



RF TEST REPORT

Report No.: SET2016-15530

Product Name: Vodafone Moblie WiFi

FCC ID: SRQ-R230

Model No. : MF980,R230

Applicant: ZTE Corporation

Address: ZTE Plaza, Keji Road South, Shenzhen, China

Dates of Testing: 08/20/2016 — 08/30/2016

Issued by: CCIC-SET

Lab Location: Electronic Testing Building, Shahe Road, Xili, Nanshan District,
Shenzhen, 518055, P. R. China

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Test Report

Product Name : Vodafone Moblie WiFi

Brand Name : ZTE

Trade Name : ZTE

Applicant : ZTE Corporation

Applicant Address : ZTE Plaza, Keji Road South, Shenzhen, China

Manufacturer : ZTE Corporation

Manufacturer Address : ZTE Plaza, Keji Road South, Shenzhen, China

Test Standards : 47 CFR Part 15 Subpart C: Radio Frequency Devices
ANSI C63.10 2013: American National Standard for
Testing Unlicensed Wireless Devices
KDB558074 D01 v03r05

Test Result : PASS

Tested by :

2016.08.01

Lu Lei, Test Engineer

Reviewed by :

2016.08.01

Zhu Qi, Senior EGINEER

Approved by :

2016.08.01

Wu Li'an, Manager

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Change History		
Issue	Date	Reason for change
1.0	2016.08.01	First edition

1. General Information

1.1. EUT Description

EUT Type	Vodafone Moblie WiFi
Hardware Version	dkhA
Software Version	EN_ZTE_MF980V1.0.0B02
EUT supports Radios application	GSM/GPRS/EDGE/WCDMA/HSPA//LTE WLAN2.4GHz 802.11b/g/n (HT20/40) WLAN5.0GHz 802.11a/n/ac
Frequency Range	802.11b/g/n-20MHz: 2.412GHz - 2.462GHz
Channel Number	802.11b/g/n-20MHz: 11 802.11n-40MHz: 7
Bit Rate of Transmitter	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n : up to 300 Mbps
Modulation Type	DSSS (802.11b), OFDM (802.11g/n)
Antenna Type	Internal Antenna
Antenna Gain	Antenna 0:1.5dBi Antenna 1:1.5dBi
Output Power (Max.)	802.11b: 15.4dBm 802.11g: 14.4dBm 802.11n(HT20): 15.8dBm 802.11n(HT40): 15.8dBm

Note1: The EUT is a LTE UFi, it contains 2 models, they are MF980 and R230. They have the same size, appearance and internal structure, and the only difference is the model number.

Note2: The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers for 5GHz WIFI, 2 completed transmitters and 2 receivers for 2.4GHz WIFI.

Frequency	Modulation Mode	TX / RX Function
2.4GHz	802.11b	1TX / 1RX
	802.11g	1TX / 1RX
	802.11n (HT20)	1TX / 1RX or 2TX / 2RX
	802.11n (HT40)	1TX / 1RX or 2TX / 2RX

1.2. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C (WiFi, 2.4GHz ISM band radiators) for the EUT FCC Certification:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart C	Radio Frequency Devices
2	ANSI C63.10 2013	American National Standard for Testing Unlicensed Wireless Devices
3	KDB Publication 6629911 D01 v02r01	Emission Testing of Transmitters with Multiple Outputs in the same Band(e.g., MIMO, Smart Antenna, etc)
4	ANSI C63.4-2014	American National Standard for Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Test detailed items/section required by FCC rules and results are as below:

No.	Section in CFR 47	Description	Result
1	15.203	Antenna Requirement	PASS
2	15.247(b)	Peak Output Power	PASS
3	15.247(a)	6dB Bandwidth	PASS
4	15.247(d)	Conducted Band Edges and Spurious Emission	PASS
5	15.247(e)	Power spectral density (PSD)	PASS
6	15.207	Conducted Emission	PASS
7	15.209 15.247(d)	Radiated Band Edges and Spurious Emission	PASS

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10-2013.

These RF tests were performed according to the method of measurements prescribed in KDB558074 D01 v03r05.

1.3. Test environment and mode

Operating Environment	
Temperature	24℃
Humidity	57 % RH
Atmospheric Pressure	1010 mbar
Test mode:	
Continuously transmitting mode	Keeps the EUT in 100% duty cycle transmitting with modulation in SISO and MIMO mode, duty cycle factor is not required.

There are two bandwidth systems:

For 20MHz bandwidth systems, use Channel 1~ Channel 11

For 40MHz bandwidth systems, use Channel 3~ Channel 9

Channel No.	Frequency	Channel No.	Frequency	Channel No.	Frequency
1	2412MHz	5	2432MHz	9	2452MHz
2	2417MHz	6	2437MHz	10	2457MHz
3	2422MHz	7	2442MHz	11	2462MHz
4	2427MHz	8	2447MHz		

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Test Items	Mode	Data Rate	Channel
Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Conducted and Spurious Emission Radiated and Spurious Emission	11b/DSSS	1 Mbps	1/6/11
	11g/OFDM	6 Mbps	1/6/11
	11n(20MHz)/OFDM	MCS 0	1/6/11
	11n(40MHz)/OFDM	MCS 0	3/6/9
Band Edge	11b/DSSS	1 Mbps	1/11
	11g/OFDM	6 Mbps	1/11
	11n(20MHz)/OFDM	MCS 0	1/11
	11n(40MHz)/OFDM	MCS 0	3/6/9

1.4. Laboratory Facilities

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories

(identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

FCC-Registration No.: 317478

Shenzhen Huatongwei International Inspection 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 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

IC-Registration No.: 5377B

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

2. 47 CFR Part 15C Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

And according to FCC 47 CFR Section 15.247(c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

2.1.2. Antenna Information

Antenna Category: Internal antenna

An Internal antenna was soldered to the antenna port of EUT via an adaptor cable, can't be removed.

Antenna System	Cyclic Delay Diversity(CDD)
	2 antennas are correlated with each other

2.1.3. Antenna Gain

EUT	Antenna	Ant. Type	Gain(dBi)
Vodafone Moblie WiFi	0	Internal	1.5
Vodafone Moblie WiFi	1	Internal	1.5
Vodafone Moblie WiFi	0+1	Internal	4.5

Note: 1. for 802.11n20/n40 mode, antenna 0, 1 can transmit/receive simultaneously (MIMO mode), for 802.11b/g, both antennas 0, 1 can transmit/receive at single mode (SISO mode)

2. Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi

2.1.4. Result: comply

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Peak Output Power

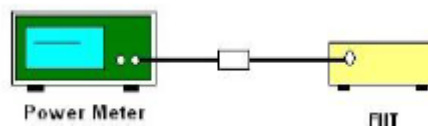
2.2.1. Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Setup



2.2.4. Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 v03r05.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

2.2.5. Test Result

Test Mode	Channel	Frequency (MHz)	Output Power(dBm)		Limits (dBm)	Result	
			Ant. 0	Ant. 1			
802.11b	1	2412	14.6	15.4	30	PASS	
	6	2437	13.8	14.9	30	PASS	
	11	2462	13.2	14.7	30	PASS	
Test Mode	Channel	Frequency (MHz)	Output Power(dBm)		Limits (dBm)	Result	
			Ant. 0	Ant. 1			
802.11g	1	2412	13.5	14.4	30	PASS	
	6	2437	12.7	13.8	30	PASS	
	11	2462	12.2	13.7	30	PASS	
Test Mode	Channel	Frequency (MHz)	Output Power(dBm)			Limits (dBm)	Result
			Ant. 0	Ant. 1	Ant. 0+1		
802.11n20	1	2412	12.3	13.3	15.8	30	PASS
	6	2437	11.4	12.7	15.1	30	PASS
	11	2462	11.2	12.5	14.9	30	PASS
Test Mode	Channel	Frequency (MHz)	Output Power(dBm)			Limits (dBm)	Result
			Ant. 0	Ant. 1	Ant. 0+1		
802.11n40	3	2422	11.9	13.5	15.8	30	PASS
	6	2437	11.2	13.1	15.3	30	PASS
	9	2452	11.2	13.0	15.2	30	PASS

Note: All data rates are testing, but the worse case data rate was record in the report.

2.3. 6dB Bandwidth

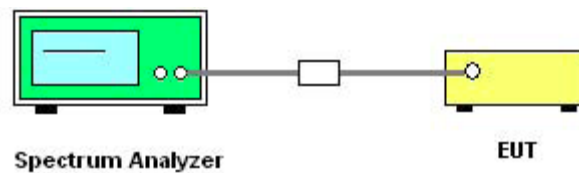
2.3.1. Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Setup



2.3.4. Test Procedures

1. The testing follows FCC KDB558074 D01 v03r05.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz.

Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz.

5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 30 kHz and set the Video bandwidth (VBW) = 100 kHz.

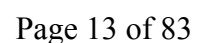
6. Measure and record the results in the test report.

2.3.5. Test Results of 6dB Bandwidth

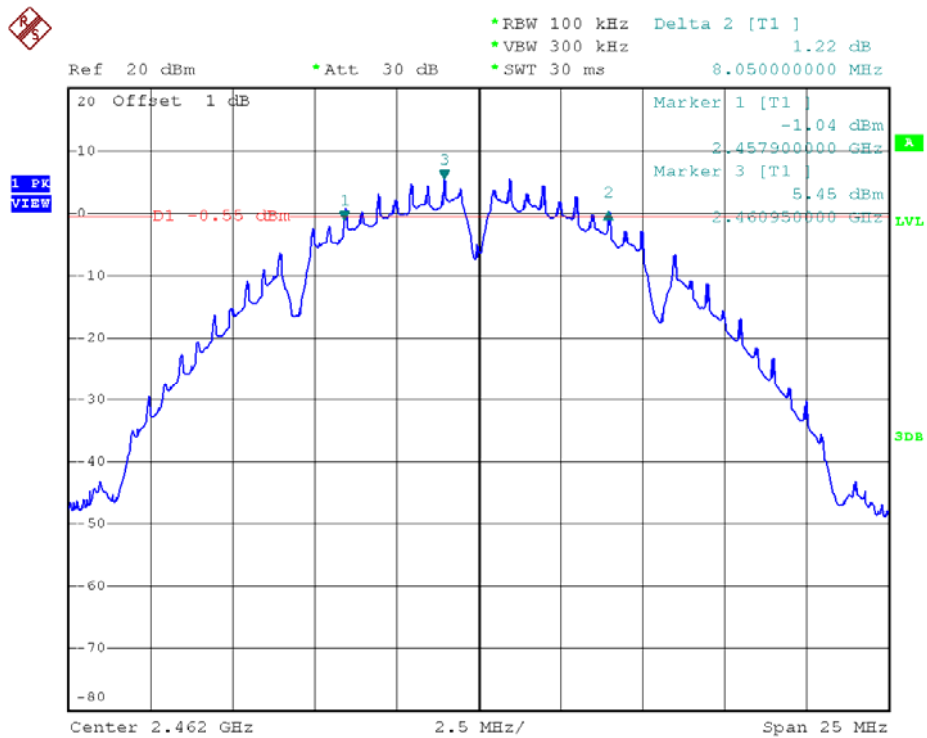
Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Limits (MHz)	Result
			Ant.0	Ant.1		
802.11b	1	2412	7.53	8.00	≥0.5	PASS
	6	2437	8.10	8.10		PASS
	11	2462	8.05	8.10		PASS
802.11g	1	2412	15.90	15.55		PASS
	6	2437	16.20	16.35		PASS
	11	2462	15.95	16.35		PASS
802.11n20	1	2412	16.70	16.35		PASS
	6	2437	16.80	17.30		PASS
	11	2462	16.85	17.10		PASS
802.11n40	3	2422	35.74	35.46		PASS
	6	2437	35.76	35.93		PASS
	9	2452	35.07	35.51		PASS



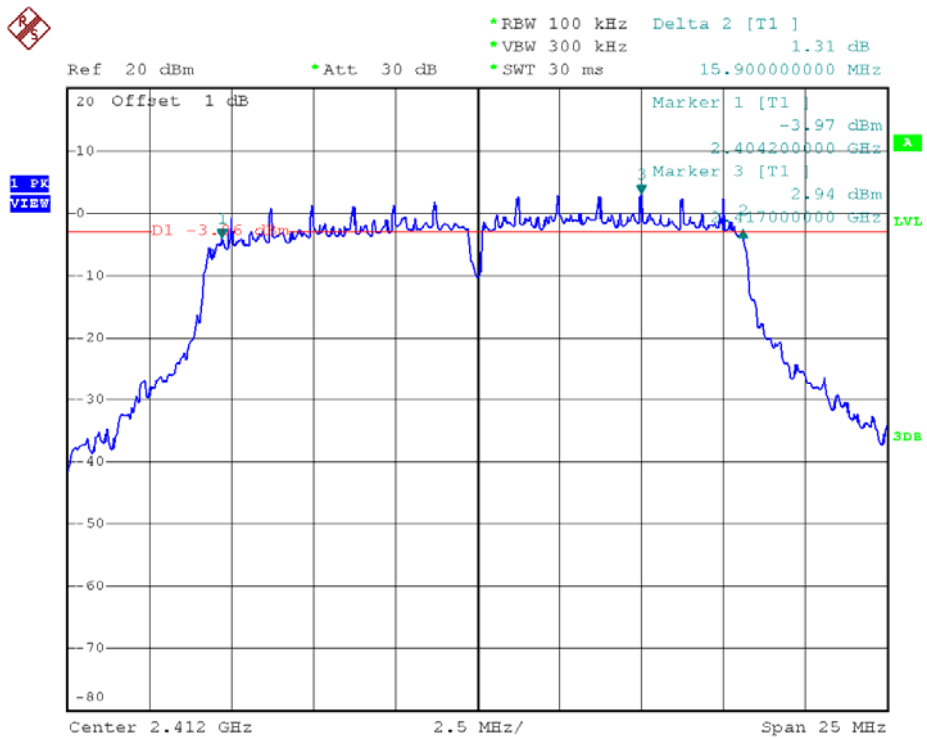
Ant.0 - 802.11b - 6 dB Bandwidth Plot on channel 1



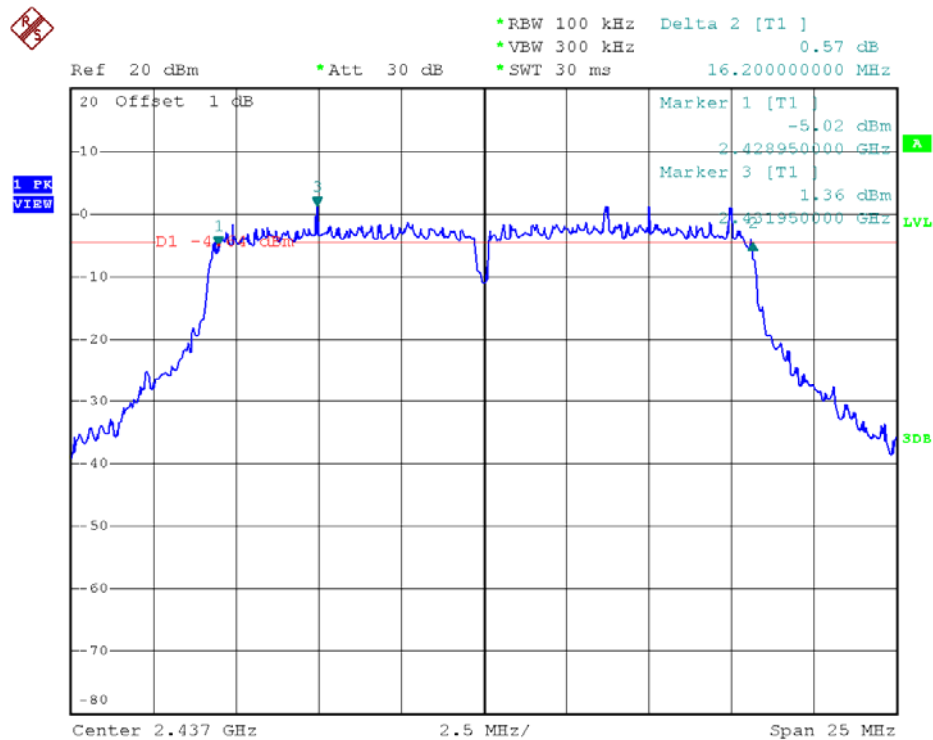
Ant.0 - 802.11b - 6 dB Bandwidth Plot on channel 11



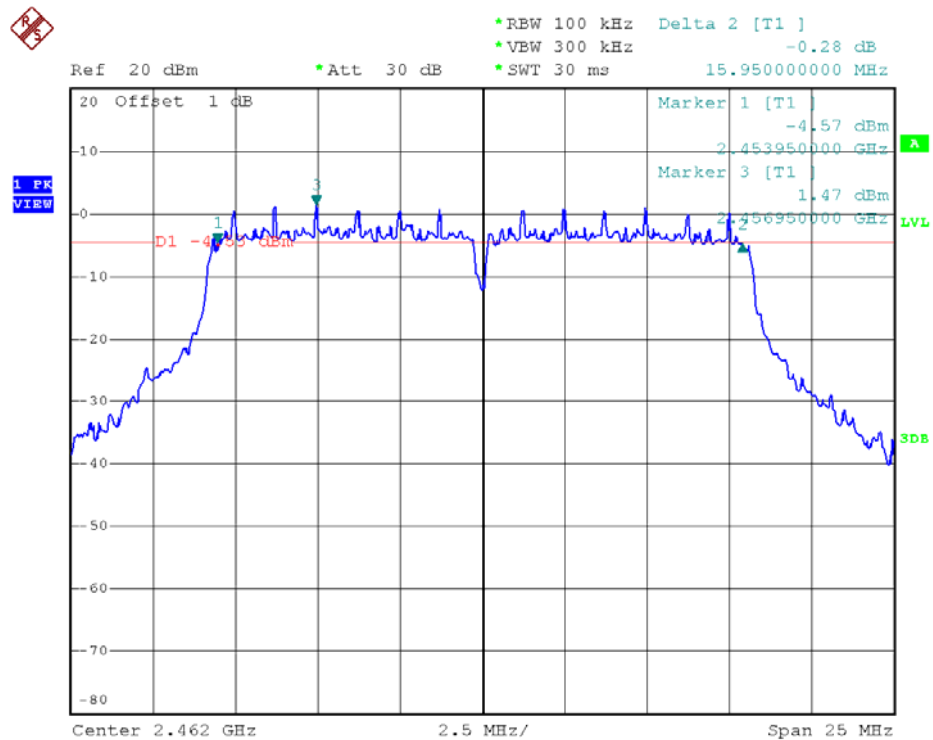
Ant.0 - 802.11g - 6 dB Bandwidth Plot on channel 1



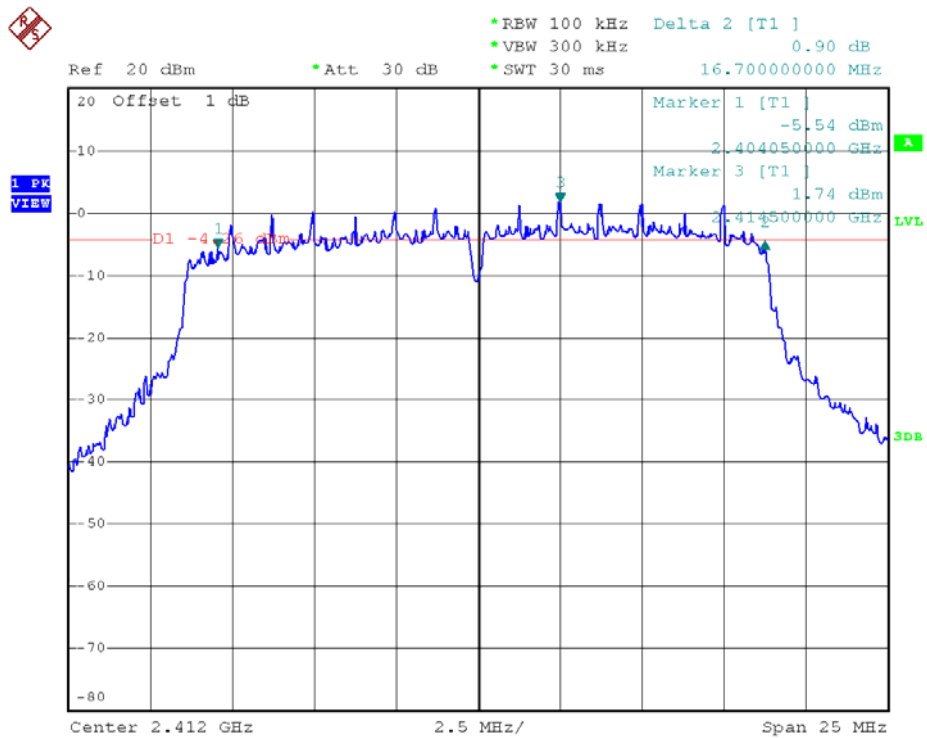
Ant.0 - 802.11g - 6 dB Bandwidth Plot on channel 6



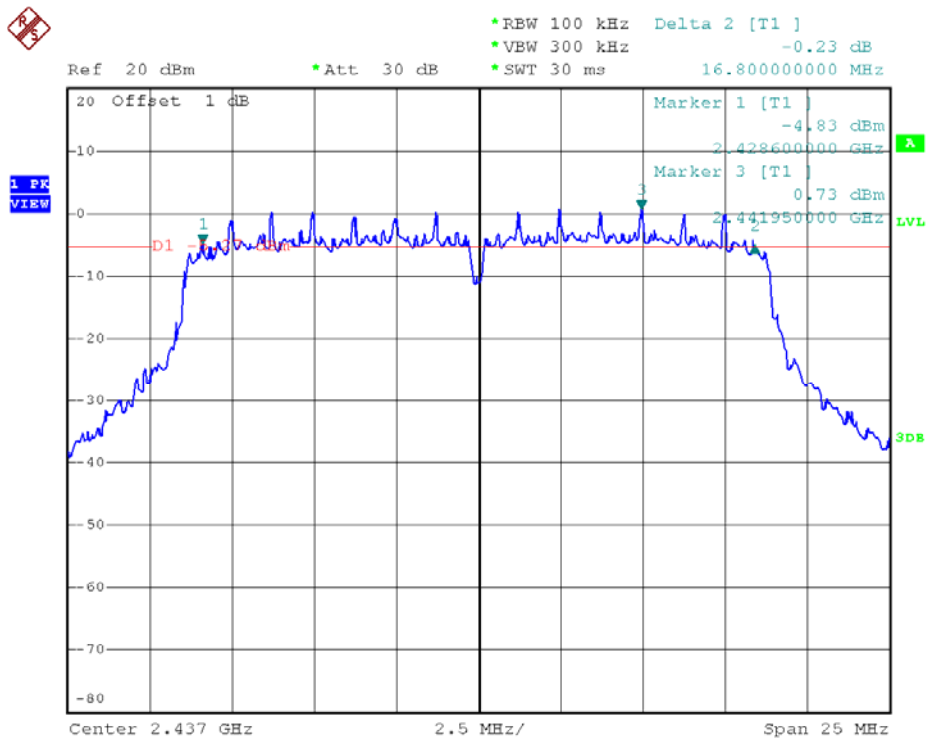
Ant.0 - 802.11g - 6 dB Bandwidth Plot on channel 11



Ant.0 - 802.11n20 - 6 dB Bandwidth Plot on channel 1



Ant.0 - 802.11n20 - 6 dB Bandwidth Plot on channel 6





1 PK VIEW

Ref 20 dBm * Att 30 dB * RBW 100 kHz Delta 2 [T1] 0.88 dB * VEW 300 kHz * SWT 30 ms 16.850000000 MHz

20 Offset 1 dB

Marker 1 [T1] -6.21 dBm 2.453500000 GHz

Marker 3 [T1] -6.24 dBm 2.455700000 GHz

Center 2.462 GHz 2.5 MHz/ Span 25 MHz

Ref 20 dBm *Att 30 dB *RBW 100 kHz Delta 2 [T1] 0.24 dB
 *VBW 300 kHz *SWT 30 ms 35.740000000 MHz

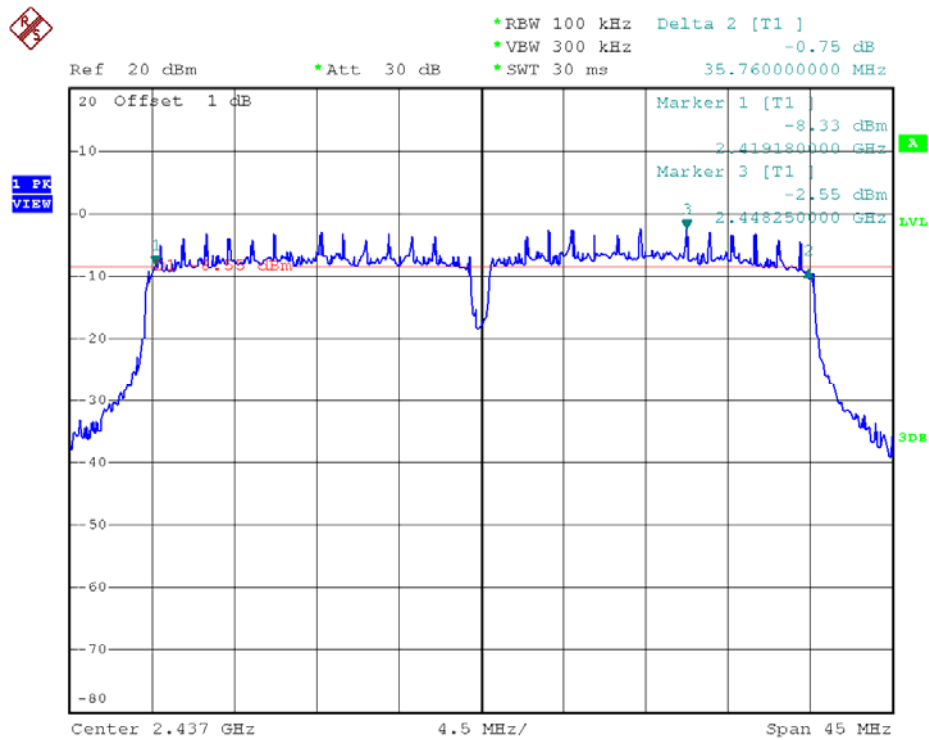
20 Offset 1 dB

Marker 1 [T1] -7.85 dBm
 2.404350000 GHz
 Marker 3 [T1] -1.66 dBm
 2.416900000 GHz

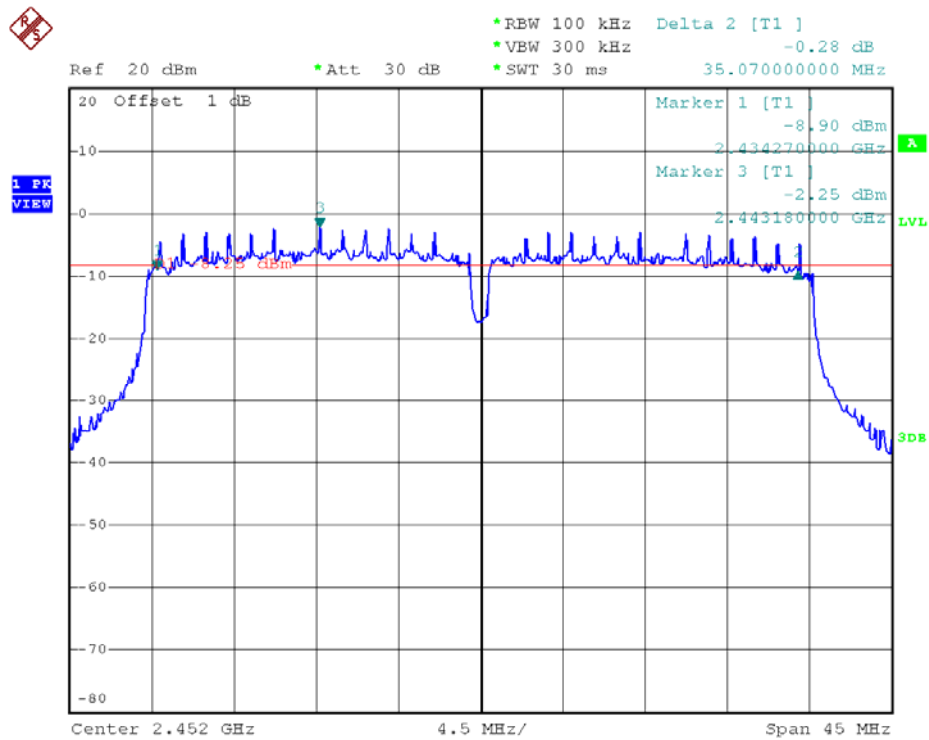
1 PK VIEW

Center 2.422 GHz 4.5 MHz/ Span 45 MHz

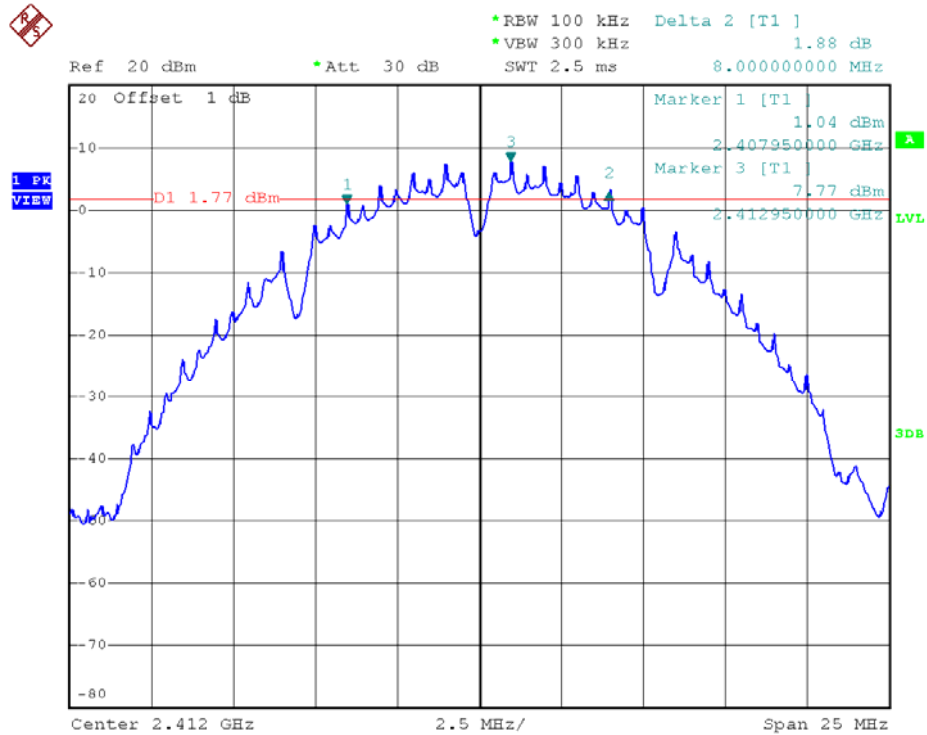
Ant.0 - 802.11n40 - 6 dB Bandwidth Plot on channel 6



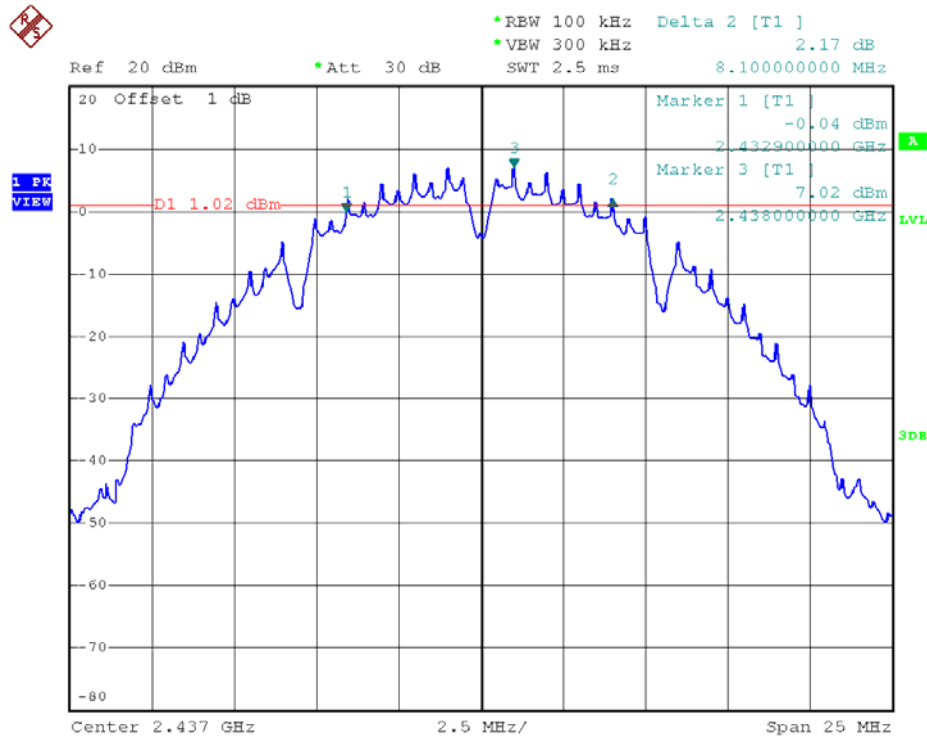
Ant.0 - 802.11n40 - 6 dB Bandwidth Plot on channel 9



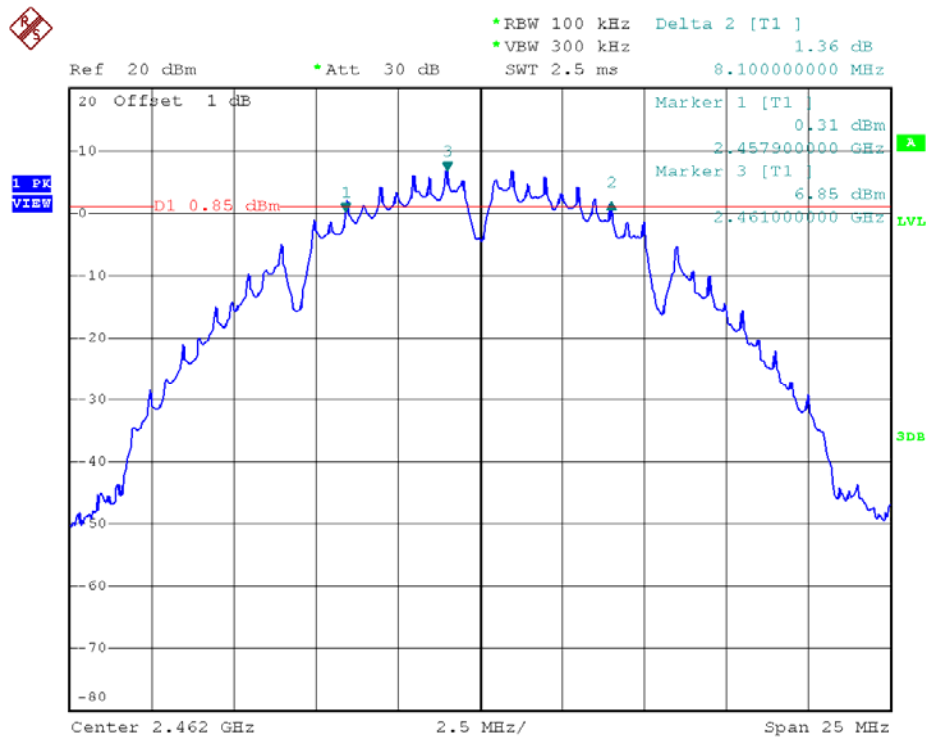
Ant.1 - 802.11b - 6 dB Bandwidth Plot on channel 1



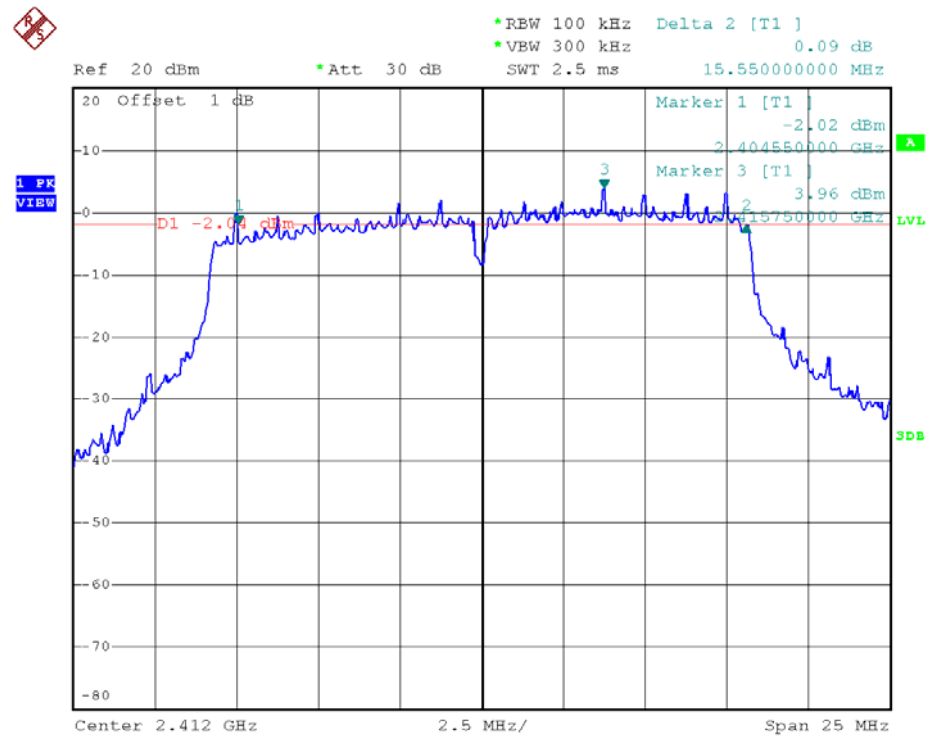
Ant.1 - 802.11b - 6 dB Bandwidth Plot on channel 6



Ant.1 - 802.11b - 6 dB Bandwidth Plot on channel 11



Ant.1 - 802.11g - 6 dB Bandwidth Plot on channel 1





1 PK VIEW

Ref 20 dBm *Att 30 dB SWT 2.5 ms Delta 2 [T1] 1.35 dB

20 Offset 1 dB

Marker 1 [T1] -4.53 dBm 2.429750000 GHz

Marker 3 [T1] -2.60 dBm 2.431950000 GHz

D1 -4.53 dBm

Center 2.437 GHz 2.5 MHz/ Span 25 MHz

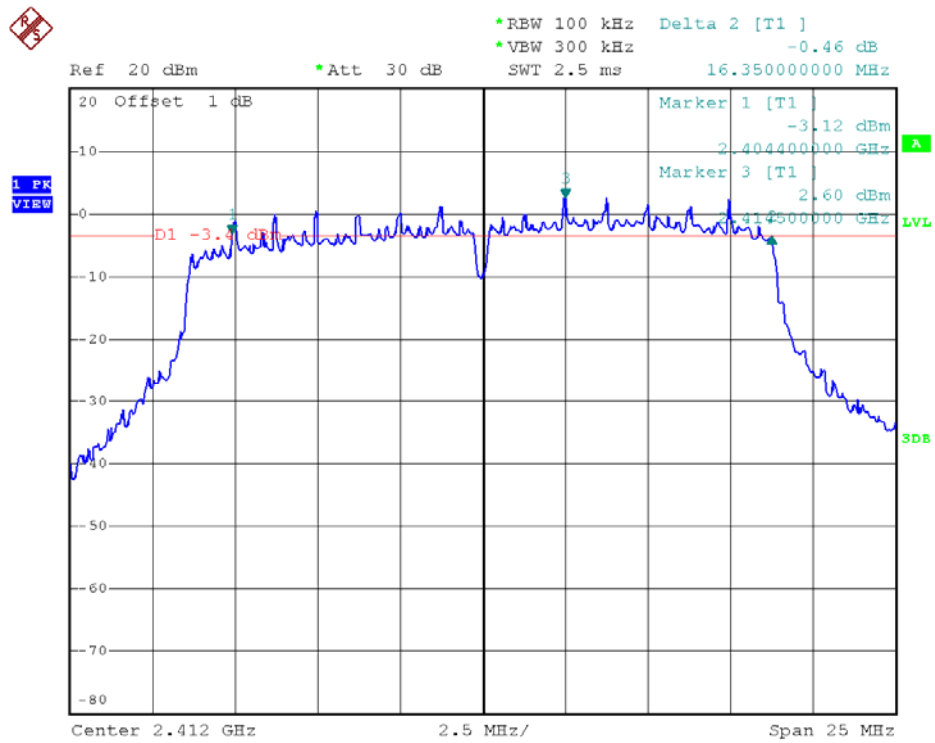
*RBW 100 kHz Delta 2 [T1]
 *VBW 300 kHz 0.99 dB
 Ref 20 dBm *Att 30 dB SWT 2.5 ms 16.350000000 MHz

20 Offset 1 dB
 Marker 1 [T1] -4.74 dBm
 2.453750000 GHz
 Marker 3 [T1] 2.27 dBm
 2.465750000 GHz

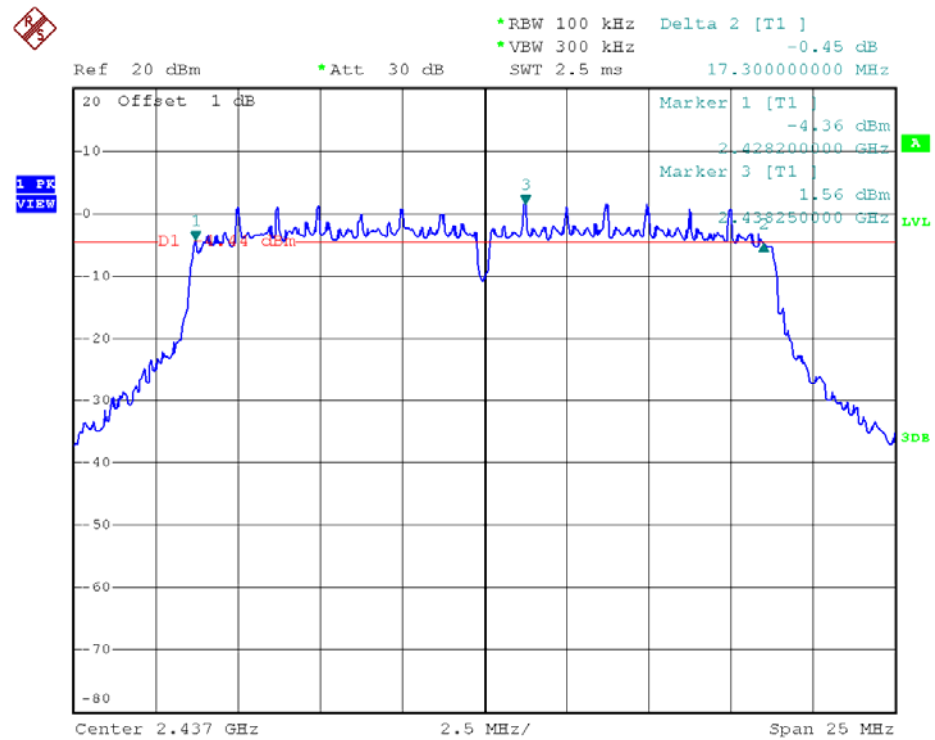
1 PK VIEW
 D1 -4.74 dBm
 3
 3 dB

Center 2.462 GHz 2.5 MHz/ Span 25 MHz

Ant.1 - 802.11n20 - 6 dB Bandwidth Plot on channel 1



Ant.1 - 802.11n20 - 6 dB Bandwidth Plot on channel 6





Ref 20 dBm *Att 30 dB SWT 2.5 ms 17.100000000 MHz

20 Offset 1 dB

Marker 1 [T1] -4.88 dBm 2.453250000 GHz

Marker 3 [T1] 1.39 dBm 2.456950000 GHz

1 PK VIEW

D1 3dB

Center 2.462 GHz 2.5 MHz/ Span 25 MHz

Ref 20 dBm *Att 30 dB SWT 5 ms 35.46000000 MHz

20 Offset 1 dB

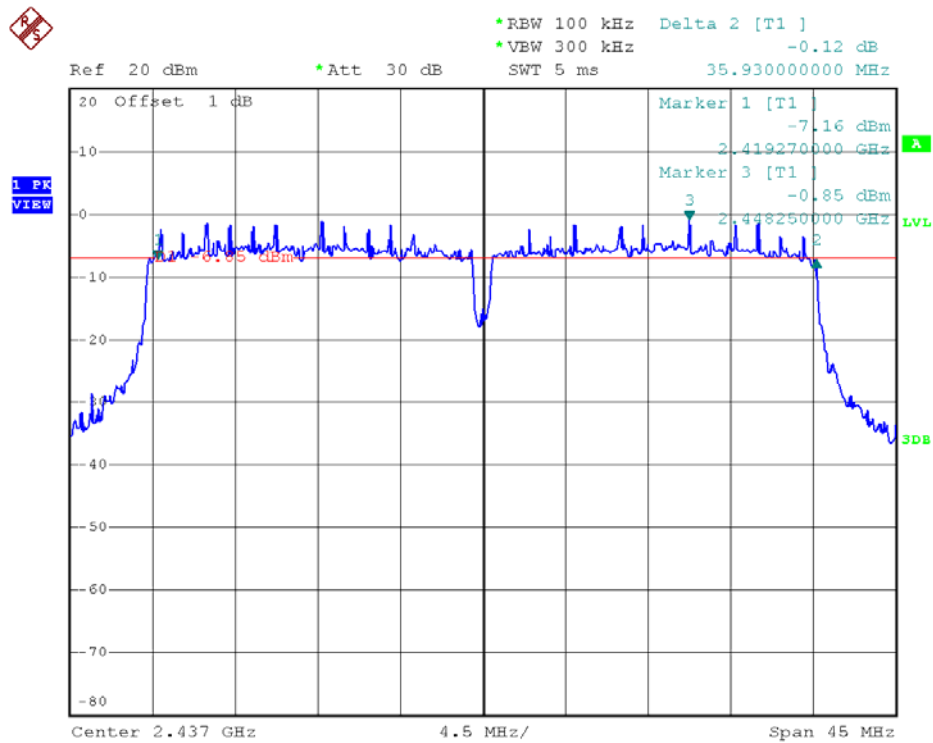
Marker 1 [T1] -7.79 dBm 2.404350000 GHz

Marker 3 [T1] -0.24 dBm 2.416900000 GHz

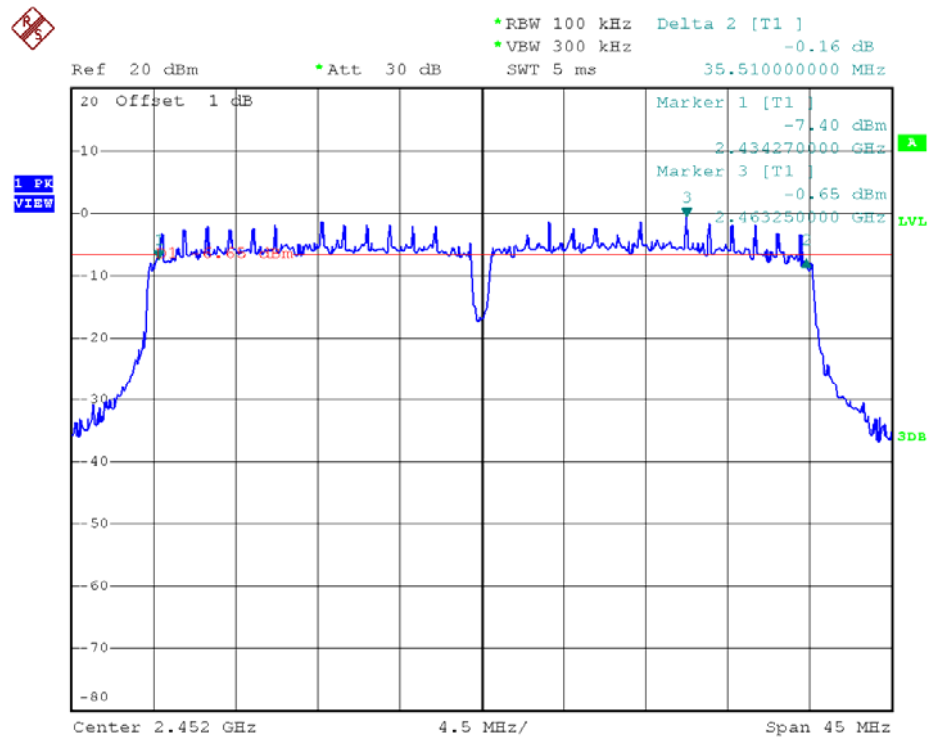
1 PK VIEW

Center 2.422 GHz 4.5 MHz/ Span 45 MHz

Ant.1 - 802.11n40 - 6 dB Bandwidth Plot on channel 6



Ant.1 - 802.11n40 - 6 dB Bandwidth Plot on channel 9



2.4. Conducted Band Edges and Spurious Emissions

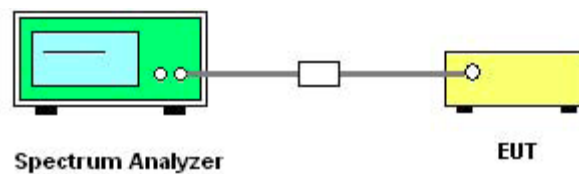
2.4.1. Limit of Conducted Band Edges and Spurious Emissions

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

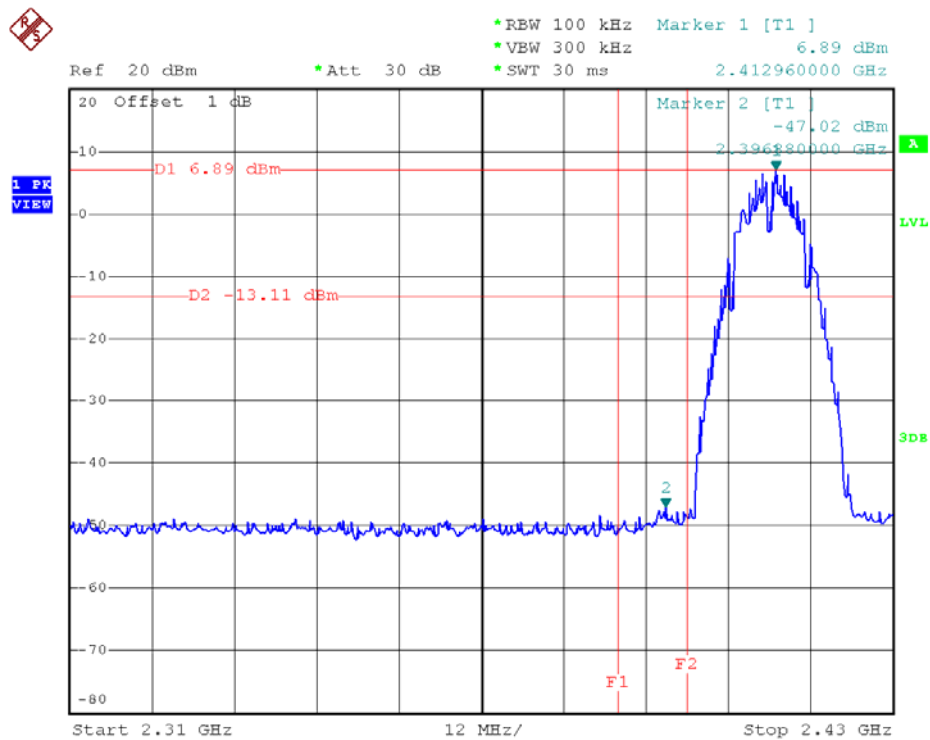
2.4.3. Test Setup



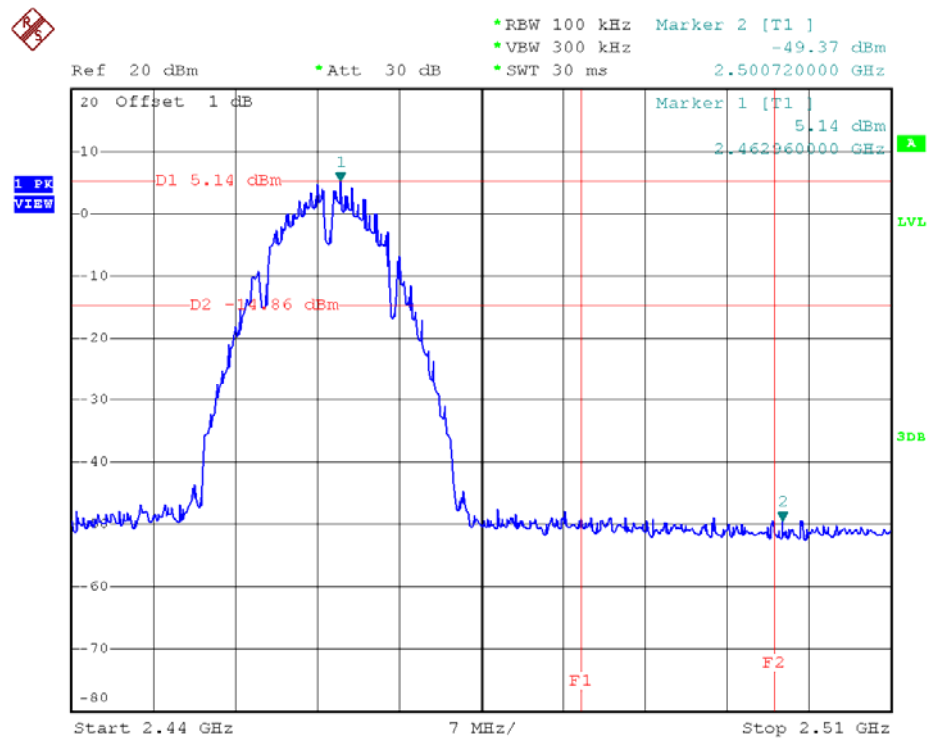
2.4.4. Test Procedure

1. The testing follows FCC KDB558074 D01 v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

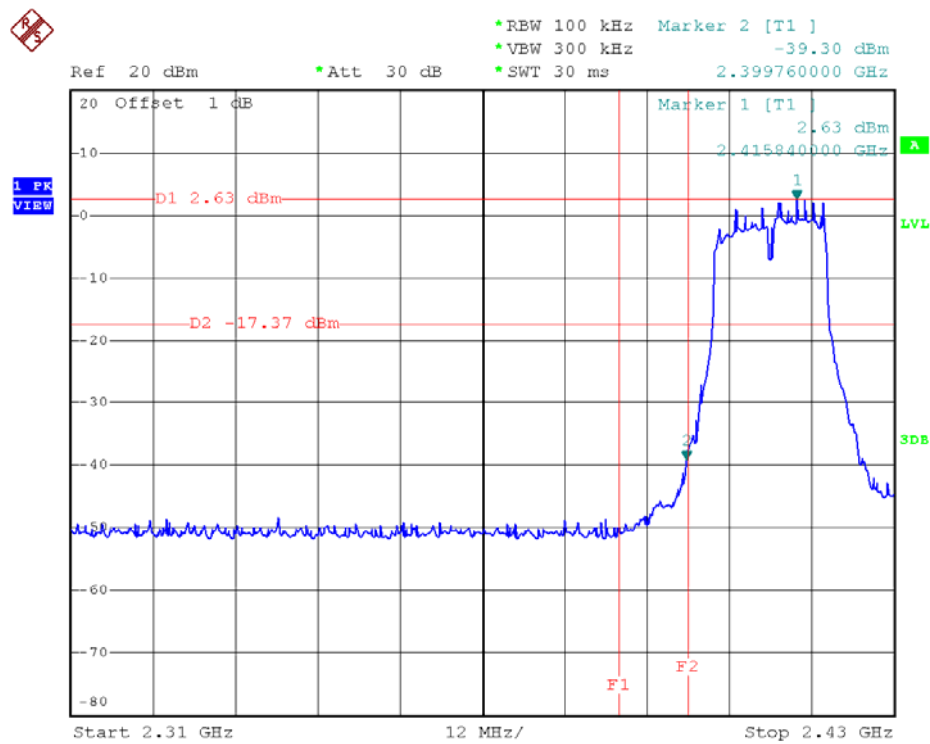
2.4.5. Test Results of Conducted Band Edges



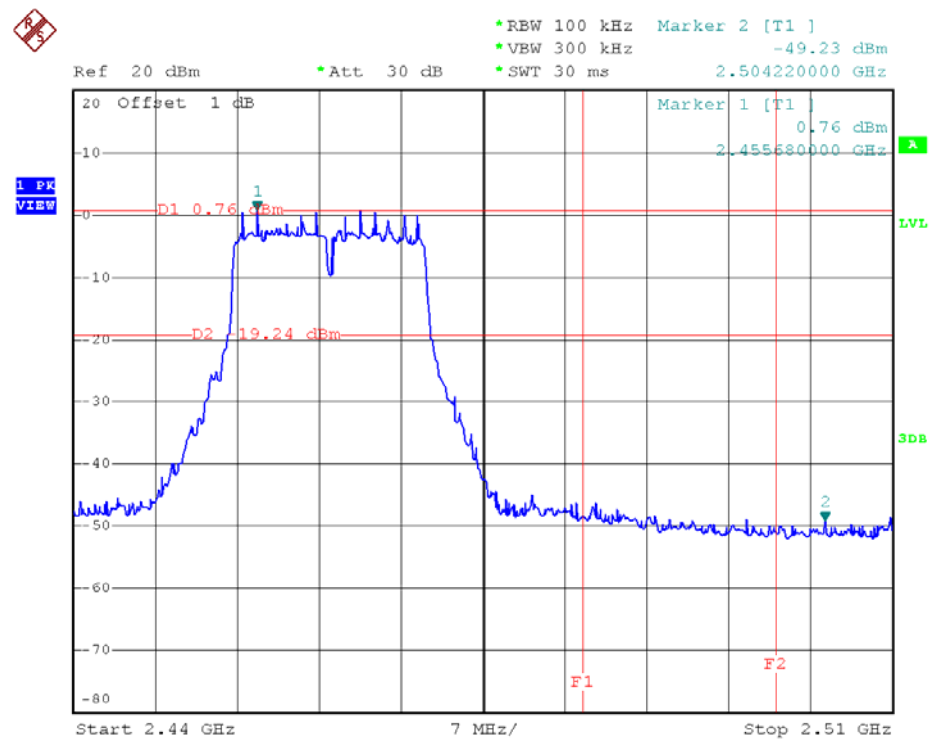
Antenna 0 - 802.11b - Low Band Edge Plot on Channel 1



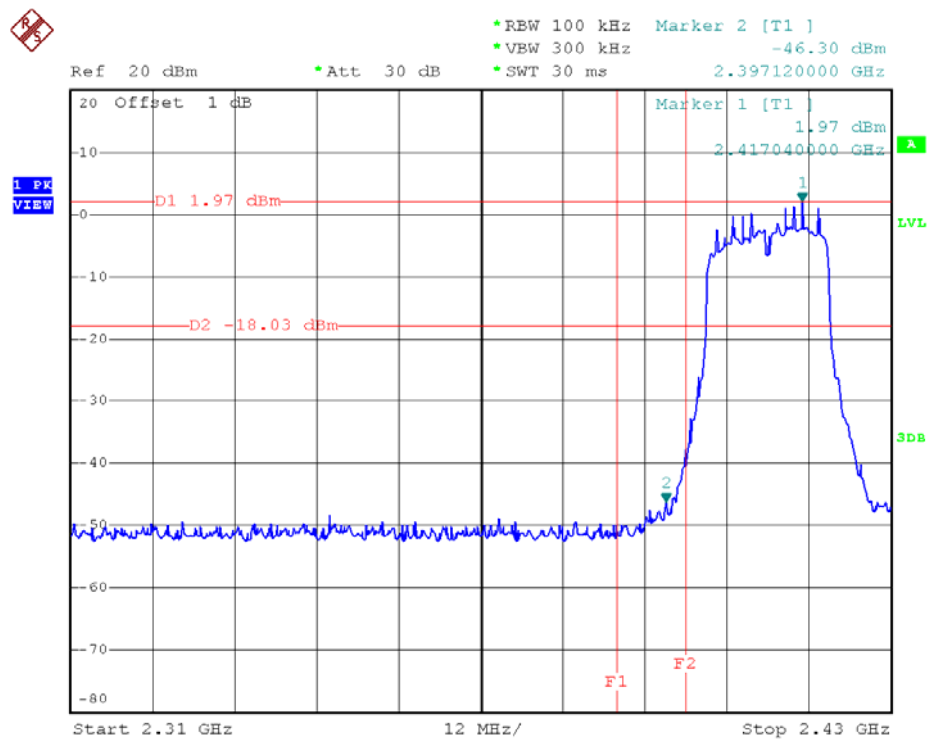
Antenna 0 - 802.11b - High Band Edge Plot on Channel 11



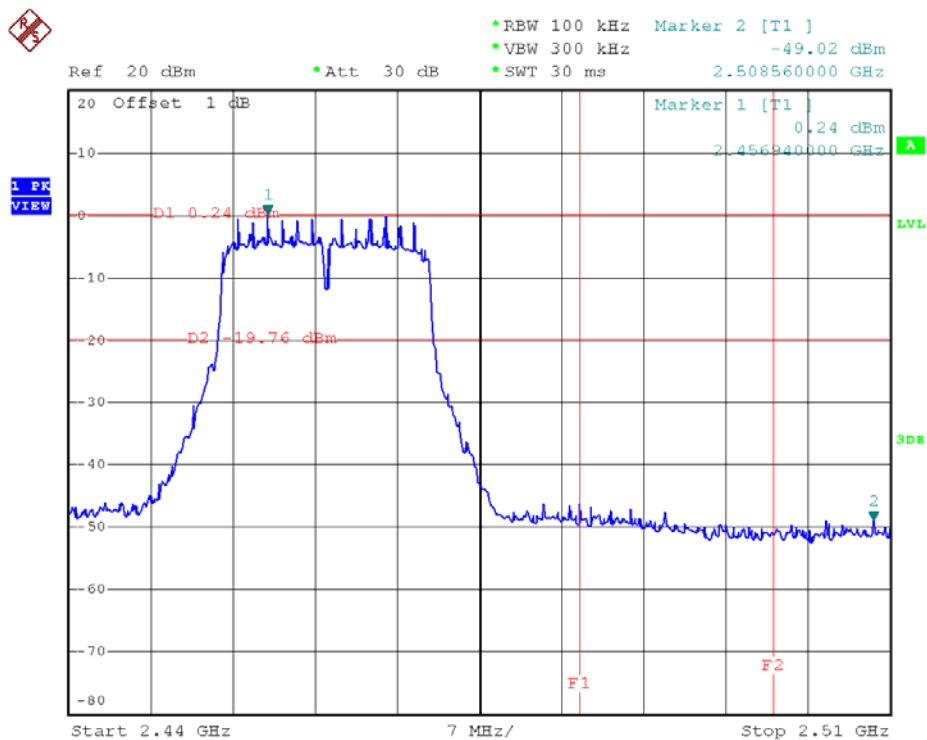
Antenna 0 - 802.11g - Low Band Edge Plot on Channel 1



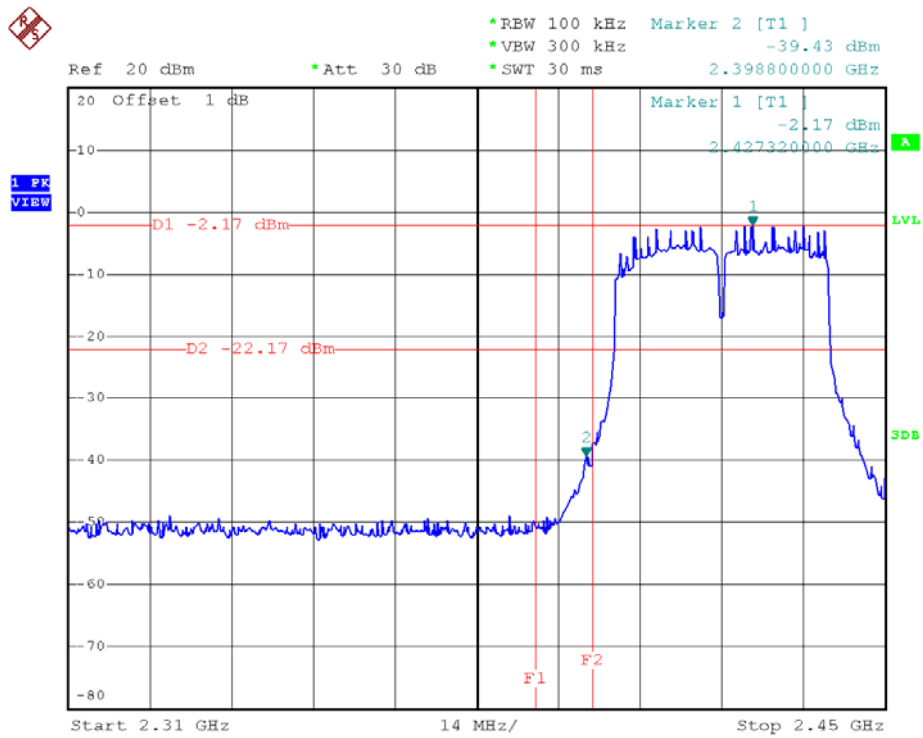
Antenna 0 - 802.11g - High Band Edge Plot on Channel 11



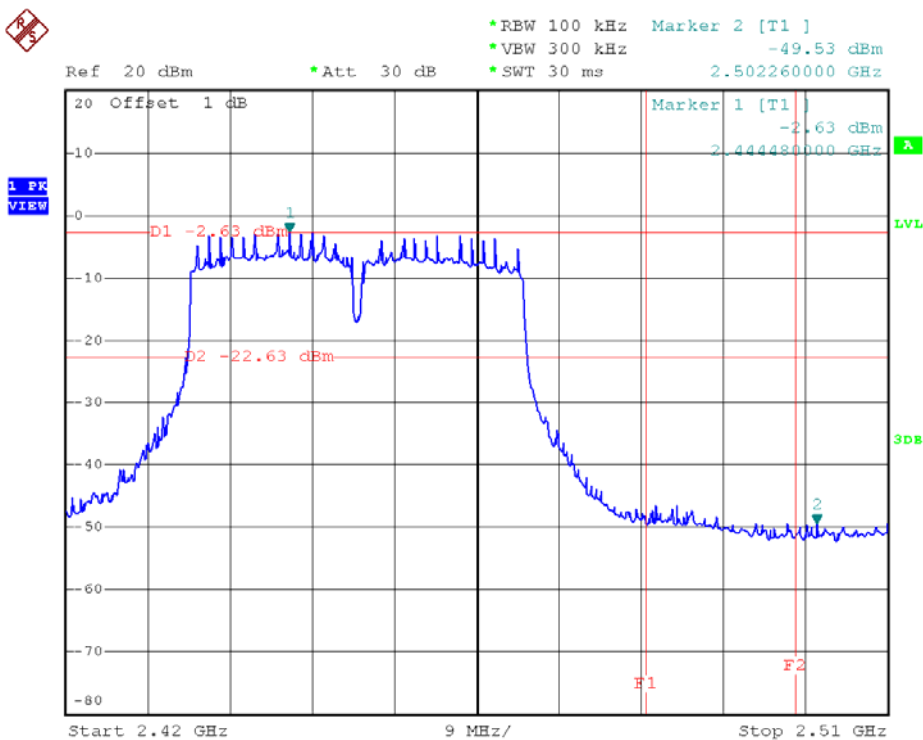
Antenna 0 - 802.11n20 - Low Band Edge Plot on Channel 1



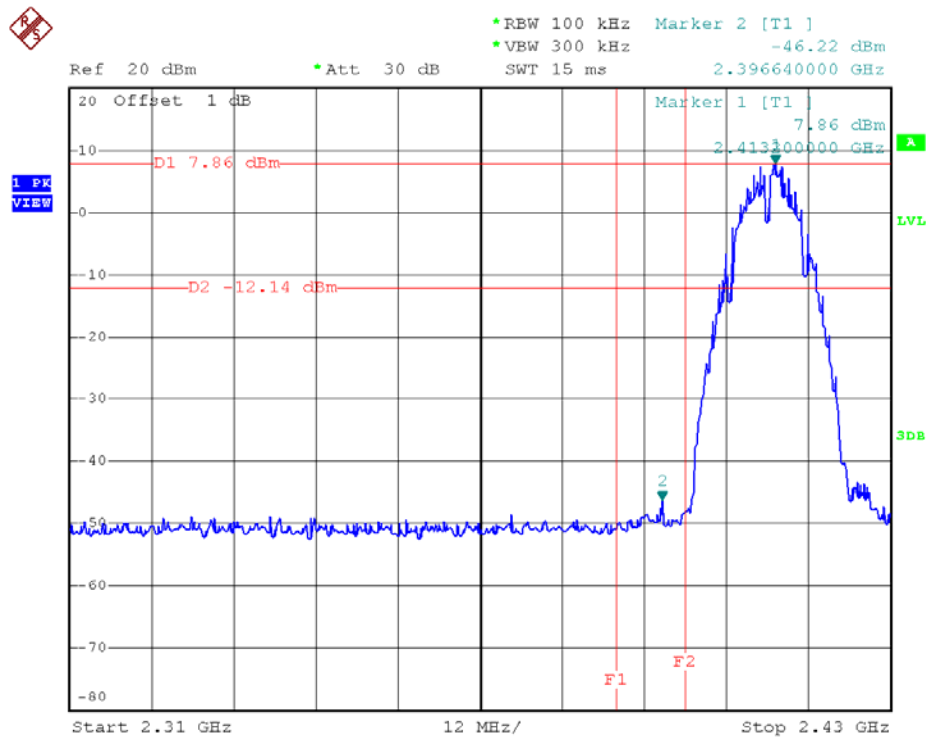
Antenna 0 - 802.11n20 - High Band Edge Plot on Channel 11



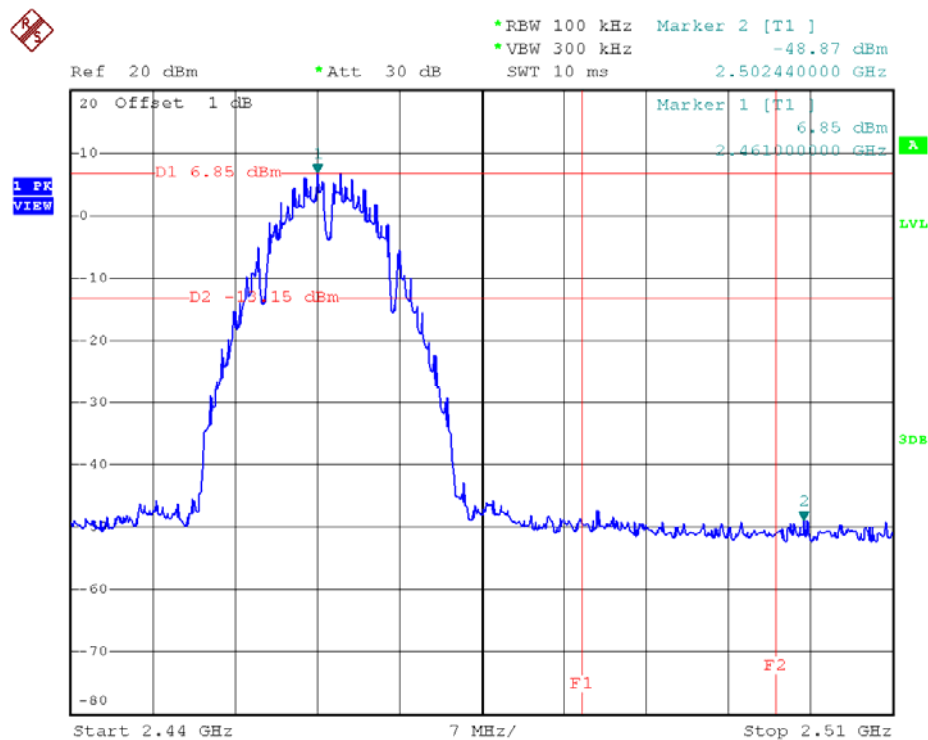
Antenna 0 - 802.11n40 - Low Band Edge Plot on Channel 3



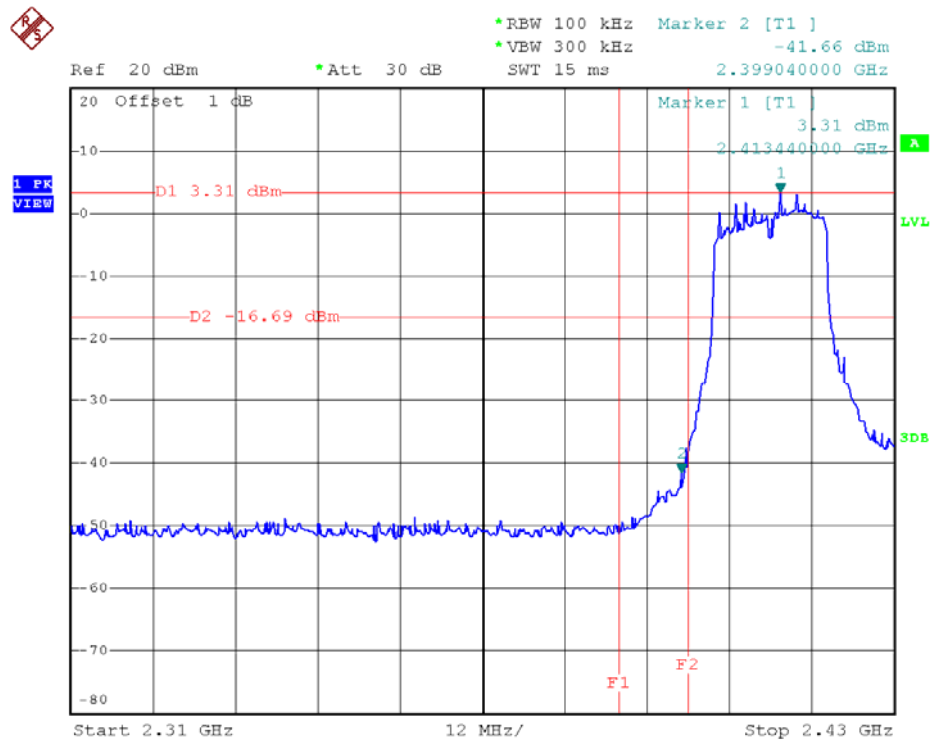
Antenna 0 - 802.11n40 - High Band Edge Plot on Channel 9



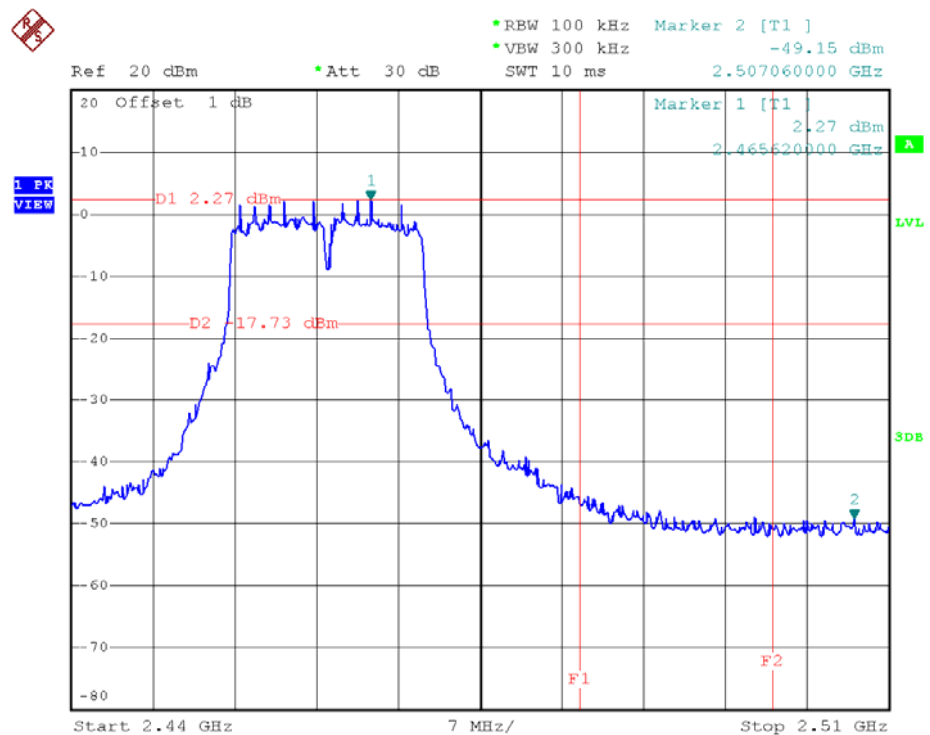
Antenna 1 - 802.11b - Low Band Edge Plot on Channel 1



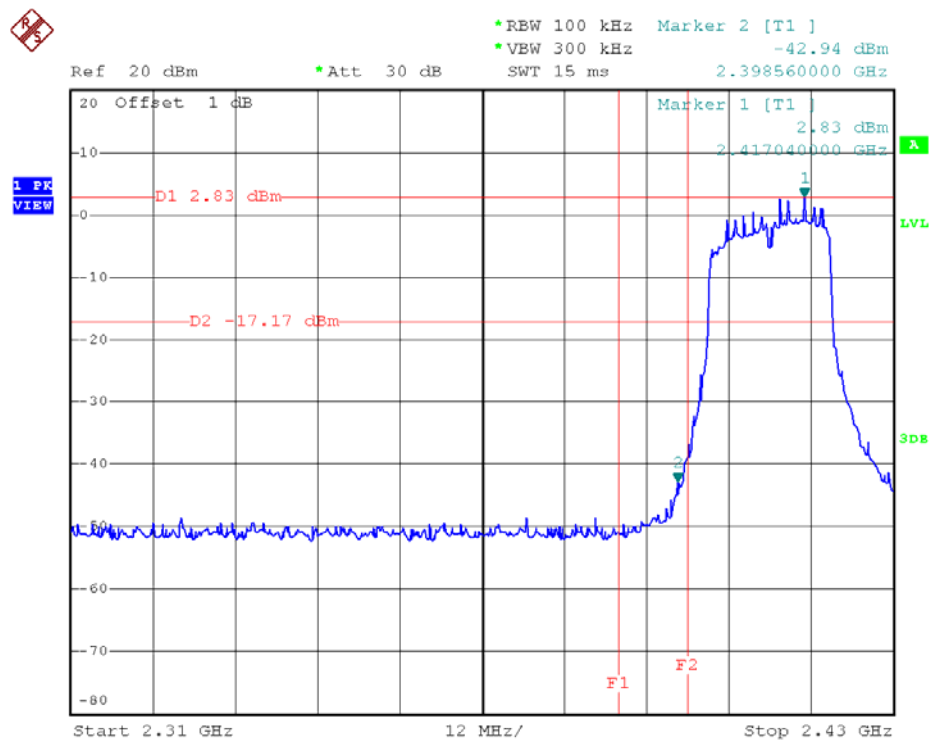
Antenna 1 - 802.11b - High Band Edge Plot on Channel 11



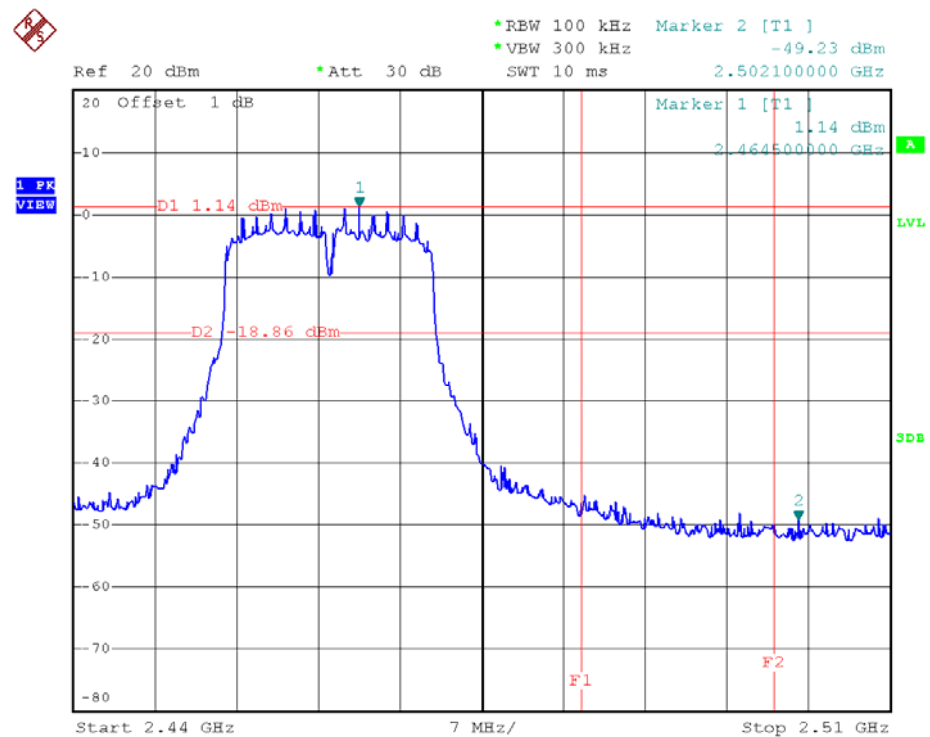
Antenna 1 - 802.11g - Low Band Edge Plot on Channel 1



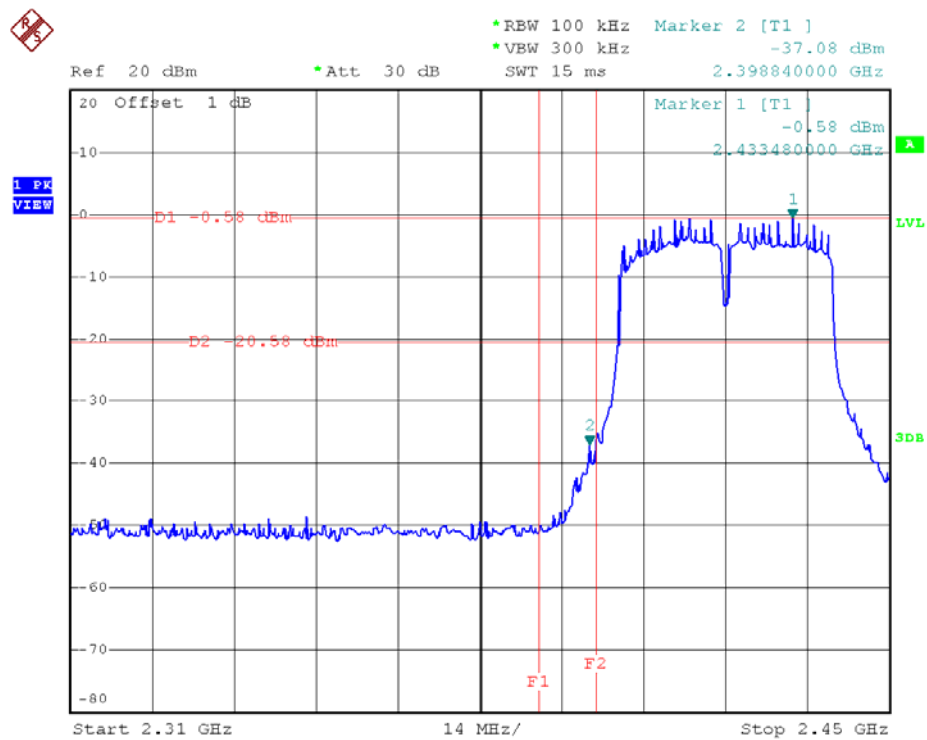
Antenna 1 - 802.11g - High Band Edge Plot on Channel 11



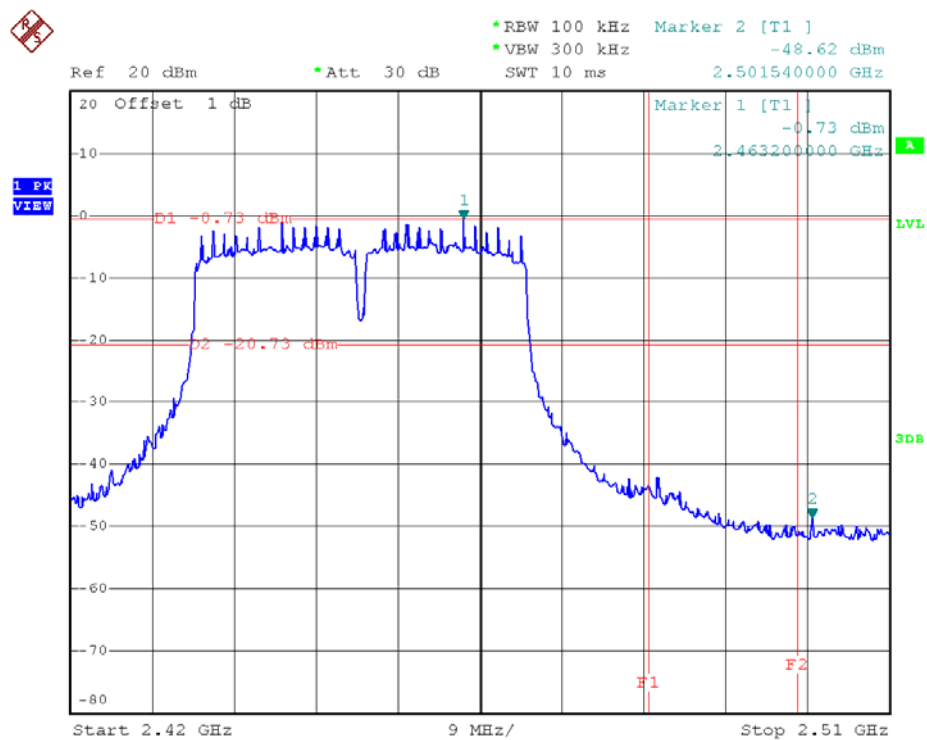
Antenna 1 - 802.11n20 - Low Band Edge Plot on Channel 1



Antenna 1 - 802.11n20 - High Band Edge Plot on Channel 11



Antenna 1 - 802.11n40 - Low Band Edge Plot on Channel 3

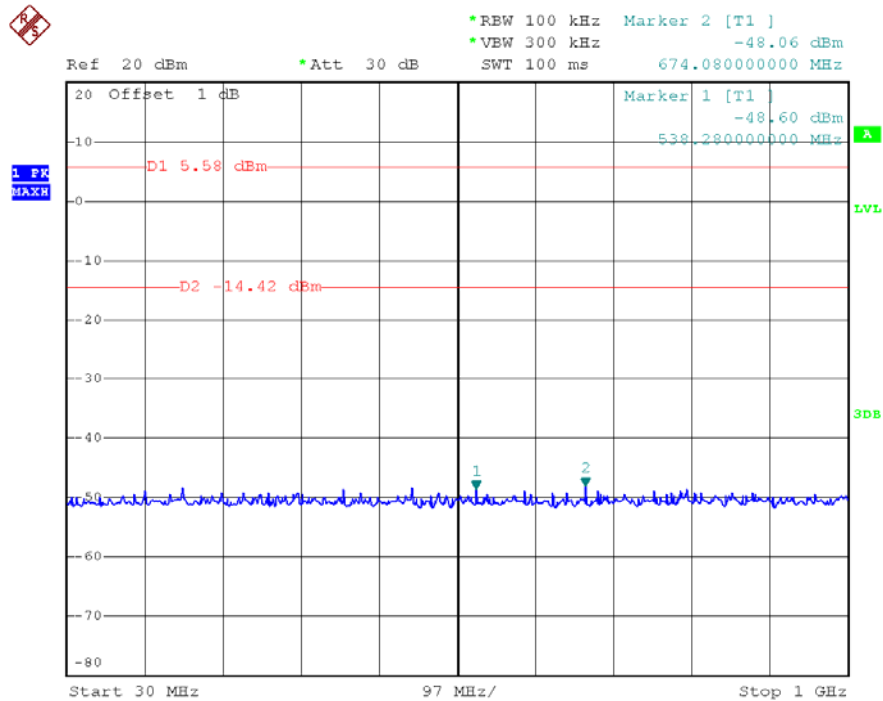


Antenna 1 - 802.11n40 - High Band Edge Plot on Channel 9

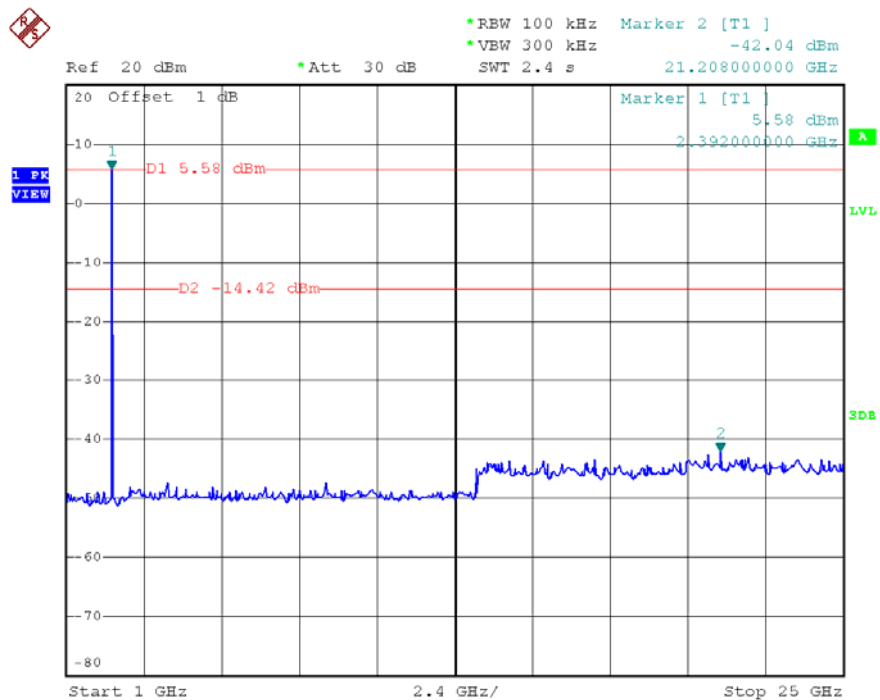
2.4.6. Test Result of Conducted Spurious Emission

NOTE: All test modes of the Conducted Spurious Emission were only verified the worst cases, only the worse data were reported.

802.11b - Conducted Spurious Emission Plot on channel 1

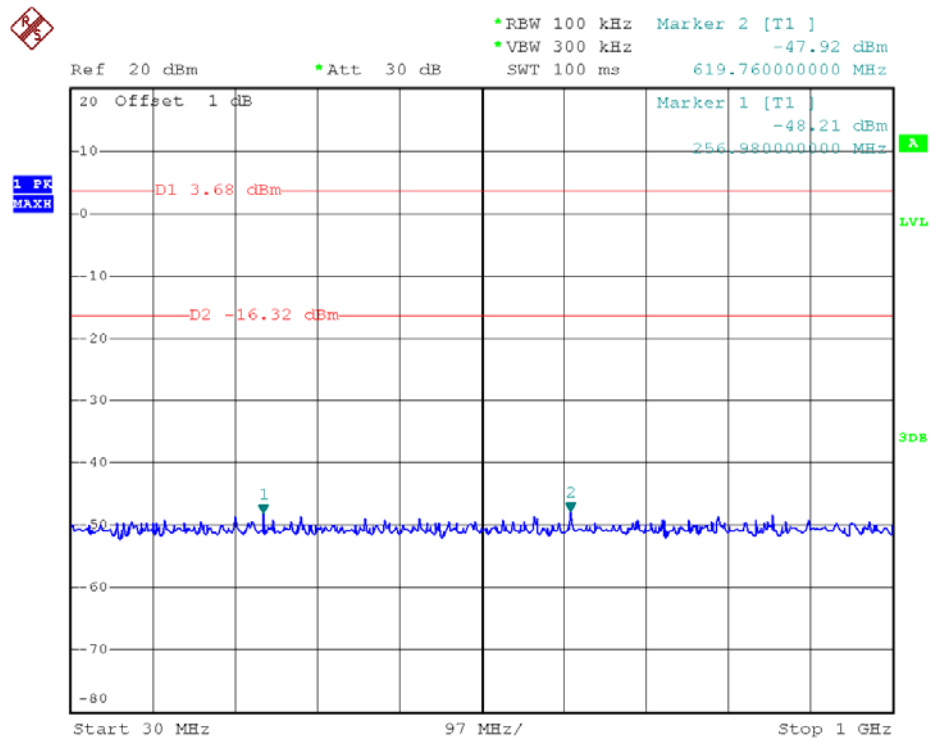


Channel = 1, 30MHz to 1GHz

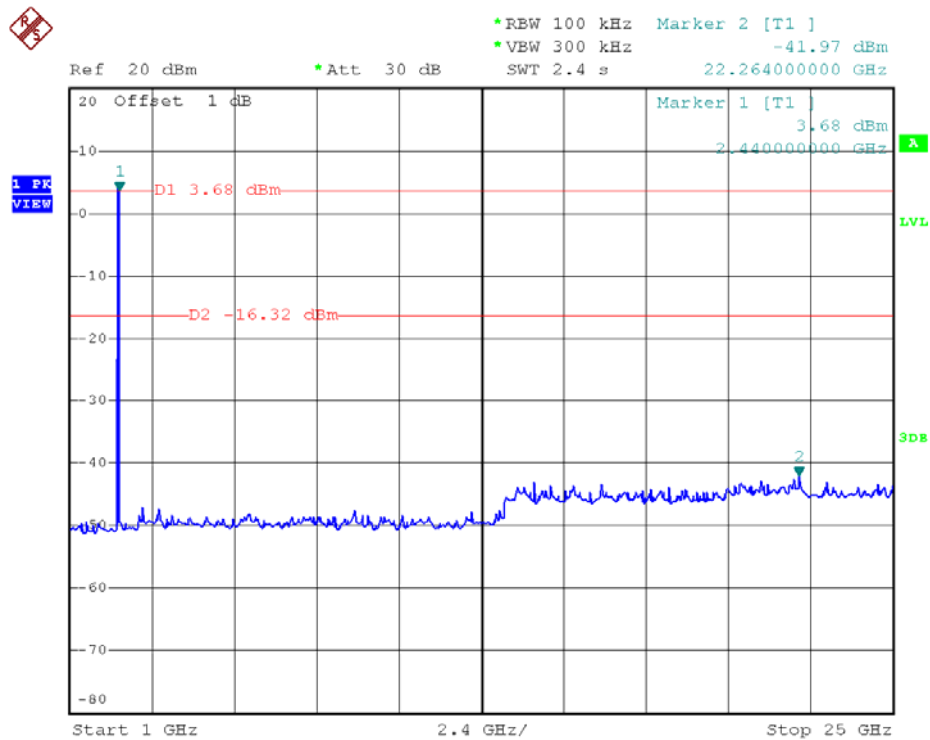


Channel = 1, 1GHz to 25GHz

802.11b - Conducted Spurious Emission Plot on channel 6

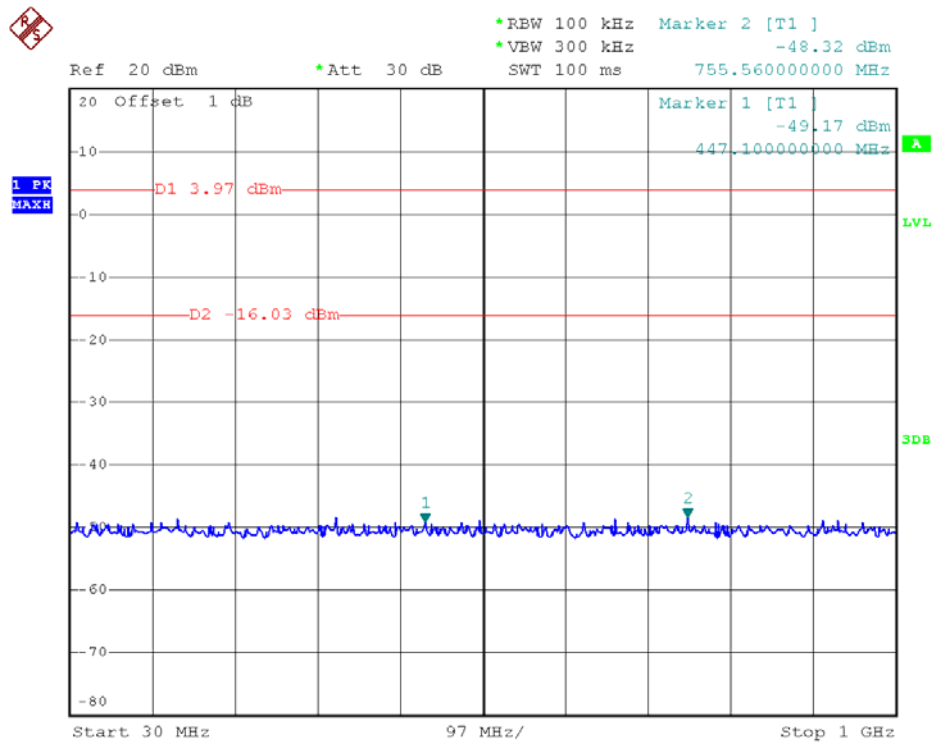


Channel = 6, 30MHz to 1GHz

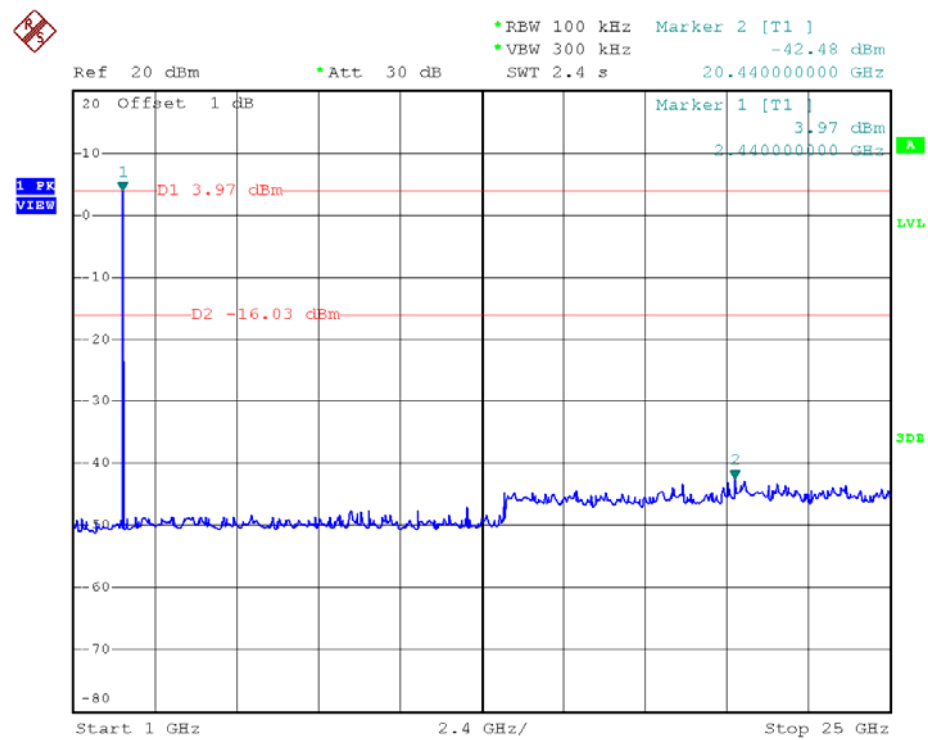


Channel = 6, 1GHz to 25GHz

802.11b - Conducted Spurious Emission Plot on channel 11

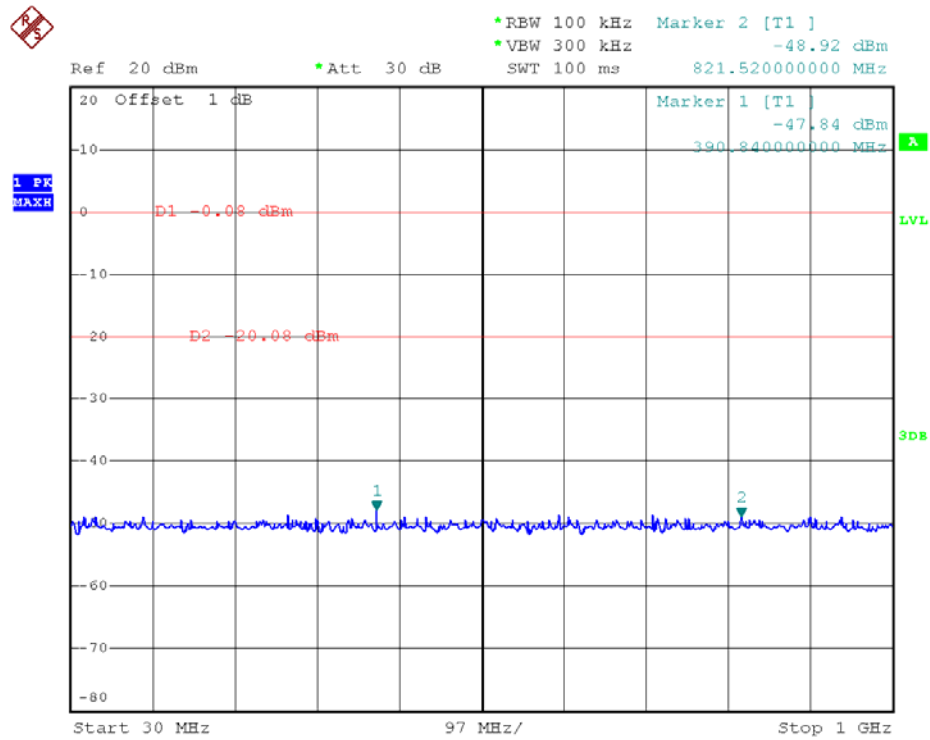


Channel = 11, 30MHz to 25GHz

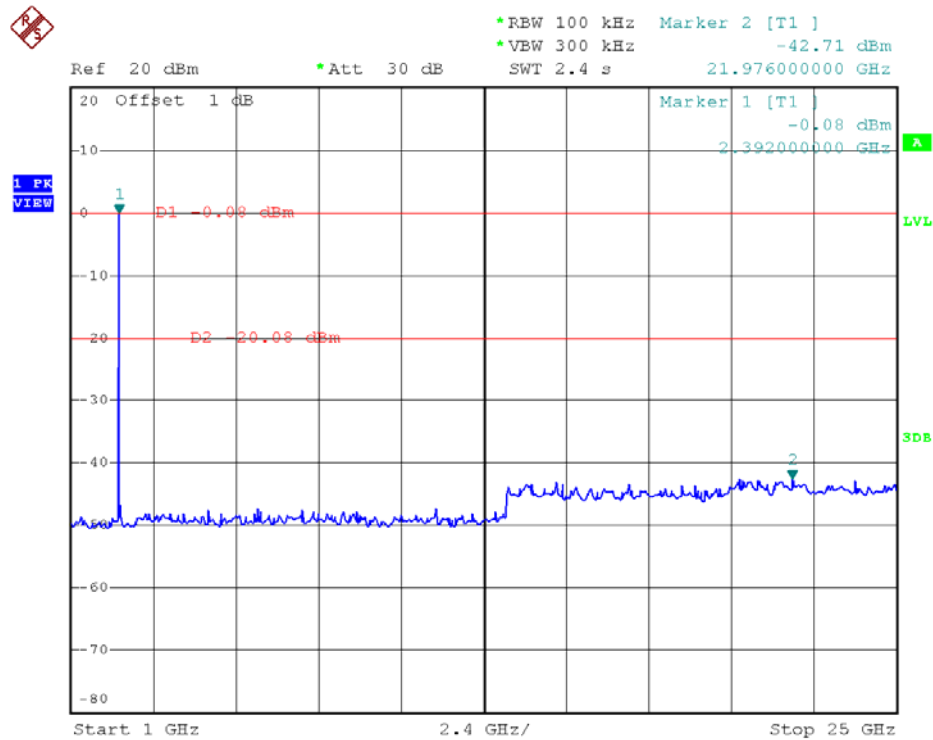


Channel = 11, 30MHz to 25GHz

802.11g - Conducted Spurious Emission Plot on channel 1

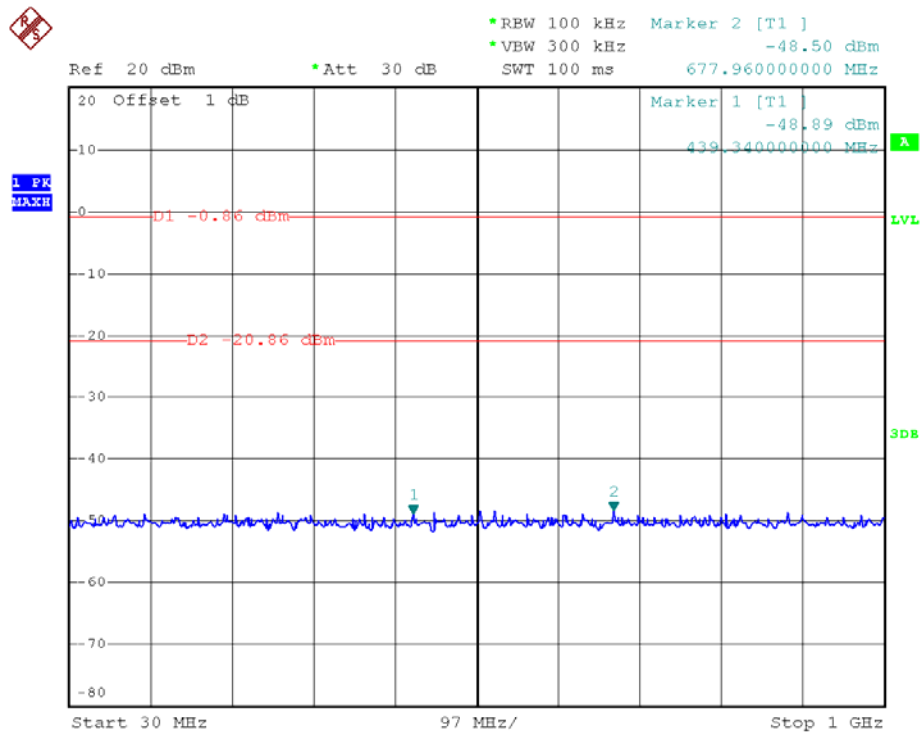


Channel = 1, 30MHz to 1GHz

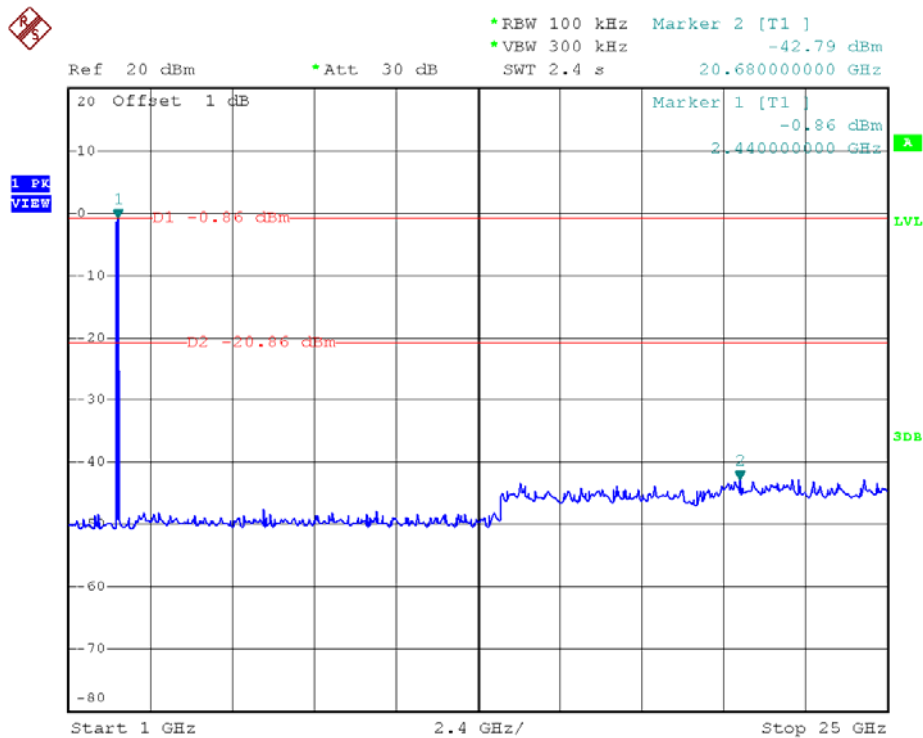


Channel = 1, 1GHz to 25GHz

802.11g - Conducted Spurious Emission Plot on channel 6

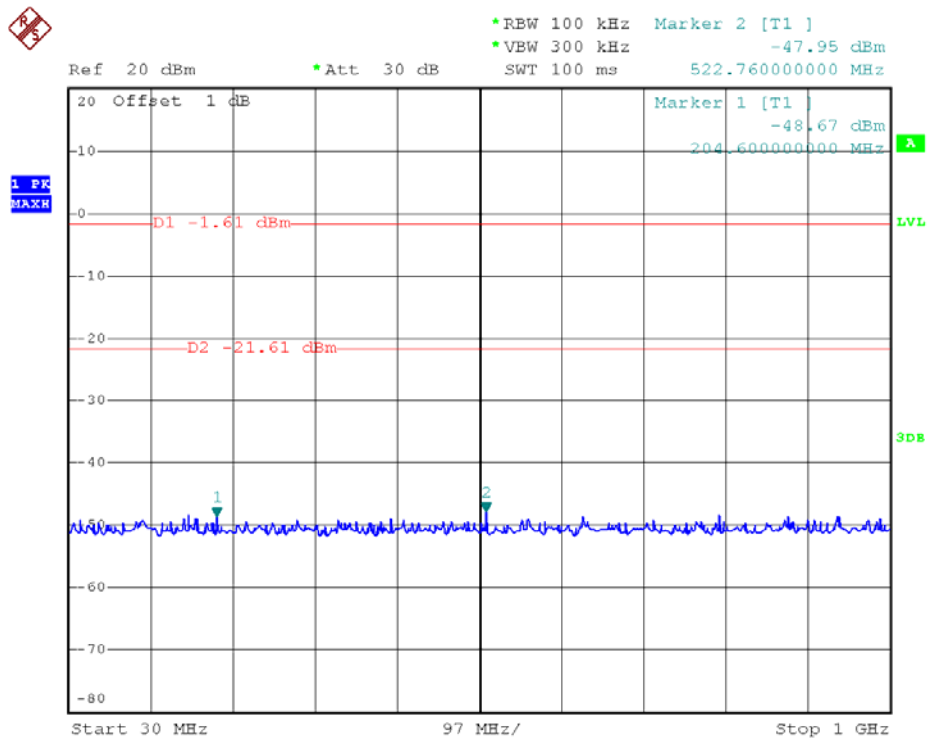


Channel = 6, 30MHz to 1GHz

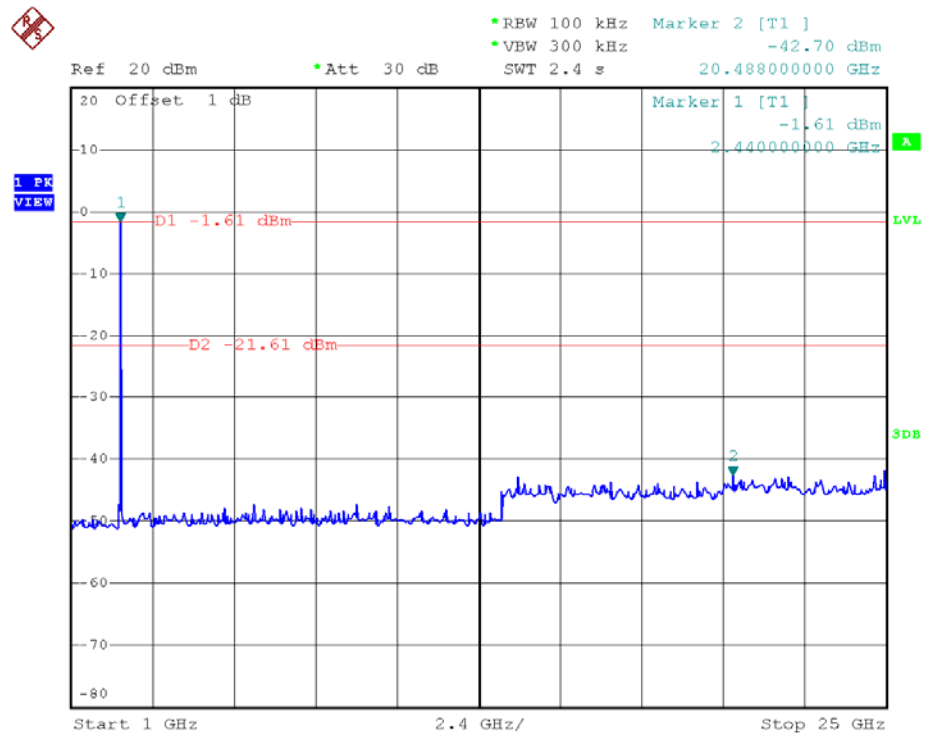


Channel = 6, 1GHz to 25GHz

802.11g - Conducted Spurious Emission Plot on channel 11

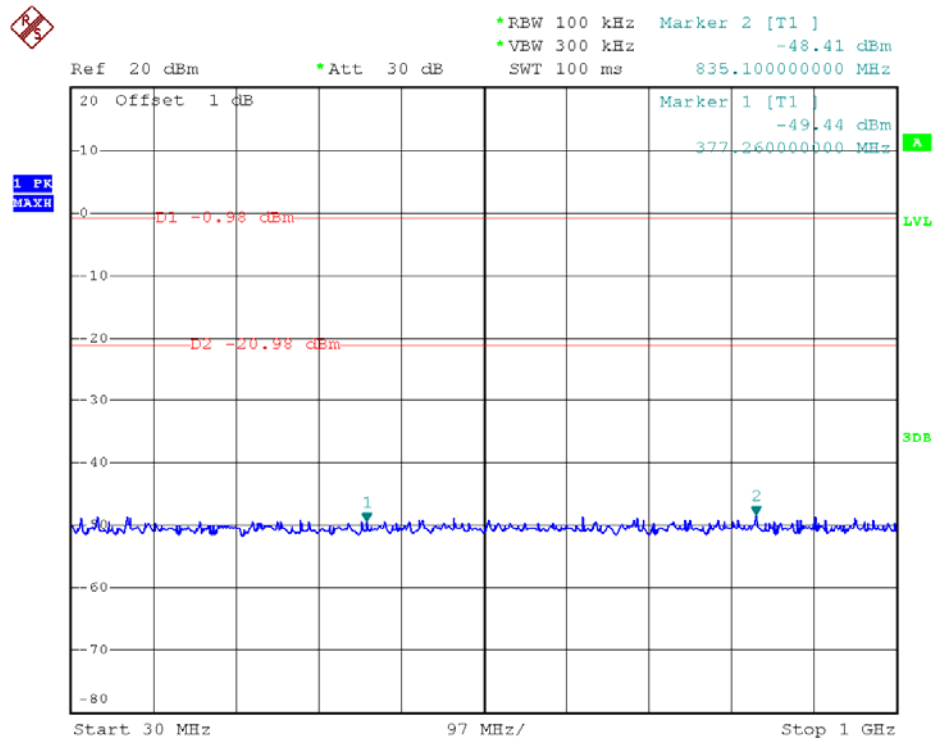


Channel = 11, 30MHz to 25GHz

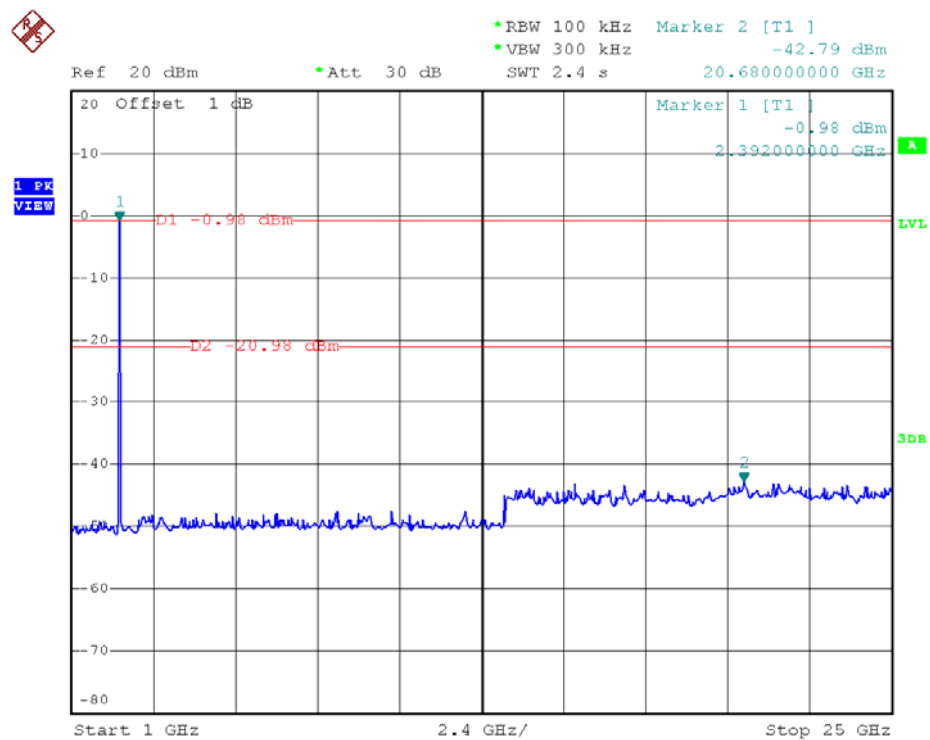


Channel = 11, 30MHz to 25GHz

802.11n20 - Conducted Spurious Emission Plot on channel 1

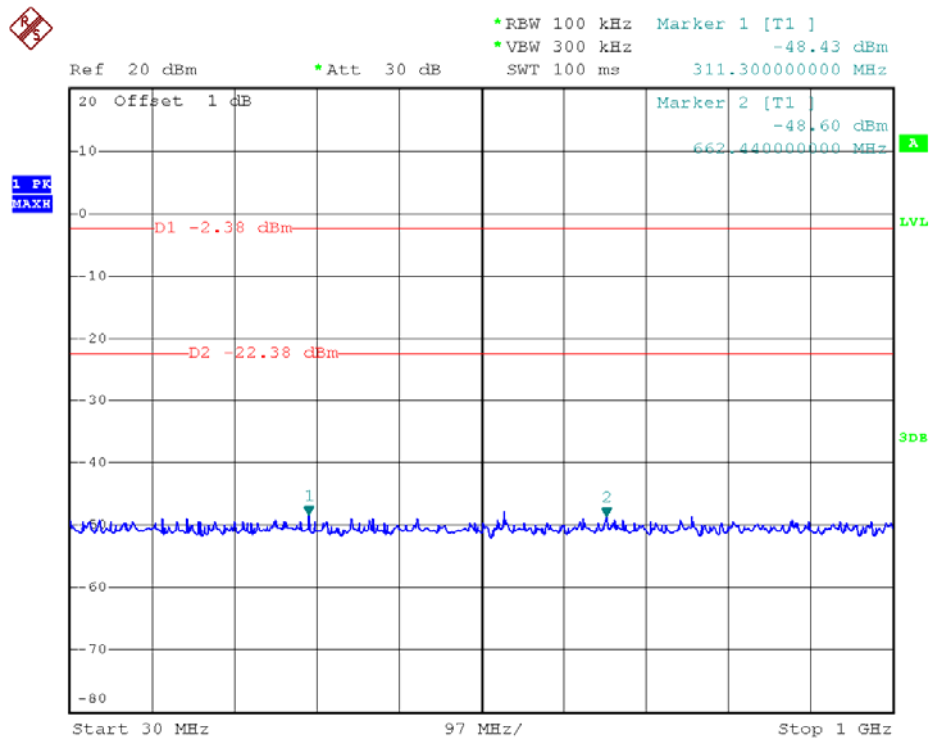


Channel = 1, 30MHz to 1GHz

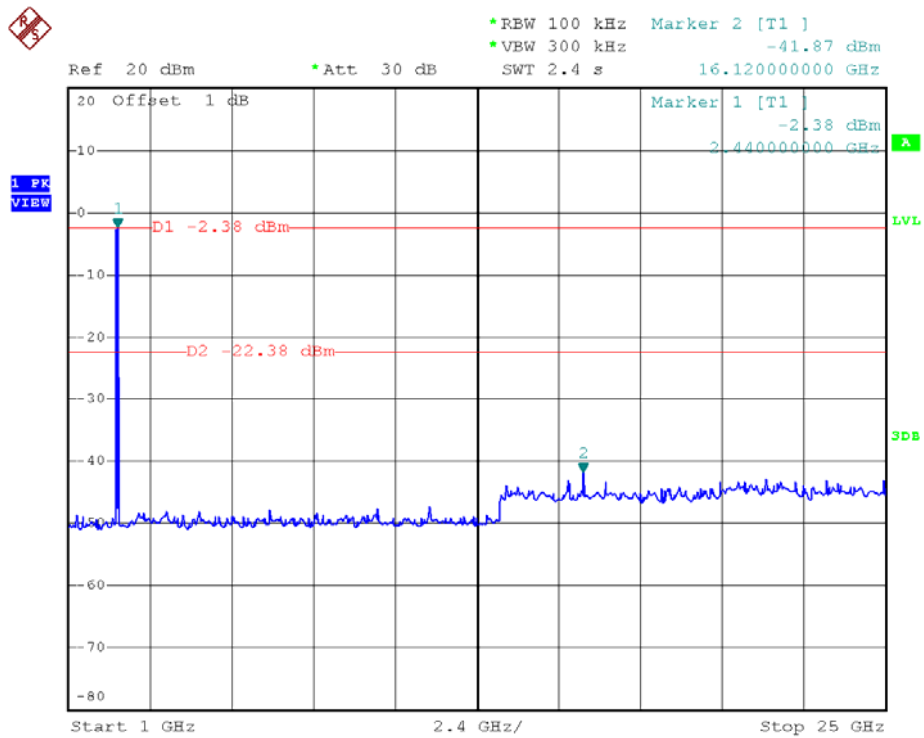


Channel = 1, 1GHz to 25GHz

802.11n20 - Conducted Spurious Emission Plot on channel 6

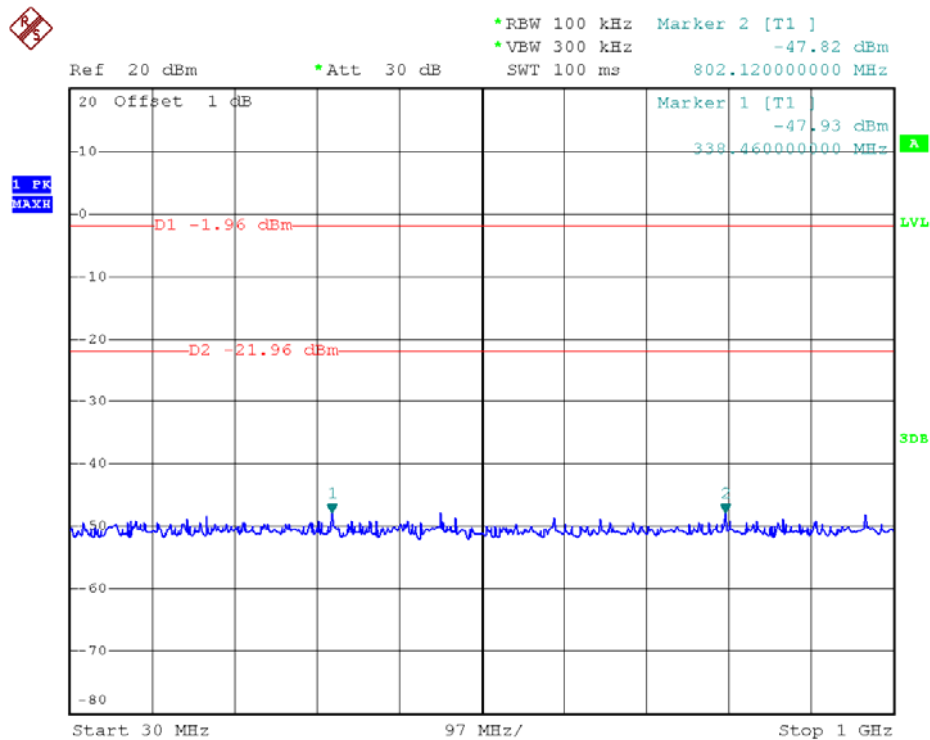


Channel = 6, 30MHz to 1GHz

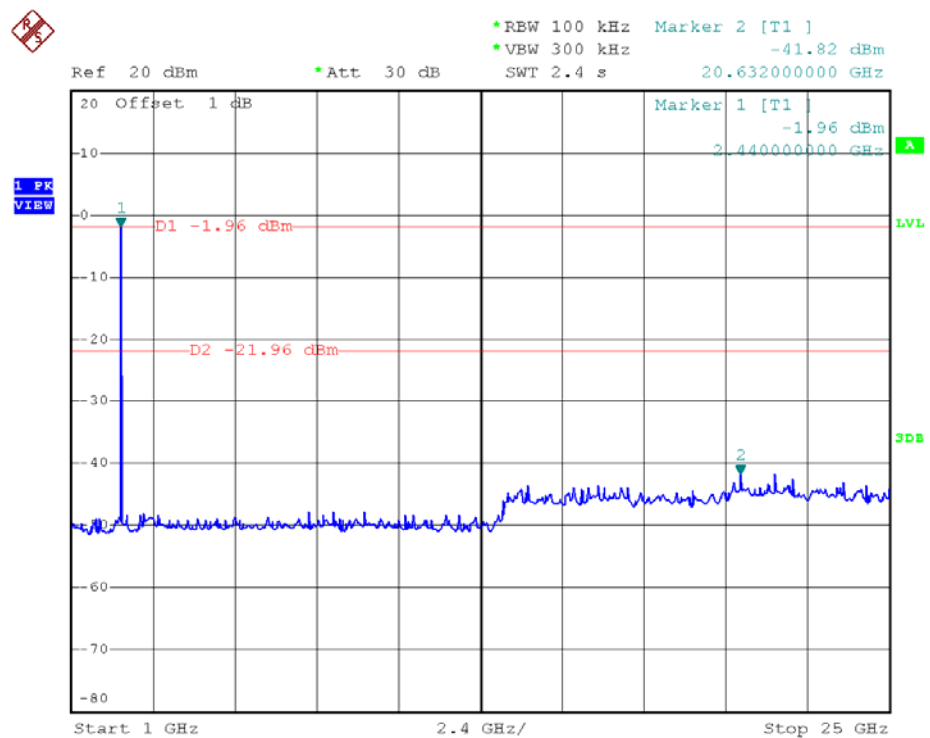


Channel = 6, 1GHz to 25GHz

802.11n20 - Conducted Spurious Emission Plot on channel 11

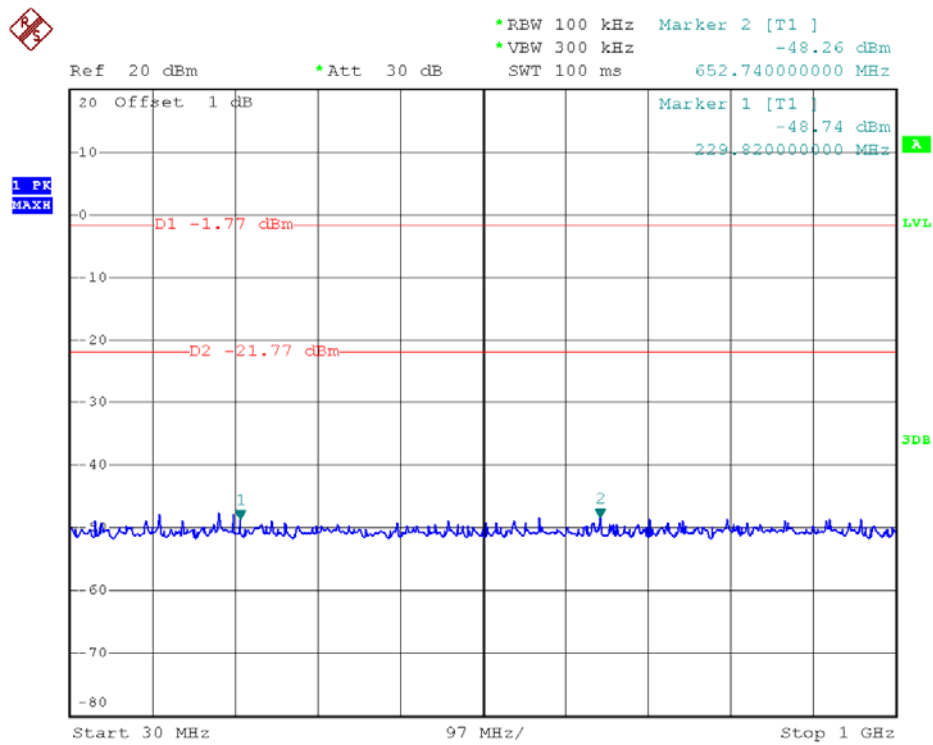


Channel = 11, 30MHz to 25GHz

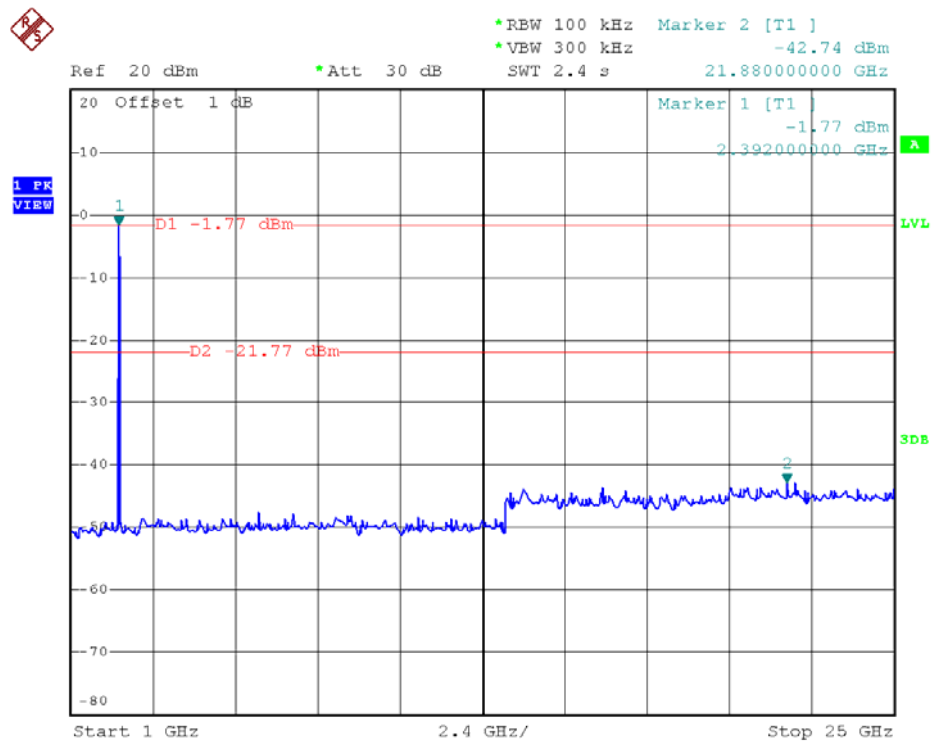


Channel = 11, 30MHz to 25GHz

802.11n40 - Conducted Spurious Emission Plot on channel 3

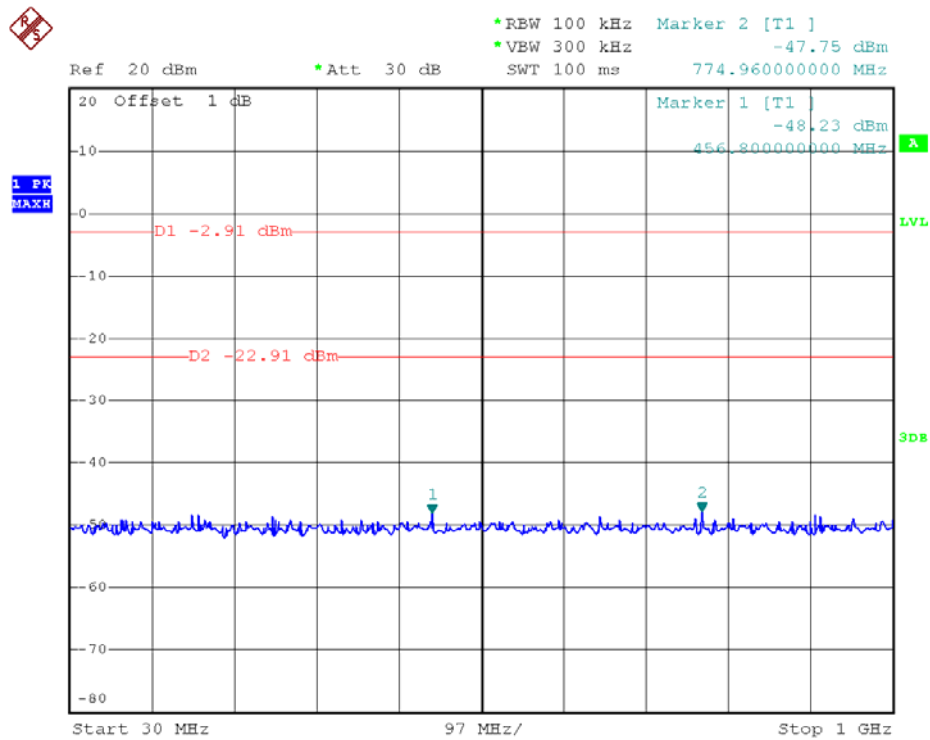


Channel = 3, 30MHz to 1GHz

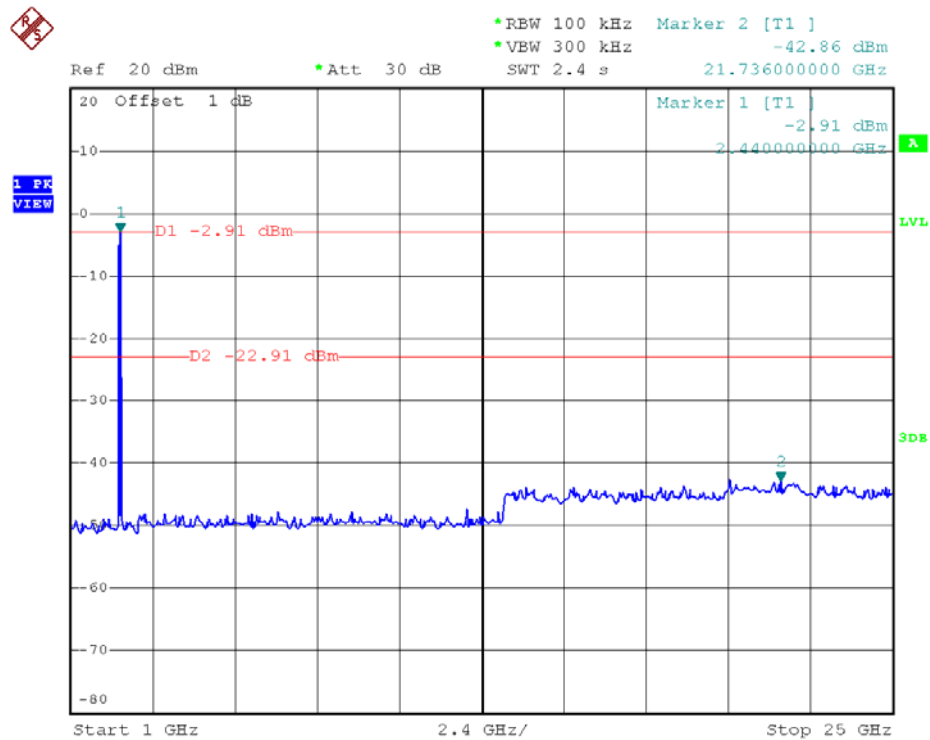


Channel = 3, 1GHz to 25GHz

802.11n40 - Conducted Spurious Emission Plot on channel 6

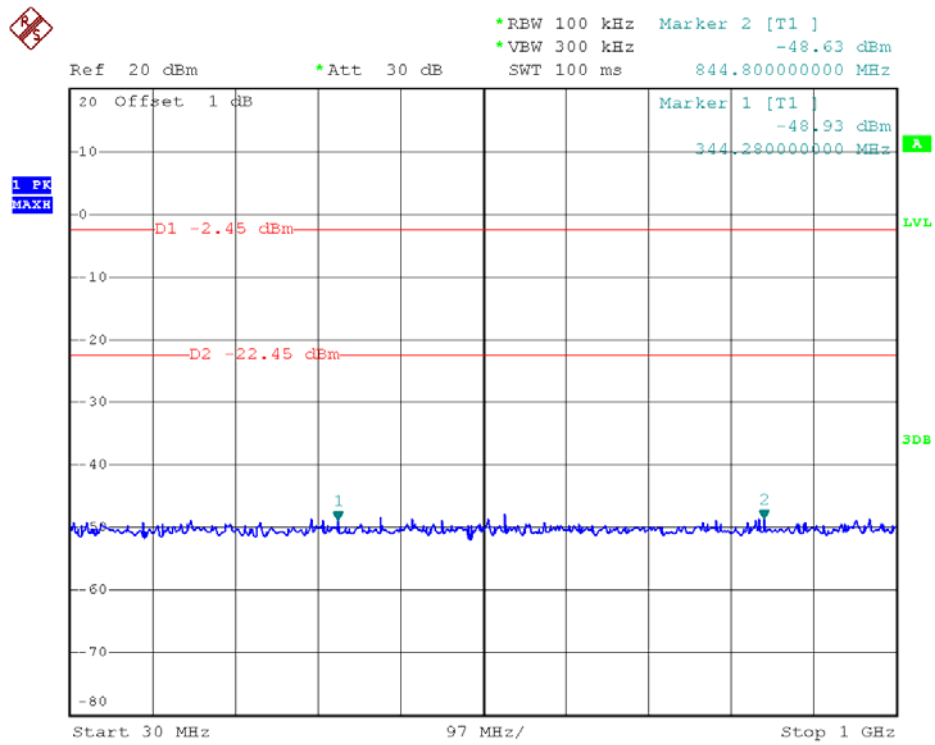


Channel = 6, 30MHz to 1GHz

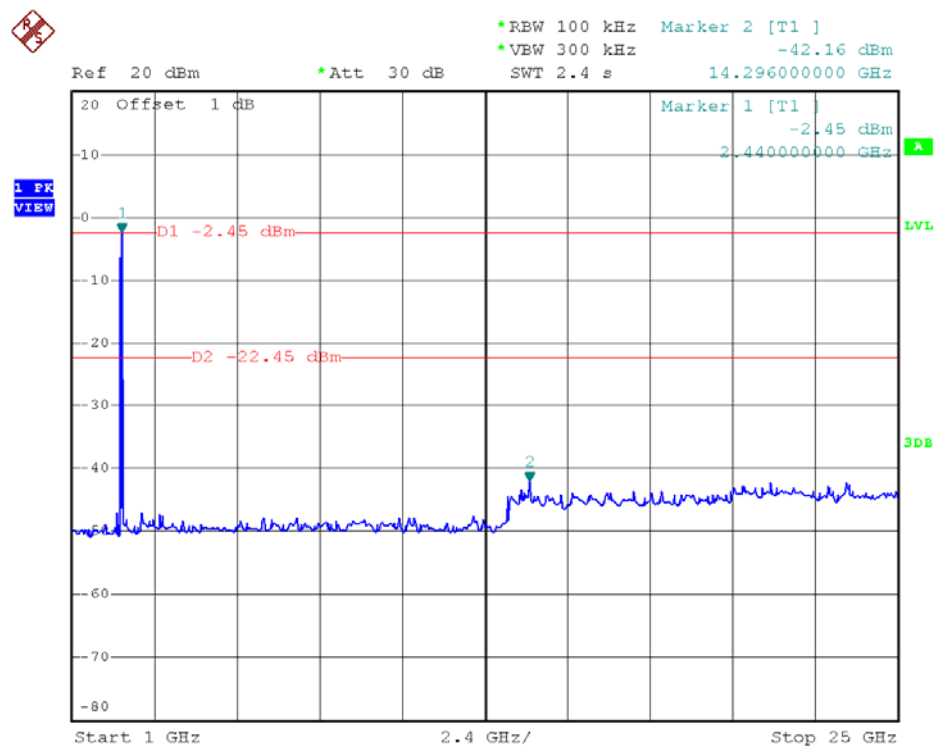


Channel = 6, 1GHz to 25GHz

802.11n40 - Conducted Spurious Emission Plot on channel 9



Channel = 9, 30MHz to 25GHz



Channel = 9, 30MHz to 25GHz

2.5. Power spectral density (PSD)

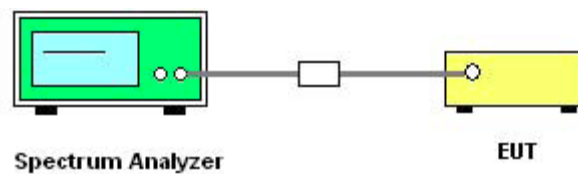
2.5.1. Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Setup



2.5.4. Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB558074 D01 v03r05.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz.

Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)

5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.

6. Measure and record the results in the test report.

7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

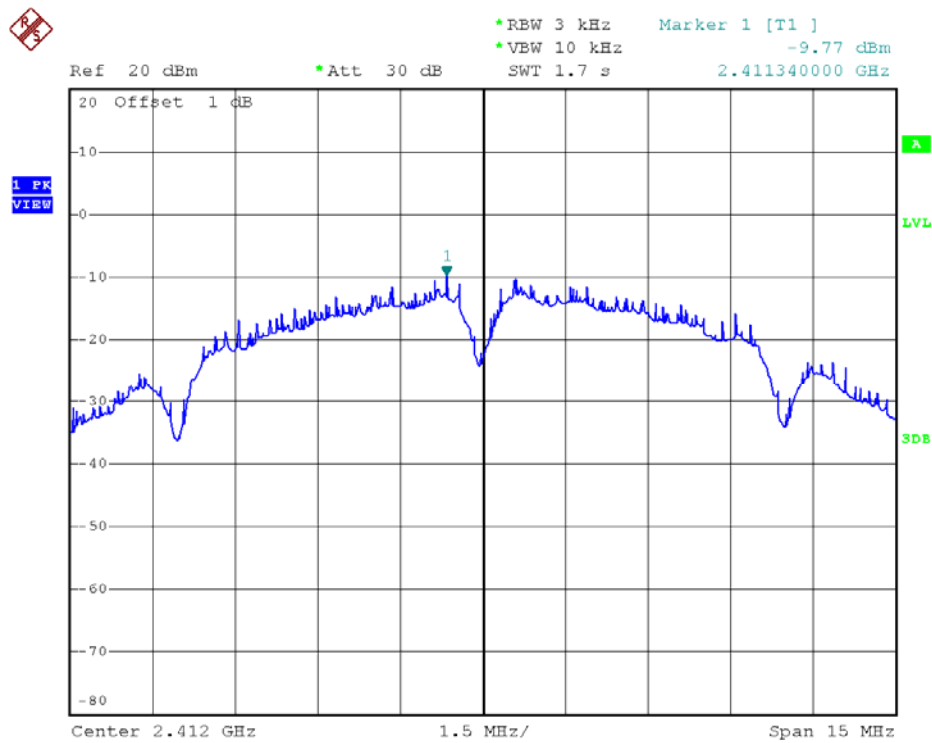
2.5.5. Test Results of Power spectral density

Spectral power density (dBm)						
Test mode	Channel	Frequency (MHz)	PSD/3kHz (dBm)			Verdict
			Antenna 0	Antenna 1	Antenna 0+1	
802.11b	1	2412	-9.77	-8.18	/	PASS
	6	2437	-11.14	-10.61	/	PASS
	11	2462	-11.37	-10.43	/	PASS
802.11g	1	2412	-13.51	-13.15	/	PASS
	6	2437	-15.29	-13.76	/	PASS
	11	2462	-15.71	-14.12	/	PASS
802.11n20	1	2412	-15.09	-14.22	-11.62	PASS
	6	2437	-16.35	-14.69	-12.43	PASS
	11	2462	-16.47	-14.82	-12.56	PASS
802.11n40	3	2422	-16.19	-16.91	-13.52	PASS
	6	2437	-17.94	-15.90	-13.79	PASS
	9	2452	-18.29	-17.32	-14.77	PASS
Measurement uncertainty: $\pm 1.3\text{dB}$						

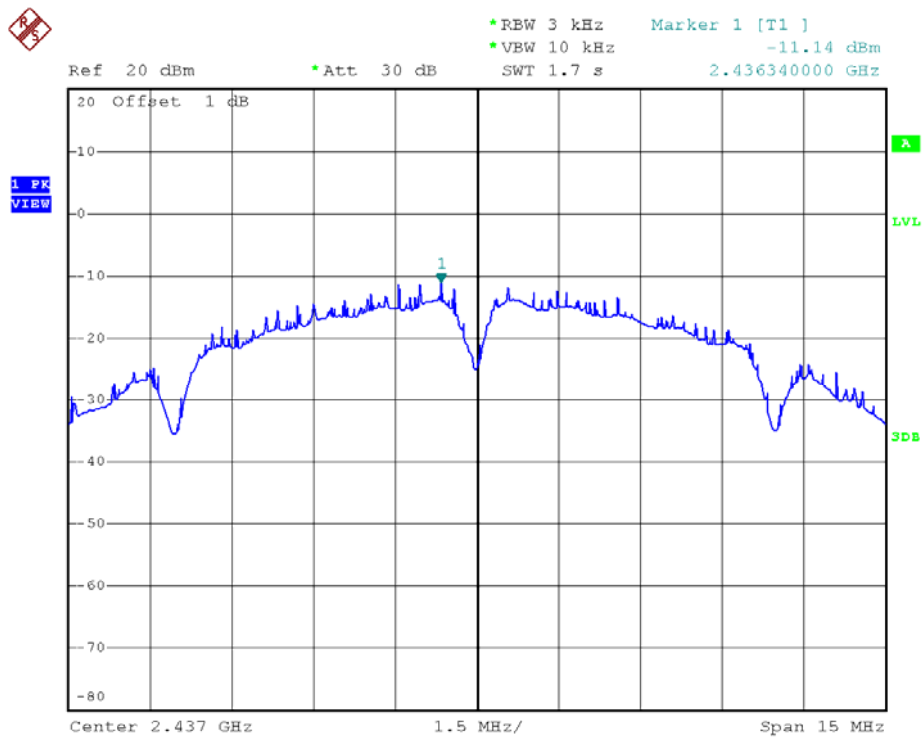
Note:

1. Measured power density (dBm) has offset with cable loss.

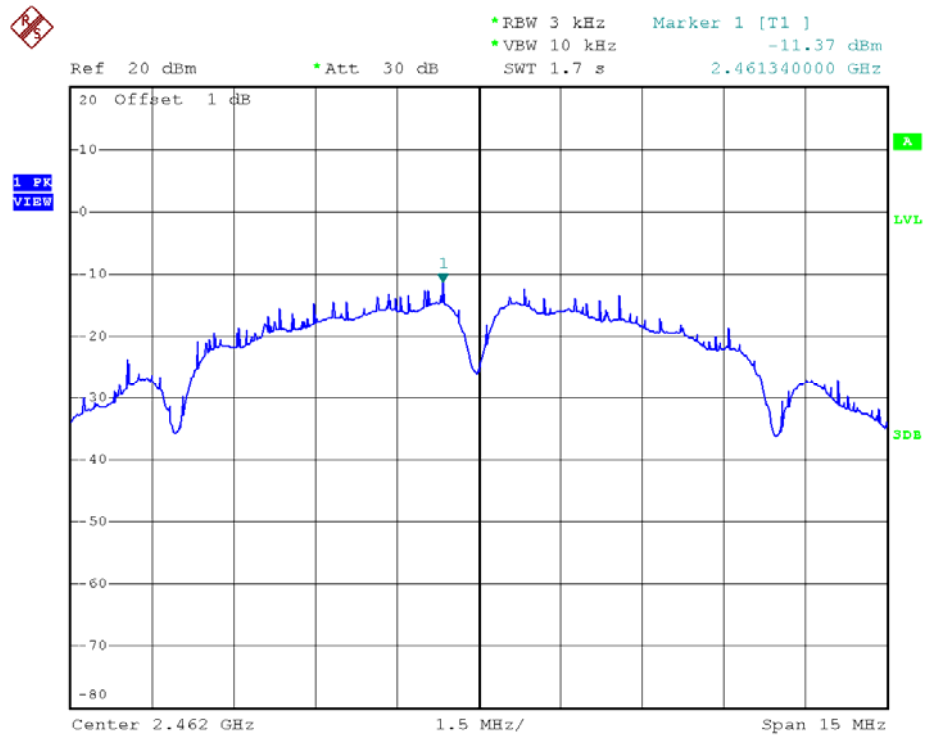
2.5.6. Test Results (plots) of Power spectral density



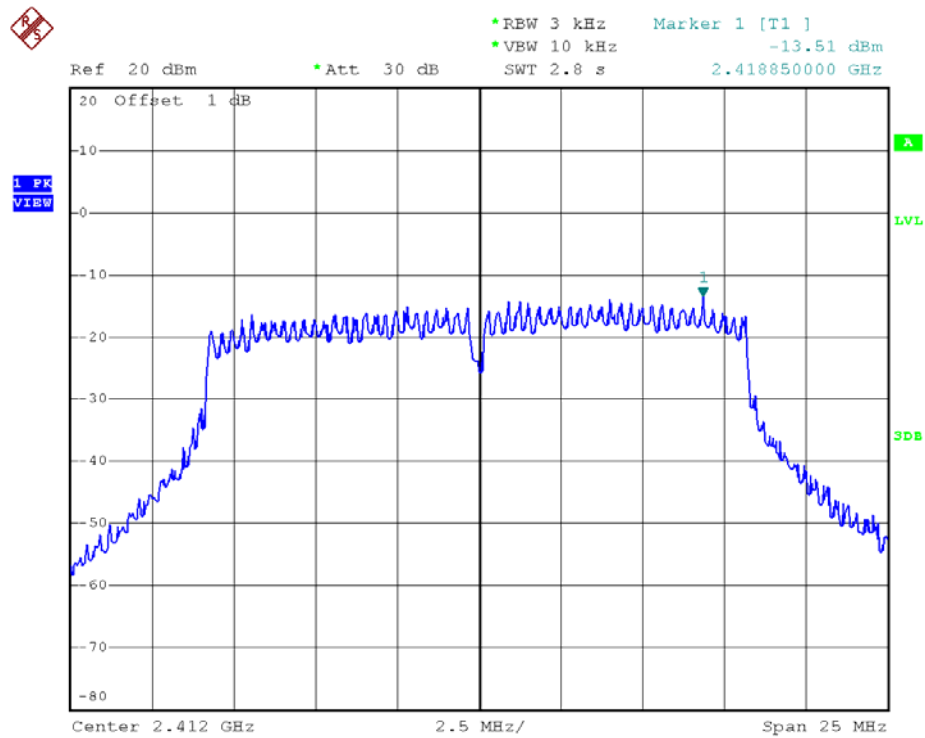
Antenna 0 - 802.11b - Channel 1



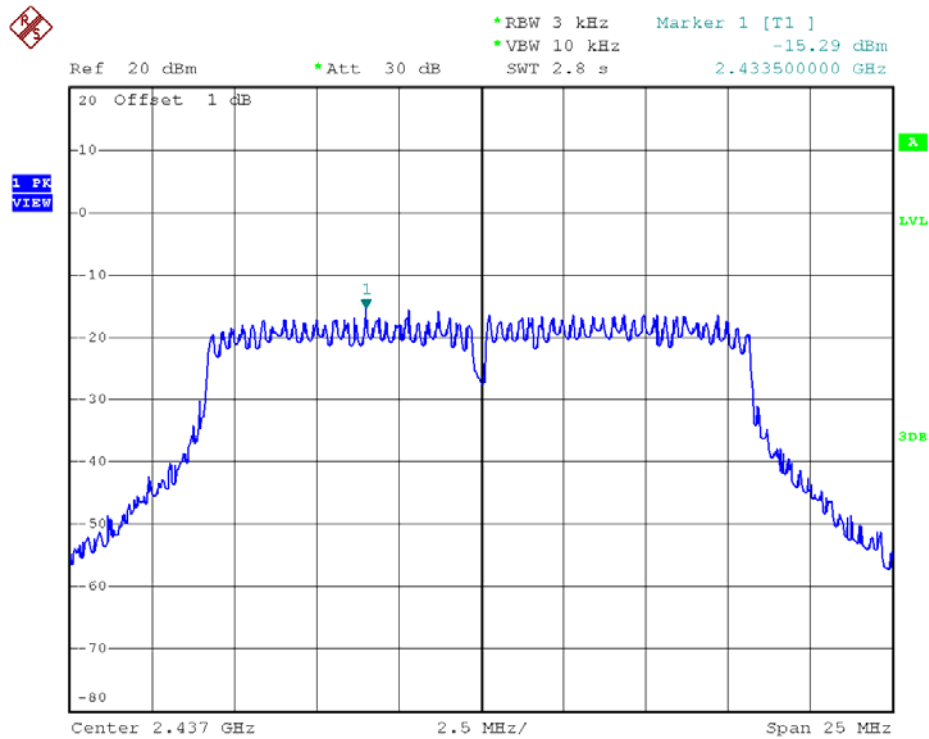
Antenna 0 - 802.11b - Channel 6



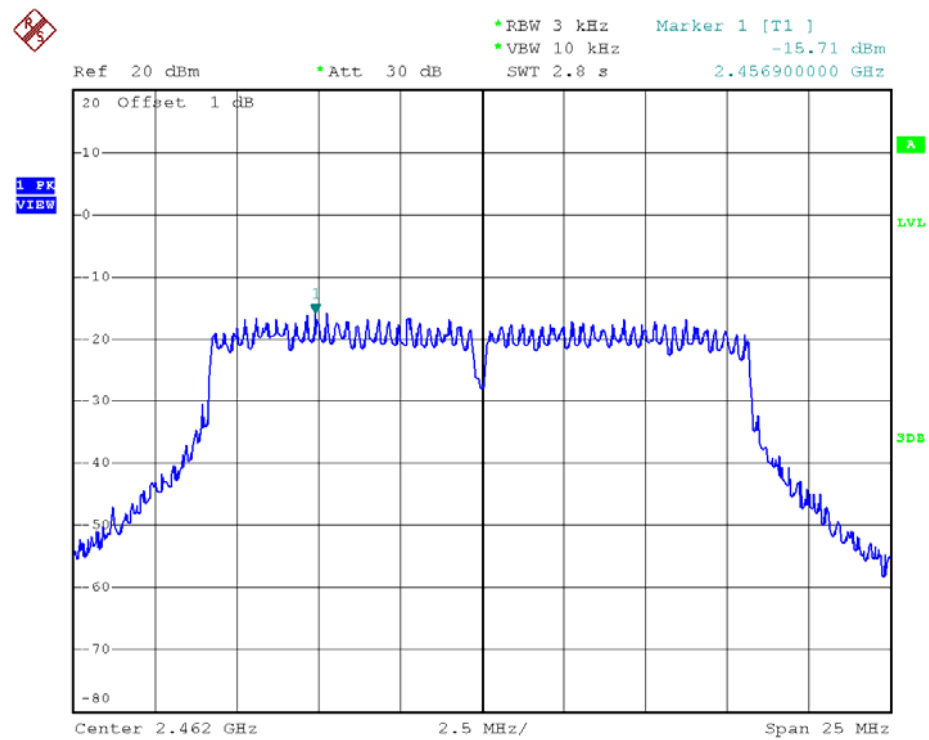
Antenna 0 - 802.11b - Channel 11



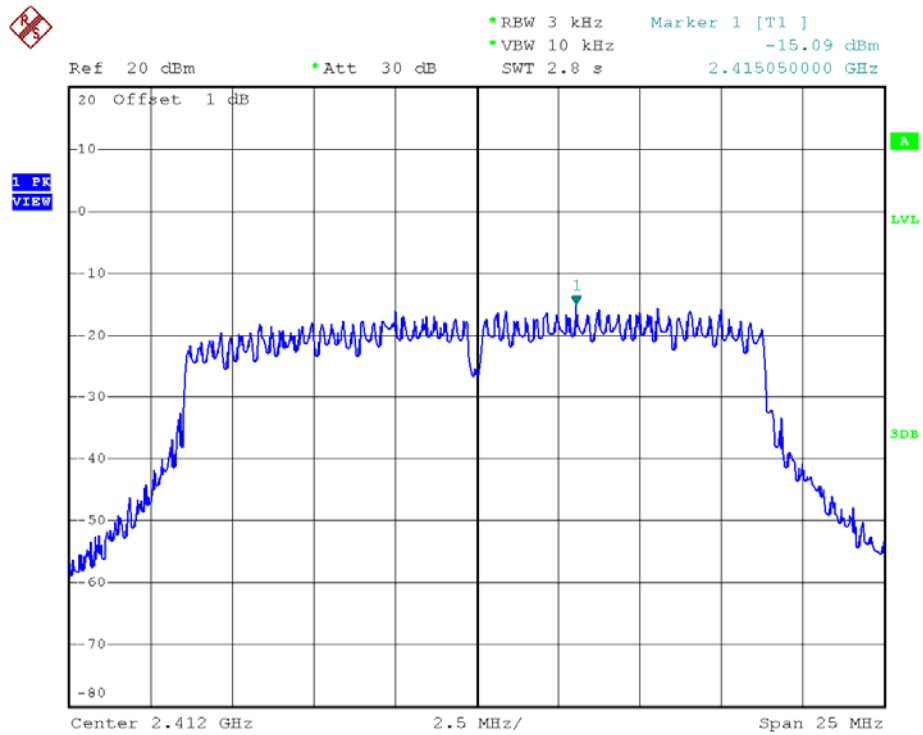
Antenna 0 - 802.11g - Channel 1



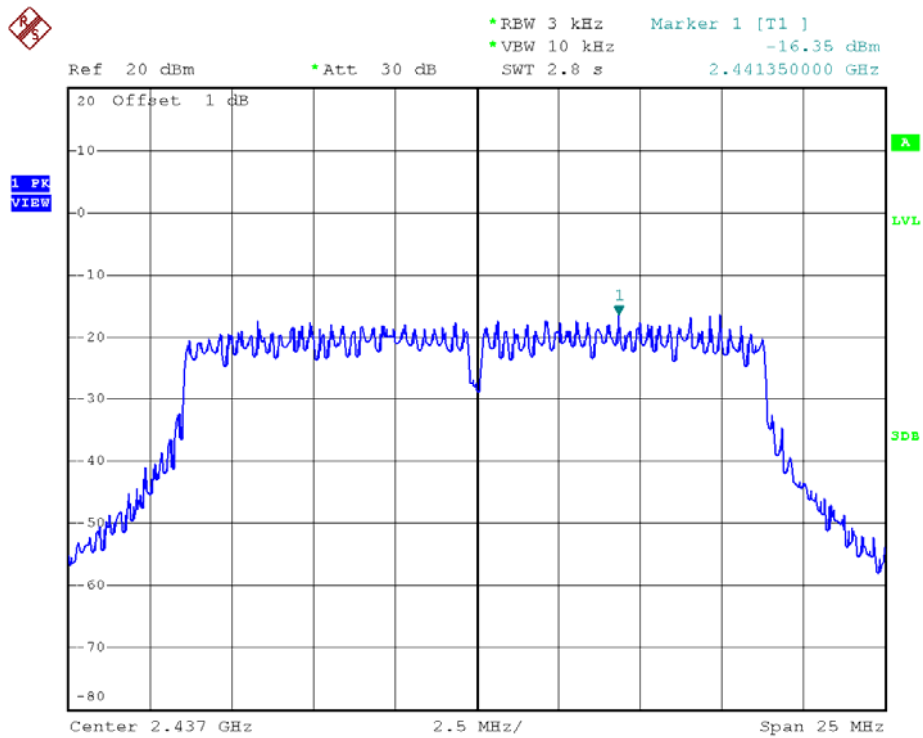
Antenna 0 - 802.11g - Channel 6



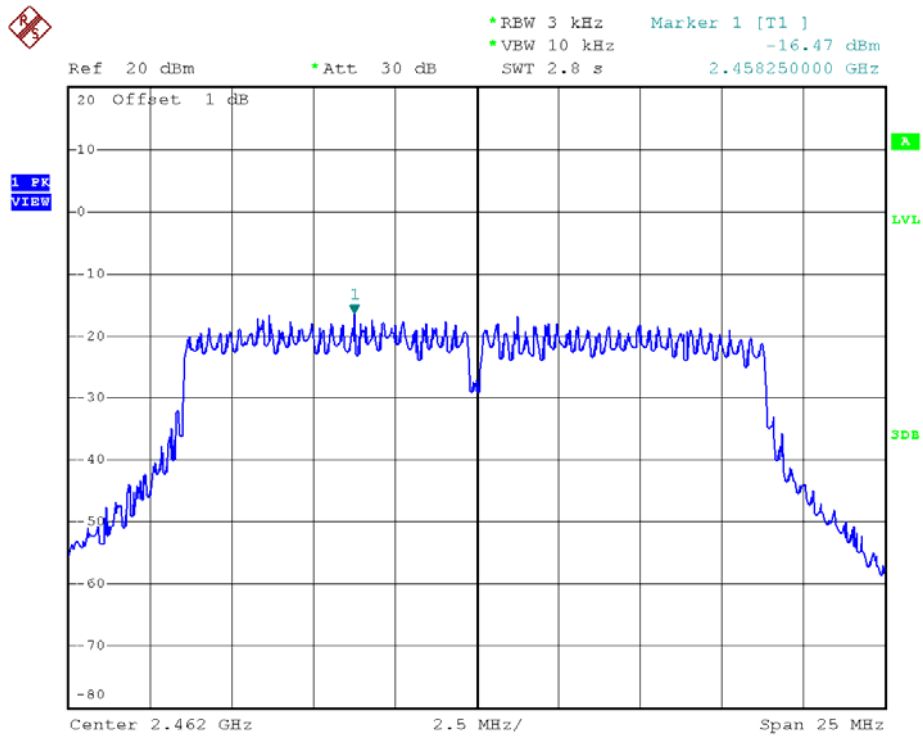
Antenna 0 - 802.11g - Channel 11



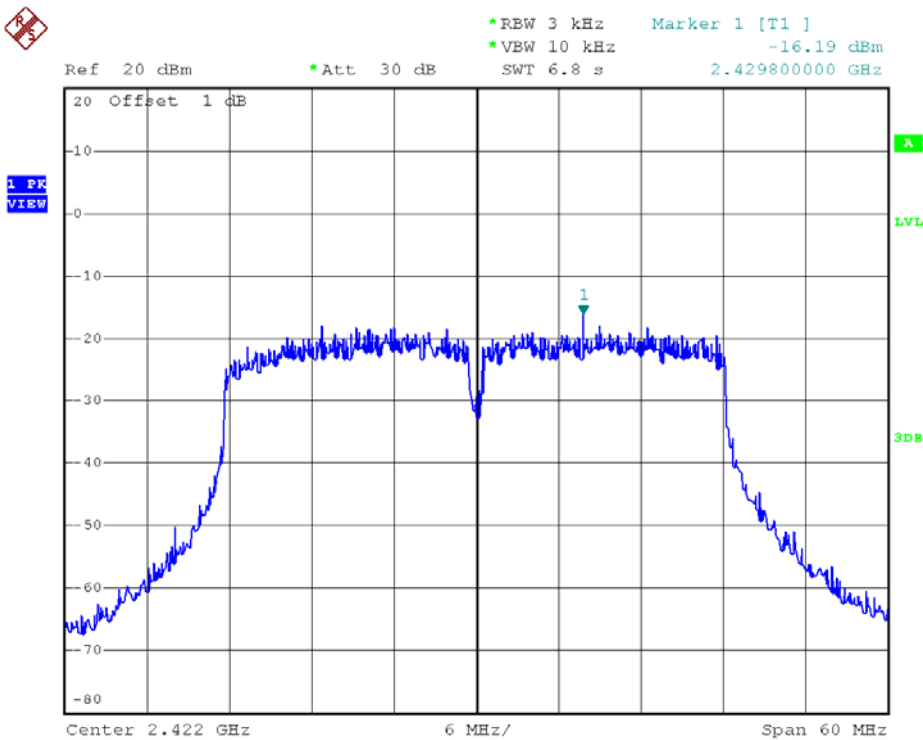
Antenna 0 - 802.11n20 - Channel 1



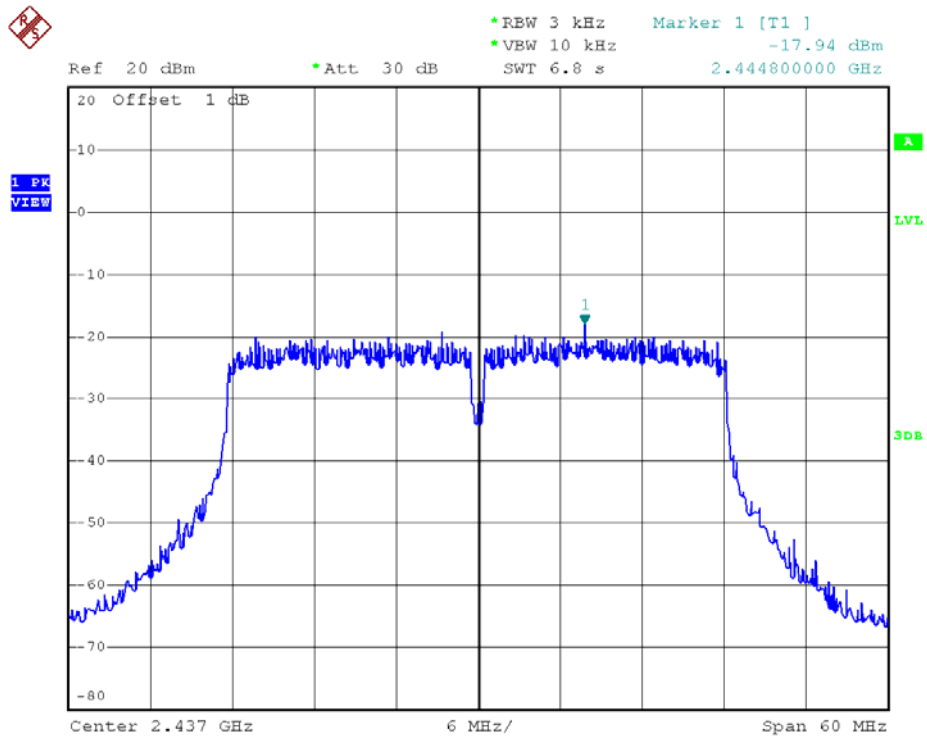
Antenna 0 - 802.11n20 - Channel 6



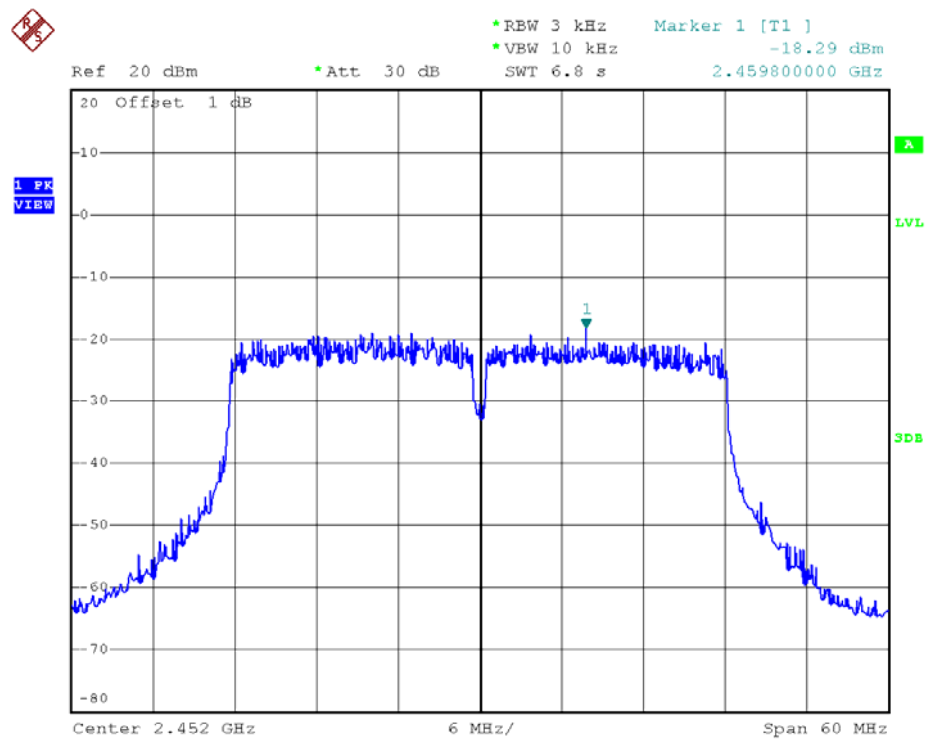
Antenna 0 - 802.11n20 - Channel 11



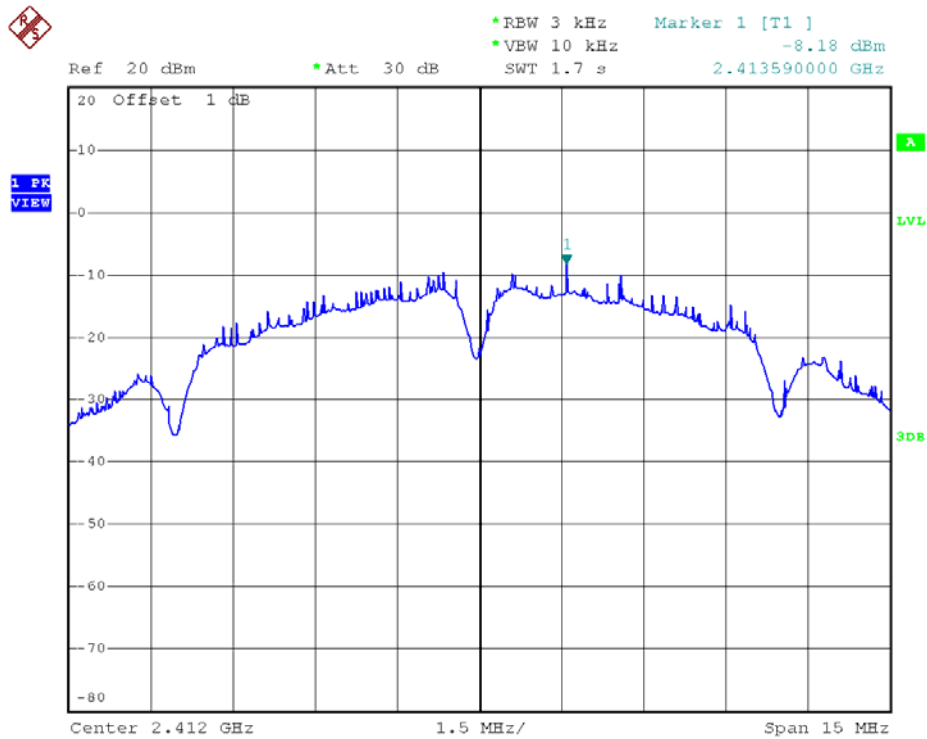
Antenna 0 - 802.11n40 - Channel 3



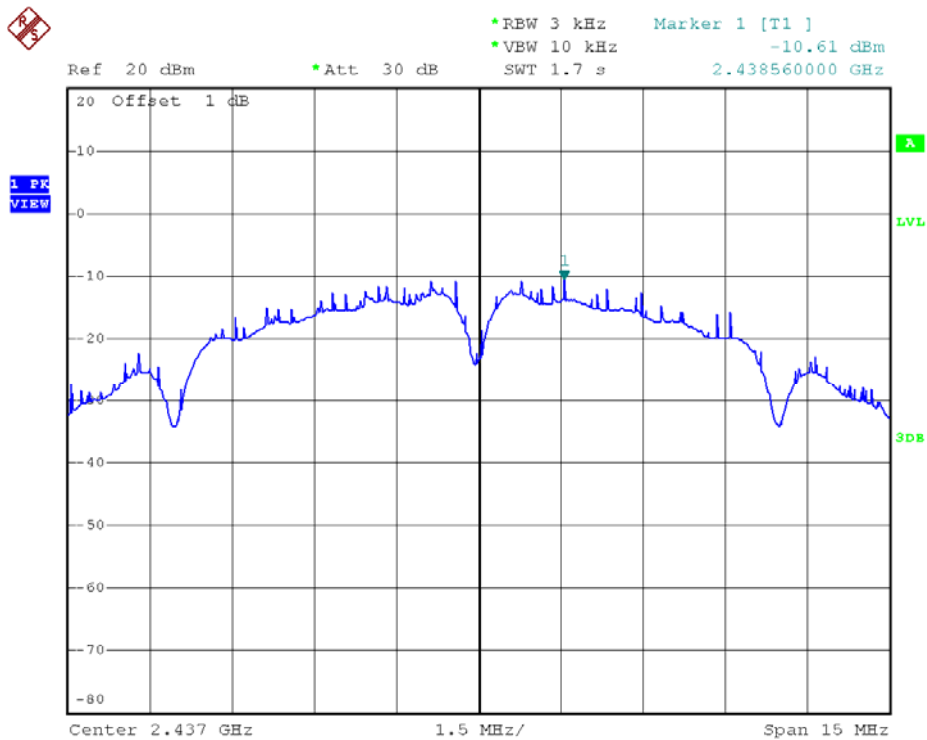
Antenna 0 - 802.11n40 - Channel 6



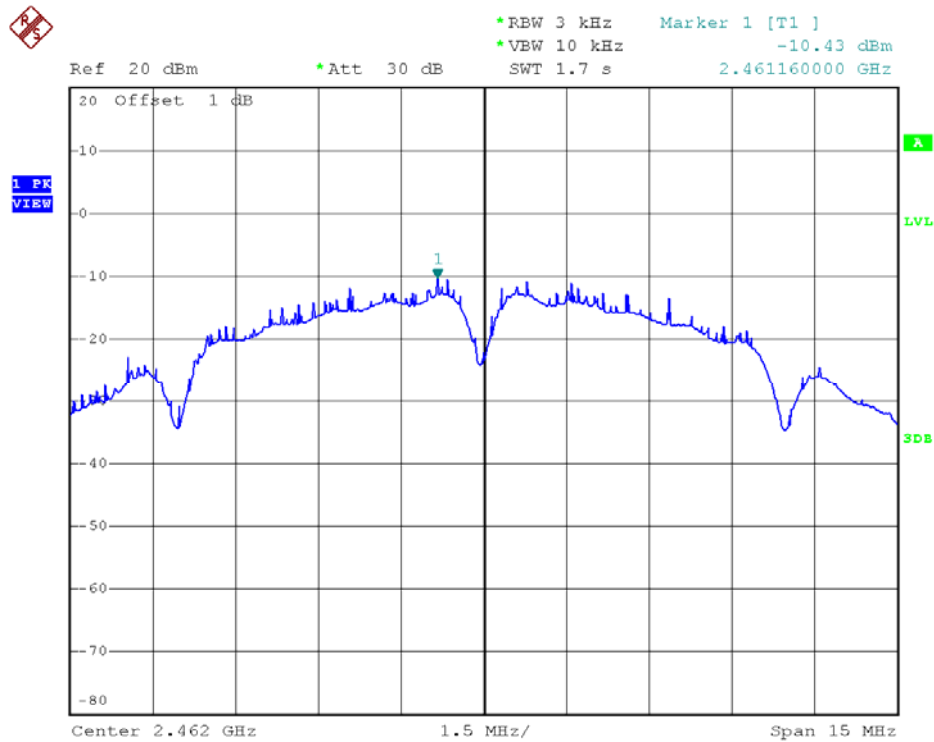
Antenna 0 - 802.11n40 - Channel 9



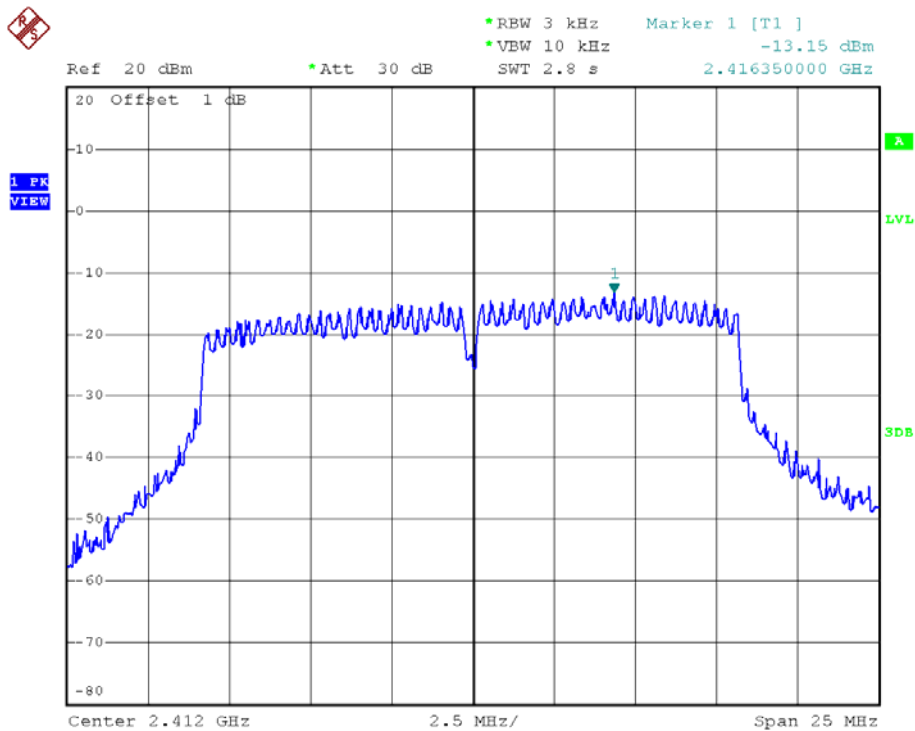
Antenna 1 - 802.11b - Channel 1



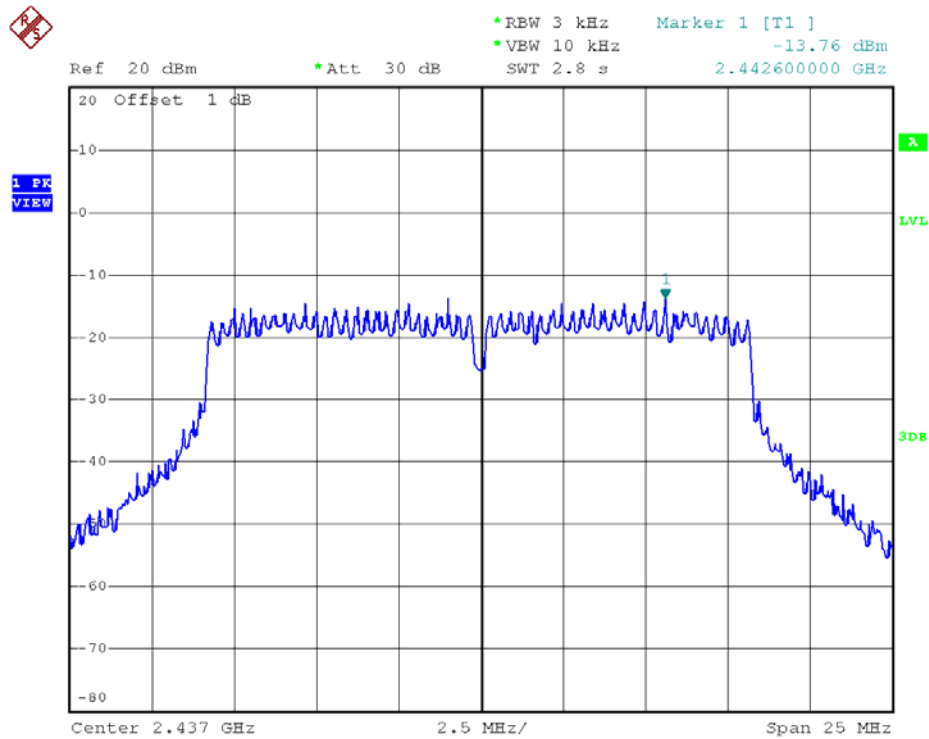
Antenna 1 - 802.11b - Channel 6



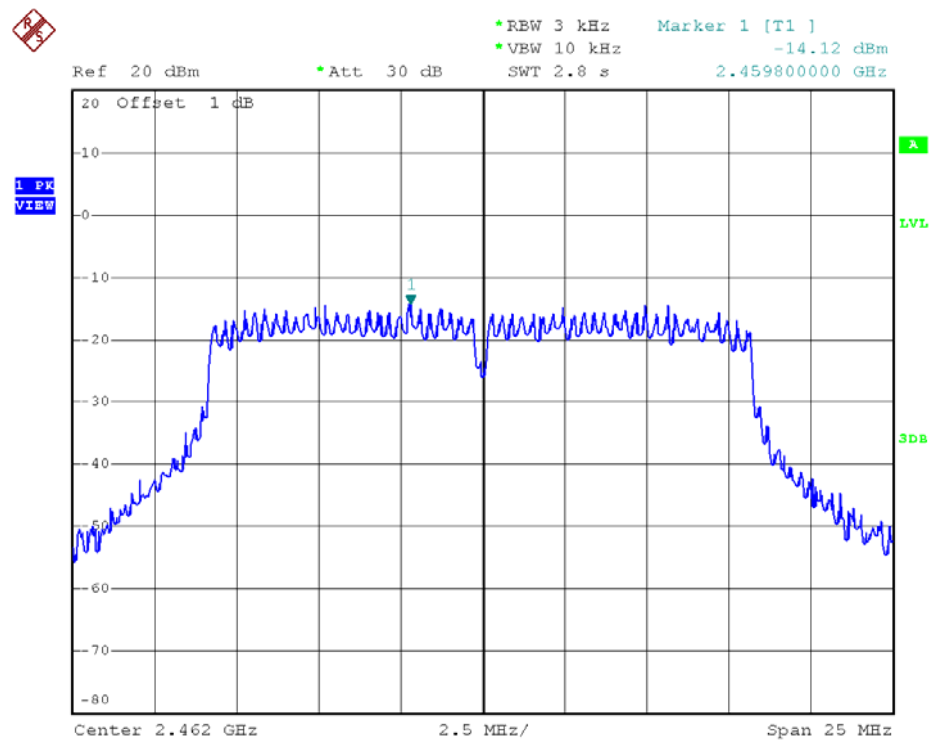
Antenna 1 - 802.11b - Channel 11



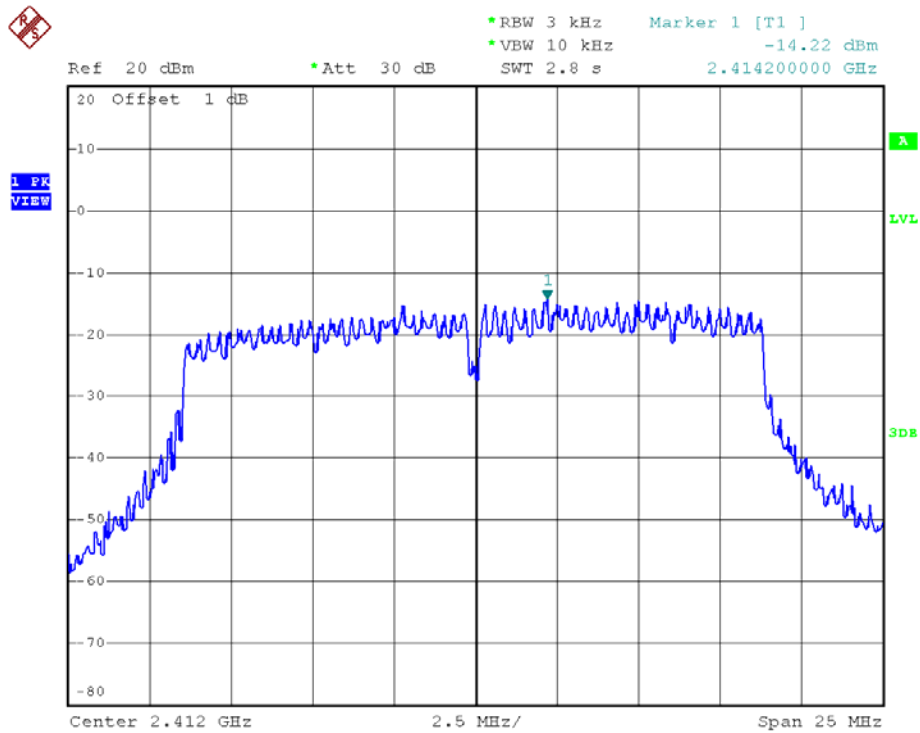
Antenna 1 - 802.11g - Channel 1



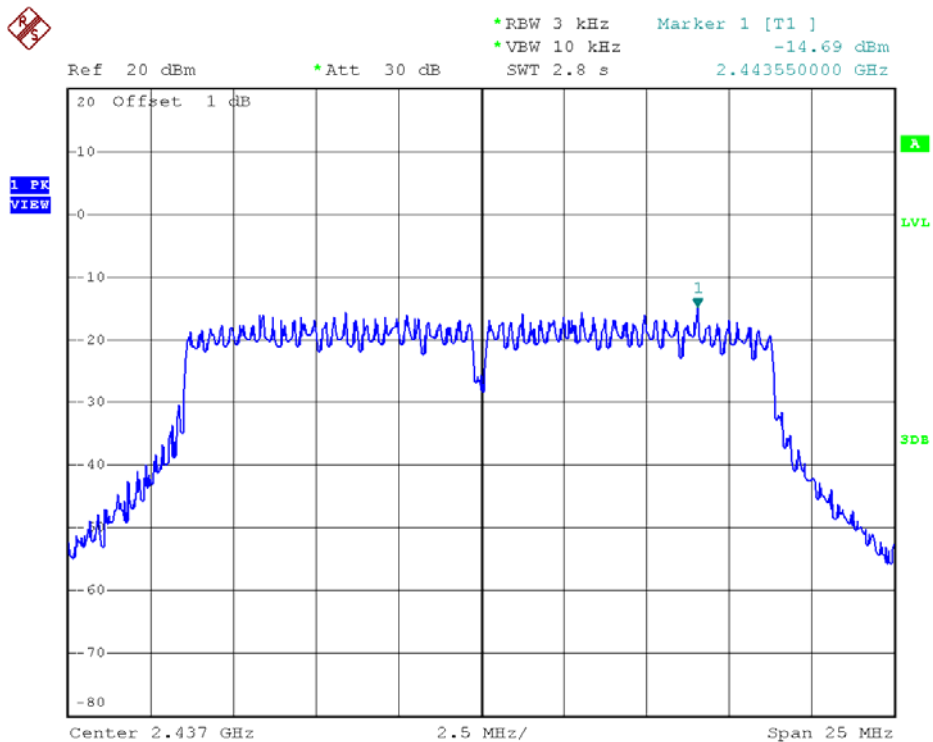
Antenna 1 - 802.11g - Channel 6



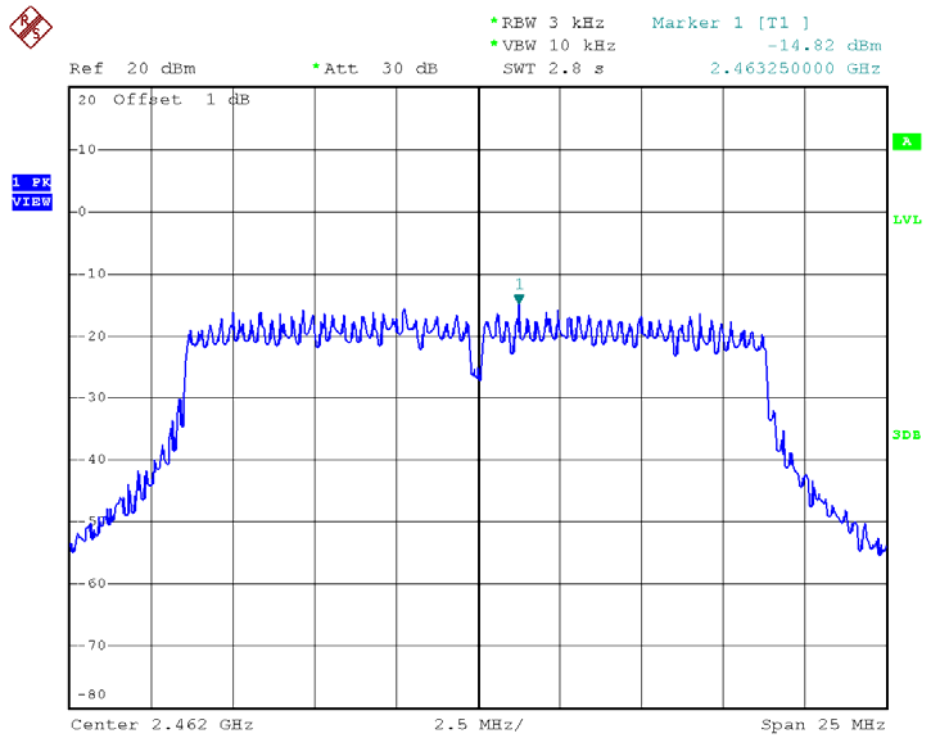
Antenna 1 - 802.11g - Channel 11



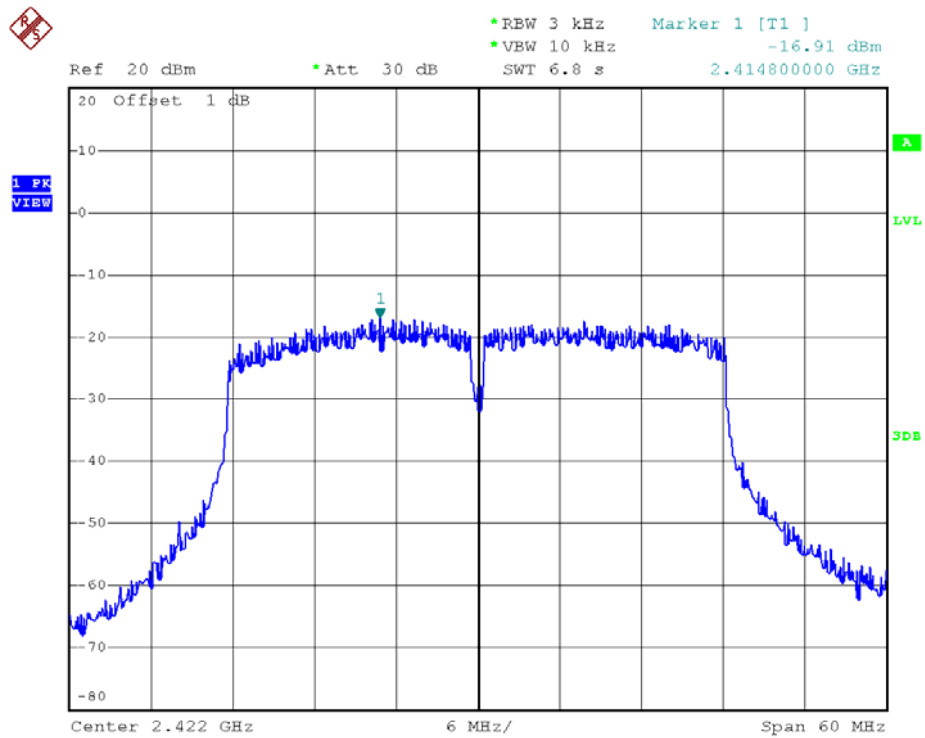
Antenna 1 - 802.11n20 - Channel 1



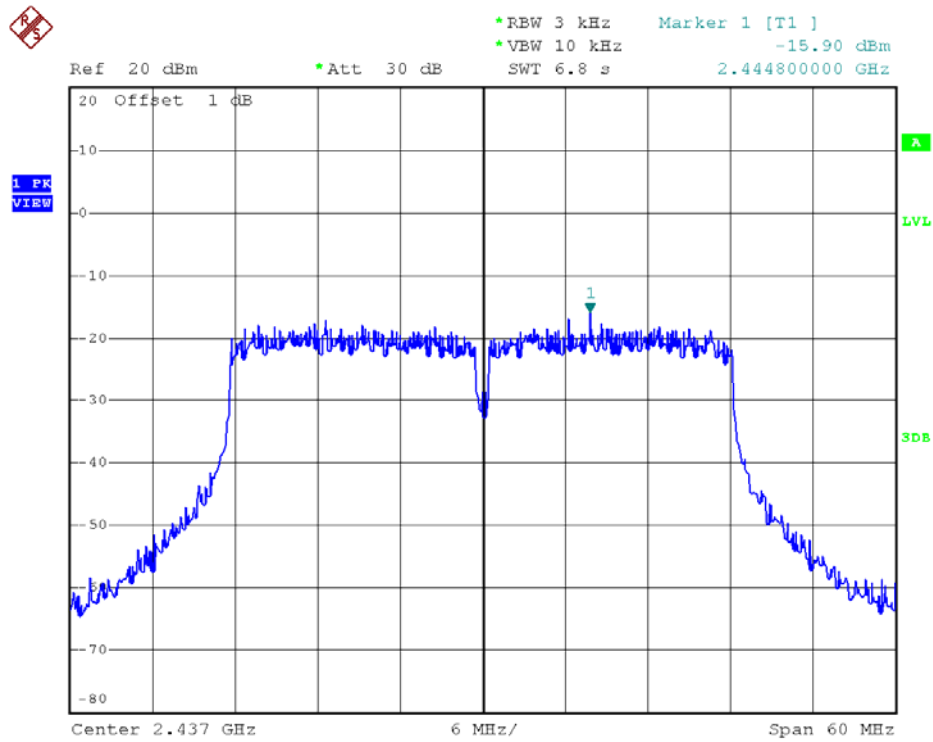
Antenna 1 - 802.11n20 - Channel 6



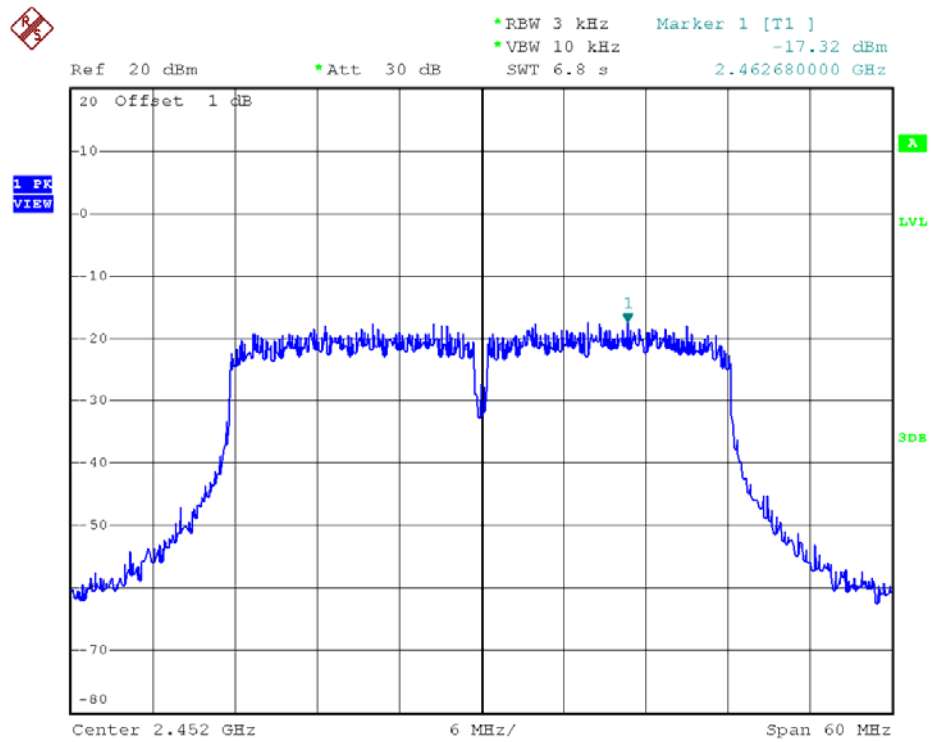
Antenna 1 - 802.11n20 - Channel 11



Antenna 1 - 802.11n40 - Channel 3



Antenna 1 - 802.11n40 - Channel 6



Antenna 1 - 802.11n40 - Channel 9

2.6. Radiated Band Edge and Spurious Emission

2.6.1. Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Note: Wireless charger configuration was evaluated.

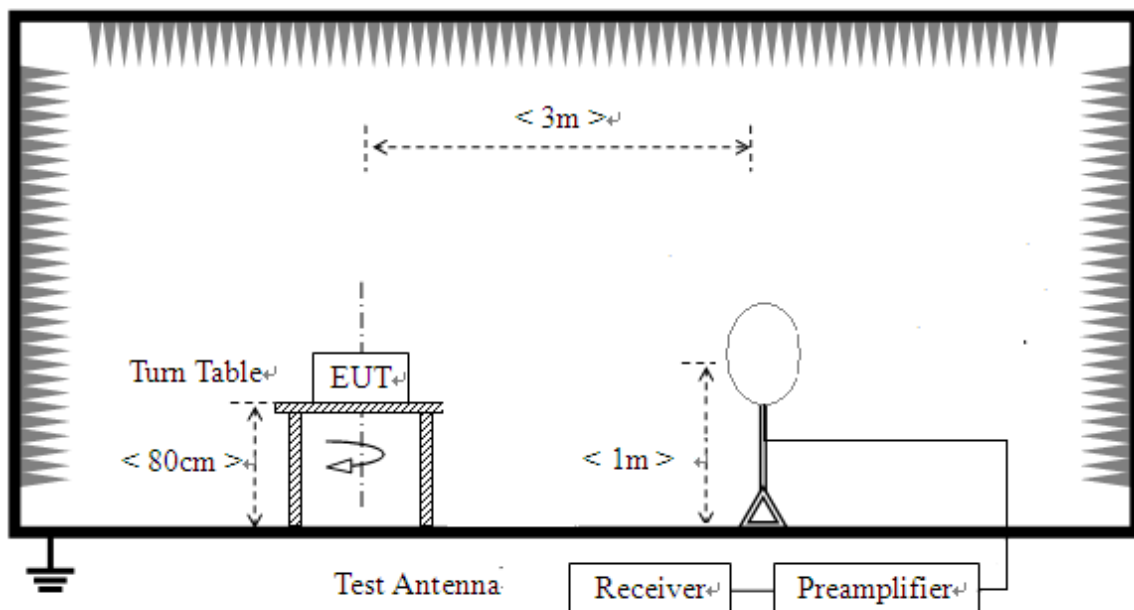
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

2.6.2. Measuring Instruments

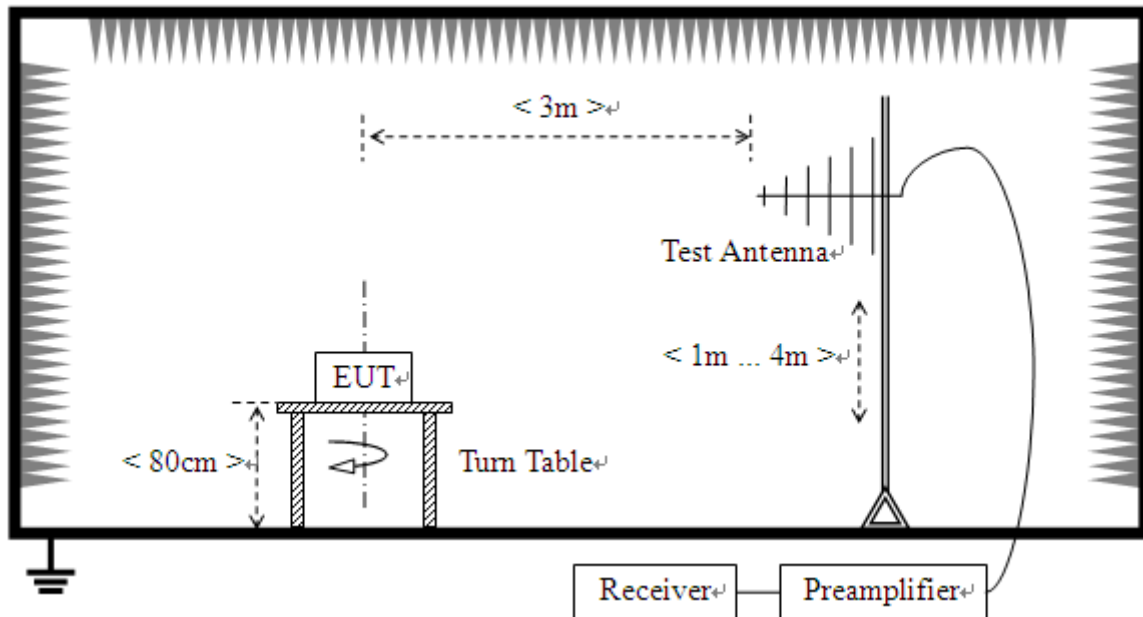
The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Setup

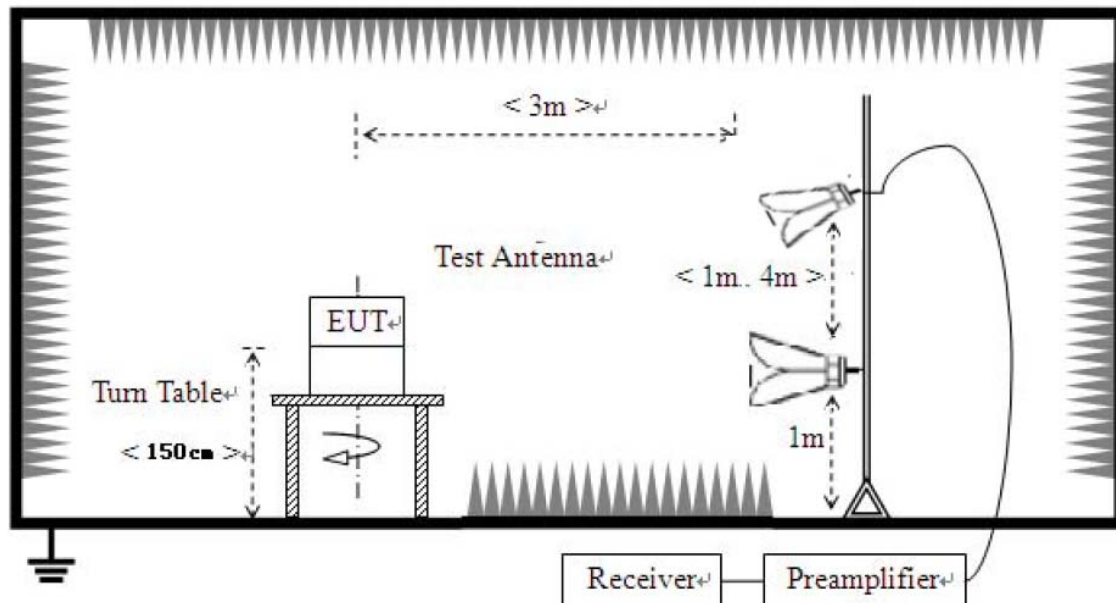
For radiated emissions from 9 KHz to 30 MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.6.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8 meters for below 1GHz and 1.5 meters for above 1GHz on the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. Height of receiving antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported.

Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
7. For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

NOTE:

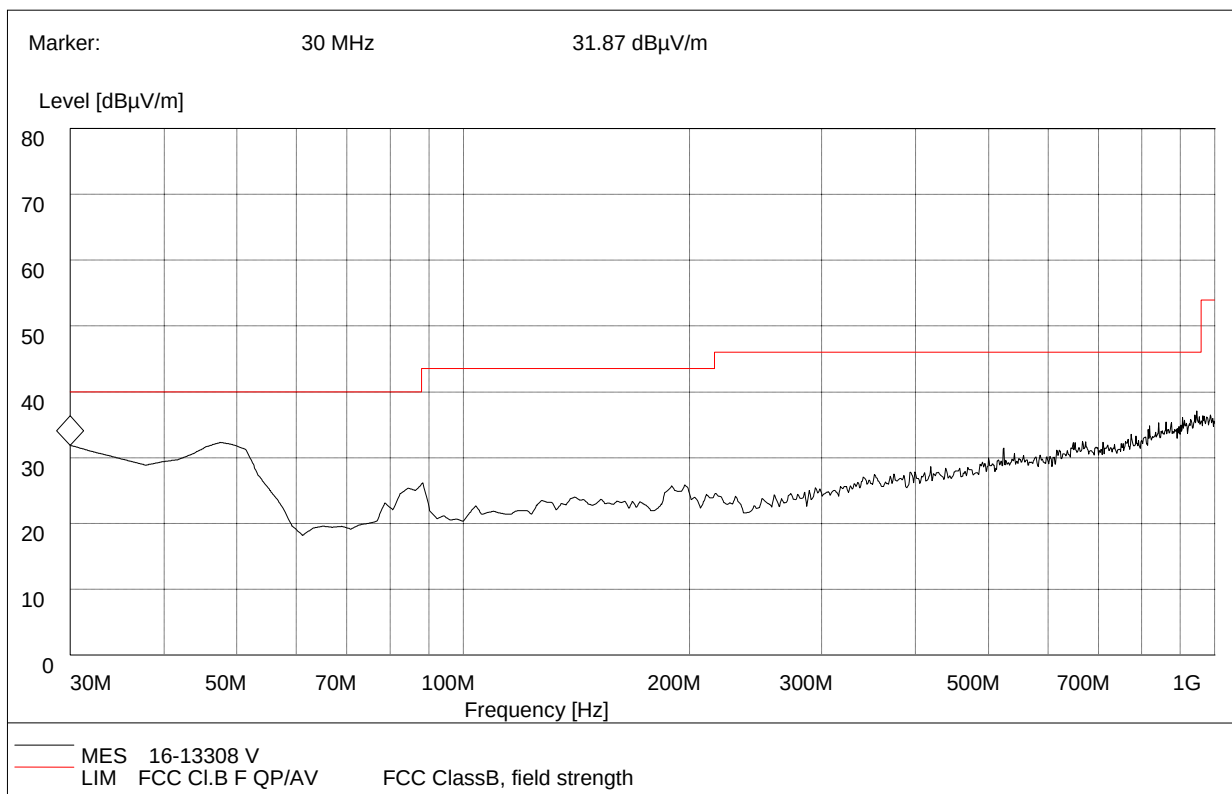
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $> 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

2.6.5. Test Results of Radiated Band Edge and Spurious Emission

For 9 kHz to 30MHz

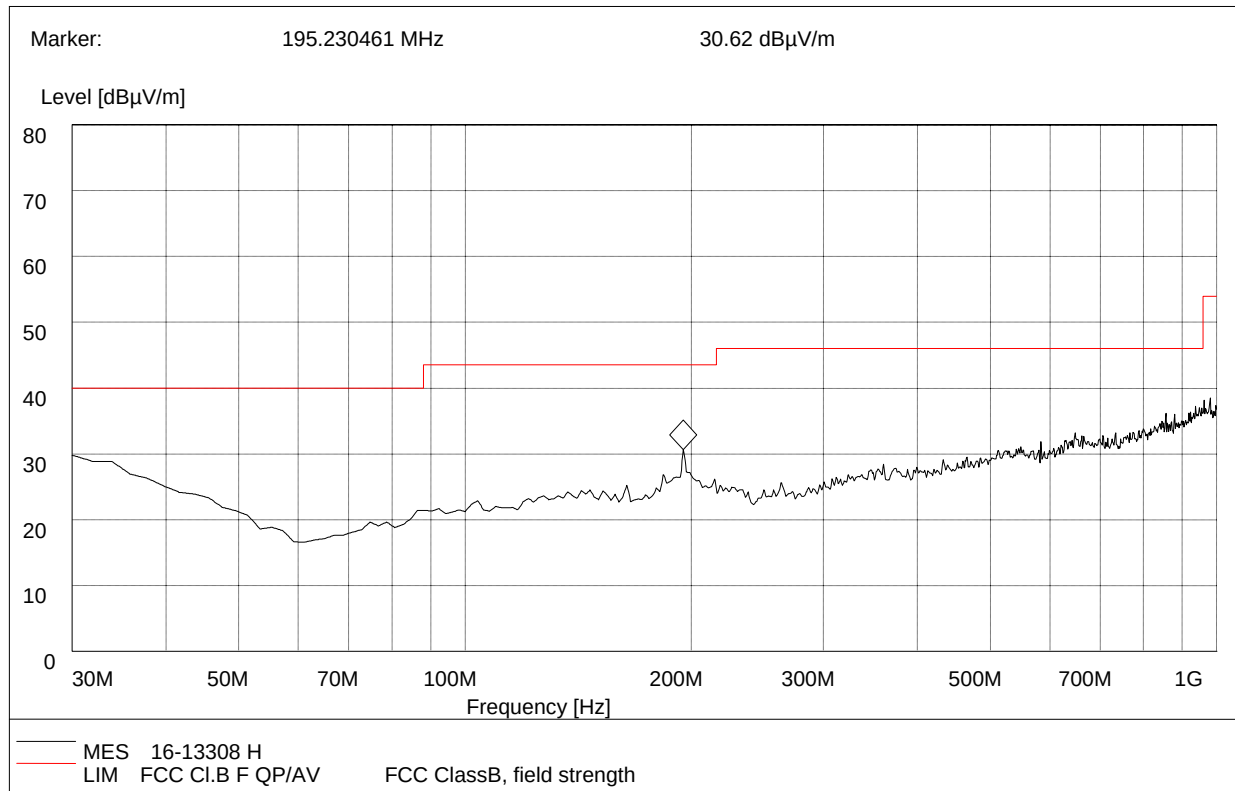
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



30MHz to 1GHz, Antenna Vertical

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Antenna	Verdict
30.00	31.87	120.000	100.0	40.0	Vertical	Pass



30MHz to 1GHz, Antenna Horizontal

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Antenna	Verdict
195.23	30.62	120.000	100.0	43.5	Horizontal	Pass

For 1GHz to 25 GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b_2412MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	56.40	PK	74.00	-17.60	1.51 H	228	24.20	32.20
2	2390.00	43.60	AV	54.00	-10.40	1.51 H	228	11.40	32.20
3	*2412.00	94.70	PK	/	/	1.53 H	112	62.50	32.20
4	*2412.00	80.20	AV	/	/	1.53 H	112	48.00	32.20
5	4824.00	51.40	PK	74.00	-22.60	1.50 H	254	46.10	5.30
6	4824.00	46.50	AV	54.00	-7.50	1.50 H	254	41.20	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b_2412MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	55.4	PK	74.00	-18.6	1.51 V	228	23.20	32.20
2	2390.00	44.3	AV	54.00	-9.7	1.51 V	228	12.10	32.20
3	*2412.00	95.65	PK	/	/	1.49 V	112	62.45	32.20
4	*2412.00	83.9	AV	/	/	1.53 V	112	51.70	32.20
5	4824.00	54.4	PK	74.00	-19.6	1.51 V	254	49.10	5.30
6	4824.00	43.5	AV	54.00	-10.5	1.51 V	254	38.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	95.66	PK	/	/	1.51 H	210	63.46	32.20
2	*2437.00	83.4	AV	/	/	1.51 H	210	51.20	32.20
3	4874.00	54.2	PK	74.00	-19.8	1.53 H	272	48.90	5.30
4	4874.00	44.0	AV	54.00	-10.0	1.53 H	272	38.70	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	96.00	PK	/	/	1.49 V	112	66.80	32.20
2	*2437.00	85.30	AV	/	/	1.49 V	112	53.10	32.20
3	4874.00	56.80	PK	74.00	-17.20	1.51 V	254	51.50	5.30
4	4874.00	46.50	AV	54.00	-7.50	1.51 V	254	41.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	94.57	PK	/	/	1.55 H	215	62.27	32.30
2	*2462.00	82.5	AV	/	/	1.55 H	215	50.20	32.30
3	2483.50	56.8	PK	74.00	-17.2	1.55 H	211	24.40	32.40
4	2483.50	44.5	AV	54.00	-9.5	1.55 H	211	12.10	32.40
5	4924.00	52.1	PK	74.00	-21.9	1.55 H	320	46.60	5.50
6	4924.00	46.3	AV	54.00	-7.7	1.55 H	320	40.80	5.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	94.5	PK	/	/	1.55 V	174	62.20	32.30
2	*2462.00	83.8	AV	/	/	1.55 V	174	51.50	32.30
3	2483.50	57.5	PK	74.00	-16.5	1.55 V	177	25.10	32.40
4	2483.50	44.7	AV	54.00	-9.3	1.55 V	177	12.30	32.40
5	4924.00	54.9	PK	74.00	-19.1	1.55 V	201	49.40	5.50
6	4924.00	45.6	AV	54.00	-8.4	1.55 V	201	40.10	5.50

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	56.3	PK	74.0	-17.7	1.51 H	228	24.10	32.20
2	2390.00	43.4	AV	54.0	-10.6	1.51 H	228	11.20	32.20
3	*2412.00	92.1	PK	/	/	1.53 H	112	59.90	32.20
4	*2412.00	77.6	AV	/	/	1.53 H	112	45.40	32.20
5	4824.00	51.7	PK	74.00	-22.3	1.50 H	254	46.40	5.30
6	4824.00	48.5	AV	54.00	-5.5	1.50 H	254	43.20	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	56.1	PK	74.0	-17.9	1.51 V	228	23.90	32.20
2	2390.00	43.4	AV	54.0	-10.6	1.51 V	228	11.20	32.20
3	*2412.00	96.9	PK	/	/	1.59 V	112	64.70	32.20
4	*2412.00	83.6	AV	/	/	1.53 V	112	51.40	32.20
5	4824.00	54.4	PK	74.00	-19.6	1.51 V	254	49.10	5.30
6	4824.00	44.7	AV	54.00	-9.3	1.51 V	254	39.40	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	94.23	PK	/	/	1.51 H	210	65.03	32.20
2	*2437.00	85.6	AV	/	/	1.51 H	210	53.40	32.20
3	4874.00	53.4	PK	74.00	-20.6	1.53 H	272	48.10	5.30
4	4874.00	44.0	AV	54.00	-10.0	1.53 H	272	38.70	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	93.3	PK	/	/	1.49 V	112	61.10	32.20
2	*2437.00	78.7	AV	/	/	1.49 V	112	46.50	32.20
3	4874.00	56.8	PK	74.00	-17.2	1.51 V	254	51.50	5.30
4	4874.00	44.5	AV	54.00	-9.5	1.51 V	254	39.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	93.7	PK	/	/	1.55 H	215	61.40	32.30
2	*2462.00	77.9	AV	/	/	1.55 H	215	45.60	32.30
3	2483.50	57.3	PK	74.0	-16.7	1.55 H	211	24.90	32.40
4	2483.50	44.2	AV	54.0	-9.8	1.55 H	211	11.80	32.40
5	4924.00	52.4	PK	74.0	-21.6	1.55 H	320	46.90	5.50
6	4924.00	44.2	AV	54.0	-9.8	1.55 H	320	38.70	5.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	91.6	PK	/	/	1.55 V	174	59.30	32.30
2	*2462.00	76.8	AV	/	/	1.55 V	174	44.50	32.30
3	2483.50	55.5	PK	74.0	-18.5	1.55 V	177	23.10	32.40
4	2483.50	44.7	AV	54.0	-9.3	1.55 V	177	12.30	32.40
5	4924.00	53.9	PK	74.0	-20.1	1.55 V	201	48.40	5.50
6	4924.00	45.9	AV	54.0	-8.1	1.55 V	201	40.40	5.50

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	59.3	PK	74.0	-14.7	1.51 H	228	27.10	32.20
2	2390.00	42.7	AV	54.0	-11.3	1.51 H	228	10.50	32.20
3	*2412.00	94.4	PK	/	/	1.53 H	112	62.20	32.20
4	*2412.00	82.0	AV	/	/	1.53 H	112	59.80	32.20
5	4824.00	54.8	PK	74.00	-19.2	1.50 H	254	49.50	5.30
6	4824.00	46.6	AV	54.00	-7.4	1.50 H	254	41.30	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	57.7	PK	74.0	-16.3	1.51 V	228	25.50	32.20
2	2390.00	43.7	AV	54.0	-10.3	1.51 V	228	11.50	32.20
3	*2412.00	97.1	PK	/	/	1.49 V	112	64.90	32.20
4	*2412.00	83.8	AV	/	/	1.53 V	112	51.80	32.20
5	4824.00	54.4	PK	74.00	-19.6	1.51 V	254	49.10	5.30
6	4824.00	44.9	AV	54.00	-9.1	1.51 V	254	39.60	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	94.3	PK	/	/	1.51 H	210	62.10	32.20
2	*2437.00	82.1	AV	/	/	1.51 H	210	51.90	32.20
3	4874.00	57.8	PK	74.00	-16.2	1.53 H	272	52.50	5.30
4	4874.00	45.2	AV	54.00	-8.8	1.53 H	272	39.90	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	94.0	PK	/	/	1.49 V	112	61.80	32.20
2	*2437.00	85.3	AV	/	/	1.49 V	112	53.10	32.20
3	4874.00	56.8	PK	74.00	-17.2	1.51 V	254	51.50	5.30
4	4874.00	45.5	AV	54.00	-8.5	1.51 V	254	40.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	93.2	PK	/	/	1.55 H	215	60.90	32.30
2	*2462.00	79.9	AV	/	/	1.55 H	215	47.60	32.30
3	2483.50	56.3	PK	74.0	-17.7	1.55 H	211	23.90	32.40
4	2483.50	44.1	AV	54.0	-9.9	1.55 H	211	11.70	32.40
5	4924.00	53.4	PK	74.0	-20.6	1.55 H	320	47.90	5.50
6	4924.00	46.3	AV	54.0	-7.7	1.55 H	320	40.80	5.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	94.5	PK	/	/	1.55 V	174	62.20	32.30
2	*2462.00	80.8	AV	/	/	1.55 V	174	48.50	32.30
3	2483.50	55.5	PK	74.0	-18.5	1.55 V	177	23.10	32.40
4	2483.50	44.7	AV	54.0	-9.3	1.55 V	177	12.30	32.40
5	4924.00	55.9	PK	74.0	-18.1	1.55 V	201	50.40	5.50
6	4924.00	46.4	AV	54.0	-7.6	1.55 V	201	40.90	5.50

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_2422MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	56.9	PK	74.0	-17.1	1.51 H	228	24.70	32.20
2	2390.00	43.6	AV	54.0	-10.4	1.51 H	228	11.40	32.20
3	*2422.00	91.8	PK	/	/	1.53 H	112	59.60	32.20
4	*2422.00	77.3	AV	/	/	1.53 H	112	45.10	32.20
5	4844.00	51.7	PK	74.00	-22.3	1.50 H	254	46.40	5.30
6	4844.00	46.6	AV	54.00	-7.4	1.50 H	254	41.30	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_2422MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	57.0	PK	74.0	-17.0	1.51 V	228	24.80	32.20
2	2390.00	44.4	AV	54.0	-9.6	1.51 V	228	12.20	32.20
3	*2422.00	92.6	PK	/	/	1.50 V	112	60.40	32.20
4	*2422.00	77.6	AV	/	/	1.53 V	112	45.40	32.20
5	4844.00	54.4	PK	74.00	-19.6	1.51 V	254	49.10	5.30
6	4844.00	44.6	AV	54.00	-9.4	1.51 V	254	39.30	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	91.3	PK	/	/	1.51 H	210	59.10	32.20
2	*2437.00	76.1	AV	/	/	1.51 H	210	43.90	32.20
3	4874.00	53.8	PK	74.00	-20.2	1.53 H	272	48.50	5.30
4	4874.00	44.2	AV	54.00	-9.8	1.53 H	272	38.90	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	92.0	PK	/	/	1.49 V	112	61.80	32.20
2	*2437.00	76.3	AV	/	/	1.49 V	112	44.10	32.20
3	4874.00	56.4	PK	74.00	-17.6	1.51 V	254	51.10	5.30
4	4874.00	44.5	AV	54.00	-9.5	1.51 V	254	39.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_2452MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2452.00	92.2	PK	/	/	1.55 H	215	59.90	32.30
2	*2452.00	77.1	AV	/	/	1.55 H	215	48.80	32.30
3	2483.50	57.3	PK	74.0	-16.7	1.55 H	211	24.90	32.40
4	2483.50	45.0	AV	54.0	-9.0	1.55 H	211	12.60	32.40
5	4904.00	52.7	PK	74.0	-21.3	1.55 H	320	47.20	5.50
6	4904.00	43.0	AV	54.0	-11.0	1.55 H	320	37.50	5.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_2452MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2452.00	90.4	PK	/	/	1.55 V	174	58.10	32.30
2	*2452.00	76.8	AV	/	/	1.55 V	174	44.50	32.30
3	2483.50	55.5	PK	74.0	-18.5	1.55 V	177	23.10	32.40
4	2483.50	45.7	AV	54.0	-8.3	1.55 V	177	13.30	32.40
5	4904.00	55.9	PK	74.0	-18.1	1.55 V	201	50.40	5.50
6	4904.00	46.7	AV	54.0	-7.3	1.55 V	201	41.20	5.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
- Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level - Limit value
5. " * ": Fundamental frequency.

2.7. Conducted Emission

2.7.1. Limit of Conducted Emission

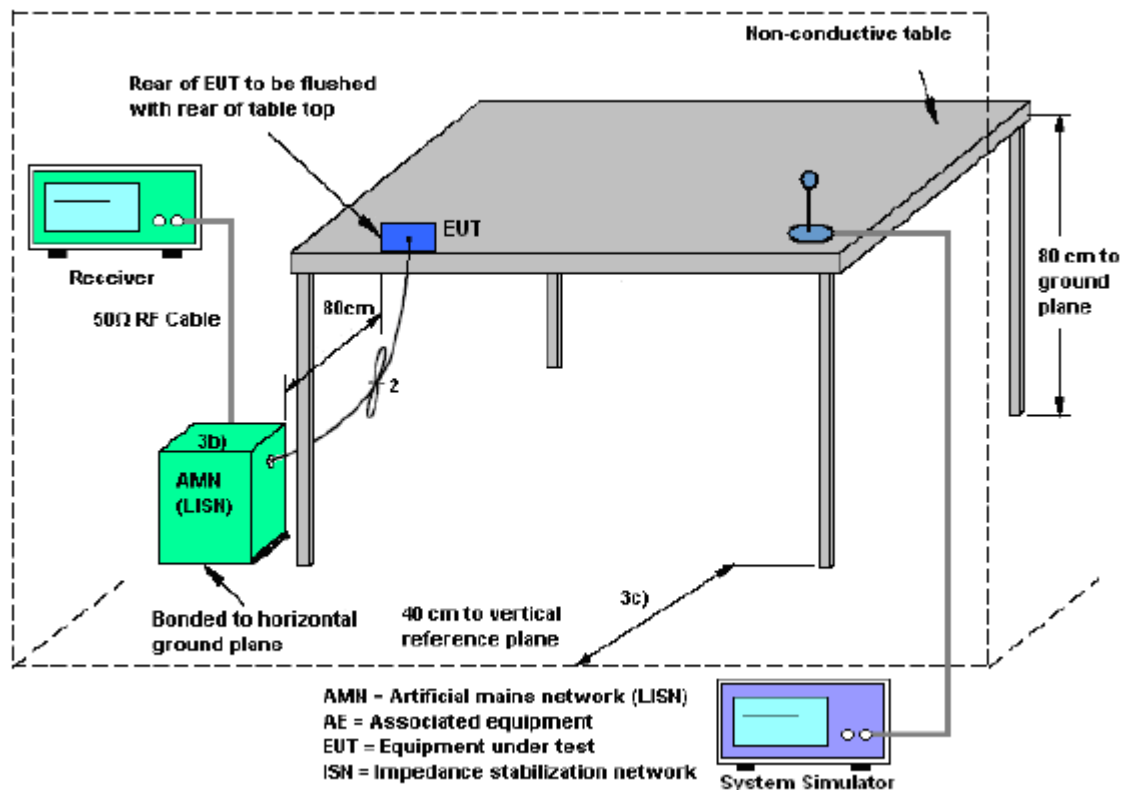
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3. Test Setup

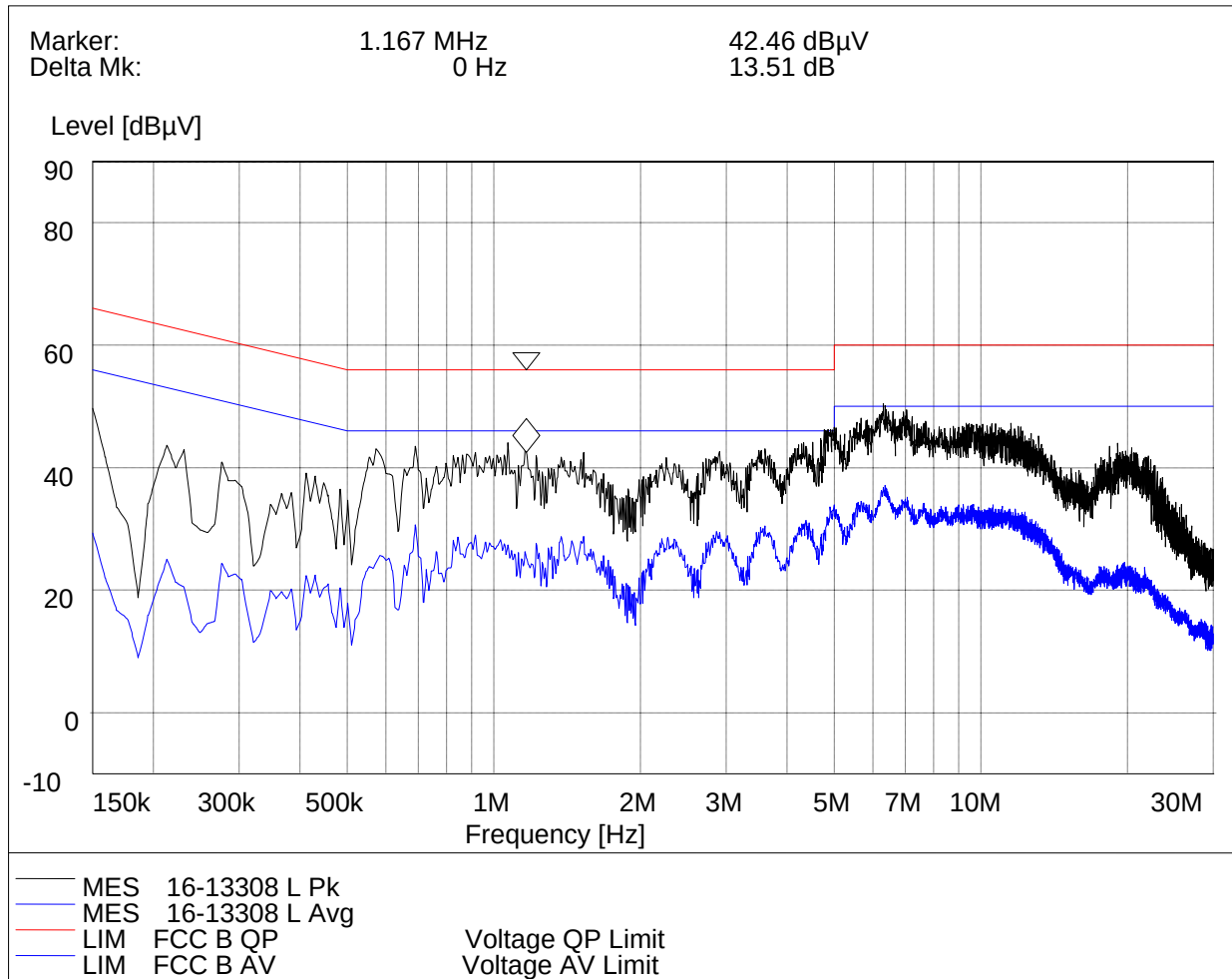


2.7.4. Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 micrometry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

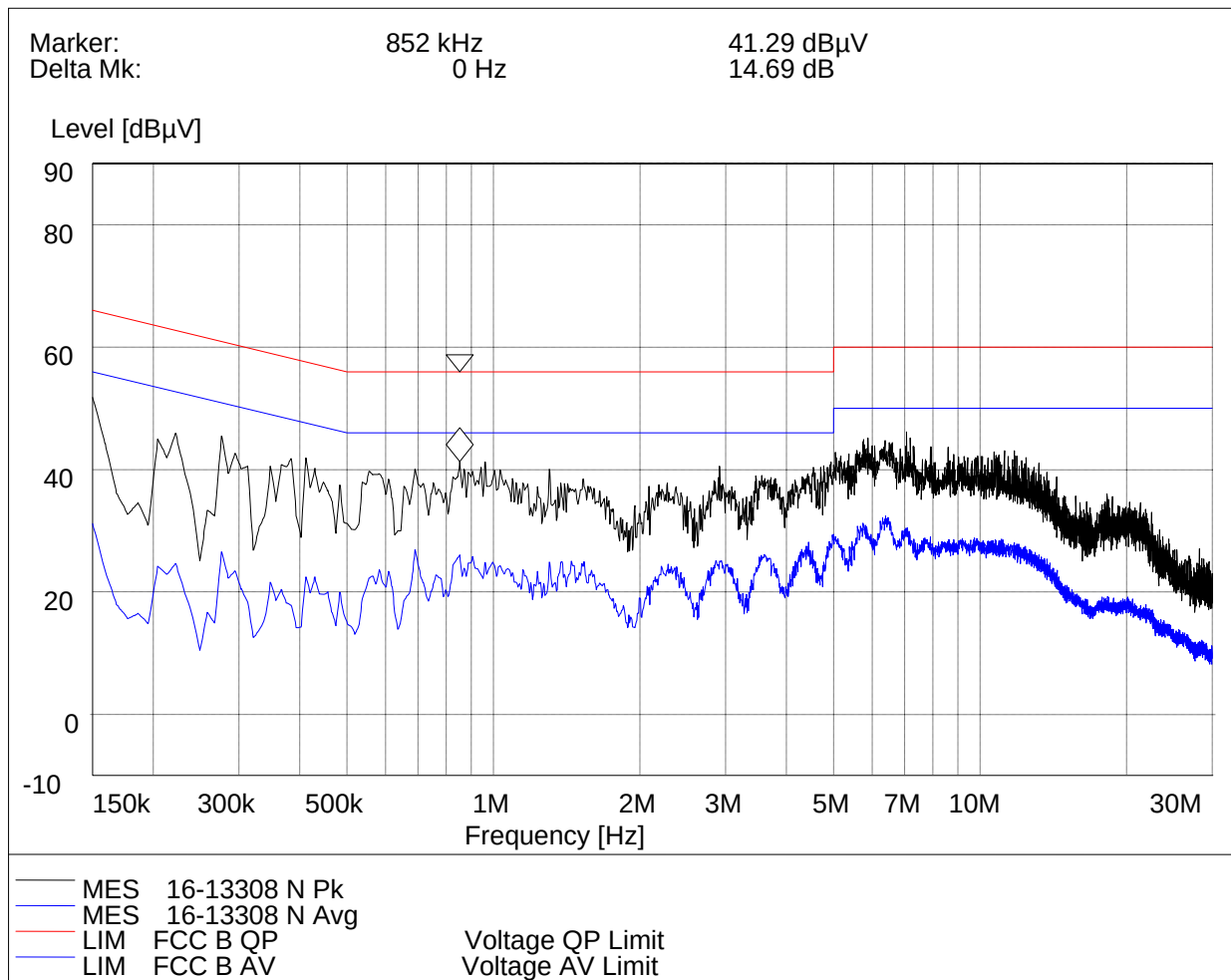
2.7.5. Test Results of Conducted Emission

1. The EUT configuration of the emission tests is WLAN Link + USB Cable (Charging from Adapter).
2. The power adapter support (100~240V AC, 50/60Hz), the EUT was tested at the both available voltages (120, 240V AC), and 60Hz. Only the worst-case mode (120V/60Hz) was record in this report.



(Plot A: L Phase)

Conducted Disturbance at Mains Terminals					
L Test Data					
QP			AV		
Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)	Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)
0.150	66.00	47.70	0.150	56.00	29.29
0.582	56.00	40.26	0.582	46.00	25.64
1.167	56.00	40.46	1.167	46.00	25.21



(Plot B: N Phase)

Conducted Disturbance at Mains Terminals					
N Test Data					
QP			AV		
Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)	Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)
0.150	66.00	49.74	0.150	56.00	31.12
0.690	56.00	38.03	0.690	46.00	26.90
0.853	56.00	39.29	0.853	46.00	26.02

Test Result: PASS

3. List of measuring equipment

Description	Manufacturer	Model	Serial No.	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESIB26	A0304218	2016.06.02	2017.06.01	Radiation
Full-Anechoic Chamber	Albatross	12.8m*6.8m*6.4m	A0412372	2016.06.02	2017.06.01	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2016.06.02	2017.06.01	Radiation
Ultra-wideband antenna (30MHz~1GHz)	R&S	HL562	100089	2016.06.02	2017.06.01	Radiation
Double ridge horn antenna (1G~18GHz)	R&S	HF906	100150	2016.06.02	2017.06.01	Radiation
Test Antenna – Horn (18G-26.5GHz)	ETS	3160-09	A0902607	2016.06.02	2017.06.01	Radiation
Amplifier 20M~3GHz	R&S	PAP-0203H	22018	2016.06.02	2017.06.01	Radiation
Ampilier 1G~18GHz	R&S	MITEQ AFS42-00101 800	25-S-42	2016.06.02	2017.06.01	Radiation
Ampilier 18G~40GHz	R&S	JS42-180026 00-28-5A	12111.0980.00	2016.06.02	2017.06.01	Radiation
Spectrum Analyzer	KEYSIGHT	N9030A	MY55410524	2016.05.05	2017.05.04	Conducted
Power Meter	Anritsu	ML2495A	1421017	2016.06.02	2017.06.01	Conducted
Power Sensor	Anritsu	MA2411B	1417208	2016.06.02	2017.06.01	Conducted
LISN	ROHDE&SC HWARZ	ESH2-Z5	A0304221	2016.06.02	2017.06.01	Conducted
Test Receiver	R&S	ESCS30	A0304260	2016.06.02	2017.06.01	Conducted
Cable	SUNHNER	SUCOFLEX 100	/	2016.06.02	2017.06.01	Radiation
Cable	SUNHNER	SUCOFLEX 104	/	2016.06.02	2017.06.01	Radiation

4. Uncertainty of Evaluation

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.35dB
Radiated emissions	30MHz~1000MHz	2.45dB
	1G~18GHz	2.21dB
	18G~40GHz	1.96dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

**** END OF REPORT ****