FCC RADIO TEST REPORT

FCC ID	:	QZEMPWAPUS
Equipment	:	Rocket
Brand Name	:	Juniper
Model Name	:	SRX-MP-WLAN-US, SRX-MP-WLAN-IL, SRX-MP-WLAN-WW
Applicant	:	Juniper Networks, Inc. 1133 Innovation Way Sunnyvale CA United States 94089 USA
Manufacturer	:	Accton Technology Corporation No. 1, Creation Rd. III, Science-based Industrial Park, Hsinchu, Taiwan, R.O.C.
Standard	:	47 CFR FCC Part 15.247

The product was received on Mar. 27, 2019, and testing was started from Mar. 28, 2019 and completed on Jul. 30, 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: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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Appendix H. Test Photos

Photographs of EUT v01

History of this test report

Report No.	Version	Description	Issued Date
FR932719-01AA	01	Initial issue of report	Aug. 12, 2019
FR932719-01AA	02	Changing the Applicant address to “1133 Innovation Way Sunnyvale CA United States 94089 USA” from “1194 North Mathilda Avenue Sunnyvale, California 94089-1206 USA”	Sep. 02, 2019

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-
Note: Reference to Sporton Project No.: 932719.				

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:
1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer. 2. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen
Report Producer: Sandy Chuang

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	2TX
2.4-2.4835GHz	802.11g	20	2TX
2.4-2.4835GHz	802.11n HT20	20	2TX
2.4-2.4835GHz	802.11n HT40	40	2TX

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.
- 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.	Port	Brand	Model Name	Type	Connector	Antenna Gain (dBi)		Loss of External Cable (dB)		True Gain (dBi)	
						2.4G	5G	2.4G	5G	2.4G	5G
1	1	MAG. LAYERS	EDA-1713-25G R2-A3	Dipole	Reversed-SMA	5.5	5.5	0.74	1.18	4.76	4.32
2	2	MAG. LAYERS	EDA-1713-25G R2-A3	Dipole	Reversed-SMA	5.5	5.5	0.74	1.18	4.76	4.32

Note 1: The above information was declared by manufacturer.

Note 2: The EUT has two antennas. (2TX, 2RX)

Port 1 and Port 2 could transmit/receive simultaneously.

Note 3: There are two modes of EUT for Radiated and RF Conducted above 1GHz tests, one is “EUT + Antenna cable + Antenna”, the other is “EUT + Antenna”.

Only the higher gain mode “EUT + Antenna” was tested and recorded in the report.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.994	0.026	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.963	0.164	2.075m	1k
802.11n HT20	0.984	0.07	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11n HT40	0.968	0.141	2.445m	1k

1.1.4 EUT Operational Condition

EUT Power Type	From host system			
Beamforming Function	☐	With beamforming	☒	Without beamforming
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	QCA Radio Control Toolkit v3.0.233.0			

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

The EUT has three model names which are identical to each other in all aspects except for the following table:

Model Name	Description
SRX-MP-WLAN-US	There is nothing different of three models, just for different marketing use.
SRX-MP-WLAN-IL	
SRX-MP-WLAN-WW	

From the above models, model: SRX-MP-WLAN-US was selected as representative model for the test and its data was recorded in this report.

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 v05r02
- FCC KDB 662911 D01 v02r01

1.3 Testing Location Information

Testing Location							
☐	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
☒	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	Ekko Hsieh	21~23℃ / 54~56%	Ap r. 06, 2019~May 21, 2019
Radiated (others test)	03CH01-CB	Ekko Hsieh	22~24℃ / 47~64%	Mar. 28, 2019 ~May 13, 2019
Radiated (co-location)	03CH01-CB	Ekko Hsieh	22~24℃ / 47~64%	Jul. 30, 2019
AC Conduction	CO01-CB	Ryo Fan	21.4~22.3℃ / 56~59%	Apr. 18, 2019

Test site Designation No. TW0006 with FCC.
Test site registered number IC 4086B 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)	2.0 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%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74×10^{-8}	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
802.11b_Nss1,(1Mbps)_2TX	-
2412MHz	19.5
2437MHz	20
2462MHz	18
802.11g_Nss1,(6Mbps)_2TX	-
2412MHz	15.5
2417MHz	18
2437MHz	19
2457MHz	16.5
2462MHz	13
802.11n HT20_Nss1,(MCS0)_2TX	-
2412MHz	15.5
2417MHz	18.5
2437MHz	19
2457MHz	16
2462MHz	13.5
802.11n HT40_Nss1,(MCS0)_2TX	-
2422MHz	13.5
2437MHz	14
2452MHz	12

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	EUT + Antenna cable + Antenna / WLAN 2.4GHz
2	EUT + Antenna cable + Antenna / WLAN 5GHz
3	EUT + Antenna / WLAN 2.4GHz
4	EUT + Antenna / WLAN 5GHz
For operating mode 3 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains.
Operating Mode	CTX
1	EUT + Antenna

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	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.
Operating Mode < 1GHz	CTX
The EUT was performed at X axis, Y axis and Z axis position for Emissions in Restricted Frequency Bands test, and the worst case was found at Z axis for Emissions in Restricted Frequency Bands above 1GHz test. So the measurement will follow this same test configuration.	
1	EUT in Z axis + Antenna cable + Antenna / WLAN 2.4GHz
2	EUT in Z axis + Antenna cable + Antenna / WLAN 5GHz
3	EUT in Z axis + Antenna / WLAN 2.4GHz
4	EUT in Z axis + Antenna / WLAN 5GHz
For operating mode 2 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
The EUT was performed at X axis, Y axis and Z axis position for Emissions in Restricted Frequency Bands test, and the worst case was found at Z axis. So the measurement will follow this same test configuration.	
1	EUT in Z axis + Antenna

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Radiated Emission Co-location
Test Condition	Radiated measurement
Operating Mode	Normal Link
1	WLAN 2.4GHz+ WLAN 5GHz
Refer to Appendix G for Radiated Emission Co-location.	

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

N/A

2.5 Support Equipment

For AC Conduction:

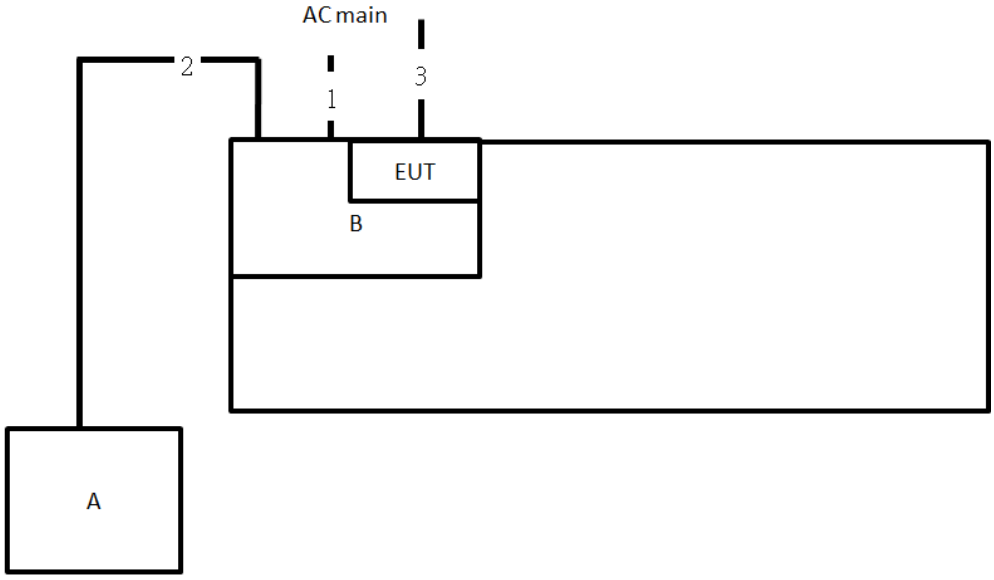
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	LAN NB	DELL	E6430	N/A
B	Fixture	Accton	142000001732A	N/A

For Radiated and RF Conducted:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB	DELL	E4300	N/A
B	Fixture	Accton	142000001732A	N/A

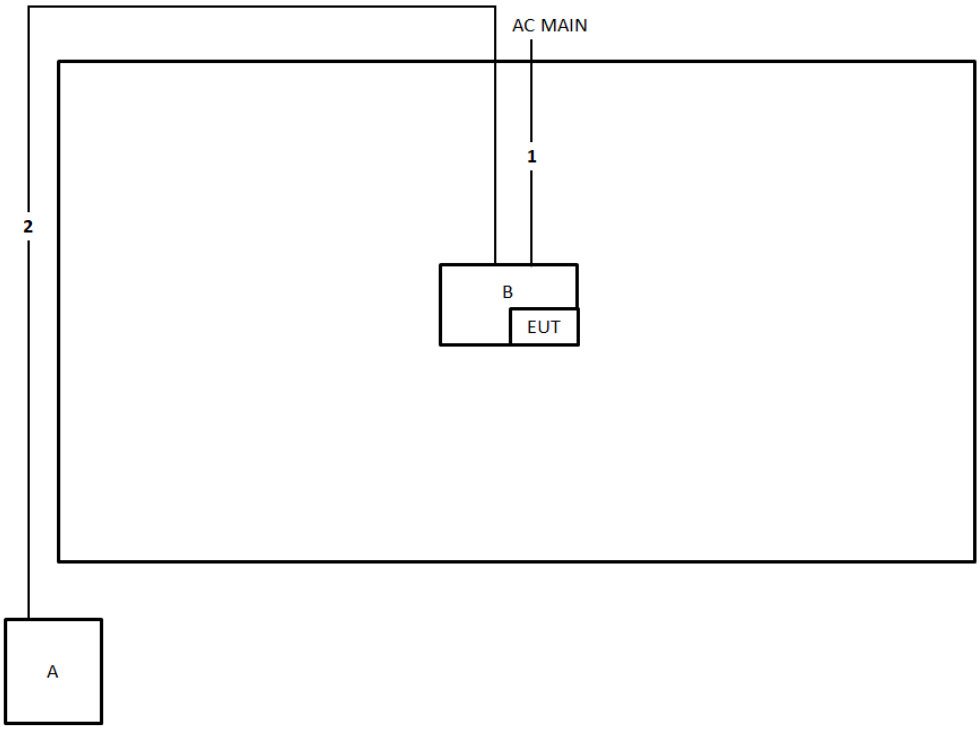
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	USB cable	Yes	1.5m

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	10m

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

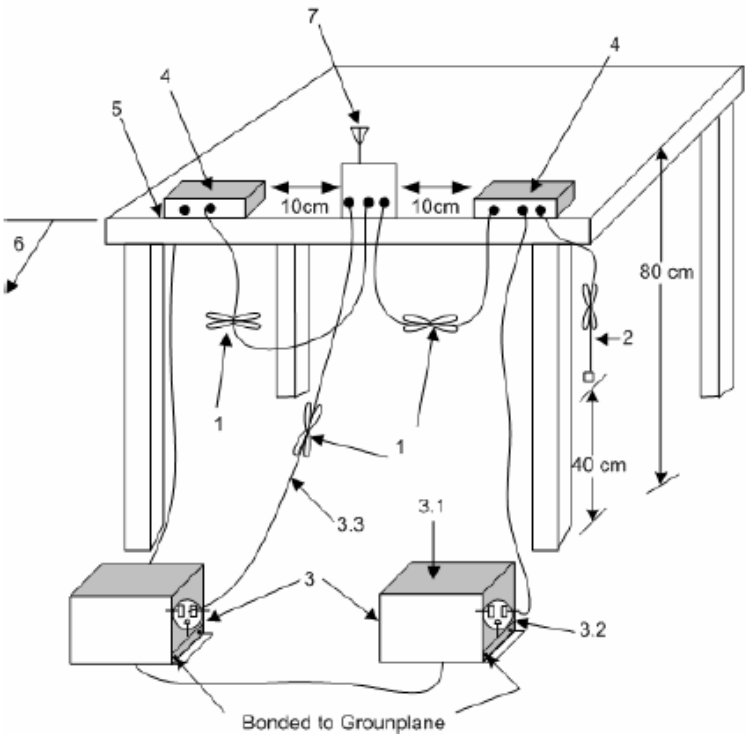
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

AC Power-line Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

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
Systems using digital modulation techniques:
▪ 6 dB bandwidth ≥ 500 kHz.

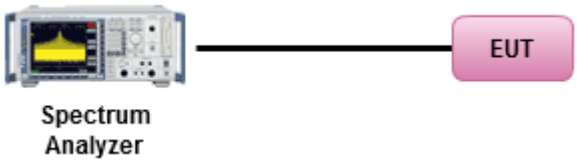
3.2.2 Measuring Instruments

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:	
	☒ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
	☐ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
	☐ Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

3.2.4 Test Setup

Emission Bandwidth


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		
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)	
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)$ dBm	
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm	
	▪ Smart antenna system (SAS):	
		- 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
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		
▪ Maximum Peak Conducted Output Power		
	☐	Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
	☐	Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
▪ Maximum Conducted Output Power		
	[duty cycle ≥ 98% or external video / power trigger]	
	☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
	☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
	duty cycle < 98% and average over on/off periods with duty factor	
	☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
	☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
	☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
	☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
	Measurement using a power meter (PM)	
	☒	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
	☐	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).

▪ For conducted measurement.	
	▪ 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.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

Maximum Conducted Output Power (Power Meter)

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) ≤ 8 dBm/3kHz

3.4.2 Measuring Instruments

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

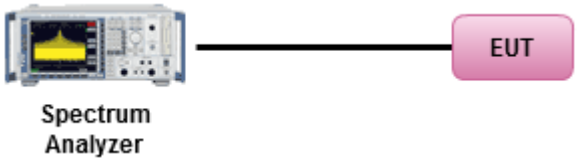
3.4.3 Test Procedures

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).		
	☒	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.2 Method PKPSD.
	[duty cycle ≥ 98% or external video / power trigger]	
	☐	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.3 Method AVGPSD-1.
	☐	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.5 Method AVGPSD-2.
	☐	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.7 Method AVGPSD-3.
	duty cycle < 98% and average over on/off periods with duty factor	
	☐	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.4 Method AVGPSD-1A. (alternative).
	☐	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.6 Method AVGPSD-2A. (alternative)
	☐	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.8 Method AVGPSD-3A. (alternative)
▪ For conducted measurement.		
	▪ If The EUT supports multiple transmit chains using options given below:	
		☒ 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.
		☐ 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,

		☐ 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.

3.4.4 Test Setup

Power Spectral Density



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 (dBc)**
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

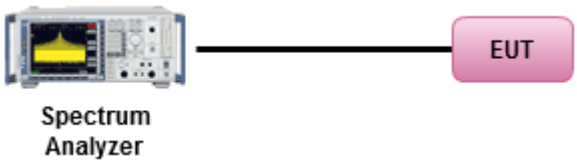
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method
▪ Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup

Emissions in Non-restricted Frequency Bands



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.

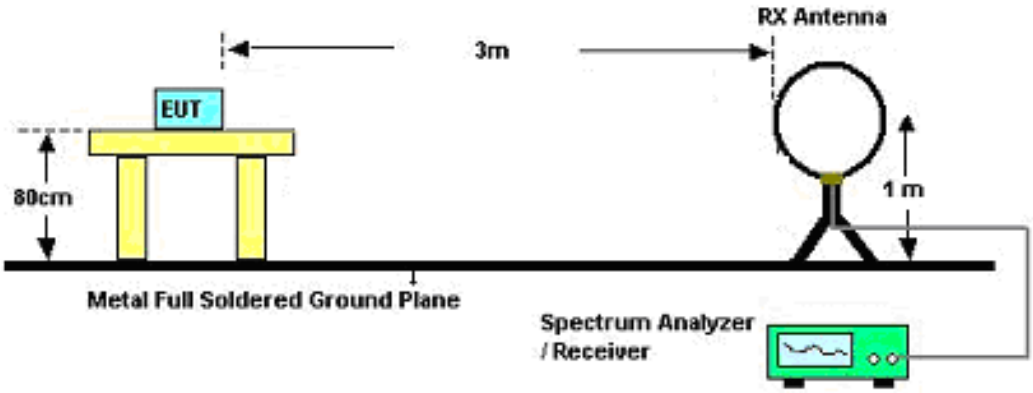
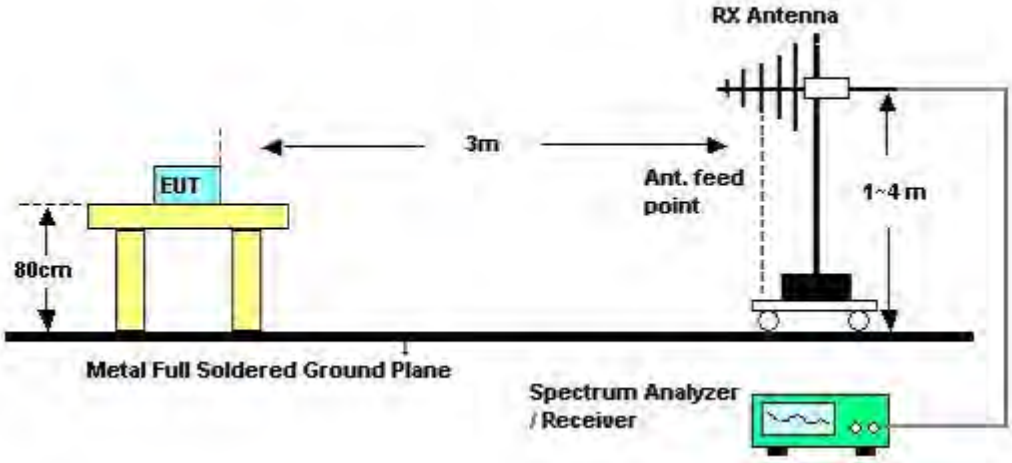
3.6.2 Measuring Instruments

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

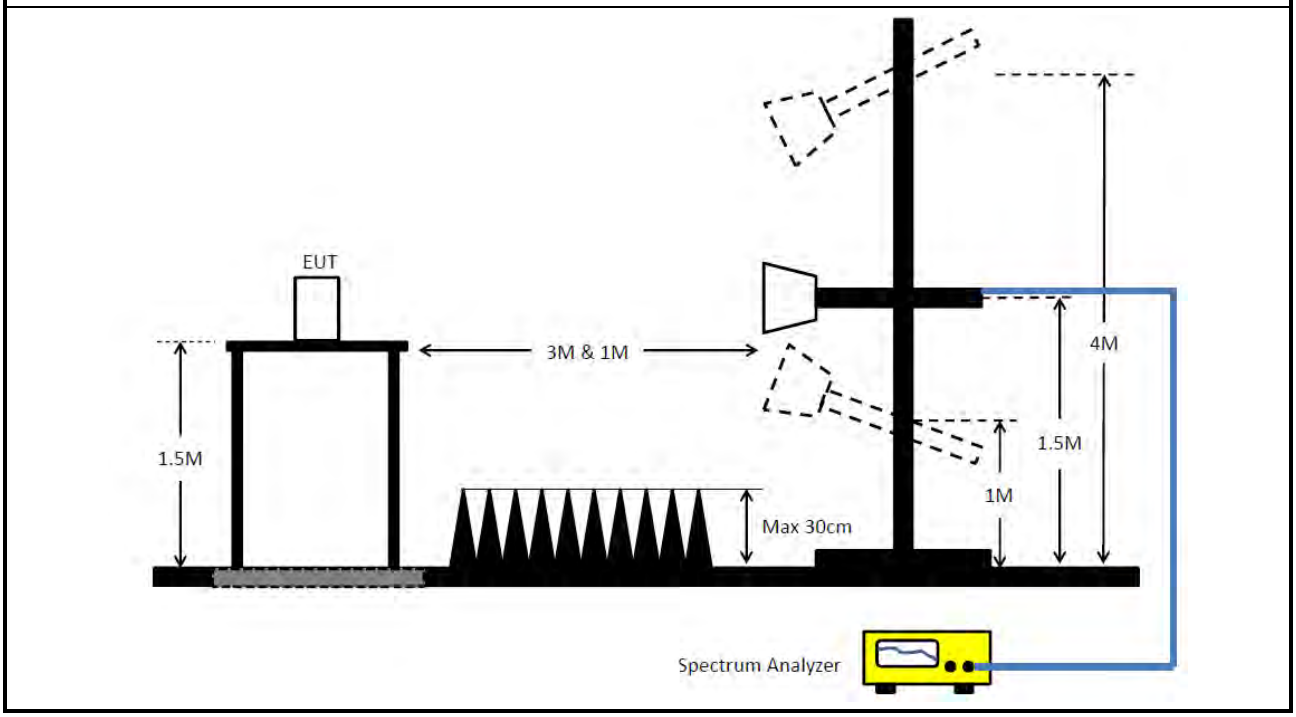
3.6.3 Test Procedures

Test Method		
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].		
▪ 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.		
▪ For the transmitter unwanted emissions shall be measured using following options below:		
	▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.	
		☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%).
		☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
		☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).
		☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
		☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
▪ For the transmitter band-edge emissions shall be measured using following options below:		
	▪ Refer as FCC KDB 558074 clause 8.7 & C63.10 clause 11.13.1, 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.	
	▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.	
	▪ Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).	
	▪ 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	
	▪ 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.	

3.6.4 Test Setup

Radiated - Emissions in Restricted Frequency Bands
9kHz ~30MHz

30MHz~1GHz


Above 1GHz



3.6.5 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

3.6.6 Emissions in Restricted Frequency Bands (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.
The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 28, 2019	Jan. 29, 2020	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50 -16-2	04083	150kHz ~ 100MHz	Dec. 24, 2018	Dec. 23, 2019	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Jan. 11, 2019	Jan. 10, 2020	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	150kHz ~ 30MHz	May 22, 2018	May 21, 2019	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 15, 2019	Mar. 14, 2020	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 29, 2019	Mar. 28, 2020	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 27, 2018	Aug. 26, 2019	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 13, 2018	Nov. 12, 2019	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA917025 2	15GHz ~ 40GHz	Jun. 28, 2018	Jun. 27, 2019	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA917025 2	15GHz ~ 40GHz	Jun. 27, 2019	Jun. 26, 2020	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980391	20MHz ~ 3GHz	Jun. 13, 2018	Jun. 12, 2019	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 08, 2019	Jan. 07, 2020	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 04, 2018	Jul. 03, 2019	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Jan. 31, 2019	Jan. 30, 2020	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS	100359	9kHz ~ 2.75GHz	Jul. 03, 2018	Jul. 02, 2019	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Feb. 25, 2019	Feb. 24, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 19, 2018	Nov. 18, 2019	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 05, 2018	Nov. 04, 2019	Conducted (TH01-CB)

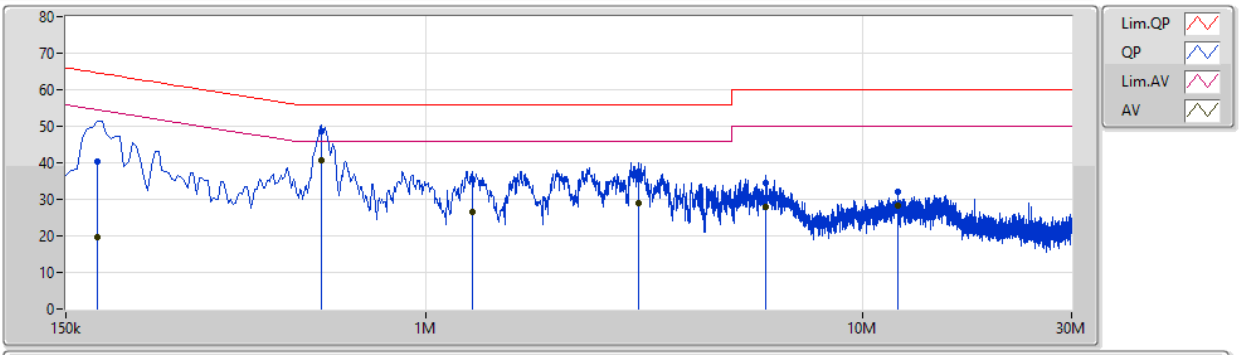
Note: Calibration Interval of instruments listed above is one year.

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

AC Power-line Conducted Emissions Result			
Operating Mode	3	**Power Phase**	Line
Operating Function	CTX		

Mode 3

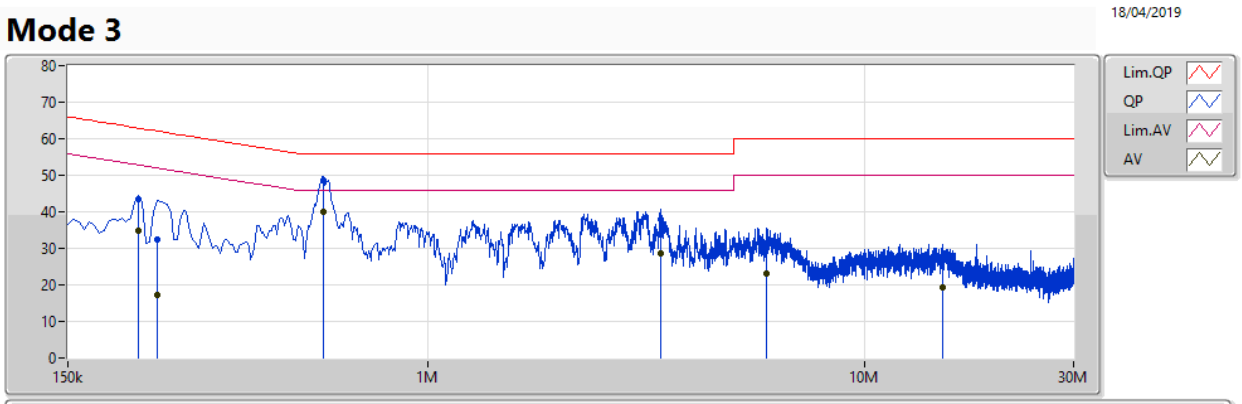
18/04/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	177k	40.19	64.62	-24.43	10.00	Line	-	30.19	0.06	0.15	9.79
AV	177k	19.59	54.62	-35.03	10.00	Line	-	9.59	0.06	0.15	9.79
QP	577.5k	48.69	56.00	-7.31	10.02	Line	-	38.67	0.06	0.15	9.81
AV	577.5k	40.54	46.00	-5.46	10.02	Line	"Worst"	30.52	0.06	0.15	9.81
QP	1.275M	35.49	56.00	-20.51	10.11	Line	-	25.38	0.08	0.21	9.82
AV	1.275M	26.71	46.00	-19.29	10.11	Line	-	16.60	0.08	0.21	9.82
QP	3.062M	37.67	56.00	-18.33	10.10	Line	-	27.57	0.11	0.17	9.82
AV	3.062M	28.95	46.00	-17.05	10.10	Line	-	18.85	0.11	0.17	9.82
QP	6.005M	34.51	60.00	-25.49	10.16	Line	-	24.35	0.16	0.14	9.86
AV	6.005M	27.79	50.00	-22.21	10.16	Line	-	17.63	0.16	0.14	9.86
QP	12.003M	32.19	60.00	-27.81	10.33	Line	-	21.86	0.23	0.18	9.92
AV	12.003M	28.32	50.00	-21.68	10.33	Line	-	17.99	0.23	0.18	9.92

Note 1: “>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.)

AC Power-line Conducted Emissions Result			
Operating Mode	3	**Power Phase**	Neutral
Operating Function	CTX		



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	217.5k	43.59	62.92	-19.33	9.97	Neutral	-	33.62	0.04	0.14	9.79
AV	217.5k	34.83	52.92	-18.09	9.97	Neutral	-	24.86	0.04	0.14	9.79
QP	240k	32.49	62.10	-29.61	9.97	Neutral	-	22.52	0.04	0.13	9.80
AV	240k	17.39	52.10	-34.71	9.97	Neutral	-	7.42	0.04	0.13	9.80
QP	577.5k	48.57	56.00	-7.43	10.01	Neutral	-	38.56	0.05	0.15	9.81
AV	577.5k	39.96	46.00	-6.04	10.01	Neutral	"Worst"	29.95	0.05	0.15	9.81
QP	3.417M	37.81	56.00	-18.19	10.05	Neutral	-	27.76	0.09	0.15	9.81
AV	3.417M	28.55	46.00	-17.45	10.05	Neutral	-	18.50	0.09	0.15	9.81
QP	5.955M	31.18	60.00	-28.82	10.14	Neutral	-	21.04	0.14	0.14	9.86
AV	5.955M	23.16	50.00	-26.84	10.14	Neutral	-	13.02	0.14	0.14	9.86
QP	15.086M	27.03	60.00	-32.97	10.37	Neutral	-	16.66	0.23	0.22	9.92
AV	15.086M	19.40	50.00	-30.60	10.37	Neutral	-	9.03	0.23	0.22	9.92

Note 1: ">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.)

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)_2TX	9.075M	14.293M	14M3G1D	8.525M	13.168M
802.11g_Nss1,(6Mbps)_2TX	16.325M	20.34M	20M3D1D	16.275M	16.467M
802.11n HT20_Nss1,(MCS0)_2TX	17.6M	21.214M	21M2D1D	17.55M	17.691M
802.11n HT40_Nss1,(MCS0)_2TX	36.35M	36.432M	36M4D1D	35.65M	36.182M

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

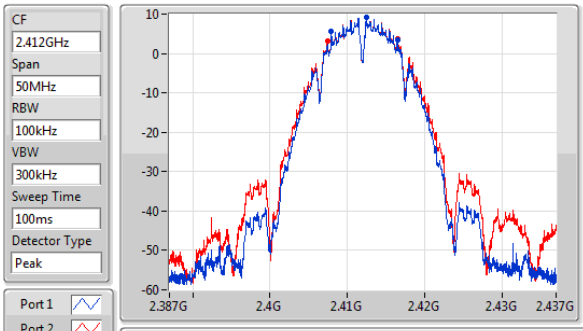
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	8.55M	13.168M	9.05M	13.918M
2437MHz	Pass	500k	8.55M	13.568M	9.075M	14.293M
2462MHz	Pass	500k	8.525M	13.218M	9.025M	13.343M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.325M	16.542M	16.325M	16.467M
2437MHz	Pass	500k	16.275M	16.817M	16.325M	20.34M
2462MHz	Pass	500k	16.325M	16.542M	16.3M	16.492M
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	17.55M	17.741M	17.6M	17.691M
2437MHz	Pass	500k	17.575M	17.916M	17.55M	21.214M
2462MHz	Pass	500k	17.6M	17.716M	17.55M	17.716M
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	35.9M	36.282M	35.65M	36.182M
2437MHz	Pass	500k	36.05M	36.282M	36.35M	36.332M
2452MHz	Pass	500k	36.3M	36.332M	35.9M	36.432M

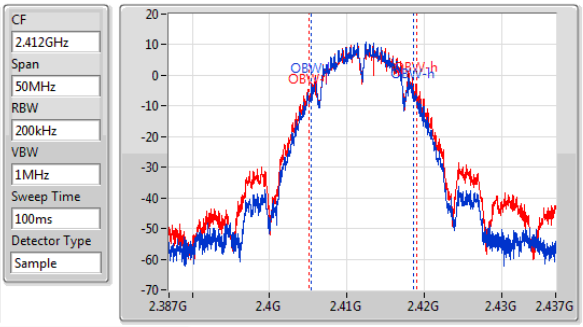
Port X-N dB = Port **X** 6dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

802.11b_Nss1,(1Mbps)_2TX — EBW

2412MHz

06/04/2019



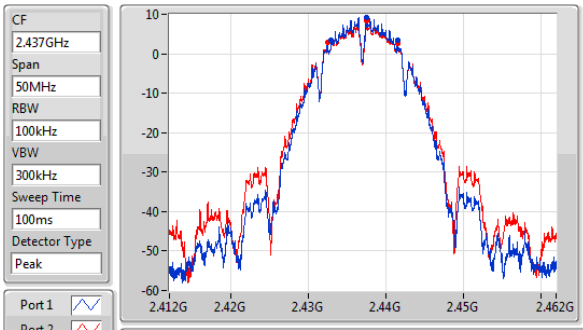


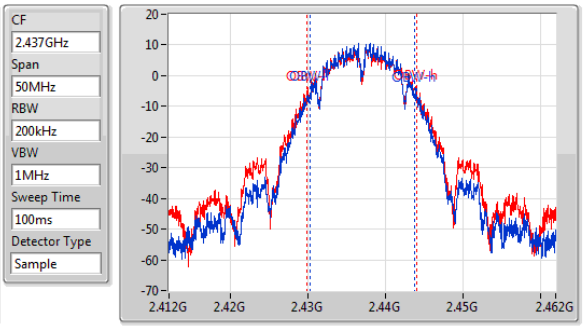
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
8.55M	2.407925G	2.416475G	13.168M	2.405428G	2.418597G	500k	1
9.05M	2.40745G	2.4165G	13.918M	2.405103G	2.419021G	500k	2

802.11b_Nss1,(1Mbps)_2TX — EBW

2437MHz

06/04/2019



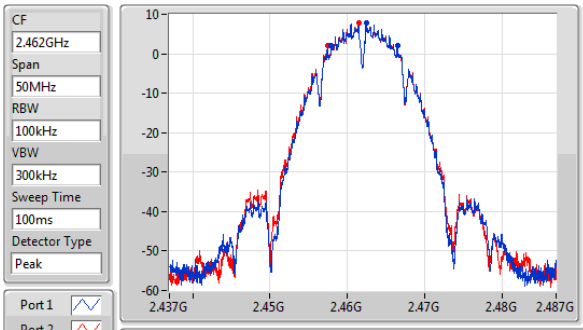


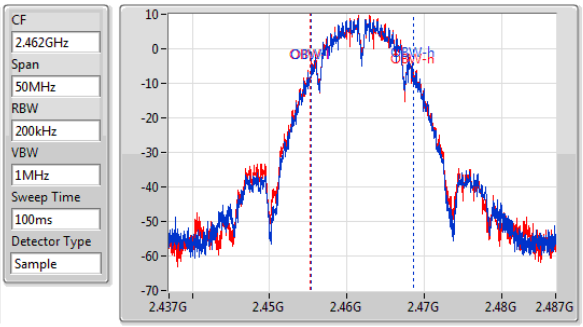
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
8.55M	2.43295G	2.4415G	13.568M	2.430253G	2.443822G	500k	1
9.075M	2.432425G	2.4415G	14.293M	2.429779G	2.444071G	500k	2

802.11b_Nss1,(1Mbps)_2TX — EBW

2462MHz

06/04/2019



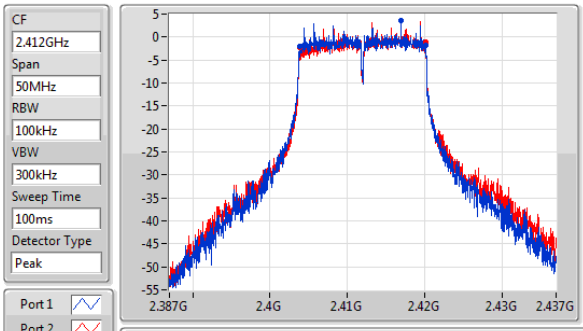


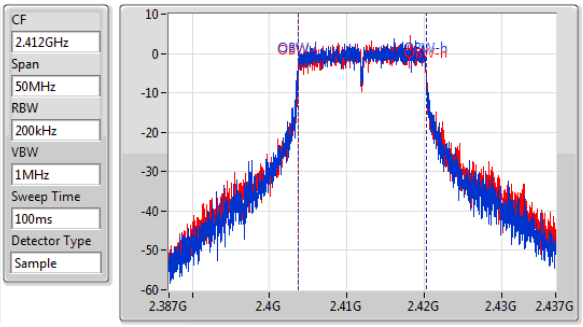
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
8.525M	2.45795G	2.466475G	13.218M	2.455353G	2.468572G	500k	1
9.025M	2.45745G	2.466475G	13.343M	2.455278G	2.468622G	500k	2

802.11g_Nss1,(6Mbps)_2TX EBW

2412MHz

06/04/2019



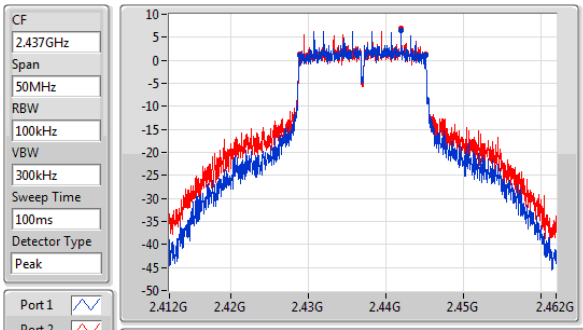


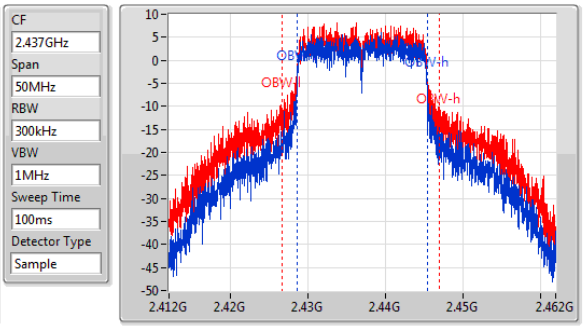
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.325M	2.4038G	2.420125G	16.542M	2.403704G	2.420246G	500k	1
16.325M	2.4038G	2.420125G	16.467M	2.403754G	2.420221G	500k	2

802.11g_Nss1,(6Mbps)_2TX EBW

2437MHz

06/04/2019



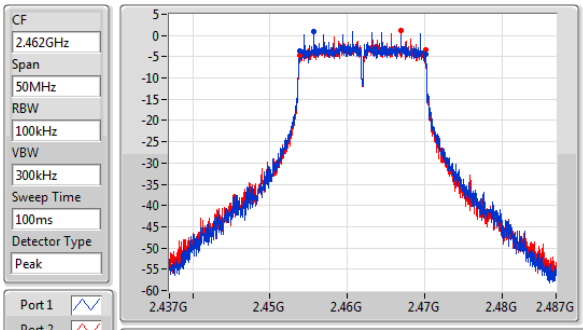


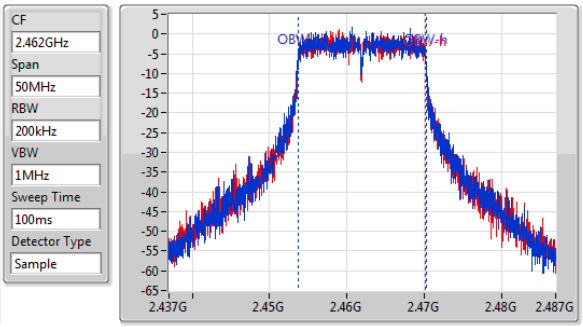
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.275M	2.428825G	2.4451G	16.817M	2.428579G	2.445396G	500k	1
16.325M	2.4288G	2.445125G	20.34M	2.426555G	2.446895G	500k	2

802.11g_Nss1,(6Mbps)_2TX EBW

2462MHz

06/04/2019



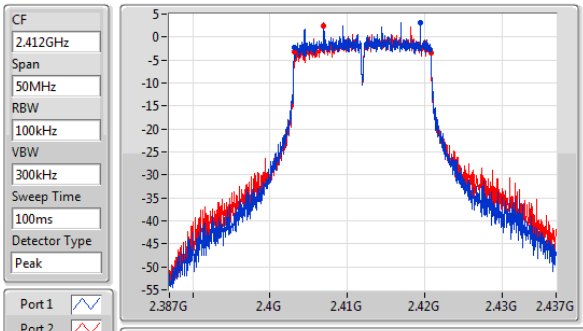


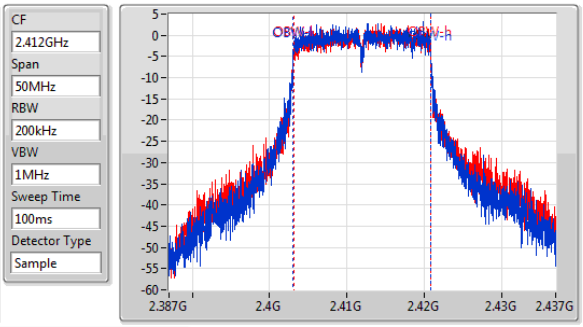
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.325M	2.4538G	2.470125G	16.542M	2.453679G	2.470221G	500k	1
16.3M	2.4538G	2.4701G	16.492M	2.453704G	2.470196G	500k	2

802.11n HT20_Nss1,(MCS0)_2TX EBW

2412MHz

06/04/2019



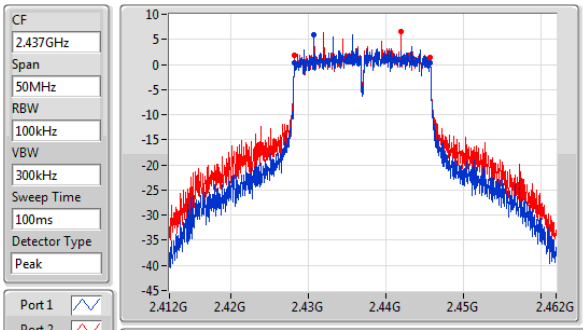


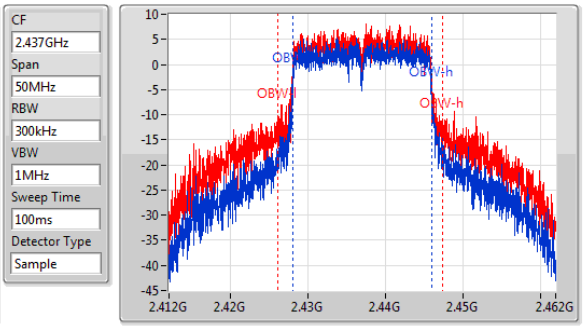
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.55M	2.4032G	2.42075G	17.741M	2.403079G	2.420821G	500k	1
17.6M	2.403175G	2.420775G	17.691M	2.403129G	2.420821G	500k	2

802.11n HT20_Nss1,(MCS0)_2TX EBW

2437MHz

06/04/2019



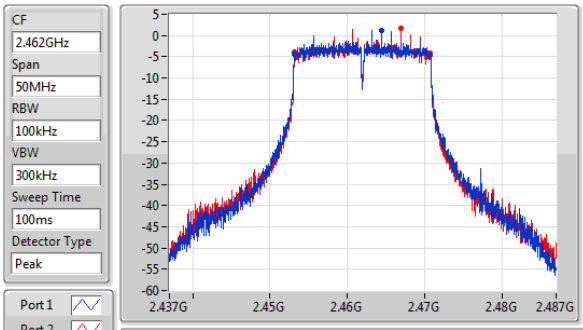


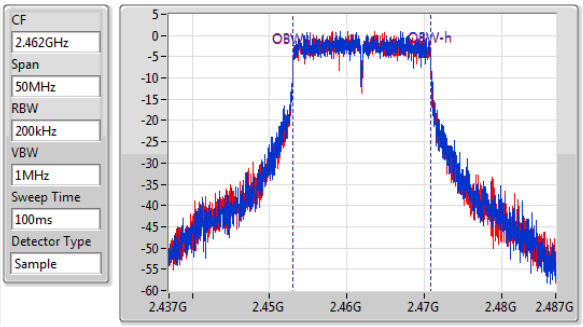
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.575M	2.428175G	2.44575G	17.916M	2.428004G	2.445921G	500k	1
17.55M	2.428175G	2.445725G	21.214M	2.42613G	2.447345G	500k	2

802.11n HT20_Nss1,(MCS0)_2TX EBW

2462MHz

06/04/2019



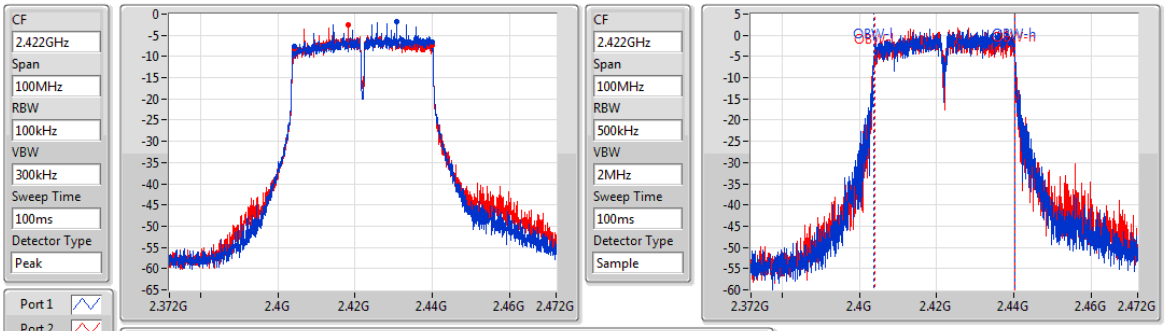


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.6M	2.45315G	2.47075G	17.716M	2.453079G	2.470796G	500k	1
17.55M	2.453175G	2.470725G	17.716M	2.453079G	2.470796G	500k	2

802.11n HT40_Nss1,(MCS0)_2TX EBW

2422MHz

06/04/2019

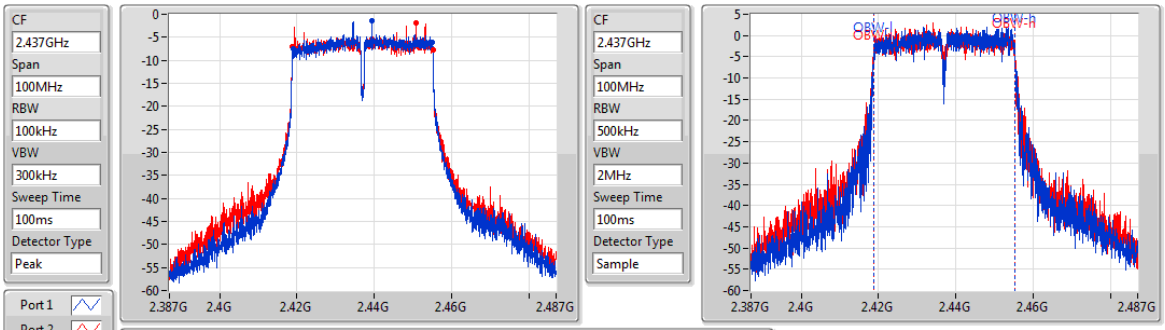


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
35.9M	2.4042G	2.4401G	36.282M	2.403859G	2.440141G	500k	1
35.65M	2.40445G	2.4401G	36.182M	2.403959G	2.440141G	500k	2

802.11n HT40_Nss1,(MCS0)_2TX EBW

2437MHz

06/04/2019

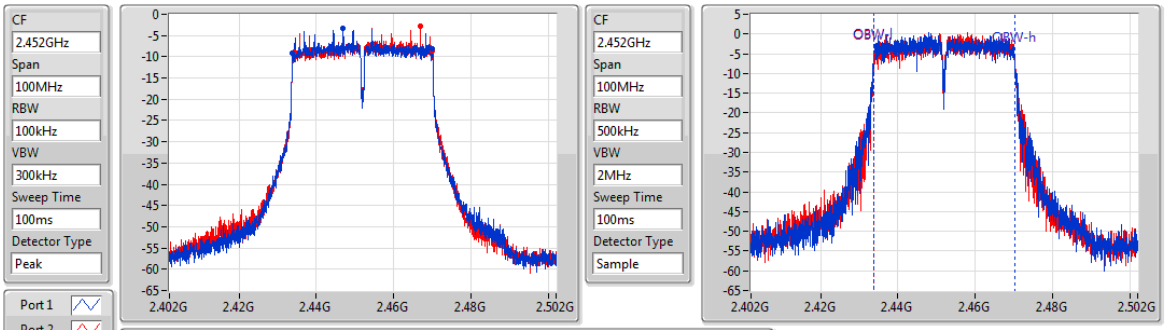


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
36.05M	2.41905G	2.4551G	36.282M	2.418859G	2.455141G	500k	1
36.35M	2.4188G	2.45515G	36.332M	2.418809G	2.455141G	500k	2

802.11n HT40_Nss1,(MCS0)_2TX EBW

2452MHz

06/04/2019



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
36.3M	2.4338G	2.4701G	36.332M	2.433809G	2.470141G	500k	1
35.9M	2.4342G	2.4701G	36.432M	2.433759G	2.470191G	500k	2

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	23.09	0.20370
802.11g_Nss1,(6Mbps)_2TX	21.28	0.13428
802.11n HT20_Nss1,(MCS0)_2TX	21.32	0.13552
802.11n HT40_Nss1,(MCS0)_2TX	16.67	0.04645

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.50	19.99	20.07	23.04	30.00
2437MHz	Pass	5.50	20.28	19.87	23.09	30.00
2462MHz	Pass	5.50	18.44	18.68	21.57	30.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.50	15.84	15.52	18.69	30.00
2417MHz	Pass	5.50	17.85	17.62	20.75	30.00
2437MHz	Pass	5.50	18.27	18.27	21.28	30.00
2457MHz	Pass	5.50	16.98	17.08	20.04	30.00
2462MHz	Pass	5.50	13.32	13.32	16.33	30.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.50	15.89	15.64	18.78	30.00
2417MHz	Pass	5.50	18.16	18.09	21.14	30.00
2437MHz	Pass	5.50	18.28	18.33	21.32	30.00
2457MHz	Pass	5.50	16.65	16.68	19.68	30.00
2462MHz	Pass	5.50	14.04	13.94	17.00	30.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	5.50	13.56	13.29	16.44	30.00
2437MHz	Pass	5.50	13.66	13.65	16.67	30.00
2452MHz	Pass	5.50	12.25	12.29	15.28	30.00

DG = Directional Gain; **Port X** = Port X output power
Note : Conducted average output power is for reference only

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_2TX	-6.4
802.11g_Nss1,(6Mbps)_2TX	-8.36
802.11n HT20_Nss1,(MCS0)_2TX	-8.12
802.11n HT40_Nss1,(MCS0)_2TX	-14.33

RBW=3kHz.

Result

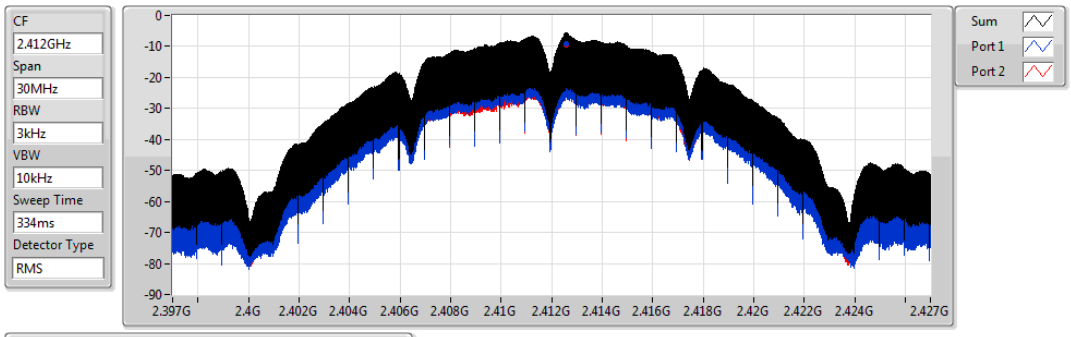
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	8.51	-9.29	-9.5	-6.40	5.49
2437MHz	Pass	8.51	-9.35	-9.96	-6.70	5.49
2462MHz	Pass	8.51	-10.73	-10.52	-7.67	5.49
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	8.51	-12.93	-13.6	-11.31	5.49
2437MHz	Pass	8.51	-10.12	-10.26	-8.36	5.49
2462MHz	Pass	8.51	-14.3	-14.09	-12.65	5.49
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	8.51	-12.87	-13.16	-10.61	5.49
2437MHz	Pass	8.51	-10.4	-10.25	-8.12	5.49
2462MHz	Pass	8.51	-14.72	-14.23	-12.24	5.49
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	8.51	-17.08	-15.98	-15.18	5.49
2437MHz	Pass	8.51	-16.62	-16.02	-14.33	5.49
2452MHz	Pass	8.51	-19.21	-18.9	-17.06	5.49

DG = Directional Gain; RBW=3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port Xpower density;

802.11b_Nss1,(1Mbps)_2TX PSD

2412MHz

06/04/2019

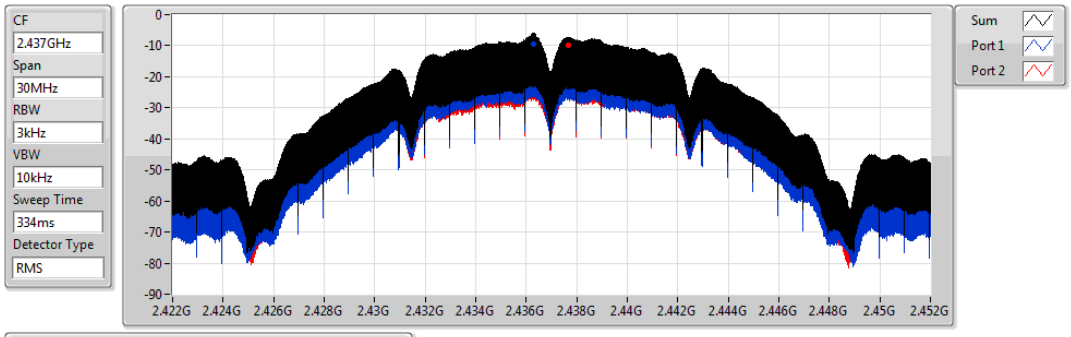


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-6.40	-6.40	-9.29	-9.50

802.11b_Nss1,(1Mbps)_2TX PSD

2437MHz

06/04/2019

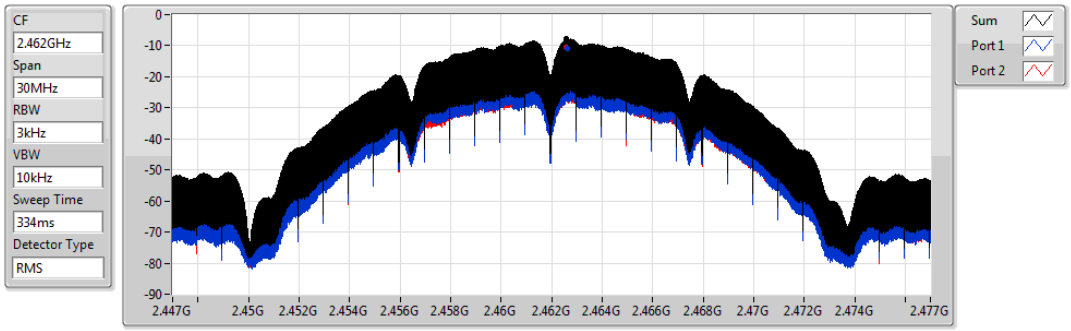


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-6.70	-6.70	-9.35	-9.96

802.11b_Nss1,(1Mbps)_2TX PSD

2462MHz

06/04/2019

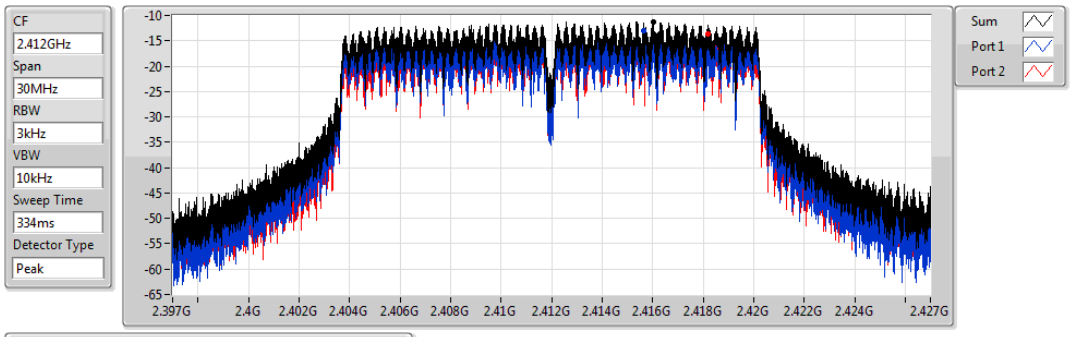


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-7.67	-7.67	-10.73	-10.52

802.11g_Nss1,(6Mbps)_2TX PSD

2412MHz

06/04/2019

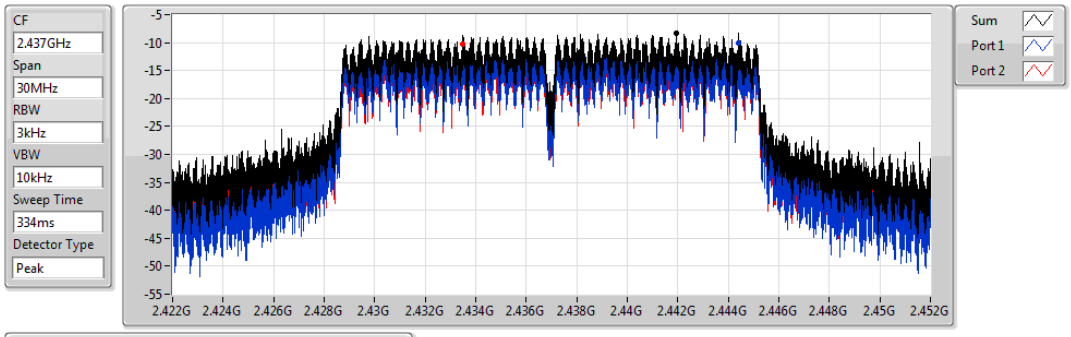


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.31	-11.31	-12.93	-13.60

802.11g_Nss1,(6Mbps)_2TX PSD

2437MHz

06/04/2019

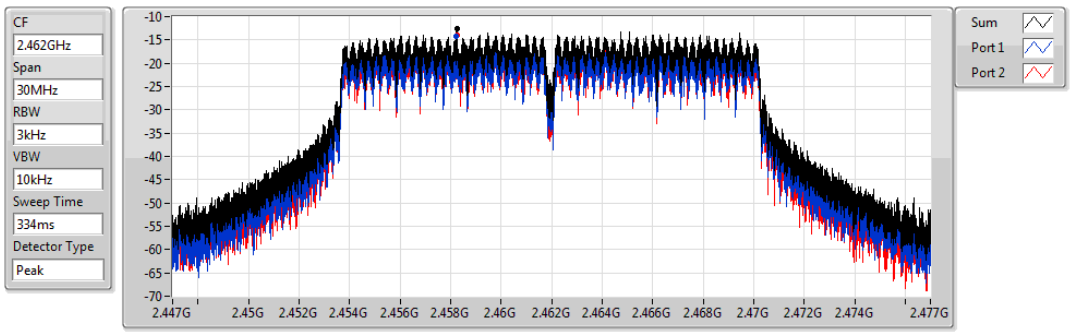


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.36	-8.36	-10.12	-10.26

802.11g_Nss1,(6Mbps)_2TX PSD

2462MHz

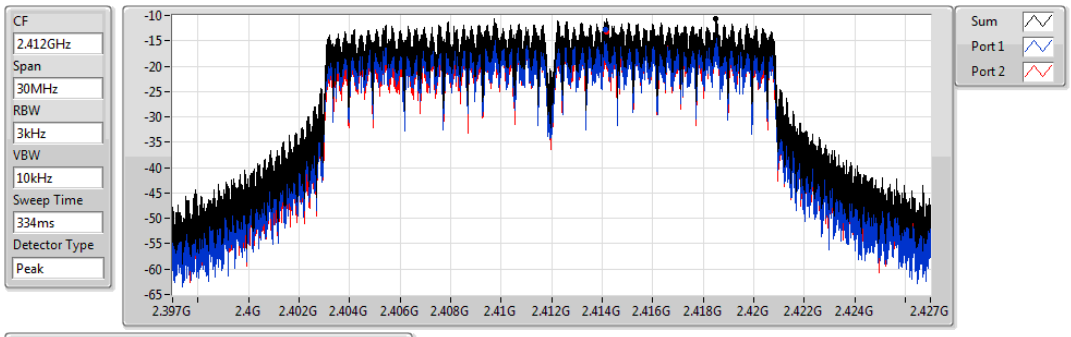
06/04/2019



Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.65	-12.65	-14.30	-14.09

802.11n HT20_Nss1,(MCS0)_2TX PSD

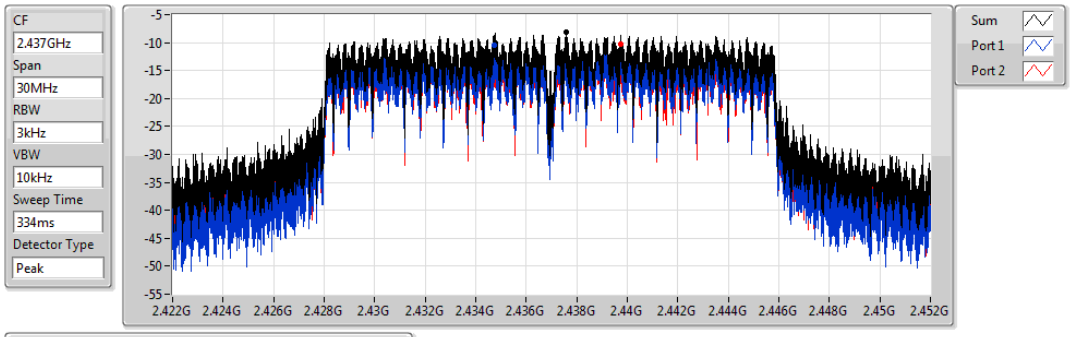
2412MHz



Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.61	-10.61	-12.87	-13.16

802.11n HT20_Nss1,(MCS0)_2TX PSD

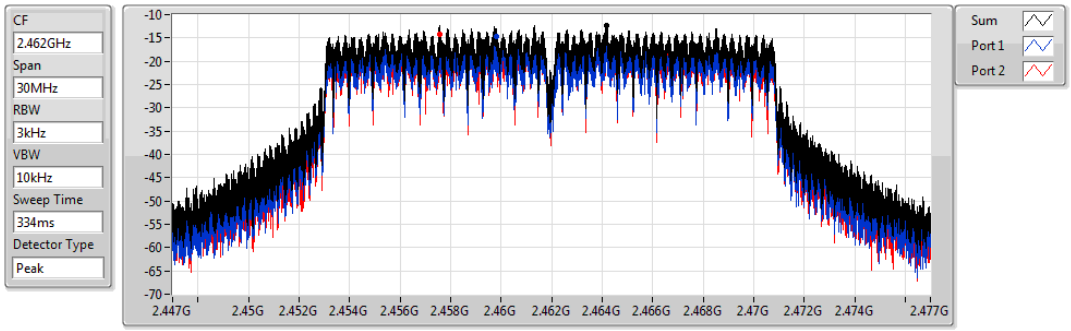
2437MHz



Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.12	-8.12	-10.40	-10.25

802.11n HT20_Nss1,(MCS0)_2TX PSD

2462MHz

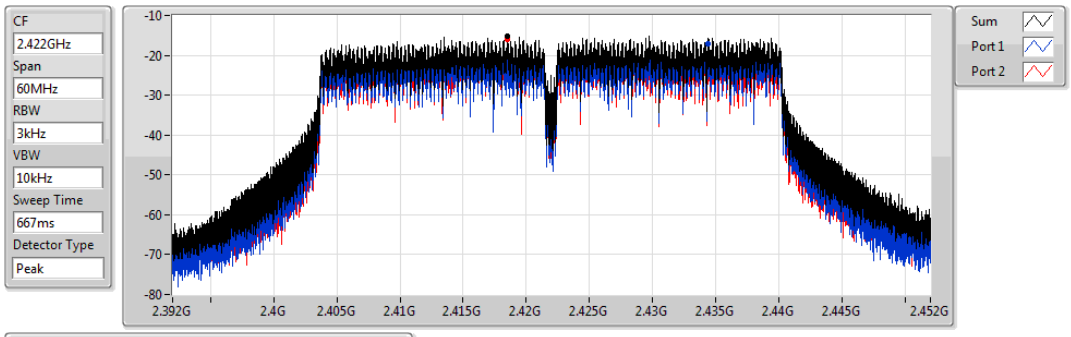


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.24	-12.24	-14.72	-14.23

802.11n HT40_Nss1,(MCS0)_2TX PSD

2422MHz

06/04/2019

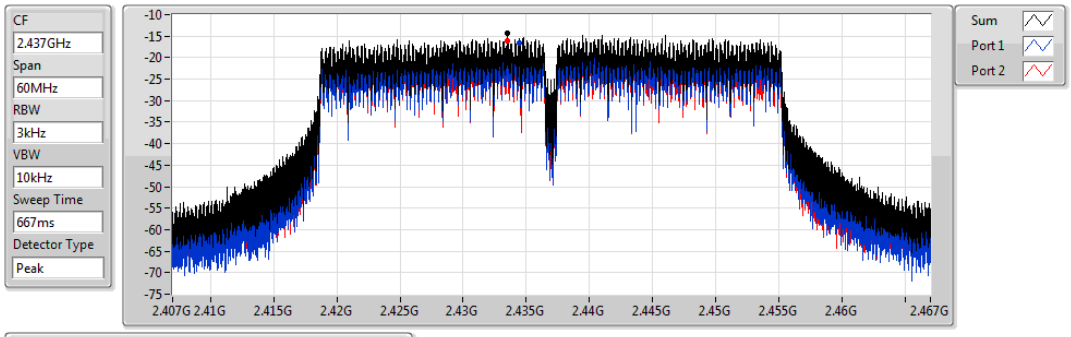


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-15.18	-15.18	-17.08	-15.98

802.11n HT40_Nss1,(MCS0)_2TX PSD

2437MHz

06/04/2019

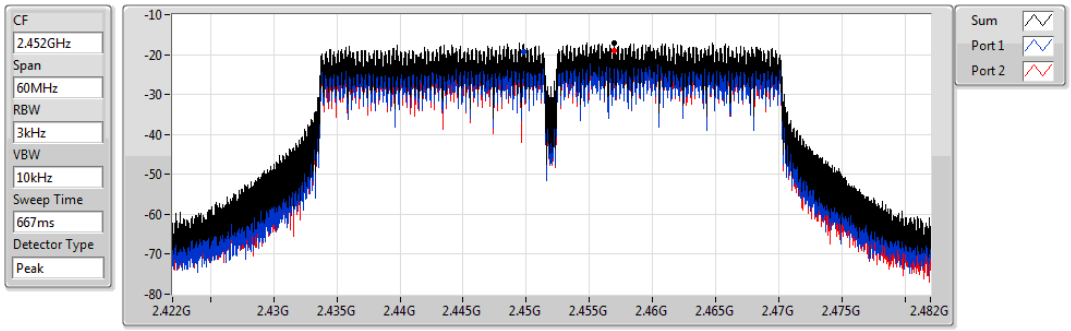


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.33	-14.33	-16.62	-16.02

802.11n HT40_Nss1,(MCS0)_2TX PSD

2452MHz

06/04/2019



Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-17.06	-17.06	-19.21	-18.90

Summary

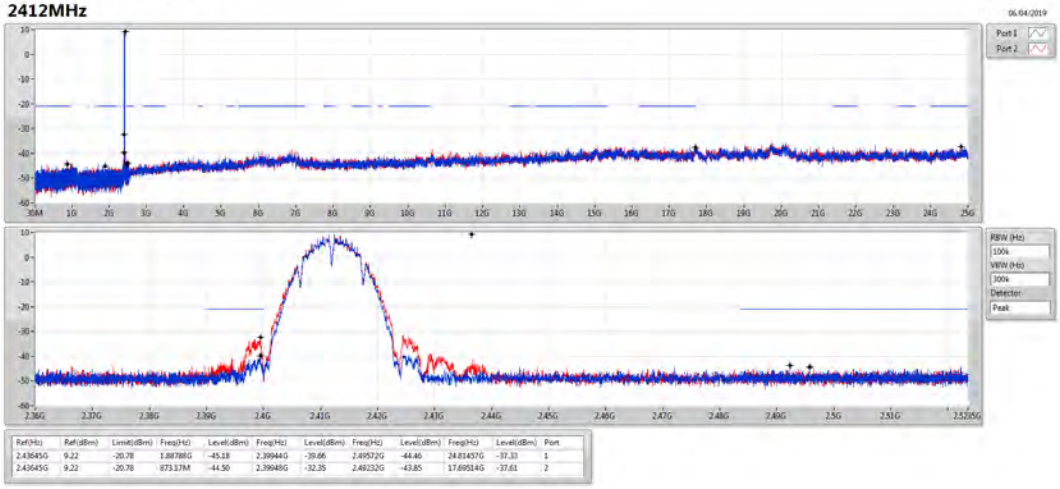
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	2.43645G	9.22	-20.78	873.17M	-44.5	2.39948G	-32.35	2.49232G	-43.85	17.69514G	-37.61	2
802.11g_Nss1,(6Mbps)_2TX	Pass	2.44071G	6.12	-23.88	781.43M	-45.27	2.39964G	-28.58	2.51164G	-44.47	15.26768G	-37.04	1
802.11n HT20_Nss1,(MCS0)_2TX	Pass	2.43315G	4.91	-25.09	2.17564G	-45.11	2.3998G	-28.34	2.4995G	-44.38	21.87296G	-36.49	2
802.11n HT40_Nss1,(MCS0)_2TX	Pass	2.44071G	-1.52	-31.52	601.64M	-44.74	2.39468G	-46.4	2.48794G	-44.25	15.01295G	-36.11	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)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43645G	9.22	-20.78	1.88788G	-45.18	2.39944G	-39.66	2.49572G	-44.46	24.81457G	-37.33	1
2412MHz	Pass	2.43645G	9.22	-20.78	873.17M	-44.5	2.39948G	-32.35	2.49232G	-43.85	17.69514G	-37.61	2
2437MHz	Pass	2.43645G	9.22	-20.78	894.43M	-44.69	2.39392G	-45.19	2.48668G	-44.19	15.05134G	-36.81	1
2437MHz	Pass	2.43645G	9.22	-20.78	2.11448G	-44.61	2.3997G	-44.6	2.49322G	-44.76	16.59098G	-36.71	2
2462MHz	Pass	2.43645G	9.22	-20.78	2.06147G	-44.42	2.39152G	-44.91	2.51614G	-44.39	17.68952G	-37.05	1
2462MHz	Pass	2.43645G	9.22	-20.78	946.86M	-43.96	2.39698G	-45.76	2.48916G	-44.8	17.01241G	-37.17	2
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.44071G	6.12	-23.88	781.43M	-45.27	2.39964G	-28.58	2.51164G	-44.47	15.26768G	-37.04	1
2412MHz	Pass	2.44071G	6.12	-23.88	1.81915G	-44.51	2.39978G	-28.76	2.51692G	-45.16	15.0092G	-36.86	2
2437MHz	Pass	2.44071G	6.12	-23.88	881.91M	-44.99	2.39434G	-43.96	2.5027G	-44.62	16.27912G	-37.28	1
2437MHz	Pass	2.44071G	6.12	-23.88	927.63M	-44.89	2.39962G	-40.27	2.50644G	-43.15	17.27651G	-37.01	2
2462MHz	Pass	2.44071G	6.12	-23.88	1.75886G	-44.41	2.39926G	-44.66	2.5232G	-43.53	24.5308G	-36.72	1
2462MHz	Pass	2.44071G	6.12	-23.88	1.83517G	-44.95	2.39444G	-44.94	2.48548G	-44.42	24.80895G	-36.74	2
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43315G	4.91	-25.09	1.86633G	-45	2.39986G	-28.8	2.49628G	-43.9	16.26226G	-37.26	1
2412MHz	Pass	2.43315G	4.91	-25.09	2.17564G	-45.11	2.3998G	-28.34	2.4995G	-44.38	21.87296G	-36.49	2
2437MHz	Pass	2.43315G	4.91	-25.09	930.55M	-45.66	2.396G	-43.72	2.49642G	-44.08	24.89605G	-36.73	1
2437MHz	Pass	2.43315G	4.91	-25.09	488.72M	-43.91	2.3995G	-41.52	2.48568G	-44.11	15.02886G	-37.16	2
2462MHz	Pass	2.43315G	4.91	-25.09	868.8M	-44.31	2.39592G	-46.42	2.48382G	-42.42	23.13164G	-37.37	1
2462MHz	Pass	2.43315G	4.91	-25.09	944.53M	-45.57	2.39994G	-45.74	2.48382G	-41.09	15.00077G	-36.53	2
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.44071G	-1.52	-31.52	582.46M	-45.6	2.39976G	-37.22	2.54218G	-45.42	24.85416G	-36.93	1
2422MHz	Pass	2.44071G	-1.52	-31.52	737.04M	-44.93	2.3976G	-36.89	2.5175G	-44.92	15.00173G	-37.26	2
2437MHz	Pass	2.44071G	-1.52	-31.52	901.92M	-44.46	2.39824G	-45.44	2.49314G	-45.26	16.25257G	-37.3	1
2437MHz	Pass	2.44071G	-1.52	-31.52	352.03M	-44.23	2.39784G	-43.07	2.50478G	-44.85	16.54144G	-37.01	2
2452MHz	Pass	2.44071G	-1.52	-31.52	745.91M	-45.02	2.39464G	-46.22	2.4933G	-43.45	16.26098G	-36.82	1
2452MHz	Pass	2.44071G	-1.52	-31.52	601.64M	-44.74	2.39468G	-46.4	2.48794G	-44.25	15.01295G	-36.11	2

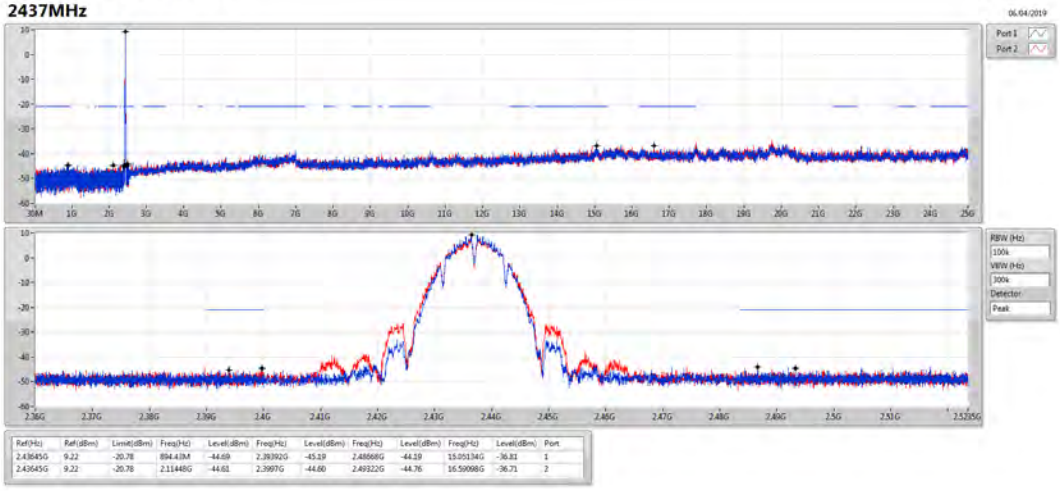
802.11b_Nss1,(1Mbps)_2TX CSE NdB

2412MHz



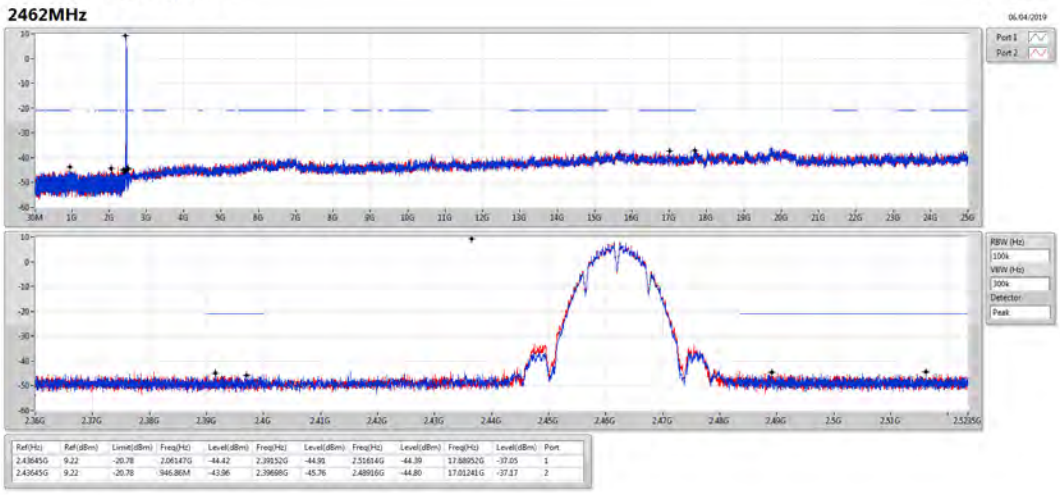
802.11b_Nss1,(1Mbps)_2TX CSE NdB

2437MHz



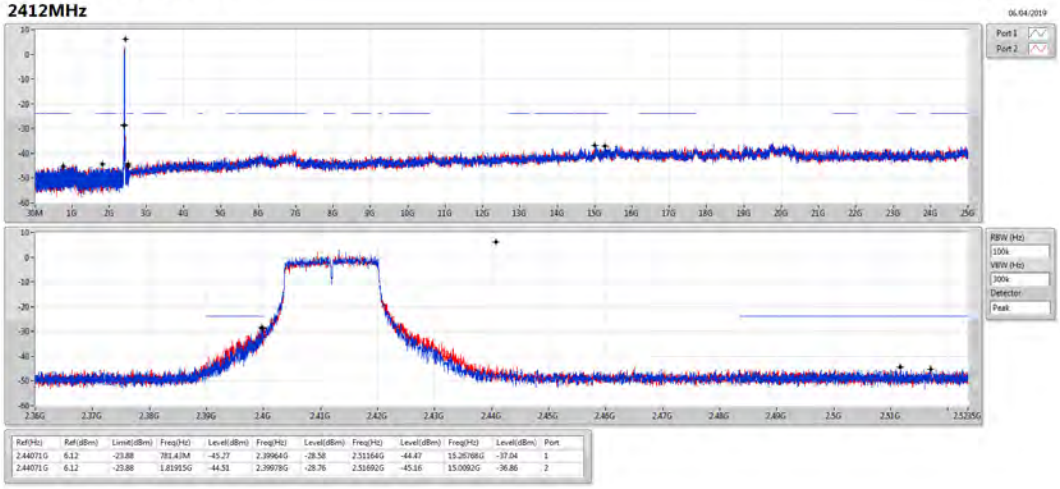
802.11b_Nss1,(1Mbps)_2TX CSE NdB

2462MHz



802.11g_Nss1,(6Mbps)_2TX CSE NdB

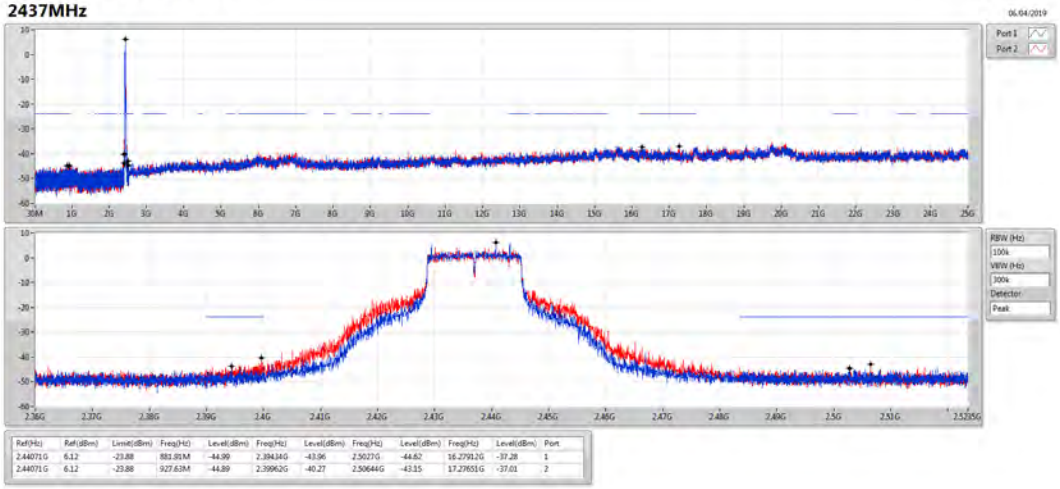
2412MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44071G	6.12	-23.88	781.43M	-45.27	2.39964G	-28.58	2.51164G	-44.47	15.26768G	-37.04	1
2.44071G	6.12	-23.88	1.81915G	-44.51	2.39978G	-28.76	2.51692G	-45.16	15.0092G	-36.86	2

802.11g_Nss1,(6Mbps)_2TX CSE NdB

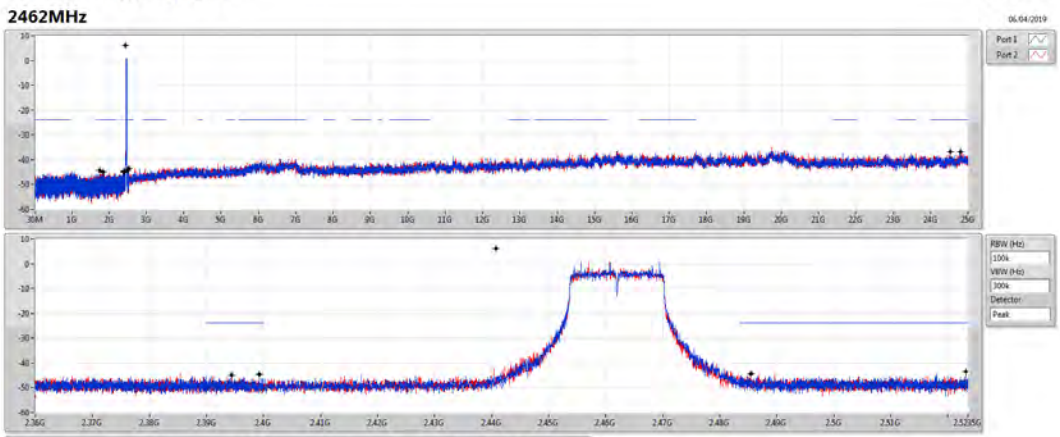
2437MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44071G	6.12	-23.88	881.81M	-44.99	2.39434G	-43.96	2.5027G	-44.62	16.27912G	-37.28	1
2.44071G	6.12	-23.88	927.62M	-44.89	2.39962G	-40.27	2.50644G	-43.15	17.27851G	-37.01	2

802.11g_Nss1,(6Mbps)_2TX CSE NdB

2462MHz

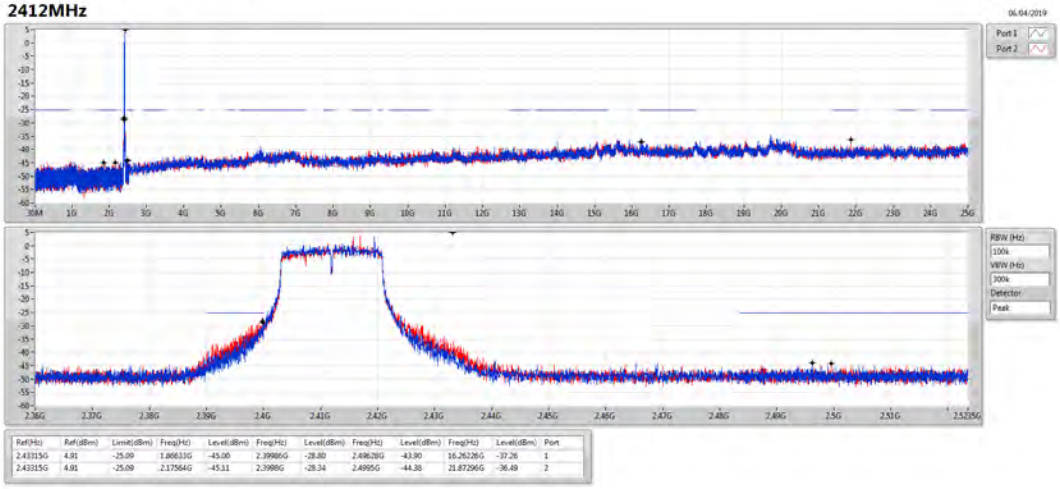


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44071G	6.12	-23.88	1.75886G	-44.41	2.39926G	-44.66	2.5232G	-43.53	24.5308G	-36.72	1
2.44071G	6.12	-23.88	1.83517G	-44.95	2.39444G	-44.94	2.48548G	-44.42	24.80895G	-36.74	2

802.11n HT20_Nss1,(MCS0)_2TX

CSE NdB

2412MHz

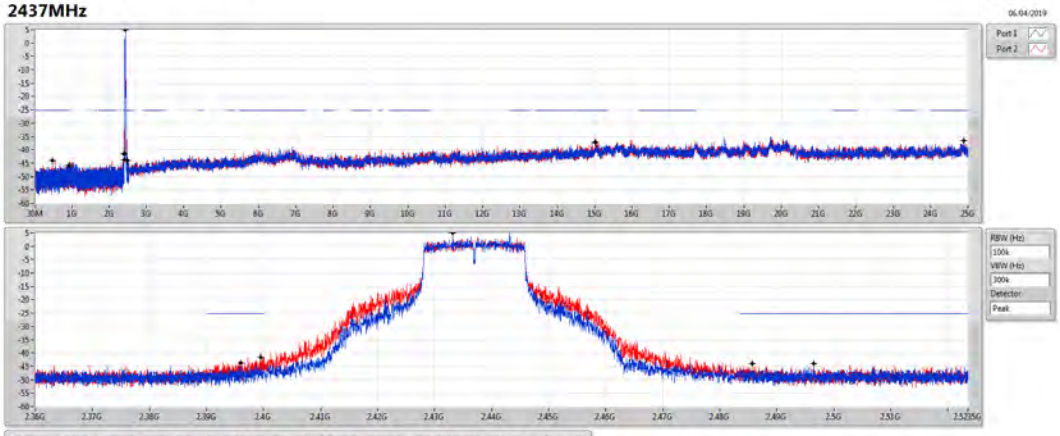


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43315G	4.91	-25.09	1.86633G	-45.00	2.39985G	-28.80	2.49628G	-43.90	16.26226G	-37.26	1
2.43315G	4.91	-25.09	2.17564G	-45.11	2.3998G	-28.34	2.4995G	-44.38	21.87296G	-36.49	2

802.11n HT20_Nss1,(MCS0)_2TX

CSE NdB

2437MHz

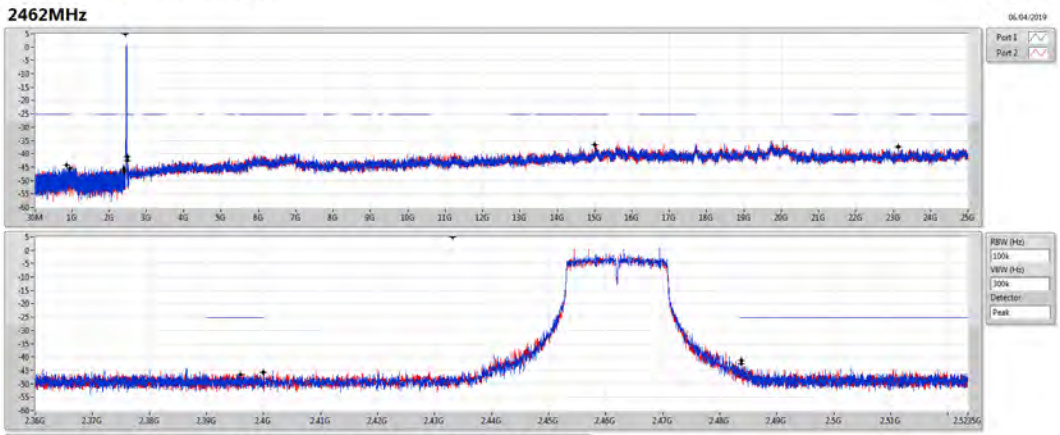


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43315G	4.91	-25.09	930.55M	-45.66	2.396G	-43.72	2.49642G	-44.08	24.89805G	-36.73	1
2.43315G	4.91	-25.09	488.72M	-43.91	2.3995G	-41.52	2.48568G	-44.11	15.02886G	-37.16	2

802.11n HT20_Nss1,(MCS0)_2TX

CSE NdB

2462MHz

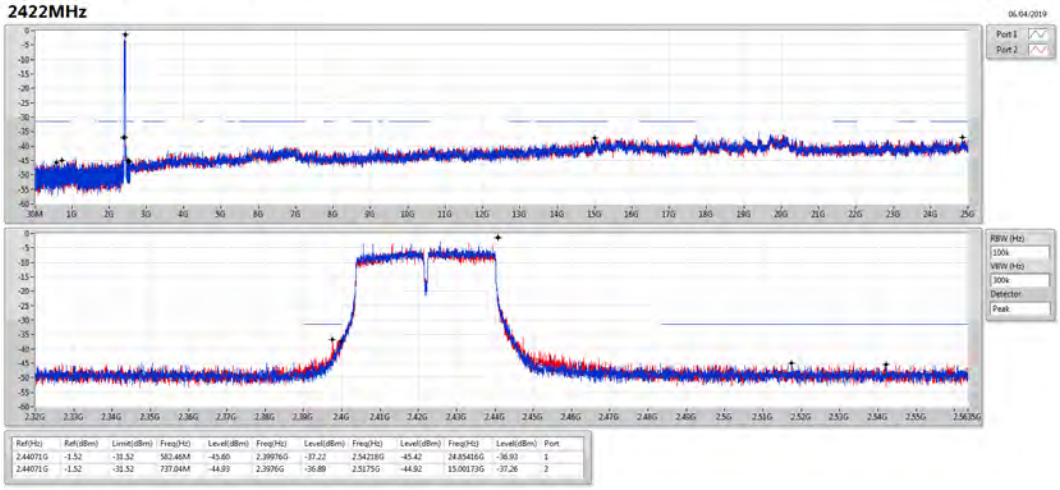


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43315G	4.91	-25.09	868.8M	-44.31	2.39592G	-46.42	2.48382G	-42.42	23.31164G	-37.37	1
2.43315G	4.91	-25.09	944.53M	-45.57	2.39994G	-45.74	2.48382G	-41.09	15.00077G	-36.53	2

802.11n HT40_Nss1,(MCS0)_2TX

CSE NdB

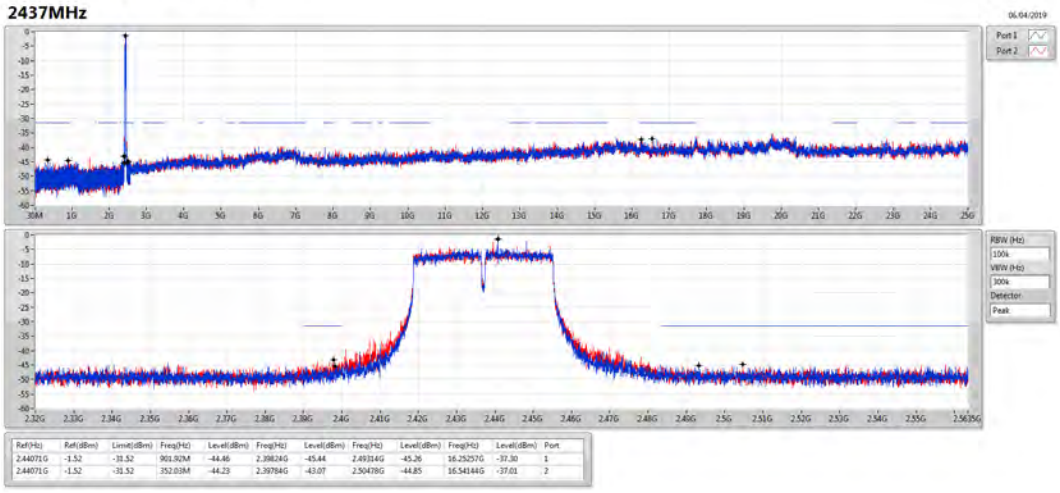
2422MHz



802.11n HT40_Nss1,(MCS0)_2TX

CSE NdB

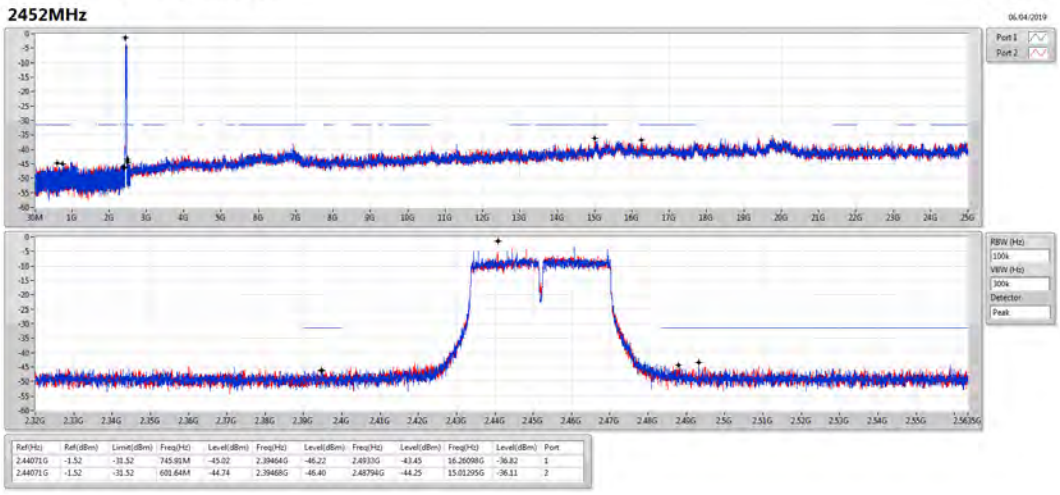
2437MHz



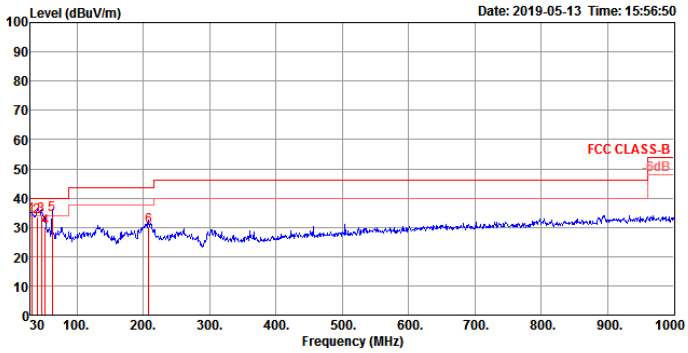
802.11n HT40_Nss1,(MCS0)_2TX

CSE NdB

2452MHz



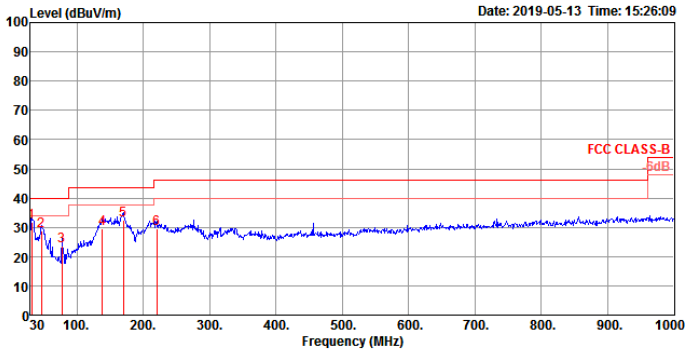
RSE below 1GHz Result			
Operating Mode	2	**Polarization**	Vertical
Operating Function	CTX		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable 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	31.94	33.82	40.00	-6.18	42.80	0.52	22.93	32.43	200	97	QP	VERTICAL
2	39.70	33.50	40.00	-6.50	46.89	0.61	18.42	32.42	100	227	QP	VERTICAL
3	46.49	34.13	40.00	-5.87	50.70	0.69	15.16	32.42	100	354	QP	VERTICAL
4	52.31	29.71	40.00	-10.29	48.31	0.74	13.08	32.42	100	316	QP	VERTICAL
5	62.98	34.20	40.00	-5.80	53.60	0.83	12.17	32.40	200	65	QP	VERTICAL
6	208.48	30.34	43.50	-13.16	45.90	1.51	15.23	32.30	100	301	QP	VERTICAL

Note 1: “>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.)

RSE below 1GHz Result			
Operating Mode	2	**Polarization**	Horizontal
Operating Function	CTX		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable 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	31.94	31.72	40.00	-8.28	40.70	0.52	22.93	32.43	100	185	QP	HORIZONTAL
2	46.49	28.83	40.00	-11.17	45.40	0.69	15.16	32.42	300	114	QP	HORIZONTAL
3	77.53	23.61	40.00	-16.39	42.80	0.89	12.31	32.39	100	260	QP	HORIZONTAL
4	138.64	29.58	43.50	-13.92	43.49	1.22	17.21	32.34	200	237	QP	HORIZONTAL
5	169.68	32.36	43.50	-11.14	47.59	1.35	15.74	32.32	150	99	QP	HORIZONTAL
6	220.12	29.56	46.00	-16.44	45.10	1.54	15.21	32.29	125	228	QP	HORIZONTAL

Note 1: “>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.)

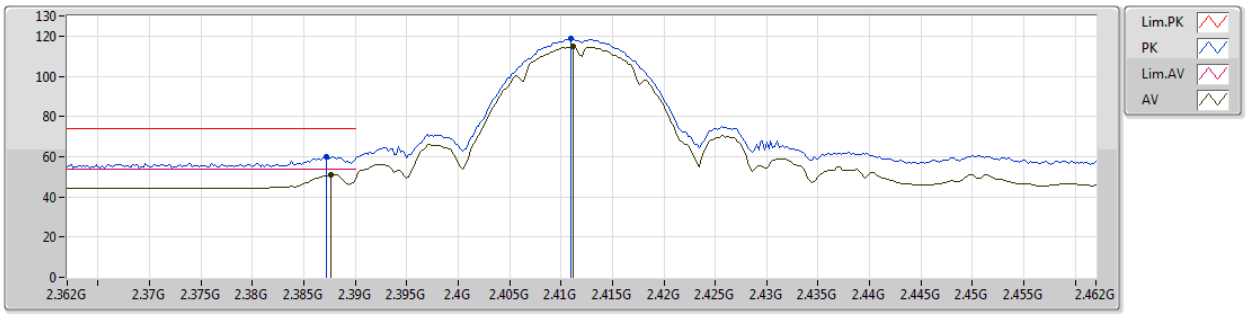
Summary

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	-	-	-	-	-	-	-	-	-	-	-	-
802.11g_Nss1,(6Mbps)_2TX	Pass	AV	2.389G	53.99	54.00	-0.01	32.12	3	Vertical	101	1.20	-

802.11b_Nss1,(1Mbps)_2TX

2412MHz_TX

03/04/2019



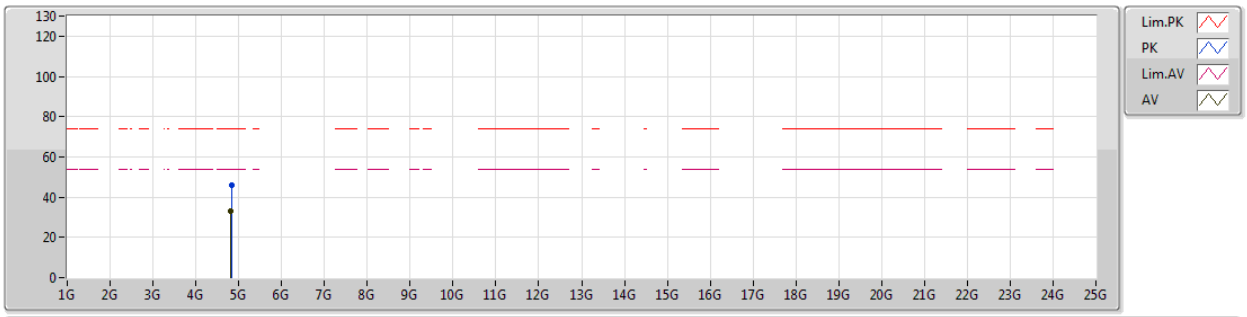
EUT Z_2TX_Dipole
Setting 19.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3872G	60.11	74.00	-13.89	32.11	3	Vertical	354	1.50	-
AV	2.3876G	50.82	54.00	-3.18	32.11	3	Vertical	354	1.50	-
PK	2.411G	118.66	Inf	-Inf	32.19	3	Vertical	354	1.50	-
AV	2.4112G	114.87	Inf	-Inf	32.19	3	Vertical	354	1.50	-

802.11b_Nss1,(1Mbps)_2TX

2412MHz_TX

03/04/2019



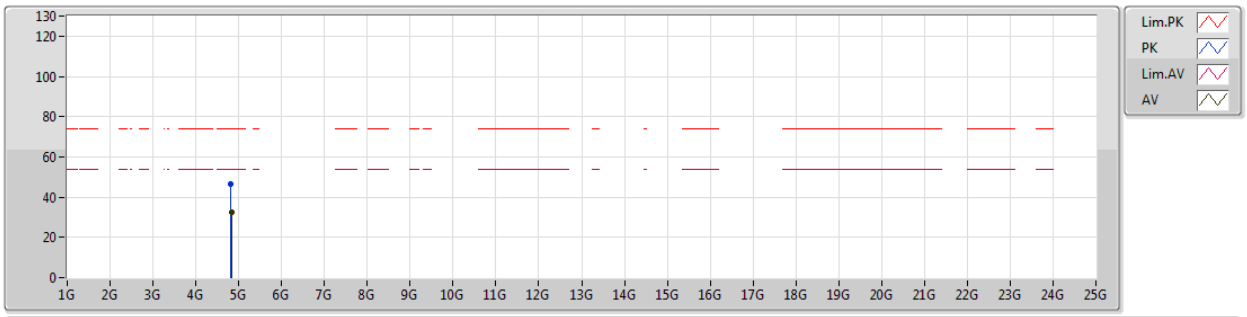
EUT Z_2TX_Dipole
Setting 19.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.83702G	45.98	74.00	-28.02	6.62	3	Vertical	82	1.06	-
AV	4.82394G	33.19	54.00	-20.81	6.59	3	Vertical	82	1.06	-

802.11b_Nss1,(1Mbps)_2TX

2412MHz_TX

03/04/2019



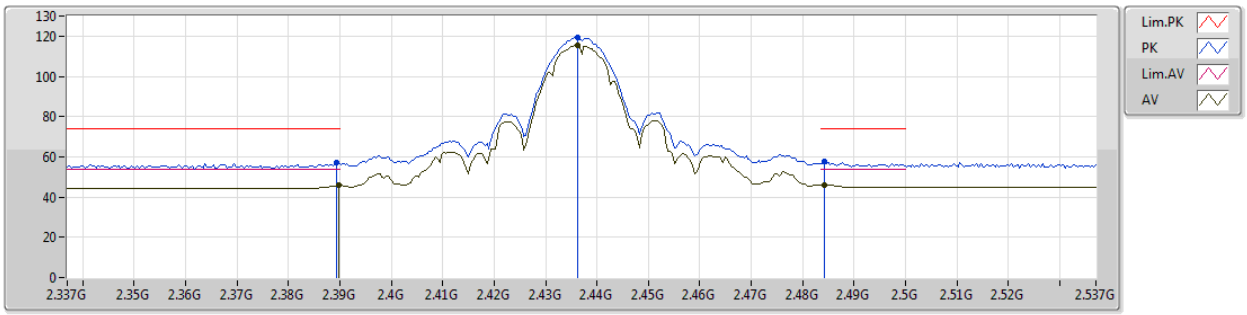
EUT Z_2TX_Dipole
Setting 19.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.81248G	46.74	74.00	-27.26	6.56	3	Horizontal	196	1.26	-
AV	4.82928G	32.48	54.00	-21.52	6.59	3	Horizontal	196	1.26	-

802.11b_Nss1,(1Mbps)_2TX

2437MHz_TX

03/04/2019



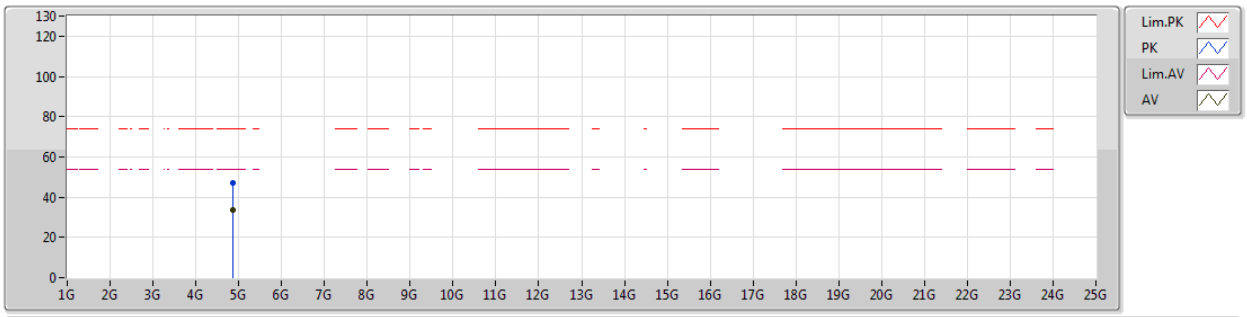
EUT Z_2TX_Dipole
Setting 20
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3894G	56.95	74.00	-17.05	32.13	3	Vertical	88	1.01	-
AV	2.3898G	45.72	54.00	-8.28	32.13	3	Vertical	88	1.01	-
PK	2.4362G	119.40	Inf	-Inf	32.27	3	Vertical	88	1.01	-
AV	2.4362G	115.58	Inf	-Inf	32.27	3	Vertical	88	1.01	-
PK	2.4842G	57.81	74.00	-16.19	32.42	3	Vertical	88	1.01	-
AV	2.4842G	46.13	54.00	-7.87	32.42	3	Vertical	88	1.01	-

802.11b_Nss1,(1Mbps)_2TX

2437MHz_TX

03/04/2019



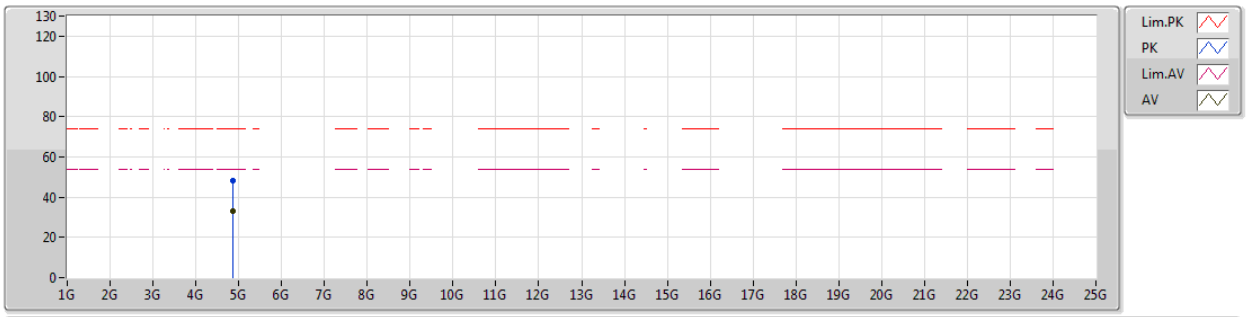
EUT Z_2TX_Dipole
Setting 20
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.87568G	47.01	74.00	-26.99	6.71	3	Vertical	352	2.26	-
AV	4.87382G	33.53	54.00	-20.47	6.71	3	Vertical	352	2.26	-

802.11b_Nss1,(1Mbps)_2TX

2437MHz_TX

03/04/2019



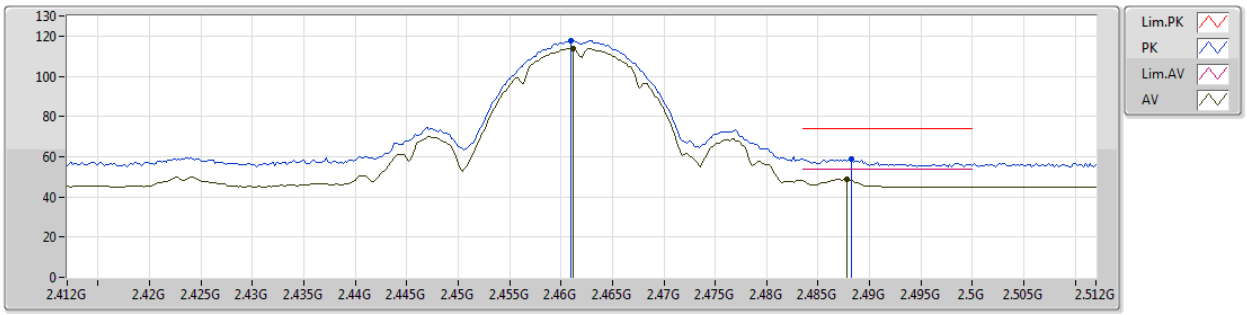
EUT Z_2TX_Dipole
Setting 20
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.8746G	48.00	74.00	-26.00	6.71	3	Horizontal	328	1.57	-
AV	4.87376G	33.00	54.00	-21.00	6.71	3	Horizontal	328	1.57	-

802.11b_Nss1,(1Mbps)_2TX

2462MHz_TX

03/04/2019



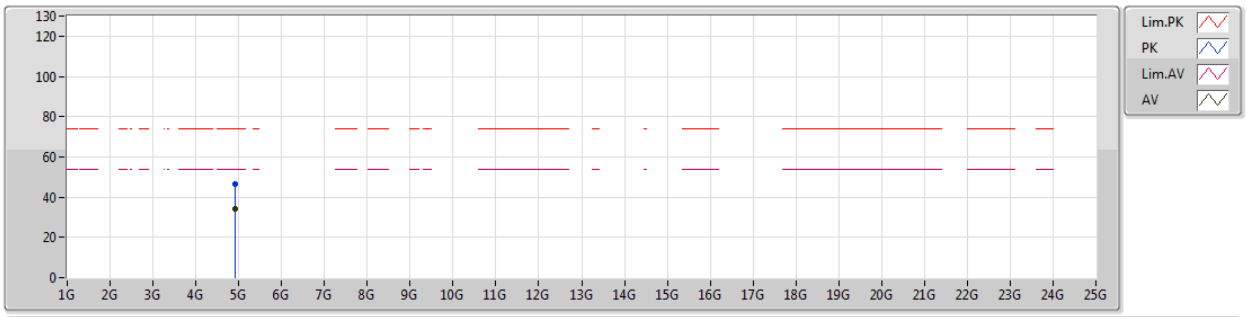
EUT Z_2TX_Dipole
Setting 18
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.461G	117.78	Inf	-Inf	32.34	3	Vertical	86	1.50	-
AV	2.4612G	113.96	Inf	-Inf	32.34	3	Vertical	86	1.50	-
PK	2.4882G	58.75	74.00	-15.25	32.42	3	Vertical	86	1.50	-
AV	2.4878G	48.58	54.00	-5.42	32.42	3	Vertical	86	1.50	-

802.11b_Nss1,(1Mbps)_2TX

2462MHz_TX

03/04/2019



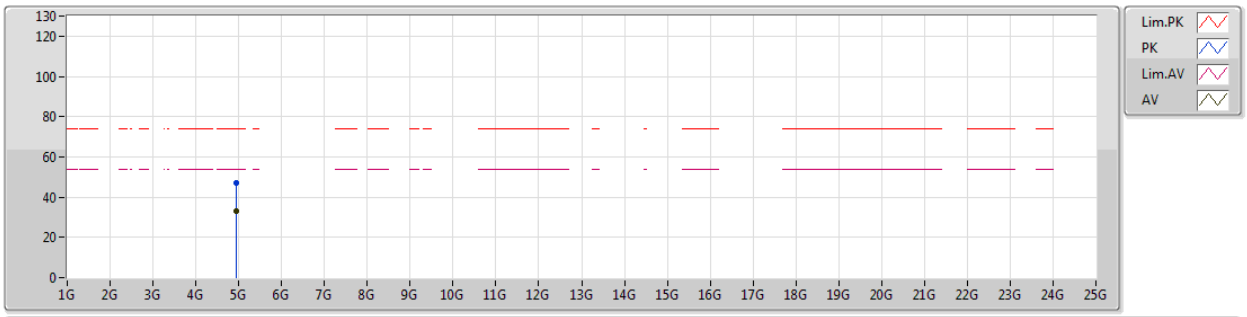
EUT Z_2TX_Dipole
Setting 18
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.91572G	46.68	74.00	-27.32	6.81	3	Vertical	185	1.24	-
AV	4.92394G	34.23	54.00	-19.77	6.83	3	Vertical	185	1.24	-

802.11b_Nss1,(1Mbps)_2TX

2462MHz_TX

03/04/2019



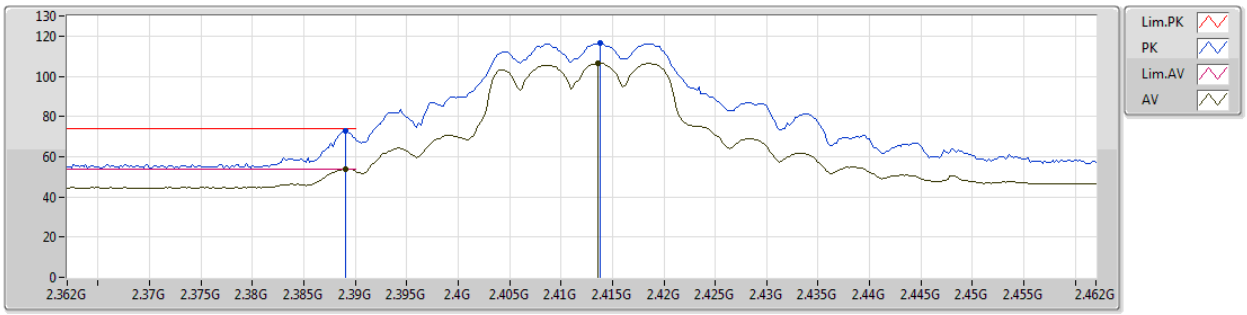
EUT Z_2TX_Dipole
Setting 18
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.93876G	47.02	74.00	-26.98	6.87	3	Horizontal	166	1.76	-
AV	4.93882G	32.93	54.00	-21.07	6.87	3	Horizontal	166	1.76	-

802.11g_Nss1,(6Mbps)_2TX

2412MHz_TX

03/04/2019



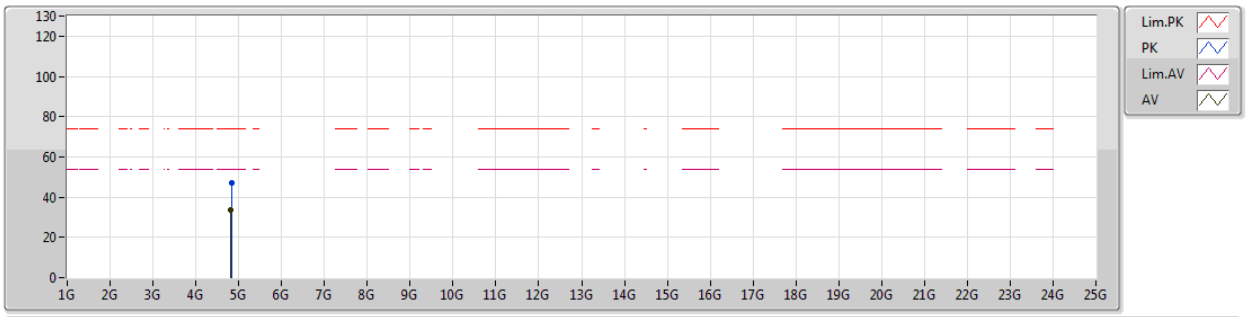
EUT Z_2TX_Dipole
Setting 15.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.389G	72.90	74.00	-1.10	32.12	3	Vertical	101	1.20	-
AV	2.389G	53.99	54.00	-0.01	32.12	3	Vertical	101	1.20	-
PK	2.4138G	116.38	Inf	-Inf	32.20	3	Vertical	101	1.20	-
AV	2.4136G	106.28	Inf	-Inf	32.20	3	Vertical	101	1.20	-

802.11g_Nss1,(6Mbps)_2TX

2412MHz_TX

03/04/2019



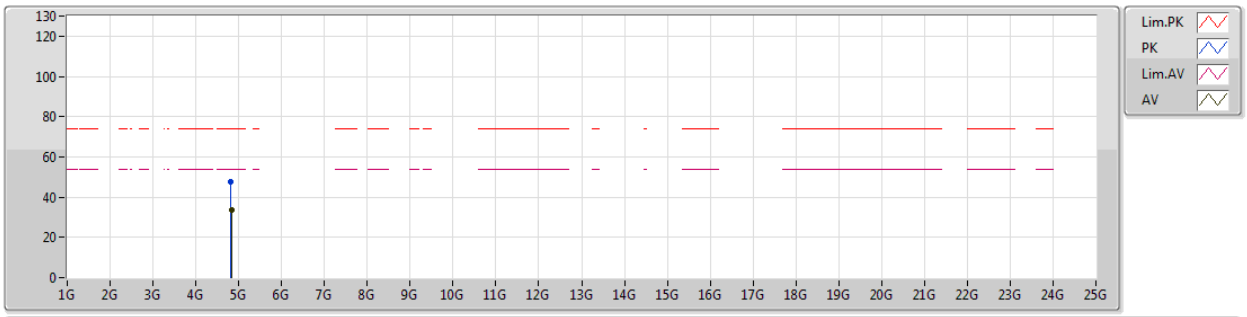
EUT Z_2TX_Dipole
Setting 15.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.83084G	47.05	74.00	-26.95	6.61	3	Vertical	177	2.09	-
AV	4.824G	33.79	54.00	-20.21	6.59	3	Vertical	177	2.09	-

802.11g_Nss1,(6Mbps)_2TX

2412MHz_TX

03/04/2019



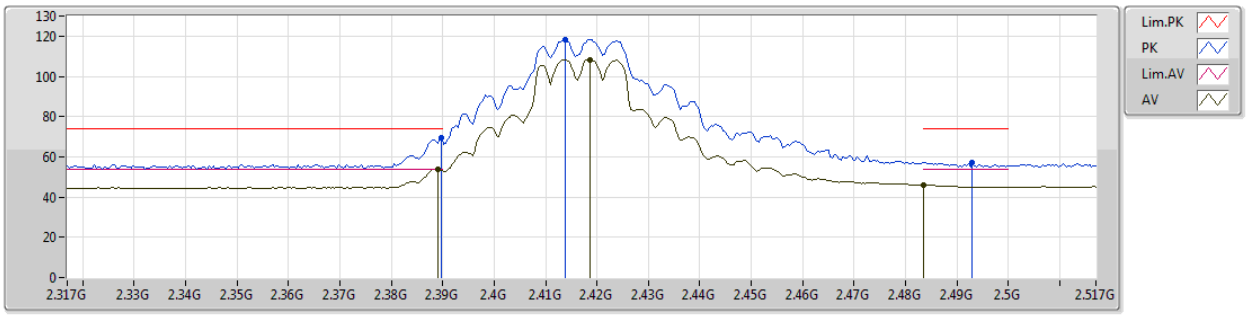
EUT Z_2TX_Dipole
Setting 15.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.8174G	47.38	74.00	-26.62	6.58	3	Horizontal	120	2.05	-
AV	4.83678G	33.49	54.00	-20.51	6.62	3	Horizontal	120	2.05	-

802.11g_Nss1,(6Mbps)_2TX

2417MHz_TX

04/04/2019



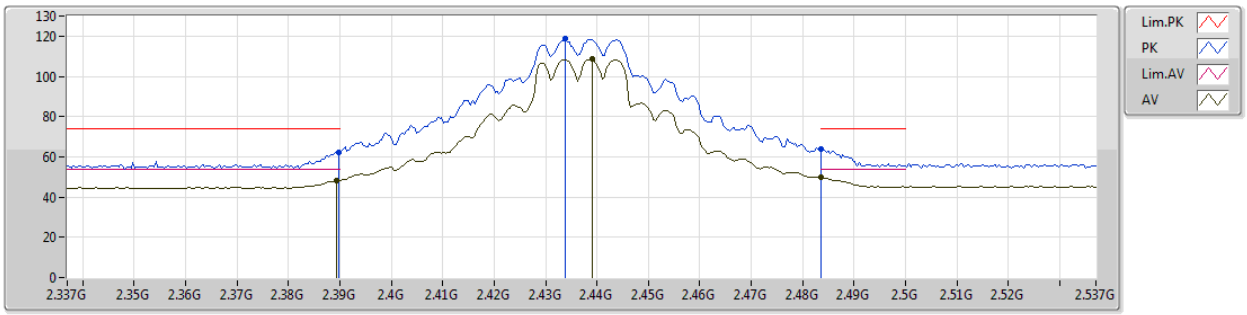
EUT Z_2TX_Dipole
Setting 18
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3898G	69.47	74.00	-4.53	32.13	3	Vertical	100	1.24	-
AV	2.389G	53.82	54.00	-0.18	32.12	3	Vertical	100	1.24	-
PK	2.4138G	118.38	Inf	-Inf	32.20	3	Vertical	100	1.24	-
AV	2.4186G	108.38	Inf	-Inf	32.21	3	Vertical	100	1.24	-
PK	2.493G	57.39	74.00	-16.61	32.43	3	Vertical	100	1.24	-
AV	2.4835G	46.21	54.00	-7.79	32.41	3	Vertical	100	1.24	-

802.11g_Nss1,(6Mbps)_2TX

2437MHz_TX

03/04/2019



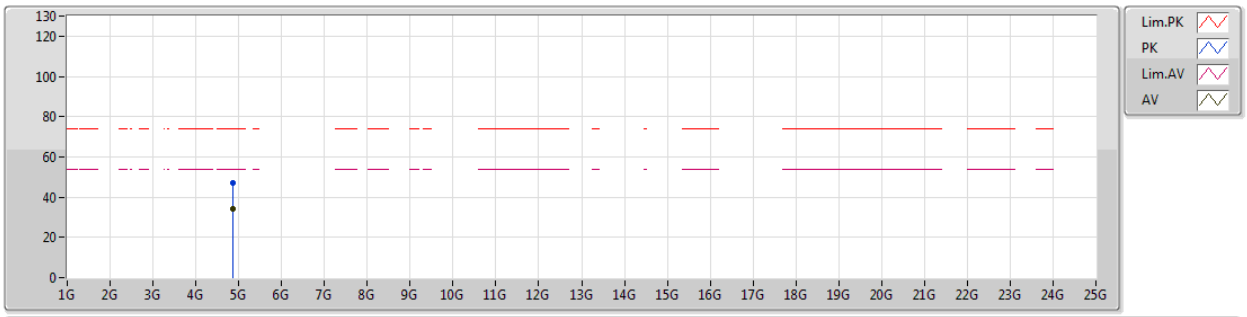
EUT Z_2TX_Dipole
Setting 19
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3898G	62.30	74.00	-11.70	32.13	3	Vertical	105	1.50	-
AV	2.3894G	48.42	54.00	-5.58	32.13	3	Vertical	105	1.50	-
PK	2.4338G	118.72	Inf	-Inf	32.26	3	Vertical	105	1.50	-
AV	2.439G	108.52	Inf	-Inf	32.28	3	Vertical	105	1.50	-
PK	2.4835G	64.13	74.00	-9.87	32.41	3	Vertical	105	1.50	-
AV	2.4835G	49.80	54.00	-4.20	32.41	3	Vertical	105	1.50	-

802.11g_Nss1,(6Mbps)_2TX

2437MHz_TX

03/04/2019



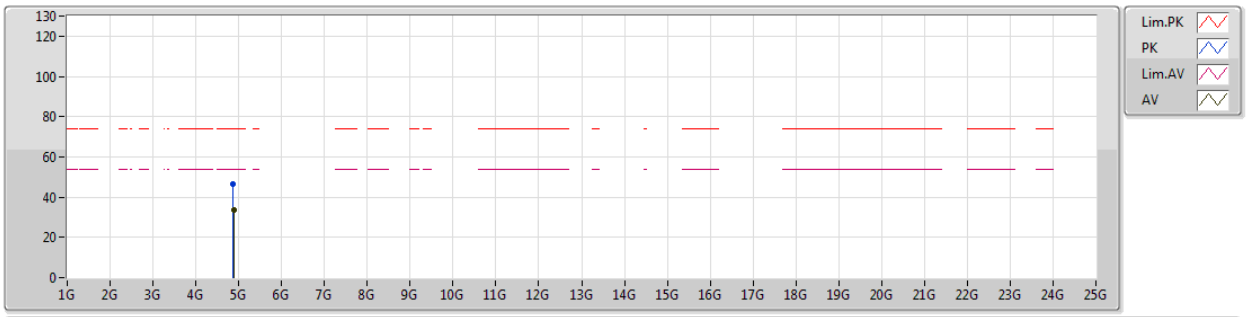
EUT Z_2TX_Dipole
Setting 19
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.87316G	47.00	74.00	-27.00	6.71	3	Vertical	267	1.06	-
AV	4.87394G	34.10	54.00	-19.90	6.71	3	Vertical	267	1.06	-

802.11g_Nss1,(6Mbps)_2TX

2437MHz_TX

03/04/2019



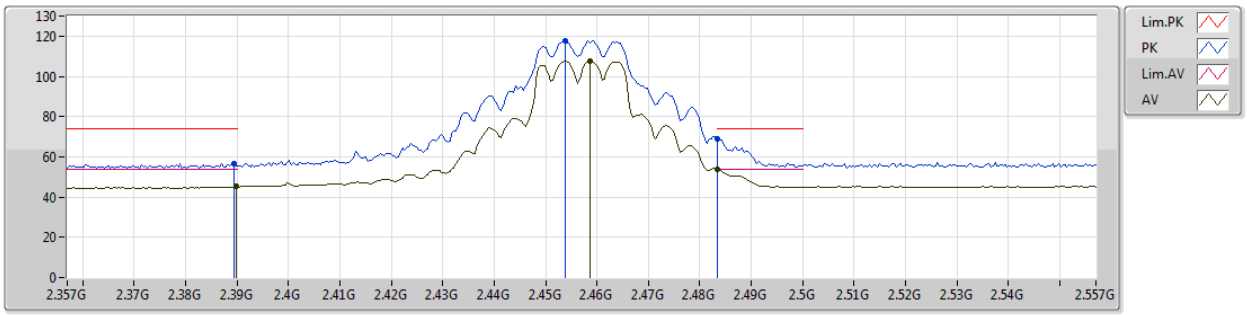
EUT Z_2TX_Dipole
Setting 19
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.87322G	46.57	74.00	-27.43	6.71	3	Horizontal	291	2.41	-
AV	4.87988G	33.80	54.00	-20.20	6.72	3	Horizontal	291	2.41	-

802.11g_Nss1,(6Mbps)_2TX

2457MHz_TX

04/04/2019



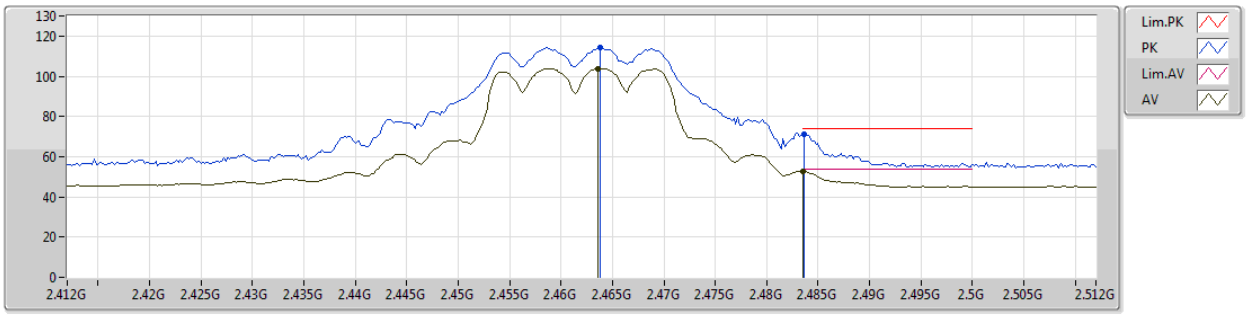
EUT Z_2TX_Dipole
Setting 16.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3894G	56.76	74.00	-17.24	32.13	3	Vertical	109	1.35	-
AV	2.3898G	45.13	54.00	-8.87	32.13	3	Vertical	109	1.35	-
PK	2.4538G	117.71	Inf	-Inf	32.32	3	Vertical	109	1.35	-
AV	2.4586G	107.54	Inf	-Inf	32.34	3	Vertical	109	1.35	-
PK	2.4835G	69.20	74.00	-4.80	32.41	3	Vertical	109	1.35	-
AV	2.4835G	53.90	54.00	-0.10	32.41	3	Vertical	109	1.35	-

802.11g_Nss1,(6Mbps)_2TX

2462MHz_TX

03/04/2019



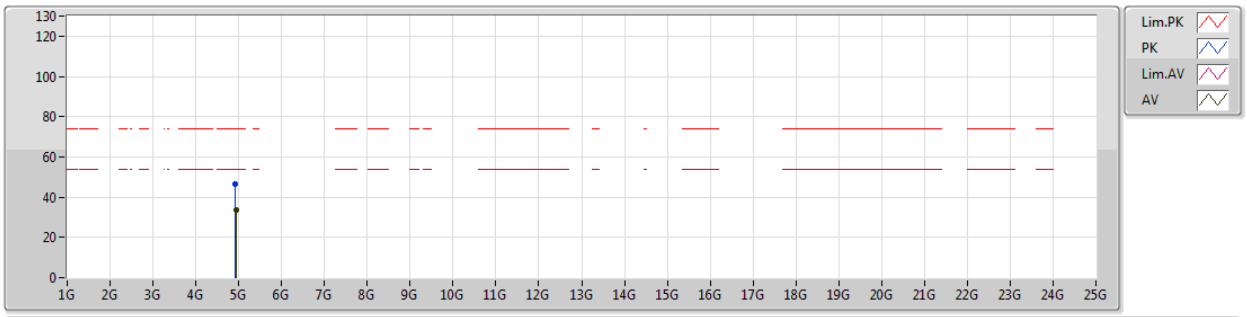
EUT Z_2TX_Dipole
Setting 13
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.4638G	114.10	Inf	-Inf	32.35	3	Vertical	108	1.36	-
AV	2.4636G	103.91	Inf	-Inf	32.35	3	Vertical	108	1.36	-
PK	2.4836G	71.17	74.00	-2.83	32.41	3	Vertical	108	1.36	-
AV	2.4835G	52.82	54.00	-1.18	32.41	3	Vertical	108	1.36	-

802.11g_Nss1,(6Mbps)_2TX

2462MHz_TX

03/04/2019



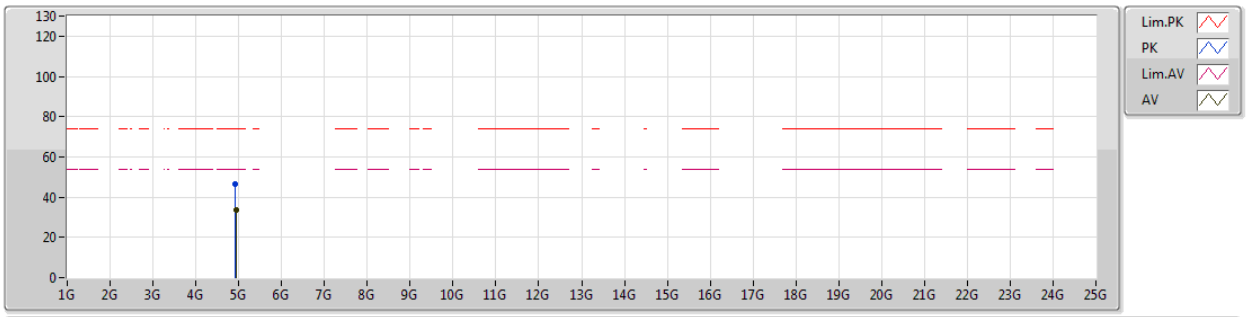
EUT Z_2TX_Dipole
Setting 13
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.92034G	46.78	74.00	-27.22	6.82	3	Vertical	268	1.59	-
AV	4.93774G	33.69	54.00	-20.31	6.87	3	Vertical	268	1.59	-

802.11g_Nss1,(6Mbps)_2TX

2462MHz_TX

03/04/2019



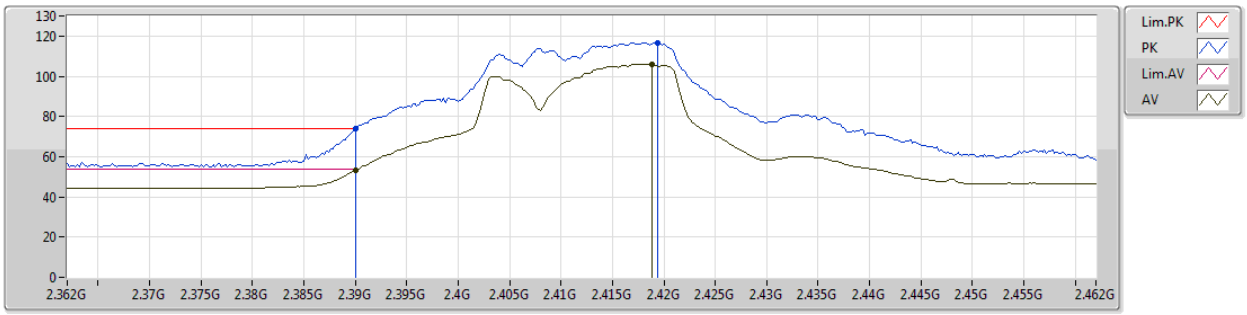
EUT Z_2TX_Dipole
Setting 13
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.91284G	46.65	74.00	-27.35	6.81	3	Horizontal	197	1.96	-
AV	4.93252G	33.70	54.00	-20.30	6.86	3	Horizontal	197	1.96	-

802.11n HT20_Nss1,(MCS0)_2TX

2412MHz_TX

11/04/2019



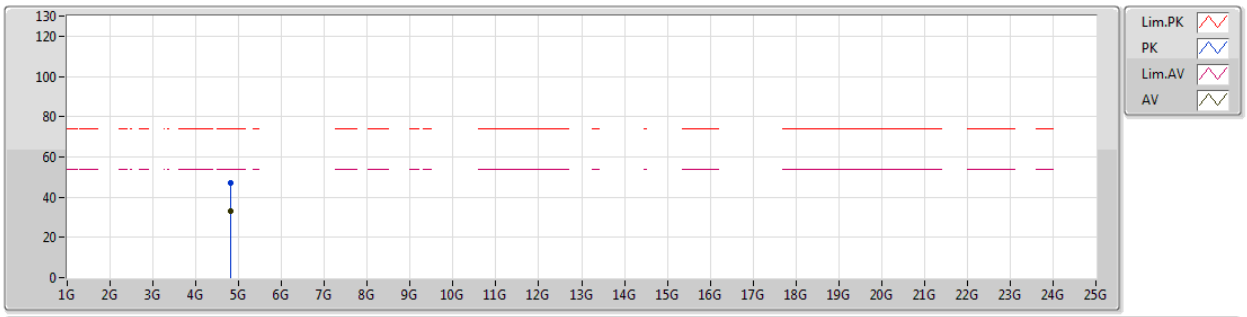
EUT Z_2TX_Dipole
Setting 15.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.39G	73.76	74.00	-0.24	32.13	3	Vertical	101	1.21	-
AV	2.39G	52.98	54.00	-1.02	32.13	3	Vertical	101	1.21	-
PK	2.4194G	116.62	Inf	-Inf	32.22	3	Vertical	101	1.21	-
AV	2.4188G	105.87	Inf	-Inf	32.22	3	Vertical	101	1.21	-

802.11n HT20_Nss1,(MCS0)_2TX

2412MHz_TX

11/04/2019



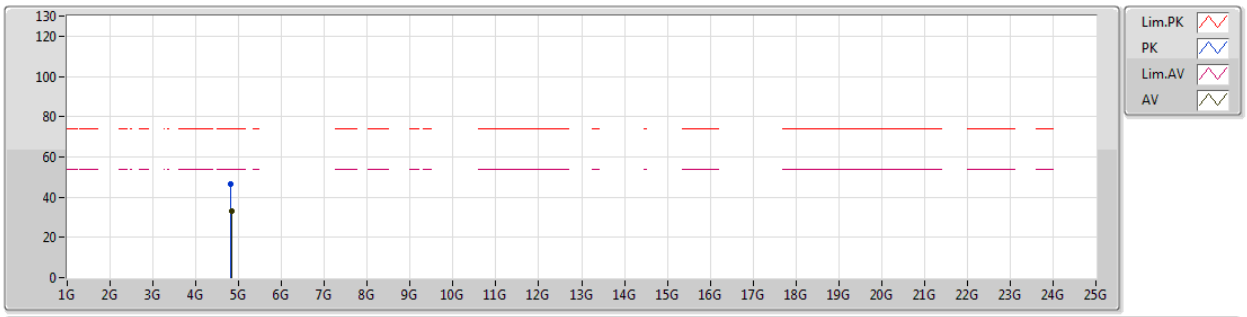
EUT Z_2TX_Dipole
Setting 15.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.8093G	47.08	74.00	-26.92	6.54	3	Vertical	96	2.06	-
AV	4.82388G	33.33	54.00	-20.67	6.59	3	Vertical	96	2.06	-

802.11n HT20_Nss1,(MCS0)_2TX

2412MHz_TX

11/04/2019



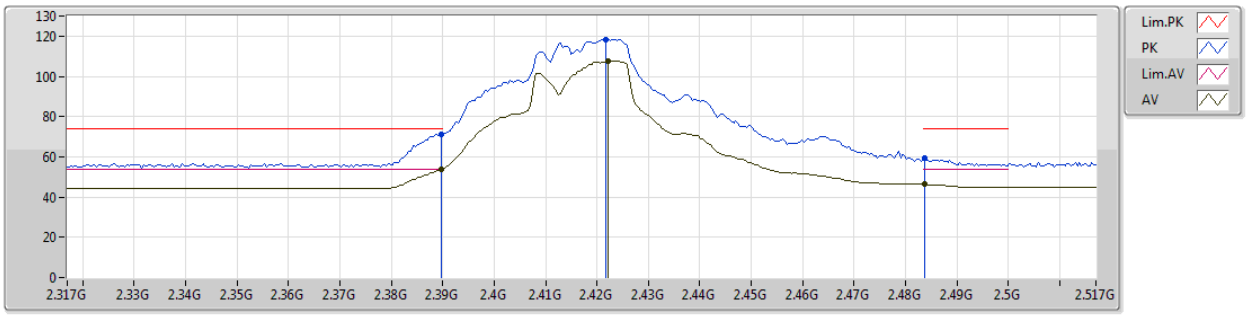
EUT Z_2TX_Dipole
Setting 15.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.81302G	46.76	74.00	-27.24	6.57	3	Horizontal	121	2.31	-
AV	4.82928G	32.94	54.00	-21.06	6.59	3	Horizontal	121	2.31	-

802.11n HT20_Nss1,(MCS0)_2TX

2417MHz_TX

11/04/2019



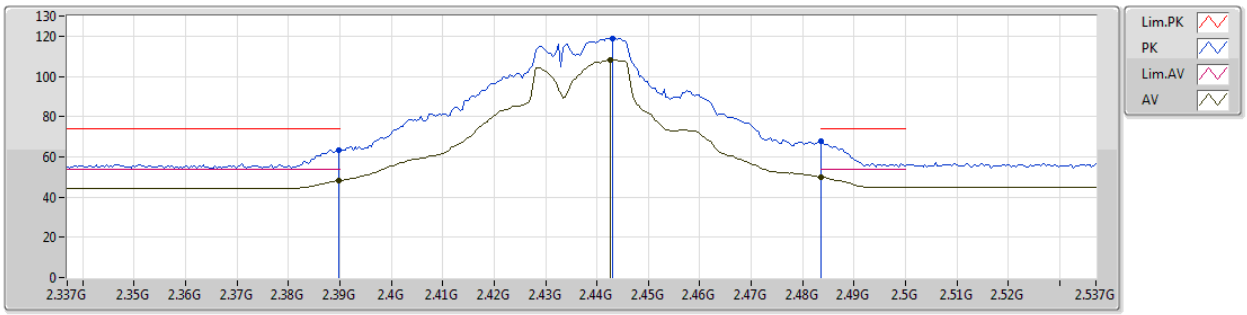
EUT Z_2TX_Dipole
Setting 18.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3898G	71.08	74.00	-2.92	32.13	3	Vertical	107	1.35	-
AV	2.3898G	53.77	54.00	-0.23	32.13	3	Vertical	107	1.35	-
PK	2.4218G	118.48	Inf	-Inf	32.23	3	Vertical	107	1.35	-
AV	2.4222G	107.69	Inf	-Inf	32.23	3	Vertical	107	1.35	-
PK	2.4838G	59.39	74.00	-14.61	32.41	3	Vertical	107	1.35	-
AV	2.4836G	46.32	54.00	-7.68	32.41	3	Vertical	107	1.35	-

802.11n HT20_Nss1,(MCS0)_2TX

2437MHz_TX

11/04/2019



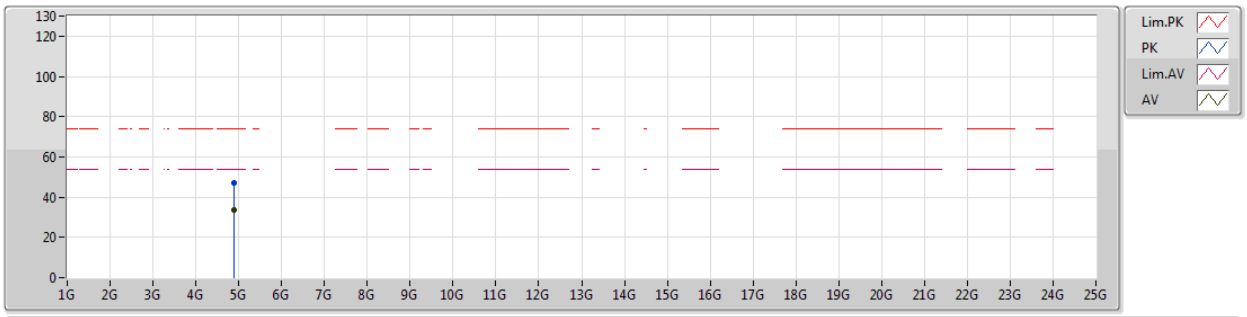
EUT Z_2TX_Dipole
Setting 19
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3898G	63.19	74.00	-10.81	32.13	3	Vertical	103	1.12	-
AV	2.3898G	48.28	54.00	-5.72	32.13	3	Vertical	103	1.12	-
PK	2.443G	118.83	Inf	-Inf	32.28	3	Vertical	103	1.12	-
AV	2.4426G	108.03	Inf	-Inf	32.28	3	Vertical	103	1.12	-
PK	2.4835G	68.02	74.00	-5.98	32.41	3	Vertical	103	1.12	-
AV	2.4835G	49.90	54.00	-4.10	32.41	3	Vertical	103	1.12	-

802.11n HT20_Nss1,(MCS0)_2TX

2437MHz_TX

11/04/2019



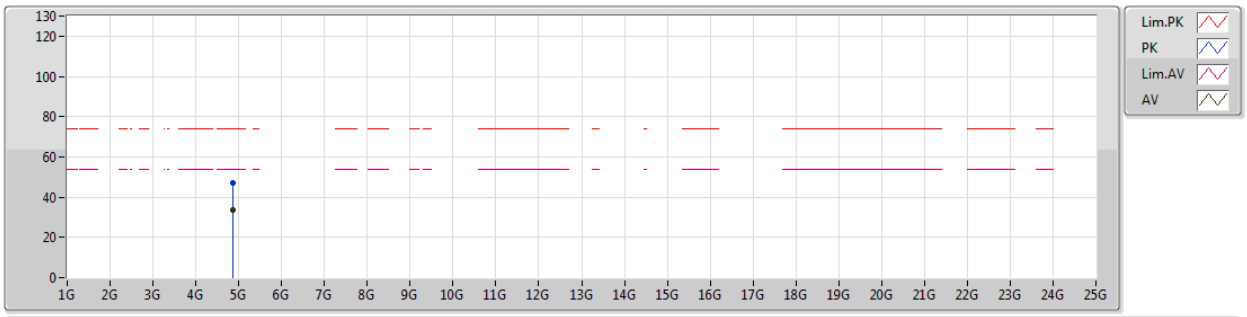
EUT Z_2TX_Dipole
Setting 19
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.88396G	46.88	74.00	-27.12	6.73	3	Vertical	115	1.02	-
AV	4.87742G	33.37	54.00	-20.63	6.72	3	Vertical	115	1.02	-

802.11n HT20_Nss1,(MCS0)_2TX

2437MHz_TX

11/04/2019



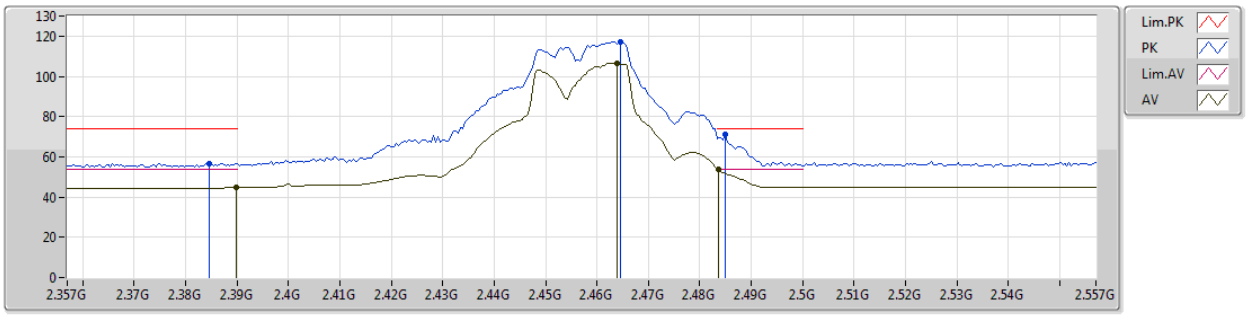
EUT Z_2TX_Dipole
Setting 19
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.86074G	47.01	74.00	-26.99	6.67	3	Horizontal	186	2.44	-
AV	4.87394G	33.67	54.00	-20.33	6.71	3	Horizontal	186	2.44	-

802.11n HT20_Nss1,(MCS0)_2TX

2457MHz_TX

11/04/2019



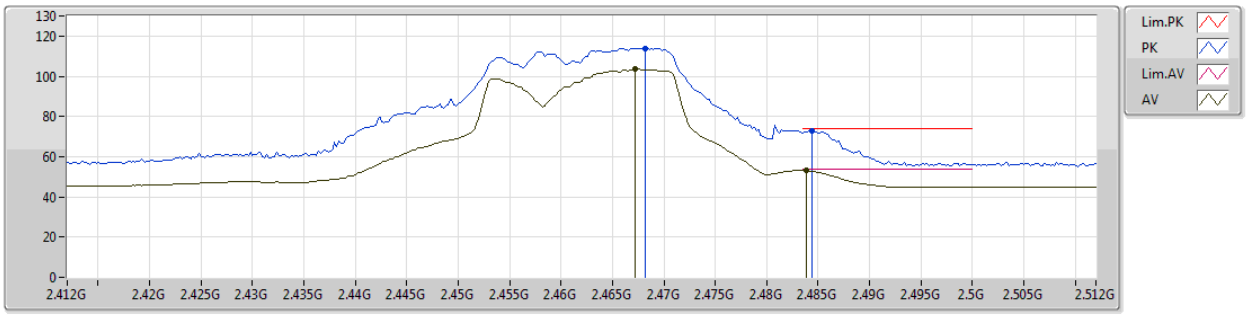
EUT Z_2TX_Dipole
Setting 16
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3846G	56.78	74.00	-17.22	32.10	3	Vertical	105	1.36	-
AV	2.3898G	44.67	54.00	-9.33	32.13	3	Vertical	105	1.36	-
PK	2.4646G	117.07	Inf	-Inf	32.35	3	Vertical	105	1.36	-
AV	2.4638G	106.32	Inf	-Inf	32.35	3	Vertical	105	1.36	-
PK	2.485G	71.35	74.00	-2.65	32.42	3	Vertical	105	1.36	-
AV	2.4836G	53.78	54.00	-0.22	32.41	3	Vertical	105	1.36	-

802.11n HT20_Nss1,(MCS0)_2TX

2462MHz_TX

11/04/2019



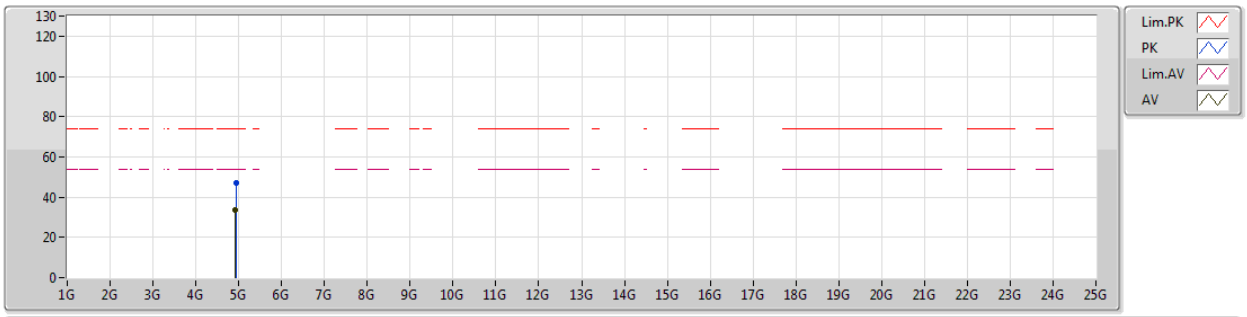
EUT Z_2TX_Dipole
Setting 13.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.4682G	113.97	Inf	-Inf	32.36	3	Vertical	110	1.34	-
AV	2.4672G	103.46	Inf	-Inf	32.36	3	Vertical	110	1.34	-
PK	2.4844G	72.90	74.00	-1.10	32.42	3	Vertical	110	1.34	-
AV	2.4838G	53.04	54.00	-0.96	32.41	3	Vertical	110	1.34	-

802.11n HT20_Nss1,(MCS0)_2TX

2462MHz_TX

11/04/2019



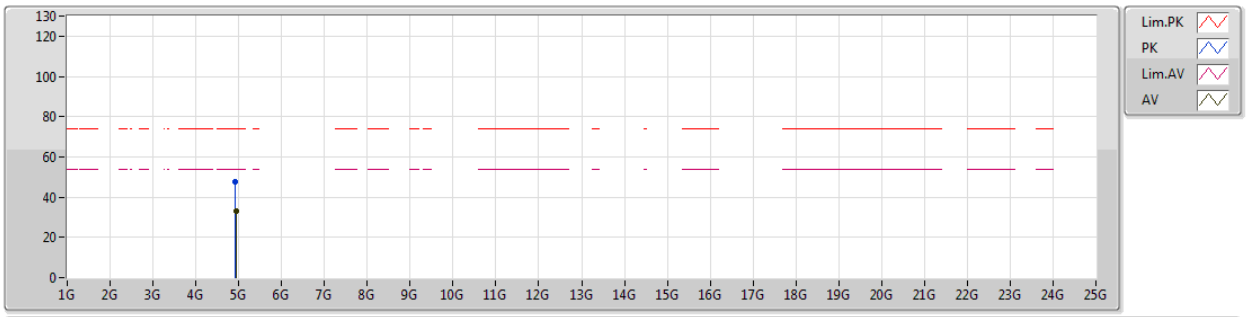
EUT Z_2TX_Dipole
Setting 13.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.93636G	47.10	74.00	-26.90	6.86	3	Vertical	118	2.38	-
AV	4.92382G	33.58	54.00	-20.42	6.83	3	Vertical	118	2.38	-

802.11n HT20_Nss1,(MCS0)_2TX

2462MHz_TX

11/04/2019



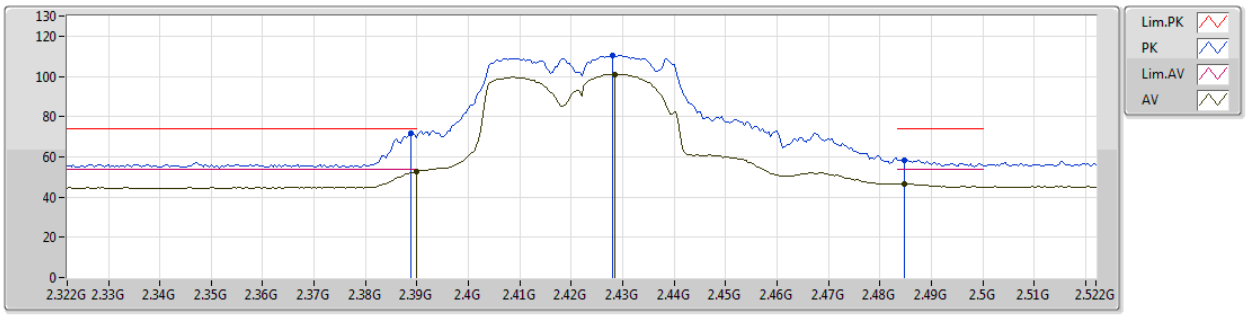
EUT Z_2TX_Dipole
Setting 13.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.9108G	47.55	74.00	-26.45	6.81	3	Horizontal	104	1.79	-
AV	4.93168G	33.27	54.00	-20.73	6.86	3	Horizontal	104	1.79	-

802.11n HT40_Nss1,(MCS0)_2TX

2422MHz_TX

11/04/2019



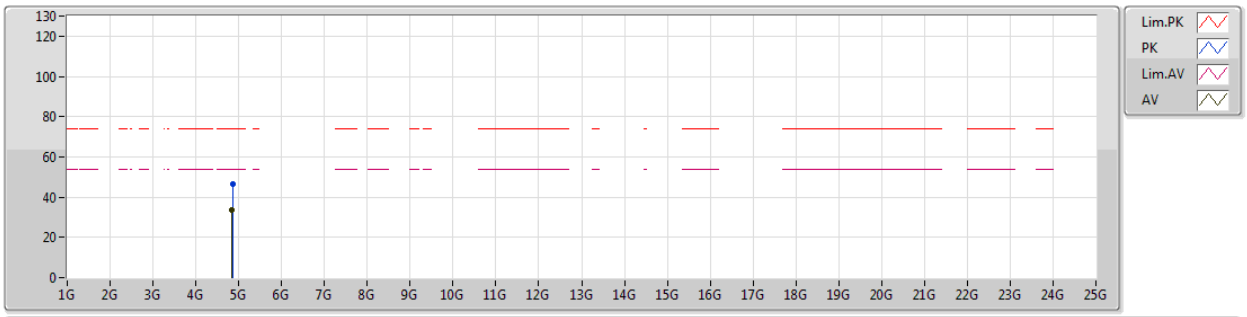
EUT Z_2TX_Dipole
Setting 13.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3888G	71.51	74.00	-2.49	32.12	3	Vertical	106	1.33	-
AV	2.39G	52.89	54.00	-1.11	32.13	3	Vertical	106	1.33	-
PK	2.428G	110.64	Inf	-Inf	32.24	3	Vertical	106	1.33	-
AV	2.4284G	101.07	Inf	-Inf	32.24	3	Vertical	106	1.33	-
PK	2.4848G	58.49	74.00	-15.51	32.42	3	Vertical	106	1.33	-
AV	2.4848G	46.56	54.00	-7.44	32.42	3	Vertical	106	1.33	-

802.11n HT40_Nss1,(MCS0)_2TX

2422MHz_TX

11/04/2019



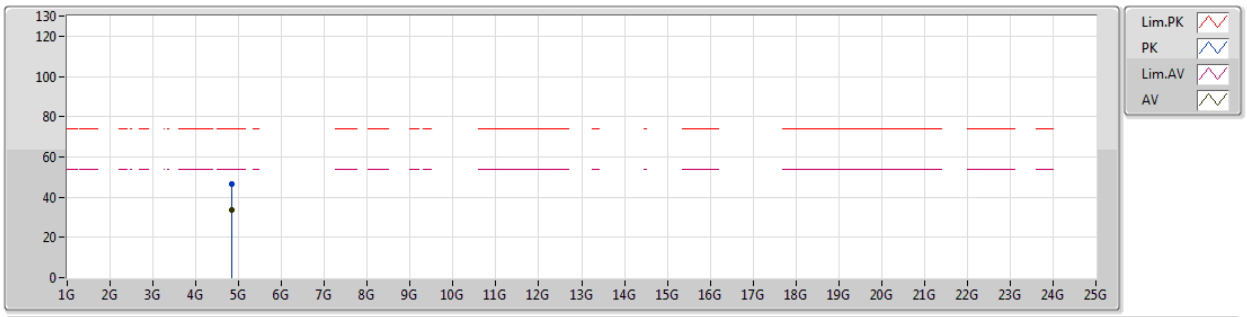
EUT Z_2TX_Dipole
Setting 13.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.85822G	46.63	74.00	-27.37	6.67	3	Vertical	188	1.56	-
AV	4.8437G	33.56	54.00	-20.44	6.64	3	Vertical	188	1.56	-

802.11n HT40_Nss1,(MCS0)_2TX

2422MHz_TX

11/04/2019



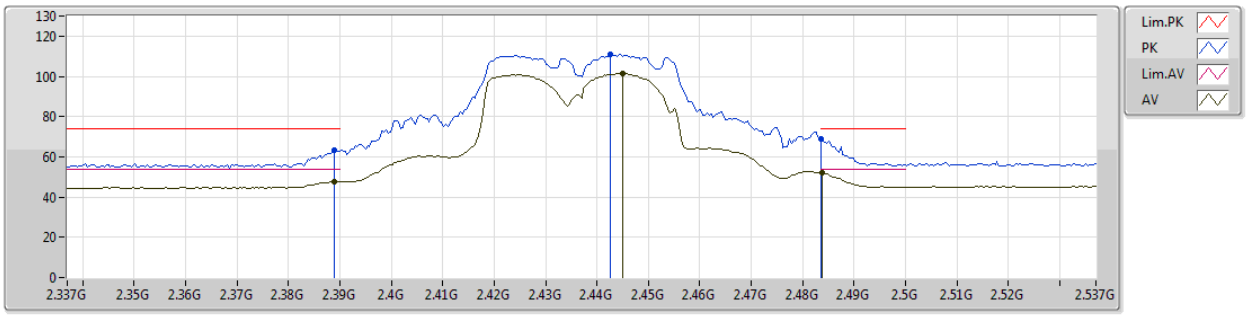
EUT Z_2TX_Dipole
Setting 13.5
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.84022G	46.56	74.00	-27.44	6.63	3	Horizontal	61	2.36	-
AV	4.84448G	33.42	54.00	-20.58	6.64	3	Horizontal	61	2.36	-

802.11n HT40_Nss1,(MCS0)_2TX

2437MHz_TX

11/04/2019



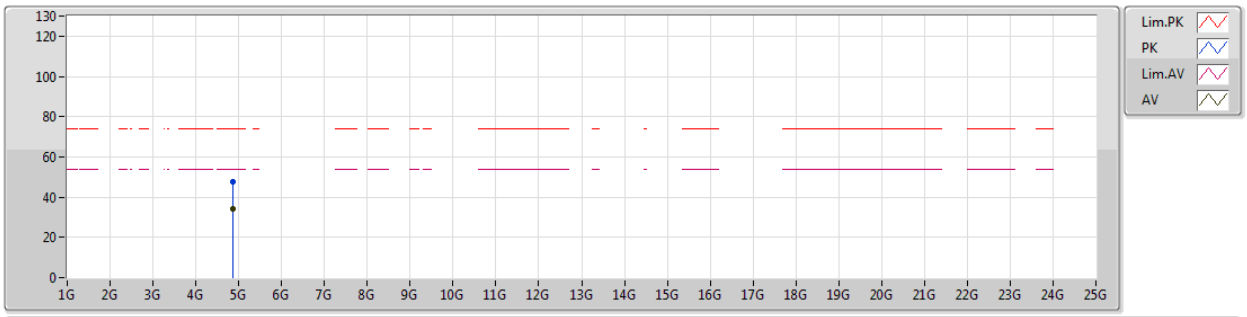
EUT Z_2TX_Dipole
Setting 14
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.389G	63.48	74.00	-10.52	32.12	3	Vertical	106	1.44	-
AV	2.389G	47.89	54.00	-6.11	32.12	3	Vertical	106	1.44	-
PK	2.4426G	111.18	Inf	-Inf	32.28	3	Vertical	106	1.44	-
AV	2.445G	101.32	Inf	-Inf	32.30	3	Vertical	106	1.44	-
PK	2.4835G	68.73	74.00	-5.27	32.41	3	Vertical	106	1.44	-
AV	2.4838G	52.25	54.00	-1.75	32.41	3	Vertical	106	1.44	-

802.11n HT40_Nss1,(MCS0)_2TX

2437MHz_TX

11/04/2019



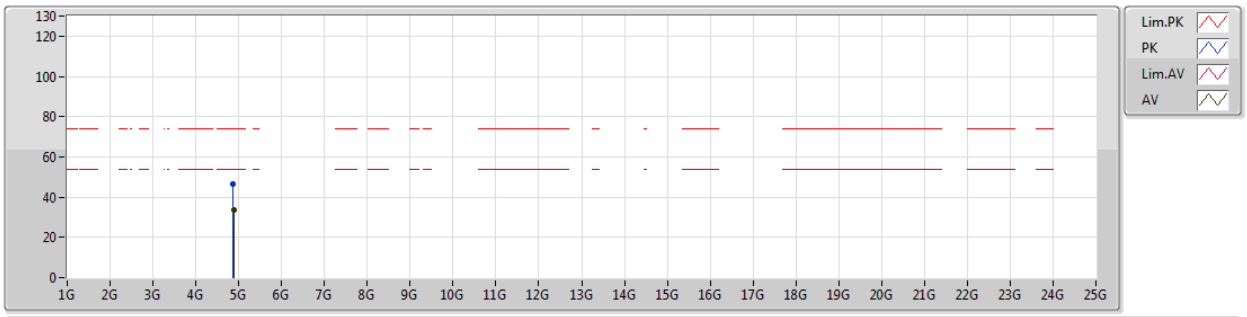
EUT Z_2TX_Dipole
Setting 14
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.87316G	47.35	74.00	-26.65	6.71	3	Vertical	72	2.46	-
AV	4.87394G	34.40	54.00	-19.60	6.71	3	Vertical	72	2.46	-

802.11n HT40_Nss1,(MCS0)_2TX

2437MHz_TX

11/04/2019



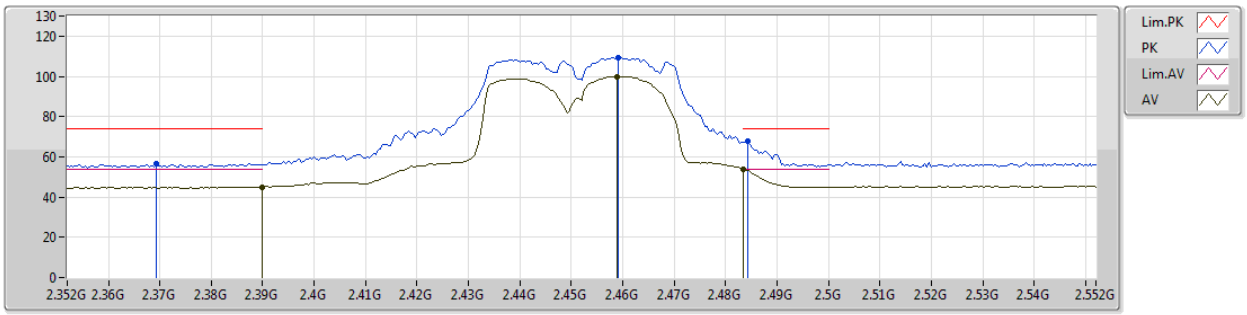
EUT Z_2TX_Dipole
Setting 14
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.86074G	46.76	74.00	-27.24	6.67	3	Horizontal	288	1.96	-
AV	4.88756G	33.84	54.00	-20.16	6.74	3	Horizontal	288	1.96	-

802.11n HT40_Nss1,(MCS0)_2TX

2452MHz_TX

11/04/2019



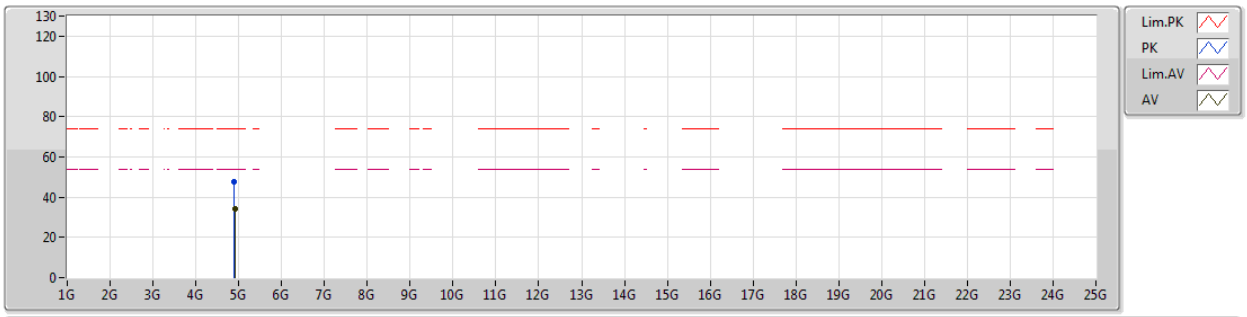
EUT Z_2TX_Dipole
Setting 12
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	2.3692G	56.56	74.00	-17.44	32.05	3	Vertical	106	1.34	-
AV	2.39G	45.07	54.00	-8.93	32.13	3	Vertical	106	1.34	-
PK	2.4592G	109.35	Inf	-Inf	32.34	3	Vertical	106	1.34	-
AV	2.4588G	99.92	Inf	-Inf	32.34	3	Vertical	106	1.34	-
PK	2.4844G	67.76	74.00	-6.24	32.42	3	Vertical	106	1.34	-
AV	2.4835G	53.96	54.00	-0.04	32.41	3	Vertical	106	1.34	-

802.11n HT40_Nss1,(MCS0)_2TX

2452MHz_TX

11/04/2019



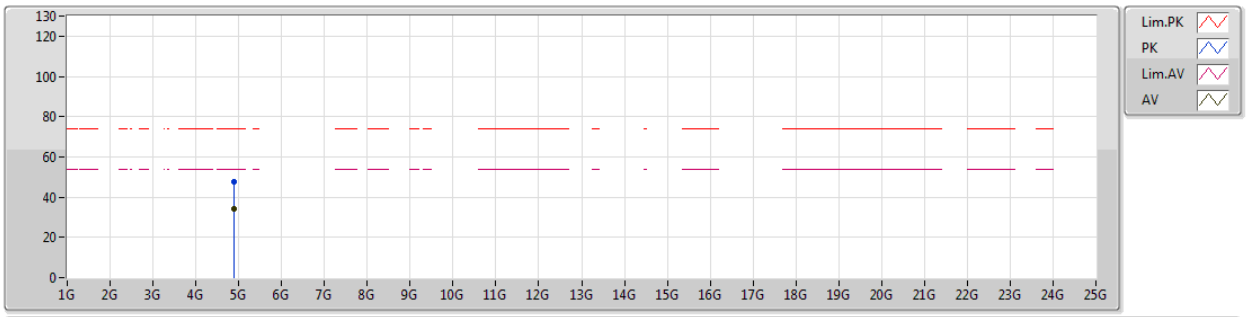
EUT Z_2TX_Dipole
Setting 12
06-C-4
FSP(100080)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.90124G	47.64	74.00	-26.36	6.77	3	Vertical	202	1.29	-
AV	4.90394G	34.33	54.00	-19.67	6.78	3	Vertical	202	1.29	-

802.11n HT40_Nss1,(MCS0)_2TX

2452MHz_TX

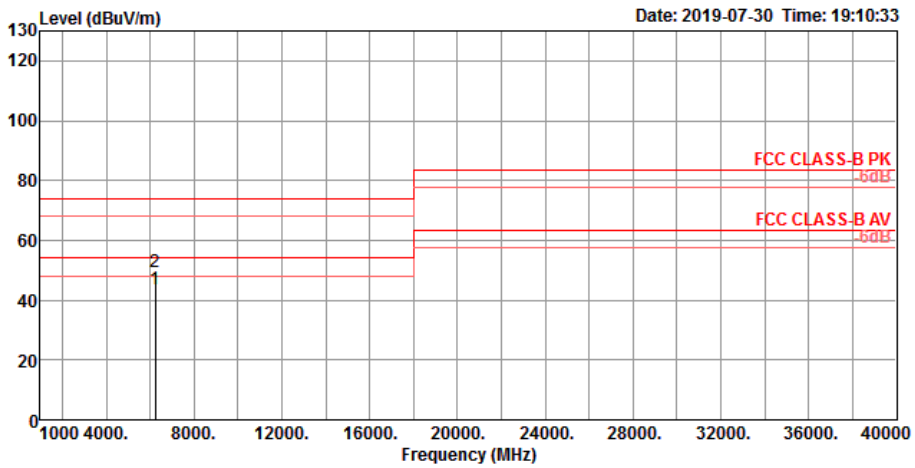
11/04/2019



EUT Z_2TX_Dipole
Setting 12
06-C-4
FSP(100080)

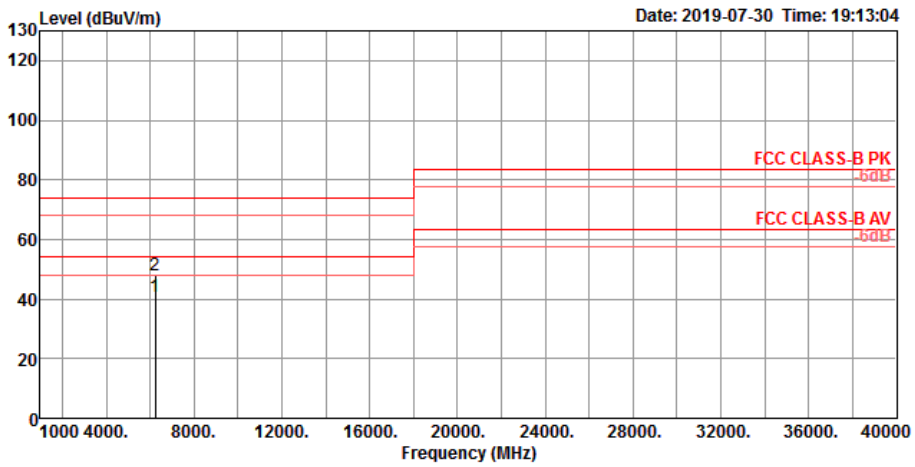
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	4.89338G	47.83	74.00	-26.17	6.76	3	Horizontal	125	2.31	-
AV	4.89158G	34.17	54.00	-19.83	6.76	3	Horizontal	125	2.31	-

RSE Co-location Result			
Operating Mode	1	**Polarization**	Horizontal
Operating Function	Normal Link		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable 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	6249.90	43.71	54.00	-10.29	38.59	6.13	34.55	35.56	196	233	Average	VERTICAL
2	6250.02	49.31	74.00	-24.69	44.19	6.13	34.55	35.56	196	233	Peak	VERTICAL

RSE Co-location Result			
Operating Mode	1	**Polarization**	Vertical
Operating Function	Normal Link		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable 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	6249.91	40.63	54.00	-13.37	35.51	6.13	34.55	35.56	116	172	Average	HORIZONTAL
2	6250.00	48.12	74.00	-25.88	43.00	6.13	34.55	35.56	116	172	Peak	HORIZONTAL