



# FCC Test Report

**Equipment** : R610 Access Point  
**Brand Name** : Ruckus  
**Model No.** : R610  
**FCC ID** : S9GR610  
**Standard** : 47 CFR FCC Part 15.247  
**Operating Band** : 2400 MHz – 2483.5 MHz  
**Function** :  Point-to-multipoint;  Point-to-point  
**Applicant** : Ruckus Wireless, Inc.  
350 West Java Drive Sunnyvale, California 94089  
U.S.A  
**Manufacturer** : Ruckus Wireless, Inc.  
350 West Java Drive Sunnyvale, California 94089  
U.S.A

The product sample received on Jul. 25, 2016 and completely tested on Aug. 23, 2016. We, SPORTON, 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 test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

  
Sam Chen  
SPORTON INTERNATIONAL INC.





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### Summary of Test Result

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



### Revision History

Report No.	Version	Description	Issued Date
FR672501AA	Rev. 01	Initial issue of report	Sep. 01, 2016



# 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), ac (VHT20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40), ac (VHT40)	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4G	11b	20	3
2.4G	11g	20	3
2.4G	HT20	20	3
2.4G	HT20,BF	20	3
2.4G	VHT20	20	3
2.4G	VHT20,BF	20	3
2.4G	HT40	40	3
2.4G	HT40,BF	40	3

Note:

- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- 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.
- VHT20, VHT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	Ruckus	R610	PIFA Antenna	I-PEX	1	3
2	Ruckus	R610	PIFA Antenna	I-PEX	1	3
3	Ruckus	R610	PIFA Antenna	I-PEX	1	3

Note: 1. The EUT has three antennas.

2. The EUT is with 3 antennas. Two of the antennas' polarity is vertical and the other antenna's polarity is Horizontal which is 3T2S, the array gain is 1.76dBi.

The 80+80MHz mode which is 2T2S(Chain 1 + Chain 3), the array gain is 0 dBi.

The non-beamforming 80+80MHz mode=beamforming 80+80MHz mode.

<For 2.4GHz Band>

**For IEEE 802.11b/g/n/ac mode <3TX/3RX>:**

Chain 1, Chain 2 and Chain 3 will transmit/receive the same signal simultaneously.

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antennas.

<For 5GHz Band>

**For IEEE 802.11a/n/ac mode <3TX/3RX>:**

Chain 1, Chain 2 and Chain 3 will transmit/receive the same signal simultaneously.

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antennas.

**For IEEE 802.11ac 80+80MHz <2TX/2RX>:**

Chain 1 and Chain 3 will transmit/receive the same signal simultaneously.

Chain 1 and Chain 3 can be used as transmitting/receiving antennas.





1.1.3 Mode Test Duty Cycle

Mode	DC	T(s)	VBW(Hz) ≥ 1/T
11b	0.994	n/a (DC>=0.98)	n/a (DC>=0.98)
11g	0.969	2.029m	1k
VHT20	0.986	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT20,BF	0.986	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT40	0.973	2.417m	1k
VHT40,BF	0.925	845u	3k

1.1.4 EUT Operational Condition

<b>EUT Power Type</b>	From Power Adapter and PoE		
<b>Beamforming Function</b>	<input checked="" type="checkbox"/>	With beamforming for 802.11n/ac in 2.4GHz/5GHz	<input type="checkbox"/> Without beamforming



## 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
- ◆ FCC KDB 558074 D01 v03r05
- ◆ FCC KDB 662911 D01 v02r01
- ◆ FCC KDB 644545 D01 v01r02

## 1.3 Testing Location Information

Testing Location		
<input type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Gary Chu	25°C / 60%	Aug. 06, 2016~Aug. 23, 2016
Radiated	03CH01-CB	Steven Liang	22°C / 54%	Aug. 06, 2016~Aug. 23, 2016
AC Conduction	CO01-CB	Ryo Fan	24°C / 65%	Aug. 11, 2016

Test site Designation No. TW0006 with FCC.  
Test site registered number IC 4086D with Industry Canada.

## 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)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%





## 2 Test Configuration of EUT

### 2.1 Test Channel Mode

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
2.4G	11b	20	1	3	2412	L	21
2.4G	11b	20	1	3	2437	M	22.5
2.4G	11b	20	1	3	2462	H	19.5
2.4G	11g	20	1	3	2412	L	18
2.4G	11g	20	1	3	2437	M	23.5
2.4G	11g	20	1	3	2462	H	19
2.4G	VHT20	20	1,(M0)	3	2412	L	16.5
2.4G	VHT20	20	1,(M0)	3	2437	M	23
2.4G	VHT20	20	1,(M0)	3	2462	H	19.5
2.4G	VHT40	40	1,(M0)	3	2422	L	14
2.4G	VHT40	40	1,(M0)	3	2437	M	17
2.4G	VHT40	40	1,(M0)	3	2452	H	18
2.4G	VHT20,BF	20	1,(M0)	3	2412	L	23.5
2.4G	VHT20,BF	20	1,(M0)	3	2437	M	27
2.4G	VHT20,BF	20	1,(M0)	3	2462	H	23.5
2.4G	VHT40,BF	40	1,(M0)	3	2422	L	20.5
2.4G	VHT40,BF	40	1,(M0)	3	2437	M	21.5
2.4G	VHT40,BF	40	1,(M0)	3	2452	H	20.5

Note 1: VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

Note 2: There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802.11n/ac in 2.4GHz/5GHz, Beamforming mode and non-beamforming mode has been test and record in this test report.

## 2.2 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>	Normal Link
1	EUT with Adapter
2	EUT with PoE
For operating mode 2 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	DTS Bandwidth Fundamental Emission Output Power Power Spectral Density
<b>Test Condition</b>	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Emissions in Non-restricted Frequency Bands 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>	Normal Link
1	Place EUT in Y axis with Adapter
2	Place EUT in Z axis with Adapter
Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.	
3	Place EUT in Y axis with PoE
For operating mode 1 is the worst case and it was record in this test report.	
<b>Operating Mode &gt; 1GHz</b>	CTX
1	Place EUT in Y axis
2	Place EUT in Z axis
Mode 2 has been evaluated to be the worst case after evaluating. Consequently, measurement will follow this same test mode.	



The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Test Condition	Radiated measurement
Operating Mode	Normal Link
1	Place EUT in Y axis (2.4GHz+5GHz)
2	Place EUT in Z axis (2.4GHz+5GHz)
Mode 2 has been evaluated to be the worst case after evaluating. Consequently, measurement will follow this same test mode.	
Refer to Sporton Test Report No.: FA672501 for Co-location RF Exposure Evaluation and Appendix G for Radiated Emission Co-location.	

### 2.3 EUT Operation during Test

**<For Non-Beamforming Mode>**

The EUT was programmed to be in continuously transmitting/receiving mode.

**<For Beamforming Mode>**

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN XP were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under Telnet.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by RX Device and transmit duty cycle no less 98%



## 2.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter	Ruckus	WGF-1200200T3	Input: 100-240V~, 50/60Hz, 0.6A Output: 12.0V, 2.0A
PoE	Ruckus	740-64214-001	Input: 100-240V~50/60Hz 0.75A MAX Output: 48V, 0.5A
Other			
Wall-mounted rack*1			

## 2.5 Support Equipment

For Test Site No: CO01-CB

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB*4	DELL	E6430	DoC
2	Flash disk	Silicon	I-Series	DoC

For Test Site No: 03CH01-CB (below 1GHz)

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB*4	DELL	E4300	DoC
2	Flash Disk3.0	Transcend	JetFlash-700	DoC

<For Non-Beamforming Mode>

For Test Site No: 03CH01-CB (above 1GHz)

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E4300	DoC

<For Beamforming Mode>

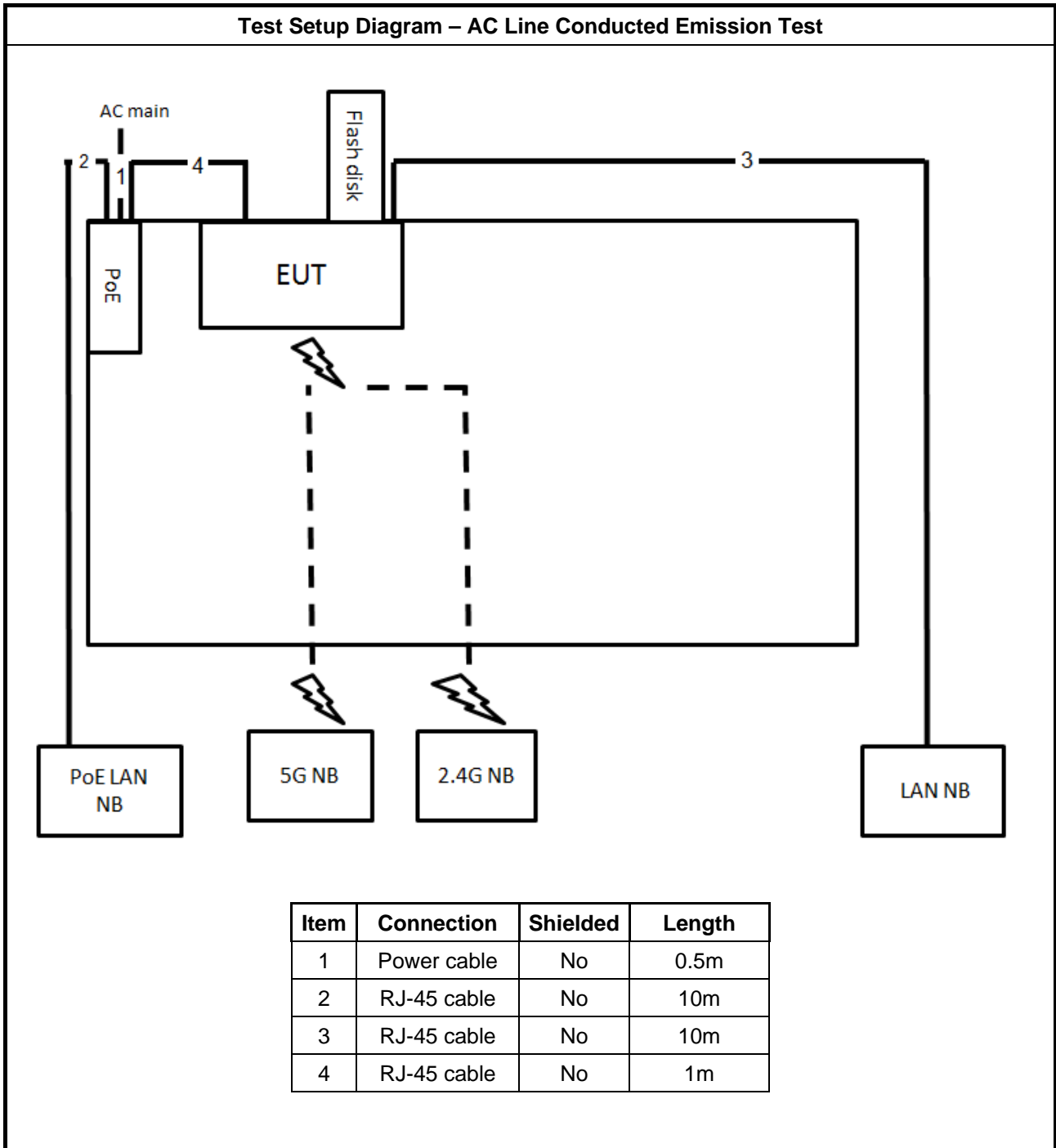
For Test Site No: 03CH01-CB (above 1GHz)

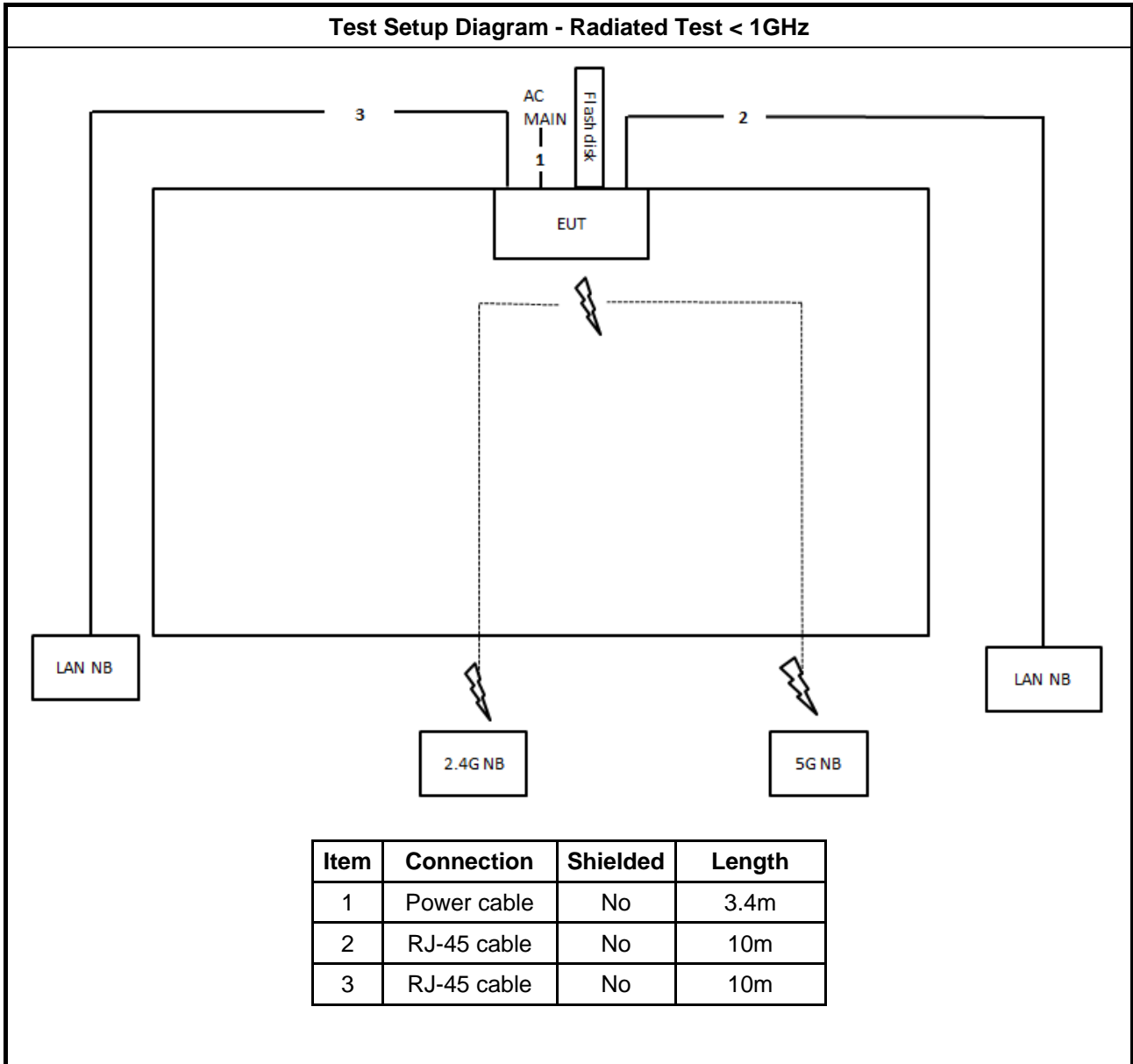
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB*2	DELL	E4300	DoC
2	RX Device	Ruckus	R610	S9GR610

For Test Site No: TH01-CB

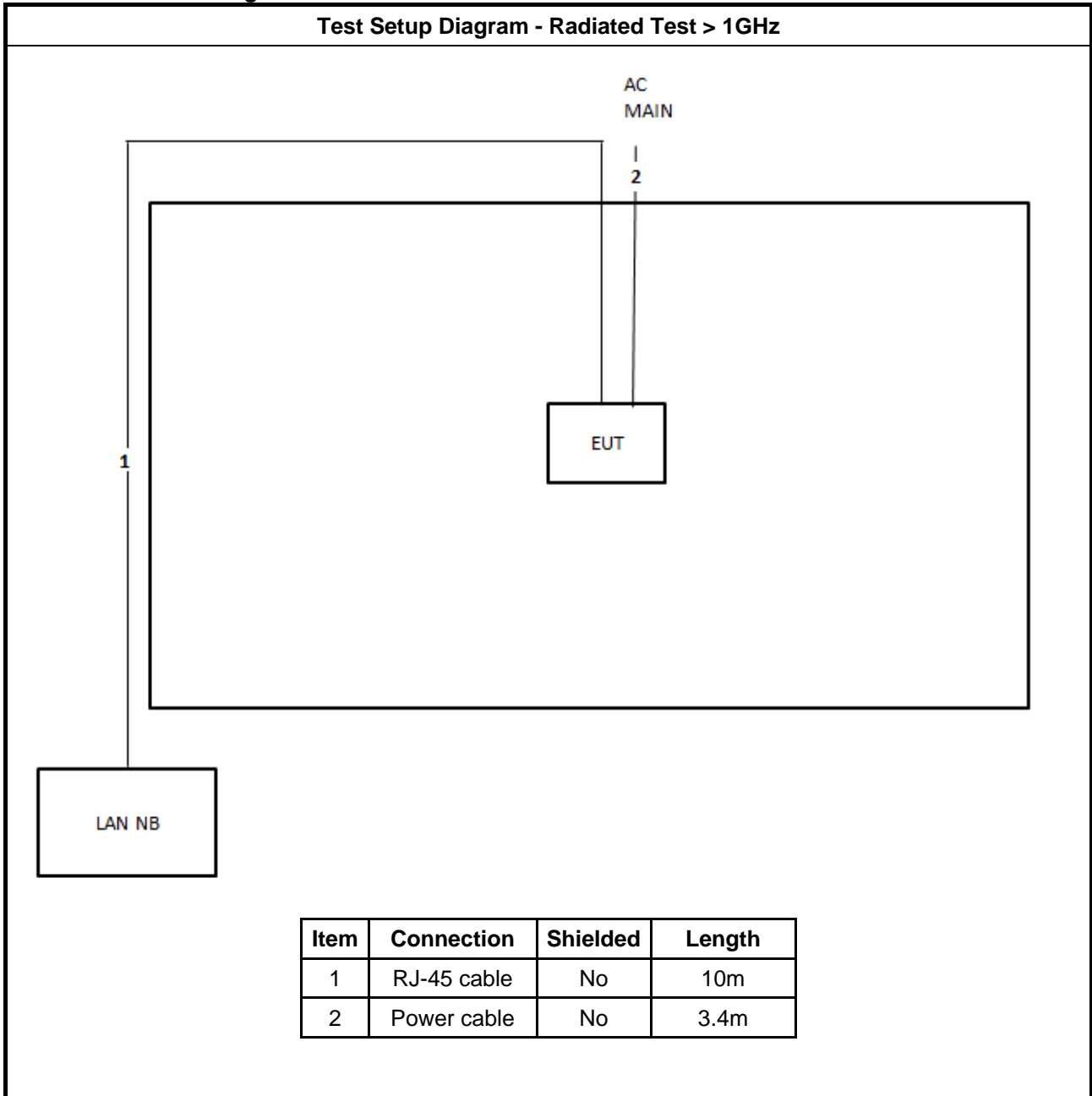
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E4300	DoC

## 2.6 Test Setup Diagram

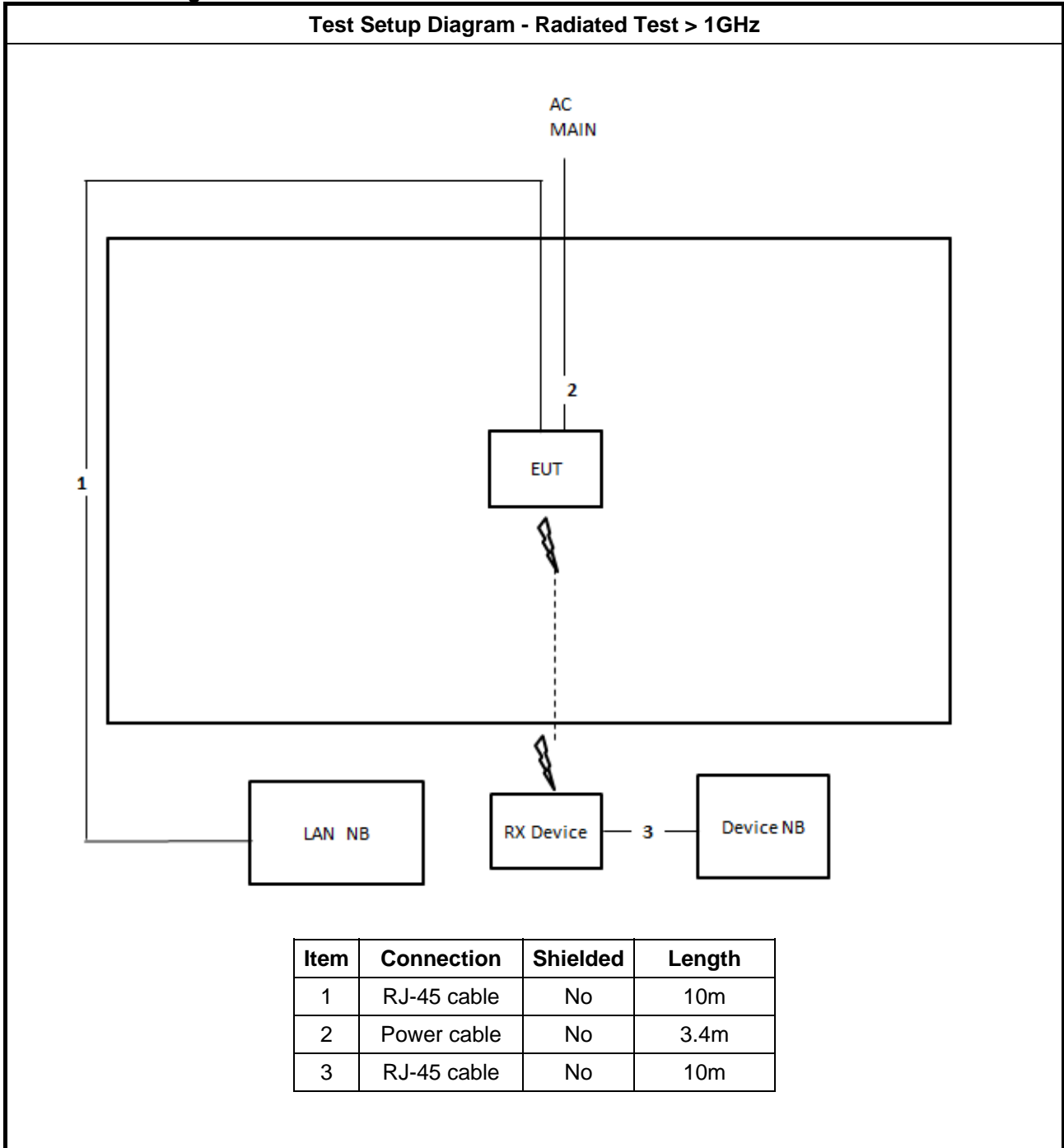




<For Non-Beamforming Mode>



<For Beamforming Mode>





### 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.

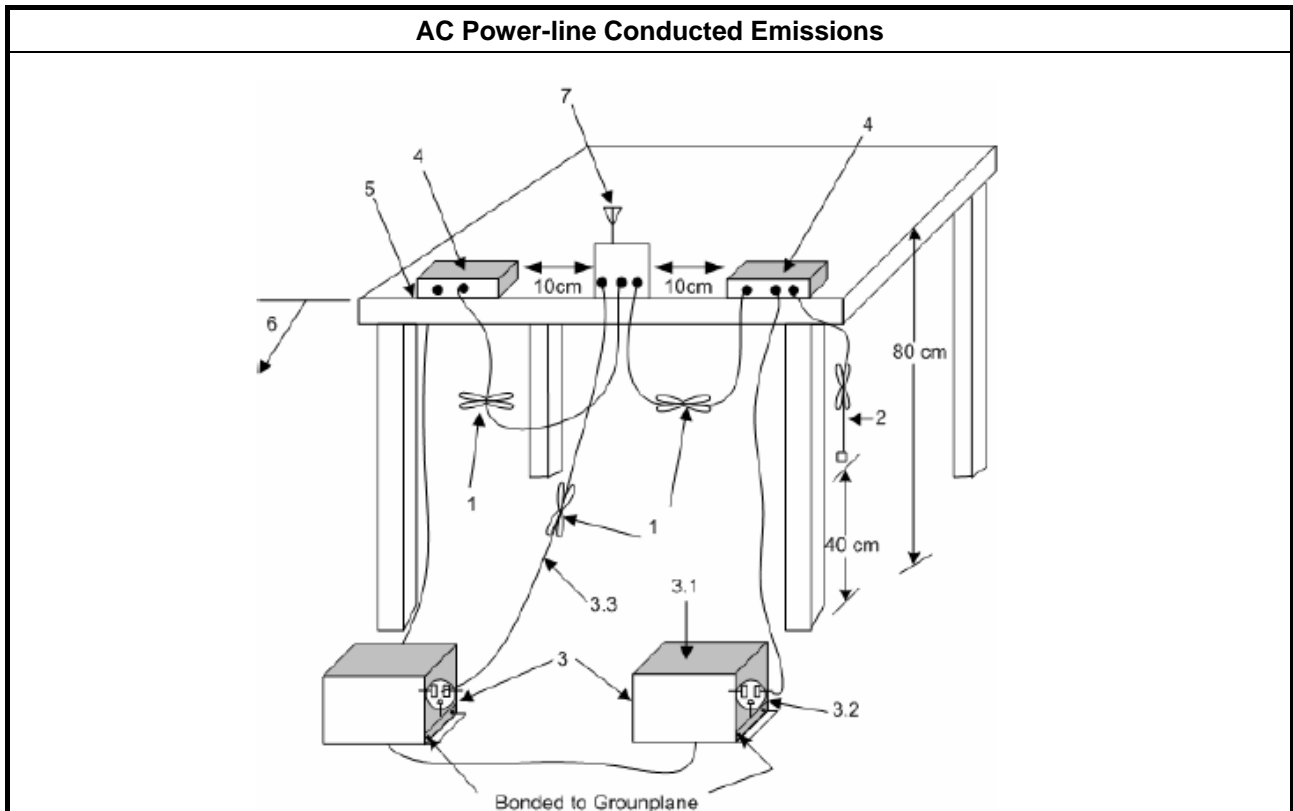
##### 3.1.2 Measuring Instruments

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>
<ul style="list-style-type: none"> <li>▪ 6 dB bandwidth <math>\geq</math> 500 kHz.</li> </ul>

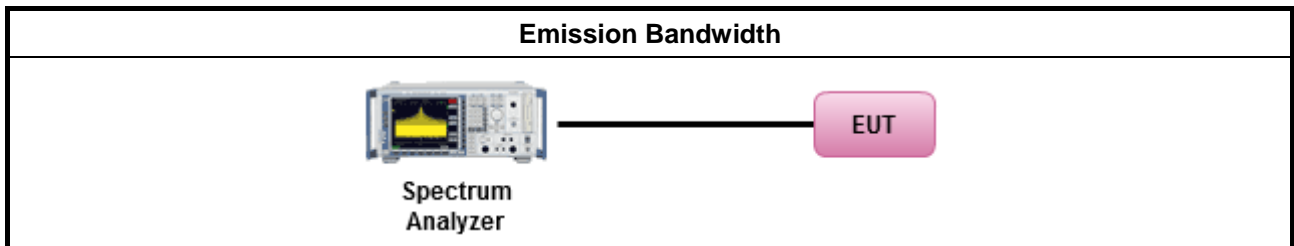
#### 3.2.2 Measuring Instruments

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

#### 3.2.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>▪ For the emission bandwidth shall be measured using one of the options below:</li> </ul>
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

#### 3.2.4 Test Setup



#### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

### 3.3 Fundamental Emission Output Power

#### 3.3.1 Fundamental Emission 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>
	<ul style="list-style-type: none"> <li>- Single beam: 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>- Overlap beam: 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>- Aggregate power on all beams: If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3 + 8</math> dB dBm</li> </ul>
<p><math>P_{Out}</math> = maximum peak conducted output power or maximum conducted output power in dBm,  <math>G_{TX}</math> = the maximum transmitting antenna directional gain in dBi.</p>	

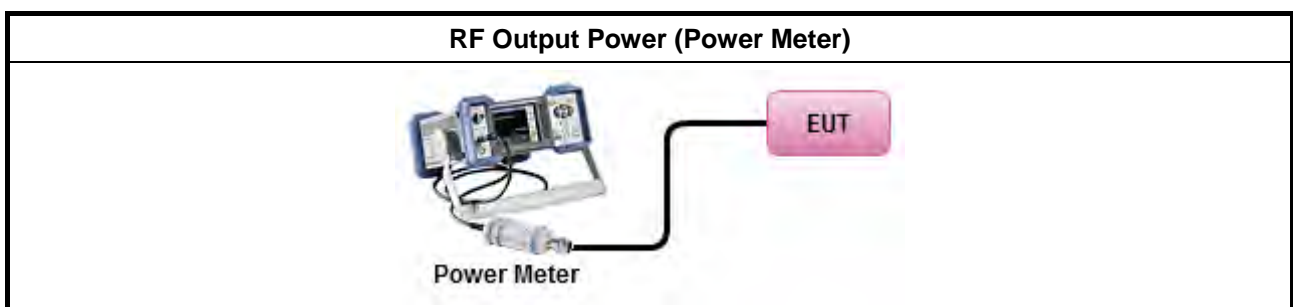
#### 3.3.2 Measuring Instruments

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 FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
<ul style="list-style-type: none"> <li>▪ Maximum Conducted Output Power</li> </ul>	
[duty cycle ≥ 98% or external video / power trigger]	
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed)
duty cycle < 98% and average over on/off periods with duty factor	
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
RF power meter and average over on/off periods with duty factor or gated trigger	
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM-G (using an RF average 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 FCC 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
<ul style="list-style-type: none"> <li>▪ Power Spectral Density (PSD) <math>\leq</math> 8 dBm/3kHz</li> </ul>

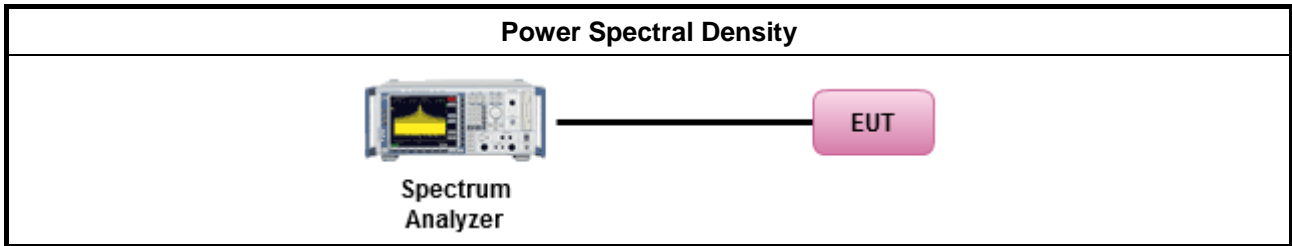
#### 3.4.2 Measuring Instruments

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

#### 3.4.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>▪ 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).</li> </ul>
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak). [duty cycle $\geq$ 98% or external video / power trigger]
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed) duty cycle < 98% and average over on/off periods with duty factor
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-1 Alt (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)
<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:           <ul style="list-style-type: none"> <li> <input checked="" type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. Refer as FCC 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.               </li> <li> <input type="checkbox"/> Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,               </li> <li> <input type="checkbox"/> Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.               </li> </ul> </li> </ul>

### 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

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.

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.

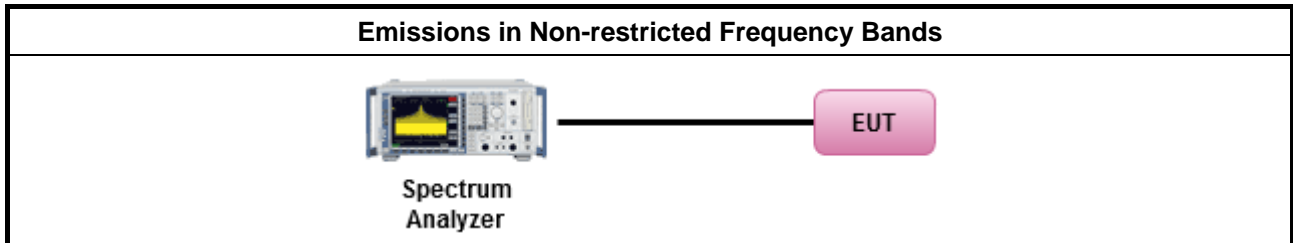
#### 3.5.2 Measuring Instruments

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 FCC KDB 558074, clause 11 for unwanted emissions into non-restricted 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.

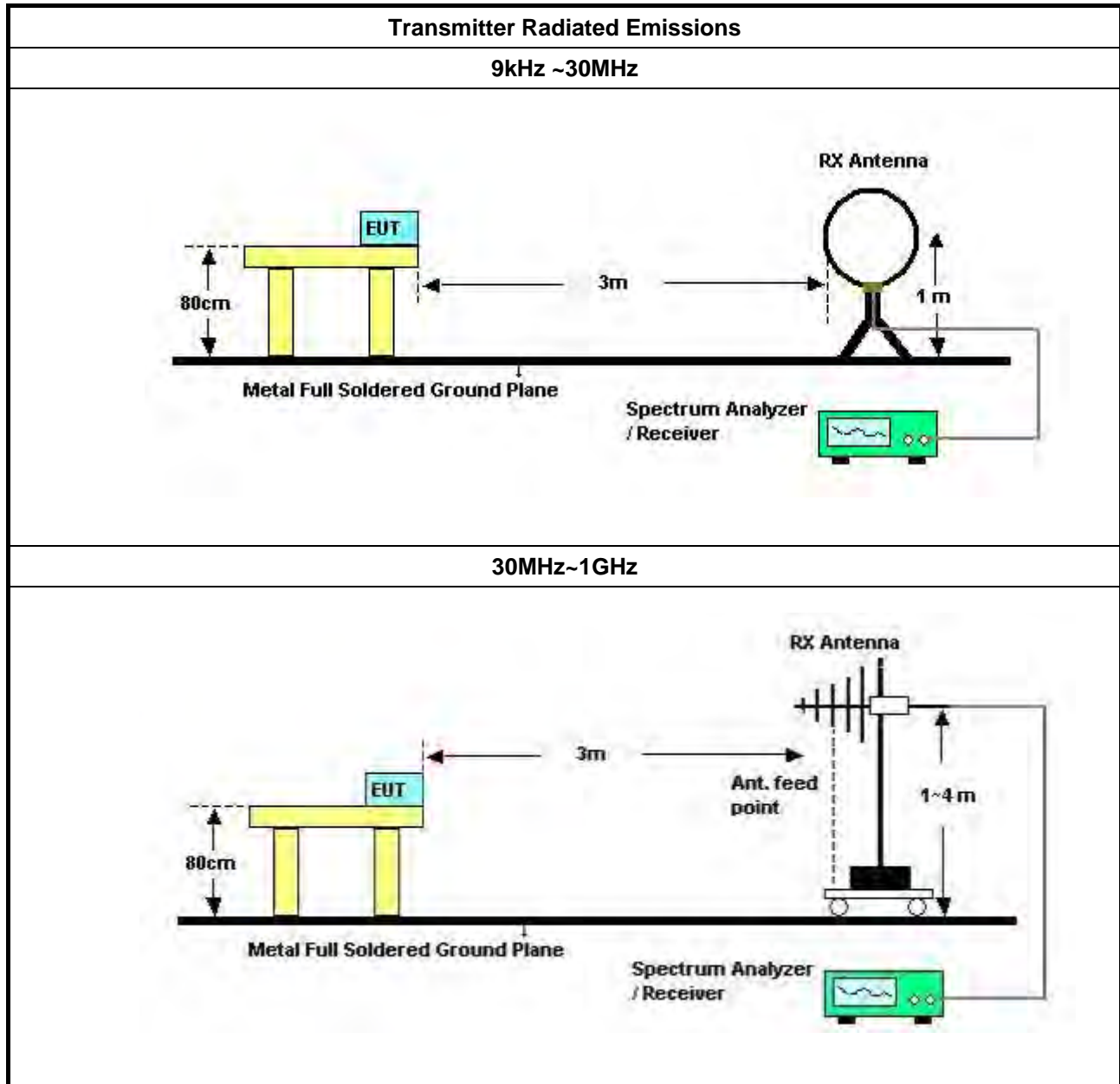
#### 3.6.2 Measuring Instruments

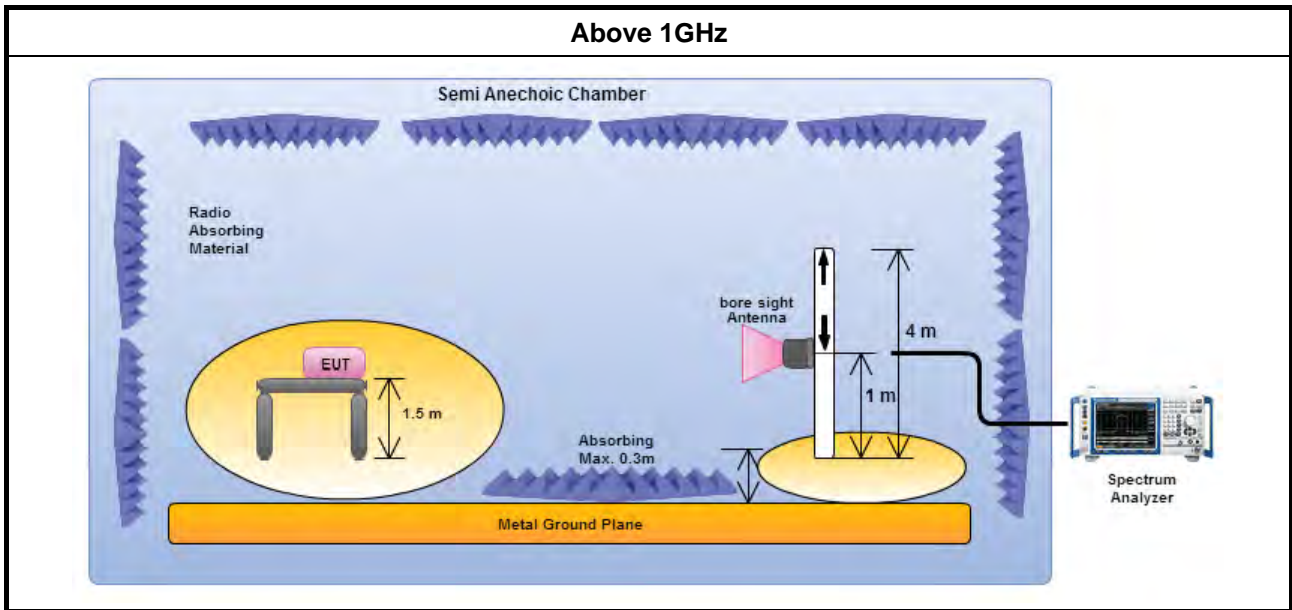
Refer a test equipment and calibration data table in this test report.

### 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 6.9.2.2 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 FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.</li> </ul>
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$ )
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$ ).
	<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW $\geq 1/T$ , where T is pulse time.
	<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.4 measurement procedure peak limit.
<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 FCC KDB 558074 clause 13.1, 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 FCC KDB 558074, clause 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Refer as FCC KDB 558074, clause 13.3 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>▪ For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below:                (1) Measure and sum the spectra across the outputs or                (2) Measure and add 10 log(N) dB</li> </ul>
	<ul style="list-style-type: none"> <li>▪ For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.</li> </ul>

### 3.6.4 Test Setup





### 3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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

### 3.6.6 Test Result of Transmitter Radiated Unwanted Emissions

Refer as Appendix F



## 4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)



<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Characteristics</b>	<b>Calibration Date</b>	<b>Remark</b>
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

“\*\*” Calibration Interval of instruments listed above is two years.

N.C.R. means Non-Calibration required.



AC Power-line Conducted Emissions Result																																																																																																																																																																									
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<p>Note 1: "&gt;20dB" means emission levels that exceed the level of 20 dB below the applicable limit.            Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)</p>																																																																																																																																																																									

AC Power-line Conducted Emissions Result																																																																																																																																																																									
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<p>Note 1: "&gt;20dB" means emission levels that exceed the level of 20 dB below the applicable limit.            Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)</p>																																																																																																																																																																									



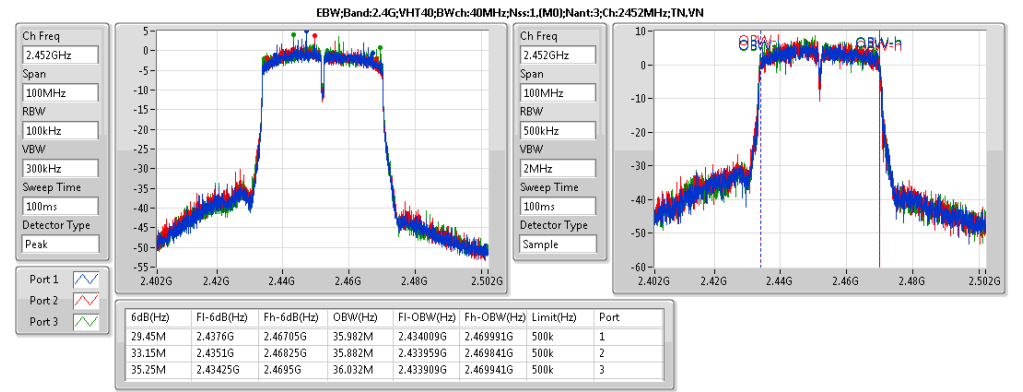
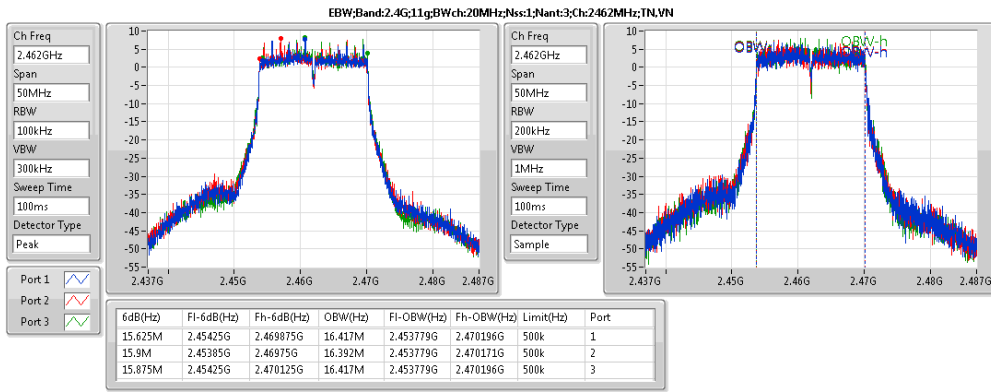
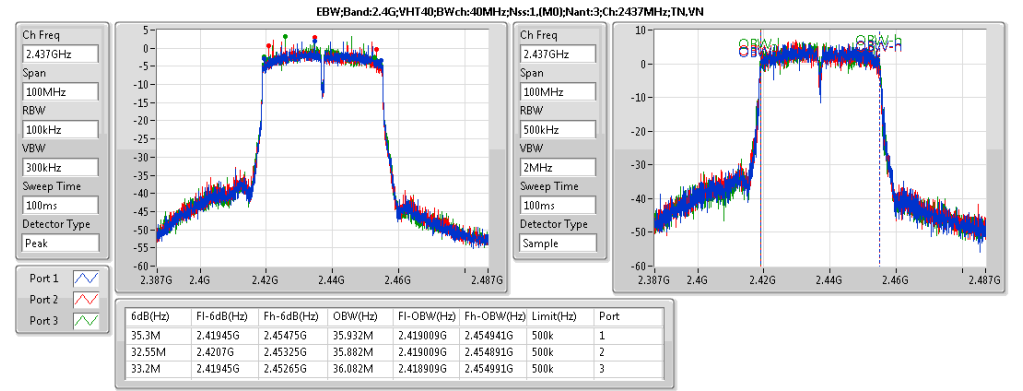
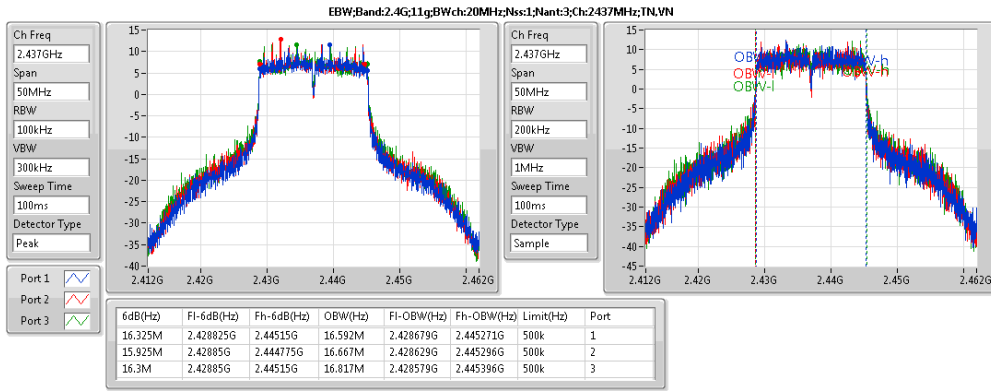
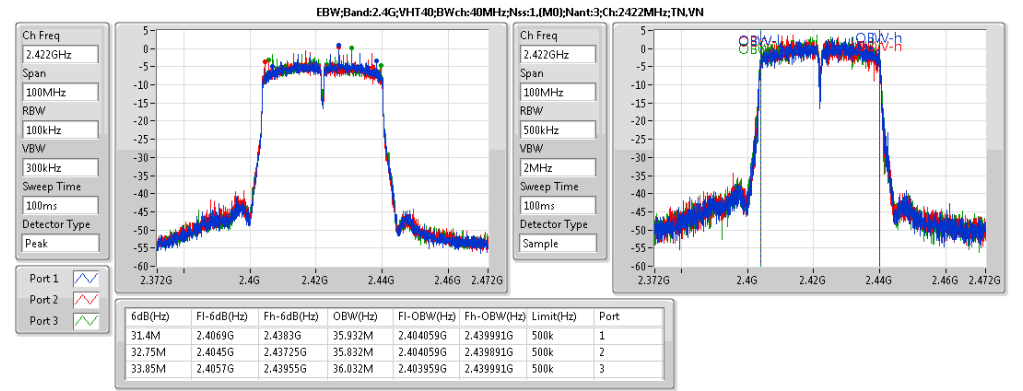
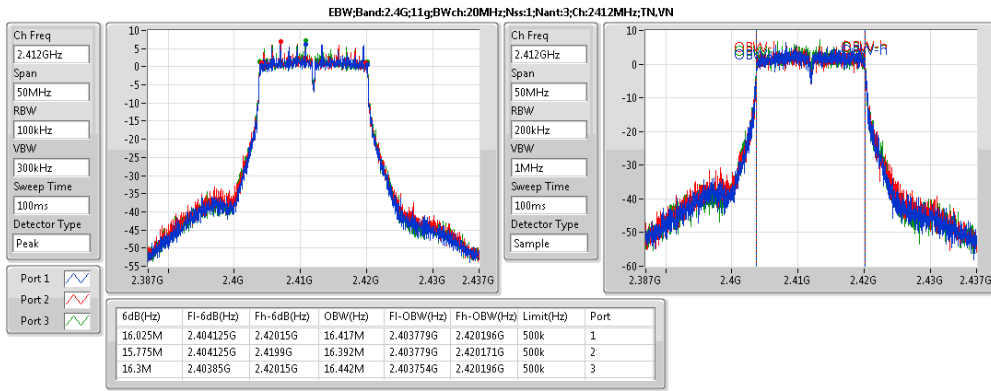
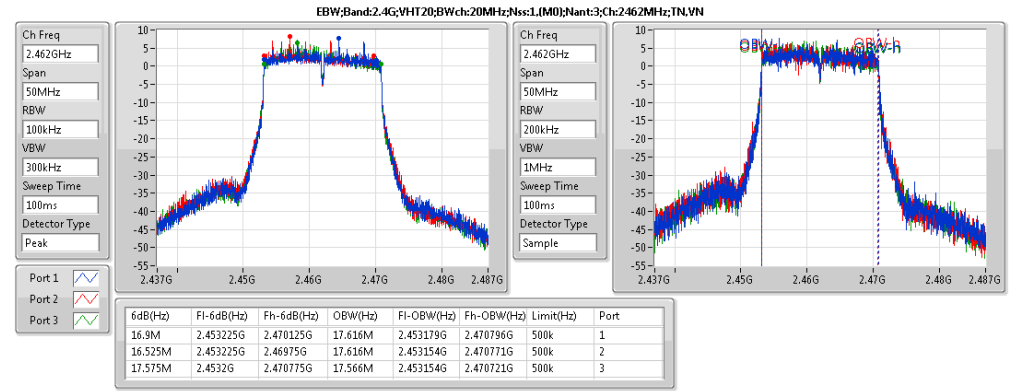
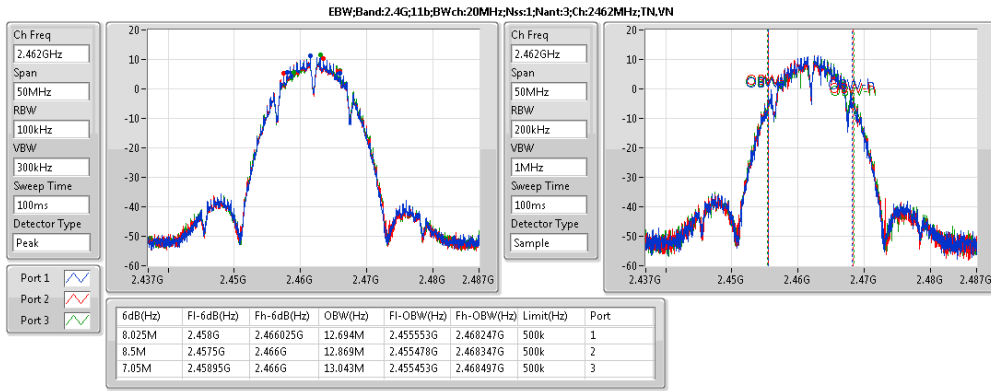
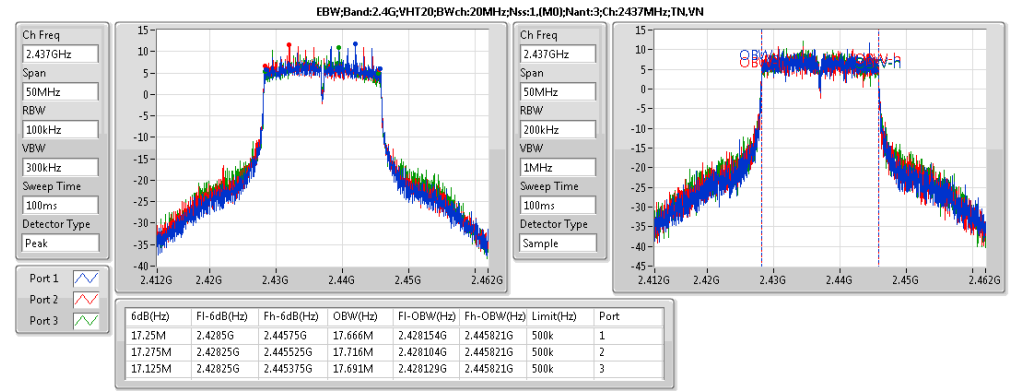
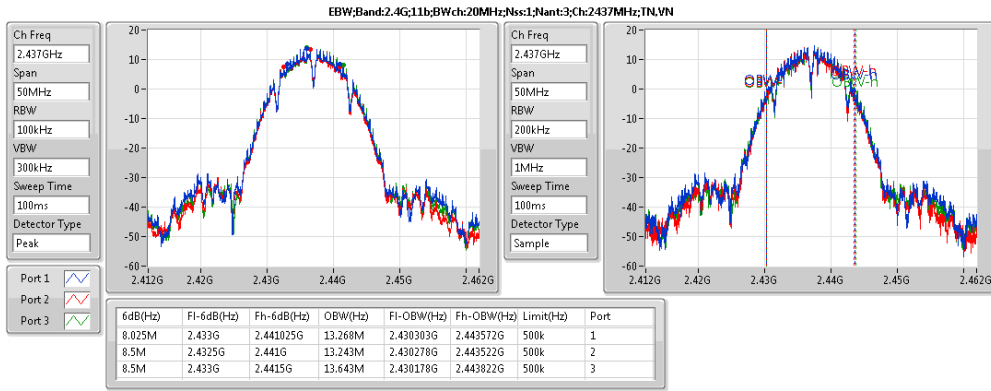
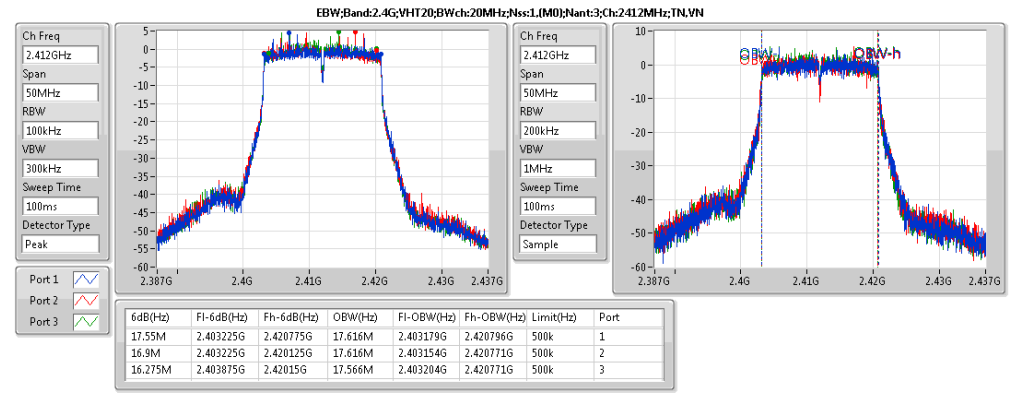
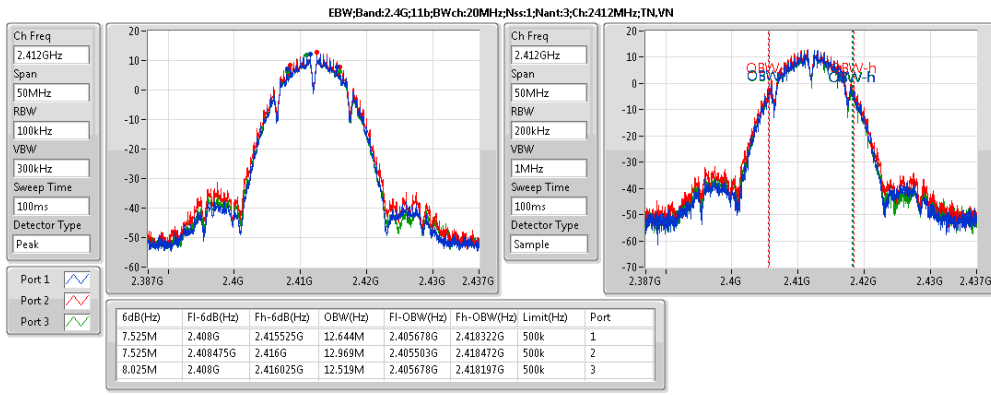
Summary

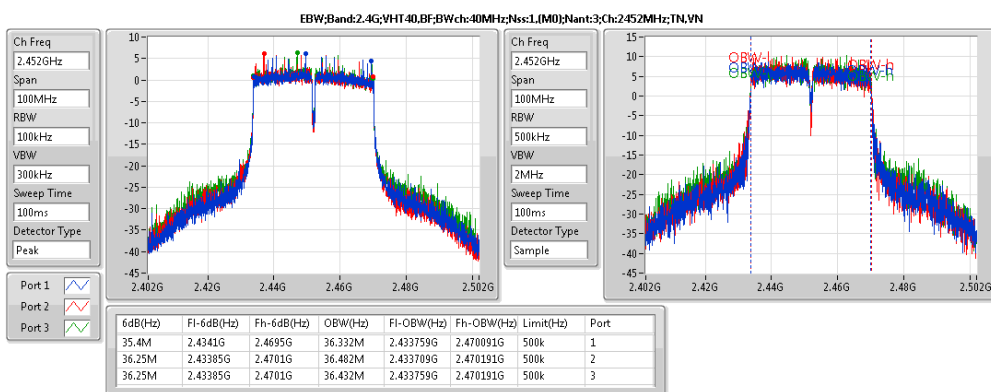
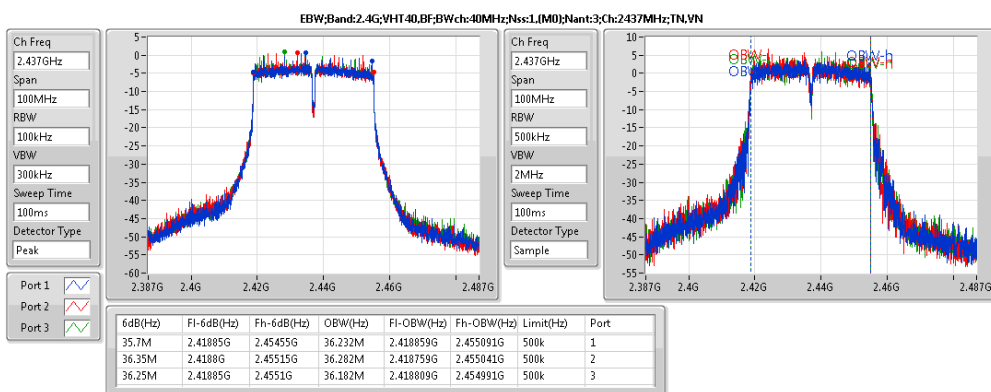
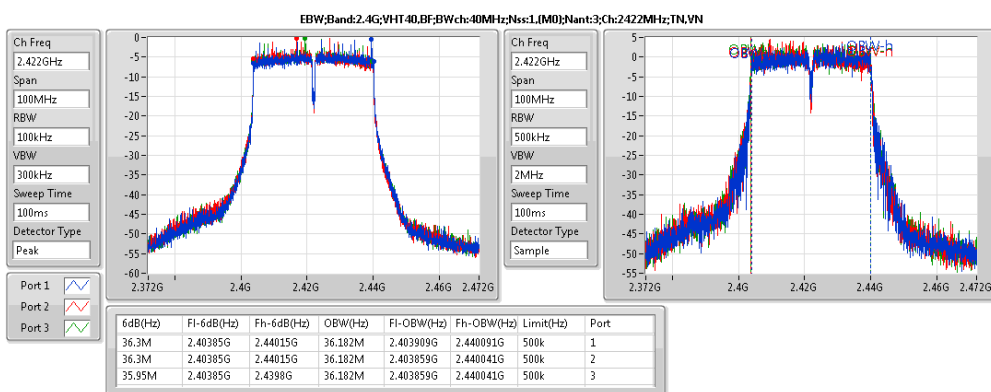
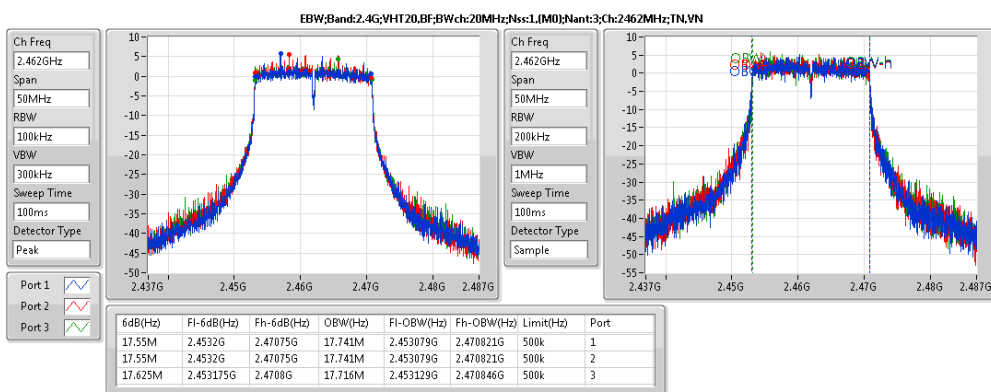
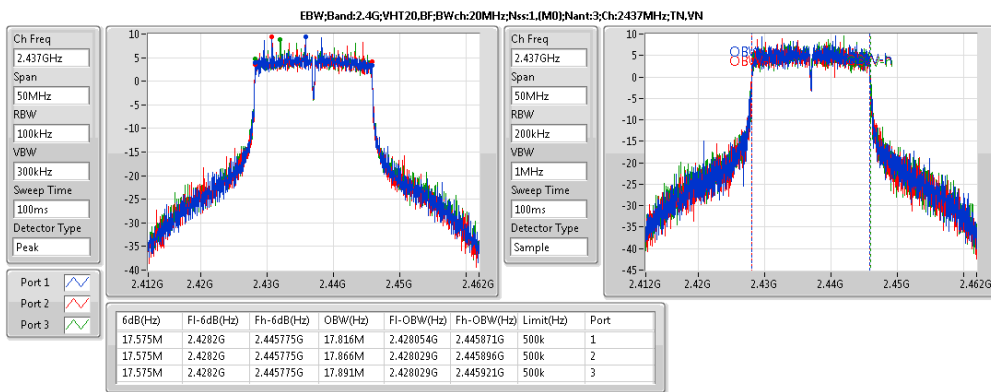
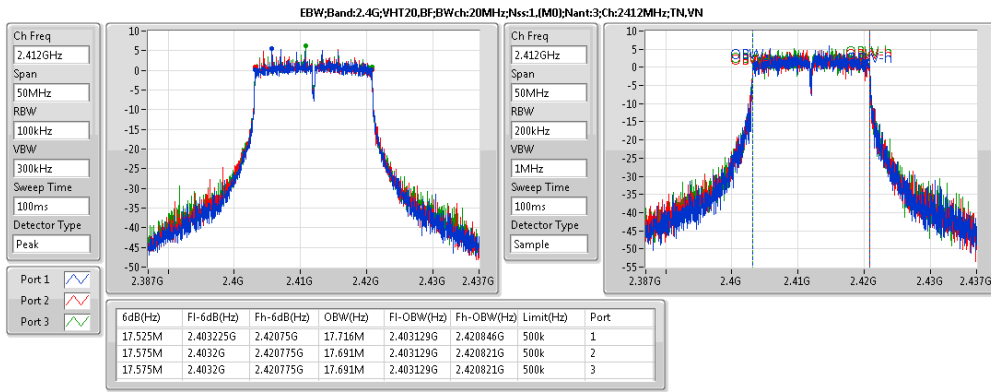
Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4G;11b;Nss1;Ntx3	8.5M	13.643M	13M6G1D	7.05M	12.519M
2.4G;11g;Nss1;Ntx3	16.325M	16.817M	16M8D1D	15.625M	16.392M
2.4G;VHT20;Nss1,(M0);Ntx3	17.575M	17.716M	17M7D1D	16.275M	17.566M
2.4G;VHT40;Nss1,(M0);Ntx3	35.3M	36.082M	36M1D1D	29.45M	35.832M
2.4G;VHT20,BF;Nss1,(M0);Ntx3	17.625M	17.891M	17M9D1D	17.525M	17.691M
2.4G;VHT40,BF;Nss1,(M0);Ntx3	36.35M	36.482M	36M5D1D	35.4M	36.182M



**Result**

Mode	Result	Limit	P1-N dB (Hz)	P1-OBW (Hz)	P2-N dB (Hz)	P2-OBW (Hz)	P3-N dB (Hz)	P3-OBW (Hz)
2.4G:11b:Nss1:Ntx3:2412;TN,VN	Pass	500k	7.525M	12.644M	7.525M	12.969M	8.025M	12.519M
2.4G:11b:Nss1:Ntx3:2437;TN,VN	Pass	500k	8.025M	13.268M	8.5M	13.243M	8.5M	13.643M
2.4G:11b:Nss1:Ntx3:2462;TN,VN	Pass	500k	8.025M	12.694M	8.5M	12.869M	7.05M	13.043M
2.4G:11g:Nss1:Ntx3:2412;TN,VN	Pass	500k	16.025M	16.417M	15.775M	16.392M	16.3M	16.442M
2.4G:11g:Nss1:Ntx3:2437;TN,VN	Pass	500k	16.325M	16.592M	15.925M	16.667M	16.3M	16.817M
2.4G:11g:Nss1:Ntx3:2462;TN,VN	Pass	500k	15.625M	16.417M	15.9M	16.392M	15.875M	16.417M
2.4G:VHT20:Nss1,(M0):Ntx3:2412;TN,VN	Pass	500k	17.55M	17.616M	16.9M	17.616M	16.275M	17.566M
2.4G:VHT20:Nss1,(M0):Ntx3:2437;TN,VN	Pass	500k	17.25M	17.666M	17.275M	17.716M	17.125M	17.691M
2.4G:VHT20:Nss1,(M0):Ntx3:2462;TN,VN	Pass	500k	16.9M	17.616M	16.525M	17.616M	17.575M	17.566M
2.4G:VHT40:Nss1,(M0):Ntx3:2422;TN,VN	Pass	500k	31.4M	35.932M	32.75M	35.832M	33.85M	36.032M
2.4G:VHT40:Nss1,(M0):Ntx3:2437;TN,VN	Pass	500k	35.3M	35.932M	32.55M	35.882M	33.2M	36.082M
2.4G:VHT40:Nss1,(M0):Ntx3:2452;TN,VN	Pass	500k	29.45M	35.982M	33.15M	35.882M	35.25M	36.032M
2.4G:VHT20,BF:Nss1,(M0):Ntx3:2412;TN,VN	Pass	500k	17.525M	17.716M	17.575M	17.691M	17.575M	17.691M
2.4G:VHT20,BF:Nss1,(M0):Ntx3:2437;TN,VN	Pass	500k	17.575M	17.816M	17.575M	17.866M	17.575M	17.891M
2.4G:VHT20,BF:Nss1,(M0):Ntx3:2462;TN,VN	Pass	500k	17.55M	17.741M	17.55M	17.741M	17.625M	17.716M
2.4G:VHT40,BF:Nss1,(M0):Ntx3:2422;TN,VN	Pass	500k	36.3M	36.182M	36.3M	36.182M	35.95M	36.182M
2.4G:VHT40,BF:Nss1,(M0):Ntx3:2437;TN,VN	Pass	500k	35.7M	36.232M	36.35M	36.282M	36.25M	36.182M
2.4G:VHT40,BF:Nss1,(M0):Ntx3:2452;TN,VN	Pass	500k	35.4M	36.332M	36.25M	36.482M	36.25M	36.432M







Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G:11b:Nss1:Ntx3	27.56	0.57016	28.56	0.71779
2.4G:11g:Nss1:Ntx3	28.28	0.67298	29.28	0.84723
2.4G:VHT20:Nss1,(M0):Ntx3	27.10	0.51286	28.10	0.64565
2.4G:VHT40:Nss1,(M0):Ntx3	22.84	0.19231	23.84	0.2421
2.4G:VHT20,BF:Nss1,(M0):Ntx3	26.07	0.40458	28.83	0.76384
2.4G:VHT40,BF:Nss1,(M0):Ntx3	21.45	0.13964	24.21	0.26363

**Result**

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)	P2 (dBm)	P3 (dBm)
2.4G;11b;Nss1;Ntx3;2412;TN,VN	Pass	1.00	26.99	36.00	25.99	30.00	21.65	20.72	21.25
2.4G;11b;Nss1;Ntx3;2437;TN,VN	Pass	1.00	28.56	36.00	27.56	30.00	22.45	23.25	22.62
2.4G;11b;Nss1;Ntx3;2462;TN,VN	Pass	1.00	25.90	36.00	24.90	30.00	20.14	20.46	19.75
2.4G;11g;Nss1;Ntx3;2412;TN,VN	Pass	1.00	23.18	36.00	22.18	30.00	17.15	17.36	17.69
2.4G;11g;Nss1;Ntx3;2437;TN,VN	Pass	1.00	29.28	36.00	28.28	30.00	23.04	22.86	24.45
2.4G;11g;Nss1;Ntx3;2462;TN,VN	Pass	1.00	24.44	36.00	23.44	30.00	18.41	18.71	18.87
2.4G;VHT20;Nss1,(M0);Ntx3;2412;TN,VN	Pass	1.00	21.48	36.00	20.48	30.00	15.58	15.49	16.04
2.4G;VHT20;Nss1,(M0);Ntx3;2437;TN,VN	Pass	1.00	28.10	36.00	27.10	30.00	22.21	22.12	22.65
2.4G;VHT20;Nss1,(M0);Ntx3;2462;TN,VN	Pass	1.00	24.74	36.00	23.74	30.00	18.83	18.81	19.25
2.4G;VHT40;Nss1,(M0);Ntx3;2422;TN,VN	Pass	1.00	19.78	36.00	18.78	30.00	13.96	13.75	14.31
2.4G;VHT40;Nss1,(M0);Ntx3;2437;TN,VN	Pass	1.00	22.82	36.00	21.82	30.00	17.05	16.83	17.26
2.4G;VHT40;Nss1,(M0);Ntx3;2452;TN,VN	Pass	1.00	23.84	36.00	22.84	30.00	17.88	18.04	18.29
2.4G;VHT20;BF;Nss1,(M0);Ntx3;2412;TN,VN	Pass	2.76	25.15	36.00	22.39	30.00	17.72	17.37	17.75
2.4G;VHT20;BF;Nss1,(M0);Ntx3;2437;TN,VN	Pass	2.76	28.83	36.00	26.07	30.00	21.22	21.54	21.14
2.4G;VHT20;BF;Nss1,(M0);Ntx3;2462;TN,VN	Pass	2.76	25.09	36.00	22.33	30.00	17.48	17.32	17.85
2.4G;VHT40;BF;Nss1,(M0);Ntx3;2422;TN,VN	Pass	2.76	23.08	36.00	20.32	30.00	15.59	15.33	15.72
2.4G;VHT40;BF;Nss1,(M0);Ntx3;2437;TN,VN	Pass	2.76	24.21	36.00	21.45	30.00	16.94	16.43	16.65
2.4G;VHT40;BF;Nss1,(M0);Ntx3;2452;TN,VN	Pass	2.76	23.10	36.00	20.34	30.00	15.61	15.42	15.67

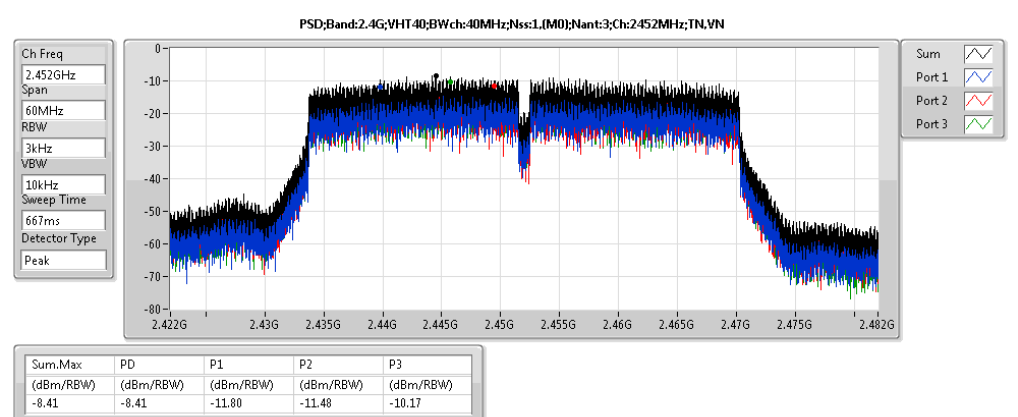
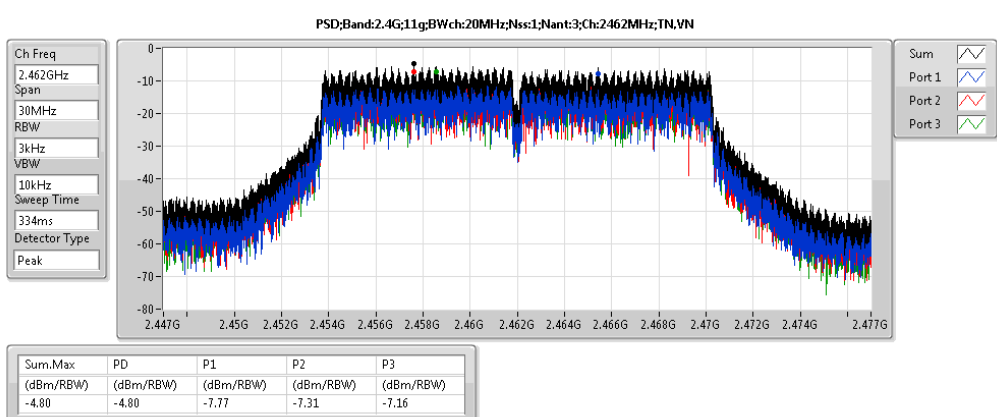
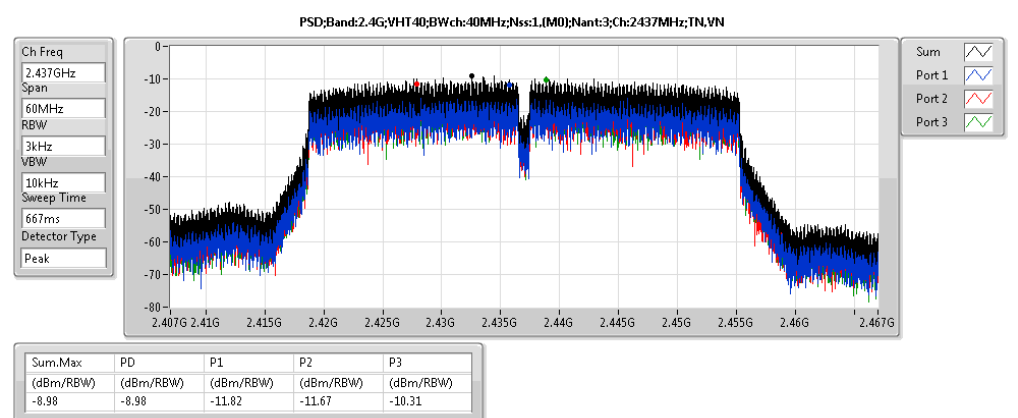
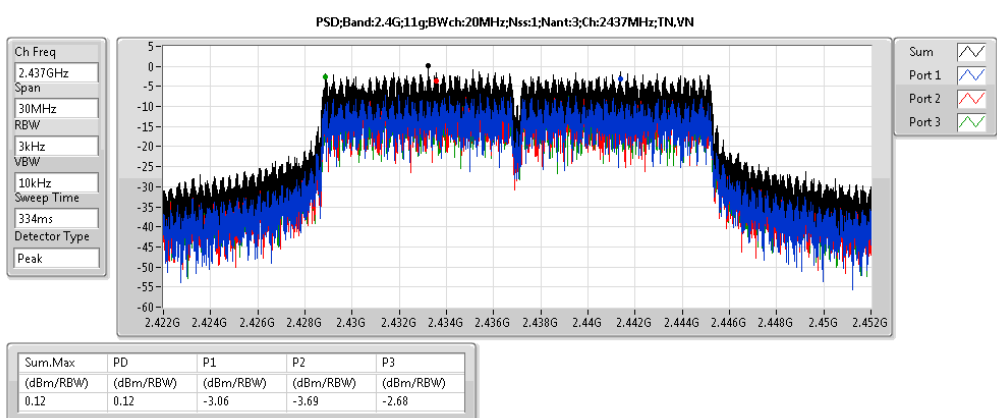
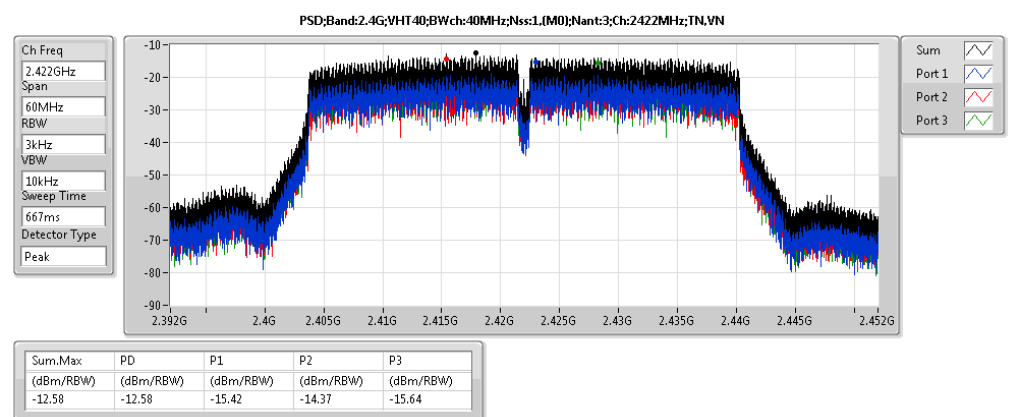
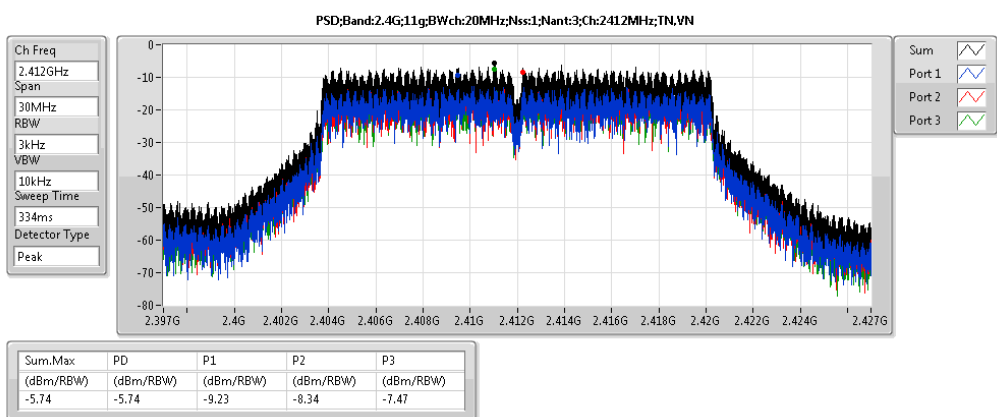
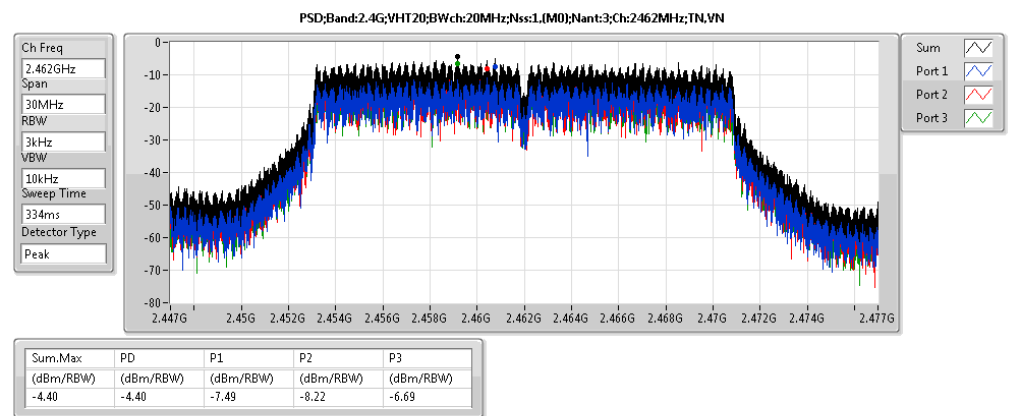
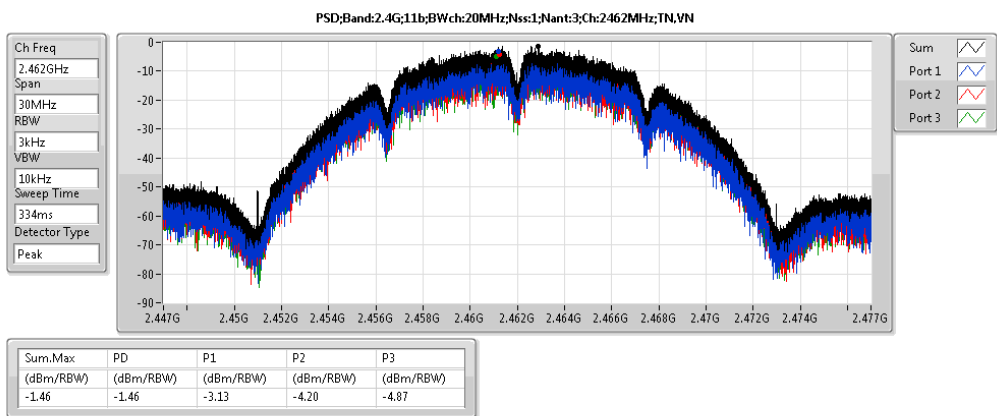
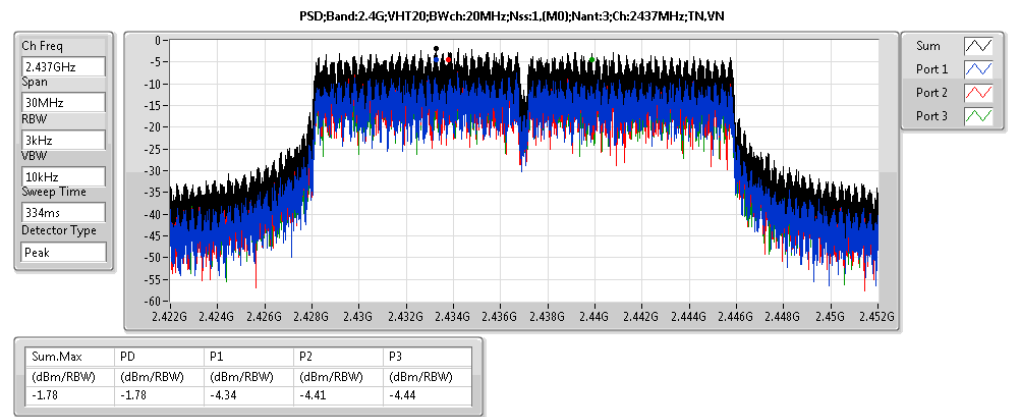
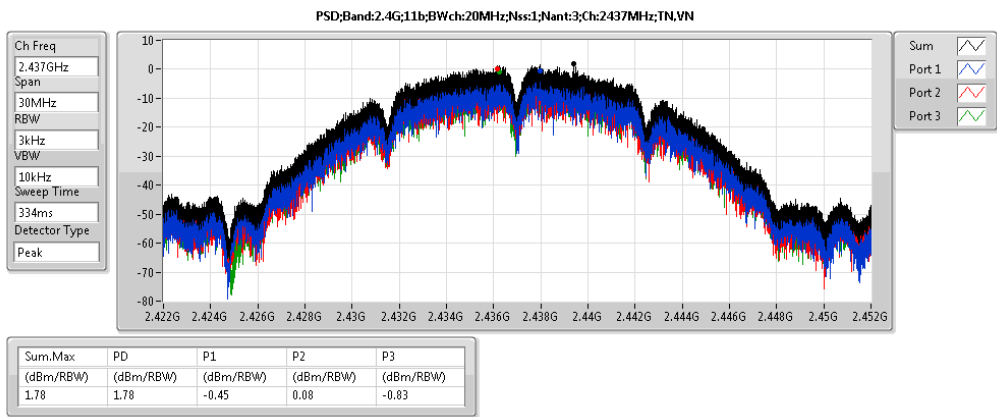
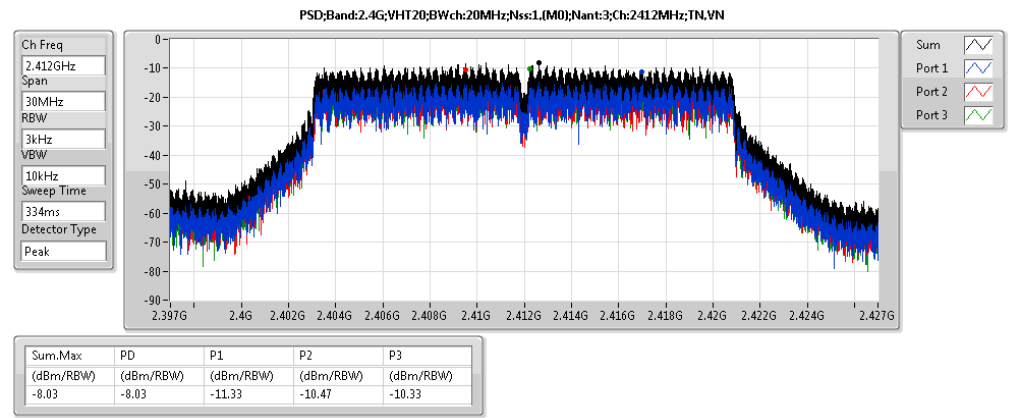
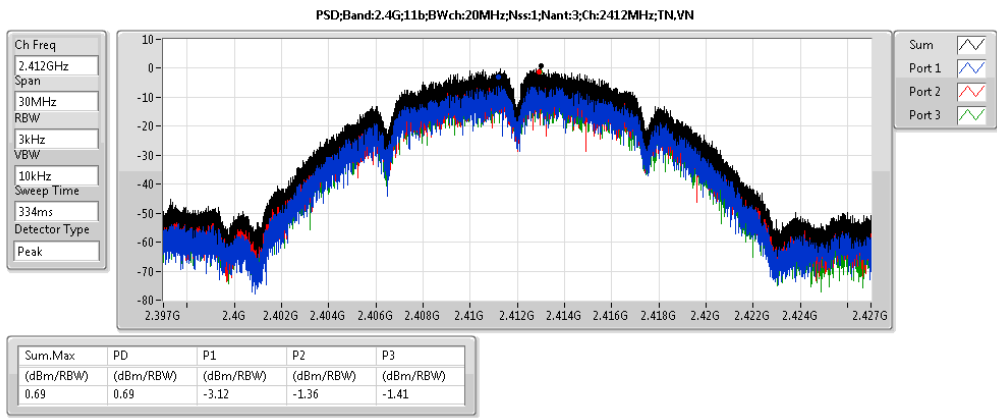


Summary

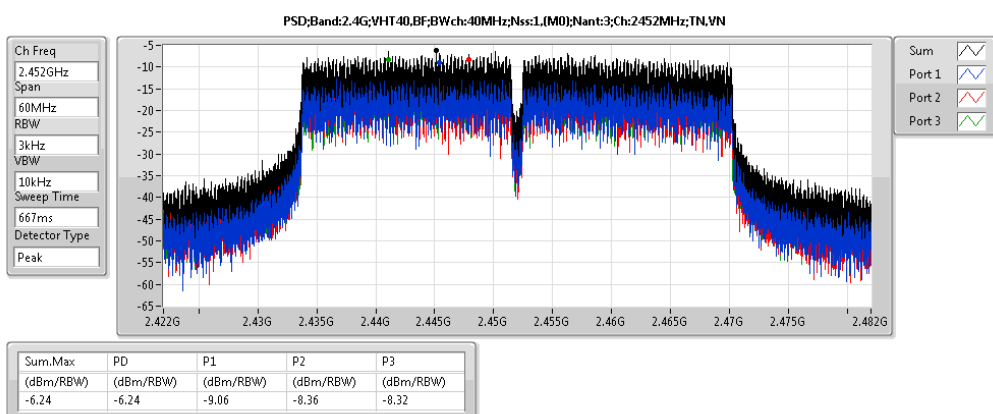
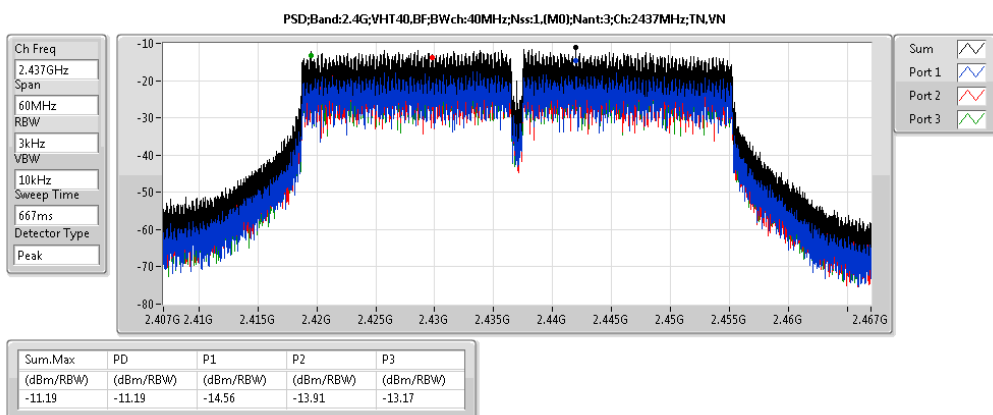
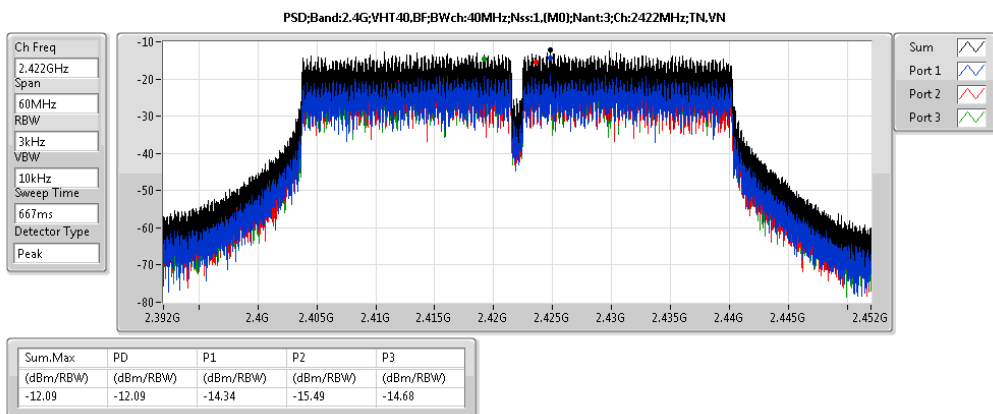
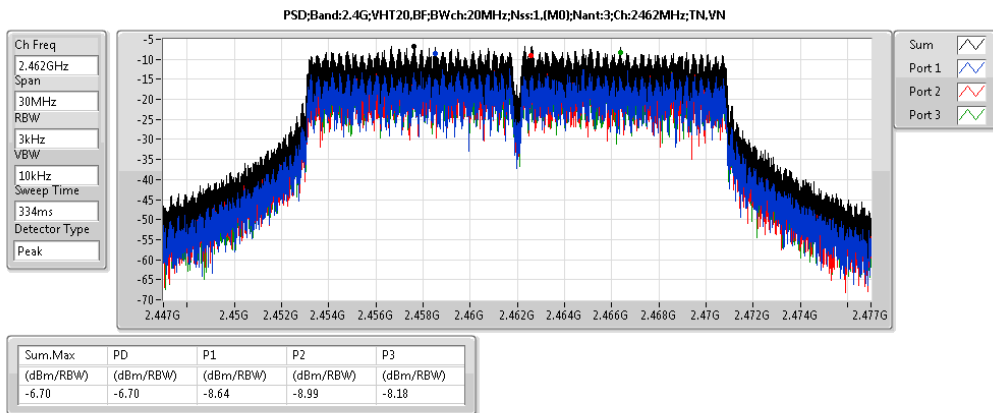
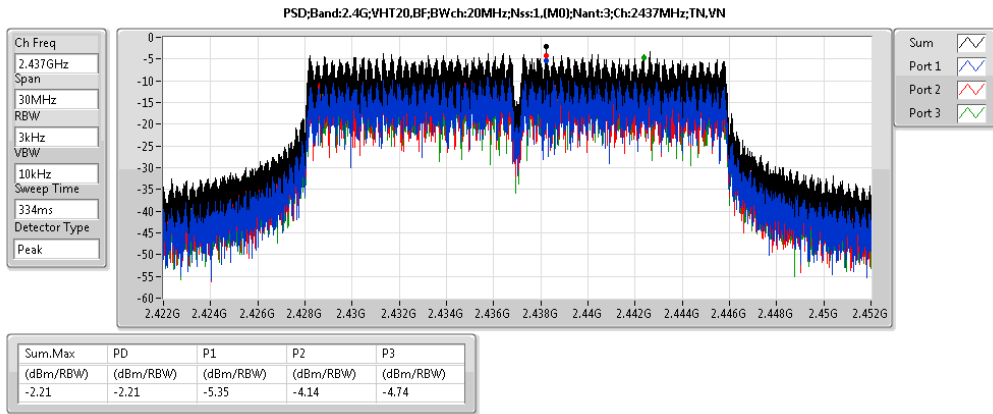
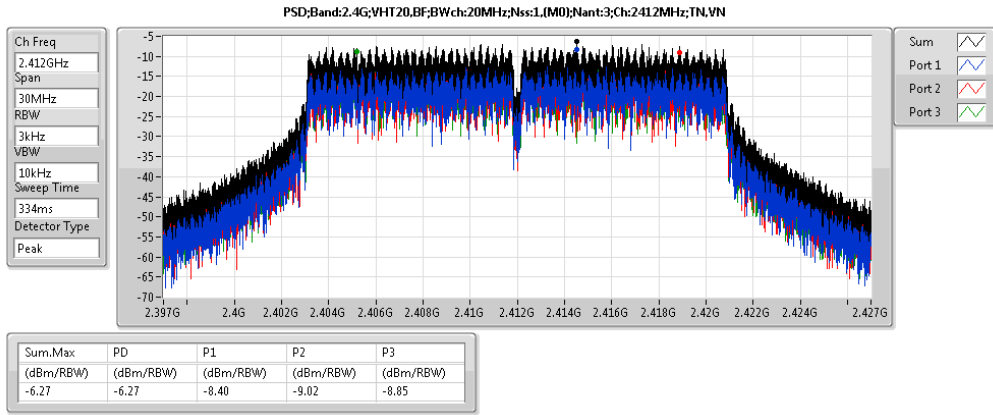
Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
2.4G;11b;Nss1;Ntx3	1.78	4.54
2.4G;11g;Nss1;Ntx3	0.12	2.88
2.4G;VHT20;Nss1,(M0);Ntx3	-1.78	0.98
2.4G;VHT40;Nss1,(M0);Ntx3	-8.41	-5.65
2.4G;VHT20,BF;Nss1,(M0);Ntx3	-2.21	0.55
2.4G;VHT40,BF;Nss1,(M0);Ntx3	-6.24	-3.48

Result

Mode	Result	Meas.RBW (Hz)	Lim.RBW (Hz)	BWCF (dB)	DG (dBi)	Sum.Max (dBm/RBW)	PD (dBm/RBW)	PD.Limit (dBm/RBW)	EIRP.PD (dBm/RBW)	EIRP.PD.Li m (dBm/RBW)	P1 (dBm/RBW)	P2 (dBm/RBW)	P3 (dBm/RBW)
2.4G;11b;Nss1;Ntx3;2412;TN,VN	Pass	3k	3k	0.00	2.76	0.69	0.69	8.00	3.45	Inf	-3.12	-1.36	-1.41
2.4G;11b;Nss1;Ntx3;2437;TN,VN	Pass	3k	3k	0.00	2.76	1.78	1.78	8.00	4.54	Inf	-0.45	0.08	-0.83
2.4G;11b;Nss1;Ntx3;2462;TN,VN	Pass	3k	3k	0.00	2.76	-1.46	-1.46	8.00	1.30	Inf	-3.13	-4.20	-4.87
2.4G;11g;Nss1;Ntx3;2412;TN,VN	Pass	3k	3k	0.00	2.76	-5.74	-5.74	8.00	-2.98	Inf	-9.23	-8.34	-7.47
2.4G;11g;Nss1;Ntx3;2437;TN,VN	Pass	3k	3k	0.00	2.76	0.12	0.12	8.00	2.88	Inf	-3.06	-3.69	-2.68
2.4G;11g;Nss1;Ntx3;2462;TN,VN	Pass	3k	3k	0.00	2.76	-4.80	-4.80	8.00	-2.04	Inf	-7.77	-7.31	-7.16
2.4G;VHT20;Nss1,(M0);Ntx3;2412;TN,VN	Pass	3k	3k	0.00	2.76	-8.03	-8.03	8.00	-5.27	Inf	-11.33	-10.47	-10.33
2.4G;VHT20;Nss1,(M0);Ntx3;2437;TN,VN	Pass	3k	3k	0.00	2.76	-1.78	-1.78	8.00	0.98	Inf	-4.34	-4.41	-4.44
2.4G;VHT20;Nss1,(M0);Ntx3;2462;TN,VN	Pass	3k	3k	0.00	2.76	-4.40	-4.40	8.00	-1.64	Inf	-7.49	-8.22	-6.69
2.4G;VHT40;Nss1,(M0);Ntx3;2422;TN,VN	Pass	3k	3k	0.00	2.76	-12.58	-12.58	8.00	-9.82	Inf	-15.42	-14.37	-15.64
2.4G;VHT40;Nss1,(M0);Ntx3;2437;TN,VN	Pass	3k	3k	0.00	2.76	-8.98	-8.98	8.00	-6.22	Inf	-11.82	-11.67	-10.31
2.4G;VHT40;Nss1,(M0);Ntx3;2452;TN,VN	Pass	3k	3k	0.00	2.76	-8.41	-8.41	8.00	-5.65	Inf	-11.80	-11.48	-10.17
2.4G;VHT20,BF;Nss1,(M0);Ntx3;2412;TN,VN	Pass	3k	3k	0.00	2.76	-6.27	-6.27	8.00	-3.51	Inf	-8.40	-9.02	-8.85
2.4G;VHT20,BF;Nss1,(M0);Ntx3;2437;TN,VN	Pass	3k	3k	0.00	2.76	-2.21	-2.21	8.00	0.55	Inf	-5.35	-4.14	-4.74
2.4G;VHT20,BF;Nss1,(M0);Ntx3;2462;TN,VN	Pass	3k	3k	0.00	2.76	-6.70	-6.70	8.00	-3.94	Inf	-8.64	-8.99	-8.18
2.4G;VHT40,BF;Nss1,(M0);Ntx3;2422;TN,VN	Pass	3k	3k	0.00	2.76	-12.09	-12.09	8.00	-9.33	Inf	-14.34	-15.49	-14.68
2.4G;VHT40,BF;Nss1,(M0);Ntx3;2437;TN,VN	Pass	3k	3k	0.00	2.76	-11.19	-11.19	8.00	-8.43	Inf	-14.56	-13.91	-13.17
2.4G;VHT40,BF;Nss1,(M0);Ntx3;2452;TN,VN	Pass	3k	3k	0.00	2.76	-6.24	-6.24	8.00	-3.48	Inf	-9.06	-8.36	-8.32

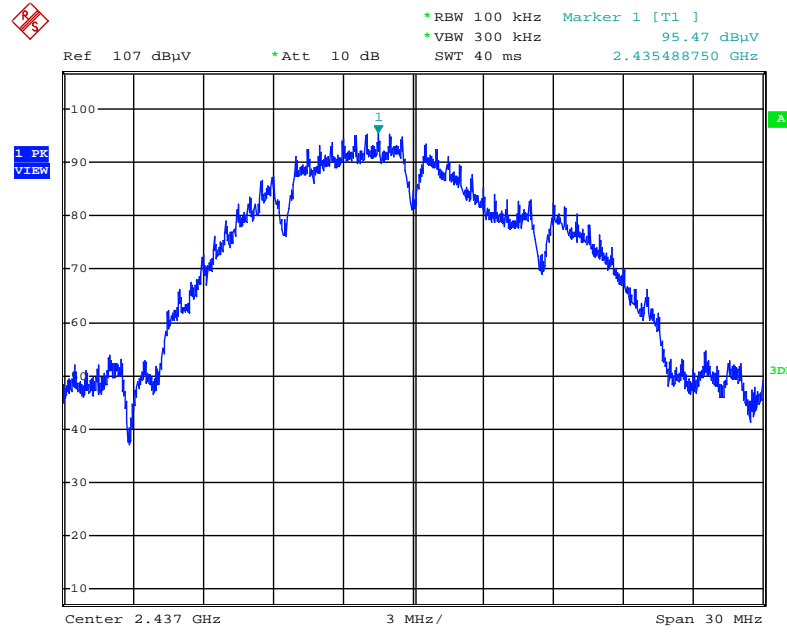






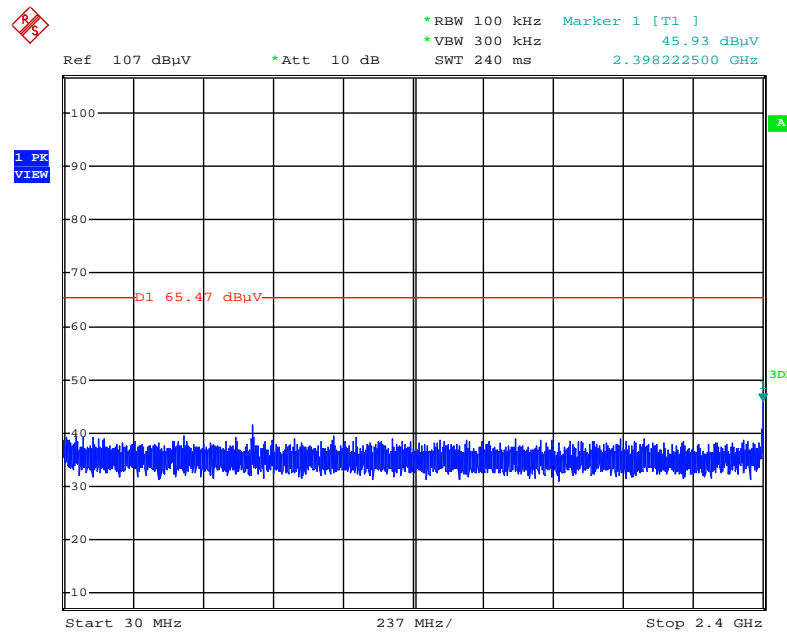
<For Non-Beamforming Mode>

Plot on Configuration IEEE 802.11b / Reference Level



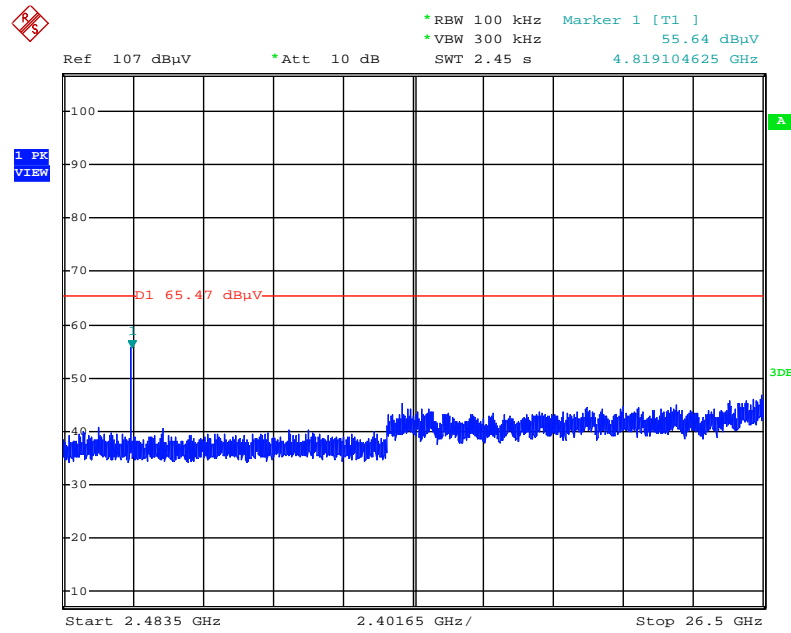
Date: 6.AUG.2016 12:12:35

Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc)



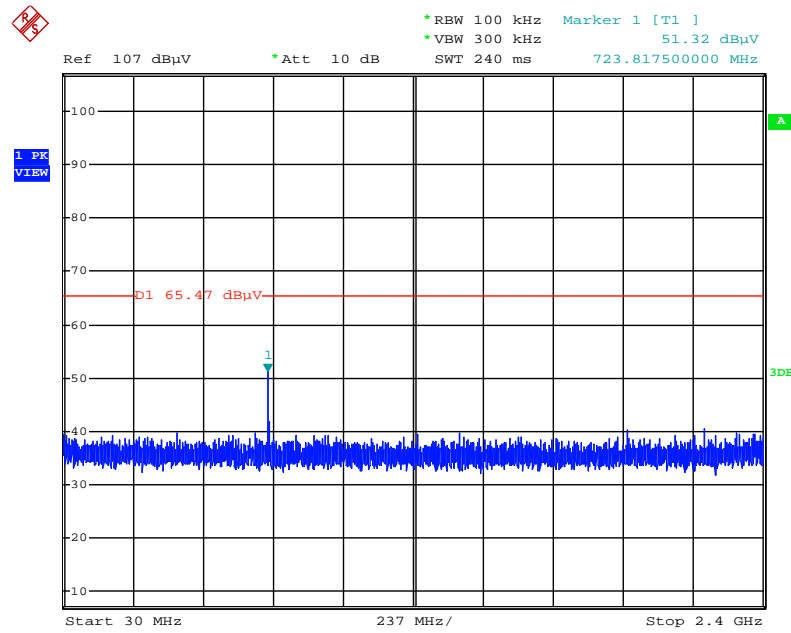
Date: 6.AUG.2016 12:14:36

Plot on Configuration IEEE 802.11b / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



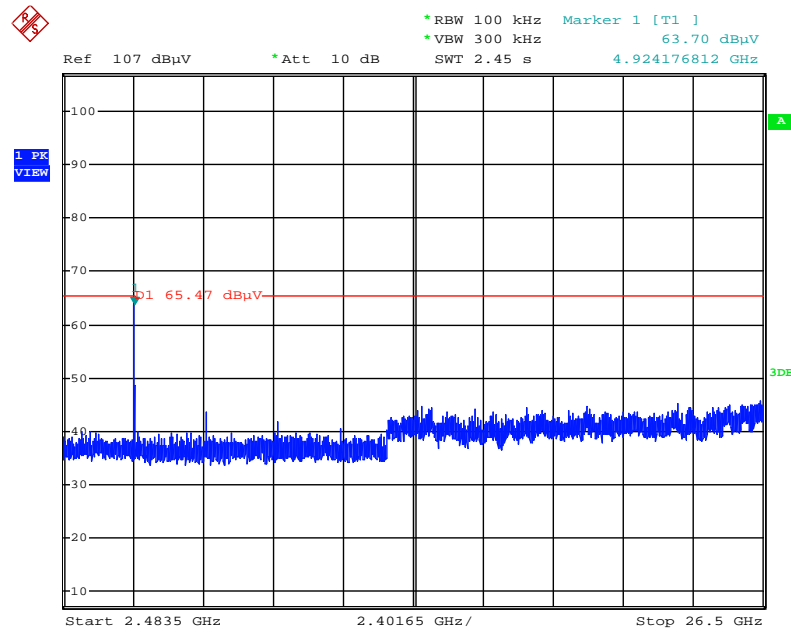
Date: 6.AUG.2016 12:15:37

Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc)



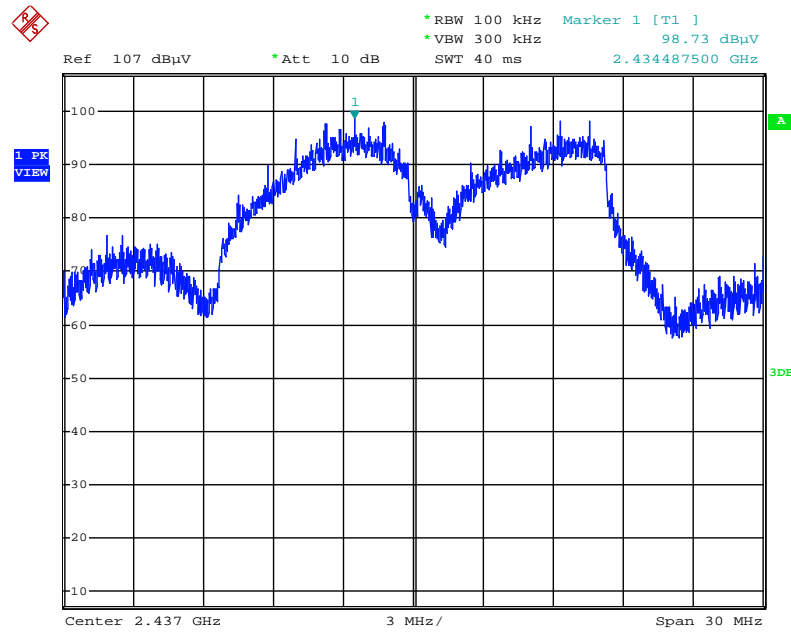
Date: 6.AUG.2016 12:21:48

Plot on Configuration IEEE 802.11b / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



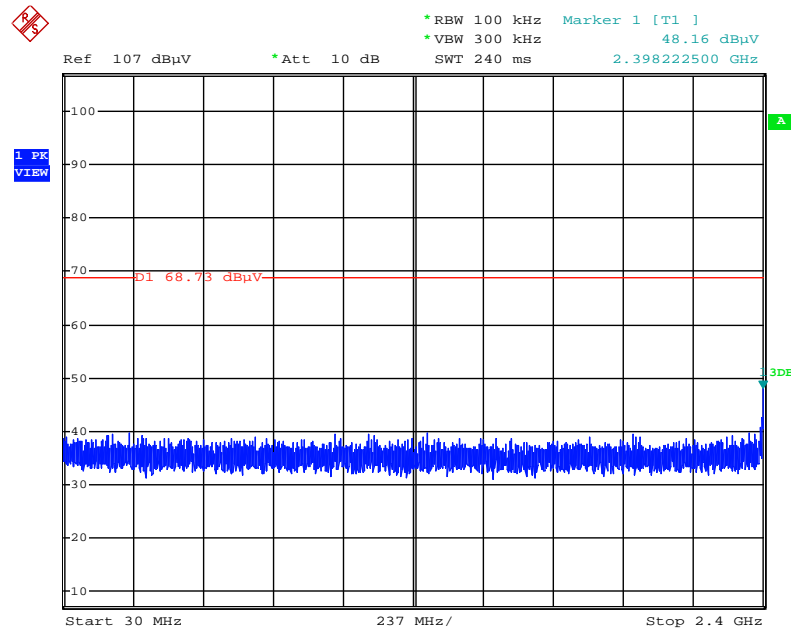
Date: 6.AUG.2016 12:25:49

Plot on Configuration IEEE 802.11g / Reference Level



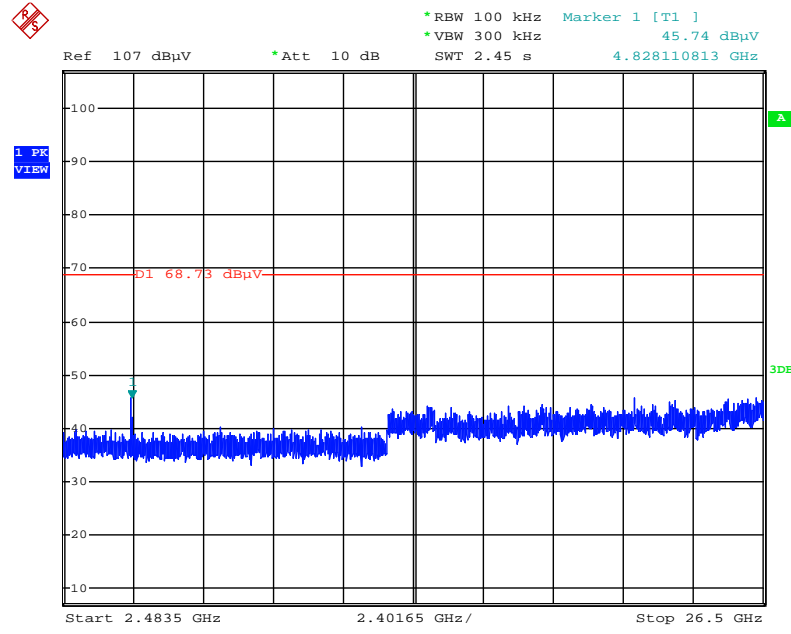
Date: 6.AUG.2016 12:30:10

Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc)



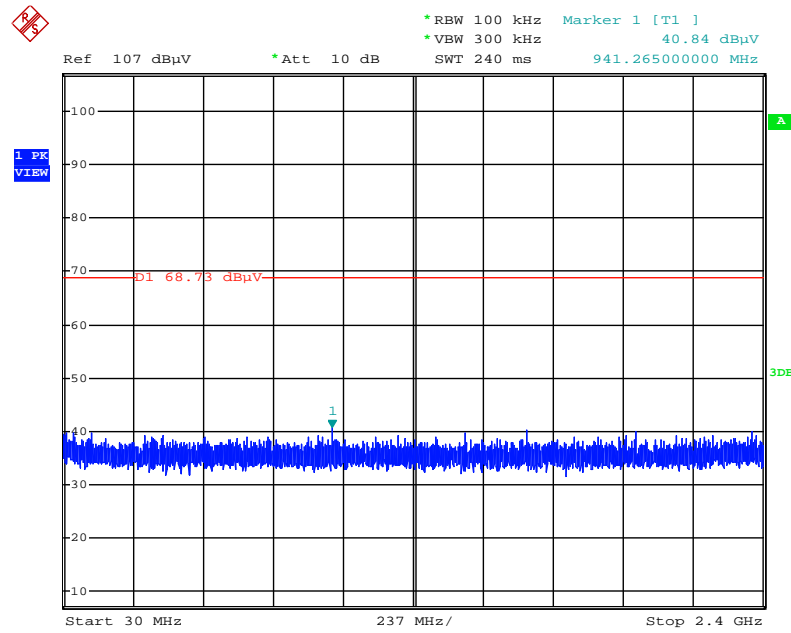
Date: 6.AUG.2016 12:31:30

Plot on Configuration IEEE 802.11g / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



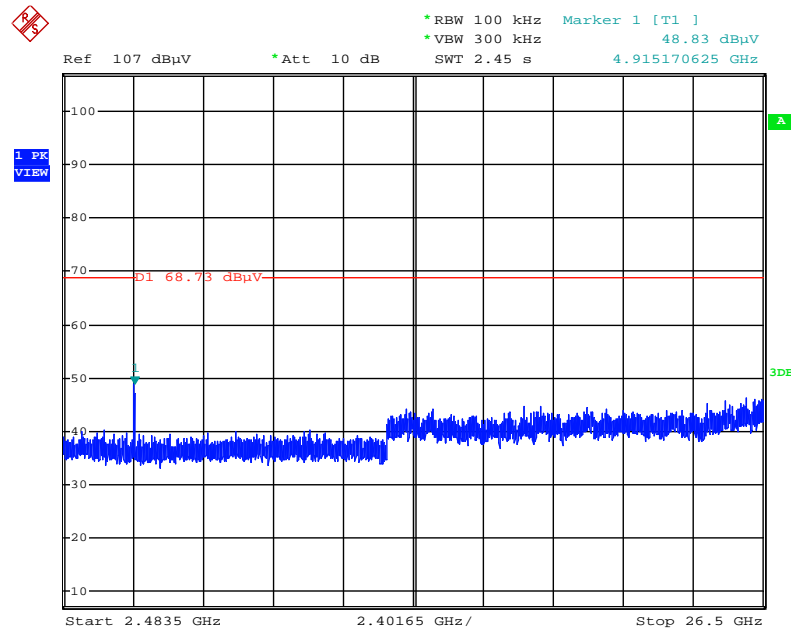
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Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc)



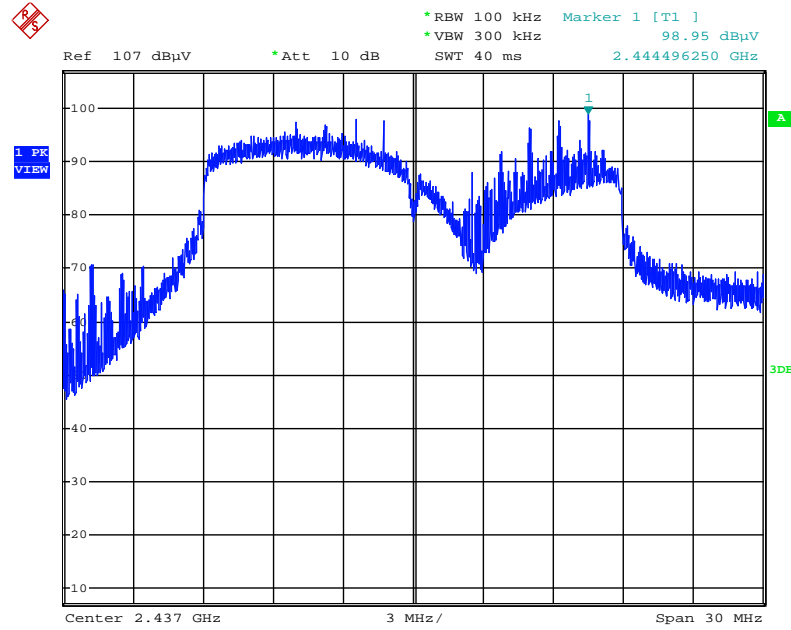
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Plot on Configuration IEEE 802.11g / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



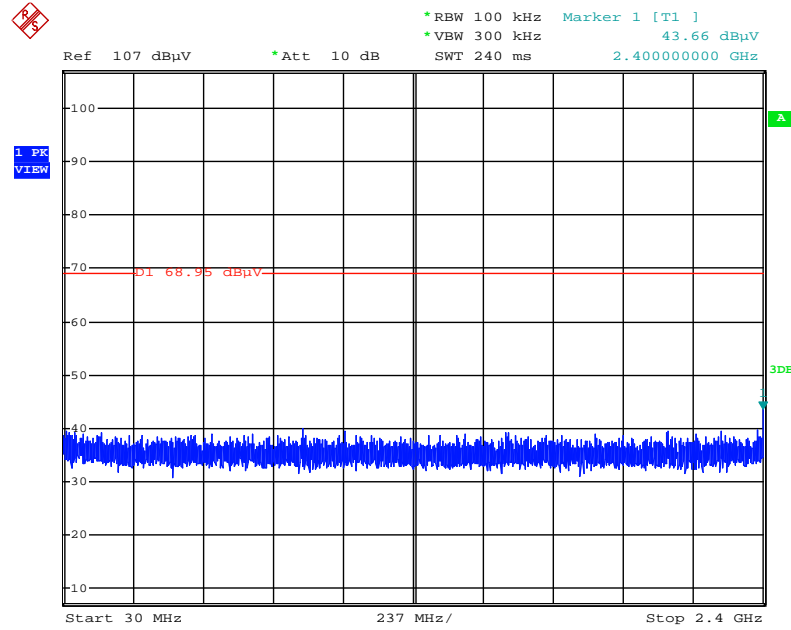
Date: 6.AUG.2016 12:33:47

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



Date: 6.AUG.2016 12:36:00

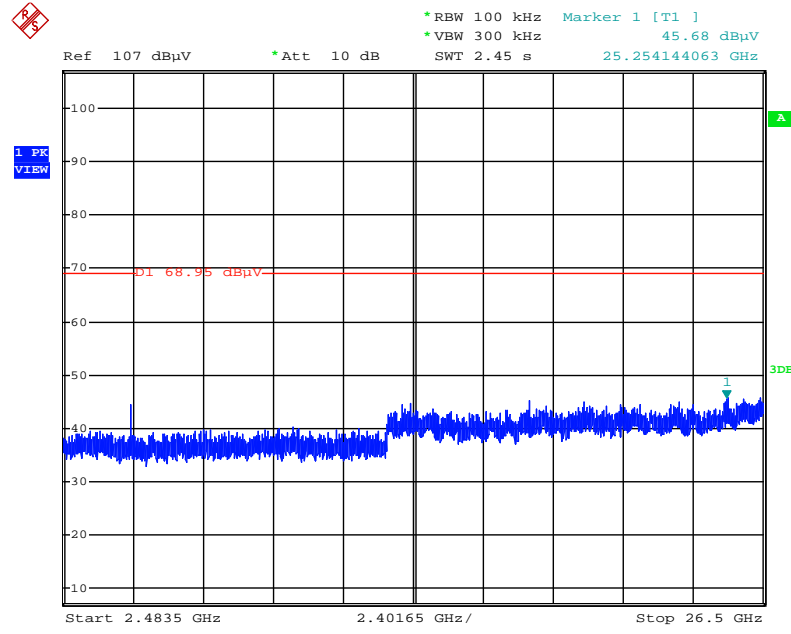
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



Date: 6.AUG.2016 12:58:26

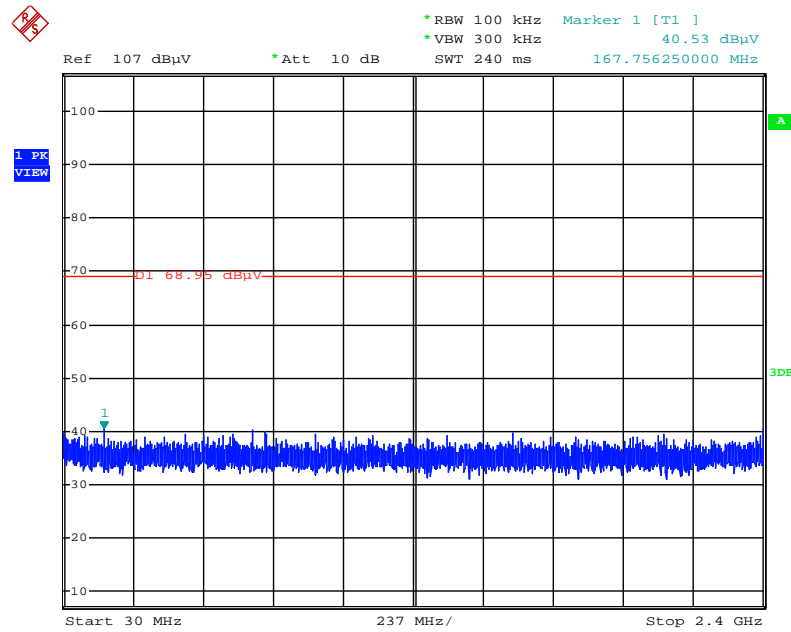


Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



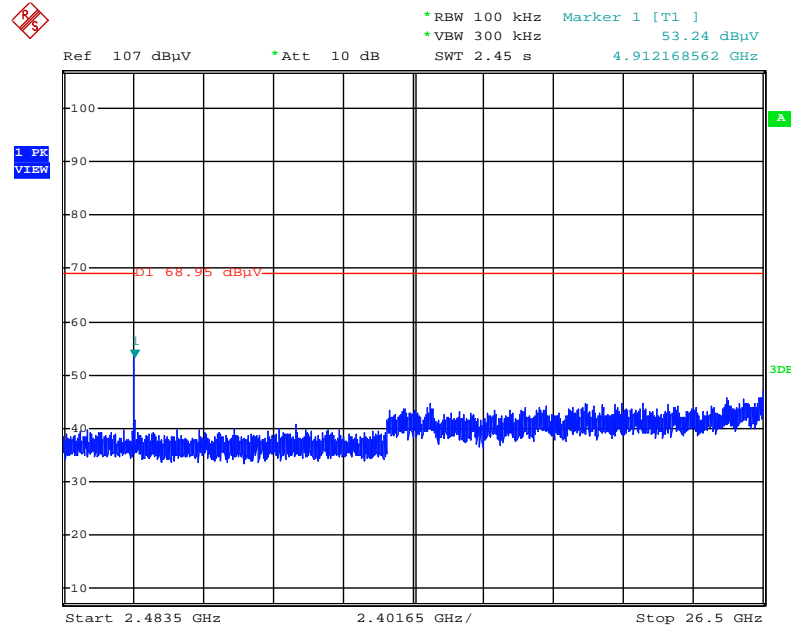
Date: 6.AUG.2016 12:59:05

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



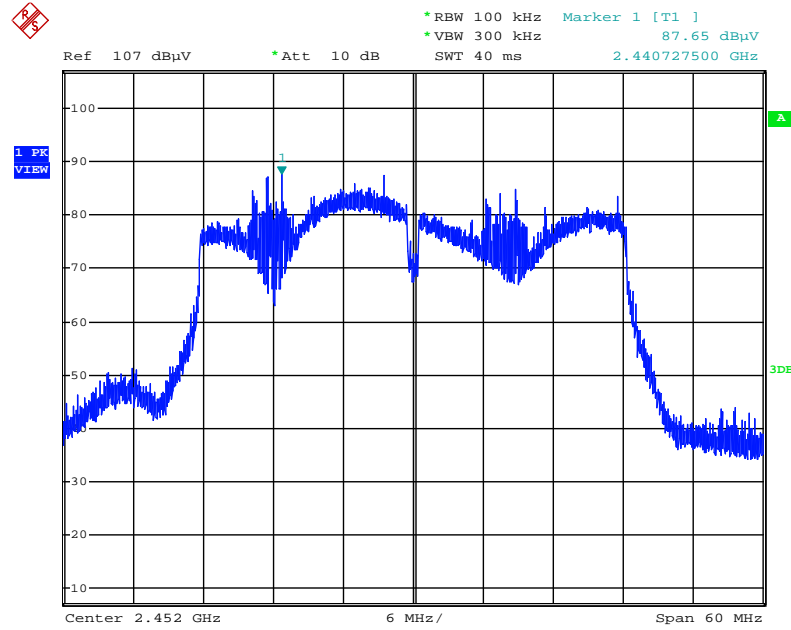
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Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



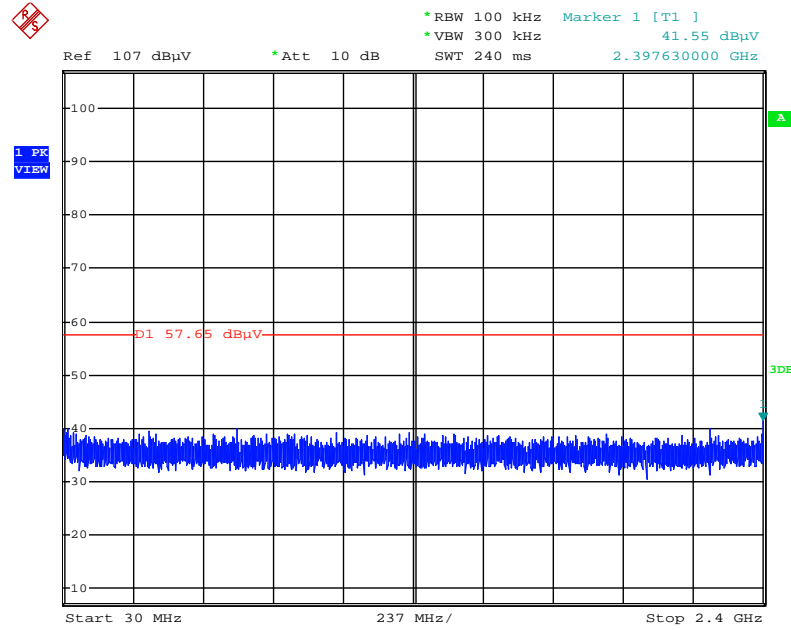
Date: 6.AUG.2016 13:00:36

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



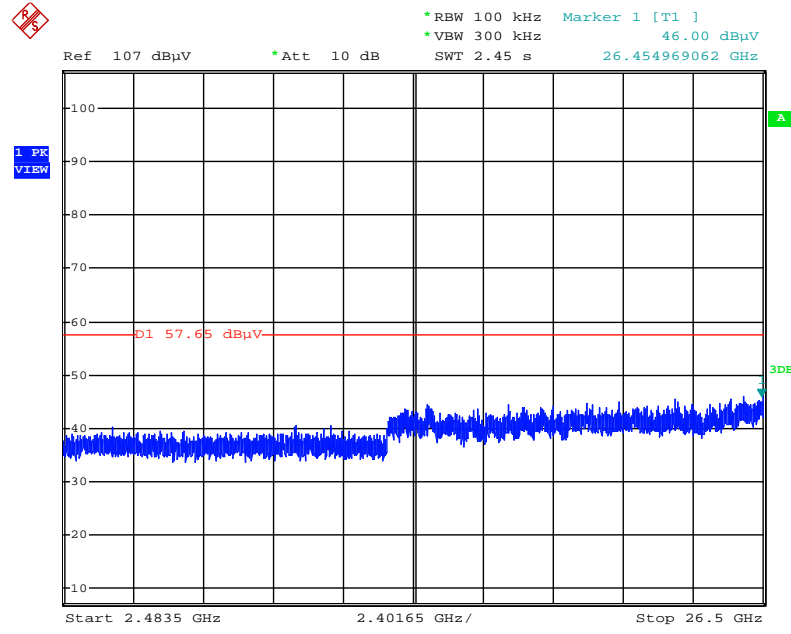
Date: 6.AUG.2016 12:49:44

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



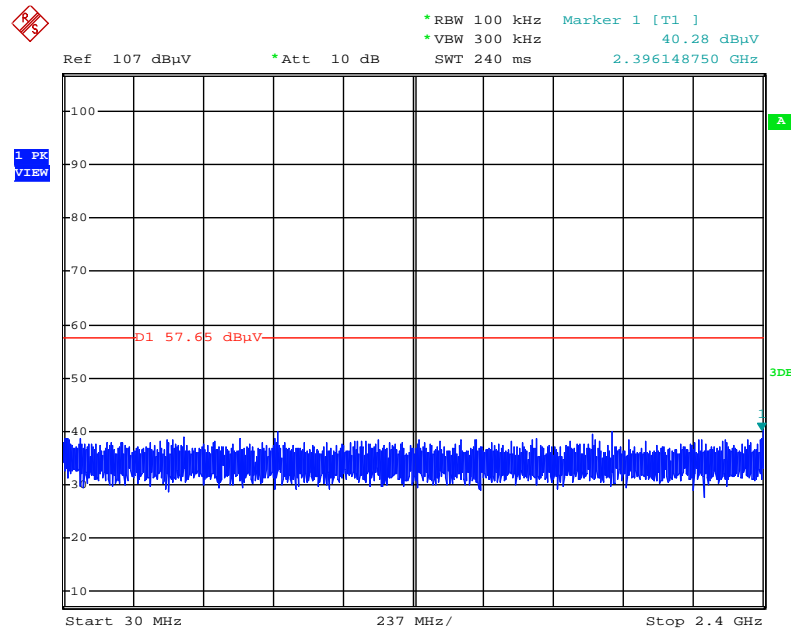
Date: 6.AUG.2016 12:51:17

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2483.5MHz~26500MHz (down 30dBc)



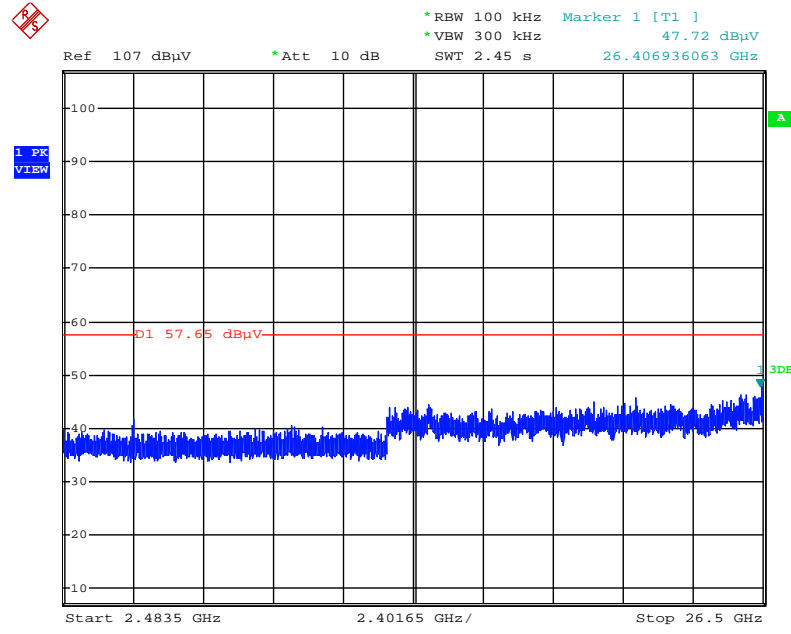
Date: 6.AUG.2016 12:51:56

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



Date: 6.AUG.2016 12:52:53

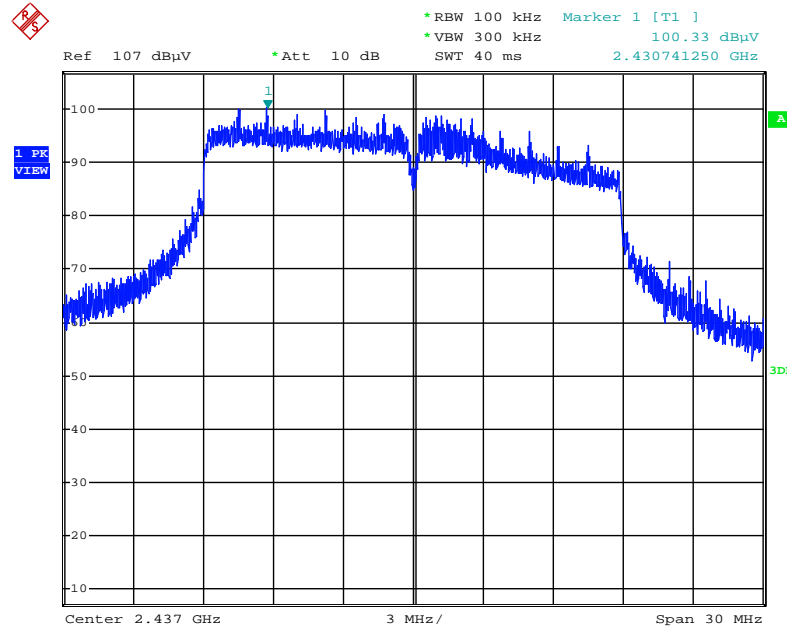
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2483.5MHz~26500MHz (down 30dBc)



Date: 6.AUG.2016 12:53:30

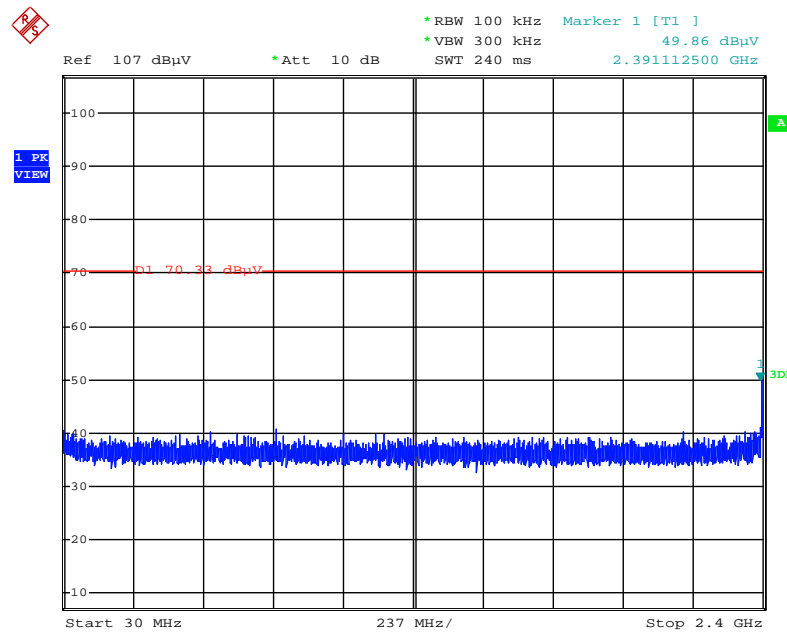
<For Beamforming Mode>

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



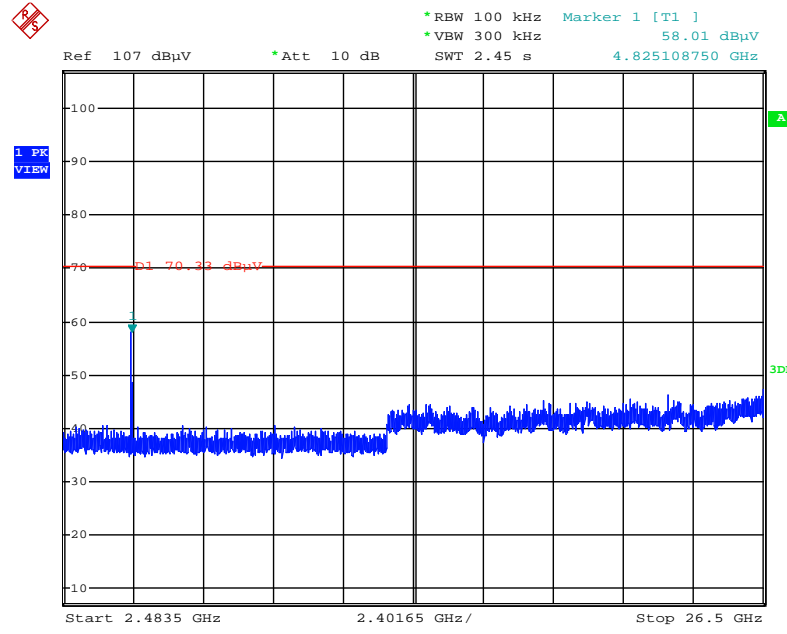
Date: 11.AUG.2016 04:27:57

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



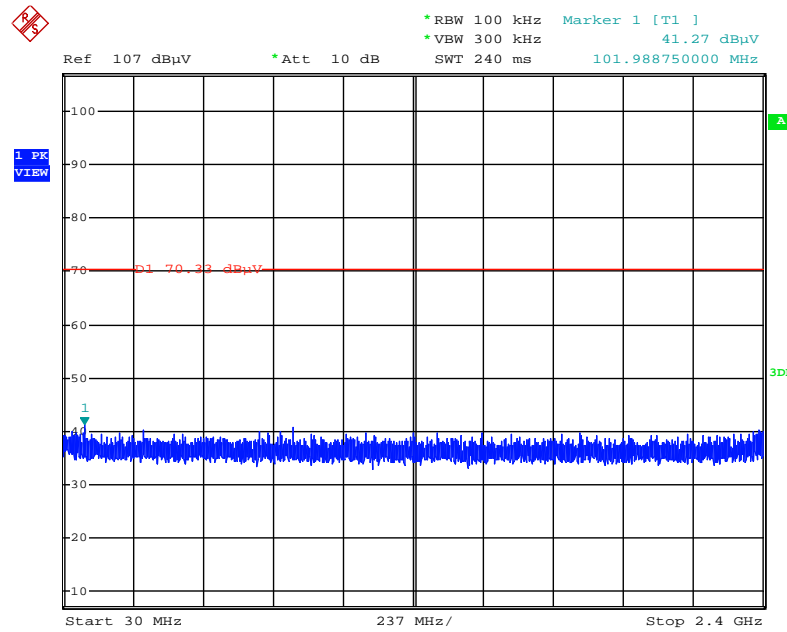
Date: 11.AUG.2016 04:29:46

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



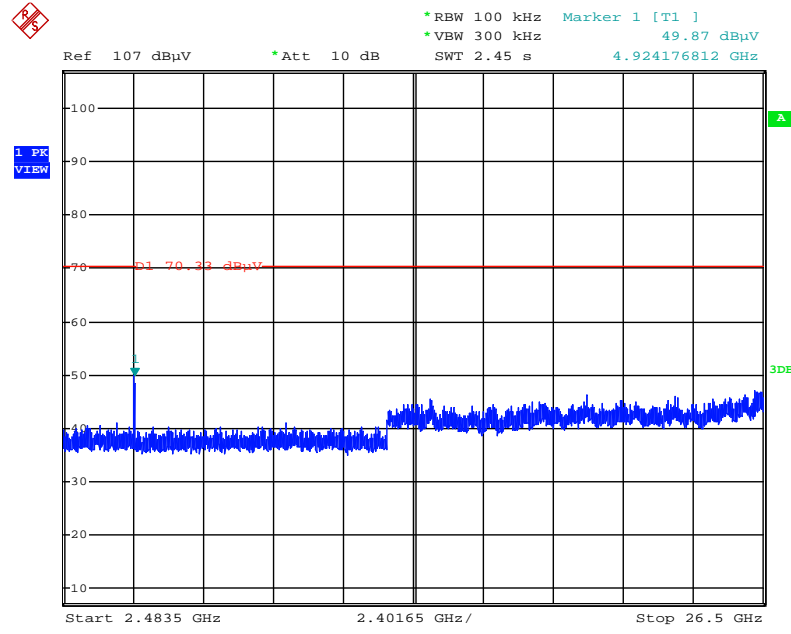
Date: 11.AUG.2016 04:31:40

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



Date: 11.AUG.2016 04:33:17

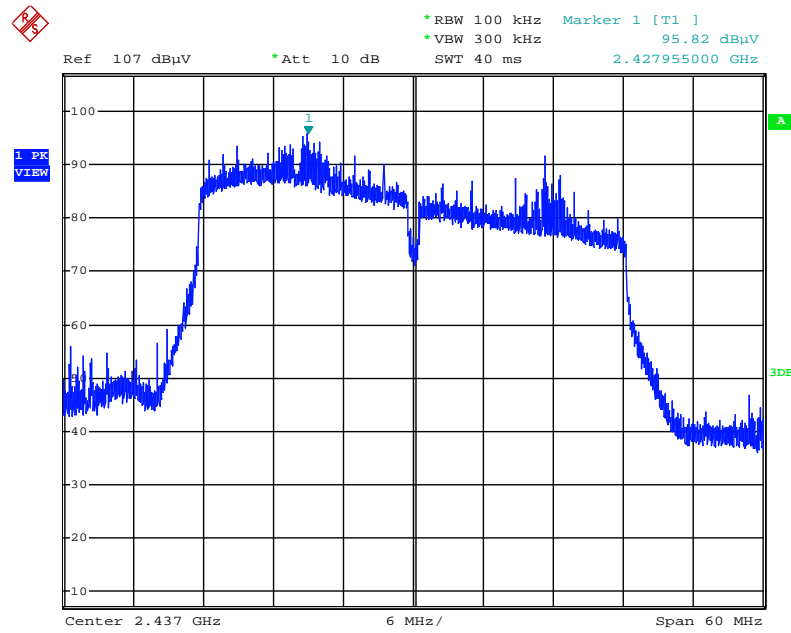
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



Date: 11.AUG.2016 04:32:48

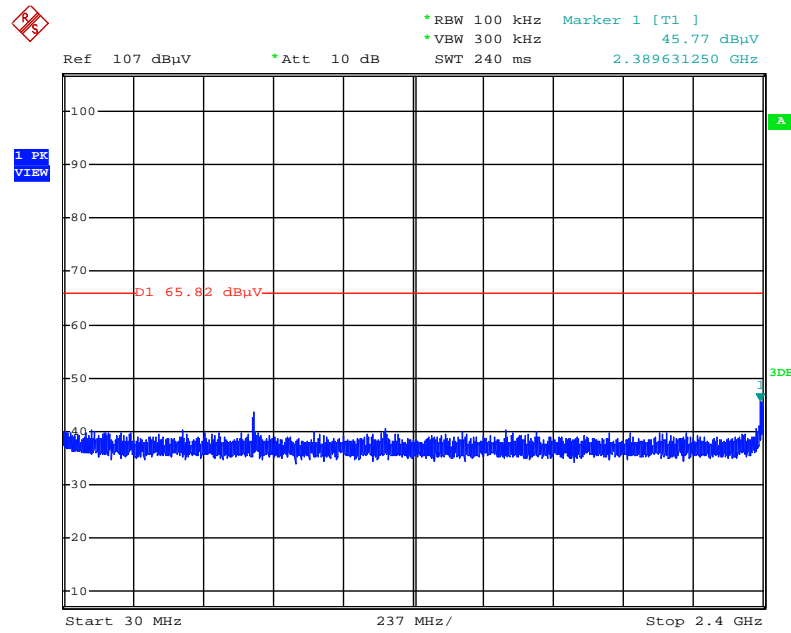


Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



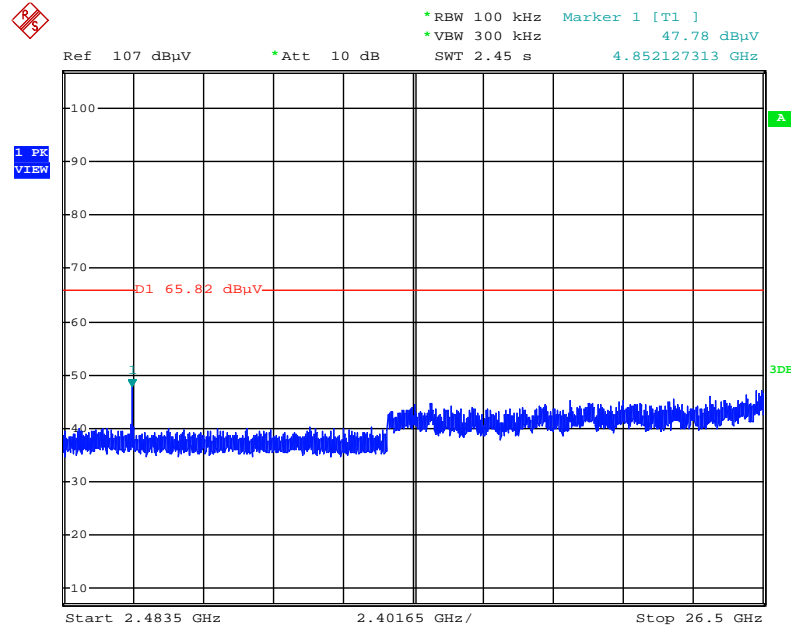
Date: 11.AUG.2016 04:34:42

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



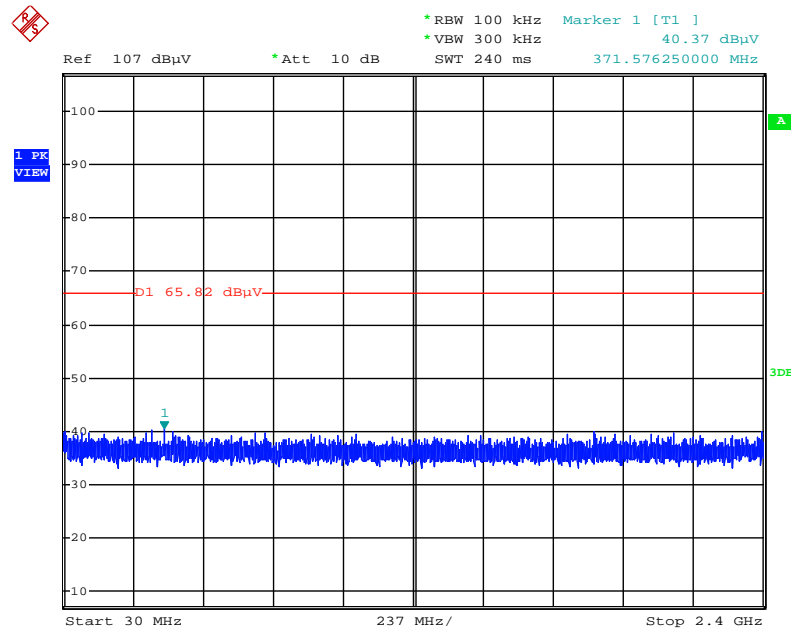
Date: 11.AUG.2016 04:40:01

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2483.5MHz~26500MHz (down 30dBc)



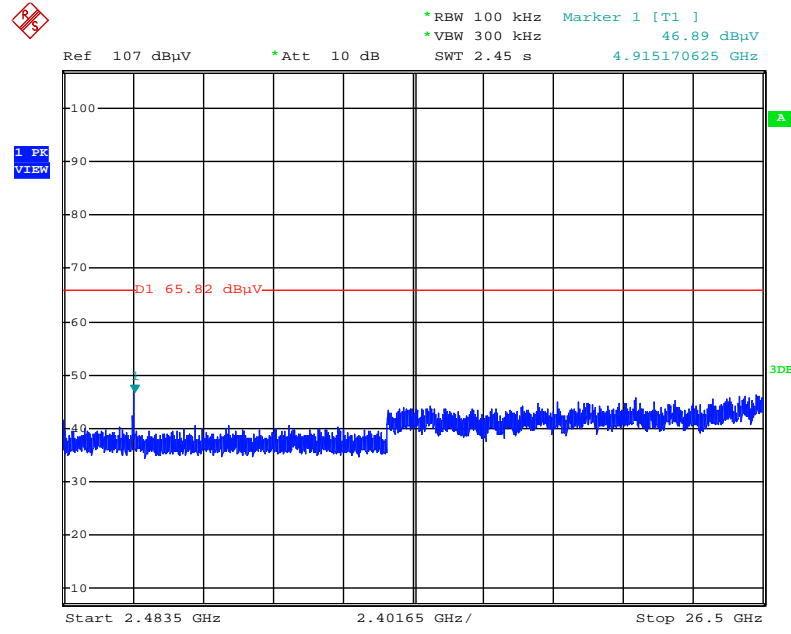
Date: 11.AUG.2016 04:40:35

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)

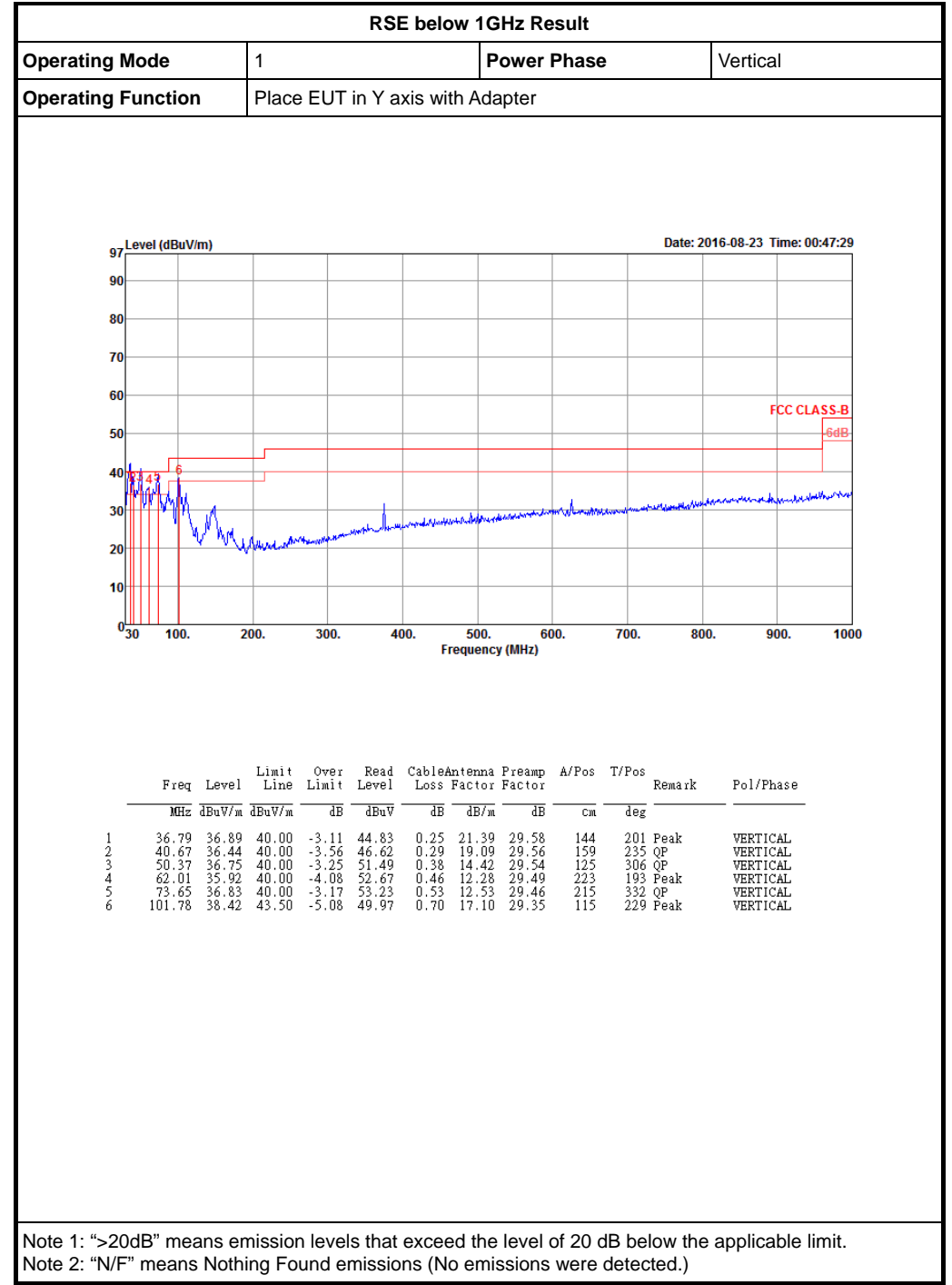
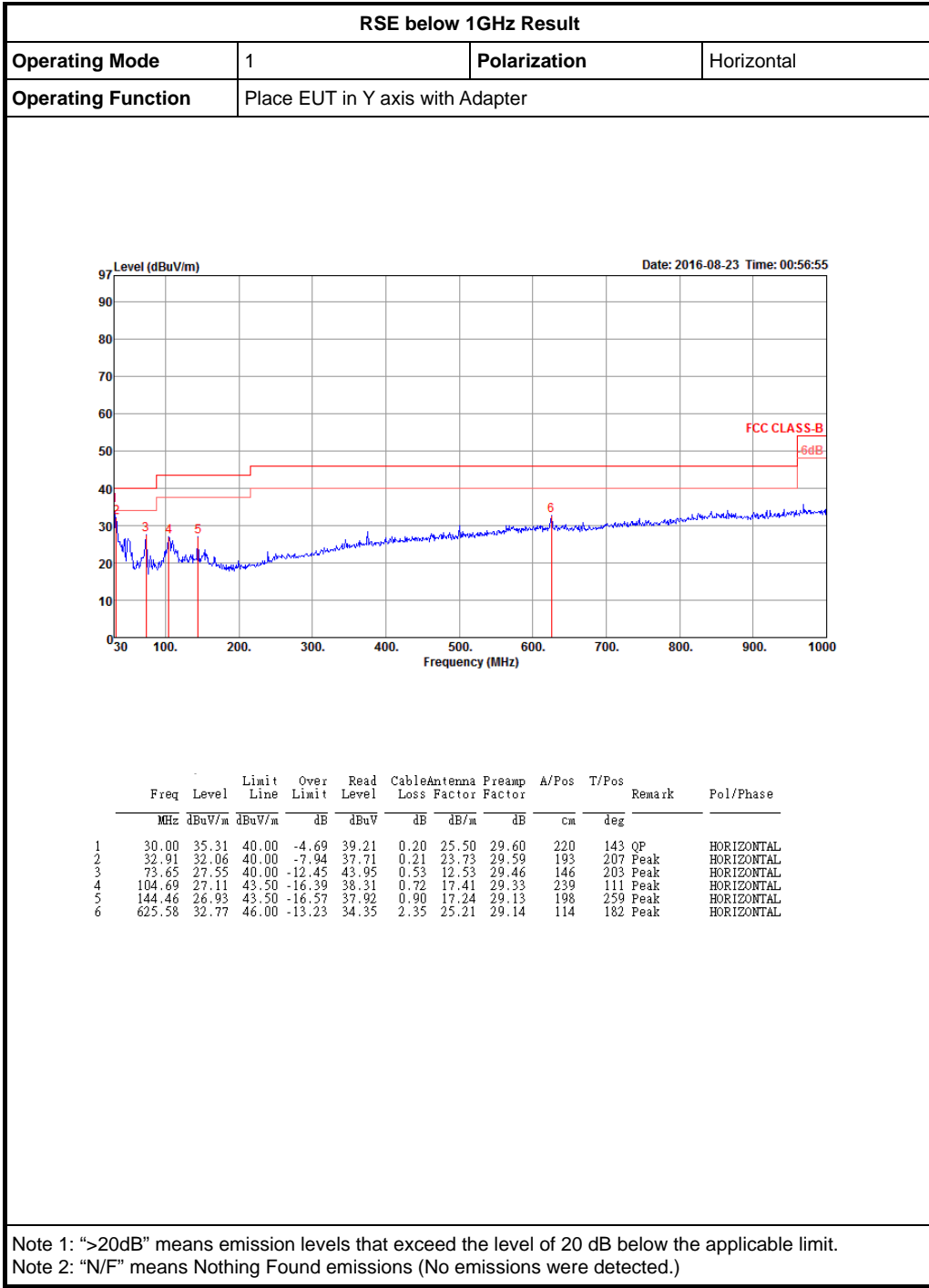


Date: 11.AUG.2016 04:39:09

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2483.5MHz~26500MHz (down 30dBc)



Date: 11.AUG.2016 04:38:41





<For Non-Beamforming Mode>

**Radiated Emissions (1GHz~10<sup>th</sup> Harmonic)**

<b>Configurations</b>	IEEE 802.11b CH 1 / Chain 1+Chain 2+Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4823.92	52.07	74.00	-21.93	47.02	9.12	32.58	36.65	257	77 Peak	HORIZONTAL
2	4824.01	47.16	54.00	-6.84	42.11	9.12	32.58	36.65	257	77 Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4824.03	44.17	54.00	-9.83	39.12	9.12	32.58	36.65	102	162 Average	VERTICAL
2	4824.05	50.74	74.00	-23.26	45.69	9.12	32.58	36.65	102	162 Peak	VERTICAL

<b>Configurations</b>	IEEE 802.11b CH 6 / Chain 1+Chain 2+Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4873.97	47.41	54.00	-6.59	42.22	9.16	32.68	36.65	100	196 Average	HORIZONTAL
2	4874.02	52.76	74.00	-21.24	47.57	9.16	32.68	36.65	100	196 Peak	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4874.01	51.13	54.00	-2.87	45.94	9.16	32.68	36.65	306	124 Average	VERTICAL
2	4874.08	55.34	74.00	-18.66	50.15	9.16	32.68	36.65	306	124 Peak	VERTICAL

<b>Configurations</b>	IEEE 802.11b CH 11 / Chain 1+Chain 2+Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4924.01	46.73	54.00	-7.27	41.40	9.19	32.78	36.64	261	46 Average	HORIZONTAL
2	4924.08	52.02	74.00	-21.98	46.69	9.19	32.78	36.64	261	46 Peak	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4923.92	51.53	74.00	-22.47	46.20	9.19	32.78	36.64	100	281 Peak	VERTICAL
2	4923.98	47.56	54.00	-6.44	42.23	9.19	32.78	36.64	100	281 Average	VERTICAL



<b>Configurations</b>	IEEE 802.11g CH 1 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4817.80	46.45	74.00	-27.55	41.40	9.12	32.58	36.65	149	187	Peak	HORIZONTAL
2	4820.48	33.53	54.00	-20.47	28.48	9.12	32.58	36.65	149	187	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4817.12	46.03	74.00	-27.97	40.98	9.12	32.58	36.65	128	263	Peak	VERTICAL
2	4817.36	33.85	54.00	-20.15	28.80	9.12	32.58	36.65	128	263	Average	VERTICAL

<b>Configurations</b>	IEEE 802.11g CH 6 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4868.60	51.93	74.00	-22.07	46.74	9.16	32.68	36.65	100	332	Peak	HORIZONTAL
2	4877.88	38.72	54.00	-15.28	33.53	9.16	32.68	36.65	100	332	Average	HORIZONTAL
3	7306.44	59.43	74.00	-14.57	47.59	10.70	37.24	36.10	100	203	Peak	HORIZONTAL
4	7315.56	46.39	54.00	-7.61	34.55	10.70	37.24	36.10	100	203	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4876.24	56.39	74.00	-17.61	51.20	9.16	32.68	36.65	103	274	Peak	VERTICAL
2	4877.08	41.36	54.00	-12.64	36.17	9.16	32.68	36.65	103	274	Average	VERTICAL
3	7316.36	60.12	74.00	-13.88	48.26	10.69	37.27	36.10	100	343	Peak	VERTICAL
4	7316.76	46.29	54.00	-7.71	34.43	10.69	37.27	36.10	100	343	Average	VERTICAL

<b>Configurations</b>	IEEE 802.11g CH 11 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4926.72	46.84	74.00	-27.16	41.51	9.19	32.78	36.64	150	138	Peak	HORIZONTAL
2	4929.56	34.68	54.00	-19.32	29.35	9.19	32.78	36.64	150	138	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4926.16	35.05	54.00	-18.95	29.72	9.19	32.78	36.64	130	178	Average	VERTICAL
2	4930.92	47.91	74.00	-26.09	42.58	9.19	32.78	36.64	130	178	Peak	VERTICAL



<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4814.88	33.30	54.00	-20.70	28.25	9.12	32.58	36.65	138	211 Average	HORIZONTAL
2	4825.64	46.37	74.00	-27.63	41.28	9.13	32.61	36.65	138	211 Peak	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4815.60	33.49	54.00	-20.51	28.44	9.12	32.58	36.65	121	145 Average	VERTICAL
2	4817.28	45.04	74.00	-28.96	39.99	9.12	32.58	36.65	121	145 Peak	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4866.12	36.65	54.00	-17.35	31.49	9.15	32.66	36.65	142	99 Average	HORIZONTAL
2	4872.80	48.84	74.00	-25.16	43.65	9.16	32.68	36.65	142	99 Peak	HORIZONTAL
3	7301.04	57.54	74.00	-16.46	45.70	10.70	37.24	36.10	100	179 Peak	HORIZONTAL
4	7320.04	44.66	54.00	-9.34	32.80	10.69	37.27	36.10	100	179 Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4875.28	49.83	74.00	-24.17	44.64	9.16	32.68	36.65	320	118 Peak	VERTICAL
2	4875.72	36.97	54.00	-17.03	31.78	9.16	32.68	36.65	320	118 Average	VERTICAL
3	7309.52	58.56	74.00	-15.44	46.72	10.70	37.24	36.10	100	289 Peak	VERTICAL
4	7310.60	45.96	54.00	-8.04	34.12	10.70	37.24	36.10	100	289 Average	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	7377.60	53.15	74.00	-20.85	41.23	10.67	37.33	36.08	197	174 Peak	HORIZONTAL
2	7386.48	40.41	54.00	-13.59	28.48	10.66	37.35	36.08	197	174 Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	7382.92	53.50	74.00	-20.50	41.57	10.66	37.35	36.08	220	250 Peak	VERTICAL
2	7395.48	40.72	54.00	-13.28	28.78	10.66	37.35	36.07	220	250 Average	VERTICAL



<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4856.16	46.37	74.00	-27.63	41.21	9.15	32.66	36.65	200	153	Peak	HORIZONTAL
2	4861.04	33.89	54.00	-20.11	28.73	9.15	32.66	36.65	200	153	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4852.16	45.58	74.00	-28.42	40.46	9.14	32.63	36.65	189	122	Peak	VERTICAL
2	4863.60	33.71	54.00	-20.29	28.55	9.15	32.66	36.65	189	122	Average	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	7320.04	39.98	54.00	-14.02	28.12	10.69	37.27	36.10	237	125	Average	HORIZONTAL
2	7328.12	52.99	74.00	-21.01	41.13	10.69	37.27	36.10	237	125	Peak	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	7325.80	52.97	74.00	-21.03	41.11	10.69	37.27	36.10	264	160	Peak	VERTICAL
2	7329.48	40.47	54.00	-13.53	28.61	10.69	37.27	36.10	264	160	Average	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	7342.32	41.30	54.00	-12.70	29.42	10.68	37.30	36.10	126	164	Average	HORIZONTAL
2	7345.36	53.36	74.00	-20.64	41.48	10.68	37.30	36.10	126	164	Peak	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	7342.40	41.17	54.00	-12.83	29.29	10.68	37.30	36.10	115	258	Average	VERTICAL
2	7359.92	53.36	74.00	-20.64	41.45	10.67	37.33	36.09	115	258	Peak	VERTICAL

Note:

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

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.





<For Beamforming Mode>

**Radiated Emissions (1GHz~10<sup>th</sup> Harmonic)**

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4822.72	48.26	74.00	-25.74	43.21	9.12	32.58	36.65	155	204	Peak	HORIZONTAL
2	4823.92	38.10	54.00	-15.90	33.05	9.12	32.58	36.65	155	204	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4824.04	41.51	54.00	-12.49	36.46	9.12	32.58	36.65	180	354	Average	VERTICAL
2	4828.36	48.36	74.00	-25.64	43.27	9.13	32.61	36.65	180	354	Peak	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4869.96	55.55	74.00	-18.45	50.36	9.16	32.68	36.65	264	162	Peak	HORIZONTAL
2	4873.96	52.64	54.00	-1.36	47.45	9.16	32.68	36.65	264	162	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.08	51.11	74.00	-22.89	45.92	9.16	32.68	36.65	230	17	Peak	VERTICAL
2	4874.08	47.00	54.00	-7.00	41.81	9.16	32.68	36.65	230	17	Average	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4876.08	48.09	74.00	-25.91	42.90	9.16	32.68	36.65	133	255	Peak	HORIZONTAL
2	4881.12	34.57	54.00	-19.43	29.34	9.17	32.71	36.65	133	255	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4869.72	47.43	74.00	-26.57	42.24	9.16	32.68	36.65	155	137	Peak	VERTICAL
2	4882.36	34.70	54.00	-19.30	29.47	9.17	32.71	36.65	155	137	Average	VERTICAL



<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4834.04	35.64	54.00	-18.36	30.55	9.13	32.61	36.65	171	137	Average	HORIZONTAL
2	4835.84	48.53	74.00	-25.47	43.44	9.13	32.61	36.65	171	137	Peak	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4834.88	35.08	54.00	-18.92	29.99	9.13	32.61	36.65	201	194	Average	VERTICAL
2	4844.52	48.30	74.00	-25.70	43.18	9.14	32.63	36.65	201	194	Peak	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4875.68	47.72	74.00	-26.28	42.53	9.16	32.68	36.65	130	244	Peak	HORIZONTAL
2	4883.24	34.69	54.00	-19.31	29.46	9.17	32.71	36.65	130	244	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4876.92	47.26	74.00	-26.74	42.07	9.16	32.68	36.65	172	107	Peak	VERTICAL
2	4880.48	34.76	54.00	-19.24	29.57	9.16	32.68	36.65	172	107	Average	VERTICAL

<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3
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**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4895.28	35.57	54.00	-18.43	30.32	9.17	32.73	36.65	179	97	Average	HORIZONTAL
2	4896.28	49.52	74.00	-24.48	44.27	9.17	32.73	36.65	179	97	Peak	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4895.72	48.86	74.00	-25.14	43.61	9.17	32.73	36.65	156	242	Peak	VERTICAL
2	4896.48	35.38	54.00	-18.62	30.13	9.17	32.73	36.65	156	242	Average	VERTICAL

Note:

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

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

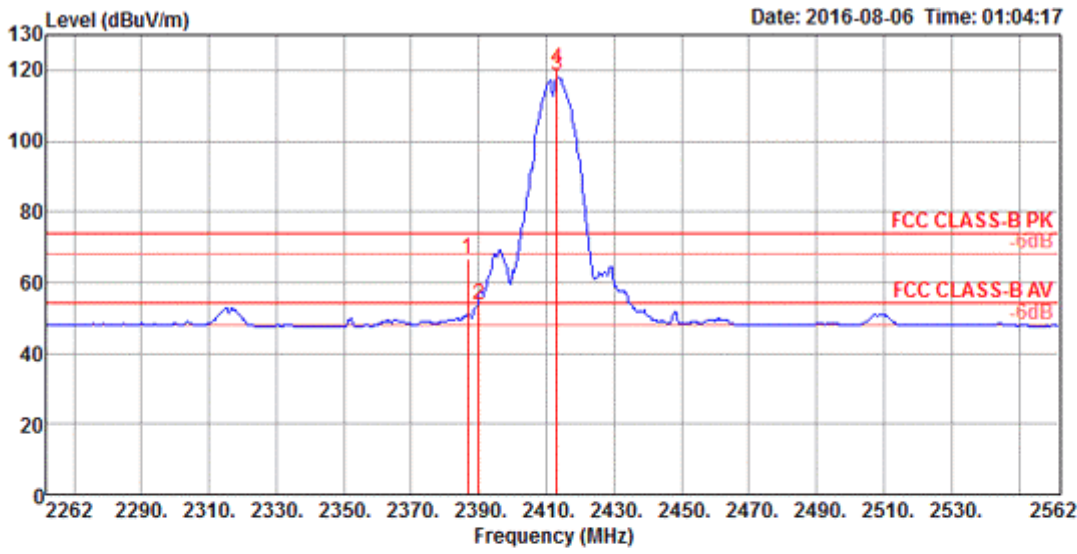


**Band Edge Emissions**

<For Non-Beamforming Mode>

<b>Configurations</b>	IEEE 802.11b CH 1, 6, 11 / Chain 1+Chain 2+Chain 3
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**Channel 1**

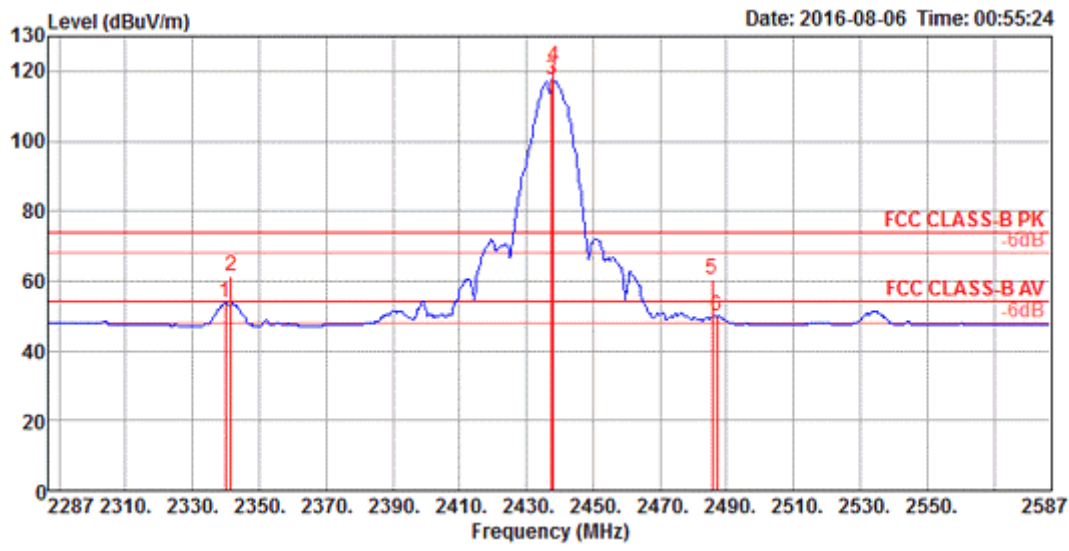


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2386.80	66.46	74.00	-7.54	31.99	6.57	27.90	0.00	296	182	Peak	VERTICAL
2	2390.00	53.61	54.00	-0.39	19.14	6.57	27.90	0.00	296	182	Average	VERTICAL
3	2413.20	118.37			83.86	6.63	27.88	0.00	296	182	Average	VERTICAL
4	2413.20	120.57			86.06	6.63	27.88	0.00	296	182	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.



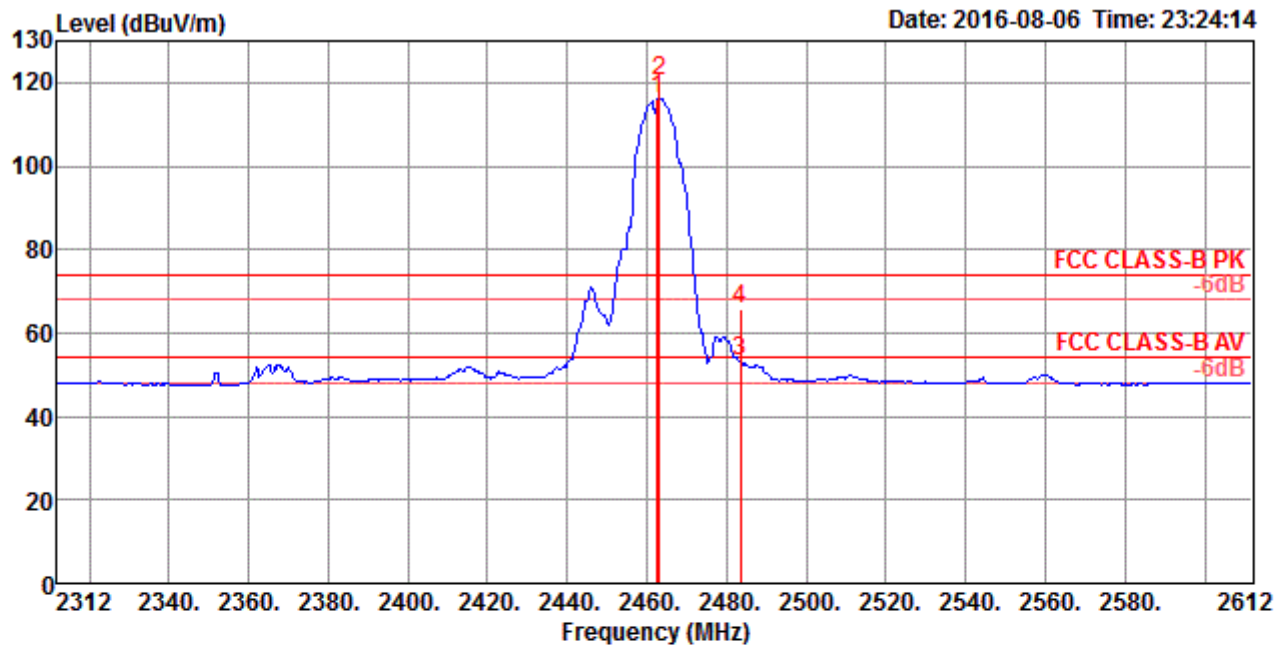
Channel 6



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBUV/m	dBUV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2339.80	53.82	54.00	-0.18	19.42	6.45	27.95	0.00	285	192 Average	VERTICAL
2	2341.60	61.59	74.00	-12.41	27.19	6.45	27.95	0.00	285	192 Peak	VERTICAL
3	2437.60	117.36			82.81	6.69	27.86	0.00	285	192 Average	VERTICAL
4	2438.20	121.41			86.86	6.69	27.86	0.00	285	192 Peak	VERTICAL
5	2485.60	60.61	74.00	-13.39	25.99	6.81	27.81	0.00	285	192 Peak	VERTICAL
6	2487.10	49.99	54.00	-4.01	15.37	6.81	27.81	0.00	285	192 Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11



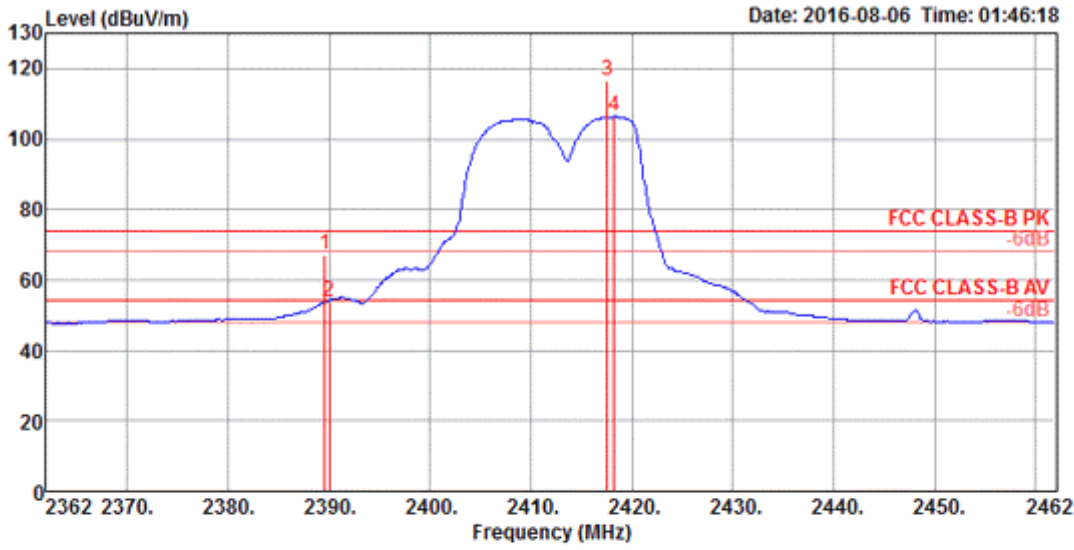
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2462.60	116.32			81.73	6.76	27.83	0.00	283	193	Average	VERTICAL
2	2463.20	120.29			85.70	6.76	27.83	0.00	283	193	Peak	VERTICAL
3	2483.50	53.39	54.00	-0.61	18.77	6.81	27.81	0.00	283	193	Average	VERTICAL
4	2483.50	65.89	74.00	-8.11	31.27	6.81	27.81	0.00	283	193	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.



<b>Configurations</b>	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
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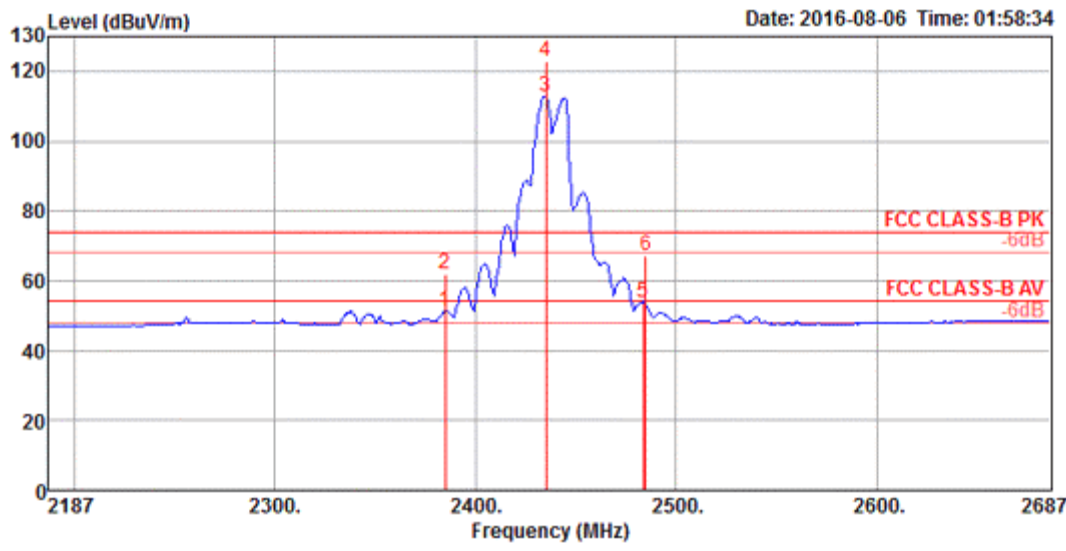
Channel 1



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.60	67.24	74.00	-6.76	32.77	6.57	27.90	0.00	312	165	Peak	VERTICAL
2	2390.00	53.95	54.00	-0.05	19.48	6.57	27.90	0.00	312	165	Average	VERTICAL
3	2417.60	116.80			82.29	6.63	27.88	0.00	312	165	Peak	VERTICAL
4	2418.20	106.28			71.76	6.65	27.87	0.00	312	165	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

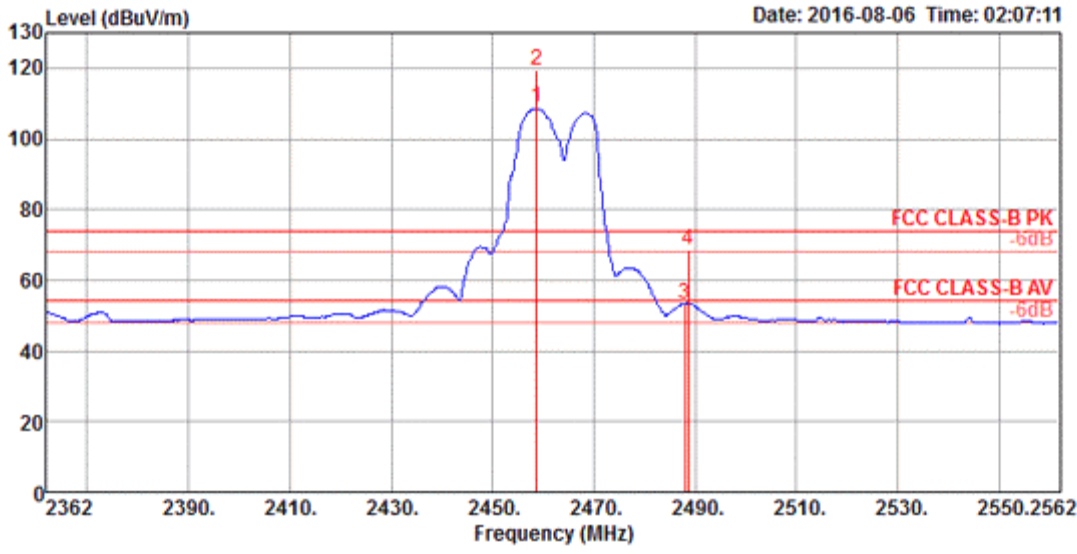


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2385.00	51.23	54.00	-2.77	16.76	6.57	27.90	0.00	316	190	Average	VERTICAL
2	2385.00	61.95	74.00	-12.05	27.48	6.57	27.90	0.00	316	190	Peak	VERTICAL
3	2435.00	112.90			78.35	6.69	27.86	0.00	316	190	Average	VERTICAL
4	2435.00	122.97			88.42	6.69	27.86	0.00	316	190	Peak	VERTICAL
5	2483.50	53.64	54.00	-0.36	19.02	6.81	27.81	0.00	316	190	Average	VERTICAL
6	2485.00	67.38	74.00	-6.62	32.76	6.81	27.81	0.00	316	190	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.



Channel 11



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2458.80	108.83			74.25	6.74	27.84	0.00	320	152 Average	VERTICAL
2	2458.80	119.38			84.80	6.74	27.84	0.00	320	152 Peak	VERTICAL
3	2488.00	53.38	54.00	-0.62	18.76	6.81	27.81	0.00	320	152 Average	VERTICAL
4	2488.80	68.55	74.00	-5.45	33.93	6.81	27.81	0.00	320	152 Peak	VERTICAL

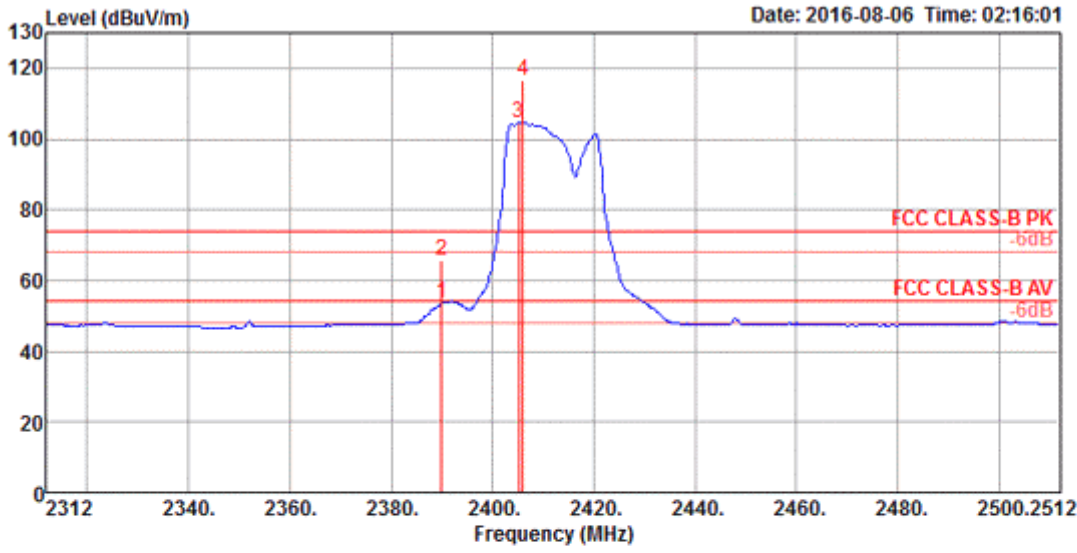
Item 1, 2 are the fundamental frequency at 2462 MHz.





<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
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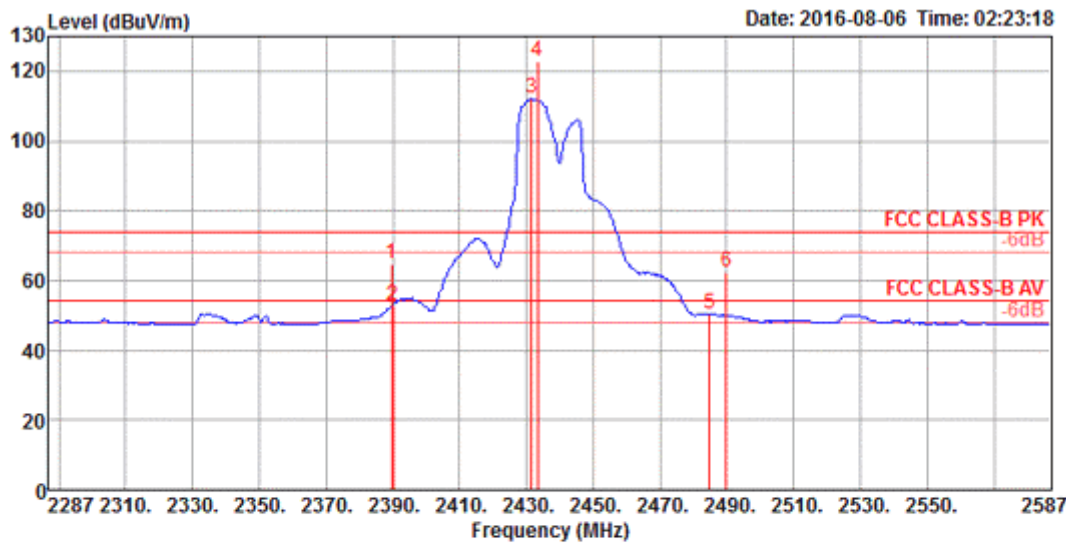
Channel 1



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2390.00	53.58	54.00	-0.42	19.11	6.57	27.90	0.00	306	156 Average	VERTICAL
2	2390.00	65.55	74.00	-8.45	31.08	6.57	27.90	0.00	306	156 Peak	VERTICAL
3	2405.20	104.60			70.10	6.62	27.88	0.00	306	156 Average	VERTICAL
4	2406.00	116.64			82.14	6.62	27.88	0.00	306	156 Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

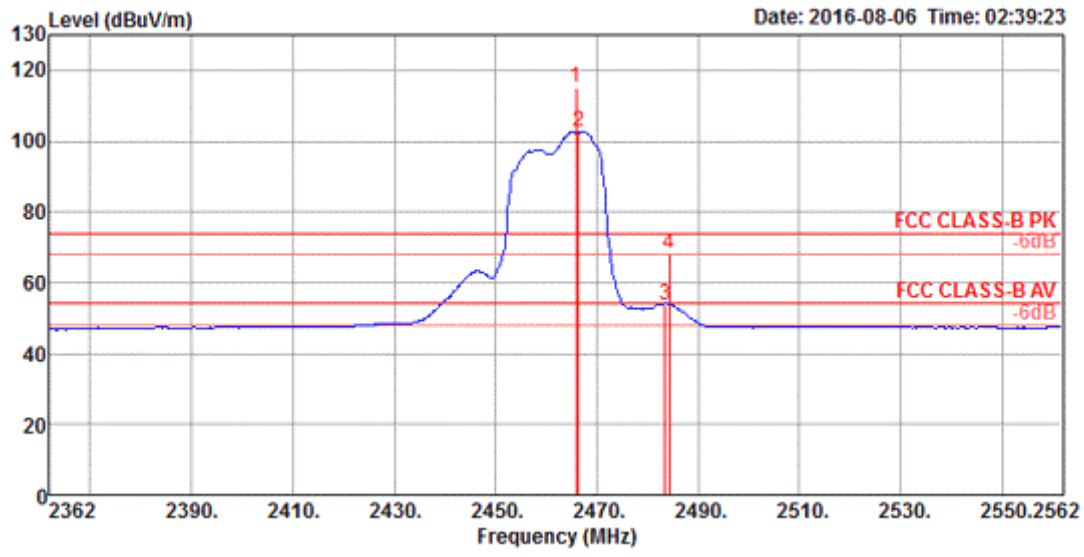


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2389.60	64.70	74.00	-9.30	30.23	6.57	27.90	0.00	320	191 Peak	VERTICAL
2	2390.00	52.97	54.00	-1.03	18.50	6.57	27.90	0.00	320	191 Average	VERTICAL
3	2431.60	112.03			77.50	6.67	27.86	0.00	320	191 Average	VERTICAL
4	2433.40	122.96			88.41	6.69	27.86	0.00	320	191 Peak	VERTICAL
5	2485.00	50.35	54.00	-3.65	15.73	6.81	27.81	0.00	320	191 Average	VERTICAL
6	2489.80	62.13	74.00	-11.87	27.49	6.83	27.81	0.00	320	191 Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.



Channel 11



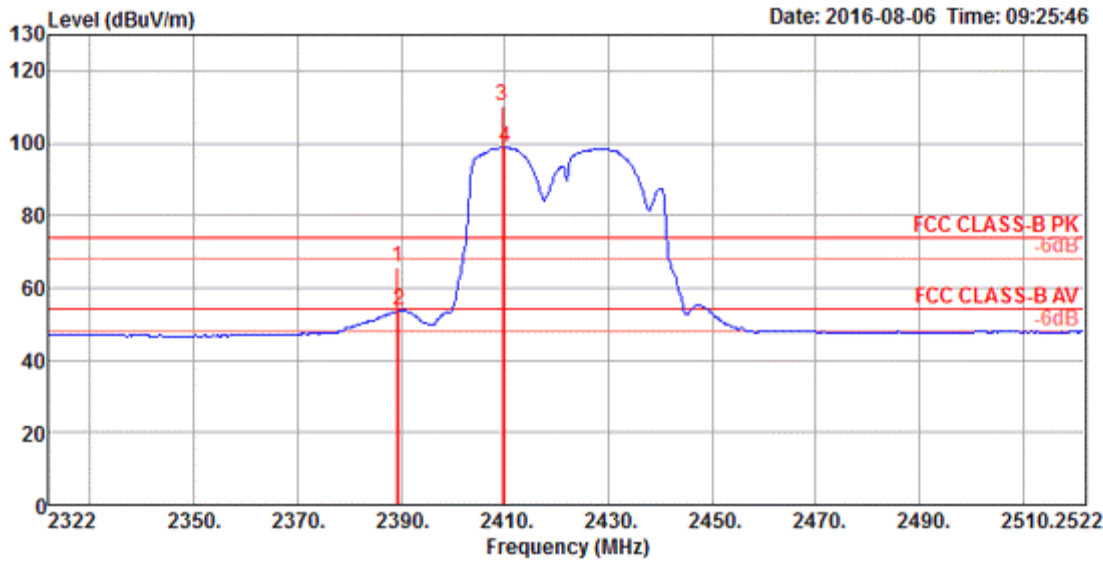
Item	Freq MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Cable Loss dB	Antenna Factor dB/m	Preamp Factor dB	A/Pos cm	T/Pos deg	Remark	Pol/Phase
1	2466.00	114.97			80.38	6.76	27.83	0.00	249	68	Peak	HORIZONTAL
2	2466.40	102.78			68.19	6.76	27.83	0.00	249	68	Average	HORIZONTAL
3	2483.50	53.88	54.00	-0.12	19.26	6.81	27.81	0.00	249	68	Average	HORIZONTAL
4	2484.40	67.97	74.00	-6.03	33.35	6.81	27.81	0.00	249	68	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.



<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
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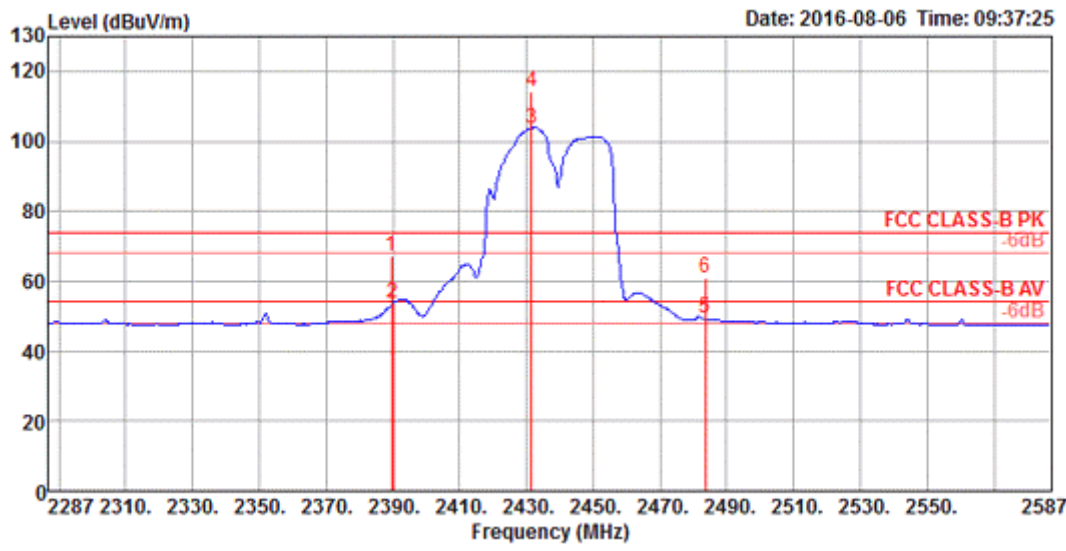
Channel 3



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2389.20	65.77	74.00	-8.23	31.30	6.57	27.90	0.00	277	356 Peak	VERTICAL
2	2389.60	53.72	54.00	-0.28	19.25	6.57	27.90	0.00	277	356 Average	VERTICAL
3	2409.60	110.51			76.01	6.62	27.88	0.00	277	356 Peak	VERTICAL
4	2410.00	98.98			64.48	6.62	27.88	0.00	277	356 Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

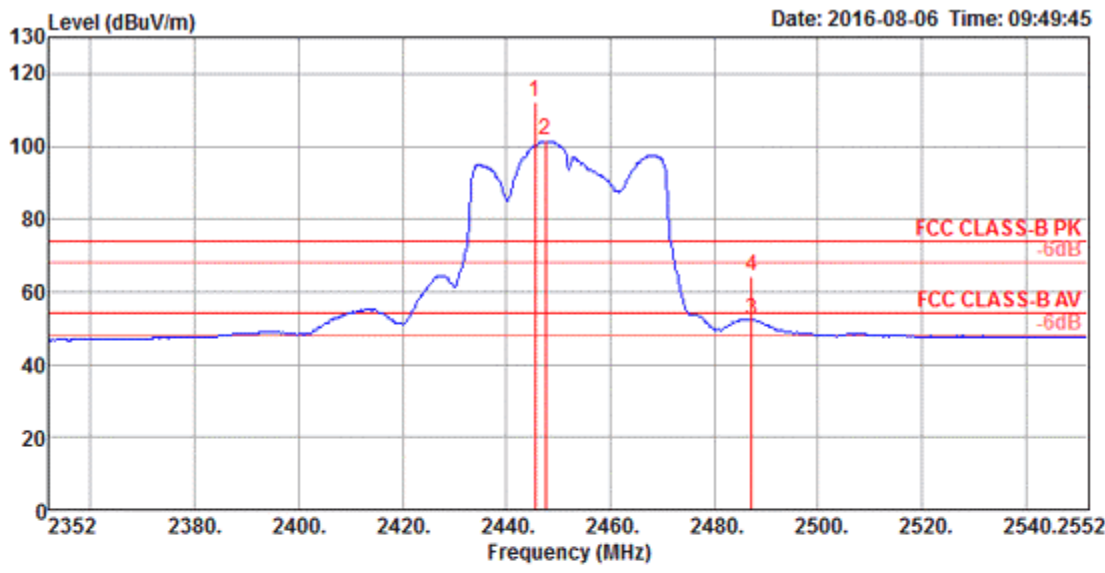
Channel 6



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2389.60	67.00	74.00	-7.00	32.53	6.57	27.90	0.00	320	184 Peak	VERTICAL
2	2390.00	53.78	54.00	-0.22	19.31	6.57	27.90	0.00	320	184 Average	VERTICAL
3	2431.60	103.78			69.25	6.67	27.86	0.00	320	184 Average	VERTICAL
4	2431.60	114.38			79.85	6.67	27.86	0.00	320	184 Peak	VERTICAL
5	2483.50	49.17	54.00	-4.83	14.55	6.81	27.81	0.00	320	184 Average	VERTICAL
6	2483.50	60.70	74.00	-13.30	26.08	6.81	27.81	0.00	320	184 Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 9



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2445.60	112.48			77.93	6.70	27.85	0.00	320	181 Peak	VERTICAL
2	2447.60	101.50			66.93	6.72	27.85	0.00	320	181 Average	VERTICAL
3	2487.20	52.38	54.00	-1.62	17.76	6.81	27.81	0.00	320	181 Average	VERTICAL
4	2487.20	64.41	74.00	-9.59	29.79	6.81	27.81	0.00	320	181 Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2452 MHz.

Note:

Emission level (dBUV/m) = 20 log Emission level (uV/m).

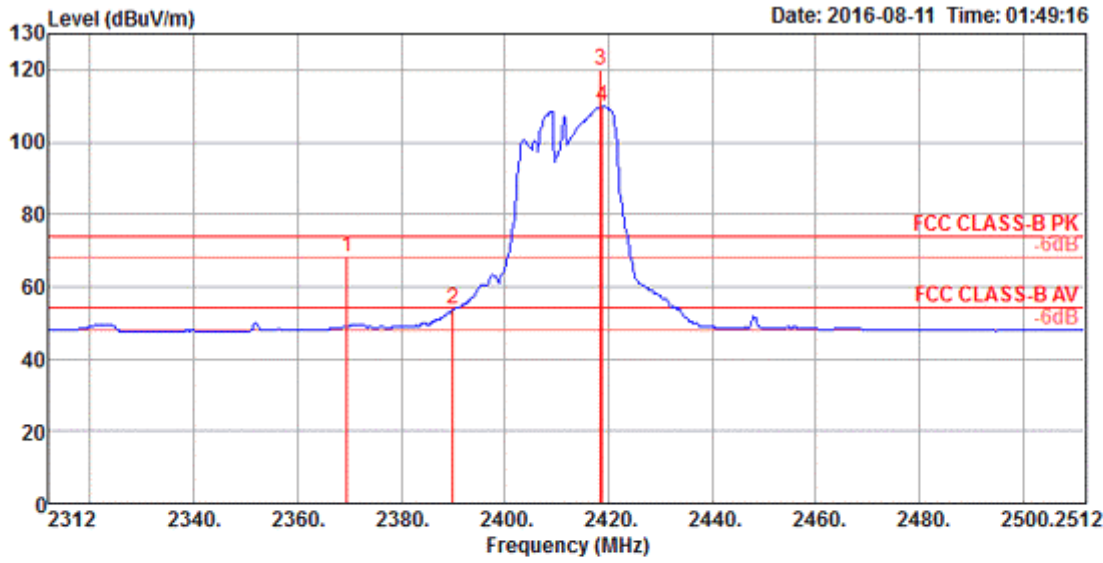
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.



<For Beamforming Mode>

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
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Channel 1

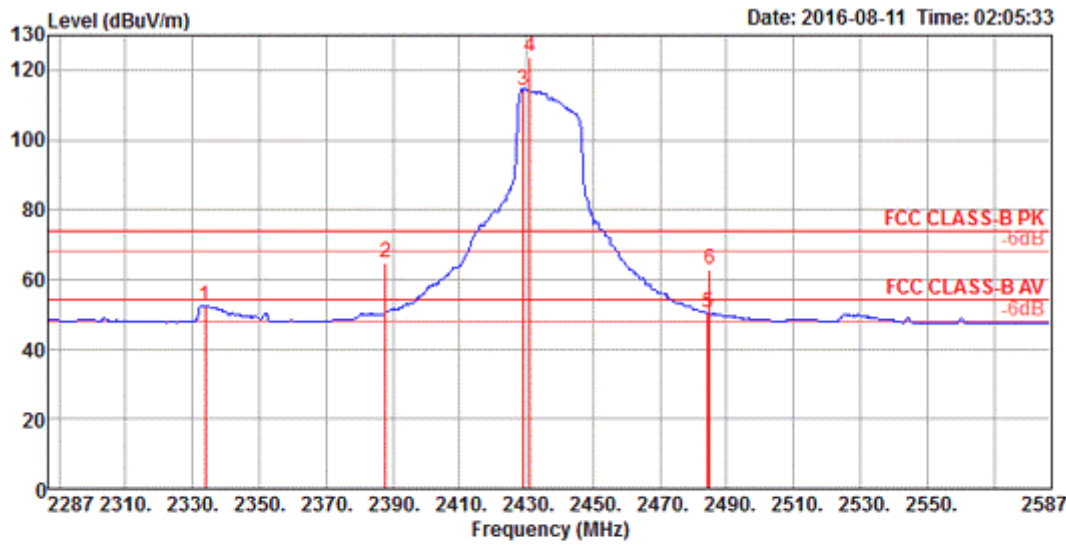


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2369.60	68.00	74.00	-6.00	33.93	6.15	27.92	0.00	225	177 Peak	VERTICAL
2	2390.00	53.80	54.00	-0.20	19.72	6.18	27.90	0.00	225	177 Average	VERTICAL
3	2418.40	119.71			85.60	6.24	27.87	0.00	225	177 Peak	VERTICAL
4	2418.80	109.75			75.64	6.24	27.87	0.00	225	177 Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.



Channel 6

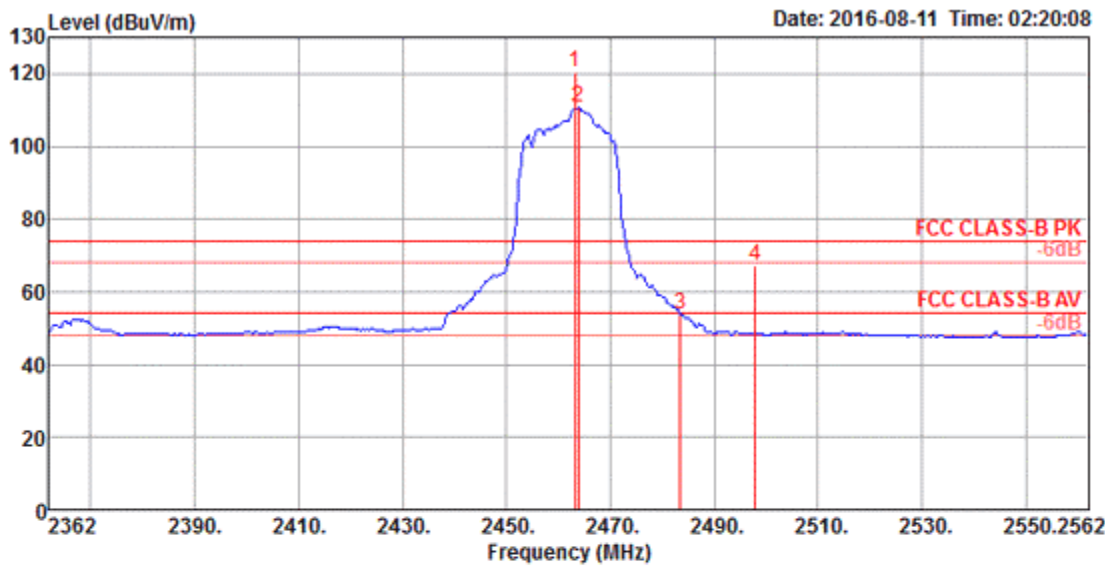


	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2333.80	52.23	54.00	-1.77	18.16	6.11	27.96	0.00	250	178	Average	VERTICAL
2	2387.80	64.85	74.00	-9.15	30.77	6.18	27.90	0.00	250	178	Peak	VERTICAL
3	2429.20	114.36			80.25	6.25	27.86	0.00	250	178	Average	VERTICAL
4	2431.00	123.84			89.73	6.25	27.86	0.00	250	178	Peak	VERTICAL
5	2484.40	50.32	54.00	-3.68	16.16	6.35	27.81	0.00	250	178	Average	VERTICAL
6	2485.00	62.91	74.00	-11.09	28.75	6.35	27.81	0.00	250	178	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.



Channel 11



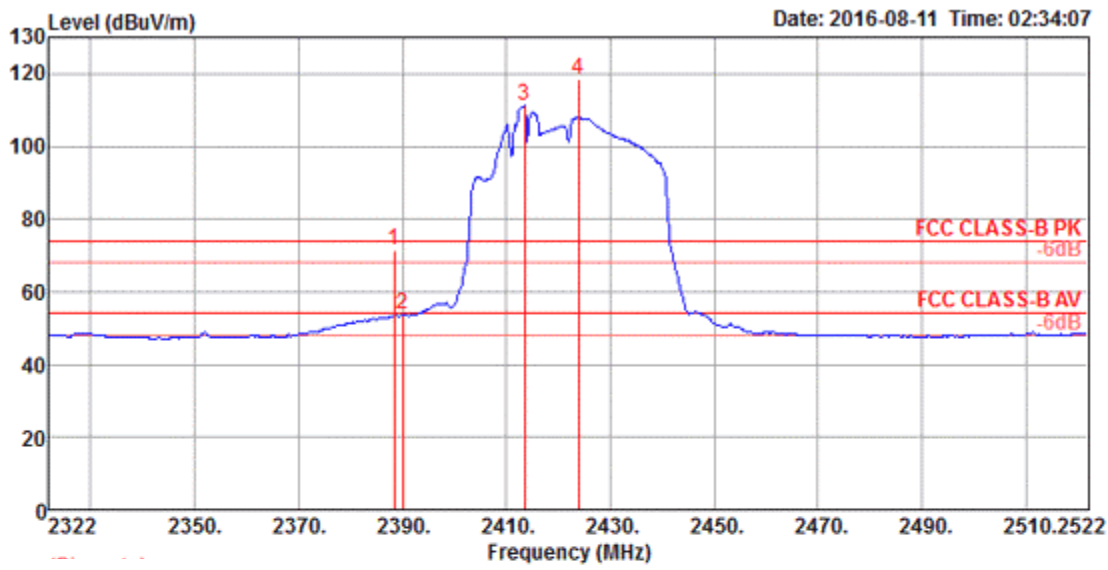
	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2463.20	120.47			86.33	6.31	27.83	0.00	202	185 Peak	VERTICAL
2	2464.00	110.61			76.47	6.31	27.83	0.00	202	185 Average	VERTICAL
3	2483.50	53.91	54.00	-0.09	19.75	6.35	27.81	0.00	202	185 Average	VERTICAL
4	2498.00	67.36	74.00	-6.64	33.18	6.38	27.80	0.00	202	185 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.



<b>Configurations</b>	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
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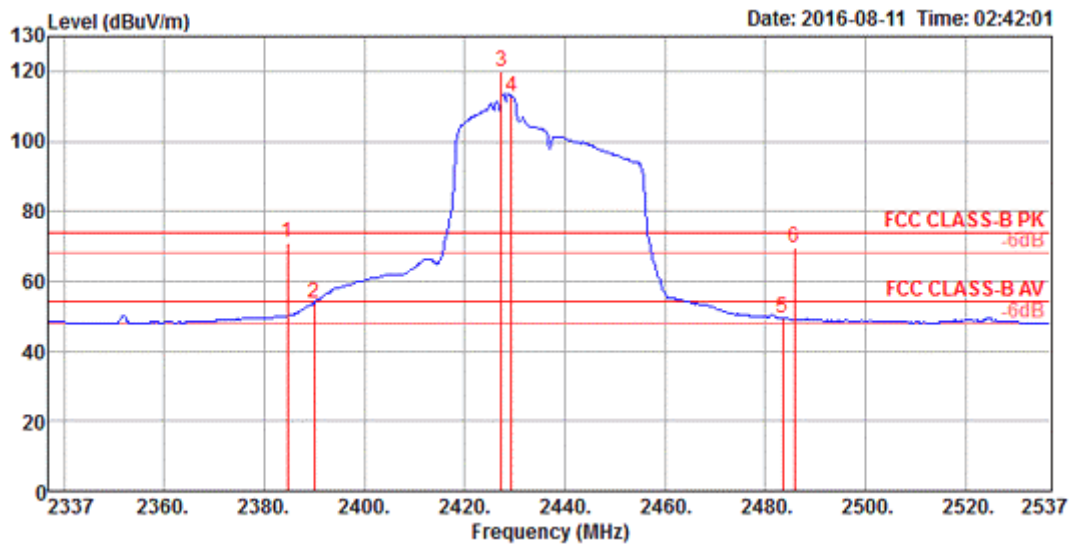
Channel 3



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2388.40	71.62	74.00	-2.38	37.54	6.18	27.90	0.00	300	169 Peak	VERTICAL
2	2390.00	53.77	54.00	-0.23	19.69	6.18	27.90	0.00	300	169 Average	VERTICAL
3	2413.60	111.12			77.02	6.22	27.88	0.00	300	169 Average	VERTICAL
4	2424.00	118.28			84.17	6.24	27.87	0.00	300	169 Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

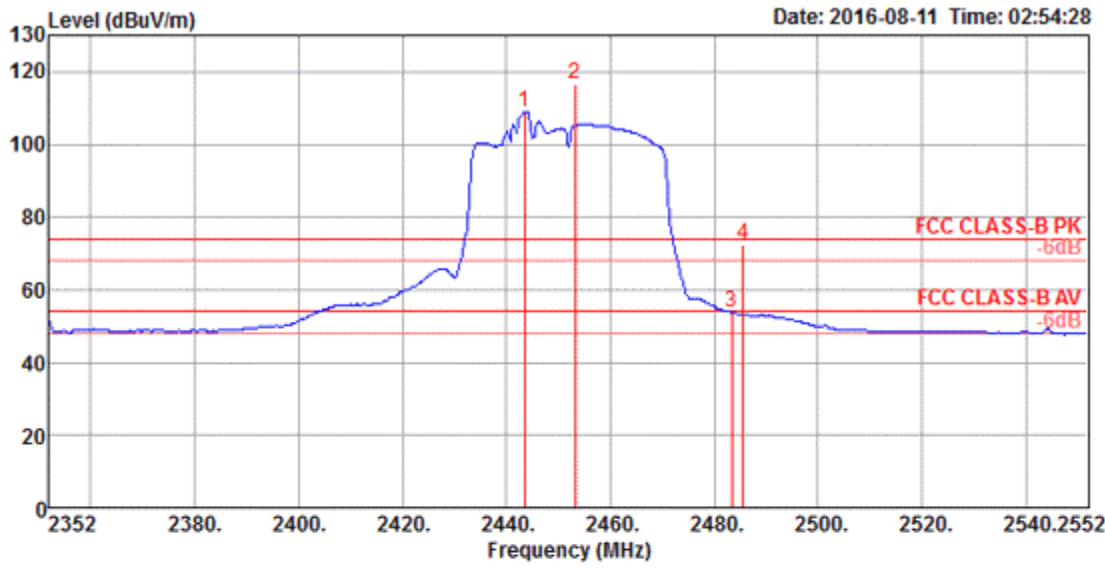
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2384.60	71.19	74.00	-2.81	37.11	6.18	27.90	0.00	246	172 Peak	VERTICAL
2	2390.00	53.95	54.00	-0.05	19.87	6.18	27.90	0.00	246	172 Average	VERTICAL
3	2427.40	120.03			85.92	6.25	27.86	0.00	246	172 Peak	VERTICAL
4	2429.40	112.85			78.74	6.25	27.86	0.00	246	172 Average	VERTICAL
5	2483.50	49.25	54.00	-4.75	15.09	6.35	27.81	0.00	246	172 Average	VERTICAL
6	2485.80	69.58	74.00	-4.42	35.42	6.35	27.81	0.00	246	172 Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 9



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2443.60	108.94			74.81	6.28	27.85	0.00	313	148 Average	VERTICAL
2	2453.20	116.69			82.55	6.29	27.85	0.00	313	148 Peak	VERTICAL
3	2483.50	53.61	54.00	-0.39	19.45	6.35	27.81	0.00	313	148 Average	VERTICAL
4	2485.60	72.21	74.00	-1.79	38.05	6.35	27.81	0.00	313	148 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.