

## FCC- TEST REPORT

Report Number : **68.950.17.249.01** Date of Issue: April 21, 2017

Model : WS9TCHW

Product Type : IoTega Touchscreen

Applicant : Digital Security Controls Ltd.

Address : 3301 Langstaff Road, Concord, Ontario L4K 4L2, Canada

Production Facility : WELCO WONG'S TECHNOLOGY (SHENZHEN) LIMITED

Address : 2-3 floor of block 14, 1-4 floor of block 34, No2 of WanFeng

WanZhangPu Industrial Estate, ShaJing, Bao'an ShenZhen,China

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including  
Appendices : 48

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## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
Building 12&13, Zhiheng Wisdomland Business Park,  
Nantou Checkpoint Road 2, Nanshan District,  
Shenzhen City, 518052,  
P. R. China

FCC Registration Number: 502708

IC Registration Number: 10320A-1

Telephone: 86 755 8828 6998  
Fax: 86 755 8828 5299

### 3 Description of the Equipment under Test

#### Description of the Equipment Under Test

Product:	IoTega Touchscreen
Model no.:	WS9TCHW
FCC ID:	F5317WS9TCHW
IC	160A-WS9TCHW
Options and accessories:	NIL
Rating:	3.7VDC, 1000mAh (Supplied by Li-ion rechargeable battery) 5.0VDC, 2.0A (Charging by USB Port per AC/DC external adapter) Model No: SEI0502000VU Input: 100 – 240VAC, 50-60Hz, 500mA Output: 5VDC, 2000mA
RF Transmission Frequency: No. of Operated Channel:	2412-2462MHz 11
Modulation:	CCK, DQPSK, DBPSK for 802.11b QPSK,BPSK for 802.11g/n
Duty Cycle:	100%
Antenna Type:	Integral Antenna
Antenna Gain:	-2dBi
Description of the EUT:	The Equipment Under Test (EUT) is a IoTega Touchscreen with WIFI function operating at 2.4GHz

## 4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2016 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-247 Issue 2 2017	Digital Transmission Systems (DTS), Frequency Hopping Systems (FHSS) and License-Exempt Local Area Network (LE-LAN) Devices

All the test methods were according to KDB558074 DTS Measurement Guidance and ANSI C63.10 (2013).

## 5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C/RSS-247 Issue 2/RSS-Gen Issue 4					
Test Condition			Pages	Test Result	Test Site
§15.207	RSS-GEN 8.8	Conducted emission AC power port	10	Pass	Site 1
§15.247(b)(1)	RSS-247 Clause 5.4(2)	Conducted peak output power	13	Pass	Site 1
§15.247(e)	RSS-247 Clause 5.2(2)	Power spectral density*	20	Pass	Site 1
§15.247(a)(2)	RSS-247 Clause 5.2(1)	6dB bandwidth	14	Pass	Site 1
§15.247(a)(1)	RSS-247 Clause 5.1(1)	20dB bandwidth and 99% Occupied Bandwidth	14	Pass	Site 1
§15.247(a)(1)	RSS-247 Clause 5.1(2)	Carrier frequency separation	--	N/A	--
§15.247(a)(1)(iii)	RSS-247 Clause 5.1(4)	Number of hopping frequencies	--	N/A	--
§15.247(a)(1)(iii)	RSS-247 Clause 5.1(4)	Dwell Time	--	N/A	--
§15.247(d)	RSS-247 Clause 5.5	Spurious RF conducted emissions	26	Pass	Site 1
§15.247(d)	RSS-247 Clause 5.5	Band edge	32	Pass	Site 1
§15.247(d) & §15.209 &	RSS-247 Clause 5.5 & RSS-GEN 6.13	Spurious radiated emissions for transmitter and receiver	36	Pass	Site 1
§15.203	RSS-GEN 8.3	Antenna requirement	See note 1	Pass	--

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses a permanently integral antenna, which gain is -2dBi. According to §15.203, it is considered sufficiently to comply with the provisions of this section.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: F5317WS9TCHW, IC: 160A-WS9TCHW, complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C and RSS 247 and RSS-Gen rules.

### SUMMARY:

All tests according to the regulations cited on page 5 were

☒ - Performed

☐ - **Not** Performed

The Equipment under Test

☒ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: April 07, 2017

Testing Start Date: April 07, 2017

Testing End Date: April 21, 2017


- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

Reviewed by:

Reviewed by:



Phoebe Hu  
Section Manager

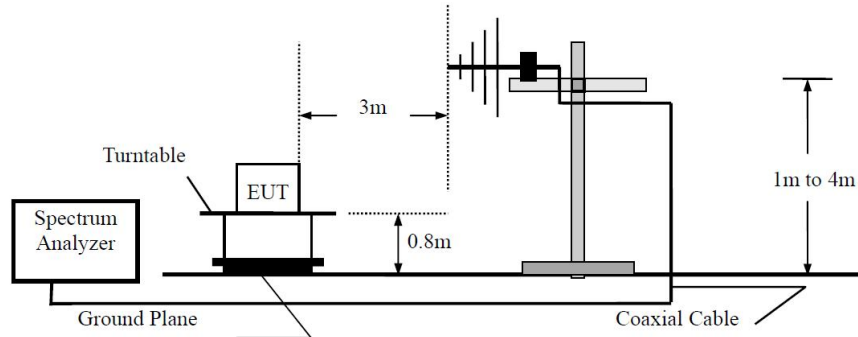


Aaron Lai  
EMC Project Engineer

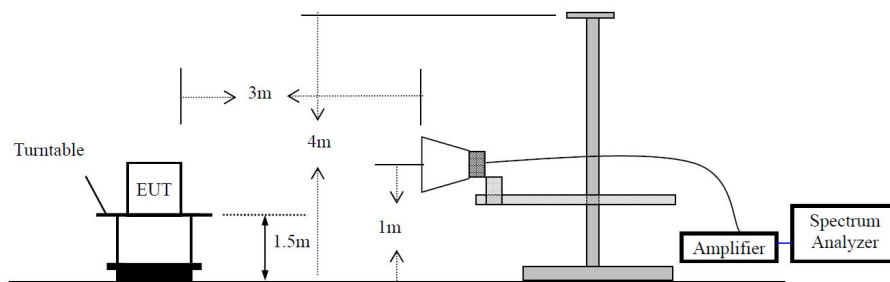
## 7 Test Setups

### 7.1 Radiated test setups

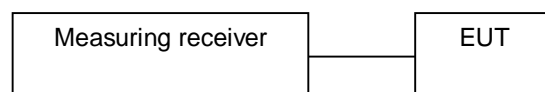
Below 1GHz



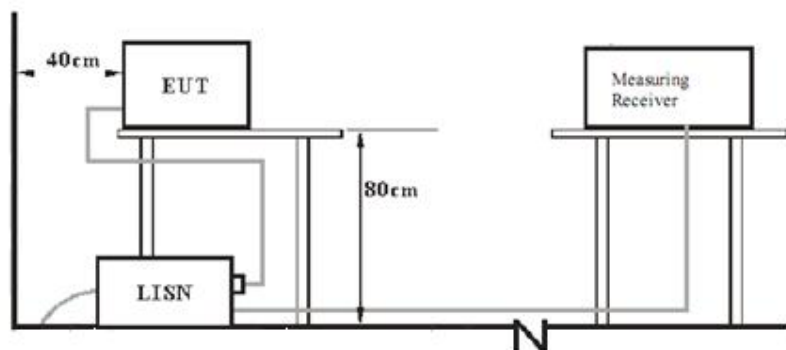
Above 1GHz



### 7.2 Conducted RF test setups



### 7.3 AC Power Line Conducted Emission test setups





## 8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
---	---	---	---

Test software: RF test tool

The system was configured to channel 1, 6 and 11 for the test.

## 9 Technical Requirement

### 9.1 Conducted Emission

#### Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

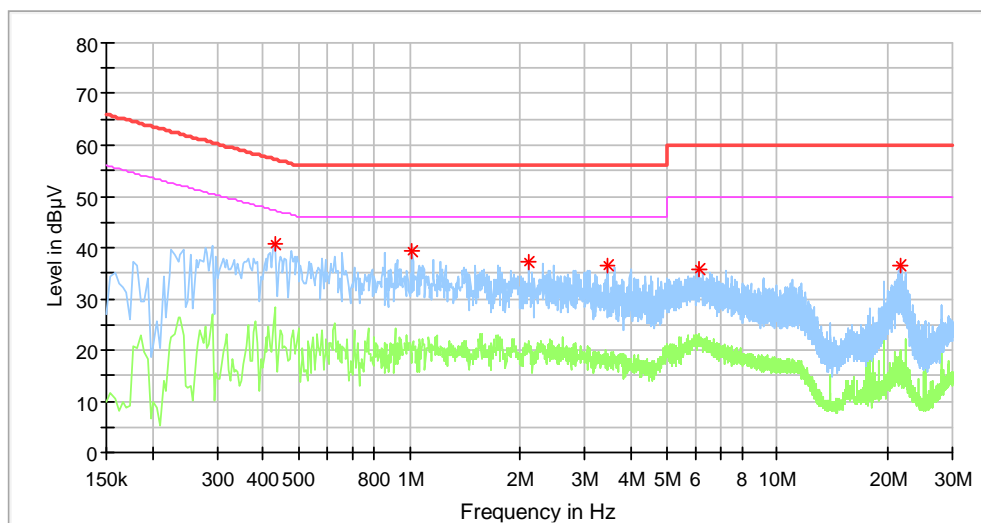
#### Limit

Frequency MHz	QP Limit dB $\mu$ V	AV Limit dB $\mu$ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linea

## Conducted Emission

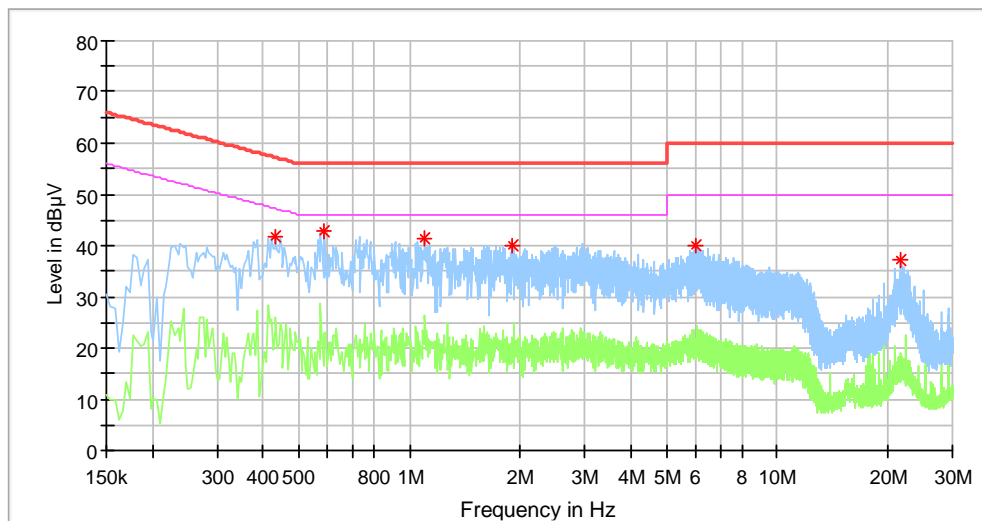
Product Type : IoTega Touchscreen  
 M/N : WS9TCHW  
 Operating Condition : Charging & TX  
 Test Specification : Live  
 Comment : AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.430000	40.76	---	57.25	16.49	L1	11.2
1.018000	39.42	---	56.00	16.58	L1	10.4
2.114000	37.07	---	56.00	18.93	L1	10.4
3.450000	36.48	---	56.00	19.52	L1	10.4
6.162000	35.69	---	60.00	24.31	L1	10.6
21.554000	36.48	---	60.00	23.52	L1	11.0

## Conducted Emission

Product Type : IoTega Touchscreen  
 M/N : WS9TCHW  
 Operating Condition : Charging & TX  
 Test Specification : Neutral  
 Comment : AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.434000	41.82	---	57.18	15.35	N	10.3
0.586000	42.78	---	56.00	13.22	N	10.3
1.102000	41.54	---	56.00	14.46	N	10.4
1.902000	40.15	---	56.00	15.85	N	10.4
5.974000	39.84	---	60.00	20.16	N	10.6
21.758000	37.37	---	60.00	22.63	N	11.2

## 9.2 Conducted peak output power

### Test Method

1. Use the following spectrum analyzer settings:  
RBW > the 6 dB bandwidth of the emission being measured, VBW $\geq$ 3RBW, Span $\geq$ 3RBW  
Sweep = auto, Detector function = peak, Trace = max hold.
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

### Limits

According to §15.247 (b) (1), conducted peak output power limit as below:

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	$\leq 1$	$\leq 30$

Test result as below table

802.11b

Frequency MHz	Conducted Peak Output Power dBm	Result
Top channel 2412MHz	15.5	Pass
Middle channel 2437MHz	15.6	Pass
Bottom channel 2462MHz	15.9	Pass

802.11g

Frequency MHz	Conducted Peak Output Power dBm	Result
Top channel 2412MHz	13.3	Pass
Middle channel 2437MHz	13.4	Pass
Bottom channel 2462MHz	13.5	Pass

802.11nHT20

Frequency MHz	Conducted Peak Output Power dBm	Result
Top channel 2412MHz	12.7	Pass
Middle channel 2437MHz	12.6	Pass
Bottom channel 2462MHz	12.9	Pass

### 9.3 6dB and 99% bandwidth

#### Test Method

1. Use the following spectrum analyzer settings:  
RBW=100K, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be  $\geq$  6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

#### Limit

Limit [kHz]

$\geq 500$

#### Test result

##### 802.11b

Frequency MHz	6dB bandwidth MHz	99 bandwidth MHz	Result
Bottom channel 2412MHz	8.075	12.46	Pass
Middle channel 2437MHz	8.032	12.32	Pass
Top channel 2462MHz	8.075	12.47	Pass

##### 802.11g

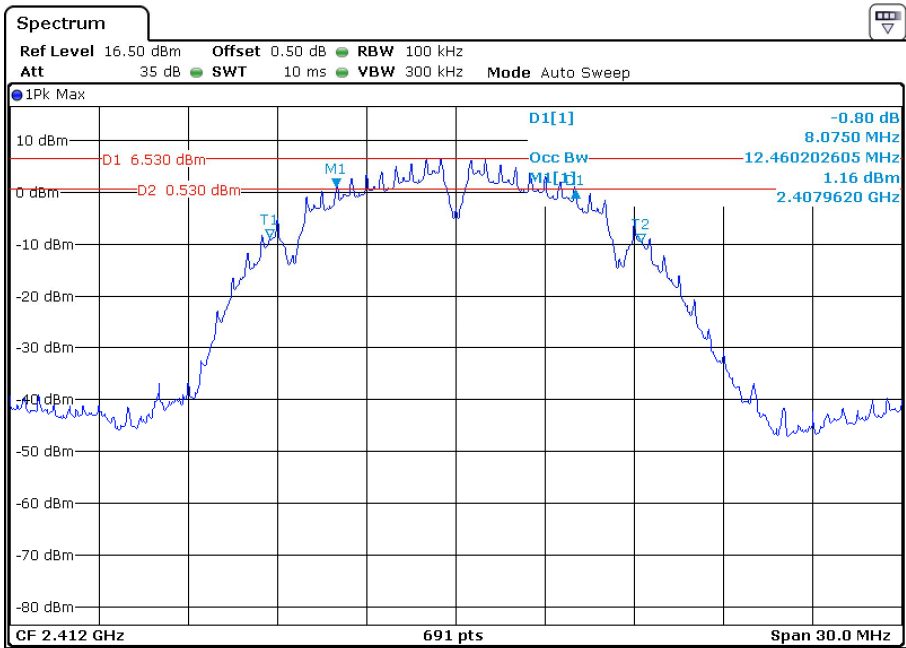
Frequency MHz	6dB bandwidth MHz	99 bandwidth MHz	Result
Bottom channel 2412MHz	15.456	16.32	Pass
Middle channel 2437MHz	15.456	16.32	Pass
Top channel 2462MHz	14.560	16.32	Pass

##### 802.11nHT20

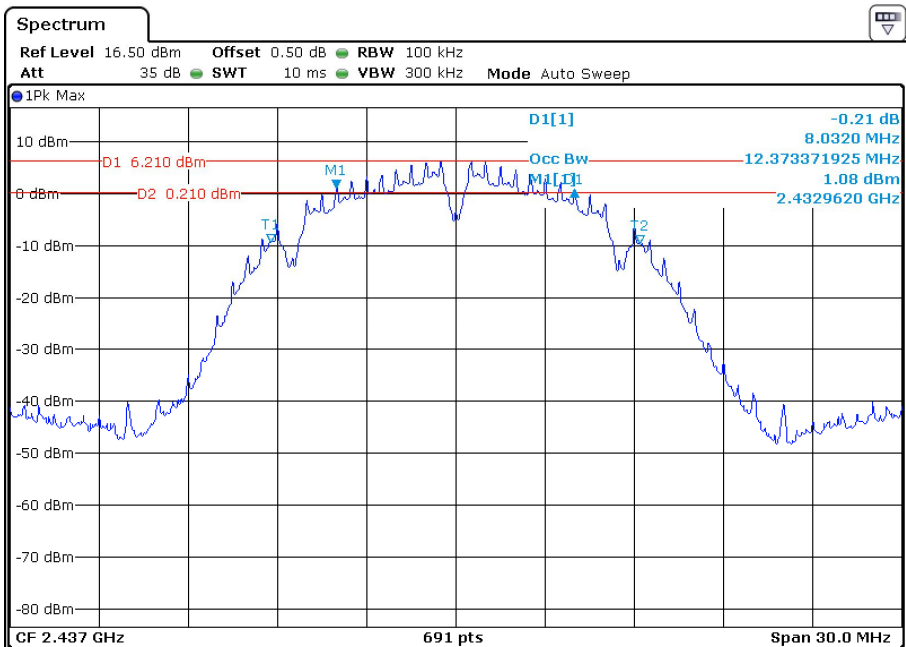
Frequency MHz	6dB bandwidth MHz	99 bandwidth MHz	Result
Bottom channel 2412MHz	16.064	17.49	Pass
Middle channel 2437MHz	14.889	17.49	Pass
Top channel 2462MHz	16.325	17.49	Pass



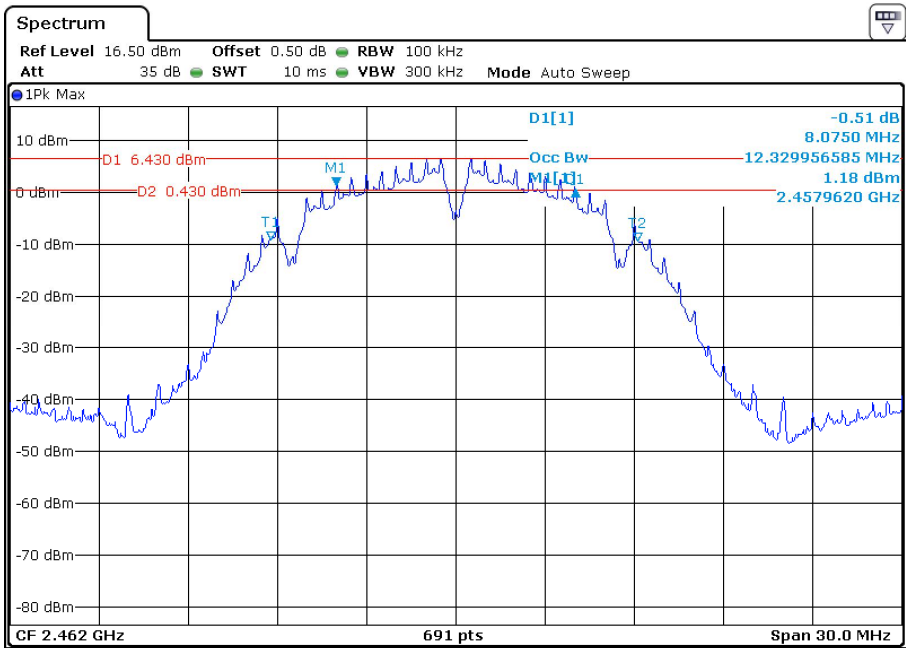
802.11b



2412MHz

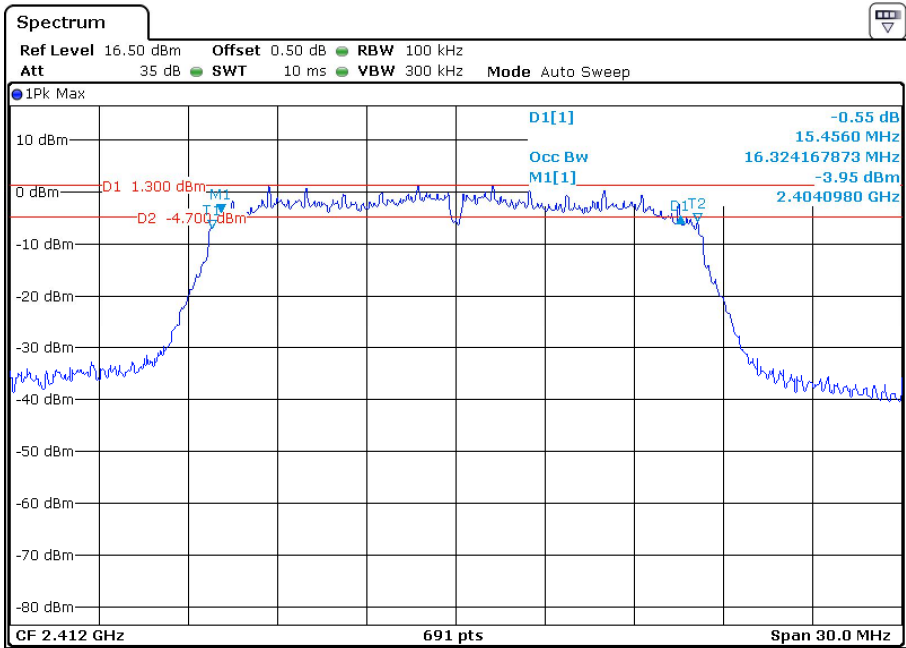


2437MHz



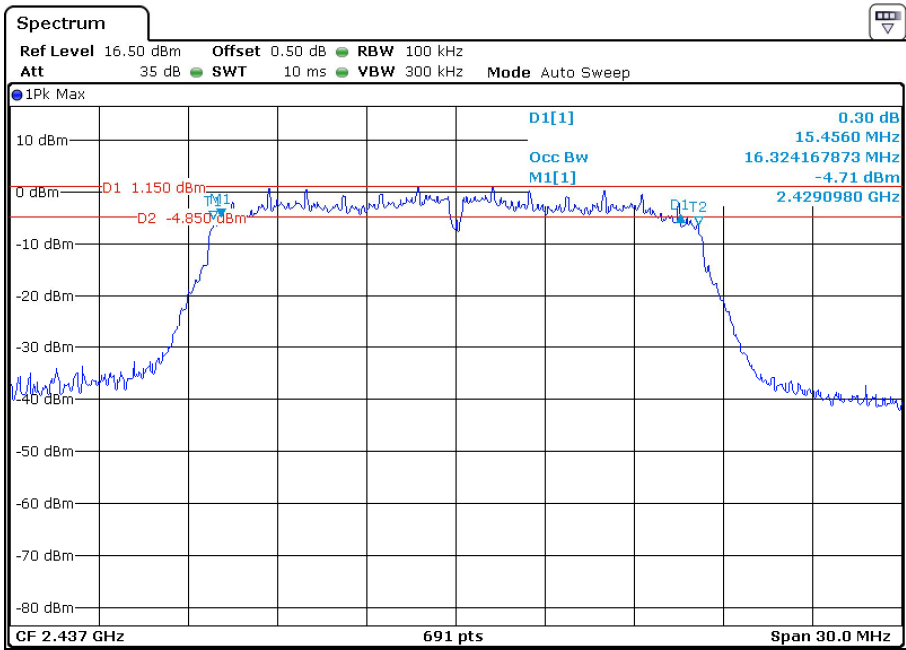
2462MHz

802.11g

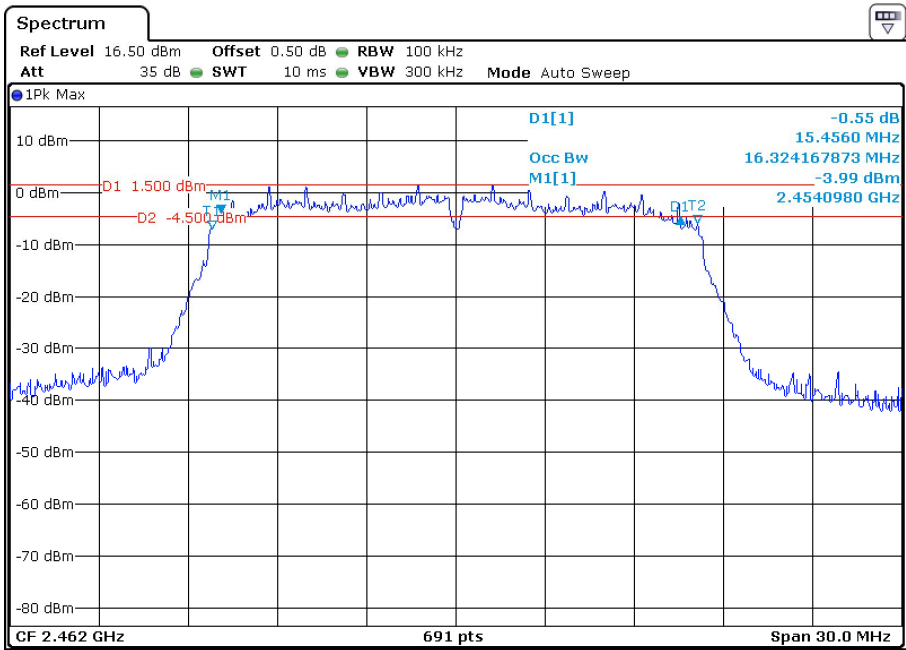


2412MHz





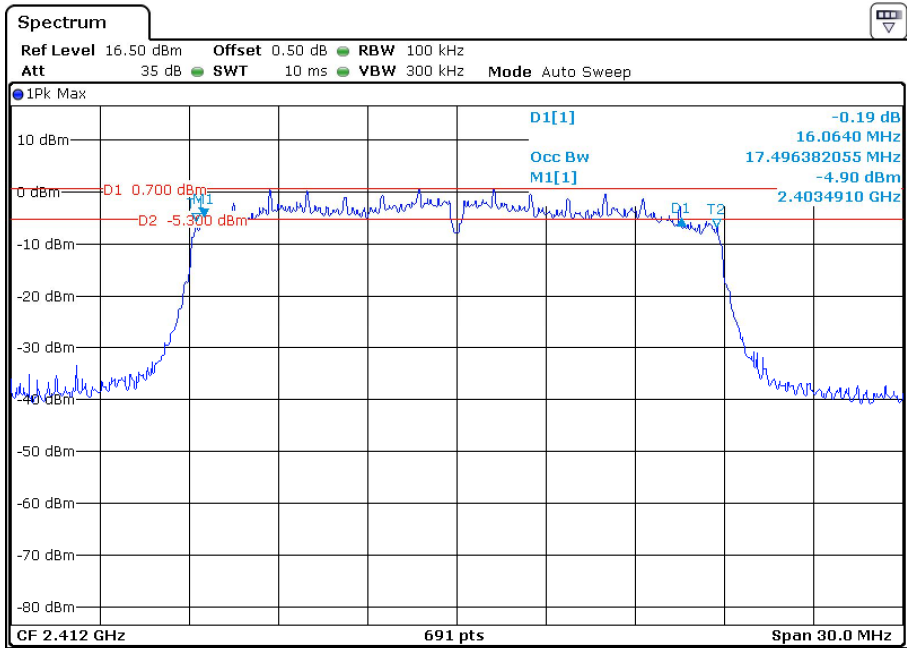
2437MHz



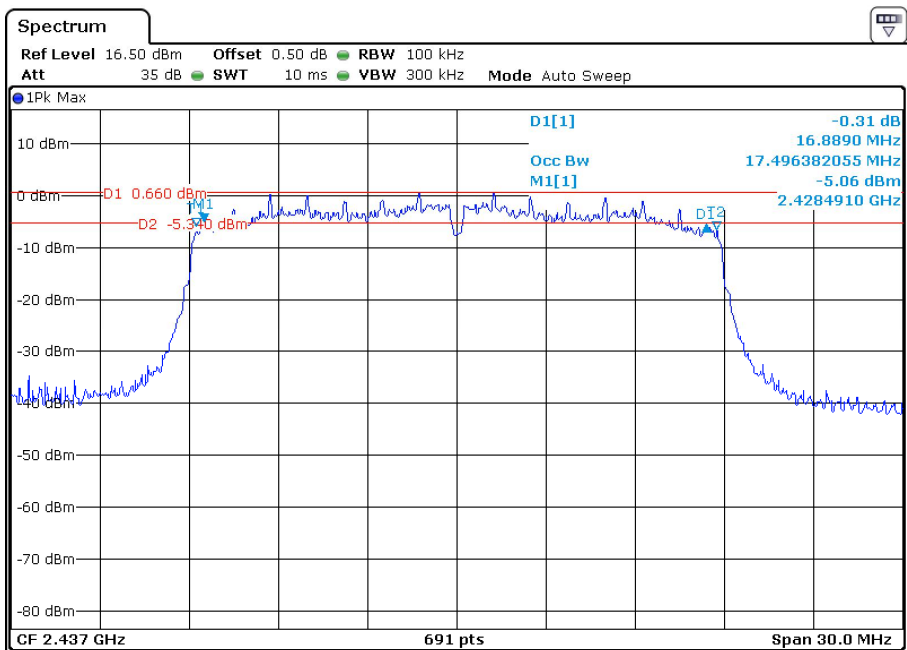
2462MHz



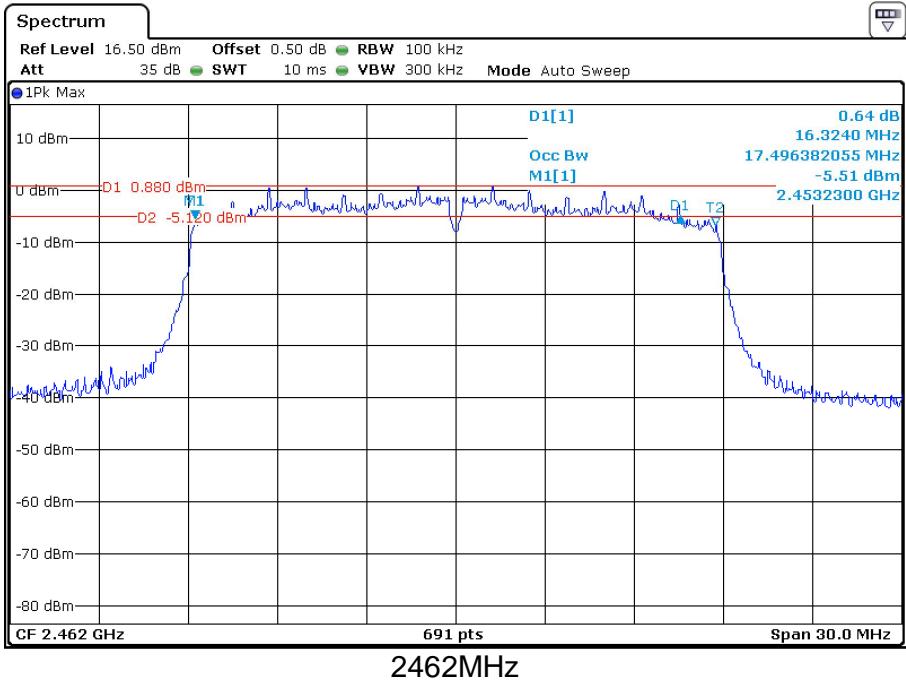
802.11nHT20



2412MHz



2437MHz



## 9.4 Power spectral density

### Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
3. Repeat above procedures until other frequencies measured were completed.

### Limit

Limit [dBm]

$\leq 8$

### Test result

#### 802.11b

Frequency MHz	Power spectral density dBm	Result
Top channel 2412MHz	-5.69	Pass
Middle channel 2437MHz	-5.98	Pass
Bottom channel 2462MHz	-5.49	Pass

#### 802.11g

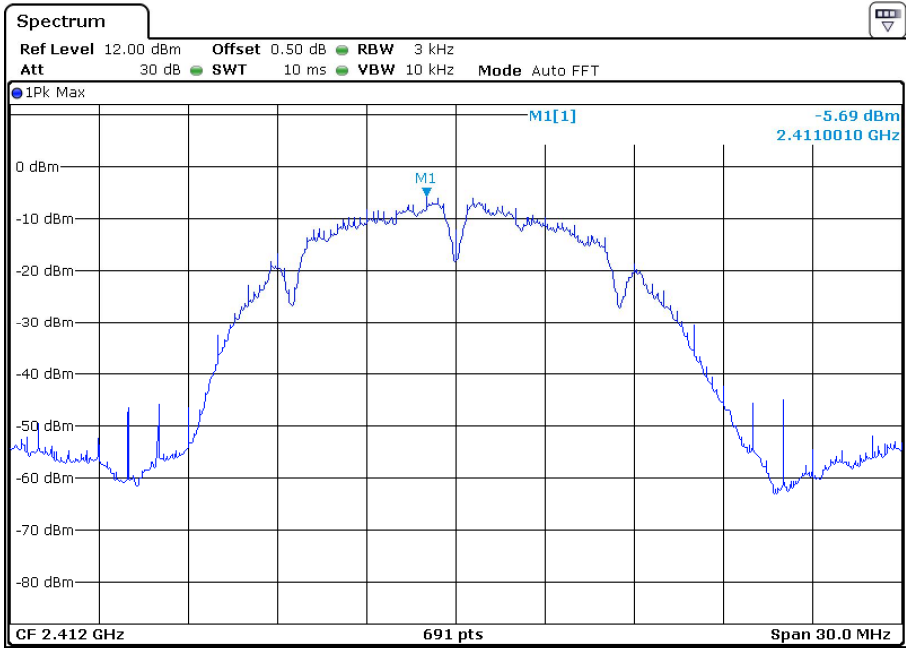
Frequency MHz	Power spectral density dBm	Result
Top channel 2412MHz	-11.25	Pass
Middle channel 2437MHz	-11.06	Pass
Bottom channel 2462MHz	-11.30	Pass

#### 802.11nHT20

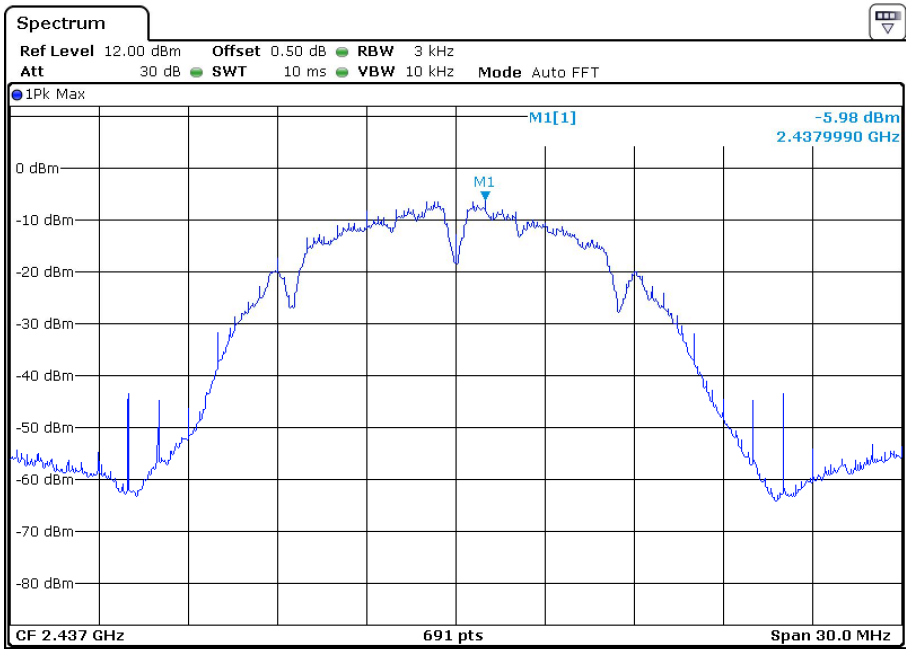
Frequency MHz	Power spectral density dBm	Result
Top channel 2412MHz	-11.30	Pass
Middle channel 2437MHz	-11.48	Pass
Bottom channel 2462MHz	-11.33	Pass



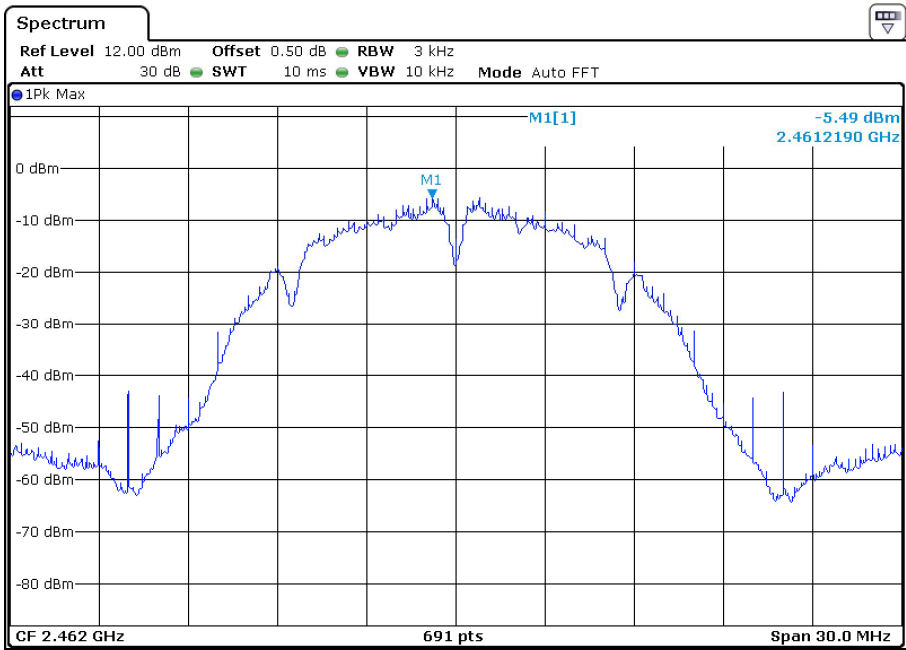
802.11b



2412MHz

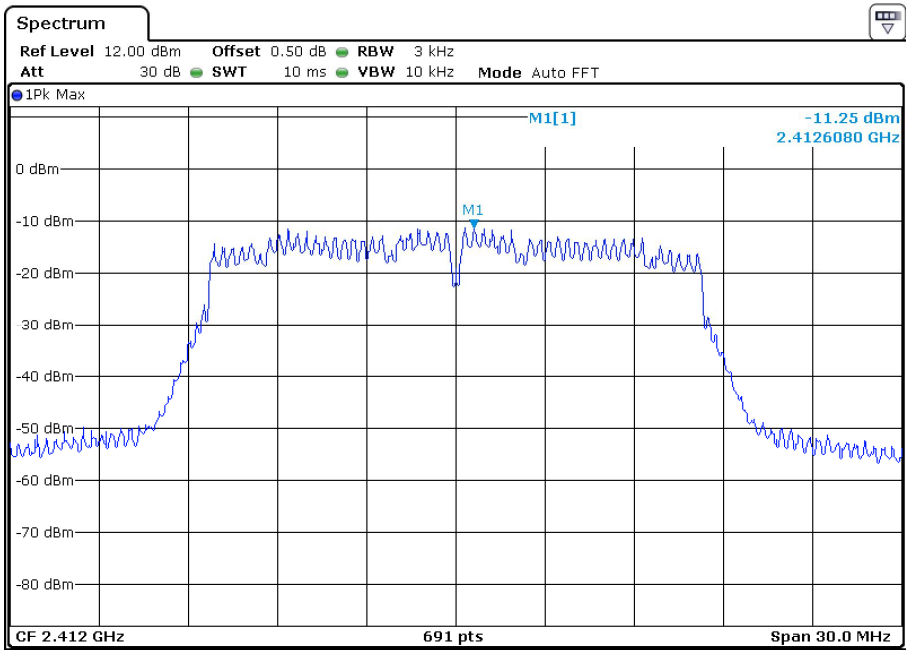


2437MHz

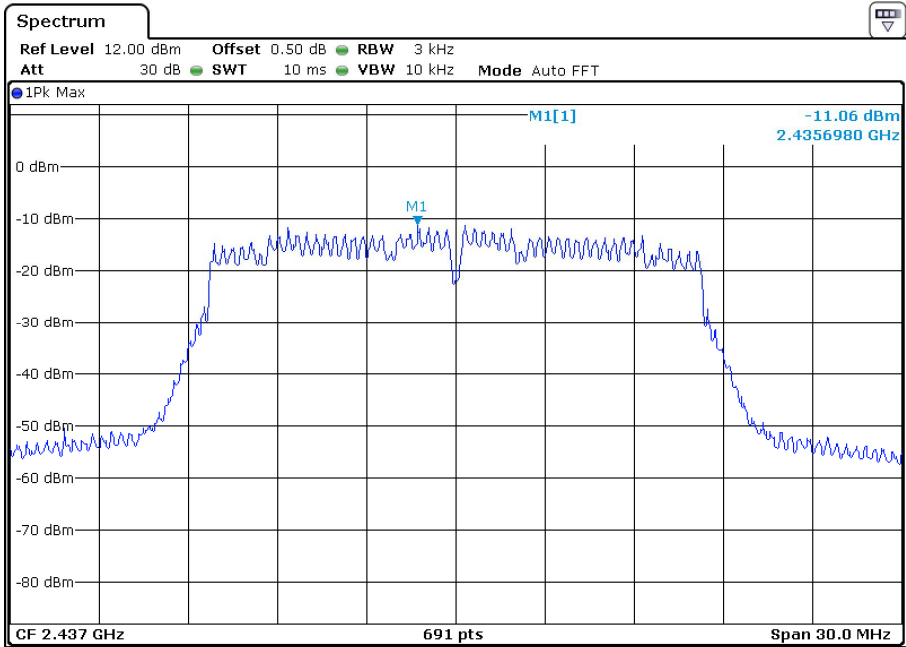


2462MHz

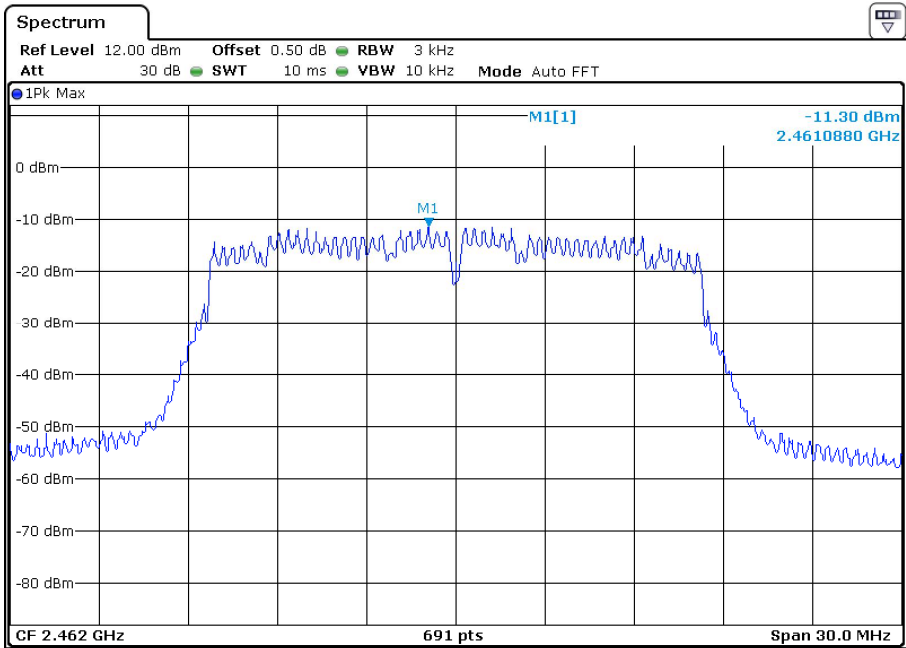
802.11g



2462MHz



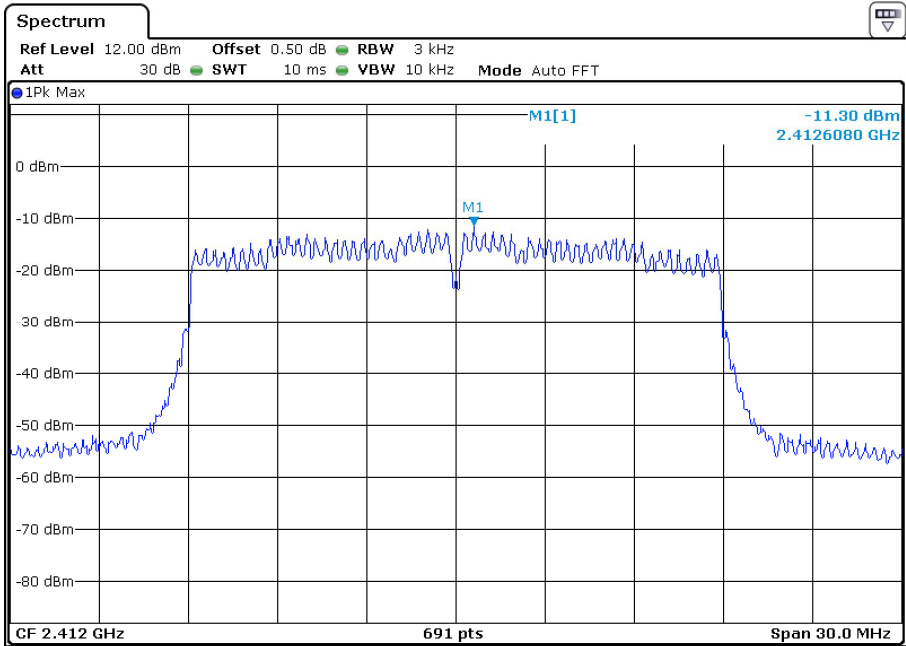
2437MHz



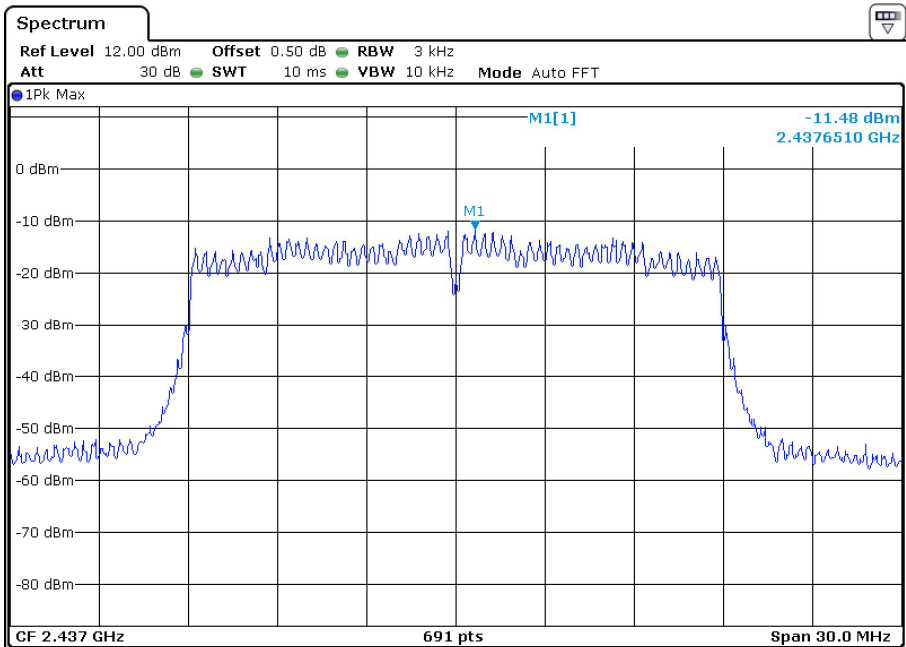
2462MHz



802.11nHT20

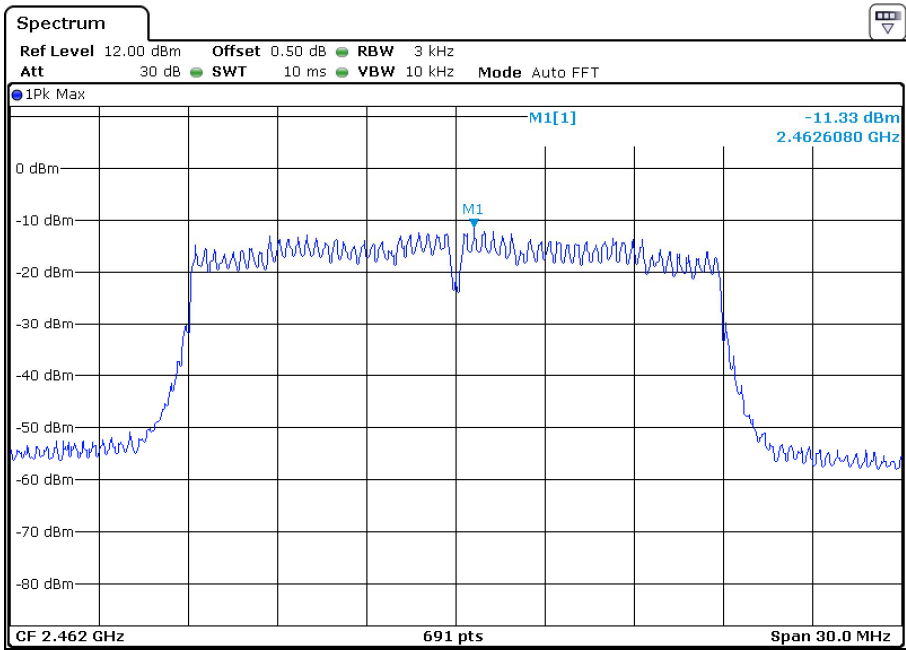


2412MHz



2437MHz





2462MHz

## 9.5 Spurious RF conducted emissions

### Test Method

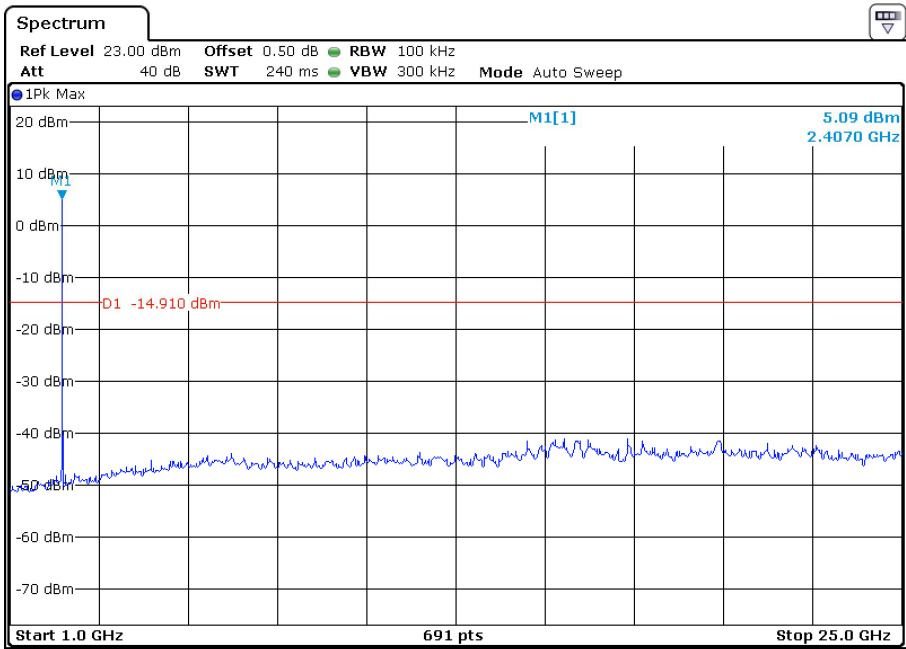
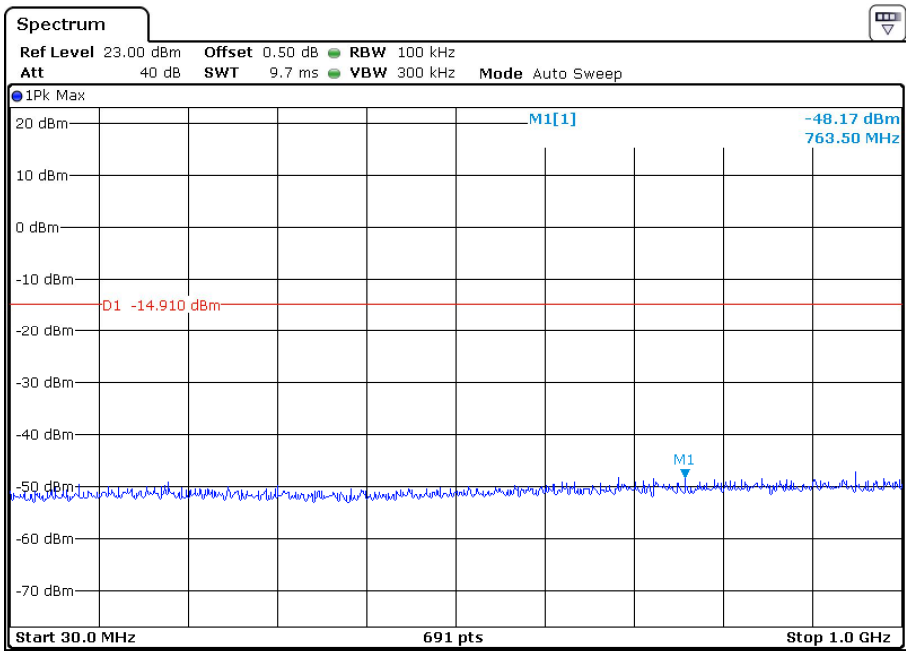
1. Establish a reference level by using the following procedure:
  - a. Set RBW=100 kHz. VBW $\geq$ 3RBW. Detector =peak, Sweep time = auto couple, Trace mode = max hold.
  - b. Allow trace to fully stabilize, use the peak marker function to determine the maximum PSD level.
2. Use the maximum PSD level to establish the reference level.
  - a. Set the center frequency and span to encompass frequency range to be measured.
  - b. Use the peak marker function to determine the maximum amplitude level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements, report the three highest emissions relative to the limit.
3. Repeat above procedures until other frequencies measured were completed.

### Limit

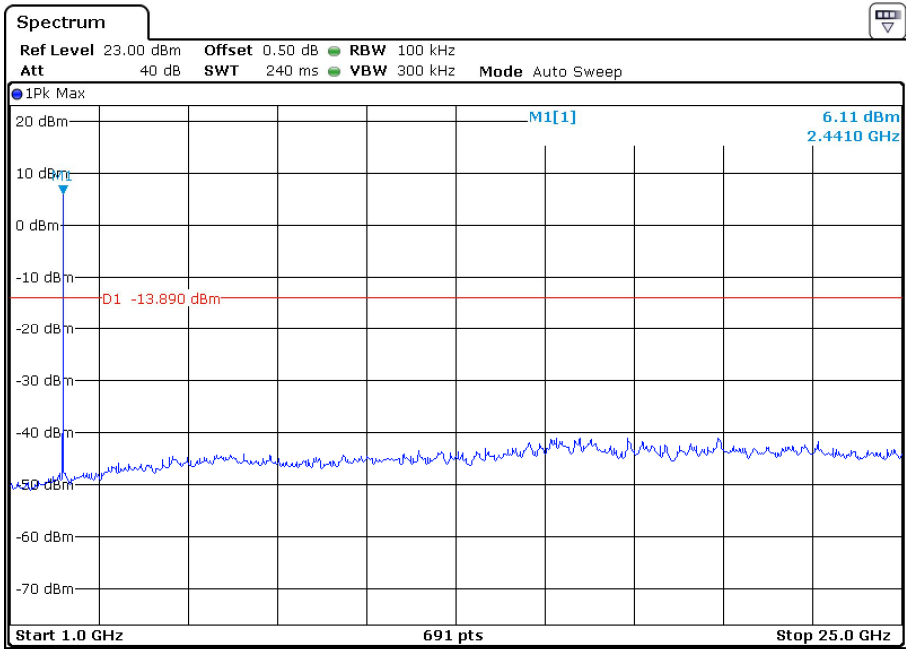
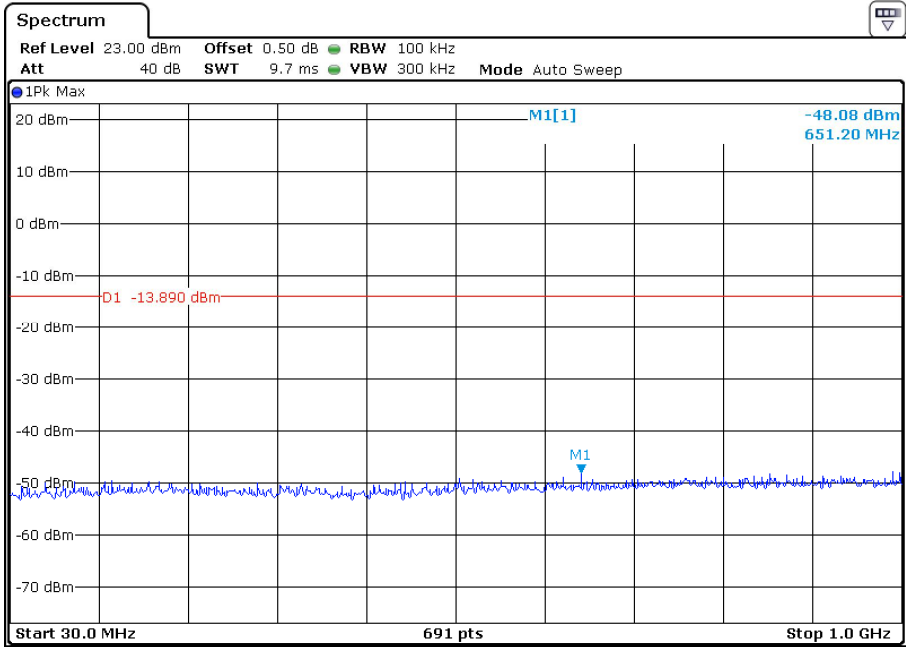
Frequency Range MHz	Limit (dBc)
30-25000	-20

Spurious RF conducted emissions

802.11b

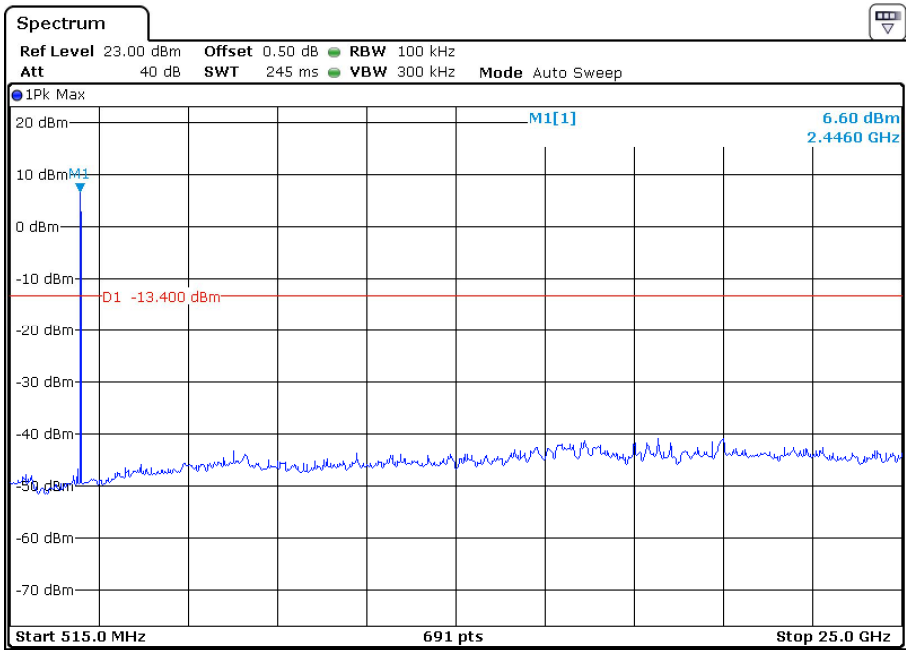
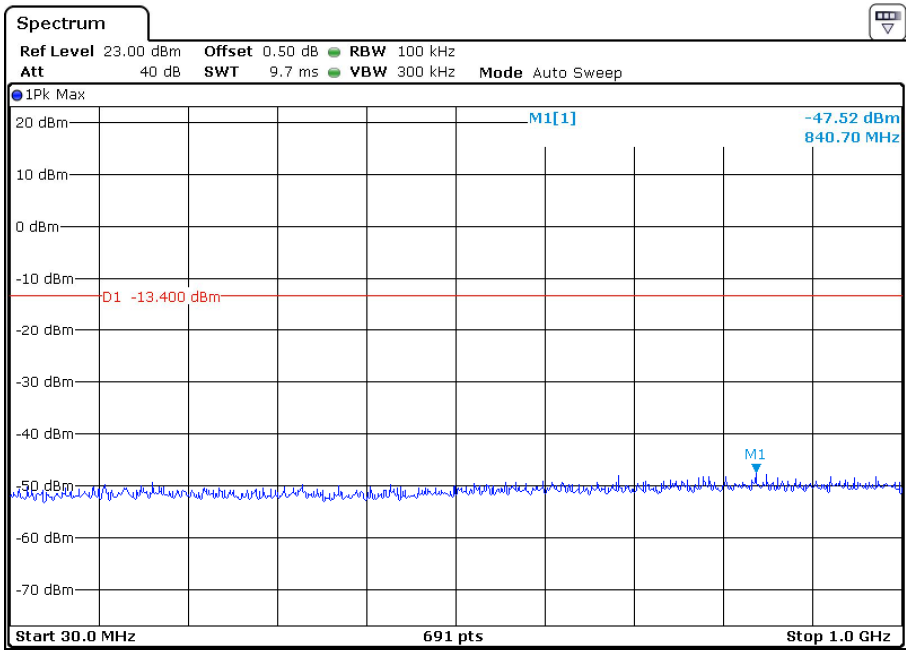


2412MHz



2437MHz

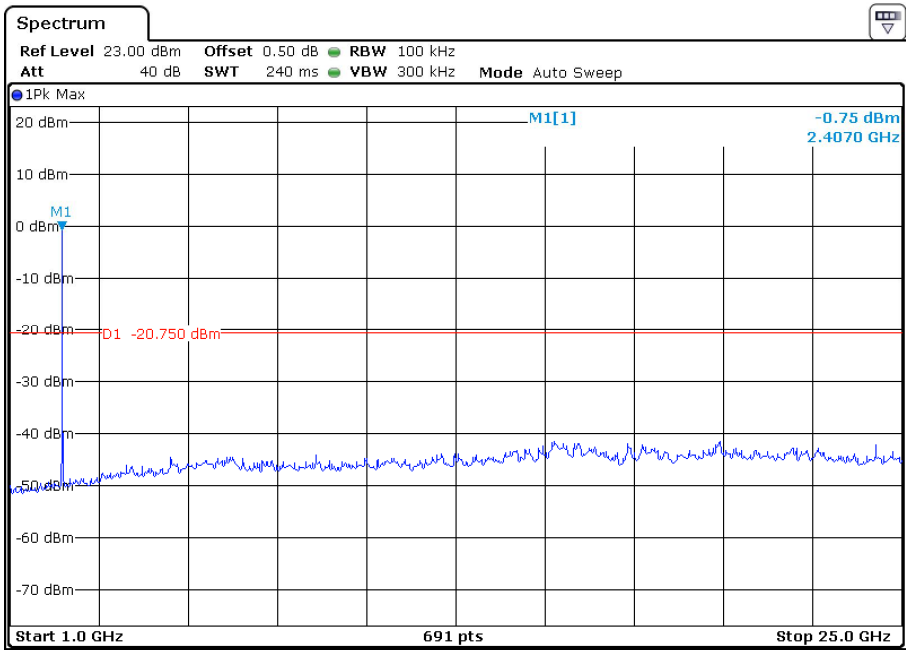
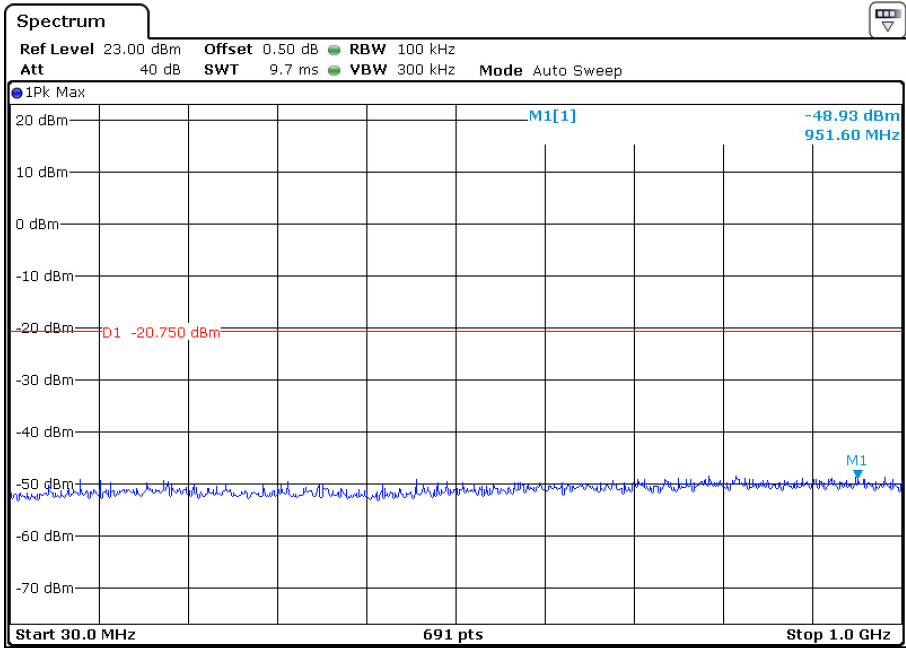
Spurious RF conducted emissions



2462MHz



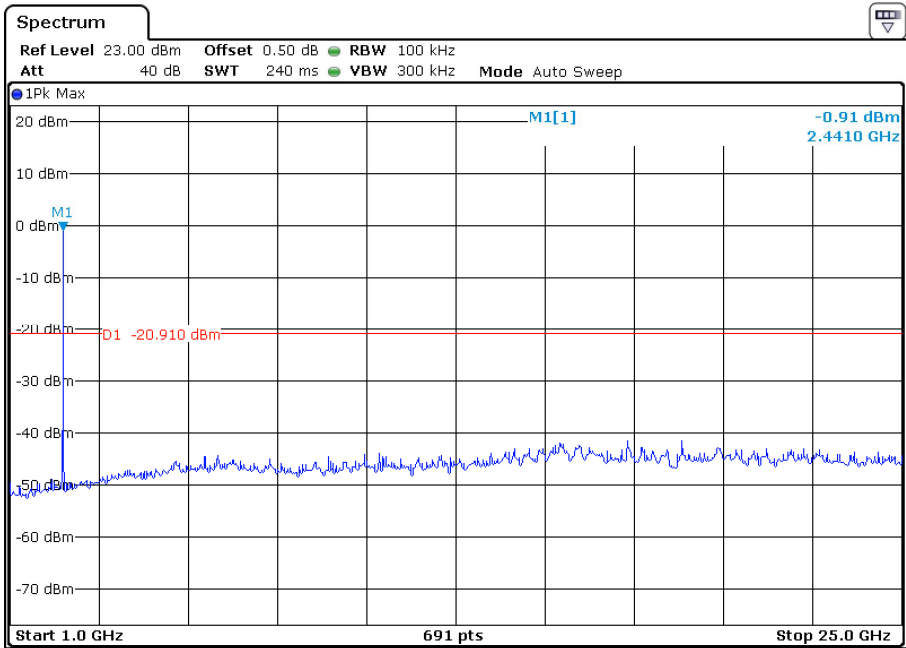
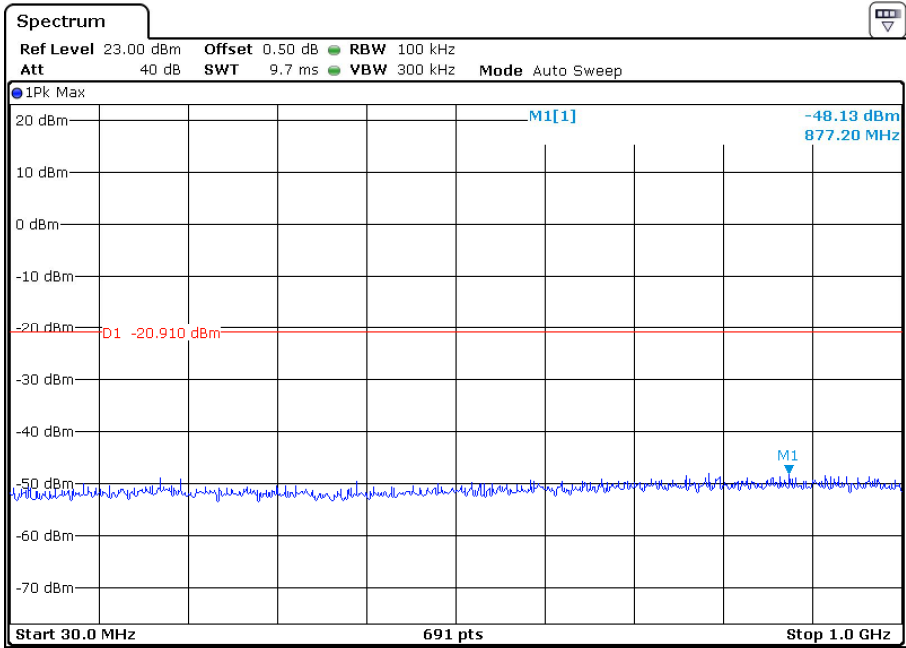
802.11g



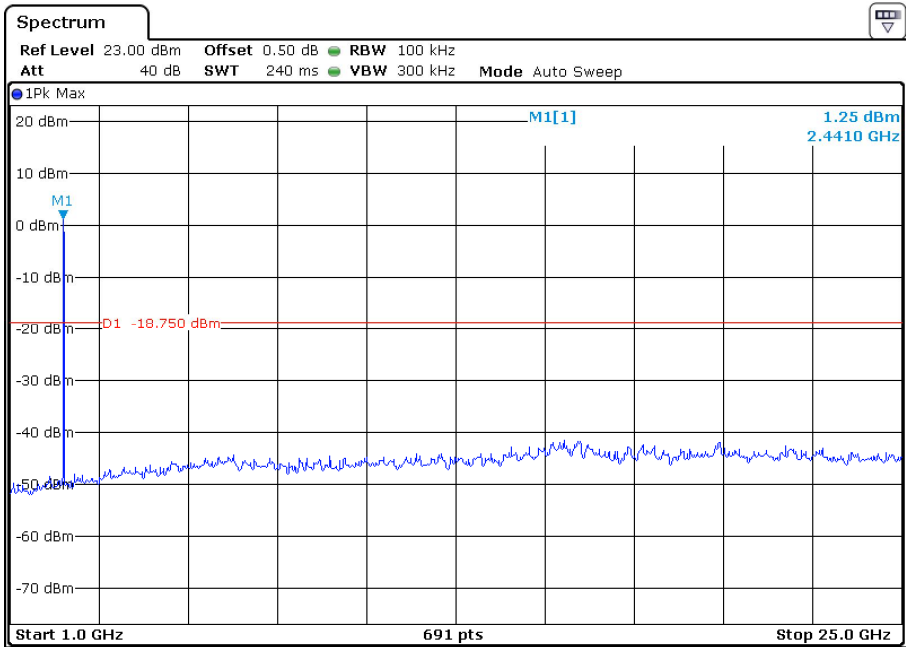
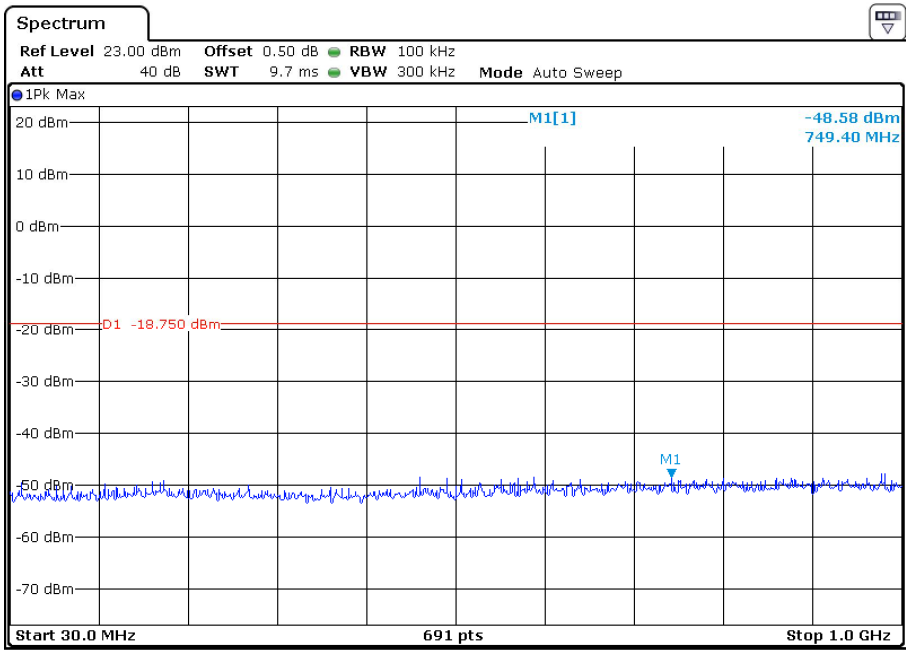
2412MHz



Spurious RF conducted emissions



2437MHz



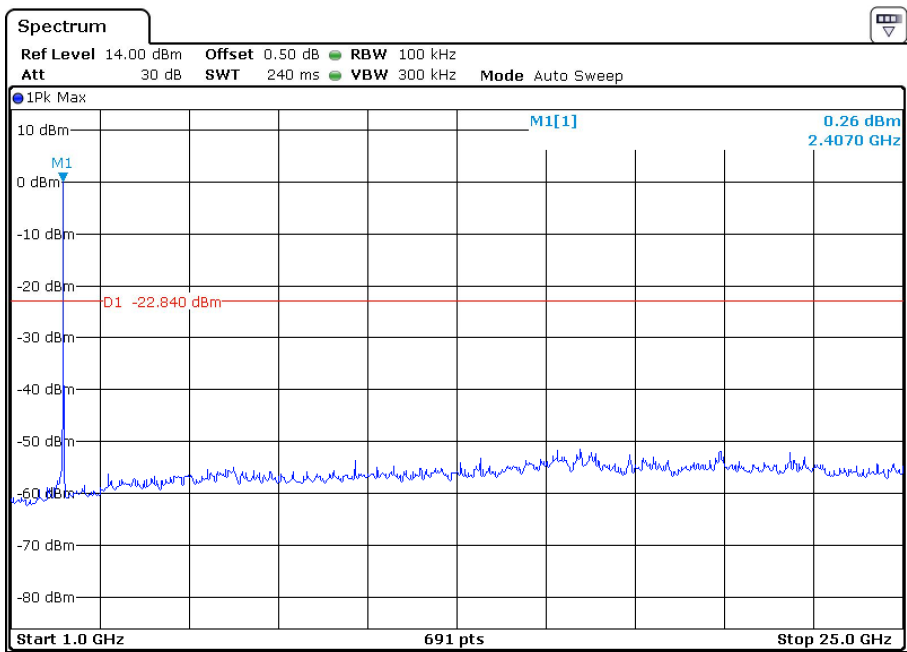
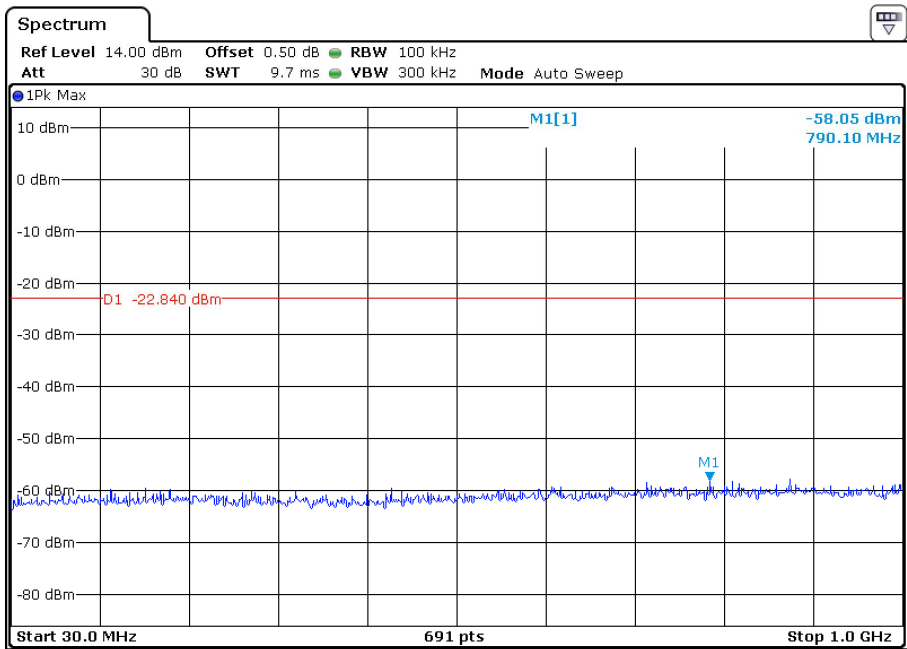
2462MHz



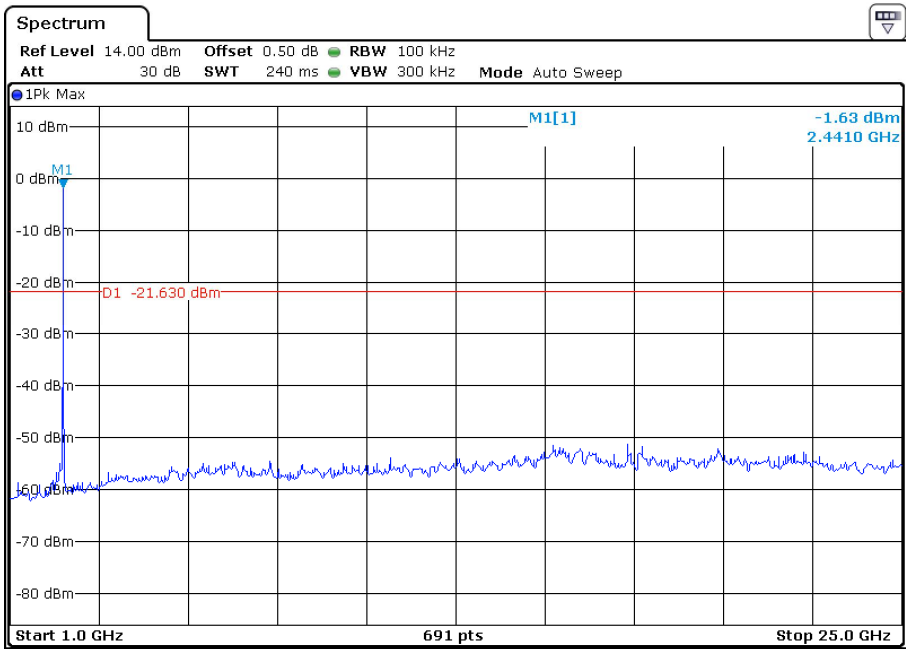
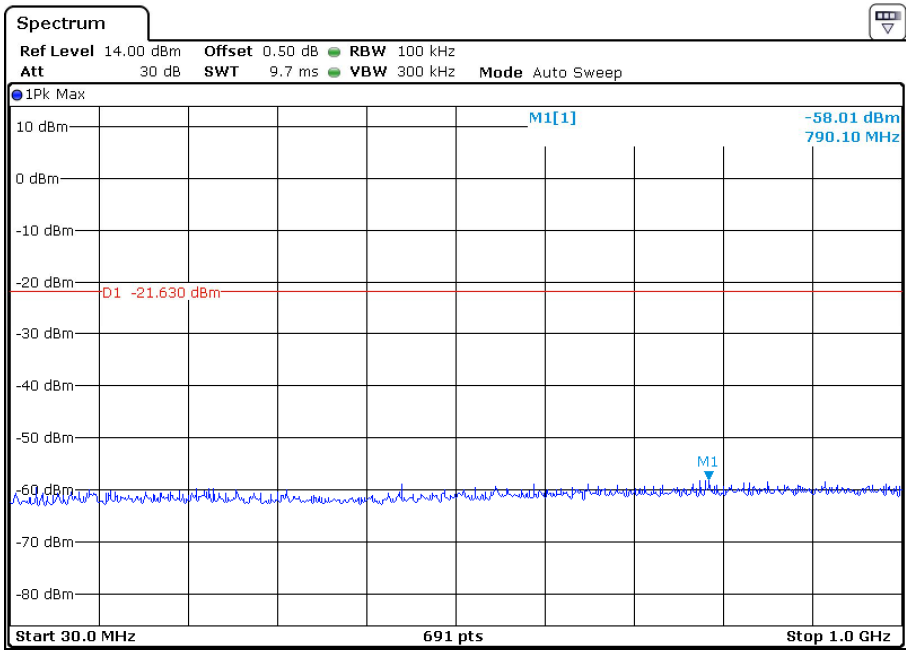


Spurious RF conducted emissions

802.11nHT20



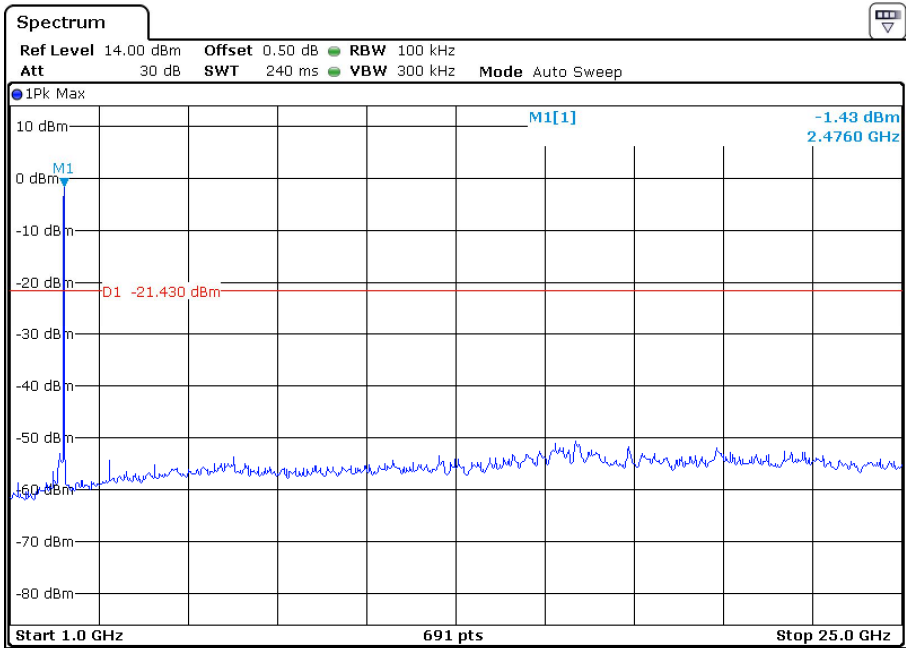
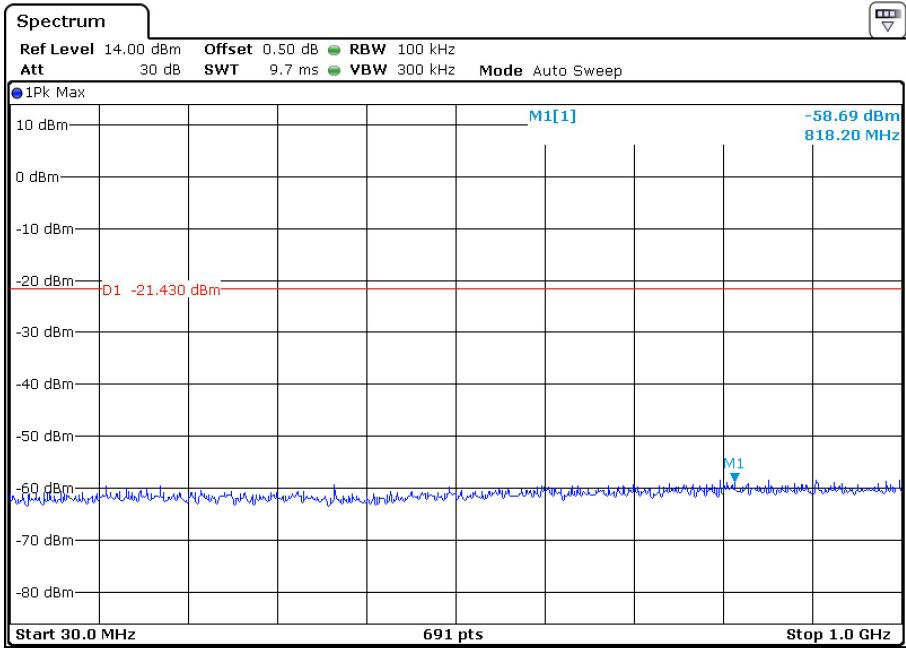
2412MHz



2437MHz



Spurious RF conducted emissions



2462MHz

## 9.6 Band edge

### Test Method

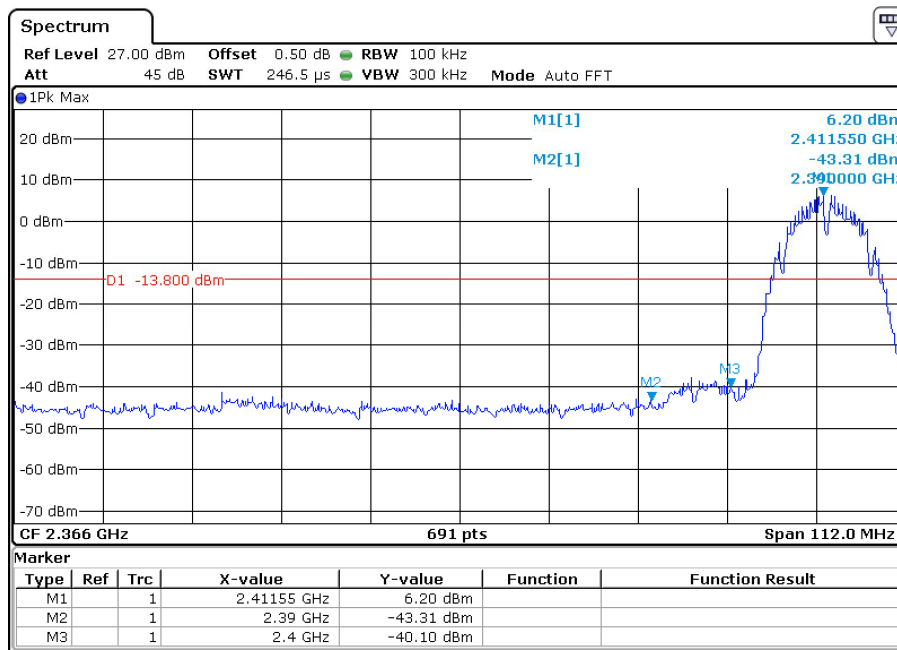
- 1 Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 kHz, VBW  $\geq$  RBW, Sweep = auto, Detector function = peak, Trace = max hold.
- 2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
- 3 The level displayed must comply with the limit specified in this Section.

### Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20

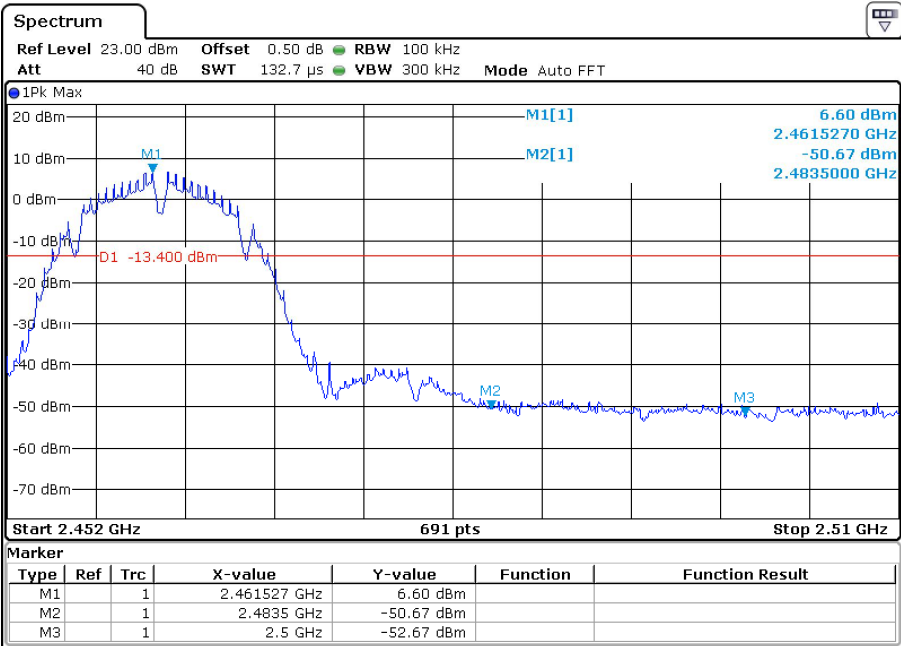
### Test result

802.11b



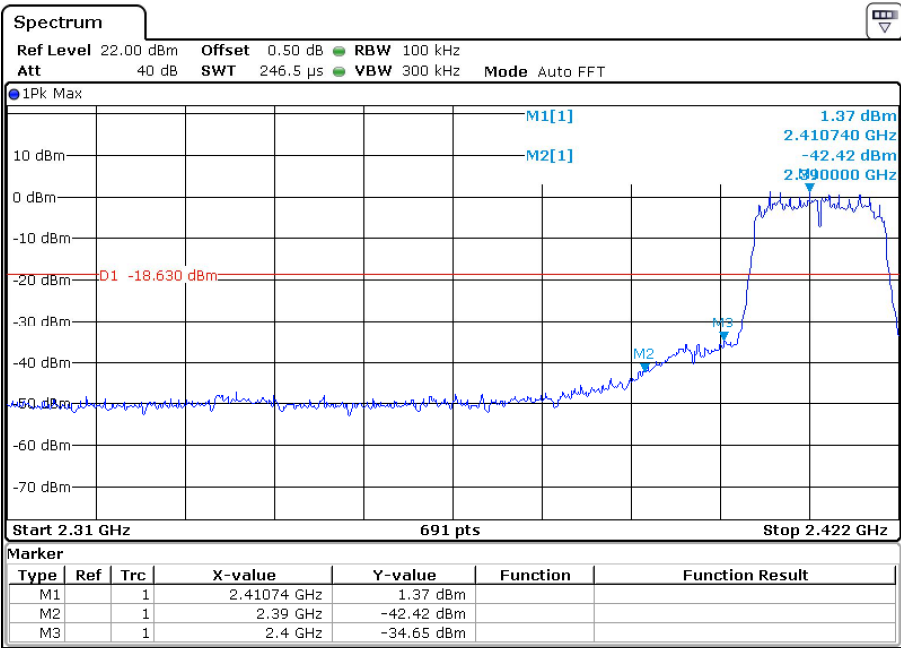
2412MHz

Band edge



2462MHz

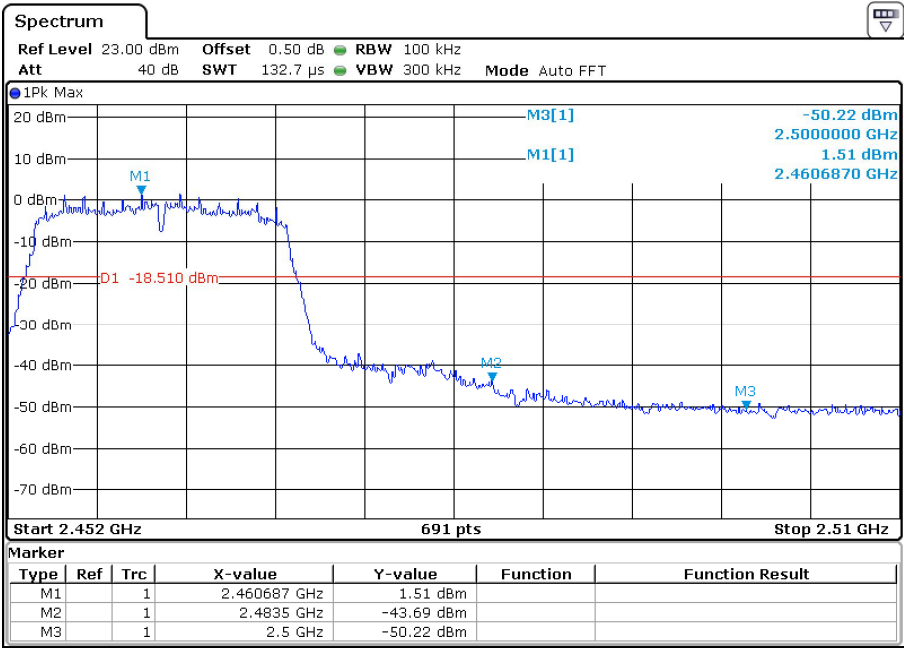
802.11g



2412MHz

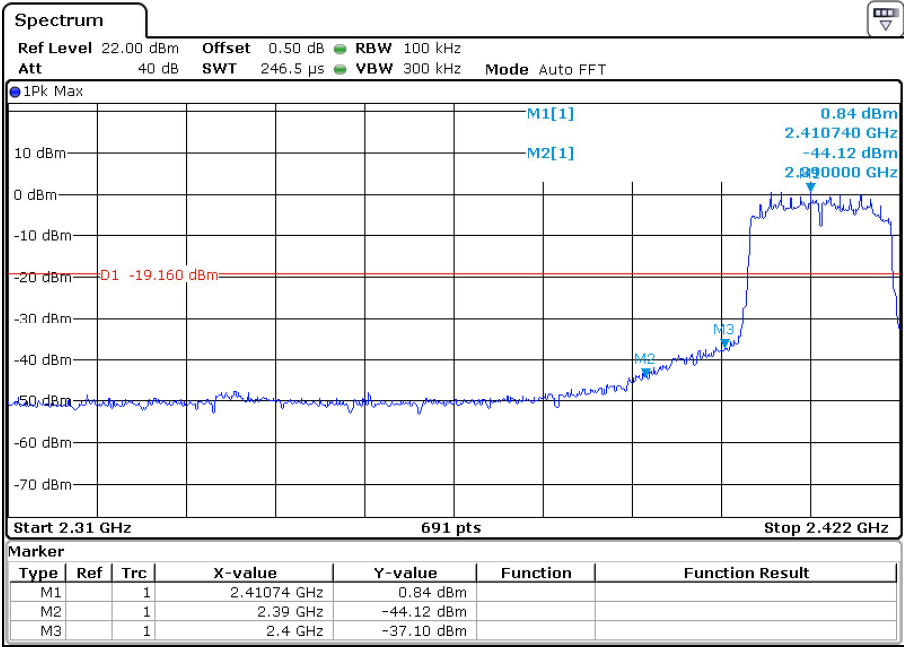


Band edge



2462MHz

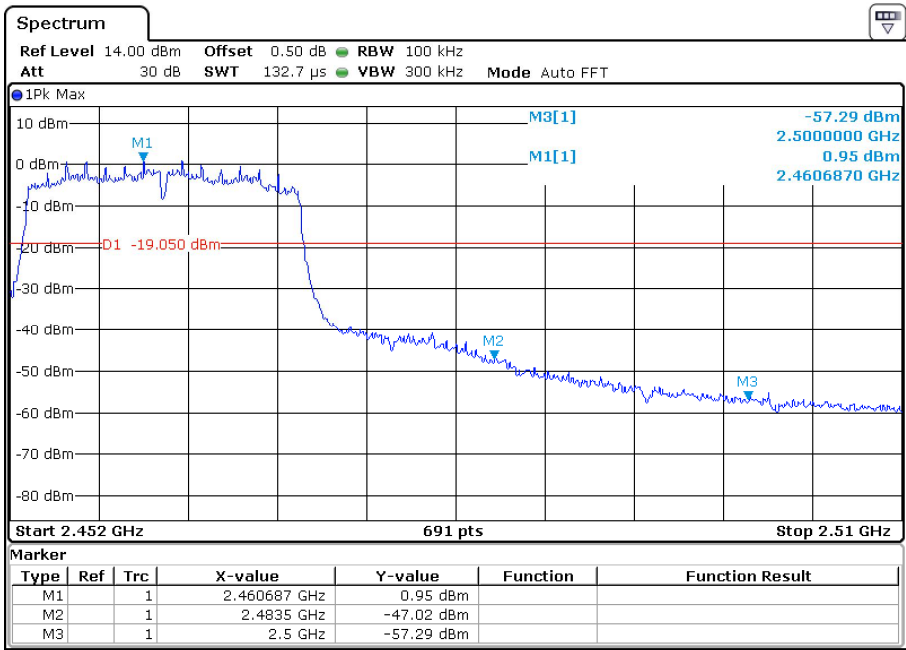
802.11nHT20



2412MHz



Band edge



2462MHz

## 9.7 Spurious radiated emissions for transmitter

### Test Method

- 1: The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3meter chamber room for test. 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: The height of 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: Use the following spectrum analyzer settings According to C63.10:

#### For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 1MHz, VBW  $\geq$  RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold.

#### For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 KHz, VBW  $\geq$  RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

### Note:

- 1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.
- 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $20\log(1/\text{duty cycle})$ ).
- 4: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.



## Limit

The radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBμV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

## Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

### Transmitting spurious emission test result as below:

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2412MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
120.91	28.62	Horizontal	43.50	QP	Pass
86.20	34.85	Vertical	40.00	QP	Pass

2412MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
7236.56 *	46.95	Horizontal	74.00	PK	Pass
7235.15 *	44.88	Vertical	74.00	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) “\*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

## 2437MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
--	--	Horizontal	--	QP	Pass
--	--	Vertical	--	QP	Pass

## 2437MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
7310.15 *	44.57	Horizontal	74.00	PK	Pass
7308.75 *	42.32	Vertical	74.00	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) “\*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

## 2462MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
--	--	Horizontal	--	QP	Pass
--	--	Vertical	--	QP	Pass

## 2462MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
7384.68 *	42.90	Horizontal	74.00	PK	Pass
8719.68	41.04	Vertical	74.00	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) “\*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

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2412MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
		Horizontal		QP	Pass
		Vertical		QP	Pass

2412MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
7227.65 *	39.96	Horizontal	74.00	PK	Pass
8752.03	41.02	Vertical	74.00	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) “\*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

2437MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
--	--	Horizontal	--	QP	Pass
--	--	Vertical	--	QP	Pass

2437MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
7844.06 *	39.82	Horizontal	74.00	PK	Pass
9920.15	41.48	Vertical	74.00	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) “\*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

## 2462MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
--	--	Horizontal	--	QP	Pass
--	--	Vertical	--	QP	Pass

## 2462MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
8878.28	42.00	Horizontal	74.00	PK	Pass
15010.78	47.58	Vertical	74.00	PK	Pass

## Remark:

- (1) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) "\*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

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## 2412MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
--	--	Horizontal	--	QP	Pass
--	--	Vertical	--	QP	Pass

## 2412MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
7232.81 *	41.84	Horizontal	74.00	PK	Pass
8724.84	40.62	Vertical	74.00	PK	Pass

## Remark:

- (1) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) "\*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

## 2437MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
--	--	Horizontal	--	QP	Pass
--	--	Vertical	--	QP	Pass

## 2437MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
8796.09	40.59	Horizontal	74.00	PK	Pass
8751.09	40.81	Vertical	74.00	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) "\*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

## 2462MHz (30MHz – 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
--	--	Horizontal	--	QP	Pass
--	--	Vertical	--	QP	Pass

## 2462MHz (Above 1GHz)

Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
8788.12	41.70	Horizontal	74.00	PK	Pass
8779.68	40.89	Vertical	74.00	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) "\*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

## 10 Test Equipment List

### List of Test Instruments

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2017-7-15
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2017-7-15
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2017-8-3
Horn Antenna	Rohde & Schwarz	HF907	102294	2017-7-15
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2017-7-15
3m Semi-anechoic chamber	TDK	9X6X6	----	2019-5-29
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2017-7-15
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2017-8-3
Horn Antenna	Rohde & Schwarz	HF907	102294	2017-7-15
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2017-7-15
LISN	Rohde & Schwarz	ENV4200	100249	2017-7-15
LISN	Rohde & Schwarz	ENV216	100326	2017-7-15
ISN	Rohde & Schwarz	ENY81	100177	2017-7-15
ISN	Rohde & Schwarz	ENY81-CA6	101664	2017-7-15
High Voltage Probe	Rohde & Schwarz	TK9420(VT94 20)	9420-58	2017-7-15
RF Current Probe	Rohde & Schwarz	EZ-17	100816	2017-7-15

#### C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth
- Power spectral density\*
- Spurious RF conducted emissions
- Band edge

## 11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Spurious Emission 25MHz-3000MHz	Horizontal: 4.98dB; Vertical: 5.06dB;
Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz	Horizontal: 4.95dB; Vertical: 4.94dB;
Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz	Horizontal: 5.14dB; Vertical: 5.12dB;
Uncertainty for Conducted RF test with TS 8997	Power level test involved: 2.06dB Frequency test involved: $1.16 \times 10^{-7}$