



**FCC 47 CFR PART 15 SUBPART E
C2PC CERTIFICATION TEST REPORT
FOR**

802.11 a/b/g/n WLAN, BT 2.1 and RF4CE SATELLITE SE

MODEL NUMBER: ID:075

FCC ID: DKNCB1138

REPORT NUMBER: 16U23276-E2V2

ISSUE DATE: 5/17/2016

Prepared for
**Echostar Technologies LLC
94 Inverness Terrace East
Englewood, CO 80112**

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

Rev.	Issue Date	Revisions	Revised By
V1	5/11/16	Initial Issue	C. Vergonio
V2	5/17/16	Inserted Bandedge data and updated Section 10.4 page 114.	C. Vergonio

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION	6
4.3. MEASUREMENT UNCERTAINTY	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT	8
5.2. MAXIMUM OUTPUT POWER.....	8
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.4. SOFTWARE AND FIRMWARE.....	8
5.5. DESCRIPTION OF CLASS II PERMISSIVE CHANGE	8
5.6. WORST-CASE CONFIGURATION AND MODE	9
5.7. DESCRIPTION OF TEST SETUP.....	10
6. TEST AND MEASUREMENT EQUIPMENT	12
7. SUMMARY TABLE	13
8. MEASUREMENT METHODS	14
9. ANTENNA PORT TEST RESULTS	15
9.1. ON TIME AND DUTY CYCLE.....	15
9.2. 802.11a SISO MODE IN THE 5.8 GHz BAND	18
9.2.1. 6 dB BANDWIDTH.....	18
9.2.2. 99% BANDWIDTH.....	21
9.2.3. OUTPUT POWER	24
9.2.4. Maximum Power Spectral Density (PSD)	26
9.3. 802.11a CDD 2TX MODE IN THE 5.8 GHz BAND.....	30
9.3.1. 6 dB BANDWIDTH.....	30
9.3.2. 99% BANDWIDTH.....	34
9.3.3. OUTPUT POWER	38
9.3.4. Maximum Power Spectral Density (PSD)	40
9.4. 802.11n HT20 SISO MODE IN THE 5.8 GHz BAND	45
9.4.1. 6 dB BANDWIDTH.....	45
9.4.2. 99% BANDWIDTH.....	48
9.4.3. OUTPUT POWER	51

9.4.4.	Maximum Power Spectral Density (PSD).....	53
9.5.	802.11n HT20 CDD 2TX MODE IN THE 5.8 GHz BAND	57
9.5.1.	6 dB BANDWIDTH.....	57
9.5.2.	99% BANDWIDTH.....	61
9.5.3.	OUTPUT POWER	65
9.5.4.	Maximum Power Spectral Density (PSD).....	67
9.6.	802.11n HT40 SISO MODE IN THE 5.8 GHz BAND	72
9.6.1.	6 dB BANDWIDTH.....	72
9.6.2.	99% BANDWIDTH.....	74
9.6.3.	OUTPUT POWER	76
9.6.4.	Maximum Power Spectral Density (PSD).....	78
9.7.	802.11n HT40 CDD 2TX MODE IN THE 5.8 GHz BAND	81
9.7.1.	6 dB BANDWIDTH.....	81
9.7.2.	99% BANDWIDTH.....	84
9.7.3.	OUTPUT POWER	87
9.7.4.	Maximum Power Spectral Density (PSD).....	89
10.	RADIATED TEST RESULTS	93
10.1.	LIMITS AND PROCEDURE.....	93
10.2.	TX ABOVE 1 GHz 802.11a SISO MODE IN THE 5.8 GHz BAND	94
10.3.	TX ABOVE 1 GHz 802.11a CDD 2TX MODE IN THE 5.8 GHz BAND.....	104
10.4.	TX ABOVE 1 GHz 802.11n HT20 SISO MODE IN THE 5.8 GHz BAND.....	114
10.5.	TX ABOVE 1 GHz 802.11n HT20 CDD 2TX MODE IN THE 5.8 GHz BAND	124
10.6.	TX ABOVE 1 GHz 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND.....	134
10.7.	TX ABOVE 1 GHz 802.11n HT40 CDD 2TX MODE IN THE 5.8 GHz BAND	142
10.8.	WORST-CASE BELOW 1 GHz	150
11.	AC POWER LINE CONDUCTED EMISSIONS	152
12.	SETUP PHOTOS	155

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Echostar Technologies LLC
94 Inverness Terrace East
Englewood, CO 80112

EUT DESCRIPTION: WLAN 802.11 a/b/g/n, BT 2.1 and RF4CE Satellite Set Top Box

MODEL: ID:075

SERIAL NUMBER: 200101R01292Y00110H (Conducted)
200101R01282Y00107H (Radiated)

DATE TESTED: FEBRUARY 26 – MAY 5, 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:



CHARLES VERGONIO
WISE ENGINEER
UL Verification Services Inc.

Prepared By:



JONATHAN HSU
WISE LAB 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, 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.

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

Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

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	3.52 dB
Radiated Disturbance, 9KHz to 30 MHz	2.14 dB
Radiated Disturbance, 30 to 1000 MHz	4.98 dB
Radiated Disturbance, 1000 to 6000 MHz	3.86 dB
Radiated Disturbance, 6000 to 18000 MHz	4.23 dB
Radiated Disturbance, 18000 to 26000 MHz	5.30 dB
Radiated Disturbance, 26000 to 40000 MHz	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, BT 2.1 and RF4CE SATTELITE SE.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

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	17.39	N/A	17.39	54.83
5745-5825	802.11n HT20	17.42	N/A	17.42	55.21
5755-5795	802.11n HT40	17.09	N/A	17.09	51.17
5.8 GHz band, 2TX					
5745-5825	802.11a CDD	17.03	16.88	19.97	99.22
5745-5825	802.11n HT20 CDD	17.23	16.93	20.09	102.16
5755-5795	802.11n HT40 CDD	17.00	17.00	20.01	100.24

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency (MHz)	Antenna Gain (J0) dBi	Antenna Gain (J1) dBi
5745-5825	3.2	1.8

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Broadcom, rev. 5.102 RC98.37

The EUT driver software installed during testing was Broadcom, rev. 5.102.98.37 (WLTEST)

The test utility software used during testing was Broadcom MTool, rev 2.0.1.1

5.5. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

Please refer to Echostar Technologies L.L.C Class II Change Description Letter for details.

5.6. WORST-CASE CONFIGURATION AND MODE

The EUT can only be setup in desktop orientation; therefore, all radiated testing was performed with the EUT in desktop orientation.

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

For SISO mode, the conducted & radiated testing was only performed with the highest antenna gain chain, J0.

Worst-case data rates as provided by the client 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	HP	EliteBook 8470	CNU342CP2Y	N/A
Laptop AC adapter	HP	PPP009L-E	WCNXA0C3U5IA7F	N/A
Router	Netgear	WNR1000	28C2035S0B654	N/A
Router AC adapter	Netgear	T012LF1209	N/A	N/A

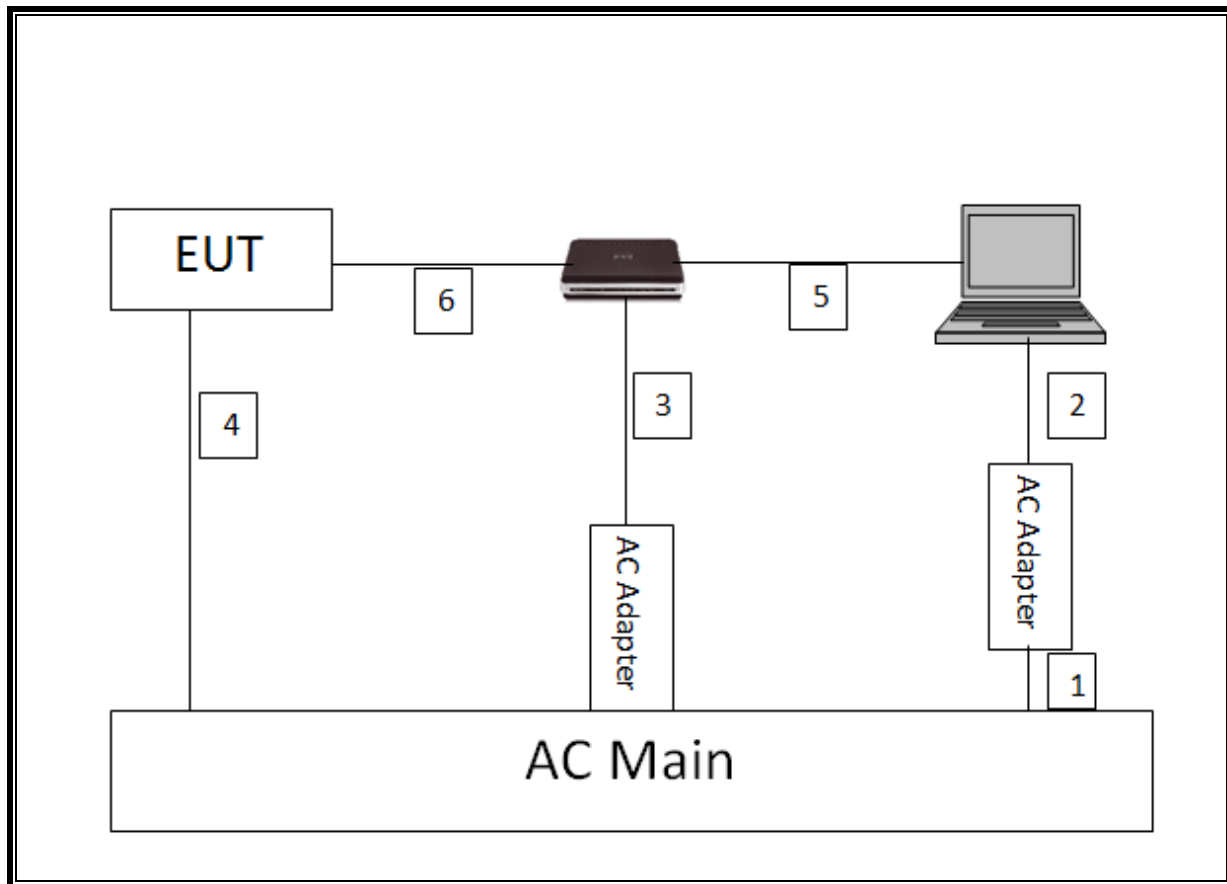
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US115V	Un-shielded	1.8	N/A
2	DC	1	19.5VDC	Un-shielded	1.8	N/A
3	DC	1	12VDC	Un-shielded	1.8	N/A
4	AC	1	US115V	Un-shielded	1.8	N/A
5	LAN	1	RJ45	Un-shielded	2	N/A
6	LAN	1	RJ45	Un-shielded	2	N/A

TEST SETUP

The EUT was tested stand alone and the communication was established via RJ45 cable between EUT and support laptop. Test software exercised the radio.

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
Bilog Antenna 30-1000MHz	Sunol	JB1	130	09/01/15	09/01/16
Horn Antenna 1-18GHz	ETS	3117	344	02/22/16	02/22/17
Horn Antenna 1-18GHz	ETS	3117	345	03/27/16	03/27/17
Horn Antenna 18-26.5GHz	ARA	MWH-1826	447	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	12/17/15	12/17/16
Preamp 1-18GHz	Miteq	AFS42-00101800-25-2-42	493	07/23/15	07/23/16
Preamp 1-26.5GHz	Agilent	8449B	404	06/28/15	06/28/16
Amplifier, 26-40GHz	Miteq	NSP4000-SP2	88	04/07/16	04/07/17
Spectrum Analyzer 3kHz - 44GHz	Keysight	E4440A	119	07/22/15	07/22/16
Spectrum Analyzer 3kHz - 44GHz	Keysight	N9030A	908	05/26/15	05/26/16
Spectrum Analyzer 3kHz - 44GHz	Keysight	N9030A	907	01/06/16	01/06/17
Spectrum Analyzer 9kHz - 40GHz	HP	8564E	106	08/14/15	08/14/16
3GHz HPF	Micro-Tronics	HPM17543	487	01/26/16	01/27/17
EMI Test Receiver	Rohde & Schwarz	ESR	1436	12/19/15	12/19/16
Power Meter	Keysight	N1911A	1264	07/01/15	07/01/16
Power Sensor	Keysight	N1921A	750	09/17/15	09/17/16
LISN for Conducted Emission CISPR-1	Fischer	FCC-LISN-50/250-25-2-01-C	1310	09/16/15	09/16/16

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Version 9.5, 06/24/15
Conducted Software	UL	UL EMC	Version 9.5, 05/26/15
Antenna Port Software	UL	UL RF	Version 4.7, 04/28/16

7. SUMMARY TABLE

FCC Part Section	RSS Section	Test Description	Test Limit	Test Condition	Test Result
§15.407 (a)	RSS-247	Occupied Band width (26dB)	N/A	Conducted	N/A
§15.407	RSS-247 6.2.4	6dB Band width (5.8Ghz)	>500KHz		Pass
§15.407 (a)(1)	RSS-247 6.2	TX Cond. Power 5.15-5.25	<24dBm (FCC) / <23 dBm or <10+10Log(99% BW) (IC)		N/A
§15.407 (a)(2)	RSS-247 6.2	TX Cond. Power 5.25-5.35 & 5.47-5.725	<24dBm or <11+10log (OBW) (FCC) / <24 dBm or <11+10Log(99% BW) (IC)		N/A
§15.407 (a)(3)	RSS-247 6.2.4	TX Cond. Power 5.725-5.850	<30dBm		Pass
§15.407 (a)(1)	RSS-247 6.2	PSD (5.15-5.25)	<11dBm/MHz (FCC) <10dBm/MHz EIRP (IC)		N/A
§15.407 (a)(2)	RSS-247 6.2	PSD (5.3,5.5GHz)	<11dBm/MHz		N/A
§15.407 (a)(3)	RSS-247 6.2.4	PSD (5.8GHz)	<30dBm per 500kHz		Pass
§15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10		Pass
§15.407 (b) & 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	<54dBuV/m	Radiated	Pass

8. MEASUREMENT METHODS

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

6 dB Emission BW: KDB 789033 D02 v01r01, Section C, and KDB 662911 D01 v02r01.

26 dB Emission BW: KDB 789033 D02 v01r01, Section C, and KDB 662911 D01 v02r01.

99% Occupied BW: KDB 789033 D02 v01r01, Section D, and KDB 662911 D01 v02r01.

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.3, G.4, G.5, and G.6, and KDB 662911 D01 v02r01.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v01r01, Sections G.3, G.4, and G.5, and KDB 662911 D01 v02r01.

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

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

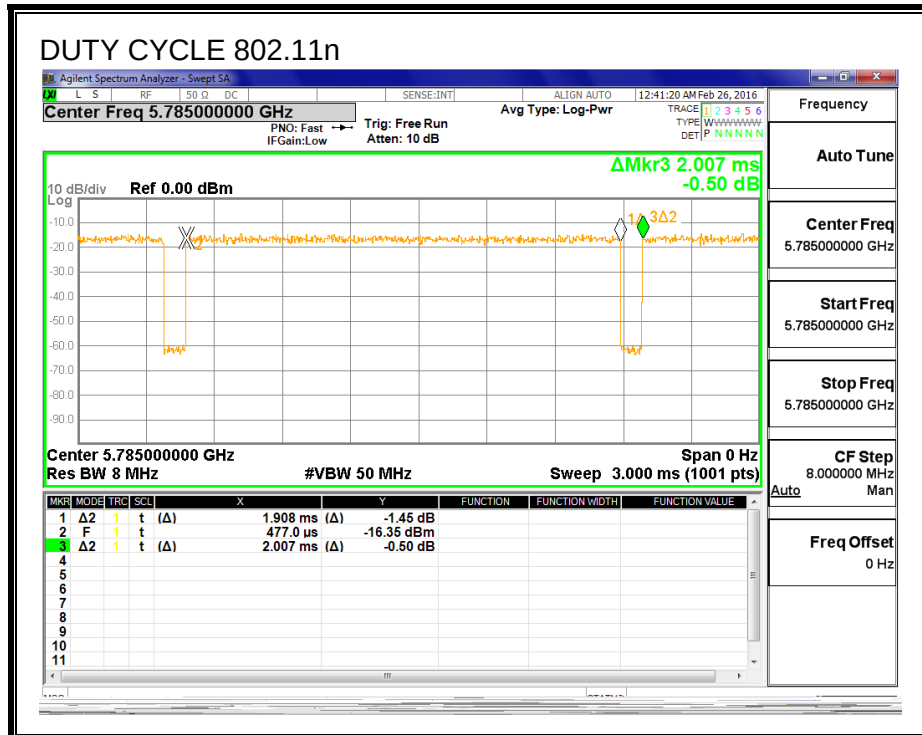
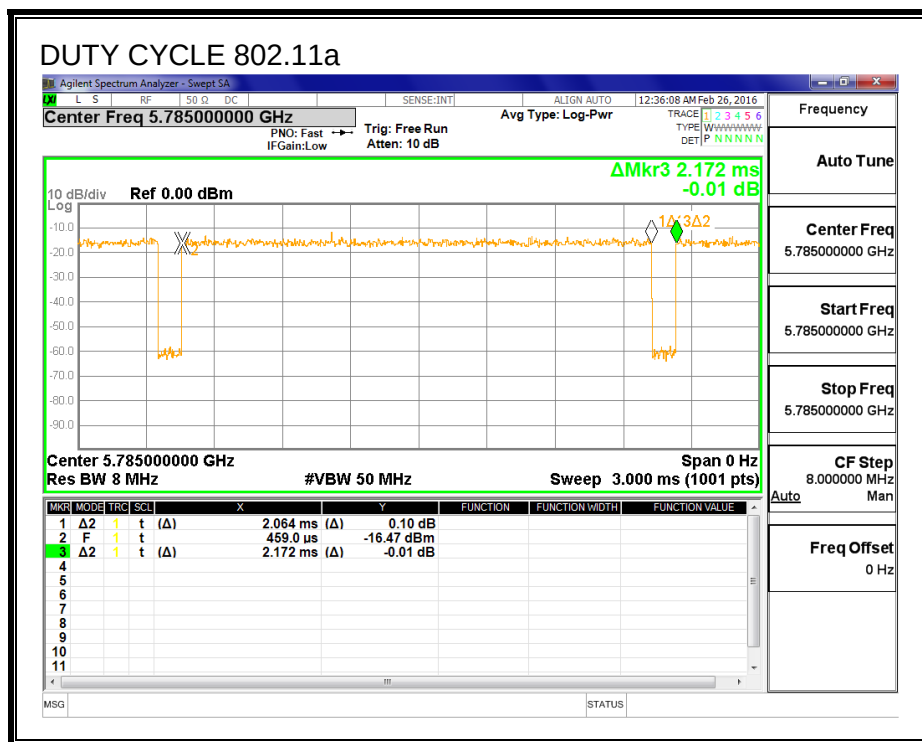
PROCEDURE

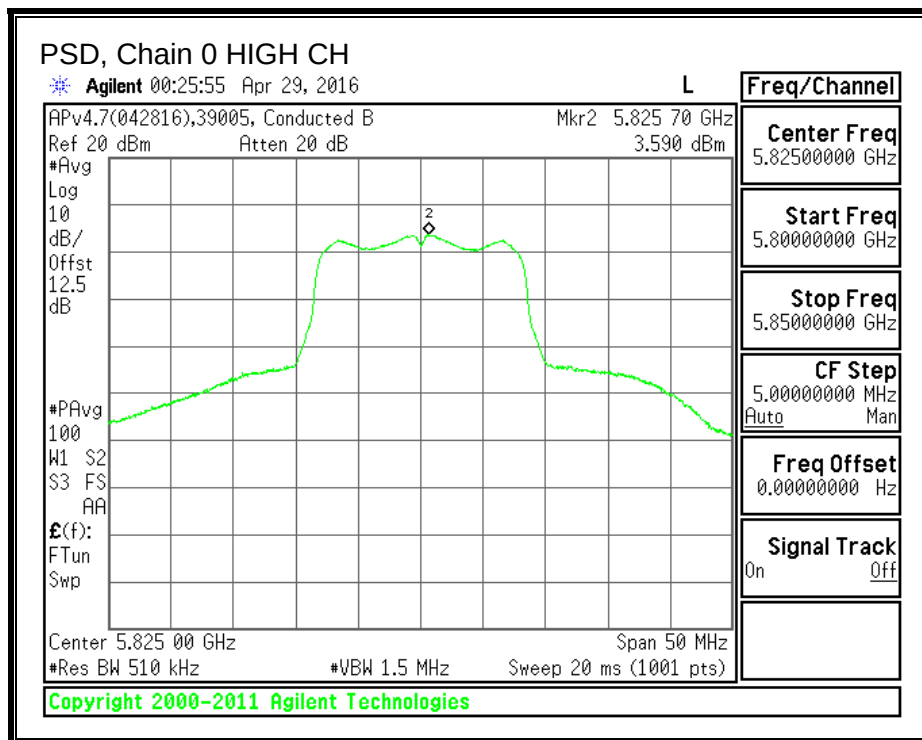
KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

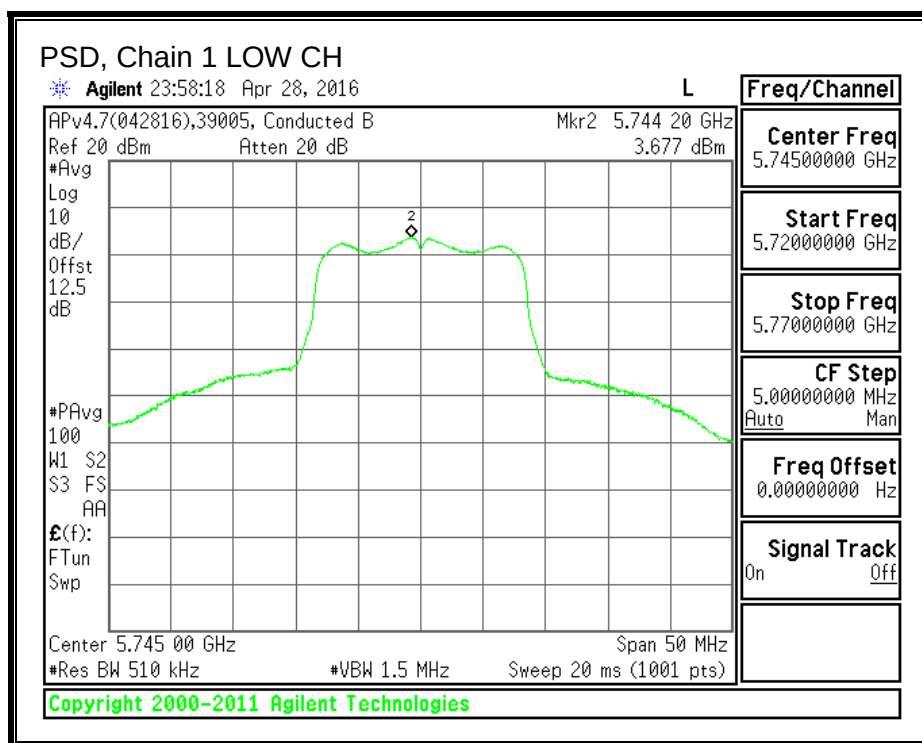
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11a	2.064	2.172	0.950	95.03%	0.22	0.484
802.11n HT20	1.908	2.007	0.951	95.07%	0.22	0.524
802.11n HT40	0.932	1.030	0.905	90.49%	0.43	1.073

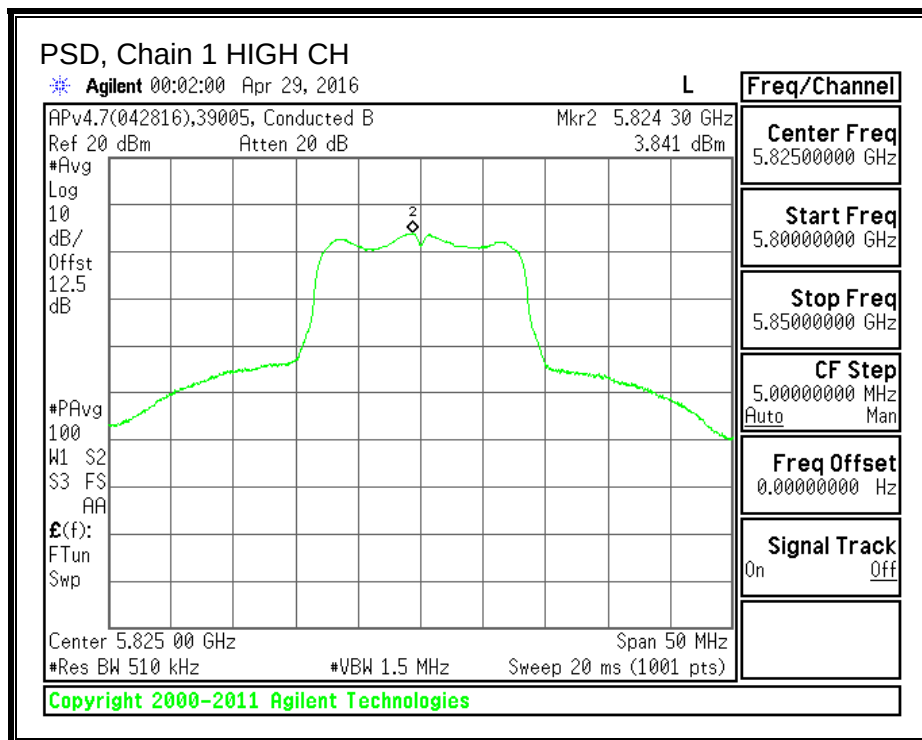
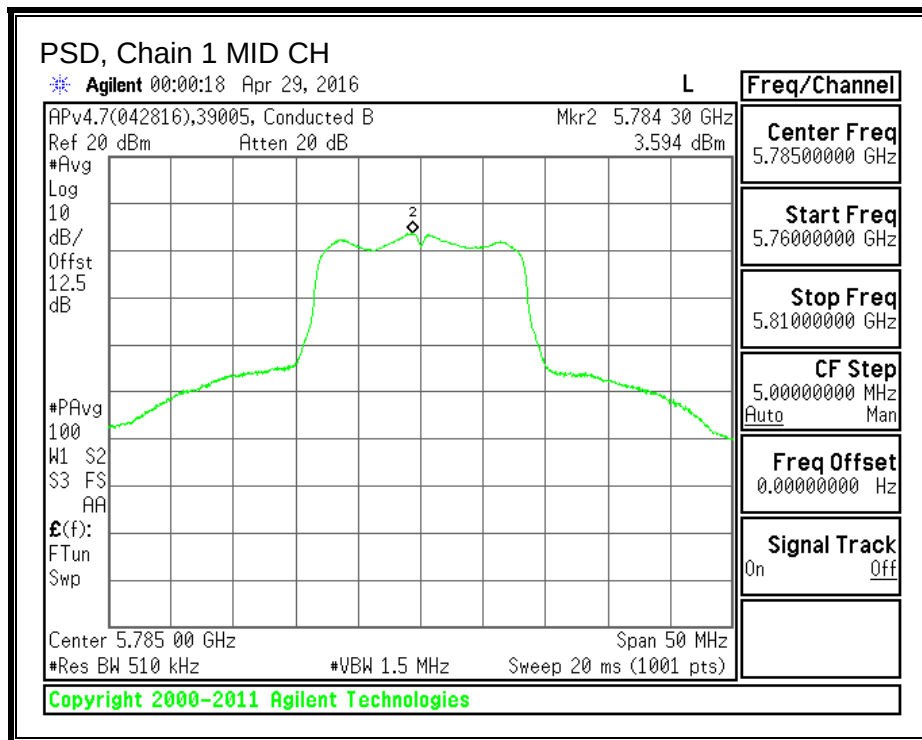
DUTY CYCLE PLOTS





PSD, Chain 1





9.4. 802.11n HT20 SISO MODE IN THE 5.8 GHz BAND

9.4.1. 6 dB BANDWIDTH

LIMITS

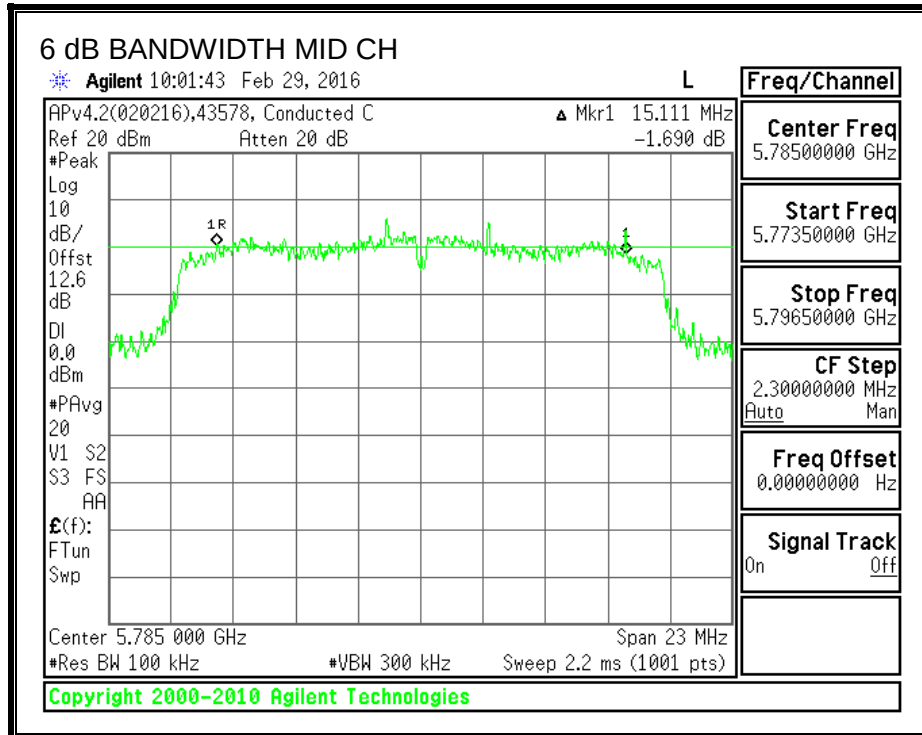
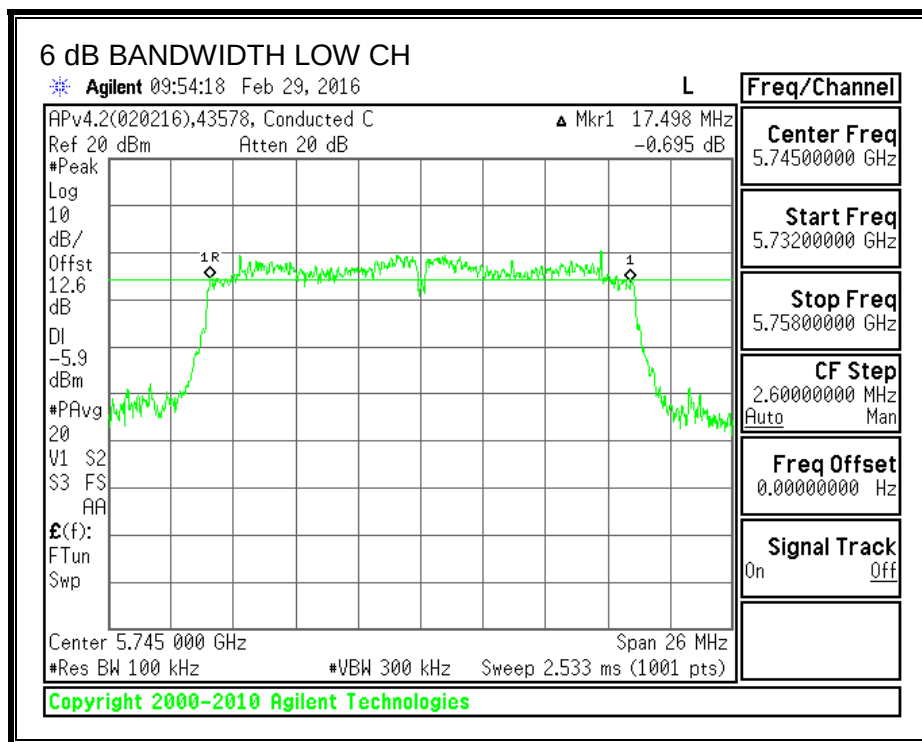
FCC §15.407 (e)

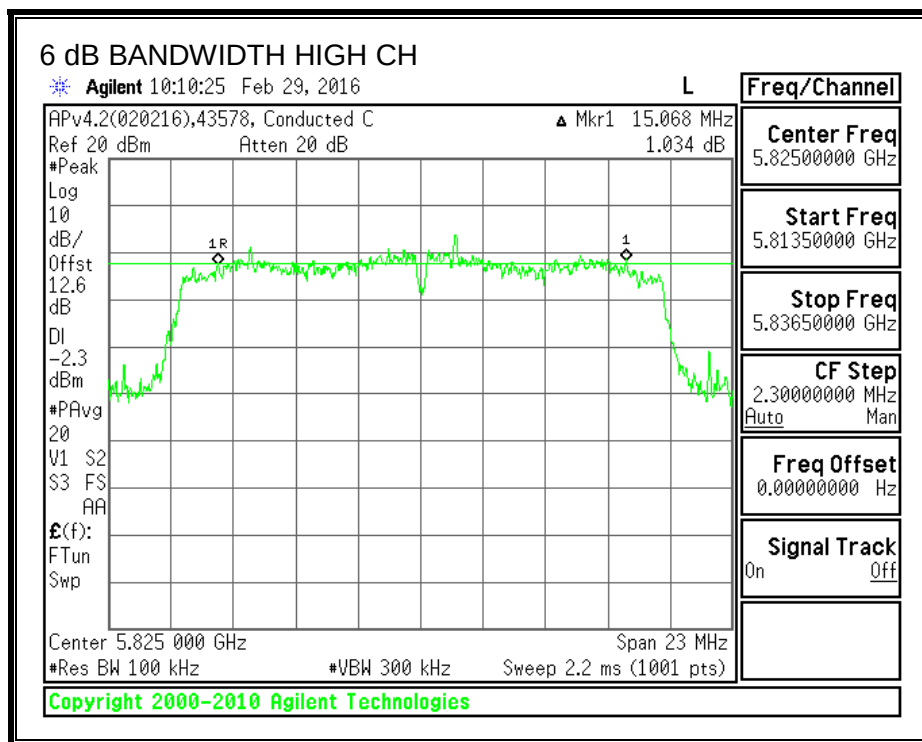
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.4980	0.5
Mid	5785	15.1110	0.5
High	5825	15.0680	0.5

6 dB BANDWIDTH





9.4.2. 99% BANDWIDTH

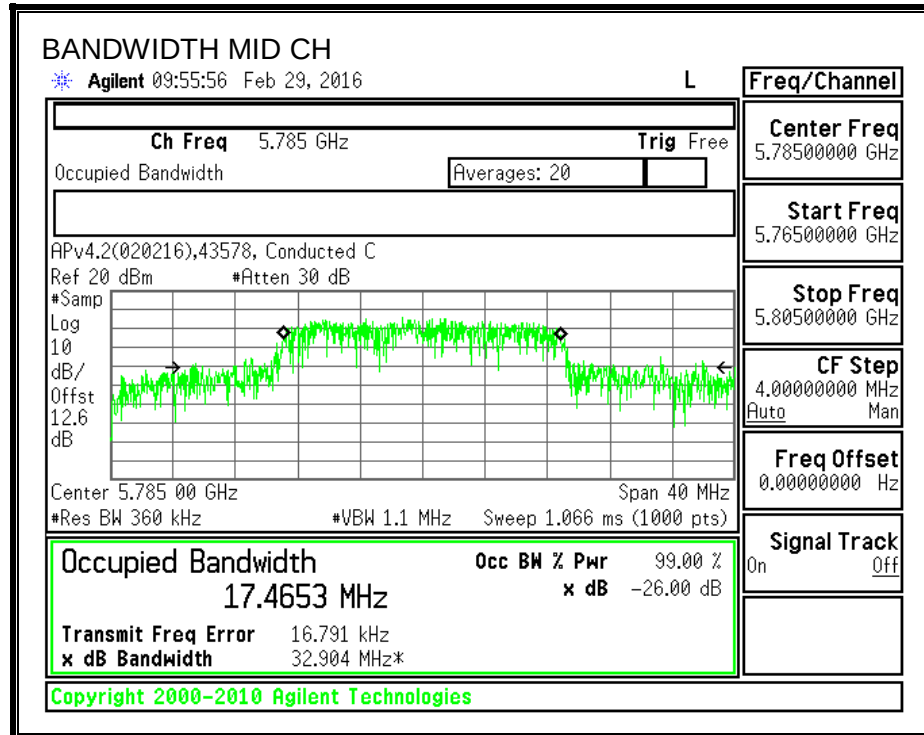
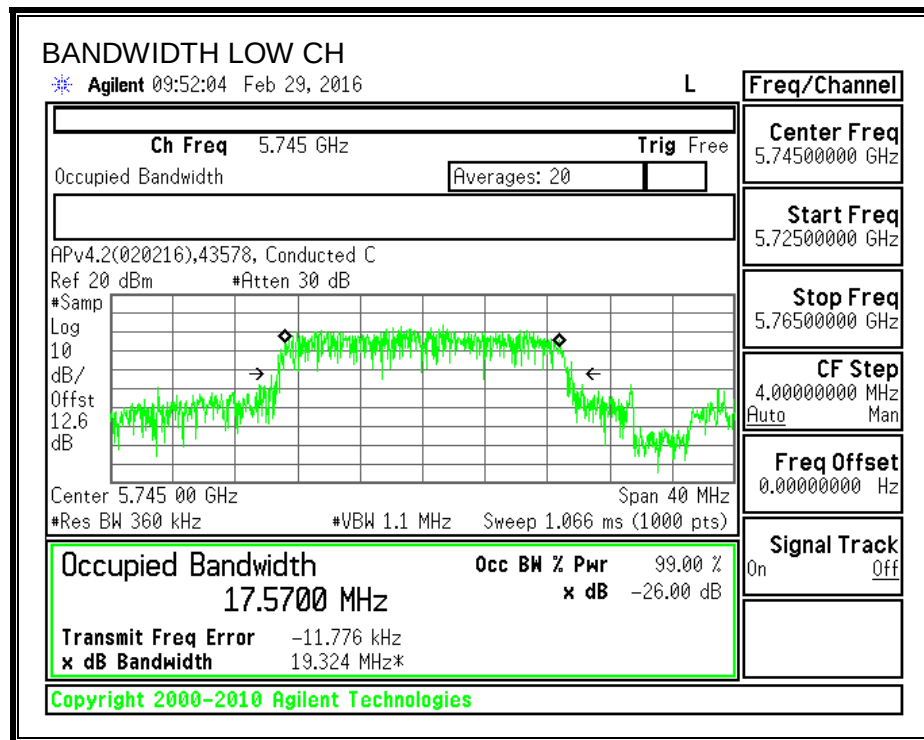
LIMITS

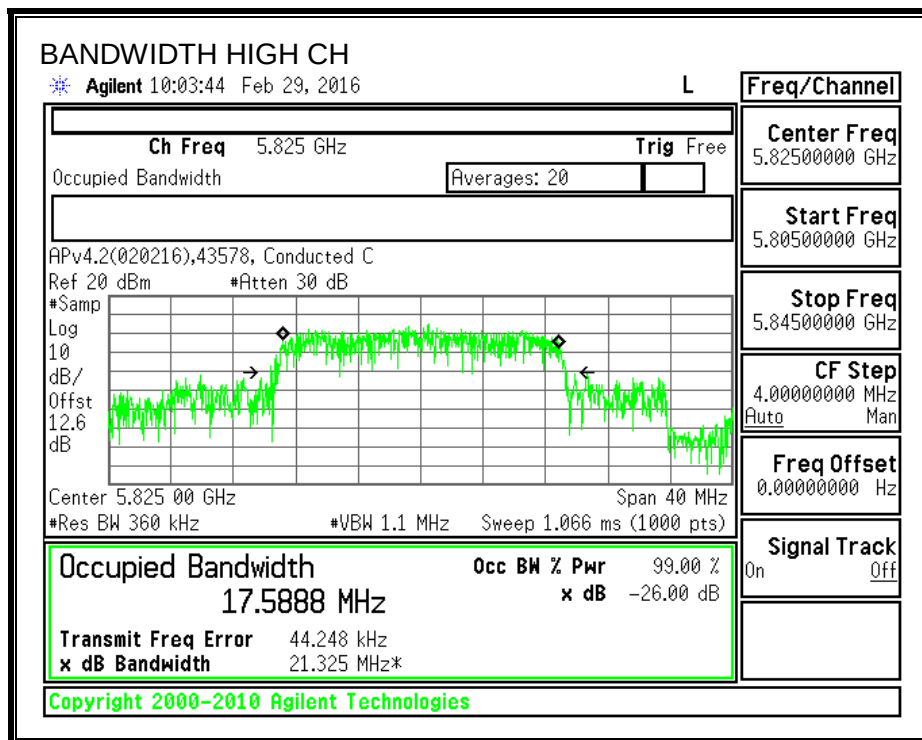
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.5700
Mid	5785	17.4653
High	5825	17.5888

99% BANDWIDTH





9.4.3. 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

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	3.20	30.00
Mid	5785	3.20	30.00
High	5825	3.20	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)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	17.42	17.42	30.00	-12.58
Mid	5785	16.91	16.91	30.00	-13.09
High	5825	16.80	16.80	30.00	-13.20

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.

9.4.4. 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

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limits

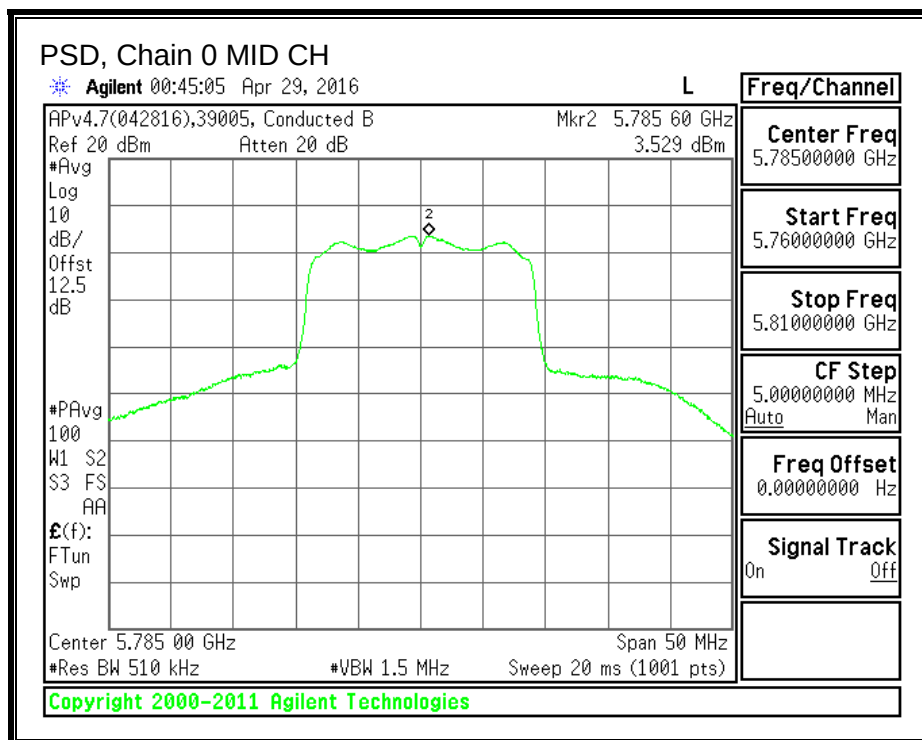
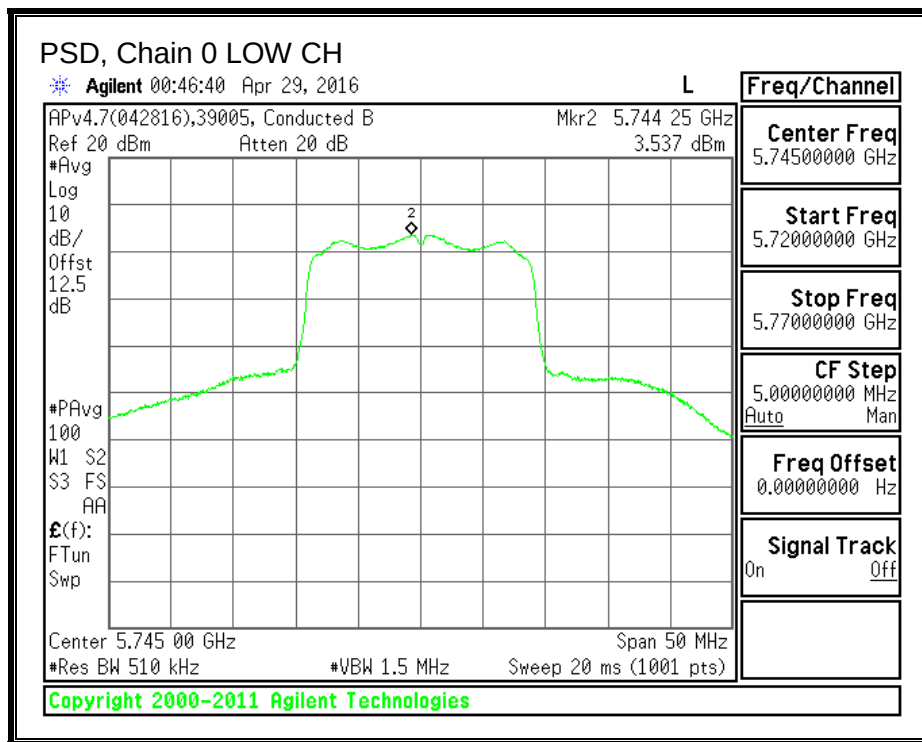
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5745	3.20	30.00
Mid	5785	3.20	30.00
High	5825	3.20	30.00

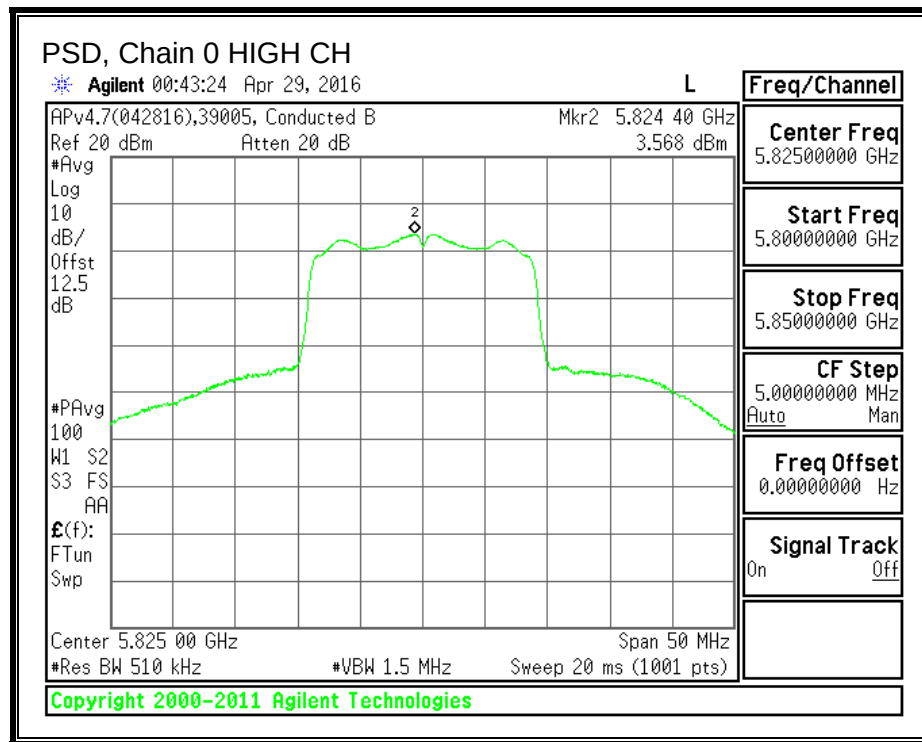
Duty Cycle CF (dB)	0.22	Included in Calculations of Corr'd PSD
--------------------	------	--

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5745	3.537	3.757	30.00	-26.24
Mid	5785	3.529	3.749	30.00	-26.25
High	5825	3.568	3.788	30.00	-26.21

PSD, Chain 0





9.5. 802.11n HT20 CDD 2TX MODE IN THE 5.8 GHz BAND

9.5.1. 6 dB BANDWIDTH

LIMITS

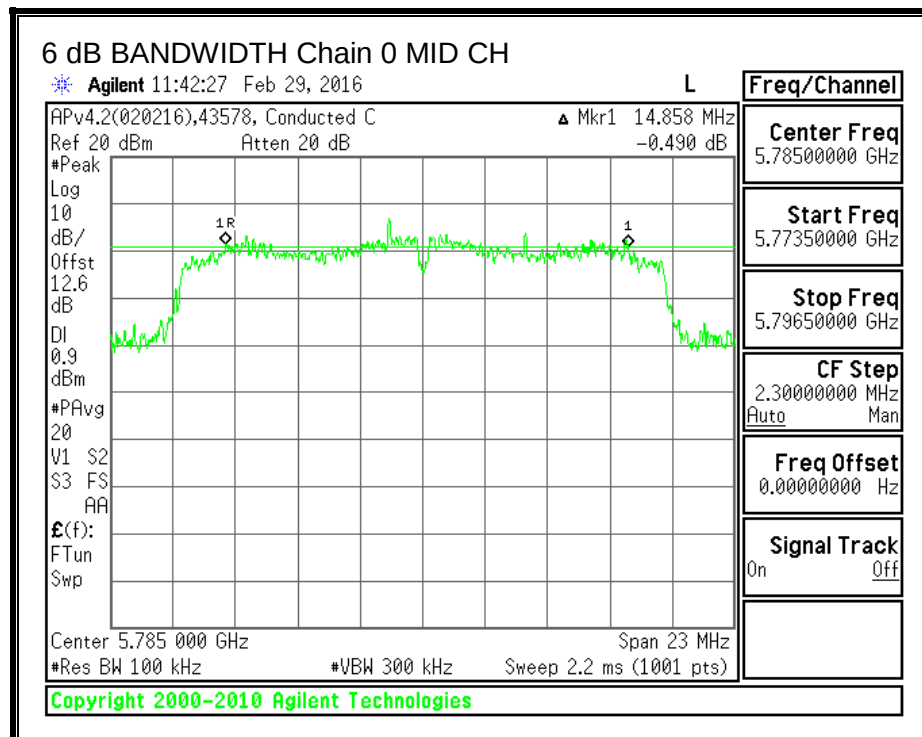
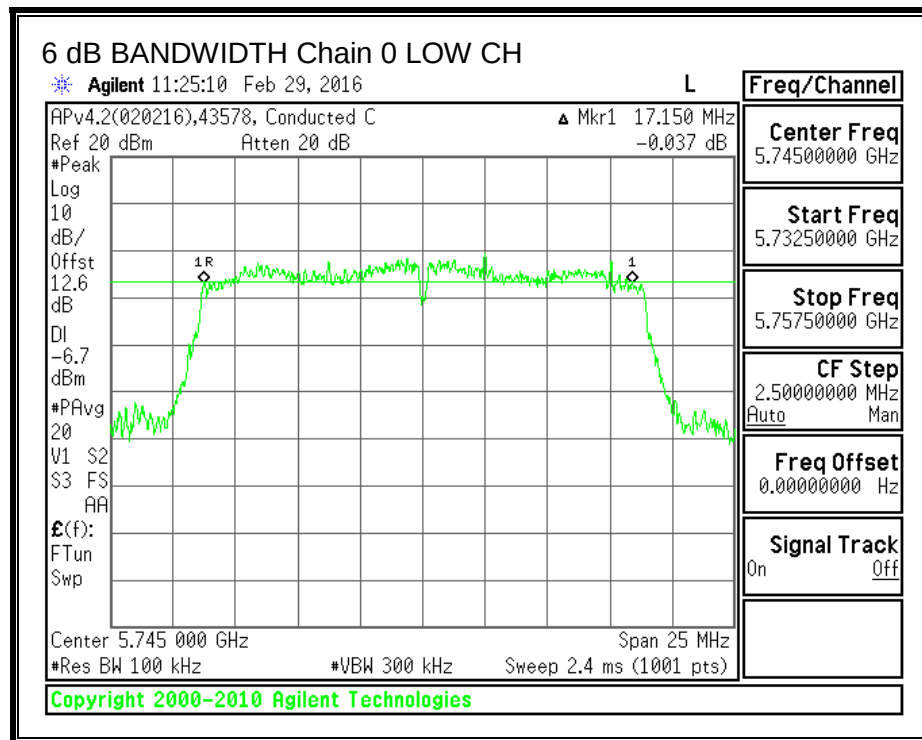
FCC §15.407 (e)

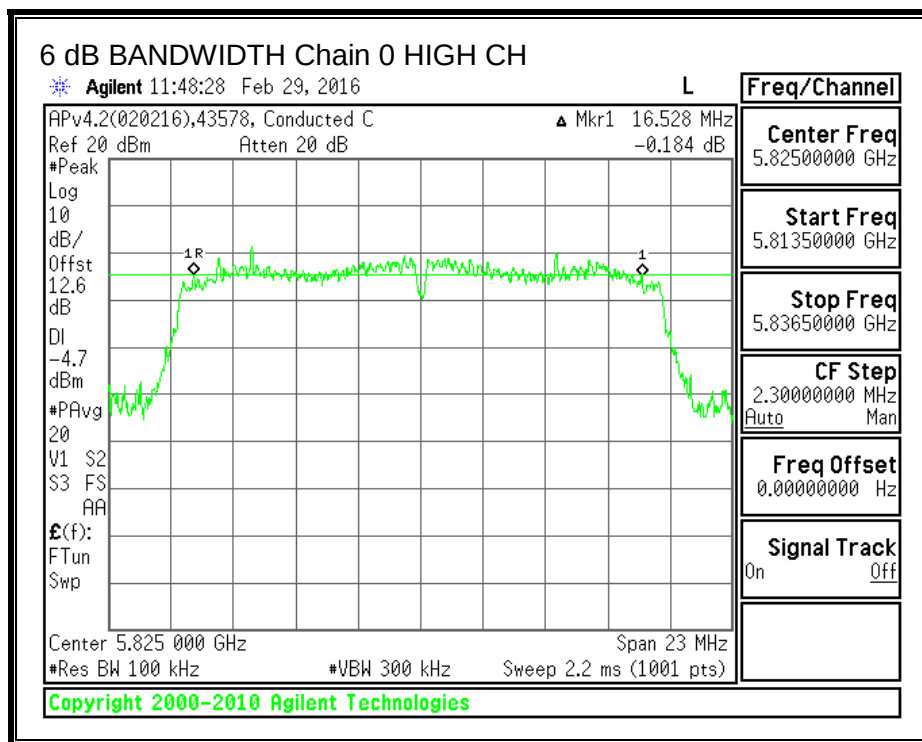
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

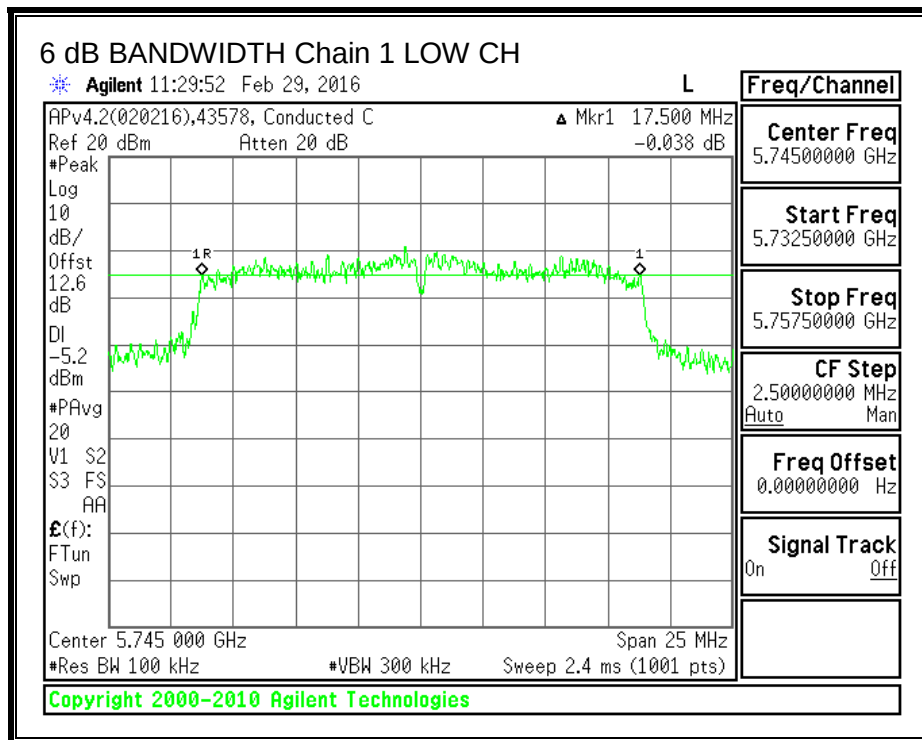
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	17.1500	17.5000	0.5
Mid	5785	14.8580	15.1340	0.5
High	5825	16.5280	16.4750	0.5

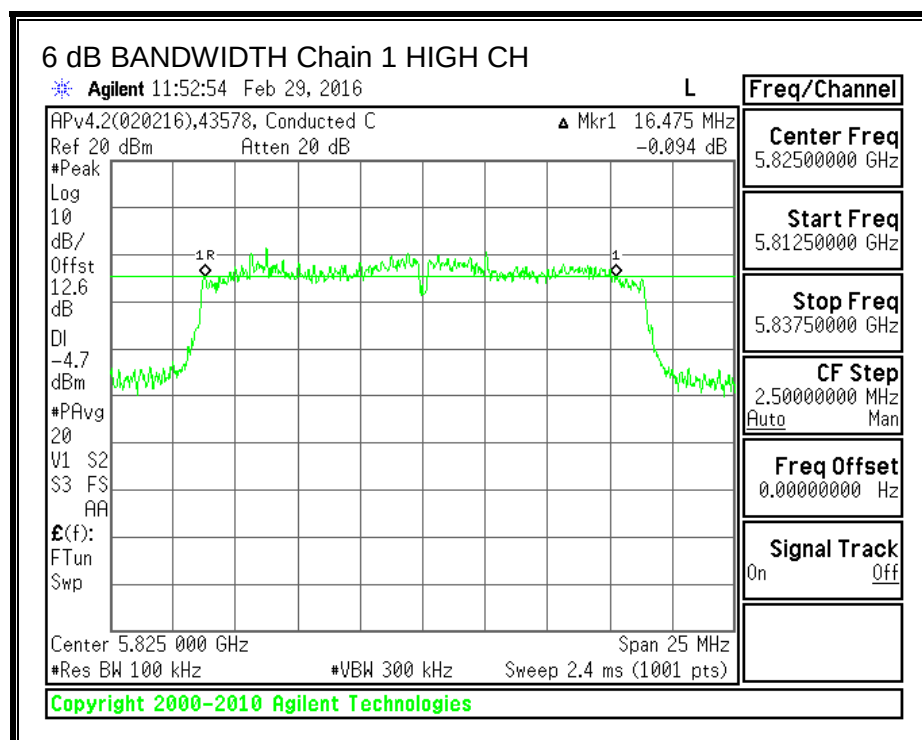
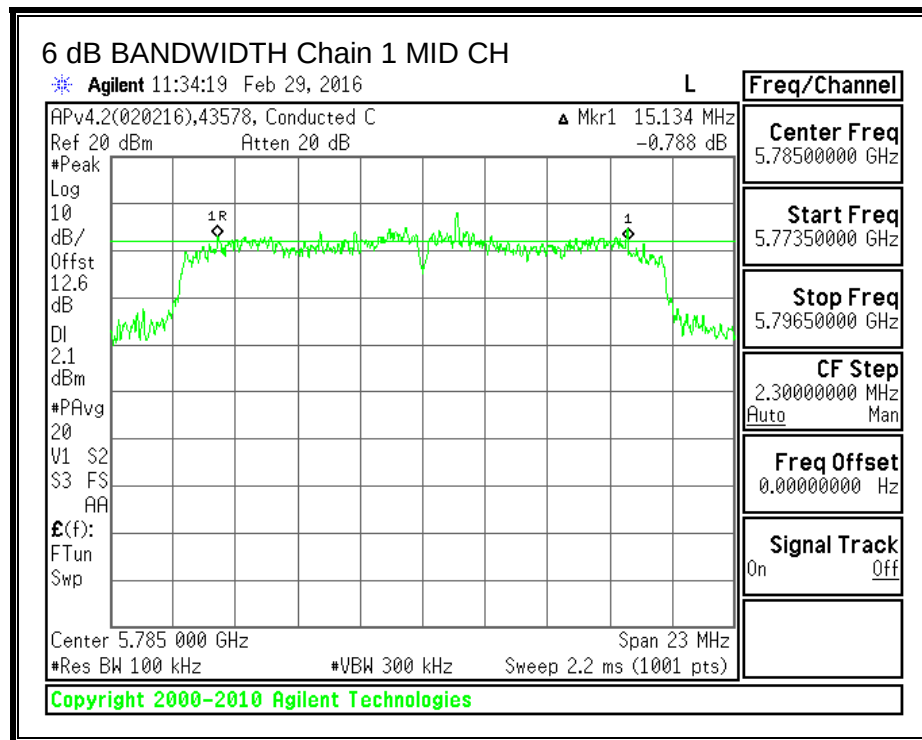
6 dB BANDWIDTH, Chain 0





6 dB BANDWIDTH, Chain 1





9.5.2. 99% BANDWIDTH

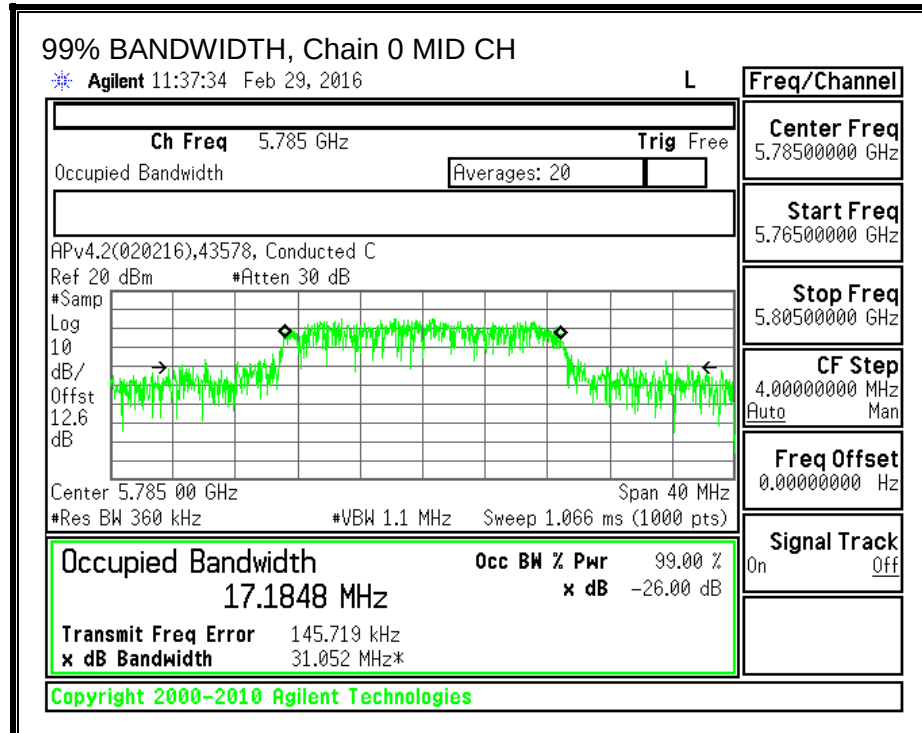
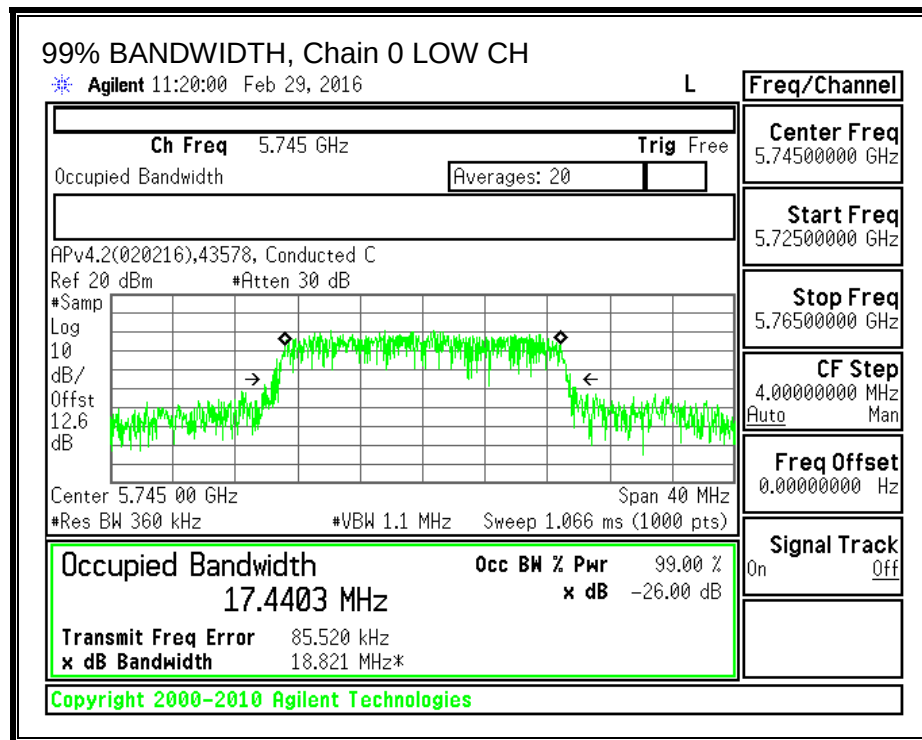
LIMITS

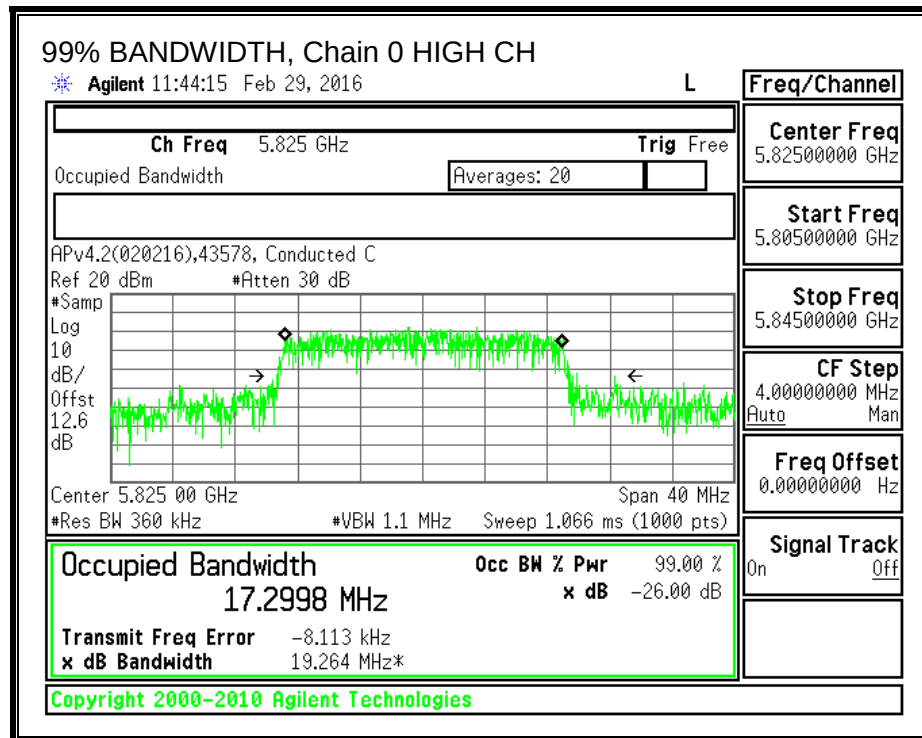
None; for reporting purposes only.

RESULTS

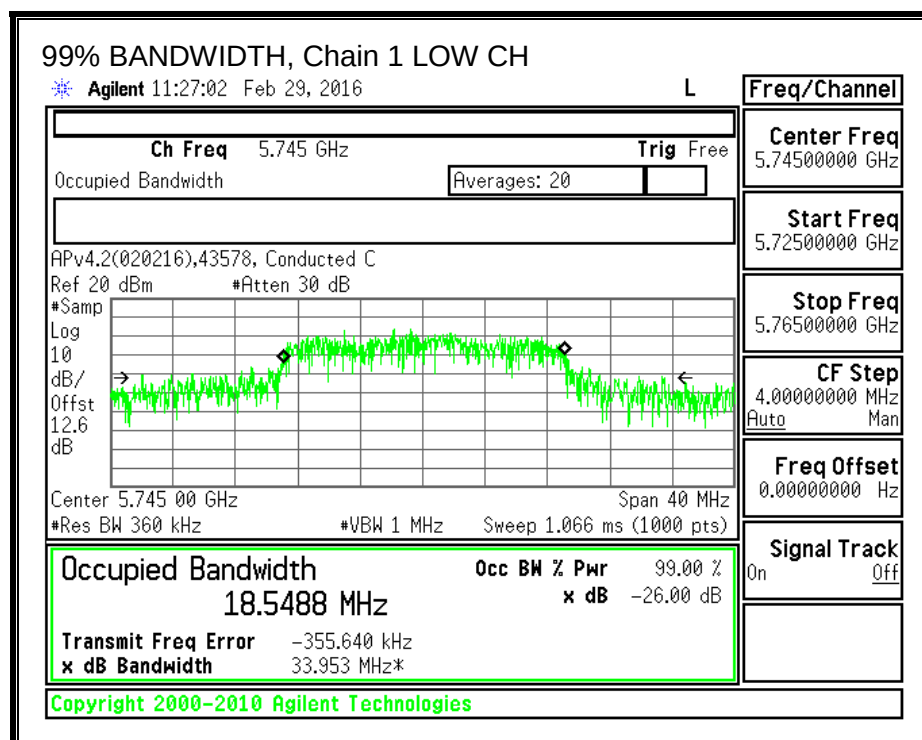
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5745	17.4403	18.5488
Mid	5785	17.1848	19.7964
High	5825	17.2998	17.5886

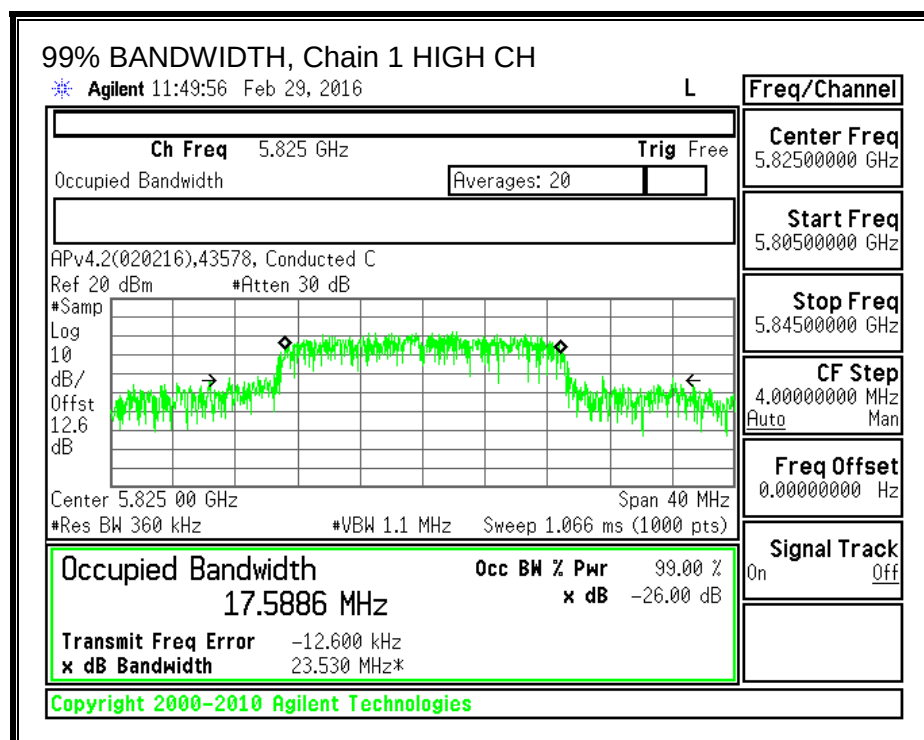
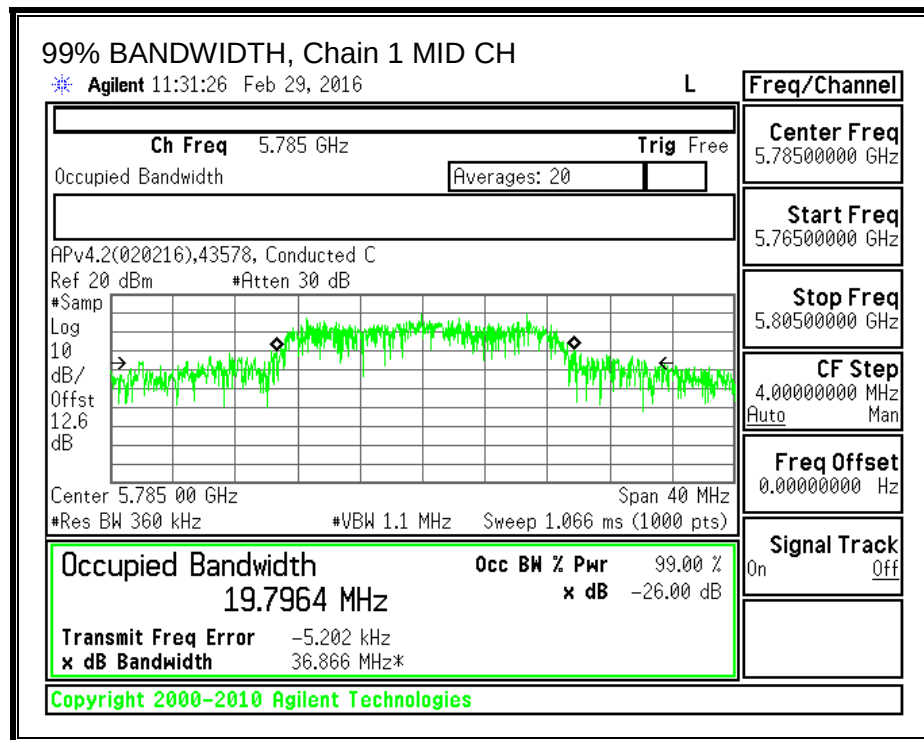
99% BANDWIDTH, Chain 0





99% BANDWIDTH, Chain 1





9.5.3. 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:

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	2.56	30.00
Mid	5785	2.56	30.00
High	5825	2.56	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	17.23	16.93	20.09	30.00	-9.91
Mid	5785	16.91	16.90	19.92	30.00	-10.08
High	5825	16.92	16.85	19.90	30.00	-10.10

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.

9.5.4. 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:

RESULTS

Antenna Gain and Limits

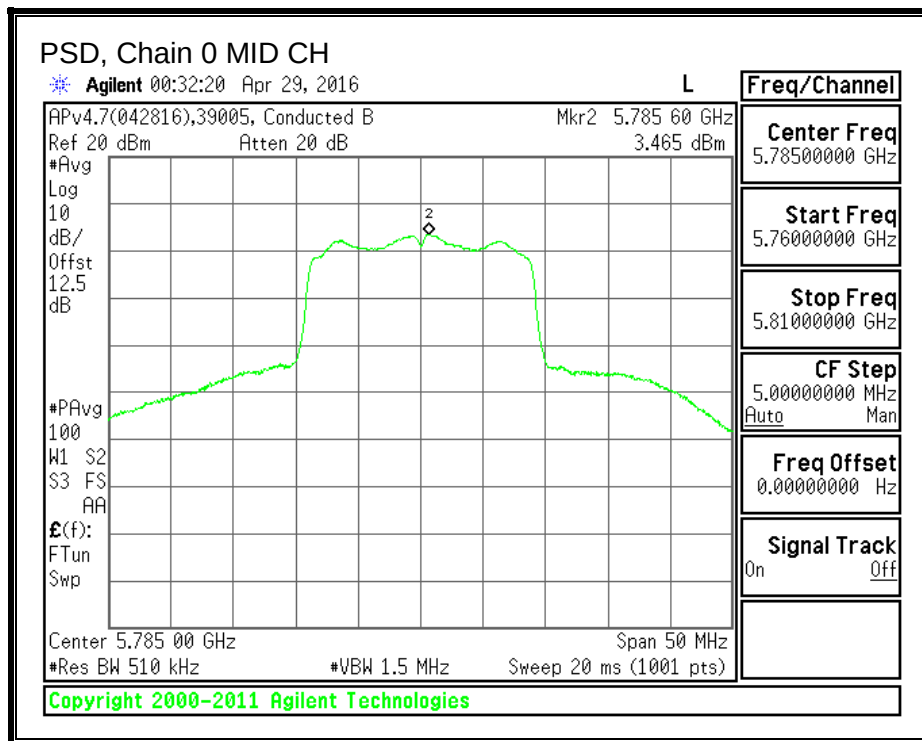
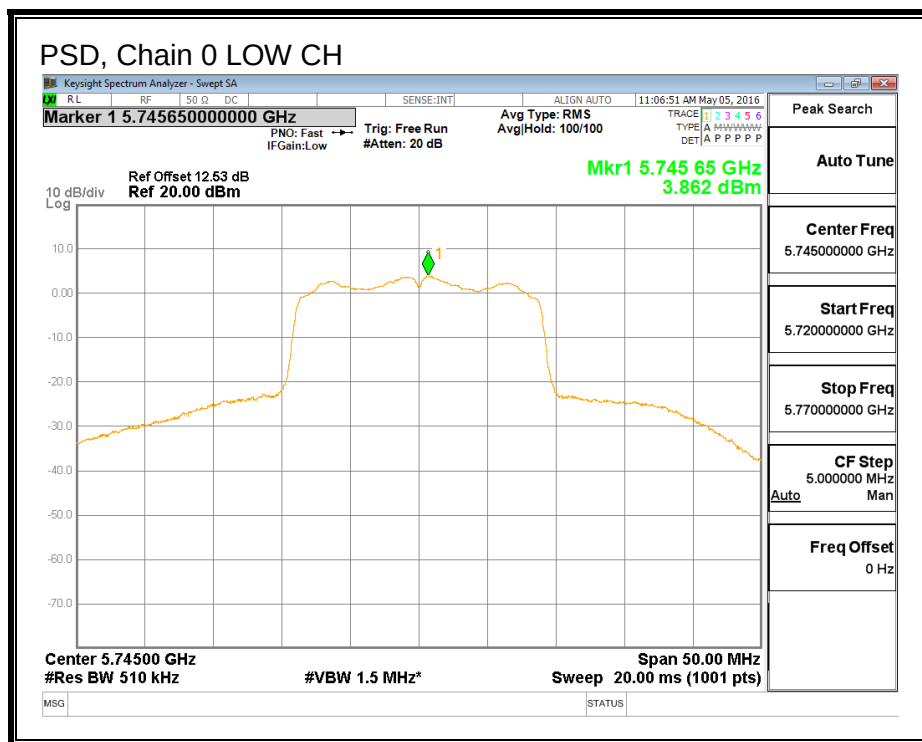
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5745	5.54	30.00
Mid	5785	5.54	30.00
High	5825	5.54	30.00

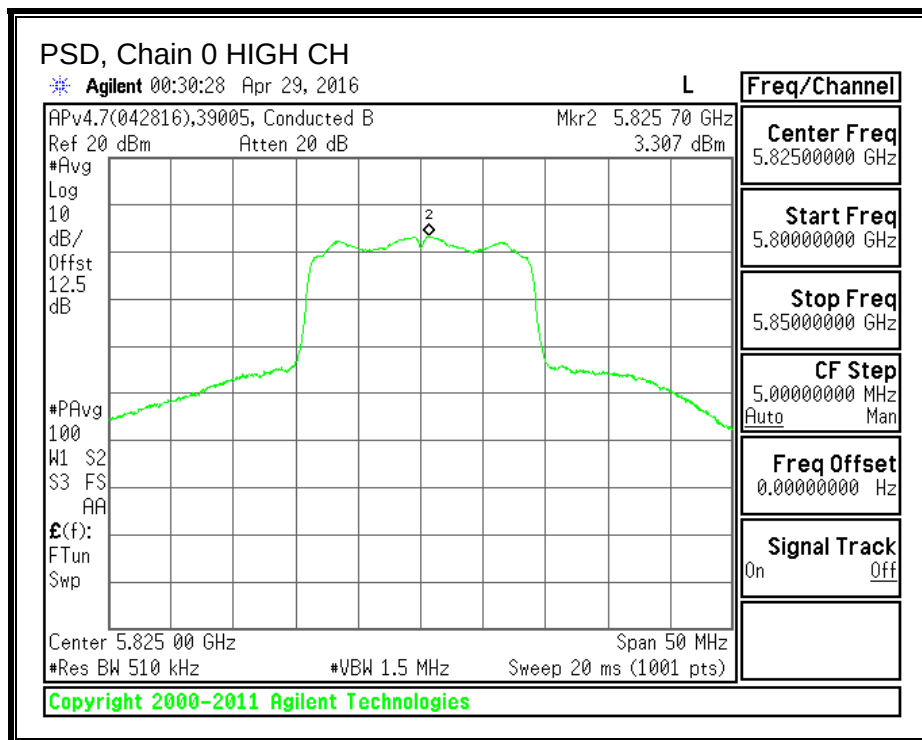
Duty Cycle CF (dB)	0.22	Included in Calculations of Corr'd PSD
--------------------	------	--

PSD Results

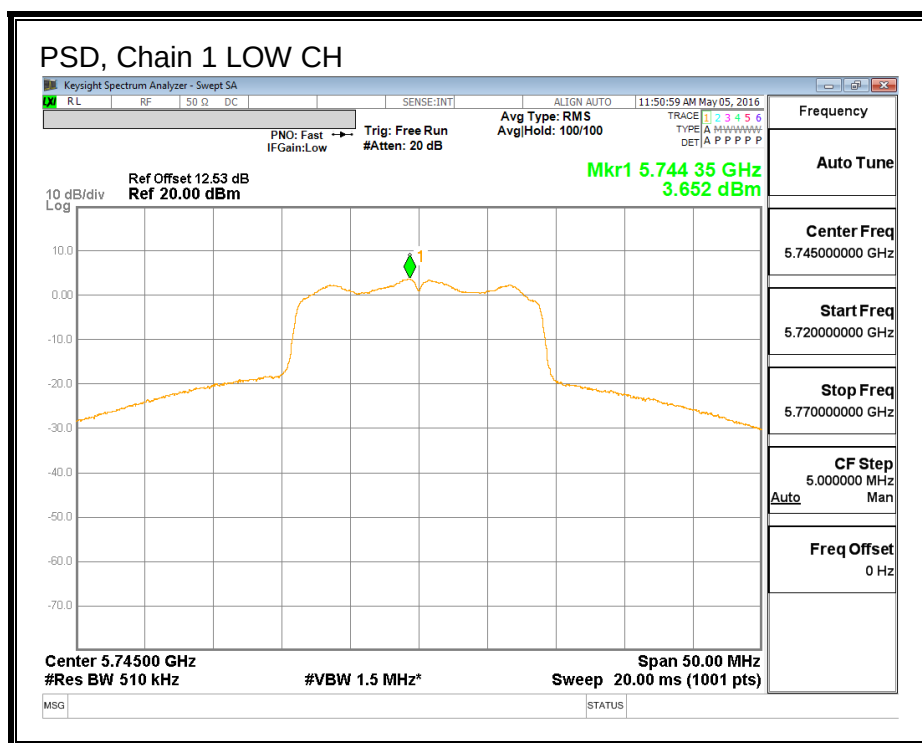
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5745	3.862	3.652	6.99	30.00	-23.01
Mid	5785	3.465	3.470	6.70	30.00	-23.30
High	5825	3.397	3.465	6.66	30.00	-23.34

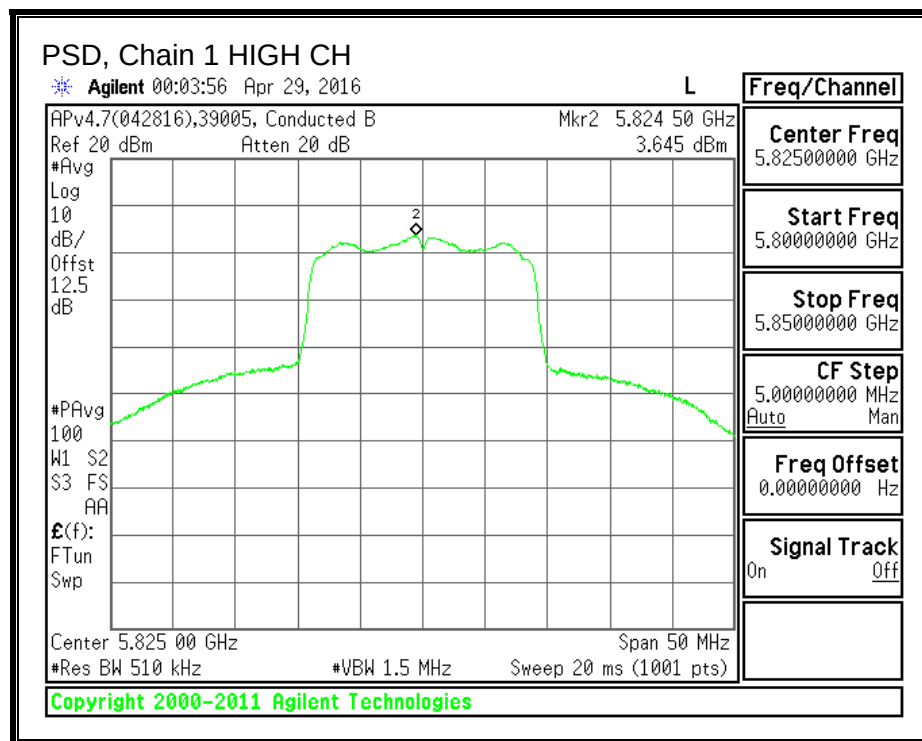
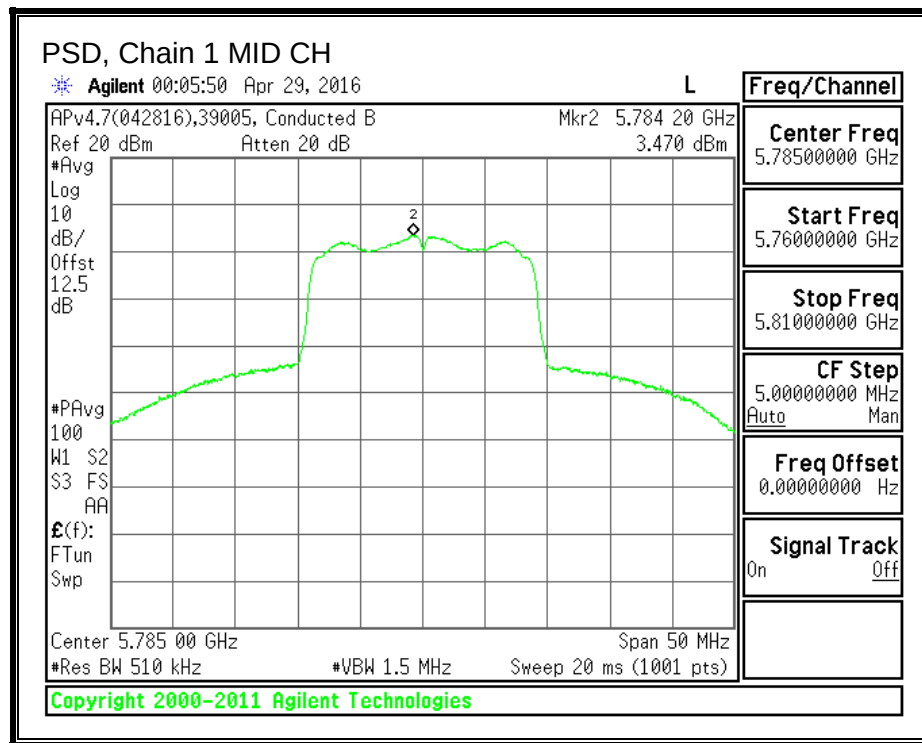
PSD, Chain 0





PSD, Chain 1





9.6. 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND

9.6.1. 6 dB BANDWIDTH

LIMITS

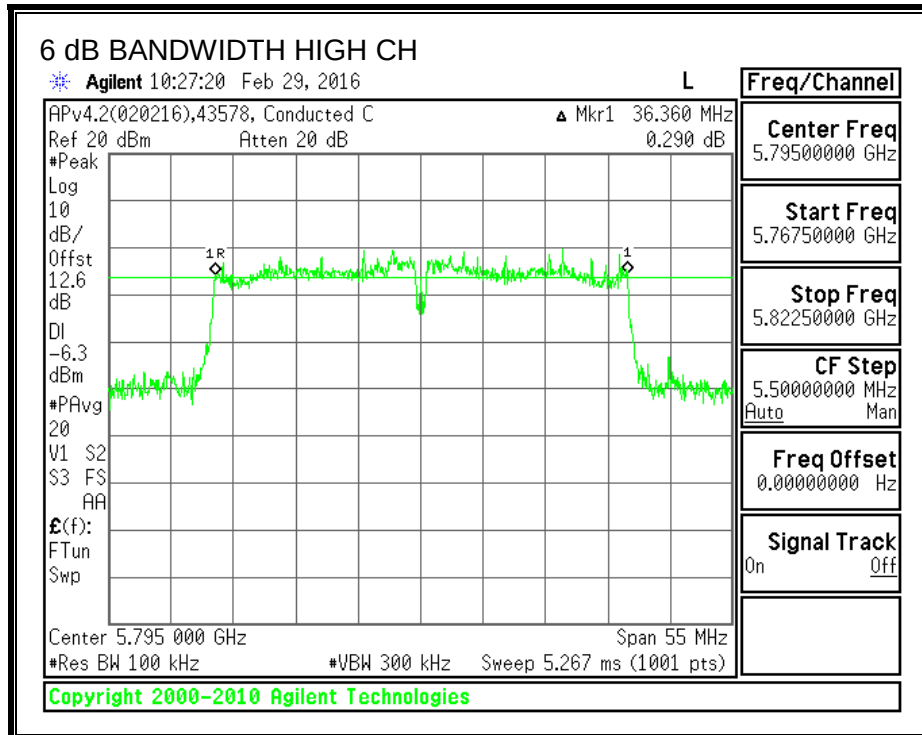
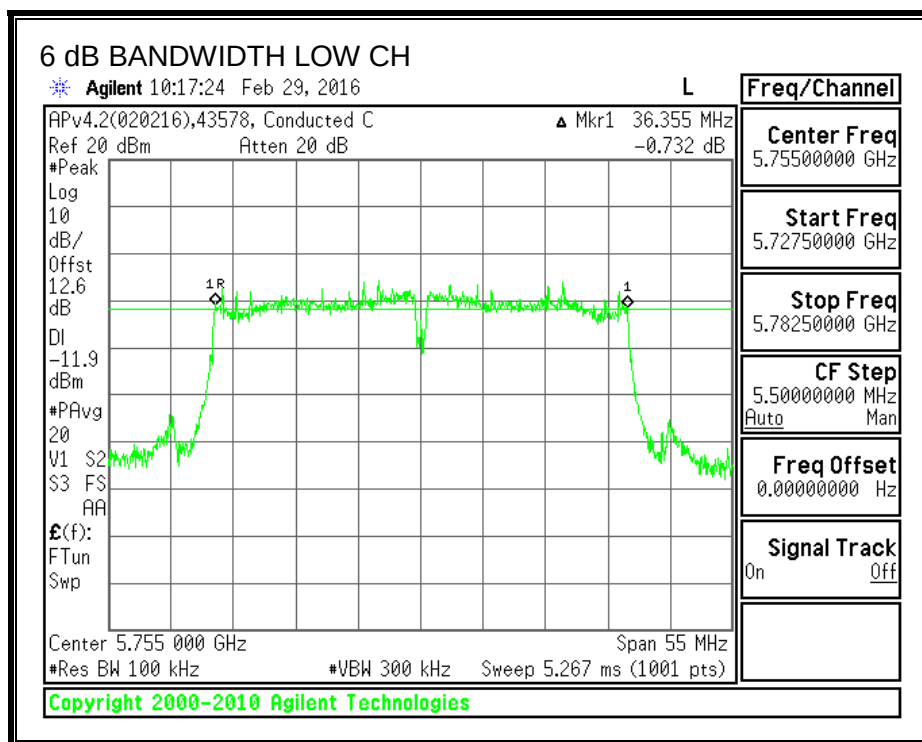
FCC §15.407 (e)

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

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	36.3550	0.5
High	5795	36.3600	0.5

6 dB BANDWIDTH



9.6.2. 99% BANDWIDTH

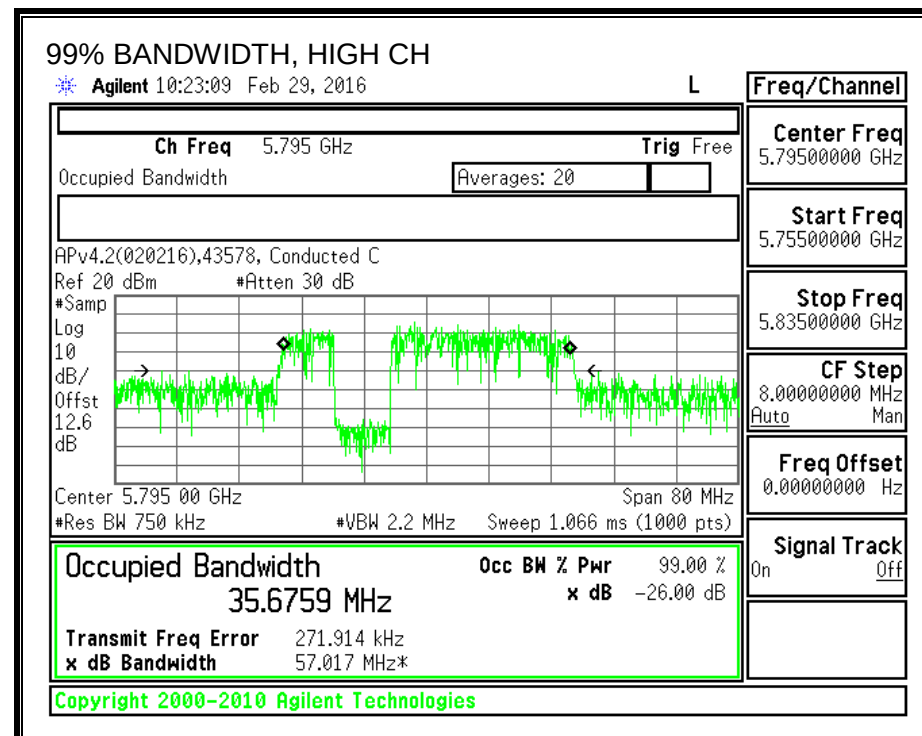
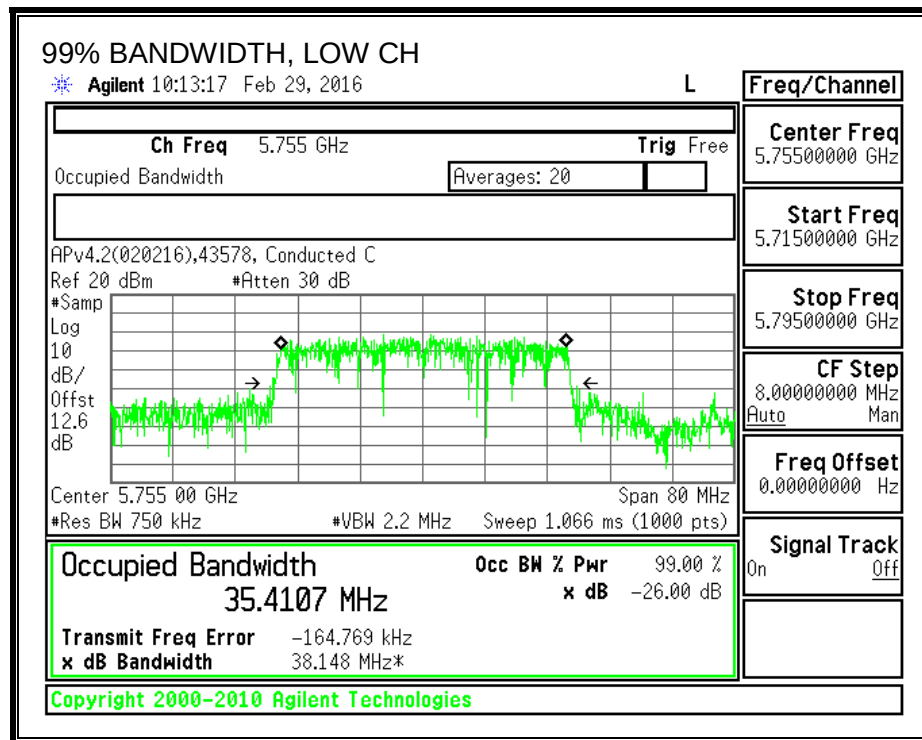
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	35.4107
High	5795	35.6759

99% BANDWIDTH



9.6.3. 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

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5755	3.20	30.00
High	5795	3.20	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)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5755	17.09	17.09	30.00	-12.91
High	5795	16.80	16.80	30.00	-13.20

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.

9.6.4. 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

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limits

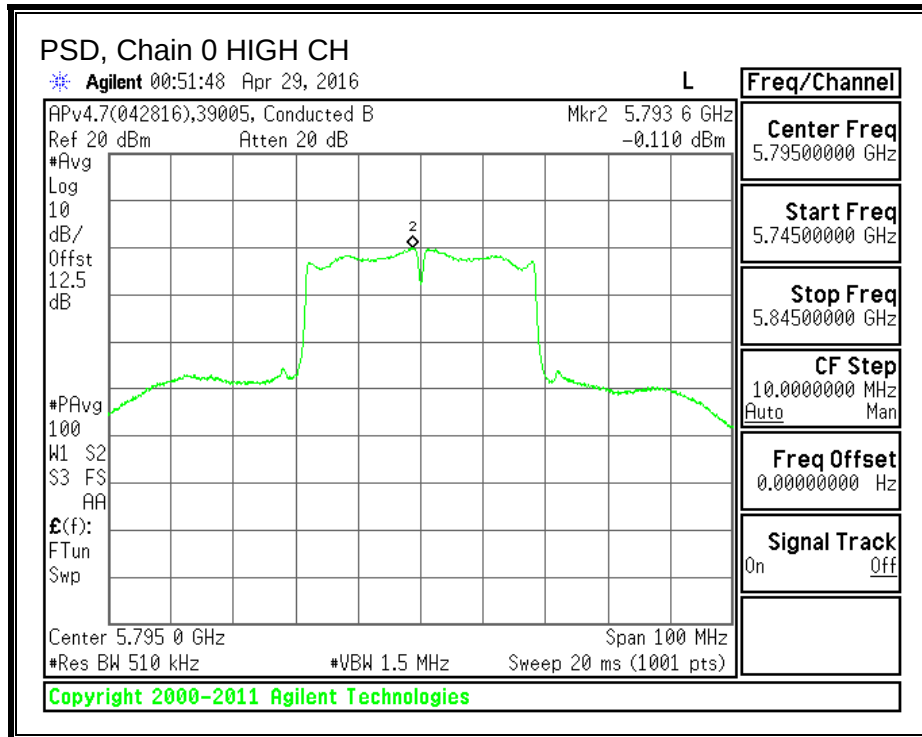
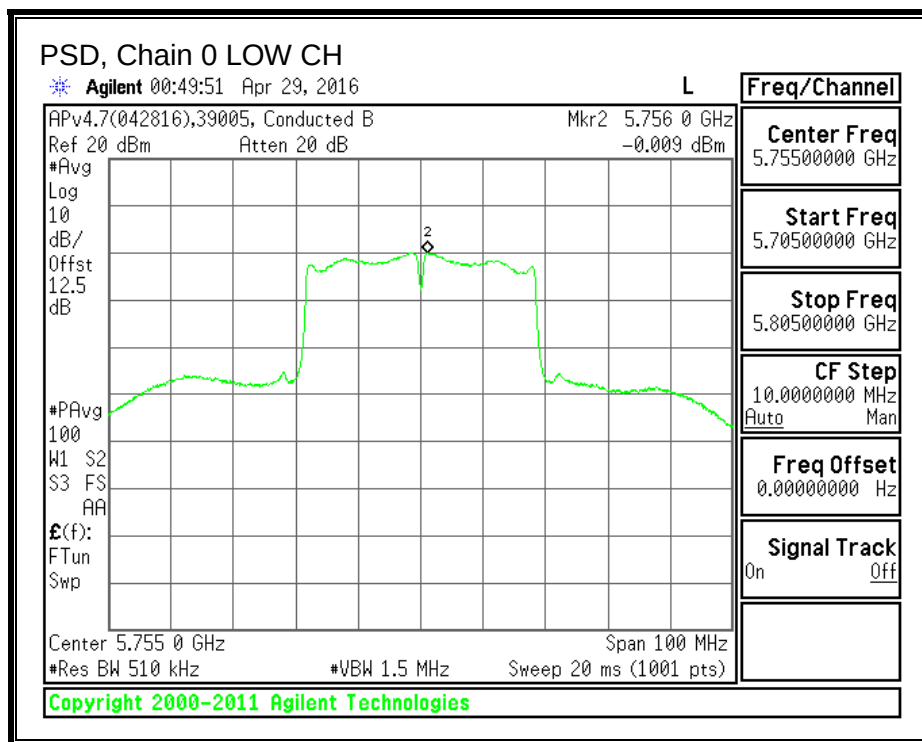
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5755	3.20	30.00
High	5795	3.20	30.00

Duty Cycle CF (dB)	0.43	Included in Calculations of Corr'd PSD
---------------------------	------	---

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5755	-0.009	0.42	30.00	-29.58
High	5795	-0.110	0.32	30.00	-29.68

PSD, Chain 0



9.7. 802.11n HT40 CDD 2TX MODE IN THE 5.8 GHz BAND

9.7.1. 6 dB BANDWIDTH

LIMITS

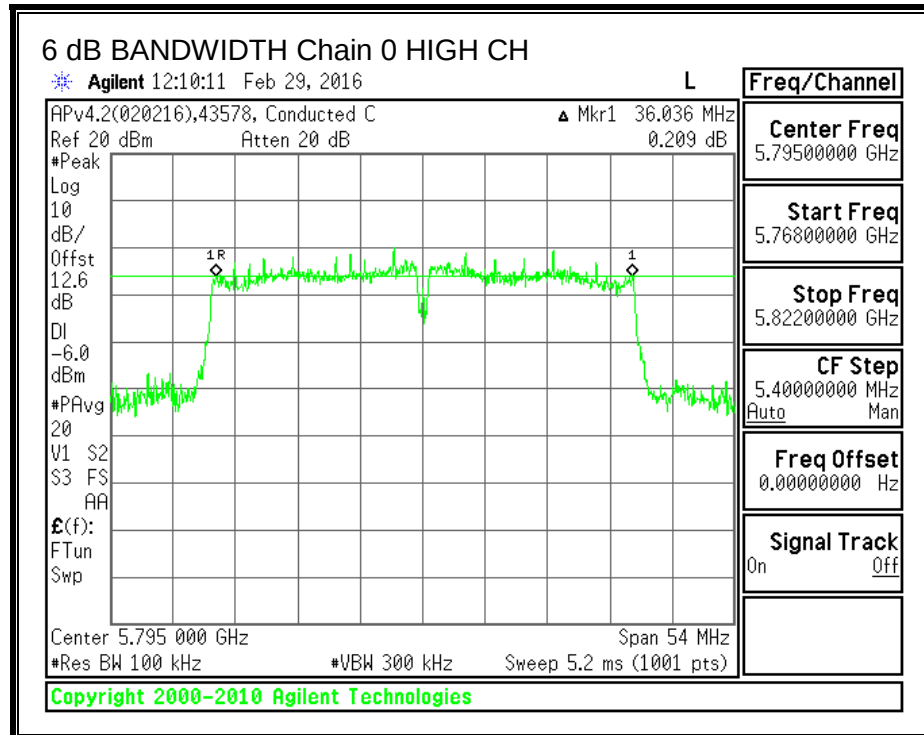
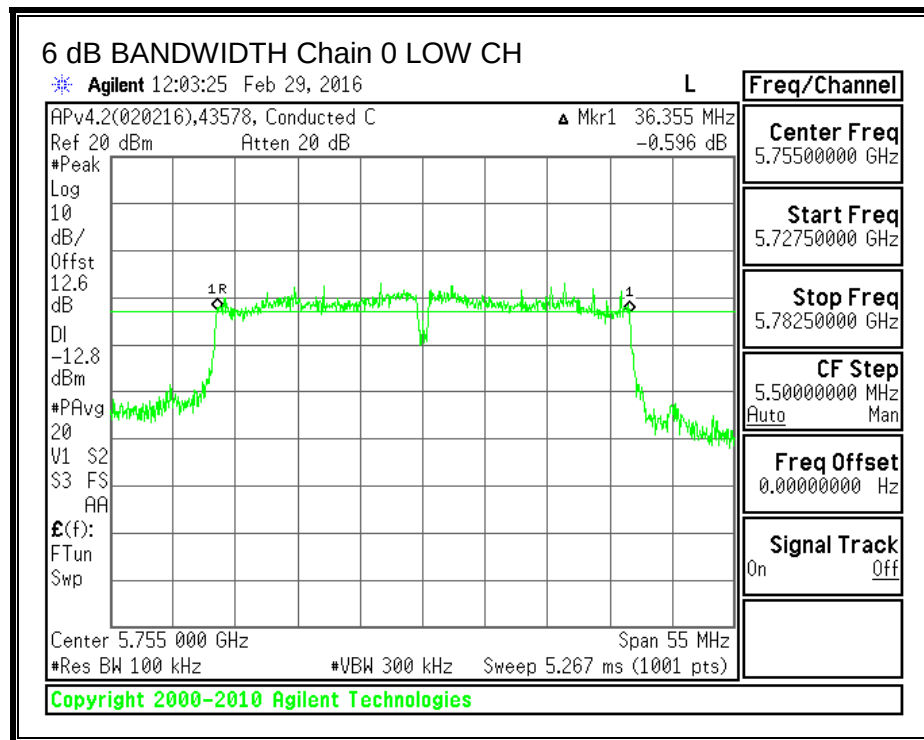
FCC §15.407 (e)

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

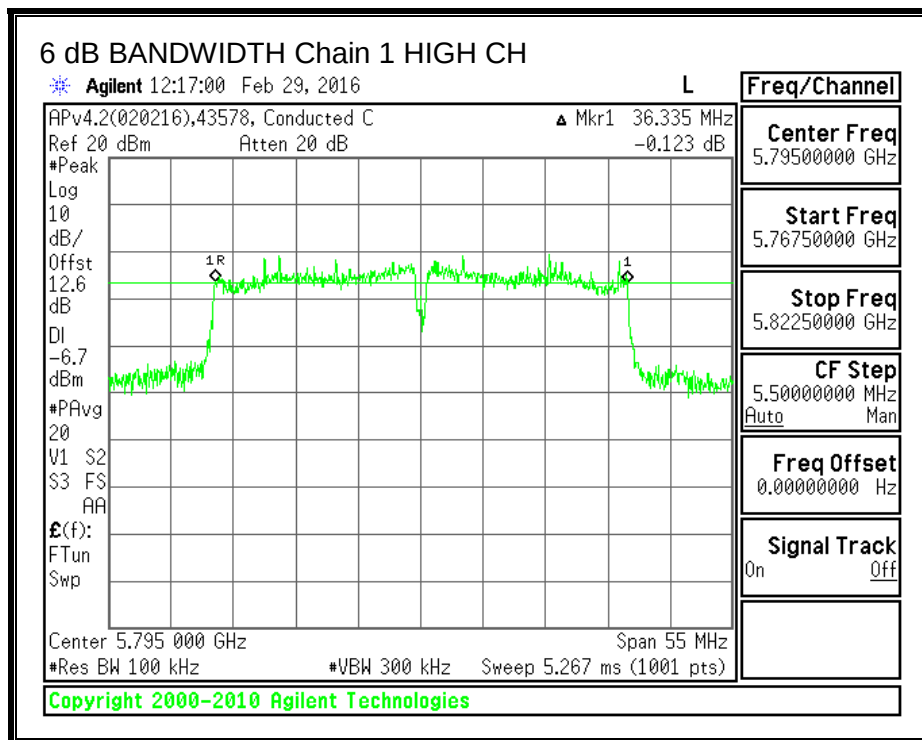
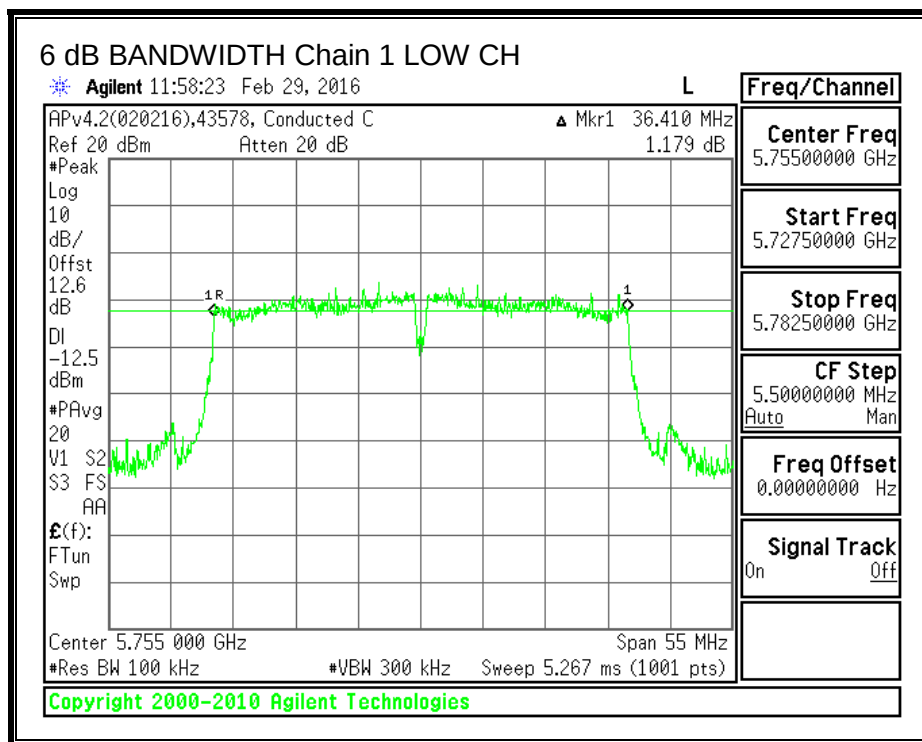
RESULTS

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5755	36.3550	36.4100	0.5
High	5795	36.0360	36.3350	0.5

6 dB BANDWIDTH, Chain 0



6 dB BANDWIDTH, Chain 1



9.7.2. 99% BANDWIDTH

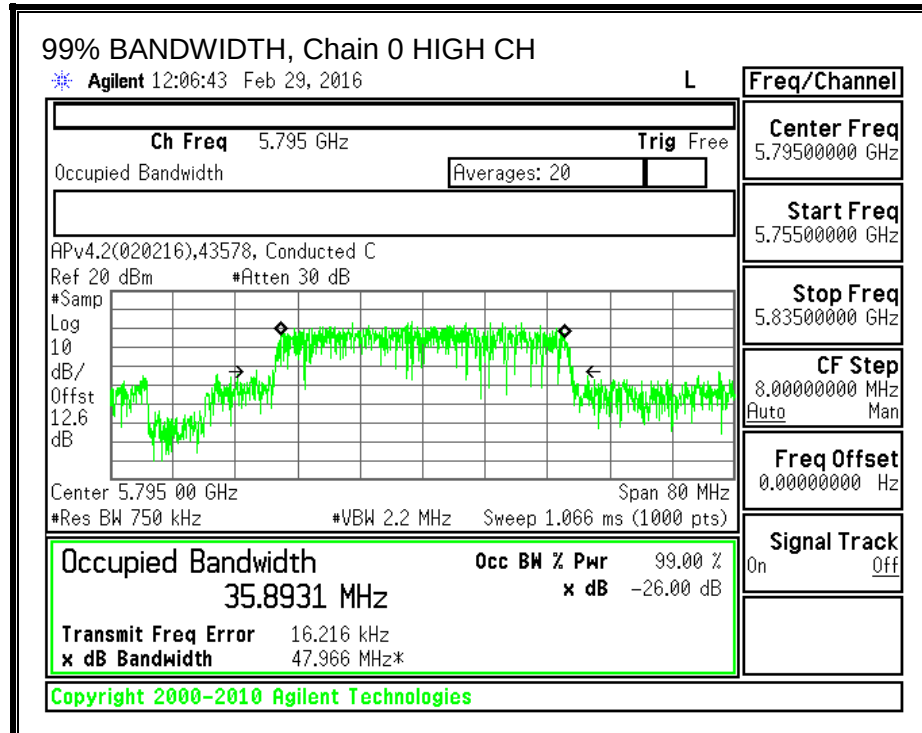
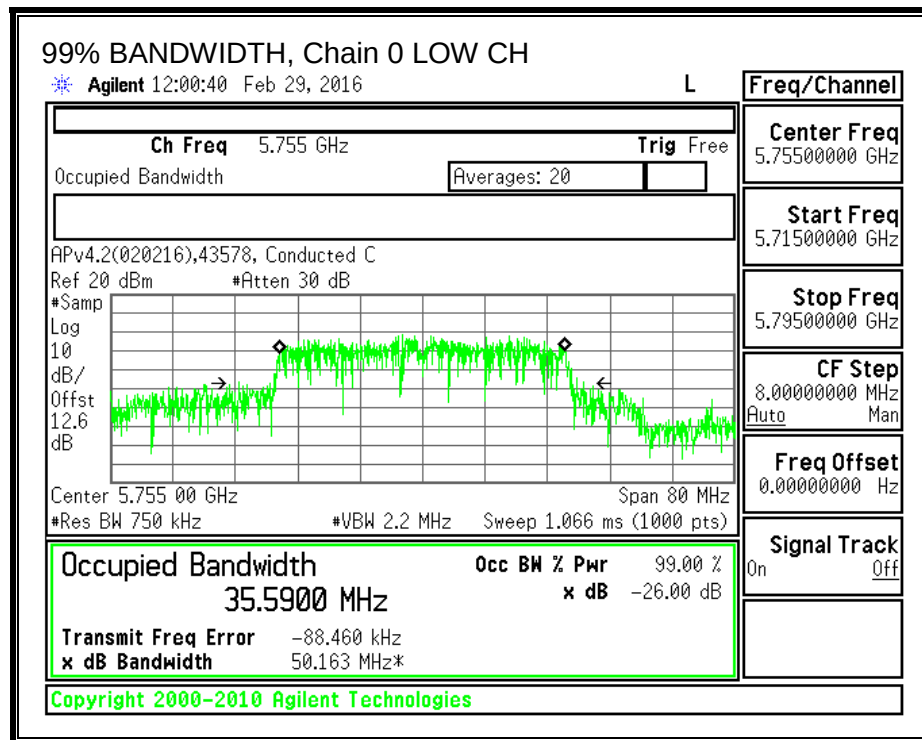
LIMITS

None; for reporting purposes only.

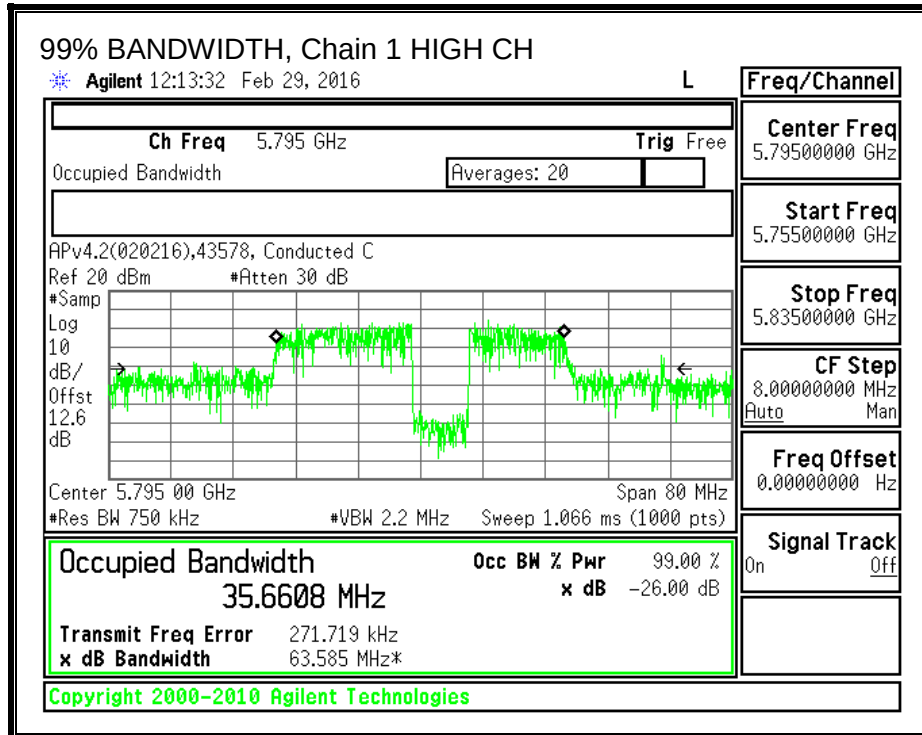
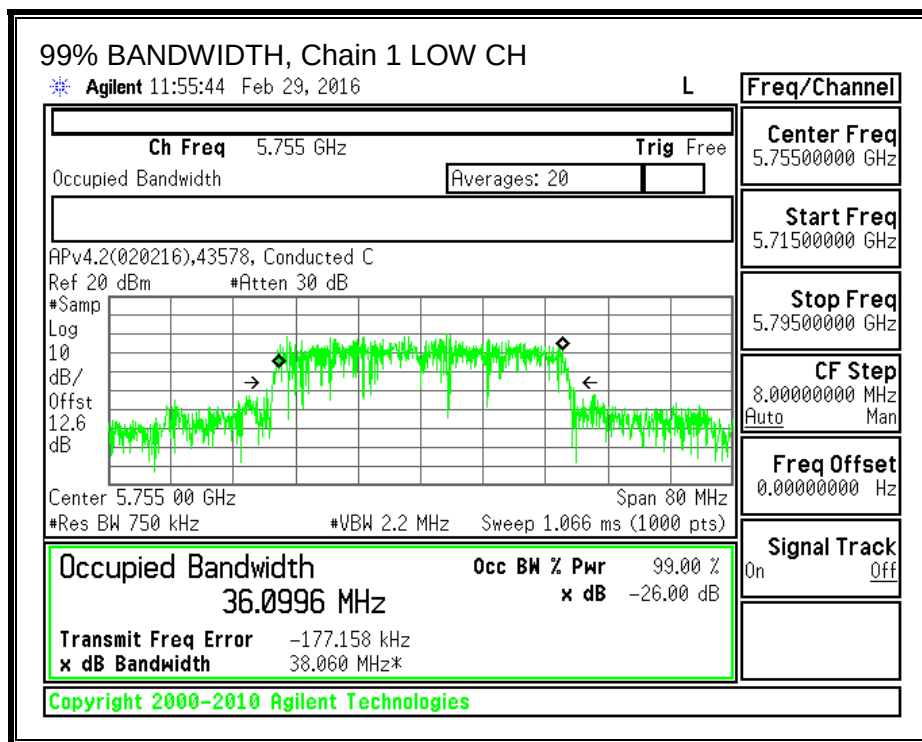
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5755	35.5900	36.0996
High	5795	35.8931	35.6608

99% BANDWIDTH, Chain 0



99% BANDWIDTH, Chain 1



9.7.3. 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:

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5755	2.56	30.00
High	5795	2.56	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	17.00	17.00	20.01	30.00	-9.99
High	5795	16.93	16.90	19.93	30.00	-10.07

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.

9.7.4. 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:

RESULTS

Antenna Gain and Limit

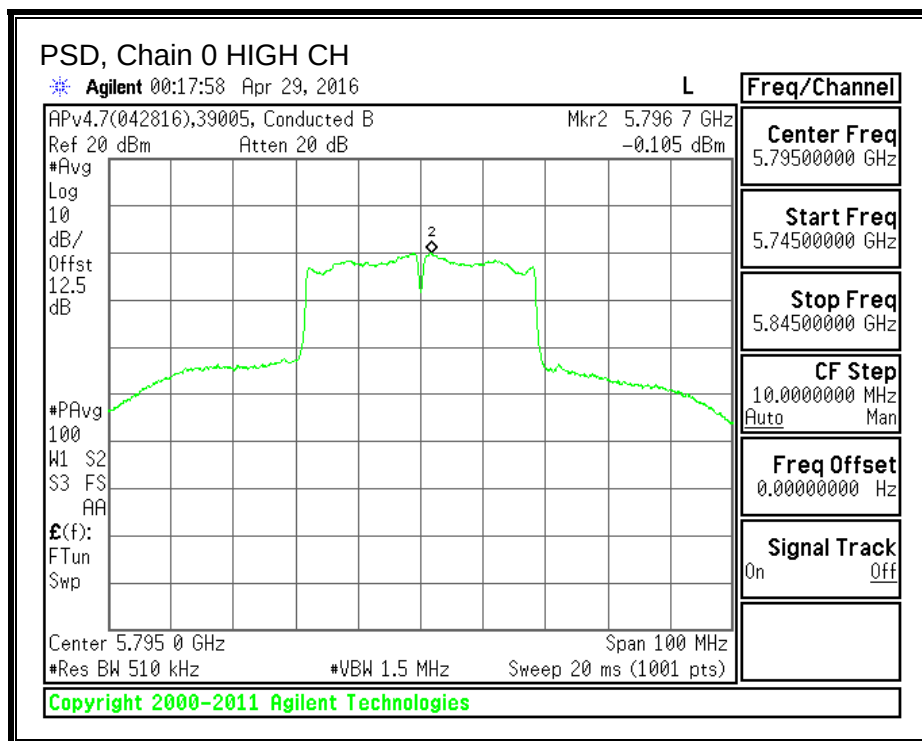
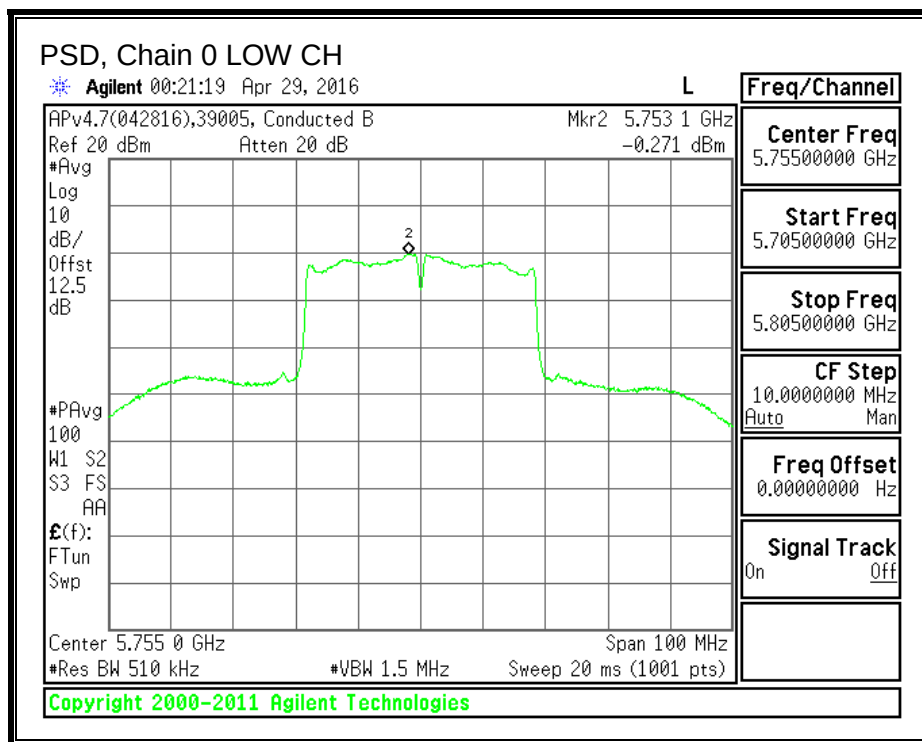
Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5755	5.54	30.00
High	5795	5.54	30.00

Duty Cycle CF (dB)	0.43	Included in Calculations of Corr'd PSD
--------------------	------	--

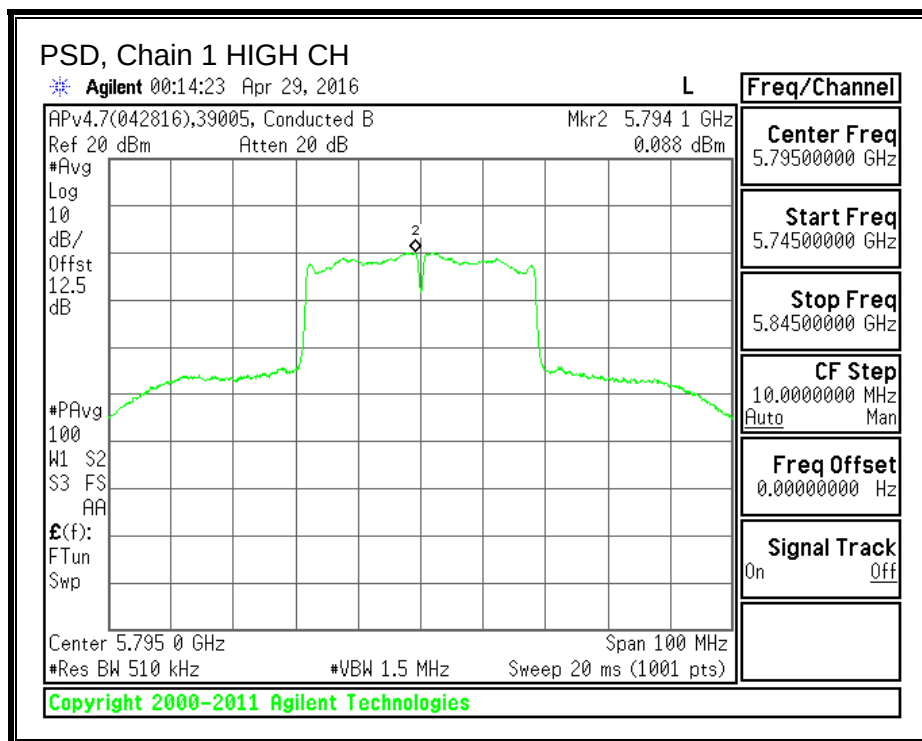
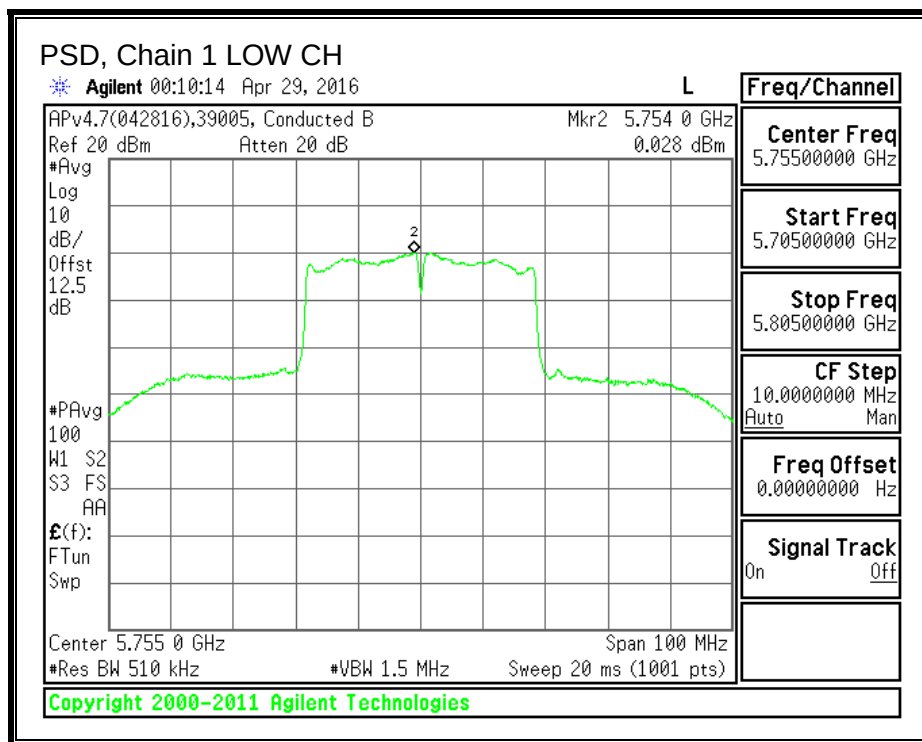
PSD Results

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	-0.271	0.028	3.32	30.00	-26.68
High	5795	-0.105	0.088	3.43	30.00	-26.57

PSD, Chain 0



PSD, Chain 1



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

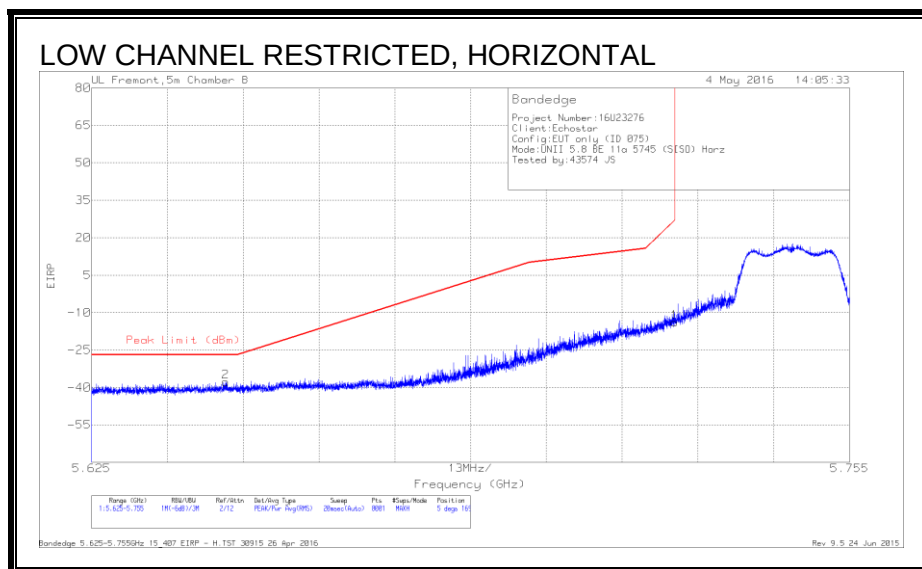
FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit ($\mu\text{V/m}$) at 3 m	Field Strength Limit (dB $\mu\text{V/m}$) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE: for below 1 GHz emission scan, the RJ45 cable was unplugged from the router end after the RF transmission started; and the EUT was stayed on transmit mode during the scan.

10.2. TX ABOVE 1 GHz 802.11a SISO MODE IN THE 5.8 GHz BAND

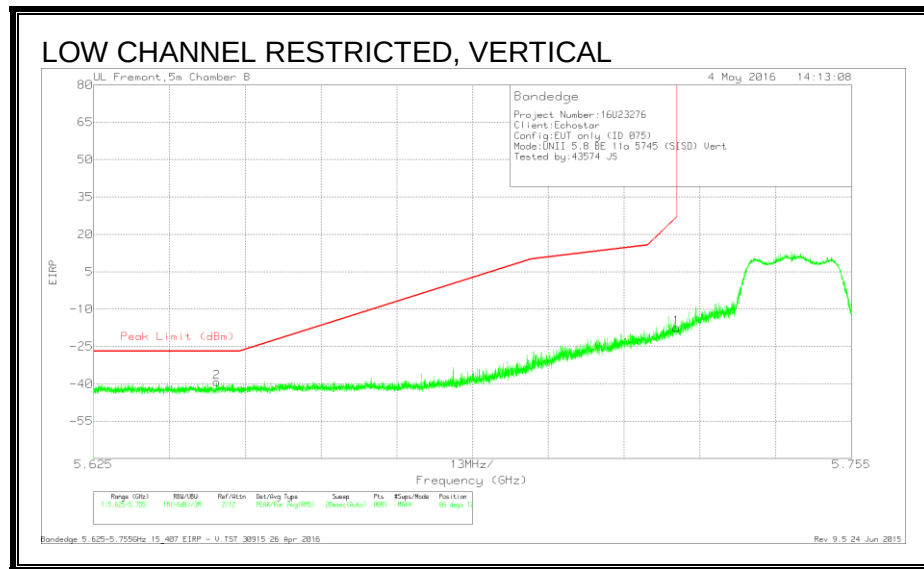
RESTRICTED BANDEGE (LOW CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.648	-62.84	Pk	34.7	-21.4	11.8	0	-37.74	-27	-10.74	5	169	H
1	5.725	-38.92	Pk	34.9	-21.7	11.8	0	-13.92	26.97	-40.89	5	169	H

Pk - Peak detector



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cb/Fl tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.646	-64.3	Pk	34.7	-21.5	11.8	0	-39.3	-27	-12.3	66	129	V
1	5.725	-42.45	Pk	34.9	-21.7	11.8	0	-17.45	26.97	-44.42	66	129	V

Pk - Peak detector

HIGH CHANNEL BANDEDGE, HORIZONTAL

The plot shows EIRP (dBm) on the y-axis (ranging from -5 to 80) versus Frequency (GHz) on the x-axis (ranging from 5.8 to 6.0). A blue line represents the measured signal, showing a peak around 5.8 GHz. A red line represents the peak limit, starting at 80 dBm at 5.8 GHz and decreasing to -40 dBm at 6.0 GHz. The plot is titled 'UL Fremont, 5m Chamber B' and includes a date and time stamp '4 May 2016 14:28:39'.

UL Fremont, 5m Chamber B

4 May 2016 14:28:39

Bandedge

Project Number: 16023276

Client: Echostar

Config: EUT only (ID 875)

Mode: UNII S, B, BE, 11a, 5825 (SISD) Horz

Tested by: 43574 JS

EIRP

Frequency (GHz)

Peak Limit (dBm)

20

5.8

6.0

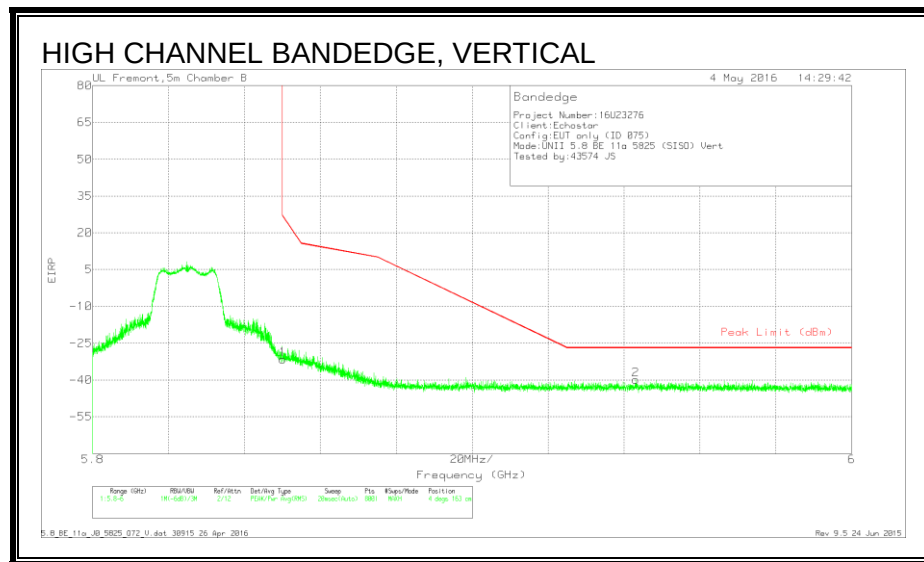
Range (GHz) 5.850-6.000 Ref/Att'n 2.72 Det/Avg Type Peak (Max) Sweep 3000 Hz Exp. Mode 9000 Bins 6 Page 26

Bandedge: 5.850-6.000 GHz, 15_407 EIRP - H TST 201615_26 Apr. 2016

Rev. 9.5.24 Jun. 2015

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cb/Fl tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-48.55	Pk	35.2	-21.6	11.8	0	-23.15	26.94	-50.09	6	262	H
2	5.936	-64.08	Pk	35.3	-21.4	11.8	0	-38.38	-27	-11.38	6	262	H

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

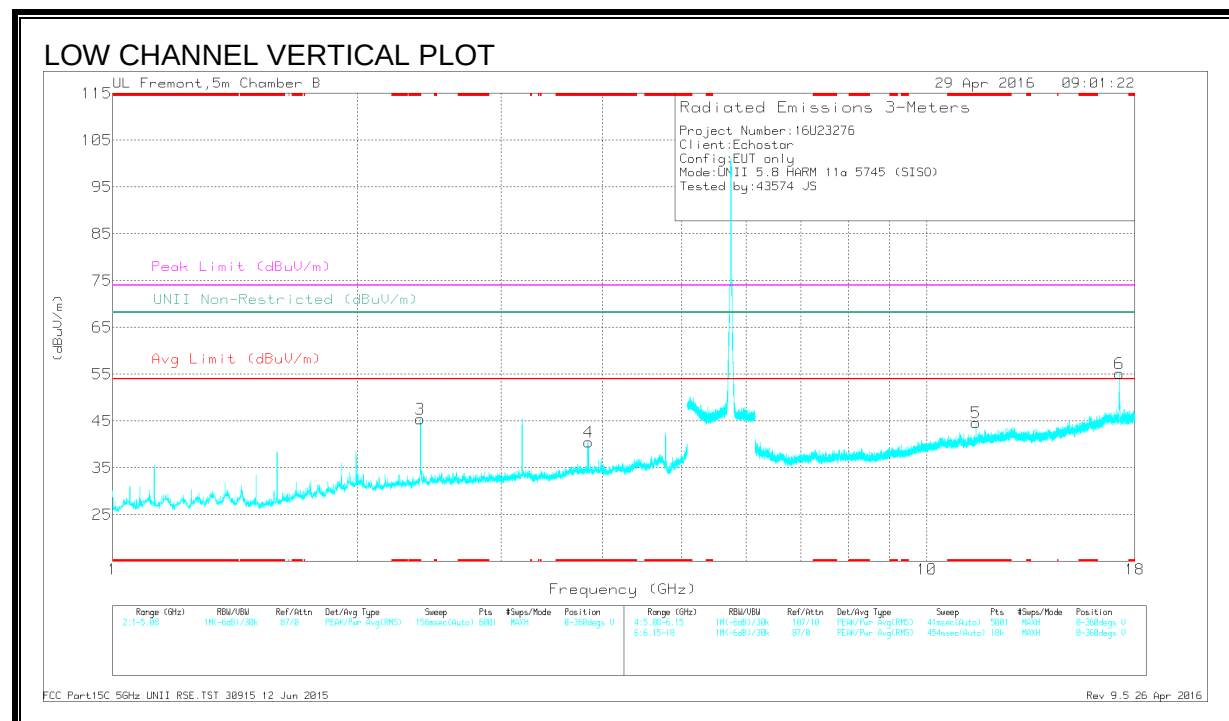
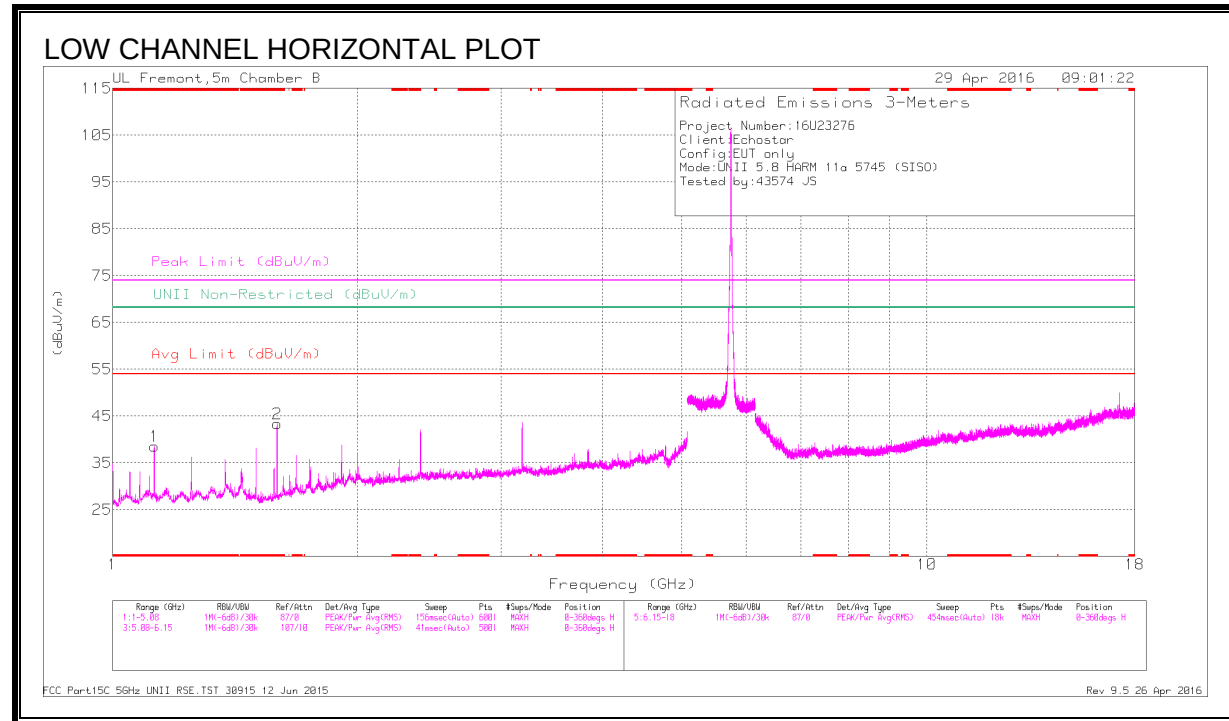


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-57.02	Pk	35.2	-21.6	11.8	0	-31.62	26.94	-58.56	4	163	V
2	5.943	-65.66	Pk	35.3	-21.4	11.8	0	-39.96	-27	-12.96	4	163	V

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Ch/Filtz/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Aug Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 1.125	46.09	Pk	28	-35.5	0	-38.59	-	-	74	-35.41	68.2	-29.61	0-360	101	H
2	* 1.592	50.51	Pk	28.1	-35.3	0	-43.31	-	-	74	-30.69	68.2	-24.89	0-360	101	H
3	* 2.388	47.8	Pk	32.1	-34.5	0	-45.4	-	-	74	-28.6	68.2	-22.8	0-360	101	V
4	* 3.84	40.33	Pk	33.4	-33.2	0	-40.53	-	-	74	-33.47	68.2	-27.67	0-360	101	V
5	* 11.489	32.17	Pk	38.3	-25.8	0	-44.67	-	-	74	-29.33	68.2	-23.53	0-360	199	V
6	17.242	37.05	Pk	41.3	-23.2	0	-55.15	-	-	74	-18.85	68.2	-13.05	0-360	101	V

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

Pk - Peak detector

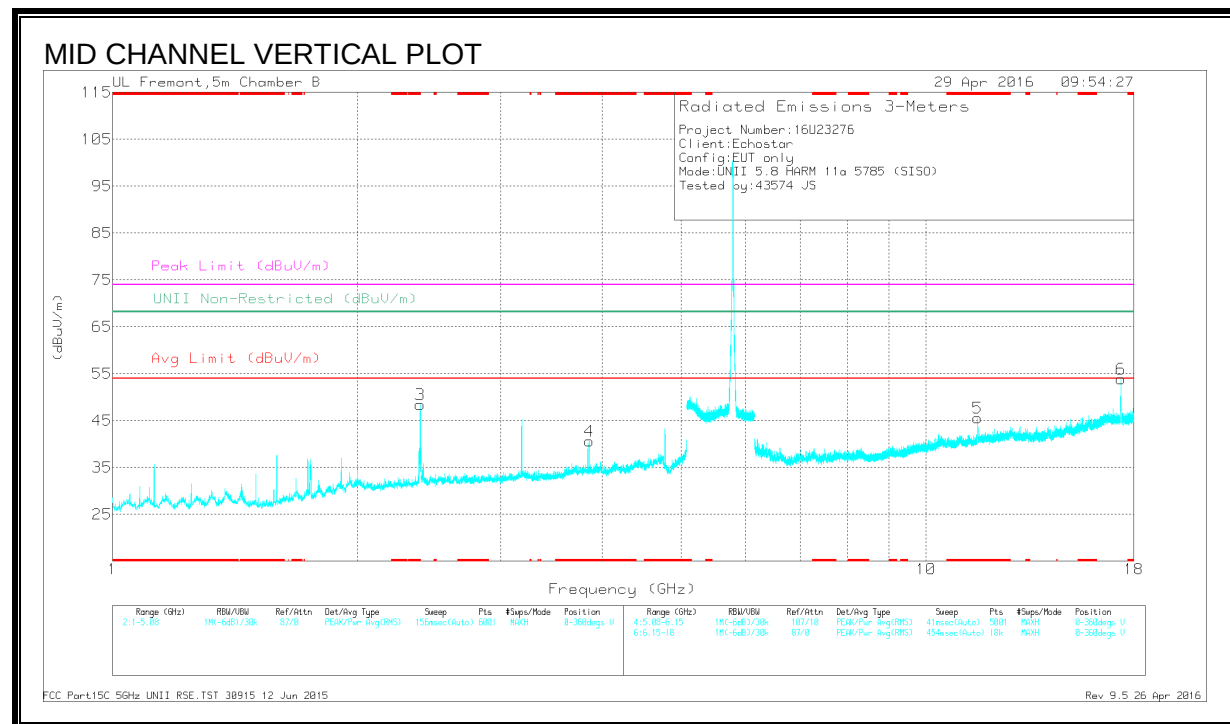
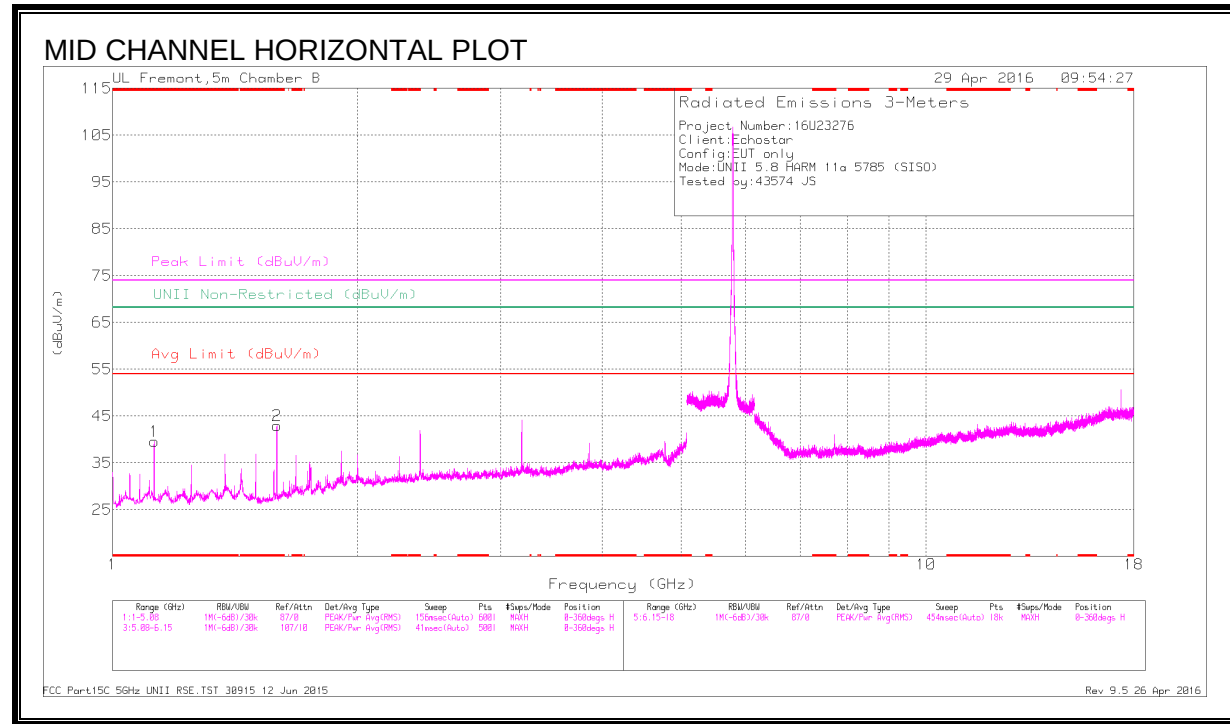
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Ch/Filtz/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Aug Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
* 1.125	50.95	PK-U	28	-35.5	0	-43.45	-	-	74	-30.55	-	-	161	162	H
* 1.125	44.4	ADR	28	-35.5	.22	-37.12	54	-16.88	-	-	-	-	161	162	H
* 1.592	52.77	PK-U	28.1	-35.3	0	-45.57	-	-	74	-28.43	-	-	318	151	H
* 1.592	48.57	ADR	28.1	-35.3	.22	-41.59	54	-12.41	-	-	-	-	318	151	H
* 2.388	54.61	PK-U	32.1	-34.5	0	-52.21	-	-	74	-21.79	-	-	355	109	V
* 2.388	46.49	ADR	32.1	-34.5	.22	-44.31	54	-9.69	-	-	-	-	355	109	V
* 3.84	45.2	PK-U	33.4	-33.2	0	-45.4	-	-	74	-28.6	-	-	323	101	V
* 3.84	37.98	ADR	33.4	-33.2	.22	-38.4	54	-15.6	-	-	-	-	323	101	V
* 11.491	37.78	PK-U	38.3	-25.8	0	-50.28	-	-	74	-23.72	-	-	36	212	V
* 11.49	27.83	ADR	38.3	-25.8	.22	-40.55	54	-13.45	-	-	-	-	36	212	V
17.243	45.94	PK-U	41.3	-23.2	0	-64.04	-	-	-	-	68.2	-4.16	23	382	V

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

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.125	47.08	PK	28	-35.5	0	39.58	-	-	74	-34.42	68.2	-28.62	0-360	101	H
2	* 1.592	50.21	PK	28.1	-35.3	0	43.01	-	-	74	-30.99	68.2	-25.19	0-360	101	H
3	* 2.389	50.81	PK	32.1	-34.5	0	48.41	-	-	74	-25.59	68.2	-19.79	0-360	201	V
4	* 3.857	40.31	PK	33.4	-33.1	0	40.61	-	-	74	-33.39	68.2	-27.59	0-360	201	V
5	* 11.568	32.22	PK	38.4	-25	0	45.62	-	-	74	-28.38	68.2	-22.58	0-360	199	V
6	17.358	35.44	PK	41.3	-22.8	0	53.94	-	-	74	-20.06	68.2	-14.26	0-360	101	V

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

PK - Peak detector

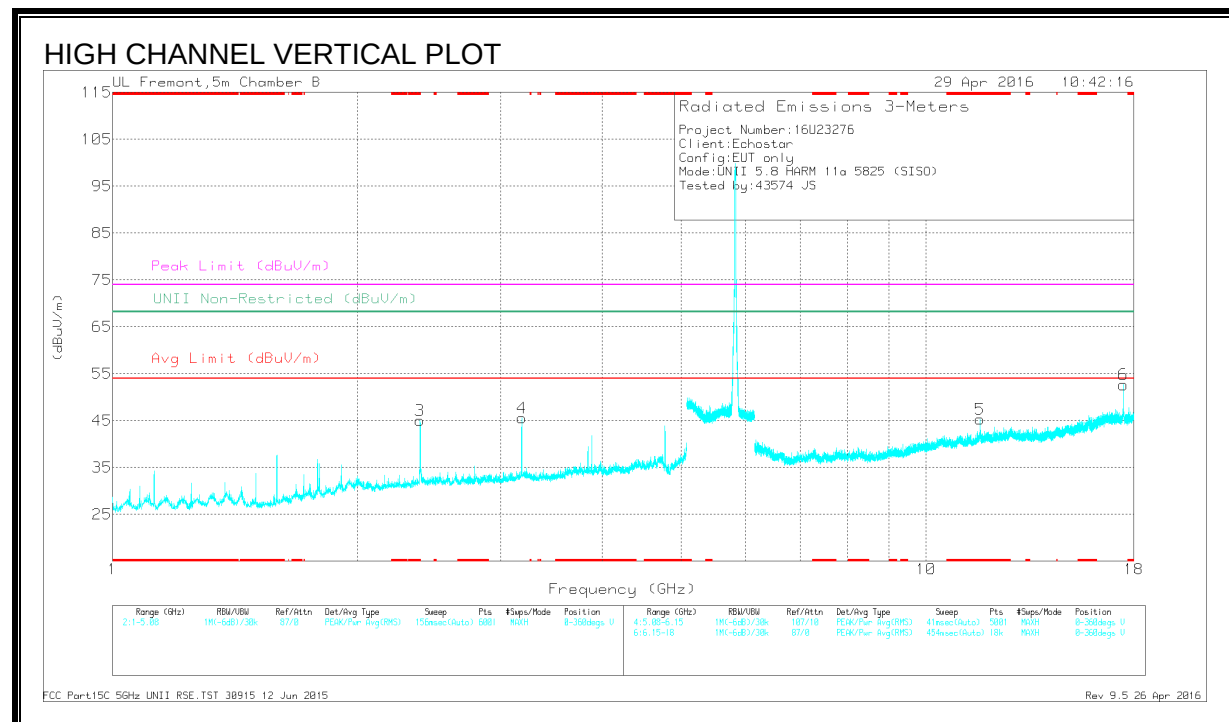
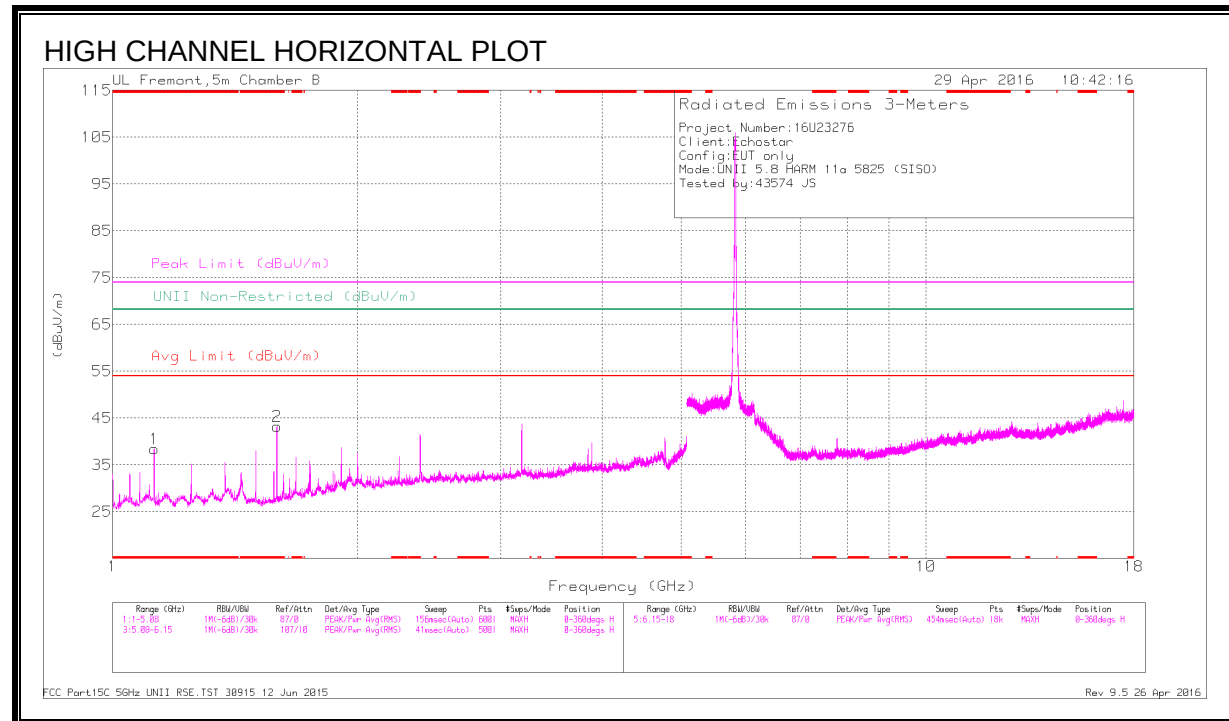
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.125	50.44	PK-U	28	-35.5	0	42.94	-	-	74	-31.06	-	-	158	105	H
* 1.125	43.85	ADR	28	-35.5	22	36.57	54	-17.43	-	-	-	-	158	105	H
* 1.592	54.26	PK-U	28.1	-35.3	0	47.06	-	-	74	-26.94	-	-	318	142	H
* 1.592	50	ADR	28.1	-35.3	22	43.02	54	-10.98	-	-	-	-	318	142	H
* 2.388	54.38	PK-U	32.1	-34.5	0	51.88	-	-	74	-22.02	-	-	351	112	V
* 2.388	46.21	ADR	32.1	-34.5	22	44.03	54	-9.97	-	-	-	-	351	112	V
* 3.857	45.68	PK-U	33.4	-33.1	0	45.98	-	-	74	-28.02	-	-	348	213	V
* 3.857	40.22	ADR	33.4	-33.1	22	40.74	54	-13.26	-	-	-	-	348	213	V
* 11.569	39.08	PK-U	38.4	-24.9	0	52.58	-	-	74	-21.42	-	-	40	229	V
* 11.57	28.72	ADR	38.4	-24.9	22	42.44	54	-11.56	-	-	-	-	40	229	V
17.359	44.67	PK-U	41.3	-22.8	0	63.17	-	-	-	-	68.2	-5.03	356	153	V

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

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.125	45.94	PK	28	-35.5	0	38.44	-	-	74	-35.56	68.2	-29.76	0-360	199	H
2	* 1.592	50.47	PK	28.1	-35.3	0	43.27	-	-	74	-30.73	68.2	-24.93	0-360	101	H
3	* 2.388	47.48	PK	32.1	-34.5	0	45.08	-	-	74	-28.92	68.2	-23.12	0-360	101	V
5	* 11.656	32.15	PK	38.5	-25.3	0	45.35	-	-	74	-28.65	68.2	-22.85	0-360	199	V
4	3.183	45.66	PK	33	-33.1	0	45.56	-	-	74	-28.44	68.2	-22.64	0-360	101	V
6	17.476	34.25	PK	41.3	-22.9	0	52.65	-	-	74	-21.35	68.2	-15.55	0-360	199	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.125	49.89	PK-U	28	-35.5	0	42.39	-	-	74	-31.61	-	-	242	256	H
* 1.125	43.44	ADR	28	-35.5	22	36.16	54	-17.94	-	-	-	-	242	256	H
* 1.592	54.47	PK-U	28.1	-35.3	0	47.27	-	-	74	-26.73	-	-	315	135	H
* 1.592	50.35	ADR	28.1	-35.3	22	43.37	54	-10.63	-	-	-	-	315	135	H
* 2.388	56.6	PK-U	32.1	-34.5	0	54.2	-	-	74	-19.8	-	-	354	107	V
* 2.388	46.52	ADR	32.1	-34.5	22	44.34	54	-9.66	-	-	-	-	354	107	V
* 11.656	40.02	PK-U	38.5	-25.3	0	53.22	-	-	74	-20.78	-	-	48	178	V
* 11.654	28.13	ADR	38.5	-25.3	22	41.55	54	-12.45	-	-	-	-	48	178	V
3.183	50.99	PK-U	33	-33.1	0	50.89	-	-	-	-	68.2	-17.31	17	111	V
17.475	40.63	PK-U	41.3	-22.9	0	59.03	-	-	-	-	68.2	-9.17	360	148	V

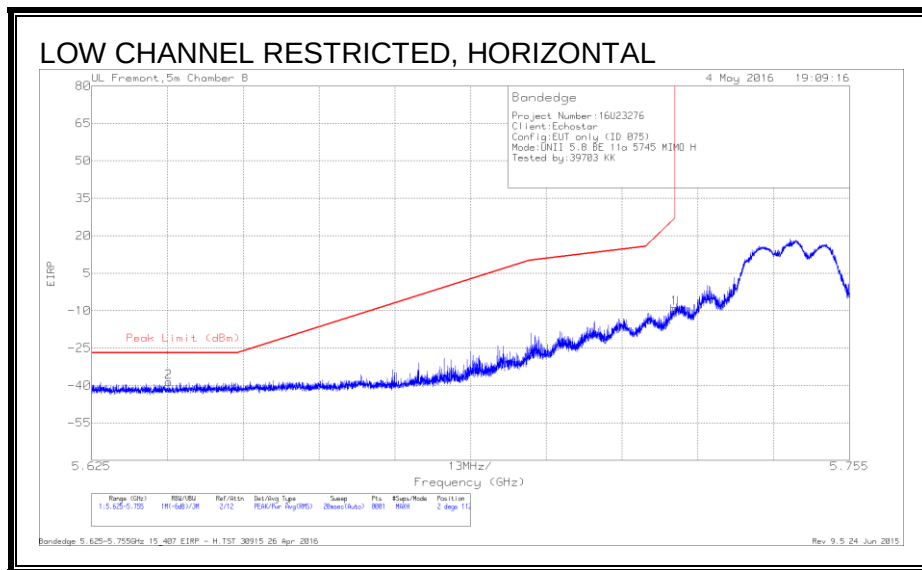
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

10.3. TX ABOVE 1 GHz 802.11a CDD 2TX MODE IN THE 5.8 GHz BAND

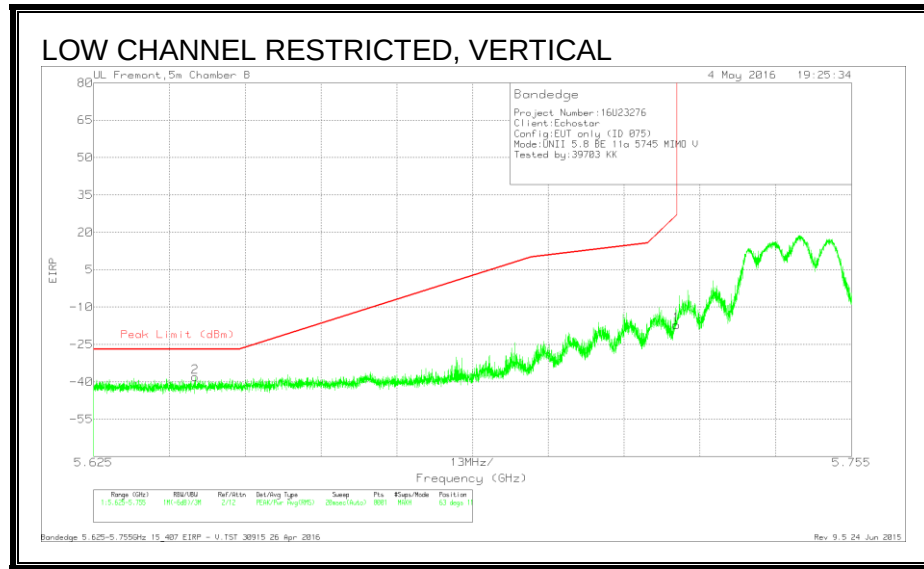
RESTRICTED BANEDGE (LOW CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.638	-63.66	Pk	34.7	-21.4	11.8	-38.56	-27	-11.56	2	112	H
1	5.725	-34	Pk	34.9	-21.7	11.8	-9	26.97	-35.97	2	112	H

Pk - Peak detector

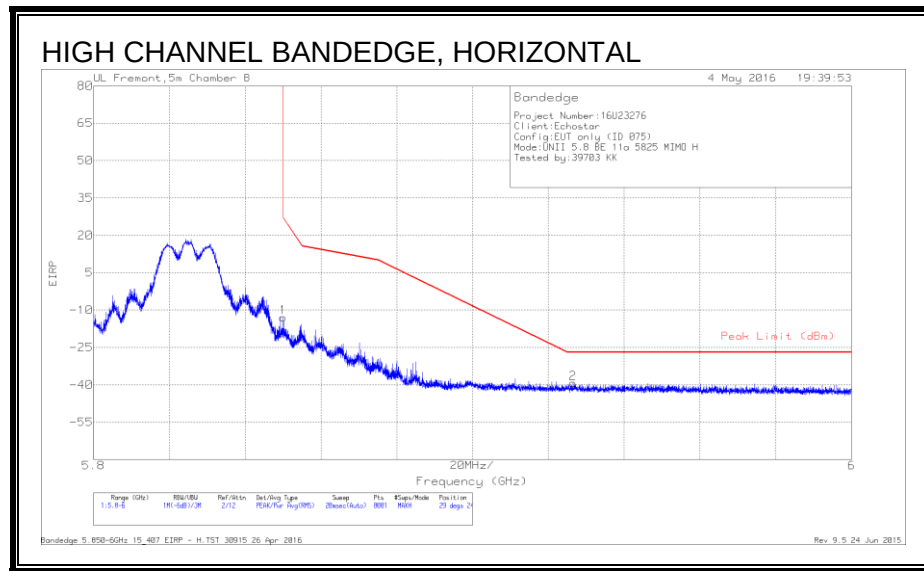


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.642	-63.23	Pk	34.7	-21.3	11.8	-38.03	-27	-11.03	63	117	V
1	5.725	-42.16	Pk	34.9	-21.7	11.8	-17.16	26.97	-44.13	63	117	V

Pk - Peak detector

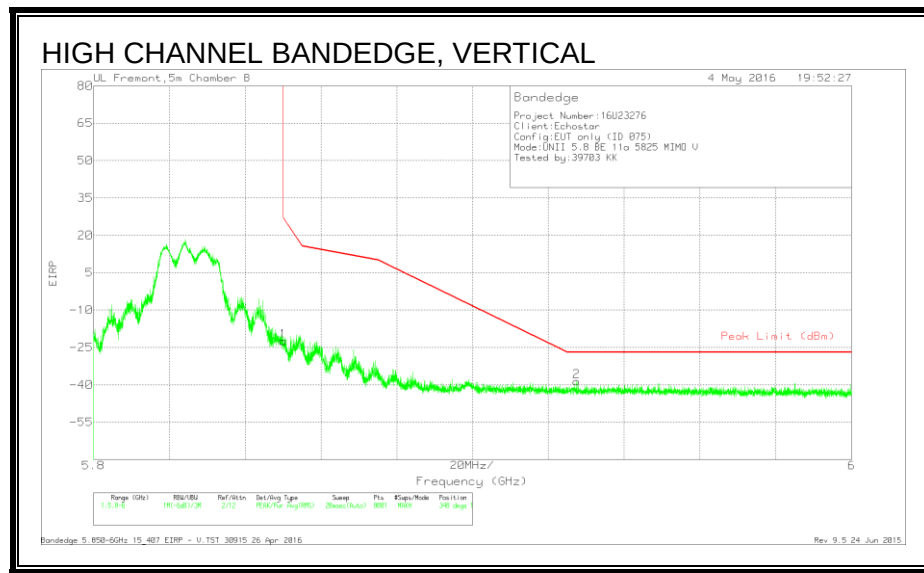
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-38.35	Pk	35.2	-21.6	11.8	-12.95	26.94	-39.89	29	240	H
2	5.927	-65.24	Pk	35.3	-21.2	11.8	-39.34	-27	-12.34	29	240	H

Pk - Peak detector

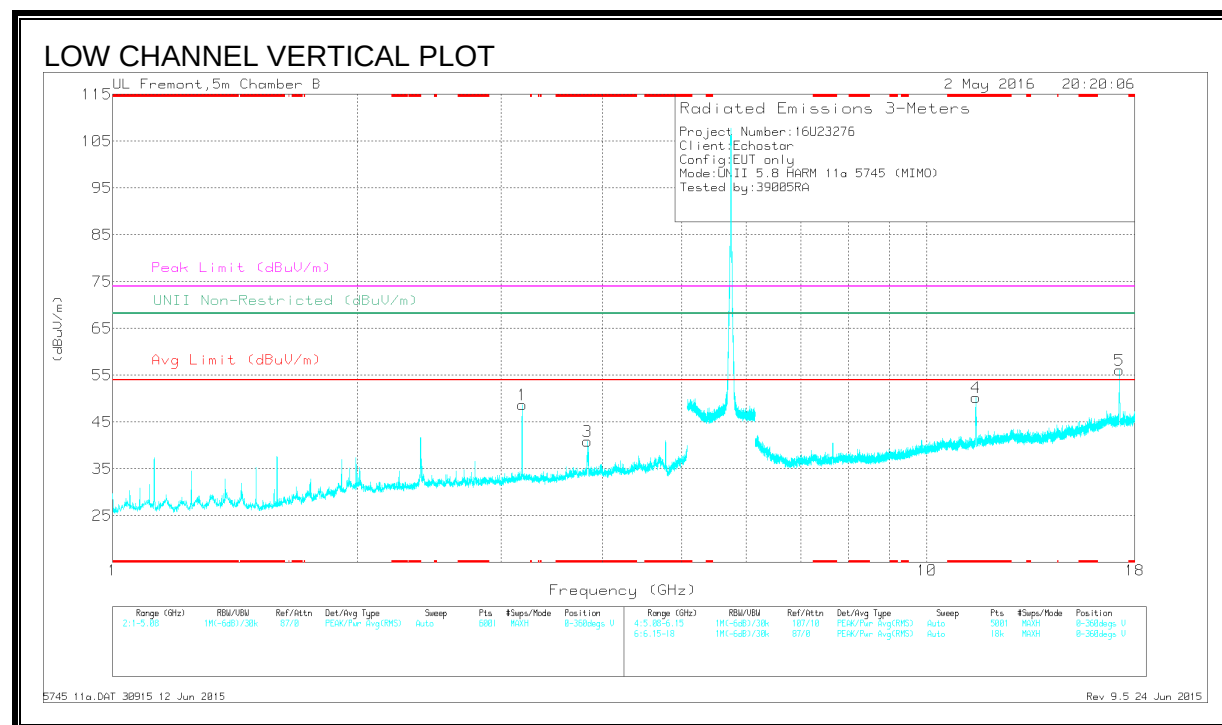
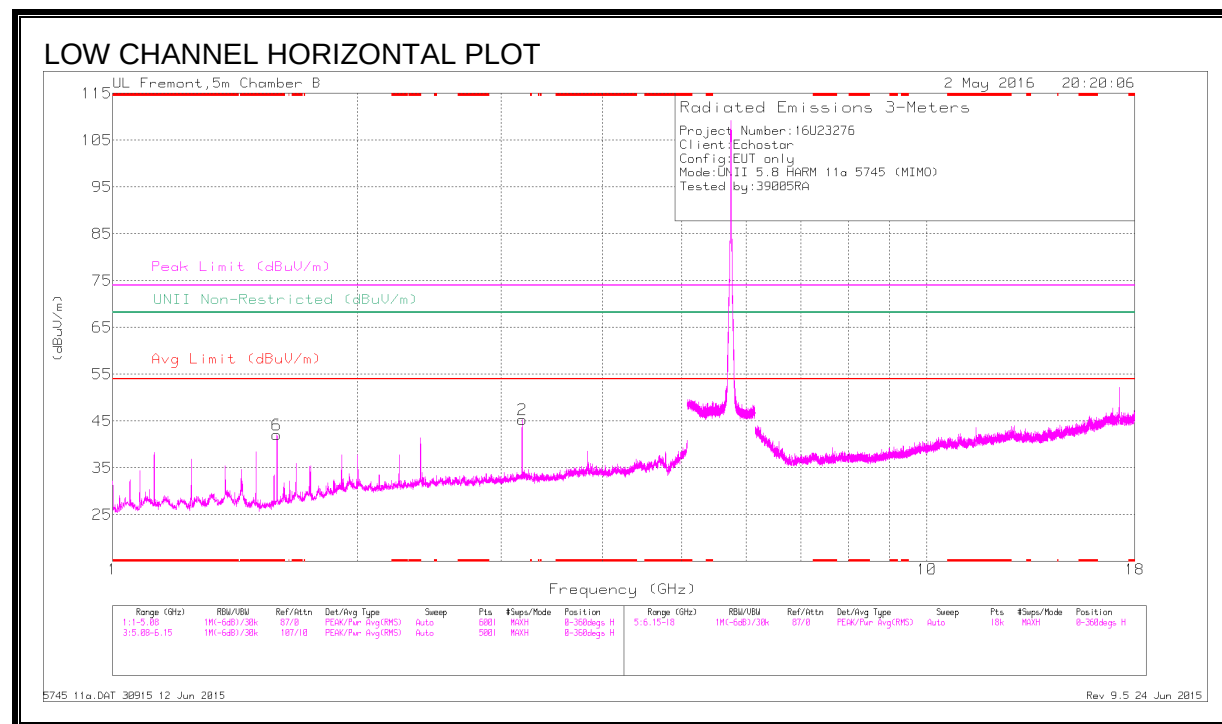


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-47.91	Pk	35.2	-21.6	11.8	-22.51	26.94	-49.45	348	119	V
2	5.928	-64.31	Pk	35.3	-21.4	11.8	-38.61	-27	-11.61	348	119	V

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
6	* 1.592	49.24	Pk	28.1	-35.3	0	42.04	-	-	74	-31.96	68.2	-26.16	0-360	101	H
3	* 3.83	40.55	Pk	33.4	-33	0	40.95	-	-	74	-33.05	68.2	-27.25	0-360	200	V
4	* 11.488	37.7	Pk	38.3	-25.8	0	50.2	-	-	74	-23.8	68.2	-18	0-360	199	V
2	3.183	45.45	Pk	33	-33.1	0	45.35	-	-	74	-28.65	68.2	-22.85	0-360	101	H
1	3.183	48.81	Pk	33	-33.1	0	48.71	-	-	74	-25.29	68.2	-19.49	0-360	101	V
5	17.231	38.06	Pk	41.3	-23.3	0	56.06	-	-	74	-17.94	68.2	-12.14	0-360	199	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

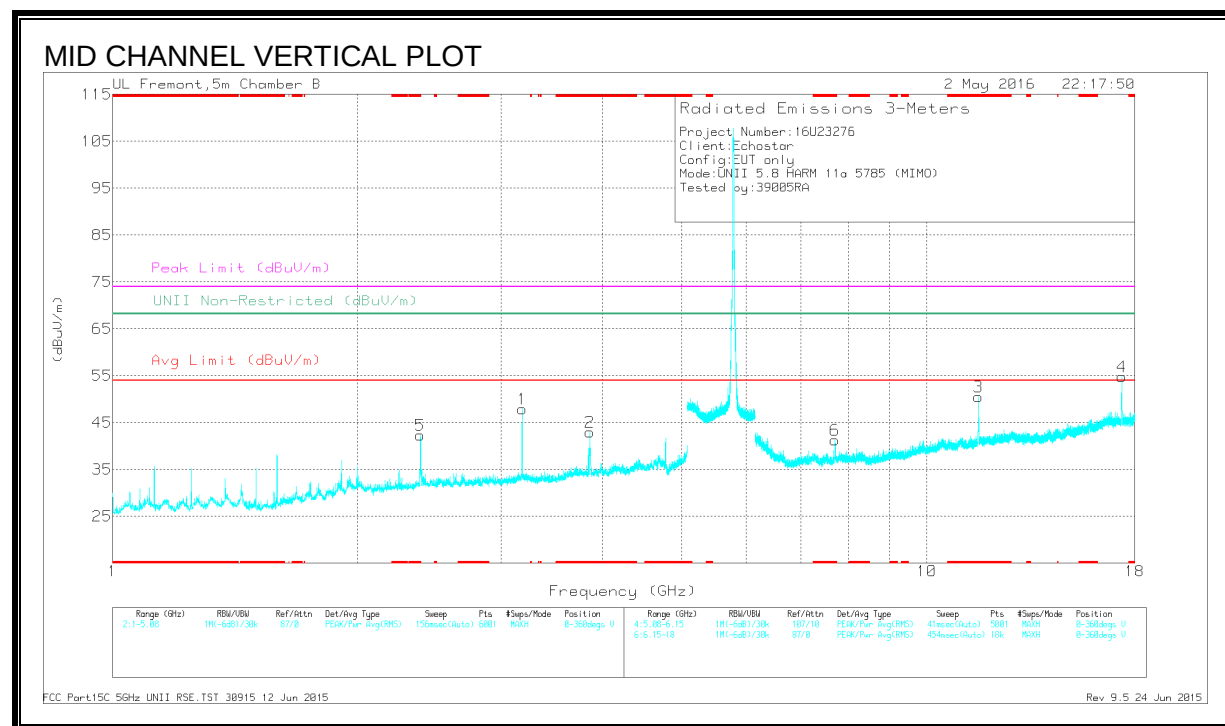
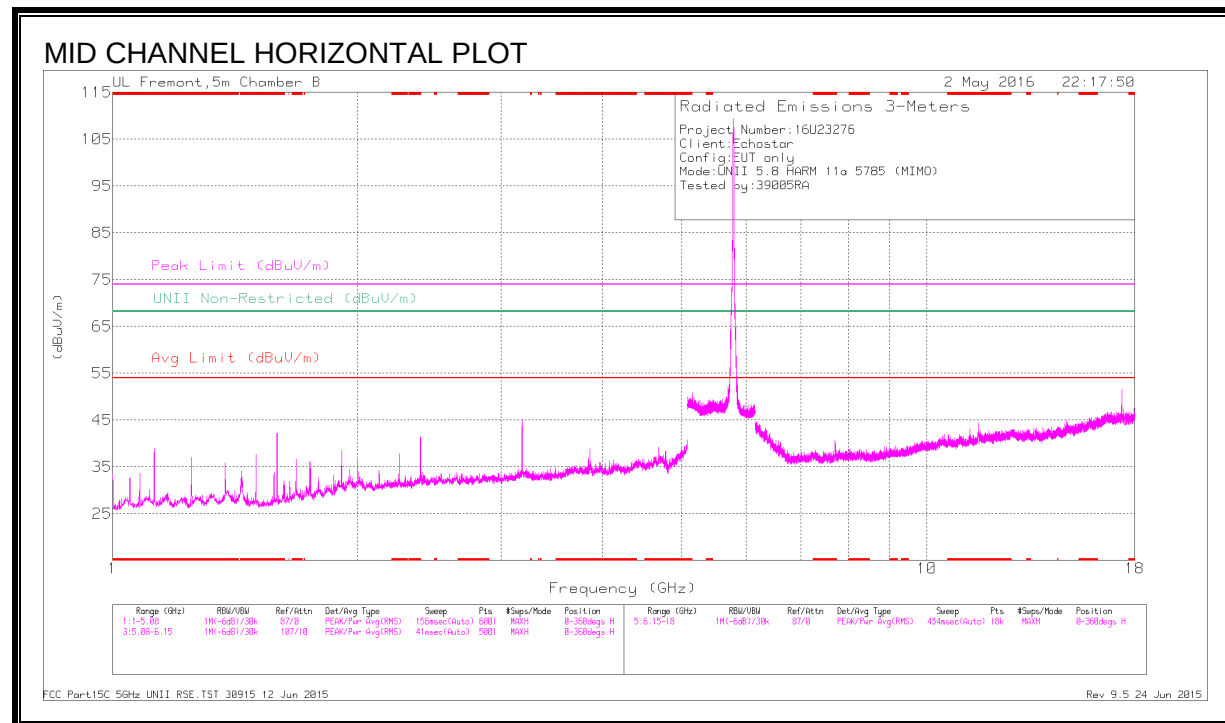
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
* 1.592	54.64	PK-U	28.1	-35.3	0	47.44	-	-	74	-26.56	-	-	311	101	H
* 1.592	48.99	ADR	28.1	-35.3	.22	42.01	54	-11.99	-	-	-	-	311	101	H
* 3.83	48.71	PK-U	33.4	-33	0	49.11	-	-	74	-24.89	-	-	10	152	V
* 3.83	39.56	ADR	33.4	-33	.22	40.18	54	-13.82	-	-	-	-	10	152	V
* 11.489	49.05	PK-U	38.3	-25.8	0	61.55	-	-	74	-12.45	-	-	36	210	V
* 11.489	35.63	ADR	38.3	-25.8	.22	48.35	54	-5.65	-	-	-	-	36	210	V
3.183	53.11	PK-U	33	-33.1	0	53.01	-	-	-	-	68.2	-15.19	173	251	H
3.184	52.76	PK-U	33	-33.1	0	52.66	-	-	-	-	68.2	-15.54	355	125	V
17.231	47.34	PK-U	41.3	-23.3	0	65.34	-	-	-	-	68.2	-2.86	37	101	V
17.231	47.79	PK-U	41.3	-23.3	0	65.79	-	-	-	-	68.2	-2.41	37	101	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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	42.7	Pk	33.4	-33.1	0	43	-	-	74	-31	68.2	-25.2	0-360	200	V
5	* 2.388	44.72	Pk	32.1	-34.5	0	42.32	-	-	74	-31.68	68.2	-25.88	0-360	200	V
3	* 11.569	37.01	Pk	38.4	-24.9	0	50.51	-	-	74	-23.49	68.2	-17.69	0-360	200	V
6	* 7.714	35.22	Pk	35.8	-29.7	0	41.32	-	-	74	-32.68	68.2	-26.88	0-360	101	V
1	3.183	48.04	Pk	33	-33.1	0	47.94	-	-	74	-26.06	68.2	-20.26	0-360	101	V
4	17.361	36.14	Pk	41.3	-22.6	0	54.84	-	-	74	-19.16	68.2	-13.36	0-360	101	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

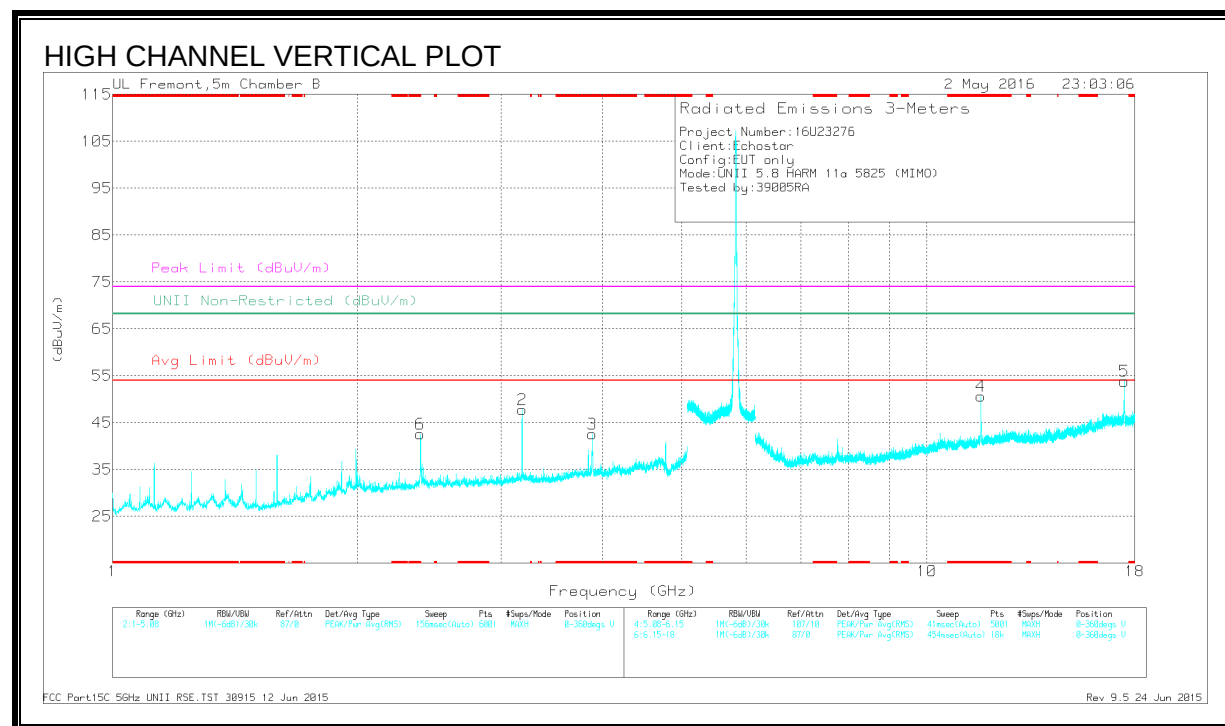
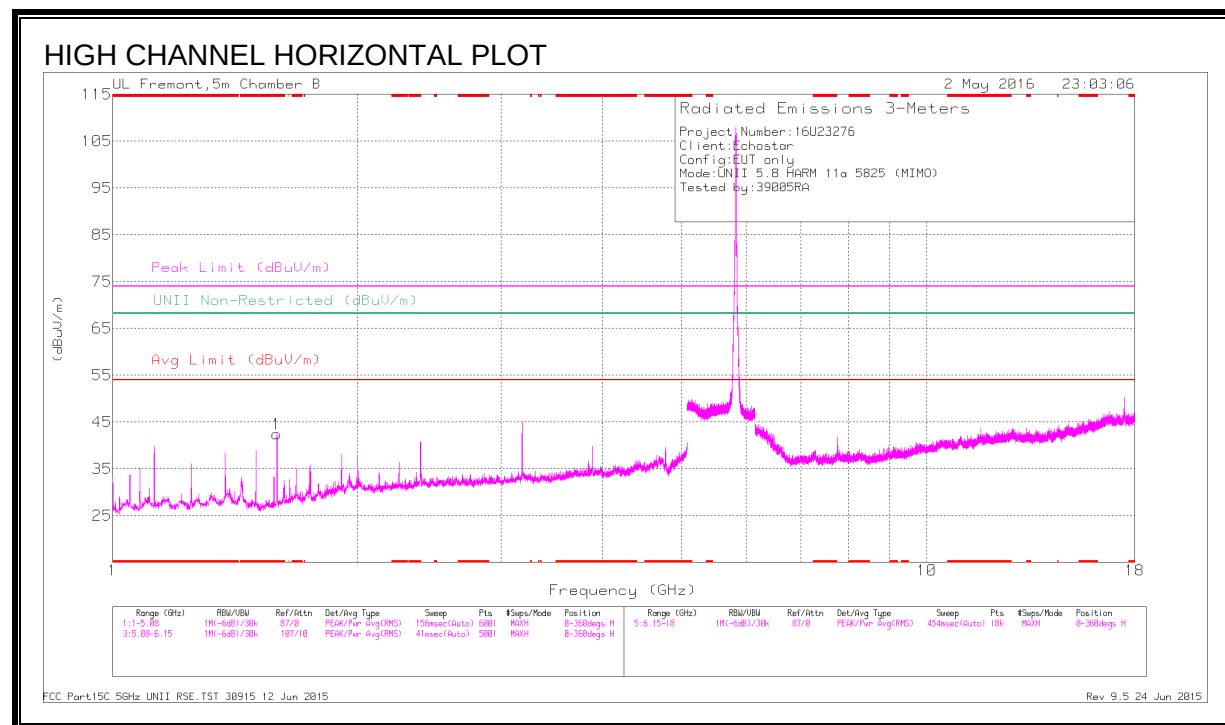
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
* 3.857	50.08	PK-U	33.4	-33.1	0	50.38	-	-	74	-23.62	-	-	8	162	V
* 3.857	41.19	ADR	33.4	-33.1	.22	41.71	54	-12.29	-	-	-	-	8	162	V
* 2.387	56.42	PK-U	32.1	-34.5	0	54.02	-	-	74	-19.98	-	-	25	157	V
* 2.388	43.17	ADR	32.1	-34.5	.22	40.99	54	-13.01	-	-	-	-	25	157	V
* 11.569	47.9	PK-U	38.4	-24.9	0	61.4	-	-	74	-12.6	-	-	47	236	V
* 11.569	33.85	ADR	38.4	-24.9	.22	47.57	54	-6.43	-	-	-	-	47	236	V
* 7.708	44.15	PK-U	35.8	-29.8	0	50.15	-	-	74	-23.85	-	-	341	345	V
* 7.708	31.7	ADR	35.8	-29.8	.22	37.92	54	-16.08	-	-	-	-	341	345	V
3.184	52.95	PK-U	33	-33	0	52.95	-	-	-	-	68.2	-15.25	355	103	V
17.356	49.35	PK-U	41.3	-22.9	0	67.75	-	-	-	-	68.2	-.45	25	347	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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	* 1.592	49.61	Pk	28.1	-35.3	0	42.41	-	-	74	-31.59	68.2	-25.79	0-360	101	H
3	* 3.883	42.1	Pk	33.3	-32.8	0	42.6	-	-	74	-31.4	68.2	-25.6	0-360	200	V
6	* 2.388	45.03	Pk	32.1	-34.5	0	42.63	-	-	74	-31.37	68.2	-25.57	0-360	200	V
4	* 11.65	37.25	Pk	38.5	-25.1	0	50.65	-	-	74	-23.35	68.2	-17.55	0-360	199	V
2	3.183	47.9	Pk	33	-33.1	0	47.8	-	-	74	-26.2	68.2	-20.4	0-360	101	V
5	17.471	35.52	Pk	41.3	-23	0	53.82	-	-	74	-20.18	68.2	-14.38	0-360	101	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

Radiated Emissions

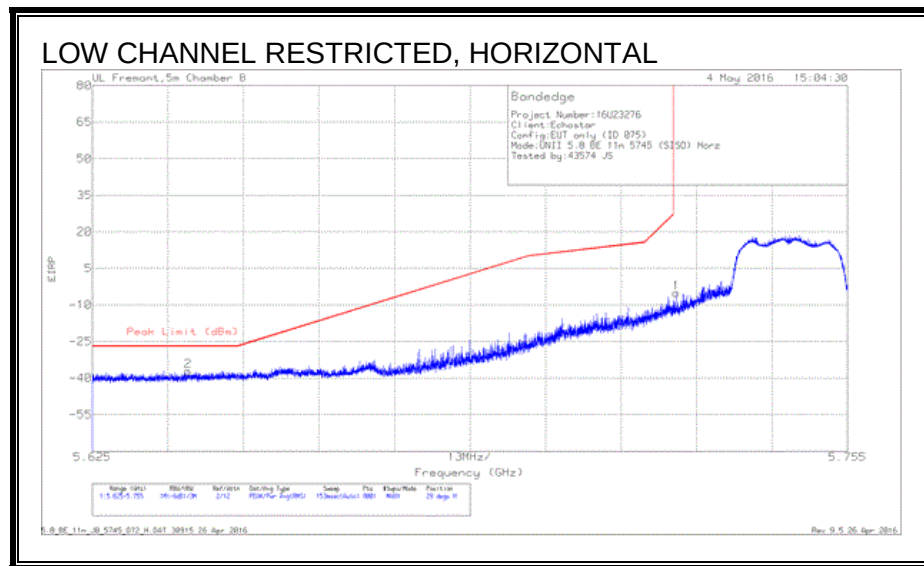
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.592	55.01	PK-U	28.1	-35.3	0	47.81	-	-	74	-26.19	-	-	312	103	H
* 1.592	48.85	ADR	28.1	-35.3	.22	41.87	54	-12.13	-	-	-	-	312	103	H
* 3.883	49.39	PK-U	33.3	-32.8	0	49.89	-	-	74	-24.11	-	-	8	194	V
* 3.883	41.05	ADR	33.3	-32.8	.22	41.77	54	-12.23	-	-	-	-	8	194	V
* 2.387	57.66	PK-U	32.1	-34.5	0	55.26	-	-	74	-18.74	-	-	227	184	V
* 2.388	42.58	ADR	32.1	-34.5	.22	40.4	54	-13.6	-	-	-	-	227	184	V
* 11.649	49.26	PK-U	38.5	-25.1	0	62.66	-	-	74	-11.34	-	-	35	149	V
* 11.649	34.4	ADR	38.5	-25.1	.22	48.02	54	-5.98	-	-	-	-	35	149	V
3.184	53.42	PK-U	33	-33.1	0	53.32	-	-	-	-	68.2	-14.88	355	101	V
17.476	49.31	PK-U	41.3	-22.9	0	67.71	-	-	-	-	68.2	-.49	15	242	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

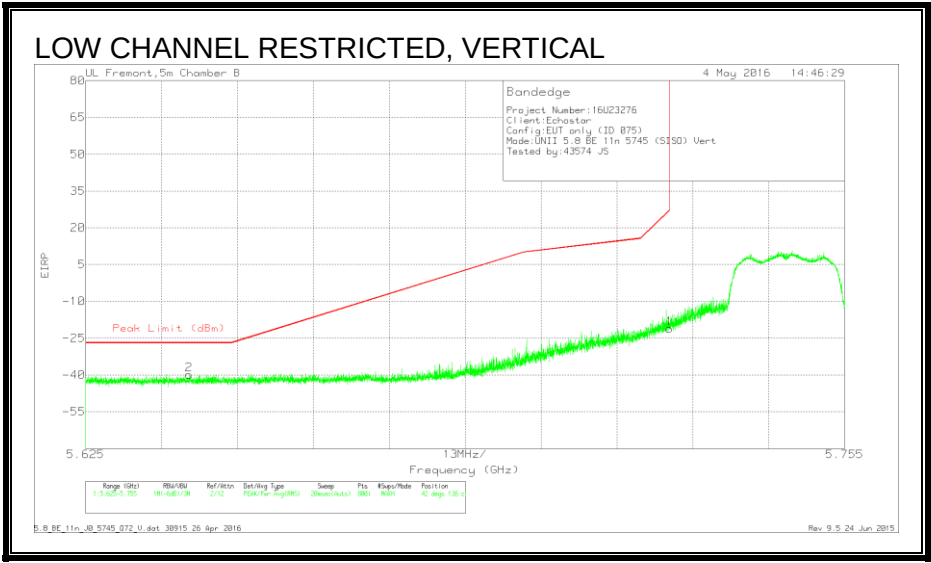
ADR - U-NII AD primary method, RMS average

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cb/Fltr/P ad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.641	-62.4	Pk	34.7	-21.3	11.8	0	-37.2	-27	-10.2	29	138	H
1	5.726	-30.24	Pk	34.9	-21.6	11.8	0	-5.14	26.97	-32.11	29	138	H

Rev 9.5 24 Jun 2015



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.643	-65.02	Pk	34.7	-21.3	11.8	0	-39.82	-27	-12.82	42	136	V
1	5.725	-46.09	Pk	34.9	-21.7	11.8	0	-21.09	26.97	-48.06	42	136	V

Pk - Peak detector

HIGH CHANNEL BANDEDGE, HORIZONTAL

UL Fremont, 5m Chamber B

4 May 2016 15:17:53

Bandedge

Project Number: 16U23276

Client: EchoStar

Config: EUT only (ID 075)

Made: UNII S-B BE 11n 5825 (SISO) Horz

Tested by: 43574 JS

EIRP

Peak Limit (dBm)

2

Frequency (GHz)

Range (GHz)	RBW/VBW	Ref/Actn	Ref/Actn Type	Sweep	Pls	Expts/Mode	Position
1.5 GHz	10 MHz/10 MHz	2702	PSM Per Ang (dB)	20000/1000	1000	8	8 steps, 134 cm

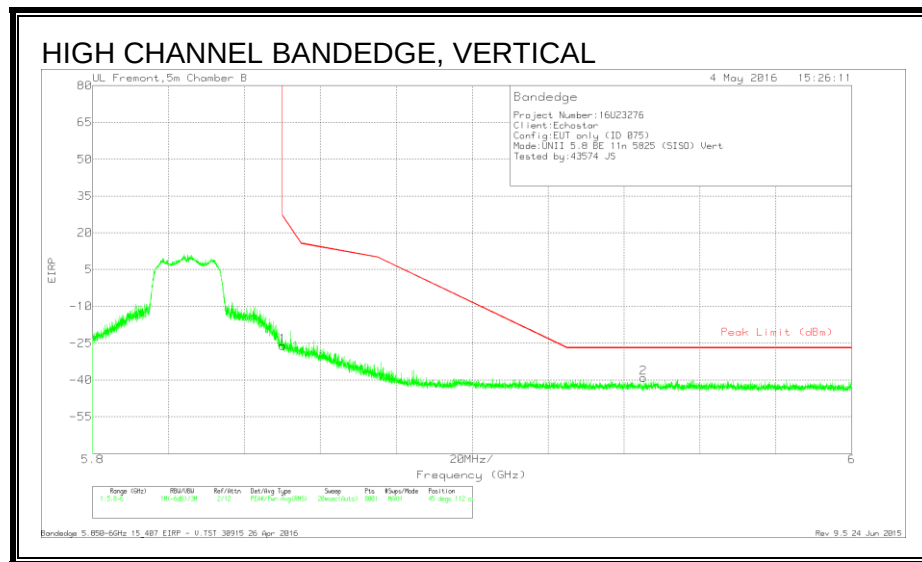
Bandedge 5.050-6.025 GHz 15.487 EIRP - H.TST 201615 20 Apr 2016

Rev: 9.5 24 Jun 2015

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cb/ Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-48.71	Pk	35.2	-21.6	11.8	0	-23.31	26.94	-50.25	8	124	H
2	5.925	-64.02	Pk	35.3	-21.4	11.8	0	-38.32	-27	-11.32	8	124	H

Page 116 of 158

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

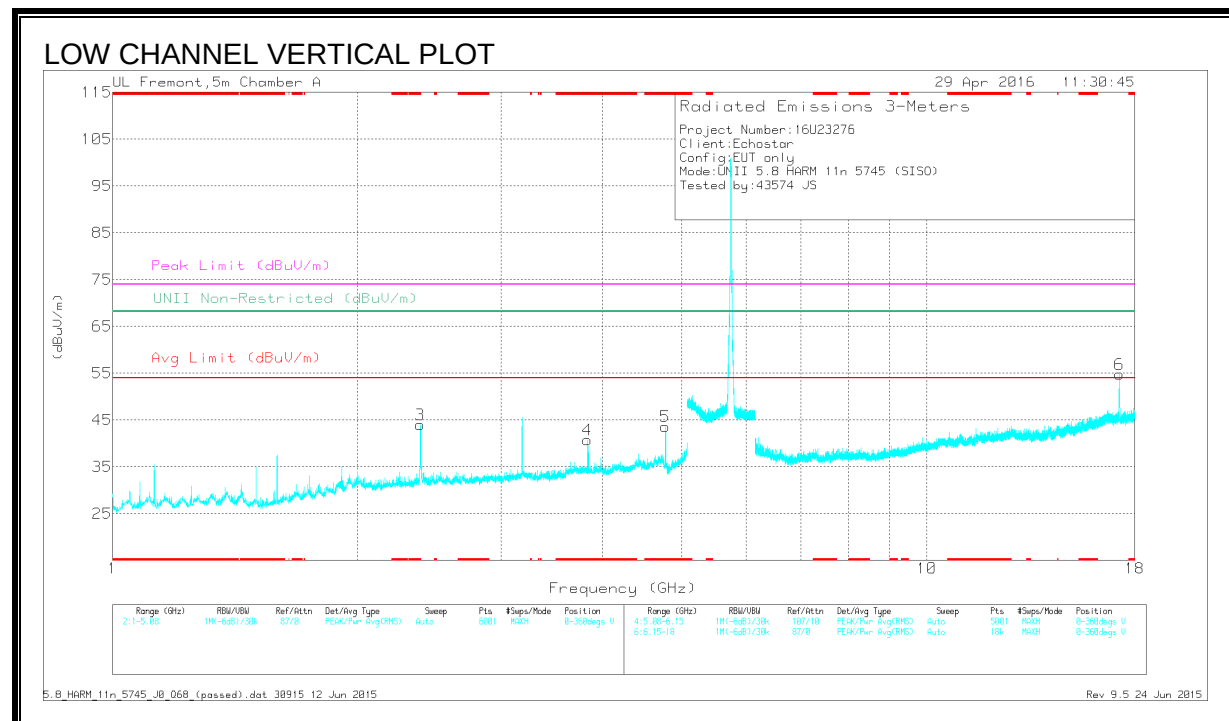
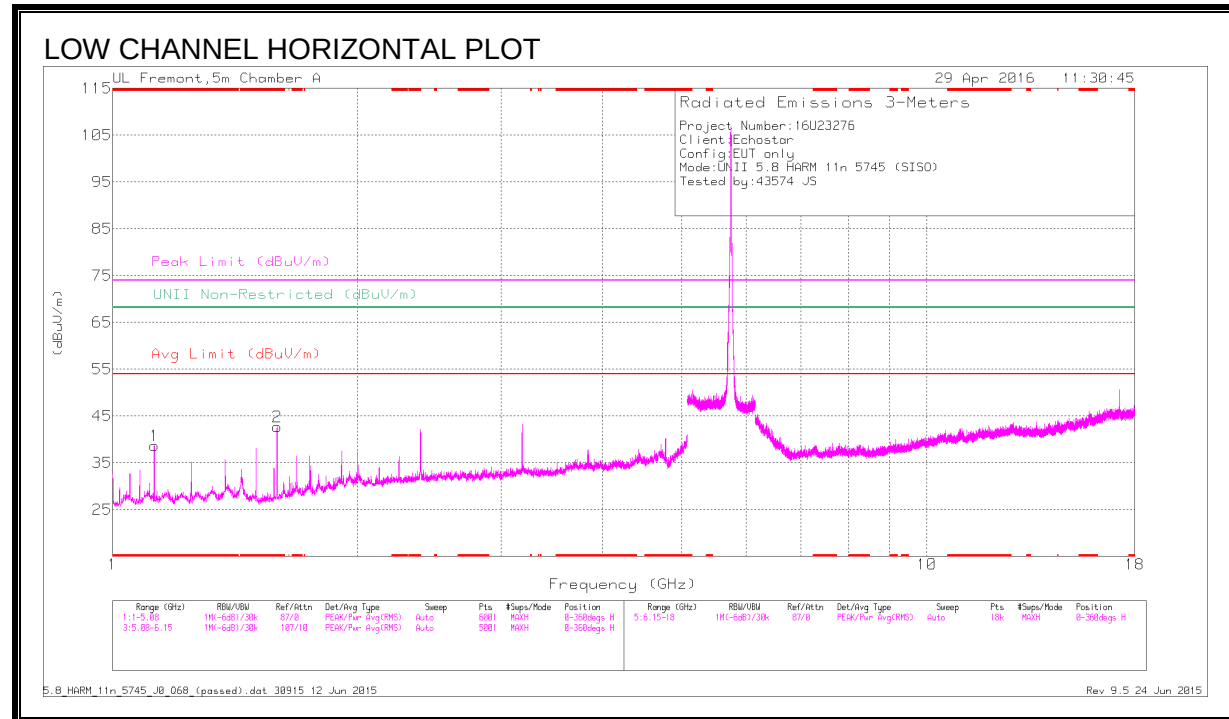


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-51.44	Pk	35.2	-21.6	11.8	0	-26.04	26.94	-52.98	45	112	V
2	5.945	-64.78	Pk	35.3	-21.5	11.8	0	-39.18	-27	-12.18	45	112	V

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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	* 1.125	46.16	Pk	28	-35.5	0	38.66	-	-	74	-35.34	68.2	-29.54	0-360	101	H
2	* 1.592	49.96	Pk	28.1	-35.3	0	42.76	-	-	74	-31.24	68.2	-25.44	0-360	199	H
3	* 2.388	46.47	Pk	32.1	-34.5	0	44.07	-	-	74	-29.93	68.2	-24.13	0-360	101	V
4	* 3.83	40.31	Pk	33.4	-33	0	40.71	-	-	74	-33.29	68.2	-27.49	0-360	199	V
5	* 4.775	41.29	Pk	33.9	-31.6	0	43.59	-	-	74	-30.41	68.2	-24.61	0-360	199	V
6	17.234	36.71	Pk	41.3	-23.2	0	54.81	-	-	74	-19.19	68.2	-13.39	0-360	199	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

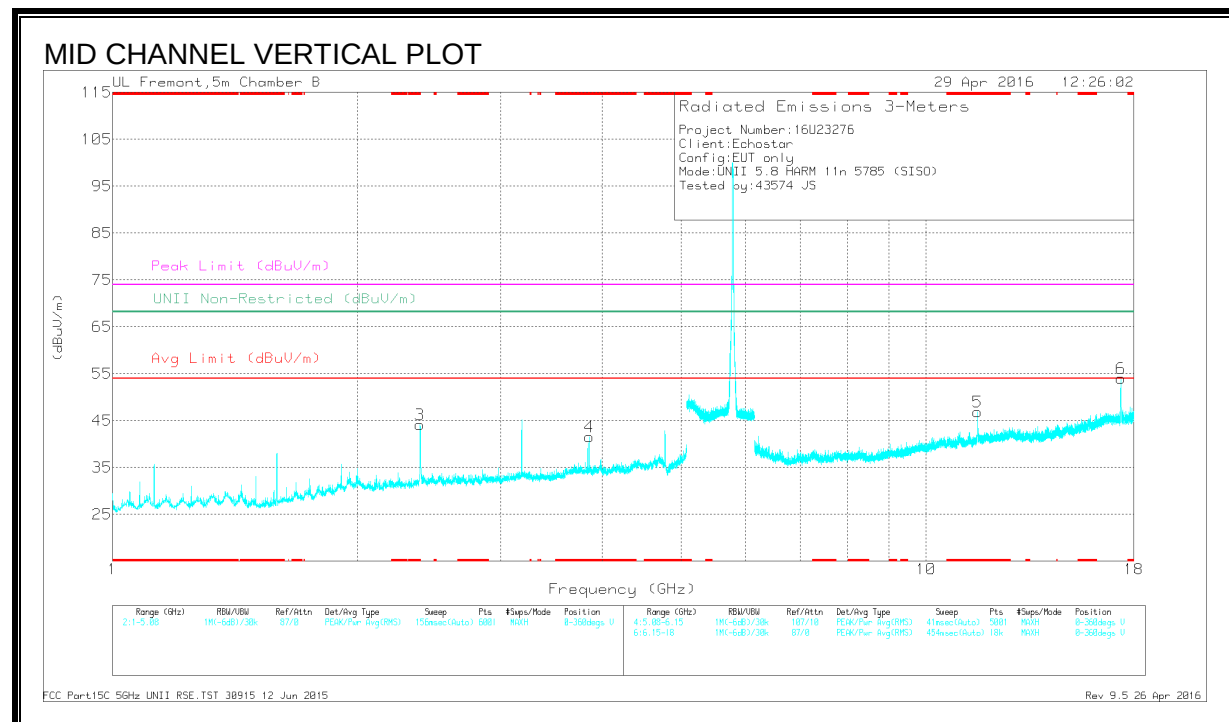
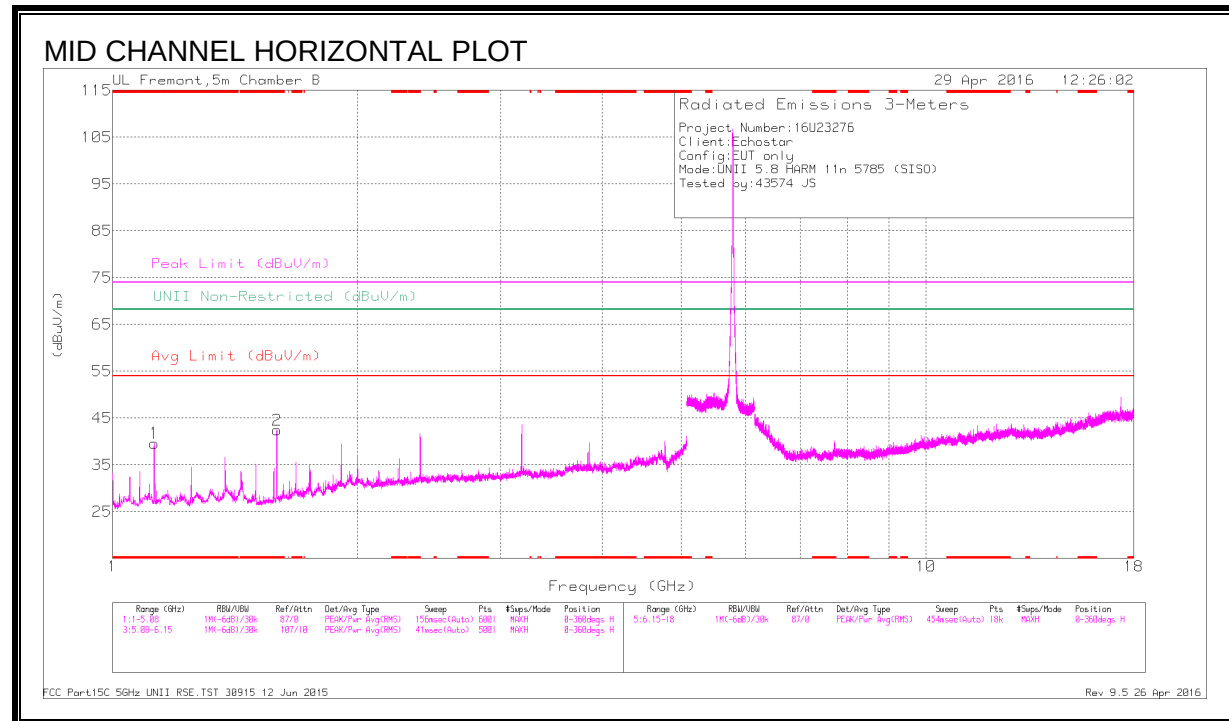
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
* 1.125	50.7	PK-U	28	-35.5	0	43.2	-	-	74	-30.8	-	-	158	160	H
* 1.125	44.25	ADR	28	-35.5	.22	36.97	54	-17.03	-	-	-	-	158	160	H
* 1.593	54.18	PK-U	28.1	-35.3	0	46.98	-	-	74	-27.02	-	-	316	137	H
* 1.592	50.42	ADR	28.1	-35.3	.22	43.44	54	-10.56	-	-	-	-	316	137	H
* 2.388	54.6	PK-U	32.1	-34.5	0	52.2	-	-	74	-21.8	-	-	355	321	V
* 2.388	42.95	ADR	32.1	-34.5	.22	40.77	54	-13.23	-	-	-	-	355	321	V
* 3.83	44.47	PK-U	33.4	-33	0	44.87	-	-	74	-29.13	-	-	349	183	V
* 3.83	38.05	ADR	33.4	-33	.22	38.67	54	-15.33	-	-	-	-	349	183	V
* 4.776	45.82	PK-U	33.9	-31.6	0	48.12	-	-	74	-25.88	-	-	7	226	V
* 4.776	37.72	ADR	33.9	-31.6	.22	40.24	54	-13.76	-	-	-	-	7	226	V
17.234	48.61	PK-U	41.3	-23.2	0	66.71	-	-	-	-	68.2	-1.49	11	371	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.125	47.16	PK	28	-35.5	0	39.66	-	-	74	-34.34	68.2	-28.54	0-360	101	H
2	* 1.592	49.66	PK	28.1	-35.3	0	42.46	-	-	74	-31.54	68.2	-25.74	0-360	101	H
3	* 2.388	46.56	PK	32.1	-34.5	0	44.16	-	-	74	-29.84	68.2	-24.04	0-360	101	V
4	* 3.857	41.22	PK	33.4	-33.1	0	41.52	-	-	74	-32.48	68.2	-26.68	0-360	201	V
5	* 11.567	33.5	PK	38.4	-25	0	46.9	-	-	74	-27.1	68.2	-21.3	0-360	199	V
6	17.348	35.66	PK	41.3	-22.9	0	54.06	-	-	74	-19.94	68.2	-14.14	0-360	101	V

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

PK - Peak detector

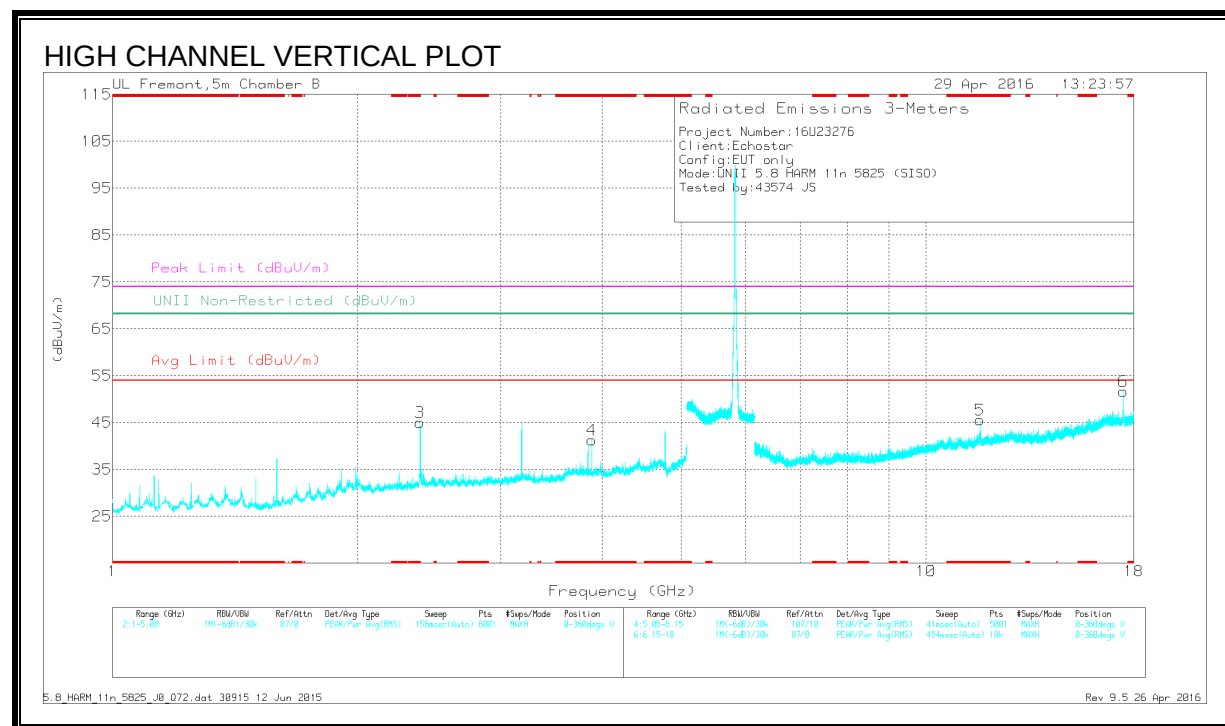
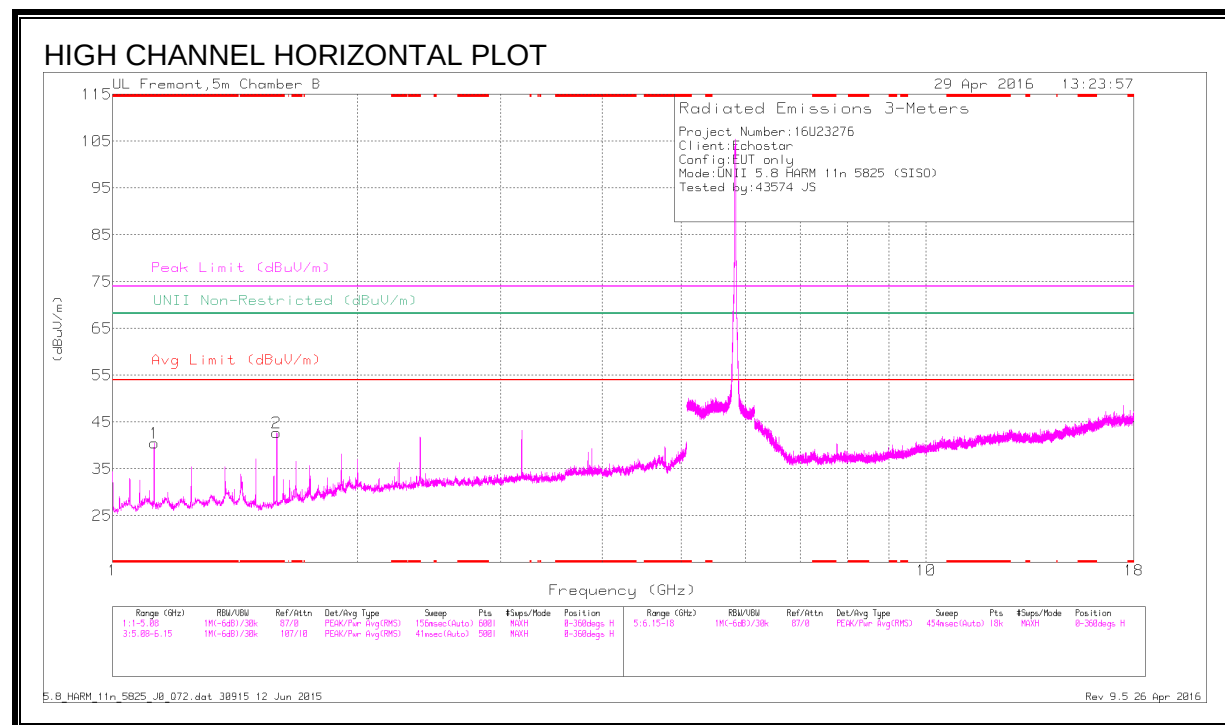
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.125	50.2	PK-U	28	-35.5	0	42.7	-	-	74	-31.3	-	-	156	166	H
* 1.125	43.77	ADR	28	-35.5	22	36.49	54	-17.51	-	-	-	-	156	166	H
* 1.592	54.61	PK-U	28.1	-35.3	0	47.41	-	-	74	-26.59	-	-	318	138	H
* 1.592	50.32	ADR	28.1	-35.3	22	43.34	54	-10.66	-	-	-	-	318	138	H
* 2.388	56.3	PK-U	32.1	-34.5	0	53.9	-	-	74	-20.1	-	-	354	108	V
* 2.388	46.49	ADR	32.1	-34.5	22	44.31	54	-9.69	-	-	-	-	354	108	V
* 3.857	45.35	PK-U	33.4	-33.1	0	45.65	-	-	74	-28.35	-	-	349	205	V
* 3.857	40.37	ADR	33.4	-33.1	22	40.89	54	-13.11	-	-	-	-	349	205	V
* 11.567	39.82	PK-U	38.4	-25	0	53.22	-	-	74	-20.78	-	-	39	230	V
* 11.569	28.69	ADR	38.4	-24.9	22	42.41	54	-11.59	-	-	-	-	39	230	V
17.348	44.22	PK-U	41.3	-22.9	0	62.62	-	-	-	-	68.2	-5.58	354	141	V

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

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/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)	Asimuth (Degs)	Height (cm)	Polarity
1	* 1.125	48.03	PK	28	-35.5	0	40.53	-	-	74	-33.47	68.2	-27.67	0-360	101	H
2	* 1.592	49.87	PK	28.1	-35.3	0	42.67	-	-	74	-31.33	68.2	-25.53	0-360	101	H
3	* 2.388	47.47	PK	32.1	-34.5	0	45.07	-	-	74	-28.93	68.2	-23.13	0-360	101	V
4	* 3.883	40.73	PK	33.3	-32.8	0	41.23	-	-	74	-32.77	68.2	-26.97	0-360	101	V
5	* 11.645	32.07	PK	38.5	-25	0	45.57	-	-	74	-28.43	68.2	-22.63	0-360	199	V
6	17.473	33.22	PK	41.3	-22.9	0	51.62	-	-	74	-22.38	68.2	-16.58	0-360	101	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/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)	Asimuth (Degs)	Height (cm)	Polarity
* 1.125	50.79	PK-U	28	-35.5	0	43.29	-	-	74	-30.71	-	-	162	161	H
* 1.125	44.16	ADR	28	-35.5	22	36.88	54	-17.12	-	-	-	-	162	161	H
* 1.592	54.56	PK-U	28.1	-35.3	0	47.36	-	-	74	-26.64	-	-	316	136	H
* 1.592	50.23	ADR	28.1	-35.3	22	43.25	54	-10.75	-	-	-	-	316	136	H
* 2.388	54.59	PK-U	32.1	-34.5	0	52.19	-	-	74	-21.81	-	-	353	111	V
* 2.388	46.55	ADR	32.1	-34.5	22	44.37	54	-9.63	-	-	-	-	353	111	V
* 3.883	45.17	PK-U	33.3	-32.8	0	45.67	-	-	74	-28.33	-	-	348	229	V
* 3.883	40.27	ADR	33.3	-32.8	22	40.99	54	-13.01	-	-	-	-	348	229	V
* 11.645	38.91	PK-U	38.5	-25	0	52.41	-	-	74	-21.59	-	-	45	217	V
* 11.645	27.36	ADR	38.5	-25	22	41.08	54	-12.92	-	-	-	-	45	217	V
17.474	42.35	PK-U	41.3	-22.9	0	60.75	-	-	-	-	68.2	-7.45	355	131	V

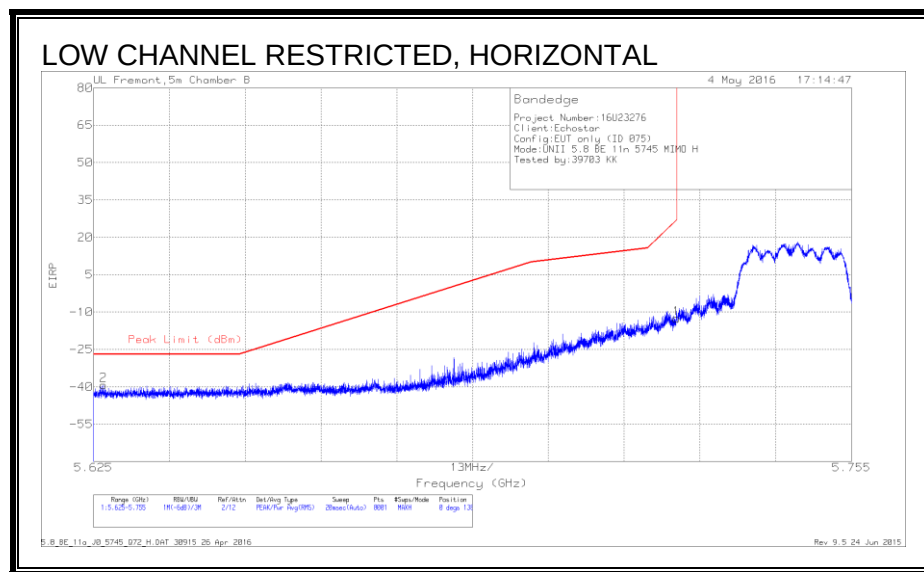
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

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

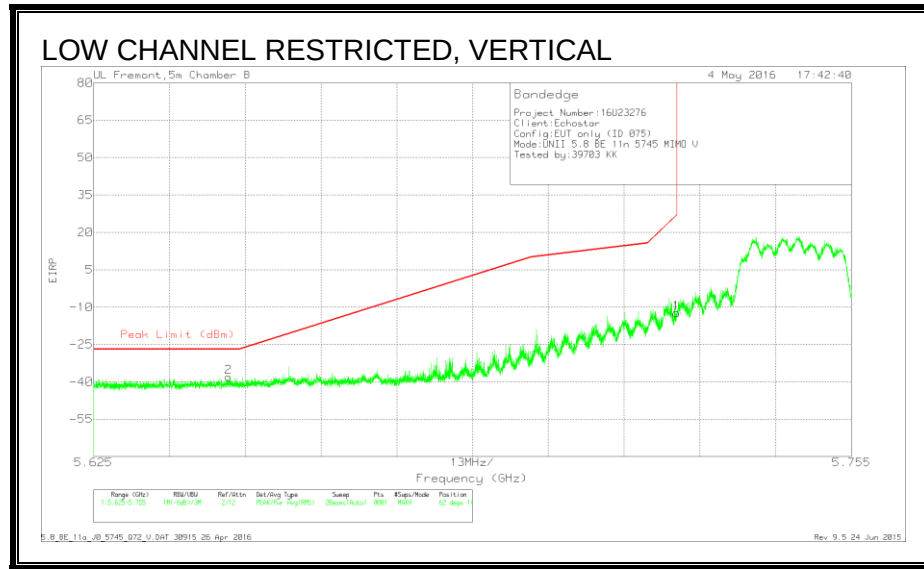
RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.627	-64.59	Pk	34.6	-21.1	11.8	-39.29	-27	-12.29	0	138	H
1	5.725	-37.57	Pk	34.9	-21.7	11.8	-12.57	26.97	-39.54	0	138	H

Pk - Peak detector

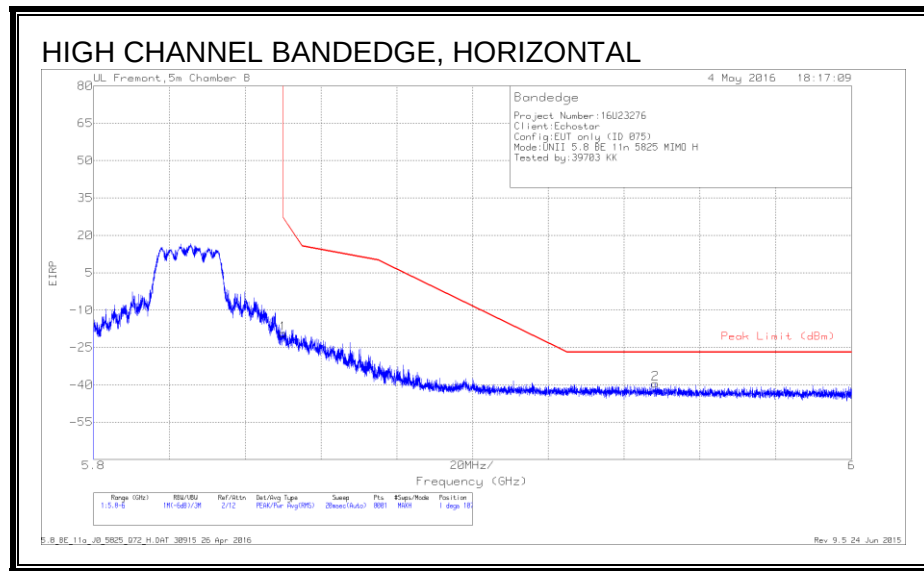


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AFT345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.648	-63.17	Pk	34.7	-21.4	11.8	-38.07	-27	-11.07	62	143	V
1	5.725	-37.39	Pk	34.9	-21.7	11.8	-12.39	26.97	-39.36	62	143	V

Pk - Peak detector

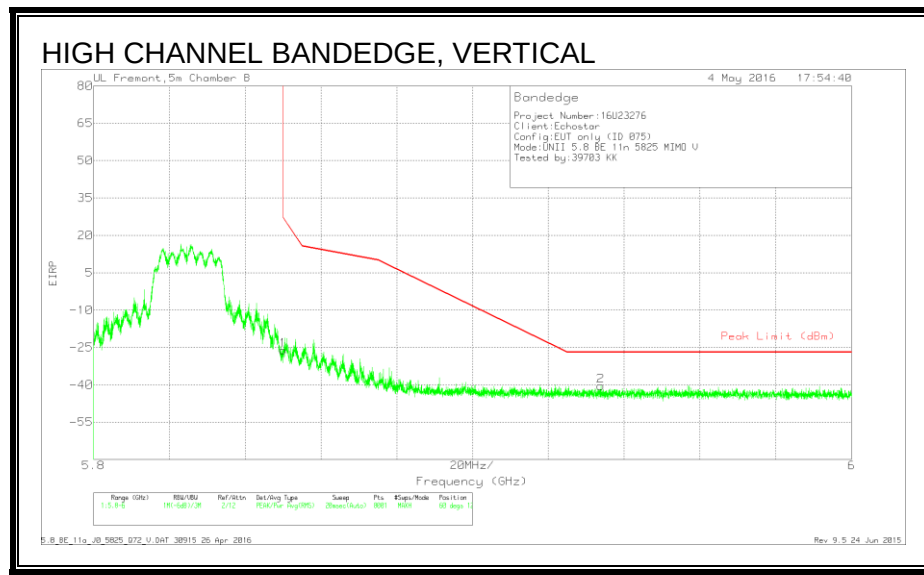
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AFT345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-44.82	Pk	35.2	-21.6	11.8	-19.42	26.94	-46.36	1	107	H
2	5.948	-65.23	Pk	35.2	-21.2	11.8	-39.43	-27	-12.43	1	107	H

Pk - Peak detector

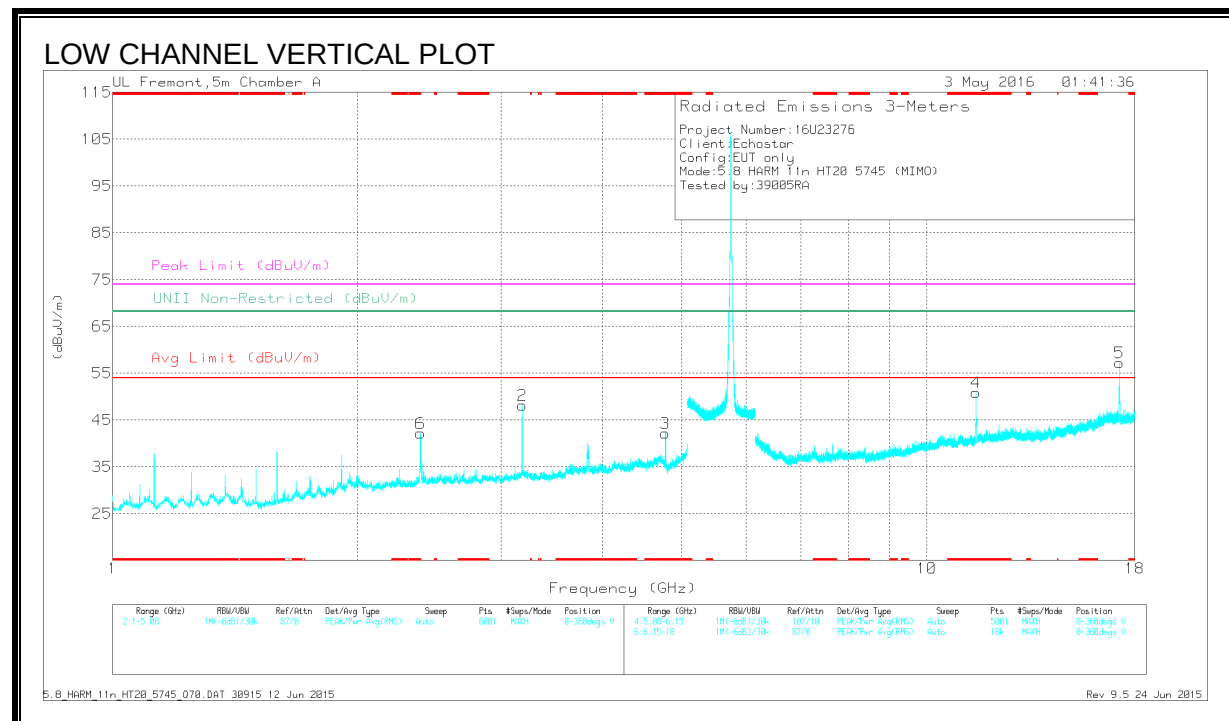
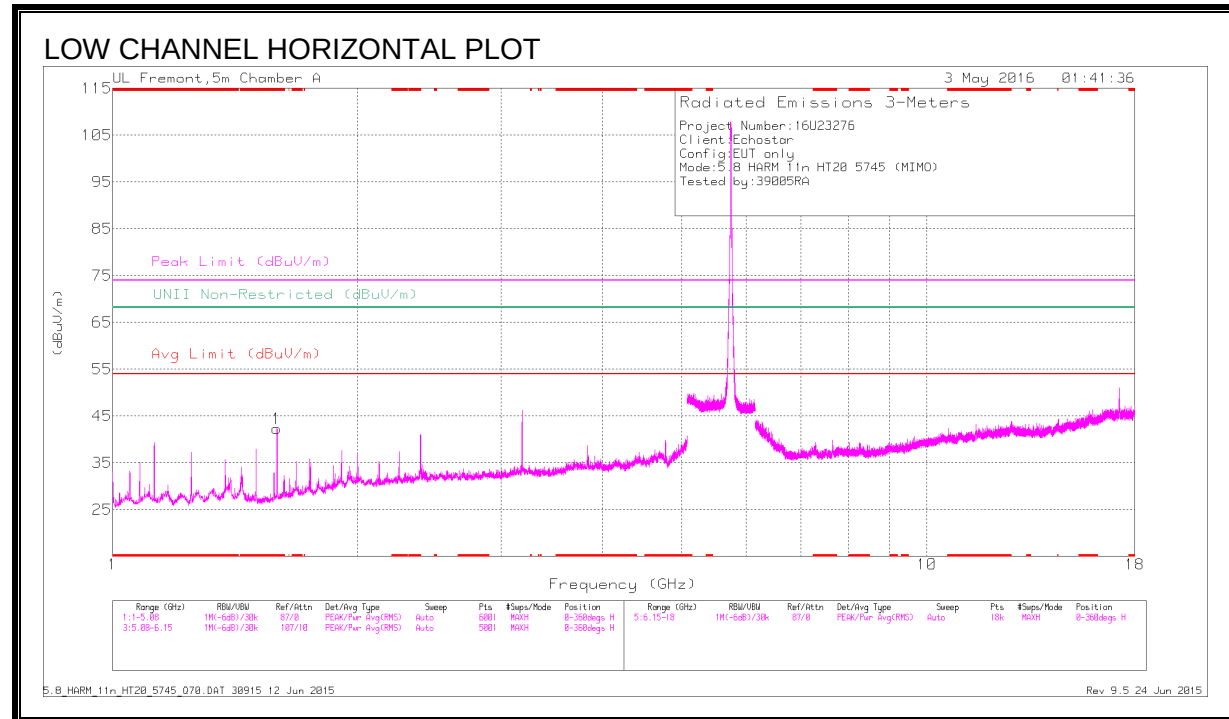


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-51.52	Pk	35.2	-21.6	11.8	-26.12	26.94	-53.06	60	129	V
2	5.934	-65.99	Pk	35.3	-21.5	11.8	-40.39	-27	-13.39	60	129	V

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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	* 1.592	49.48	Pk	28.1	-35.3	0	42.28	-	-	74	-31.72	68.2	-25.92	0-360	101	H
3	* 4.775	39.9	Pk	33.9	-31.6	0	42.2	-	-	74	-31.8	68.2	-26	0-360	200	V
6	* 2.389	44.6	Pk	32.1	-34.5	0	42.2	-	-	74	-31.8	68.2	-26	0-360	101	V
4	* 11.489	38.4	Pk	38.3	-25.8	0	50.9	-	-	74	-23.1	68.2	-17.3	0-360	199	V
2	3.183	48.21	Pk	33	-33.1	0	48.11	-	-	74	-25.89	68.2	-20.09	0-360	101	V
5	17.236	39.12	Pk	41.3	-23.2	0	57.22	-	-	74	-16.78	68.2	-10.98	0-360	199	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

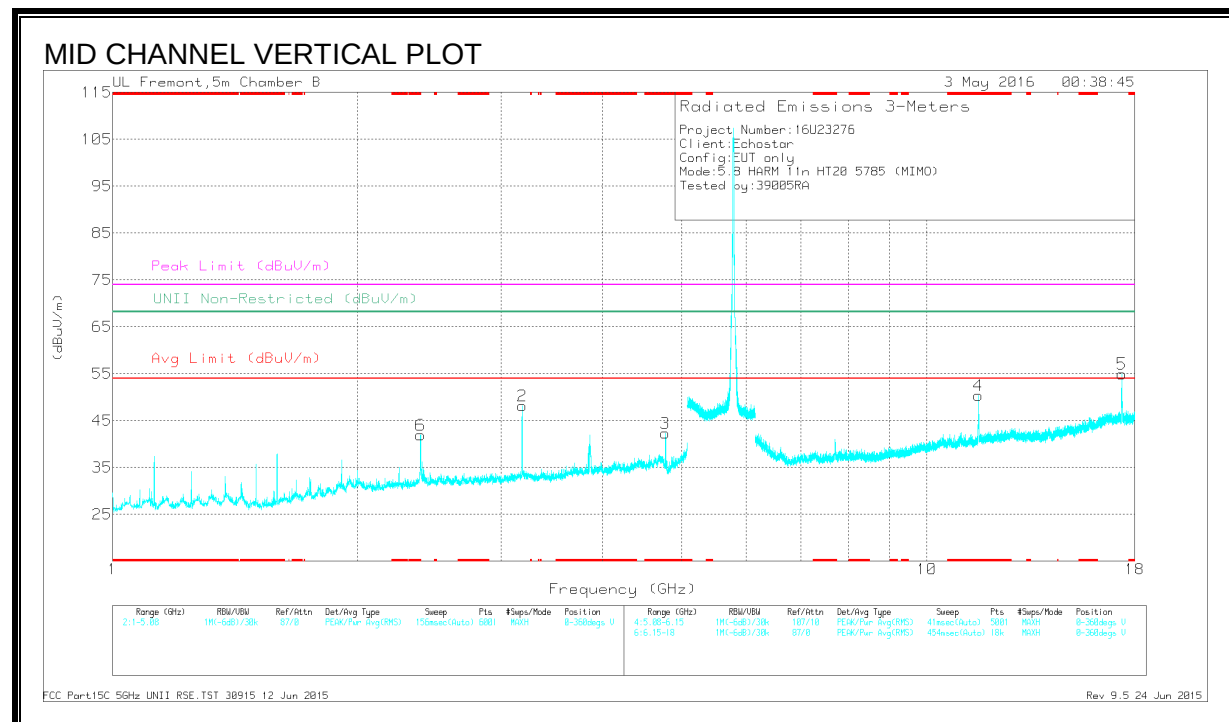
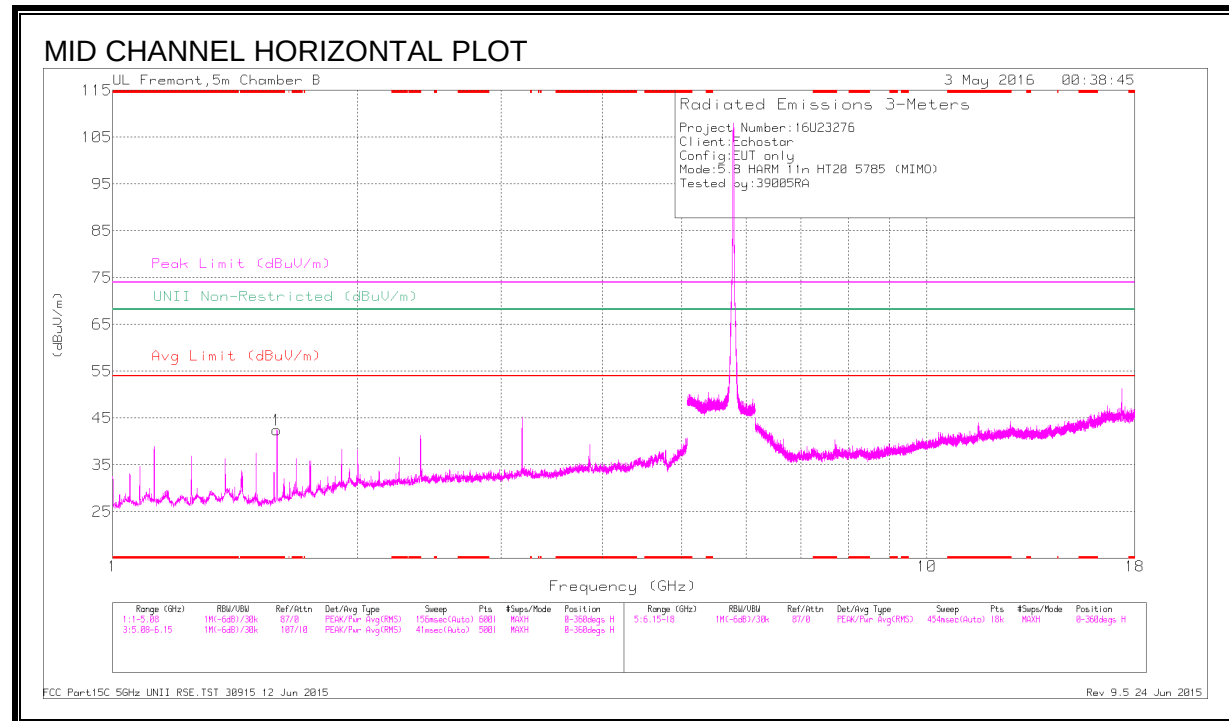
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
* 1.592	54.59	PK-U	28.1	-35.3	0	47.39	-	-	74	-26.61	-	-	309	103	H
* 1.592	48.89	ADR	28.1	-35.3	.22	41.91	54	-12.09	-	-	-	-	309	103	H
* 4.777	47.99	PK-U	33.9	-31.6	0	50.29	-	-	74	-23.71	-	-	11	224	V
* 4.776	38.2	ADR	33.9	-31.6	.22	40.72	54	-13.28	-	-	-	-	11	224	V
* 2.388	56.14	PK-U	32.1	-34.5	0	53.74	-	-	74	-20.26	-	-	228	125	V
* 2.388	40.99	ADR	32.1	-34.5	.22	38.81	54	-15.19	-	-	-	-	228	125	V
* 11.489	45.56	PK-U	38.3	-25.8	0	58.06	-	-	74	-15.94	-	-	38	281	V
* 11.489	33.14	ADR	38.3	-25.8	.22	45.86	54	-8.14	-	-	-	-	38	281	V
3.184	53.58	PK-U	33	-33.1	0	53.48	-	-	-	-	68.2	-14.72	356	103	V
17.236	46.24	PK-U	41.3	-23.2	0	64.34	-	-	-	-	68.2	-3.86	354	375	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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	* 1.592	49.71	Pk	28.1	-35.3	0	42.51	-	-	74	-31.49	68.2	-25.69	0-360	101	H
3	* 4.775	40	Pk	33.9	-31.6	0	42.3	-	-	74	-31.7	68.2	-25.9	0-360	200	V
6	* 2.389	44.36	Pk	32.1	-34.5	0	41.96	-	-	74	-32.04	68.2	-26.24	0-360	101	V
4	* 11.569	36.9	Pk	38.4	-24.9	0	50.4	-	-	74	-23.6	68.2	-17.8	0-360	199	V
2	3.183	48.25	Pk	33	-33.1	0	48.15	-	-	74	-25.85	68.2	-20.05	0-360	101	V
5	17.358	36.48	Pk	41.3	-22.8	0	54.98	-	-	74	-19.02	68.2	-13.22	0-360	101	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

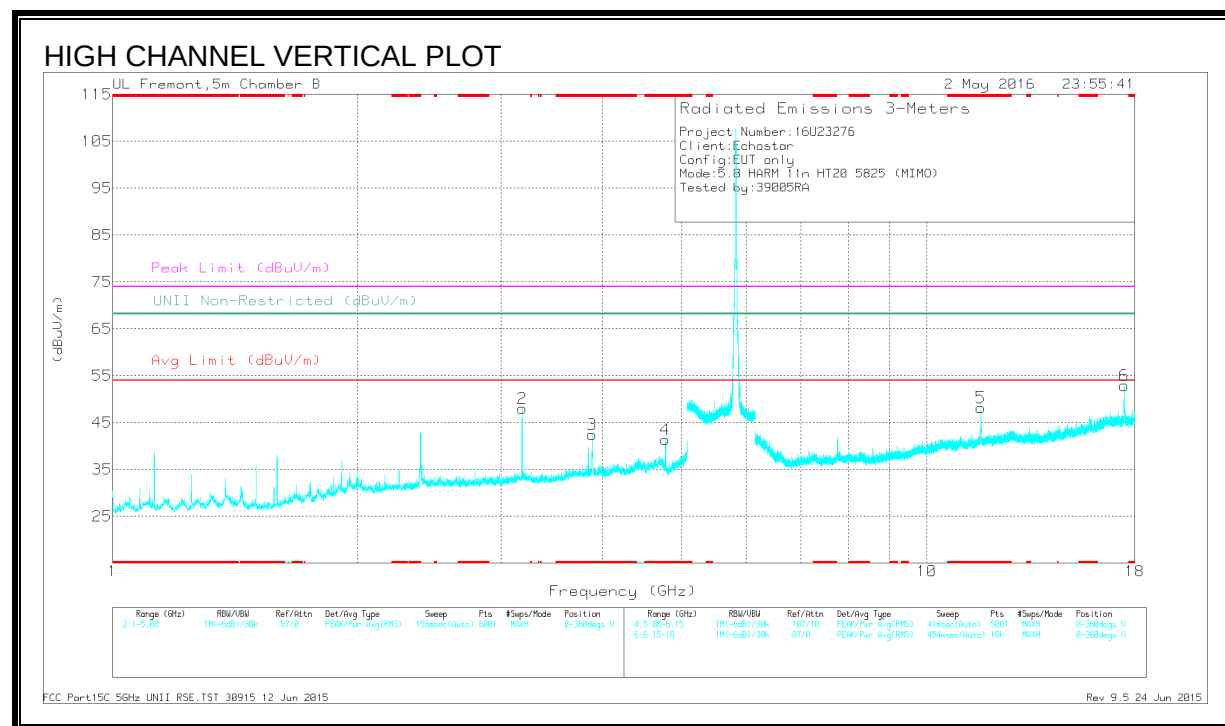
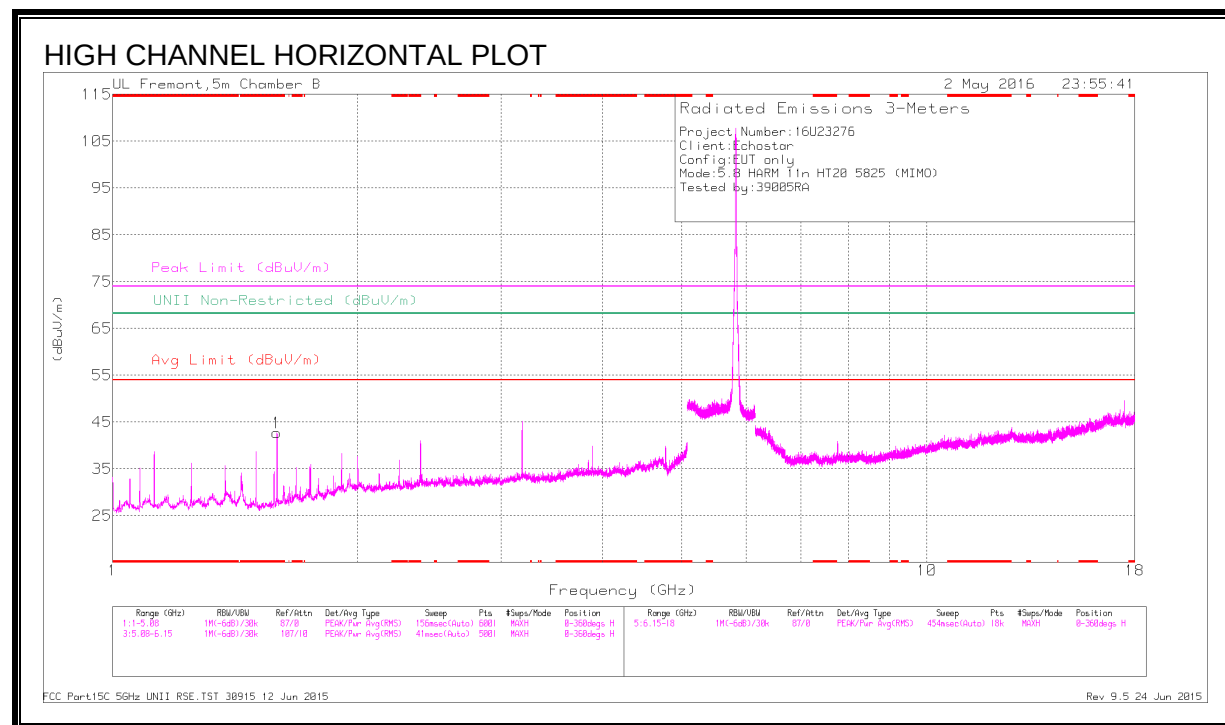
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
* 1.592	54.14	PK-U	28.1	-35.3	0	46.94	-	-	74	-27.06	-	-	311	189	H
* 1.592	47.29	ADR	28.1	-35.3	.22	40.31	54	-13.69	-	-	-	-	311	189	H
* 4.776	47.73	PK-U	33.9	-31.6	0	50.03	-	-	74	-23.97	-	-	40	281	V
* 4.776	37.71	ADR	33.9	-31.6	.22	40.23	54	-13.77	-	-	-	-	40	281	V
* 2.388	57.15	PK-U	32.1	-34.5	0	54.75	-	-	74	-19.25	-	-	216	214	V
* 2.388	39.79	ADR	32.1	-34.5	.22	37.61	54	-16.39	-	-	-	-	216	214	V
* 11.57	46.19	PK-U	38.4	-24.9	0	59.69	-	-	74	-14.31	-	-	33	215	V
* 11.57	33.27	ADR	38.4	-24.9	.22	46.99	54	-7.01	-	-	-	-	33	215	V
3.184	53.5	PK-U	33	-33.1	0	53.4	-	-	-	-	68.2	-14.8	338	179	V
17.358	46.59	PK-U	41.3	-22.8	0	65.09	-	-	-	-	68.2	-3.11	357	122	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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	* 1.592	49.94	Pk	28.1	-35.3	0	42.74	-	-	74	-31.26	68.2	-25.46	0-360	101	H
3	* 3.883	41.92	Pk	33.3	-32.8	0	42.42	-	-	74	-31.58	68.2	-25.78	0-360	101	V
4	* 4.775	39.08	Pk	33.9	-31.6	0	41.38	-	-	74	-32.62	68.2	-26.82	0-360	199	V
5	* 11.649	34.83	Pk	38.5	-25.1	0	48.23	-	-	74	-25.77	68.2	-19.97	0-360	199	V
2	3.184	48.05	Pk	33	-33	0	48.05	-	-	74	-25.95	68.2	-20.15	0-360	101	V
6	17.477	34.41	Pk	41.3	-22.8	0	52.91	-	-	74	-21.09	68.2	-15.29	0-360	199	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
* 1.592	54.31	PK-U	28.1	-35.3	0	47.11	-	-	74	-26.89	-	-	310	103	H
* 1.592	48.98	ADR	28.1	-35.3	.22	42	54	-12	-	-	-	-	310	103	H
* 3.883	50.31	PK-U	33.3	-32.8	0	50.81	-	-	74	-23.19	-	-	10	193	V
* 3.883	41.82	ADR	33.3	-32.8	.22	42.54	54	-11.46	-	-	-	-	10	193	V
* 4.776	47.94	PK-U	33.9	-31.6	0	50.24	-	-	74	-23.76	-	-	9	231	V
* 4.776	37.78	ADR	33.9	-31.6	.22	40.3	54	-13.7	-	-	-	-	9	231	V
* 11.65	46.5	PK-U	38.5	-25.1	0	59.9	-	-	74	-14.1	-	-	36	163	V
* 11.65	32.6	ADR	38.5	-25.1	.22	46.22	54	-7.78	-	-	-	-	36	163	V
3.184	52.66	PK-U	33	-33.1	0	52.56	-	-	-	-	68.2	-15.64	357	101	V
17.475	47.41	PK-U	41.3	-22.9	0	65.81	-	-	-	-	68.2	-2.39	23	383	V

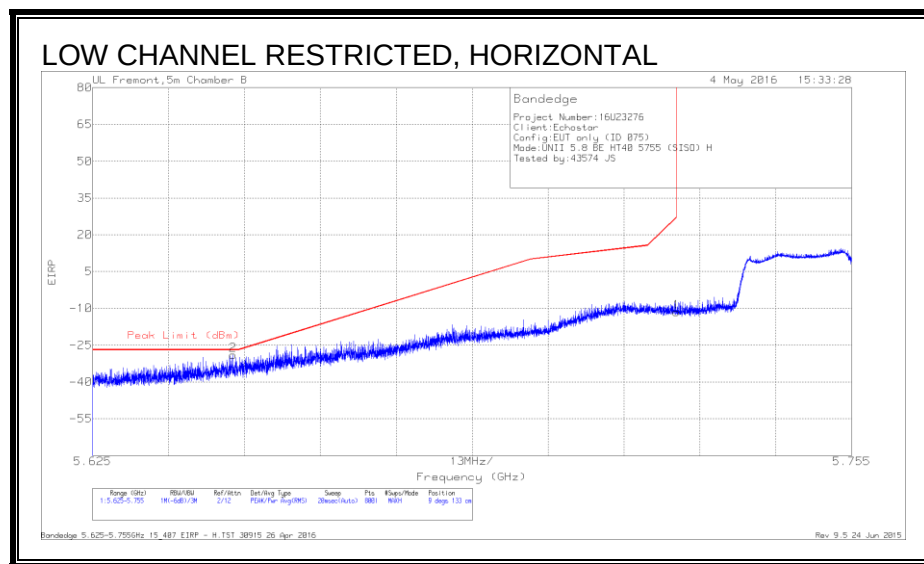
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

10.6. TX ABOVE 1 GHz 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND

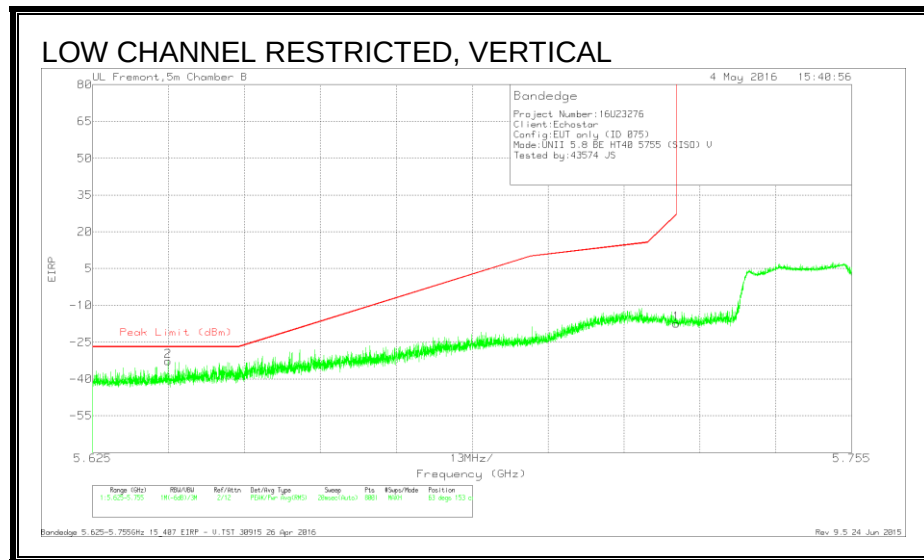
RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.649	-53.97	Pk	34.7	-21.5	11.8	0	-28.97	-27	-1.97	9	133	H
1	5.725	-36.58	Pk	34.9	-21.7	11.8	0	-11.58	26.97	-38.55	9	133	H

Pk - Peak detector

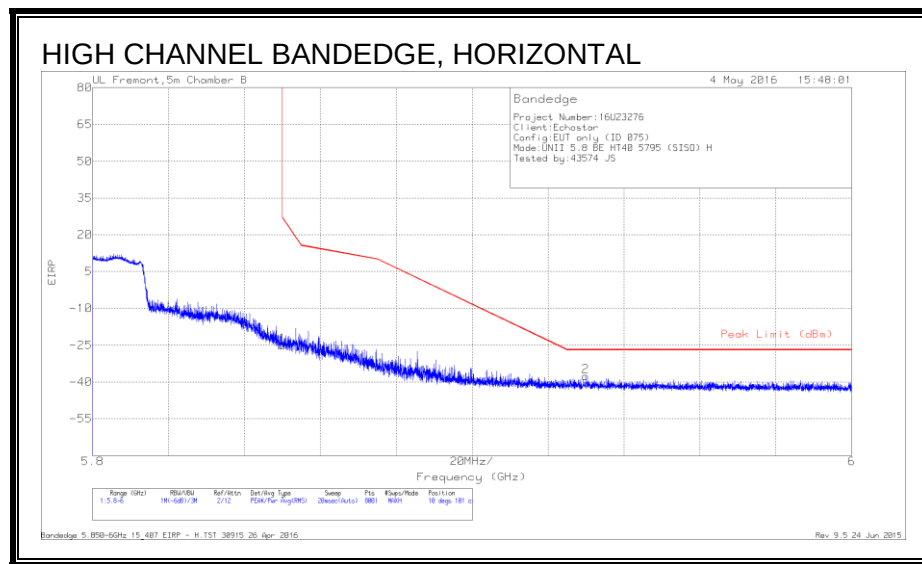


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/Fi tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.638	-57.83	Pk	34.7	-21.4	11.8	0	-32.73	-27	-5.73	63	153	V
1	5.725	-42.32	Pk	34.9	-21.7	11.8	0	-17.32	26.97	-44.29	63	153	V

Pk - Peak detector

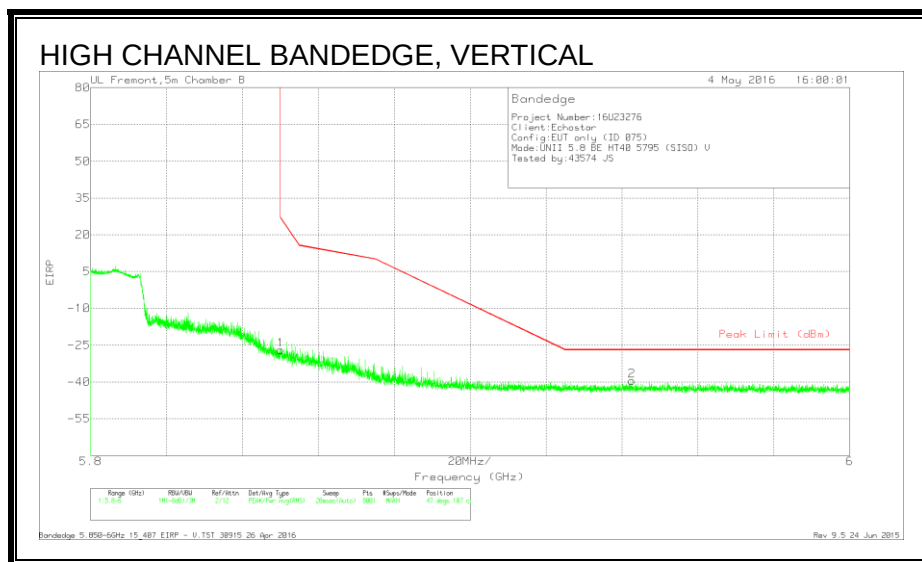
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-50.53	Pk	35.2	-21.6	11.8	0	-25.13	26.94	-52.07	10	101	H
2	5.93	-63.25	Pk	35.3	-21.5	11.8	0	-37.65	-27	-10.65	10	101	H

Pk - Peak detector

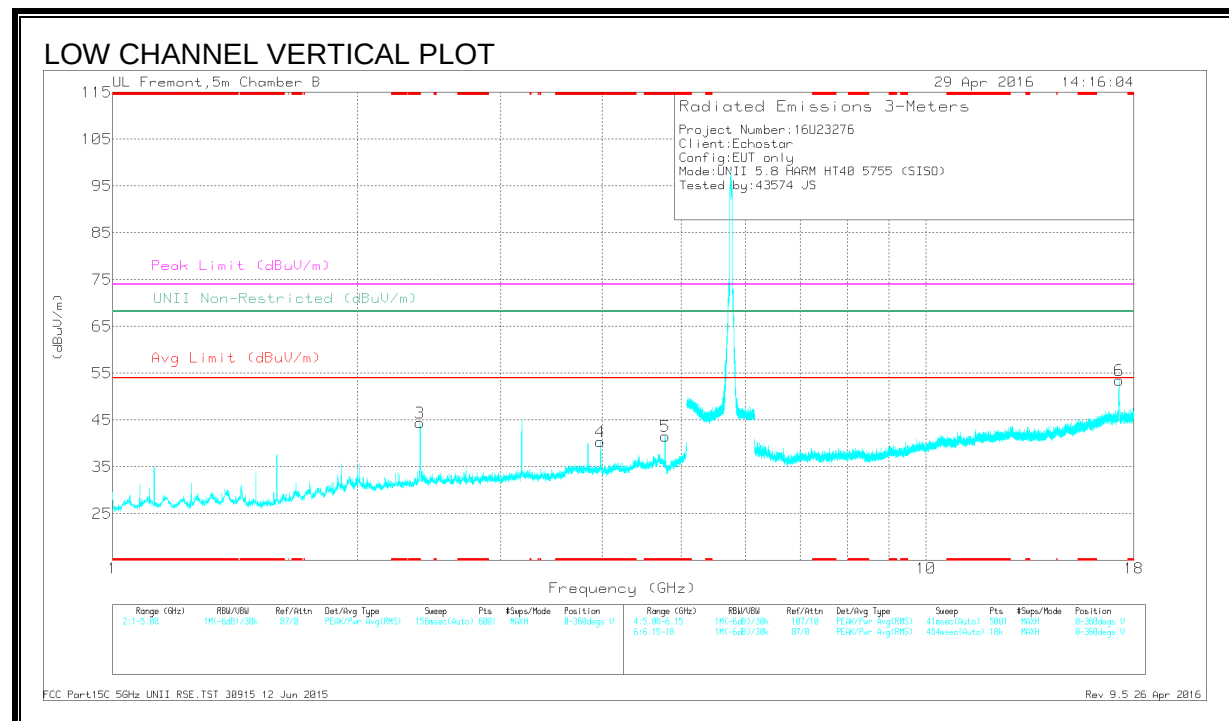
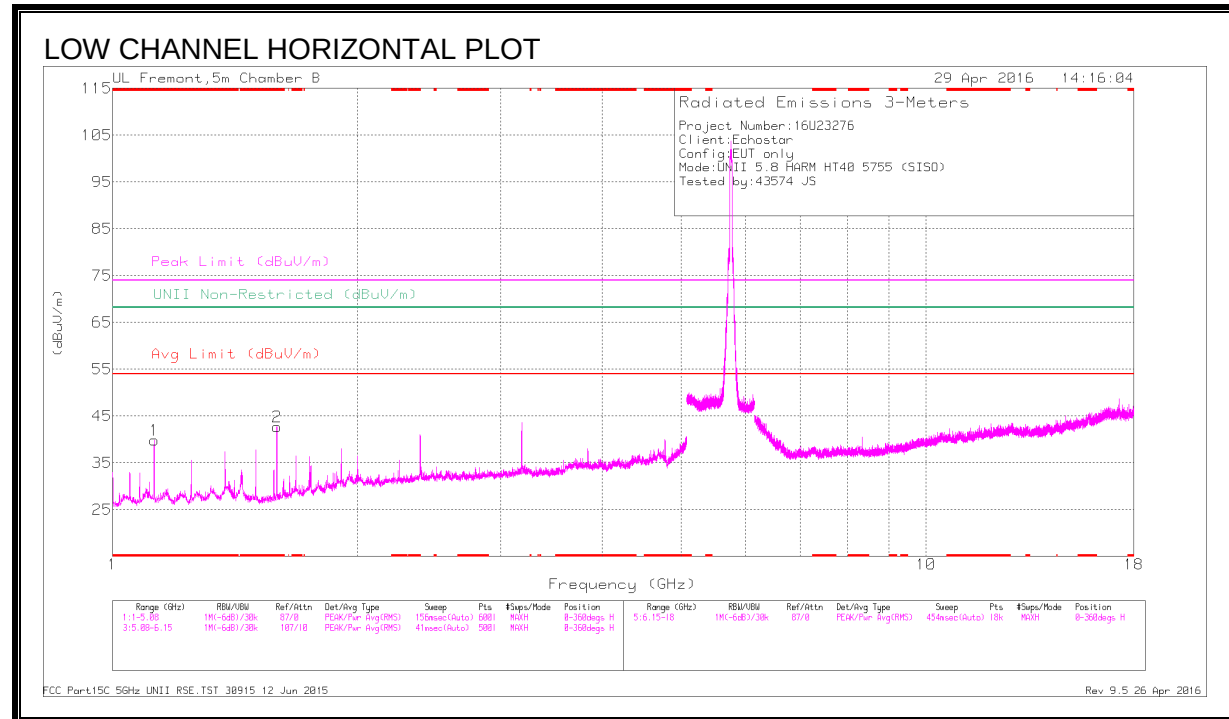


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-52.42	Pk	35.2	-21.6	11.8	0	-27.02	26.94	-53.96	47	107	V
2	5.943	-65.35	Pk	35.3	-21.3	11.8	0	-39.55	-27	-12.55	47	107	V

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 1.125	47.41	Pk	28	-35.5	0	39.91	-	-	74	-34.09	68.2	-28.29	0-360	101	H
2	* 1.592	49.89	Pk	28.1	-35.3	0	42.69	-	-	74	-31.31	68.2	-25.51	0-360	199	H
3	* 2.388	46.81	Pk	32.1	-34.5	0	44.41	-	-	74	-29.59	68.2	-23.79	0-360	101	V
4	* 3.98	38.75	Pk	33.3	-31.7	0	40.35	-	-	74	-33.65	68.2	-27.85	0-360	199	V
5	* 4.777	39.21	Pk	33.9	-31.6	0	41.51	-	-	74	-32.49	68.2	-26.69	0-360	199	V
6	17.255	35.25	Pk	41.3	-23.1	0	53.45	-	-	74	-20.55	68.2	-14.75	0-360	101	V

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

Pk - Peak detector

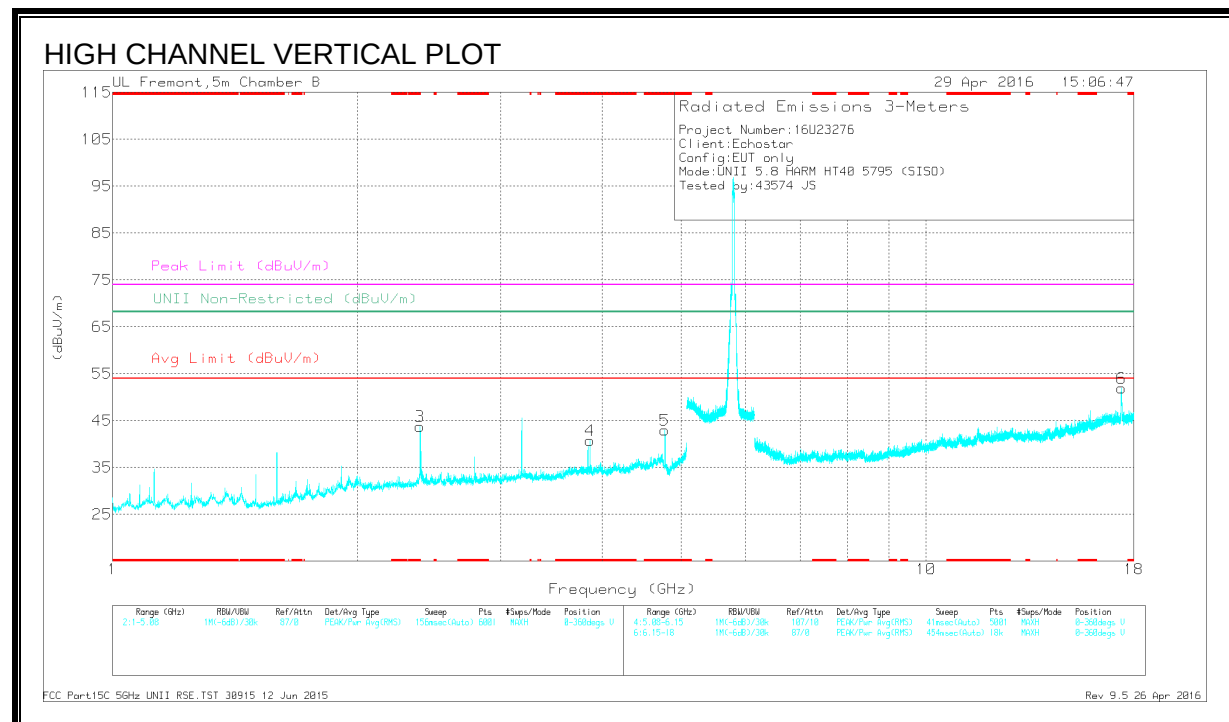
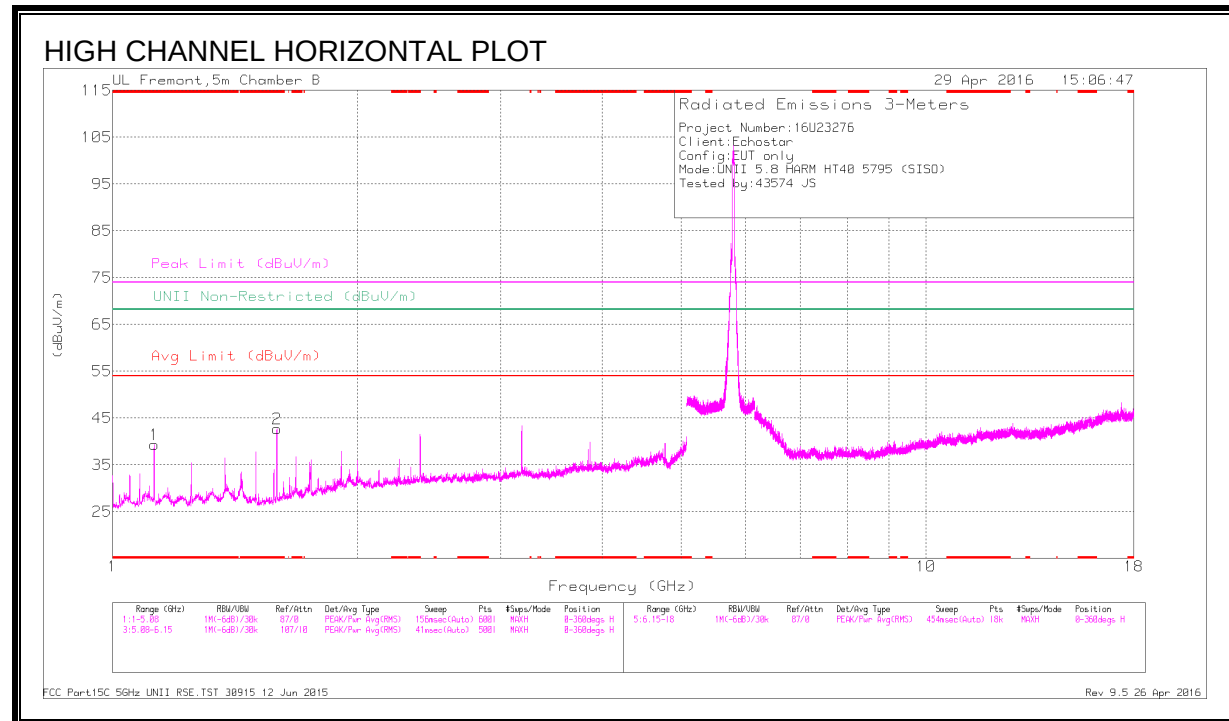
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
* 1.125	50.58	PK-U	28	-35.5	0	43.08	-	-	74	-30.92	-	-	158	162	H
* 1.125	44.49	ADR	28	-35.5	.43	37.42	54	-16.58	-	-	-	-	158	162	H
* 1.592	54.06	PK-U	28.1	-35.3	0	46.86	-	-	74	-27.14	-	-	317	137	H
* 1.592	50.36	ADR	28.1	-35.3	.43	43.59	54	-10.41	-	-	-	-	317	137	H
* 2.388	56.12	PK-U	32.1	-34.5	0	53.72	-	-	74	-20.28	-	-	353	108	V
* 2.388	46.12	ADR	32.1	-34.5	.43	44.15	54	-9.85	-	-	-	-	353	108	V
* 3.98	41.65	PK-U	33.3	-31.7	0	43.25	-	-	74	-30.75	-	-	352	319	V
* 3.979	31.55	ADR	33.3	-31.7	.43	33.58	54	-20.42	-	-	-	-	352	319	V
* 4.777	45.52	PK-U	33.9	-31.6	0	47.82	-	-	74	-26.18	-	-	8	233	V
* 4.775	37.98	ADR	33.9	-31.6	.43	40.71	54	-13.29	-	-	-	-	8	233	V
17.254	42.15	PK-U	41.3	-23.1	0	60.35	-	-	-	-	68.2	-7.85	356	147	V

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

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Psd (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 1.125	46.89	PK	28	-35.5	0	39.39	-	-	74	-34.61	68.2	-28.81	0-360	101	H
2	* 1.592	49.92	PK	28.1	-35.3	0	42.72	-	-	74	-31.28	68.2	-25.48	0-360	101	H
3	* 2.388	46.18	PK	32.1	-34.5	0	43.78	-	-	74	-30.22	68.2	-24.42	0-360	101	V
4	* 3.863	40.33	PK	33.4	-33	0	40.73	-	-	74	-33.27	68.2	-27.47	0-360	199	V
5	* 4.775	40.67	PK	33.9	-31.6	0	42.97	-	-	74	-31.03	68.2	-25.23	0-360	199	V
6	17.39	33.55	PK	41.3	-22.9	0	51.95	-	-	74	-22.05	68.2	-16.25	0-360	101	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr/Psd (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
* 1.125	50.54	PK-U	28	-35.5	0	43.04	-	-	74	-30.96	-	-	164	172	H
* 1.125	43.92	ADR	28	-35.5	.43	36.85	54	-17.15	-	-	-	-	164	172	H
* 1.592	53.86	PK-U	28.1	-35.3	0	46.66	-	-	74	-27.34	-	-	326	167	H
* 1.592	48.91	ADR	28.1	-35.3	.43	42.14	54	-11.86	-	-	-	-	326	167	H
* 2.388	54.75	PK-U	32.1	-34.5	0	52.35	-	-	74	-21.65	-	-	355	143	V
* 2.388	44.76	ADR	32.1	-34.5	.43	42.79	54	-11.21	-	-	-	-	355	143	V
* 3.863	45.19	PK-U	33.4	-33	0	45.59	-	-	74	-28.41	-	-	348	251	V
* 3.863	40.33	ADR	33.4	-33	.43	41.16	54	-12.84	-	-	-	-	348	251	V
* 4.775	45.92	PK-U	33.9	-31.6	0	48.22	-	-	74	-25.78	-	-	8	242	V
* 4.776	38.56	ADR	33.9	-31.6	.43	41.29	54	-12.71	-	-	-	-	8	242	V
17.389	40.14	PK-U	41.3	-22.9	0	58.54	-	-	-	-	68.2	-9.66	353	122	V

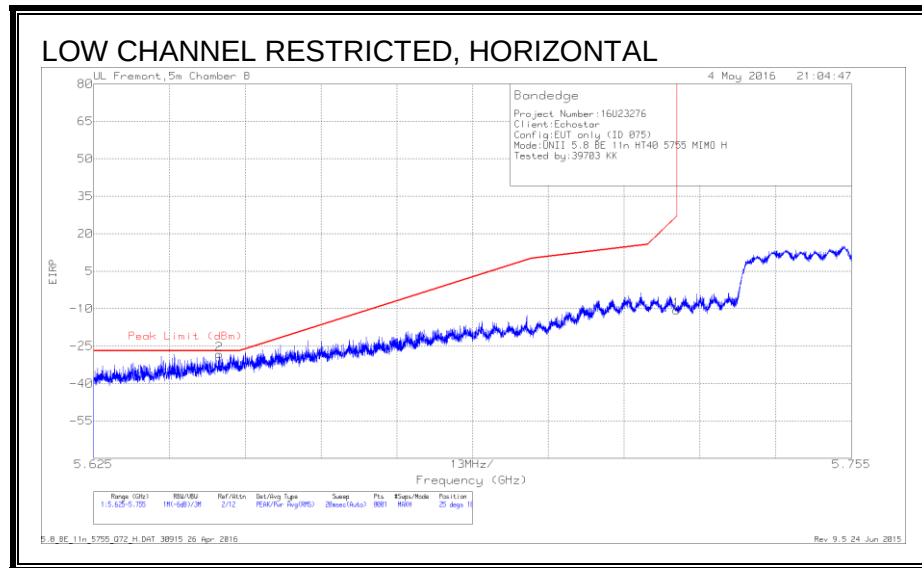
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

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

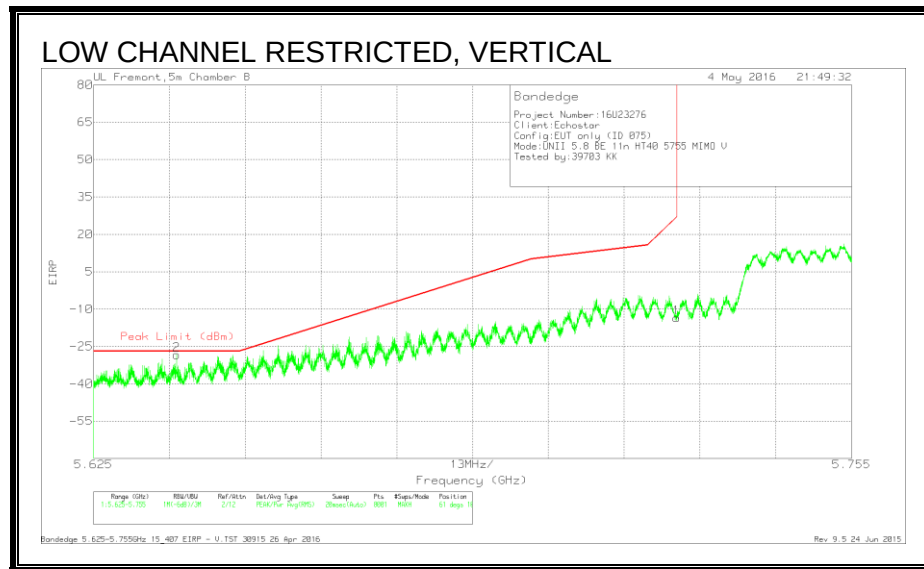
RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.647	-53.27	Pk	34.7	-21.5	11.8	-28.27	-27	-1.27	25	188	H
1	5.725	-35.57	Pk	34.9	-21.7	11.8	-10.57	26.97	-37.54	25	188	H

Pk - Peak detector

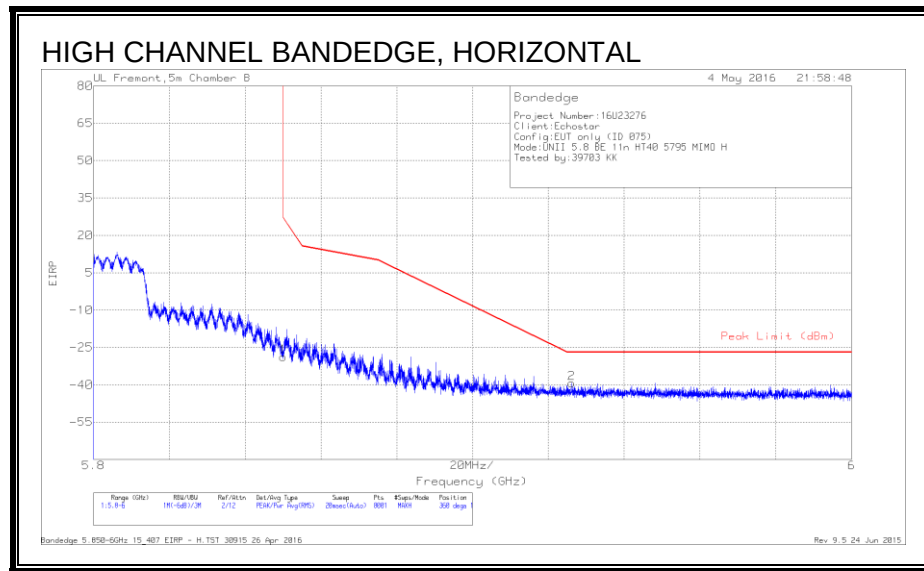


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AFT345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.639	-53.12	Pk	34.7	-21.7	11.8	-28.32	-27	-1.32	61	103	V
1	5.725	-38.49	Pk	34.9	-21.7	11.8	-13.49	26.97	-40.46	61	103	V

Pk - Peak detector

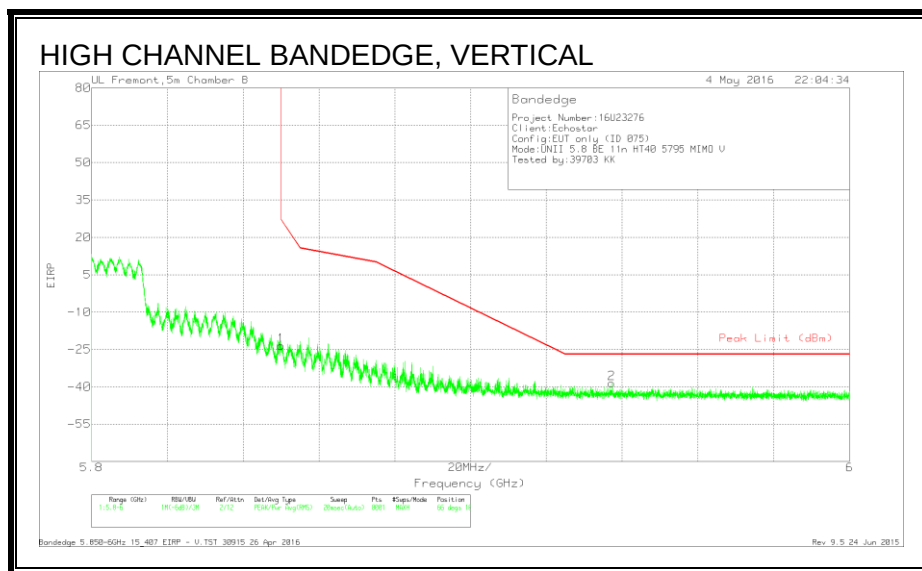
AUTHORIZED BANDEGE (HIGH CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AFT345 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-54.15	Pk	35.2	-21.6	11.8	-28.75	26.94	-55.69	360	124	H
2	5.926	-65.23	Pk	35.3	-21.2	11.8	-39.33	-27	-12.33	360	124	H

Pk - Peak detector

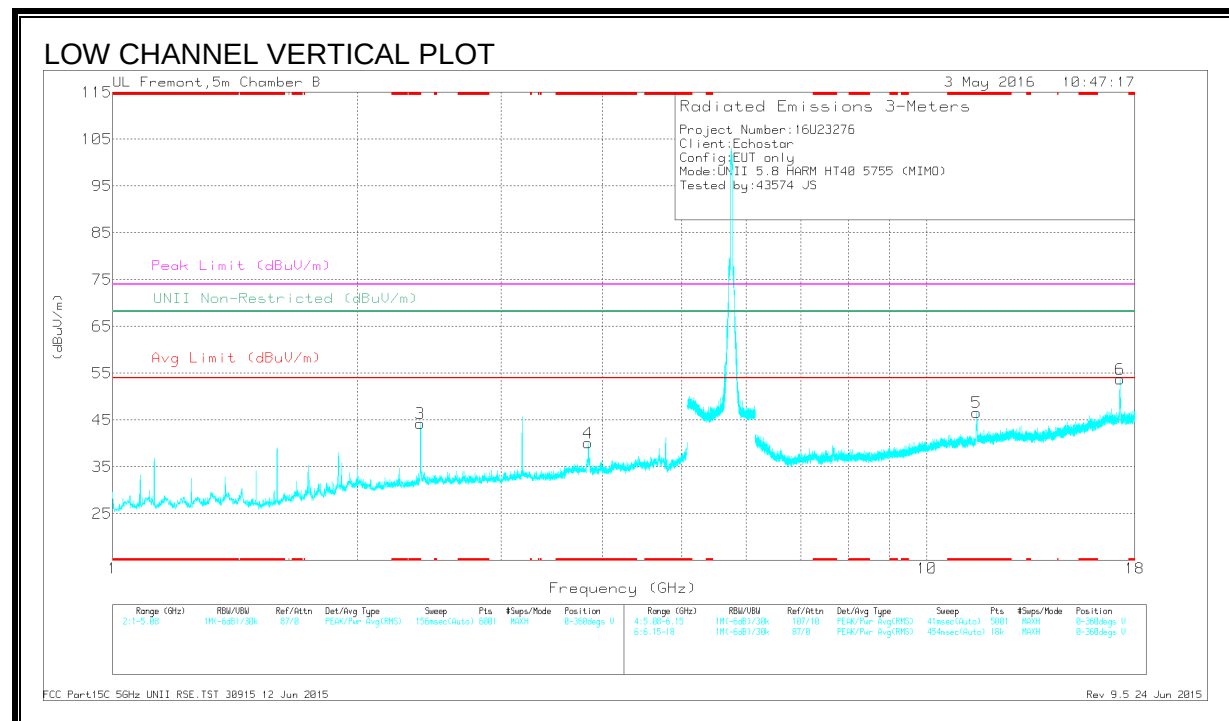
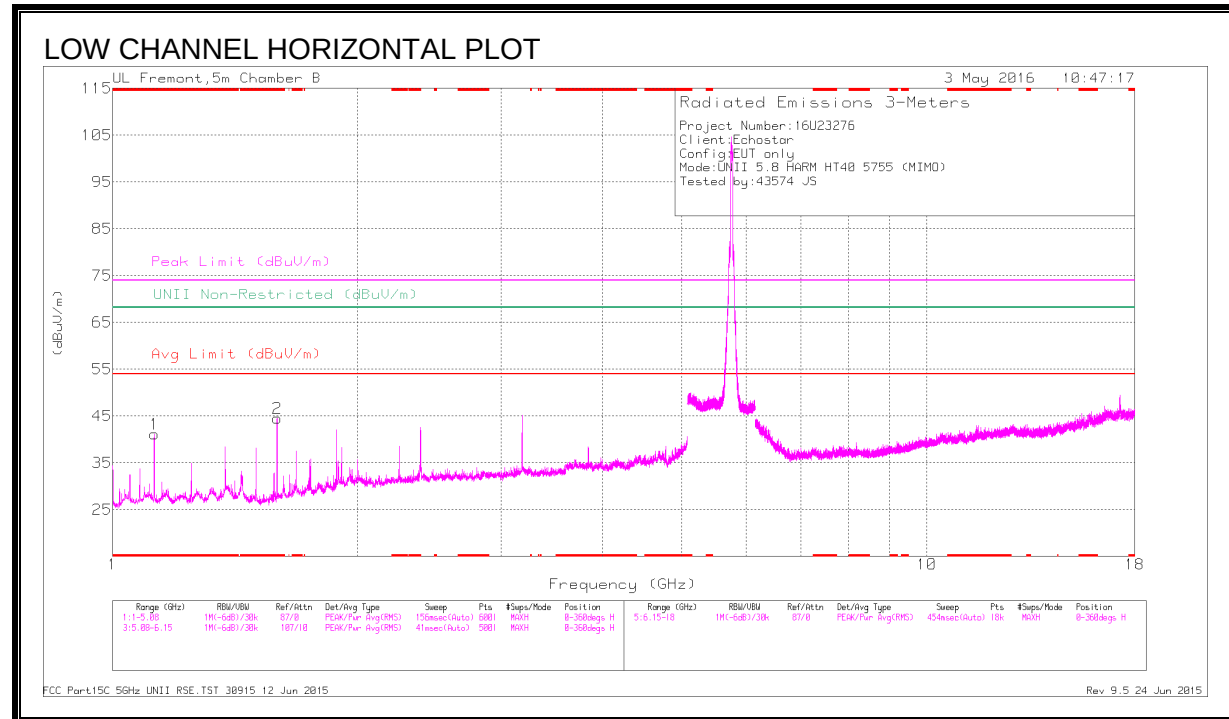


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-48.91	Pk	35.2	-21.6	11.8	-23.51	26.94	-50.45	66	101	V
2	5.937	-64.45	Pk	35.3	-21.2	11.8	-38.55	-27	-11.55	66	101	V

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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	* 1.125	48.65	Pk	28	-35.5	0	41.15	-	-	74	-32.85	68.2	-27.05	0-360	101	H
2	* 1.592	51.7	Pk	28.1	-35.3	0	44.5	-	-	74	-29.5	68.2	-23.7	0-360	101	H
3	* 2.388	46.64	Pk	32.1	-34.5	0	44.24	-	-	74	-29.76	68.2	-23.96	0-360	101	V
4	* 3.837	39.77	Pk	33.4	-33.1	0	40.07	-	-	74	-33.93	68.2	-28.13	0-360	200	V
5	* 11.509	33.99	Pk	38.3	-25.7	0	46.59	-	-	74	-27.41	68.2	-21.61	0-360	199	V
6	17.265	35.61	Pk	41.3	-23.1	0	53.81	-	-	74	-20.19	68.2	-14.39	0-360	199	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

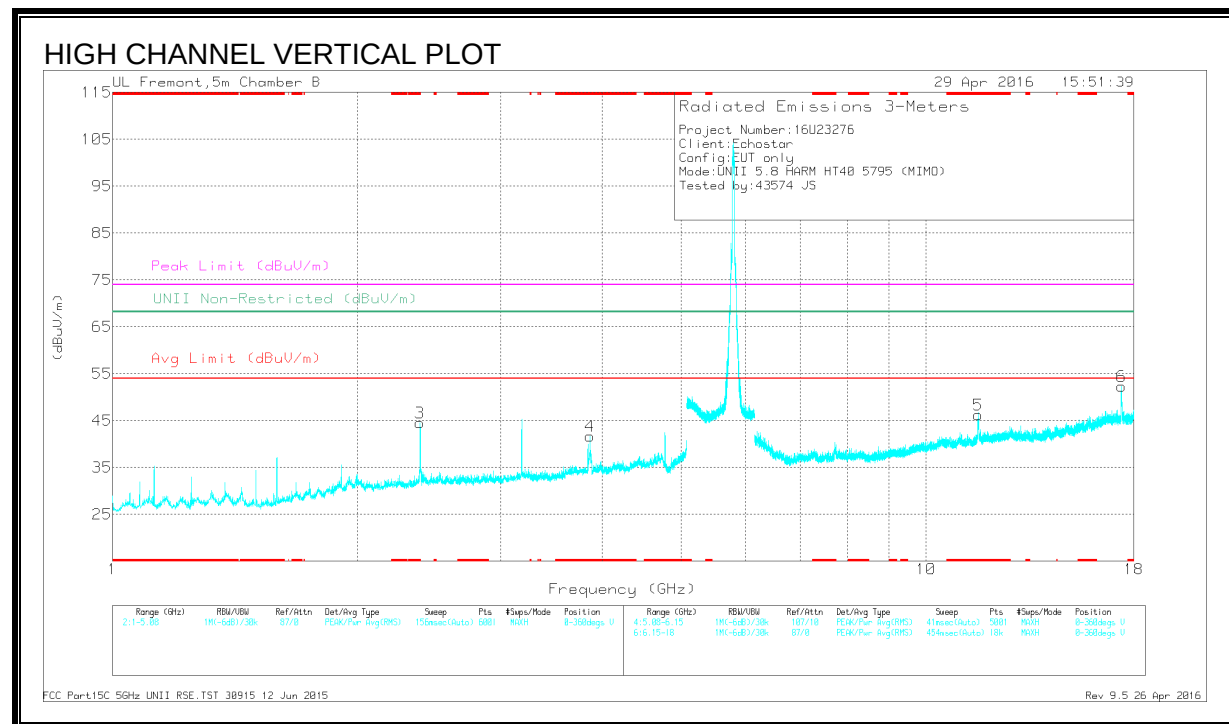
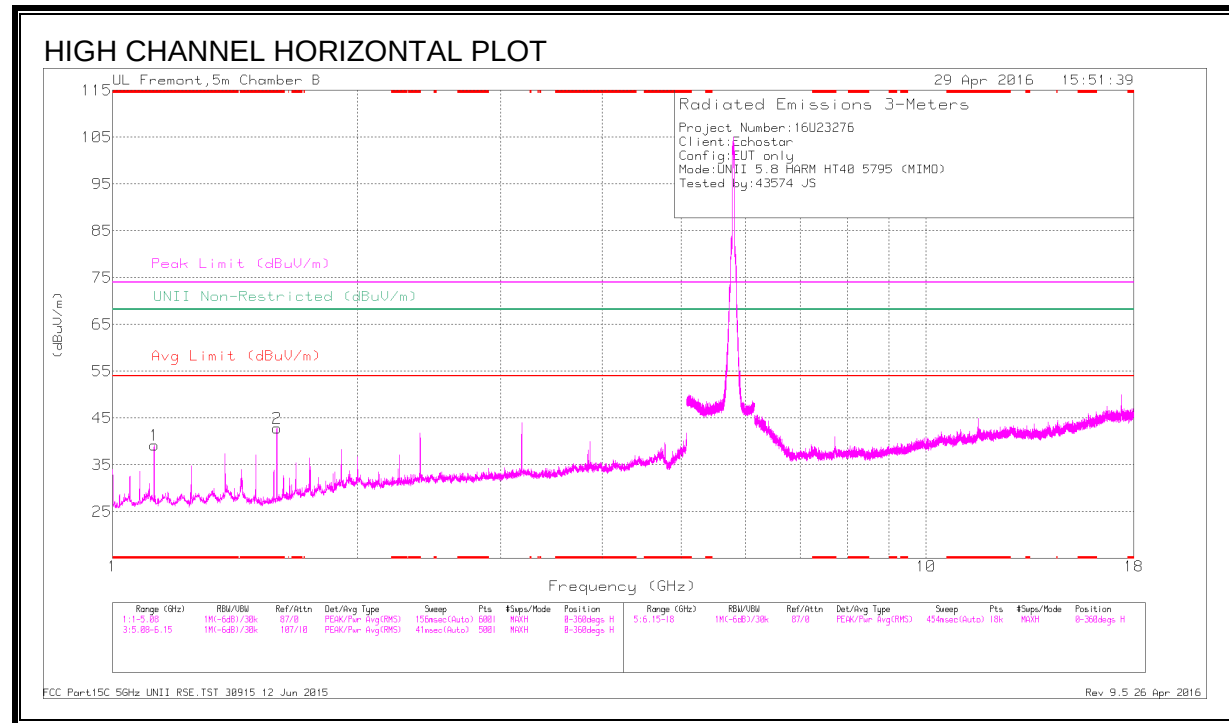
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/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
* 1.125	51.95	PK-U	28	-35.5	0	44.45	-	-	74	-29.55	-	-	262	102	H
* 1.125	45.16	ADR	28	-35.5	.43	38.09	54	-15.91	-	-	-	-	262	102	H
* 1.592	55.53	PK-U	28.1	-35.3	0	48.33	-	-	74	-25.67	-	-	320	161	H
* 1.592	50.76	ADR	28.1	-35.3	.43	43.99	54	-10.01	-	-	-	-	320	161	H
* 2.388	58.07	PK-U	32.1	-34.5	0	55.67	-	-	74	-18.33	-	-	49	157	V
* 2.388	45.98	ADR	32.1	-34.5	.43	44.01	54	-9.99	-	-	-	-	49	157	V
* 3.839	47.25	PK-U	33.4	-33.2	0	47.45	-	-	74	-26.55	-	-	10	170	V
* 3.837	39.75	ADR	33.4	-33.1	.43	40.48	54	-13.52	-	-	-	-	10	170	V
* 11.507	43.46	PK-U	38.3	-25.8	0	55.96	-	-	74	-18.04	-	-	39	219	V
* 11.509	31.59	ADR	38.3	-25.8	.43	44.52	54	-9.48	-	-	-	-	39	219	V
17.266	45.69	PK-U	41.3	-23.1	0	63.89	-	-	-	-	68.2	-4.31	11	385	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 1.125	46.74	PK	28	-35.5	0	39.24	-	-	74	-34.76	68.2	-28.96	0-360	101	H
2	* 1.592	50.07	PK	28.1	-35.3	0	42.87	-	-	74	-31.13	68.2	-25.33	0-360	199	H
3	* 2.388	46.94	PK	32.1	-34.5	0	44.54	-	-	74	-29.46	68.2	-23.66	0-360	101	V
4	* 3.863	41.33	PK	33.4	-33	0	41.73	-	-	74	-32.27	68.2	-26.47	0-360	199	V
5	* 11.59	32.75	PK	38.4	-24.9	0	46.25	-	-	74	-27.75	68.2	-21.95	0-360	199	V
6	17.388	33.88	PK	41.3	-22.9	0	52.28	-	-	74	-21.72	68.2	-15.92	0-360	101	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U/NII Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
* 1.125	50.64	PK-U	28	-35.5	0	43.14	-	-	74	-30.86	-	-	159	172	H
* 1.125	43.41	ADR	28	-35.5	.43	36.34	54	-17.66	-	-	-	-	159	172	H
* 1.592	54.41	PK-U	28.1	-35.3	0	47.21	-	-	74	-26.79	-	-	316	136	H
* 1.592	50.17	ADR	28.1	-35.3	.43	43.4	54	-10.6	-	-	-	-	316	136	H
* 2.388	56.17	PK-U	32.1	-34.5	0	53.77	-	-	74	-20.23	-	-	350	113	V
* 2.388	45.55	ADR	32.1	-34.5	.43	43.58	54	-10.42	-	-	-	-	350	113	V
* 3.863	44.99	PK-U	33.4	-33	0	45.39	-	-	74	-28.61	-	-	349	185	V
* 3.863	39.51	ADR	33.4	-33	.43	40.34	54	-13.66	-	-	-	-	349	185	V
* 11.59	40.46	PK-U	38.4	-24.9	0	53.96	-	-	74	-20.04	-	-	25	179	V
* 11.59	29.06	ADR	38.4	-24.9	.43	42.99	54	-11.01	-	-	-	-	25	179	V
17.388	42.75	PK-U	41.3	-22.9	0	61.15	-	-	-	-	68.2	-7.05	23	372	V

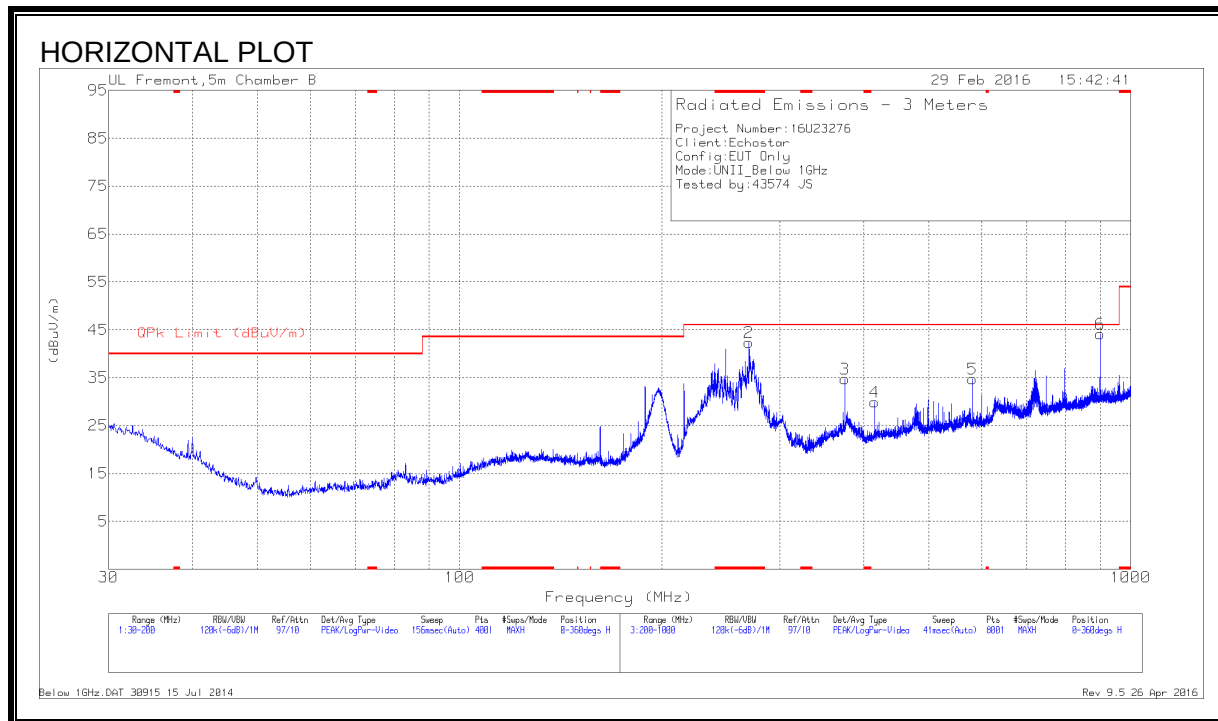
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

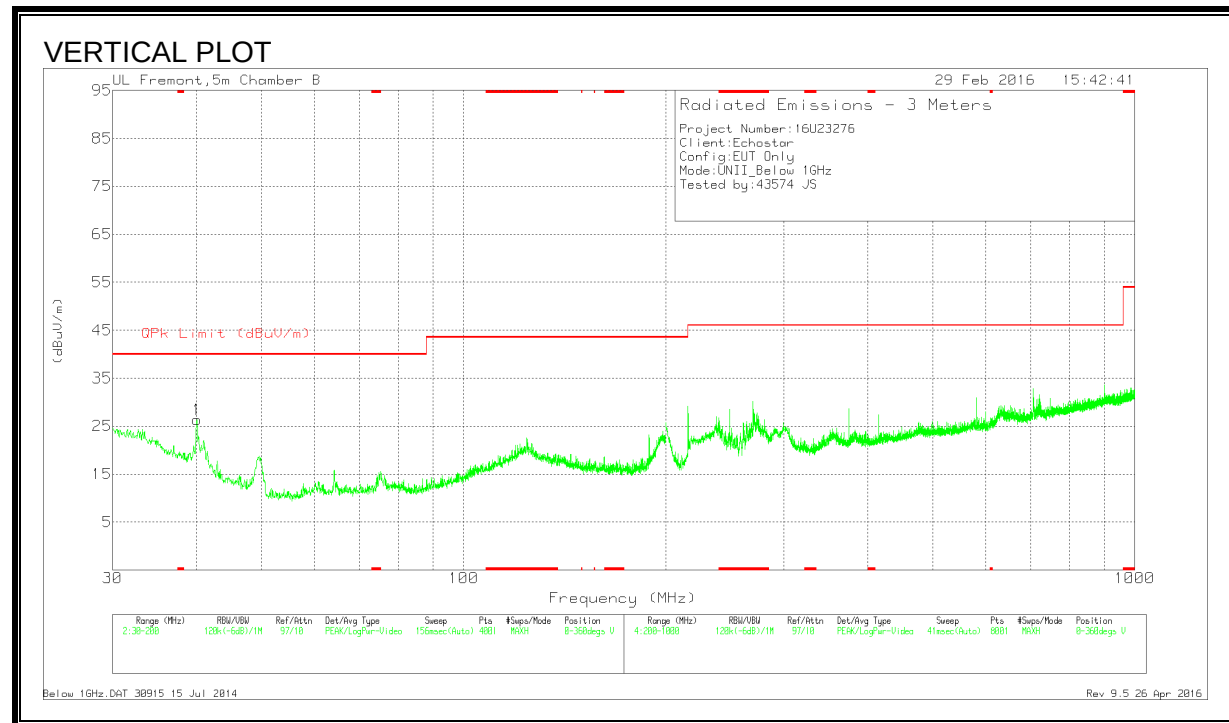
ADR - U-NII AD primary method, RMS average

10.8. WORST-CASE BELOW 1 GHz

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



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



DATA

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	* 270	51.71	Pk	17.1	-26.4	42.41	46.02	-3.61	0-360	101	H
1	40.0725	37.21	Pk	17.8	-28.7	26.31	40	-13.69	0-360	101	V
3	375	42	Pk	18.9	-26.2	34.7	46.02	-11.32	0-360	101	H
4	415.4	36.08	Pk	20.1	-26.3	29.88	46.02	-16.14	0-360	101	H
5	581.5	38.13	Pk	22.6	-26	34.73	46.02	-11.29	0-360	199	H
6	900	41.51	Pk	26.4	-23.8	44.11	46.02	-1.91	0-360	101	H

Pk - Peak detector

Radiated Emissions

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
* 270.011	50.91	Qp	17.1	-26.4	41.61	46.02	-4.41	228	110	H
900.011	40.9	Qp	26.4	-23.8	43.5	46.02	-2.52	189	101	H

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Qp - Quasi-Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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.

TEST PROCEDURE

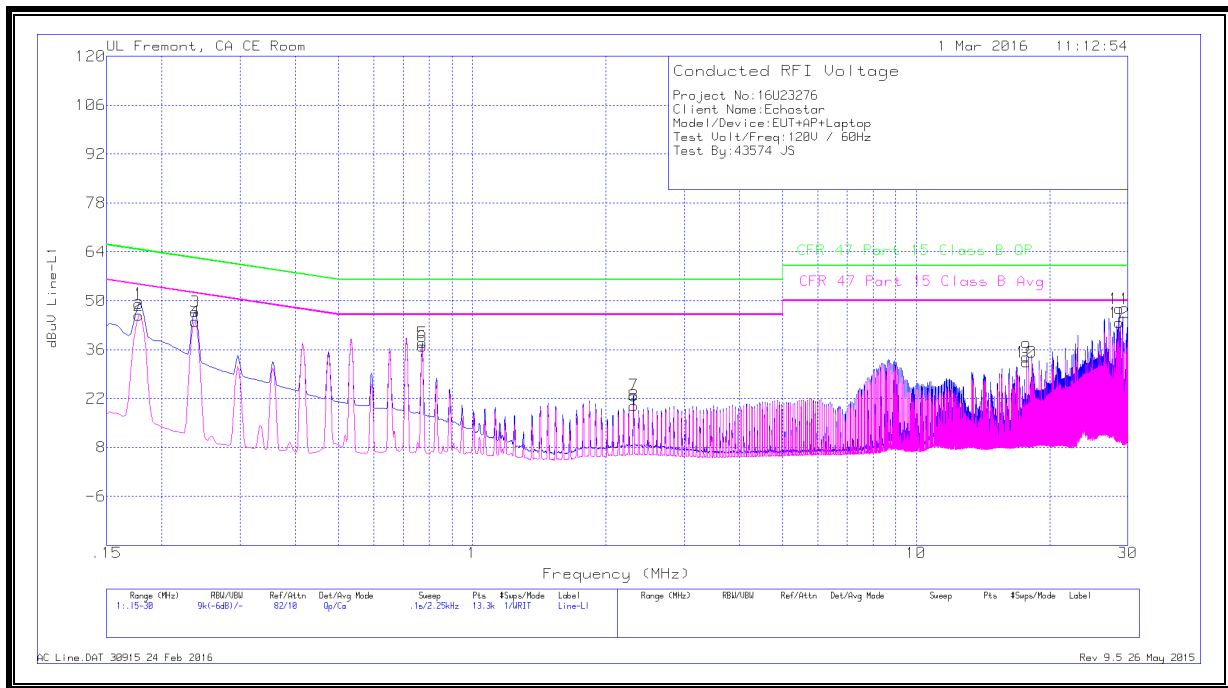
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

LINE 1 RESULTS



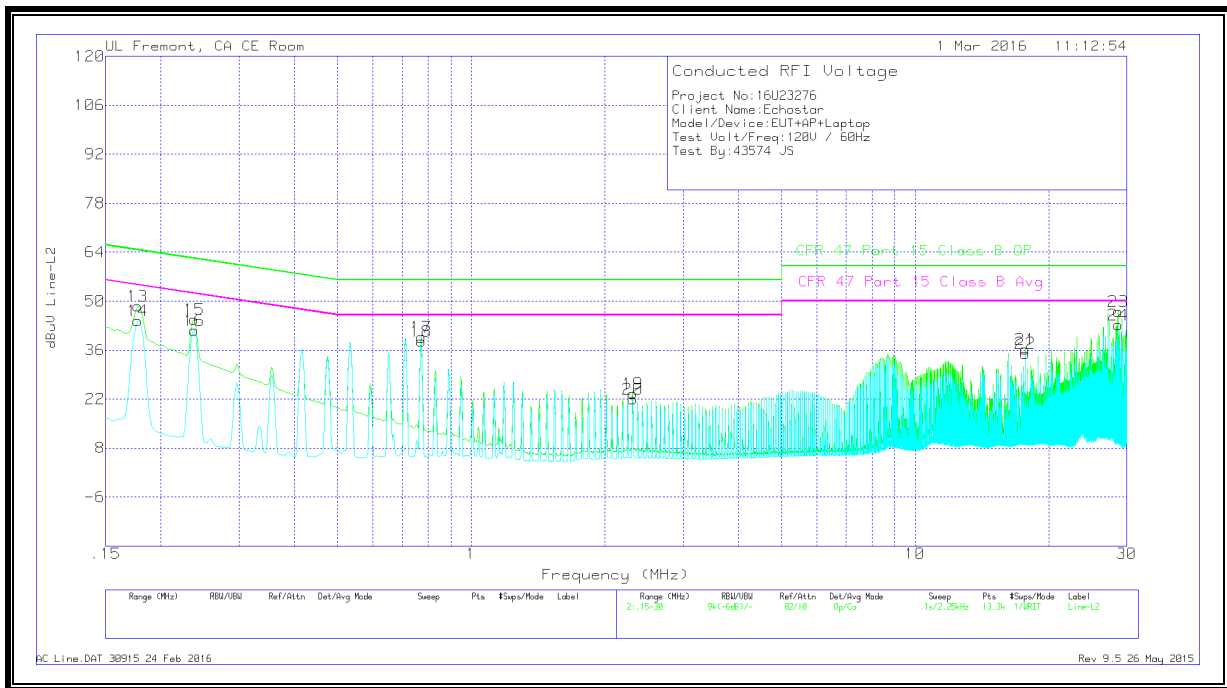
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T1310 IL L1	LC Cables 1&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.177	39.11	Qp	0	0	10.1	49.21	64.63	-15.42	-	-
2	.177	35.77	Ca	0	0	10.1	45.87	-	-	54.63	-8.76
3	.23775	36.8	Qp	0	0	10.1	46.9	62.17	-15.27	-	-
4	.23775	34.02	Ca	0	0	10.1	44.12	-	-	52.17	-8.05
5	.771	27.83	Qp	0	0	10.1	37.93	56	-18.07	-	-
6	.771	26.85	Ca	0	0	10.1	36.95	-	-	46	-9.05
7	2.31	12.87	Qp	0	.1	10.1	23.07	56	-32.93	-	-
8	2.31	9.81	Ca	0	.1	10.1	20.01	-	-	46	-25.99
9	17.69325	23.3	Qp	0	.2	10.3	33.8	60	-26.2	-	-
10	17.69325	21.9	Ca	0	.2	10.3	32.4	-	-	50	-17.6
11	28.6845	37.1	Qp	0	.3	10.4	47.8	60	-12.2	-	-
12	28.6845	33.08	Ca	0	.3	10.4	43.78	-	-	50	-6.22

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T1310 IL L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	.177	38.56	Qp	0	0	10.1	48.66	64.63	-15.97	-	-
14	.177	34.41	Ca	0	0	10.1	44.51	-	-	54.63	-10.12
15	.23775	34.63	Qp	0	0	10.1	44.73	62.17	-17.44	-	-
16	.23775	31.55	Ca	0	0	10.1	41.65	-	-	52.17	-10.52
17	.771	29.56	Qp	0	0	10.1	39.66	56	-16.34	-	-
18	.771	28.39	Ca	0	0	10.1	38.49	-	-	46	-7.51
19	2.31225	13.43	Qp	0	.1	10.1	23.63	56	-32.37	-	-
20	2.31225	11.81	Ca	0	.1	10.1	22.01	-	-	46	-23.99
21	17.69325	25.75	Qp	0	.2	10.3	36.25	60	-23.75	-	-
22	17.69325	24.63	Ca	0	.2	10.3	35.13	-	-	50	-14.87
23	28.68675	36.17	Qp	.1	.3	10.4	46.97	60	-13.03	-	-
24	28.68675	32.37	Ca	.1	.3	10.4	43.17	-	-	50	-6.83

Qp - Quasi-Peak detector

Ca - CISPR average detection