CERTIFICATION TEST REPORT

Report Number. : 12073310-E4V2

Applicant : SONY MOBILE COMMUNICATIONS, INC.
4-12-3 HIGASHI-SHINAGAWA,
SHINAGAWA -KU,TOKYO, 140-0002, JAPAN

FCC ID : PY7-21831A

EUT Description : GSM/WCDMA/LTE PHONE with BT, DTS/UNII a/b/g/n/ac & NFC

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

Date Of Issue:
January 19, 2018

Prepared by:
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NVLAP TESTING
NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	01/08/18	Initial Issue	Dan Coronia
V2	01/19/18	Section 1 removed “Reviewed By”, updated section 5.5	Dan Coronia

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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. WORST-CASE CONFIGURATION AND MODE 9

5.6. DESCRIPTION OF TEST SETUP 10

6. TEST AND MEASUREMENT EQUIPMENT 13

7. MEASUREMENT METHODS 14

8. SUMMARY TABLE 15

9. ANTENNA PORT TEST RESULTS 16

9.1. ON TIME AND DUTY CYCLE 16

9.2. 11b 2TX MIMO MODE IN THE 2.4GHz BAND 19

9.2.1. 6 dB BANDWIDTH 19
9.2.2. 99% BANDWIDTH 25
9.2.3. OUTPUT POWER 31
9.2.4. POWER SPECTRAL DENSITY 33
9.2.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS 39

9.3. 11g 2TX CDD MIMO MODE IN THE 2.4GHz BAND 49

9.3.1. 6 dB BANDWIDTH 49
9.3.2. 99% BANDWIDTH 55
9.3.3. OUTPUT POWER 61
9.3.4. POWER SPECTRAL DENSITY 63
9.3.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS 69

9.4. 11n HT20 2TX CDD MIMO MODE IN THE 2.4GHz BAND 79

9.4.1. 6 dB BANDWIDTH 79

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9.4.2. 99% BANDWIDTH 85
9.4.3. OUTPUT POWER 91
9.4.4. POWER SPECTRAL DENSITY 93
9.4.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS 99

10. RADIATED TEST RESULTS 109

10.1. LIMITS AND PROCEDURE 109

10.2. TRANSMITTER ABOVE 1 GHz 110
10.2.1 11b MIMO MODE IN THE 2.4GHz BAND 110
10.2.2 11g MIMO MODE IN THE 2.4GHz BAND 124
10.2.3 11n HT20 MIMO MODE IN THE 2.4GHz BAND 138

10.3 WORST-CASE BELOW 30 MHz 152

10.4 WORST-CASE BELOW 1 GHz 153

10.5. WORST-CASE 18 to 26 GHz 155

11. AC POWER LINE CONDUCTED EMISSIONS 157

12. SETUP PHOTOS 160

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SONY MOBILE COMMUNICATIONS, INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU, TOKYO, 140-0002, JAPAN
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS & NFC
SERIAL NUMBER:	QV70003P12 (RADIATED) QV7000SD15 (CONDUCTED)
DATE TESTED:	December 07-27, 2017

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. 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.

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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, KDB 558074 D01 v04, KDB 662911 D01 v02r01 and ANSI C63.10-2013,

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 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(IC: 2324B-1)	☐ Chamber D(IC: 22541-1)
☐ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 22541-2)
☐ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 22541-3)
	☐ Chamber G(IC: 22541-4)
	☐ Chamber H(IC: 22541-5)

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 C are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, & NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2472	802.11b 2TX	15.34	34.20
2412 - 2472	802.11g 2TX	15.90	38.90
2412 - 2472	802.11n HT20 2TX CDD	16.09	40.64

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (GHz)	Antenna Gain (dBi)	
	Chain 0	Chain 1
2.4	-0.60	-8.40

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was s_atp_XXX_0_00333_A_11.
The test utility software used during testing was Tera Term Ver 4.79.

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5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 30MHz, 1GHz, above 18GHz, and power line conducted emission were performed with the EUT was set to transmit at the channel with highest output power as worst-case scenario.

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

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

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

The simultaneous mode (SISO 2.4GHz Chain 0 and 5GHz chain 1) was checked and stand-alone (MIMO) 2.4 GHz / 5GHz remain worst case.

NOTE: SISO mode is covered by MIMO mode due to same maximum tune-up limit (power).

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	20B7S0A200	PC015REW	NA
AC Adapter	SONY	UCH12	4016W40310044	NA
DC Power Supply	Ametek	XT 15-4	T463	N/A

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	RF	Shielded	0.2	To Spectrum Analyzer
2	USB	1	USB	Shielded	1	N/A
3	DC	1	DC	Shielded	0.3	N/A

I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB	Shielded	3	N/A

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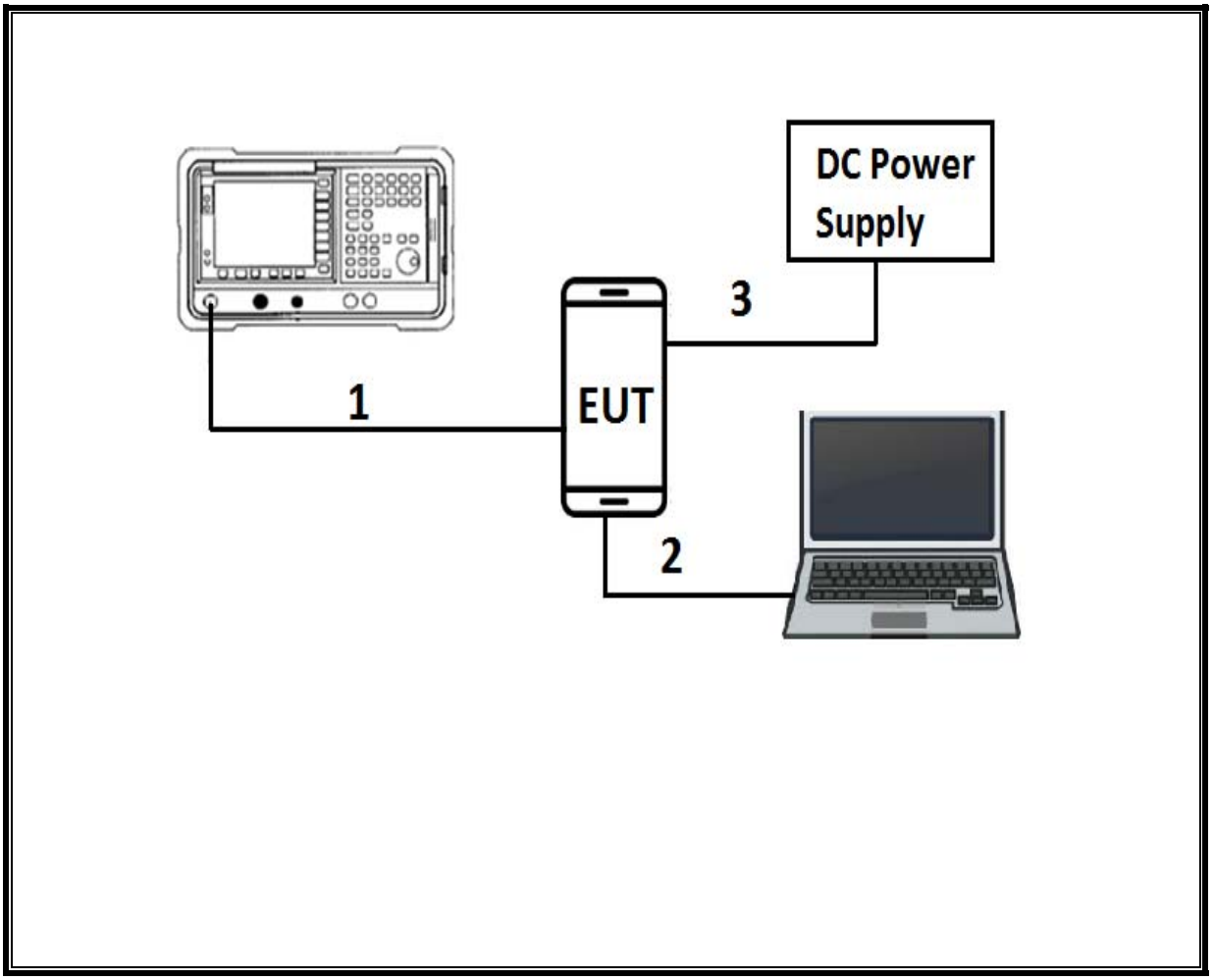
TEST SETUP

CONDUCTED TEST SETUP DIAGRAM



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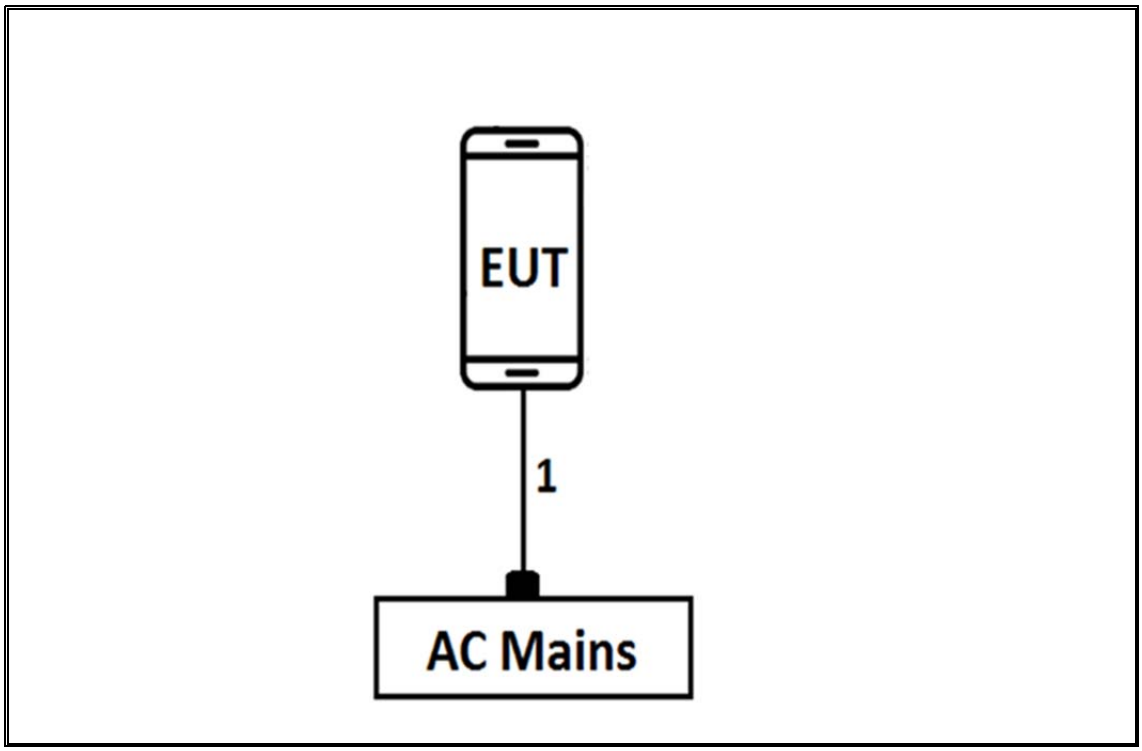
TEST SETUP

RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



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6. TEST AND MEASUREMENT EQUIPMENT

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

Description	Manufacturer	Model	ID Num	Cal Due
Spectrum Analyzer	Keysight	E4446A	T146	07/17/2018
Spectrum Analyzer	Keysight	N9030A	T1466	04/11/2018
Antenna, Biconolog, 30MHz – 1GHz	Sunol Sciences	JB3	T899	06/15/2018
Antenna, Horn, 1-18GHz	ETS Lindgren	3117	T862	06/09/2018
Antenna, Horn, 1-18GHz	ETS Lindgren	3117	T712	01/30/2018
RF Preamplifier, 10kHz - 1GHz	Sonoma	310N	T300	12/11/2018
RF Preamplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T1165	06/24/2018
RF Preamplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T493	02/15/2018
Spectrum Analyzer	Keysight	N9030A	T907	01/23/2018
RF Preamplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T931	06/21/2018
Spectrum Analyzer	Keysight	N9030A	T905	01/11/2018
Spectrum Analyzer	Keysight	N9030A	T1454	12/31/2017
Antenna, Horn, 18-26-GHz	ARA	MWH-1826	T449	06/12/2018
Antenna, Active Loop 9KHz to 30MHz	COM-POWER	AL-130R	T1866	10/10/2018
RF Preamplifier, 1-26GHz	Agilent	8449B	T404	07/23/2018
Power Meter	Keysight	N1911A	T1271	07/17/2018
Power Sensor	Keysight	N1921A	T413	06/22/2018
EMI Receiver	Rohde & Schwarz	ESR	T1436	01/06/2018
LISN	Fischer Custom Communications	FCC-LISN-50/250-25-2-01	T1310	06/15/2018

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, Apr 26, 2016
Antenna Port Software	UL	UL RF	Ver 7.6, Nov 11, 2017

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7. MEASUREMENT METHODS

On Time and Duty Cycle: KDB 558074 D01 v04, Section 6.

6 dB BW: KDB 558074 D01 v04, Section 8.1.

99% BW: ANSI C63.10-2013, Section 6.9.3.

Output Power: KDB 558074 D01 v04, Section 9.2.3.2.

Power Spectral Density: KDB 558074 D01 v04, Section 10.3.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.1 (b).

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

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

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8. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	Occupied Band width (6dB)	>500KHz	Conducted	Pass
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-30dBc		Pass
15.247 (b) (3)	TX conducted output power	<30dBm		Pass
15.247 (e)	PSD	<8dBm		Pass
15.207 (a)	AC Power Line conducted emissions	Section 10	Radiated	Pass
15.205, 15.209, 15.247(d)	Radiated Spurious Emission	< 54dBuV/m		Pass

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9. ANTENNA PORT TEST RESULTS

9.1. 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 (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11b	12.20	12.34	0.99	98.87%	0.00	0.01
802.11g	2.03	2.06	0.98	98.26%	0.00	0.01
802.11n HT20 CDD	2.51	2.58	0.97	97.44%	0.11	0.40

Note: Chain 1 was tested to represent the worst chain.

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DUTY CYCLE PLOTS

DUTY CYCLE 802.11b MODE

DUTY CYCLE 802.11g MODE

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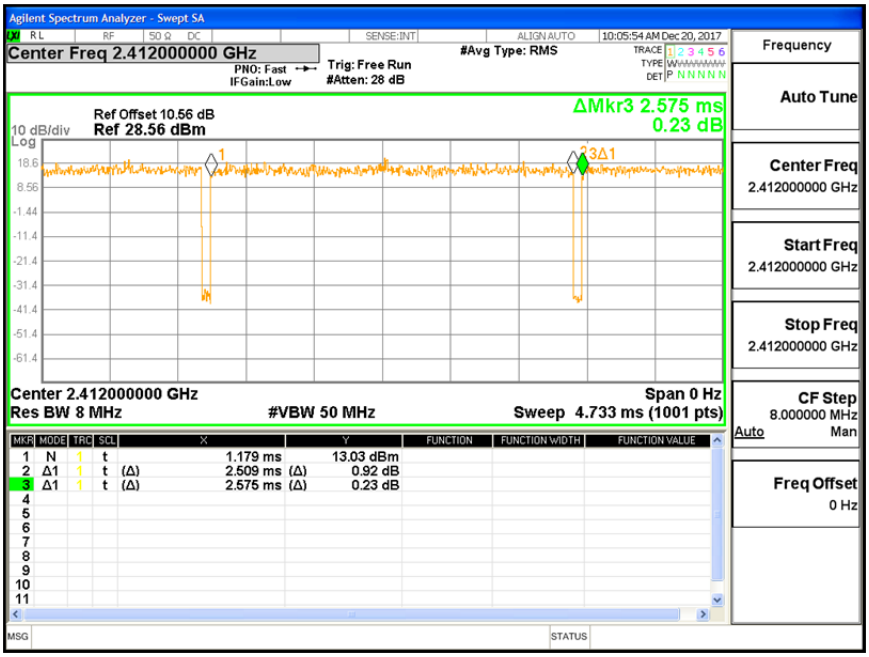
DUTY CYCLE 802.11n HT20 CDD MODE



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9.2. 11b 2TX MIMO MODE IN THE 2.4GHz BAND

9.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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)
CH1	2412	**8.60**	7.68	0.5
CH6	2437	6.52	**9.04**	0.5
CH11	2462	7.20	7.60	0.5
CH12	2467	7.56	8.52	0.5
CH13	2472	8.60	8.60	0.5

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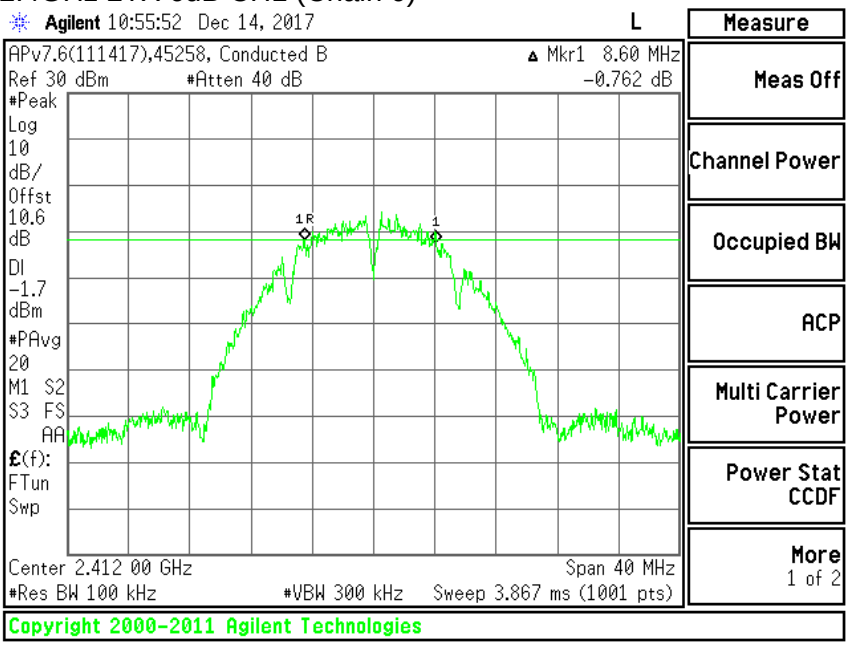
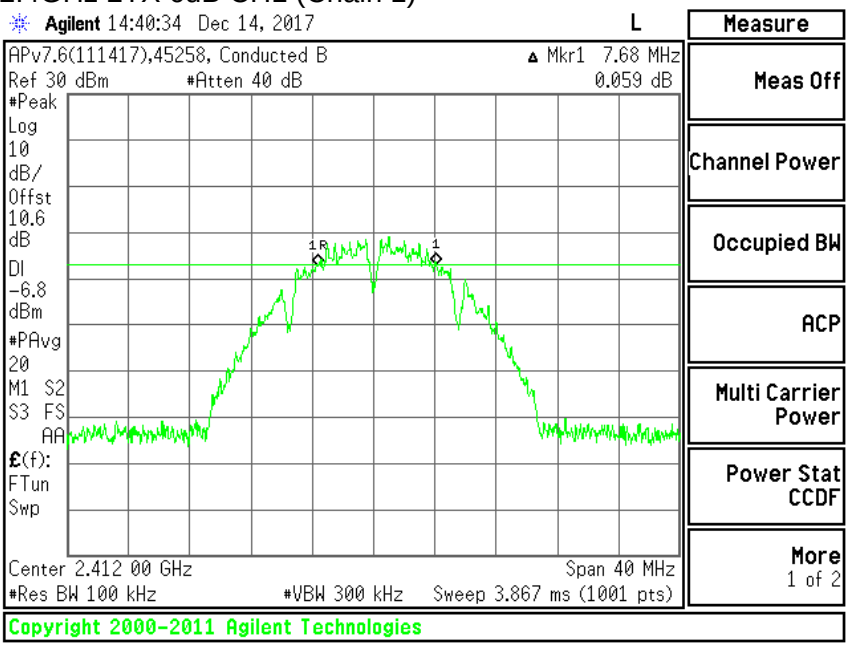
2.4GHz 2TX 6dB CH1 (Chain 0)



2.4GHz 2TX 6dB CH1 (Chain 1)



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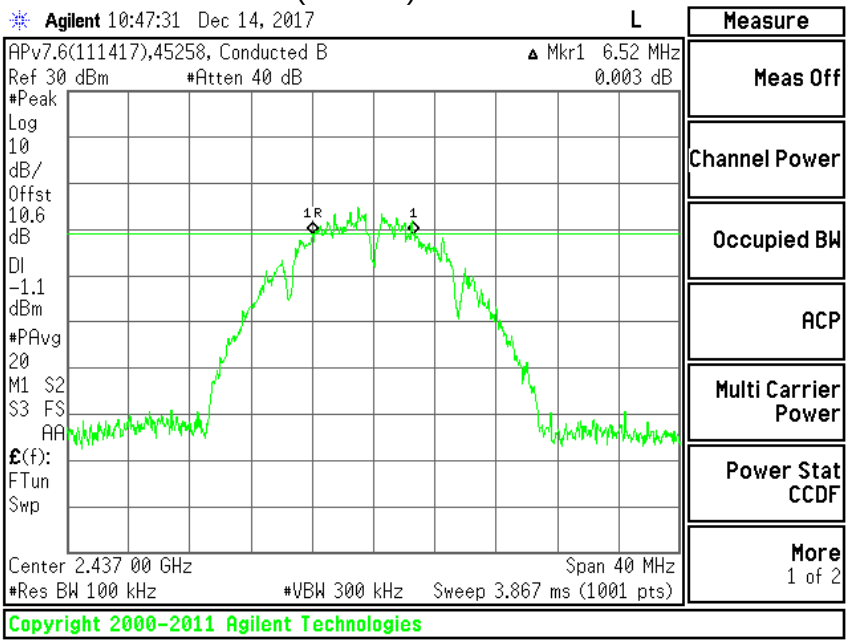
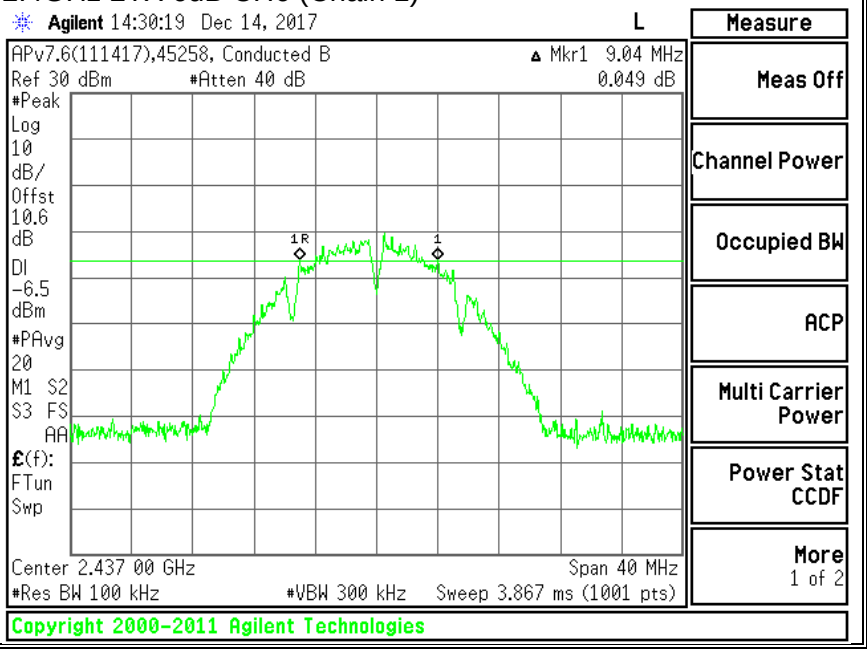
2.4GHz 2TX 6dB CH6 (Chain 0)



2.4GHz 2TX 6dB CH6 (Chain 1)



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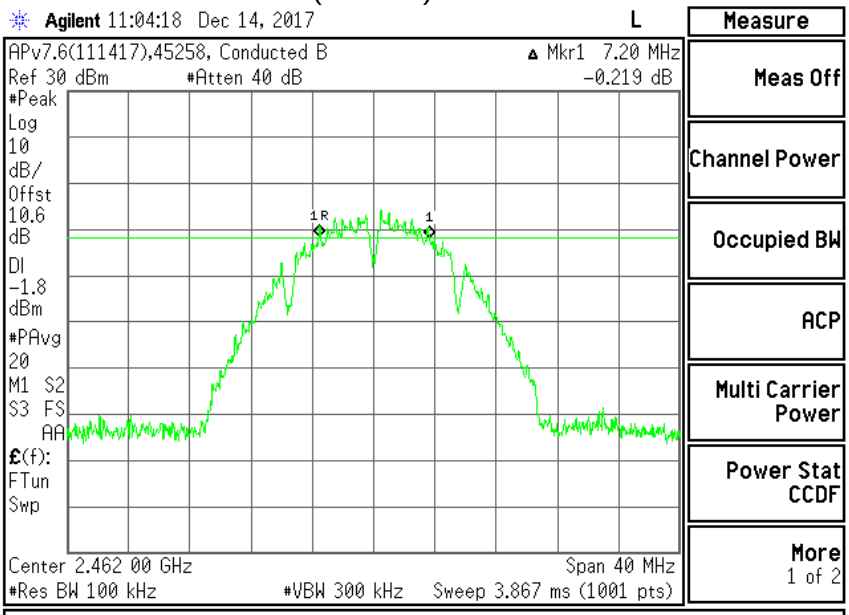
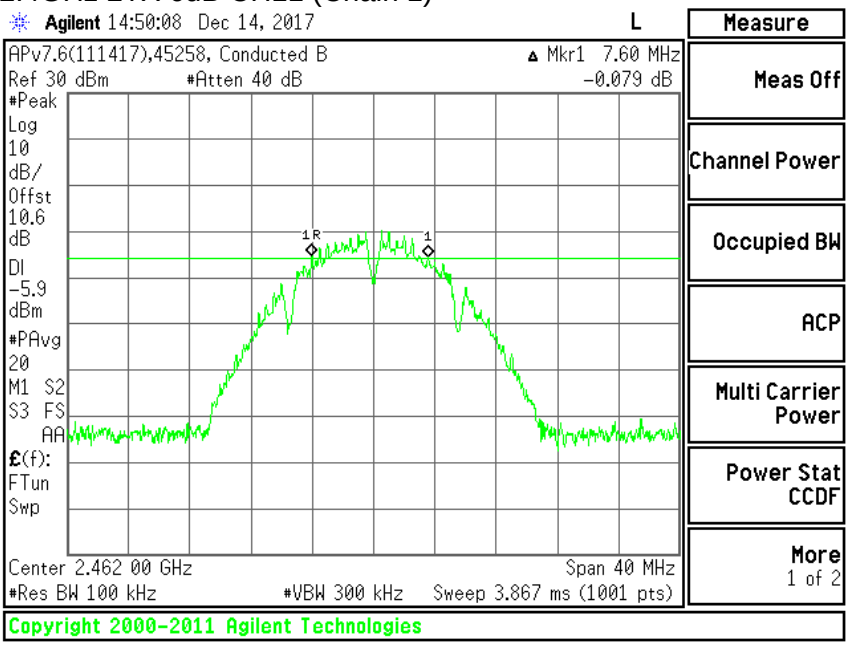
2.4GHz 2TX 6dB CH11 (Chain 0)



2.4GHz 2TX 6dB CH11 (Chain 1)



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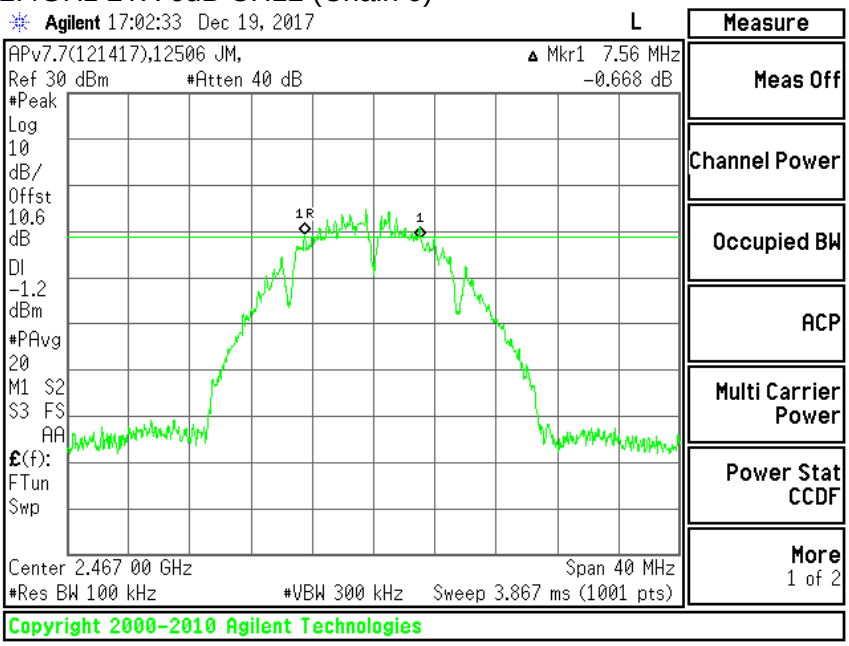
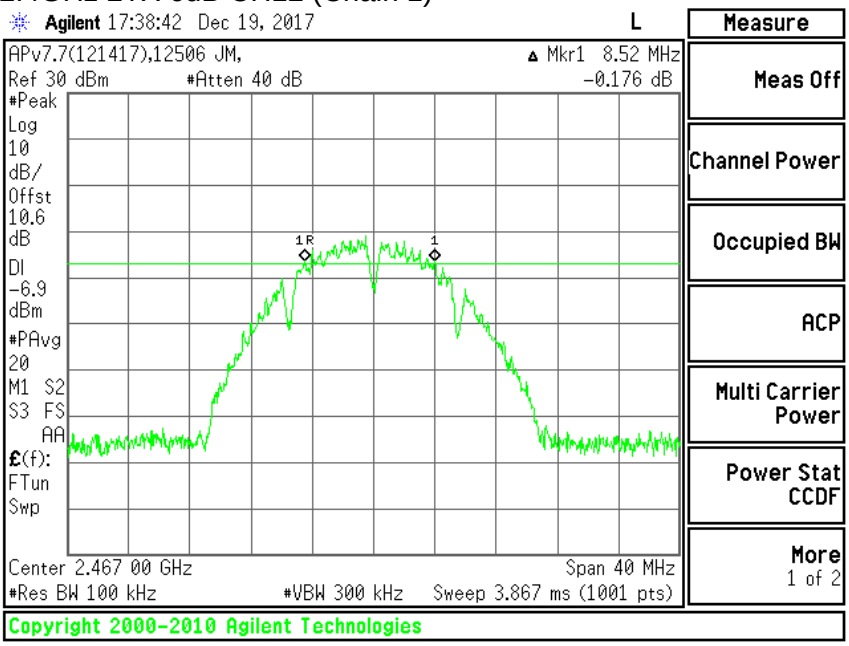
2.4GHz 2TX 6dB CH12 (Chain 0)



2.4GHz 2TX 6dB CH12 (Chain 1)



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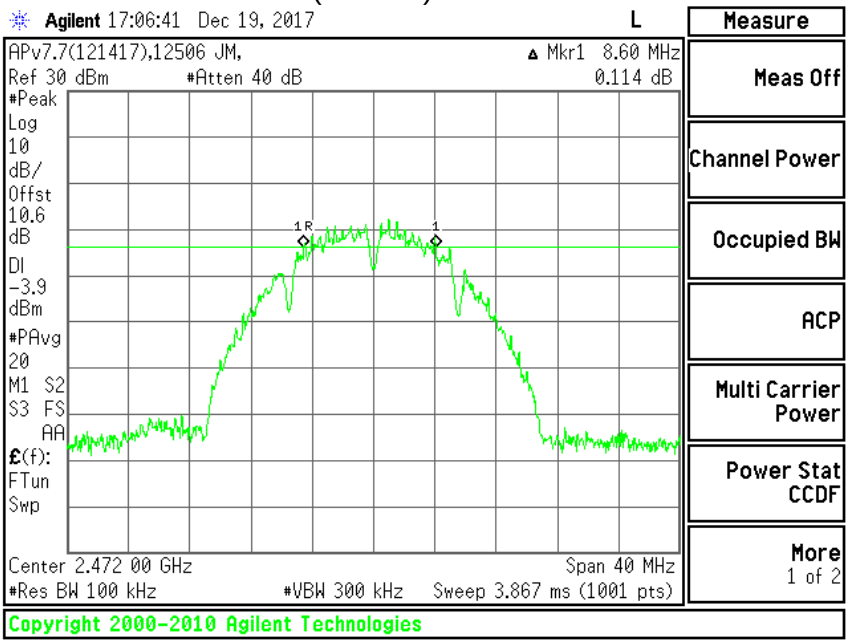
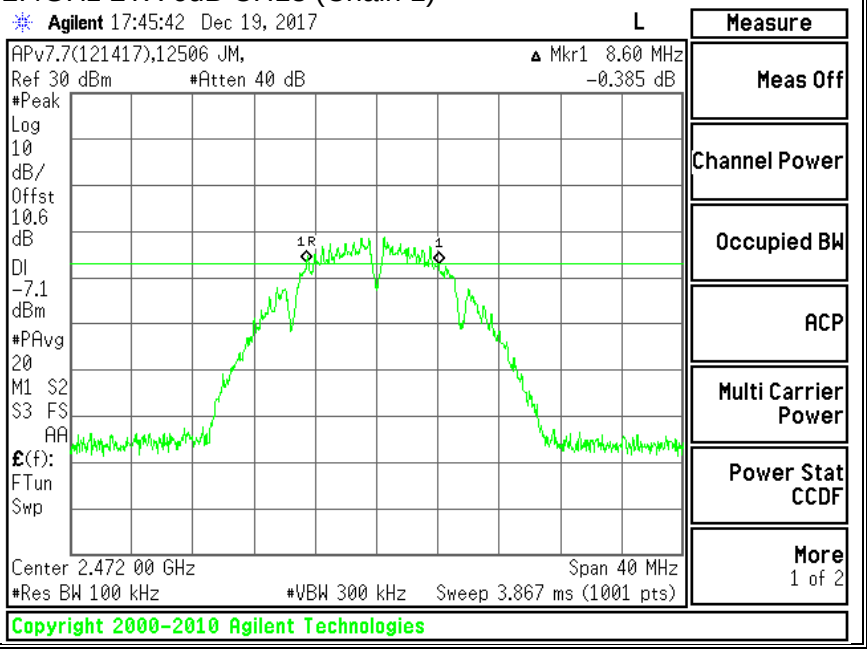
2.4GHz 2TX 6dB CH13 (Chain 0)



2.4GHz 2TX 6dB CH13 (Chain 1)



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9.2.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
CH1	2412	**14.4463**	14.1892
CH6	2437	14.0697	**14.3199**
CH11	2462	13.4641	13.9546
CH12	2467	14.1604	14.0682
CH13	2472	14.3818	14.1309

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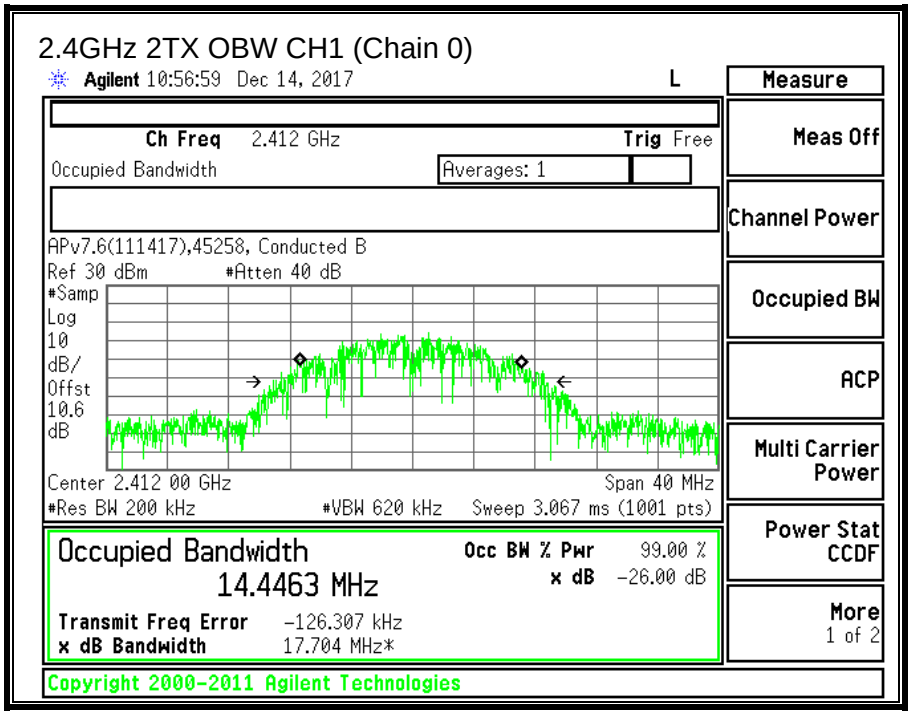

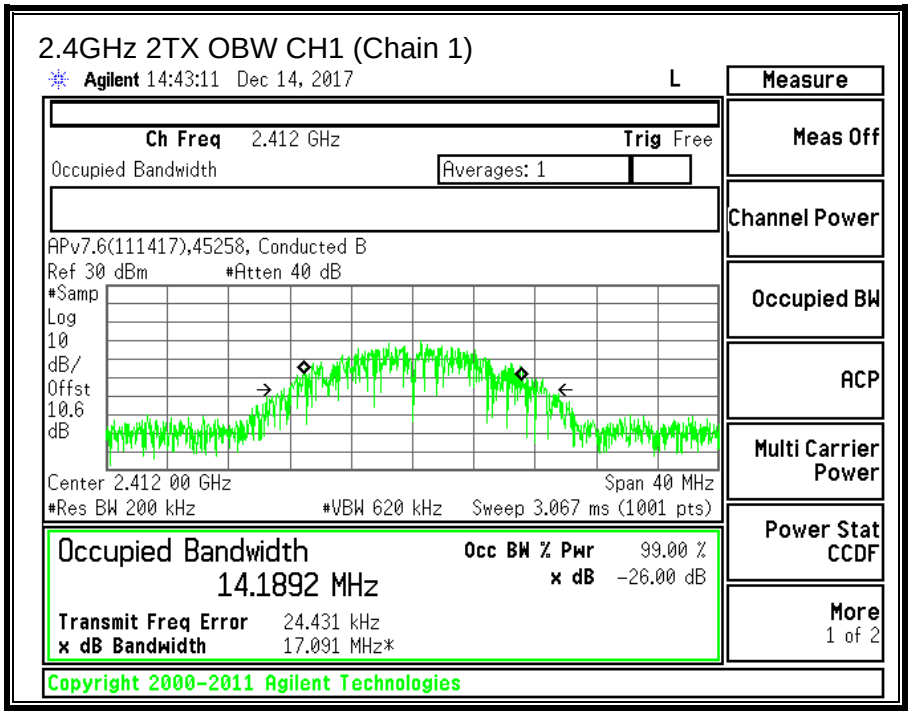

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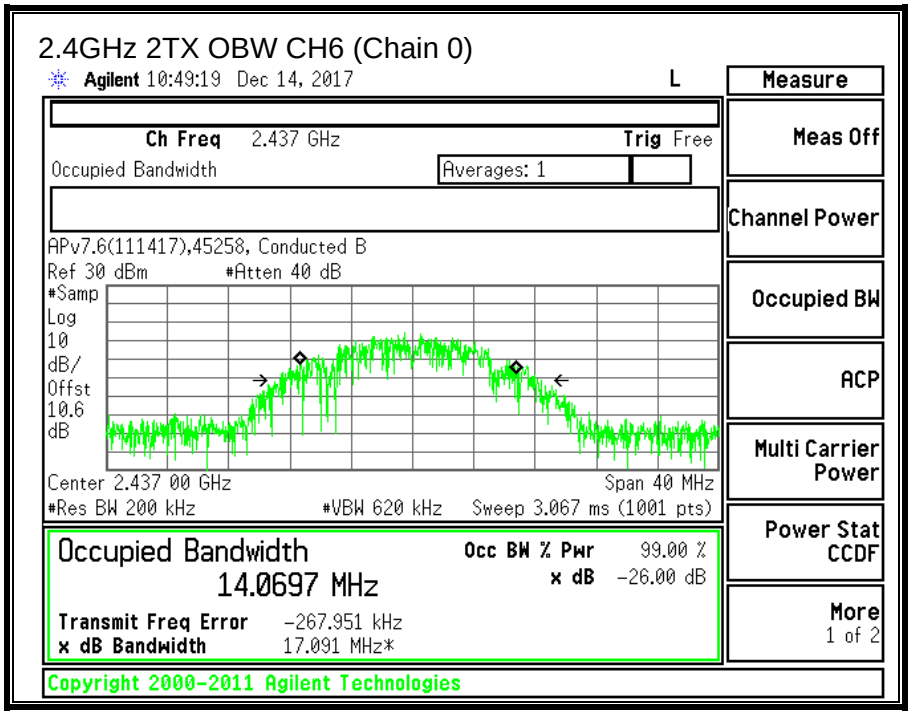

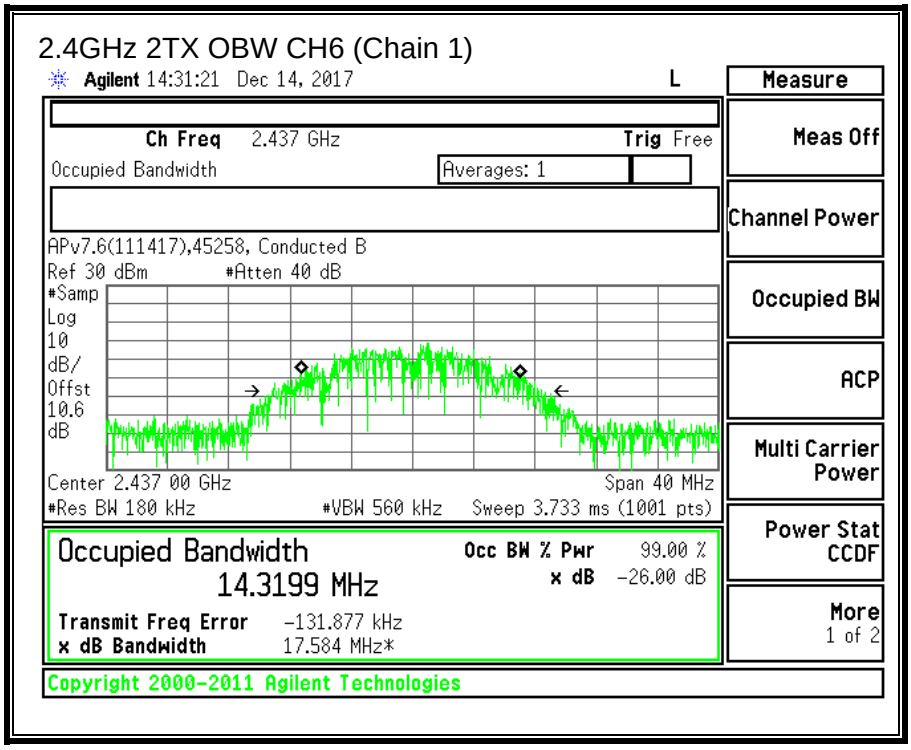

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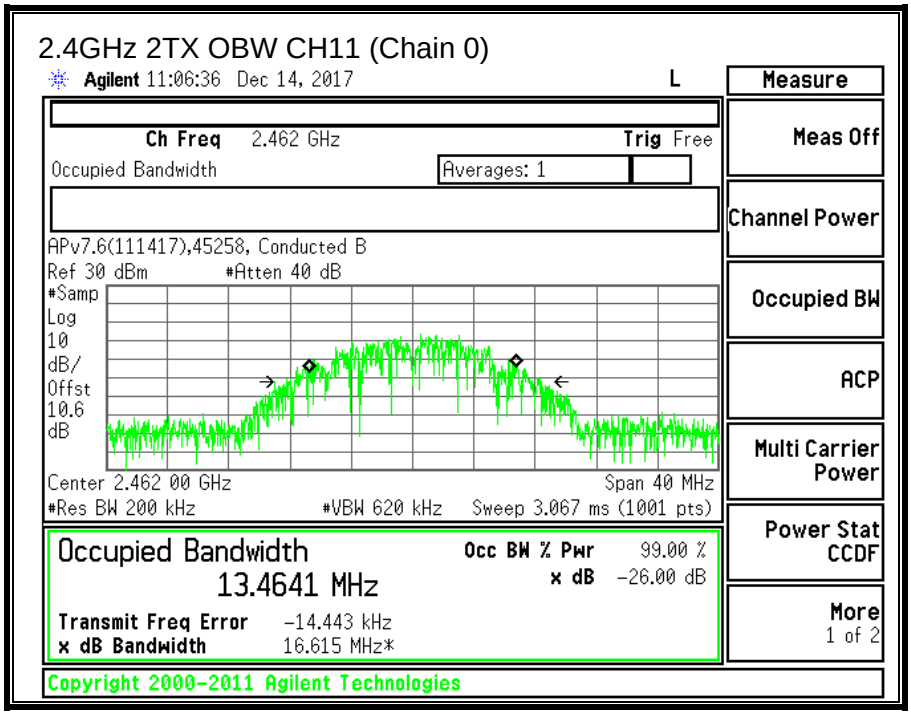

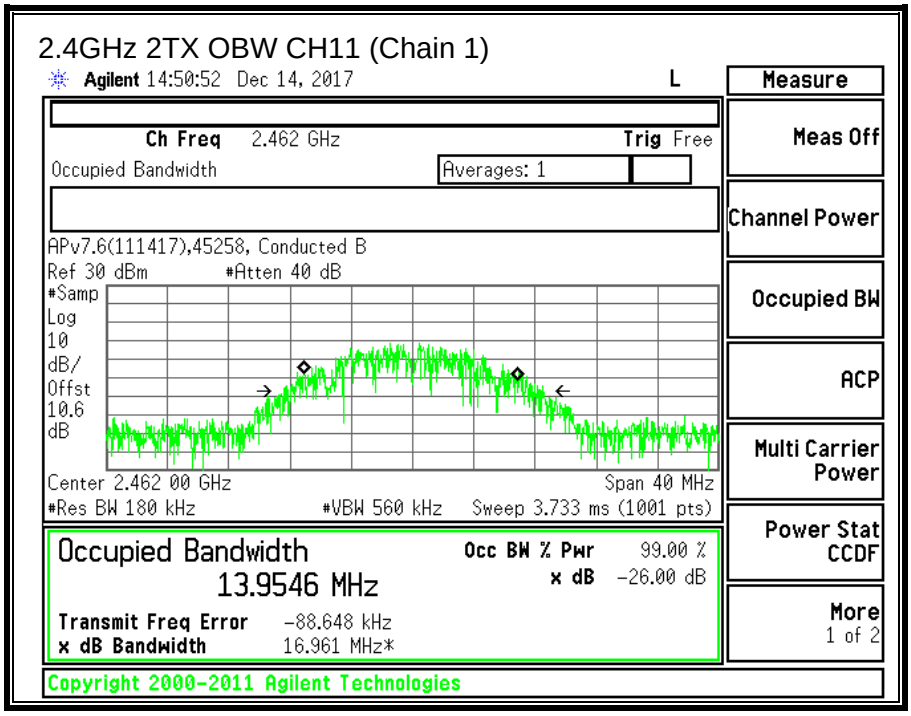

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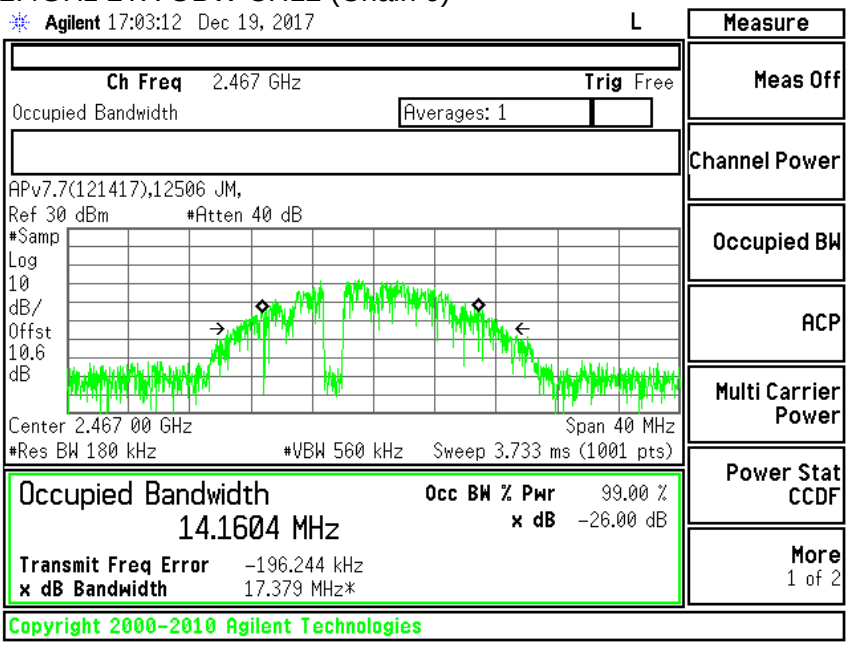
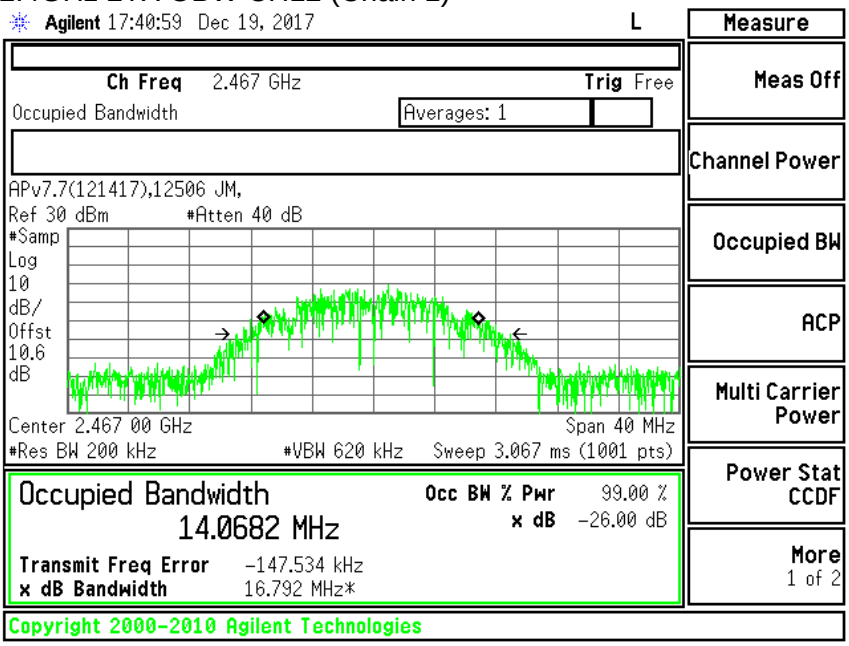
2.4GHz 2TX OBW CH12 (Chain 0)



2.4GHz 2TX OBW CH12 (Chain 1)



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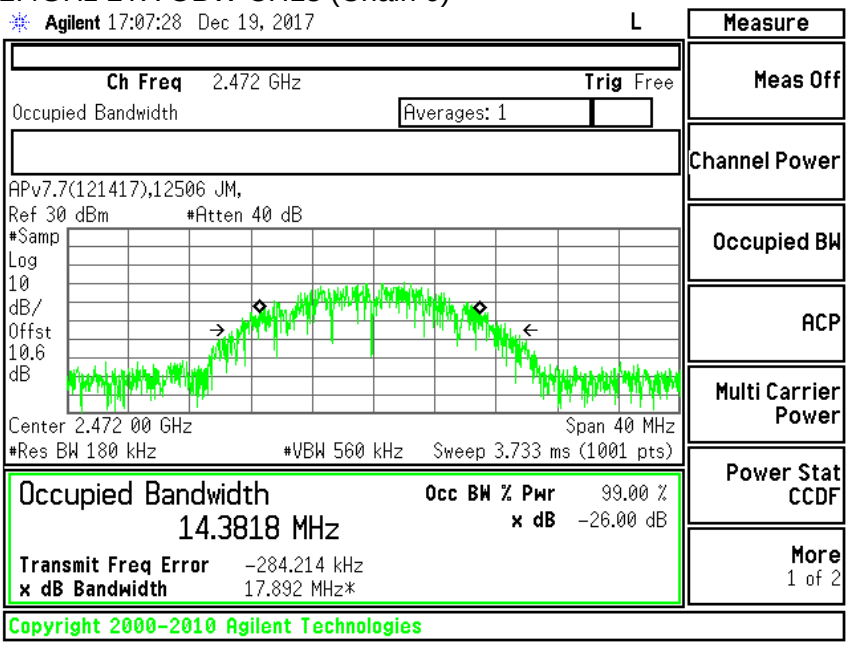
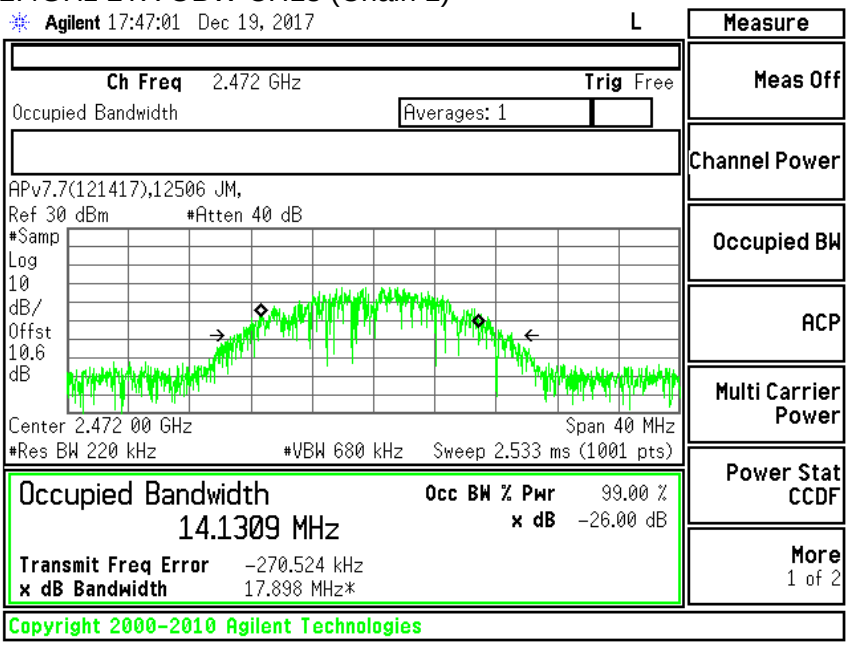
2.4GHz 2TX OBW CH13 (Chain 0)



2.4GHz 2TX OBW CH13 (Chain 1)



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9.2.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)
IC RSS-247 (5.4) (4)

For systems using digital modulation in the 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

KDB 58074 D01 v04 Section 9.2.3.2

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.60	-8.40	-2.94

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RESULTS

ID:	JM12056	Date:	12/12/17

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-2.94	30.00	30	36	30.00
CH6	2437	-2.94	30.00	30	36	30.00
CH11	2462	-2.94	30.00	30	36	30.00
CH12	2467	-2.94	30.00	30	36	30.00
CH13	2472	-2.94	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
CH1	2412	12.32	11.77	15.06	30.00	-14.94
CH6	2437	**12.62**	12.02	**15.34**	30.00	-14.66
CH11	2462	12.52	**12.12**	15.33	30.00	-14.67
CH12	2467	12.33	11.96	15.16	30.00	-14.84
CH13	2472	12.08	11.99	15.05	30.00	-14.95

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

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9.2.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

RESULTS

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
CH1	2412	-8.576	-9.648	-6.07	8.0	-14.1
CH6	2437	**-8.395**	-9.584	**-5.94**	8.0	-13.9
CH11	2462	-8.844	-9.521	-6.16	8.0	-14.2
CH12	2467	-8.981	**-9.454**	-6.20	8.0	-14.2
CH13	2472	-11.133	-11.542	-8.32	8.0	-16.3

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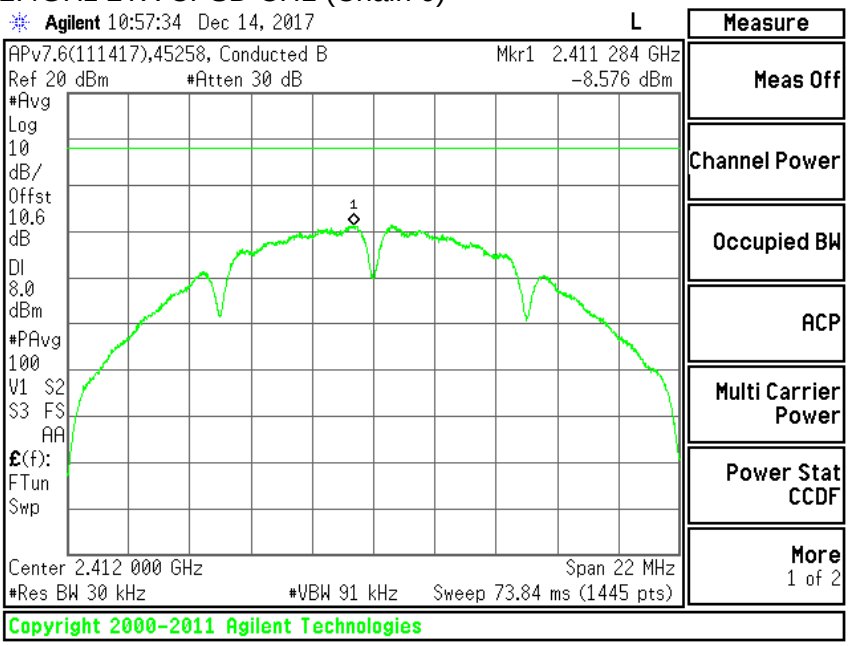
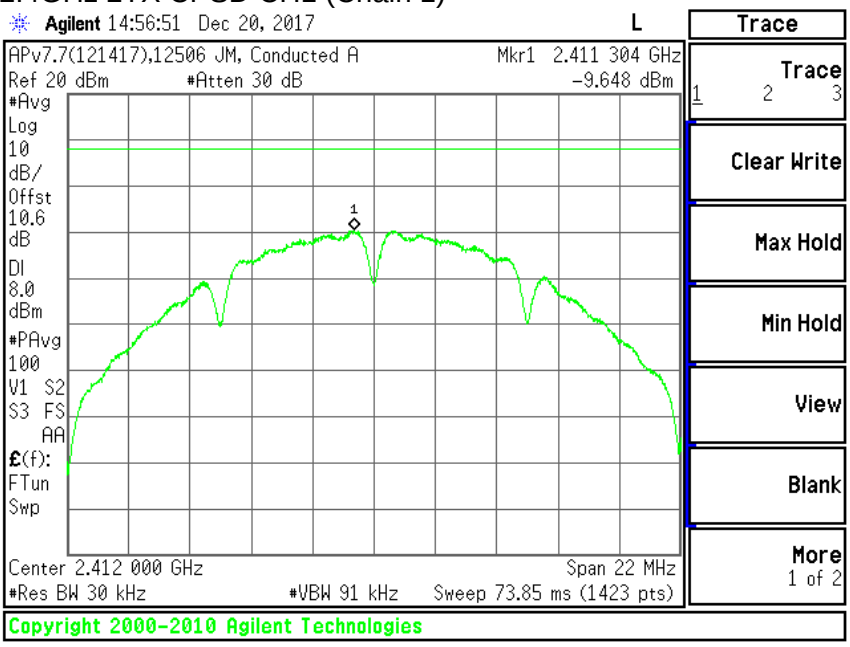
2.4GHz 2TX CPSD CH1 (Chain 0)



2.4GHz 2TX CPSD CH1 (Chain 1)



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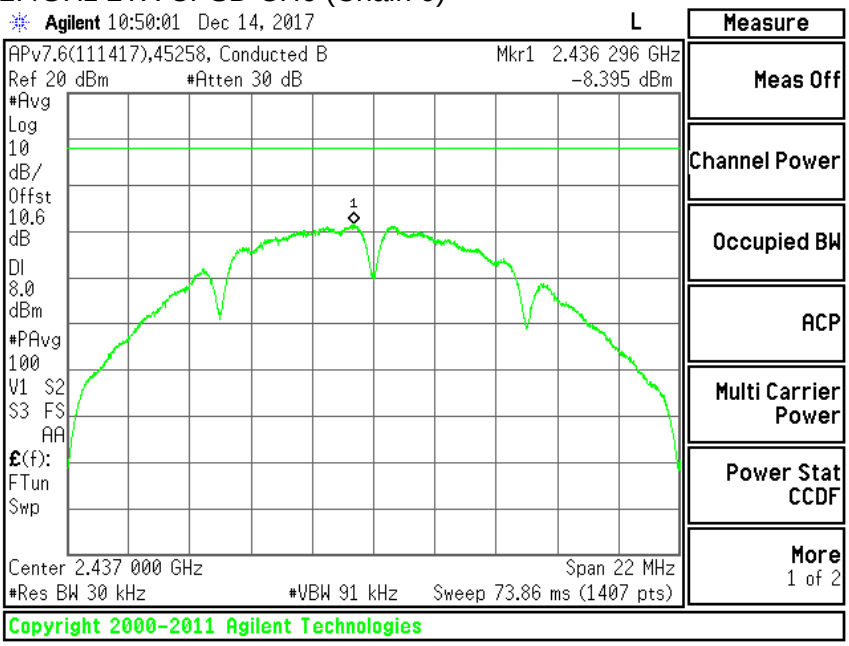
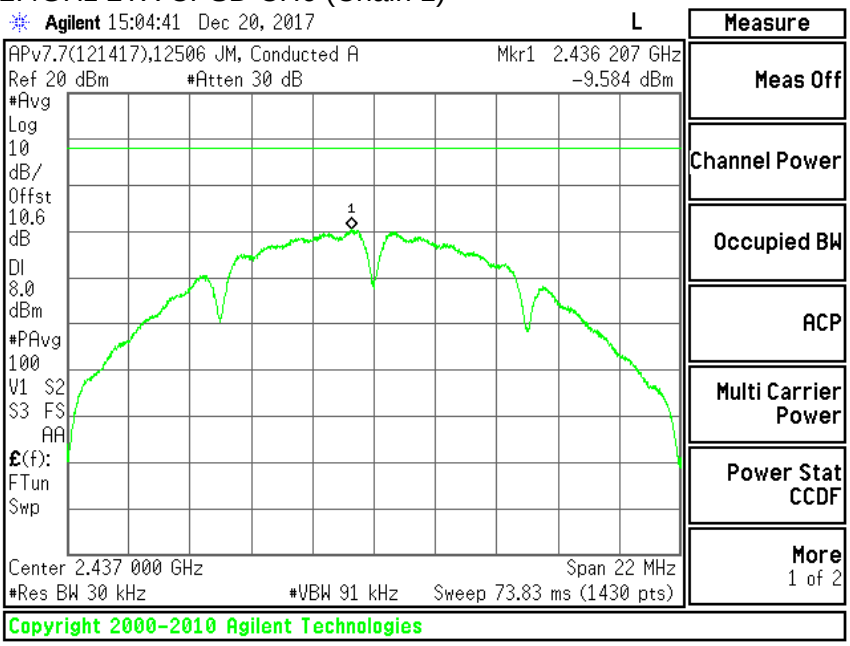
2.4GHz 2TX CPSD CH6 (Chain 0)



2.4GHz 2TX CPSD CH6 (Chain 1)



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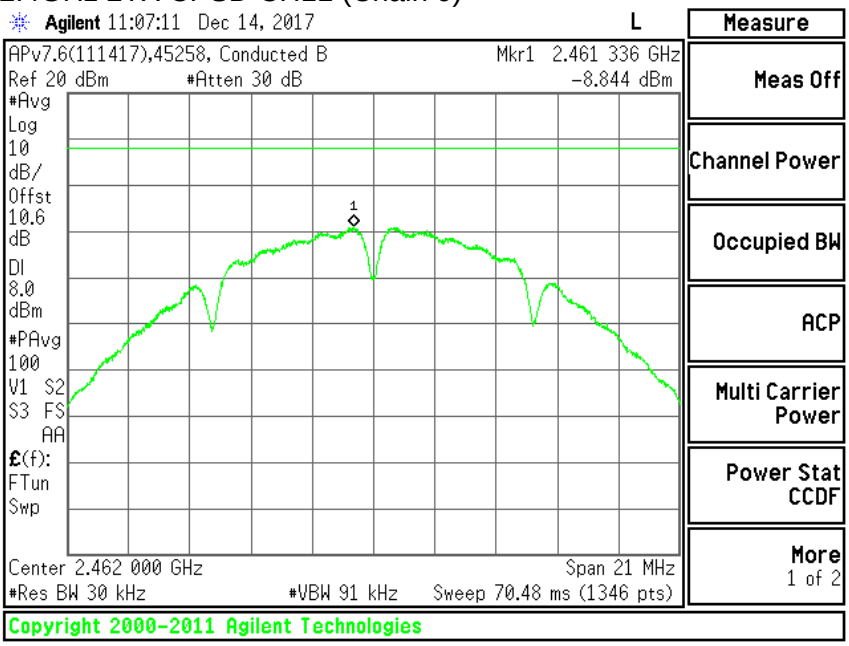
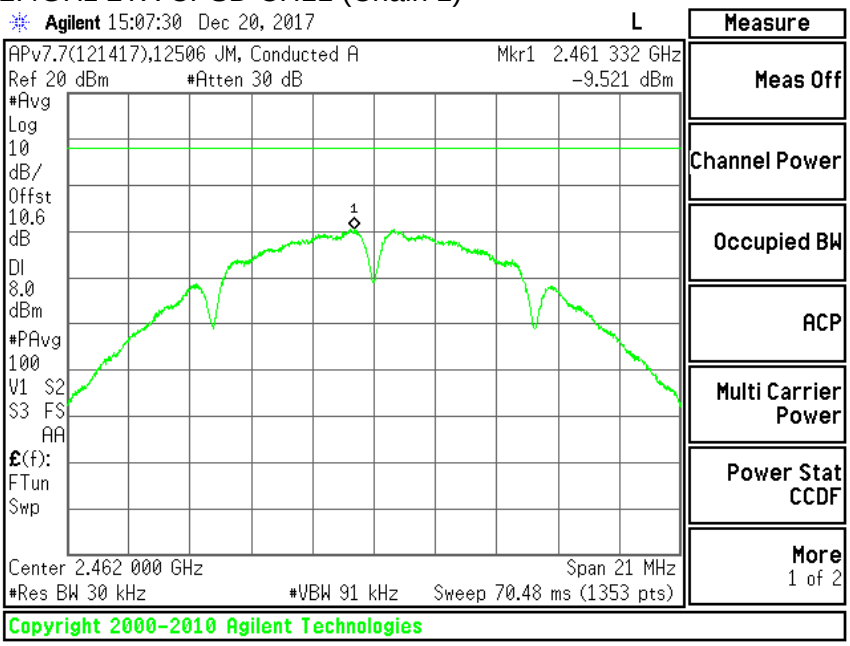
2.4GHz 2TX CPSD CH11 (Chain 0)



2.4GHz 2TX CPSD CH11 (Chain 1)



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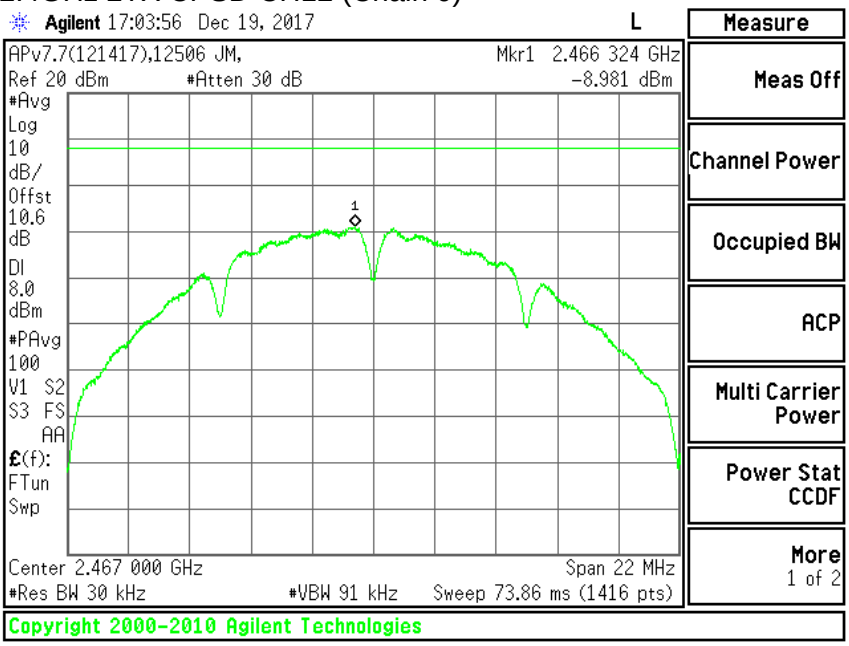
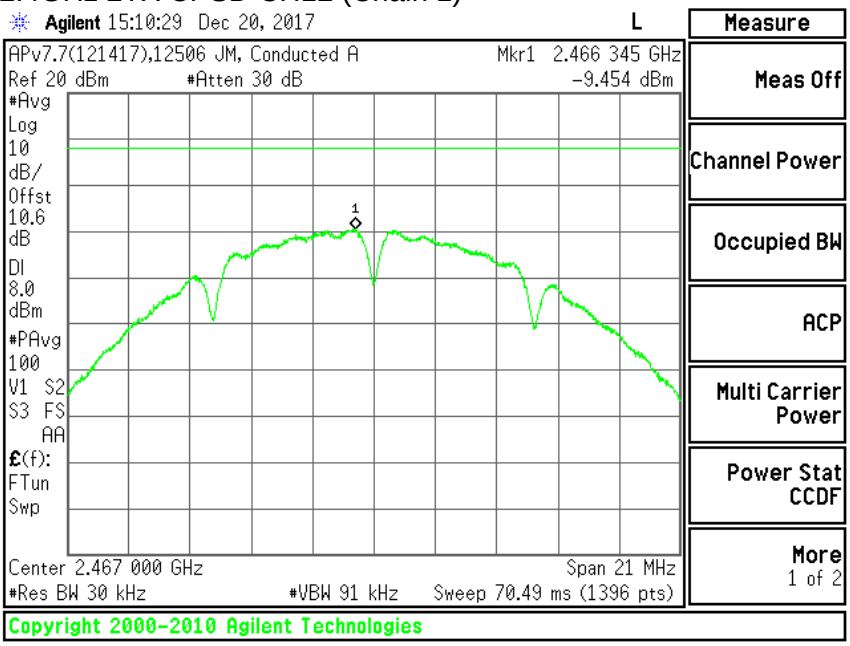
2.4GHz 2TX CPSD CH12 (Chain 0)



2.4GHz 2TX CPSD CH12 (Chain 1)



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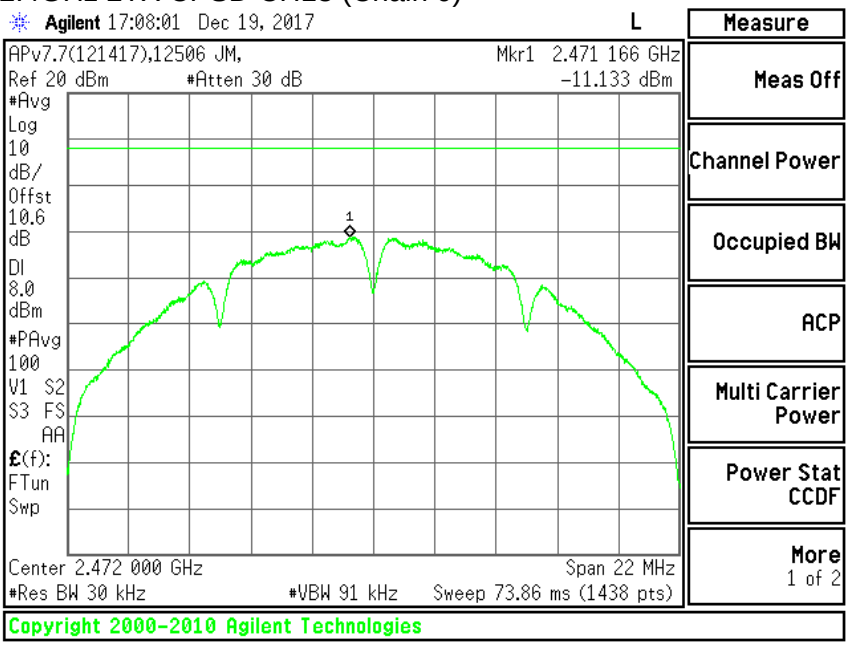
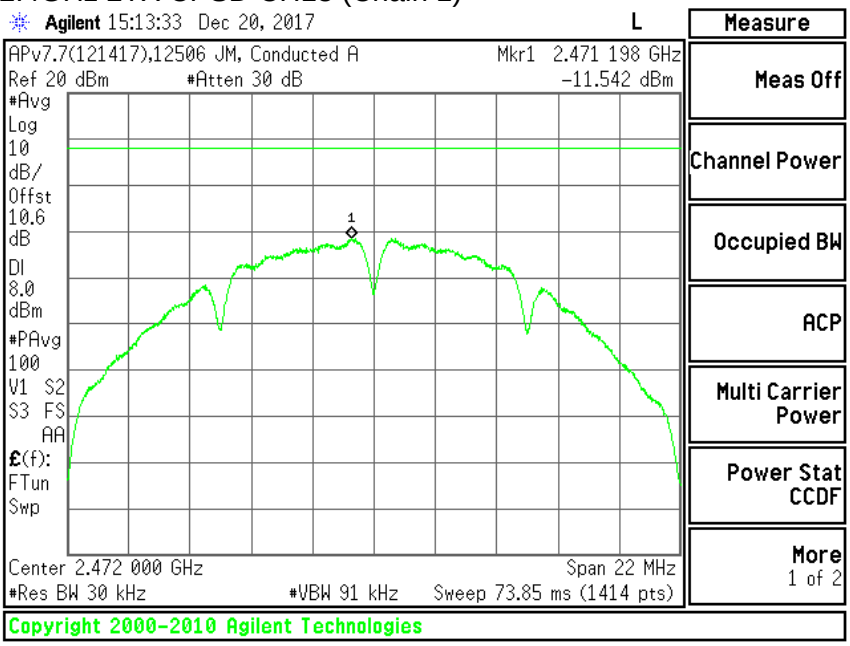
2.4GHz 2TX CPSD CH13 (Chain 0)



2.4GHz 2TX CPSD CH13 (Chain 1)



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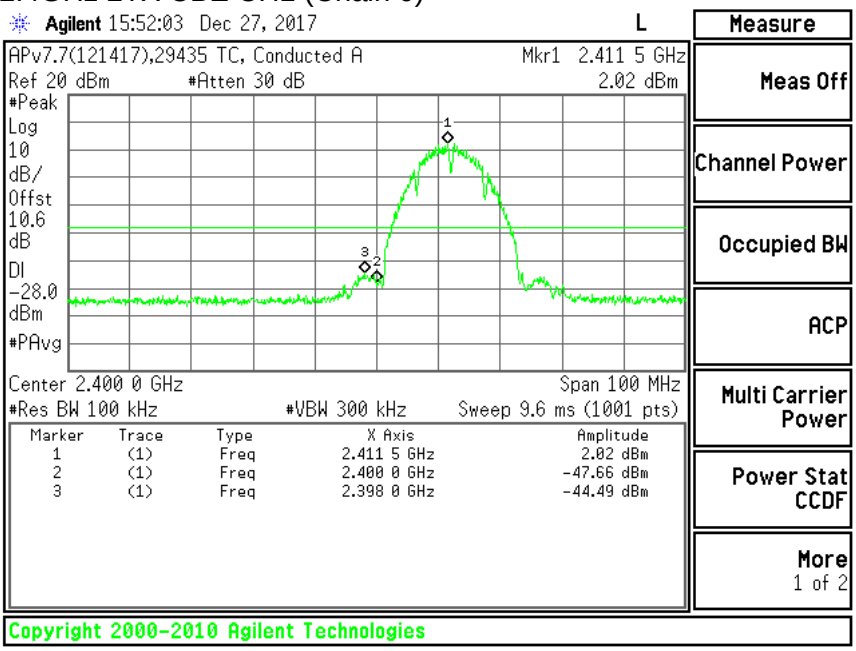
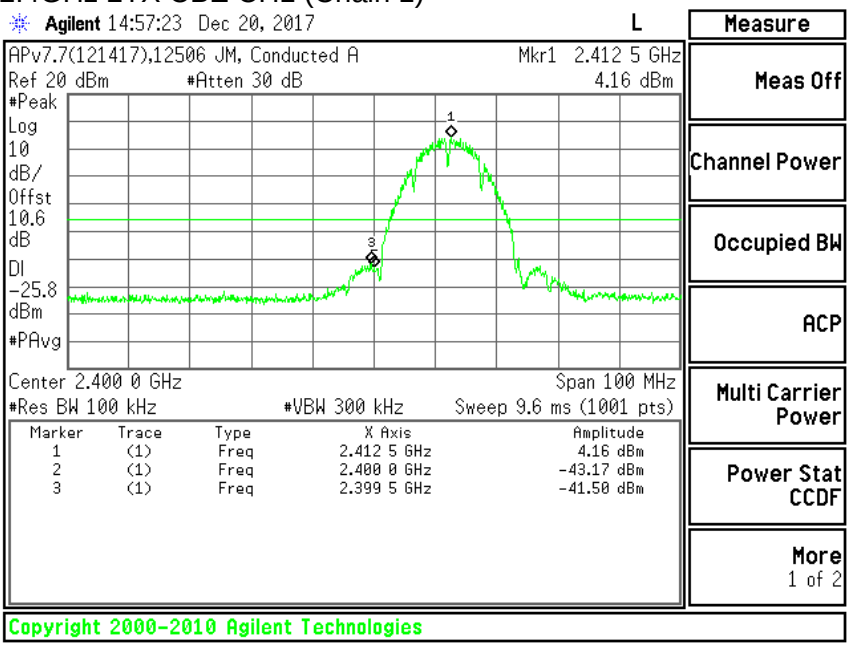
9.2.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

2.4GHz 2TX CBE CH1 (Chain 0)



2.4GHz 2TX CBE CH1 (Chain 1)



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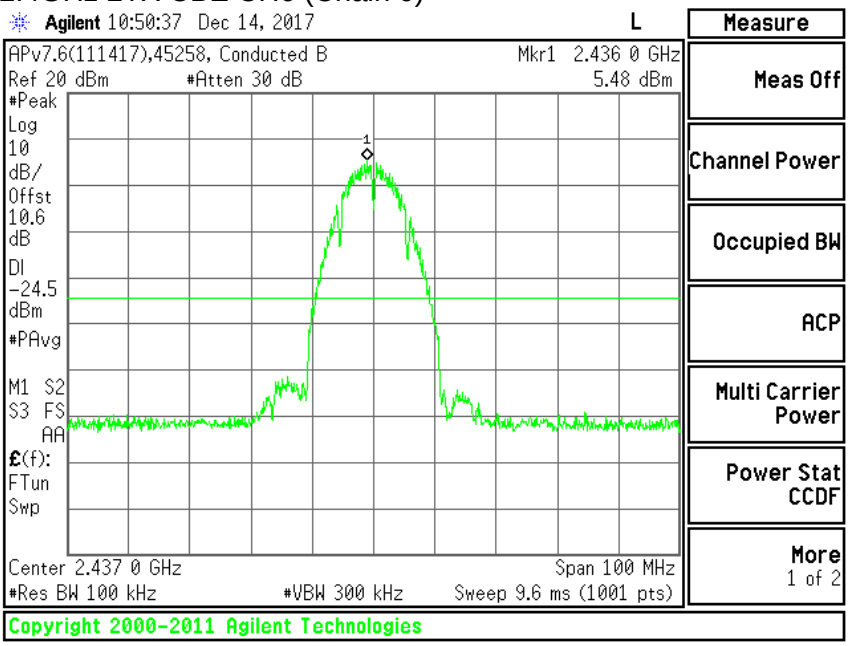
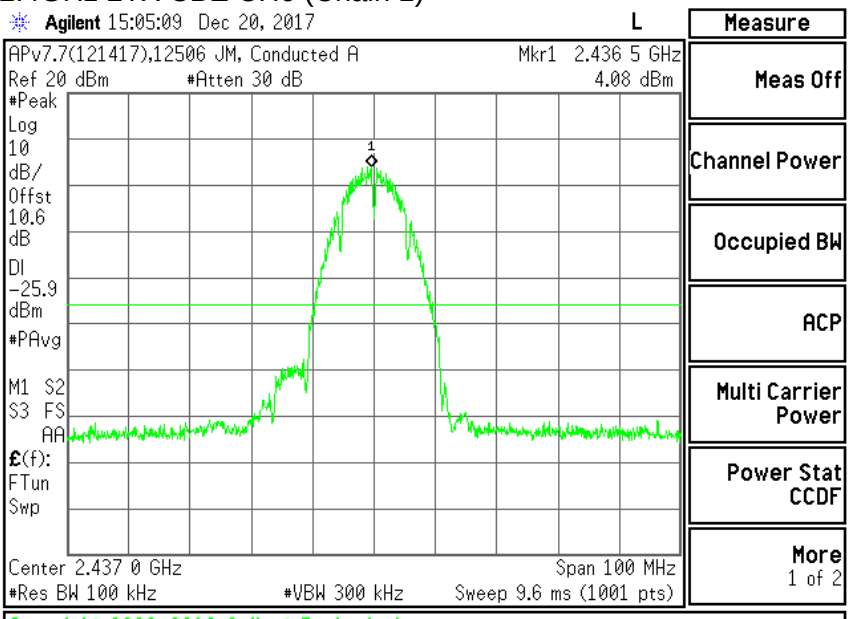
2.4GHz 2TX CBE CH6 (Chain 0)



2.4GHz 2TX CBE CH6 (Chain 1)



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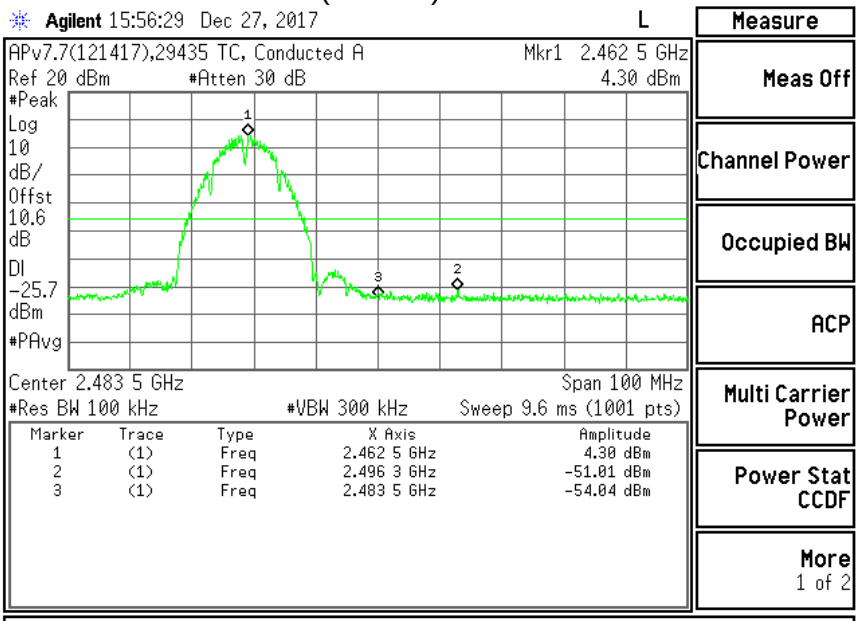
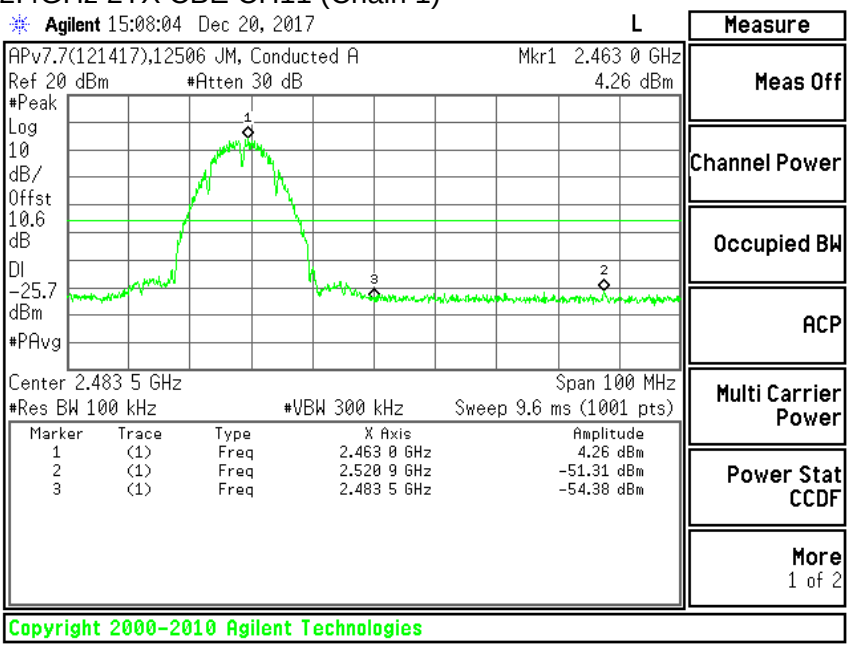
2.4GHz 2TX CBE CH11 (Chain 0)



2.4GHz 2TX CBE CH11 (Chain 1)



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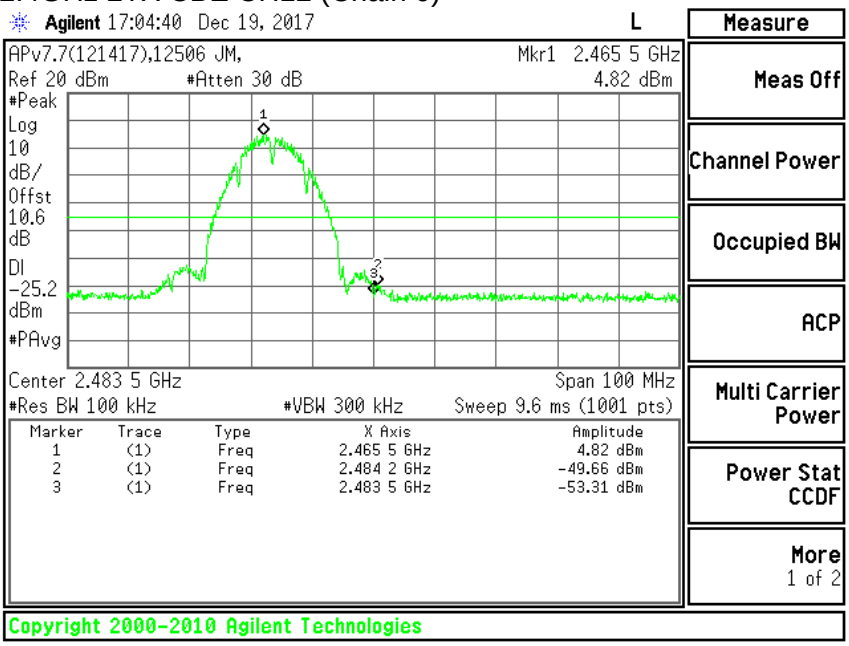
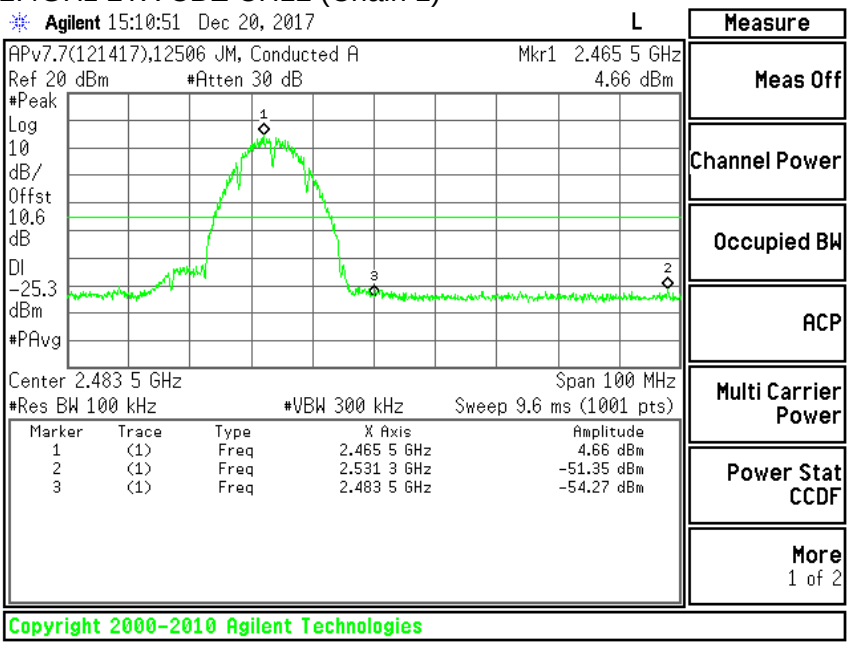
2.4GHz 2TX CBE CH12 (Chain 0)



2.4GHz 2TX CBE CH12 (Chain 1)



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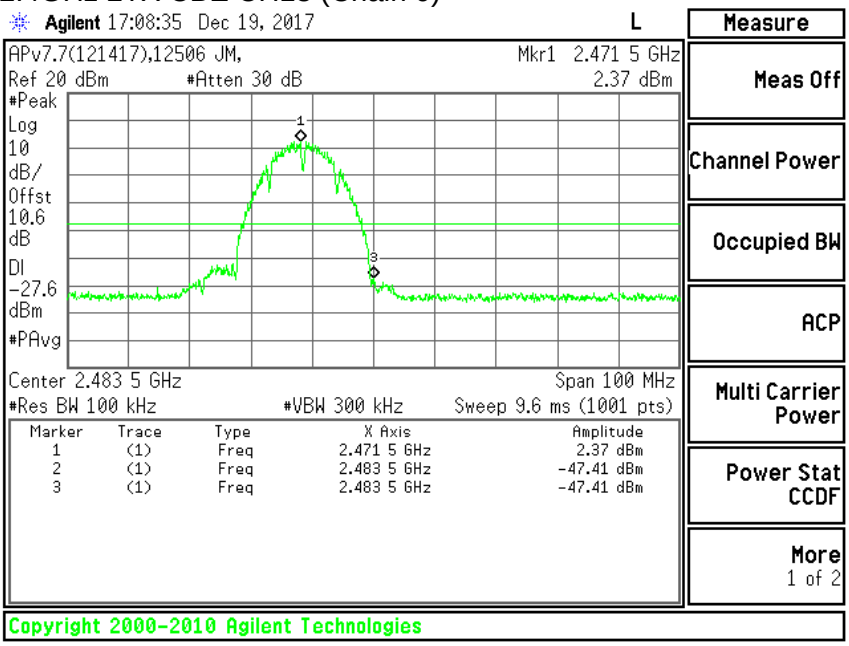
2.4GHz 2TX CBE CH13 (Chain 0)



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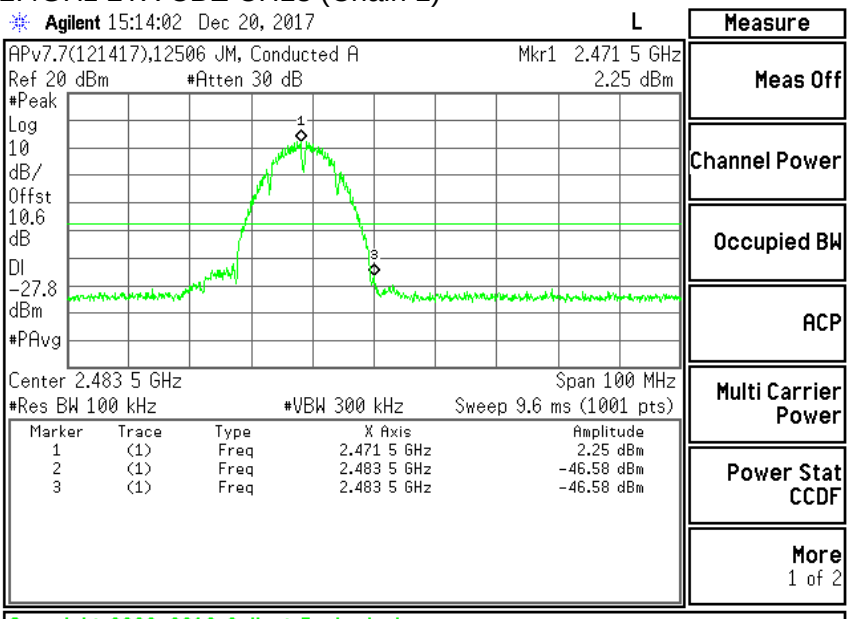

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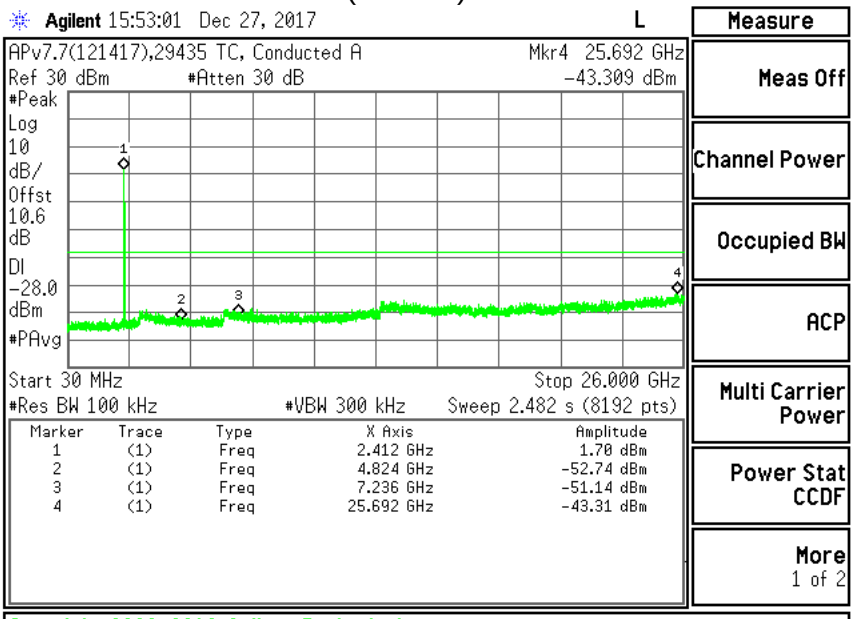
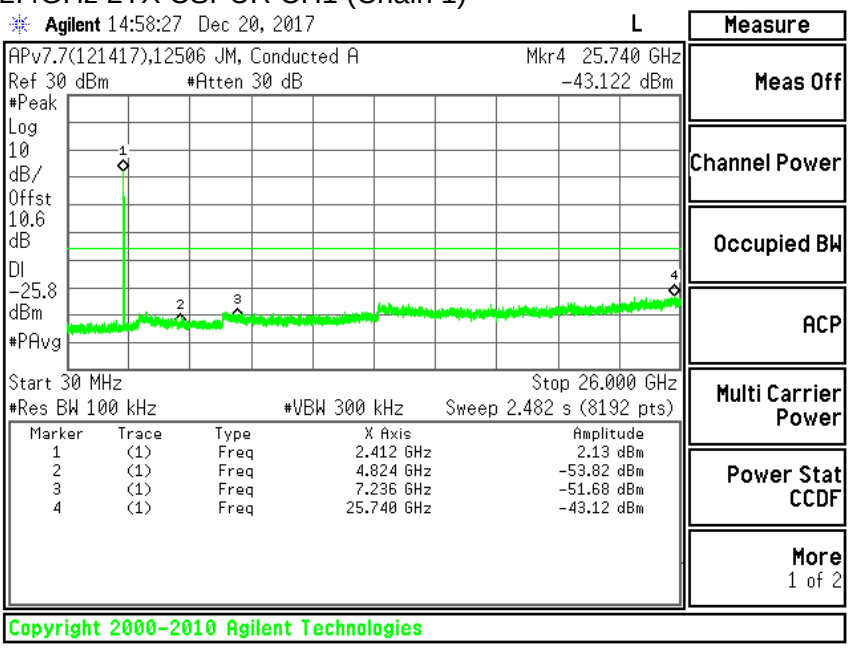
2.4GHz 2TX CSPUR CH1 (Chain 0)



2.4GHz 2TX CSPUR CH1 (Chain 1)



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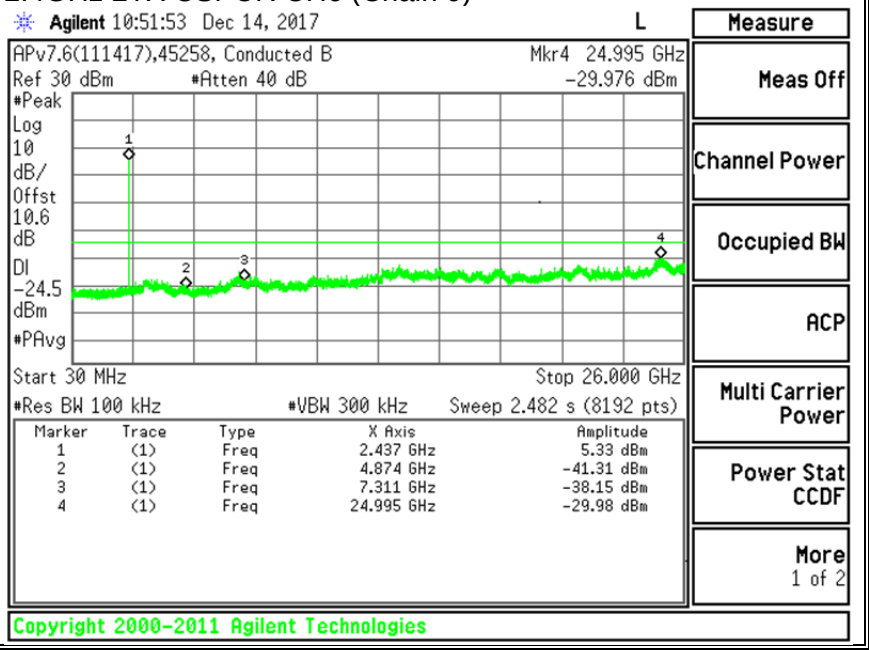
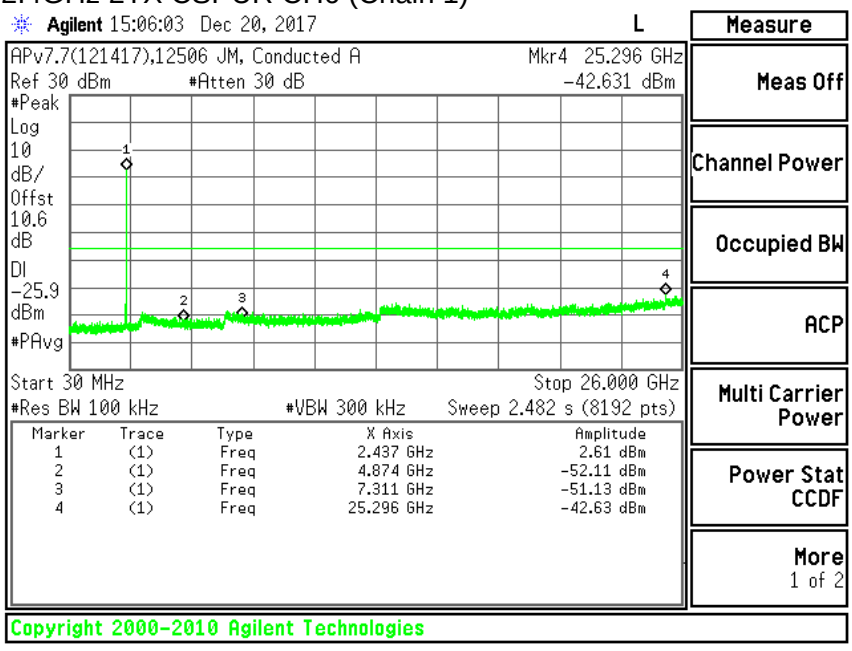
2.4GHz 2TX CSPUR CH6 (Chain 0)



2.4GHz 2TX CSPUR CH6 (Chain 1)



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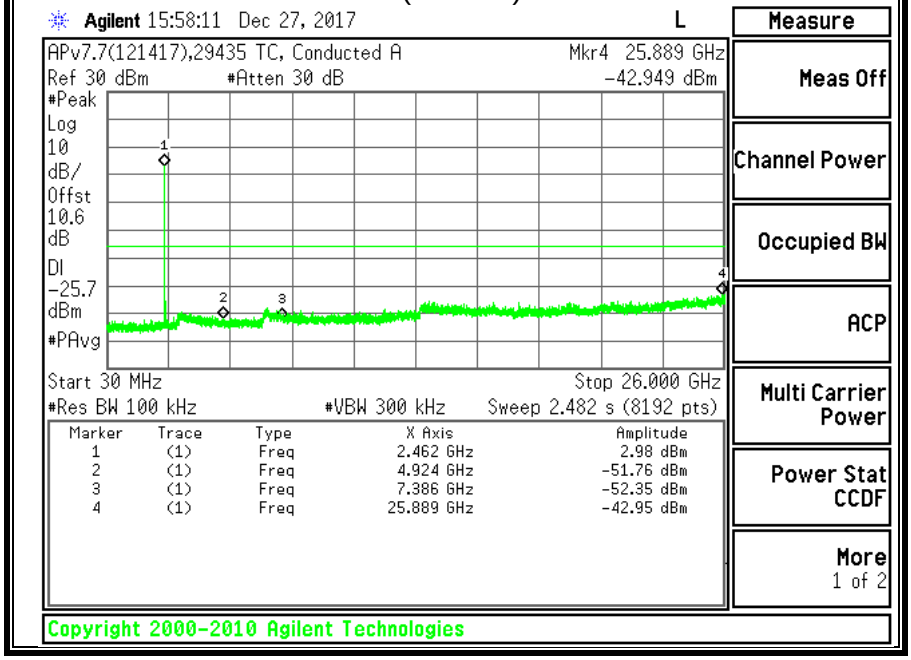
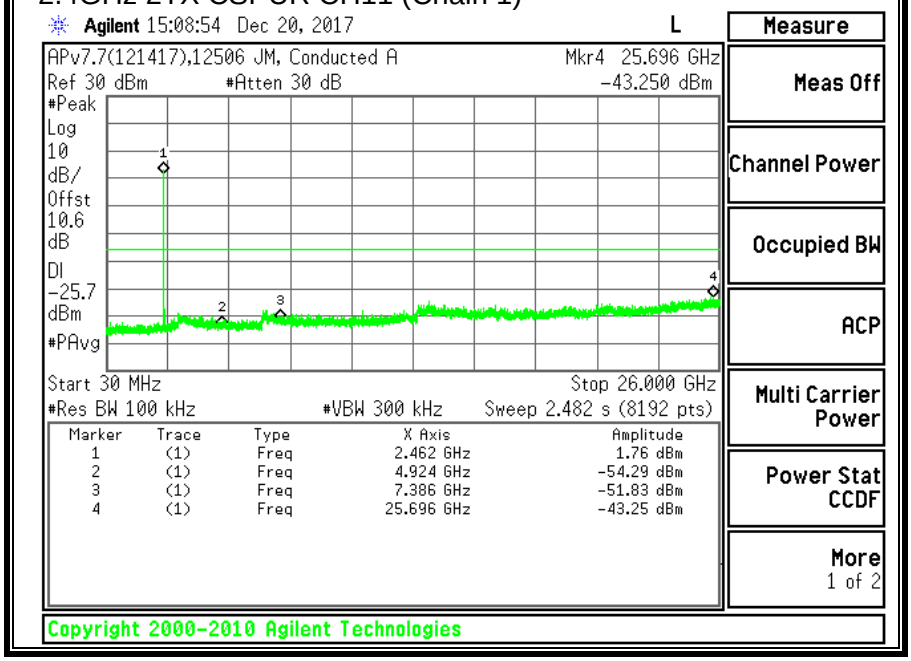
2.4GHz 2TX CSPUR CH11 (Chain 0)



2.4GHz 2TX CSPUR CH11 (Chain 1)



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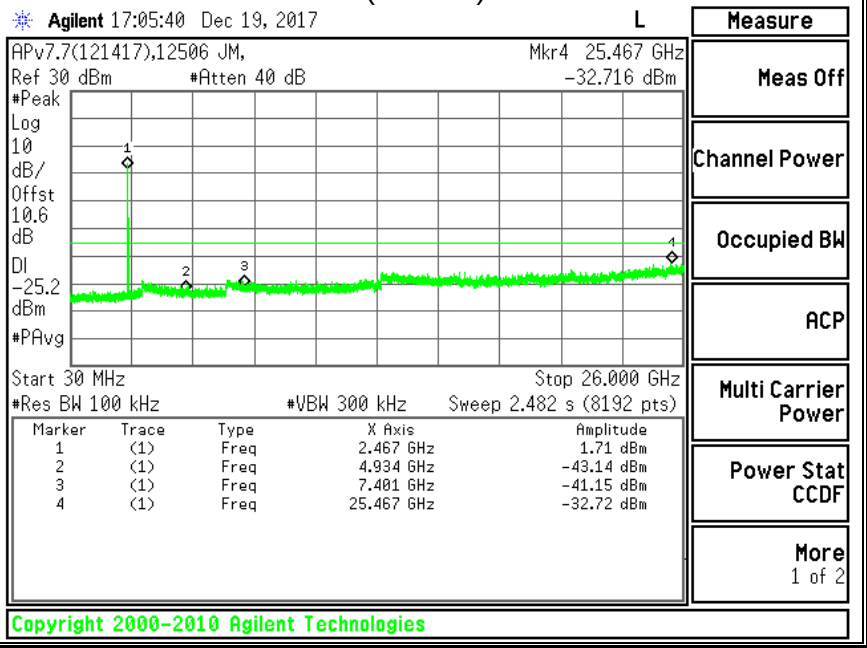
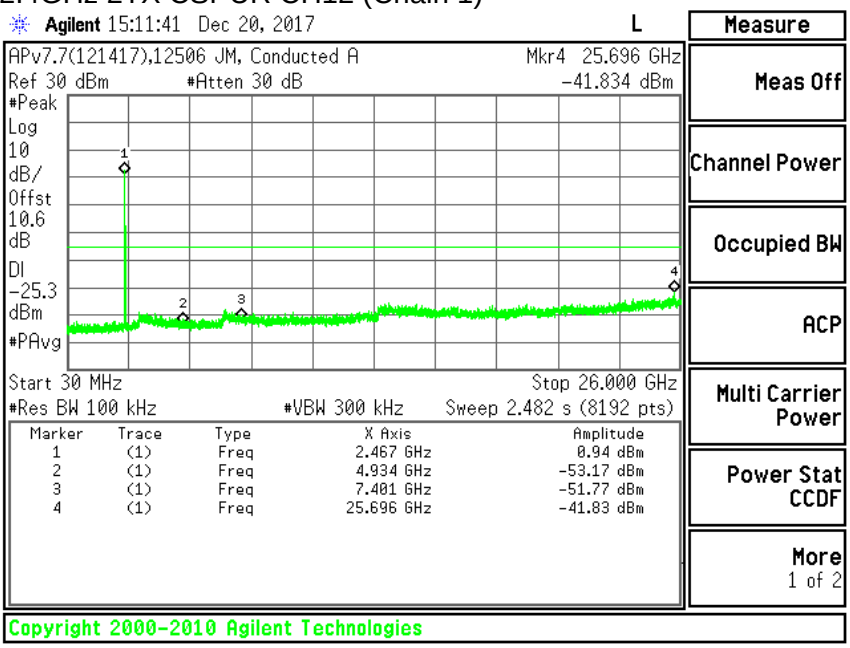
2.4GHz 2TX CSPUR CH12 (Chain 0)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.467 GHz	1.71 dBm
2	(1)	Freq	4.934 GHz	-43.14 dBm
3	(1)	Freq	7.401 GHz	-41.15 dBm
4	(1)	Freq	25.467 GHz	-32.72 dBm

2.4GHz 2TX CSPUR CH12 (Chain 1)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.467 GHz	0.94 dBm
2	(1)	Freq	4.934 GHz	-53.17 dBm
3	(1)	Freq	7.401 GHz	-51.77 dBm
4	(1)	Freq	25.696 GHz	-41.83 dBm

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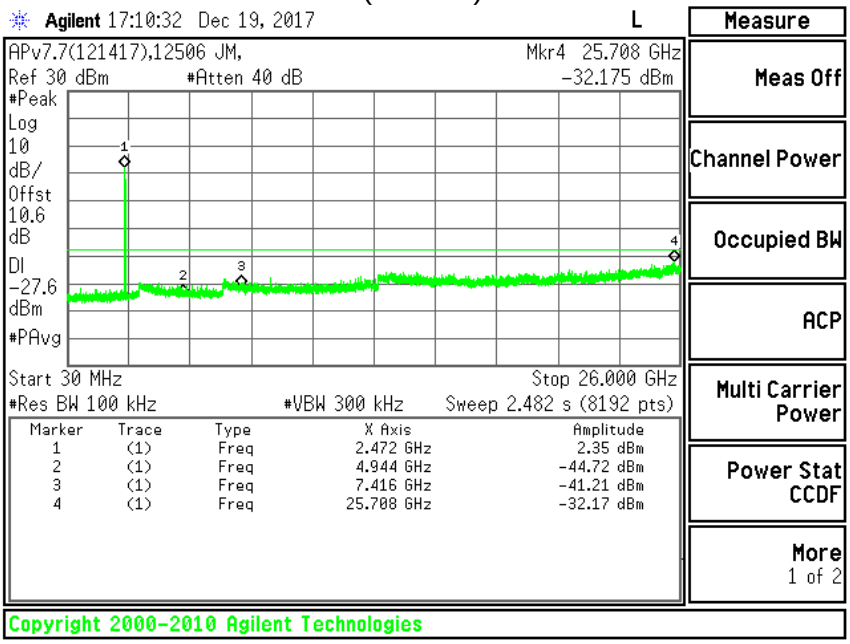
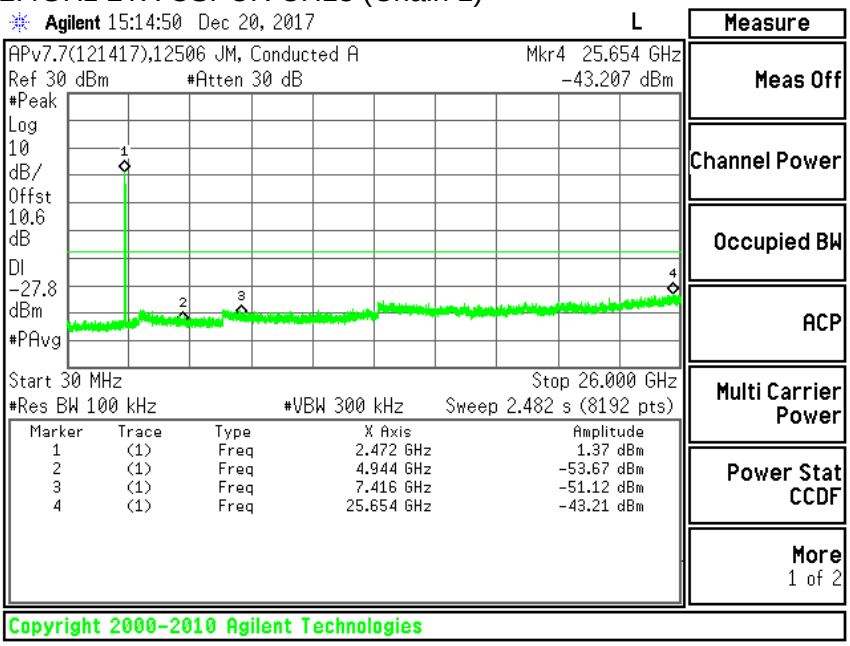
2.4GHz 2TX CSPUR CH13 (Chain 0)



2.4GHz 2TX CSPUR CH13 (Chain 1)



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9.3. 11g 2TX CDD MIMO MODE IN THE 2.4GHz BAND

9.3.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

RESULTS

Channel	Frequency	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
CH1	2412	16.32	**16.36**	0.5
CH6	2437	16.20	16.40	0.5
CH11	2462	16.32	16.36	0.5
CH12	2467	16.08	16.36	0.5
CH13	2472	**16.36**	15.96	0.5

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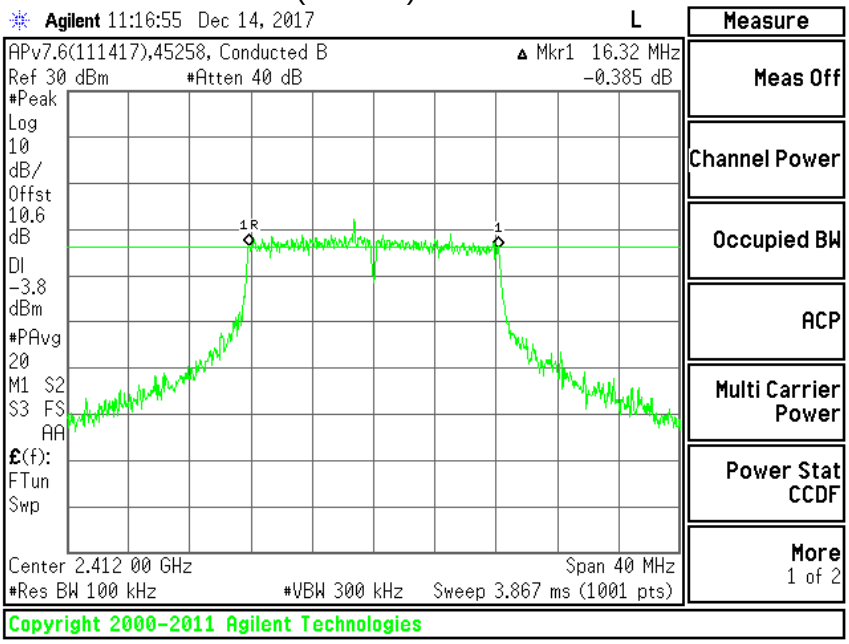
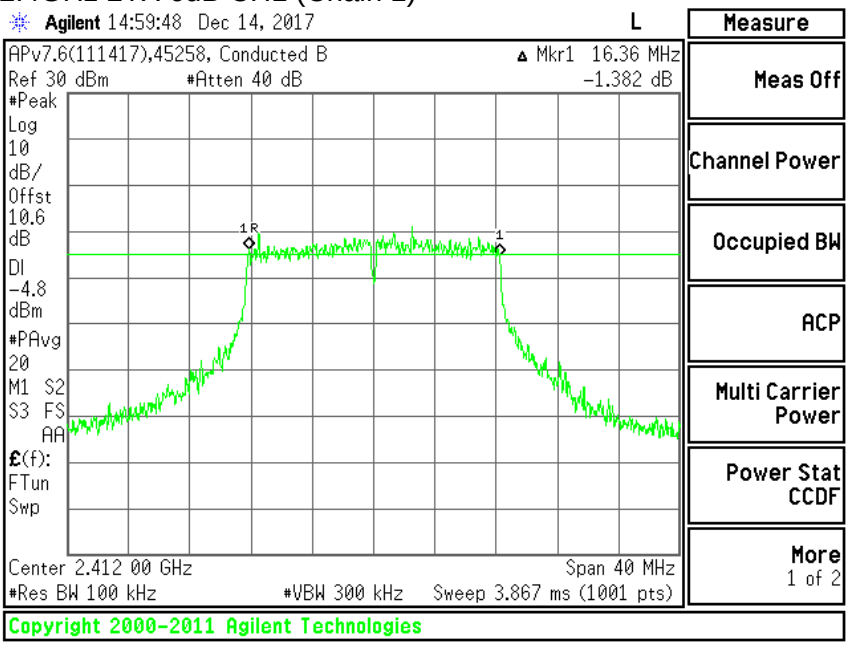
2.4GHz 2TX 6dB CH1 (Chain 0)



2.4GHz 2TX 6dB CH1 (Chain 1)



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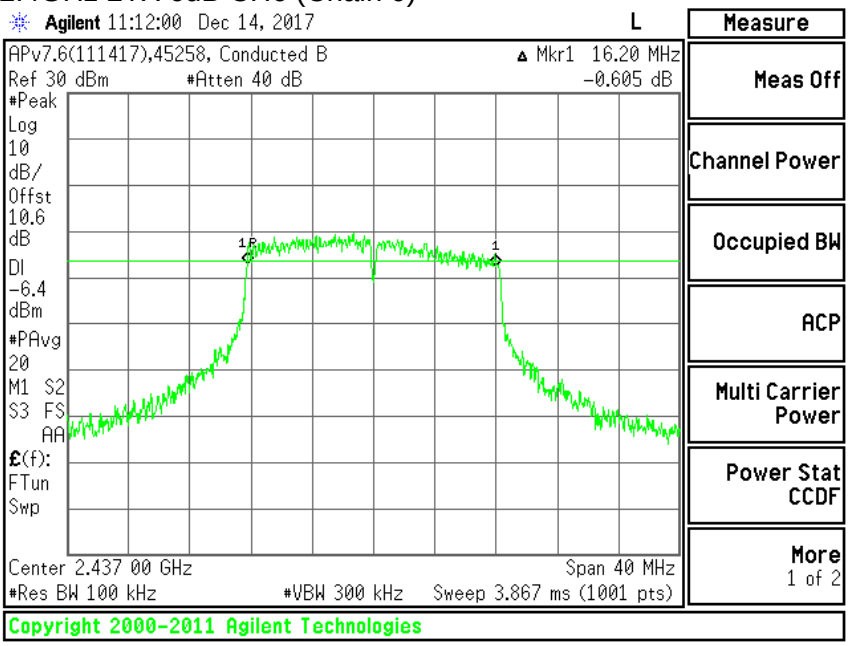
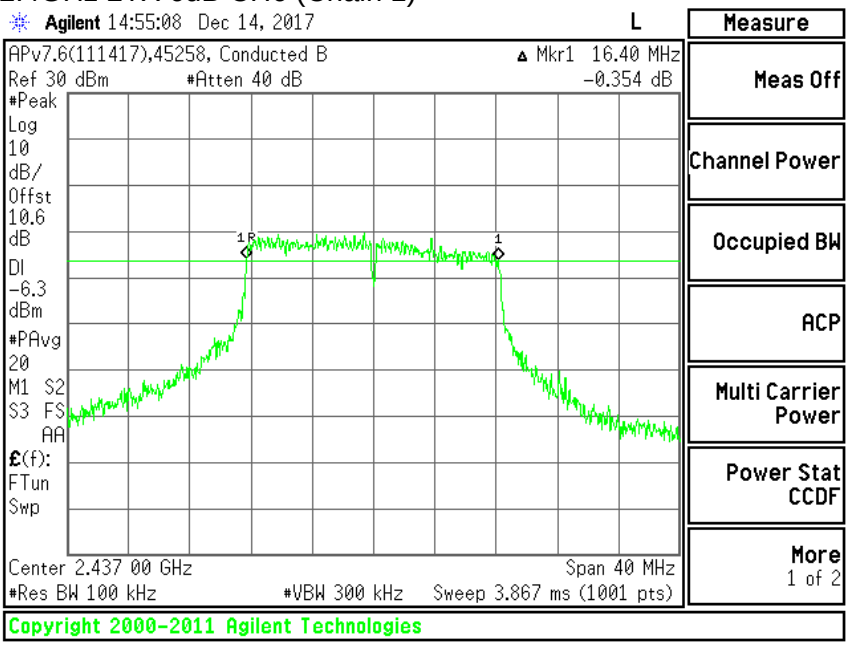
2.4GHz 2TX 6dB CH6 (Chain 0)



2.4GHz 2TX 6dB CH6 (Chain 1)



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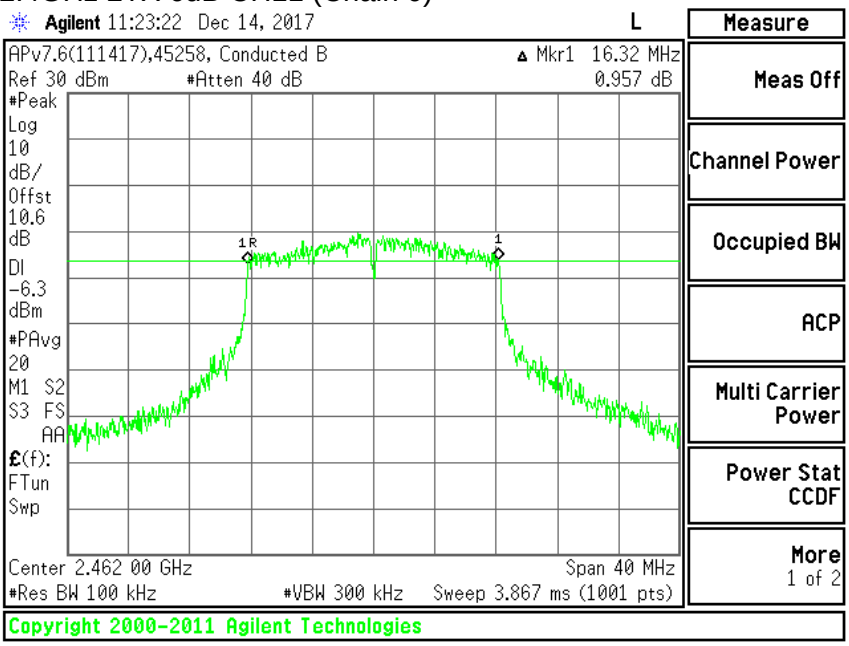
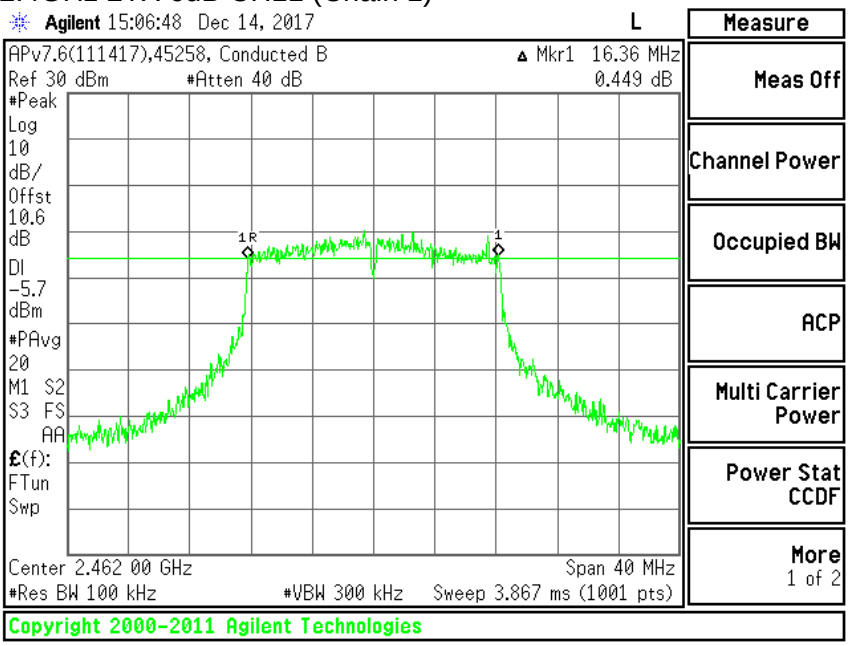
2.4GHz 2TX 6dB CH11 (Chain 0)



2.4GHz 2TX 6dB CH11 (Chain 1)



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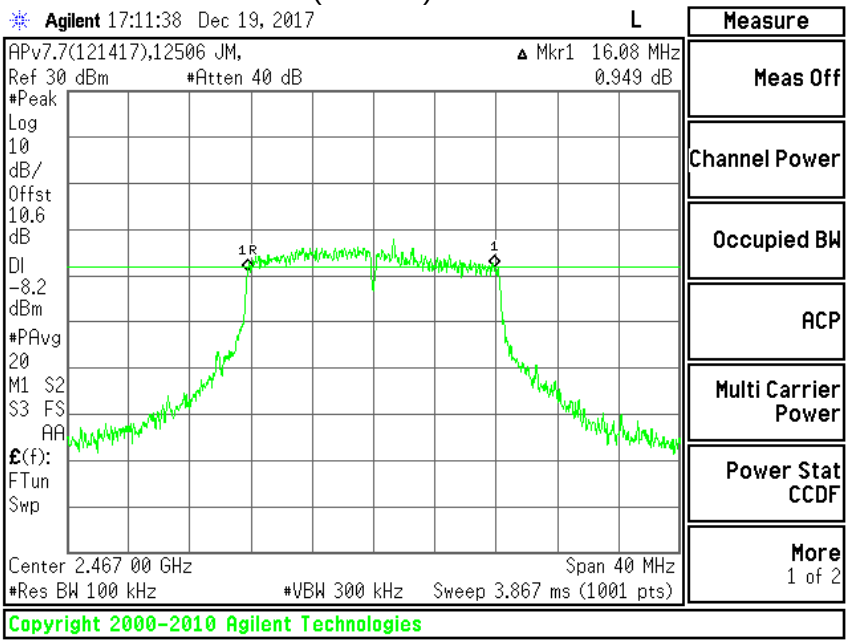
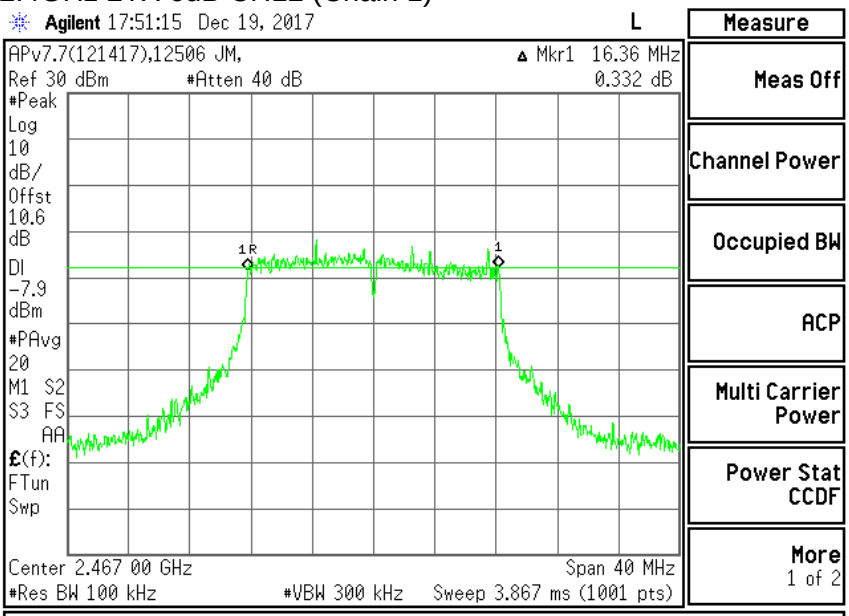
2.4GHz 2TX 6dB CH12 (Chain 0)



2.4GHz 2TX 6dB CH12 (Chain 1)



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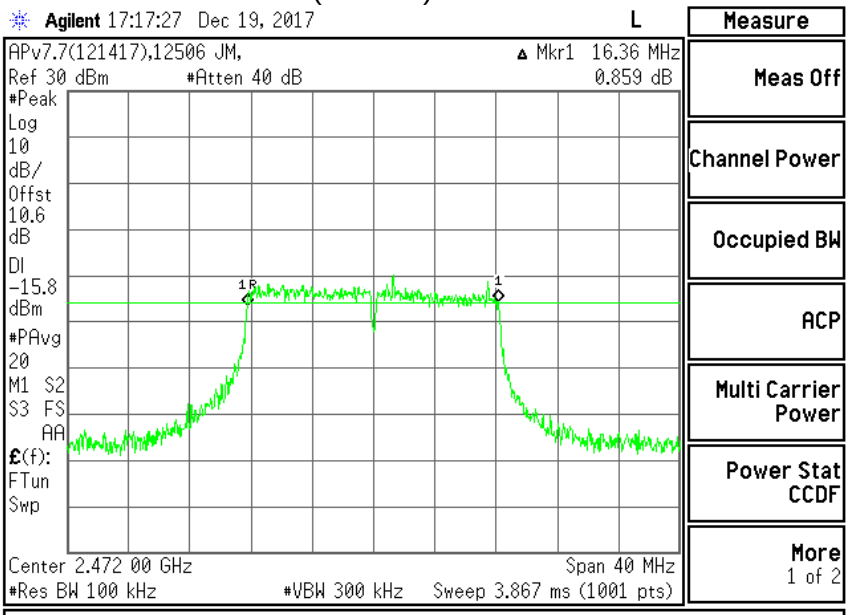
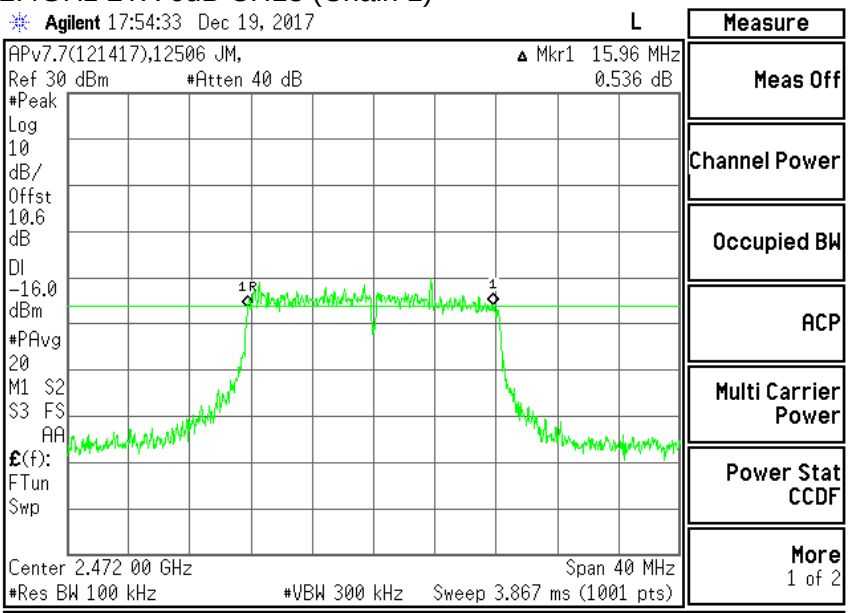
2.4GHz 2TX 6dB CH13 (Chain 0)



2.4GHz 2TX 6dB CH13 (Chain 1)



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9.3.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
CH1	2412	**16.5581**	16.5193
CH6	2437	16.3550	**16.5973**
CH11	2462	16.3674	16.3514
CH12	2467	16.3561	16.4310
CH13	2472	16.4708	16.5151

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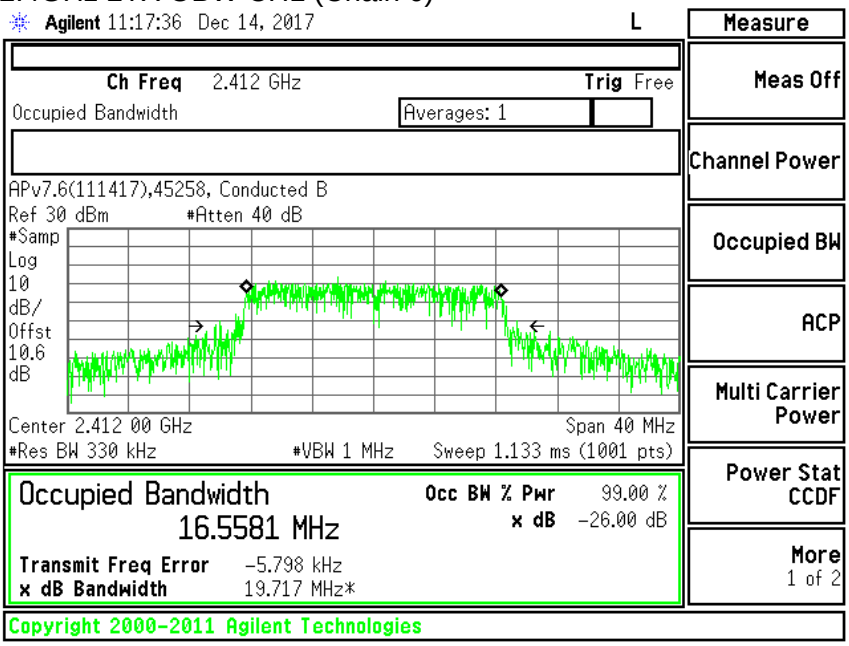
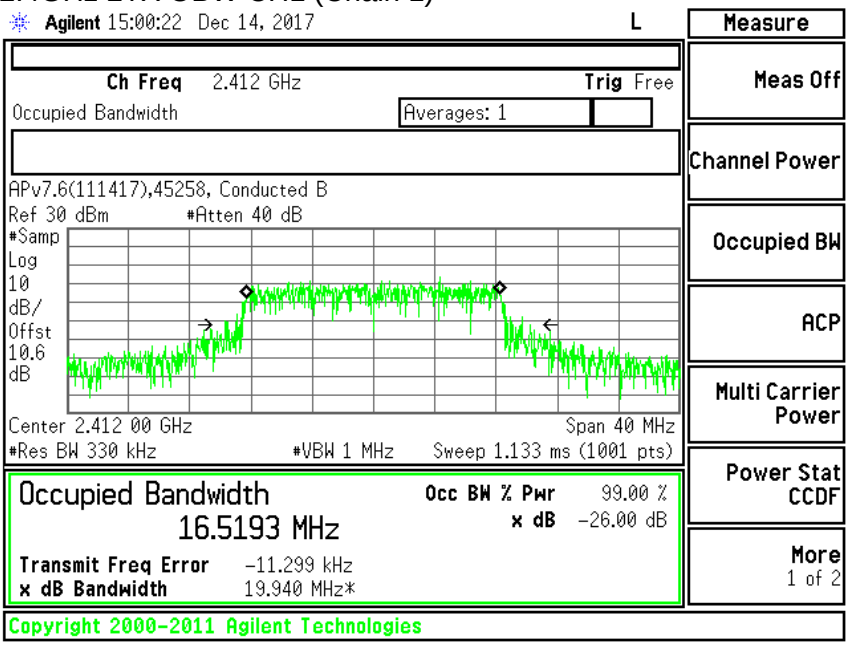
2.4GHz 2TX OBW CH1 (Chain 0)



2.4GHz 2TX OBW CH1 (Chain 1)



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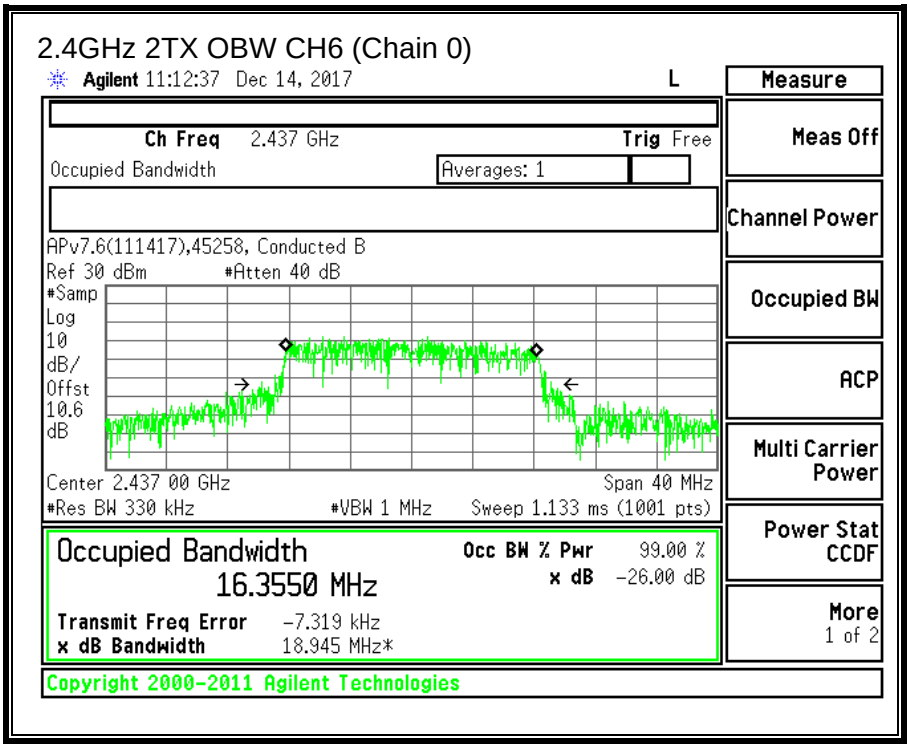

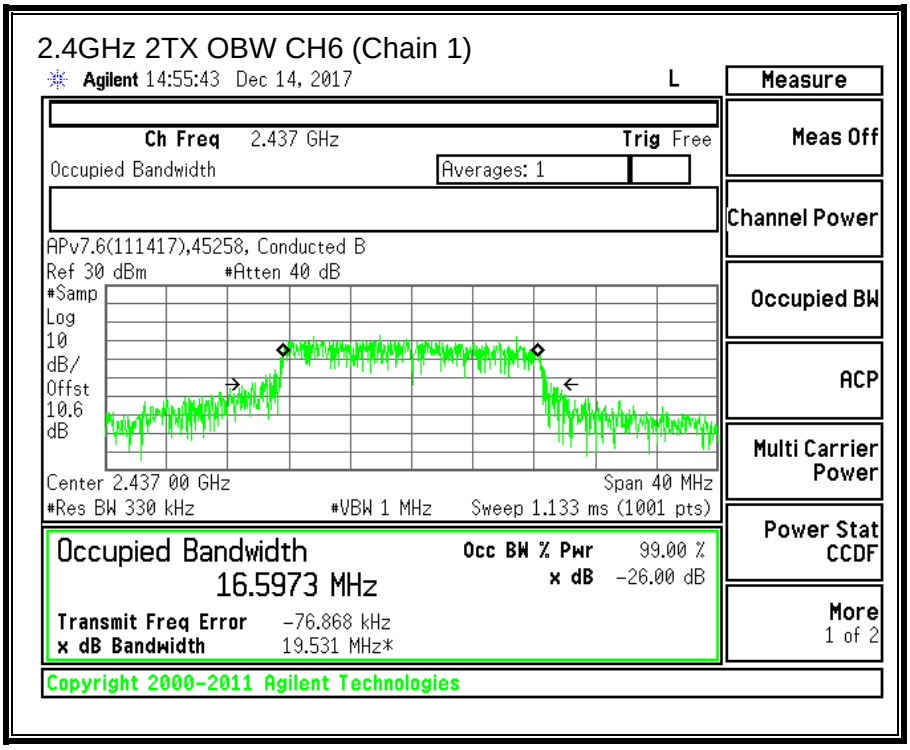

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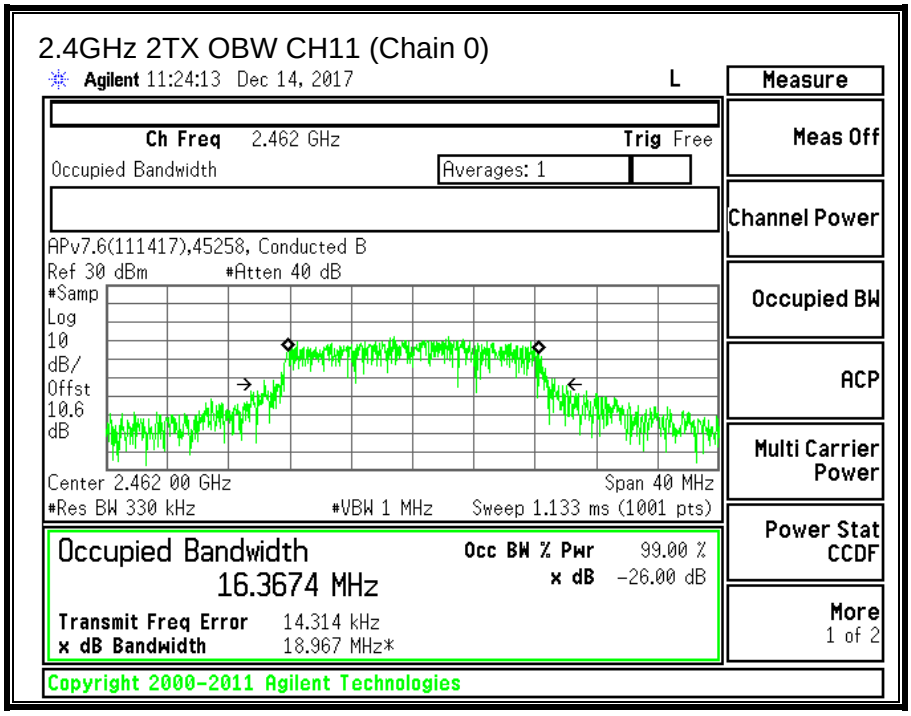

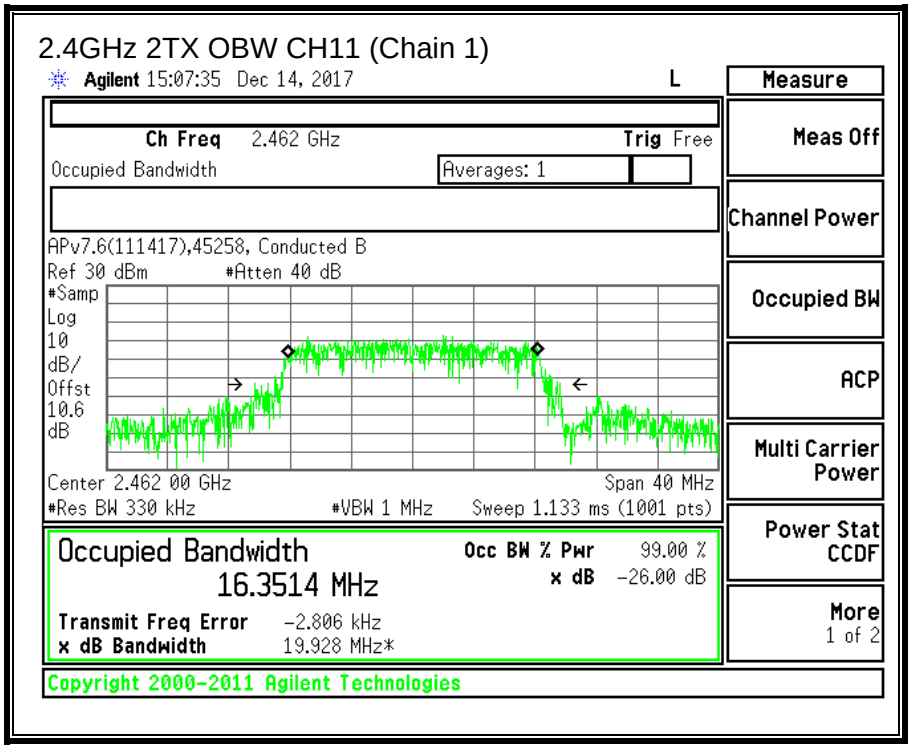

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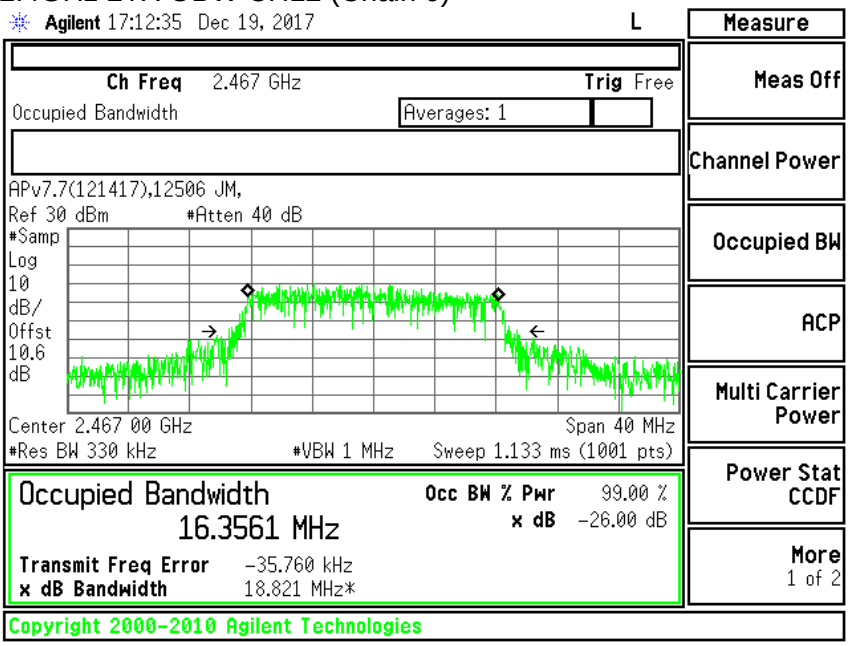
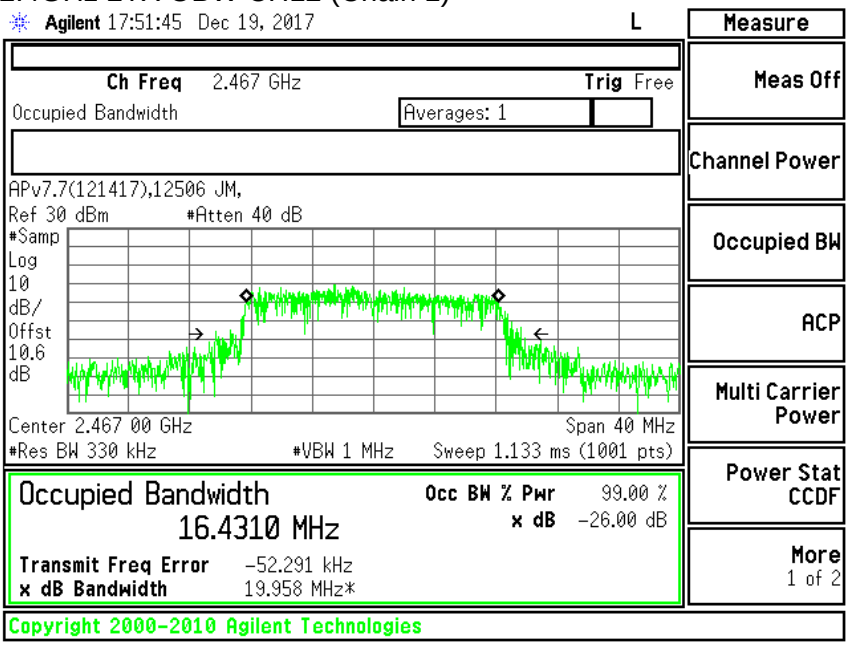
2.4GHz 2TX OBW CH12 (Chain 0)



2.4GHz 2TX OBW CH12 (Chain 1)



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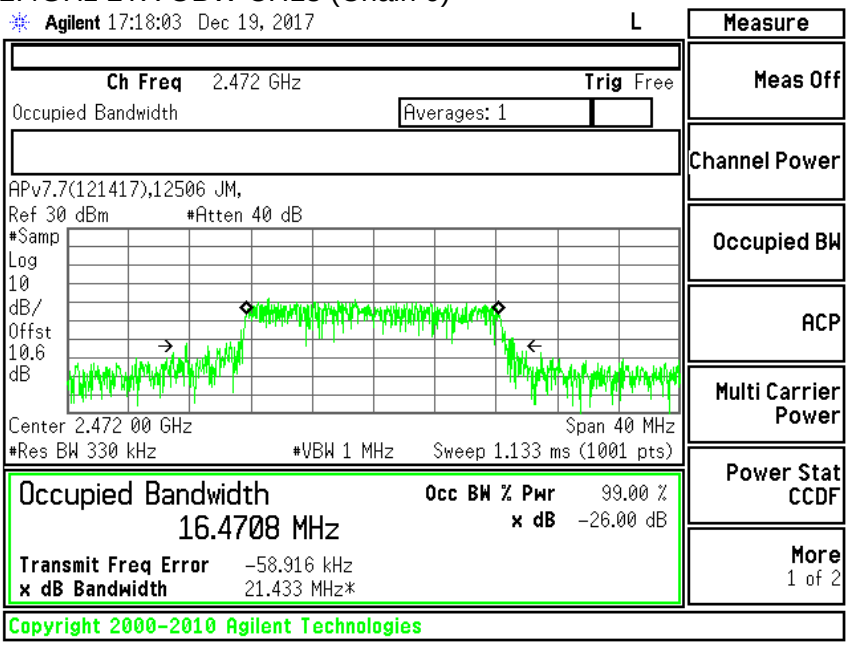
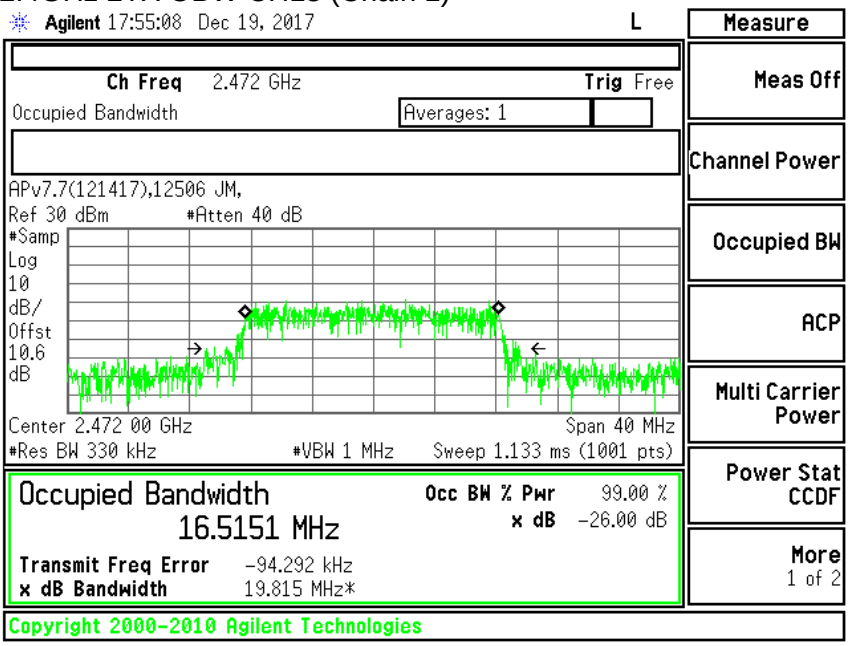
2.4GHz 2TX OBW CH13 (Chain 0)



2.4GHz 2TX OBW CH13 (Chain 1)



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9.3.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

For systems using digital modulation in the 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

KDB 58074 D01 v04 Section 9.2.3.2

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.60	-8.40	-2.94

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RESULTS

ID:	JM12056	Date:	12/12/17

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-2.94	30.00	30	36	30.00
CH6	2437	-2.94	30.00	30	36	30.00
CH11	2462	-2.94	30.00	30	36	30.00
CH12	2467	-2.94	30.00	30	36	30.00
CH13	2472	-2.94	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
CH1	2412	12.87	12.45	15.68	30.00	-14.32
CH6	2437	**13.06**	11.76	15.47	30.00	-14.53
CH11	2462	13.05	**12.73**	**15.90**	30.00	-14.10
CH12	2467	10.16	9.84	13.01	30.00	-16.99
CH13	2472	2.25	1.87	5.07	30.00	-24.93

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.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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9.3.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

RESULTS

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
CH1	2412	-11.520	-11.985	-8.74	8.0	-16.7
CH6	2437	-11.151	-11.597	-8.36	8.0	-16.4
CH11	2462	**-10.924**	**-11.140**	**-8.02**	8.0	-16.0
CH12	2467	-13.926	-15.817	-11.76	8.0	-19.8
CH13	2472	-22.532	-23.242	-19.86	8.0	-27.9

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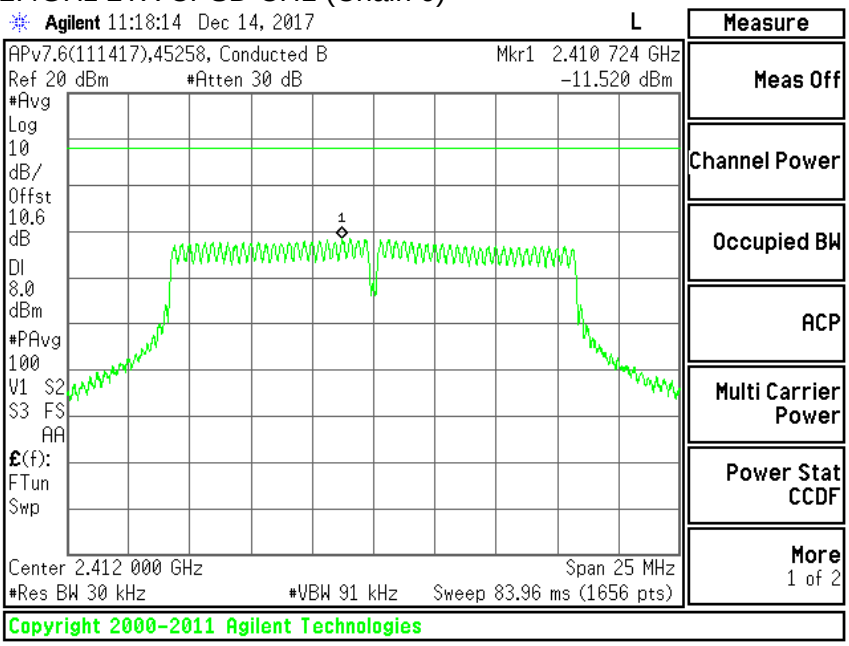
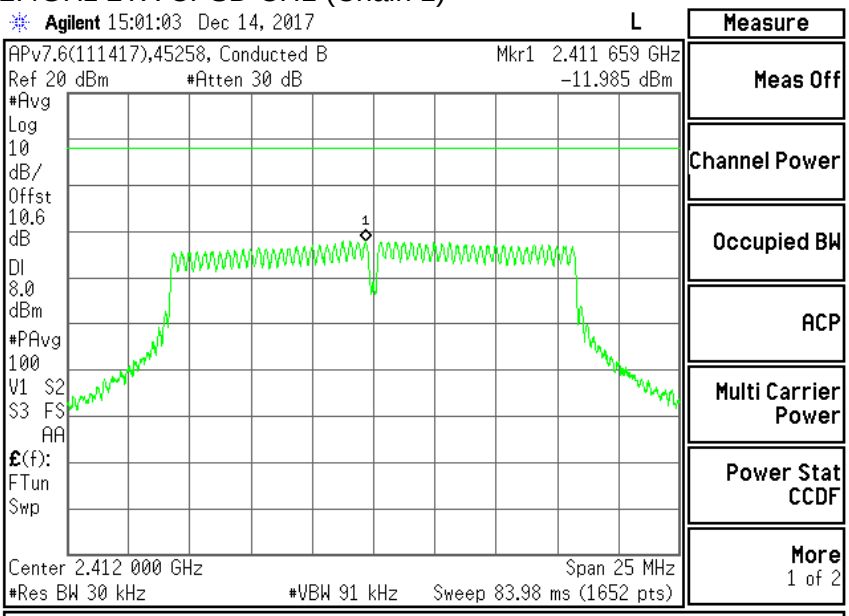
2.4GHz 2TX CPSD CH1 (Chain 0)



2.4GHz 2TX CPSD CH1 (Chain 1)



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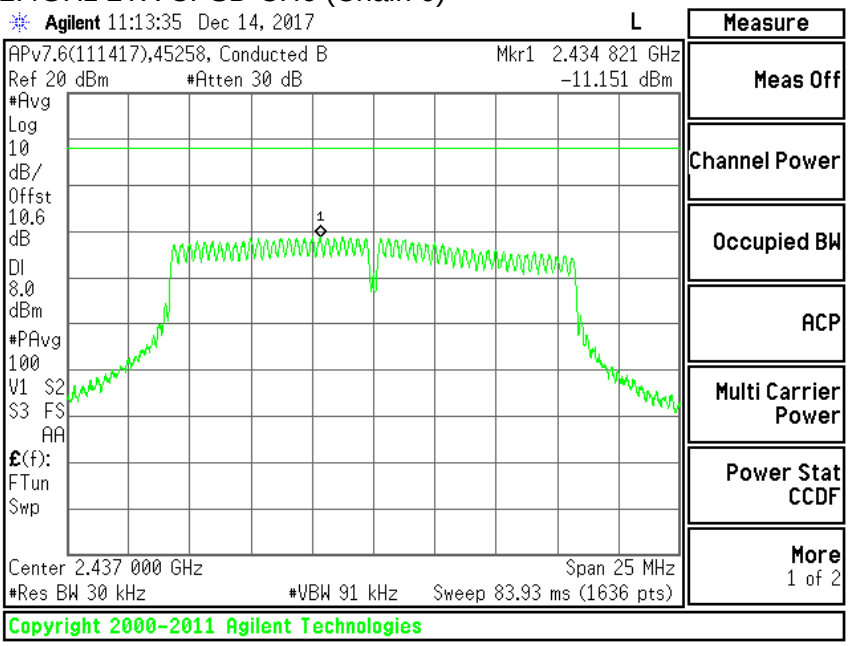
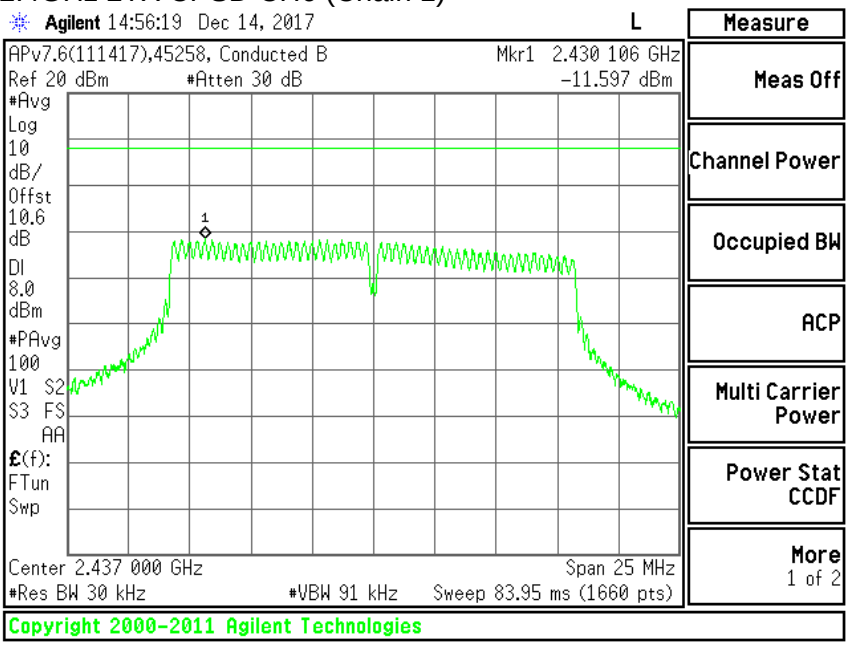
2.4GHz 2TX CPSD CH6 (Chain 0)



2.4GHz 2TX CPSD CH6 (Chain 1)



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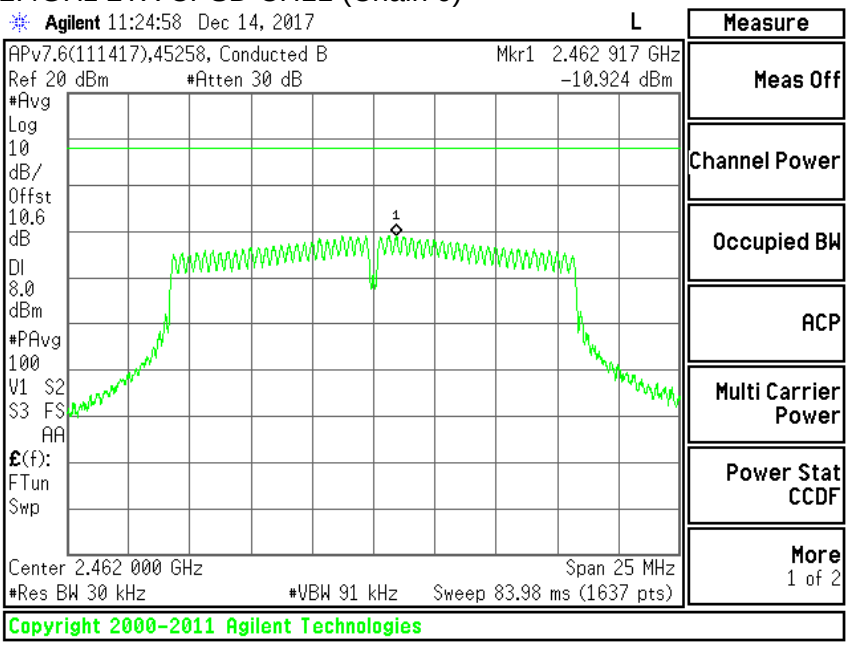
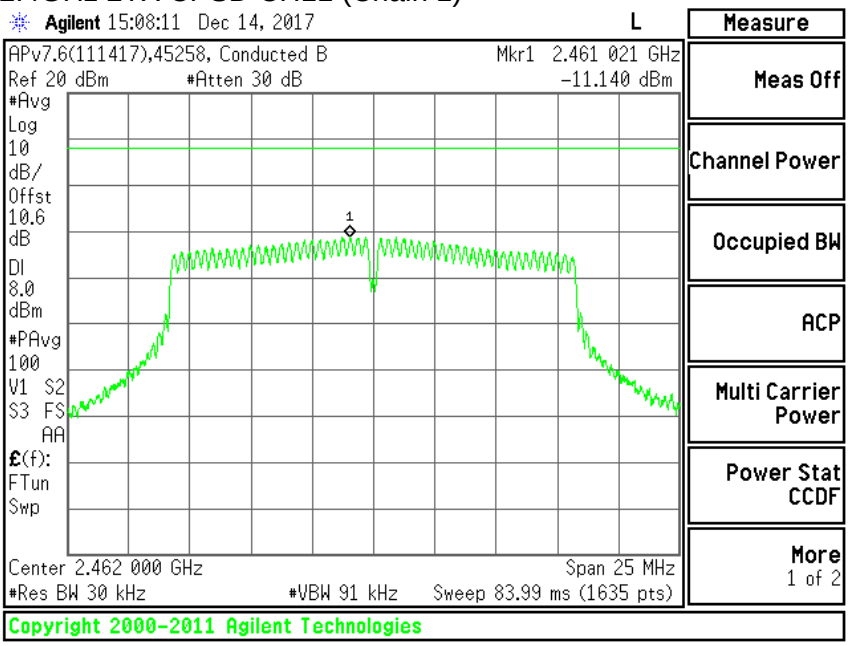
2.4GHz 2TX CPSD CH11 (Chain 0)



2.4GHz 2TX CPSD CH11 (Chain 1)



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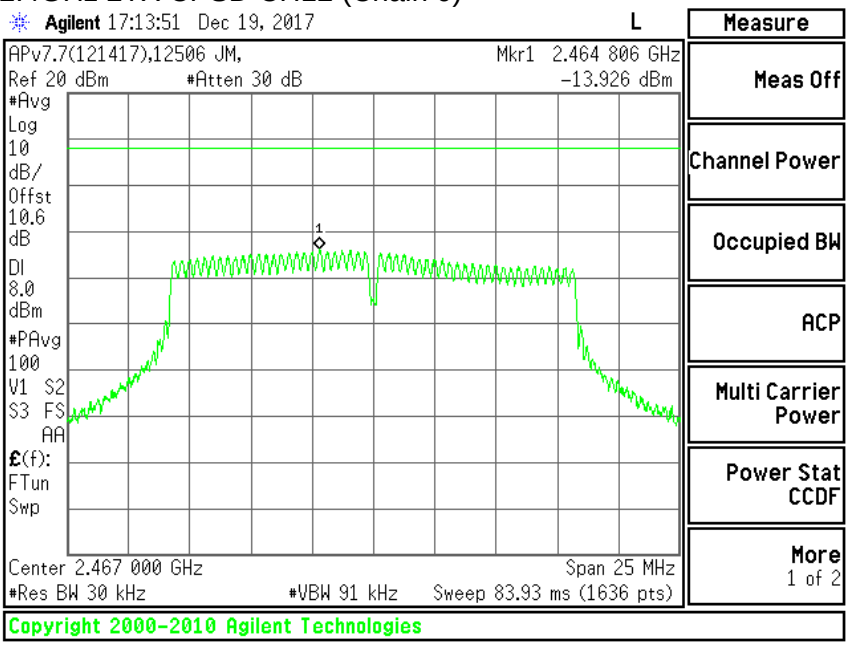
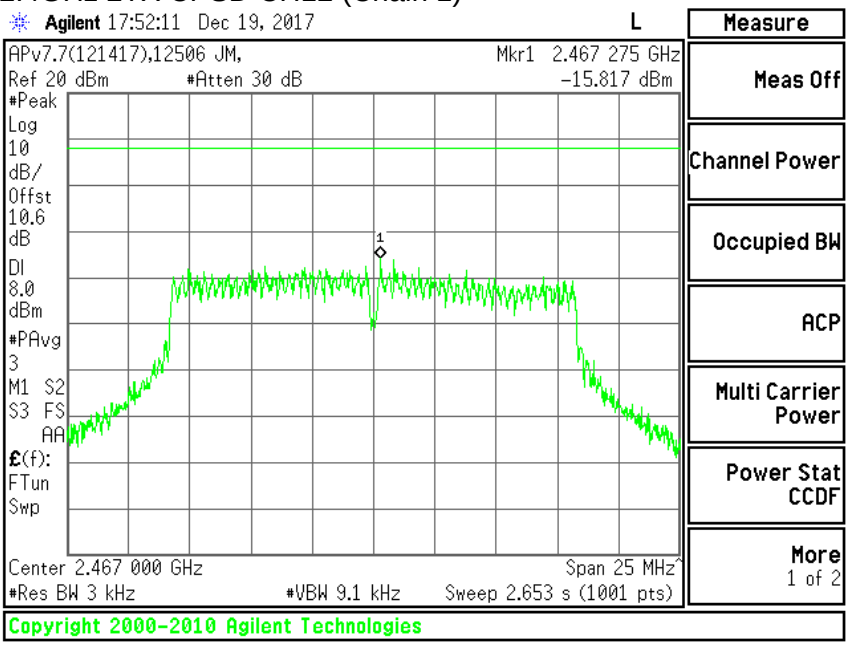
2.4GHz 2TX CPSD CH12 (Chain 0)



2.4GHz 2TX CPSD CH12 (Chain 1)



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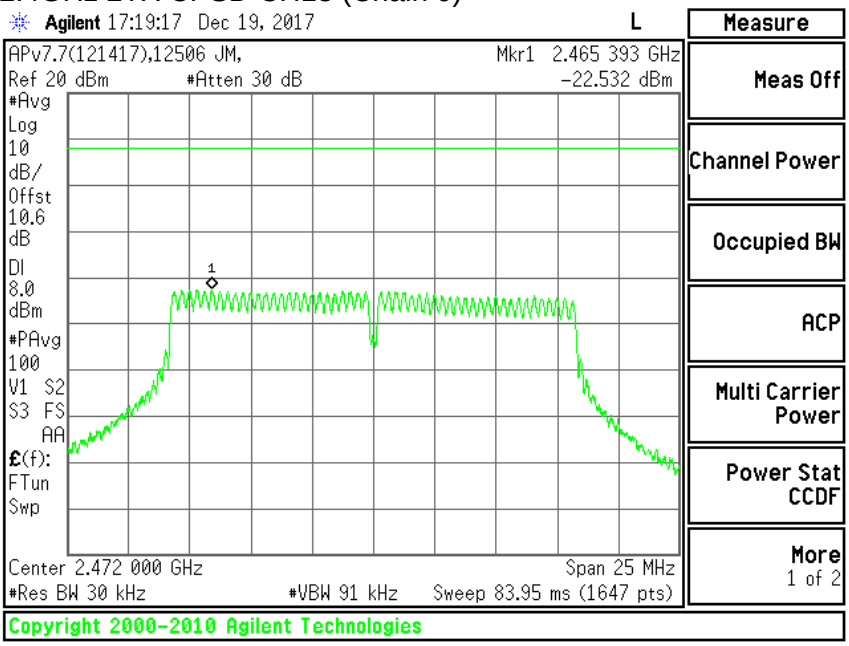
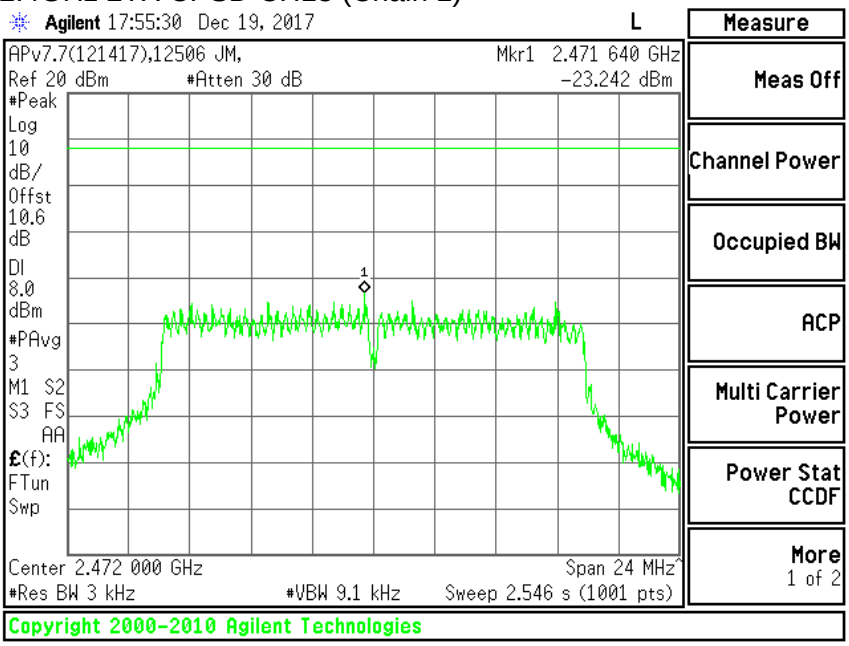
2.4GHz 2TX CPSD CH13 (Chain 0)



2.4GHz 2TX CPSD CH13 (Chain 1)



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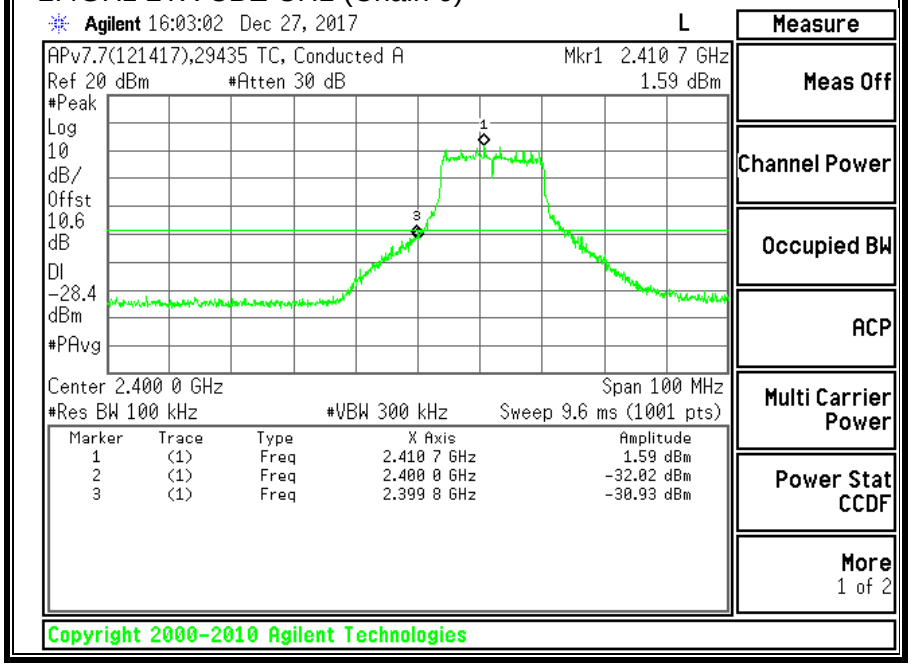
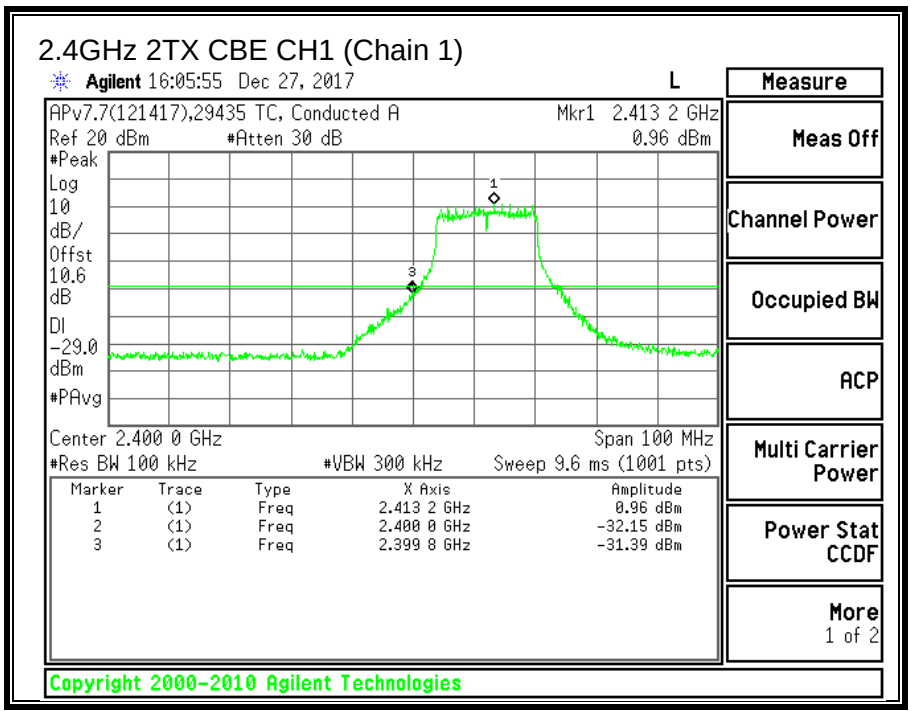
9.3.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

2.4GHz 2TX CBE CH1 (Chain 0)



2.4GHz 2TX CBE CH1 (Chain 1)



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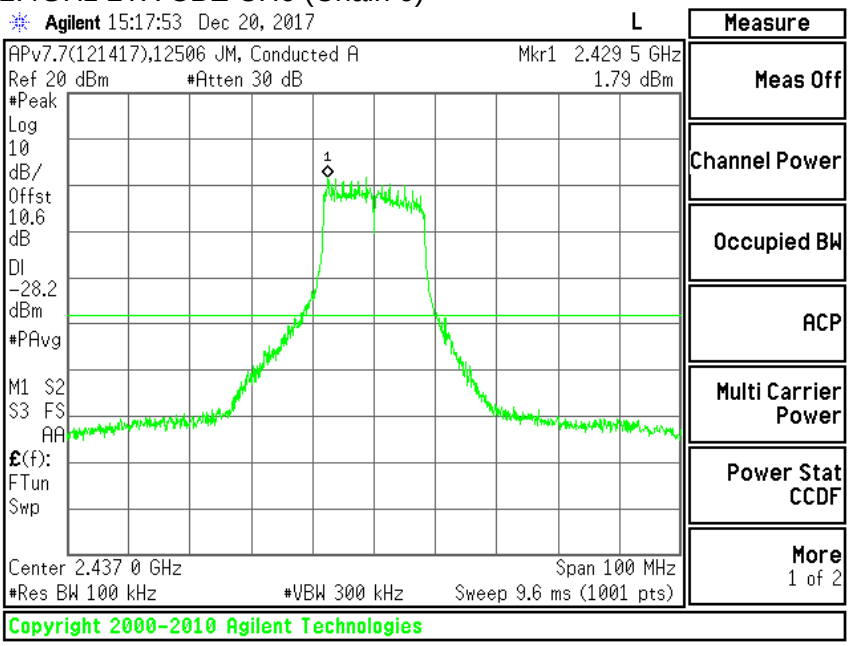
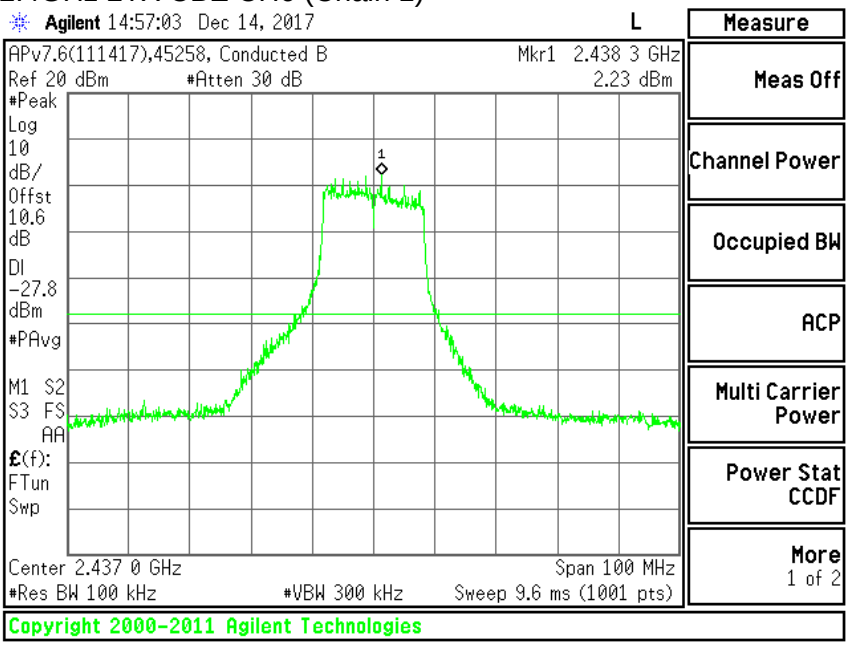
2.4GHz 2TX CBE CH6 (Chain 0)



2.4GHz 2TX CBE CH6 (Chain 1)



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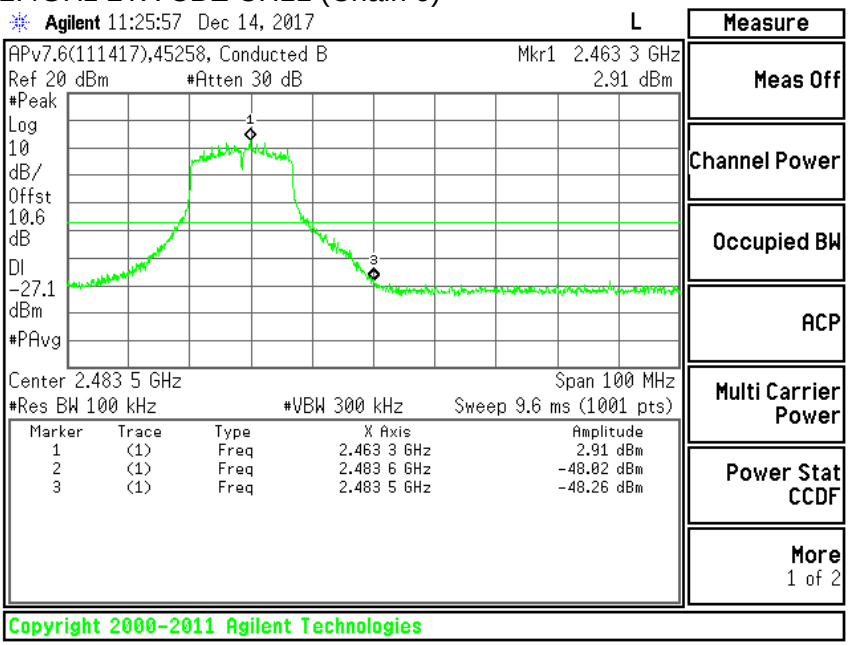
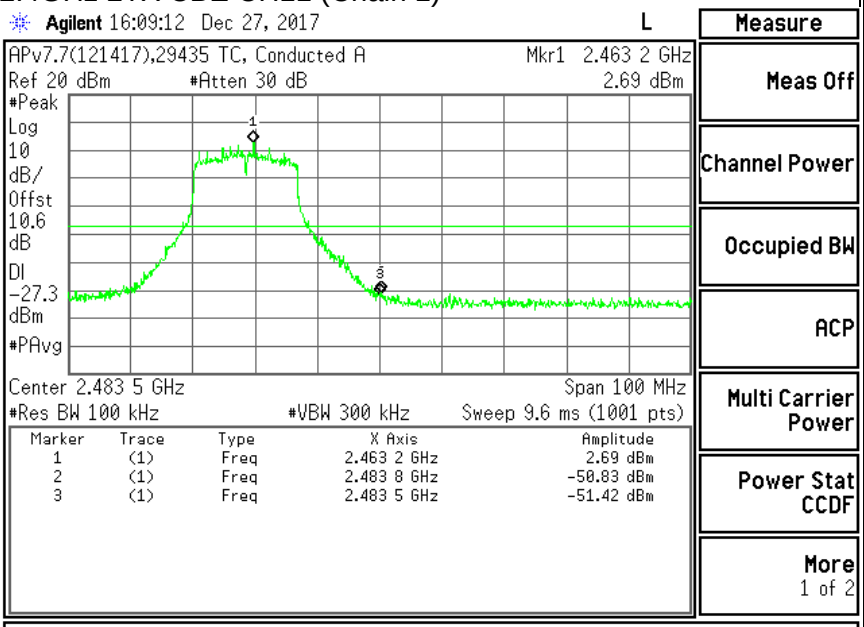
2.4GHz 2TX CBE CH11 (Chain 0)



2.4GHz 2TX CBE CH11 (Chain 1)



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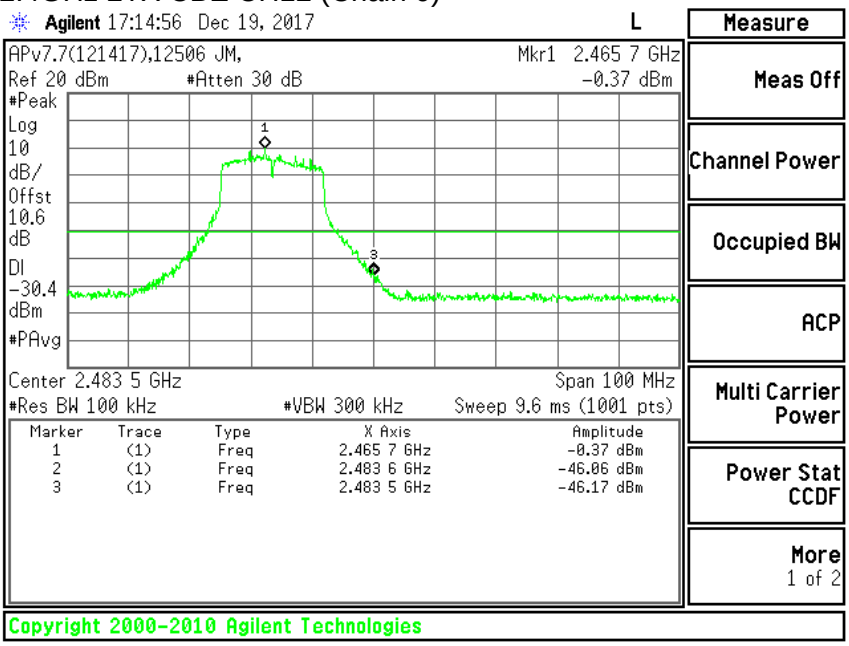
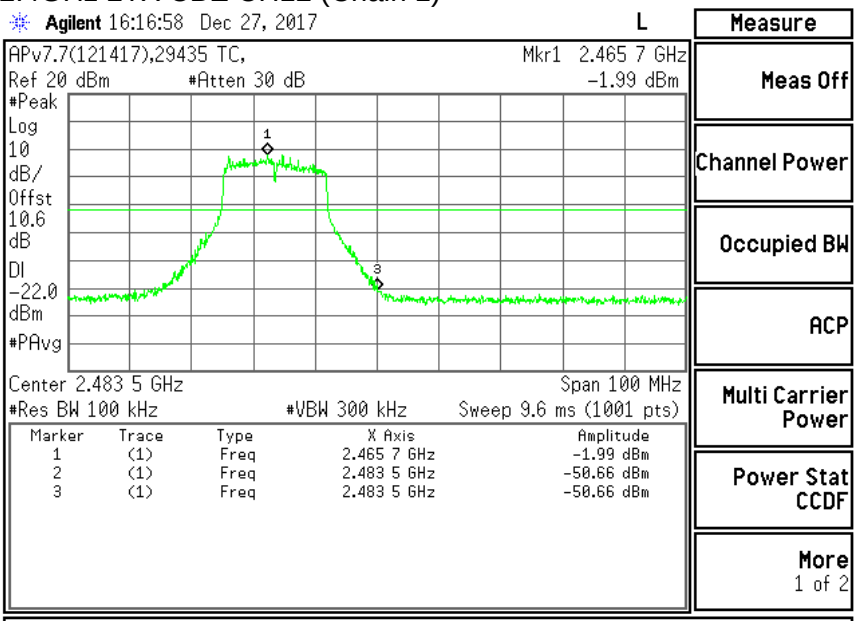
2.4GHz 2TX CBE CH12 (Chain 0)



2.4GHz 2TX CBE CH12 (Chain 1)



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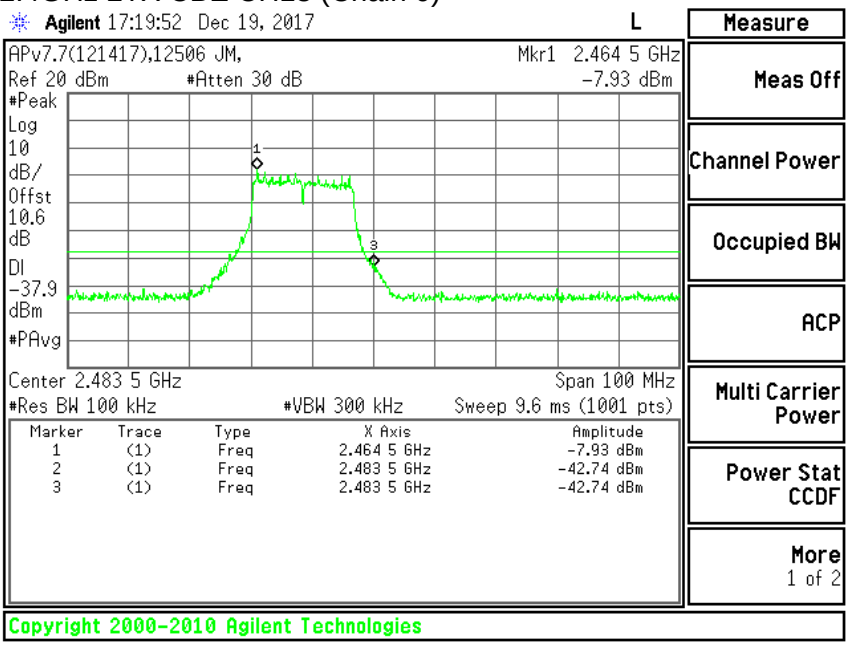
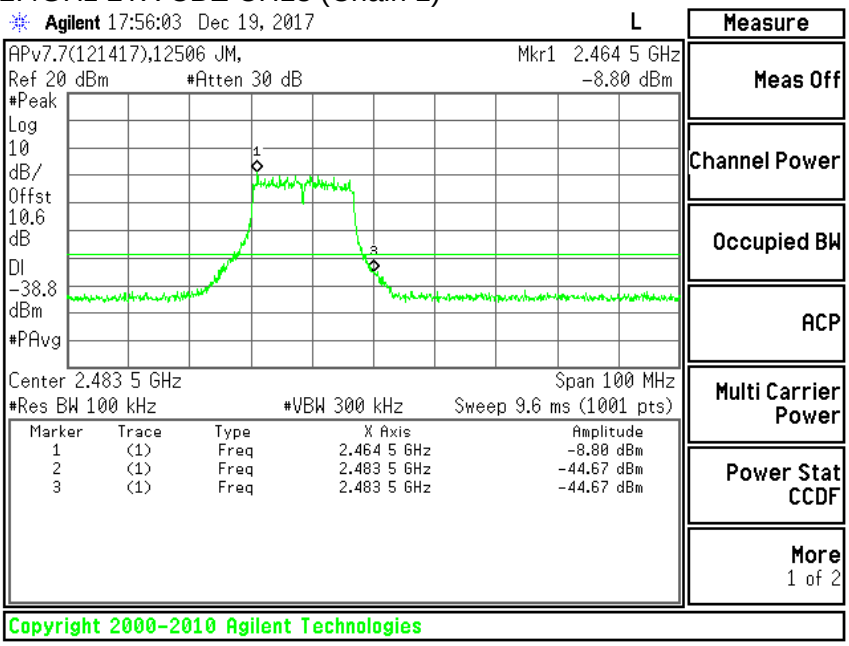
2.4GHz 2TX CBE CH13 (Chain 0)



2.4GHz 2TX CBE CH13 (Chain 1)



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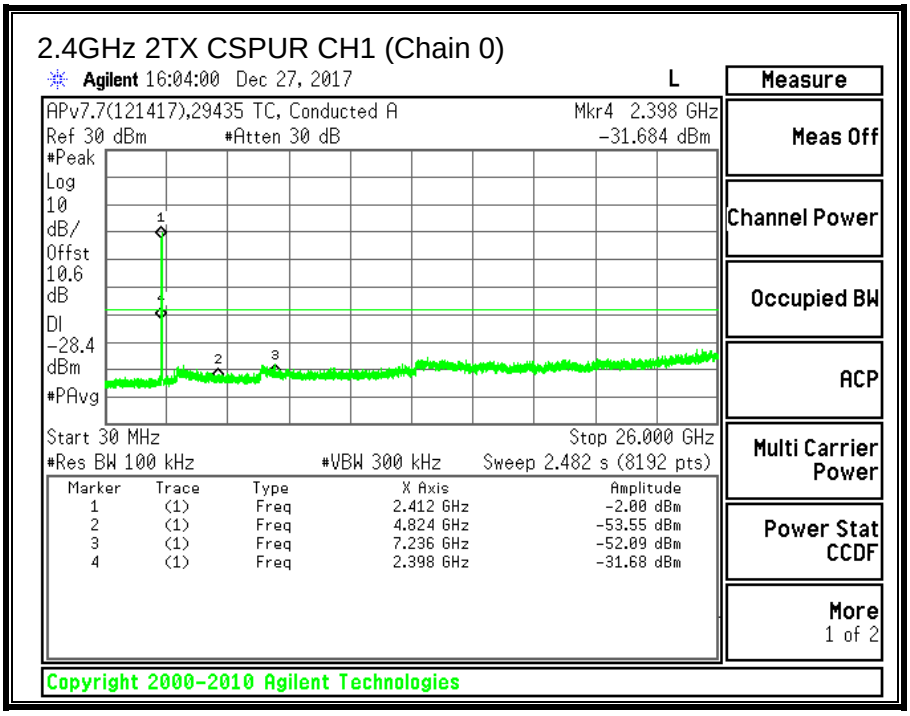
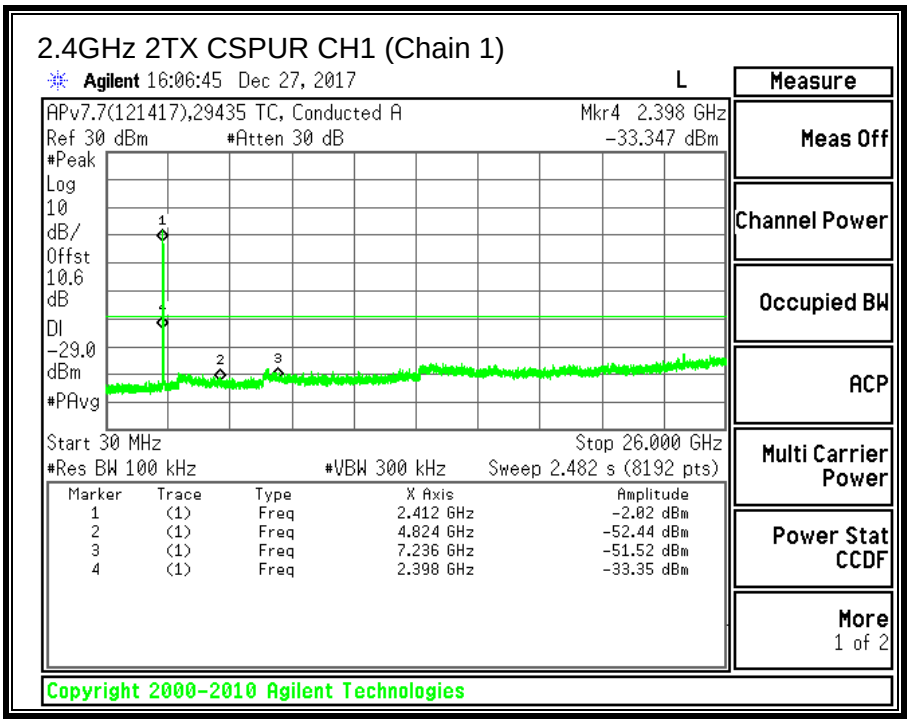
2.4GHz 2TX CSPUR CH1 (Chain 0)



2.4GHz 2TX CSPUR CH1 (Chain 1)



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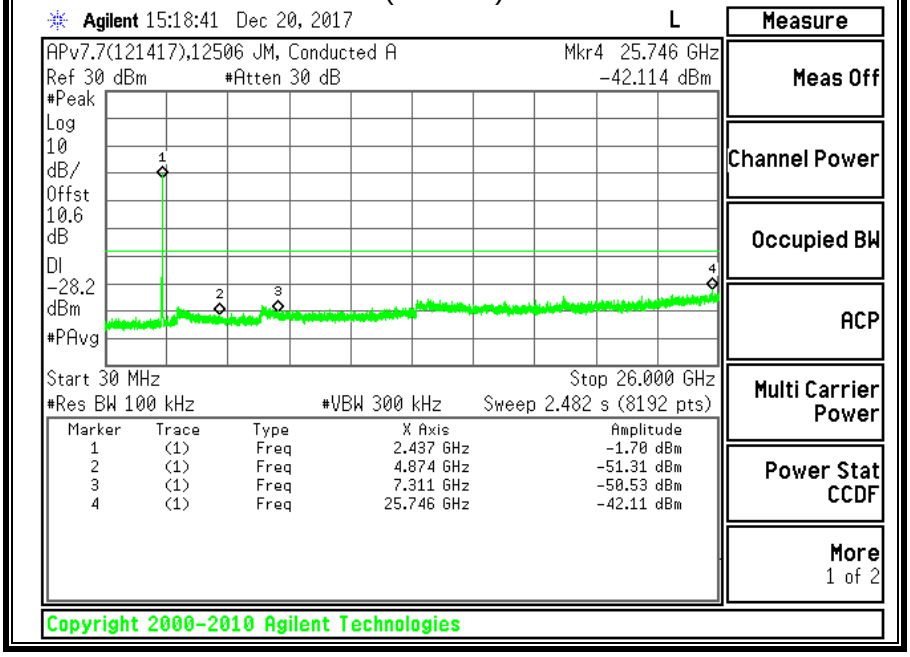
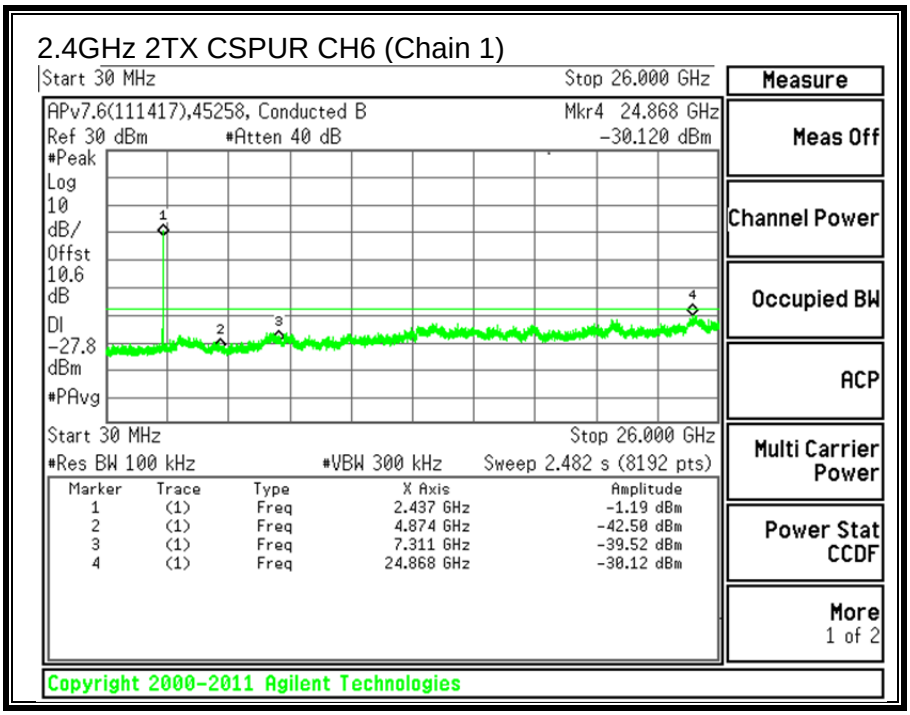
2.4GHz 2TX CSPUR CH6 (Chain 0)



2.4GHz 2TX CSPUR CH6 (Chain 1)



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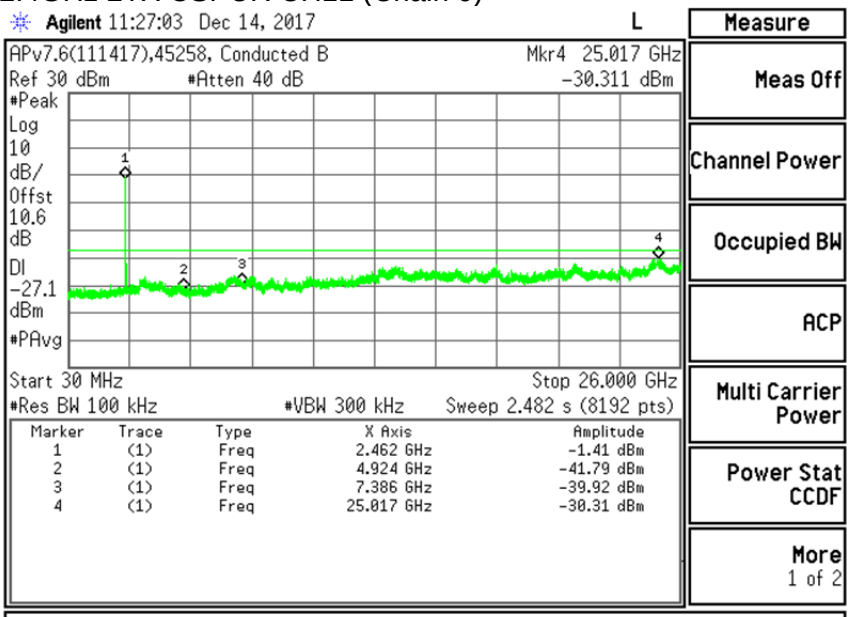
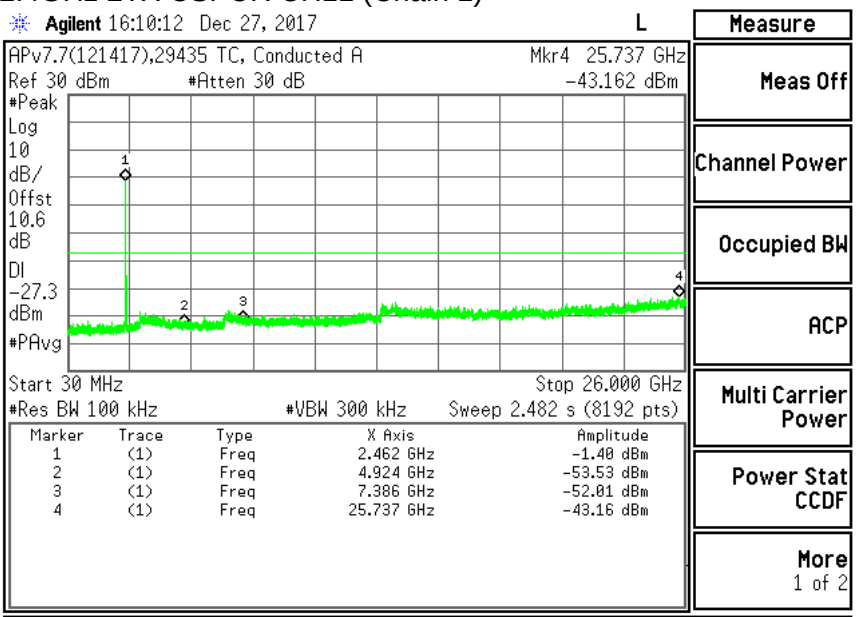
2.4GHz 2TX CSPUR CH11 (Chain 0)



2.4GHz 2TX CSPUR CH11 (Chain 1)



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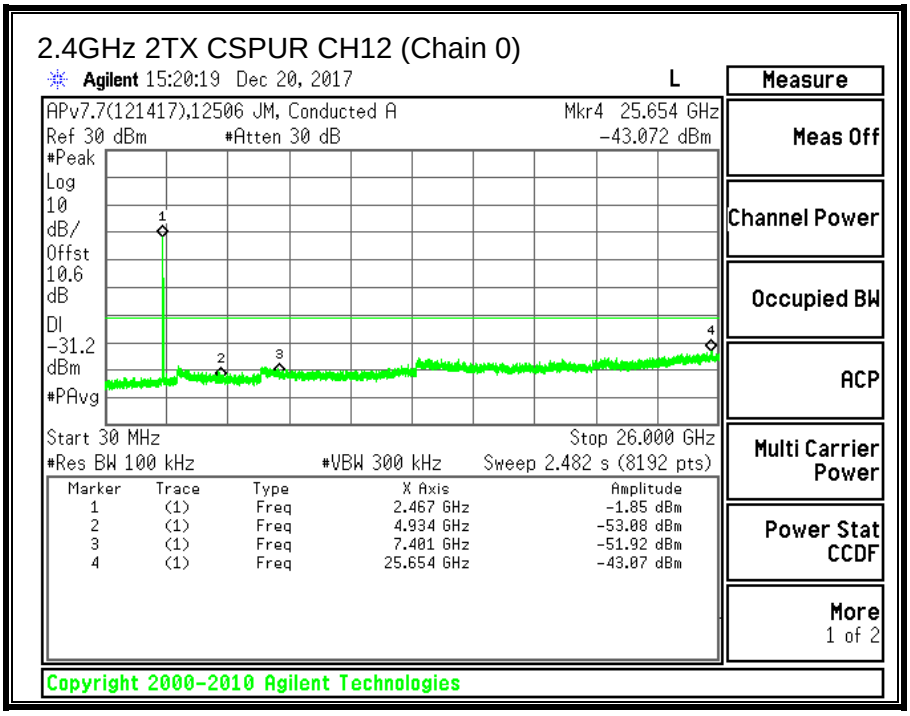
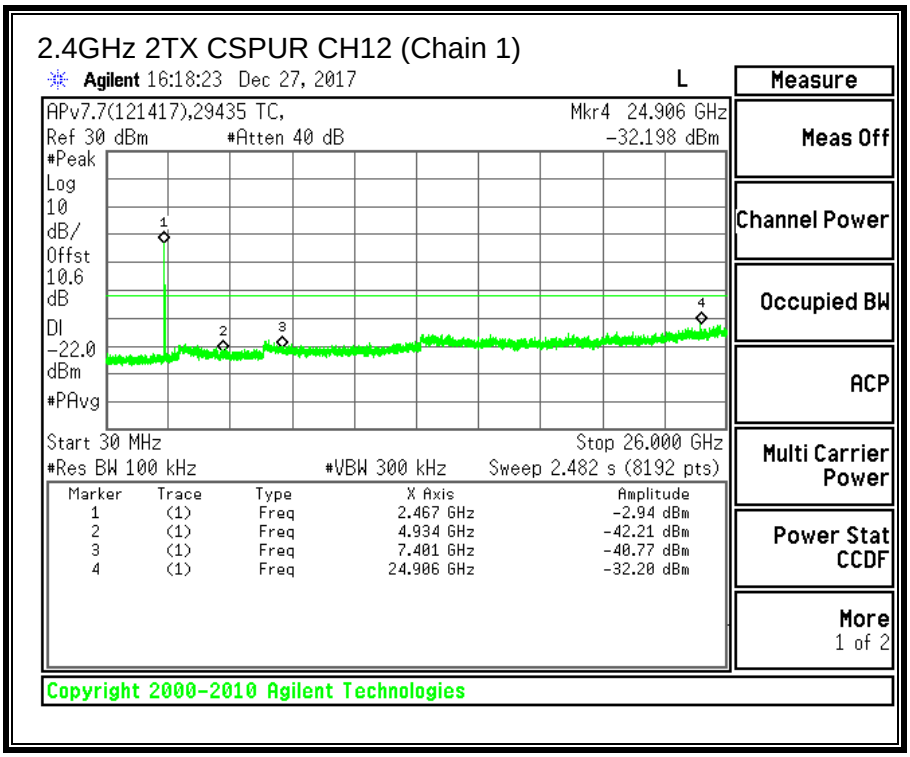
2.4GHz 2TX CSPUR CH12 (Chain 0)



2.4GHz 2TX CSPUR CH12 (Chain 1)



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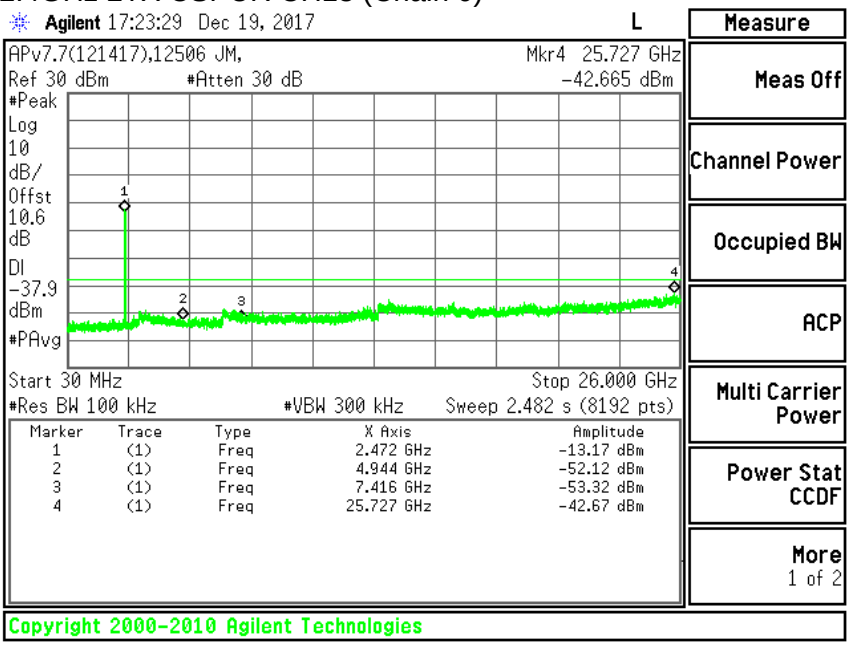
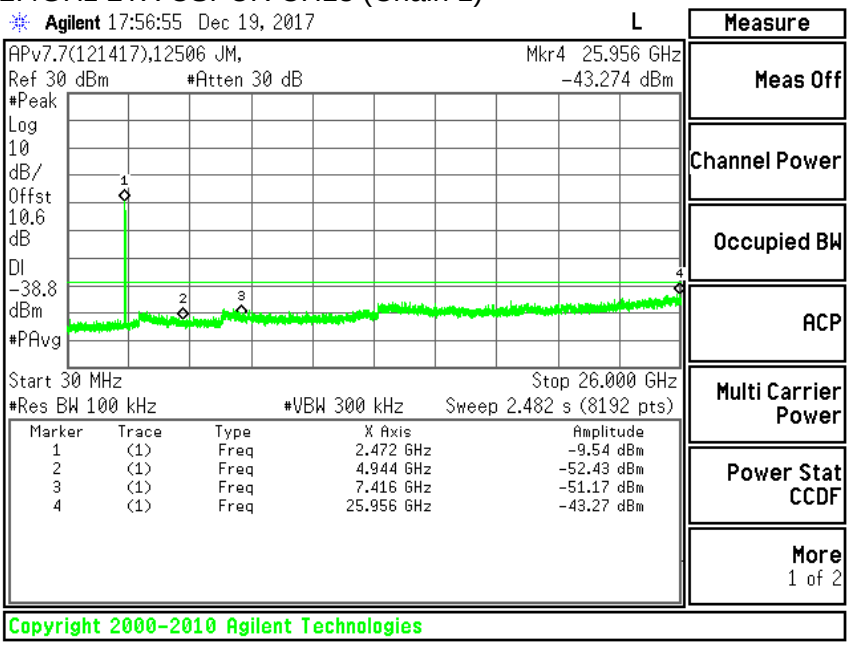
2.4GHz 2TX CSPUR CH13 (Chain 0)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.472 GHz	-13.17 dBm
2	(1)	Freq	4.944 GHz	-52.12 dBm
3	(1)	Freq	7.416 GHz	-53.32 dBm
4	(1)	Freq	25.727 GHz	-42.67 dBm

2.4GHz 2TX CSPUR CH13 (Chain 1)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.472 GHz	-9.54 dBm
2	(1)	Freq	4.944 GHz	-52.43 dBm
3	(1)	Freq	7.416 GHz	-51.17 dBm
4	(1)	Freq	25.956 GHz	-43.27 dBm

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9.4. 11n HT20 2TX CDD MIMO MODE IN THE 2.4GHz BAND

9.4.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

RESULTS

Channel	Frequency	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
CH1	2412	**17.60**	17.60	0.5
CH6	2437	17.40	**17.64**	0.5
CH11	2462	17.60	17.28	0.5
CH12	2467	16.32	17.64	0.5
CH13	2472	17.20	17.24	0.5

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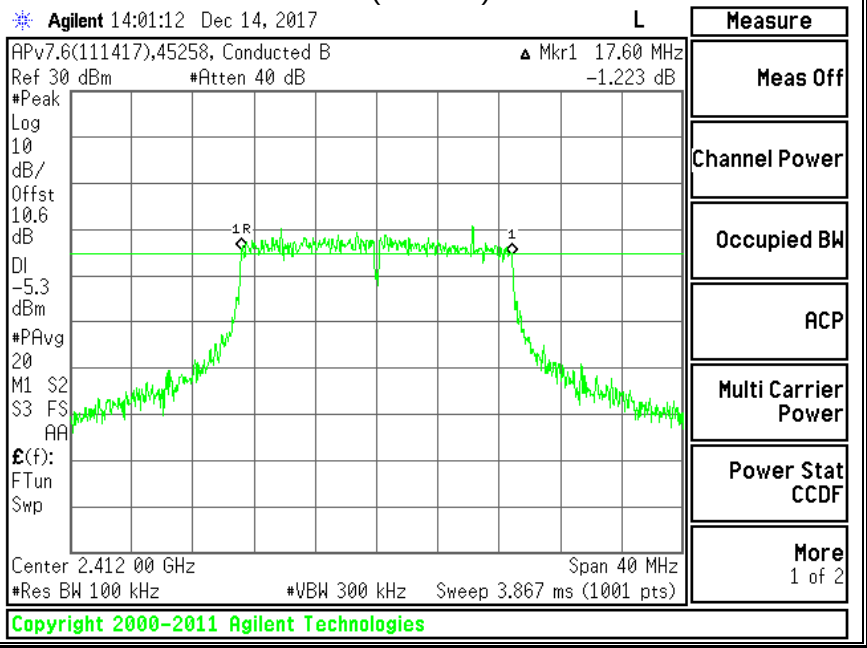
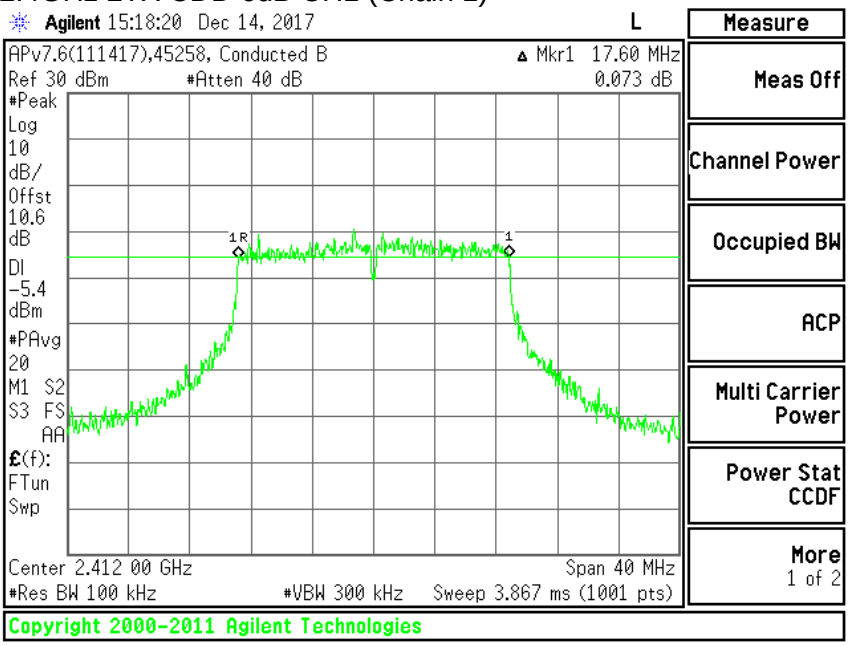
2.4GHz 2TX CDD 6dB CH1 (Chain 0)



2.4GHz 2TX CDD 6dB CH1 (Chain 1)



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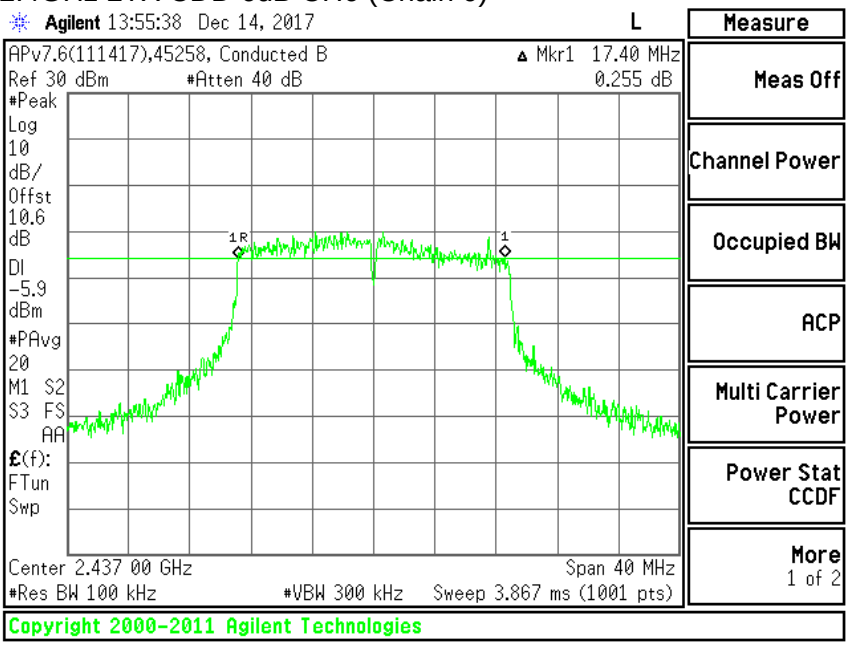
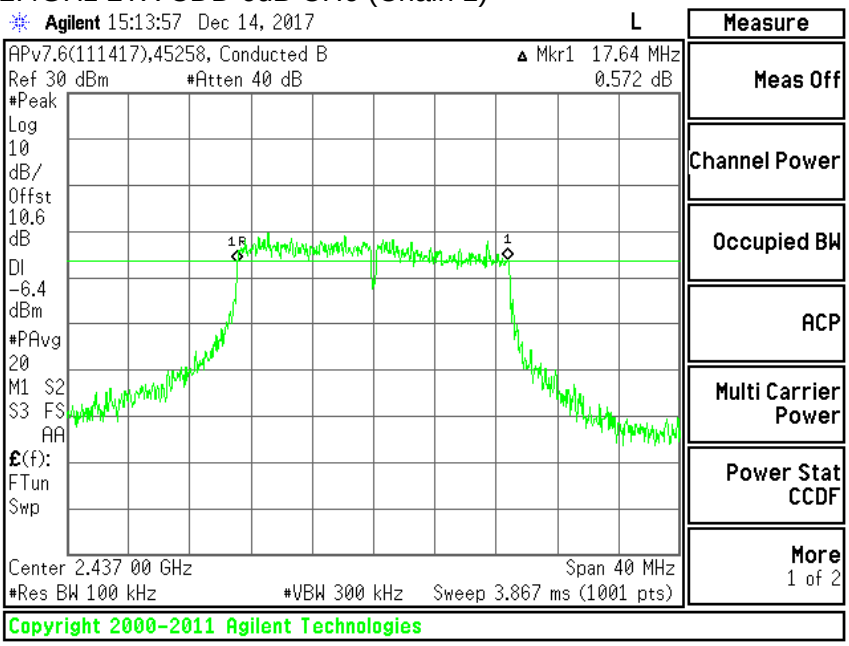
2.4GHz 2TX CDD 6dB CH6 (Chain 0)



2.4GHz 2TX CDD 6dB CH6 (Chain 1)



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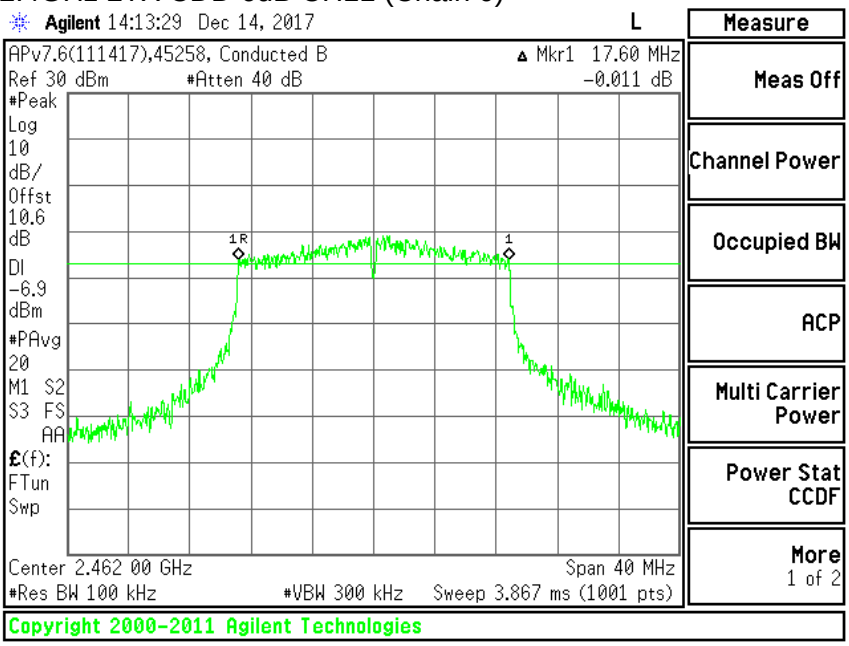
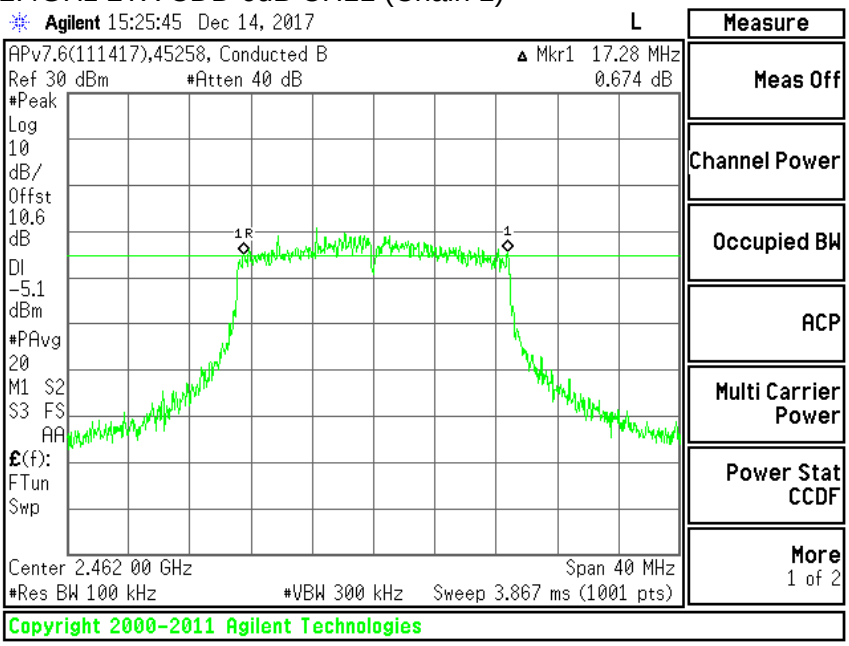
2.4GHz 2TX CDD 6dB CH11 (Chain 0)



2.4GHz 2TX CDD 6dB CH11 (Chain 1)



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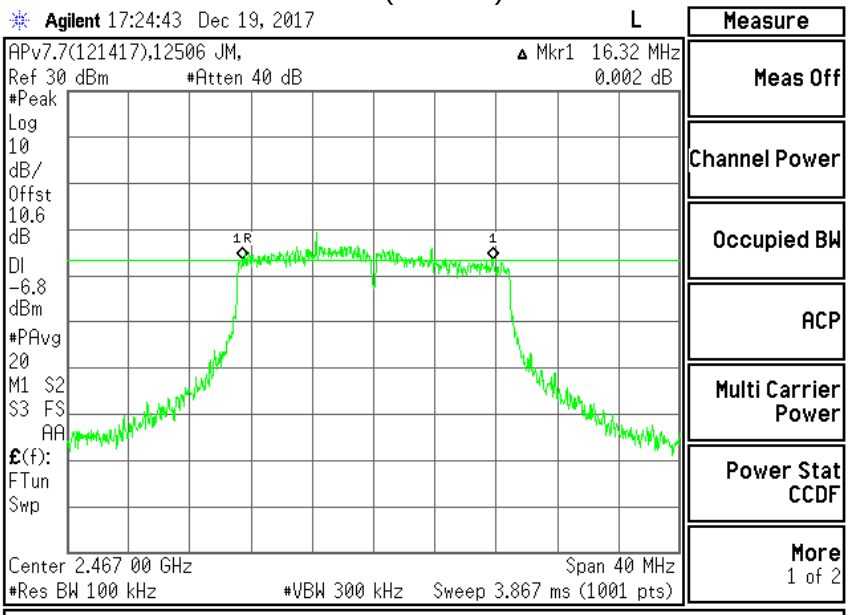
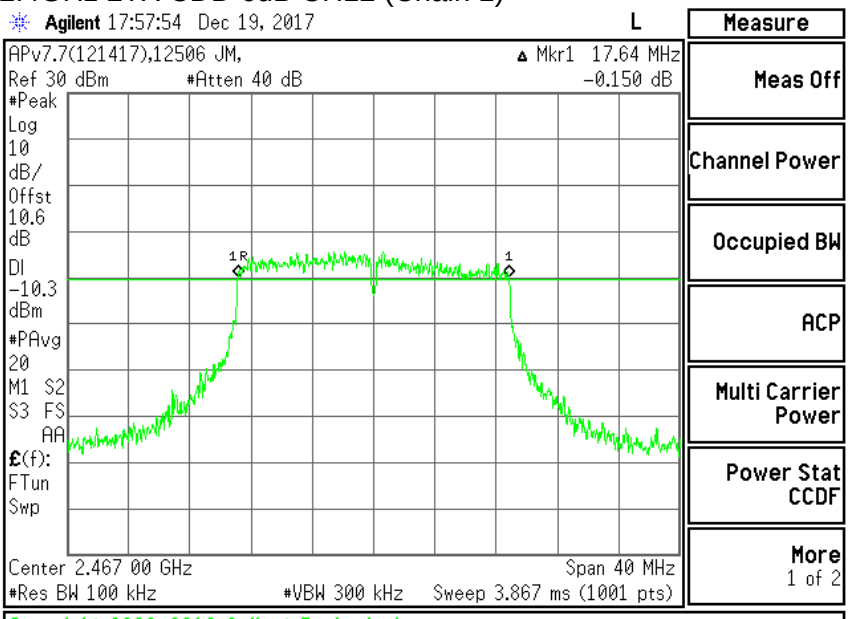
2.4GHz 2TX CDD 6dB CH12 (Chain 0)



2.4GHz 2TX CDD 6dB CH12 (Chain 1)



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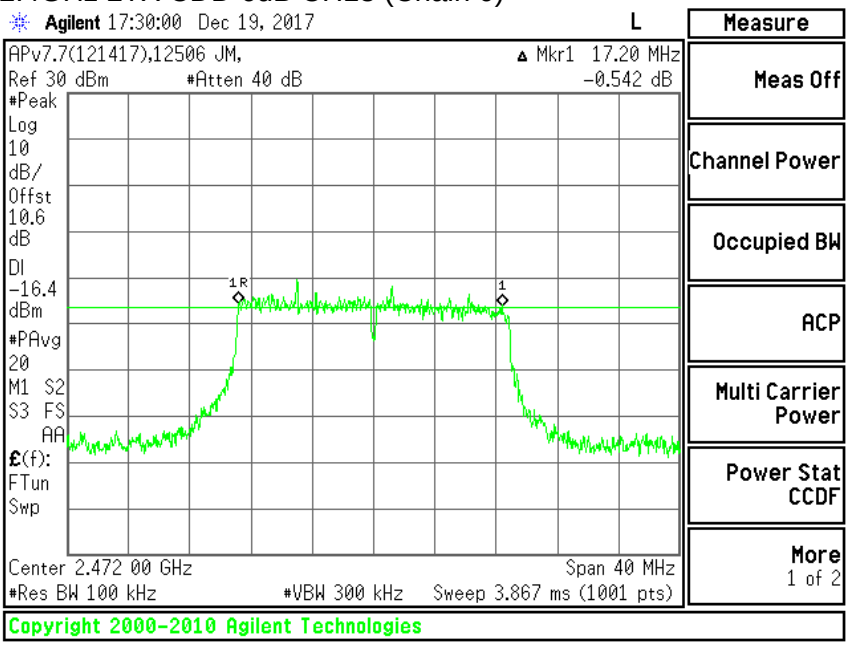
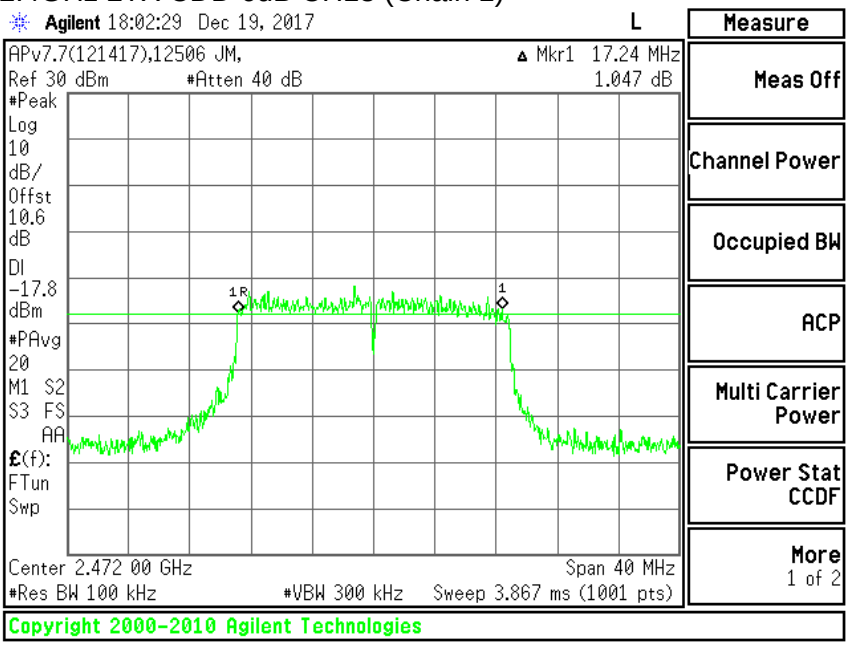
2.4GHz 2TX CDD 6dB CH13 (Chain 0)



2.4GHz 2TX CDD 6dB CH13 (Chain 1)



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9.4.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
CH1	2412	17.6974	17.6672
CH6	2437	17.6769	17.6969
CH11	2462	17.5475	17.5869
CH12	2467	17.6059	17.6665
CH13	2472	**17.7877**	**17.8571**

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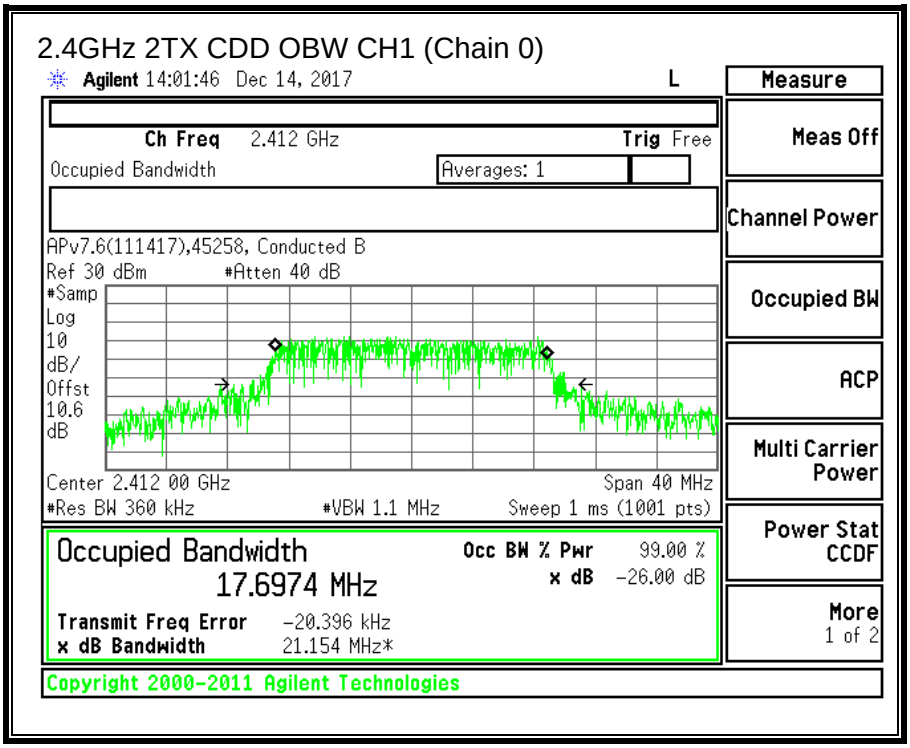

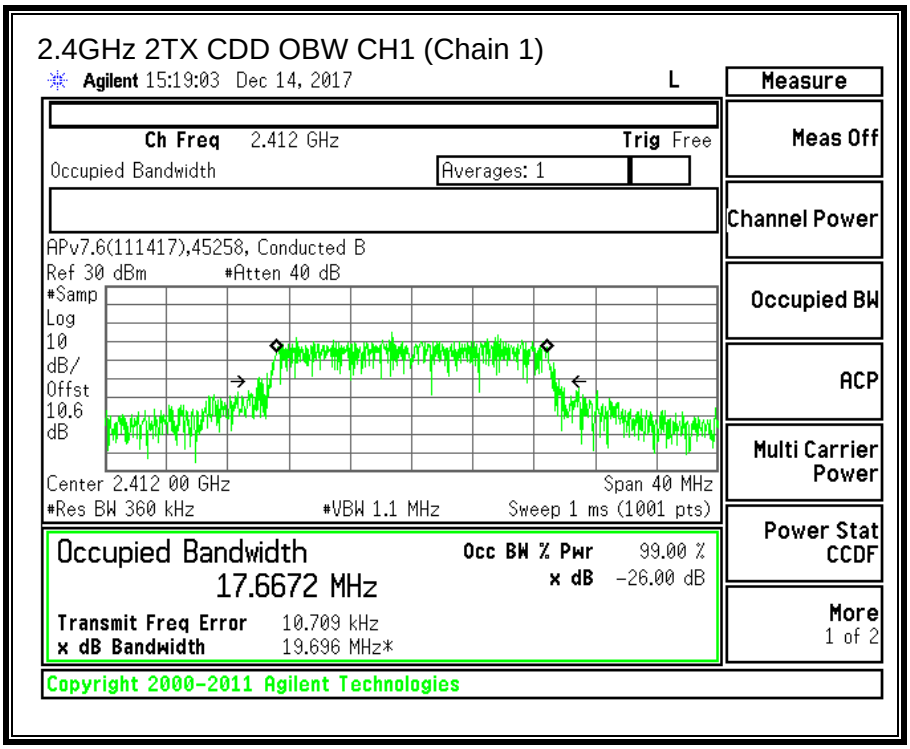

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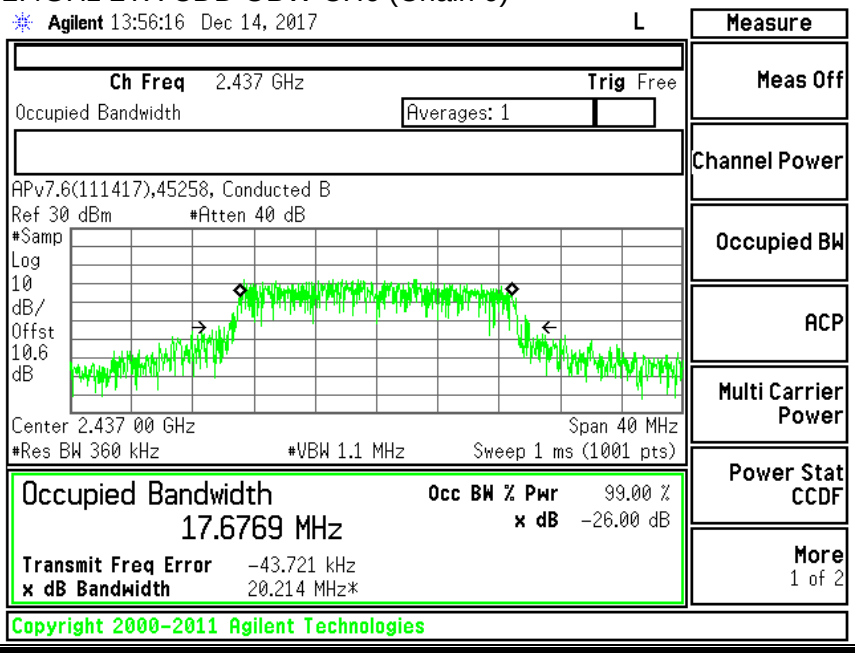
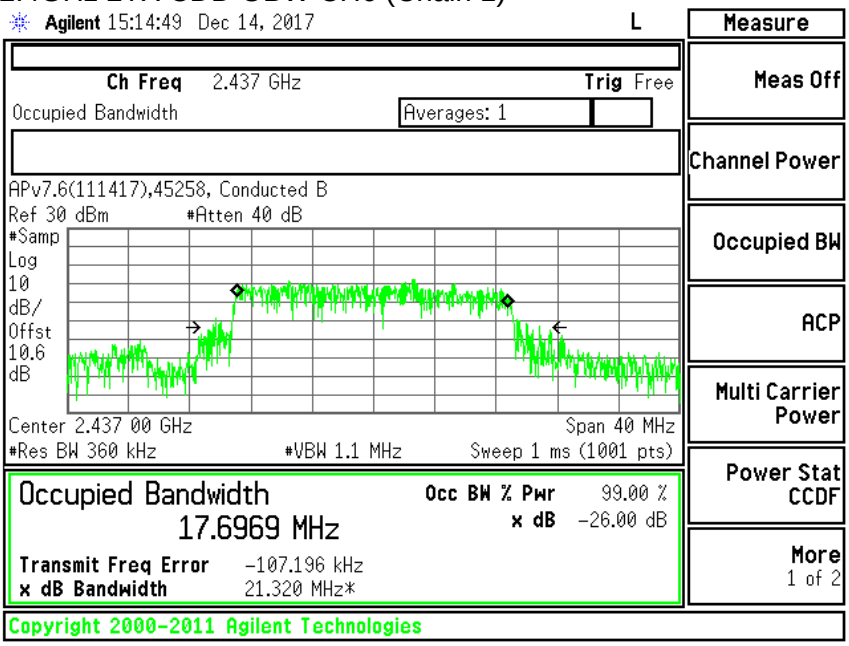
2.4GHz 2TX CDD OBW CH6 (Chain 0)



2.4GHz 2TX CDD OBW CH6 (Chain 1)



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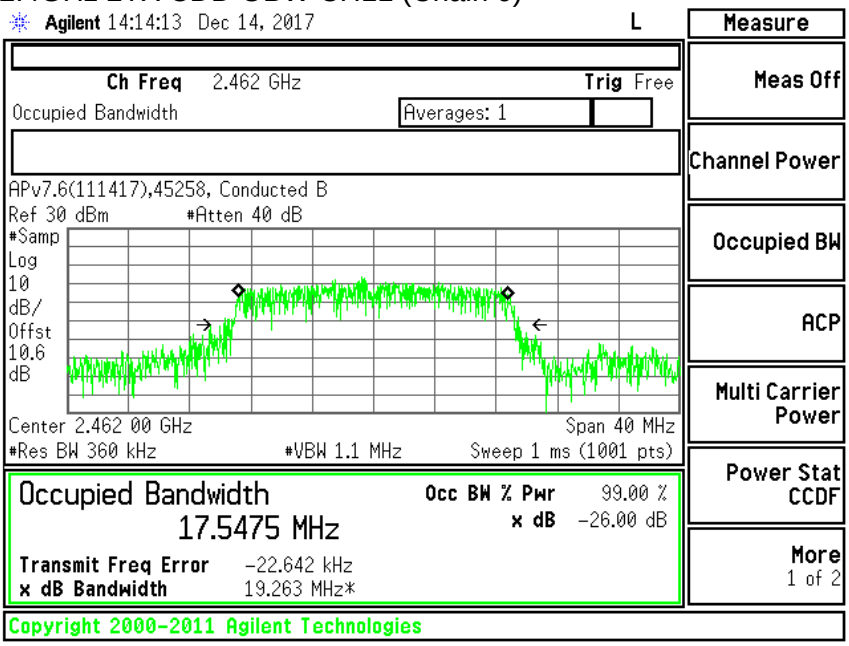
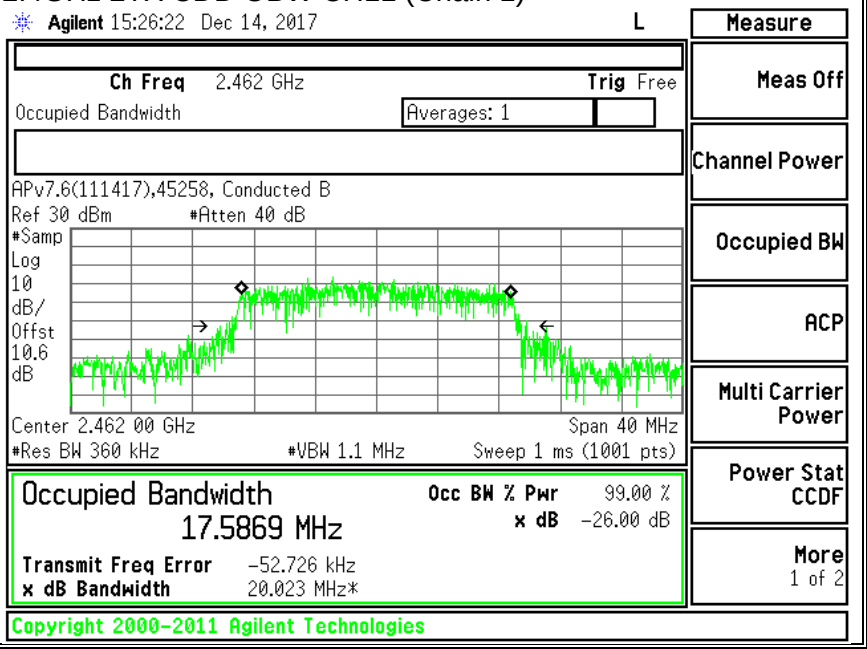
2.4GHz 2TX CDD OBW CH11 (Chain 0)



2.4GHz 2TX CDD OBW CH11 (Chain 1)



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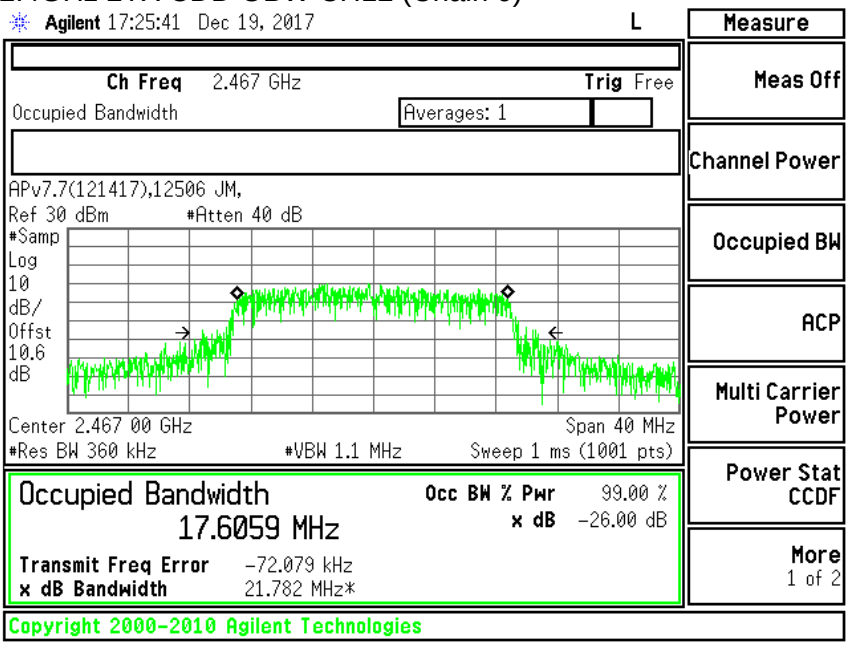
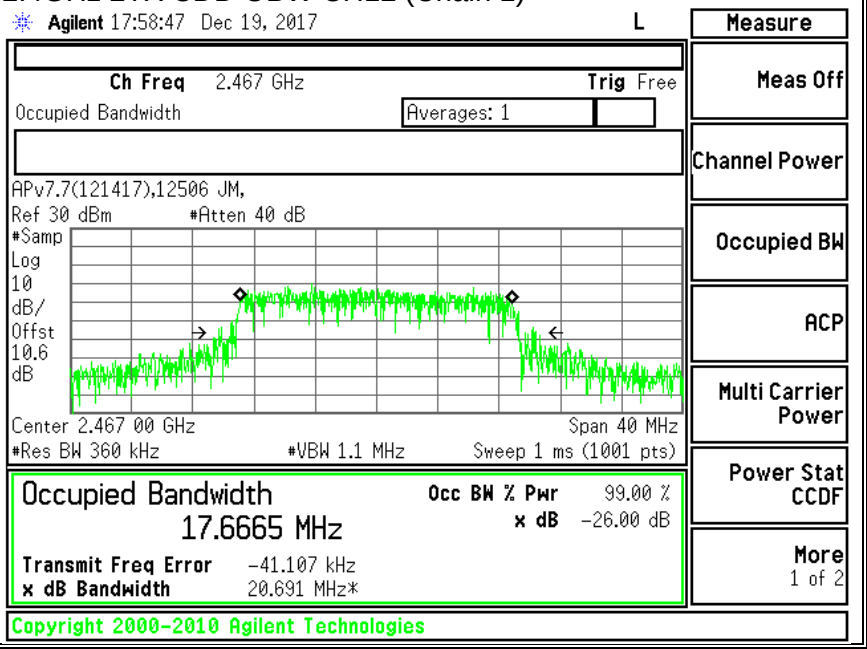
2.4GHz 2TX CDD OBW CH12 (Chain 0)



2.4GHz 2TX CDD OBW CH12 (Chain 1)



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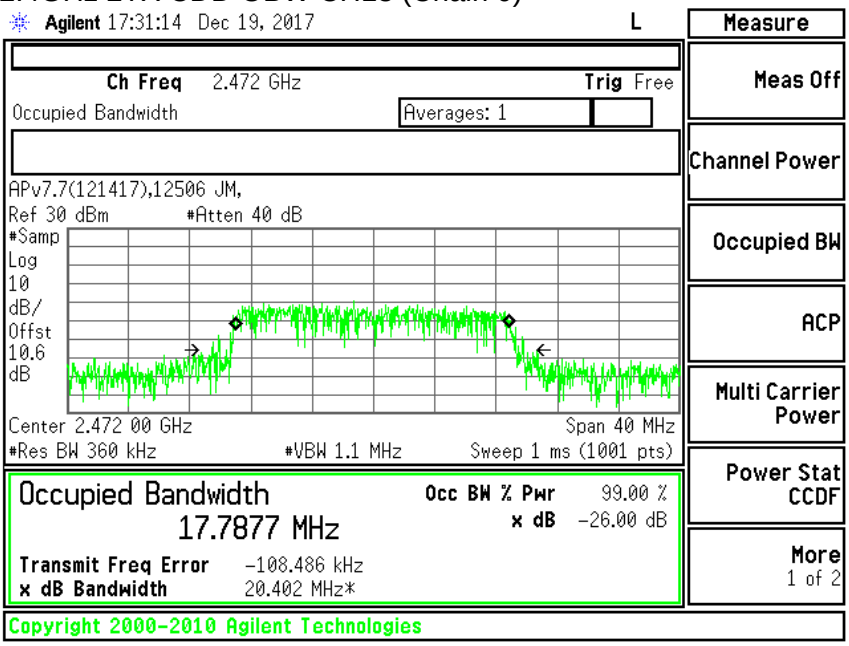
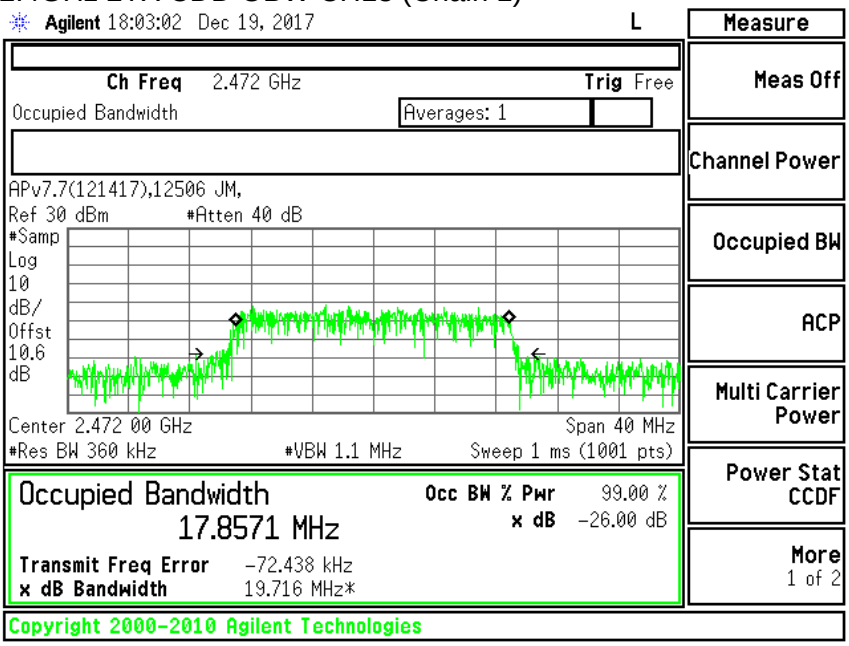
2.4GHz 2TX CDD OBW CH13 (Chain 0)



2.4GHz 2TX CDD OBW CH13 (Chain 1)



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9.4.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

For systems using digital modulation in the 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

KDB 58074 D01 v04 Section 9.2.3.2

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.60	-8.40	-2.94

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RESULTS

ID:	JM12056	Date:	12/12/17

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-2.94	30.00	30	36	30.00
CH6	2437	-2.94	30.00	30	36	30.00
CH11	2462	-2.94	30.00	30	36	30.00
CH12	2467	-2.94	30.00	30	36	30.00
CH13	2472	-2.94	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
CH1	2412	13.23	**12.92**	**16.09**	30.00	-13.91
CH6	2437	**13.35**	12.63	16.02	30.00	-13.98
CH11	2462	13.05	12.54	15.81	30.00	-14.19
CH12	2467	10.35	10.28	13.33	30.00	-16.67
CH13	2472	0.98	0.52	3.77	30.00	-26.23

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.

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9.4.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

RESULTS

Duty Cycle CF (dB)	0.11	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
CH1	2412	-11.444	-12.368	-8.76	8.0	-16.8
CH6	2437	**-10.824**	-11.876	-8.20	8.0	-16.2
CH11	2462	-10.917	**-11.502**	**-8.08**	8.0	-16.1
CH12	2467	-14.002	-16.052	-11.79	8.0	-19.8
CH13	2472	-24.171	-26.035	-21.88	8.0	-29.9

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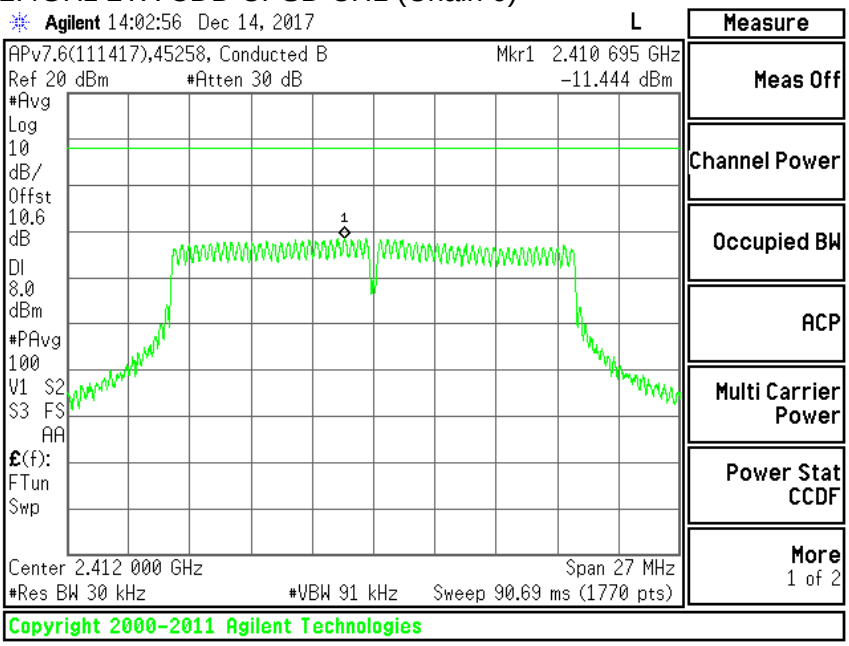
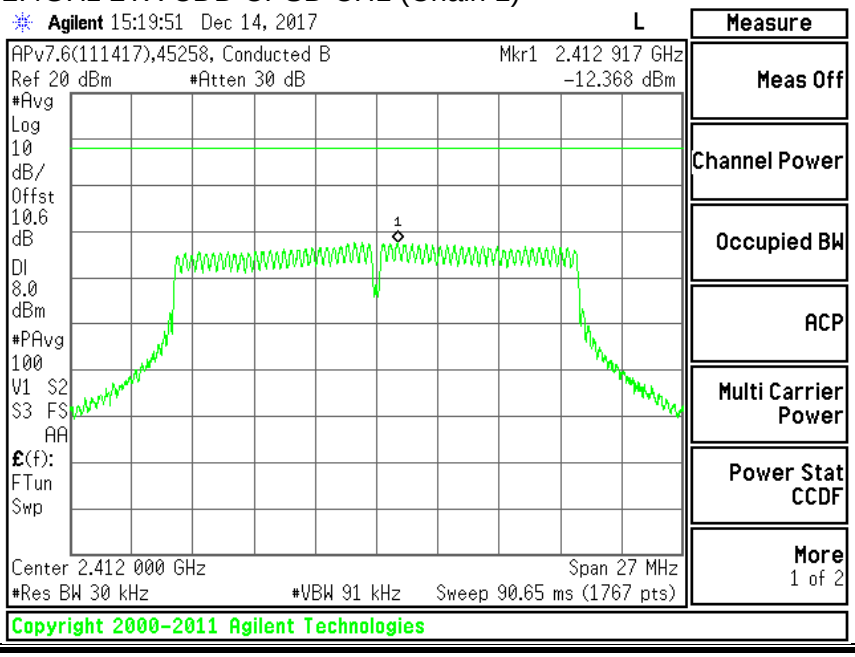
2.4GHz 2TX CDD CPSD CH1 (Chain 0)



2.4GHz 2TX CDD CPSD CH1 (Chain 1)



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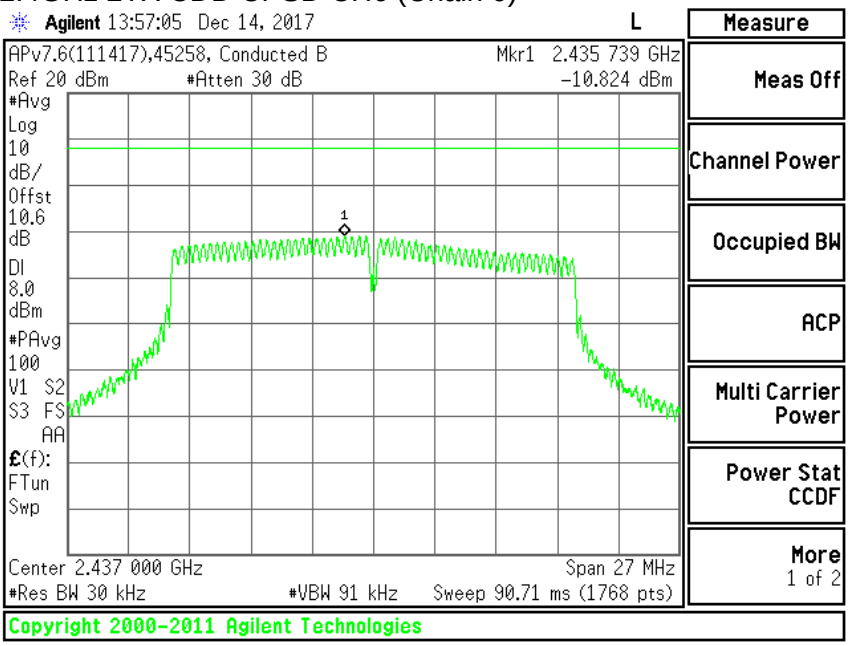
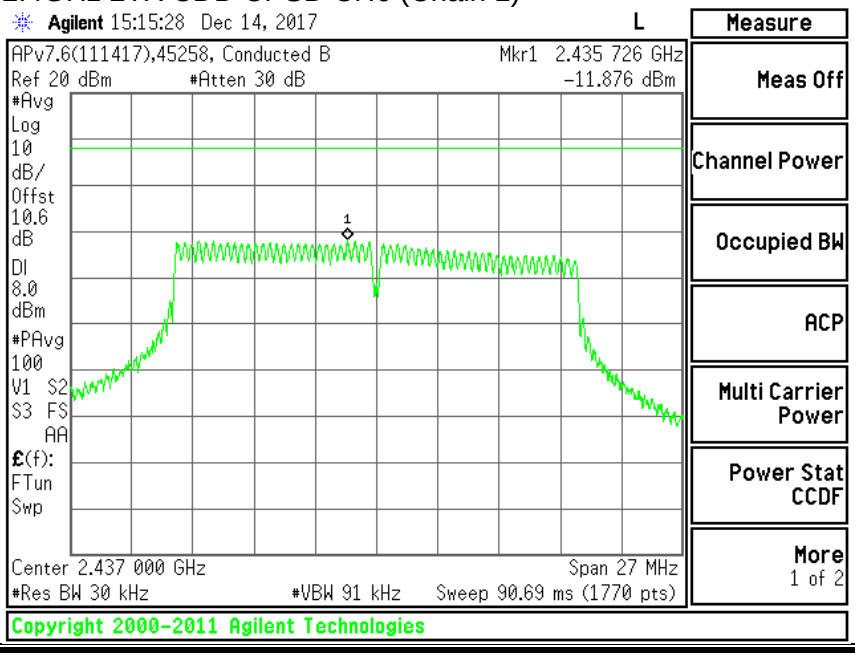
2.4GHz 2TX CDD CPSD CH6 (Chain 0)



2.4GHz 2TX CDD CPSD CH6 (Chain 1)



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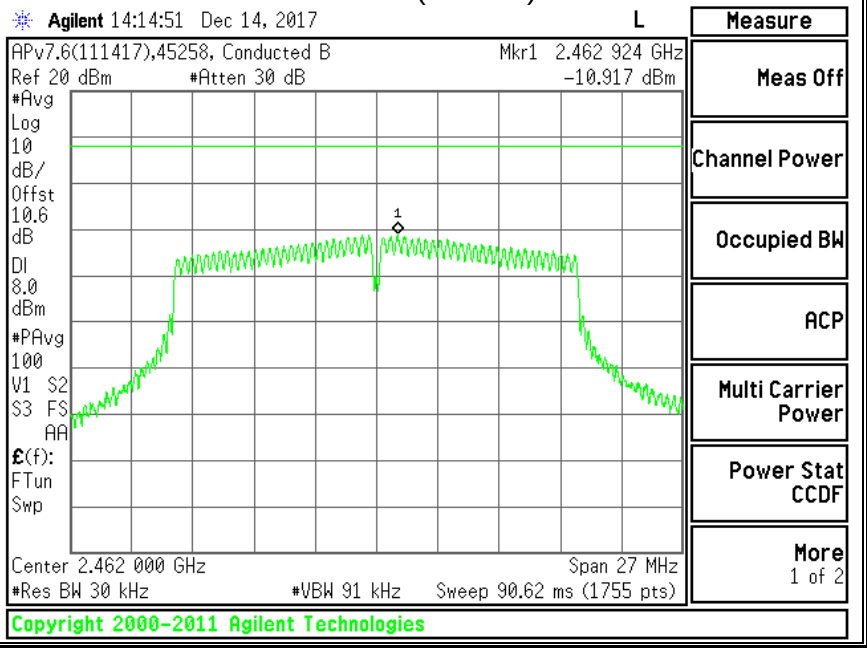
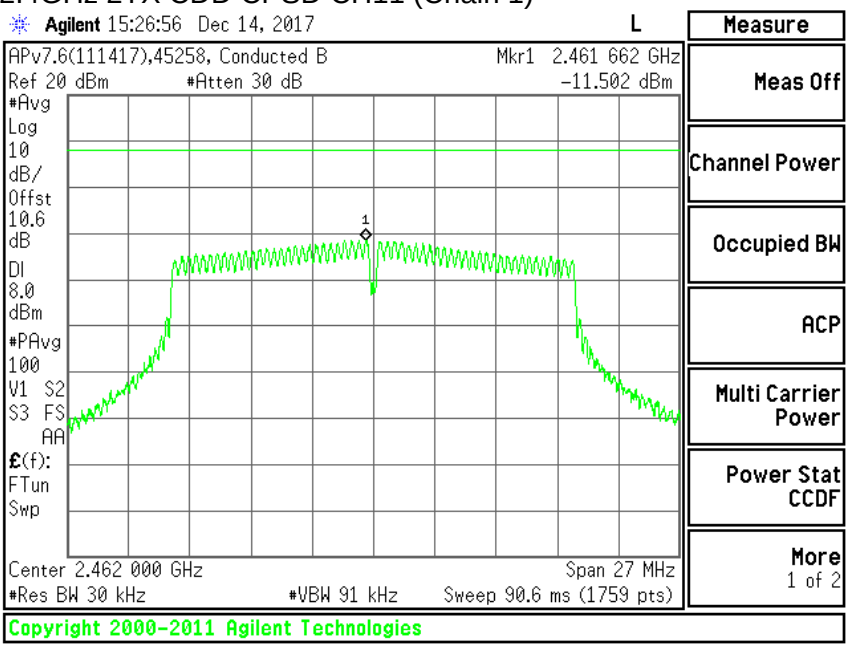
2.4GHz 2TX CDD CPSD CH11 (Chain 0)



2.4GHz 2TX CDD CPSD CH11 (Chain 1)



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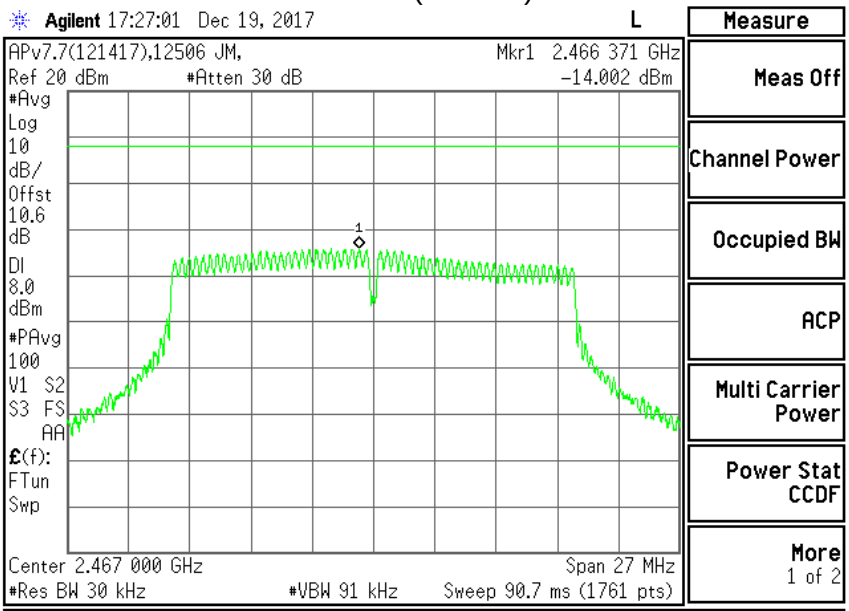
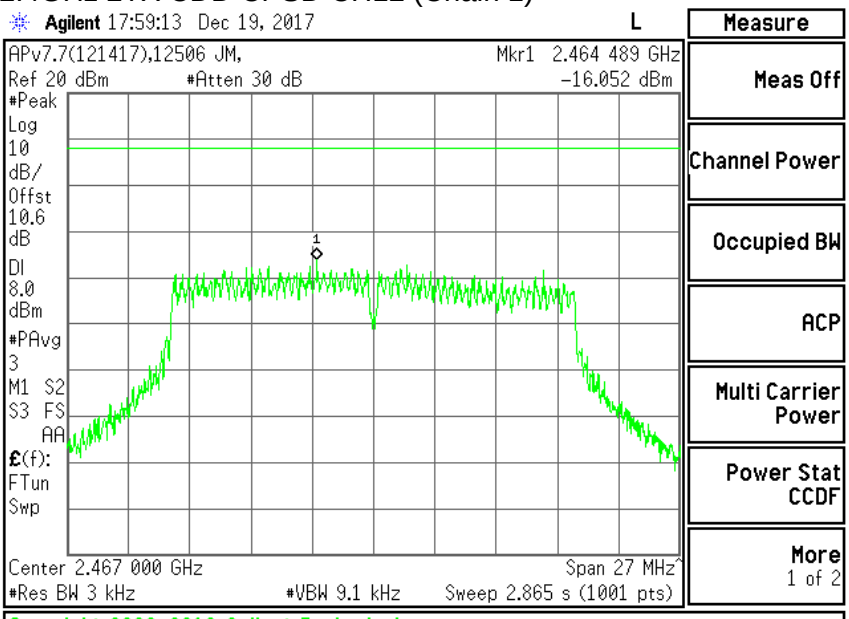
2.4GHz 2TX CDD CPSD CH12 (Chain 0)



2.4GHz 2TX CDD CPSD CH12 (Chain 1)



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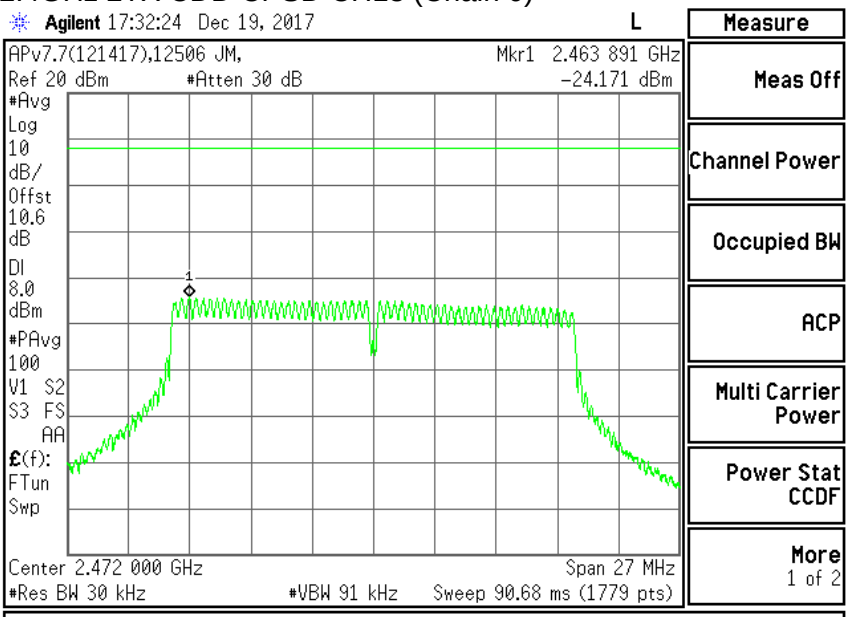
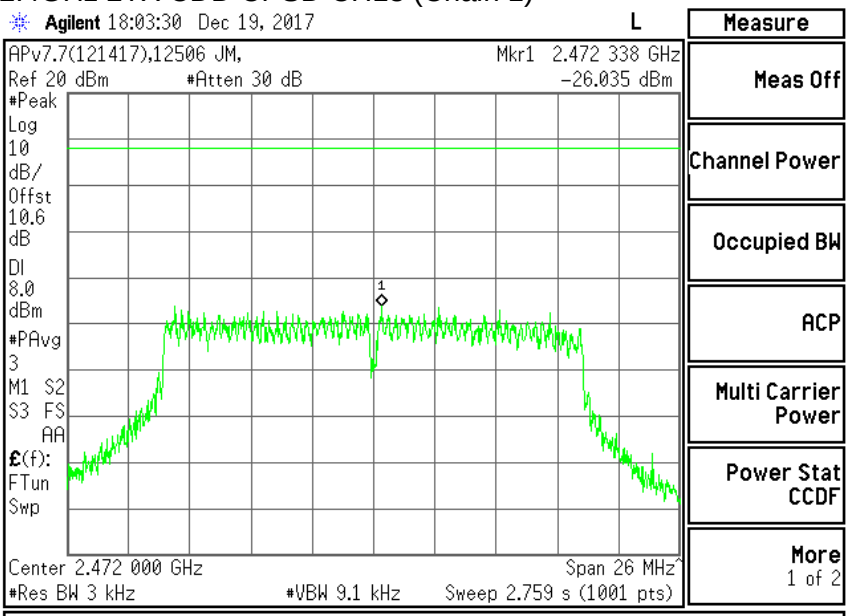
2.4GHz 2TX CDD CPSD CH13 (Chain 0)



2.4GHz 2TX CDD CPSD CH13 (Chain 1)



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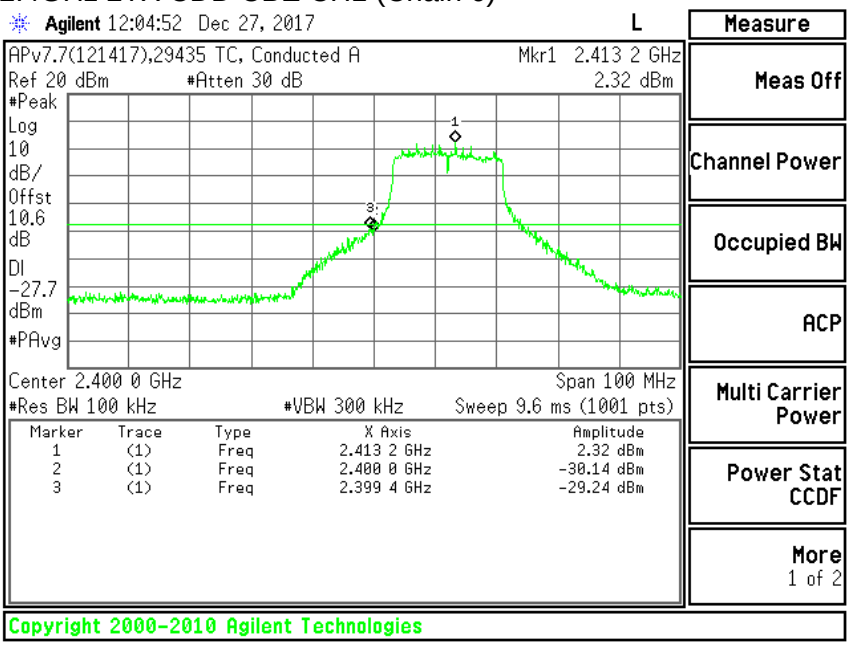
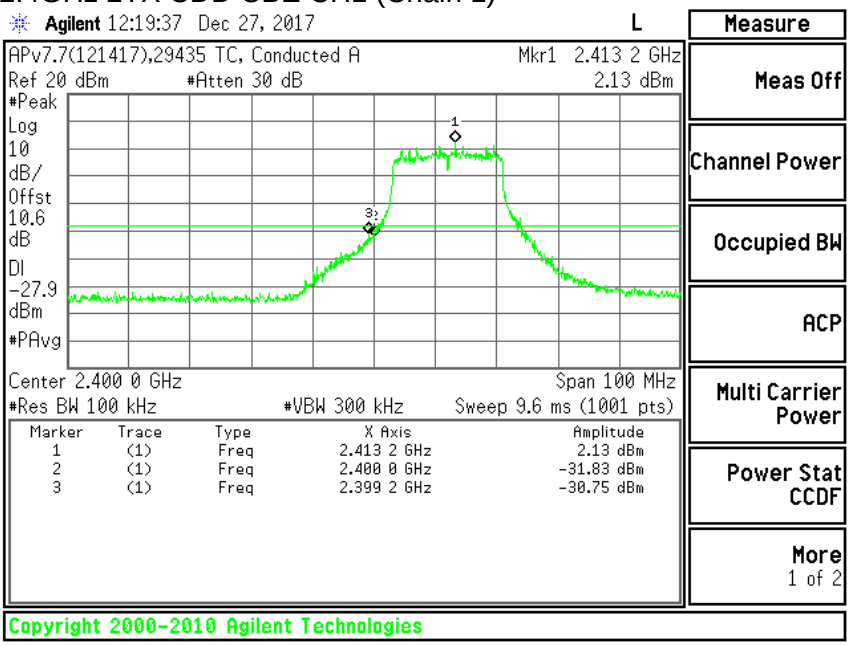
9.4.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

2.4GHz 2TX CDD CBE CH1 (Chain 0)



2.4GHz 2TX CDD CBE CH1 (Chain 1)



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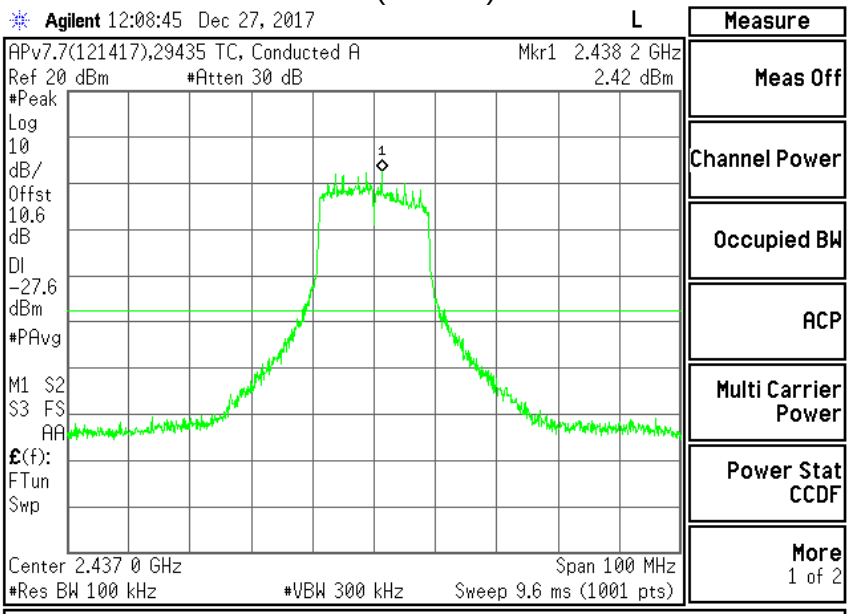
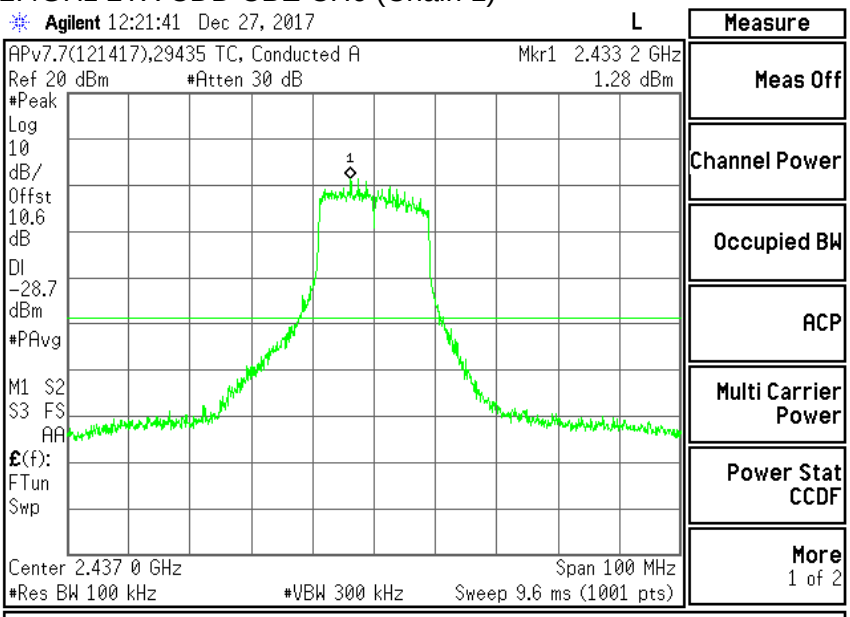
2.4GHz 2TX CDD CBE CH6 (Chain 0)



2.4GHz 2TX CDD CBE CH6 (Chain 1)



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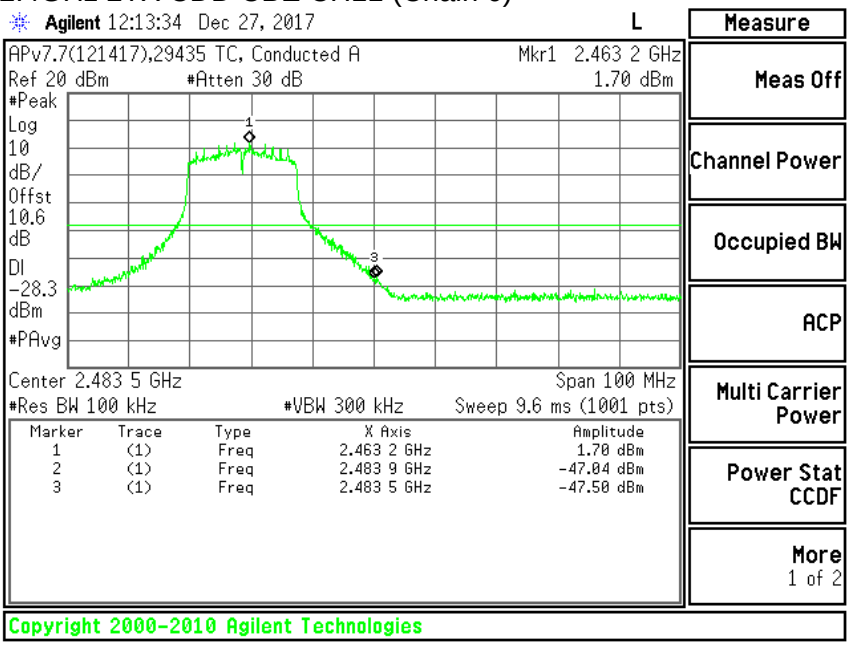
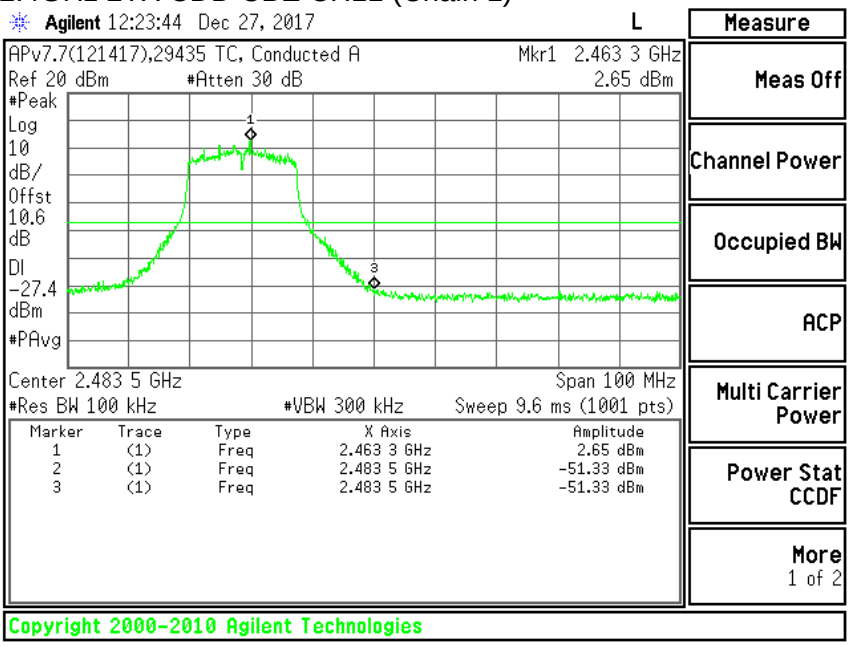
2.4GHz 2TX CDD CBE CH11 (Chain 0)



2.4GHz 2TX CDD CBE CH11 (Chain 1)



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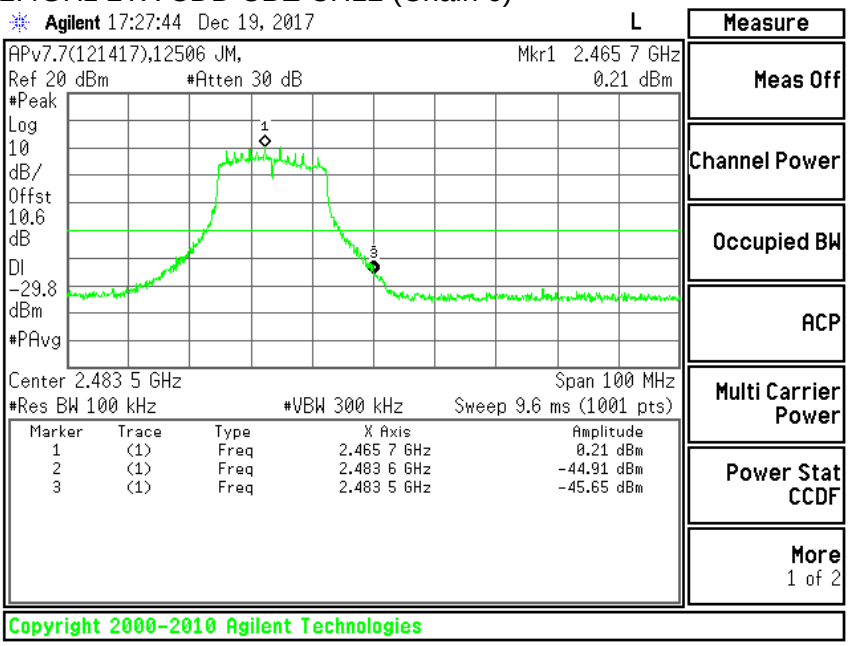
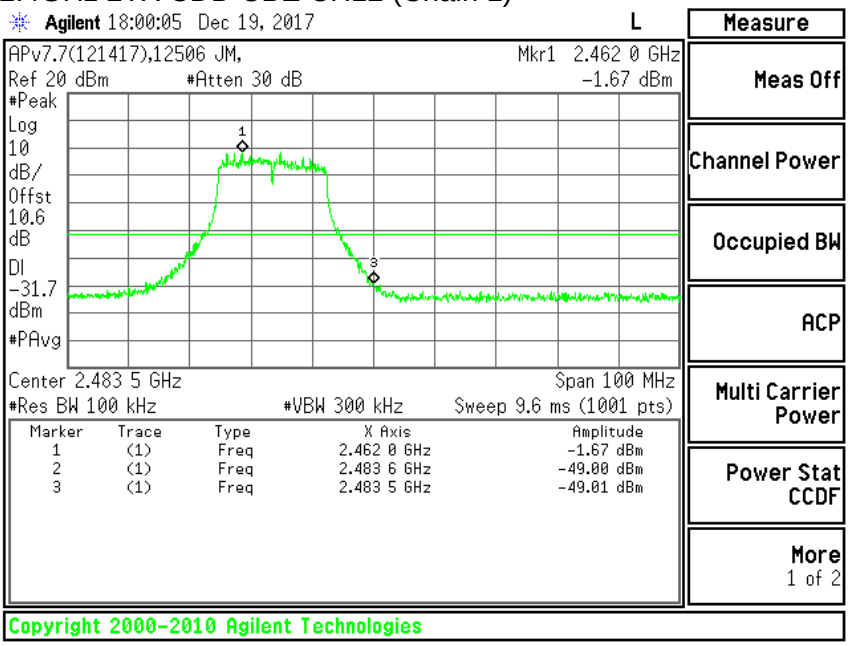
2.4GHz 2TX CDD CBE CH12 (Chain 0)



2.4GHz 2TX CDD CBE CH12 (Chain 1)



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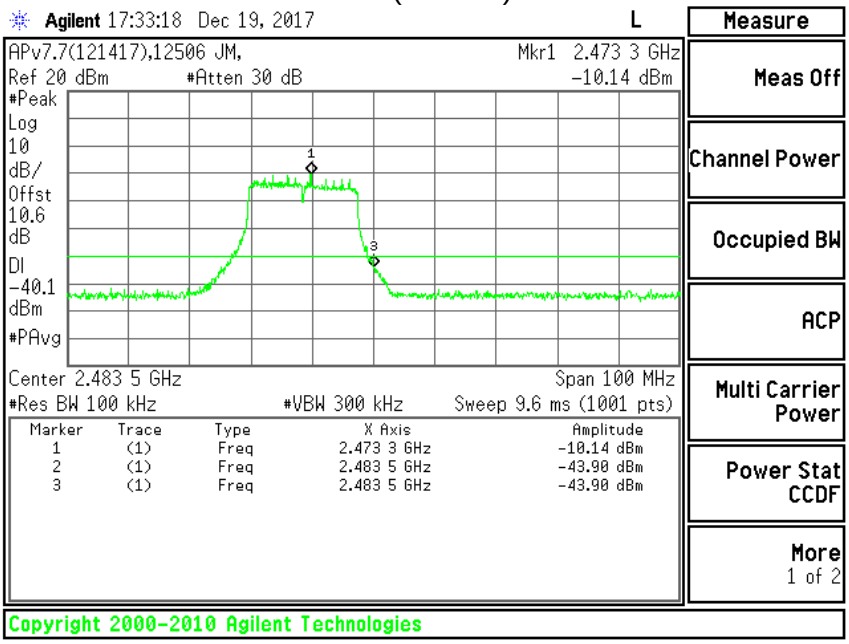
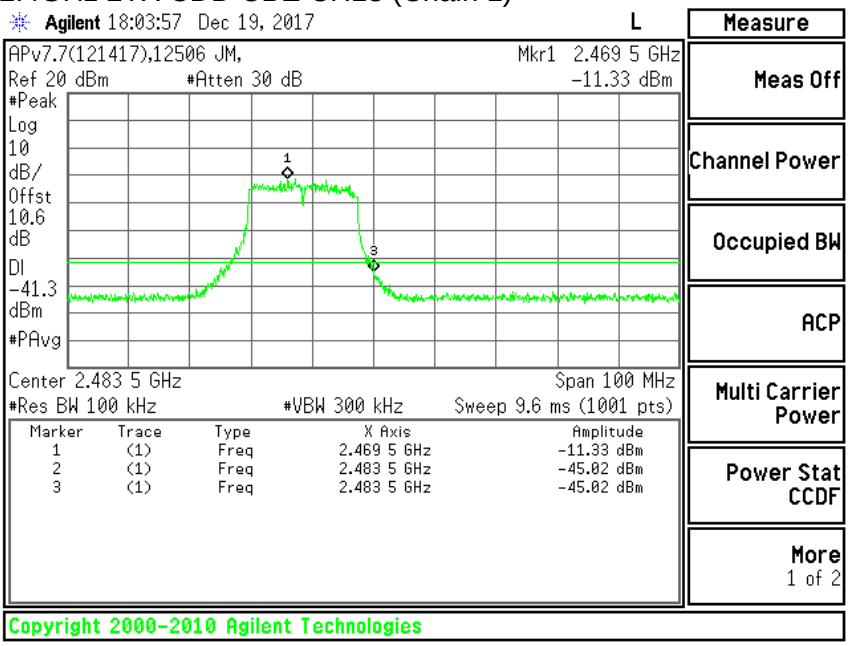
2.4GHz 2TX CDD CBE CH13 (Chain 0)



2.4GHz 2TX CDD CBE CH13 (Chain 1)



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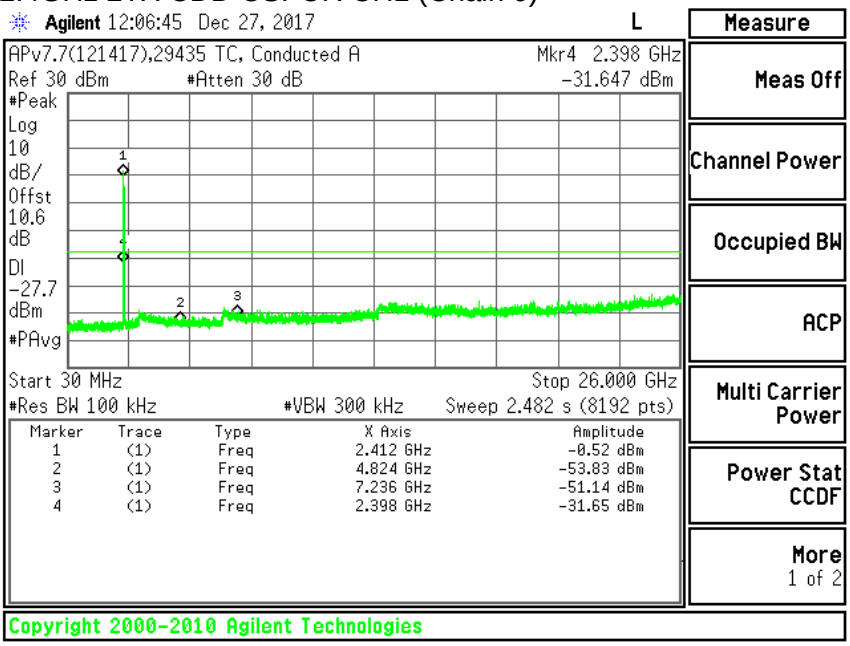
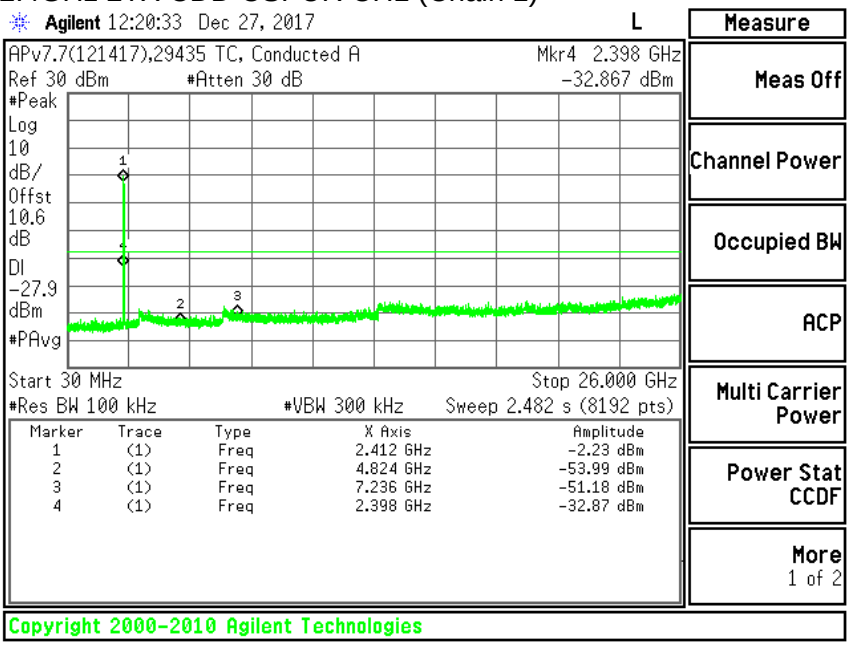
2.4GHz 2TX CDD CSPUR CH1 (Chain 0)



2.4GHz 2TX CDD CSPUR CH1 (Chain 1)



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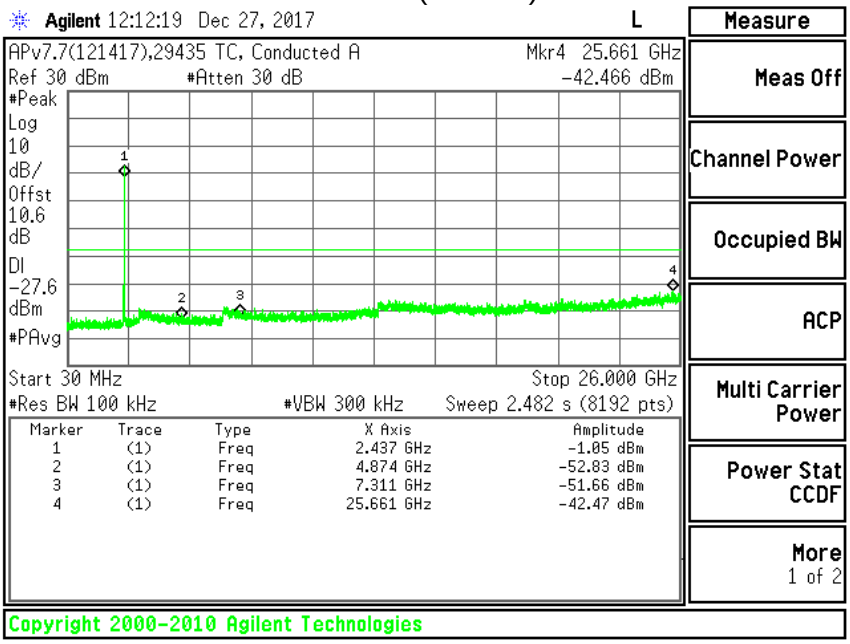
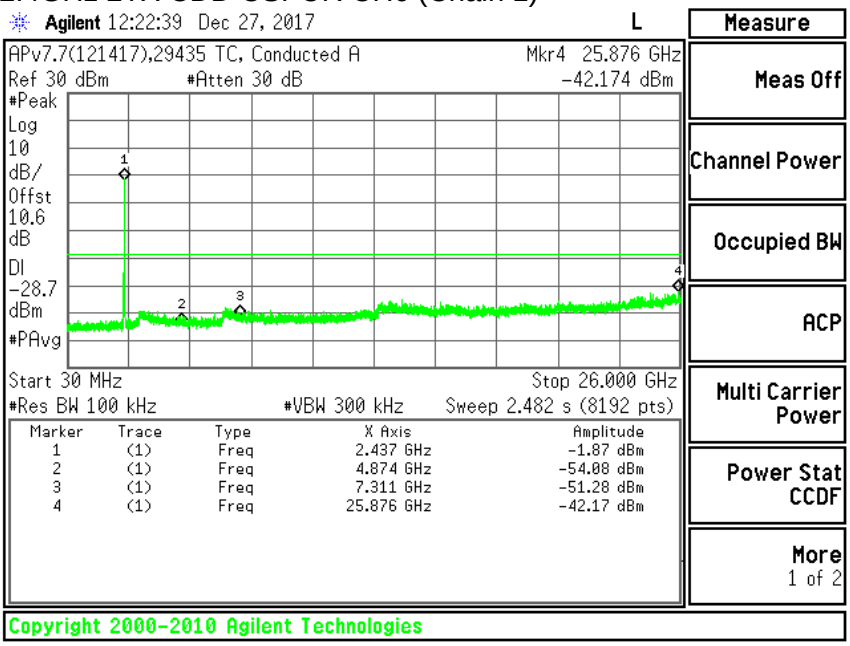
2.4GHz 2TX CDD CSPUR CH6 (Chain 0)



2.4GHz 2TX CDD CSPUR CH6 (Chain 1)



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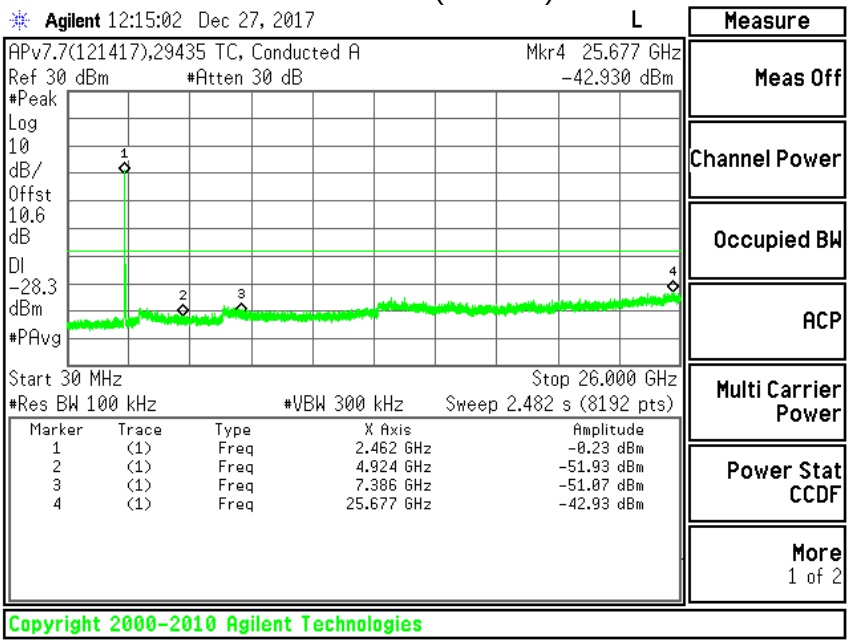
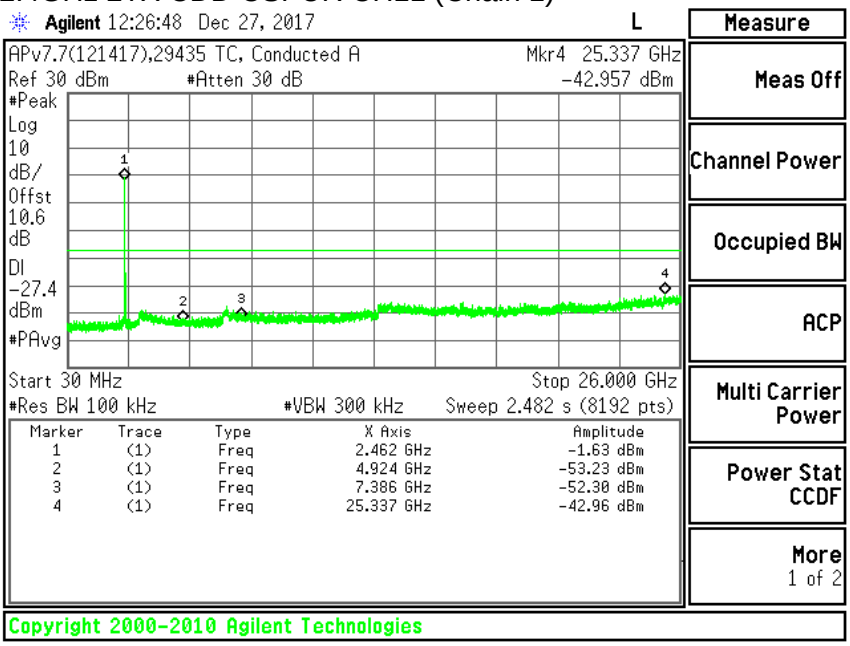
2.4GHz 2TX CDD CSPUR CH11 (Chain 0)



2.4GHz 2TX CDD CSPUR CH11 (Chain 1)



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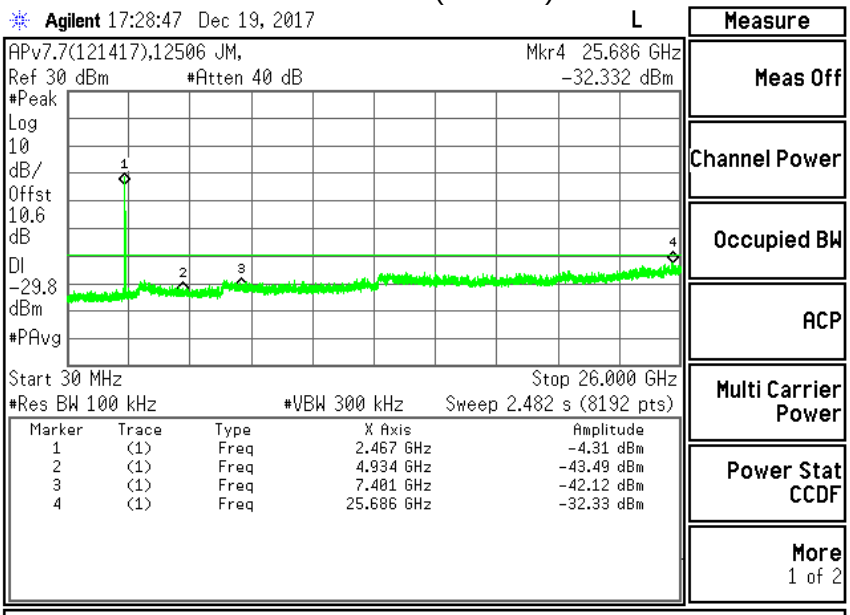
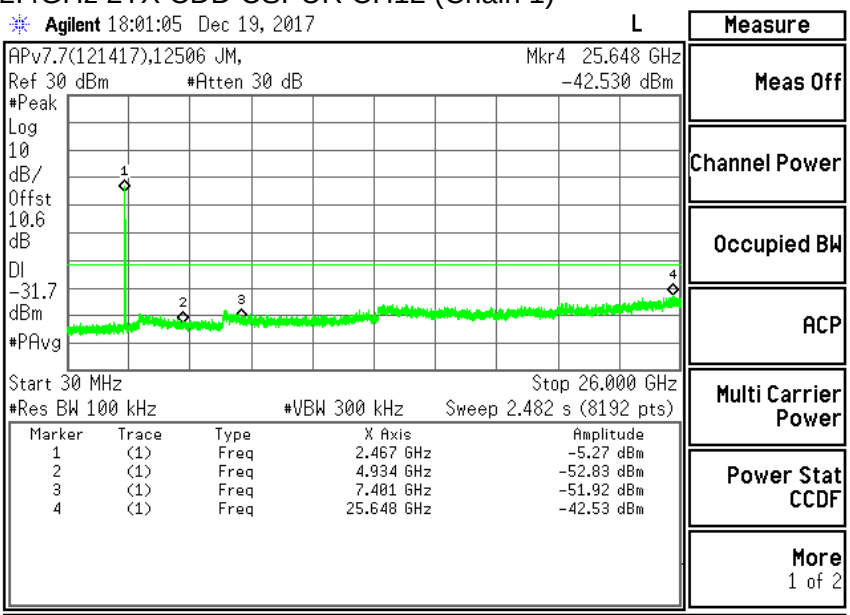
2.4GHz 2TX CDD CSPUR CH12 (Chain 0)



2.4GHz 2TX CDD CSPUR CH12 (Chain 1)



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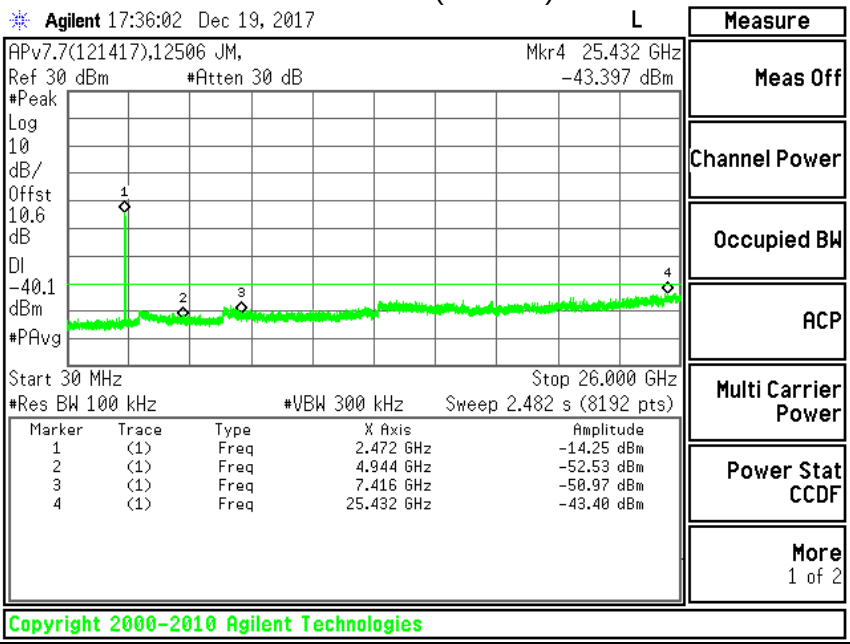
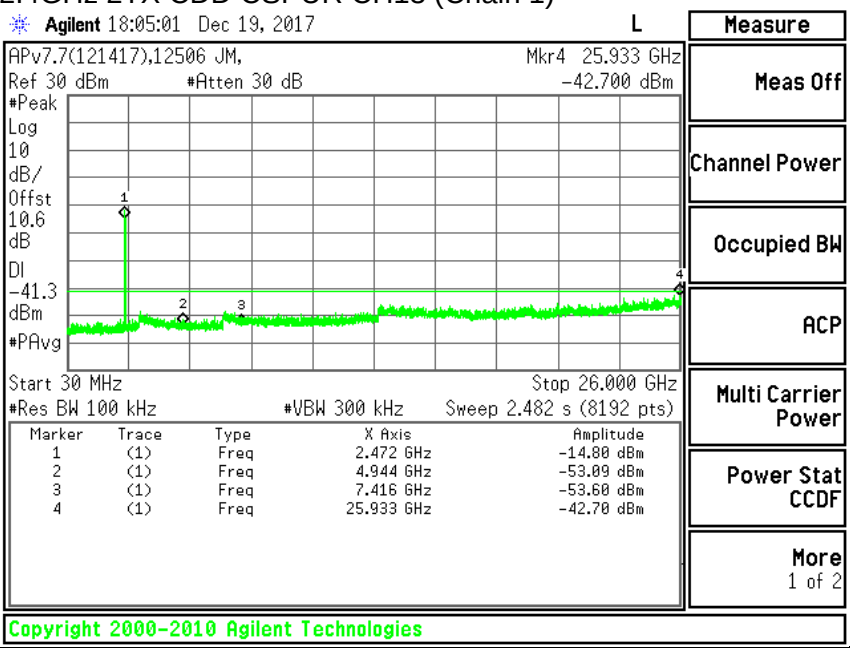
2.4GHz 2TX CDD CSPUR CH13 (Chain 0)



2.4GHz 2TX CDD CSPUR CH13 (Chain 1)



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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
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 120 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements for the 30-1000 MHz range, 9 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements for the 0.15-30 MHz range and 200 Hz for peak detection measurements or 200 Hz for quasi-peak detection measurements for the 9 to 150 kHz range. 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 add duty cycle factor 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

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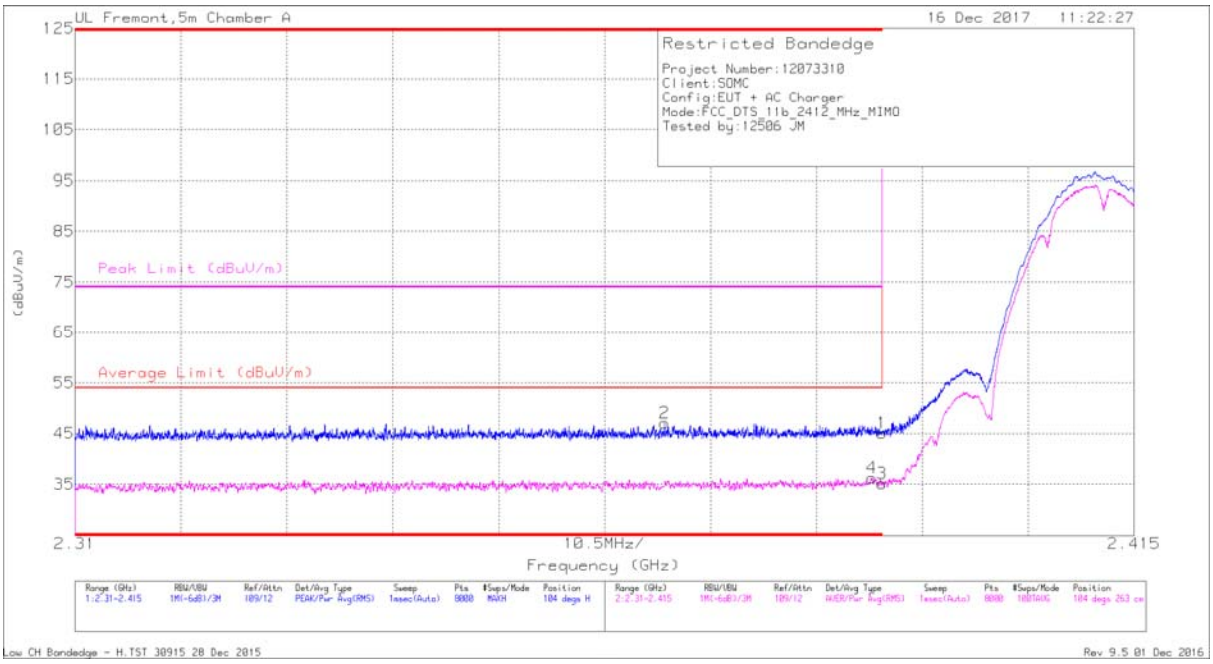
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1 11b MIMO MODE IN THE 2.4GHz BAND

AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.368	38.79	Pk	31.7	-23.4	47.09	-	-	74	-26.91	104	263	H
4	* 2.389	27.81	RMS	31.8	-23.3	36.31	54	-17.69	-	-	104	263	H
1	* 2.39	36.59	Pk	31.8	-23.3	45.09	-	-	74	-28.91	104	263	H
3	* 2.39	26.69	RMS	31.8	-23.3	35.19	54	-18.81	-	-	104	263	H

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

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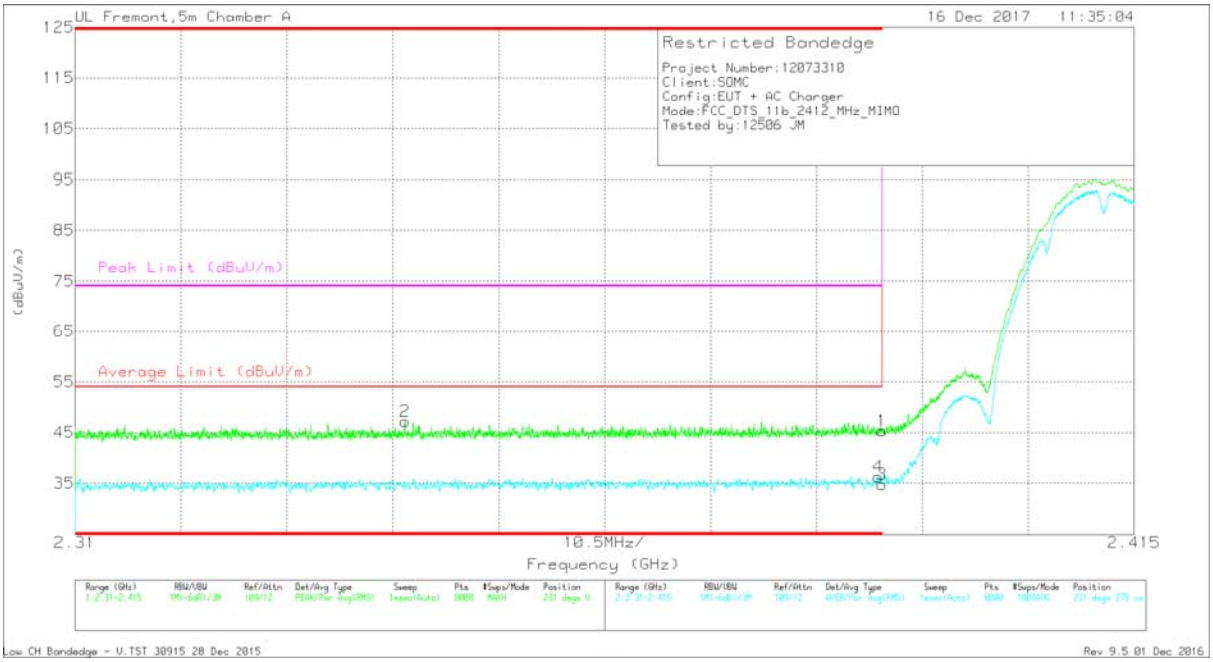
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.343	38.96	Pk	31.6	-23.4	47.16	-	-	74	-26.84	231	275	V
1	* 2.39	36.86	Pk	31.8	-23.3	45.36	-	-	74	-28.64	231	275	V
3	* 2.39	26.31	RMS	31.8	-23.3	34.81	54	-19.19	-	-	231	275	V
4	* 2.39	27.76	RMS	31.8	-23.3	36.26	54	-17.74	-	-	231	275	V

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

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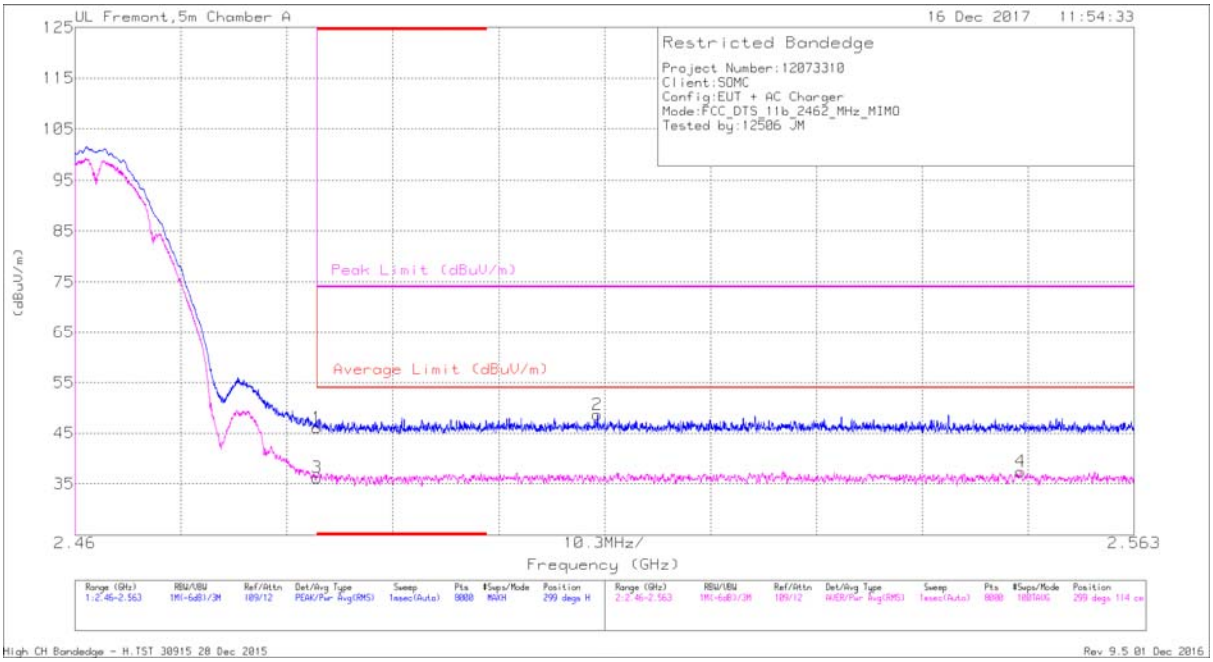
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	36.97	Pk	32.3	-23.2	46.07	-	-	74	-27.93	299	114	H
3	* 2.484	27.1	RMS	32.3	-23.2	36.2	54	-17.8	-	-	299	114	H
2	2.511	39.52	Pk	32.4	-23.2	48.72	-	-	74	-25.28	299	114	H
4	2.552	28.34	RMS	32.3	-23.2	37.44	54	-16.56	-	-	299	114	H

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

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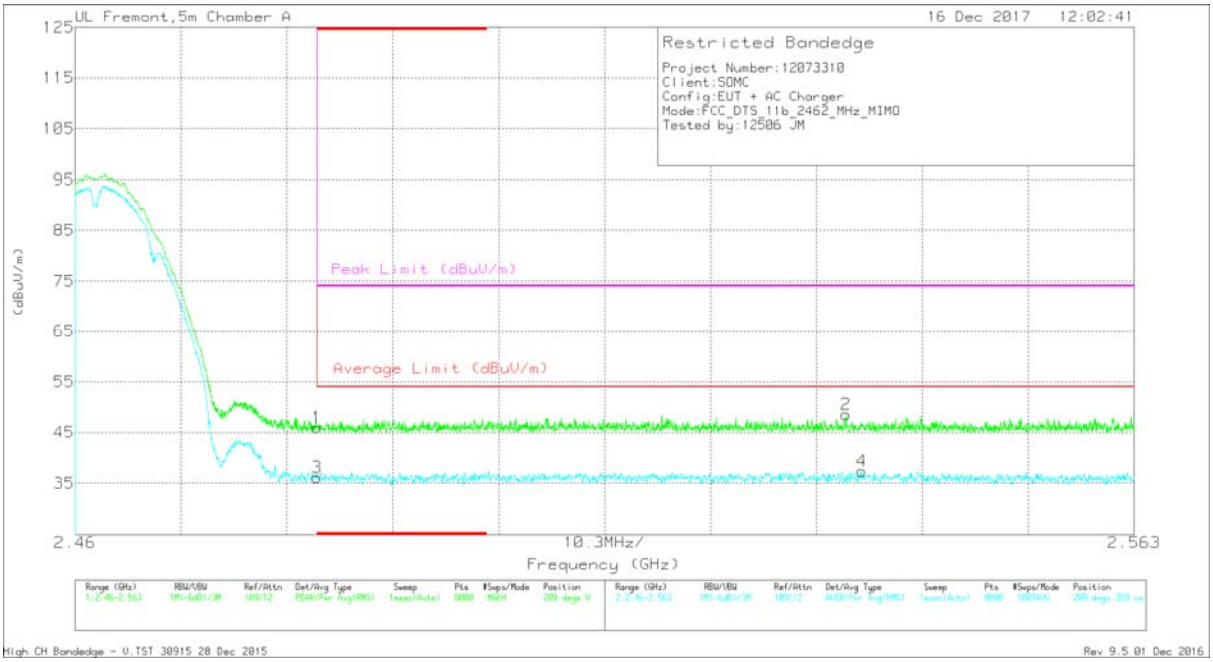
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	36.84	Pk	32.3	-23.2	45.94	-	-	74	-28.06	209	359	V
3	* 2.484	27.03	RMS	32.3	-23.2	36.13	54	-17.87	-	-	209	359	V
2	2.535	39.26	Pk	32.4	-23.1	48.56	-	-	74	-25.44	209	359	V
4	2.537	28.03	RMS	32.4	-23.1	37.33	54	-16.67	-	-	209	359	V

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

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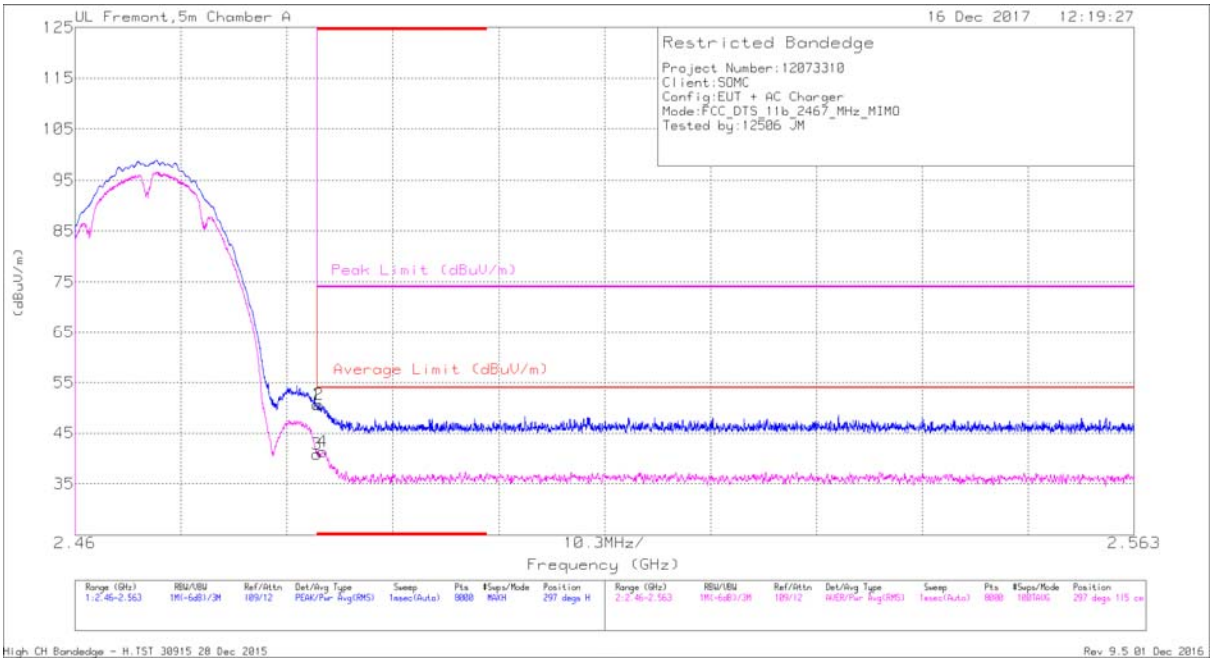
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 12)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.56	Pk	32.3	-23.2	50.66	-	-	74	-23.34	297	115	H
2	* 2.484	41.59	Pk	32.3	-23.2	50.69	-	-	74	-23.31	297	115	H
3	* 2.484	31.74	RMS	32.3	-23.2	40.84	54	-13.16	-	-	297	115	H
4	* 2.484	32.26	RMS	32.3	-23.2	41.36	54	-12.64	-	-	297	115	H

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

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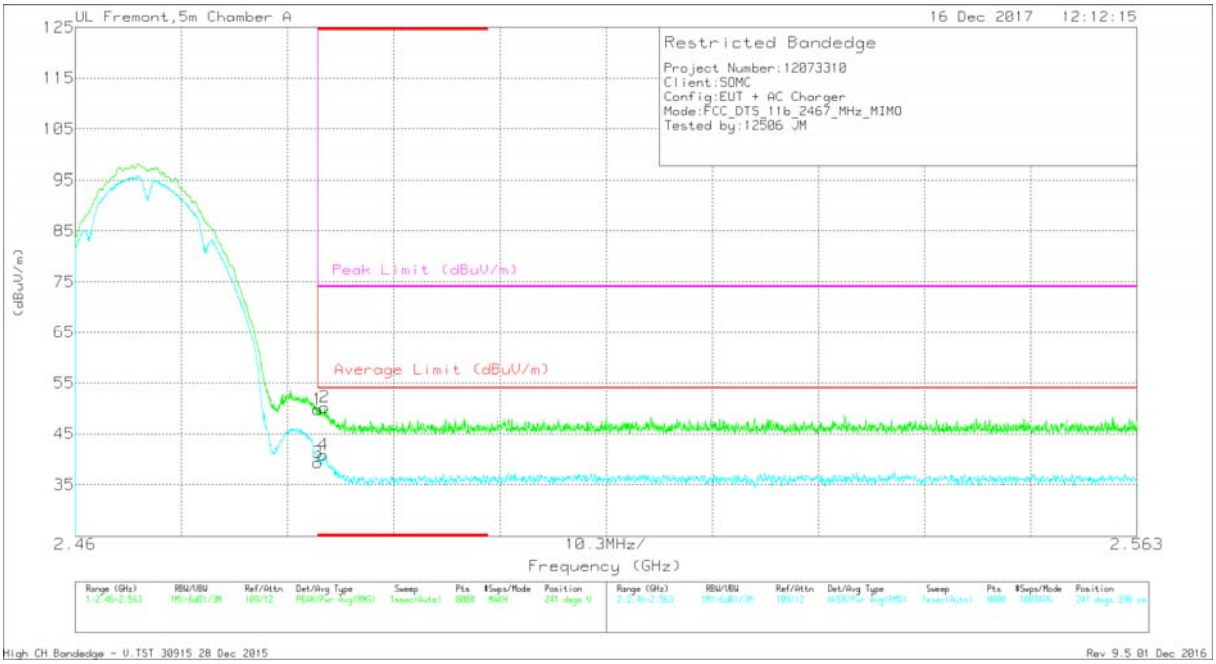
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.74	Pk	32.3	-23.2	49.84	-	-	74	-24.16	241	398	V
2	* 2.484	41.13	Pk	32.3	-23.2	50.23	-	-	74	-23.77	241	398	V
3	* 2.484	30.32	RMS	32.3	-23.2	39.42	54	-14.58	-	-	241	398	V
4	* 2.484	31.76	RMS	32.3	-23.2	40.86	54	-13.14	-	-	241	398	V

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

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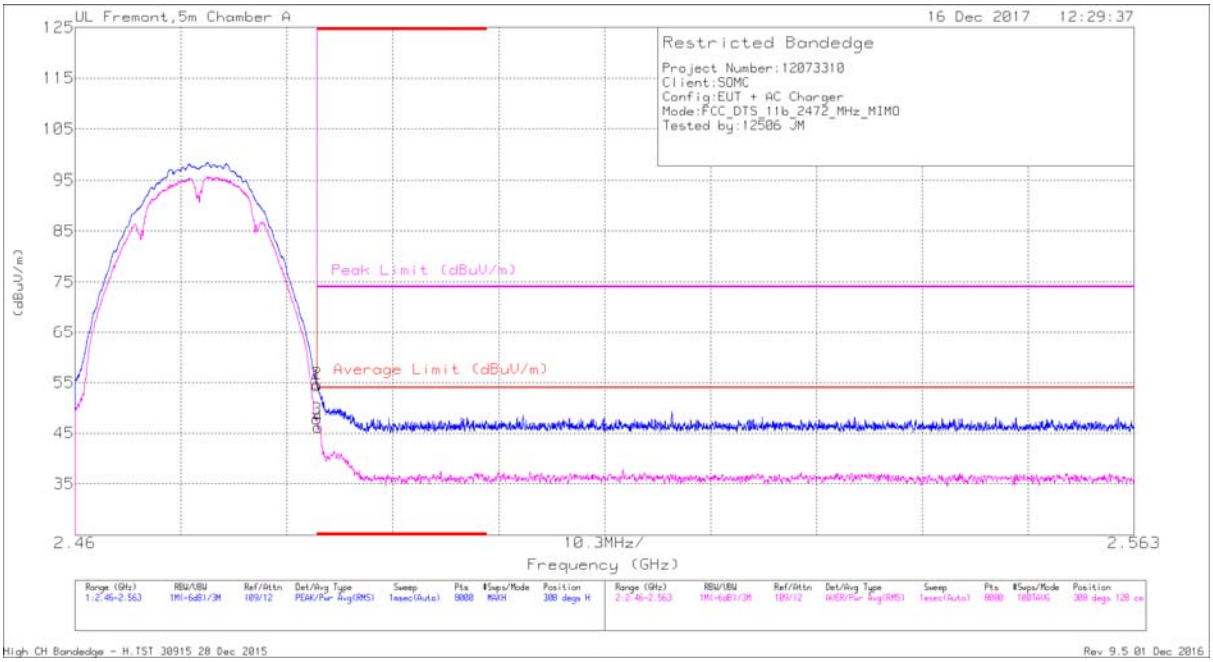
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 13)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.28	Pk	32.3	-23.2	54.38	-	-	74	-19.62	308	128	H
2	* 2.484	45.71	Pk	32.3	-23.2	54.81	-	-	74	-19.19	308	128	H
3	* 2.484	38.76	RMS	32.3	-23.2	47.86	54	-6.14	-	-	308	128	H
4	* 2.484	37.09	RMS	32.3	-23.2	46.19	54	-7.81	-	-	308	128	H

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

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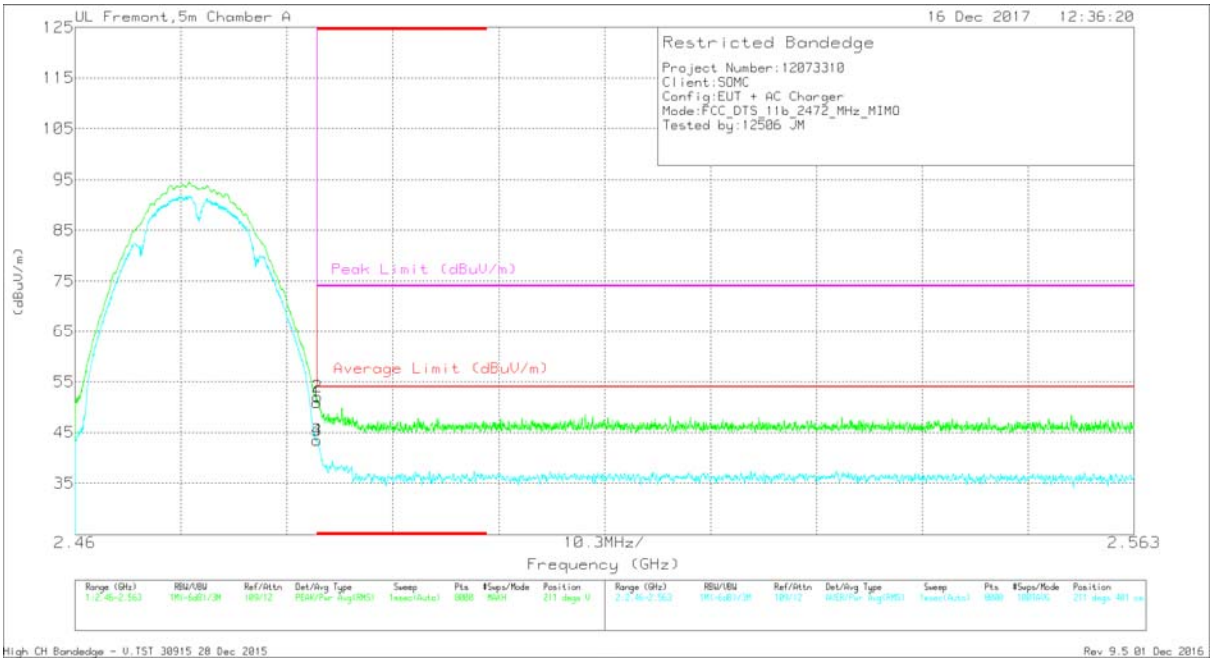
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.87	Pk	32.3	-23.2	50.97	-	-	74	-23.03	211	401	V
2	* 2.484	42.96	Pk	32.3	-23.2	52.06	-	-	74	-21.94	211	401	V
3	* 2.484	34.32	RMS	32.3	-23.2	43.42	54	-10.58	-	-	211	401	V
4	* 2.484	34.39	RMS	32.3	-23.2	43.49	54	-10.51	-	-	211	401	V

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

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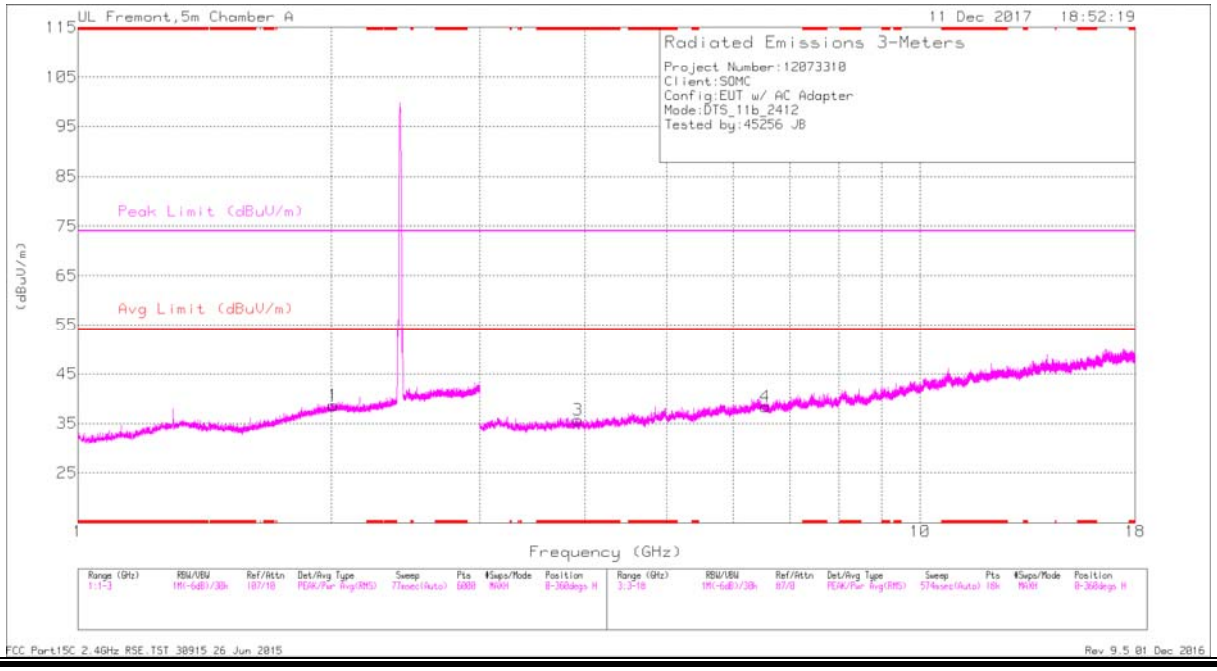
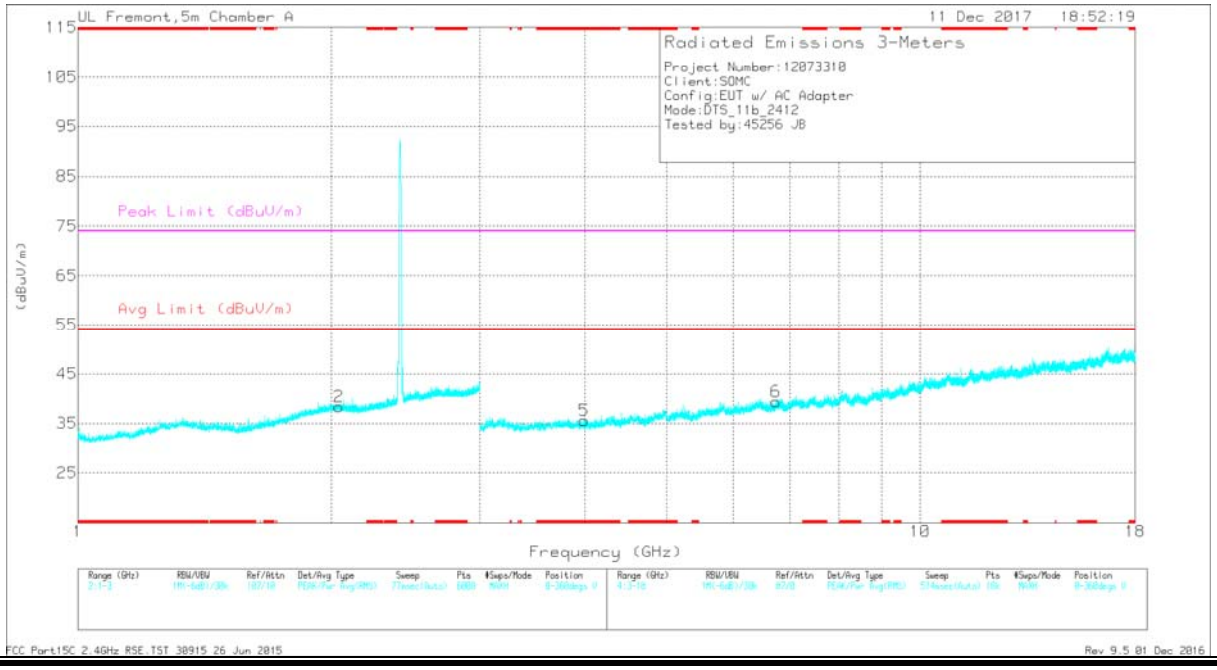
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.923	37.07	PK2	33.2	-28.3	0	41.97	-	-	74	-32.03	100	236	H
* 3.921	25.53	MAv1	33.2	-28.3	0	30.43	54	-23.57	-	-	100	236	H
* 3.991	36.63	PK2	33.3	-28.2	0	41.73	-	-	74	-32.27	231	268	V
* 3.988	25.08	MAv1	33.3	-28.2	0	30.18	54	-23.82	-	-	231	268	V
2.011	36.14	PK2	31.4	-23.2	0	44.34	-	-	-	-	28	191	H
2.011	24.59	MAv1	31.4	-23.2	0	32.79	-	-	-	-	28	191	H
2.041	36.91	PK2	31.4	-23.3	0	45.01	-	-	-	-	5	308	V
2.041	24.74	MAv1	31.4	-23.3	0	32.84	-	-	-	-	5	308	V
6.547	22.37	MAv1	35.6	-24.5	0	33.47	-	-	-	-	67	140	H
6.55	33.78	PK2	35.6	-24.6	0	44.78	-	-	-	-	67	140	H
6.739	22.3	MAv1	35.5	-23.7	0	34.1	-	-	-	-	240	117	V
6.74	34.27	PK2	35.5	-23.7	0	46.07	-	-	-	-	240	117	V

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

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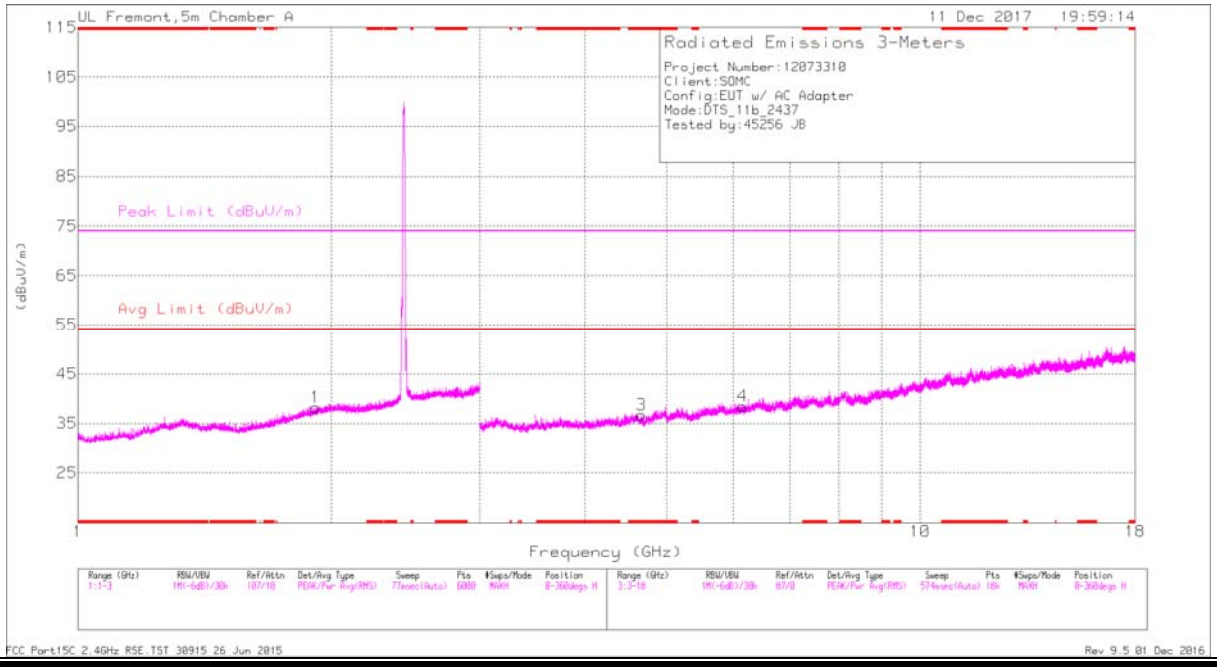
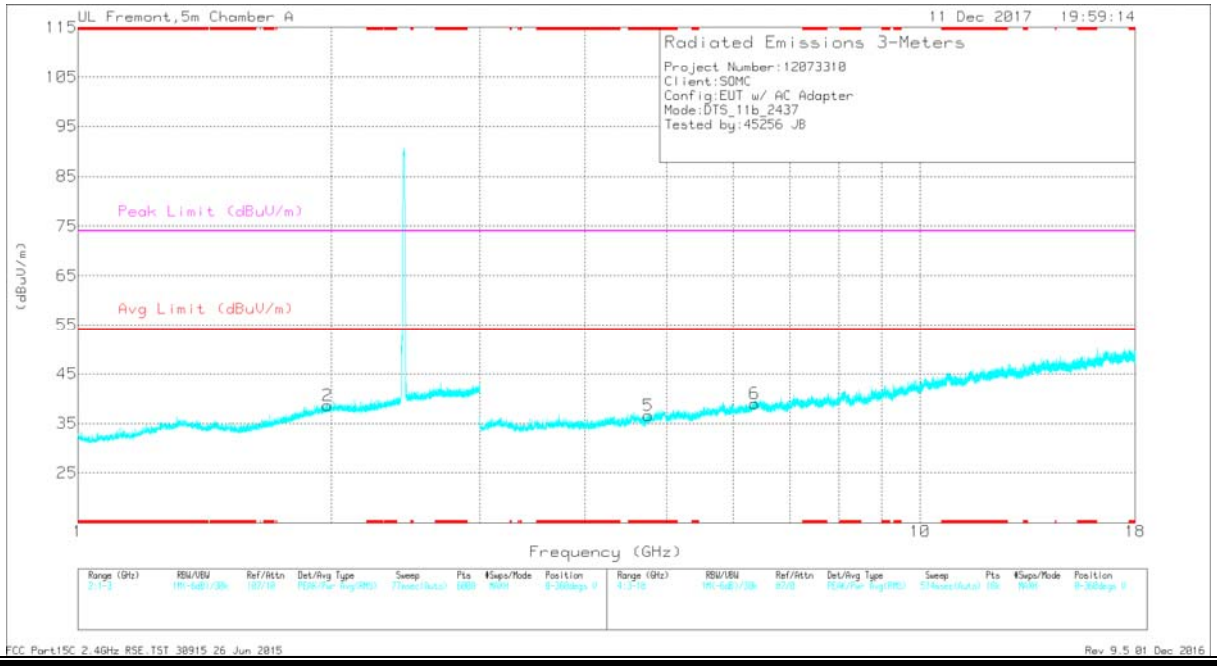
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.672	37.35	PK2	34	-27.7	0	43.65	-	-	74	-30.35	17	398	H
* 4.671	25.26	MAv1	34	-27.7	0	31.56	54	-22.44	-	-	17	398	H
* 4.759	36.14	PK2	34.1	-27.3	0	42.94	-	-	74	-31.06	180	381	V
* 4.756	24.56	MAv1	34.1	-27.4	0	31.26	54	-22.74	-	-	180	381	V
1.914	36.57	PK2	31.1	-23.3	0	44.37	-	-	-	-	13	122	H
1.916	24.39	MAv1	31.1	-23.3	0	32.19	-	-	-	-	13	122	H
1.978	36.2	PK2	31.4	-23.2	0	44.4	-	-	-	-	176	385	V
1.979	24.37	MAv1	31.4	-23.2	0	32.57	-	-	-	-	176	385	V
6.152	33.95	PK2	35.5	-24.6	0	44.85	-	-	-	-	270	389	H
6.153	22.6	MAv1	35.5	-24.6	0	33.5	-	-	-	-	270	389	H
6.362	35.06	PK2	35.8	-24.9	0	45.96	-	-	-	-	203	386	V
6.364	23.3	MAv1	35.8	-24.9	0	34.2	-	-	-	-	203	386	V

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

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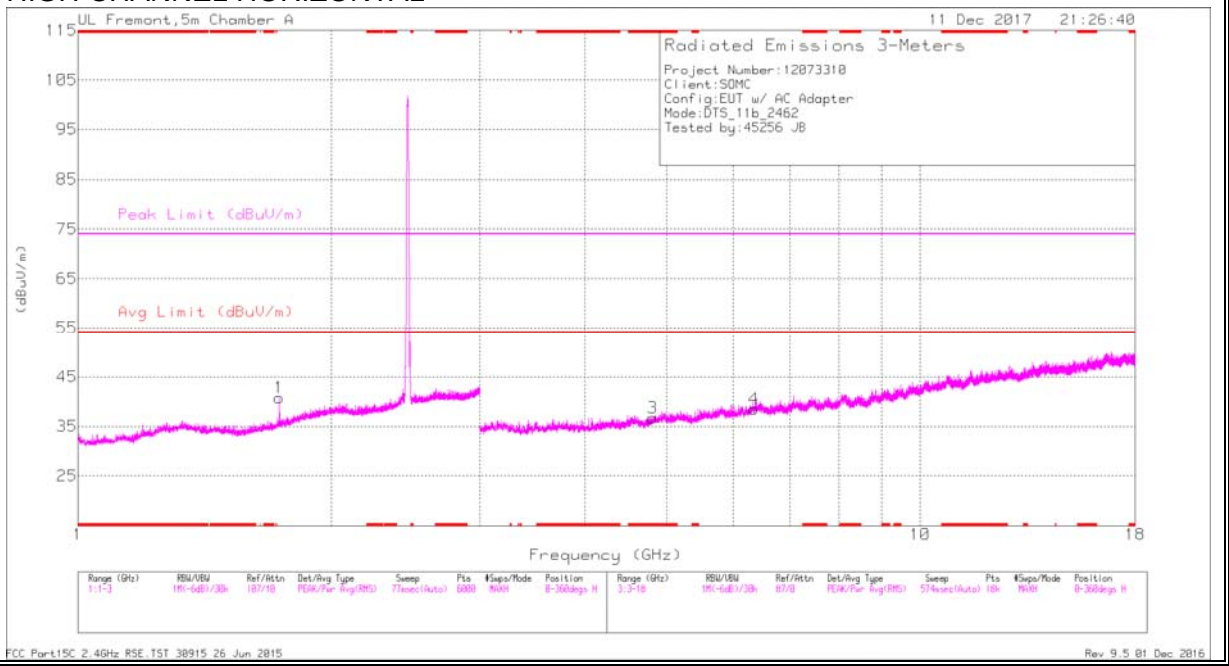
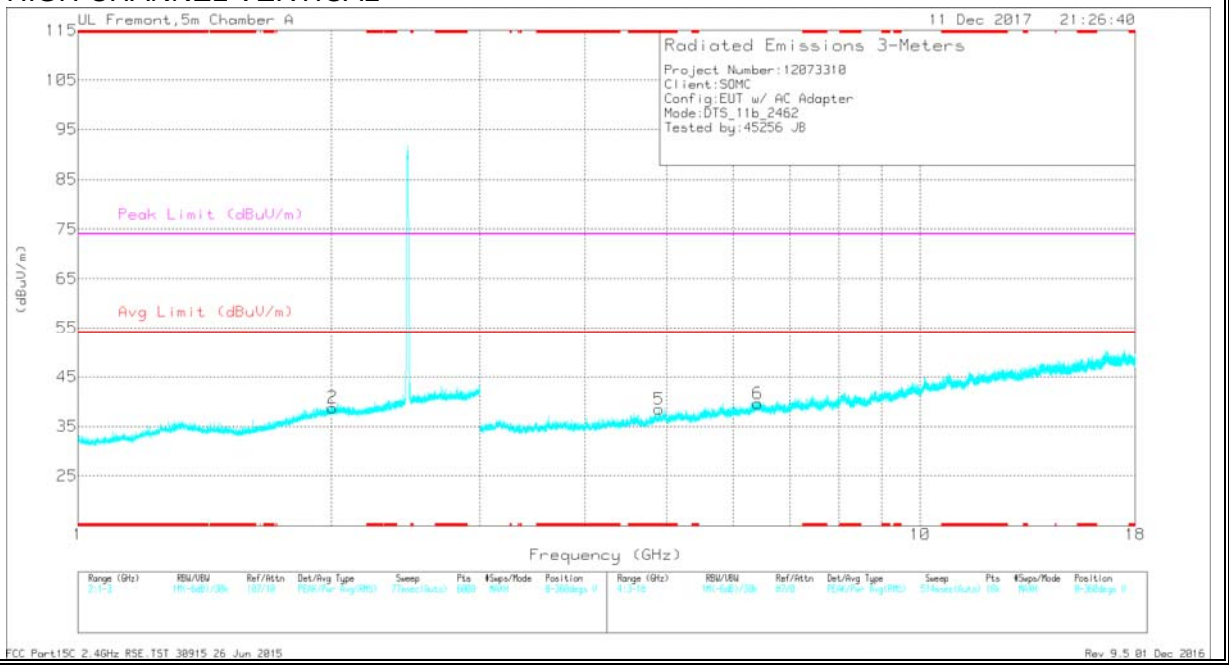
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.81	35.21	PK2	34.2	-26.7	0	42.71	-	-	74	-31.29	114	400	H
* 4.807	23.99	MAv1	34.2	-26.8	0	31.39	54	-22.61	-	-	114	400	H
* 4.896	35.28	PK2	34.1	-26.2	0	43.18	-	-	74	-30.82	94	150	V
* 4.896	24.13	MAv1	34.1	-26.2	0	32.03	54	-21.97	-	-	94	150	V
1.735	36.67	PK2	29.5	-23.5	0	42.67	-	-	-	-	149	353	H
1.736	24.36	MAv1	29.5	-23.5	0	30.36	-	-	-	-	149	353	H
2.007	36.64	PK2	31.4	-23.2	0	44.84	-	-	-	-	72	203	V
2.009	24.58	MAv1	31.4	-23.2	0	32.78	-	-	-	-	72	203	V
6.346	35.16	PK2	35.7	-25	0	45.86	-	-	-	-	114	363	H
6.346	23.03	MAv1	35.7	-25	0	33.73	-	-	-	-	114	363	H
6.412	22.87	MAv1	35.8	-24.2	0	34.47	-	-	-	-	293	400	V
6.415	34.16	PK2	35.8	-24.3	0	45.66	-	-	-	-	293	400	V

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

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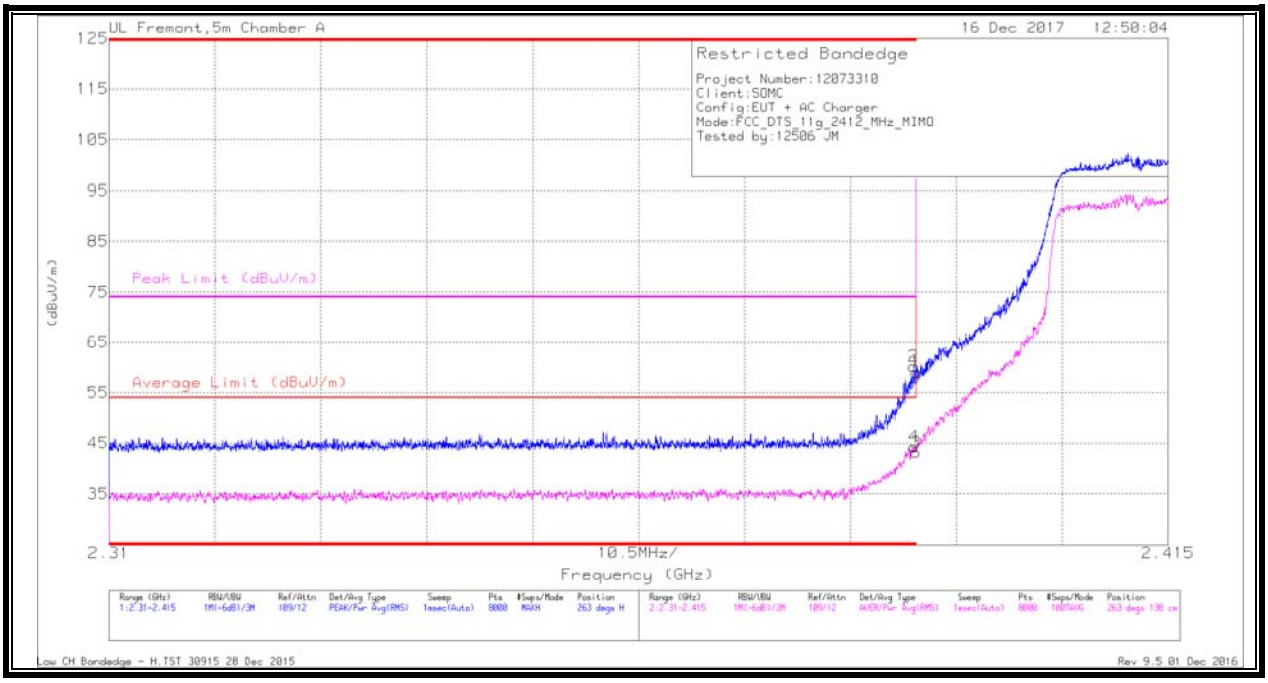
10.2.2 11g MIMO MODE IN THE 2.4GHz BAND

AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	50.48	Pk	31.8	-23.3	58.98	-	-	74	-15.02	263	138	H
2	* 2.39	51.74	Pk	31.8	-23.3	60.24	-	-	74	-13.76	263	138	H
3	* 2.39	34.66	RMS	31.8	-23.3	43.16	54	-10.84	-	-	263	138	H
4	* 2.39	35.8	RMS	31.8	-23.3	44.3	54	-9.7	-	-	263	138	H

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

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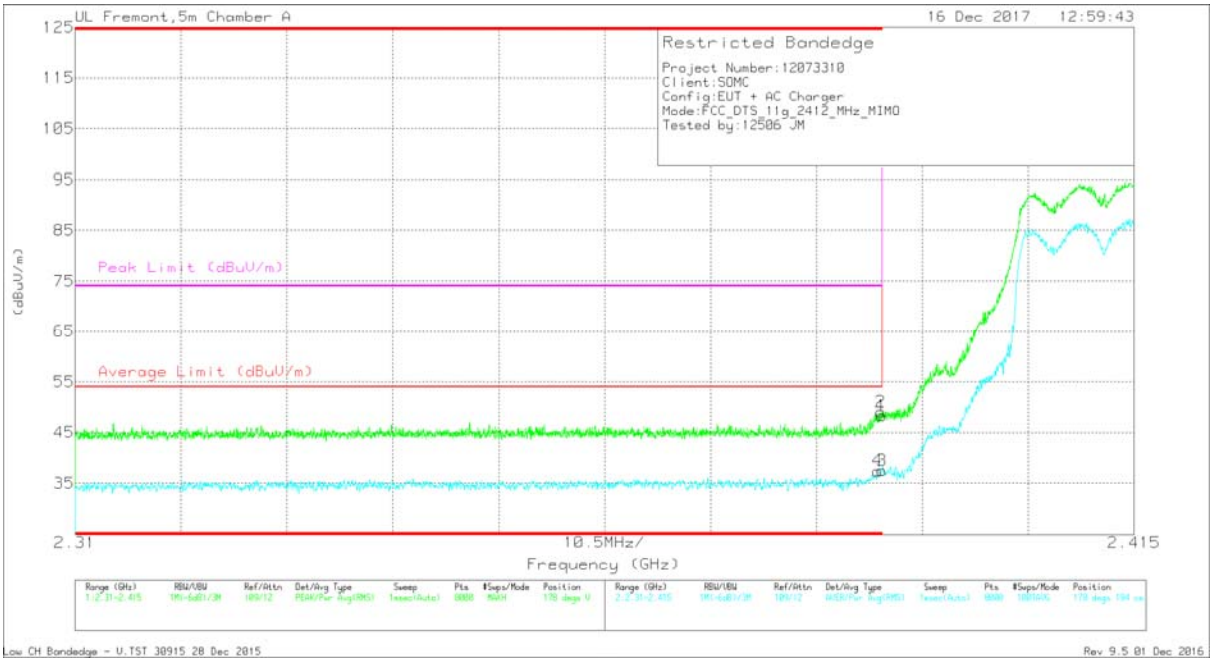
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.82	Pk	31.8	-23.3	48.32	-	-	74	-25.68	178	194	V
2	* 2.39	40.54	Pk	31.8	-23.3	49.04	-	-	74	-24.96	178	194	V
3	* 2.39	29.02	RMS	31.8	-23.3	37.52	54	-16.48	-	-	178	194	V
4	* 2.39	28.94	RMS	31.8	-23.3	37.44	54	-16.56	-	-	178	194	V

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

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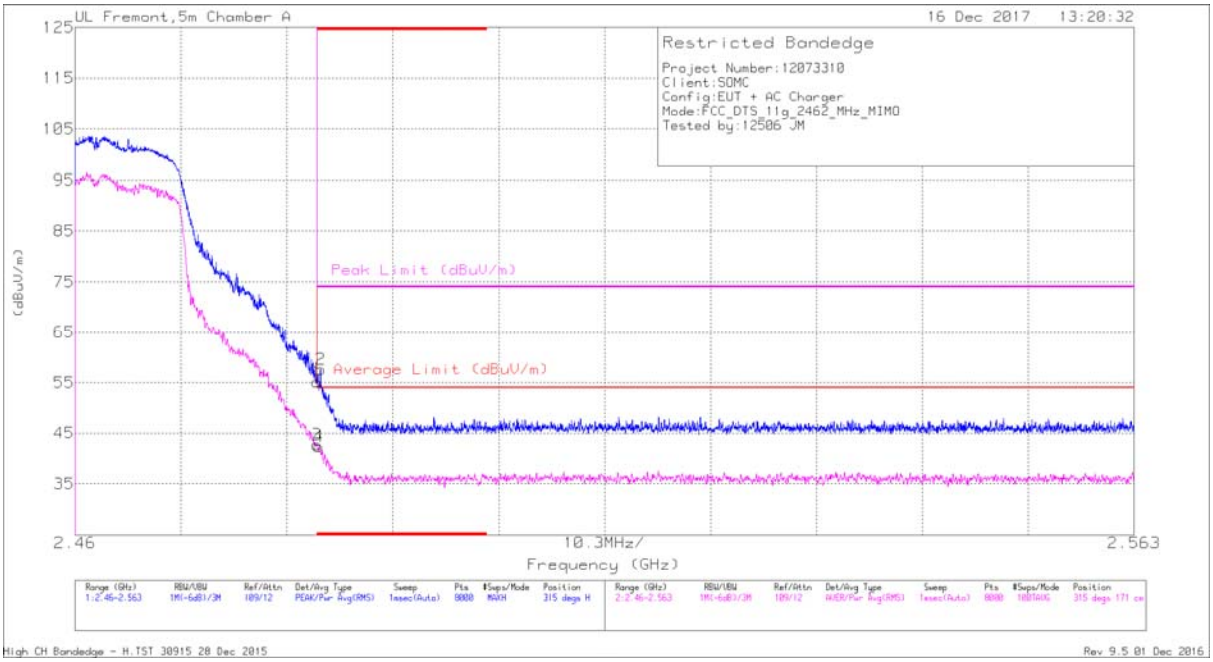
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.05	Pk	32.3	-23.2	55.15	-	-	74	-18.85	315	171	H
2	* 2.484	48.49	Pk	32.3	-23.2	57.59	-	-	74	-16.41	315	171	H
3	* 2.484	33.62	RMS	32.3	-23.2	42.72	54	-11.28	-	-	315	171	H
4	* 2.484	33.25	RMS	32.3	-23.2	42.35	54	-11.65	-	-	315	171	H

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

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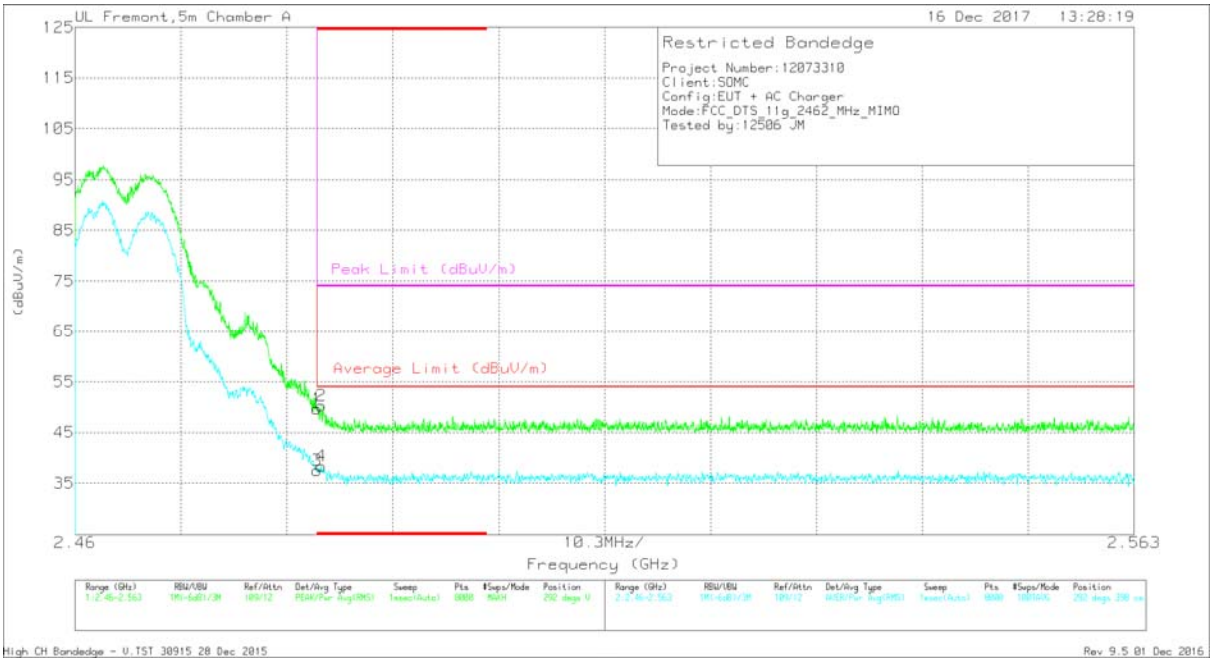
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.58	Pk	32.3	-23.2	49.68	-	-	74	-24.32	292	398	V
2	* 2.484	41.24	Pk	32.3	-23.2	50.34	-	-	74	-23.66	292	398	V
3	* 2.484	28.44	RMS	32.3	-23.2	37.54	54	-16.46	-	-	292	398	V
4	* 2.484	29.25	RMS	32.3	-23.2	38.35	54	-15.65	-	-	292	398	V

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

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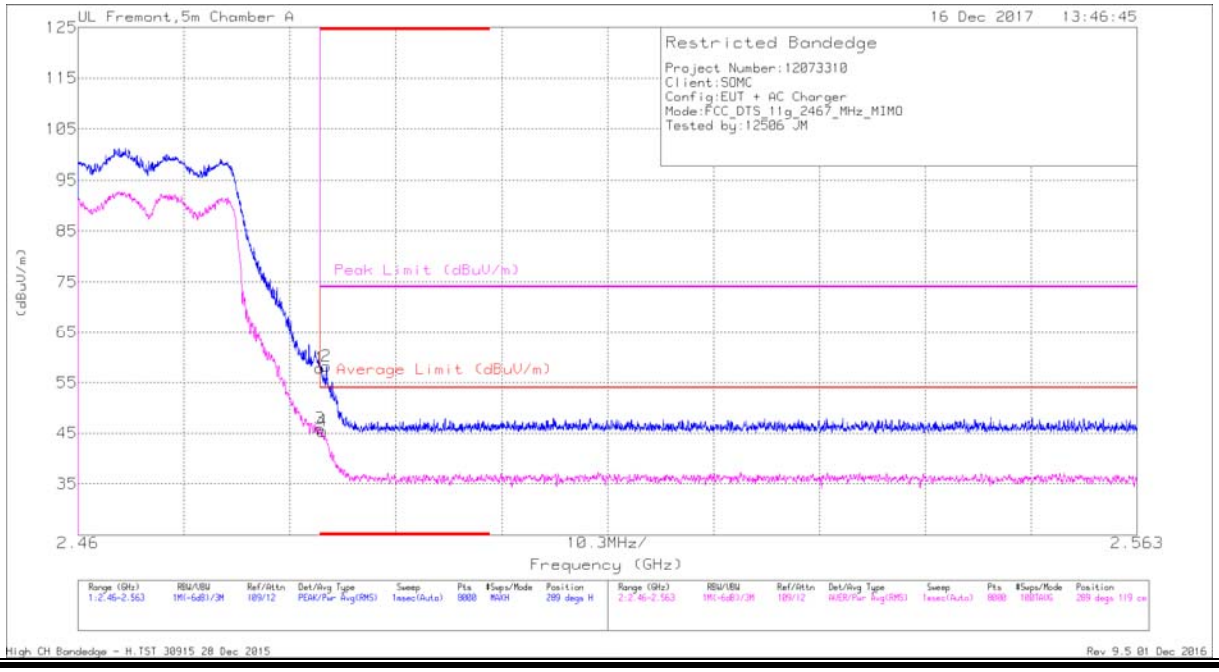
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 12)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	48.74	Pk	32.3	-23.2	57.84	-	-	74	-16.16	289	119	H
2	* 2.484	49.15	Pk	32.3	-23.2	58.25	-	-	74	-15.75	289	119	H
3	* 2.484	36.9	RMS	32.3	-23.2	46	54	-8	-	-	289	119	H
4	* 2.484	36.29	RMS	32.3	-23.2	45.39	54	-8.61	-	-	289	119	H

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

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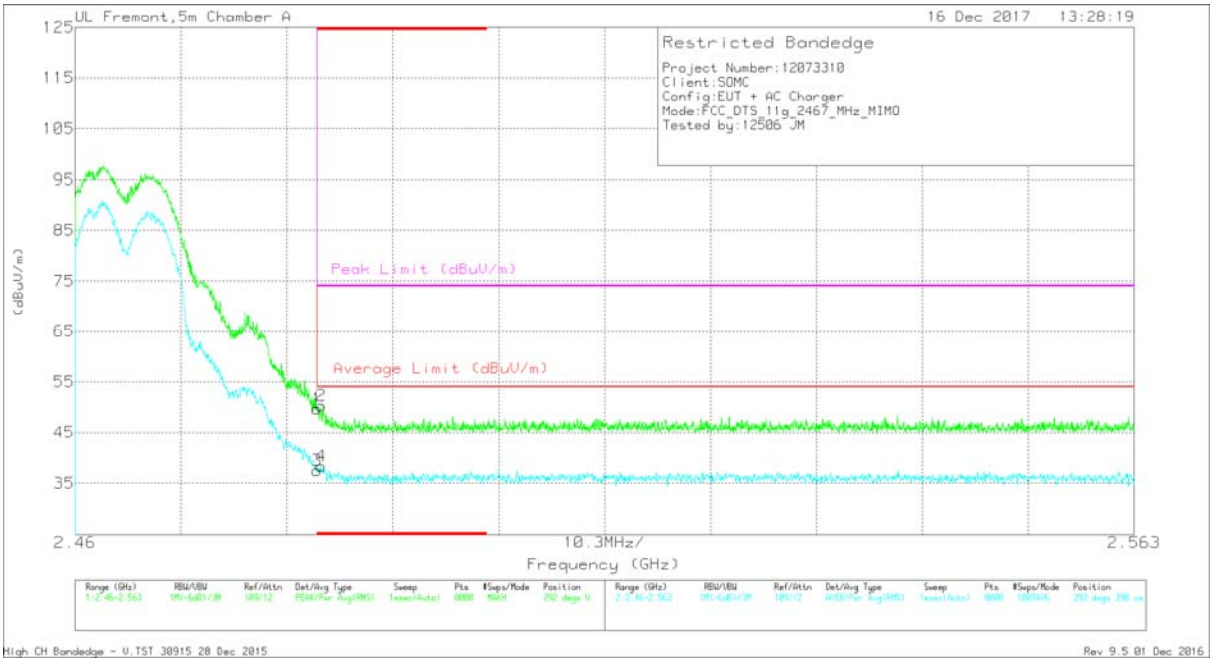
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.58	Pk	32.3	-23.2	49.68	-	-	74	-24.32	292	398	V
2	* 2.484	41.24	Pk	32.3	-23.2	50.34	-	-	74	-23.66	292	398	V
3	* 2.484	28.44	RMS	32.3	-23.2	37.54	54	-16.46	-	-	292	398	V
4	* 2.484	29.25	RMS	32.3	-23.2	38.35	54	-15.65	-	-	292	398	V

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

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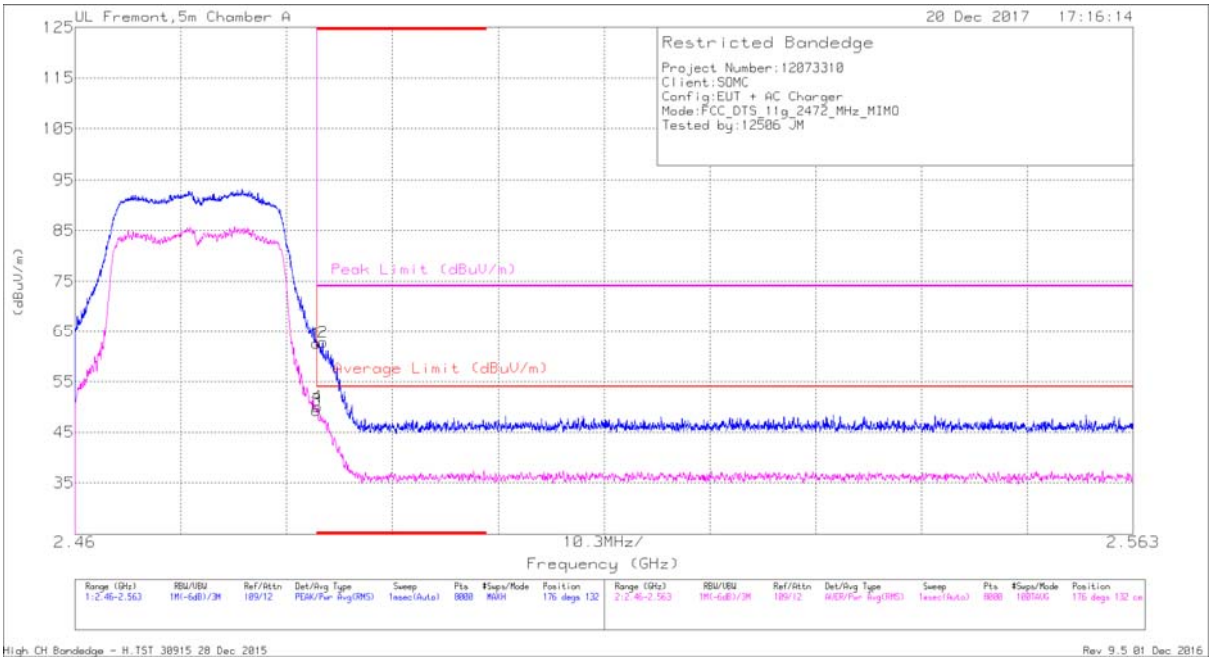
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 13)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	53.5	Pk	32.3	-23.2	62.6	-	-	74	-11.4	176	132	H
2	* 2.484	53.77	Pk	32.3	-23.2	62.87	-	-	74	-11.13	176	132	H
3	* 2.484	40.26	RMS	32.3	-23.2	49.36	54	-4.64	-	-	176	132	H
4	* 2.484	40.97	RMS	32.3	-23.2	50.07	54	-3.93	-	-	176	132	H

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

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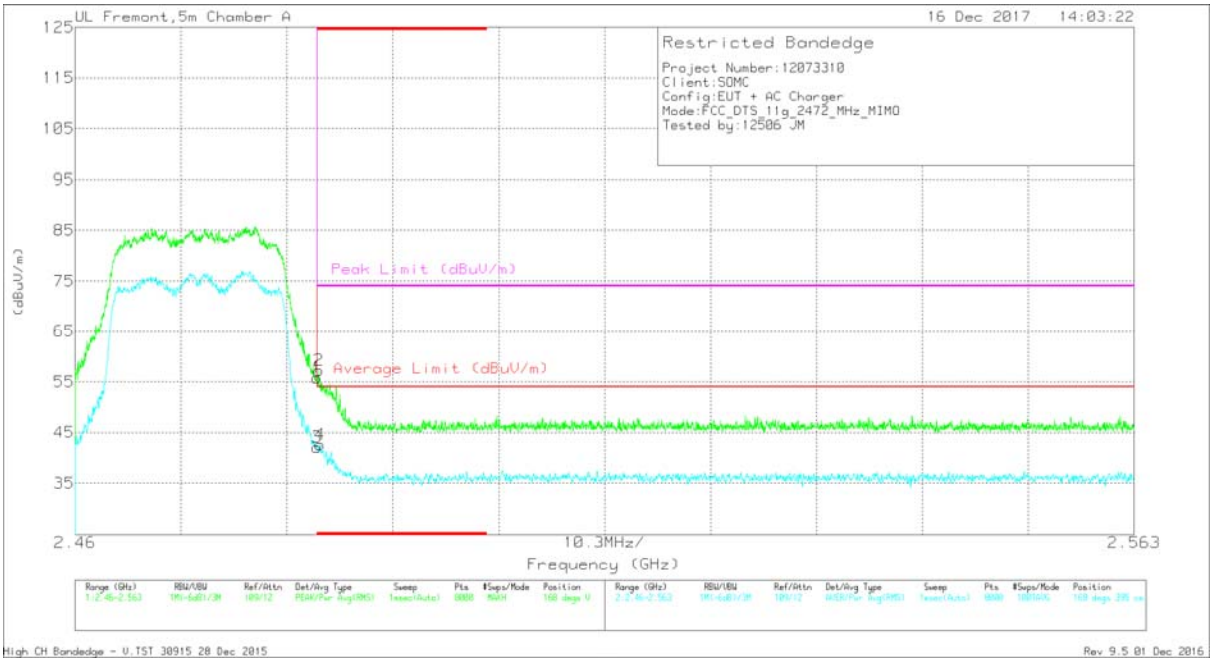
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.63	Pk	32.3	-23.2	55.73	-	-	74	-18.27	168	395	V
2	* 2.484	48.12	Pk	32.3	-23.2	57.22	-	-	74	-16.78	168	395	V
3	* 2.484	33.05	RMS	32.3	-23.2	42.15	54	-11.85	-	-	168	395	V
4	* 2.484	33.51	RMS	32.3	-23.2	42.61	54	-11.39	-	-	168	395	V

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

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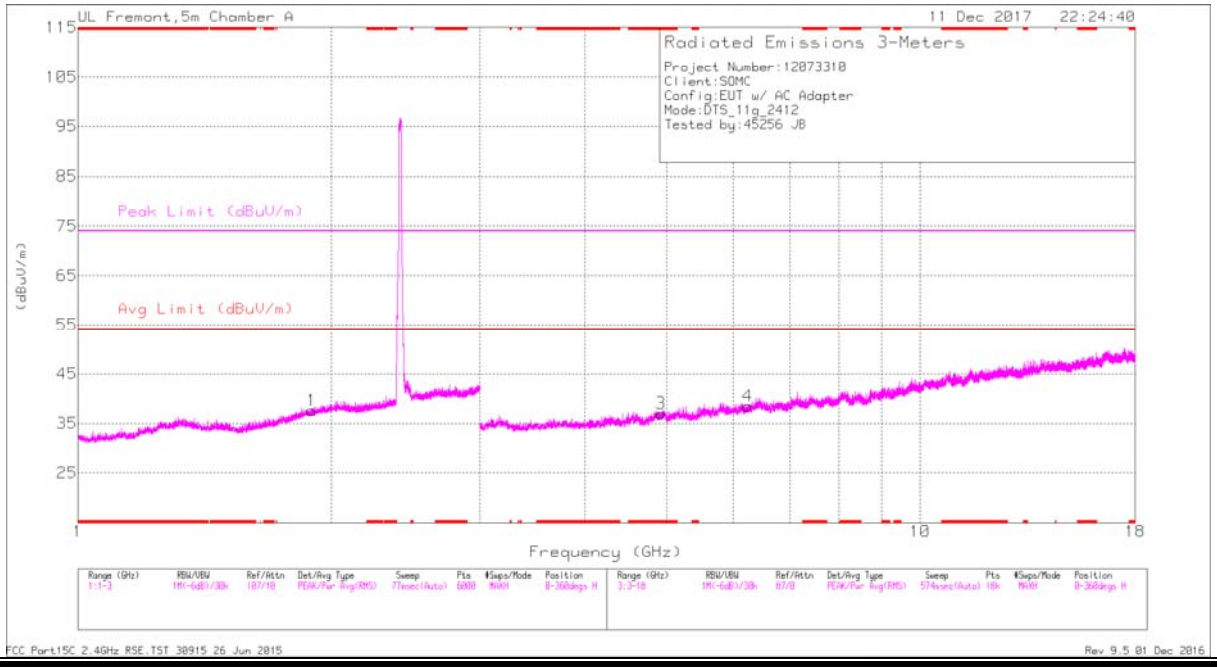
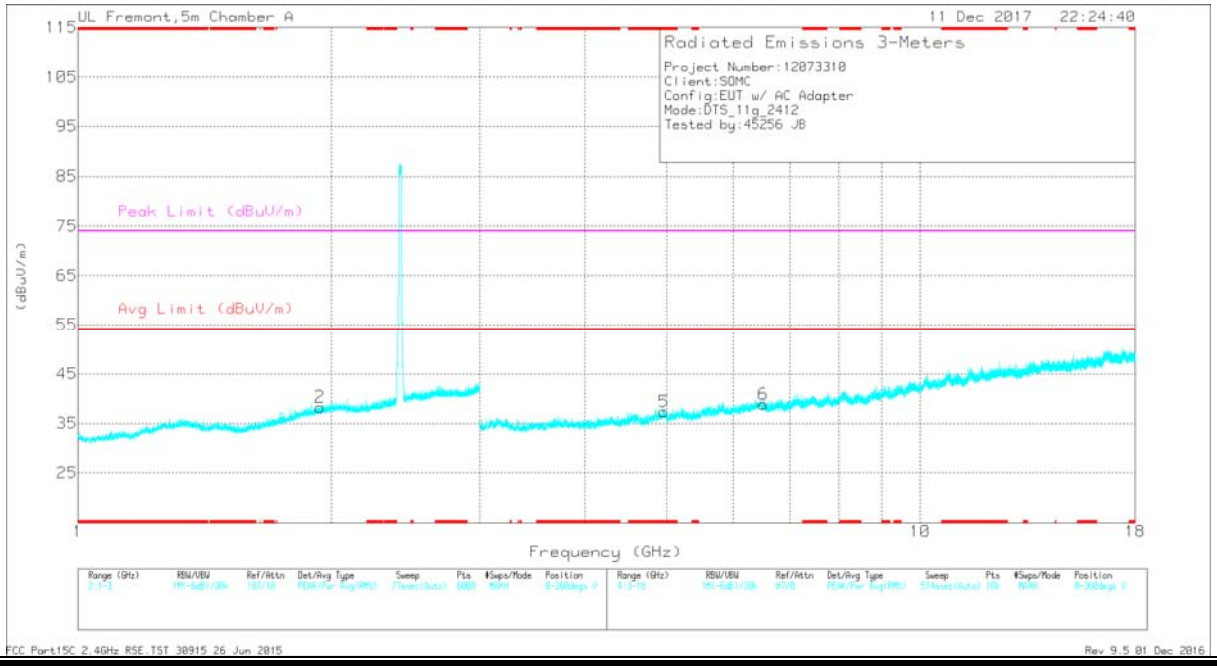
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	35.66	PK2	34.1	-26.5	0	43.26	-	-	74	-30.74	7	233	H
* 4.926	24.37	MAv1	34.2	-26.5	0	32.07	54	-21.93	-	-	7	233	H
* 4.969	37	PK2	34.2	-27.1	0	44.1	-	-	74	-29.9	288	169	V
* 4.969	25.4	MAv1	34.2	-27.1	0	32.5	54	-21.5	-	-	288	169	V
1.894	24.34	MAv1	31	-23.3	0	32.04	-	-	-	-	228	345	H
1.896	37.11	PK2	31	-23.3	0	44.81	-	-	-	-	228	345	H
1.941	36.26	PK2	31.3	-23.2	0	44.36	-	-	-	-	192	143	V
1.941	24.28	MAv1	31.3	-23.2	0	32.38	-	-	-	-	192	143	V
6.239	23.17	MAv1	35.6	-25.4	0	33.37	-	-	-	-	110	368	H
6.241	34.86	PK2	35.6	-25.4	0	45.06	-	-	-	-	110	368	H
6.517	22.29	MAv1	35.7	-24	0	33.99	-	-	-	-	262	263	V
6.518	33.88	PK2	35.7	-24	0	45.58	-	-	-	-	262	263	V

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

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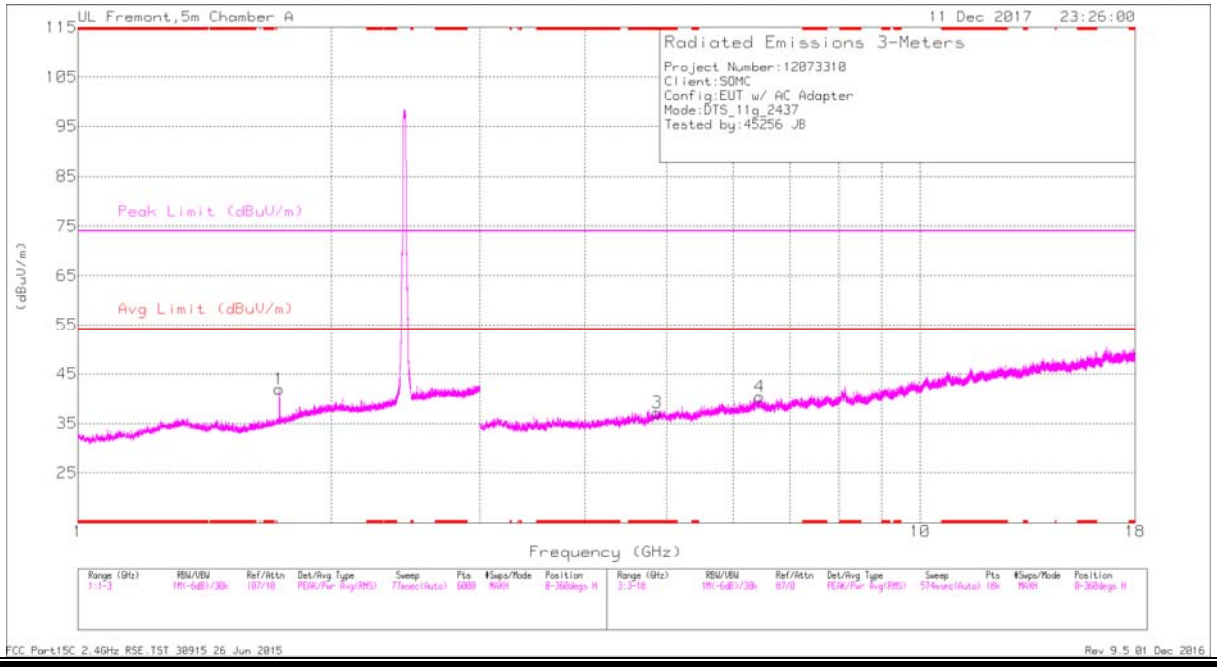
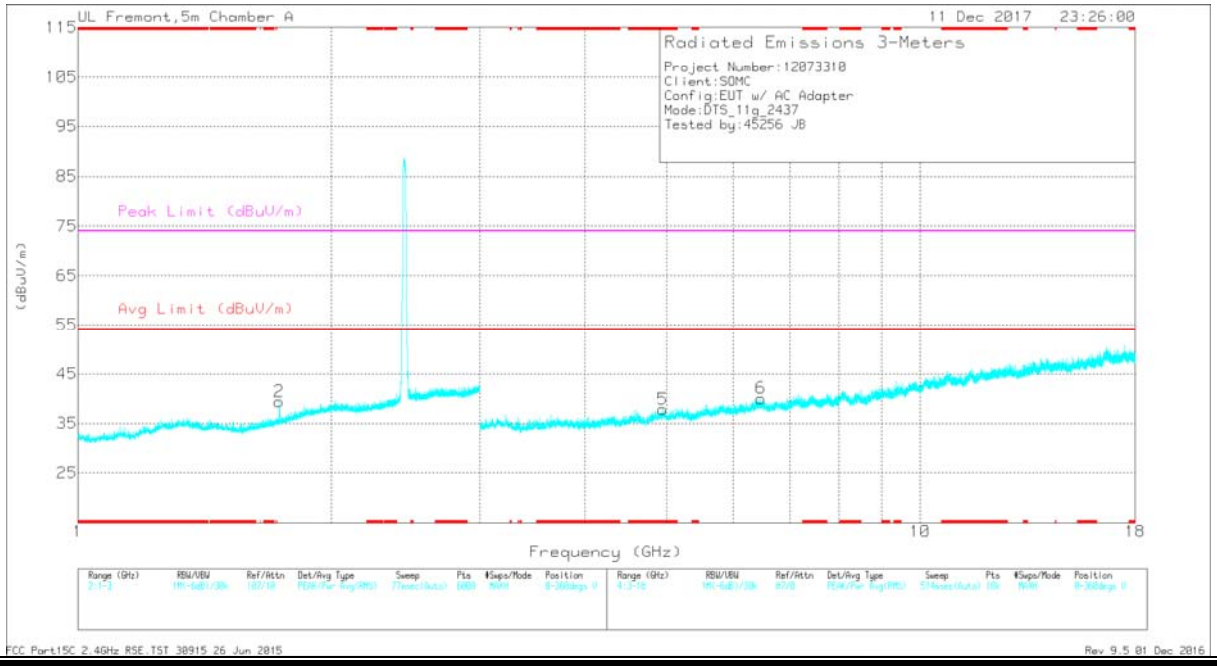
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.875	35.46	PK2	34.1	-26.3	0	43.26	-	-	74	-30.74	131	286	H
* 4.875	24.19	MAv1	34.1	-26.3	0	31.99	54	-22.01	-	-	131	286	H
* 4.948	36.69	PK2	34.2	-26.9	0	43.99	-	-	74	-30.01	188	139	V
* 4.951	25.34	MAv1	34.2	-26.9	0	32.64	54	-21.36	-	-	188	139	V
1.732	24.34	MAv1	29.5	-23.5	0	30.34	-	-	-	-	123	159	H
1.732	36.36	PK2	29.5	-23.5	0	42.36	-	-	-	-	254	142	V
1.733	36.55	PK2	29.5	-23.5	0	42.55	-	-	-	-	123	159	H
1.733	24.32	MAv1	29.5	-23.5	0	30.32	-	-	-	-	254	142	V
6.45	22.49	MAv1	35.8	-23.8	0	34.49	-	-	-	-	326	239	H
6.453	34.13	PK2	35.8	-23.7	0	46.23	-	-	-	-	326	239	H
6.472	22.11	MAv1	35.7	-23.8	0	34.01	-	-	-	-	233	127	V
6.474	33.52	PK2	35.7	-23.8	0	45.42	-	-	-	-	233	127	V

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

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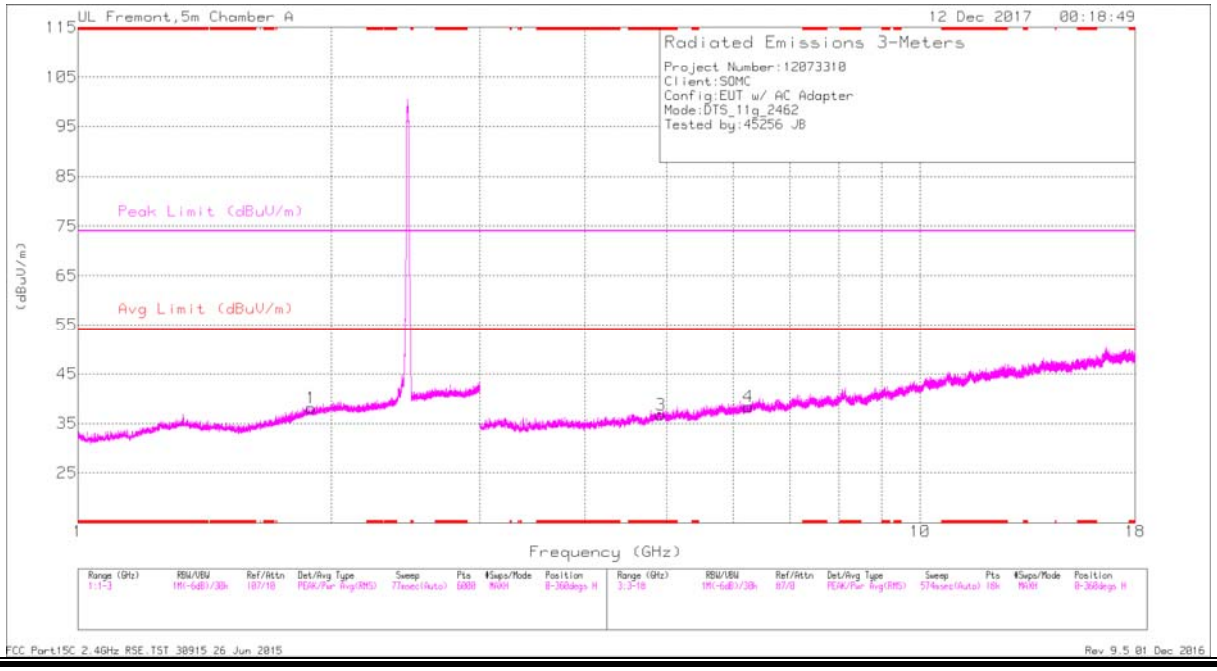
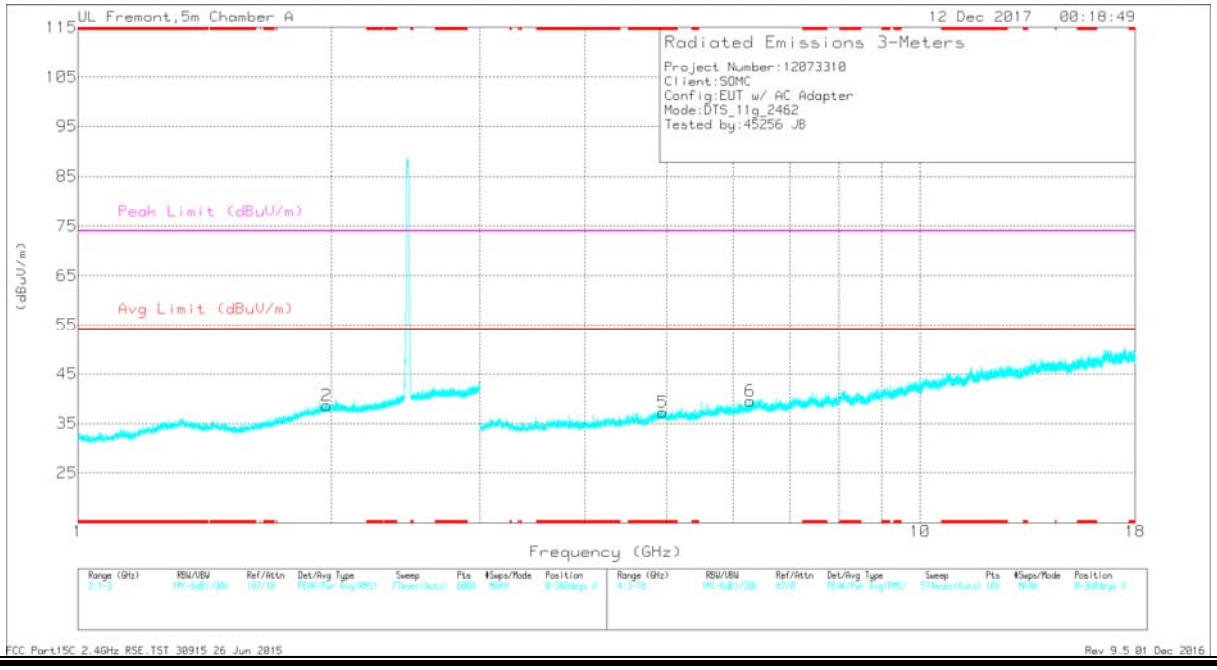
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.919	35.95	PK2	34.1	-26.4	0	43.65	-	-	74	-30.35	223	388	H
* 4.92	24.69	MAv1	34.1	-26.4	0	32.39	54	-21.61	-	-	223	388	H
* 4.95	36.36	PK2	34.2	-26.9	0	43.66	-	-	74	-30.34	353	272	V
* 4.951	24.93	MAv1	34.2	-26.9	0	32.23	54	-21.77	-	-	353	272	V
1.892	24.38	MAv1	31	-23.3	0	32.08	-	-	-	-	338	262	H
1.894	37.02	PK2	31	-23.3	0	44.72	-	-	-	-	338	262	H
1.972	24.31	MAv1	31.4	-23.3	0	32.41	-	-	-	-	275	179	V
1.974	36.21	PK2	31.4	-23.3	0	44.31	-	-	-	-	275	179	V
6.252	23.16	MAv1	35.6	-25.5	0	33.26	-	-	-	-	160	258	H
6.255	34.53	PK2	35.6	-25.5	0	44.63	-	-	-	-	160	258	H
6.283	22.96	MAv1	35.7	-25.3	0	33.36	-	-	-	-	318	308	V
6.286	34.25	PK2	35.7	-25.4	0	44.55	-	-	-	-	318	308	V

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

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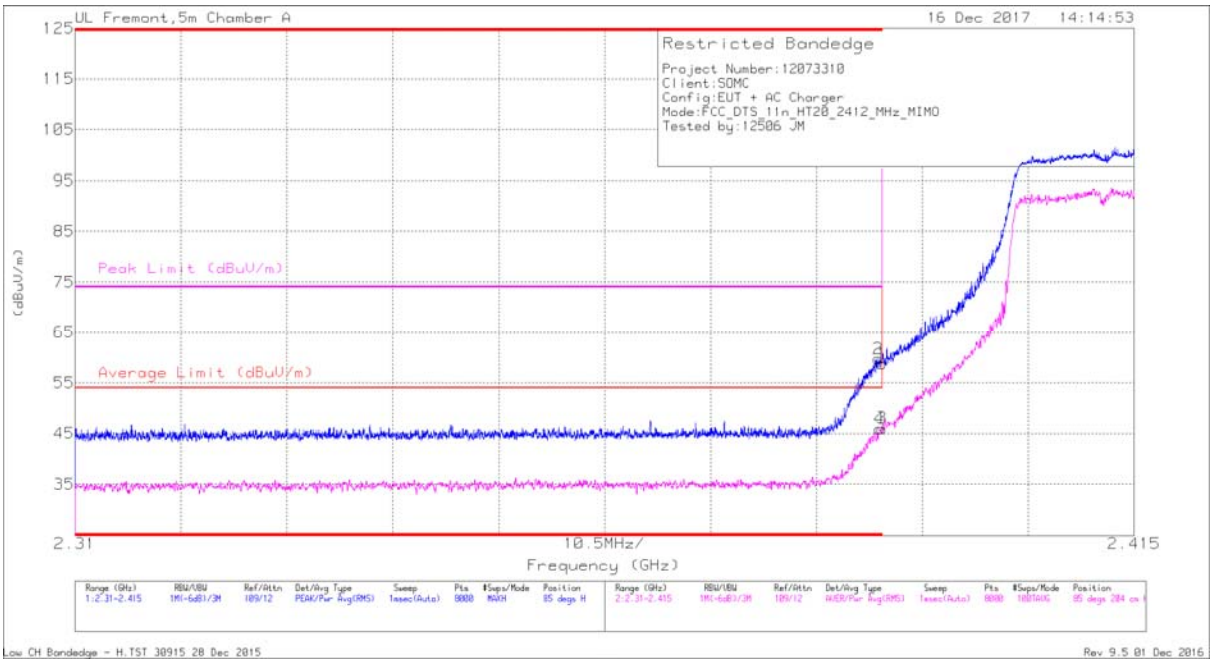
10.2.3 11n HT20 MIMO MODE IN THE 2.4GHz BAND

AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	50.23	Pk	31.8	-23.3	0	58.73	-	-	74	-15.27	85	204	H
2	* 2.39	51.2	Pk	31.8	-23.3	0	59.7	-	-	74	-14.3	85	204	H
3	* 2.39	37.4	RMS	31.8	-23.3	.11	46.01	54	-7.99	-	-	85	204	H
4	* 2.39	37.35	RMS	31.8	-23.3	.11	45.96	54	-8.04	-	-	85	204	H

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

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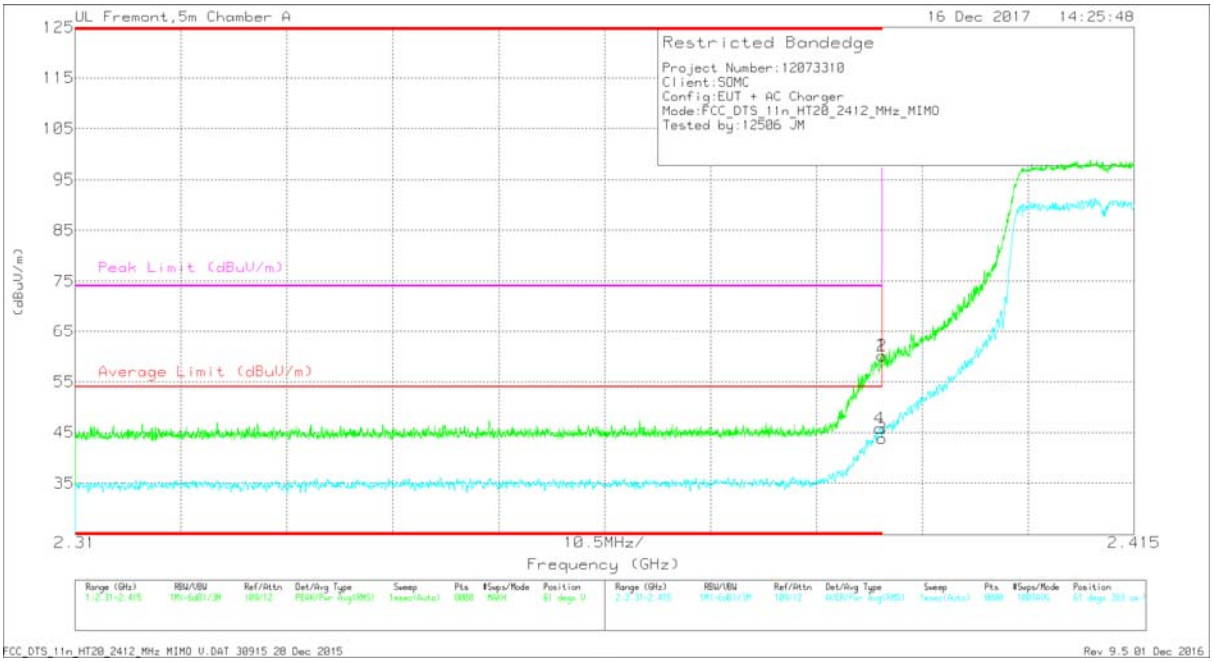
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	51.66	Pk	31.8	-23.3	0	60.16	-	-	74	-13.84	61	383	V
2	* 2.39	51.64	Pk	31.8	-23.3	0	60.14	-	-	74	-13.86	61	383	V
3	* 2.39	35.37	RMS	31.8	-23.3	.11	43.98	54	-10.02	-	-	61	383	V
4	* 2.39	37.3	RMS	31.8	-23.3	.11	45.91	54	-8.09	-	-	61	383	V

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

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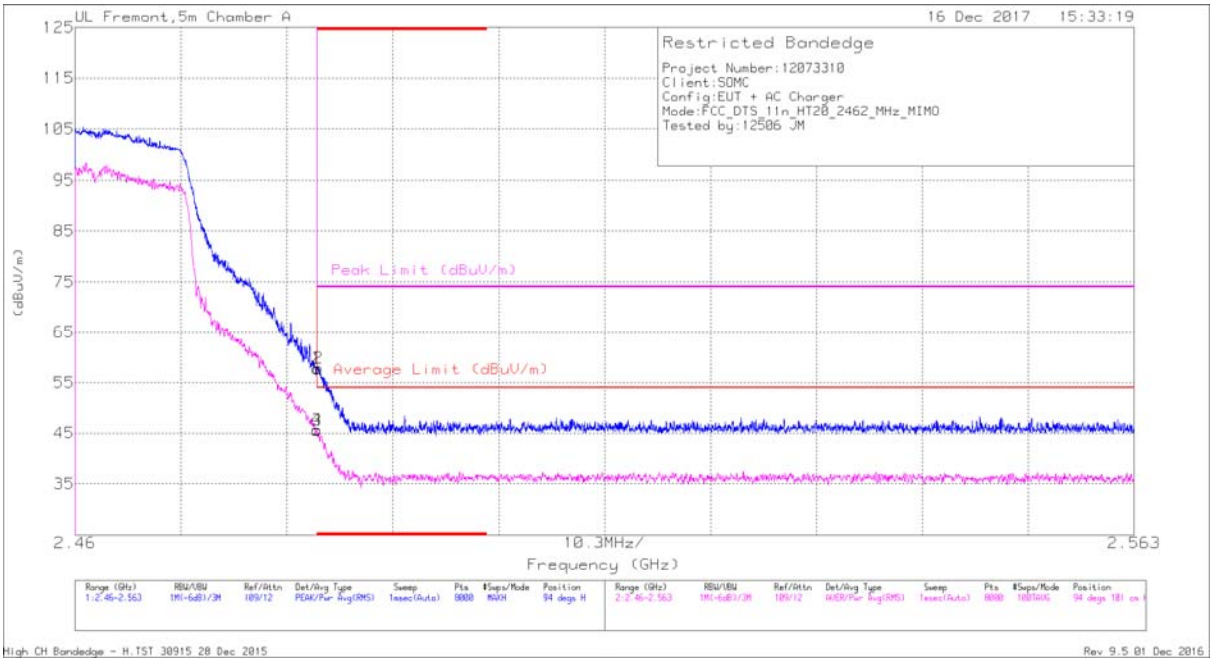
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	* 2.484	48.63	Pk	32.3	-23.2	0	57.73	-	-	74	-16.27	94	101	H
2	* 2.484	48.81	Pk	32.3	-23.2	0	57.91	-	-	74	-16.09	94	101	H
3	* 2.484	36.4	RMS	32.3	-23.2	.11	45.61	54	-8.39	-	-	94	101	H
4	* 2.484	36.46	RMS	32.3	-23.2	.11	45.67	54	-8.33	-	-	94	101	H

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

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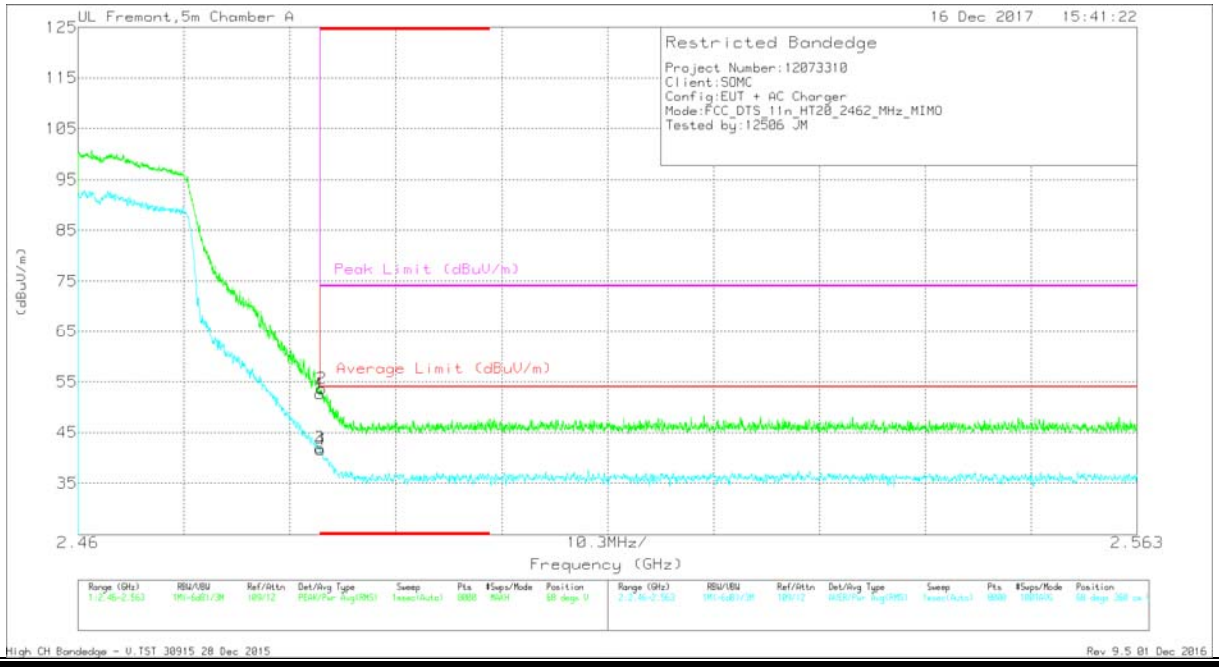
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	* 2.484	43.5	Pk	32.3	-23.2	0	52.6	-	-	74	-21.4	68	360	V
2	* 2.484	44.56	Pk	32.3	-23.2	0	53.66	-	-	74	-20.34	68	360	V
3	* 2.484	32.82	RMS	32.3	-23.2	0.11	42.03	54	-11.97	-	-	68	360	V
4	* 2.484	32.47	RMS	32.3	-23.2	0.11	41.68	54	-12.32	-	-	68	360	V

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

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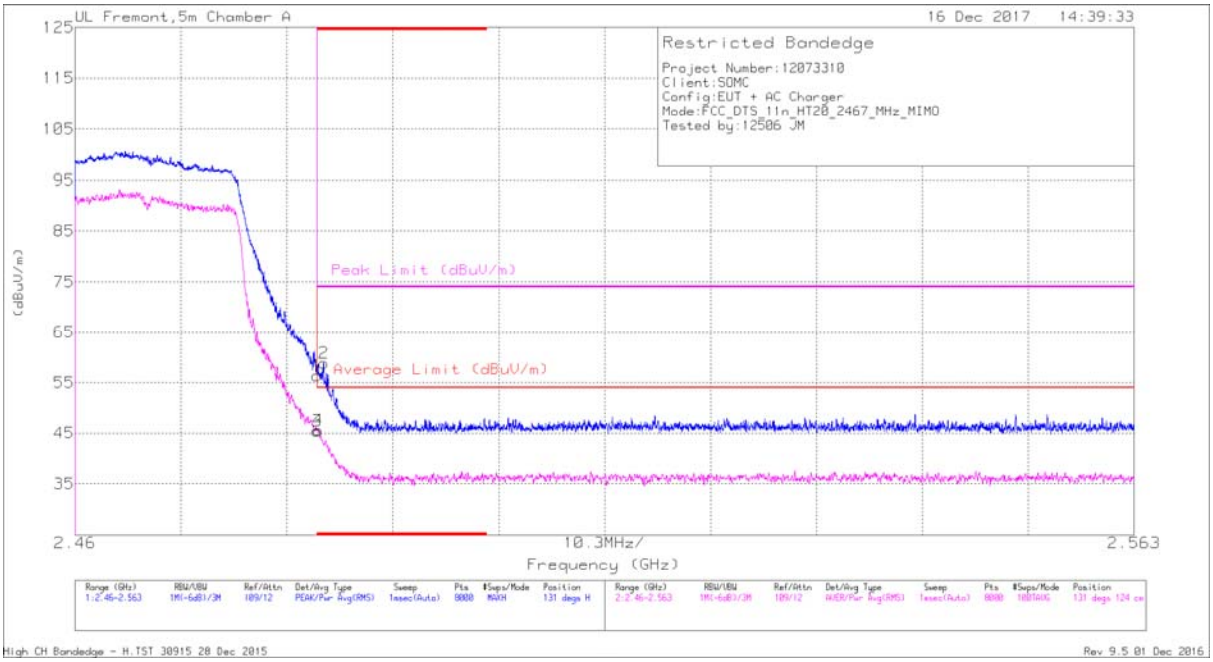
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 12)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	* 2.484	47.33	Pk	32.3	-23.2	0	56.43	-	-	74	-17.57	131	124	H
2	* 2.484	49.78	Pk	32.3	-23.2	0	58.88	-	-	74	-15.12	131	124	H
3	* 2.484	36.35	RMS	32.3	-23.2	.11	45.56	54	-8.44	-	-	131	124	H
4	* 2.484	36.43	RMS	32.3	-23.2	.11	45.64	54	-8.36	-	-	131	124	H

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

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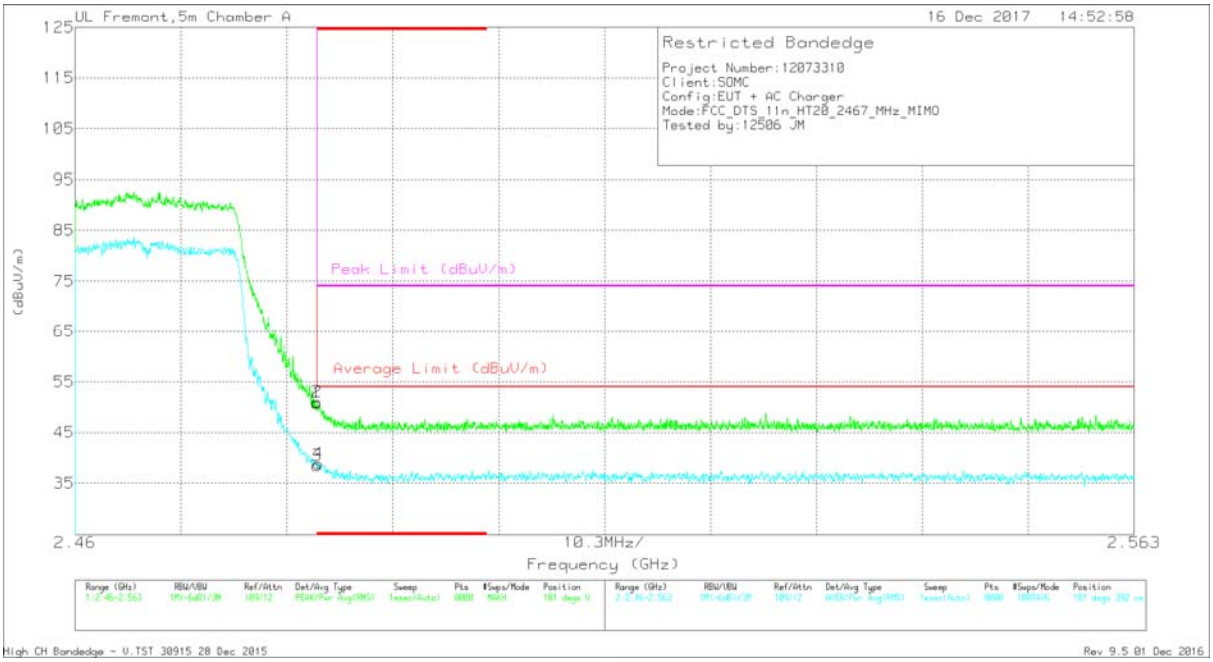
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	* 2.484	41.65	Pk	32.3	-23.2	0	50.75	-	-	74	-23.25	181	392	V
2	* 2.484	41.93	Pk	32.3	-23.2	0	51.03	-	-	74	-22.97	181	392	V
3	* 2.484	29.24	RMS	32.3	-23.2	.11	38.45	54	-15.55	-	-	181	392	V
4	* 2.484	29.62	RMS	32.3	-23.2	.11	38.83	54	-15.17	-	-	181	392	V

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

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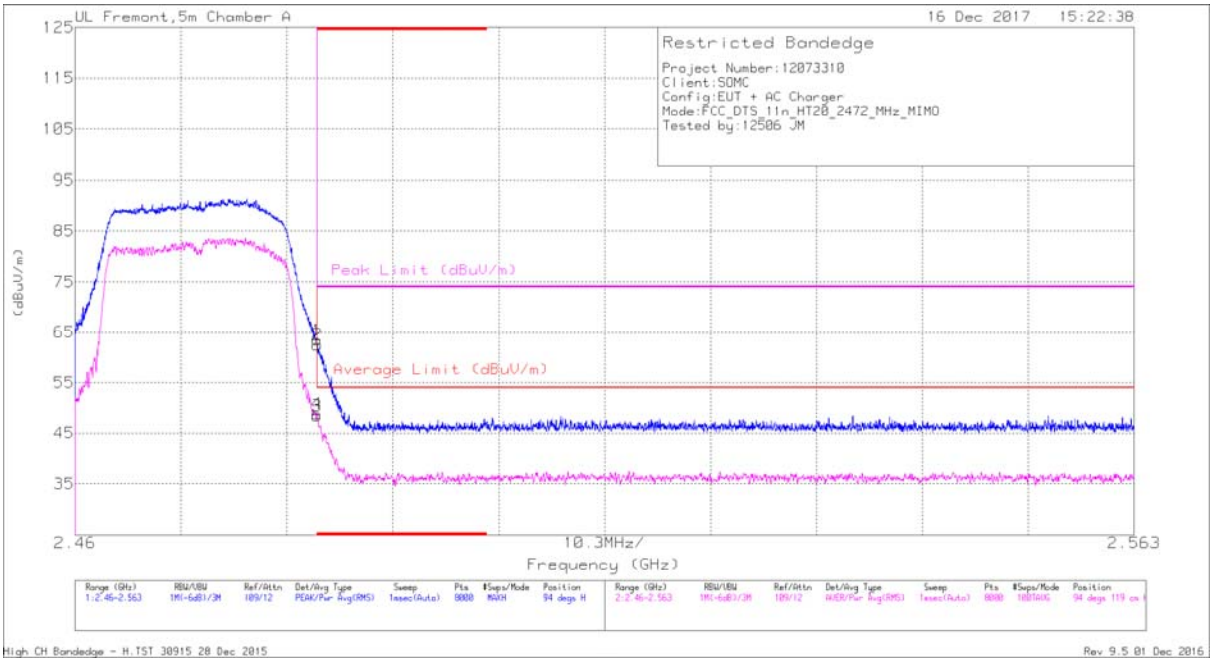
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 13)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	* 2.484	54.34	Pk	32.3	-23.2	0	63.44	-	-	74	-10.56	94	119	H
2	* 2.484	53.42	Pk	32.3	-23.2	0	62.52	-	-	74	-11.48	94	119	H
3	* 2.484	39.27	RMS	32.3	-23.2	.11	48.48	54	-5.52	-	-	94	119	H
4	* 2.484	39.62	RMS	32.3	-23.2	.11	48.83	54	-5.17	-	-	94	119	H

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

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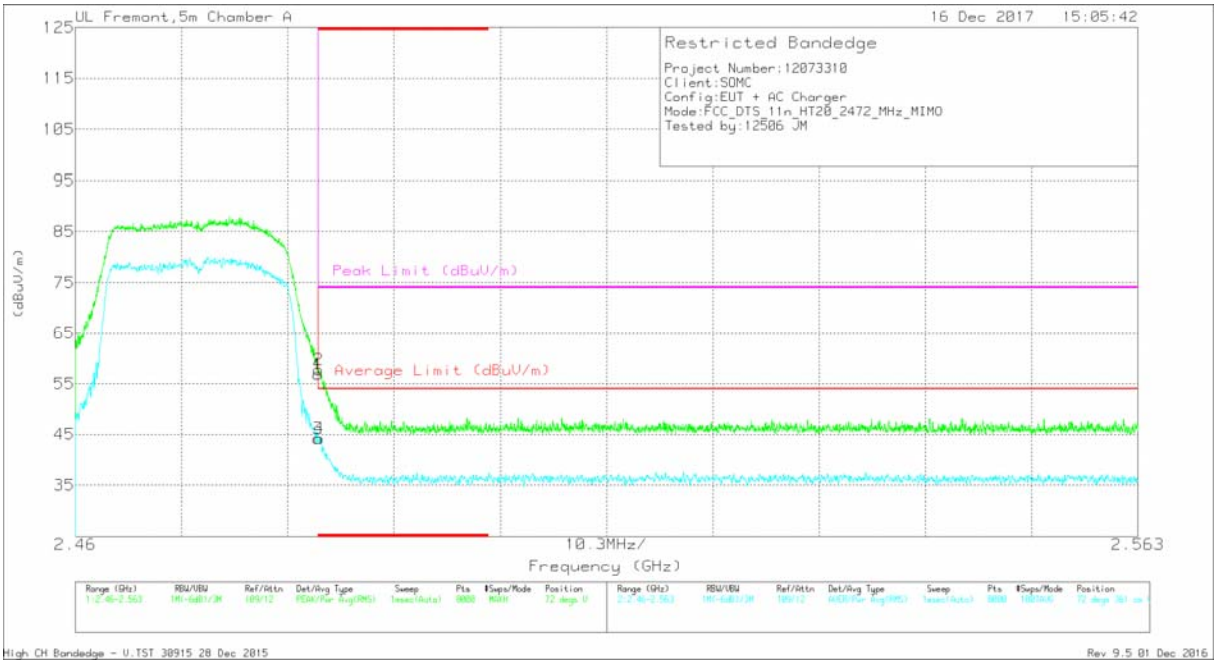
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	* 2.484	47.72	Pk	32.3	-23.2	0	56.82	-	-	74	-17.18	72	361	V
2	* 2.484	48.63	Pk	32.3	-23.2	0	57.73	-	-	74	-16.27	72	361	V
3	* 2.484	35.04	RMS	32.3	-23.2	.11	44.25	54	-9.75	-	-	72	361	V
4	* 2.484	35.05	RMS	32.3	-23.2	.11	44.26	54	-9.74	-	-	72	361	V

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

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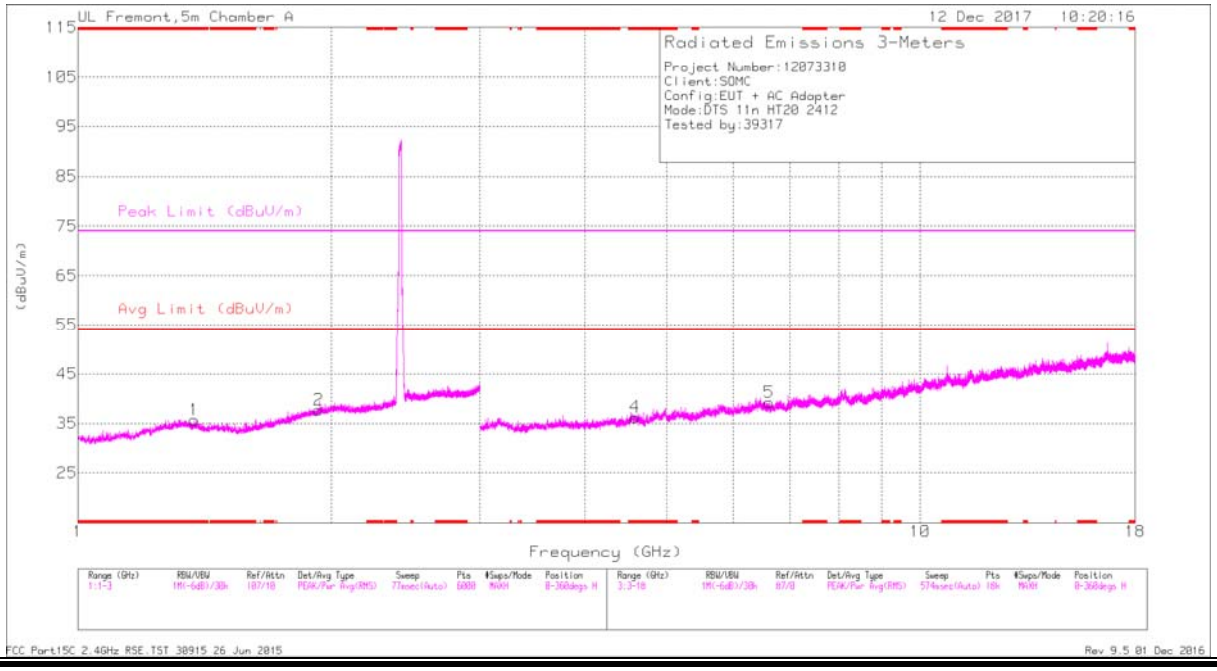
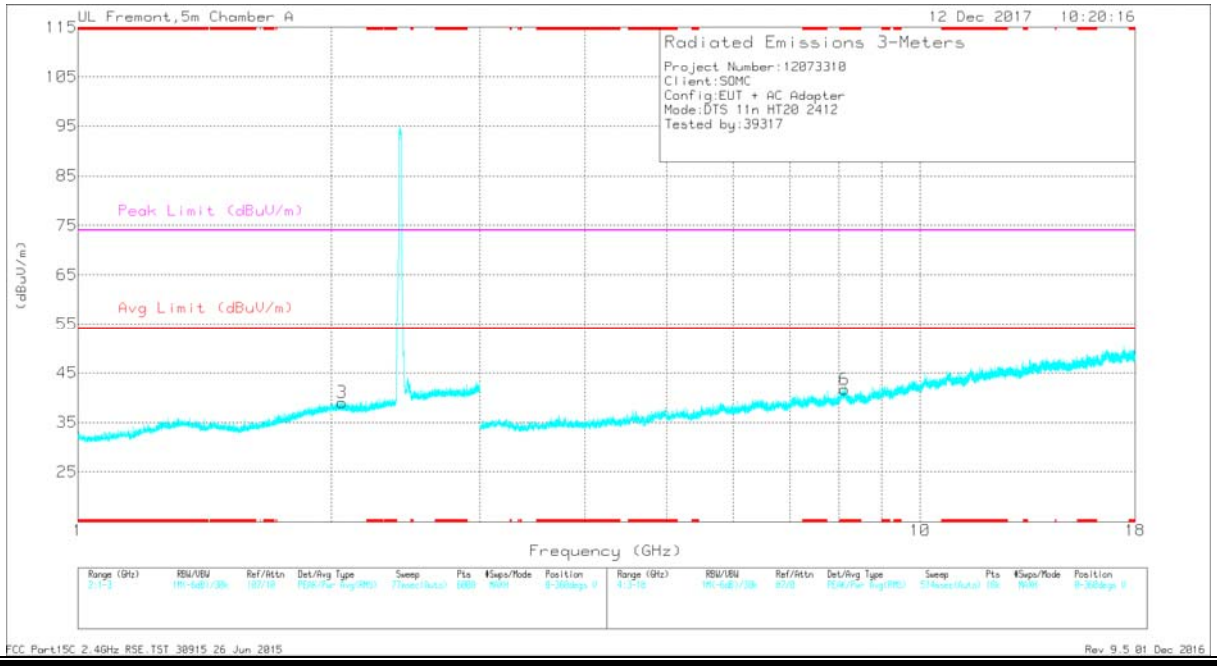
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.375	35.87	PK2	29.1	-23.4	0	41.57	-	-	74	-32.43	360	100	H
* 1.375	24.29	MAv1	29.1	-23.5	.11	30	54	-24	-	-	360	100	H
* 4.583	35.81	PK2	34.1	-27	0	42.91	-	-	74	-31.09	360	102	H
* 4.582	25.14	MAv1	34.1	-27	.11	32.35	54	-21.65	-	-	360	102	H
* 8.126	32.58	PK2	35.8	-21.1	0	47.28	-	-	74	-26.72	360	199	V
* 8.125	21.85	MAv1	35.8	-21.1	.11	36.66	54	-17.34	-	-	360	199	V
1.933	24.95	MAv1	31.3	-23.3	.11	33.06	-	-	-	-	360	199	H
1.934	36.44	PK2	31.3	-23.3	0	44.44	-	-	-	-	360	199	H
2.057	37.63	PK2	31.4	-23.3	0	45.73	-	-	-	-	360	199	V
2.059	25.17	MAv1	31.3	-23.3	.11	33.28	-	-	-	-	360	199	V
6.618	23.31	MAv1	35.6	-24.8	.11	34.22	-	-	-	-	360	102	H
6.619	34.17	PK2	35.6	-24.8	0	44.97	-	-	-	-	360	102	H

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

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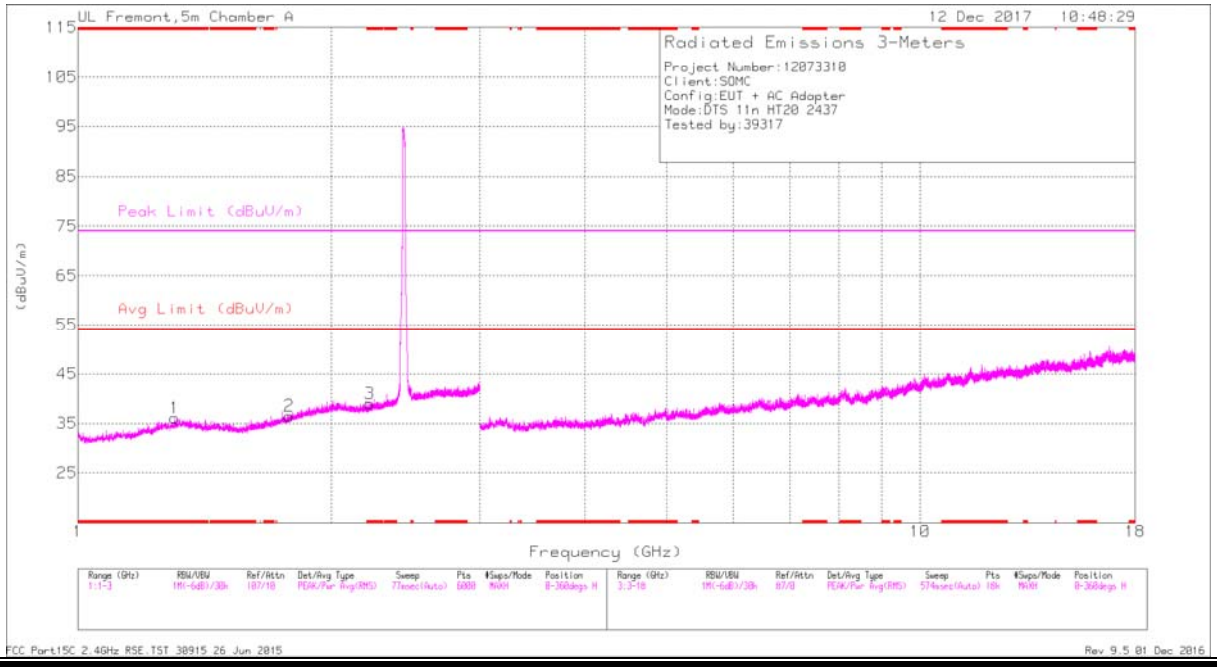
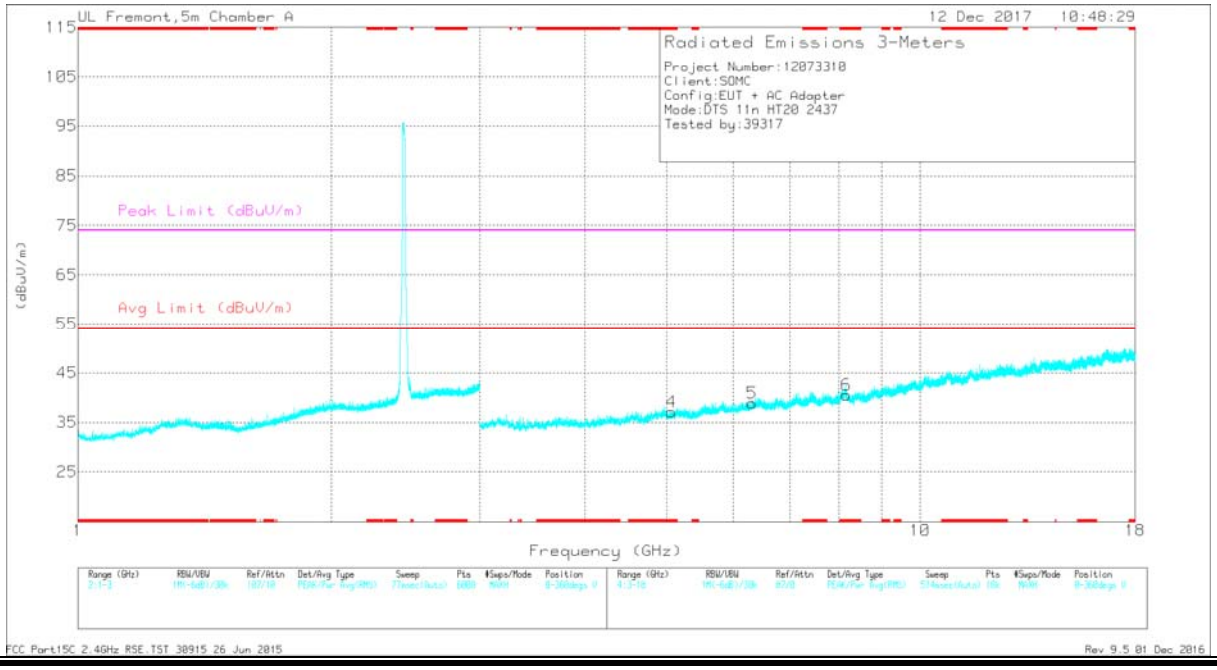
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.304	36.02	PK2	29.4	-23.6	0	41.82	-	-	74	-32.18	360	101	H
* 1.305	24.22	MAv1	29.4	-23.6	.11	30.13	54	-23.87	-	-	360	101	H
* 2.22	36.64	PK2	31.3	-23.5	0	44.44	-	-	74	-29.56	360	199	H
* 2.222	25.55	MAv1	31.3	-23.5	.11	33.46	54	-20.54	-	-	360	199	H
* 5.066	35.82	PK2	34.4	-27.2	0	43.02	-	-	74	-30.98	360	199	V
* 5.066	24.82	MAv1	34.4	-27.2	.11	32.13	54	-21.87	-	-	360	199	V
* 8.17	32.71	PK2	35.8	-21.7	0	46.81	-	-	74	-27.19	360	200	V
* 8.172	21.8	MAv1	35.8	-21.8	.11	35.91	54	-18.09	-	-	360	200	V
1.78	24.7	MAv1	30	-23.4	.11	31.41	-	-	-	-	360	199	H
1.781	36.39	PK2	30	-23.4	0	42.99	-	-	-	-	360	199	H
6.315	24.07	MAv1	35.7	-25.1	.11	34.78	-	-	-	-	360	102	V
6.317	34.82	PK2	35.7	-25.1	0	45.42	-	-	-	-	360	102	V

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

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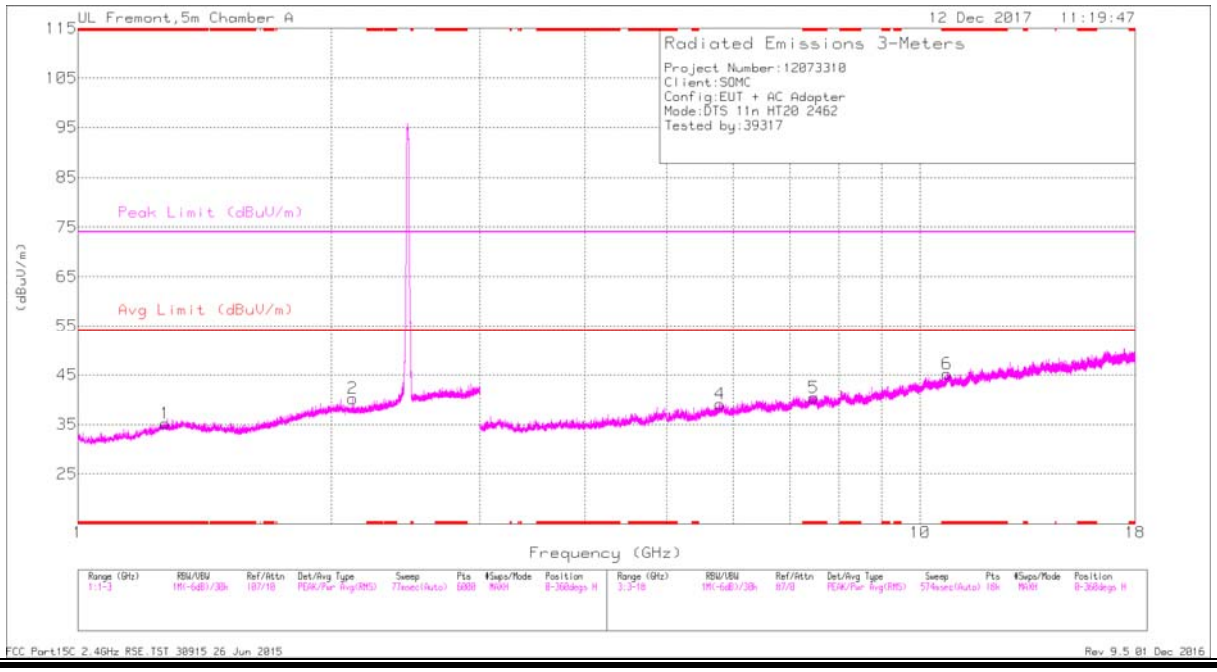
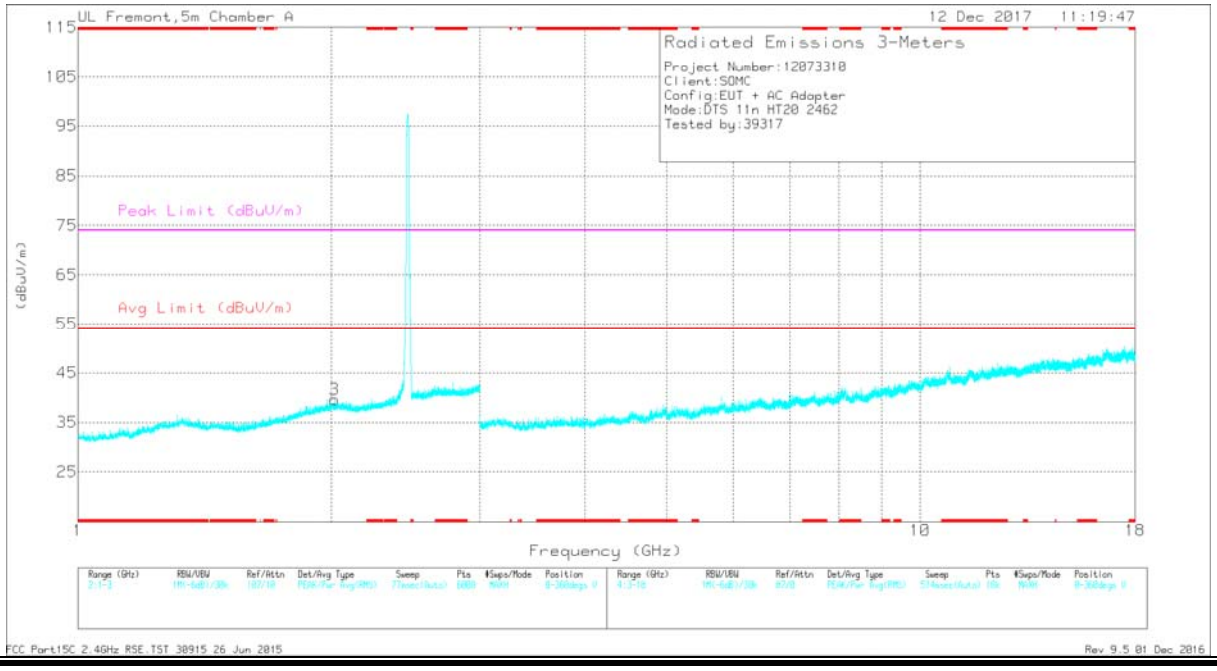
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.27	35.77	PK2	29.2	-23.8	0	41.17	-	-	74	-32.83	360	199	H
* 1.271	24.6	MAv1	29.2	-23.8	.11	30.11	54	-23.89	-	-	360	199	H
* 7.473	33.98	PK2	35.7	-21.7	0	47.98	-	-	74	-26.02	360	199	H
* 7.475	21.77	MAv1	35.7	-21.8	.11	35.78	54	-18.22	-	-	360	199	H
* 10.764	32.12	PK2	37.8	-18.3	0	51.62	-	-	74	-22.38	360	199	H
* 10.765	21.05	MAv1	37.8	-18.3	.11	40.66	54	-13.34	-	-	360	199	H
2.017	36.62	PK2	31.4	-23.2	0	44.82	-	-	-	-	360	103	V
2.017	25.1	MAv1	31.4	-23.2	.11	33.41	-	-	-	-	360	103	V
2.118	25.31	MAv1	31.1	-23.5	.11	33.02	-	-	-	-	360	103	H
2.119	36.52	PK2	31.1	-23.5	0	44.12	-	-	-	-	360	103	H
5.781	35.38	PK2	35	-25.1	0	45.28	-	-	-	-	360	199	H
5.782	24.2	MAv1	35	-25.1	.11	34.21	-	-	-	-	360	199	H

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

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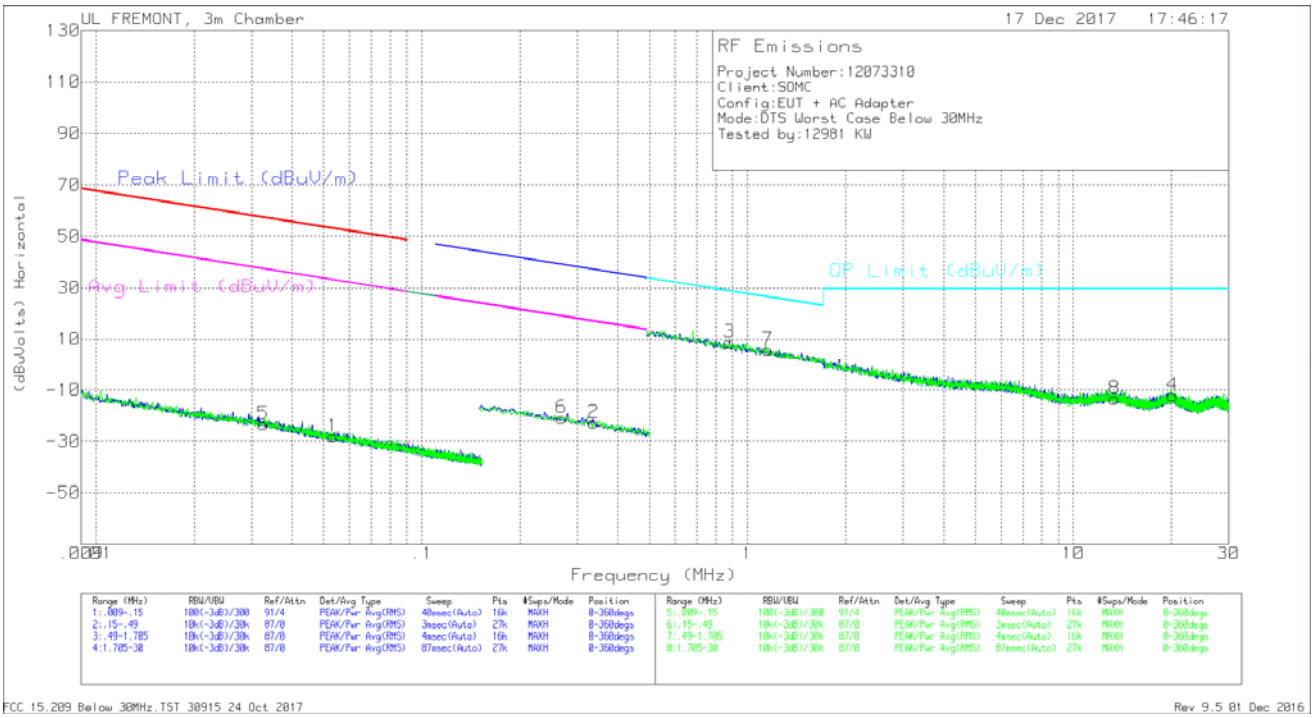
10.3 WORST-CASE BELOW 30 MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL AND VERTICAL PLOTS



NOTE: KDB 414788 OATS and Chamber Correlation Justification

- Based 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.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.03268	39.94	Pk	15.3	1.4	-80	-23.36	57.3	-80.66	37.3	-60.66	-	-	-	-	0-360
1	.05342	36.1	Pk	14.4	1.4	-80	-28.1	53.03	-81.13	33.03	-61.13	-	-	-	-	0-360
6	.26871	43.92	Pk	13.8	1.5	-80	-20.78	-	-	-	-	39.03	-59.81	19.03	-39.81	0-360
2	.33725	41.98	Pk	13.8	1.5	-80	-22.72	-	-	-	-	37.05	-59.77	17.05	-39.77	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.88049	33.35	Pk	14.1	1.5	-40	8.95	28.72	-19.77	0-360
7	1.15371	30.13	Pk	14.3	1.5	-40	5.93	26.38	-20.45	0-360
8	13.38915	10.25	Pk	14.6	1.6	-40	-13.55	29.5	-43.05	0-360
4	20.18124	11.4	Pk	14.8	1.7	-40	-12.1	29.5	-41.6	0-360

Pk - Peak detector

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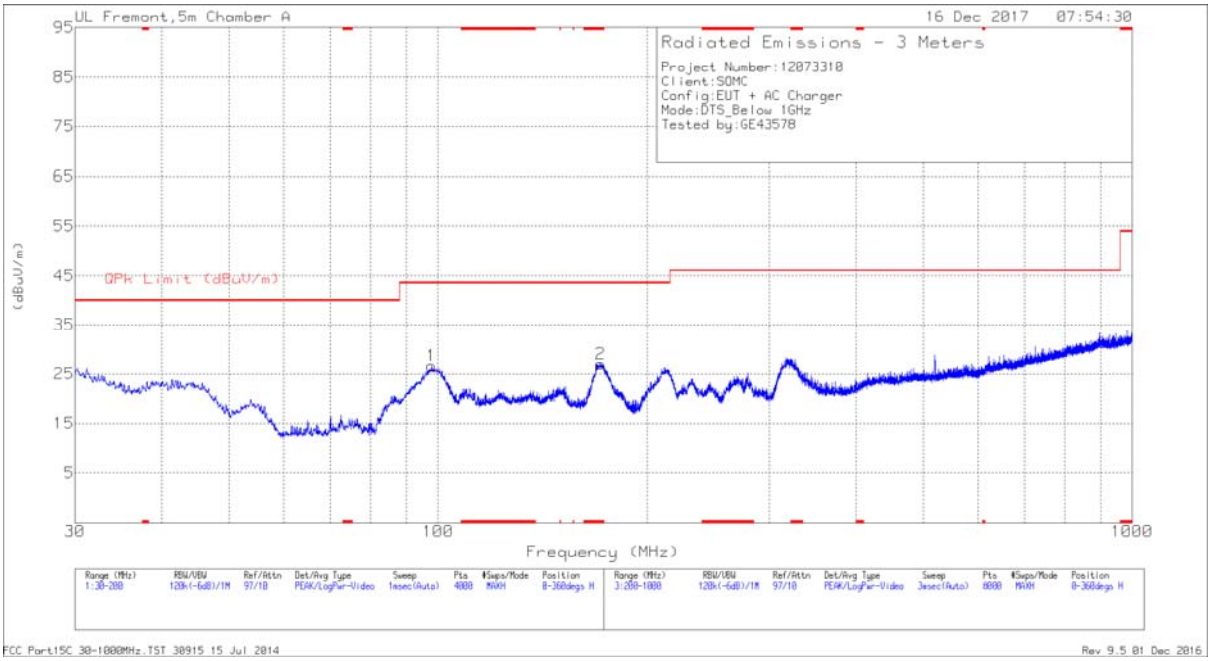
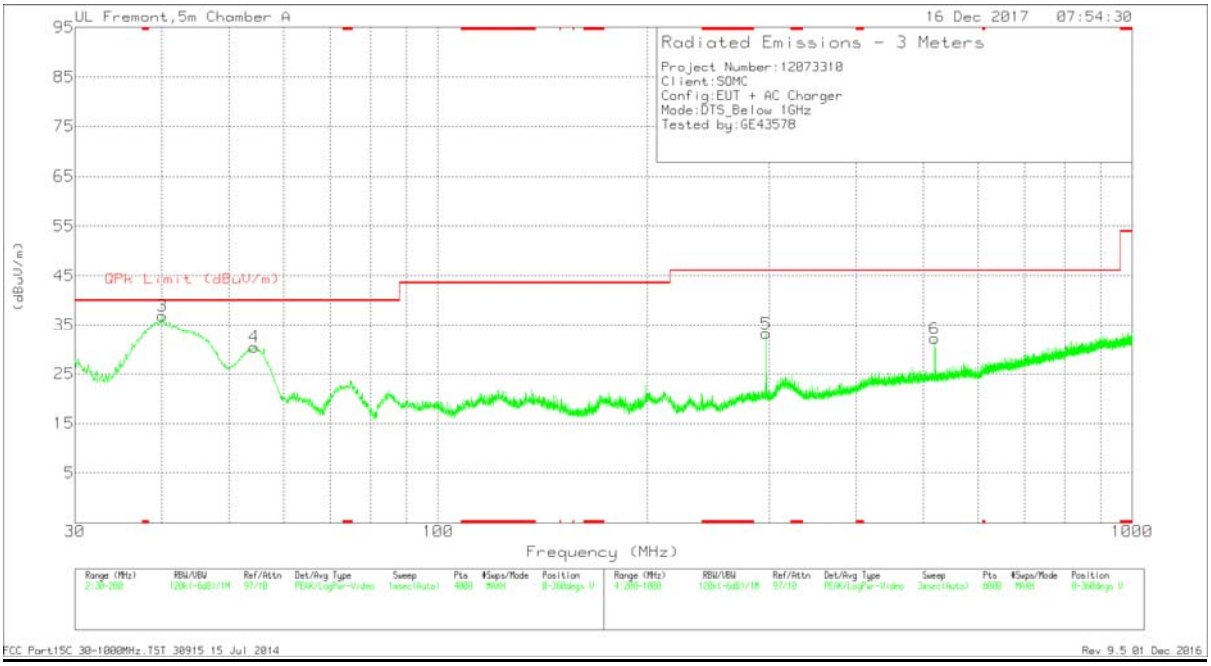
10.4 WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



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Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 171.6892	36.87	Pk	15.7	-25.6	26.97	43.52	-16.55	0-360	200	H
3	40.0751	46.07	Pk	17.9	-27.1	36.87	40	-3.13	0-360	100	V
4	54.3163	46.2	Pk	11.1	-26.9	30.4	40	-9.6	0-360	100	V
1	97.9326	39.35	Pk	13.7	-26.4	26.65	43.52	-16.87	0-360	300	H
5	297.0126	40.57	Pk	17.3	-24.6	33.27	46.02	-12.75	0-360	300	V
6	519.7416	35.75	Pk	21.7	-25.3	32.15	46.02	-13.87	0-360	200	V

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

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
40.0444	42.41	Qp	18	-27.1	33.31	40	-6.69	334	100	V

* - indicates frequency in CFR47 Pt 15 - Restricted Band
Qp - Quasi-Peak detector

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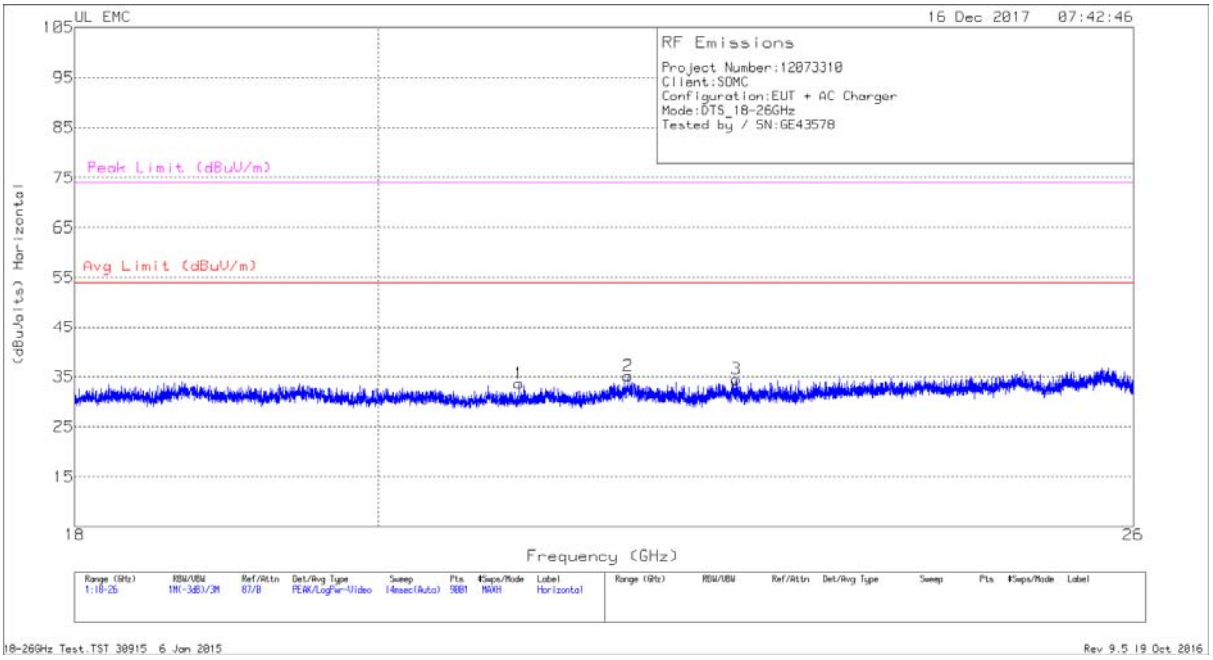
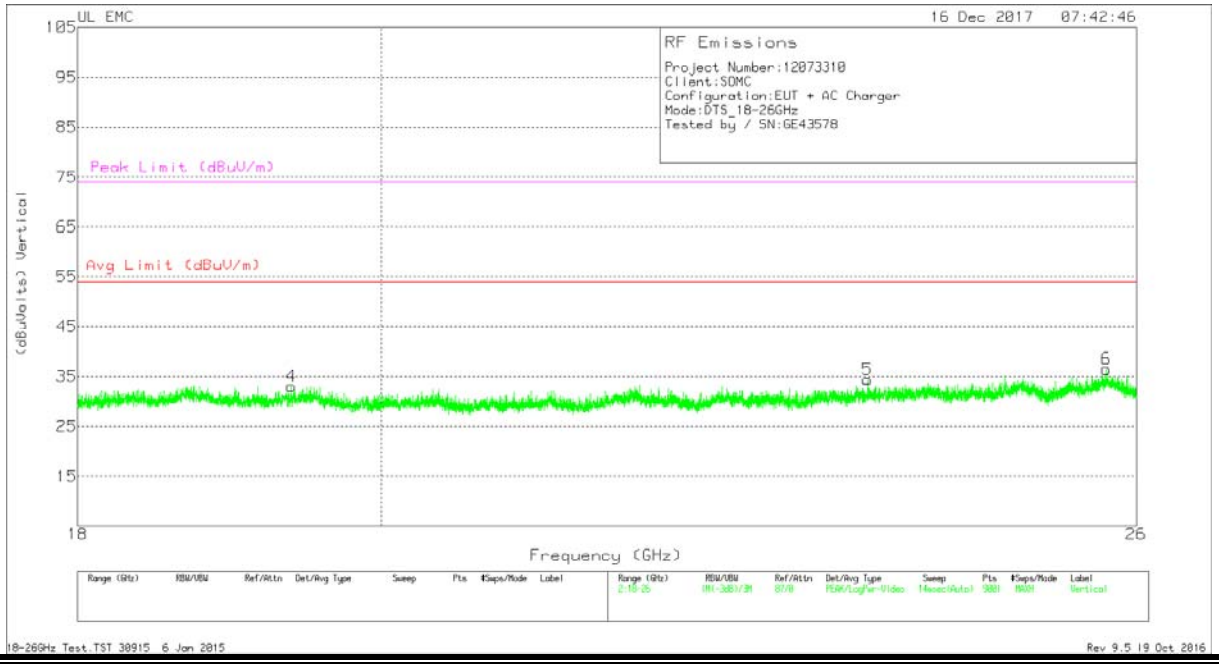
10.5. WORST-CASE 18 to 26 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)

HORIZONTAL PLOT



VERTICAL PLOT



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Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	21.005	36.43	Pk	32.4	-25.7	-9.5	33.63	54	-20.37	74	-40.37
2	21.817	35.88	Pk	33.3	-24.5	-9.5	35.18	54	-18.82	74	-38.82
3	22.651	35.71	Pk	33.3	-25	-9.5	34.51	54	-19.49	74	-39.49
4	19.387	35.25	Pk	32.4	-25.1	-9.5	33.05	54	-20.95	74	-40.95
5	23.684	34.71	Pk	33.6	-24.4	-9.5	34.41	54	-19.59	74	-39.59
6	25.732	36.69	Pk	34.1	-24.8	-9.5	36.49	54	-17.51	74	-37.51

Pk - Peak detector

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11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	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.

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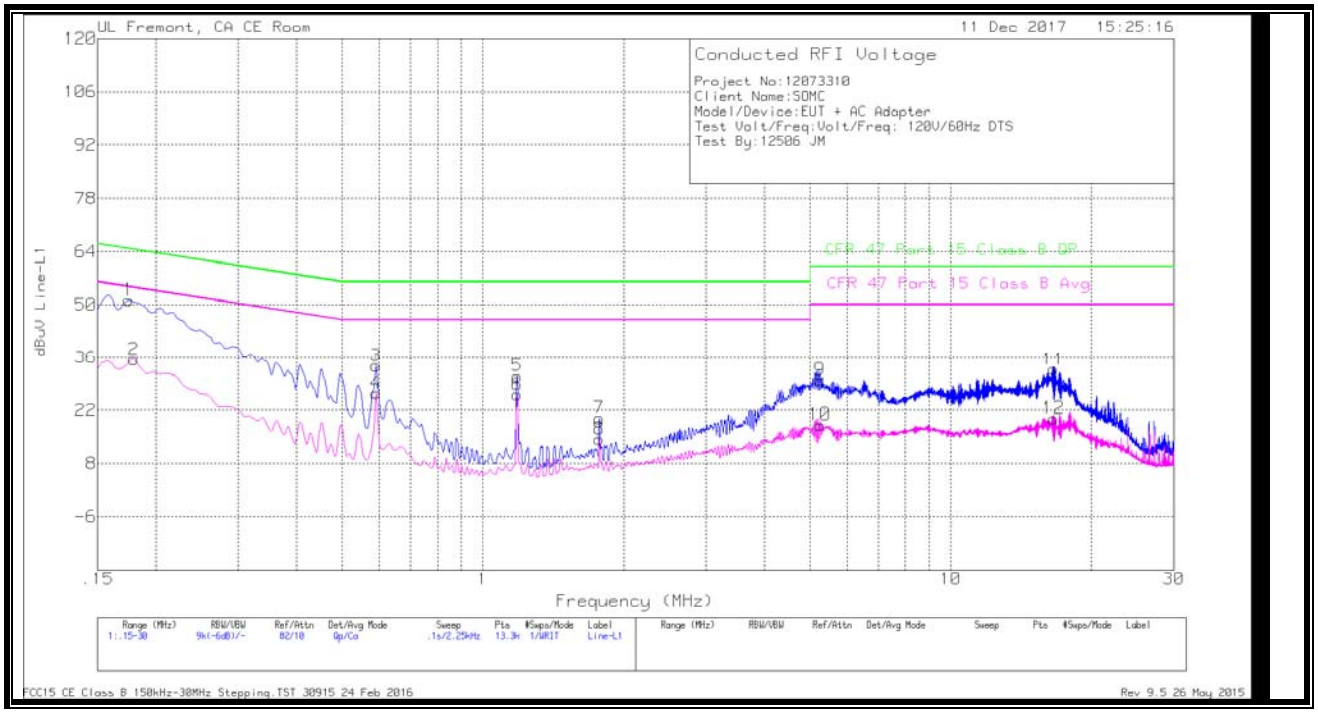
LINE 1 RESULTS



WORST EMISSIONS

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	.17475	41.11	Qp	0	0	10.1	51.21	64.73	-13.52	-	-
2	.17925	25.42	Ca	0	0	10.1	35.52	-	-	54.52	-19
3	.591	23.69	Qp	0	0	10.1	33.79	56	-22.21	-	-
4	.591	16.43	Ca	0	0	10.1	26.53	-	-	46	-19.47
5	1.18275	20.84	Qp	0	.1	10.1	31.04	56	-24.96	-	-
6	1.18275	15.97	Ca	0	.1	10.1	26.17	-	-	46	-19.83
7	1.7745	9.72	Qp	0	.1	10.1	19.92	56	-36.08	-	-
8	1.7745	4.2	Ca	0	.1	10.1	14.4	-	-	46	-31.6
9	5.25975	19.66	Qp	0	.1	10.2	29.96	60	-30.04	-	-
10	5.25975	7.84	Ca	0	.1	10.2	18.14	-	-	50	-31.86
11	16.59075	22.25	Qp	0	.3	10.3	32.85	60	-27.15	-	-
12	16.59075	9.25	Ca	0	.3	10.3	19.85	-	-	50	-30.15

Qp - Quasi-Peak detector

Ca - CISPR average detection

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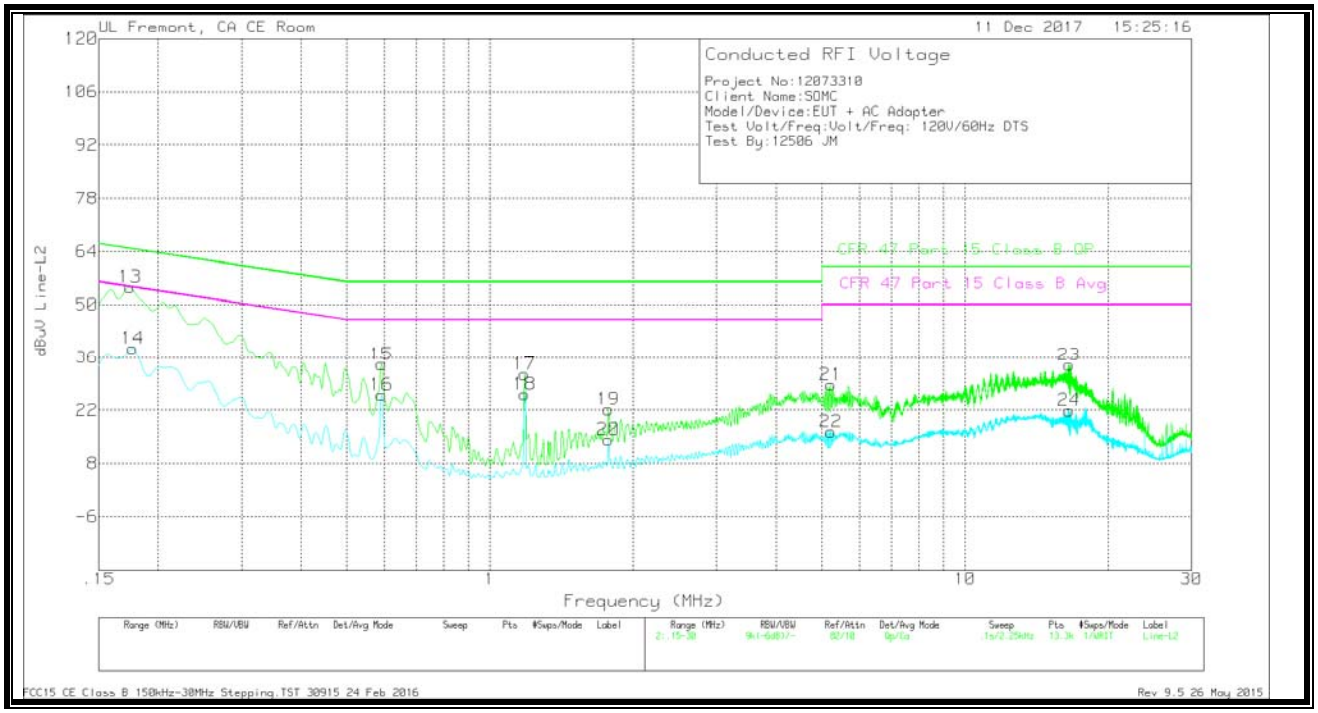
LINE 2 RESULTS



WORST EMISSIONS

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	.17475	44.52	Qp	0	0	10.1	54.62	64.73	-10.11	-	-
14	.177	28.35	Ca	0	0	10.1	38.45	-	-	54.63	-16.18
15	.591	24.05	Qp	0	0	10.1	34.15	56	-21.85	-	-
16	.591	15.94	Ca	0	0	10.1	26.04	-	-	46	-19.96
17	1.18275	21.3	Qp	0	.1	10.1	31.5	56	-24.5	-	-
18	1.18275	16.01	Ca	0	.1	10.1	26.21	-	-	46	-19.79
19	1.7745	12	Qp	0	.1	10.1	22.2	56	-33.8	-	-
20	1.7745	4.01	Ca	0	.1	10.1	14.21	-	-	46	-31.79
21	5.2215	18.39	Qp	0	.1	10.2	28.69	60	-31.31	-	-
22	5.21925	6.04	Ca	0	.1	10.2	16.34	-	-	50	-33.66
23	16.5795	23.36	Qp	0	.3	10.3	33.96	60	-26.04	-	-
24	16.5795	11.3	Ca	0	.3	10.3	21.9	-	-	50	-28.1

Qp - Quasi-Peak detector

Ca - CISPR average detection

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