FCC 47 CFR PART 15 SUBPART E

CLASS II PERMISSIVE CHANGE

TEST REPORT

FOR

802.11a/b/g/n WLAN + Bluetooth PCI-E Mini Card

MODEL NUMBER: BCM943228HMB

FCC ID: QDS-BRCM1058

REPORT NUMBER: 15U21619- E1V4

ISSUE DATE: FEBRUARY 9, 2016

Prepared for
BROADCOM CORPORATION
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	9/14/15	Initial Issue	H. Mustapha
V2	1/22/16	Added 26dB BW data and 5.6 radiated bandedge data	H. Mustapha
V3	2/3/16	Updated section 5.6 Updated section 9.12	H. Mustapha
V4	2/9/16	Updated section 9.1 with reference to 15.407 limits	H. Mustapha

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	BROADCOM CORPORATION 190 MATHILDA PLACE SUNNYVALE, CA 94086, U.S.A.
EUT DESCRIPTION:	802.11a/b/g/n WLAN + Bluetooth PCI-E Mini Card
MODEL:	BCM943228HMB
SERIAL NUMBER:	Radiated and Conducted ID: 28E347217510
DATE TESTED:	SEPTEMPER 4 – 12, 2015 JANUARY 19 – FEBRUARY 3, 2016

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

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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 any government.

Approved & Released For
UL Verification Services Inc. By:

Huda Mustapha

HUDA MUSTAPHA
PROJECT LEAD
UL Verification Services Inc.

FRANK IBRAHIM
PROGRAM MANAGER
UL Verification Services Inc.

Tested By:

LIEU NGUYEN
EMC ENGINEER
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 06-96, FCC KDB 789033 D02 v01r01, KDB 662911 D01 v02r01 and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, 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
☒ Chamber A	☐ Chamber D
☒ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F
	☐ Chamber G
	☐ Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11a/b/g/n WLAN + Bluetooth PCI-E Mini Card

The radio module is manufactured by Broadcom.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.6 GHz BAND

Frequency Range (MHz)	Mode	Power, Chain 0 (dBm)	Power, Chain 1 (dBm)	Output Power (dBm)	Output Power (mW)
5.6 GHz band, 1TX					
5500-5700	802.11a Legacy	17.28	N/A	17.28	53.46
5500-5700	802.11n HT20	15.30	N/A	15.30	33.88
5510-5670	802.11n HT40	14.50	N/A	14.50	28.18
5.6 GHz band, 2TX					
5500-5700	802.11n HT20 CDD	16.63	16.81	19.73	94.00
5510-5670	802.11n HT40 CDD	17.46	17.61	20.55	113.40

5.8 GHz BAND

Frequency Range (MHz)	Mode	Power, Chain 0 (dBm)	Power, Chain 1 (dBm)	Output Power (dBm)	Output Power (mW)
5.8 GHz band, 1TX					
5745-5825	802.11a Legacy	18.80	N/A	18.80	75.86
5745-5825	802.11n HT20	18.40	N/A	18.40	69.18
5755-5795	802.11n HT40	16.85	N/A	16.85	48.42
5.8 GHz band, 2TX					
5745-5825	802.11n HT20 CDD	19.00	18.60	21.81	151.88
5755-5795	802.11n HT40 CDD	17.12	18.02	20.60	114.91

5.3. LIST OF TEST REDUCTION AND MODES COVERING OTHER MODES

Antenna Port Testing		
Band	**Mode**	**Covered by**
5 GHz bands	802.11a Legacy 1TX	802.11n HT20 CDD 2TX
5 GHz bands	802.11a CDD 2TX	802.11n HT20 CDD 2TX
5 GHz bands	802.11n HT20 1TX	802.11n HT20 CDD 2TX
5 GHz bands	802.11n HT40 1TX	802.11n HT40 CDD 2TX

Radiated Testing		
Band	**Mode**	**Covered by**
5 GHz bands	802.11a Legacy 1TX (Harmonics)	802.11n HT20 CDD 2TX (Harmonics)
5 GHz bands	802.11a CDD 2TX	802.11n HT20 CDD 2TX
5 GHz bands	802.11n HT20 1TX	802.11n HT20 CDD 2TX
5 GHz bands	802.11n HT40 1TX (Harmonics)	802.11n HT40 CDD 2TX (Harmonics)

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes 802.11abgn WLAN antennas, with maximum gains as table below;

	Antenna Gain		Antenna Gain		Antenna Gain	Antenna Gain
GHz	Ant 1 dBi	Ant 2 dBi	Ant 1 Numeric	Ant 2 Numeric	Combined Numeric	Combined dBi
5.2	5.60	5.60	3.63	3.63	7.26	**8.61**
5.3	5.60	5.60	3.63	3.63	7.26	**8.61**
5.5	4.20	4.20	2.63	2.63	5.26	**7.21**

	Antenna Gain		Antenna Gain		Antenna Gain	Antenna Gain
GHz	Ant 1 dBi	Ant 2 dBi	Ant 1 Numeric	Ant 2 Numeric	Combined Numeric	Combined dBi
5.8	4.20	4.20	2.63	2.63	5.26	**7.21**

5.5. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Broadcom, rev. 6.30.0.0.

The test utility software used during testing was Broadcom MTool, rev. 6.30.RC307.1166.

5.6. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The purpose of this C2PC is to upgrade the device described under section 5.1 of this report to the new rules per KDB 789033 D02 v01r01.

For UNII-3 band, compliance with the new rules per KDB 789033 D02 v01r01is demonstrated by data covered under this report.

For UNII-1, UNII-2 and UNII-2C bands, other than the 26dB BW and radiated bandedge for UNII-2C, we have reviewed the original test report (report no. 11U13795-2A) and are hereby attesting that all the current technical requirements are still met and all applicable test procedures remain the same. Therefore, the original test report is still applicable and no additional testing is done.

The EUT is a Slave Device without Radar Detection. Therefore, DFS evaluation as per section 10 in original report no. 11U13795-2A continues to be valid and consistent with requirements of KDB 905462 D02 v01r02, KDB 905462 D03 v01r01, KDB 905462 D04 v01 and KDB 789033 D02 v01r01.

5.7. WORST-CASE CONFIGURATION AND MODE

The EUT was tested as an external module installed in a test jig board connected to a host Laptop PC.

X, Y, & Z investigation was performed and X orientation was found to be worst-case, therefore, all final radiated emissions was performed using X orientation. See setup photos section for details.

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

For all modes with single chain SISO, chain 0 (J0) was used for 5GHz band as worst case.

For 5GHz, band edge preliminary investigation showed horizontal polarization was worst case for CDD and SISO modes, therefore only horizontal polarization was tested for these modes.

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

802.11a mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0

For antenna port testing, 2TX modes were considered worst case, where testing was performed at power levels, per transmit chain, greater than or equal to the maximum power in any 1TX mode.

Even though the 26 dB bandwidth was measuring wider than in the original test report, we have verified that this had no significant effect on the power values measured by integration.

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	**Manufacturer**	**Model**	**Serial Number**
Laptop	DELL	Latitude E6400	17193107269
AC / DC Adapter	DELL	DA90PM111	N/A
PCIe. Card	Broadcom	N/A	N/A

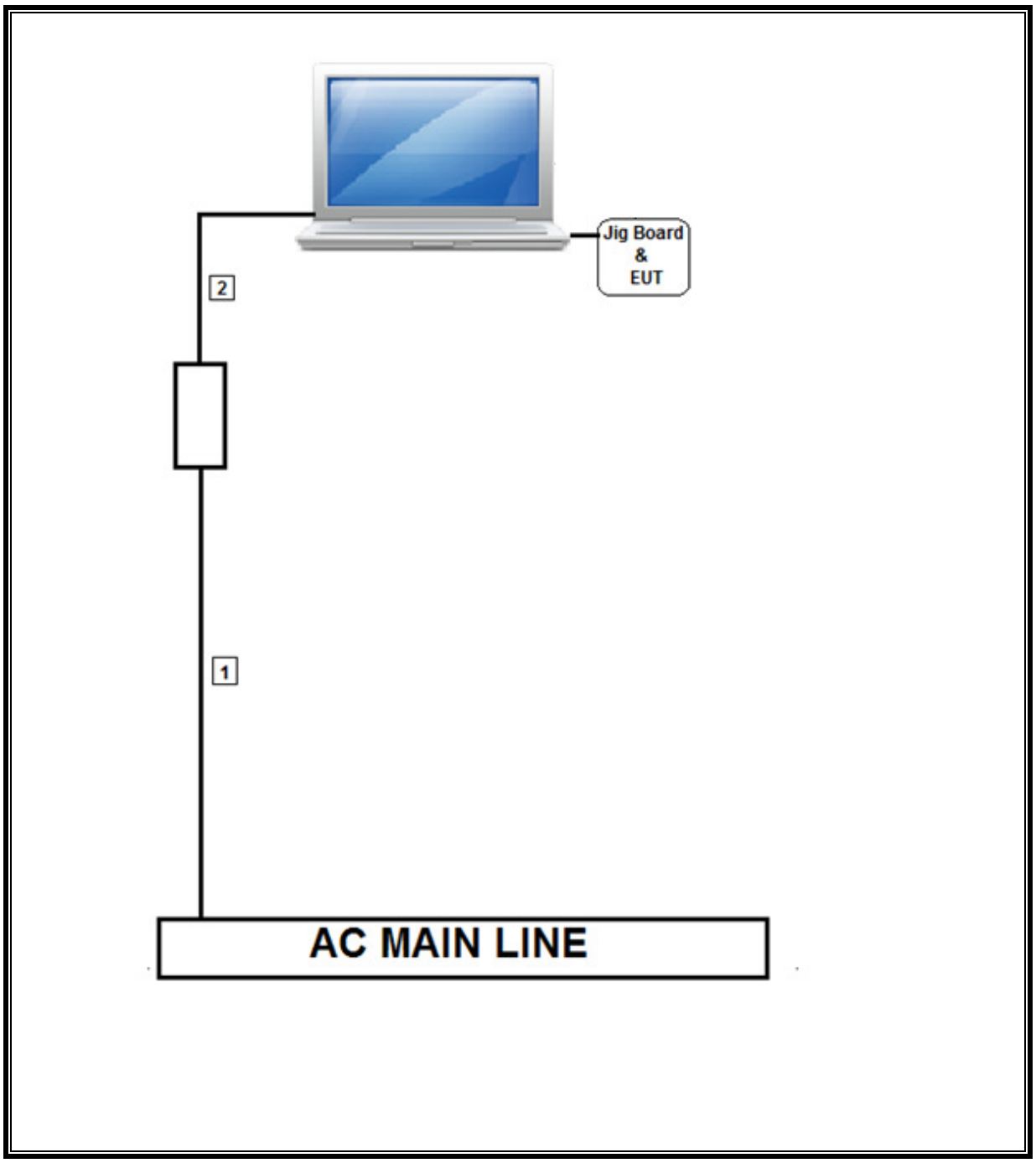
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	US 115V	Shielded	1.5m	NA
2	DC	1	DC	Unshielded	1.5m	Ferrite at laptop's end

TEST SETUP

The EUT was connected to a host laptop via PCIE card. Test software exercised the EUT.

SETUP DIAGRAM FOR TESTS



6. 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**	**T No.**	**Cal Date**	**Cal Due**
Radiated Software	UL	UL EMC	Ver 9.5, June 6, 2015		
Conducted Software	UL	UL EMC	Ver 9.5, May 17 2012		
Bilog Antenna 30-1000MHz	Sunol	JB1	185	02/18/15	02/18/16
Horn Antenna 1-18GHz	ETS	3117	136	03/03/15	03/03/16
Horn Antenna 1-18GHz	ETS	3117	345	03/03/15	03/03/16
Horn Antenna 18-26.5GHz	ARA	SWH-28	125	05/12/15	05/12/16
Horn Antenna 26.5- 40GHz	ARA	MWH-2640/B	90	07/28/15	07/28/16
Preamp 10kHz-1000MHz	Sonoma	310	300	11/05/15	11/05/16
Preamp 1-8GHz	Miteq	AMF-4D-01000800-30-29P	782	10/22/15	10/22/16
Preamp 1-26.5GHz	Agilent	8449B	404	04/13/15	04/13/16
Amplifier, 26-40GHz	Miteq	NSP4000-SP2	88	04/07/15	04/07/16
Spectrum Analyzer 3kHz - 44GHz	Agilent	N9030A	907	05/15/15	05/15/16
Coaxial Switchbox	Agilent	SP6T	927	03/03/15	03/03/16
3GHz HPF	Micro-Tronics	HPM17543	487	01/31/15	01/31/16
EMI Test Receiver	Rohde & Schwarz	ECSI 7	212	08/07/15	08/07/16
Spectrum Analzer 3Hz to 44GHz	Agilent	E4440A	123	10/22/15	10/22/16
Power Meter	Agilent	N1911A	T1268	06/07/15	06/07/16
Power Sensor	Agilent	N1921A	1223	06/07/15	02/06/16

7. MEASUREMENT METHODS

On Time and Duty Cycle: KDB 789033 D02 v01r01, Section B.

Emission BW: KDB 789033 D02 v01r01, Section C.

Conducted Output Power: KDB 789033 D02 v01r01, Section E.3.b (Method PM-G), and KDB 662911 D01 v02r01.

Power Spectral Density: KDB 789033 D02 v01r01, Section F, and KDB 662911 D01 v02r01.

Unwanted emissions in restricted bands: KDB 789033 D02 v01r01, Sections G.2, G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v01r01, Sections G.2, G.3, G.4, and G.5

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

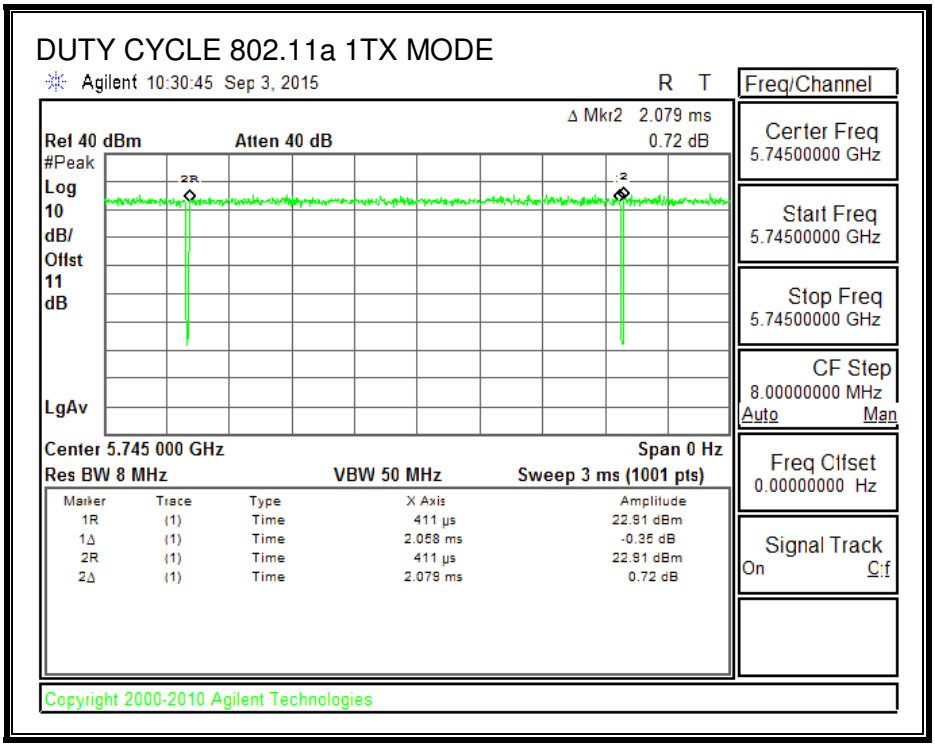
LIMITS

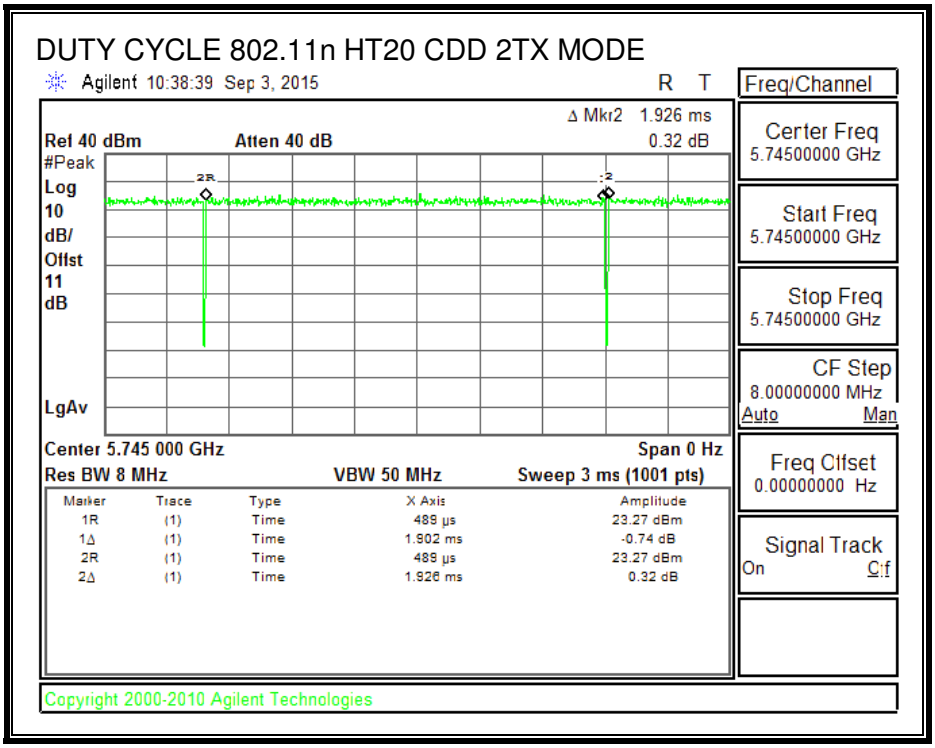
None; for reporting purposes only.

ON TIME AND DUTY CYCLE RESULTS

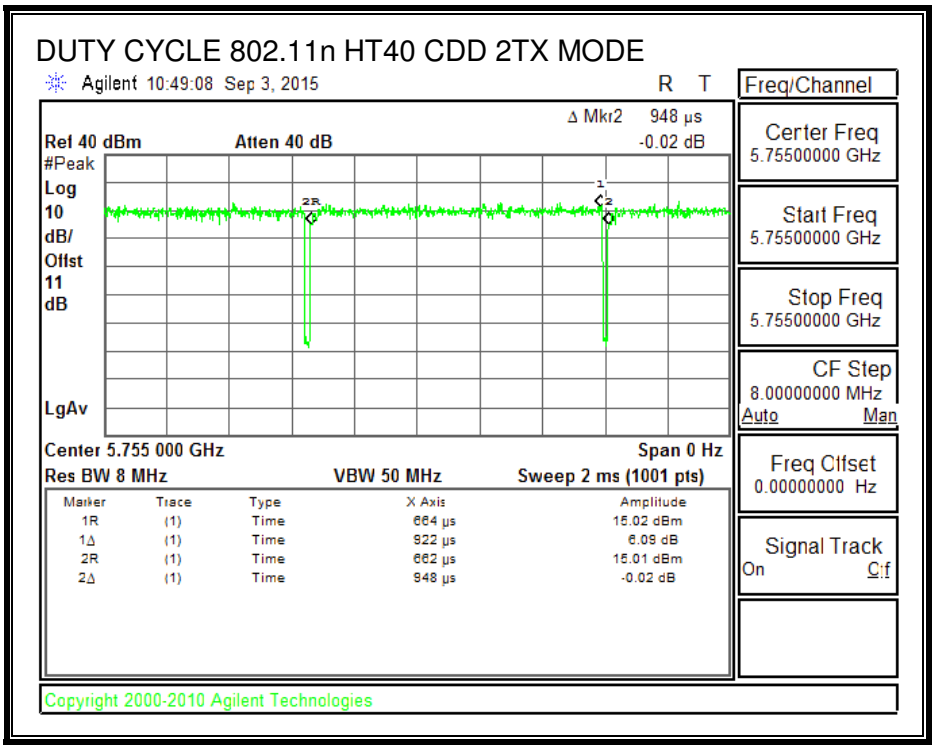
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
5GHz Band						
802.11a 1TX	2.058	2.079	0.990	98.99%	0.00	0.010
802.11n HT20 CDD 2TX	1.902	1.926	0.988	98.75%	0.00	0.010
802.11n HT40 CDD 2TX	0.922	0.948	0.973	97.26%	0.12	1.085

8.2. DUTY CYCLE PLOTS





DUTY CYCLE 802.11n HT40 CDD 2TX MODE



8.3. 802.11a LEGACY MODE IN THE 5.2 GHz BAND

8.3.1. 26 dB BANDWIDTH

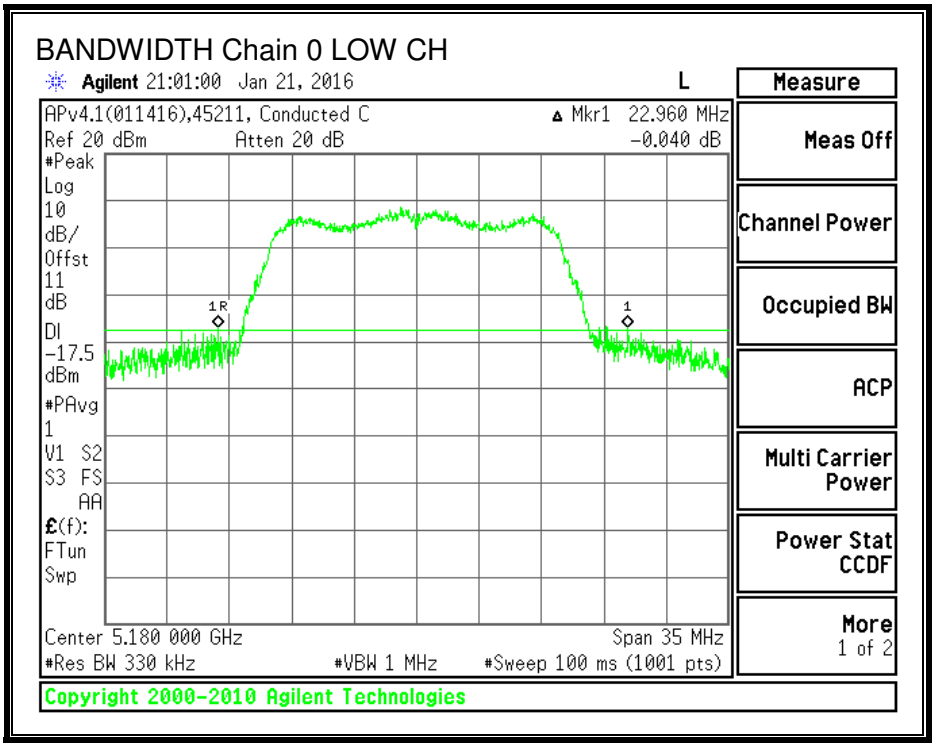
LIMITS

None; for reporting purposes only.

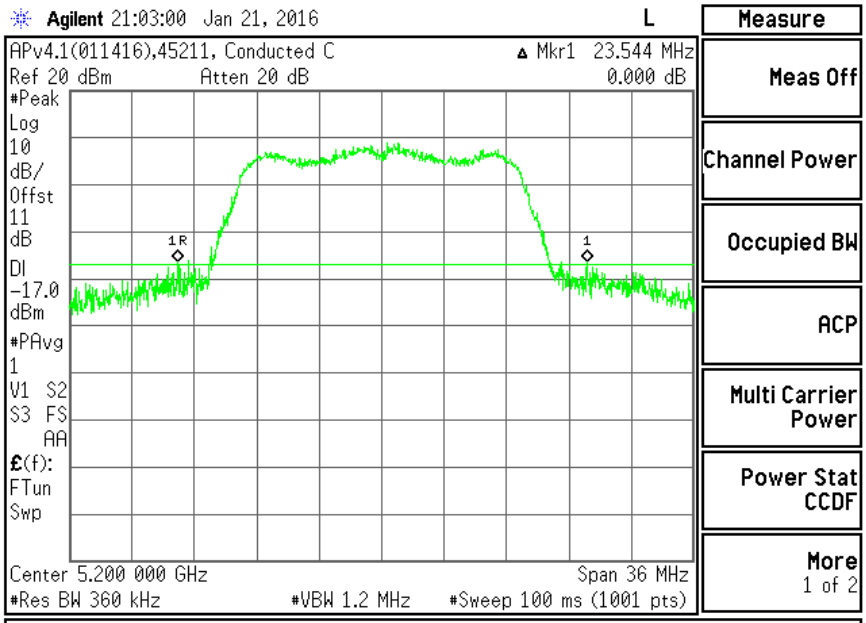
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)
Low	5180	22.960
Mid	5200	23.544
High	5240	26.640

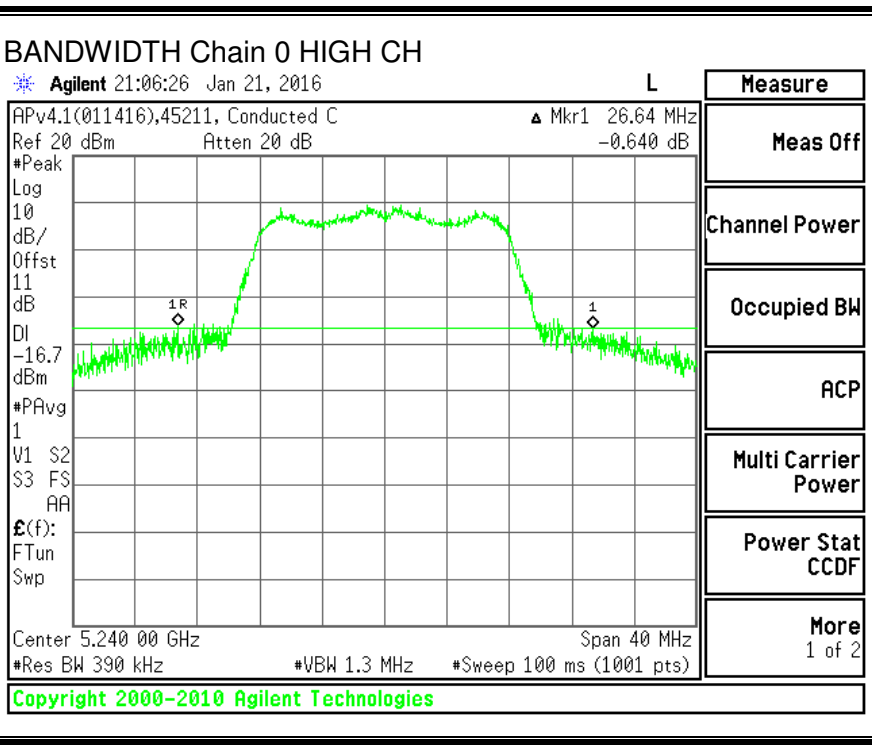
26 dB BANDWIDTH, Chain 0



BANDWIDTH Chain 0 MID CH



BANDWIDTH Chain 0 HIGH CH



8.4. 802.11n HT20 CDD 2Tx MODE IN THE 5.2 GHz BAND

8.4.1. 26 dB BANDWIDTH

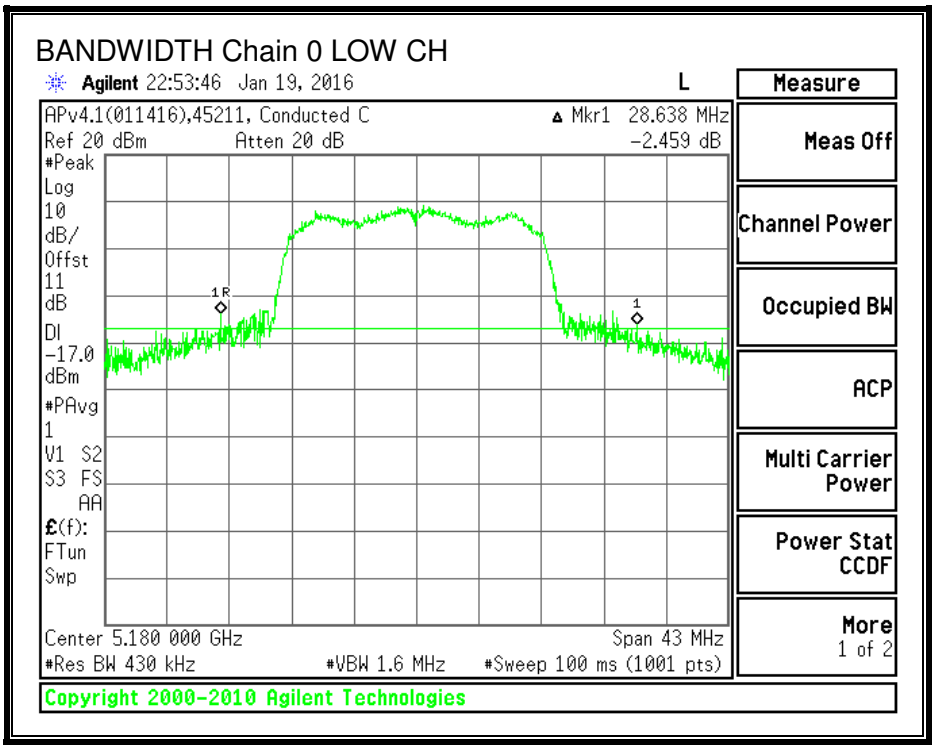
LIMITS

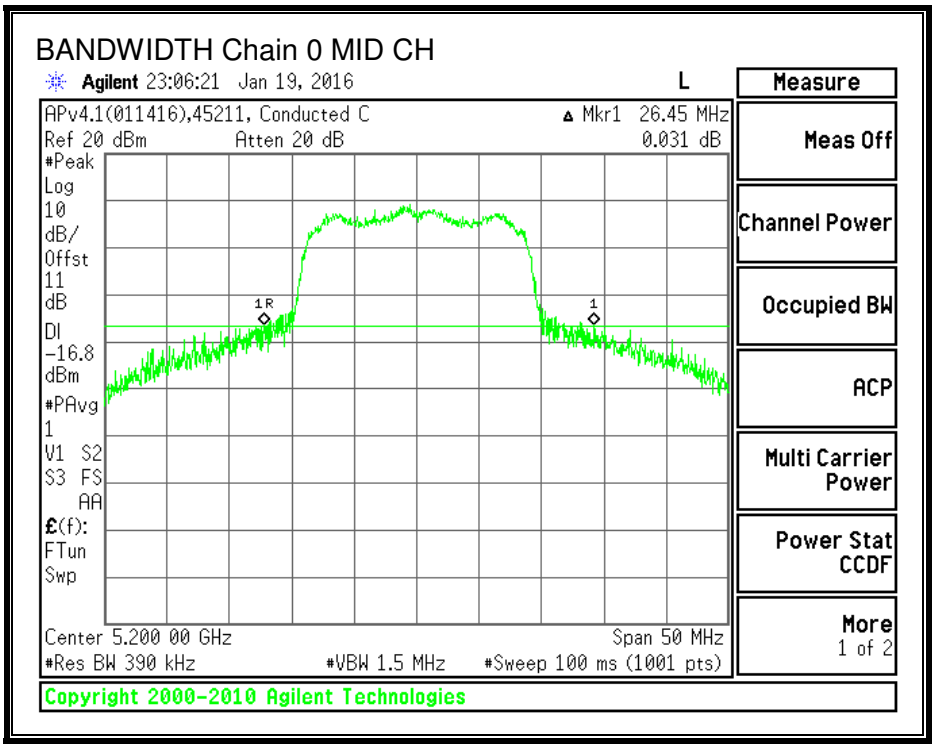
None; for reporting purposes only.

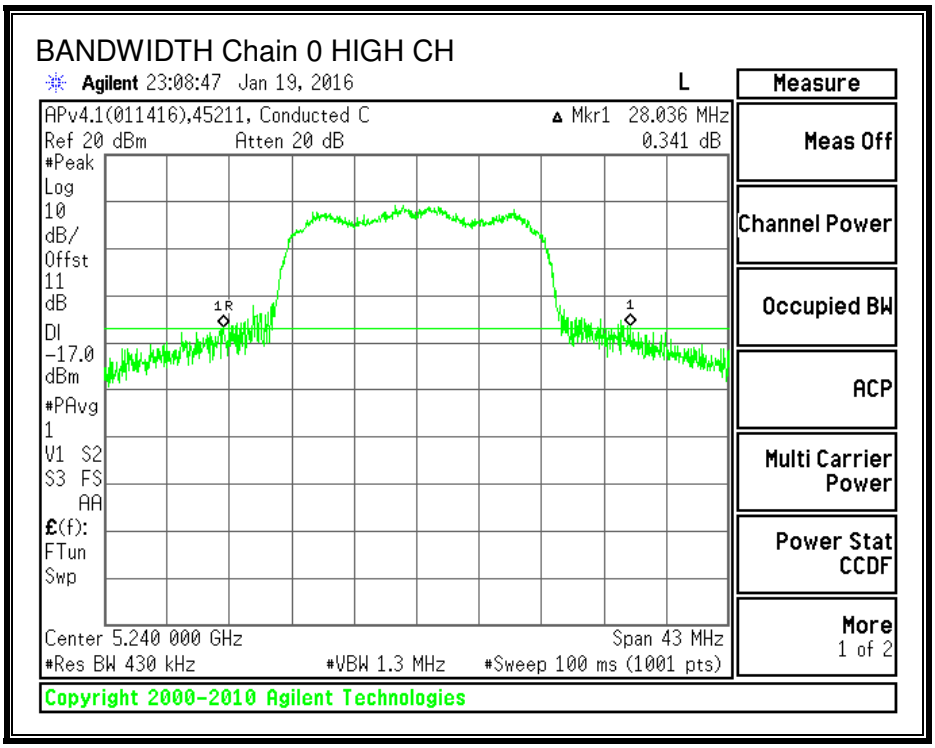
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5180	28.638	28.730
Mid	5200	26.450	26.559
High	5240	28.036	26.860

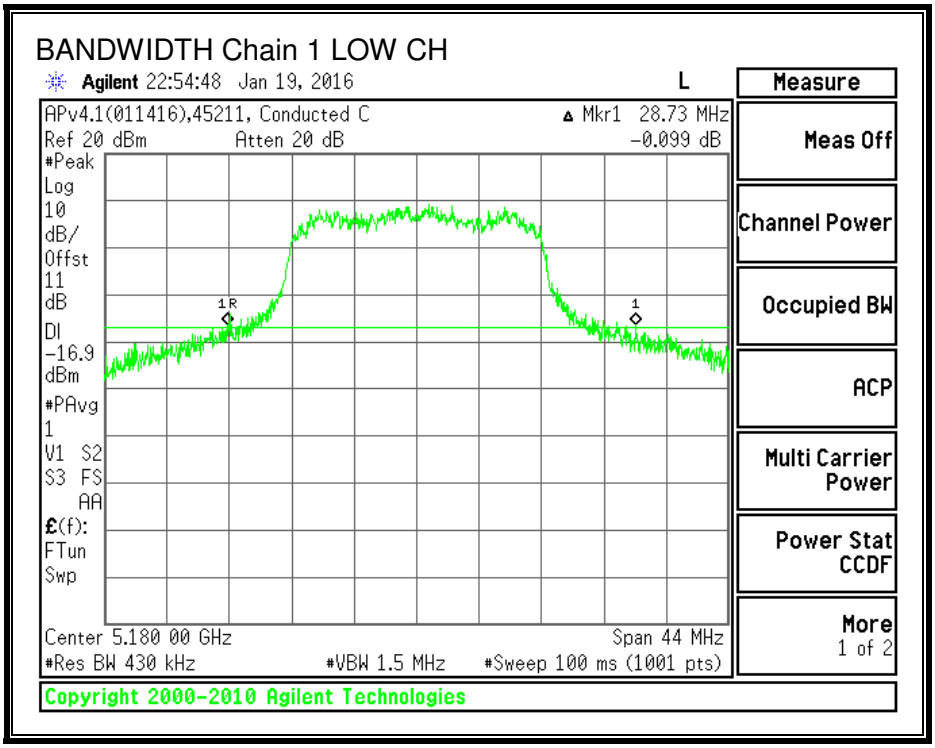
26 dB BANDWIDTH, Chain 0



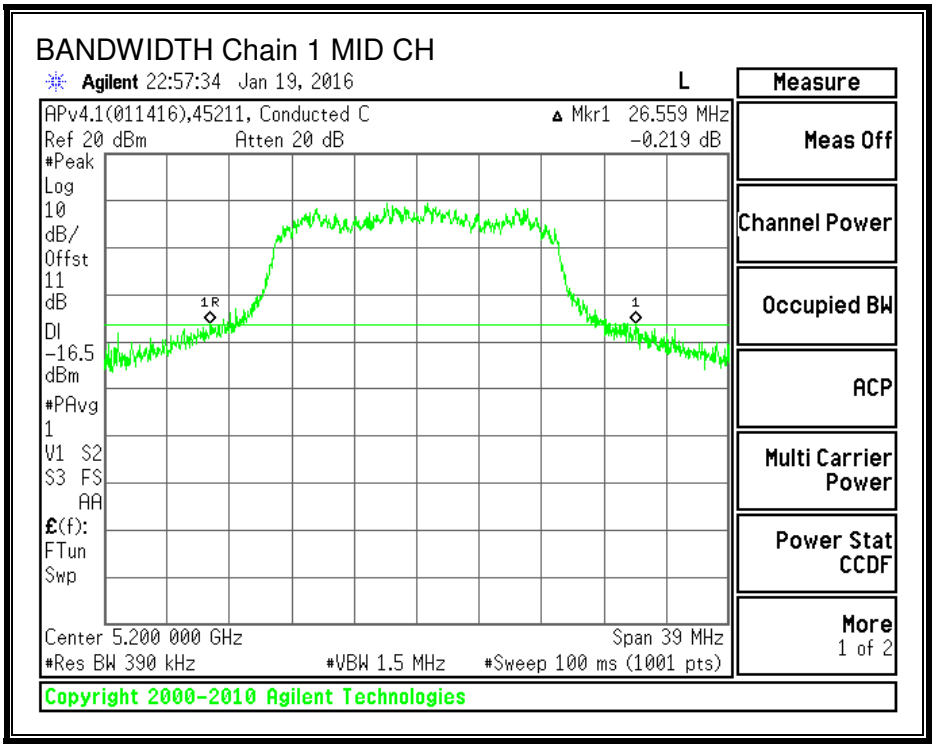




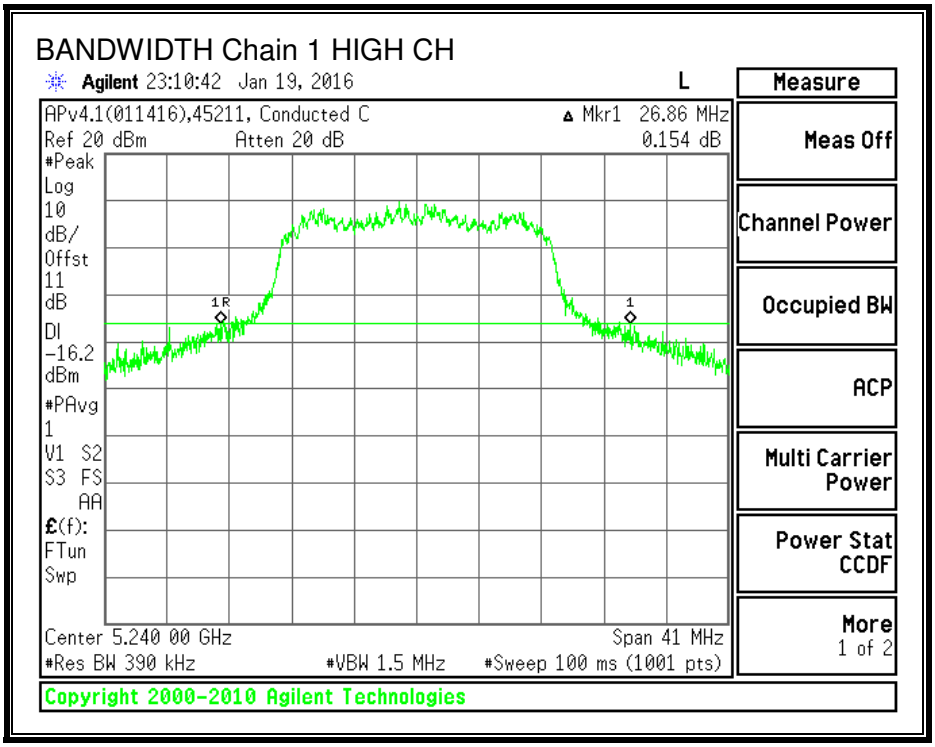
26 dB BANDWIDTH, Chain 1



BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



8.5. 802.11n HT40 CDD 2Tx MODE IN THE 5.2 GHz BAND

8.5.1. 26 dB BANDWIDTH

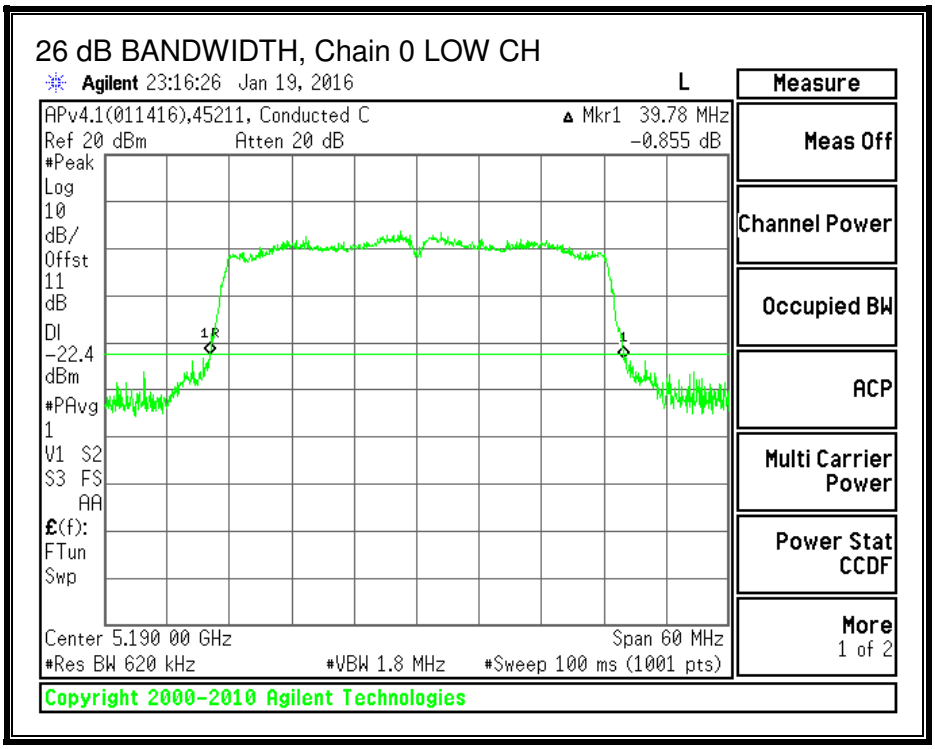
LIMITS

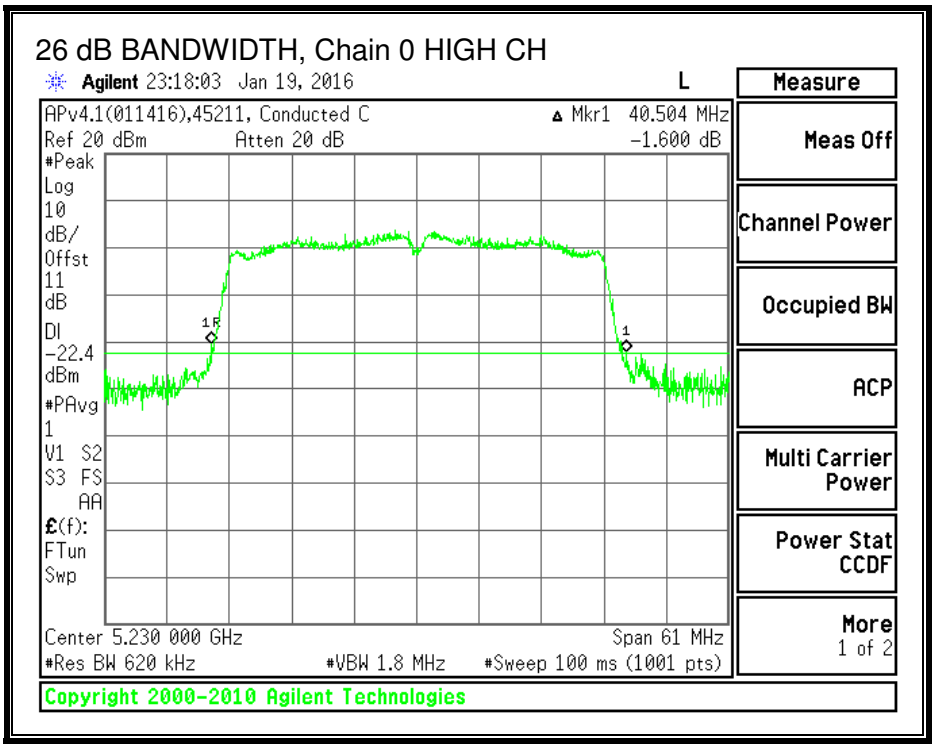
None; for reporting purposes only.

RESULTS

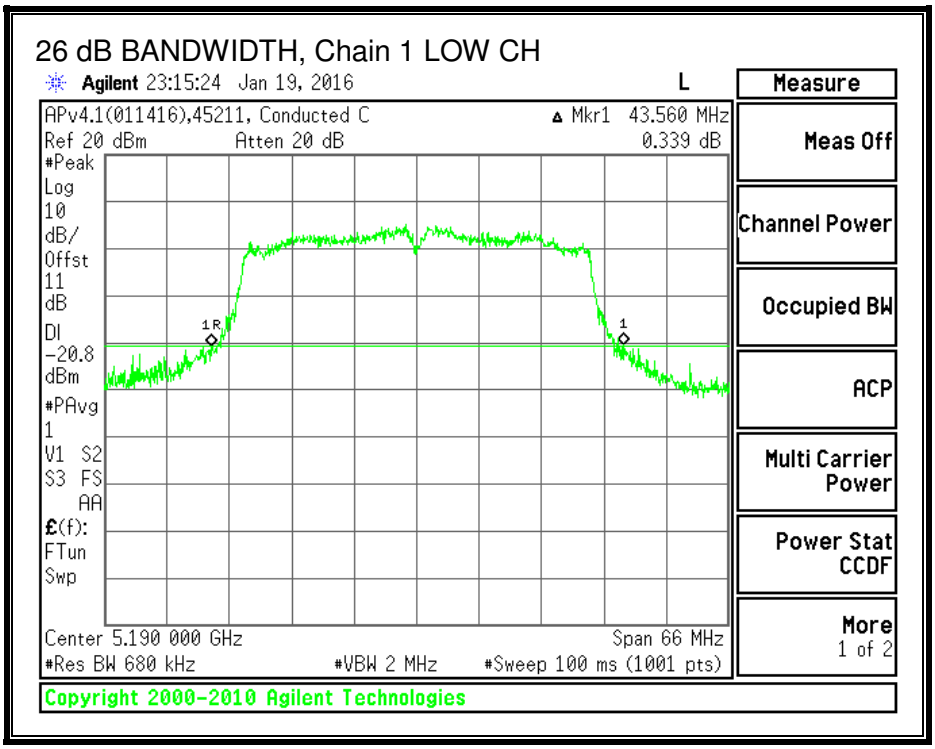
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5190	39.78	43.56
High	5230	40.50	42.43

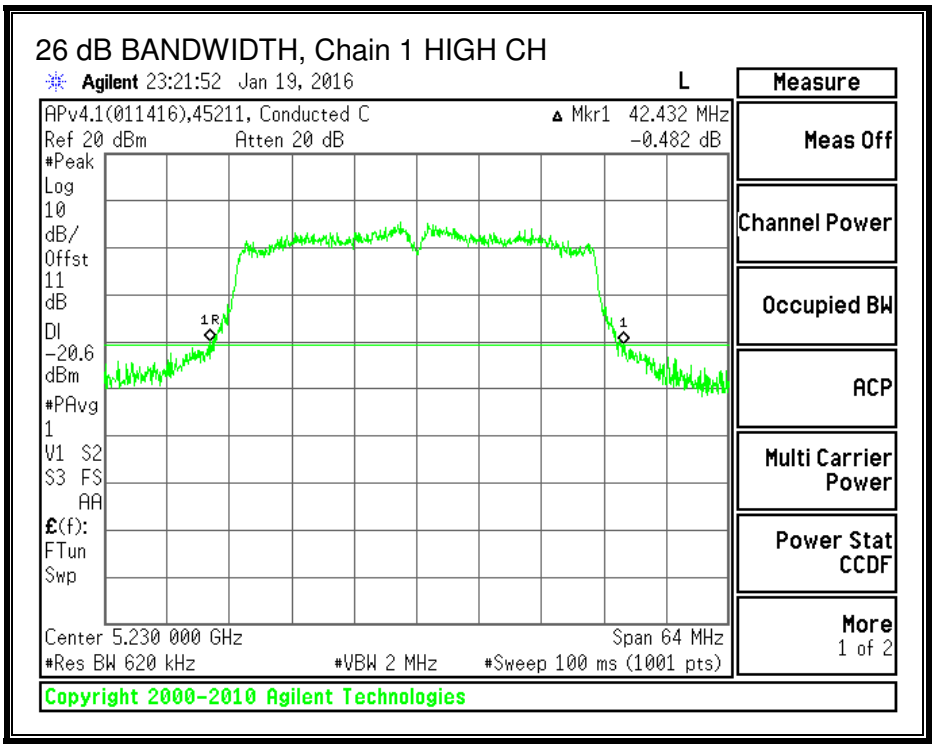
26 dB BANDWIDTH, Chain 0





26 dB BANDWIDTH, Chain 1





8.6. 802.11a LEGACY MODE IN THE 5.3 GHz BAND

8.6.1. 26 dB BANDWIDTH

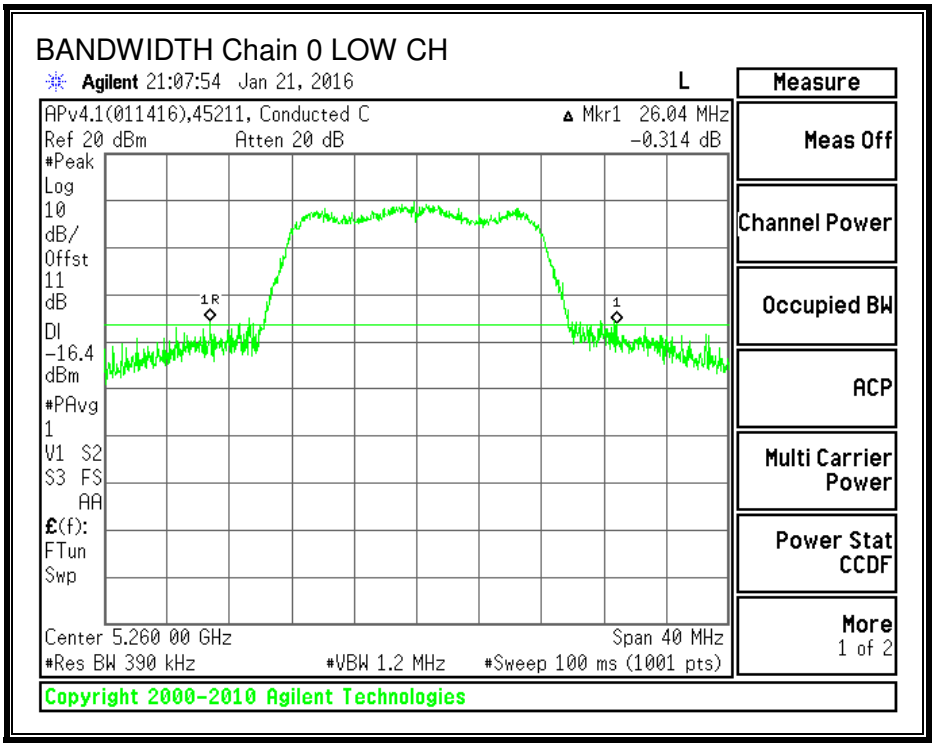
LIMITS

None; for reporting purposes only.

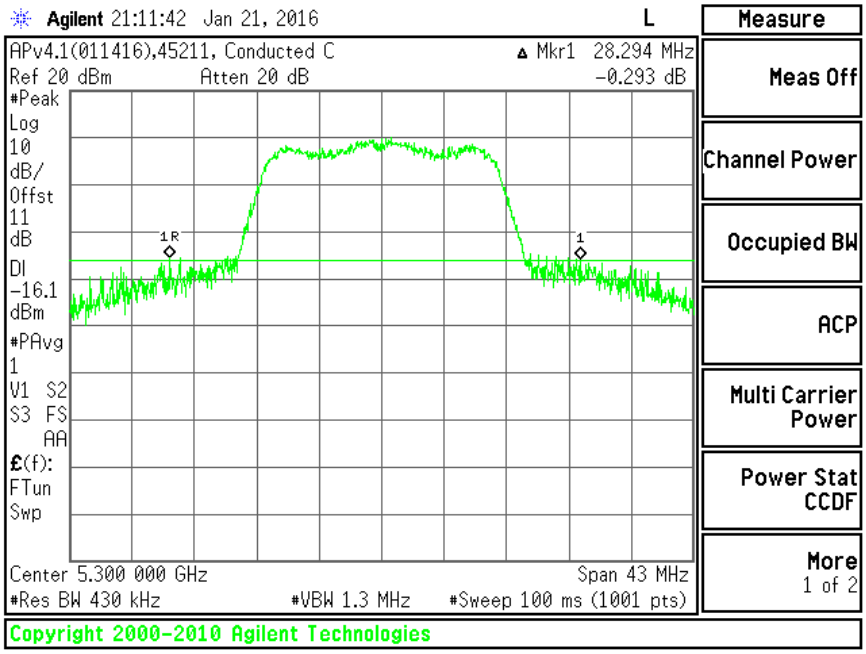
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)
Low	5260	26.04
Mid	5300	28.29
High	5320	24.93

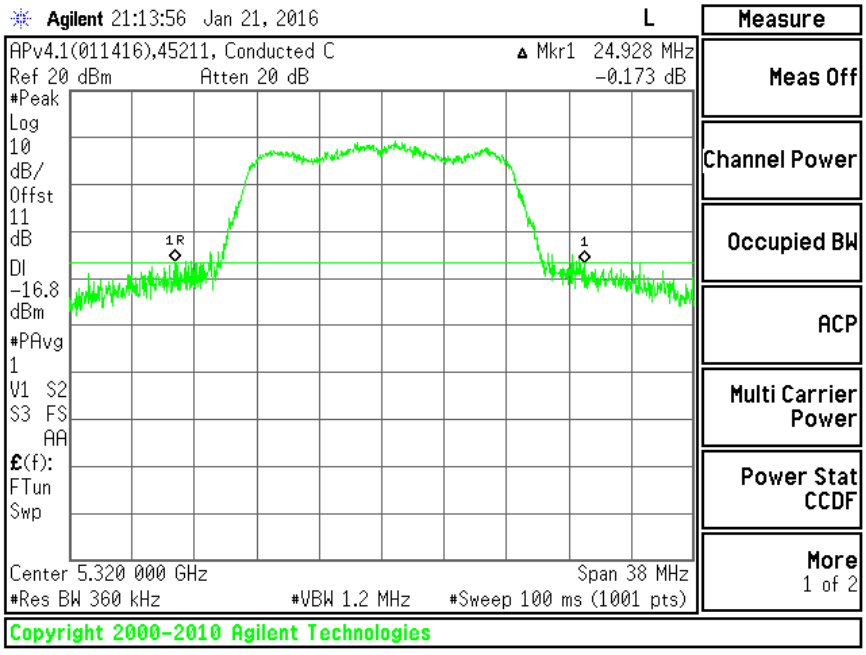
26 dB BANDWIDTH, Chain 0



BANDWIDTH Chain 0 MID CH



BANDWIDTH Chain 0 HIGH CH



8.7. 802.11n HT20 CDD 2Tx MODE IN THE 5.3 GHz BAND

8.7.1. 26 dB BANDWIDTH

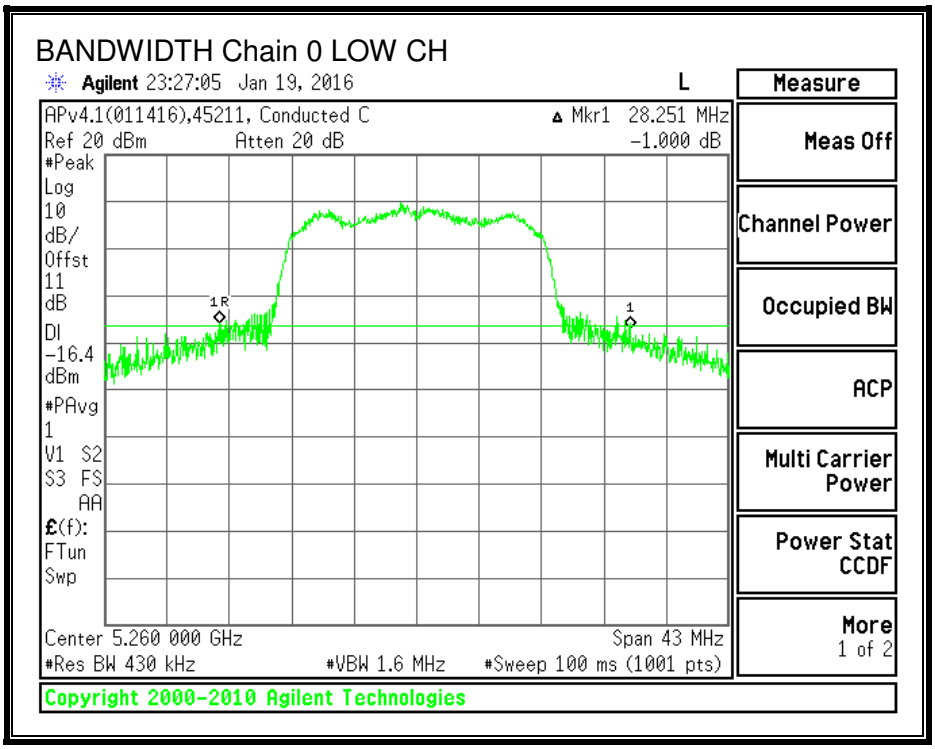
LIMITS

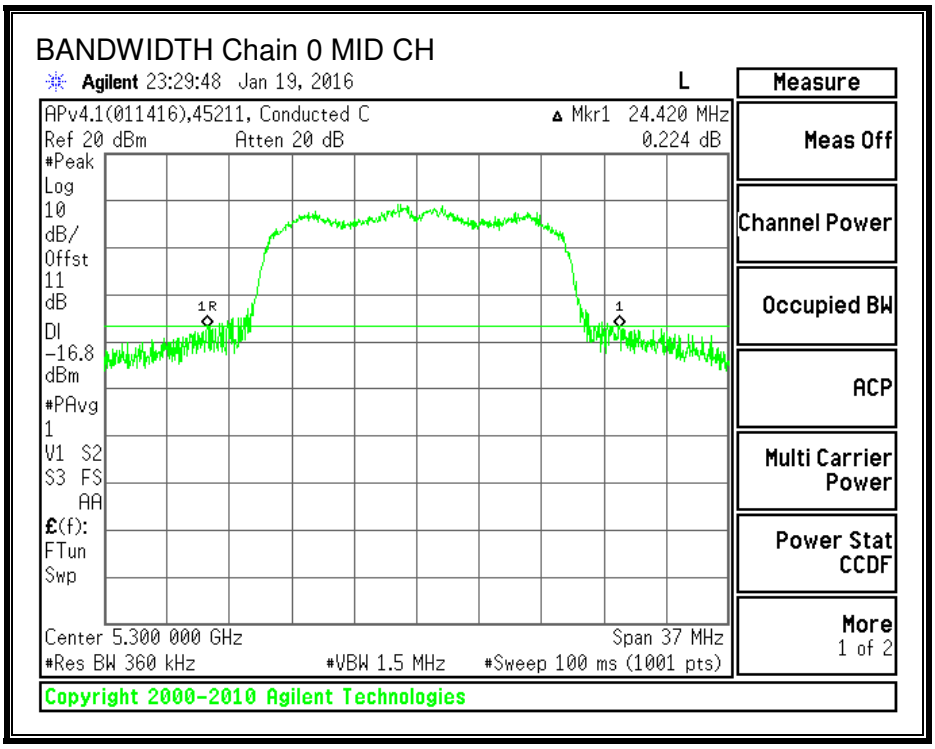
None; for reporting purposes only.

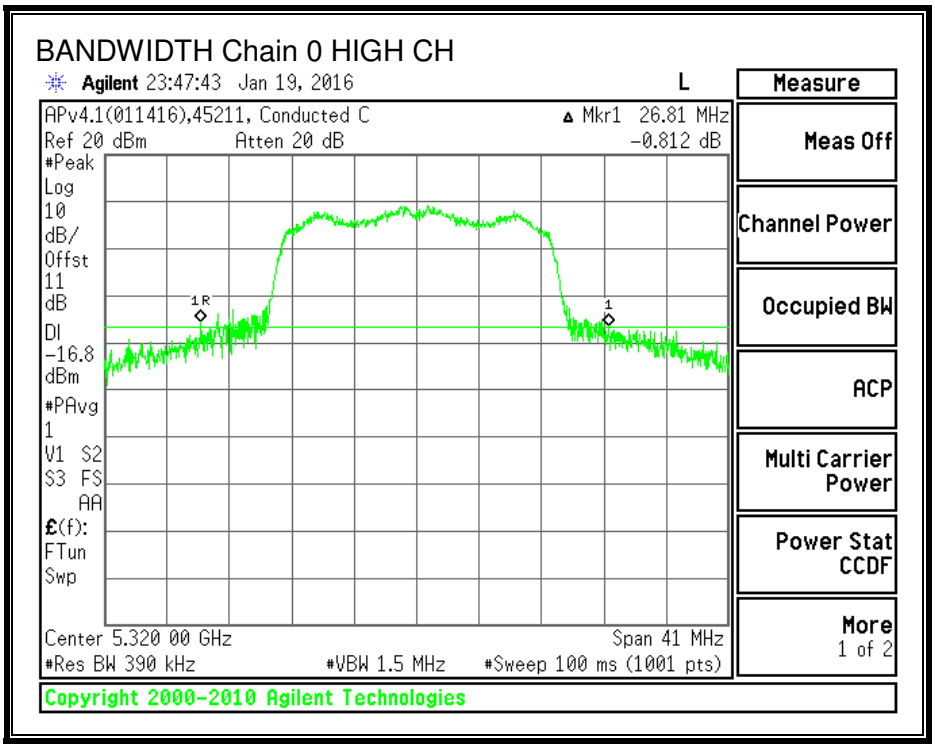
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5260	28.25	28.86
Mid	5300	24.42	27.34
High	5320	26.81	29.13

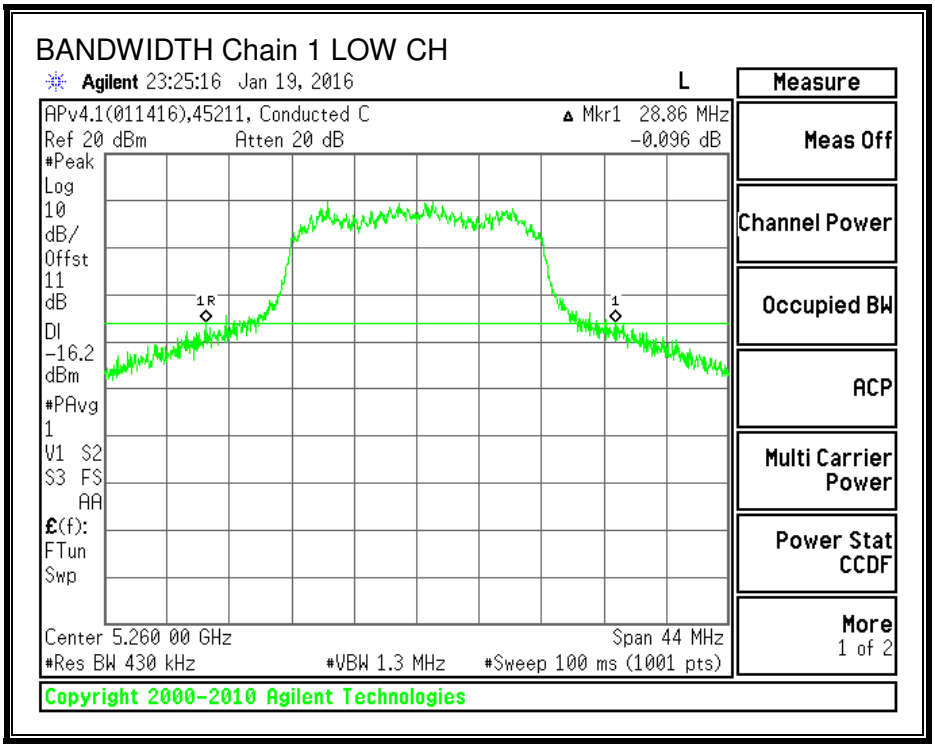
26 dB BANDWIDTH, Chain 0



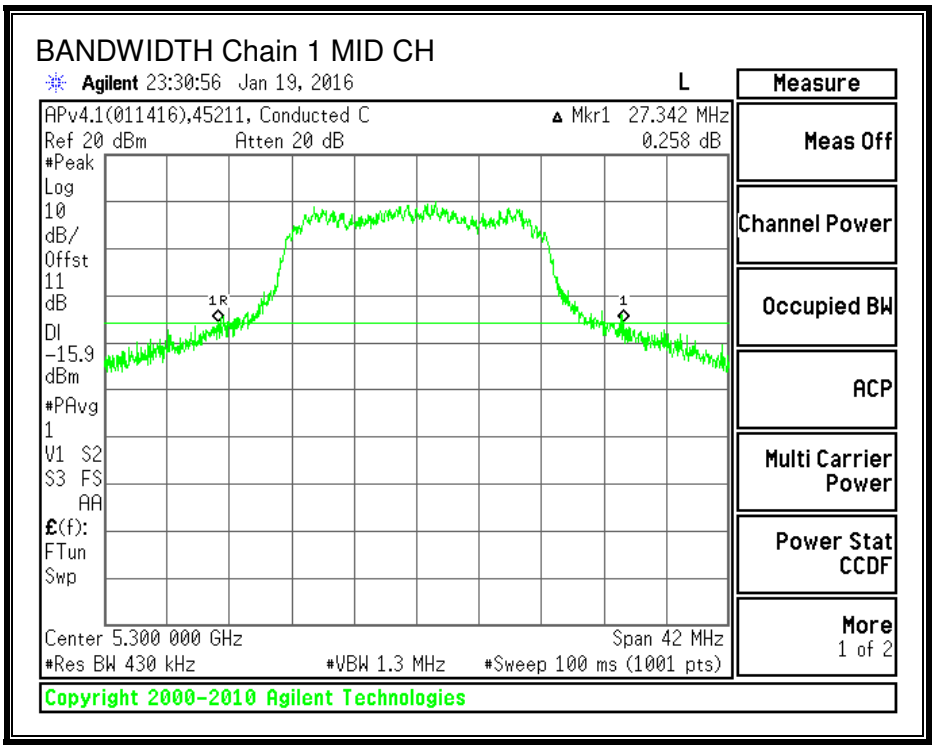




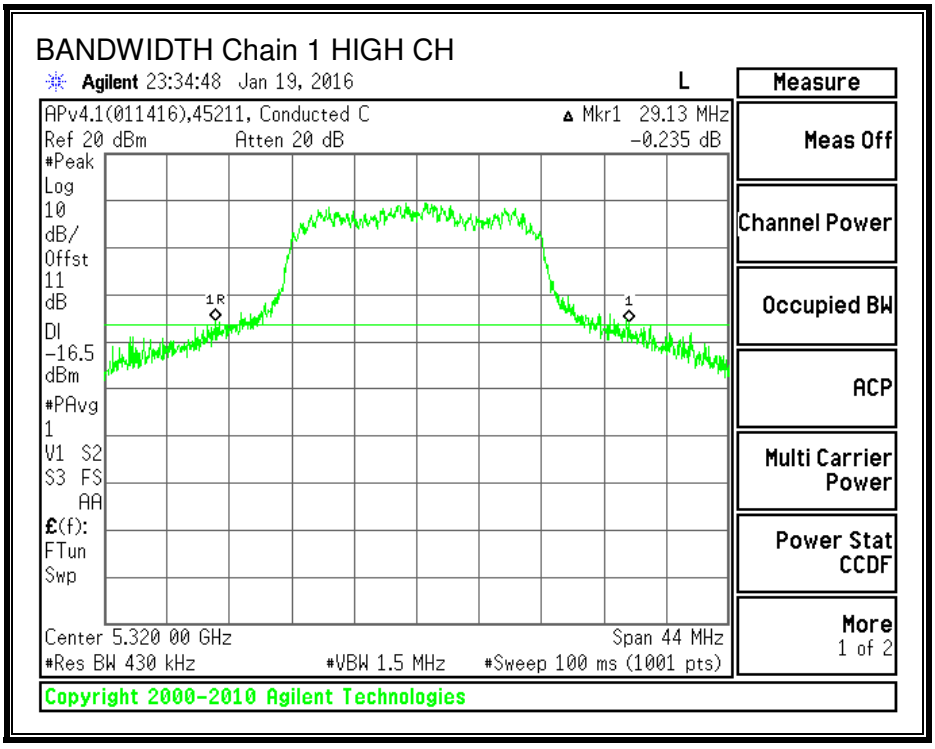
26 dB BANDWIDTH, Chain 1



BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



8.8. 802.11n HT40 CDD 2Tx MODE IN THE 5.3 GHz BAND

8.8.1. 26 dB BANDWIDTH

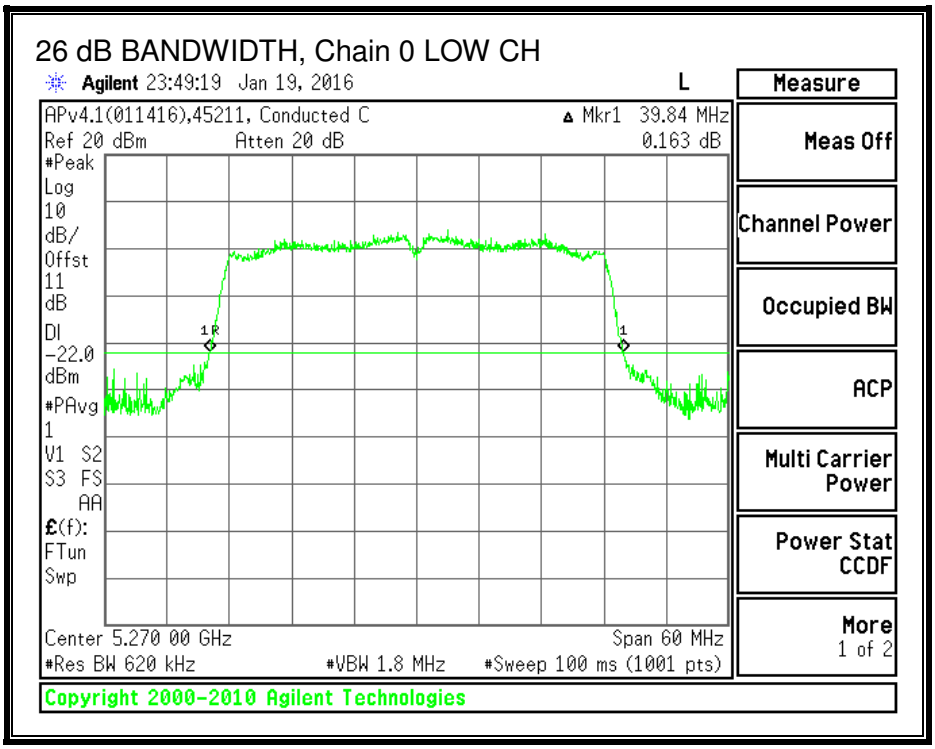
LIMITS

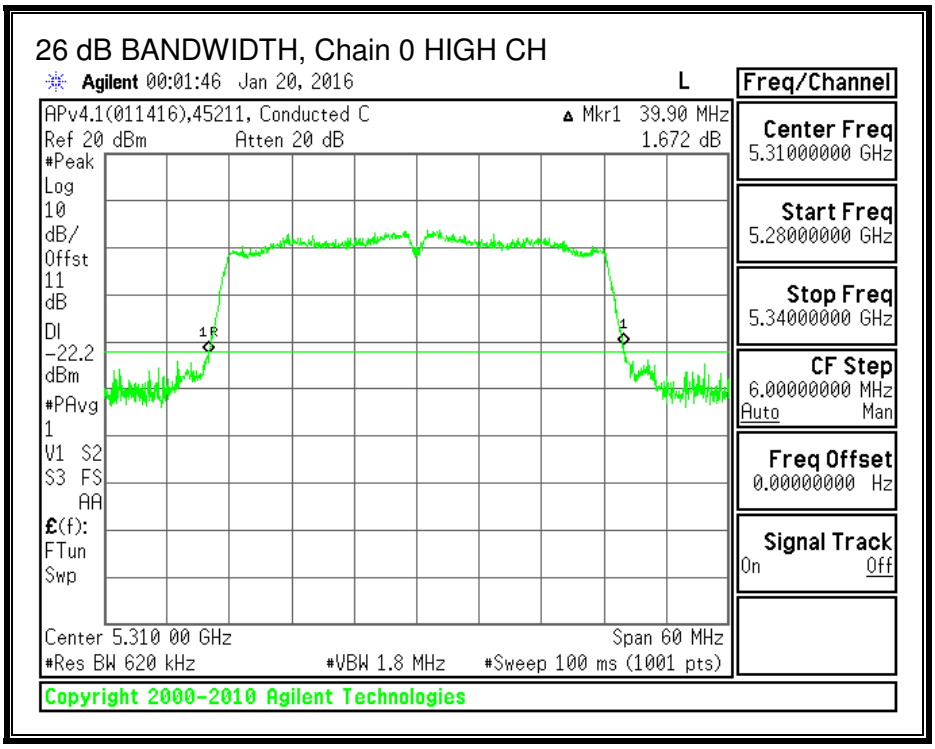
None; for reporting purposes only.

RESULTS

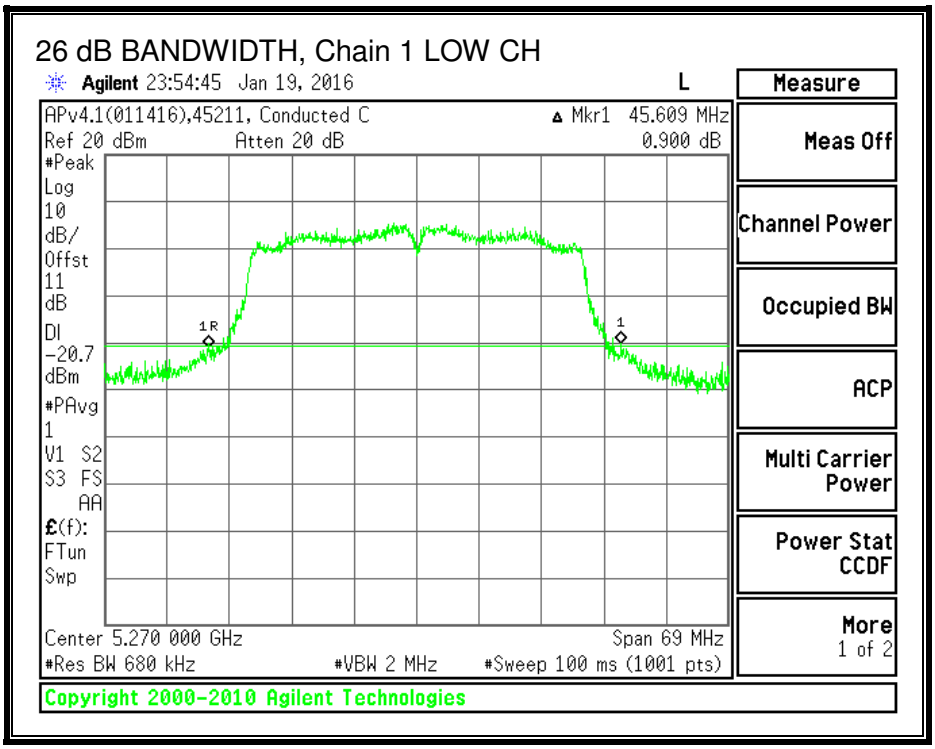
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5270	39.84	45.61
High	5310	39.90	45.89

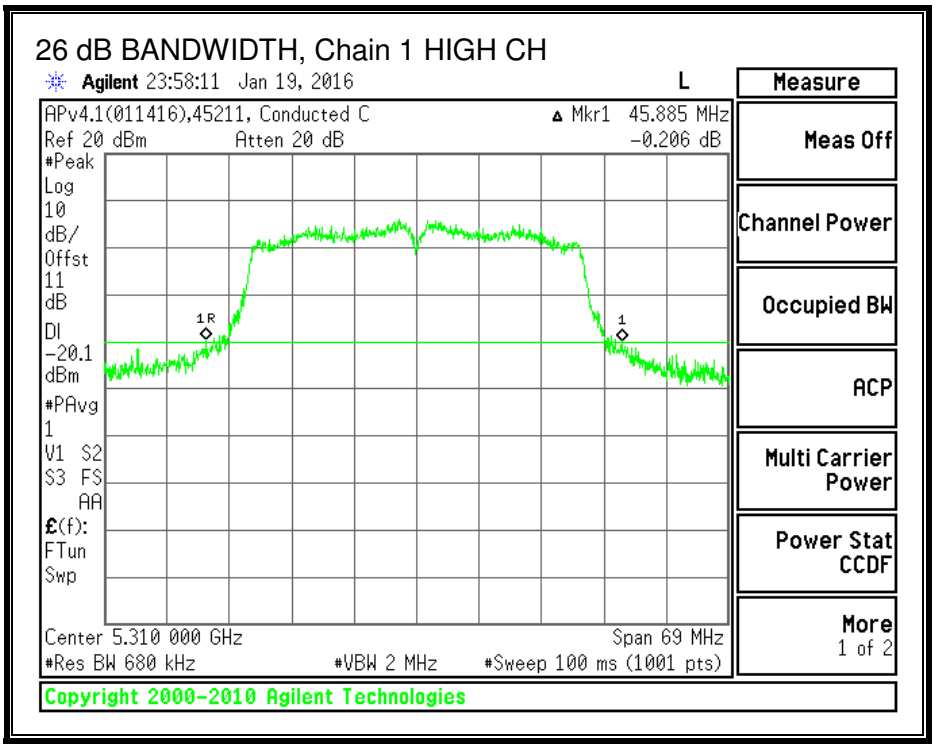
26 dB BANDWIDTH, Chain 0





26 dB BANDWIDTH, Chain 1





8.9. 802.11a LEGACY MODE IN THE 5.6 GHz BAND

8.9.1. 26 dB BANDWIDTH

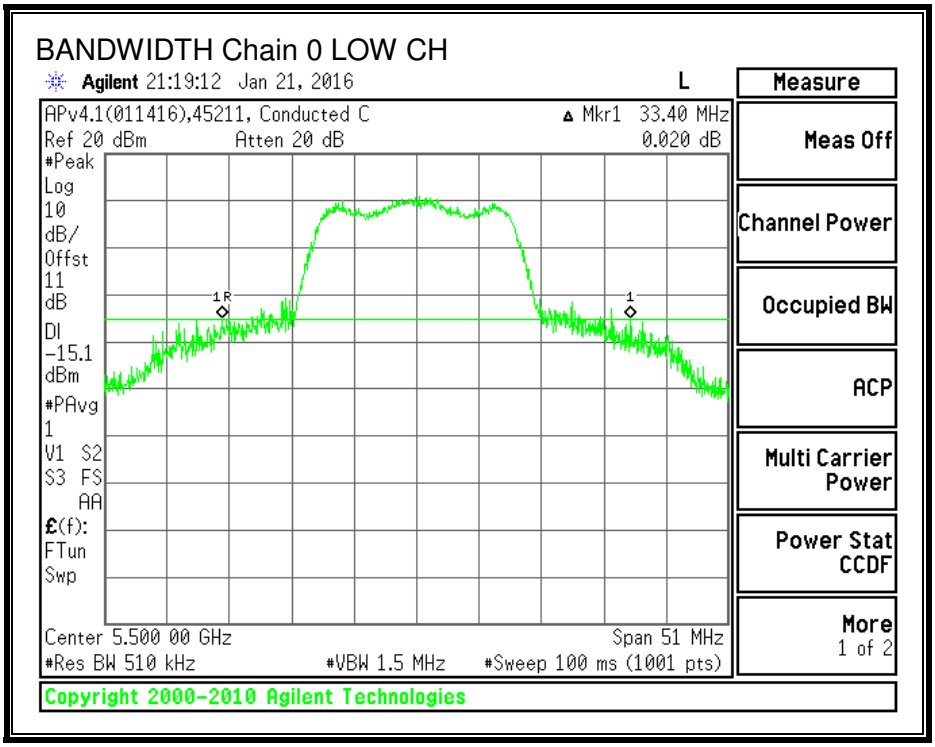
LIMITS

None; for reporting purposes only.

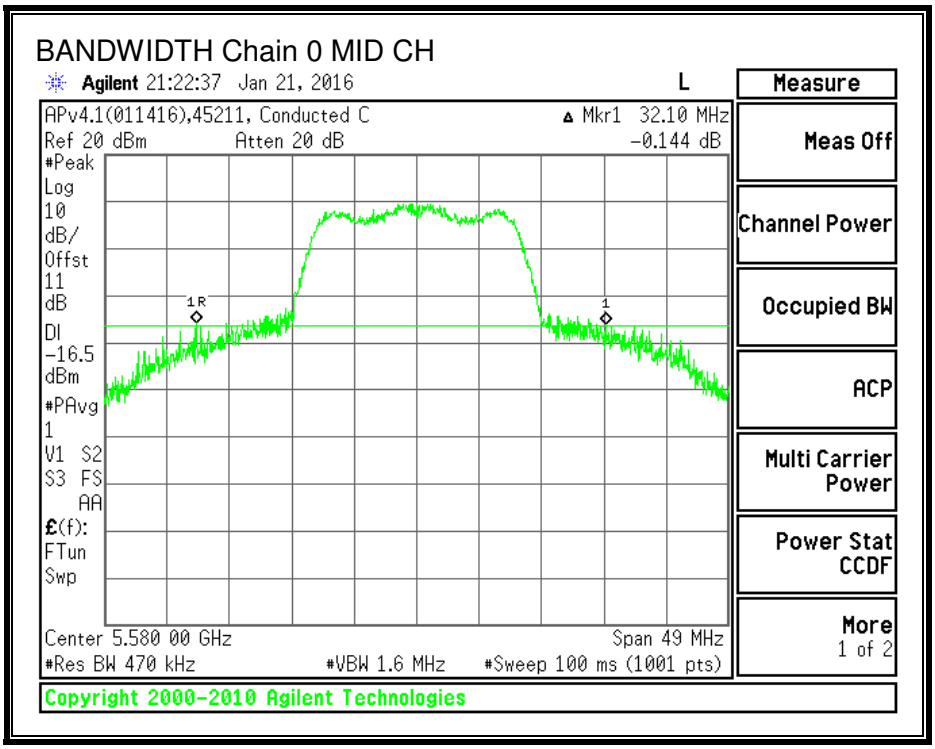
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)
Low	5500	33.40
Mid	5580	32.10
High	5700	31.68

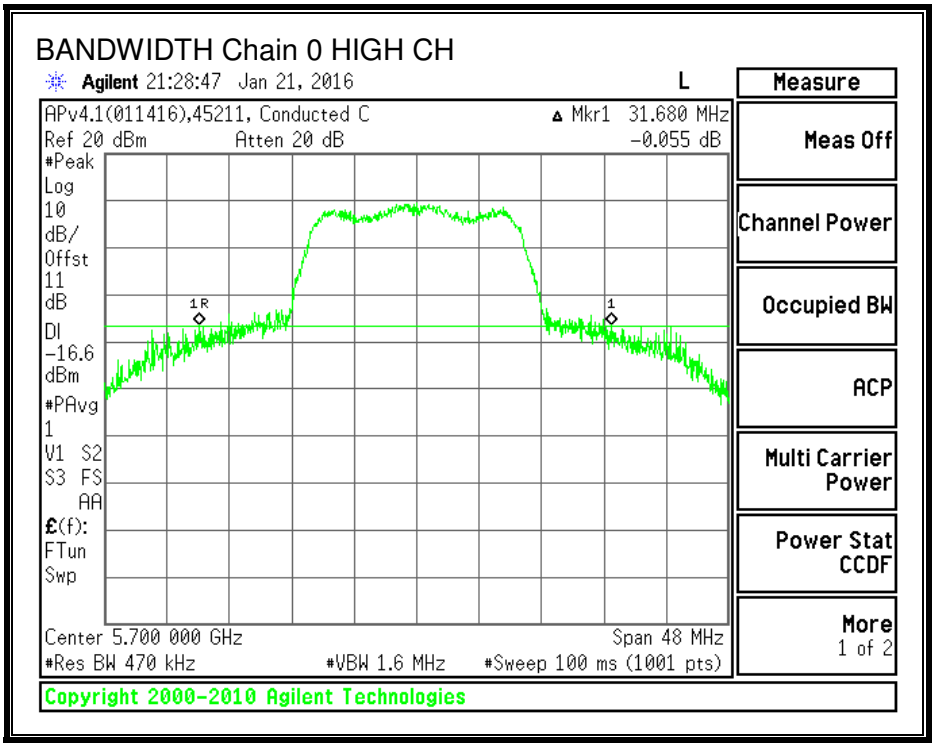
26 dB BANDWIDTH, Chain 0



BANDWIDTH Chain 0 MID CH



BANDWIDTH Chain 0 HIGH CH



8.9.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) = 4.2 dBi

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5500	33.40	4.20	24.00	11.00
Mid	5580	32.10	4.20	24.00	11.00
High	5700	31.68	4.20	24.00	11.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	15.51	15.51	24.00	-8.49
Mid	5580	17.28	17.28	24.00	-6.72
High	5700	12.12	12.12	24.00	-11.88

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Note: power for the middle channel was taken from the original report *"11U13795 - 2A FCC IC UNII WLAN REPORT"*

8.10. 802.11n HT20 1Tx MODE IN THE 5.6 GHz BAND

8.10.1. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) = 4.2 dBi

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5500	30.41	4.20	24.00	11.00
High	5700	36.25	4.20	24.00	11.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	15.30	15.30	24.00	-8.70
High	5700	11.90	11.90	24.00	-12.10

Note: for Chain 0, 26dB data & plots, see section 11n HT20 CDD 2TX MODE IN THE 5.6 GHz BAND.

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.11. 802.11n HT20 CDD 2Tx MODE IN THE 5.6 GHz BAND

8.11.1. 26 dB BANDWIDTH

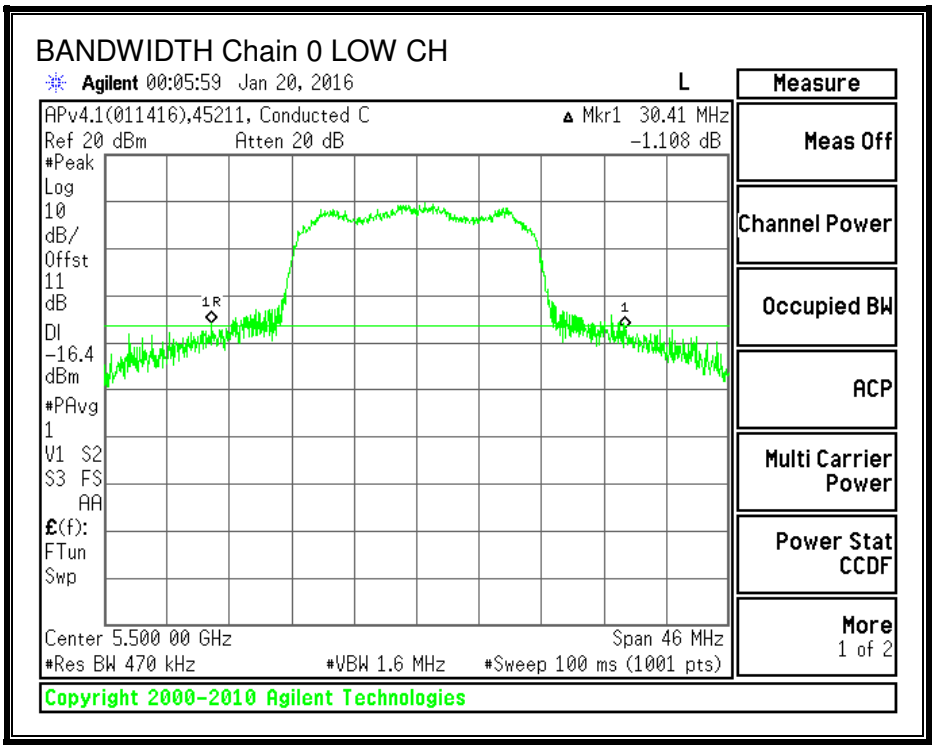
LIMITS

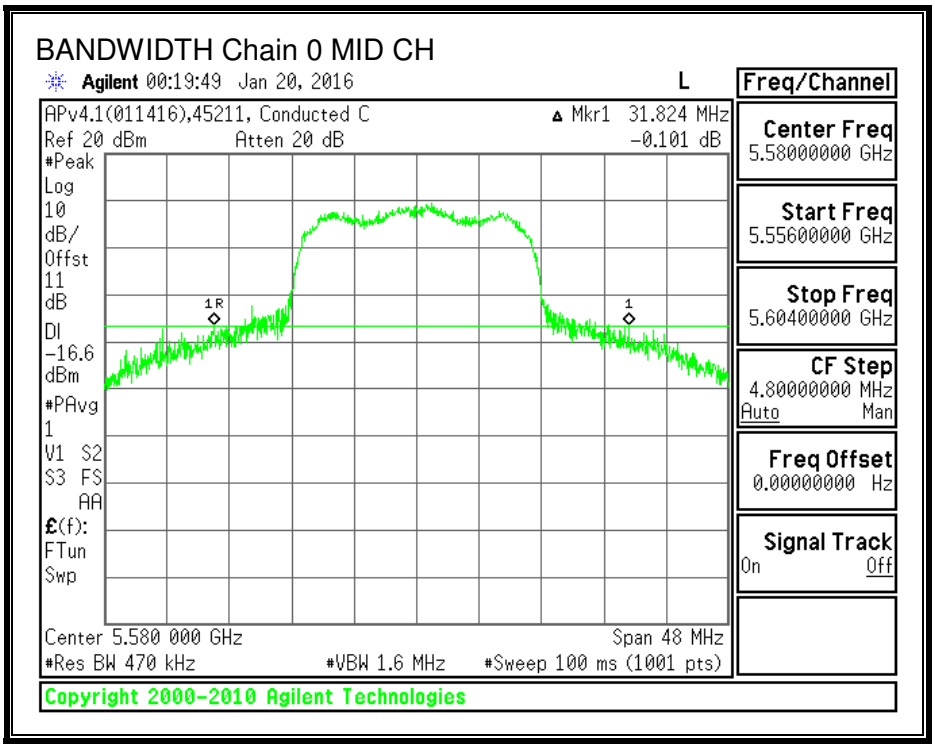
None; for reporting purposes only.

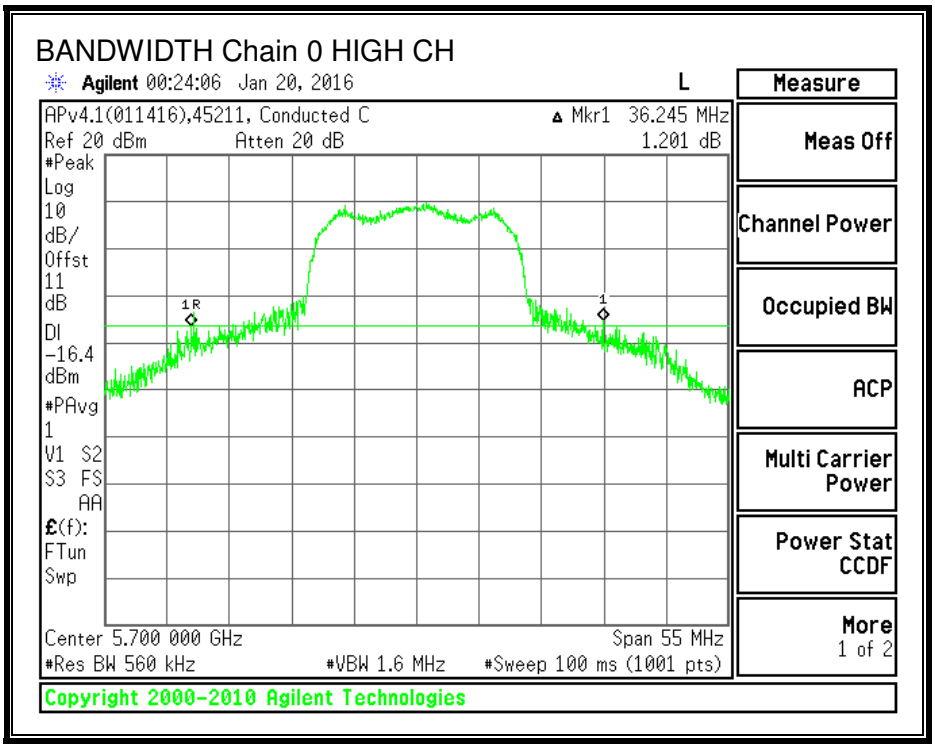
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5500	30.41	28.73
Mid	5580	31.82	27.47
High	5700	36.25	28.25

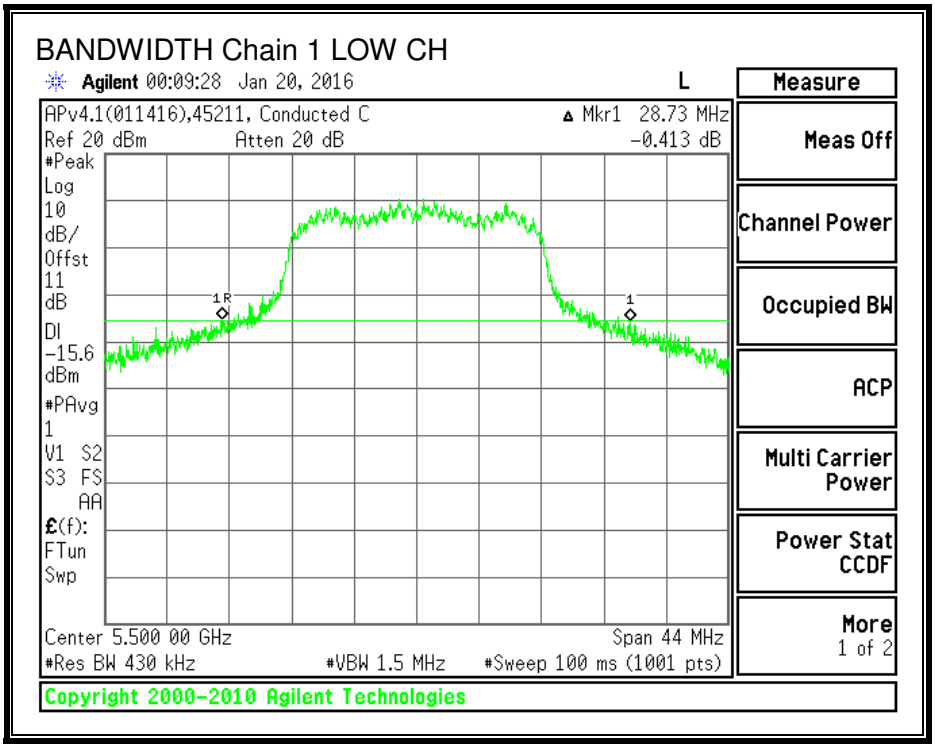
26 dB BANDWIDTH, Chain 0



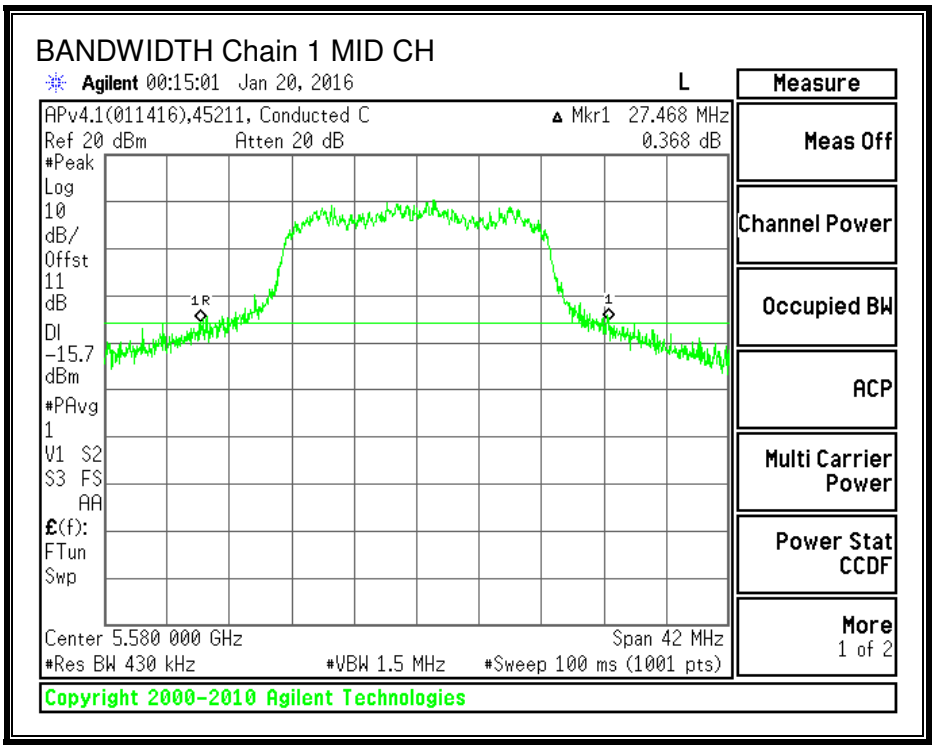




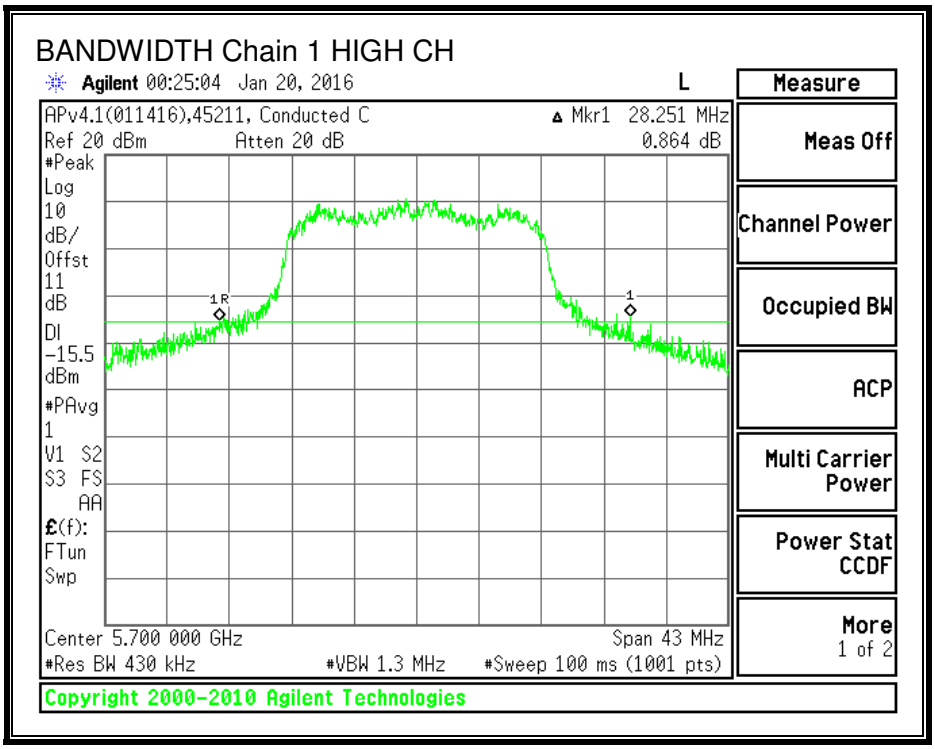
26 dB BANDWIDTH, Chain 1



BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



8.11.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For power the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain, 4.2 dBi.

RESULTS

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)
Low	5500	28.73	4.20	N/A	24.00
Mid	5580	27.47	4.20	N/A	24.00
High	5700	28.25	4.20	N/A	24.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	13.48	13.11	16.31	24.00	-7.69
Mid	5580	16.63	16.81	19.73	24.00	-4.27
High	5700	9.91	10.08	13.01	24.00	-10.99

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Note: power for the middle channel was taken from the original report *"11U13795 - 2A FCC IC UNII WLAN REPORT"*

8.12. 802.11n HT40 1Tx MODE IN THE 5.6 GHz BAND

8.12.1. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) = 4.2 dBi

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5510	41.64	4.20	24.00
High	5670	40.08	4.20	24.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	10.55	10.55	24.00	-13.45
High	5670	14.51	14.51	24.00	-9.49

Note: for Chain 0, 26dB data & plots, see section 11n HT40 CDD 2TX MODE IN THE 5.6 GHz BAND.

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.13. 802.11n HT40 CDD 2Tx MODE IN THE 5.6 GHz BAND

8.13.1. 26 dB BANDWIDTH

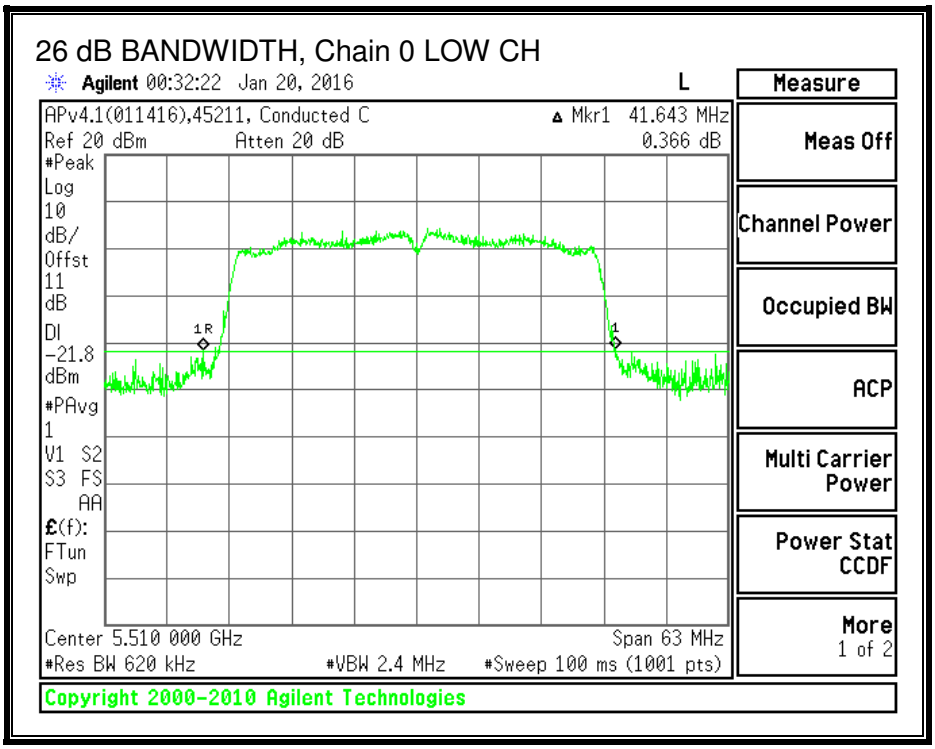
LIMITS

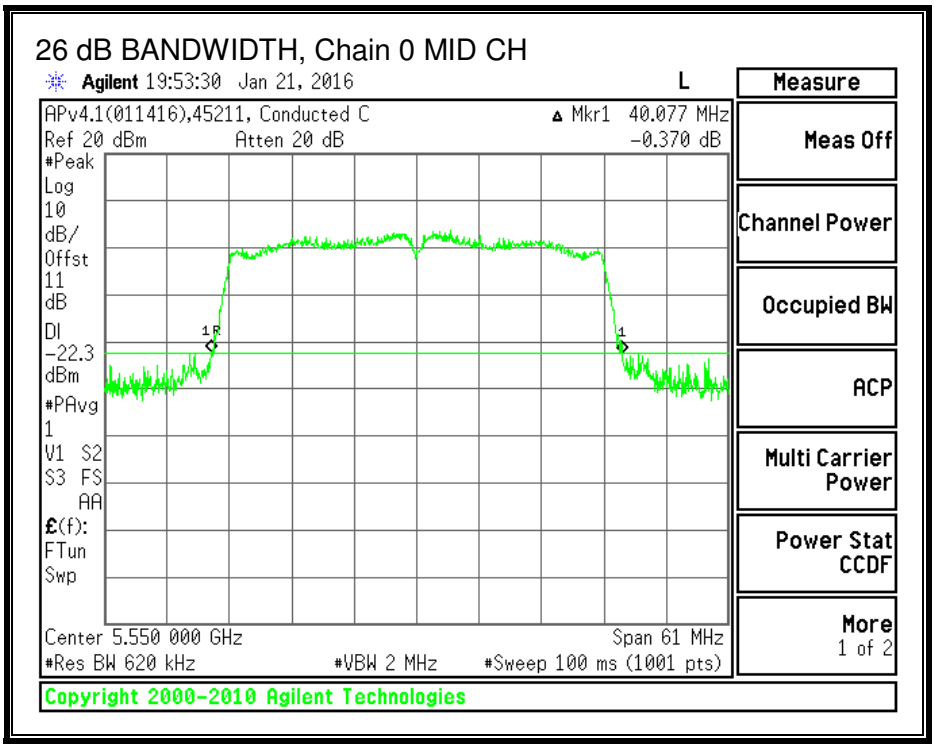
None; for reporting purposes only.

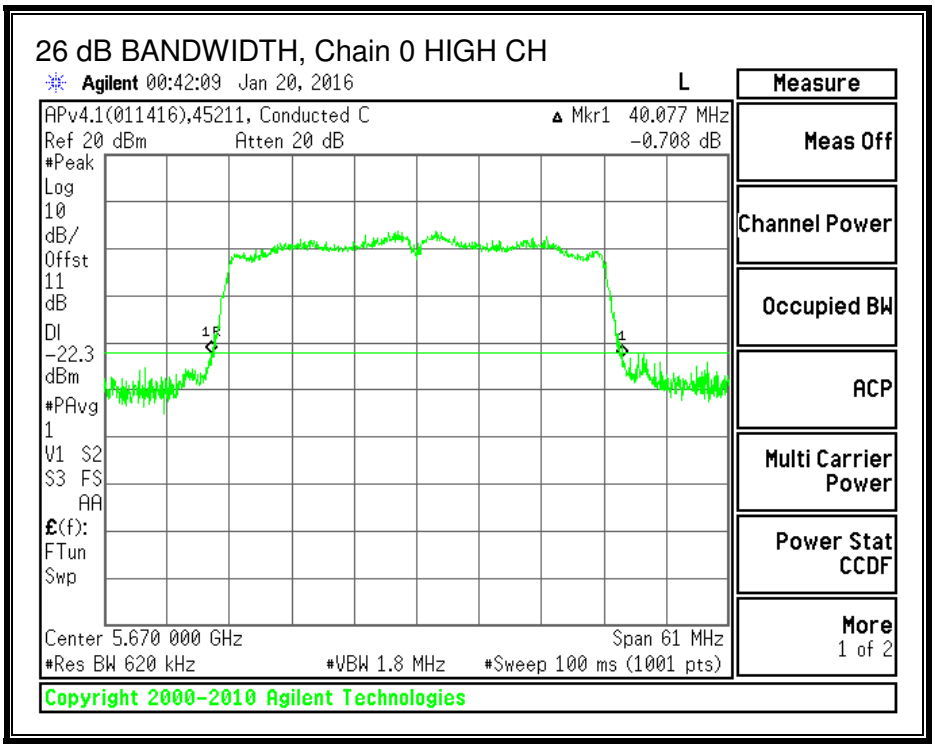
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5510	41.64	46.34
Mid	5550	40.08	44.88
High	5670	40.08	42.90

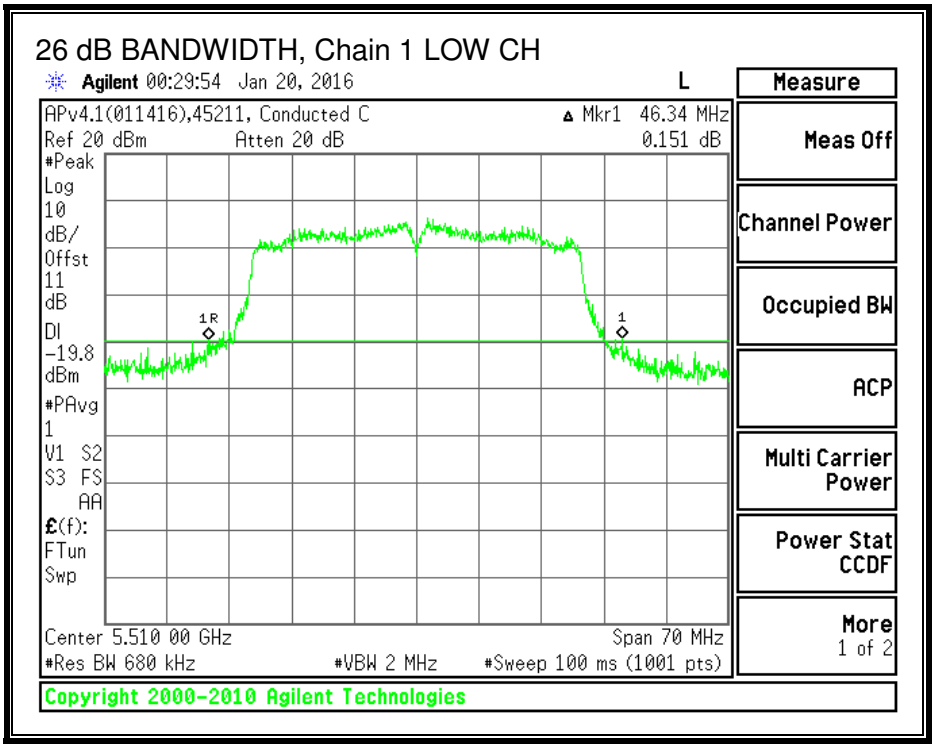
26 dB BANDWIDTH, Chain 0



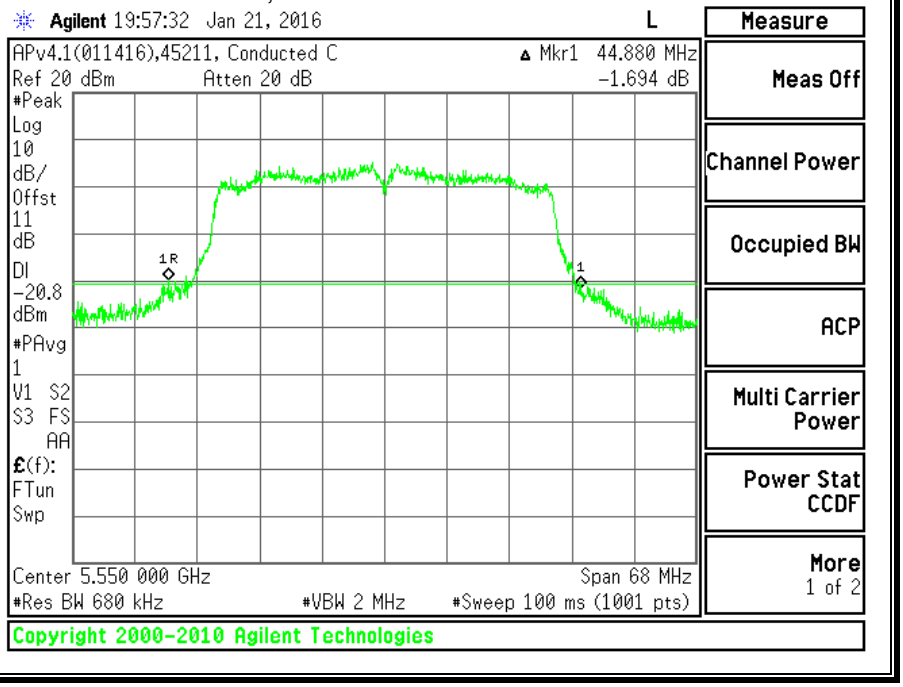




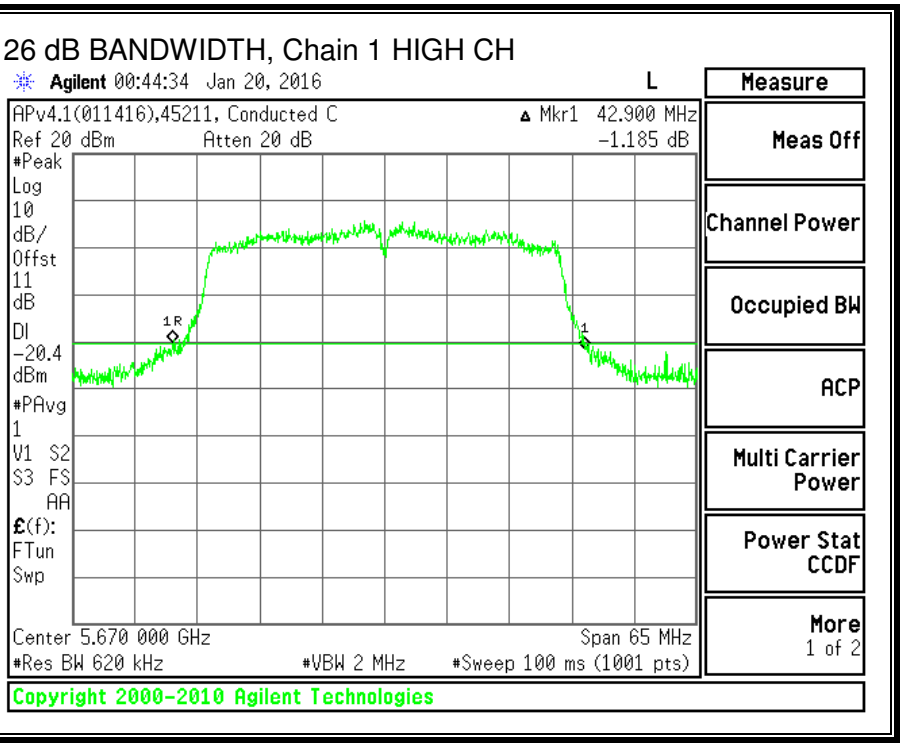
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



8.13.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For power the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain, 4.2 dBi.

RESULTS

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)
Low	5510	41.643	4.20	N/A	24.00
Mid	5550	40.077	4.20	N/A	24.00
High	5670	40.077	4.20	N/A	24.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	8.88	9.11	12.01	24.00	-11.99
Mid	5550	17.46	17.61	20.55	24.00	-3.45
High	5670	13.25	13.53	16.40	24.00	-7.60

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Note: power for the middle channel was taken from the original report *"11U13795 - 2A FCC IC UNII WLAN REPORT"*

8.14. 802.11a LEGACY MODE IN THE 5.8 GHz BAND

8.14.1. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) = 4.2 dBi

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	4.20	30.00
Mid	5785	4.20	30.00
High	5825	4.20	30.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	14.07	14.07	30.00	-15.93
High	5825	18.80	18.80	30.00	-11.20

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.15. 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND

8.15.1. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) = 4.2 dBi

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	4.20	30.00
High	5825	4.20	30.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	13.47	13.47	30.00	-16.53
High	5825	18.40	18.40	30.00	-11.60

Note: the power readings above are measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.16. 802.11n HT20 CDD 2Tx MODE IN THE 5.8 GHz BAND

8.16.1. 6 dB BANDWIDTH

LIMITS

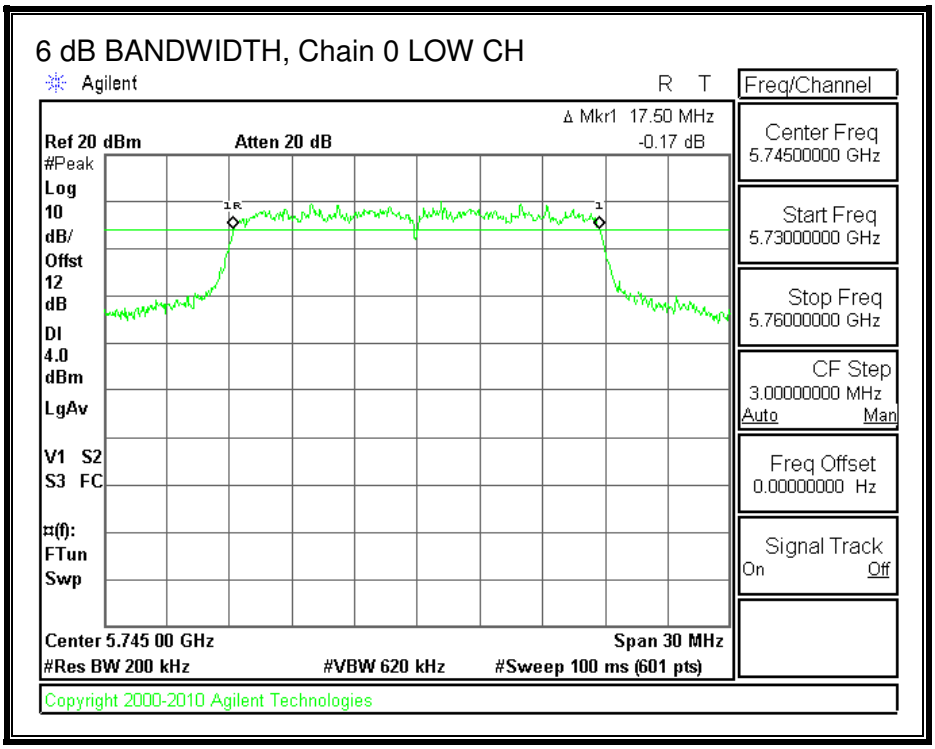
FCC §15.407 (e)

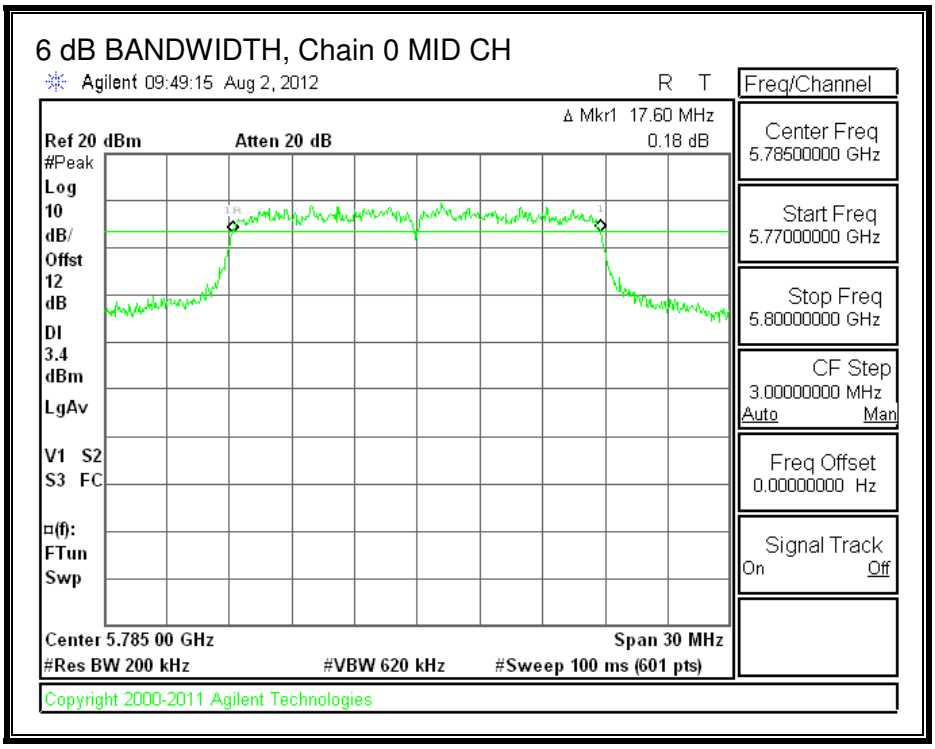
The minimum 6 dB bandwidth shall be at least 500 kHz.

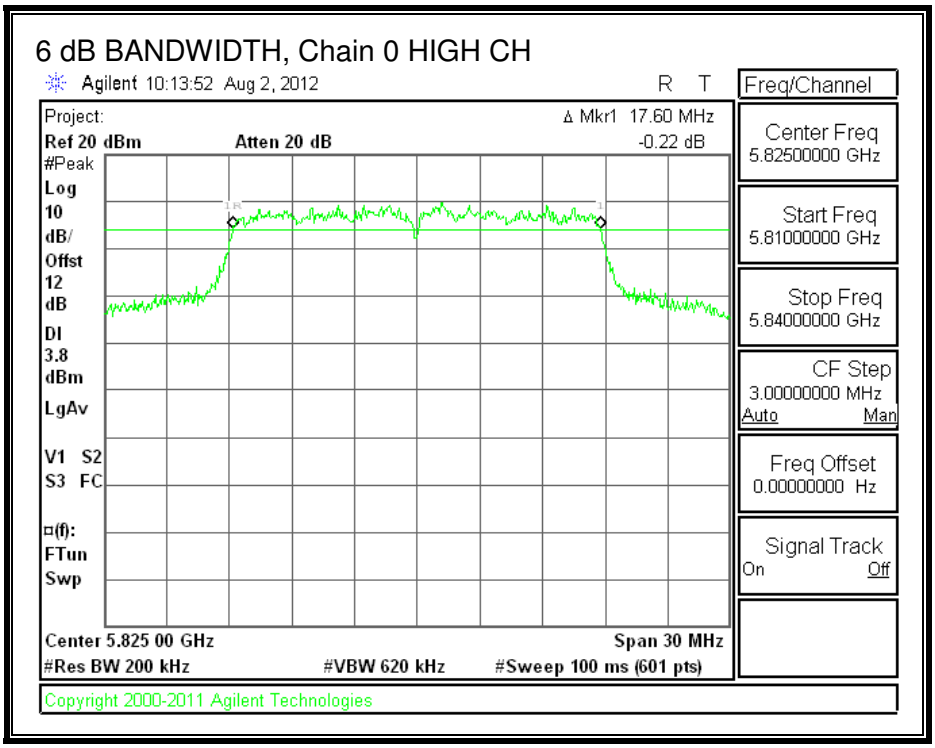
RESULTS

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	17.50	17.60	0.5
Mid	5785	17.60	17.70	0.5
High	5825	17.60	17.70	0.5

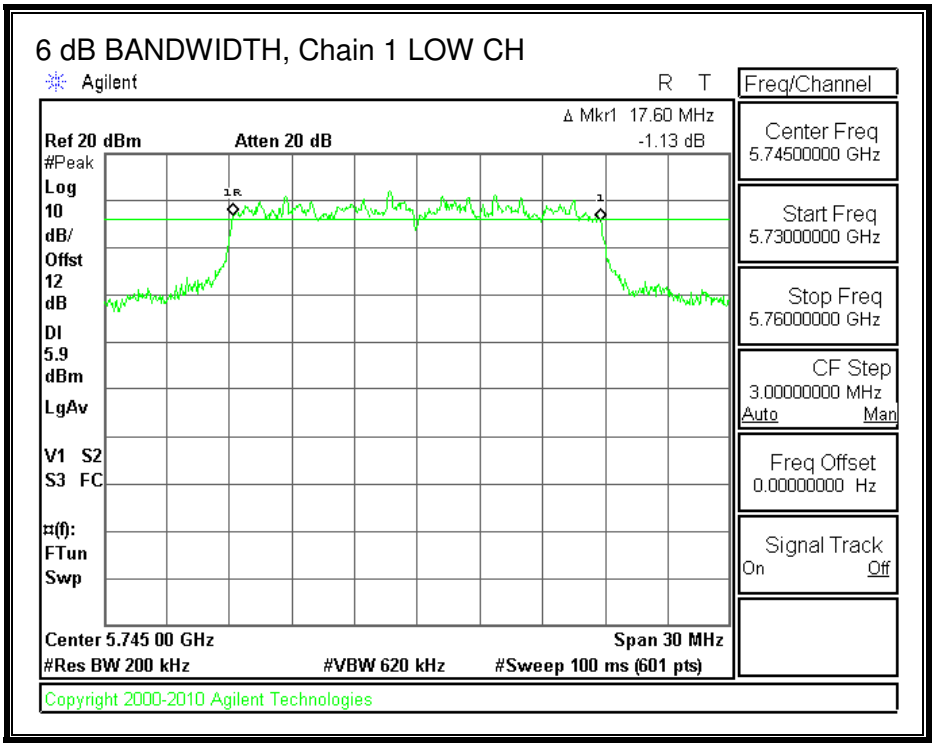
6 dB BANDWIDTH, Chain 0

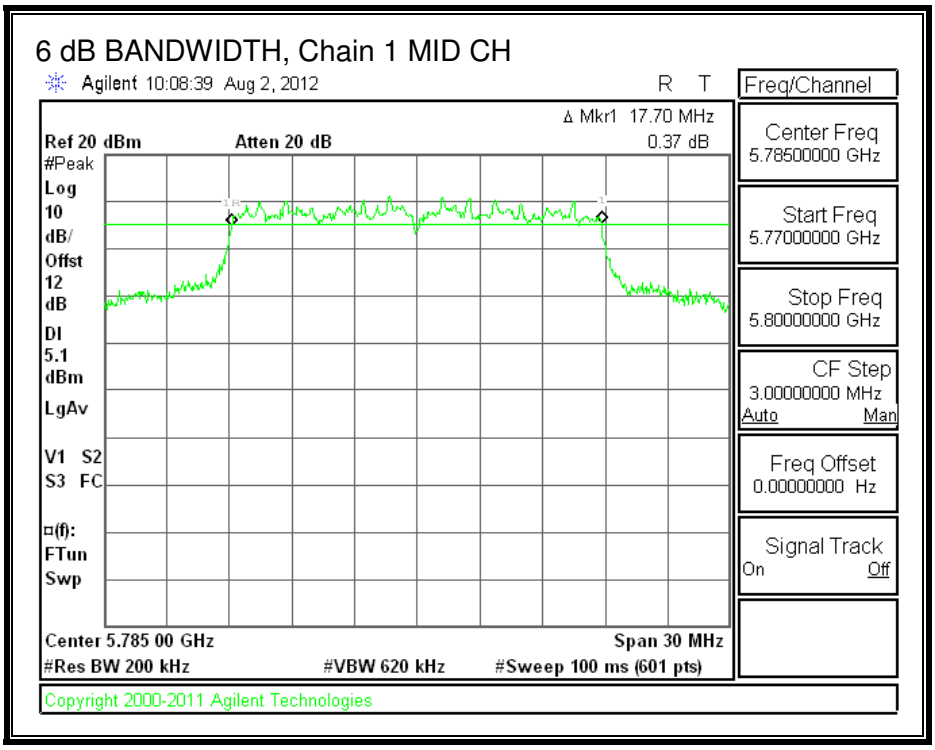


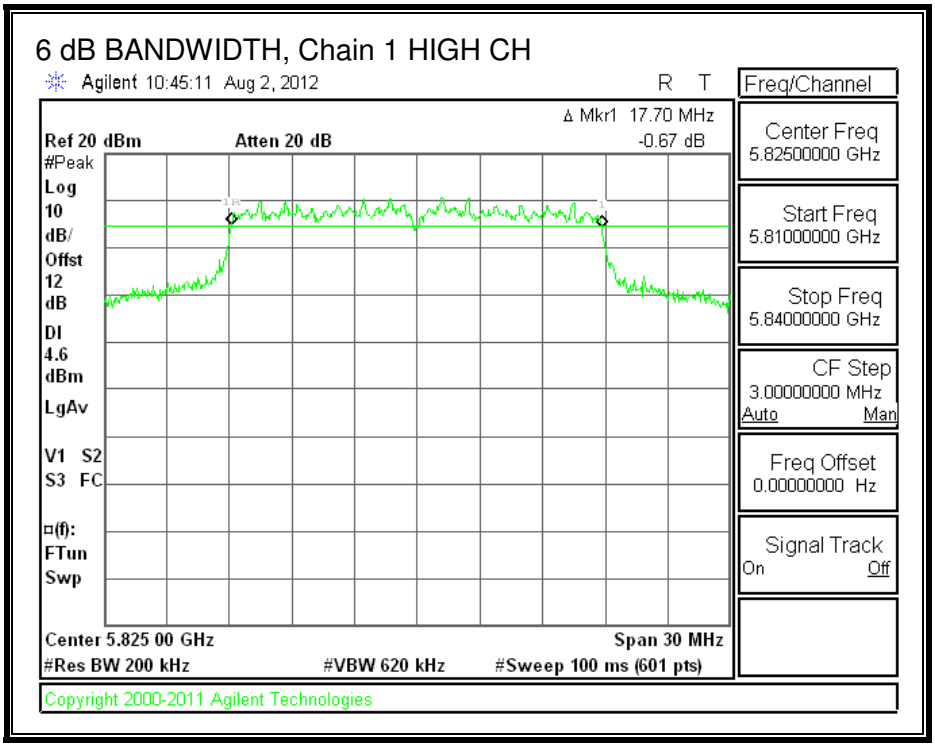




6 dB BANDWIDTH, Chain 1







8.16.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain, 4.2 dBi.

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5745	4.20	30.00
Mid	5785	4.20	30.00
High	5825	4.20	30.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	13.15	13.40	16.29	30.00	-13.71
Mid	5785	19.00	18.60	21.81	30.00	-8.19
High	5825	18.25	18.98	21.64	30.00	-8.36

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.16.3. Maximum Power Spectral Density (PSD)

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.20	3.01	7.21

RESULTS

Antenna Gain and Limit

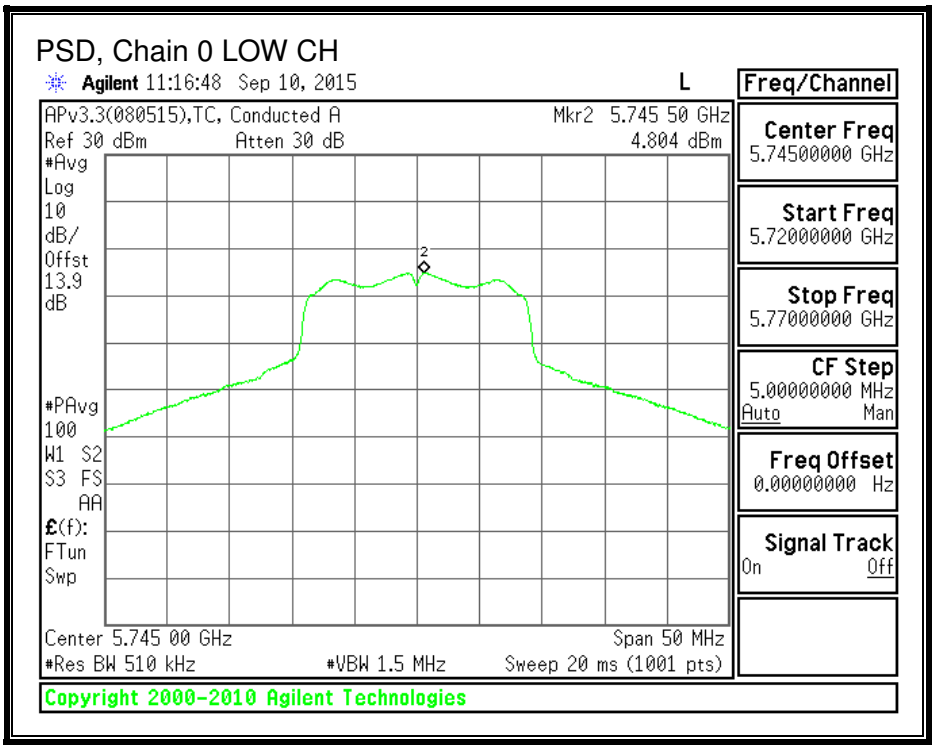
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5745	7.21	28.79
Mid	5785	7.21	28.79
High	5825	7.21	28.79

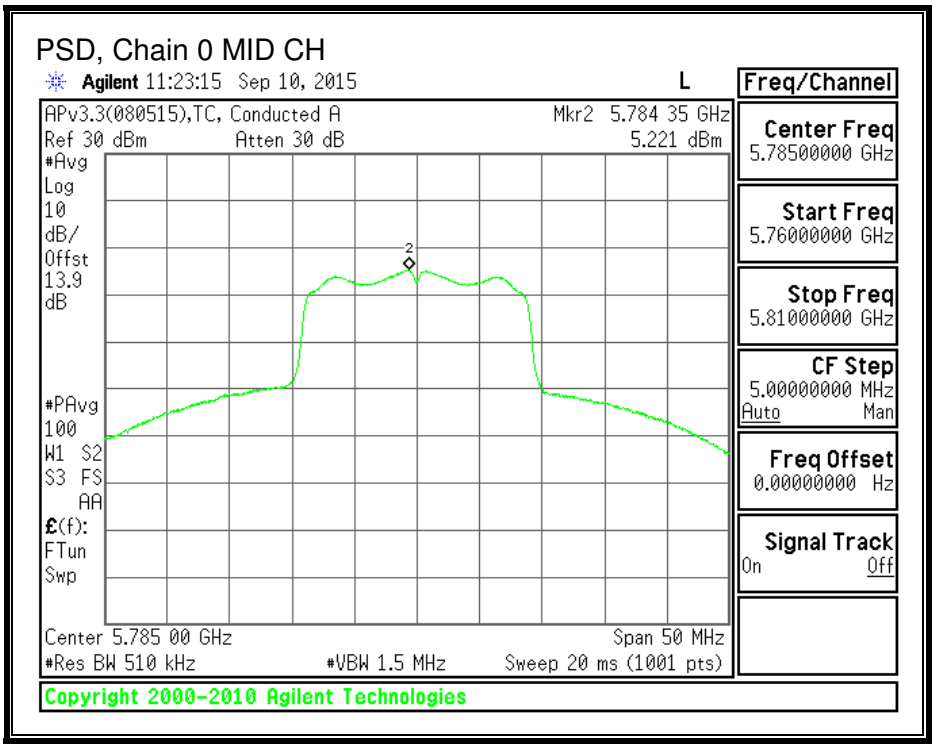
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

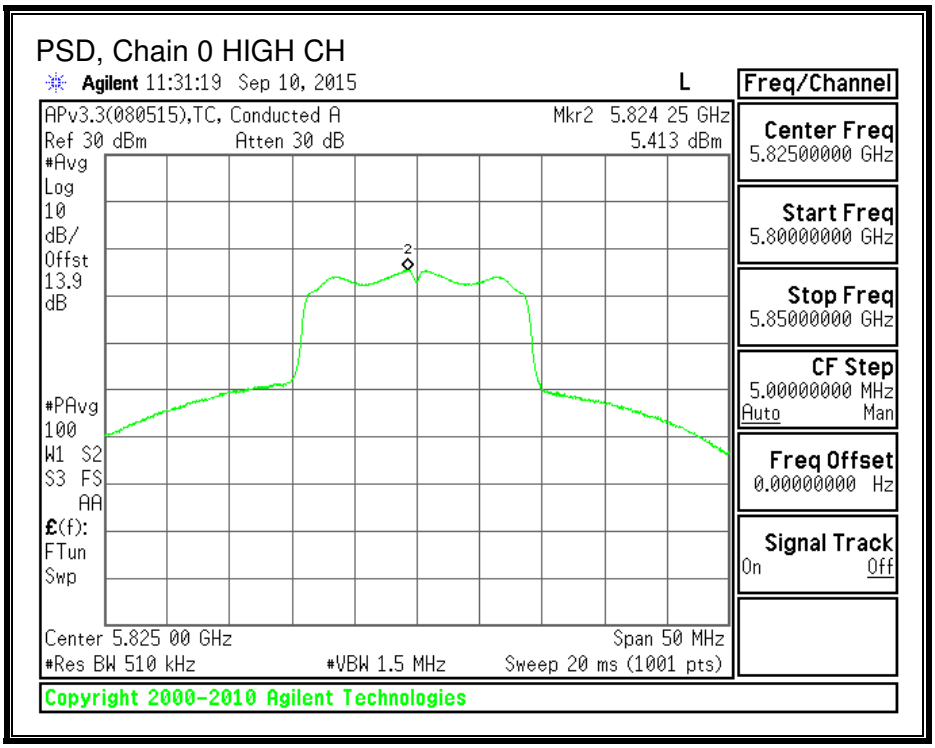
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5745	4.804	6.240	8.59	28.79	-20.20
Mid	5785	5.221	6.510	8.92	28.79	-19.87
High	5825	5.413	6.472	8.98	28.79	-19.81

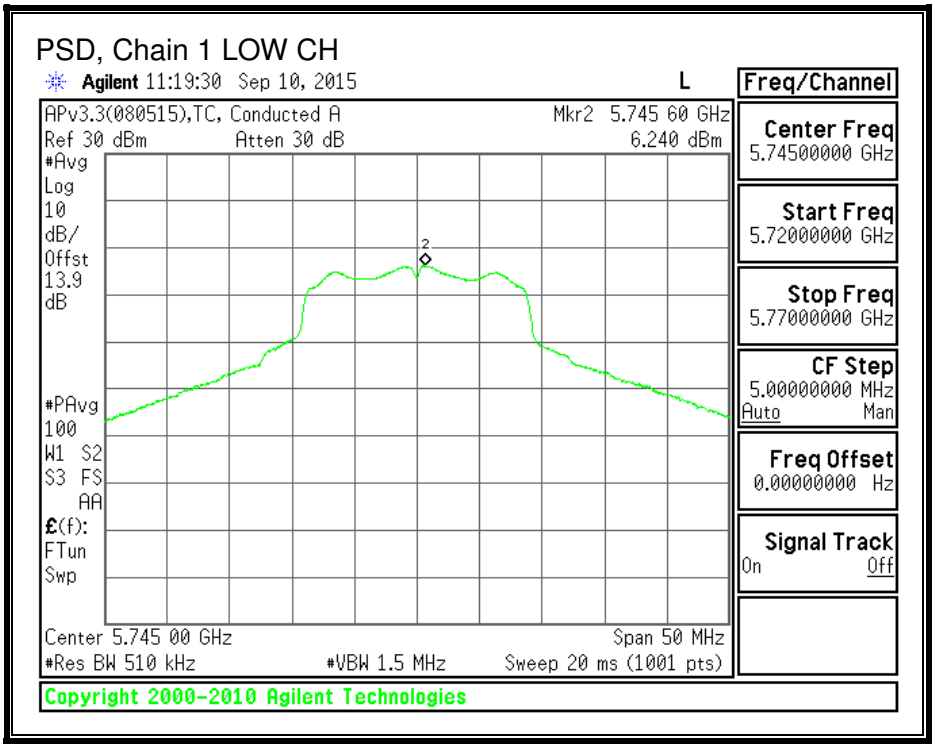
PSD, Chain 0



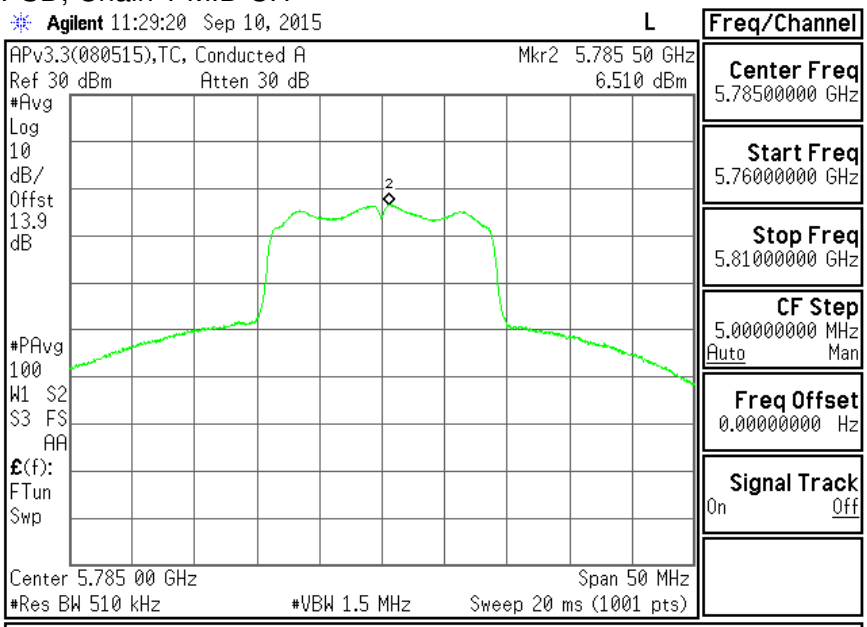




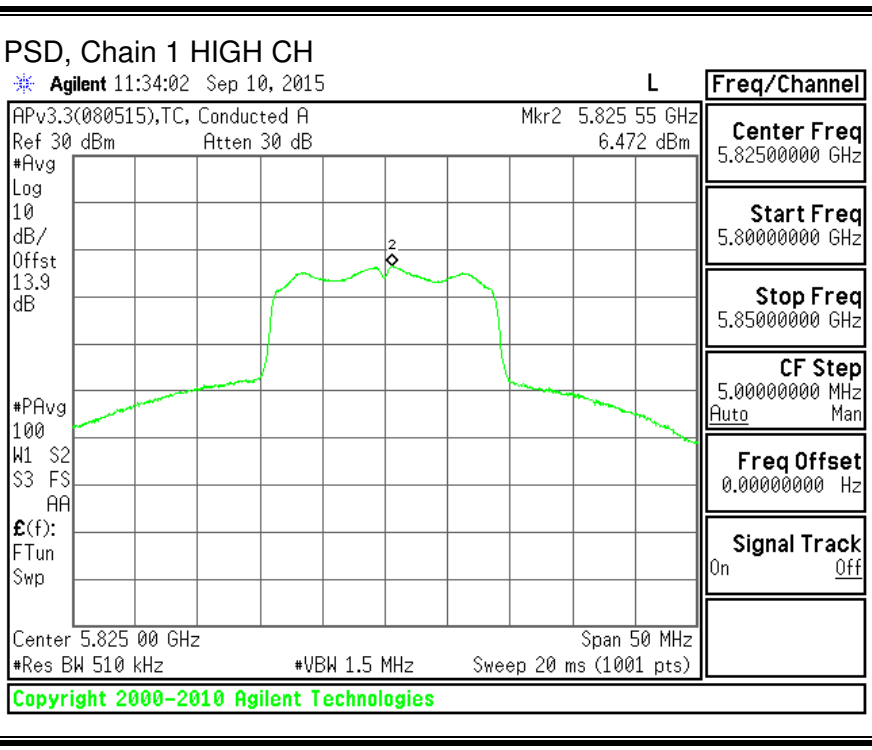
PSD, Chain 1



PSD, Chain 1 MID CH



PSD, Chain 1 HIGH CH



8.17. 802.11n HT40 1Tx MODE IN THE 5.8 GHz BAND

8.17.1. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) = 4.2 dBi

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5755	4.20	30.00
High	5795	4.20	30.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5755	10.35	14.55	30.00	-15.45
High	5795	16.85	21.05	30.00	-8.95

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.18. 802.11n HT40 CDD 2Tx MODE IN THE 5.8 GHz BAND

8.18.1. 6 dB BANDWIDTH

LIMITS

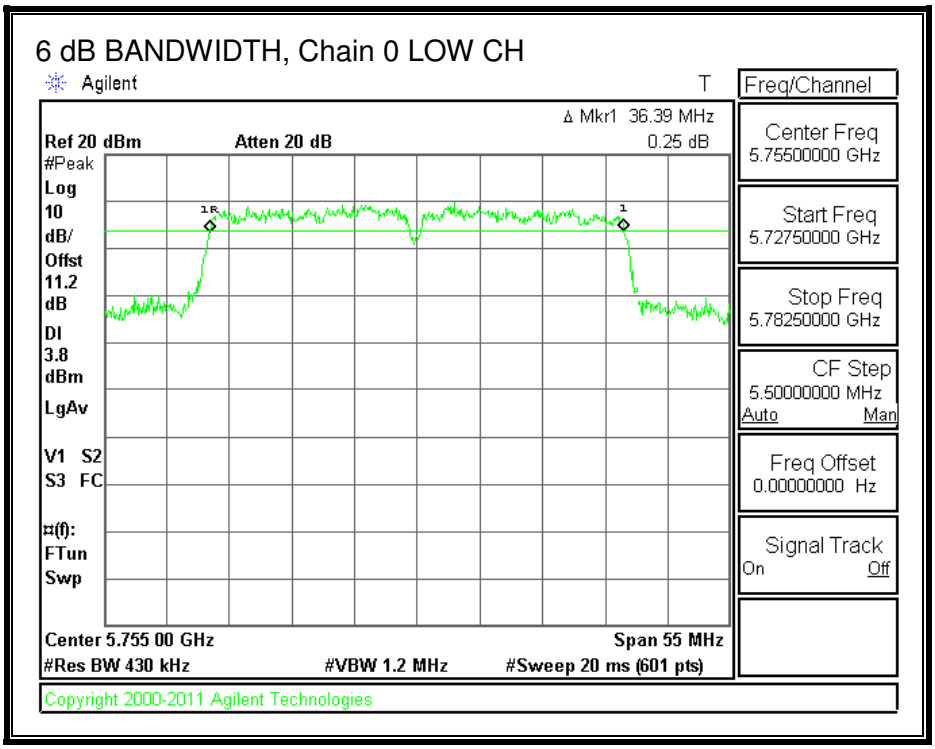
FCC §15.407 (e)

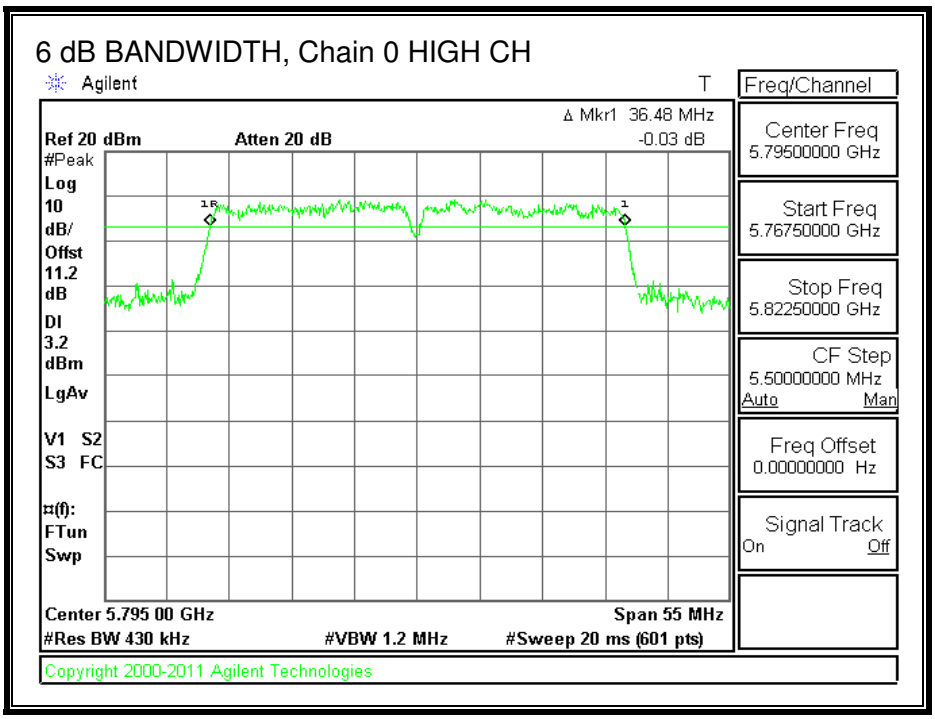
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

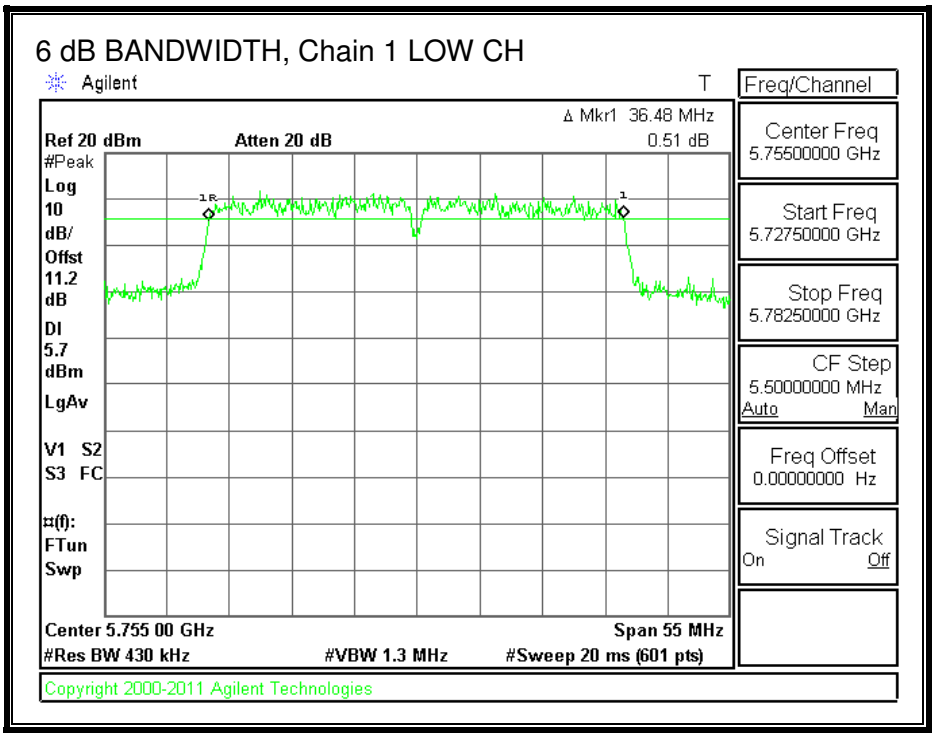
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5755	36.39	36.48	0.5
High	5795	36.48	36.30	0.5

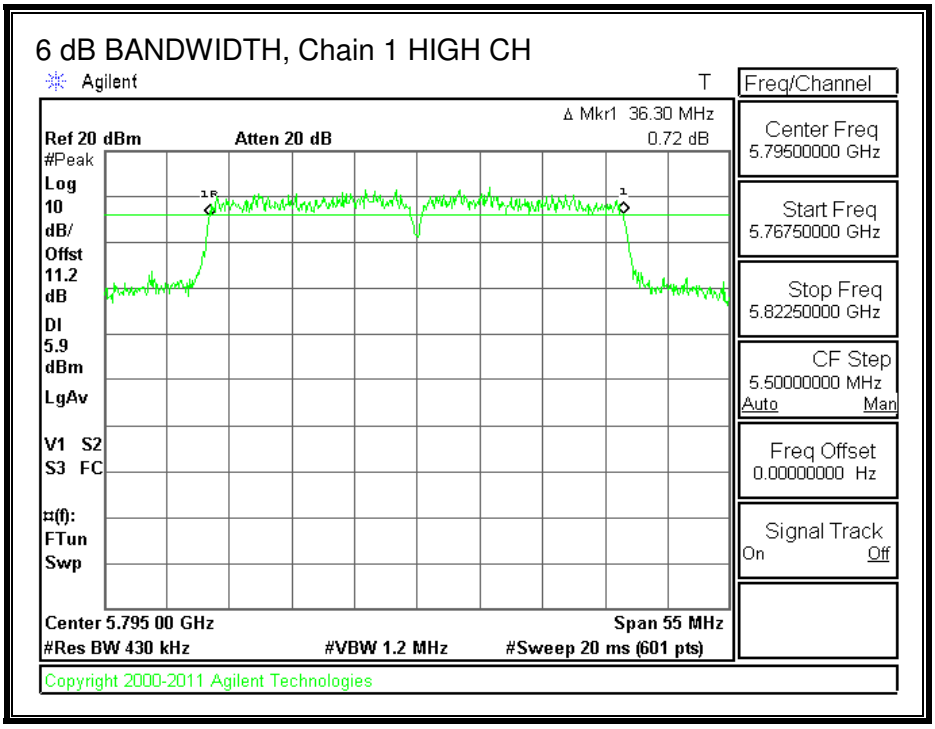
6 dB BANDWIDTH, Chain 0





6 dB BANDWIDTH, Chain 1





8.18.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain, 4.2 dBi.

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5755	4.20	30.00
High	5795	4.20	30.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5755	8.06	9.32	11.75	30.00	-18.25
High	5795	17.12	18.02	20.60	30.00	-9.40

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.18.3. Maximum Power Spectral Density (PSD)

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.20	3.01	7.21

RESULTS

Antenna Gain and Limit

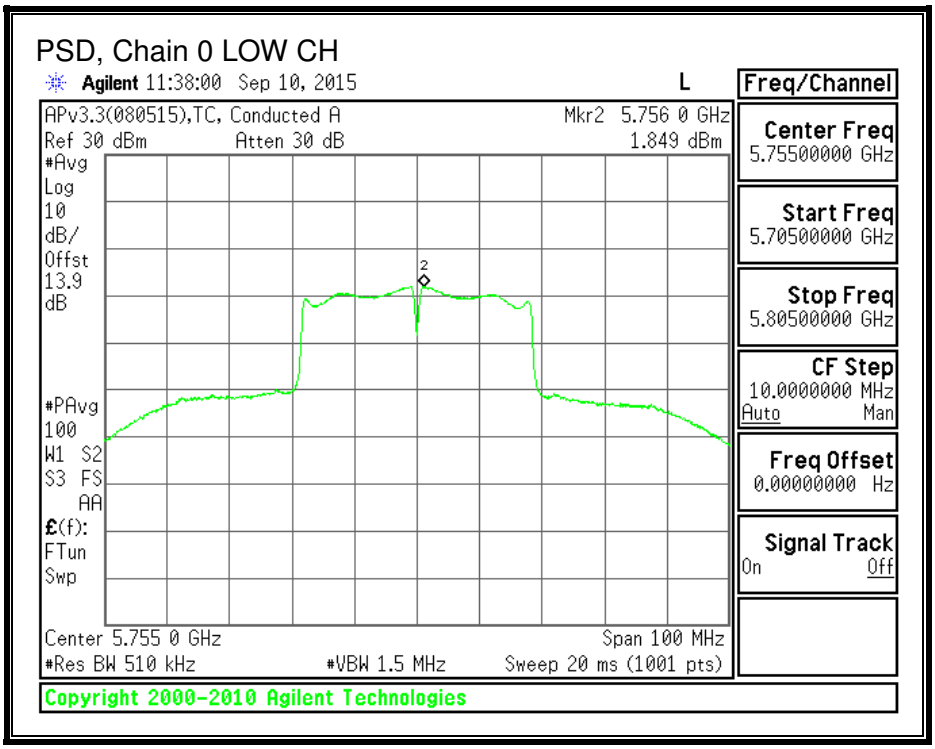
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5755	7.21	28.79
High	5795	7.21	28.79

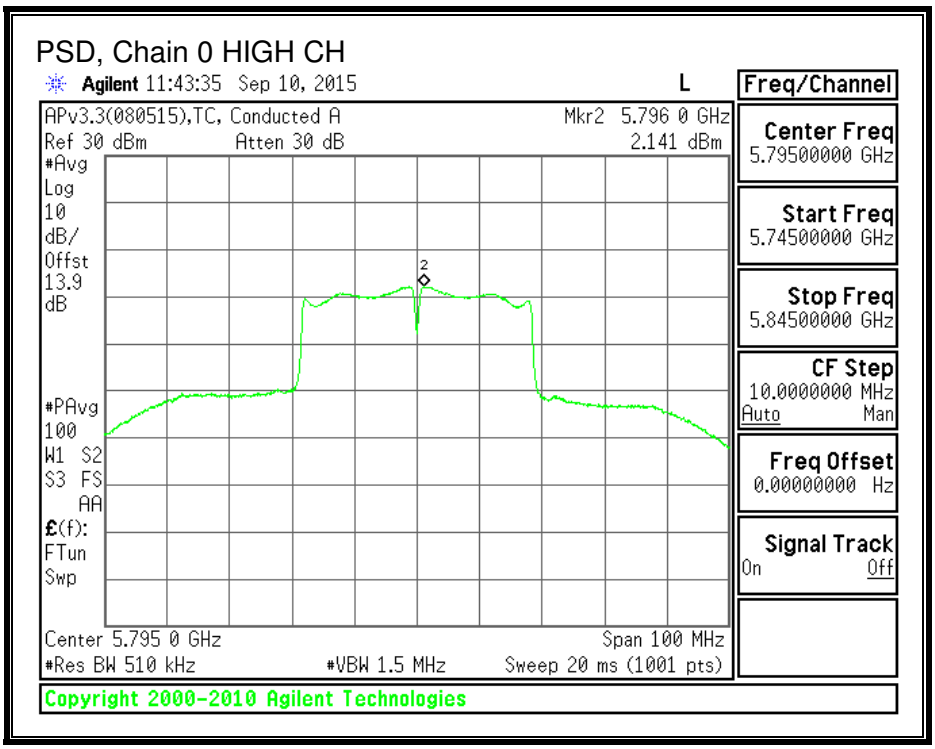
Duty Cycle CF (dB)	0.12	Included in Calculations of Corr'd PSD

PSD Results

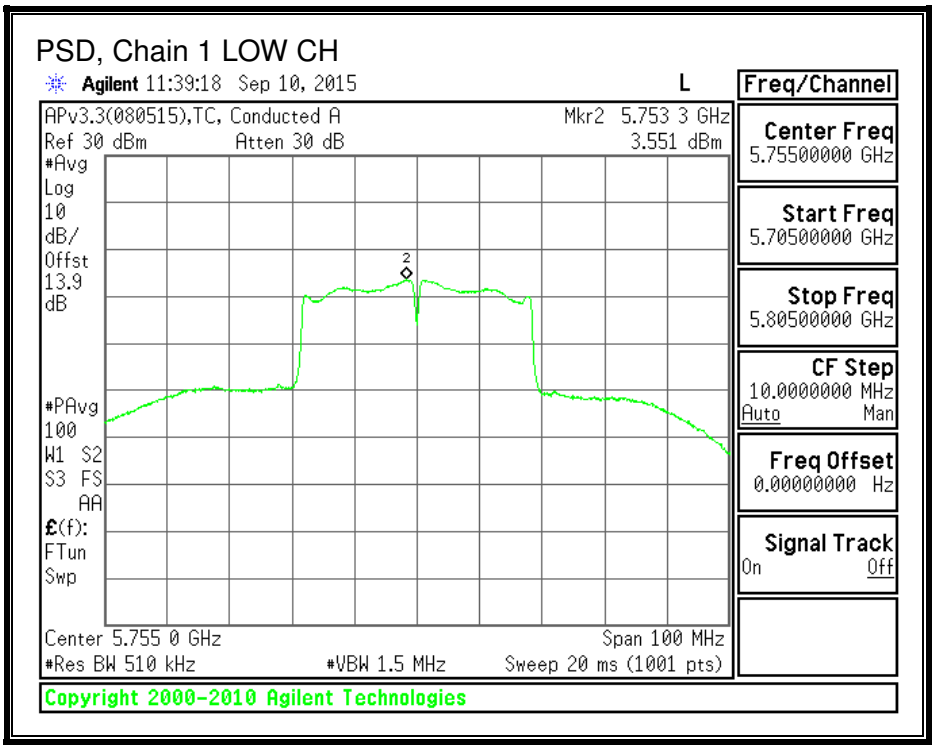
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5755	1.849	3.551	5.91	28.79	-22.88
High	5795	2.141	3.491	6.00	28.79	-22.79

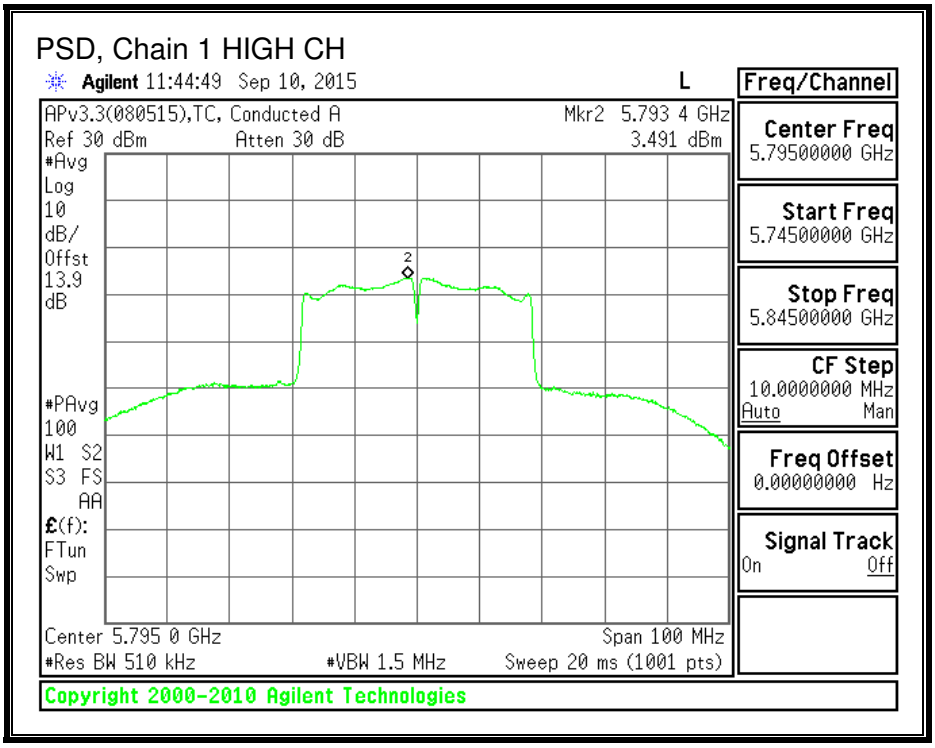
PSD, Chain 0





PSD, Chain 1





9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

For non-restricted out-of-band emissions in the 5.725-5.85 GHz band, the applied limits were either in accordance with the ones above or with FCC §15.407(b)(4). See below.

§15.407(b)(4)

For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters.

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.

Reference to KDB KD789033 D02 v01r01 UNII part G) 6) c) Method AD:

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor to the reading offset for average measurements.

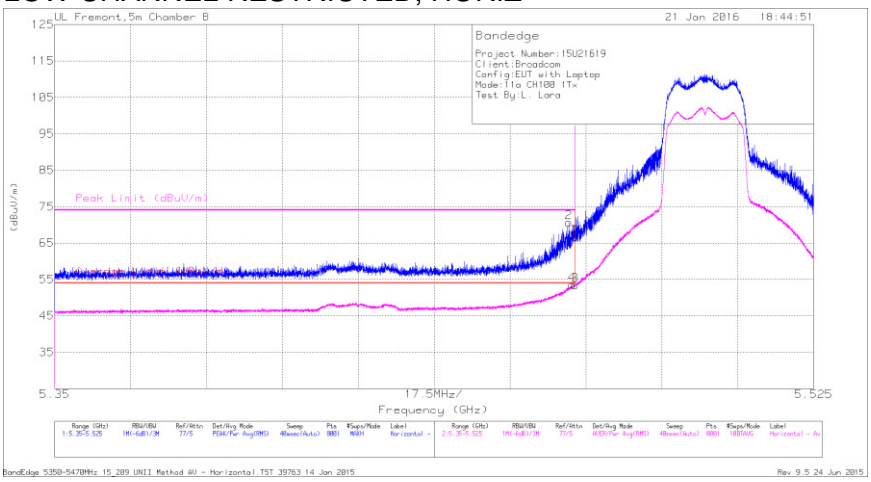
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

9.1. TX ABOVE 1 GHz 802.11a 1TX MODE IN THE 5.6 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



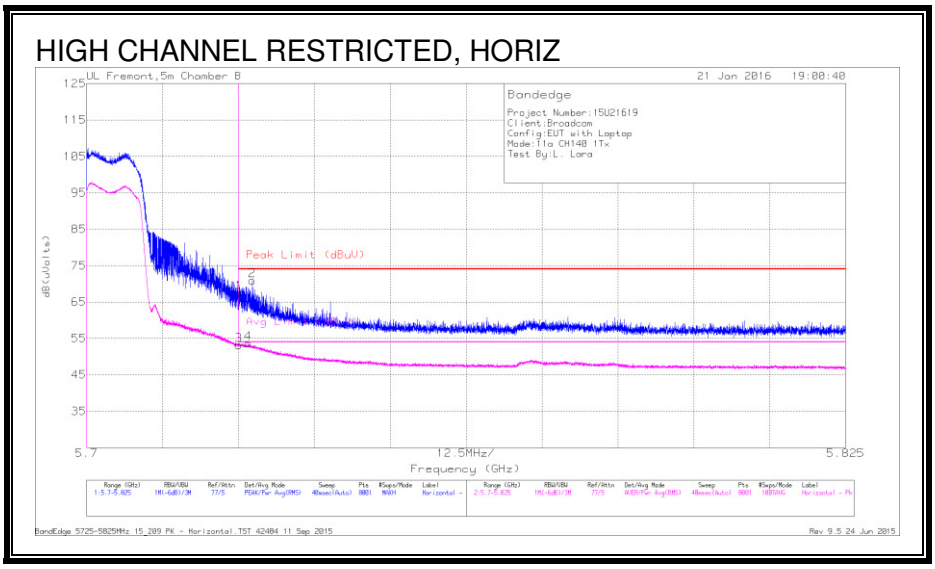
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.469	29.01	Pk	34.5	7.2	0	70.71	-	-	74	-3.29	248	156	H
4	5.469	11.79	RMS	34.5	7.2	0	53.49	54	-.51	-	-	248	156	H
1	5.47	24.97	Pk	34.5	7.2	0	66.67	-	-	74	-7.33	248	156	H
3	5.47	11.75	RMS	34.5	7.2	0	53.45	54	-.55	-	-	248	156	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading dB(uVolts)	Peak Limit (dBuV)	PK Margin (dB)	Avg Limit (dBuV)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	25.19	Pk	35	7.4	0	67.59	74	-6.41	-	-	295	164	H
3	5.725	10.8	RMS	35	7.4	0	53.2	-	-	54	-.8	295	164	H
2	5.727	28.49	Pk	35	7.4	0	70.89	74	-3.11	-	-	295	164	H
4	5.727	11.27	RMS	35	7.4	0	53.67	-	-	54	-.33	295	164	H

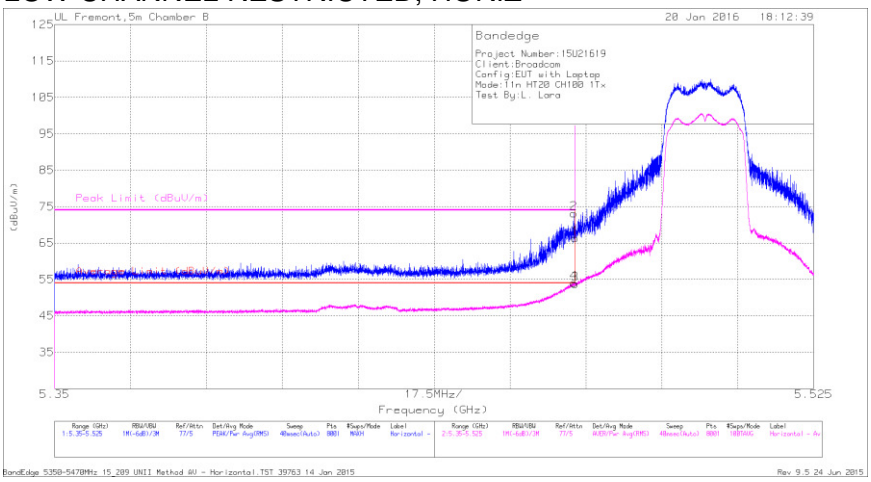
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

9.2. TX ABOVE 1 GHz 802.11n HT20 1TX MODE IN THE 5.6 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



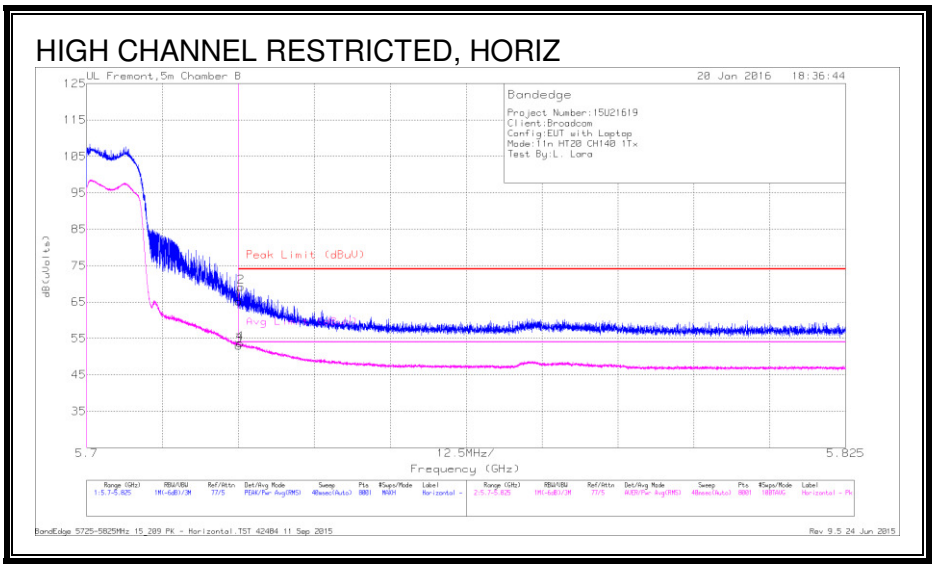
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.47	24.62	Pk	34.5	7.2	0	66.32	-	-	74	-7.68	77	146	H
2	5.47	31.48	Pk	34.5	7.2	0	73.18	-	-	74	-.82	77	146	H
3	5.47	12.03	RMS	34.5	7.2	0	53.73	54	-.27	-	-	77	146	H
4	5.47	12.27	RMS	34.5	7.2	0	53.97	54	-.03	-	-	77	146	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

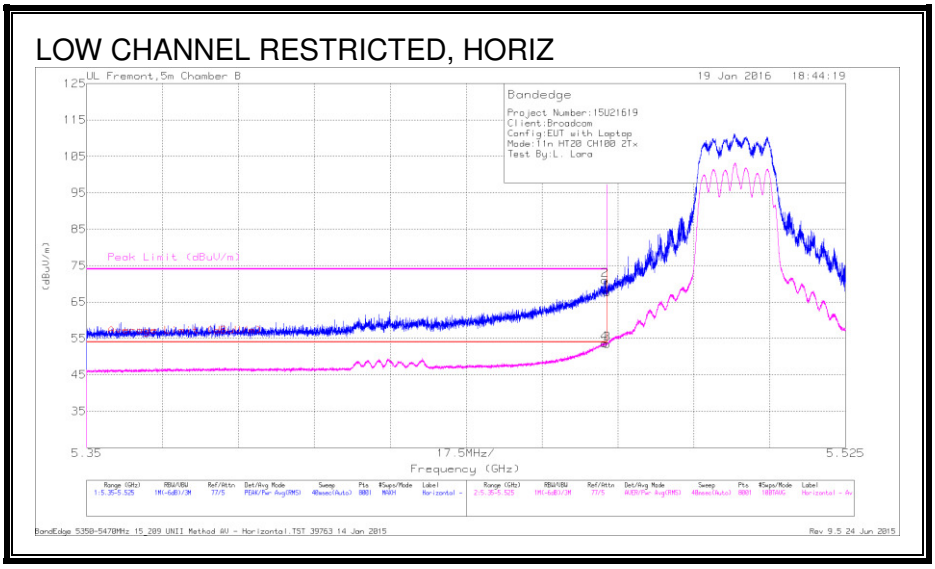
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading dB(uVolts)	Peak Limit (dBuV)	PK Margin (dB)	Avg Limit (dBuV)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	22.85	Pk	35	7.4	0	65.25	74	-8.75	-	-	84	122	H
2	5.725	26.76	Pk	35	7.4	0	69.16	74	-4.84	-	-	84	122	H
3	5.725	10.67	RMS	35	7.4	0	53.07	-	-	54	-.93	84	122	H
4	5.725	11.2	RMS	35	7.4	0	53.6	-	-	54	-.4	84	122	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

9.3. TX ABOVE 1 GHz 802.11n HT20 CDD 2TX MODE IN THE 5.6 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



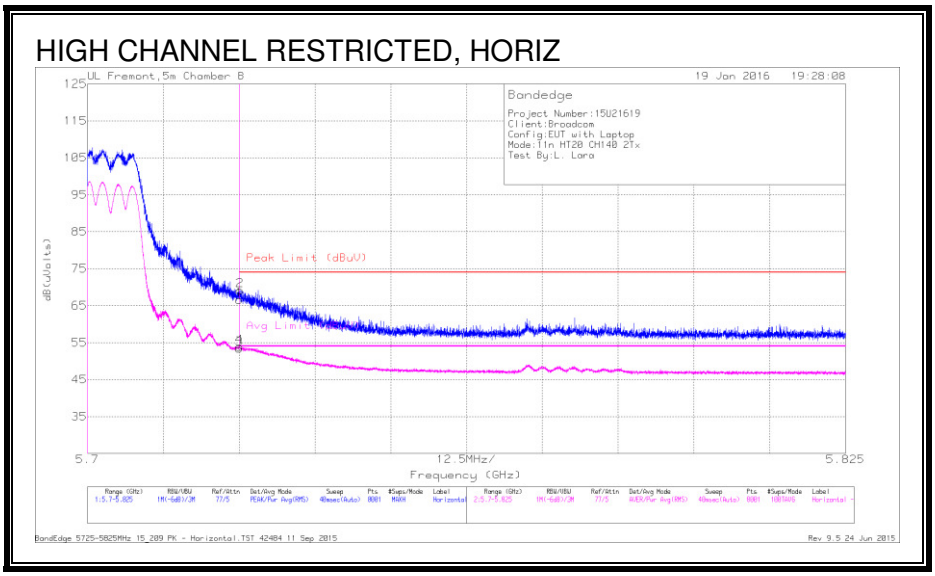
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.469	29.28	Pk	34.5	7.2	70.98	-	-	74	-3.02	257	145	H
4	5.469	12	RMS	34.5	7.2	53.7	54	-.3	-	-	257	145	H
1	5.47	25.95	Pk	34.5	7.2	67.65	-	-	74	-6.35	257	145	H
3	5.47	11.82	RMS	34.5	7.2	53.52	54	-.48	-	-	257	145	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading dB(uVolts)	Peak Limit (dBuV)	PK Margin (dB)	Avg Limit (dBuV)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	24.18	Pk	35	7.4	0	66.58	74	-7.42	-	-	261	124	H
2	5.725	26.75	Pk	35	7.4	0	69.15	74	-4.85	-	-	261	124	H
3	5.725	10.99	RMS	35	7.4	0	53.39	-	-	54	-.61	261	124	H
4	5.725	11.48	RMS	35	7.4	0	53.88	-	-	54	-.12	261	124	H

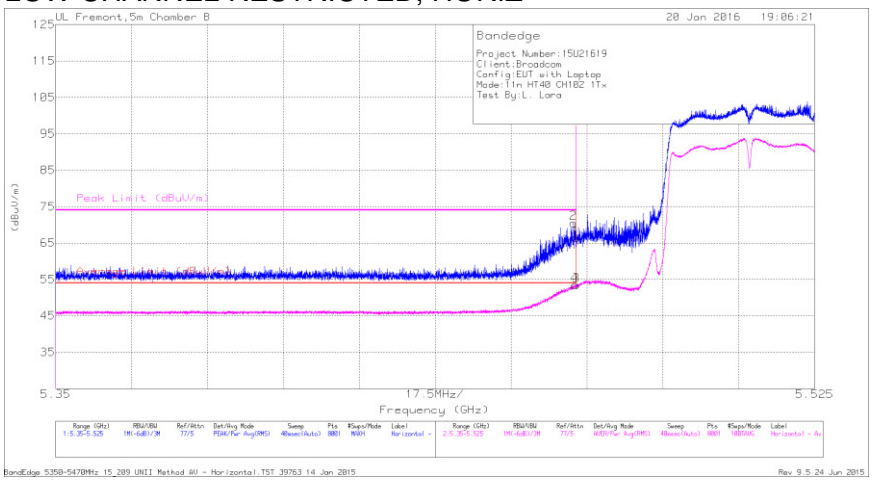
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

9.4. TX ABOVE 1 GHz 802.11n HT40 1TX MODE IN THE 5.6 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



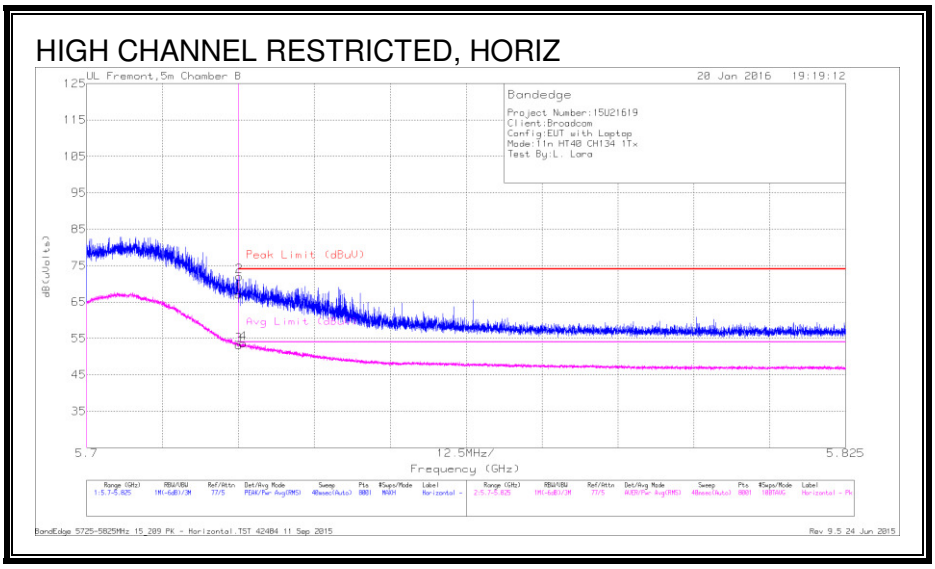
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.469	28.77	Pk	34.5	7.2	0	70.47	-	-	74	-3.53	63	138	H
1	5.47	24.77	Pk	34.5	7.2	0	66.47	-	-	74	-7.53	63	138	H
3	5.47	11.53	RMS	34.5	7.2	.12	53.35	54	-.65	-	-	63	138	H
4	5.47	11.57	RMS	34.5	7.2	.12	53.39	54	-.61	-	-	63	138	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading dB(uVolts)	Peak Limit (dBuV)	PK Margin (dB)	Avg Limit (dBuV)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	24.62	Pk	35	7.4	0	67.02	74	-6.98	-	-	81	127	H
2	5.725	29.68	Pk	35	7.4	0	72.08	74	-1.92	-	-	81	127	H
3	5.725	10.62	RMS	35	7.4	.12	53.14	-	-	54	-.86	81	127	H
4	5.726	11.14	RMS	35	7.4	.12	53.66	-	-	54	-.34	81	127	H

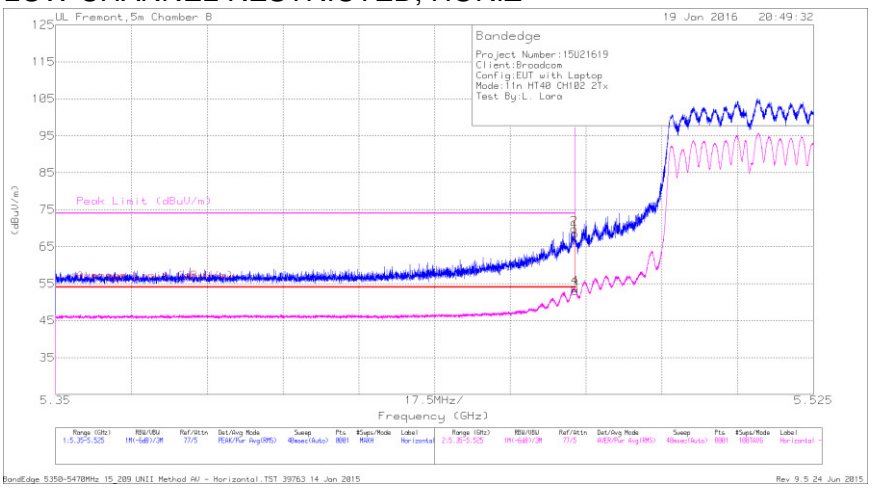
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

9.5. TX ABOVE 1 GHz 802.11n HT40 CDD 2TX MODE IN THE 5.6 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



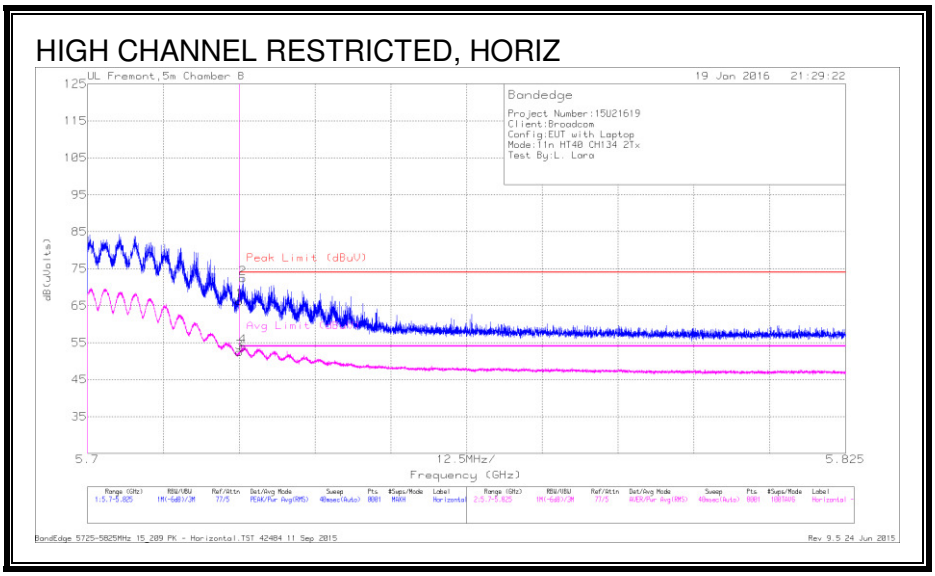
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.47	26.88	Pk	34.5	7.2	0	68.58	-	-	74	-5.42	257	103	H
2	5.47	28.22	Pk	34.5	7.2	0	69.92	-	-	74	-4.08	257	103	H
3	5.47	11.28	RMS	34.5	7.2	.12	53.1	54	-.9	-	-	257	103	H
4	5.47	12	RMS	34.5	7.2	.12	53.82	54	-.18	-	-	257	103	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading dB(uVolts)	Peak Limit (dBuV)	PK Margin (dB)	Avg Limit (dBuV)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	23.86	Pk	35	7.4	0	66.26	74	-7.74	-	-	261	138	H
3	5.725	9.92	RMS	35	7.4	.12	52.44	-	-	54	-1.56	261	138	H
2	5.726	30.01	Pk	35	7.4	0	72.41	74	-1.59	-	-	261	138	H
4	5.726	11.42	RMS	35	7.4	.12	53.94	-	-	54	-.06	261	138	H

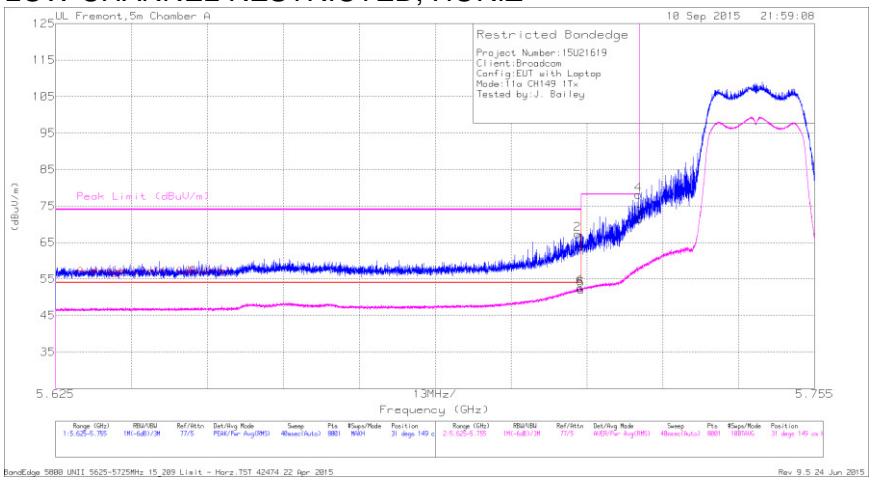
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector
RMS - RMS detection

9.6. TX ABOVE 1 GHz 802.11a 1Tx MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



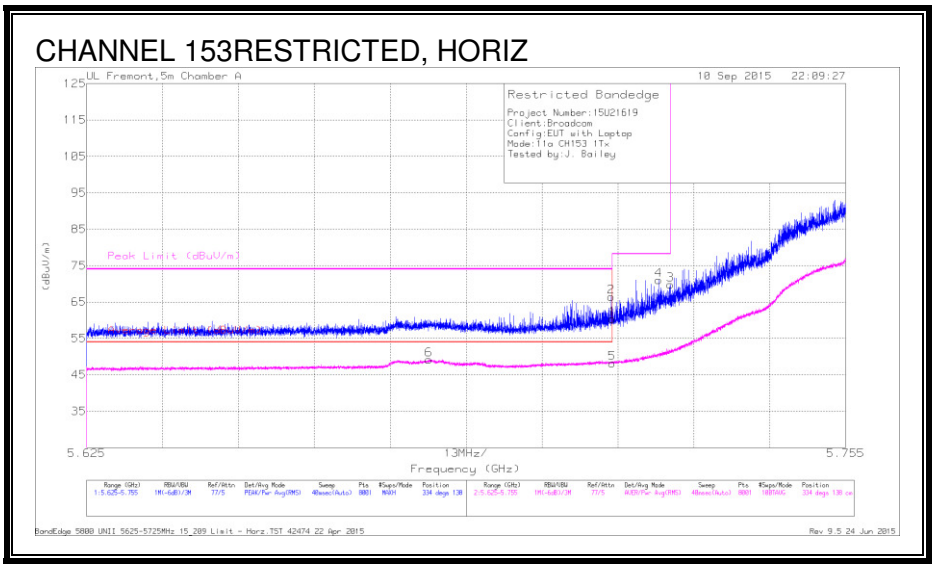
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	24.82	Pk	34.7	7.8	67.32	-	-	74	-6.68	31	149	H
1	5.715	21.64	Pk	34.7	7.8	64.14	-	-	74	-9.86	31	149	H
5	5.715	9.51	RMS	34.7	7.8	52.01	54	-1.99	-	-	31	149	H
6	5.715	10.06	RMS	34.7	7.8	52.56	54	-1.44	-	-	31	149	H
3	5.725	28.88	Pk	34.7	7.8	71.38	-	-	78.2	-6.82	31	149	H
4	5.725	35.63	Pk	34.7	7.8	78.13	-	-	78.2	-.07	31	149	H

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (CHANNEL 153)



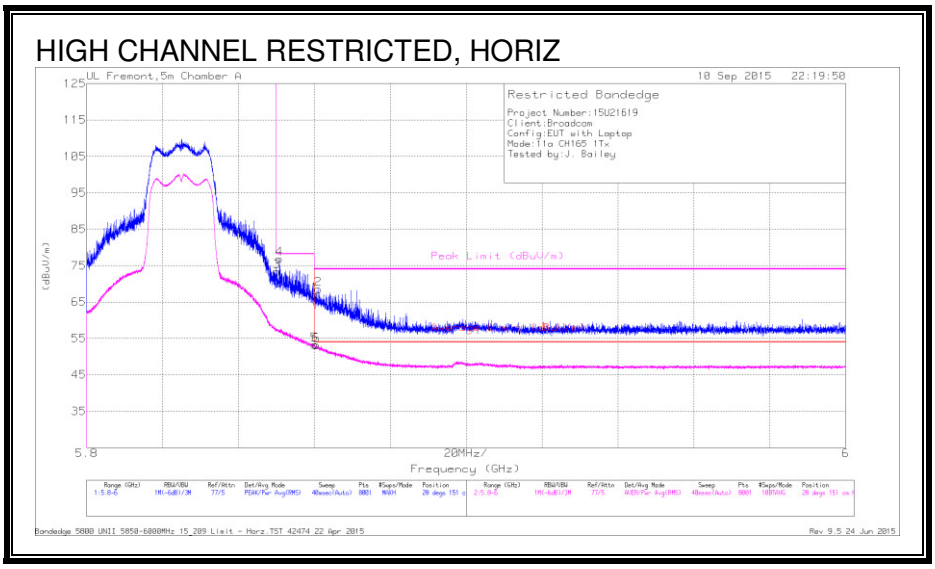
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	5.684	6.93	RMS	34.6	7.7	49.23	54	-4.77	-	-	334	138	H
1	5.715	17.82	Pk	34.7	7.8	60.32	-	-	74	-13.68	334	138	H
2	5.715	23.9	Pk	34.7	7.8	66.4	-	-	74	-7.6	334	138	H
5	5.715	5.71	RMS	34.7	7.8	48.21	54	-5.79	-	-	334	138	H
4	5.723	28.55	Pk	34.7	7.8	71.05	-	-	78.2	-7.15	334	138	H
3	5.725	27.28	Pk	34.7	7.8	69.78	-	-	78.2	-8.42	334	138	H

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	5.85	30.39	Pk	35.1	7.9	73.39	-	-	78.2	-4.81	28	151	H
4	5.851	33.89	Pk	35.1	7.9	76.89	-	-	78.2	-1.31	28	151	H
1	5.86	24.03	Pk	35.1	7.9	67.03	-	-	74	-6.97	28	151	H
5	5.86	10.25	RMS	35.1	7.9	53.25	54	-.75	-	-	28	151	H
2	5.861	25.59	Pk	35.1	7.9	68.59	-	-	74	-5.41	28	151	H
6	5.861	10.14	RMS	35.1	7.9	53.14	54	-.86	-	-	28	151	H

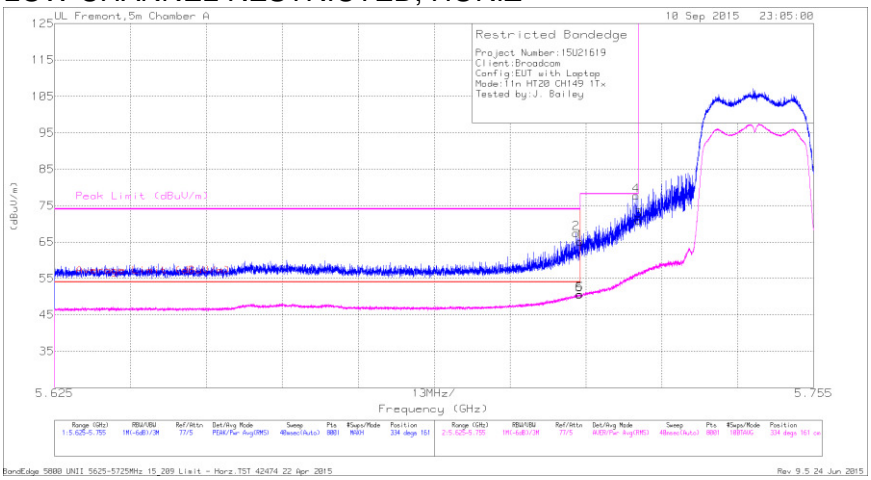
Pk - Peak detector

RMS - RMS detection

9.7. TX ABOVE 1 GHz 802.11n HT20 1Tx MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



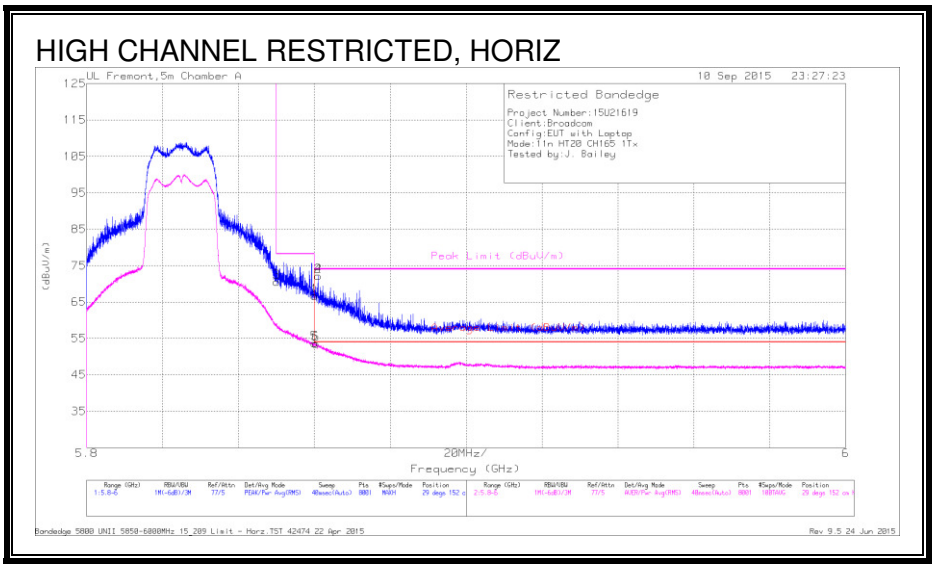
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	24.88	Pk	34.7	7.8	67.38	-	-	74	-6.62	334	161	H
1	5.715	22.57	Pk	34.7	7.8	65.07	-	-	74	-8.93	334	161	H
5	5.715	8.15	RMS	34.7	7.8	50.65	54	-3.35	-	-	334	161	H
6	5.715	8.05	RMS	34.7	7.8	50.55	54	-3.45	-	-	334	161	H
3	5.725	28.43	Pk	34.7	7.8	70.93	-	-	78.2	-7.27	334	161	H
4	5.725	35.21	Pk	34.7	7.8	77.71	-	-	78.2	-.49	334	161	H

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	5.85	27.51	Pk	35.1	7.9	70.51	-	-	78.2	-7.69	29	152	H
1	5.86	23.71	Pk	35.1	7.9	66.71	-	-	74	-7.29	29	152	H
5	5.86	10.62	RMS	35.1	7.9	53.62	54	-.38	-	-	29	152	H
6	5.86	10.54	RMS	35.1	7.9	53.54	54	-.46	-	-	29	152	H
2	5.861	29.19	Pk	35.1	7.9	72.19	-	-	74	-1.81	29	152	H
4	5.861	29.19	Pk	35.1	7.9	72.19	-	-	74	-1.81	29	152	H

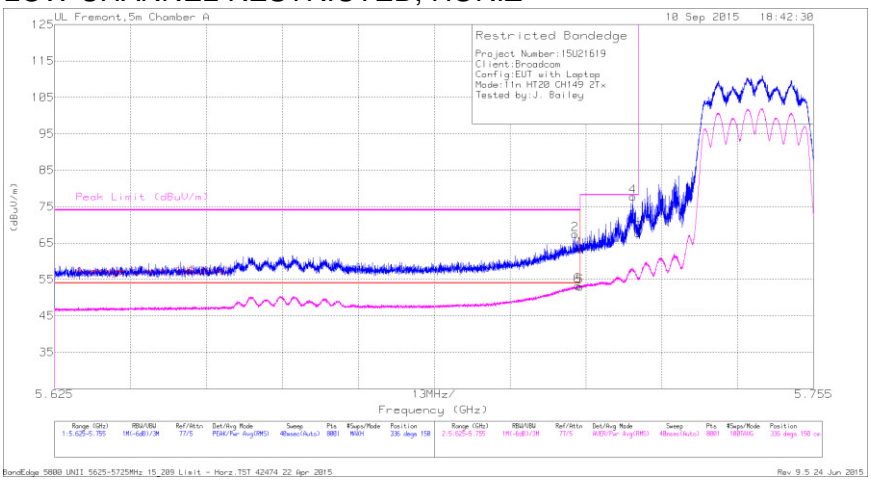
Pk - Peak detector

RMS - RMS detection

9.8. TX ABOVE 1 GHz 802.11n HT20 CDD 2TX MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



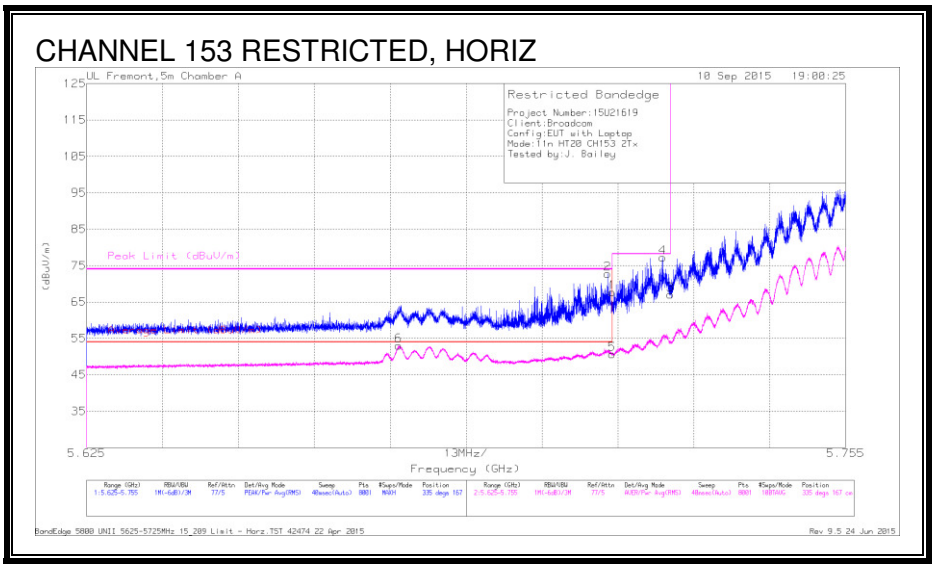
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	24.87	Pk	34.7	7.8	67.37	-	-	74	-6.63	336	150	H
1	5.715	20.78	Pk	34.7	7.8	63.28	-	-	74	-10.72	336	150	H
5	5.715	10.5	RMS	34.7	7.8	53	54	-1	-	-	336	150	H
6	5.715	10.83	RMS	34.7	7.8	53.33	54	-.67	-	-	336	150	H
4	5.724	35.19	Pk	34.7	7.8	77.69	-	-	78.2	-.51	336	150	H
3	5.725	25.16	Pk	34.7	7.8	67.66	-	-	78.2	-10.54	336	150	H

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (CHANNEL 153)



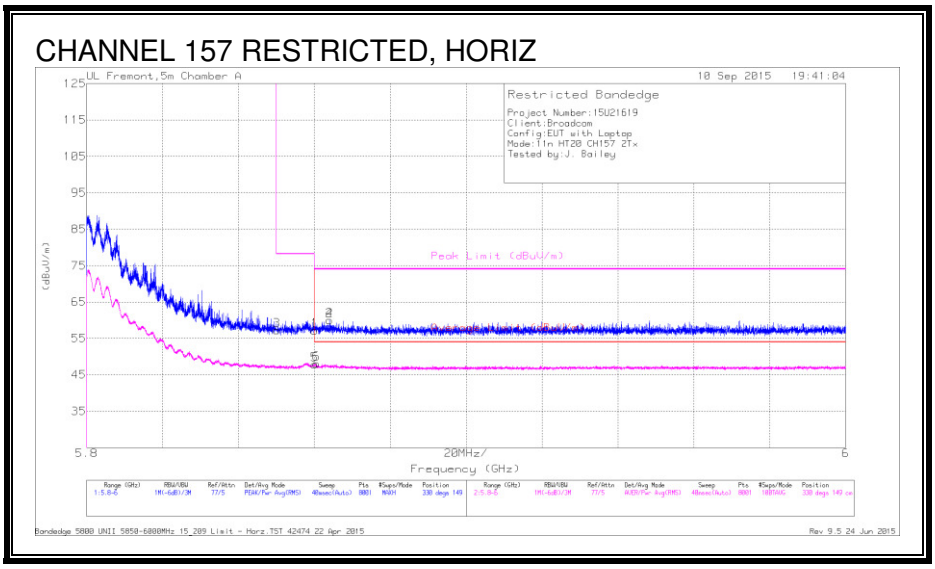
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	5.678	10.66	RMS	34.6	7.8	53.06	54	-.94	-	-	335	167	H
2	5.714	30.23	Pk	34.7	7.8	72.73	-	-	74	-1.27	335	167	H
1	5.715	25.13	Pk	34.7	7.8	67.63	-	-	74	-6.37	335	167	H
5	5.715	8.22	RMS	34.7	7.8	50.72	54	-3.28	-	-	335	167	H
4	5.724	34.73	Pk	34.7	7.8	77.23	-	-	78.2	-.97	335	167	H
3	5.725	24.6	Pk	34.7	7.8	67.1	-	-	78.2	-11.1	335	167	H

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (CHANNEL 157)



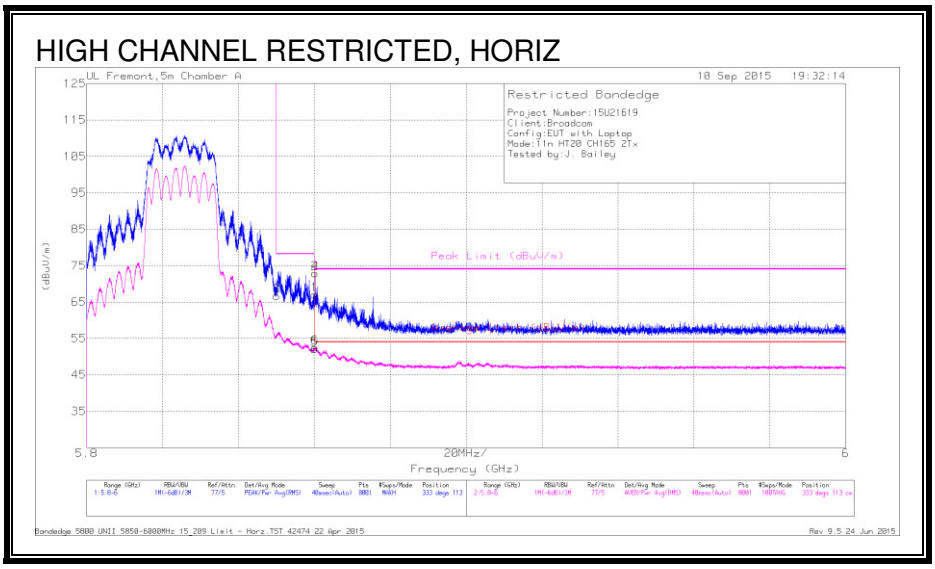
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	5.85	14.28	Pk	35.1	7.9	57.28	-	-	78.2	-20.92	330	149	H
1	5.86	14.18	Pk	35.1	7.9	57.18	-	-	74	-16.82	330	149	H
5	5.86	4.76	RMS	35.1	7.9	47.76	54	-6.24	-	-	330	149	H
6	5.861	5	RMS	35.1	7.9	48	54	-6	-	-	330	149	H
2	5.864	17.01	Pk	35.1	7.9	60.01	-	-	74	-13.99	330	149	H
4	5.864	17.01	Pk	35.1	7.9	60.01	-	-	74	-13.99	330	149	H

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	5.85	23.63	Pk	35.1	7.9	66.63	-	-	78.2	-11.57	333	113	H
1	5.86	24	Pk	35.1	7.9	67	-	-	74	-7	333	113	H
2	5.86	29.9	Pk	35.1	7.9	72.9	-	-	74	-1.1	333	113	H
4	5.86	29.9	Pk	35.1	7.9	72.9	-	-	74	-1.1	333	113	H
5	5.86	9.06	RMS	35.1	7.9	52.06	54	-1.94	-	-	333	113	H
6	5.86	9.57	RMS	35.1	7.9	52.57	54	-1.43	-	-	333	113	H

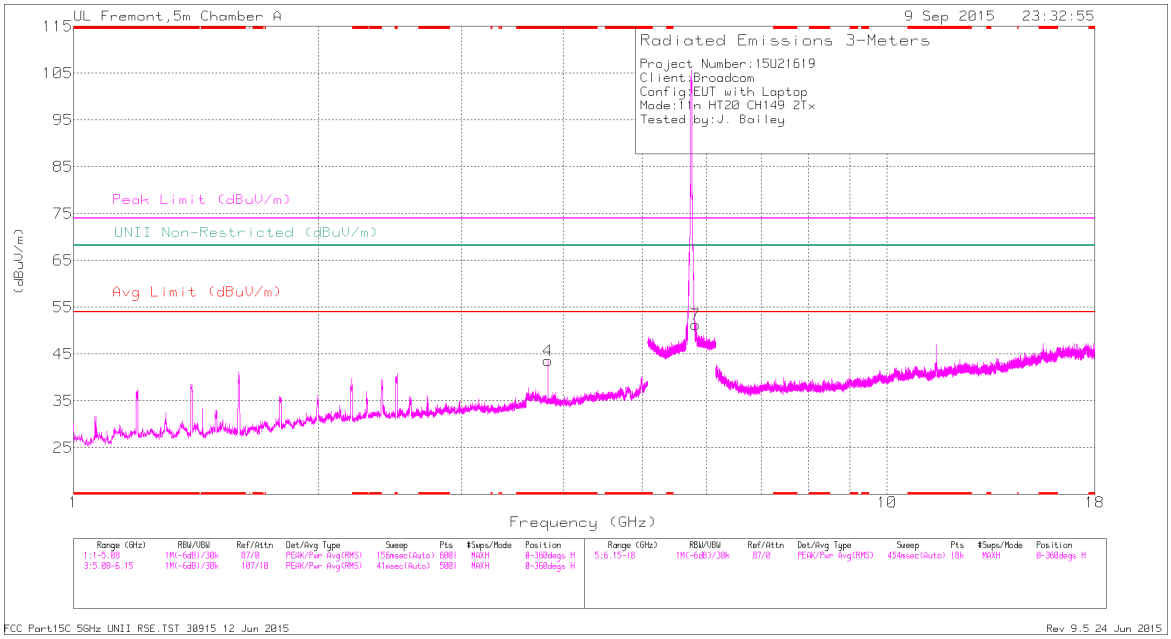
Pk - Peak detector

RMS - RMS detection

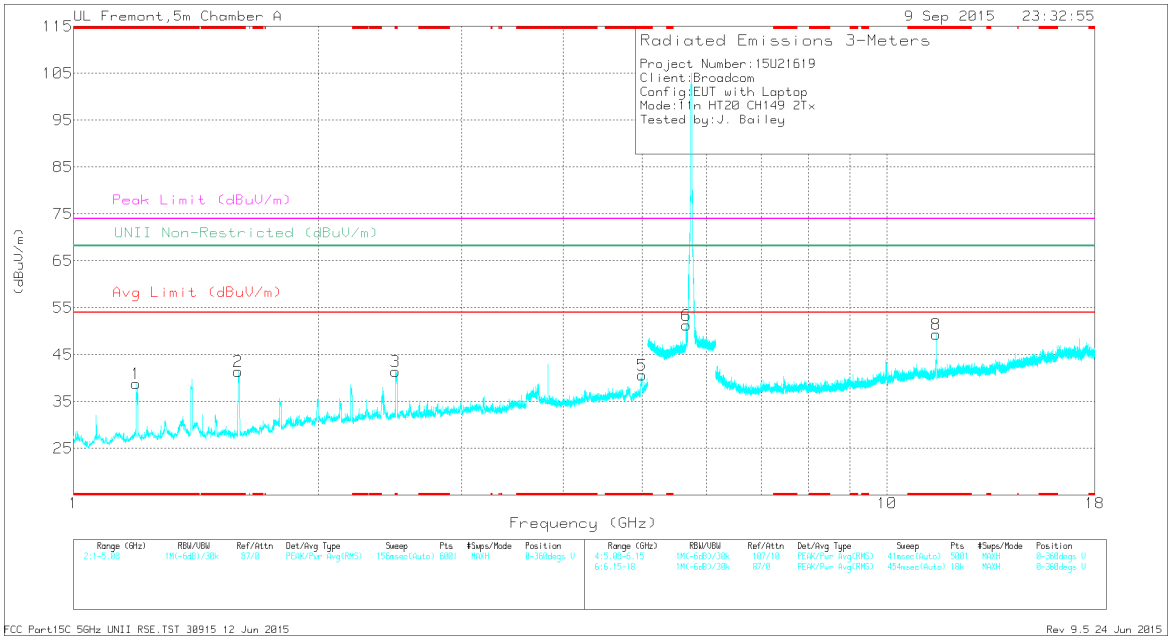
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL

HORIZONTAL



VERTICAL



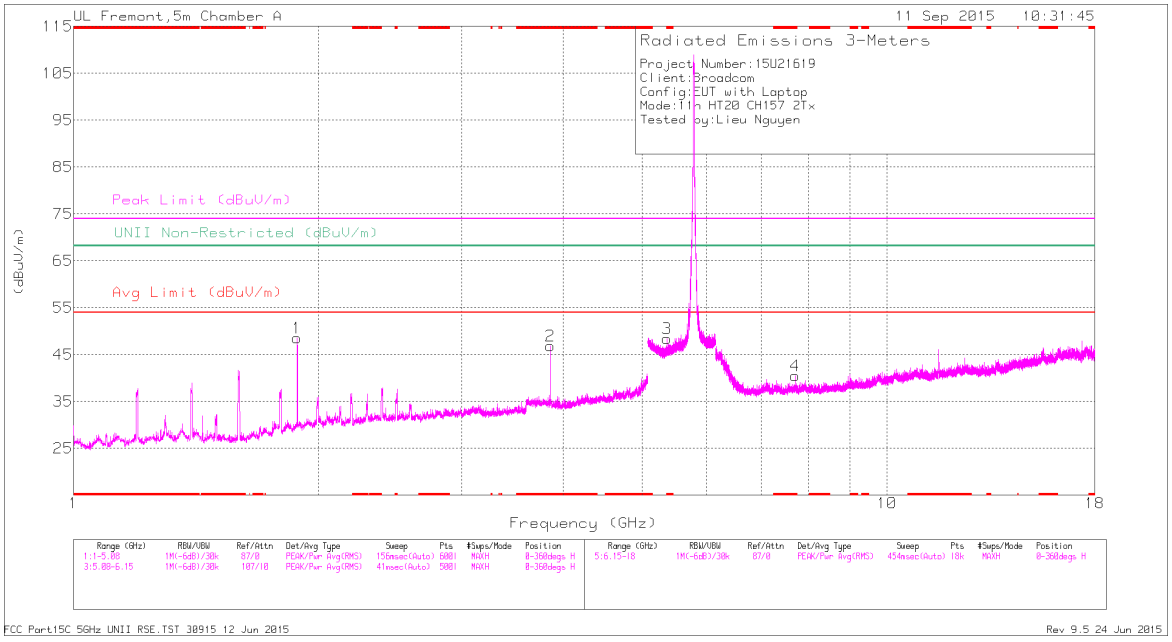
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 3.83	47.99	PK-U	33.4	-31.8	49.59	-	-	74	-24.41	-	-	66	158	H
	* 3.83	43.18	ADR	33.4	-31.8	44.78	54	-9.22	-	-	-	-	66	158	H
2	* 1.198	52.08	PK-U	28	-36	44.08	-	-	74	-29.92	-	-	146	124	V
	* 1.199	39.8	ADR	28	-36	31.8	54	-22.2	-	-	-	-	146	124	V
8	* 1.597	56.16	PK-U	27.9	-35.5	48.56	-	-	74	-25.44	-	-	291	165	V
	* 1.596	37.27	ADR	27.9	-35.5	29.67	54	-24.33	-	-	-	-	291	165	V
3	* 2.491	50.94	PK-U	32.1	-34.4	48.64	-	-	74	-25.36	-	-	188	107	V
	* 2.49	39.04	ADR	32.1	-34.4	36.74	54	-17.26	-	-	-	-	188	107	V
4	* 4.977	44.23	PK-U	34	-29.2	49.03	-	-	74	-24.97	-	-	247	112	V
	* 4.979	31.08	ADR	34	-29.2	35.88	54	-18.12	-	-	-	-	247	112	V
5	* 11.49	40.07	PK-U	38	-22.6	55.47	-	-	74	-18.53	-	-	27	380	V
	* 11.49	28.65	ADR	38	-22.6	44.05	54	-9.95	-	-	-	-	27	380	V
6	**5.664	37.74	Pk	34.6	-21	51.34	-	-	-	-	68.2	-16.86	0-360	100	V
7	***5.817	36.72	Pk	35	-20.4	51.32	-	-	-	-	-	-	0-360	100	H

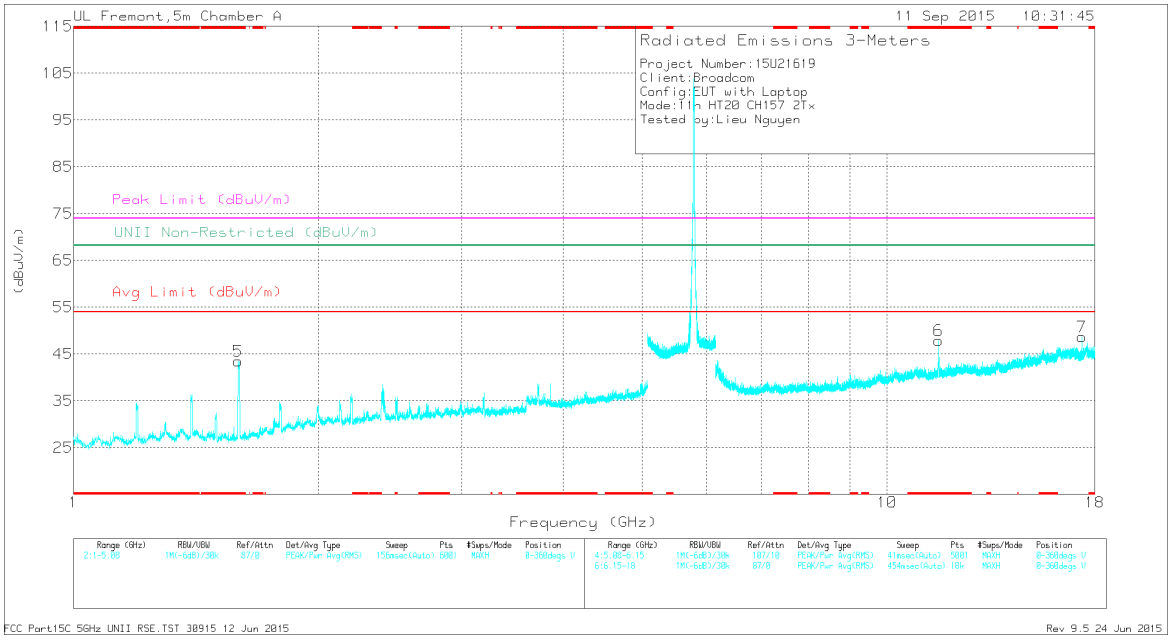
* - indicates frequency in CFR15.205/ IC8.10 Restricted Band.
** - indicates frequency covered by Radiated Band Edge
*** - indicates frequency within the operating band
Pk - Peak detector

MID CHANNEL

HORIZONTAL



VERTICAL



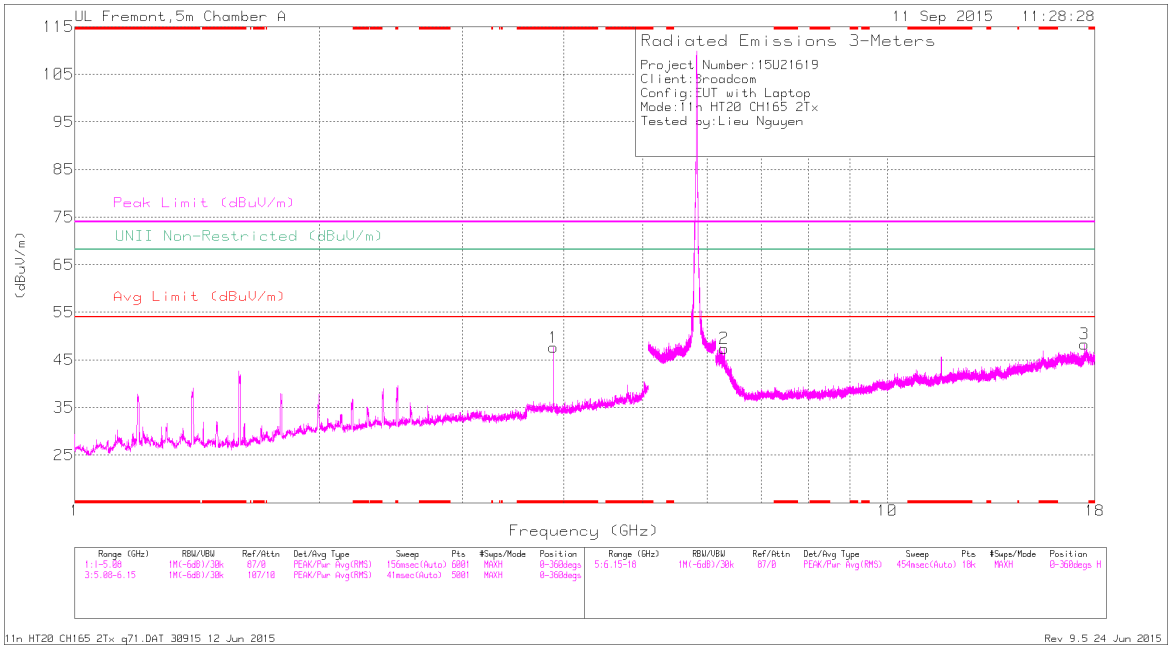
Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
2	* 3.857	50.38	PK-U	33.4	-31.9	0	51.88	-	-	74	-22.12	-	-	355	160	H
	* 3.857	46.1	ADR	33.4	-31.9	0	47.6	54	-6.4	-	-	-	-	355	160	H
5	* 1.594	60.49	PK-U	27.9	-35.5	0	52.89	-	-	74	-21.11	-	-	284	101	V
	* 1.593	47.02	ADR	27.9	-35.5	0	39.42	54	-14.58	-	-	-	-	284	101	V
3	* 5.362	44.2	PK-U	34.6	-20.9	0	57.9	-	-	74	-16.1	-	-	332	133	H
	* 5.36	31.64	ADR	34.6	-20.9	0	45.34	54	-8.66	-	-	-	-	332	133	H
4	* 7.712	38.58	PK-U	35.7	-26	0	48.28	-	-	74	-25.72	-	-	80	108	H
	* 7.713	28.66	ADR	35.7	-26.1	0	38.26	54	-15.74	-	-	-	-	80	108	H
6	* 11.574	42.43	PK-U	38.1	-22.8	0	57.73	-	-	74	-16.27	-	-	351	213	V
	* 11.572	30.68	ADR	38.1	-22.8	0	45.98	54	-8.02	-	-	-	-	351	213	V
1	1.885	43.78	PK-U	30.7	-35.3	0	39.18	-	-	-	-	68.2	-29.02	262	299	H
7	17.348	37.25	PK-U	41.3	-23	0	55.55	-	-	-	-	68.2	-12.65	15	234	V

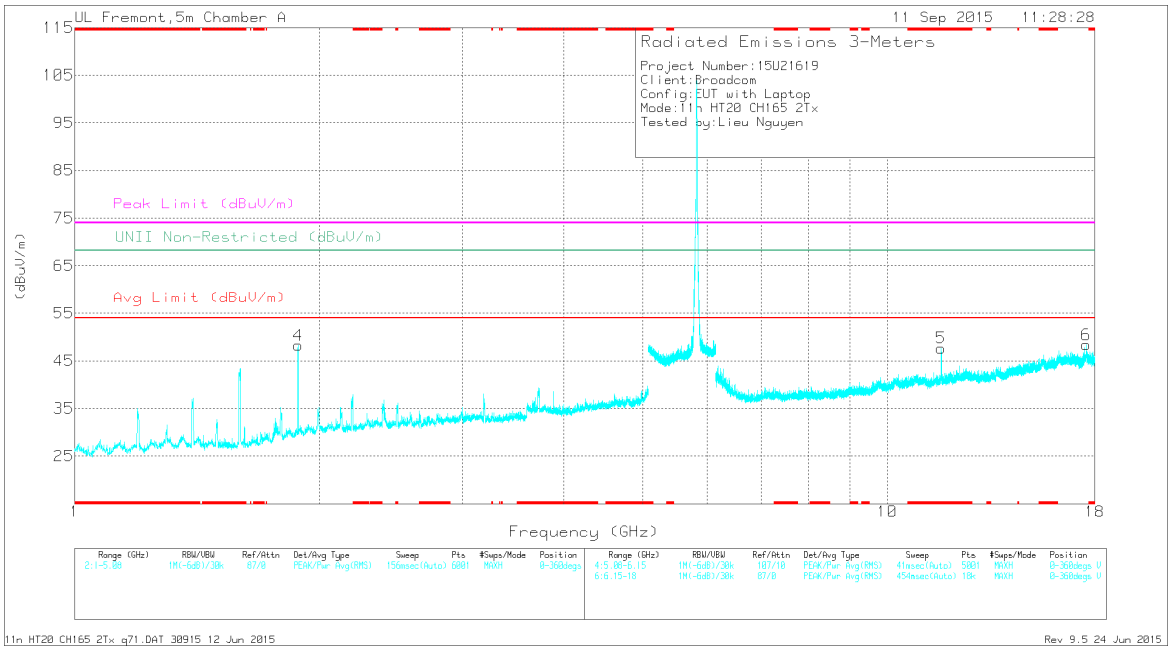
* - indicates frequency in CFR15.205/ IC8.10 Restricted Band.
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

HIGH CHANNEL

HORIZONTAL



VERTICAL



Radiated Emissions

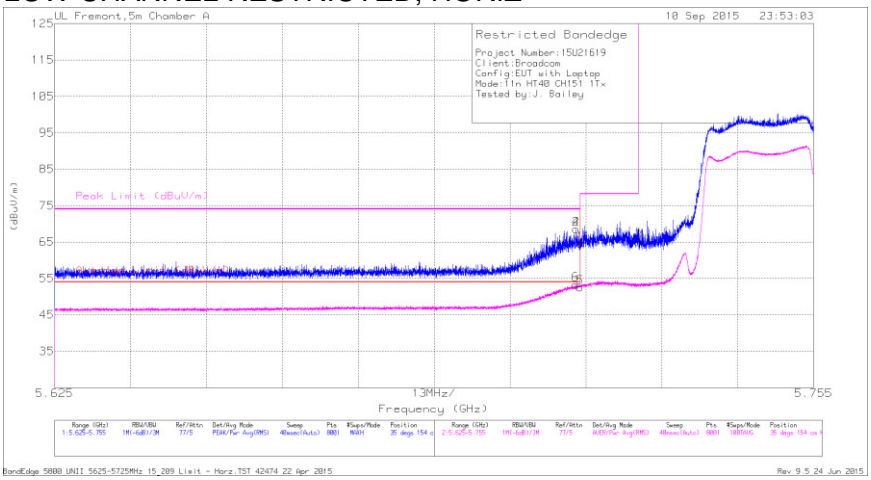
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.883	50.78	PK-U	33.5	-32.3	0	51.98	-	-	74	-22.02	-	-	355	153	H
	* 3.883	46.31	ADR	33.5	-32.3	0	47.51	54	-6.49	-	-	-	-	355	153	H
5	* 11.65	42.22	PK-U	38.2	-22.4	0	58.02	-	-	74	-15.98	-	-	295	119	V
	* 11.649	30.14	ADR	38.2	-22.4	0	45.94	54	-8.06	-	-	-	-	295	119	V
4	1.882	43.78	PK-U	30.7	-35.3	0	39.18	-	-	-	-	68.2	-29.02	266	333	V
2	6.23	46.35	PK-U	35.5	-27.9	0	53.95	-	-	-	-	68.2	-14.25	15	149	H
6	17.566	27.81	PK-U	41.7	-21.1	0	48.41	-	-	-	-	68.2	-19.79	0-360	100	V
3	17.478	38.74	PK-U	41.6	-22.6	0	57.74	-	-	-	-	68.2	-10.46	55	244	H

* - indicates frequency in CFR15.205/ IC8.10 Restricted Band.
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

9.9. TX ABOVE 1 GHz 802.11n HT40 1Tx MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	26.05	Pk	34.7	7.8	0	68.55	-	-	74	-5.45	35	154	H
4	5.714	26.05	Pk	34.7	7.8	0	68.55	-	-	74	-5.45	35	154	H
6	5.714	10.71	RMS	34.7	7.8	.12	53.33	54	-.67	-	-	35	154	H
1	5.715	22.11	Pk	34.7	7.8	0	64.61	-	-	74	-9.39	35	154	H
5	5.715	9.88	RMS	34.7	7.8	.12	52.5	54	-1.5	-	-	35	154	H
3	5.725	22.43	Pk	34.7	7.8	0	64.93	-	-	78.2	-13.27	35	154	H

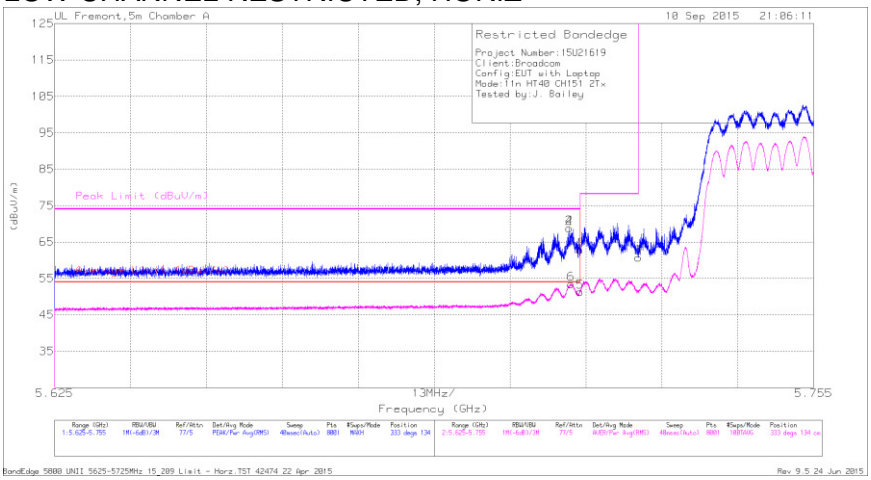
Pk - Peak detector

RMS - RMS detection

9.10. TX ABOVE 1 GHz 802.11n HT40 CDD 2TX MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



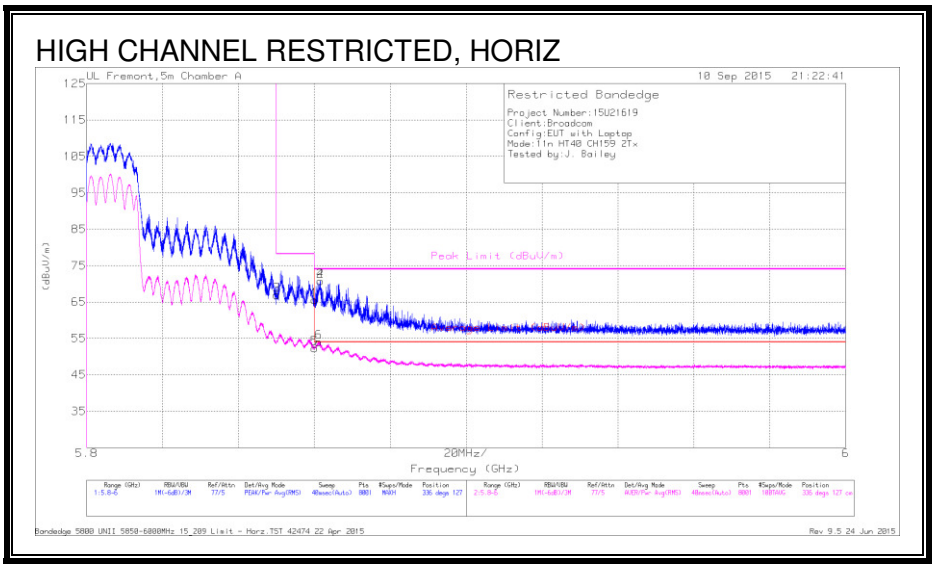
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.713	26.35	Pk	34.7	7.8	0	68.85	-	-	74	-5.15	333	134	H
4	5.713	26.35	Pk	34.7	7.8	0	68.85	-	-	74	-5.15	333	134	H
6	5.713	10.84	RMS	34.7	7.8	.12	53.46	54	-.54	-	-	333	134	H
1	5.715	20.32	Pk	34.7	7.8	0	62.82	-	-	74	-11.18	333	134	H
5	5.715	8.72	RMS	34.7	7.8	.12	51.34	54	-2.66	-	-	333	134	H
3	5.725	18.27	Pk	34.7	7.8	0	60.77	-	-	78.2	-17.43	333	134	H

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Bypass (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	5.85	23.88	Pk	35.1	7.9	0	66.88	-	-	78.2	-11.32	336	127	H
1	5.86	22.61	Pk	35.1	7.9	0	65.61	-	-	74	-8.39	336	127	H
5	5.86	9.11	RMS	35.1	7.9	.12	52.23	54	-1.77	-	-	336	127	H
6	5.861	10.86	RMS	35.1	7.9	.12	53.98	54	-.02	-	-	336	127	H
2	5.862	27.74	Pk	35.1	7.9	0	70.74	-	-	74	-3.26	336	127	H
4	5.862	27.74	Pk	35.1	7.9	0	70.74	-	-	74	-3.26	336	127	H

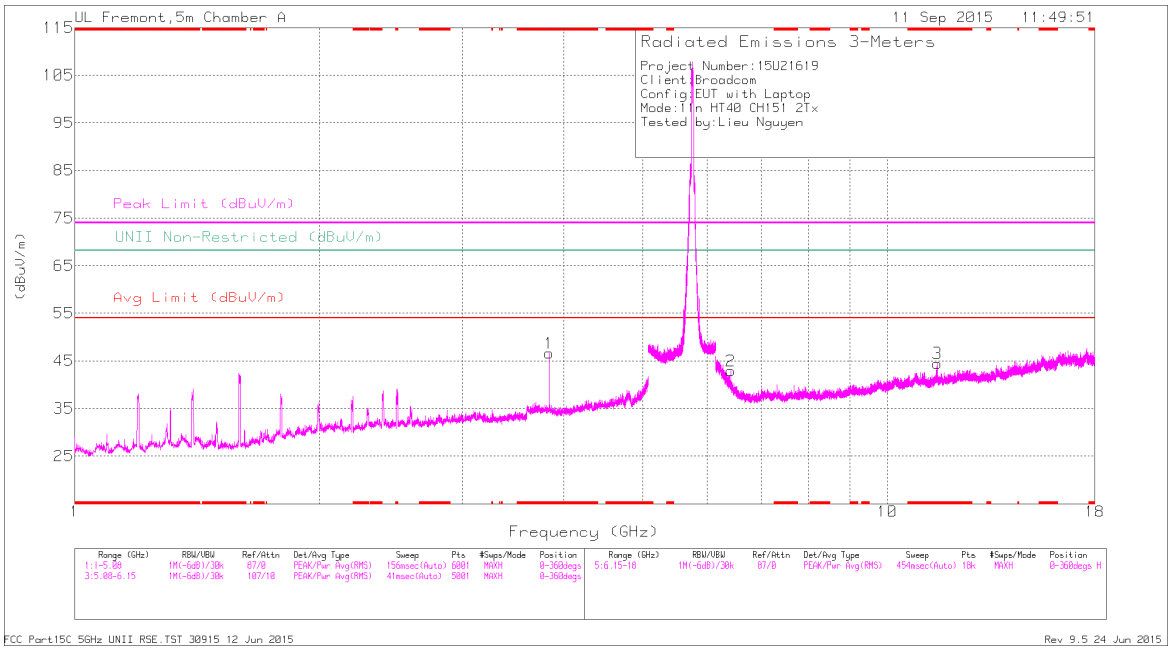
Pk - Peak detector

RMS - RMS detection

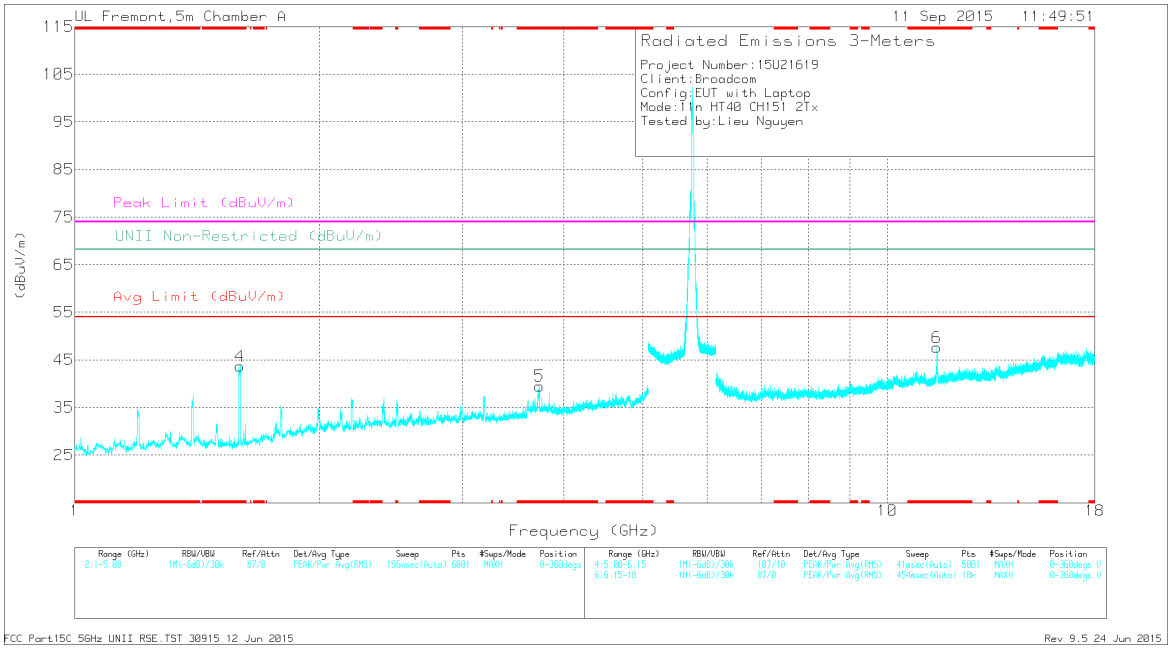
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL

HORIZONTAL



VERTICAL



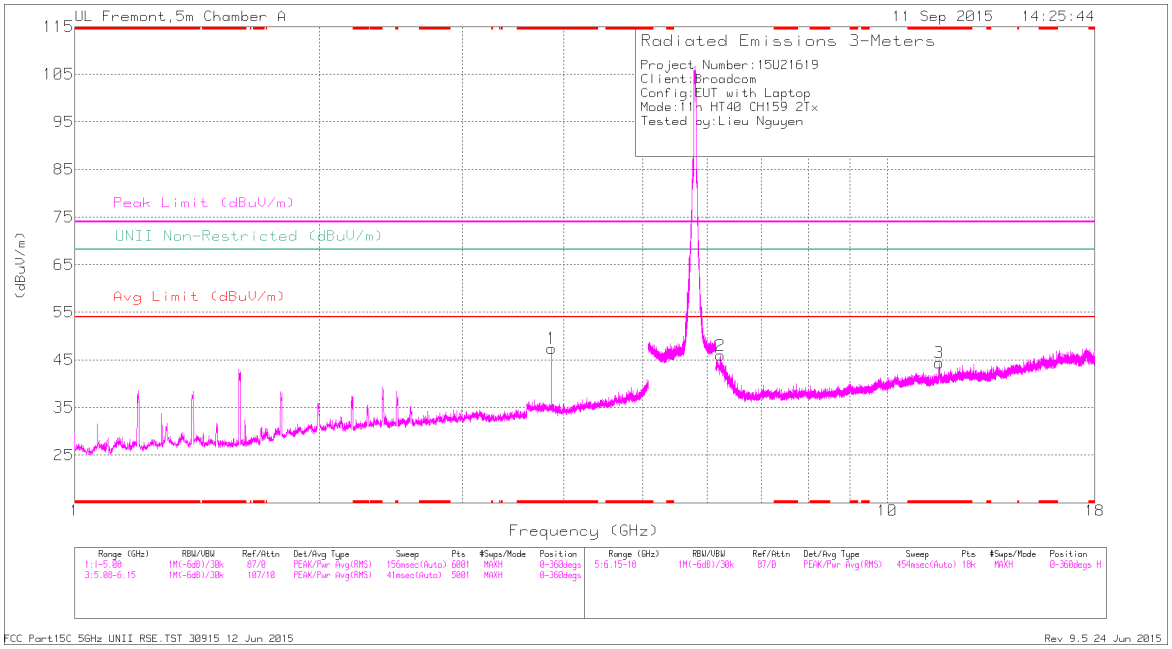
Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	* 3.837	48.99	PK-U	33.4	-31.8	0	50.59	-	-	74	-23.41	-	-	354	187	H
	* 3.837	44.48	ADR	33.4	-31.8	.12	46.2	54	-7.8	-	-	-	-	354	187	H
4	* 1.598	60.04	PK-U	27.9	-35.5	0	52.44	-	-	74	-21.56	-	-	290	106	V
	* 1.598	47.17	ADR	27.9	-35.5	.12	39.69	54	-14.31	-	-	-	-	290	106	V
5	* 3.73	47.09	PK-U	33.3	-32.2	0	48.19	-	-	74	-25.81	-	-	210	120	V
	* 3.731	33.62	ADR	33.3	-32.2	.12	34.84	54	-19.16	-	-	-	-	210	120	V
3	* 11.517	36.95	PK-U	38.1	-22.7	0	52.35	-	-	74	-21.65	-	-	95	155	H
	* 11.517	25.82	ADR	38.1	-22.7	.12	41.34	54	-12.66	-	-	-	-	95	155	H
6	* 11.51	41.01	PK-U	38	-22.6	0	56.41	-	-	74	-17.59	-	-	100	108	V
	* 11.51	28.78	ADR	38	-22.6	.12	44.3	54	-9.7	-	-	-	-	100	108	V
2	6.423	43.25	PK-U	35.5	-27.6	0	51.15	-	-	-	-	68.2	-17.05	21	125	H

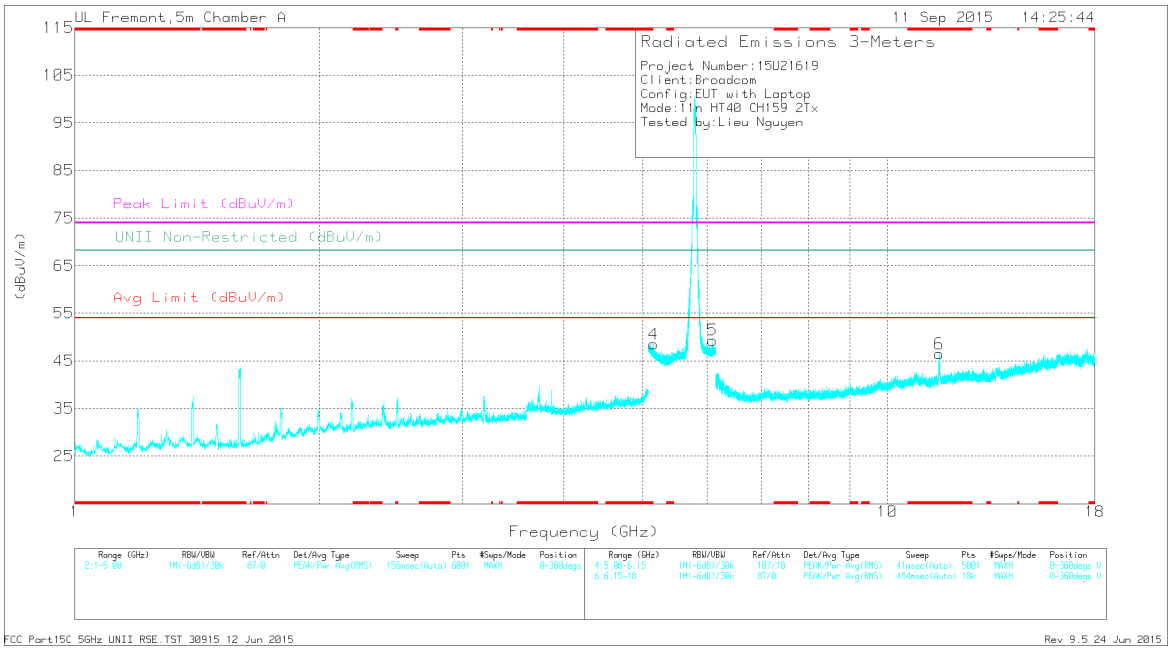
* - indicates frequency in CFR15.205/ IC8.10 Restricted Band.
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

HIGH CHANNEL

HORIZONTAL



VERTICAL



Radiated Emissions

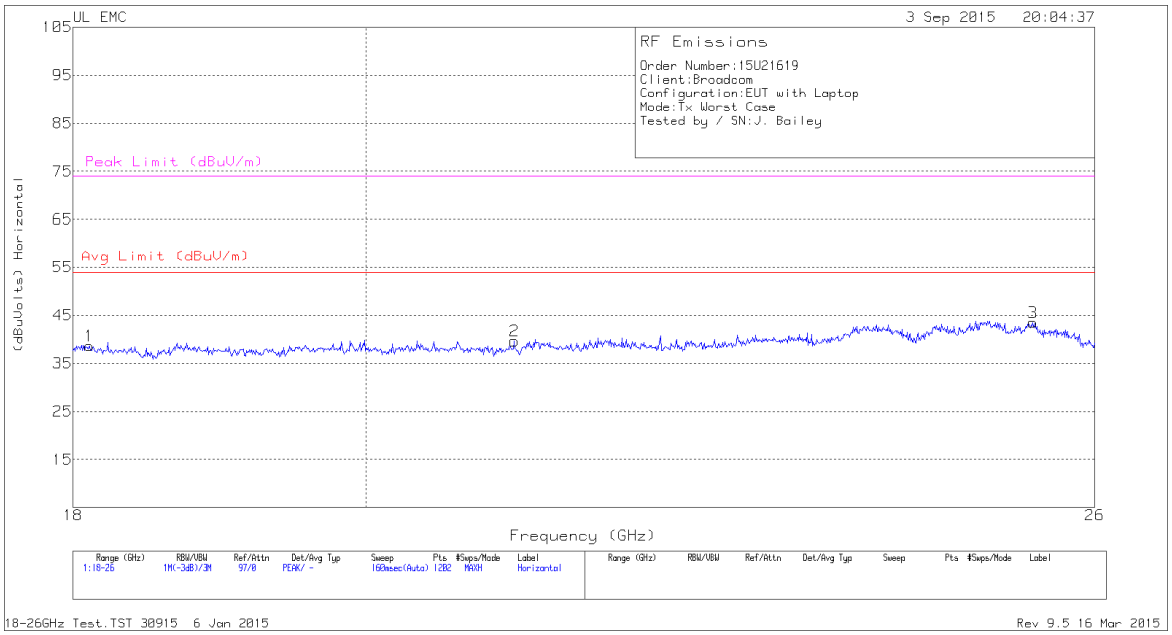
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.863	50.48	PK-U	33.5	-32	0	51.98	-	-	74	-22.02	-	-	354	162	H
	* 3.863	45.99	ADR	33.5	-32	.12	47.61	54	-6.39	-	-	-	-	354	162	H
3	* 11.59	36.5	PK-U	38.1	-22.8	0	51.8	-	-	74	-22.2	-	-	4	100	H
	* 11.591	25.17	ADR	38.1	-22.8	.12	40.59	54	-13.41	-	-	-	-	4	100	H
6	* 11.587	38.59	PK-U	38.1	-22.8	0	53.89	-	-	74	-20.11	-	-	284	176	V
	* 11.587	27.38	ADR	38.1	-22.8	.12	42.8	54	-11.2	-	-	-	-	284	176	V
4	5.156	42.33	PK-U	34.2	-20.7	0	55.83	-	-	-	-	68.2	-12.37	327	147	V
5	6.098	39.87	PK-U	35.4	-19.8	0	55.47	-	-	-	-	68.2	-12.73	200	204	V
2	6.23	46.35	PK-U	35.5	-27.9	0	53.95	-	-	-	-	68.2	-14.25	15	149	H

* - indicates frequency in CFR15.205/ IC8.10 Restricted Band.
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

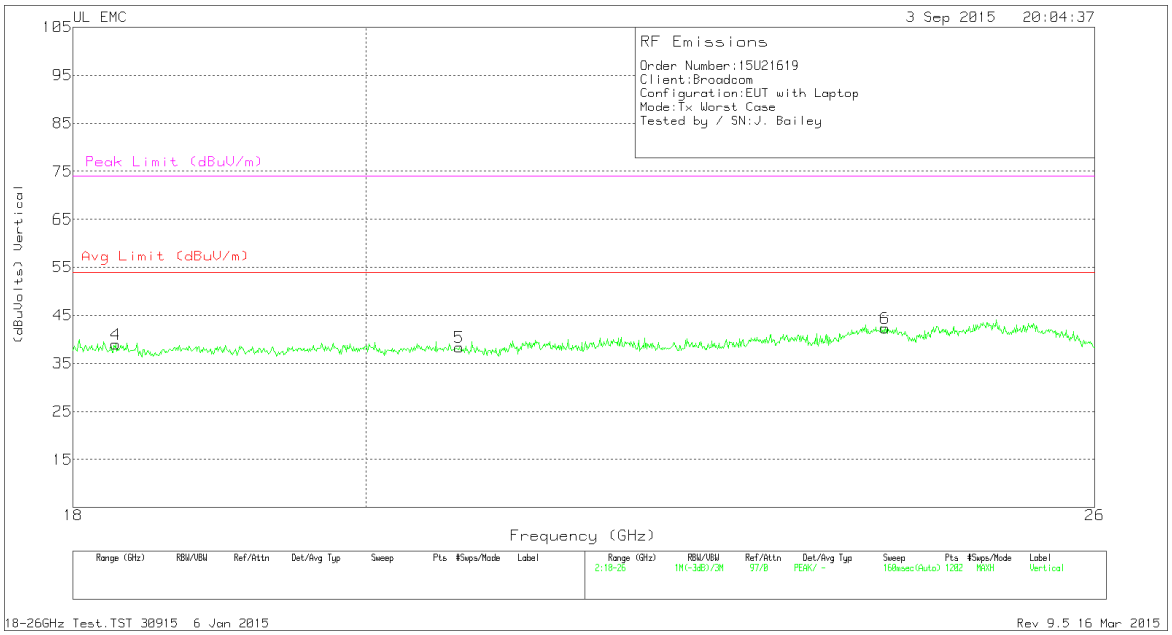
9.11. WORST-CASE ABOVE 18GHz

SPURIOUS EMISSIONS 18 – 26GHz

HORIZONTAL



VERTICAL



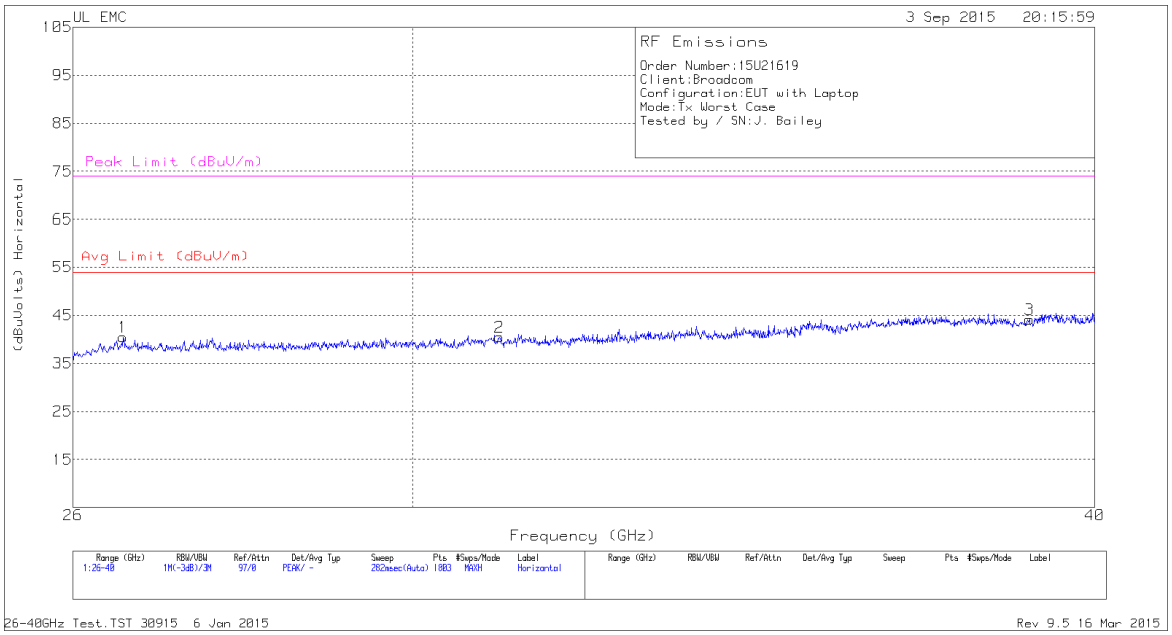
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	18.107	41.17	Pk	32.5	-25.5	-9.5	38.67	54	-15.33	74	-35.33
2	21.097	41.57	Pk	32.7	-25.1	-9.5	39.67	54	-14.33	74	-34.33
3	25.427	43.5	Pk	33.8	-24.3	-9.5	43.5	54	-10.5	74	-30.5
4	18.28	41.5	Pk	32.4	-25.4	-9.5	39	54	-15	74	-35
5	20.684	40.23	Pk	32.8	-25.2	-9.5	38.33	54	-15.67	74	-35.67
6	24.108	42.83	Pk	33.4	-24.4	-9.5	42. 33	54	-11.67	74	-31.67

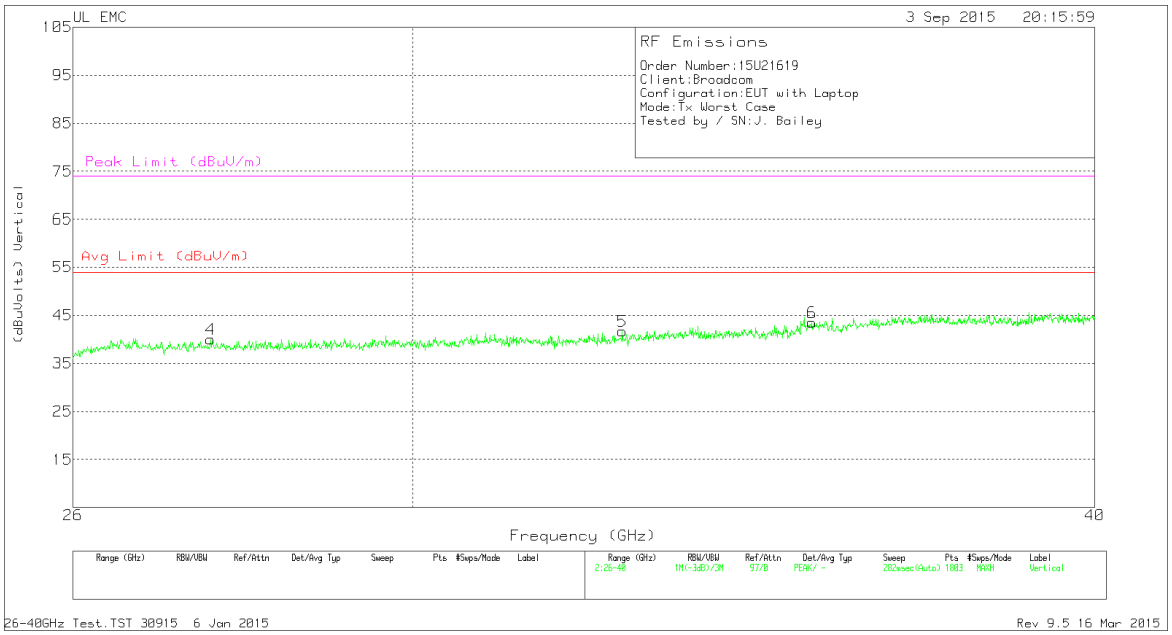
Pk - Peak detector

SPURIOUS EMISSIONS 26 – 40GHz

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T90 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	26.552	44.8	Pk	35.5	-30.3	-9.5	40.5	54	-13.5	74	-33.5
2	31.12	46.8	Pk	35.9	-32.7	-9.5	40.5	54	-13.5	74	-33.5
3	38.912	48.57	Pk	37	-31.9	-9.5	44.17	54	-9.83	74	-29.83
4	27.554	45.1	Pk	35.7	-31.3	-9.5	40	54	-14	74	-34
5	32.775	47.47	Pk	36.6	-32.9	-9.5	41.67	54	-12.33	74	-32.33
6	35.502	48.4	Pk	37.9	-33.3	-9.5	43.5	54	-10.5	74	-30.5

Pk - Peak detector

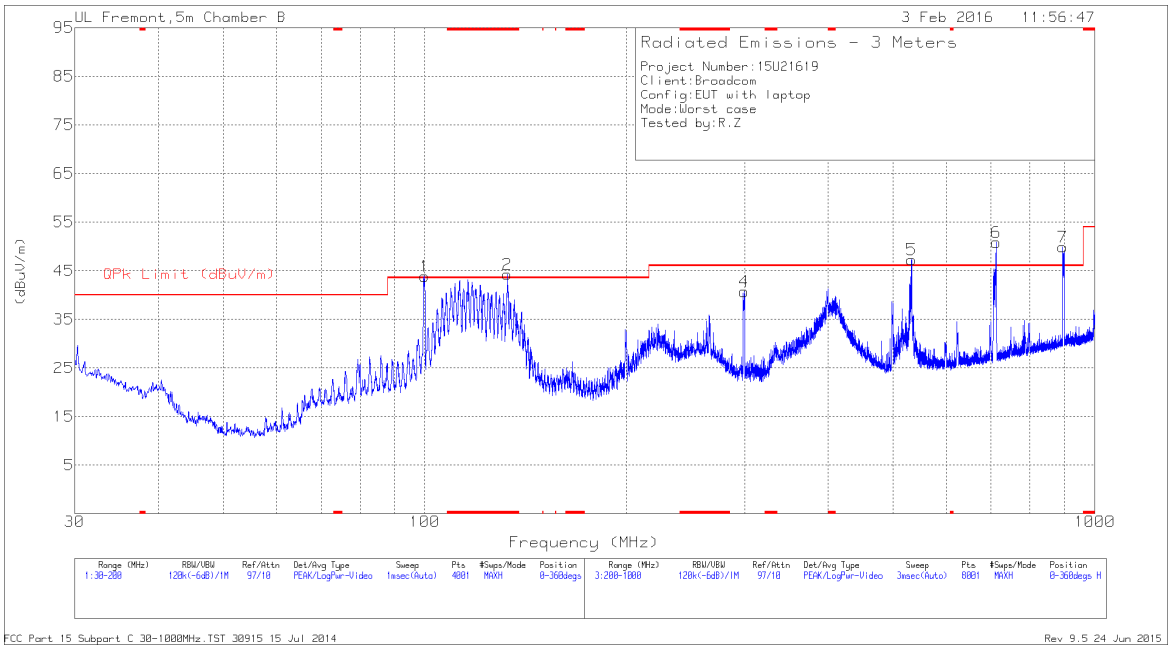
26-40GHz Test.TST 30915 6 Jan 2015

Rev 9.5 16 Mar 2015

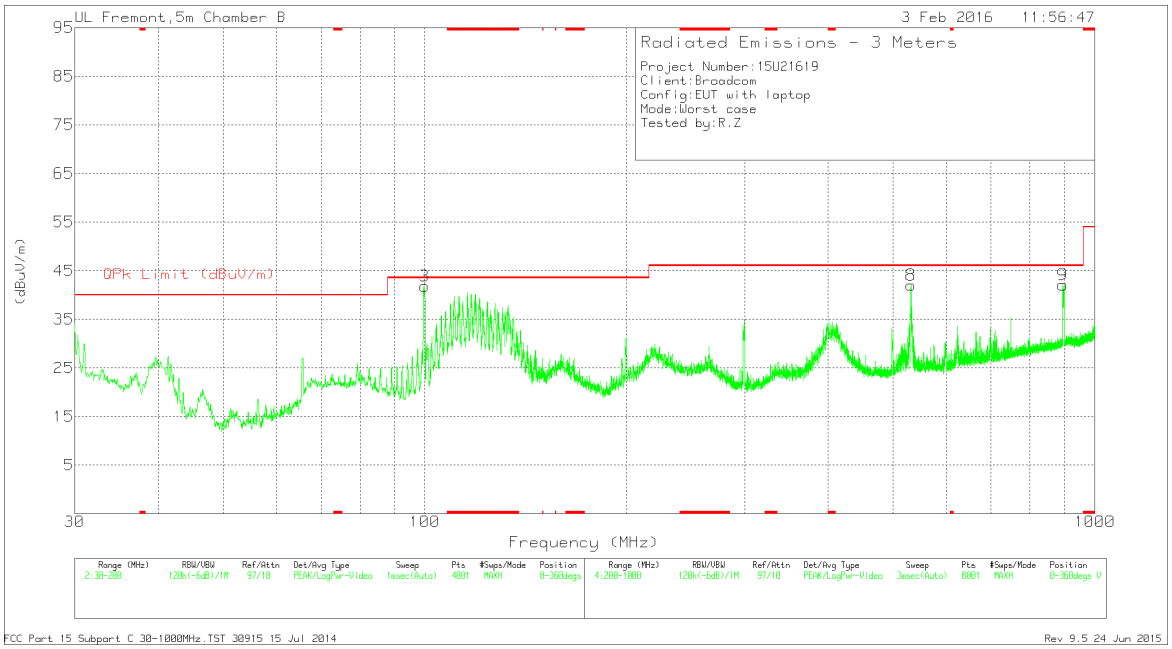
9.12. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 133.2905	49	Qp	17.6	-27.8	38.8	43.52	-4.72	202	206	H
1	99.9478	56.68	Qp	14.3	-28.1	42.88	43.52	-.64	205	304	H
3	99.927	54.48	Qp	14.3	-28.1	40.68	43.52	-2.84	128	103	V
4	299.915	46.5	Qp	17.3	-26.2	37.6	46.02	-8.42	223	128	H
8	531.65	29.07	Qp	21.9	-26.2	24.77	46.02	-21.25	303	102	V
5	533.74	32.39	Qp	22	-26.2	28.19	46.02	-17.83	145	160	H
6	713	23.33	Qp	24.3	-25.2	22.43	46.02	-23.59	303	102	H
7	895.9063	42.74	Qp	26.3	-23.9	45.14	46.02	-.88	143	102	H
9	895.9	36.3	Qp	26.3	-23.9	38.7	46.02	-7.32	111	166	V

* - indicates frequency in CFR15.205 Restricted Band

Pk - Peak detector

Qp - Quasi-Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

RESULTS

6 WORST EMISSIONS

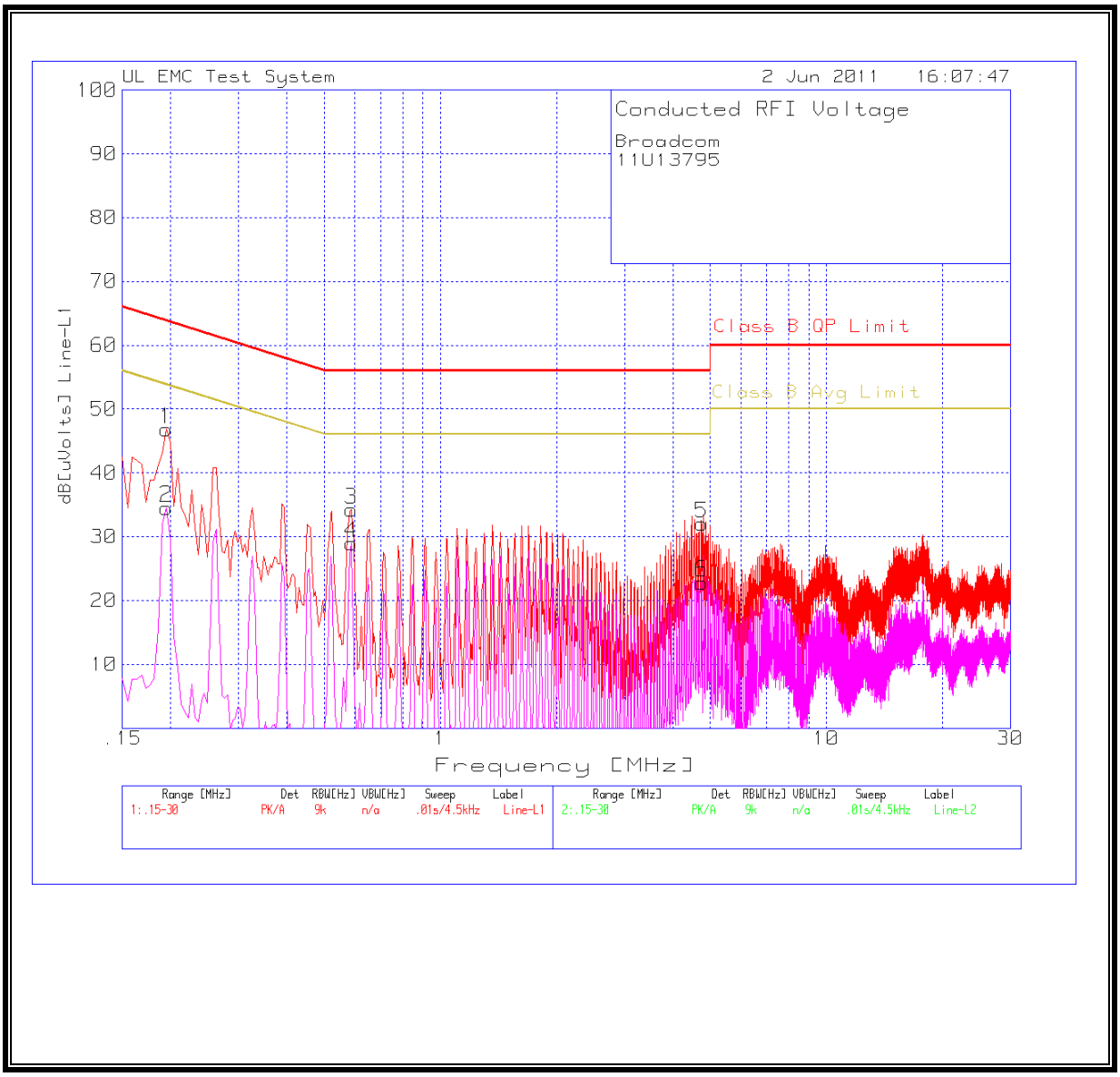
Line-L1 .15 - 30MHz

Test Frequency	Meter Reading	Detector	LISN [dB]	Conducted Emission Cable [dB]	dB[uVolts]	Class B QP Limit	Margin	Class B Avg Limit	Margin
0.195	46.84	PK	0	0	46.84	63.8	-16.96	53.8	-6.96
0.195	34.56	Av	0	0	34.56	63.8	-29.24	53.8	-19.24
0.5865	34.25	PK	0	0	34.25	56	-21.75	46	-11.75
0.5865	29.01	Av	0	0	29.01	56	-26.99	46	-16.99
4.749	32.05	PK	0	0	32.05	56	-23.95	46	-13.95
4.749	22.87	Av	0	0	22.87	56	-33.13	46	-23.13

Line-L2 .15 - 30MHz

Test Frequency	Meter Reading	Detector	LISN [dB]	Conducted Emission Cable [dB]	dB[uVolts]	Class B QP Limit	Margin	Class B Avg Limit	Margin
0.195	48.51	PK	0	0	48.51	63.8	-15.29	53.8	-5.29
0.195	35.39	Av	0	0	35.39	63.8	-28.41	53.8	-18.41
0.5235	35.05	PK	0	0	35.05	56	-20.95	46	-10.95
0.5235	24.28	Av	0	0	24.28	56	-31.72	46	-21.72
4.749	35.15	PK	0	0	35.15	56	-20.85	46	-10.85
4.749	19.59	Av	0	0	19.59	56	-36.41	46	-26.41

LINE 1 RESULTS



LINE 2 RESULTS