CERTIFICATION TEST REPORT

Report Number : 12579508-E1V5

Applicant	:	Broadcom 250 Innovation Drive San Jose, CA 95134, USA
Model	:	BCM94378FCPAGBE
FCC ID	:	QDS-BRCM1094
EUT Description	:	802.11a/n/ac/ax WLAN PCI-E Custom Card
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E

Date Of Issue:
February 06, 2019

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
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NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	1/3/2019	Initial Issue	
V2	1/8/2019	Updated Sections 8.2.3, 8.2.18 &8.2.29	E.Yu
V3	1/11/19	Updated the EUT Description	Grace Rincand
V4	1/17/19	Updated Sections 5.2 , 8 &9	E.Yu
V5	1/17/19	Updated Sections 5.5	E.Yu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Broadcom 250 Innovation Drive San Jose, CA 95134, USA
EUT DESCRIPTION:	802.11a/n/ac/ax WLAN PCI-E Custom Card
MODEL:	BCM94378FCPAGBE
SERIAL NUMBER:	1517631156; 14446352125
DATE TESTED:	November 16, 2018 –January 16, 2019

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

FRANK IBRAHIM
Operations Leader
Consumer Technology Division
UL Verification Services Inc.

Prepared By:

Eric Yu
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 14-30, FCC KDB 662911 D01 v02r01, FCC KDB 905462 D02 v02/D03 v01r02/D06 v02, FCC KDB 789033 D02 v02r01, FCC KDB 644545 D03 v01, ANSI C63.10-2013, FCC 06-96, FCC KDB 905462 D02 and D03.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd
☐ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☐ Chamber I (ISED:2324A-5)
☐ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☒ Chamber J (ISED:2324A-6)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	☒ Chamber K (ISED:2324A-1)
	☐ Chamber G (ISED:22541-4)	☐ Chamber L (ISED:2324A-3)
	☐ Chamber H (ISED:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

Uncertainty figures are valid to a confidence level of 95%.

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is an 802.11a/n/ac/ax WLAN PCI-E Custom Card.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.2 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2 GHz band, 2TX			
5180-5240	802.11n HT20 2TX	20.87	122.18
5180-5240	802.11ax HE20 2TX	21.98	157.76
5190-5230	802.11n HT40 2TX	22.00	158.49
5190-5230	802.11ax HE40 2TX	20.74	118.58
5210	802.11ac VHT80 2TX	12.91	19.54
5210	802.11ax HE80 2TX	13.15	20.65

5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 2TX			
5260 - 5320	802.11n HT20 2TX	20.36	108.64
5260 - 5320	802.11ax HE20 2TX	21.34	136.14
5270 - 5310	802.11n HT40 2TX	17.31	53.83
5270 - 5310	802.11ax HE40 2TX	17.95	62.37
5290	802.11ac VHT80 2TX	14.39	27.48
5290	802.11ax HE80 2TX	16.26	42.27

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5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an onmi-directional antenna, with a maximum gain of:

	Peak Antenna Gain (dBi)	
Frequency (GHz)	Antenna 1	Antenna 2
5150-5250	4.32	4.32
5250-5350	4.96	4.96

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was LEMUR_REL_18_10_433

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Worst-case data rates as provided by the client were:

802.11n HT20mode: MCS0
802.11n HT40mode: MCS0
802.11ac VHT80 mode: MCS0
802.11ax HE20 mode: MCS0
802.11ax HE40 mode: MCS0
802.11ax HE80 mode: MCS0

For regulatory compliance the SU modes are worst case and testing to these modes can be used to cover the same or narrower BW RUs for compliance as long as the same PSD limits are maintained. However, where SU power is not maximized to meet PSD limits then this leaves potential to further increase the narrower BW RU power to maximize against PSD limits. SU data can therefore be used to cover all RUs that maintain the same or lower PSD, and for this reason, full SU data for 20/40/80MHz is included in this report. The SU power in the 5.3GHz band is not maximized against the PSD limits and so the report also includes maximization in this band for HE80 RU52/106 and HE40 RU106 up to PSD limits. Since the power of RU26 was lower than RU52/106 (assuming they maintain the same or lower PSD) it has not been included in this report. These cases with narrower BW are at higher relative power compared to SU (to meet PSD limits) and therefore have been included as additional worst case mode references for test.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC
Laptop AC/DC Adapter	Lenovo	ADP-65kh B	36001646	NA
Laptop	Lenovo	G560-0679	NA	NA
EUT AC/DC Adapter	Delta Electronic Inc	ADP-400D B	NA	NA

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Unshielded	1	AC Mains to AC/DC Adapter
2	DC	1	DC	Unshielded	1.5	AC/DC Adapter to Laptop
3	Ethernet	1	Ethernet	Unshielded	1	Laptop to EUT
4	Antenna	1	SMA	Unshielded	0.08	To spectrum analyzer
5	AC	1	AC	Unshielded	1	AC Mains to AC/DC Adapter
6	DC	1	DC	Unshielded	1.5	AC/DC Adapter to EUT

I/O CABLES (AC POWER CONDUCTED TEST AND RADIATED TEST)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Unshielded	1	AC Mains to AC/DC Adapter
2	DC	1	DC	Unshielded	1.5	AC/DC Adapter to Laptop
5	AC	1	AC	Unshielded	1	AC Mains to AC/DC Adapter
6	DC	1	DC	Unshielded	1.5	AC/DC Adapter to EUT
7	Ethernet	1	Ethernet	Unshielded	10	Laptop to EUT

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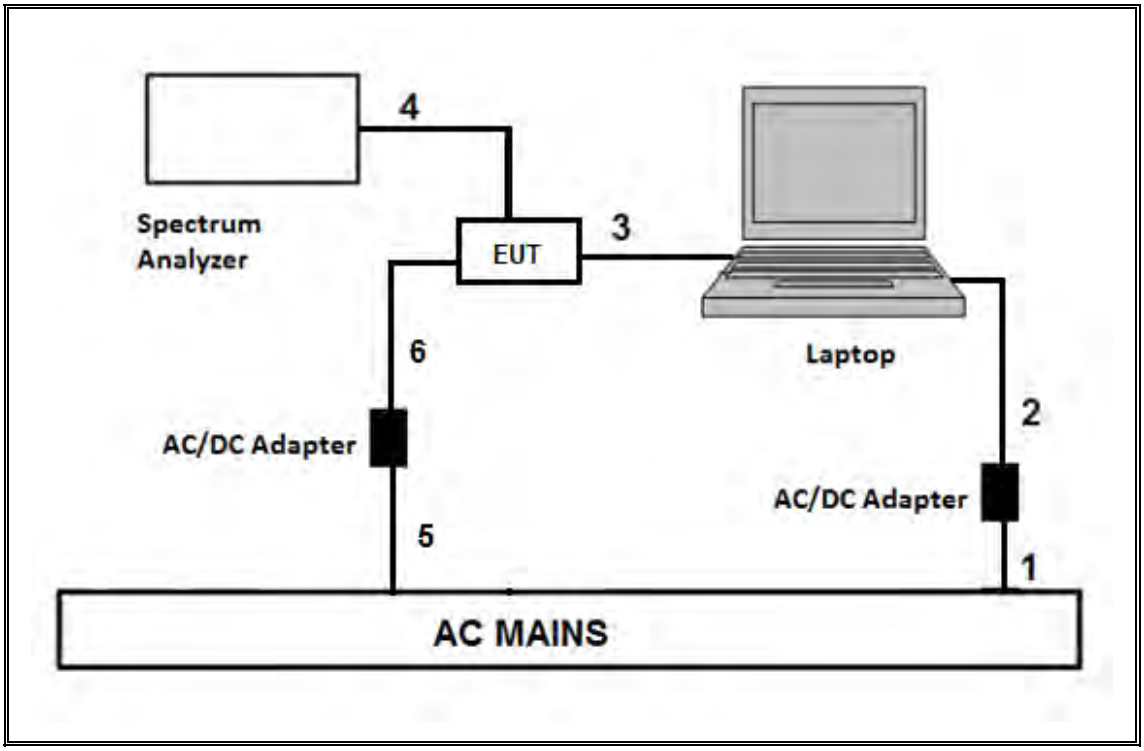
TEST SETUP- ANTENNA PORT CONDUCTED TESTS

The EUT was connected to and powered by AC. Test software exercised the EUT.

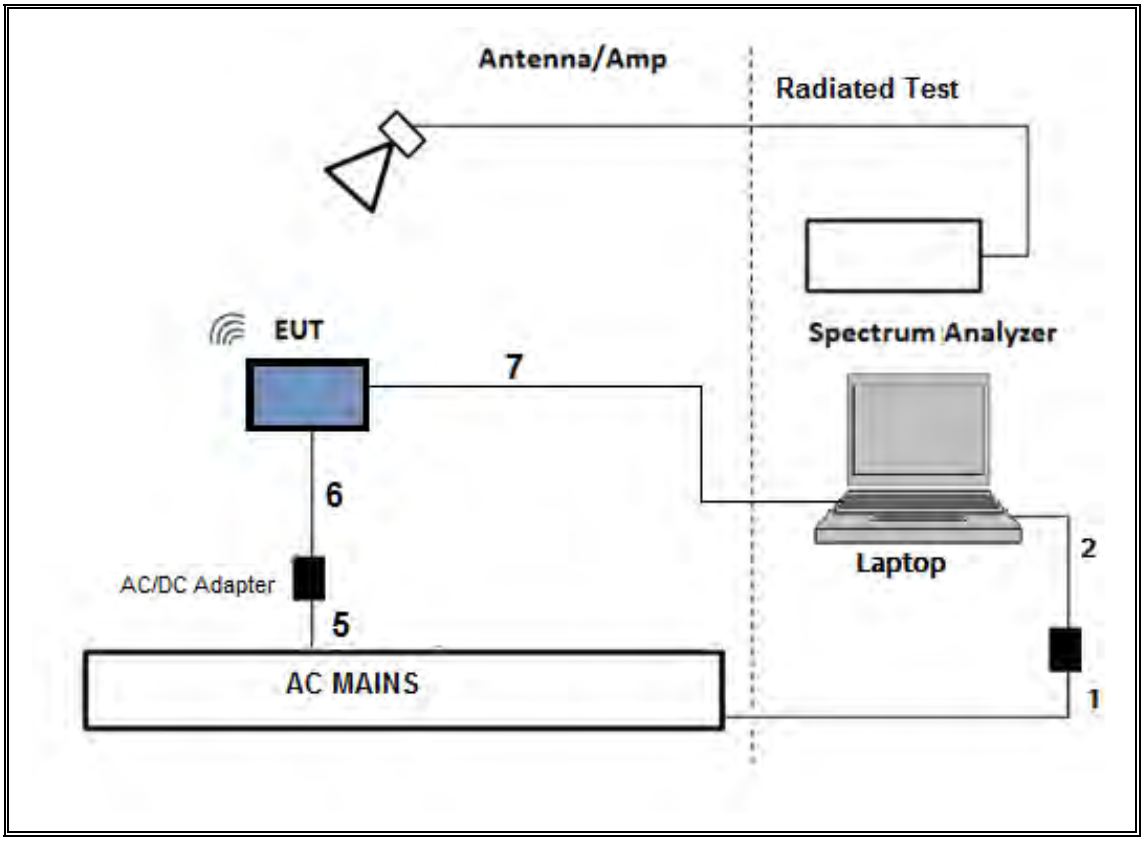
SETUP DIAGRAM



TEST SETUP- RADIATED EMISSIONS TEST

The EUT was connected to AC power cord. Test software exercised the EUT.

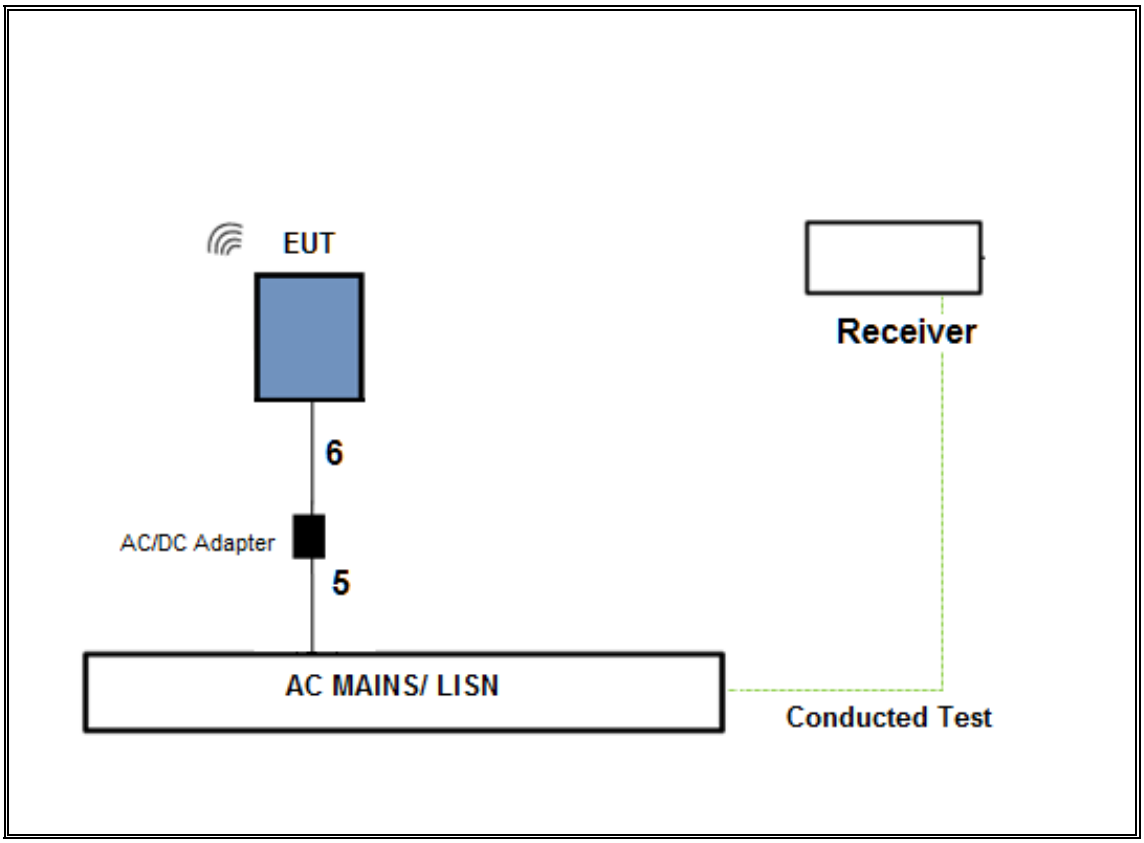
SETUP DIAGRAM



TEST SETUP- AC LINE CONDUCTED TEST

The EUT was connected to AC power cord. Test software exercised the EUT.

SETUP DIAGRAM



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6. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section B.

26 dB Emission BW: KDB 789033 D02 v02r01, Section C.1

Conducted Output Power: KDB 789033 D02 v02r01, Section E.3.b (Method PM-G) and KDB 789033 D02 v02r01, Section E.2.b (Method SA-1)

Power Spectral Density: KDB 789033 D02 v02r01, Section F

Unwanted emissions in restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

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7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Amplifier, 10KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	PRE0180174	05/31/2019
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T344	04/30/2019
Amplifier, 1 to 18GHz,35dB	AMPLICAL	AMP1G18-35	T1569	06/03/2019
Antenna, Horn 1-18GHz	ETS Lindgren	3117	AT0067	03/06/2019
Amplifier, 1 to 18GHz	Amplical	AMP1G18-35	T1571	07/30/2019
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB1	PRE0181575	08/01/2019
Antenna Horn, 18 to 26GHz	ARA	MWH-1826/B	T448	03/13/2019
Antenna Horn, 26 to 40GHz	ARA	MWH-2640	T90	09/11/2019
High Frequency Amplifier Switch Box	UL(In house)	NA	PRE0183142	07/03/2019
EMI Test Receiver	Rohde&Schwarz	ESW44	PRE0179372	05/04/2019
EMI Test Receiver	Rohde&Schwarz	ESW44	PRE0179367	04/28/2019
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1271	07/17/2019
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1225	04/10/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	E4446A	T146	08/13/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1466	04/16/2019
AC Line Conducted				
EMI Receiver	Rohde & Schwarz	ESR	T1436	02/21/2019
LISN for Conducted Emissions CISPR-16	FCC INC.	FCC LISN 50/250	T1310	06/15/2019
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, June 22, 2018	
Antenna Port Software	UL	UL RF	Ver 8.8.1, Sep 26, 2018	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015	

NOTES:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

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8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11n HT20 2TX	1.585	1.608	0.986	98.57%	0.00	0.010
802.11ax HE20 2TX SU	1.575	1.592	0.989	98.93%	0.00	0.010
802.11n HT40 2TX	1.539	1.559	0.987	98.72%	0.00	0.010
802.11ax HE40 2TX SU	4.090	4.157	0.984	98.39%	0.00	0.010
802.11ac VHT80 2TX	1.478	1.499	0.986	98.60%	0.00	0.010
802.11ax HE80 2TX SU	1.464	1.489	0.983	98.32%	0.00	0.010

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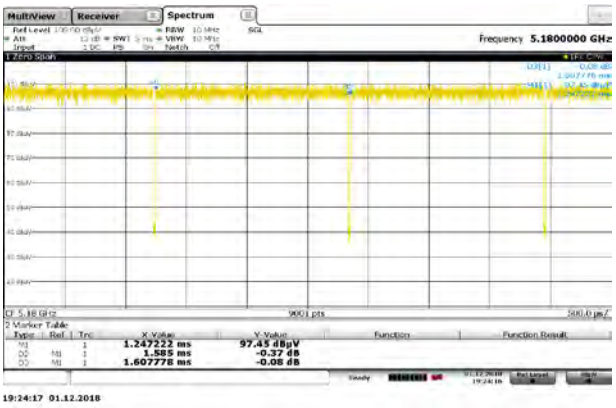
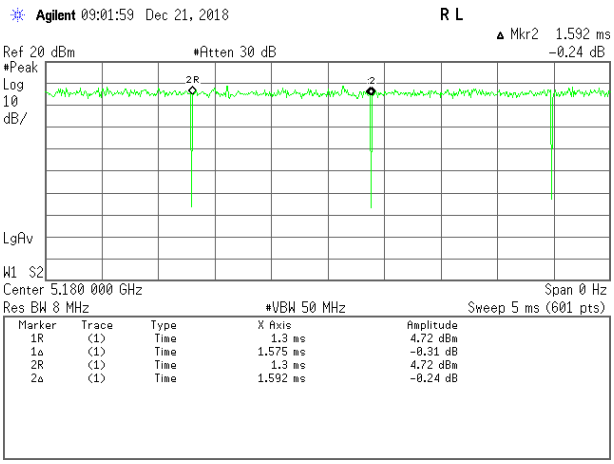
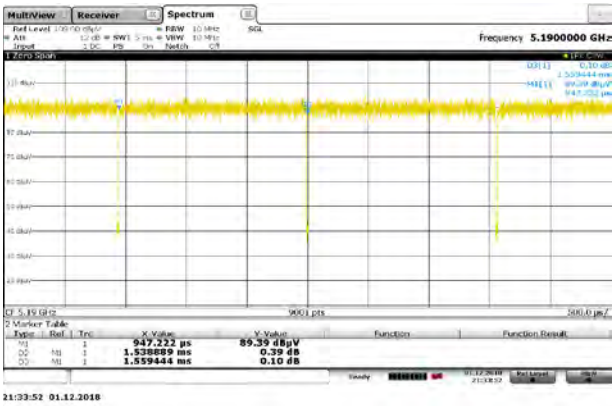
DUTY CYCLE PLOTS



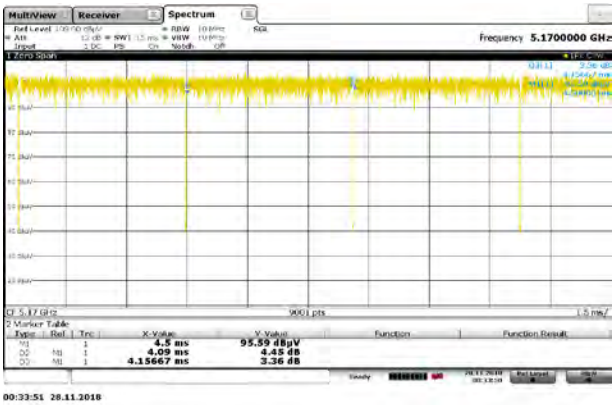
DUTY CYCLE 802.11n HT20 2TX



DUTY CYCLE 802.11ax HE20 2TX SU



DUTY CYCLE 802.11n HT40 2TX



DUTY CYCLE 802.11ax HE40 2TX SU

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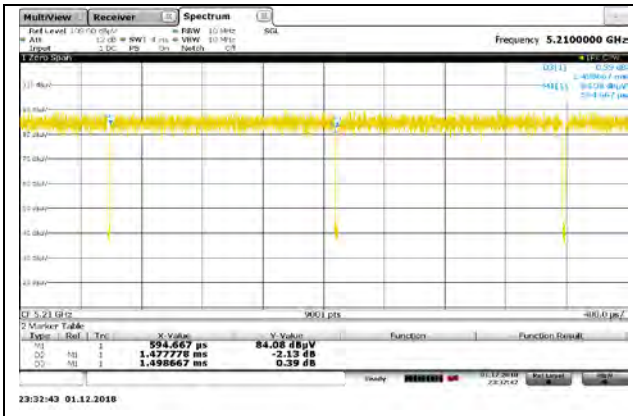
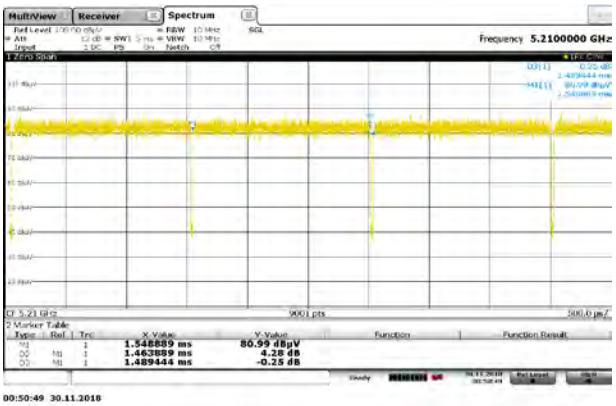


DUTY CYCLE 802.11ac VHT80 2TX



DUTY CYCLE 802.11ax HE80 2TX SU

8.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

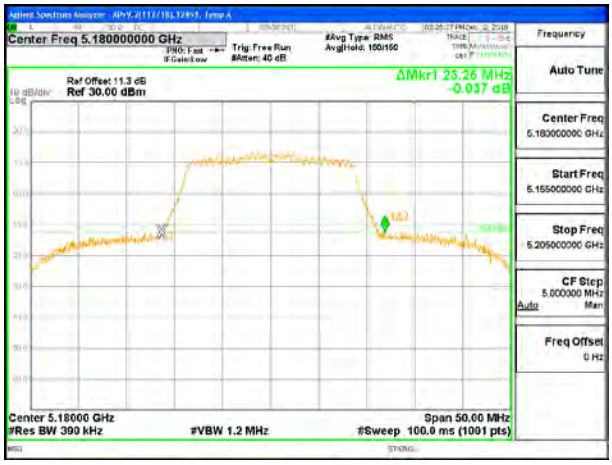
8.2.1. 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Low	5180	22.25	23.25
Mid	5200	22.20	24.55
High	5240	22.45	24.35

LOW CHANNEL

LOW CHANNEL CHAIN 0



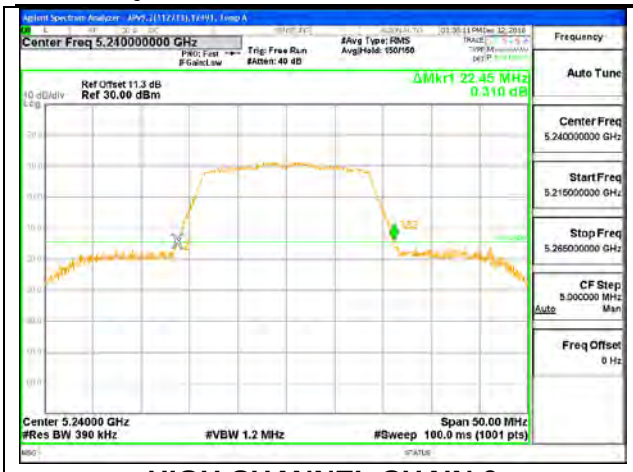
LOW CHANNEL CHAIN 1

MID CHANNEL

MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0

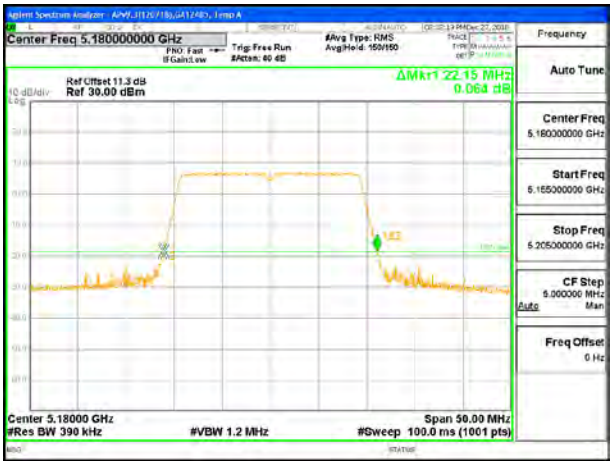
HIGH CHANNEL CHAIN 1

8.2.2. 802.11ax HE20 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Low	5180	22.15	21.75
Mid	5200	22.15	21.70
High	5240	23.15	22.00

LOW CHANNEL



LOW CHANNEL CHAIN 0

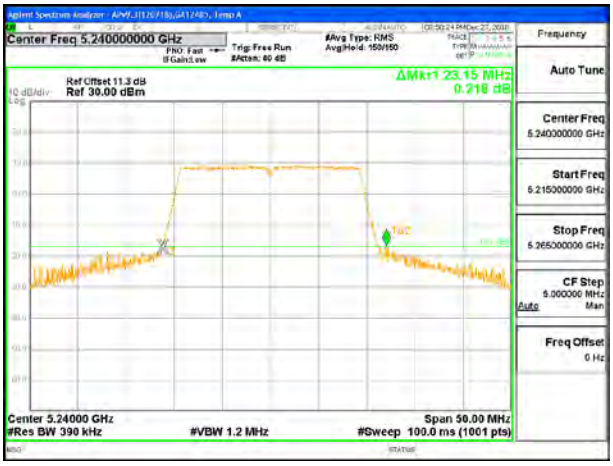
LOW CHANNEL CHAIN 1

MID CHANNEL

MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	40.80	40.30
High	5230	40.70	40.40

LOW CHANNEL

LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

HIGH CHANNEL

HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.2.4. 802.11ax HE40 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	40.90	40.70
High	5230	40.90	42.40

LOW CHANNEL

LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

HIGH CHANNEL

HIGH CHANNEL CHAIN 0

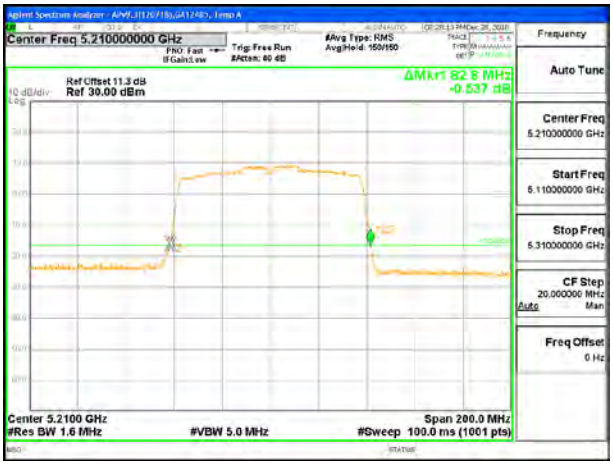
HIGH CHANNEL CHAIN 1

8.2.5. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Mid	5210	82.80	84.00

MID CHANNEL



MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

8.2.6. 802.11ax HE80 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Mid	5210	84.60	83.00

MID CHANNEL

MID CHANNEL CHAIN 0

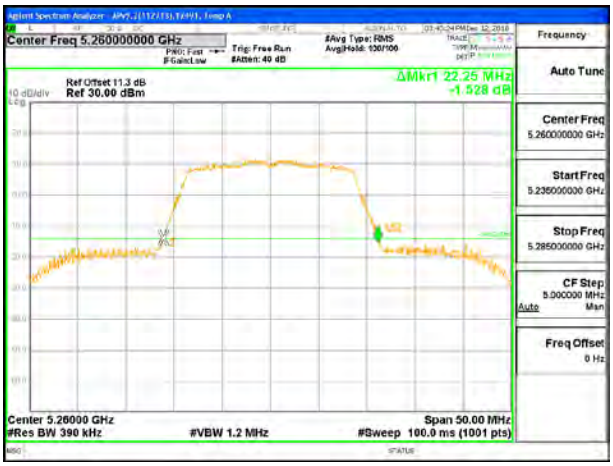
MID CHANNEL CHAIN 1

8.2.7. 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Low	5260	22.25	23.00
Mid	5300	22.25	22.50
High	5320	22.45	22.60

LOW CHANNEL



LOW CHANNEL CHAIN 0

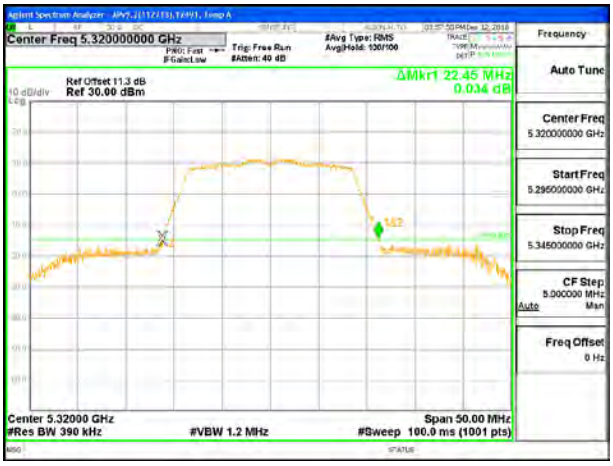
LOW CHANNEL CHAIN 1

MID CHANNEL

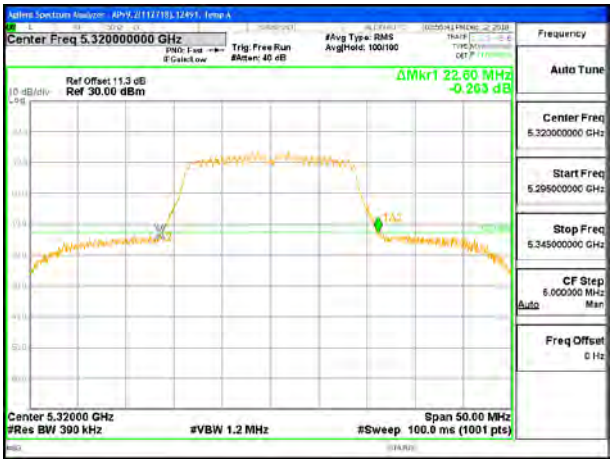
MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

8.2.8. 802.11ax HE20 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Low	5260	22.15	21.90
Mid	5300	22.25	21.80
High	5320	22.15	21.80

LOW CHANNEL

LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

MID CHANNEL

MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

HIGH CHANNEL

HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.2.9. 802.11n HT40 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Low	5270	40.20	40.20
High	5310	40.20	40.00

LOW CHANNEL

LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

HIGH CHANNEL

HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.2.10. 802.11ax HE40 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Low	5270	40.80	40.60
High	5310	40.90	40.60

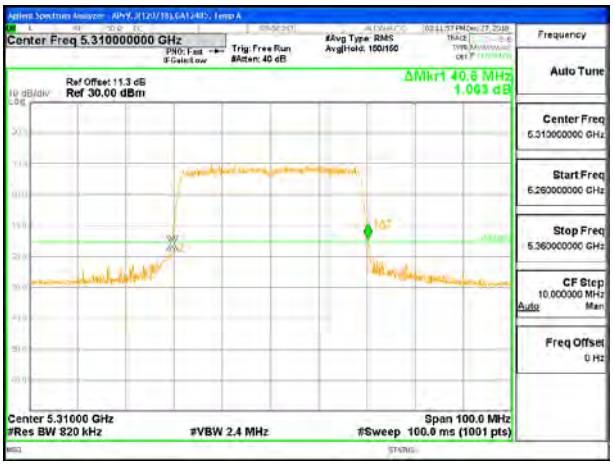
LOW CHANNEL

LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

HIGH CHANNEL

HIGH CHANNEL CHAIN 0



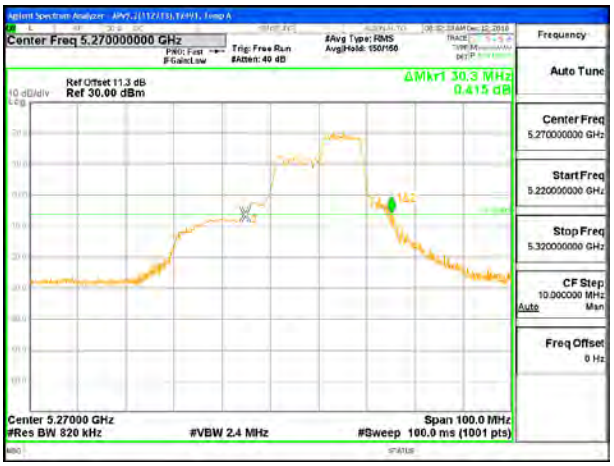
HIGH CHANNEL CHAIN 1

8.2.11. 802.11ax HE40 MODE IN THE 5.3 GHz BAND RU106 INDEX 56

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Low	5270	30.30	25.60
High	5310	29.40	28.00

LOW CHANNEL



LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

HIGH CHANNEL

HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.2.12. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Mid	5290	83.60	84.60

MID CHANNEL

MID CHANNEL CHAIN 0

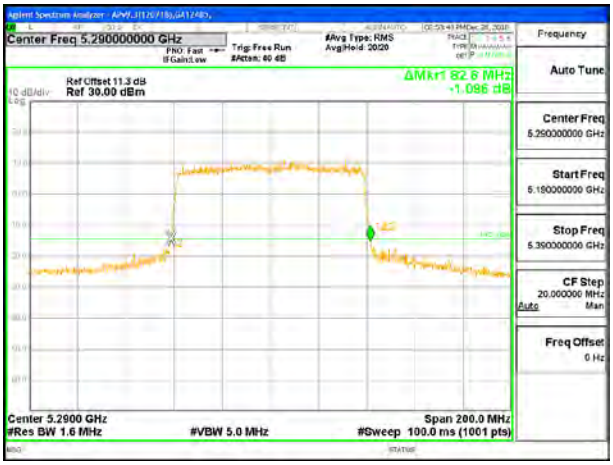
MID CHANNEL CHAIN 1

8.2.13. 802.11ax HE80 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Mid	5290	82.60	82.80

MID CHANNEL



MID CHANNEL CHAIN 0

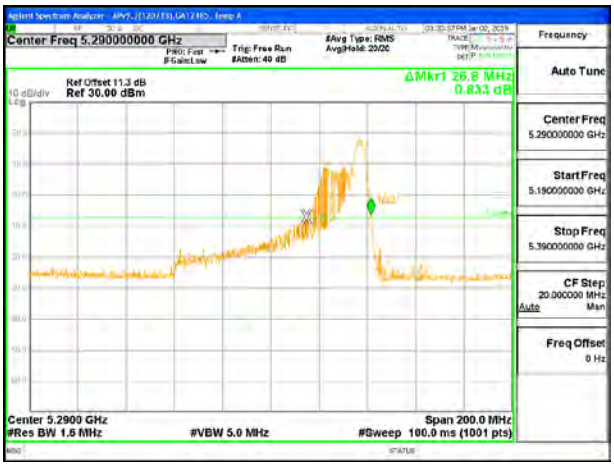
MID CHANNEL CHAIN 1

8.2.14. 802.11ax HE80 MODE IN THE 5.3 GHz BAND RU52 INDEX 52

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Mid	5290	26.80	21.60

MID CHANNEL



MID CHANNEL CHAIN 0

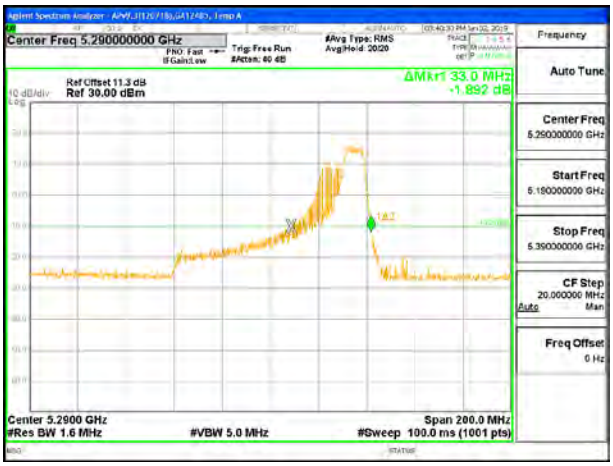
MID CHANNEL CHAIN 1

8.2.15. 802.11ax HE80 MODE IN THE 5.3 GHz BAND RU106 INDEX 60

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 2 (MHz)
Mid	5290	33.00	25.00

MID CHANNEL



MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

8.3. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Bands 5.25-5.35 GHz and 5.47-5.725 GHz
The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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TEST PROCEDURE

The measurement method used for output power is KDB 789033 D02 v02r01, Section E.3.b (Method PM-G) and for straddles channels KDB 789033 D02 v02r01, Section E.2.b (Method SA-1) was used.

The measurement method used for power spectral density is KDB 789033 D02 v02r01, Section F

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DIRECTIONAL ANTENNA GAIN

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes. The directional gains are as follows:

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5.2	4.32	4.32	4.32	7.33
5.3	4.96	4.96	4.96	7.97

RESULTS

8.3.1. 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	4.32	7.33	24.00	9.67
Mid	5200	4.32	7.33	24.00	9.67
High	5240	4.32	7.33	24.00	9.67

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

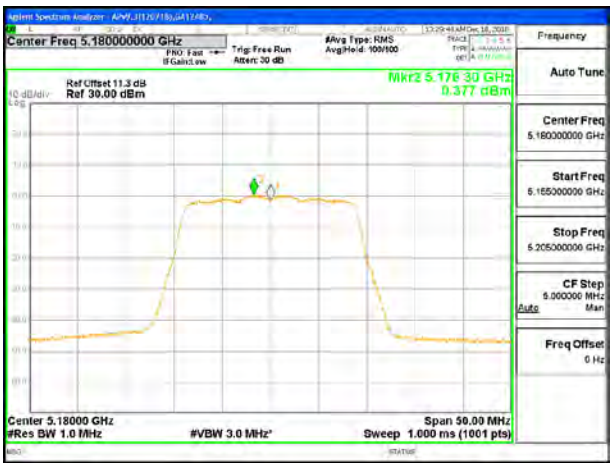
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	12.05	13.02	15.57	24.00	-8.43
Mid	5200	17.46	17.98	20.74	24.00	-3.26
High	5240	17.41	18.26	20.87	24.00	-3.13

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	0.38	1.72	4.11	9.67	-5.56
Mid	5200	5.69	6.66	9.21	9.67	-0.46
High	5240	5.83	6.74	9.32	9.67	-0.35

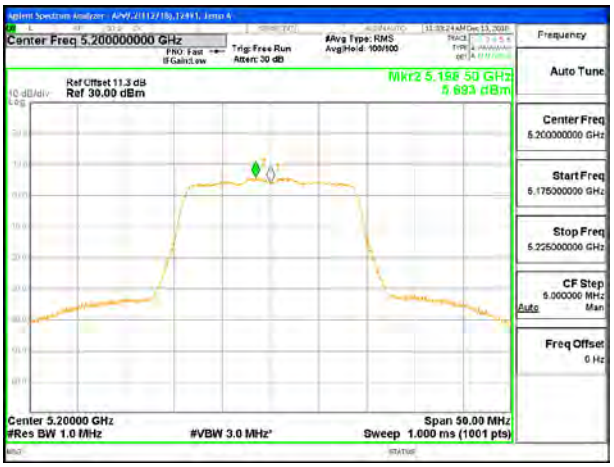
LOW CHANNEL



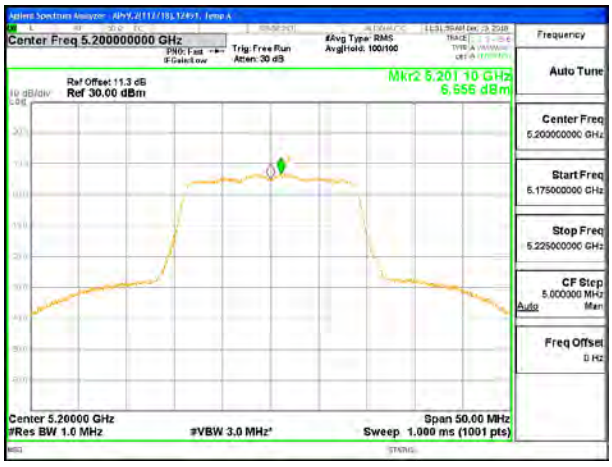
LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

MID CHANNEL

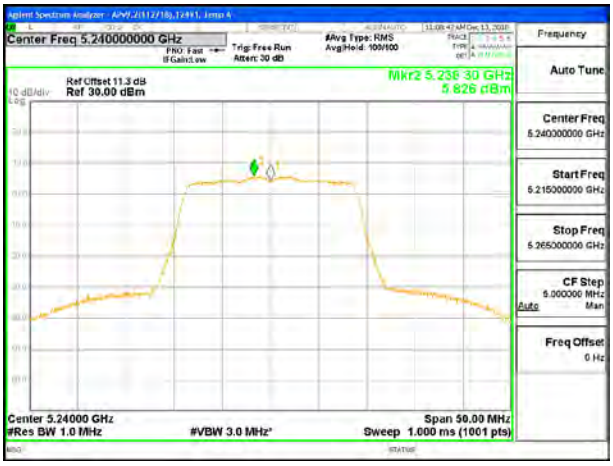


MID CHANNEL CHAIN 0

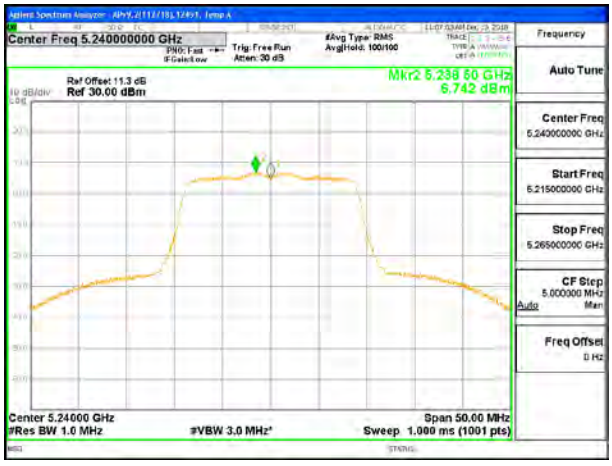


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

8.3.2. 802.11ax HE20 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	4.32	7.33	24.00	9.67
Mid	5200	4.32	7.33	24.00	9.67
High	5240	4.32	7.33	24.00	9.67

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

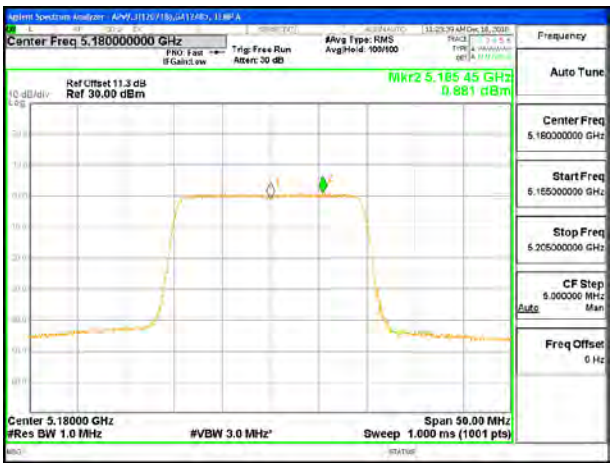
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	12.98	13.92	16.49	24.00	-7.51
Mid	5200	18.45	19.29	21.90	24.00	-2.10
High	5240	18.60	19.31	21.98	24.00	-2.02

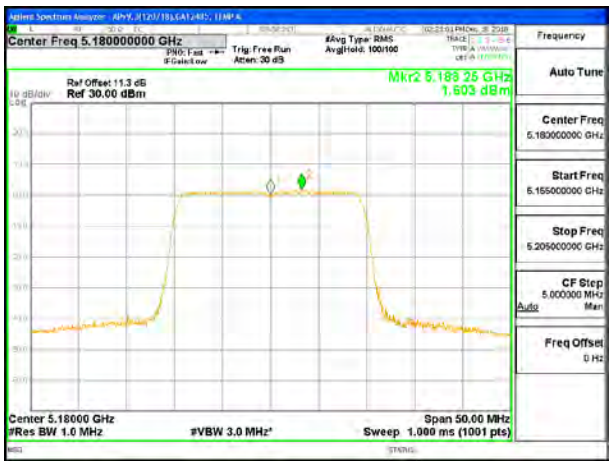
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	0.88	1.60	4.27	9.67	-5.40
Mid	5200	5.73	6.59	9.19	9.67	-0.48
High	5240	5.68	6.54	9.14	9.67	-0.53

LOW CHANNEL

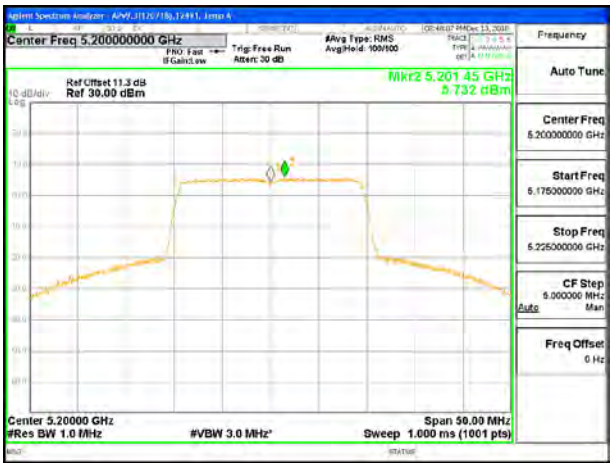


LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

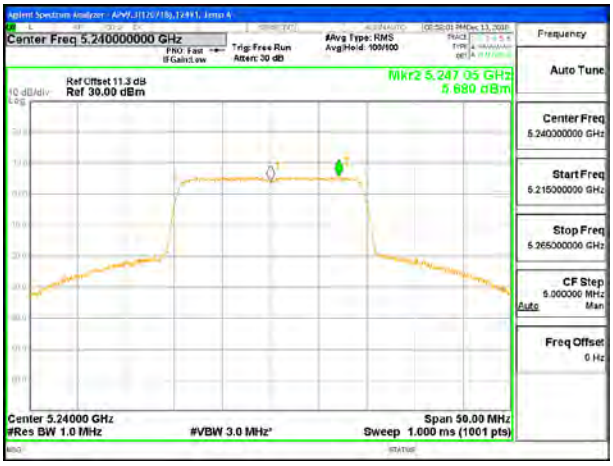
MID CHANNEL



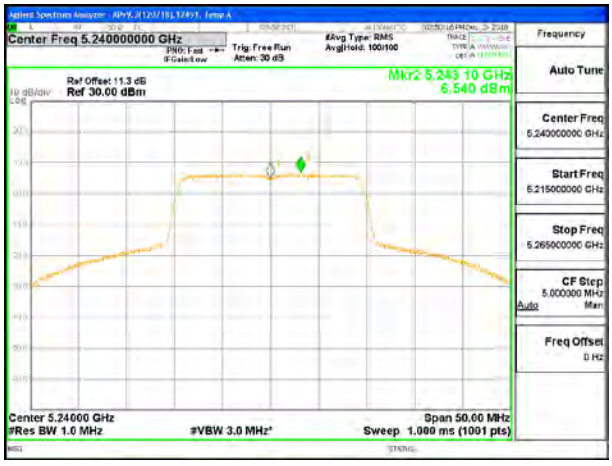
MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

8.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5190	4.32	7.33	24.00	9.67
High	5230	4.32	7.33	24.00	9.67

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

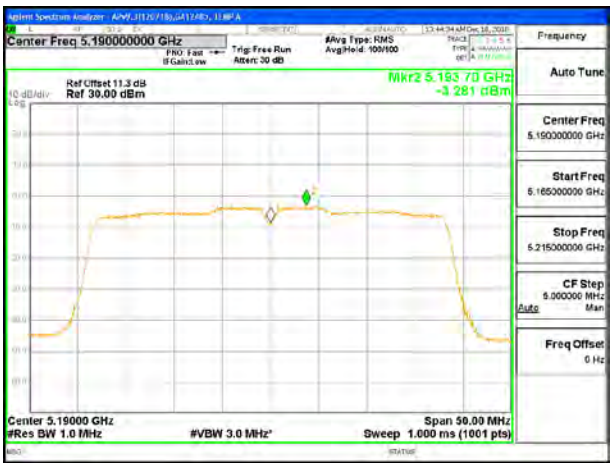
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	10.83	11.82	14.36	24.00	-9.64
High	5230	18.63	19.32	22.00	24.00	-2.00

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/ 1MHz)	Antenna 2 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5190	-3.28	-2.19	0.31	9.67	-9.36
High	5230	4.36	5.09	7.75	9.67	-1.92

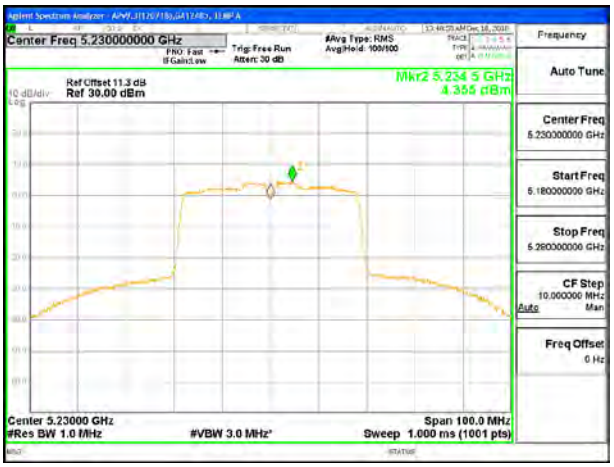
LOW CHANNEL



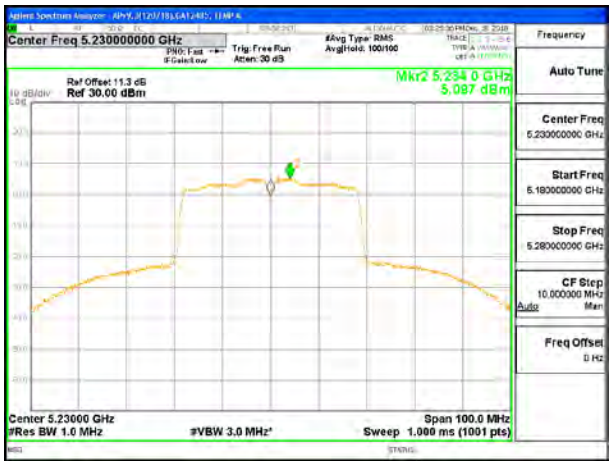
LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

8.3.4. 802.11ax HE40 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5190	4.32	7.33	24.00	9.67
High	5230	4.32	7.33	24.00	9.67

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

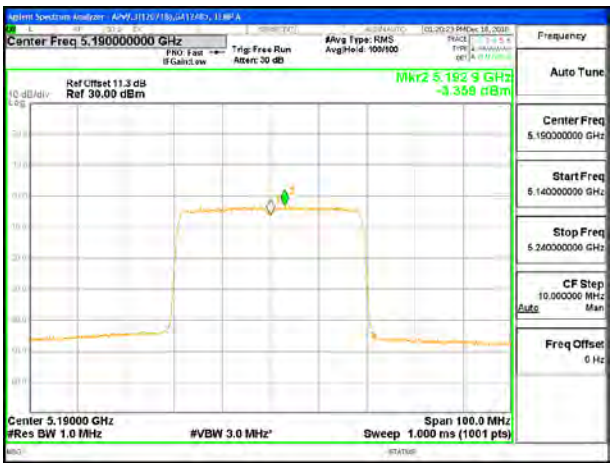
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	11.43	12.35	14.92	24.00	-9.08
High	5230	17.42	18.01	20.74	24.00	-3.26

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/ 1MHz)	Antenna 2 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5190	-3.36	-2.55	0.07	9.67	-9.60
High	5230	2.38	2.89	5.65	9.67	-4.02

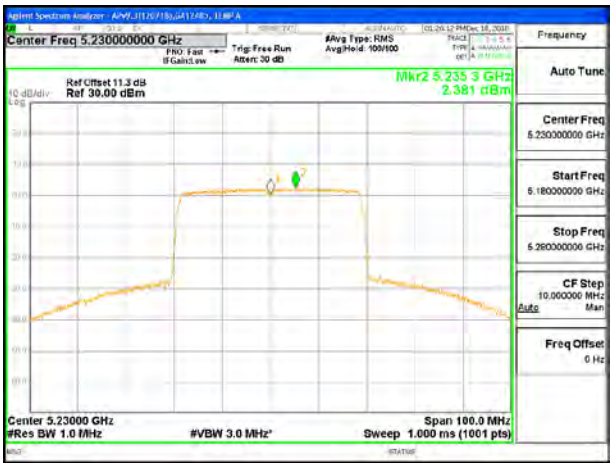
LOW CHANNEL



LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.3.5. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Mid	5210	4.32	7.33	24.00	9.67

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	9.52	10.25	12.91	24.00	-11.09

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/ 1MHz)	Antenna 2 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Mid	5210	-7.07	-6.57	-3.80	9.67	-13.47

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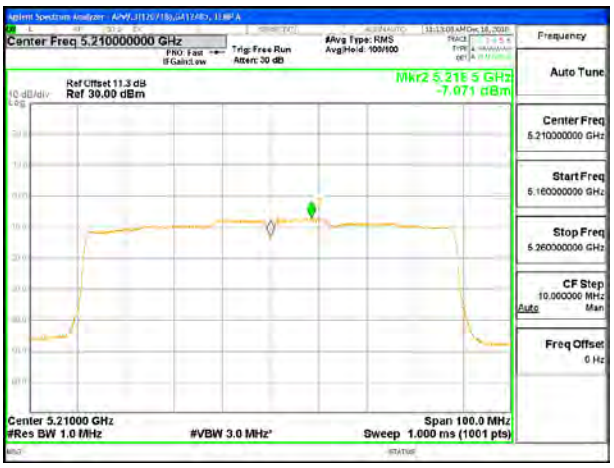
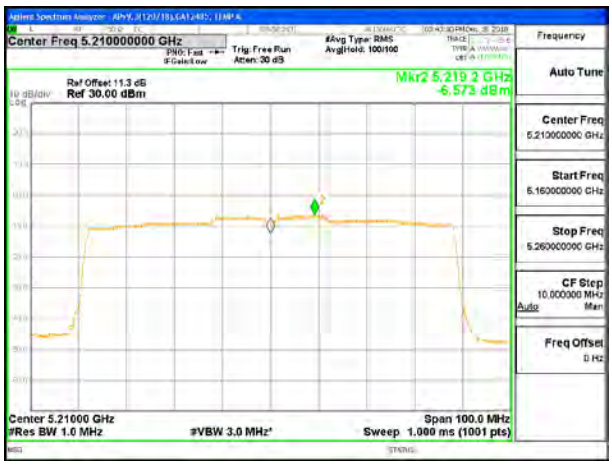
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

8.3.6. 802.11ax HE80 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Mid	5210	4.32	7.33	24.00	9.67

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	9.35	10.81	13.15	24.00	-10.85

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/ 1MHz)	Antenna 2 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Mid	5210	-8.43	-7.02	-4.66	9.67	-14.33

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MID CHANNEL

MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

8.3.7. 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	22.25	4.96	7.97	24.00	9.03
Mid	5300	22.25	4.96	7.97	24.00	9.03
High	5320	22.45	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

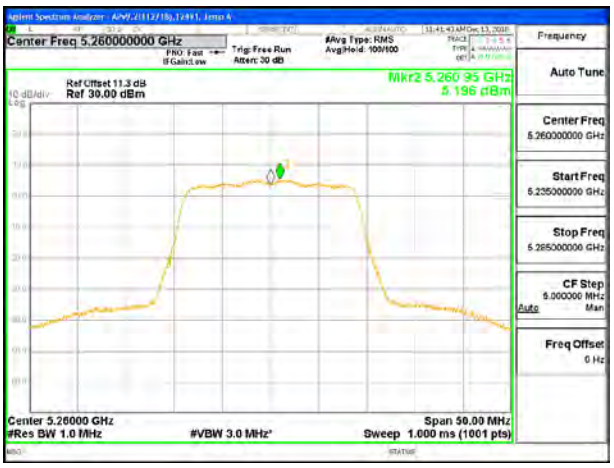
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.92	17.54	20.25	24.00	-3.75
Mid	5300	16.88	17.77	20.36	24.00	-3.64
High	5320	13.85	14.88	17.41	24.00	-6.59

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	5.20	6.11	8.69	9.03	-0.34
Mid	5300	5.05	6.11	8.62	9.03	-0.41
High	5320	1.51	1.63	4.58	9.03	-4.45

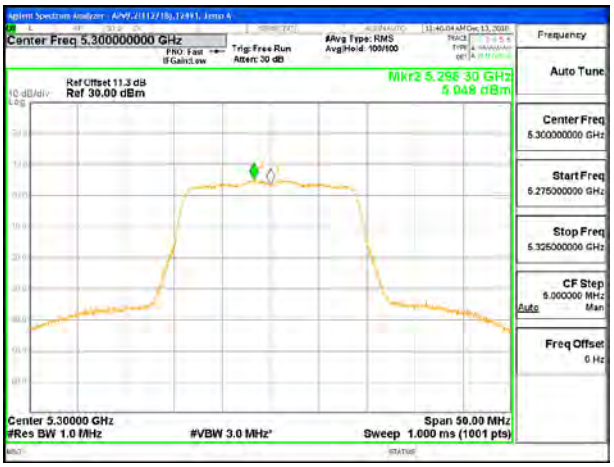
LOW CHANNEL



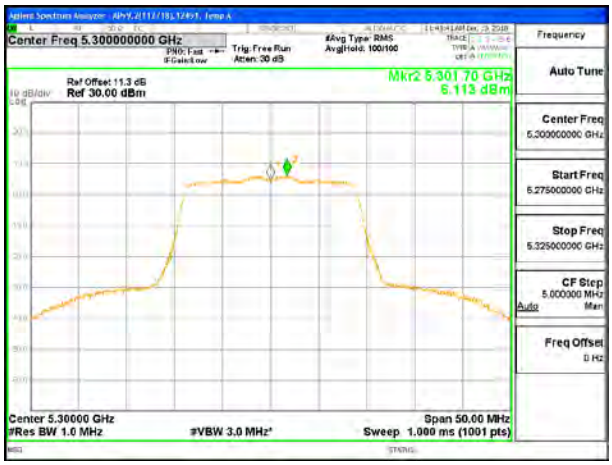
LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

MID CHANNEL

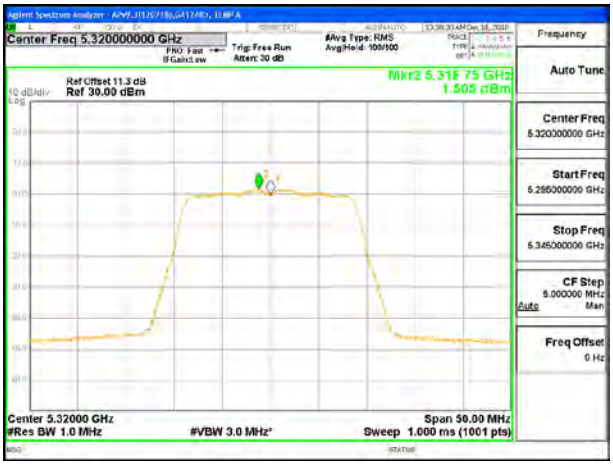


MID CHANNEL CHAIN 0

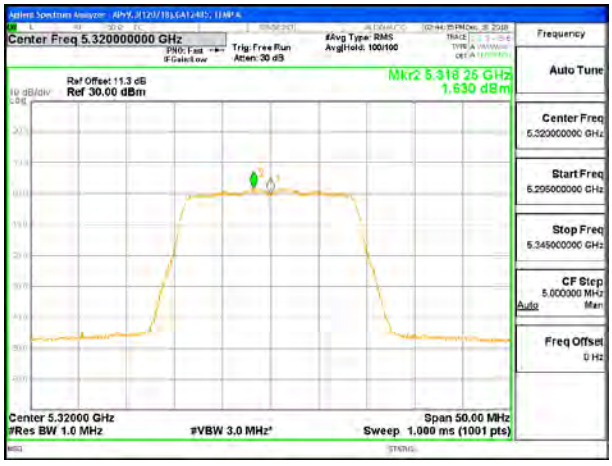


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

8.3.8. 802.11ax HE20 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	21.90	4.96	7.97	24.00	9.03
Mid	5300	21.80	4.96	7.97	24.00	9.03
High	5320	21.80	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

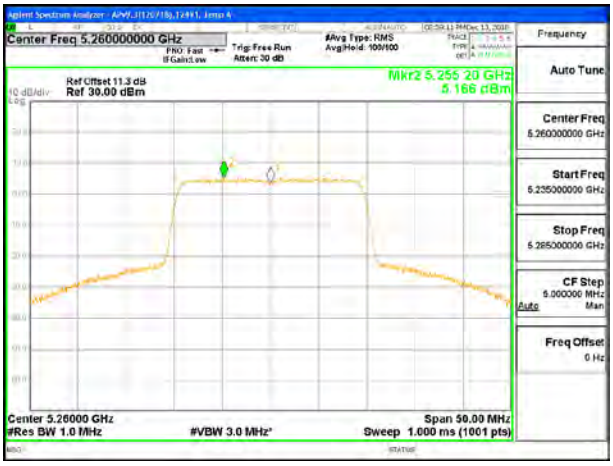
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	18.01	18.62	21.34	24.00	-2.66
Mid	5300	18.04	18.54	21.31	24.00	-2.69
High	5320	14.87	15.61	18.27	24.00	-5.73

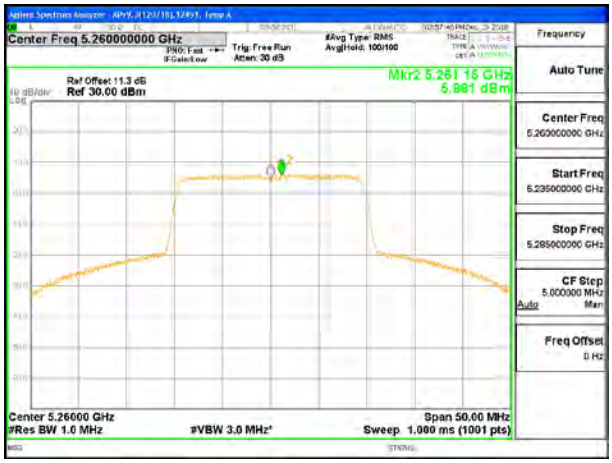
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	5.17	5.88	8.55	9.03	-0.48
Mid	5300	5.00	5.70	8.38	9.03	-0.65
High	5320	1.85	2.33	5.11	9.03	-3.92

LOW CHANNEL

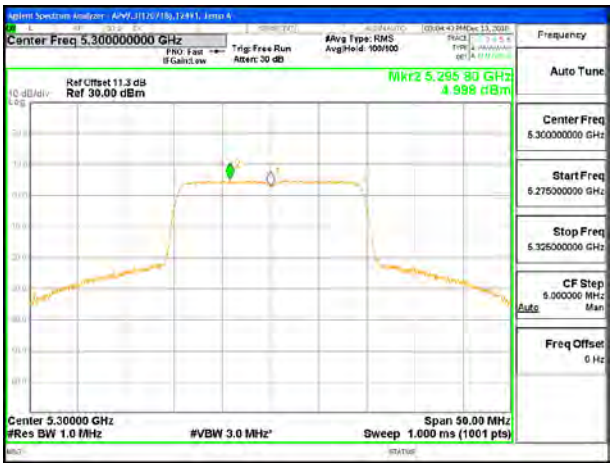


LOW CHANNEL CHAIN 0

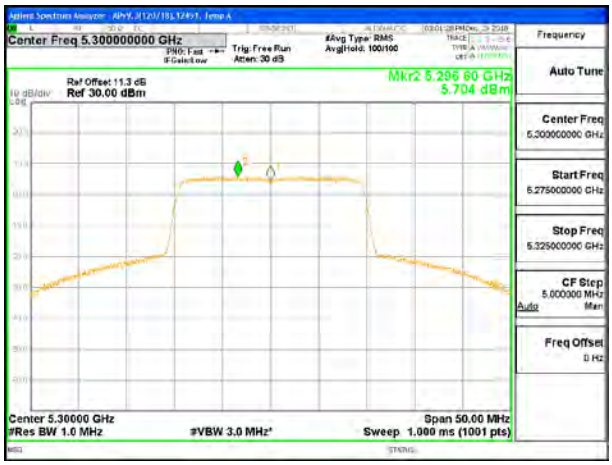


LOW CHANNEL CHAIN 1

MID CHANNEL

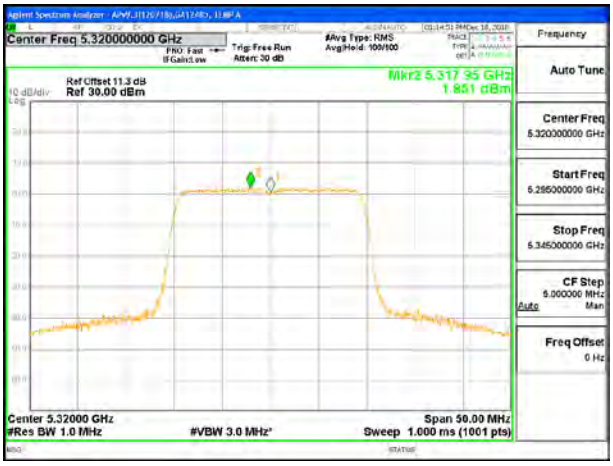


MID CHANNEL CHAIN 0

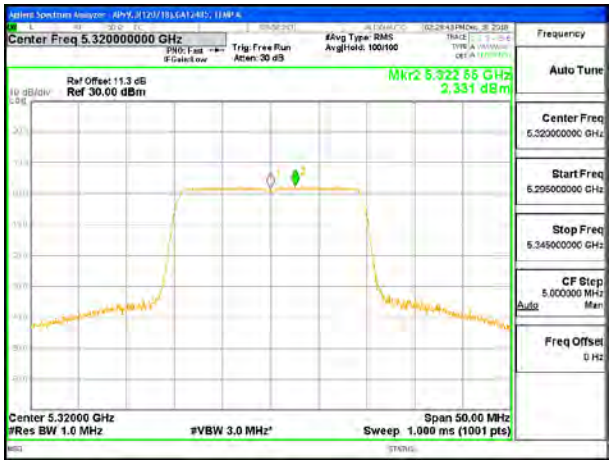


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

8.3.9. 802.11n HT40 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5270	40.20	4.96	7.97	24.00	9.03
High	5310	40.00	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

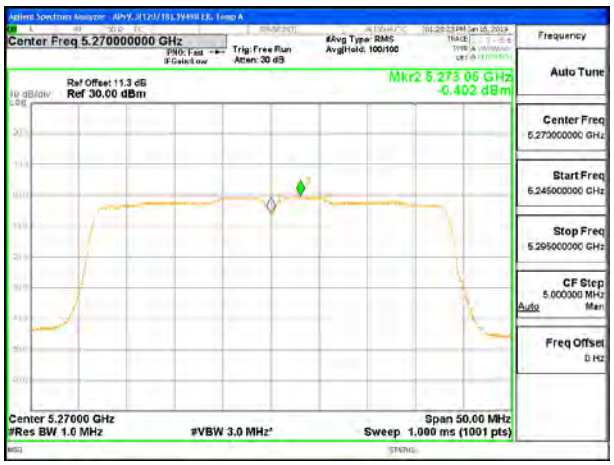
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	13.95	14.63	17.31	24.00	-6.69
High	5310	11.38	12.38	14.92	24.00	-9.08

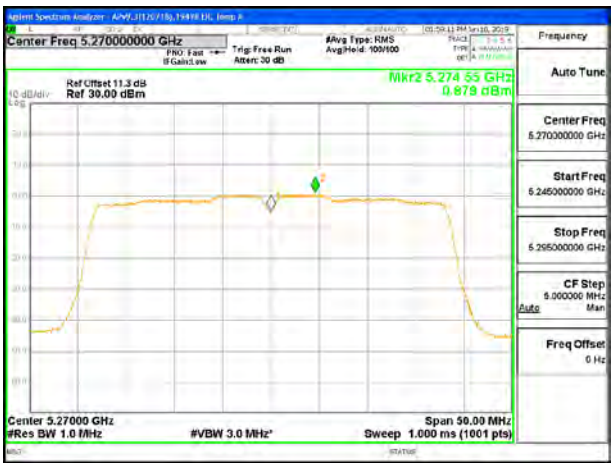
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5270	-0.40	0.88	3.30	9.03	-5.73
High	5310	-3.07	-2.21	0.39	9.03	-8.64

LOW CHANNEL

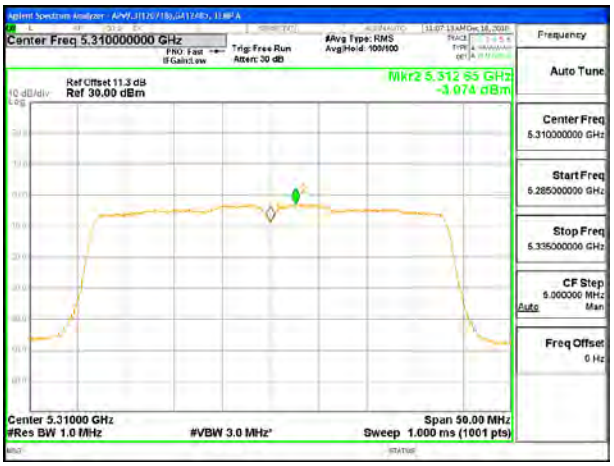


LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.3.10. 802.11ax HE40 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5270	40.80	4.96	7.97	24.00	9.03
High	5310	40.60	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	14.13	14.96	17.58	24.00	-6.42
High	5310	11.95	12.95	15.49	24.00	-8.51

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5270	-0.58	0.40	2.95	9.03	-6.08
High	5310	-3.24	-2.38	0.22	9.03	-8.81

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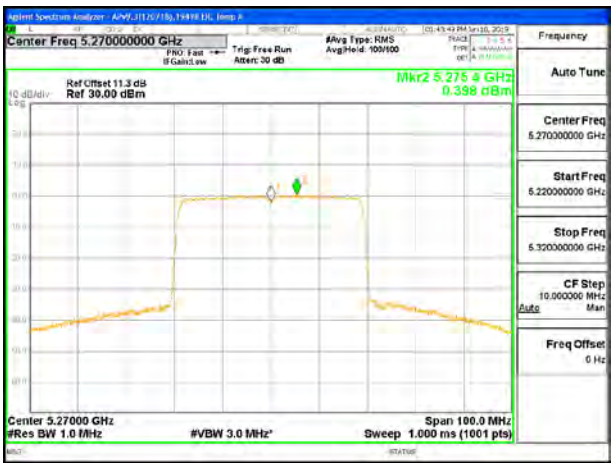
LOW CHANNEL

LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

HIGH CHANNEL

HIGH CHANNEL CHAIN 0

HIGH CHANNEL CHAIN 1

8.3.11. 802.11ax HE40 MODE IN THE 5.3 GHz BAND RU106 INDEX 56

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5270	25.60	4.96	7.97	24.00	9.03
High	5310	28.00	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	14.11	14.92	17.54	24.00	-6.46
High	5310	14.58	15.28	17.95	24.00	-6.05

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5270	5.11	5.86	8.52	9.03	-0.51
High	5310	4.82	5.94	8.42	9.03	-0.61

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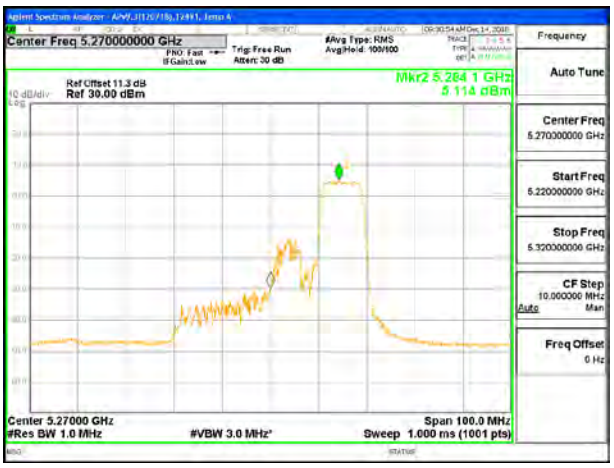
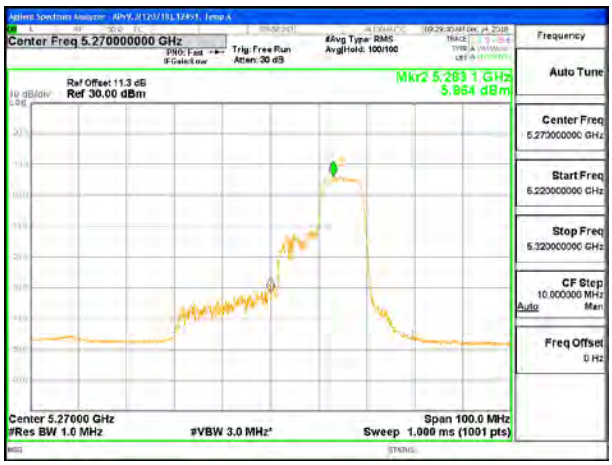
LOW CHANNEL

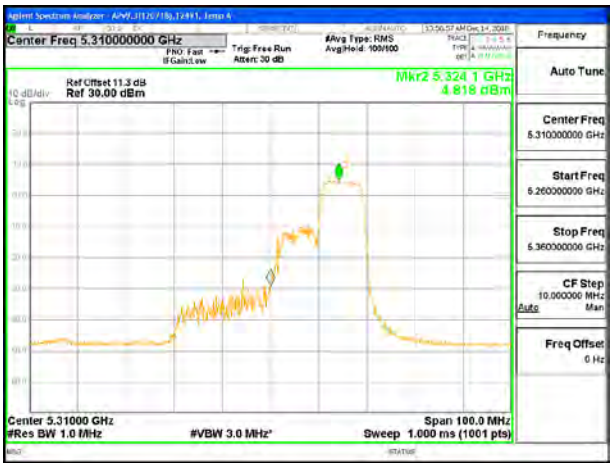


LOW CHANNEL CHAIN 0

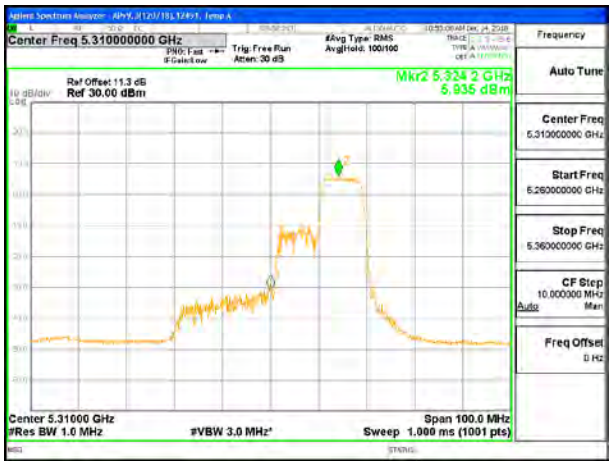


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

8.3.12. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	83.40	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	10.96	11.77	14.39	24.00	-9.61

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	-6.13	-5.63	-2.86	9.03	-11.89

MID CHANNEL

MID CHANNEL CHAIN 0

MID CHANNEL CHAIN 1

8.3.13. 802.11ax HE80 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	82.60	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

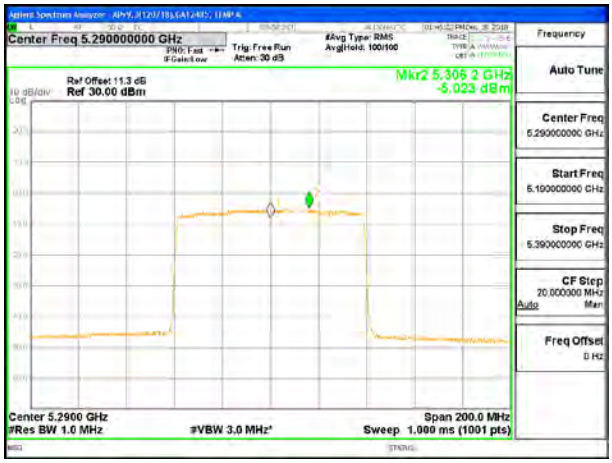
Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	12.21	12.88	15.57	24.00	-8.43

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	-5.70	-5.02	-2.34	9.03	-11.37

MID CHANNEL

MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

8.3.14. 802.11ax HE80 MODE IN THE 5.3 GHz BAND RU52 INDEX 52

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	26.80	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	12.18	13.07	15.66	24.00	-8.34

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	5.59	6.22	8.92	9.03	-0.11

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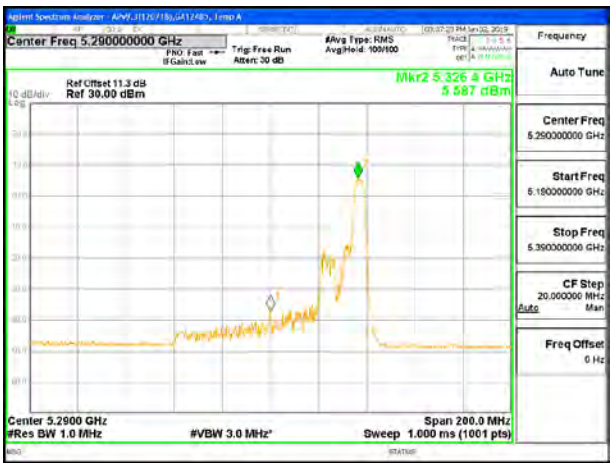
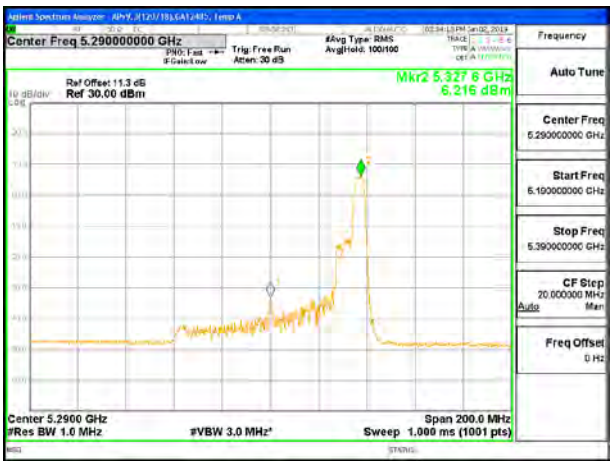
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

8.3.15. 802.11ax HE80 MODE IN THE 5.3 GHz BAND RU106 INDEX 60

2TX Antenna 1 + Antenna 2 CDD MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	33.00	4.96	7.97	24.00	9.03

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

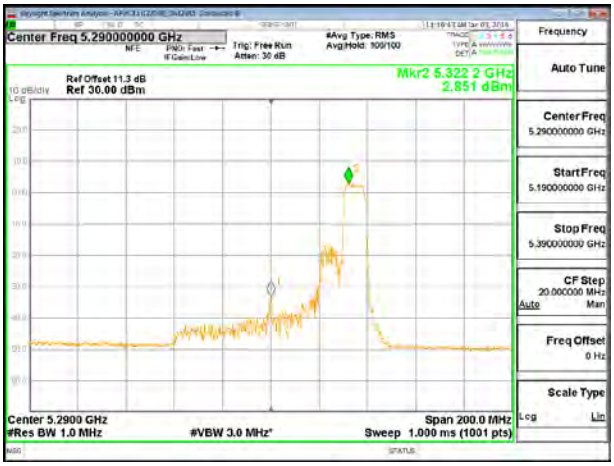
Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	12.97	13.52	16.26	24.00	-7.74

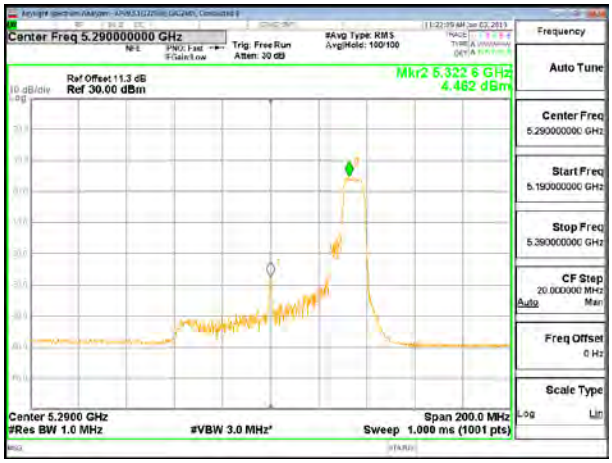
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Antenna 2 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	2.85	4.46	6.74	9.03	-2.29

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 -Restricted bands

FCC §15.407(b)(1-3) -Un-Restricted bands

After January 01, 2019 for Outside of the Restricted Bands Emissions

RSS 247 Issue 2 Sections
6.2.1.2 (for 5150-5250 MHz band)
6.2.2.2 (for 5250-5350 MHz band)
6.2.3.2 (for 5470-5600 MHz and 5650-5725 MHz bands)
6.2.4.2 (for 5725-5850 MHz band)

NCC LP0002 §2.7 and §2.8

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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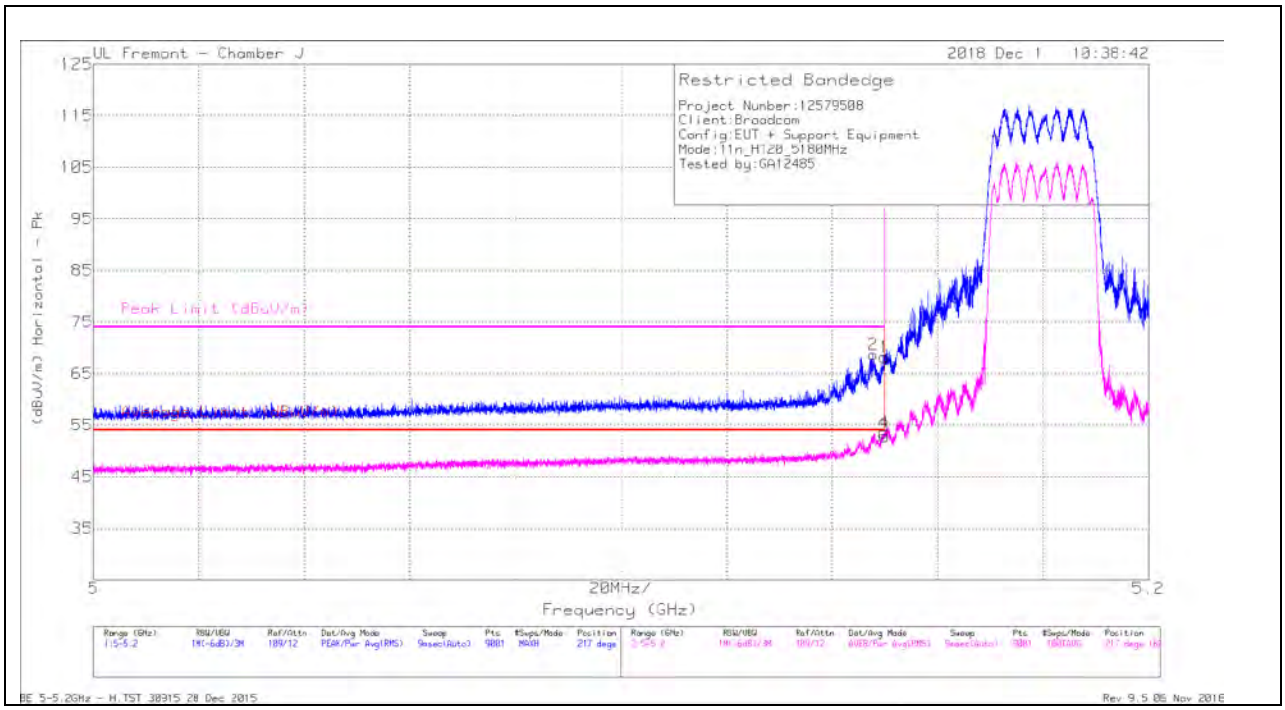
9.1. TRANSMITTER ABOVE 1 GHz

9.1.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (CHANNEL 36)

HORIZONTAL RESULT

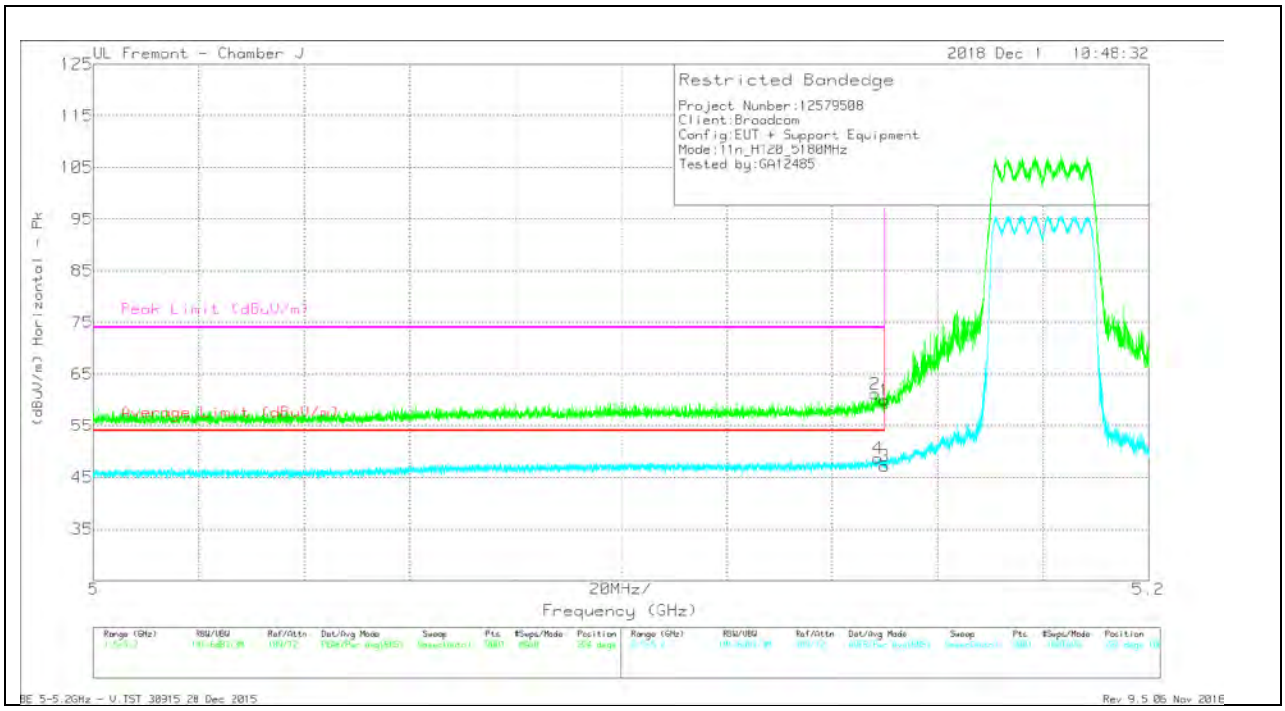


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	43.09	Pk	34.2	-9.1	68.19	-	-	74	-5.81	217	162	H
2	* 5.148	43.59	Pk	34.2	-9.1	68.69	-	-	74	-5.31	217	162	H
3	* 5.15	27.73	RMS	34.2	-9.1	52.83	54	-1.17	-	-	217	162	H
4	* 5.15	28.47	RMS	34.2	-9.1	53.57	54	-.43	-	-	217	162	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



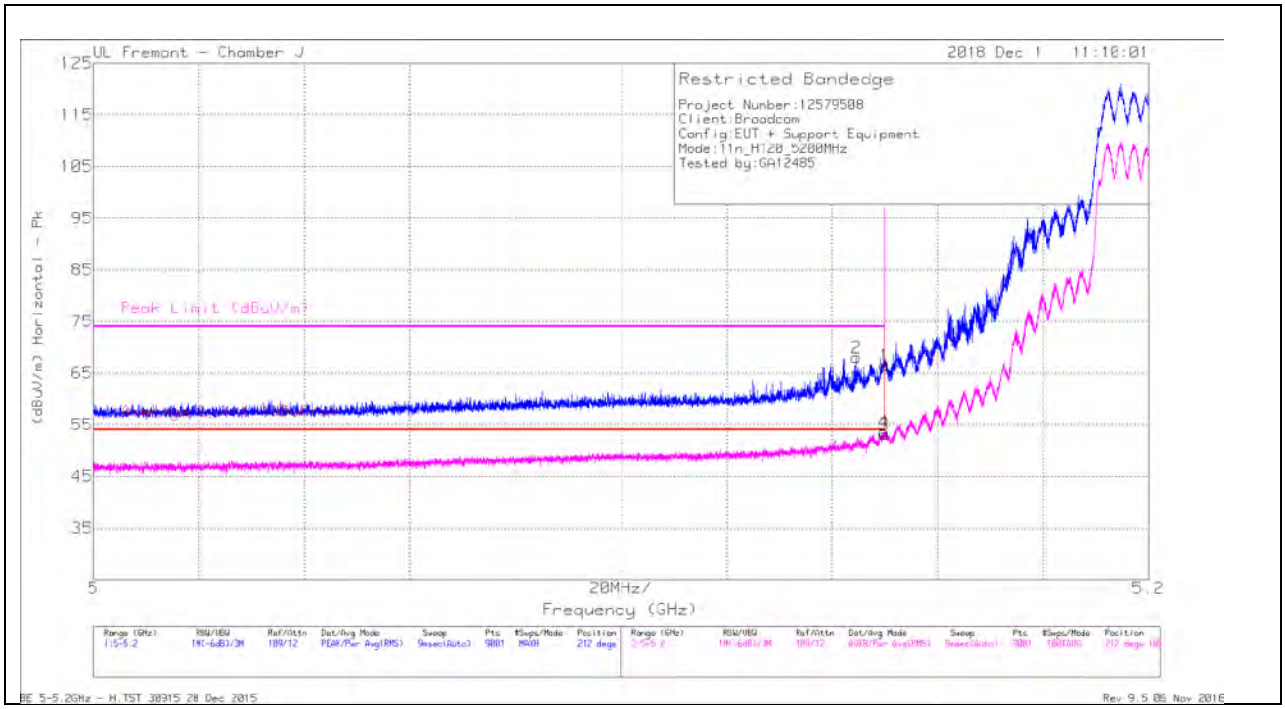
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	34.83	Pk	34.2	-9.1	59.93	-	-	74	-14.07	224	106	V
2	* 5.148	36.03	Pk	34.2	-9.1	61.13	-	-	74	-12.87	224	106	V
3	* 5.15	22.06	RMS	34.2	-9.1	47.16	54	-6.84	-	-	224	106	V
4	* 5.149	23.61	RMS	34.2	-9.1	48.71	54	-5.29	-	-	224	106	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (CHANNEL 40)

HORIZONTAL RESULT

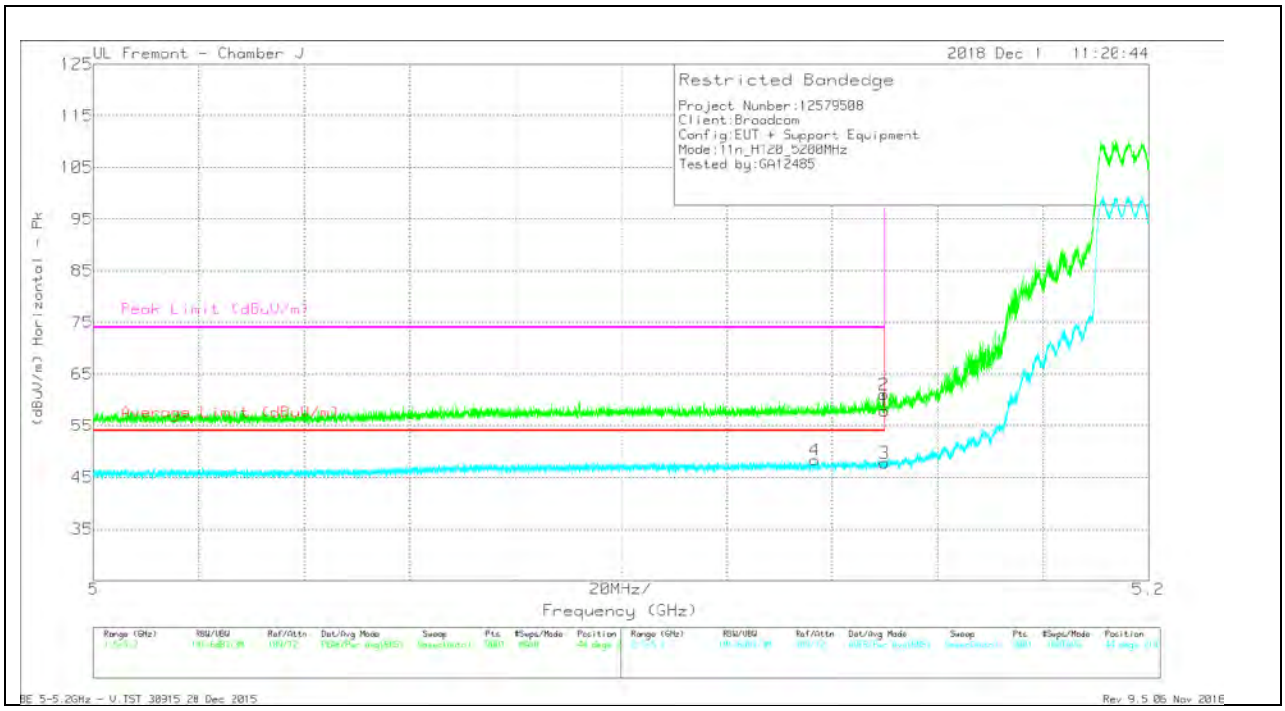


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	41.33	Pk	34.2	-9.1	66.43	-	-	74	-7.57	212	185	H
2	* 5.145	42.75	Pk	34.2	-9	67.95	-	-	74	-6.05	212	185	H
3	* 5.15	28.02	RMS	34.2	-9.1	53.12	54	-.88	-	-	212	185	H
4	* 5.15	28.46	RMS	34.2	-9.1	53.56	54	-.44	-	-	212	185	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



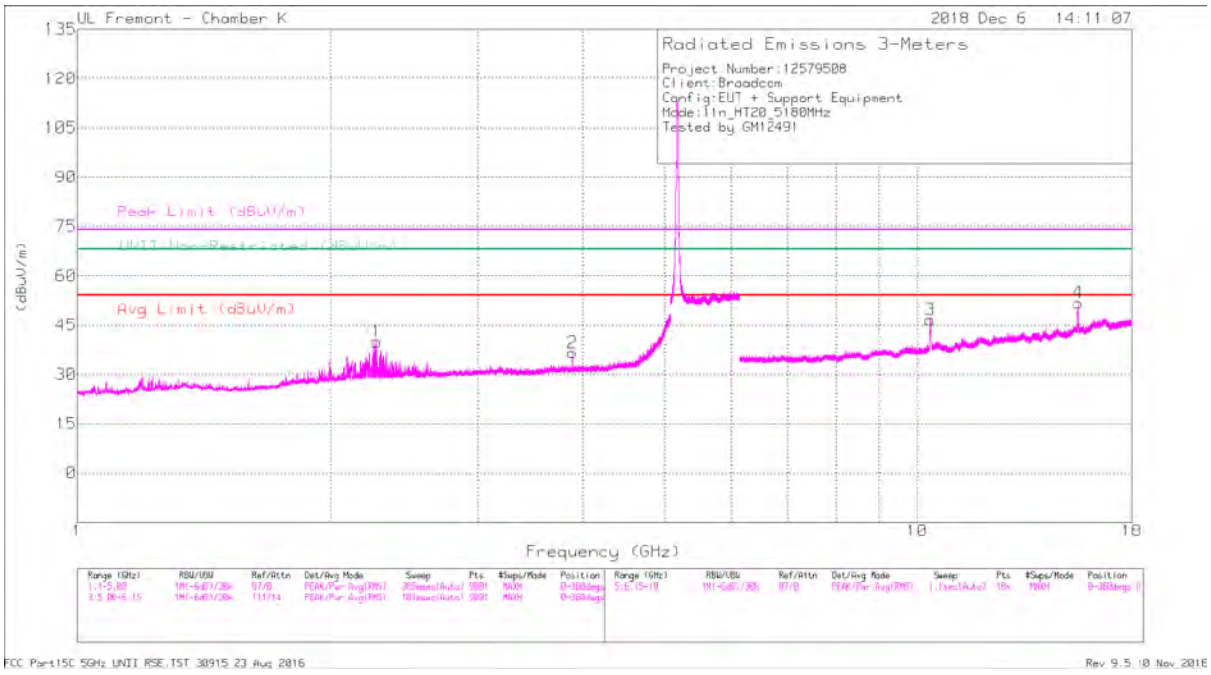
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	32.8	Pk	34.2	-9.1	57.9	-	-	74	-16.1	44	218	V
2	* 5.15	35.94	Pk	34.2	-9.1	61.04	-	-	74	-12.96	44	218	V
3	* 5.15	22.67	RMS	34.2	-9.1	47.77	54	-6.23	-	-	44	218	V
4	* 5.137	23.24	RMS	34.1	-9	48.34	54	-5.66	-	-	44	218	V

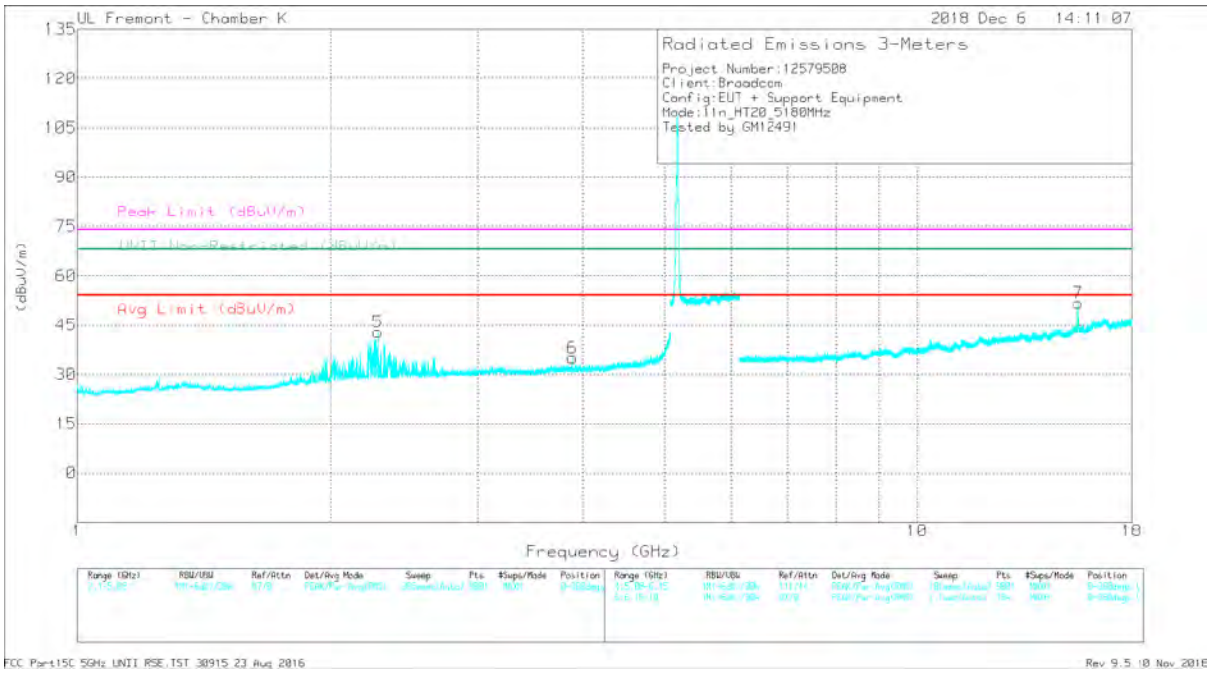
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

CHANNEL 36 RESULTS



HORIZONTAL



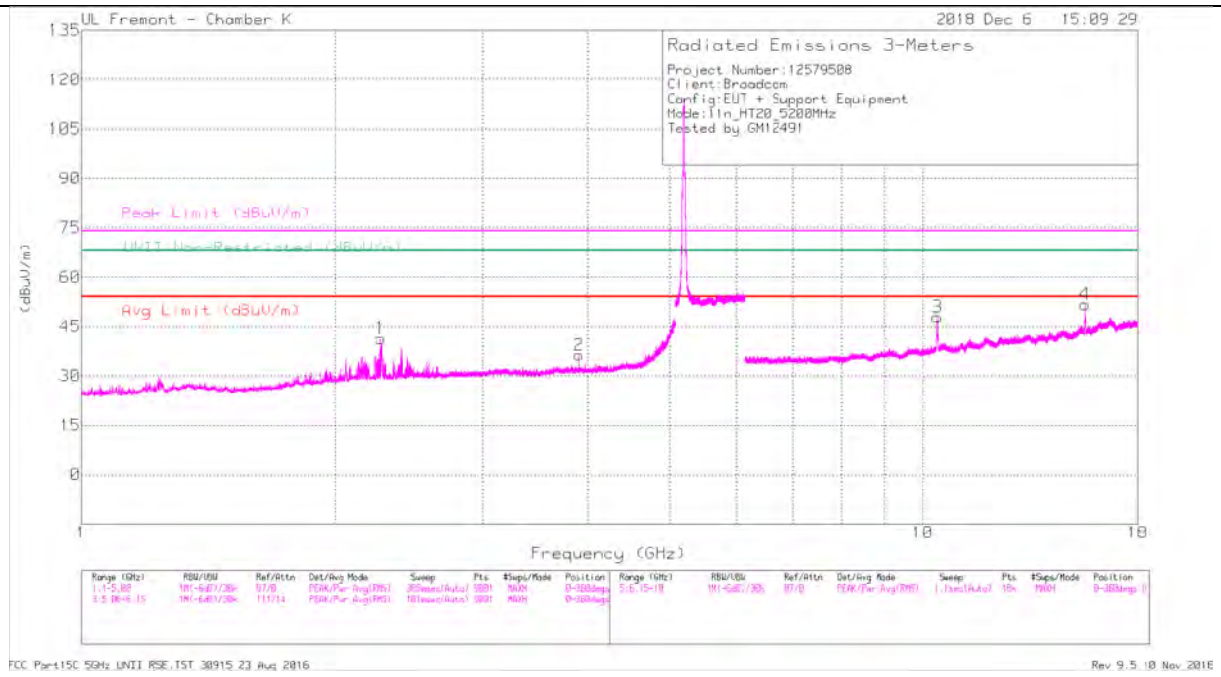
VERTICAL

RADIATED EMISSIONS

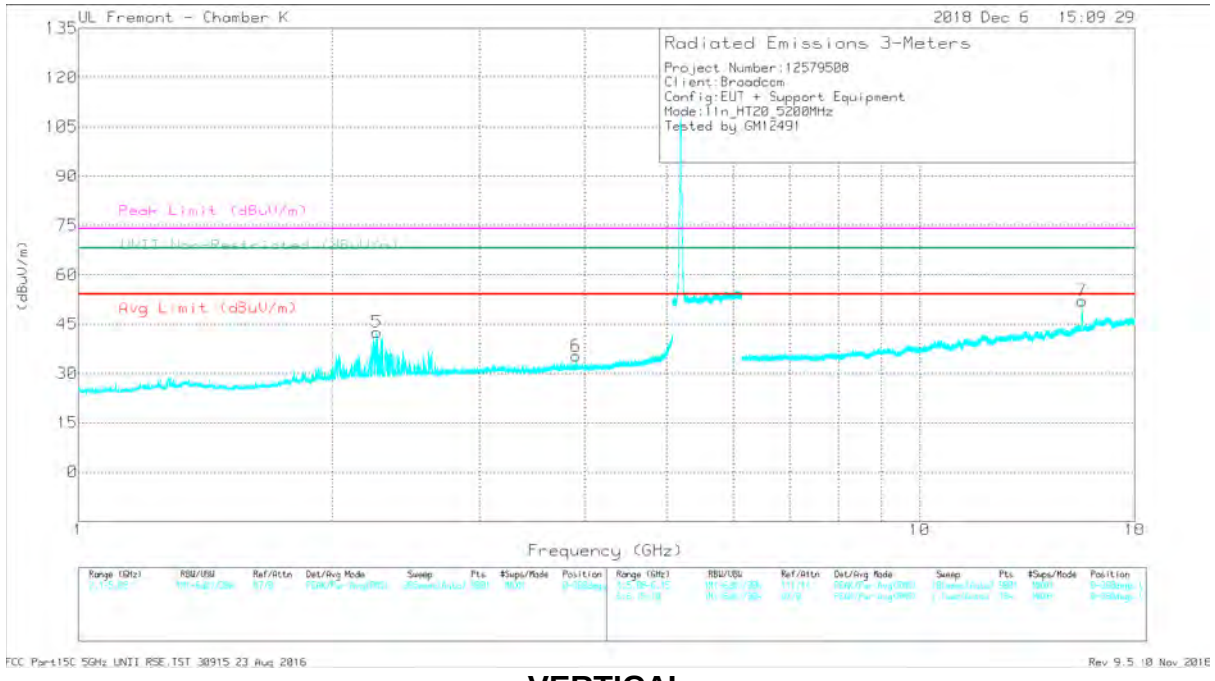
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.27	51.03	PK-U	31.8	-35.1	47.73	-	-	74	-26.27	-	-	204	289	H
	* 2.273	31.72	ADR	31.8	-35.2	28.32	54	-25.68	-	-	-	-	204	289	H
2	* 3.885	40.37	PK-U	33.4	-31.7	42.07	-	-	74	-31.93	-	-	24	244	H
	* 3.885	34.16	ADR	33.4	-31.7	35.86	54	-18.14	-	-	-	-	24	244	H
5	* 2.28	53.75	PK-U	31.8	-35.1	50.45	-	-	74	-23.55	-	-	144	103	V
	* 2.278	32.38	ADR	31.8	-35.1	29.08	54	-24.92	-	-	-	-	144	103	V
6	* 3.885	39.63	PK-U	33.4	-31.7	41.33	-	-	74	-32.67	-	-	217	125	V
	* 3.885	32.33	ADR	33.4	-31.7	34.03	54	-19.97	-	-	-	-	217	125	V
3	10.359	39.03	PK-U	37.4	-23	53.43	-	-	-	-	68.2	-14.77	14	219	H
	10.361	29.88	ADR	37.4	-23.1	44.18	-	-	-	-	-	-	14	219	H
4	* 15.538	37.8	PK-U	40.7	-18.6	59.9	-	-	74	-14.1	-	-	80	140	H
	* 15.538	28.75	ADR	40.7	-18.6	50.85	54	-3.15	-	-	-	-	80	140	H
7	* 15.543	37.86	PK-U	40.7	-18.7	59.86	-	-	74	-14.14	-	-	240	218	V
	* 15.543	28.38	ADR	40.7	-18.7	50.38	54	-3.62	-	-	-	-	240	218	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

CHANNEL 40 RESULTS



HORIZONTAL



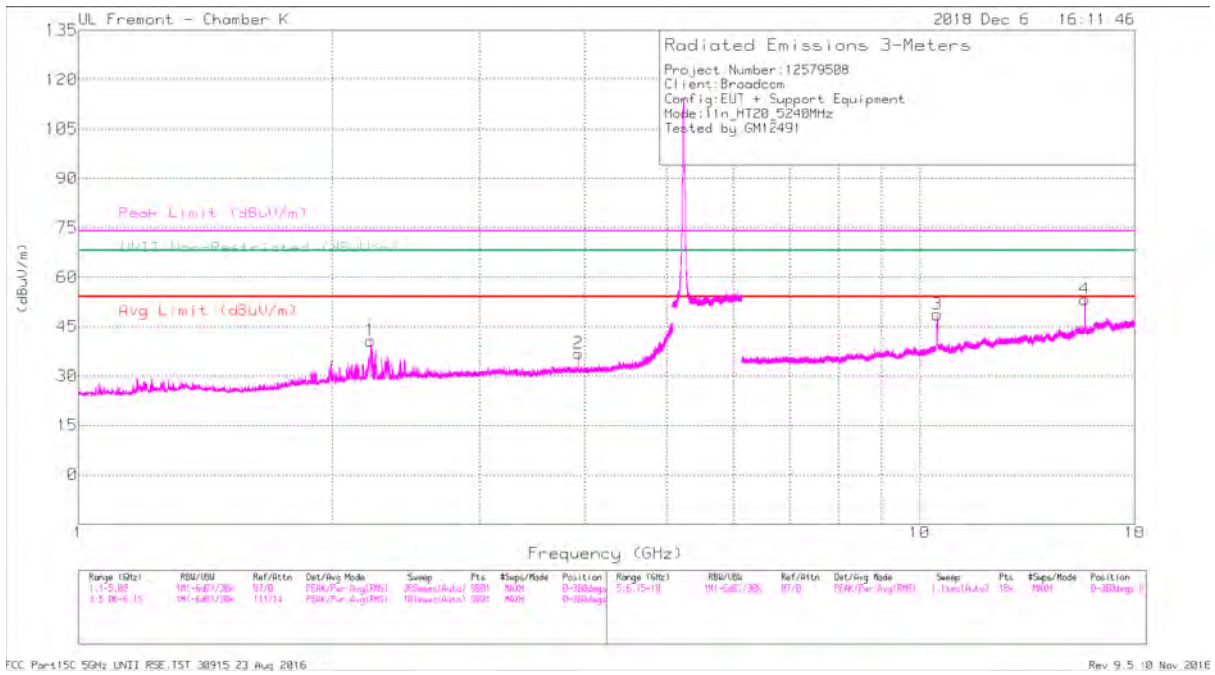
VERTICAL

RADIATED EMISSIONS

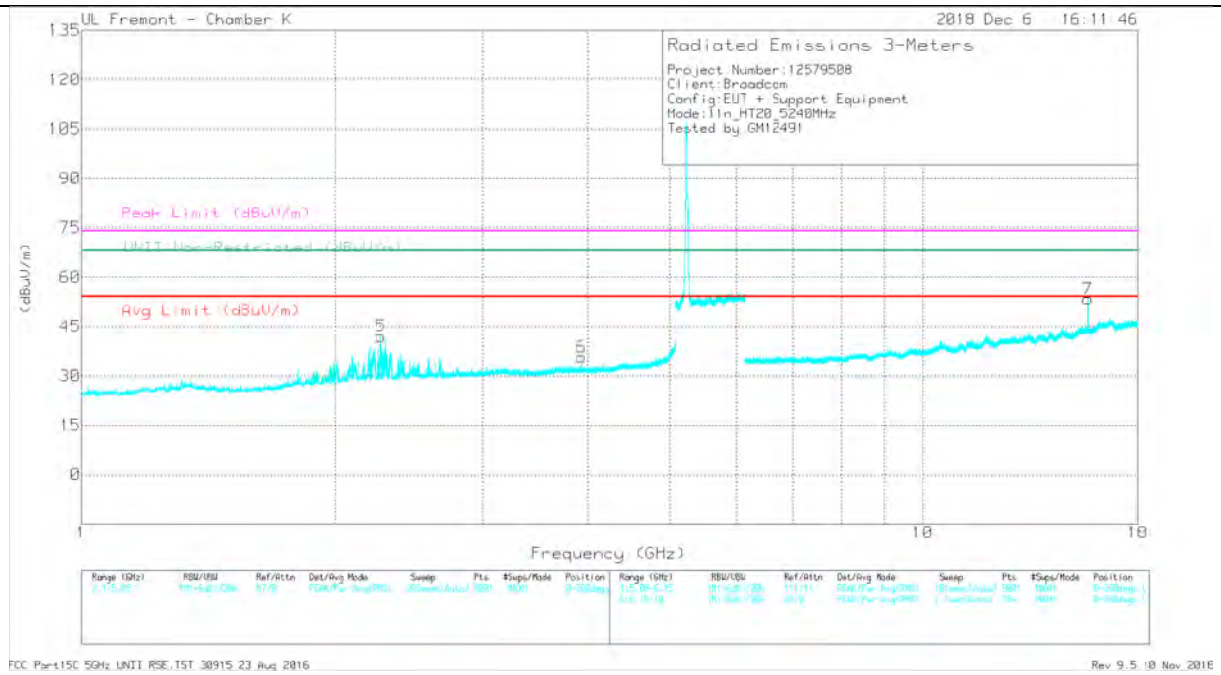
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.266	50.36	PK-U	31.8	-35.2	46.96	-	-	74	-27.04	-	-	222	261	H
	* 2.266	31.84	ADR	31.8	-35.2	28.44	54	-25.56	-	-	-	-	222	261	H
2	* 3.9	40.46	PK-U	33.5	-31.7	42.26	-	-	74	-31.74	-	-	14	212	H
	* 3.9	33.93	ADR	33.5	-31.7	35.73	54	-18.27	-	-	-	-	14	212	H
5	* 2.262	52.45	PK-U	31.8	-35.1	49.15	-	-	74	-24.85	-	-	172	317	V
	* 2.262	35.62	ADR	31.8	-35.1	32.32	54	-21.68	-	-	-	-	172	317	V
6	* 3.9	40.43	PK-U	33.5	-31.7	42.23	-	-	74	-31.77	-	-	253	285	V
	* 3.9	33.16	ADR	33.5	-31.7	34.96	54	-19.04	-	-	-	-	253	285	V
3	10.402	40.97	PK-U	37.4	-22.8	55.57	-	-	-	-	68.2	-12.63	341	161	H
	10.4	30.83	ADR	37.4	-22.8	45.43	-	-	-	-	-	-	341	161	H
4	* 15.598	37.99	PK-U	40.7	-18.6	60.09	-	-	74	-13.91	-	-	79	140	H
	* 15.598	27.73	ADR	40.7	-18.6	49.83	54	-4.17	-	-	-	-	79	140	H
7	* 15.609	38.35	PK-U	40.7	-18.5	60.55	-	-	74	-13.45	-	-	236	212	V
	* 15.608	26.74	ADR	40.7	-18.5	48.94	54	-5.06	-	-	-	-	236	212	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

CHANNEL 48 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.222	50.9	PK-U	31.8	-35.2	47.5	-	-	74	-26.5	-	-	214	298	H
	* 2.223	33.65	ADR	31.8	-35.2	30.25	54	-23.75	-	-	-	-	214	298	H
2	* 3.93	40.53	PK-U	33.4	-31.5	42.43	-	-	74	-31.57	-	-	321	104	H
	* 3.93	34.67	ADR	33.4	-31.5	36.57	54	-17.43	-	-	-	-	321	104	H
5	* 2.271	52.68	PK-U	31.8	-35.1	49.38	-	-	74	-24.62	-	-	173	394	V
	* 2.267	33.75	ADR	31.8	-35.2	30.35	54	-23.65	-	-	-	-	173	394	V
6	* 3.93	39.56	PK-U	33.4	-31.5	41.46	-	-	74	-32.54	-	-	256	263	V
	* 3.93	32.76	ADR	33.4	-31.5	34.66	54	-19.34	-	-	-	-	256	263	V
3	10.485	41.15	PK-U	37.6	-22.9	55.85	-	-	-	-	68.2	-12.35	340	158	H
	10.483	30.74	ADR	37.6	-22.9	45.44	-	-	-	-	-	-	340	158	H
4	* 15.719	36.65	PK-U	40.8	-17.8	59.65	-	-	74	-14.35	-	-	49	134	H
	* 15.719	26.77	ADR	40.8	-17.8	49.77	54	-4.23	-	-	-	-	49	134	H
7	* 15.721	40.35	PK-U	40.8	-17.8	63.35	-	-	74	-10.65	-	-	239	206	V
	* 15.724	30.03	ADR	40.8	-17.8	53.03	54	-.97	-	-	-	-	239	206	V

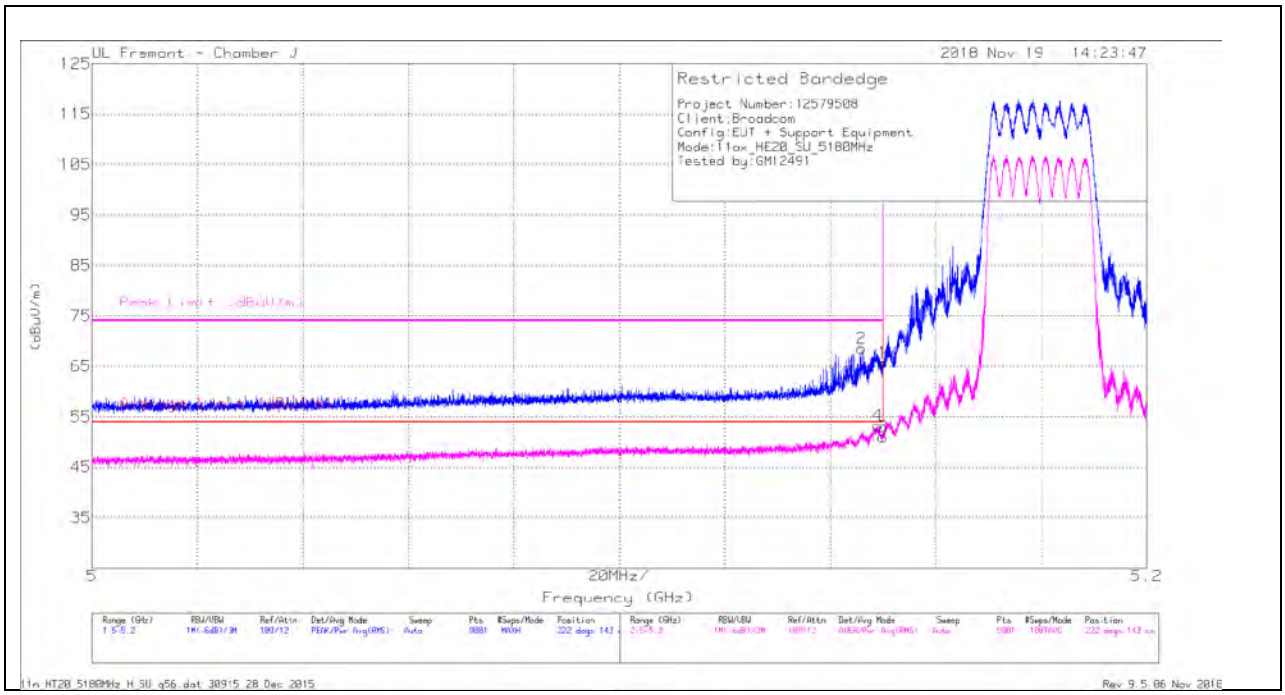
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

9.1.2. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (CHANNEL 36)

HORIZONTAL RESULT

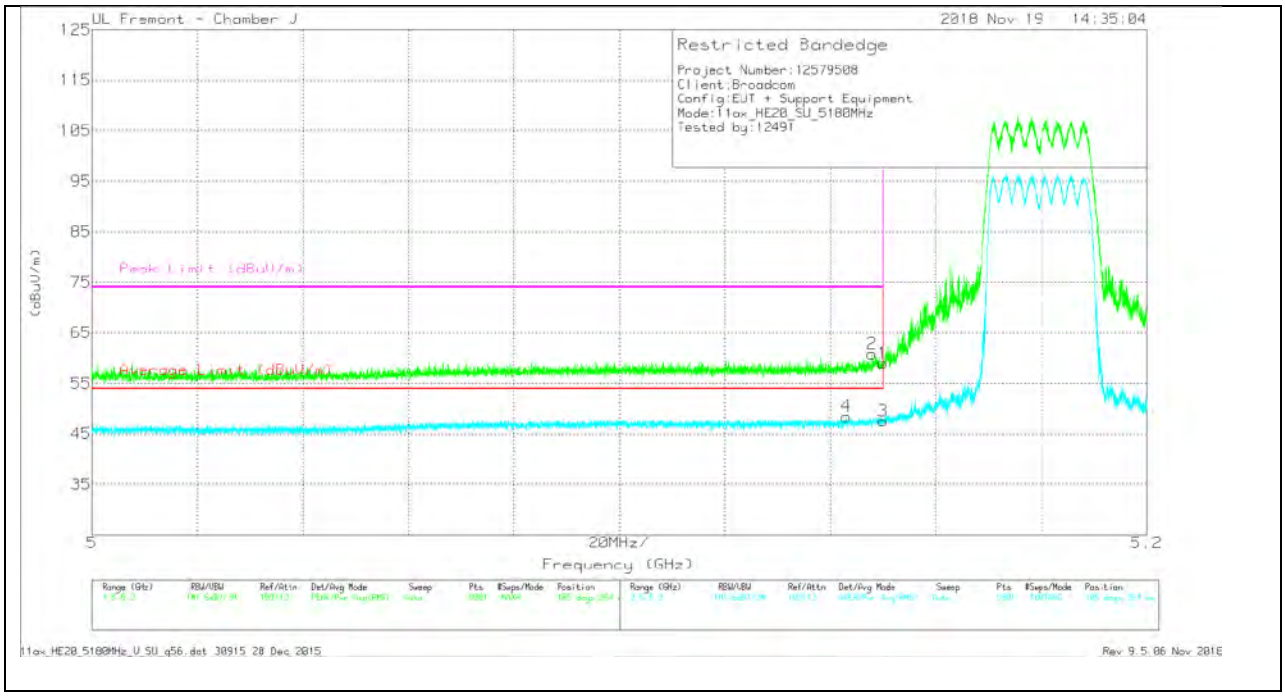


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	40.53	Pk	34.2	-9.1	65.63	-	-	74	-8.37	222	143	H
2	* 5.146	43.34	Pk	34.2	-9	68.54	-	-	74	-5.46	222	143	H
3	* 5.15	25.94	RMS	34.2	-9.1	51.04	54	-2.96	-	-	222	143	H
4	* 5.149	28.12	RMS	34.2	-9.1	53.22	54	-.78	-	-	222	143	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



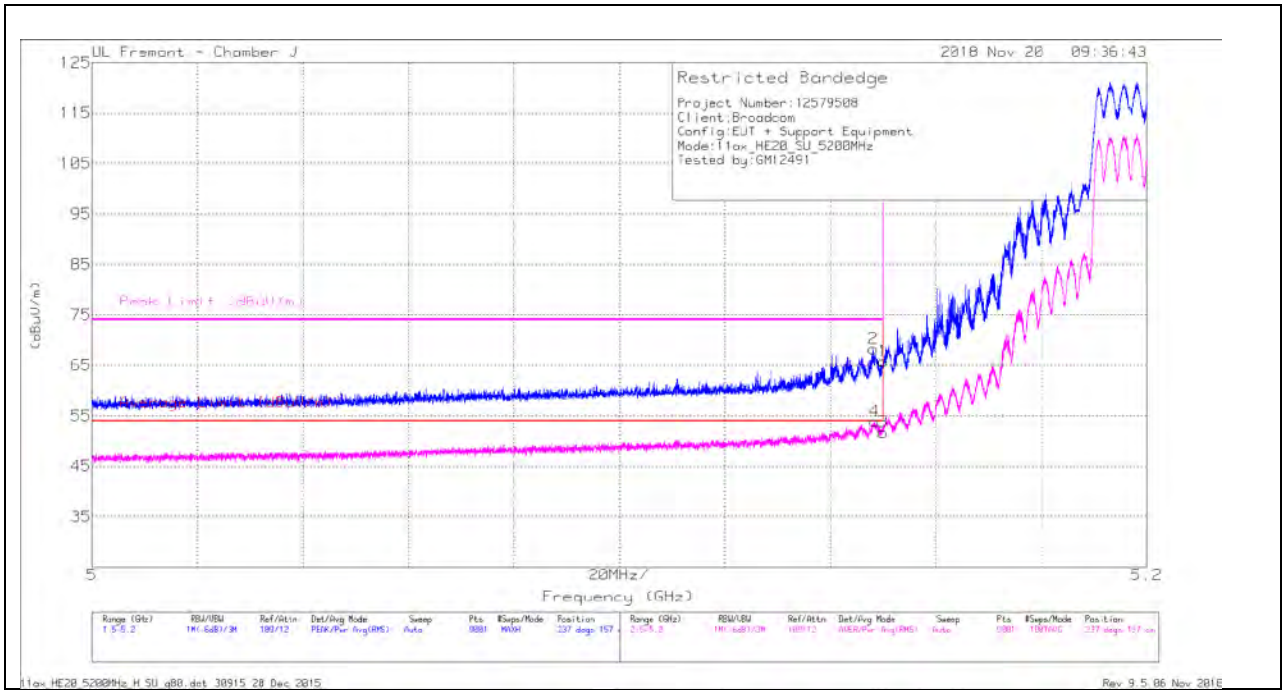
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	33.83	Pk	34.2	-9.1	58.93	-	-	74	-15.07	185	264	V
2	* 5.148	35.8	Pk	34.2	-9.1	60.9	-	-	74	-13.1	185	264	V
3	* 5.15	22.46	RMS	34.2	-9.1	47.56	54	-6.44	-	-	185	264	V
4	* 5.143	23.29	RMS	34.2	-9	48.49	54	-5.51	-	-	185	264	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (CHANNEL 40)

HORIZONTAL RESULT

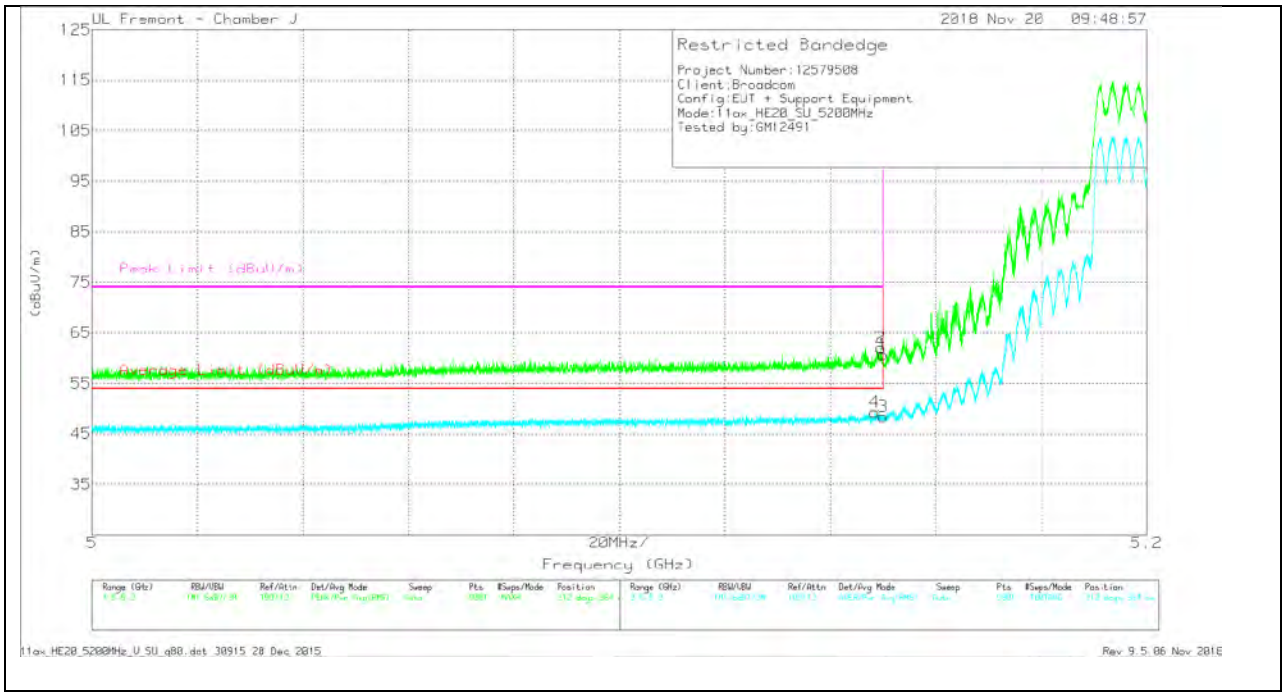


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	40.71	Pk	34.2	-9.1	65.81	-	-	74	-8.19	237	157	H
2	* 5.148	43.15	Pk	34.2	-9.1	68.25	-	-	74	-5.75	237	157	H
3	* 5.15	26.62	RMS	34.2	-9.1	51.72	54	-2.28	-	-	237	157	H
4	* 5.148	28.79	RMS	34.2	-9.1	53.89	54	-.11	-	-	237	157	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



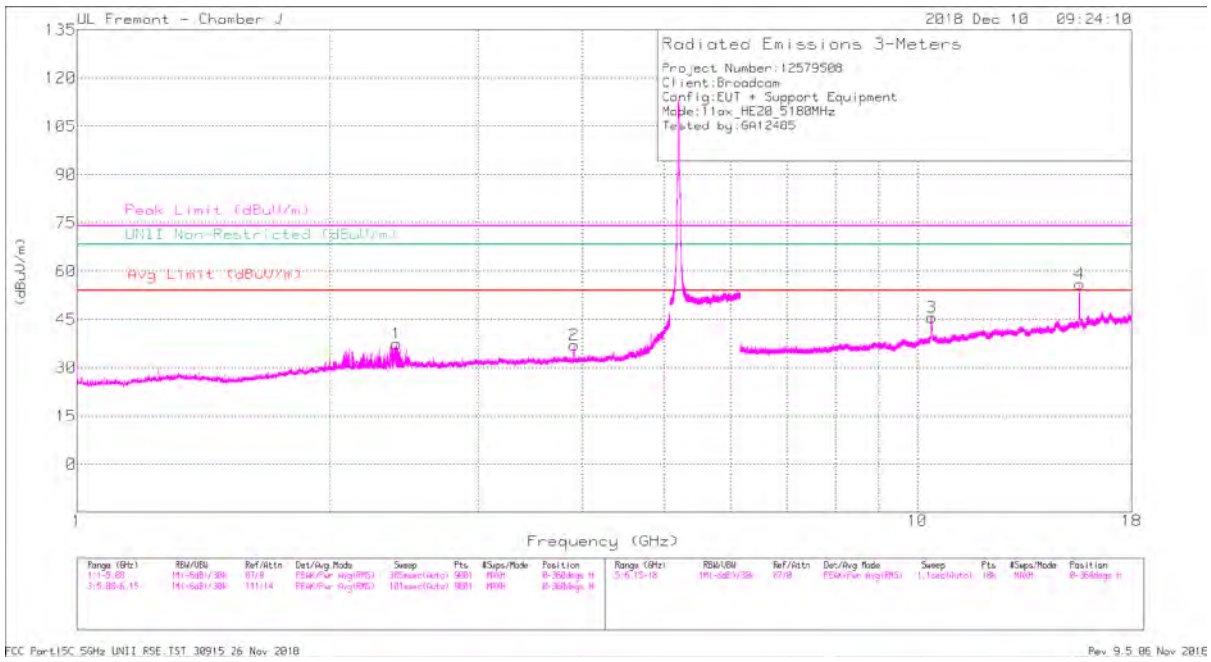
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	35.63	Pk	34.2	-9.1	60.73	-	-	74	-13.27	312	364	V
2	* 5.15	36.99	Pk	34.2	-9.1	62.09	-	-	74	-11.91	312	364	V
3	* 5.15	23.37	RMS	34.2	-9.1	48.47	54	-5.53	-	-	312	364	V
4	* 5.148	24.25	RMS	34.2	-9.1	49.35	54	-4.65	-	-	312	364	V

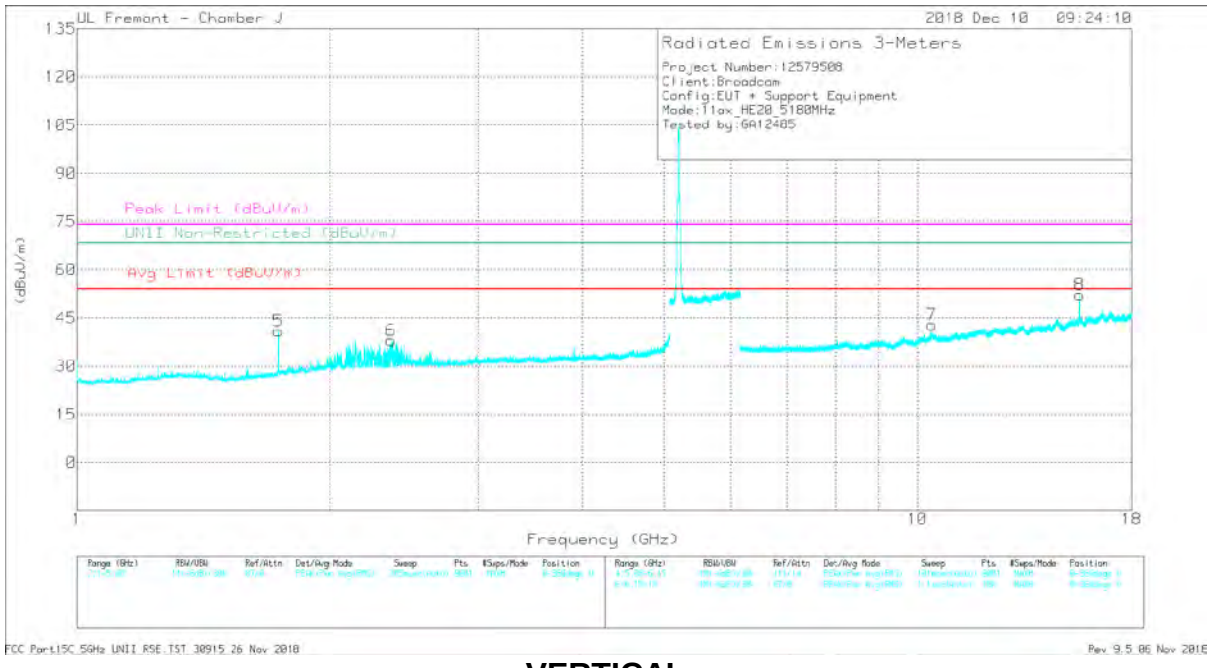
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

CHANNEL 36 RESULTS



HORIZONTAL



VERTICAL

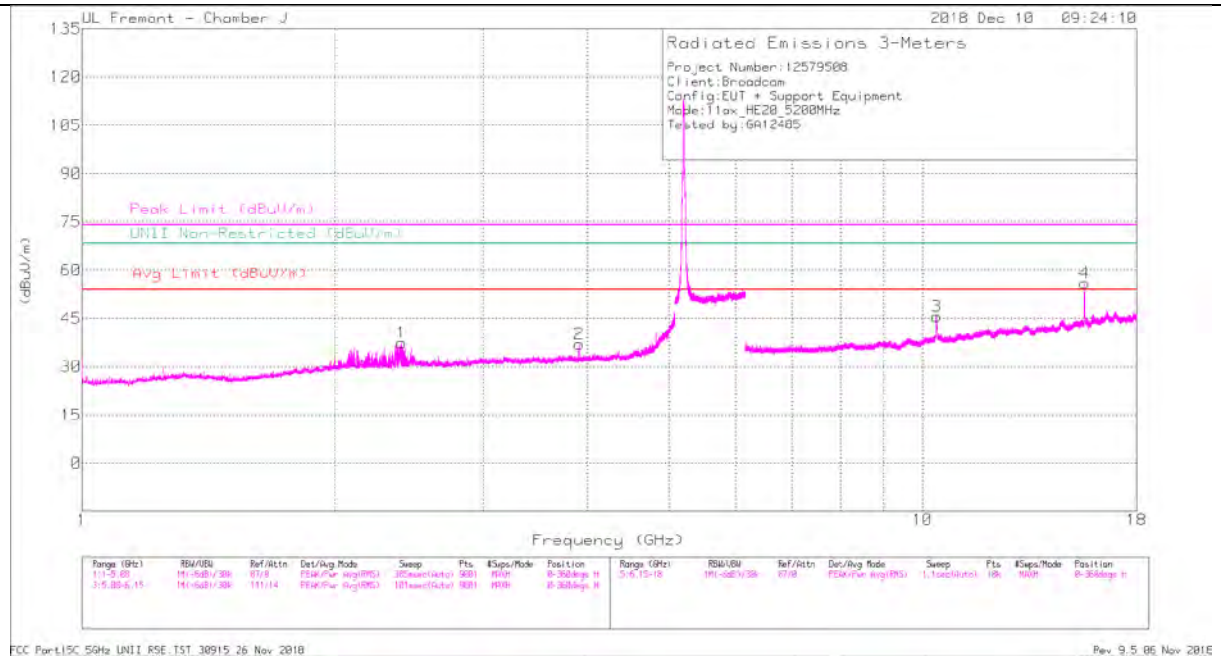
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4	47.09	PK-U	32.1	-35.5	43.69	-	-	-	-	68.2	-24.51	352	115	H
2	* 3.9	42.71	PK-U	33.4	-32.7	43.41	-	-	74	-30.59	-	-	306	109	H
	* 3.9	35.22	ADR	33.4	-32.7	35.92	54	-18.08	-	-	-	-	306	109	H
5	1.738	42.16	PK-U	29.7	-35.8	36.06	-	-	-	-	68.2	-32.14	327	194	V
6	* 2.364	46.22	PK-U	31.9	-35.5	42.62	-	-	74	-31.38	-	-	117	221	V
	* 2.366	32.57	ADR	31.9	-35.5	28.97	54	-25.03	-	-	-	-	117	221	V
3	10.4	43.55	PK-U	37.5	-25.3	55.75	-	-	-	-	68.2	-12.45	65	152	H
4	* 15.595	44.26	PK-U	40.2	-20.5	63.96	-	-	74	-10.04	-	-	37	203	H
	* 15.597	33.89	ADR	40.2	-20.5	53.59	54	-.41	-	-	-	-	37	203	H
7	10.399	38.15	PK-U	37.5	-25.3	50.35	-	-	-	-	68.2	-17.85	33	198	V
8	* 15.604	39.11	PK-U	40.3	-20.5	58.91	-	-	74	-15.09	-	-	222	202	V
	* 15.602	30.19	ADR	40.3	-20.5	49.99	54	-4.01	-	-	-	-	222	202	V

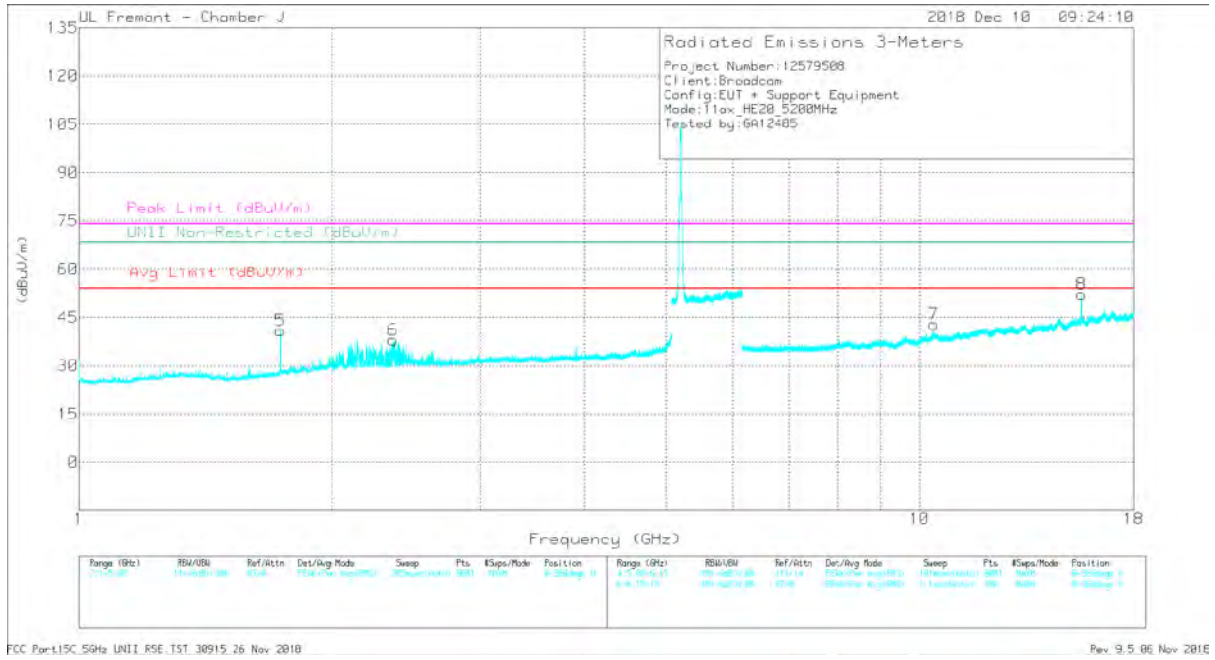
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 771-1000 FAX:(510) 661-0888

CHANNEL 40 RESULTS



HORIZONTAL



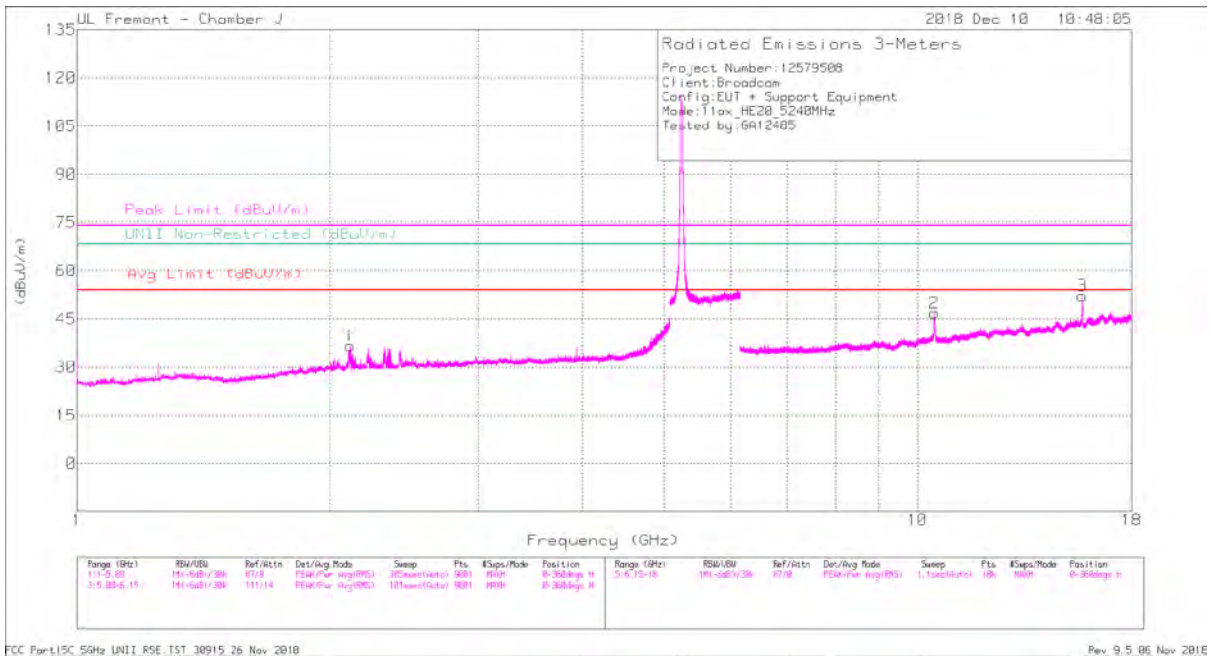
VERTICAL

RADIATED EMISSIONS

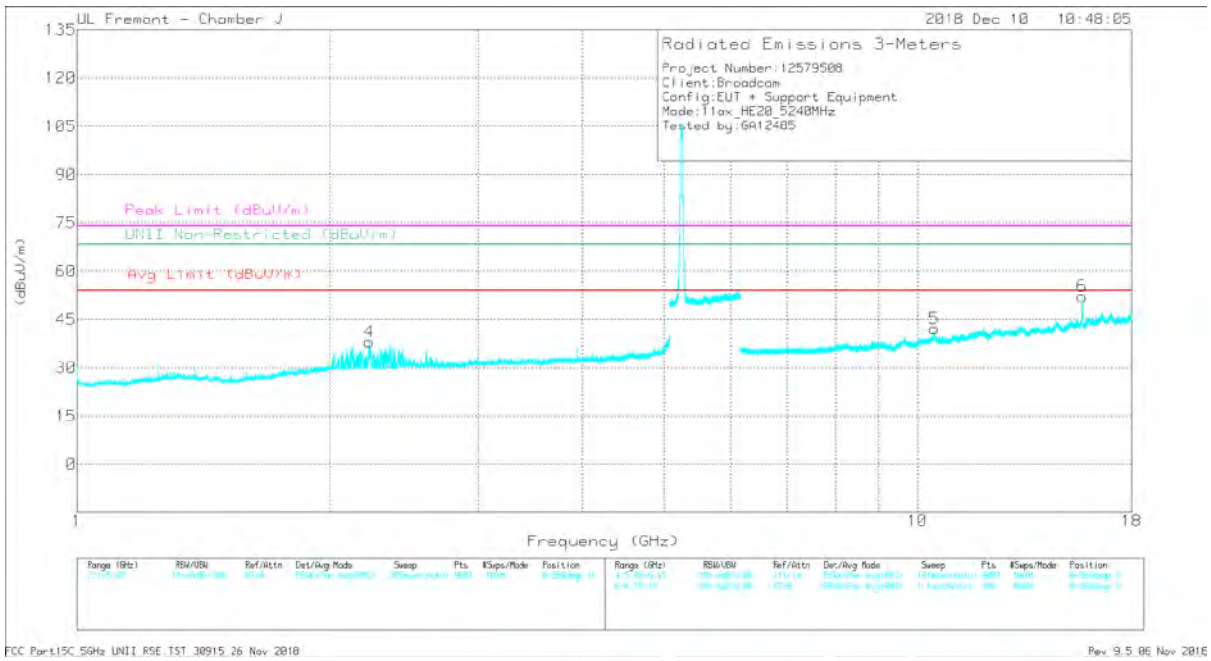
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4	47.09	PK-U	32.1	-35.5	43.69	-	-	-	-	68.2	-24.51	352	115	H
2	* 3.9	42.71	PK-U	33.4	-32.7	43.41	-	-	74	-30.59	-	-	306	109	H
	* 3.9	35.22	ADR	33.4	-32.7	35.92	54	-18.08	-	-	-	-	306	109	H
5	1.738	42.16	PK-U	29.7	-35.8	36.06	-	-	-	-	68.2	-32.14	327	194	V
6	* 2.364	46.22	PK-U	31.9	-35.5	42.62	-	-	74	-31.38	-	-	117	221	V
	* 2.366	32.57	ADR	31.9	-35.5	28.97	54	-25.03	-	-	-	-	117	221	V
3	10.4	43.55	PK-U	37.5	-25.3	55.75	-	-	-	-	68.2	-12.45	65	152	H
4	* 15.595	44.26	PK-U	40.2	-20.5	63.96	-	-	74	-10.04	-	-	37	203	H
	* 15.597	33.89	ADR	40.2	-20.5	53.59	54	-.41	-	-	-	-	37	203	H
7	10.399	38.15	PK-U	37.5	-25.3	50.35	-	-	-	-	68.2	-17.85	33	198	V
8	* 15.604	39.11	PK-U	40.3	-20.5	58.91	-	-	74	-15.09	-	-	222	202	V
	* 15.602	30.19	ADR	40.3	-20.5	49.99	54	-4.01	-	-	-	-	222	202	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

CHANNEL 48 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.112	45.78	PK-U	31.8	-35.4	42.18	-	-	-	-	68.2	-26.02	292	293	H
4	* 2.228	48.92	PK-U	31.9	-35.6	45.22	-	-	74	-28.78	-	-	278	189	V
	* 2.227	32.91	ADR	31.9	-35.6	29.21	54	-24.79	-	-	-	-	278	189	V
2	10.48	43.26	PK-U	37.5	-25.3	55.46	-	-	-	-	68.2	-12.74	176	198	H
3	* 15.707	40.8	PK-U	40.4	-20.5	60.7	-	-	74	-13.3	-	-	48	200	H
	* 15.71	30.37	ADR	40.4	-20.5	50.27	54	-3.73	-	-	-	-	48	200	H
5	10.479	39.55	PK-U	37.5	-25.3	51.75	-	-	-	-	68.2	-16.45	234	360	V
6	* 15.718	41.99	PK-U	40.4	-20.6	61.79	-	-	74	-12.21	-	-	204	216	V
	* 15.718	32.43	ADR	40.4	-20.6	52.23	54	-1.77	-	-	-	-	204	216	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

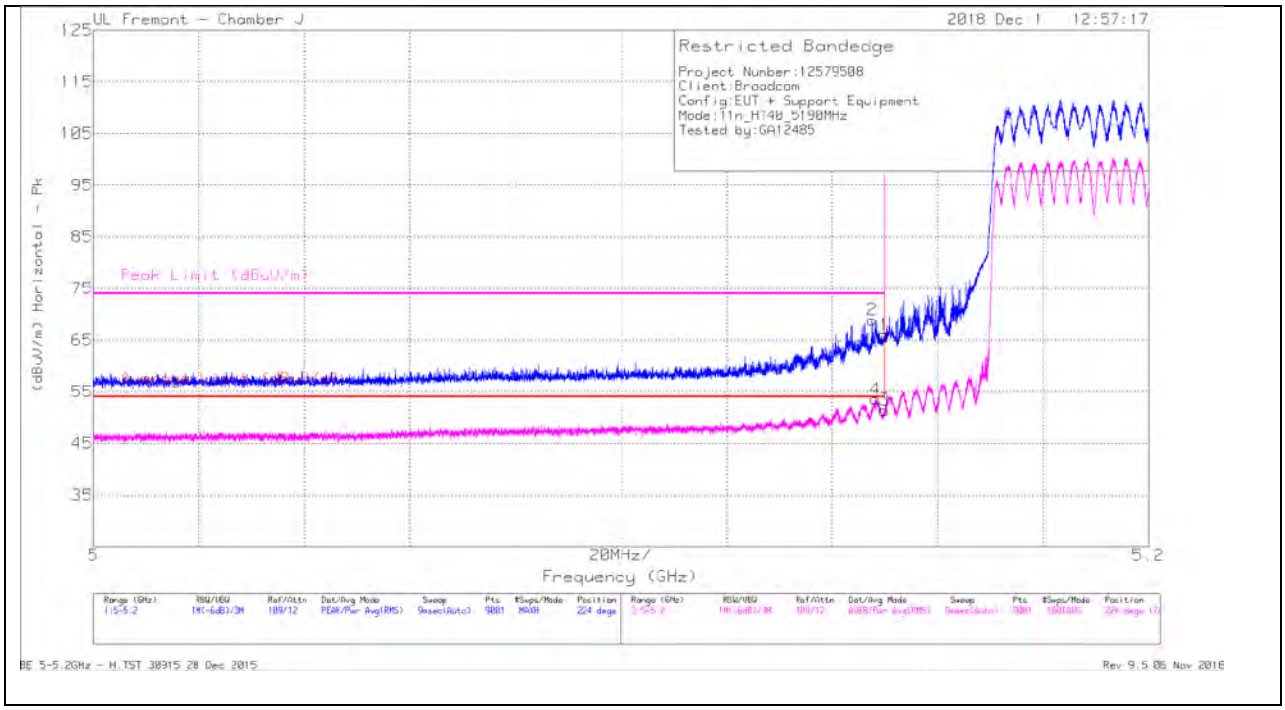
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 771-1000 FAX:(510) 661-0888

9.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (CHANNEL 38)

HORIZONTAL RESULT

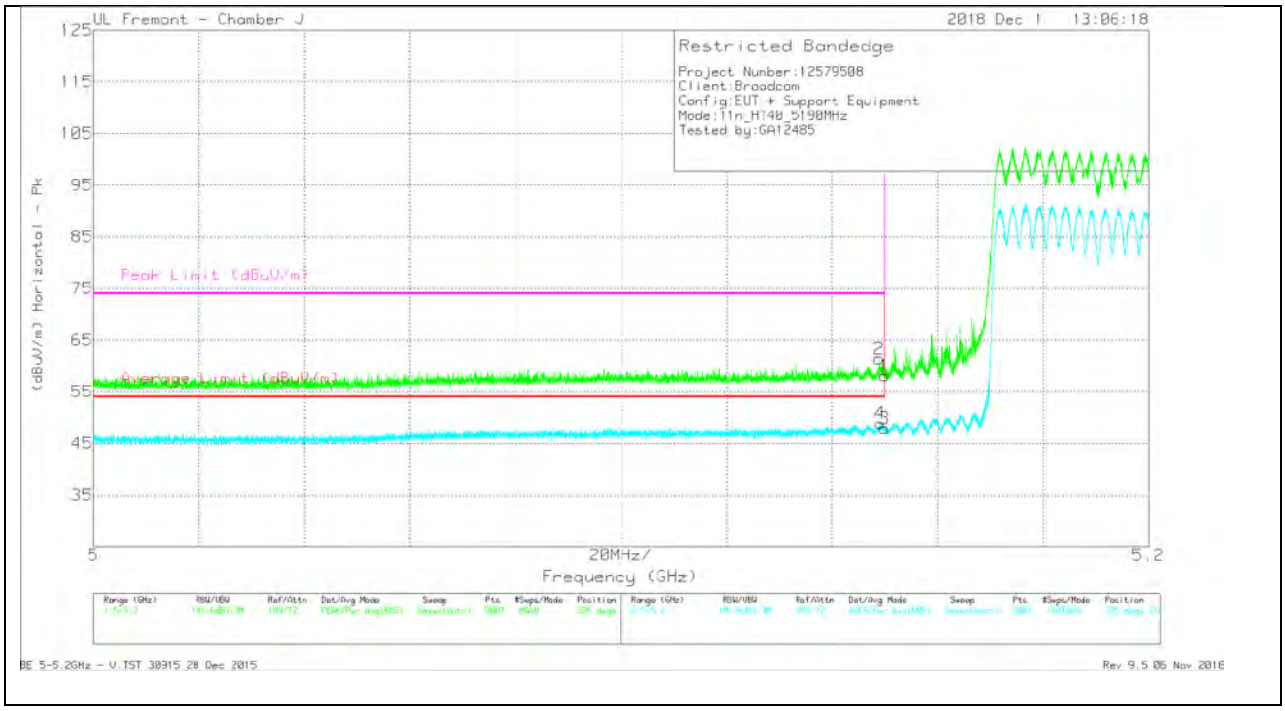


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	40.89	Pk	34.2	-9.1	65.99	-	-	74	-8.01	224	174	H
2	* 5.148	43.79	Pk	34.2	-9.1	68.89	-	-	74	-5.11	224	174	H
3	* 5.15	26.36	RMS	34.2	-9.1	51.46	54	-2.54	-	-	224	174	H
4	* 5.148	28.51	RMS	34.2	-9.1	53.61	54	-.39	-	-	224	174	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



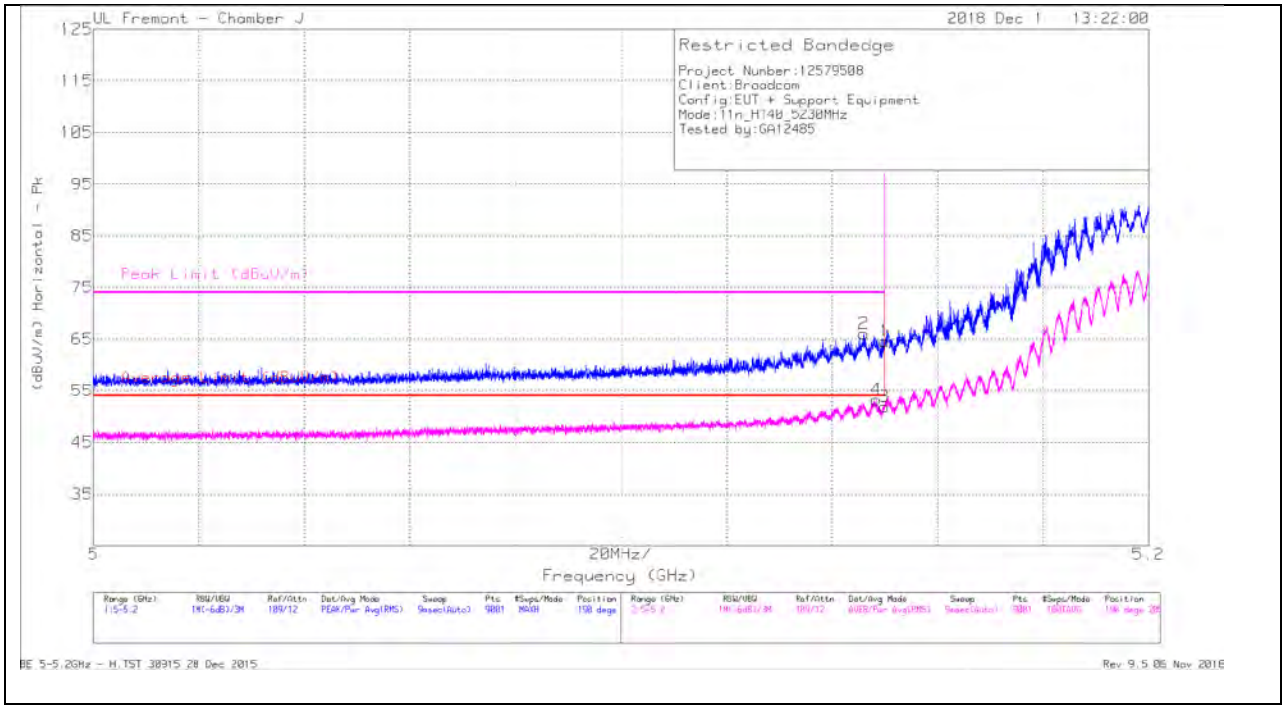
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	33.01	Pk	34.2	-9.1	58.11	-	-	74	-15.89	325	214	V
2	* 5.149	36.25	Pk	34.2	-9.1	61.35	-	-	74	-12.65	325	214	V
3	* 5.15	22.81	RMS	34.2	-9.1	47.91	54	-6.09	-	-	325	214	V
4	* 5.149	23.77	RMS	34.2	-9.1	48.87	54	-5.13	-	-	325	214	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (CHANNEL 46)

HORIZONTAL RESULT

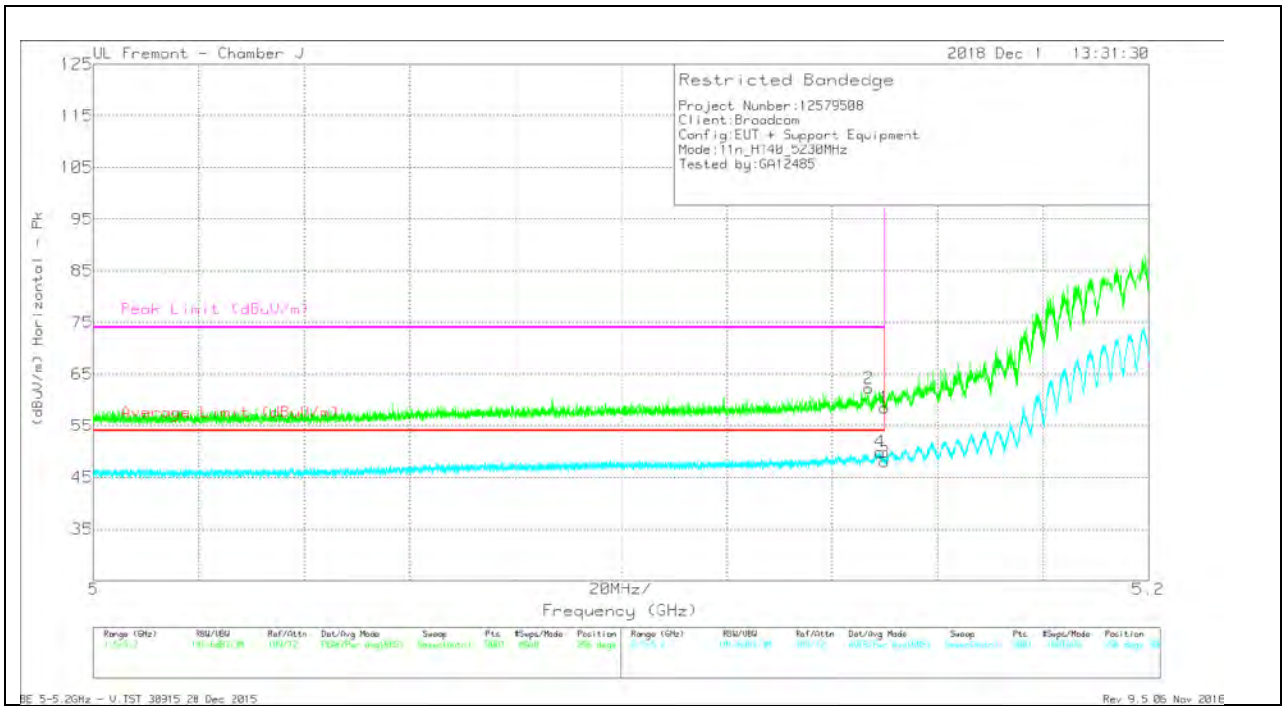


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	39.52	Pk	34.2	-9.1	64.62	-	-	74	-9.38	190	205	H
2	* 5.146	40.88	Pk	34.2	-9	66.08	-	-	74	-7.92	190	205	H
3	* 5.15	26.82	RMS	34.2	-9.1	51.92	54	-2.08	-	-	190	205	H
4	* 5.148	28.16	RMS	34.2	-9.1	53.26	54	-.74	-	-	190	205	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	33.37	Pk	34.2	-9.1	58.47	-	-	74	-15.53	296	306	V
2	* 5.147	37.15	Pk	34.2	-9.1	62.25	-	-	74	-11.75	296	306	V
3	* 5.15	22.88	RMS	34.2	-9.1	47.98	54	-6.02	-	-	296	306	V
4	* 5.149	24.81	RMS	34.2	-9.1	49.91	54	-4.09	-	-	296	306	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection