



**FCC 47 CFR PART 15 SUBPART E**

**CLASS II PERMISSIVE CHANGE**

**TEST REPORT**

**FOR**

**WIRELESS NETWORK RADIO**

**MODEL NUMBER: 1525**

**FCC ID: C3K1525**

**REPORT NUMBER: 15U22480-E1V2**

**ISSUE DATE: April 7, 2016**

*Prepared for*  
**MICROSOFT CORPORATION  
ONE MICROSOFT WAY  
REDMOND, WA 98052 U.S.A.**

*Prepared by*  
**UL VERIFICATION SERVICES INC.  
47173 BENICIA STREET  
FREMONT, CA 94538, U.S.A.  
TEL: (510) 771-1000  
FAX: (510) 661-0888**



**NVLAP LAB CODE 200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	03/07/16	Initial Issue	Francisco de Anda
V2	04/07/16	Updated 5.1 and 5.4 sections	Francisco de Anda

## TABLE OF CONTENTS

<b>1. ATTESTATION OF TEST RESULTS .....</b>	<b>5</b>
<b>2. TEST METHODOLOGY .....</b>	<b>6</b>
<b>3. FACILITIES AND ACCREDITATION .....</b>	<b>6</b>
<b>4. CALIBRATION AND UNCERTAINTY .....</b>	<b>6</b>
4.1. <i>MEASURING INSTRUMENT CALIBRATION .....</i>	6
4.2. <i>SAMPLE CALCULATION .....</i>	6
4.3. <i>MEASUREMENT UNCERTAINTY.....</i>	7
<b>5. EQUIPMENT UNDER TEST .....</b>	<b>8</b>
5.1. <i>DESCRIPTION OF EUT .....</i>	8
5.2. <i>DESCRIPTION OF CLASS II PERMISSIVE CHANGE .....</i>	8
5.3. <i>MAXIMUM OUTPUT POWER.....</i>	8
5.4. <i>DESCRIPTION OF AVAILABLE ANTENNAS .....</i>	8
5.5. <i>SOFTWARE AND FIRMWARE.....</i>	8
5.6. <i>WORST-CASE CONFIGURATION AND MODE.....</i>	9
5.7. <i>DESCRIPTION OF TEST SETUP.....</i>	10
<b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>12</b>
<b>7. MEASUREMENT METHODS .....</b>	<b>13</b>
<b>8. ANTENNA PORT TEST RESULTS .....</b>	<b>14</b>
8.1. <i>ON TIME AND DUTY CYCLE.....</i>	14
8.2. <i>802.11a MODE IN THE 5.8 GHz BAND.....</i>	17
8.2.1. <i>6 dB BANDWIDTH.....</i>	17
8.2.2. <i>26 dB BANDWIDTH.....</i>	21
8.2.3. <i>99% BANDWIDTH.....</i>	26
8.2.4. <i>OUTPUT POWER .....</i>	30
8.2.5. <i>Maximum Power Spectral Density (PSD).....</i>	34
8.3. <i>802.11n HT20 MODE IN THE 5.8 GHz BAND .....</i>	38
8.3.1. <i>6 dB BANDWIDTH.....</i>	38
8.3.2. <i>26 dB BANDWIDTH.....</i>	42
8.3.3. <i>99% BANDWIDTH.....</i>	47
8.3.4. <i>OUTPUT POWER .....</i>	51
8.3.5. <i>Maximum Power Spectral Density (PSD).....</i>	55
8.4. <i>802.11n HT40 MODE IN THE 5.8 GHz BAND .....</i>	59
8.4.1. <i>6 dB BANDWIDTH.....</i>	59
8.4.2. <i>26 dB BANDWIDTH.....</i>	62
8.4.3. <i>99% BANDWIDTH.....</i>	65
8.4.4. <i>OUTPUT POWER .....</i>	68
8.4.5. <i>Maximum Power Spectral Density (PSD).....</i>	71

---

<b>9. RADIATED TEST RESULTS.....</b>	<b>74</b>
9.1. LIMITS AND PROCEDURE.....	74
9.2. TRANSMITTER ABOVE 1 GHz.....	75
9.3. TX ABOVE 1 GHz 802.11a MODE IN THE 5.8 GHz BAND.....	75
9.4. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND.....	85
9.5. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.8 GHz BAND.....	95
9.6. WORST-CASE BELOW 1 GHz.....	103
9.7. WORST-CASE 18-26 GHz.....	105
9.8. WORST-CASE 26-40 GHz.....	107
<b>10. AC POWER LINE CONDUCTED EMISSIONS .....</b>	<b>109</b>
<b>11. SETUP PHOTOS .....</b>	<b>110</b>

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Microsoft Corporation  
One Microsoft Way  
Redmond, WA 98052, U.S.A.

**EUT DESCRIPTION:** Wireless Network Radio

**MODEL:** 1525

**SERIAL NUMBER:** 9CD21E98933D (Conducted), 9CD21E98E05B (Radiated)

**DATE TESTED:** February 25, 2016 – March 1, 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.

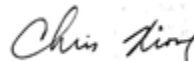
**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. 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:



Francisco de Anda  
PROGRAM MANAGER  
UL Verification Services Inc.

Prepared By:



Chris Xiong  
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, ANSI C63.10-2013, KDB 789033 D02 v01r01.

## 3. FACILITIES AND ACCREDITATION

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
<input type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F
	<input type="checkbox"/> Chamber G
	<input checked="" type="checkbox"/> Chamber H

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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 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	$\pm 3.52$ dB
Radiated Disturbance, 30 to 1000 MHz	$\pm 4.94$ dB
Radiated Disturbance, 1 to 6 GHz	$\pm 3.86$ dB
Radiated Disturbance, 6 to 18 GHz	$\pm 4.23$ dB
Radiated Disturbance, 18 to 26 GHz	$\pm 5.30$ dB
Radiated Disturbance, 26 to 40 GHz	$\pm 5.23$ dB

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is an 802.11 a/b/g/n radio.

### 5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The change filed under this application is to meet the new UNII rules per KDB 789033 D02 General UNII Test Procedures New Rules v01r01.pdf.

Unit tested as it was originally certified but under the new UNII rules.

### 5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum average conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745 - 5825	802.11a	16.42	43.85
5745 - 5825	802.11n HT20	16.26	42.27
5755 - 5795	802.11n HT40	14.1	25.70

### 5.8 GHz BAND

Authorized Frequency Band		
Frequency Range (MHz)	Tested Mode	Representative Mode
5745 - 5825	802.11a CDD	N/A
5745 - 5825	802.11n, HT20 CDD	802.11n, HT20 STBC
5745 - 5795	802.11n, HT40 CDD	802.11n, HT40 STBC

### 5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two PCB antennas, with a maximum gain of 3.38dBi (Ch0) and 3.43dBi (Ch1).

### 5.5. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 14.2.201.17.

The EUT drive software installed during testing was 2.0.0.11.

The test utility software used during testing was DutApiMimoBtFmBrdigeEth.exe.



---

## 5.6. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

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:  
Based on the baseline scan, the worst-case data rates were:

802.11a mode: 6 Mbps  
802.11n HT20mode: MCS0  
802.11n HT40mode: MCS0

Radiated emissions for EUT with antenna was performed and passed; therefore, antenna port spurious was not performed.

## 5.7. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	PP20L	CN-0KD882-48643-65H-9213	QDS-BRCM1020
AC/DC Adapter	Dell	LA65NS2-01	CN-0928G4-71615-06E-0D24-A00	N/A
Sheeva Plug	GlobalScale	003-SP1001	1035-002460	N/A
AC Adapter	CUI Inc.	EPAS-101W-C	DPS050200UPS-P5P-SZ	N/A
AC Adapter	CUI Inc.	KSAFE050040	DPS050400U-P5P-TK	N/A

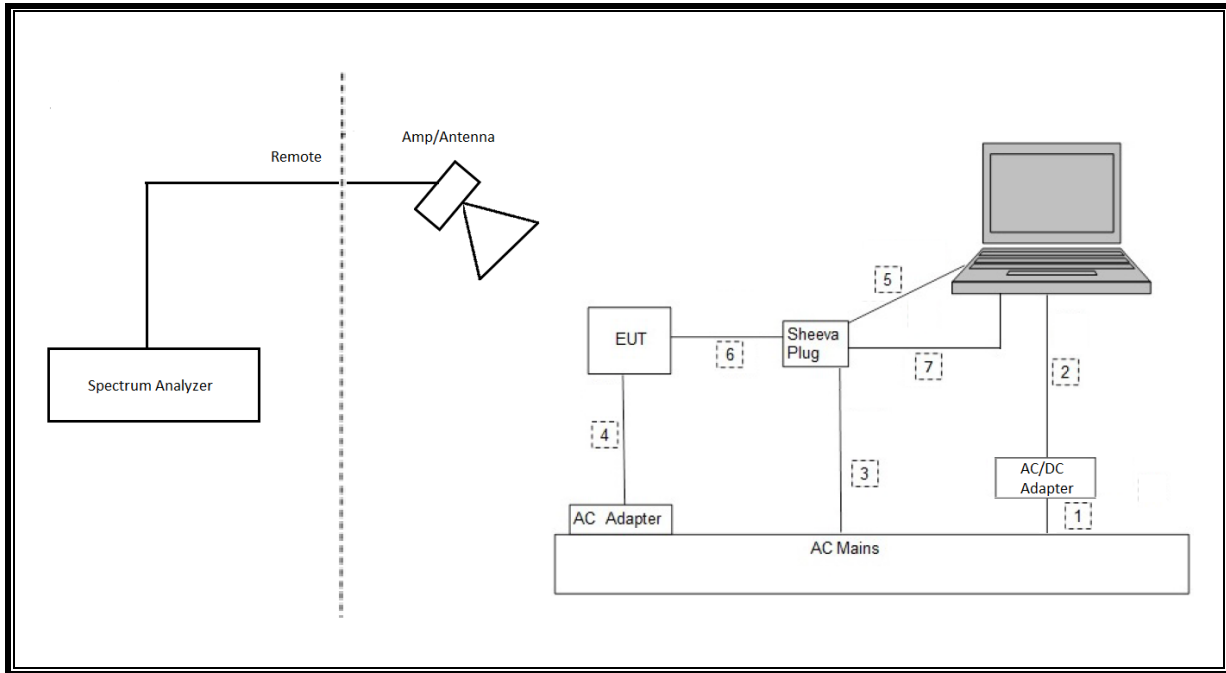
### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	3-prong	Un-Shielded	0.90	
2	DC	1	DC	Un-Shielded	1.80	
3	AC	1	2-prong	Un-Shielded	1.70	
4	AC	1	2-prong	Un-Shielded	1.40	
5	USB/Micro USB	1	USB/Micro USB	Shielded	0.60	Micro USB to Sheeva
6	USB	1	USB	Shielded	1.30	
7	Ethernet	1	RJ45	Shielded	1.80	
8	Antenna	2	SMA	Shielded	1.00	
9	RF input	1	SMA	Shielded	1.00	
10	USB	1	USB	Shielded	0.90	
11	AC	1	2-prong	Un-Shielded	1.90	

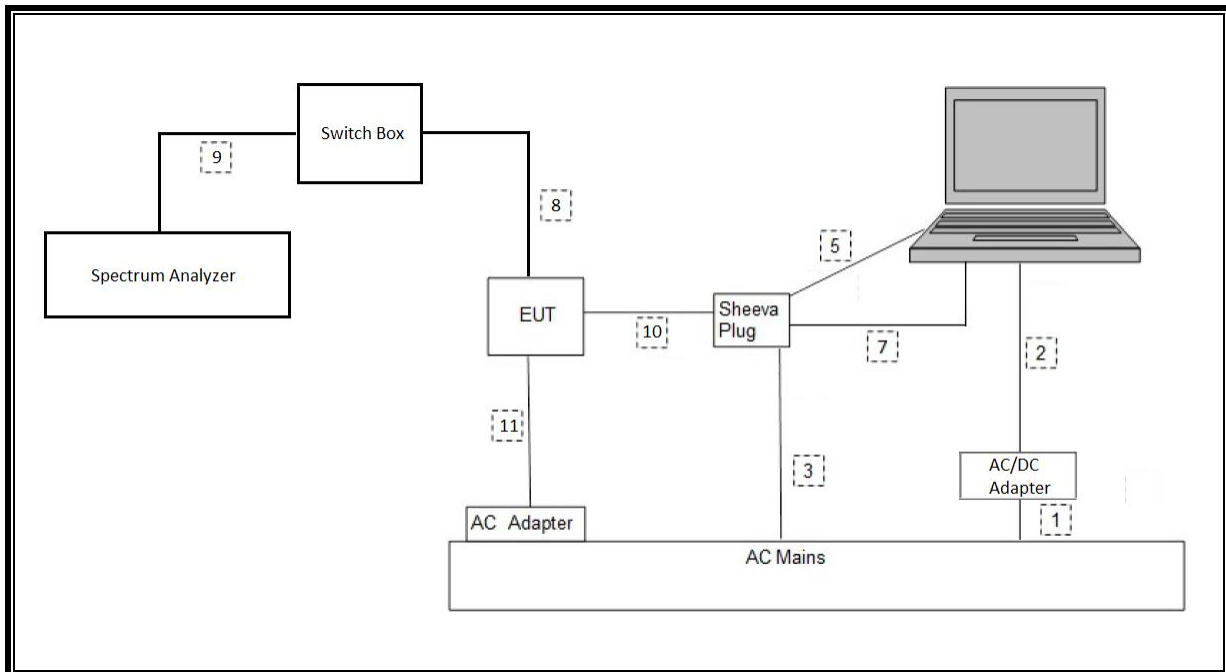
### TEST SETUP

Test software exercised the radio card.

**SETUP DIAGRAM FOR RADIATED TESTS**



**SETUP DIAGRAM FOR CONDUCTED 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 Due
Radiated Software	UL	UL EMC	Ver 9.5, July 22, 2014	
Conducted Software	UL	UL EMC	Ver 4.2, February 2, 2016	
Spectrum Analyzer 9kHz - 26.5GHz	Keysight	N9030A	PRE0123763	12/09/16
Antenna, Horn 1-18GHz	ETS Lindgren	3117	863	04/10/16
Antenna, Broadband Hybrid, 30MHz - 2000MHz	Sunol Science	JB3	900	04/10/16
Amplifier, 1-18GHz	Miteq	ASF42-00101800-25-S-42	495	10/22/16
Amplifier, 10KHz-1GHz, 32dB	Sonoma	310N	835	06/06/16
Amplifier, 1-8GHz, 35dB	Miteq	AMF-4D-01000800-30-29P	782	10/22/16
Spectrum Analyzer, 40GHz	Hewlett-Packard	8564E	106	08/14/16
Antenna, Horn 18-26GHz	ARA	MWH-1826	447	05/12/16
Antenna, Horn 40GHz	ARA	MWH-2640/B	90	07/28/16
Amplifier, 1-26GHz	Keysight	8449B	404	06/29/16
Amplifier, 26-40GHz	Miteq	NSP4000-SP2	88	04/07/16
Switch, SP6T Coaxial Switch	Keysight	87106C	836	06/26/16

---

## 7. MEASUREMENT METHODS

26 dB Emission BW: KDB 789033 D02 v01r01, Section C.

99% Occupied BW: KDB 789033 D02 v01r01, Section D.

Conducted Output Power: KDB 789033 D02 v01r01, Section E.2.b (Method SA-1).

Power Spectral Density: KDB 789033 D02 v01r01, Section F.

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

Unwanted emissions in non-restricted bands: KDB 789033 D02 v01r01, Sections 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.

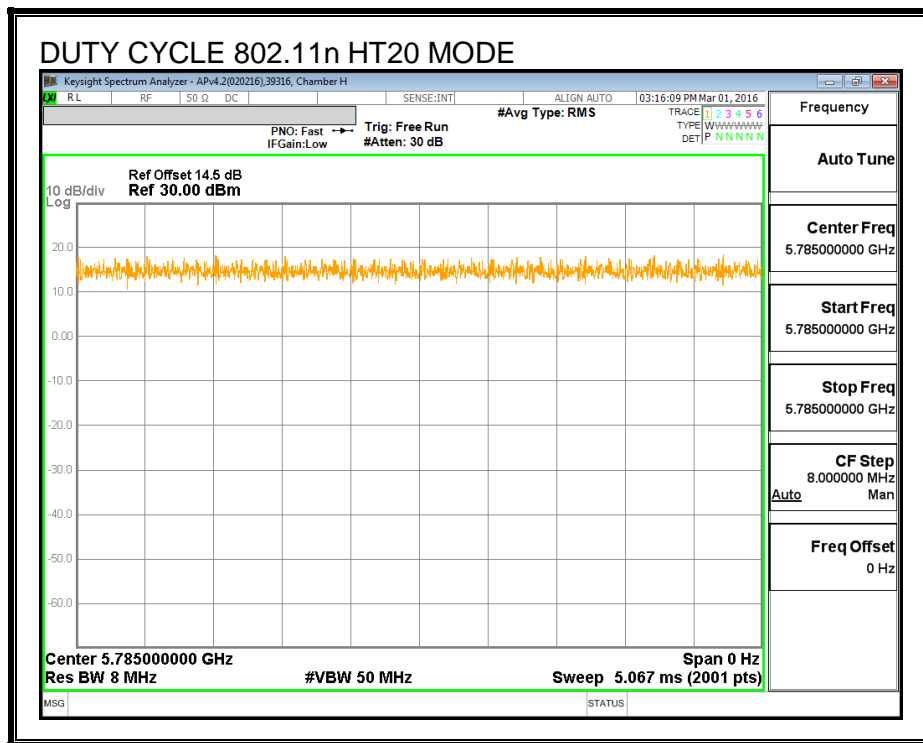
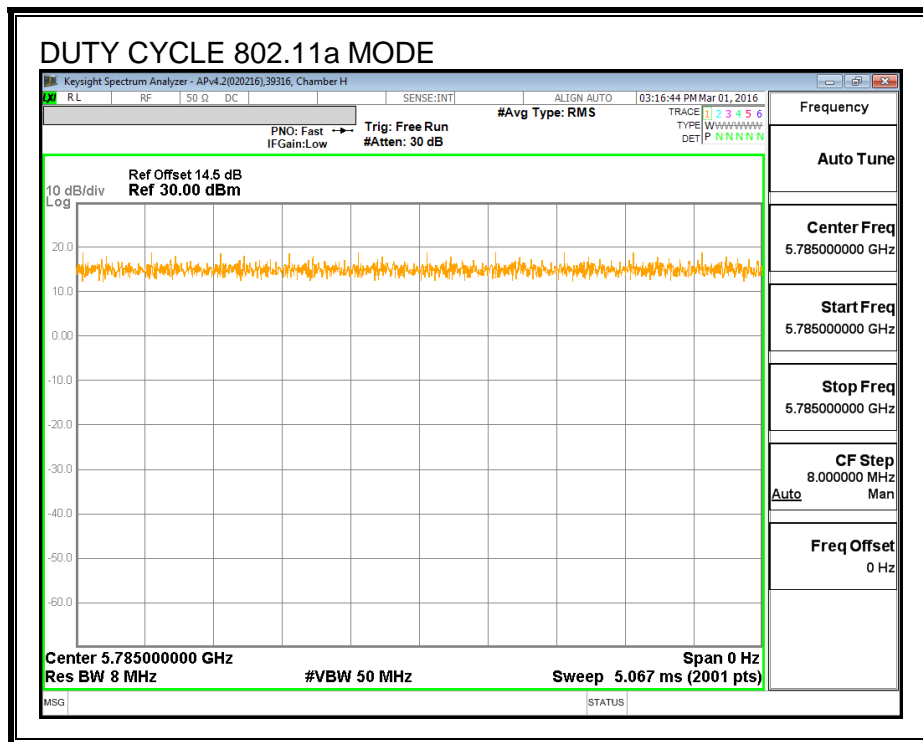
#### PROCEDURE

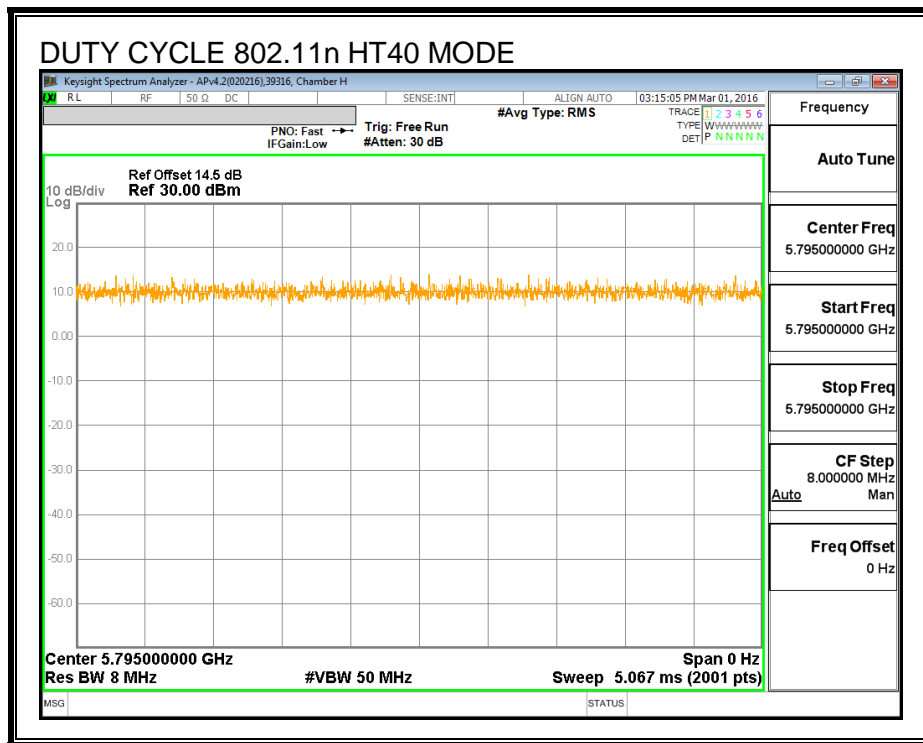
KDB 789033 Zero-Span Spectrum Analyzer Method.

#### 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)
802.11a	1.000	1.000	1.000	100.00%	0.00	0.010
802.11n HT20	1.000	1.000	1.000	100.00%	0.00	0.010
802.11n HT40	1.000	1.000	1.000	100.00%	0.00	0.010

**DUTY CYCLE PLOTS**







## 8.2. 802.11a MODE IN THE 5.8 GHz BAND

### 8.2.1. 6 dB BANDWIDTH

#### LIMITS

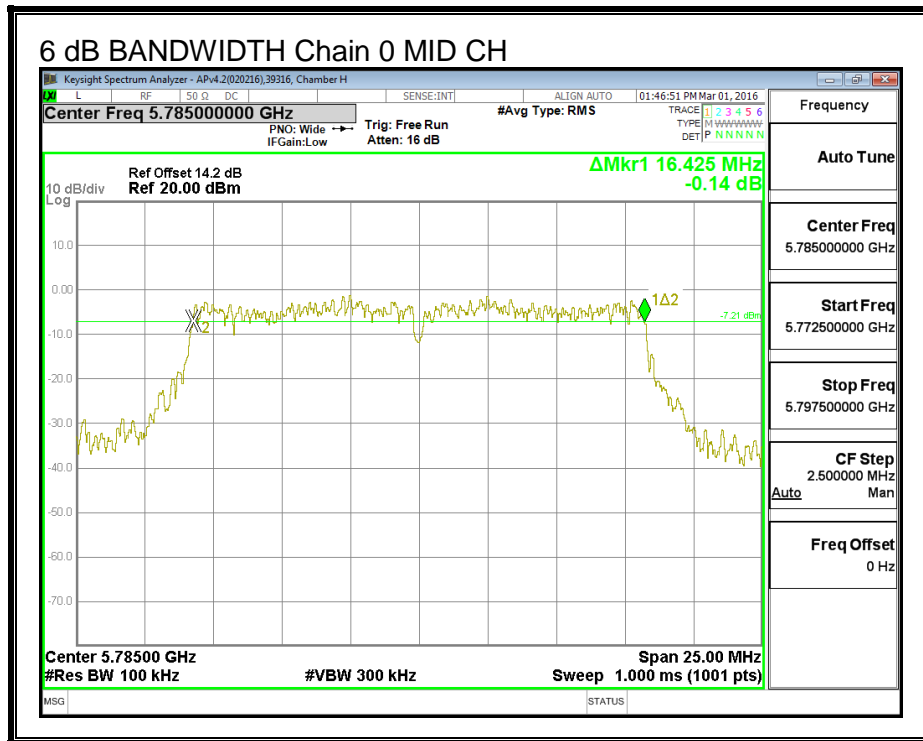
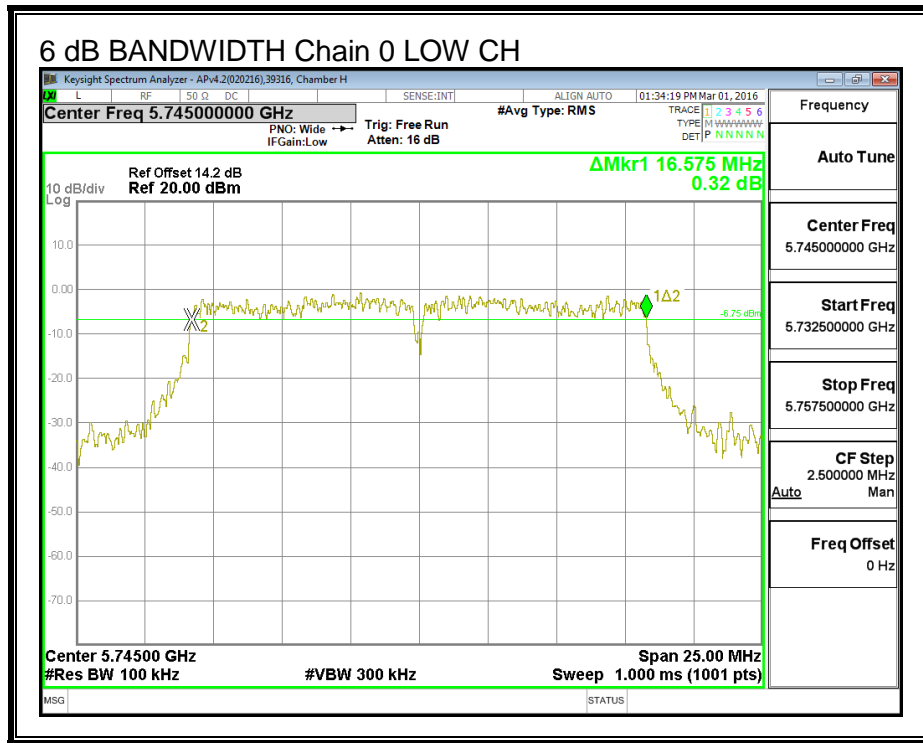
FCC §15.407 (e)

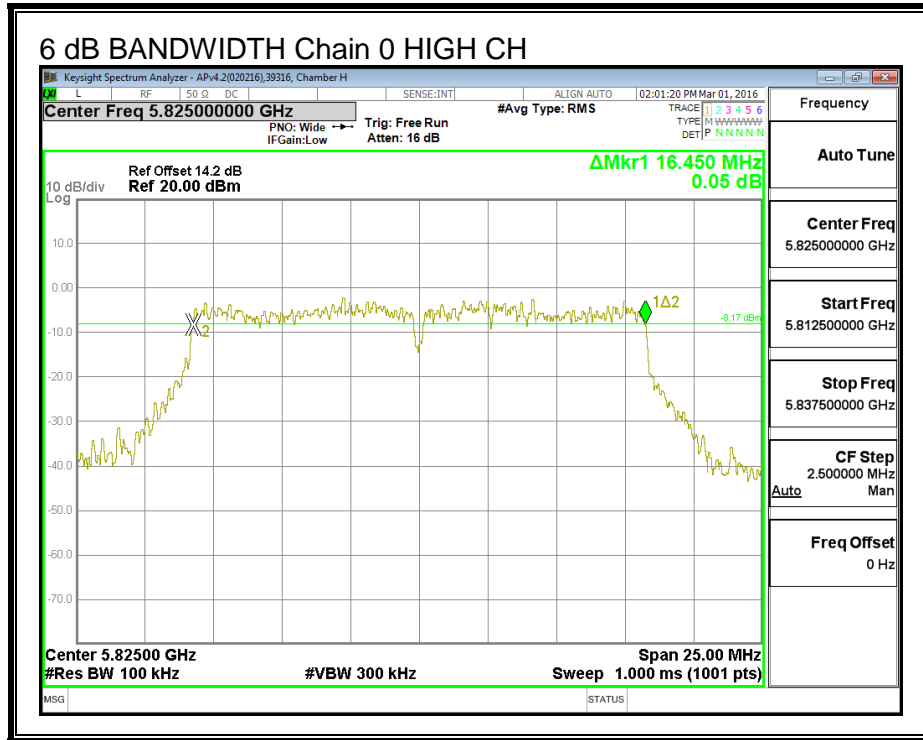
The minimum 6 dB bandwidth shall be at least 500 kHz.

#### RESULTS

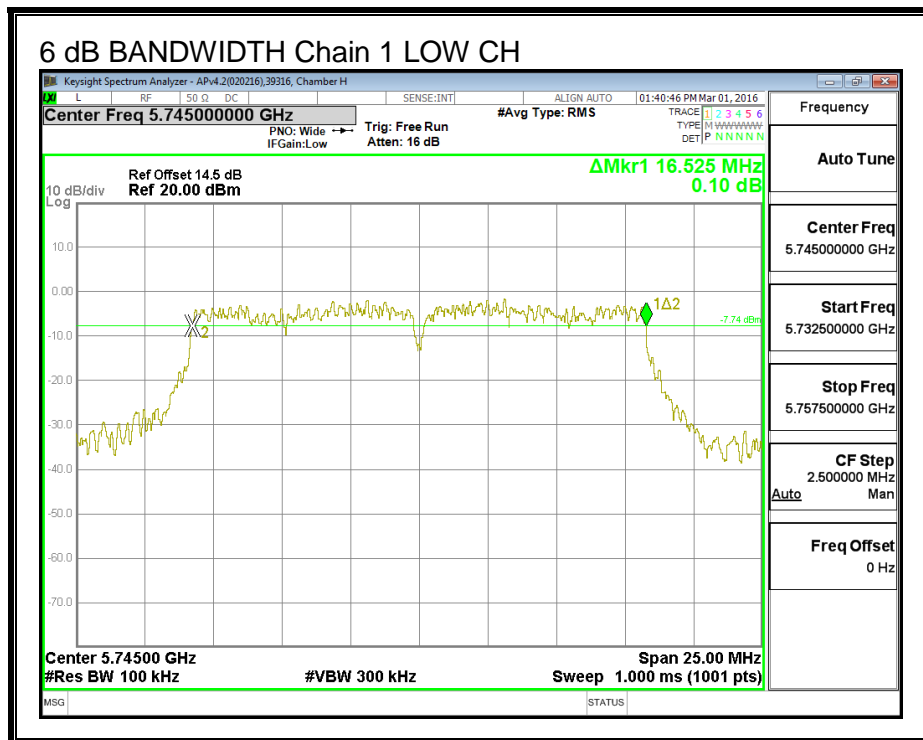
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	16.5750	16.5250	0.5
Mid	5785	16.4250	16.5250	0.5
High	5825	16.4500	16.5500	0.5

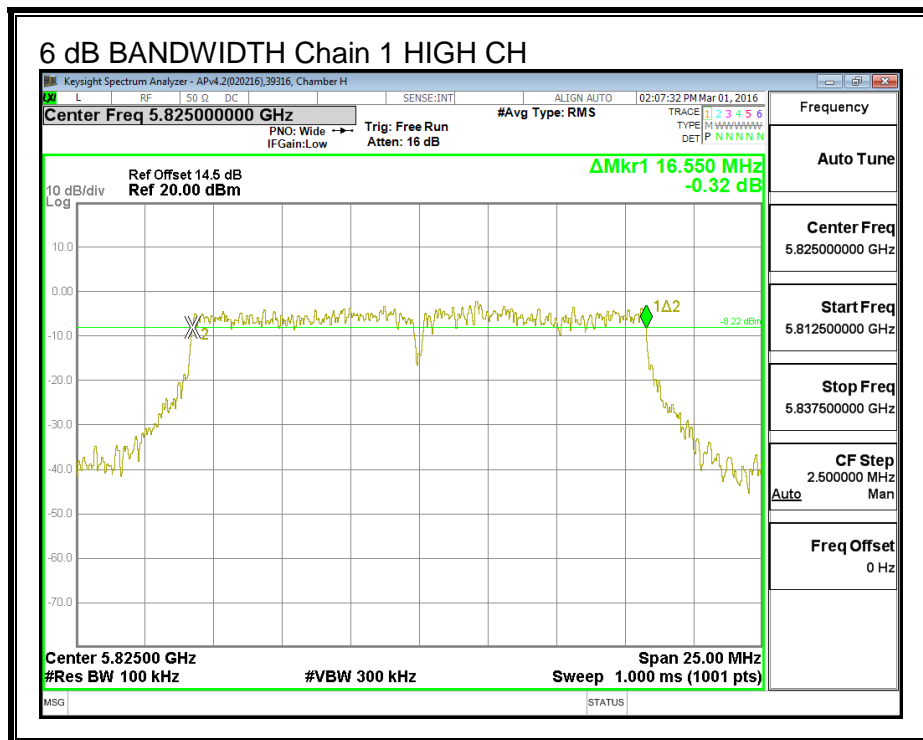
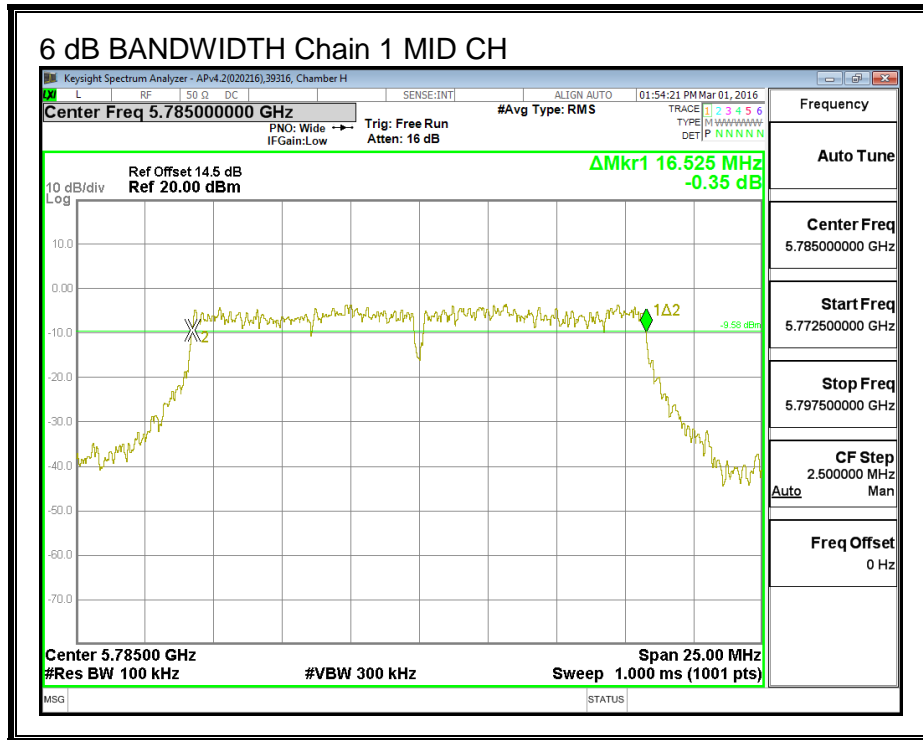
**6 dB BANDWIDTH, Chain 0**





**6 dB BANDWIDTH, Chain 1**





## 8.2.2. 26 dB BANDWIDTH

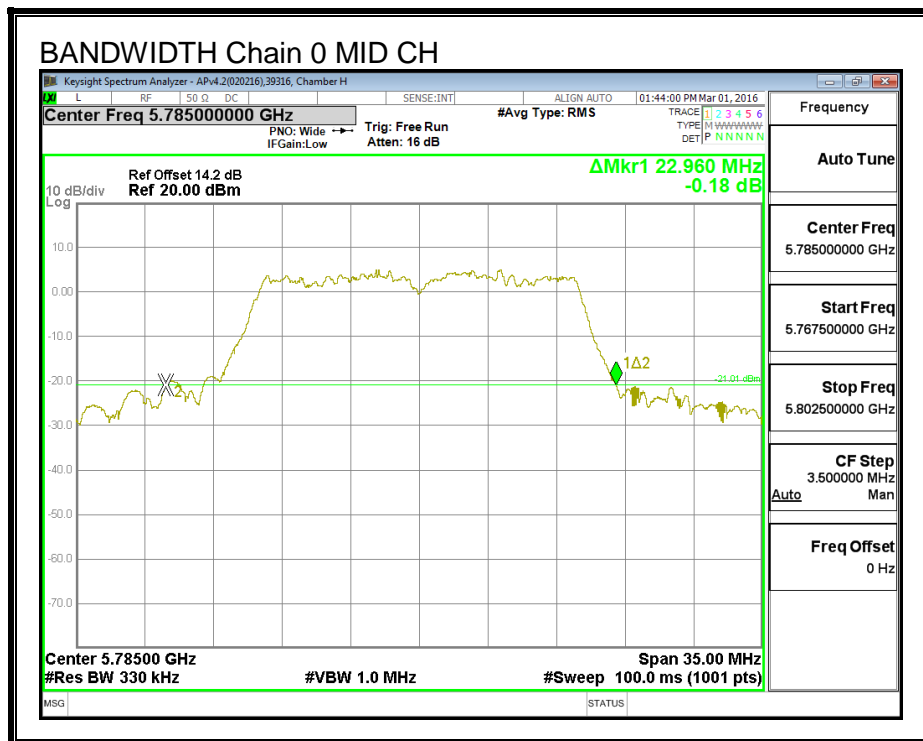
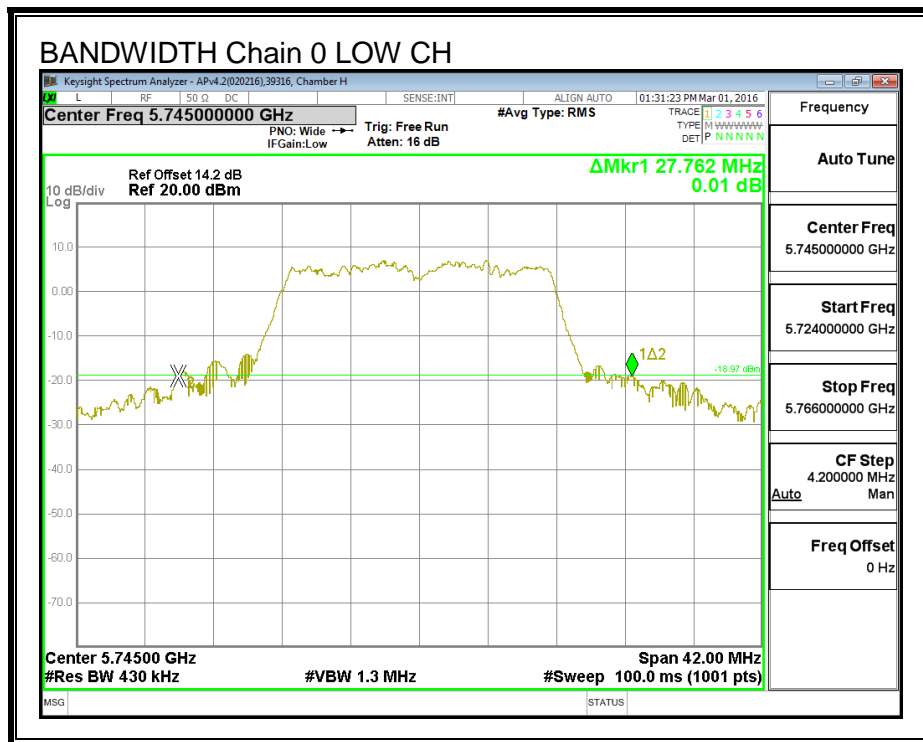
### LIMITS

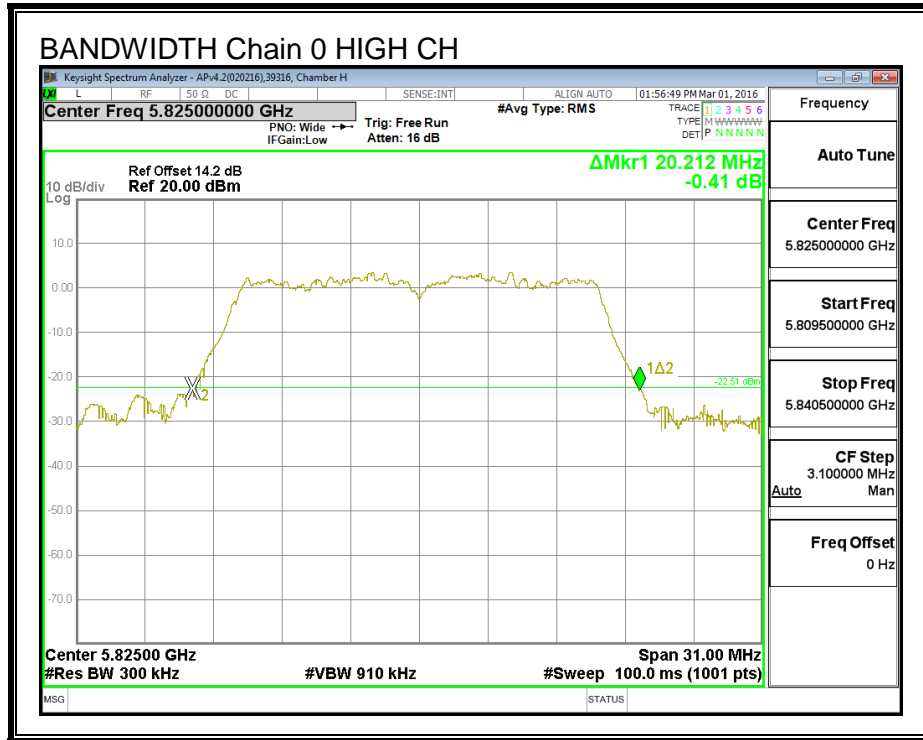
None; for reporting purposes only.

### RESULTS

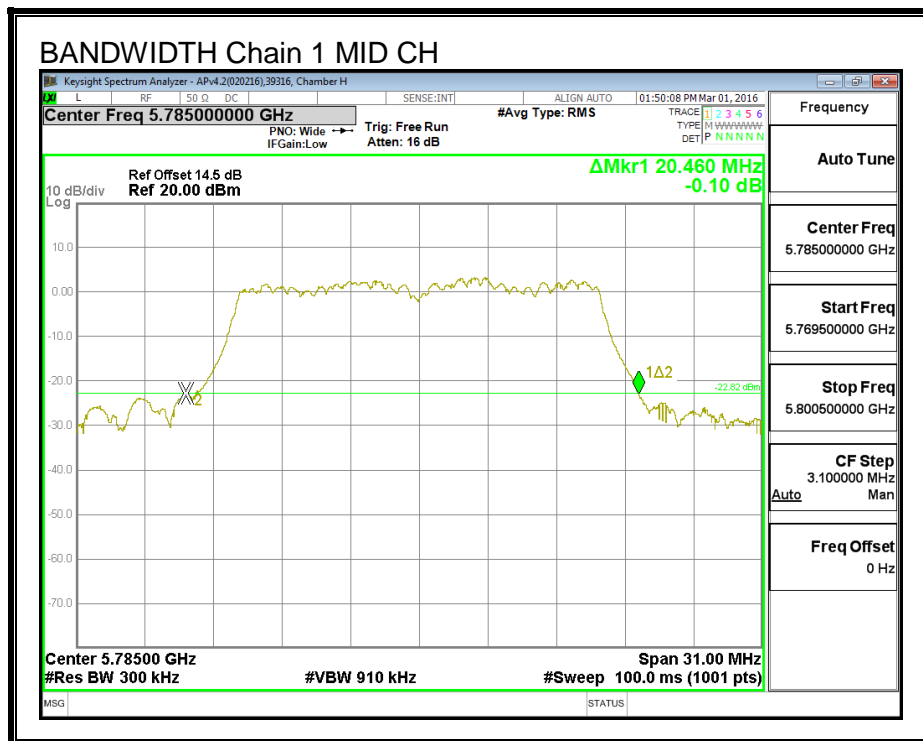
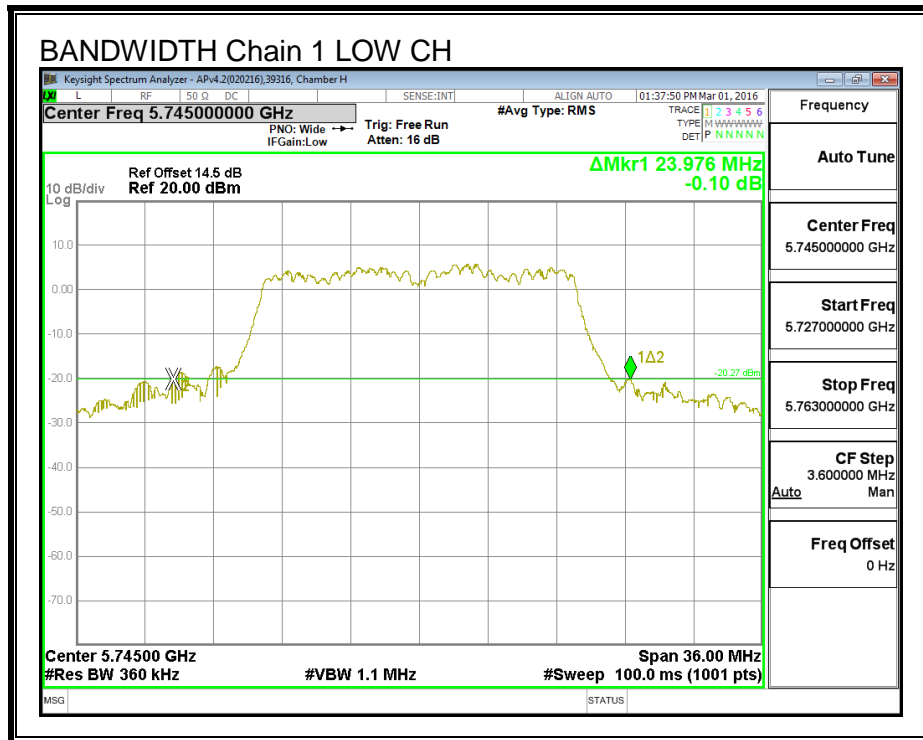
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5745	27.76	23.98
Mid	5785	22.96	20.46
High	5825	20.21	19.92

**26 dB BANDWIDTH, Chain 0**

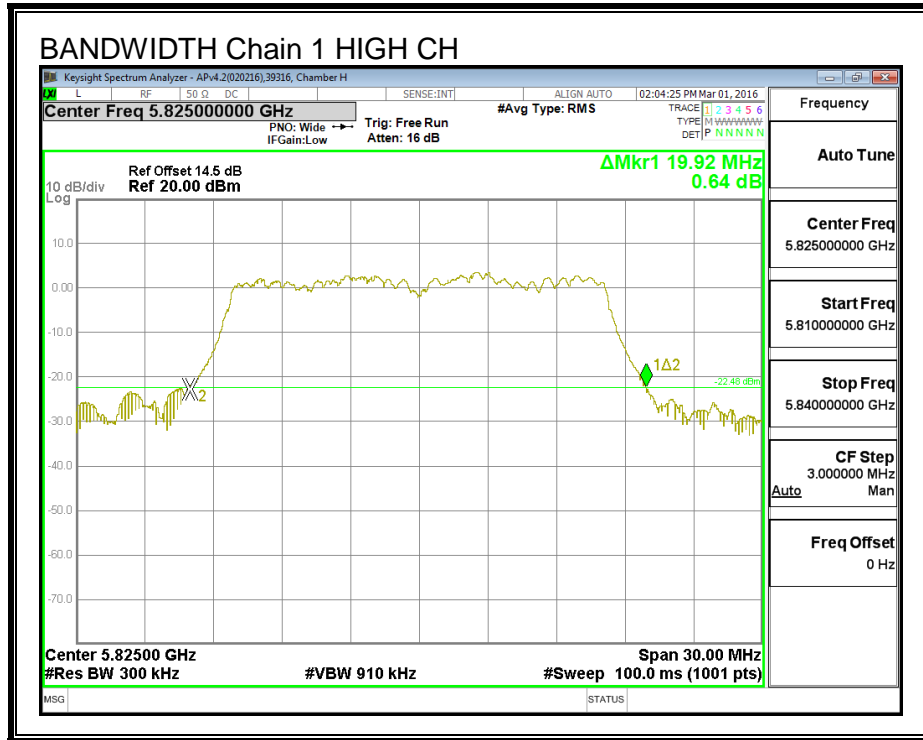




**26 dB BANDWIDTH, Chain 1**







### 8.2.3. 99% BANDWIDTH

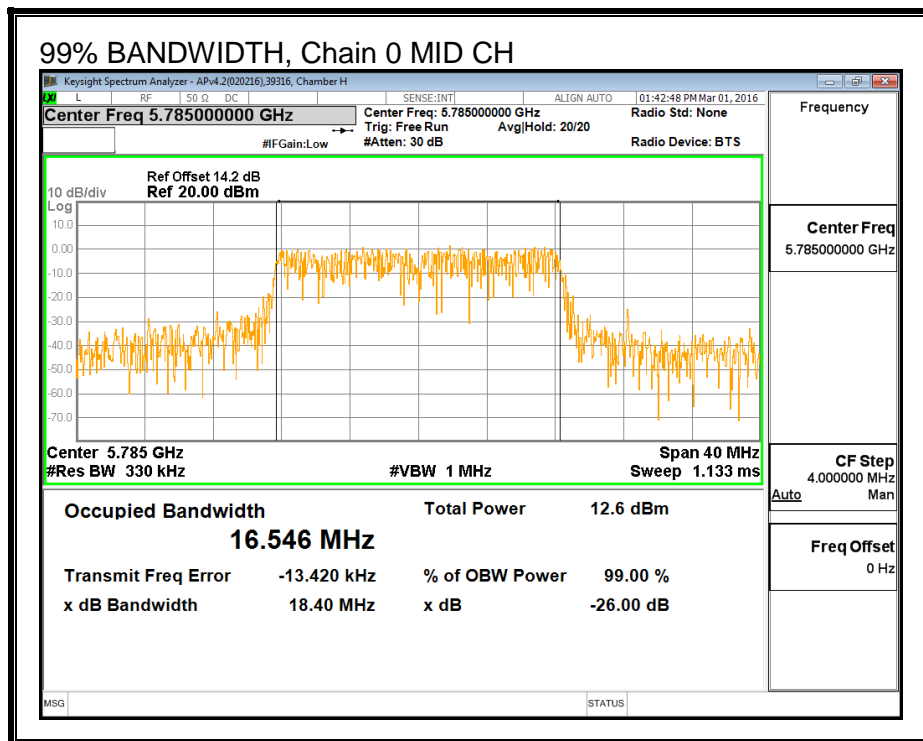
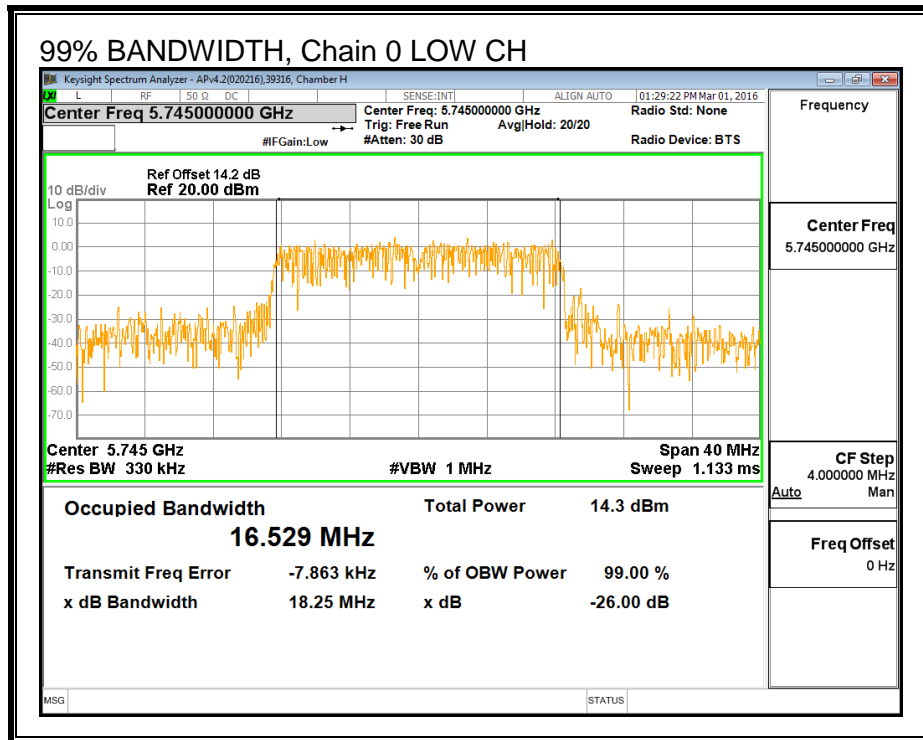
#### LIMITS

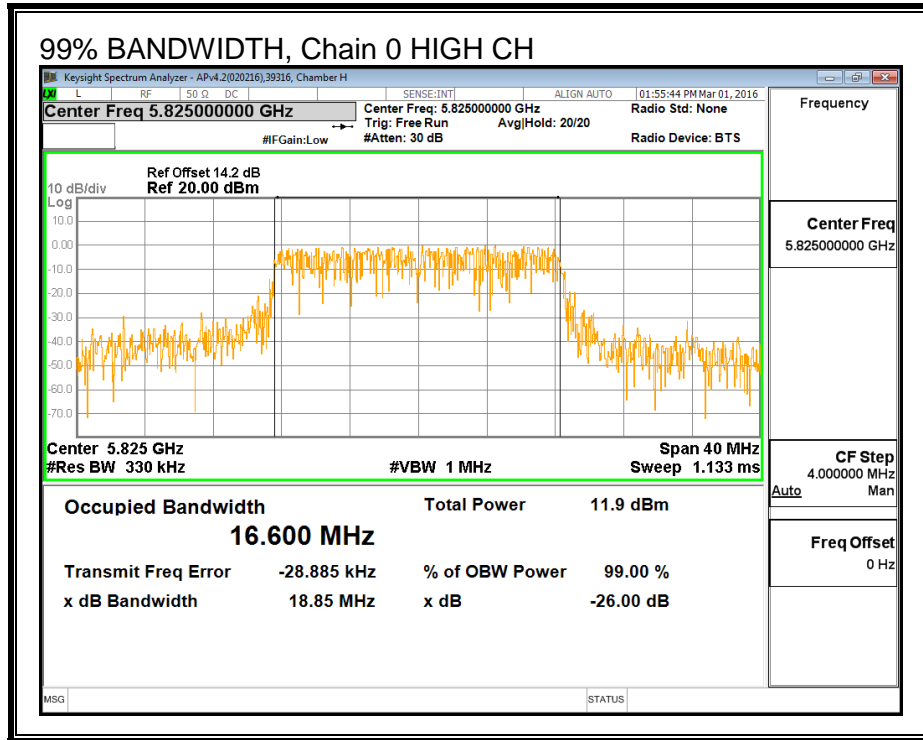
None; for reporting purposes only.

#### RESULTS

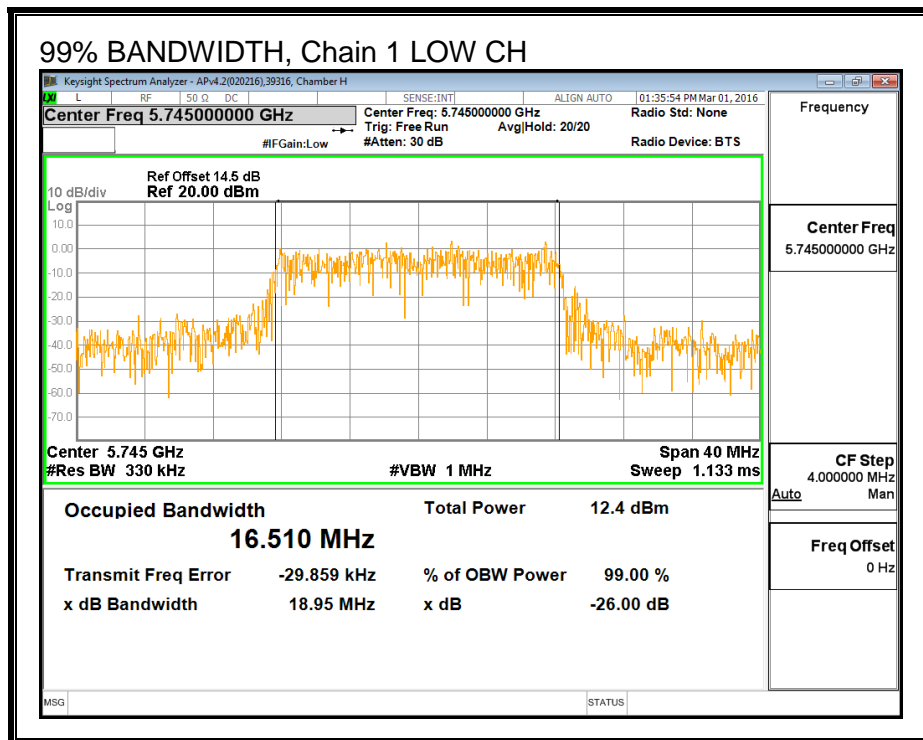
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5745	16.5290	16.5100
Mid	5785	16.5460	16.5000
High	5825	16.6000	16.5900

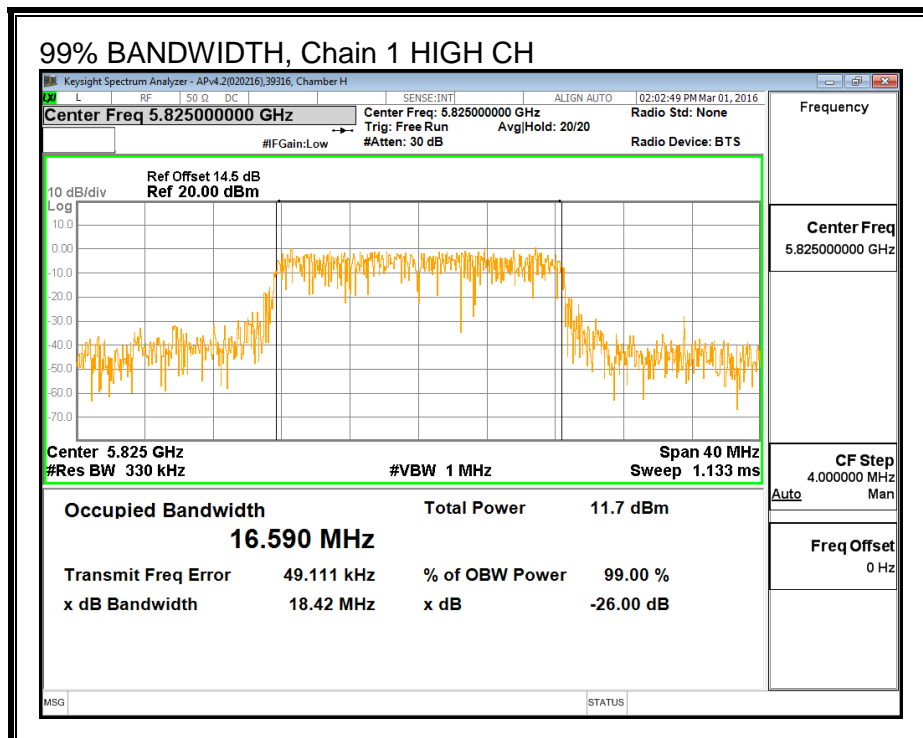
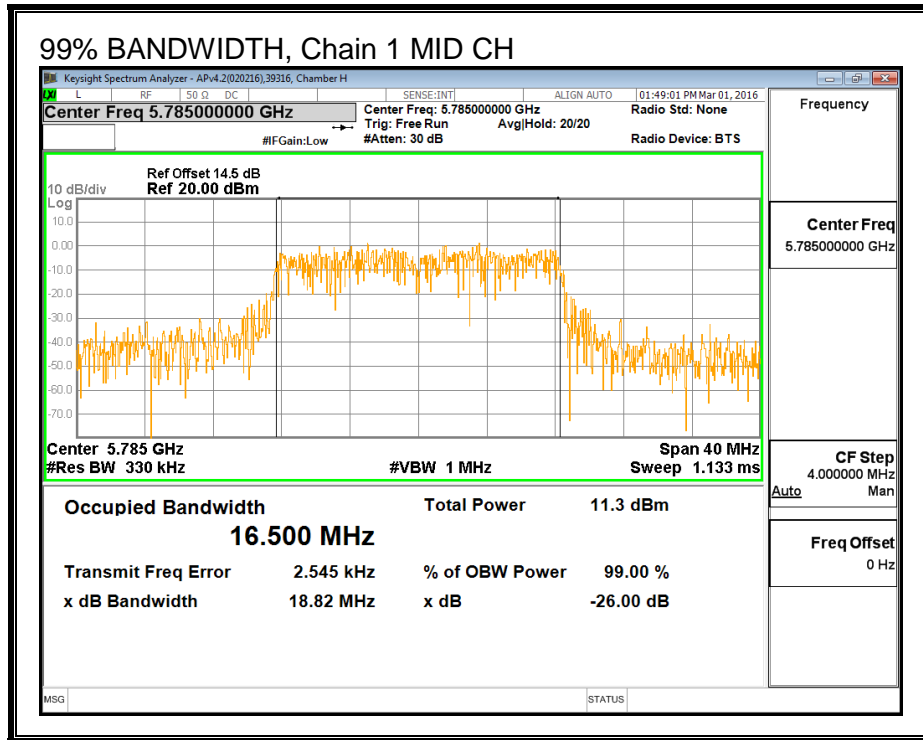
**99% BANDWIDTH, Chain 0**





**99% BANDWIDTH, Chain 1**





## 8.2.4. 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 unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.38	3.43	3.41

### RESULTS

#### Antenna Gain and Limit

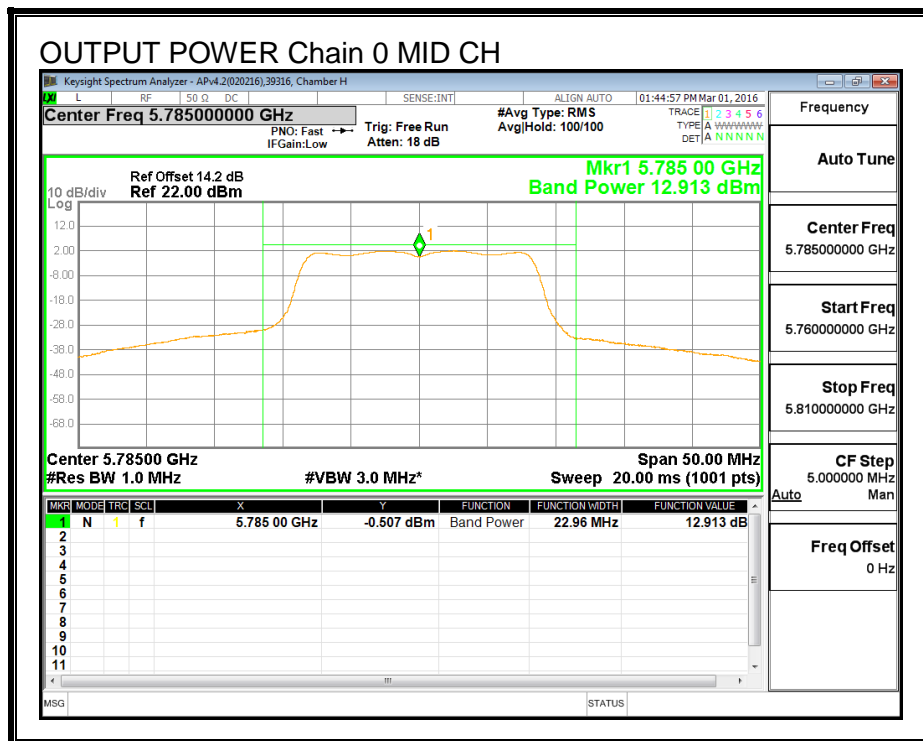
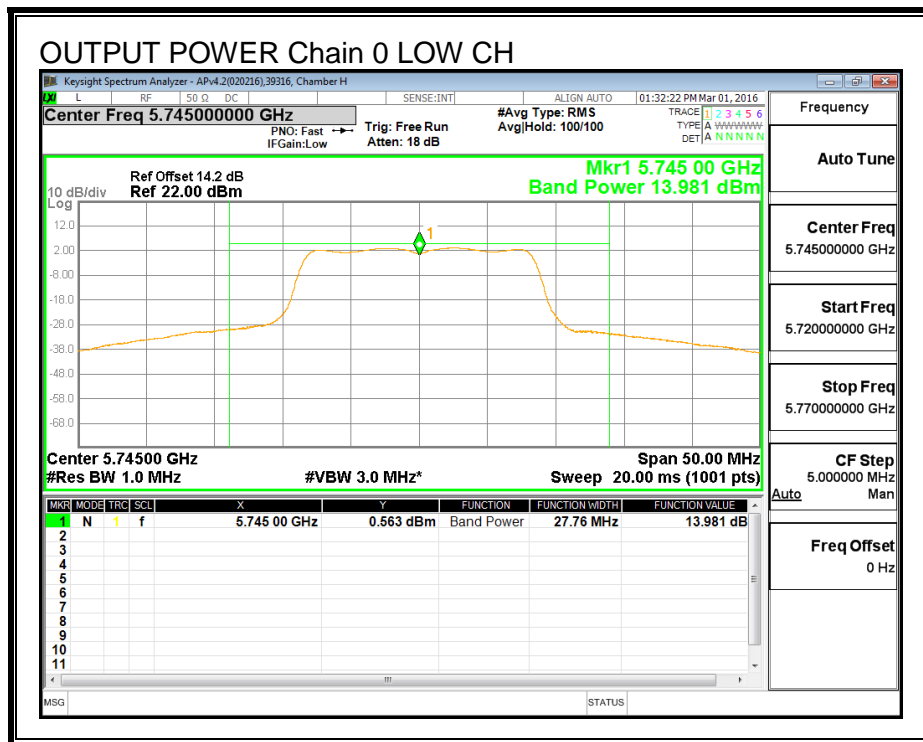
Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	3.41	30.00
Mid	5785	3.41	30.00
High	5825	3.41	30.00

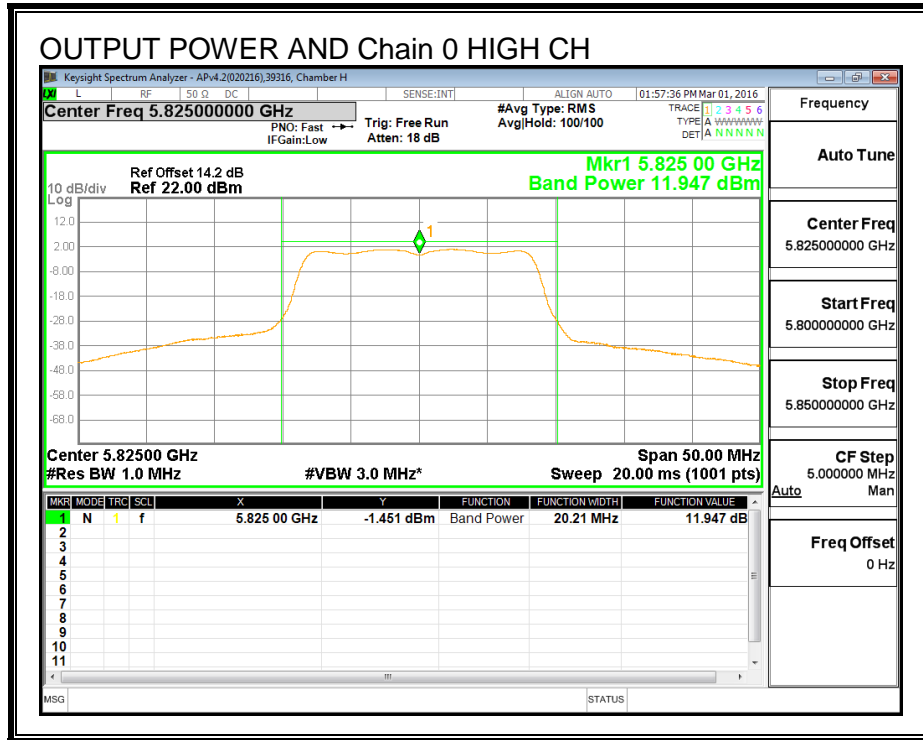
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

#### Output Power Results

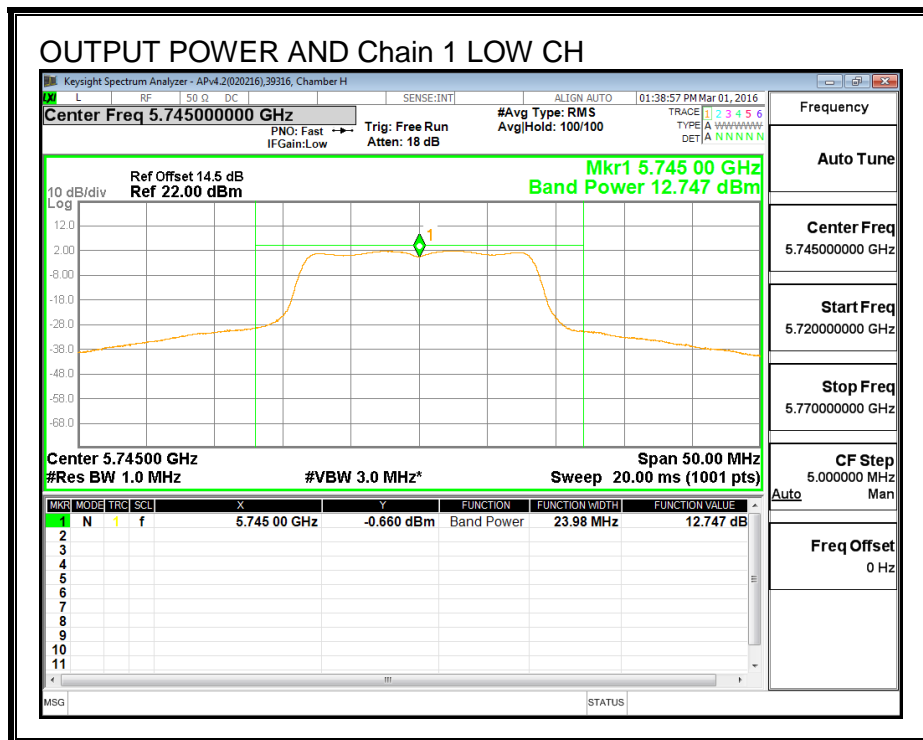
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	13.98	12.75	16.42	30.00	-13.58
Mid	5785	12.91	11.40	15.23	30.00	-14.77
High	5825	11.95	11.73	14.85	30.00	-15.15

**OUTPUT POWER Chain 0**

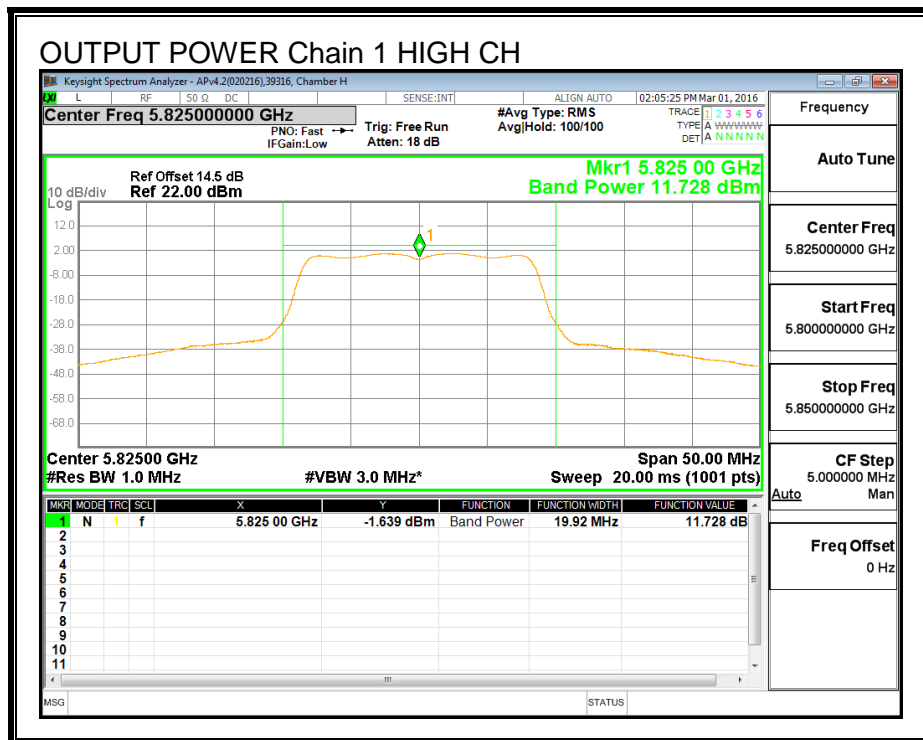
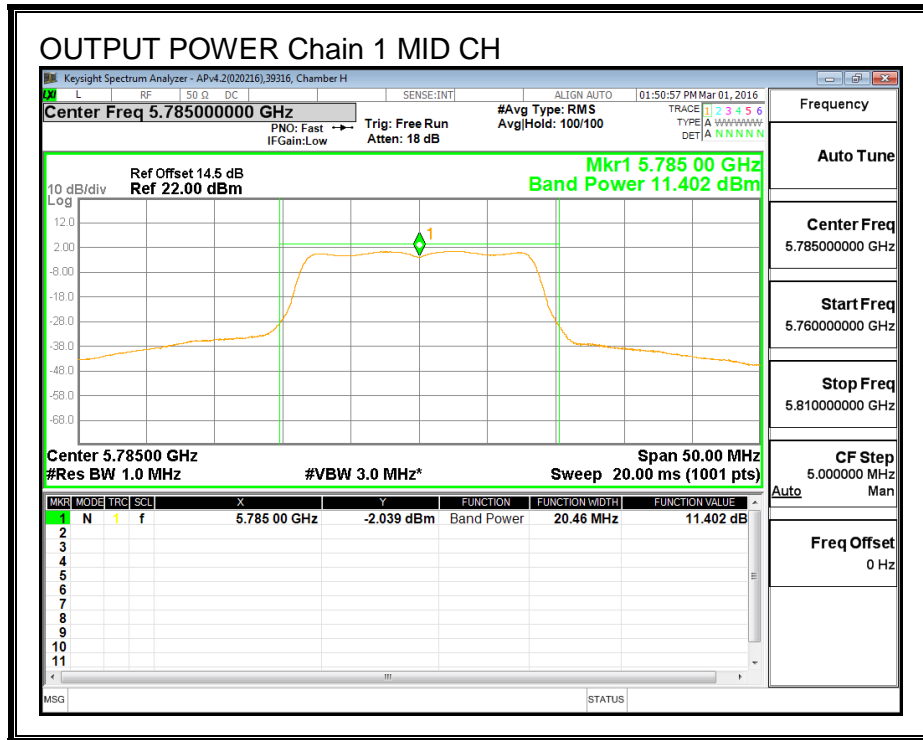




### OUTPUT POWER Chain 1







## 8.2.5. 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 unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.38	3.43	6.42

### RESULTS

#### Antenna Gain and Limits

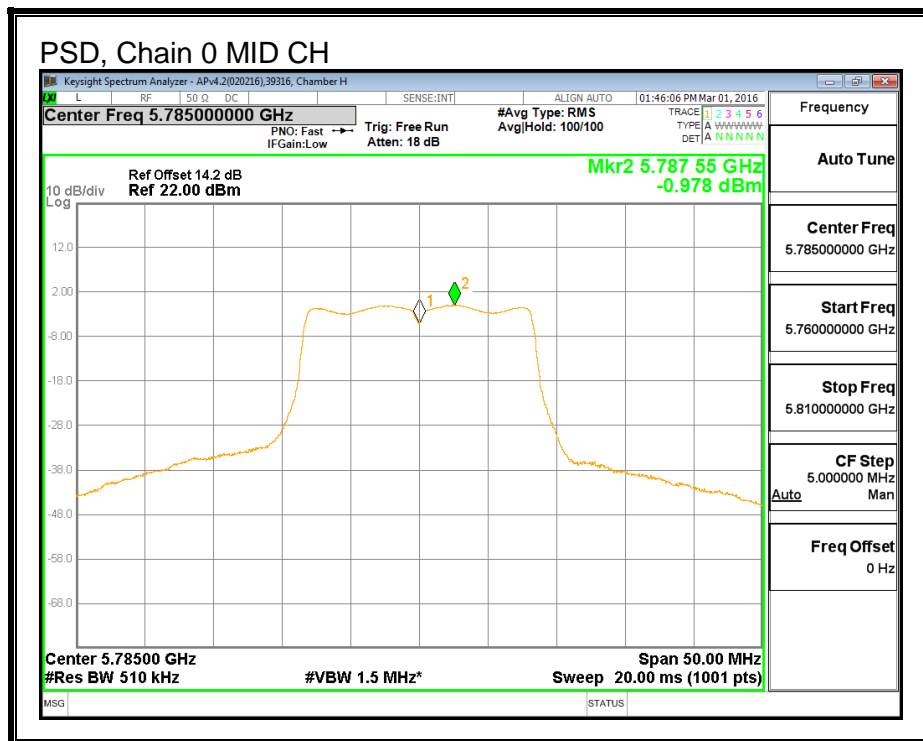
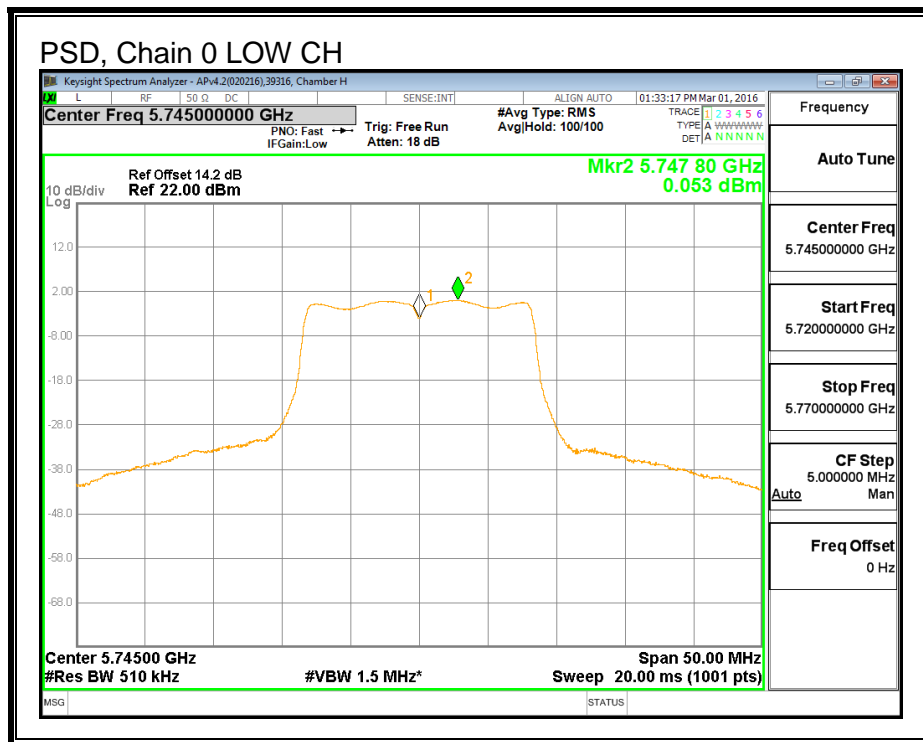
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5745	6.42	29.58
Mid	5785	6.42	29.58
High	5825	6.42	29.58

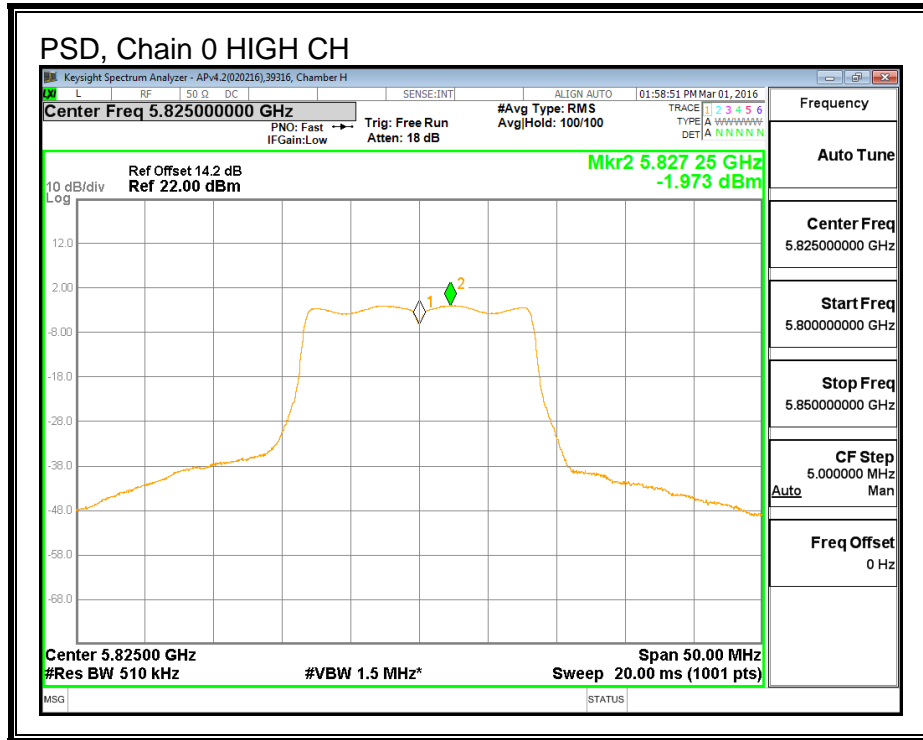
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
--------------------	------	--

#### PSD Results

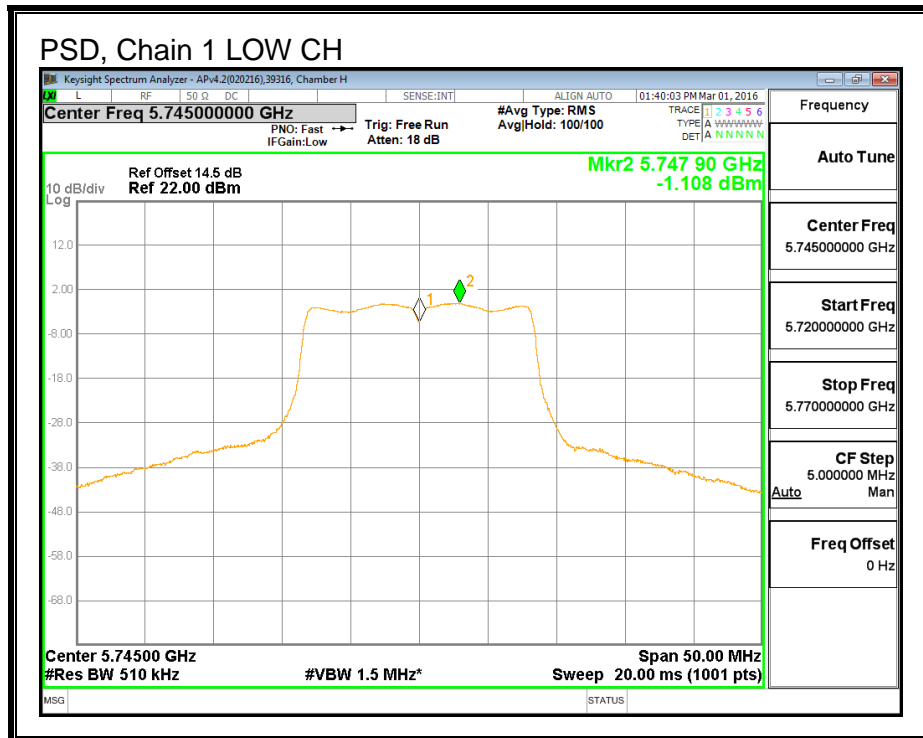
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5745	0.05	-1.11	2.52	29.58	-27.06
Mid	5785	-0.98	-2.46	1.35	29.58	-28.23
High	5825	-1.97	-2.18	0.94	29.58	-28.64

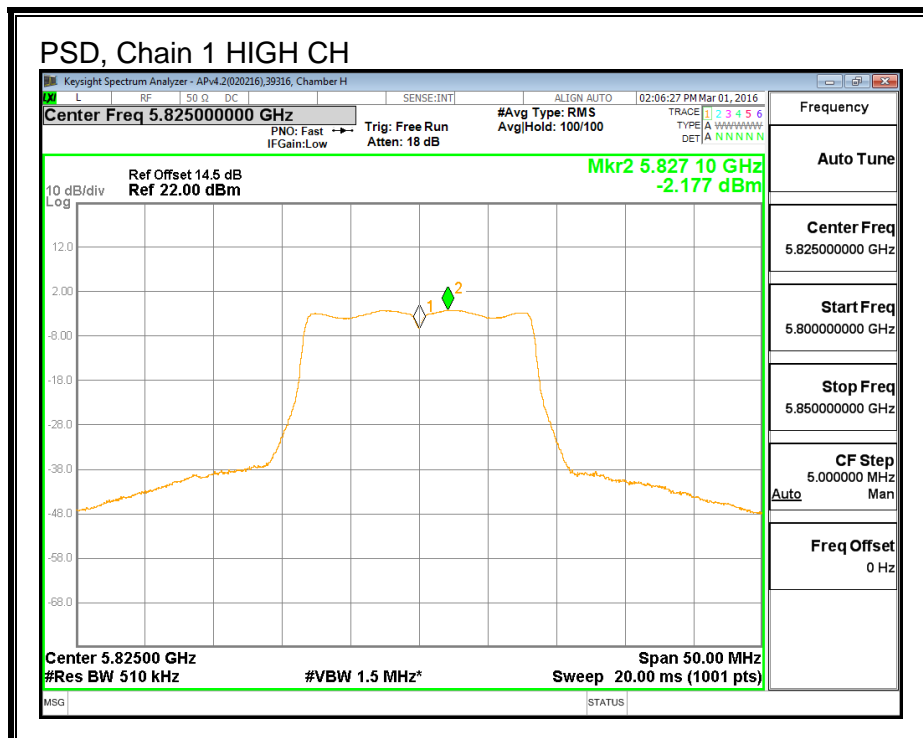
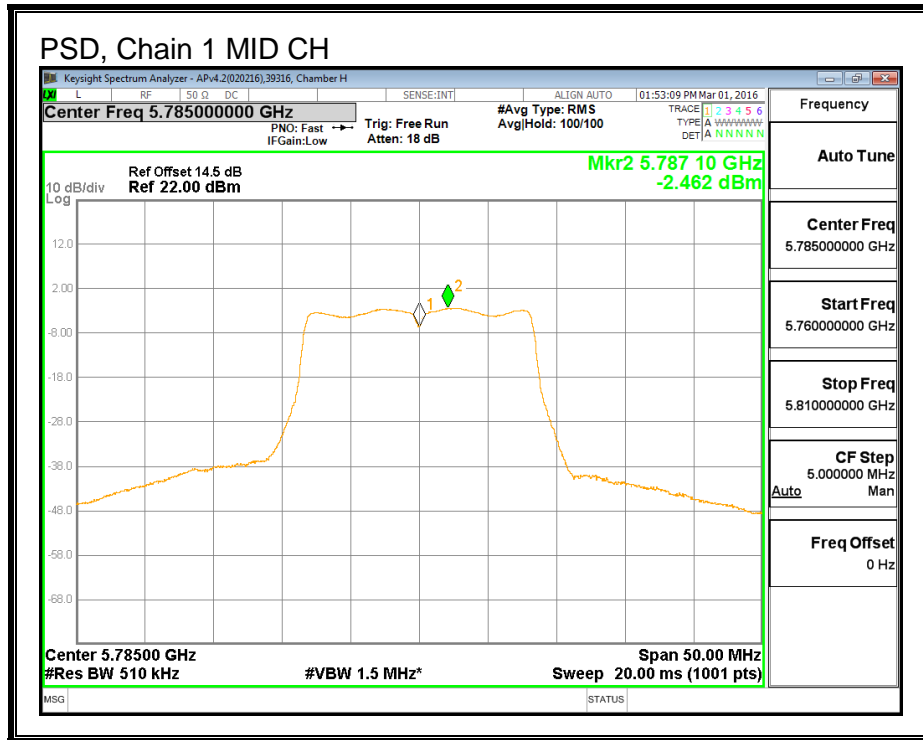
**PSD, Chain 0**





PSD, Chain 1





### 8.3. 802.11n HT20 MODE IN THE 5.8 GHz BAND

#### 8.3.1. 6 dB BANDWIDTH

##### LIMITS

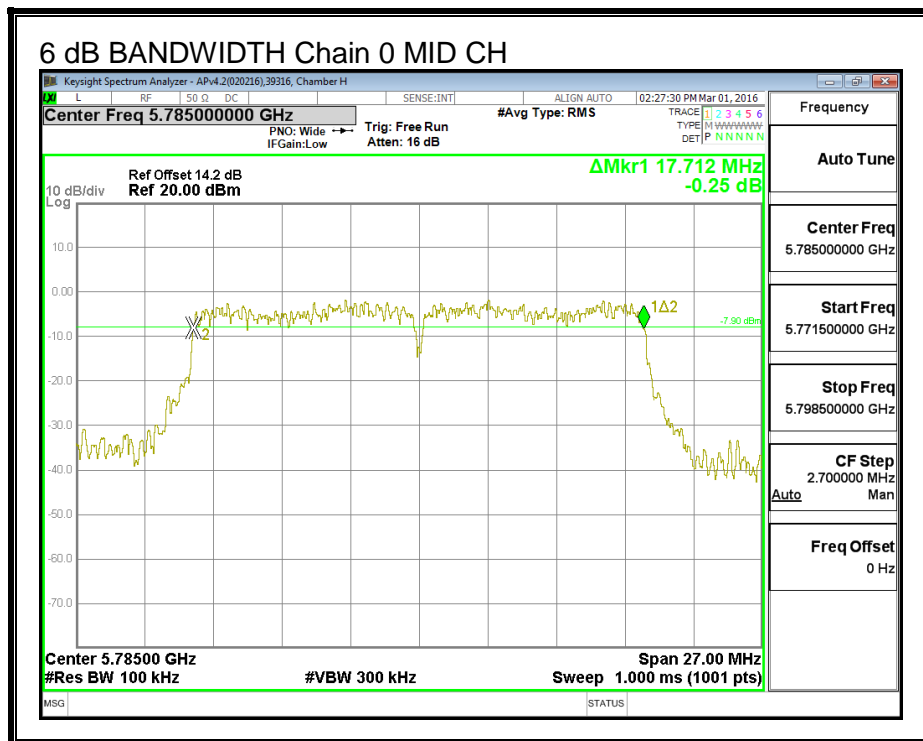
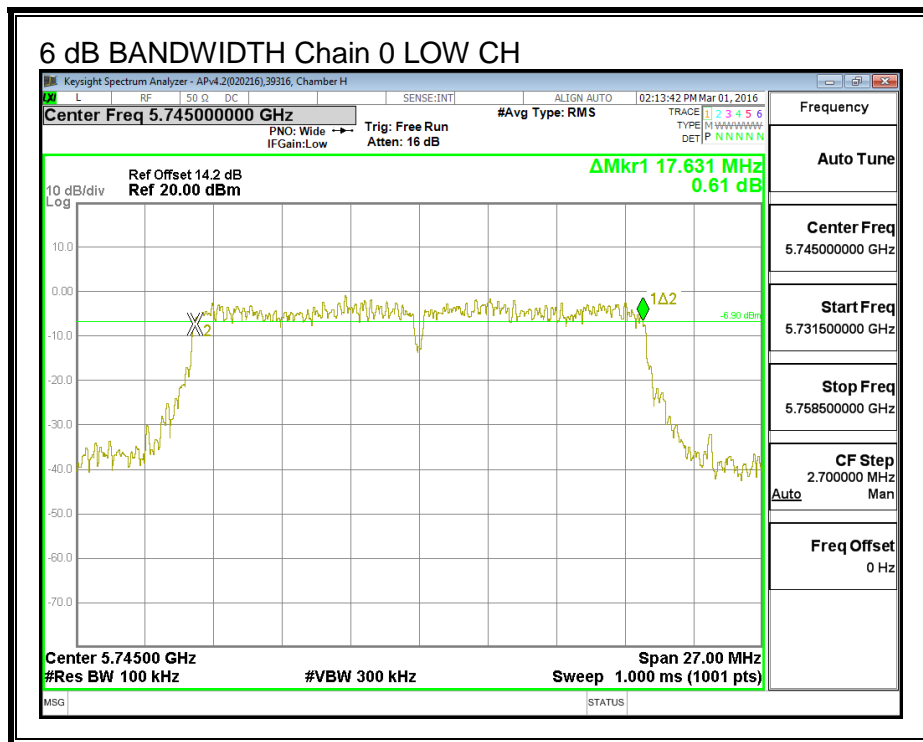
FCC §15.407 (e)

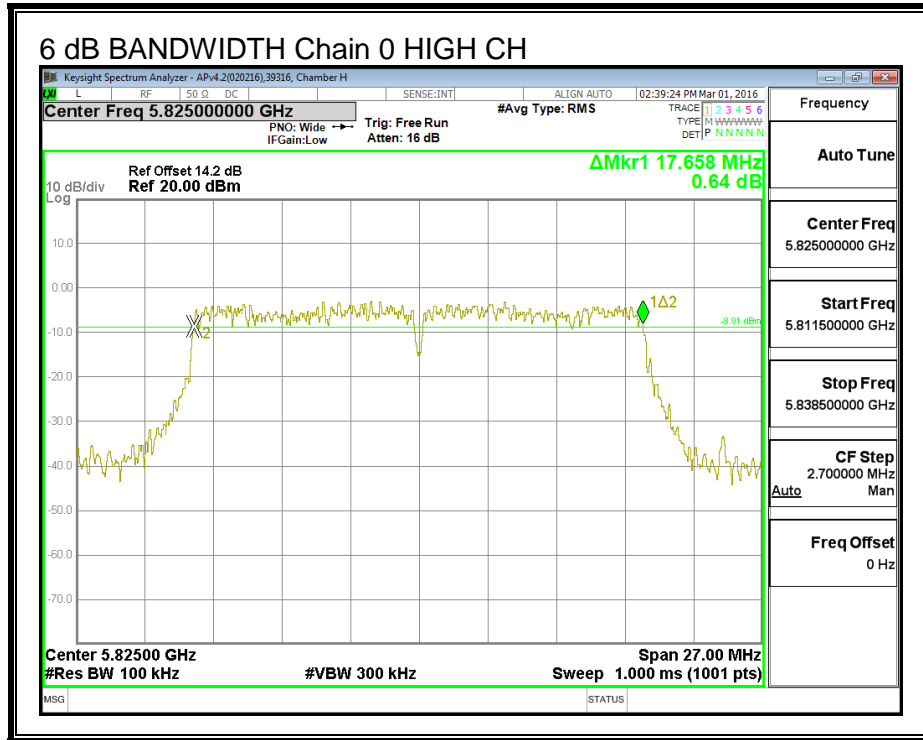
The minimum 6 dB bandwidth shall be at least 500 kHz.

##### RESULTS

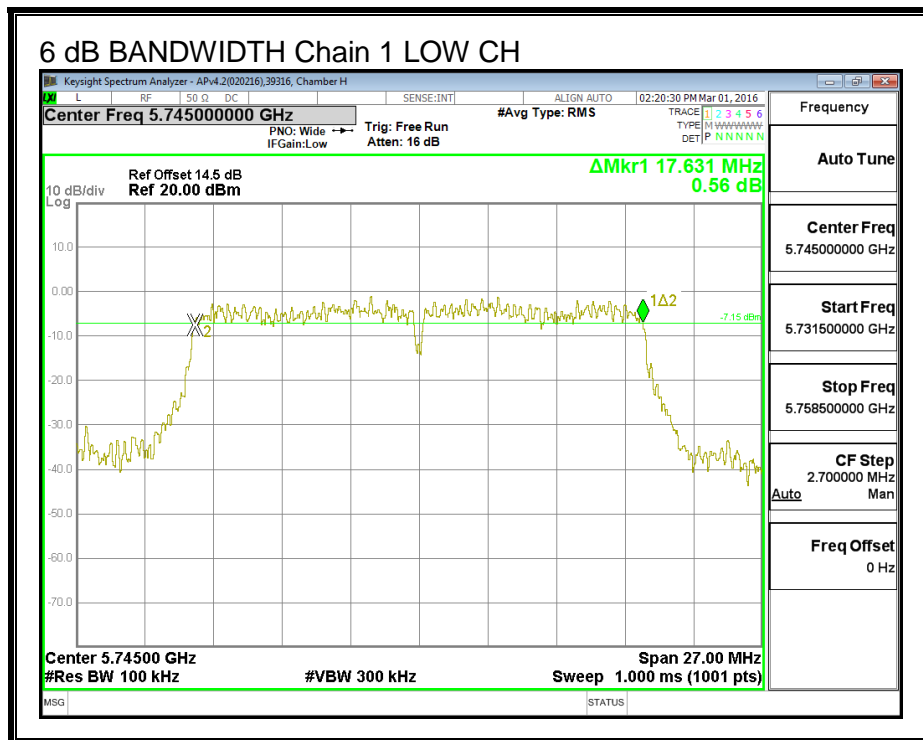
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	17.6310	17.6310	0.5
Mid	5785	17.7120	17.6850	0.5
High	5825	17.6580	17.6850	0.5

**6 dB BANDWIDTH, Chain 0**

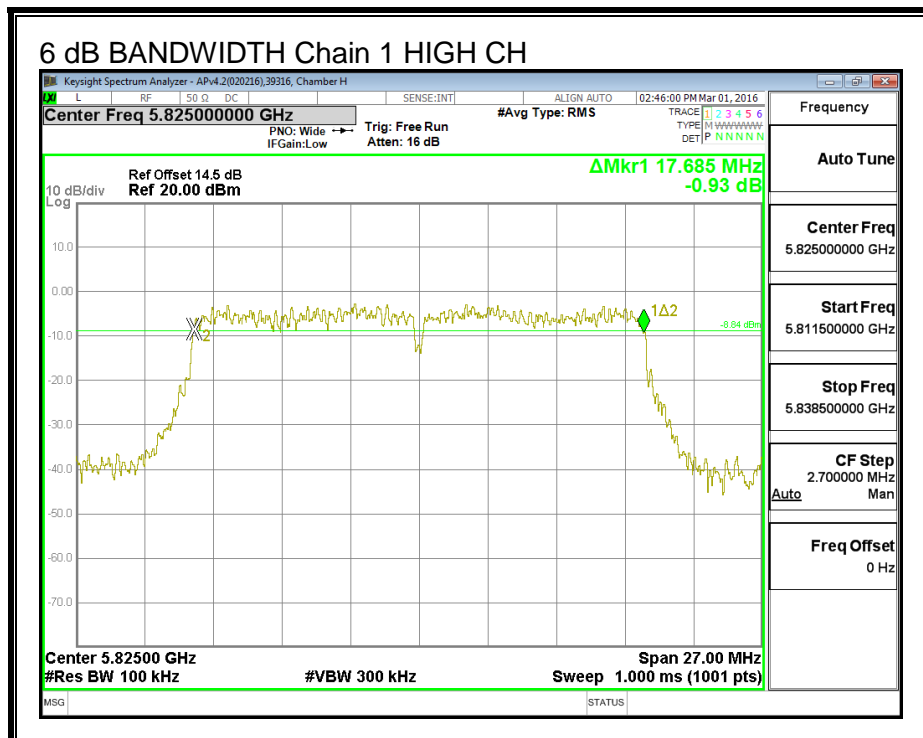
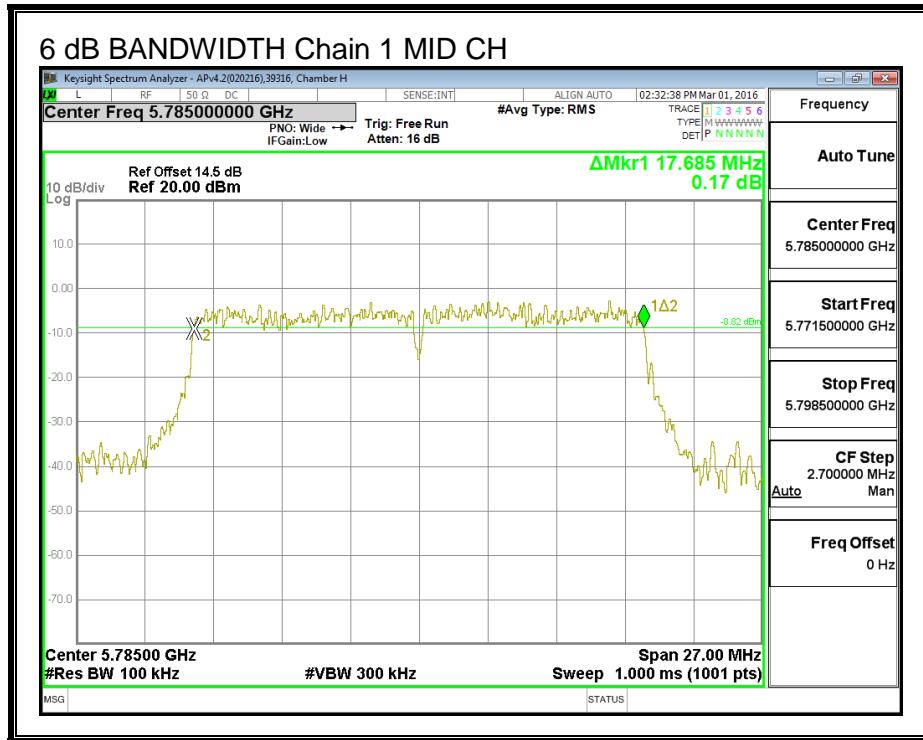




**6 dB BANDWIDTH, Chain 1**







### 8.3.2. 26 dB BANDWIDTH

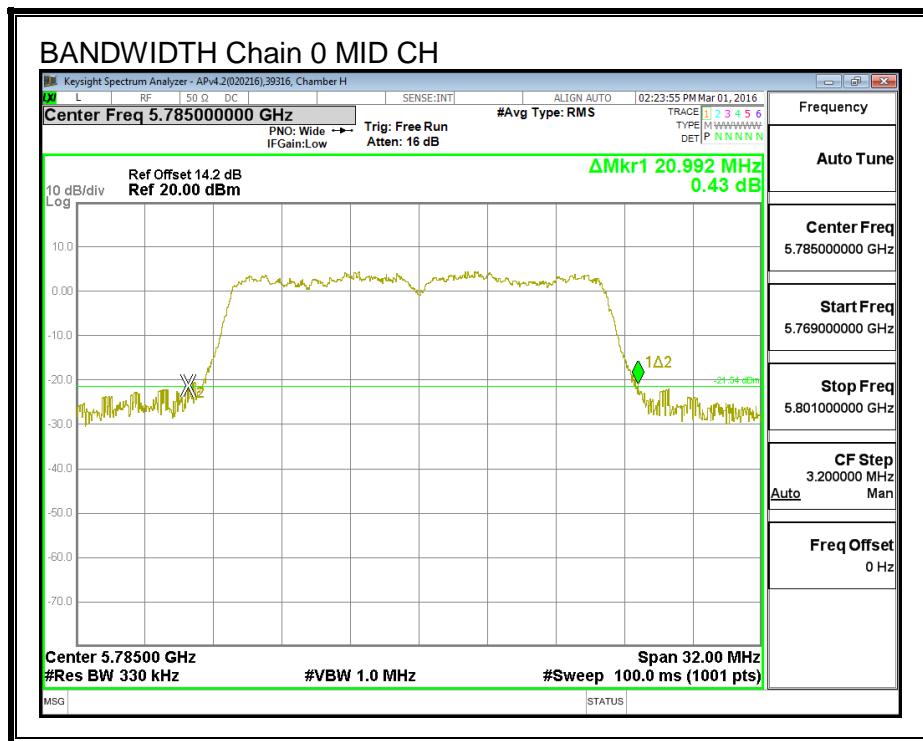
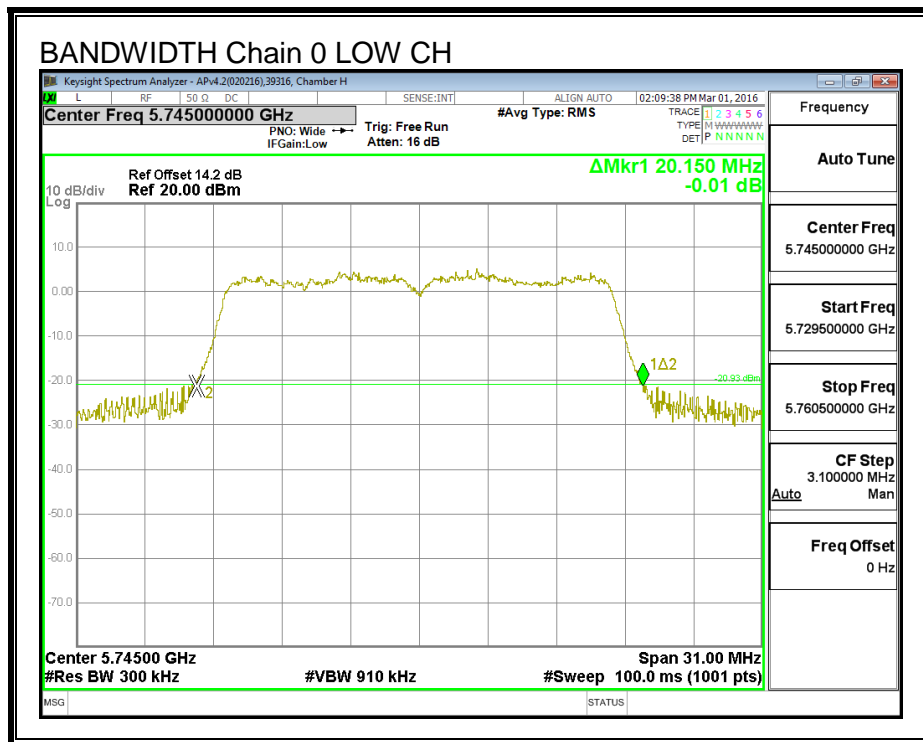
#### LIMITS

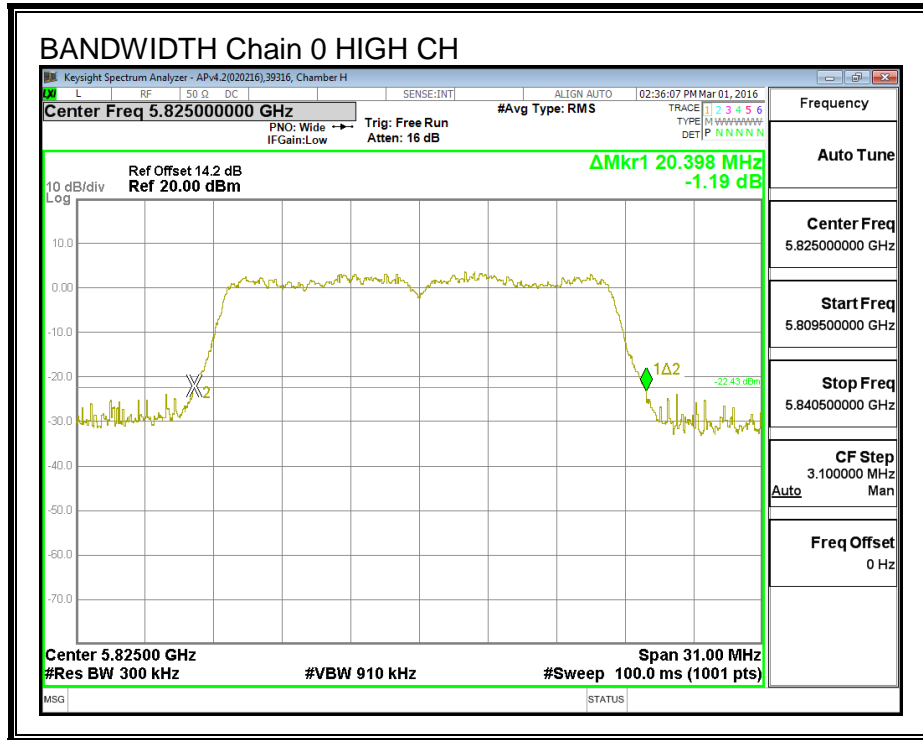
None; for reporting purposes only.

#### RESULTS

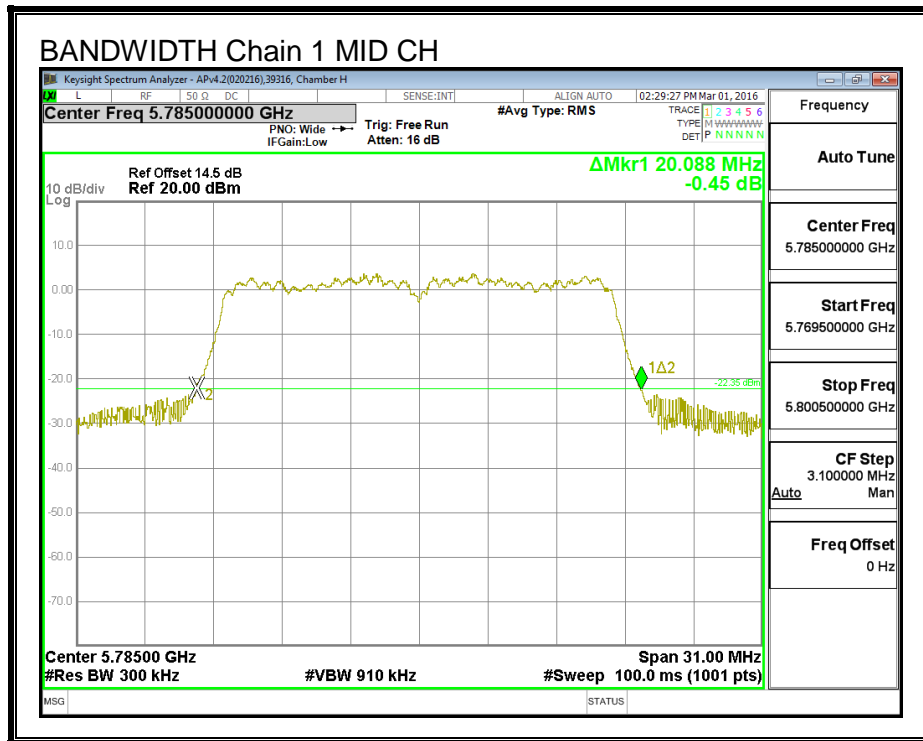
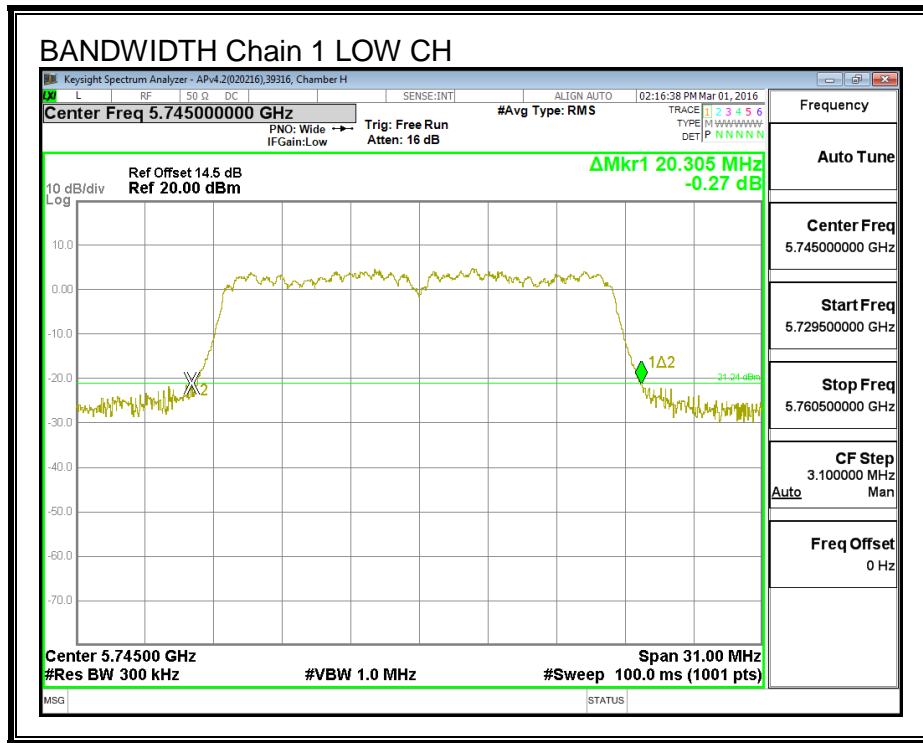
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5745	20.15	20.31
Mid	5785	20.99	20.09
High	5825	20.40	20.03

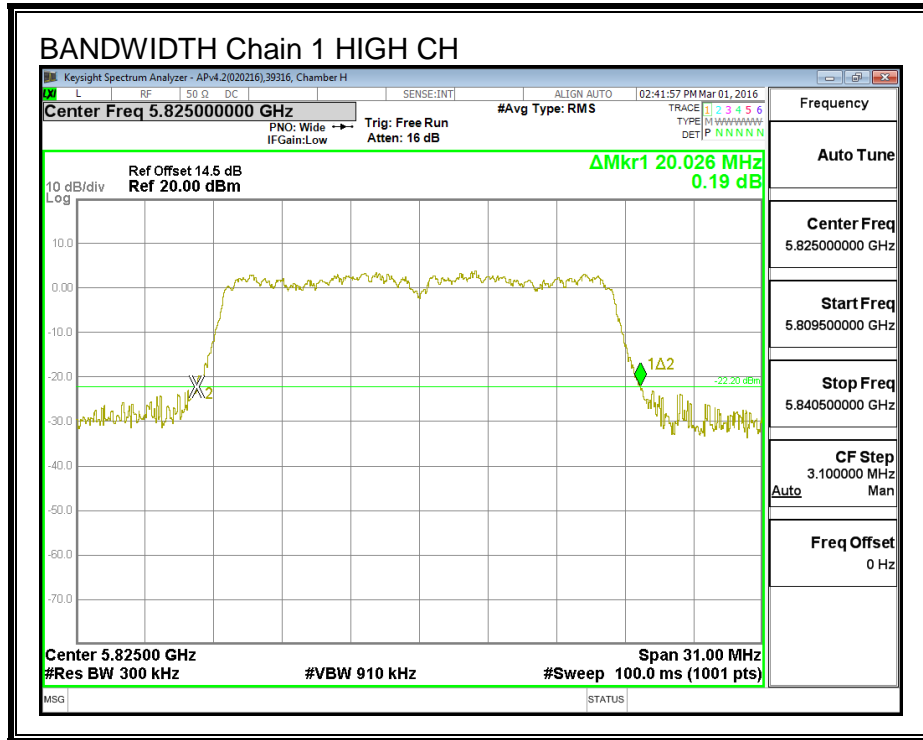
**26 dB BANDWIDTH, Chain 0**





**26 dB BANDWIDTH, Chain 1**





### 8.3.3. 99% BANDWIDTH

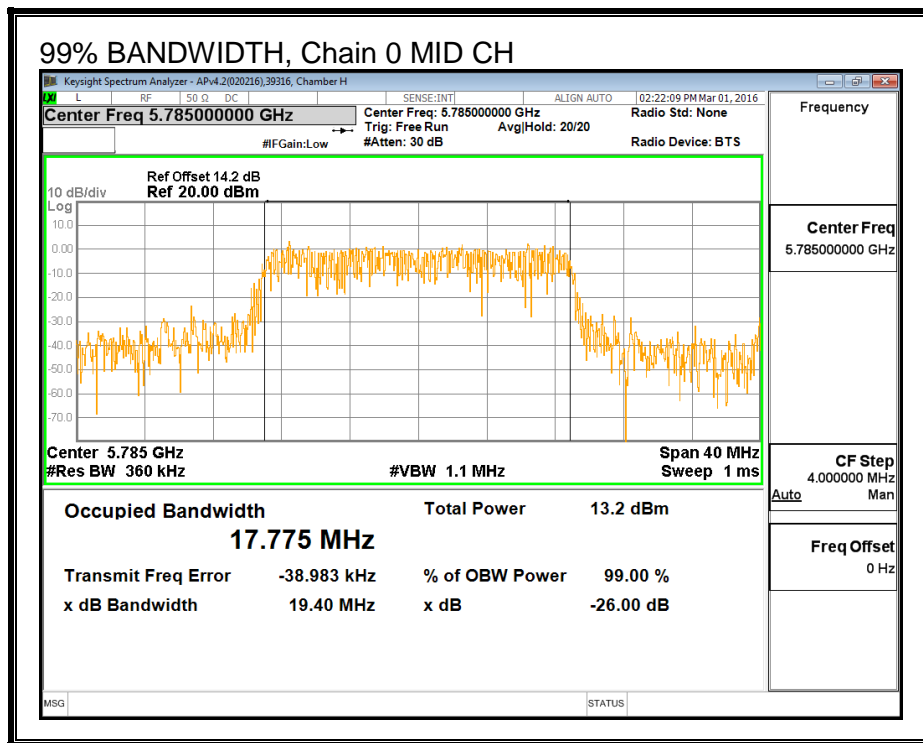
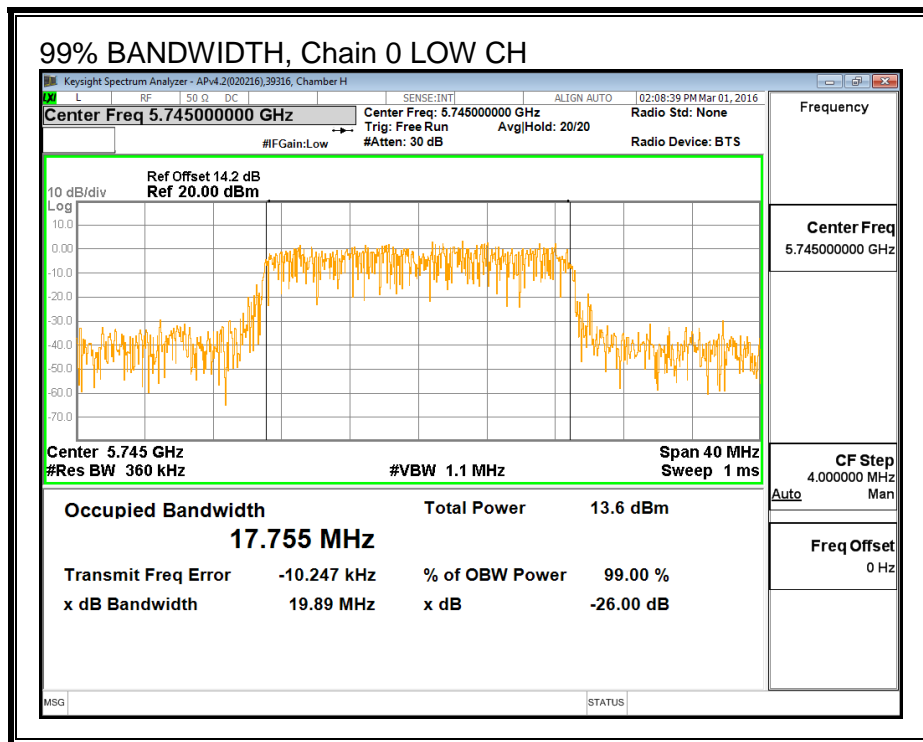
#### LIMITS

None; for reporting purposes only.

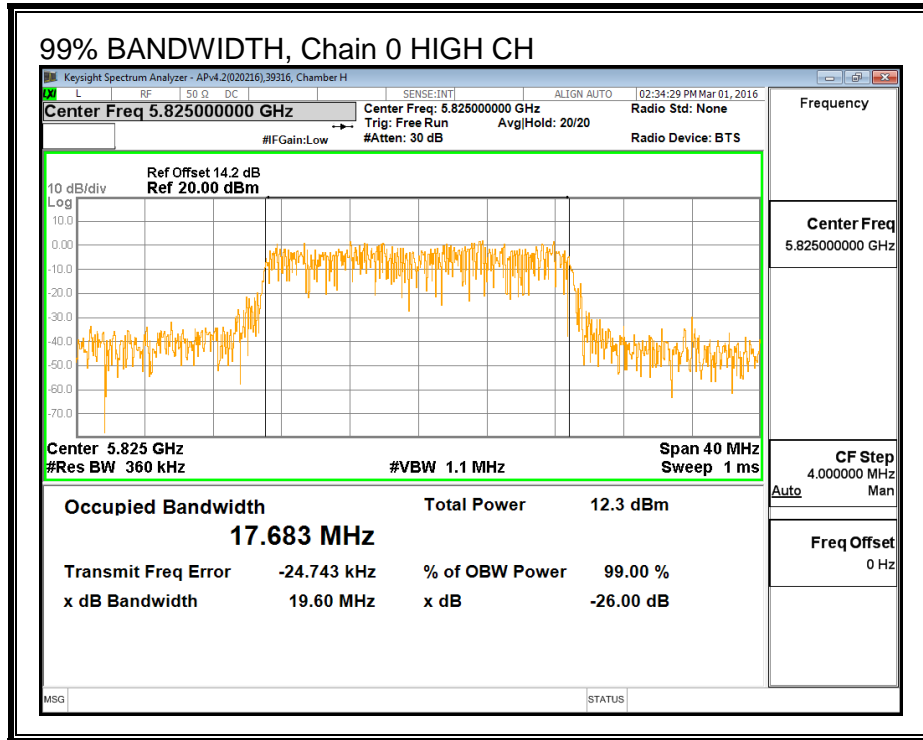
#### RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5745	17.7550	17.6210
Mid	5785	17.7750	17.6300
High	5825	17.6830	17.7050

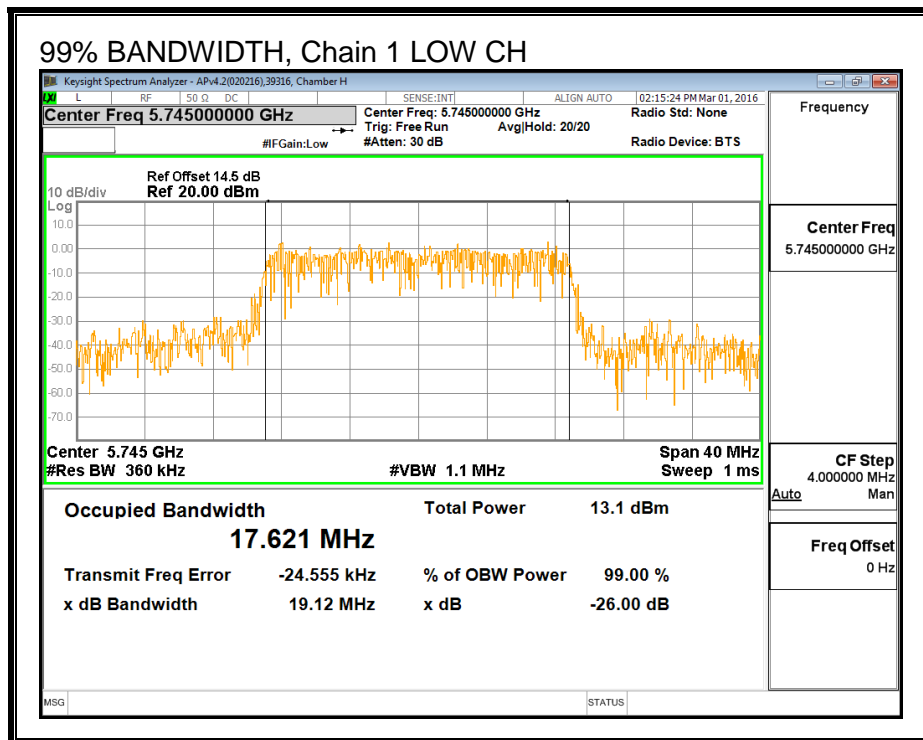
**99% BANDWIDTH, Chain 0**

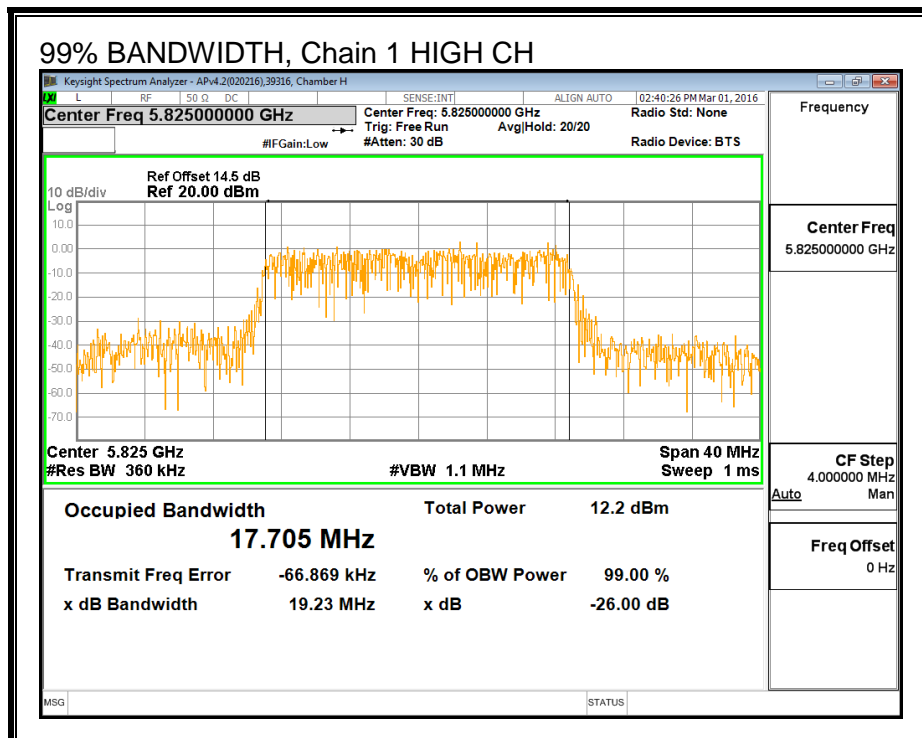
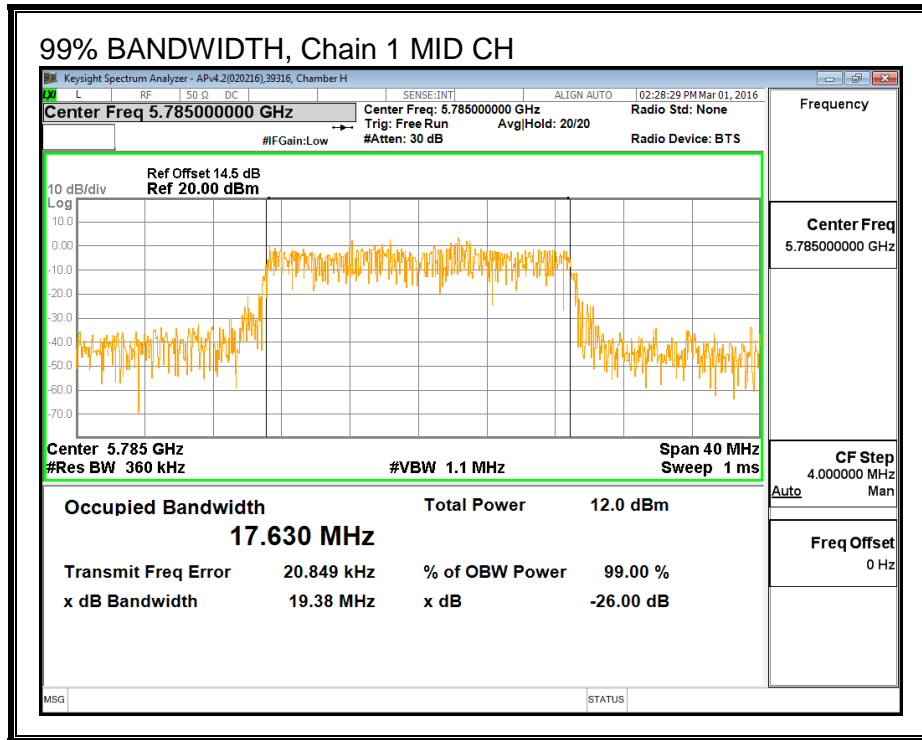






**99% BANDWIDTH, Chain 1**





### 8.3.4. 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 unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.38	3.43	3.41

#### RESULTS

##### Antenna Gain and Limit

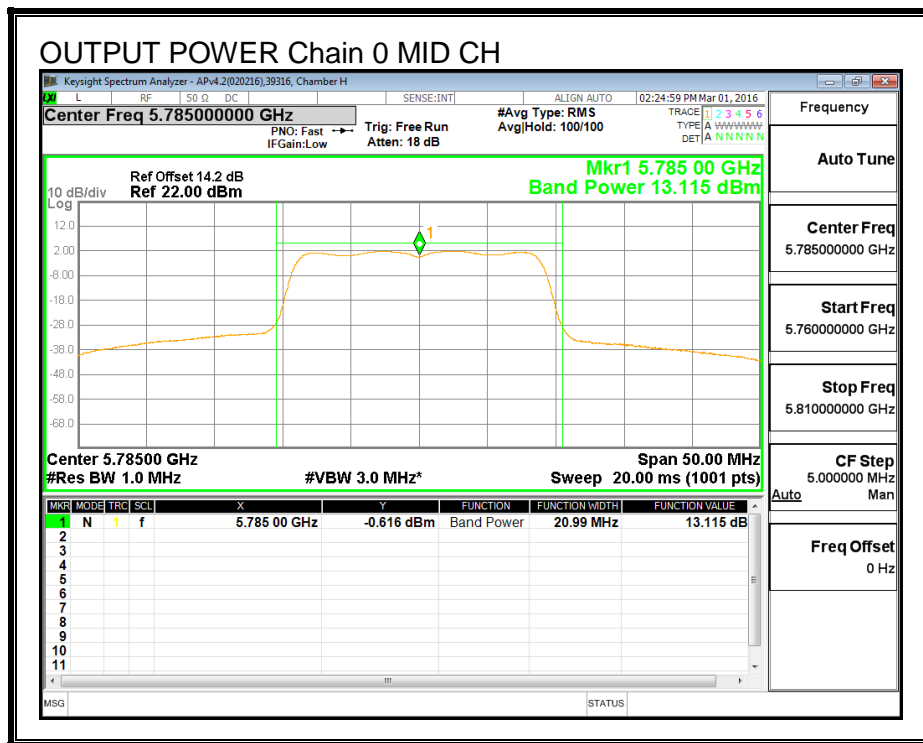
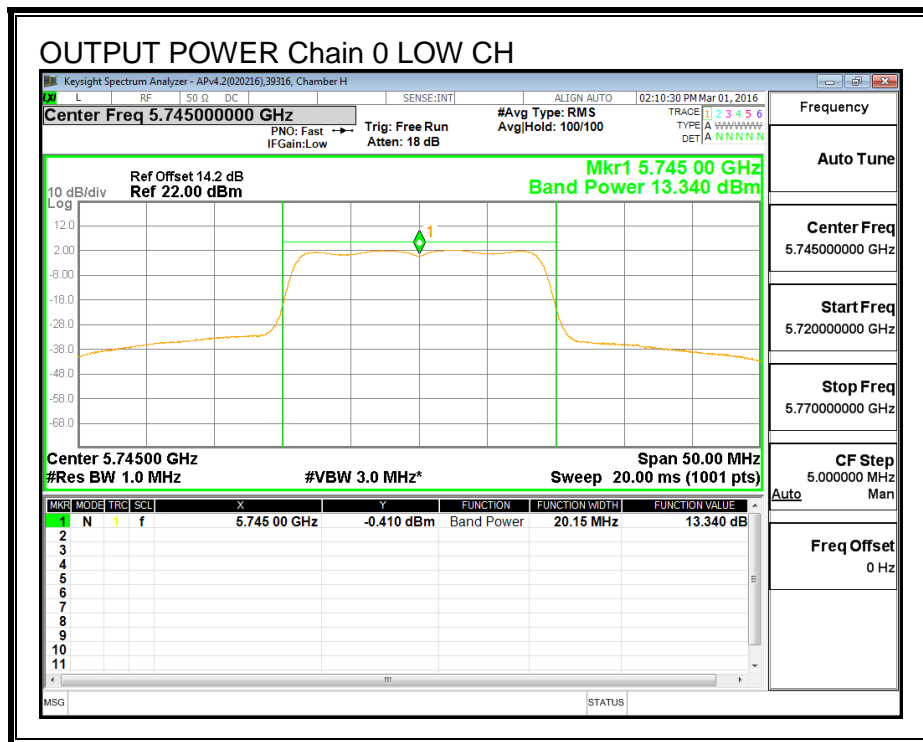
Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	3.41	30.00
Mid	5785	3.41	30.00
High	5825	3.41	30.00

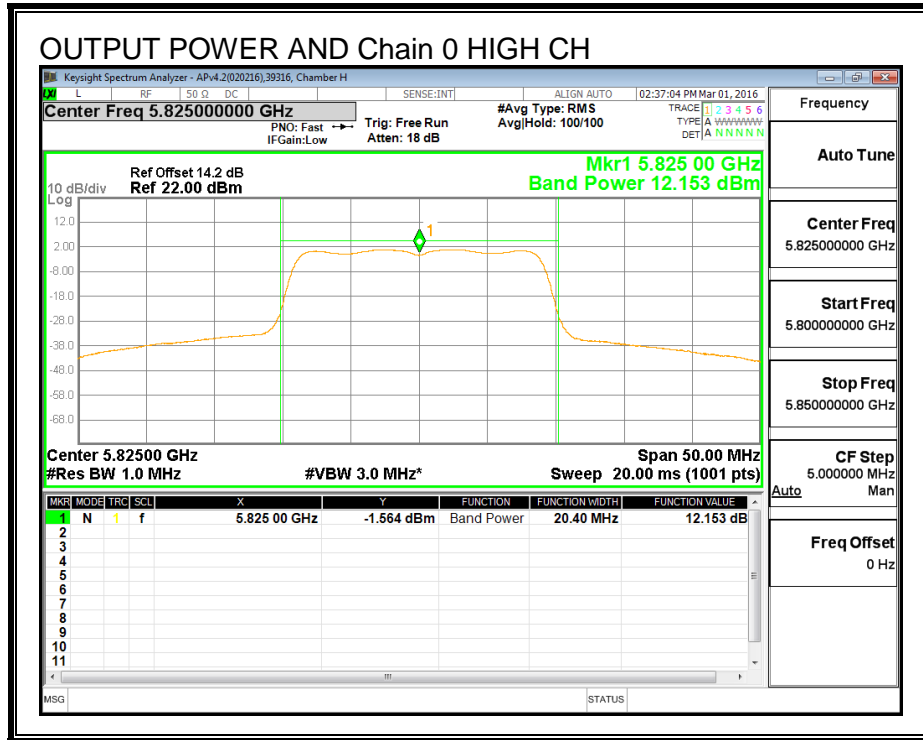
<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd Power</b>
---------------------------	------	---

##### Output Power Results

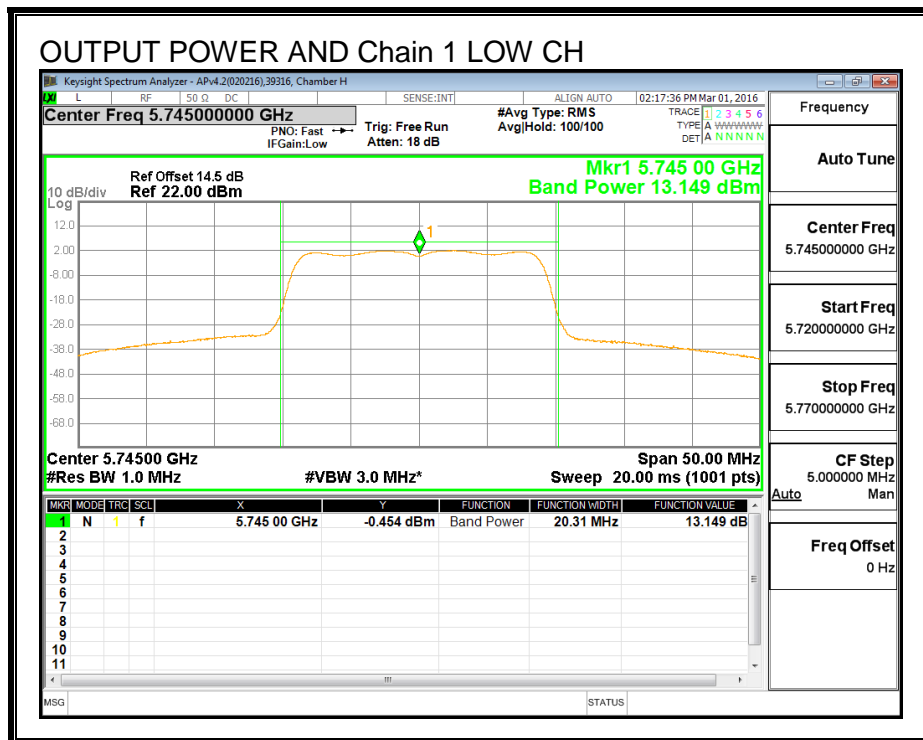
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	13.34	13.15	16.26	30.00	-13.74
Mid	5785	13.12	11.80	15.52	30.00	-14.48
High	5825	12.15	12.17	15.17	30.00	-14.83

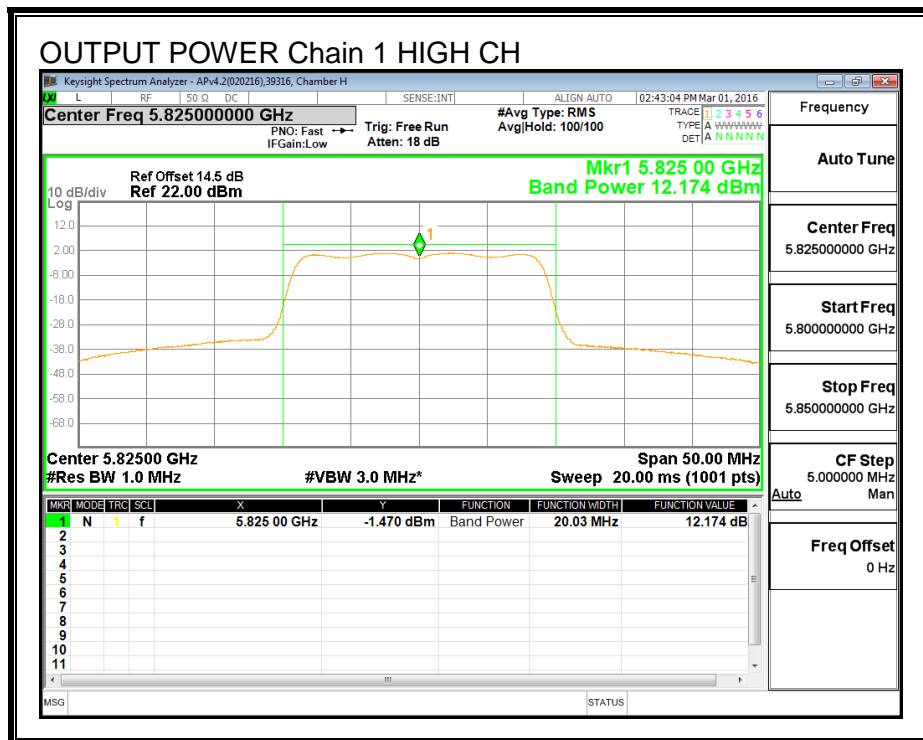
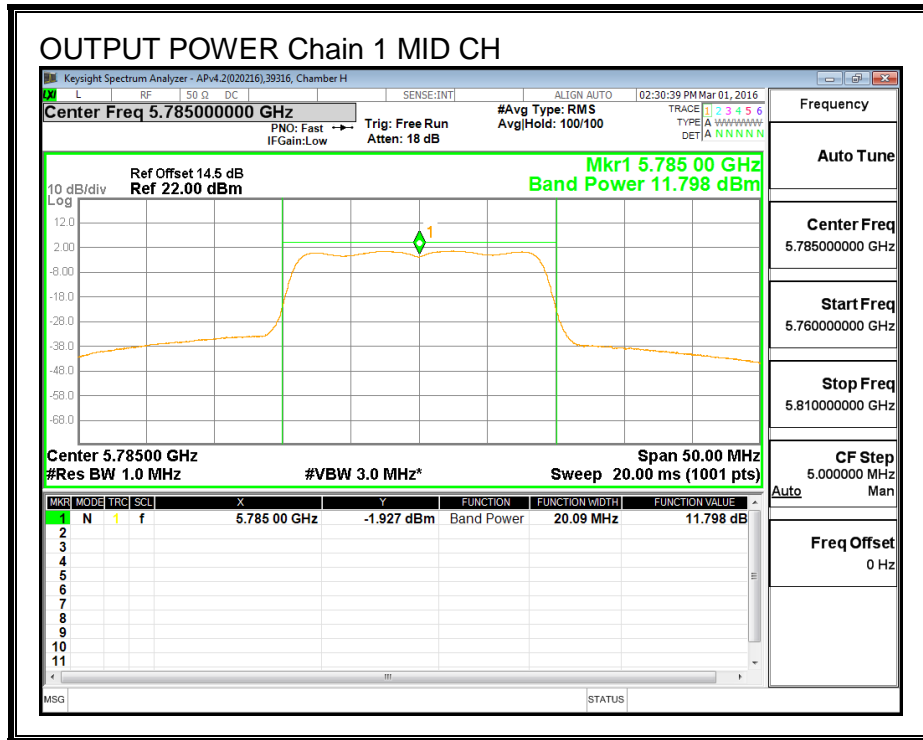
**OUTPUT POWER Chain 0**





### OUTPUT POWER Chain 1





### 8.3.5. 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 unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.38	3.43	6.42

#### RESULTS

##### Antenna Gain and Limits

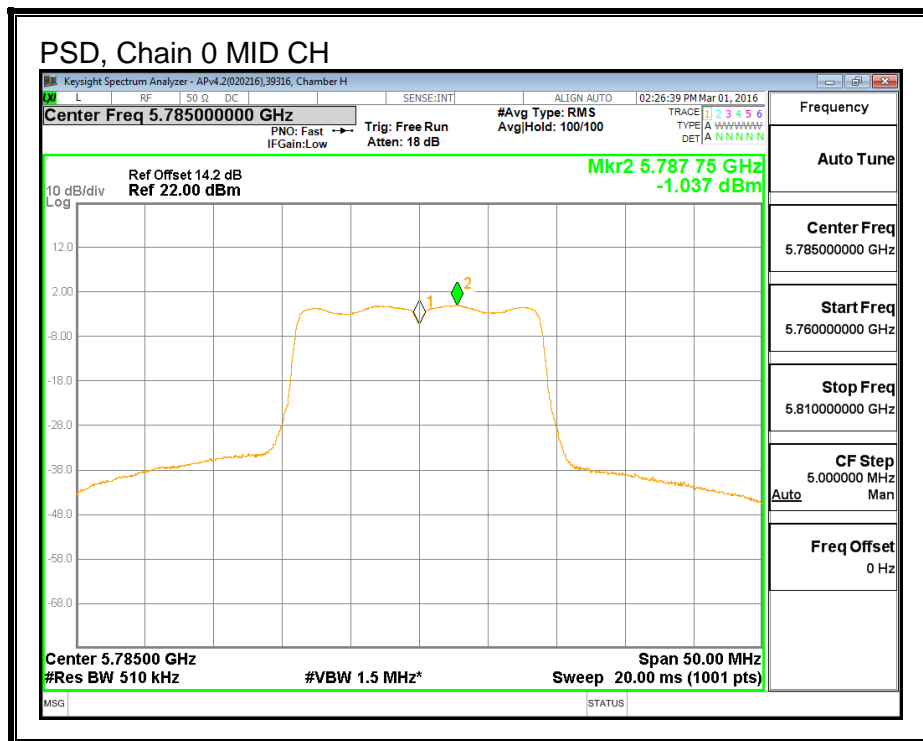
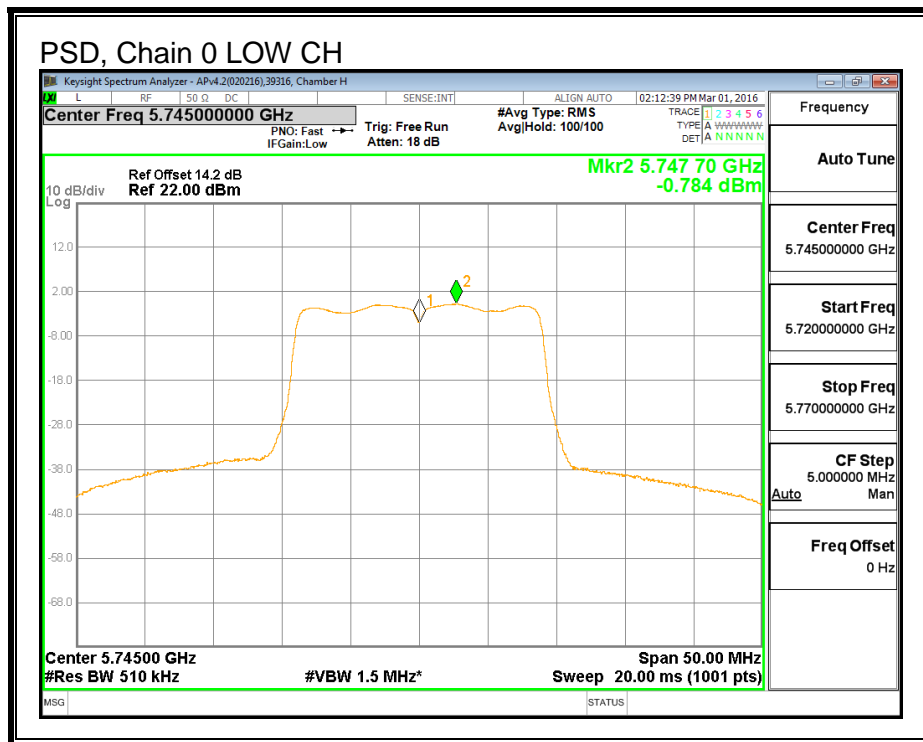
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5745	6.42	29.58
Mid	5785	6.42	29.58
High	5825	6.42	29.58

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
---------------------------	------	---

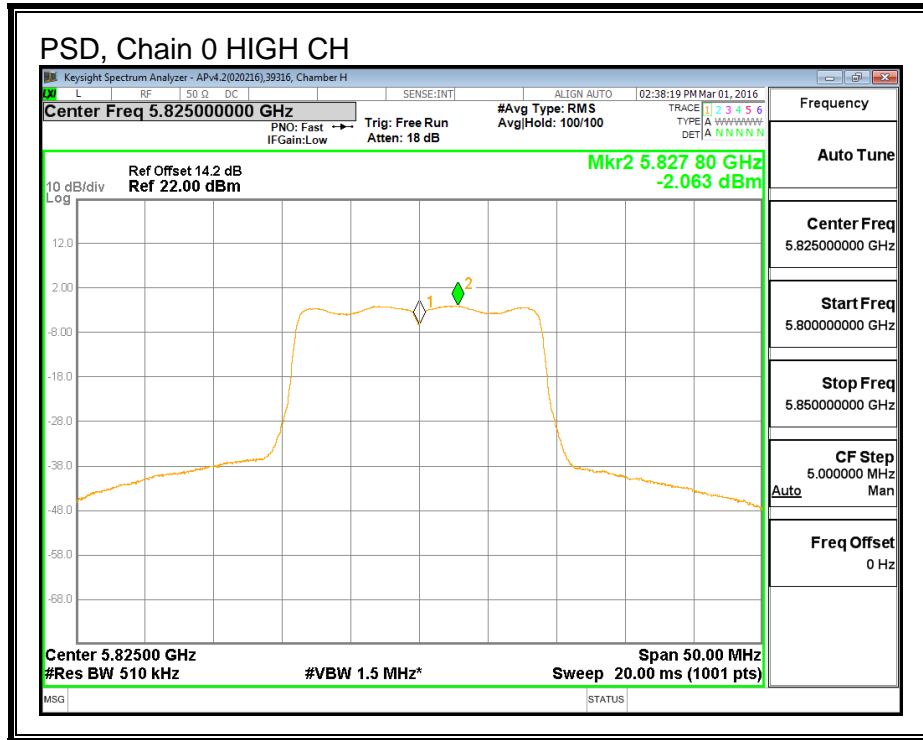
##### PSD Results

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	-0.78	-0.93	2.16	29.58	-27.42
Mid	5785	-1.04	-2.28	1.40	29.58	-28.18
High	5825	-2.06	-2.04	0.96	29.58	-28.62

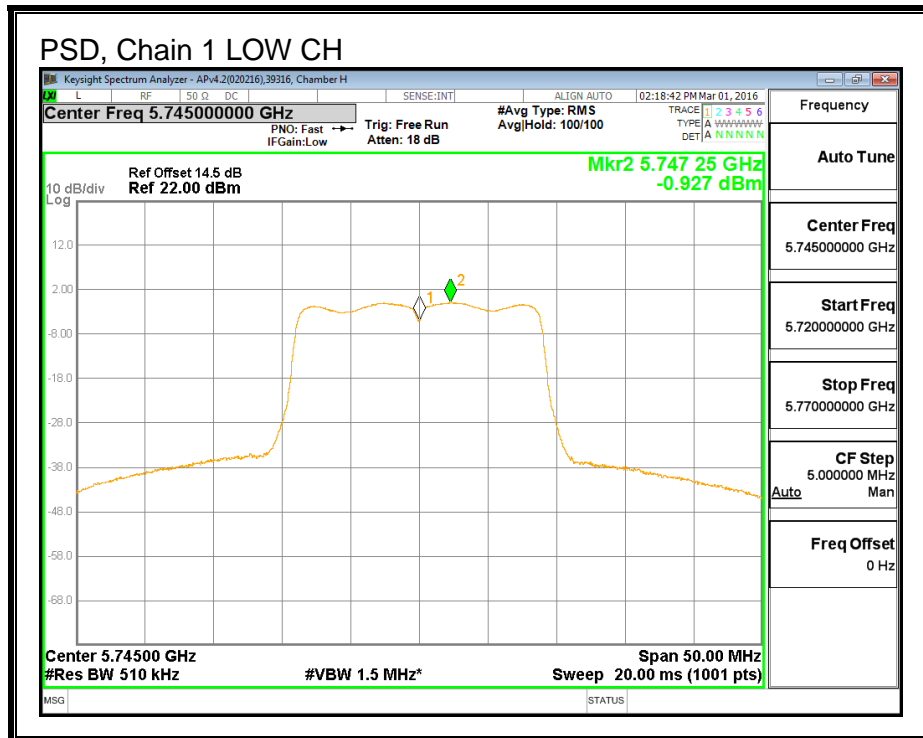
**PSD, Chain 0**

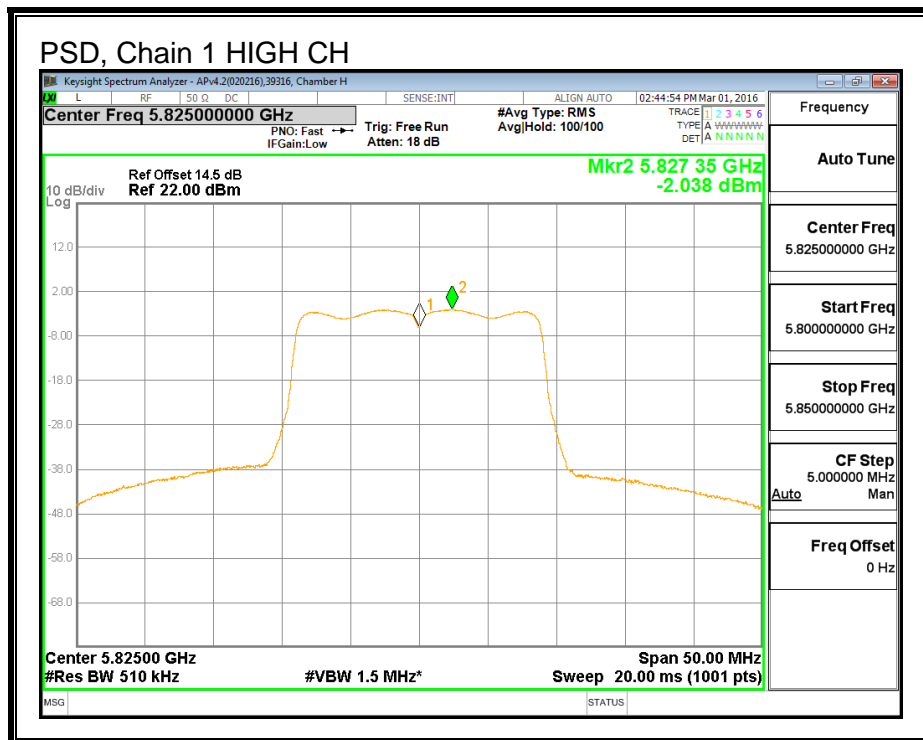
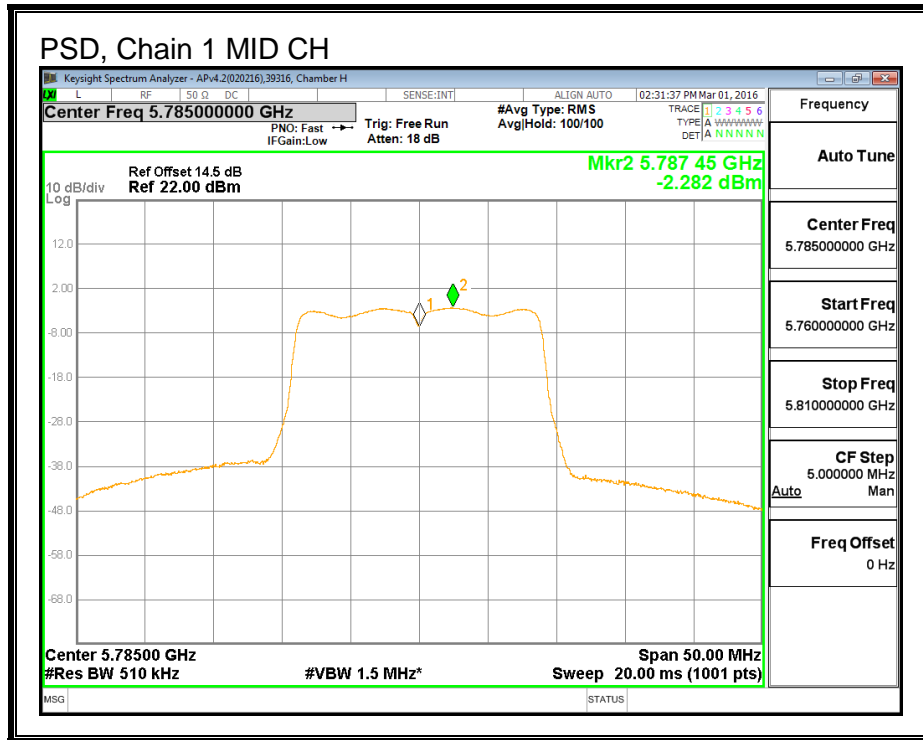






PSD, Chain 1





## 8.4. 802.11n HT40 MODE IN THE 5.8 GHz BAND

### 8.4.1. 6 dB BANDWIDTH

#### LIMITS

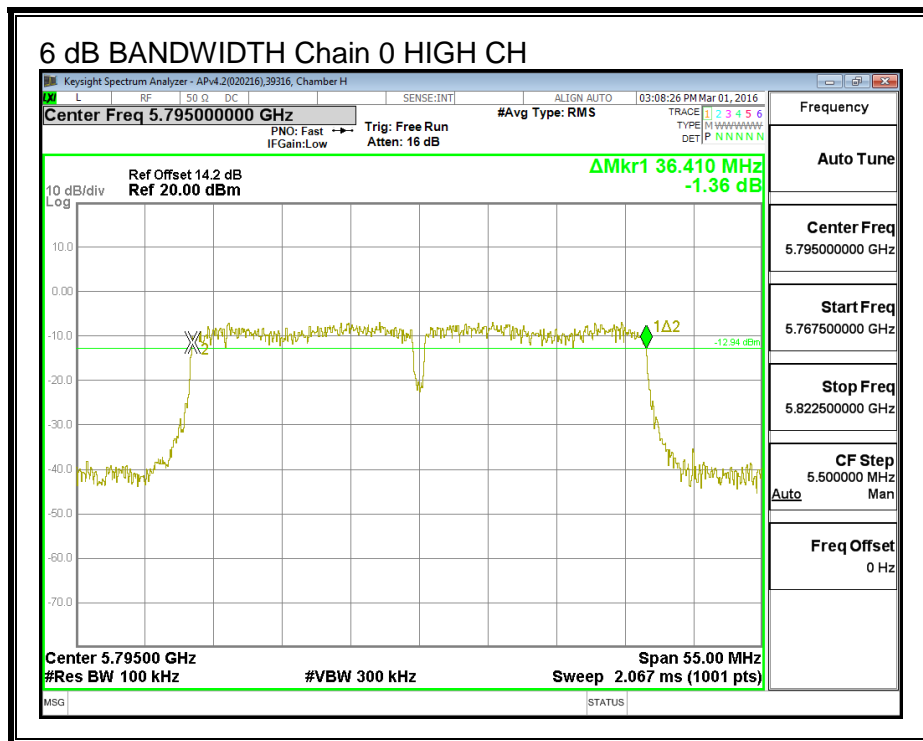
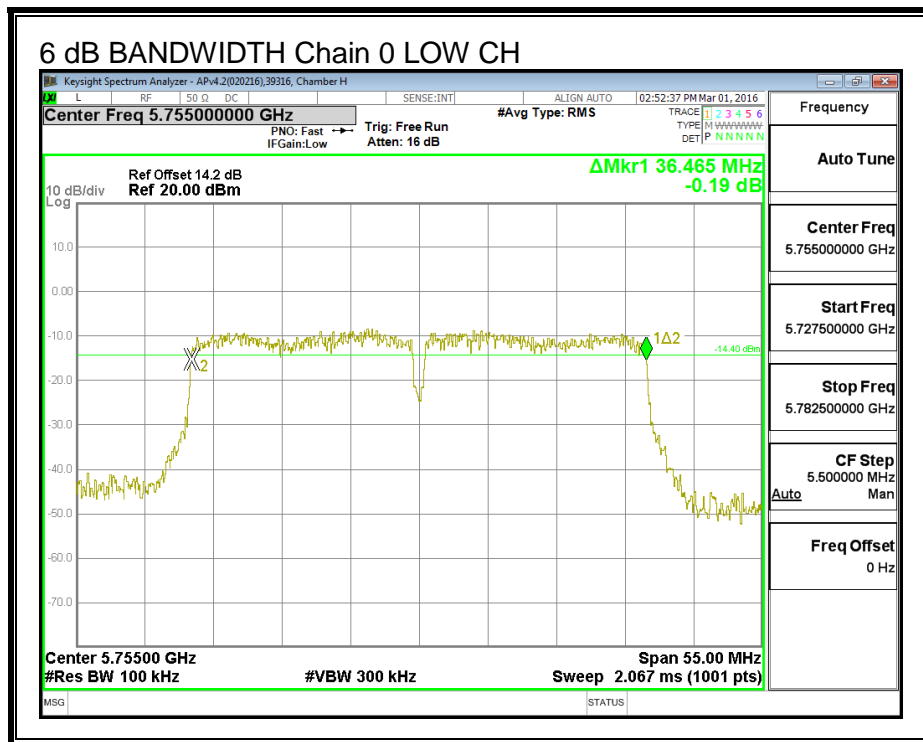
FCC §15.407 (e)

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

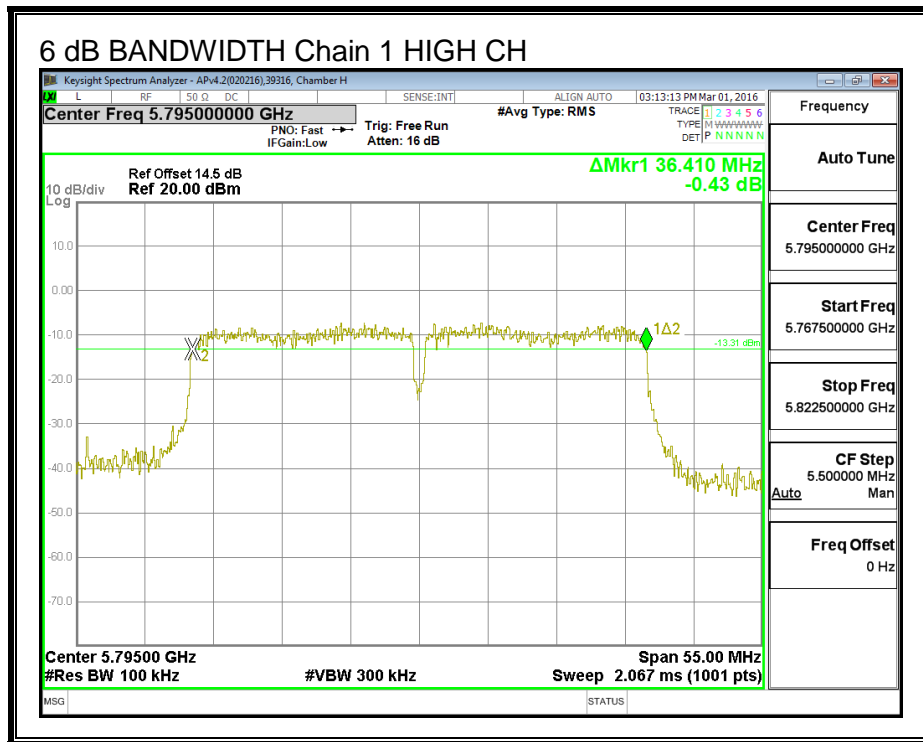
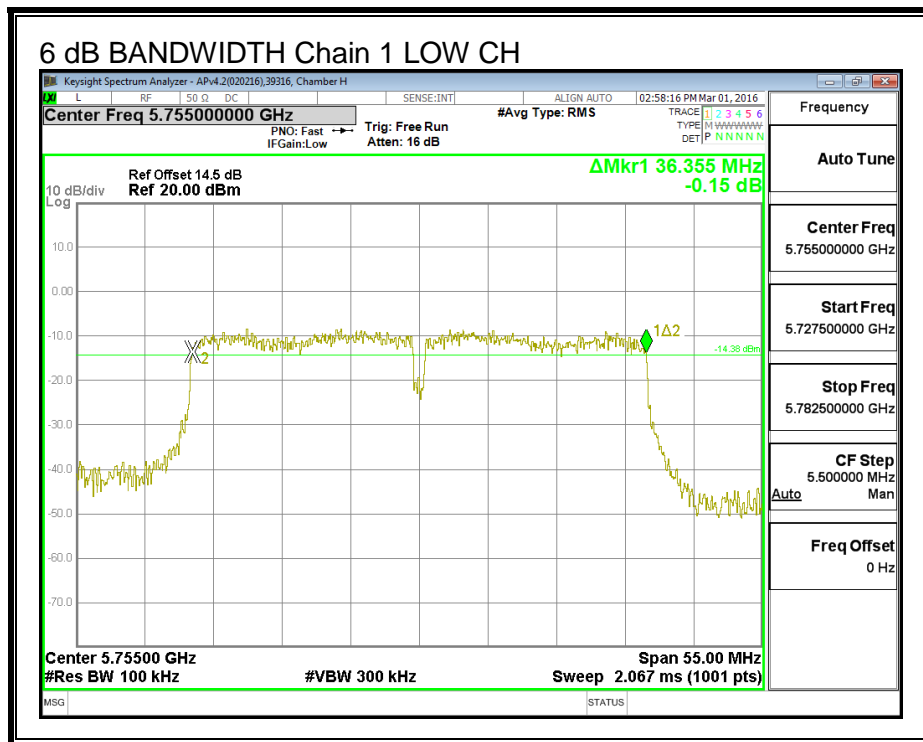
#### RESULTS

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5755	36.4650	36.3550	0.5
High	5795	36.4100	36.4100	0.5

**6 dB BANDWIDTH, Chain 0**



**6 dB BANDWIDTH, Chain 1**



### 8.4.2. 26 dB BANDWIDTH

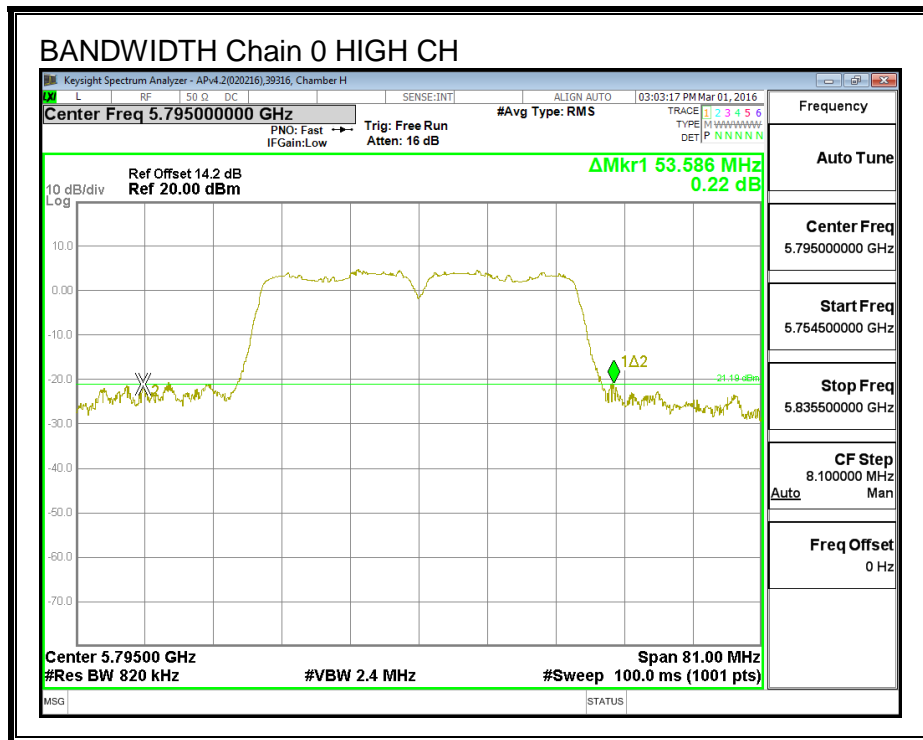
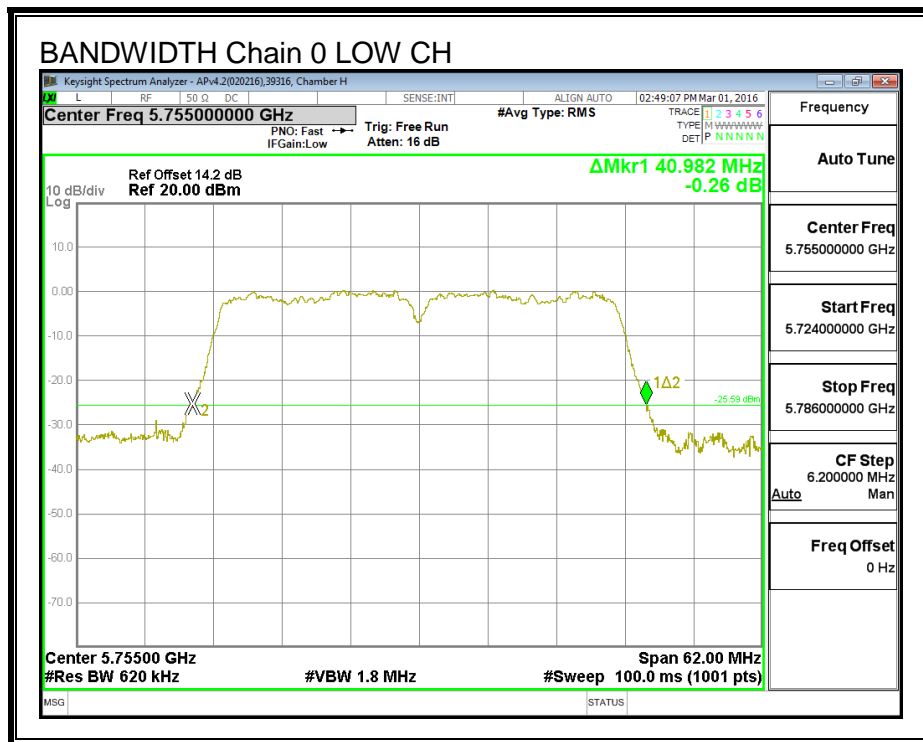
#### LIMITS

None; for reporting purposes only.

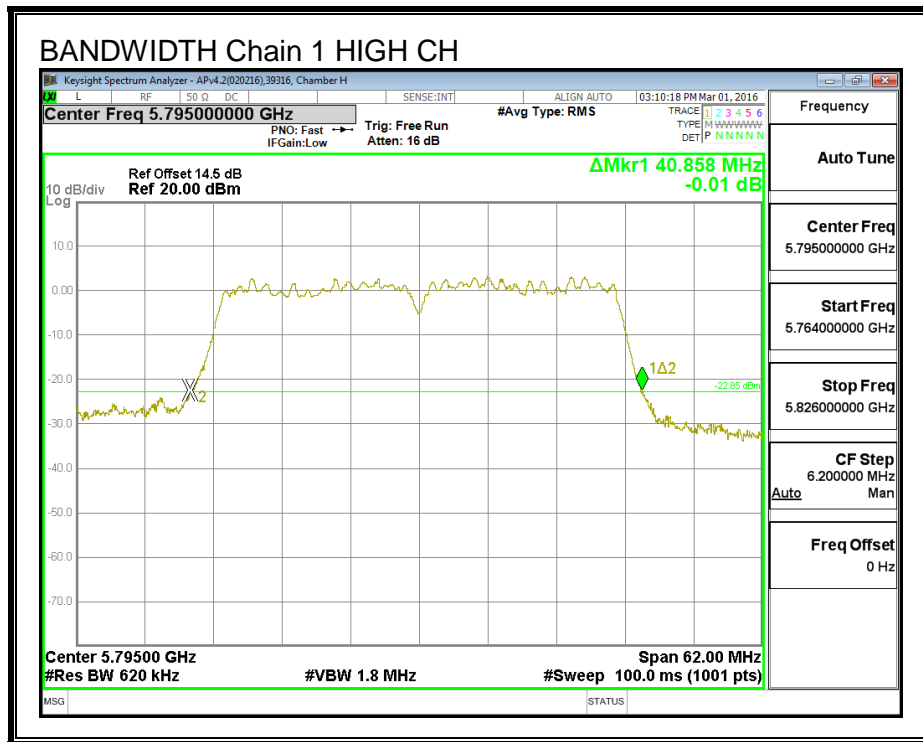
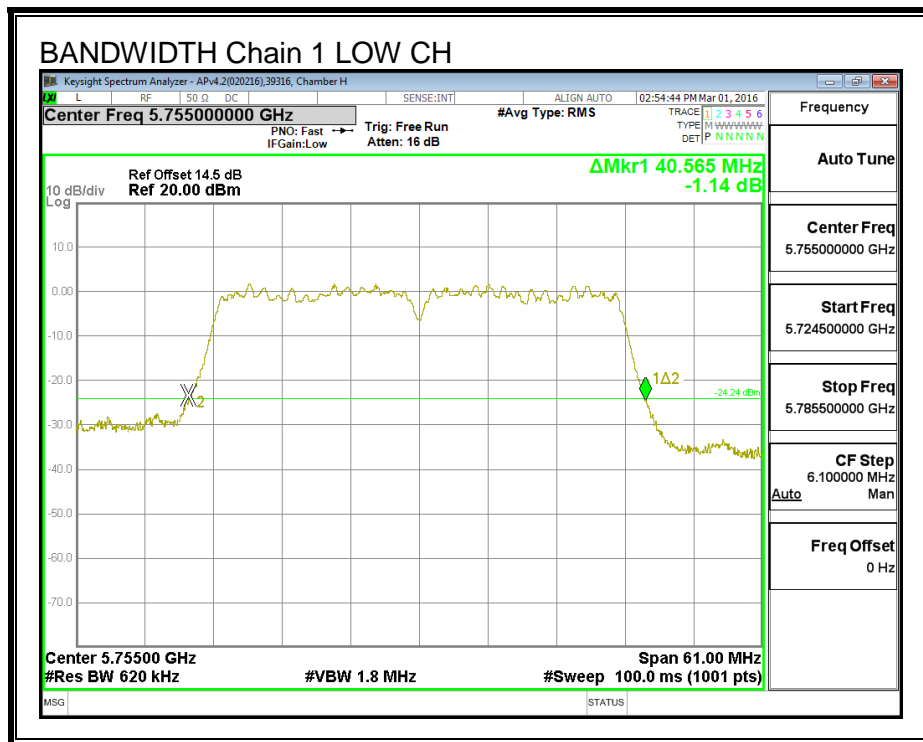
#### RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5755	40.98	40.57
High	5795	53.59	40.86

**26 dB BANDWIDTH, Chain 0**



**26 dB BANDWIDTH, Chain 1**





### 8.4.3. 99% BANDWIDTH

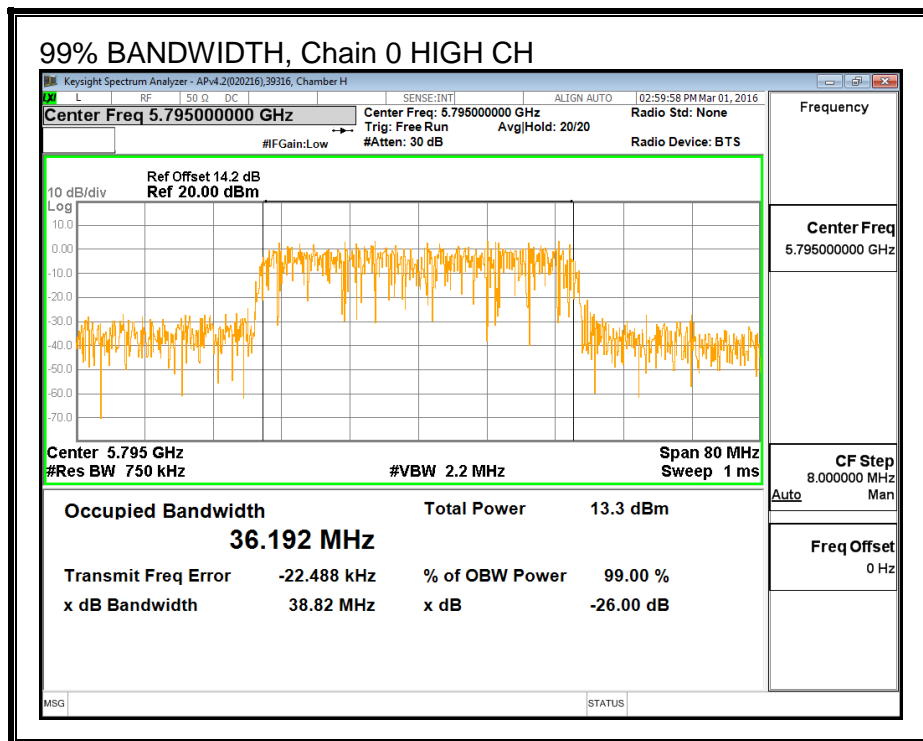
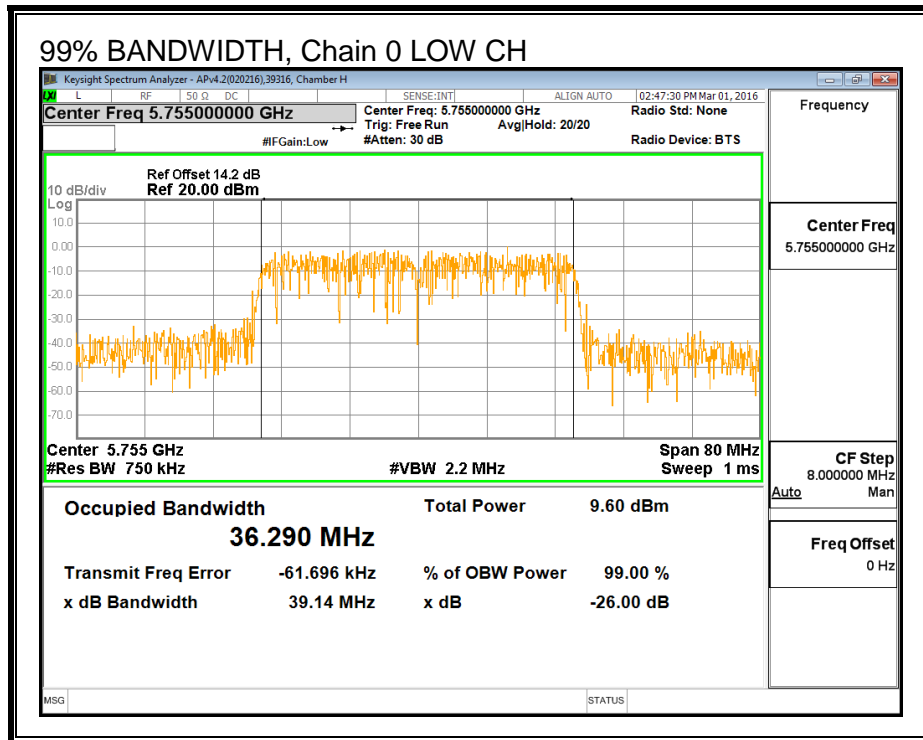
#### LIMITS

None; for reporting purposes only.

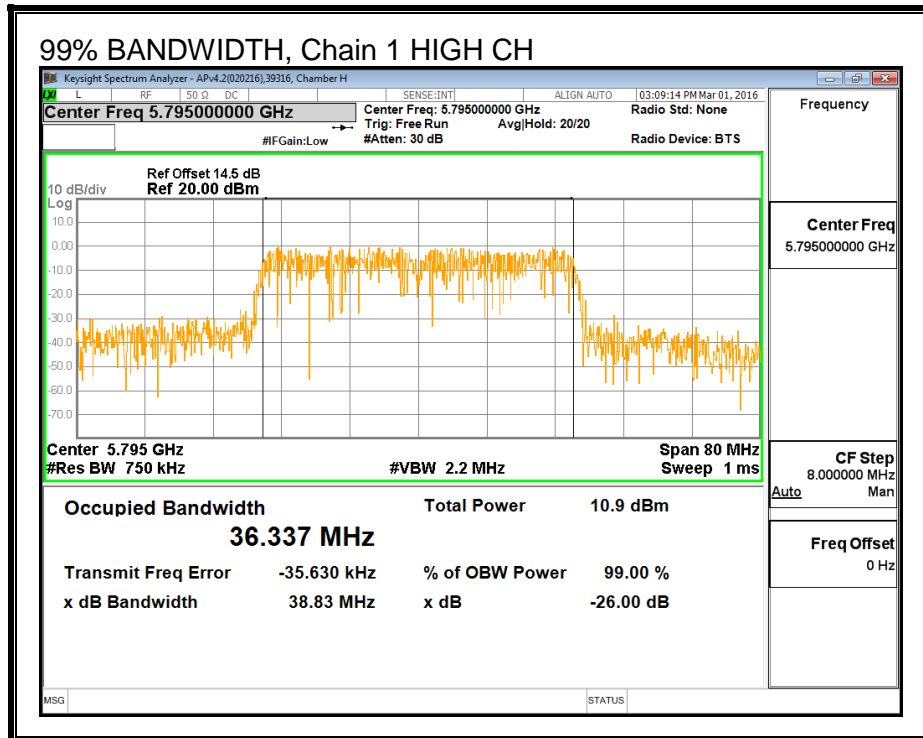
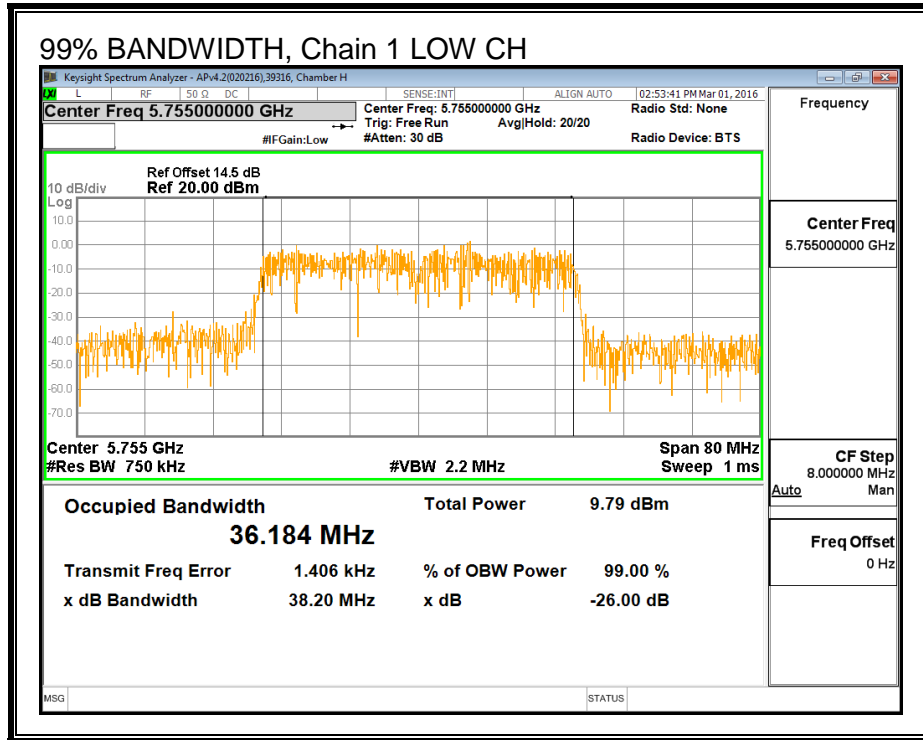
#### RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5755	36.2900	36.1840
High	5795	36.1920	36.3370

**99% BANDWIDTH, Chain 0**



**99% BANDWIDTH, Chain 1**



### 8.4.4. 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 unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.38	3.43	3.41

#### RESULTS

##### Antenna Gain and Limit

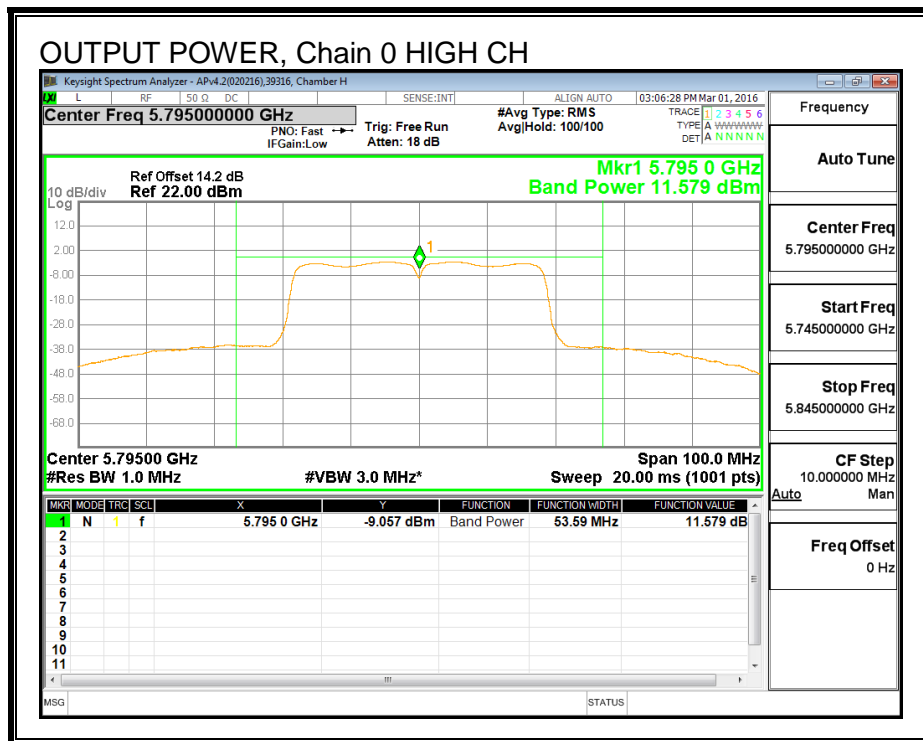
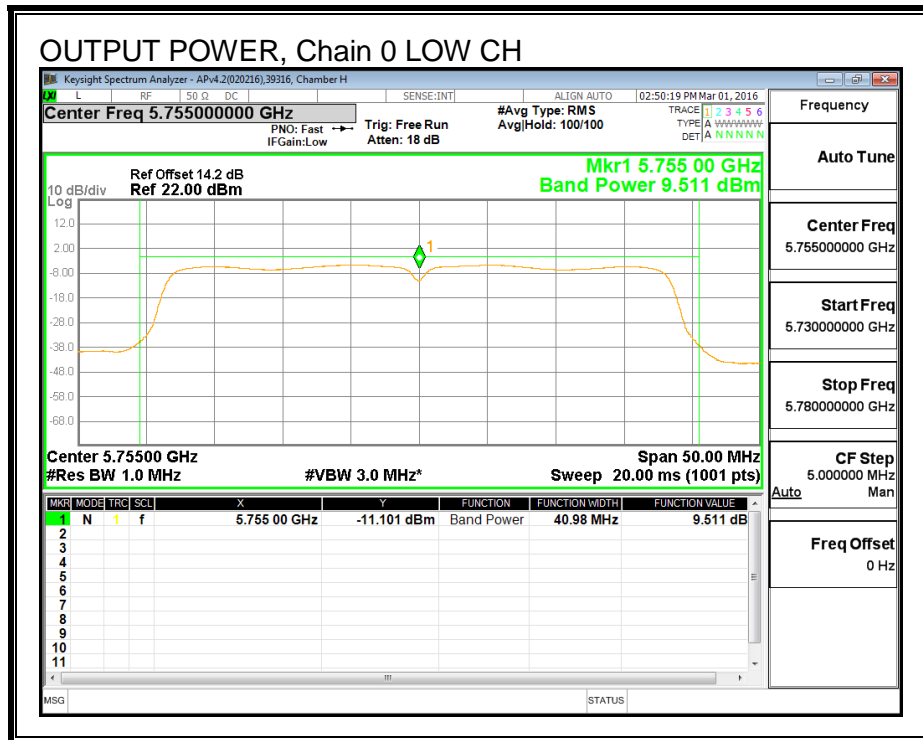
Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5755	3.41	30.00
High	5795	3.41	30.00

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

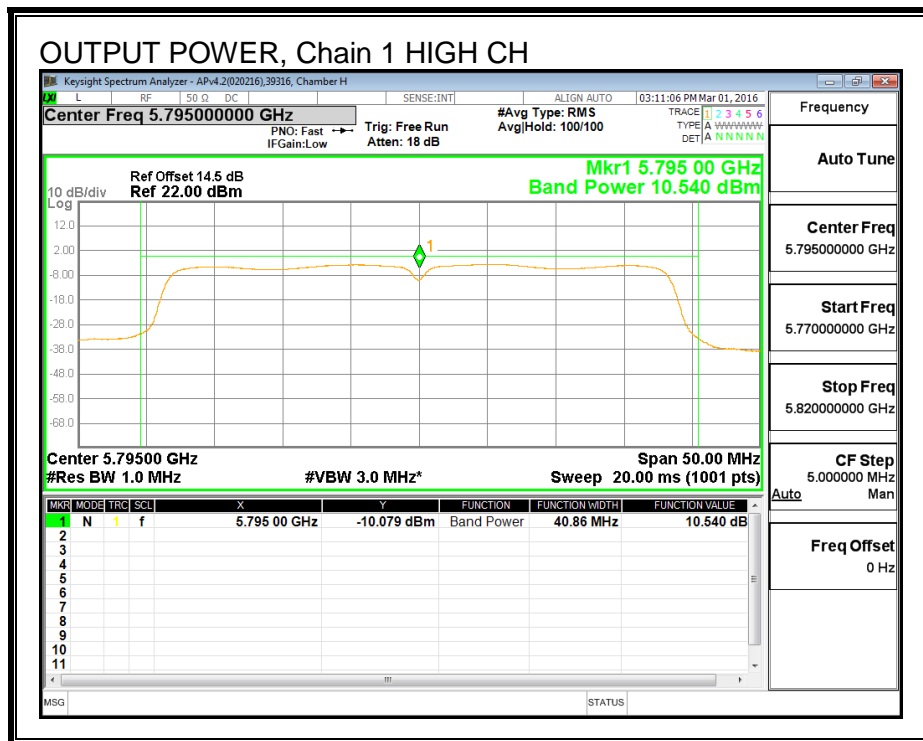
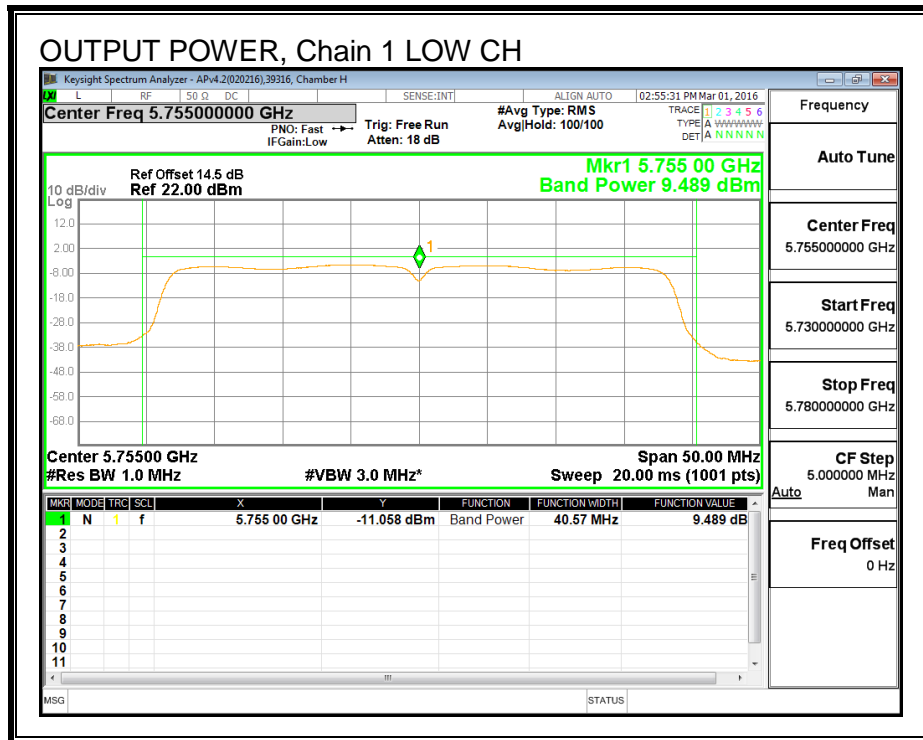
##### Output Power Results

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	9.51	9.49	12.51	30.00	-17.49
High	5795	11.58	10.54	14.10	30.00	-15.90

**OUTPUT POWER, Chain 0**



**OUTPUT POWER, Chain 1**



### 8.4.5. 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 unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.38	3.43	6.42

#### RESULTS

##### Antenna Gain and Limit

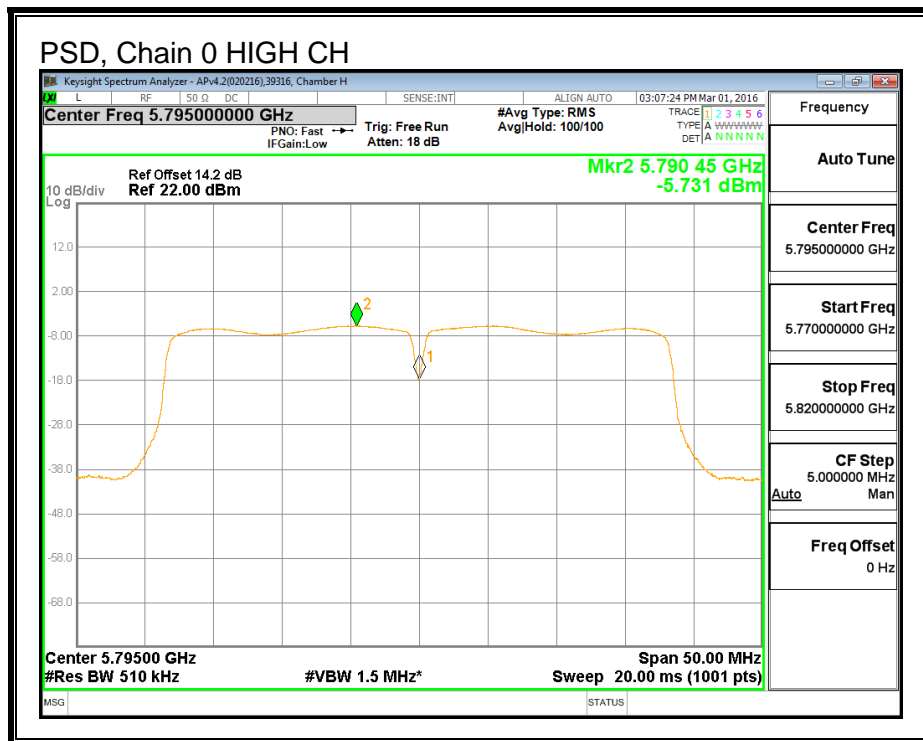
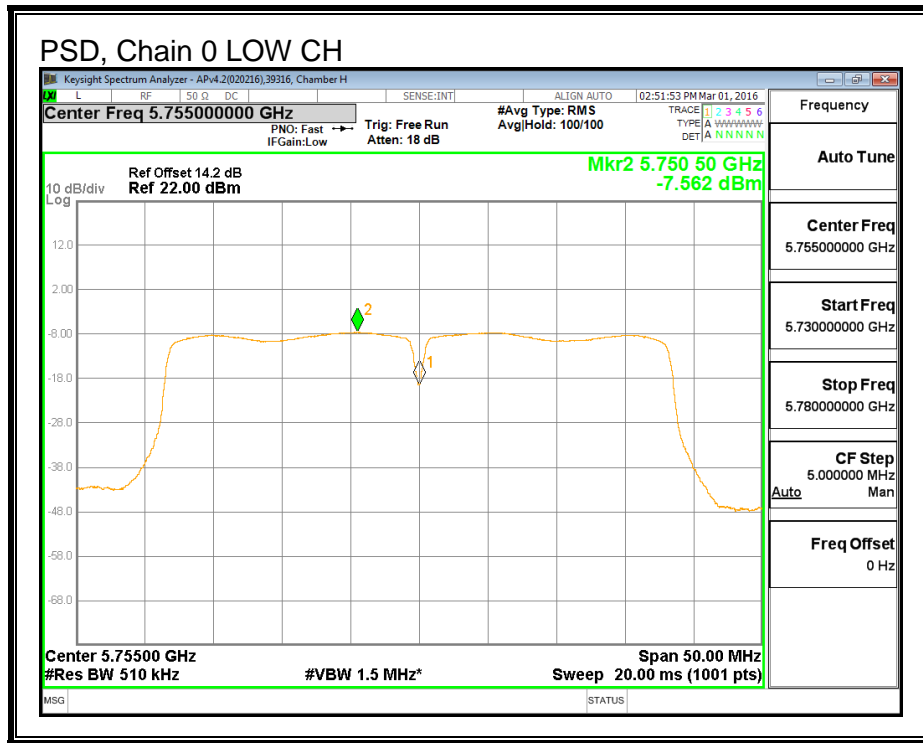
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5755	6.42	29.58
High	5795	6.42	29.58

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

##### PSD Results

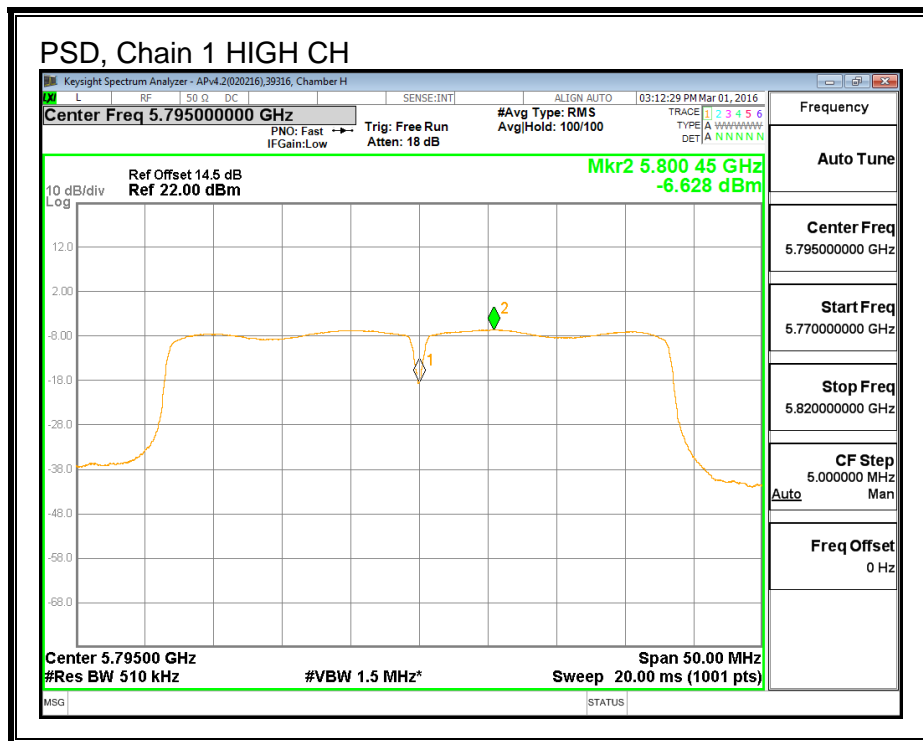
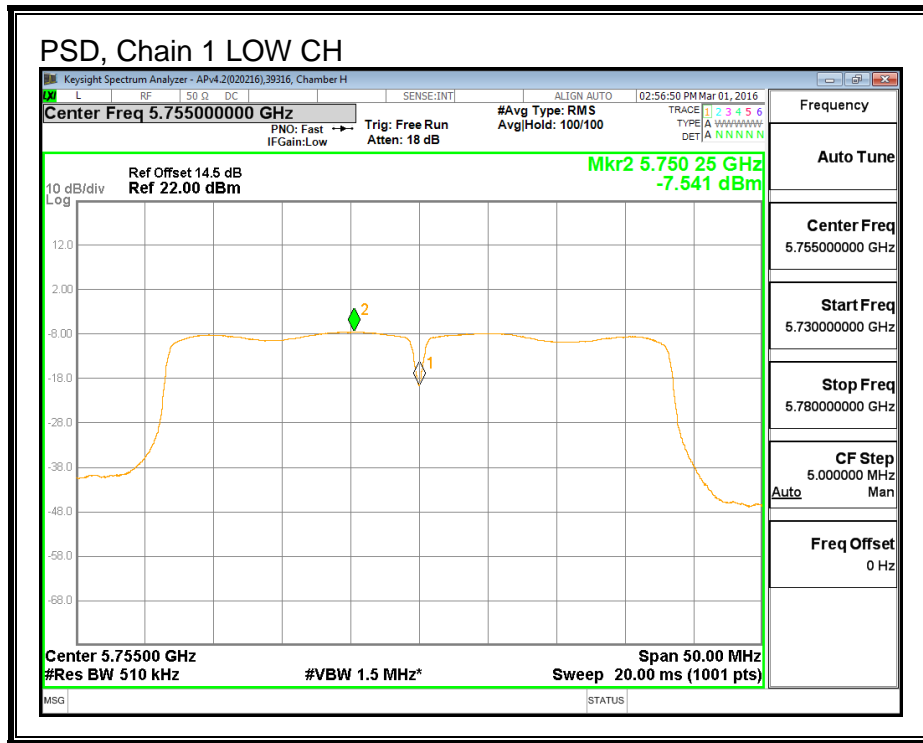
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5755	-7.56	-7.54	-4.54	29.58	-34.12
High	5795	-5.73	-6.63	-3.15	29.58	-32.73

**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

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz measurements and 1.5 m above the ground plane for above 1GHz measurements. The antenna to EUT distance is 3 meters.

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

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

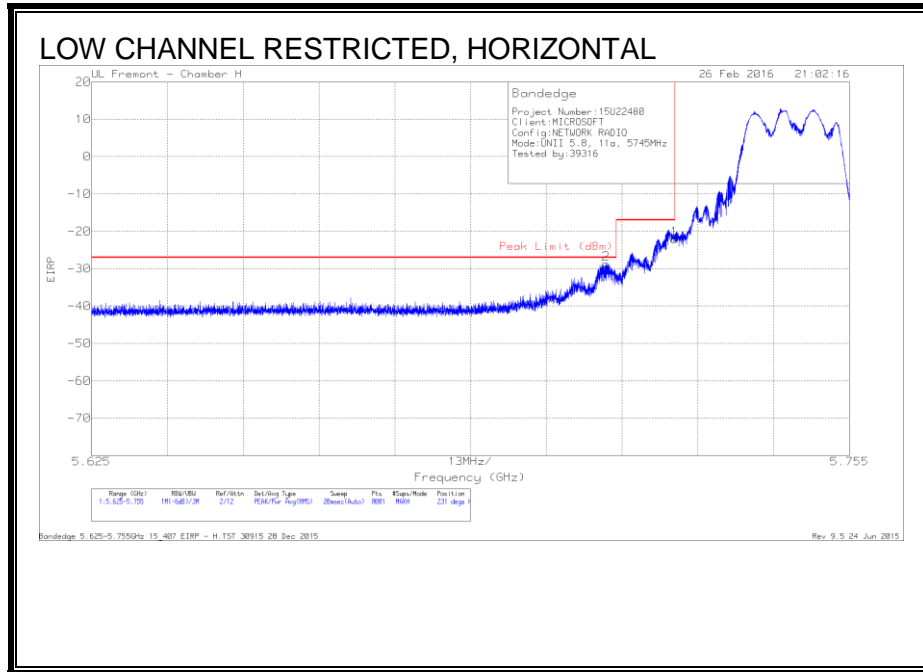
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

**9.2. TRANSMITTER ABOVE 1 GHz**

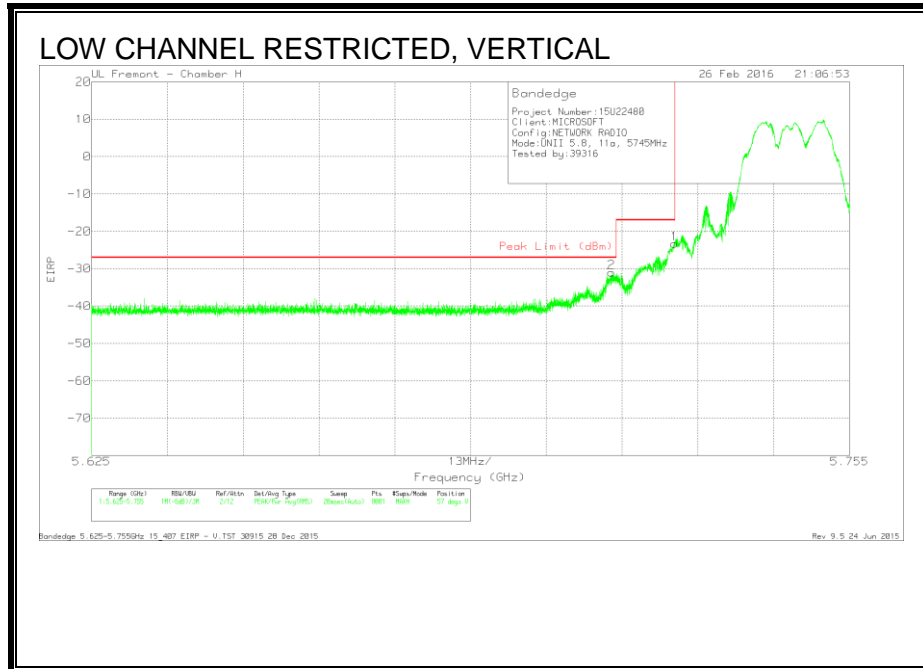
**9.3. TX ABOVE 1 GHz 802.11a MODE IN THE 5.8 GHz BAND**

**RESTRICTED BANDEDGE (LOW CHANNEL)**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.713	-56.71	PK	34.8	-18.6	11.8	-28.71	-27	-1.71	231	230	H
1	5.725	-50.14	PK	34.8	-18.5	11.8	-22.04	-17	-5.04	231	230	H

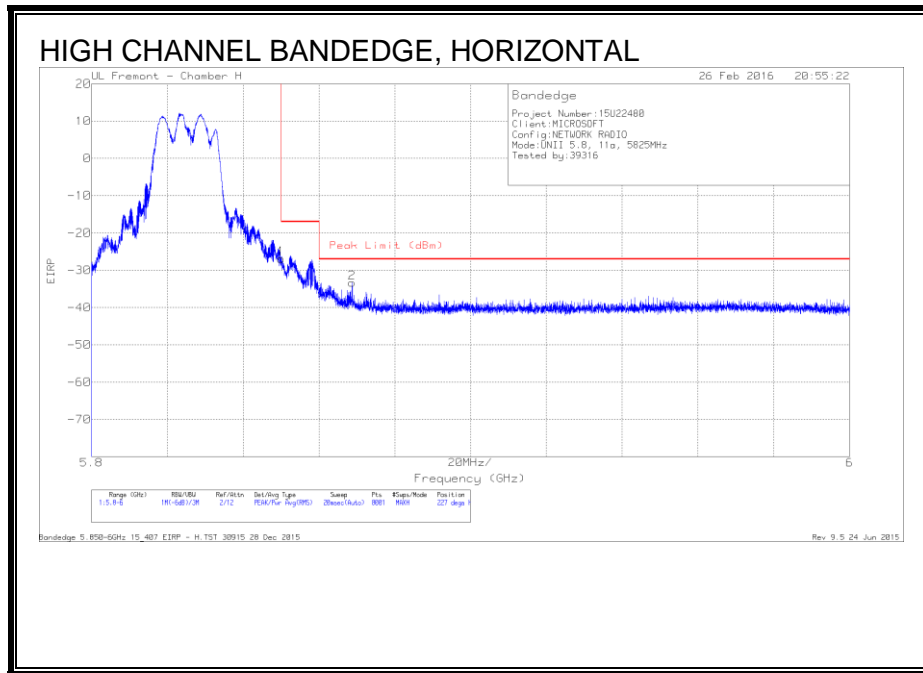
Pk - Peak detector



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	-59.08	PK	34.8	-18.5	11.8	-30.98	-27	-3.98	57	214	V
1	5.725	-51.39	PK	34.8	-18.5	11.8	-23.29	-17	-6.29	57	214	V

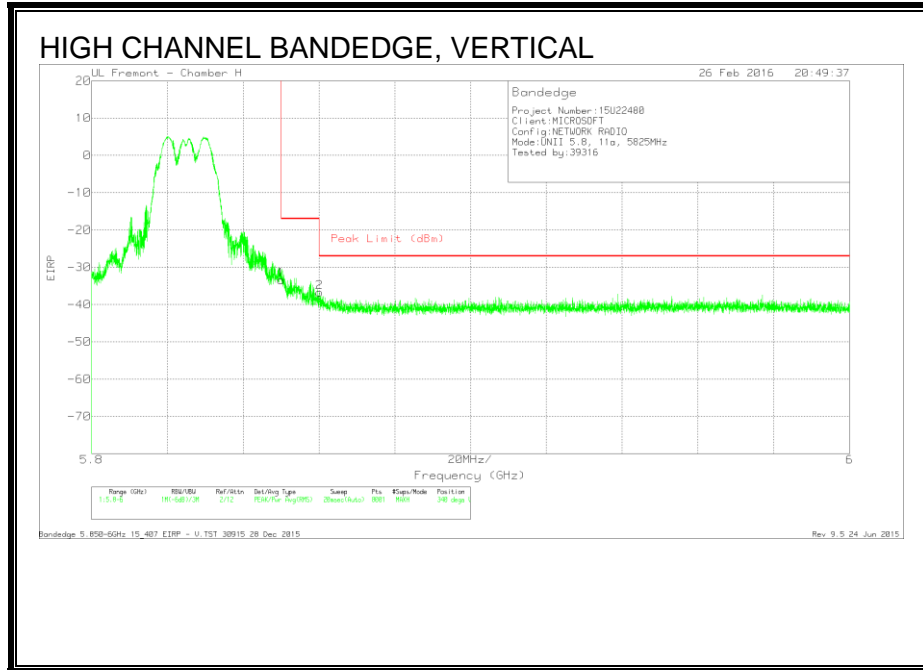
Pk - Peak detector

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-55.09	Pk	34.9	-18.5	11.8	-26.89	-17	-9.89	227	212	H
2	5.869	-61.75	Pk	34.9	-18.3	11.8	-33.35	-27	-6.35	227	212	H

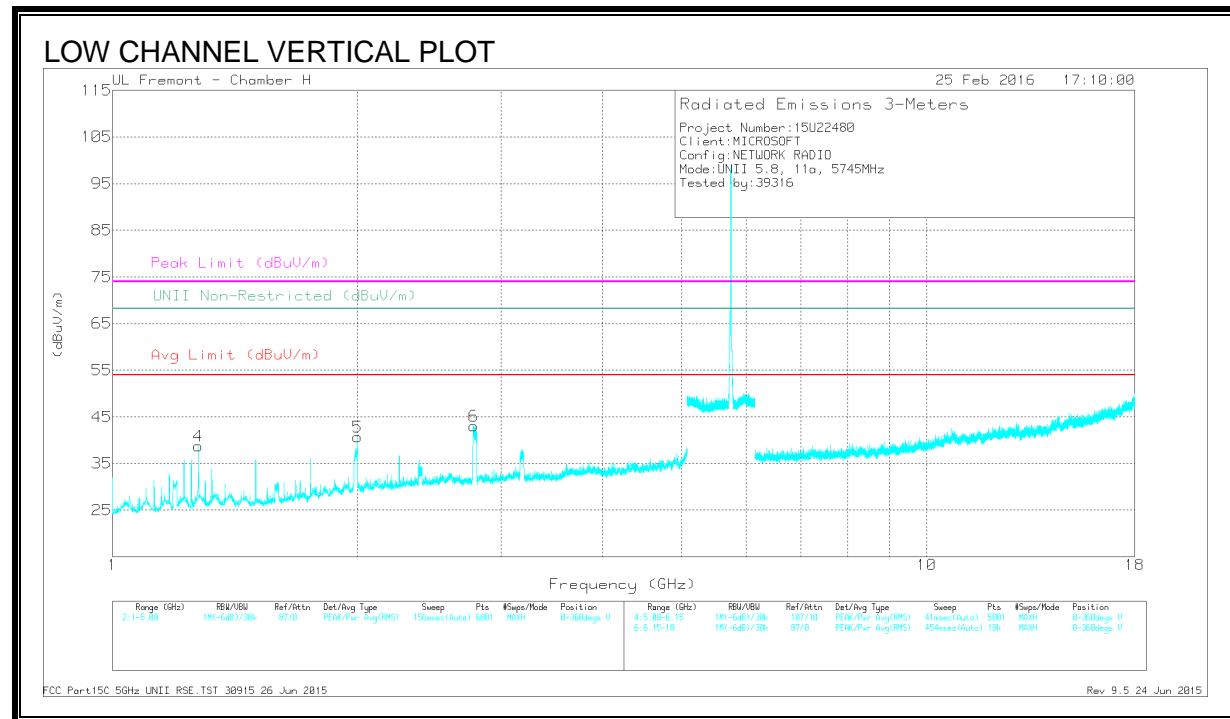
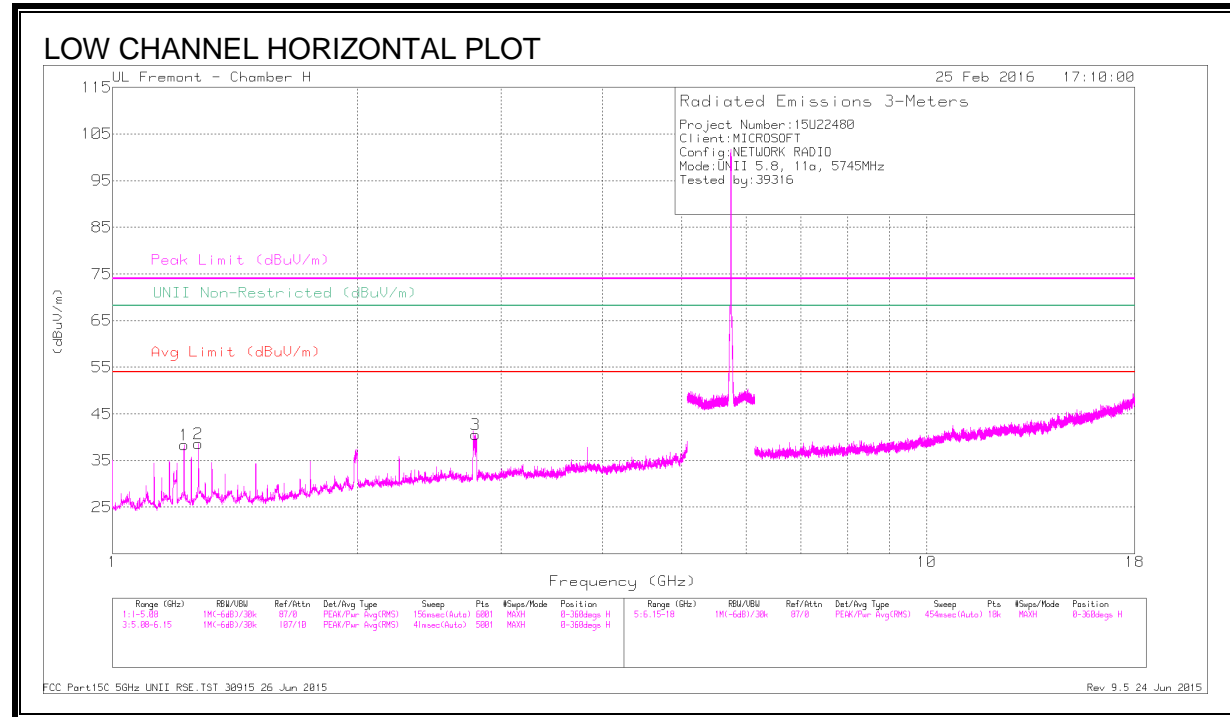
Pk - Peak detector



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-61.59	Pk	34.9	-18.5	11.8	-33.39	-17	-16.39	340	249	V
2	5.86	-65	PK	34.9	-18.4	11.8	-36.7	-27	-9.7	340	249	V

Pk - Peak detector

**HARMONICS AND SPURIOUS EMISSIONS**



**DATA**

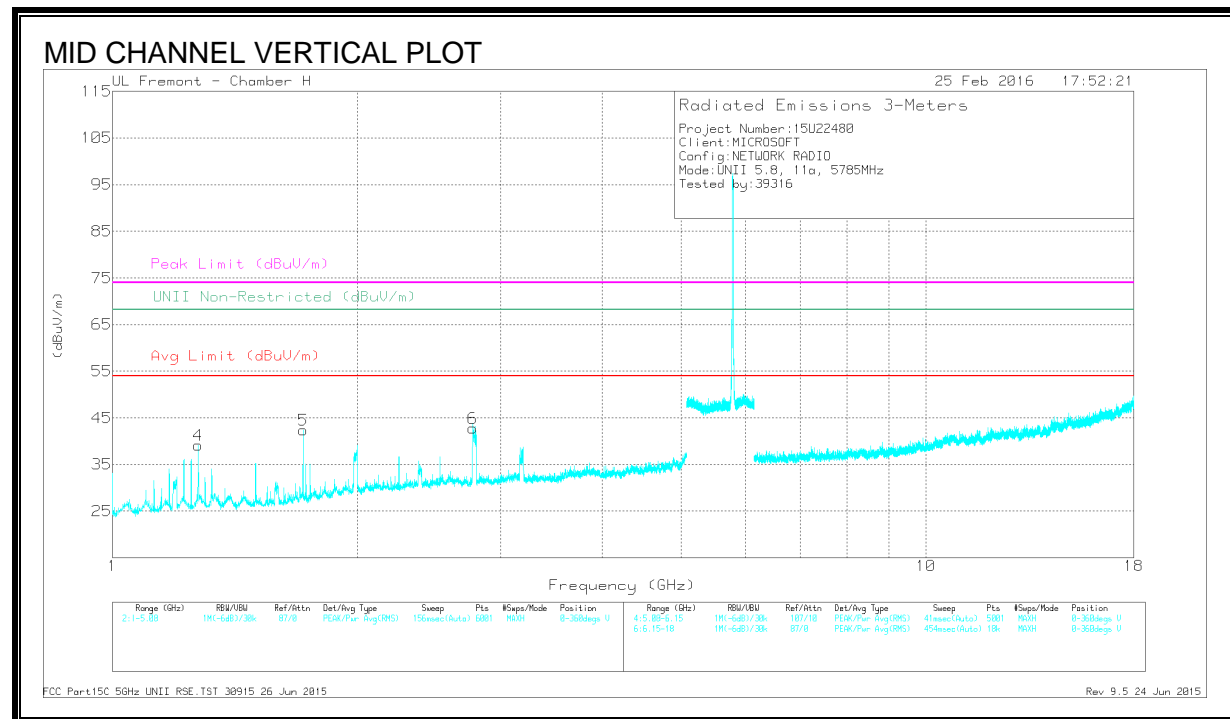
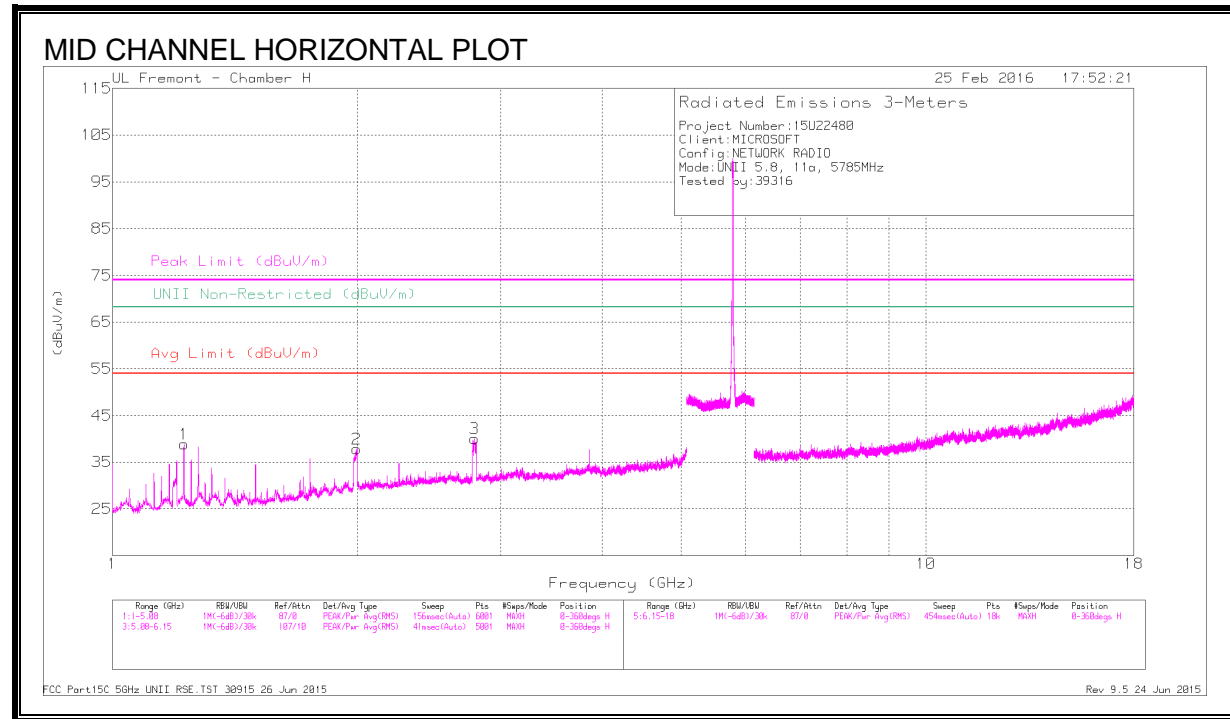
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/F Itr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.225	51.58	PK-U	28.3	-34.5	45.38	-	-	74	-28.62	-	-	61	155	H
	* 1.225	44.1	ADR	28.3	-34.5	37.9	54	-16.1	-	-	-	-	61	155	H
2	* 1.275	50.24	PK-U	28.8	-34.6	44.44	-	-	74	-29.56	-	-	57	291	H
	* 1.275	42.76	ADR	28.8	-34.6	36.96	54	-17.04	-	-	-	-	57	291	H
3	* 2.789	48.07	PK-U	32.4	-32.2	48.27	-	-	74	-25.73	-	-	145	181	H
	* 2.791	34.09	ADR	32.4	-32.2	34.29	54	-19.71	-	-	-	-	145	181	H
4	* 1.275	52.44	PK-U	28.8	-34.6	46.64	-	-	74	-27.36	-	-	127	205	V
	* 1.275	43.13	ADR	28.8	-34.6	37.33	54	-16.67	-	-	-	-	127	205	V
6	* 2.778	51.01	PK-U	32.4	-32.3	51.11	-	-	74	-22.89	-	-	133	198	V
	* 2.777	36.79	ADR	32.4	-32.4	36.79	54	-17.21	-	-	-	-	133	198	V
5	2	45.73	PK-U	31.2	-33.8	43.13	-	-	-	-	68.2	-25.07	286	131	V

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average





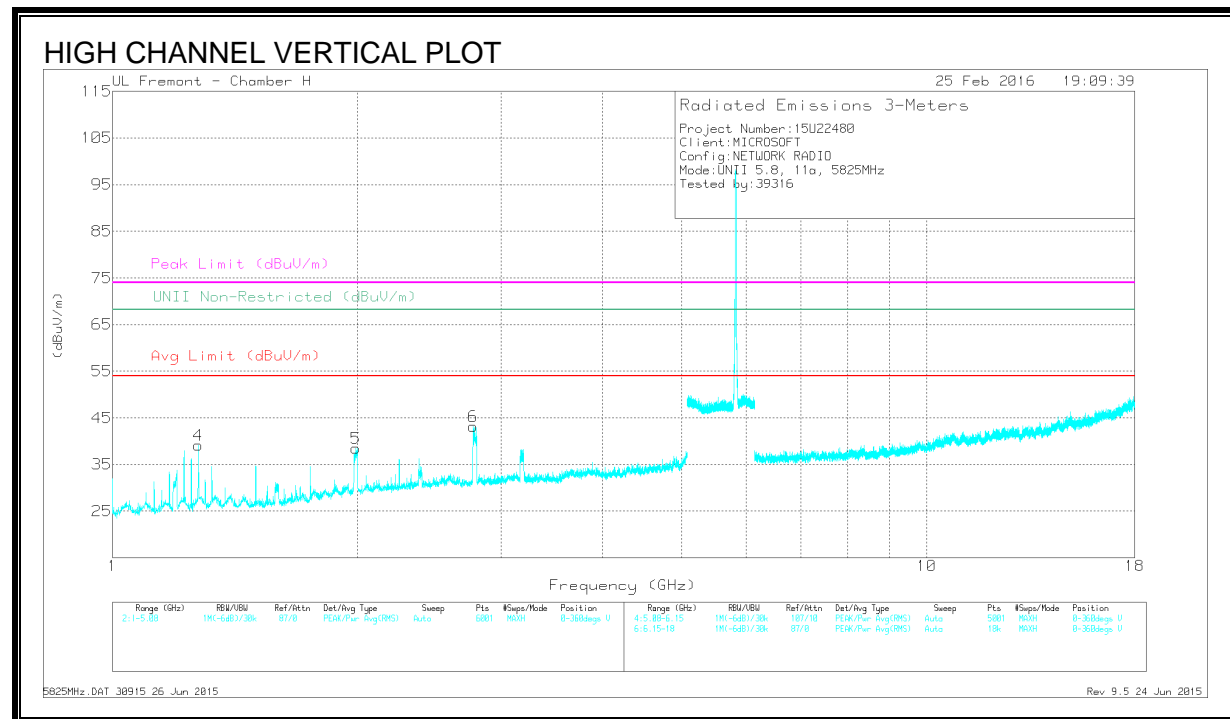
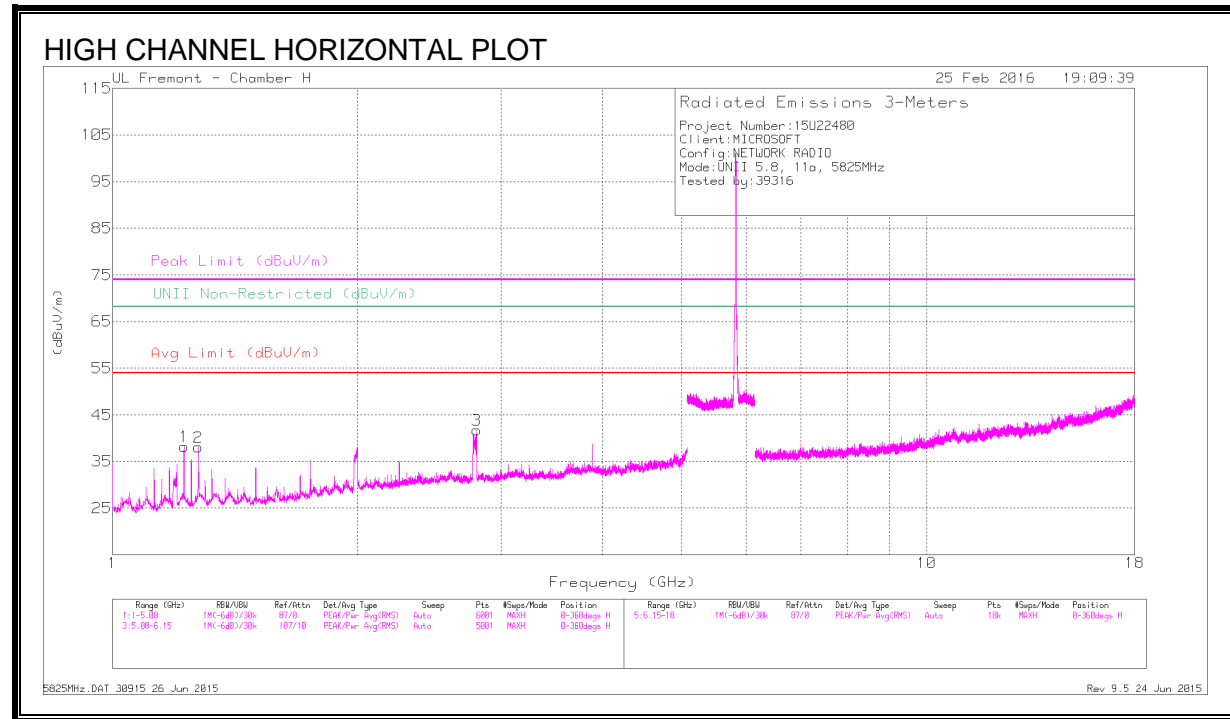
**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cb/F It/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	* 1.225	50.42	PK-U	28.3	-34.5	0	44.22	-	-	74	-29.78	-	-	65	164	H
	* 1.225	43.72	ADR	28.3	-34.5	0	37.52	54	-16.48	-	-	-	-	65	164	H
3	* 2.79	47.84	PK-U	32.4	-32.2	0	48.04	-	-	74	-25.96	-	-	152	143	H
	* 2.78	32.67	ADR	32.4	-32.3	0	32.77	54	-21.23	-	-	-	-	152	143	H
4	* 1.275	49.93	PK-U	28.8	-34.6	0	44.13	-	-	74	-29.87	-	-	125	205	V
	* 1.275	42.94	ADR	28.8	-34.6	0	37.14	54	-16.86	-	-	-	-	125	205	V
6	* 2.771	50.93	PK-U	32.4	-32.5	0	50.83	-	-	74	-23.17	-	-	134	153	V
	* 2.773	36.17	ADR	32.4	-32.4	0	36.17	54	-17.83	-	-	-	-	134	153	V
5	1.715	42.26	PK-U	29.1	-33.7	0	37.66	-	-	-	-	68.2	-30.54	172	100	V
	1.715	29.89	ADR	29.1	-33.7	0	25.29	-	-	-	-	-	-	172	100	V
2	2	48.18	PK-U	31.2	-33.8	0	45.58	-	-	-	-	68.2	-22.62	80	198	H

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



**DATA**

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cbl/F ltr/Pad (dB)	DC Corr (dB)	Correcte d 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	* 1.225	50.62	PK-U	28.3	-34.5	0	44.42	-	-	74	-29.58	-	-	66	160	H
	* 1.225	43.58	ADR	28.3	-34.5	0	37.38	54	-16.62	-	-	-	-	66	160	H
2	* 1.275	52.18	PK-U	28.8	-34.6	0	46.38	-	-	74	-27.62	-	-	55	296	H
	* 1.275	43.78	ADR	28.8	-34.6	0	37.98	54	-16.02	-	-	-	-	55	296	H
3	* 2.798	49.04	PK-U	32.4	-32.1	0	49.34	-	-	74	-24.66	-	-	152	166	H
	* 2.797	34.1	ADR	32.4	-32.1	0	34.4	54	-19.6	-	-	-	-	152	166	H
4	* 1.275	49.44	PK-U	28.8	-34.6	0	43.64	-	-	74	-30.36	-	-	146	199	V
	* 1.275	42.75	ADR	28.8	-34.6	0	36.95	54	-17.05	-	-	-	-	146	199	V
5	* 2.771	50.92	PK-U	32.4	-32.5	0	50.82	-	-	74	-23.18	-	-	132	178	V
	* 2.773	36.63	ADR	32.4	-32.4	0	36.63	54	-17.37	-	-	-	-	132	178	V
6	1.991	48.62	PK-U	31.2	-33.9	0	45.92	-	-	-	-	68.2	-22.28	314	201	V

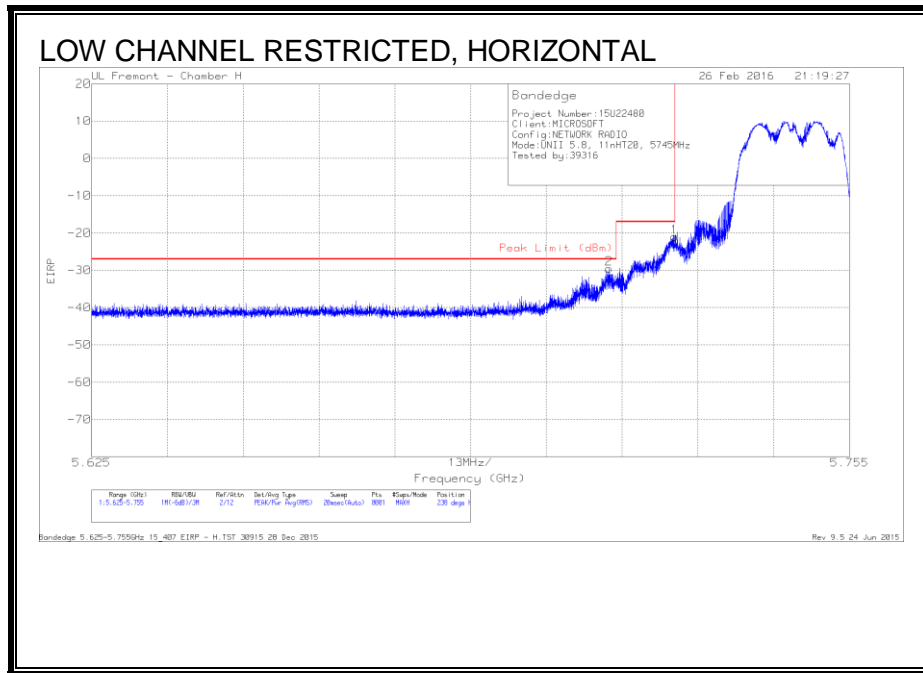
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

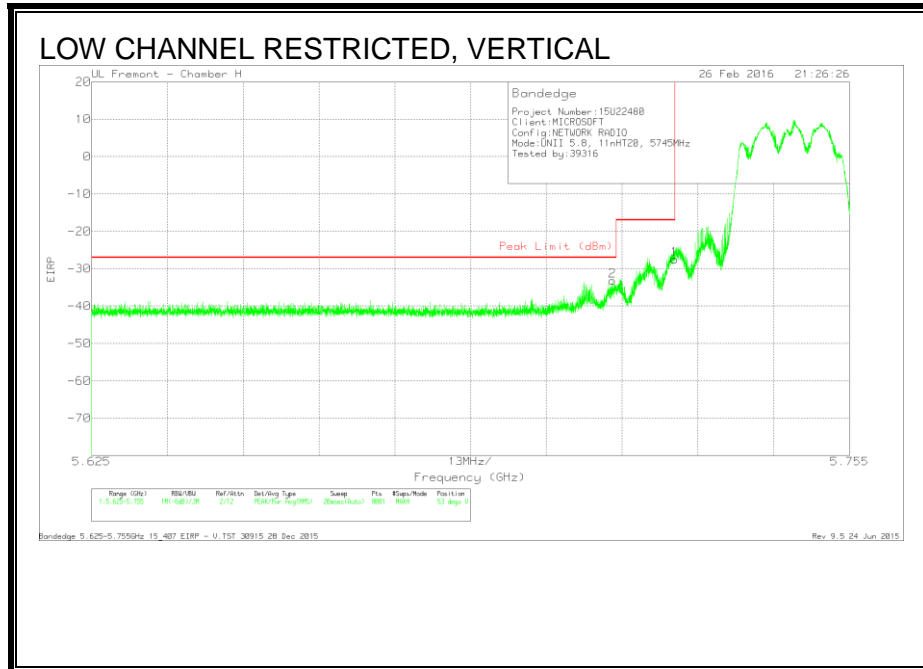
### 9.4. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND

#### RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	-57.65	PK	34.8	-18.5	11.8	-29.55	-27	-2.55	238	225	H
1	5.725	-49.12	PK	34.8	-18.5	11.8	-21.02	-17	-4.02	238	225	H

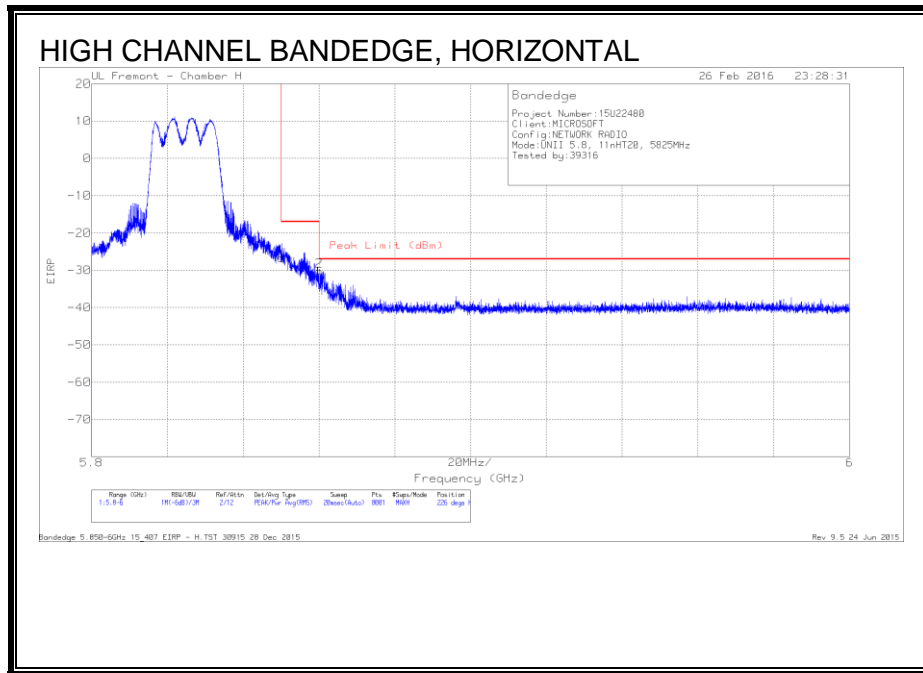
Pk - Peak detector



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	-61.31	PK	34.8	-18.5	11.8	-33.21	-27	-6.21	53	228	V
1	5.725	-55.59	PK	34.8	-18.5	11.8	-27.49	-17	-10.49	53	228	V

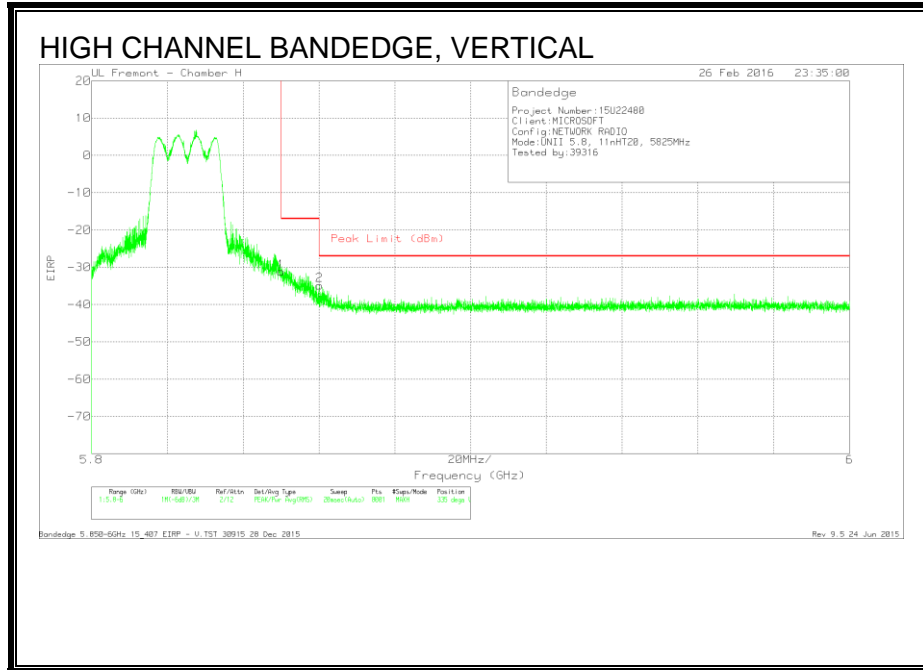
Pk - Peak detector

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-54.84	PK	34.9	-18.5	11.8	-26.64	-17	-9.64	226	154	H
2	5.86	-58.45	PK	34.9	-18.4	11.8	-30.15	-27	-3.15	226	154	H

Pk - Peak detector

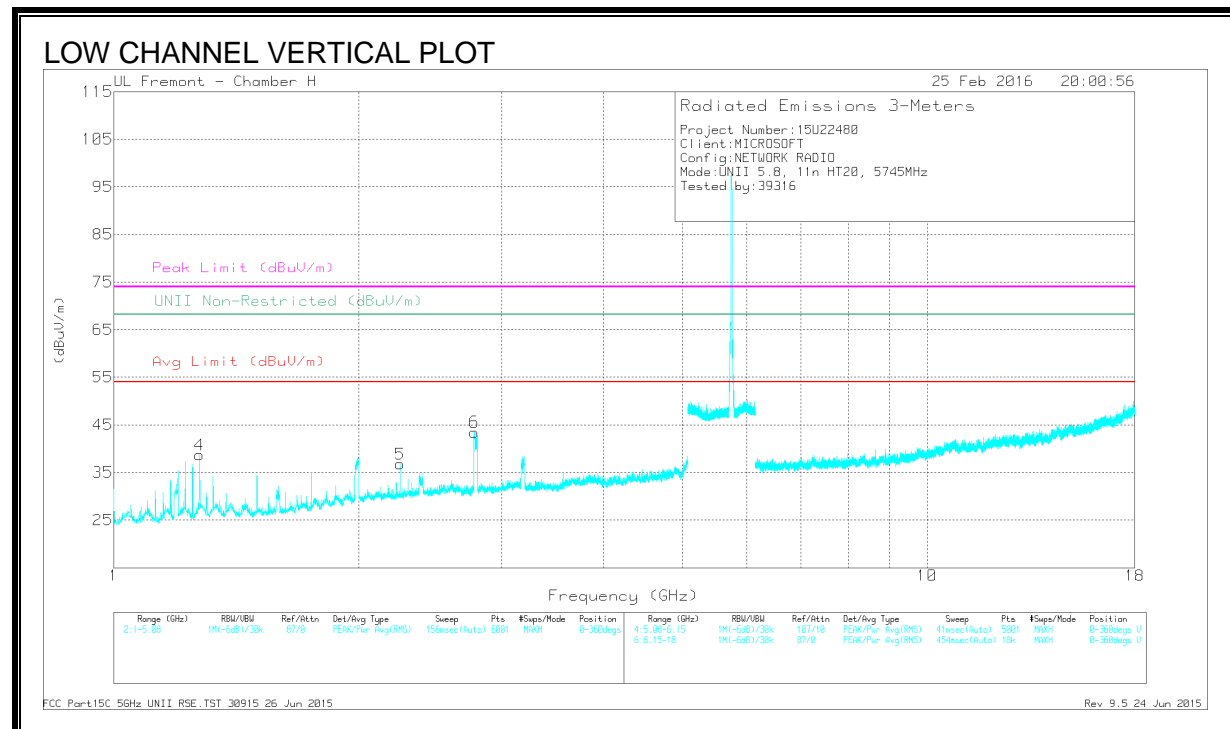
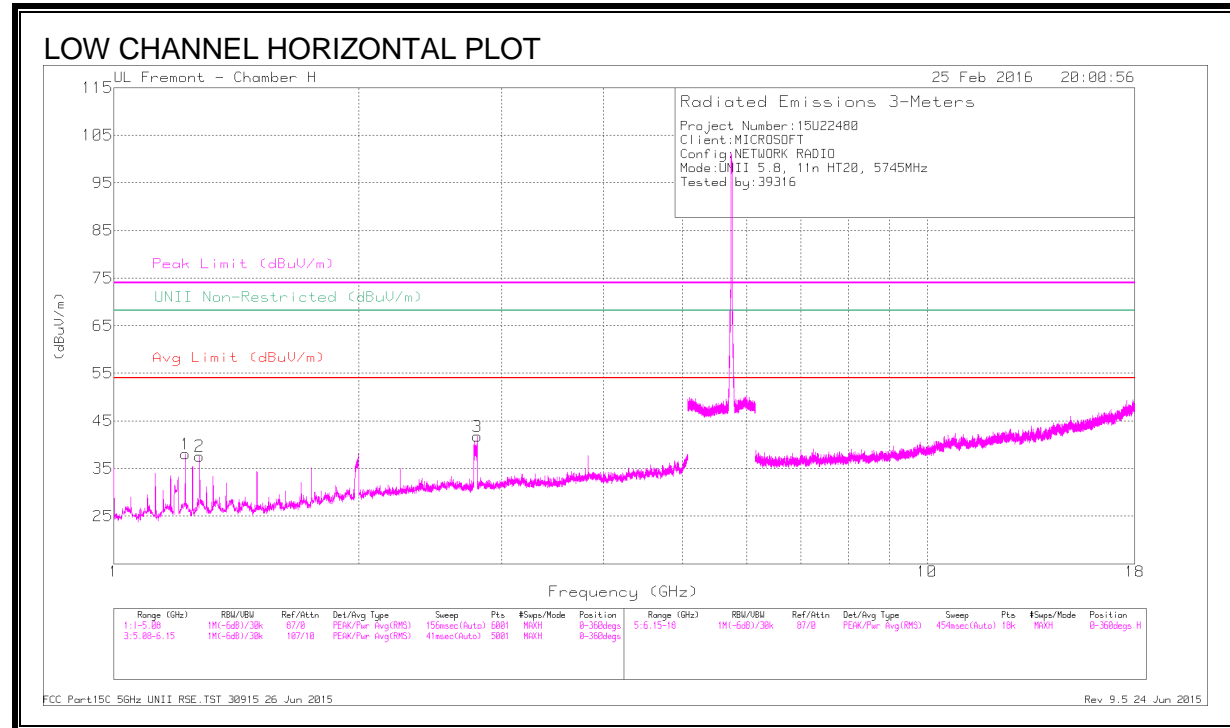


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-59.38	Pk	34.9	-18.5	11.8	-31.18	-17	-14.18	335	208	V
2	5.86	-63.14	Pk	34.9	-18.4	11.8	-34.84	-27	-7.84	335	208	V

Pk - Peak detector



**HARMONICS AND SPURIOUS EMISSIONS**



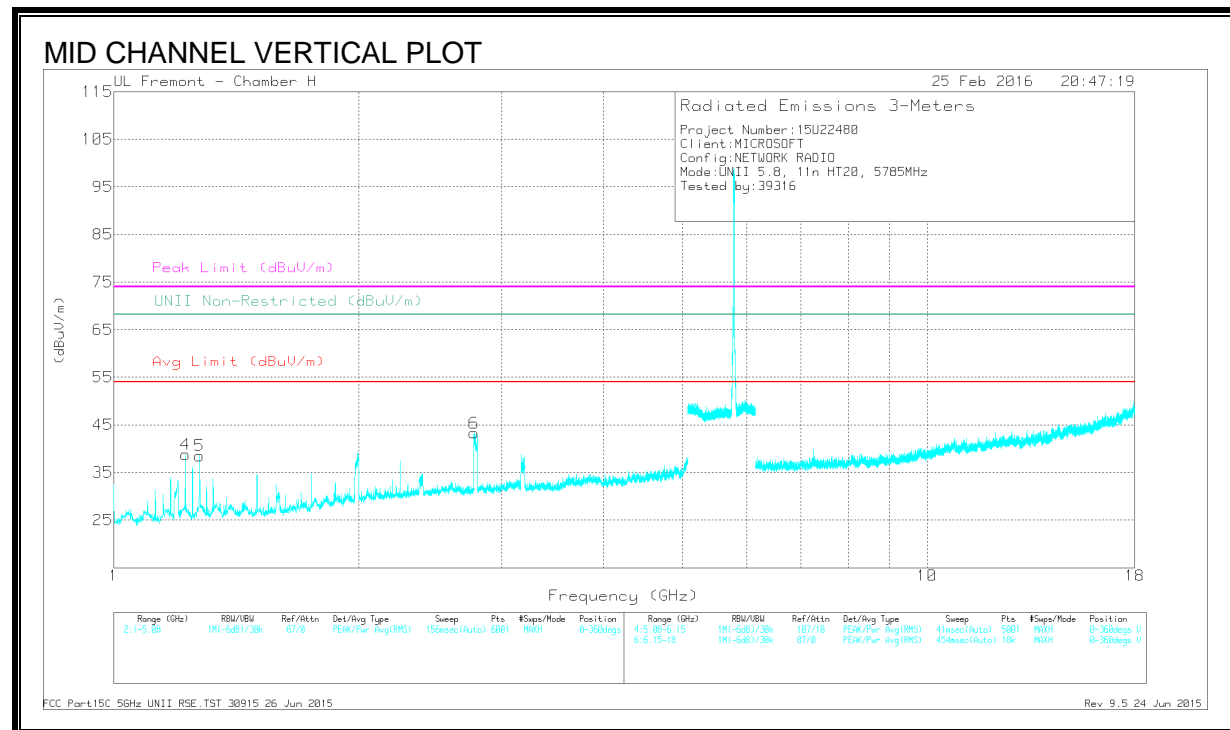
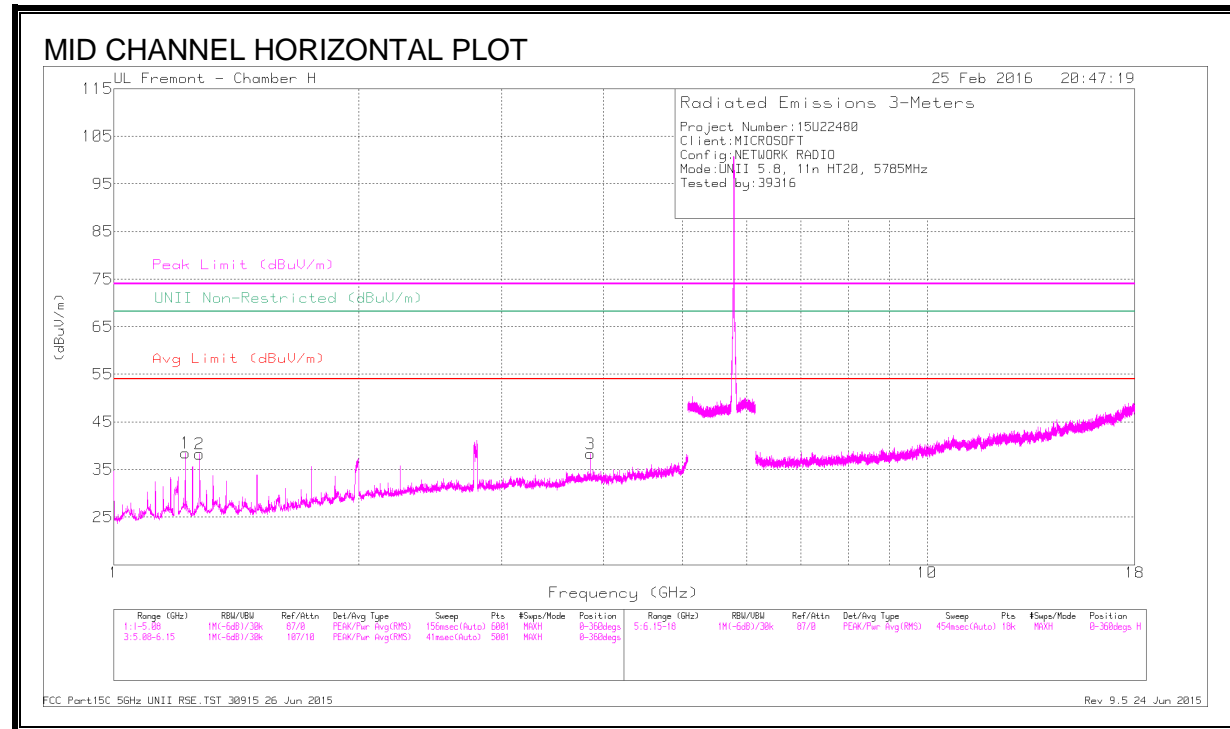
**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cb/F Itt/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	* 1.225	50.51	PK-U	28.3	-34.5	0	44.31	-	-	74	-29.69	-	-	64	160	H
	* 1.225	43.64	ADR	28.3	-34.5	0	37.44	54	-16.56	-	-	-	-	64	160	H
2	* 1.275	49.26	PK-U	28.8	-34.6	0	43.46	-	-	74	-30.54	-	-	60	277	H
	* 1.275	42.74	ADR	28.8	-34.6	0	36.94	54	-17.06	-	-	-	-	60	277	H
3	* 2.777	49.44	PK-U	32.4	-32.4	0	49.44	-	-	74	-24.56	-	-	151	187	H
	* 2.778	34.44	ADR	32.4	-32.4	0	34.44	54	-19.56	-	-	-	-	151	187	H
4	* 1.275	49.68	PK-U	28.8	-34.6	0	43.88	-	-	74	-30.12	-	-	143	206	V
	* 1.275	43	ADR	28.8	-34.6	0	37.2	54	-16.8	-	-	-	-	143	206	V
5	* 2.25	46	PK-U	31.6	-33.5	0	44.1	-	-	74	-29.9	-	-	142	214	V
	* 2.25	38.12	ADR	31.6	-33.5	0	36.22	54	-17.78	-	-	-	-	142	214	V
6	* 2.775	50.98	PK-U	32.4	-32.4	0	50.98	-	-	74	-23.02	-	-	132	158	V
	* 2.773	36.43	ADR	32.4	-32.4	0	36.43	54	-17.57	-	-	-	-	132	158	V

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



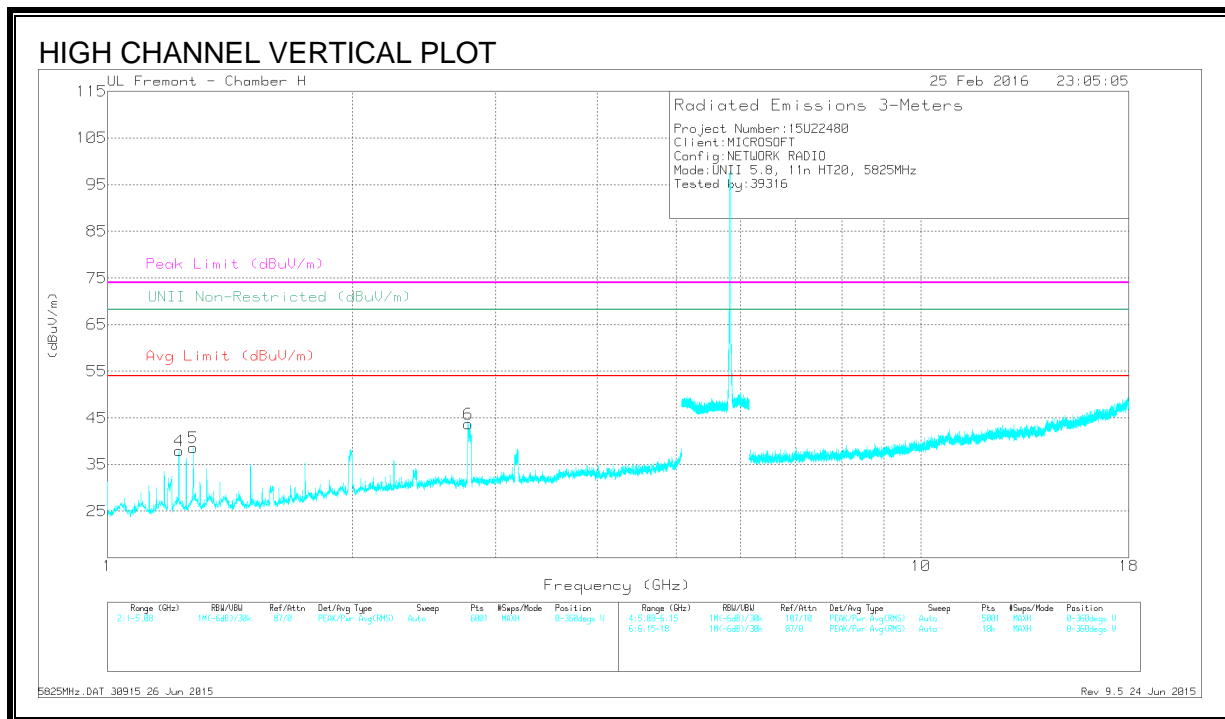
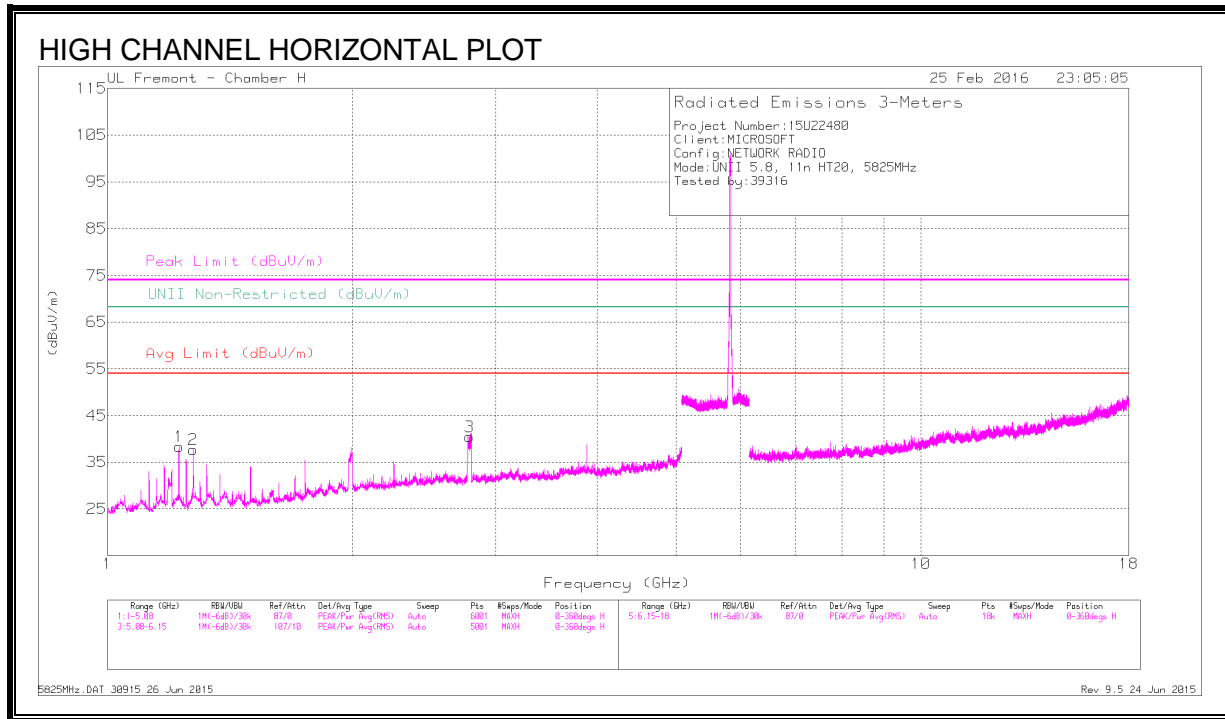
**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cb/F Itt/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	* 1.225	50.14	PK-U	28.3	-34.5	0	43.94	-	-	74	-30.06	-	-	69	161	H
	* 1.225	43.15	ADR	28.3	-34.5	0	36.95	54	-17.05	-	-	-	-	69	161	H
2	* 1.275	50.13	PK-U	28.8	-34.6	0	44.33	-	-	74	-29.67	-	-	55	306	H
	* 1.275	43.51	ADR	28.8	-34.6	0	37.71	54	-16.29	-	-	-	-	55	306	H
3	* 3.857	42.78	PK-U	33.5	-30.4	0	45.88	-	-	74	-28.12	-	-	254	223	H
	* 3.857	34.58	ADR	33.5	-30.4	0	37.68	54	-16.32	-	-	-	-	254	223	H
4	* 1.225	51.09	PK-U	28.3	-34.5	0	44.89	-	-	74	-29.11	-	-	143	225	V
	* 1.225	43.66	ADR	28.3	-34.5	0	37.46	54	-16.54	-	-	-	-	143	225	V
5	* 1.275	49.79	PK-U	28.8	-34.6	0	43.99	-	-	74	-30.01	-	-	147	202	V
	* 1.275	42.97	ADR	28.8	-34.6	0	37.17	54	-16.83	-	-	-	-	147	202	V
6	* 2.773	51.13	PK-U	32.4	-32.4	0	51.13	-	-	74	-22.87	-	-	132	177	V
	* 2.775	36.2	ADR	32.4	-32.4	0	36.2	54	-17.8	-	-	-	-	132	177	V

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cb/F Itt/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	* 1.225	51	PK-U	28.3	-34.5	0	44.8	-	-	74	-29.2	-	-	246	215	H
	* 1.225	43.06	ADR	28.3	-34.5	0	36.86	54	-17.14	-	-	-	-	246	215	H
2	* 1.275	49.63	PK-U	28.8	-34.6	0	43.83	-	-	74	-30.17	-	-	91	100	H
	* 1.275	43.18	ADR	28.8	-34.6	0	37.38	54	-16.62	-	-	-	-	91	100	H
3	* 2.771	50.68	PK-U	32.4	-32.5	0	50.58	-	-	74	-23.42	-	-	174	151	H
	* 2.773	36.09	ADR	32.4	-32.4	0	36.09	54	-17.91	-	-	-	-	174	151	H
4	* 1.225	51.92	PK-U	28.3	-34.5	0	45.72	-	-	74	-28.28	-	-	158	200	V
	* 1.225	42.75	ADR	28.3	-34.5	0	36.55	54	-17.45	-	-	-	-	158	200	V
5	* 1.275	49.22	PK-U	28.8	-34.6	0	43.42	-	-	74	-30.58	-	-	128	269	V
	* 1.275	42.04	ADR	28.8	-34.6	0	36.24	54	-17.76	-	-	-	-	128	269	V
6	* 2.775	51.57	PK-U	32.4	-32.4	0	51.57	-	-	74	-22.43	-	-	280	194	V
	* 2.773	36.89	ADR	32.4	-32.4	0	36.89	54	-17.11	-	-	-	-	280	194	V

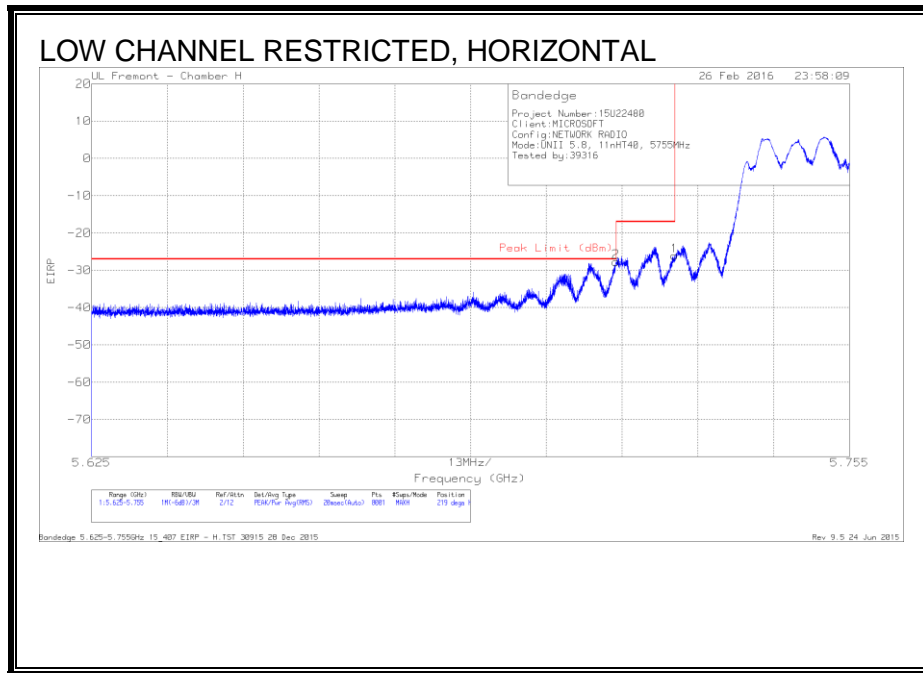
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

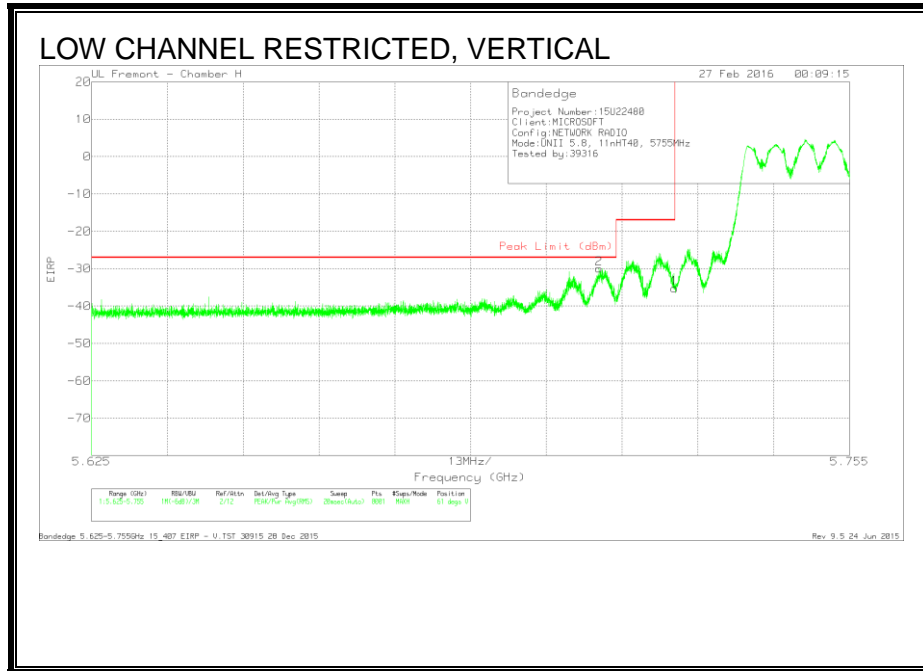
### 9.5. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.8 GHz BAND

#### RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.715	-55.83	PK	34.8	-18.5	11.8	-27.73	-27	-7.3	219	225	H
1	5.725	-54.2	PK	34.8	-18.5	11.8	-26.1	-17	-9.1	219	225	H

Pk - Peak detector

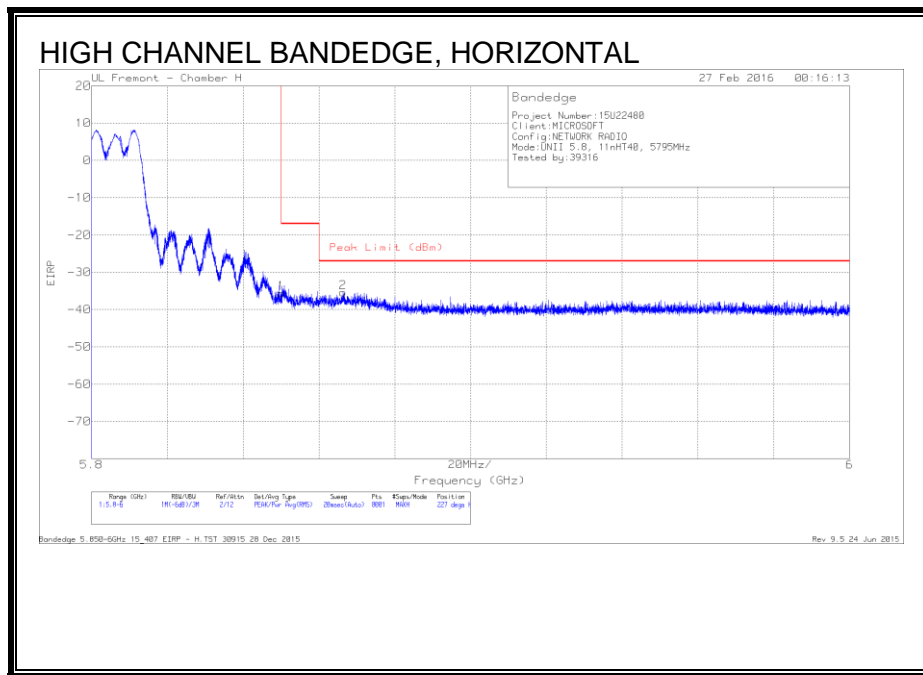


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.712	-57.94	Pk	34.8	-18.6	11.8	-29.94	-27	-2.94	61	236	V
1	5.725	-63.31	Pk	34.8	-18.5	11.8	-35.21	-17	-18.21	61	236	V

Pk - Peak detector

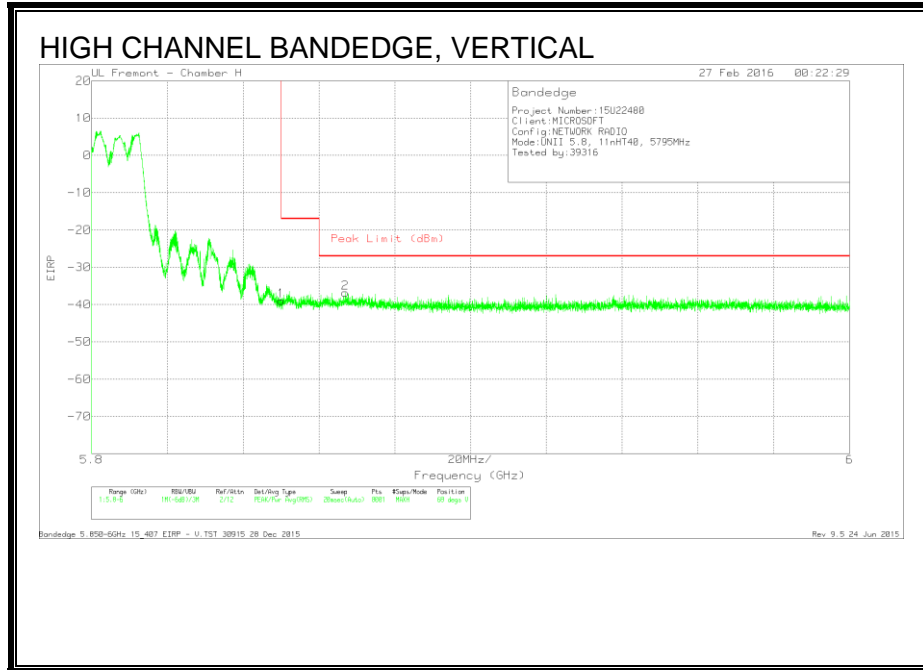


**AUTHORIZED BANDEDGE (HIGH CHANNEL)**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-63.8	Pk	34.9	-18.5	11.8	-35.6	-17	-18.6	227	229	H
2	5.866	-63.67	Pk	34.9	-18.4	11.8	-35.37	-27	-8.37	227	229	H

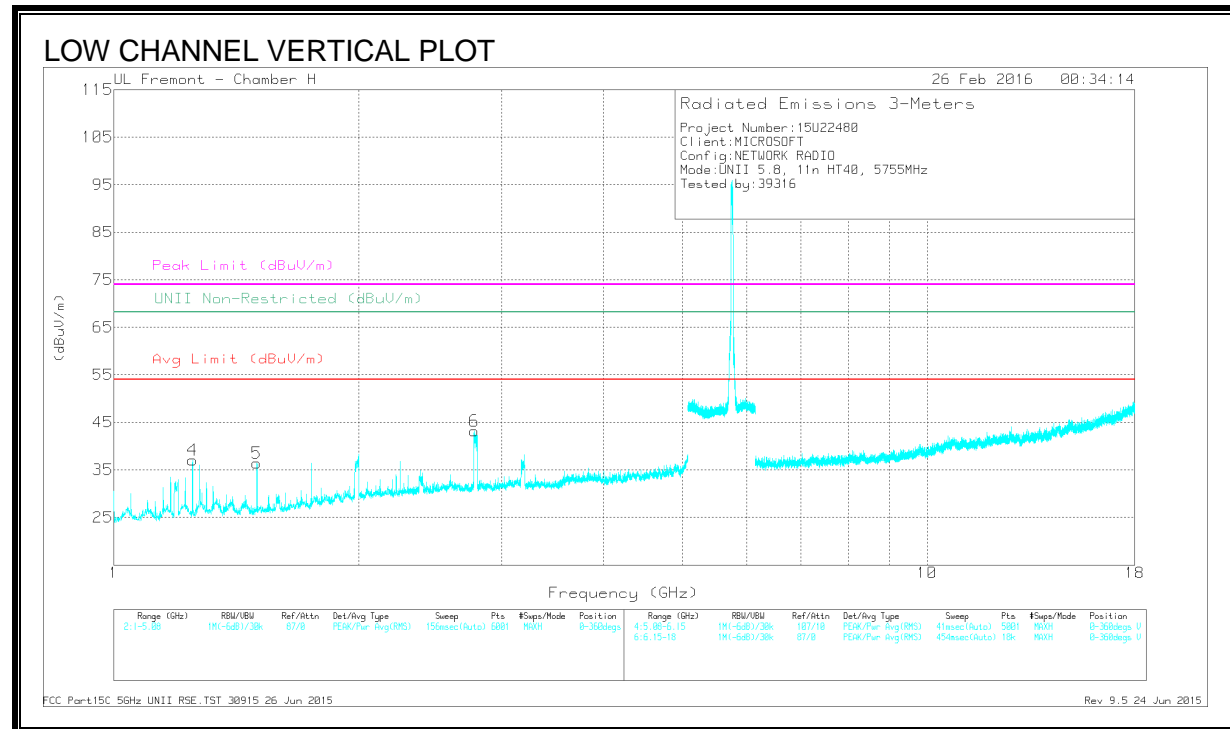
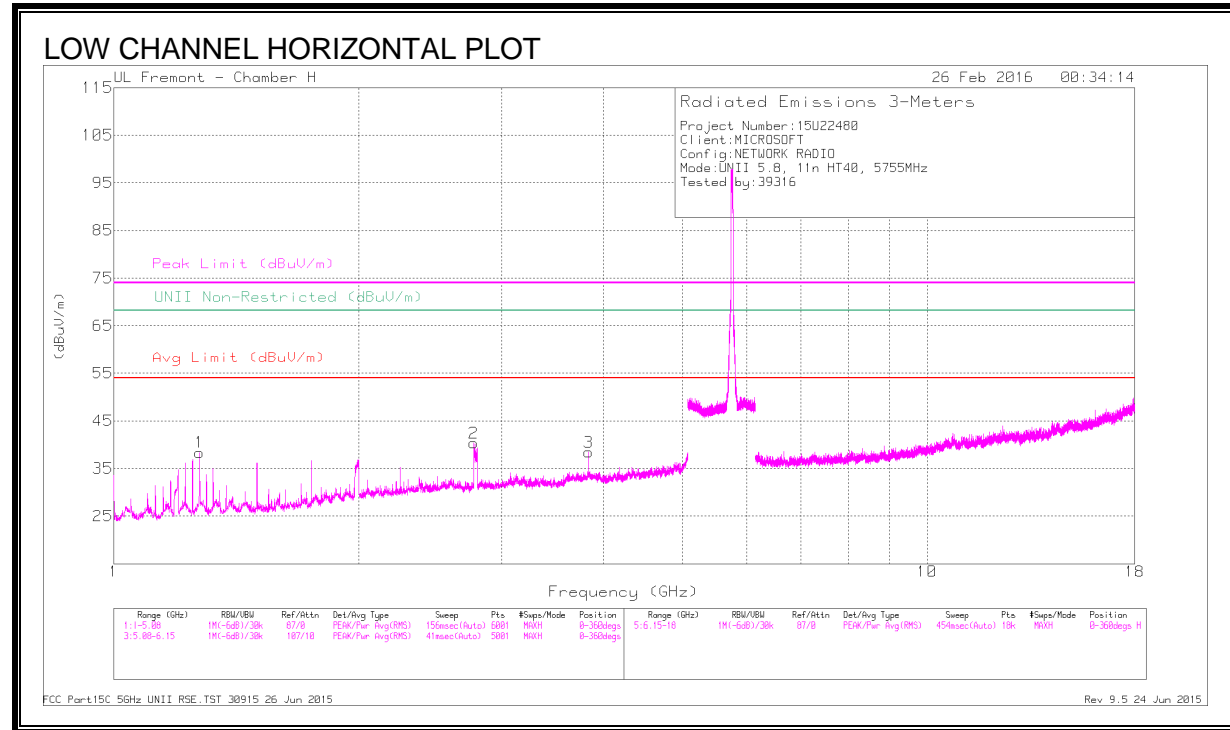
Pk - Peak detector



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-67.16	Pk	34.9	-18.5	11.8	-38.96	-17	-21.96	68	239	V
2	5.867	-65.15	Pk	34.9	-18.4	11.8	-36.85	-27	-9.85	68	239	V

Pk - Peak detector

**HARMONICS AND SPURIOUS EMISSIONS**



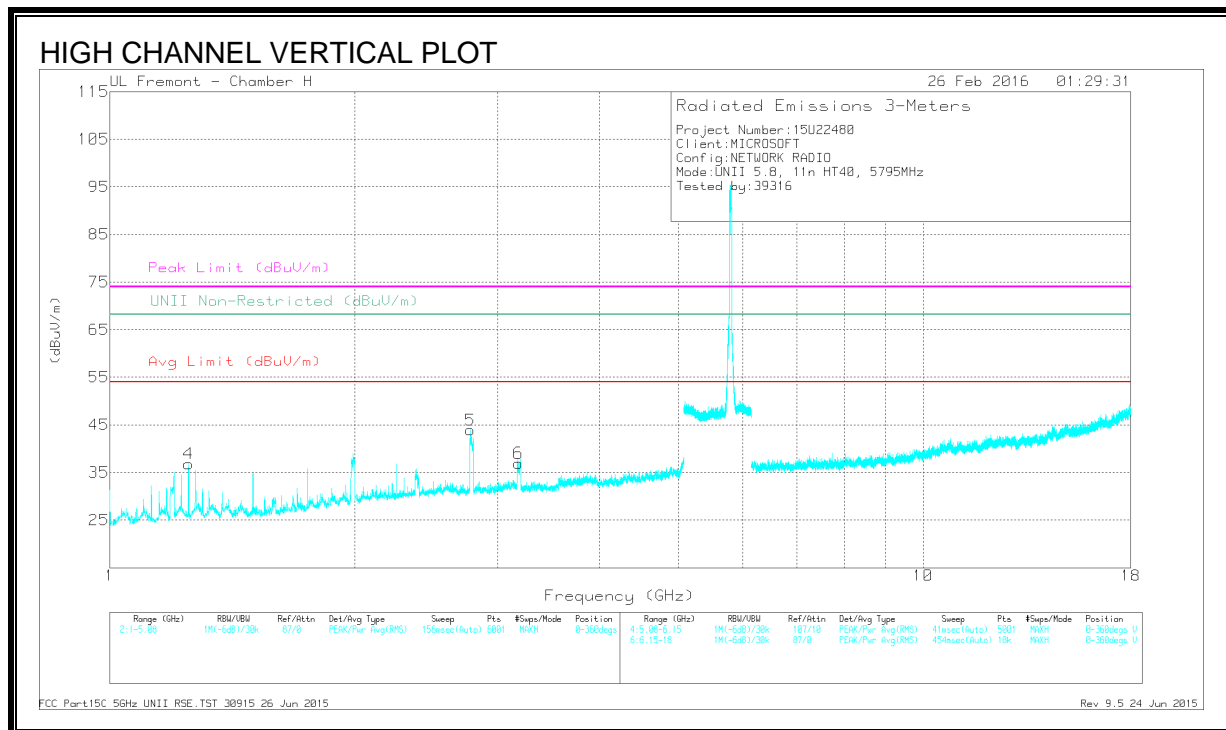
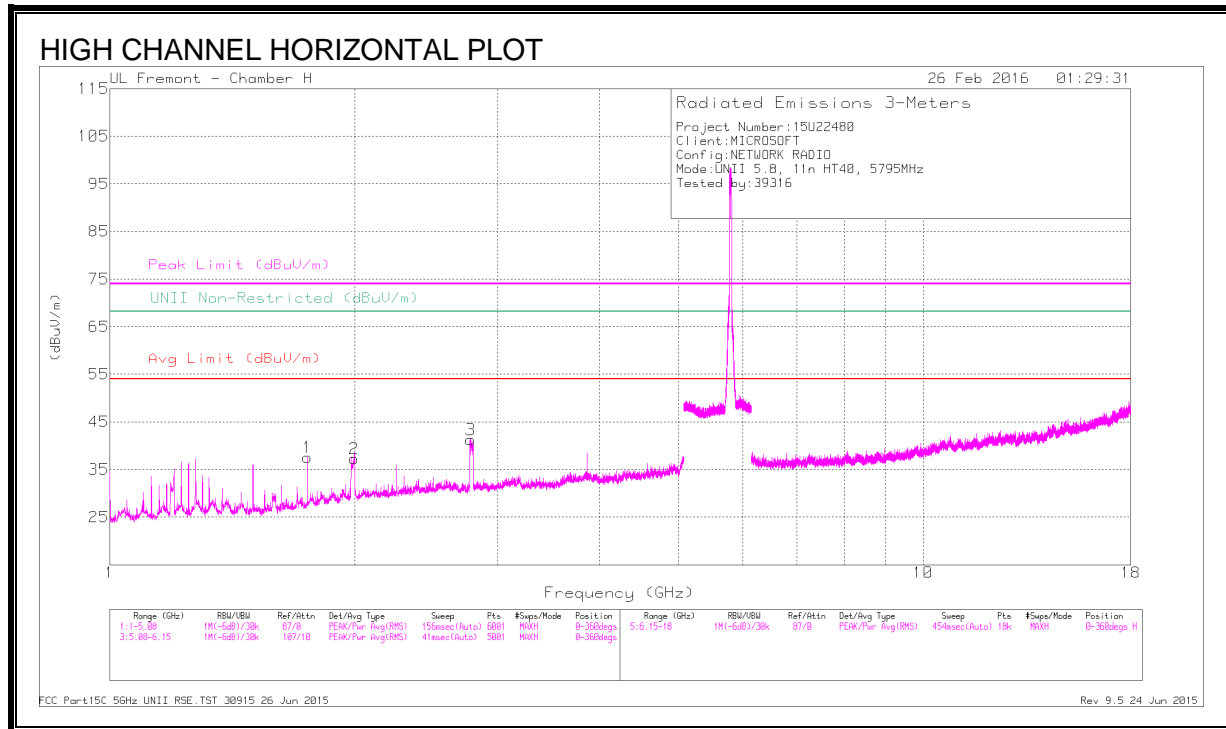
**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/CbI/F Itr/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	* 1.275	48.9	PK-U	28.8	-34.6	0	43.1	-	-	74	-30.9	-	-	54	268	H
	* 1.275	41.89	ADR	28.8	-34.6	0	36.09	54	-17.91	-	-	-	-	54	268	H
2	* 2.773	49.05	PK-U	32.4	-32.4	0	49.05	-	-	74	-24.95	-	-	169	159	H
	* 2.774	34.37	ADR	32.4	-32.4	0	34.37	54	-19.63	-	-	-	-	169	159	H
3	* 3.836	43.21	PK-U	33.5	-30.2	0	46.51	-	-	74	-27.49	-	-	243	194	H
	* 3.837	34.36	ADR	33.5	-30.2	0	37.66	54	-16.34	-	-	-	-	243	194	H
4	* 1.25	50.23	PK-U	28.5	-34.5	0	44.23	-	-	74	-29.77	-	-	134	218	V
	* 1.25	43.54	ADR	28.5	-34.5	0	37.54	54	-16.46	-	-	-	-	134	218	V
5	* 1.5	47.87	PK-U	28.1	-34.3	0	41.67	-	-	74	-32.33	-	-	239	211	V
	* 1.5	42.72	ADR	28.1	-34.3	0	36.52	54	-17.48	-	-	-	-	239	211	V
6	* 2.773	51.43	PK-U	32.4	-32.4	0	51.43	-	-	74	-22.57	-	-	137	188	V
	* 2.775	36.8	ADR	32.4	-32.4	0	36.8	54	-17.2	-	-	-	-	137	188	V

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cb/F Itt/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
3	* 2.779	49.58	PK-U	32.4	-32.3	0	49.68	-	-	74	-24.32	-	-	165	110	H
	* 2.778	34.38	ADR	32.4	-32.3	0	34.48	54	-19.52	-	-	-	-	165	110	H
4	* 1.25	49.52	PK-U	28.5	-34.5	0	43.52	-	-	74	-30.48	-	-	135	216	V
	* 1.25	43.08	ADR	28.5	-34.5	0	37.08	54	-16.92	-	-	-	-	135	216	V
5	* 2.773	50.84	PK-U	32.4	-32.4	0	50.84	-	-	74	-23.16	-	-	149	198	V
	* 2.775	35.98	ADR	32.4	-32.4	0	35.98	54	-18.02	-	-	-	-	149	198	V
1	1.75	46.78	PK-U	29.6	-34	0	42.38	-	-	-	-	68.2	-25.82	176	204	H
	1.75	41.46	ADR	29.6	-34	0	37.06	-	-	-	-	-	-	176	204	H
2	2	50.18	PK-U	31.2	-33.8	0	47.58	-	-	-	-	68.2	-20.62	7	321	H
	2	38.38	ADR	31.2	-33.8	0	35.78	-	-	-	-	-	-	7	321	H
6	3.179	46.08	PK-U	32.9	-31.4	0	47.58	-	-	-	-	68.2	-20.62	247	376	V
	3.179	30.97	ADR	32.9	-31.4	0	32.47	-	-	-	-	-	-	247	376	V

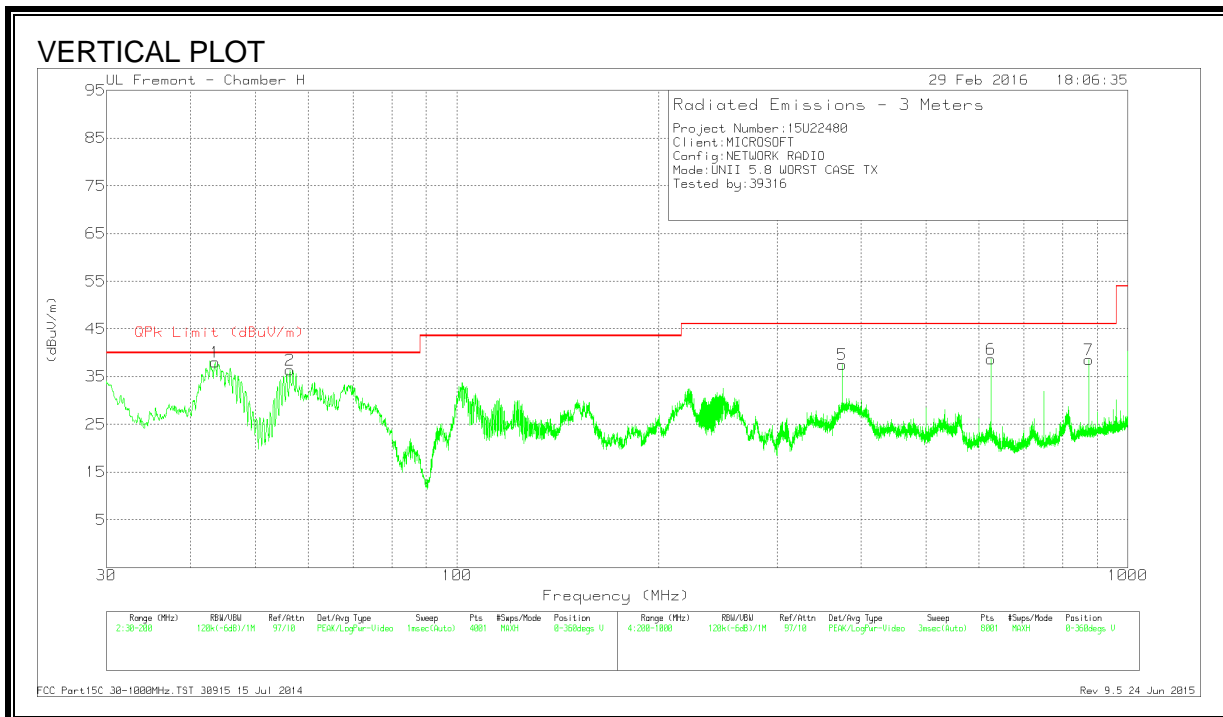
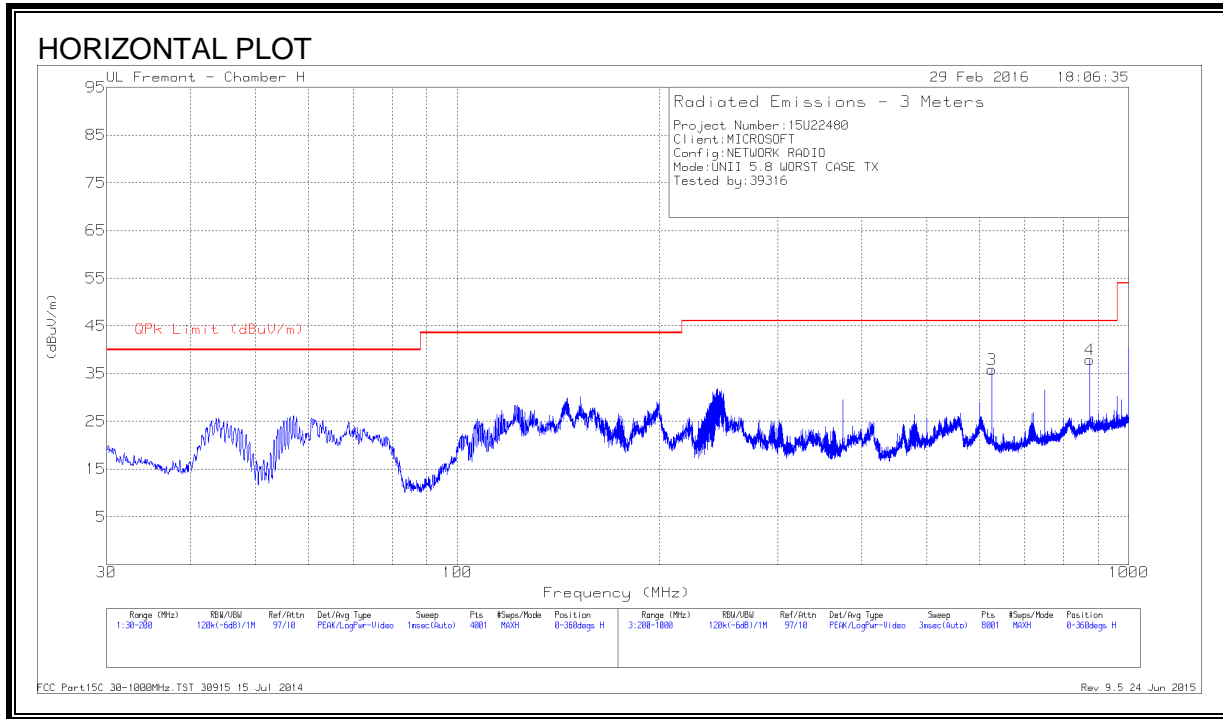
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

## 9.6. WORST-CASE BELOW 1 GHz

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



**DATA**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	43.6213	57.2	Pk	12	-31.1	38.1	40	-1.9	0-360	100	V
	45.4713	45.47	Qp	10.6	-31	25.07	40	-14.93	331	394	V
2	56.3713	59.99	Pk	7.3	-30.9	36.39	40	-3.61	0-360	100	V
	56.3563	57.02	Qp	7.3	-30.9	33.42	40	-6.58	258	106	V
5	375	51.03	Pk	15.3	-28.8	37.53	46.02	-8.49	0-360	100	V
6	625	47.04	Pk	19.6	-27.9	38.74	46.02	-7.28	0-360	100	V
3	625.1	44.18	Pk	19.6	-27.9	35.88	46.02	-10.14	0-360	100	H
4	875.1	43.32	Pk	21.3	-26.7	37.92	46.02	-8.1	0-360	100	H
7	875.1	43.97	Pk	21.3	-26.7	38.57	46.02	-7.45	0-360	100	V

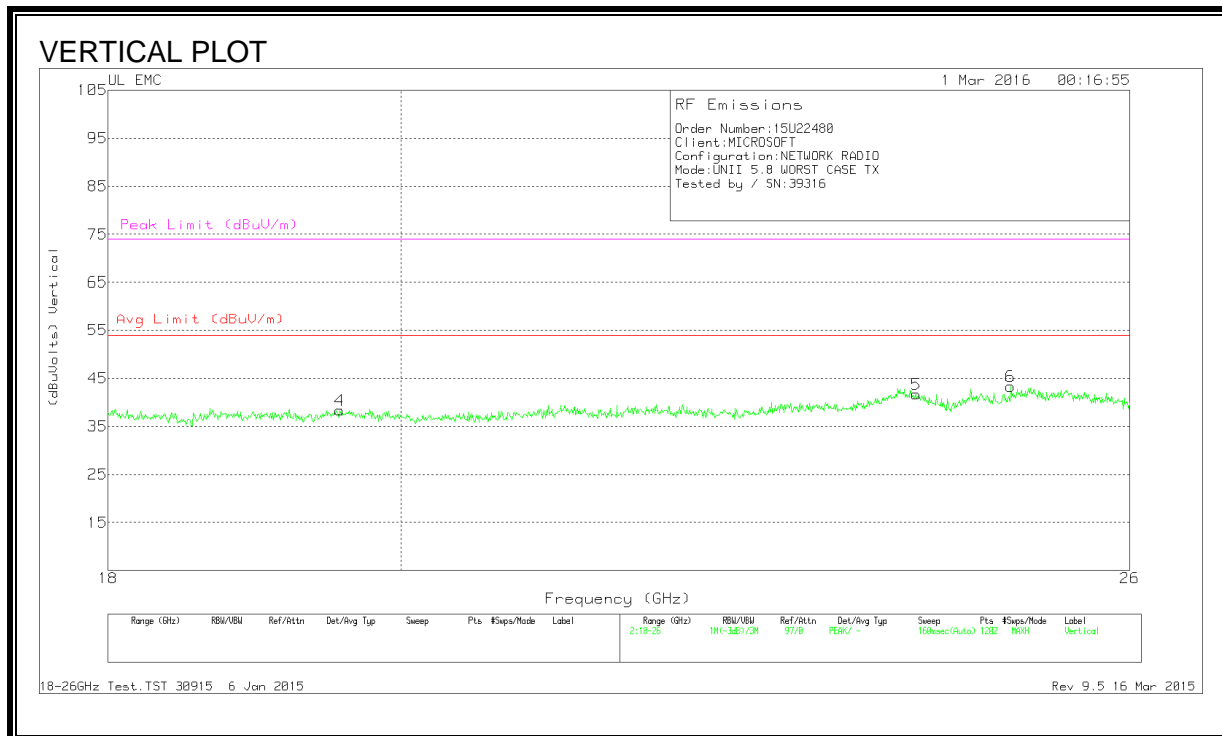
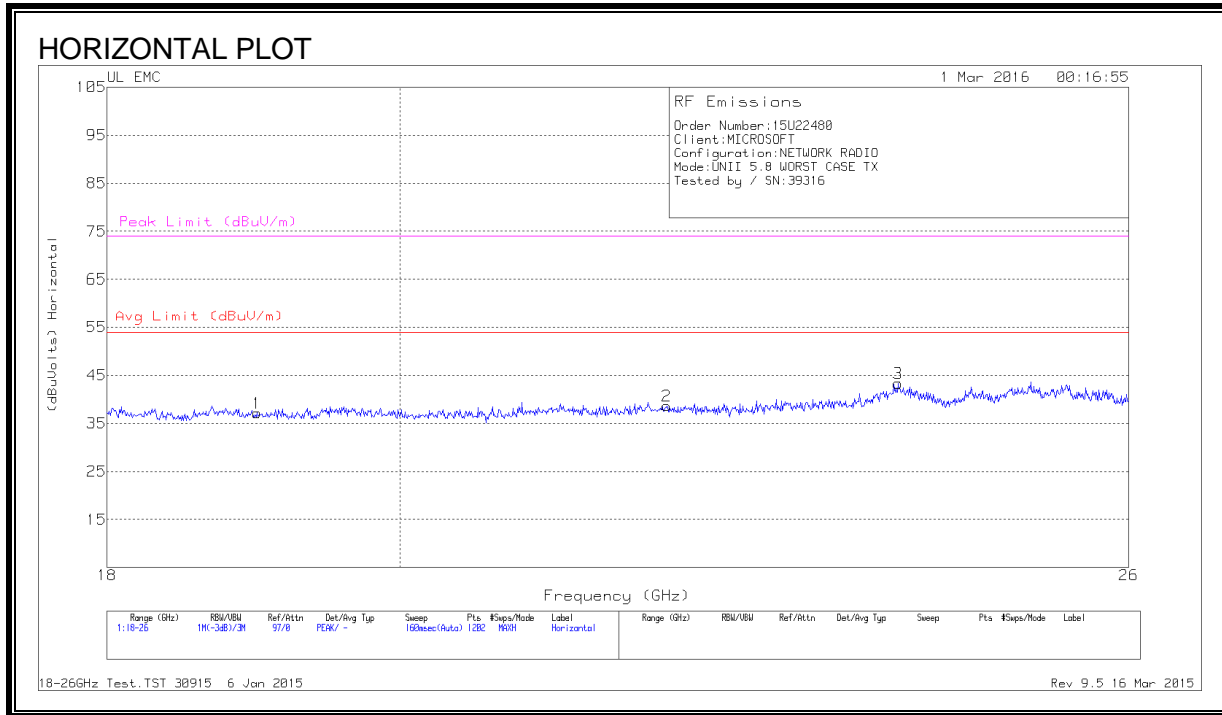
Pk - Peak detector

Qp - Quasi-Peak detector



### 9.7. WORST-CASE 18-26 GHz

#### SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION)



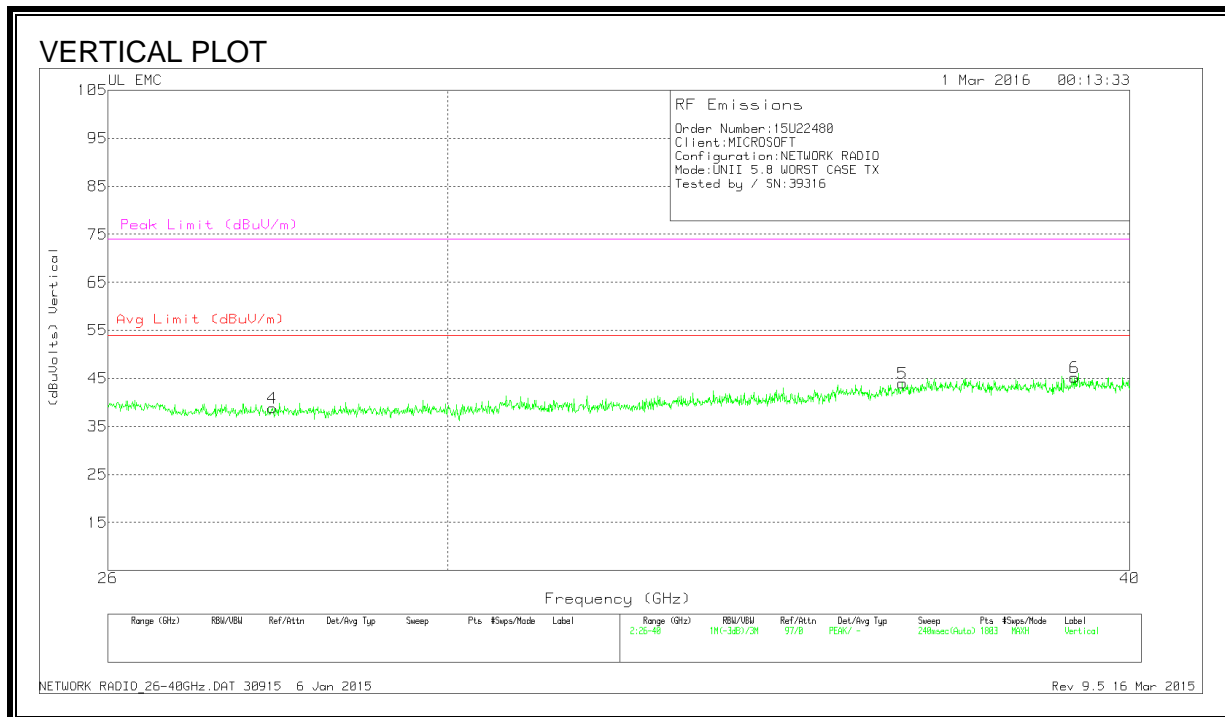
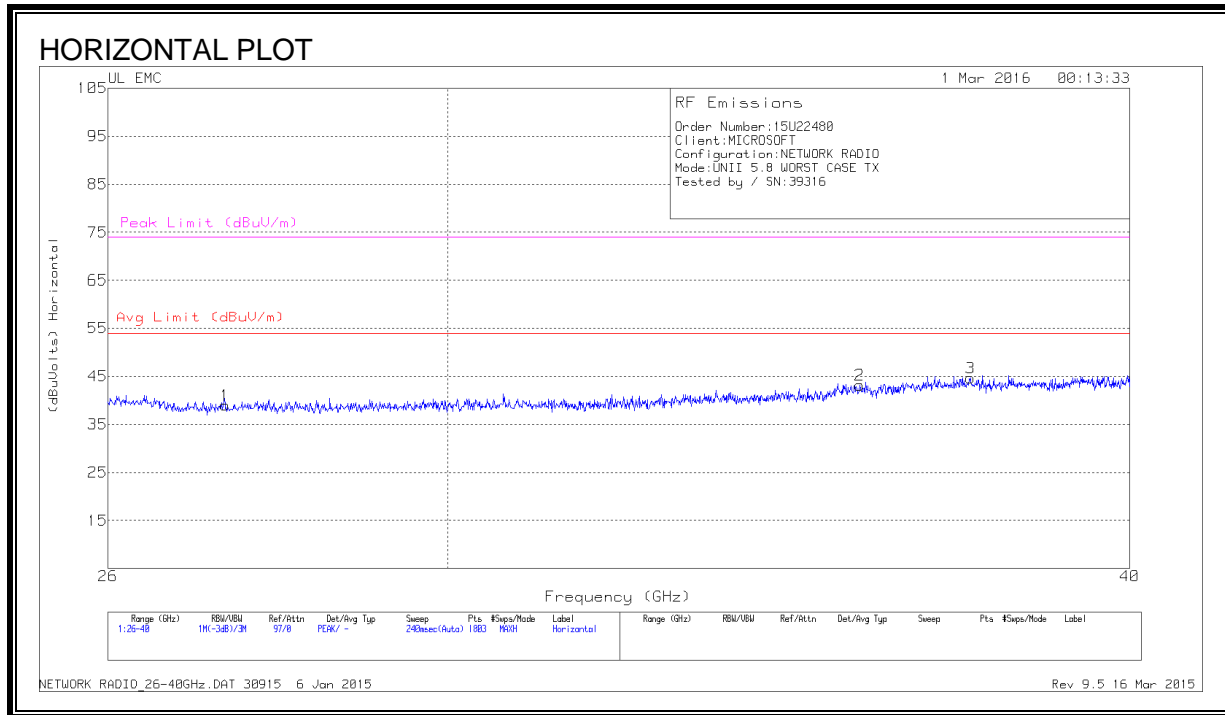
**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T477 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	18.999	38.97	Pk	32.5	-24.8	-9.5	37.167	54	-16.833	74	-36.833
2	22.017	40.17	Pk	33.2	-25.2	-9.5	38.667	54	-15.333	74	-35.333
3	23.928	43.13	Pk	33.7	-24	-9.5	43.333	54	-10.667	74	-30.667
4	19.565	40.23	Pk	32.7	-25.1	-9.5	38.333	54	-15.667	74	-35.667
5	24.075	41.87	Pk	33.7	-24.4	-9.5	41.667	54	-12.333	74	-32.333
6	24.908	43.13	Pk	34	-24.3	-9.5	43.333	54	-10.667	74	-30.667

Pk - Peak detector

### 9.8. WORST-CASE 26-40 GHz

#### SPURIOUS EMISSIONS 26 TO 40 GHz (WORST-CASE CONFIGURATION, HORIZONTAL)



**DATA**

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	27.313	44	Pk	35.6	-31.1	-9.5	39	54	-15	74	-35
2	35.696	48.57	Pk	37.4	-33.3	-9.5	43.167	54	-10.833	74	-30.833
3	37.397	49.97	Pk	37.3	-33.1	-9.5	44.667	54	-9.333	74	-29.333
4	27.865	44.03	Pk	35.8	-31.5	-9.5	38.833	54	-15.167	74	-35.167
5	36.341	49.5	Pk	37.2	-33.2	-9.5	44	54	-10	74	-30
6	39.075	48.87	Pk	37.6	-31.8	-9.5	45.167	54	-8.833	74	-28.833

Pk - Peak detector

---

## 10. AC POWER LINE CONDUCTED EMISSIONS

Please refer to Report Number 13U14860-3A, FCC ID: C3K1525, pages 243 – 249.