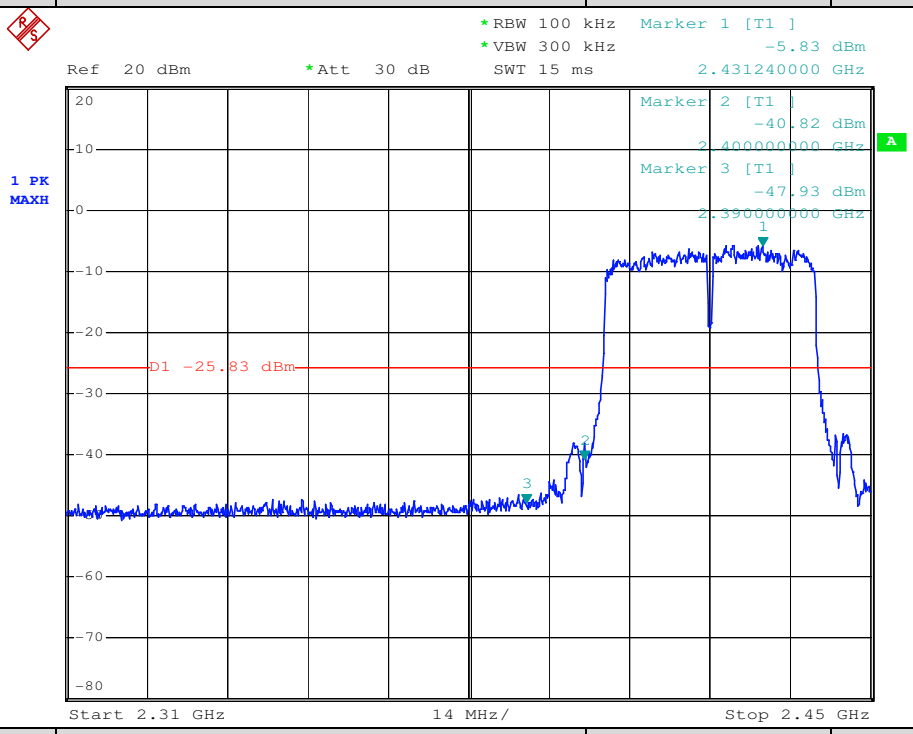
Test mode:	802.11n20	Channel:	Lowest



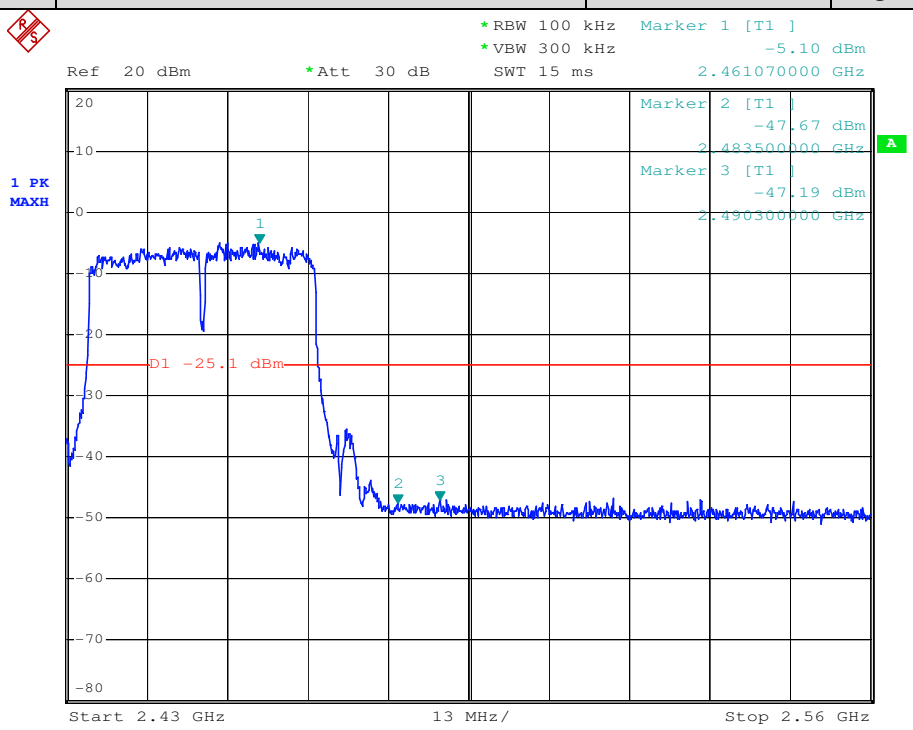
Test mode:	802.11n20	Channel:	Highest



Test mode:	802.11n40	Channel:	Lowest



Test mode:	802.11n40	Channel:	Highest



7.8 Radiated Spurious Emissions and Band-edge

Frequency Range: 9KHz to 25GHz

Test site/setup: Measurement Distance: 3m (Semi-Anechoic Chamber)
Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
0.009MHz-0.090MHz	Peak	10kHz	30kHz
0.009MHz-0.090MHz	Average	10kHz	30kHz
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz
0.110MHz-0.490MHz	Peak	10kHz	30kHz
0.110MHz-0.490MHz	Average	10kHz	30kHz
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz
30MHz-1GHz	Quasi-peak	100kHz	300kHz
Above 1GHz	Peak	RBW=1MHz	VBW≥RBW
	Average		VBW=10Hz

Sweep=Auto

15.209 Limit:

Frequency	Limit (dBuV/m)
0.009MHz-0.490MHz	128.5 ~ 93.8
0.490MHz-1.705MHz	73.8 ~63.0
1.705MHz-30MHz	69.5
30MHz-88MHz	40.0
88MHz-216MHz	43.5
216MHz-960MHz	46.0
960MHz-1GHz	54.0
Above 1GHz	54.0

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test Configuration:

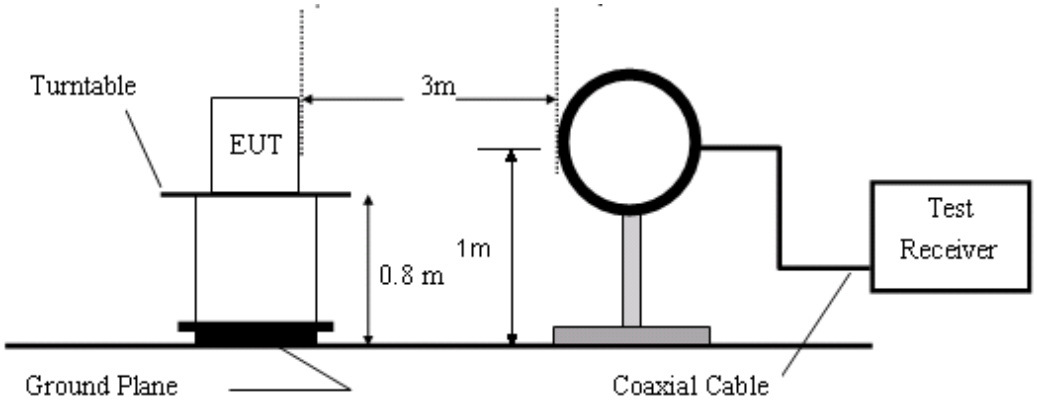


Figure1. Below 30MHz radiated emissions test configuration

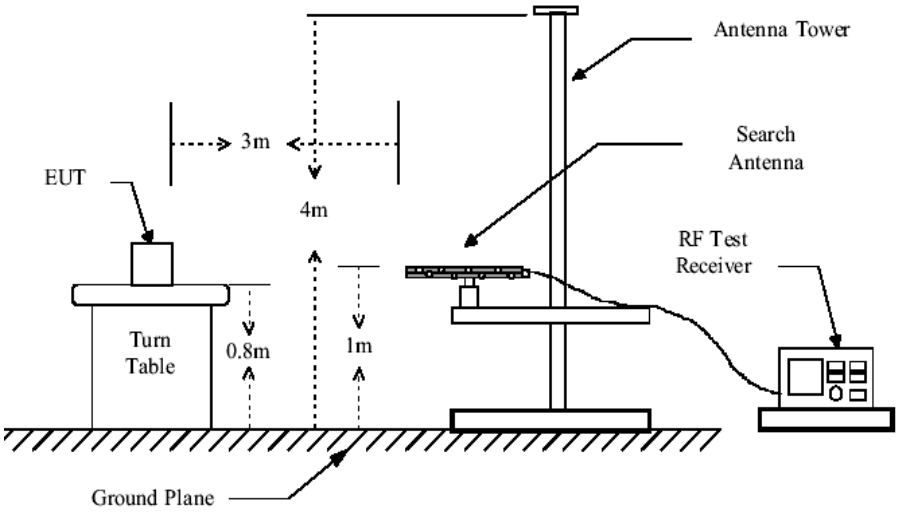


Figure2. 30MHz to 1GHz radiated emissions test configuration

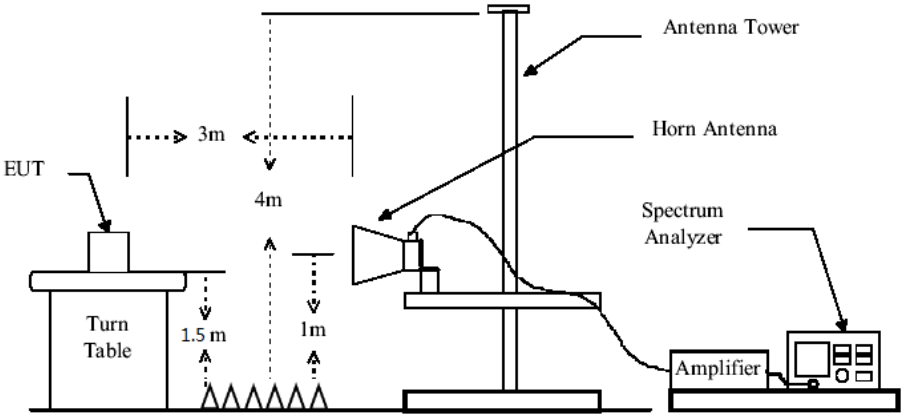


Figure3. Above 1GHz radiated emissions test configuration

Test Procedure:

1) The procedure used was ANSI Standard C63.10. The receiver was scanned from 9 KHz 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.
2) Low noise amplifier was used below 1GHz, High pass Filter was used above 3GHz. We did not use any amplifier or filter between 1G and 3GHz.
3) Test were performed for their spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.
   a) For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5rd harmonic.
   b) As shown in Section, for frequencies above 1000MHz. 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.
4) Pretest under all modes below 1GHz; choose the worst case mode (802.11b) record on the report.
5) The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

Test Result: Pass

7.8.1 Radiated Spurious Emissions

30MHz-1GHz:

lowest Channel

Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	47.994	29.42	12.86	23.70	0.38	18.96	40.00	-21.04	QP	Horizontal
2	80.081	34.26	8.40	23.67	0.70	19.69	40.00	-20.31	QP	Horizontal
3	150.011	26.05	12.30	23.64	1.17	15.88	43.50	-27.62	QP	Horizontal
4	287.990	26.04	11.43	23.66	1.81	15.62	46.00	-30.38	QP	Horizontal
5	360.448	34.84	13.59	23.69	2.01	26.75	46.00	-19.25	QP	Horizontal
6	552.883	26.17	17.38	23.78	2.59	22.36	46.00	-23.64	QP	Horizontal
1	47.994	31.71	12.86	23.70	0.38	21.25	40.00	-18.75	QP	Vertical
2	52.575	32.62	12.37	23.69	0.44	21.74	40.00	-18.26	QP	Vertical
3	96.099	38.96	8.82	23.66	0.87	24.99	43.50	-18.51	QP	Vertical
4	121.123	33.91	11.19	23.65	1.03	22.48	43.50	-21.02	QP	Vertical
5	157.007	30.40	12.30	23.63	1.21	20.28	43.50	-23.22	QP	Vertical
6	432.546	20.21	15.46	23.71	2.28	14.24	46.00	-31.76	QP	Vertical

Middle Channel

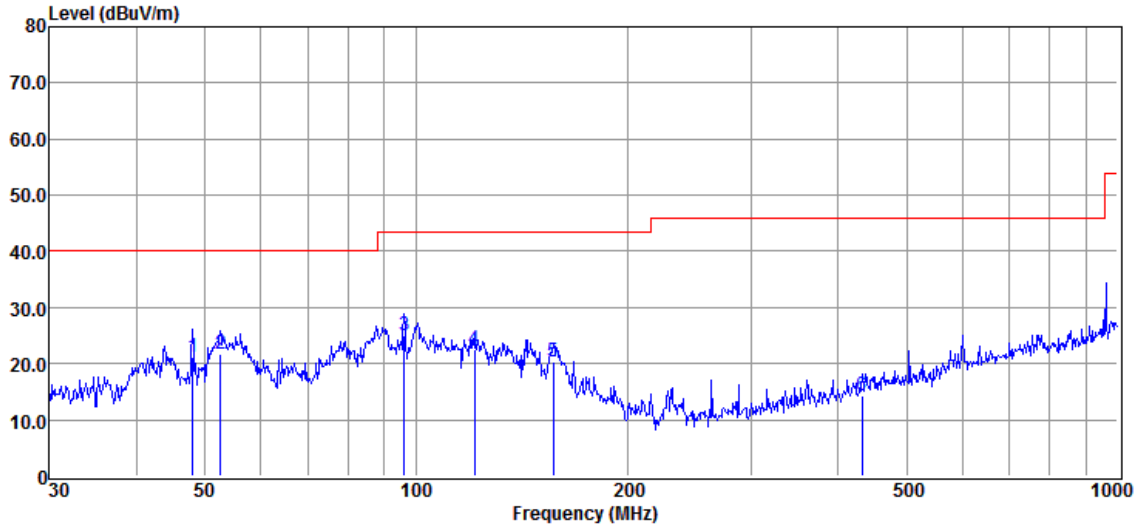
Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	33.562	29.74	12.57	23.71	0.16	18.76	40.00	-21.24	QP	Horizontal
2	48.163	28.24	12.84	23.70	0.38	17.76	40.00	-22.24	QP	Horizontal
3	81.212	32.43	8.44	23.67	0.72	17.92	40.00	-22.08	QP	Horizontal
4	133.619	29.62	11.33	23.64	1.10	18.41	43.50	-25.09	QP	Horizontal
5	155.910	28.11	12.30	23.63	1.21	17.99	43.50	-25.51	QP	Horizontal
6	360.448	35.55	13.59	23.69	2.01	27.46	46.00	-18.54	QP	Horizontal
1	53.882	36.84	12.24	23.69	0.46	25.85	40.00	-14.15	QP	Vertical
2	84.110	38.48	8.56	23.67	0.75	24.12	40.00	-15.88	QP	Vertical
3	96.436	39.26	8.85	23.66	0.89	25.34	43.50	-18.16	QP	Vertical
4	114.114	36.03	10.80	23.65	1.00	24.18	43.50	-19.32	QP	Vertical
5	156.458	32.09	12.30	23.63	1.21	21.97	43.50	-21.53	QP	Vertical
6	360.448	29.88	13.59	23.69	2.01	21.79	46.00	-24.21	QP	Vertical

Highest Channel

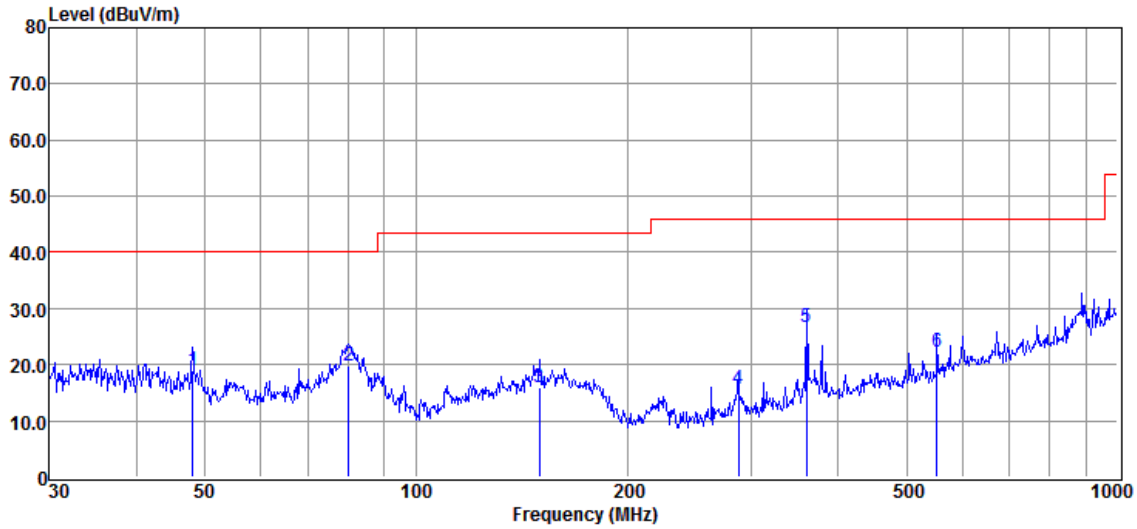
Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
1	32.864	29.83	12.56	23.71	0.15	18.83	40.00	-21.17	QP	Horizontal
2	122.404	33.60	11.17	23.65	1.04	22.16	43.50	-21.34	QP	Horizontal
3	144.335	32.79	11.96	23.64	1.16	22.27	43.50	-21.23	QP	Horizontal
4	264.746	37.30	10.79	23.65	1.66	26.10	46.00	-19.90	QP	Horizontal
5	519.065	25.54	16.88	23.75	2.48	21.15	46.00	-24.85	QP	Horizontal
6	663.473	22.30	19.88	23.85	2.87	21.20	46.00	-24.80	QP	Horizontal
1	33.562	28.13	12.57	23.71	0.16	17.15	40.00	-22.85	QP	Vertical
2	207.123	29.87	9.15	23.62	1.43	16.83	43.50	-26.67	QP	Vertical
3	361.714	27.58	13.65	23.69	2.01	19.55	46.00	-26.45	QP	Vertical
4	494.198	29.20	16.20	23.73	2.42	24.09	46.00	-21.91	QP	Vertical
5	663.473	23.40	19.88	23.85	2.87	22.30	46.00	-23.70	QP	Vertical
6	734.491	22.44	20.95	23.89	3.06	22.56	46.00	-23.44	QP	Vertical

Result Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Below is the plot of worst case on Middle channel:
Vertical:



Horizontal:



Above 1GHz:

Test mode: 802.11b **Channel: lowest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4824	41.54	6.40	47.94	54	-6.06	peak	Horizontal
2	7236	39.37	10.76	50.13	54	-3.87	peak	Horizontal
3	9648	36.44	14.37	50.81	54	-3.19	peak	Horizontal
4	4824	41.88	6.40	48.28	54	-5.72	peak	Vertical
5	7236	40.30	10.76	51.06	54	-2.94	peak	Vertical
6	9648	35.83	14.37	50.20	54	-3.80	peak	Vertical

Test mode: 802.11b **Channel: Middle**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4874	41.64	6.92	48.56	54	-5.44	peak	Horizontal
2	7311	39.79	11.08	50.87	54	-3.13	peak	Horizontal
3	9748	37.55	14.36	51.91	54	-2.09	peak	Horizontal
4	4874	40.94	6.92	47.86	54	-6.14	peak	Vertical
5	7311	38.30	11.08	49.38	54	-4.62	peak	Vertical
6	9748	37.25	14.36	51.61	54	-2.39	peak	Vertical

Test mode: 802.11b **Channel: Highest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4924	41.09	7.31	48.40	54	-5.60	peak	Horizontal
2	7386	40.79	11.41	52.20	54	-1.80	peak	Horizontal
3	9848	37.60	14.38	51.98	54	-2.02	peak	Horizontal
4	4924	40.92	7.31	48.23	54	-5.77	peak	Vertical
5	7386	40.88	11.41	52.29	54	-1.71	peak	Vertical
6	9848	37.35	14.38	51.73	54	-2.27	peak	Vertical

Test mode: 802.11g **Channel: lowest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4824	41.21	6.40	47.61	54	-6.39	peak	Horizontal
2	7236	40.19	10.76	50.95	54	-3.05	peak	Horizontal
3	9648	36.44	14.37	50.81	54	-3.19	peak	Horizontal
4	4824	41.01	6.40	47.41	54	-6.59	peak	Vertical
5	7236	39.87	10.76	50.63	54	-3.37	peak	Vertical
6	9648	36.82	14.37	51.19	54	-2.81	peak	Vertical

Test mode: 802.11g **Channel: Middle**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4874	40.66	6.92	47.58	54	-6.42	peak	Horizontal
2	7311	39.91	11.08	50.99	54	-3.01	peak	Horizontal
3	9748	36.46	14.36	50.82	54	-3.18	peak	Horizontal
4	4874	40.58	6.92	47.50	54	-6.50	peak	Vertical
5	7311	38.68	11.08	49.76	54	-4.24	peak	Vertical
6	9748	36.39	14.36	50.75	54	-3.25	peak	Vertical

Test mode: 802.11g **Channel: Highest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4924	41.43	7.31	48.74	54	-5.26	peak	Horizontal
2	7386	40.36	11.41	51.77	54	-2.23	peak	Horizontal
3	9848	37.36	14.38	51.74	54	-2.26	peak	Horizontal
4	4924	40.63	7.31	47.94	54	-6.06	peak	Vertical
5	7386	40.07	11.41	51.48	54	-2.52	peak	Vertical
6	9848	38.68	14.38	53.06	54	-0.94	peak	Vertical

Test mode: 802.11n20 **Channel: lowest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4824	38.65	6.40	45.05	54	-8.95	peak	Horizontal
2	7236	39.78	10.76	50.54	54	-3.46	peak	Horizontal
3	9648	36.29	14.37	50.66	54	-3.34	peak	Horizontal
4	4824	37.84	6.40	44.24	54	-9.76	peak	Vertical
5	7236	39.88	10.76	50.64	54	-3.36	peak	Vertical
6	9648	35.37	14.37	49.74	54	-4.26	peak	Vertical

Test mode: 802.11n20 **Channel: Middle**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4874	37.81	6.92	44.73	54	-9.27	peak	Horizontal
2	7311	38.34	11.08	49.42	54	-4.58	peak	Horizontal
3	9748	37.00	14.36	51.36	54	-2.64	peak	Horizontal
4	4874	37.38	6.92	44.30	54	-9.70	peak	Vertical
5	7311	38.43	11.08	49.51	54	-4.49	peak	Vertical
6	9748	37.15	14.36	51.51	54	-2.49	peak	Vertical

Test mode: 802.11n20 **Channel: Highest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4924	38.22	7.31	45.53	54	-8.47	peak	Horizontal
2	7386	40.04	11.41	51.45	54	-2.55	peak	Horizontal
3	9848	39.19	14.38	53.57	54	-0.43	peak	Horizontal
4	4924	39.61	7.31	46.92	54	-7.08	peak	Vertical
5	7386	39.65	11.41	51.06	54	-2.94	peak	Vertical
6	9848	37.91	14.38	52.29	54	-1.71	peak	Vertical

Test mode: 802.11n40 **Channel: lowest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4844	39.66	6.60	46.26	54	-7.74	peak	Horizontal
2	7266	38.69	10.89	49.58	54	-4.42	peak	Horizontal
3	9688	36.82	14.35	51.17	54	-2.83	peak	Horizontal
4	4844	38.32	6.60	44.92	54	-9.08	peak	Vertical
5	7266	38.46	10.89	49.35	54	-4.65	peak	Vertical
6	9688	35.78	14.35	50.13	54	-3.87	peak	Vertical

Test mode: 802.11n40 **Channel: Middle**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4874	45.46	6.92	52.38	54	-1.62	peak	Horizontal
2	7311	38.09	11.08	49.17	54	-4.83	peak	Horizontal
3	9748	37.15	14.36	51.51	54	-2.49	peak	Horizontal
4	4874	40.75	6.92	47.67	54	-6.33	peak	Vertical
5	7311	37.75	11.08	48.83	54	-5.17	peak	Vertical
6	9748	36.71	14.36	51.07	54	-2.93	peak	Vertical

Test mode: 802.11n40 **Channel: Highest**

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4904	42.43	7.22	49.65	54	-4.35	peak	Horizontal
2	7356	39.86	11.28	51.14	54	-2.86	peak	Horizontal
3	9808	38.36	14.37	52.73	54	-1.27	peak	Horizontal
4	4904	41.51	7.22	48.73	54	-5.27	peak	Vertical
5	7356	40.28	11.28	51.56	54	-2.44	peak	Vertical
6	9808	37.94	14.37	52.31	54	-1.69	peak	Vertical

Remark: 1). Test Level =Receiver Reading + Antenna Factor + Cable Loss –Preamplifier Factor.

2). 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.

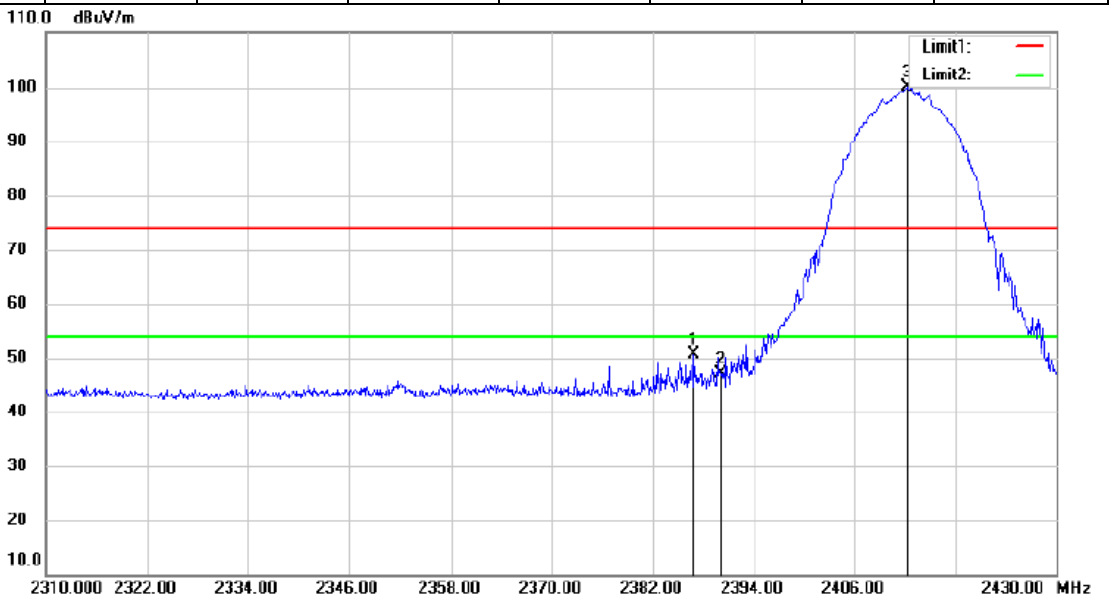
3). If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

7.8.2 Radiated Band edge

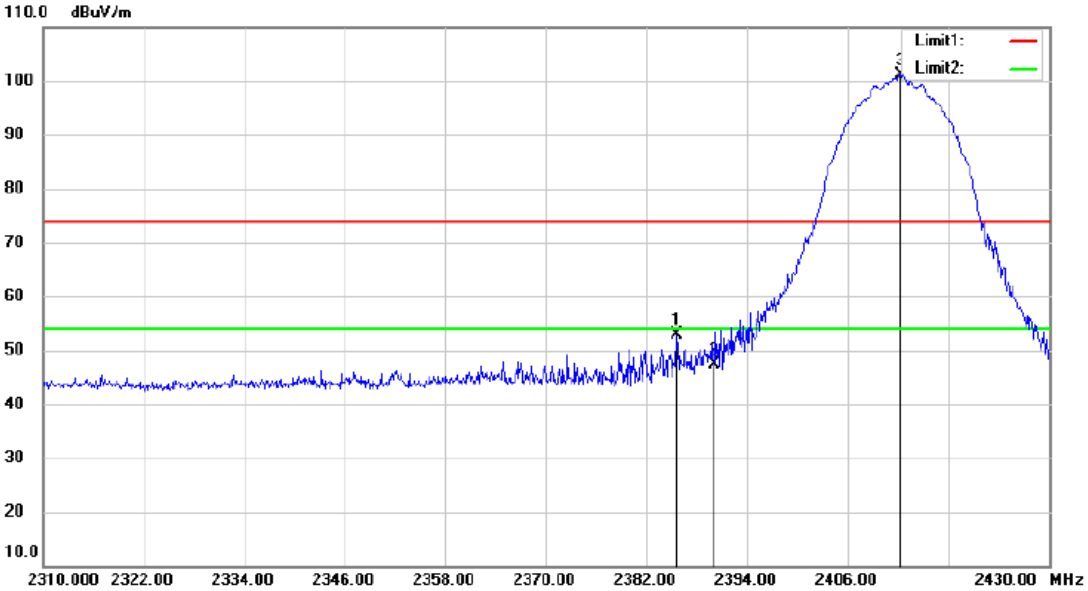
Test Mode: 802.11b **Channel: lowest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2386.8	54.62	-3.88	50.74	54	-3.26	Peak	Horizontal
2	2390	51.06	-3.89	47.17	54	-6.83	Peak	Horizontal
3	2412.24	103.95	-3.94	100.01	54	46.01	Peak	Horizontal
1	2385.6	56.82	-3.88	52.94	54	-1.06	Peak	Vertical
2	2390	51.31	-3.89	47.42	54	-6.58	Peak	Vertical
3	2412.24	105.08	-3.94	101.14	54	47.14	Peak	Vertical

Horizontal



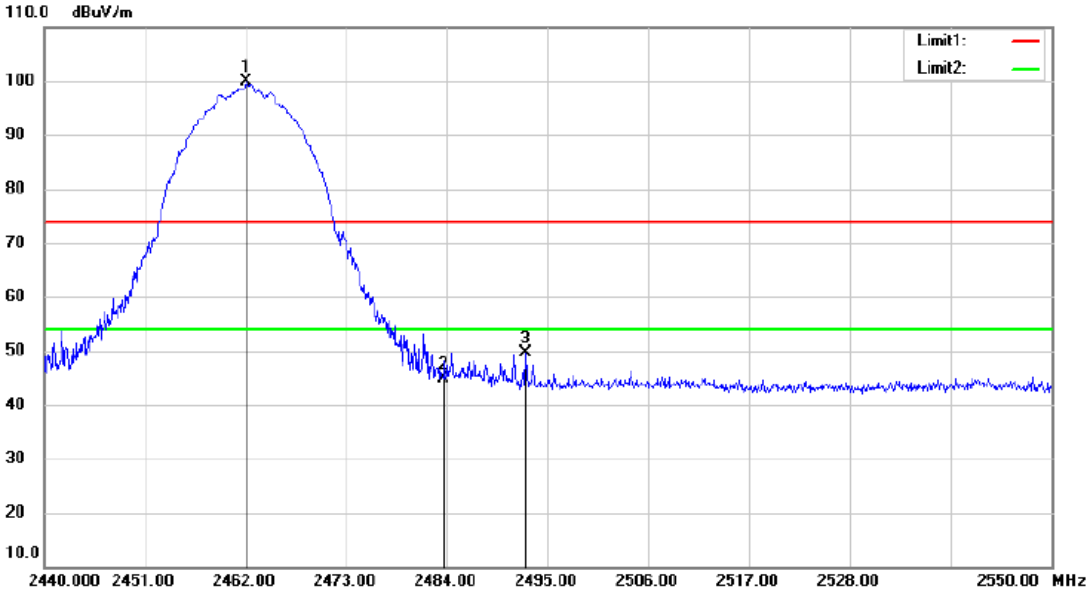
Vertical



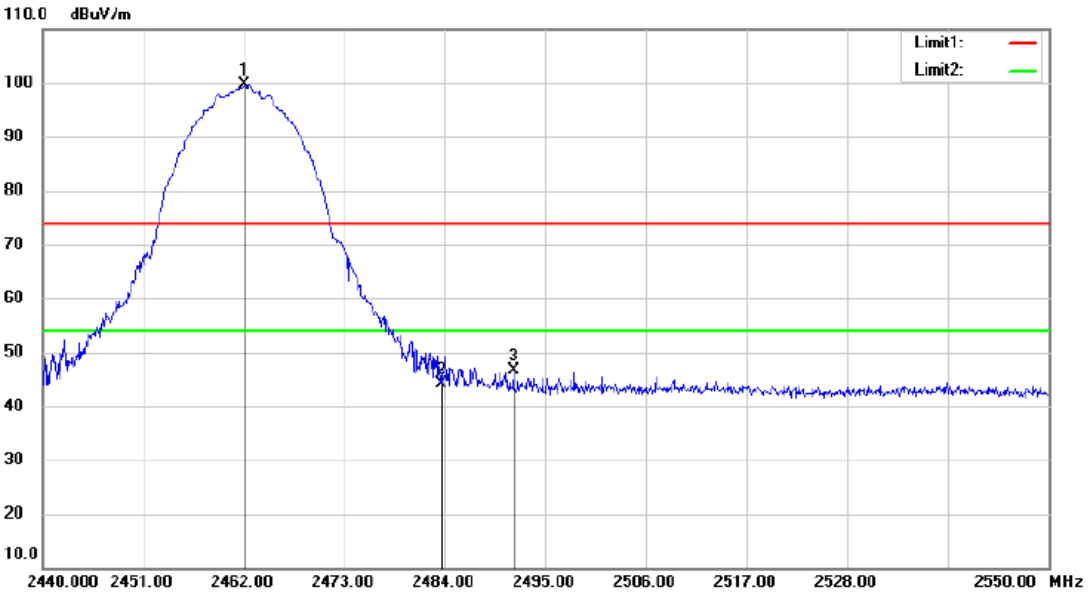
Test Mode: 802.11b **Channel: Highest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2462	103.77	-3.99	99.78	54	45.78	Peak	Horizontal
2	2483.5	48.82	-4.01	44.81	54	-9.19	Peak	Horizontal
3	2492.58	53.57	-4.02	49.55	54	-4.45	Peak	Horizontal
1	2462	103.73	-3.99	99.74	54	45.74	Peak	Vertical
2	2483.5	48.12	-4.01	44.11	54	-9.89	Peak	Vertical
3	2491.48	50.63	-4.02	46.61	54	-7.39	Peak	Vertical

Horizontal



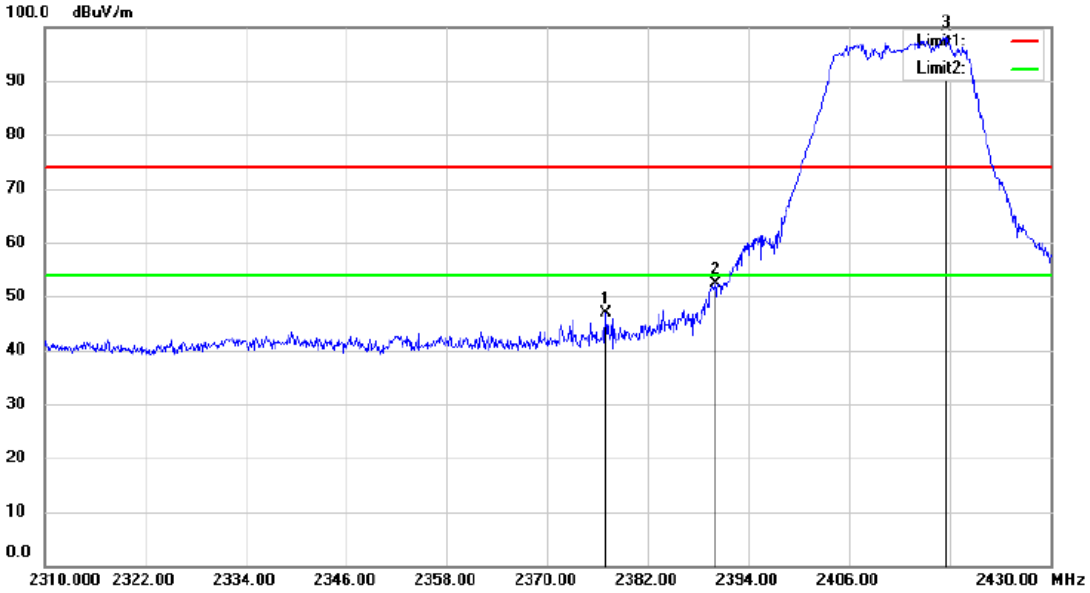
Vertical



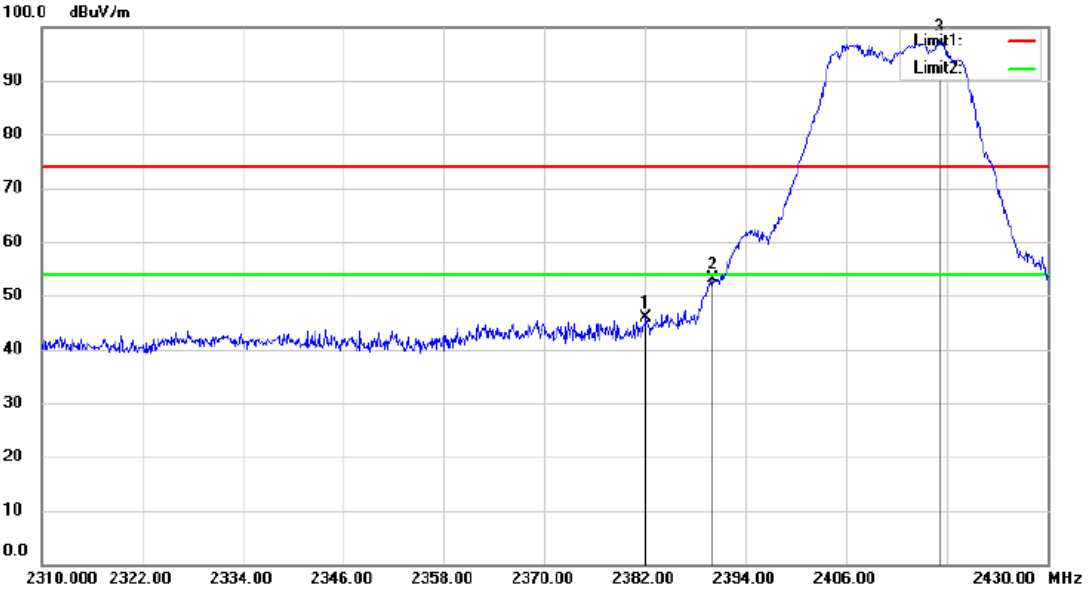
Test Mode: 802.11g **Channel: lowest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2376.96	50.64	-3.85	46.79	54	-7.21	Peak	Horizontal
2	2390	56.20	-3.89	52.31	54	-1.69	Peak	Horizontal
3	2417.52	102.17	-3.94	98.23	54	44.23	Peak	Horizontal
1	2382.12	49.85	-3.87	45.98	54	-8.02	Peak	Vertical
2	2390	57.12	-3.89	53.23	54	-0.77	Peak	Vertical
3	2417.04	101.28	-3.94	97.34	54	43.34	Peak	Vertical

Horizontal



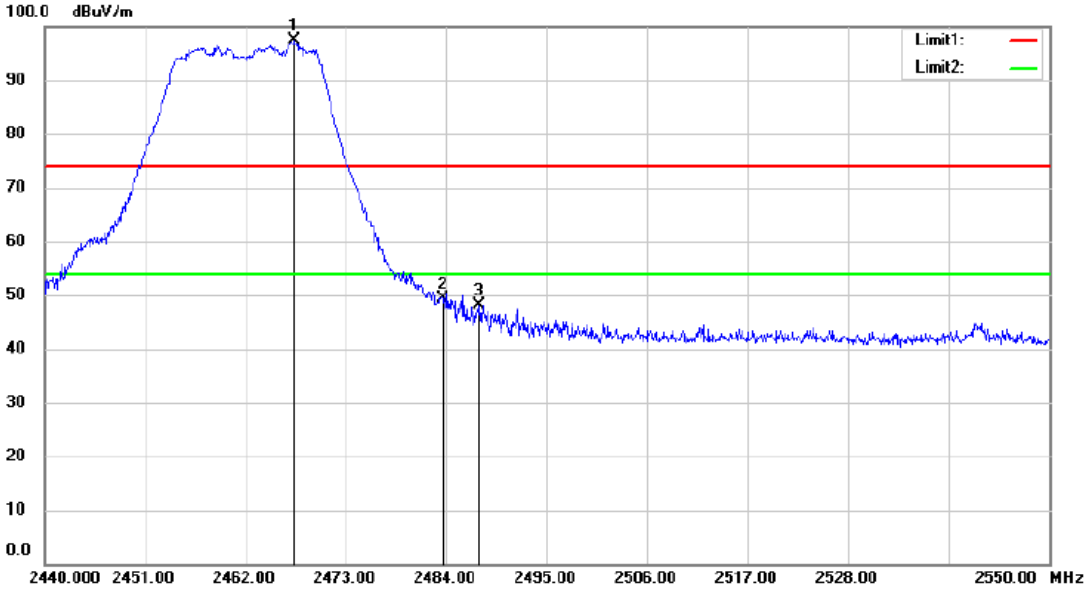
Vertical



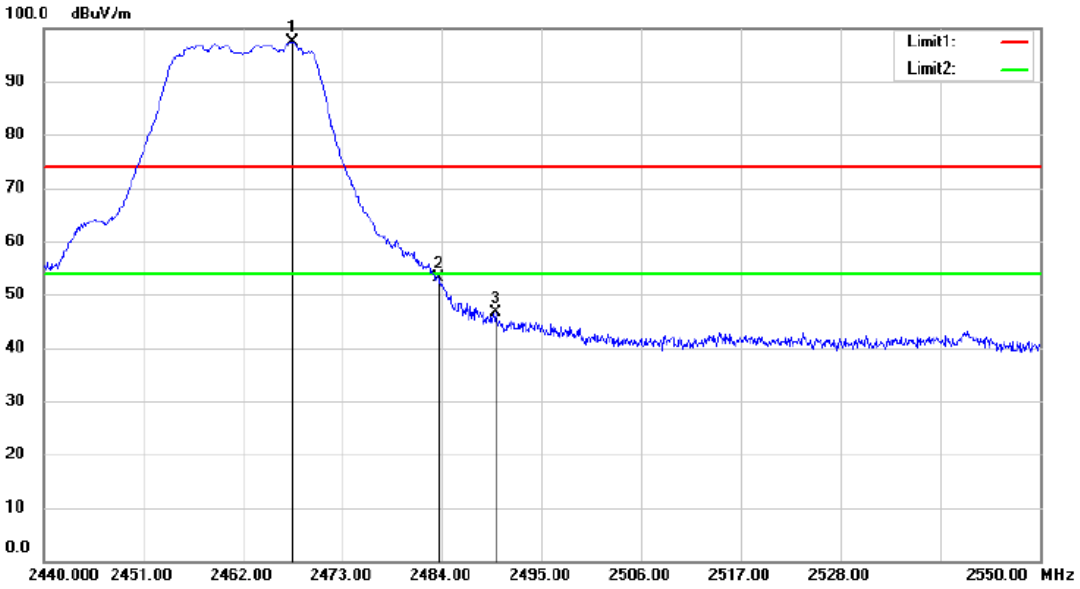
Test Mode: 802.11g **Channel: Highest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2467.39	101.34	-4.00	97.34	54	43.34	Peak	Horizontal
2	2483.5	53.46	-4.01	49.45	54	-4.55	Peak	Horizontal
3	2487.63	52.18	-4.01	48.17	54	-5.83	Peak	Horizontal
1	2467.5	101.42	-4.00	97.42	54	43.42	Peak	Vertical
2	2483.5	57.03	-4.01	53.02	54	-0.98	Peak	Vertical
3	2489.94	50.70	-4.02	46.68	54	-7.32	Peak	Vertical

Horizontal



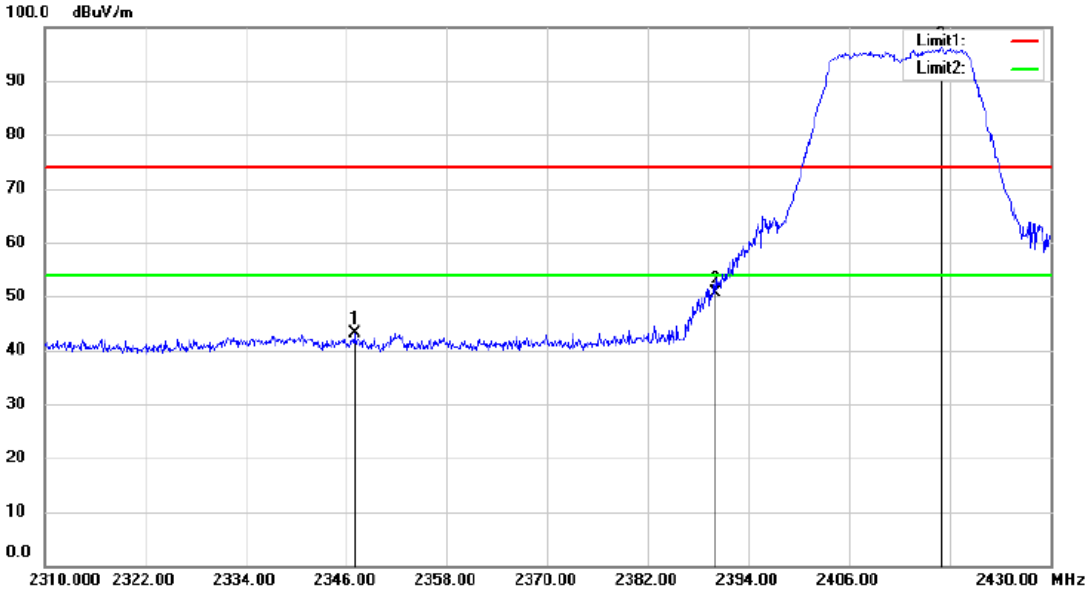
Vertical



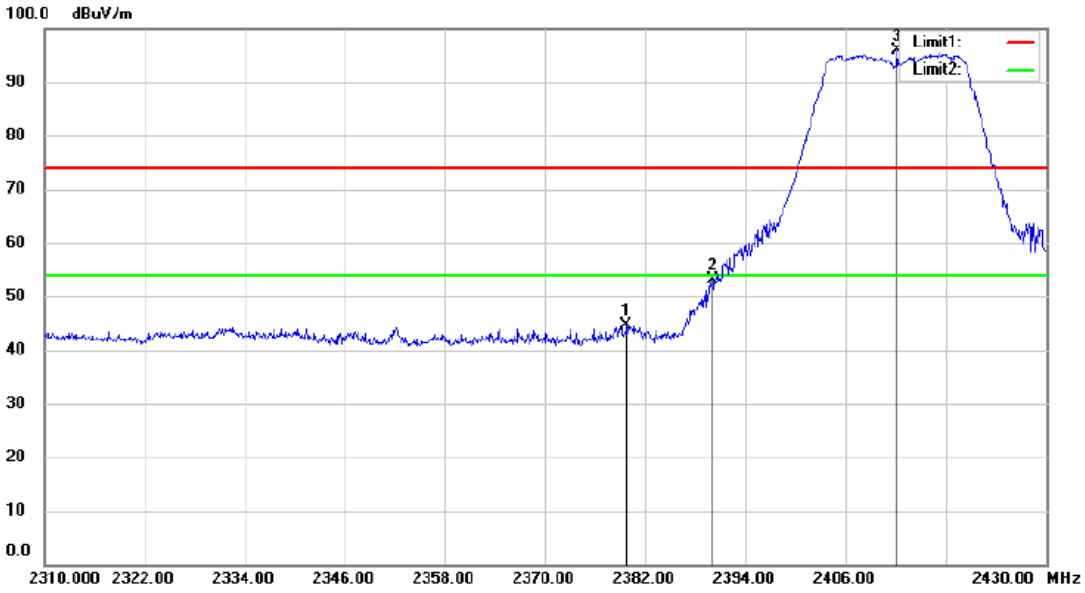
Test Mode: 802.11n20 **Channel: Lowest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2346.96	46.98	-3.76	43.22	54	-10.78	Peak	Horizontal
2	2390	54.58	-3.89	50.69	54	-3.31	Peak	Horizontal
3	2416.92	99.96	-3.94	96.02	54	42.02	Peak	Horizontal
1	2379.72	48.54	-3.87	44.67	54	-9.33	Peak	Vertical
2	2390	57.03	-3.89	53.14	54	-0.86	Peak	Vertical
3	2412.12	99.76	-3.93	95.83	54	41.83	Peak	Vertical

Horizontal



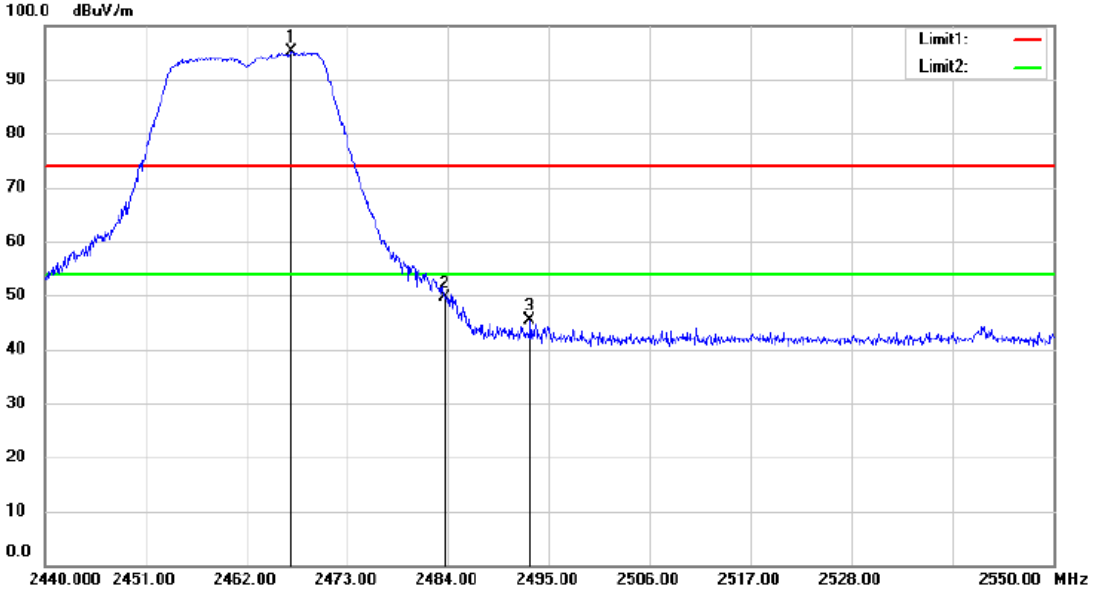
Vertical



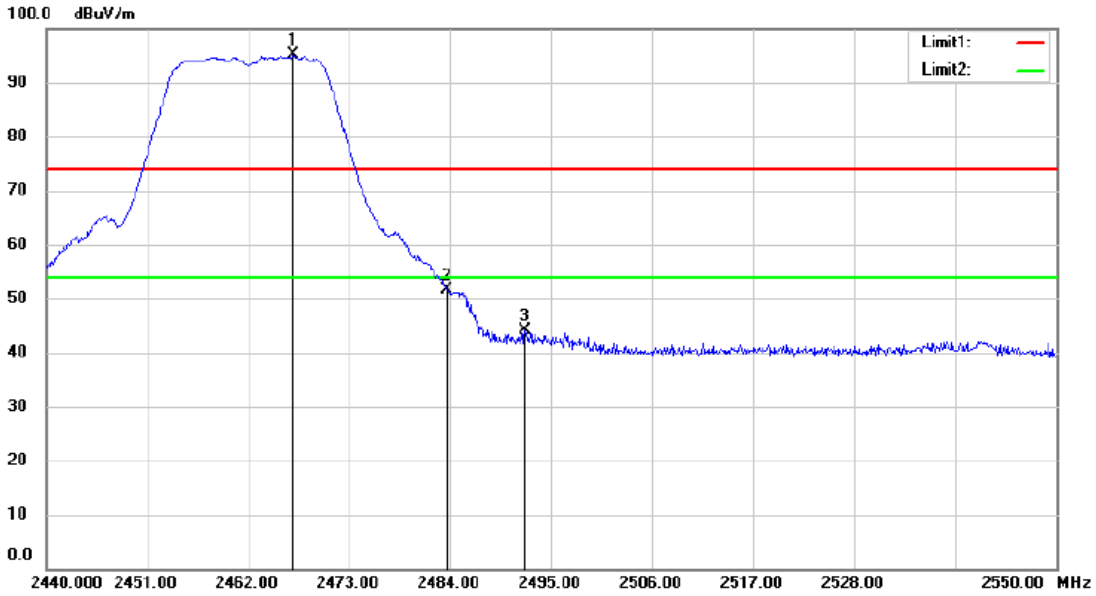
Test Mode: 802.11n20 **Channel: Highest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2466.95	99.10	-3.99	95.11	54	41.11	Peak	Horizontal
2	2483.5	53.73	-4.01	49.72	54	-4.28	Peak	Horizontal
3	2492.91	49.39	-4.03	45.36	54	-8.64	Peak	Horizontal
1	2466.95	99.13	-3.99	95.14	54	41.14	Peak	Vertical
2	2483.5	55.68	-4.01	51.67	54	-2.33	Peak	Vertical
3	2492.14	48.23	-4.02	44.21	54	-9.79	Peak	Vertical

Horizontal



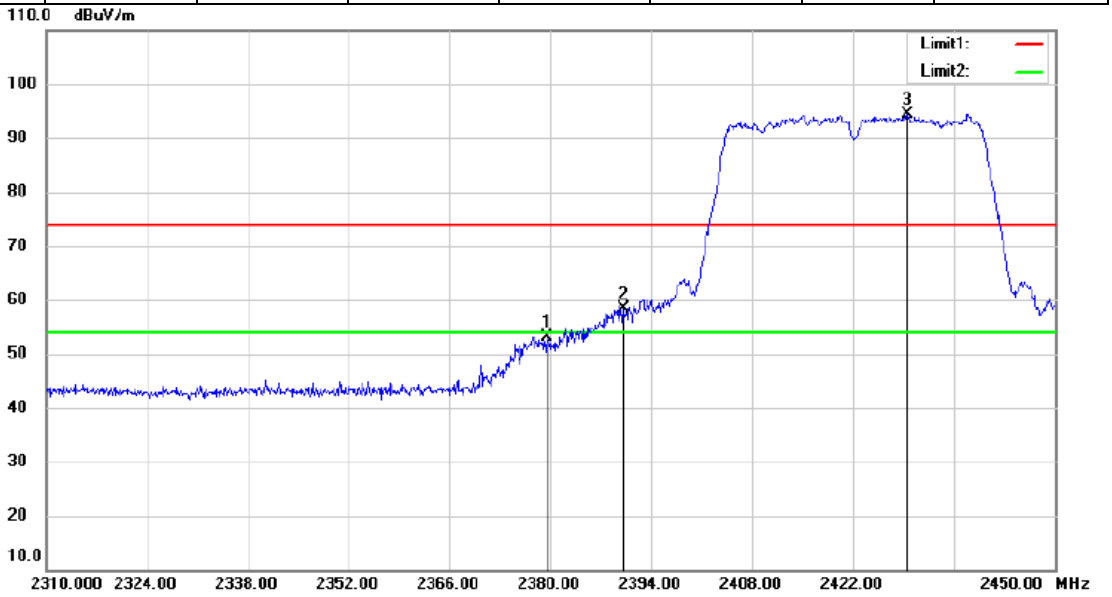
Vertical



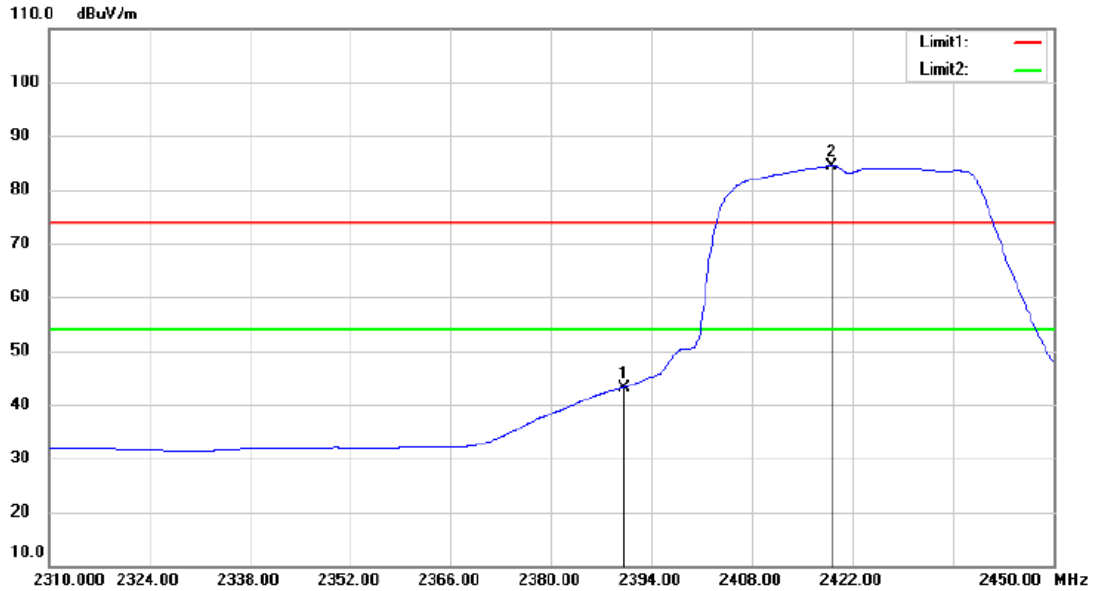
Test Mode: 802.11n40 **Channel: lowest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2379.58	57.09	-3.86	53.23	74	-20.77	Peak	Horizontal
2	2390	62.27	-3.89	58.38	74	-15.62	Peak	Horizontal
3	2429.56	98.41	-3.95	94.46	74	20.46	Peak	Horizontal
1	2390	47.11	-3.89	43.22	54	-10.78	Average	Horizontal
2	2419.06	88.28	-3.94	84.34	54	30.34	Average	Horizontal

Peak



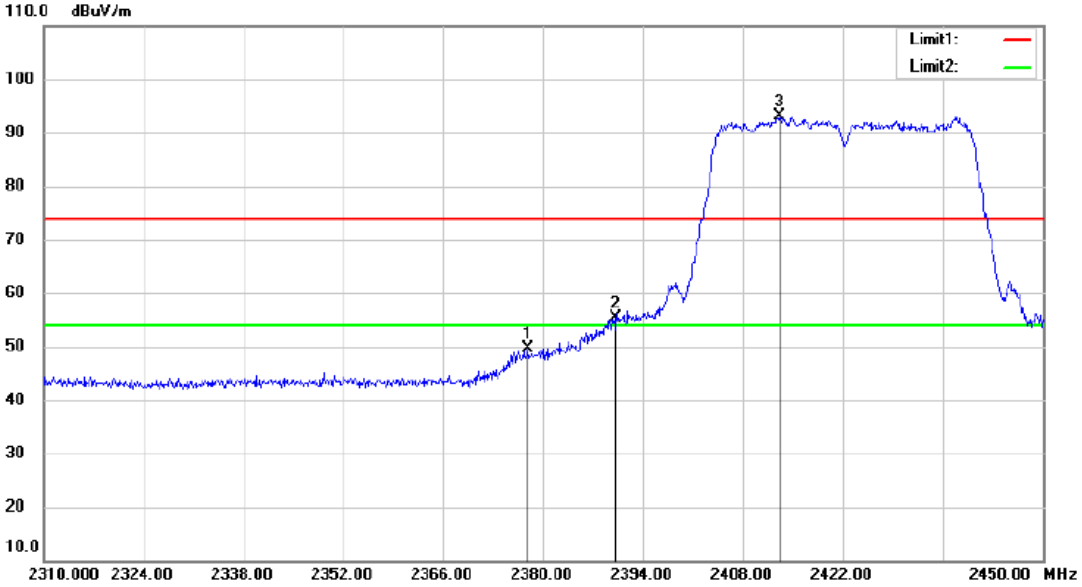
Average



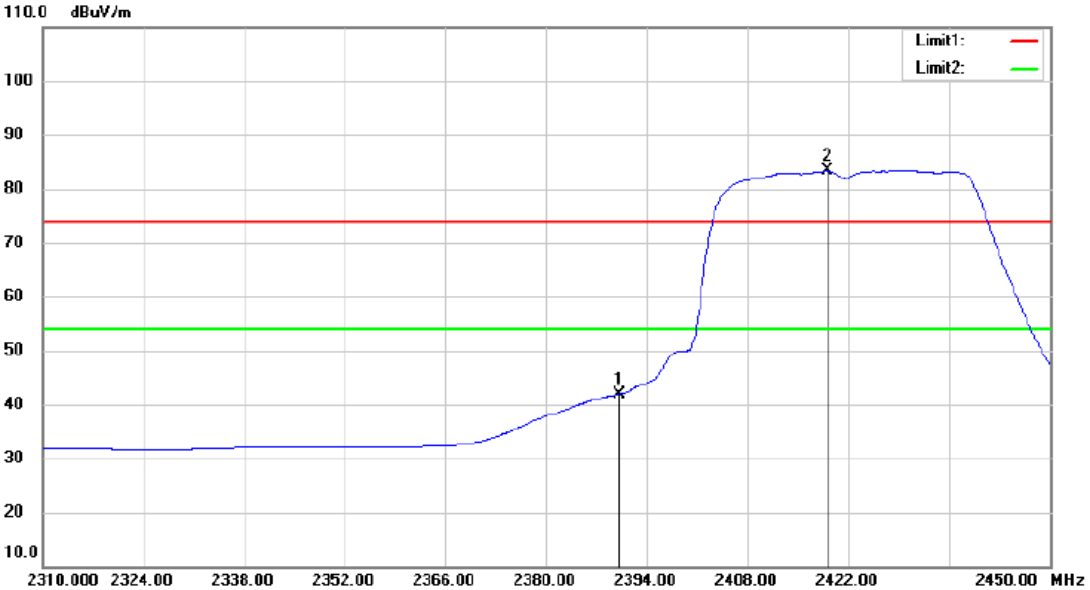
Test Mode: 802.11n40 **Channel: Lowest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2377.76	53.53	-3.85	49.68	74	-24.32	Peak	Vertical
2	2390	59.15	-3.89	55.26	74	-18.74	Peak	Vertical
3	2413.04	97.00	-3.93	93.07	74	19.07	Peak	Vertical
1	2390	45.82	-3.89	41.93	54	-12.07	Average	Vertical
2	2419.06	87.23	-3.94	83.29	54	29.29	Average	Vertical

Peak



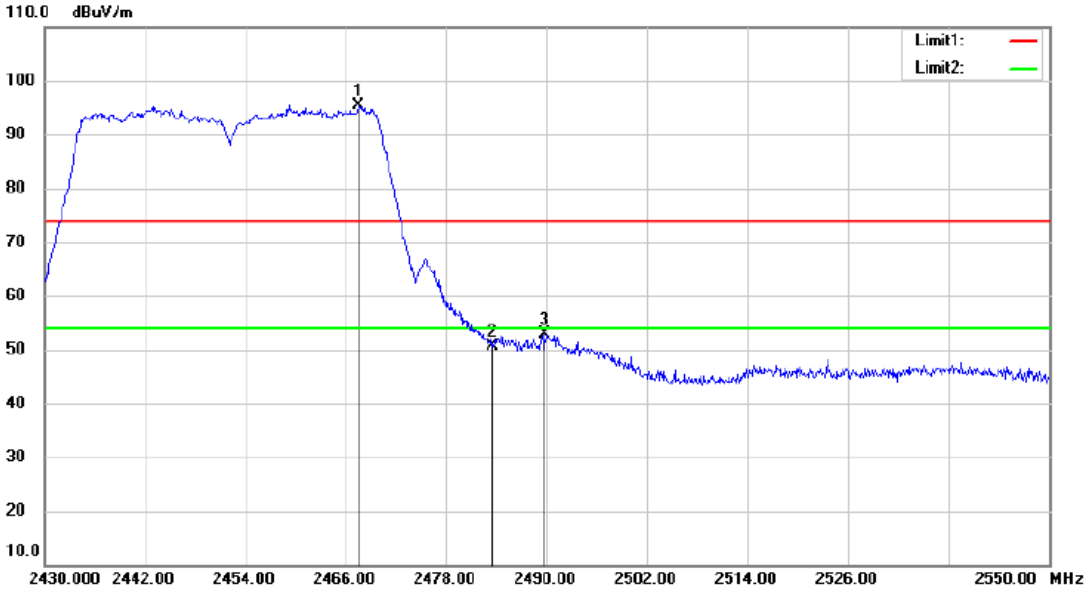
Average



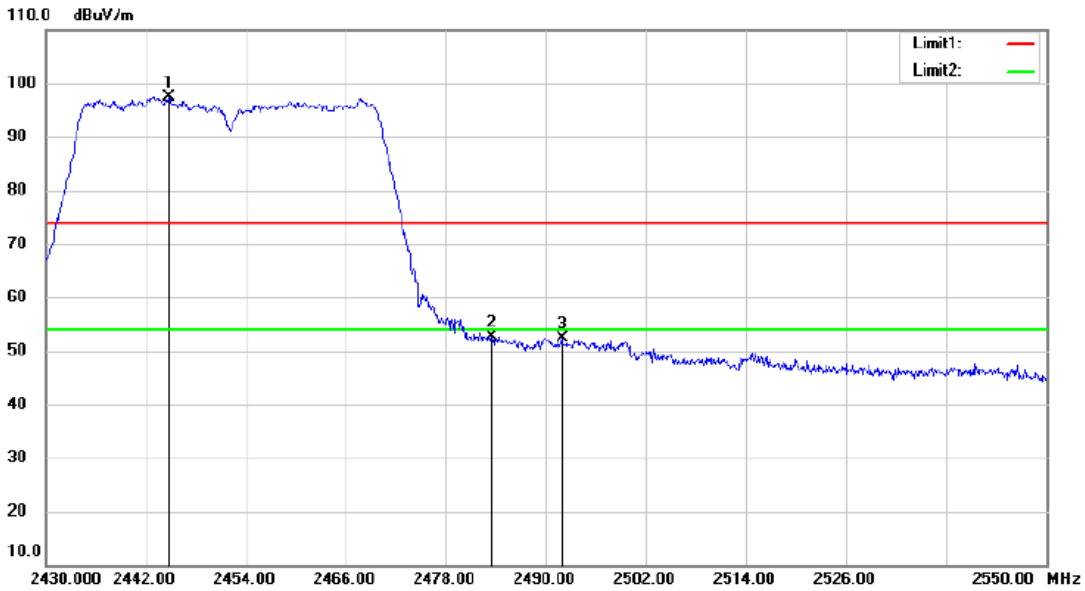
Test Mode: 802.11n40 **Channel: Highest**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2467.56	99.47	-4.00	95.47	54	41.47	Peak	Horizontal
2	2483.5	54.57	-4.01	50.56	54	-3.44	Peak	Horizontal
3	2489.76	56.95	-4.02	52.93	54	-1.07	Peak	Horizontal
1	2444.76	101.42	-3.97	97.45	54	43.45	Peak	Vertical
2	2483.5	56.59	-4.01	52.58	54	-1.42	Peak	Vertical
3	2491.92	56.34	-4.02	52.32	54	-1.68	Peak	Vertical

Horizontal



Vertical



Remark: 1. Test Level = Receiver Reading + Antenna Factor + Cable Loss- Preamplifier Factor

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

3. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

All frequencies within the "Restricted bands" have been evaluated to compliance. Section 15.205 Restricted bands of operation.

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

FCC Part 15, Subpart C Section 15.205 Restricted bands of operation.

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]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	10.5 - 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 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

8 Test Setup Photographs

Refer to the < TVW-3130 _Test Setup photos-FCC>.

9 EUT Constructional Details

Refer to the < TVW-3130 _External Photos-FCC > & < TVW-3130 _Internal Photos-FCC>.

--End of the Report--