



# FCC Test Report

**FCC ID** : 2AEUPBHARC011  
**Equipment** : Spotlight cam wired  
**Brand Name** : RING  
**Model Name** : 5L5C4T  
**Applicant** : Ring LLC  
1523 26th St, Santa Monica, CA 90404, USA  
**Manufacturer** : Chicony Electronics (Dong Guan) Co.,Ltd.  
San Zhong Guan Li Qu, Qingxi Town,  
Dongguan City Guangdong 523651 China  
**Standard** : 47 CFR FCC Part 15.247

The product was received on May 31, 2019, and testing was started from Jun. 08, 2019 and completed on Jun. 24, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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## History of this test report

[illegible]

## Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	FCC 15.203
3.1	15.207	AC Power-line Conducted Emissions	PASS	FCC 15.207
3.2	15.247(a)	DTS Bandwidth	PASS	≥500kHz
3.3	15.247(b)	Maximum Conducted Output Power	PASS	Power [dBm]: 30
3.4	15.247(e)	Power Spectral Density	PASS	PSD [dBm/3kHz]: 8
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	Non-Restricted Bands: > 30 dBc
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	Restricted Bands: FCC 15.209

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and explanations:**

None

**Reviewed by: Jackson Tsai**

**Report Producer: Ann Hou**

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g, n (HT20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40)	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	1TX(Port 1)
2.4-2.4835GHz	802.11g	20	1TX(Port 1)
2.4-2.4835GHz	802.11n HT20	20	2TX
2.4-2.4835GHz	802.11n HT40	40	1TX(Port 1)

Note:

- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- BWch is the nominal channel bandwidth.

### 1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	WGT	Ant 1	PIFA	I-PEX
2	WGT	Ant 2	PIFA	I-PEX
3	Aristotle	Lora Ant	PIFA	I-PEX

Ant.	Port	Gain (dBi)		
		2.4G	BT	LoRa
1	2	1.06	-	-
2	1	1.27	1.06	-
3	1	-	-	0.73

Note 1: The EUT has three antennas.

#### For 2.4GHz function:

For IEEE 802.11 b/g/n mode (1TX/1RX)

Support diversity function and tested on each single chain.

For IEEE 802.11 n (HT20) mode (2TX/2RX)

Ant. 1 (port 2) and Ant. 2 (port 1) could transmit/receive simultaneously.

#### For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 2 (port 1) could transmit/receive simultaneously.

**For LoRa function:**

For LoRa mode (1TX/1RX)

Ant. 3 (port 1) could transmit/receive simultaneously.

**1.1.3 EUT Information**

Operational Condition			
<b>EUT Power Type</b>	From AC mains		
<b>EUT Function</b>	<input type="checkbox"/> Point-to-multipoint	<input checked="" type="checkbox"/> Point-to-point	
<b>Beamforming Function</b>	<input type="checkbox"/> With beamforming	<input checked="" type="checkbox"/> Without beamforming	
Type of EUT			
<input checked="" type="checkbox"/>	Stand-alone		
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.:		...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.:		...
<input type="checkbox"/>	Other:		

**1.1.4 Mode Test Duty Cycle**

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11b	0.994	0.03	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11g	0.964	0.16	5.404m	300
802.11n HT20	0.961	0.17	5.002m	300
802.11n HT40	0.918	0.37	2.43m	1k

Note. If DC < 0.98, the DCF was added while measuring Output power and PSD.

## 1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ KDB 558074 D01 v05r02
- ♦ KDB 662911 D01 v02r01

## 1.3 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
<input type="checkbox"/>	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Jeff	23.5~24.2°C / 53.5~55.3%	14/Jun/2019
RF Conducted	TH06-HY	Gary	23.2~24.6°C / 62~68.5%	10/Jun/2019
Radiated	03CH02-HY	Andy	21.8~23.2°C / 52.7~53.5%	08/Jun/2019~ 24/Jun/2019

## 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.54 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	1.6 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

## 2 Test Configuration of EUT

### 2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

### 2.2 Test Channel Mode

Test Software	DoS
---------------	-----

Mode	Power Setting
802.11b_Nss1,(1Mbps)_1TX(Port1)	-
2412MHz	18
2417MHz	18
2437MHz	17
2457MHz	18.25
2462MHz	18.25
802.11b_Nss1,(1Mbps)_1TX(Port2)	-
2412MHz	17.75
2417MHz	18
2437MHz	17
2457MHz	18
2462MHz	18
802.11g_Nss1,(6Mbps)_1TX(Port1)	-
2412MHz	15.5
2417MHz	17
2437MHz	18.75
2457MHz	17.5
2462MHz	15.75
802.11g_Nss1,(6Mbps)_1TX(Port2)	-
2412MHz	15.5
2417MHz	17
2437MHz	18.25
2457MHz	17.5
2462MHz	15.5




802.11n HT20_Nss1,(MCS0)_1TX(Port1)	-
2412MHz	15
2417MHz	17
2437MHz	17.75
2457MHz	16.75
2462MHz	15
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	-
2412MHz	15
2417MHz	17
2437MHz	17
2457MHz	17
2462MHz	14.5
802.11n HT20_Nss2,(MCS8)_2TX	-
2412MHz	17.25
2417MHz	19.25
2437MHz	20
2457MHz	19.5
2462MHz	16.75
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	-
2422MHz	11.75
2427MHz	12.75
2437MHz	15
2447MHz	13.75
2452MHz	12.75
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	-
2422MHz	12
2427MHz	13.75
2437MHz	15
2447MHz	11.75
2452MHz	11.75

## 2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	AC power-line conducted emissions
<b>Condition</b>	AC power-line conducted measurement for line and neutral
<b>Operating Mode</b>	CTX
1	AC mains mode

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
<b>Test Condition</b>	Conducted measurement at transmit chains

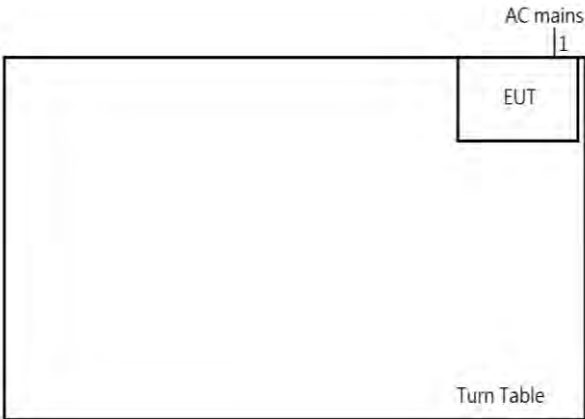
The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Emissions in Restricted Frequency Bands
<b>Test Condition</b>	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
<b>Operating Mode &lt; 1GHz</b>	CTX
1	AC mains mode
<b>Operating Mode &gt; 1GHz</b>	CTX
<b>Orthogonal Planes of EUT</b>	<p style="text-align: center;"><b>Y Plane</b></p> 
<b>Worst Planes of EUT</b>	V

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Simultaneous Transmission Analysis
<b>Operating Mode</b>	CTX
1	LoRa + WLAN 2.4GHz
2	LoRa + Bluetooth
Refer to Sporton Test Report No.: FA953031 for Co-location RF Exposure Evaluation.	

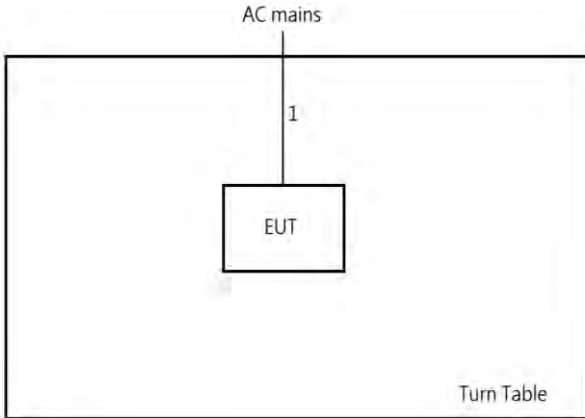
## 2.4 Support Equipment

Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for Notebook	DELL	HA65NM130	DoC

## 2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test				
				
Item	Connection	Shielded	Length	
1	AC Power line	No	6 m	

Test Setup Diagram - Radiated Test				
				
Item	Connection	Shielded	Length	
1	AC Power line	No	6m	

### 3 Transmitter Test Result

### 3.1 AC Power-line Conducted Emissions

### 3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: \* Decreases with the logarithm of the frequency.

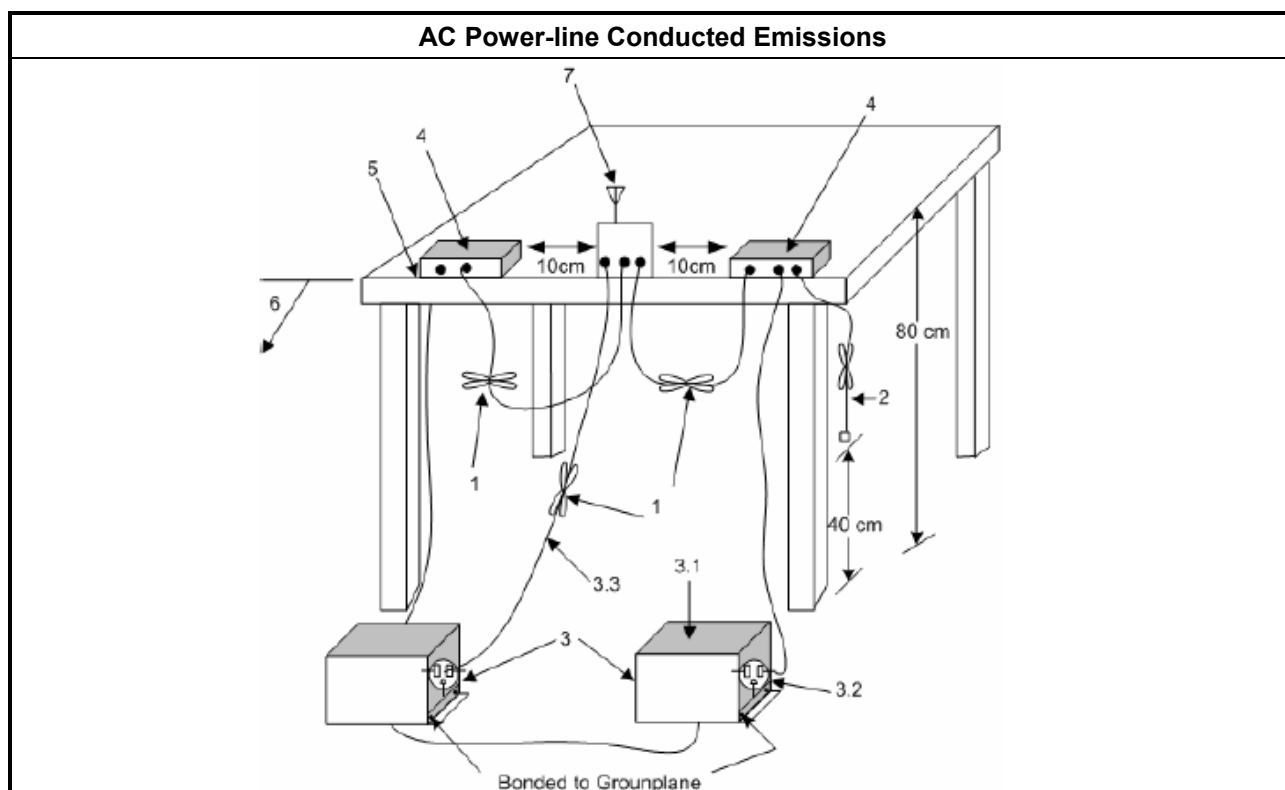
### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

## 3.2 DTS Bandwidth

### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
<b>Systems using digital modulation techniques:</b>	
▪	6 dB bandwidth $\geq$ 500 kHz.

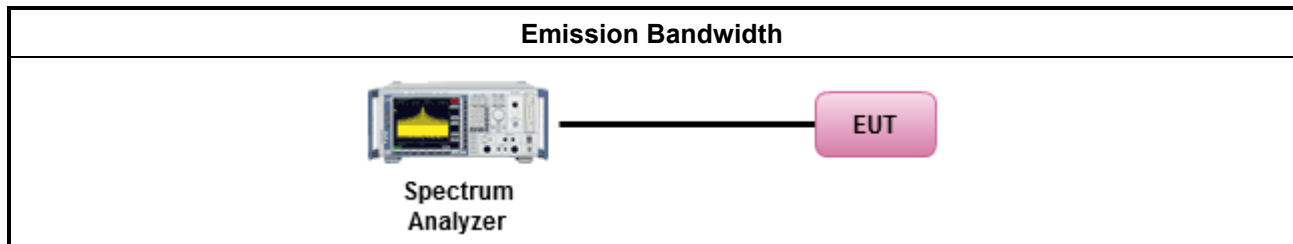
### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedures

Test Method	
▪	For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/>	Refer as KDB 558074. clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
<input type="checkbox"/>	Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

### 3.3 Maximum Conducted Output Power

#### 3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit		
	<ul style="list-style-type: none"> <li>If <math>G_{TX} \leq 6</math> dBi, then <math>P_{Out} \leq 30</math> dBm (1 W)</li> </ul>	
	<ul style="list-style-type: none"> <li>Point-to-multipoint systems (P2M): If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>Point-to-point systems (P2P): If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>Smart antenna system (SAS):</li> </ul>	
	-	Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	-	Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	-	Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
e.i.r.p. Power Limit:		
	<ul style="list-style-type: none"> <li>2400-2483.5 MHz Band</li> </ul>	
	<ul style="list-style-type: none"> <li>Point-to-multipoint systems (P2M): <math>P_{eirp} \leq 36</math> dBm (4 W)</li> </ul>	
	<ul style="list-style-type: none"> <li>Point-to-point systems (P2P): <math>P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>Smart antenna system (SAS)</li> </ul>	
	-	Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	-	Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	-	Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
$P_{Out}$ = maximum peak conducted output power or maximum conducted output power in dBm, $G_{TX}$ = the maximum transmitting antenna directional gain in dBi.		

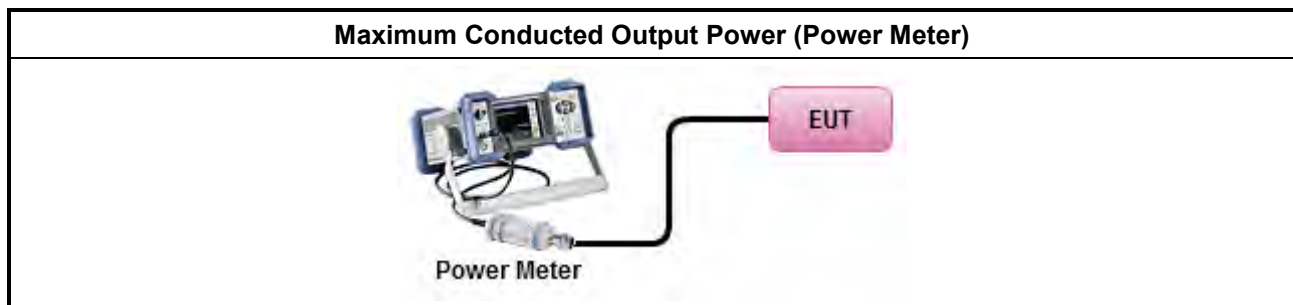
#### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>Maximum Peak Conducted Output Power</li> </ul>	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
<ul style="list-style-type: none"> <li>Maximum Average Conducted Output Power</li> </ul>	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
<ul style="list-style-type: none"> <li>For conducted measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.</li> </ul>	
<ul style="list-style-type: none"> <li>If multiple transmit chains, EIRP calculation could be following as methods:  <math display="block">P_{total} = P_1 + P_2 + \dots + P_n</math> (calculated in linear unit [mW] and transfer to log unit [dBm])  <math display="block">EIRP_{total} = P_{total} + DG</math> </li> </ul>	

### 3.3.4 Test Setup



### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

### 3.4 Power Spectral Density

#### 3.4.1 Power Spectral Density Limit

Power Spectral Density Limit	
▪	Power Spectral Density (PSD) $\leq$ 8 dBm/3kHz

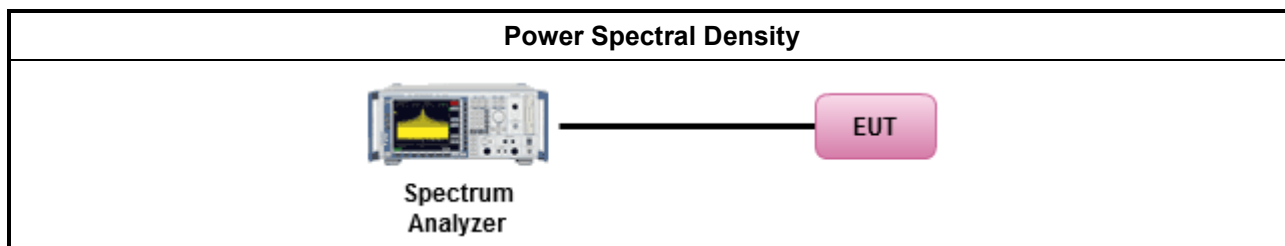
#### 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.4.3 Test Procedures

Test Method	
▪	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Method PKPSD.
▪	For conducted measurement.
▪	If The EUT supports multiple transmit chains using options given below:
▪	Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

#### 3.4.4 Test Setup



#### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D



### 3.5 Emissions in Non-restricted Frequency Bands

#### 3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30
<p>Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.</p> <p>Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.</p>	

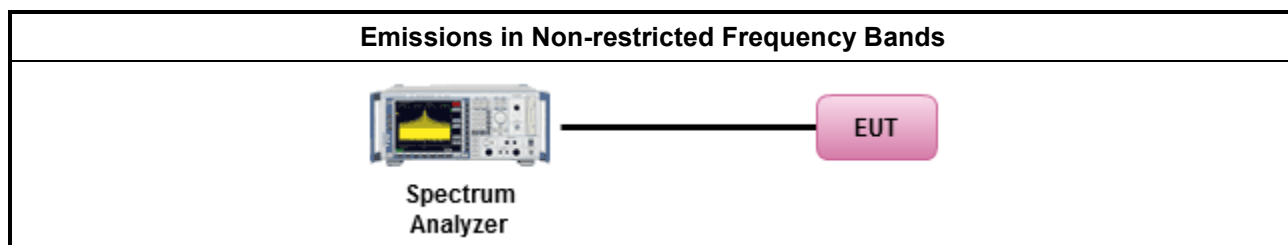
#### 3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.</li> </ul>

#### 3.5.4 Test Setup



#### 3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

### 3.6 Emissions in Restricted Frequency Bands

#### 3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

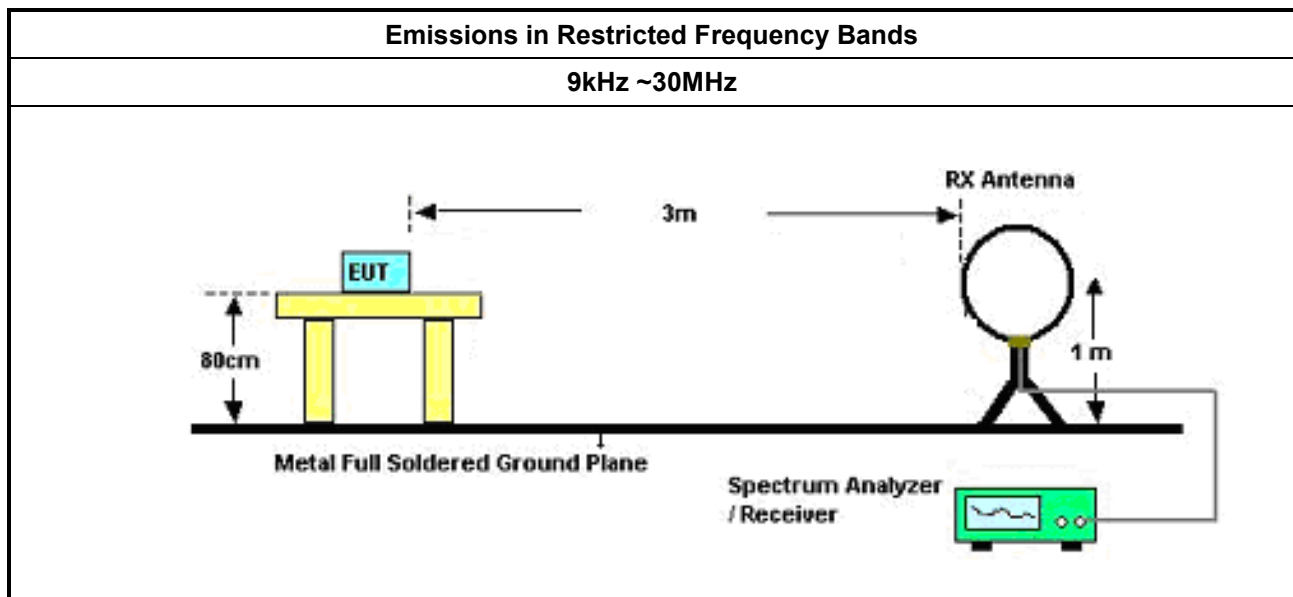
#### 3.6.2 Measuring Instruments

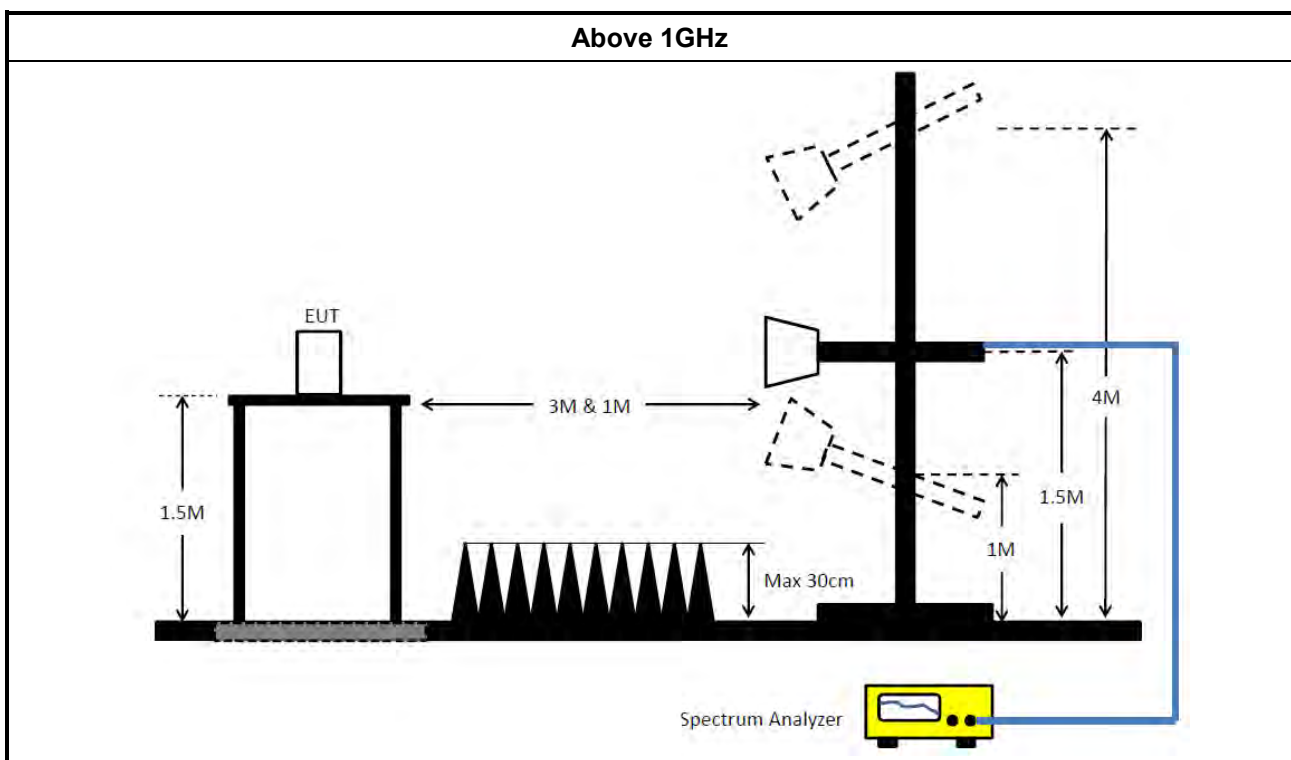
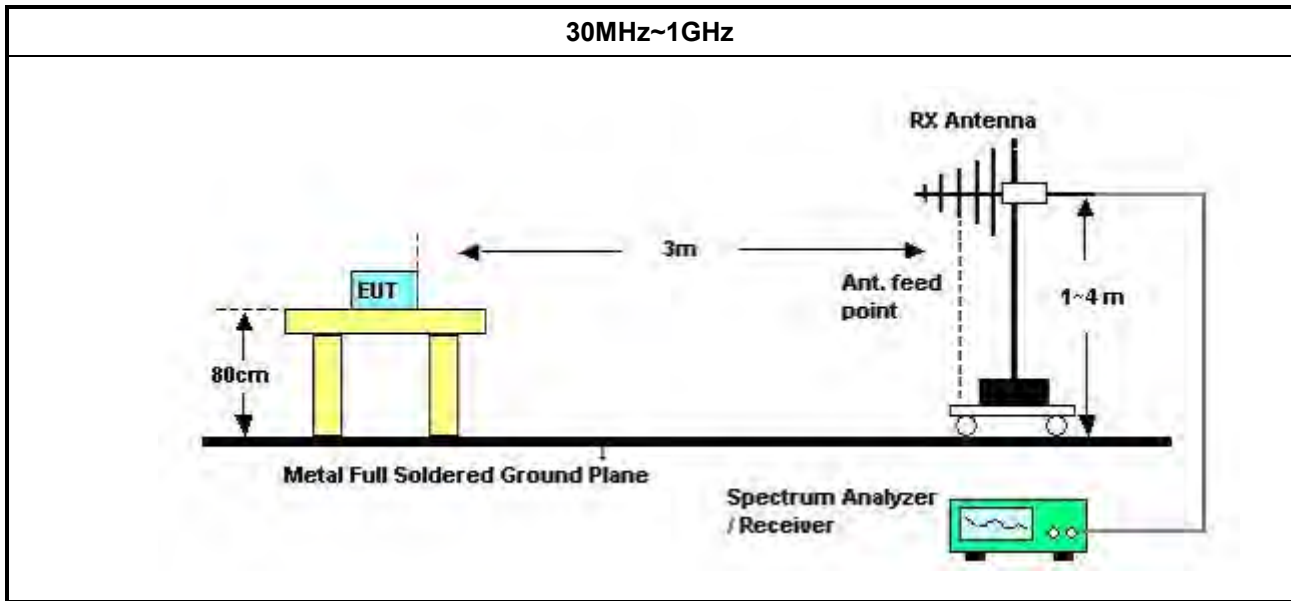
Refer a test equipment and calibration data table in this test report.

### 3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>The average emission levels shall be measured in [duty cycle <math>\geq 98</math> or duty factor].</li> </ul>	
<ul style="list-style-type: none"> <li>Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.</li> </ul>	
<ul style="list-style-type: none"> <li>For the transmitter unwanted emissions shall be measured using following options below:</li> </ul>	
	<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.</li> </ul>
<ul style="list-style-type: none"> <li>For the transmitter band-edge emissions shall be measured using following options below:</li> </ul>	
	<ul style="list-style-type: none"> <li>Refer as KDB 558074 clause 8.7.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.</li> </ul>
	<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.</li> </ul>
	<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).</li> </ul>
<ul style="list-style-type: none"> <li>Use the following spectrum analyzer settings:</li> </ul>	
	<ul style="list-style-type: none"> <li>Set RBW=100 kHz for <math>f &lt; 1</math> GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.</li> </ul>
	<ul style="list-style-type: none"> <li>Set RBW = 1 MHz, VBW= 3MHz for <math>f \geq 1</math> GHz for peak measurement. For average measurement, refer as 1.1.4.</li> </ul>

### 3.6.4 Test Setup





### 3.6.5 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

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

### 3.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	08/Nov/2018	07/Nov/2019
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	17/Sep/2018	16/Sep/2019
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2018	11/Oct/2019

NCR : Non-Calibration Require

### Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz ~18G	21/Mar/2019	20/Mar/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	21/Mar/2019	20/Mar/2020
Cable 0.5m	HUBER	MY39470/4	RF Cable - 29	30MHz ~18G	21/Mar/2019	20/Mar/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020

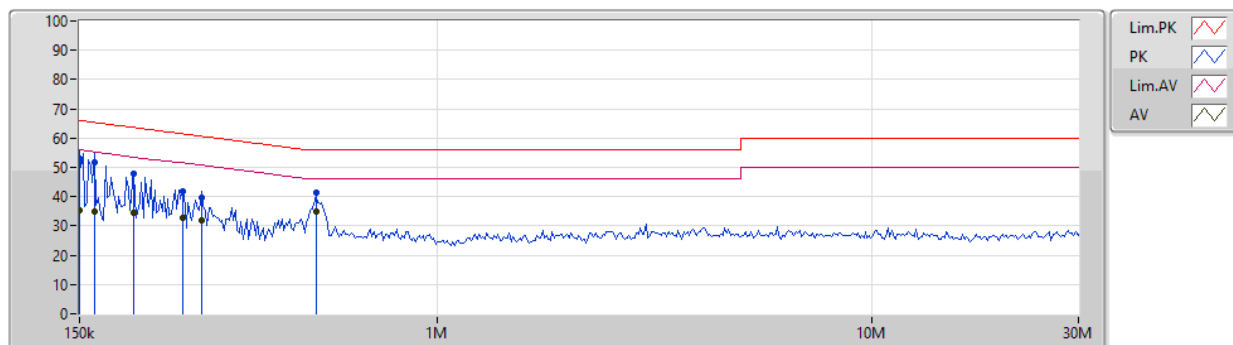
### Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	19/Oct/2018	18/Oct/2019
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz 3m	17/Oct/2018	16/Oct/2019
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	27/Jul/2018	02/Jul/2019
Amplifier	KEYSIGHT	83017A	MY53270197	1GHz ~ 26.5GHz	30/Nov/2018	29/Nov/2019
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9KHz - 40GHz	27/Dec/2018	26/Dec/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	26/Mar/2019	25/Mar/2020
RF Cable-high 6m	SUHNER	SUCOFLEX104	10567868 / SN805193/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
RF Cable-high 7m	SUHNER	SUCOFLEX104	10567868 / SN805192/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 1GHz	08/Sep/2018	07/Sep/2019
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz ~ 40GHz	22/Mar/2019	21/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz ~ 18GHz	03/Jun/2019	02/Jun/2020

## AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	AC mains mode		

14/06/2019

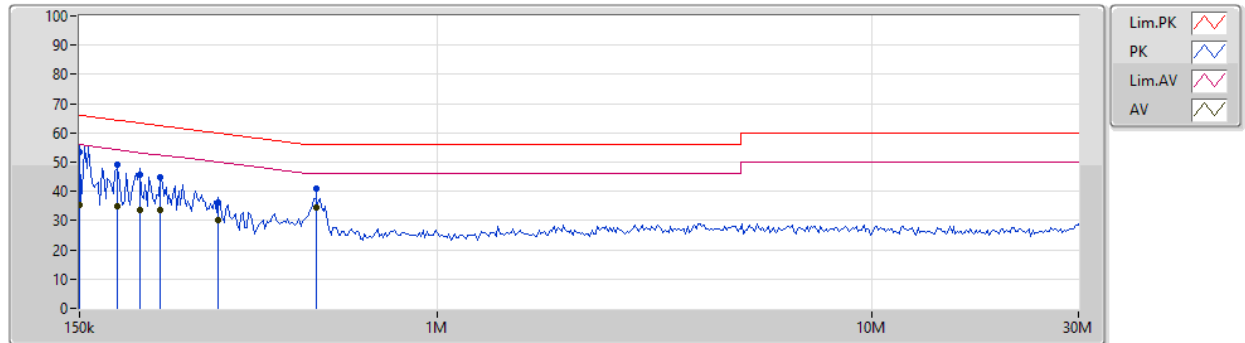


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	150k	52.96	66.00	-13.04	19.48	Neutral	-	33.48	9.60	0.01	9.87			
AV	150k	35.54	56.00	-20.46	19.48	Neutral	-	16.06	9.60	0.01	9.87			
QP	162.429k	51.76	65.33	-13.57	19.48	Neutral	-	32.28	9.60	0.01	9.87			
AV	162.429k	34.96	55.33	-20.37	19.48	Neutral	-	15.48	9.60	0.01	9.87			
QP	200.176k	47.64	63.61	-15.97	19.47	Neutral	-	28.17	9.59	0.01	9.87			
AV	200.176k	34.29	53.61	-19.32	19.47	Neutral	-	14.82	9.59	0.01	9.87			
QP	259.279k	41.95	61.45	-19.50	19.47	Neutral	-	22.48	9.59	0.01	9.87			
AV	259.279k	32.82	51.45	-18.63	19.47	Neutral	-	13.35	9.59	0.01	9.87			
QP	286.405k	39.59	60.63	-21.04	19.48	Neutral	-	20.11	9.59	0.01	9.88			
AV	286.405k	31.88	50.63	-18.75	19.48	Neutral	-	12.40	9.59	0.01	9.88			
QP	525.514k	41.30	56.00	-14.70	19.48	Neutral	-	21.82	9.59	0.01	9.88			
AV	525.514k	34.75	46.00	-11.25	19.48	Neutral	"Worst"	15.27	9.59	0.01	9.88			

## AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	AC mains mode		

14/06/2019



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	150k	53.33	66.00	-12.67	19.48	Line	-	33.85	9.60	0.01	9.87			
AV	150k	35.30	56.00	-20.70	19.48	Line	-	15.82	9.60	0.01	9.87			
QP	183.029k	49.10	64.34	-15.24	19.48	Line	-	29.62	9.60	0.01	9.87			
AV	183.029k	34.71	54.34	-19.63	19.48	Line	-	15.23	9.60	0.01	9.87			
QP	206.241k	45.81	63.36	-17.55	19.48	Line	-	26.33	9.60	0.01	9.87			
AV	206.241k	33.56	53.36	-19.80	19.48	Line	-	14.08	9.60	0.01	9.87			
QP	230.097k	44.84	62.44	-17.60	19.48	Line	-	25.36	9.60	0.01	9.87			
AV	230.097k	33.73	52.44	-18.71	19.48	Line	-	14.25	9.60	0.01	9.87			
QP	313.237k	36.32	59.88	-23.56	19.48	Line	-	16.84	9.59	0.01	9.88			
AV	313.237k	29.98	49.88	-19.90	19.48	Line	-	10.50	9.59	0.01	9.88			
QP	525.514k	41.05	56.00	-14.95	19.48	Line	-	21.57	9.59	0.01	9.88			
AV	525.514k	34.43	46.00	-11.57	19.48	Line	"Worst"	14.95	9.59	0.01	9.88			

**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX(Port1)	10.05M	17.416M	17M4G1D	10.025M	14.818M
802.11b_Nss1,(1Mbps)_1TX(Port2)	11.05M	17.116M	17M1G1D	10M	15.042M
802.11g_Nss1,(6Mbps)_1TX(Port1)	14.125M	25.187M	25M2D1D	12.85M	16.292M
802.11g_Nss1,(6Mbps)_1TX(Port2)	15.025M	23.313M	23M3D1D	12.775M	16.292M
802.11n HT20_Nss1,(MCS0)_1TX(Port1)	14.375M	24.513M	24M5D1D	13.75M	17.441M
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	15.025M	24.713M	24M7D1D	15.025M	17.466M
802.11n HT20_Nss2,(MCS8)_2TX	15.05M	17.716M	17M7D1D	13.8M	17.416M
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	35.05M	35.882M	35M9D1D	32.55M	35.632M
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	34.7M	35.782M	35M8D1D	28.95M	35.632M

**Max-N dB** = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;

**Min-N dB** = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;



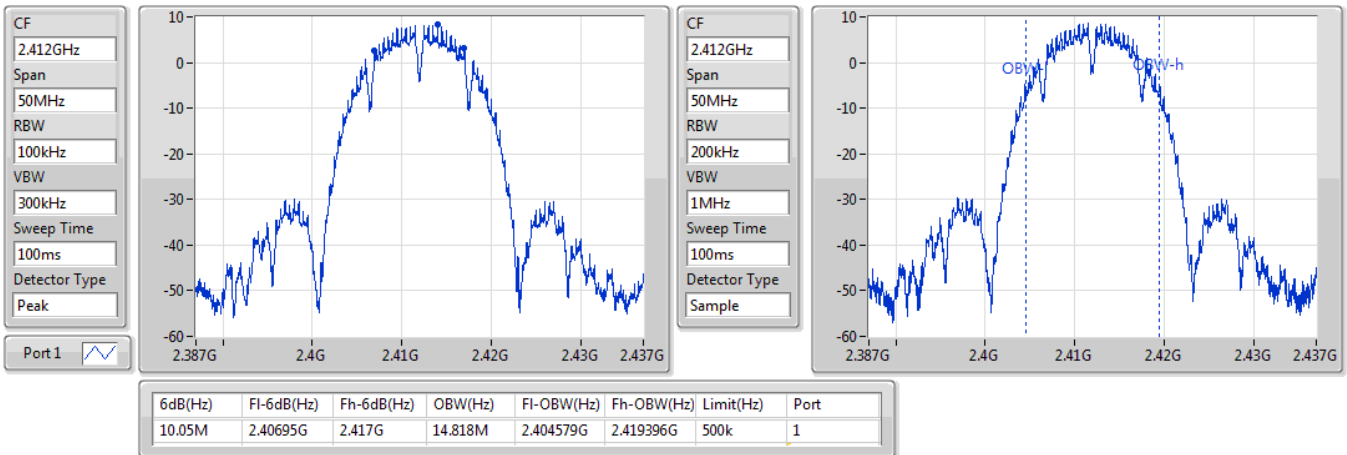
**Result**

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11b_Nss1,(1Mbps)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	500k	10.05M	14.818M		
2437MHz	Pass	500k	10.05M	17.416M		
2462MHz	Pass	500k	10.025M	14.843M		
802.11b_Nss1,(1Mbps)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	500k			10M	15.067M
2437MHz	Pass	500k			11.05M	17.116M
2462MHz	Pass	500k			10.025M	15.042M
802.11g_Nss1,(6Mbps)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	500k	14.125M	16.342M		
2437MHz	Pass	500k	13.85M	25.187M		
2462MHz	Pass	500k	12.85M	16.292M		
802.11g_Nss1,(6Mbps)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	500k			12.775M	16.342M
2437MHz	Pass	500k			13.775M	23.313M
2462MHz	Pass	500k			15.025M	16.292M
802.11n HT20_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	500k	13.75M	17.441M		
2437MHz	Pass	500k	13.75M	24.513M		
2462MHz	Pass	500k	14.375M	17.466M		
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	500k			15.025M	17.491M
2437MHz	Pass	500k			15.025M	24.713M
2462MHz	Pass	500k			15.025M	17.466M
802.11n HT20_Nss2,(MCS8)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	13.8M	17.416M	13.85M	17.466M
2437MHz	Pass	500k	14.975M	17.666M	14.975M	17.716M
2462MHz	Pass	500k	15.05M	17.416M	13.85M	17.441M
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-
2422MHz	Pass	500k	32.55M	35.632M		
2437MHz	Pass	500k	35.05M	35.882M		
2452MHz	Pass	500k	35M	35.782M		
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-
2422MHz	Pass	500k			31.35M	35.632M
2437MHz	Pass	500k			28.95M	35.782M
2452MHz	Pass	500k			34.7M	35.682M

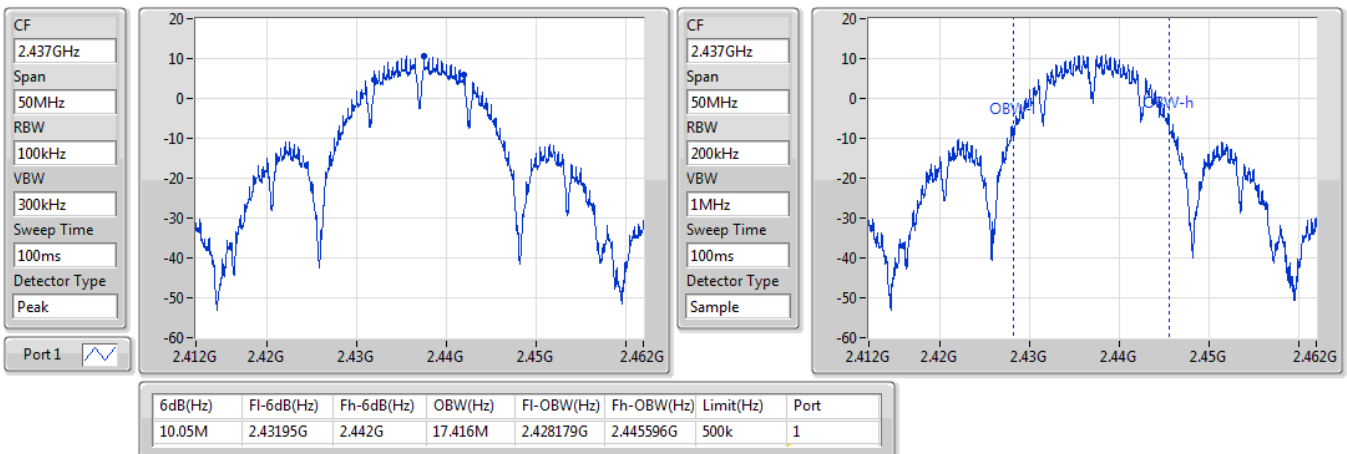
**Port X-N dB** = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

**802.11b\_Nss1,(1Mbps)\_1TX(Port1)**
**EBW**
**2412MHz**

10/06/2019


**802.11b\_Nss1,(1Mbps)\_1TX(Port1)**
**EBW**
**2437MHz**

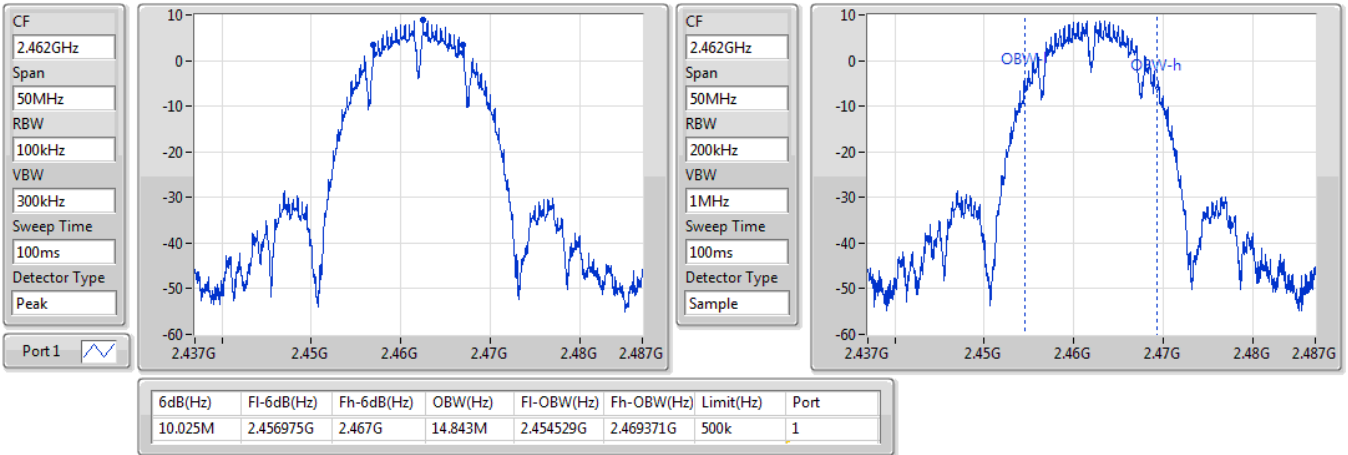
10/06/2019



## 802.11b\_Nss1,(1Mbps)\_1TX(Port1)

**EBW**
**2462MHz**

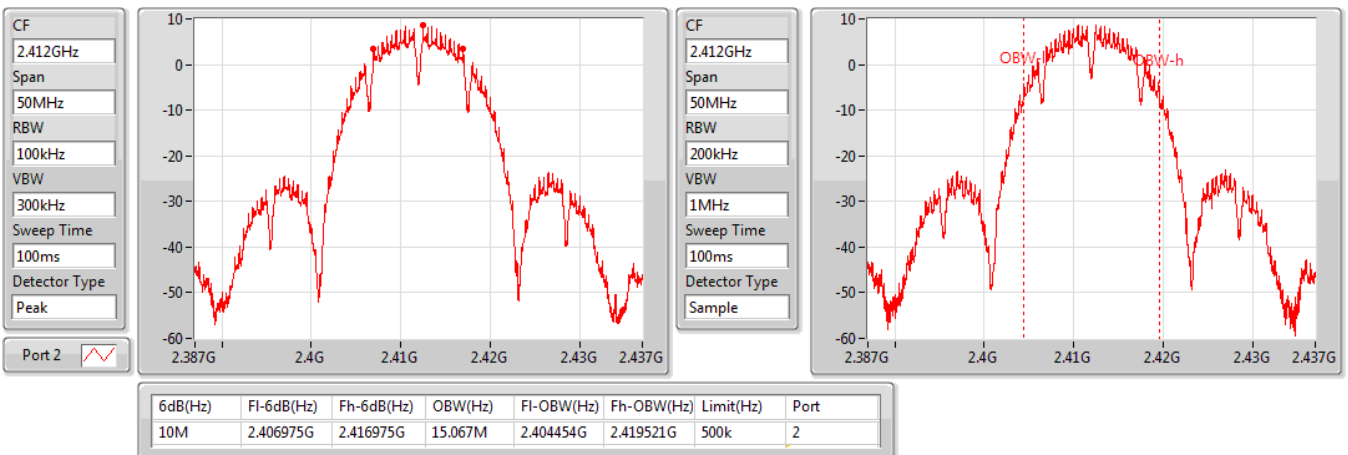
10/06/2019



## 802.11b\_Nss1,(1Mbps)\_1TX(Port2)

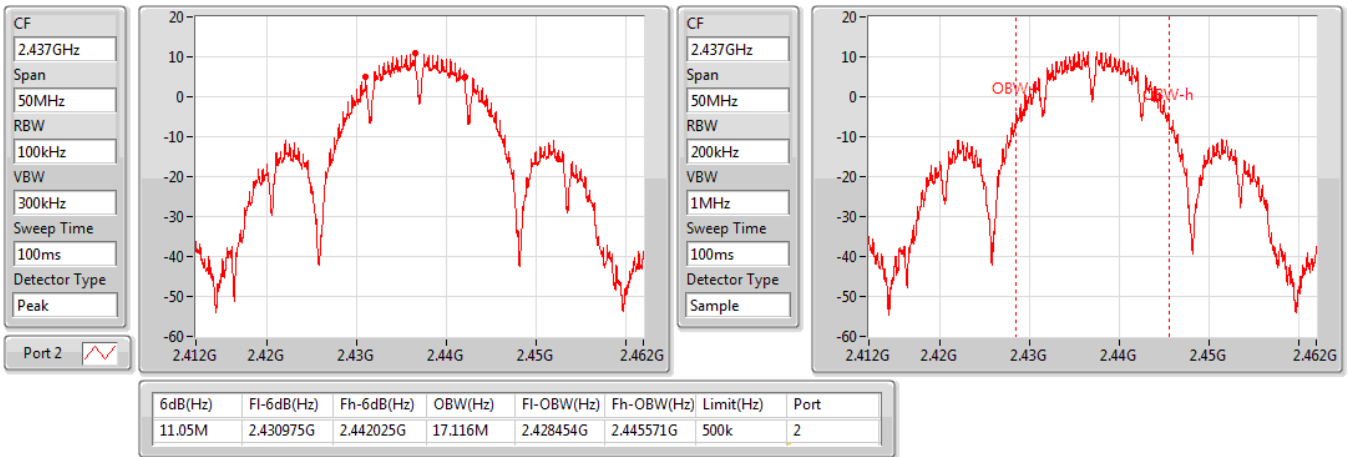
**EBW**
**2412MHz**

10/06/2019

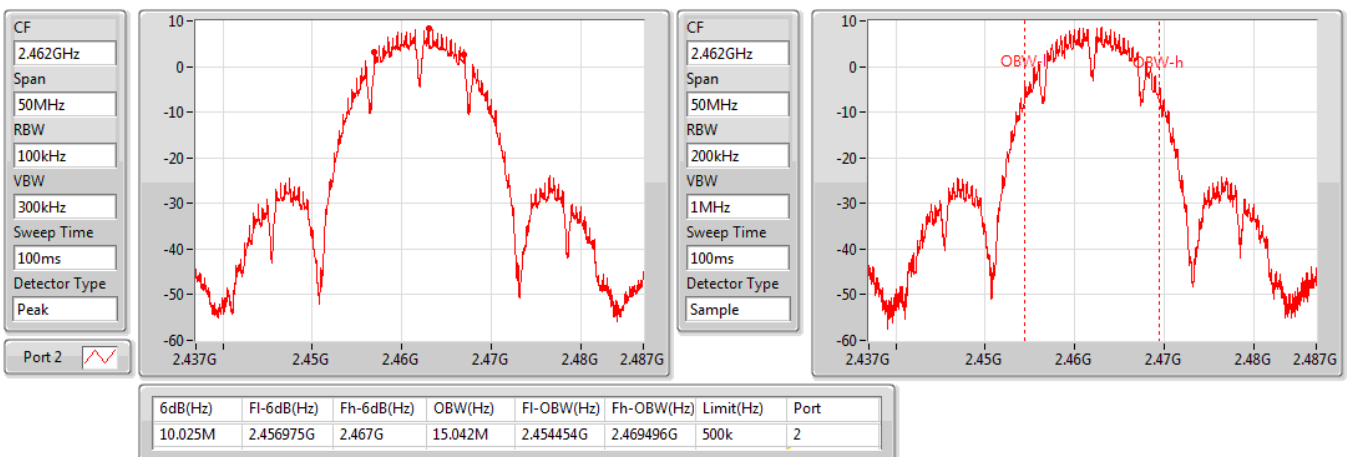


**802.11b\_Nss1,(1Mbps)\_1TX(Port2)**
**EBW**
**2437MHz**

10/06/2019


**802.11b\_Nss1,(1Mbps)\_1TX(Port2)**
**EBW**
**2462MHz**

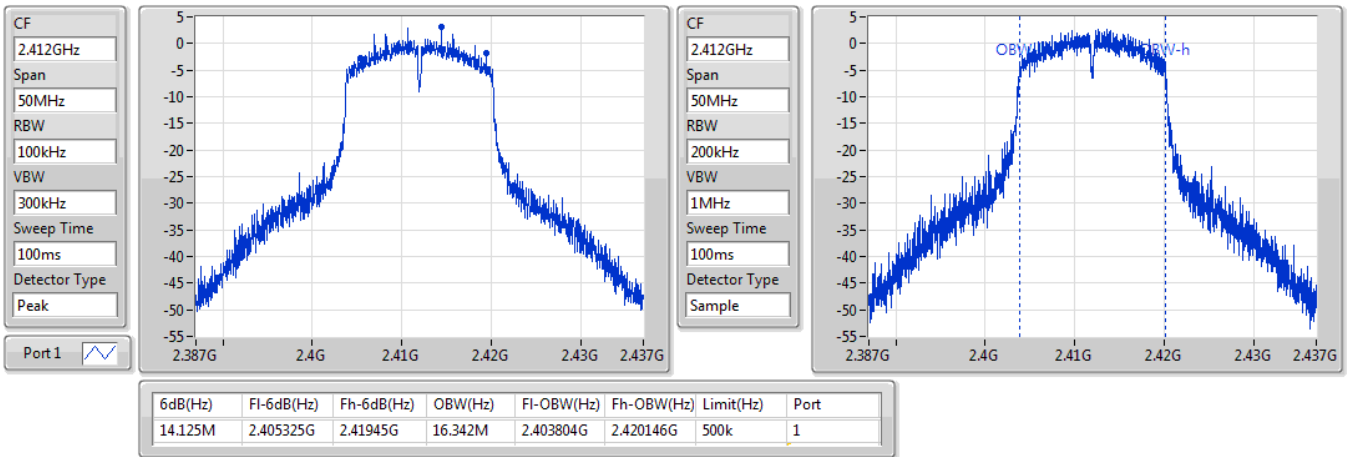
10/06/2019



## 802.11g\_Nss1,(6Mbps)\_1TX(Port1)

**EBW**
**2412MHz**

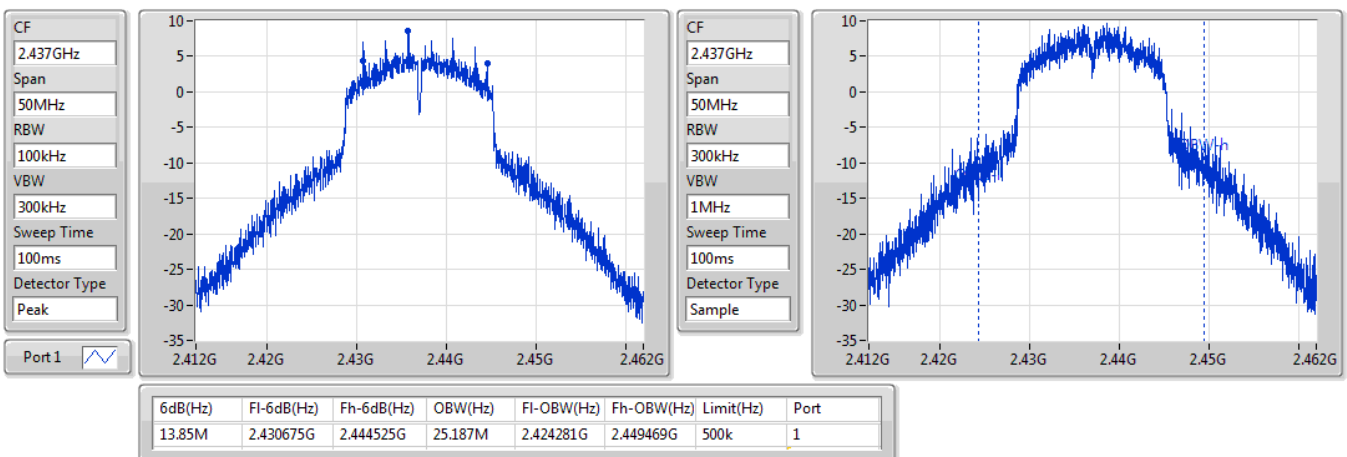
10/06/2019



## 802.11g\_Nss1,(6Mbps)\_1TX(Port1)

**EBW**
**2437MHz**

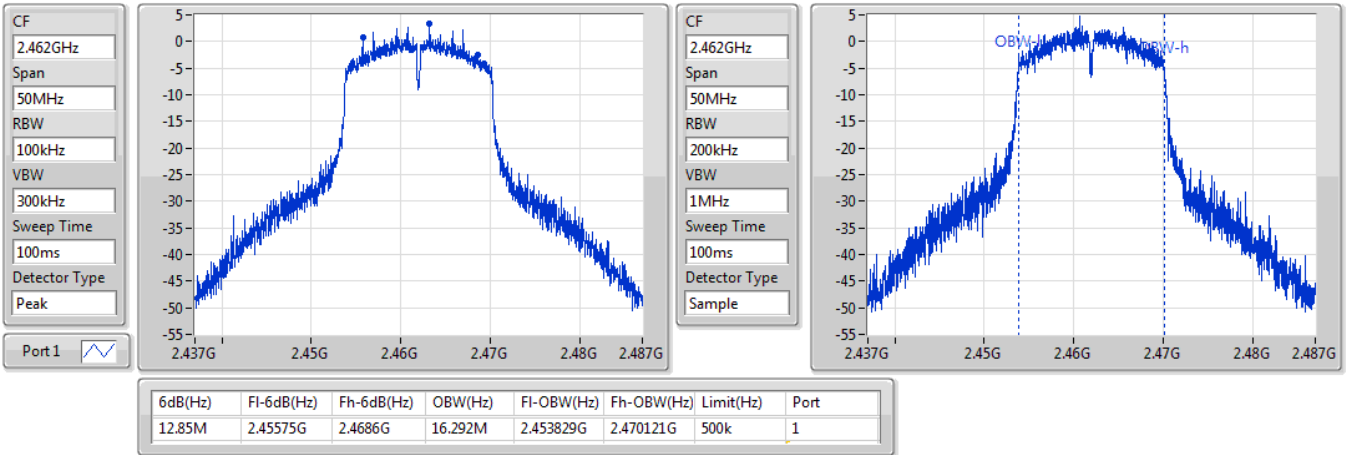
10/06/2019



## 802.11g\_Nss1,(6Mbps)\_1TX(Port1)

**EBW**
**2462MHz**

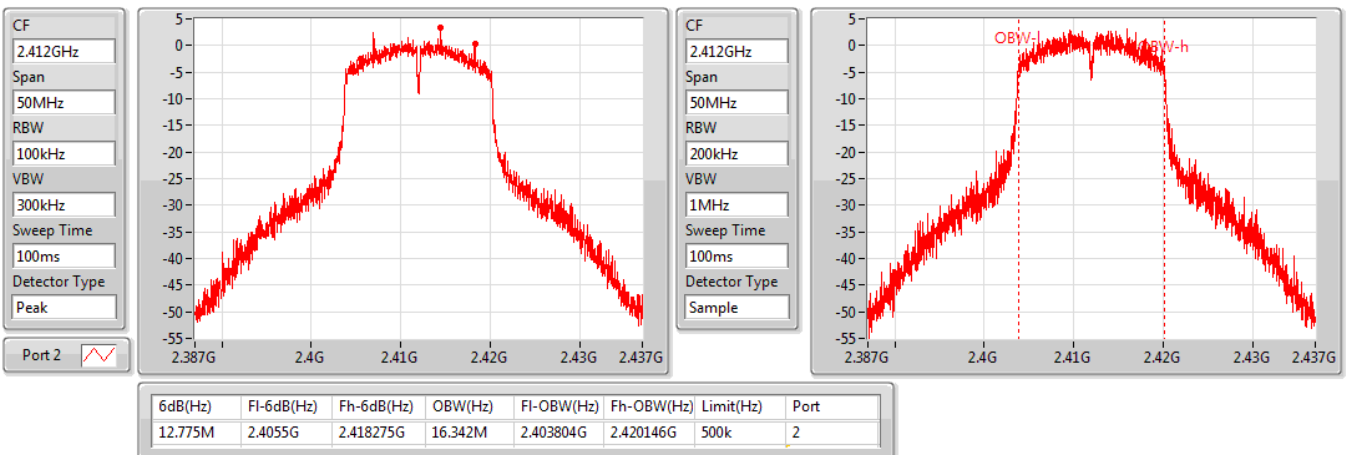
10/06/2019



## 802.11g\_Nss1,(6Mbps)\_1TX(Port2)

**EBW**
**2412MHz**

10/06/2019

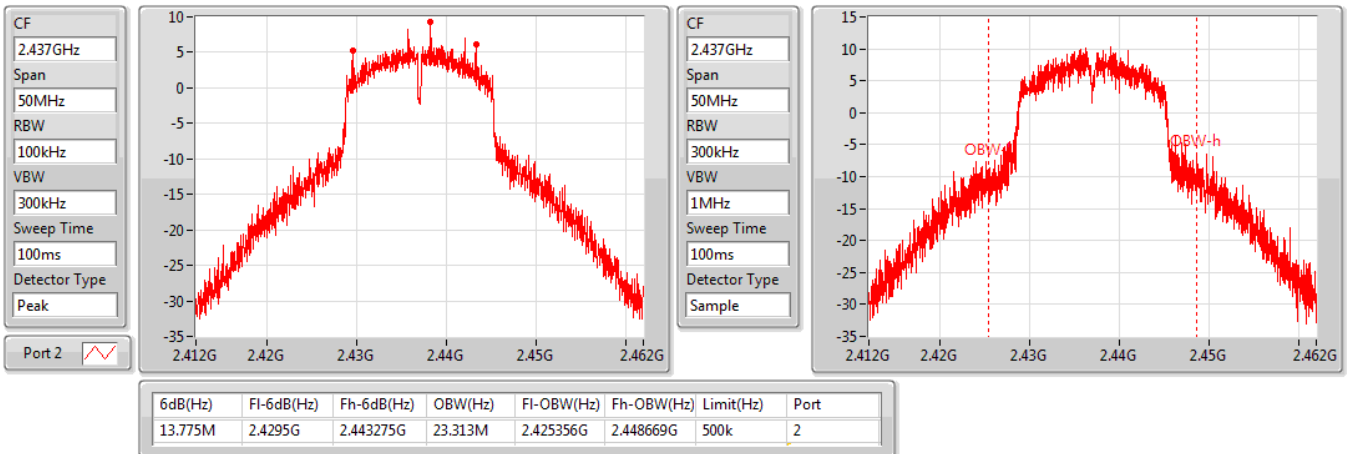


## 802.11g\_Nss1,(6Mbps)\_1TX(Port2)

EBW

2437MHz

10/06/2019

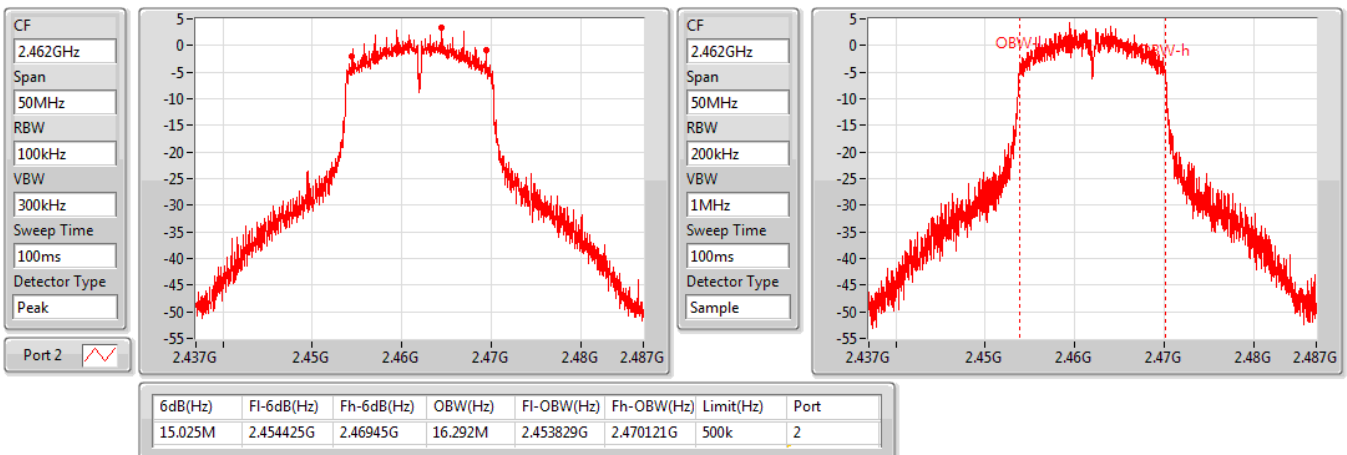


## 802.11g\_Nss1,(6Mbps)\_1TX(Port2)

EBW

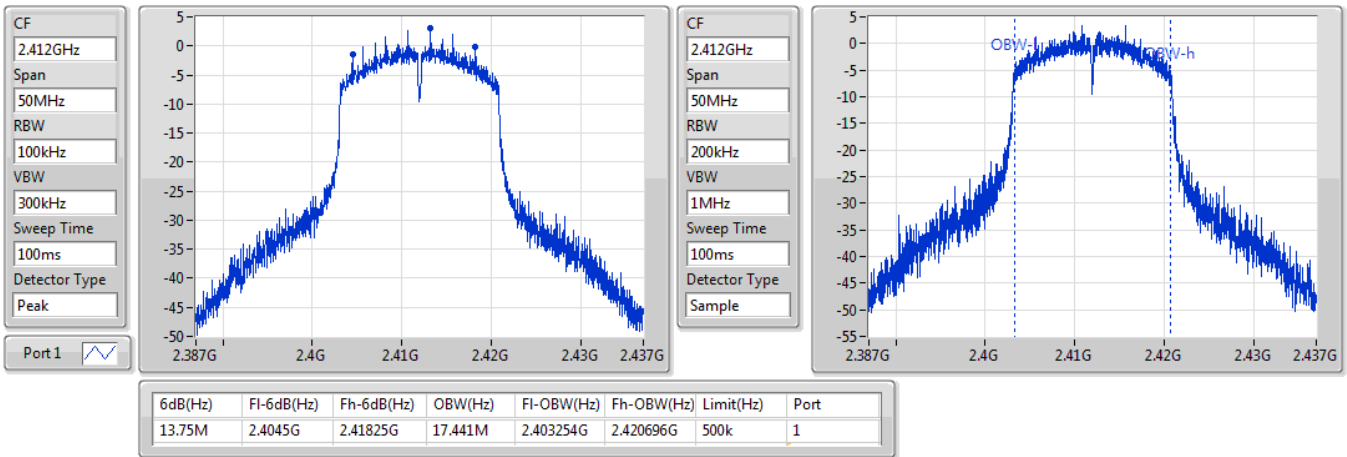
2462MHz

10/06/2019

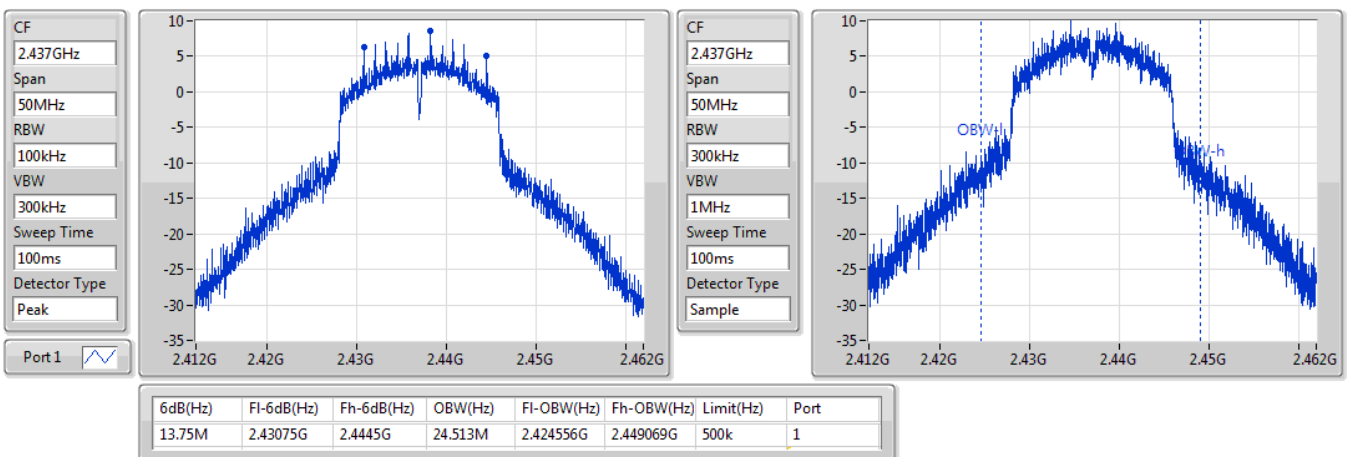


**802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)**
**EBW**
**2412MHz**

10/06/2019


**802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)**
**EBW**
**2437MHz**

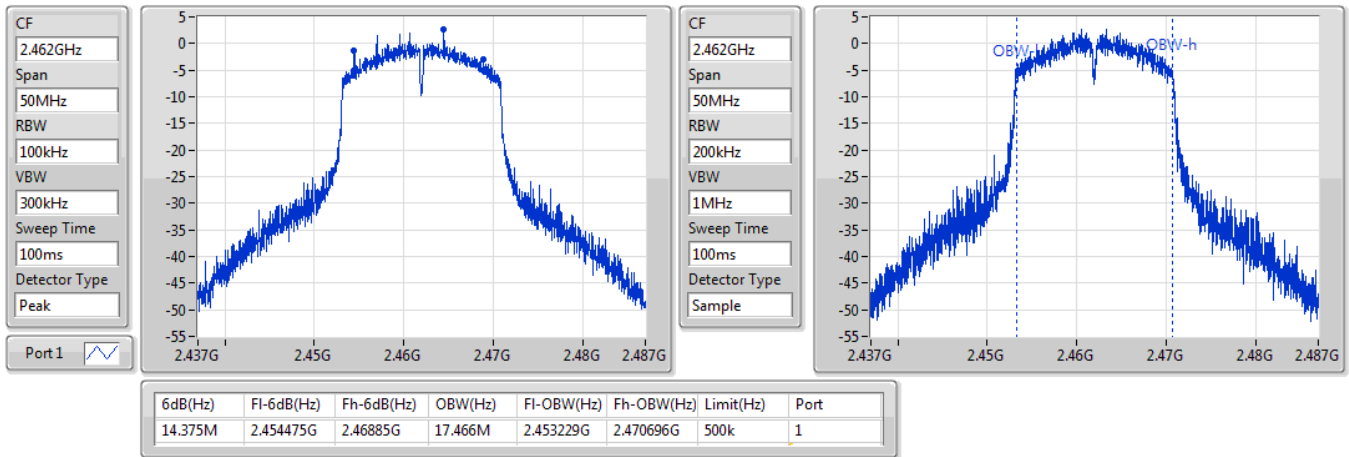
10/06/2019



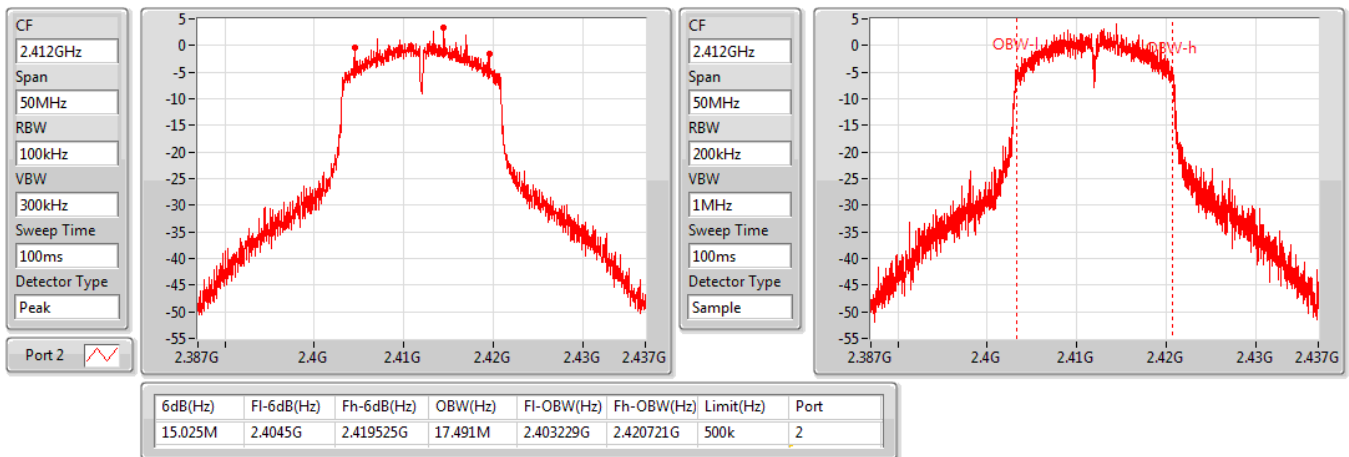


**802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)**
**EBW**
**2462MHz**

10/06/2019

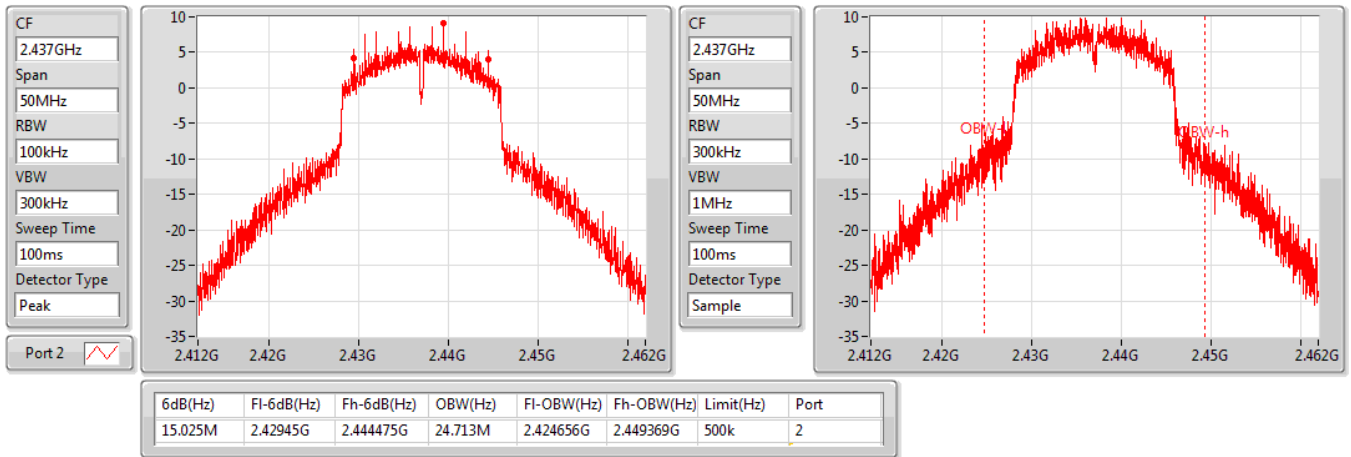

**802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)**
**EBW**
**2412MHz**

10/06/2019

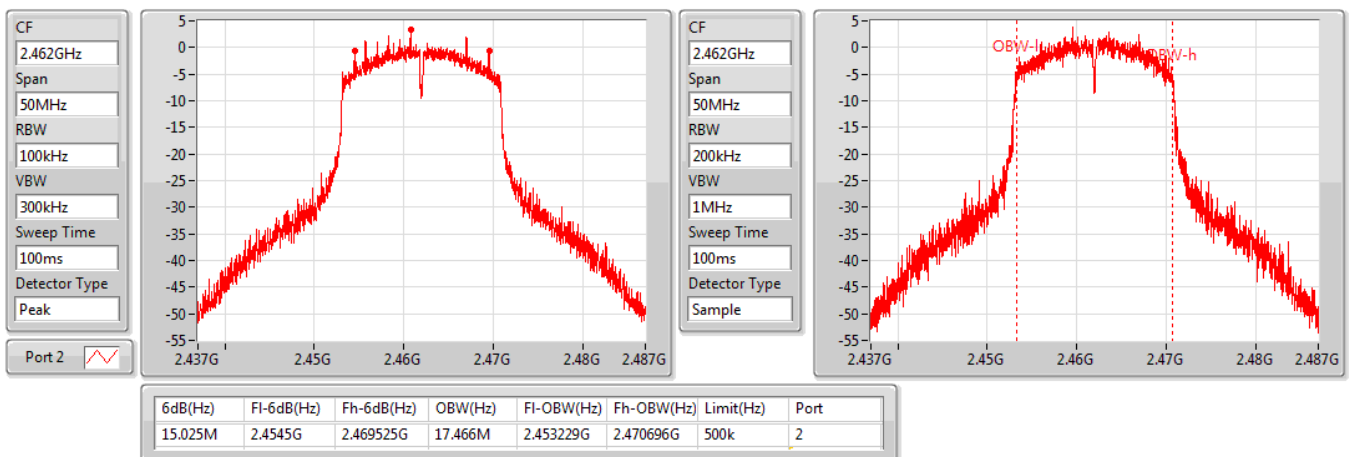


**802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)**
**EBW**
**2437MHz**

10/06/2019

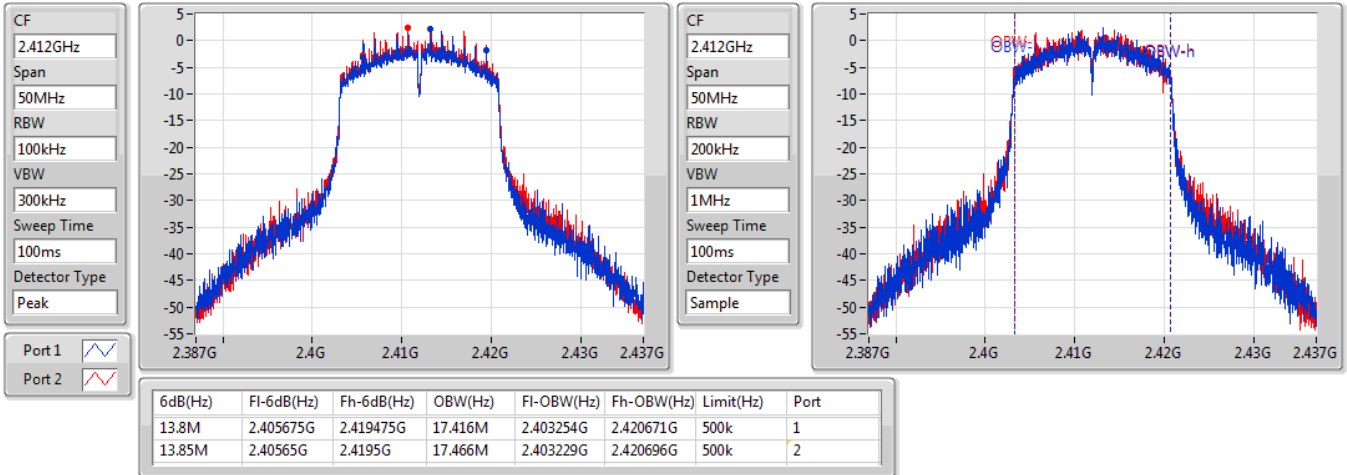

**802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)**
**EBW**
**2462MHz**

10/06/2019

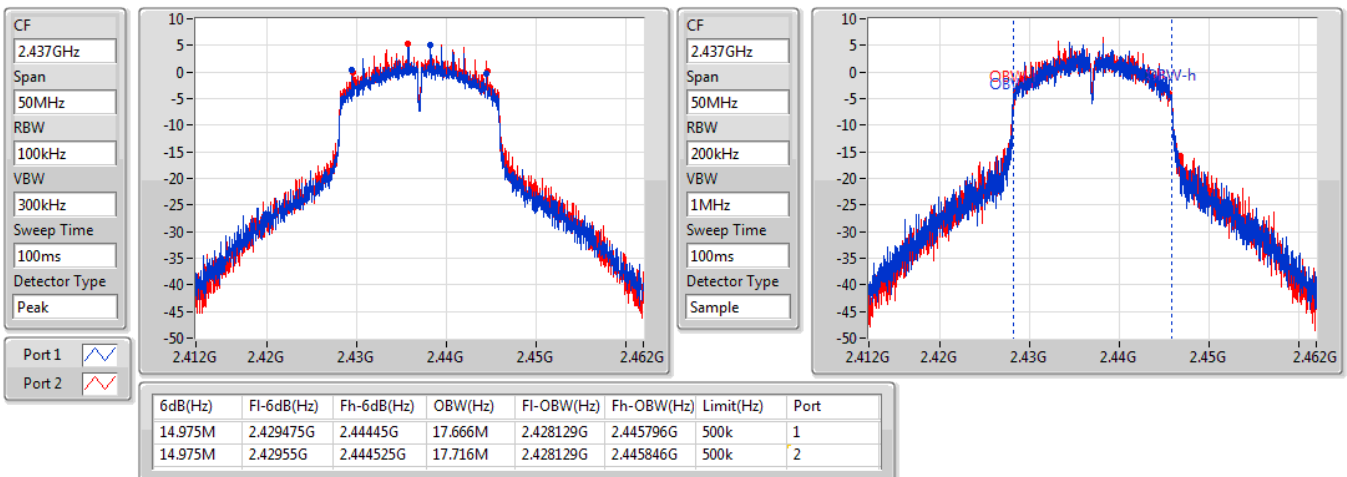


**802.11n HT20\_Nss2,(MCS8)\_2TX**
**EBW**
**2412MHz**

10/06/2019

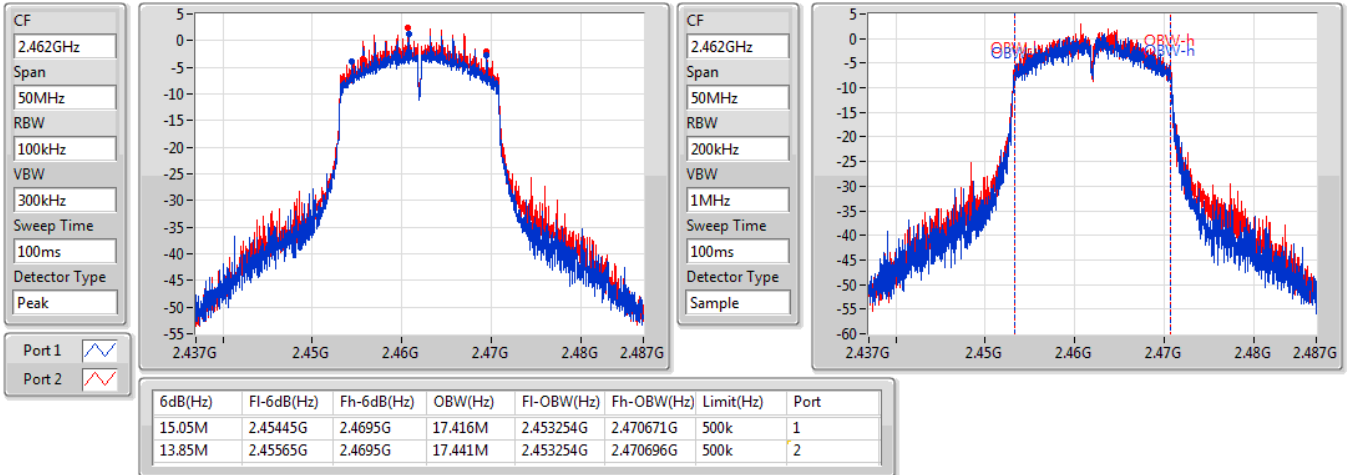

**802.11n HT20\_Nss2,(MCS8)\_2TX**
**EBW**
**2437MHz**

10/06/2019

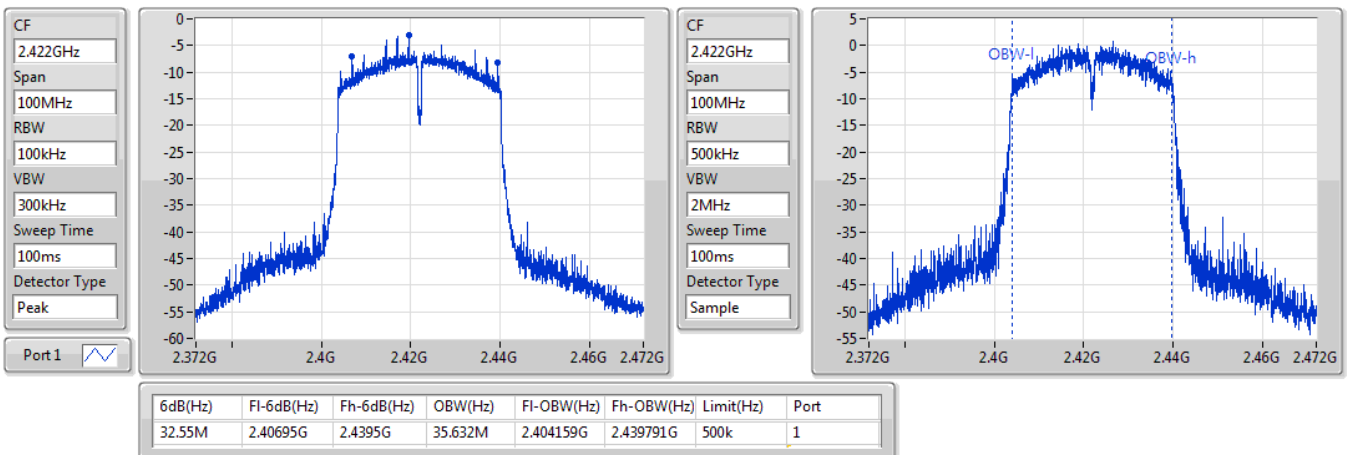


**802.11n HT20\_Nss2,(MCS8)\_2TX**
**EBW**
**2462MHz**

10/06/2019

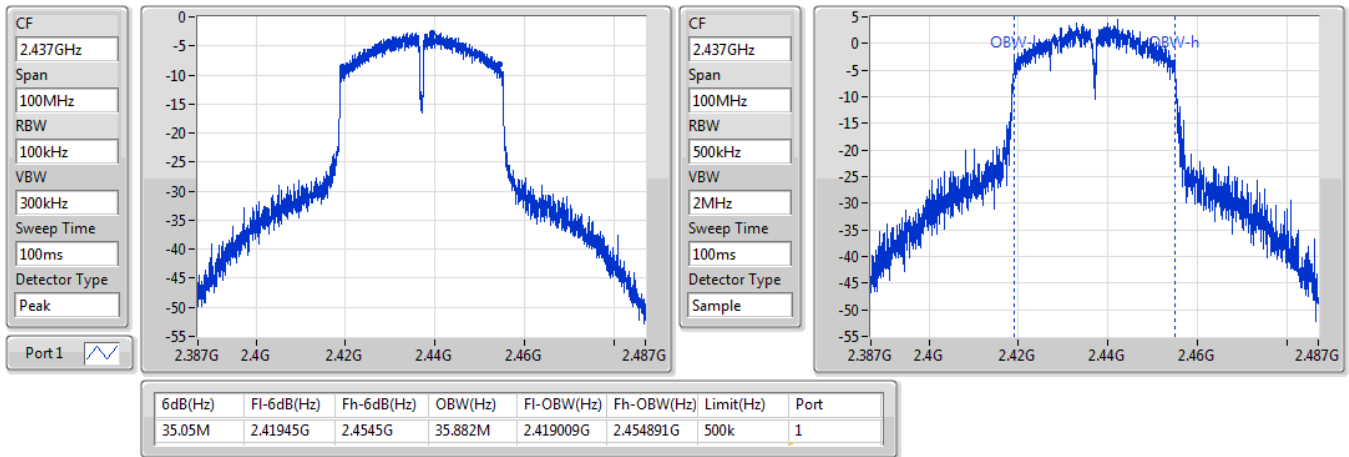

**802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)**
**EBW**
**2422MHz**

10/06/2019

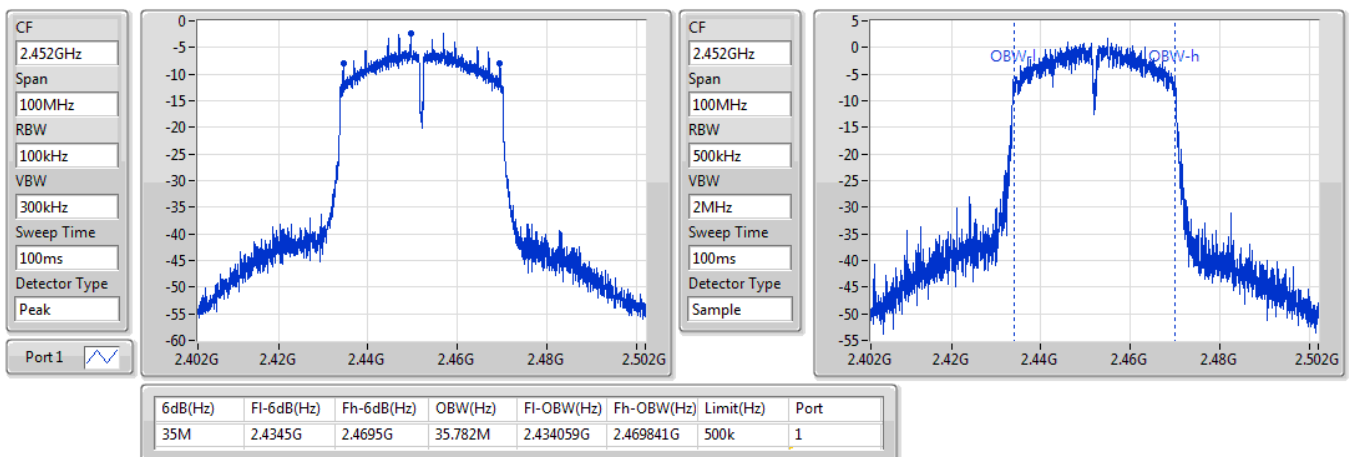


**802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)**
**EBW**
**2437MHz**

10/06/2019


**802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)**
**EBW**
**2452MHz**

10/06/2019

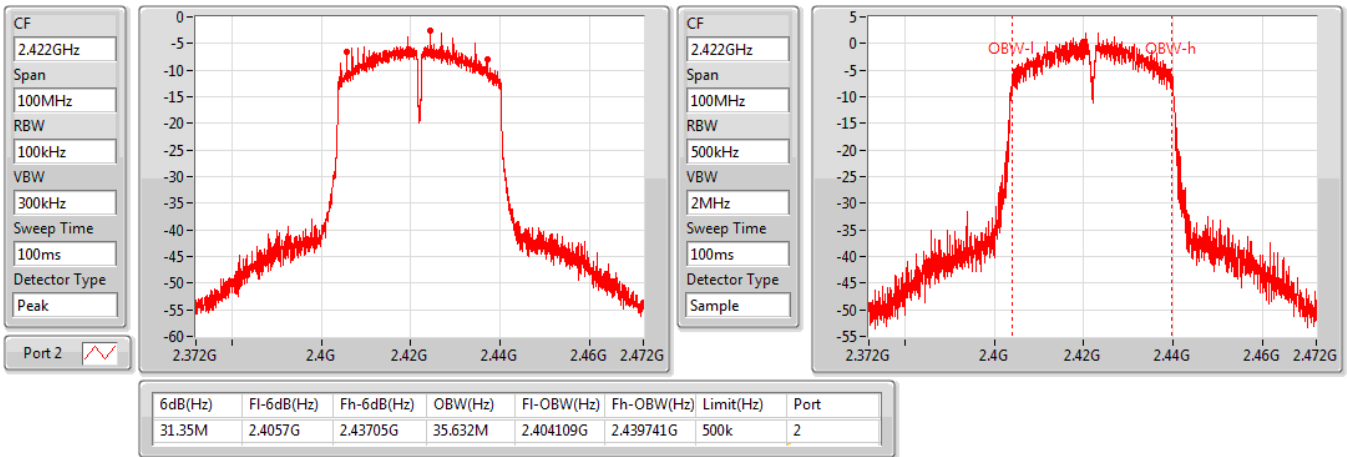


## 802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

EBW

2422MHz

10/06/2019

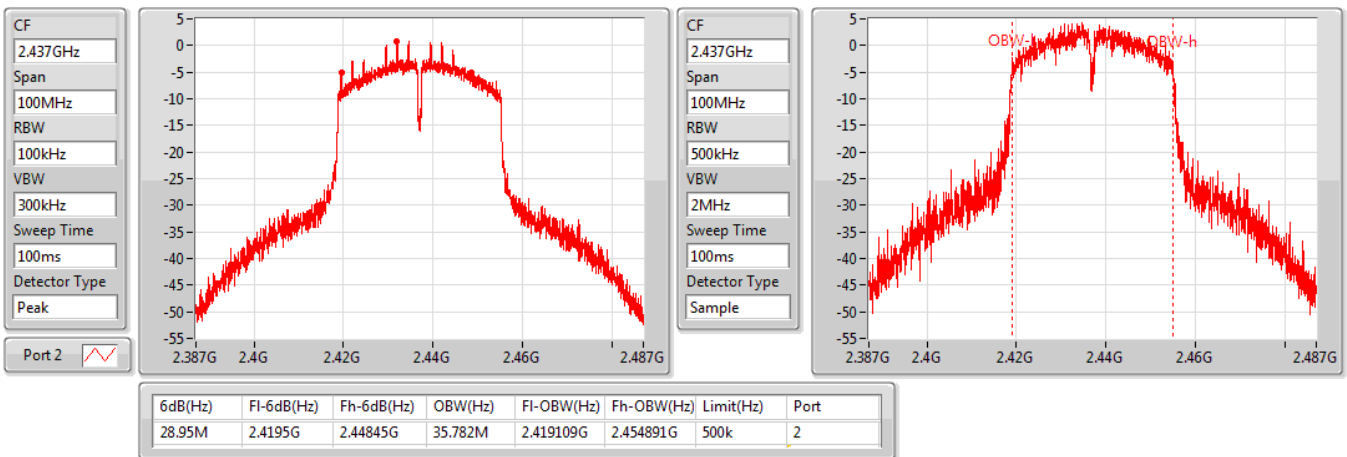


## 802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

EBW

2437MHz

10/06/2019

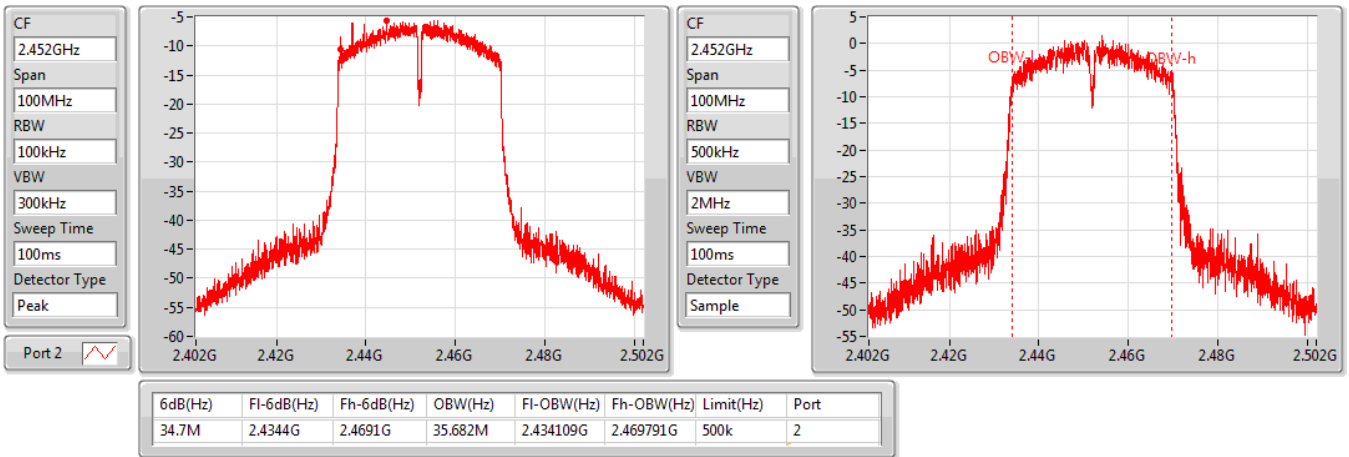


## 802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

EBW

2452MHz

10/06/2019





**Summary**

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX(Port1)	17.28	0.05346
802.11b_Nss1,(1Mbps)_1TX(Port2)	17.28	0.05346
802.11g_Nss1,(6Mbps)_1TX(Port1)	17.03	0.05047
802.11g_Nss1,(6Mbps)_1TX(Port2)	17.03	0.05047
802.11n HT20_Nss1,(MCS0)_1TX(Port1)	16.00	0.03981
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	16.02	0.03999
802.11n HT20_Nss2,(MCS8)_2TX	18.07	0.06412
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	13.60	0.02291
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	13.71	0.02350



## Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)
802.11b_Nss1,(1Mbps)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	1.27	17.12		17.12	30.00
2417MHz	Pass	1.27	17.16		17.16	30.00
2437MHz	Pass	1.27	17.03		17.03	30.00
2457MHz	Pass	1.27	17.28		17.28	30.00
2462MHz	Pass	1.27	17.28		17.28	30.00
802.11b_Nss1,(1Mbps)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	1.27		17.12	17.12	30.00
2417MHz	Pass	1.27		17.24	17.24	30.00
2437MHz	Pass	1.27		17.22	17.22	30.00
2457MHz	Pass	1.27		17.28	17.28	30.00
2462MHz	Pass	1.27		17.18	17.18	30.00
802.11g_Nss1,(6Mbps)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	1.27	13.78		13.78	30.00
2417MHz	Pass	1.27	15.27		15.27	30.00
2437MHz	Pass	1.27	17.03		17.03	30.00
2457MHz	Pass	1.27	15.72		15.72	30.00
2462MHz	Pass	1.27	13.86		13.86	30.00
802.11g_Nss1,(6Mbps)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	1.27		14.11	14.11	30.00
2417MHz	Pass	1.27		15.82	15.82	30.00
2437MHz	Pass	1.27		17.03	17.03	30.00
2457MHz	Pass	1.27		16.11	16.11	30.00
2462MHz	Pass	1.27		14.17	14.17	30.00
802.11n_HT20_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	1.27	13.36		13.36	30.00
2417MHz	Pass	1.27	15.34		15.34	30.00
2437MHz	Pass	1.27	16.00		16.00	30.00
2457MHz	Pass	1.27	14.94		14.94	30.00
2462MHz	Pass	1.27	13.32		13.32	30.00
802.11n_HT20_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	1.27		13.99	13.99	30.00
2417MHz	Pass	1.27		15.99	15.99	30.00
2437MHz	Pass	1.27		15.96	15.96	30.00
2457MHz	Pass	1.27		16.02	16.02	30.00
2462MHz	Pass	1.27		13.73	13.73	30.00
802.11n_HT20_Nss2,(MCS8)_2TX	-	-	-	-	-	-
2412MHz	Pass	1.27	12.38	12.80	15.61	30.00
2417MHz	Pass	1.27	14.23	14.71	17.49	30.00
2437MHz	Pass	1.27	14.93	15.19	18.07	30.00
2457MHz	Pass	1.27	14.37	15.11	17.77	30.00
2462MHz	Pass	1.27	11.61	12.45	15.06	30.00
802.11n_HT40_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-
2422MHz	Pass	1.27	9.99		9.99	30.00



## Average Power

## Appendix C

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)
2427MHz	Pass	1.27	10.93		10.93	30.00
2437MHz	Pass	1.27	13.60		13.60	30.00
2447MHz	Pass	1.27	11.96		11.96	30.00
2452MHz	Pass	1.27	10.89		10.89	30.00
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-
2422MHz	Pass	1.27		10.95	10.95	30.00
2427MHz	Pass	1.27		12.67	12.67	30.00
2437MHz	Pass	1.27		13.71	13.71	30.00
2447MHz	Pass	1.27		10.20	10.20	30.00
2452MHz	Pass	1.27		10.47	10.47	30.00

**DG** = Directional Gain; **Port X** = Port X output power

**Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_1TX(Port1)	-3.15
802.11b_Nss1,(1Mbps)_1TX(Port2)	-3.21
802.11g_Nss1,(6Mbps)_1TX(Port1)	-5.95
802.11g_Nss1,(6Mbps)_1TX(Port2)	-5.89
802.11n HT20_Nss1,(MCS0)_1TX(Port1)	-6.24
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	-6.11
802.11n HT20_Nss2,(MCS8)_2TX	-7.62
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	-13.51
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	-13.44

RBW=3 kHz.

**Result**

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11b_Nss1,(1Mbps)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	1.27	-5.98		-5.98	8.00
2437MHz	Pass	1.27	-3.15		-3.15	8.00
2462MHz	Pass	1.27	-5.76		-5.76	8.00
802.11b_Nss1,(1Mbps)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	1.27		-5.58	-5.58	8.00
2437MHz	Pass	1.27		-3.21	-3.21	8.00
2462MHz	Pass	1.27		-5.56	-5.56	8.00
802.11g_Nss1,(6Mbps)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	1.27	-10.42		-10.42	8.00
2437MHz	Pass	1.27	-5.95		-5.95	8.00
2462MHz	Pass	1.27	-10.57		-10.57	8.00
802.11g_Nss1,(6Mbps)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	1.27		-9.99	-9.99	8.00
2437MHz	Pass	1.27		-5.89	-5.89	8.00
2462MHz	Pass	1.27		-9.55	-9.55	8.00
802.11n HT20_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-
2412MHz	Pass	1.27	-11.09		-11.09	8.00
2437MHz	Pass	1.27	-6.24		-6.24	8.00
2462MHz	Pass	1.27	-11.45		-11.45	8.00
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-
2412MHz	Pass	1.27		-9.79	-9.79	8.00
2437MHz	Pass	1.27		-6.11	-6.11	8.00
2462MHz	Pass	1.27		-11.27	-11.27	8.00
802.11n HT20_Nss2,(MCS8)_2TX	-	-	-	-	-	-
2412MHz	Pass	1.27	-12.30	-11.97	-9.91	8.00
2437MHz	Pass	1.27	-9.50	-9.63	-7.62	8.00
2462MHz	Pass	1.27	-12.55	-12.05	-10.19	8.00
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-
2422MHz	Pass	1.27	-16.33		-16.33	8.00
2437MHz	Pass	1.27	-13.51		-13.51	8.00
2452MHz	Pass	1.27	-16.57		-16.57	8.00
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-
2422MHz	Pass	1.27		-15.58	-15.58	8.00
2437MHz	Pass	1.27		-13.44	-13.44	8.00
2452MHz	Pass	1.27		-16.77	-16.77	8.00

**DG** = Directional Gain; RBW=3 kHz;

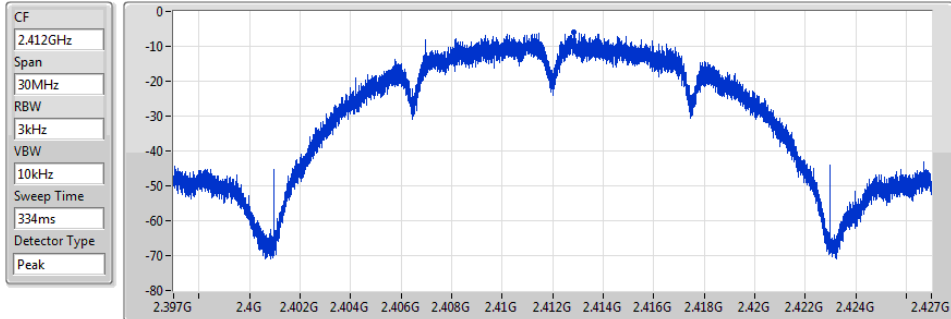
**PD** = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

### 802.11b\_Nss1,(1Mbps)\_1TX(Port1)

PSD

2412MHz

10/06/2019



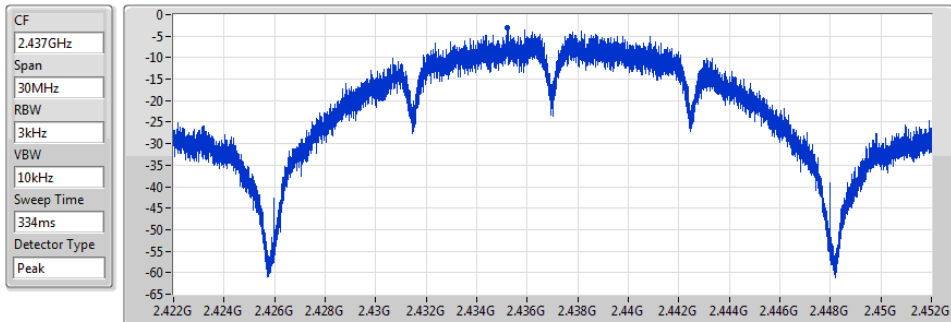
Sum	PD	Port 1
(dBm/100kHz)	(dBm/100kHz)	(dBm/100kHz)
-5.98	-5.98	-5.98

### 802.11b\_Nss1,(1Mbps)\_1TX(Port1)

PSD

2437MHz

10/06/2019



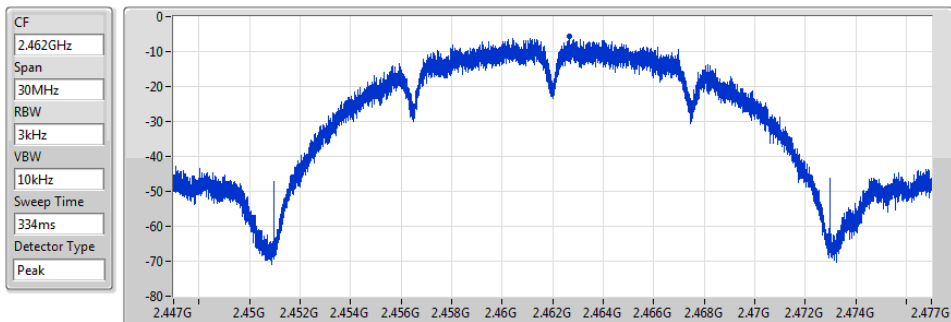
Sum	PD	Port 1
(dBm/100kHz)	(dBm/100kHz)	(dBm/100kHz)
-3.15	-3.15	-3.15

### 802.11b\_Nss1,(1Mbps)\_1TX(Port1)

PSD

2462MHz

10/06/2019



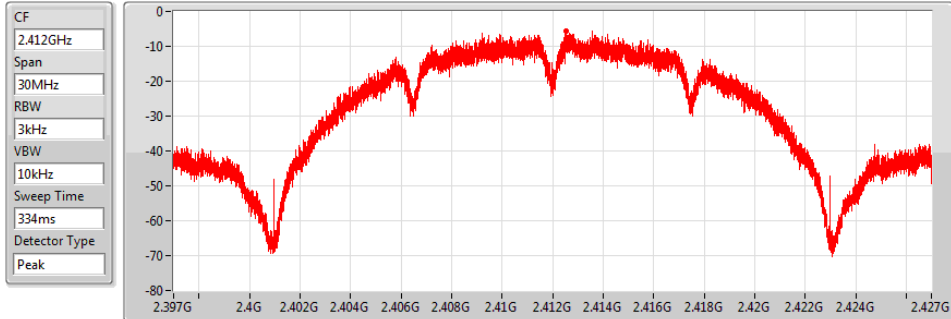
Sum	PD	Port 1
(dBm/100kHz)	(dBm/100kHz)	(dBm/100kHz)
-5.76	-5.76	-5.76

### 802.11b\_Nss1,(1Mbps)\_1TX(Port2)

PSD

2412MHz

10/06/2019



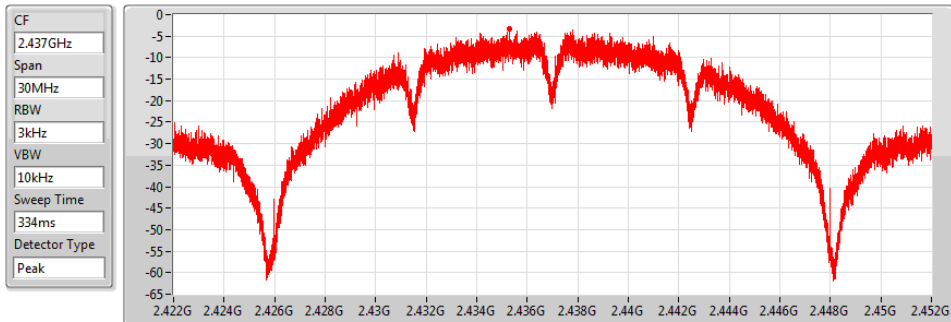
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-5.58	-5.58		-5.58

### 802.11b\_Nss1,(1Mbps)\_1TX(Port2)

PSD

2437MHz

10/06/2019



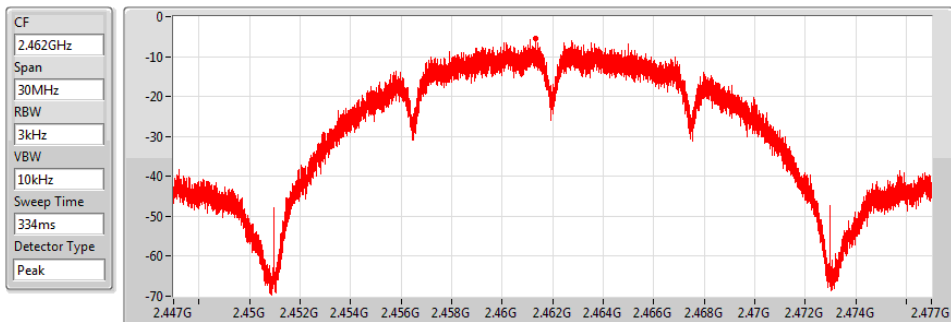
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-3.21	-3.21		-3.21

### 802.11b\_Nss1,(1Mbps)\_1TX(Port2)

PSD

2462MHz

10/06/2019



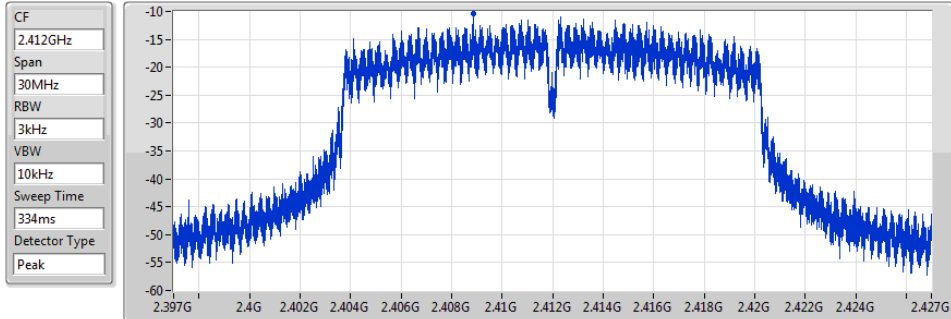
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-5.56	-5.56		-5.56

### 802.11g\_Nss1,(6Mbps)\_1TX(Port1)

PSD

2412MHz

10/06/2019



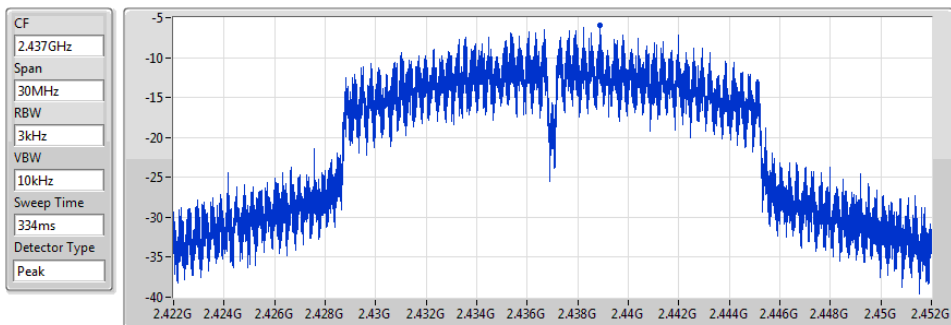
Sum	PD	Port1
(dBm/100kHz)	(dBm/100kHz)	(dBm/100kHz)
-10.42	-10.42	-10.42

### 802.11g\_Nss1,(6Mbps)\_1TX(Port1)

PSD

2437MHz

10/06/2019



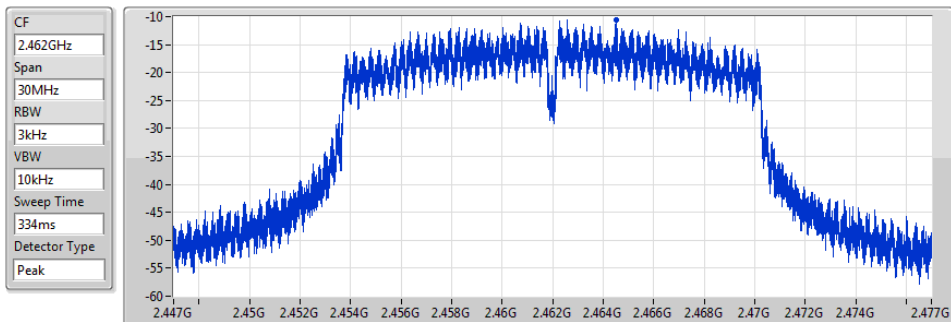
Sum	PD	Port1
(dBm/100kHz)	(dBm/100kHz)	(dBm/100kHz)
-5.95	-5.95	-5.95

### 802.11g\_Nss1,(6Mbps)\_1TX(Port1)

PSD

2462MHz

10/06/2019



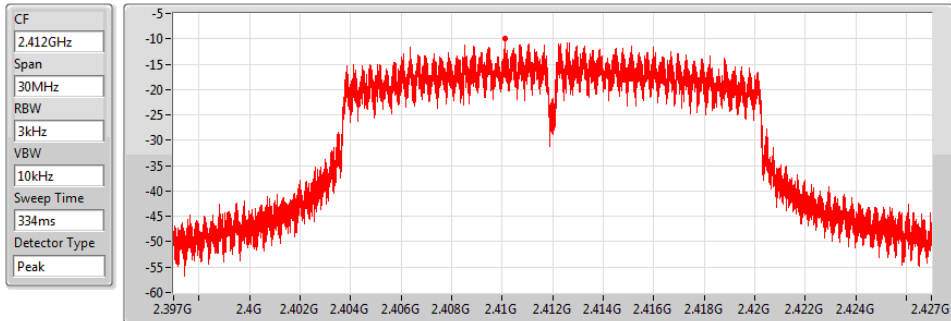
Sum	PD	Port1
(dBm/100kHz)	(dBm/100kHz)	(dBm/100kHz)
-10.57	-10.57	-10.57

## 802.11g\_Nss1,(6Mbps)\_1TX(Port2)

PSD

2412MHz

10/06/2019



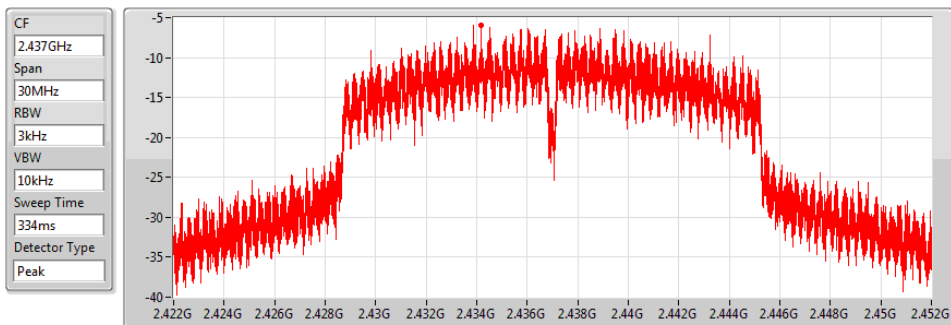
Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.99	-9.99		-9.99

## 802.11g\_Nss1,(6Mbps)\_1TX(Port2)

PSD

2437MHz

10/06/2019



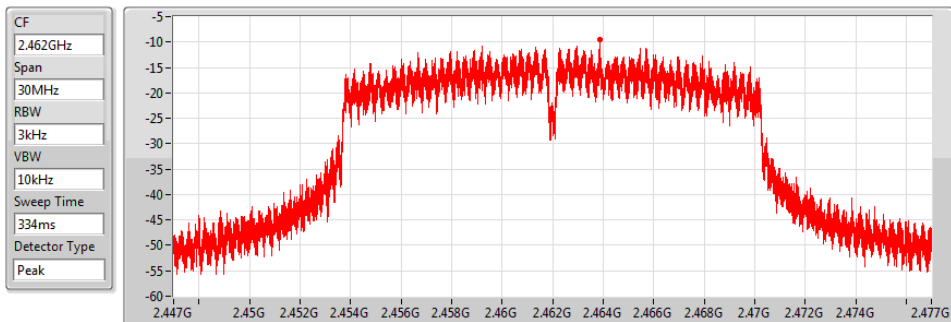
Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-5.89	-5.89		-5.89

## 802.11g\_Nss1,(6Mbps)\_1TX(Port2)

PSD

2462MHz

10/06/2019



Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.55	-9.55		-9.55

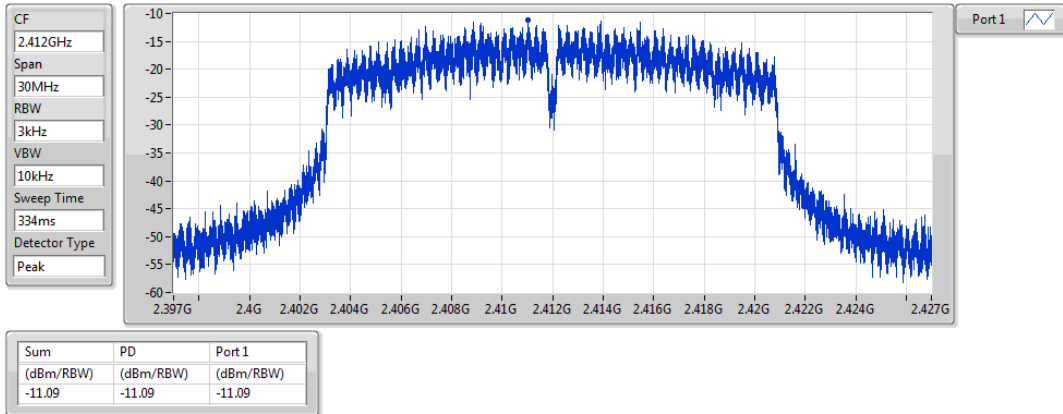


## 802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)

PSD

2412MHz

10/06/2019

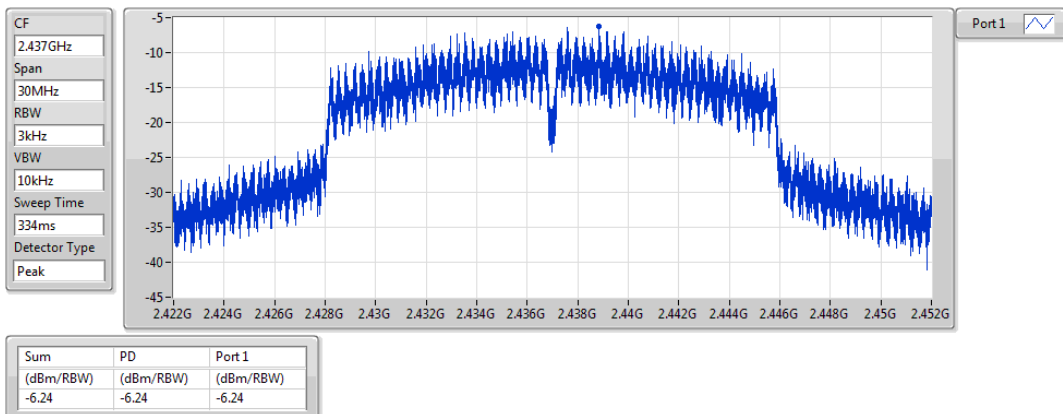


## 802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)

PSD

2437MHz

10/06/2019

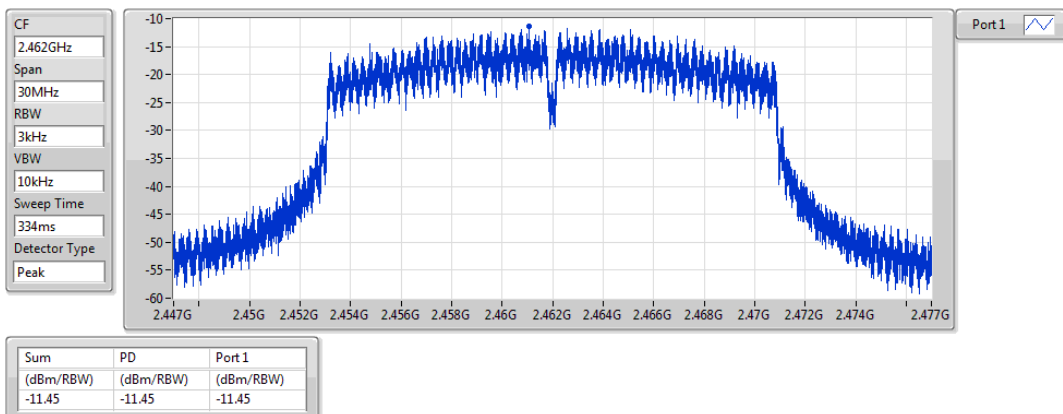


## 802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)

PSD

2462MHz

10/06/2019

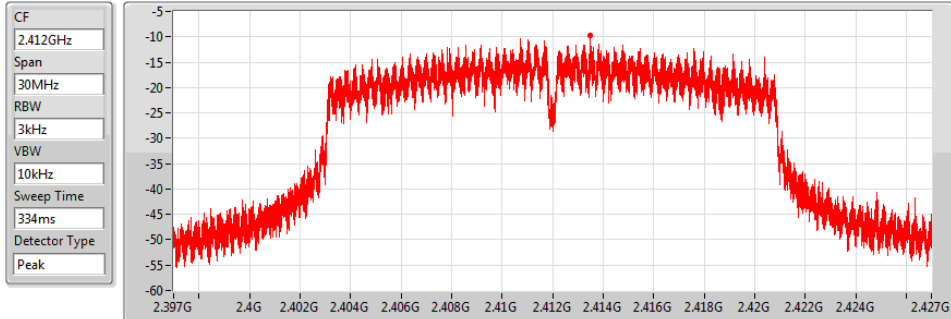


### 802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)

PSD

2412MHz

10/06/2019



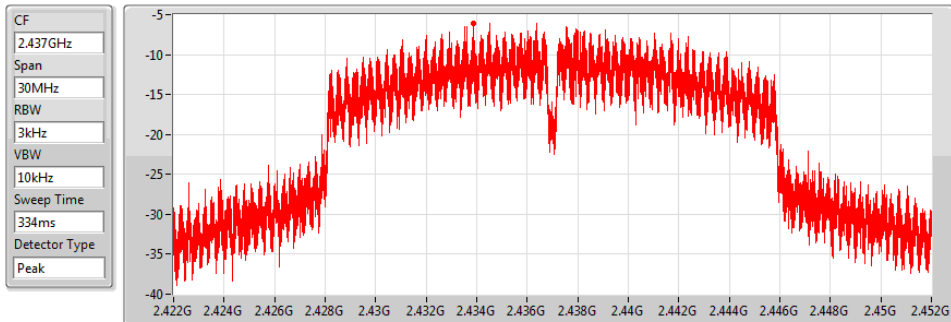
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-9.79	-9.79		-9.79

### 802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)

PSD

2437MHz

10/06/2019



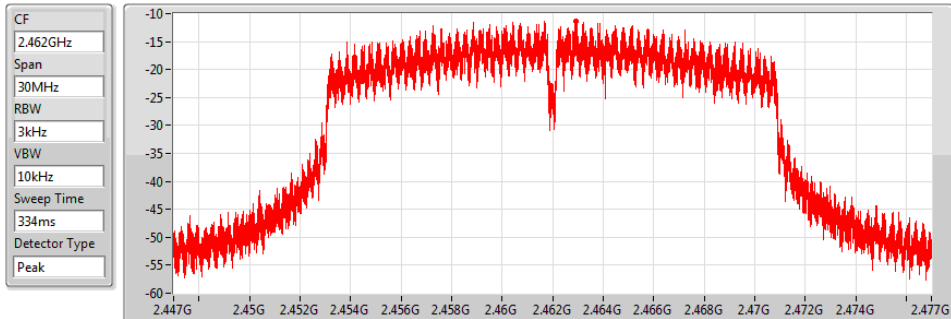
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-6.11	-6.11		-6.11

### 802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)

PSD

2462MHz

10/06/2019



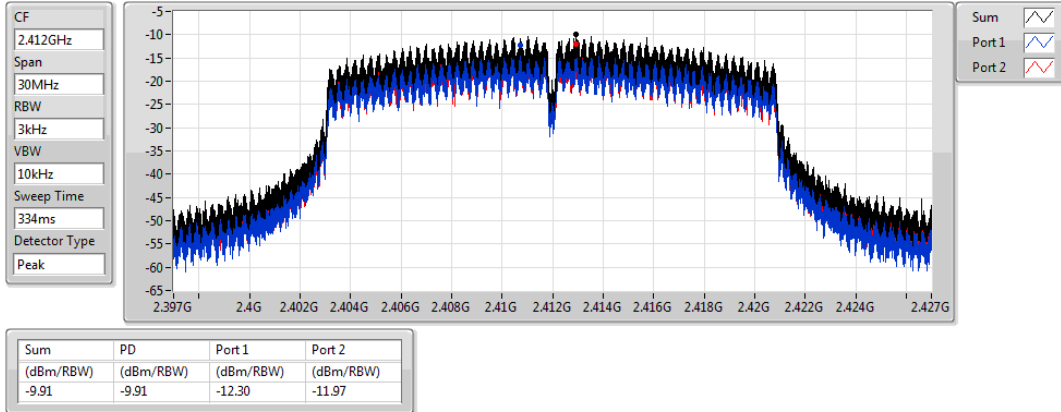
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-11.27	-11.27		-11.27

## 802.11n HT20\_Nss2,(MCS8)\_2TX

PSD

2412MHz

10/06/2019

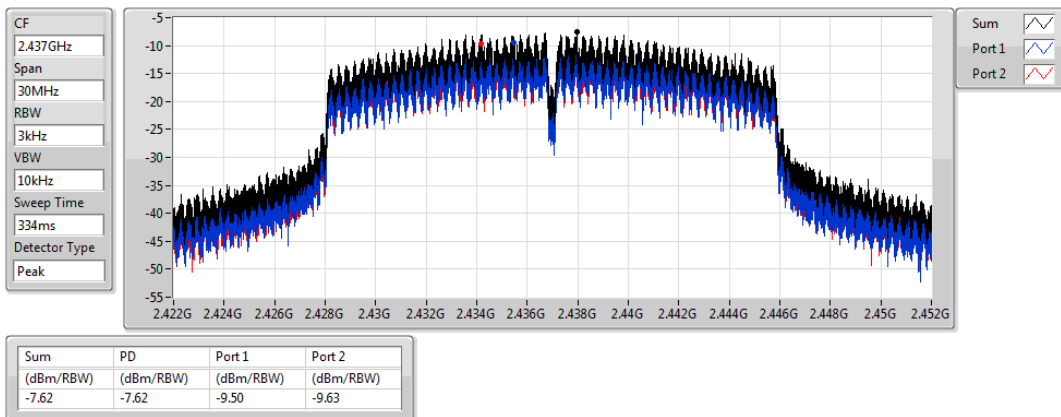


## 802.11n HT20\_Nss2,(MCS8)\_2TX

PSD

2437MHz

10/06/2019

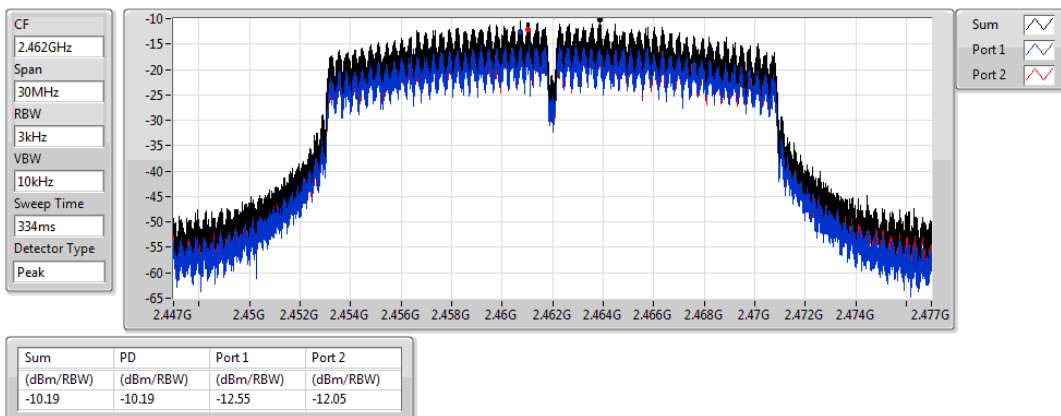


## 802.11n HT20\_Nss2,(MCS8)\_2TX

PSD

2462MHz

10/06/2019

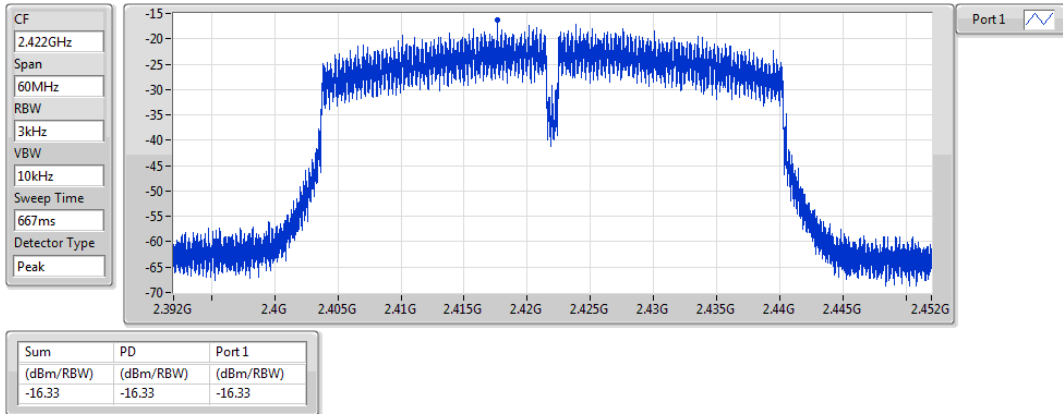


## 802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)

PSD

2422MHz

10/06/2019

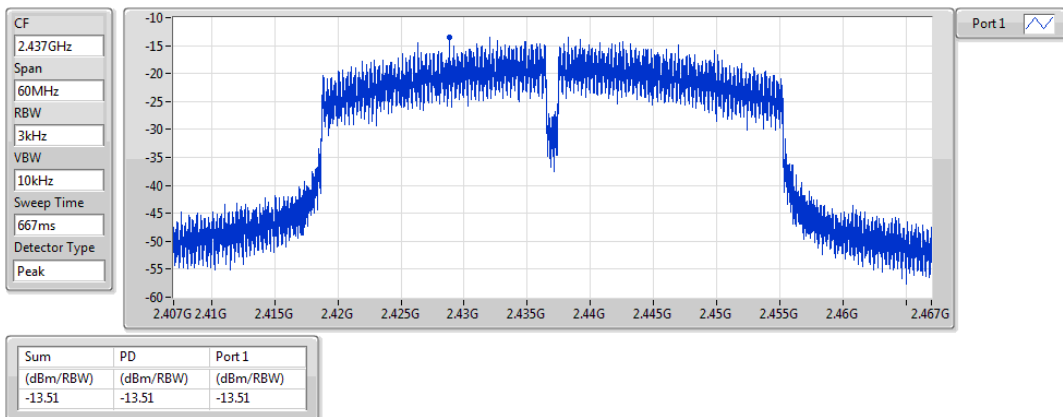


## 802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)

PSD

2437MHz

10/06/2019

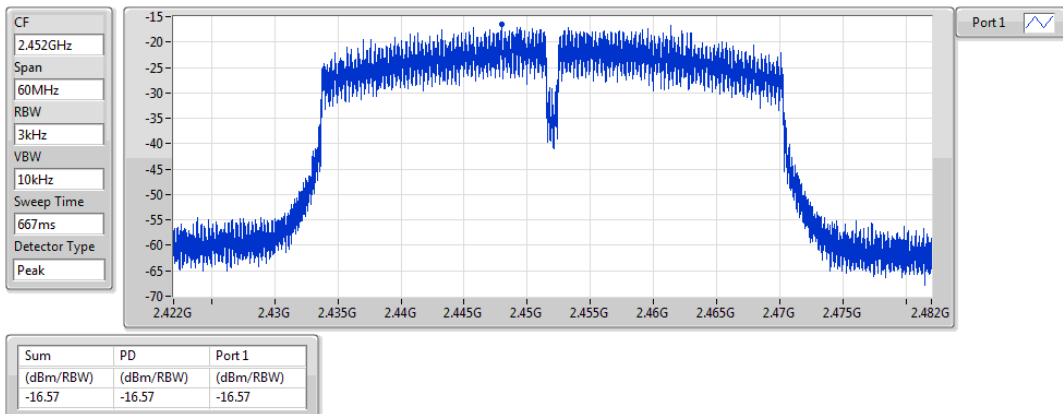


## 802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)

PSD

2452MHz

10/06/2019

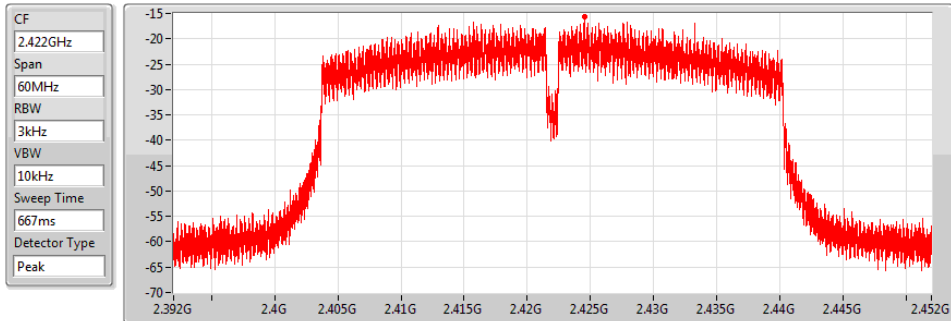


### 802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

PSD

2422MHz

10/06/2019



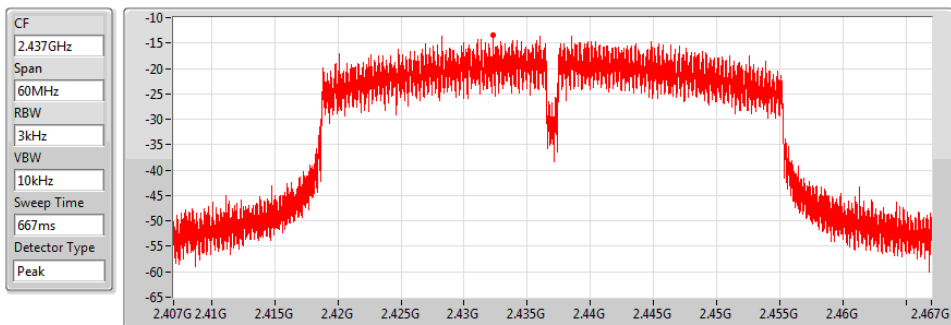
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-15.58	-15.58		-15.58

### 802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

PSD

2437MHz

10/06/2019



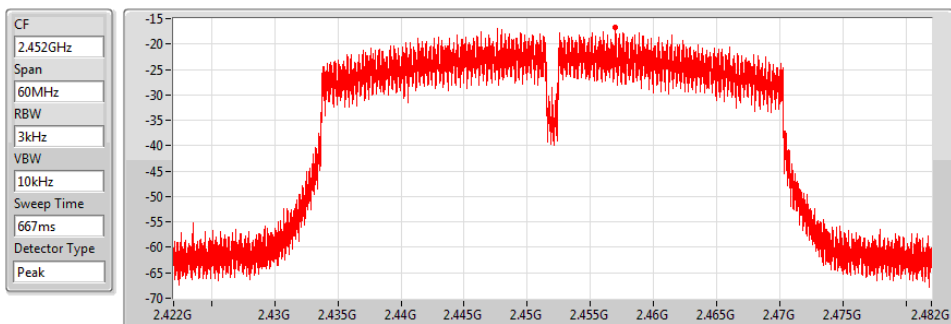
Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-13.44	-13.44		-13.44

### 802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

PSD

2452MHz

10/06/2019



Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-16.77	-16.77		-16.77

**Summary**

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX(Port1)	Pass	2.43649G	10.15	-19.85	2.30728G	-58.99	2.398G	-29.76	2.5155G	-56.36	17.57433G	-51.91	1
802.11b_Nss1,(1Mbps)_1TX(Port2)	Pass	2.43645G	10.48	-19.52	2.30641G	-62.85	2.397G	-23.41	2.48446G	-59.21	16.40274G	-51.91	2
802.11g_Nss1,(6Mbps)_1TX(Port1)	Pass	2.43824G	8.75	-21.25	2.30699G	-61.78	2.39886G	-26.27	2.51724G	-59.51	17.55747G	-51.99	1
802.11g_Nss1,(6Mbps)_1TX(Port2)	Pass	2.442G	7.72	-22.28	2.30816G	-63.65	2.39984G	-25.54	2.5166G	-60.33	17.61085G	-51.61	2
802.11n HT20_Nss1,(MCS0)_1TX(Port1)	Pass	2.4357G	8.33	-21.67	2.30874G	-62.85	2.39984G	-26.32	2.48542G	-60.26	16.28474G	-51.64	1
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	Pass	2.4395G	8.60	-21.40	2.30583G	-63.57	2.39944G	-26.64	2.516G	-59.94	16.92532G	-52.50	2
802.11n HT20_Nss2,(MCS8)_2TX	Pass	2.43574G	5.17	-24.83	2.30903G	-63.96	2.39974G	-29.36	2.48424G	-60.23	17.40013G	-52.05	2
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	Pass	2.44075G	0.71	-29.29	863.27M	-65.31	2.39888G	-33.31	2.48414G	-45.48	17.64083G	-52.22	1
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	Pass	2.442G	0.51	-29.49	2.30798G	-63.75	2.39956G	-35.20	2.48418G	-46.04	16.23013G	-52.01	2

**Result**

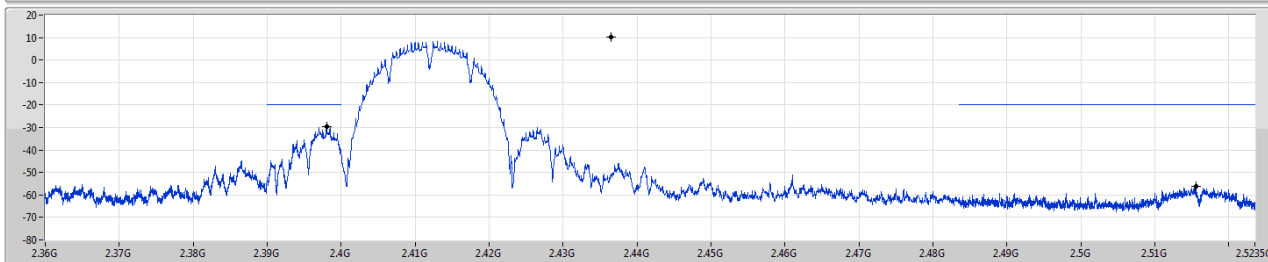
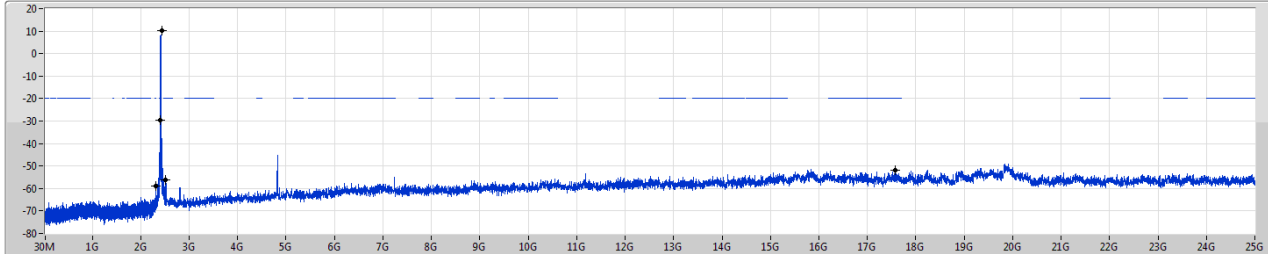
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
802.11b_Nss1,(1Mbps)_1TX(Port1)	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43649G	10.15	-19.85	2.30728G	-58.99	2.398G	-29.76	2.5155G	-56.36	17.57433G	-51.91	1
2437MHz	Pass	2.43649G	10.15	-19.85	2.03147G	-59.42	2.39998G	-32.25	2.48498G	-46.37	14.62148G	-46.78	1
2462MHz	Pass	2.43649G	10.15	-19.85	2.05244G	-62.43	2.39712G	-58.77	2.48748G	-45.38	17.6249G	-52.41	1
802.11b_Nss1,(1Mbps)_1TX(Port2)	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43645G	10.48	-19.52	2.30641G	-62.85	2.397G	-23.41	2.48446G	-59.21	16.40274G	-51.91	2
2437MHz	Pass	2.43645G	10.48	-19.52	1.94963G	-59.20	2.39998G	-38.47	2.49598G	-45.62	14.62148G	-39.87	2
2462MHz	Pass	2.43645G	10.48	-19.52	1.96973G	-61.75	2.39992G	-59.72	2.48748G	-43.43	16.79608G	-52.12	2
802.11g_Nss1,(6Mbps)_1TX(Port1)	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43824G	8.75	-21.25	2.30699G	-61.78	2.39886G	-26.27	2.51724G	-59.51	17.55747G	-51.99	1
2437MHz	Pass	2.43824G	8.75	-21.25	2.02273G	-62.27	2.39922G	-34.93	2.4839G	-45.34	16.8326G	-52.65	1
2462MHz	Pass	2.43824G	8.75	-21.25	2.15816G	-64.86	2.39328G	-58.92	2.48354G	-40.45	16.86632G	-52.16	1
802.11g_Nss1,(6Mbps)_1TX(Port2)	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.442G	7.72	-22.28	2.30816G	-63.65	2.39984G	-25.54	2.5166G	-60.33	17.61085G	-51.61	2
2437MHz	Pass	2.442G	7.72	-22.28	2.30117G	-63.87	2.39988G	-38.46	2.48576G	-45.20	16.82979G	-51.10	2
2462MHz	Pass	2.442G	7.72	-22.28	957.05M	-64.67	2.39682G	-58.41	2.48354G	-42.49	17.11075G	-52.12	2
802.11n HT20_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.4357G	8.33	-21.67	2.30874G	-62.85	2.39984G	-26.32	2.48542G	-60.26	16.28474G	-51.64	1
2437MHz	Pass	2.4357G	8.33	-21.67	2.03322G	-62.97	2.3995G	-36.88	2.48356G	-45.56	16.2454G	-52.12	1
2462MHz	Pass	2.4357G	8.33	-21.67	2.30495G	-65.32	2.39368G	-59.58	2.4845G	-41.09	16.8607G	-51.92	1
802.11n HT20_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.4395G	8.60	-21.40	2.30583G	-63.57	2.39944G	-26.64	2.516G	-59.94	16.92532G	-52.50	2
2437MHz	Pass	2.4395G	8.60	-21.40	2.30758G	-63.48	2.39986G	-37.46	2.4879G	-41.49	17.48723G	-52.06	2
2462MHz	Pass	2.4395G	8.60	-21.40	2.09904G	-64.80	2.39412G	-59.31	2.48354G	-41.30	16.20045G	-52.47	2
802.11n HT20_Nss2,(MCS8)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43574G	5.17	-24.83	2.30612G	-63.64	2.39916G	-29.99	2.48904G	-60.03	16.71741G	-51.26	1
2412MHz	Pass	2.43574G	5.17	-24.83	2.30903G	-63.96	2.39974G	-29.36	2.48424G	-60.23	17.40013G	-52.05	2
2437MHz	Pass	2.43574G	5.17	-24.83	1.93448G	-64.46	2.39858G	-47.40	2.48692G	-53.38	16.73708G	-51.46	1
2437MHz	Pass	2.43574G	5.17	-24.83	2.30321G	-62.97	2.39822G	-50.17	2.4851G	-54.67	16.23697G	-52.31	2
2462MHz	Pass	2.43574G	5.17	-24.83	2.04807G	-64.62	2.39686G	-60.85	2.4848G	-44.66	16.25664G	-50.95	1
2462MHz	Pass	2.43574G	5.17	-24.83	2.07603G	-64.14	2.39888G	-59.79	2.48454G	-43.12	17.49847G	-52.47	2
802.11n HT40_Nss1,(MCS0)_1TX(Port1)	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.44075G	0.71	-29.29	2.30168G	-63.81	2.39908G	-40.15	2.48362G	-59.35	17.52865G	-52.23	1
2437MHz	Pass	2.44075G	0.71	-29.29	863.27M	-65.31	2.39888G	-33.31	2.48414G	-45.48	17.64083G	-52.22	1
2452MHz	Pass	2.44075G	0.71	-29.29	2.14653G	-64.55	2.3974G	-57.20	2.48402G	-41.52	16.21611G	-52.58	1
802.11n HT40_Nss1,(MCS0)_1TX(Port2)	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.442G	0.51	-29.49	2.13451G	-63.88	2.39956G	-38.21	2.48606G	-59.23	17.20612G	-50.74	2
2437MHz	Pass	2.442G	0.51	-29.49	2.30798G	-63.75	2.39956G	-35.20	2.48418G	-46.04	16.23013G	-52.01	2
2452MHz	Pass	2.442G	0.51	-29.49	2.03633G	-64.96	2.39704G	-58.00	2.48378G	-43.38	17.07431G	-52.30	2

802.11b\_Nss1,(1Mbps)\_1TX(Port1)

CSE NdB

2412MHz

10/06/2019



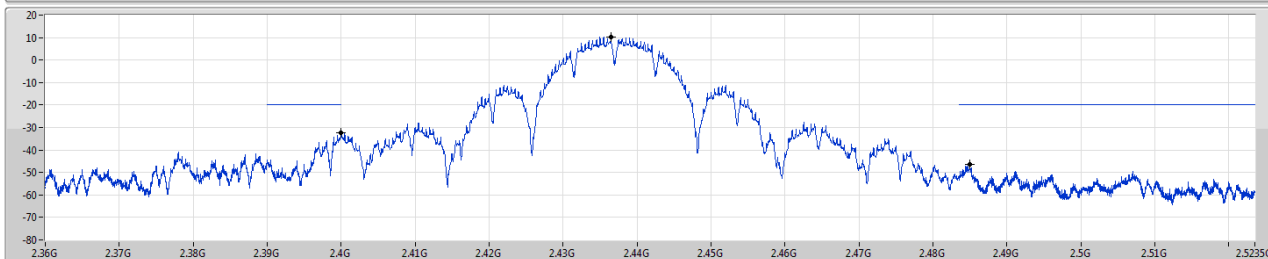
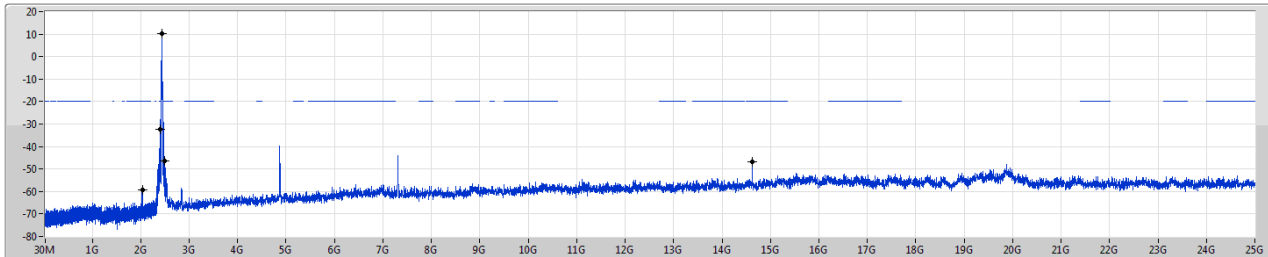
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43649G	10.15	-19.85	2.30728G	-58.99	2.398G	-29.76	2.5155G	-56.36	17.57433G	-51.91	1

802.11b\_Nss1,(1Mbps)\_1TX(Port1)

CSE NdB

2437MHz

10/06/2019



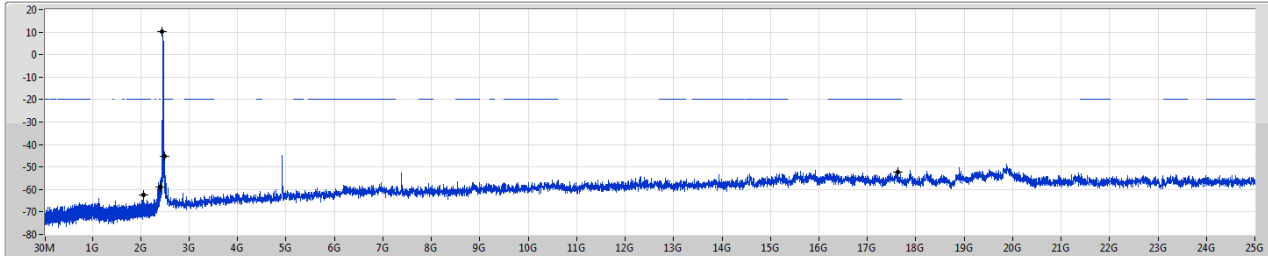
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43649G	10.15	-19.85	2.03147G	-59.42	2.39998G	-32.25	2.48498G	-46.37	14.62148G	-46.78	1



802.11b\_Nss1,(1Mbps)\_1TX(Port1)

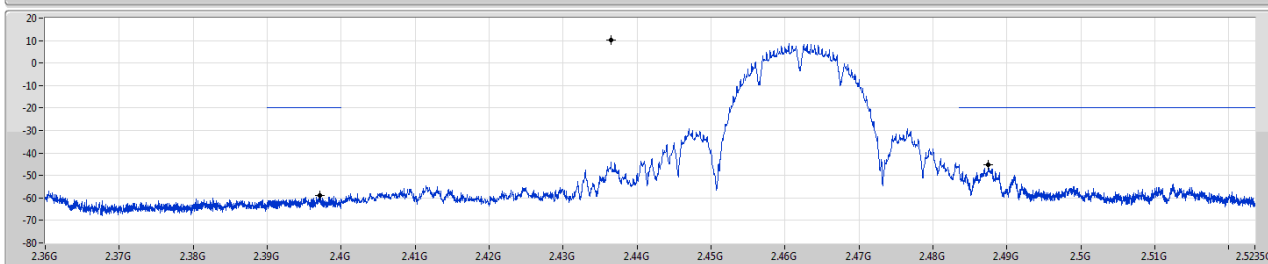
CSE NdB

2462MHz



10/06/2019

Port 1



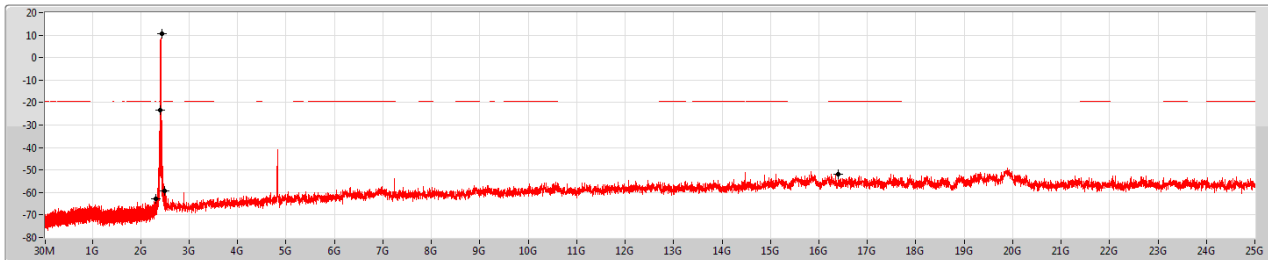
RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43649G	10.15	-19.85	2.05244G	-62.43	2.39712G	-58.77	2.48748G	-45.38	17.6249G	-52.41	1

802.11b\_Nss1,(1Mbps)\_1TX(Port2)

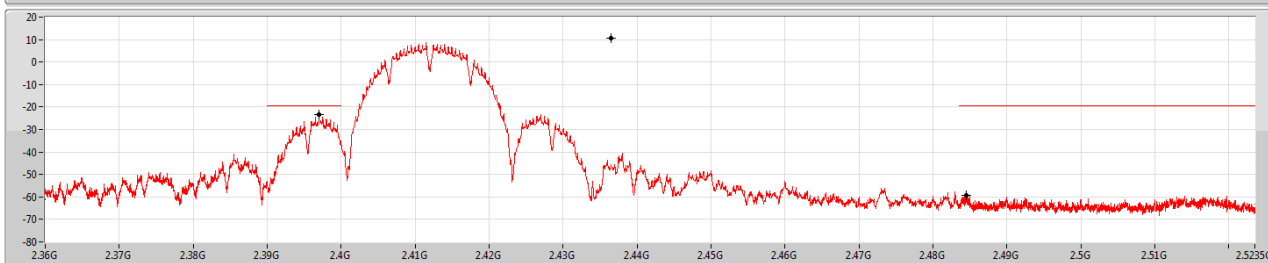
CSE NdB

2412MHz



10/06/2019

Port 2



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

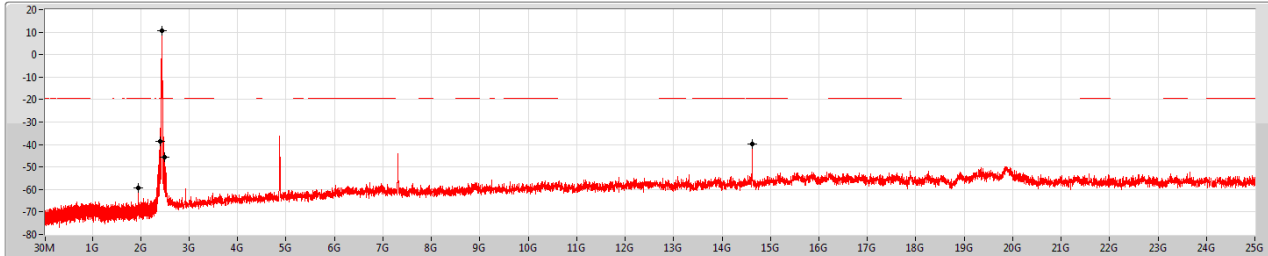
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43645G	10.48	-19.52	2.30641G	-62.85	2.397G	-23.41	2.48446G	-59.21	16.40274G	-51.91	2

802.11b\_Nss1,(1Mbps)\_1TX(Port2)

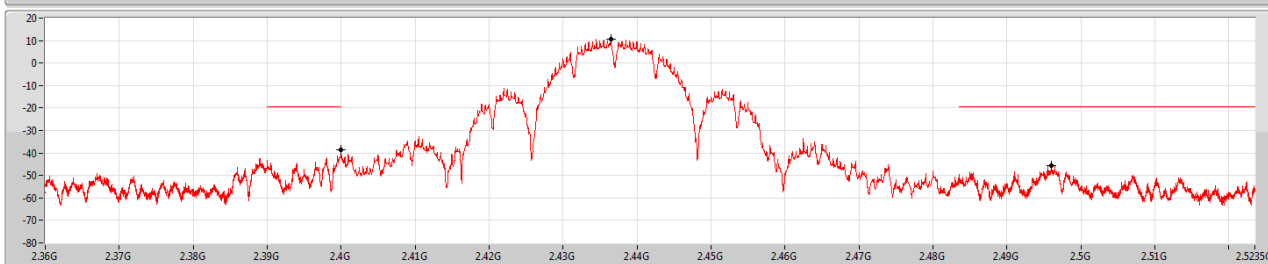
CSE NdB

2437MHz

10/06/2019



Port 2



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

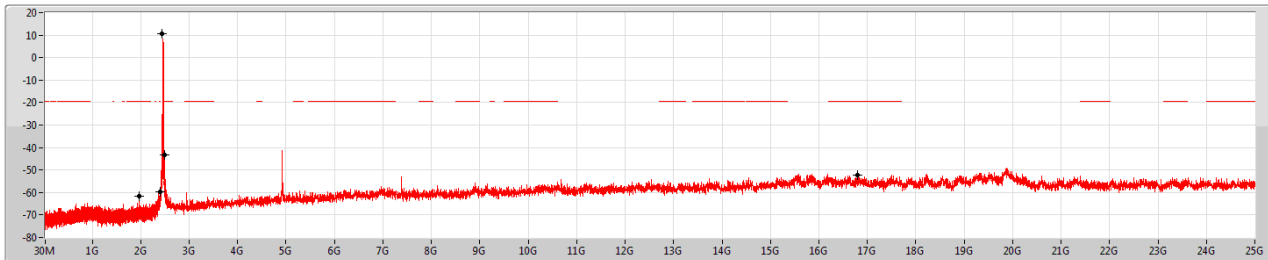
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43645G	10.48	-19.52	1.94963G	-59.20	2.39998G	-38.47	2.49598G	-45.62	14.62148G	-39.87	2

802.11b\_Nss1,(1Mbps)\_1TX(Port2)

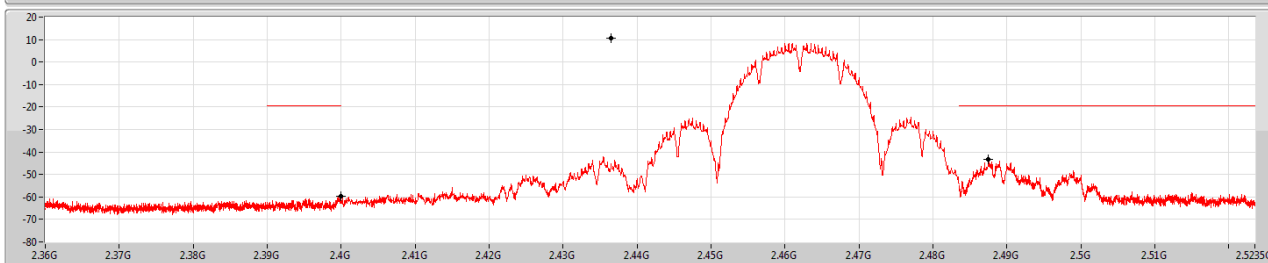
CSE NdB

2462MHz

10/06/2019



Port 2



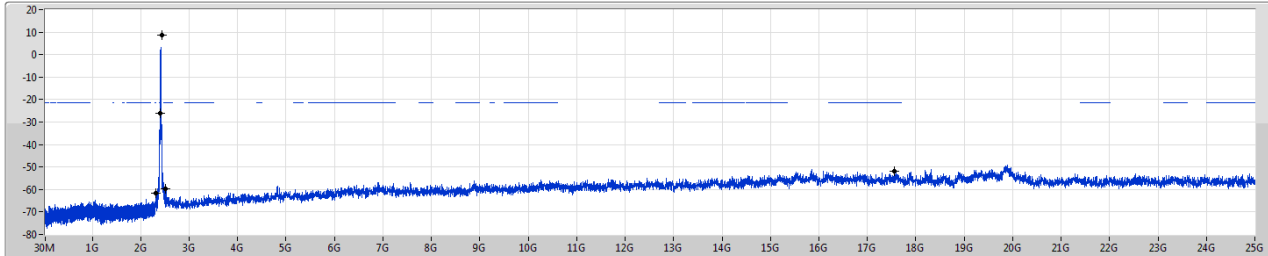
RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43645G	10.48	-19.52	1.94973G	-61.75	2.39992G	-59.72	2.48748G	-43.43	16.79608G	-52.12	2

802.11g\_Nss1,(6Mbps)\_1TX(Port1)

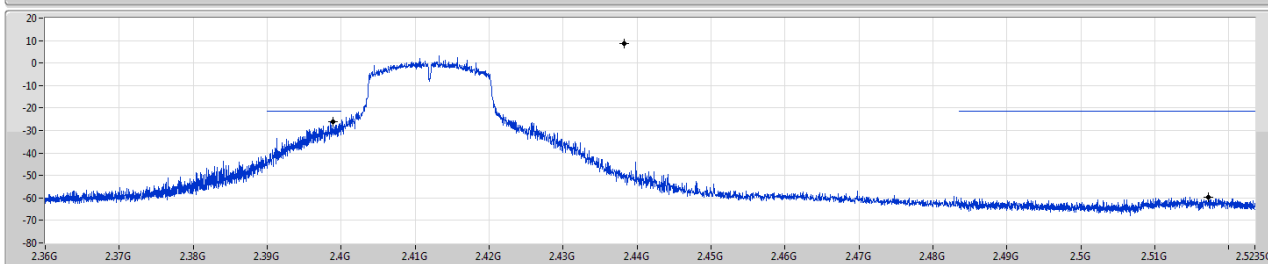
CSE NdB

2412MHz



10/06/2019

Port1



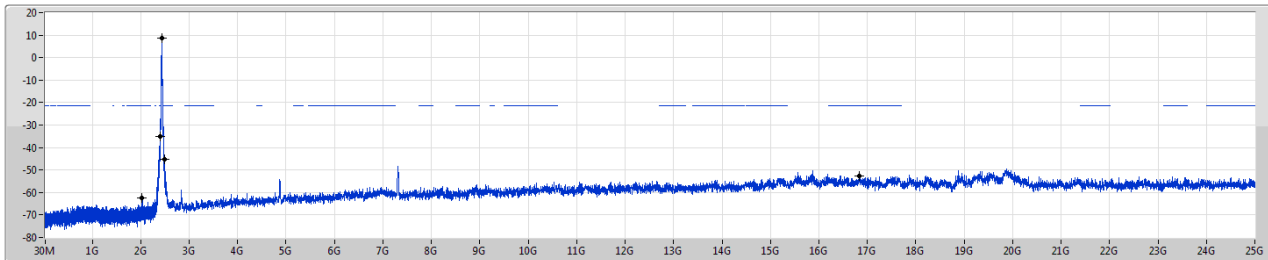
RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43824G	8.75	-21.25	2.30699G	-61.78	2.39886G	-26.27	2.51724G	-59.51	17.55747G	-51.99	1

802.11g\_Nss1,(6Mbps)\_1TX(Port1)

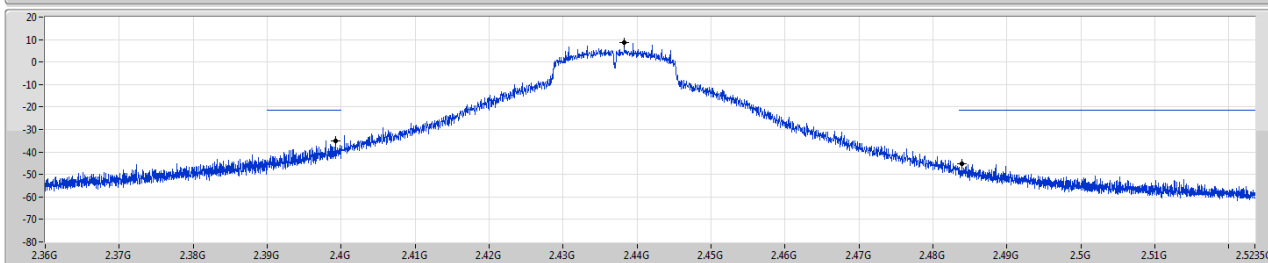
CSE NdB

2437MHz



10/06/2019

Port1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

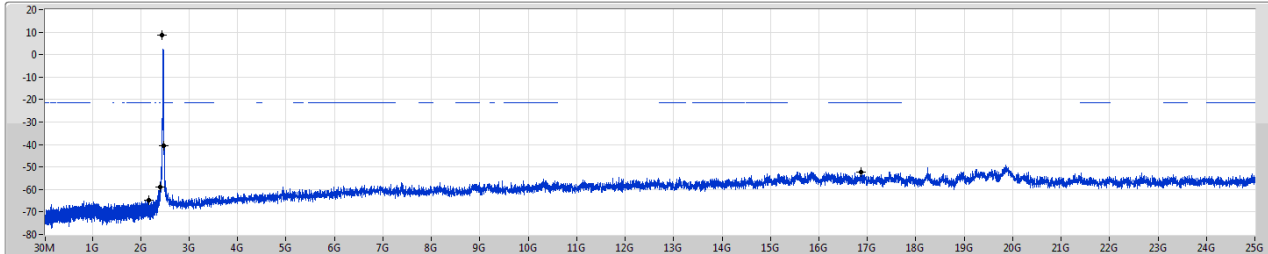
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43824G	8.75	-21.25	2.02273G	-62.27	2.39922G	-34.93	2.4839G	-45.34	16.8326G	-52.65	1

802.11g\_Nss1,(6Mbps)\_1TX(Port1)

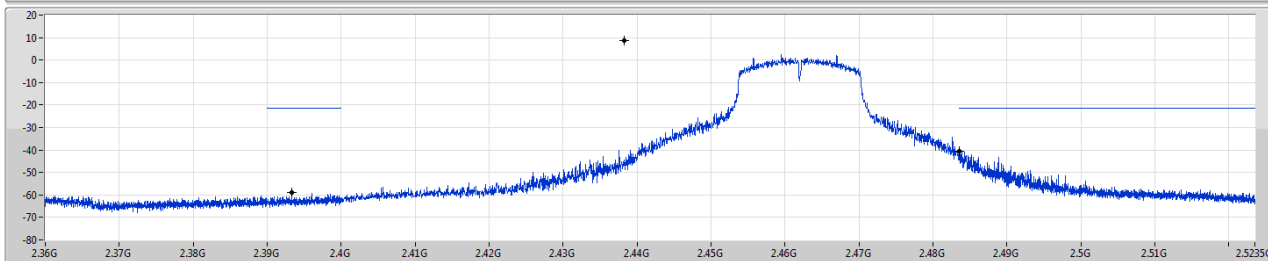
CSE NdB

2462MHz

10/06/2019



Port 1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

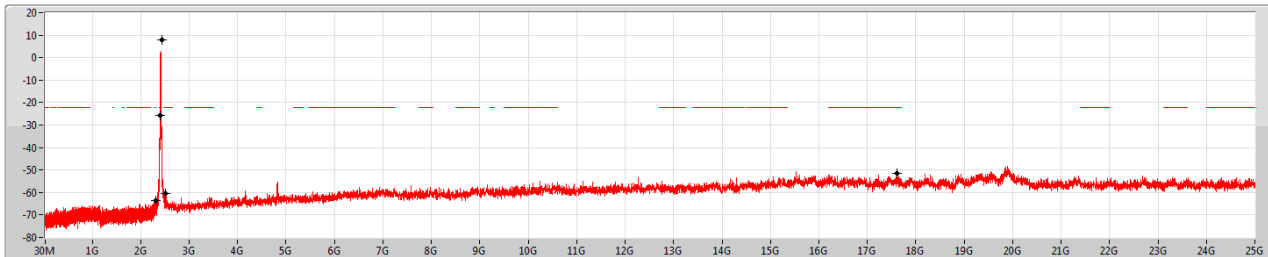
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43824G	8.75	-21.25	2.15816G	-64.86	2.39328G	-58.92	2.48354G	-40.45	16.86632G	-52.16	1

802.11g\_Nss1,(6Mbps)\_1TX(Port2)

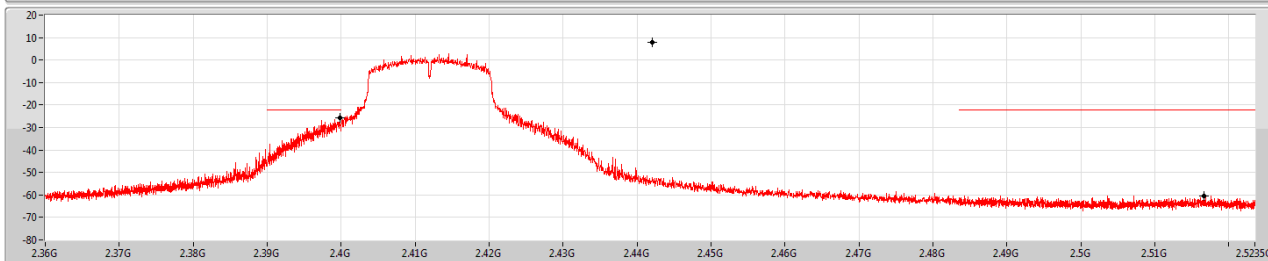
CSE NdB

2412MHz

10/06/2019



Port 2



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

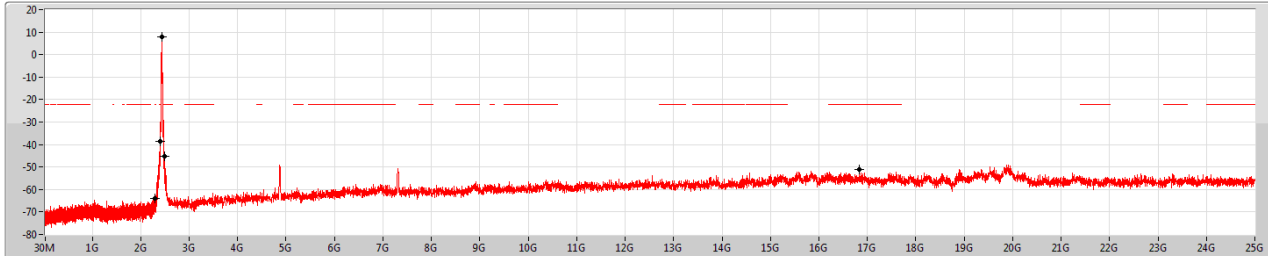
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.442G	7.72	-22.28	2.30816G	-63.65	2.39984G	-25.54	2.5166G	-60.33	17.61085G	-51.61	2

802.11g\_Nss1,(6Mbps)\_1TX(Port2)

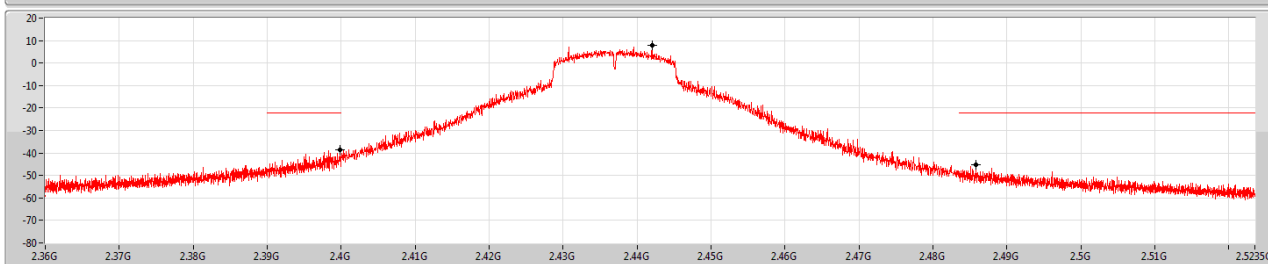
CSE NdB

2437MHz

10/06/2019



Port 2



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

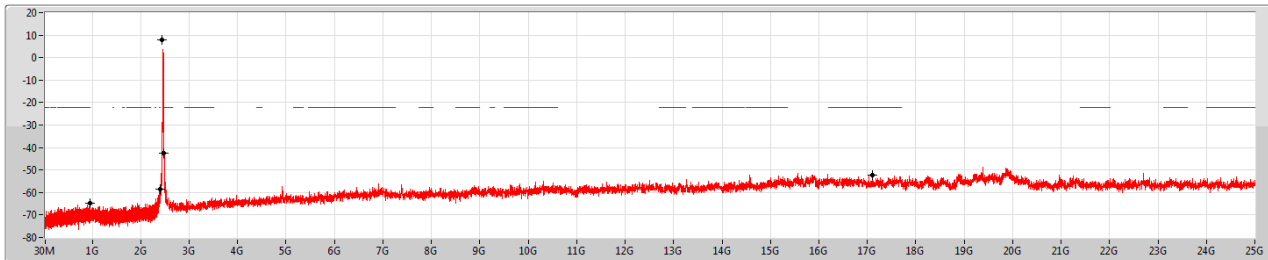
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.442G	7.72	-22.28	2.30117G	-63.87	2.39988G	-38.46	2.48576G	-45.20	16.82979G	-51.10	2

802.11g\_Nss1,(6Mbps)\_1TX(Port2)

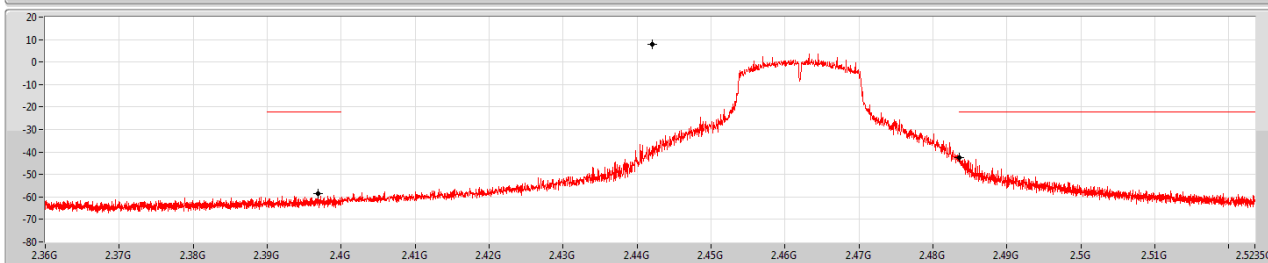
CSE NdB

2462MHz

10/06/2019



Port 2



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

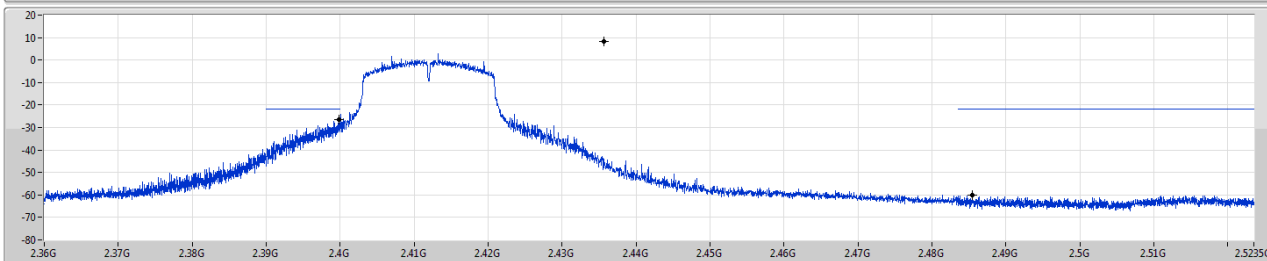
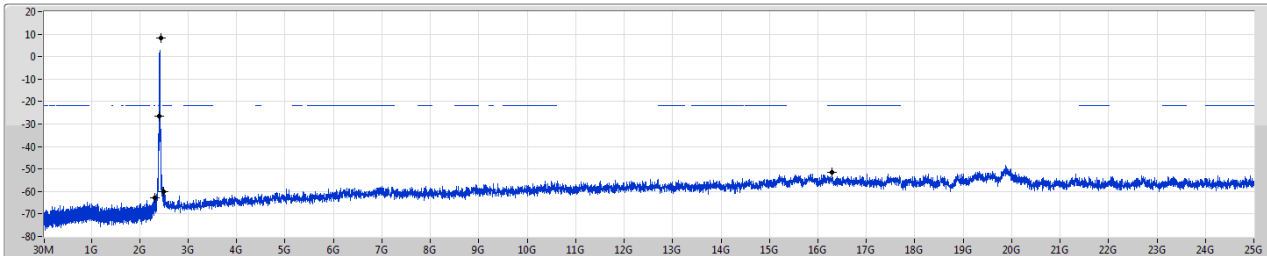
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.442G	7.72	-22.28	957.05M	-64.67	2.39682G	-58.41	2.48354G	-42.49	17.11075G	-52.12	2

802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)

CSE NdB

2412MHz

10/06/2019

RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

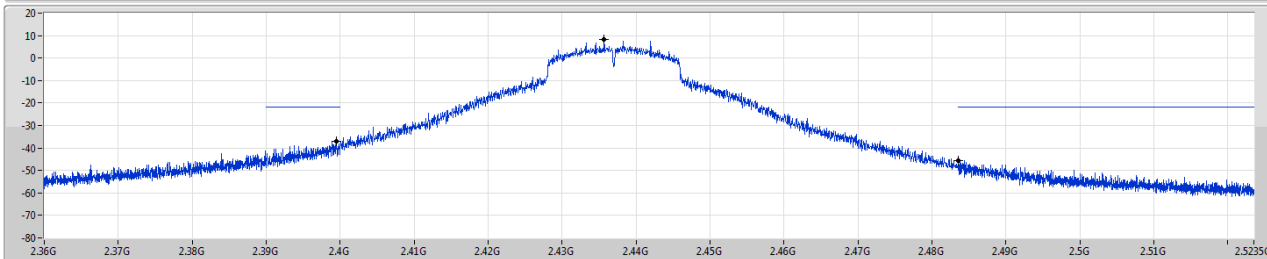
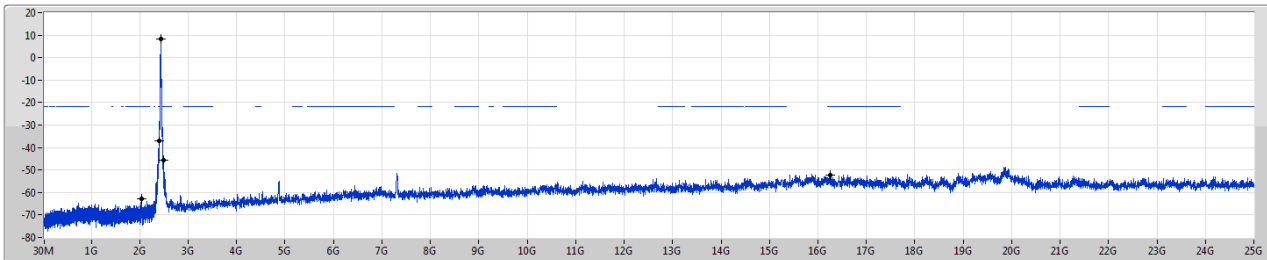
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4357G	8.33	-21.67	2.30874G	-62.85	2.39984G	-26.32	2.48542G	-60.26	16.28474G	-51.64	1

802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)

CSE NdB

2437MHz

10/06/2019

RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

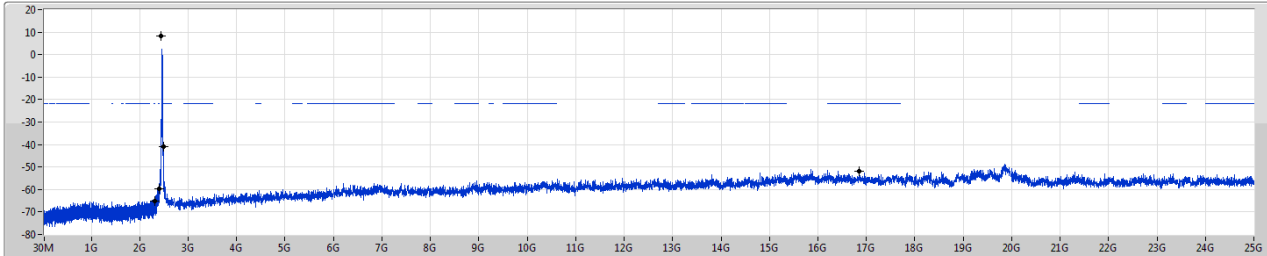
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4357G	8.33	-21.67	2.03322G	-62.97	2.3995G	-36.88	2.48356G	-45.56	16.2454G	-52.12	1

## 802.11n HT20\_Nss1,(MCS0)\_1TX(Port1)

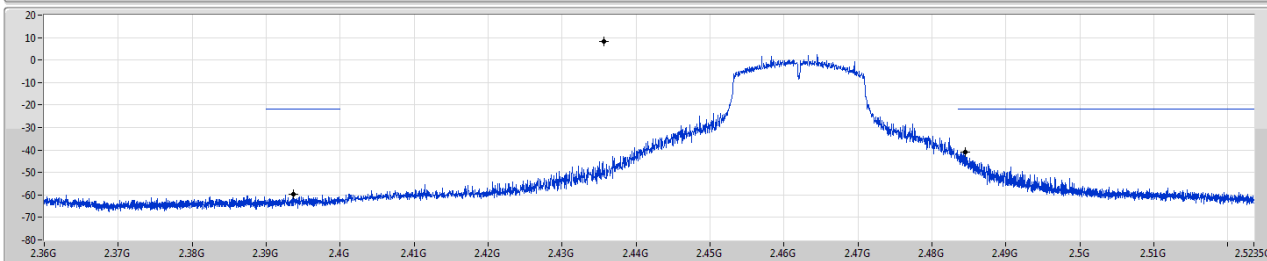
CSE NdB

2462MHz

10/06/2019



Port 1

RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

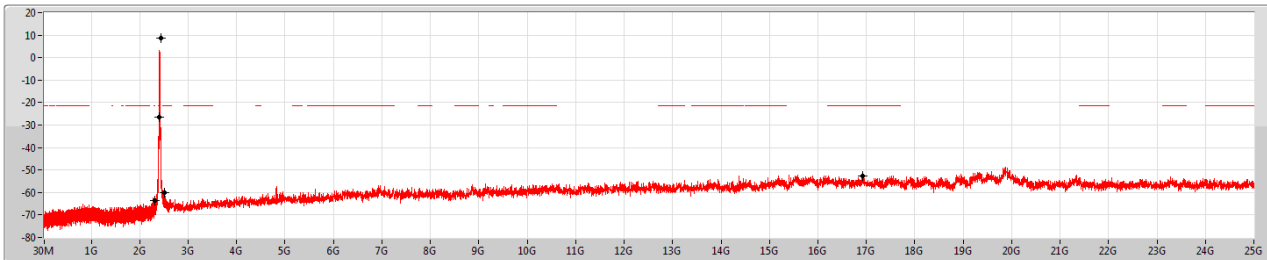
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4357G	8.33	-21.67	2.30495G	-65.32	2.39368G	-59.58	2.4845G	-41.09	16.8607G	-51.92	1

## 802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)

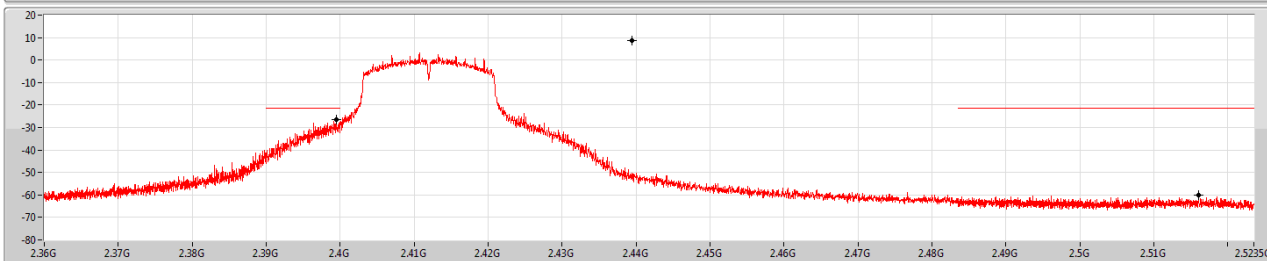
CSE NdB

2412MHz

10/06/2019



Port 2

RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4395G	8.60	-21.40	2.30583G	-63.57	2.39944G	-26.64	2.516G	-59.94	16.92532G	-52.50	2

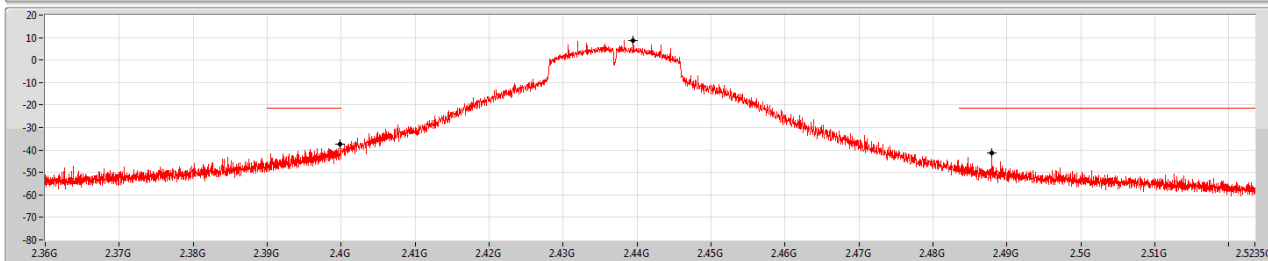
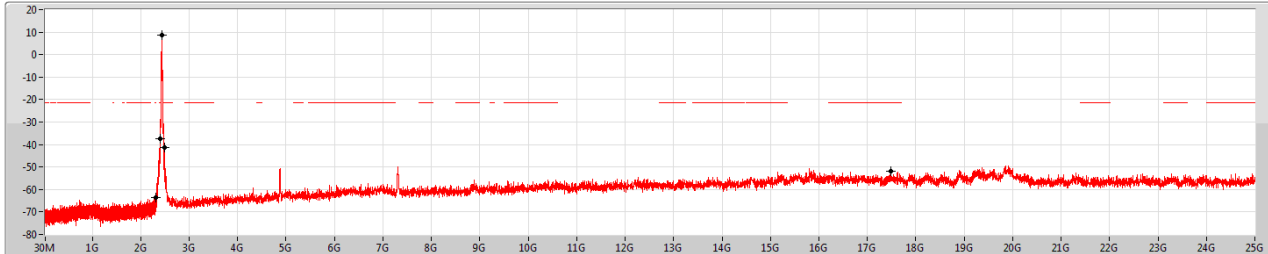
802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)

CSE NdB

2437MHz

10/06/2019

Port 2



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4395G	8.60	-21.40	2.30758G	-63.48	2.39986G	-37.46	2.4879G	-41.49	17.48723G	-52.06	2

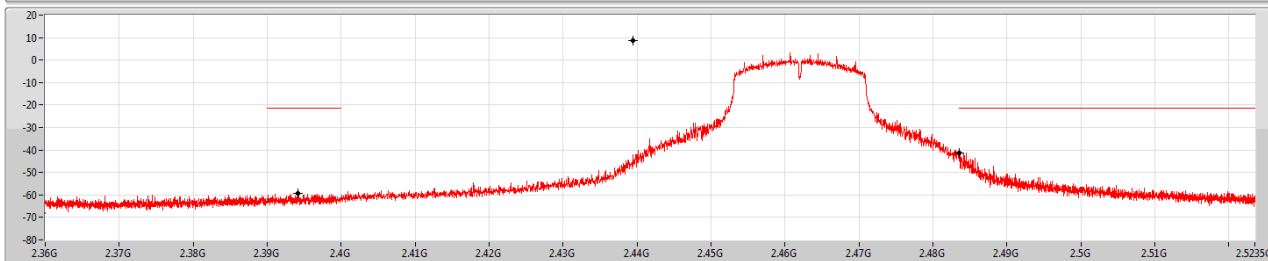
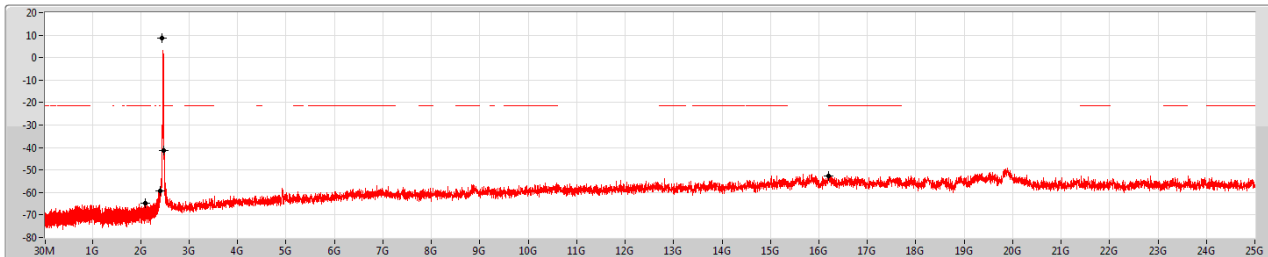
802.11n HT20\_Nss1,(MCS0)\_1TX(Port2)

CSE NdB

2462MHz

10/06/2019

Port 2



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

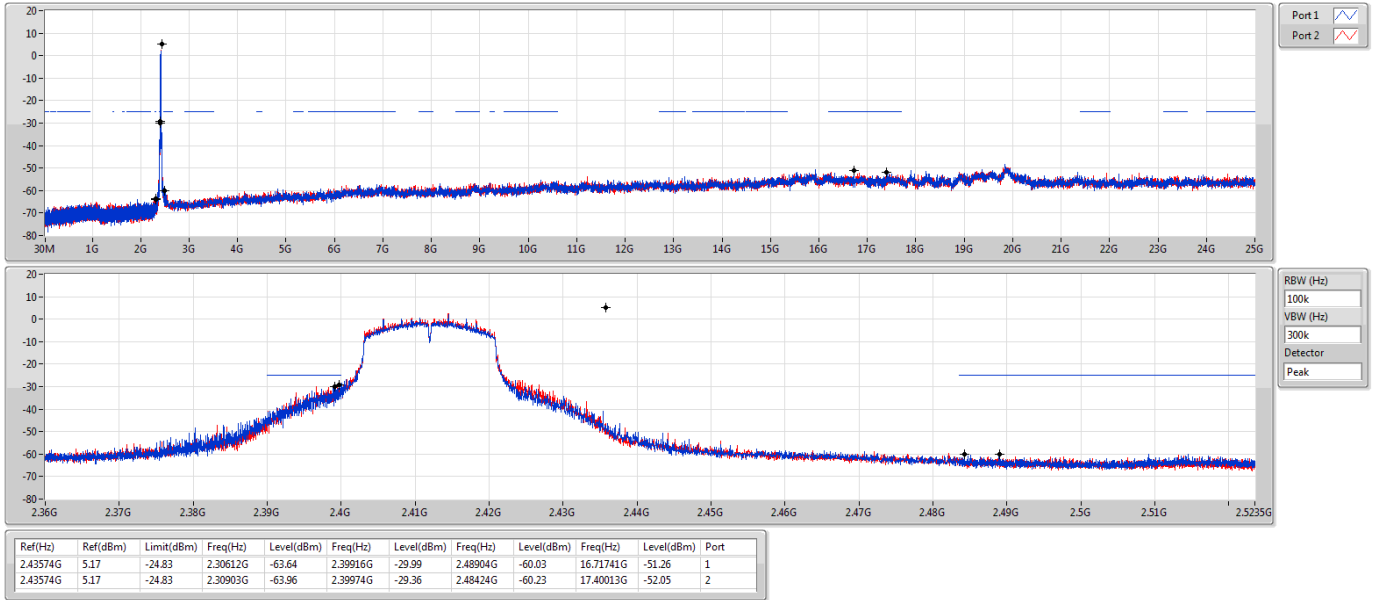
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4395G	8.60	-21.40	2.09904G	-64.80	2.39412G	-59.31	2.48394G	-41.30	16.20045G	-52.47	2



802.11n HT20\_Nss2,(MCS8)\_2TX

CSE NdB

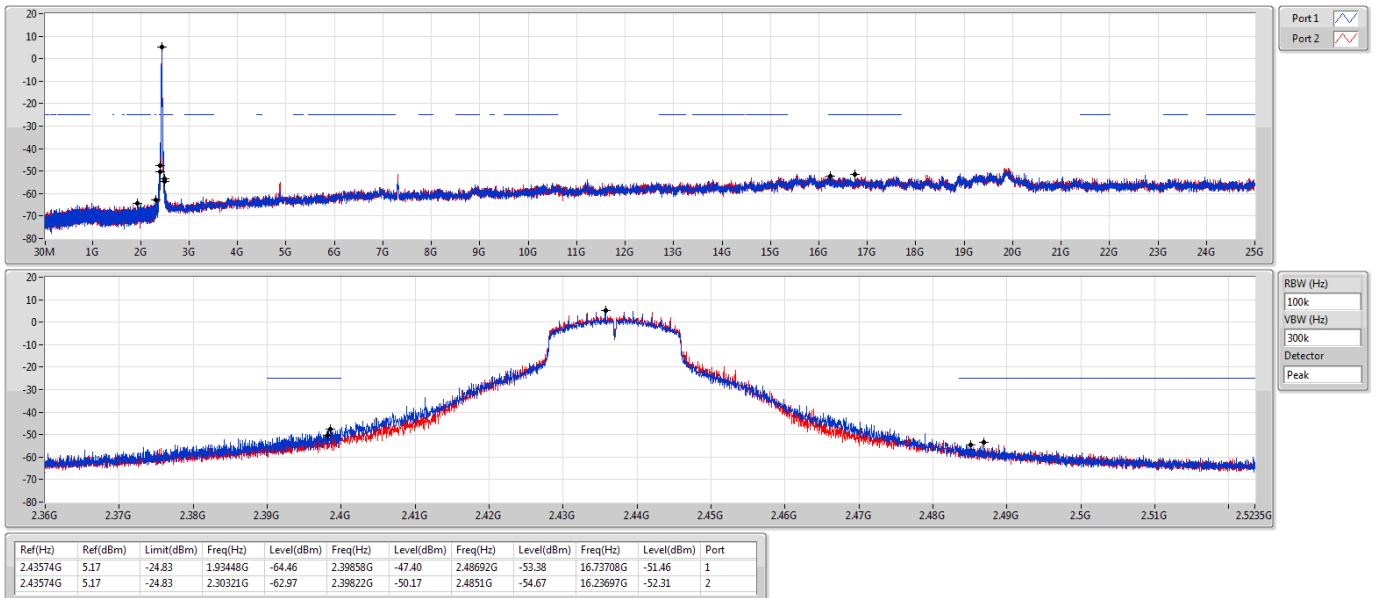
2412MHz



802.11n HT20\_Nss2,(MCS8)\_2TX

CSE NdB

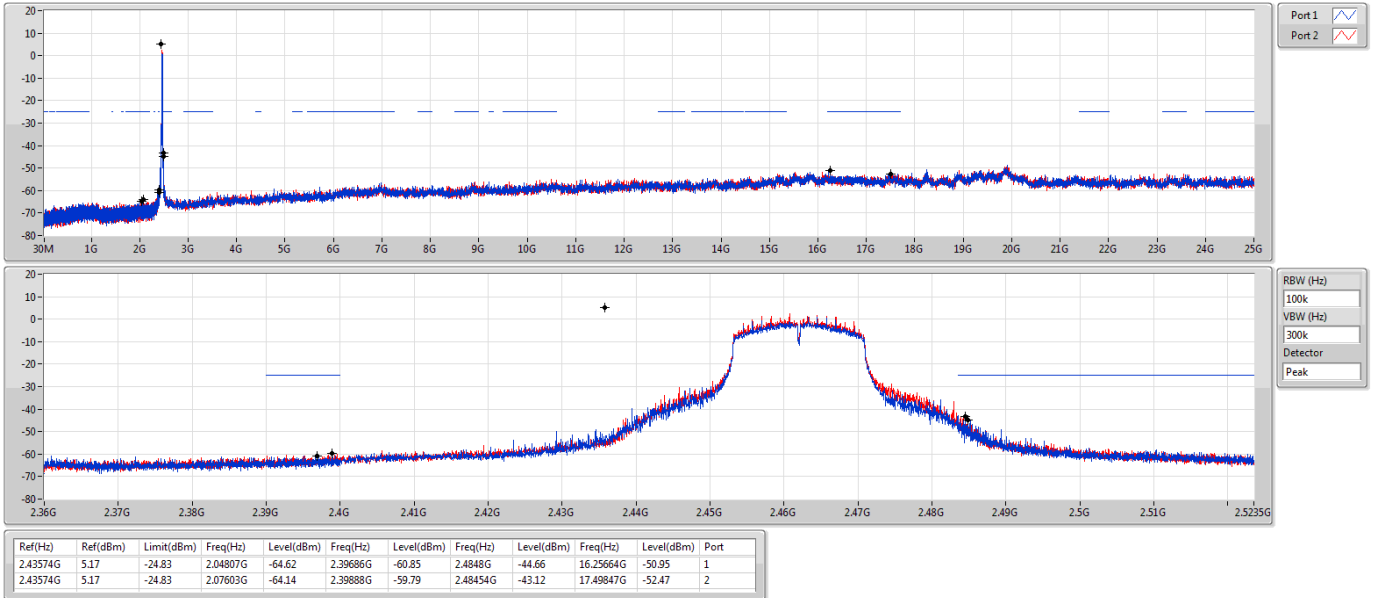
2437MHz



## 802.11n HT20\_Nss2,(MCS8)\_2TX

CSE NdB

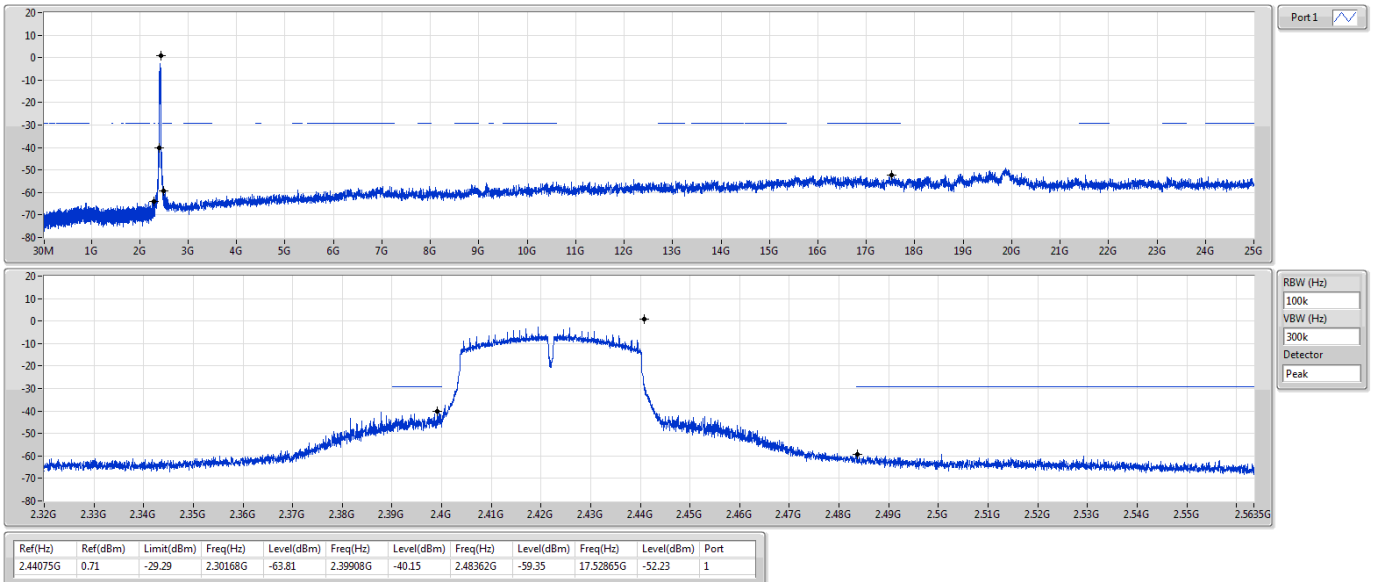
2462MHz



## 802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)

CSE NdB

2422MHz

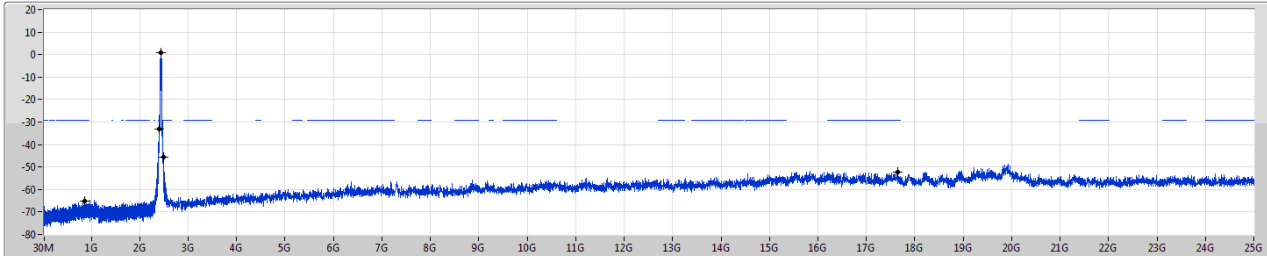


802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)

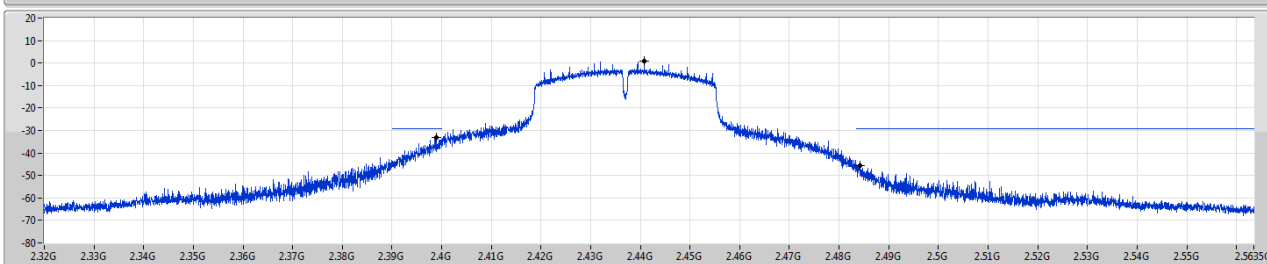
CSE NdB

2437MHz

10/06/2019



Port1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

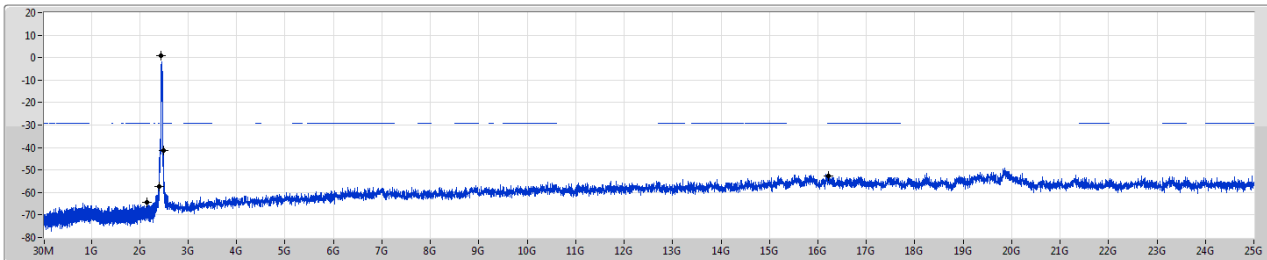
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44075G	0.71	-29.29	863.27M	-65.31	2.39888G	-33.31	2.48414G	-45.48	17.64083G	-52.22	1

802.11n HT40\_Nss1,(MCS0)\_1TX(Port1)

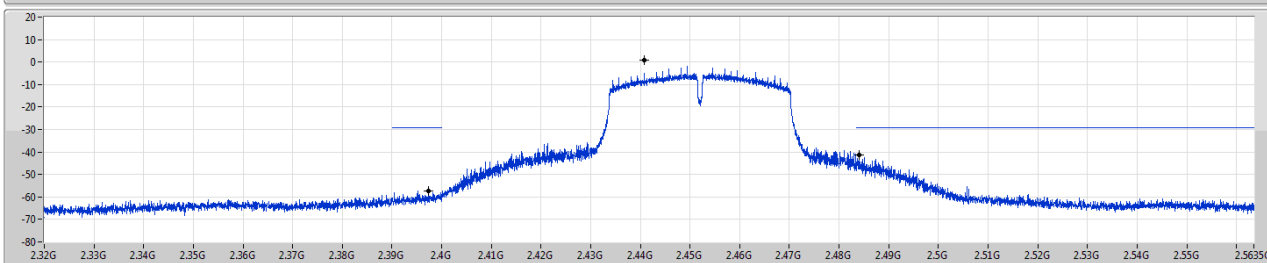
CSE NdB

2452MHz

10/06/2019



Port1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

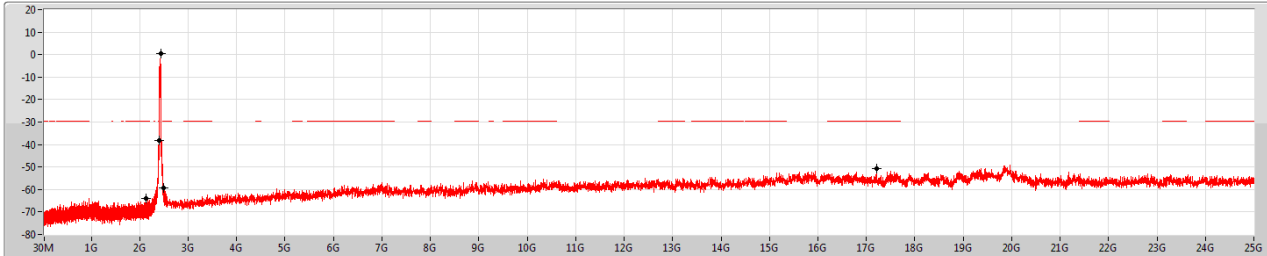
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44075G	0.71	-29.29	2.14653G	-64.55	2.3974G	-57.20	2.48402G	-41.52	16.21611G	-52.58	1

802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

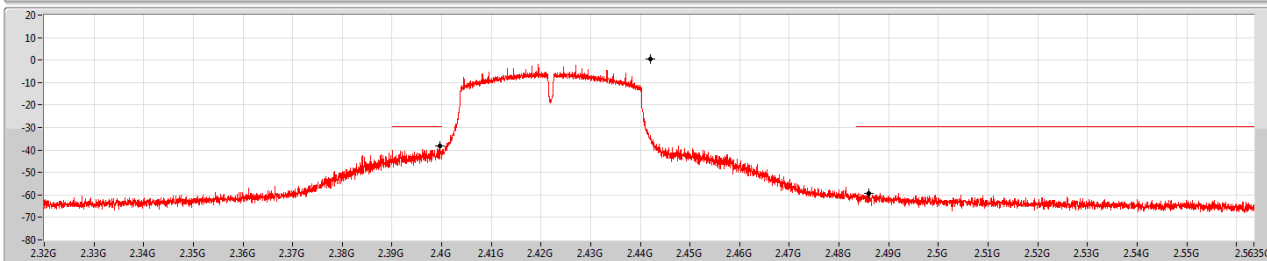
CSE NdB

2422MHz

10/06/2019



Port 2

RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

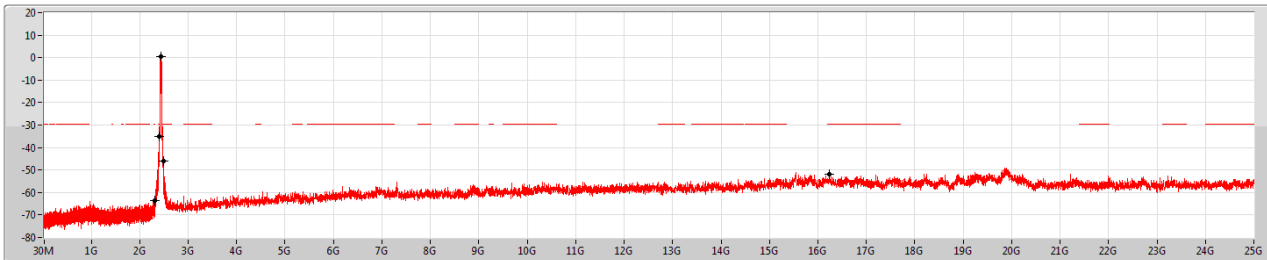
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.442G	0.51	-29.49	2.13451G	-63.88	2.39956G	-38.21	2.48606G	-59.23	17.20612G	-50.74	2

802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

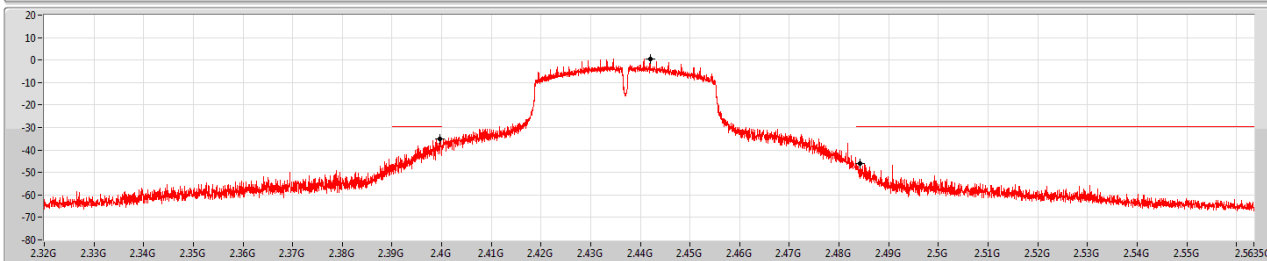
CSE NdB

2437MHz

10/06/2019



Port 2

RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

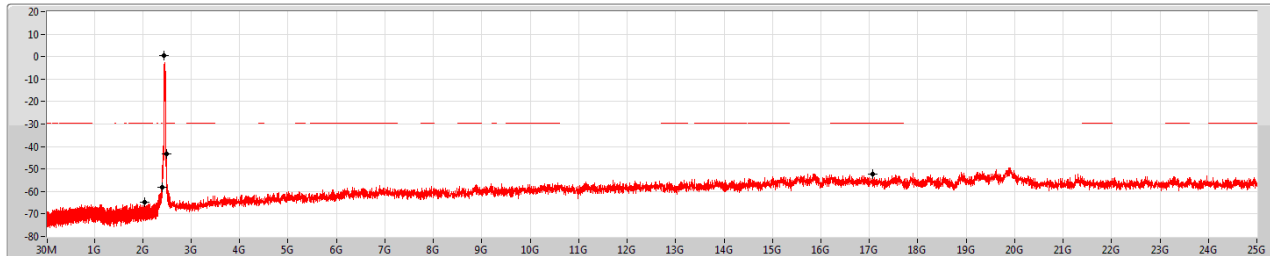
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.442G	0.51	-29.49	2.30798G	-63.75	2.39956G	-35.20	2.48418G	-46.04	16.23013G	-52.01	2

802.11n HT40\_Nss1,(MCS0)\_1TX(Port2)

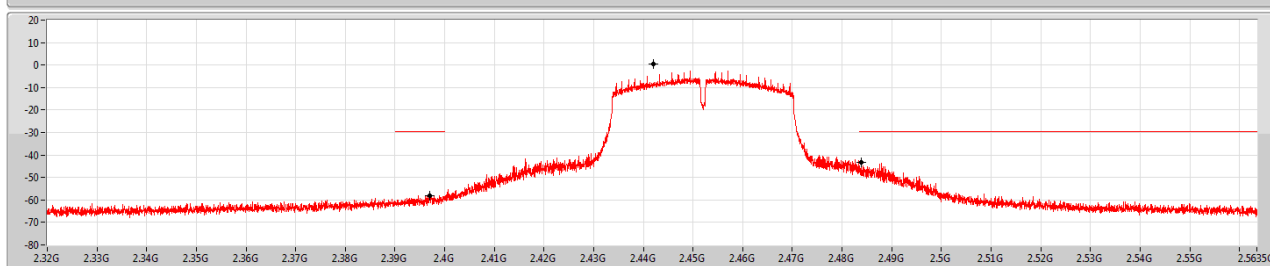
CSE NdB

2452MHz

10/06/2019



Port 2



RBW (Hz)  
100K  
VBW (Hz)  
300K  
Detector  
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.442G	0.51	-29.49	2.03633G	-64.96	2.39704G	-58.00	2.48378G	-43.38	17.07431G	-52.30	2



**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11n HT20_Nss2,(MCS8)_2TX	Pass	QP	449.04M	42.97	46.00	-3.03	-7.22	3	Horizontal	147	1.00	-

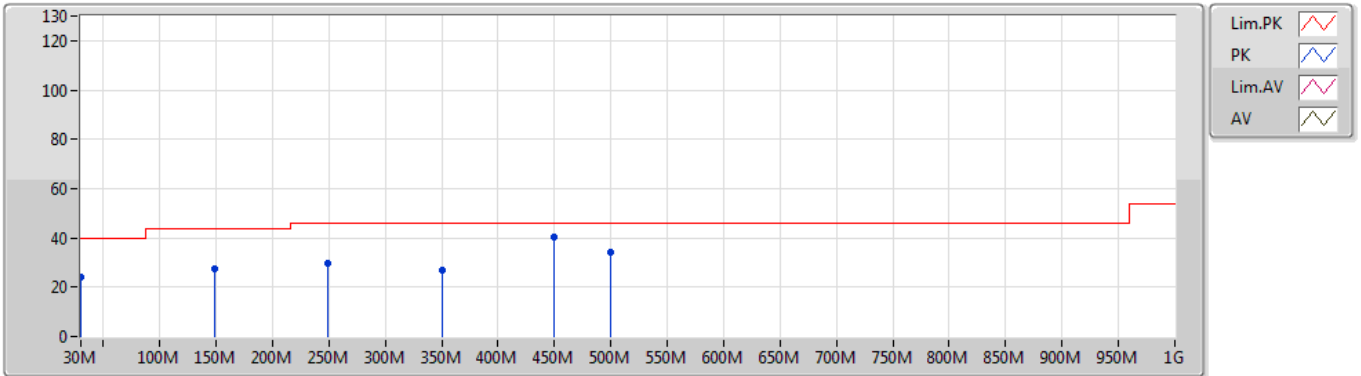
**Result**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
802.11n HT20_Nss2,(MCS8)_2TX	-	-	-	-	-	-	-	-	-	-	-	-
2437MHz	Pass	PK	30M	24.33	40.00	-15.67	-8.16	3	Vertical	0	2.00	-
2437MHz	Pass	PK	148.34M	27.42	43.50	-16.08	-14.93	3	Vertical	0	2.00	-
2437MHz	Pass	PK	249.22M	29.44	46.00	-16.56	-12.57	3	Vertical	0	2.00	-
2437MHz	Pass	PK	350.1M	26.71	46.00	-19.29	-10.26	3	Vertical	0	2.00	-
2437MHz	Pass	PK	449.04M	40.30	46.00	-5.70	-7.22	3	Vertical	0	2.00	-
2437MHz	Pass	PK	499.48M	34.30	46.00	-11.70	-6.22	3	Vertical	0	2.00	-
2437MHz	Pass	PK	30M	25.19	40.00	-14.81	-8.16	3	Horizontal	360	2.00	-
2437MHz	Pass	PK	150.28M	27.47	43.50	-16.03	-15.04	3	Horizontal	360	2.00	-
2437MHz	Pass	PK	249.22M	33.96	46.00	-12.04	-12.57	3	Horizontal	360	2.00	-
2437MHz	Pass	PK	350.1M	30.42	46.00	-15.58	-10.26	3	Horizontal	360	2.00	-
2437MHz	Pass	PK	499.48M	38.34	46.00	-7.66	-6.22	3	Horizontal	360	2.00	-
2437MHz	Pass	QP	449.04M	42.97	46.00	-3.03	-7.22	3	Horizontal	147	1.00	-

## 802.11n HT20\_Nss2,(MCS8)\_2TX

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### 2437MHz\_Switching power supply



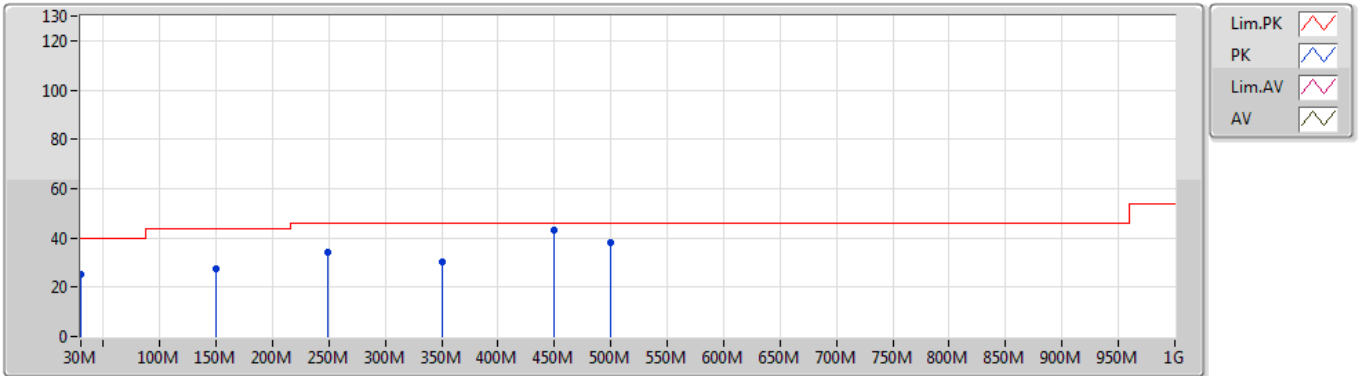
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	30M	24.33	40.00	-15.67	-8.16	3	Vertical	0	2.00	-				
PK	148.34M	27.42	43.50	-16.08	-14.93	3	Vertical	0	2.00	-				
PK	249.22M	29.44	46.00	-16.56	-12.57	3	Vertical	0	2.00	-				
PK	350.1M	26.71	46.00	-19.29	-10.26	3	Vertical	0	2.00	-				
PK	449.04M	40.30	46.00	-5.70	-7.22	3	Vertical	0	2.00	-				
PK	499.48M	34.30	46.00	-11.70	-6.22	3	Vertical	0	2.00	-				



## 802.11n HT20\_Nss2,(MCS8)\_2TX

20/06/2019

### 2437MHz\_Switching power supply



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment				
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)					
PK	30M	25.19	40.00	-14.81	-8.16	3	Horizontal	360	2.00	-				
PK	150.28M	27.47	43.50	-16.03	-15.04	3	Horizontal	360	2.00	-				
PK	249.22M	33.96	46.00	-12.04	-12.57	3	Horizontal	360	2.00	-				
PK	350.1M	30.42	46.00	-15.58	-10.26	3	Horizontal	360	2.00	-				
PK	499.48M	38.34	46.00	-7.66	-6.22	3	Horizontal	360	2.00	-				
QP	449.04M	42.97	46.00	-3.03	-7.22	3	Horizontal	147	1.00	-				