FCC Test Report

Equipment	:	AC1750 Wi-Fi Range Extender，AV1200 Powerline Edition
Brand Name	:	TP-Link
Model No.	:	TL-WPA8730
FCC ID	:	TE7WPA8730
Standard	:	47 CFR FCC Part 15.407
Operating Band	:	5150 MHz – 5250 MHz 5725 MHz – 5850 MHz
Applicant	:	TP-Link Technologies Co., Ltd. Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Manufacturer	:	TP-Link Technologies Co., Ltd. Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Function	:	☐ Outdoor; ☒ Indoor; ☐ Fixed P2P ☐ Client

The product sample received on Aug. 19, 2016 and completely tested on Oct. 29, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Sam Chen
SPORTON INTERNATIONAL INC.

Testing Laboratory
1190

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 8

2 TEST CONFIGURATION OF EUT 9

2.1 Test Channel Mode 9
2.2 The Worst Case Measurement Configuration 10
2.3 EUT Operation during Test 12
2.4 Accessories 12
2.5 Support Equipment 12
2.6 Test Setup Diagram 13

3 TRANSMITTER TEST RESULT 15

3.1 AC Power-line Conducted Emissions 15
3.2 Emission Bandwidth 17
3.3 Maximum Conducted Output Power 18
3.4 Peak Power Spectral Density 20
3.5 Unwanted Emissions 23
3.6 Frequency Stability 28

4 TEST EQUIPMENT AND CALIBRATION DATA 30

APPENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS

APPENDIX B. TEST RESULTS OF EMISSION BANDWIDTH

APPENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER

APPENDIX D. TEST RESULTS OF PEAK POWER SPECTRAL DENSITY

APPENDIX E. TEST RESULTS OF UNWANTED EMISSIONS

APPENDIX F. TEST RESULTS OF FREQUENCY STABILITY

APPENDIX G. TEST RESULTS OF RADIATED EMISSION CO-LOCATION

APPENDIX H. TEST PHOTOS

Summary of Test Result

Conformance Test Specifications			
Report Clause	**Ref. Std. Clause**	**Description**	**Result**
1.1.2	15.203	Antenna Requirement	Complied
3.1	15.207	AC Power-line Conducted Emissions	Complied
3.2	15.407(a)	Emission Bandwidth	Complied
3.3	15.407(a)	Maximum Conducted Output Power	Complied
3.4	15.407(a)	Peak Power Spectral Density	Complied
3.5	15.407(b)	Unwanted Emissions	Complied
3.6	15.407(g)	Frequency Stability	Complied

Revision History

Report No.	Version	Description	Issued Date
FR681910AB	Rev. 01	Initial issue of report	Nov. 04, 2016

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20)	5180-5240	36-48 [4]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40)	5190-5230	38-46 [2]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80)	5210	42 [1]
5725-5850		5775	155 [1]

Band	Mode	BWch (MHz)	Nant
5.2G	11a	20	3
5.2G	HT20	20	3
5.2G	VHT20	20	3
5.2G	HT40	40	3
5.2G	VHT40	40	3
5.2G	VHT80	80	3
5.8G	11a	20	3
5.8G	HT20	20	3
5.8G	VHT20	20	3
5.8G	HT40	40	3
5.8G	VHT40	40	3
5.8G	VHT80	80	3

Note:
- 5.2G/5.2G-I(IC) is the 5.2GHz Band (5.15-5.25GHz).
- 5.8G/5.8G-I(IC) is the 5.8GHz Band (5.725-5.850GHz).
- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 and VHT80use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM, modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

Ant.	Brand	Product Model	Antenna Type	Connector	Gain (dBi)		
					2.4G	5G B1	5G B4
1	TP-LINK	2051500109	Dipole Antenna	I-PEX	1.86	2.83	2.60
2	TP-LINK	2051500109	Dipole Antenna	I-PEX	1.86	2.83	2.60
3	TP-LINK	2051500109	Printed Antenna	N/A	1.83	-	-
4	TP-LINK	2051500109	Monopole Antenna	N/A	-	1.77	1.85

Note: The EUT has four antennas.

For IEEE 802.11b/g/n mode (3TX, 3RX):

Ant. 1, Ant. 2 and Ant. 3 could transmit/receive simultaneously.

For IEEE 802.11a/n/ac mode (3TX, 3RX):

Ant. 1, Ant. 2 and Ant. 4 could transmit/receive simultaneously.

1.1.3 Mode Test Duty Cycle

Mode	DC	T(s)	VBW(Hz) ≥ 1/T
11a	0.997	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT20	0.997	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT40	0.989	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT80	0.986	n/a (DC>=0.98)	n/a (DC>=0.98)

1.1.4 EUT Operational Condition

EUT Power Type	Internal power supply			
Beamforming Function	☐	With beamforming	☒	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 789033 D02 v01r03
- FCC KDB 644545 D03 v01
- FCC KDB 662911 D01 v02r01

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	Gino Huang	20°C / 60%	Oct. 26, 2016
Radiated	03CH01-CB	Nyle Chang / Stim Sung	22°C / 54%	Oct. 16, 2016~Oct. 29, 2016
AC Conduction	CO01-CB	GN Hou	23°C / 62%	Oct. 17, 2016

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

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
5.2G	11a	20	1	3	5180	L	19.5
5.2G	11a	20	1	3	5200	M	23
5.2G	11a	20	1	3	5240	H	21
5.2G	VHT20	20	1,(M0)	3	5180	L	18.5
5.2G	VHT20	20	1,(M0)	3	5200	M	24
5.2G	VHT20	20	1,(M0)	3	5240	H	20
5.2G	VHT40	40	1,(M0)	3	5190	L	16.5
5.2G	VHT40	40	1,(M0)	3	5230	H	21.5
5.2G	VHT80	80	1,(M0)	3	5210	S	14.5
5.8G	11a	20	1	3	5745	L	30
5.8G	11a	20	1	3	5785	M	31.5
5.8G	11a	20	1	3	5825	H	29
5.8G	VHT20	20	1,(M0)	3	5745	L	31.5
5.8G	VHT20	20	1,(M0)	3	5785	M	31.5
5.8G	VHT20	20	1,(M0)	3	5825	H	29
5.8G	VHT40	40	1,(M0)	3	5755	L	24
5.8G	VHT40	40	1,(M0)	3	5795	H	27
5.8G	VHT80	80	1,(M0)	3	5775	S	19

Note:
- Test range channel consist of L (Low Ch.), M (Middle Ch.), H (High Ch.), S (Single Ch.) and C (Straddle Band Ch.).
- 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.

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	CTX - 2.4G
2	CTX - 5G
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	Emission Bandwidth Maximum Conducted Output Power Peak Power Spectral Density Frequency Stability
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Unwanted Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	CTX
	The EUT was performed at Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Y axis. So the measurement will follow this same test configuration.
1	CTX - 2.4G EUT in Y axis
2	CTX - 5G EUT in Y axis
For operating mode 2 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
1	CTX - 5G EUT in Y axis
2	CTX - 5G EUT in Z axis
Mode 1 has been evaluated to be the worst case after evaluating. Consequently, measurement will follow this same test mode.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Test Condition	Radiated measurement
Operating Mode	Normal Link
1	WLAN 2.4GHz + WLAN 5GHz EUT in Y axis
2	WLAN 2.4GHz + WLAN 5GHz EUT in Z axis
For operating mode 1 is the worst case and it was record in this test report.	
Refer to Sporton Test Report No.: FA681910 for Co-location RF Exposure Evaluation and Appendix G for Radiated Emission Co-location.	

2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

2.4 Accessories

N/A

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

For Test Site No: 03CH01-CB

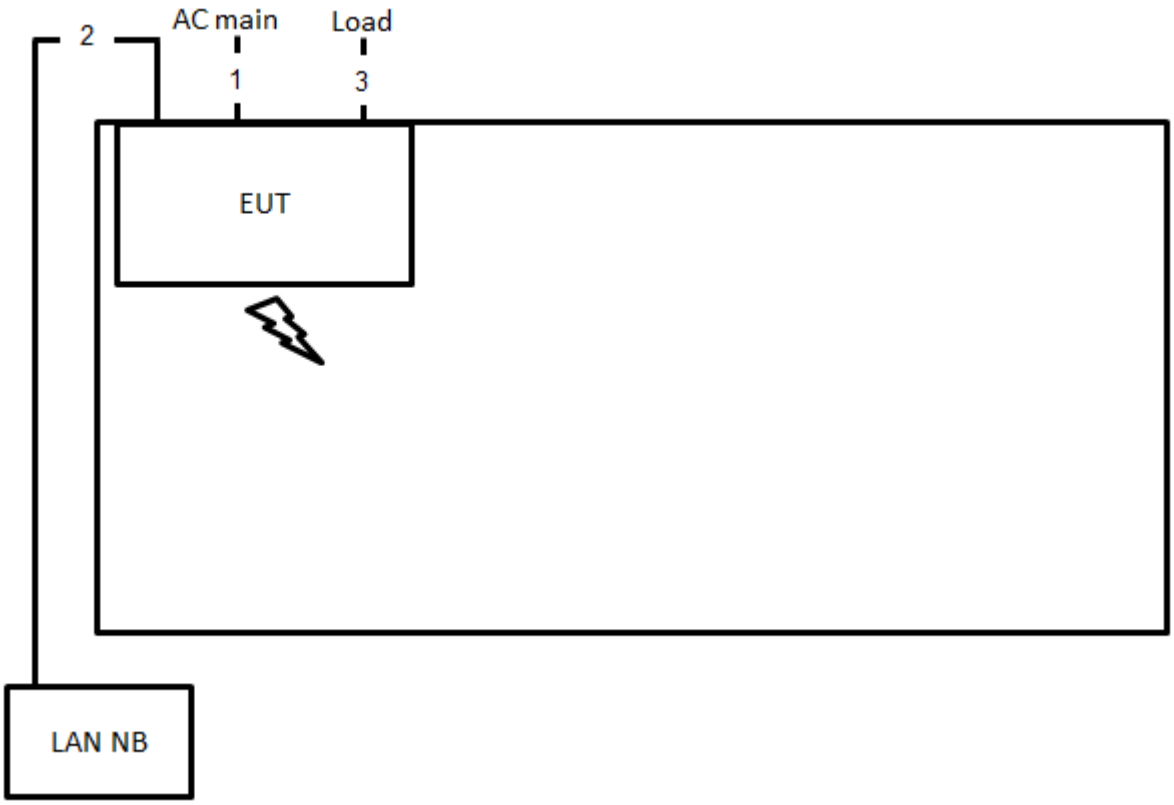
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	NB	DELL	E4300	DoC

For Test Site No: TH01-CB

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

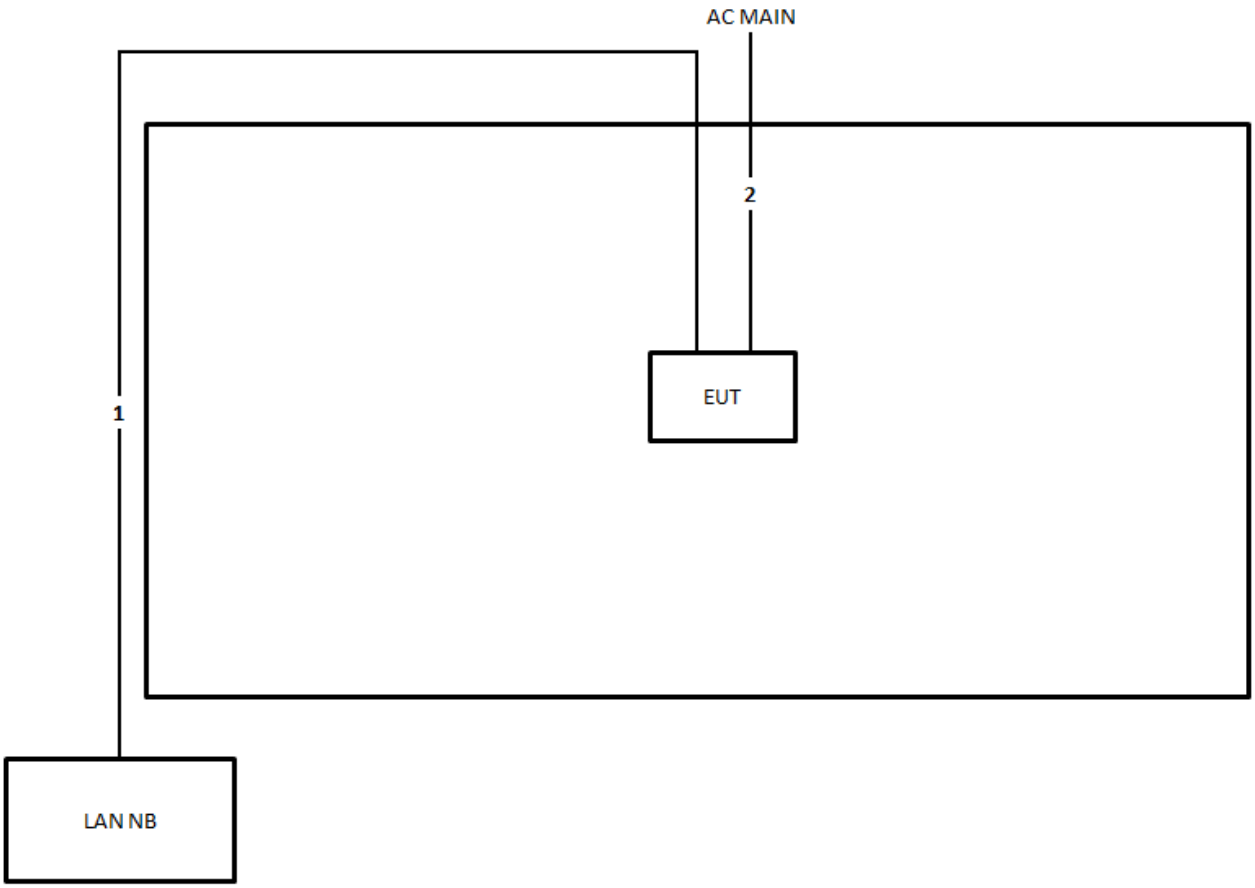
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length
1	Power cable	No	0.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable*2	No	1.5m

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	Power cable	No	0.8m
2	RJ-45 cable	No	10m

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

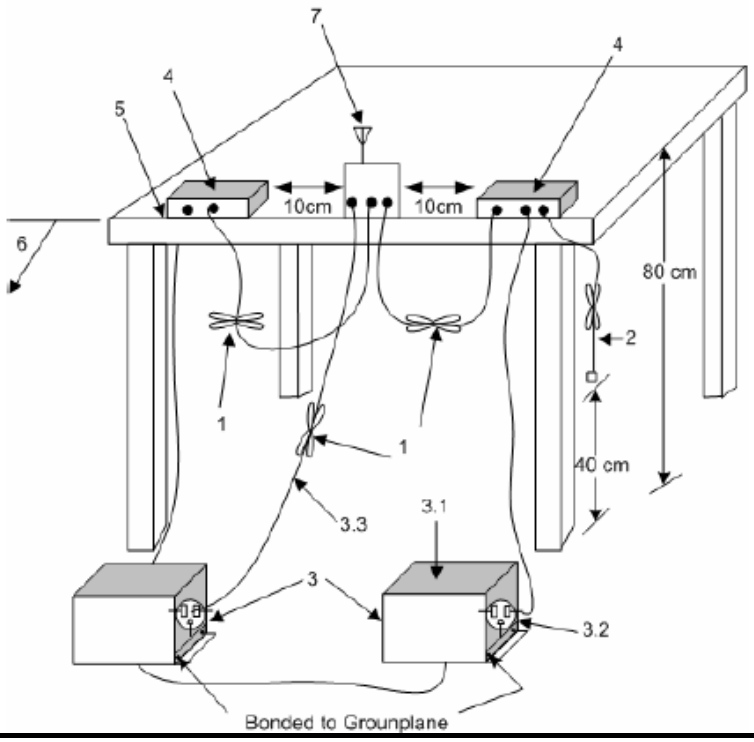
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit	
UNII Devices	
☒	For the 5.15-5.25 GHz band, N/A
☐	For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
☐	For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
☒	For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 500kHz.
LE-LAN Devices	
☐	For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.
☐	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐	For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 500kHz.

3.2.2 Measuring Instruments

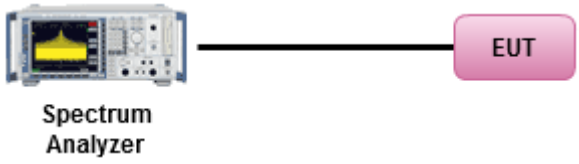
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method		
▪	For the emission bandwidth shall be measured using one of the options below:	
	☒	Refer as FCC KDB 789033, clause C for EBW and clause D for OBW measurement.
	☐	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
	☒	Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.

3.2.4 Test Setup

Emission Bandwidth



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
UNII Devices	
☒	For the 5.15-5.25 GHz band:
	▪ Outdoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]
	▪ Indoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)
	▪ Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W If G_{TX} > 23 dBi, then P_{Out} = 30 – (G_{TX} – 23).
	▪ Mobile or Portable Client: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
☐	For the 5.25-5.35 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
☐	For the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
☒	For the 5.725-5.85 GHz band:
	▪ Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6).
	▪ Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.
LE-LAN Devices	
☐	For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.
☐	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐	For the 5.725-5.85 GHz band:
	▪ Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6).
	▪ Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.
P_{Out} = maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.	

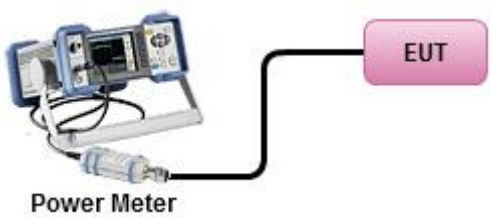
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
▪ Maximum Conducted Output Power	
	[duty cycle ≥ 98% or external video / power trigger]
	☐ Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).
	☐ Refer as FCC KDB 789033, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
	duty cycle < 98% and average over on/off periods with duty factor
	☐ Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
	☐ Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wideband RF power meter and average over on/off periods with duty factor
	☒ Refer as FCC KDB 789033, clause E Method PM-G (using an RF average power meter).
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

RF Output Power (Power Meter)


3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit	
UNII Devices	
☒	For the 5.15-5.25 GHz band:
	▪ Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 6 dBi, then P_{Out} = 17 – (G_{TX} – 6).
	▪ Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 6 dBi, then P_{Out} = 17 – (G_{TX} – 6).
	▪ Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 23 dBi, then P_{Out} = 17 – (G_{TX} – 23).
	▪ Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G_{TX} > 6 dBi, then PPSD= 11 – (G_{TX} – 6)..
☐	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G_{TX} > 6 dBi, then PPSD= 11 – (G_{TX} – 6).
☐	For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G_{TX} > 6 dBi, then PPSD= 11 – (G_{TX} – 6).
☒	For the 5.725-5.85 GHz band:
	▪ Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If G_{TX} > 6 dBi, then PPSD= 30 – (G_{TX} – 6).
	▪ Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
LE-LAN Devices	
☐	For the 5.15-5.25 GHz band, the peak power spectral density (PPSD) ≤ 4 dBm/MHz and the e.i.r.p. peak power spectral density (PPSD) ≤ 10 dBm/MHz.
☐	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz and the e.i.r.p. peak power spectral density (PPSD) ≤ 17 dBm/MHz.
	▪ e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below: -13 dBW/MHz for 0° ≤ θ < 8° ; -13 − 0.716 (θ-8) dBW/MHz for 8° ≤ θ < 40° -35.9 − 1.22 (θ-40) dBW/MHz for 40° ≤ θ ≤ 45° ; -42 dBW/MHz for θ > 45°
☐	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz and the e.i.r.p. peak power spectral density (PPSD) ≤ 17 dBm/MHz.
☐	For the 5.725-5.85 GHz band:
	▪ Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If G_{TX} > 6 dBi, then PPSD= 30 – (G_{TX} – 6).
	▪ Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
PPSD = peak power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz **G_{TX}** = the maximum transmitting antenna directional gain in dBi.	

3.4.2 Measuring Instruments

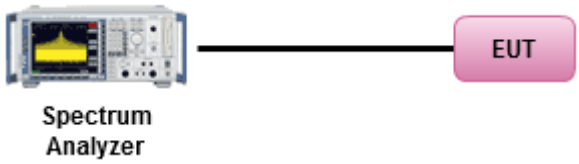
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method			
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:			
	☐ Refer as FCC KDB 789033, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth		
	[duty cycle ≥ 98% or external video / power trigger]		
	☒ Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).		
	☐ Refer as FCC KDB 789033, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)		
	duty cycle < 98% and average over on/off periods with duty factor		
	☒ Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).		
	☐ Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with 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.	
	▪	If multiple transmit chains, EIRP PPSD calculation could be following as methods: $PPSD_{total} = PPSD_1 + PPSD_2 + \ldots + PPSD_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = PPSD_{total} + DG$	

3.4.4 Test Setup

Power Spectral Density



3.4.5 Test Result of Peak Power Spectral Density

Refer as Appendix D

3.5 Unwanted Emissions

3.5.1 Transmitter Radiated Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz 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.

Un-restricted band emissions above 1GHz Limit	
Operating Band	**Limit**
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.725 - 5.85 GHz	all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note 1: 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).

3.5.2 Measuring Instruments

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

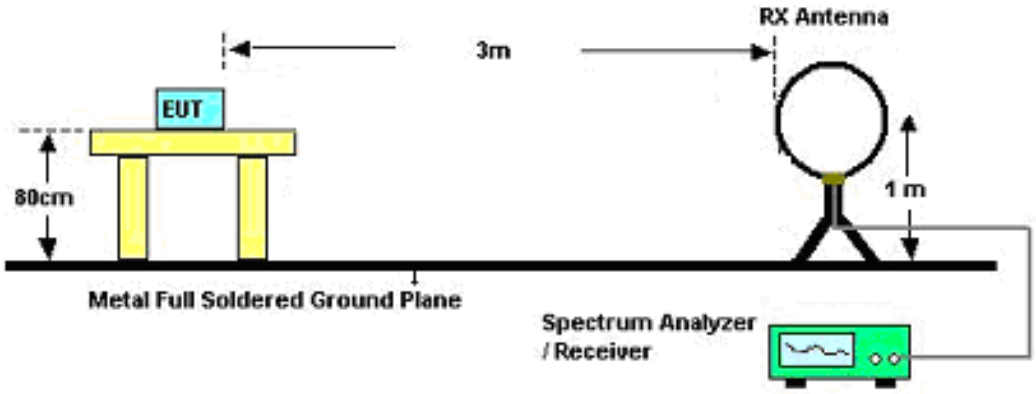
3.5.3 Test Procedures

Test Method			
▪ 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. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. 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).			
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].			
▪ For the transmitter unwanted emissions shall be measured using following options below:			
	▪ Refer as FCC KDB 789033, clause H)2) for unwanted emissions into non-restricted bands.		
	▪ Refer as FCC KDB 789033, clause H)1) for unwanted emissions into restricted bands.		
		☐	Refer as FCC KDB 789033, H)6) Method AD (Trace Averaging).
		☒	Refer as FCC KDB 789033, H)6) Method VB (Reduced VBW).
		☐	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 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 789033, clause H)5) measurement procedure peak limit.
		☐	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
▪ For radiated measurement.			
	▪ Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.		
	▪ Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.		
	▪ Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.		
▪ The any unwanted emissions level shall not exceed the fundamental emission level.			
▪ All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.			

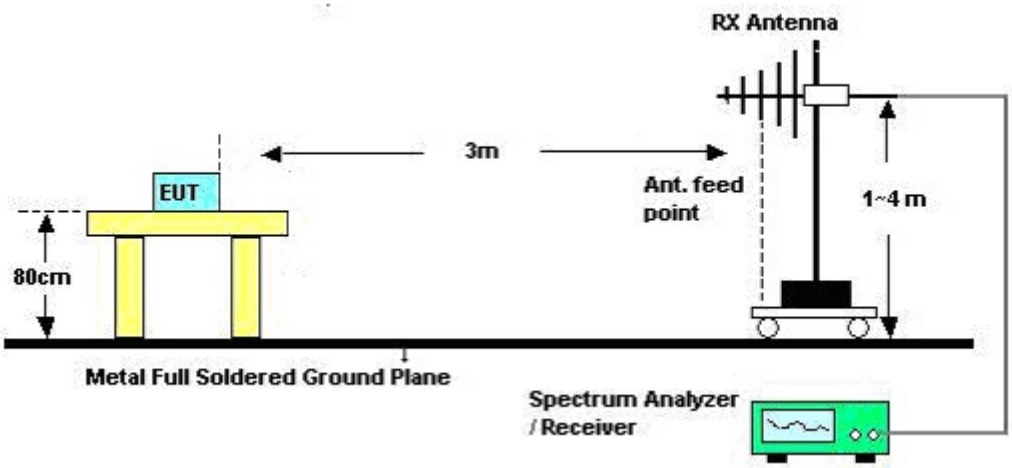
3.5.4 Test Setup

Transmitter Radiated Unwanted Emissions

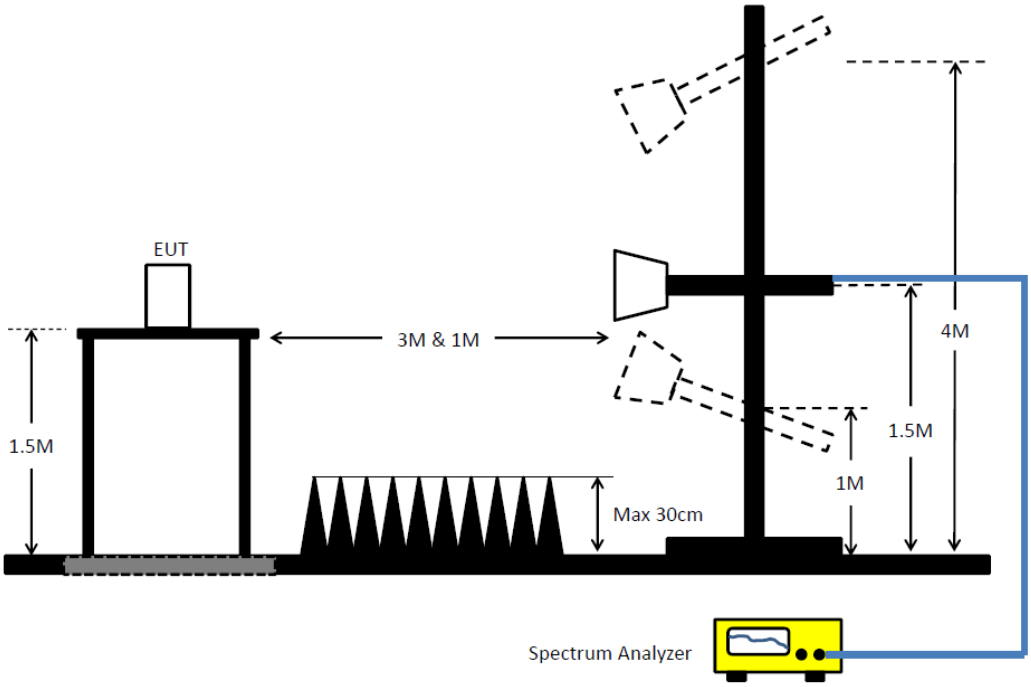
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



3.5.5 Transmitter Unwanted Emissions (Below 30MHz)

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

3.5.6 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E

3.6 Frequency Stability

3.6.1 Frequency Stability Limit

Frequency Stability Limit
UNII Devices
▪ In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
LE-LAN Devices
▪ N/A
IEEE Std. 802.11
▪ The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band and ± 25 ppm maximum for the 2.4 GHz band.

3.6.2 Measuring Instruments

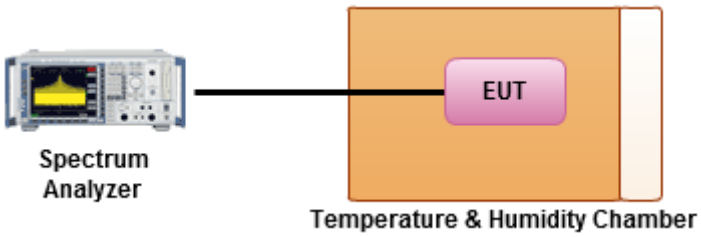
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
▪ Refer as ANSI C63.10, clause 6.8 for frequency stability tests	
	▪ Frequency stability with respect to ambient temperature
	▪ Frequency stability when varying supply voltage
	▪ Extreme temperature is 0˚C~40˚C.

3.6.4 Test Setup

Frequency Stability



3.6.5 Test Result of Frequency Stability

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	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	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	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	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)

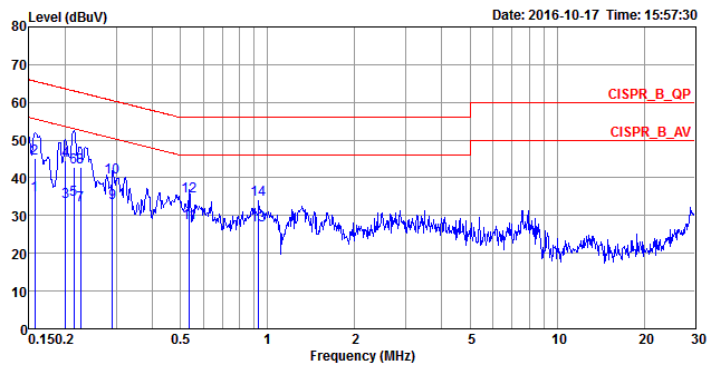
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

"*" Calibration Interval of instruments listed above is two years.

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

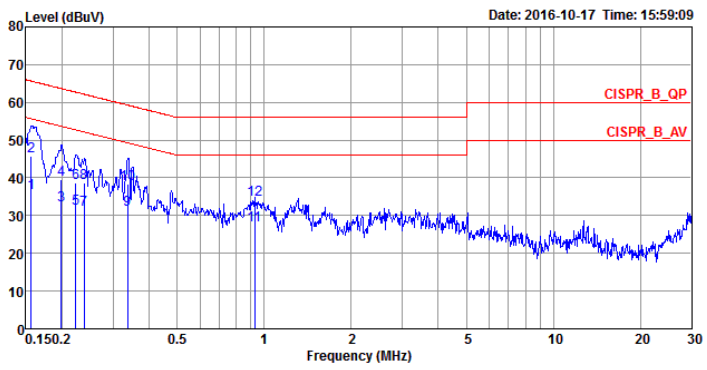
AC Power-line Conducted Emissions Result			
Operating Mode	2	**Power Phase**	Neutral
Operating Function	CTX		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1573	35.42	-20.18	55.60	25.23	10.02	0.17	NEUTRAL	Average
2	0.1573	45.29	-20.31	65.60	35.10	10.02	0.17	NEUTRAL	QP
3	0.2007	33.73	-19.85	53.58	23.62	9.92	0.19	NEUTRAL	Average
4	0.2007	44.48	-19.10	63.58	34.37	9.92	0.19	NEUTRAL	QP
5	0.2139	34.16	-18.89	53.05	24.07	9.92	0.17	NEUTRAL	Average
6	0.2139	42.79	-20.26	63.05	32.70	9.92	0.17	NEUTRAL	QP
7	0.2256	32.67	-19.94	52.61	22.59	9.92	0.16	NEUTRAL	Average
8	0.2256	42.79	-19.82	62.61	32.71	9.92	0.16	NEUTRAL	QP
9	0.2909	33.41	-17.09	50.50	23.40	9.92	0.09	NEUTRAL	Average
10	0.2909	40.26	-20.24	60.50	30.25	9.92	0.09	NEUTRAL	QP
11	0.5378	28.19	-17.81	46.00	18.02	9.93	0.24	NEUTRAL	Average
12	0.5378	35.07	-20.93	56.00	24.90	9.93	0.24	NEUTRAL	QP
13	0.9331	27.36	-18.64	46.00	16.74	9.94	0.68	NEUTRAL	Average
14	0.9331	34.17	-21.83	56.00	23.55	9.94	0.68	NEUTRAL	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.)

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	0.1565	35.98	-19.67	55.65	25.79	10.02	0.17	LINE	Average
2	0.1565	45.85	-19.80	65.65	35.66	10.02	0.17	LINE	QP
3	0.1986	32.64	-21.03	53.67	22.53	9.92	0.19	LINE	Average
4	0.1986	39.55	-24.12	63.67	29.44	9.92	0.19	LINE	QP
5	0.2232	31.98	-20.72	52.70	21.90	9.92	0.16	LINE	Average
6	0.2232	38.73	-23.97	62.70	28.65	9.92	0.16	LINE	QP
7	0.2378	31.68	-20.49	52.17	21.62	9.92	0.14	LINE	Average
8	0.2378	38.57	-23.60	62.17	28.51	9.92	0.14	LINE	QP
9	0.3374	31.54	-17.73	49.27	21.57	9.92	0.05	LINE	Average
10	0.3374	38.38	-20.89	59.27	28.41	9.92	0.05	LINE	QP
11	0.9282	27.31	-18.69	46.00	16.69	9.94	0.68	LINE	Average
12	0.9282	34.19	-21.81	56.00	23.57	9.94	0.68	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.)

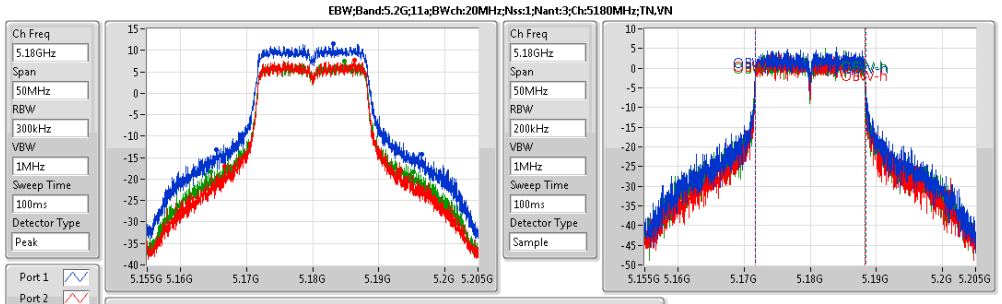
Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.2G;11a;Nss1;Ntx3	44.55M	23.563M	23M6D1D	26.525M	16.642M
5.2G;VHT20;Nss1,(M0);Ntx3	49.05M	26.987M	27M0D1D	26.575M	17.766M
5.2G;VHT40;Nss1,(M0);Ntx3	82.65M	36.832M	36M8D1D	44.5M	36.232M
5.2G;VHT80;Nss1,(M0);Ntx3	90.9M	75.862M	75M9D1D	88.1M	75.662M
5.8G;11a;Nss1;Ntx3	16.55M	38.081M	38M1D1D	16.3M	32.784M
5.8G;VHT20;Nss1,(M0);Ntx3	17.75M	39.23M	39M2D1D	17.575M	36.082M
5.8G;VHT40;Nss1,(M0);Ntx3	36.45M	72.314M	72M3D1D	36.1M	49.225M
5.8G;VHT80;Nss1,(M0);Ntx3	75.7M	76.362M	76M4D1D	72M	75.662M

Result

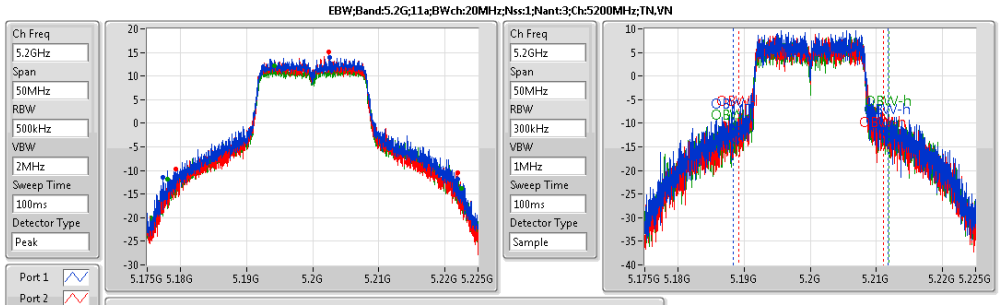
Mode	Result	Limit (Hz)	P1-N dB (Hz)	P1-OBW (Hz)	P2-N dB (Hz)	P2-OBW (Hz)	P3-N dB (Hz)	P3-OBW (Hz)
5.2G;11a;Nss1;Ntx3;5180	Pass	Inf	31.075M	16.717M	26.525M	16.642M	30.525M	16.667M
5.2G;11a;Nss1;Ntx3;5200	Pass	Inf	44.55M	23.463M	42.625M	21.864M	44.325M	23.563M
5.2G;11a;Nss1;Ntx3;5240	Pass	Inf	40.175M	18.041M	36.525M	16.992M	39.35M	16.992M
5.2G;VHT20;Nss1,(M0);Ntx3;5180	Pass	Inf	27.725M	17.791M	26.575M	17.766M	29.575M	17.816M
5.2G;VHT20;Nss1,(M0);Ntx3;5200	Pass	Inf	49.05M	26.987M	47.975M	26.112M	48.625M	26.637M
5.2G;VHT20;Nss1,(M0);Ntx3;5240	Pass	Inf	38.55M	18.041M	30.6M	17.841M	33.2M	17.866M
5.2G;VHT40;Nss1,(M0);Ntx3;5190	Pass	Inf	45.9M	36.282M	44.5M	36.232M	46.25M	36.282M
5.2G;VHT40;Nss1,(M0);Ntx3;5230	Pass	Inf	79.3M	36.832M	78.3M	36.582M	82.65M	36.682M
5.2G;VHT80;Nss1,(M0);Ntx3;5210	Pass	Inf	90.9M	75.662M	88.1M	75.862M	90.7M	75.862M
5.8G;11a;Nss1;Ntx3;5745	Pass	500k	16.4M	36.832M	16.45M	33.308M	16.4M	33.633M
5.8G;11a;Nss1;Ntx3;5785	Pass	500k	16.3M	38.081M	16.475M	37.256M	16.5M	36.482M
5.8G;11a;Nss1;Ntx3;5825	Pass	500k	16.375M	37.531M	16.4M	34.808M	16.55M	32.784M
5.8G;VHT20;Nss1,(M0);Ntx3;5745	Pass	500k	17.625M	39.205M	17.575M	38.306M	17.75M	36.082M
5.8G;VHT20;Nss1,(M0);Ntx3;5785	Pass	500k	17.7M	39.23M	17.65M	37.956M	17.625M	37.356M
5.8G;VHT20;Nss1,(M0);Ntx3;5825	Pass	500k	17.7M	38.931M	17.675M	37.256M	17.675M	36.332M
5.8G;VHT40;Nss1,(M0);Ntx3;5755	Pass	500k	36.1M	55.822M	36.4M	49.725M	36.45M	49.225M
5.8G;VHT40;Nss1,(M0);Ntx3;5795	Pass	500k	36.3M	72.314M	36.4M	60.47M	36.3M	61.569M
5.8G;VHT80;Nss1,(M0);Ntx3;5775	Pass	500k	75.7M	76.362M	75.1M	75.962M	72M	75.662M

EBW;Band:5.2G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5180MHz;TN,VN



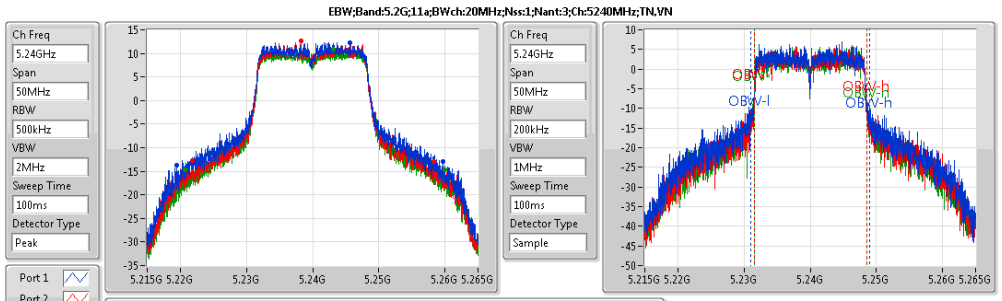
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
31.075M	5.165475G	5.19655G	16.717M	5.171654G	5.188371G	Inf	1
26.525M	5.166725G	5.19325G	16.642M	5.171679G	5.188321G	Inf	2
30.525M	5.164675G	5.1952G	16.667M	5.171654G	5.188321G	Inf	3

EBW;Band:5.2G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5200MHz;TN,VN



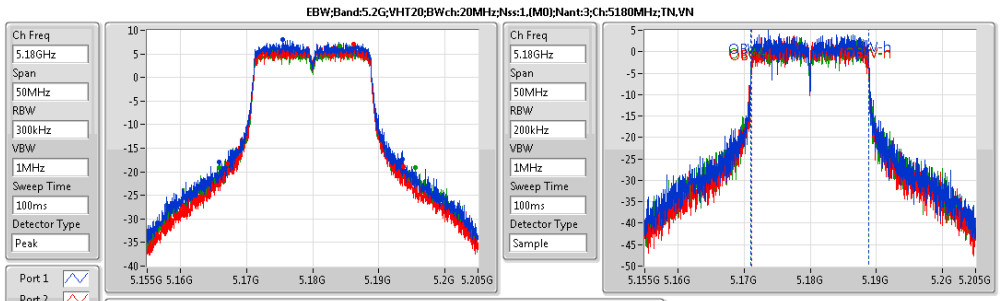
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
44.55M	5.177325G	5.221875G	23.463M	5.188306G	5.211769G	Inf	1
42.625M	5.1793G	5.221925G	21.864M	5.189255G	5.211119G	Inf	2
44.325M	5.1781G	5.222425G	23.563M	5.188331G	5.211894G	Inf	3

EBW;Band:5.2G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5240MHz;TN,VN



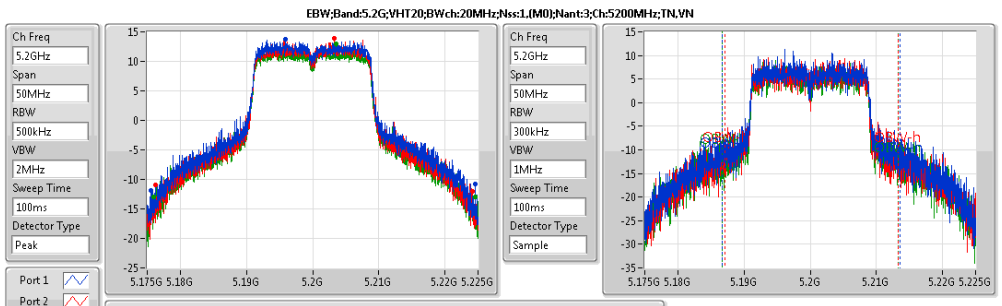
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
40.175M	5.219525G	5.2597G	18.041M	5.230955G	5.248996G	Inf	1
36.525M	5.221775G	5.2583G	16.992M	5.231554G	5.248546G	Inf	2
39.35M	5.220675G	5.260025G	16.992M	5.231529G	5.248521G	Inf	3

EBW;Band:5.2G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5180MHz;TN,VN



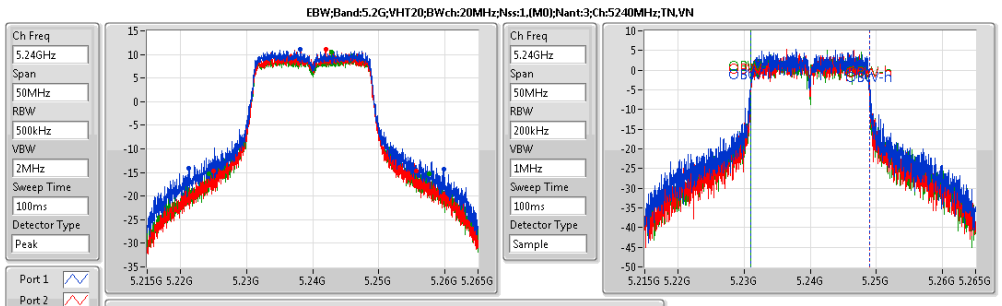
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
27.725M	5.165825G	5.19355G	17.791M	5.171079G	5.188871G	Inf	1
26.575M	5.167175G	5.19375G	17.766M	5.171104G	5.188871G	Inf	2
29.575M	5.165925G	5.1955G	17.816M	5.171054G	5.188871G	Inf	3

EBW;Band:5.2G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5200MHz;TN,VN



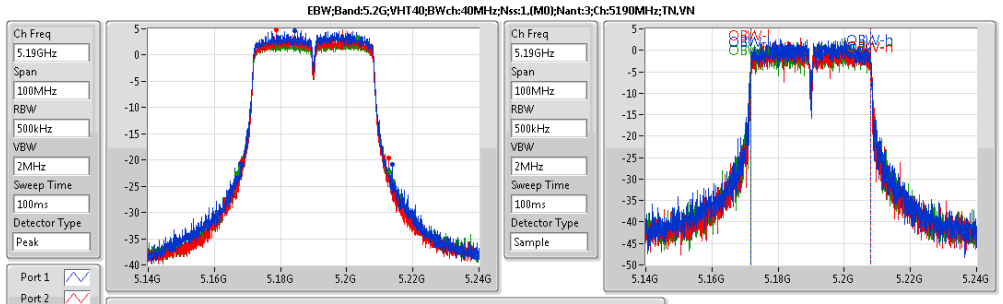
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
49.05M	5.1755G	5.22455G	26.987M	5.186657G	5.213643G	Inf	1
47.975M	5.17625G	5.224225G	26.112M	5.187156G	5.213268G	Inf	2
48.625M	5.17595G	5.224575G	26.637M	5.186707G	5.213343G	Inf	3

EBW;Band:5.2G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5240MHz;TN,VN



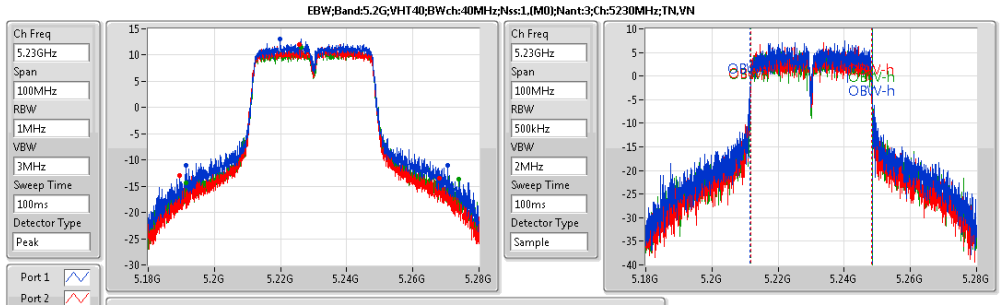
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
38.55M	5.2213G	5.25985G	18.041M	5.230955G	5.248996G	Inf	1
30.6M	5.225G	5.2556G	17.841M	5.231079G	5.248921G	Inf	2
33.2M	5.224375G	5.257575G	17.866M	5.231079G	5.248946G	Inf	3

EBW;Band:5.2G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5190MHz;TN,VN



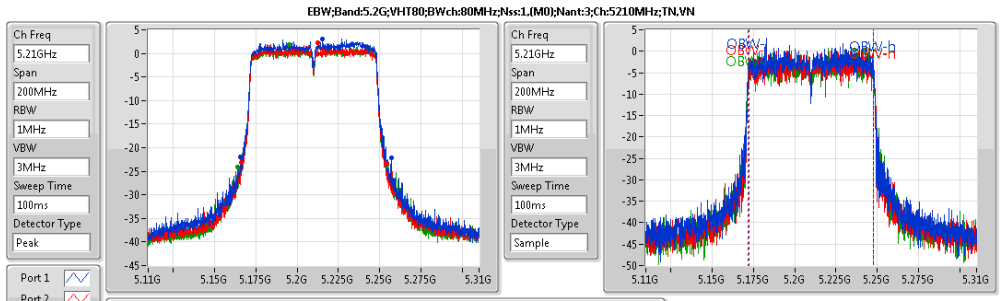
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
45.9M	5.16785G	5.21375G	36.282M	5.171809G	5.208091G	Inf	1
44.5M	5.1683G	5.2128G	36.232M	5.171859G	5.208091G	Inf	2
46.25M	5.16675G	5.213G	36.282M	5.171809G	5.208091G	Inf	3

EBW;Band:5.2G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5230MHz;TN,VN



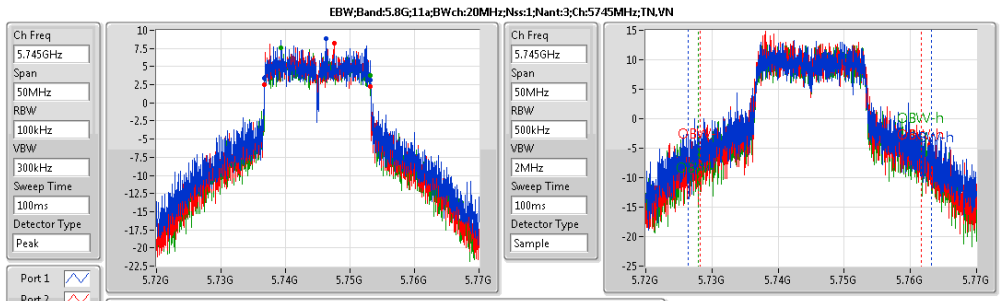
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
79.3M	5.1913G	5.2706G	36.832M	5.211609G	5.248441G	Inf	1
78.3M	5.1896G	5.2679G	36.582M	5.211659G	5.248241G	Inf	2
82.65M	5.1913G	5.27395G	36.682M	5.211709G	5.248391G	Inf	3

EBW;Band:5.2G;VHT80;BWch:80MHz;Nss:1,(M0);Nant:3;Ch:5210MHz;TN,VN



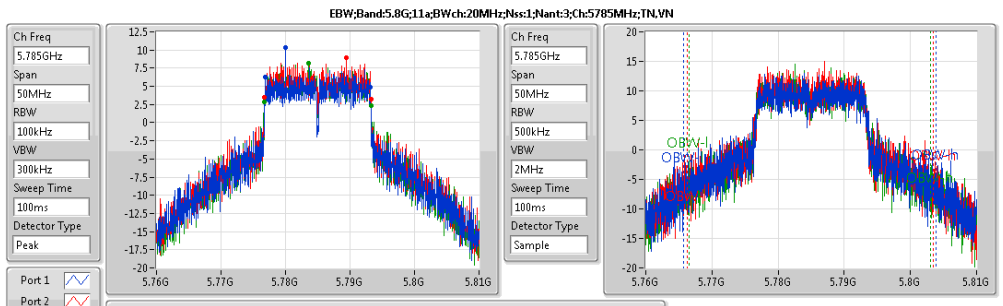
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
90.9M	5.1659G	5.2568G	75.662M	5.172119G	5.247781G	Inf	1
88.1M	5.1662G	5.2543G	75.862M	5.172019G	5.247881G	Inf	2
90.7M	5.1638G	5.2545G	75.862M	5.172019G	5.247881G	Inf	3

EBW;Band:5.8G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5745MHz;TN,VN



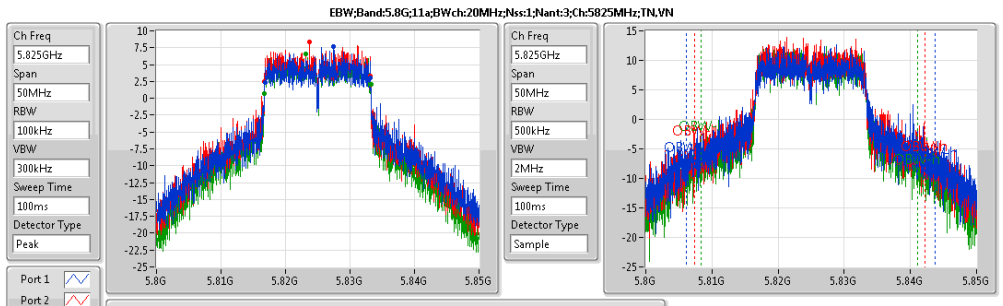
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.4M	5.736775G	5.753175G	36.832M	5.726359G	5.763191G	500k	1
16.45M	5.73675G	5.7532G	33.308M	5.728283G	5.761592G	500k	2
16.4M	5.736775G	5.753175G	33.633M	5.727984G	5.761617G	500k	3

EBW;Band:5.8G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5785MHz;TN,VN



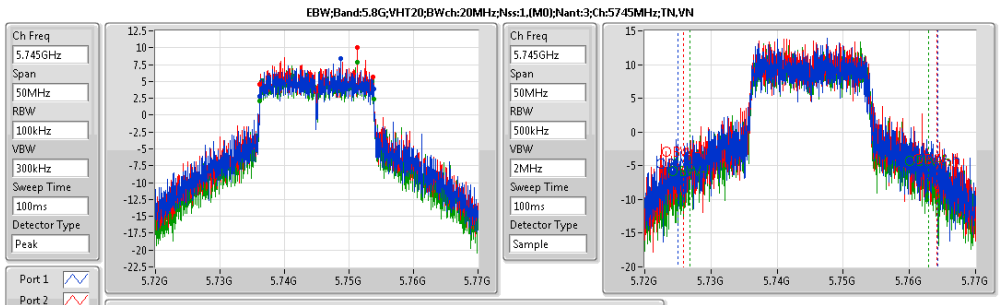
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.3M	5.77685G	5.79315G	38.081M	5.76576G	5.803841G	500k	1
16.475M	5.776775G	5.79325G	37.256M	5.766234G	5.803491G	500k	2
16.5M	5.77675G	5.79325G	36.482M	5.766534G	5.803016G	500k	3

EBW;Band:5.8G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5825MHz;TN,VN



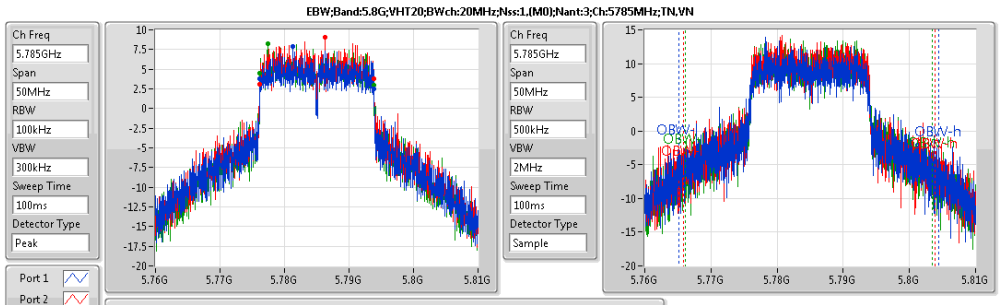
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.375M	5.8168G	5.833175G	37.531M	5.806159G	5.843691G	500k	1
16.4M	5.816775G	5.833175G	34.808M	5.807359G	5.842166G	500k	2
16.55M	5.8167G	5.83325G	32.784M	5.808333G	5.841117G	500k	3

EBW;Band:5.8G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5745MHz;TN,VN



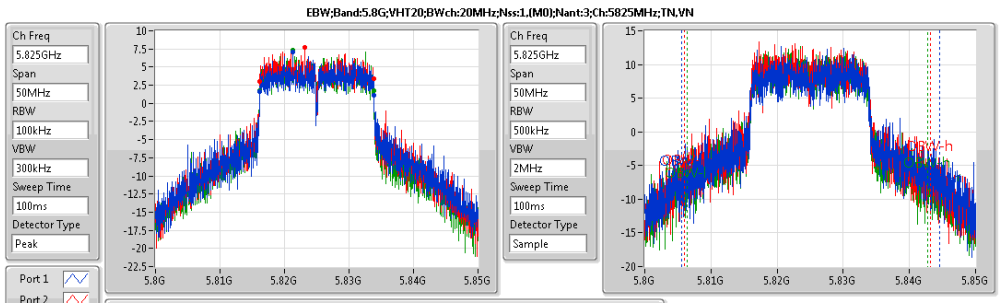
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.625M	5.736175G	5.7538G	39.205M	5.72506G	5.764265G	500k	1
17.575M	5.7362G	5.753775G	38.306M	5.72591G	5.764215G	500k	2
17.75M	5.73615G	5.7539G	36.082M	5.726809G	5.762891G	500k	3

EBW;Band:5.8G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5785MHz;TN,VN



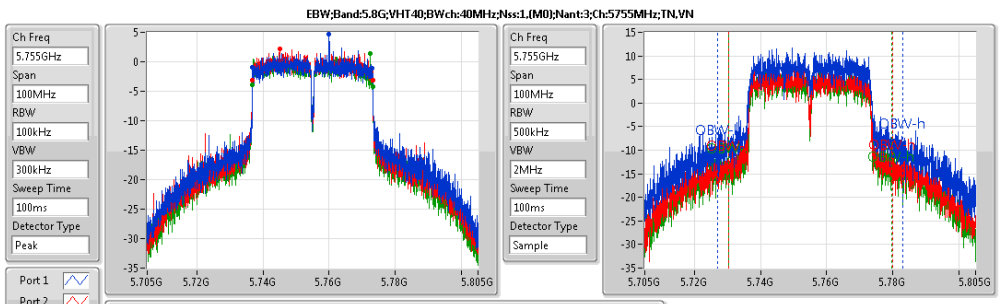
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.7M	5.7762G	5.7939G	39.23M	5.76521G	5.80444G	500k	1
17.65M	5.776175G	5.793825G	37.956M	5.76586G	5.803816G	500k	2
17.625M	5.7762G	5.793825G	37.356M	5.766134G	5.803491G	500k	3

EBW;Band:5.8G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5825MHz;TN,VN



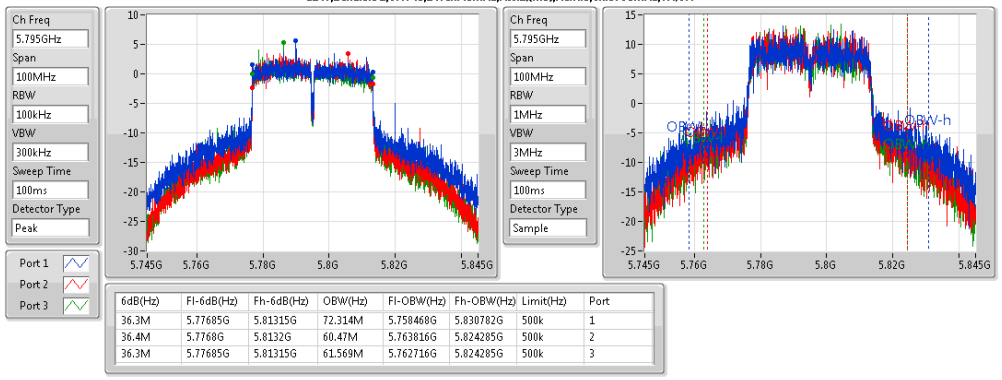
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.7M	5.81615G	5.83385G	38.931M	5.80561G	5.84454G	500k	1
17.675M	5.81615G	5.833825G	37.256M	5.805985G	5.843241G	500k	2
17.675M	5.81615G	5.833825G	36.332M	5.806359G	5.842691G	500k	3

EBW;Band:5.8G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5755MHz;TN,VN



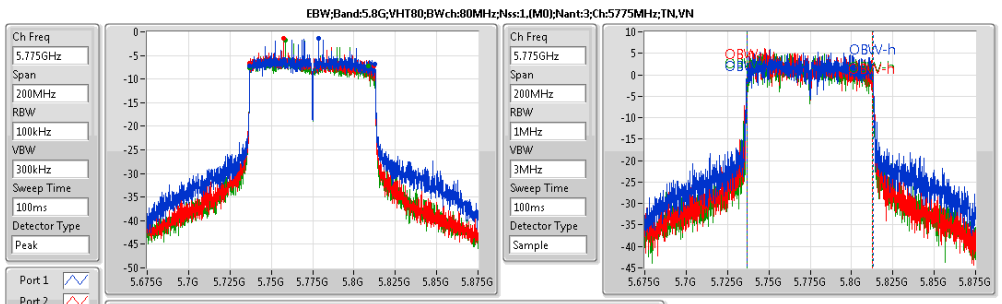
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
36.1M	5.73685G	5.77295G	55.822M	5.727114G	5.782936G	500k	1
36.4M	5.7368G	5.7732G	49.725M	5.730212G	5.779938G	500k	2
36.45M	5.73675G	5.7732G	49.225M	5.730312G	5.779538G	500k	3

EBW;Band:5.8G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5795MHz;TN,VN



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
36.3M	5.77685G	5.81315G	72.314M	5.758468G	5.830782G	500k	1
36.4M	5.7768G	5.8132G	60.47M	5.763816G	5.824285G	500k	2
36.3M	5.77685G	5.81315G	61.569M	5.762716G	5.824285G	500k	3

EBW;Band:5.8G;VHT80;BWch:80MHz;Nss:1,(M0);Nant:3;Ch:5775MHz;TN,VN



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
75.7M	5.7368G	5.8125G	76.362M	5.736719G	5.813081G	500k	1
75.1M	5.7368G	5.8119G	75.962M	5.736819G	5.812781G	500k	2
72M	5.7368G	5.8088G	75.662M	5.736919G	5.812581G	500k	3

Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
5.2G;11a;Nss1;Ntx3	26.76	0.47424	29.59	0.90991
5.2G;VHT20;Nss1,(M0);Ntx3	27.07	0.50933	29.90	0.97724
5.2G;VHT40;Nss1,(M0);Ntx3	25.21	0.33189	28.04	0.6368
5.2G;VHT80;Nss1,(M0);Ntx3	18.85	0.07674	21.68	0.14723
5.8G;11a;Nss1;Ntx3	28.53	0.71285	31.13	1.29718
5.8G;VHT20;Nss1,(M0);Ntx3	28.37	0.68707	30.97	1.25026
5.8G;VHT40;Nss1,(M0);Ntx3	27.38	0.54702	29.98	0.99541
5.8G;VHT80;Nss1,(M0);Ntx3	23.25	0.21135	25.85	0.38459

Result

Mode	Result	DG (dBi)	Sum (dBm)	Sum Lim. (dBm)	EIRP (dBm)	EIRP Lim. (dBm)	P1 (dBm)	P2 (dBm)	P3 (dBm)
5.2G;11a;Nss1;Ntx3;5180	Pass	2.83	24.57	30.00	27.40	36.00	19.86	19.76	19.77
5.2G;11a;Nss1;Ntx3;5200	Pass	2.83	26.76	30.00	29.59	36.00	22.18	21.92	21.85
5.2G;11a;Nss1;Ntx3;5240	Pass	2.83	25.38	30.00	28.21	36.00	20.92	20.52	20.38
5.2G;VHT20;Nss1,(M0);Ntx3;5180	Pass	2.83	23.63	30.00	26.46	36.00	19.21	18.49	18.85
5.2G;VHT20;Nss1,(M0);Ntx3;5200	Pass	2.83	27.07	30.00	29.90	36.00	22.55	22.02	22.32
5.2G;VHT20;Nss1,(M0);Ntx3;5240	Pass	2.83	24.44	30.00	27.27	36.00	20.08	19.35	19.55
5.2G;VHT40;Nss1,(M0);Ntx3;5190	Pass	2.83	21.09	30.00	23.92	36.00	16.76	15.86	16.29
5.2G;VHT40;Nss1,(M0);Ntx3;5230	Pass	2.83	25.21	30.00	28.04	36.00	20.77	20.02	20.48
5.2G;VHT80;Nss1,(M0);Ntx3;5210	Pass	2.83	18.85	30.00	21.68	36.00	14.28	13.92	14.04
5.8G;11a;Nss1;Ntx3;5745	Pass	2.60	28.29	30.00	30.89	36.00	23.12	23.45	23.95
5.8G;11a;Nss1;Ntx3;5785	Pass	2.60	28.53	30.00	31.13	36.00	23.12	23.82	24.26
5.8G;11a;Nss1;Ntx3;5825	Pass	2.60	27.66	30.00	30.26	36.00	22.41	22.77	23.42
5.8G;VHT20;Nss1,(M0);Ntx3;5745	Pass	2.60	28.37	30.00	30.97	36.00	23.22	23.64	23.92
5.8G;VHT20;Nss1,(M0);Ntx3;5785	Pass	2.60	28.34	30.00	30.94	36.00	22.93	23.59	24.11
5.8G;VHT20;Nss1,(M0);Ntx3;5825	Pass	2.60	27.69	30.00	30.29	36.00	22.42	22.84	23.43
5.8G;VHT40;Nss1,(M0);Ntx3;5755	Pass	2.60	26.27	30.00	28.87	36.00	21.12	21.62	21.74
5.8G;VHT40;Nss1,(M0);Ntx3;5795	Pass	2.60	27.38	30.00	29.98	36.00	22.32	22.43	23.05
5.8G;VHT80;Nss1,(M0);Ntx3;5775	Pass	2.60	23.25	30.00	25.85	36.00	18.52	18.15	18.75

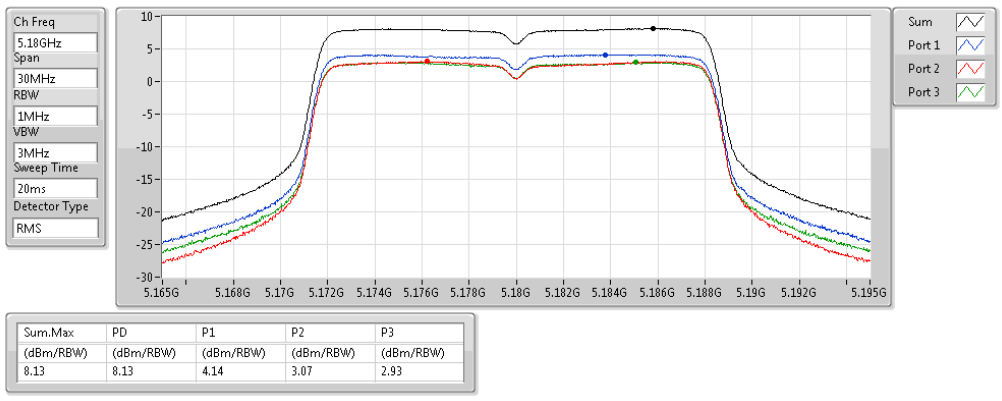
Summary

Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
5.2G;11a;Nss1;Ntx3	10.59	17.85
5.2G;VHT20;Nss1,(M0);Ntx3	10.68	17.94
5.2G;VHT40;Nss1,(M0);Ntx3	5.68	12.94
5.2G;VHT80;Nss1,(M0);Ntx3	-3.87	3.40
5.8G;11a;Nss1;Ntx3	10.74	17.87
5.8G;VHT20;Nss1,(M0);Ntx3	10.50	17.63
5.8G;VHT40;Nss1,(M0);Ntx3	6.63	13.76
5.8G;VHT80;Nss1,(M0);Ntx3	-0.33	6.80

Result

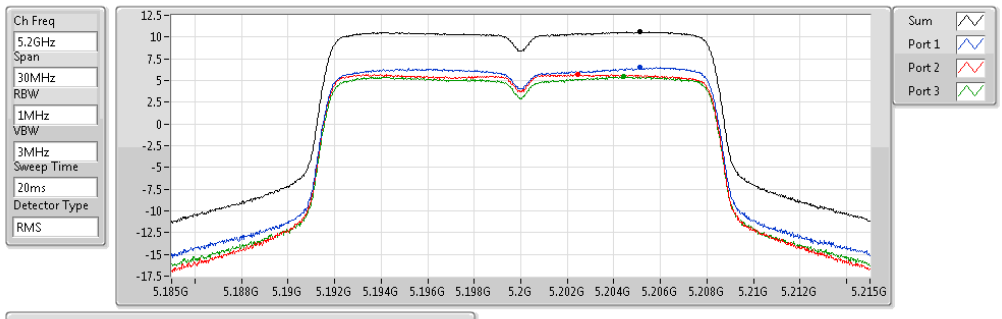
Mode	Result	Meas.RBW (Hz)	Lim.RBW (Hz)	BWCF (dB)	DG (dBi)	PD (dBm/RBW)	PD.Limit (dBm/RBW)	EIRP.PD (dBm/RBW)	EIRP.PD.Lim (dBm/RBW)	P1 (dBm/RBW)	P2 (dBm/RBW)	P3 (dBm/RBW)
5.2G;11a;Nss1;Ntx3;5180	Pass	1M	1M	0.00	7.26	8.13	15.74	15.39	Inf	4.14	3.07	2.93
5.2G;11a;Nss1;Ntx3;5200	Pass	1M	1M	0.00	7.26	10.59	15.74	17.85	Inf	6.50	5.70	5.48
5.2G;11a;Nss1;Ntx3;5240	Pass	1M	1M	0.00	7.26	9.40	15.74	16.67	Inf	5.10	4.72	4.33
5.2G;VHT20;Nss1,(M0);Ntx3;5180	Pass	1M	1M	0.00	7.26	7.36	15.74	14.62	Inf	3.40	2.42	2.20
5.2G;VHT20;Nss1,(M0);Ntx3;5200	Pass	1M	1M	0.00	7.26	10.68	15.74	17.94	Inf	6.54	5.97	5.47
5.2G;VHT20;Nss1,(M0);Ntx3;5240	Pass	1M	1M	0.00	7.26	8.23	15.74	15.50	Inf	4.11	3.29	3.36
5.2G;VHT40;Nss1,(M0);Ntx3;5190	Pass	1M	1M	0.00	7.26	1.77	15.74	9.03	Inf	-2.26	-3.18	-3.35
5.2G;VHT40;Nss1,(M0);Ntx3;5230	Pass	1M	1M	0.00	7.26	5.68	15.74	12.94	Inf	1.60	0.83	0.59
5.2G;VHT80;Nss1,(M0);Ntx3;5210	Pass	1M	1M	0.00	7.26	-3.87	15.74	3.40	Inf	-7.62	-9.11	-9.00
5.8G;11a;Nss1;Ntx3;5745	Pass	500k	500k	0.00	7.13	10.56	28.87	17.69	34.87	5.84	6.07	5.84
5.8G;11a;Nss1;Ntx3;5785	Pass	500k	500k	0.00	7.13	10.74	28.87	17.87	34.87	5.53	6.49	6.21
5.8G;11a;Nss1;Ntx3;5825	Pass	500k	500k	0.00	7.13	10.17	28.87	17.30	34.87	4.92	6.00	5.48
5.8G;VHT20;Nss1,(M0);Ntx3;5745	Pass	500k	500k	0.00	7.13	10.47	28.87	17.59	34.87	5.62	6.21	5.46
5.8G;VHT20;Nss1,(M0);Ntx3;5785	Pass	500k	500k	0.00	7.13	10.50	28.87	17.63	34.87	5.36	6.25	5.76
5.8G;VHT20;Nss1,(M0);Ntx3;5825	Pass	500k	500k	0.00	7.13	9.79	28.87	16.91	34.87	4.48	5.61	5.27
5.8G;VHT40;Nss1,(M0);Ntx3;5755	Pass	500k	500k	0.00	7.13	5.51	28.87	12.64	34.87	0.60	1.13	0.80
5.8G;VHT40;Nss1,(M0);Ntx3;5795	Pass	500k	500k	0.00	7.13	6.63	28.87	13.76	34.87	1.72	2.24	1.79
5.8G;VHT80;Nss1,(M0);Ntx3;5775	Pass	500k	500k	0.00	7.13	-0.33	28.87	6.80	34.87	-5.00	-4.91	-5.03

PSD;Band:5.2G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5180MHz;TN,VN



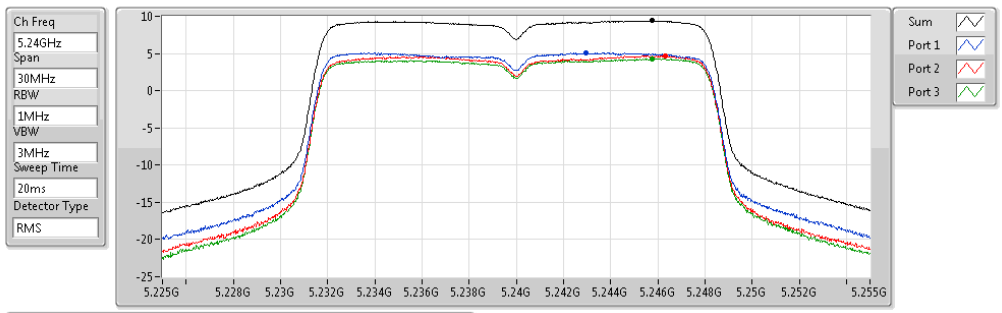
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
8.13	8.13	4.14	3.07	2.93

PSD;Band:5.2G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5200MHz;TN,VN



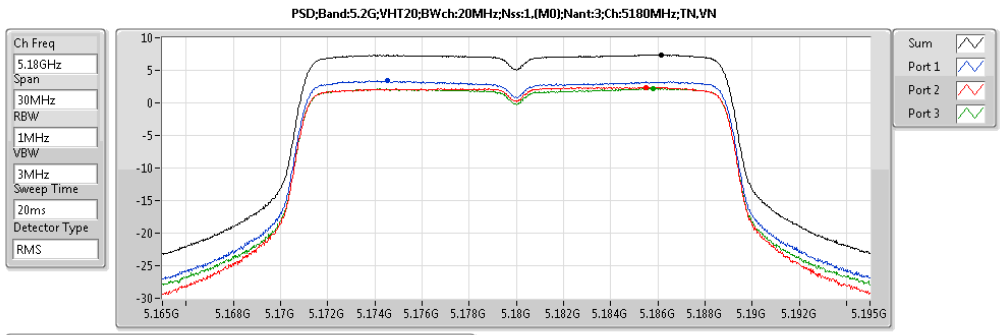
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.59	10.59	6.50	5.70	5.48

PSD;Band:5.2G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5240MHz;TN,VN



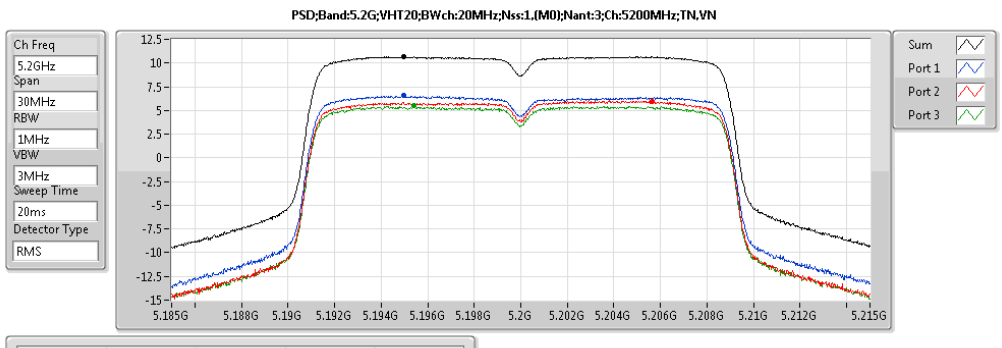
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
9.40	9.40	5.10	4.72	4.33

PSD;Band:5.2G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5180MHz;TN,VN



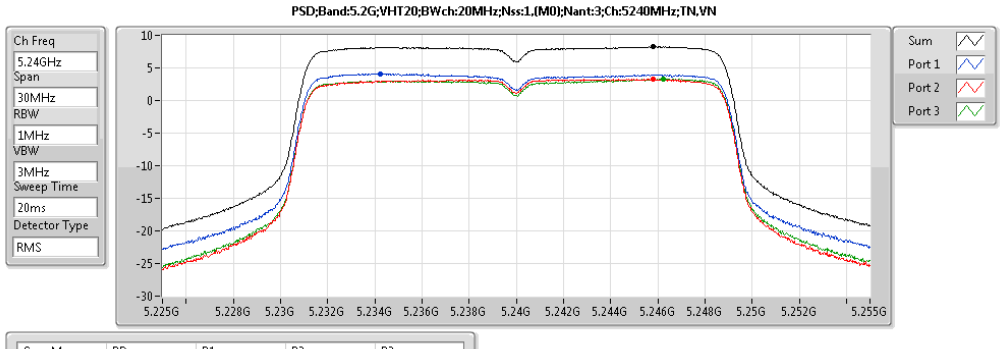
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
7.36	7.36	3.40	2.42	2.20

PSD;Band:5.2G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5200MHz;TN,VN



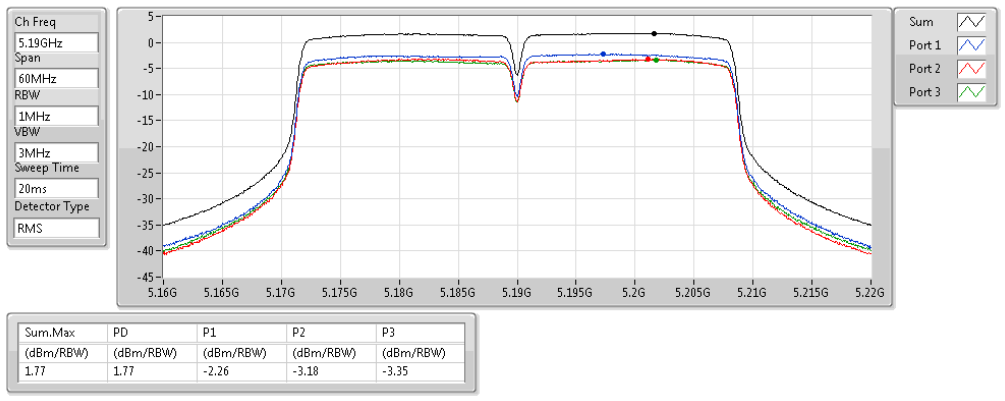
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.68	10.68	6.54	5.97	5.47

PSD;Band:5.2G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5240MHz;TN,VN



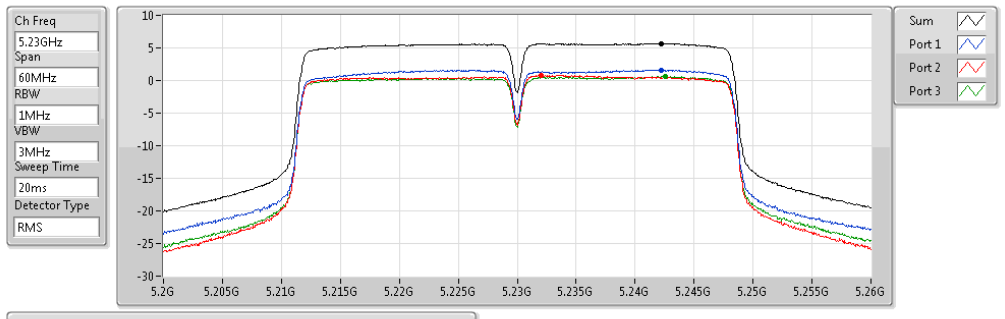
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
8.23	8.23	4.11	3.29	3.36

PSD;Band:5.2G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5190MHz;TN,VN



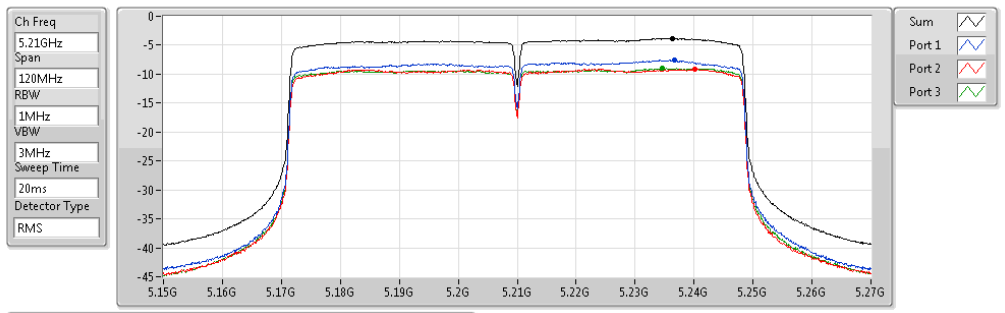
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.77	1.77	-2.26	-3.18	-3.35

PSD;Band:5.2G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5230MHz;TN,VN



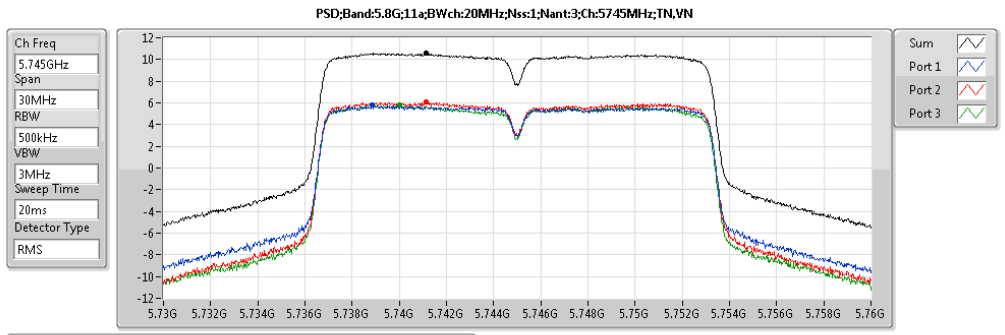
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
5.68	5.68	1.60	0.83	0.59

PSD;Band:5.2G;VHT80;BWch:80MHz;Nss:1,(M0);Nant:3;Ch:5210MHz;TN,VN



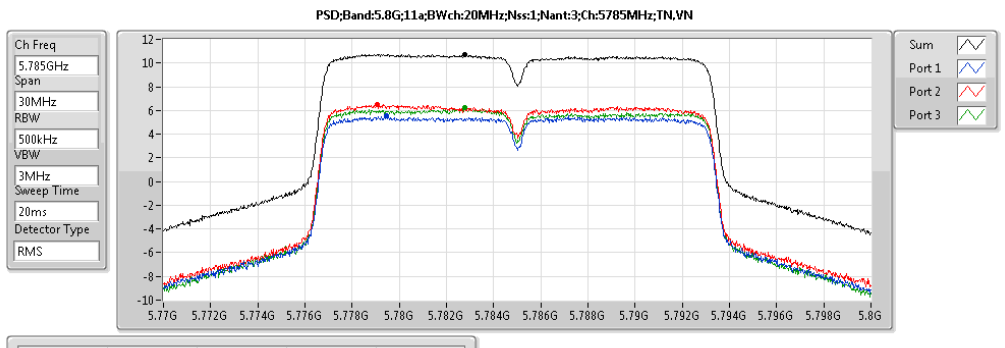
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-3.87	-3.87	-7.62	-9.11	-9.00

PSD;Band:5.8G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5745MHz;TN,VN



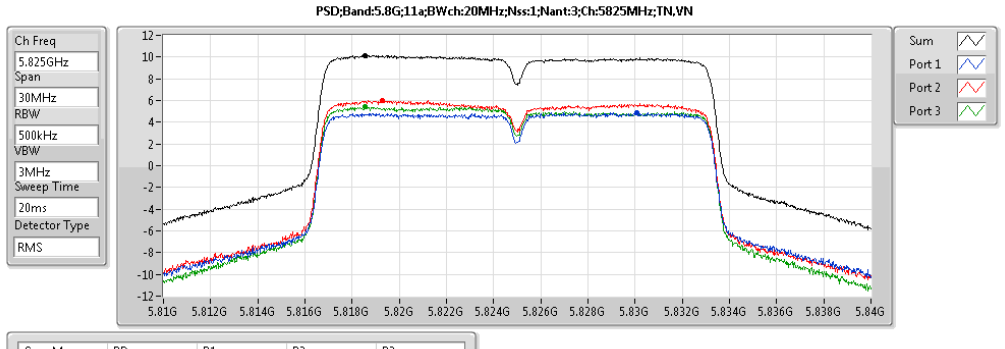
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.56	10.56	5.84	6.07	5.84

PSD;Band:5.8G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5785MHz;TN,VN



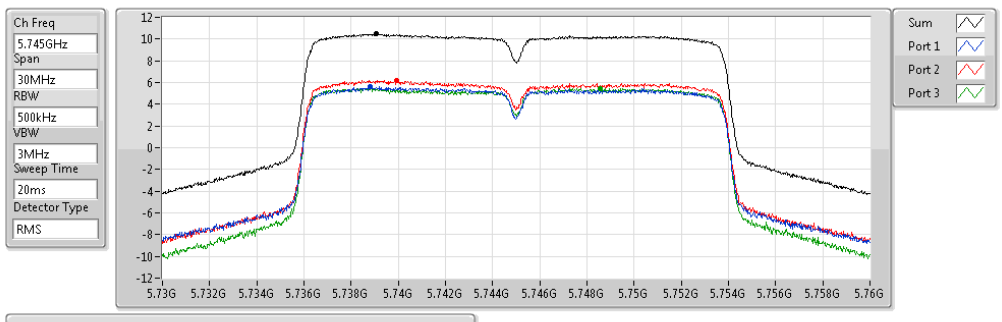
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.74	10.74	5.53	6.49	6.21

PSD;Band:5.8G;11a;BWch:20MHz;Nss:1;Nant:3;Ch:5825MHz;TN,VN



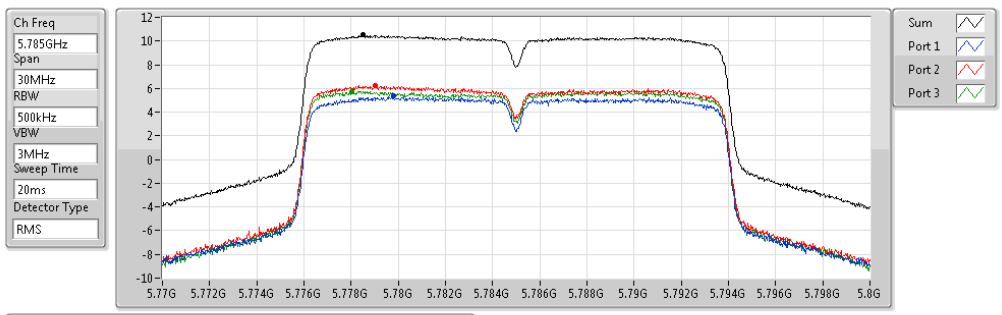
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.17	10.17	4.92	6.00	5.48

PSD;Band:5.8G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5745MHz;TN,VN



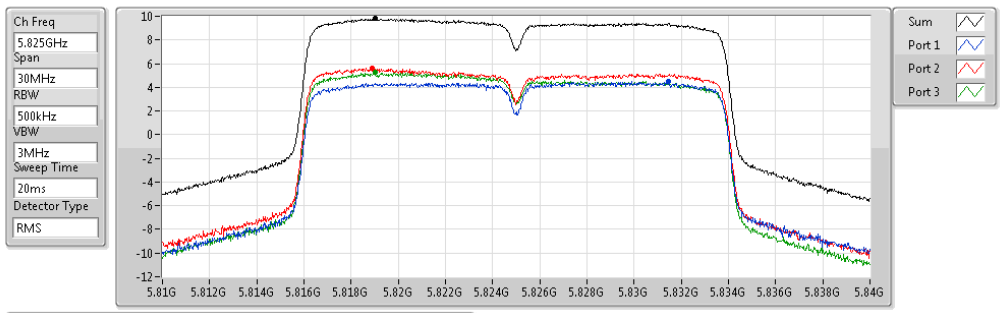
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.47	10.47	5.62	6.21	5.46

PSD;Band:5.8G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5785MHz;TN,VN



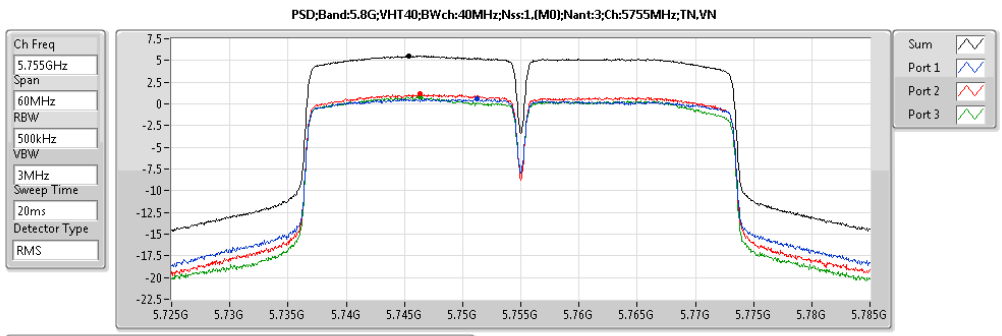
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.50	10.50	5.36	6.25	5.76

PSD;Band:5.8G;VHT20;BWch:20MHz;Nss:1,(M0);Nant:3;Ch:5825MHz;TN,VN



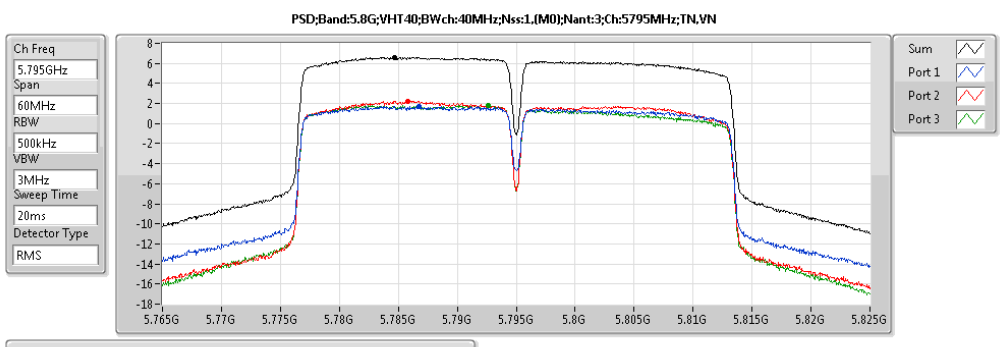
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
9.79	9.79	4.48	5.61	5.27

PSD;Band:5.8G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5755MHz;TN,VN



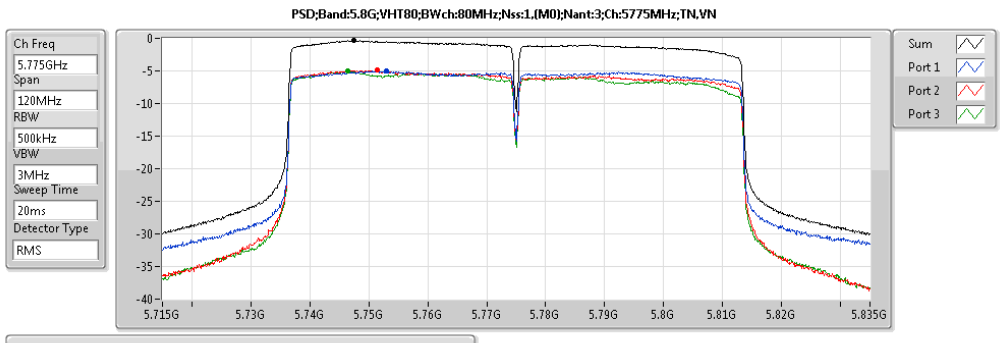
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
5.51	5.51	0.60	1.13	0.80

PSD;Band:5.8G;VHT40;BWch:40MHz;Nss:1,(M0);Nant:3;Ch:5795MHz;TN,VN



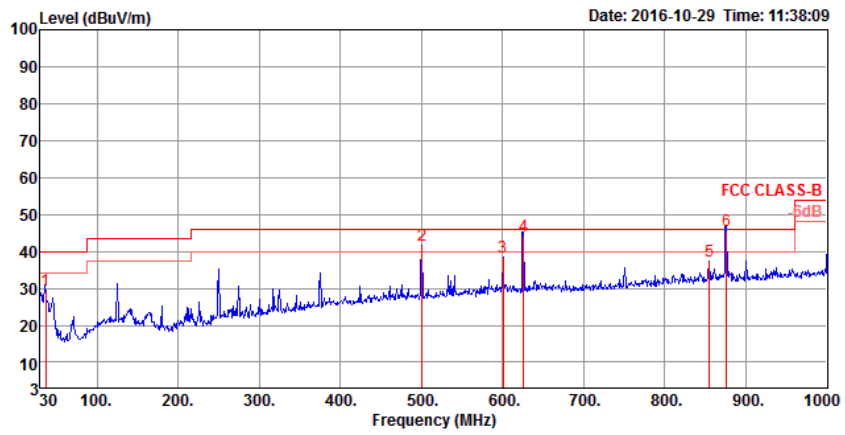
Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
6.63	6.63	1.72	2.24	1.79

PSD;Band:5.8G;VHT80;BWch:80MHz;Nss:1,(M0);Nant:3;Ch:5775MHz;TN,VN



Sum.Max	PD	P1	P2	P3
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.33	-0.33	-5.00	-4.91	-5.03

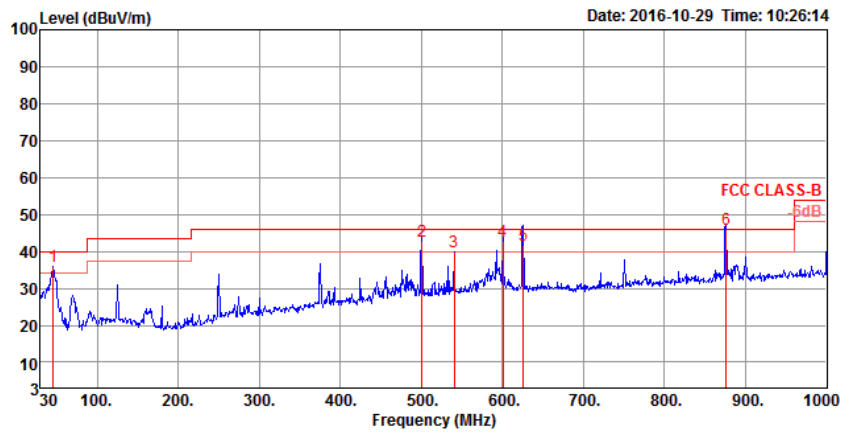
RSE below 1GHz Result			
Operating Mode	2	**Polarization**	Horizontal
Operating Function	CTX		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	36.79	29.52	40.00	-10.48	39.55	0.58	22.16	32.77	200	356	Peak	HORIZONTAL
2	500.45	41.79	46.00	-4.21	47.88	2.18	24.03	32.30	200	260	Peak	HORIZONTAL
3	600.36	38.31	46.00	-7.69	42.88	2.44	25.40	32.41	150	131	Peak	HORIZONTAL
4	625.58	44.30	46.00	-1.70	48.49	2.44	25.77	32.40	150	131	QP	HORIZONTAL
5	855.47	37.20	46.00	-8.80	38.80	2.89	27.42	31.91	100	206	Peak	HORIZONTAL
6	875.84	45.64	46.00	-0.36	47.00	2.90	27.55	31.81	100	174	QP	HORIZONTAL

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

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



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	45.52	35.88	40.00	-4.12	50.86	0.64	16.88	32.50	100	330	Peak	VERTICAL
2	500.45	42.91	46.00	-3.09	49.00	2.18	24.03	32.30	100	318	QP	VERTICAL
3	540.22	39.77	46.00	-6.23	45.23	2.26	24.63	32.35	100	1	Peak	VERTICAL
4	600.36	42.73	46.00	-3.27	47.30	2.44	25.40	32.41	100	1	QP	VERTICAL
5	625.58	41.70	46.00	-4.30	45.89	2.44	25.77	32.40	200	360	QP	VERTICAL
6	875.84	45.84	46.00	-0.16	47.20	2.90	27.55	31.81	100	13	QP	VERTICAL

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

Radiated Emissions (1GHz~40GHz)

Configurations	IEEE 802.11a CH 36 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10363.72	57.06	68.20	-11.14	46.42	7.36	38.38	35.10	202	335	Peak	HORIZONTAL
2	15543.04	41.98	54.00	-12.02	29.37	9.09	38.16	34.64	182	144	Average	HORIZONTAL
3	15546.57	55.10	74.00	-18.90	42.49	9.09	38.16	34.64	182	144	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10362.15	62.64	68.20	-5.56	52.03	7.36	38.38	35.13	234	292	Peak	VERTICAL
2	15538.53	42.22	54.00	-11.78	29.61	9.09	38.16	34.64	208	220	Average	VERTICAL
3	15543.40	54.39	74.00	-19.61	41.78	9.09	38.16	34.64	208	220	Peak	VERTICAL

Configurations	IEEE 802.11a CH 40 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10396.25	63.17	68.20	-5.03	52.49	7.37	38.41	35.10	198	339	Peak	HORIZONTAL
2	15596.25	54.76	74.00	-19.24	42.10	9.11	38.23	34.68	192	96	Peak	HORIZONTAL
3	15608.53	41.97	54.00	-12.03	29.24	9.12	38.29	34.68	192	96	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10403.01	67.85	68.20	-0.35	57.14	7.38	38.41	35.08	234	288	Peak	VERTICAL
2	15598.94	55.52	74.00	-18.48	42.86	9.11	38.23	34.68	243	2	Peak	VERTICAL
3	15600.67	43.21	54.00	-10.79	30.49	9.11	38.29	34.68	243	2	Average	VERTICAL

Configurations	IEEE 802.11a CH 48 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10486.76	58.94	68.20	-9.26	48.07	7.42	38.48	35.03	200	329	Peak	HORIZONTAL
2	15711.47	42.26	54.00	-11.74	29.45	9.16	38.42	34.77	191	162	Average	HORIZONTAL
3	15717.12	55.47	74.00	-18.53	42.70	9.16	38.42	34.81	191	162	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10480.35	66.71	68.20	-1.49	55.84	7.42	38.48	35.03	208	286	Peak	VERTICAL
2	15715.54	55.40	74.00	-18.60	42.63	9.16	38.42	34.81	181	65	Peak	VERTICAL
3	15722.72	44.10	54.00	-9.90	31.33	9.16	38.42	34.81	181	65	Average	VERTICAL

Configurations	IEEE 802.11a CH 149 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11484.15	61.14	74.00	-12.86	49.34	7.92	38.50	34.62	149	116	Peak	HORIZONTAL
2	11485.91	48.42	54.00	-5.58	36.62	7.92	38.50	34.62	149	116	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11490.40	64.47	74.00	-9.53	52.67	7.92	38.50	34.62	155	87	Peak	VERTICAL
2	11491.04	51.11	54.00	-2.89	39.31	7.92	38.50	34.62	155	87	Average	VERTICAL

Configurations	IEEE 802.11a CH 157 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11572.88	48.60	54.00	-5.40	36.76	7.96	38.53	34.65	129	296	Average	HORIZONTAL
2	11573.72	62.54	74.00	-11.46	50.70	7.96	38.53	34.65	129	296	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.03	64.88	74.00	-9.12	53.04	7.96	38.53	34.65	150	85	Peak	VERTICAL
2	11571.03	50.14	54.00	-3.86	38.30	7.96	38.53	34.65	150	85	Average	VERTICAL

Configurations	IEEE 802.11a CH 165 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11652.24	45.62	54.00	-8.38	33.73	8.00	38.57	34.68	127	296	Average	HORIZONTAL
2	11653.56	59.39	74.00	-14.61	47.50	8.00	38.57	34.68	127	296	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11641.31	60.45	74.00	-13.55	48.59	7.99	38.55	34.68	157	87	Peak	VERTICAL
2	11650.35	46.49	54.00	-7.51	34.62	8.00	38.55	34.68	157	87	Average	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15541.04	42.60	54.00	-11.40	29.99	9.09	38.16	34.64	184	311	Average	HORIZONTAL
2	15550.74	55.25	74.00	-18.75	42.63	9.10	38.16	34.64	181	311	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15539.20	55.58	74.00	-18.42	42.97	9.09	38.16	34.64	246	88	Peak	VERTICAL
2	15564.36	41.61	54.00	-12.39	28.96	9.10	38.23	34.68	246	88	Average	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10402.88	54.36	68.20	-13.84	43.65	7.38	38.41	35.08	276	172	Peak	HORIZONTAL
2	15598.08	43.42	54.00	-10.58	30.76	9.11	38.23	34.68	147	54	Average	HORIZONTAL
3	15598.64	56.46	74.00	-17.54	43.80	9.11	38.23	34.68	147	54	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10404.33	66.83	68.20	-1.37	56.12	7.38	38.41	35.08	130	304	Peak	VERTICAL
2	15585.10	49.95	74.00	-24.05	37.29	9.11	38.23	34.68	141	85	Peak	VERTICAL
3	15600.88	43.64	54.00	-10.36	30.92	9.11	38.29	34.68	141	85	Average	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10479.92	48.65	68.20	-19.55	37.78	7.42	38.48	35.03	218	356	Peak	HORIZONTAL
2	15715.99	52.33	74.00	-21.67	39.56	9.16	38.42	34.81	120	94	Peak	HORIZONTAL
3	15715.99	42.27	54.00	-11.73	29.50	9.16	38.42	34.81	120	94	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10473.59	60.34	68.20	-7.86	49.48	7.41	38.48	35.03	168	356	Peak	VERTICAL
2	15723.85	42.45	54.00	-11.55	29.68	9.16	38.42	34.81	153	77	Average	VERTICAL
3	15724.49	56.20	74.00	-17.80	43.43	9.16	38.42	34.81	153	77	Peak	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11496.65	49.85	54.00	-4.15	38.05	7.92	38.50	34.62	131	297	Average	HORIZONTAL
2	11497.93	64.40	74.00	-9.60	52.59	7.93	38.50	34.62	131	297	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11492.88	51.91	54.00	-2.09	40.11	7.92	38.50	34.62	147	85	Average	VERTICAL
2	11493.37	64.51	74.00	-9.49	52.71	7.92	38.50	34.62	147	85	Peak	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11575.29	48.10	54.00	-5.90	36.26	7.96	38.53	34.65	134	298	Average	HORIZONTAL
2	11577.05	56.24	74.00	-17.76	44.40	7.96	38.53	34.65	134	298	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.40	64.88	74.00	-9.12	53.04	7.96	38.53	34.65	153	87	Peak	VERTICAL
2	11571.12	50.35	54.00	-3.65	38.51	7.96	38.53	34.65	153	87	Average	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11640.06	57.38	74.00	-16.62	45.52	7.99	38.55	34.68	150	119	Peak	HORIZONTAL
2	11640.22	44.64	54.00	-9.36	32.78	7.99	38.55	34.68	150	119	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11649.33	60.02	74.00	-13.98	48.15	8.00	38.55	34.68	156	88	Peak	VERTICAL
2	11650.64	46.19	54.00	-7.81	34.32	8.00	38.55	34.68	156	88	Average	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15560.93	55.65	74.00	-18.35	43.00	9.10	38.23	34.68	293	329	Peak	HORIZONTAL
2	15568.40	42.48	54.00	-11.52	29.83	9.10	38.23	34.68	293	329	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15566.86	42.91	54.00	-11.09	30.26	9.10	38.23	34.68	182	80	Average	VERTICAL
2	15570.51	55.67	74.00	-18.33	43.02	9.10	38.23	34.68	182	80	Peak	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15688.59	43.84	54.00	-10.16	31.11	9.15	38.35	34.77	123	331	Average	HORIZONTAL
2	15696.51	57.22	74.00	-16.78	44.42	9.15	38.42	34.77	123	331	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15682.82	57.07	74.00	-16.93	44.34	9.15	38.35	34.77	191	137	Peak	VERTICAL
2	15696.35	43.98	54.00	-10.02	31.18	9.15	38.42	34.77	191	137	Average	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11507.95	56.02	74.00	-17.98	44.21	7.93	38.50	34.62	194	29	Peak	HORIZONTAL
2	11511.79	42.85	54.00	-11.15	31.05	7.93	38.50	34.63	194	29	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11507.98	56.95	74.00	-17.05	45.14	7.93	38.50	34.62	202	222	Peak	VERTICAL
2	11511.15	44.97	54.00	-9.03	33.17	7.93	38.50	34.63	202	222	Average	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11582.44	44.43	54.00	-9.57	32.58	7.97	38.53	34.65	205	133	Average	HORIZONTAL
2	11582.55	56.04	74.00	-17.96	44.19	7.97	38.53	34.65	205	133	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11590.29	46.16	54.00	-7.84	34.31	7.97	38.54	34.66	207	218	Average	VERTICAL
2	11591.73	59.04	74.00	-14.96	47.19	7.97	38.54	34.66	207	218	Peak	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15621.19	55.69	74.00	-18.31	43.01	9.12	38.29	34.73	147	71	Peak	HORIZONTAL
2	15633.49	42.41	54.00	-11.59	29.72	9.13	38.29	34.73	147	71	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15627.08	42.65	54.00	-11.35	29.96	9.13	38.29	34.73	199	344	Average	VERTICAL
2	15635.00	55.61	74.00	-18.39	42.92	9.13	38.29	34.73	199	344	Peak	VERTICAL

Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Ant. 1 + Ant. 2 + Ant. 4

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11540.74	40.65	54.00	-13.35	28.82	7.95	38.51	34.63	193	72	Average	HORIZONTAL
2	11540.87	53.38	74.00	-20.62	41.55	7.95	38.51	34.63	193	72	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11544.46	53.82	74.00	-20.18	41.99	7.95	38.51	34.63	234	333	Peak	VERTICAL
2	11545.80	41.16	54.00	-12.84	29.33	7.95	38.51	34.63	234	333	Average	VERTICAL

Note:

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

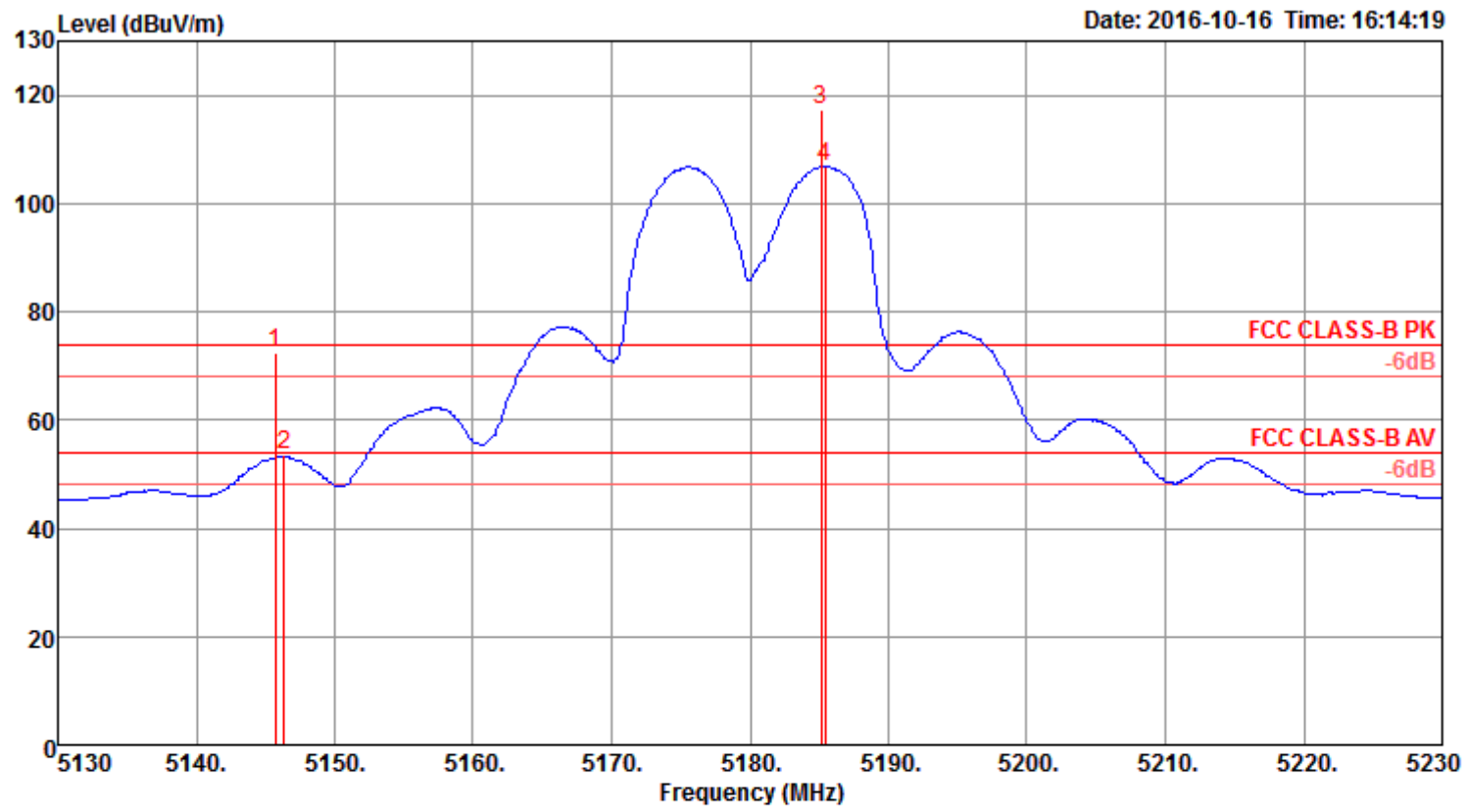
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

Band Edge Emissions

Configurations	IEEE 802.11a CH 36, 40, 48 / Ant. 1 + Ant. 2 + Ant. 4

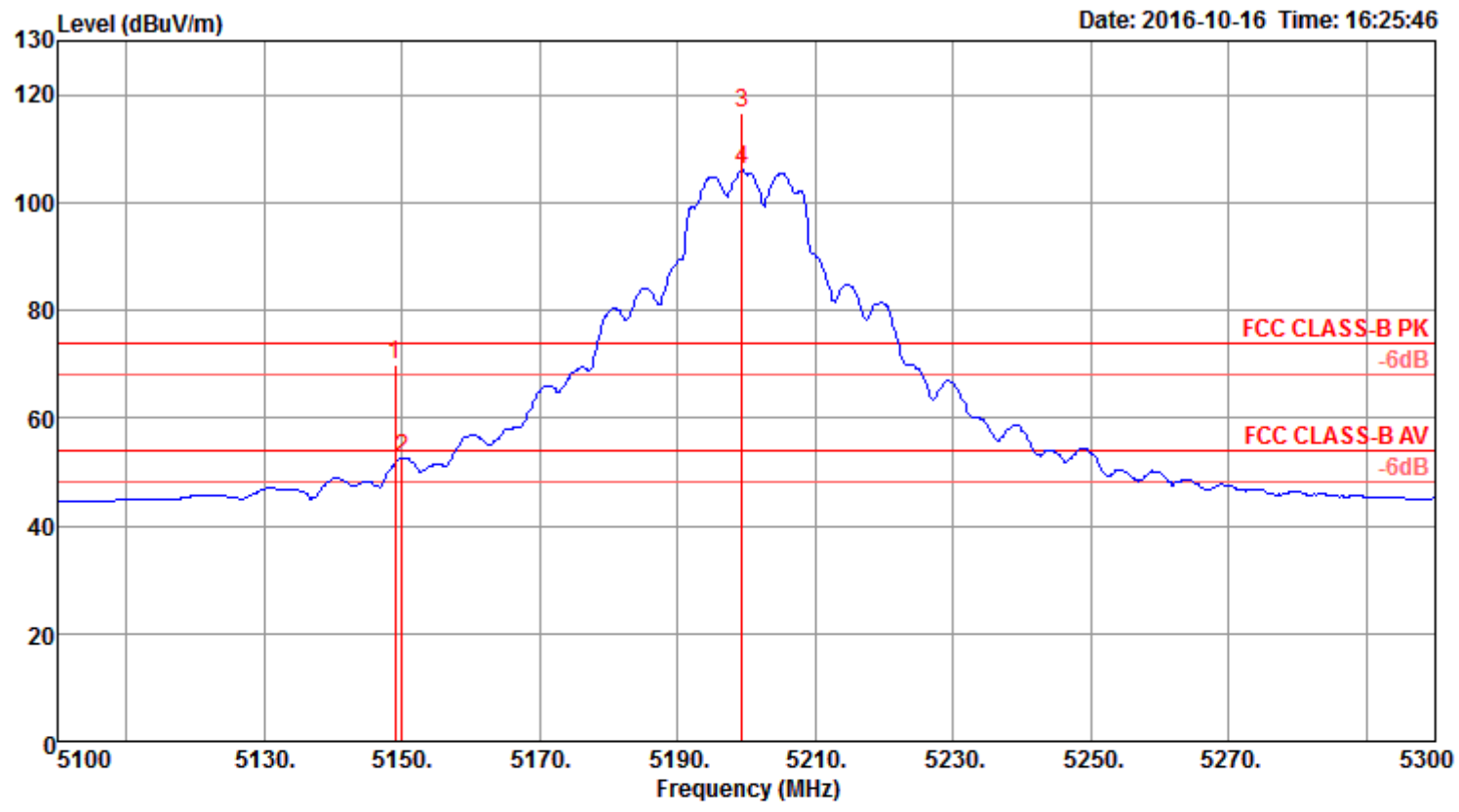
Channel 36



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.71	72.48	74.00	-1.52	68.59	5.05	33.31	34.47	189	348	Peak	VERTICAL
2	5146.35	53.50	54.00	-0.50	49.61	5.05	33.31	34.47	189	348	Average	VERTICAL
3	5185.13	117.25			113.29	5.08	33.35	34.47	189	348	Peak	VERTICAL
4	5185.45	106.85			102.89	5.08	33.35	34.47	189	348	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

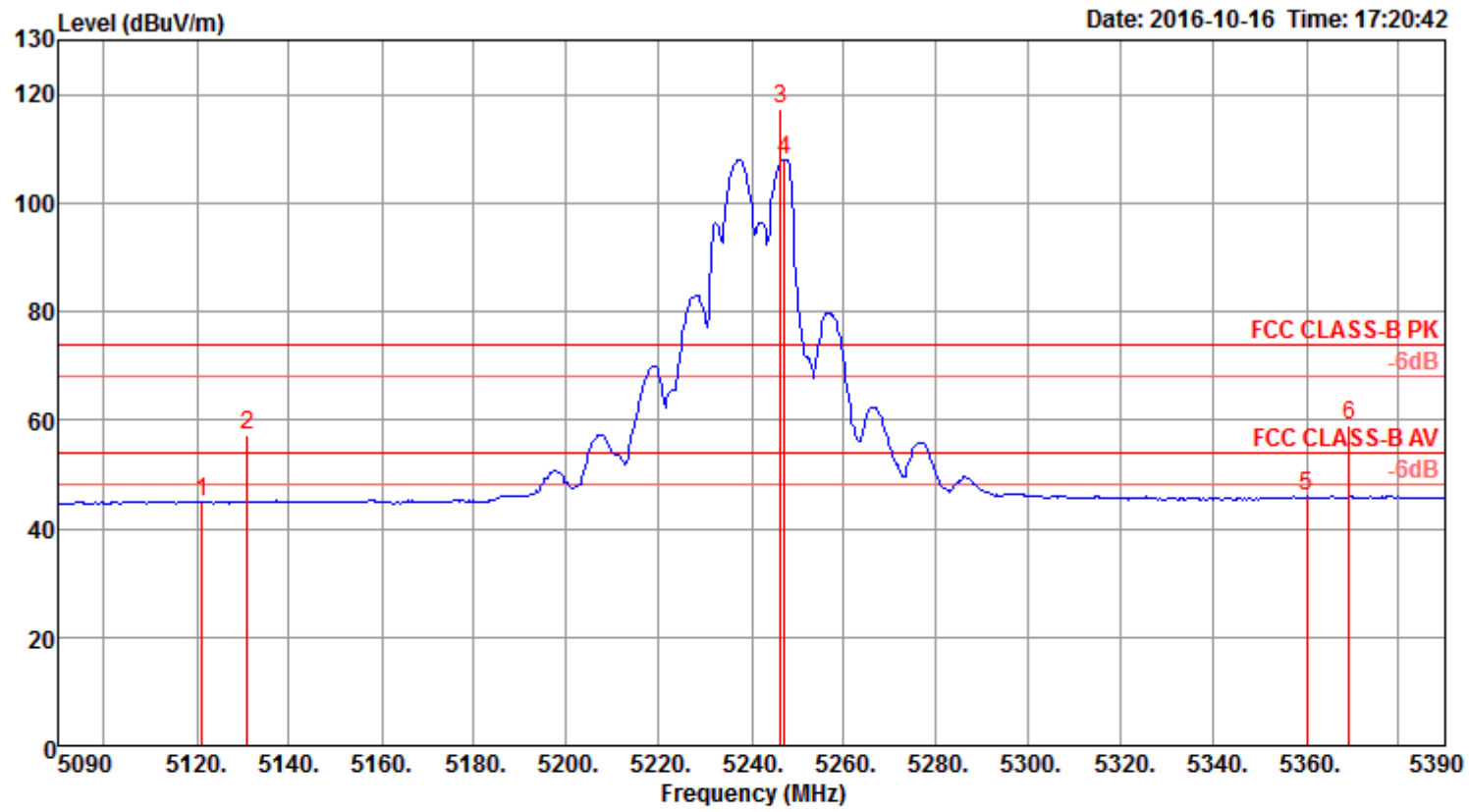
Channel 40



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.04	70.03	74.00	-3.97	66.14	5.05	33.31	34.47	263	359	Peak	VERTICAL
2	5150.00	52.65	54.00	-1.35	48.76	5.05	33.31	34.47	263	359	Average	VERTICAL
3	5199.36	116.58			112.58	5.09	33.38	34.47	263	359	Peak	VERTICAL
4	5199.36	105.99			101.99	5.09	33.38	34.47	263	359	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

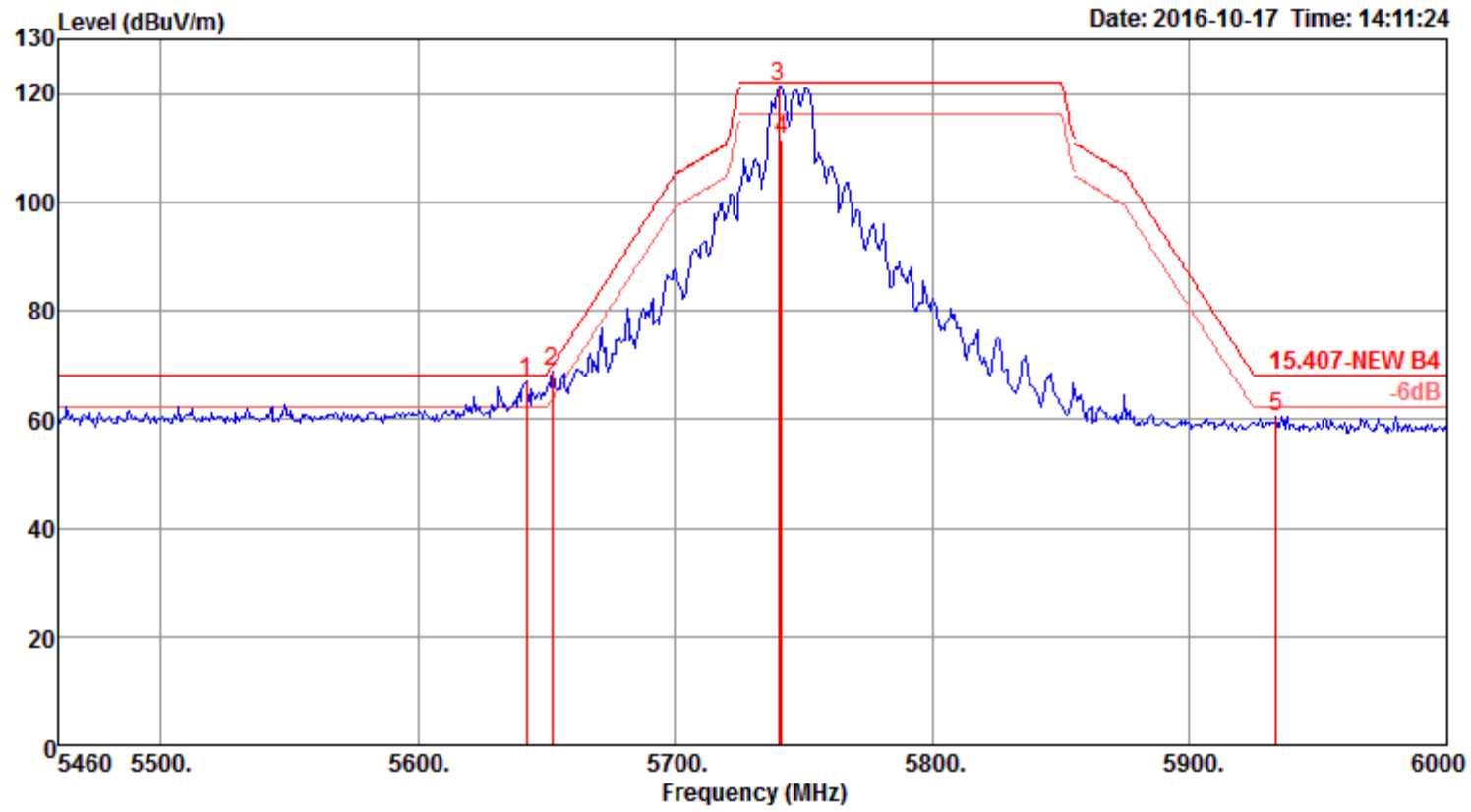


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5121.25	45.07	54.00	-8.93	41.24	5.03	33.27	34.47	250	1	Average	VERTICAL
2	5130.87	57.15	74.00	-16.85	53.29	5.04	33.29	34.47	250	1	Peak	VERTICAL
3	5246.25	117.24			113.15	5.12	33.44	34.47	250	1	Peak	VERTICAL
4	5247.21	108.07			103.96	5.12	33.46	34.47	250	1	Average	VERTICAL
5	5360.19	45.92	54.00	-8.08	41.59	5.19	33.61	34.47	250	1	Average	VERTICAL
6	5369.33	58.87	74.00	-15.13	54.53	5.20	33.61	34.47	250	1	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Configurations	IEEE 802.11a CH 149, 157, 165 / Ant. 1 + Ant. 2 + Ant. 4

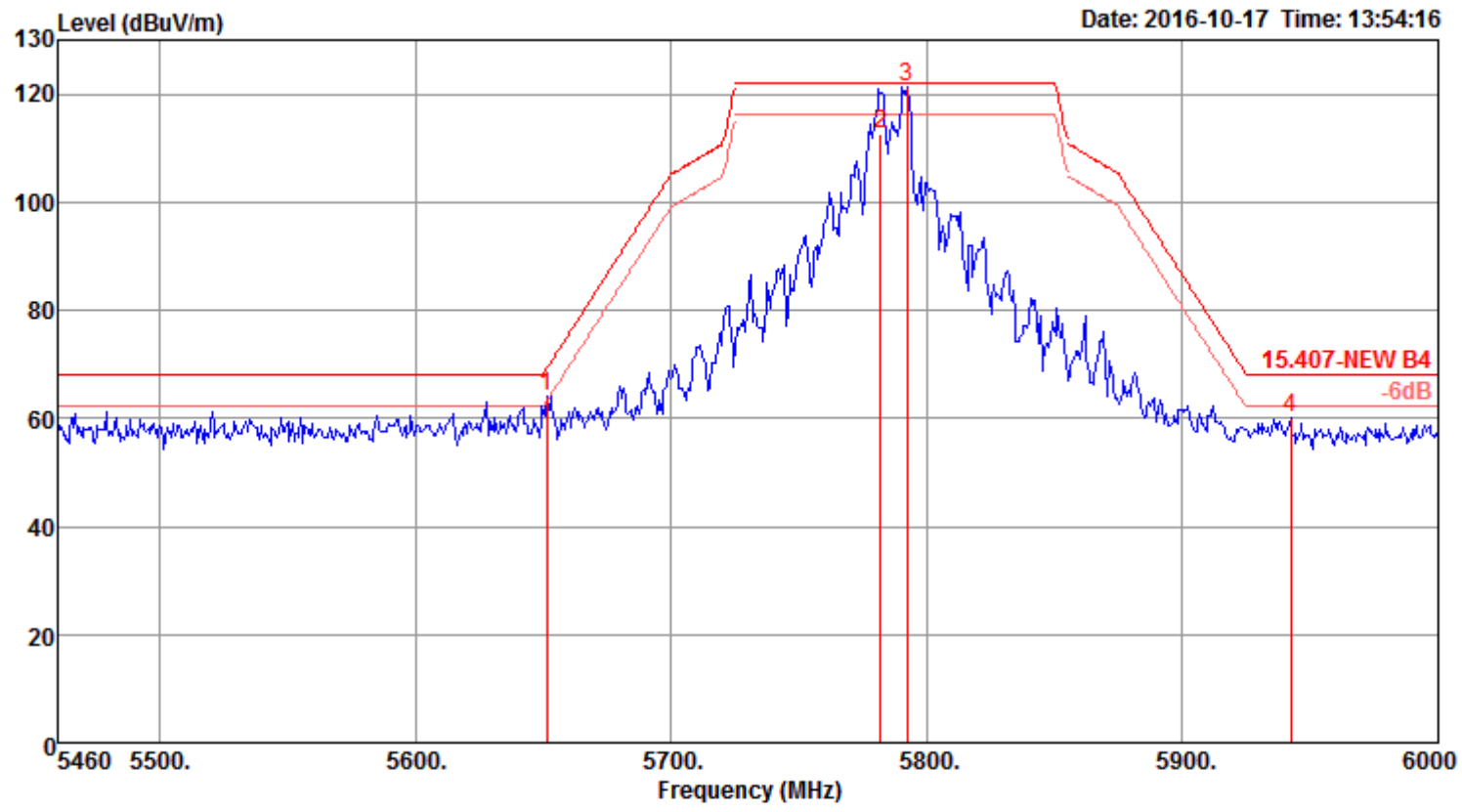
Channel 149



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5641.98	66.85	68.20	-1.35	61.87	5.23	34.25	34.50	193	9	Peak	VERTICAL
2	5652.24	68.67	69.86	-1.19	63.68	5.24	34.25	34.50	193	9	Peak	VERTICAL
3	5740.26	121.26			115.86	5.37	34.55	34.52	193	9	Peak	VERTICAL
4	5741.25	111.45	------	----	106.05	5.37	34.55	34.52	193	9	Average	VERTICAL
5	5933.58	60.38	68.20	-7.82	54.38	5.46	35.10	34.56	193	9	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5745 MHz.

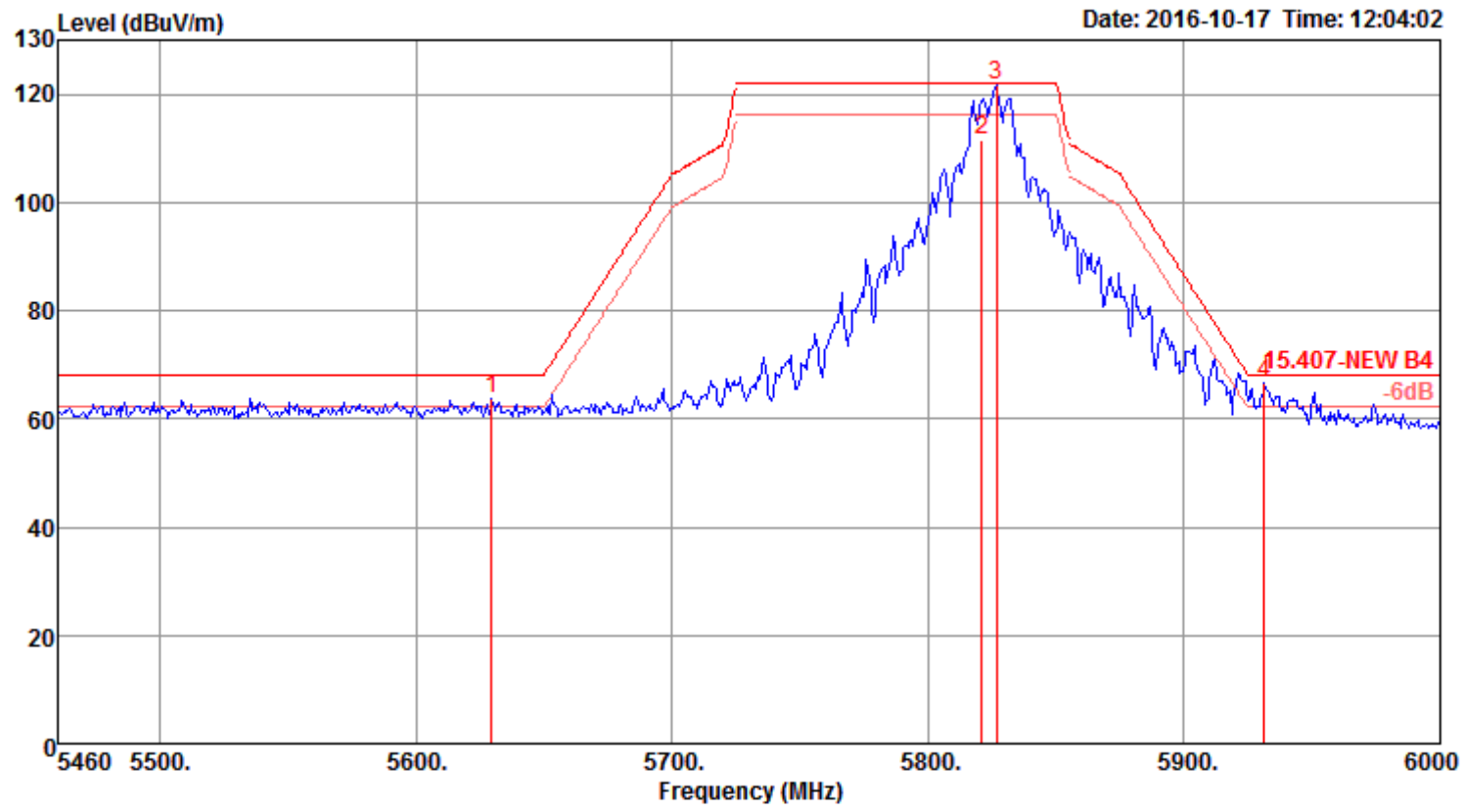
Channel 157



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5651.16	64.18	69.06	-4.88	59.19	5.24	34.25	34.50	171	360	Peak	VERTICAL
2	5781.92	112.60			107.05	5.43	34.65	34.53	171	360	Average	VERTICAL
3	5792.10	121.33			115.72	5.44	34.70	34.53	171	360	Peak	VERTICAL
4	5942.22	59.95	68.20	-8.25	53.90	5.46	35.15	34.56	171	360	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

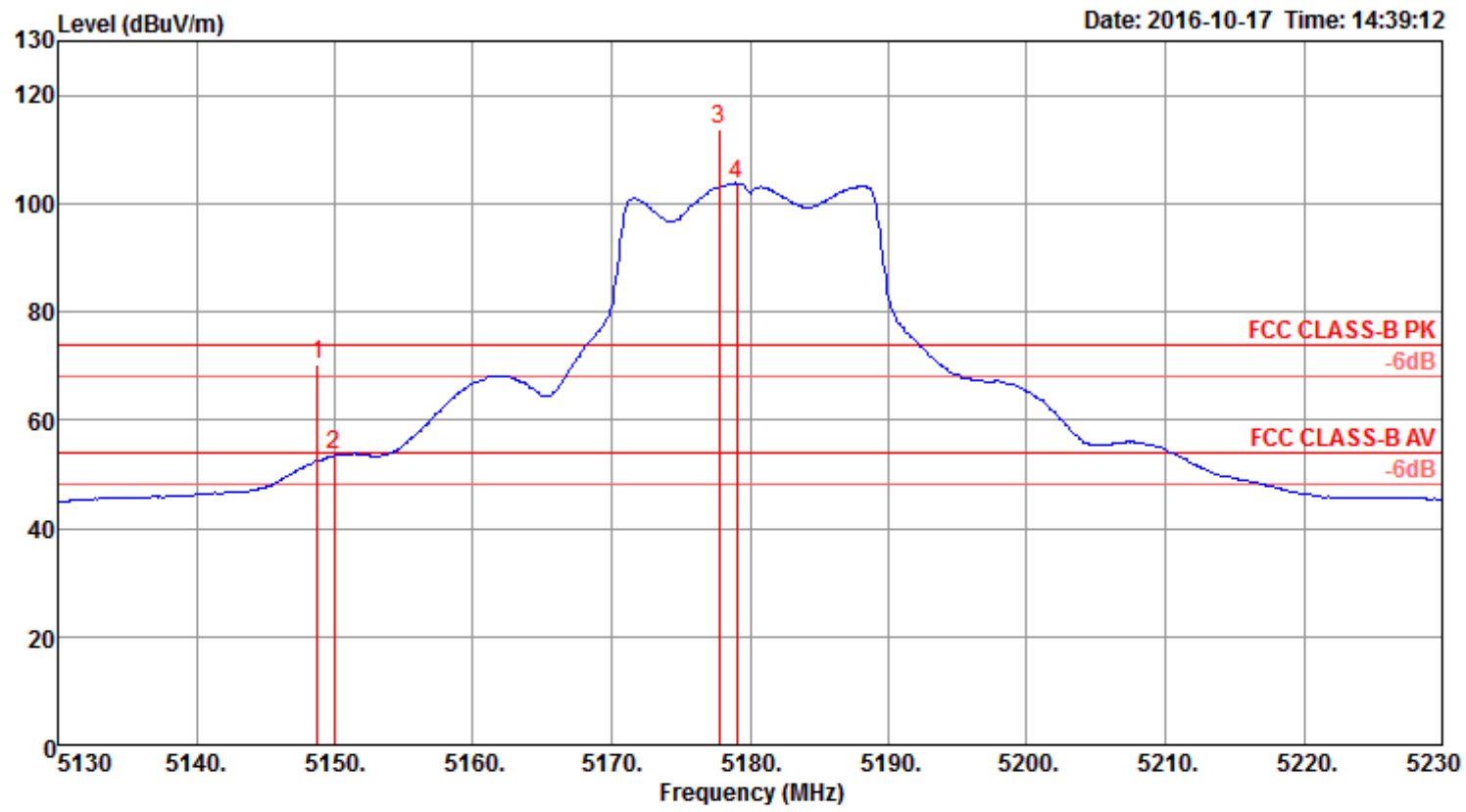


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5629.56	63.89	68.20	-4.31	58.98	5.21	34.20	34.50	193	9	Peak	VERTICAL
2	5820.87	111.63			105.96	5.45	34.75	34.53	193	9	Average	VERTICAL
3	5826.66	121.59	------	----	115.88	5.45	34.80	34.54	193	9	Peak	VERTICAL
4	5931.42	66.61	68.20	-1.59	60.61	5.46	35.10	34.56	193	9	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Ant. 1 + Ant. 2 + Ant. 4

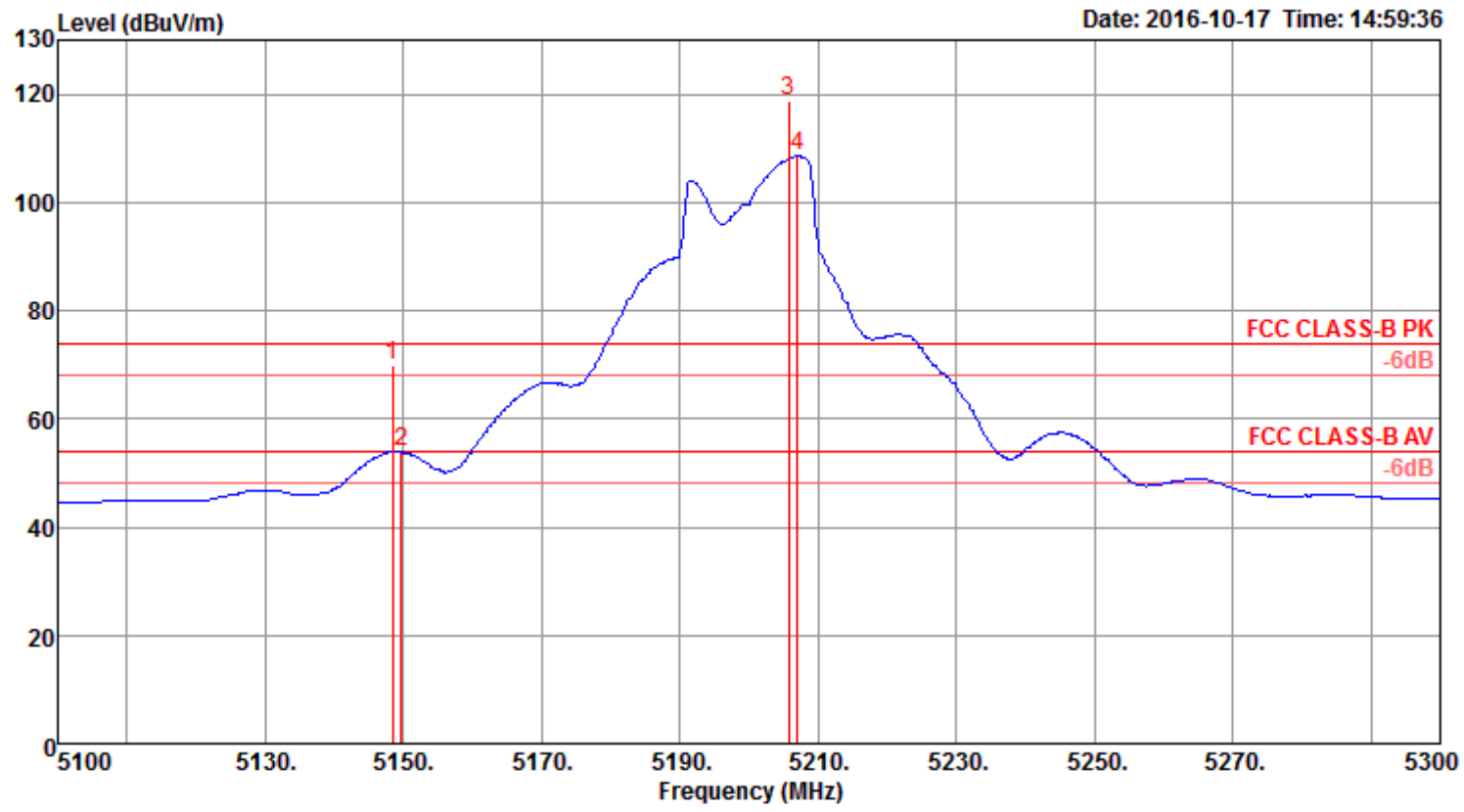
Channel 36



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.75	70.36	74.00	-3.64	66.47	5.05	33.31	34.47	231	0	Peak	VERTICAL
2	5150.00	53.44	54.00	-0.56	49.55	5.05	33.31	34.47	231	0	Average	VERTICAL
3	5177.76	113.85			109.90	5.07	33.35	34.47	231	0	Peak	VERTICAL
4	5179.04	103.74			99.79	5.07	33.35	34.47	231	0	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

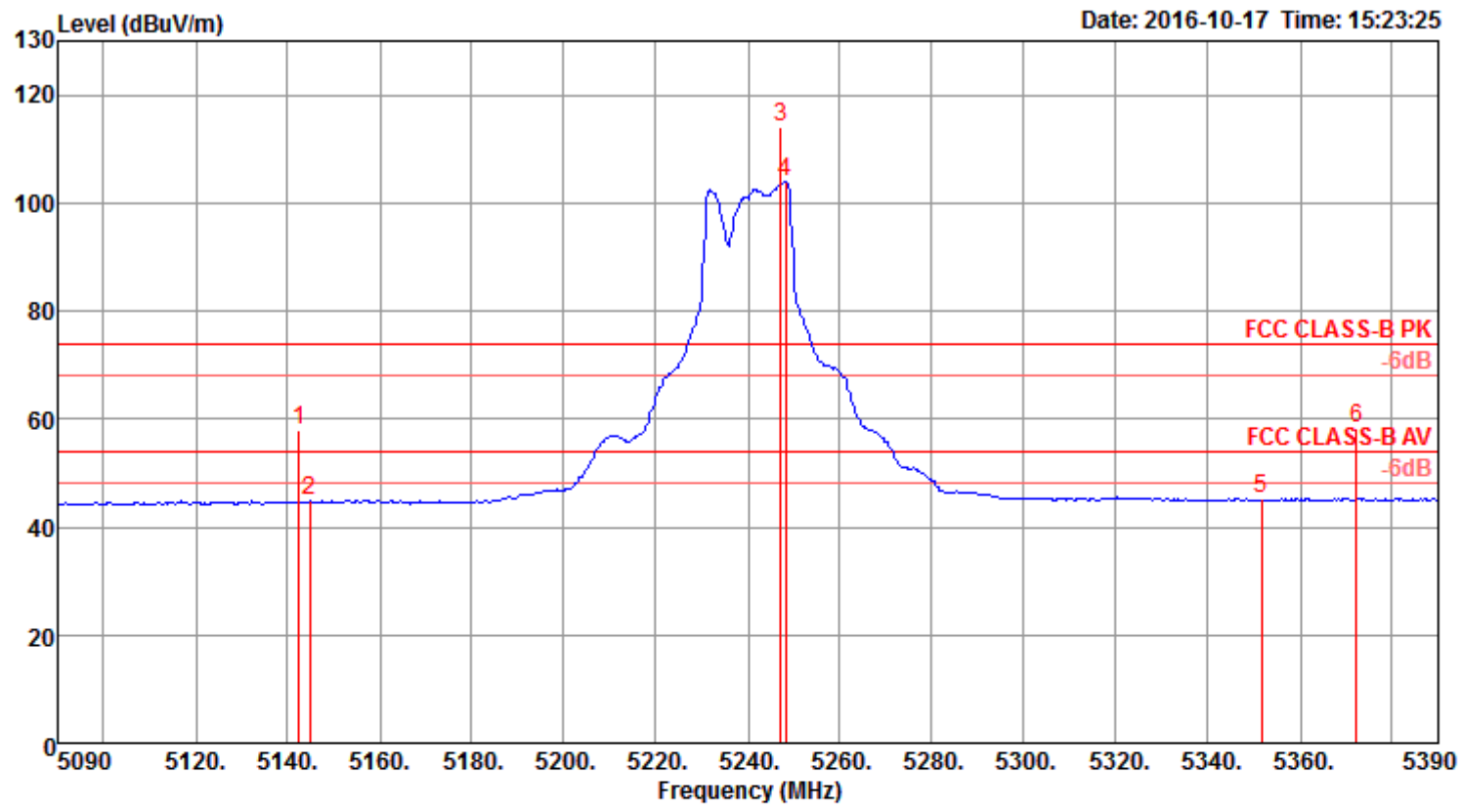
Channel 40



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.40	69.80	74.00	-4.20	65.91	5.05	33.31	34.47	154	327	Peak	VERTICAL
2	5149.68	53.97	54.00	-0.03	50.08	5.05	33.31	34.47	154	327	Average	VERTICAL
3	5205.77	118.72			114.70	5.09	33.40	34.47	154	327	Peak	VERTICAL
4	5207.05	108.64			104.62	5.09	33.40	34.47	154	327	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

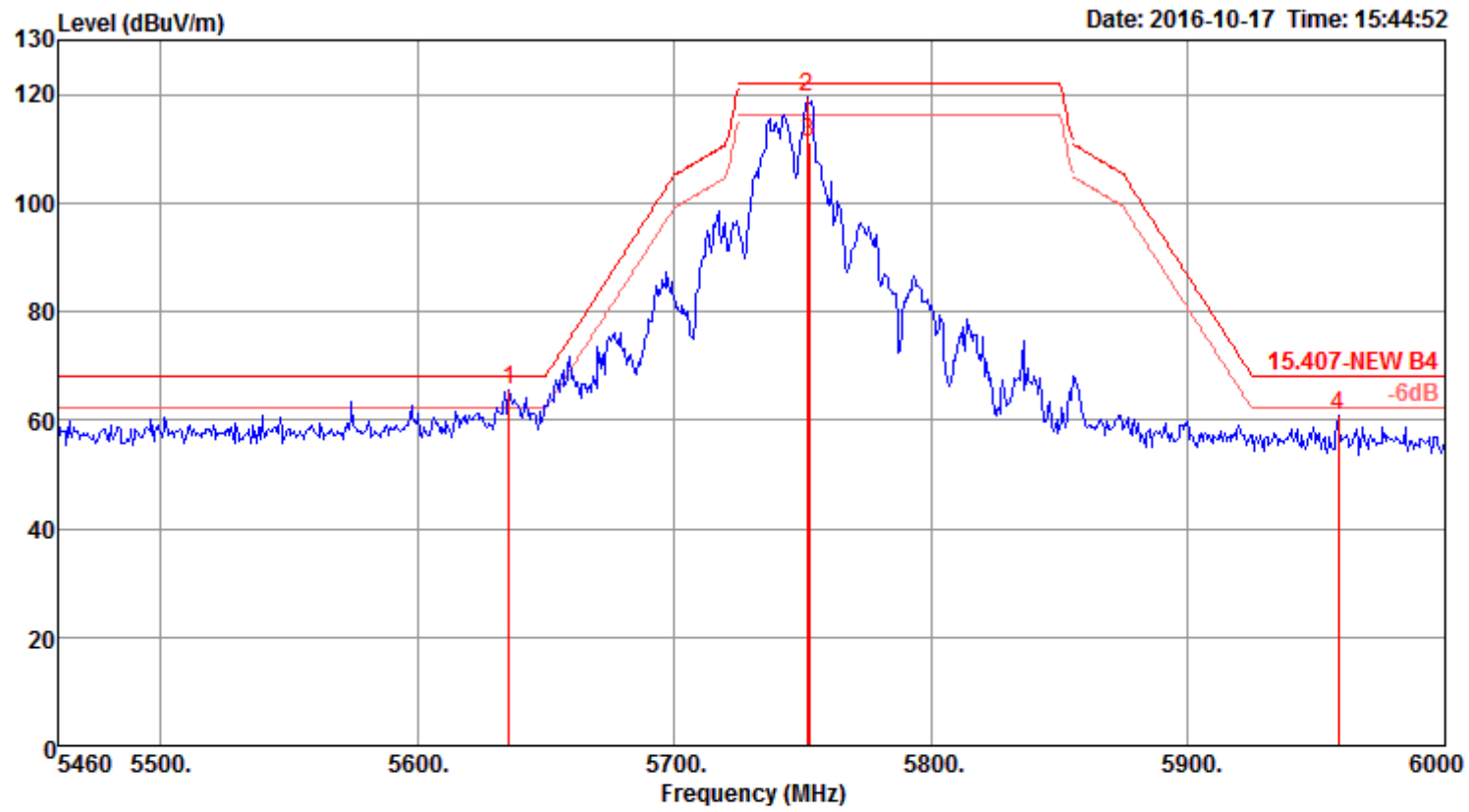


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5142.40	57.97	74.00	-16.03	54.08	5.05	33.31	34.47	246	55	Peak	VERTICAL
2	5144.81	44.80	54.00	-9.20	40.91	5.05	33.31	34.47	246	55	Average	VERTICAL
3	5247.21	114.13			110.02	5.12	33.46	34.47	246	55	Peak	VERTICAL
4	5248.17	103.81			99.70	5.12	33.46	34.47	246	55	Average	VERTICAL
5	5351.54	45.35	54.00	-8.65	41.04	5.19	33.59	34.47	246	55	Average	VERTICAL
6	5372.21	58.23	74.00	-15.77	53.87	5.20	33.63	34.47	246	55	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Ant. 1 + Ant. 2 + Ant. 4

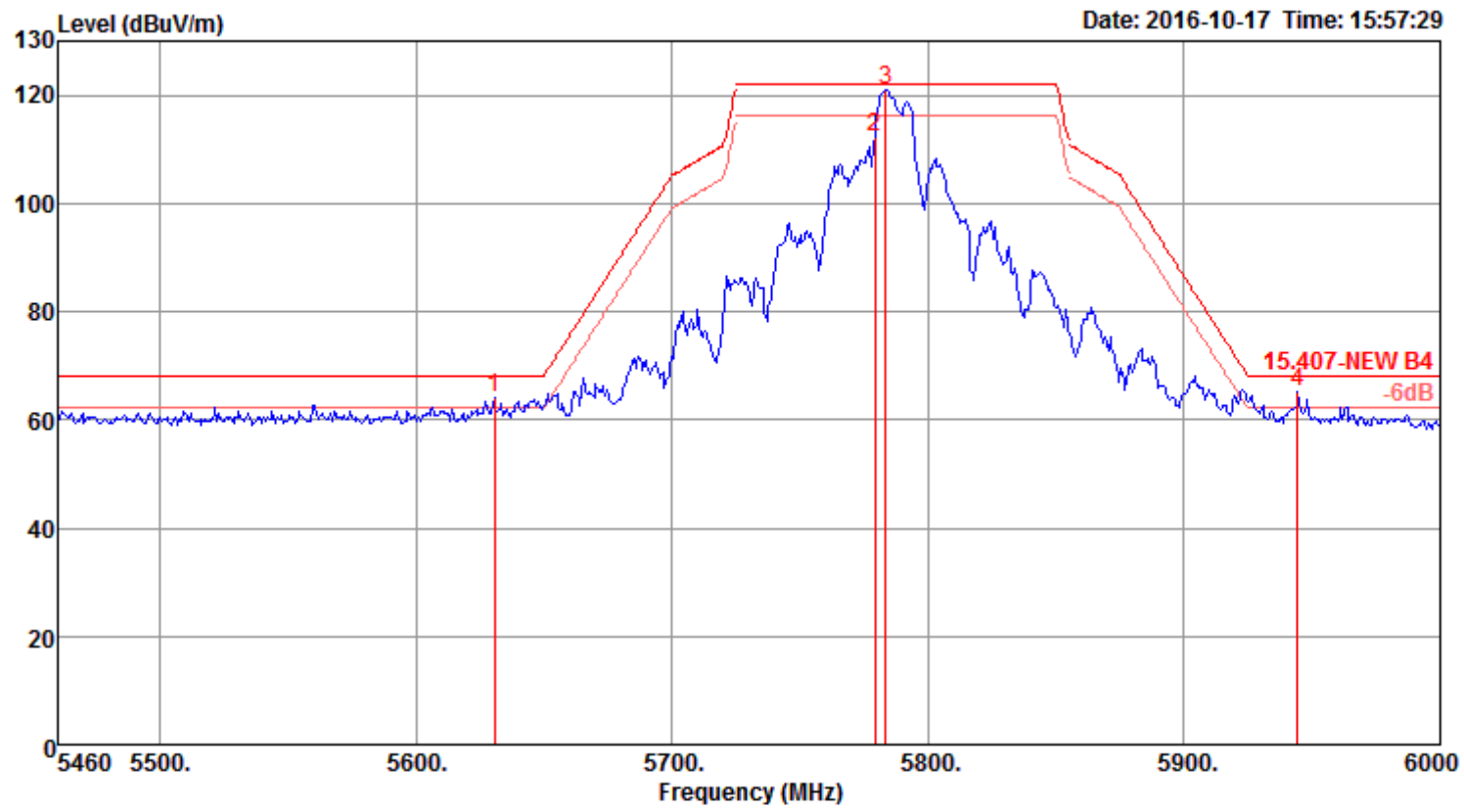
Channel 149



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5635.50	65.59	68.20	-2.61	60.67	5.22	34.20	34.50	174	0	Peak	VERTICAL
2	5751.60	119.50			114.09	5.38	34.55	34.52	174	0	Peak	VERTICAL
3	5752.50	111.14			105.73	5.38	34.55	34.52	174	0	Average	VERTICAL
4	5958.42	60.88	68.20	-7.32	54.77	5.47	35.20	34.56	174	0	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

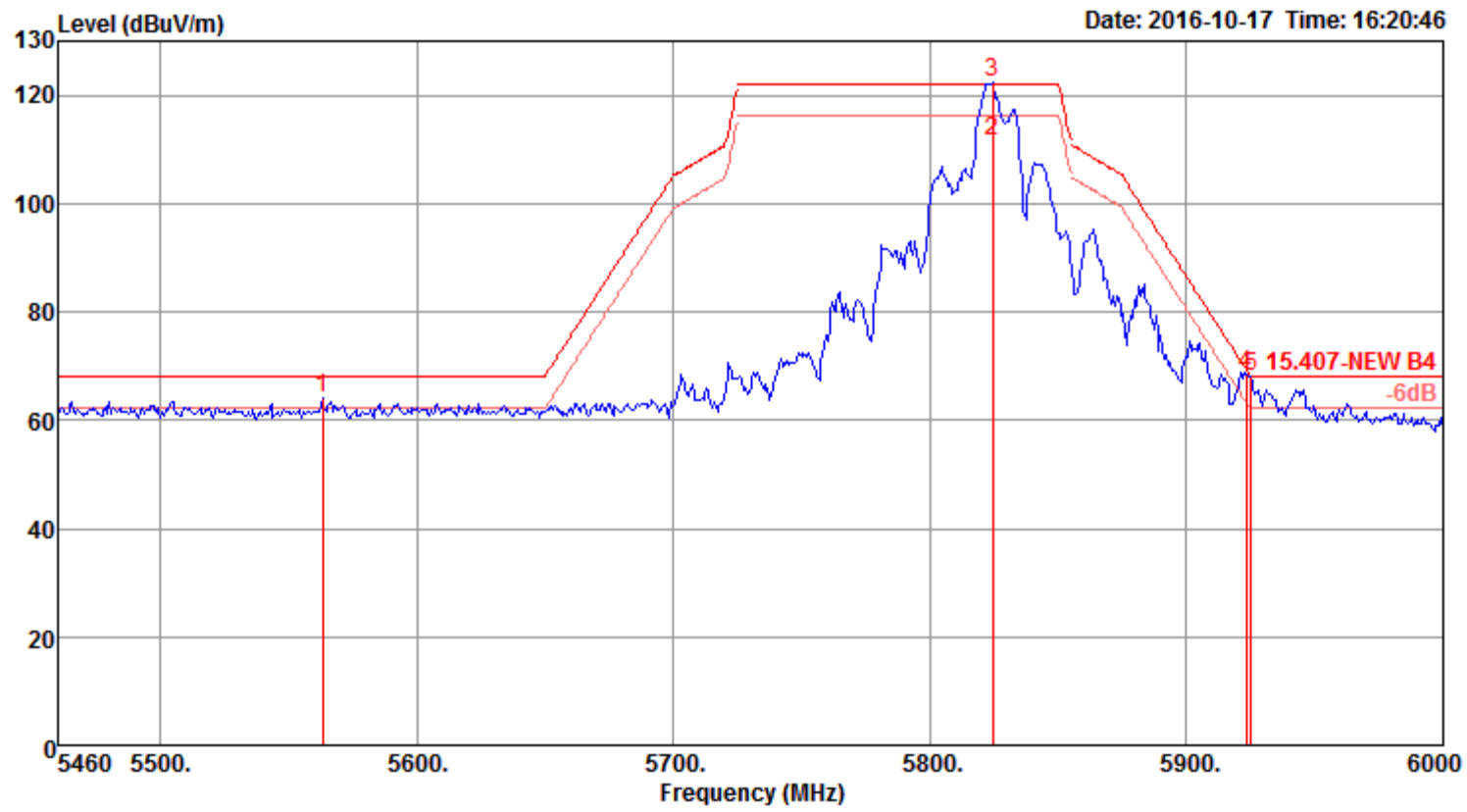
Channel 157



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5630.64	64.06	68.20	-4.14	59.15	5.21	34.20	34.50	155	359	Peak	VERTICAL
2	5779.33	112.30			106.76	5.42	34.65	34.53	155	359	Average	VERTICAL
3	5783.46	121.05			115.50	5.43	34.65	34.53	155	359	Peak	VERTICAL
4	5944.38	65.09	68.20	-3.11	59.04	5.46	35.15	34.56	155	359	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

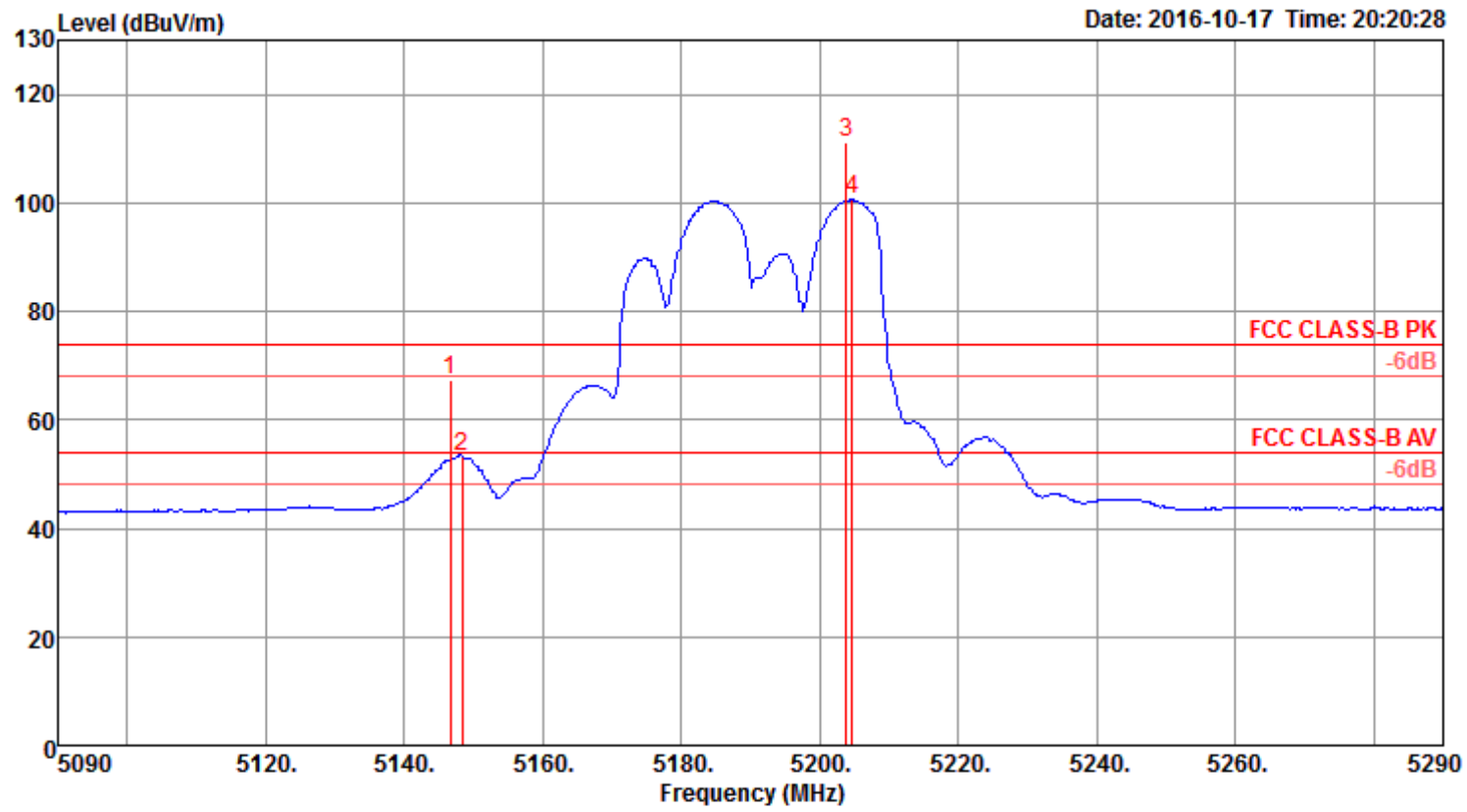


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5563.14	63.92	68.20	-4.28	59.22	5.18	34.00	34.48	181	2	Peak	VERTICAL
2	5824.33	111.64			105.93	5.45	34.80	34.54	181	2	Average	VERTICAL
3	5824.50	122.30			116.59	5.45	34.80	34.54	181	2	Peak	VERTICAL
4	5923.32	68.37	69.44	-1.07	62.42	5.46	35.05	34.56	181	2	Peak	VERTICAL
5	5924.94	67.96	68.24	-0.28	61.96	5.46	35.10	34.56	181	2	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Ant. 1 + Ant. 2 + Ant. 4

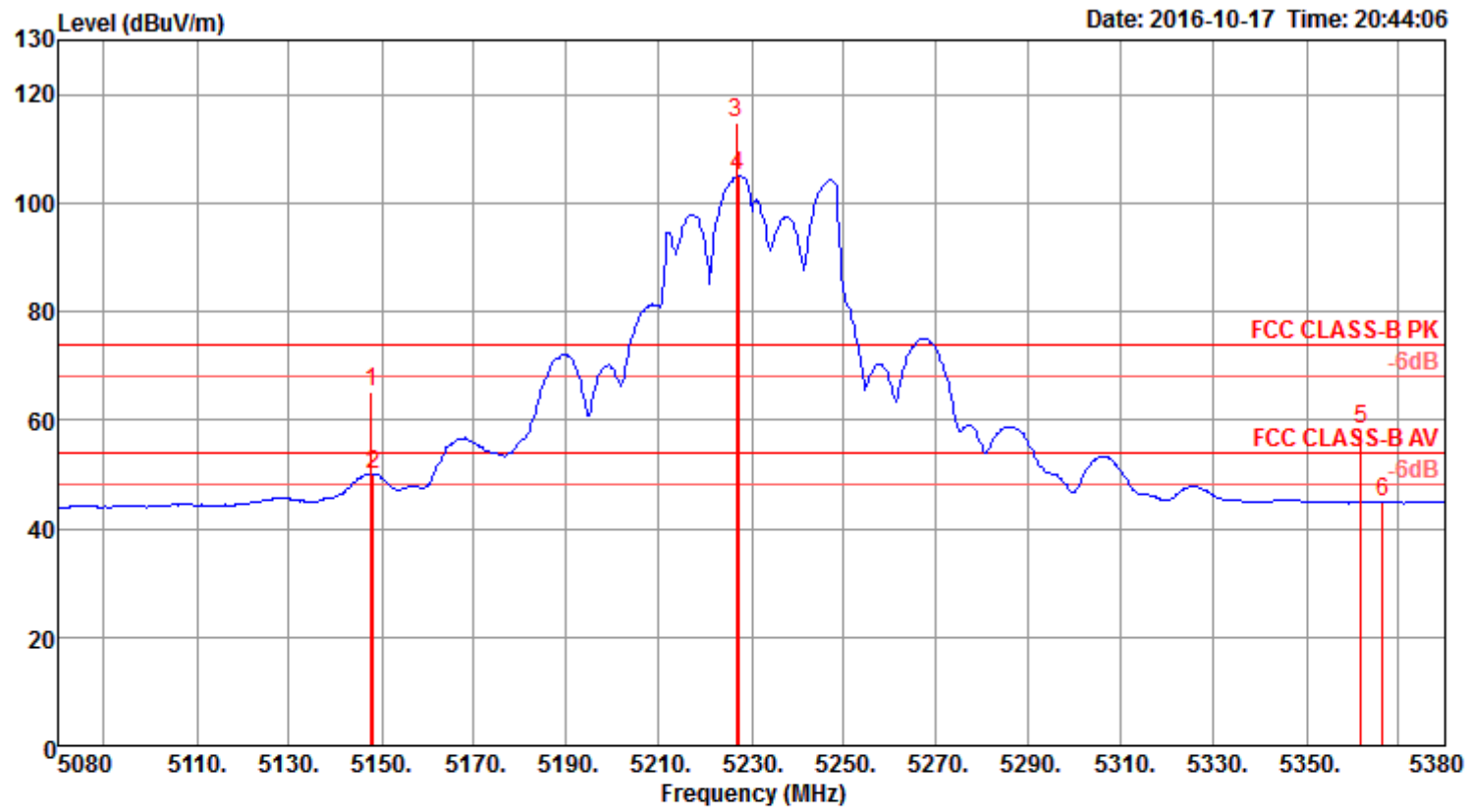
Channel 38



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.73	67.26	74.00	-6.74	63.37	5.05	33.31	34.47	204	360	Peak	VERTICAL
2	5148.33	53.09	54.00	-0.91	49.20	5.05	33.31	34.47	204	360	Average	VERTICAL
3	5203.78	111.06			107.04	5.09	33.40	34.47	204	360	Peak	VERTICAL
4	5204.74	100.55			96.53	5.09	33.40	34.47	204	360	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

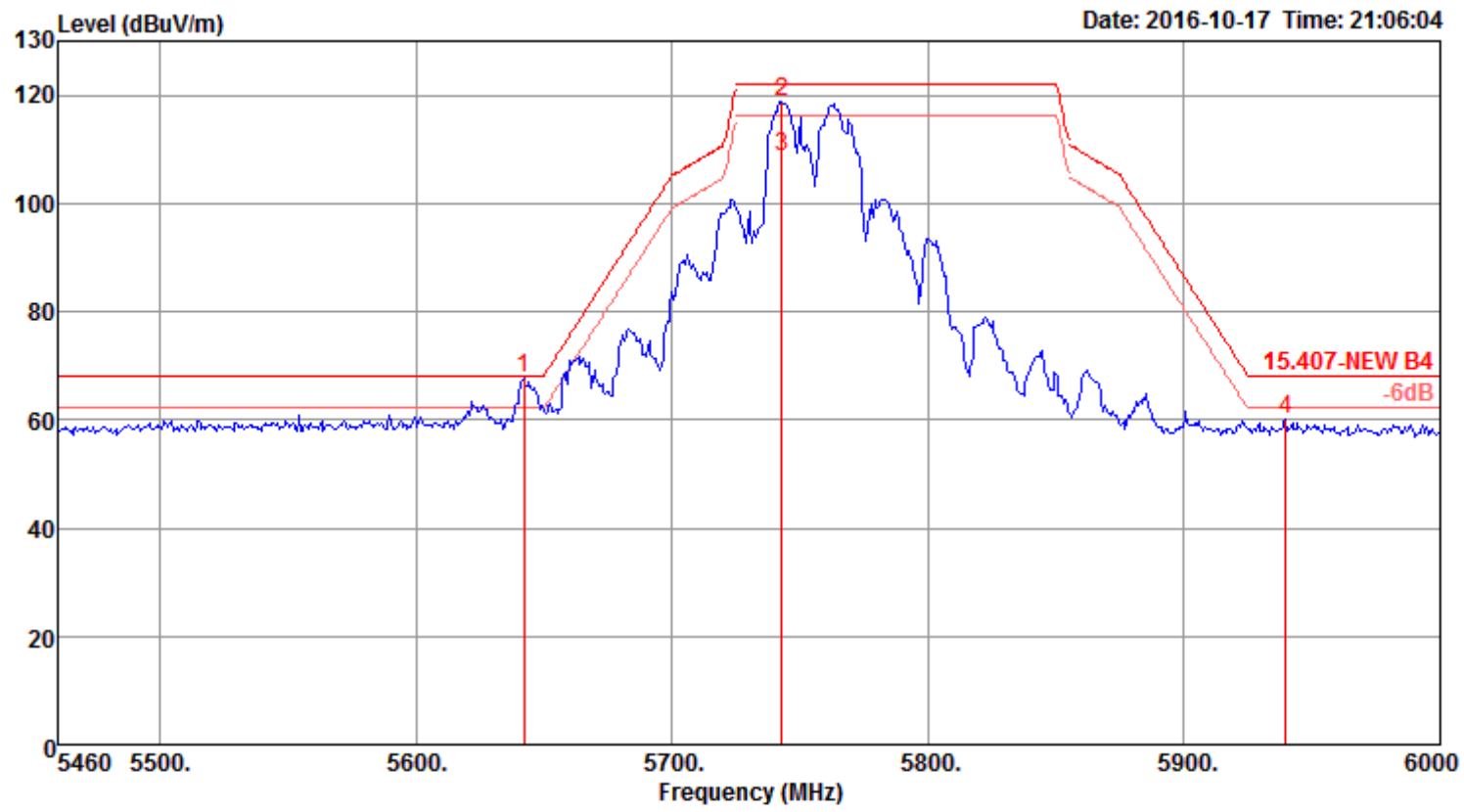


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.79	65.07	74.00	-8.93	61.18	5.05	33.31	34.47	212	18	Peak	VERTICAL
2	5148.27	50.11	54.00	-3.89	46.22	5.05	33.31	34.47	212	18	Average	VERTICAL
3	5226.64	114.66			110.60	5.11	33.42	34.47	212	18	Peak	VERTICAL
4	5227.12	104.84			100.78	5.11	33.42	34.47	212	18	Average	VERTICAL
5	5361.73	58.48	74.00	-15.52	54.14	5.20	33.61	34.47	212	18	Peak	VERTICAL
6	5366.54	45.03	54.00	-8.97	40.69	5.20	33.61	34.47	212	18	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Ant. 1 + Ant. 2 + Ant. 4

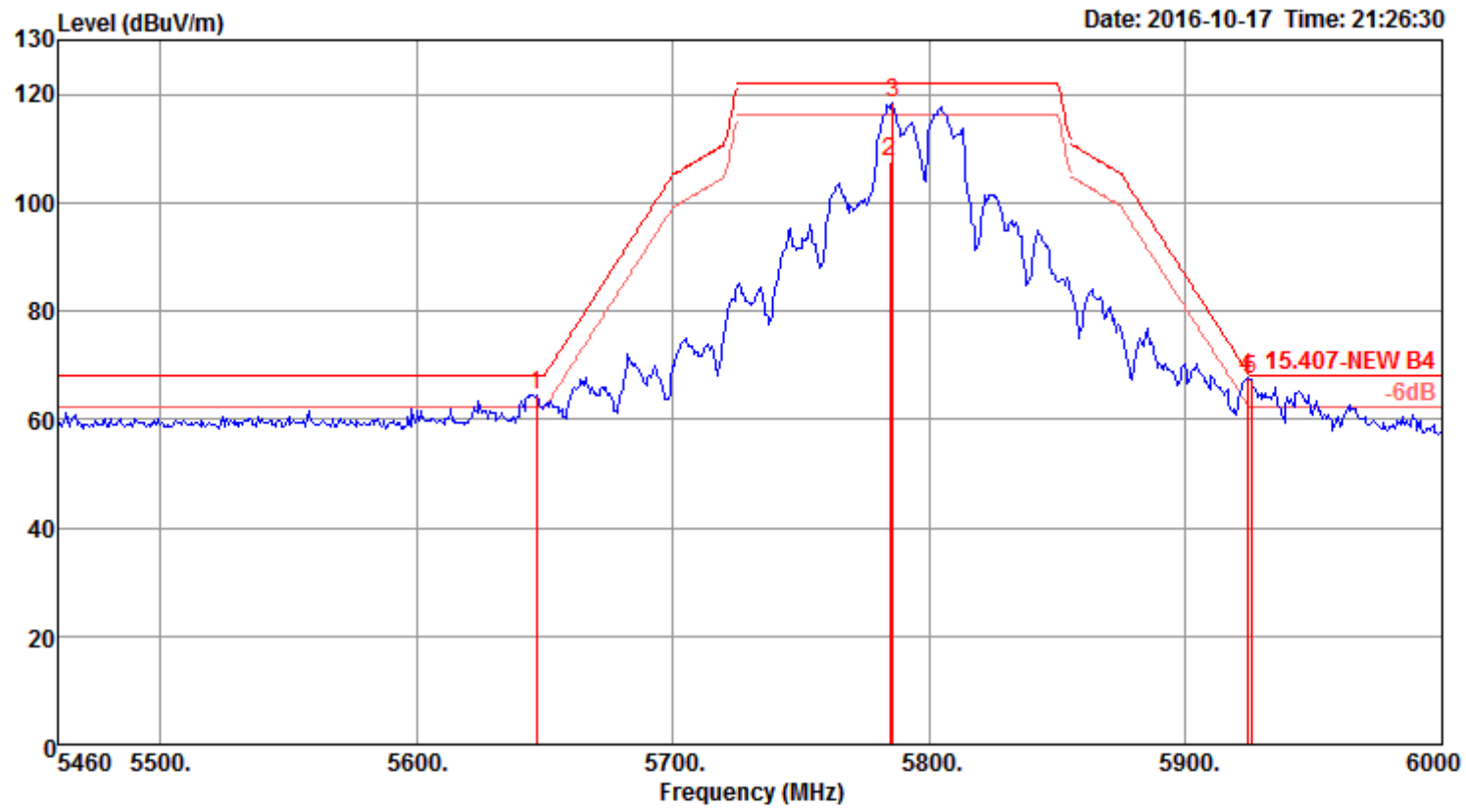
Channel 151



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5641.98	67.65	68.20	-0.55	62.67	5.23	34.25	34.50	153	9	Peak	VERTICAL
2	5742.96	118.78			113.38	5.37	34.55	34.52	153	9	Peak	VERTICAL
3	5742.98	108.49			103.09	5.37	34.55	34.52	153	9	Average	VERTICAL
4	5939.52	59.98	68.20	-8.22	53.98	5.46	35.10	34.56	153	9	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5755 MHz.

Channel 159

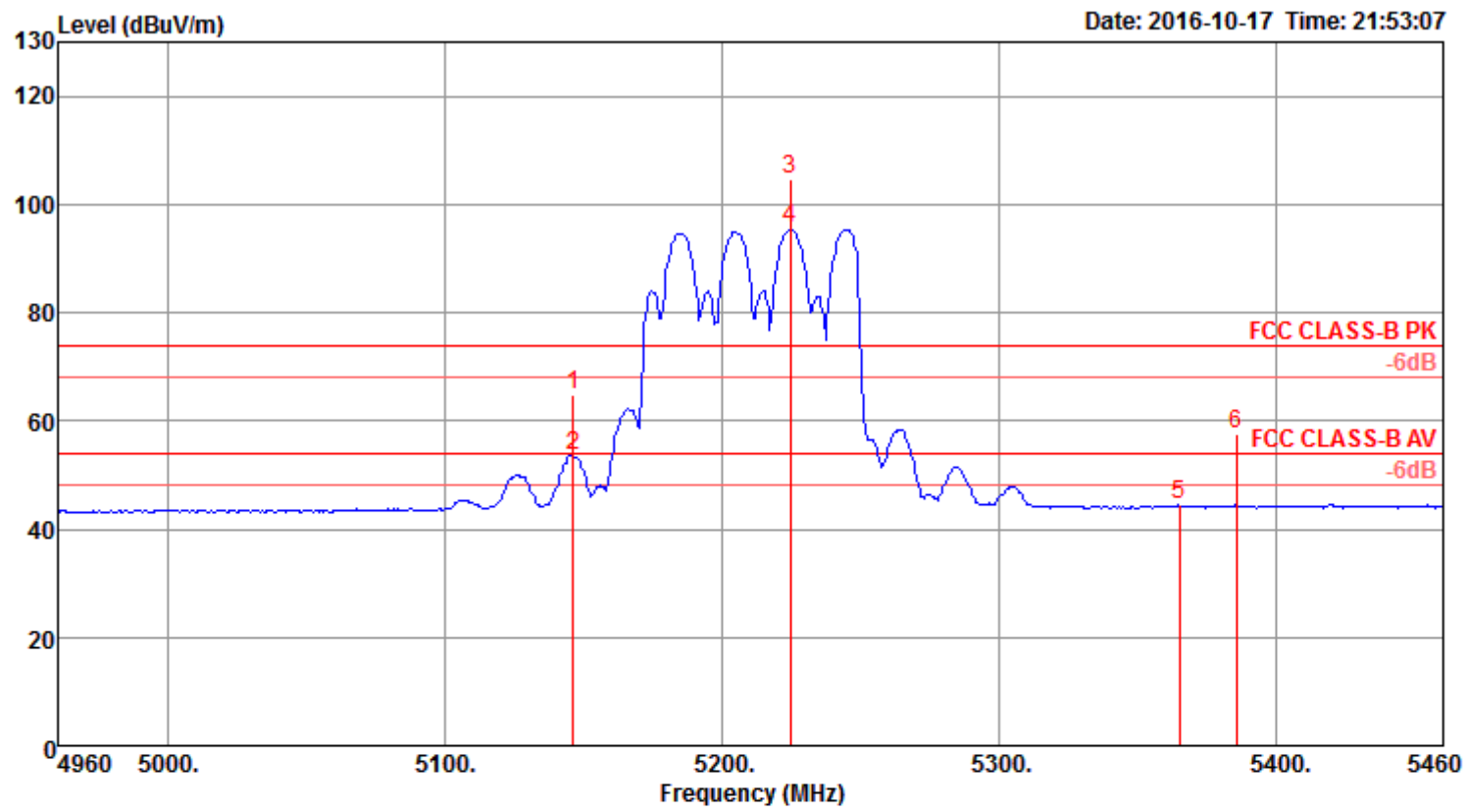


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5646.84	64.37	68.20	-3.83	59.38	5.24	34.25	34.50	150	0	Peak	VERTICAL
2	5784.52	107.71			102.16	5.43	34.65	34.53	150	0	Average	VERTICAL
3	5785.62	118.35			112.80	5.43	34.65	34.53	150	0	Peak	VERTICAL
4	5923.86	67.66	69.04	-1.38	61.71	5.46	35.05	34.56	150	0	Peak	VERTICAL
5	5925.48	67.35	68.20	-0.85	61.35	5.46	35.10	34.56	150	0	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5795 MHz.

Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Ant. 1 + Ant. 2 + Ant. 4

Channel 42

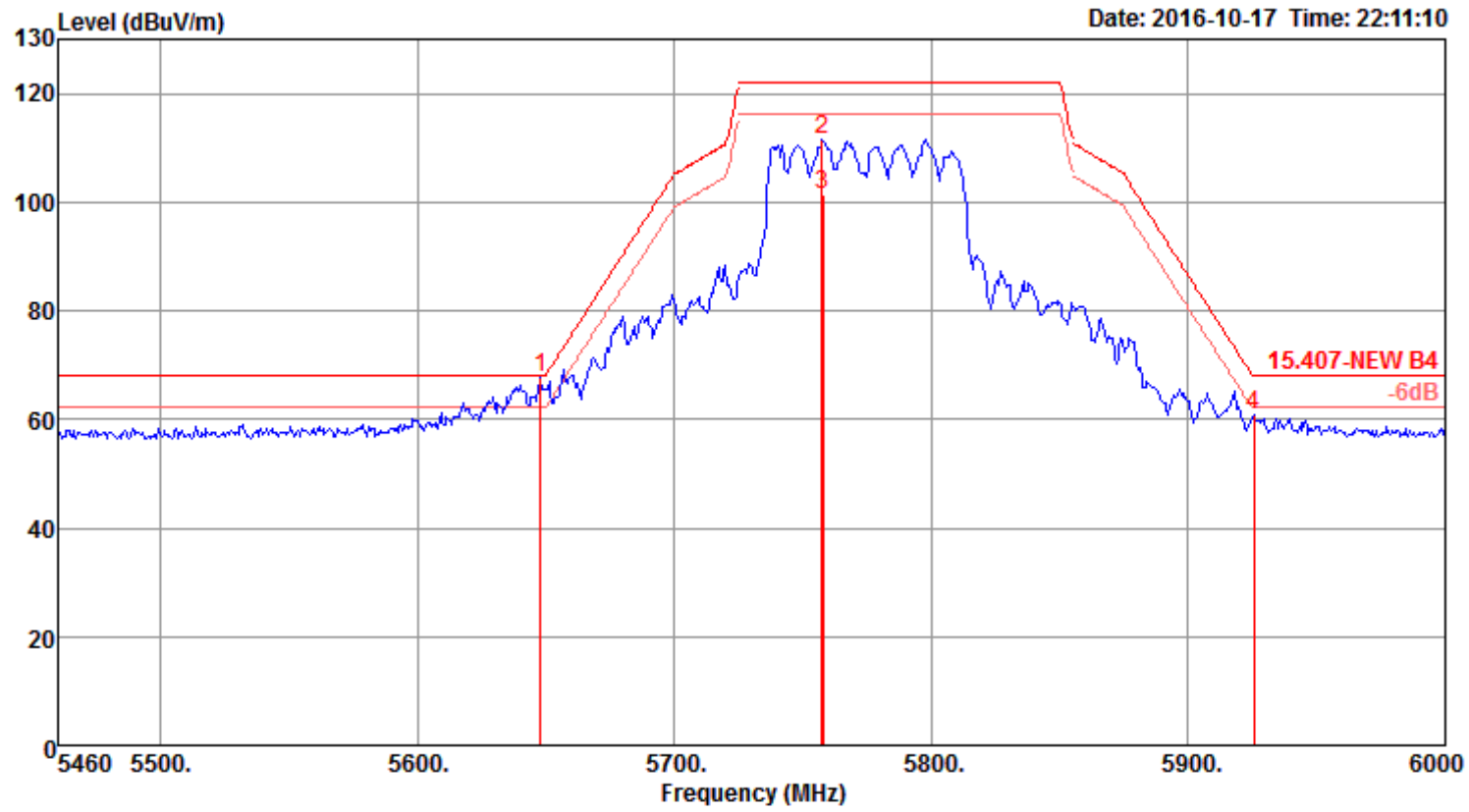


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.90	64.88	74.00	-9.12	60.99	5.05	33.31	34.47	211	0	Peak	VERTICAL
2	5145.90	53.73	54.00	-0.27	49.84	5.05	33.31	34.47	211	0	Average	VERTICAL
3	5224.42	104.79			100.73	5.11	33.42	34.47	211	0	Peak	VERTICAL
4	5224.42	95.42			91.36	5.11	33.42	34.47	211	0	Average	VERTICAL
5	5364.65	44.43	54.00	-9.57	40.09	5.20	33.61	34.47	211	0	Average	VERTICAL
6	5385.48	57.74	74.00	-16.26	53.35	5.21	33.65	34.47	211	0	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5210 MHz.

Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Ant. 1 + Ant. 2 + Ant. 4

Channel 155



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5647.92	67.65	68.20	-0.55	62.66	5.24	34.25	34.50	150	4	Peak	VERTICAL
2	5757.54	111.44			105.97	5.39	34.60	34.52	150	4	Peak	VERTICAL
3	5757.69	101.34			95.87	5.39	34.60	34.52	150	4	Average	VERTICAL
4	5925.48	60.71	68.20	-7.49	54.71	5.46	35.10	34.56	150	4	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5775 MHz.

Note:

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

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

Mode: 20 MHz / Ant. 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9864	5199.9861	5199.9858	5199.9848
110.00	5199.9857	5199.9848	5199.9838	5199.9834
93.50	5199.9851	5199.9848	5199.9838	5199.9831
Max. Deviation (MHz)	0.0149	0.0152	0.0162	0.0169
Max. Deviation (ppm)	2.87	2.93	3.12	3.26
Result	Pass			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5199.9868	5199.9862	5199.9858	5199.9853
10	5199.9858	5199.9848	5199.9841	5199.9840
20	5199.9857	5199.9848	5199.9840	5199.9838
30	5199.9839	5199.9834	5199.9832	5199.9825
40	5199.9838	5199.9829	5199.9826	5199.9822
Max. Deviation (MHz)	0.0162	0.0171	0.0174	0.0178
Max. Deviation (ppm)	3.11	3.28	3.34	3.42
Result	Pass			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9859	5784.9858	5784.9851	5784.9845
110.00	5784.9857	5784.9853	5784.9849	5784.9840
93.50	5784.9848	5784.9840	5784.9834	5784.9828
Max. Deviation (MHz)	0.0152	0.0160	0.0166	0.0172
Max. Deviation (ppm)	2.63	2.77	2.87	2.98
Result	Pass			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5784.9878	5784.9875	5784.9868	5784.9859
10	5784.9874	5784.9870	5784.9860	5784.9852
20	5784.9857	5784.9847	5784.9841	5784.9839
30	5784.9839	5784.9831	5784.9827	5784.9823
40	5784.9821	5784.9819	5784.9811	5784.9810
Max. Deviation (MHz)	0.0179	0.0181	0.0189	0.0190
Max. Deviation (ppm)	3.09	3.12	3.26	3.28
Result	Pass			

Mode: 40 MHz / Ant. 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9859	5189.9855	5189.9853	5189.9843
110.00	5189.9857	5189.9851	5189.9841	5189.9838
93.50	5189.9856	5189.9851	5189.9845	5189.9835
Max. Deviation (MHz)	0.0144	0.0149	0.0159	0.0165
Max. Deviation (ppm)	2.78	2.88	3.07	3.18
Result	Pass			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5189.9870	5189.9864	5189.9861	5189.9854
10	5189.9866	5189.9857	5189.9850	5189.9842
20	5189.9857	5189.9848	5189.9839	5189.9830
30	5189.9839	5189.9829	5189.9821	5189.9816
40	5189.9835	5189.9828	5189.9818	5189.9813
Max. Deviation (MHz)	0.0165	0.0172	0.0182	0.0187
Max. Deviation (ppm)	3.17	3.31	3.50	3.60
Result	Pass			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9867	5754.9858	5754.9857	5754.9850
110.00	5754.9857	5754.9854	5754.9849	5754.9847
93.50	5754.9854	5754.9845	5754.9839	5754.9829
Max. Deviation (MHz)	0.0146	0.0155	0.0161	0.0171
Max. Deviation (ppm)	2.54	2.70	2.80	2.98
Result	Pass			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5754.9861	5754.9851	5754.9845	5754.9842
10	5754.9858	5754.9853	5754.9849	5754.9847
20	5754.9857	5754.9849	5754.9839	5754.9833
30	5754.9839	5754.9833	5754.9827	5754.9818
40	5754.9831	5754.9827	5754.9824	5754.9818
Max. Deviation (MHz)	0.0169	0.0173	0.0176	0.0182
Max. Deviation (ppm)	2.93	3.00	3.05	3.16
Result	Pass			

Mode: 80 MHz / Ant. 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9862	5209.9859	5209.9856	5209.9847
110.00	5209.9857	5209.9847	5209.9845	5209.9839
93.50	5209.9847	5209.9840	5209.9835	5209.9830
Max. Deviation (MHz)	0.0153	0.0160	0.0165	0.0170
Max. Deviation (ppm)	2.94	3.08	3.17	3.27
Result	Pass			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5209.9879	5209.9871	5209.9870	5209.9862
10	5209.9866	5209.9857	5209.9853	5209.9851
20	5209.9857	5209.9853	5209.9846	5209.9838
30	5209.9839	5209.9830	5209.9823	5209.9813
40	5209.9822	5209.9815	5209.9810	5209.9801
Max. Deviation (MHz)	0.0178	0.0185	0.0190	0.0199
Max. Deviation (ppm)	3.41	3.54	3.64	3.81
Result	Pass			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9866	5774.9857	5774.9852	5774.9842
110.00	5774.9857	5774.9850	5774.9847	5774.9844
93.50	5774.9852	5774.9848	5774.9845	5774.9836
Max. Deviation (MHz)	0.0148	0.0152	0.0155	0.0164
Max. Deviation (ppm)	2.57	2.64	2.69	2.85
Result	Pass			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5774.9879	5774.9873	5774.9868	5774.9863
10	5774.9861	5774.9857	5774.9847	5774.9837
20	5774.9857	5774.9847	5774.9843	5774.9842
30	5774.9839	5774.9838	5774.9836	5774.9829
40	5774.9832	5774.9826	5774.9824	5774.9818
Max. Deviation (MHz)	0.0168	0.0174	0.0176	0.0182
Max. Deviation (ppm)	2.90	3.01	3.04	3.14
Result	Pass			