FCC RADIO TEST REPORT

FCC ID	:	G954331X
Equipment Name	:	DOCSIS Cable Gateway
Trade Name	:	Technicolor
Model Number	:	CGM4331COM
Applicant / Manufacturer	:	Technicolor Connected Home USA LLC 5030 Sugarloaf Parkway,Building 6, Lawrenceville Georgia,United States,30044
Standard	:	47 CFR FCC Part 15.247

The product was received on Jul. 19, 2019, and testing was started from Jul. 19, 2019 and completed on Nov. 11, 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 variant 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

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Photographs of EUT v01

History of this test report

Report No.	Version	Description	Issued Date
FR971031-02AA	01	Initial issue of report	Nov. 15, 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	15.247(b)	Maximum Conducted Output Power	PASS	-
3.2	15.247(e)	Power Spectral Density	PASS	-
3.3	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

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: Cindy Peng

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), VHT20, ax (HEW20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40), VHT40, ax (HEW40)	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	802.11g	20	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	802.11n HT20	20	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	802.11n HT20-BF	20	2TX, 3TX, 4TX
2.4-2.4835GHz	VHT20	20	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	VHT20-BF	20	2TX, 3TX, 4TX
2.4-2.4835GHz	802.11ax HEW20	20	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	802.11ax HEW20-BF	20	2TX, 3TX, 4TX
2.4-2.4835GHz	802.11n HT40	40	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	802.11n HT40-BF	40	2TX, 3TX, 4TX
2.4-2.4835GHz	VHT40	40	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	VHT40-BF	40	2TX, 3TX, 4TX
2.4-2.4835GHz	802.11ax HEW40	40	1TX, 2TX, 3TX, 4TX
2.4-2.4835GHz	802.11ax HEW40-BF	40	2TX, 3TX, 4TX

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.
- VHT20, VHT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- HEW20, HEW40 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM 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	Antenna Type	Connector
1	1	-	-	-	-
2	2	-	-	-	-
3	3	-	-	-	-
4	4	-	-	-	-

Number of Transmit Antennas & Bandwidth

Number of Transmit Antennas	1TX		2TX		3TX		4TX	
Bandwidth Mode	**20 MHz**	**40 MHz**	**20 MHz**	**40 MHz**	**20 MHz**	**40 MHz**	**20 MHz**	**40 MHz**
802.11b	V	X	V	X	V	X	V	X
802.11g	V	X	V	X	V	X	V	X
VHT	V	V	V	V	V	V	V	V
802.11ax	V	V	V	V	V	V	V	V

Directional Gain (dBi) for TxBF & SDM & CDD mode						
Bandwidth Mode	**Frequency**	**1 Stream 4 TX for TxBF mode**	**2 Stream 4 TX for TxBF mode**	**3 Stream 4 TX for TxBF mode**	**4 Stream 4 TX for SDM mode**	**1 Stream 4 TX for CDD mode**
20MHz	2412MHz	8.0	5.3	4.9	2.3	4.8
	2437MHz	8.0	5.3	4.9	2.3	4.8
	2462MHz	8.0	5.3	4.9	2.3	4.8
40MHz	2422MHz	8.0	5.3	4.9	2.3	-
	2437MHz	8.0	5.3	4.9	2.3	-
	2452MHz	8.0	5.3	4.9	2.3	-

Note: The above information was declared by manufacturer.

1.1.3 Mode Test Duty Cycle

For non-beamforming mode:
4 Stream 4 TX for SDM mode & 1 Stream 4 TX for CDD mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	1	0	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT20	0.986	0.06	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT40	0.972	0.12	953.75u	3k
802.11ax HEW20	0.982	0.08	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW40	0.965	0.15	773.75u	3k

For beamforming mode:
1 Stream 4 TX for TxBF mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
VHT20-BF	0.965	0.15	3.838m	300
VHT40-BF	0.966	0.15	3.695m	300
802.11ax HEW20-BF	0.951	0.22	2.926m	1k
802.11ax HEW40-BF	0.957	0.19	4.36m	300

2 Stream 4 TX for TxBF mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
VHT20-BF	0.947	0.24	3.838m	300
VHT40-BF	0.965	0.15	4.61m	300
802.11ax HEW20-BF	0.939	0.27	4.368m	300
802.11ax HEW40-BF	0.941	0.26	5.083m	300

Note:
- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From power adapter			
Beamforming Function	☒	With beamforming	☐	Without beamforming
	The product has beamforming function for 11n, VHT, 11ax in 2.4GHz and 11n, 11ac, 11ax in 5GHz.			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	For non-beamforming mode: accessMTool_3.1.0.1			
	For beamforming mode: Telnet			

Note: The above information was declared by manufacturer.

1.1.5 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR971031AC

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Changing the same type antenna with different directional gain (Only for WLAN function).	1. Maximum Conducted Output Power. 2. Power Spectral Density.
	3. Emissions in Restricted Frequency Bands below 1GHz. (It was performed according the worst case of original test)
	4. Emissions in Restricted Frequency Bands above 1GHz. (After evaluating, 1 Stream 4 TX for CDD mode: 802.11b 2412 MHz/2437 MHz/2462 MHz; 4 Stream 4 TX for SDM mode: 802.11ax HEW20 2462 MHz, 802.11ax HEW40 2422 MHz/2437 MHz/2452 MHz; 1 Stream 4 TX for TxBF mode: 802.11ax HEW20 2412 MHz/2462 MHz, 802.11ax HEW40 2422 MHz/2437 MHz/2452 MHz; 2 Stream 4 TX for TxBF mode: 802.11ax HEW20 2462 MHz, 802.11ax HEW40 2437 MHz/2452 MHz were tested.)
	5. Radiated Emission Co-location.

1.2 Applicable 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
- FCC KDB 414788 D01 v01r01

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	Eddie Weng	26~27.7°C / 62~64%	Jul. 19, 2019~Nov. 11, 2019
Radiated	03CH05-CB	Cola Fan	23.8~25.8°C / 58~61%	Oct. 30, 2019~Nov. 04, 2019

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
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	5.1 dB	Confidence levels of 95%
Conducted Emission	2.4 dB	Confidence levels of 95%
Output Power Measurement	1.5 dB	Confidence levels of 95%
Power Density Measurement	2.4 dB	Confidence levels of 95%
Bandwidth Measurement	2%	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

For non-beamforming mode:
4 Stream 4 TX for SDM mode & 1 Stream 4 TX for CDD mode:

Mode	Power Setting
802.11b_Nss1,(1Mbps)_4TX	-
2412MHz	94
2437MHz	92
2462MHz	92
VHT20_Nss4,(MCS0)_4TX	-
2412MHz	93
2437MHz	92
2462MHz	88
VHT40_Nss4,(MCS0)_4TX	-
2422MHz	83
2437MHz	84
2452MHz	81
802.11ax HEW20_Nss4,(MCS0)_4TX	-
2412MHz	93
2437MHz	92
2462MHz	88
802.11ax HEW40_Nss4,(MCS0)_4TX	-
2422MHz	83
2437MHz	84
2452MHz	81

For beamforming mode:
1 Stream 4 TX for TxBF mode:

Mode	Power Setting
VHT20-BF_Nss1,(MCS0)_4TX	-
2412MHz	85
2437MHz	82
2462MHz	79
VHT40-BF_Nss1,(MCS0)_4TX	-
2422MHz	83
2437MHz	81
2452MHz	73
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-
2412MHz	85
2437MHz	82
2462MHz	79
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-
2422MHz	83
2437MHz	81
2452MHz	73

2 Stream 4 TX for TxBF mode:

Mode	Power Setting
VHT20-BF_Nss2,(MCS0)_4TX	-
2412MHz	95
2437MHz	92
2462MHz	80
VHT40-BF_Nss2,(MCS0)_4TX	-
2422MHz	92
2437MHz	81
2452MHz	73
802.11ax HEW20-BF_Nss2,(MCS0)_4TX	-
2412MHz	95
2437MHz	92
2462MHz	80
802.11ax HEW40-BF_Nss2,(MCS0)_4TX	-
2422MHz	92
2437MHz	81
2452MHz	73

Note:
- 11g CDD、SDM modes can be covered by 11ac 20M SDM 4T/4S mode.
- 4T3S TxBF modes can be covered by 4T/2S TxBF mode.
- 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.
- There are two functions of EUT, one is beamforming function, and the other is non-beamforming function for for 11n, VHT, 11ax in 2.4GHz and 11n, 11ac, 11ax in 5GHz. All test results were recorded in the report.

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Maximum Conducted Output Power Power Spectral Density
Test Condition	Conducted measurement at transmit chains

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	Normal Link
There are two adapters, one is adapter 1 and the other is adapter 2 Adapter 2 generated the worst test result for original test. Unwanted Emissions below 1GHz was performed according the worst case of original test.	
1	EUT + Adapter 2: WLAN 2.4GHz on only
2	EUT + Adapter 2: WLAN 5Hz on only
For operating mode 1 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX

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 D for Radiated Emission Co-location.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	WLAN 2.4GHz + WLAN 5GHz
2	WLAN 5GHz + Zigbee + Bluetooth
Refer to Sporton Test Report No.: FA971031-02 for Co-location RF Exposure Evaluation.	

Note: The EUT can only be used at Y axis position.

2.3 EUT Operation during Test

For CTX Mode:

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

During the test, the following programs under WIN 7 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 transmit and receive packet by RX Device and transmit duty cycle no less than 98%.

For Normal Link:

During the test, the EUT operation to normal function.

2.4 Accessories

Accessories				
No.	**Equipment Name**	**Brand Name**	**Model Name**	**Rating**
1	Adapter 1	AcBel	ADK002	INPUT: 100-120V ~50/60Hz, 1.5A, OUTPUT: 12V, 4.6A
2	Adapter 2	Netbit	NBC56A120460VU	INPUT: 100-120V ~50/60Hz, 1.5A, OUTPUT: 12V, 4.6A

2.5 Support Equipment

For Radiated (below 1GHz):

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

For Radiated (above 1GHz) and RF Conducted:

For non-beamforming mode:

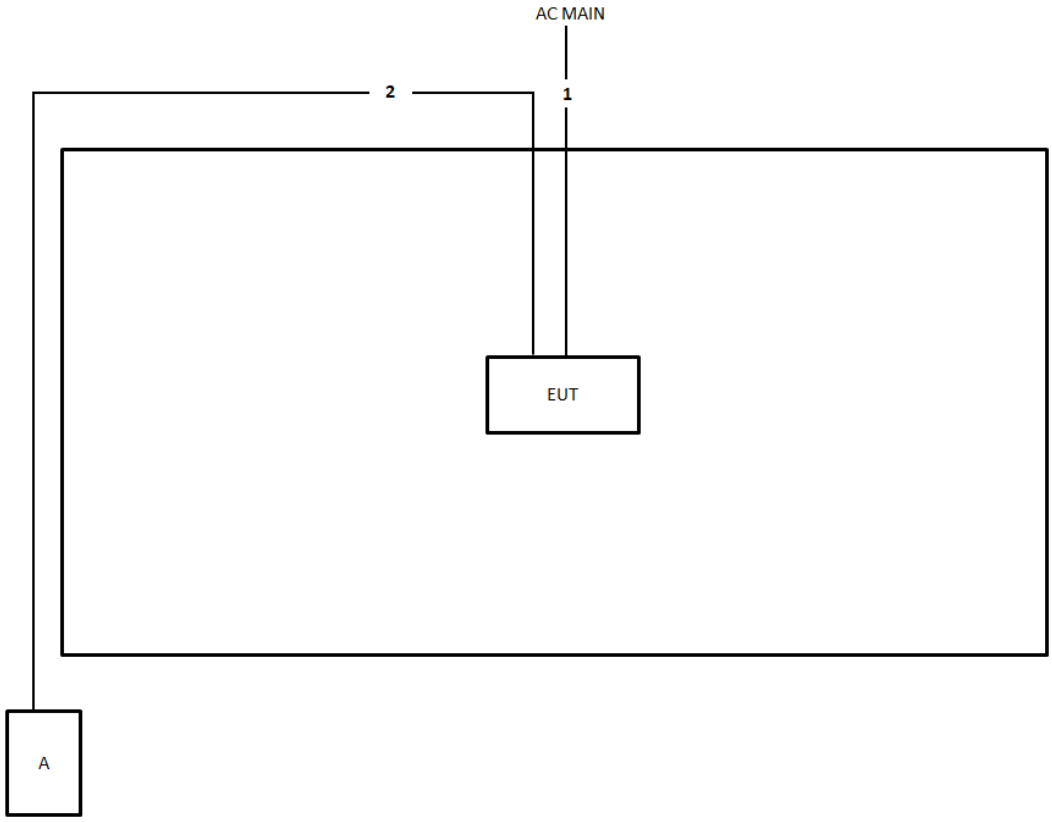
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB	DELL	E4300	N/A

For beamforming mode:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB	DELL	E4300	N/A
B	NB	DELL	E4300	N/A
C	AP (RX Device)	ASUS	RT-AX88U	N/A

2.6 Test Setup Diagram

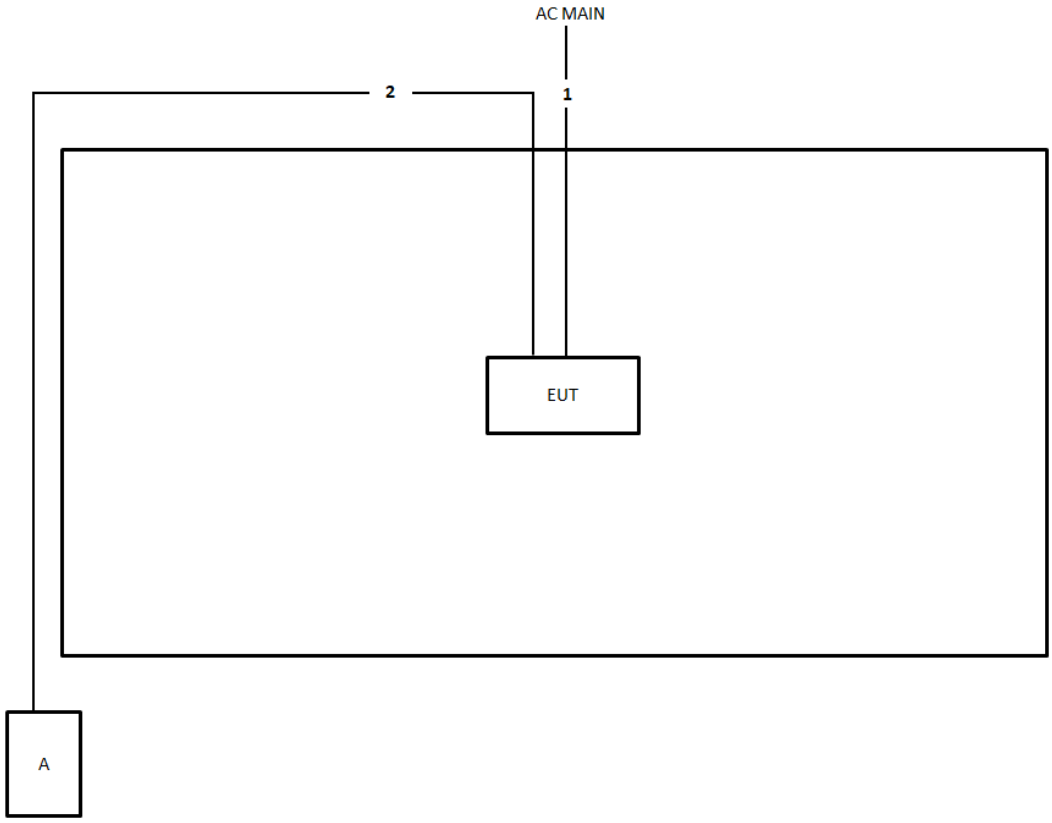
Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m

Test Setup Diagram - Radiated Test > 1GHz

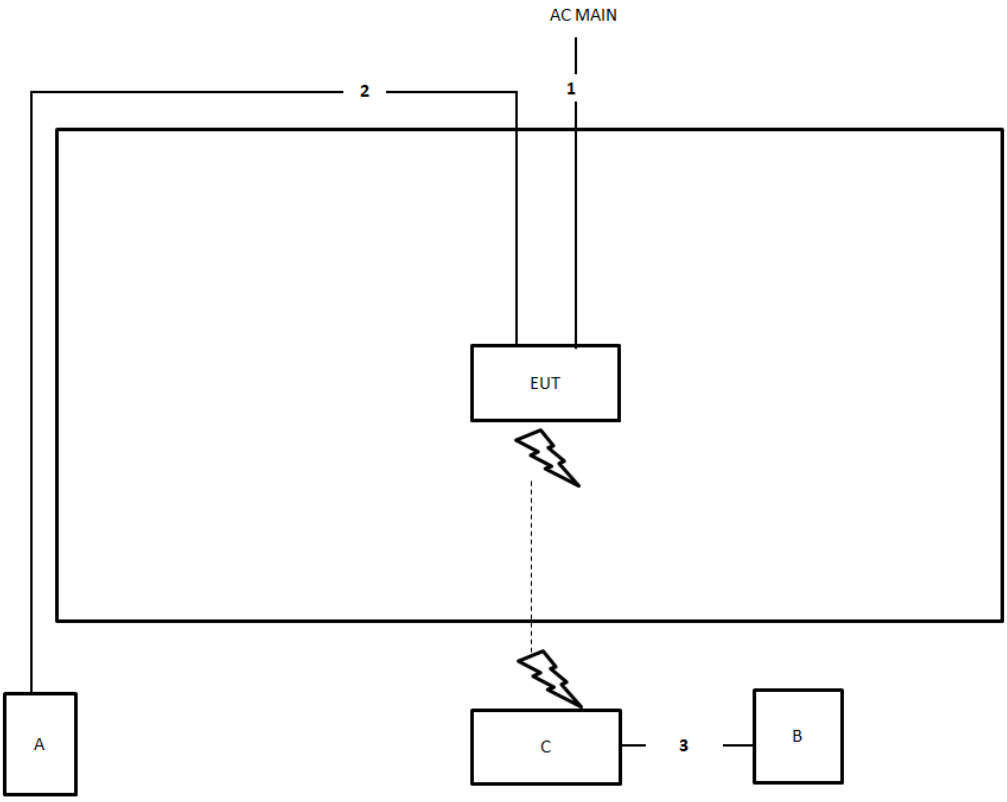
For non-beamforming mode:



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m

Test Setup Diagram - Radiated Test > 1GHz

For beamforming mode:



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

3 Transmitter Test Result

3.1 Maximum Conducted Output Power

3.1.1 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.		

3.1.2 Measuring Instruments

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

3.1.3 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]) $EIRP_{total} = P_{total} + DG$

3.1.4 Test Setup

Maximum Conducted Output Power (Power Meter)

3.1.5 Test Result of Maximum Conducted Output Power

Refer as Appendix A

3.2 Power Spectral Density

3.2.1 Power Spectral Density Limit

Power Spectral Density Limit
▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

3.2.2 Measuring Instruments

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

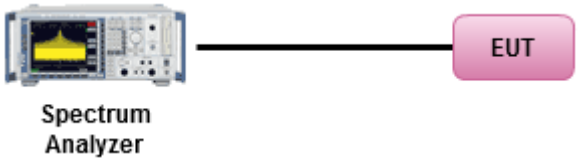
3.2.3 Test Procedures

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.

3.2.4 Test Setup

Power Spectral Density



3.2.5 Test Result of Power Spectral Density

Refer as Appendix B

3.3 Emissions in Restricted Frequency Bands

3.3.1 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.

3.3.2 Measuring Instruments

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

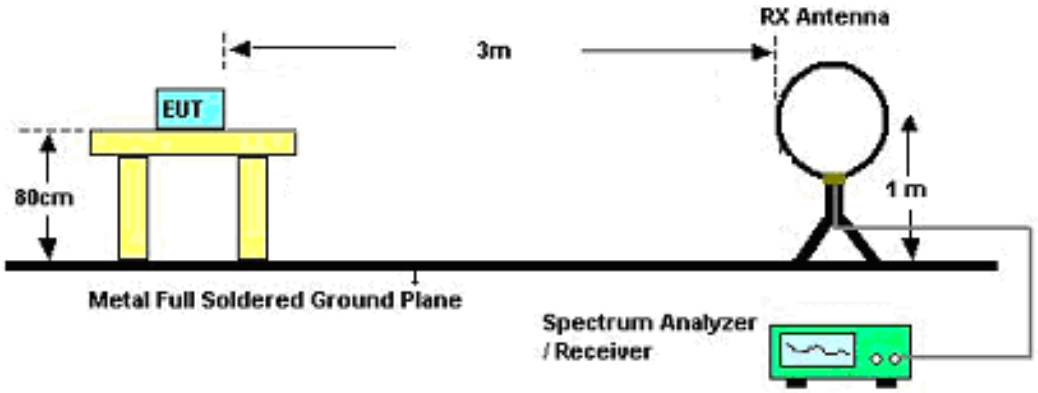
3.3.3 Test Procedures

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.	

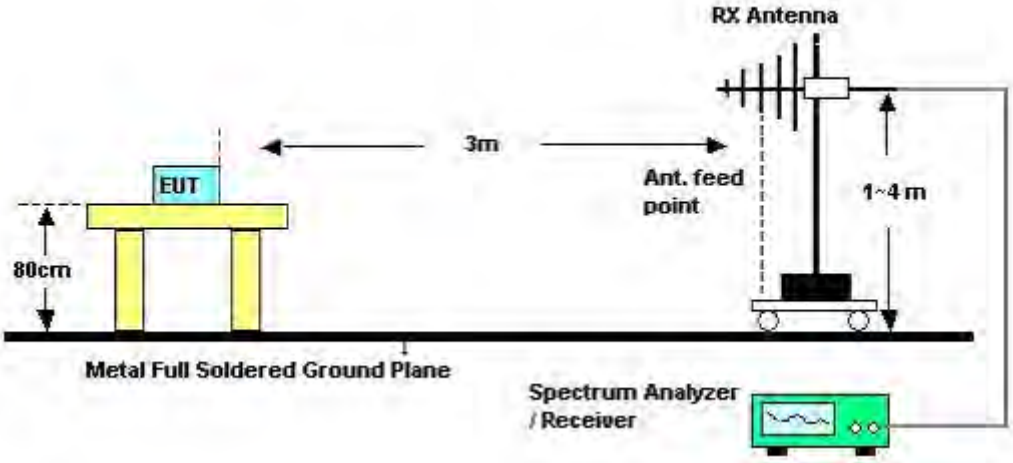
3.3.4 Test Setup

Radiated - Emissions in Restricted Frequency Bands

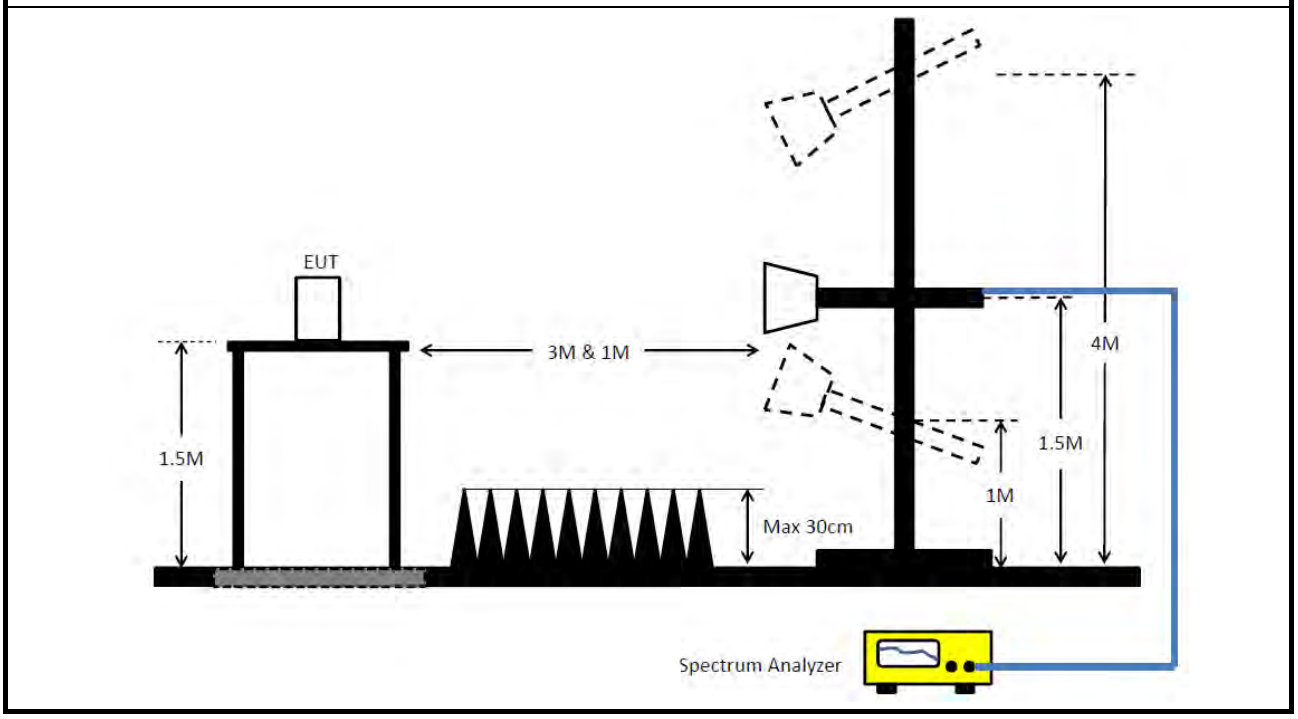
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



3.3.5 Measurement Results Calculation

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

3.3.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.
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.

3.3.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix C

4 Test Equipment and Calibration Data

For Radiated:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 29, 2019	Mar. 28, 2020	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESE & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 28, 2019	Mar. 27, 2020	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1291	1GHz~18GHz	Oct. 05, 2019	Oct. 04, 2020	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 12, 2019	Jun. 11, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 01, 2019	Apr. 30, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Apr. 16, 2019	Apr. 15, 2020	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Aug, 15, 2019	Aug, 14, 2020	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 15, 2019	May 14, 2020	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	LOW Cable-04+23	30MHz~1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+23	30MHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH05-CB)

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

For RF Conducted:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Feb. 25, 2019	Feb. 24, 2020	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Jan. 15, 2019	Jan. 14, 2020	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Jan. 15, 2019	Jan. 14, 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-06	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	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-07	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	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-08	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	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-09	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	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-10	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	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)

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

For non-beamforming mode:
4 Stream 4 TX for SDM mode & 1 Stream 4 TX for CDD mode:
Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_4TX	29.48	0.88176
VHT20_Nss4,(MCS0)_4TX	29.83	0.96161
VHT40_Nss4,(MCS0)_4TX	27.42	0.55208
802.11ax HEW20_Nss4,(MCS0)_4TX	29.99	0.99770
802.11ax HEW40_Nss4,(MCS0)_4TX	27.97	0.62661

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)
802.11b_Nss1,(1Mbps)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	4.8	23.36	22.88	23.69	23.84	29.48	30.00
2437MHz	Pass	4.8	23.58	22.20	23.54	24.05	29.42	30.00
2462MHz	Pass	4.8	23.42	22.57	23.43	23.71	29.32	30.00
VHT20_Nss4,(MCS0)_4TX	-		-	-	-	-	-	-
2412MHz	Pass	2.3	24.19	23.44	23.88	23.67	29.82	30.00
2437MHz	Pass	2.3	24.26	23.42	23.93	23.57	29.83	30.00
2462MHz	Pass	2.3	21.68	21.78	21.55	21.74	27.71	30.00
VHT40_Nss4,(MCS0)_4TX	-		-	-	-	-	-	-
2422MHz	Pass	2.3	21.09	21.16	20.99	21.24	27.14	30.00
2437MHz	Pass	2.3	21.41	21.41	21.25	21.51	27.42	30.00
2452MHz	Pass	2.3	20.24	20.25	20.06	20.32	26.24	30.00
802.11ax HEW20_Nss4,(MCS0)_4TX	-		-	-	-	-	-	-
2412MHz	Pass	2.3	24.19	23.63	24.16	23.76	29.96	30.00
2437MHz	Pass	2.3	24.28	23.72	23.94	23.91	29.99	30.00
2462MHz	Pass	2.3	21.26	22.05	21.96	22.22	27.91	30.00
802.11ax HEW40_Nss4,(MCS0)_4TX	-		-	-	-	-	-	-
2422MHz	Pass	2.3	21.23	21.42	21.43	21.45	27.40	30.00
2437MHz	Pass	2.3	21.67	22.25	21.81	22.05	27.97	30.00
2452MHz	Pass	2.3	20.54	20.89	20.96	20.93	26.85	30.00

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

For beamforming mode:
1 Stream 4 TX for TxBF mode:
Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
VHT20-BF_Nss1,(MCS0)_4TX	27.09	0.51168
VHT40-BF_Nss1,(MCS0)_4TX	27.64	0.58076
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	27.85	0.60954
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	27.85	0.60954

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)
VHT20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	8.00	21.03	21.33	20.82	20.98	27.06	28.00
2437MHz	Pass	8.00	21.04	21.34	20.84	21.04	27.09	28.00
2462MHz	Pass	8.00	19.28	19.63	19.10	19.29	25.35	28.00
VHT40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	8.00	21.54	21.91	21.35	21.64	27.64	28.00
2437MHz	Pass	8.00	20.93	21.44	20.92	21.10	27.12	28.00
2452MHz	Pass	8.00	18.94	19.17	18.66	18.84	24.93	28.00
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	8.00	21.13	22.14	22.07	21.91	27.85	28.00
2437MHz	Pass	8.00	21.00	21.85	21.69	21.82	27.62	28.00
2462MHz	Pass	8.00	19.22	19.81	19.88	19.95	25.75	28.00
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	8.00	21.67	22.12	21.76	21.77	27.85	28.00
2437MHz	Pass	8.00	21.11	21.56	21.41	21.63	27.45	28.00
2452MHz	Pass	8.00	18.88	19.18	19.25	19.19	25.15	28.00

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

2 Stream 4 TX for TxBF mode:

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
VHT20-BF_Nss1,(MCS0)_4TX	29.84	0.96383
VHT40-BF_Nss1,(MCS0)_4TX	29.86	0.96828
802.11ax HEW20-BF_Nss2,(MCS0)_4TX	29.94	0.98628
802.11ax HEW40-BF_Nss2,(MCS0)_4TX	29.98	0.99541

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)
VHT20-BF_Nss2,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	5.30	23.88	23.81	23.94	23.49	29.80	30.00
2437MHz	Pass	5.30	23.66	23.44	23.88	24.25	29.84	30.00
2462MHz	Pass	5.30	19.52	19.49	19.30	19.60	25.50	30.00
VHT40-BF_Nss2,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	5.30	24.03	23.85	23.59	23.86	29.86	30.00
2437MHz	Pass	5.30	21.13	21.07	20.89	21.21	27.10	30.00
2452MHz	Pass	5.30	18.91	18.90	18.67	18.95	24.88	30.00
802.11ax HEW20-BF_Nss2,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	5.30	23.76	23.92	24.32	23.58	29.92	30.00
2437MHz	Pass	5.30	24.43	23.24	24.25	23.66	29.94	30.00
2462MHz	Pass	5.30	19.67	19.66	19.58	19.87	25.72	30.00
802.11ax HEW40-BF_Nss2,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	5.30	24.29	23.53	24.12	23.84	29.98	30.00
2437MHz	Pass	5.30	21.37	21.34	21.24	21.43	27.37	30.00
2452MHz	Pass	5.30	19.13	19.20	18.92	19.23	25.14	30.00

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

For non-beamforming mode:
4 Stream 4 TX for SDM mode & 1 Stream 4 TX for CDD mode:
Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_4TX	5.58
VHT20_Nss4,(MCS0)_4TX	1.85
VHT40_Nss4,(MCS0)_4TX	-1.08
802.11ax HEW20_Nss4,(MCS0)_4TX	3.11
802.11ax HEW40_Nss4,(MCS0)_4TX	-0.88

RBW=3 kHz.

Result

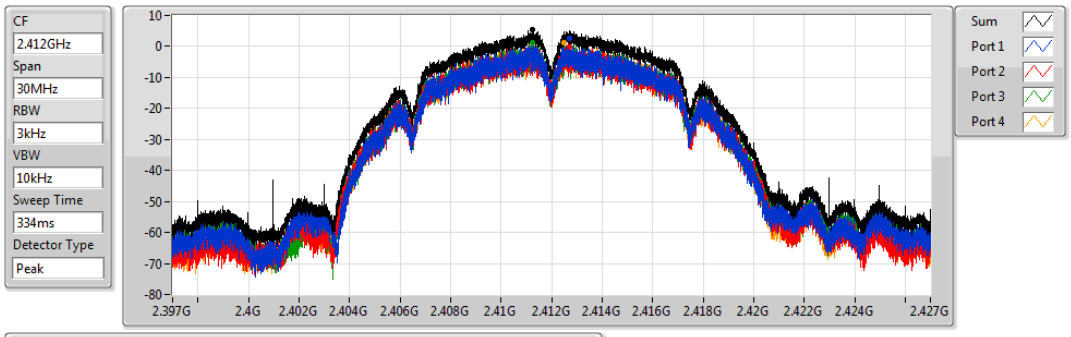
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	Port 3 (dBm/RBW)	Port 4 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11b_Nss1,(1Mbps)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	4.8	2.53	-0.11	1.36	1.22	5.55	8.00
2437MHz	Pass	4.8	1.41	1.50	1.04	0.96	5.58	8.00
2462MHz	Pass	4.8	0.49	-0.21	0.12	0.86	4.82	8.00
VHT20_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	2.3	-3.10	-4.17	-3.53	-2.95	1.57	8.00
2437MHz	Pass	2.3	-2.97	-3.24	-3.20	-3.33	1.85	8.00
2462MHz	Pass	2.3	-3.95	-4.59	-4.20	-4.42	1.54	8.00
VHT40_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	2.3	-5.45	-6.27	-7.52	-7.03	-1.08	8.00
2437MHz	Pass	2.3	-6.73	-5.79	-6.23	-7.27	-1.96	8.00
2452MHz	Pass	2.3	-6.25	-6.65	-6.71	-8.67	-1.55	8.00
802.11ax HEW20_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	2.3	-3.01	-3.05	-3.91	-4.14	1.84	8.00
2437MHz	Pass	2.3	-2.03	-3.55	-2.66	-2.74	3.05	8.00
2462MHz	Pass	2.3	-3.11	-3.00	-2.75	-2.80	3.11	8.00
802.11ax HEW40_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	2.3	-6.88	-6.38	-6.92	-7.51	-0.88	8.00
2437MHz	Pass	2.3	-6.52	-6.95	-8.42	-7.74	-1.34	8.00
2452MHz	Pass	2.3	-7.44	-8.80	-7.70	-8.93	-2.15	8.00

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

802.11b_Nss1,(1Mbps)_4TX PSD

2412MHz

19/07/2019

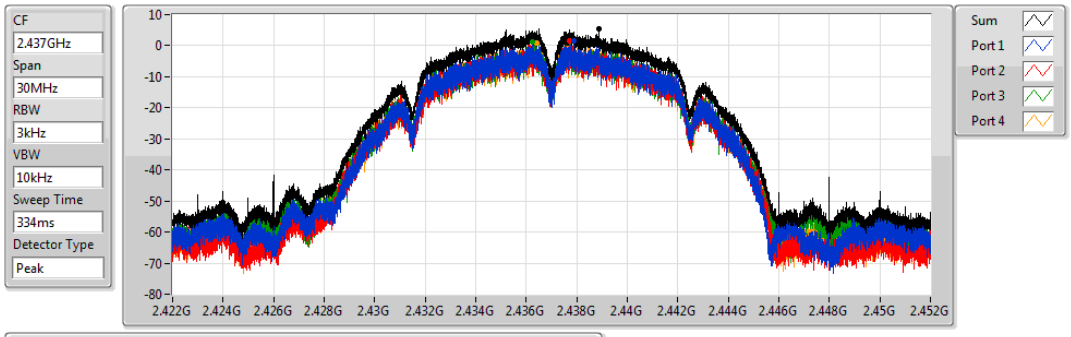


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
5.55	5.55	2.53	-0.11	1.36	1.22

802.11b_Nss1,(1Mbps)_4TX PSD

2437MHz

19/07/2019

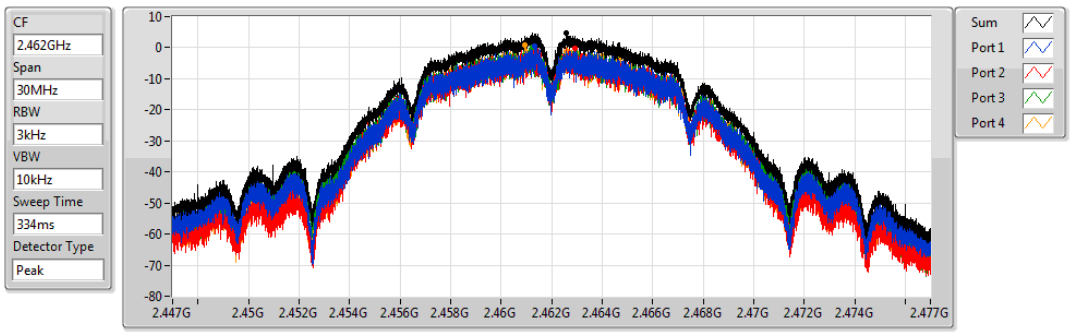


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
5.58	5.58	1.41	1.50	1.04	0.96

802.11b_Nss1,(1Mbps)_4TX PSD

2462MHz

19/07/2019

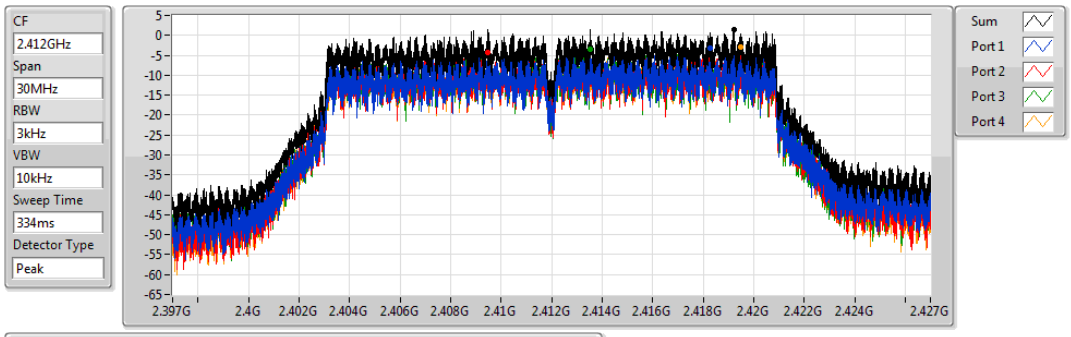


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
4.82	4.82	0.49	-0.21	0.12	0.86

VHT20_Nss4,(MCS0)_4TX PSD

2412MHz

19/07/2019

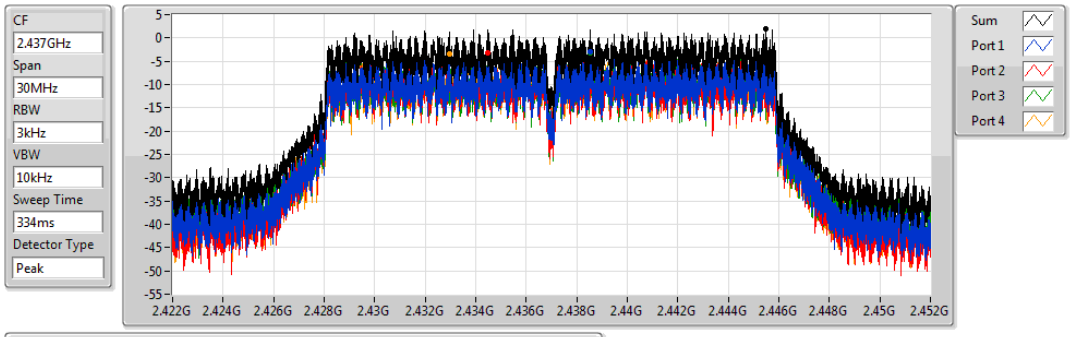


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.57	1.57	-3.10	-4.17	-3.53	-2.95

VHT20_Nss4,(MCS0)_4TX PSD

2437MHz

19/07/2019

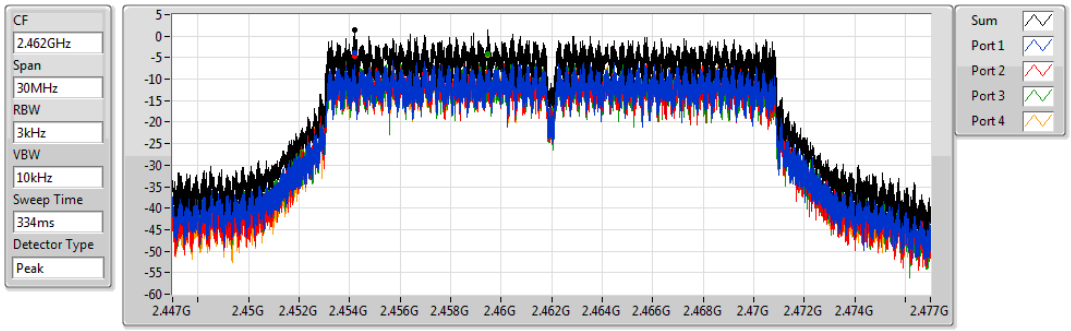


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.85	1.85	-2.97	-3.24	-3.20	-3.33

VHT20_Nss4,(MCS0)_4TX PSD

2462MHz

19/07/2019

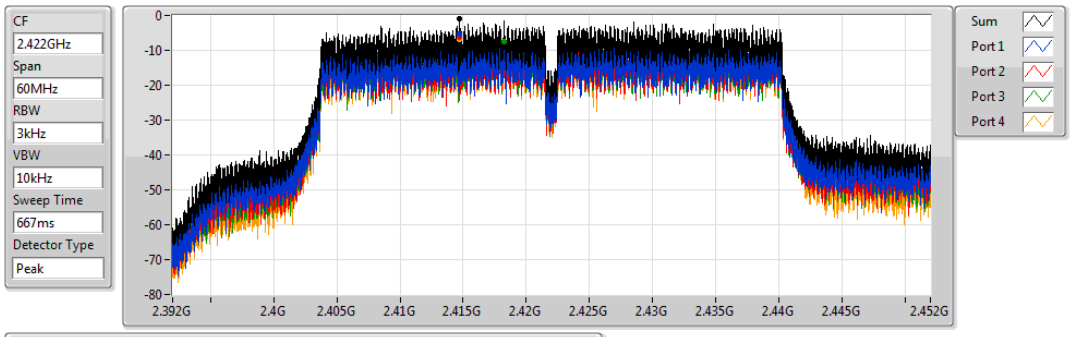


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.54	1.54	-3.95	-4.59	-4.20	-4.42

VHT40_Nss4,(MCS0)_4TX PSD

2422MHz

19/07/2019

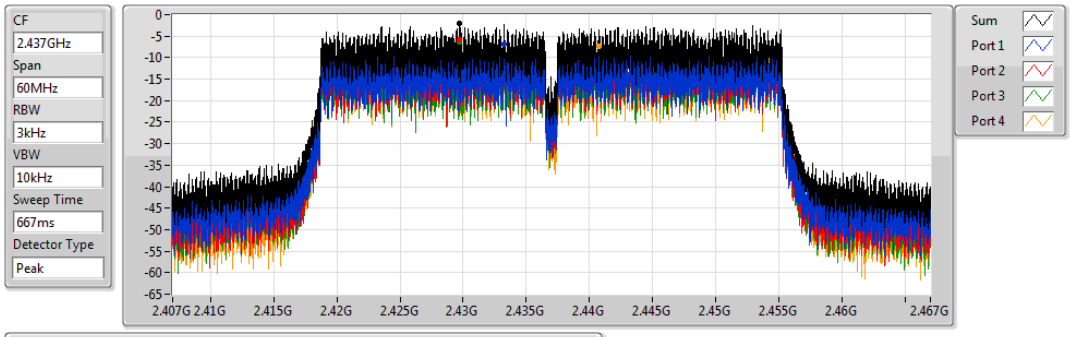


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.08	-1.08	-5.45	-6.27	-7.52	-7.03

VHT40_Nss4,(MCS0)_4TX PSD

2437MHz

19/07/2019

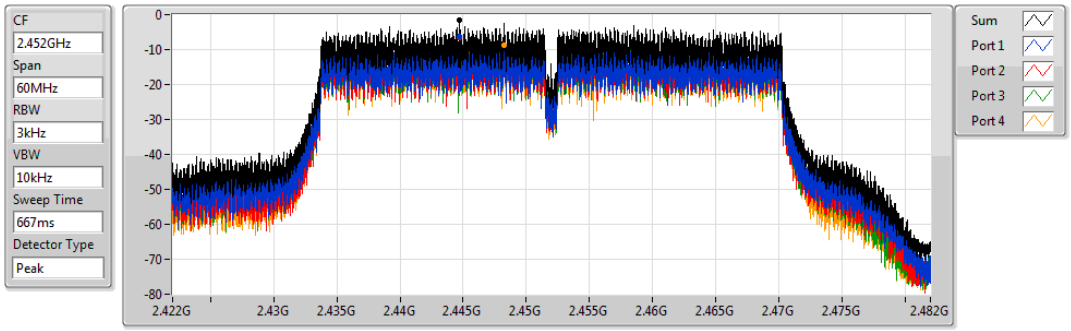


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.96	-1.96	-6.73	-5.79	-6.23	-7.27

VHT40_Nss4,(MCS0)_4TX PSD

2452MHz

19/07/2019

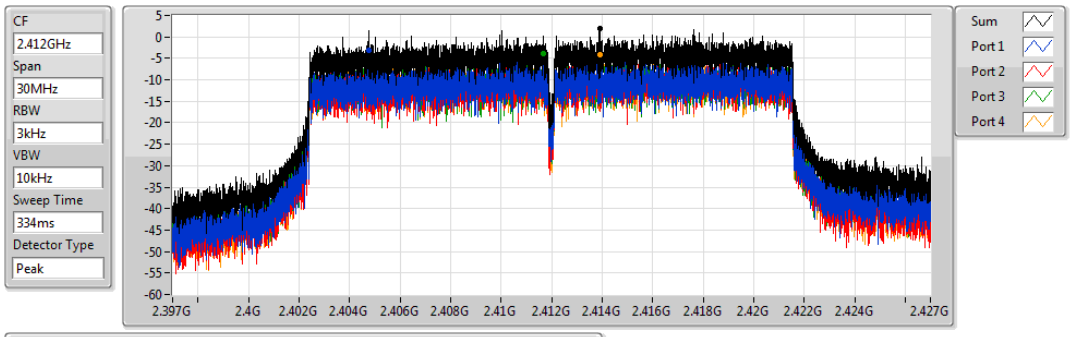


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.55	-1.55	-6.25	-6.65	-6.71	-8.67

802.11ax HEW20_Nss4,(MCS0)_4TX PSD

2412MHz

19/07/2019

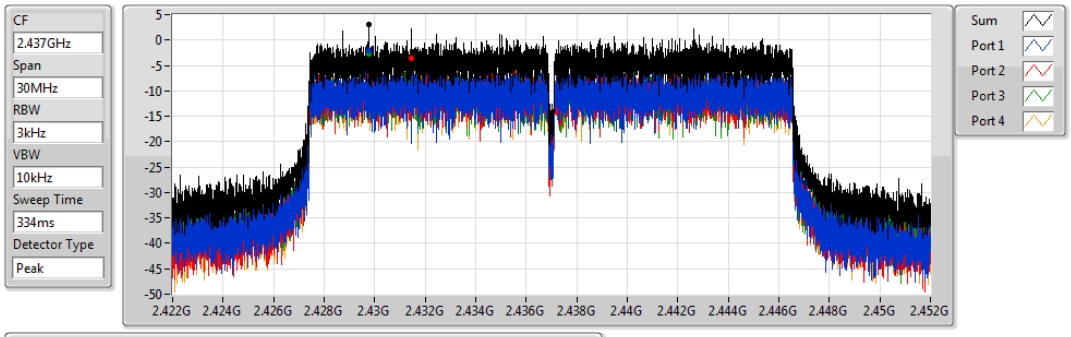


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.84	1.84	-3.01	-3.05	-3.91	-4.14

802.11ax HEW20_Nss4,(MCS0)_4TX PSD

2437MHz

19/07/2019

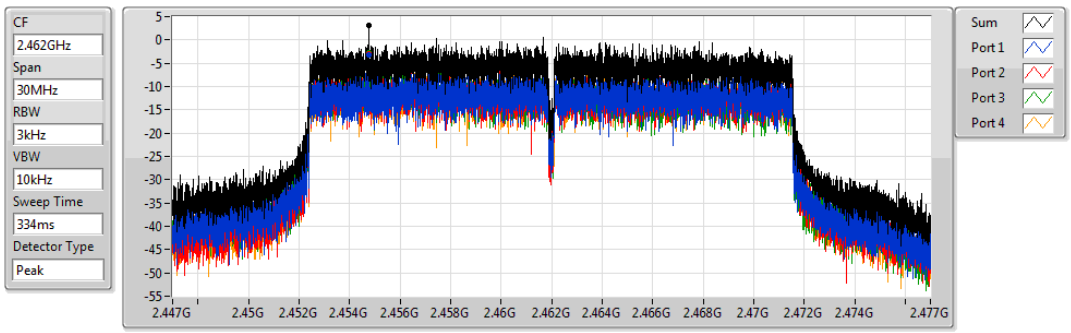


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
3.05	3.05	-2.03	-3.55	-2.66	-2.74

802.11ax HEW20_Nss4,(MCS0)_4TX PSD

2462MHz

19/07/2019

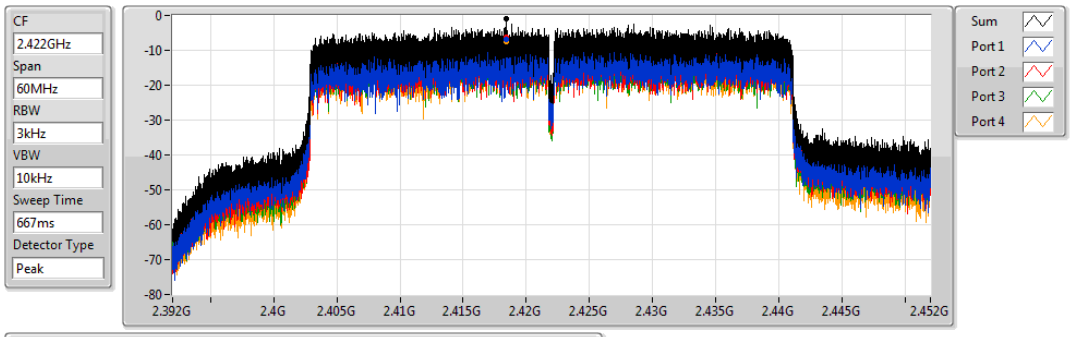


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
3.11	3.11	-3.11	-3.00	-2.75	-2.80

802.11ax HEW40_Nss4,(MCS0)_4TX PSD

2422MHz

19/07/2019

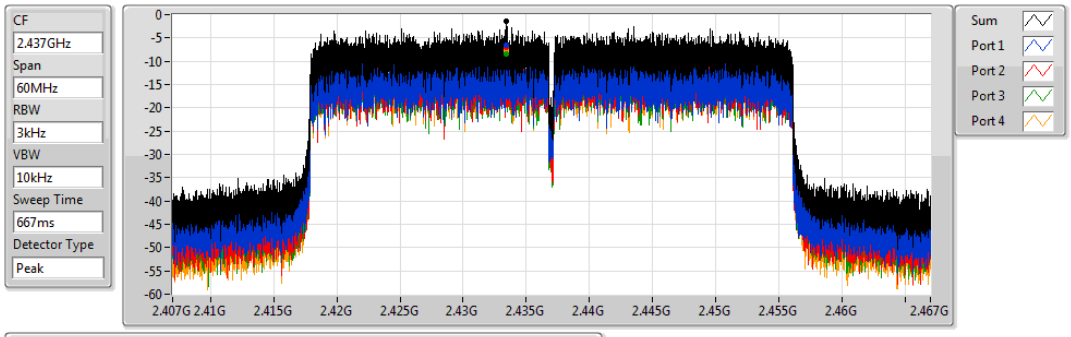


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.88	-0.88	-6.88	-6.38	-6.92	-7.51

802.11ax HEW40_Nss4,(MCS0)_4TX PSD

2437MHz

19/07/2019

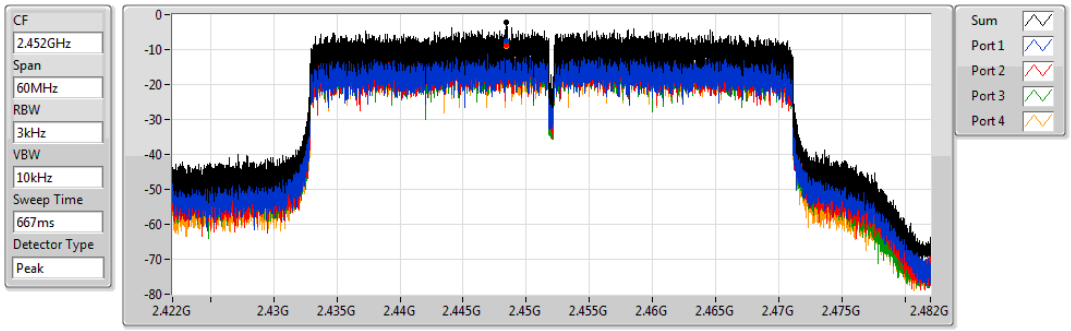


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.34	-1.34	-6.52	-6.95	-8.42	-7.74

802.11ax HEW40_Nss4,(MCS0)_4TX PSD

2452MHz

19/07/2019



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-2.15	-2.15	-7.44	-8.80	-7.70	-8.93

For beamforming mode:
1 Stream 4 TX for TxBF mode:
Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
VHT20-BF_Nss1,(MCS0)_4TX	2.53
VHT40-BF_Nss1,(MCS0)_4TX	1.85
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	2.97
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	0.93

RBW=3 kHz.

Result

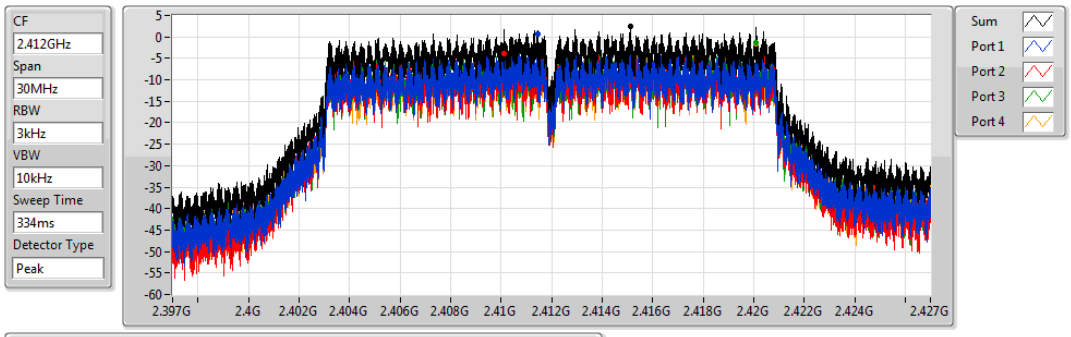
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	Port 3 (dBm/RBW)	Port 4 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
VHT20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	8.00	0.64	-3.87	-1.38	-1.64	2.53	6.00
2437MHz	Pass	8.00	-2.42	-3.64	-3.89	-2.30	1.74	6.00
2462MHz	Pass	8.00	-0.19	-3.38	-2.46	-4.25	1.47	6.00
VHT40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	8.00	1.41	-4.11	-5.22	-4.66	1.85	6.00
2437MHz	Pass	8.00	-0.38	-5.28	-4.40	-4.01	0.67	6.00
2452MHz	Pass	8.00	-3.71	-7.41	-7.24	-7.41	-1.61	6.00
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	8.00	0.80	-2.45	-2.23	-1.69	2.97	6.00
2437MHz	Pass	8.00	0.10	-2.88	-3.12	-3.15	2.69	6.00
2462MHz	Pass	8.00	0.68	-4.75	-3.52	-3.72	1.25	6.00
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	8.00	-0.49	-3.82	-5.27	-4.90	0.93	6.00
2437MHz	Pass	8.00	-0.71	-3.57	-5.99	-5.48	-0.04	6.00
2452MHz	Pass	8.00	-1.30	-8.00	-7.54	-7.78	-0.86	6.00

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

VHT20-BF_Nss1,(MCS0)_4TX PSD

2412MHz

23/07/2019

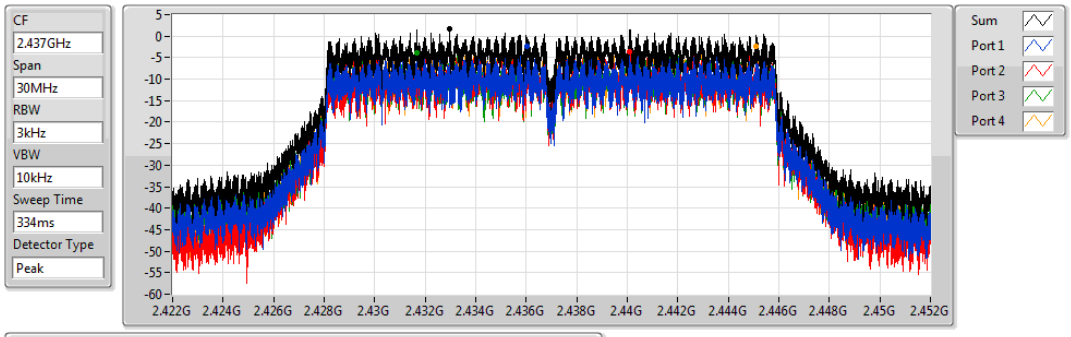


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.53	2.53	0.64	-3.87	-1.38	-1.64

VHT20-BF_Nss1,(MCS0)_4TX PSD

2437MHz

23/07/2019

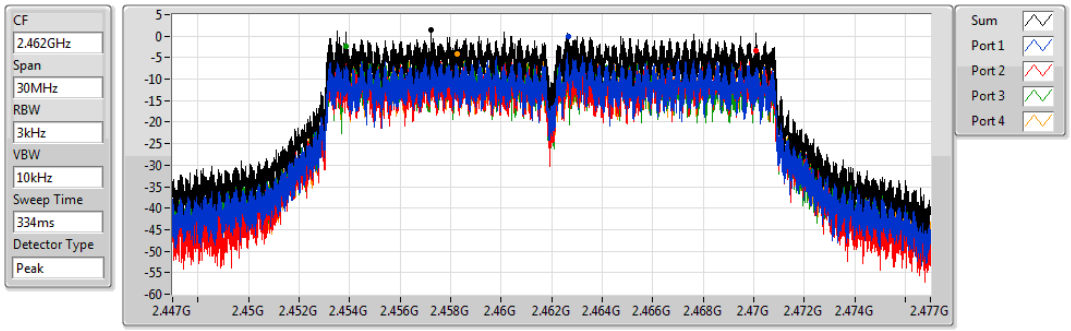


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.74	1.74	-2.42	-3.64	-3.89	-2.30

VHT20-BF_Nss1,(MCS0)_4TX PSD

2462MHz

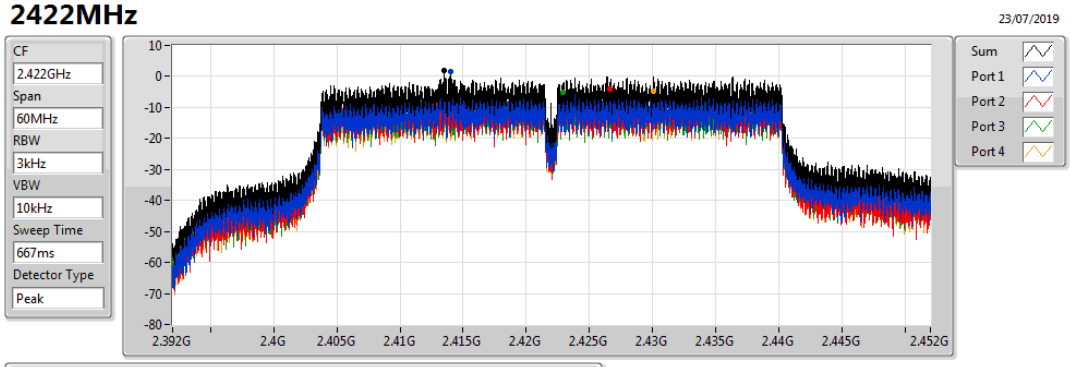
23/07/2019



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.47	1.47	-0.19	-3.38	-2.46	-4.25

VHT40-BF_Nss1,(MCS0)_4TX PSD

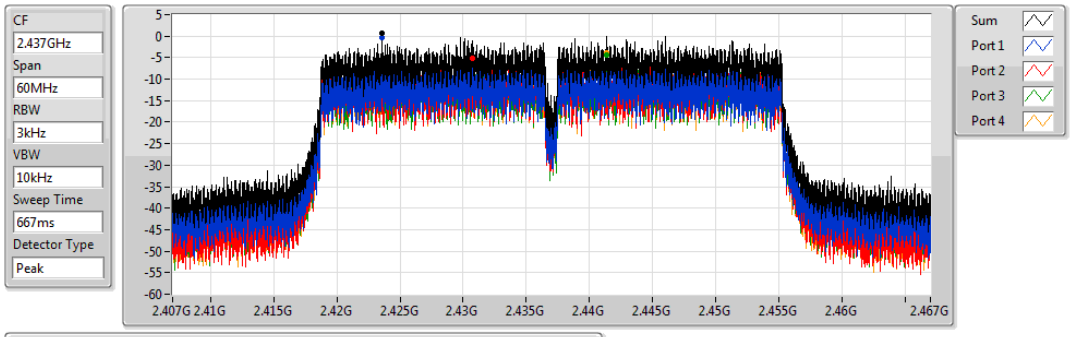
2422MHz



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.85	1.85	1.41	-4.11	-5.22	-4.66

VHT40-BF_Nss1,(MCS0)_4TX PSD

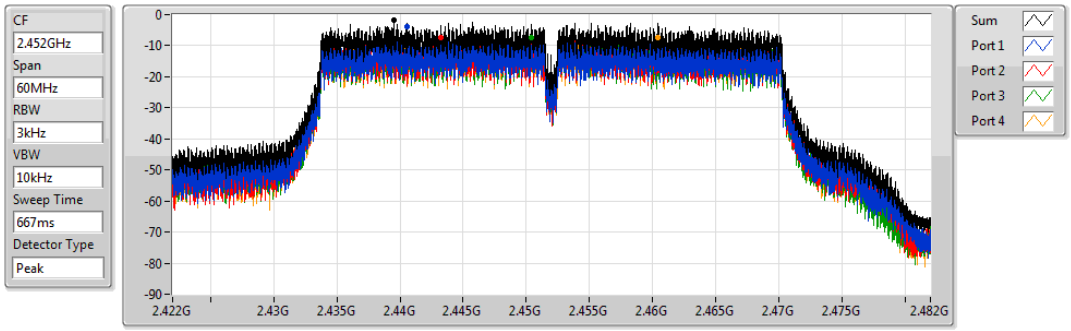
2437MHz



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.67	0.67	-0.38	-5.28	-4.40	-4.01

VHT40-BF_Nss1,(MCS0)_4TX PSD

2452MHz

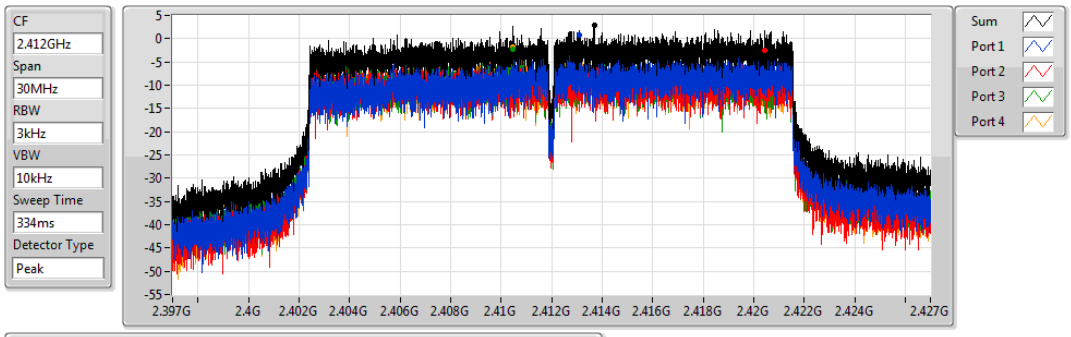


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.61	-1.61	-3.71	-7.41	-7.24	-7.41

802.11ax HEW20-BF_Nss1,(MCS0)_4TX PSD

2412MHz

25/07/2019

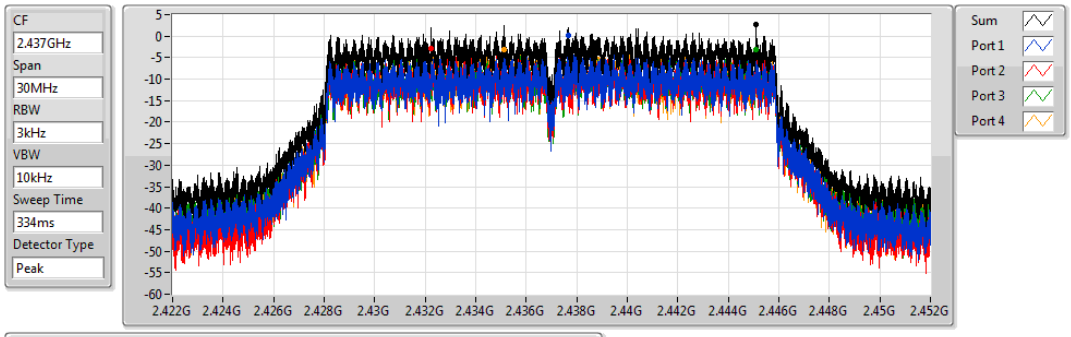


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.97	2.97	0.80	-2.45	-2.23	-1.69

802.11ax HEW20-BF_Nss1,(MCS0)_4TX PSD

2437MHz

23/07/2019

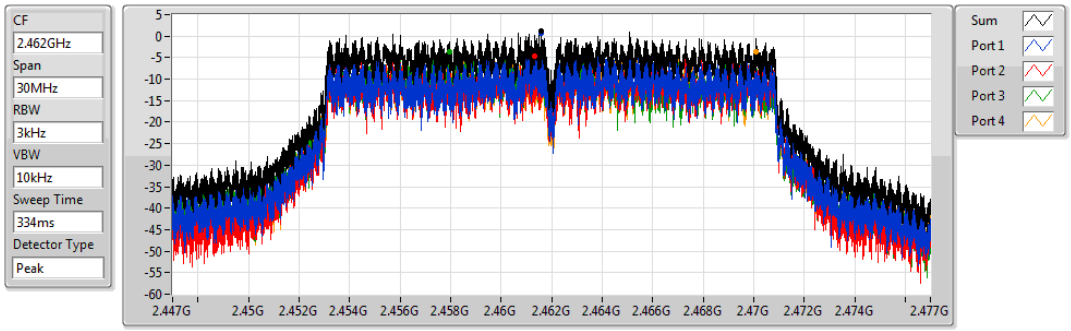


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.69	2.69	0.10	-2.88	-3.12	-3.15

802.11ax HEW20-BF_Nss1,(MCS0)_4TX PSD

2462MHz

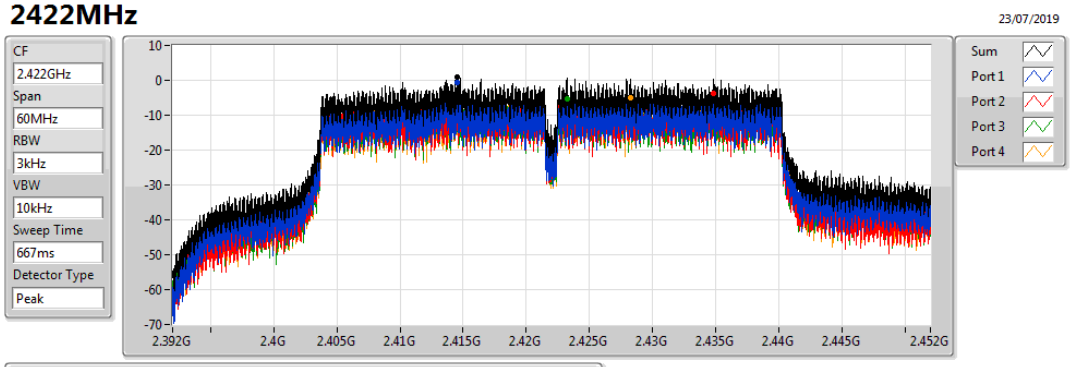
23/07/2019



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.25	1.25	0.68	-4.75	-3.52	-3.72

802.11ax HEW40-BF_Nss1,(MCS0)_4TX PSD

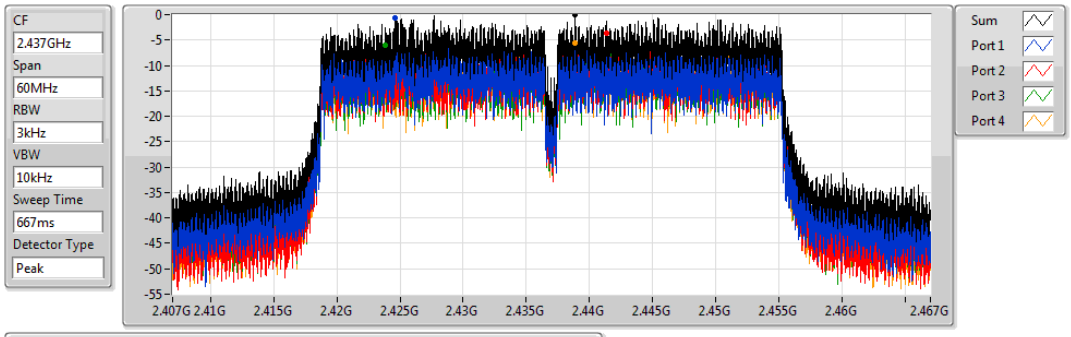
2422MHz



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.93	0.93	-0.49	-3.82	-5.27	-4.90

802.11ax HEW40-BF_Nss1,(MCS0)_4TX PSD

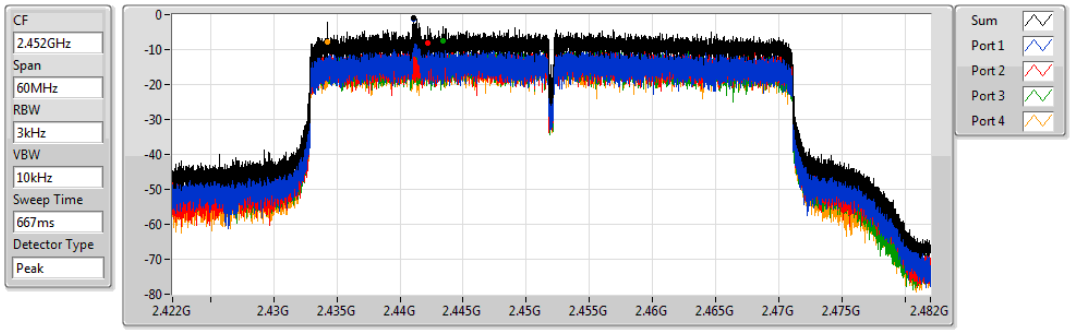
2437MHz



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.04	-0.04	-0.71	-3.57	-5.99	-5.48

802.11ax HEW40-BF_Nss1,(MCS0)_4TX PSD

2452MHz



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.86	-0.86	-1.30	-8.00	-7.54	-7.78

2 Stream 4 TX for TxBF mode:

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
VHT20-BF_Nss1,(MCS0)_4TX	2.93
VHT40-BF_Nss1,(MCS0)_4TX	0.38
802.11ax HEW20-BF_Nss2,(MCS0)_4TX	2.79
802.11ax HEW40-BF_Nss2,(MCS0)_4TX	0.63

RBW=3 kHz.

Result

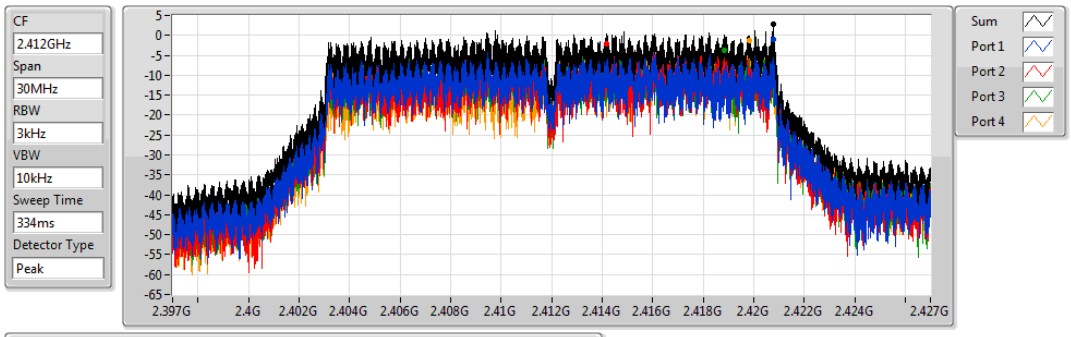
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	Port 3 (dBm/RBW)	Port 4 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
VHT20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	5.3	-0.88	-2.07	-3.71	-1.34	2.93	8.00
2437MHz	Pass	5.3	0.06	-2.18	-2.53	-2.74	2.38	8.00
2462MHz	Pass	5.3	1.05	-1.97	-3.57	-2.55	2.19	8.00
VHT40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	5.3	-0.45	-3.24	-5.80	-3.84	0.38	8.00
2437MHz	Pass	5.3	-2.37	-4.23	-6.01	-4.75	-0.83	8.00
2452MHz	Pass	5.3	-4.45	-6.05	-7.14	-7.20	-2.04	8.00
802.11ax HEW20-BF_Nss2,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	5.3	0.15	-2.67	-2.69	-2.60	1.40	8.00
2437MHz	Pass	5.3	1.98	-3.65	-2.84	-4.07	2.79	8.00
2462MHz	Pass	5.3	-1.05	-1.81	-4.10	-3.86	0.82	8.00
802.11ax HEW40-BF_Nss2,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	5.3	-0.23	-4.31	-5.42	-5.21	0.38	8.00
2437MHz	Pass	5.3	-0.76	-3.69	-6.32	-4.70	0.63	8.00
2452MHz	Pass	5.3	-1.74	-5.68	-8.74	-6.17	-1.29	8.00

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

VHT20-BF_Nss2,(MCS0)_4TX PSD

2412MHz

23/07/2019

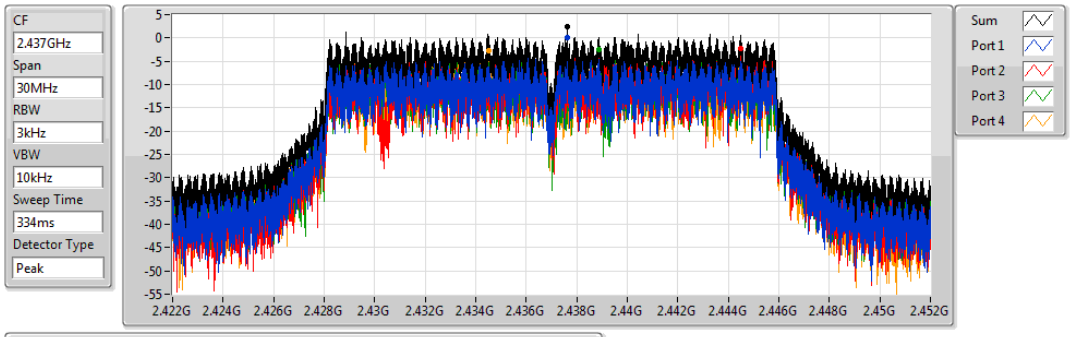


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.93	2.93	-0.88	-2.07	-3.71	-1.34

VHT20-BF_Nss1,(MCS0)_4TX PSD

2437MHz

25/07/2019

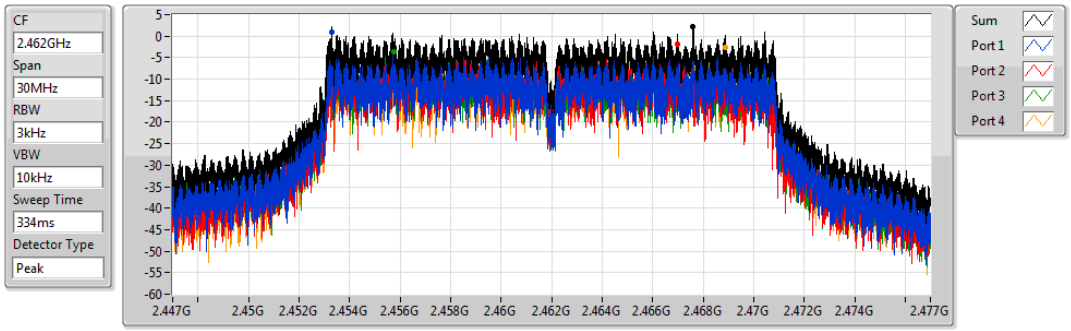


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.38	2.38	0.06	-2.18	-2.53	-2.74

VHT20-BF_Nss2,(MCS0)_4TX PSD

2462MHz

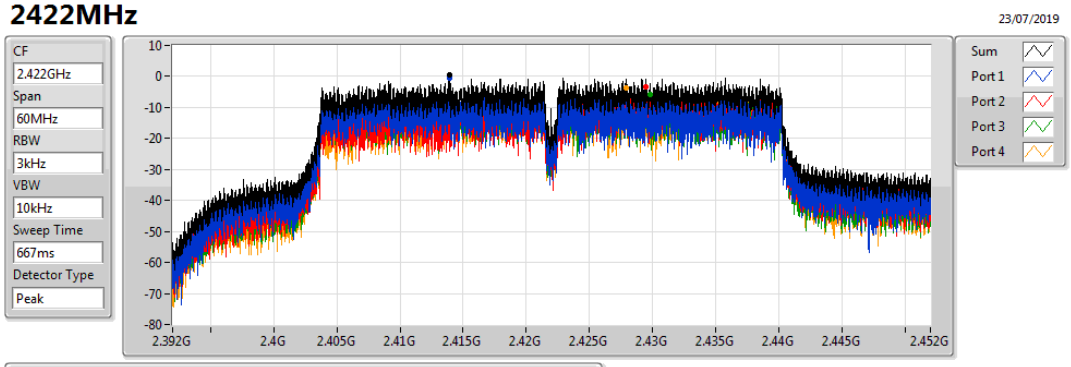
23/07/2019



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.19	2.19	1.05	-1.97	-3.57	-2.55

VHT40-BF_Nss2,(MCS0)_4TX PSD

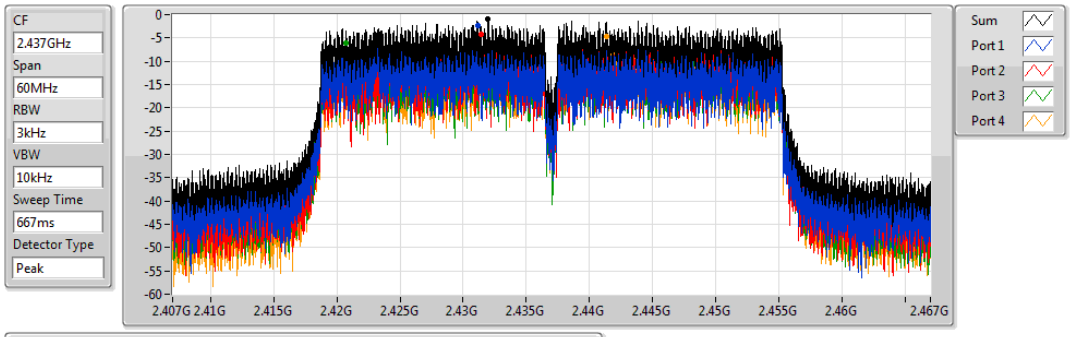
2422MHz



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.38	0.38	-0.45	-3.24	-5.80	-3.84

VHT40-BF_Nss2,(MCS0)_4TX PSD

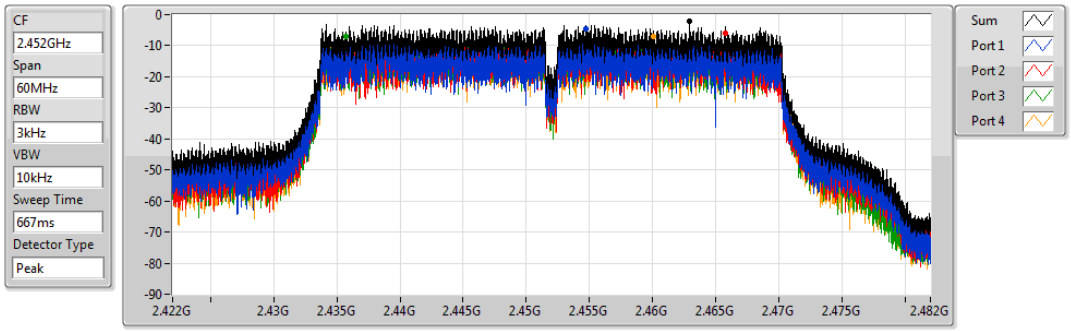
2437MHz



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.83	-0.83	-2.37	-4.23	-6.01	-4.75

VHT40-BF_Nss2,(MCS0)_4TX PSD

2452MHz

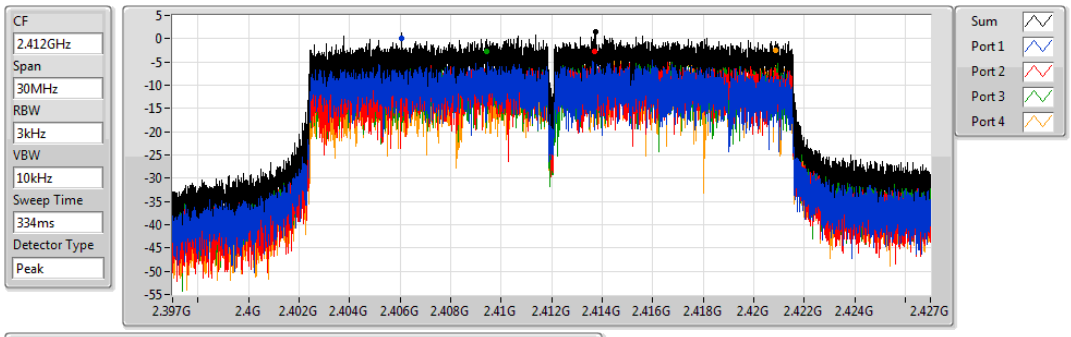


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-2.04	-2.04	-4.45	-6.05	-7.14	-7.20

802.11ax HEW20-BF_Nss2,(MCS0)_4TX PSD

2412MHz

25/07/2019

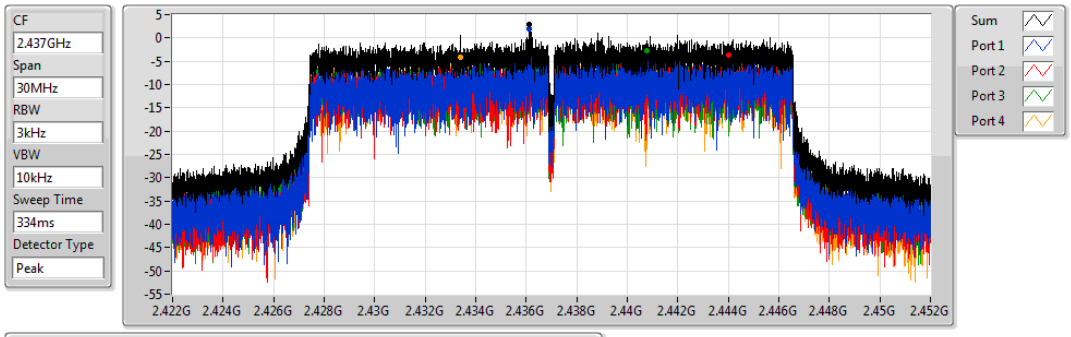


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.40	1.40	0.15	-2.67	-2.69	-2.60

802.11ax HEW20-BF_Nss2,(MCS0)_4TX PSD

2437MHz

25/07/2019

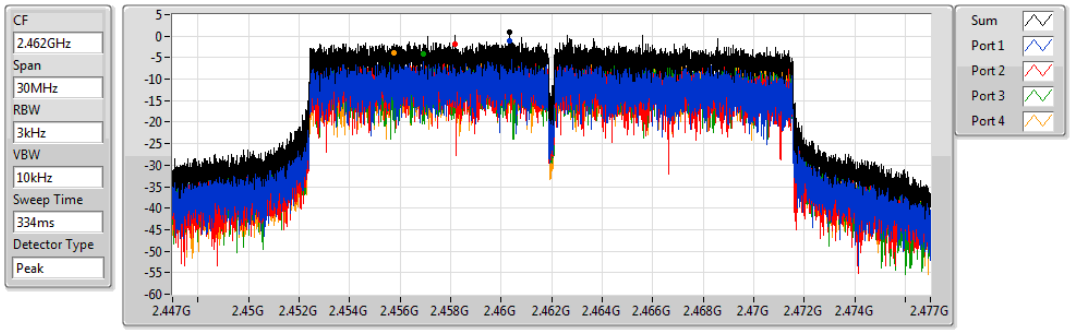


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.79	2.79	1.98	-3.65	-2.84	-4.07

802.11ax HEW20-BF_Nss2,(MCS0)_4TX PSD

2462MHz

25/07/2019

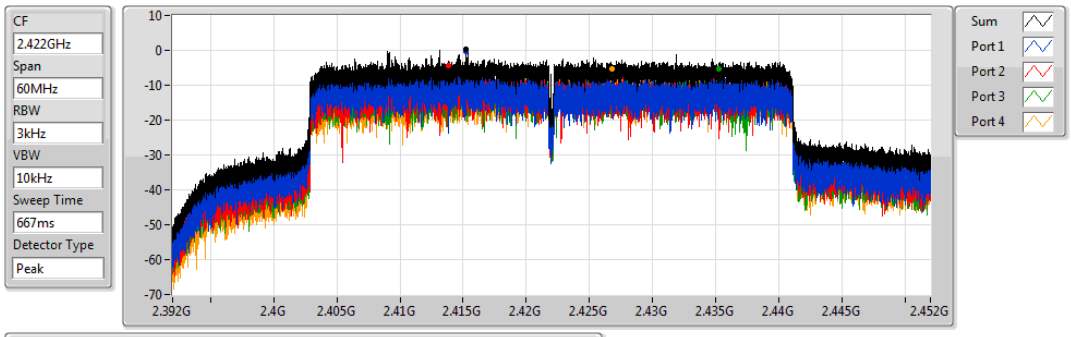


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.82	0.82	-1.05	-1.81	-4.10	-3.86

802.11ax HEW40-BF_Nss2,(MCS0)_4TX PSD

2422MHz

25/07/2019

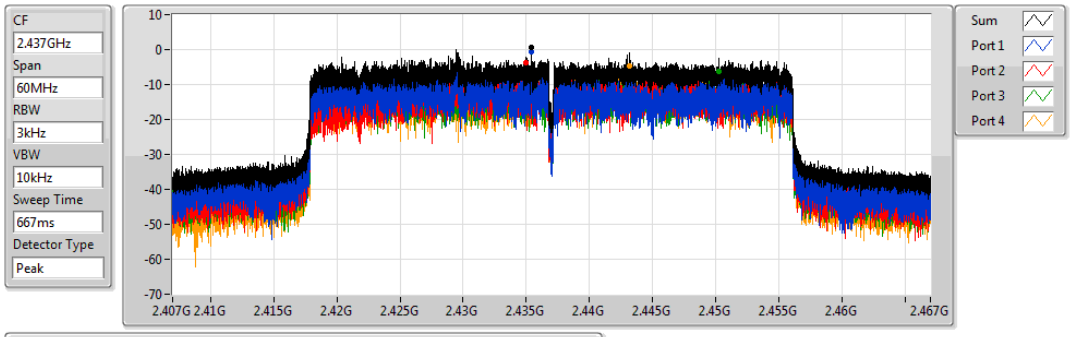


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.38	0.38	-0.23	-4.31	-5.42	-5.21

802.11ax HEW40-BF_Nss2,(MCS0)_4TX PSD

2437MHz

23/07/2019

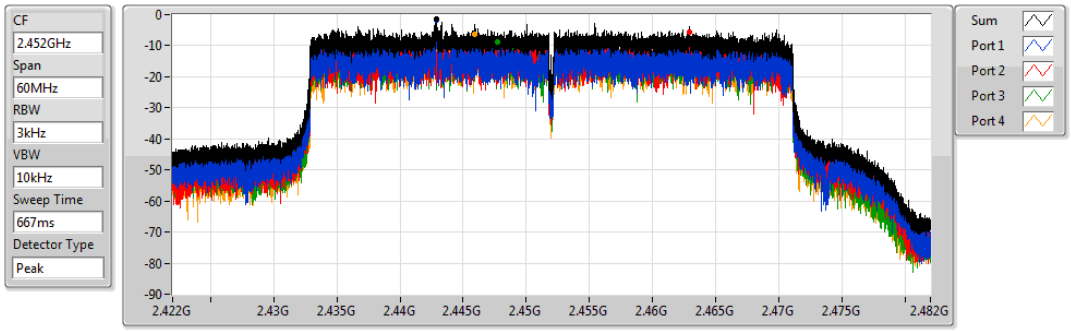


Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.63	0.63	-0.76	-3.69	-6.32	-4.70

802.11ax HEW40-BF_Nss2,(MCS0)_4TX PSD

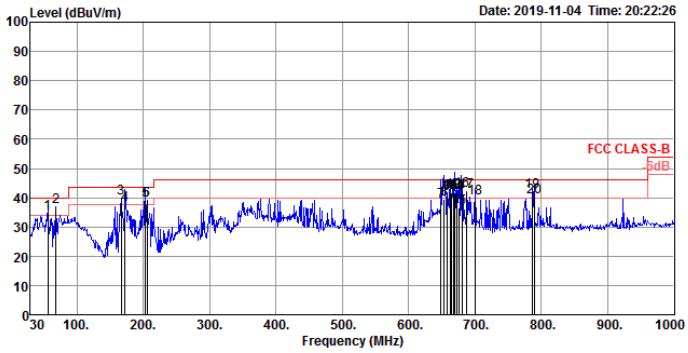
2452MHz

23/07/2019



Sum	PD	Port 1	Port 2	Port 3	Port 4
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.29	-1.29	-1.74	-5.68	-8.74	-6.17

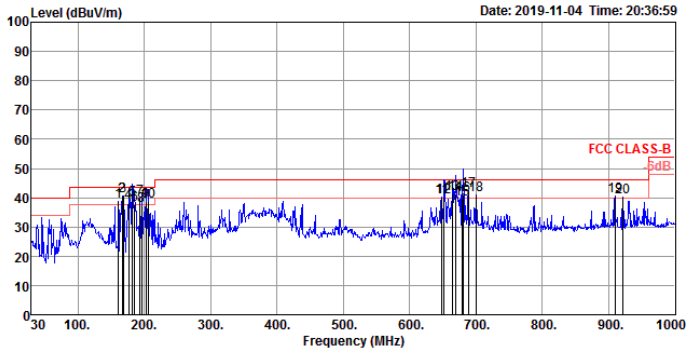
RSE below 1GHz Result			
Operating Mode	1	**Polarization**	Vertical
Operating Function	Normal Link		



	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	56.19	34.68	40.00	-5.32	52.15	0.94	13.40	31.81	125	94	QP	VERTICAL
2	68.80	36.91	40.00	-3.09	55.17	1.02	12.60	31.88	100	144	Peak	VERTICAL
3	166.77	39.85	43.50	-3.65	53.92	1.64	16.17	31.88	150	0	Peak	VERTICAL
4	172.59	37.74	43.50	-5.76	52.11	1.68	15.88	31.93	100	0	QP	VERTICAL
5	203.63	39.20	43.50	-4.30	53.12	1.76	16.27	31.95	150	75	QP	VERTICAL
6	205.57	39.10	43.50	-4.40	52.97	1.77	16.31	31.95	125	198	Peak	VERTICAL
7	648.86	38.86	46.00	-7.14	42.65	3.25	25.50	32.54	100	234	QP	VERTICAL
8	653.71	39.46	46.00	-6.54	43.22	3.27	25.51	32.54	100	10	QP	VERTICAL
9	658.56	41.78	46.00	-4.22	45.50	3.29	25.52	32.53	100	220	Peak	VERTICAL
10	662.44	41.16	46.00	-4.84	44.85	3.31	25.53	32.53	100	44	QP	VERTICAL
11	664.38	41.86	46.00	-4.14	45.55	3.31	25.53	32.53	100	316	QP	VERTICAL
12	667.29	42.09	46.00	-3.91	45.74	3.33	25.54	32.52	150	199	QP	VERTICAL
13	670.20	41.87	46.00	-4.13	45.51	3.34	25.54	32.52	150	262	QP	VERTICAL
14	672.14	41.20	46.00	-4.80	44.82	3.35	25.55	32.52	150	158	QP	VERTICAL
15	676.02	36.40	46.00	-9.60	40.00	3.36	25.55	32.51	100	27	QP	VERTICAL
16	680.87	42.49	46.00	-3.51	46.06	3.38	25.56	32.51	100	50	QP	VERTICAL
17	687.66	42.12	46.00	-3.88	45.63	3.41	25.58	32.50	150	2	Peak	VERTICAL
18	700.27	39.77	46.00	-6.23	43.21	3.45	25.60	32.49	150	24	QP	VERTICAL
19	786.60	41.96	46.00	-4.04	43.98	3.70	26.59	32.31	150	0	QP	VERTICAL
20	789.51	40.31	46.00	-5.69	42.30	3.70	26.62	32.31	150	0	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	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	160.95	38.66	43.50	-4.84	52.44	1.61	16.44	31.83	200	358	Peak	HORIZONTAL
2	166.77	40.48	43.50	-3.02	54.55	1.64	16.17	31.88	150	69	Peak	HORIZONTAL
3	168.71	40.42	43.50	-3.08	54.60	1.66	16.06	31.90	150	69	Peak	HORIZONTAL
4	176.47	38.32	43.50	-5.18	52.89	1.70	15.69	31.96	125	225	QP	HORIZONTAL
5	182.29	39.49	43.50	-4.01	54.25	1.72	15.50	31.98	100	248	QP	HORIZONTAL
6	185.20	37.81	43.50	-5.69	52.57	1.72	15.50	31.98	100	82	QP	HORIZONTAL
7	193.93	39.79	43.50	-3.71	54.23	1.73	15.78	31.95	100	231	Peak	HORIZONTAL
8	195.87	37.44	43.50	-6.06	51.74	1.73	15.92	31.95	125	360	QP	HORIZONTAL
9	202.66	38.62	43.50	-4.88	52.56	1.75	16.26	31.95	200	123	QP	HORIZONTAL
10	205.57	38.69	43.50	-4.81	52.56	1.77	16.31	31.95	200	123	QP	HORIZONTAL
11	648.86	40.30	46.00	-5.70	44.09	3.25	25.50	32.54	150	338	Peak	HORIZONTAL
12	651.77	40.21	46.00	-5.79	43.99	3.26	25.50	32.54	125	310	QP	HORIZONTAL
13	664.38	41.42	46.00	-4.58	45.11	3.31	25.53	32.53	150	218	QP	HORIZONTAL
14	670.20	41.25	46.00	-4.75	44.89	3.34	25.54	32.52	150	240	QP	HORIZONTAL
15	678.93	39.64	46.00	-6.36	43.21	3.38	25.56	32.51	300	134	QP	HORIZONTAL
16	680.87	40.81	46.00	-5.19	44.38	3.38	25.56	32.51	200	206	QP	HORIZONTAL
17	688.63	42.53	46.00	-3.47	46.03	3.42	25.58	32.50	125	356	Peak	HORIZONTAL
18	700.27	40.88	46.00	-5.12	44.32	3.45	25.60	32.49	125	0	Peak	HORIZONTAL
19	909.79	40.56	46.00	-5.44	41.05	4.09	27.76	32.34	100	186	Peak	HORIZONTAL
20	921.43	40.22	46.00	-5.78	40.53	4.10	27.84	32.25	100	352	Peak	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.)

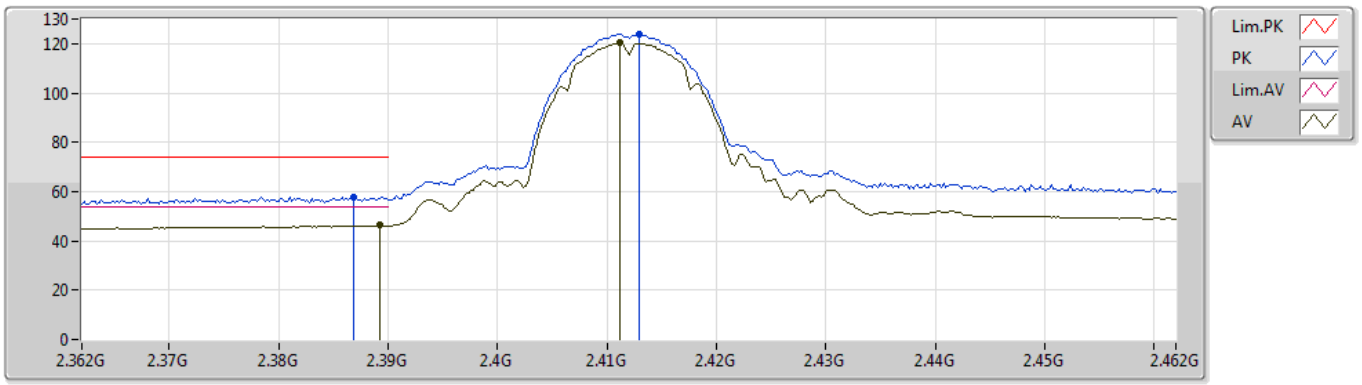
For non-beamforming mode:
1 Stream 4 TX for CDD mode:
Summary

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	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_4TX	Pass	AV	2.3892G	46.27	54.00	-7.73	31.90	3	Vertical	81	1.70	-

802.11b_Nss1,(1Mbps)_4TX

2412MHz_TX

08/11/2019



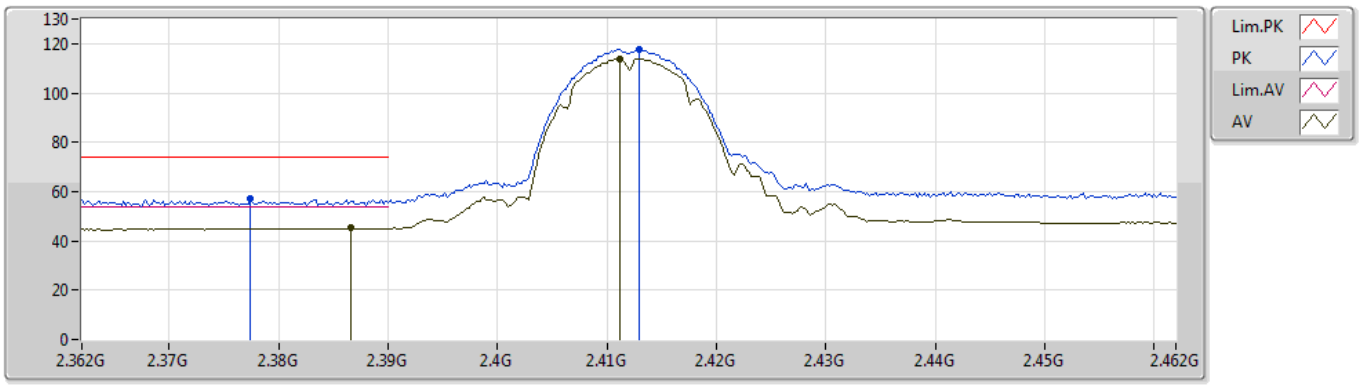
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3868G	57.82	74.00	-16.18	31.89	3	Vertical	81	1.70	-	25.93
AV	2.3892G	46.27	54.00	-7.73	31.90	3	Vertical	81	1.70	-	14.37
PK	2.413G	123.96	Inf	-Inf	32.03	3	Vertical	81	1.70	-	91.93
AV	2.4112G	120.33	Inf	-Inf	32.02	3	Vertical	81	1.70	-	88.31

802.11b_Nss1,(1Mbps)_4TX

2412MHz_TX

08/11/2019



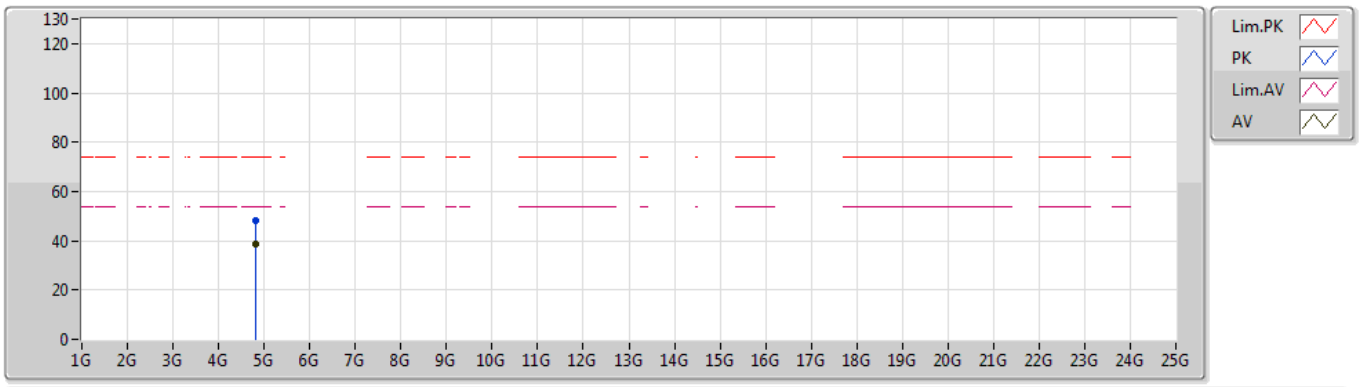
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3774G	56.93	74.00	-17.07	31.86	3	Horizontal	306	2.40	-	25.07
AV	2.3866G	45.13	54.00	-8.87	31.89	3	Horizontal	306	2.40	-	13.24
PK	2.413G	117.77	Inf	-Inf	32.03	3	Horizontal	306	2.40	-	85.74
AV	2.4112G	114.02	Inf	-Inf	32.02	3	Horizontal	306	2.40	-	82.00

802.11b_Nss1,(1Mbps)_4TX

2412MHz_TX

08/11/2019



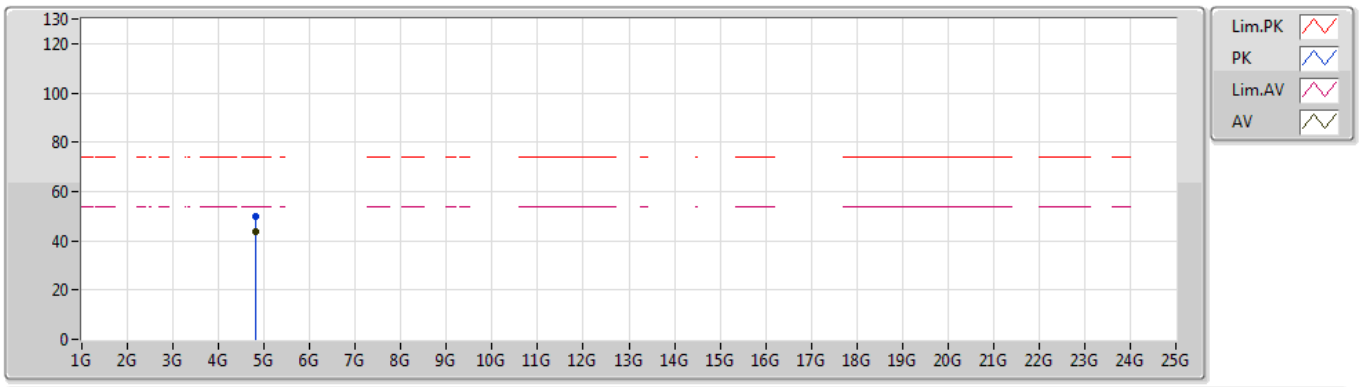
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.824G	48.20	74.00	-25.80	4.24	3	Vertical	110	1.28	-	43.96
AV	4.82399G	38.90	54.00	-15.10	4.24	3	Vertical	110	1.28	-	34.66

802.11b_Nss1,(1Mbps)_4TX

2412MHz_TX

08/11/2019



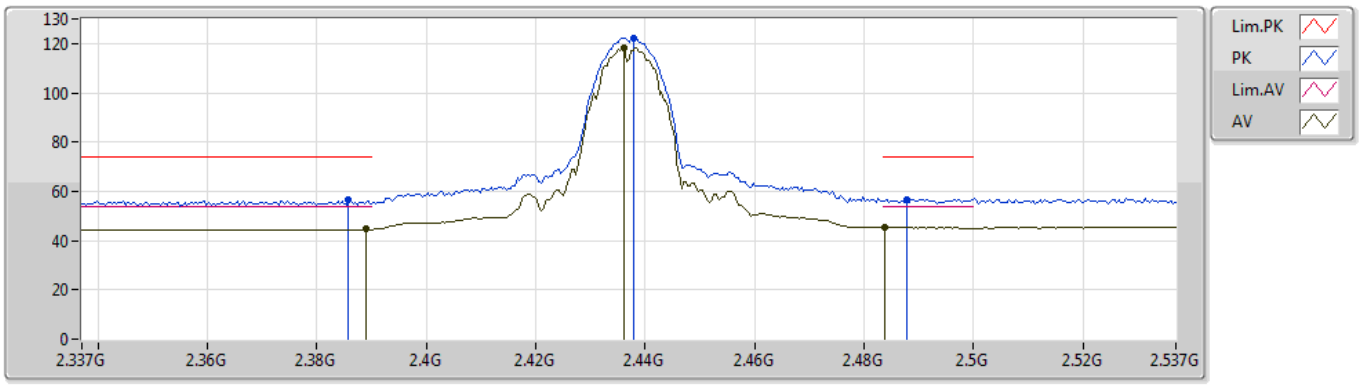
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.8239G	49.81	74.00	-24.19	4.24	3	Horizontal	64	2.46	-	45.57
AV	4.82396G	43.48	54.00	-10.52	4.24	3	Horizontal	64	2.46	-	39.24

802.11b_Nss1,(1Mbps)_4TX

2437MHz_TX

08/11/2019



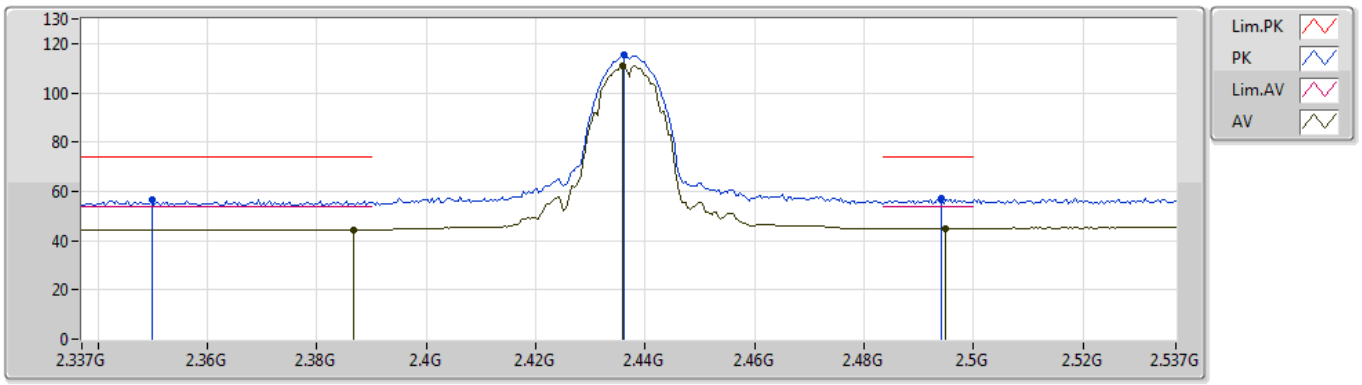
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3858G	56.37	74.00	-17.63	31.89	3	Vertical	81	2.03	-	24.48
AV	2.389G	44.56	54.00	-9.44	31.90	3	Vertical	81	2.03	-	12.66
PK	2.4378G	122.26	Inf	-Inf	32.19	3	Vertical	81	2.03	-	90.07
AV	2.4362G	118.50	Inf	-Inf	32.18	3	Vertical	81	2.03	-	86.32
PK	2.4878G	56.70	74.00	-17.30	32.51	3	Vertical	81	2.03	-	24.19
AV	2.4838G	45.31	54.00	-8.69	32.48	3	Vertical	81	2.03	-	12.83

802.11b_Nss1,(1Mbps)_4TX

2437MHz_TX

08/11/2019



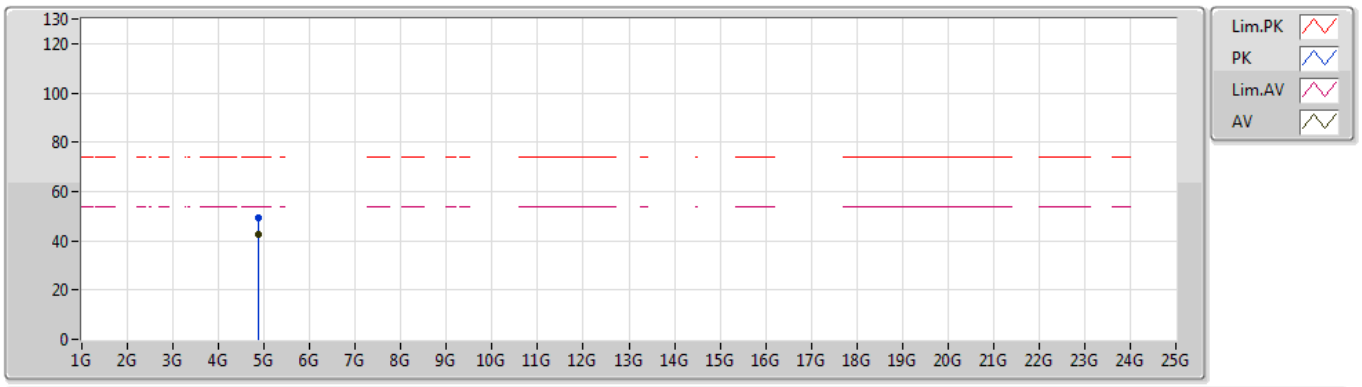
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3498G	56.54	74.00	-17.46	31.76	3	Horizontal	133	2.16	-	24.78
AV	2.3866G	44.30	54.00	-9.70	31.89	3	Horizontal	133	2.16	-	12.41
PK	2.4362G	115.17	Inf	-Inf	32.18	3	Horizontal	133	2.16	-	82.99
AV	2.4358G	110.84	Inf	-Inf	32.17	3	Horizontal	133	2.16	-	78.67
PK	2.4942G	57.22	74.00	-16.78	32.56	3	Horizontal	133	2.16	-	24.66
AV	2.495G	45.04	54.00	-8.96	32.56	3	Horizontal	133	2.16	-	12.48

802.11b_Nss1,(1Mbps)_4TX

2437MHz_TX

08/11/2019



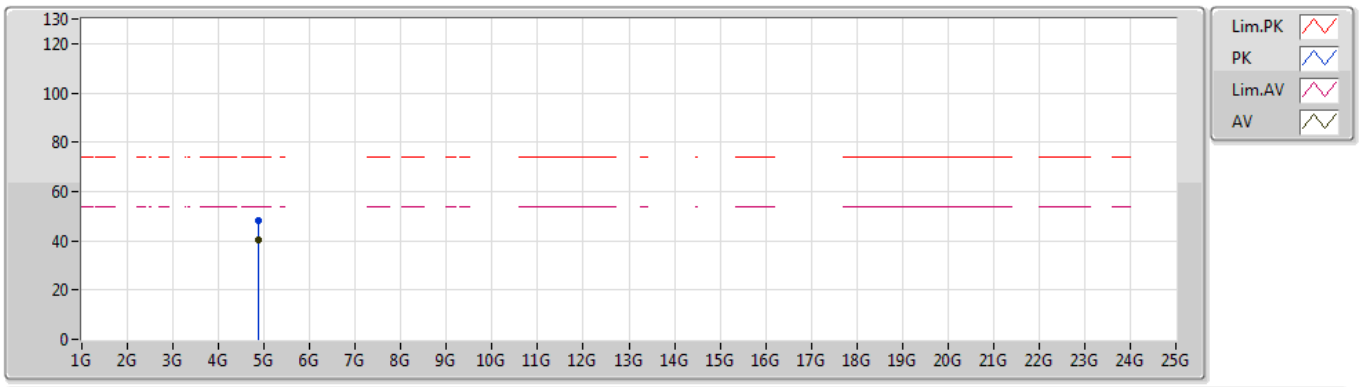
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.87406G	49.37	74.00	-24.63	4.35	3	Vertical	273	1.50	-	45.02
AV	4.87397G	42.33	54.00	-11.67	4.35	3	Vertical	273	1.50	-	37.98

802.11b_Nss1,(1Mbps)_4TX

2437MHz_TX

08/11/2019



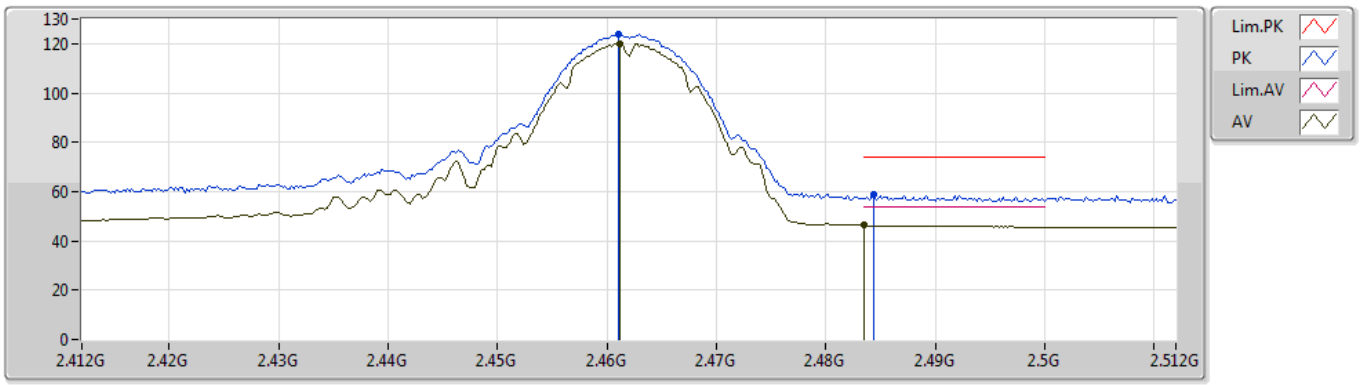
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.87402G	48.14	74.00	-25.86	4.35	3	Horizontal	58	1.50	-	43.79
AV	4.874G	40.08	54.00	-13.92	4.35	3	Horizontal	58	1.50	-	35.73

802.11b_Nss1,(1Mbps)_4TX

2462MHz_TX

08/11/2019



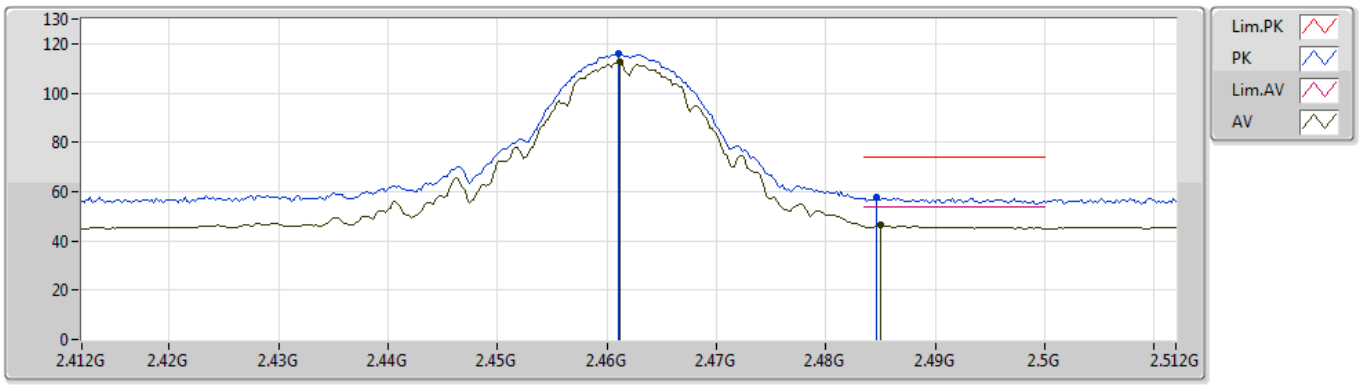
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.461G	123.91	Inf	-Inf	32.34	3	Vertical	261	1.85	-	91.57
AV	2.4612G	120.07	Inf	-Inf	32.34	3	Vertical	261	1.85	-	87.73
PK	2.4844G	58.99	74.00	-15.01	32.49	3	Vertical	261	1.85	-	26.50
AV	2.4835G	46.24	54.00	-7.76	32.48	3	Vertical	261	1.85	-	13.76

802.11b_Nss1,(1Mbps)_4TX

2462MHz_TX

08/11/2019



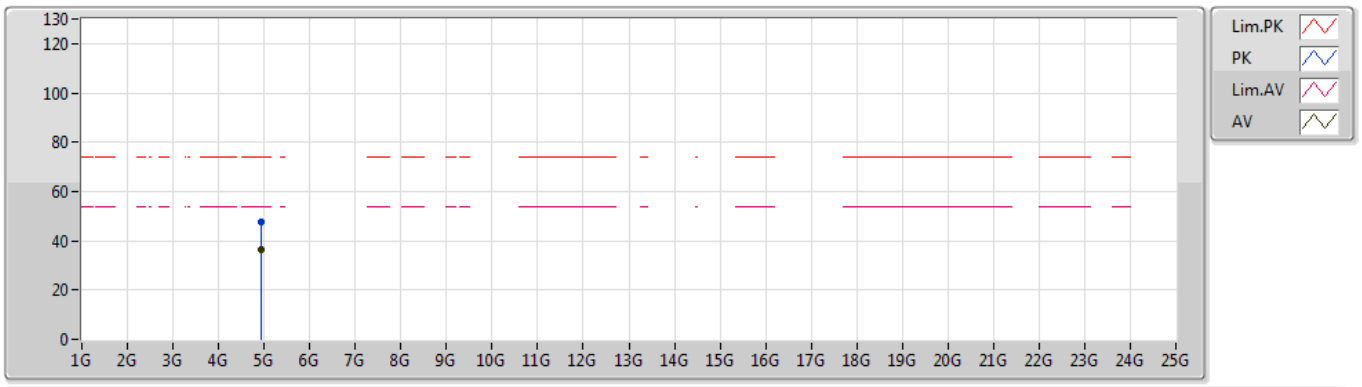
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.461G	116.16	Inf	-Inf	32.34	3	Horizontal	82	1.50	-	83.82
AV	2.4612G	112.41	Inf	-Inf	32.34	3	Horizontal	82	1.50	-	80.07
PK	2.4846G	57.92	74.00	-16.08	32.49	3	Horizontal	82	1.50	-	25.43
AV	2.485G	46.23	54.00	-7.77	32.49	3	Horizontal	82	1.50	-	13.74

802.11b_Nss1,(1Mbps)_4TX

2462MHz_TX

08/11/2019



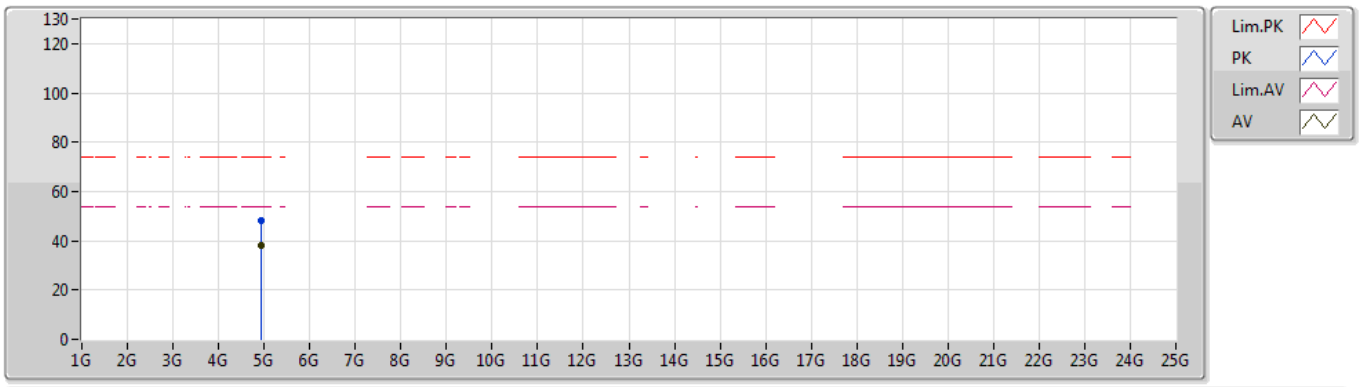
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.92413G	47.52	74.00	-26.48	4.45	3	Vertical	59	1.49	-	43.07
AV	4.92393G	36.49	54.00	-17.51	4.45	3	Vertical	59	1.49	-	32.04

802.11b_Nss1,(1Mbps)_4TX

2462MHz_TX

08/11/2019



EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.9238G	48.23	74.00	-25.77	4.45	3	Horizontal	342	2.99	-	43.78
AV	4.92398G	38.19	54.00	-15.81	4.45	3	Horizontal	342	2.99	-	33.74

4 Stream 4 TX for SDM mode:

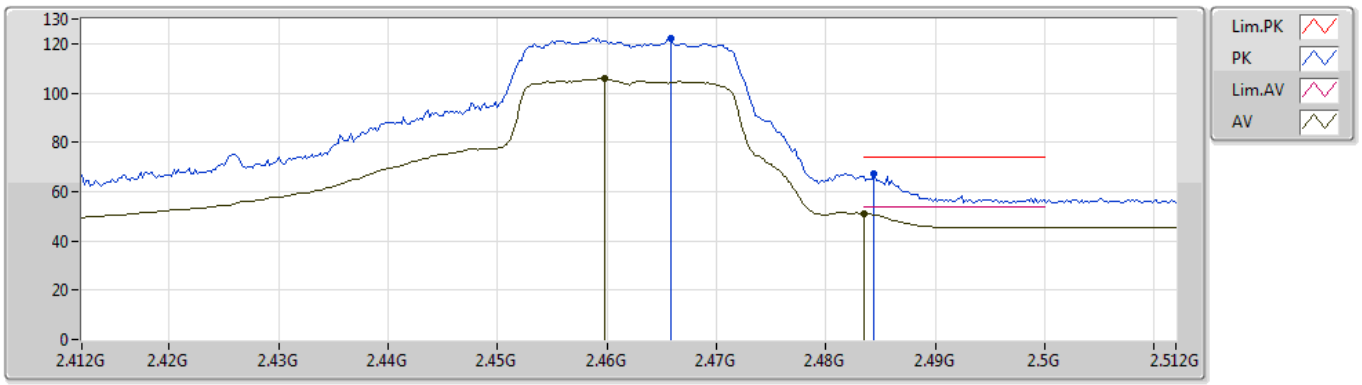
Summary

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	-	-	-	-	-	-	-	-	-	-	-	-
802.11ax HEW20_Nss4,(MCS0)_4TX	Pass	AV	2.4835G	51.07	54.00	-2.93	32.48	3	Vertical	266	1.86	-

802.11ax HEW20_Nss4,(MCS0)_4TX

2462MHz_TX

08/11/2019



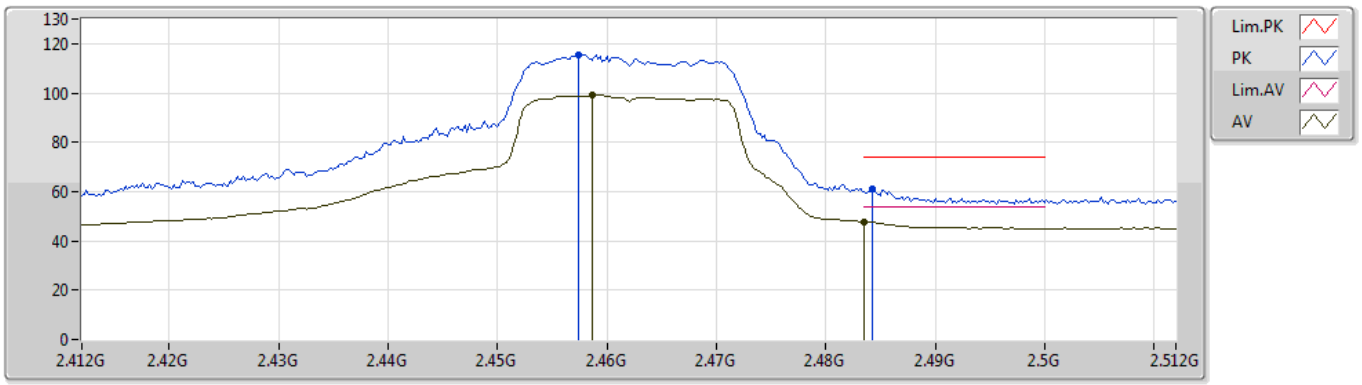
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.4658G	122.19	Inf	-Inf	32.36	3	Vertical	266	1.86	-	89.83
AV	2.4598G	106.13	Inf	-Inf	32.33	3	Vertical	266	1.86	-	73.80
PK	2.4844G	67.47	74.00	-6.53	32.49	3	Vertical	266	1.86	-	34.98
AV	2.4835G	51.07	54.00	-2.93	32.48	3	Vertical	266	1.86	-	18.59

802.11ax HEW20_Nss4,(MCS0)_4TX

2462MHz_TX

08/11/2019



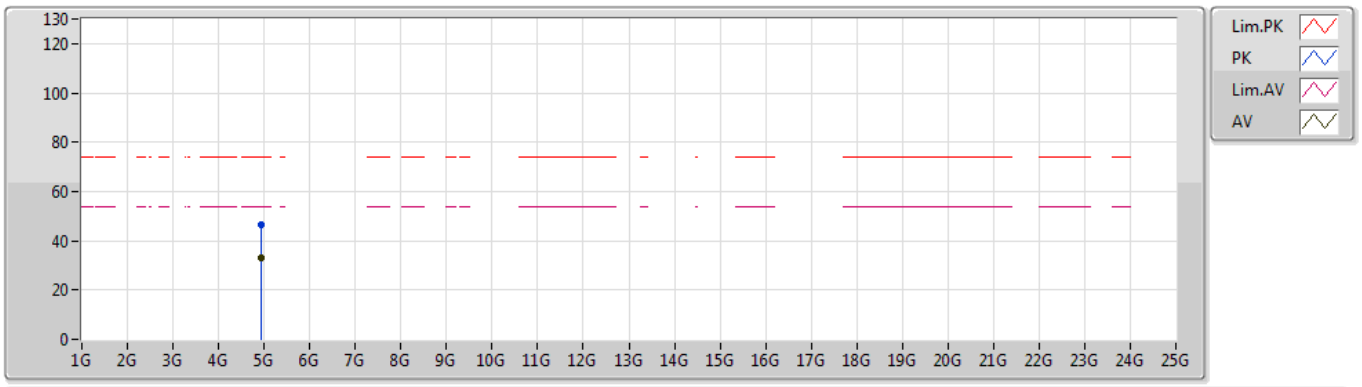
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.4574G	115.59	Inf	-Inf	32.31	3	Horizontal	305	2.46	-	83.28
AV	2.4586G	98.97	Inf	-Inf	32.32	3	Horizontal	305	2.46	-	66.65
PK	2.4842G	60.85	74.00	-13.15	32.49	3	Horizontal	305	2.46	-	28.36
AV	2.4835G	47.63	54.00	-6.37	32.48	3	Horizontal	305	2.46	-	15.15

802.11ax HEW20_Nss4,(MCS0)_4TX

2462MHz_TX

08/11/2019



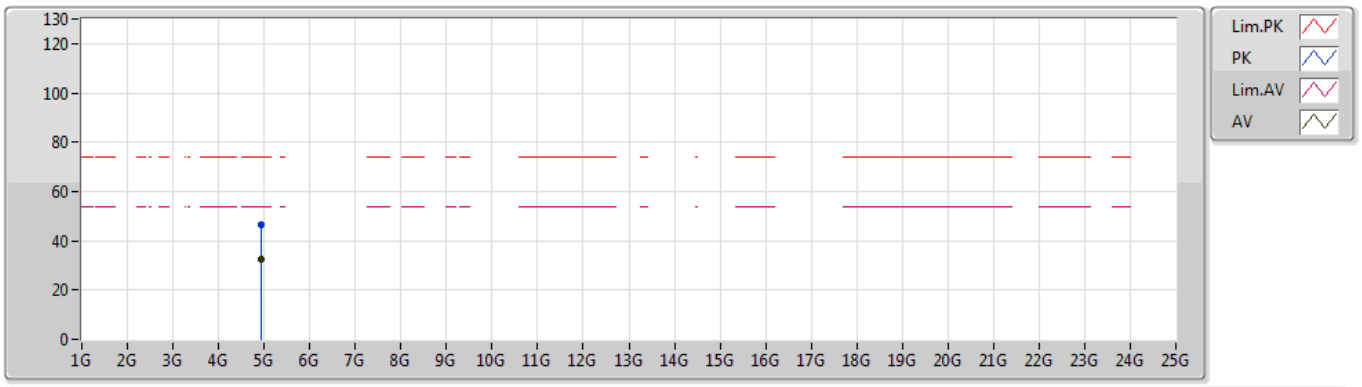
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.9256G	46.47	74.00	-27.53	4.45	3	Vertical	199	2.48	-	42.02
AV	4.92776G	32.91	54.00	-21.09	4.46	3	Vertical	199	2.48	-	28.45

802.11ax HEW20_Nss4,(MCS0)_4TX

2462MHz_TX

08/11/2019



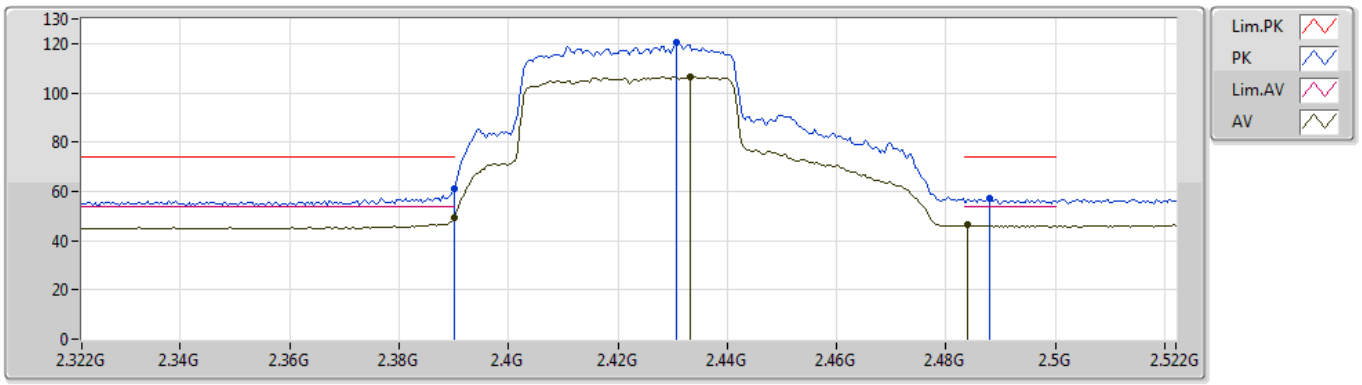
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.92764G	46.46	74.00	-27.54	4.46	3	Horizontal	284	1.07	-	42.00
AV	4.928G	32.40	54.00	-21.60	4.46	3	Horizontal	284	1.07	-	27.94

802.11ax HEW40_Nss4,(MCS0)_4TX

2422MHz_TX

08/11/2019



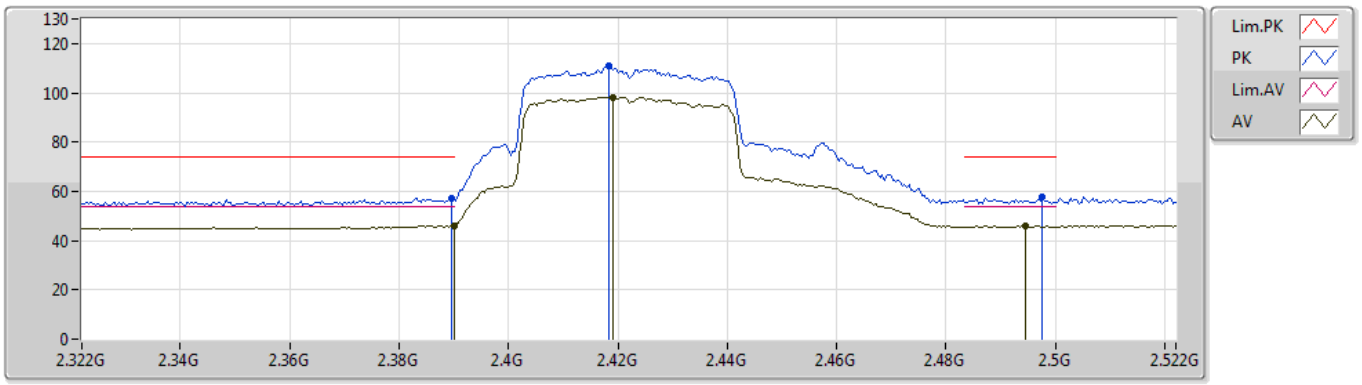
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.39G	61.08	74.00	-12.92	31.90	3	Vertical	262	1.90	-	29.18
AV	2.39G	49.30	54.00	-4.70	31.90	3	Vertical	262	1.90	-	17.40
PK	2.4308G	120.63	Inf	-Inf	32.14	3	Vertical	262	1.90	-	88.49
AV	2.4332G	106.64	Inf	-Inf	32.16	3	Vertical	262	1.90	-	74.48
PK	2.488G	56.93	74.00	-17.07	32.51	3	Vertical	262	1.90	-	24.42
AV	2.484G	46.30	54.00	-7.70	32.48	3	Vertical	262	1.90	-	13.82

802.11ax HEW40_Nss4,(MCS0)_4TX

2422MHz_TX

08/11/2019



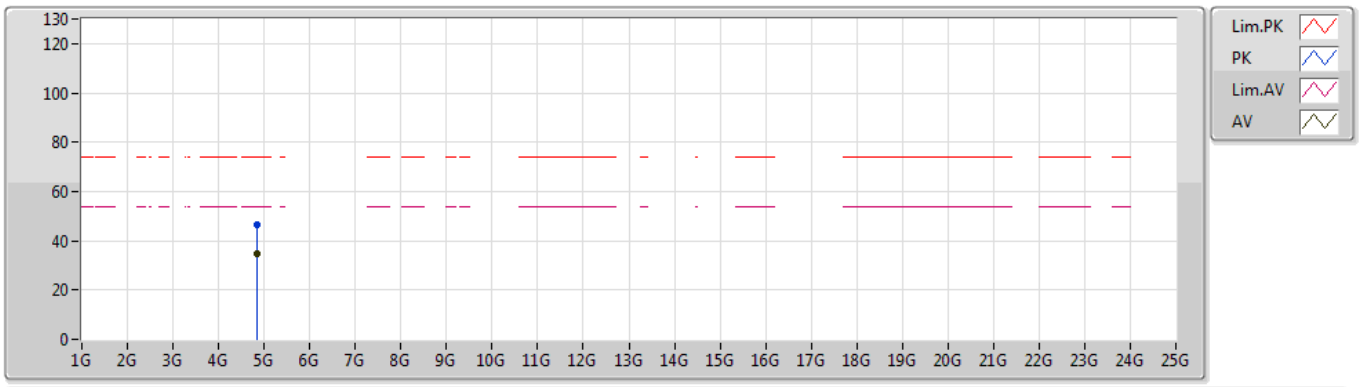
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3896G	57.20	74.00	-16.80	31.90	3	Horizontal	165	1.50	-	25.30
AV	2.39G	46.16	54.00	-7.84	31.90	3	Horizontal	165	1.50	-	14.26
PK	2.4184G	110.80	Inf	-Inf	32.06	3	Horizontal	165	1.50	-	78.74
AV	2.4192G	98.25	Inf	-Inf	32.07	3	Horizontal	165	1.50	-	66.18
PK	2.4976G	57.67	74.00	-16.33	32.58	3	Horizontal	165	1.50	-	25.09
AV	2.4944G	45.93	54.00	-8.07	32.56	3	Horizontal	165	1.50	-	13.37

802.11ax HEW40_Nss4,(MCS0)_4TX

2422MHz_TX

08/11/2019



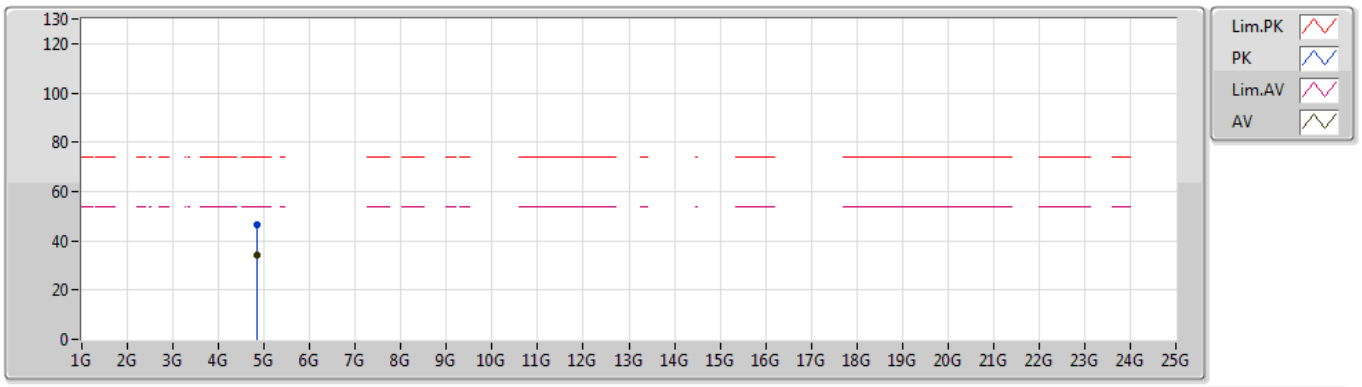
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.84232G	46.42	74.00	-27.58	4.28	3	Vertical	265	1.94	-	42.14
AV	4.8444G	34.58	54.00	-19.42	4.29	3	Vertical	265	1.94	-	30.29

802.11ax HEW40_Nss4,(MCS0)_4TX

2422MHz_TX

08/11/2019



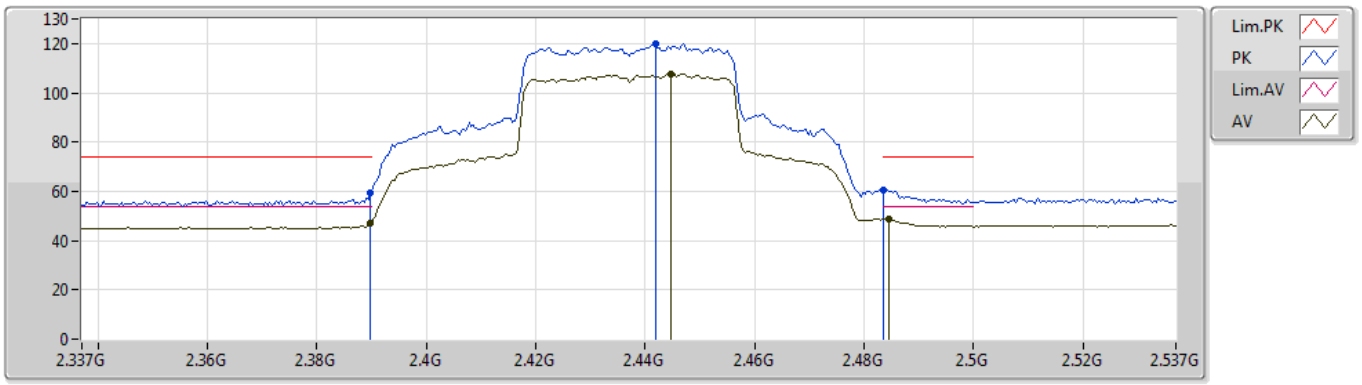
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.84468G	46.53	74.00	-27.47	4.29	3	Horizontal	71	1.91	-	42.24
AV	4.84354G	34.06	54.00	-19.94	4.29	3	Horizontal	71	1.91	-	29.77

802.11ax HEW40_Nss4,(MCS0)_4TX

2437MHz_TX

08/11/2019



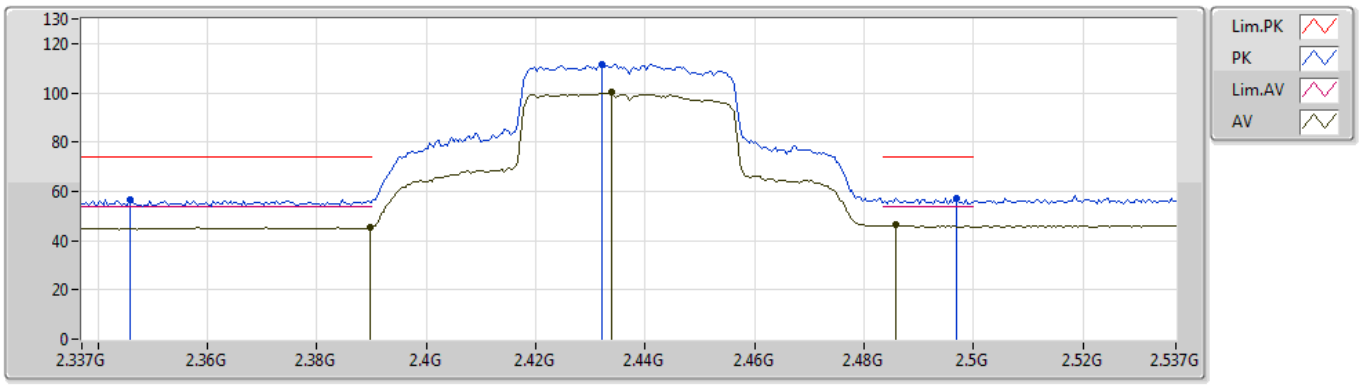
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3898G	59.44	74.00	-14.56	31.90	3	Vertical	264	1.89	-	27.54
AV	2.3898G	47.19	54.00	-6.81	31.90	3	Vertical	264	1.89	-	15.29
PK	2.4418G	119.83	Inf	-Inf	32.21	3	Vertical	264	1.89	-	87.62
AV	2.4446G	107.67	Inf	-Inf	32.23	3	Vertical	264	1.89	-	75.44
PK	2.4835G	60.70	74.00	-13.30	32.48	3	Vertical	264	1.89	-	28.22
AV	2.4846G	48.88	54.00	-5.12	32.49	3	Vertical	264	1.89	-	16.39

802.11ax HEW40_Nss4,(MCS0)_4TX

2437MHz_TX

08/11/2019



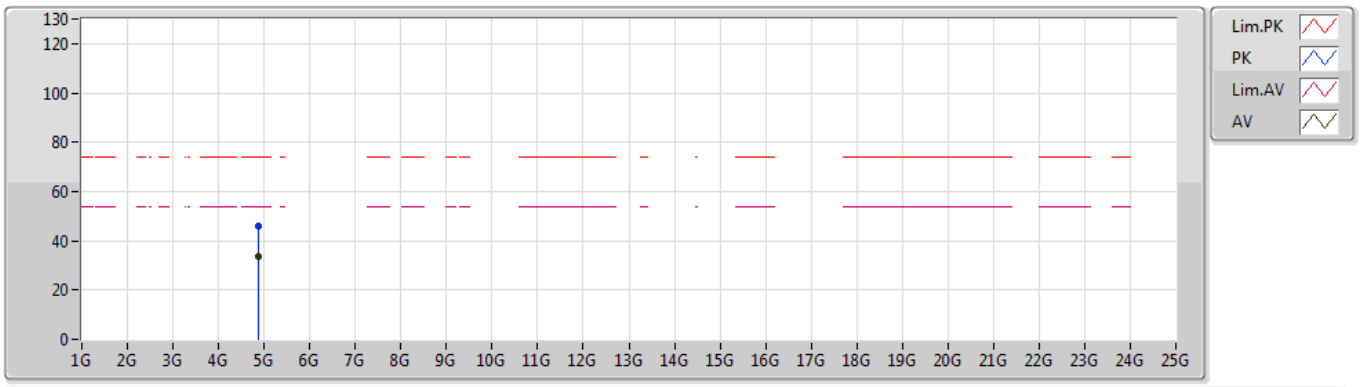
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3458G	56.77	74.00	-17.23	31.75	3	Horizontal	24	2.45	-	25.02
AV	2.3898G	45.31	54.00	-8.69	31.90	3	Horizontal	24	2.45	-	13.41
PK	2.4322G	111.56	Inf	-Inf	32.15	3	Horizontal	24	2.45	-	79.41
AV	2.4338G	100.11	Inf	-Inf	32.16	3	Horizontal	24	2.45	-	67.95
PK	2.497G	57.04	74.00	-16.96	32.57	3	Horizontal	24	2.45	-	24.47
AV	2.4858G	46.24	54.00	-7.76	32.49	3	Horizontal	24	2.45	-	13.75

802.11ax HEW40_Nss4,(MCS0)_4TX

2437MHz_TX

08/11/2019



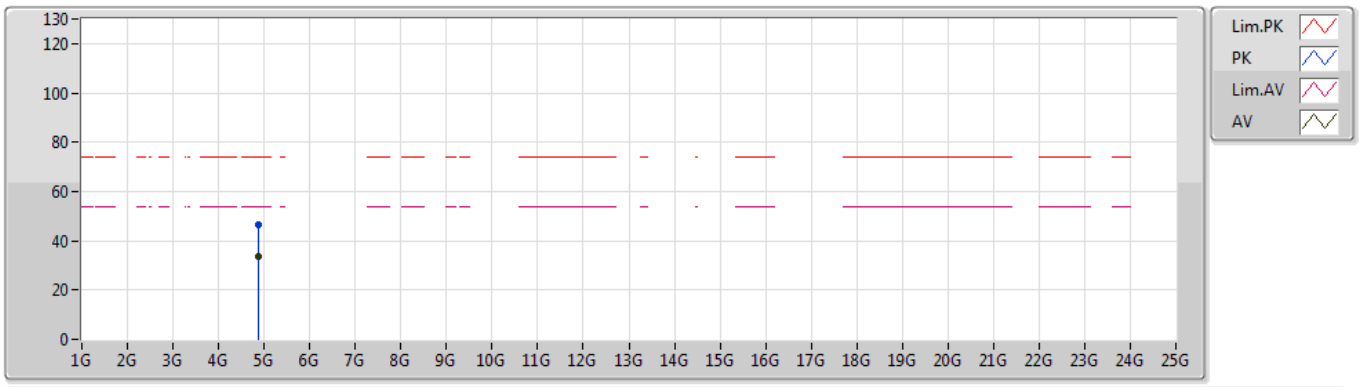
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.87736G	46.15	74.00	-27.85	4.35	3	Vertical	65	2.62	-	41.80
AV	4.87876G	33.71	54.00	-20.29	4.36	3	Vertical	65	2.62	-	29.35

802.11ax HEW40_Nss4,(MCS0)_4TX

2437MHz_TX

08/11/2019



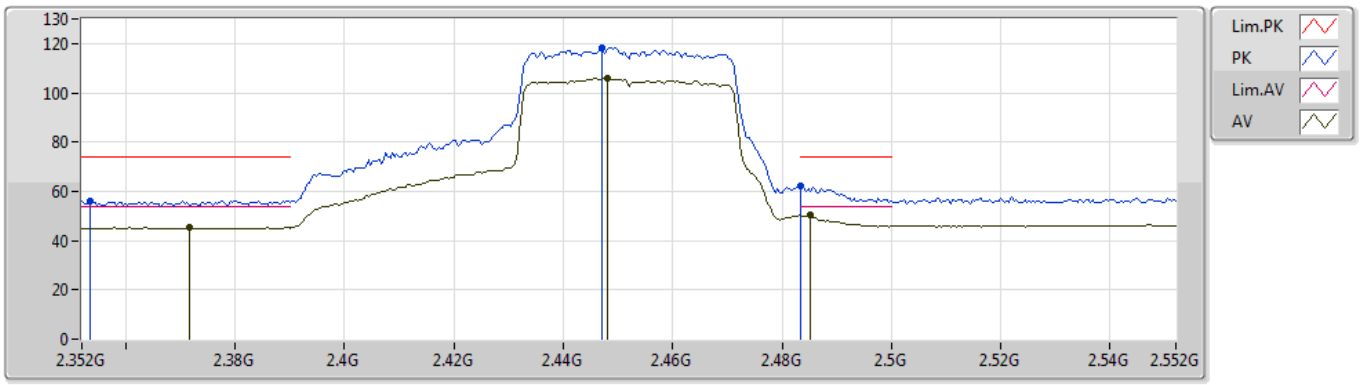
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.87812G	46.59	74.00	-27.41	4.36	3	Horizontal	172	2.09	-	42.23
AV	4.86946G	33.65	54.00	-20.35	4.34	3	Horizontal	172	2.09	-	29.31

802.11ax HEW40_Nss4,(MCS0)_4TX

2452MHz_TX

08/11/2019



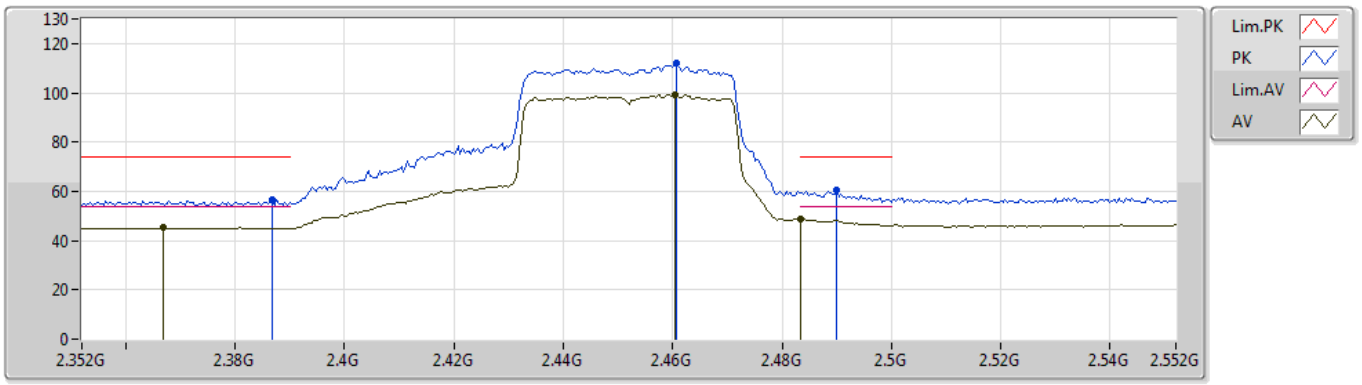
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3536G	56.24	74.00	-17.76	31.78	3	Vertical	265	1.91	-	24.46
AV	2.3716G	45.20	54.00	-8.80	31.84	3	Vertical	265	1.91	-	13.36
PK	2.4472G	118.25	Inf	-Inf	32.24	3	Vertical	265	1.91	-	86.01
AV	2.448G	106.12	Inf	-Inf	32.25	3	Vertical	265	1.91	-	73.87
PK	2.4835G	62.31	74.00	-11.69	32.48	3	Vertical	265	1.91	-	29.83
AV	2.4852G	50.23	54.00	-3.77	32.49	3	Vertical	265	1.91	-	17.74

802.11ax HEW40_Nss4,(MCS0)_4TX

2452MHz_TX

08/11/2019



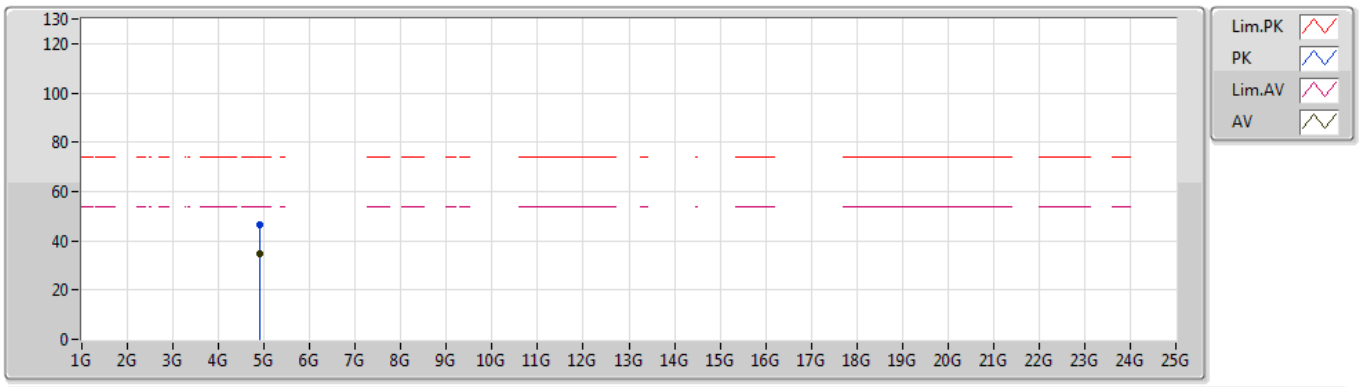
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3868G	56.64	74.00	-17.36	31.89	3	Horizontal	306	2.39	-	24.75
AV	2.3668G	45.25	54.00	-8.75	31.82	3	Horizontal	306	2.39	-	13.43
PK	2.4608G	111.89	Inf	-Inf	32.33	3	Horizontal	306	2.39	-	79.56
AV	2.4604G	99.46	Inf	-Inf	32.33	3	Horizontal	306	2.39	-	67.13
PK	2.49G	60.44	74.00	-13.56	32.53	3	Horizontal	306	2.39	-	27.91
AV	2.4835G	48.65	54.00	-5.35	32.48	3	Horizontal	306	2.39	-	16.17

802.11ax HEW40_Nss4,(MCS0)_4TX

2452MHz_TX

08/11/2019



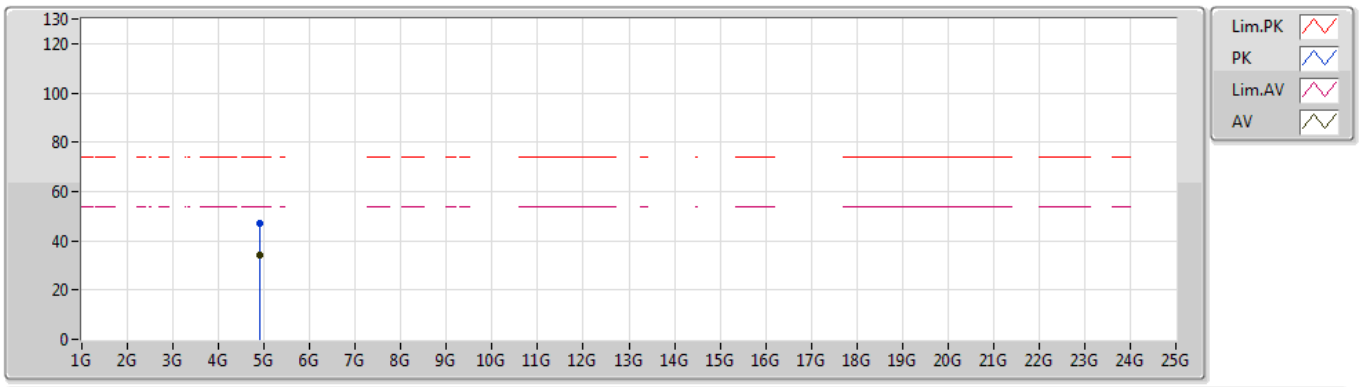
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.90268G	46.72	74.00	-27.28	4.41	3	Vertical	170	2.07	-	42.31
AV	4.9042G	34.49	54.00	-19.51	4.41	3	Vertical	170	2.07	-	30.08

802.11ax HEW40_Nss4,(MCS0)_4TX

2452MHz_TX

08/11/2019



EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	4.90804G	46.94	74.00	-27.06	4.42	3	Horizontal	201	2.28	-	42.52
AV	4.90574G	34.28	54.00	-19.72	4.41	3	Horizontal	201	2.28	-	29.87

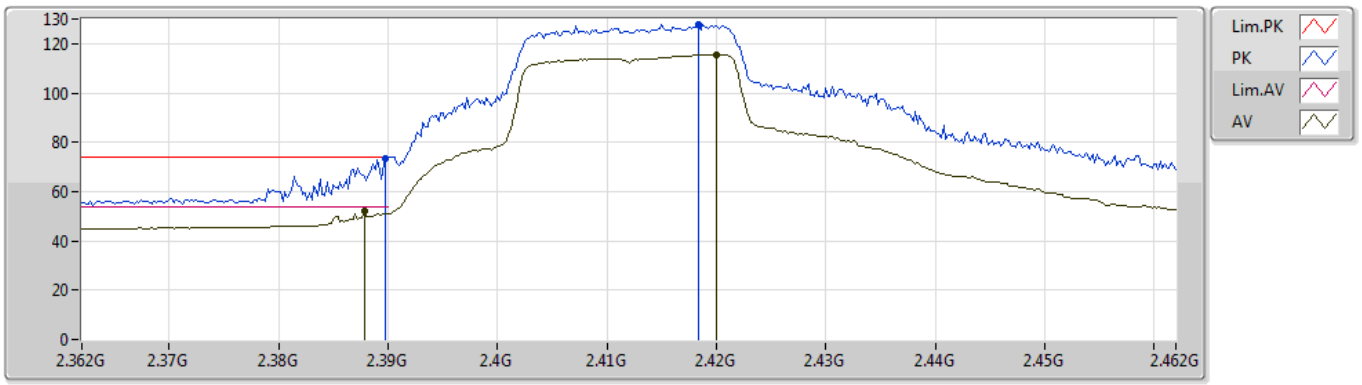
For beamforming mode:
1 Stream 4 TX for TxBF mode:
Summary

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	-	-	-	-	-	-	-	-	-	-	-	-
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	Pass	AV	2.4835G	53.88	54.00	-0.12	32.48	3	Vertical	265	1.89	-

802.11ax HEW20-BF_Nss1,(MCS0)_4TX

2412MHz_TX

08/11/2019



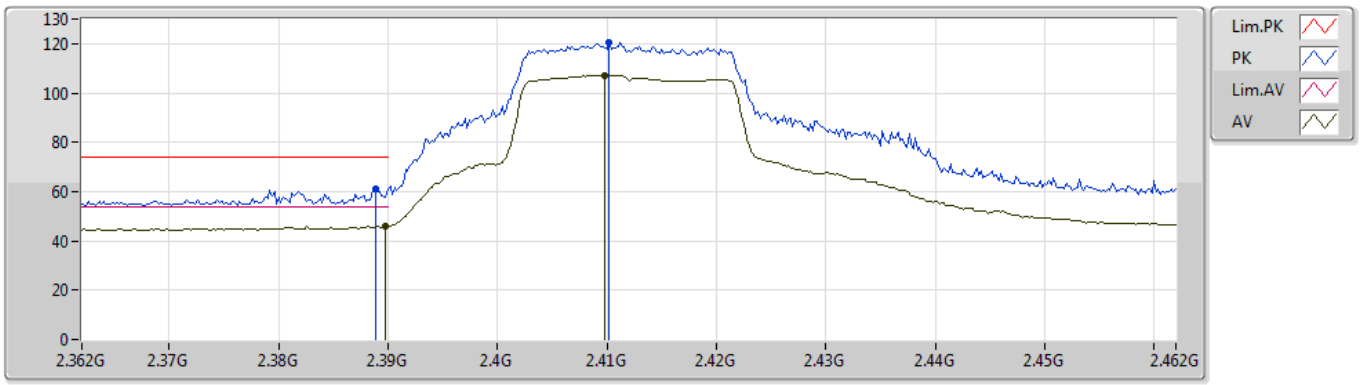
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3898G	73.49	74.00	-0.51	31.90	3	Vertical	263	1.73	-	41.59
AV	2.3878G	52.36	54.00	-1.64	31.89	3	Vertical	263	1.73	-	20.47
PK	2.4184G	127.81	Inf	-Inf	32.06	3	Vertical	263	1.73	-	95.75
AV	2.42G	115.63	Inf	-Inf	32.07	3	Vertical	263	1.73	-	83.56

802.11ax HEW20-BF_Nss1,(MCS0)_4TX

2412MHz_TX

08/11/2019



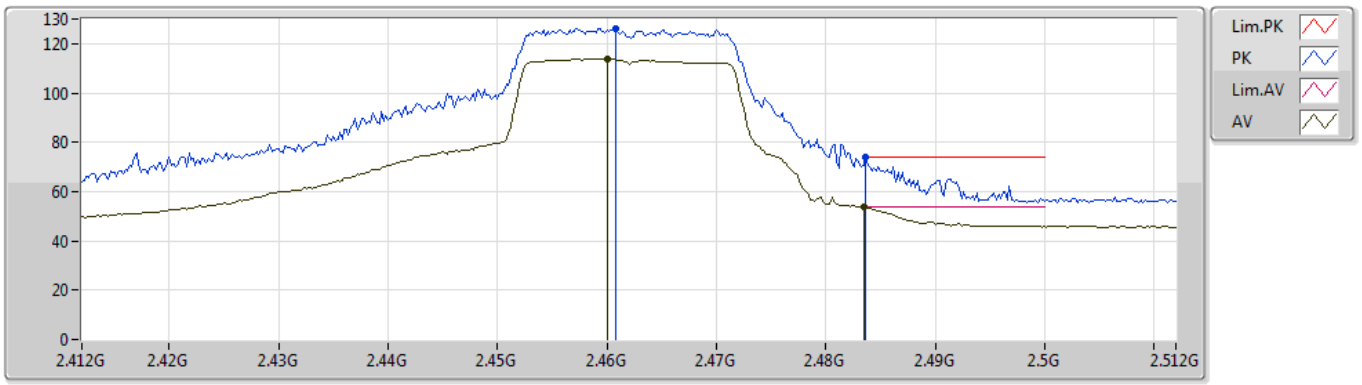
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3888G	61.14	74.00	-12.86	31.90	3	Horizontal	9	2.82	-	29.24
AV	2.3898G	46.01	54.00	-7.99	31.90	3	Horizontal	9	2.82	-	14.11
PK	2.4102G	120.59	Inf	-Inf	32.01	3	Horizontal	9	2.82	-	88.58
AV	2.4098G	107.09	Inf	-Inf	32.00	3	Horizontal	9	2.82	-	75.09

802.11ax HEW20-BF_Nss1,(MCS0)_4TX

2462MHz_TX

08/11/2019



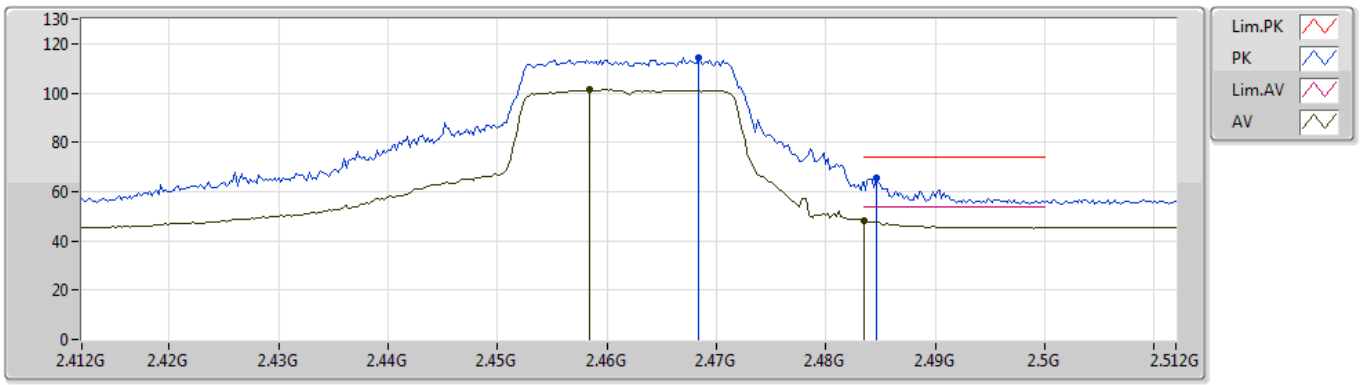
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.4608G	126.17	Inf	-Inf	32.33	3	Vertical	262	1.81	-	93.84
AV	2.46G	113.79	Inf	-Inf	32.33	3	Vertical	262	1.81	-	81.46
PK	2.4836G	73.73	74.00	-0.27	32.48	3	Vertical	262	1.81	-	41.25
AV	2.4835G	53.63	54.00	-0.37	32.48	3	Vertical	262	1.81	-	21.15

802.11ax HEW20-BF_Nss1,(MCS0)_4TX

2462MHz_TX

08/11/2019



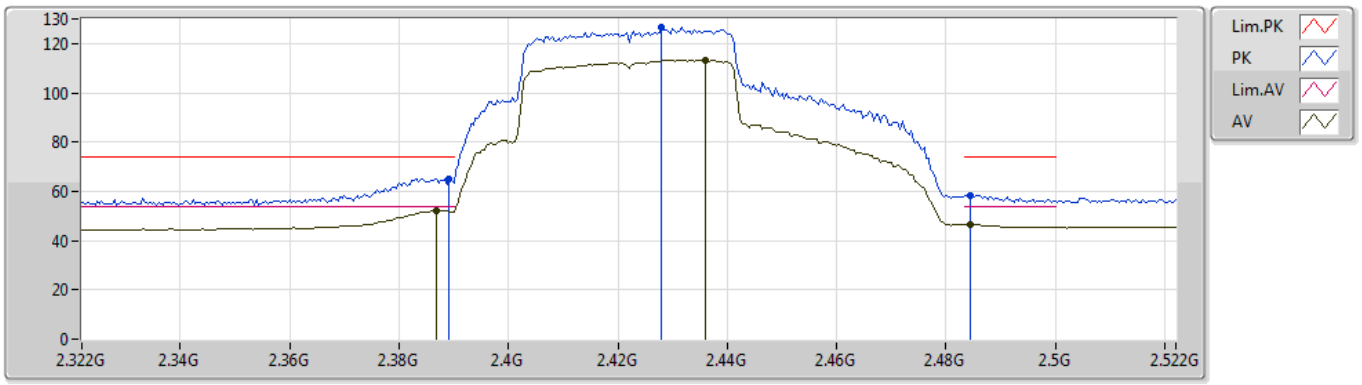
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.4684G	114.50	Inf	-Inf	32.38	3	Horizontal	254	1.53	-	82.12
AV	2.4584G	101.47	Inf	-Inf	32.32	3	Horizontal	254	1.53	-	69.15
PK	2.4846G	65.38	74.00	-8.62	32.49	3	Horizontal	254	1.53	-	32.89
AV	2.4835G	48.18	54.00	-5.82	32.48	3	Horizontal	254	1.53	-	15.70

802.11ax HEW40-BF_Nss1,(MCS0)_4TX

2422MHz_TX

08/11/2019



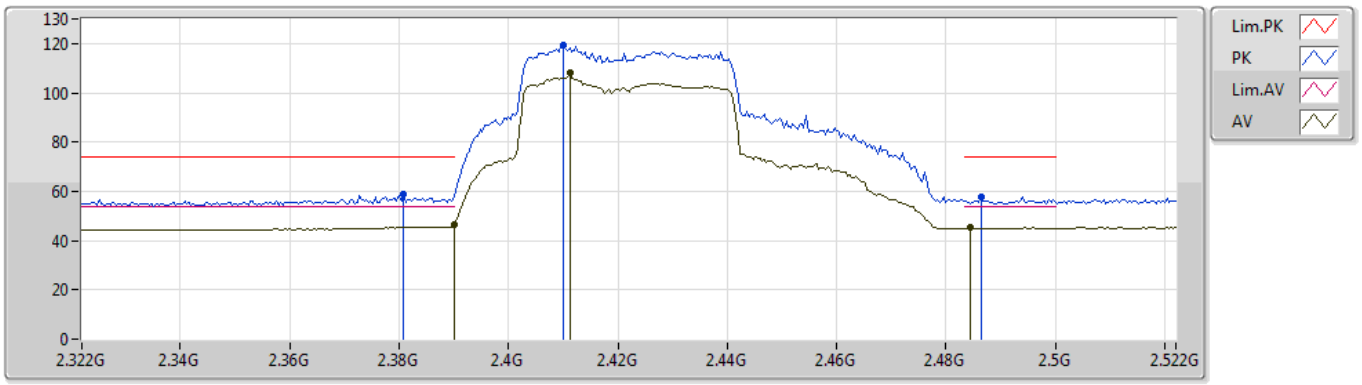
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3892G	65.24	74.00	-8.76	31.90	3	Vertical	265	1.88	-	33.34
AV	2.3868G	52.30	54.00	-1.70	31.89	3	Vertical	265	1.88	-	20.41
PK	2.428G	126.78	Inf	-Inf	32.12	3	Vertical	265	1.88	-	94.66
AV	2.436G	113.28	Inf	-Inf	32.18	3	Vertical	265	1.88	-	81.10
PK	2.4844G	58.49	74.00	-15.51	32.49	3	Vertical	265	1.88	-	26.00
AV	2.4844G	46.59	54.00	-7.41	32.49	3	Vertical	265	1.88	-	14.10

802.11ax HEW40-BF_Nss1,(MCS0)_4TX

2422MHz_TX

08/11/2019



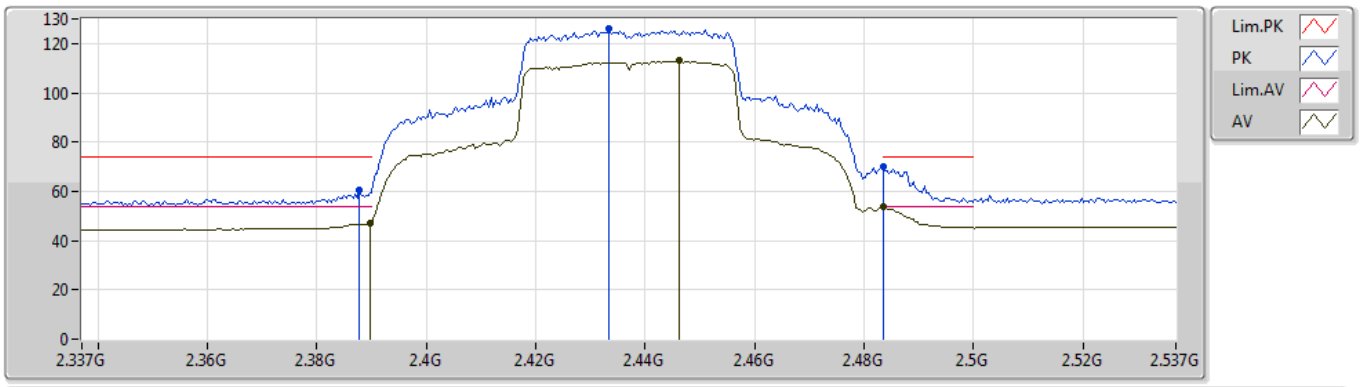
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3808G	58.88	74.00	-15.12	31.87	3	Horizontal	17	2.50	-	27.01
AV	2.39G	46.38	54.00	-7.62	31.90	3	Horizontal	17	2.50	-	14.48
PK	2.41G	119.21	Inf	-Inf	32.00	3	Horizontal	17	2.50	-	87.21
AV	2.4112G	108.06	Inf	-Inf	32.02	3	Horizontal	17	2.50	-	76.04
PK	2.4864G	57.63	74.00	-16.37	32.50	3	Horizontal	17	2.50	-	25.13
AV	2.4844G	45.14	54.00	-8.86	32.49	3	Horizontal	17	2.50	-	12.65

802.11ax HEW40-BF_Nss1,(MCS0)_4TX

2437MHz_TX

08/11/2019



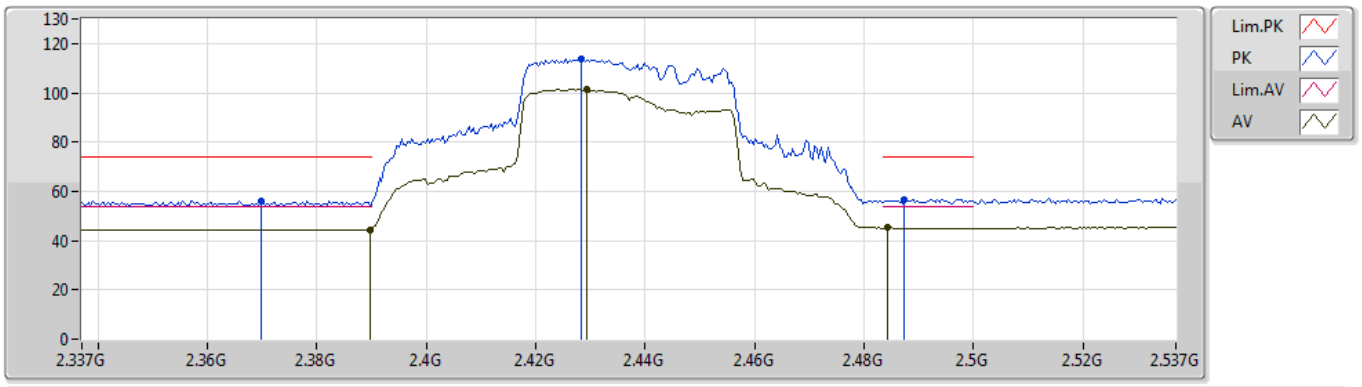
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3878G	60.32	74.00	-13.68	31.89	3	Vertical	265	1.89	-	28.43
AV	2.3898G	46.99	54.00	-7.01	31.90	3	Vertical	265	1.89	-	15.09
PK	2.4334G	125.80	Inf	-Inf	32.16	3	Vertical	265	1.89	-	93.64
AV	2.4462G	113.06	Inf	-Inf	32.24	3	Vertical	265	1.89	-	80.82
PK	2.4835G	69.97	74.00	-4.03	32.48	3	Vertical	265	1.89	-	37.49
AV	2.4835G	53.88	54.00	-0.12	32.48	3	Vertical	265	1.89	-	21.40

802.11ax HEW40-BF_Nss1,(MCS0)_4TX

2437MHz_TX

08/11/2019



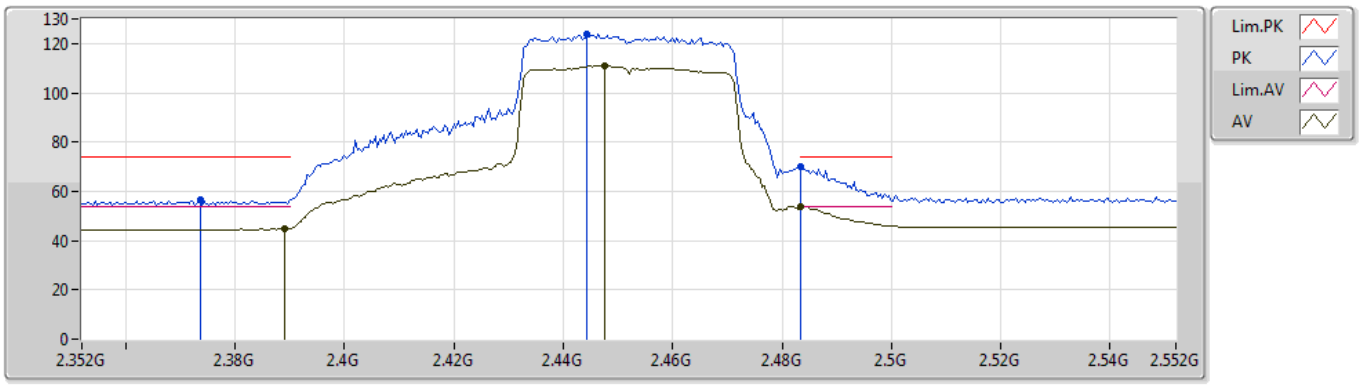
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3698G	56.22	74.00	-17.78	31.83	3	Horizontal	159	1.34	-	24.39
AV	2.3898G	44.51	54.00	-9.49	31.90	3	Horizontal	159	1.34	-	12.61
PK	2.4282G	114.02	Inf	-Inf	32.12	3	Horizontal	159	1.34	-	81.90
AV	2.4294G	101.43	Inf	-Inf	32.13	3	Horizontal	159	1.34	-	69.30
PK	2.4874G	56.74	74.00	-17.26	32.50	3	Horizontal	159	1.34	-	24.24
AV	2.4842G	45.13	54.00	-8.87	32.49	3	Horizontal	159	1.34	-	12.64

802.11ax HEW40-BF_Nss1,(MCS0)_4TX

2452MHz_TX

08/11/2019



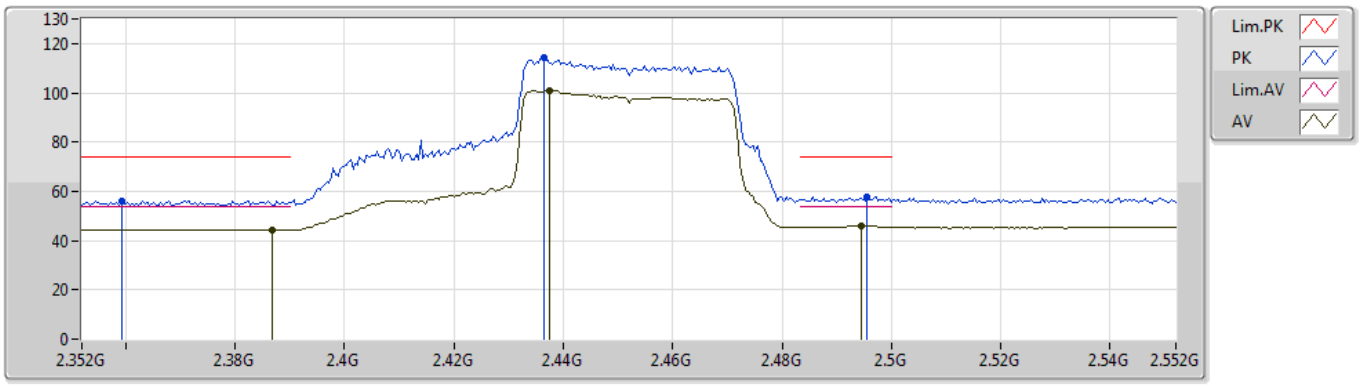
EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3736G	56.53	74.00	-17.47	31.85	3	Vertical	266	1.92	-	24.68
AV	2.3892G	44.80	54.00	-9.20	31.90	3	Vertical	266	1.92	-	12.90
PK	2.4444G	123.77	Inf	-Inf	32.23	3	Vertical	266	1.92	-	91.54
AV	2.4476G	111.10	Inf	-Inf	32.25	3	Vertical	266	1.92	-	78.85
PK	2.4835G	69.82	74.00	-4.18	32.48	3	Vertical	266	1.92	-	37.34
AV	2.4835G	53.78	54.00	-0.22	32.48	3	Vertical	266	1.92	-	21.30

802.11ax HEW40-BF_Nss1,(MCS0)_4TX

2452MHz_TX

08/11/2019



EUT Y_4TX
04-W-3
FSP(100019)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3592G	56.30	74.00	-17.70	31.80	3	Horizontal	11	2.46	-	24.50
AV	2.3868G	44.31	54.00	-9.69	31.89	3	Horizontal	11	2.46	-	12.42
PK	2.4364G	114.19	Inf	-Inf	32.18	3	Horizontal	11	2.46	-	82.01
AV	2.4376G	100.90	Inf	-Inf	32.19	3	Horizontal	11	2.46	-	68.71
PK	2.4956G	57.88	74.00	-16.12	32.56	3	Horizontal	11	2.46	-	25.32
AV	2.4944G	45.88	54.00	-8.12	32.56	3	Horizontal	11	2.46	-	13.32

2 Stream 4 TX for TxBF mode:

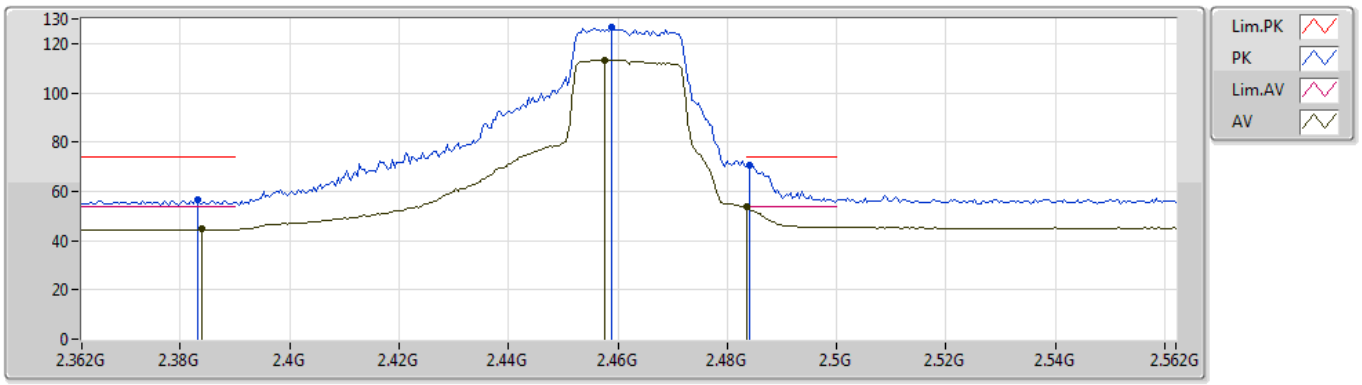
Summary

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	-	-	-	-	-	-	-	-	-	-	-	-
802.11ax HEW20-BF_Nss2,(MCS0)_4TX	Pass	AV	2.4836G	53.77	54.00	-0.23	32.25	3	Vertical	265	1.86	-

802.11ax HEW20-BF_Nss2,(MCS0)_4TX

2462MHz_TX

08/11/2019



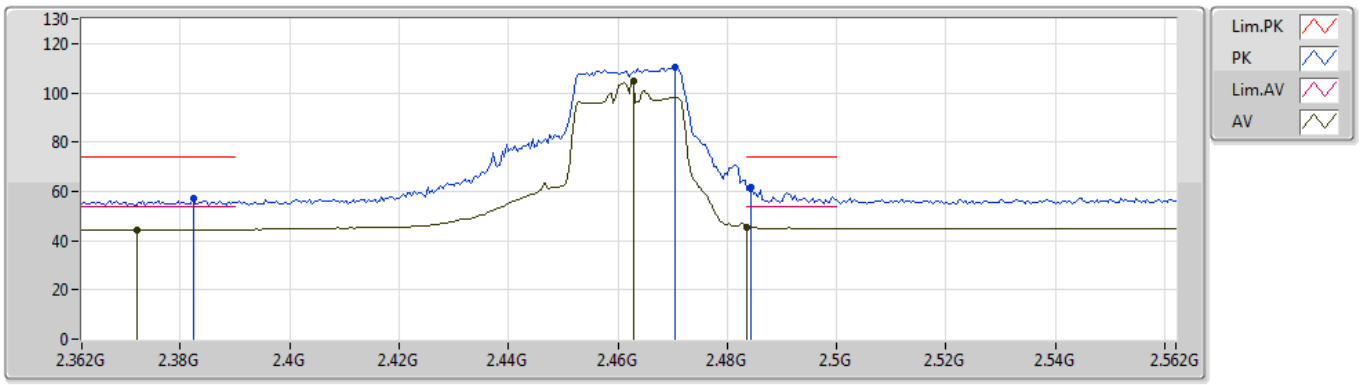
EUT Y_4TX
03-L-3
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3832G	56.37	74.00	-17.63	31.92	3	Vertical	265	1.86	-	24.45
AV	2.384G	44.57	54.00	-9.43	31.92	3	Vertical	265	1.86	-	12.65
PK	2.4588G	126.65	Inf	-Inf	32.17	3	Vertical	265	1.86	-	94.48
AV	2.4576G	113.43	Inf	-Inf	32.16	3	Vertical	265	1.86	-	81.27
PK	2.484G	70.67	74.00	-3.33	32.25	3	Vertical	265	1.86	-	38.42
AV	2.4836G	53.77	54.00	-0.23	32.25	3	Vertical	265	1.86	-	21.52

802.11ax HEW20-BF_Nss2,(MCS0)_4TX

2462MHz_TX

08/11/2019



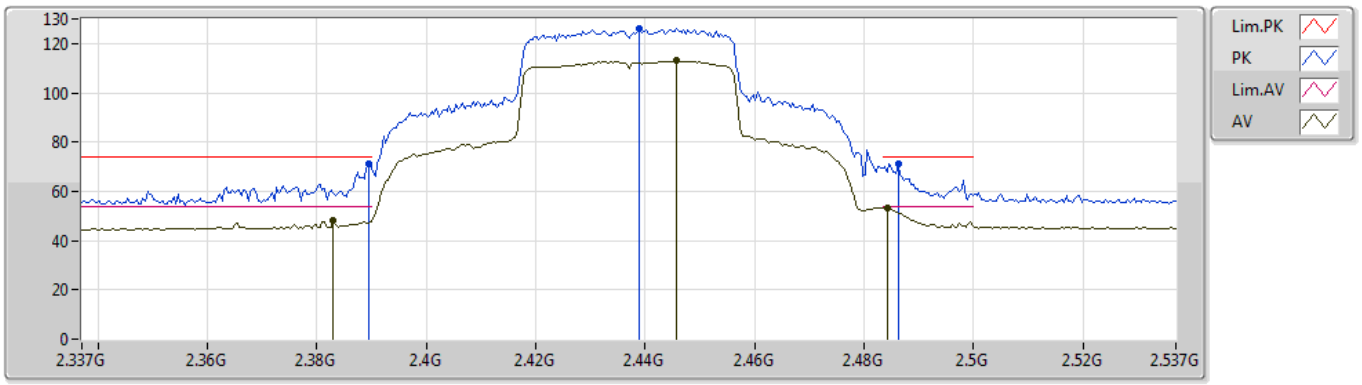
EUT Y_4TX
03-L-3
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3824G	57.05	74.00	-16.95	31.91	3	Horizontal	104	1.09	-	25.14
AV	2.372G	44.41	54.00	-9.59	31.88	3	Horizontal	104	1.09	-	12.53
PK	2.4704G	110.44	Inf	-Inf	32.21	3	Horizontal	104	1.09	-	78.23
AV	2.4628G	104.52	Inf	-Inf	32.18	3	Horizontal	104	1.09	-	72.34
PK	2.4844G	61.86	74.00	-12.14	32.25	3	Horizontal	104	1.09	-	29.61
AV	2.4835G	45.57	54.00	-8.43	32.25	3	Horizontal	104	1.09	-	13.32

802.11ax HEW40-BF_Nss2,(MCS0)_4TX

2437MHz_TX

08/11/2019



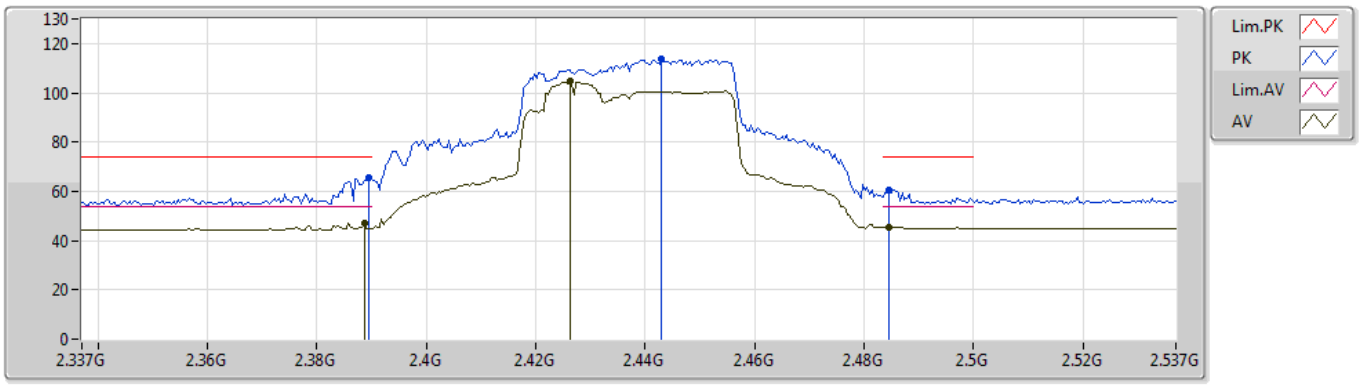
EUT Y_4TX
03-L-3
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3894G	70.92	74.00	-3.08	31.93	3	Vertical	262	1.92	-	38.99
AV	2.383G	48.02	54.00	-5.98	31.92	3	Vertical	262	1.92	-	16.10
PK	2.439G	125.93	Inf	-Inf	32.10	3	Vertical	262	1.92	-	93.83
AV	2.4458G	113.03	Inf	-Inf	32.12	3	Vertical	262	1.92	-	80.91
PK	2.4862G	71.37	74.00	-2.63	32.26	3	Vertical	262	1.92	-	39.11
AV	2.4842G	53.51	54.00	-0.49	32.25	3	Vertical	262	1.92	-	21.26

802.11ax HEW40-BF_Nss2,(MCS0)_4TX

2437MHz_TX

08/11/2019



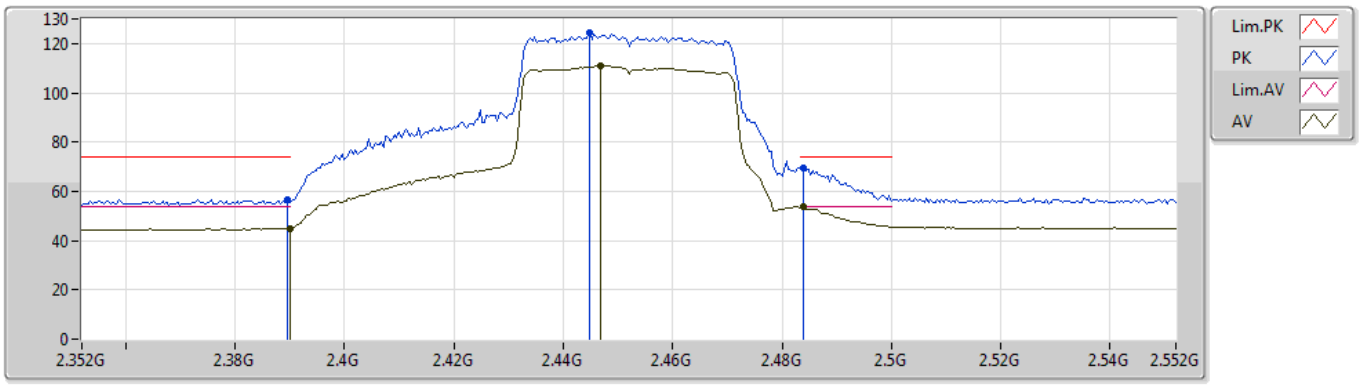
EUT Y_4TX
03-L-3
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3894G	65.33	74.00	-8.67	31.93	3	Horizontal	184	1.85	-	33.40
AV	2.3886G	47.10	54.00	-6.90	31.93	3	Horizontal	184	1.85	-	15.17
PK	2.443G	113.78	Inf	-Inf	32.11	3	Horizontal	184	1.85	-	81.67
AV	2.4262G	104.55	Inf	-Inf	32.05	3	Horizontal	184	1.85	-	72.50
PK	2.4846G	60.76	74.00	-13.24	32.25	3	Horizontal	184	1.85	-	28.51
AV	2.4846G	45.58	54.00	-8.42	32.25	3	Horizontal	184	1.85	-	13.33

802.11ax HEW40-BF_Nss2,(MCS0)_4TX

2452MHz_TX

08/11/2019



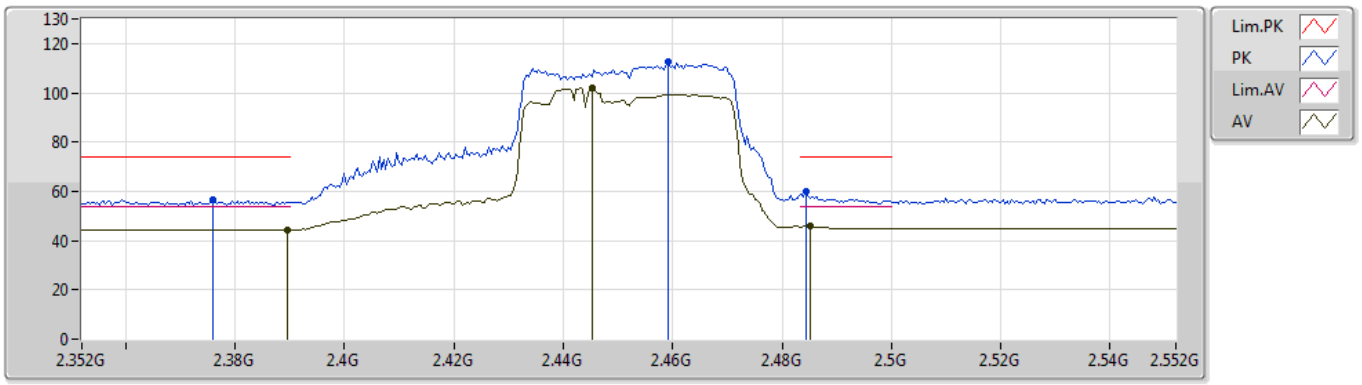
EUT Y_4TX
03-L-3
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.3896G	56.71	74.00	-17.29	31.93	3	Vertical	267	1.90	-	24.78
AV	2.39G	44.96	54.00	-9.04	31.93	3	Vertical	267	1.90	-	13.03
PK	2.4448G	124.56	Inf	-Inf	32.11	3	Vertical	267	1.90	-	92.45
AV	2.4468G	110.97	Inf	-Inf	32.12	3	Vertical	267	1.90	-	78.85
PK	2.484G	69.64	74.00	-4.36	32.25	3	Vertical	267	1.90	-	37.39
AV	2.484G	53.70	54.00	-0.30	32.25	3	Vertical	267	1.90	-	21.45

802.11ax HEW40-BF_Nss2,(MCS0)_4TX

2452MHz_TX

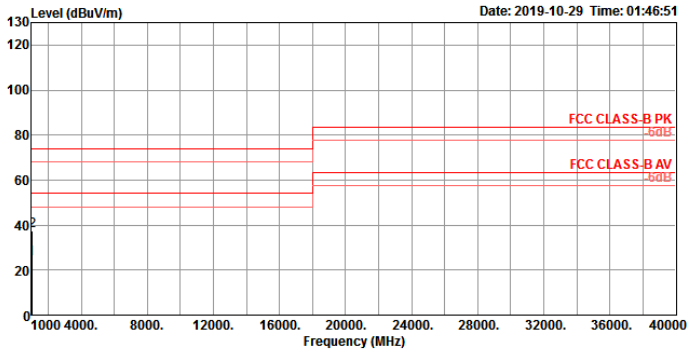
08/11/2019



EUT Y_4TX
03-L-3
FSP

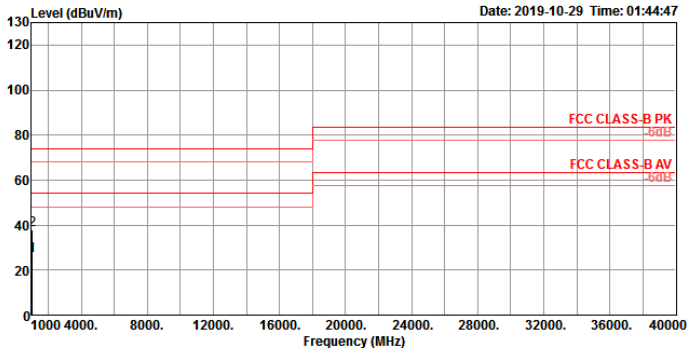
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)
PK	2.376G	56.41	74.00	-17.59	31.89	3	Horizontal	194	2.04	-	24.52
AV	2.3896G	44.43	54.00	-9.57	31.93	3	Horizontal	194	2.04	-	12.50
PK	2.4592G	112.47	Inf	-Inf	32.17	3	Horizontal	194	2.04	-	80.30
AV	2.4452G	101.89	Inf	-Inf	32.12	3	Horizontal	194	2.04	-	69.77
PK	2.4844G	59.76	74.00	-14.24	32.25	3	Horizontal	194	2.04	-	27.51
AV	2.4852G	45.81	54.00	-8.19	32.26	3	Horizontal	194	2.04	-	13.55

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	1017.70	24.76	54.00	-29.24	36.11	1.85	24.54	37.74	140	170	Average	HORIZONTAL
2	1044.50	37.53	74.00	-36.47	48.52	1.87	24.75	37.61	140	170	Peak	HORIZONTAL

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	1028.80	26.18	54.00	-27.82	37.36	1.86	24.64	37.68	117	177	Average	VERTICAL
2	1049.60	37.73	74.00	-36.27	48.63	1.88	24.80	37.58	117	177	Peak	VERTICAL