

FCC Test Report

Equipment : Wireless-AC/N Dual Radio Access Point with 2.5GbE LAN
Brand Name : CISCO
Model No. : WAP581
FCC ID : PD5-WAP581
Standard : 47 CFR FCC Part 15.247
Operating Band : 2400 MHz – 2483.5 MHz
Function : ☒ Point-to-multipoint; ☐ Point-to-point
Applicant : Delta Networks, Inc.
No.252, Shang Ying Rd., Kuei San District, Taoyuan City
33341, Taiwan R.O.C.
Manufacturer : Delta Networks, Inc.
No.252, Shang Ying Rd., Kuei San District, Taoyuan City
33341, Taiwan R.O.C.

The product sample received on Aug. 18, 2016 and completely tested on Nov. 30, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

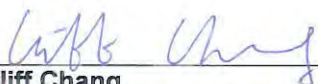

Cliff Chang
SPORTON INTERNATIONAL INC.



Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information.....	5
1.2	Testing Applied Standards	7
1.3	Testing Location Information.....	7
1.4	Measurement Uncertainty	7
2	TEST CONFIGURATION OF EUT	8
2.1	Test Channel Mode	8
2.2	The Worst Case Measurement Configuration.....	9
2.3	EUT Operation during Test	11
2.4	Accessories	12
2.5	Support Equipment.....	12
2.6	Test Setup Diagram	13
3	TRANSMITTER TEST RESULT	16
3.1	AC Power-line Conducted Emissions	16
3.2	DTS Bandwidth	19
3.3	Maximum Conducted Output Power	30
3.4	Power Spectral Density	33
3.5	Emissions in Non-restricted Frequency Bands	35
3.6	Emissions in Restricted Frequency Bands.....	47
4	TEST EQUIPMENT AND CALIBRATION DATA	107

APPENDIX A. TEST PHOTOS

APPENDIX B. TEST RESULTS OF RADIATED EMISSION CO-LOCATION

Summary of Test Result

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

Revision History

[illegible]

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g, n (HT20), ac (VHT20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40), ac (VHT40)	2422-2452	3-9 [7]

Mode	Bandwidth(MHz)	TX
802.11b	20	3
802.11g	20	3
802.11n HT20	20	3
802.11n HT40	40	3
802.11ac VHT20	20	3
802.11ac VHT40	40	3
802.11n HT20(BF)	20	3
802.11n HT40(BF)	40	3
802.11ac VHT20(BF)	20	3
802.11ac VHT40(BF)	40	3

Note:

- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- BF is the Beam-forming mode

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	Master Wave	SSP-14552	PIFA Antenna	I-PEX	3.50	5.51
2	Master Wave	SSP-14552	PIFA Antenna	I-PEX	3.61	5.50
3	Master Wave	SSP-14552	PIFA Antenna	I-PEX	3.59	6.23
4	Master Wave	SSP-14552	PIFA Antenna	I-PEX	3.61	5.70

Note: The EUT four antennas.

Ant 2~Ant 4 connect to chain 2~chain 4 (port1~port 3) for 2.4G

Ant 1~Ant 4 connect to chain 1~chain 4 (port1~port 4) for 5G

For 2.4GHz IEEE 802.11b/g/n/ac mode (3TX/3RX):

Chain 2, chain 3 and chain 4 (port1~port 3) could transmit/receive simultaneously.

For 5GHz IEEE 802.11n/a/ac mode (4TX/4RX):

Chain 1, chain 2, chain 3 and chain 4 (port1~port 4) could transmit/receive simultaneously.

1.1.3 Mode Test Duty Cycle

Mode	Bandwidth (MHz)	Data Rate	Duty Cycle	T(s)	VBW(Hz) $\geq 1/T$
802.11b	20	1Mbps	1	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11g	20	6Mbps	0.999	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ac VHT20	20	MCS0-Nss1	0.999	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ac VHT40	40	MCS0-Nss1	1	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ac VHT20(BF)	20	MCS0-Nss1	1	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ac VHT40(BF)	40	MCS0-Nss1	1	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)

1.1.4 EUT Operational Condition

EUT Power Type	From Power Adapter or PoE				
Beamforming Function	☒	With beamforming in 802.11 n/ac	☐	Without beamforming	

1.2 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ FCC KDB 558074 D01 v03r05
- ♦ FCC KDB 662911 D01 v02r01
- ♦ FCC KDB 644545 D01 v01r02
- ♦ FCC KDB 412172 D01 v01

1.3 Testing Location Information

Testing Location				
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.	TEL : 886-3-327-3456	FAX : 886-3-318-0055
☒	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	Andy Tsai & Serway Li	22°C / 54%	Nov. 13, 2016 ~ Nov. 15, 2016
Radiated	03CH01-CB	Jay Luo & Stim Sung & Zero Chen	22°C / 54%	Nov. 08, 2016 ~ Nov. 30, 2016
AC Conduction	CO01-CB	Gavin Peng & Kane Liu	23°C / 66%	Oct. 27, 2016

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74×10^{-8}	Confidence levels of 95%
Frequency Stability	6.06×10^{-8}	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Bandwidth (MHz)	Data Rate	TX	Frequency (MHz)	Power Setting
802.11b	20	1Mbps	3	2412	88
802.11b	20	1Mbps	3	2437	98
802.11b	20	1Mbps	3	2462	87
802.11g	20	6Mbps	3	2412	70
802.11g	20	6Mbps	3	2437	98
802.11g	20	6Mbps	3	2462	74
802.11ac VHT20	20	MCS0 Nss-1	3	2412	73
802.11ac VHT20	20	MCS0 Nss-1	3	2437	98
802.11ac VHT20	20	MCS0 Nss-1	3	2462	73
802.11ac VHT40	40	MCS0 Nss-1	3	2422	54
802.11ac VHT40	40	MCS0 Nss-1	3	2437	71
802.11ac VHT40	40	MCS0 Nss-1	3	2452	60
802.11ac VHT20(BF)	20	MCS0 Nss-1	3	2412	70
802.11ac VHT20(BF)	20	MCS0 Nss-1	3	2437	94
802.11ac VHT20(BF)	20	MCS0 Nss-1	3	2462	76
802.11ac VHT40(BF)	40	MCS0 Nss-1	3	2422	56
802.11ac VHT40(BF)	40	MCS0 Nss-1	3	2437	72
802.11ac VHT40(BF)	40	MCS0 Nss-1	3	2452	62

Note:

- ♦ 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 modes of EUT, one is beamforming mode, and the other is non-beamforming mode, Beamforming mode and non-beamforming mode has been test and record in this test report.

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	EUT + WALN function 2.4G + Adapter
2	EUT + WALN function 5G + Adapter
Mode 2 has been evaluated to be the worst case after evaluating. Consequently, measurement will follow this same test mode.	
3	EUT + WALN function 5G + PoE
For operating mode 2 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
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	CTX
1	EUT in Z axis + WALN function 2.4G + Adapter
2	EUT in Y axis + WALN function 2.4G + Adapter
Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.	
3	EUT in Y axis + WALN function 5G + Adapter
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT in Y axis + WALN function 5G + PoE
For operating mode 3 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX The EUT was performed at Y axis and Z axis position for radiated emission test, and the worst case was found at Y axis. So the measurement will follow this same test configuration.
1	EUT in Y axis + WALN function + Adapter

**The Worst Case Mode for Following Conformance Tests**

Tests Item	Simultaneous Transmission Analysis
Test Condition	Radiated measurement
Operating Mode	Normal Link
1	EUT in Y axis + WALN function 2.4G + WALN function 5G + Adapter
2	EUT in Z axis + WALN function 2.4G + WALN function 5G + Adapter

For operating mode 1 is the worst case and it was record in this test report.
Refer to Sporton Test Report No.: FA6N1118 for Co-location RF Exposure Evaluation and Appendix B for Radiated Emission Co-location.

Note: The PoE as below is for measurement only and would not be marketed.

Power	Brand	Model	FCC ID
PoE	CISCO	SB-PWR-INJ2	DoC

2.3 EUT Operation during Test

For CTX Mode:

non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

beamforming mode:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN 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, LanTest20.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by RX Device and transmit duty cycle no less 98%.

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	AC Adapter	DELTA	ADP-48DR BL	INPUT: 100-240V~1.5A 50-60Hz OUTPUT: 48V - 1.25A LPS
Other				
Wall-mounted rack*1				

2.5 Support Equipment

For Test Site No: CO01-CB

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E6430	DoC
2	NB	DELL	E6430	DoC
3	NB	DELL	E6430	DoC
4	NB	DELL	E6430	DoC

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

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

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

For non-beamforming mode

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

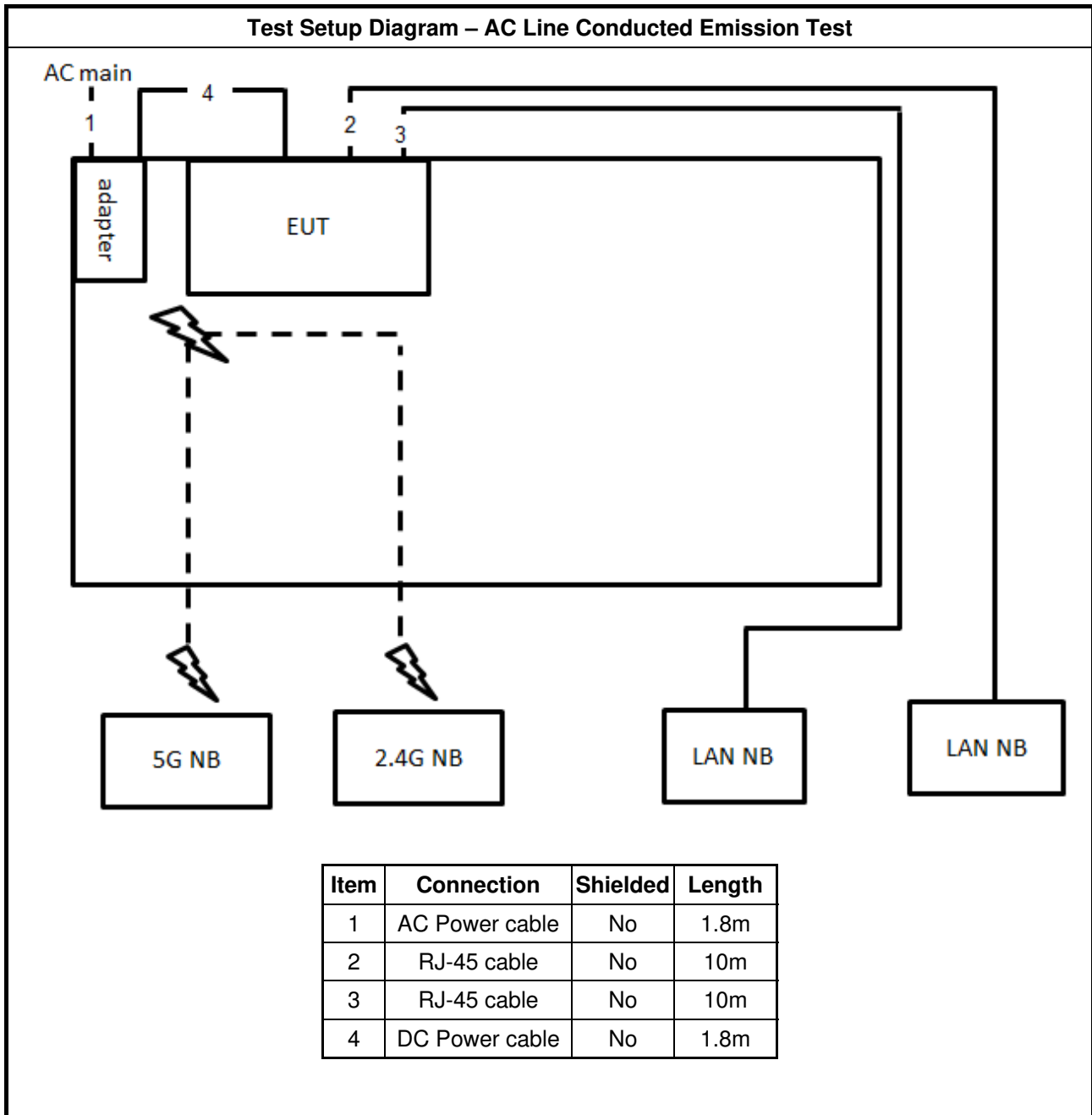
For beamforming mode

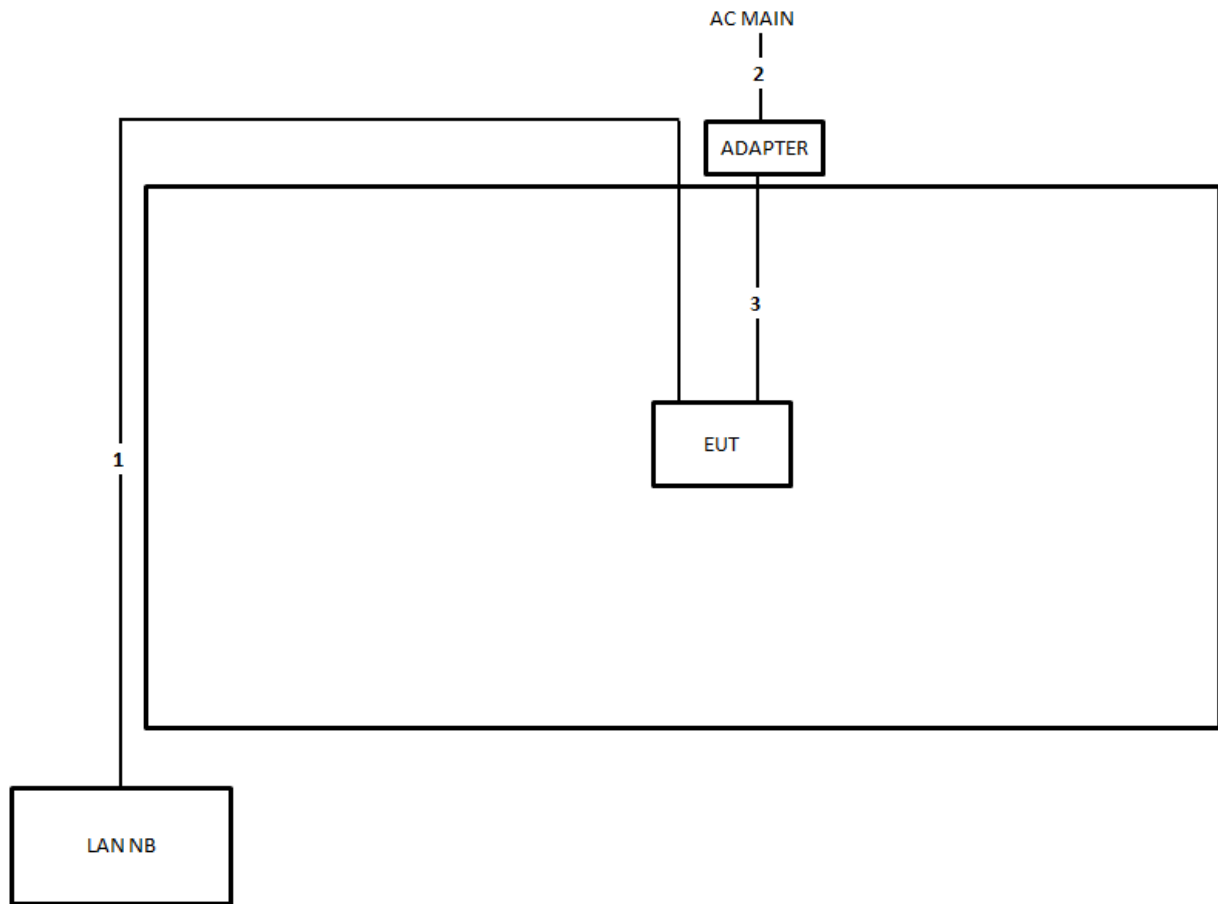
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E4300	DoC
2	NB	DELL	E4300	DoC
3	RX Device	CISCO	WAP581	PD5-WAP581

For Test Site No: TH01-CB

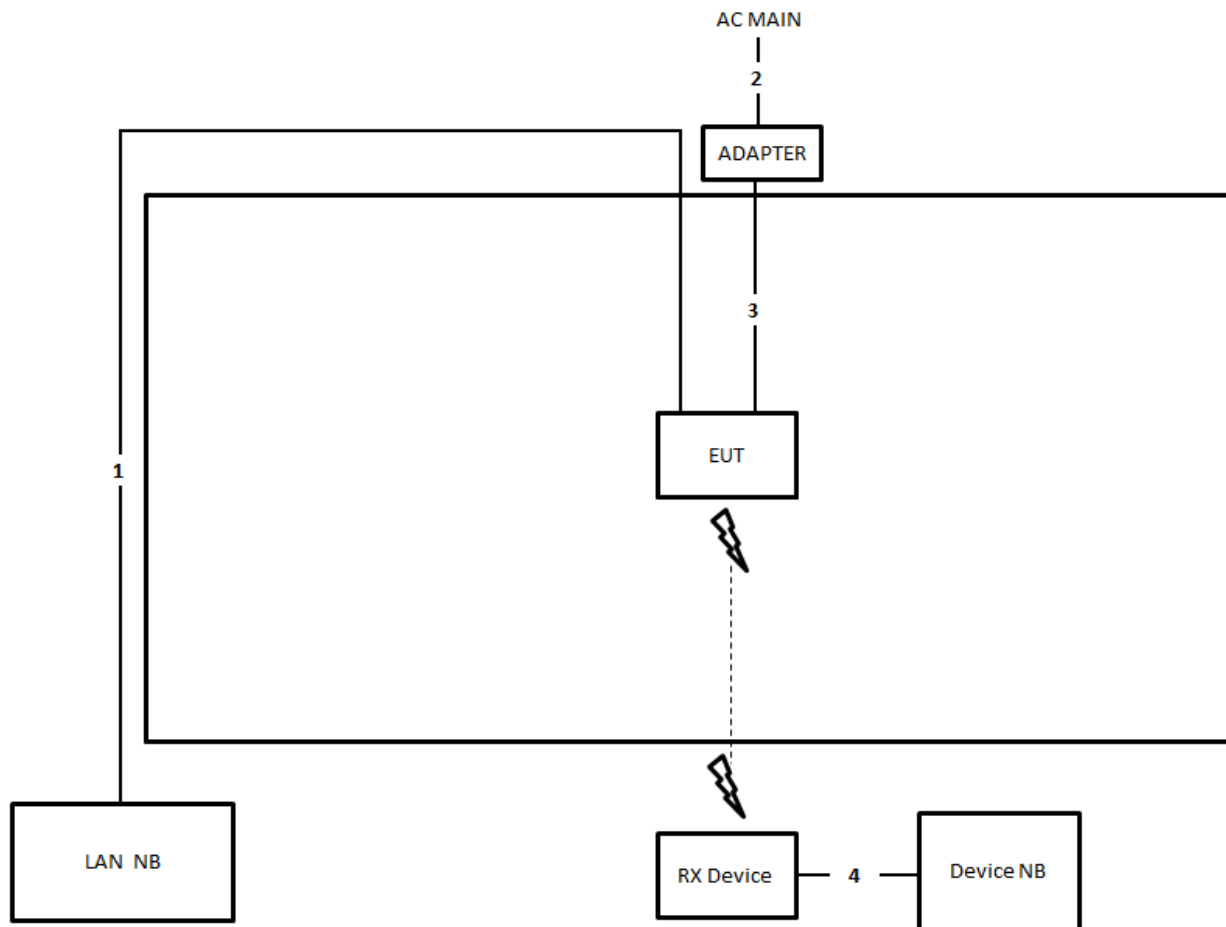
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E4300	DoC

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz and Radiated Test > 1GHz / For non-beamforming mode


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

Test Setup Diagram - Radiated Test > 1GHz / For beamforming mode


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

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

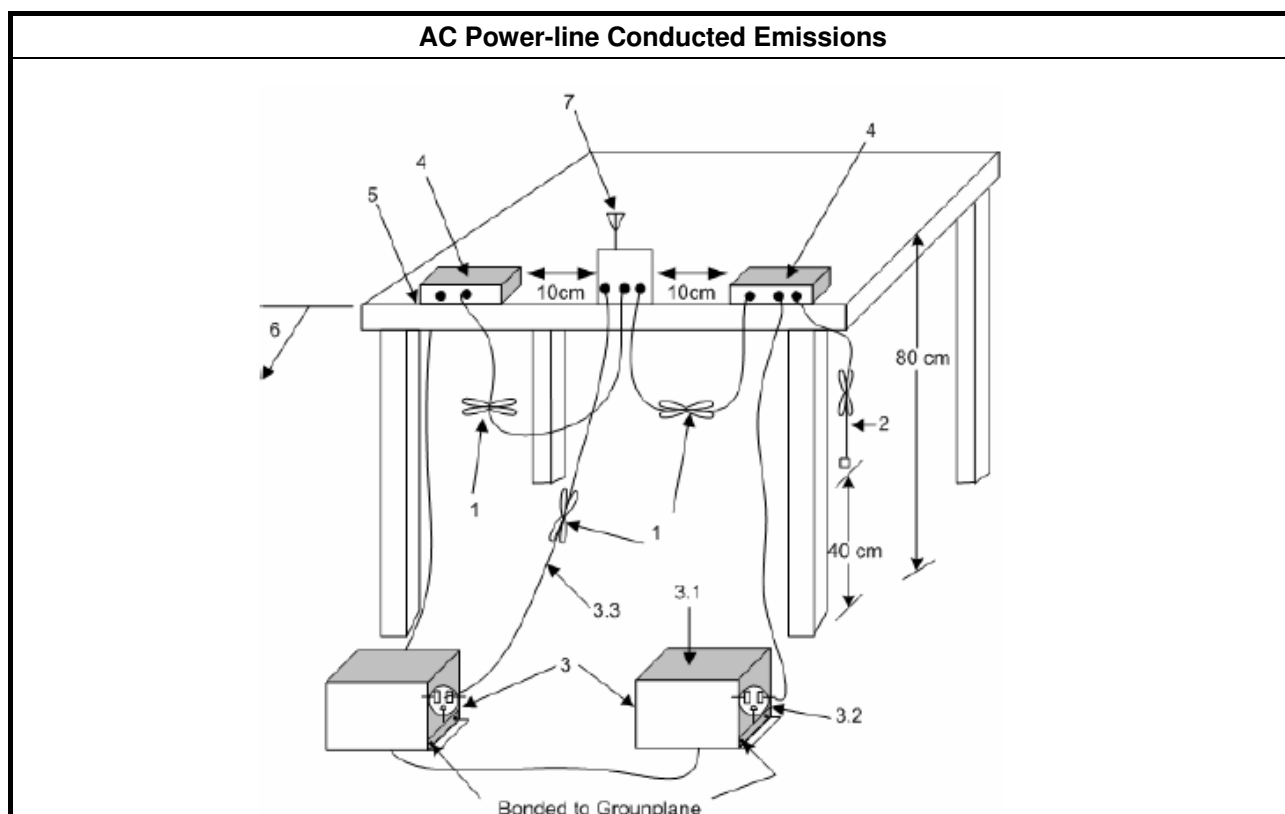
3.1.2 Measuring Instruments

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

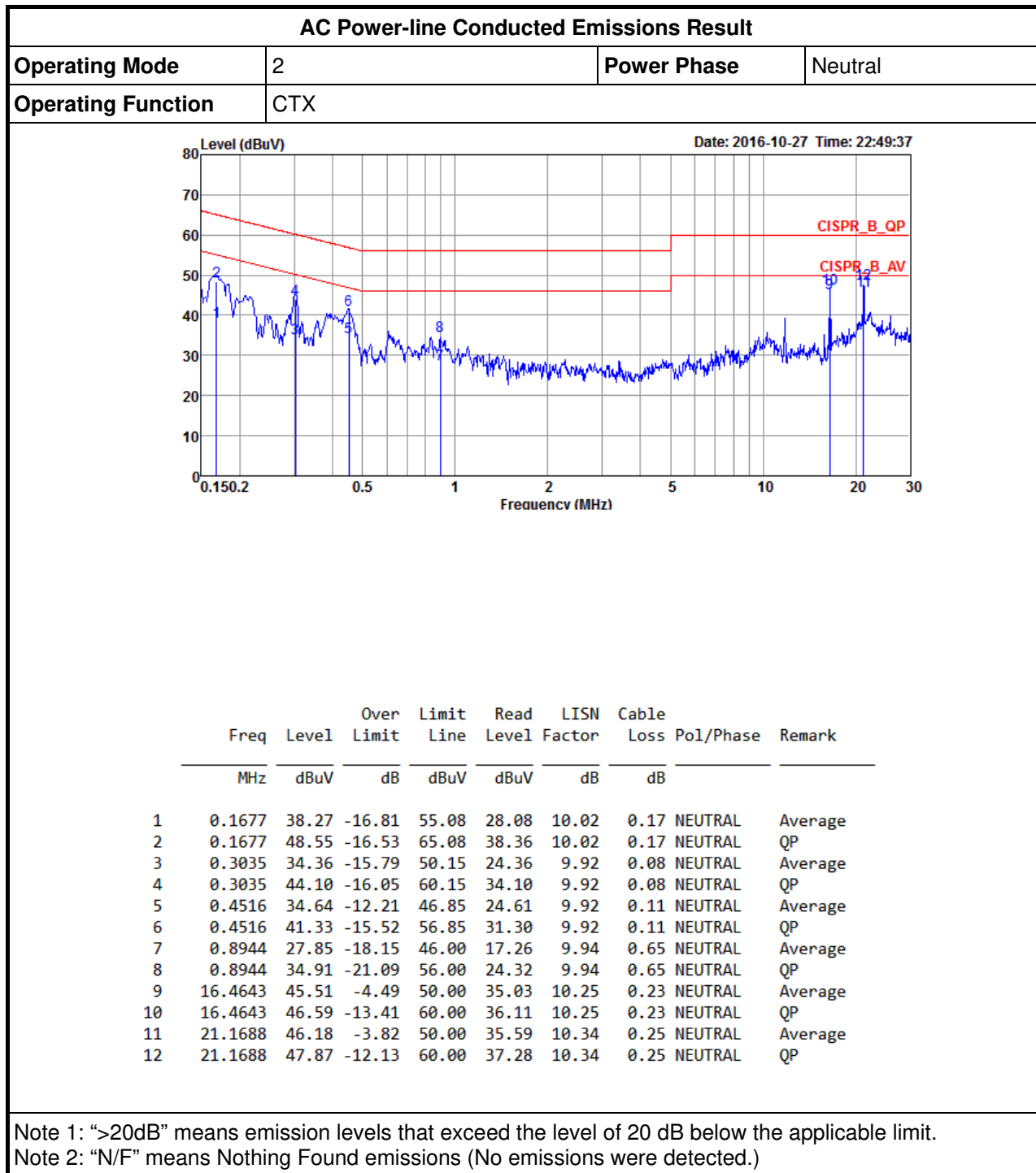
3.1.3 Test Procedures

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

3.1.4 Test Setup

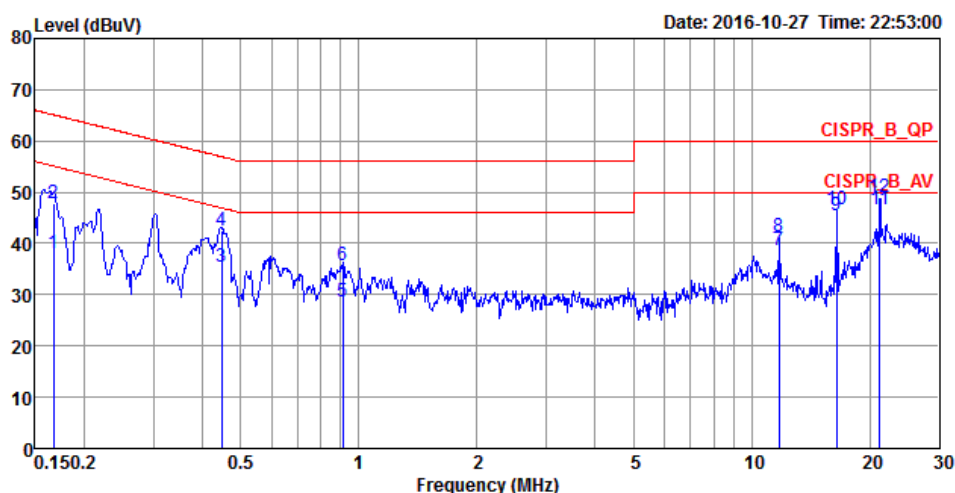


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

Operating Mode	2	Power Phase	Line
Operating Function	CTX		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1668	38.02	-17.10	55.12	27.83	10.02	0.17	LINE	Average
2	0.1668	47.93	-17.19	65.12	37.74	10.02	0.17	LINE	QP
3	0.4468	35.54	-11.39	46.93	25.53	9.92	0.09	LINE	Average
4	0.4468	42.40	-14.53	56.93	32.39	9.92	0.09	LINE	QP
5	0.9087	28.63	-17.37	46.00	18.03	9.94	0.66	LINE	Average
6	0.9087	35.85	-20.15	56.00	25.25	9.94	0.66	LINE	QP
7	11.7596	38.72	-11.28	50.00	28.36	10.18	0.18	LINE	Average
8	11.7596	41.22	-18.78	60.00	30.86	10.18	0.18	LINE	QP
9	16.4636	45.48	-4.52	50.00	35.00	10.25	0.23	LINE	Average
10	16.4636	46.61	-13.39	60.00	36.13	10.25	0.23	LINE	QP
11	21.1686	46.66	-3.34	50.00	36.07	10.34	0.25	LINE	Average
12	21.1686	48.93	-11.07	60.00	38.34	10.34	0.25	LINE	QP

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.)

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

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

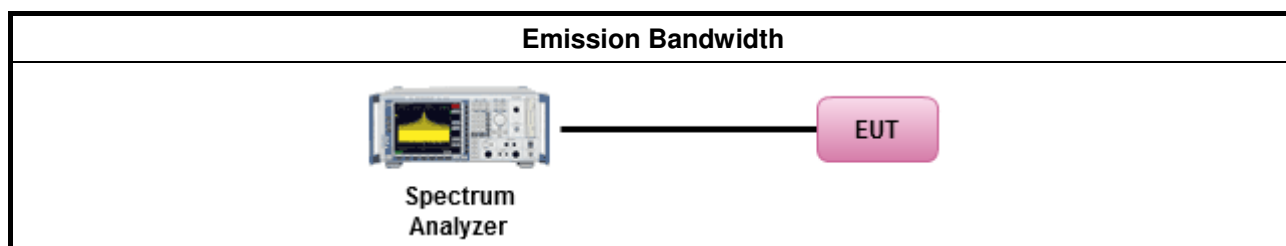
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪	For the emission bandwidth shall be measured using one of the options below:
☒	Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
☐	Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
☐	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

3.2.4 Test Setup



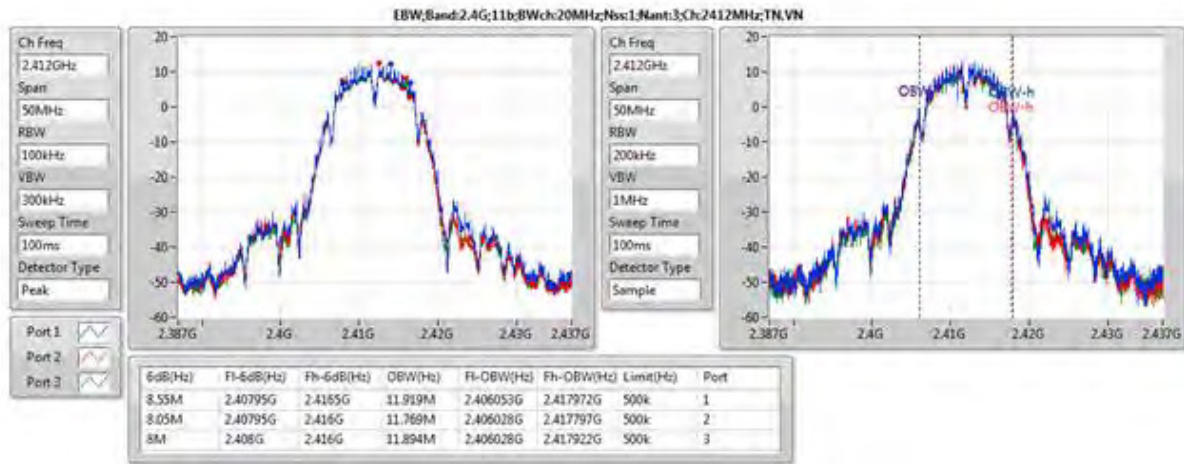
3.2.5 Test Result of Emission Bandwidth

Mode	Result	Limit (Hz)	Port 1- N dB BW (Hz)	Port 1- OBW (Hz)	Port 2- N dB BW (Hz)	Port 2- OBW (Hz)	Port 3- N dB BW (Hz)	Port 3- OBW (Hz)
802.11b 1Mbps 2412MHz 3TX	Pass	500k	8.55M	11.919M	8.05M	11.769M	8M	11.894M
802.11b 1Mbps 2437MHz 3TX	Pass	500k	8.525M	12.544M	9.025M	12.394M	8.575M	12.394M
802.11b 1Mbps 2462MHz 3TX	Pass	500k	8.55M	11.819M	8.075M	11.719M	8.975M	11.794M
802.11g 6Mbps 2412MHz 3TX	Pass	500k	16.3M	16.492M	16.325M	16.517M	16.35M	16.542M
802.11g 6Mbps 2437MHz 3TX	Pass	500k	16.3M	18.591M	16.3M	17.516M	16.05M	17.491M
802.11g 6Mbps 2462MHz 3TX	Pass	500k	16.325M	16.567M	16.325M	16.467M	16.325M	16.492M
802.11ac VHT20 MCS0 2412MHz 3TX	Pass	500k	17.525M	17.691M	17.575M	17.691M	17.55M	17.691M
802.11ac VHT20 MCS0 2437MHz 3TX	Pass	500k	16.325M	18.816M	17.575M	18.391M	16.925M	18.291M
802.11ac VHT20 MCS0 2462MHz 3TX	Pass	500k	17.55M	17.716M	17.6M	17.641M	17.525M	17.666M
802.11ac VHT40 MCS0 2422MHz 3TX	Pass	500k	35.7M	36.182M	36.1M	36.232M	35.95M	36.332M
802.11ac VHT40 MCS0 2437MHz 3TX	Pass	500k	35.7M	36.132M	36.25M	36.282M	35.65M	36.182M
802.11ac VHT40 MCS0 2452MHz 3TX	Pass	500k	36.3M	36.282M	35.7M	36.182M	35.75M	36.082M
802.11ac VHT20(BF)MCS0 2412MHz 3TX	Pass	500k	17.525M	17.716M	17.575M	17.691M	17.575M	17.691M
802.11ac VHT20(BF)MCS0 2437MHz 3TX	Pass	500k	17.25M	17.891M	17.575M	17.866M	16.9M	17.841M
802.11ac VHT20(BF)MCS0 2462MHz 3TX	Pass	500k	17.55M	17.716M	17.575M	17.641M	17.575M	17.691M
802.11ac VHT40(BF)MCS0 2422MHz 3TX	Pass	500k	35.65M	36.182M	36.35M	36.182M	36.3M	36.232M
802.11ac VHT40(BF)MCS0 2437MHz 3TX	Pass	500k	35.7M	36.132M	36.3M	36.332M	36.05M	36.232M
802.11ac VHT40(BF)MCS0 2452MHz 3TX	Pass	500k	36.05M	36.232M	35.7M	36.182M	36.3M	36.182M

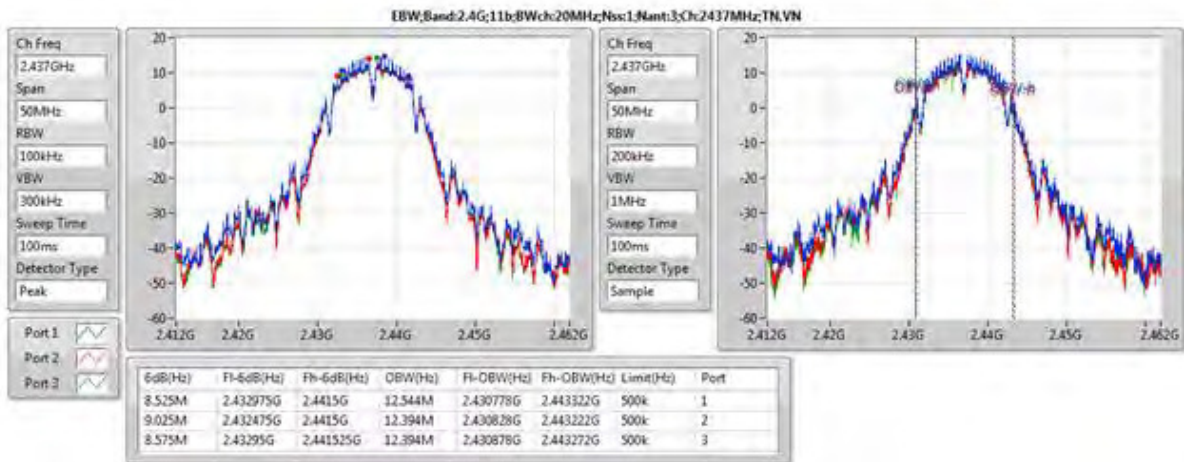
Note: N dB BW = 6dB BW

For non-beamforming mode

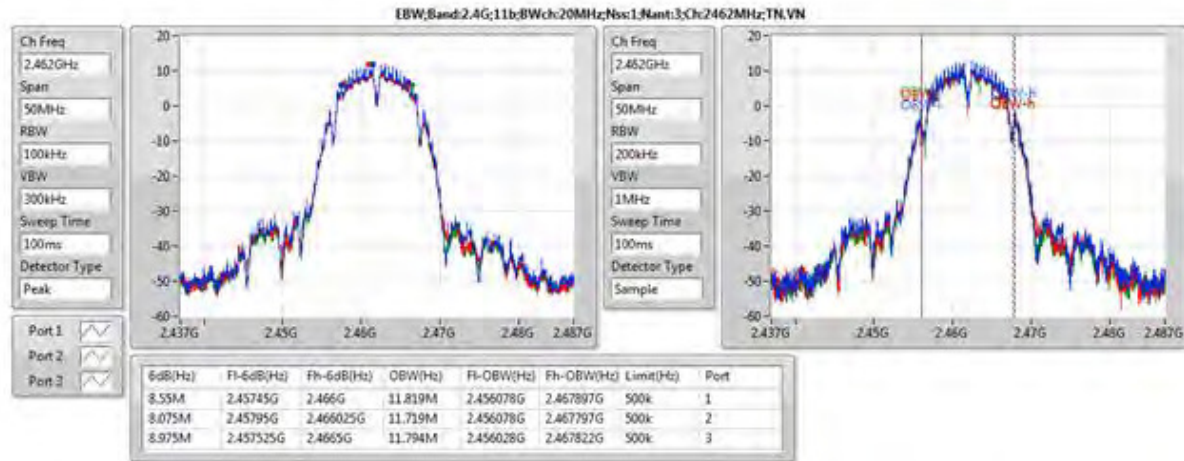
Emission Bandwidth on Configuration IEEE 802.11b / 2412 MHz / 3TX



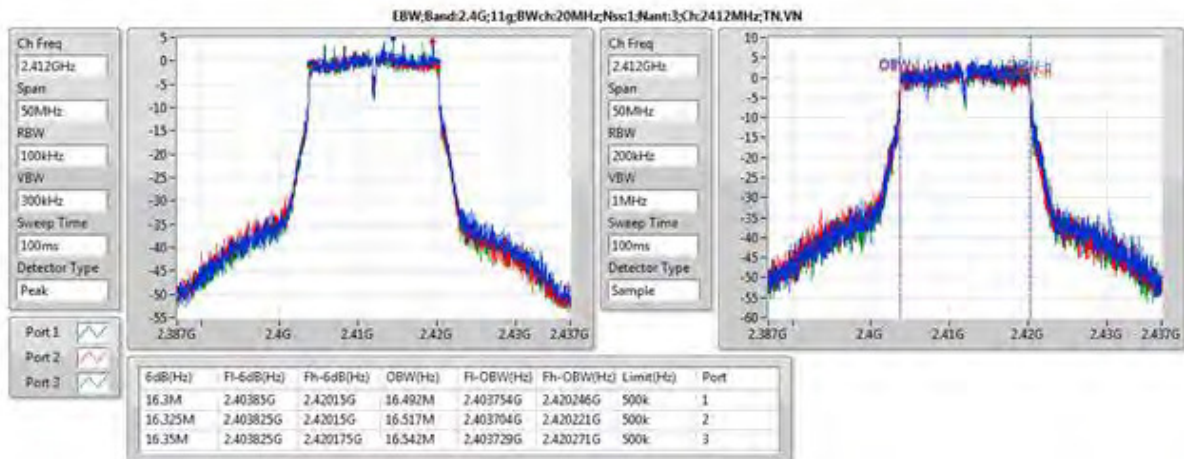
Emission Bandwidth on Configuration IEEE 802.11b / 2437 MHz / 3TX



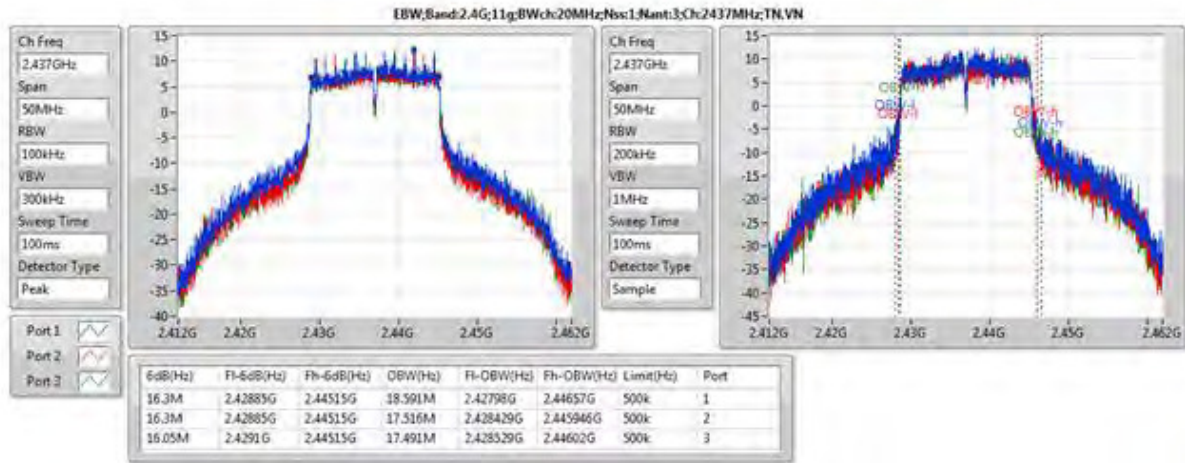
Emission Bandwidth on Configuration IEEE 802.11b / 2462 MHz / 3TX



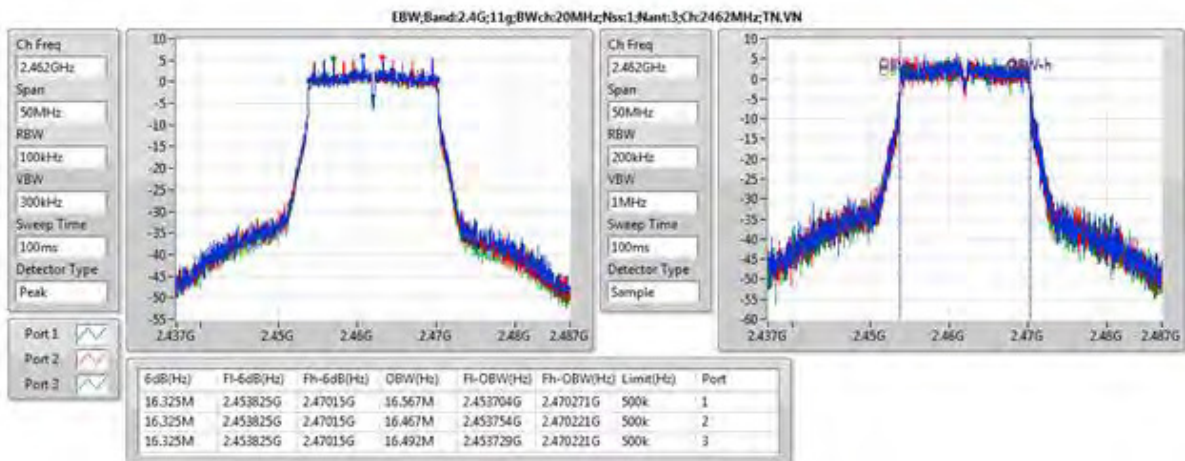
Emission Bandwidth on Configuration IEEE 802.11g / 6Mbps / 2412MHz / 3TX



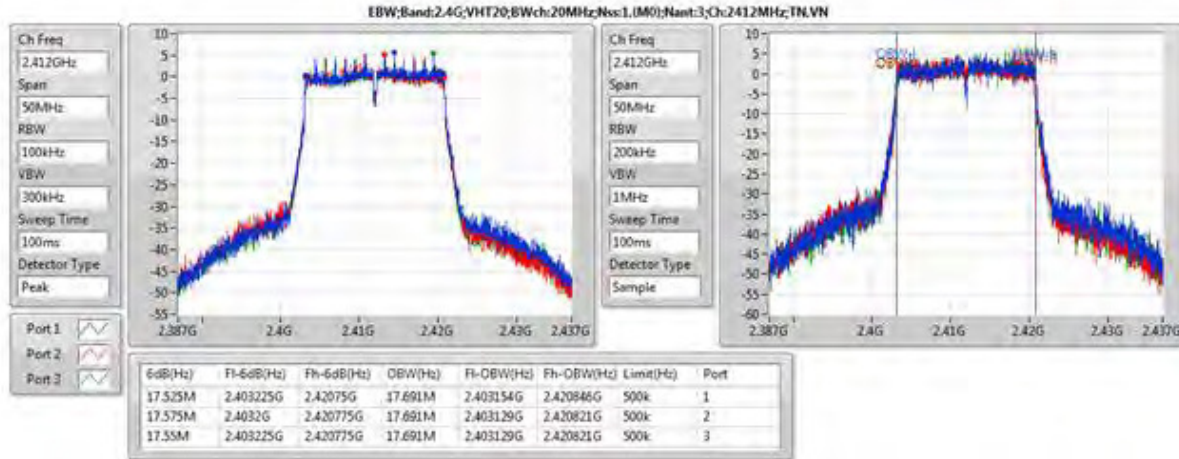
Emission Bandwidth on Configuration IEEE 802.11g / 6Mbps / 2437MHz / 3TX



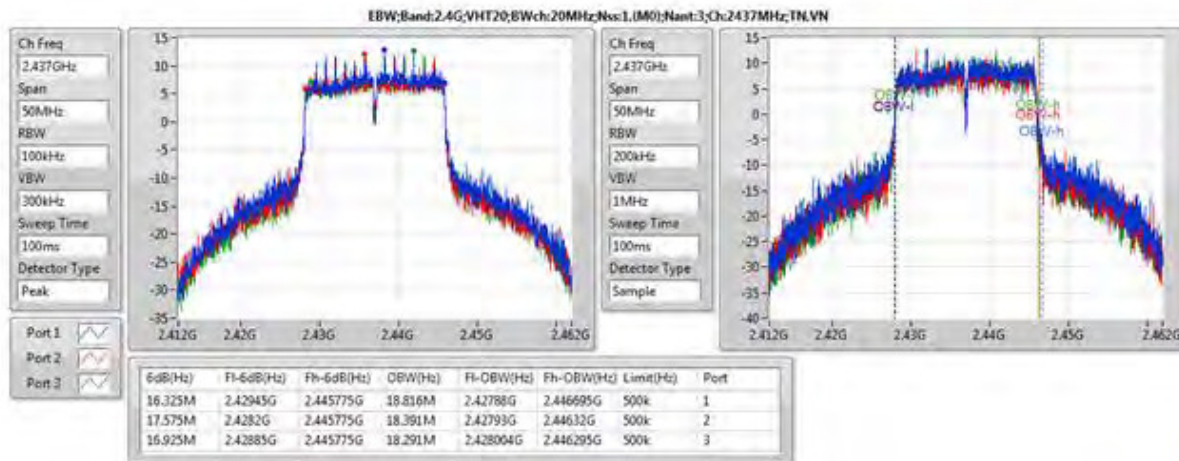
Emission Bandwidth on Configuration IEEE 802.11g / 6Mbps / 2462MHz / 3TX



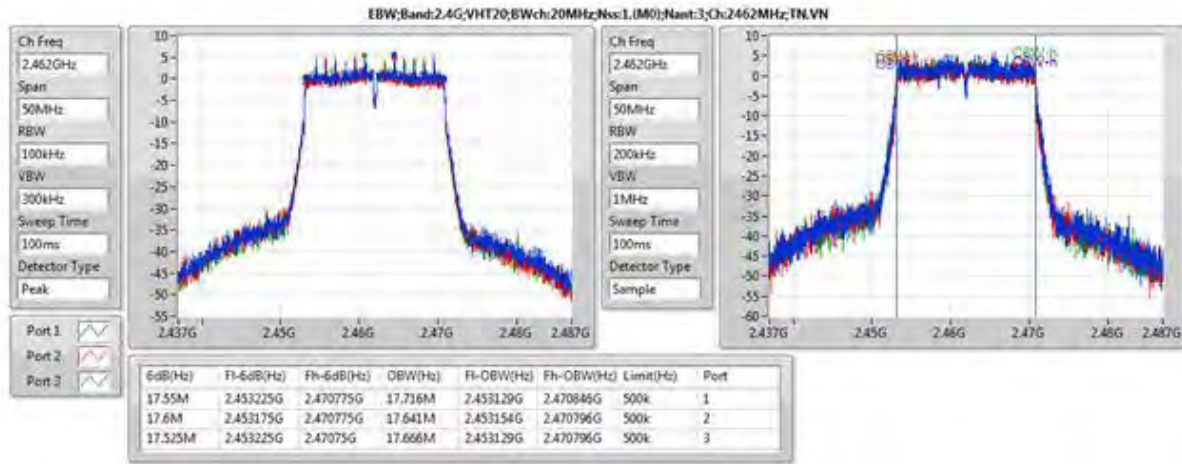
Emission Bandwidth on Configuration IEEE 802.11ac VHT20 / MCS0 Nss1 / 2412MHz / 3TX



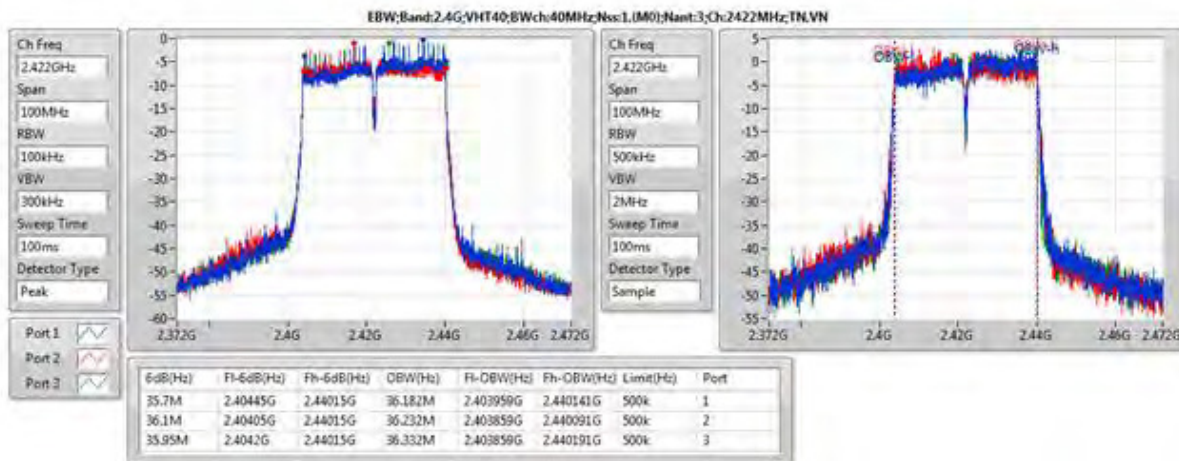
Emission Bandwidth on Configuration IEEE 802.11ac VHT20 / MCS0 Nss1 / 2437MHz / 3TX



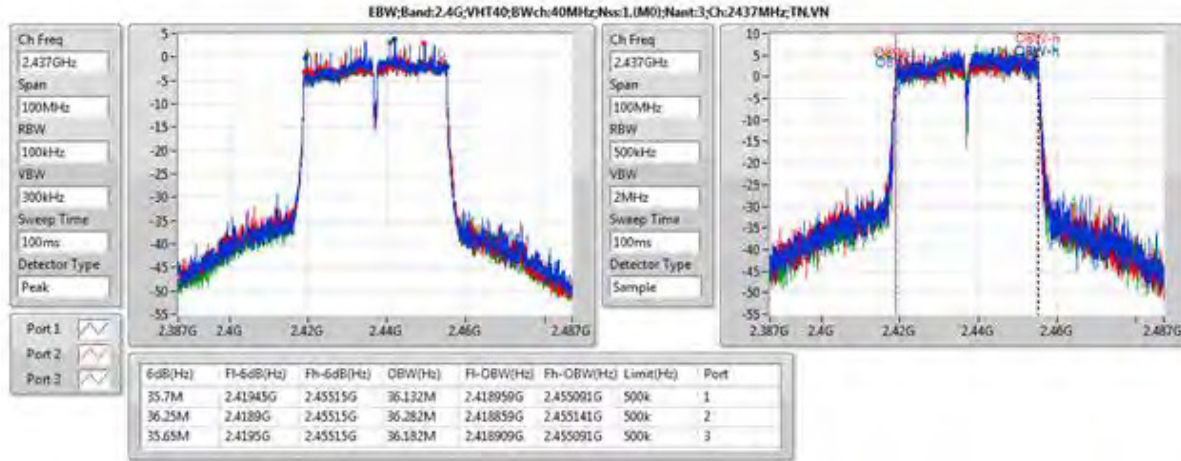
Emission Bandwidth on Configuration IEEE 802.11ac VHT20 / MCS0 Nss1 / 2462MHz / 3TX



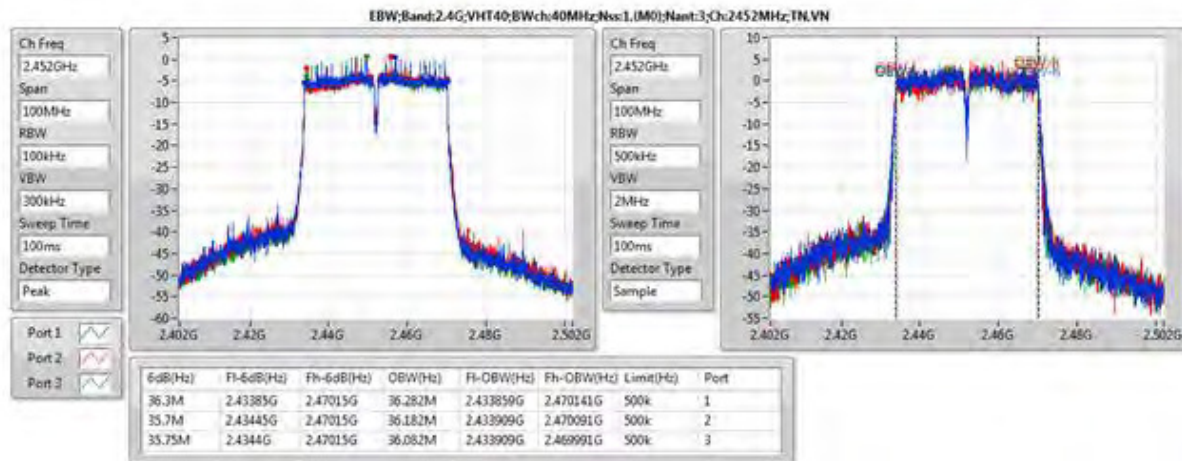
Emission Bandwidth on Configuration IEEE 802.11ac VHT40 / MCS0 Nss1 / 2422MHz / 3TX



Emission Bandwidth on Configuration IEEE 802.11ac VHT40 / MCS0 Nss1 / 2437MHz / 3TX

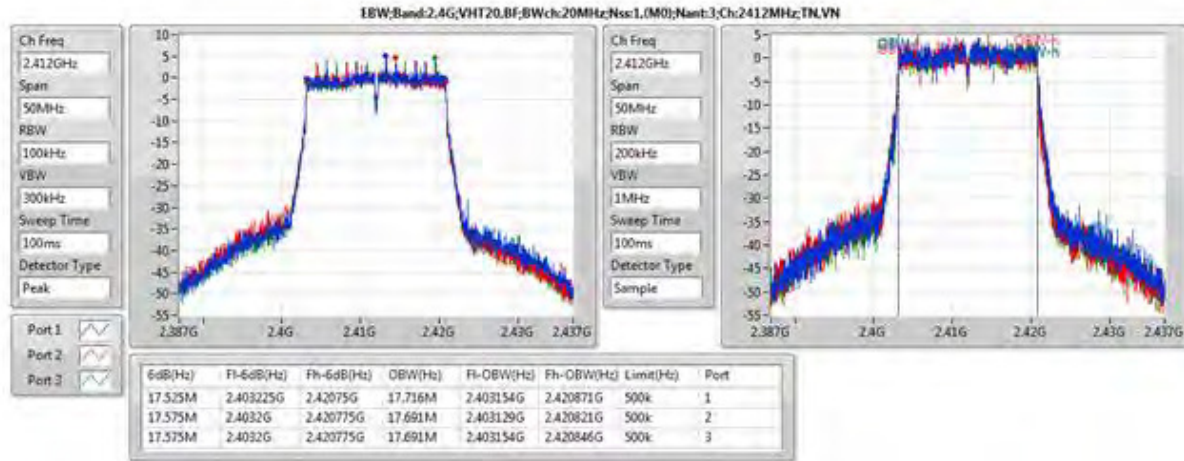


Emission Bandwidth on Configuration IEEE 802.11ac VHT40 / MCS0 Nss1 / 2452MHz / 3TX

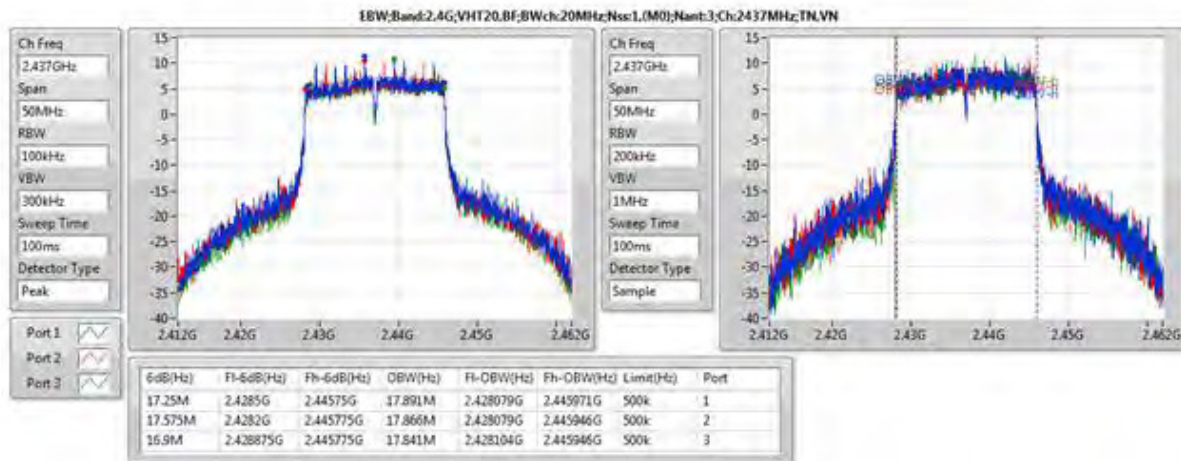


For beamforming mode

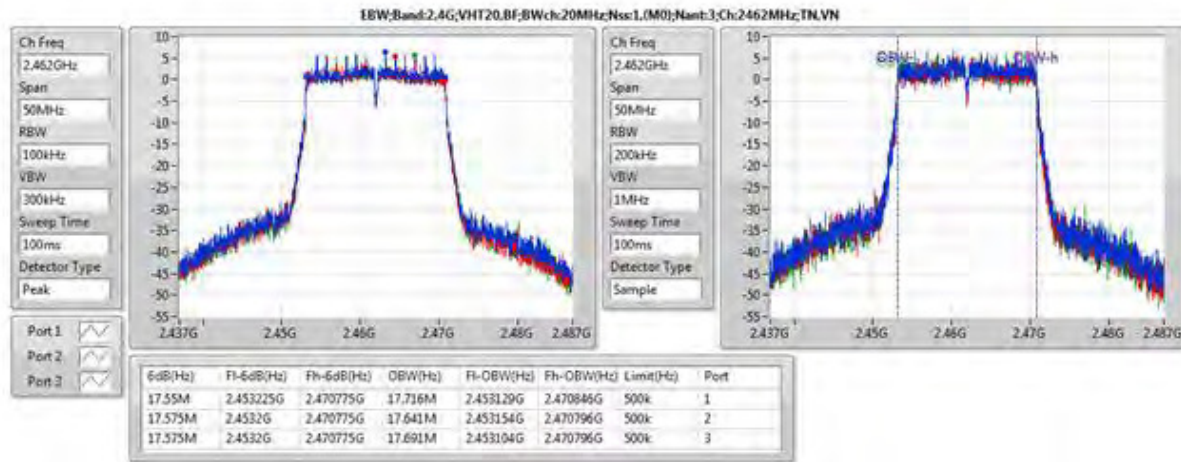
Emission Bandwidth on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2412MHz / 3TX



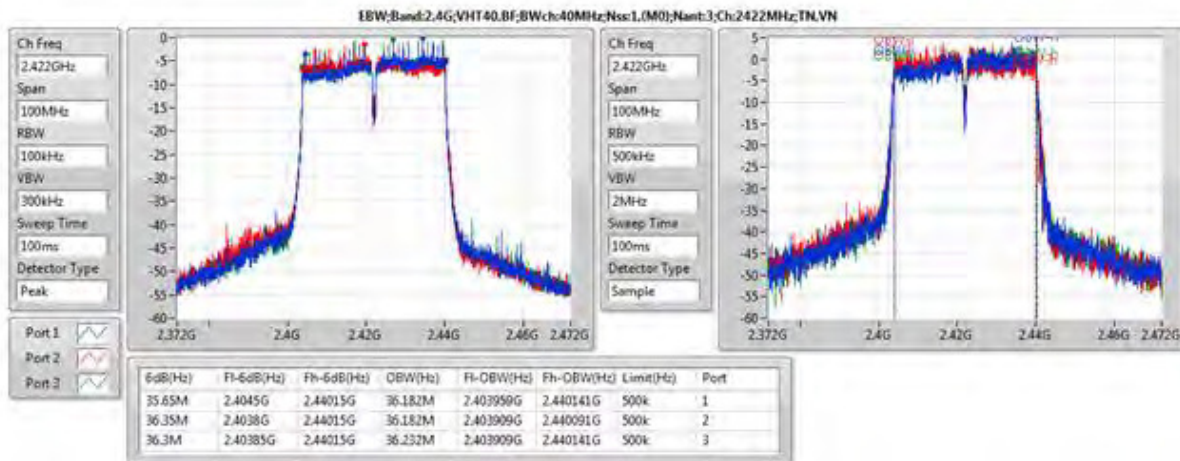
Emission Bandwidth on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2437MHz / 3TX



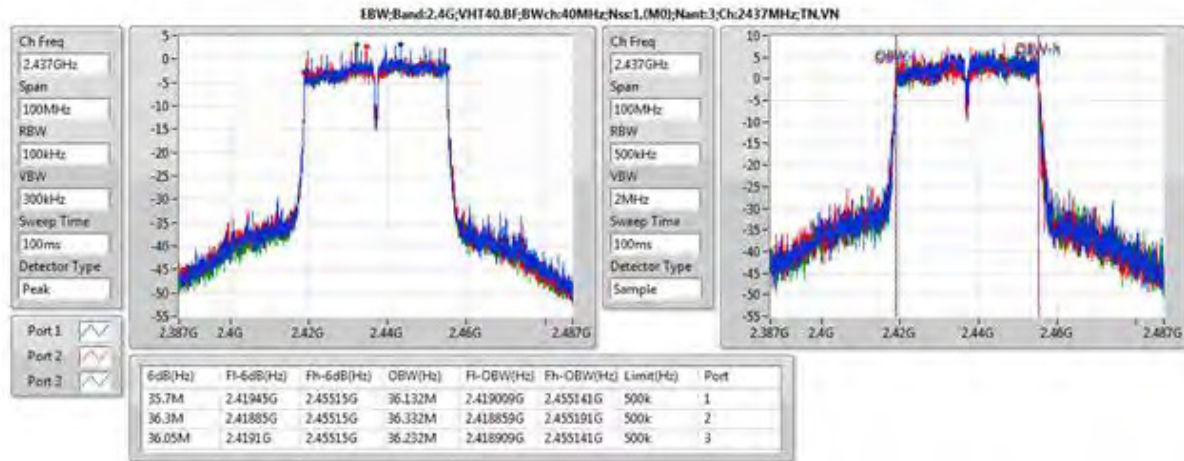
Emission Bandwidth on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2462MHz / 3TX



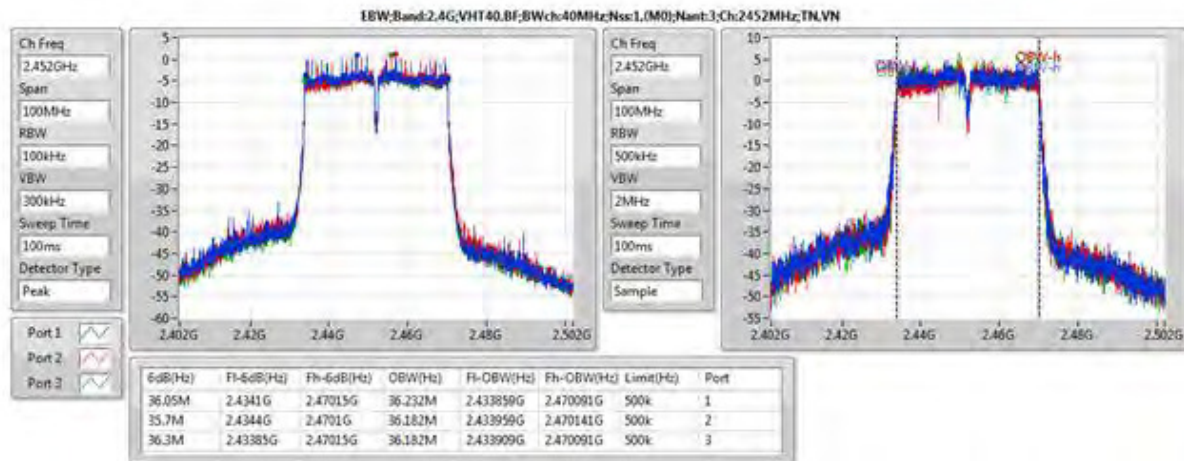
Emission Bandwidth on Configuration IEEE 802.11ac VHT40(BF) / MCS0 Nss1 / 2422MHz / 3TX



Emission Bandwidth on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2437MHz / 3TX



Emission Bandwidth on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2452MHz / 3TX



3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	▪ Smart antenna system (SAS):
	- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

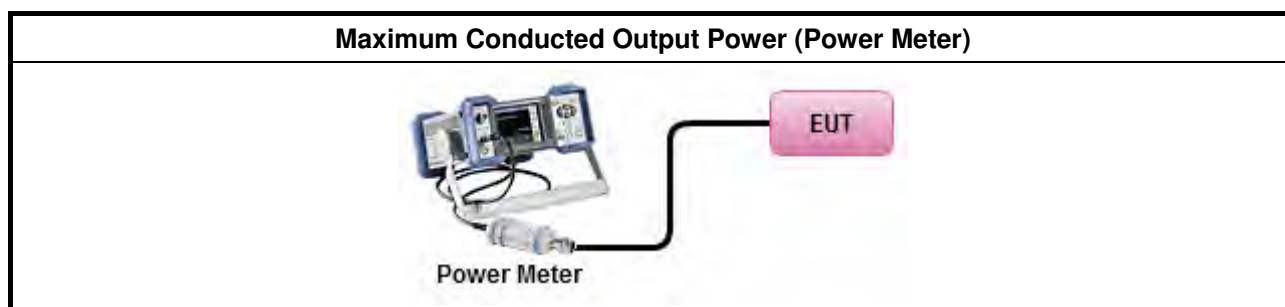
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
Maximum Peak Conducted Output Power	
☐	Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
☐	Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
Maximum Conducted Output Power	
[duty cycle ≥ 98% or external video / power trigger]	
☐	Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging).
☐	Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed)
duty cycle < 98% and average over on/off periods with duty factor	
☐	Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
☐	Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
RF power meter and average over on/off periods with duty factor or gated trigger	
☒	Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM-G (using an RF average power meter).
☐	Refer as FCC KDB 558074, clause 9.1.2 PKPM1 Peak power meter method.
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: $P_{\text{total}} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $\text{EIRP}_{\text{total}} = P_{\text{total}} + \text{DG}$	

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Mode	Result	Directional Gain (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Total Power (dBm)	Out put Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11b 1Mbps 2412MHz 3TX	Pass	3.61	21.95	21.63	21.46	26.46	30.00	30.07	36.00
802.11b 1Mbps 2437MHz 3TX	Pass	3.61	24.32	24.12	23.96	28.91	30.00	32.52	36.00
802.11b 1Mbps 2462MHz 3TX	Pass	3.61	21.62	21.12	21.10	26.06	30.00	29.67	36.00
802.11g 6Mbps 2412MHz 3TX	Pass	3.61	17.04	16.91	16.66	21.64	30.00	25.25	36.00
802.11g 6Mbps 2437MHz 3TX	Pass	3.61	24.07	23.46	23.56	28.48	30.00	32.09	36.00
802.11g 6Mbps 2462MHz 3TX	Pass	3.61	18.13	17.71	17.67	22.61	30.00	26.22	36.00
802.11ac VHT20 MCS0 2412MHz 3TX	Pass	3.61	17.70	17.40	17.47	22.30	30.00	25.91	36.00
802.11ac VHT20 MCS0 2437MHz 3TX	Pass	3.61	24.13	23.69	23.74	28.63	30.00	32.24	36.00
802.11ac VHT20 MCS0 2462MHz 3TX	Pass	3.61	17.91	17.32	17.53	22.36	30.00	25.97	36.00
802.11ac VHT40 MCS0 2422MHz 3TX	Pass	3.61	13.81	13.48	13.73	18.45	30.00	22.06	36.00
802.11ac VHT40 MCS0 2437MHz 3TX	Pass	3.61	17.88	17.52	17.52	22.41	30.00	26.02	36.00
802.11ac VHT40 MCS0 2452MHz 3TX	Pass	3.61	15.25	15.06	15.04	19.89	30.00	23.50	36.00
802.11ac VHT20(BF)MCS0 2412MHz 3TX	Pass	8.37	17.11	16.94	16.80	21.72	27.63	30.09	36.00
802.11ac VHT20(BF)MCS0 2437MHz 3TX	Pass	8.37	23.05	22.63	22.48	27.50	27.63	35.87	36.00
802.11ac VHT20(BF)MCS0 2462MHz 3TX	Pass	8.37	18.41	18.08	18.17	22.99	27.63	31.36	36.00
802.11ac VHT40(BF)MCS0 2422MHz 3TX	Pass	8.37	14.04	14.08	13.97	18.80	27.63	27.17	36.00
802.11ac VHT40(BF)MCS0 2437MHz 3TX	Pass	8.37	18.10	17.62	17.72	22.59	27.63	30.96	36.00
802.11ac VHT40(BF)MCS0 2452MHz 3TX	Pass	8.37	15.72	15.38	15.50	20.31	27.63	28.68	36.00

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

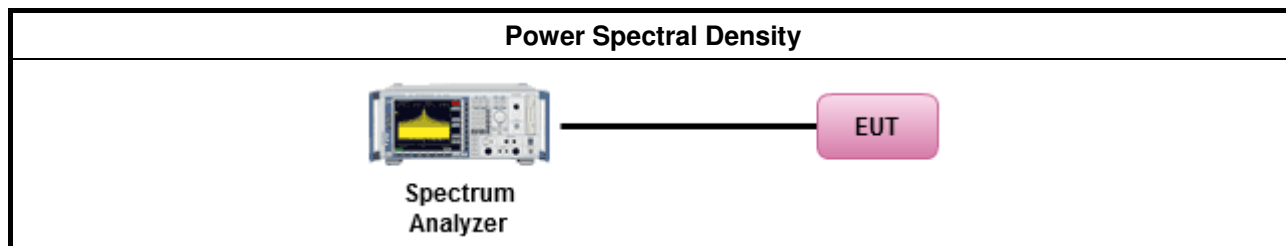
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
▪	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
☒	Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak). [duty cycle $\geq$ 98% or external video / power trigger]
☐	Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).
☐	Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed)
	duty cycle < 98% and average over on/off periods with duty factor
☐	Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-1 Alt (spectral trace averaging).
☐	Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)
▪	For conducted measurement.
▪	If The EUT supports multiple transmit chains using options given below:
☒	Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
☐	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
☐	Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Mode	Result	Directional Gain (dBi)	Port 1 (dBm/ 3kHz)	Port 2 (dBm/ 3kHz)	Port 3 (dBm/ RBW)	Total PSD (dBm/ 3kHz)	PSD. Limit (dBm/ 3kHz)
802.11b 1Mbps 2412MHz 3TX	Pass	8.37	-2.43	-1.24	-1.87	0.80	5.63
802.11b 1Mbps 2437MHz 3TX	Pass	8.37	0.42	-0.32	1.53	2.51	5.63
802.11b 1Mbps 2462MHz 3TX	Pass	8.37	-2.58	-2.56	-2.96	-0.43	5.63
802.11g 6Mbps 2412MHz 3TX	Pass	8.37	-9.48	-10.15	-10.66	-6.38	5.63
802.11g 6Mbps 2437MHz 3TX	Pass	8.37	-2.79	-3.32	-3.58	0.42	5.63
802.11g 6Mbps 2462MHz 3TX	Pass	8.37	-8.61	-8.73	-9.71	-4.83	5.63
802.11ac VHT20 MCS0 2412MHz 3TX	Pass	8.37	-9.20	-9.66	-9.66	-6.47	5.63
802.11ac VHT20 MCS0 2437MHz 3TX	Pass	8.37	-2.12	-3.36	-3.57	0.96	5.63
802.11ac VHT20 MCS0 2462MHz 3TX	Pass	8.37	-8.90	-10.48	-9.62	-5.97	5.63
802.11ac VHT40 MCS0 2422MHz 3TX	Pass	8.37	-15.16	-15.91	-15.04	-11.91	5.63
802.11ac VHT40 MCS0 2437MHz 3TX	Pass	8.37	-10.72	-12.04	-11.27	-6.54	5.63
802.11ac VHT40 MCS0 2452MHz 3TX	Pass	8.37	-14.77	-13.91	-13.03	-9.96	5.63
802.11ac VHT20(BF)MCS0 2412MHz 3TX	Pass	8.37	-10.32	-9.48	-10.79	-7.04	5.63
802.11ac VHT20(BF)MCS0 2437MHz 3TX	Pass	8.37	-4.48	-4.01	-4.00	-1.36	5.63
802.11ac VHT20(BF)MCS0 2462MHz 3TX	Pass	8.37	-8.90	-8.28	-9.76	-6.18	5.63
802.11ac VHT40(BF)MCS0 2422MHz 3TX	Pass	8.37	-15.01	-15.58	-15.36	-10.89	5.63
802.11ac VHT40(BF)MCS0 2437MHz 3TX	Pass	8.37	-10.58	-11.81	-11.10	-7.67	5.63
802.11ac VHT40(BF)MCS0 2452MHz 3TX	Pass	8.37	-12.46	-13.96	-12.93	-10.11	5.63

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

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

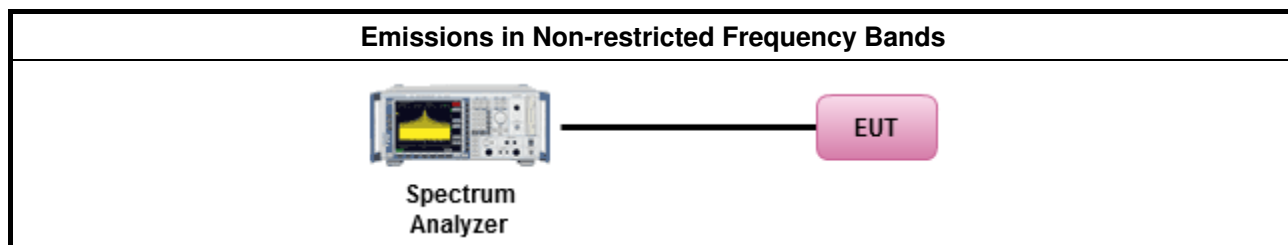
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup



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

Mode	Result	Reference Frequency (Hz)	Reference Level (dBm)	-30dBc Limit (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Port
802.11b 1Mbps 2412MHz 3TX	Pass	2.437408G	14.47	-15.53	1.8474G	-60.13	2.39904G	-30.08	2.49246G	-49.21	7.235136G	-46.93	1
	Pass	2.437408G	14.47	-15.53	1.8474G	-61.04	2.39904G	-31.89	2.49046G	-50.15	7.235136G	-46.82	2
	Pass	2.437408G	14.47	-15.53	1.8474G	-60.70	2.39752G	-34.16	2.49142G	-49.70	7.235136G	-46.77	3
802.11b 1Mbps 2437MHz 3TX	Pass	2.437408G	14.47	-15.53	1.8474G	-59.84	2.39992G	-49.27	2.49102G	-52.09	17.624898G	-52.78	1
	Pass	2.437408G	14.47	-15.53	1.8474G	-60.90	2.39952G	-48.81	2.48358G	-52.17	16.220117G	-52.50	2
	Pass	2.437408G	14.47	-15.53	2.123505G	-61.60	2.3996G	-51.66	2.48598G	-52.31	16.234165G	-52.14	3
802.11b 1Mbps 2462MHz 3TX	Pass	2.437408G	14.47	-15.53	1.8474G	-59.96	2.39152G	-57.04	2.4859G	-48.88	16.888793G	-52.54	1
	Pass	2.437408G	14.47	-15.53	1.8474G	-61.22	2.39312G	-57.12	2.48798G	-50.94	17.669851G	-52.52	2
	Pass	2.437408G	14.47	-15.53	1.8474G	-61.71	2.39904G	-56.80	2.48686G	-50.68	17.633327G	-52.45	3
802.11g 6Mbps 2412MHz 3TX	Pass	2.438243G	12.23	-17.77	2.151465G	-62.16	2.39928G	-33.20	2.48502G	-55.02	17.624898G	-52.85	1
	Pass	2.438243G	12.23	-17.77	2.30408G	-60.77	2.39888G	-32.22	2.48734G	-51.63	17.602422G	-52.09	2
	Pass	2.438243G	12.23	-17.77	1.8474G	-61.32	2.39888G	-34.29	2.48734G	-53.16	16.251022G	-53.04	3
802.11g 6Mbps 2437MHz 3TX	Pass	2.438243G	12.23	-17.77	1.8474G	-59.57	2.39856G	-40.26	2.48382G	-44.53	17.610851G	-52.19	1
	Pass	2.438243G	12.23	-17.77	1.8474G	-60.25	2.39952G	-40.39	2.48414G	-45.92	16.236975G	-51.05	2
	Pass	2.438243G	12.23	-17.77	1.841575G	-61.17	2.39448G	-40.36	2.48374G	-45.70	16.26788G	-52.65	3
802.11g 6Mbps 2462MHz 3TX	Pass	2.438243G	12.23	-17.77	1.8474G	-58.98	2.39008G	-57.67	2.48374G	-41.33	16.228546G	-52.20	1
	Pass	2.438243G	12.23	-17.77	2.123505G	-61.11	2.39016G	-57.38	2.48382G	-42.84	16.214498G	-52.74	2
	Pass	2.438243G	12.23	-17.77	1.8474G	-61.86	2.39992G	-57.36	2.48414G	-41.88	16.531979G	-52.72	3
802.11ac VHT20 MCS0 2412MHz 3TX	Pass	2.441917G	11.98	-18.02	1.850895G	-62.36	2.39832G	-30.70	2.48734G	-53.05	16.78203G	-52.41	1
	Pass	2.441917G	11.98	-18.02	1.8474G	-60.33	2.39856G	-30.71	2.48734G	-51.72	16.605027G	-52.69	2
	Pass	2.441917G	11.98	-18.02	1.8474G	-58.22	2.39984G	-30.35	2.48734G	-53.22	16.234165G	-52.56	3
802.11ac VHT20 MCS0 2437MHz 3TX	Pass	2.443253G	11.98	-18.02	1.8474G	-60.14	2.3992G	-37.10	2.4851G	-43.11	16.531979G	-52.79	1
	Pass	2.443253G	11.98	-18.02	2.300585G	-61.84	2.39608G	-38.80	2.4851G	-44.94	17.624898G	-52.20	2
	Pass	2.443253G	11.98	-18.02	1.8474G	-60.13	2.39952G	-38.44	2.48382G	-44.92	16.936556G	-52.04	3
802.11ac VHT20 MCS0 2462MHz 3TX	Pass	2.441917G	11.98	-18.02	1.8474G	-60.41	2.39016G	-57.23	2.48414G	-42.61	16.253832G	-51.89	1
	Pass	2.441917G	11.98	-18.02	1.8474G	-61.12	2.3904G	-57.67	2.48406G	-44.19	16.234165G	-53.05	2
	Pass	2.441917G	11.98	-18.02	1.8474G	-60.95	2.39072G	-57.72	2.4839G	-43.63	16.576932G	-52.18	3
802.11ac VHT40 MCS0 2422MHz 3TX	Pass	2.439579G	3.01	-26.99	2.12077G	-60.31	2.39696G	-39.95	2.4843G	-57.14	16.24696G	-51.74	1
	Pass	2.439579G	3.01	-26.99	2.121915G	-62.06	2.3984G	-40.96	2.48782G	-57.77	17.677287G	-52.75	2
	Pass	2.439579G	3.01	-26.99	1.84826G	-59.93	2.39696G	-40.48	2.48542G	-57.54	16.303052G	-51.81	3
802.11ac VHT40 MCS0 2437MHz 3TX	Pass	2.439579G	3.01	-26.99	1.84826G	-60.15	2.39952G	-35.19	2.48462G	-45.42	16.656427G	-52.80	1
	Pass	2.439579G	3.01	-26.99	839.515M	-62.38	2.39952G	-34.85	2.4843G	-48.41	16.218915G	-50.92	2
	Pass	2.439579G	3.01	-26.99	1.84826G	-60.51	2.39952G	-35.65	2.48462G	-48.15	16.230133G	-51.69	3
802.11ac VHT40 MCS0 2452MHz 3TX	Pass	2.439579G	3.01	-26.99	1.847115G	-59.30	2.39984G	-51.77	2.48942G	-40.44	16.25257G	-52.34	1
	Pass	2.439579G	3.01	-26.99	1.847115G	-61.58	2.39968G	-52.95	2.48942G	-43.16	16.230133G	-52.12	2
	Pass	2.439579G	3.01	-26.99	1.84826G	-62.45	2.3976G	-54.32	2.48942G	-40.99	16.575094G	-52.95	3
802.11ac VHT20(BF)MCS0 2412MHz 3TX	Pass	2.441917G	10.39	-19.61	1.8474G	-61.05	2.39984G	-32.08	2.49798G	-54.15	17.633327G	-51.21	1
	Pass	2.441917G	10.39	-19.61	1.8474G	-60.53	2.39992G	-31.73	2.48734G	-51.85	16.253832G	-51.60	2
	Pass	2.441917G	10.39	-19.61	2.088555G	-61.62	2.39832G	-32.41	2.48734G	-53.00	16.26507G	-52.40	3
802.11ac VHT20(BF)MCS0 2437MHz 3TX	Pass	2.441917G	10.39	-19.61	1.8474G	-59.93	2.39912G	-40.48	2.48382G	-45.86	16.253832G	-52.36	1
	Pass	2.441917G	10.39	-19.61	1.8474G	-61.06	2.3992G	-39.07	2.48414G	-48.16	24.932571G	-53.06	2
	Pass	2.441917G	10.39	-19.61	1.8474G	-59.96	2.39904G	-42.74	2.48574G	-48.87	17.602422G	-51.89	3



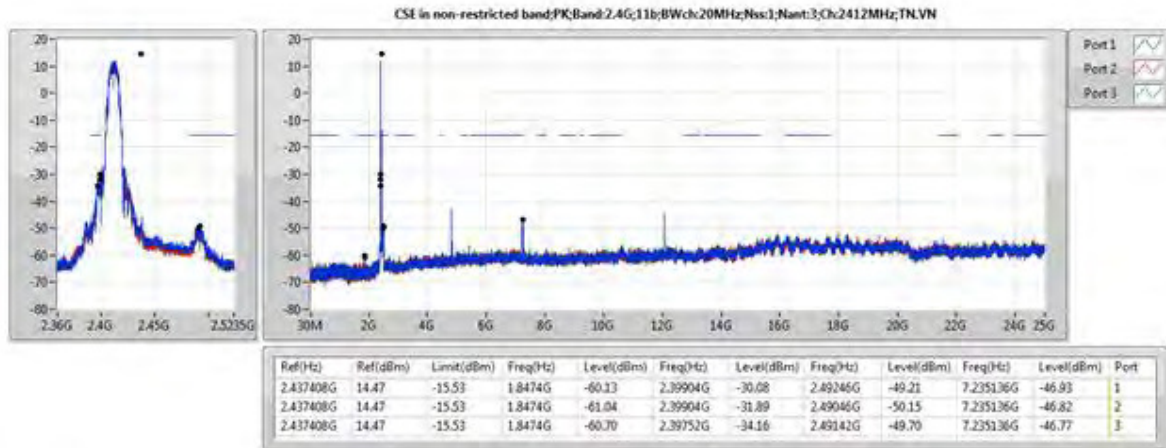
FCC Test Report

Report No. : FR6N1118AA

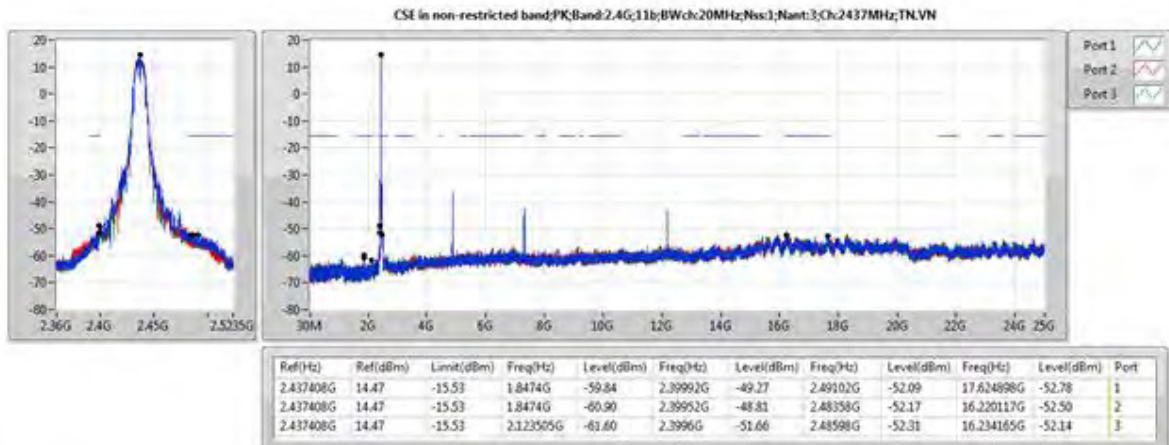
Mode	Result	Reference Frequency (Hz)	Reference Level (dBm)	-30dBc Limit (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Meas. Frequency (Hz)	Meas. Level (dBm)	Port
802.11ac VHT20(BF)MCS0 2462MHz 3TX	Pass	2.441917G	10.39	-19.61	1.8474G	-59.85	2.39072G	-55.89	2.48382G	-38.99	17.667042G	-52.38	1
	Pass	2.441917G	10.39	-19.61	1.8474G	-60.11	2.39016G	-56.61	2.48358G	-41.08	16.228546G	-52.81	2
	Pass	2.441917G	10.39	-19.61	928.215M	-62.00	2.3904G	-56.61	2.48382G	-39.08	17.610851G	-51.94	3
802.11ac VHT40(BF)MCS0 2422MHz 3TX	Pass	2.449432G	3.35	-26.65	837.225M	-62.13	2.39712G	-37.41	2.48414G	-56.62	17.607173G	-51.92	1
	Pass	2.449432G	3.35	-26.65	2.156265G	-62.26	2.39712G	-36.01	2.48878G	-56.08	16.244156G	-51.82	2
	Pass	2.449432G	3.35	-26.65	1.84826G	-62.48	2.39984G	-40.47	2.48942G	-56.45	17.604369G	-52.55	3
802.11ac VHT40(BF)MCS0 2437MHz 3TX	Pass	2.449432G	3.35	-26.65	1.84826G	-60.77	2.39952G	-35.50	2.48462G	-44.10	16.656427G	-52.04	1
	Pass	2.449432G	3.35	-26.65	663.185M	-61.42	2.39952G	-35.69	2.48494G	-47.02	17.615587G	-52.85	2
	Pass	2.449432G	3.35	-26.65	1.84826G	-61.00	2.3992G	-39.02	2.48382G	-48.32	16.863964G	-52.70	3
802.11ac VHT40(BF)MCS0 2452MHz 3TX	Pass	2.449432G	3.35	-26.65	842.95M	-60.99	2.39728G	-50.27	2.48942G	-43.94	16.533026G	-52.45	1
	Pass	2.449432G	3.35	-26.65	2.11848G	-62.34	2.39568G	-52.16	2.48446G	-39.79	16.227329G	-52.02	2
	Pass	2.449432G	3.35	-26.65	2.12306G	-61.46	2.39904G	-52.09	2.48942G	-41.55	17.607173G	-51.41	3

For non-beamforming mode

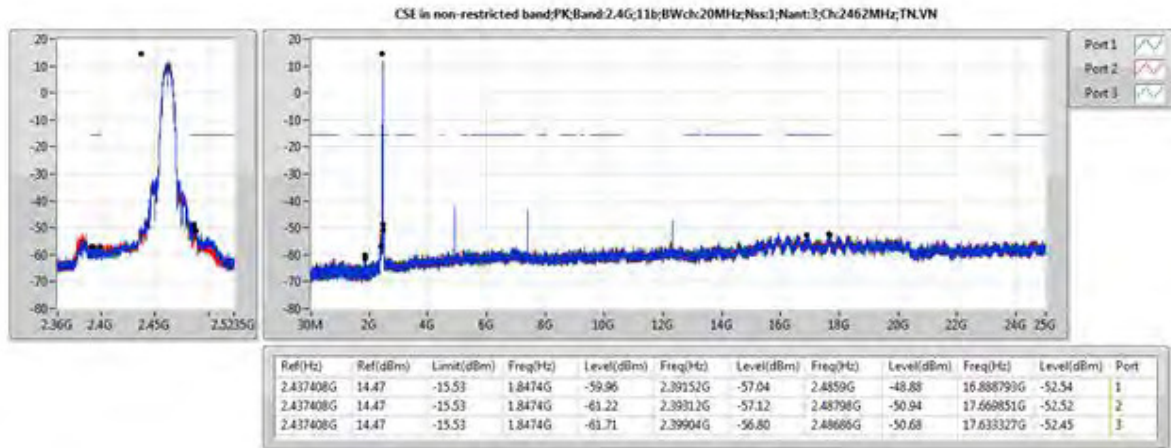
Non-restricted Frequency Bands on Configuration IEEE 802.11b / 2412 MHz / 3TX



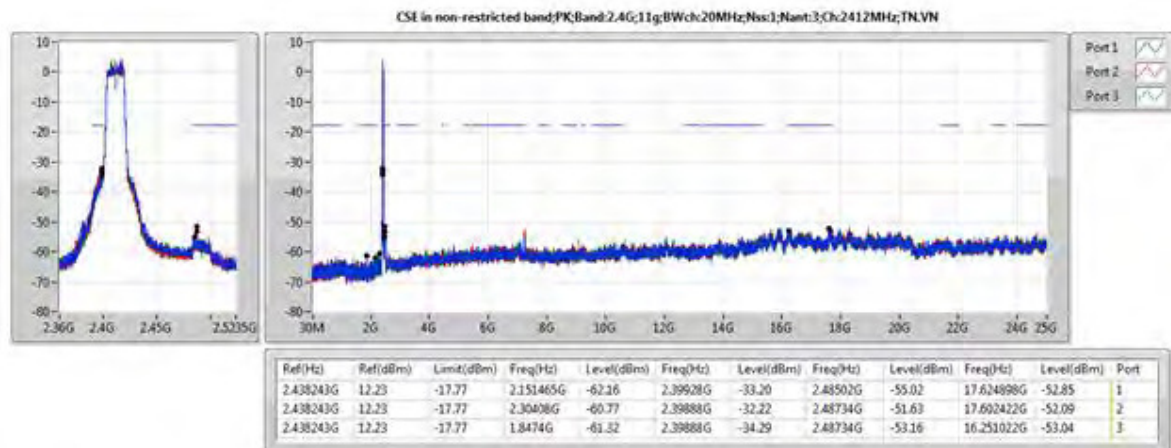
Non-restricted Frequency Bands on Configuration IEEE 802.11b / 2437 MHz / 3TX



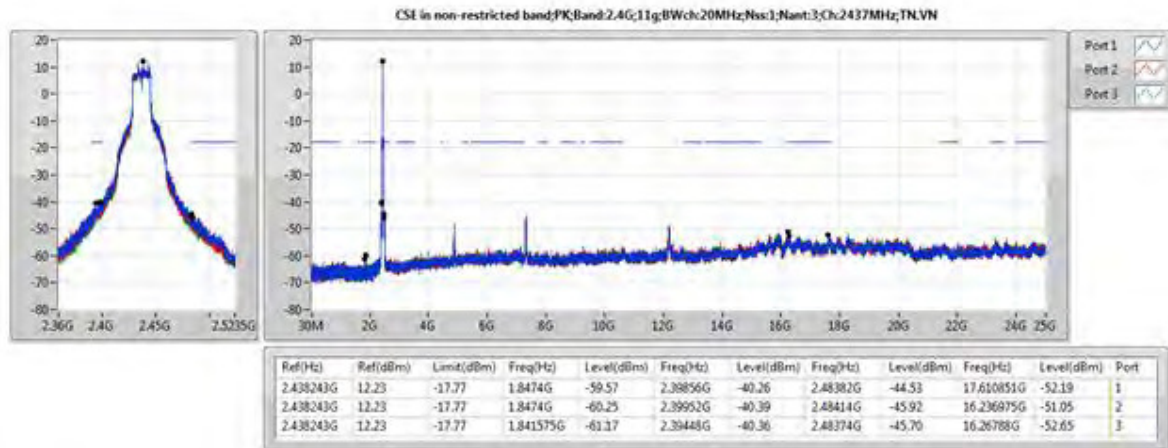
Non-restricted Frequency Bands on Configuration IEEE 802.11b / 2462 MHz / 3TX



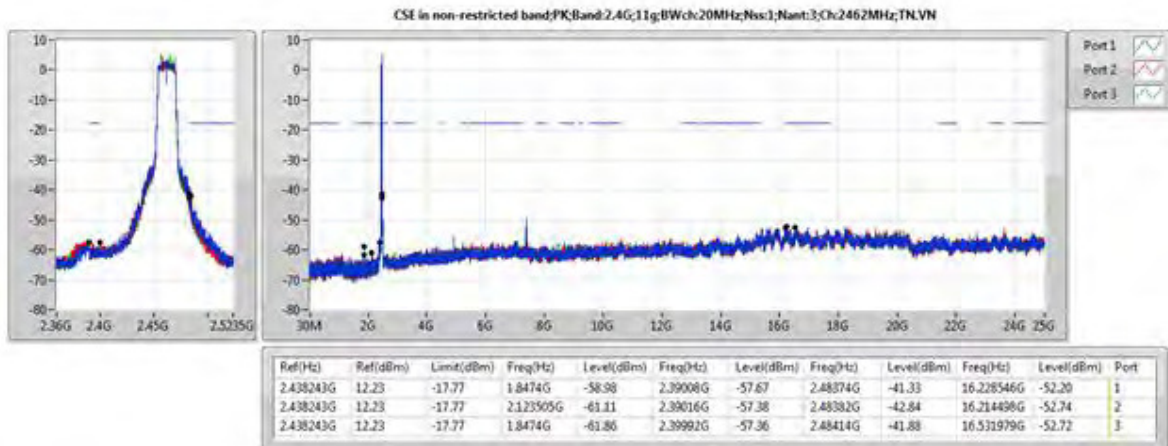
Non-restricted Frequency Bands on Configuration IEEE 802.11g / 6Mbps / 2412MHz / 3TX



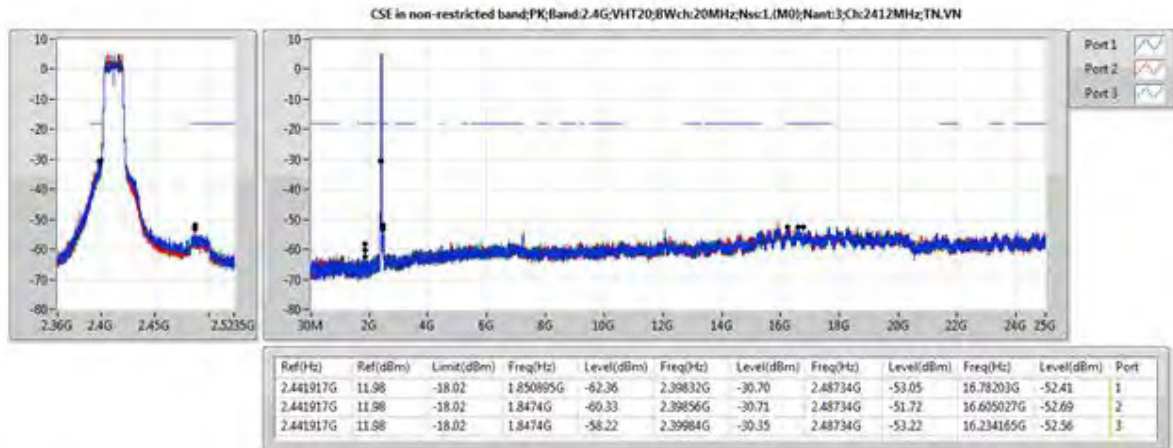
Non-restricted Frequency Bands on Configuration IEEE 802.11g / 6Mbps / 2437MHz / 3TX



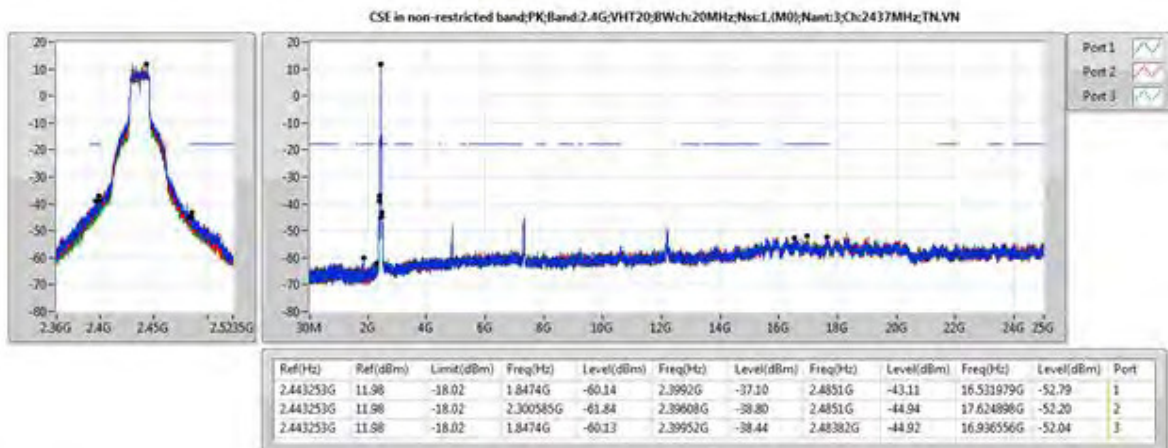
Non-restricted Frequency Bands on Configuration IEEE 802.11g / 6Mbps / 2462MHz / 3TX



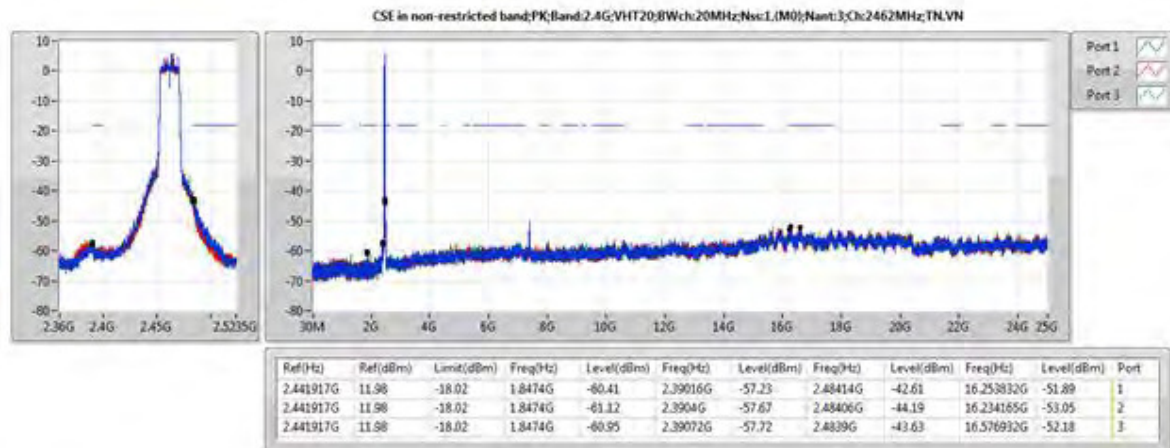
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20 / MCS0 Nss1 / 2412MHz / 3TX



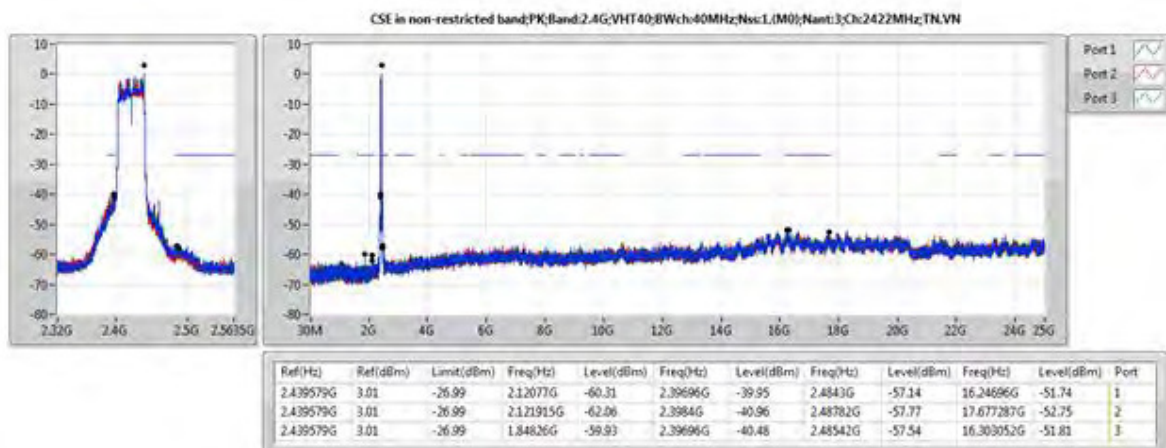
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20 / MCS0 Nss1 / 2437MHz / 3TX



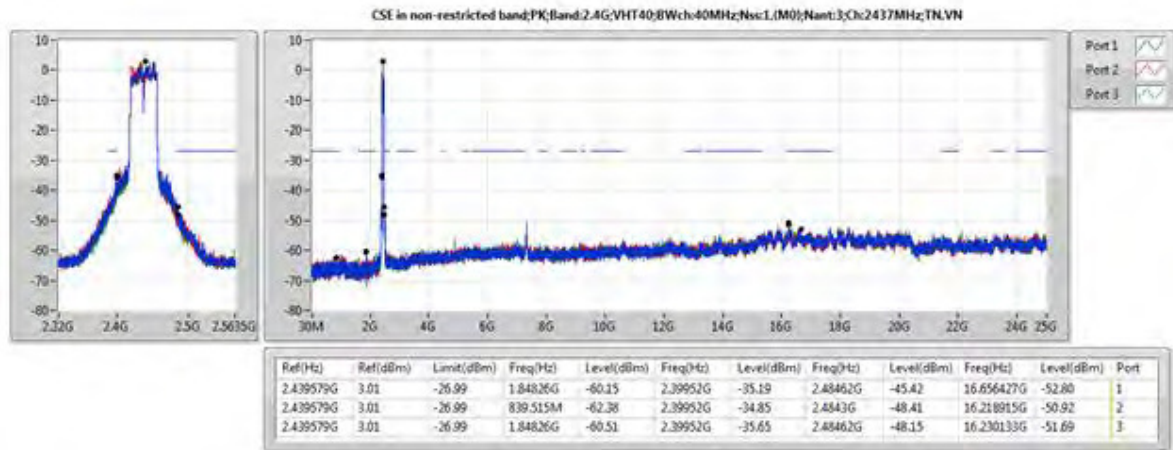
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20 / MCS0 Nss1 / 2462MHz / 3TX



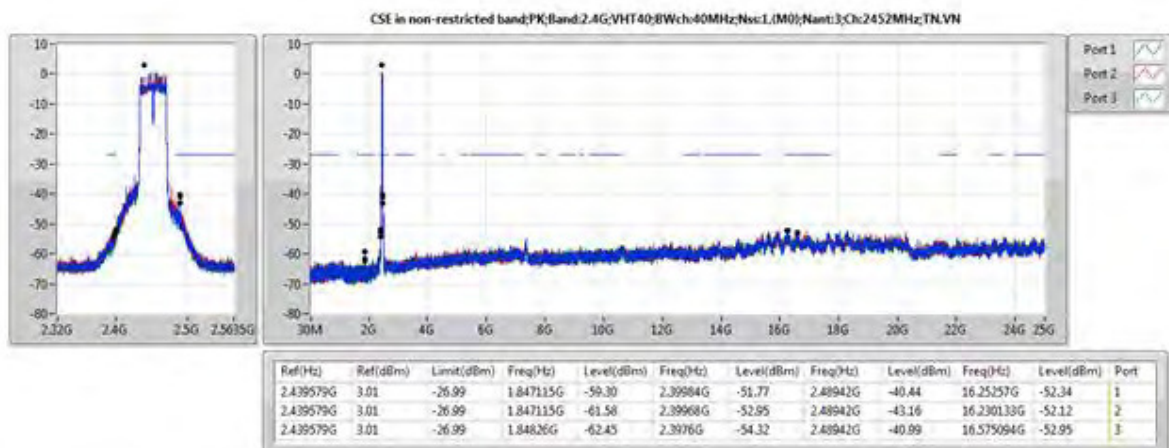
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT40 / MCS0 Nss1 / 2422MHz / 3TX



Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT40 / MCS0 Nss1 / 2437MHz / 3TX

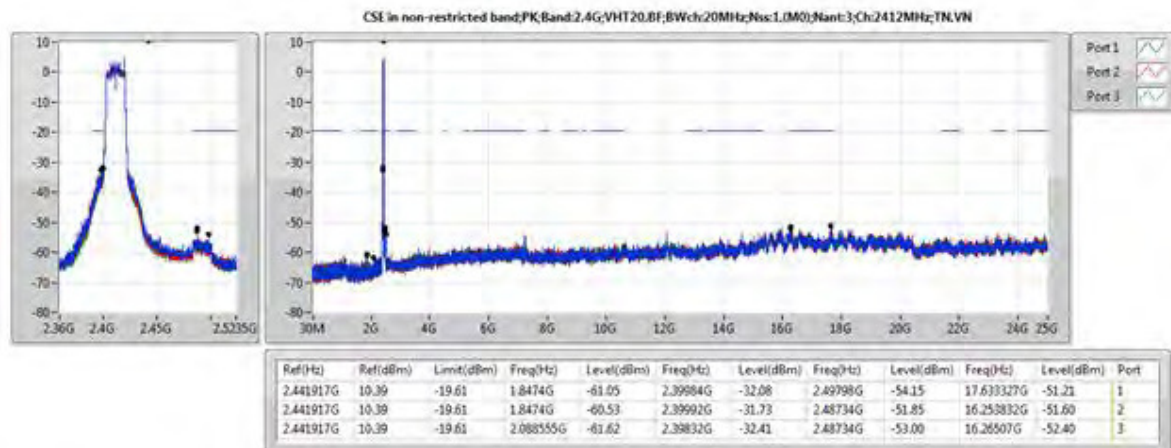


Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT40 / MCS0 Nss1 / 2452MHz / 3TX

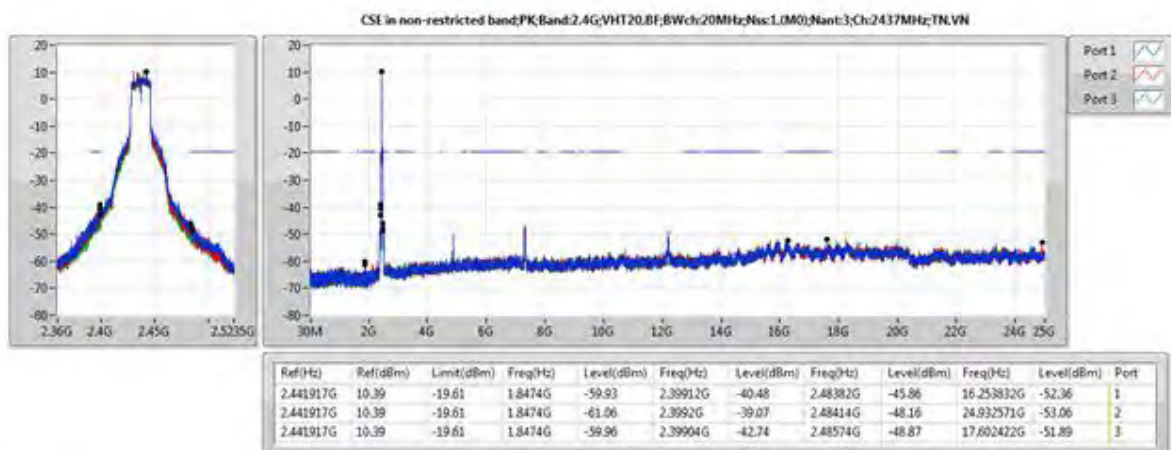


For beamforming mode

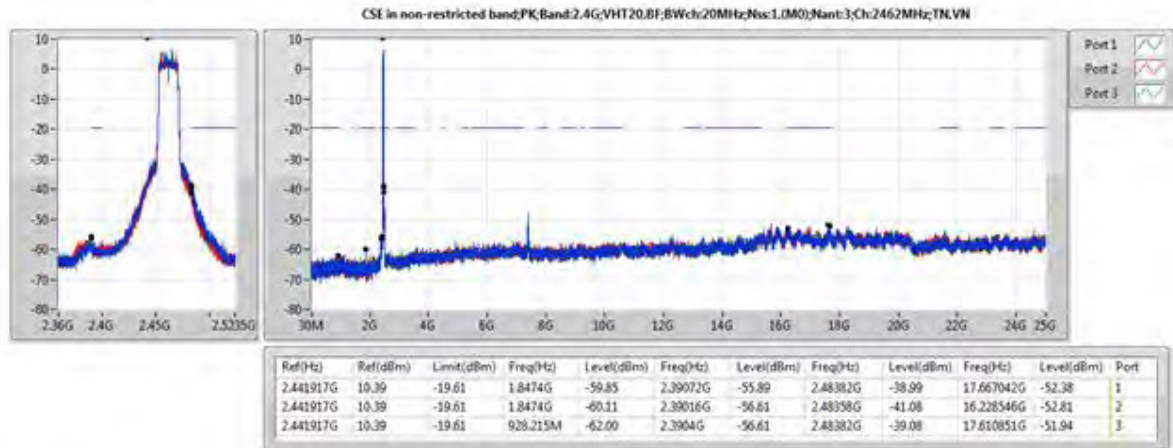
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2412MHz / 3TX



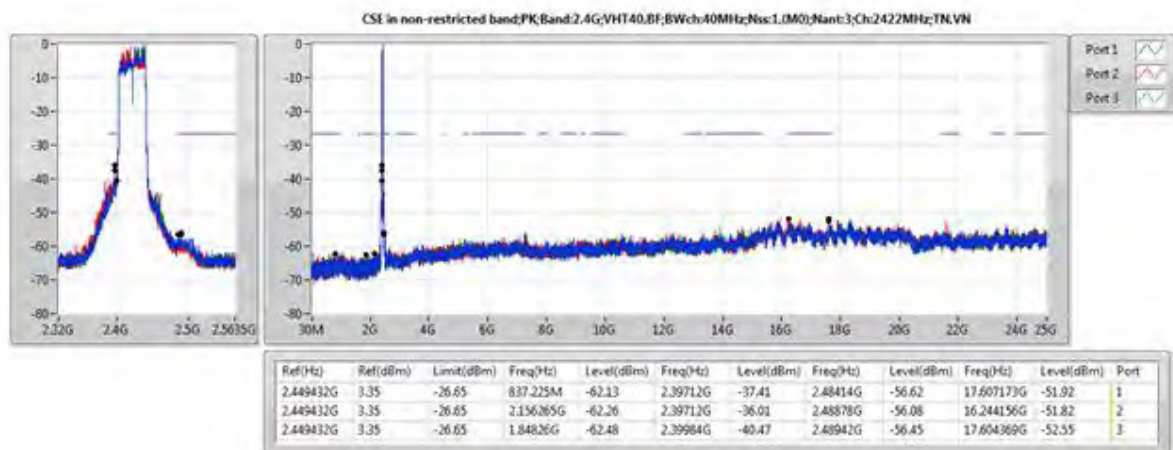
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2437MHz / 3TX



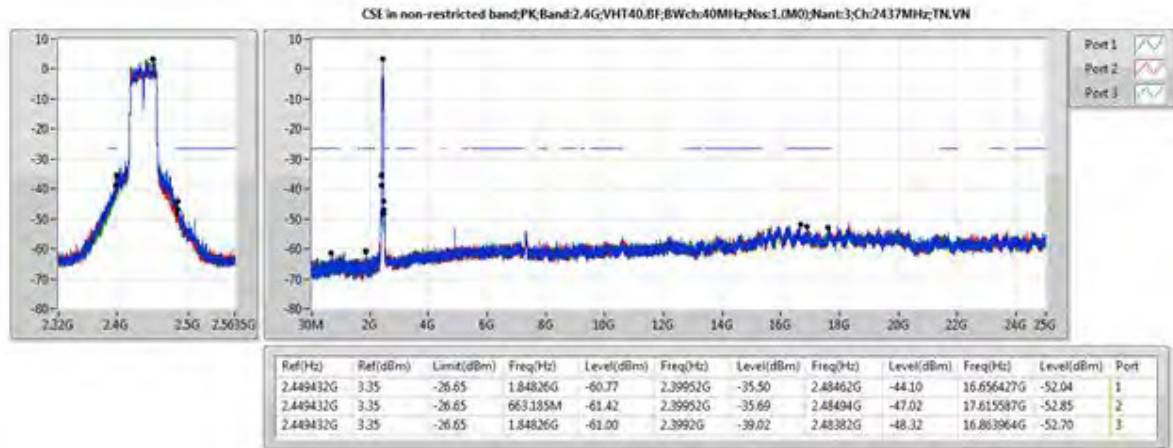
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2462MHz / 3TX



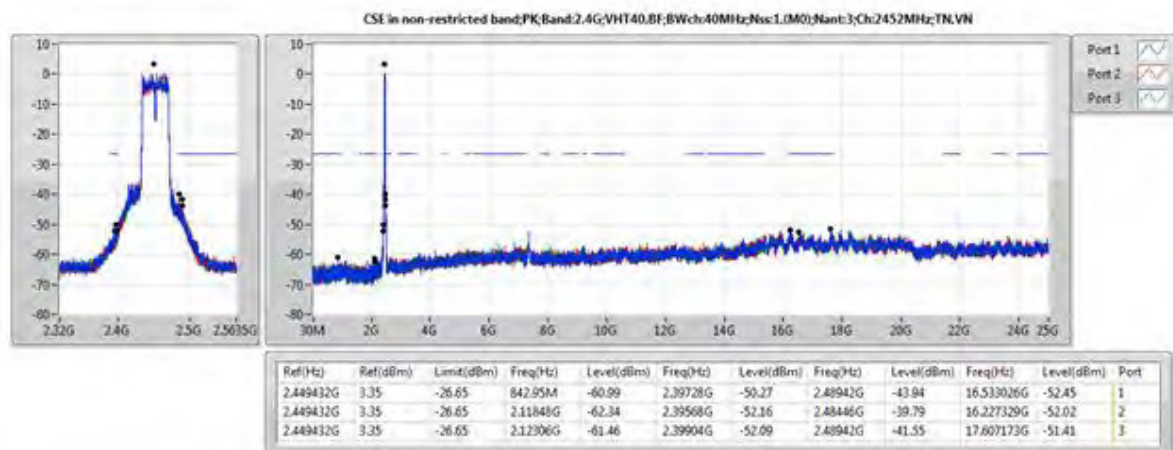
Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT40(BF) / MCS0 Nss1 / 2422MHz / 3TX



Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2437MHz / 3TX



Non-restricted Frequency Bands on Configuration IEEE 802.11ac VHT20(BF) / MCS0 Nss1 / 2452MHz / 3TX



3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

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

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

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

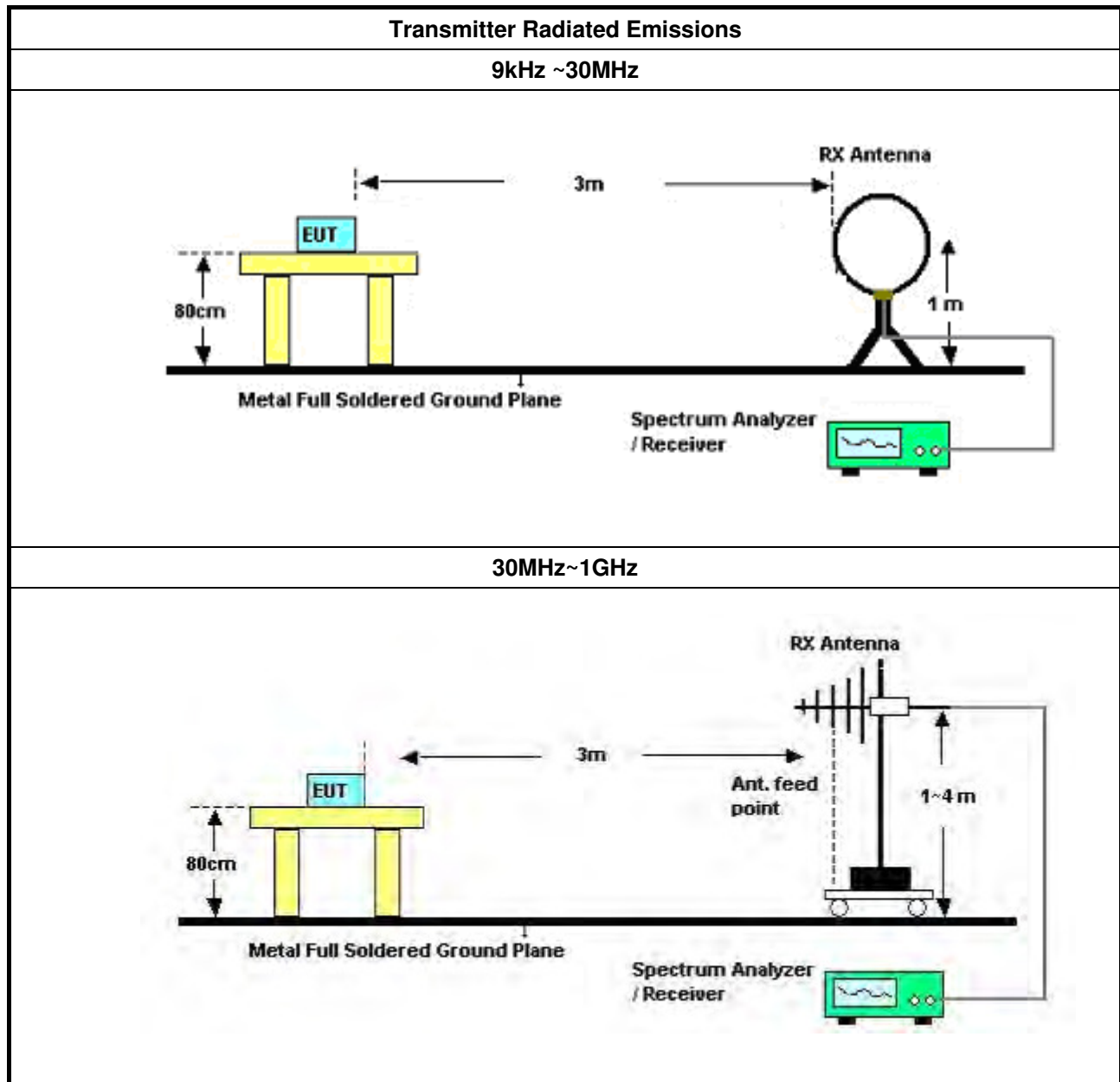
3.6.2 Measuring Instruments

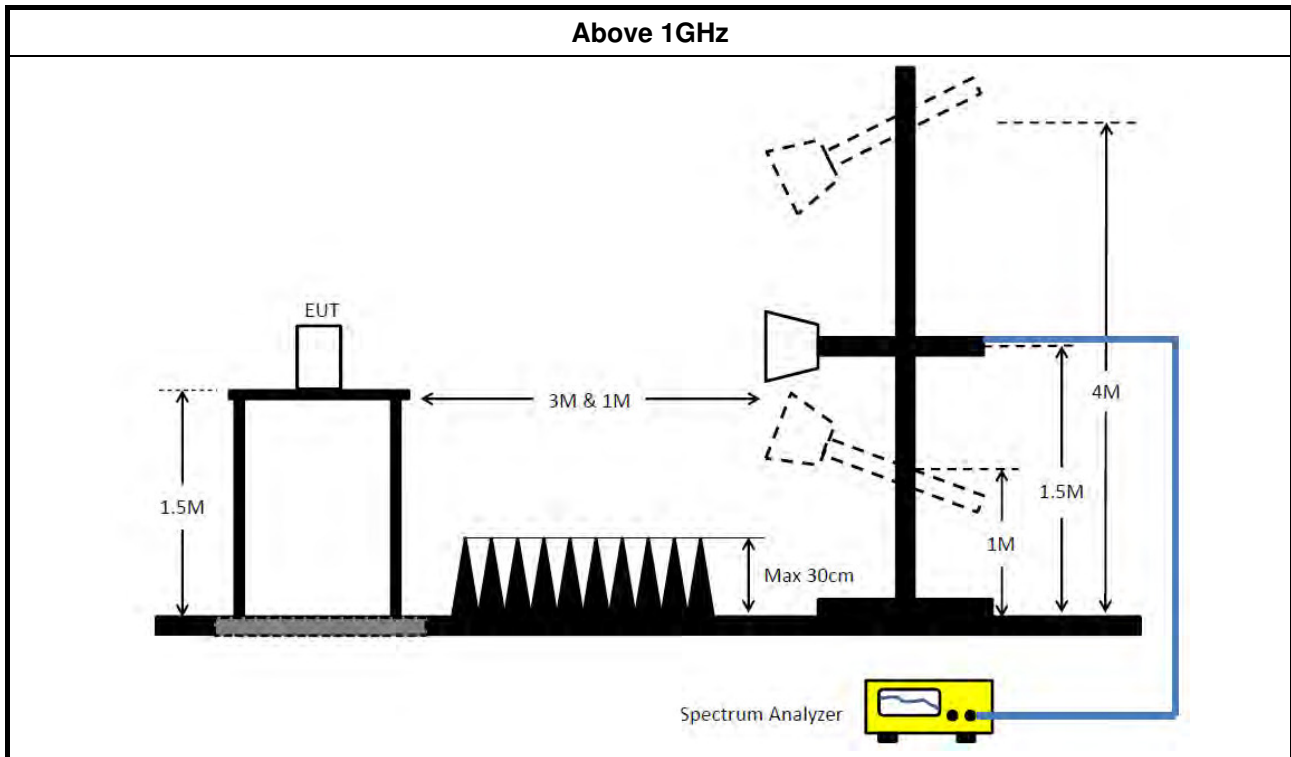
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].	
Refer as ANSI C63.10, clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
For the transmitter unwanted emissions shall be measured using following options below:	
	Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.
	☐ Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$)
	☐ Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
	☒ Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$).
	☐ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.
	☐ Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
	☒ Refer as FCC KDB 558074, clause 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 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 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.
	Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.	
	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add $10 \log(N)$ dB
	For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

3.6.4 Test Setup



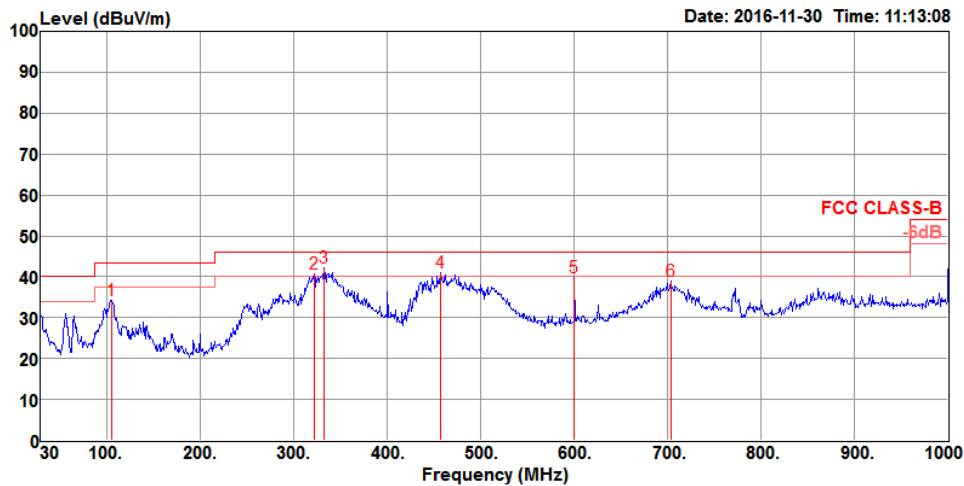


3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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

RSE below 1GHz Result

Operating Mode	3	Polarization	Horizontal
Operating Function	CTX		

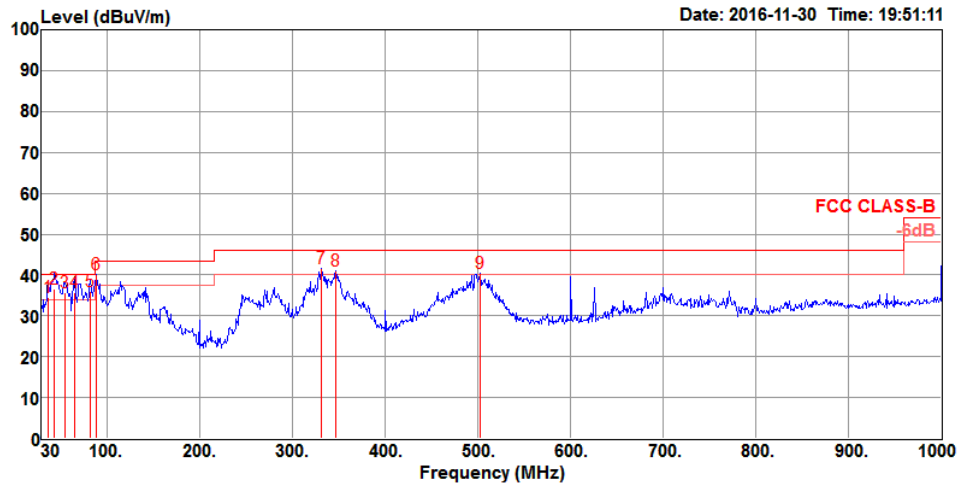


	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	105.66	34.35	43.50	-9.15	47.56	0.89	18.29	32.39	300	45	Peak	HORIZONTAL
2	321.97	40.76	46.00	-5.24	50.87	1.54	20.64	32.29	200	1	Peak	HORIZONTAL
3	332.64	42.34	46.00	-3.66	52.15	1.57	20.92	32.30	100	194	Peak	HORIZONTAL
4	456.80	41.03	46.00	-4.97	48.18	1.86	23.33	32.34	100	322	Peak	HORIZONTAL
5	600.36	39.78	46.00	-6.22	44.67	2.12	25.40	32.41	100	320	Peak	HORIZONTAL
6	703.18	38.99	46.00	-7.01	43.12	2.28	25.95	32.36	150	360	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.)

RSE below 1GHz Result

Operating Mode	3	Polarization	Vertical
Operating Function	CTX		



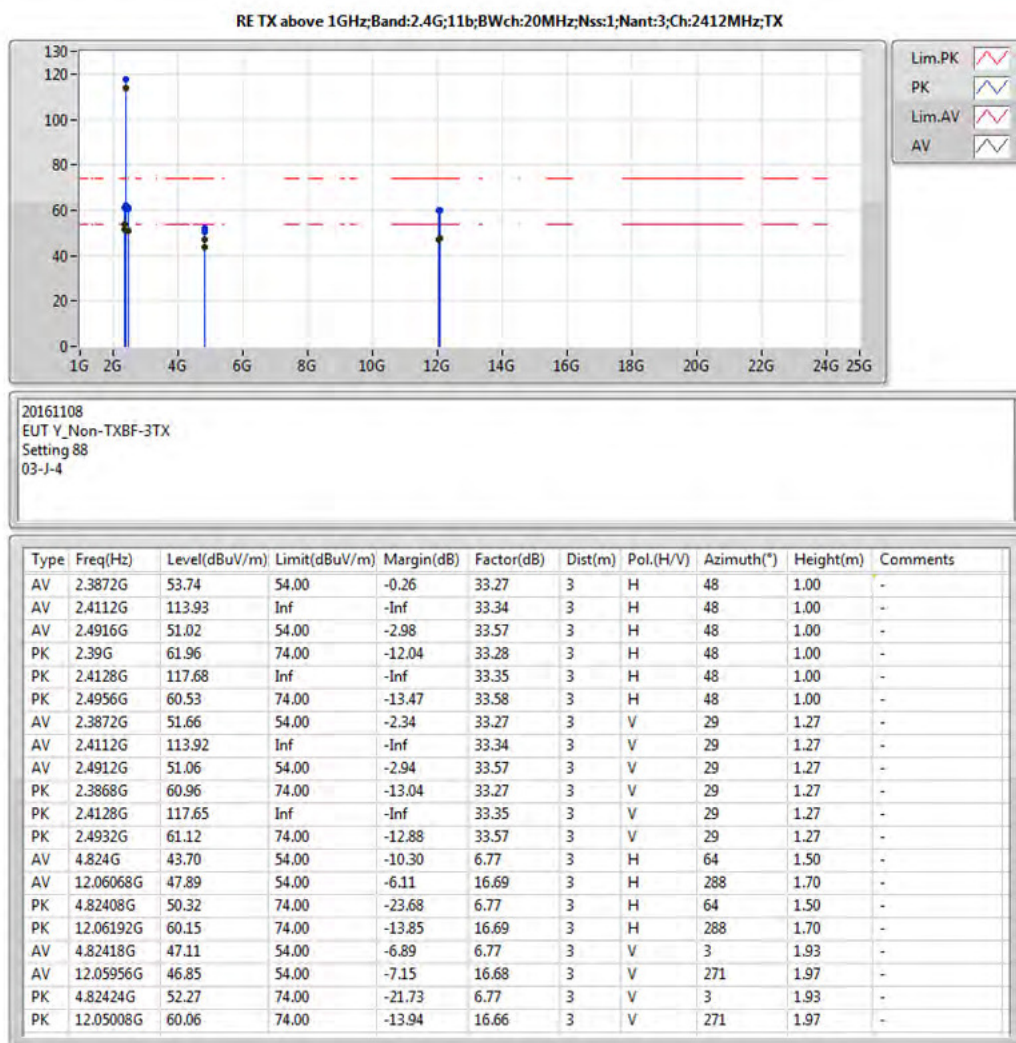
	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	36.79	34.39	40.00	-5.61	44.10	0.53	22.16	32.40	100	221 QP	VERTICAL
2	43.58	36.54	40.00	-3.46	50.36	0.58	18.01	32.41	100	170 QP	VERTICAL
3	55.22	35.63	40.00	-4.37	53.14	0.65	14.25	32.41	100	311 QP	VERTICAL
4	64.92	35.83	40.00	-4.17	54.23	0.70	13.30	32.40	200	350 QP	VERTICAL
5	82.38	36.10	40.00	-3.90	53.65	0.79	14.06	32.40	150	150 QP	VERTICAL
6	88.20	40.13	43.50	-3.37	56.50	0.81	15.21	32.39	100	196 Peak	VERTICAL
7	330.70	41.57	46.00	-4.43	51.45	1.56	20.86	32.30	150	167 Peak	VERTICAL
8	347.19	40.93	46.00	-5.07	50.34	1.60	21.30	32.31	100	0 Peak	VERTICAL
9	502.39	40.41	46.00	-5.59	46.75	1.95	24.06	32.35	200	164 Peak	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.)

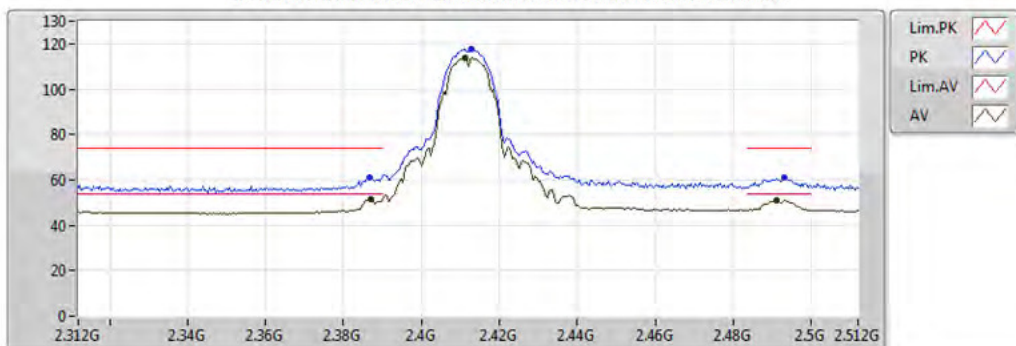
3.6.6 Test Result of Transmitter Radiated Unwanted Emissions (Above 1GHz)

For non-beamforming mode

Modulation Mode	IEEE 802.11b 6Mbps	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2412		



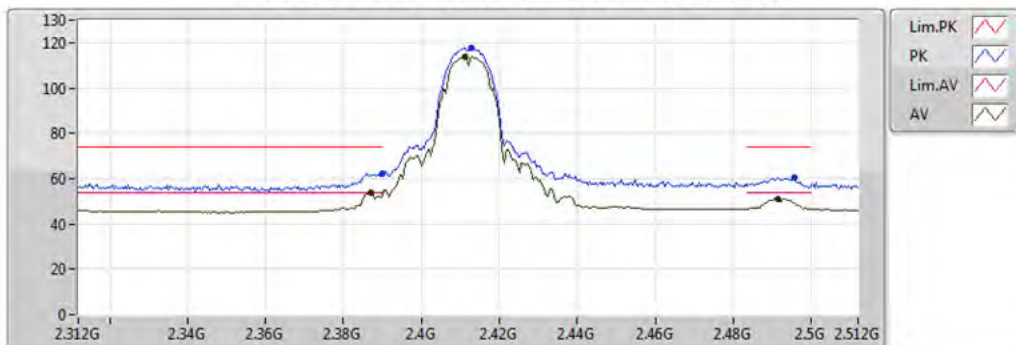
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2412MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 88
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3872G	51.66	54.00	-2.34	33.27	3	V	29	1.27	-
AV	2.4112G	113.92	Inf	-Inf	33.34	3	V	29	1.27	-
AV	2.4912G	51.06	54.00	-2.94	33.57	3	V	29	1.27	-
PK	2.3868G	60.96	74.00	-13.04	33.27	3	V	29	1.27	-
PK	2.4128G	117.65	Inf	-Inf	33.35	3	V	29	1.27	-
PK	2.4932G	61.12	74.00	-12.88	33.57	3	V	29	1.27	-

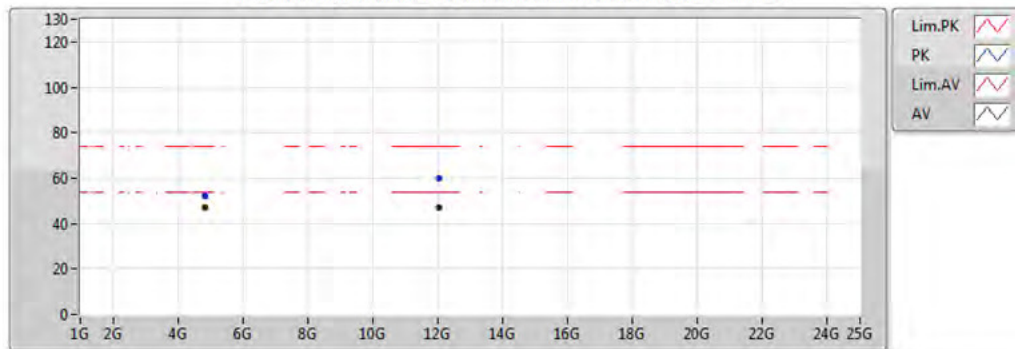
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2412MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 88
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3872G	53.74	54.00	-0.26	33.27	3	H	48	1.00	-
AV	2.4112G	113.93	Inf	-Inf	33.34	3	H	48	1.00	-
AV	2.4916G	51.02	54.00	-2.98	33.57	3	H	48	1.00	-
PK	2.39G	61.96	74.00	-12.04	33.28	3	H	48	1.00	-
PK	2.4128G	117.68	Inf	-Inf	33.35	3	H	48	1.00	-
PK	2.4956G	60.53	74.00	-13.47	33.58	3	H	48	1.00	-

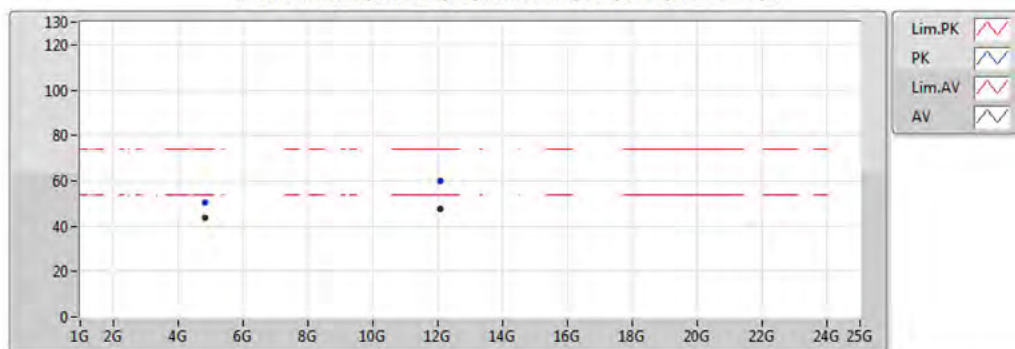
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2412MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 88
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	4.82418G	47.11	54.00	-6.89	6.77	3	V	3	1.93	-
AV	12.05956G	46.85	54.00	-7.15	16.68	3	V	271	1.97	-
PK	4.82424G	52.27	74.00	-21.73	6.77	3	V	3	1.93	-
PK	12.05008G	60.06	74.00	-13.94	16.66	3	V	271	1.97	-

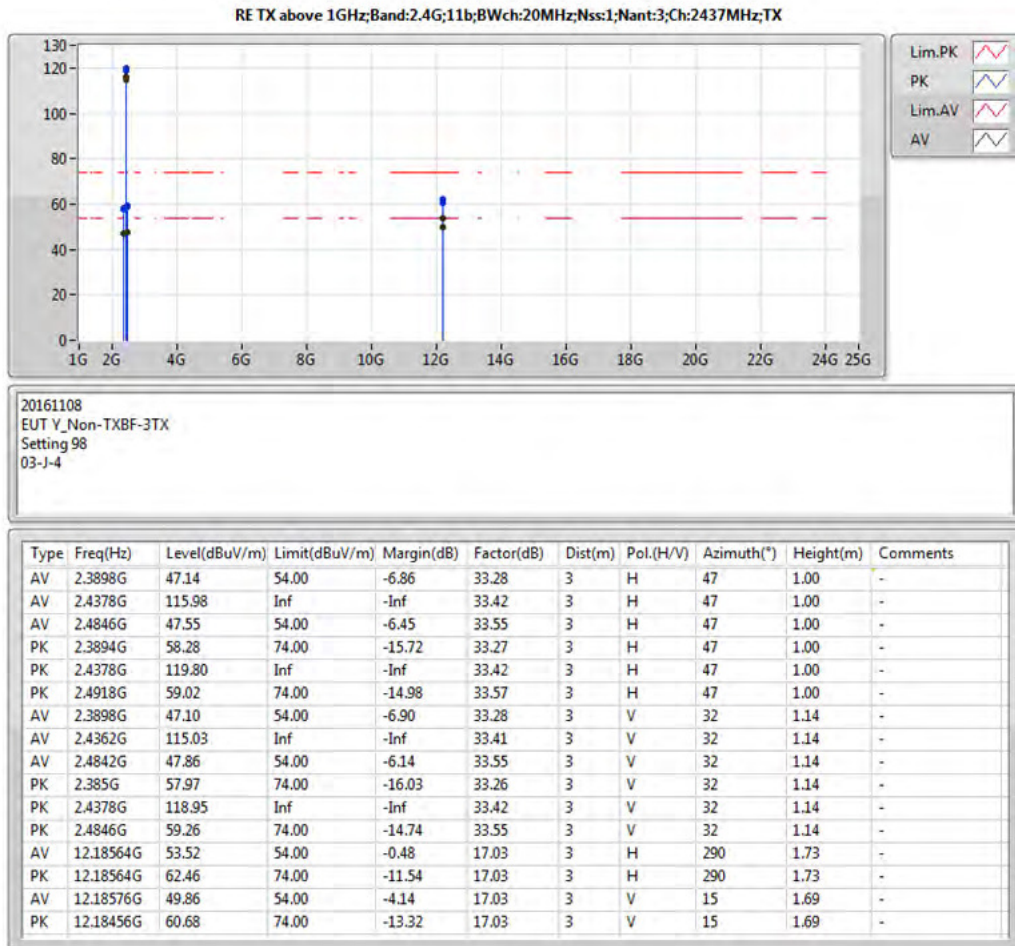
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2412MHz;TX



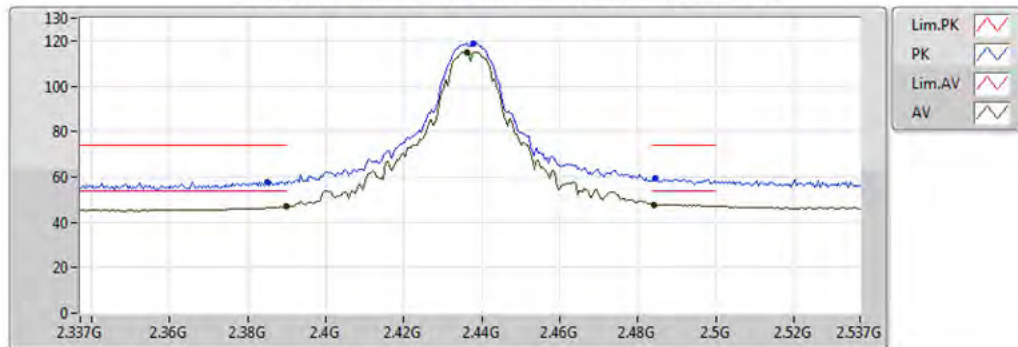
20161108
EUT Y_Non-TXBF-3TX
Setting 88
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	4.824G	43.70	54.00	-10.30	6.77	3	H	64	1.50	-
AV	12.06068G	47.89	54.00	-6.11	16.69	3	H	288	1.70	-
PK	4.82408G	50.32	74.00	-23.68	6.77	3	H	64	1.50	-
PK	12.06192G	60.15	74.00	-13.85	16.69	3	H	288	1.70	-

Modulation Mode	IEEE 802.11b 6Mbps	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2437		



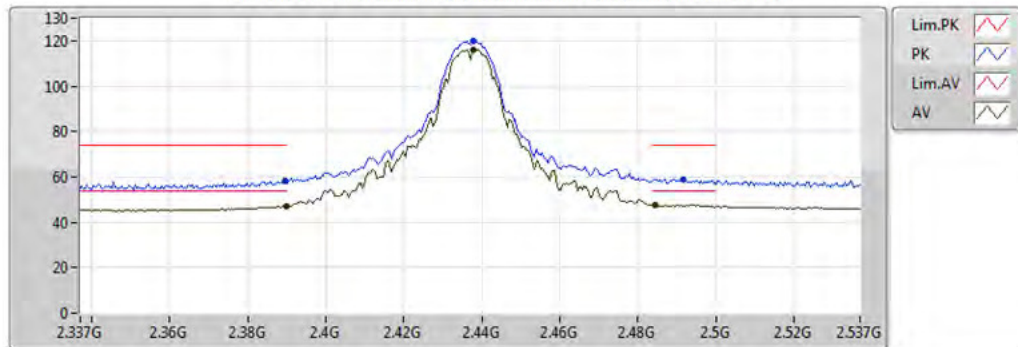
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3898G	47.10	54.00	-6.90	33.28	3	V	32	1.14	-
AV	2.4362G	115.03	Inf	-Inf	33.41	3	V	32	1.14	-
AV	2.4842G	47.86	54.00	-6.14	33.55	3	V	32	1.14	-
PK	2.385G	57.97	74.00	-16.03	33.26	3	V	32	1.14	-
PK	2.4378G	118.95	Inf	-Inf	33.42	3	V	32	1.14	-
PK	2.4846G	59.26	74.00	-14.74	33.55	3	V	32	1.14	-

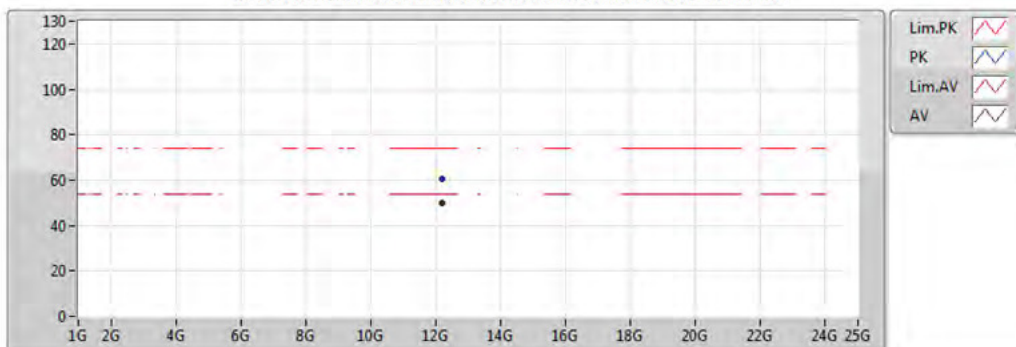
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3898G	47.14	54.00	-6.86	33.28	3	H	47	1.00	-
AV	2.4378G	115.98	Inf	-Inf	33.42	3	H	47	1.00	-
AV	2.4846G	47.55	54.00	-6.45	33.55	3	H	47	1.00	-
PK	2.3894G	58.28	74.00	-15.72	33.27	3	H	47	1.00	-
PK	2.4378G	119.80	Inf	-Inf	33.42	3	H	47	1.00	-
PK	2.4918G	59.02	74.00	-14.98	33.57	3	H	47	1.00	-

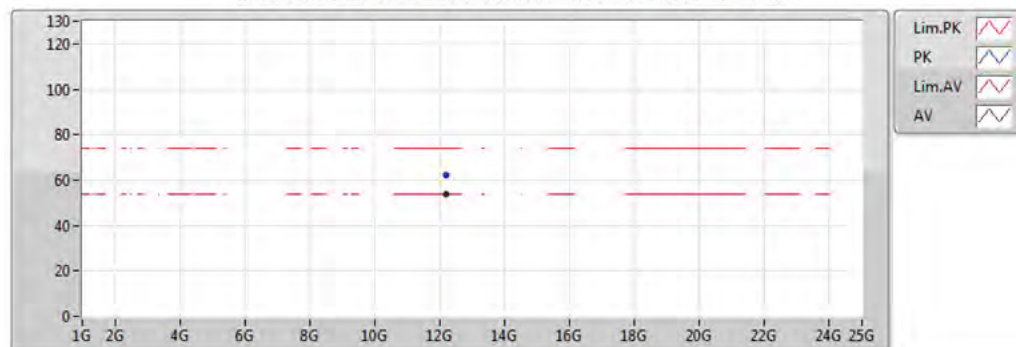
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	12.18576G	49.86	54.00	-4.14	17.03	3	V	15	1.69	-
PK	12.18456G	60.68	74.00	-13.32	17.03	3	V	15	1.69	-

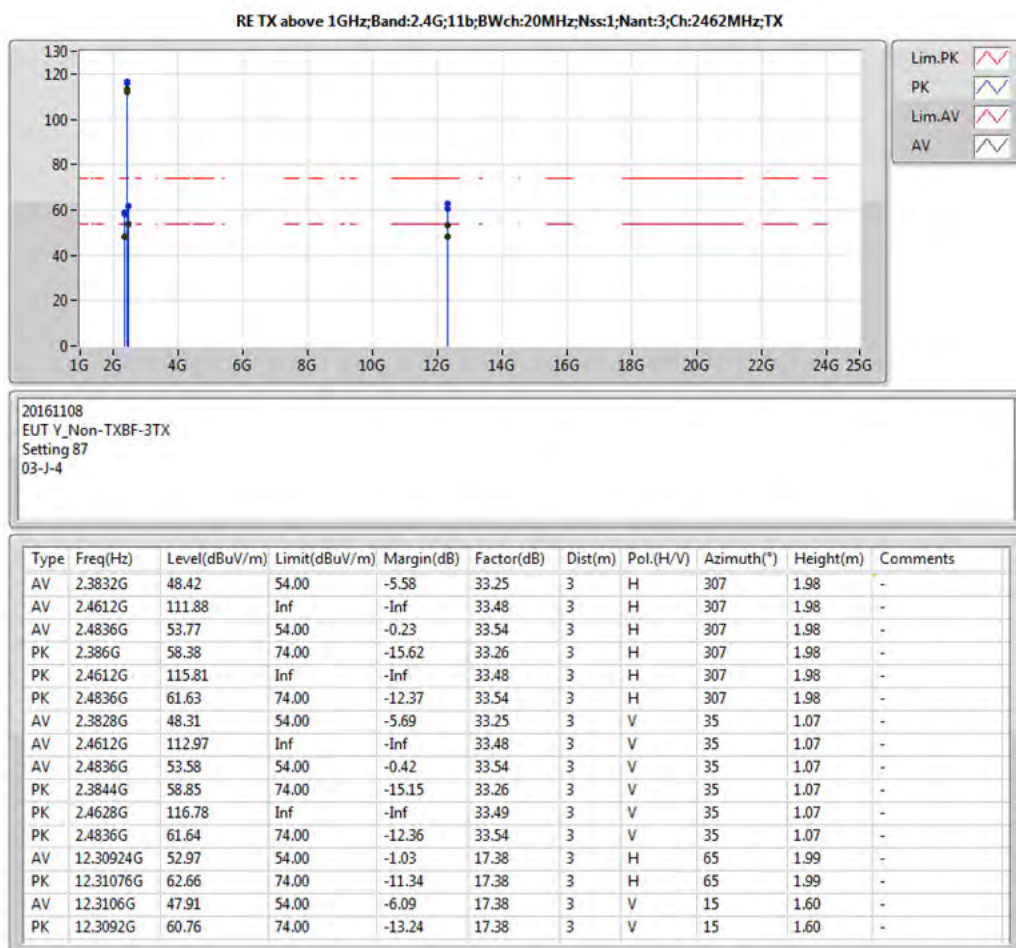
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2437MHz;TX



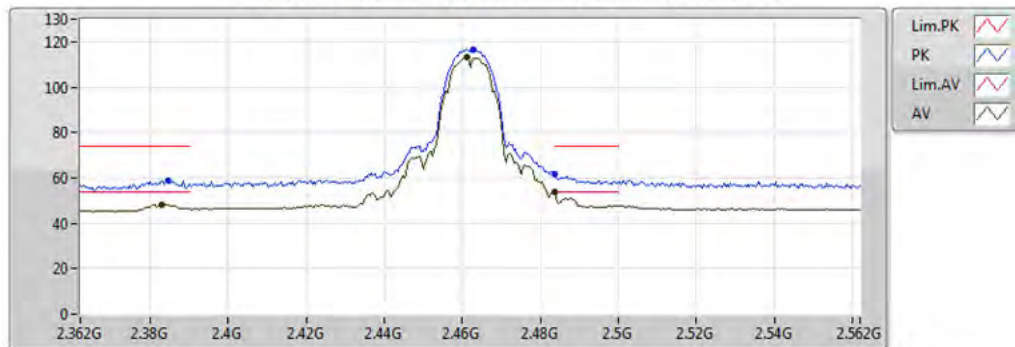
20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	12.18564G	53.52	54.00	-0.48	17.03	3	V	290	1.73	-
PK	12.18564G	62.46	74.00	-11.54	17.03	3	V	290	1.73	-

Modulation Mode	IEEE 802.11b 6Mbps	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2462		



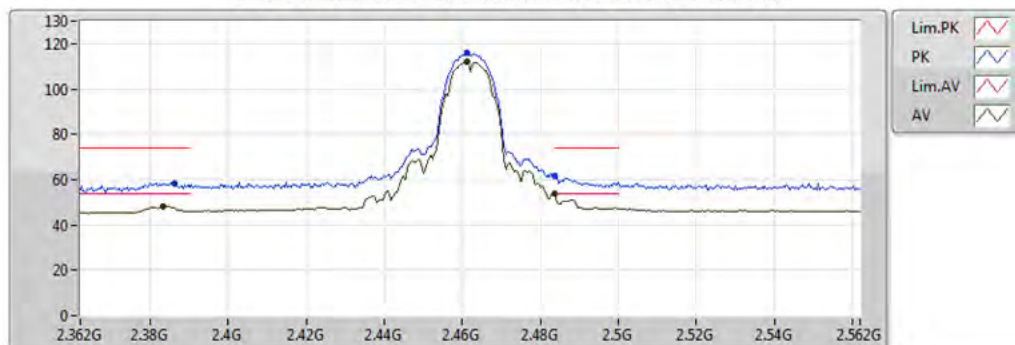
RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2462MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 87
03-J-4

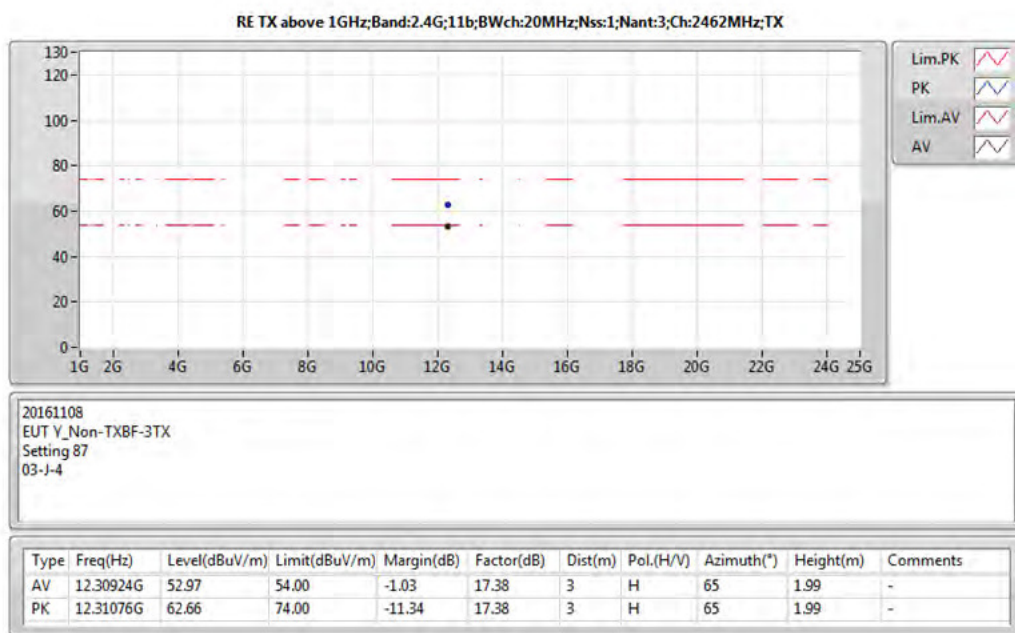
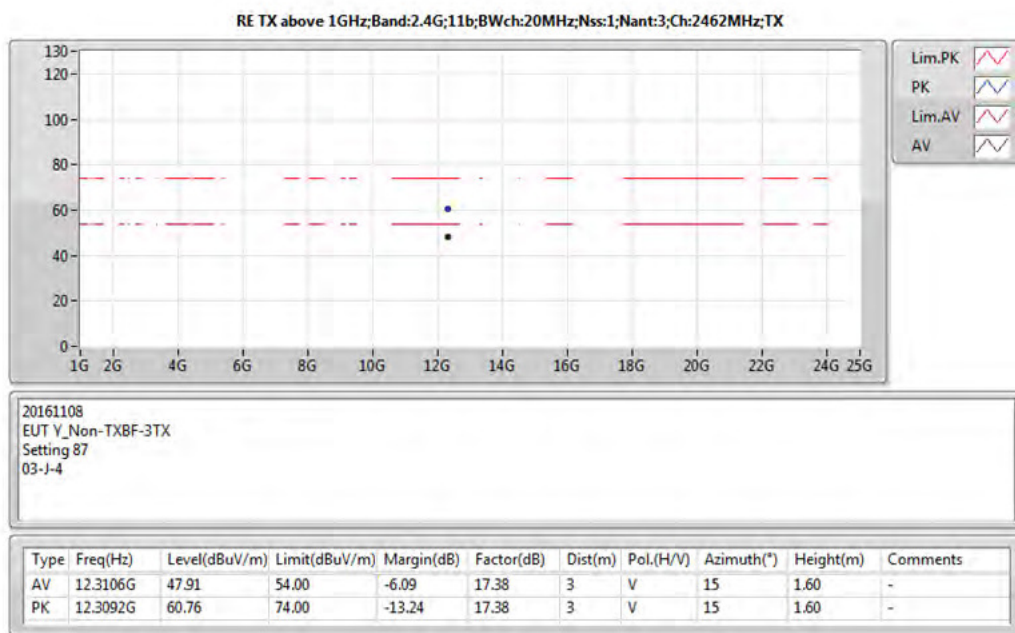
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3828G	48.31	54.00	-5.69	33.25	3	V	35	1.07	-
AV	2.4612G	112.97	Inf	-Inf	33.48	3	V	35	1.07	-
AV	2.4836G	53.58	54.00	-0.42	33.54	3	V	35	1.07	-
PK	2.3844G	58.85	74.00	-15.15	33.26	3	V	35	1.07	-
PK	2.4628G	116.78	Inf	-Inf	33.49	3	V	35	1.07	-
PK	2.4836G	61.64	74.00	-12.36	33.54	3	V	35	1.07	-

RE TX above 1GHz;Band:2.4G;11b;BWch:20MHz;Nss:1;Nant:3;Ch:2462MHz;TX

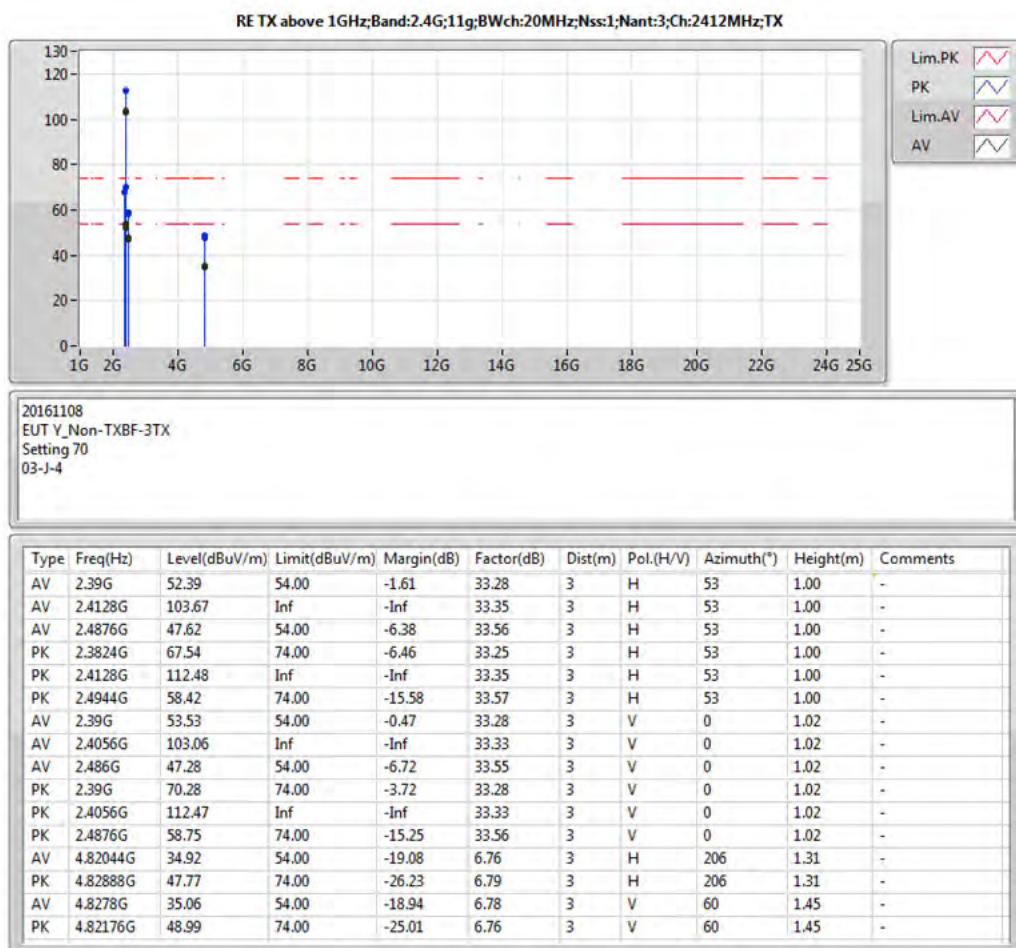


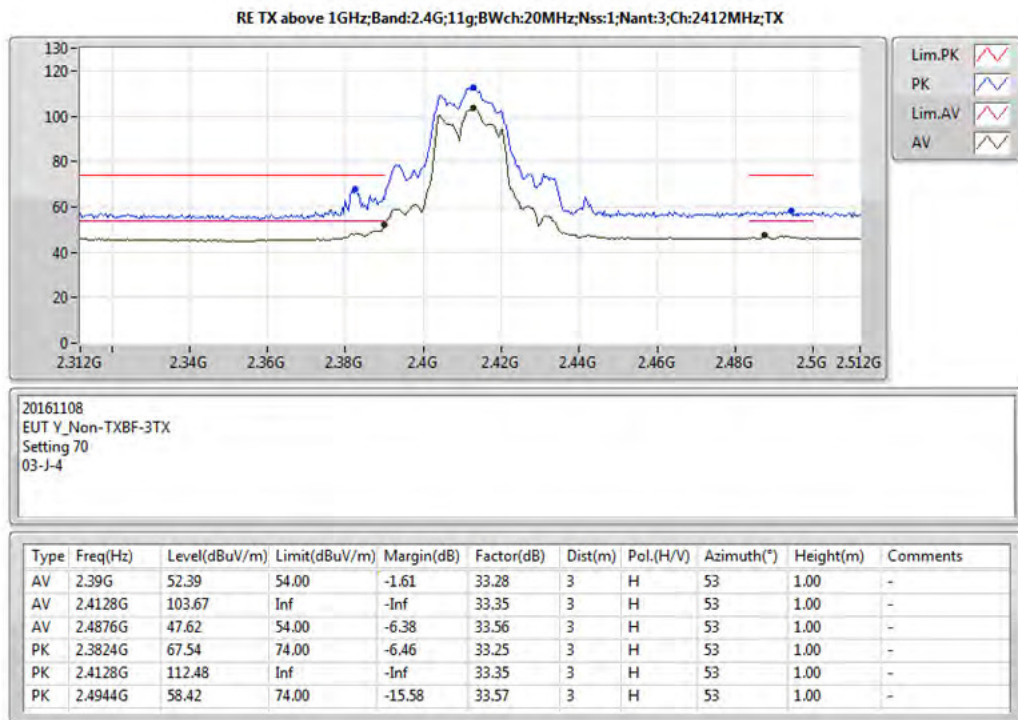
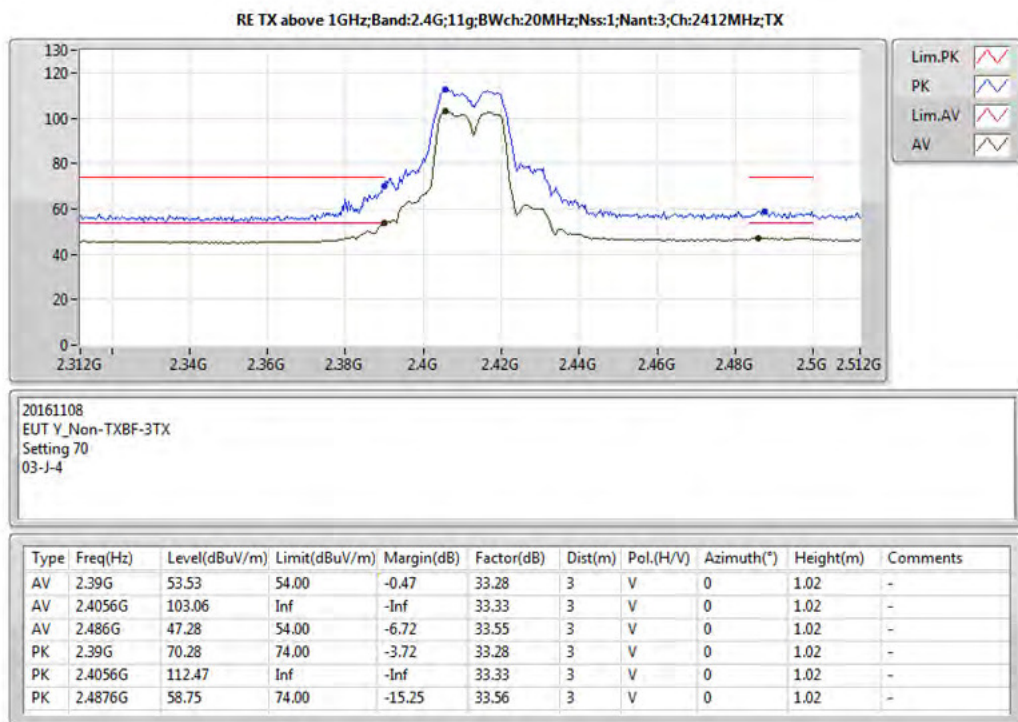
20161108
EUT Y_Non-TXBF-3TX
Setting 87
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3832G	48.42	54.00	-5.58	33.25	3	H	307	1.98	-
AV	2.4612G	111.88	Inf	-Inf	33.48	3	H	307	1.98	-
AV	2.4836G	53.77	54.00	-0.23	33.54	3	H	307	1.98	-
PK	2.386G	58.38	74.00	-15.62	33.26	3	H	307	1.98	-
PK	2.4612G	115.81	Inf	-Inf	33.48	3	H	307	1.98	-
PK	2.4836G	61.63	74.00	-12.37	33.54	3	H	307	1.98	-

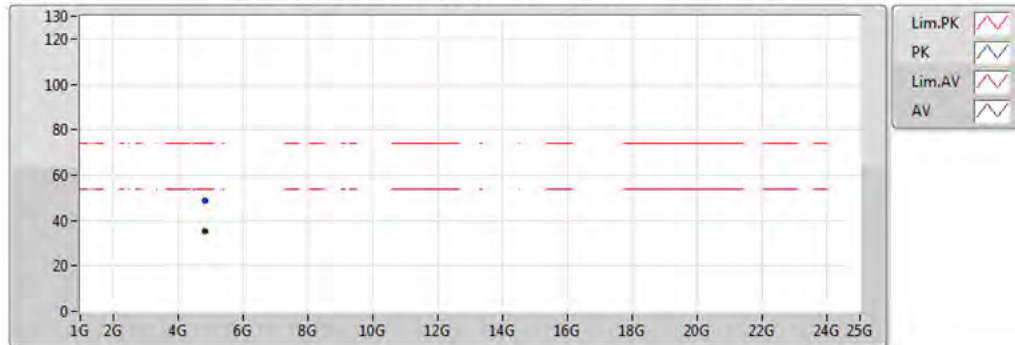


Modulation Mode	IEEE 802.11g 6Mbps	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2412		





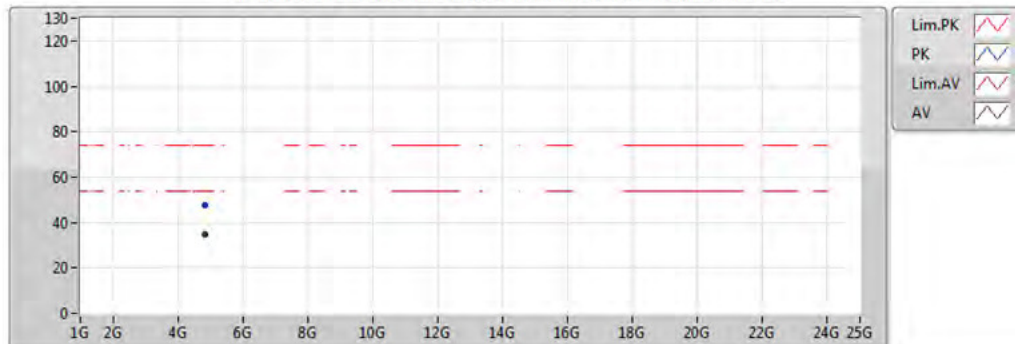
RE TX above 1GHz;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:3;Ch:2412MHz;TX



20161108
EUT Y_Non-TX8F-3TX
Setting 70
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	4.8278G	35.06	54.00	-18.94	6.78	3	V	60	1.45	-
PK	4.82176G	48.99	74.00	-25.01	6.76	3	V	60	1.45	-

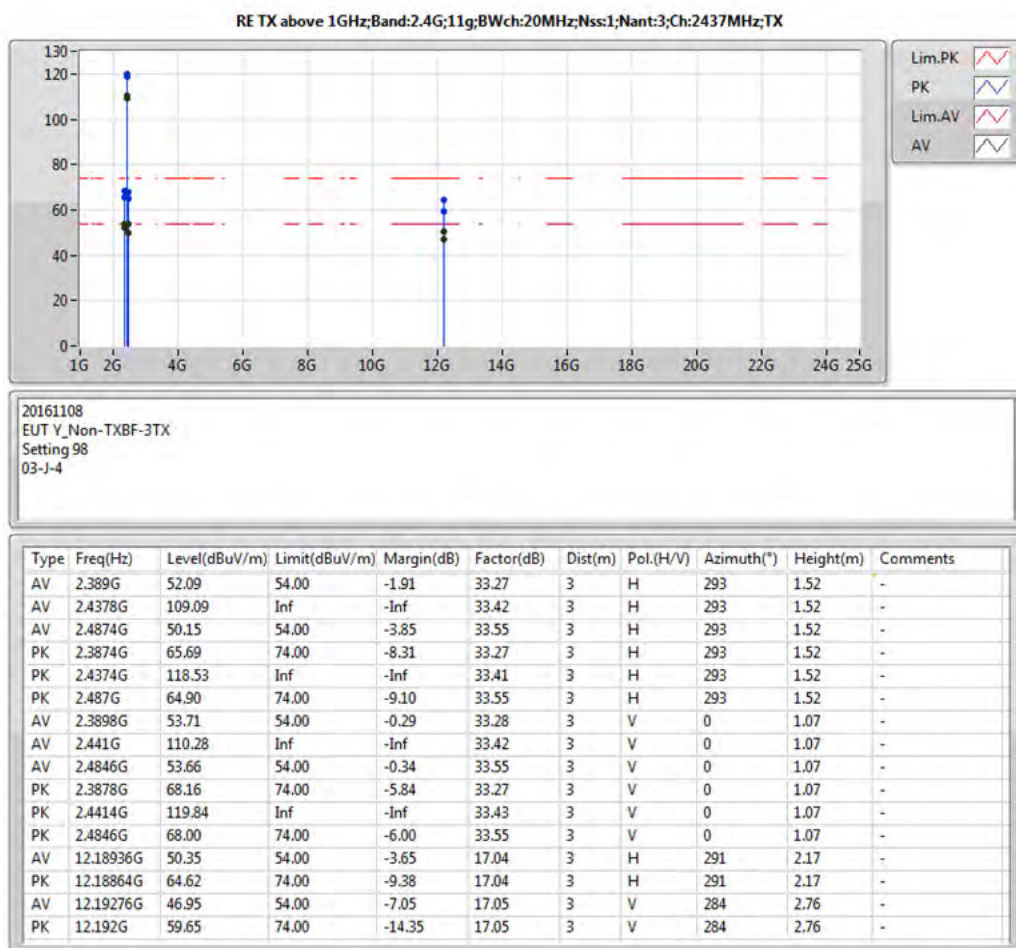
RE TX above 1GHz;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:3;Ch:2412MHz;TX



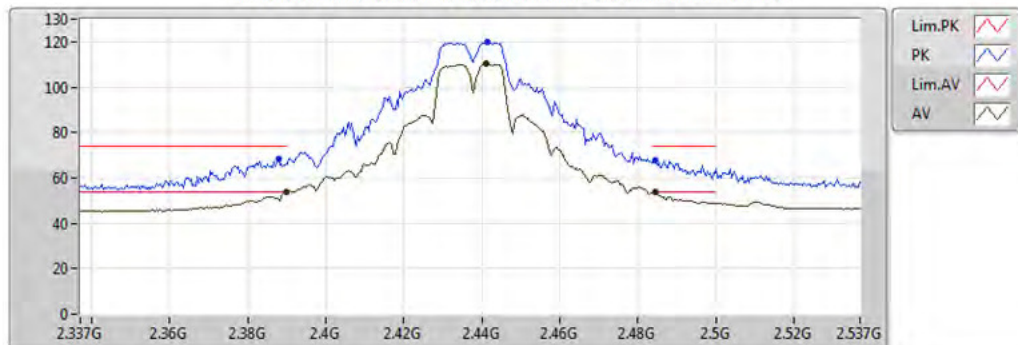
20161108
EUT Y_Non-TX8F-3TX
Setting 70
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	4.82044G	34.92	54.00	-19.08	6.76	3	H	206	1.31	-
PK	4.82888G	47.77	74.00	-26.23	6.79	3	H	206	1.31	-

Modulation Mode	IEEE 802.11g 6Mbps	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2437		



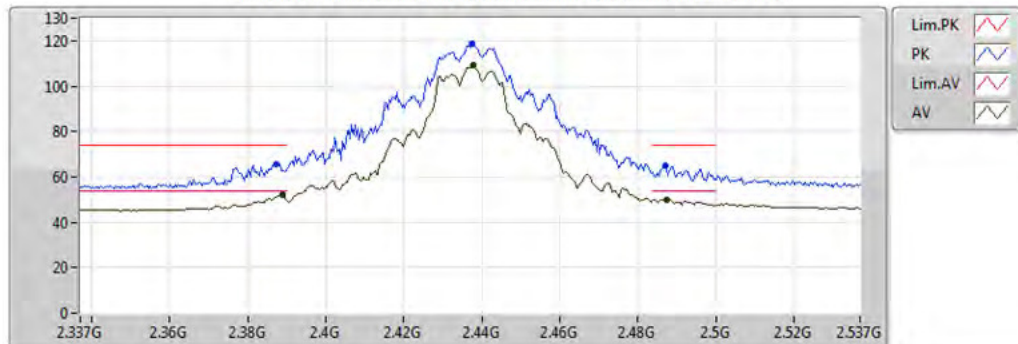
RE TX above 1GHz;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

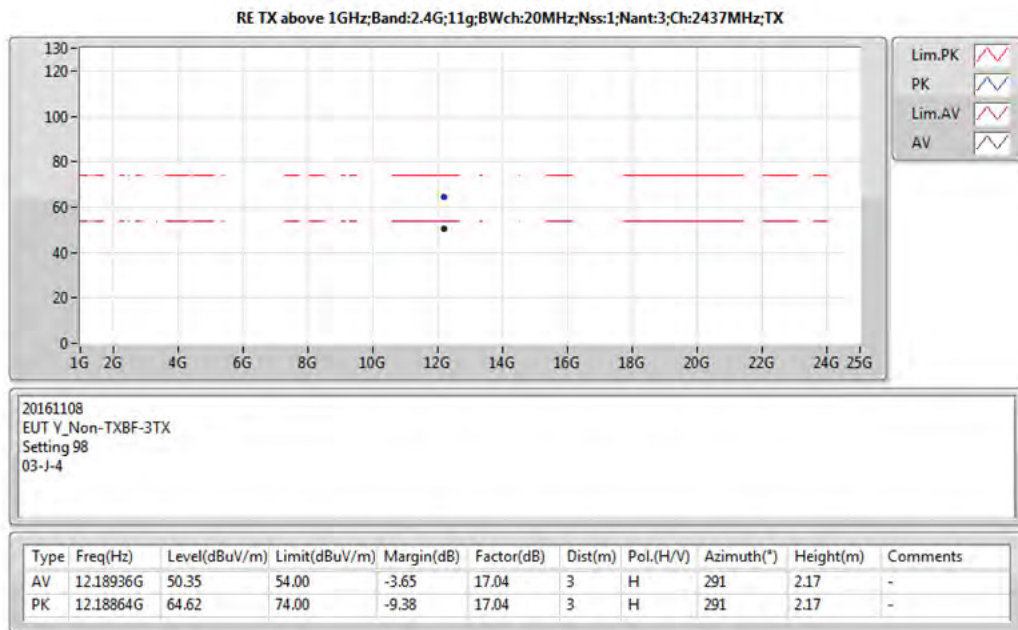
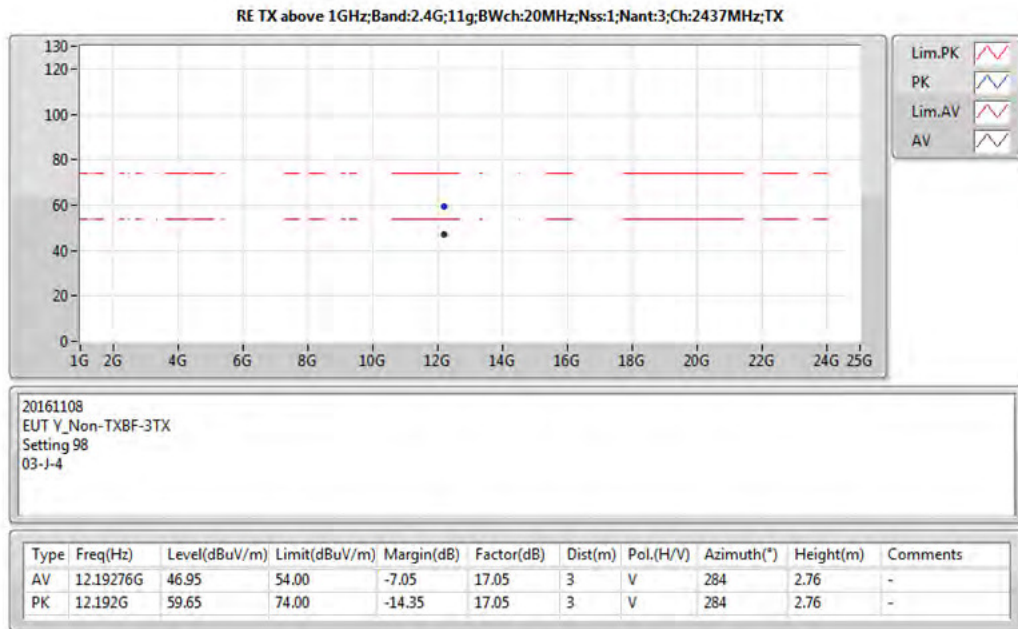
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3898G	53.71	54.00	-0.29	33.28	3	V	0	1.07	-
AV	2.441G	110.28	Inf	-Inf	33.42	3	V	0	1.07	-
AV	2.4846G	53.66	54.00	-0.34	33.55	3	V	0	1.07	-
PK	2.3878G	68.16	74.00	-5.84	33.27	3	V	0	1.07	-
PK	2.4414G	119.84	Inf	-Inf	33.43	3	V	0	1.07	-
PK	2.4846G	68.00	74.00	-6.00	33.55	3	V	0	1.07	-

RE TX above 1GHz;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:3;Ch:2437MHz;TX

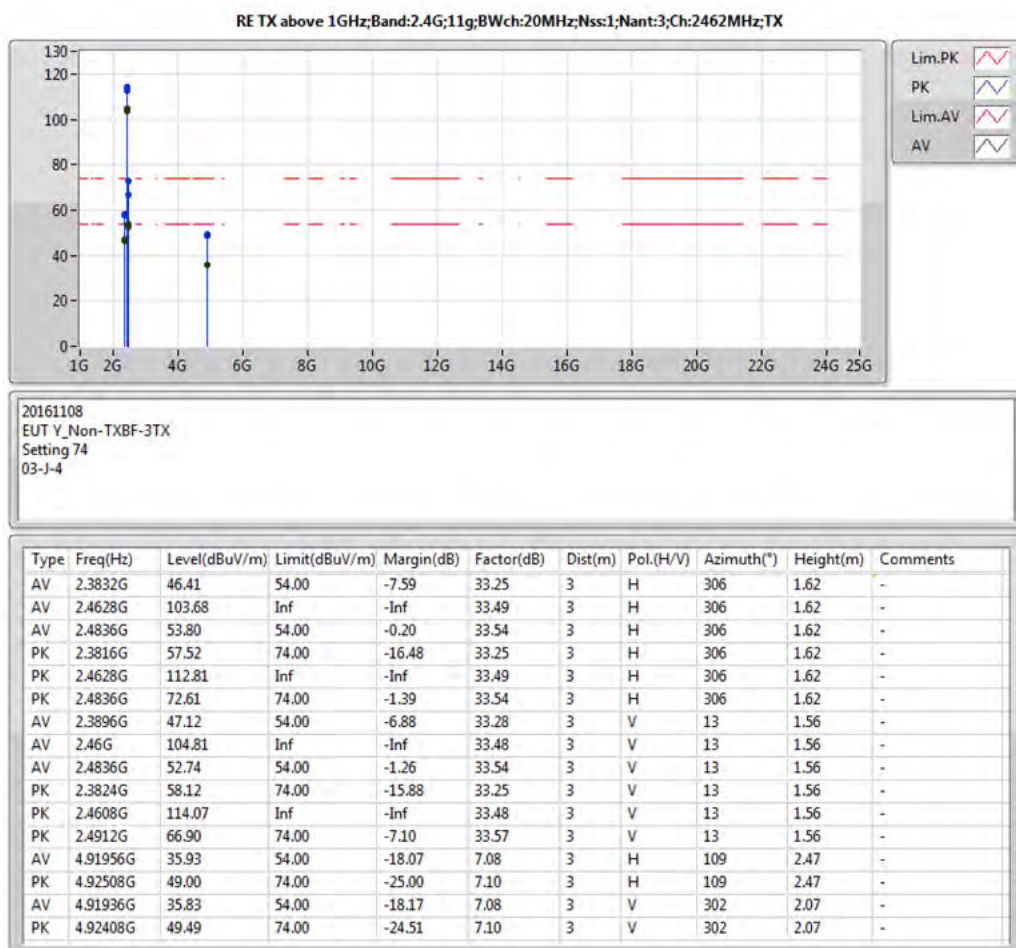


20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

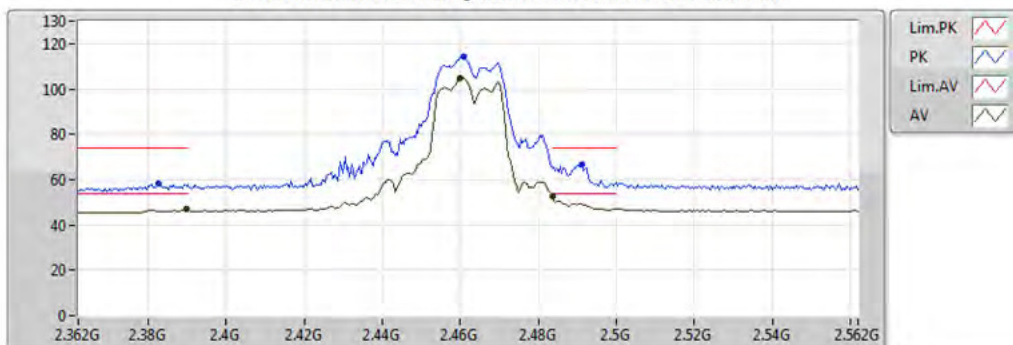
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.389G	52.09	54.00	-1.91	33.27	3	H	293	1.52	-
AV	2.4378G	109.09	Inf	-Inf	33.42	3	H	293	1.52	-
AV	2.4874G	50.15	54.00	-3.85	33.55	3	H	293	1.52	-
PK	2.3874G	65.69	74.00	-8.31	33.27	3	H	293	1.52	-
PK	2.4374G	118.53	Inf	-Inf	33.41	3	H	293	1.52	-
PK	2.487G	64.90	74.00	-9.10	33.55	3	H	293	1.52	-



Modulation Mode	IEEE 802.11g 6Mbps	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2462		



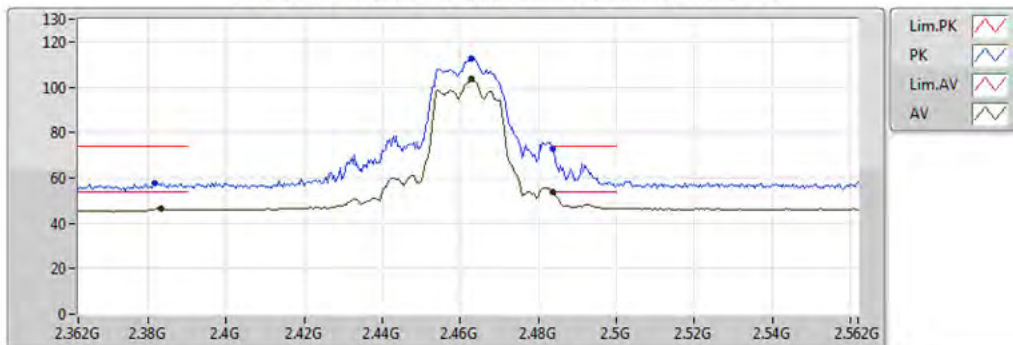
RE TX above 1GHz;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:3;Ch:2462MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 74
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3896G	47.12	54.00	-6.88	33.28	3	V	13	1.56	-
AV	2.46G	104.81	Inf	-Inf	33.48	3	V	13	1.56	-
AV	2.4836G	52.74	54.00	-1.26	33.54	3	V	13	1.56	-
PK	2.3824G	58.12	74.00	-15.88	33.25	3	V	13	1.56	-
PK	2.4608G	114.07	Inf	-Inf	33.48	3	V	13	1.56	-
PK	2.4912G	66.90	74.00	-7.10	33.57	3	V	13	1.56	-

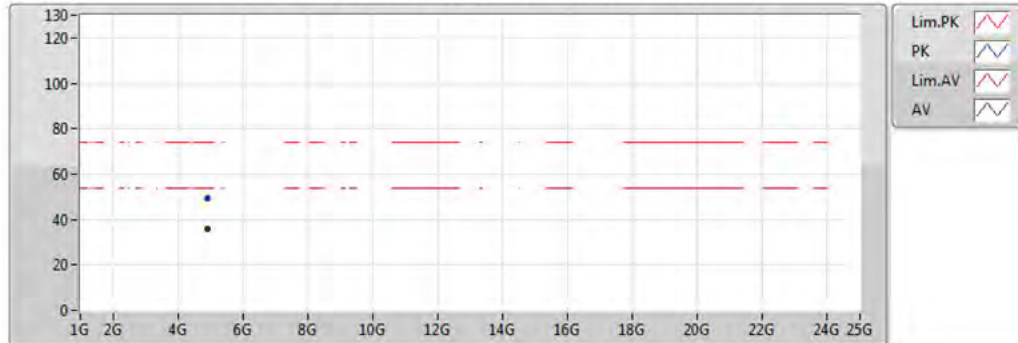
RE TX above 1GHz;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:3;Ch:2462MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 74
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3832G	46.41	54.00	-7.59	33.25	3	H	306	1.62	-
AV	2.4628G	103.68	Inf	-Inf	33.49	3	H	306	1.62	-
AV	2.4836G	53.80	54.00	-0.20	33.54	3	H	306	1.62	-
PK	2.3816G	57.52	74.00	-16.48	33.25	3	H	306	1.62	-
PK	2.4628G	112.81	Inf	-Inf	33.49	3	H	306	1.62	-
PK	2.4836G	72.61	74.00	-1.39	33.54	3	H	306	1.62	-

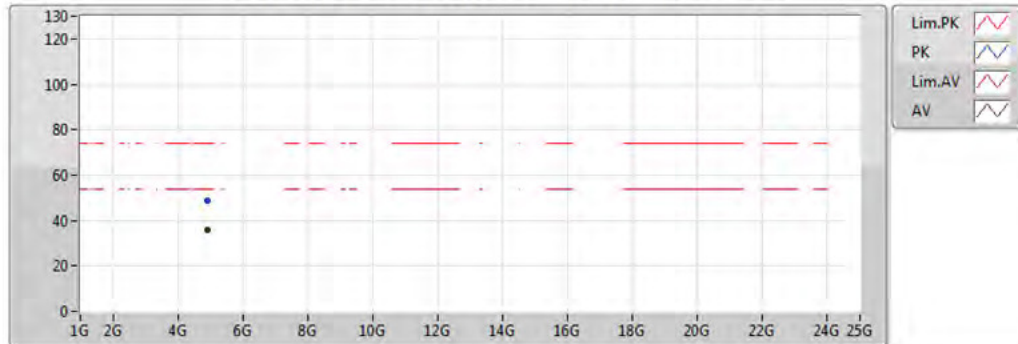
RE TX above 1GHz;Band:2.4G;11g;8Wch:20MHz;Nss:1;Nant:3;Ch:2462MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 74
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(*)	Height(m)	Comments
AV	4.91936G	35.83	54.00	-18.17	7.08	3	V	302	2.07	-
PK	4.92408G	49.49	74.00	-24.51	7.10	3	V	302	2.07	-

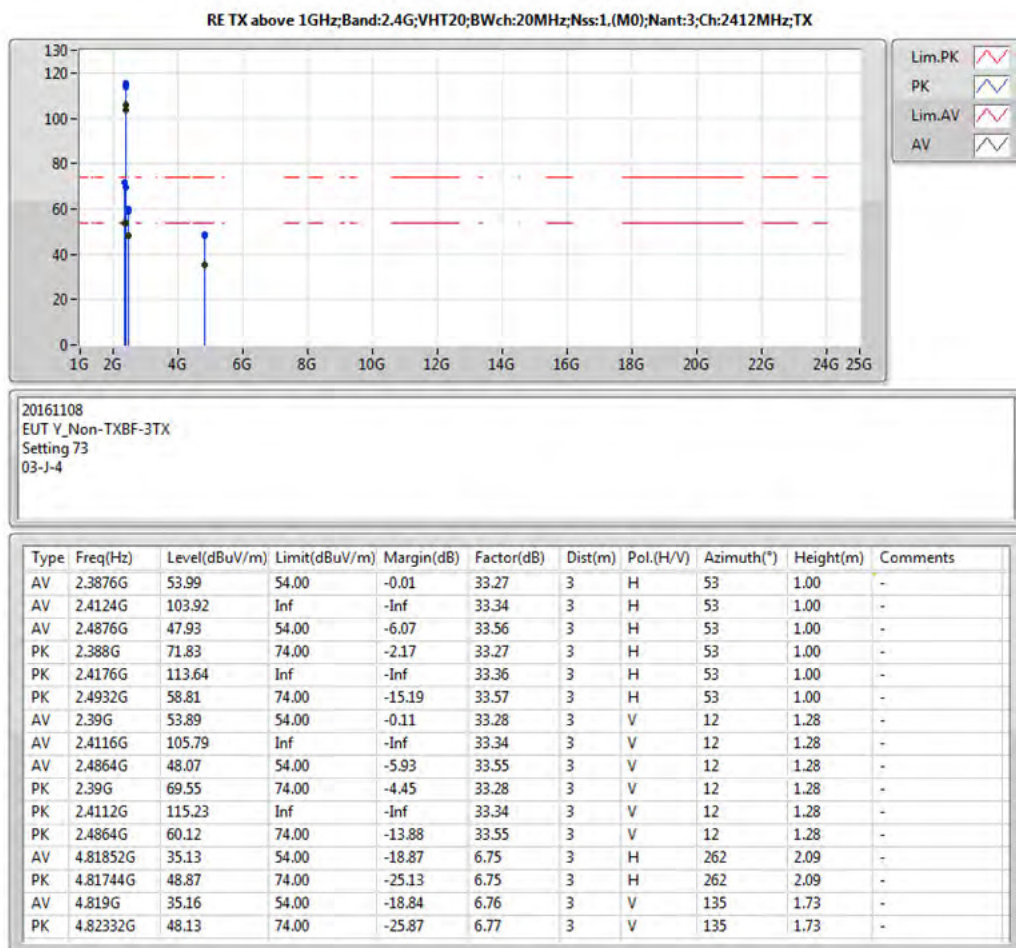
RE TX above 1GHz;Band:2.4G;11g;8Wch:20MHz;Nss:1;Nant:3;Ch:2462MHz;TX



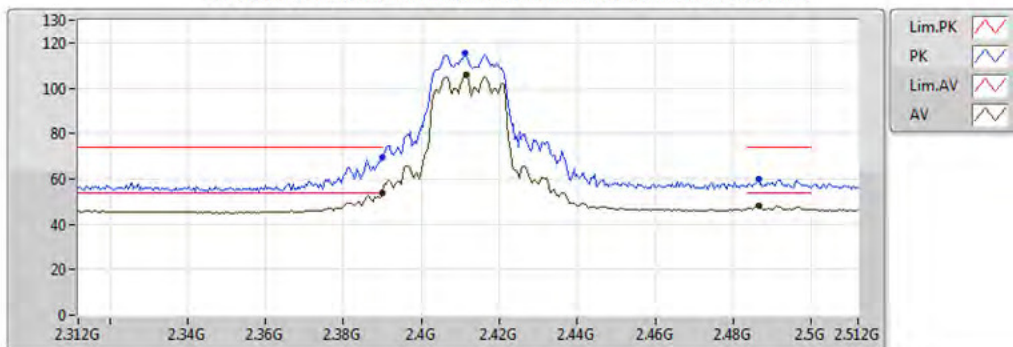
20161108
EUT Y_Non-TXBF-3TX
Setting 74
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(*)	Height(m)	Comments
AV	4.91956G	35.93	54.00	-18.07	7.08	3	H	109	2.47	-
PK	4.92508G	49.00	74.00	-25.00	7.10	3	H	109	2.47	-

Modulation Mode	IEEE 802.11ac (VHT20) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2412		



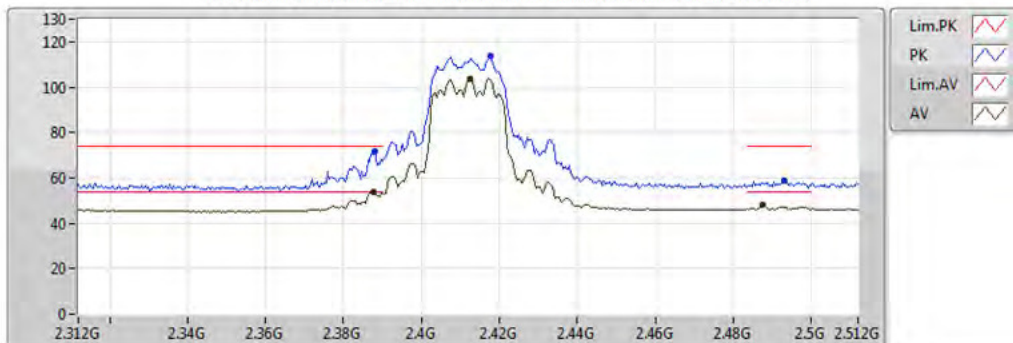
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.39G	53.89	54.00	-0.11	33.28	3	V	12	1.28	-
AV	2.4116G	105.79	Inf	-Inf	33.34	3	V	12	1.28	-
AV	2.4864G	48.07	54.00	-5.93	33.55	3	V	12	1.28	-
PK	2.39G	69.55	74.00	-4.45	33.28	3	V	12	1.28	-
PK	2.4112G	115.23	Inf	-Inf	33.34	3	V	12	1.28	-
PK	2.4864G	60.12	74.00	-13.88	33.55	3	V	12	1.28	-

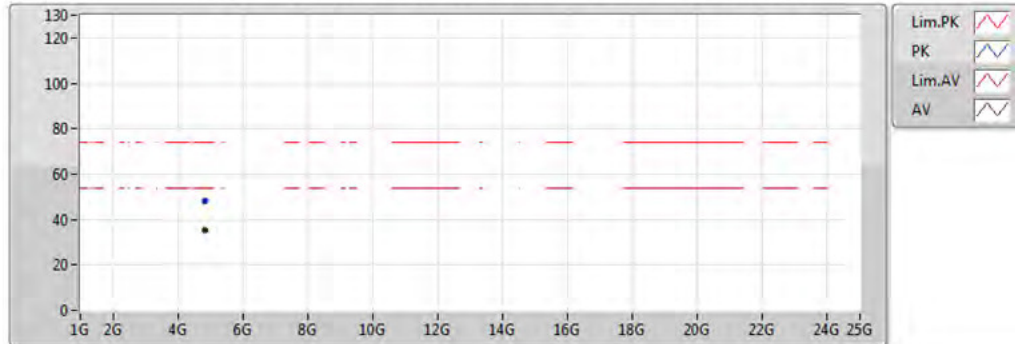
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3876G	53.99	54.00	-0.01	33.27	3	H	53	1.00	-
AV	2.4124G	103.92	Inf	-Inf	33.34	3	H	53	1.00	-
AV	2.4876G	47.93	54.00	-6.07	33.56	3	H	53	1.00	-
PK	2.388G	71.83	74.00	-2.17	33.27	3	H	53	1.00	-
PK	2.4176G	113.64	Inf	-Inf	33.36	3	H	53	1.00	-
PK	2.4932G	58.81	74.00	-15.19	33.57	3	H	53	1.00	-

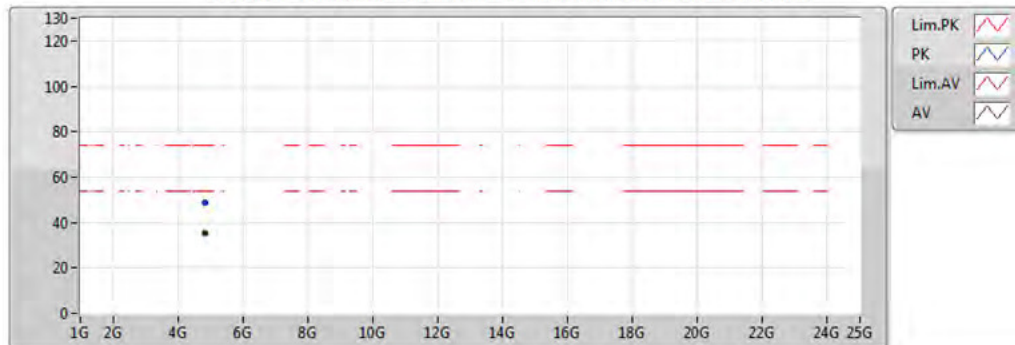
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(*)	Height(m)	Comments
AV	4.819G	35.16	54.00	-18.84	6.76	3	V	135	1.73	-
PK	4.82332G	48.13	74.00	-25.87	6.77	3	V	135	1.73	-

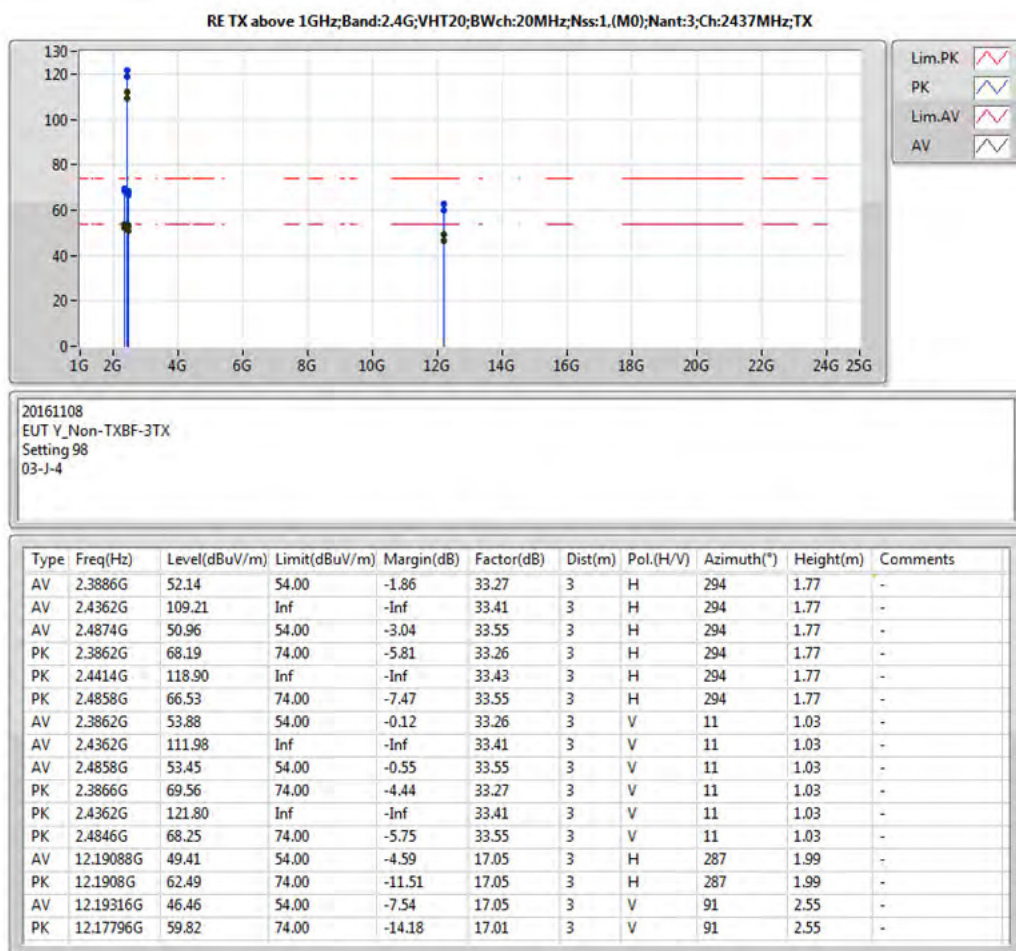
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX



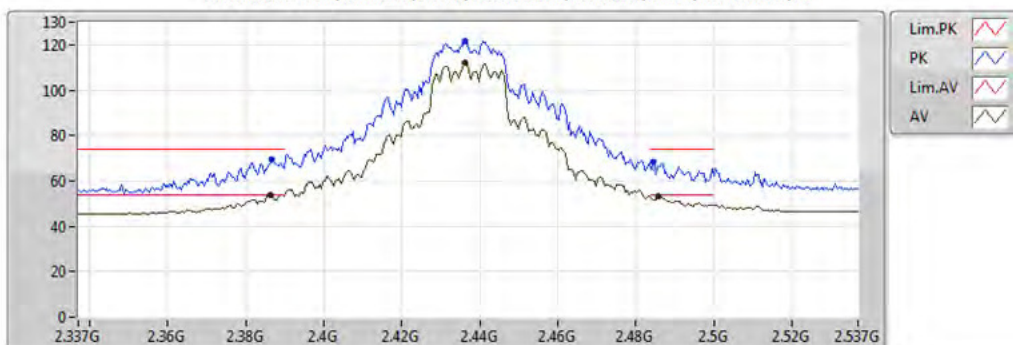
20161108
EUT Y_Non-TXBF-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(*)	Height(m)	Comments
AV	4.81852G	35.13	54.00	-18.87	6.75	3	H	262	2.09	-
PK	4.81744G	48.87	74.00	-25.13	6.75	3	H	262	2.09	-

Modulation Mode	IEEE 802.11ac (VHT20) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2437		



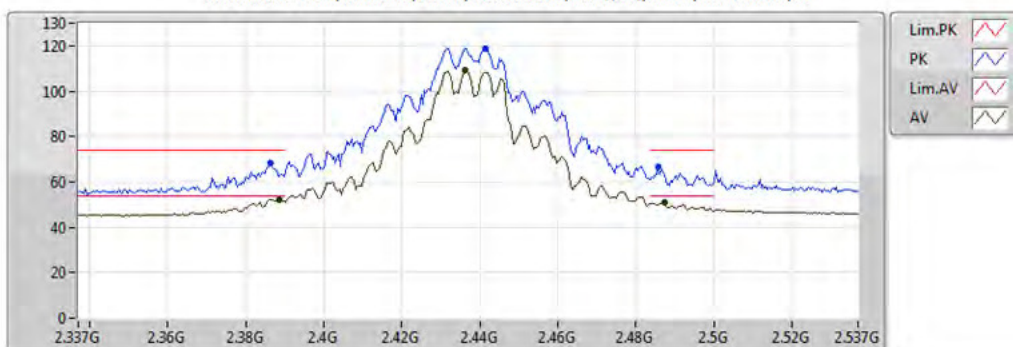
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3862G	53.88	54.00	-0.12	33.26	3	V	11	1.03	-
AV	2.4362G	111.98	Inf	-Inf	33.41	3	V	11	1.03	-
AV	2.4858G	53.45	54.00	-0.55	33.55	3	V	11	1.03	-
PK	2.3866G	69.56	74.00	-4.44	33.27	3	V	11	1.03	-
PK	2.4362G	121.80	Inf	-Inf	33.41	3	V	11	1.03	-
PK	2.4846G	68.25	74.00	-5.75	33.55	3	V	11	1.03	-

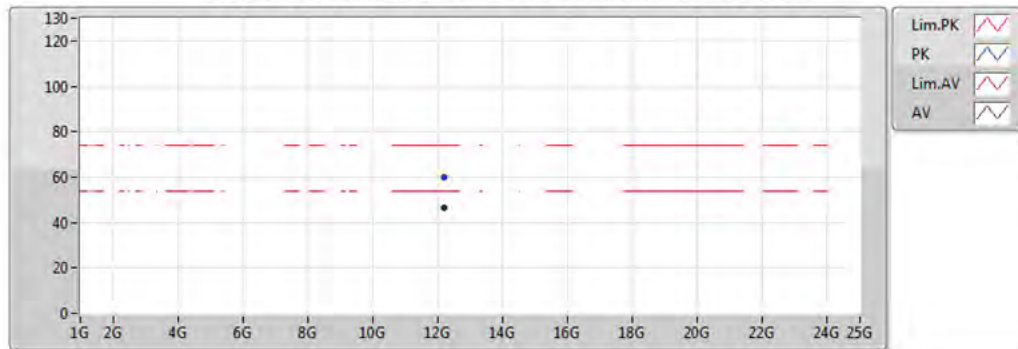
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3886G	52.14	54.00	-1.86	33.27	3	H	294	1.77	-
AV	2.4362G	109.21	Inf	-Inf	33.41	3	H	294	1.77	-
AV	2.4874G	50.96	54.00	-3.04	33.55	3	H	294	1.77	-
PK	2.3862G	68.19	74.00	-5.81	33.26	3	H	294	1.77	-
PK	2.4414G	118.90	Inf	-Inf	33.43	3	H	294	1.77	-
PK	2.4858G	66.53	74.00	-7.47	33.55	3	H	294	1.77	-

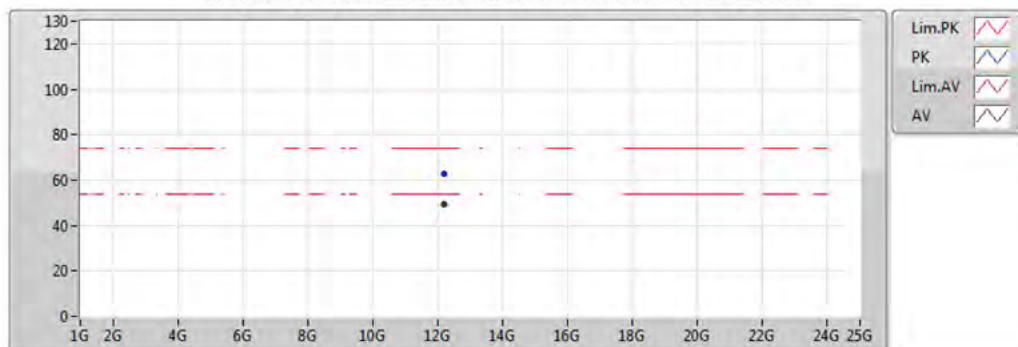
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TX8F-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	12.19316G	46.46	54.00	-7.54	17.05	3	V	91	2.55	-
PK	12.17796G	59.82	74.00	-14.18	17.01	3	V	91	2.55	-

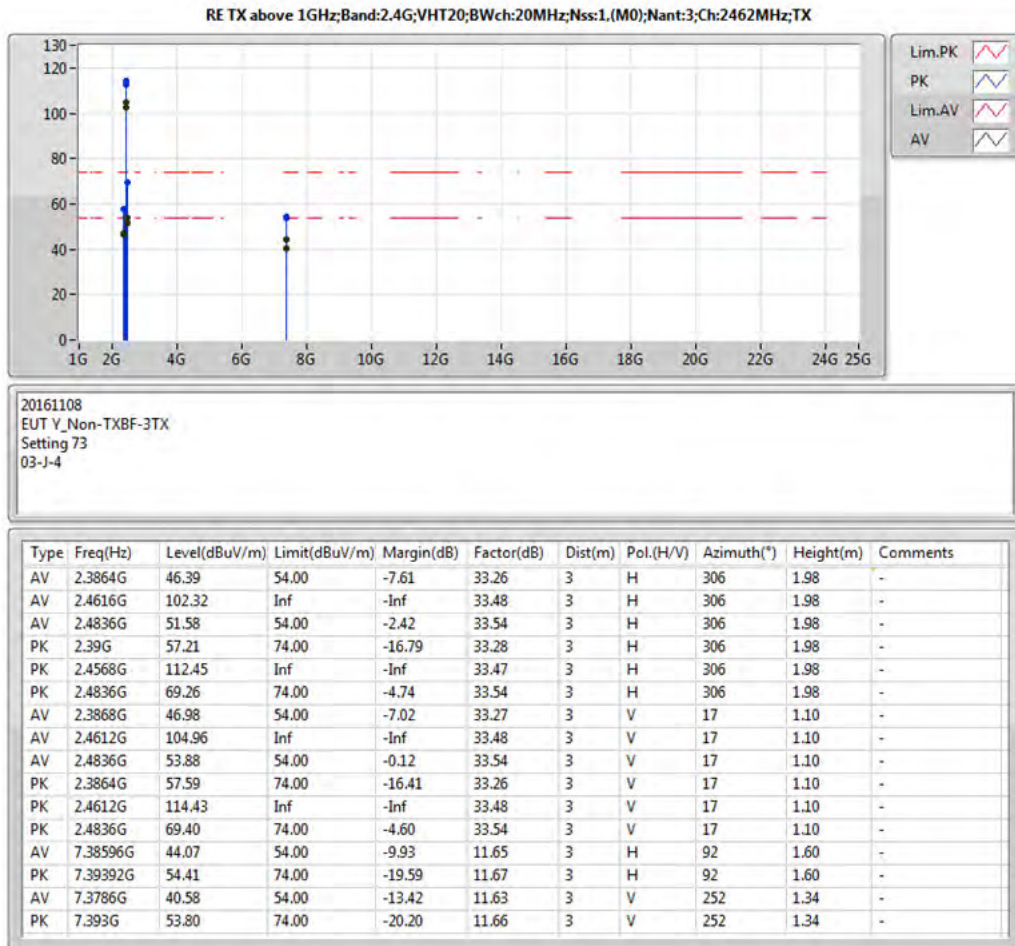
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



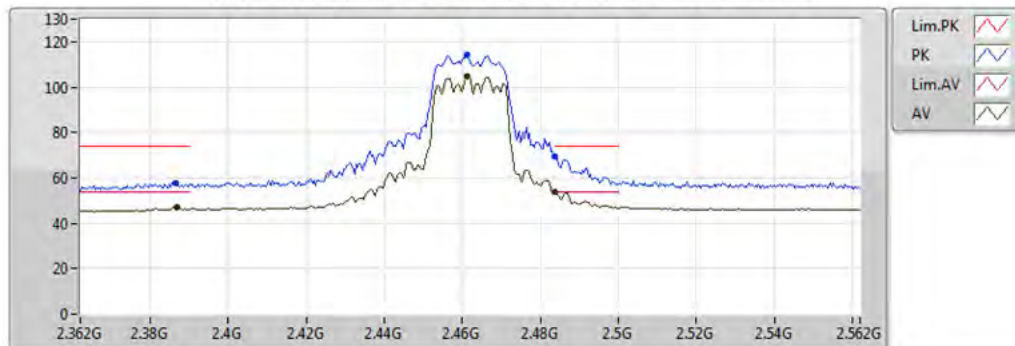
20161108
EUT Y_Non-TX8F-3TX
Setting 98
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	12.19088G	49.41	54.00	-4.59	17.05	3	H	287	1.99	-
PK	12.1908G	62.49	74.00	-11.51	17.05	3	H	287	1.99	-

Modulation Mode	IEEE 802.11ac (VHT20) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2462		



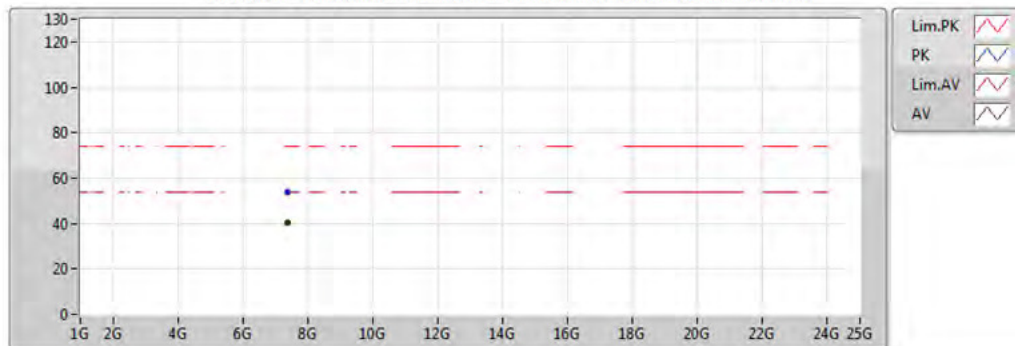
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2462MHz;TX



20161108
EUT Y_Non-TX8F-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3868G	46.98	54.00	-7.02	33.27	3	V	17	1.10	-
AV	2.4612G	104.96	Inf	-Inf	33.48	3	V	17	1.10	-
AV	2.4836G	53.88	54.00	-0.12	33.54	3	V	17	1.10	-
PK	2.3864G	57.59	74.00	-16.41	33.26	3	V	17	1.10	-
PK	2.4612G	114.43	Inf	-Inf	33.48	3	V	17	1.10	-
PK	2.4836G	69.40	74.00	-4.60	33.54	3	V	17	1.10	-

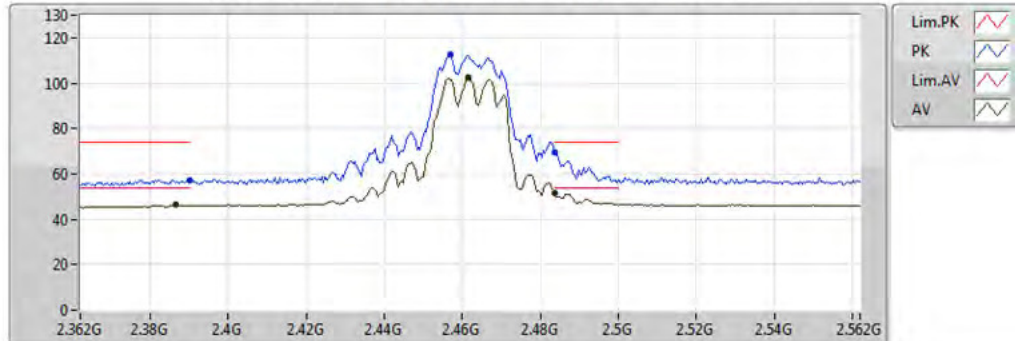
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2462MHz;TX



20161108
EUT Y_Non-TX8F-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.3786G	40.58	54.00	-13.42	11.63	3	V	252	1.34	-
PK	7.393G	53.80	74.00	-20.20	11.66	3	V	252	1.34	-

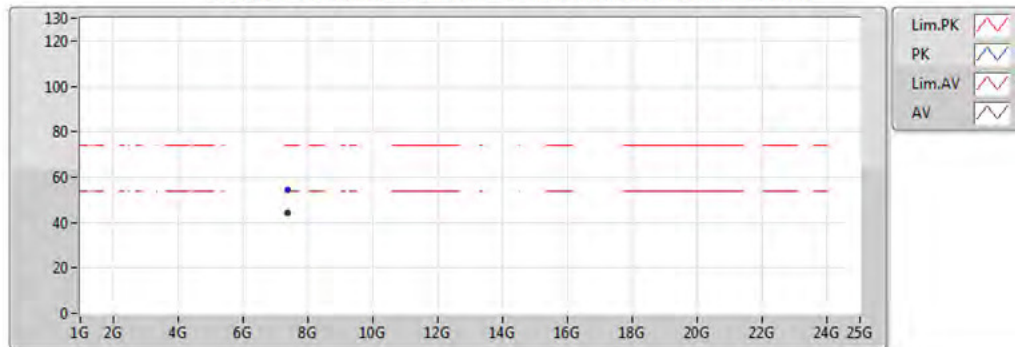
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1;(M0);Nant:3;Ch:2462MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3864G	46.39	54.00	-7.61	33.26	3	H	306	1.98	-
AV	2.4616G	102.32	Inf	-Inf	33.48	3	H	306	1.98	-
AV	2.4836G	51.58	54.00	-2.42	33.54	3	H	306	1.98	-
PK	2.39G	57.21	74.00	-16.79	33.28	3	H	306	1.98	-
PK	2.4568G	112.45	Inf	-Inf	33.47	3	H	306	1.98	-
PK	2.4836G	69.26	74.00	-4.74	33.54	3	H	306	1.98	-

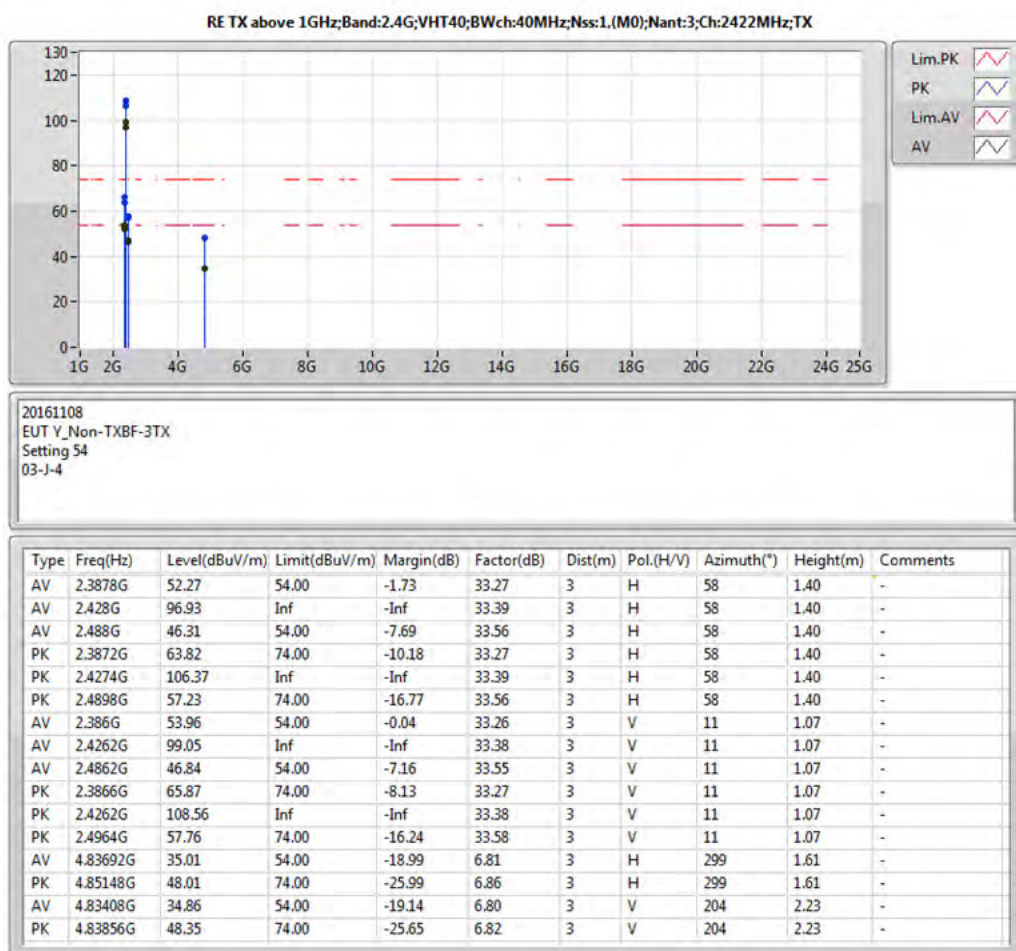
RE TX above 1GHz;Band:2.4G;VHT20;BWch:20MHz;Nss:1;(M0);Nant:3;Ch:2462MHz;TX



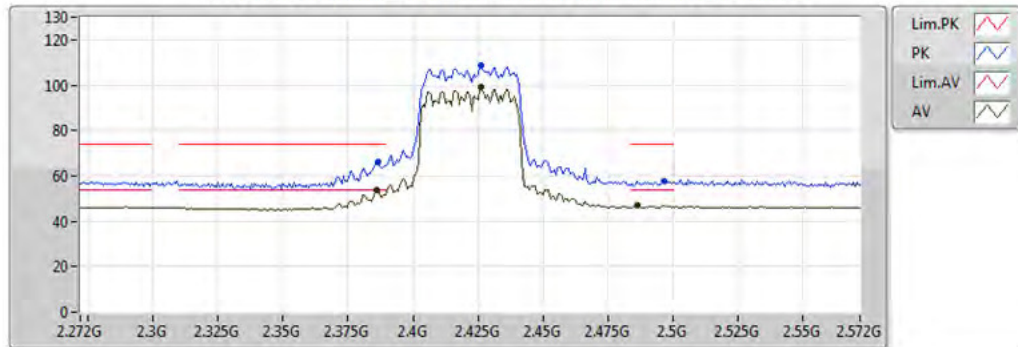
20161108
EUT Y_Non-TXBF-3TX
Setting 73
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.38596G	44.07	54.00	-9.93	11.65	3	H	92	1.60	-
PK	7.39392G	54.41	74.00	-19.59	11.67	3	H	92	1.60	-

Modulation Mode	IEEE 802.11ac (VHT40) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2422		



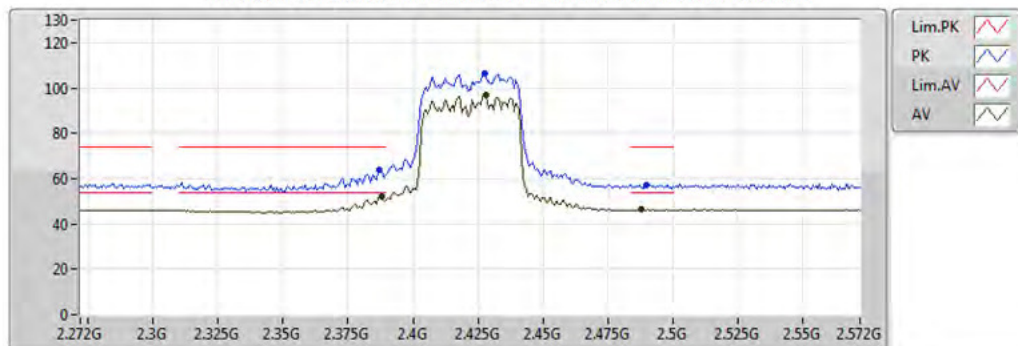
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2422MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 54
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.386G	53.96	54.00	-0.04	33.26	3	V	11	1.07	-
AV	2.4262G	99.05	Inf	-Inf	33.38	3	V	11	1.07	-
AV	2.4862G	46.84	54.00	-7.16	33.55	3	V	11	1.07	-
PK	2.3866G	65.87	74.00	-8.13	33.27	3	V	11	1.07	-
PK	2.4262G	108.56	Inf	-Inf	33.38	3	V	11	1.07	-
PK	2.4964G	57.76	74.00	-16.24	33.58	3	V	11	1.07	-

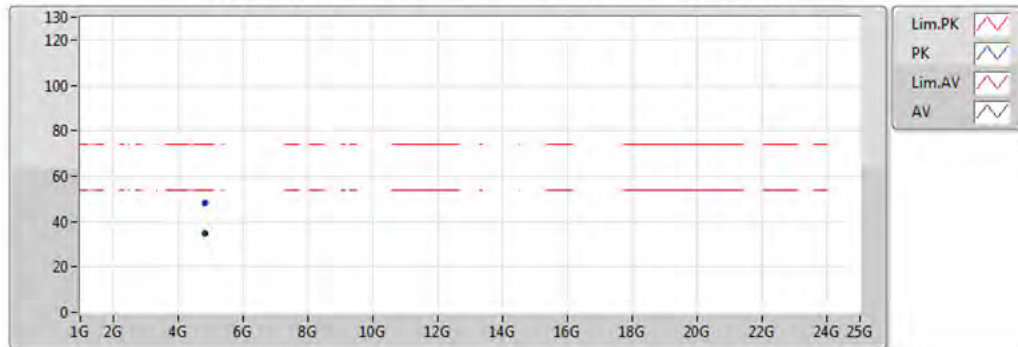
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2422MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 54
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3878G	52.27	54.00	-1.73	33.27	3	H	58	1.40	-
AV	2.428G	96.93	Inf	-Inf	33.39	3	H	58	1.40	-
AV	2.488G	46.31	54.00	-7.69	33.56	3	H	58	1.40	-
PK	2.3872G	63.82	74.00	-10.18	33.27	3	H	58	1.40	-
PK	2.4274G	106.37	Inf	-Inf	33.39	3	H	58	1.40	-
PK	2.4898G	57.23	74.00	-16.77	33.56	3	H	58	1.40	-

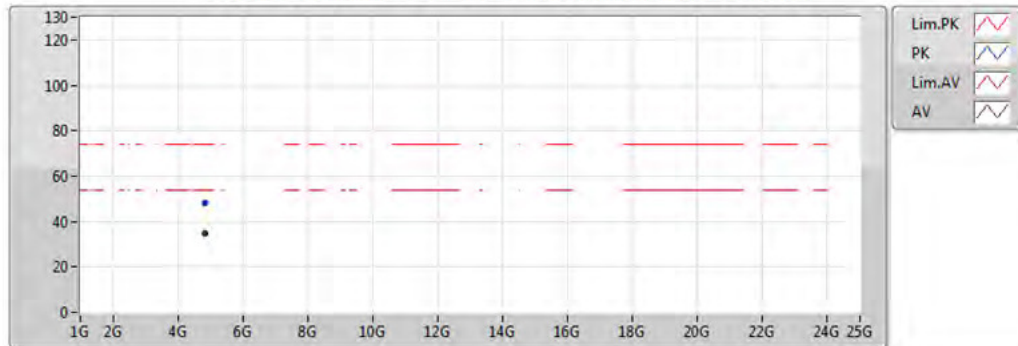
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2422MHz;TX



20161108
EUT Y_Non-TX8F-3TX
Setting 54
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	4.83408G	34.86	54.00	-19.14	6.80	3	V	204	2.23	-
PK	4.83856G	48.35	74.00	-25.65	6.82	3	V	204	2.23	-

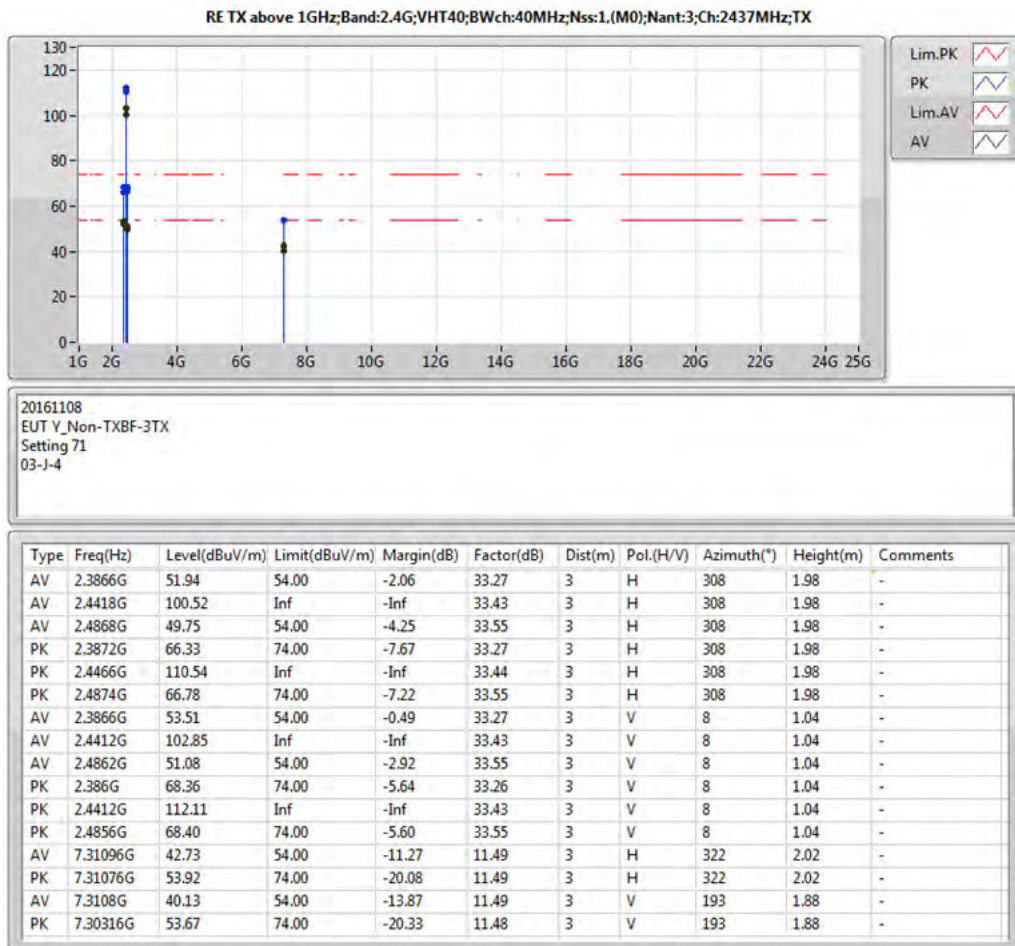
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2422MHz;TX



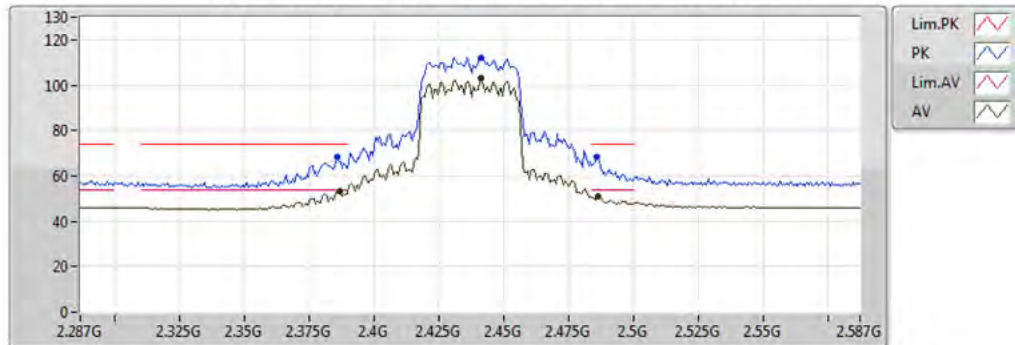
20161108
EUT Y_Non-TX8F-3TX
Setting 54
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	4.83692G	35.01	54.00	-18.99	6.81	3	H	299	1.61	-
PK	4.85148G	48.01	74.00	-25.99	6.86	3	H	299	1.61	-

Modulation Mode	IEEE 802.11ac (VHT40) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2437		



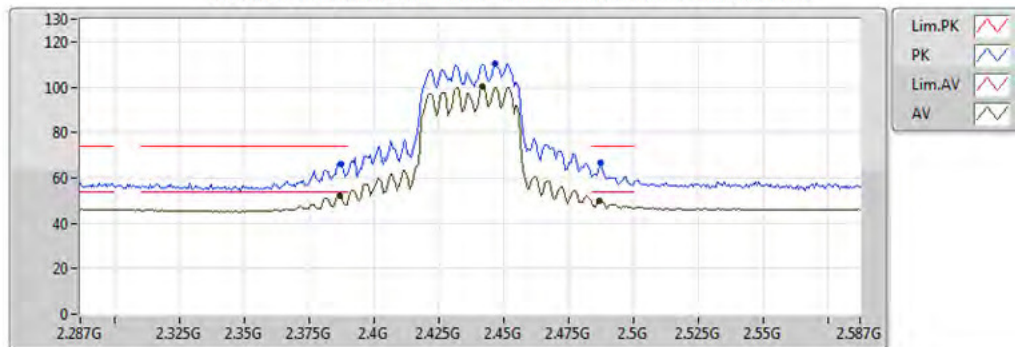
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 71
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3866G	53.51	54.00	-0.49	33.27	3	V	8	1.04	-
AV	2.4412G	102.85	Inf	-Inf	33.43	3	V	8	1.04	-
AV	2.4862G	51.08	54.00	-2.92	33.55	3	V	8	1.04	-
PK	2.386G	68.36	74.00	-5.64	33.26	3	V	8	1.04	-
PK	2.4412G	112.11	Inf	-Inf	33.43	3	V	8	1.04	-
PK	2.4856G	68.40	74.00	-5.60	33.55	3	V	8	1.04	-

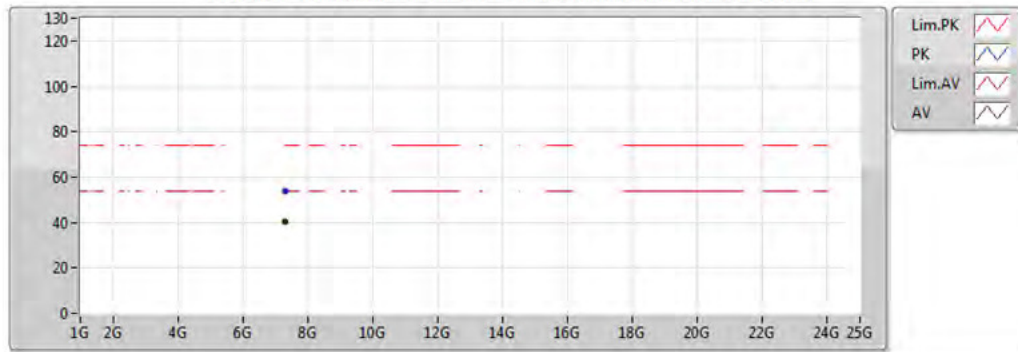
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 71
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3866G	51.94	54.00	-2.06	33.27	3	H	308	1.98	-
AV	2.4418G	100.52	Inf	-Inf	33.43	3	H	308	1.98	-
AV	2.4868G	49.75	54.00	-4.25	33.55	3	H	308	1.98	-
PK	2.3872G	66.33	74.00	-7.67	33.27	3	H	308	1.98	-
PK	2.4466G	110.54	Inf	-Inf	33.44	3	H	308	1.98	-
PK	2.4874G	66.78	74.00	-7.22	33.55	3	H	308	1.98	-

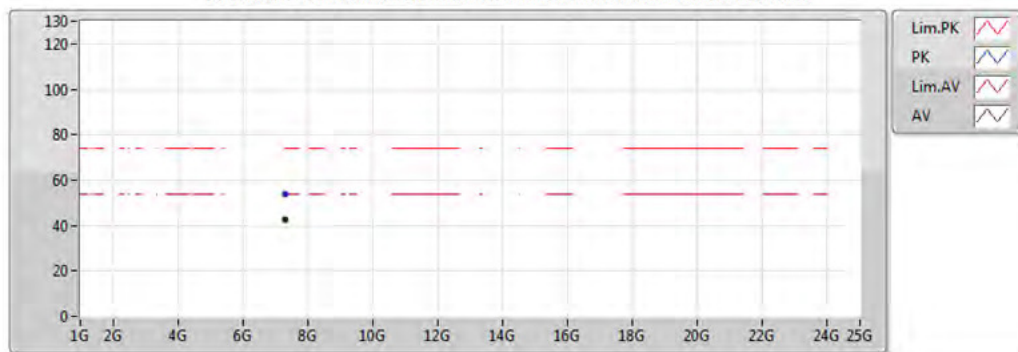
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 71
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(*)	Height(m)	Comments
AV	7.3108G	40.13	54.00	-13.87	11.49	3	V	193	1.88	-
PK	7.30316G	53.67	74.00	-20.33	11.48	3	V	193	1.88	-

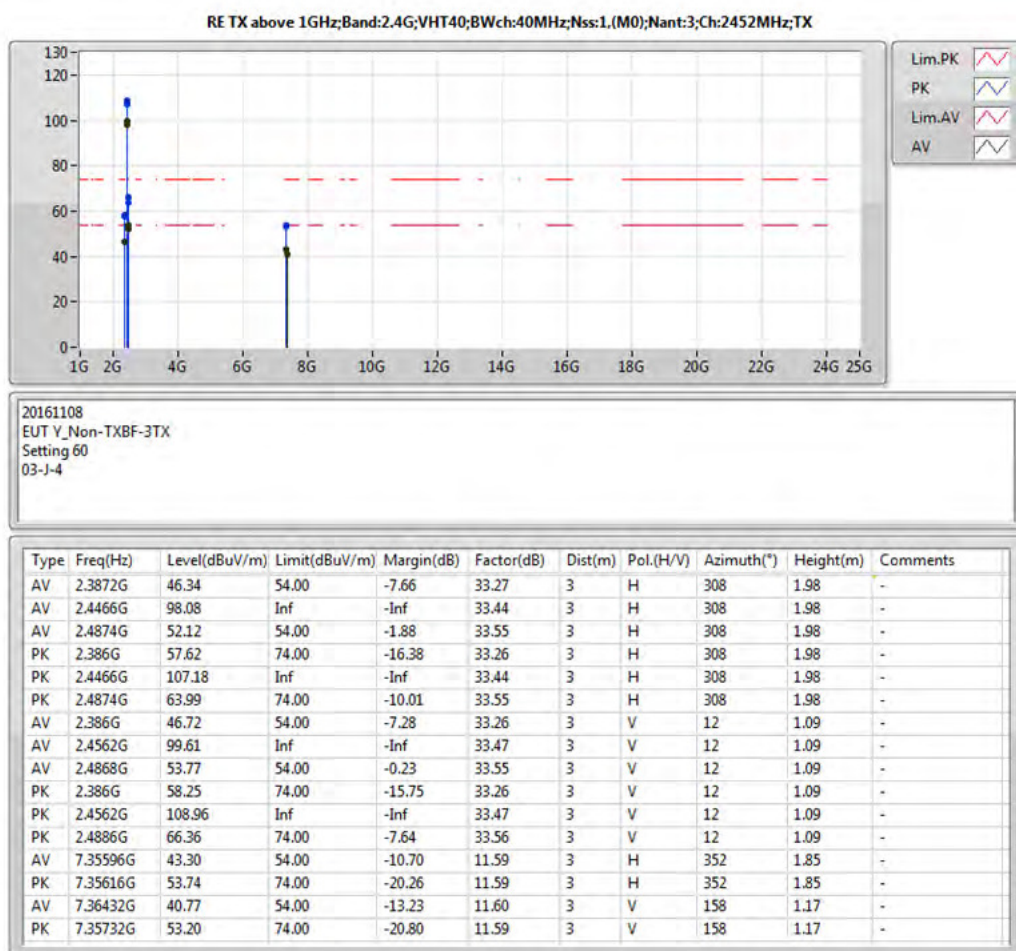
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



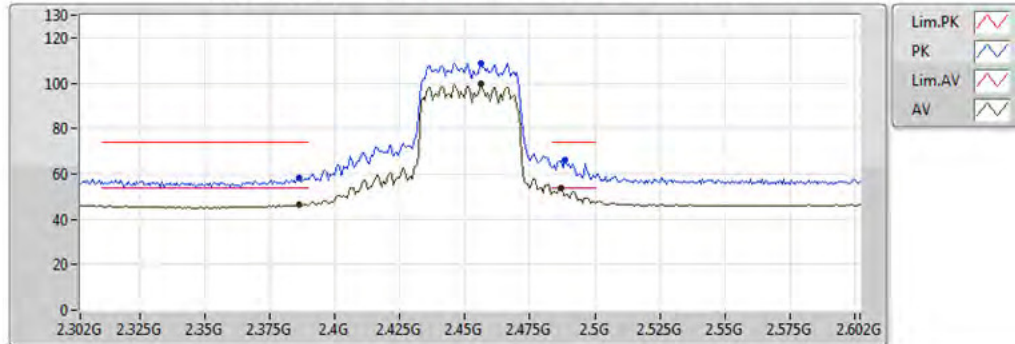
20161108
EUT Y_Non-TXBF-3TX
Setting 71
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(*)	Height(m)	Comments
AV	7.31096G	42.73	54.00	-11.27	11.49	3	H	322	2.02	-
PK	7.31076G	53.92	74.00	-20.08	11.49	3	H	322	2.02	-

Modulation Mode	IEEE 802.11ac (VHT40) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2452		



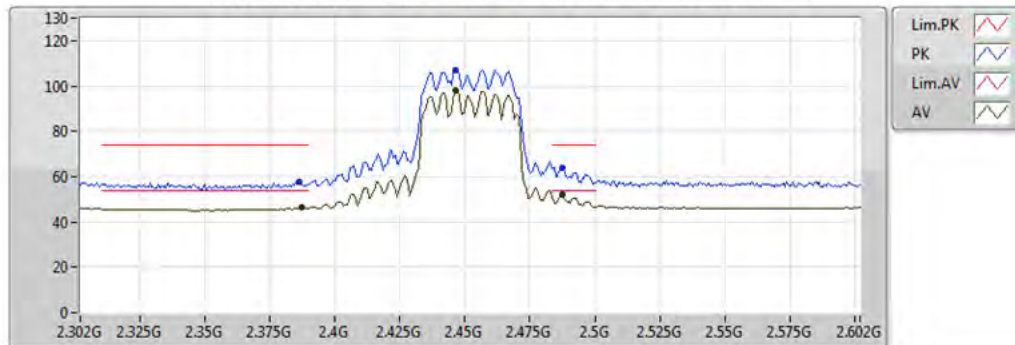
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 60
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.386G	46.72	54.00	-7.28	33.26	3	V	12	1.09	-
AV	2.4562G	99.61	Inf	-Inf	33.47	3	V	12	1.09	-
AV	2.4868G	53.77	54.00	-0.23	33.55	3	V	12	1.09	-
PK	2.386G	58.25	74.00	-15.75	33.26	3	V	12	1.09	-
PK	2.4562G	108.96	Inf	-Inf	33.47	3	V	12	1.09	-
PK	2.4886G	66.36	74.00	-7.64	33.56	3	V	12	1.09	-

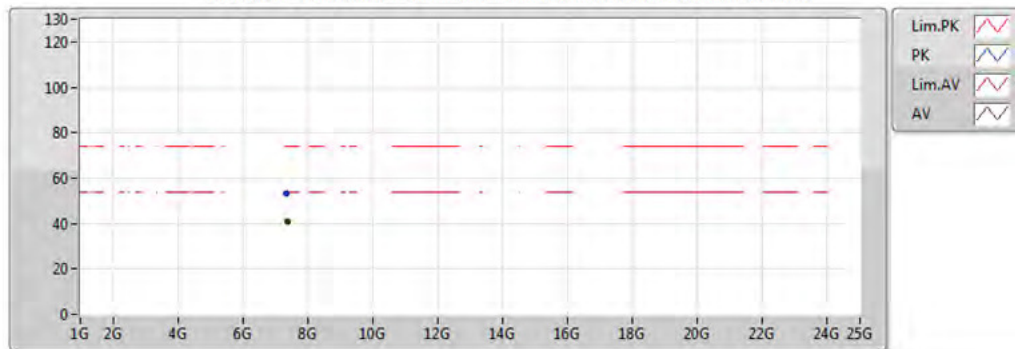
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX



20161108
EUT Y_Non-TXBF-3TX
Setting 60
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3872G	46.34	54.00	-7.66	33.27	3	H	308	1.98	-
AV	2.4466G	98.08	Inf	-Inf	33.44	3	H	308	1.98	-
AV	2.4874G	52.12	54.00	-1.88	33.55	3	H	308	1.98	-
PK	2.386G	57.62	74.00	-16.38	33.26	3	H	308	1.98	-
PK	2.4466G	107.18	Inf	-Inf	33.44	3	H	308	1.98	-
PK	2.4874G	63.99	74.00	-10.01	33.55	3	H	308	1.98	-

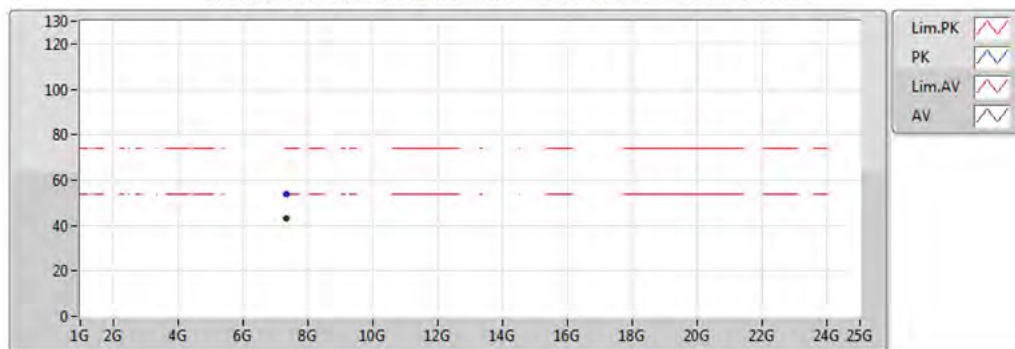
RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX



20161108
EUT Y_Non-TX8F-3TX
Setting 60
03-J-4

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.36432G	40.77	54.00	-13.23	11.60	3	V	158	1.17	-
PK	7.35732G	53.20	74.00	-20.80	11.59	3	V	158	1.17	-

RE TX above 1GHz;Band:2.4G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX

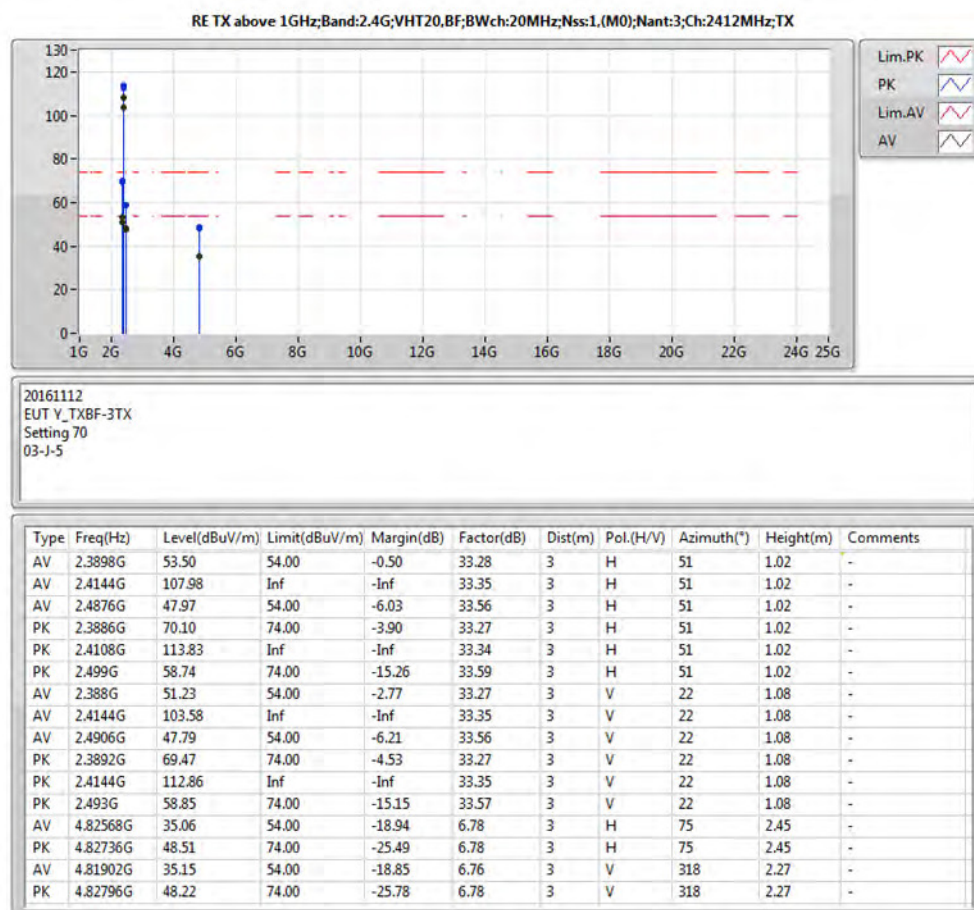


20161108
EUT Y_Non-TX8F-3TX
Setting 60
03-J-4

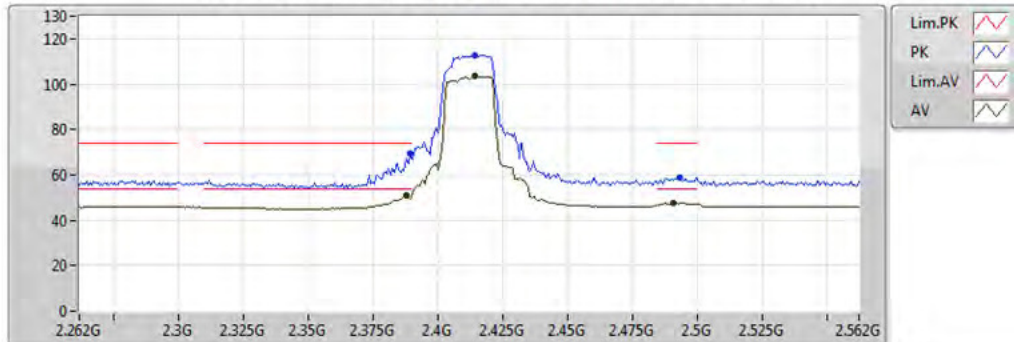
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.35596G	43.30	54.00	-10.70	11.59	3	H	352	1.85	-
PK	7.35616G	53.74	74.00	-20.26	11.59	3	H	352	1.85	-

For beamforming mode

Modulation Mode	IEEE 802.11ac (VHT20) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2412		



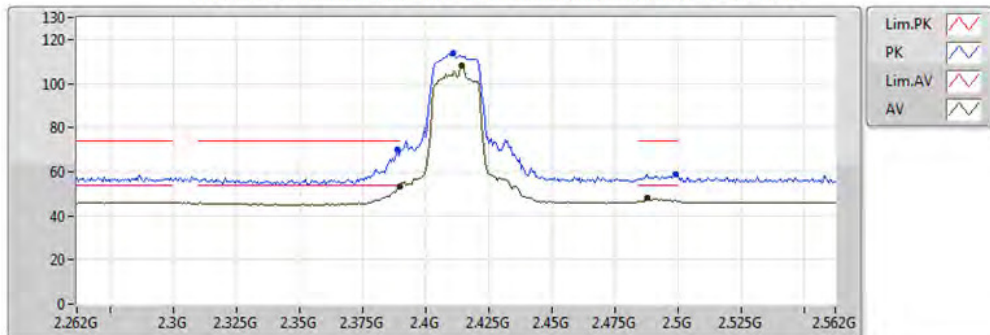
RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX



20161112
EUT Y_TXBF-3TX
Setting 70
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.388G	51.23	54.00	-2.77	33.27	3	V	22	1.08	-
AV	2.4144G	103.58	Inf	-Inf	33.35	3	V	22	1.08	-
AV	2.4906G	47.79	54.00	-6.21	33.56	3	V	22	1.08	-
PK	2.3892G	69.47	74.00	-4.53	33.27	3	V	22	1.08	-
PK	2.4144G	112.86	Inf	-Inf	33.35	3	V	22	1.08	-
PK	2.493G	58.85	74.00	-15.15	33.57	3	V	22	1.08	-

RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX



20161112
EUT Y_TXBF-3TX
Setting 70
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3898G	53.50	54.00	-0.50	33.28	3	H	51	1.02	-
AV	2.4144G	107.98	Inf	-Inf	33.35	3	H	51	1.02	-
AV	2.4876G	47.97	54.00	-6.03	33.56	3	H	51	1.02	-
PK	2.3886G	70.10	74.00	-3.90	33.27	3	H	51	1.02	-
PK	2.4108G	113.83	Inf	-Inf	33.34	3	H	51	1.02	-
PK	2.499G	58.74	74.00	-15.26	33.59	3	H	51	1.02	-

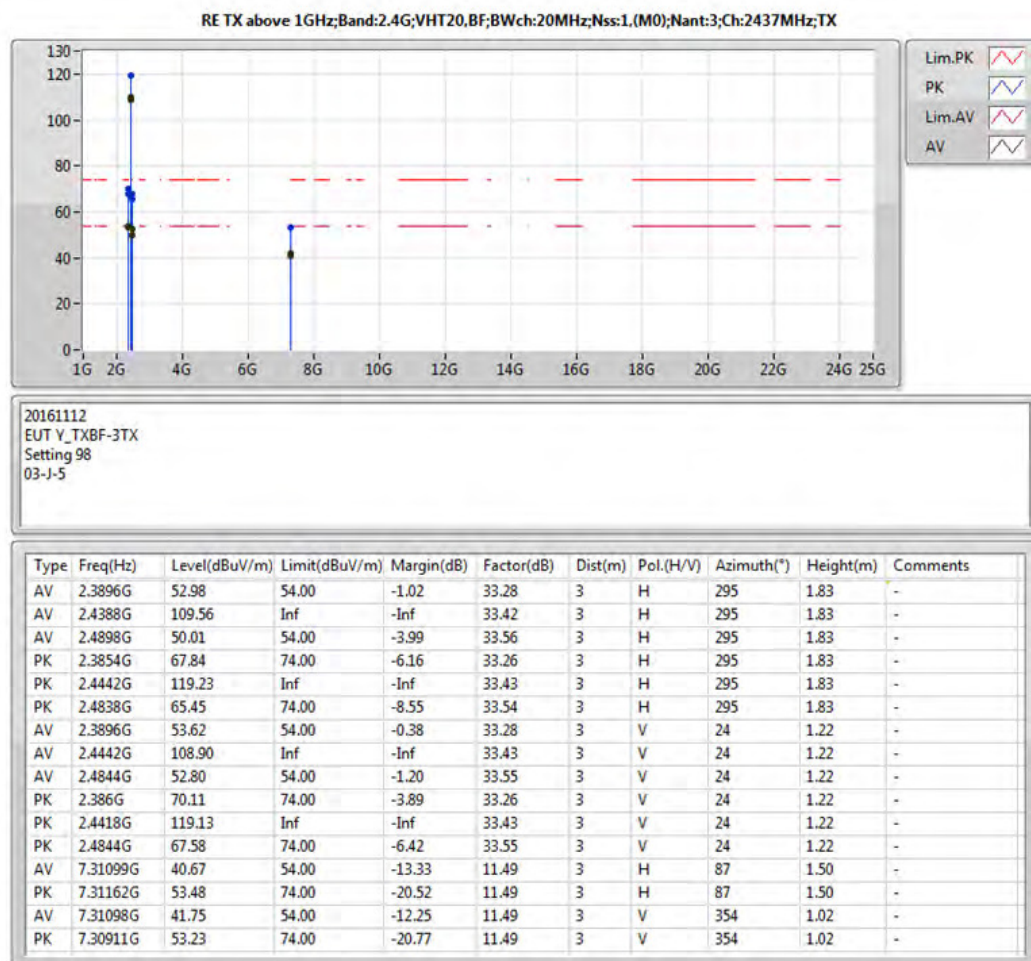
RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX

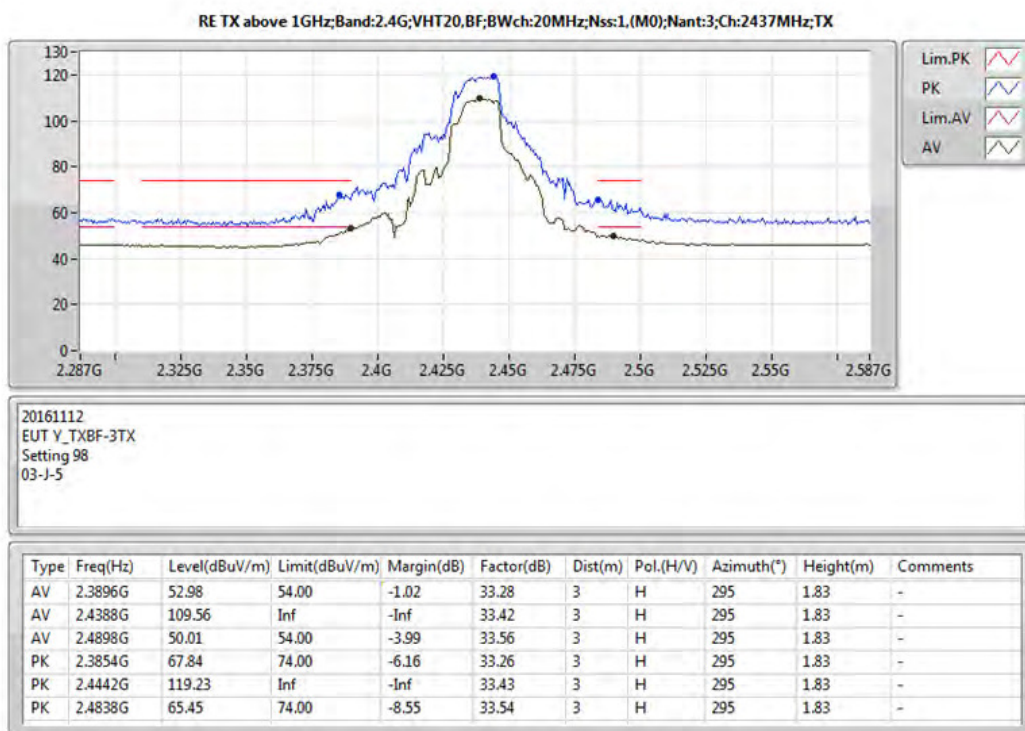
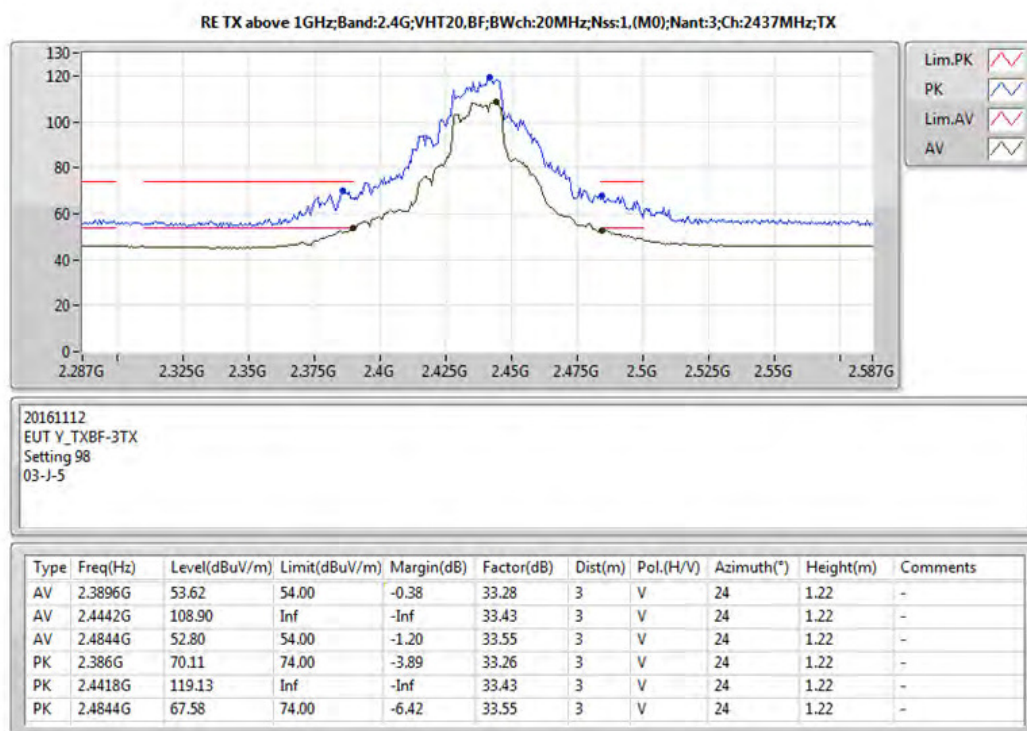


RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2412MHz;TX

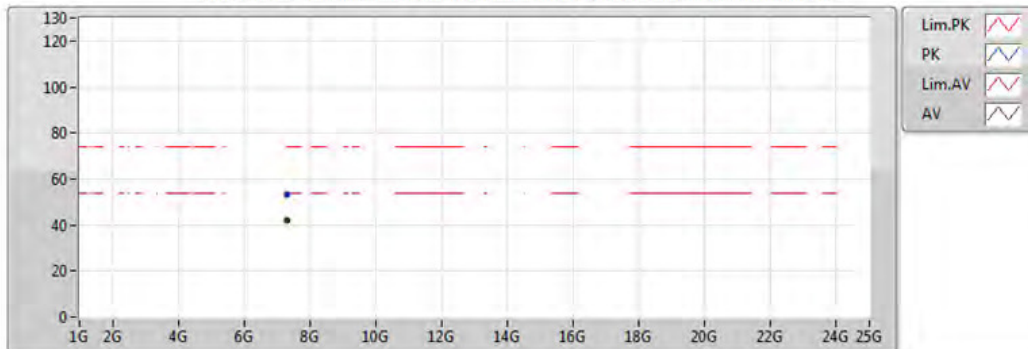


Modulation Mode	IEEE 802.11ac (VHT20) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2437		





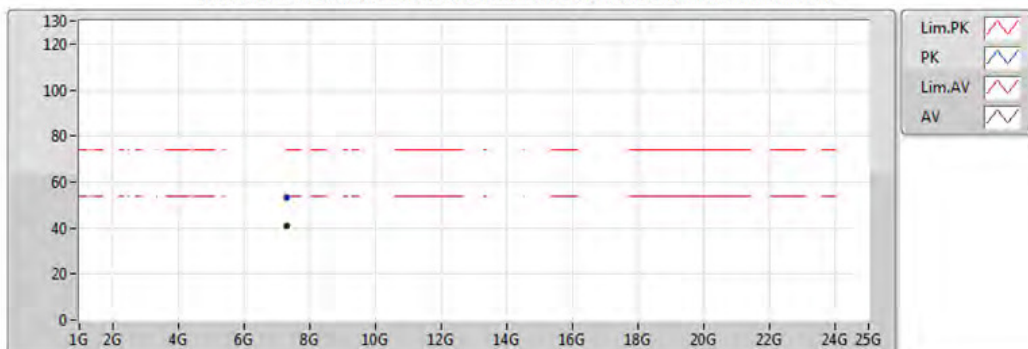
RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 98
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.31098G	41.75	54.00	-12.25	11.49	3	V	354	1.02	-
PK	7.30911G	53.23	74.00	-20.77	11.49	3	V	354	1.02	-

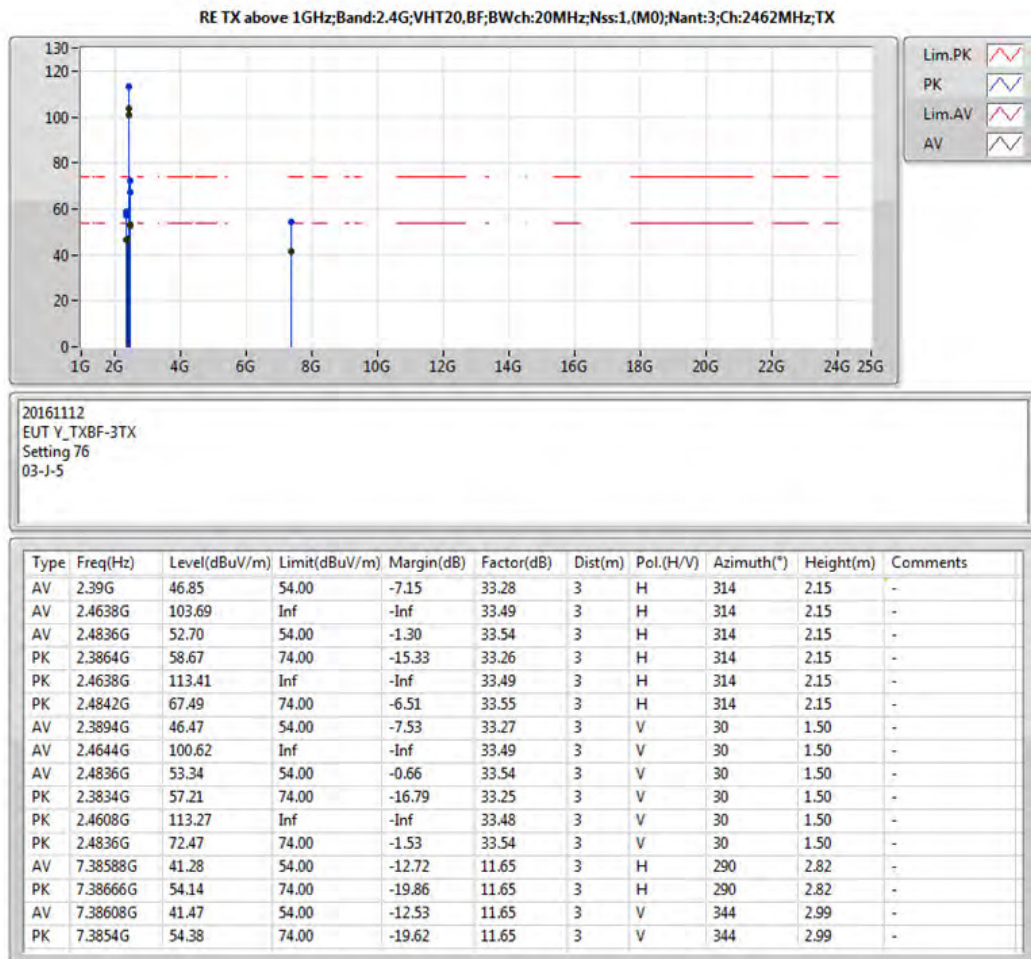
RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



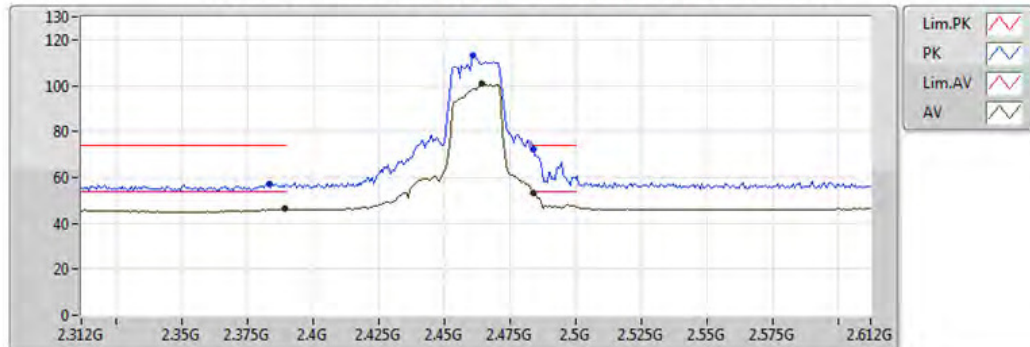
20161112
EUT_Y_TXBF-3TX
Setting 98
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.31099G	40.67	54.00	-13.33	11.49	3	H	87	1.50	-
PK	7.31162G	53.48	74.00	-20.52	11.49	3	H	87	1.50	-

Modulation Mode	IEEE 802.11ac (VHT20) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2462		



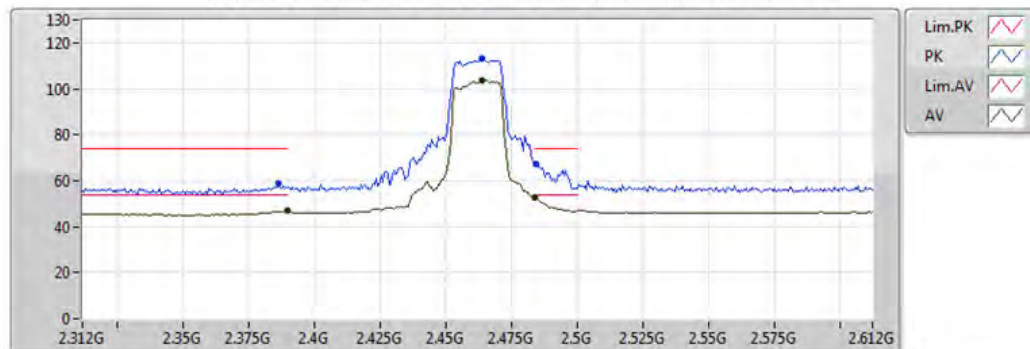
RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2462MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 76
03-J-5

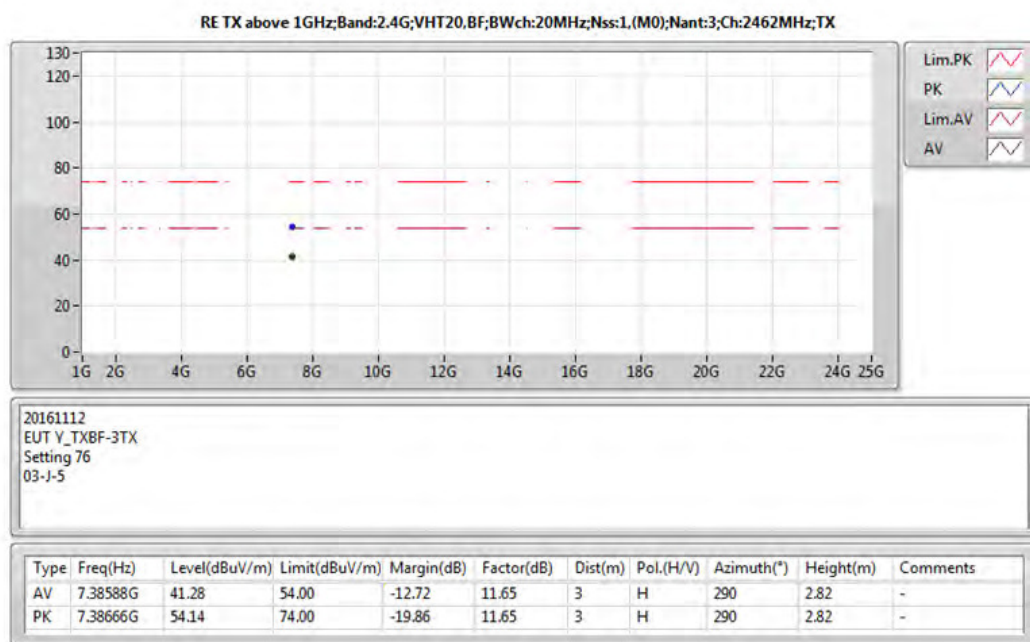
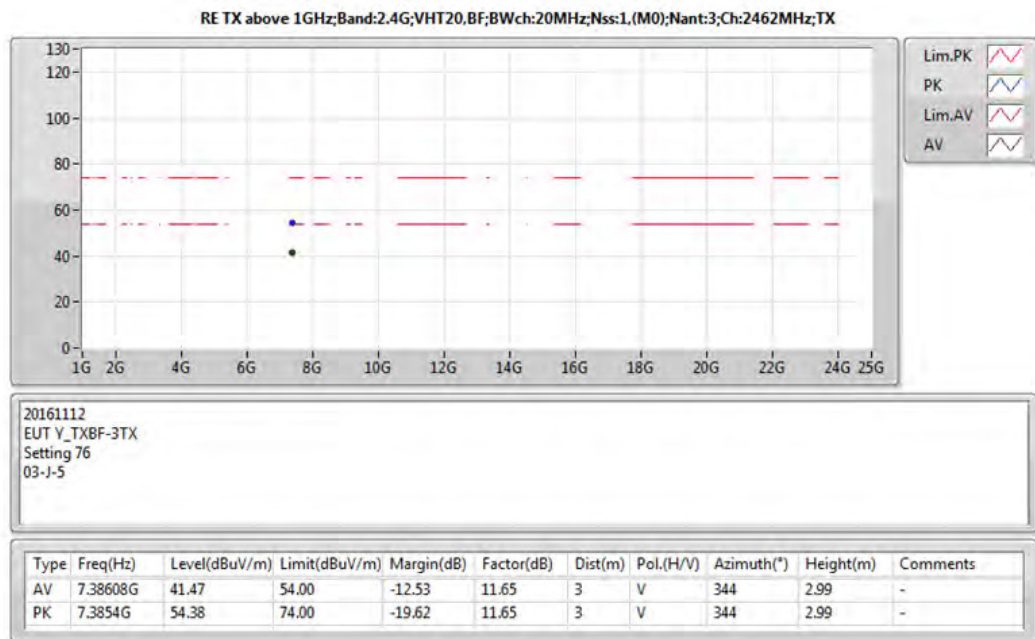
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3894G	46.47	54.00	-7.53	33.27	3	V	30	1.50	-
AV	2.4644G	100.62	Inf	-Inf	33.49	3	V	30	1.50	-
AV	2.4836G	53.34	54.00	-0.66	33.54	3	V	30	1.50	-
PK	2.3834G	57.21	74.00	-16.79	33.25	3	V	30	1.50	-
PK	2.4608G	113.27	Inf	-Inf	33.48	3	V	30	1.50	-
PK	2.4836G	72.47	74.00	-1.53	33.54	3	V	30	1.50	-

RE TX above 1GHz;Band:2.4G;VHT20,BF;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:2462MHz;TX



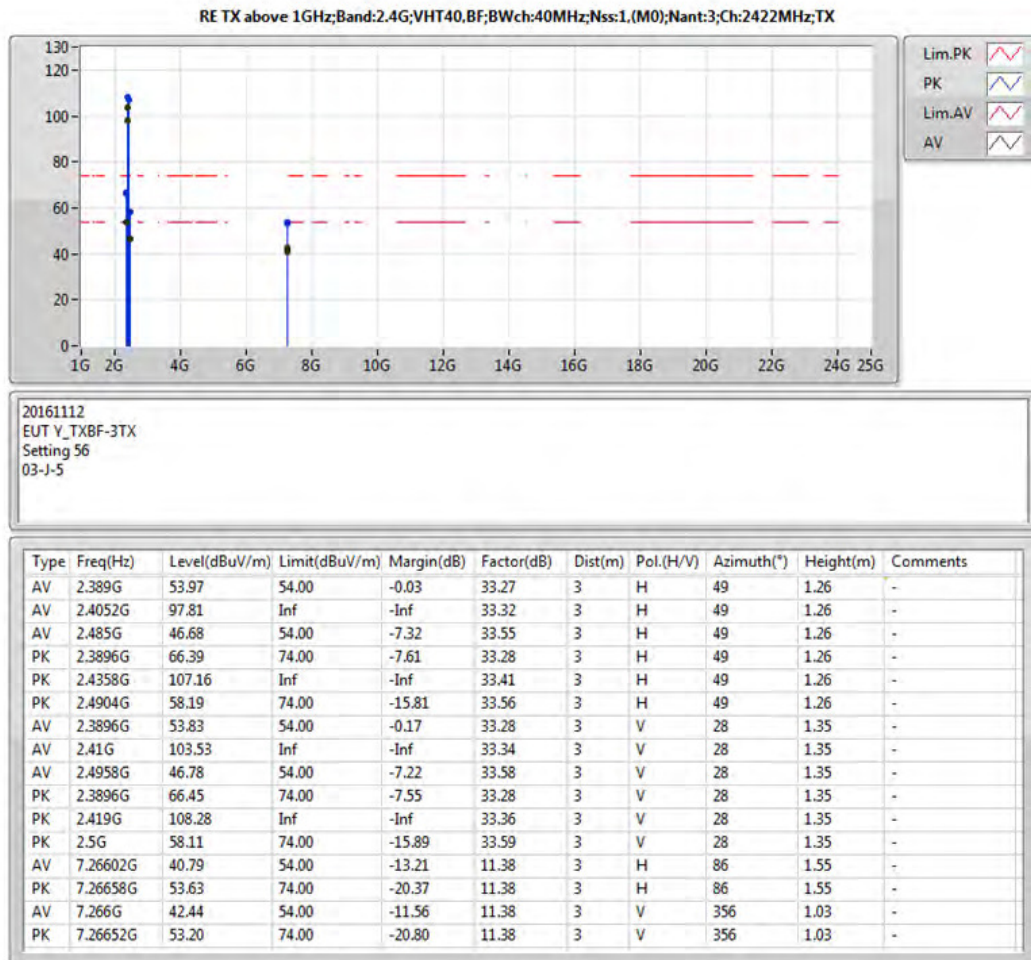
20161112
EUT_Y_TXBF-3TX
Setting 76
03-J-5

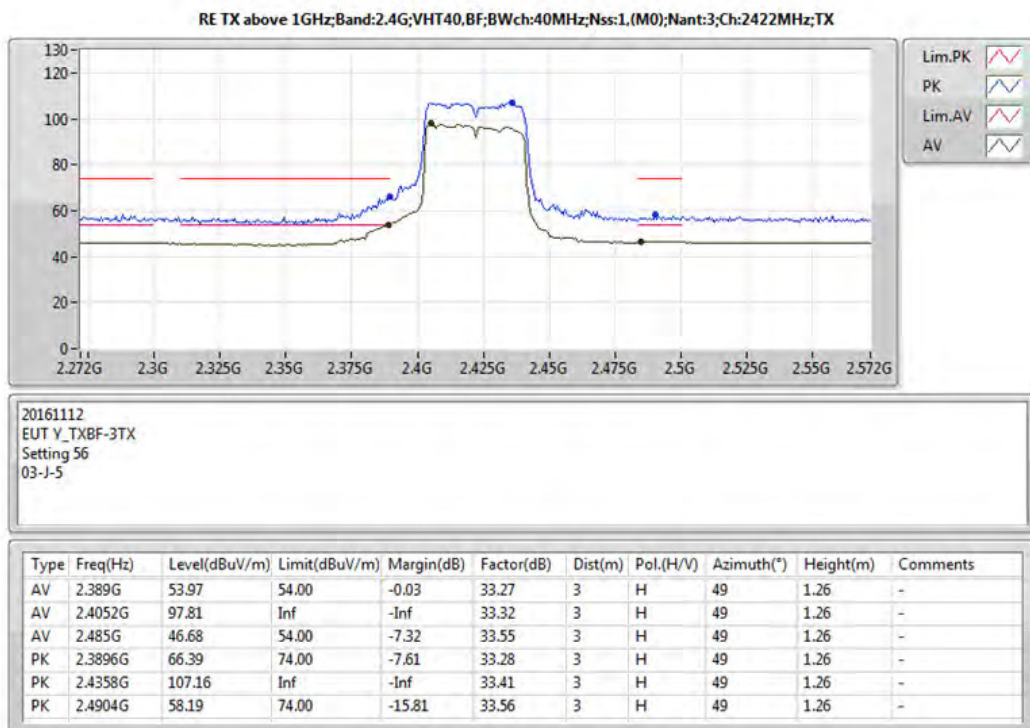
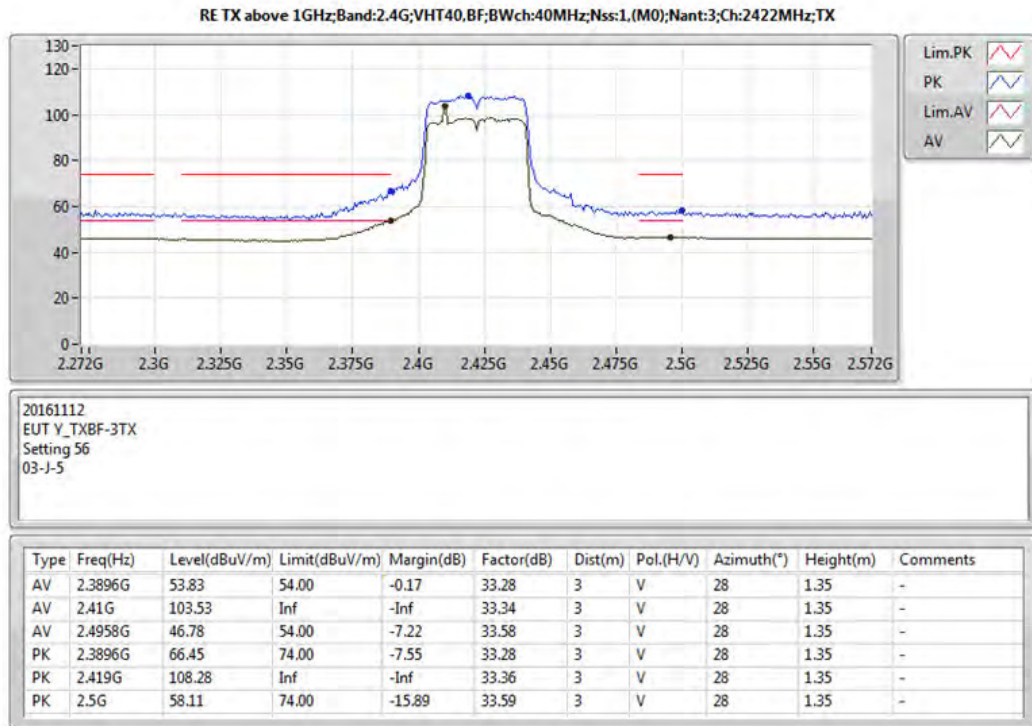
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.39G	46.85	54.00	-7.15	33.28	3	H	314	2.15	-
AV	2.4638G	103.69	Inf	-Inf	33.49	3	H	314	2.15	-
AV	2.4836G	52.70	54.00	-1.30	33.54	3	H	314	2.15	-
PK	2.3864G	58.67	74.00	-15.33	33.26	3	H	314	2.15	-
PK	2.4638G	113.41	Inf	-Inf	33.49	3	H	314	2.15	-
PK	2.4842G	67.49	74.00	-6.51	33.55	3	H	314	2.15	-



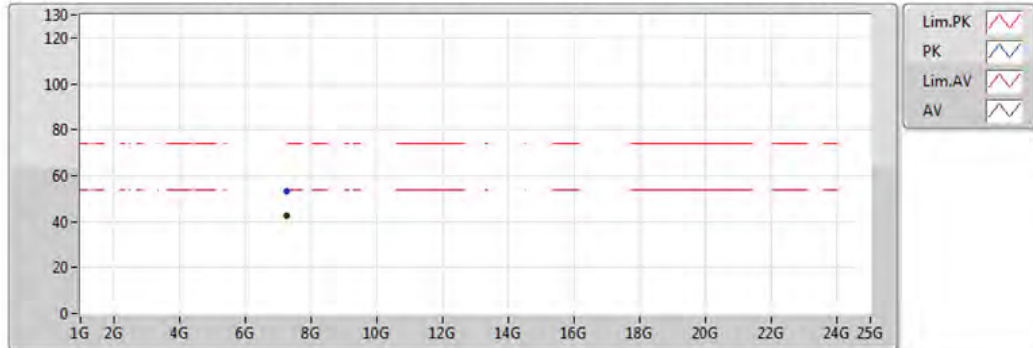


Modulation Mode	IEEE 802.11ac (VHT40) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2422		





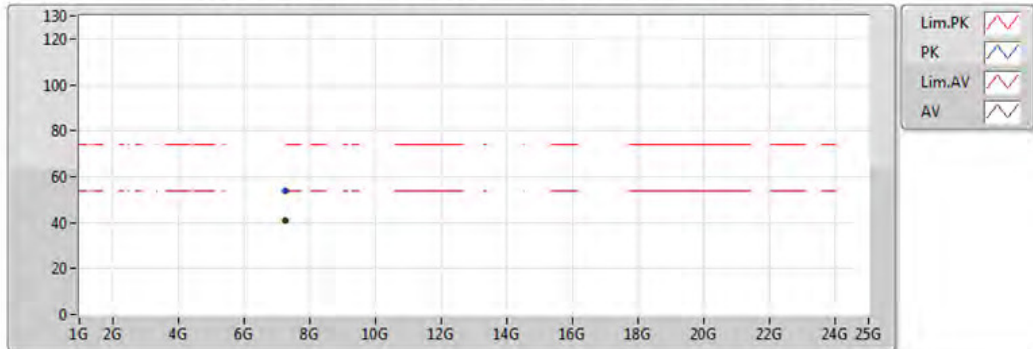
RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2422MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 56
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.266G	42.44	54.00	-11.56	11.38	3	V	356	1.03	-
PK	7.26652G	53.20	74.00	-20.80	11.38	3	V	356	1.03	-

RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2422MHz;TX

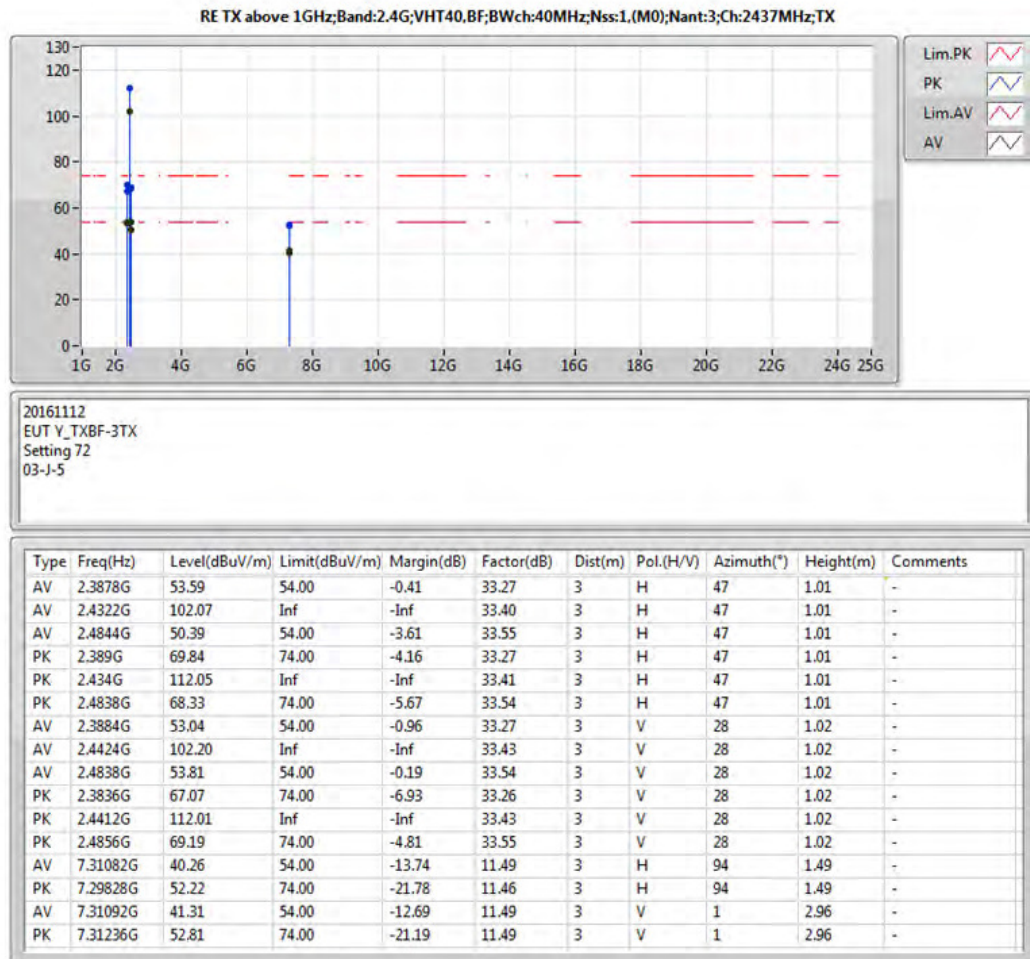


20161112
EUT_Y_TXBF-3TX
Setting 56
03-J-5

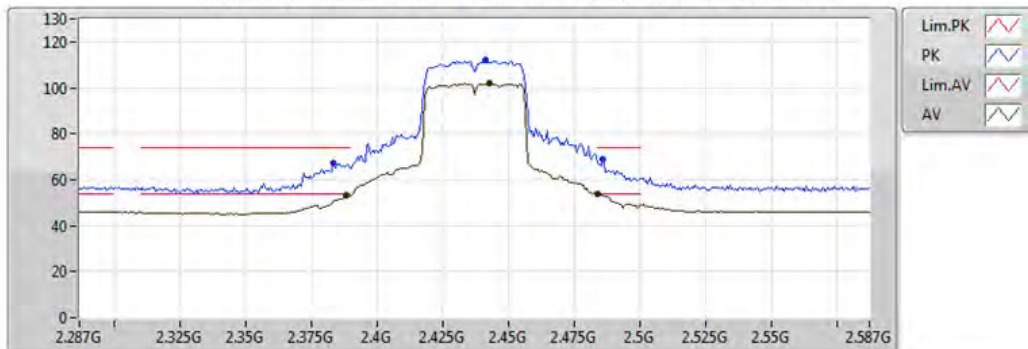
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.26602G	40.79	54.00	-13.21	11.38	3	H	86	1.55	-
PK	7.26658G	53.63	74.00	-20.37	11.38	3	H	86	1.55	-



Modulation Mode	IEEE 802.11ac (VHT40) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2437		



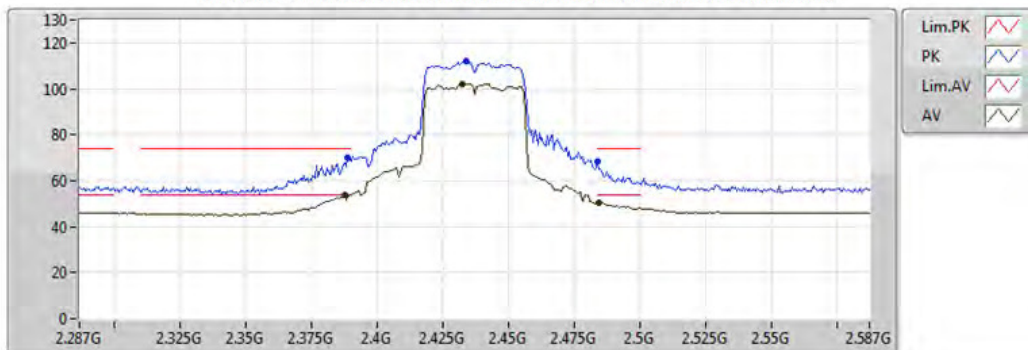
RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 72
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3884G	53.04	54.00	-0.96	33.27	3	V	28	1.02	-
AV	2.4424G	102.20	Inf	-Inf	33.43	3	V	28	1.02	-
AV	2.4838G	53.81	54.00	-0.19	33.54	3	V	28	1.02	-
PK	2.3836G	67.07	74.00	-6.93	33.26	3	V	28	1.02	-
PK	2.4412G	112.01	Inf	-Inf	33.43	3	V	28	1.02	-
PK	2.4856G	69.19	74.00	-4.81	33.55	3	V	28	1.02	-

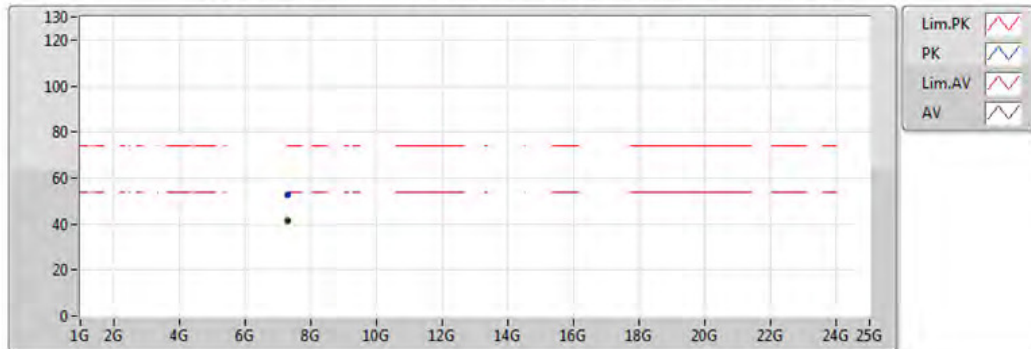
RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 72
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3878G	53.59	54.00	-0.41	33.27	3	H	47	1.01	-
AV	2.4322G	102.07	Inf	-Inf	33.40	3	H	47	1.01	-
AV	2.4844G	50.39	54.00	-3.61	33.55	3	H	47	1.01	-
PK	2.389G	69.84	74.00	-4.16	33.27	3	H	47	1.01	-
PK	2.434G	112.05	Inf	-Inf	33.41	3	H	47	1.01	-
PK	2.4838G	68.33	74.00	-5.67	33.54	3	H	47	1.01	-

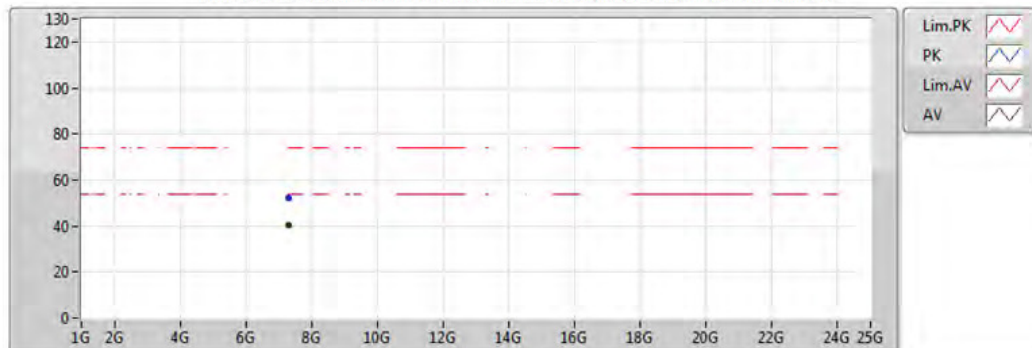
RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 72
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.31092G	41.31	54.00	-12.69	11.49	3	V	1	2.96	-
PK	7.31236G	52.81	74.00	-21.19	11.49	3	V	1	2.96	-

RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2437MHz;TX

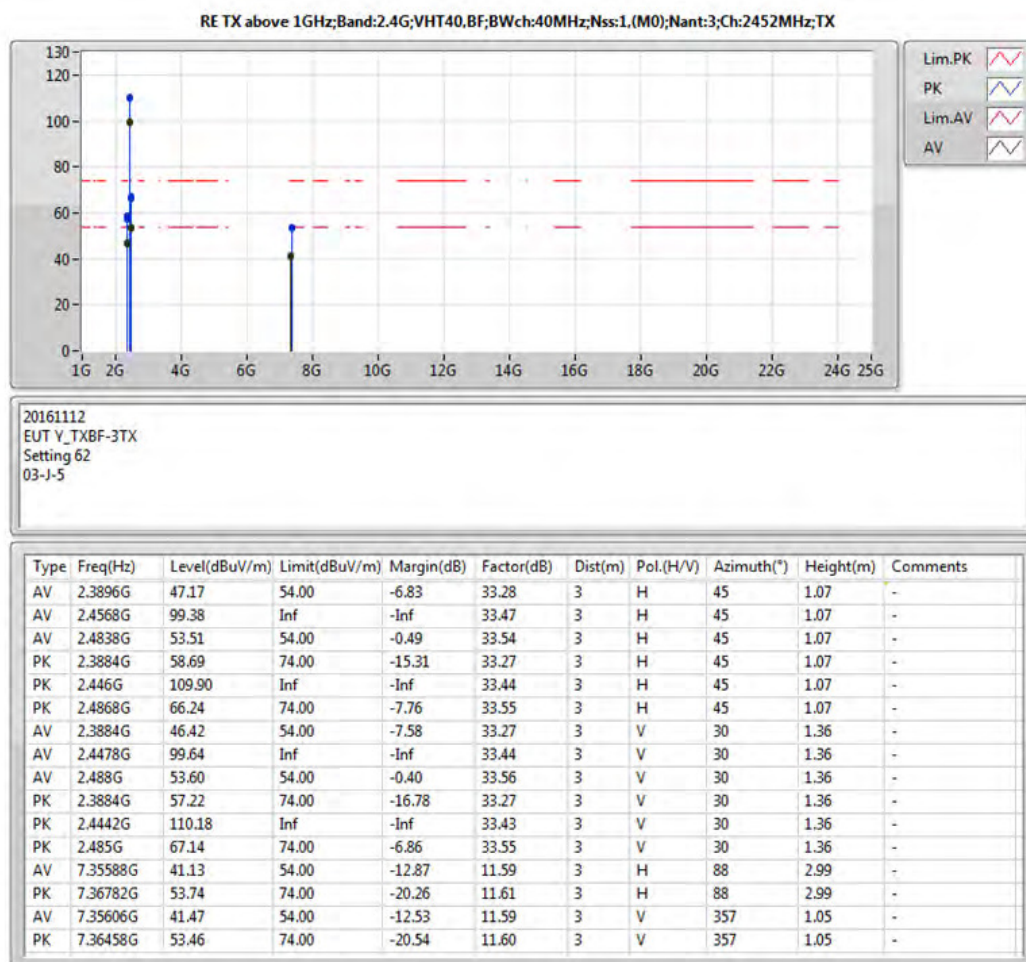


20161112
EUT_Y_TXBF-3TX
Setting 72
03-J-5

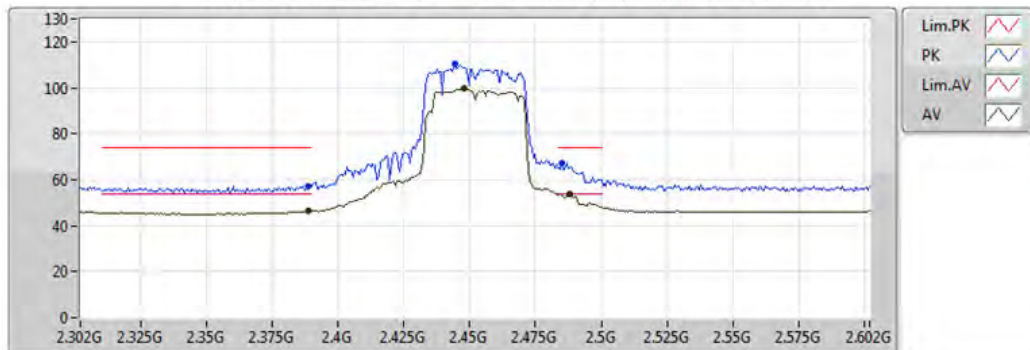
Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.31082G	40.26	54.00	-13.74	11.49	3	H	94	1.49	-
PK	7.29828G	52.22	74.00	-21.78	11.46	3	H	94	1.49	-



Modulation Mode	IEEE 802.11ac (VHT40) MCS0/Nss1	Test Chain	Chain 2 + Chain 3 + Chain 4
Test Freq. (MHz)	2452		



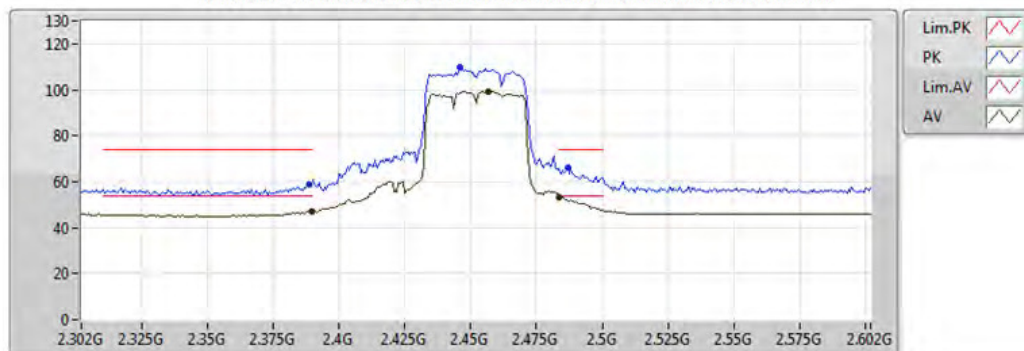
RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 62
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3884G	46.42	54.00	-7.58	33.27	3	V	30	1.36	-
AV	2.4478G	99.64	Inf	-Inf	33.44	3	V	30	1.36	-
AV	2.488G	53.60	54.00	-0.40	33.56	3	V	30	1.36	-
PK	2.3884G	57.22	74.00	-16.78	33.27	3	V	30	1.36	-
PK	2.4442G	110.18	Inf	-Inf	33.43	3	V	30	1.36	-
PK	2.485G	67.14	74.00	-6.86	33.55	3	V	30	1.36	-

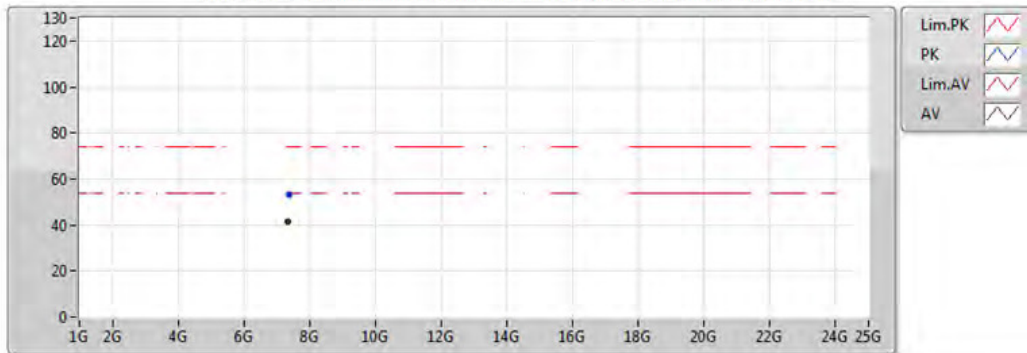
RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 62
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	2.3896G	47.17	54.00	-6.83	33.28	3	H	45	1.07	-
AV	2.4568G	99.38	Inf	-Inf	33.47	3	H	45	1.07	-
AV	2.4838G	53.51	54.00	-0.49	33.54	3	H	45	1.07	-
PK	2.3884G	58.69	74.00	-15.31	33.27	3	H	45	1.07	-
PK	2.446G	109.90	Inf	-Inf	33.44	3	H	45	1.07	-
PK	2.4868G	66.24	74.00	-7.76	33.55	3	H	45	1.07	-

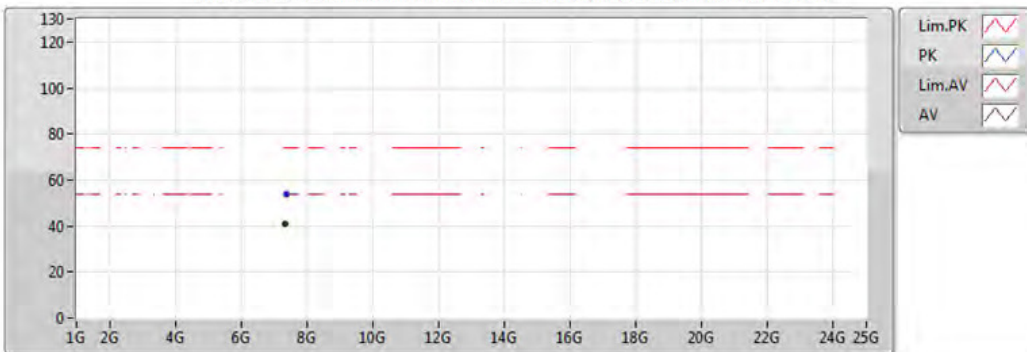
RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 62
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.35606G	41.47	54.00	-12.53	11.59	3	V	357	1.05	-
PK	7.36458G	53.46	74.00	-20.54	11.60	3	V	357	1.05	-

RE TX above 1GHz;Band:2.4G;VHT40,BF;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:2452MHz;TX



20161112
EUT_Y_TXBF-3TX
Setting 62
03-J-5

Type	Freq(Hz)	Level(dBuV/m)	Limit(dBuV/m)	Margin(dB)	Factor(dB)	Dist(m)	Pol.(H/V)	Azimuth(°)	Height(m)	Comments
AV	7.35588G	41.13	54.00	-12.87	11.59	3	H	88	2.99	-
PK	7.36782G	53.74	74.00	-20.26	11.61	3	H	88	2.99	-

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCi	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2016	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 25, 2016	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jun. 28, 2016	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP-40	100019	9kHz ~ 40GHz	Apr. 21, 2016	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-10-7	N/A	N/A	Radiation (03CH01-CB)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY54320015	50MHz~18GHz	Apr. 20, 2016	Conducted (TH01-CB)

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

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

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