



CERTIFICATION TEST REPORT

Report Number. : 12795814-E2V2

Applicant : DISH TECHNOLOGIES LLC
9601 MERIDIAN BLVD
ENGLEWOOD, CO, 80112

Model : AIRTV 2

FCC ID : DKN-ATV2

EUT Description : OVER THE AIR TV STREAMING DEVICE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

May 14, 2019

Prepared by:

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NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	5/10/2019	Initial Issue	--
V2	5/14/2019	Updated statement for conducted spur	T. Pham

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: DISH TECHNOLOGIES LLC
9601 MERIDIAN BLVD
ENGLEWOOD, CO 80112

EUT DESCRIPTION: Over the Air TV Streaming Device

MODEL: AIRTV 2

SERIAL NUMBER: R5KWMF00396B (Radiated)
R5KWMF00367B (Conducted)

DATE TESTED: APRIL 17, 2019 –MAY 10, 2019

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies

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

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

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

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05.

3. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd
<input type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D	<input checked="" type="checkbox"/> Chamber I
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E	<input checked="" type="checkbox"/> Chamber J
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F	<input checked="" type="checkbox"/> Chamber K
	<input type="checkbox"/> Chamber G	<input type="checkbox"/> Chamber L
	<input type="checkbox"/> Chamber H	<input type="checkbox"/> Chamber M

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Final Voltage (dBuV)} = \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \text{LISN Insertion Loss.}$$
$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is an Over the Air TV streaming device.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

2.4GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b 1Tx	4.6	2.88
2412 - 2462	802.11n HT20 1Tx	8.5	7.08
2412 - 2462	802.11n HT20 2Tx	10.39	10.94

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an embedded antenna, with a maximum gain of 3.3 dBi.

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was LPP-0.1

The test utility software used during testing was the Marvel Labtool.

5.5. WORST-CASE CONFIGURATION AND MODE

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

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

The fundamental of the EUT was tested at normal operation on the Y-axis position.

For 11n HT20 modes, radiated harmonics spurious were performed with the EUT set at the 2TX CDD mode with power setting equal or higher than SISO modes as the worst-case scenario. 11g SISO mode is covered by 11n HT20 mode since it has the same power or lower than 11n HT20.

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

802.11b mode: 1 Mbps

802.11n HT20 1Tx mode: MCS0

802.11n HT20 2Tx mode: MCS8

5.6. DESCRIPTION OF TEST SETUP

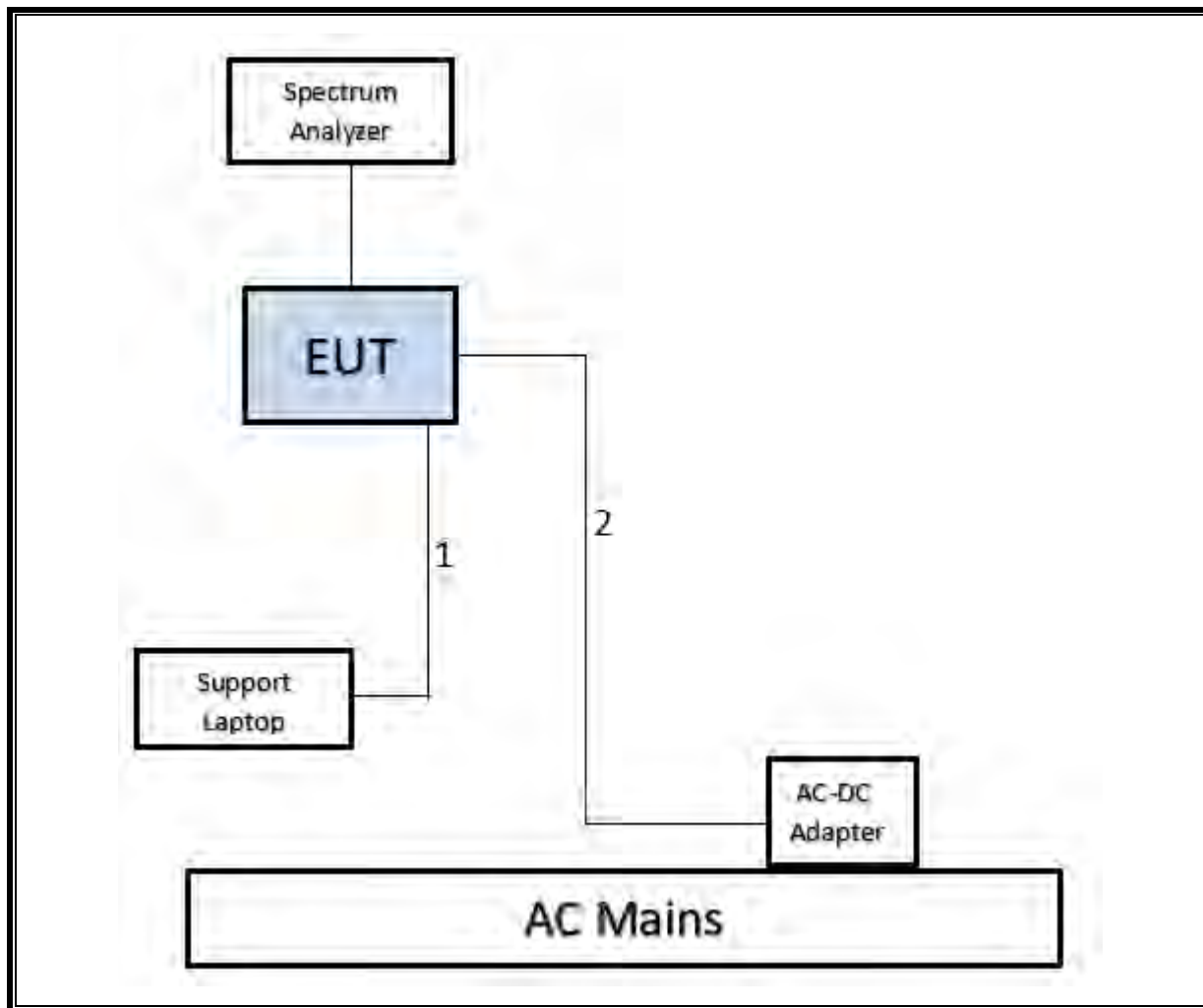
SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter to EUT	LITEON	PB-1190-6ES1	ETC1832001874	N/A
Laptop	HP	EliteBook 8470p	CNU342CP7Y	N/A
AC Adapter to Laptop	HP	PA-1650-32HJ	N/A	N/A

I/O CABLES (CONDUCTED, RADIATED AND CONDUCTED EMISSIONS)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Ethernet	1	Ethernet	Un-shielded	2	Laptop to EUT
2	AC	1	AC	Un-shielded	1.5	Laptop to EUT

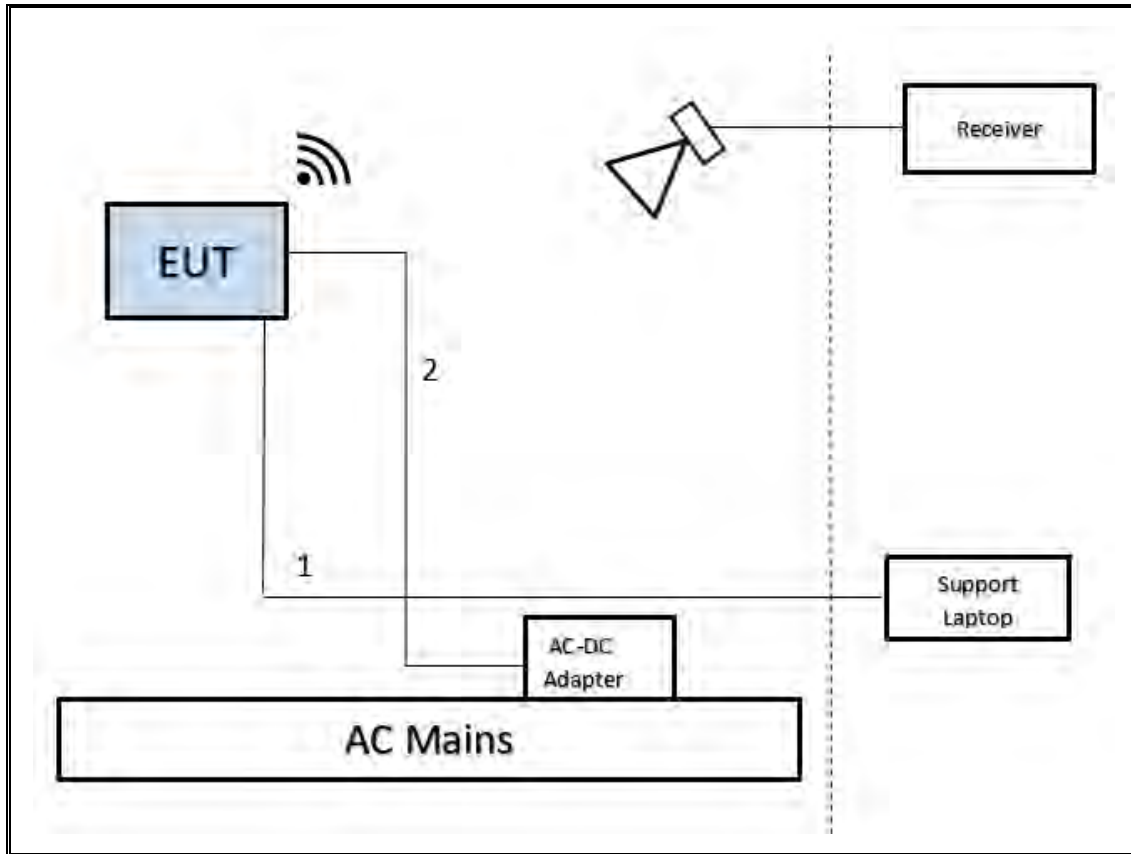
CONDCUTED TEST SETUP DIAGRAM



TEST SETUP

For conducted tests, the EUT was connected to a laptop. The test software exercises the radio.

RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



TEST SETUP

For radiated tests: EUT is connected to a laptop. The test software exercises the radio.

6. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10 Section 11.6

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

6 dB BW: ANSI C63.10 Section 11.8.1

Output Power: ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Section 11.10.3 Method AVGPSD-1

Band-edge: ANSI C63.10 Section 11.13.3.4 Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction factor

Radiated emissions non-restricted frequency bands: ANSI C63.10 Section 11.11

Radiated emissions restricted frequency bands: ANSI C63.10 Section 11.12.1

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

Conducted emissions in restricted frequency bands: ANSI C63.10 Section 11.12.

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

7. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1265	01/29/2020	01/29/2019
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1227	02/05/2020	02/05/2019
Antenna, Passive Loop 30Hz to 1MHz	ELETRO METRICS	EM-6871	PRE0179465	05/22/2019	05/22/2018
Antenna, Passive Loop 100kHz to 30MHz	ELETRO METRICS	EM-6872	PRE0179467	05/22/2019	05/22/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	05/25/2019	05/25/2018
Amplifier, 1 to18GHz	MITEQ	AFS42-00101800-25-S-42	PRE018078	08/01/2019	08/01/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0189055	04/20/2020	04/20/2018
Amplifier, 1 to18GHz	AMPLICAL	AMP1G18-35	T1571	07/30/2019	07/30/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T344	04/30/2019	04/30/2018
Amplifier, 1 to18GHz, 35dB	AMOLICAL	AMP1G18-35	T1569	06/03/2019	06/03/2018
Hybrid Antenna, 30MHz to 3GHz	SunAR rf motion	JB3	PRE0181575	08/01/2019	08/01/2018
Amplifier, 100kHz to 1GHz, 32 dB	Sonoma Instrument	310	PRE0180714	05/31/2019	05/31/2018
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	PRE0182188	08/29/2019	08/29/2018
Pre-Amp, 1-26.5GHz	Amplical	AMP18G26.5-60	PRE0181238	05/01/2020	05/01/2019
Antenna, Horn 26 to 40GHz	ARA	MWH-2640	T90	09/11/2019	09/11/2018
Pre-Amp, 26-40GHz	Amplical	AMP26G40-60	PRE0181238	05/01/2020	05/01/2019
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179367	02/14/2020	02/14/2019
EMI Test Receiver	Rohde&Schwarz	ESW44	PRE0179372	02/16/2020	02/16/2019
EMI Test Receiver	Rohde&Schwarz	ESW44	PRE0179377	02/15/2020	02/15/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T908	01/23/2020	01/23/2019
AC Line Conducted					
EMI Receiver	Rohde & Schwarz	ESR	T1436	02/14/2020	02/14/2019
LISN for Conducted Emissions CISPR-16	FCC INC.	FCC LISN 50/250	T1310	01/24/2020	01/24/2019
Test Software List					
Radiated Software	UL	UL EMC		Ver 9.5, June 22, 2018	
Antenna Port Software	UL	UL RF		Ver 9.6, April 18, 2019	
AC Line Conducted Software	UL	UL EMC		Ver 9.5, May 26, 2015	

NOTES:

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

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

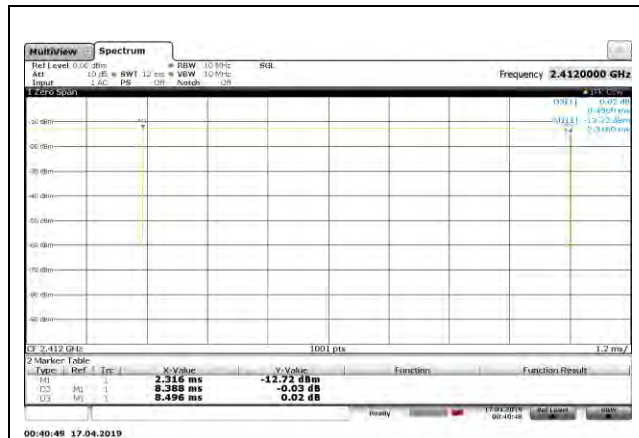
None; for reporting purposes only.

PROCEDURE

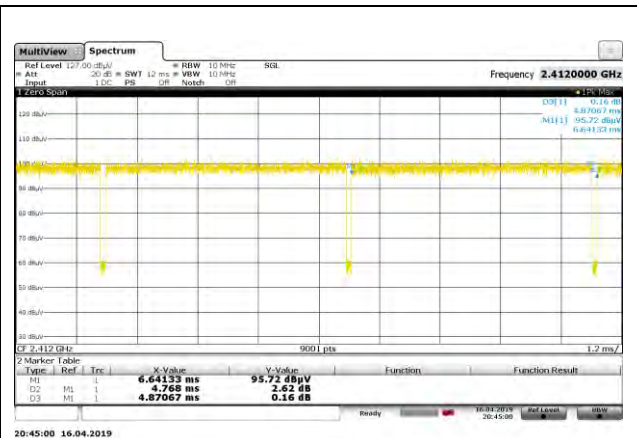
KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

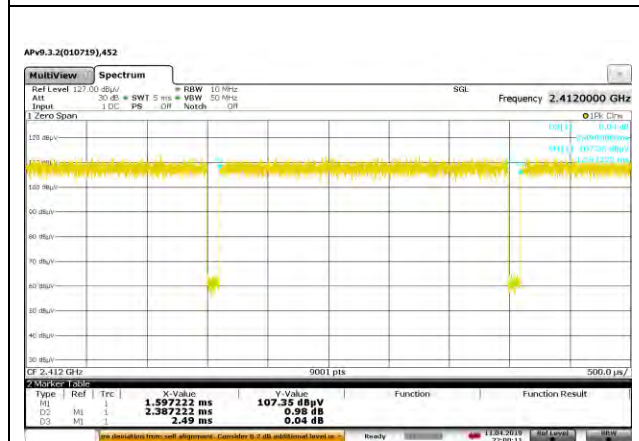
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b 1TX	8.388	8.496	0.987	98.73%	0.00	0.010
802.11n HT20 1TX	4.768	4.871	0.979	97.89%	0.09	0.210
802.11n HT20 2TX	2.387	2.490	0.959	95.86%	0.18	0.419



DUTY CYCLE 802.11b 1Tx MODE



DUTY CYCLE 802.11nHT20 1Tx MODE



DUTY CYCLE 802.11nHT20 2Tx MODE

8.2. 99% BANDWIDTH

LIMITS

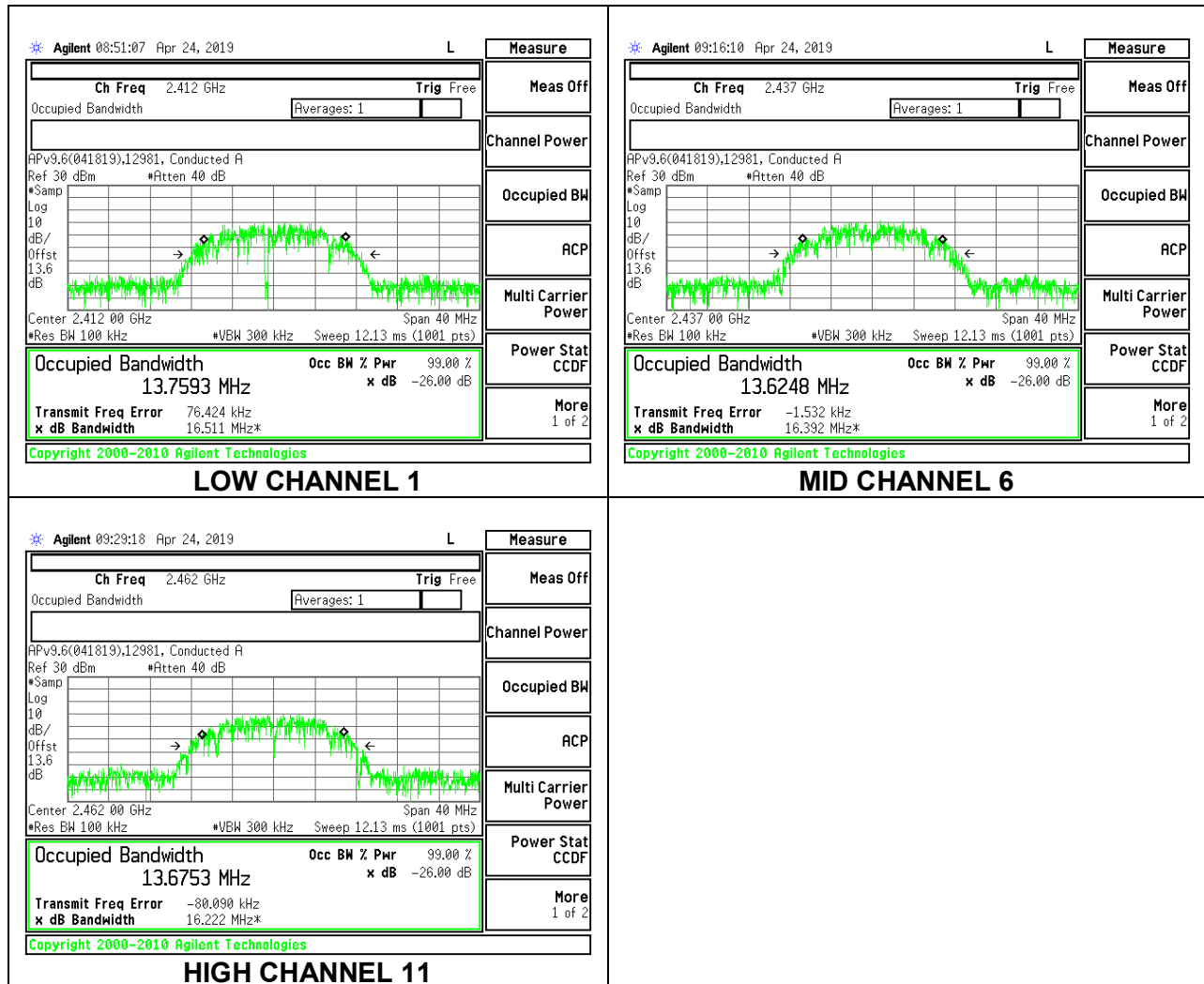
None; for reporting purposes only.

RESULTS

8.2.1. 802.11b MODE

1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	13.7590
Mid 6	2437	13.6250
High 11	2462	13.6750



1TX Antenna 2 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	13.5780
Mid 6	2437	13.4640
High 11	2462	13.5740

<p>Agilent 09:05:12 Apr 24, 2019</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth Averages: 1</p> <p>HPV9.6(041819),12981, Conducted A Ref 30 dBm *Atten 40 dB</p> <p>Center 2.412 00 GHz Span 40 MHz *Res BW 100 kHz *VBW 300 kHz Sweep 12.13 ms (1001 pts)</p> <p>Occupied Bandwidth 13.5779 MHz Occ BW % Pwr 99.00 % x dB Bandwidth 16.275 MHz* x dB -26.00 dB</p> <p>Transmit Freq Error 11.927 kHz x dB Bandwidth 16.275 MHz*</p> <p>Copyright 2000-2010 Agilent Technologies</p> <p style="text-align: center;">LOW CHANNEL 1</p>	<p>Agilent 09:34:35 Apr 24, 2019</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth Averages: 1</p> <p>HPV9.6(041819),12981, Conducted A Ref 30 dBm *Atten 40 dB</p> <p>Center 2.437 00 GHz Span 40 MHz *Res BW 100 kHz *VBW 300 kHz Sweep 12.13 ms (1001 pts)</p> <p>Occupied Bandwidth 13.4639 MHz Occ BW % Pwr 99.00 % x dB Bandwidth 15.840 MHz* x dB -26.00 dB</p> <p>Transmit Freq Error -62.219 kHz x dB Bandwidth 15.840 MHz*</p> <p>Copyright 2000-2010 Agilent Technologies</p> <p style="text-align: center;">MID CHANNEL 6</p>
<p>Agilent 09:43:26 Apr 24, 2019</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth Averages: 1</p> <p>HPV9.6(041819),12981, Conducted A Ref 30 dBm *Atten 40 dB</p> <p>Center 2.462 00 GHz Span 40 MHz *Res BW 100 kHz *VBW 300 kHz Sweep 12.13 ms (1001 pts)</p> <p>Occupied Bandwidth 13.5738 MHz Occ BW % Pwr 99.00 % x dB Bandwidth 15.803 MHz* x dB -26.00 dB</p> <p>Transmit Freq Error 36.396 kHz x dB Bandwidth 15.803 MHz*</p> <p>Copyright 2000-2010 Agilent Technologies</p> <p style="text-align: center;">HIGH CHANNEL 11</p>	

8.2.2. 802.11n HT20 MODE

1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.6497
Mid 6	2437	17.6638
High 11	2462	17.6026

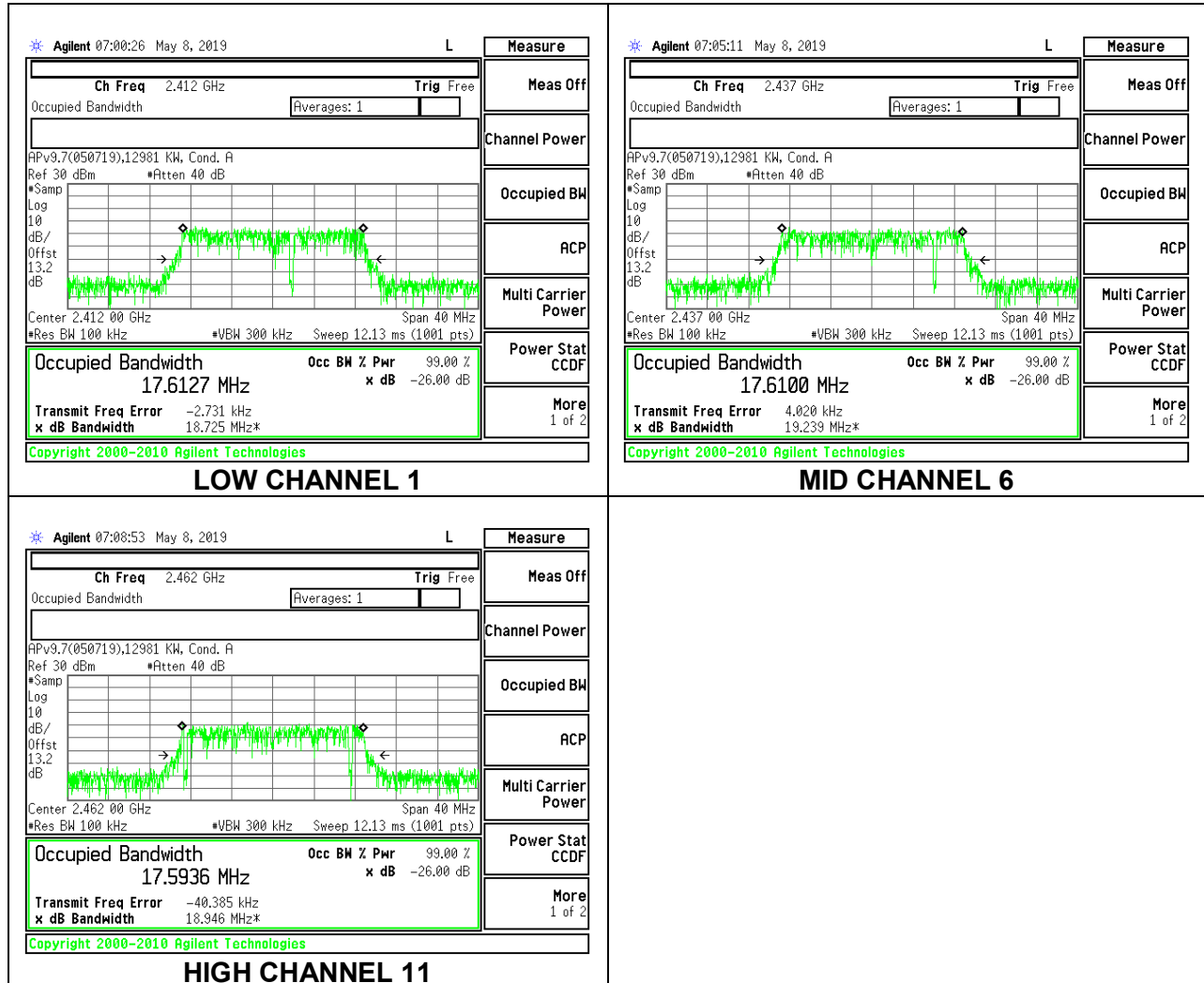
LOW CHANNEL 1

MID CHANNEL 6

HIGH CHANNEL 11

1TX Antenna 2 MODE

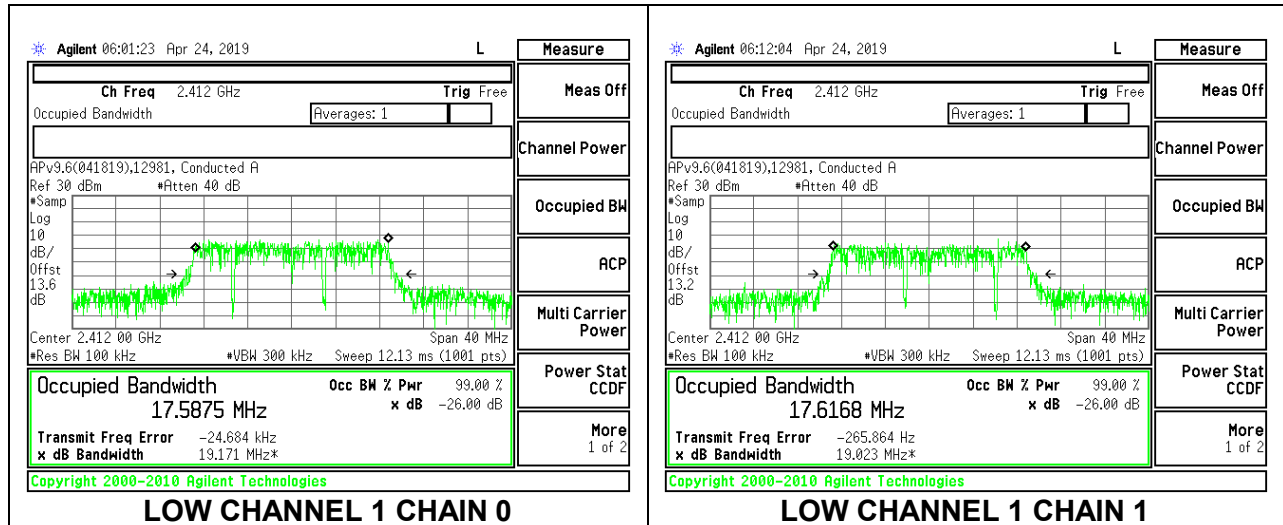
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.6127
Mid 6	2437	17.6100
High 11	2462	17.5936



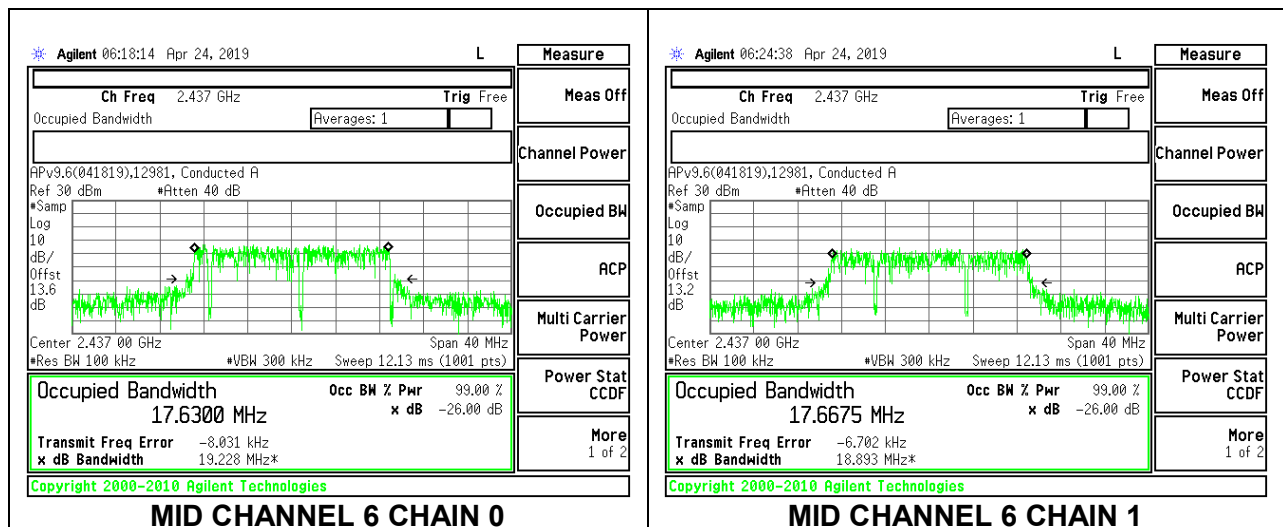
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)	99% Bandwidth Antenna 2 (MHz)
Low 1	2412	17.5870	17.6170
Mid 6	2437	17.6300	17.6680
High 11	2462	17.6570	17.6370

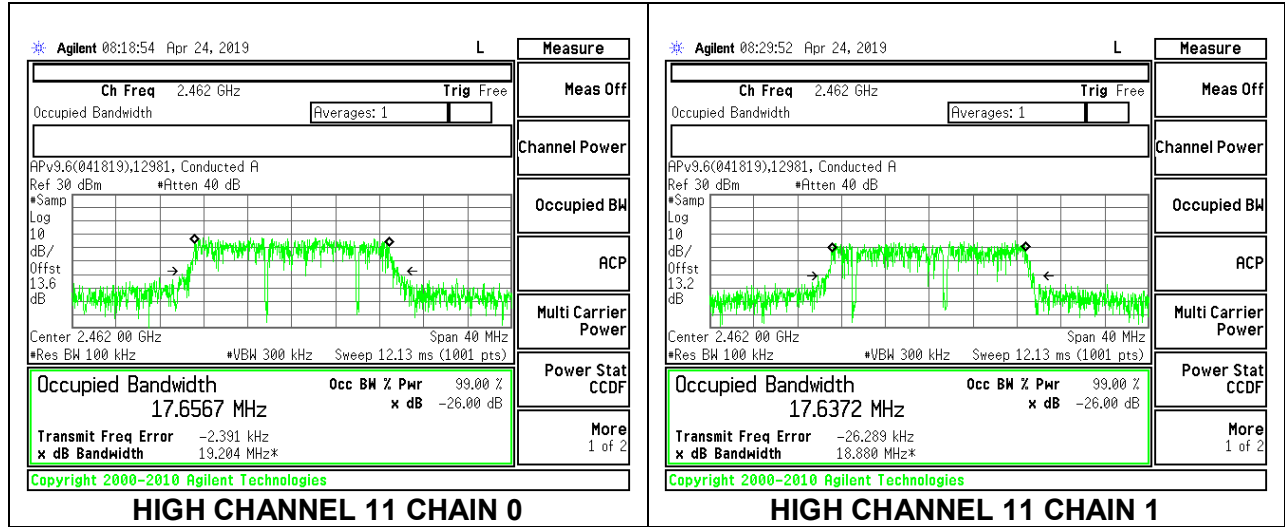
LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11



8.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

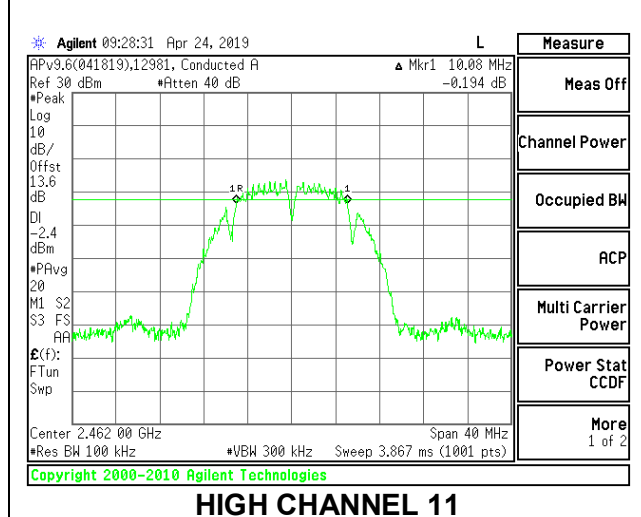
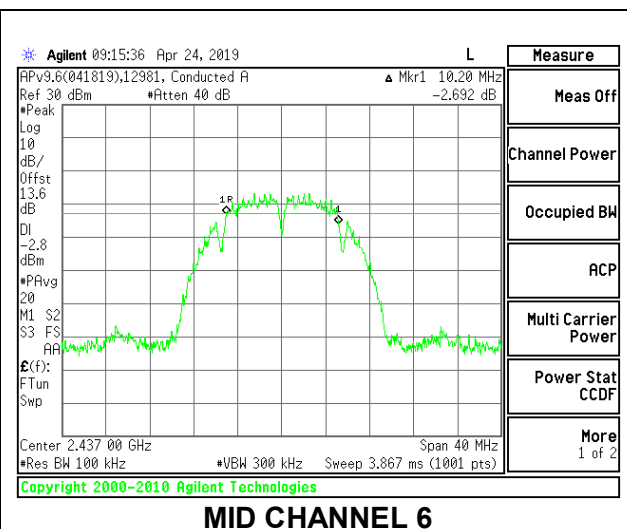
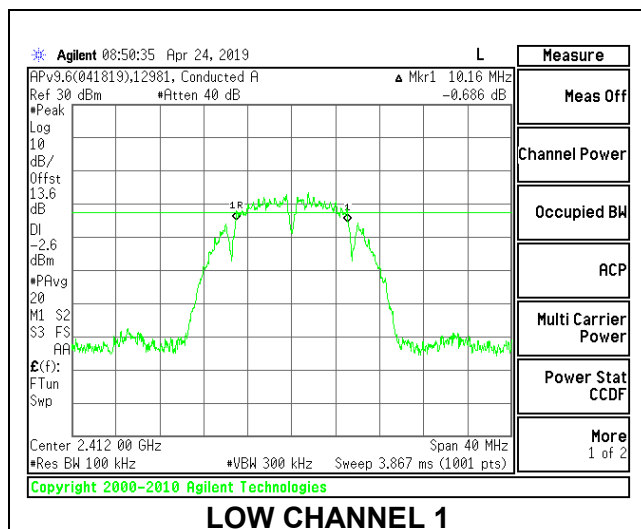
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

8.3.1. 802.11b MODE

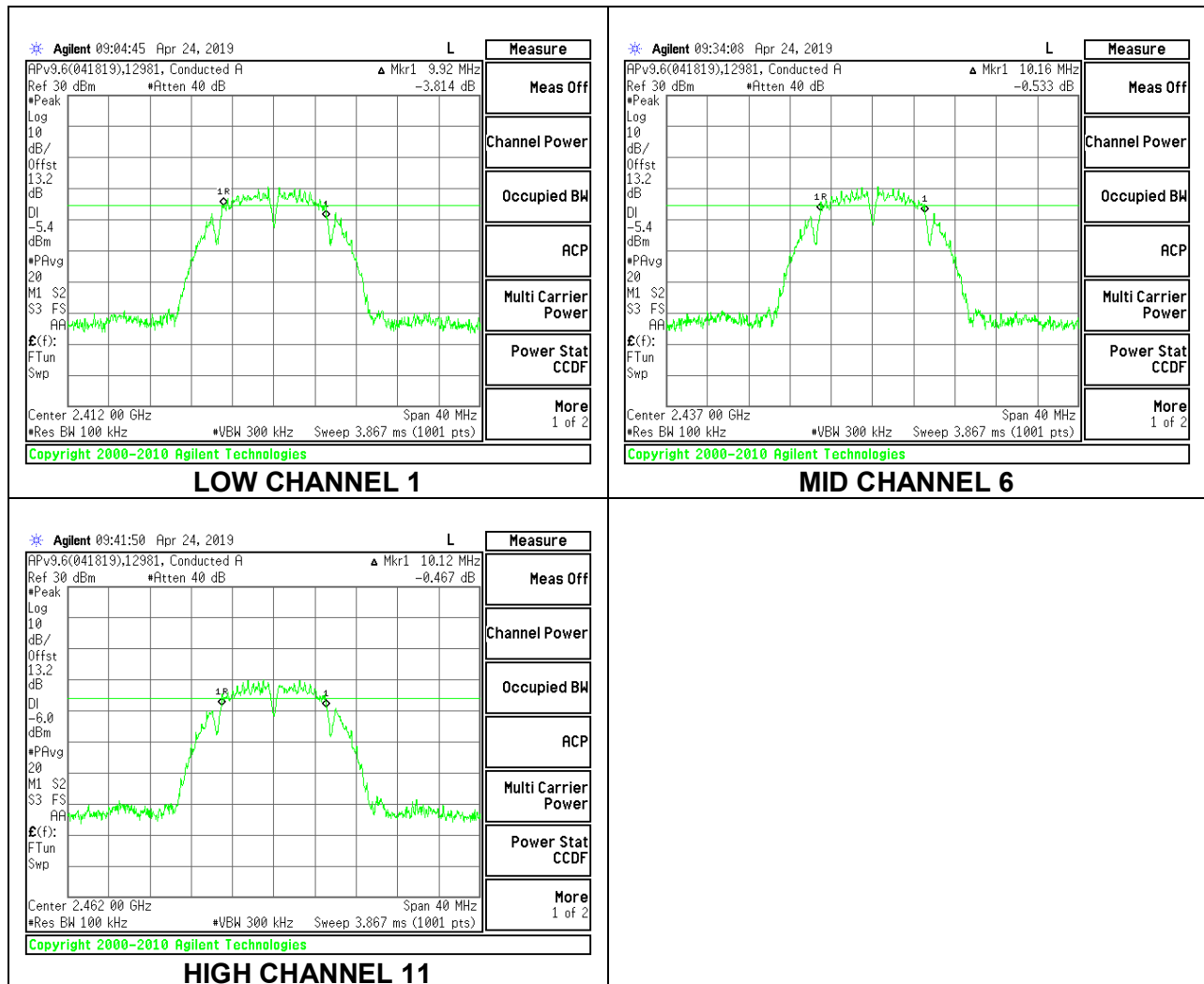
1TX Antenna 1 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	10.160	0.5
Mid 6	2437	10.200	0.5
High 11	2462	10.080	0.5



1TX Antenna 2 MODE

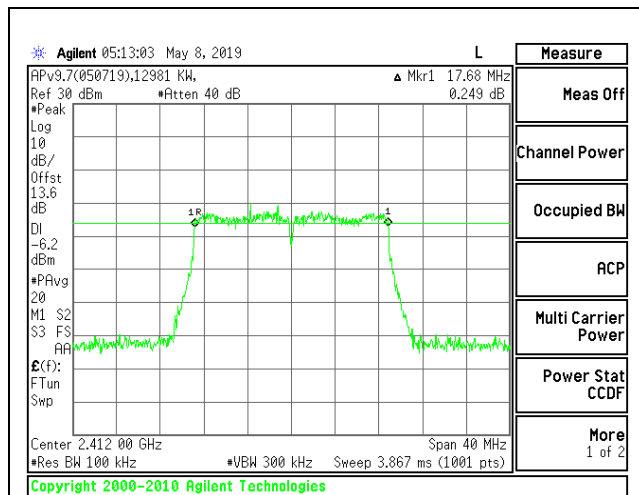
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	9.920	0.5
Mid 6	2437	10.160	0.5
High 11	2462	10.120	0.5



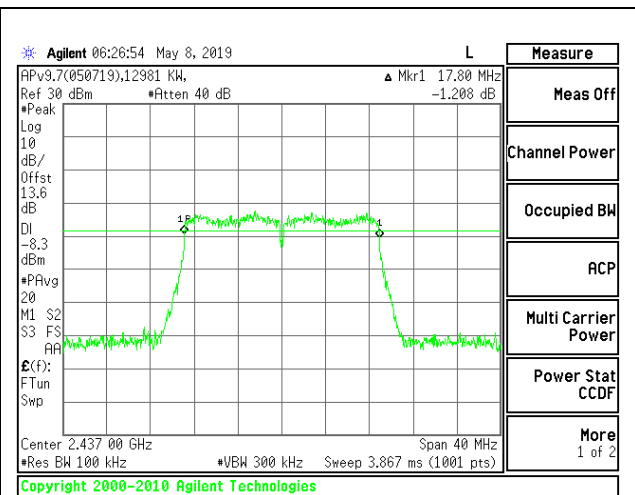
8.3.2. 802.11n HT20 MODE

1TX Antenna 1 MODE

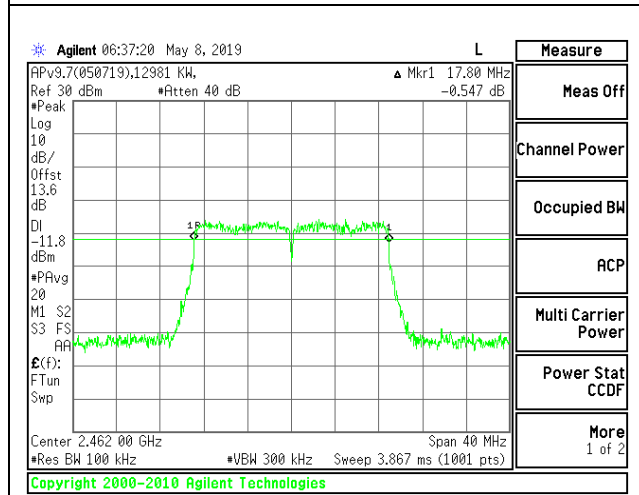
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.68	0.5
Mid 6	2437	17.80	0.5
High 11	2462	17.80	0.5



LOW CHANNEL 1



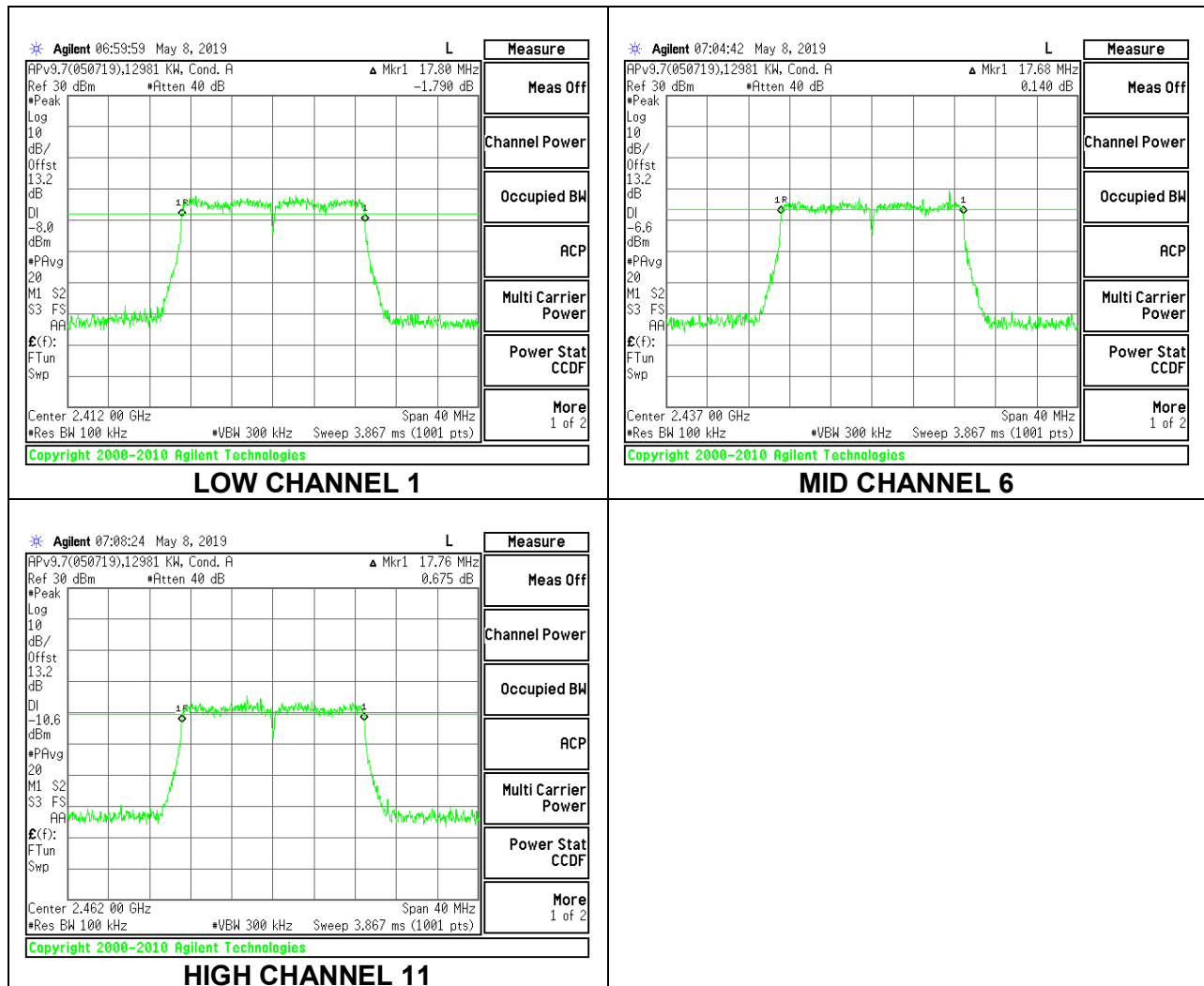
MID CHANNEL 6



HIGH CHANNEL 11

1TX Antenna 2 MODE

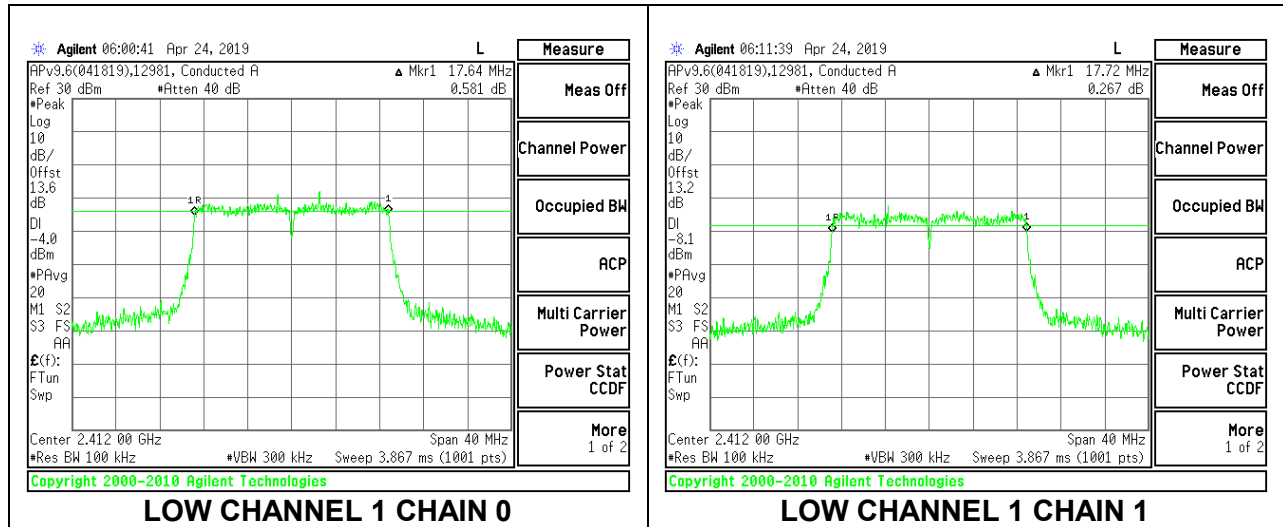
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.800	0.5
Mid 6	2437	17.680	0.5
High 11	2462	17.760	0.5



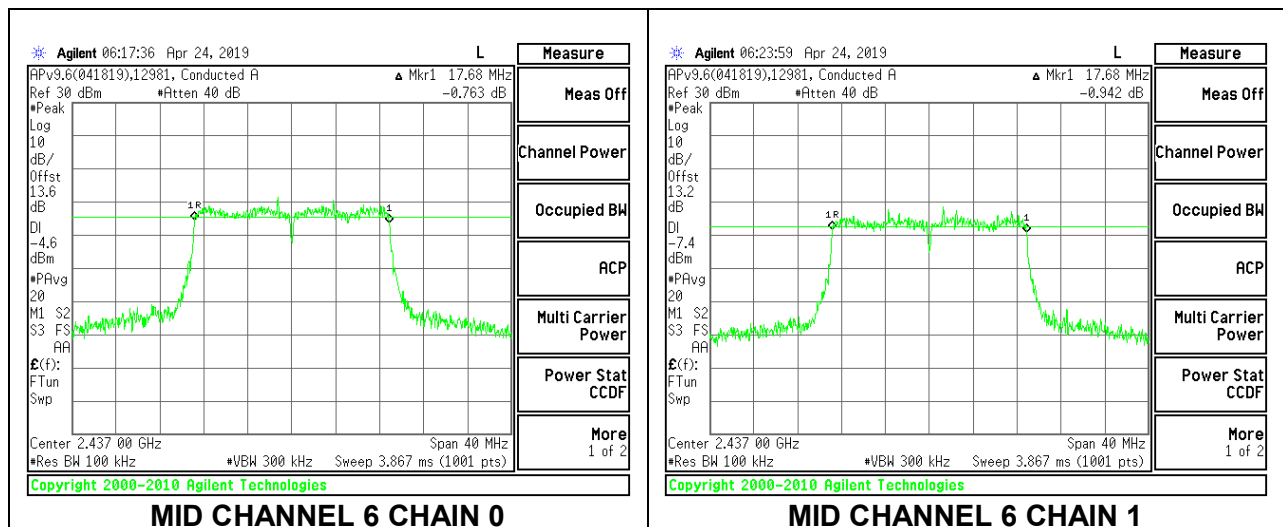
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW	6 dB BW	Minimum Limit (MHz)
		Antenna 1 (MHz)	Antenna 2 (MHz)	
Low 1	2412	17.640	17.720	0.5
Mid 6	2437	17.680	17.680	0.5
High 11	2462	17.640	17.680	0.5

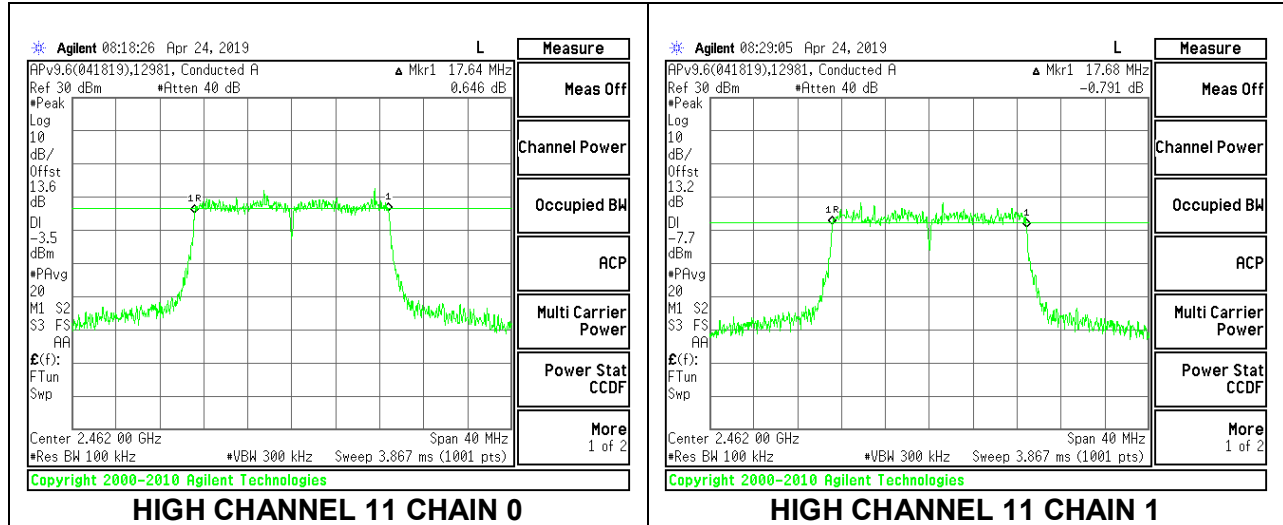
LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11



8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 13.6 dB (including 10 dB pad and 3.6 dB cable) was entered as an offset in the power meter to allow for an average reading of power.

DIRECTIONAL ANTENNA GAIN

For 1 TX:

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

For 2 TX:

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

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	3.30	3.30	3.30	6.31

RESULTS

8.4.1. 802.11b MODE

1TX Antenna 1 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.30	30.00	30	36	30.00
Mid 6	2437	3.30	30.00	30	36	30.00
High 11	2462	3.30	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	4.56	4.56	30.00	-25.44
Mid 6	2437	4.56	4.56	30.00	-25.44
High 11	2462	4.60	4.60	30.00	-25.40

1TX Antenna 2 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.30	30.00	30	36	30.00
Mid 6	2437	3.30	30.00	30	36	30.00
High 11	2462	3.30	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	1.70	1.70	30.00	-28.30
Mid 6	2437	1.56	1.56	30.00	-28.44
High 11	2462	1.43	1.43	30.00	-28.57

8.4.2. 802.11n HT20 MODE

1TX Antenna 1 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.30	30.00	30	36	30.00
Mid 6	2437	3.30	30.00	30	36	30.00
High 11	2462	3.30	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	8.49	8.49	30.00	-21.51
Mid 6	2437	8.50	8.50	30.00	-21.50
High 11	2462	8.49	8.49	30.00	-21.51

1TX Antenna 2 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.30	30.00	30	36	30.00
Mid 6	2437	3.30	30.00	30	36	30.00
High 11	2462	3.30	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	5.63	5.63	30.00	-24.37
Mid 6	2437	5.51	5.51	30.00	-24.49
High 11	2462	5.39	5.39	30.00	-24.61

2TX Antenna 1 + Antenna 2 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.30	30.00	36	30.00
Mid 6	2437	3.30	30.00	36	30.00
High 11	2462	3.30	30.00	36	30.00

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	8.57	5.72	10.39	30.00	-19.61
Mid 6	2437	8.57	5.62	10.35	30.00	-19.65
High 11	2462	8.58	5.50	10.32	30.00	-19.68

8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

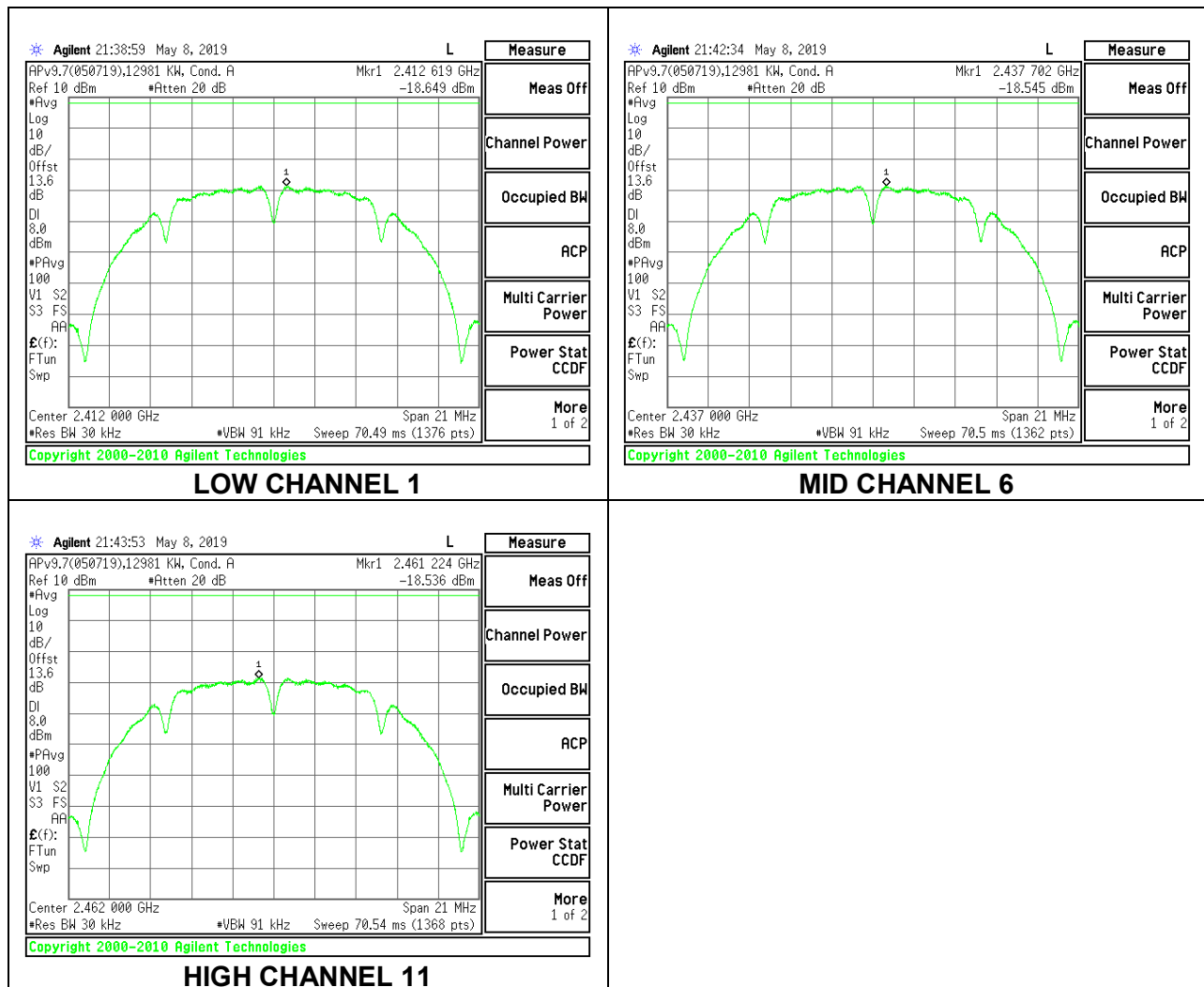
8.5.1. 802.11b MODE

1TX Antenna 1 MODE

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

Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-18.47	-18.47	8.0	-26.5
Mid 6	2437	-18.55	-18.55	8.0	-26.5
High 11	2462	-18.54	-18.54	8.0	-26.5

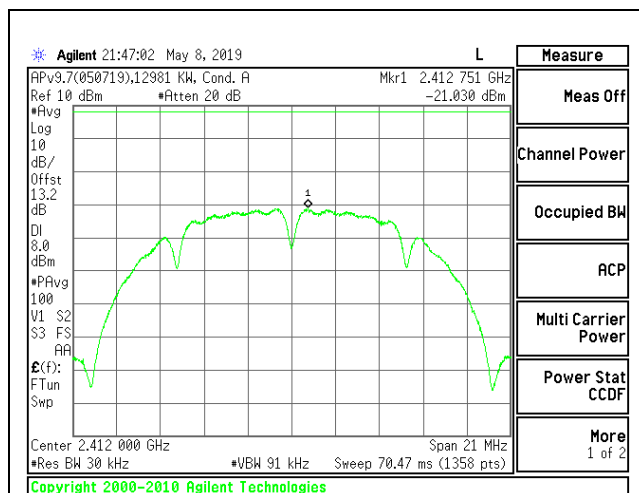


1TX Antenna 1 MODE

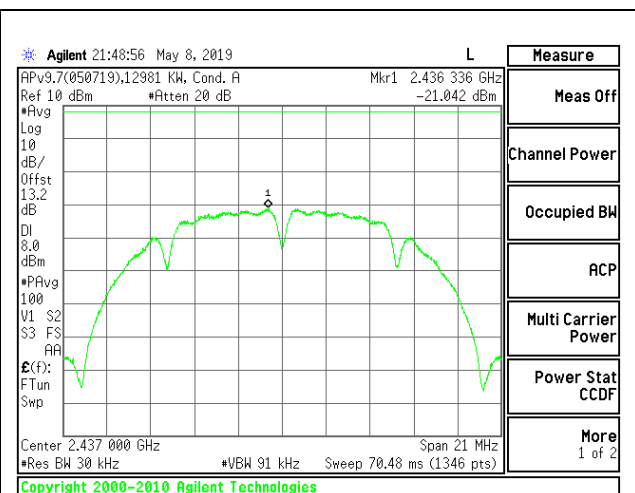
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
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PSD Results

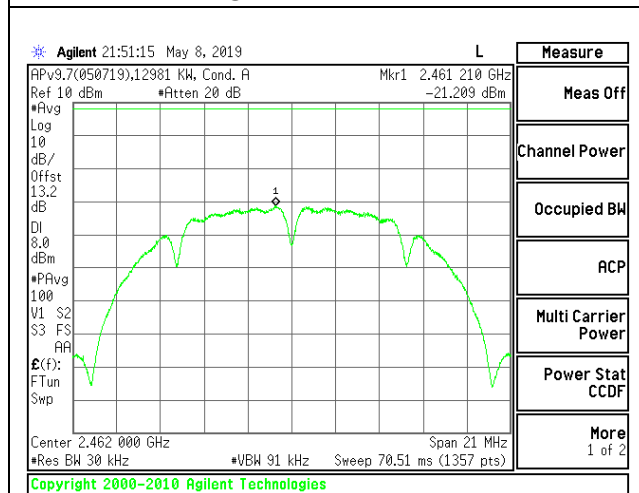
Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-21.03	-21.03	8.0	-29.0
Mid 6	2437	-21.04	-21.04	8.0	-29.0
High 11	2462	-21.21	-21.21	8.0	-29.2



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

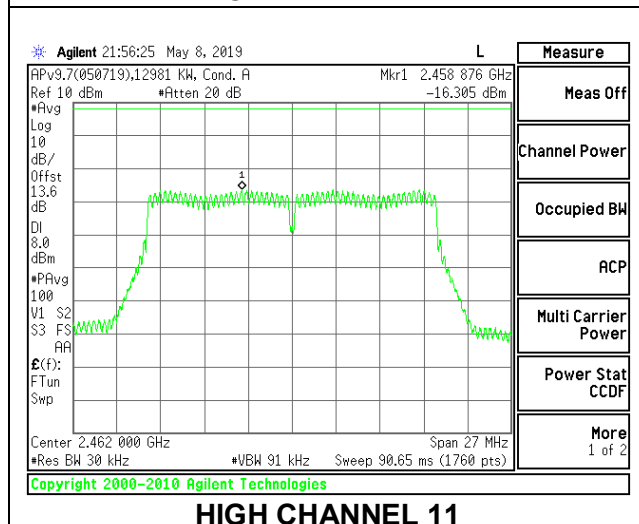
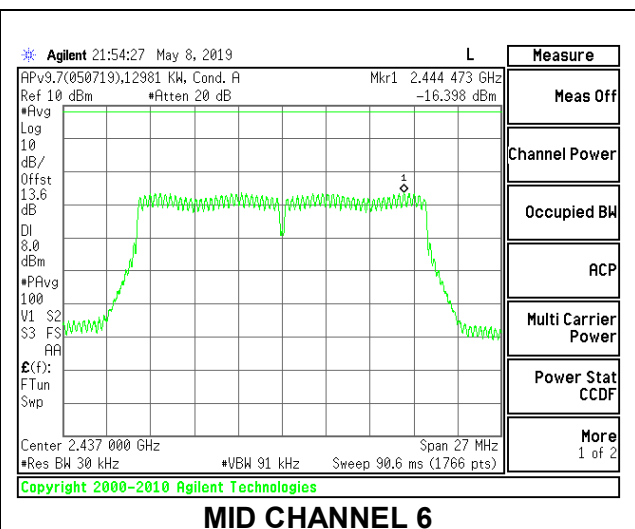
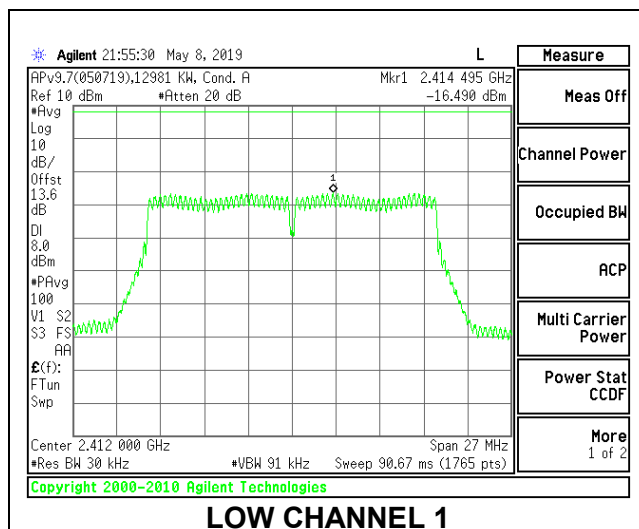
8.5.2. 802.11n HT20 MODE

1TX Antenna 1 MODE

Duty Cycle CF (dB)	0.09	Included in Calculations of Corr'd PSD
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PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-16.49	-16.40	8.0	-24.4
Mid 6	2437	-16.40	-16.31	8.0	-24.3
High 11	2462	-16.31	-16.22	8.0	-24.2

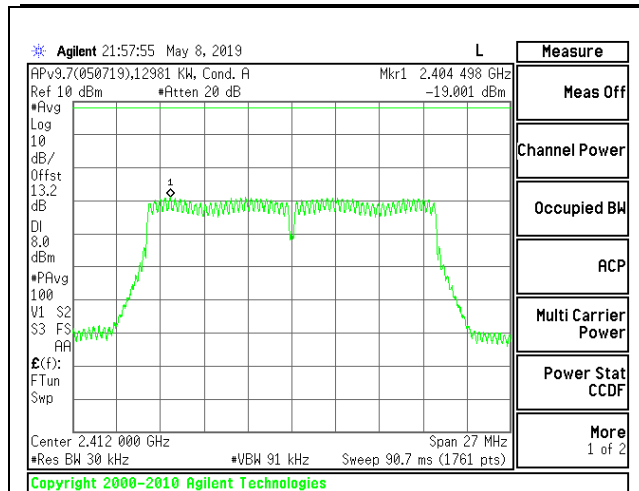


1TX Antenna 2 MODE

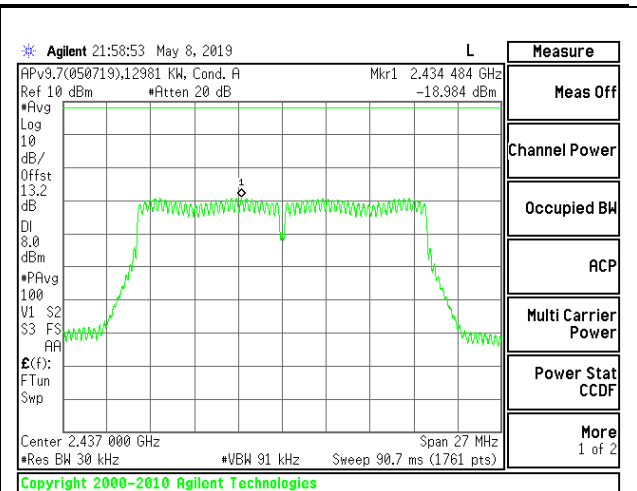
Duty Cycle CF (dB)	0.09	Included in Calculations of Corr'd PSD
---------------------------	------	---

PSD Results

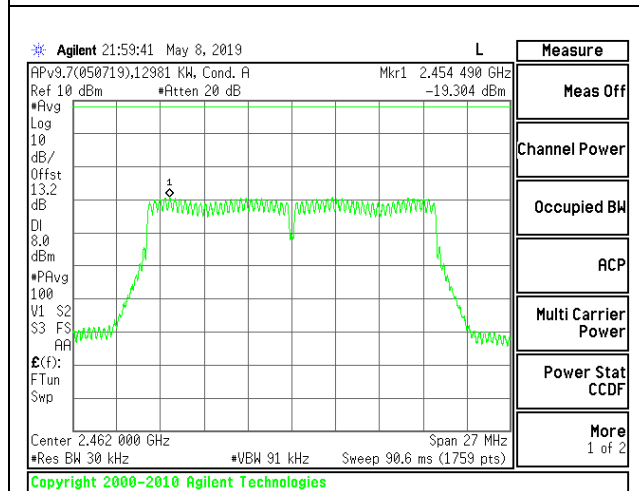
Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-19.00	-18.91	8.0	-26.9
Mid 6	2437	-18.98	-18.89	8.0	-26.9
High 11	2462	-19.30	-19.21	8.0	-27.2



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

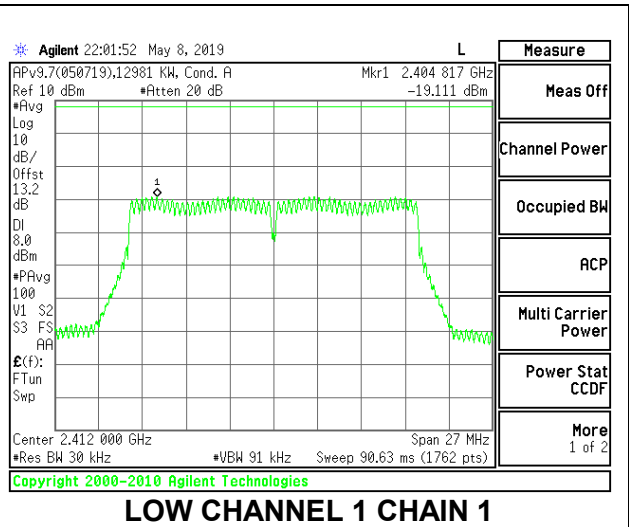
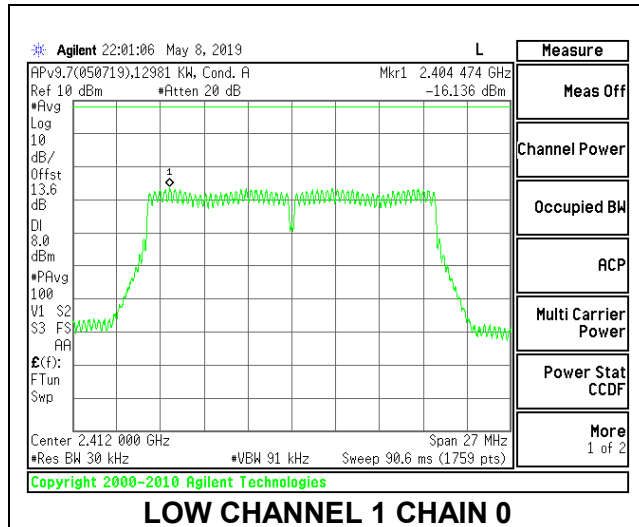
2TX Antenna 1 + Antenna 2 CDD MODE

Duty Cycle CF (dB)	0.18	Included in Calculations of Corr'd PSD
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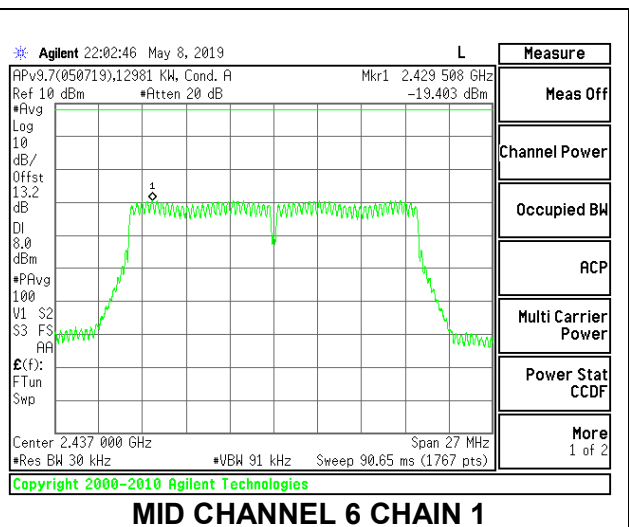
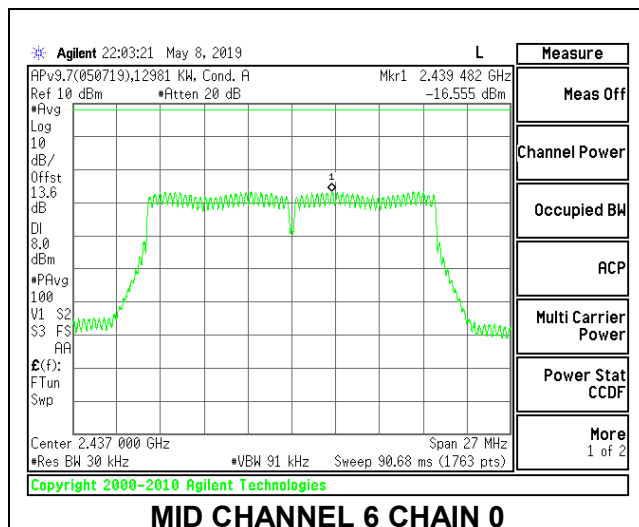
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 2 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-16.14	-19.11	-14.18	8.0	-22.2
Mid 6	2437	-16.55	-19.40	-14.56	8.0	-22.6
High 11	2462	-16.40	-19.26	-14.41	8.0	-22.4

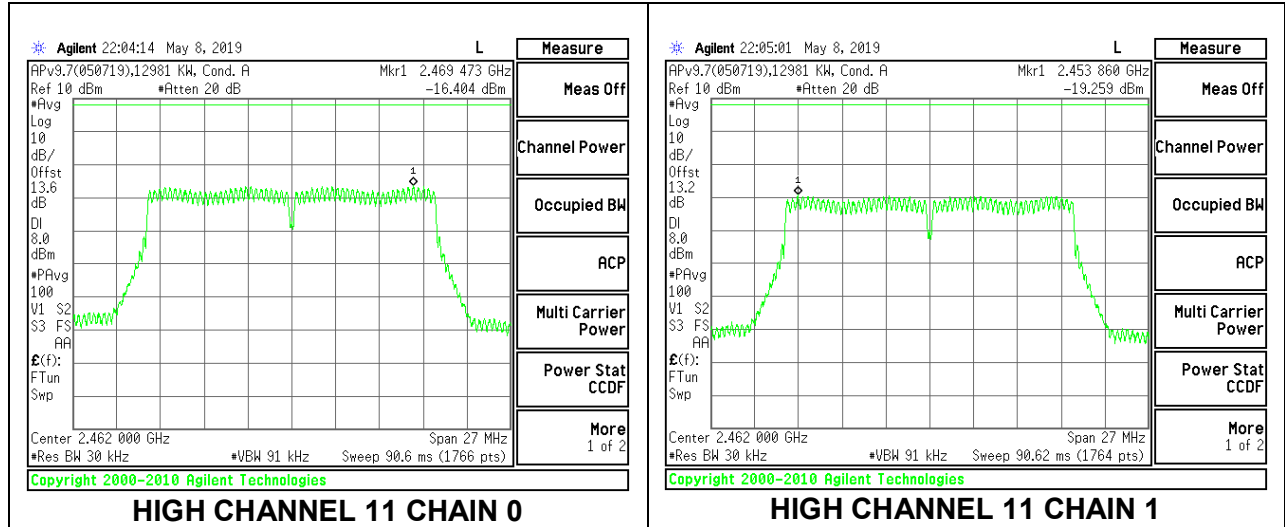
LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0

HIGH CHANNEL 11 CHAIN 1

8.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

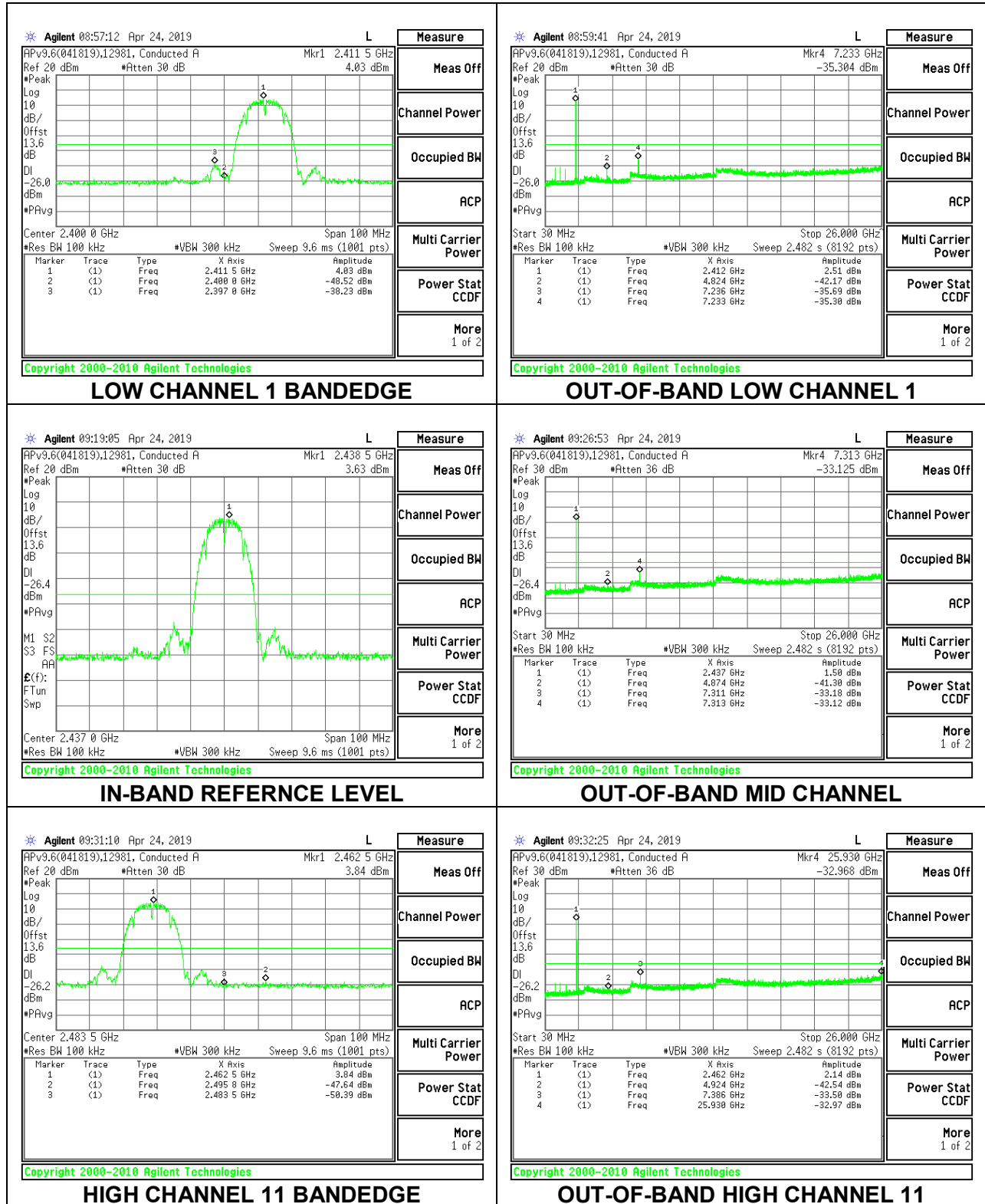
FCC §15.247 (d)

Output power was measured based on the use of average measurement, therefore the required attenuation is 30 dB.

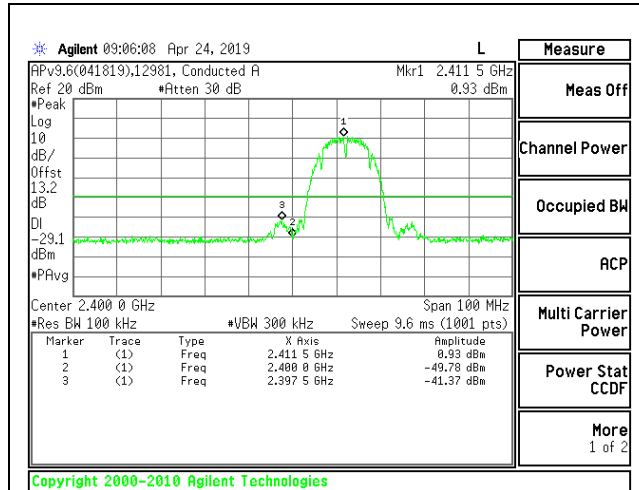
RESULTS

8.6.1. 802.11b MODE

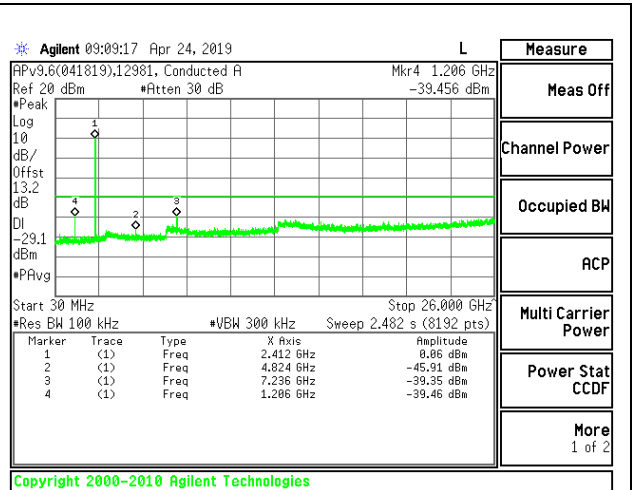
1TX Antenna 1 MODE



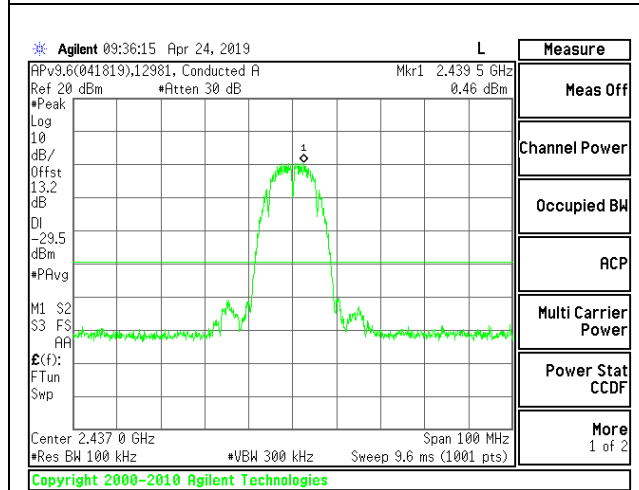
1TX Antenna 2 MODE



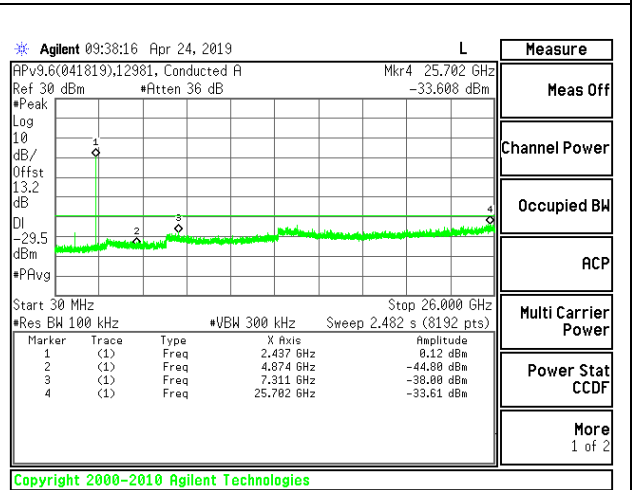
LOW CHANNEL 1 BANDEDGE



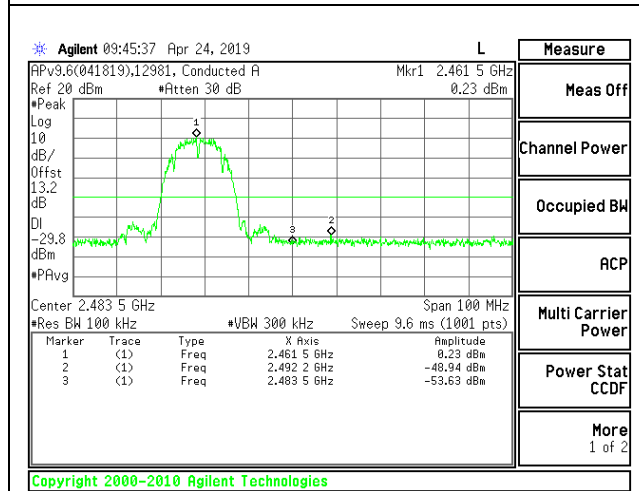
OUT-OF-BAND LOW CHANNEL 1



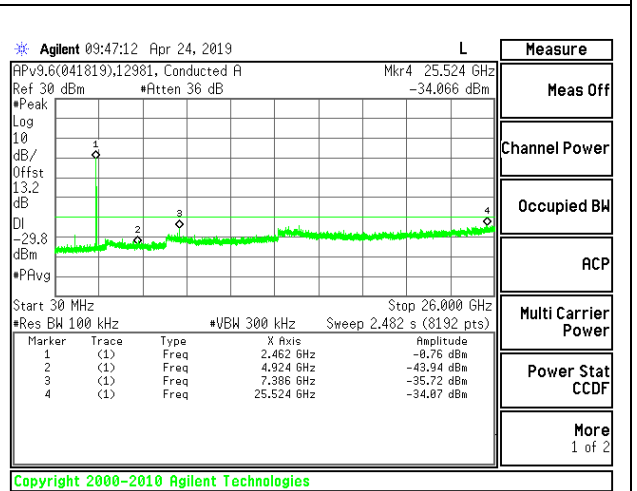
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



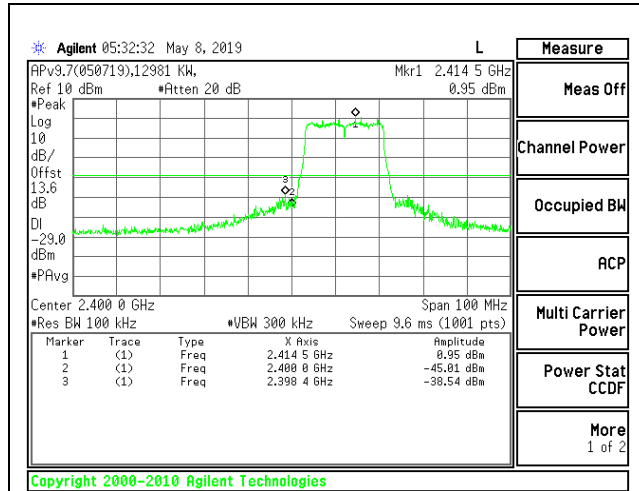
HIGH CHANNEL 11 BANDEDGE



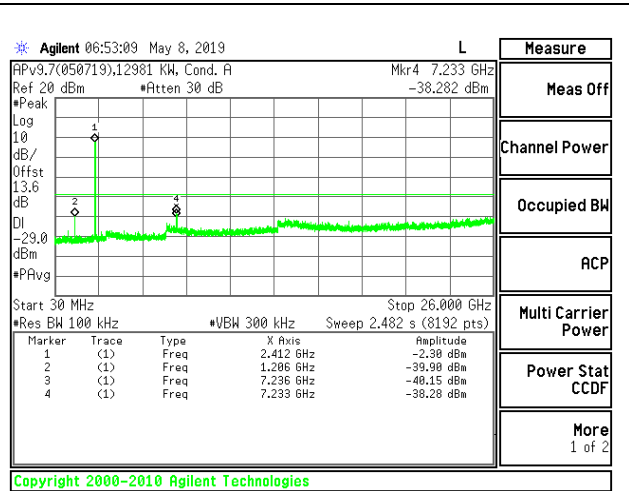
OUT-OF-BAND HIGH CHANNEL 11

8.6.2. 802.11n HT20 MODE

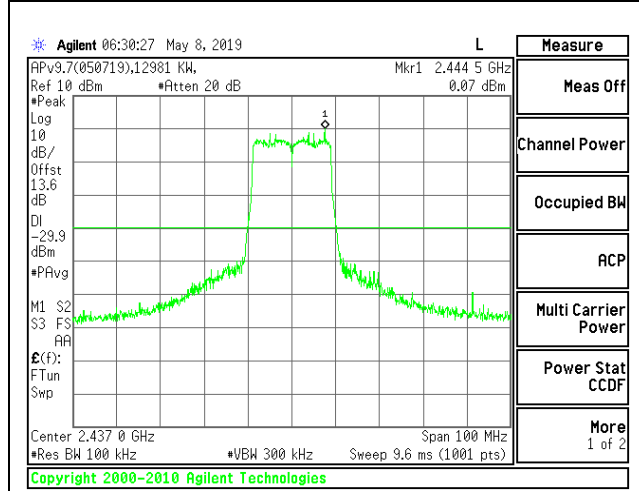
1TX Antenna 1 MODE



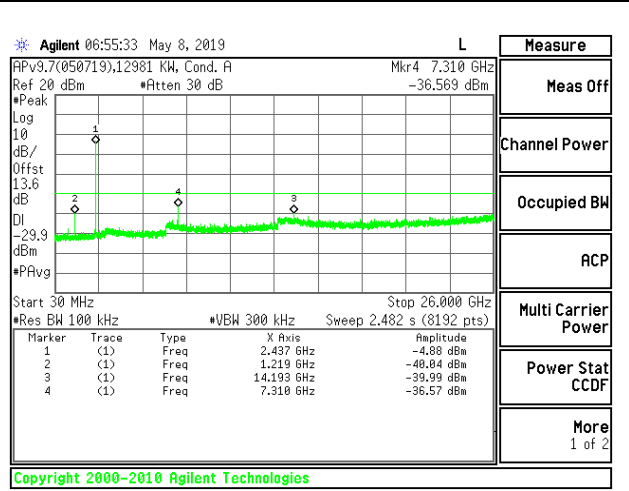
LOW CHANNEL 1 BANDEDGE



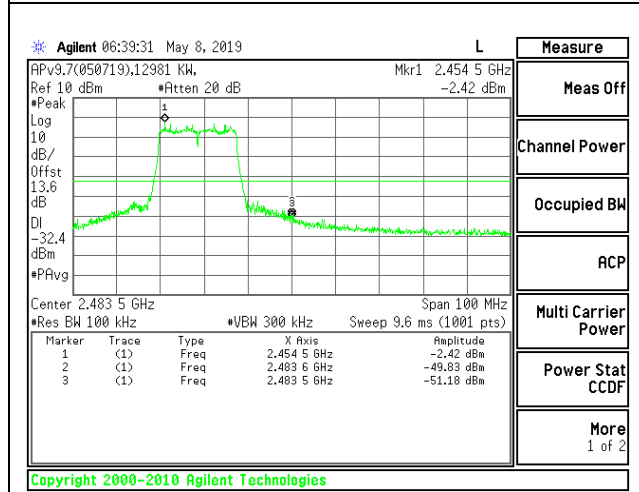
OUT-OF-BAND LOW CHANNEL 1



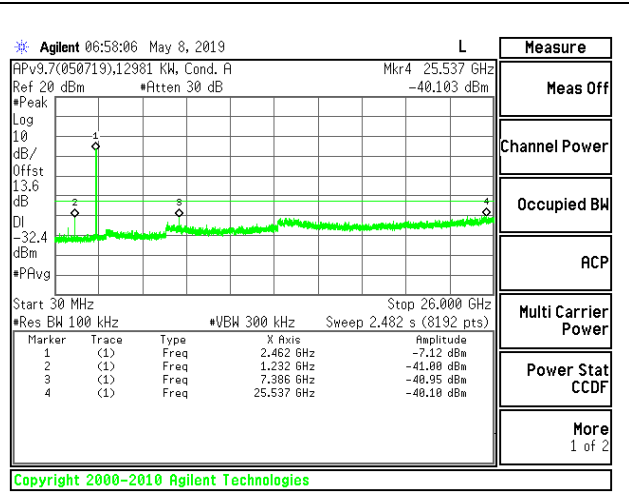
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

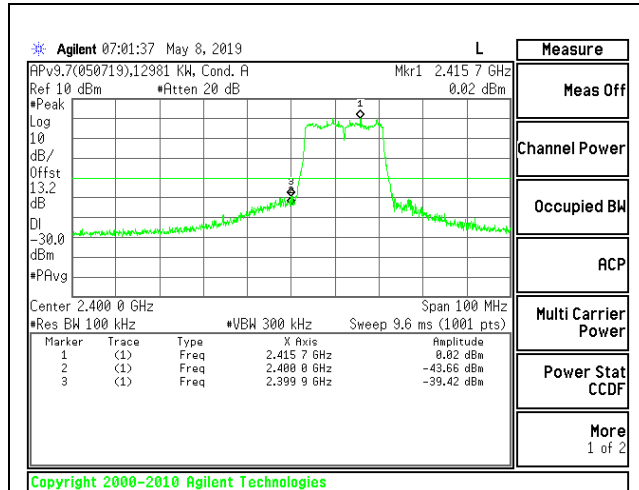


HIGH CHANNEL 11 BANDEDGE

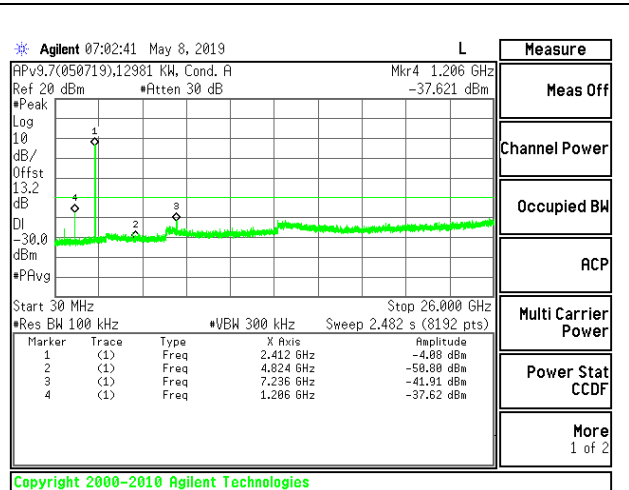


OUT-OF-BAND HIGH CHANNEL 11

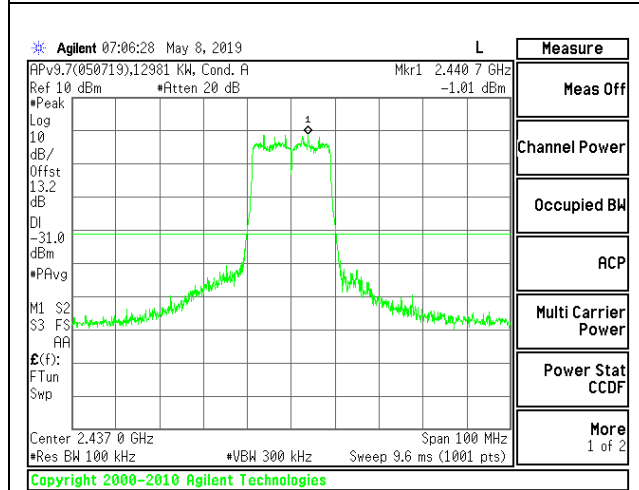
1TX Antenna 2 MODE



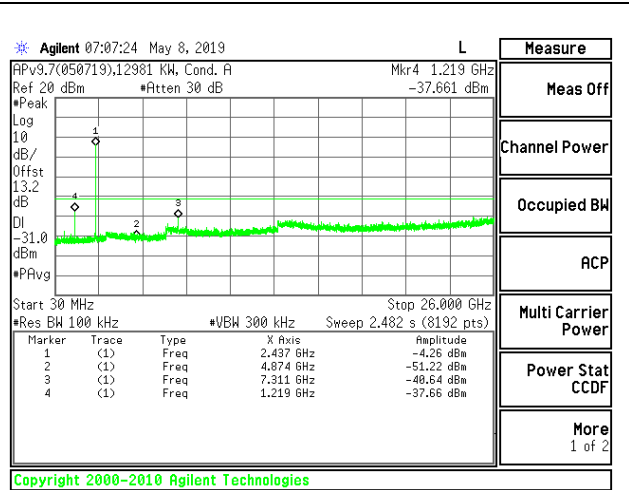
LOW CHANNEL 1 BANDEDGE



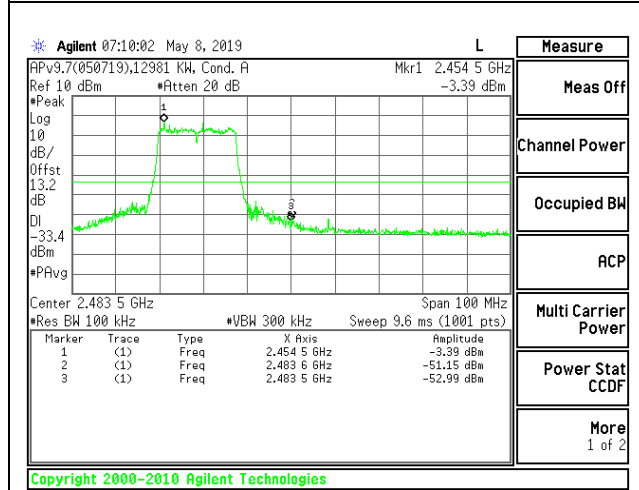
OUT-OF-BAND LOW CHANNEL 1



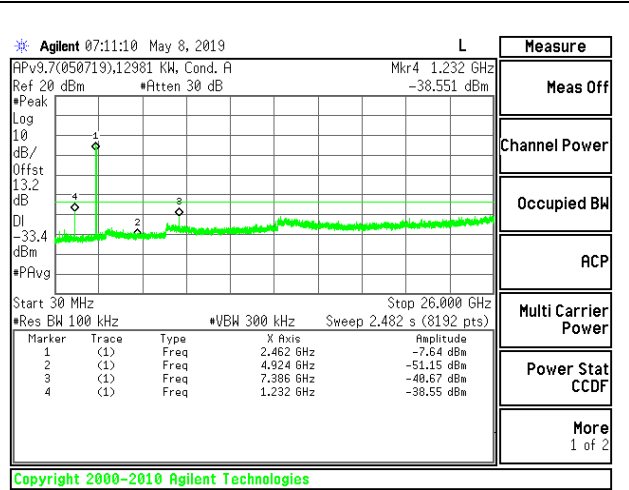
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

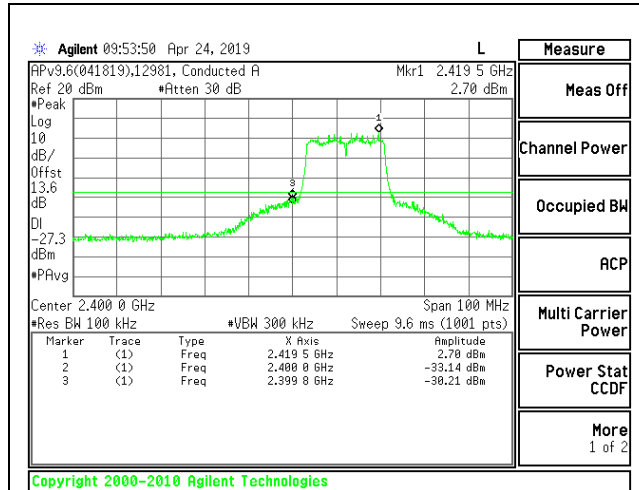


HIGH CHANNEL 11 BANDEDGE

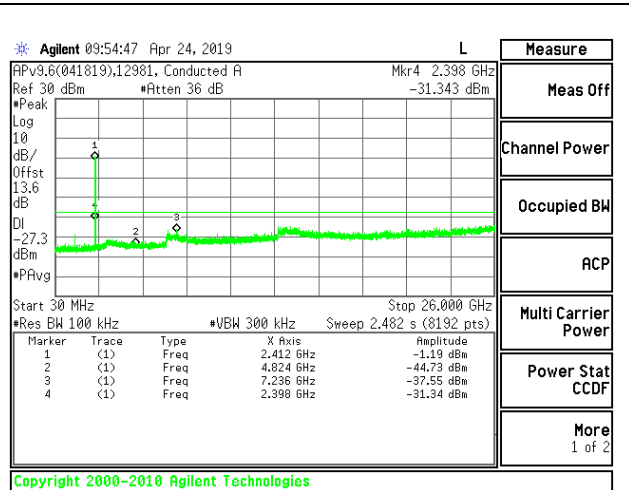


OUT-OF-BAND HIGH CHANNEL 11

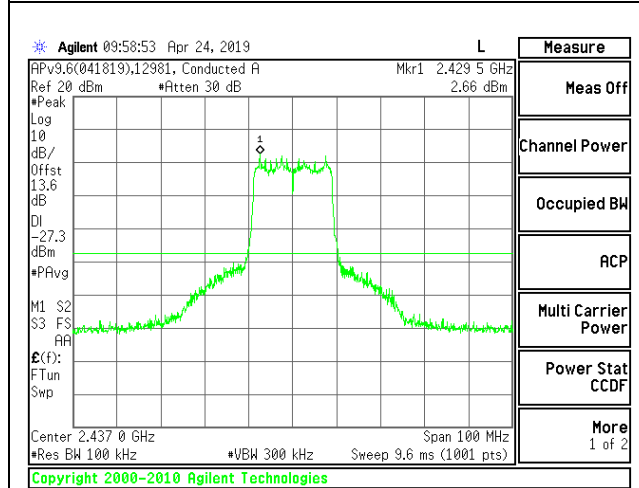
2TX Antenna 1 + Antenna 2 CDD MODE



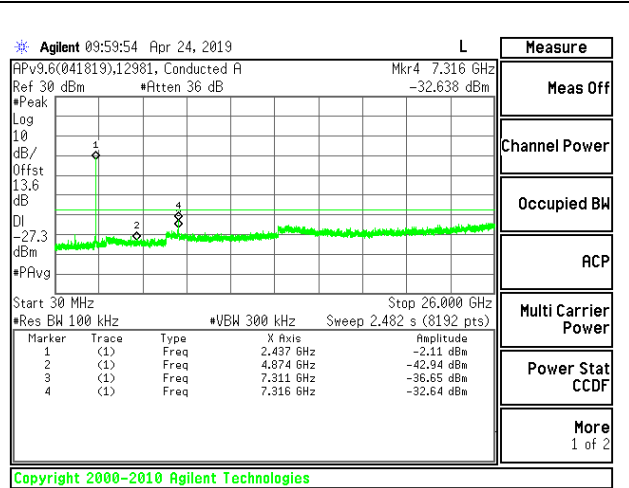
LOW CHANNEL 1 BANDEDGE CHAIN 0



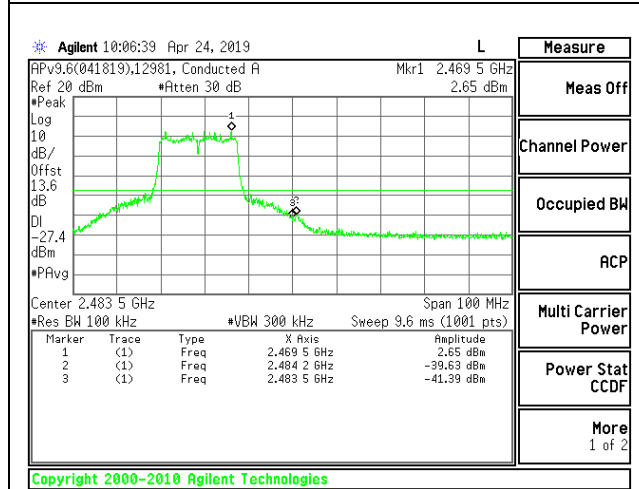
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



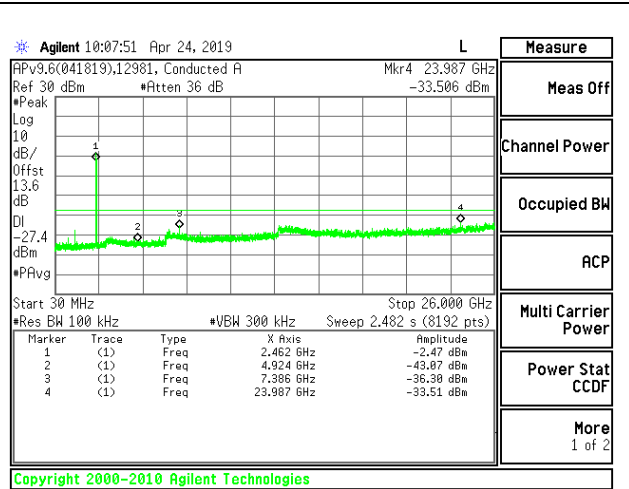
IN-BAND REFERENCE LEVEL CHAIN 0



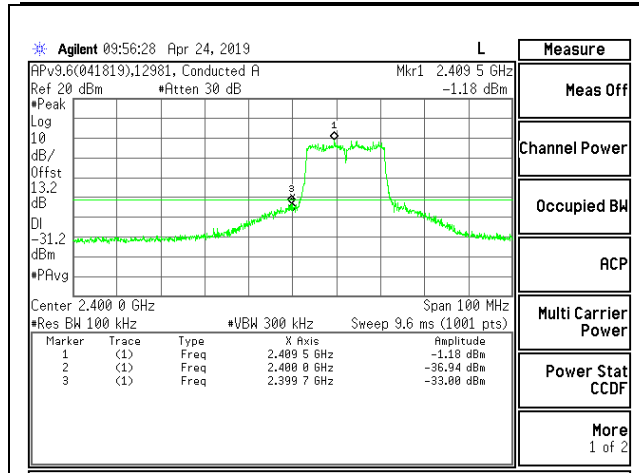
OUT-OF-BAND MID CHANNEL CHAIN 0



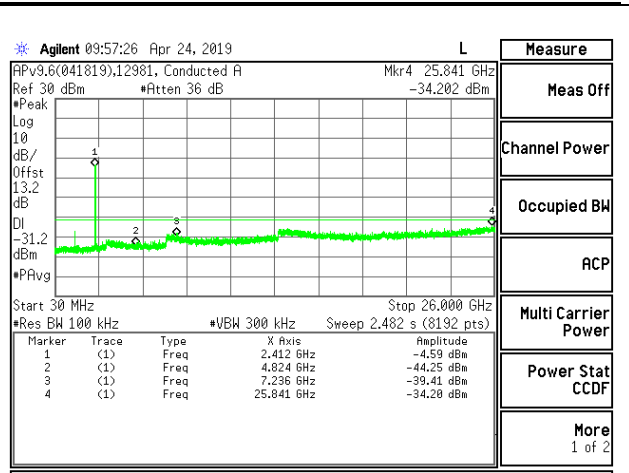
HIGH CHANNEL 11 BANDEDGE CHAIN 0



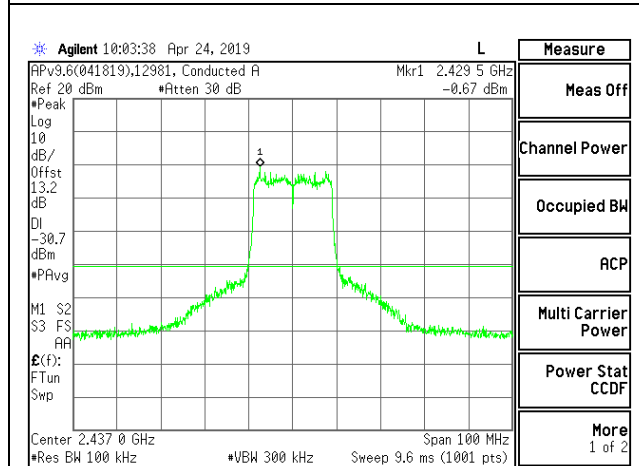
OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0



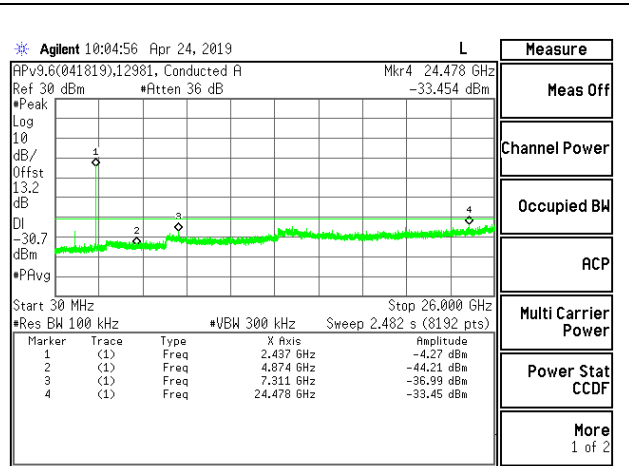
LOW CHANNEL 1 BANDEDGE CHAIN 1



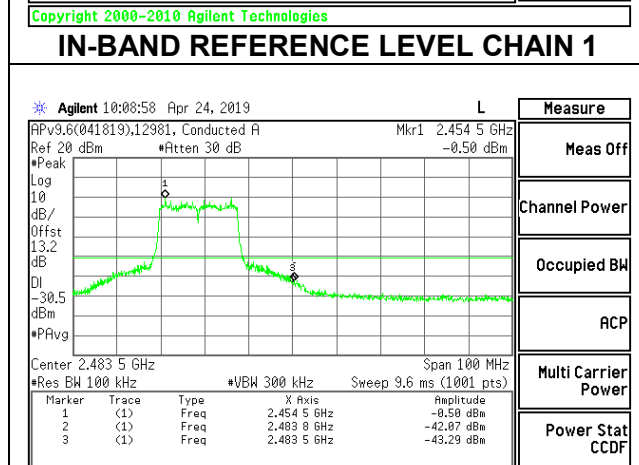
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



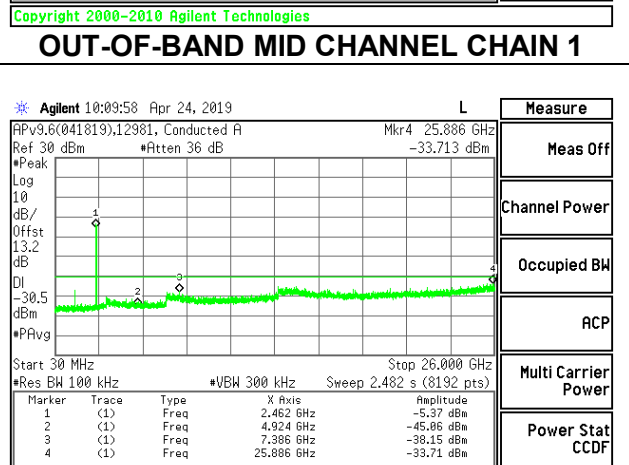
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 11 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1

9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

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

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

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

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

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

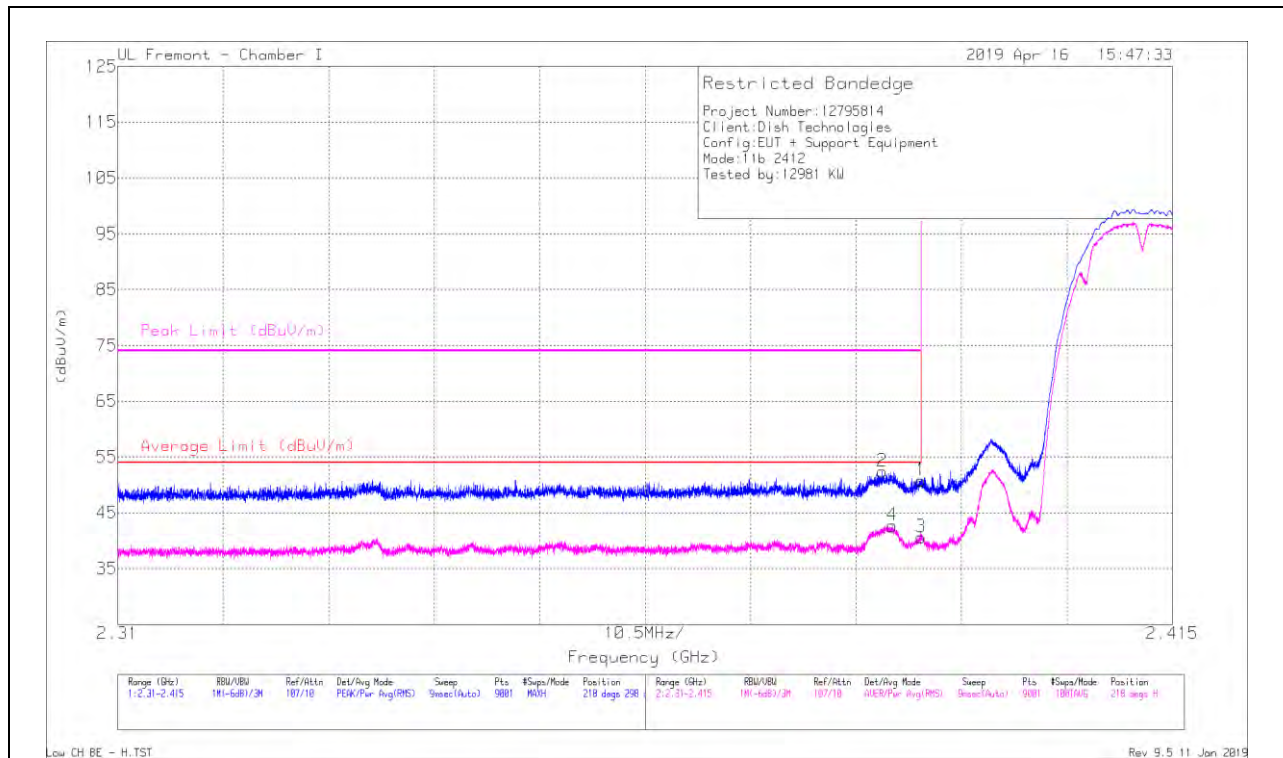
9.1. TRANSMITTER ABOVE 1 GHz

9.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL, CH 1)

HORIZONTAL RESULT



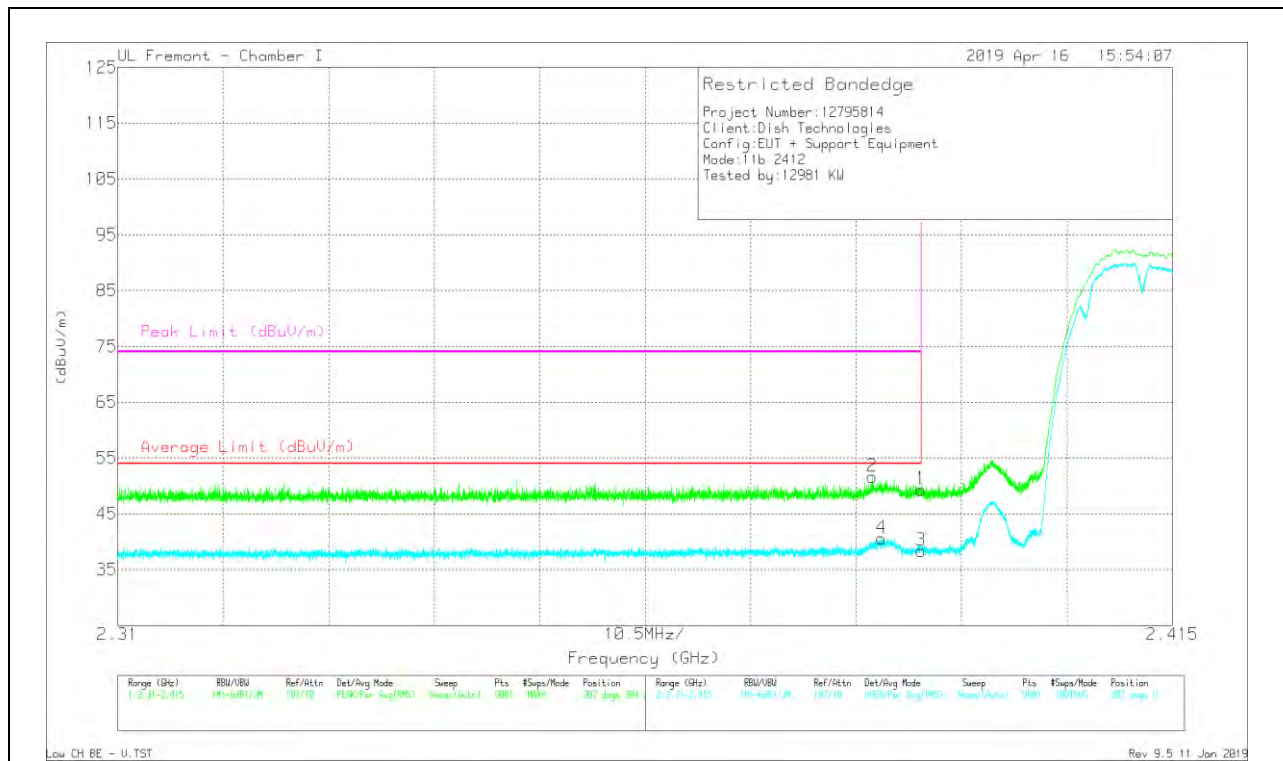
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.55	Pk	31.8	-21.6	50.75	-	-	74	-23.25	218	298	H
2	* 2.386	42.23	Pk	31.8	-21.6	52.43	-	-	74	-21.57	218	298	H
3	* 2.39	30.39	RMS	31.8	-21.6	40.59	54	-13.41	-	-	218	298	H
4	* 2.387	32.46	RMS	31.8	-21.6	42.66	54	-11.34	-	-	218	298	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.16	Pk	31.8	-21.6	49.36	-	-	74	-24.64	307	384	V
2	* 2.385	41.48	Pk	31.8	-21.6	51.68	-	-	74	-22.32	307	384	V
3	* 2.39	28.18	RMS	31.8	-21.6	38.38	54	-15.62	-	-	307	384	V
4	* 2.386	30.41	RMS	31.8	-21.6	40.61	54	-13.39	-	-	307	384	V

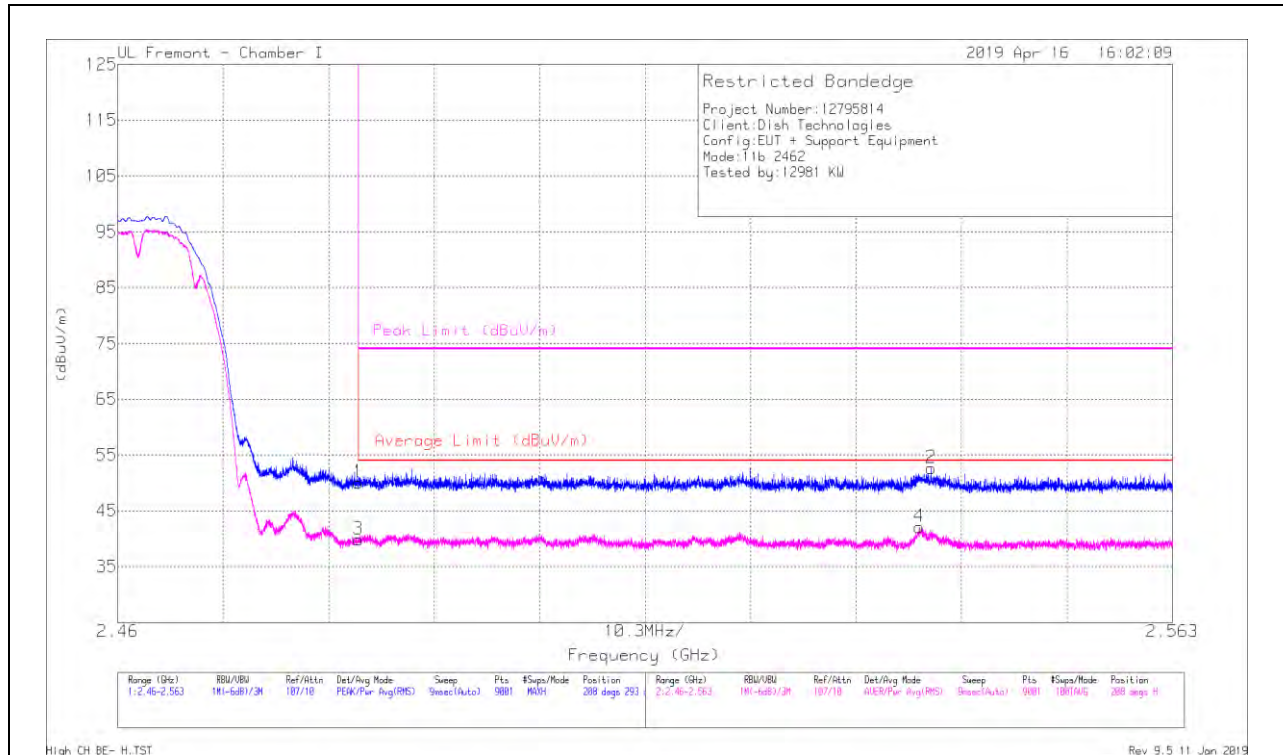
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

BANEDGE (HIGH CHANNEL, CH 11)

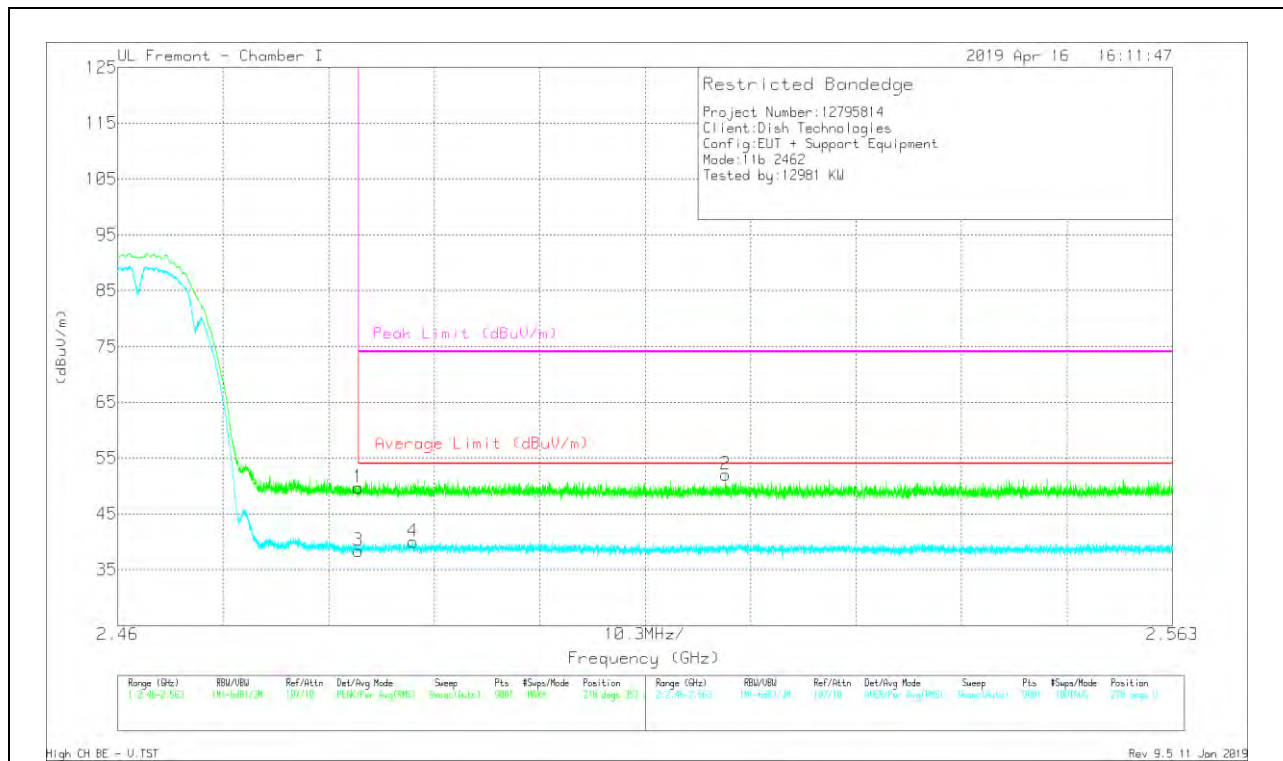
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Filt r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.29	Pk	32.4	-21.7	49.99	-	-	74	-24.01	208	293	H
2	2.539	42.03	Pk	32.3	-21.7	52.63	-	-	74	-21.37	208	293	H
3	* 2.484	29.2	RMS	32.4	-21.7	39.9	54	-14.1	-	-	208	293	H
4	2.538	31.45	RMS	32.3	-21.7	42.05	54	-11.95	-	-	208	293	H

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

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.98	Pk	32.4	-21.7	49.68	-	-	74	-24.32	278	357	V
2	2.519	41.38	Pk	32.4	-21.7	52.08	-	-	74	-21.92	278	357	V
3	* 2.484	27.63	RMS	32.4	-21.7	38.33	54	-15.67	-	-	278	357	V
4	* 2.489	29.34	RMS	32.4	-21.7	40.04	54	-13.96	-	-	278	357	V

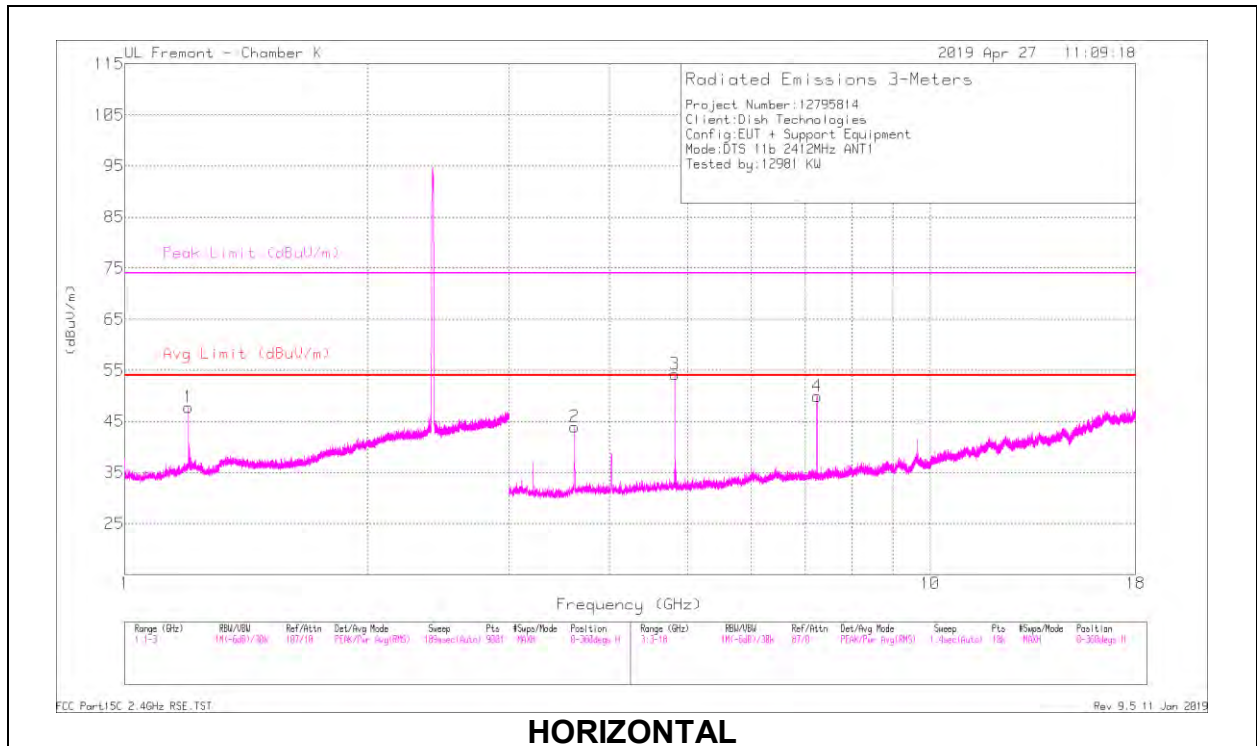
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

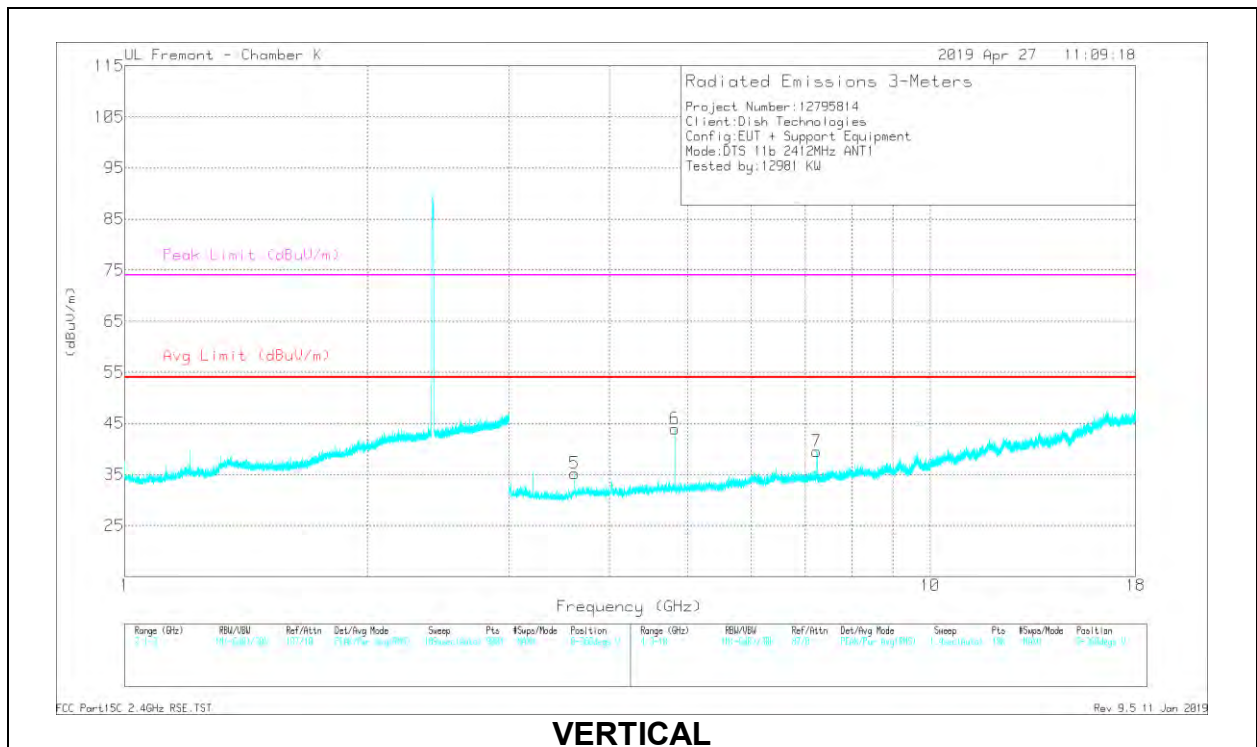
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, CH 1 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

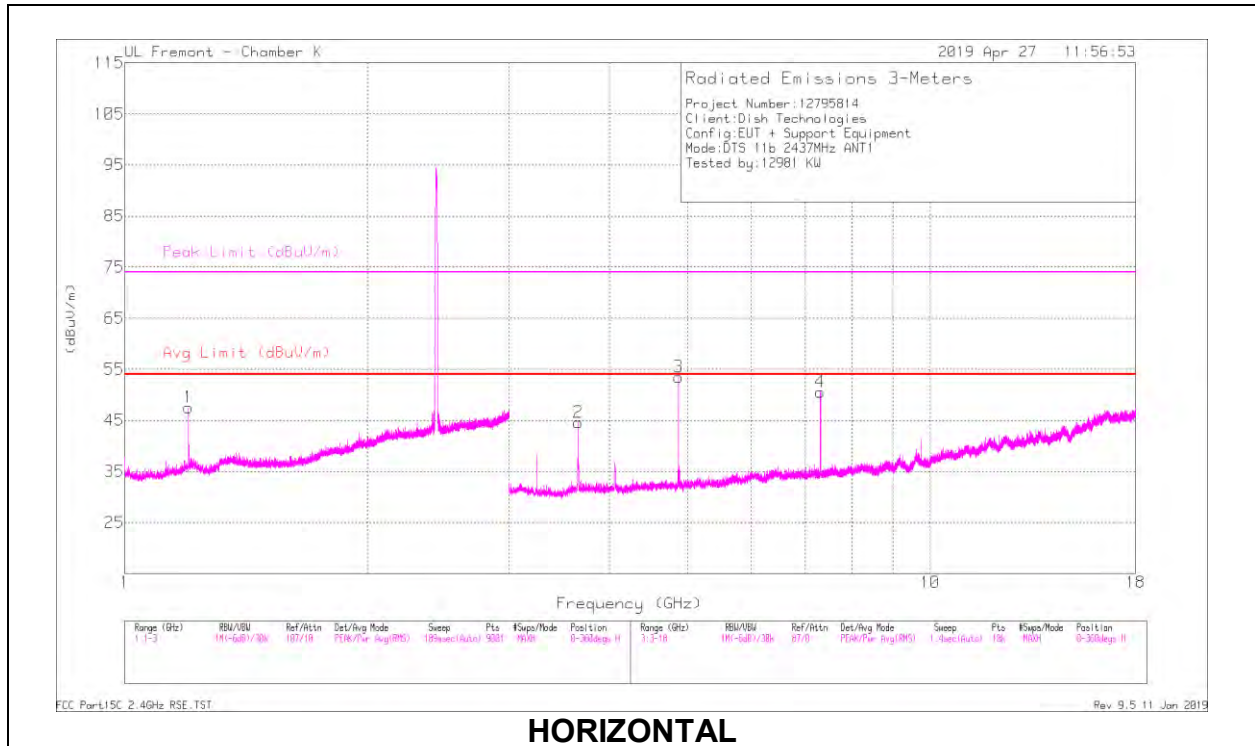
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	37.02	Pk	28.2	-17.5	47.72	-	-	74	-26.28	0-360	101	H
2	* 3.618	43.14	Pk	33	-32.2	43.94	-	-	74	-30.06	0-360	200	H
3	* 4.823	50.51	Pk	34.1	-30.4	54.21	-	-	74	-19.79	0-360	200	H
4	7.238	40.61	Pk	35.5	-26.2	49.91	-	-	-	-	0-360	200	H
5	* 3.618	34.37	Pk	33	-32.2	35.17	-	-	74	-38.83	0-360	200	V
6	* 4.823	40.25	Pk	34.1	-30.4	43.95	-	-	74	-30.05	0-360	200	V
7	7.235	30.35	Pk	35.5	-26.3	39.55	-	-	-	-	0-360	200	V

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

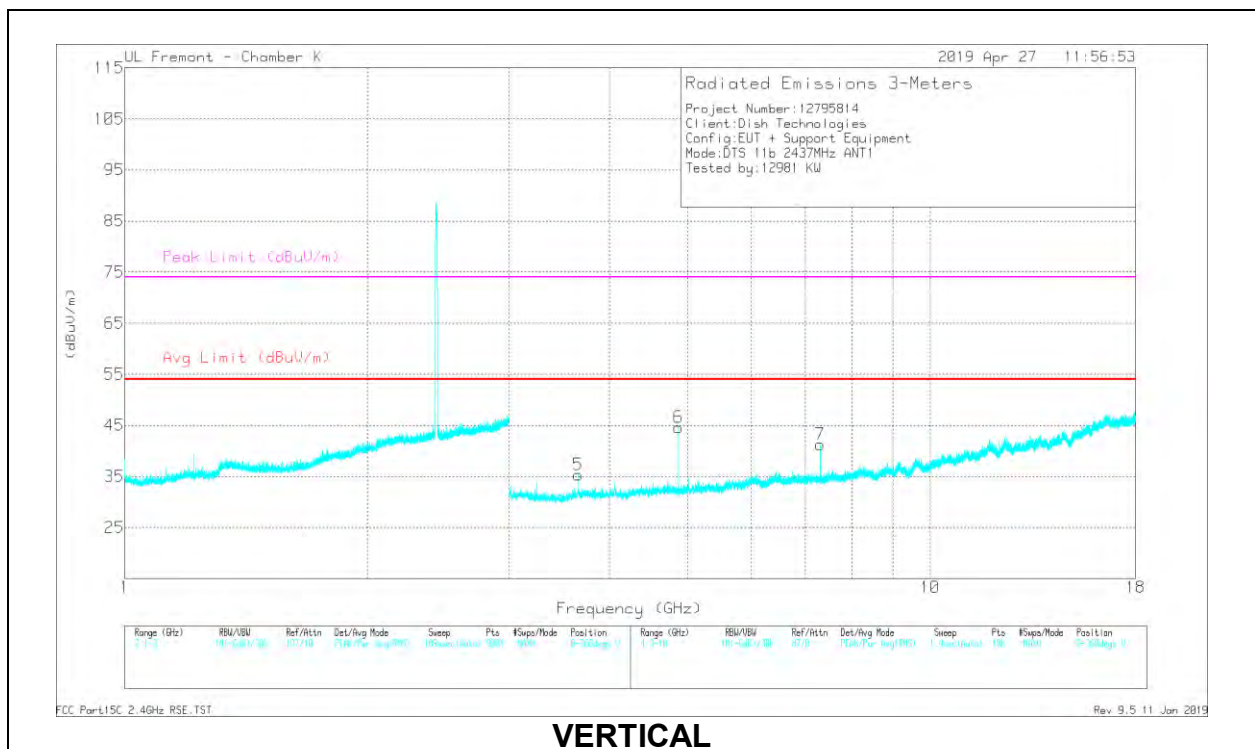
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	38.98	PK2	28.2	-17.5	49.68	-	-	74	-24.32	278	146	H
* 1.2	35.08	MAv1	28.2	-17.5	45.78	54	-8.22	-	-	278	146	H
* 4.824	51.17	PK2	34.1	-30.4	54.87	-	-	74	-19.13	226	204	H
* 4.824	50.03	MAv1	34.1	-30.4	53.73	54	-27	-	-	226	204	H
* 3.618	47.29	PK2	33	-32.2	48.09	-	-	74	-25.91	247	335	H
* 3.618	43.49	MAv1	33	-32.2	44.29	54	-9.71	-	-	247	335	H
* 3.618	42.34	PK2	33	-32.2	43.14	-	-	74	-30.86	19	274	V
* 3.618	34.89	MAv1	33	-32.2	35.69	54	-18.31	-	-	19	274	V
* 4.824	42.29	PK2	34.1	-30.4	45.99	-	-	74	-28.01	286	103	V
* 4.824	39.14	MAv1	34.1	-30.4	42.84	54	-11.16	-	-	286	103	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, CH 6 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

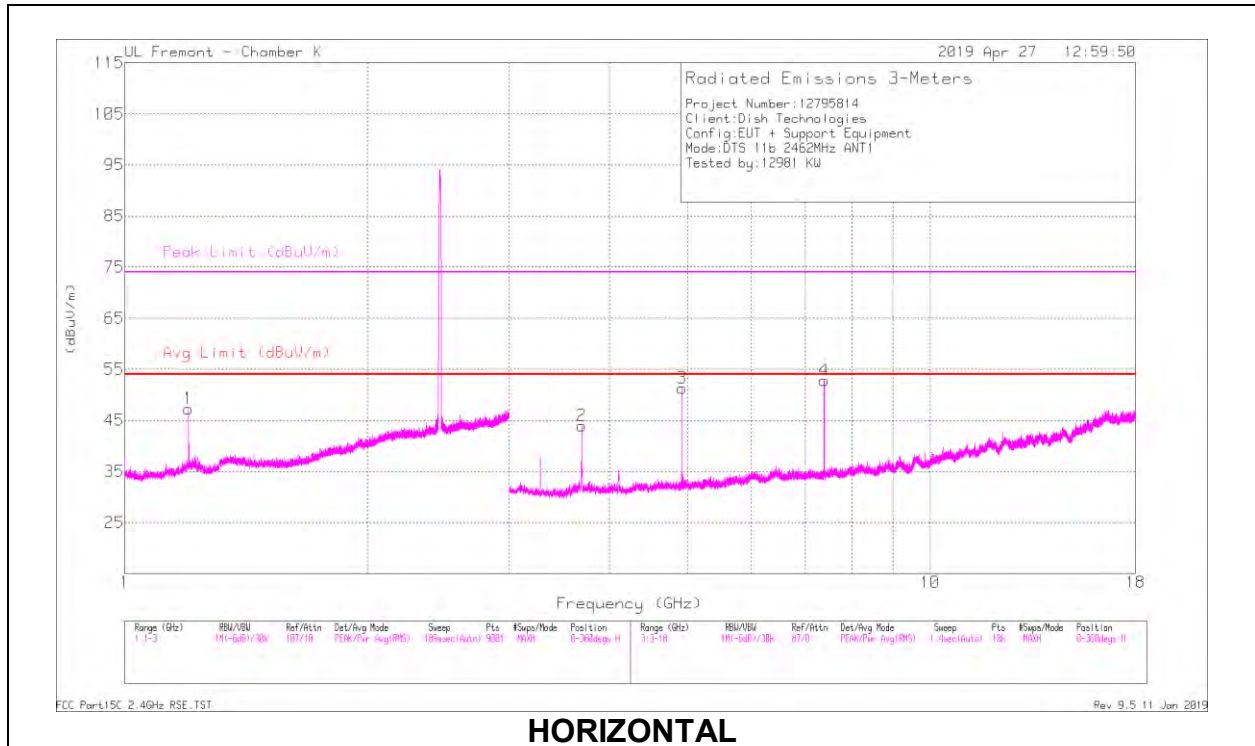
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	36.82	Pk	28.2	-17.5	47.52	-	-	74	-26.48	0-360	101	H
2	* 3.655	43.83	Pk	32.9	-32.1	44.63	-	-	74	-29.37	0-360	200	H
3	* 4.873	49.88	Pk	34.1	-30.5	53.48	-	-	74	-20.52	0-360	200	H
4	* 7.309	41.33	Pk	35.5	-26.3	50.53	-	-	74	-23.47	0-360	200	H
5	* 3.655	34.47	Pk	32.9	-32.1	35.27	-	-	74	-38.73	0-360	101	V
6	* 4.873	41.01	Pk	34.1	-30.5	44.61	-	-	74	-29.39	0-360	200	V
7	* 7.311	32.11	Pk	35.5	-26.3	41.31	-	-	74	-32.69	0-360	200	V

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

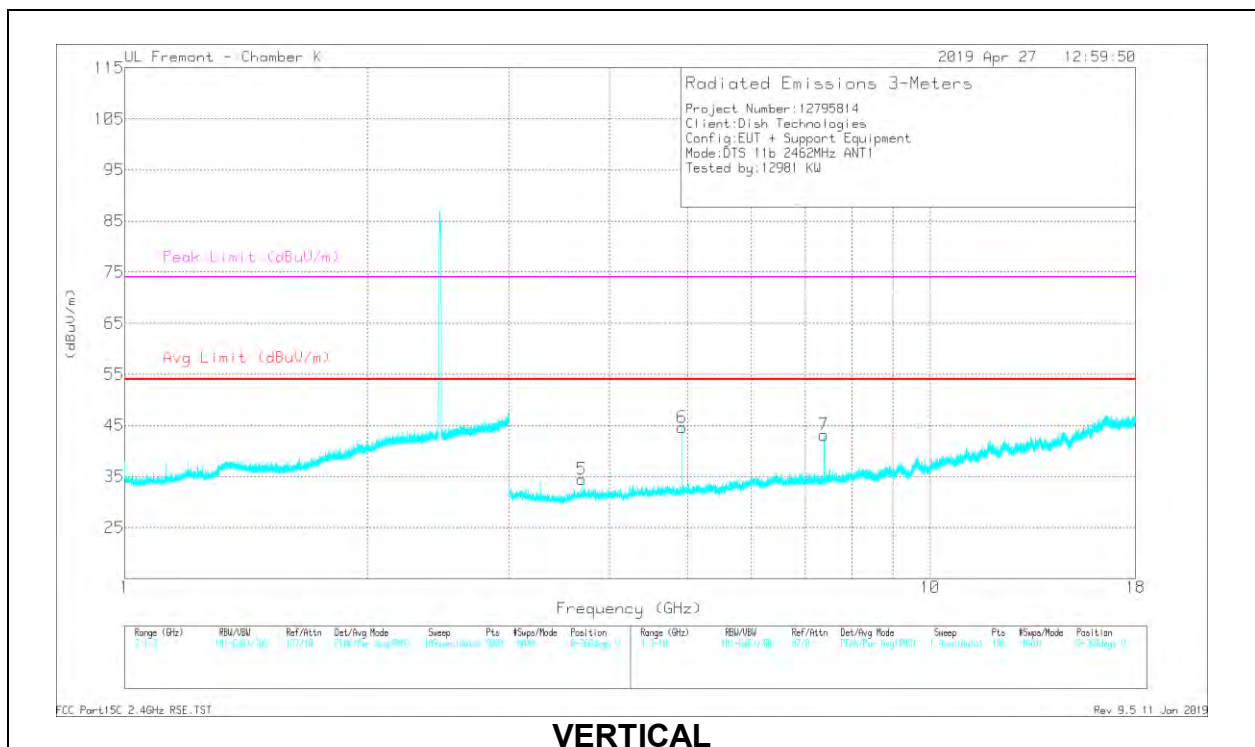
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	39.21	PK2	28.2	-17.5	49.91	-	-	74	-24.09	278	189	H
* 1.2	35.21	MAv1	28.2	-17.5	45.91	54	-8.09	-	-	278	189	H
* 4.874	50.66	PK2	34.1	-30.5	54.26	-	-	74	-19.74	229	199	H
* 4.874	49.49	MAv1	34.1	-30.5	53.09	54	-91	-	-	229	199	H
* 3.655	47	PK2	33	-32.1	47.9	-	-	74	-26.1	249	215	H
* 3.655	43.61	MAv1	33	-32.1	44.51	54	-9.49	-	-	249	215	H
* 7.31	44.94	PK2	35.5	-26.3	54.14	-	-	74	-19.86	284	170	H
* 7.31	41.68	MAv1	35.5	-26.3	50.88	54	-3.12	-	-	284	170	H
* 3.656	41.46	PK2	33	-32.1	42.36	-	-	74	-31.64	20	101	V
* 3.655	33.89	MAv1	33	-32.1	34.79	54	-19.21	-	-	20	101	V
* 4.874	41.54	PK2	34.1	-30.5	45.14	-	-	74	-28.86	287	110	V
* 4.874	37.99	MAv1	34.1	-30.5	41.59	54	-12.41	-	-	287	110	V
* 7.309	37.7	PK2	35.5	-26.3	46.9	-	-	74	-27.1	326	391	V
* 7.31	31.28	MAv1	35.5	-26.3	40.48	54	-13.52	-	-	326	391	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL, CH 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	36.53	Pk	28.2	-17.5	47.23	-	-	74	-26.77	0-360	101	H
2	* 3.693	42.89	Pk	33.1	-32	43.99	-	-	74	-30.01	0-360	200	H
3	* 4.923	47.68	Pk	34.2	-30.6	51.28	-	-	74	-22.72	0-360	200	H
4	* 7.388	43.79	Pk	35.5	-26.5	52.79	-	-	74	-21.21	0-360	200	H
5	* 3.693	33.28	Pk	33.1	-32	34.38	-	-	74	-39.62	0-360	200	V
6	* 4.923	41.03	Pk	34.2	-30.6	44.63	-	-	74	-29.37	0-360	200	V
7	* 7.387	34.13	Pk	35.5	-26.5	43.13	-	-	74	-30.87	0-360	200	V

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

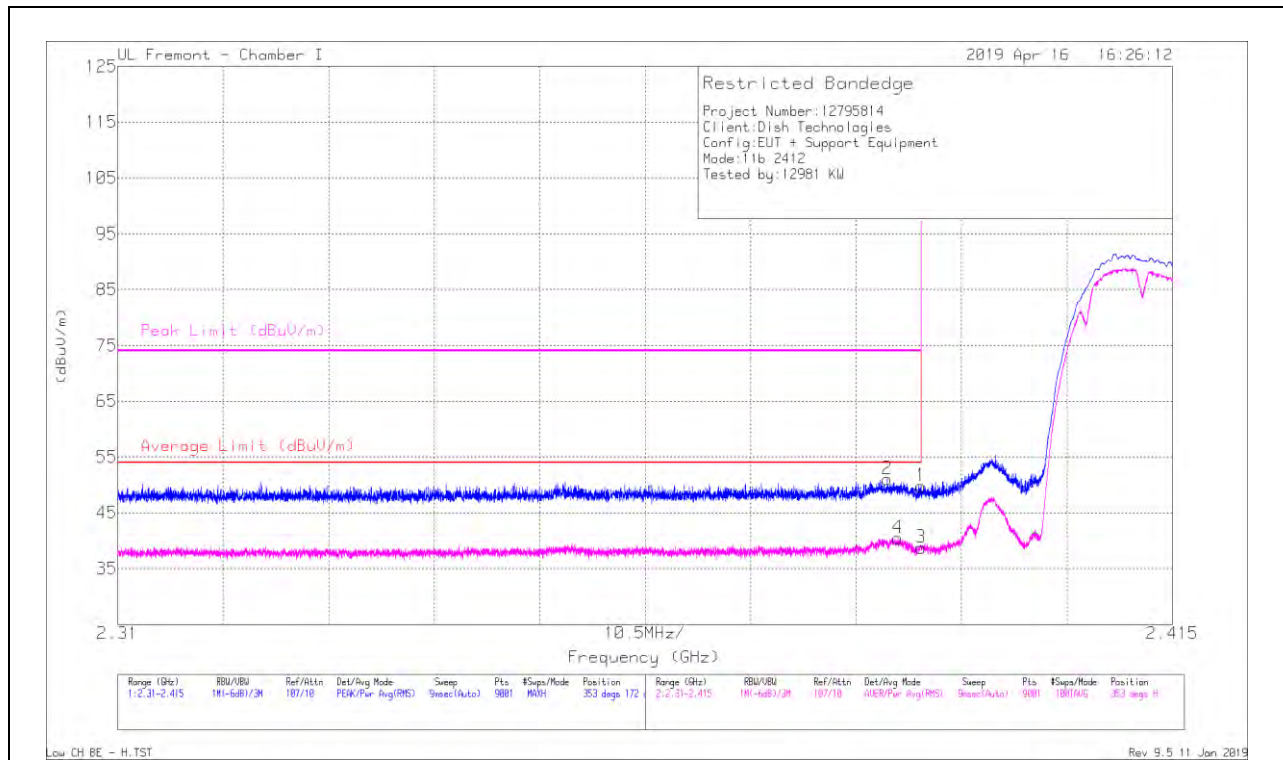
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	38.81	PK2	28.2	-17.5	49.51	-	-	74	-24.49	279	148	H
* 1.2	35.17	MAv1	28.2	-17.5	45.87	54	-8.13	-	-	279	148	H
* 4.924	48.9	PK2	34.2	-30.6	52.5	-	-	74	-21.5	232	209	H
* 4.924	47.51	MAv1	34.2	-30.6	51.11	54	-2.89	-	-	232	209	H
* 7.387	47.43	PK2	35.5	-26.5	56.43	-	-	74	-17.57	284	172	H
* 7.387	44.37	MAv1	35.5	-26.5	53.37	54	-6.3	-	-	284	172	H
* 3.693	46.77	PK2	33.1	-32	47.87	-	-	74	-26.13	247	211	H
* 3.693	42.76	MAv1	33.1	-32	43.86	54	-10.14	-	-	247	211	H
* 3.693	38.87	PK2	33.1	-32	39.97	-	-	74	-34.03	27	111	V
* 3.693	31.77	MAv1	33.1	-32	32.87	54	-21.13	-	-	27	111	V
* 4.924	43.37	PK2	34.2	-30.6	46.97	-	-	74	-27.03	211	400	V
* 4.924	41.08	MAv1	34.2	-30.6	44.68	54	-9.32	-	-	211	400	V
* 7.383	39.1	PK2	35.5	-26.5	48.1	-	-	74	-25.9	322	398	V
* 7.387	33.87	MAv1	35.5	-26.5	42.87	54	-11.13	-	-	322	398	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

1TX Antenna 2 MODE

BANDEDGE (LOW CHANNEL, CH 1)

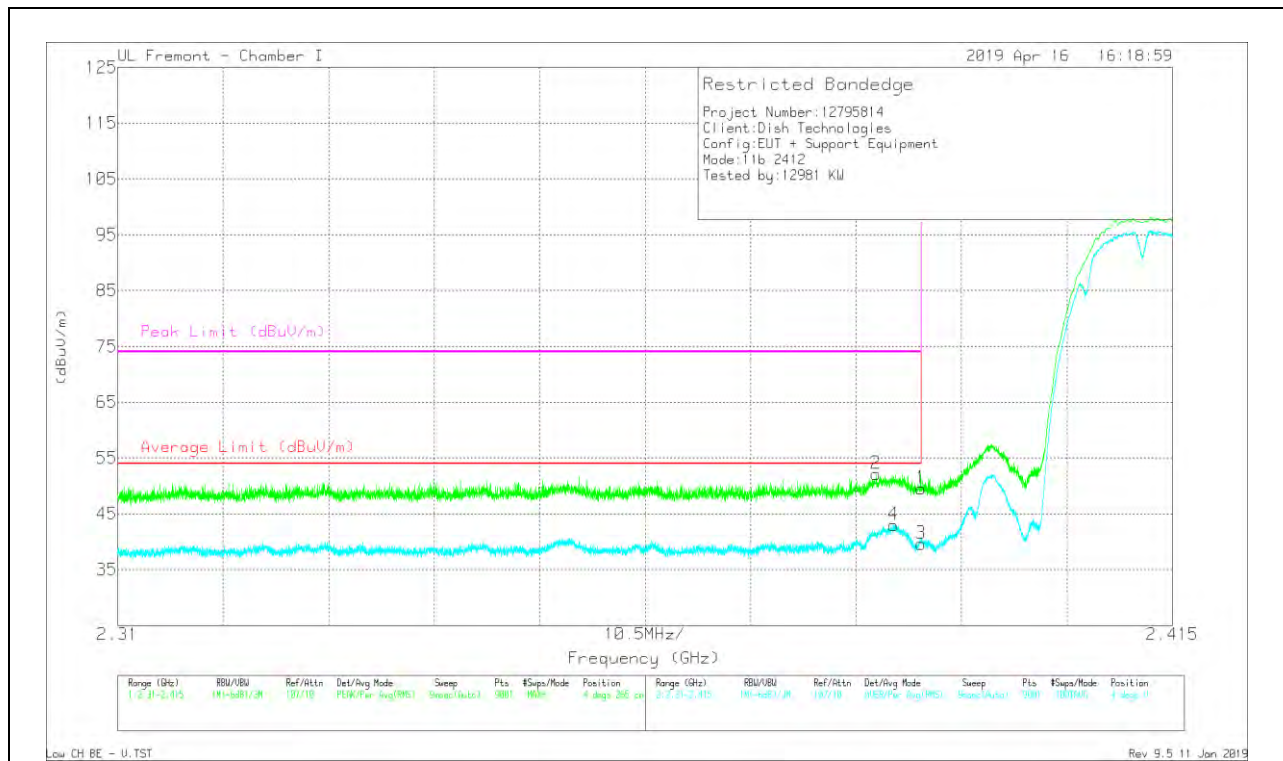
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.56	Pk	31.8	-21.6	49.76	-	-	74	-24.24	353	172	H
2	* 2.387	40.8	Pk	31.8	-21.6	51	-	-	74	-23	353	172	H
3	* 2.39	28.56	RMS	31.8	-21.6	38.76	54	-15.24	-	-	353	172	H
4	* 2.388	30.24	RMS	31.8	-21.6	40.44	54	-13.56	-	-	353	172	H

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

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.29	Pk	31.8	-21.6	49.49	-	-	74	-24.51	4	265	V
2	* 2.386	42.01	Pk	31.8	-21.6	52.21	-	-	74	-21.79	4	265	V
3	* 2.39	29.43	RMS	31.8	-21.6	39.63	54	-14.37	-	-	4	265	V
4	* 2.387	32.78	RMS	31.8	-21.6	42.98	54	-11.02	-	-	4	265	V

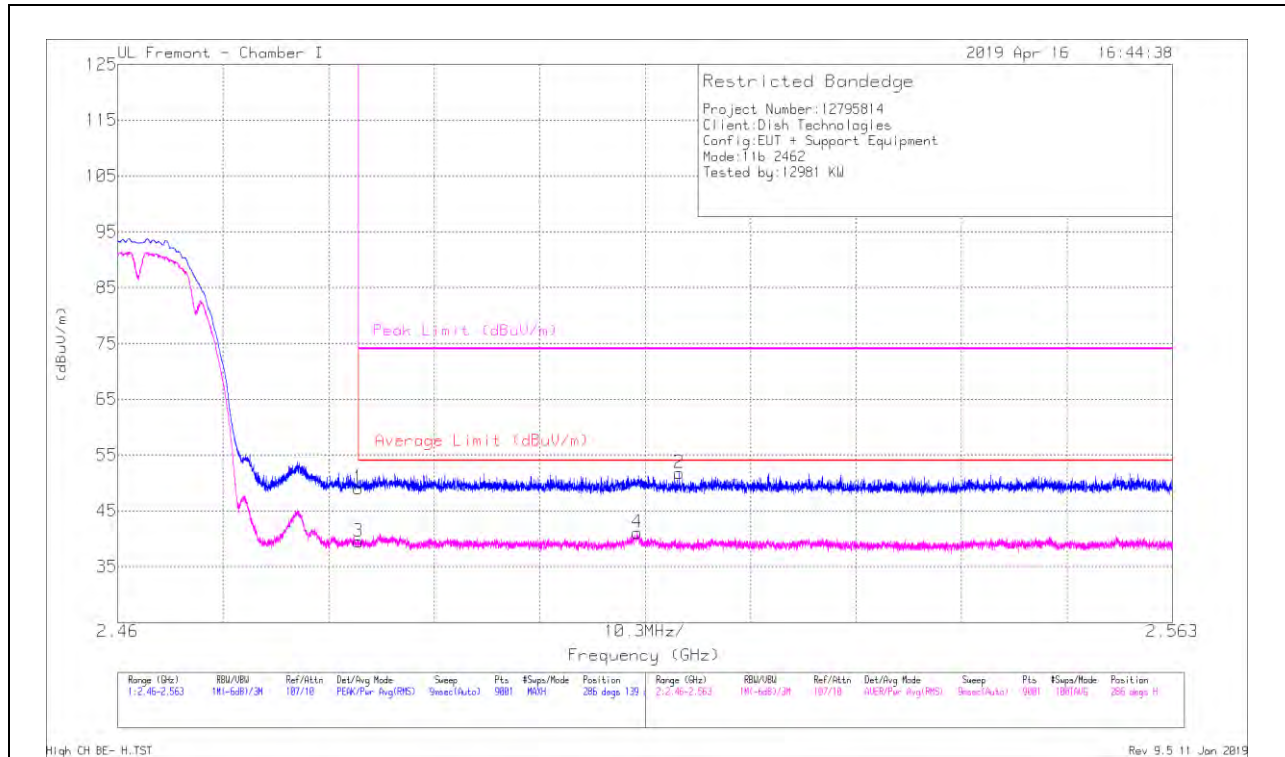
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

BANEDGE (HIGH CHANNEL, CH 11)

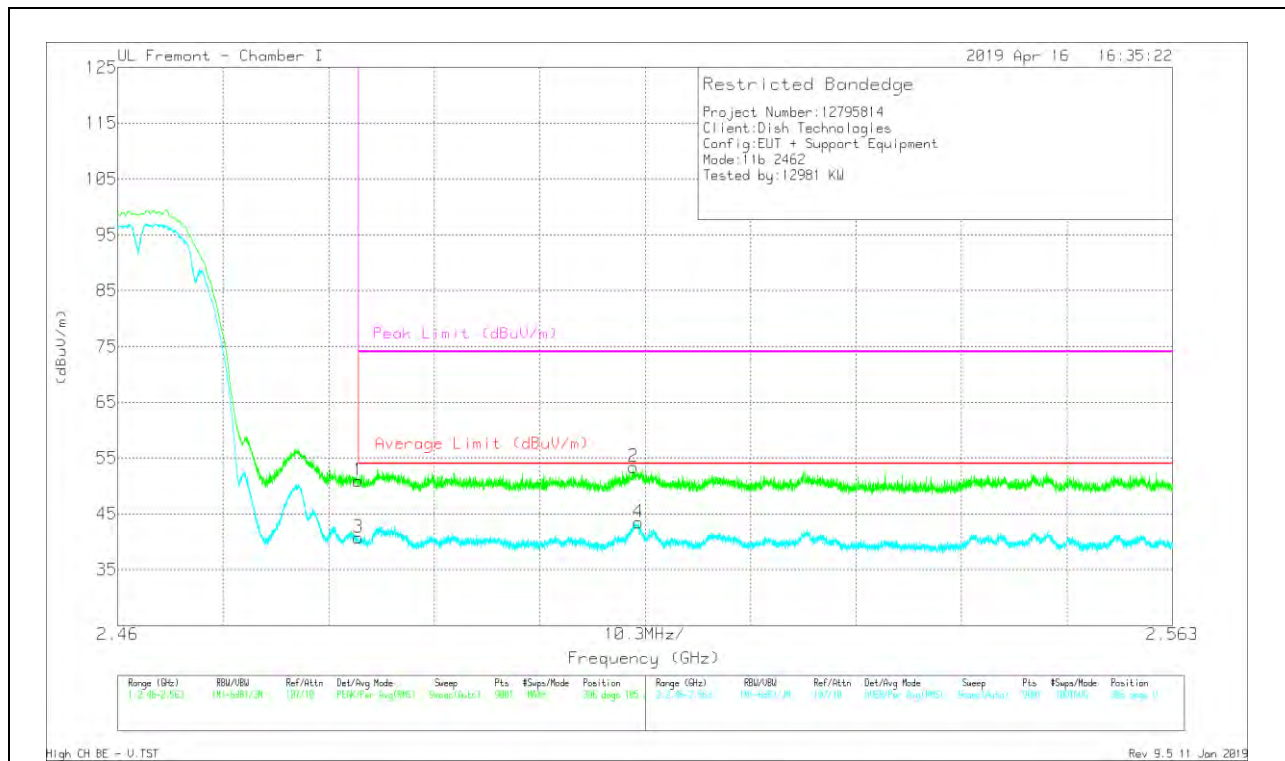
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Filt r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.33	Pk	32.4	-21.7	49.03	-	-	74	-24.97	286	139	H
2	2.515	41.15	Pk	32.4	-21.8	51.75	-	-	74	-22.25	286	139	H
3	* 2.484	28.77	RMS	32.4	-21.7	39.47	54	-14.53	-	-	286	139	H
4	2.511	30.37	RMS	32.4	-21.7	41.07	54	-12.93	-	-	286	139	H

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

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.26	Pk	32.4	-21.7	50.96	-	-	74	-23.04	306	105	V
2	2.51	42.69	Pk	32.4	-21.7	53.39	-	-	74	-20.61	306	105	V
3	* 2.484	29.99	RMS	32.4	-21.7	40.69	54	-13.31	-	-	306	105	V
4	2.511	32.75	RMS	32.4	-21.7	43.45	54	-10.55	-	-	306	105	V

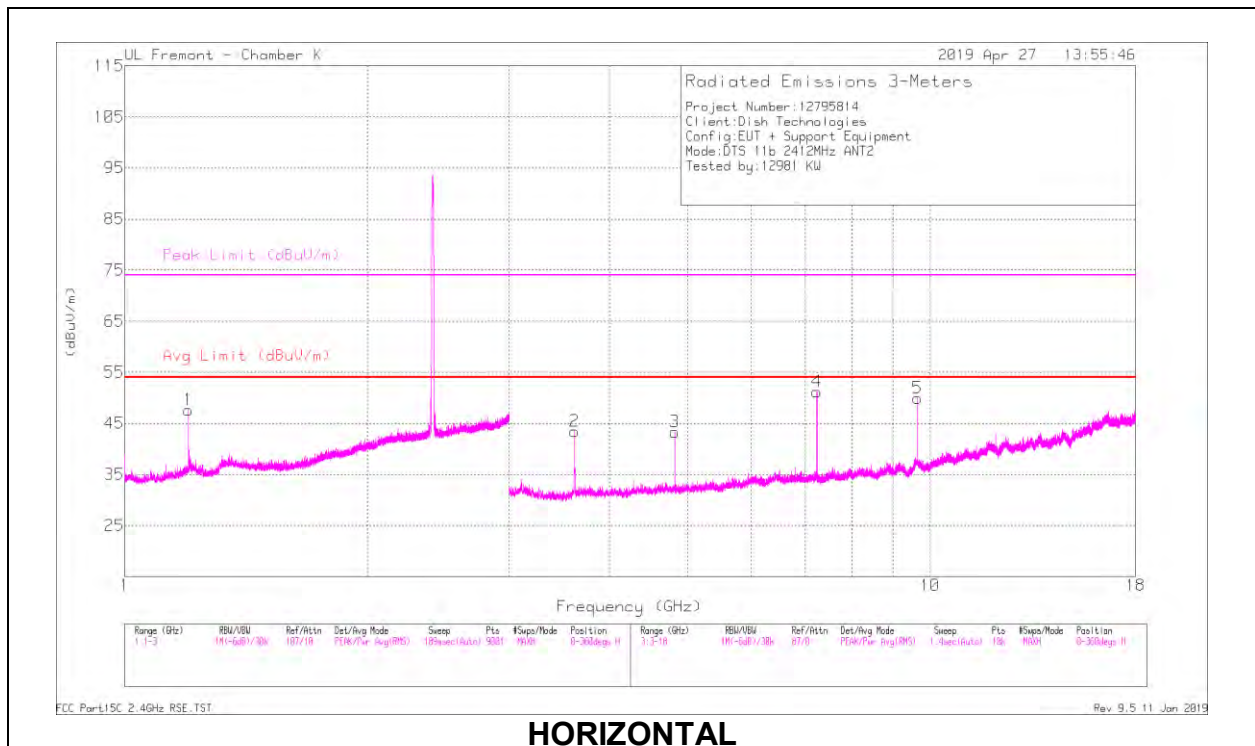
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

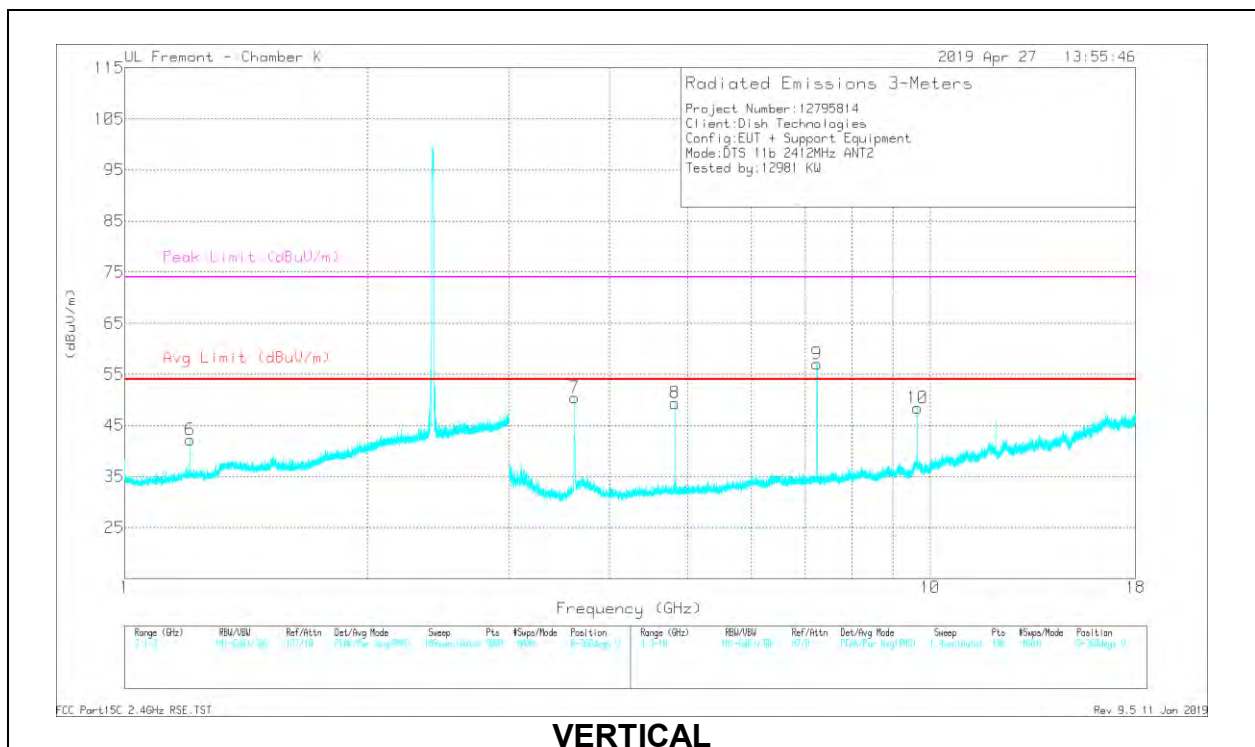
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, CH 1 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

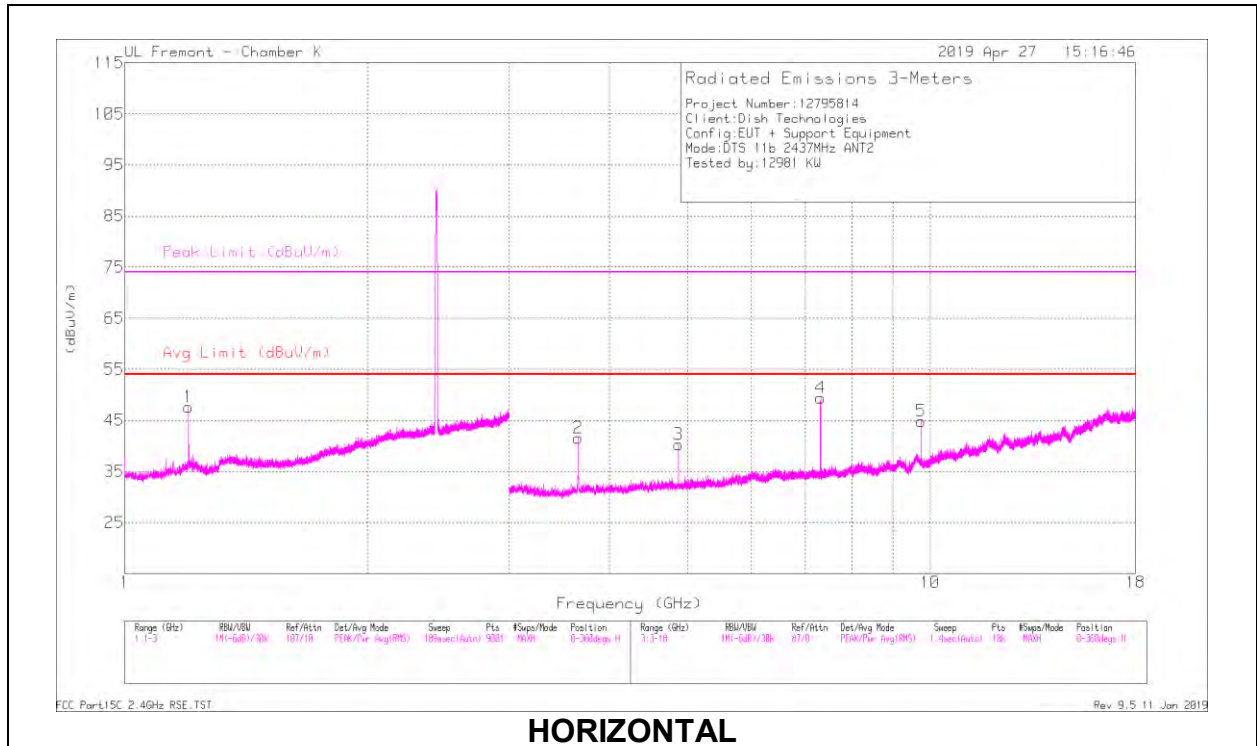
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	36.96	Pk	28.2	-17.5	47.66	-	-	74	-26.34	0-360	200	H
6	* 1.206	31.22	Pk	28.3	-17.4	42.12	-	-	74	-31.88	0-360	200	V
2	* 3.618	42.6	Pk	33	-32.2	43.4	-	-	74	-30.6	0-360	200	H
3	* 4.823	39.59	Pk	34.1	-30.4	43.29	-	-	74	-30.71	0-360	200	H
4	7.237	41.98	Pk	35.5	-26.3	51.18	-	-	-	-	0-360	101	H
5	9.648	36.53	Pk	36.8	-23.4	49.93	-	-	-	-	0-360	101	H
7	* 3.618	49.6	Pk	33	-32.2	50.4	-	-	74	-23.6	0-360	200	V
8	* 4.823	45.65	Pk	34.1	-30.4	49.35	-	-	74	-24.65	0-360	200	V
9	7.237	47.79	Pk	35.5	-26.3	56.99	-	-	-	-	0-360	101	V
10	9.648	34.97	Pk	36.8	-23.4	48.37	-	-	-	-	0-360	200	V

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

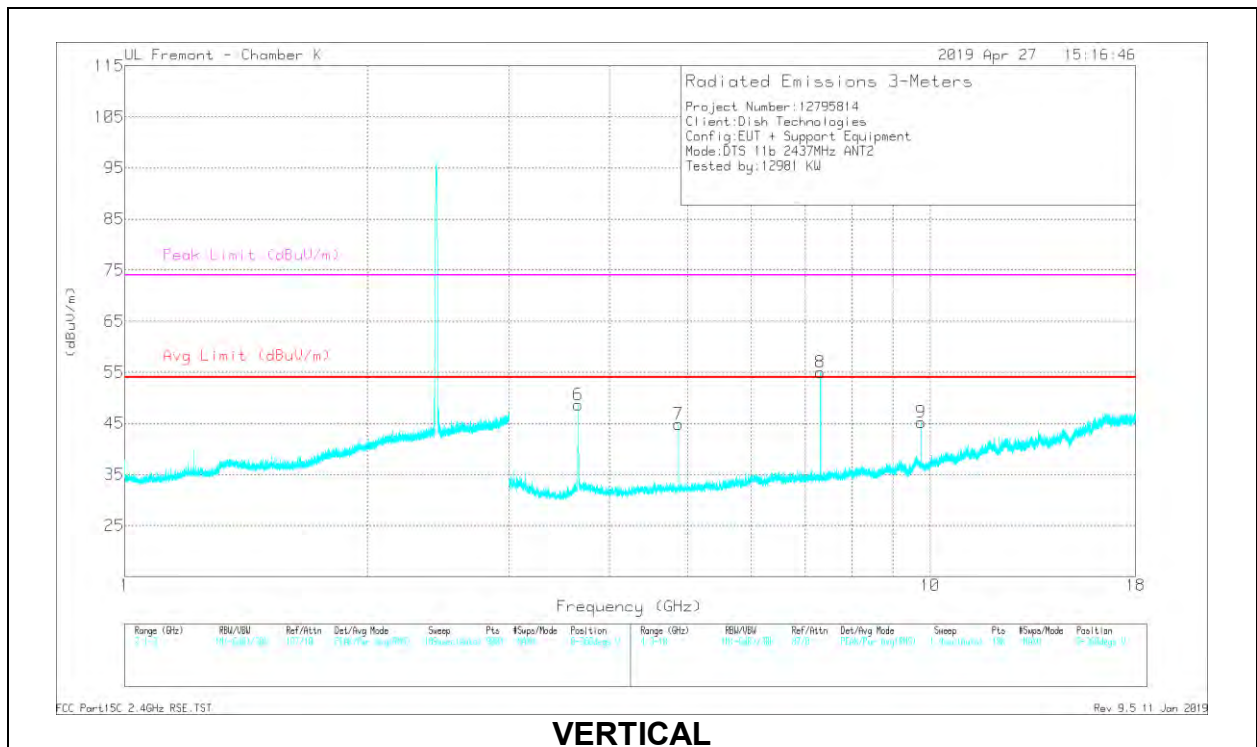
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	38.77	PK2	28.2	-17.5	49.47	-	-	74	-24.53	280	148	H
* 1.2	35.34	MAv1	28.2	-17.5	46.04	54	-7.96	-	-	280	148	H
* 1.206	35.21	PK2	28.3	-17.4	46.11	-	-	74	-27.89	341	203	V
* 1.206	29.73	MAv1	28.3	-17.4	40.63	54	-13.37	-	-	341	203	V
* 3.618	46.71	PK2	33	-32.2	47.51	-	-	74	-26.49	210	220	H
* 3.618	43.28	MAv1	33	-32.2	44.08	54	-9.92	-	-	210	220	H
* 3.618	51.85	PK2	33	-32.2	52.65	-	-	74	-21.35	343	191	V
* 3.618	49.3	MAv1	33	-32.2	50.1	54	-3.9	-	-	343	191	V
* 4.824	40.64	PK2	34.1	-30.4	44.34	-	-	74	-29.66	265	167	H
* 4.824	38.45	MAv1	34.1	-30.4	42.15	54	-11.85	-	-	265	167	H
* 4.824	47.25	PK2	34.1	-30.4	50.95	-	-	74	-23.05	289	197	V
* 4.824	45.49	MAv1	34.1	-30.4	49.19	54	-4.81	-	-	289	197	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, CH 6 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

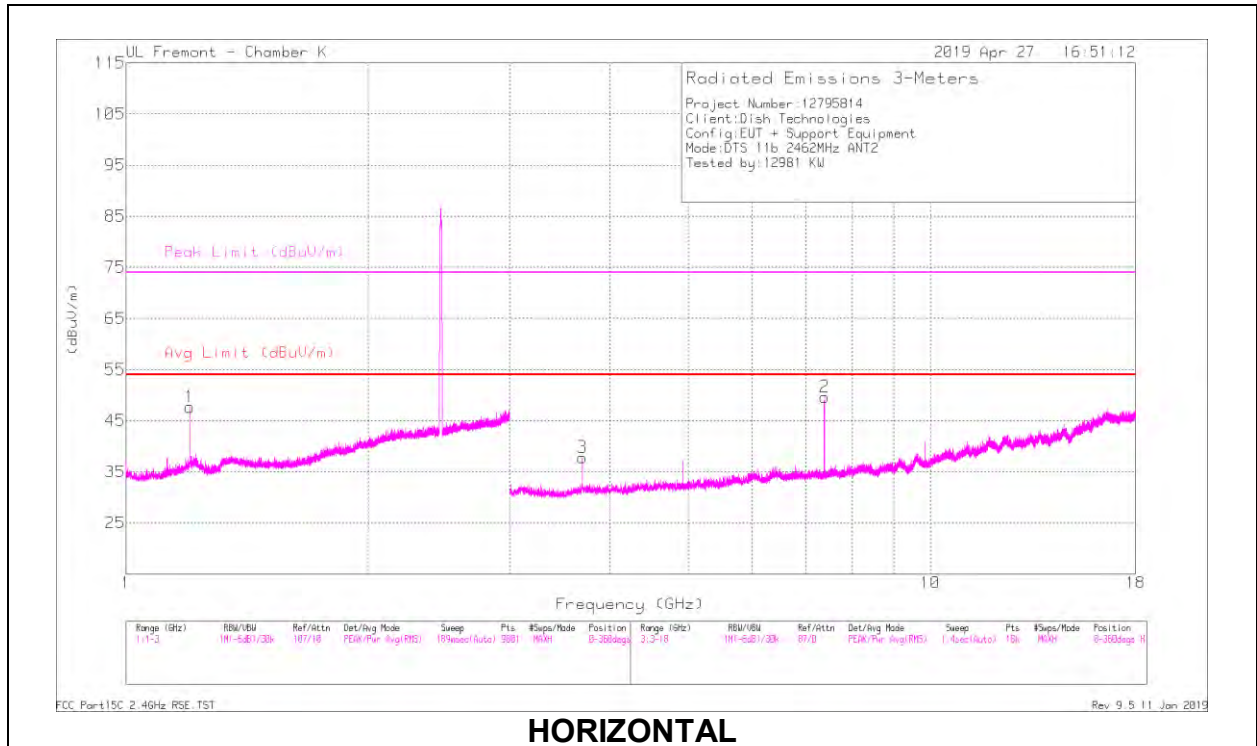
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	36.97	Pk	28.2	-17.5	47.67	-	-	74	-26.33	0-360	101	H
2	* 3.655	40.7	Pk	32.9	-32.1	41.5	-	-	74	-32.5	0-360	200	H
3	* 4.873	36.64	Pk	34.1	-30.5	40.24	-	-	74	-33.76	0-360	200	H
4	* 7.312	40.21	Pk	35.5	-26.3	49.41	-	-	74	-24.59	0-360	101	H
5	9.748	31.49	Pk	36.9	-23.6	44.79	-	-	-	-	0-360	200	H
6	* 3.655	47.81	Pk	32.9	-32.1	48.61	-	-	74	-25.39	0-360	200	V
7	* 4.873	41.28	Pk	34.1	-30.5	44.88	-	-	74	-29.12	0-360	200	V
8	* 7.309	45.79	Pk	35.5	-26.3	54.99	-	-	74	-19.01	0-360	101	V
9	9.748	31.87	Pk	36.9	-23.6	45.17	-	-	-	-	0-360	200	V

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

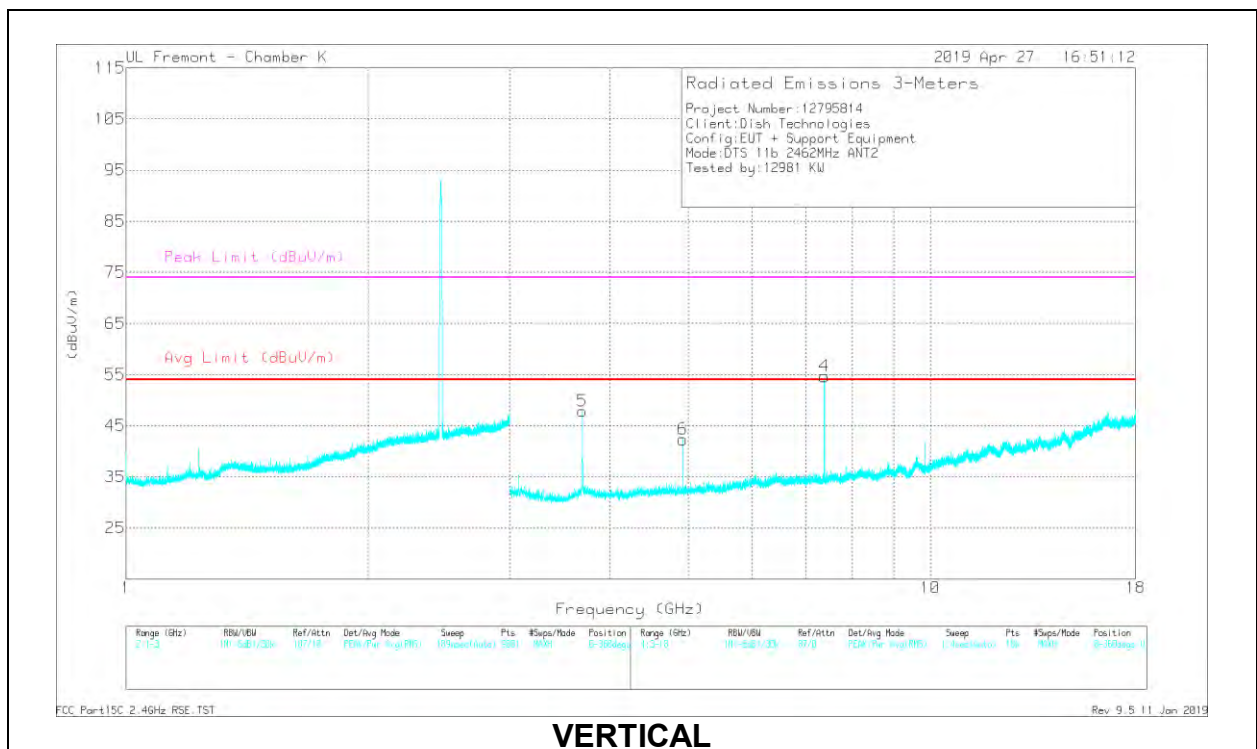
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	39.08	PK2	28.2	-17.5	49.78	-	-	74	-24.22	273	187	H
* 1.2	34.85	MAV1	28.2	-17.5	45.55	54	-8.45	-	-	273	187	H
* 7.312	42.88	PK2	35.5	-26.3	52.08	-	-	74	-21.92	5	117	H
* 7.312	38.7	MAV1	35.5	-26.3	47.9	54	-6.1	-	-	5	117	H
* 4.874	40.49	PK2	34.1	-30.5	44.09	-	-	74	-29.91	225	212	H
* 4.874	36.19	MAV1	34.1	-30.5	39.79	54	-14.21	-	-	225	212	H
* 3.655	45.08	PK2	33	-32.1	45.98	-	-	74	-28.02	206	249	H
* 3.655	41.53	MAV1	33	-32.1	42.43	54	-11.57	-	-	206	249	H
* 7.312	47.49	PK2	35.5	-26.3	56.69	-	-	74	-17.31	267	102	V
* 7.313	44.38	MAV1	35.5	-26.3	53.58	54	-4.2	-	-	267	102	V
* 4.874	42.13	PK2	34.1	-30.5	45.73	-	-	74	-28.27	277	158	V
* 4.874	39.01	MAV1	34.1	-30.5	42.61	54	-11.39	-	-	277	158	V
* 3.655	50.12	PK2	32.9	-32.1	50.92	-	-	74	-23.08	338	207	V
* 3.655	47.26	MAV1	33	-32.1	48.16	54	-5.84	-	-	338	207	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL, CH 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	36.99	Pk	28.2	-17.5	47.69	-	-	74	-26.31	0-360	200	H
2	* 7.387	40.62	Pk	35.5	-26.5	49.62	-	-	74	-24.38	0-360	101	H
3	* 3.693	36.72	Pk	33.1	-32	37.82	-	-	74	-36.18	0-360	200	H
4	* 7.384	45.66	Pk	35.5	-26.5	54.66	-	-	74	-19.34	0-360	101	V
5	* 3.693	46.76	Pk	33.1	-32	47.86	-	-	74	-26.14	0-360	200	V
6	* 4.923	38.74	Pk	34.2	-30.6	42.34	-	-	74	-31.66	0-360	101	V

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

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.201	39.48	PK2	28.2	-17.5	50.18	-	-	74	-23.82	277	192	H
* 1.2	35.05	MAv1	28.2	-17.5	45.75	54	-8.25	-	-	277	192	H
* 7.389	43.12	PK2	35.5	-26.5	52.12	-	-	74	-21.88	355	103	H
* 7.387	38.89	MAv1	35.5	-26.5	47.89	54	-6.11	-	-	355	103	H
* 3.693	43.03	PK2	33.1	-32	44.13	-	-	74	-29.87	207	260	H
* 3.693	38.75	MAv1	33.1	-32	39.85	54	-14.15	-	-	207	260	H
* 7.387	48.14	PK2	35.5	-26.5	57.14	-	-	74	-16.86	261	102	V
* 7.385	44.38	MAv1	35.5	-26.5	53.38	54	-62	-	-	261	102	V
* 3.693	48.53	PK2	33.1	-32	49.63	-	-	74	-24.37	334	198	V
* 3.693	45.38	MAv1	33.1	-32	46.48	54	-7.52	-	-	334	198	V
* 4.924	41.06	PK2	34.2	-30.6	44.66	-	-	74	-29.34	275	101	V
* 4.924	35.97	MAv1	34.2	-30.6	39.57	54	-14.43	-	-	275	101	V

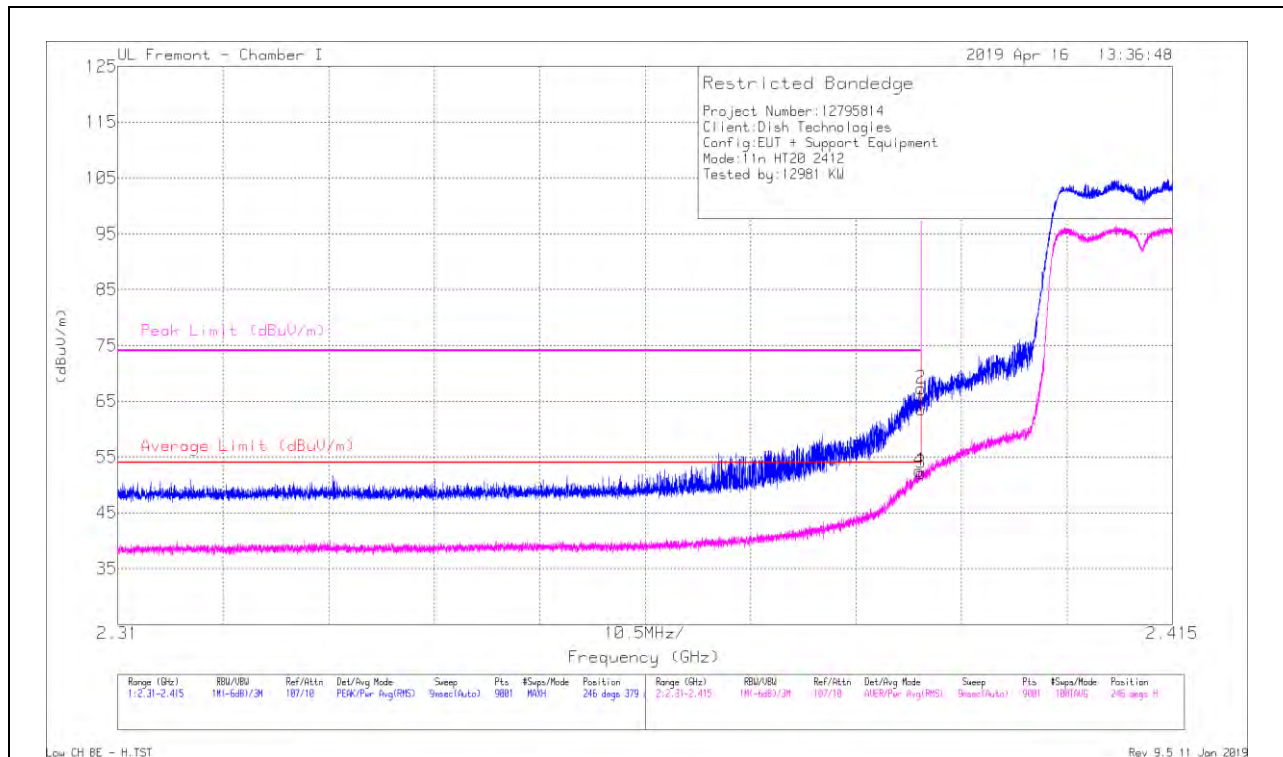
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

9.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL, CH 1)

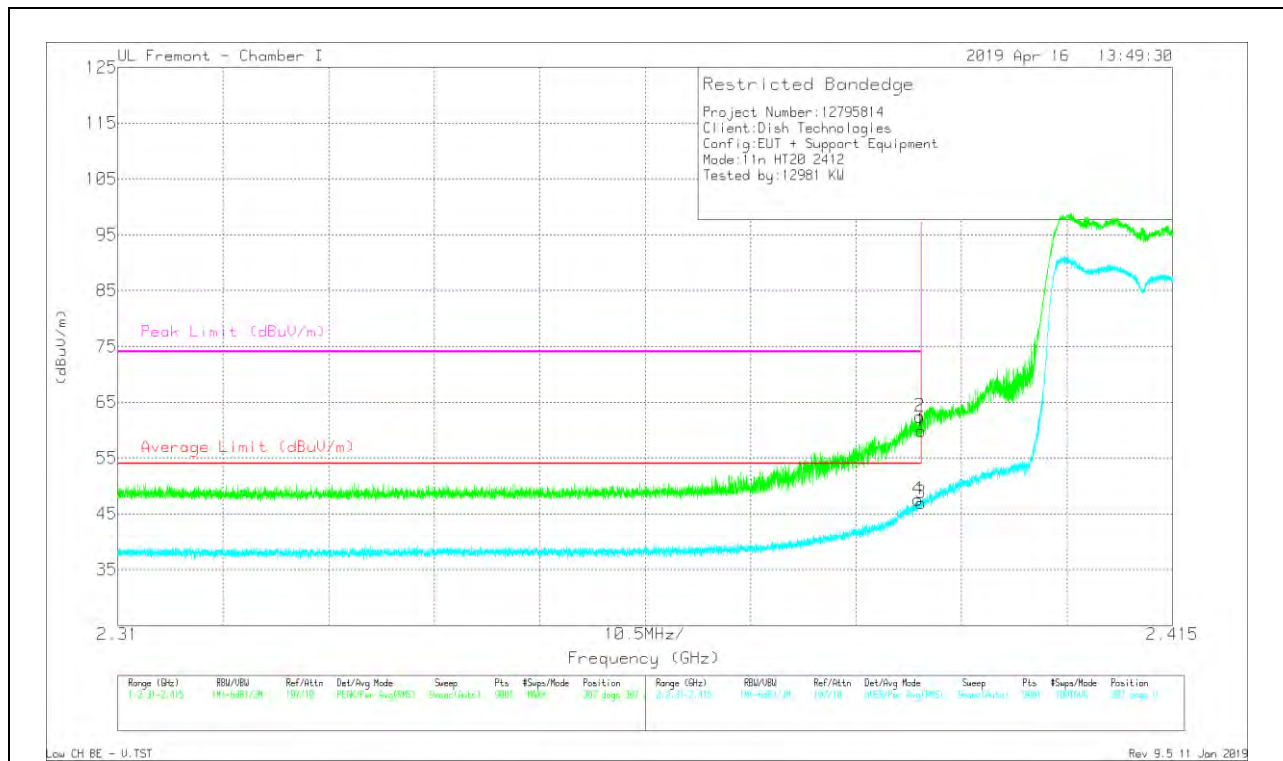
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T662 (dB/m)	Amp/CDI/Filtr/Fat (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*2.39	53.39	Pk	31.8	-21.6	0	63.59	-	-	74	-10.41	246	379	H
2	*2.39	57.13	Pk	31.8	-21.6	0	67.33	-	-	74	-6.67	246	379	H
3	*2.39	41.88	RMS	31.8	-21.6	09	52.17	54	-1.83	-	-	246	379	H
4	*2.39	42.24	RMS	31.8	-21.6	09	52.53	54	-1.47	-	-	246	379	H

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

VERTICAL RESULT

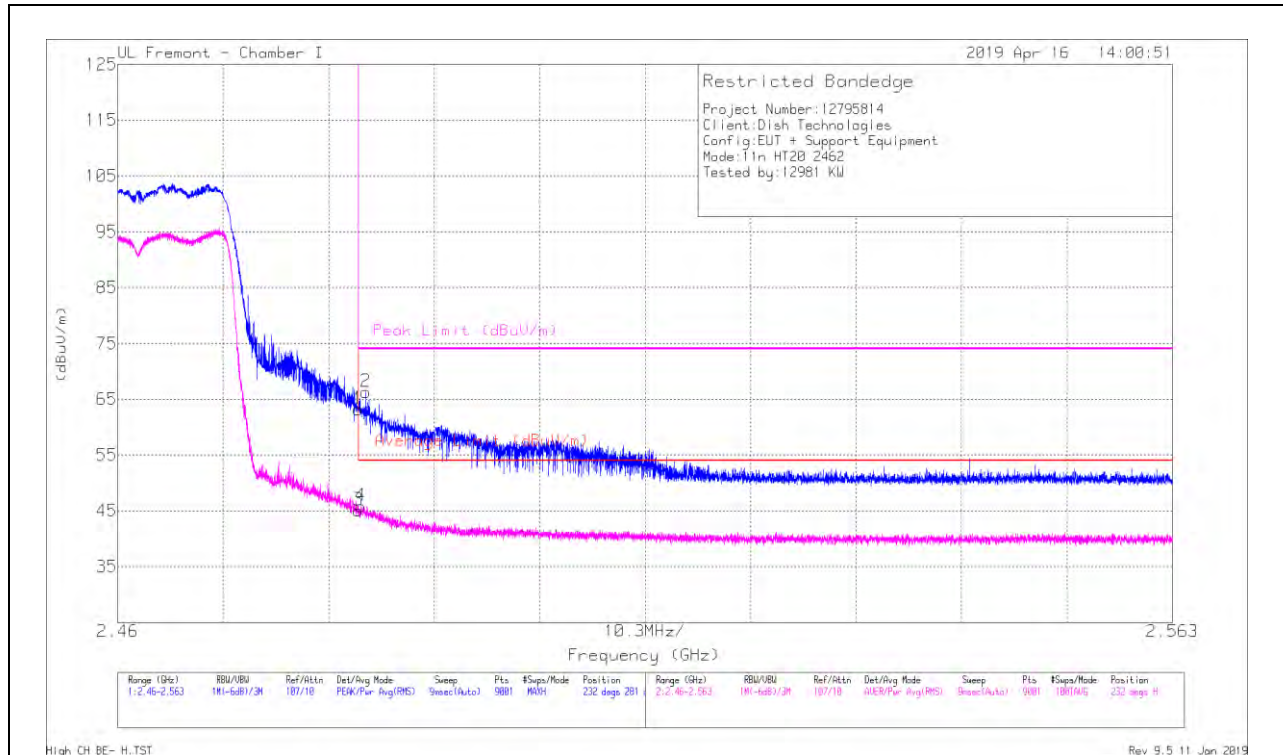


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cal/Filt/Pa d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*2.39	49.64	Pk	31.8	-21.6	0	59.84	-	-	74	-14.16	307	387	V
2	*2.39	52.2	Pk	31.8	-21.6	0	62.4	-	-	74	-11.6	307	387	V
3	*2.39	36.66	RMS	31.8	-21.6	.09	46.95	54	-7.05	-	-	307	387	V
4	*2.39	37.28	RMS	31.8	-21.6	.09	47.57	54	-6.43	-	-	307	387	V

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

BANEDGE (HIGH CHANNEL, CH 11)

HORIZONTAL RESULT



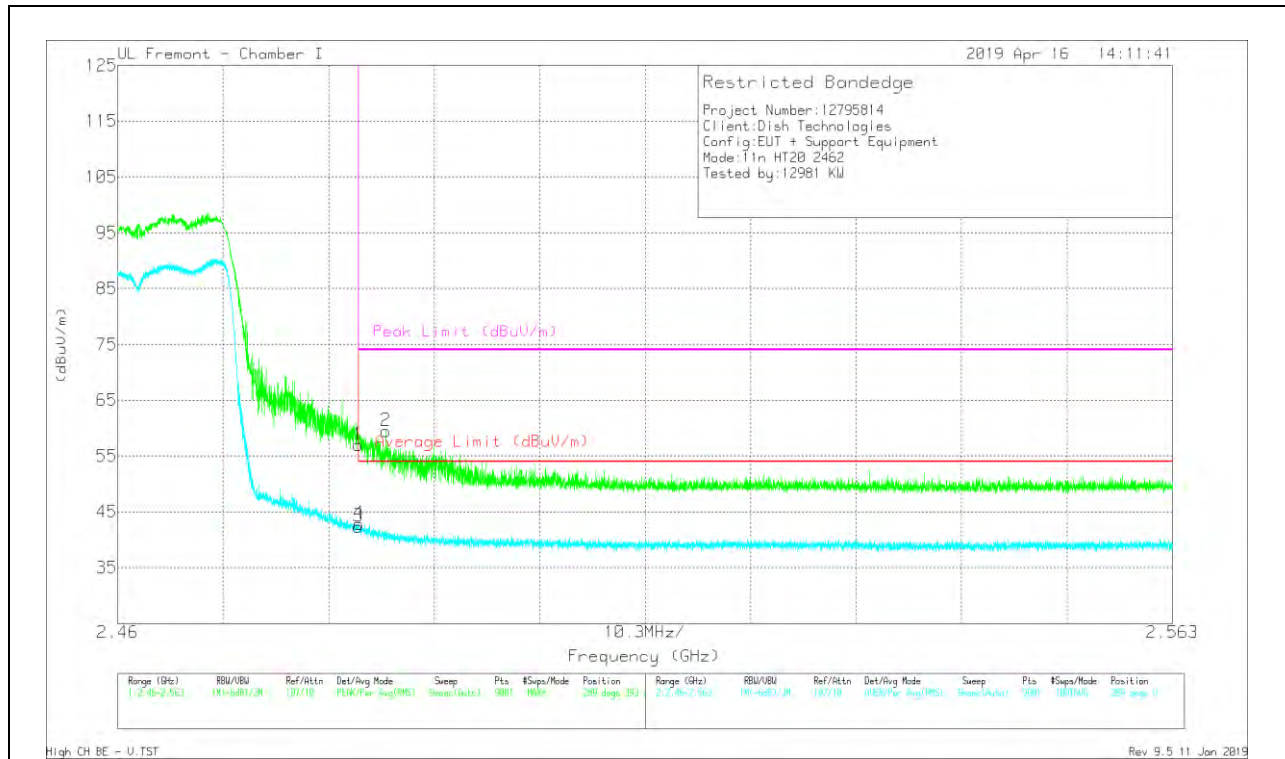
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Ampl/Cbl/Filtr/Par d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	52.56	Pk	32.4	-21.7	0	63.26	-	-	74	-10.74	232	281	H
2	* 2.484	55.65	Pk	32.4	-21.7	0	66.35	-	-	74	-7.65	232	281	H
3	* 2.484	34.24	RMS	32.4	-21.7	.09	45.03	54	-8.97	-	-	232	281	H
4	* 2.484	35.07	RMS	32.4	-21.7	.09	45.86	54	-8.14	-	-	232	281	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



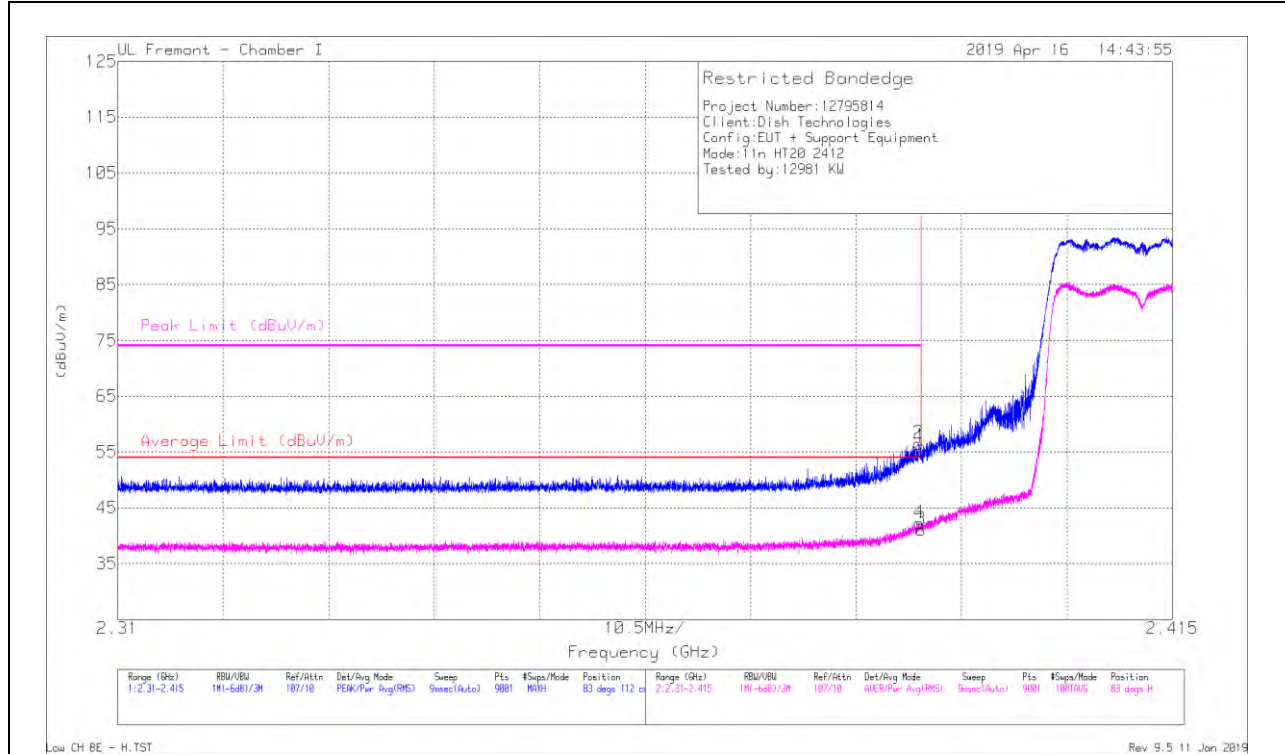
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dBm)	Amp/Ch/Filt/PA (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.34	Pk	32.4	-21.7	0	57.04	-	-	74	-16.96	289	393	V
2	* 2.486	48.88	Pk	32.4	-21.8	0	59.48	-	-	74	-14.52	289	393	V
3	* 2.484	31.51	RMS	32.4	-21.7	.09	42.3	54	-11.7	-	-	289	393	V
4	* 2.484	32.09	RMS	32.4	-21.7	.09	42.88	54	-11.12	-	-	289	393	V

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

1TX Antenna 2 MODE

BANDEDGE (LOW CHANNEL, CH 1)

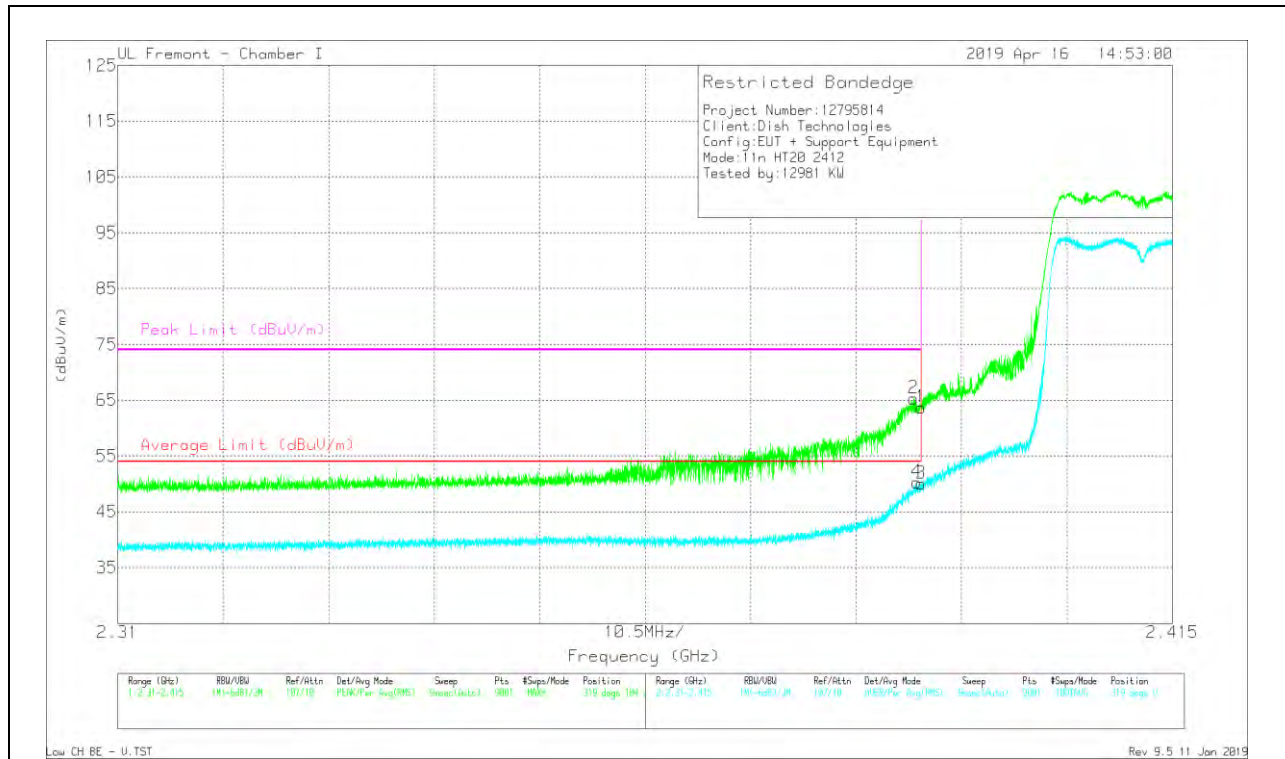
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.75	Pk	31.8	-21.6	0	55.95	-	-	74	-18.05	83	112	H
2	* 2.39	46.26	Pk	31.8	-21.6	0	56.46	-	-	74	-17.54	83	112	H
3	* 2.39	30.79	RMS	31.8	-21.6	.09	41.08	54	-12.92	-	-	83	112	H
4	* 2.39	31.92	RMS	31.8	-21.6	.09	42.21	54	-11.79	-	-	83	112	H

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

VERTICAL RESULT

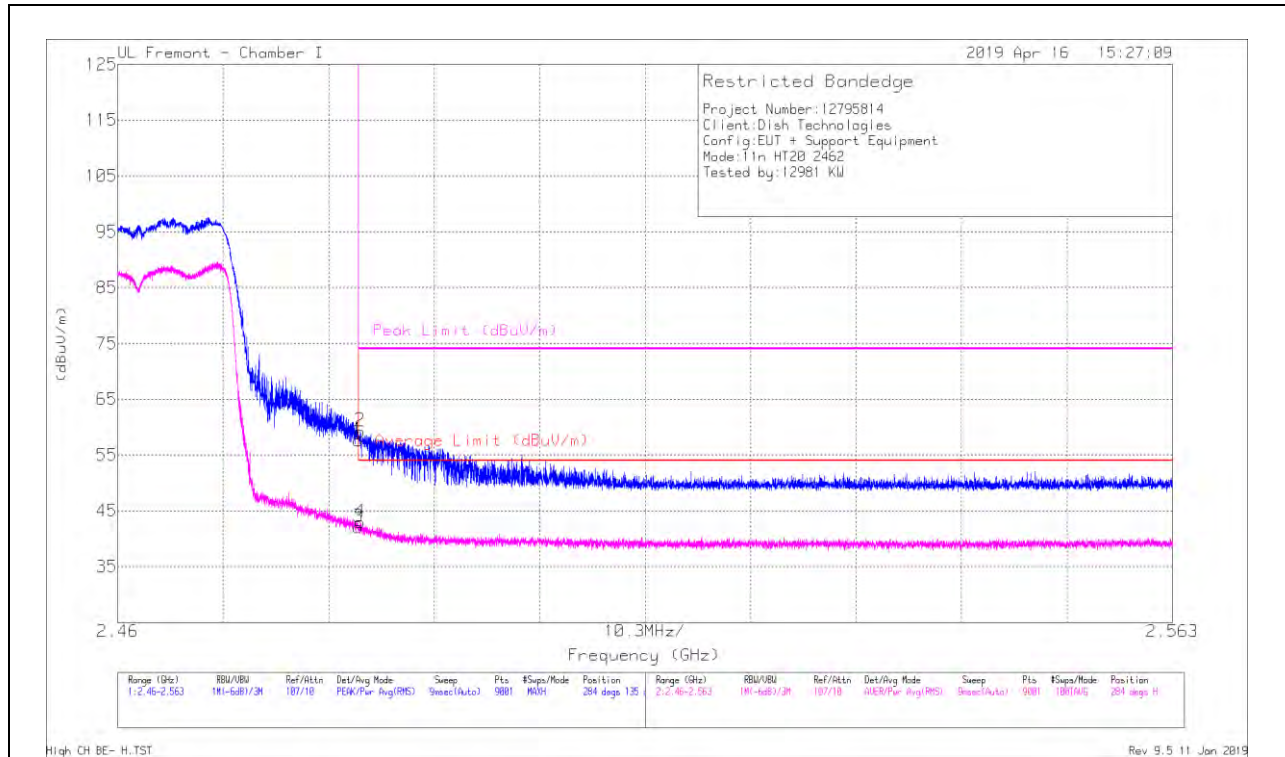


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cal/Filt/PA d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*2.39	53.46	Pk	31.8	-21.6	0	63.66	-	-	74	-10.34	319	184	V
2	*2.389	55.14	Pk	31.8	-21.6	0	65.34	-	-	74	-8.66	319	184	V
3	*2.39	39.72	RMS	31.8	-21.6	.09	50.01	54	-3.99	-	-	319	184	V
4	*2.39	40.02	RMS	31.8	-21.6	.09	50.31	54	-3.69	-	-	319	184	V

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

BANDEDGE (HIGH CHANNEL, CH 11)

HORIZONTAL RESULT



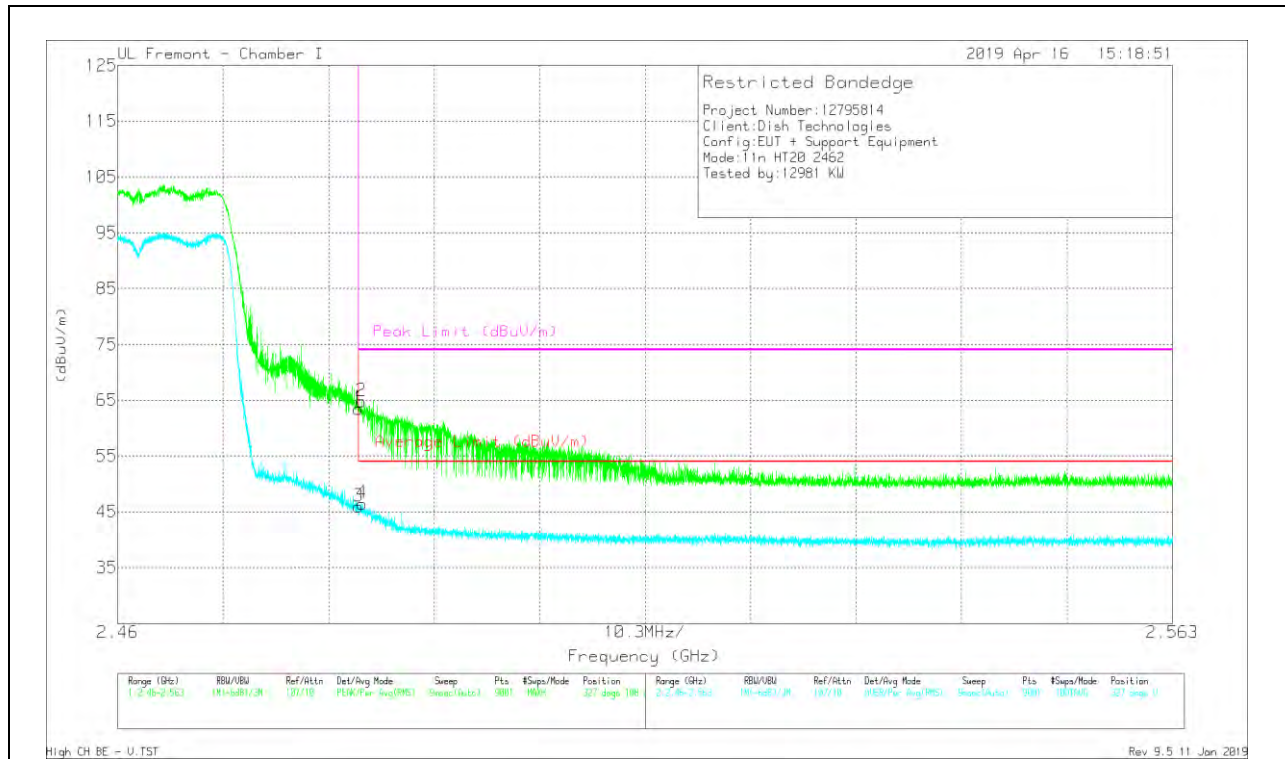
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Par d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.96	Pk	32.4	-21.7	0	57.66	-	-	74	-16.34	284	135	H
2	* 2.484	48.59	Pk	32.4	-21.7	0	59.29	-	-	74	-14.71	284	135	H
3	* 2.484	31.29	RMS	32.4	-21.7	.09	42.08	54	-11.92	-	-	284	135	H
4	* 2.484	32.16	RMS	32.4	-21.7	.09	42.95	54	-11.05	-	-	284	135	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



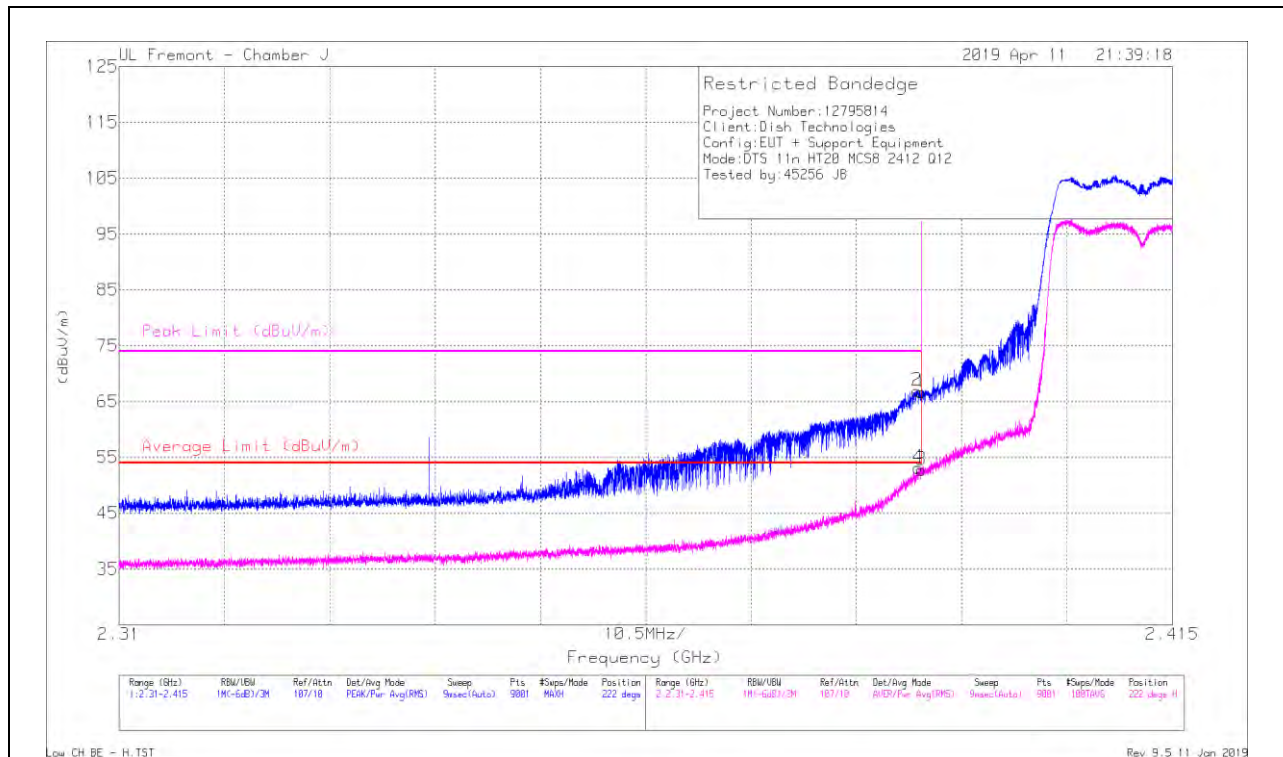
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dBm)	Amp/Cal/Filt/Par d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	52.81	Pk	32.4	-21.7	0	63.51	-	-	74	-10.49	327	108	V
2	* 2.484	54.13	Pk	32.4	-21.7	0	64.83	-	-	74	-9.17	327	108	V
3	* 2.484	35.11	RMS	32.4	-21.7	.09	45.9	54	-8.1	-	-	327	108	V
4	* 2.484	35.71	RMS	32.4	-21.7	.09	46.5	54	-7.5	-	-	327	108	V

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

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (LOW CHANNEL, CH 1)

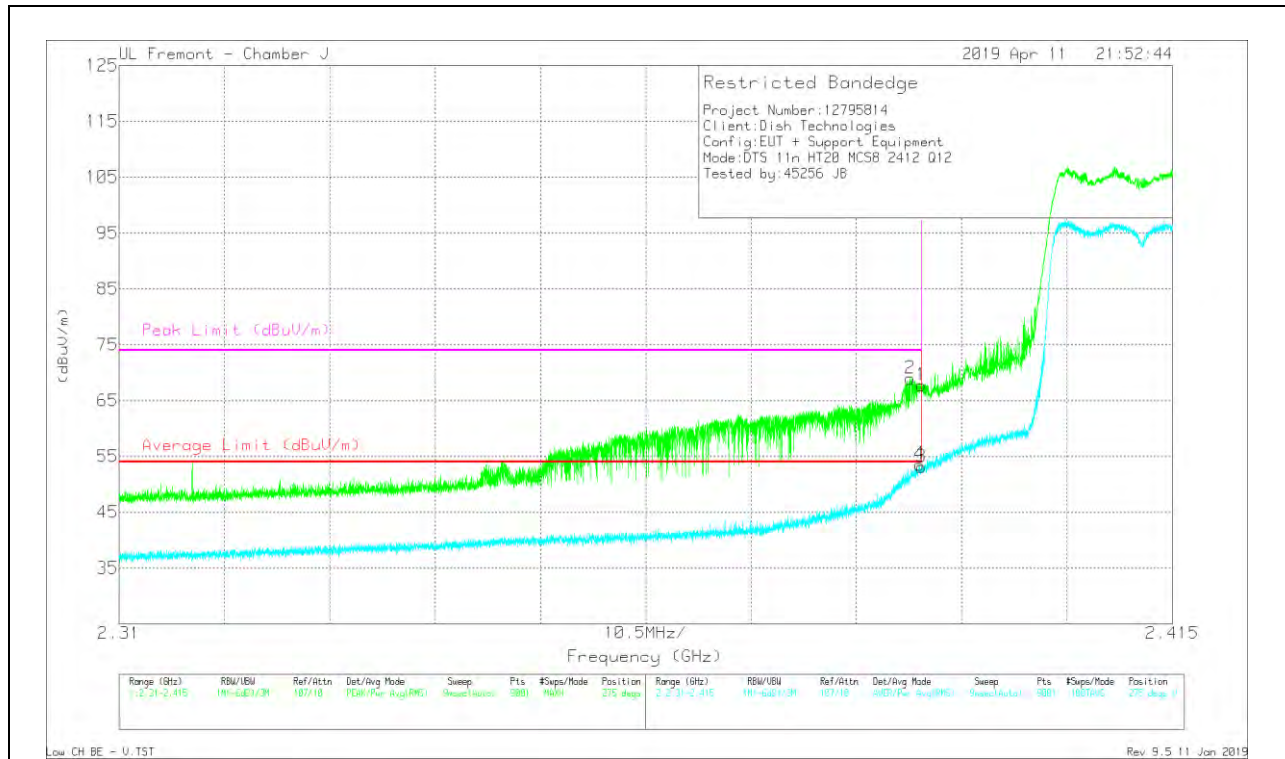
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dB/m)	Amp/Cbl/Fitr/Pa d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	62.91	Pk	29.5	-25.8	0	66.61	-	-	74	-7.39	222	373	H
2	* 2.39	63.24	Pk	29.5	-25.8	0	66.94	-	-	74	-7.06	222	373	H
3	* 2.39	48.89	RMS	29.5	-25.8	.18	52.77	54	-1.23	-	-	222	373	H
4	* 2.39	49.26	RMS	29.5	-25.8	.18	53.14	54	-.86	-	-	222	373	H

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

VERTICAL RESULT

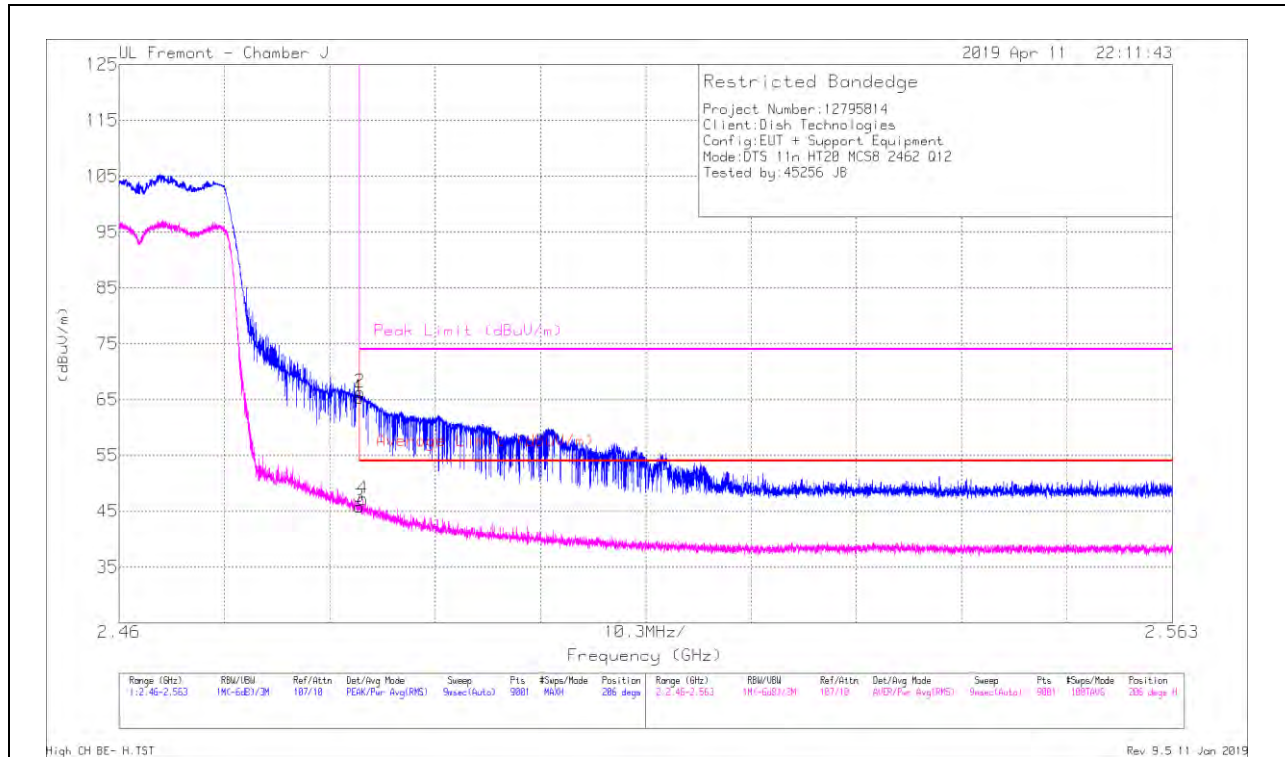


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0169055 (dB/m)	Amp/Cal/Filt/PA d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*2.39	64.01	Pk	29.5	-25.8	0	67.71	-	-	74	-6.29	275	265	V
2	*2.389	65.22	Pk	29.5	-25.8	0	68.92	-	-	74	-5.08	275	265	V
3	*2.39	49.22	RMS	29.5	-25.8	.19	53.11	54	-89	-	-	275	265	V
4	*2.39	49.62	RMS	29.5	-25.8	.19	53.51	54	-49	-	-	275	265	V

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

BANEDGE (HIGH CHANNEL, CH 11)

HORIZONTAL RESULT



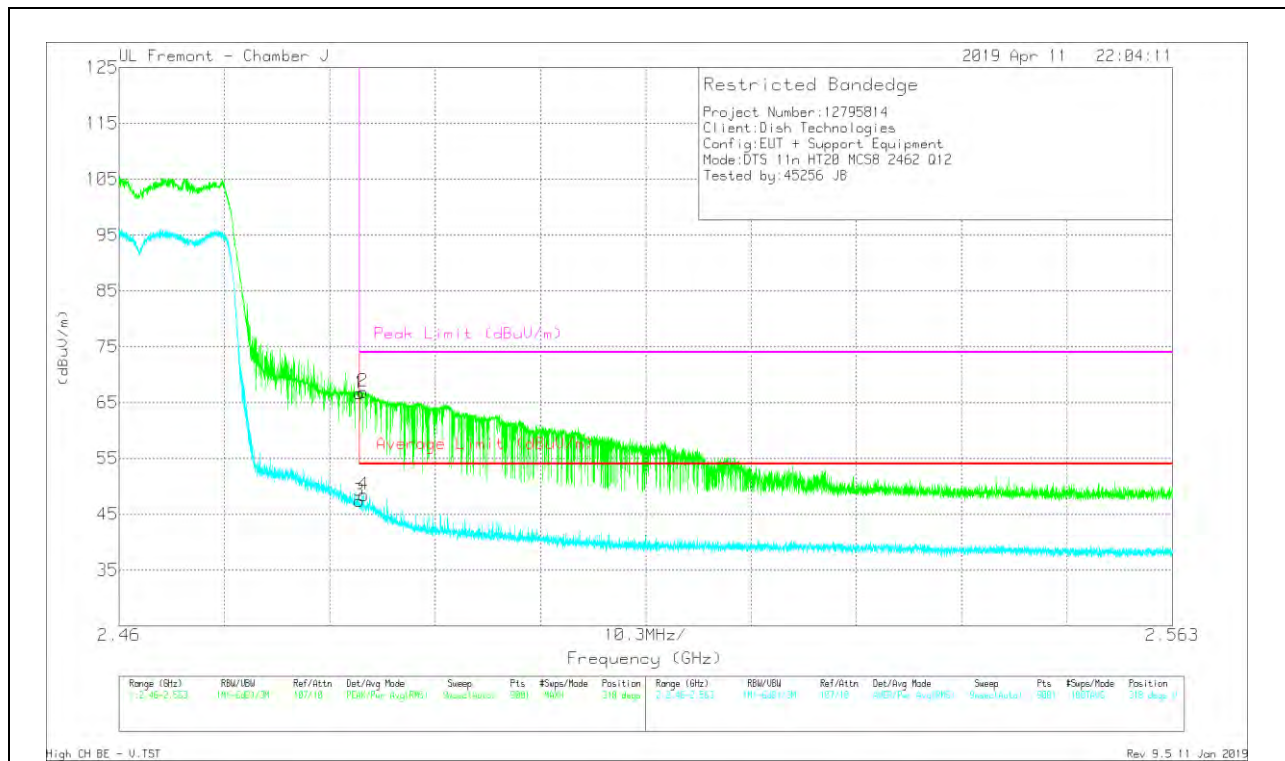
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dBm)	Amp/Cb/Filter/Par d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	61.29	Pk	29.9	-25.8	0	65.39	-	-	74	-8.61	206	387	H
2	* 2.484	62.22	Pk	29.9	-25.8	0	66.32	-	-	74	-7.68	206	387	H
3	* 2.484	41.52	RMS	29.9	-25.8	.18	45.8	54	-8.2	-	-	206	387	H
4	* 2.484	42.94	RMS	29.9	-25.8	.18	47.22	54	-6.78	-	-	206	387	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT

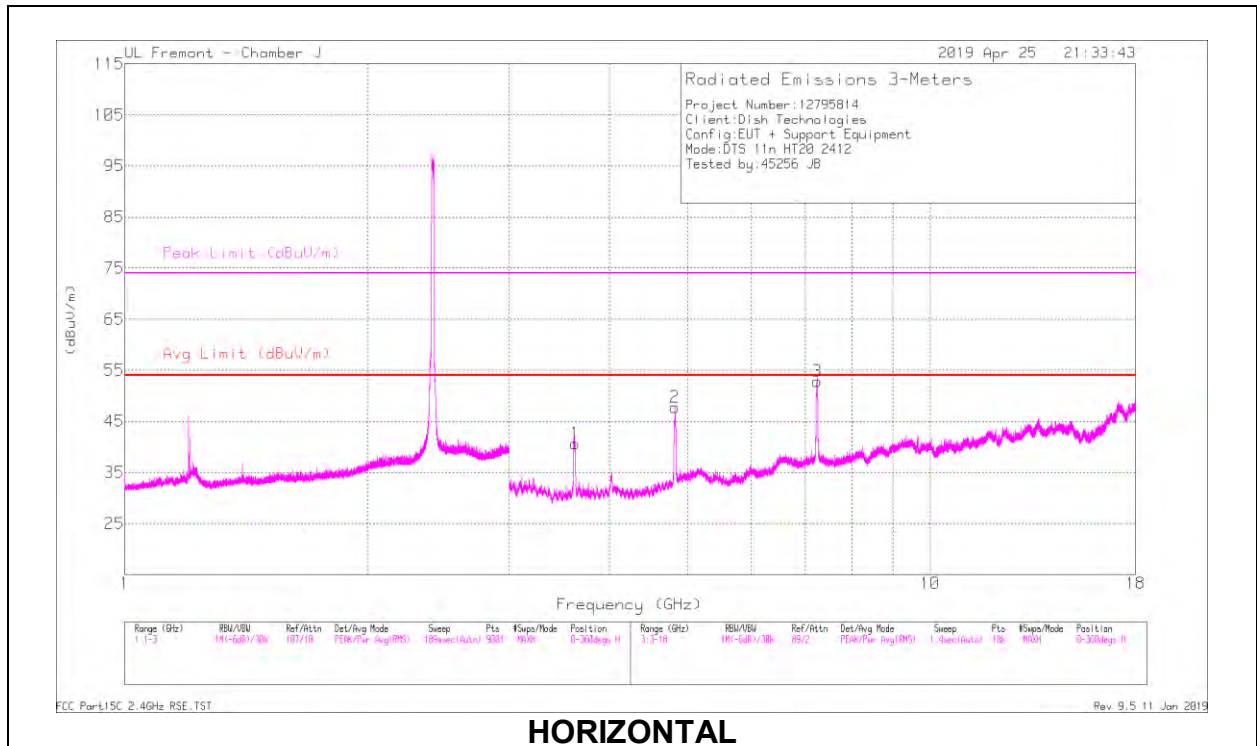


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0169055 (dB/m)	Amp/Cal/Filt/Pa d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	62.53	Pk	29.9	-25.8	0	66.63	-	-	74	-7.37	318	214	V
2	* 2.484	62.84	Pk	29.9	-25.8	0	66.94	-	-	74	-7.06	318	214	V
3	* 2.484	43.11	RMS	29.9	-25.8	.18	47.39	54	-6.61	-	-	318	214	V
4	* 2.484	44.16	RMS	29.9	-25.8	.18	48.44	54	-5.56	-	-	318	214	V

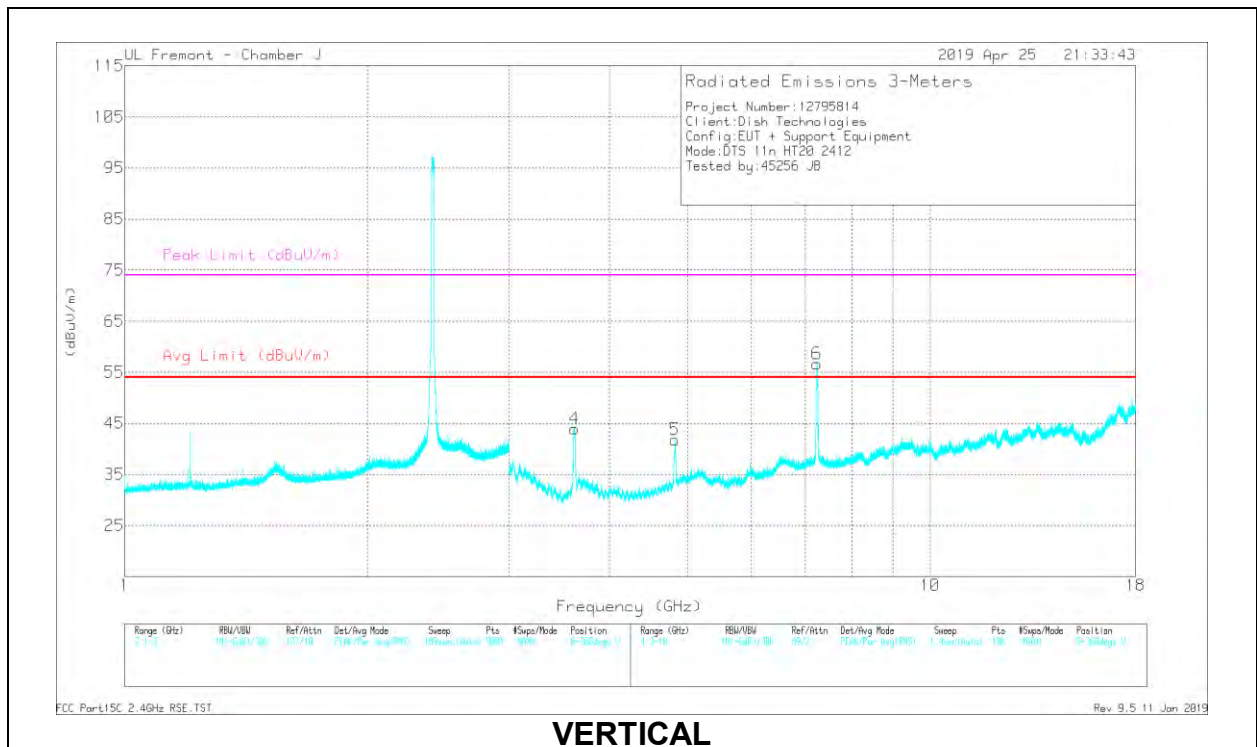
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, CH 1 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

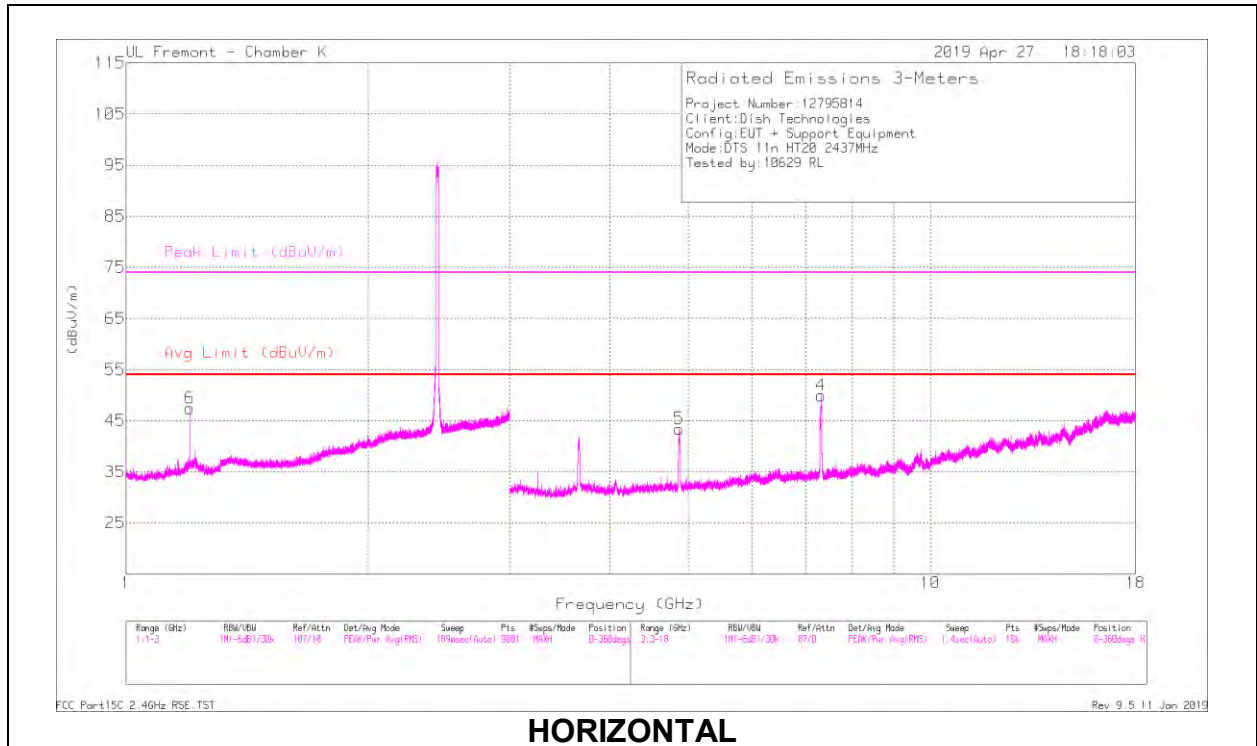
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.625	42.84	Pk	30.3	-32.5	0	40.64	-	-	74	-33.36	0-360	198	H
2	* 4.823	45.16	Pk	34.1	-31.5	0	47.76	-	-	74	-26.24	0-360	198	H
3	7.24	42.13	Pk	38.2	-27.5	0	52.83	-	-	-	-	0-360	198	H
4	* 3.618	46.1	Pk	30.3	-32.5	0	43.9	-	-	74	-30.1	0-360	198	V
5	* 4.819	39.18	Pk	34	-31.4	0	41.78	-	-	74	-32.22	0-360	101	V
6	7.237	45.97	Pk	38.2	-27.5	0	56.67	-	-	-	-	0-360	198	V

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

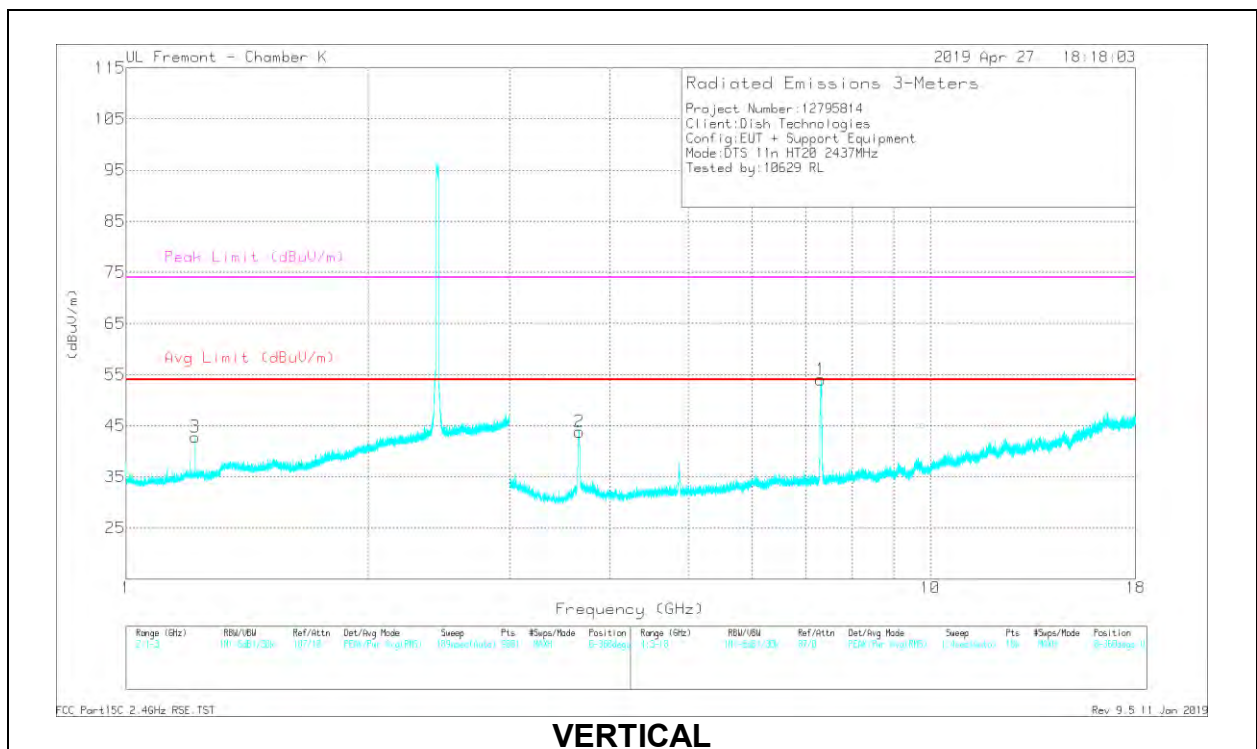
Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.624	52.06	PK2	30.3	-32.5	0	49.86	-	-	74	-24.14	156	225	H
* 3.625	42.08	MAv1	30.3	-32.5	.18	40.06	54	-13.94	-	-	156	225	H
* 3.618	54.9	PK2	30.3	-32.5	0	52.7	-	-	74	-21.3	297	199	V
* 3.618	45.6	MAv1	30.3	-32.5	.18	43.58	54	-10.42	-	-	297	199	V
* 4.821	47.02	PK2	34	-31.4	0	49.62	-	-	74	-24.38	222	118	V
* 4.821	36.79	MAv1	34	-31.4	.18	39.57	54	-14.43	-	-	222	118	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, CH 6 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

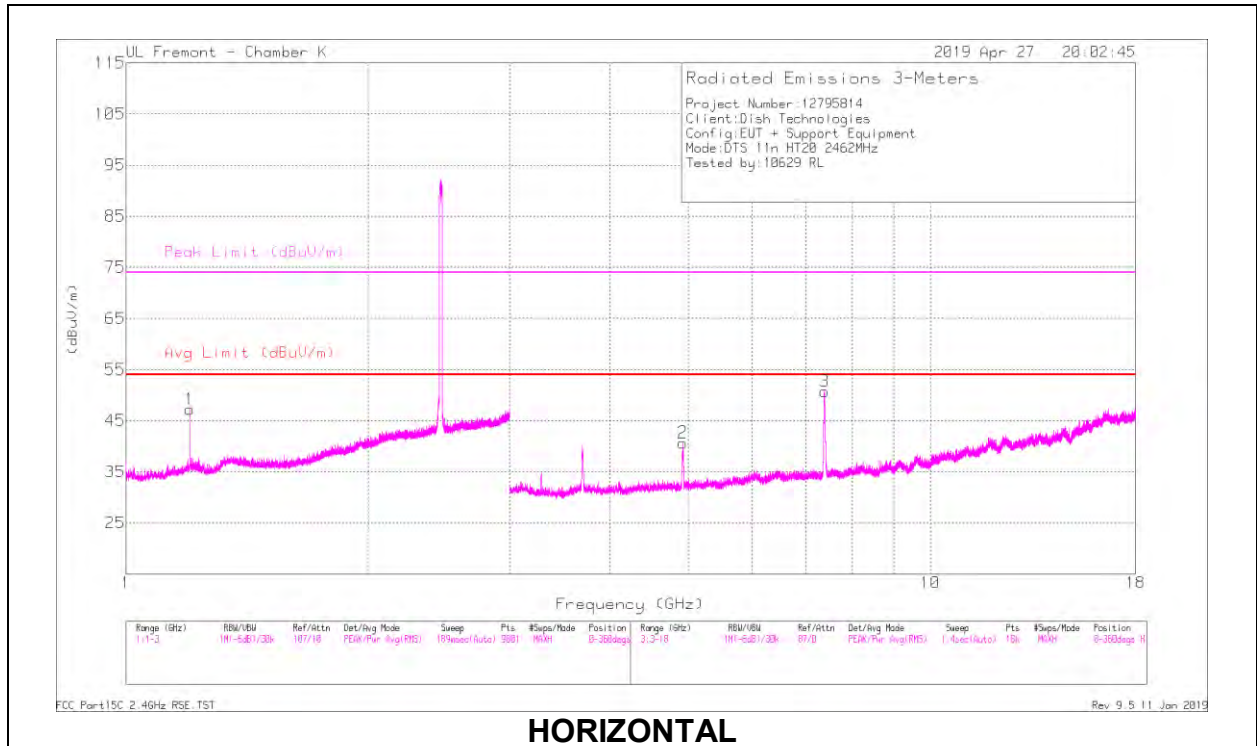
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 1.2	36.75	Pk	28.2	-17.5	0	47.45	-	-	74	-26.55	0-360	200	H
3	* 1.218	31.89	Pk	28.4	-17.5	0	42.79	-	-	74	-31.21	0-360	200	V
4	* 7.31	40.74	Pk	35.5	-26.3	0	49.94	-	-	74	-24.06	0-360	200	H
5	* 4.873	39.83	Pk	34.1	-30.5	0	43.43	-	-	74	-30.57	0-360	200	H
1	* 7.309	44.84	Pk	35.5	-26.3	0	54.04	-	-	74	-19.96	0-360	200	V
2	* 3.663	42.93	Pk	33	-32.1	0	43.83	-	-	74	-30.17	0-360	200	V

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

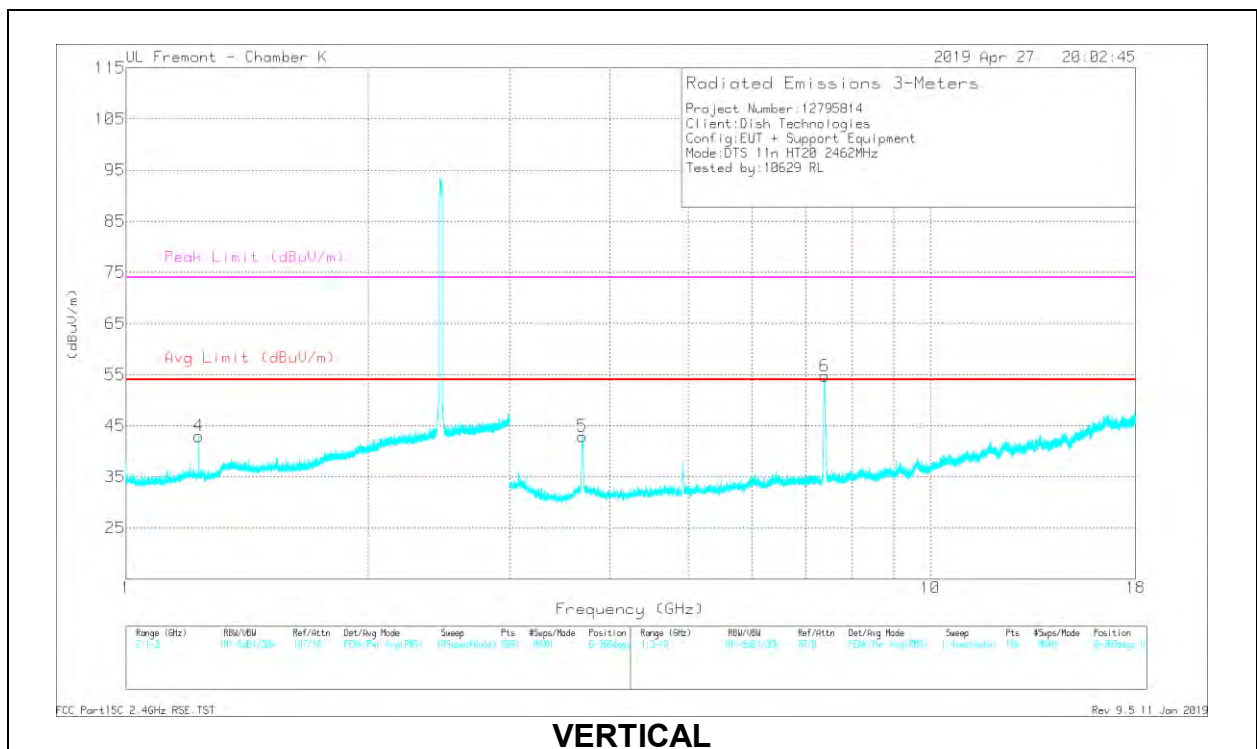
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	38.97	PK2	28.2	-17.5	0	49.67	-	-	74	-24.33	278	142	H
* 1.2	35.1	MAv1	28.2	-17.5	.09	45.89	54	-8.11	-	-	278	142	H
* 1.218	35.18	PK2	28.4	-17.5	0	46.08	-	-	74	-27.92	8	275	V
* 1.218	28.56	MAv1	28.4	-17.5	.09	39.55	54	-14.45	-	-	8	275	V
* 7.319	53.84	PK2	35.5	-26.4	0	62.94	-	-	74	-11.06	283	173	H
* 7.311	41.5	MAv1	35.5	-26.3	.09	50.79	54	-3.21	-	-	283	173	H
* 4.874	50.92	PK2	34.1	-30.5	0	54.52	-	-	74	-19.48	220	198	H
* 4.873	38.72	MAv1	34.1	-30.5	.09	42.41	54	-11.59	-	-	220	198	H
* 7.32	57.13	PK2	35.5	-26.4	0	66.23	-	-	74	-7.77	246	202	V
* 7.312	44.51	MAv1	35.5	-26.3	.09	53.8	54	-2	-	-	246	202	V
* 3.649	54.31	PK2	32.9	-32.2	0	55.01	-	-	74	-18.99	344	206	V
* 3.655	42.8	MAv1	33	-32.1	.09	43.79	54	-10.21	-	-	344	206	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL, CH 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	36.54	Pk	28.2	-17.5	0	47.24	-	-	74	-26.76	0-360	101	H
4	* 1.231	31.96	Pk	28.5	-17.5	0	42.96	-	-	74	-31.04	0-360	200	V
2	* 4.925	37.05	Pk	34.2	-30.6	0	40.65	-	-	74	-33.35	0-360	200	H
3	* 7.391	41.71	Pk	35.5	-26.5	0	50.71	-	-	74	-23.29	0-360	200	H
5	* 3.693	41.83	Pk	33.1	-32	0	42.93	-	-	74	-31.07	0-360	200	V
6	* 7.389	45.71	Pk	35.5	-26.5	0	54.71	-	-	74	-19.29	0-360	101	V

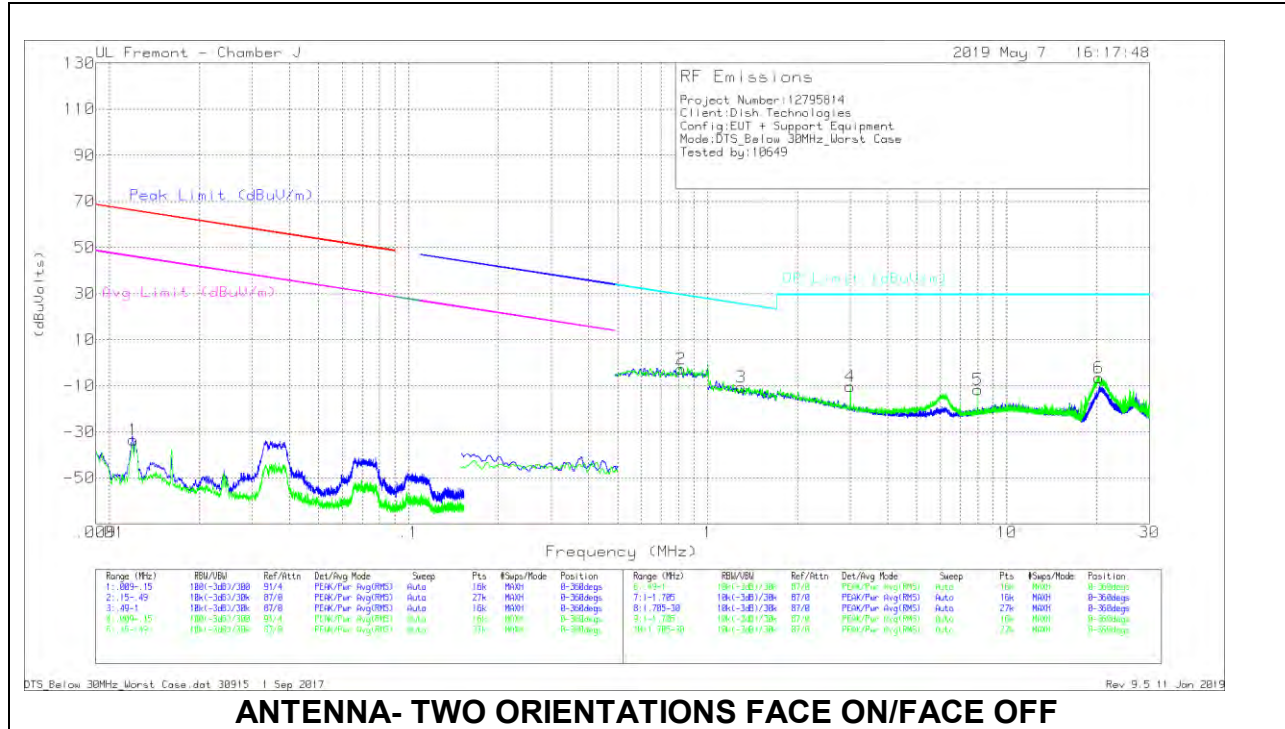
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	39.45	PK2	28.2	-17.5	0	50.15	-	-	74	-23.85	273	144	H
* 1.2	35.3	MAv1	28.2	-17.5	.09	46.09	54	-7.91	-	-	273	144	H
* 1.231	34.81	PK2	28.5	-17.5	0	45.81	-	-	74	-28.19	342	170	V
* 1.231	28.56	MAv1	28.5	-17.5	.09	39.65	54	-14.35	-	-	342	170	V
* 4.923	48.07	PK2	34.2	-30.6	0	51.67	-	-	74	-22.33	219	207	H
* 4.925	35.85	MAv1	34.2	-30.6	.09	39.54	54	-14.46	-	-	219	207	H
* 7.395	51.8	PK2	35.6	-26.5	0	60.9	-	-	74	-13.1	354	102	H
* 7.383	39.94	MAv1	35.5	-26.5	.09	49.03	54	-4.97	-	-	354	102	H
* 7.395	57.29	PK2	35.6	-26.5	0	66.39	-	-	74	-7.61	239	200	V
* 7.389	44.69	MAv1	35.5	-26.5	.09	53.78	54	-2.22	-	-	239	200	V
* 3.693	52.06	PK2	33.1	-32	0	53.16	-	-	74	-20.84	334	199	V
* 3.693	41.74	MAv1	33.1	-32	.09	42.93	54	-11.07	-	-	334	199	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

9.2. WORST CASE BELOW 30MHZ

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



ANTENNA- TWO ORIENTATIONS FACE ON/FACE OFF

Below 30MHz Data

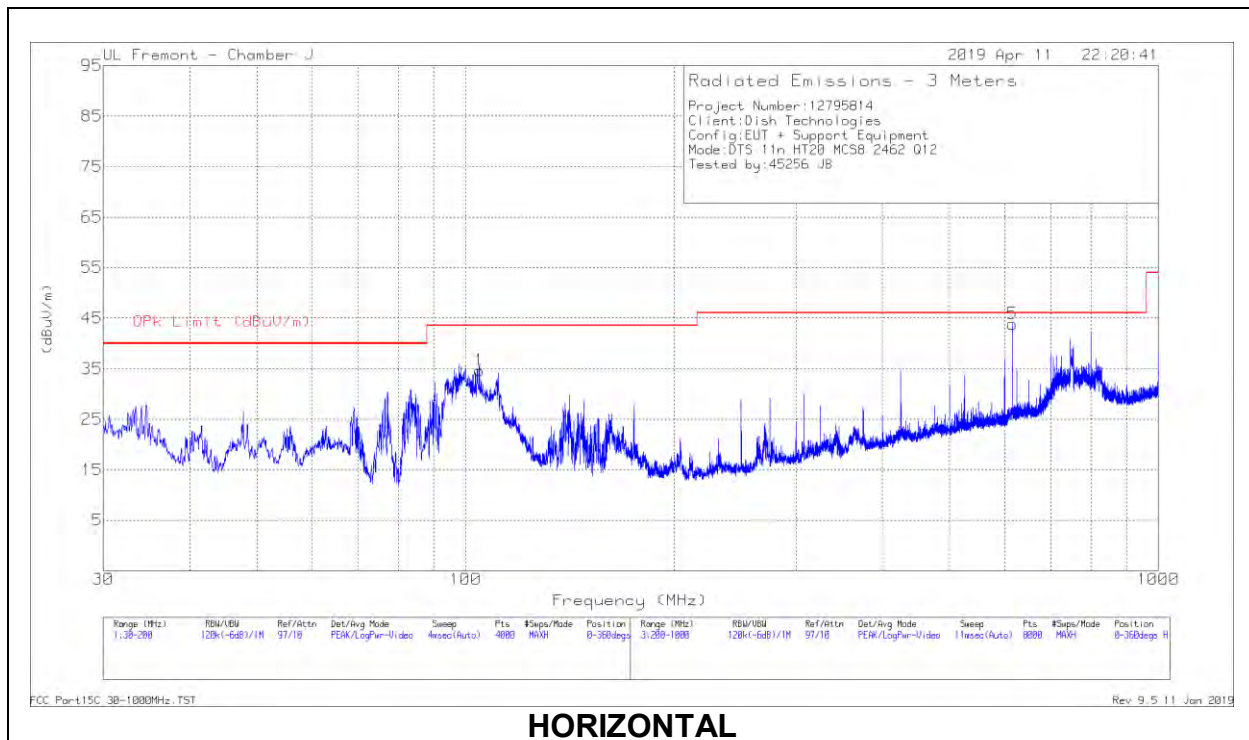
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Cables w/ PRE 0180 175 (dB)	Dist Corr 300 m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.01199	18.96	Pk	60	-32.4	-80	-33.44	66.01	-99.45	46.01	-79.45	0-360

Pk - Peak detector

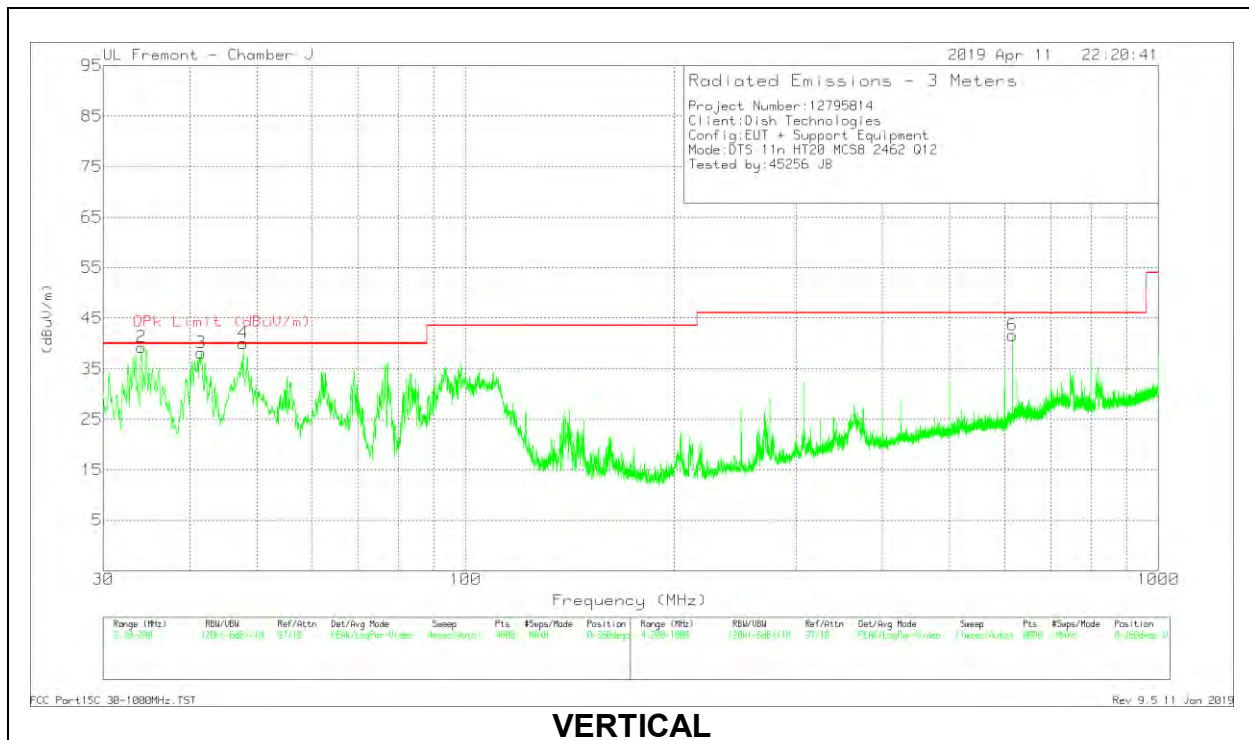
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Cables w/ PRE 0180 175 (dB)	Dist Corr 30m (dB) 40Lo g	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
2	.81627	12.69	Pk	56.3	-31.8	-40	-2.81	29.38	-32.19	0-360
3	1.29557	16.26	Pk	44.9	-31.8	-40	-10.64	25.38	-36.02	0-360
4	2.99718	22.99	Pk	38.4	-31.7	-40	-10.31	29.5	-39.81	0-360
5	7.99929	25.03	Pk	34.8	-31.6	-40	-11.77	29.5	-41.27	0-360
6	20.34211	31.33	Pk	33.5	-31.3	-40	-6.47	29.5	-35.97	0-360

Pk - Peak detector

9.3. WORST CASE BELOW 1 GHZ



HORIZONTAL



VERTICAL

Below 1GHz DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0181575 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	104.7768	47.85	Pk	17.7	-30.9	34.65	43.52	-8.87	0-360	299	H
2	34.0385	46.75	Pk	23.9	-31.4	39.25	40	-.75	0-360	101	V
3	41.563	51.36	Pk	18.2	-31.4	38.16	40	-1.84	0-360	101	V
4	47.7696	56.82	Pk	14.6	-31.4	40.02	40	.02	0-360	101	V
5	615.454	48.09	Pk	24.9	-29.1	43.89	46.02	-2.13	0-360	198	H
6	615.454	45.85	Pk	24.9	-29.1	41.65	46.02	-4.37	0-360	101	V

Pk - Peak detector

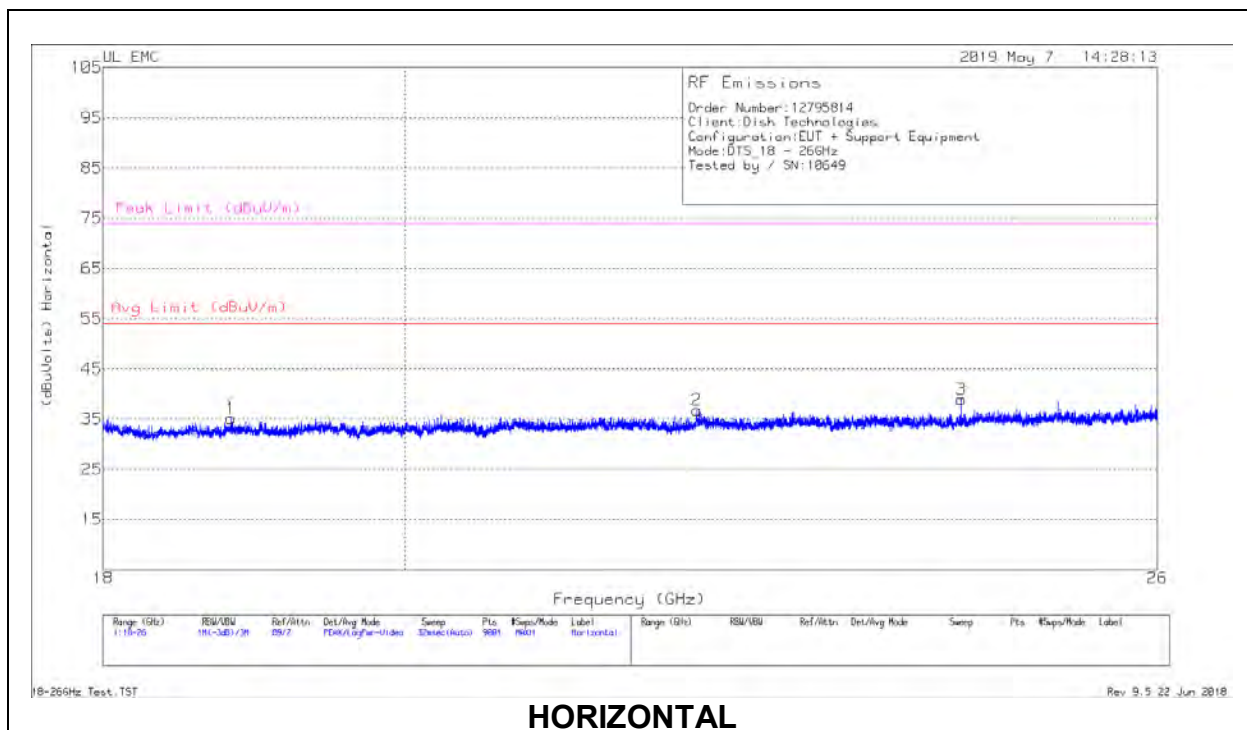
Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0181575 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
34.0917	45.07	Qp	23.8	-31.4	37.47	40	-2.53	256	107	V
41.6153	50.32	Qp	18.2	-31.4	37.12	40	-2.88	211	106	V
47.7993	55.6	Qp	14.6	-31.4	38.8	40	-1.2	211	101	V
615.2567	35.88	Pk	24.9	-29.1	31.68	46.02	-14.34	96	135	H
615.4981	45.46	Qp	24.9	-29.1	41.26	46.02	-4.76	146	103	V

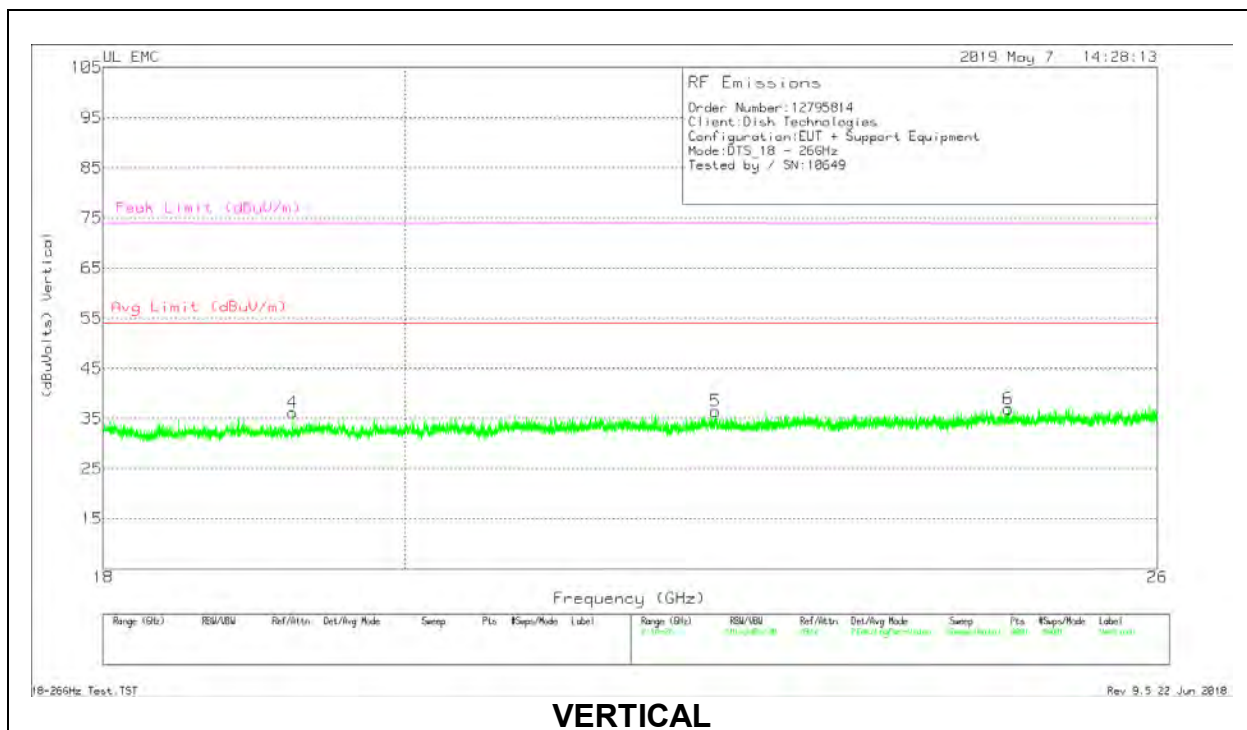
Pk - Peak detector

Qp - Quasi-Peak detector

9.4. WORST CASE 18-26 GHZ



HORIZONTAL



VERTICAL

18 – 26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE018218 8 (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	18.821	69.73	Pk	33.2	-58.3	-9.5	35.13	54	-18.87	74	-38.87
2	22.142	69.96	Pk	33.9	-57.6	-9.5	36.76	54	-17.24	74	-37.24
3	24.28	70.65	Pk	34.6	-56.8	-9.5	38.95	54	-15.05	74	-35.05
4	19.232	70.11	Pk	33.2	-57.6	-9.5	36.21	54	-17.79	74	-37.79
5	22.287	69.47	Pk	34.1	-57.6	-9.5	36.47	54	-17.53	74	-37.53
6	24.683	67.34	Pk	34.8	-55.7	-9.5	36.94	54	-17.06	74	-37.06

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

*Decreases with the logarithm of the frequency.

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 C63.10.

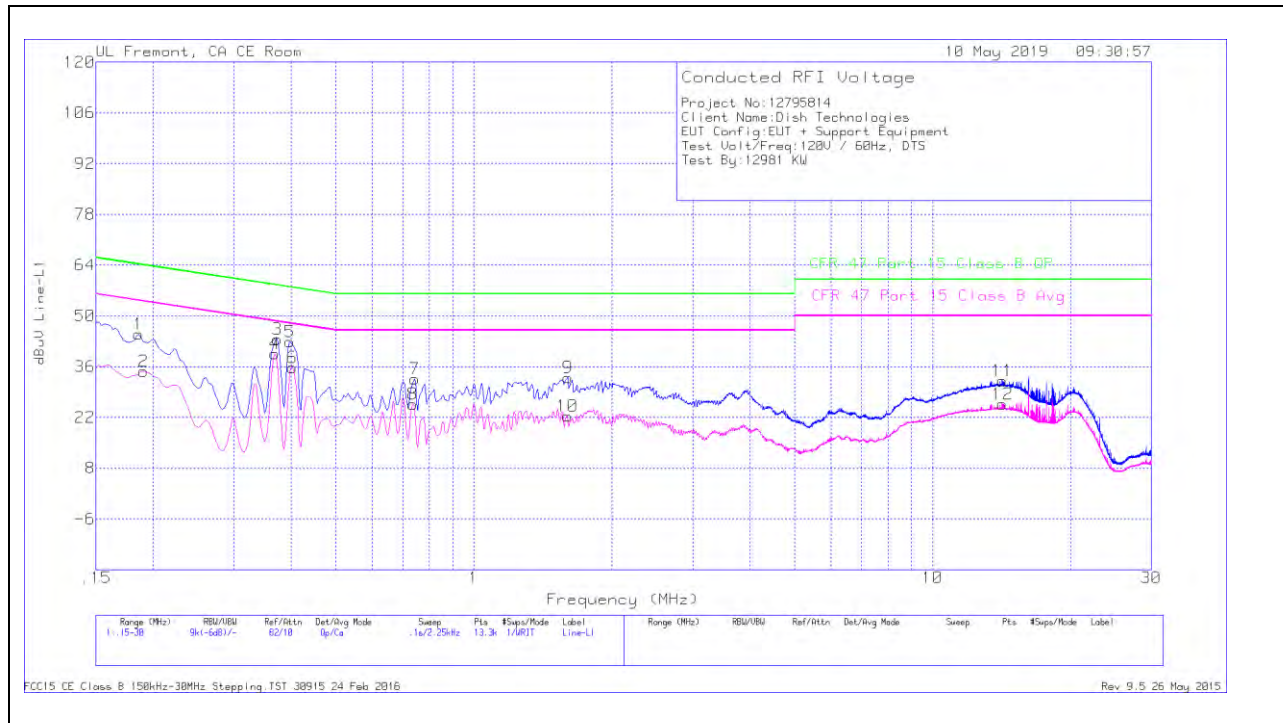
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

10.1.1. AC Power Line Norm

LINE 1 RESULTS

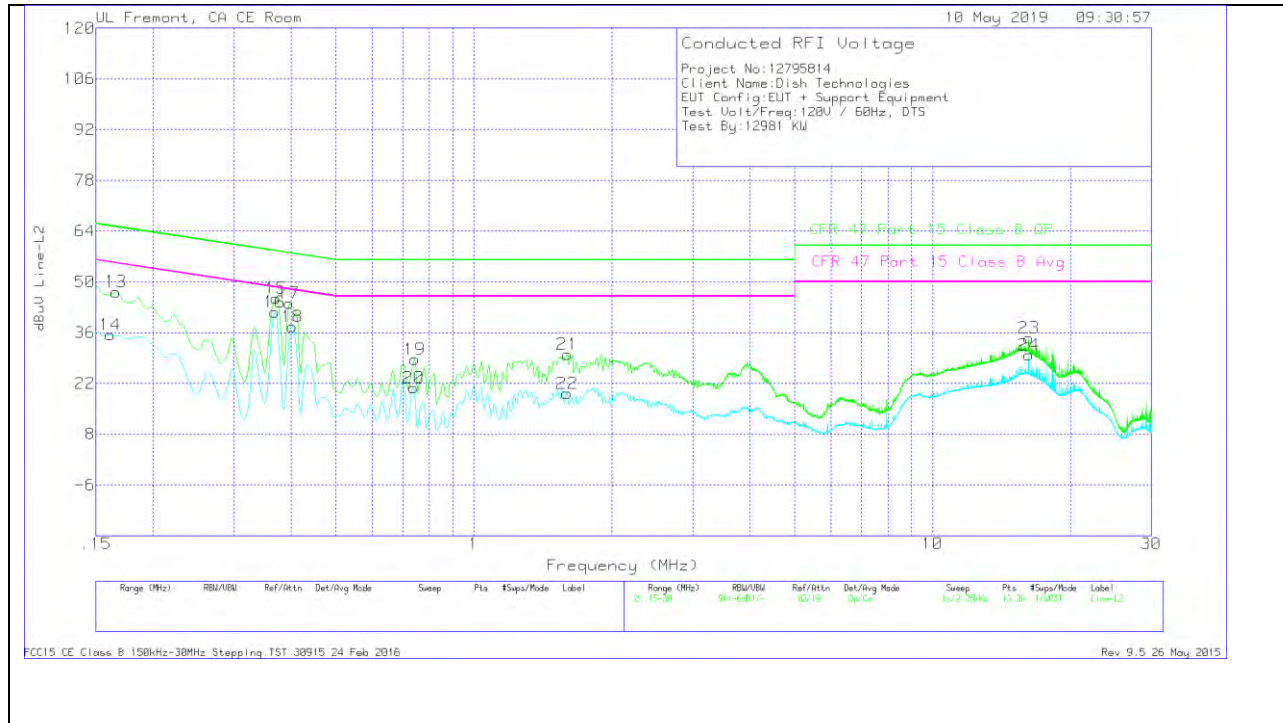


Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.186	34.86	Qp	0	0	10.1	44.96	64.21	-19.25	-	-
2	.1905	24.61	Ca	0	0	10.1	34.71	-	-	54.01	-19.3
3	.37275	33.52	Qp	0	0	10.1	43.62	58.44	-14.82	-	-
4	.36825	29.49	Ca	0	0	10.1	39.59	-	-	48.54	-8.95
5	.3975	32.74	Qp	0	0	10.1	42.84	57.91	-15.07	-	-
6	.402	25.72	Ca	0	0	10.1	35.82	-	-	47.81	-11.99
7	.744	22.5	Qp	0	0	10.1	32.6	56	-23.4	-	-
8	.73725	15.59	Ca	0	0	10.1	25.69	-	-	46	-20.31
9	1.6035	22.79	Qp	0	.1	10.1	32.99	56	-23.01	-	-
10	1.599	12.1	Ca	0	.1	10.1	22.3	-	-	46	-23.7
11	14.2125	21.55	Qp	.1	.3	10.2	32.15	60	-27.85	-	-
12	14.2125	15.1	Ca	.1	.3	10.2	25.7	-	-	50	-24.3

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	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	.16575	37.1	Qp	.1	0	10.1	47.3	65.17	-17.87	-	-
14	.16125	25.23	Ca	.1	0	10.1	35.43	-	-	55.4	-19.97
15	.3705	35.42	Qp	0	0	10.1	45.52	58.49	-12.97	-	-
16	.36825	31.63	Ca	0	0	10.1	41.73	-	-	48.54	-6.81
17	.39525	33.93	Qp	0	0	10.1	44.03	57.95	-13.92	-	-
18	.402	27.54	Ca	0	0	10.1	37.64	-	-	47.81	-10.17
19	.744	18.5	Qp	0	0	10.1	28.6	56	-27.4	-	-
20	.7395	10.71	Ca	0	0	10.1	20.81	-	-	46	-25.19
21	1.60125	19.81	Qp	0	.1	10.1	30.01	56	-25.99	-	-
22	1.59675	9.05	Ca	0	.1	10.1	19.25	-	-	46	-26.75
23	16.2285	23.76	Qp	.1	.3	10.3	34.46	60	-25.54	-	-
24	16.2285	19.16	Ca	.1	.3	10.3	29.86	-	-	50	-20.14

Qp - Quasi-Peak detector

Ca - CISPR average detection