CERTIFICATION TEST REPORT

Report Number. : 11740661-E4V4

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

FCC ID : PY7-81775I

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

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

Date Of Issue:
July 17, 2017

Prepared by:
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	06/28/17	Initial Issue	D. Coronia
V2	07/08/17	Updated Section 2, 5.5, 7, & 8	D. Coronia
V3	07/11/17	Updated Section 9.3.3, 9.4.3 & 10.1	D. Coronia
V4	07/17/17	Updated Section 5.5	D. Coronia

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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: RADIATED: QV7001PT0N, QV7001Q50N
CONDUCTED: QV7000LN0P, QV7000HV

DATE TESTED: JUNE 07 to 28, 2017

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

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

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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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 Multiple Transmitter Output 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.

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

Parameter	Uncertainty
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case 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, GPS & 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	16.49	44.57
2412 - 2472	802.11g 2TX	16.39	43.55
2412 - 2472	802.11n HT20 2TX CDD	16.30	42.66

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (GHz)	Antenna Gain (dBi)	
	Chain 0	Chain 1
2.4	-2.80	-7.00

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was SONY, s_atp_1_00139_B_10_5.
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 bandedge, harmonics, and spurious emissions from 1 GHz to 18GHz were performed. The EUT was set to transmit at the Low/Middle/High channels.

Radiated emission below 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, it was determined that Y orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in Y 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.

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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	1300-7137.1	4016W40310044	NA
Headphones	SONY	N/A	N/A	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
2	Audio	1	3.5mm	Shielded	1	N/A

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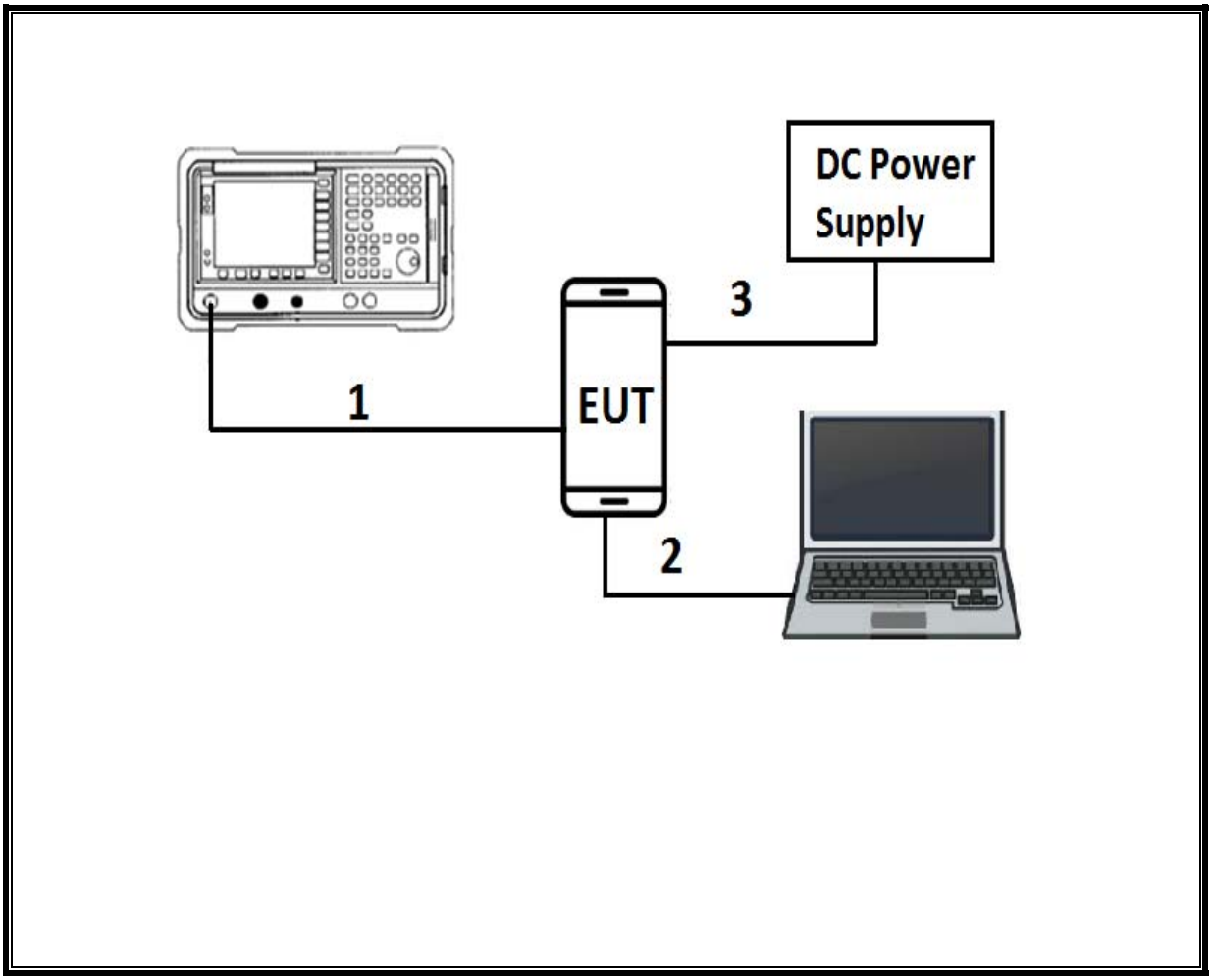
TEST SETUP

CONDUCTED TEST SETUP DIAGRAM



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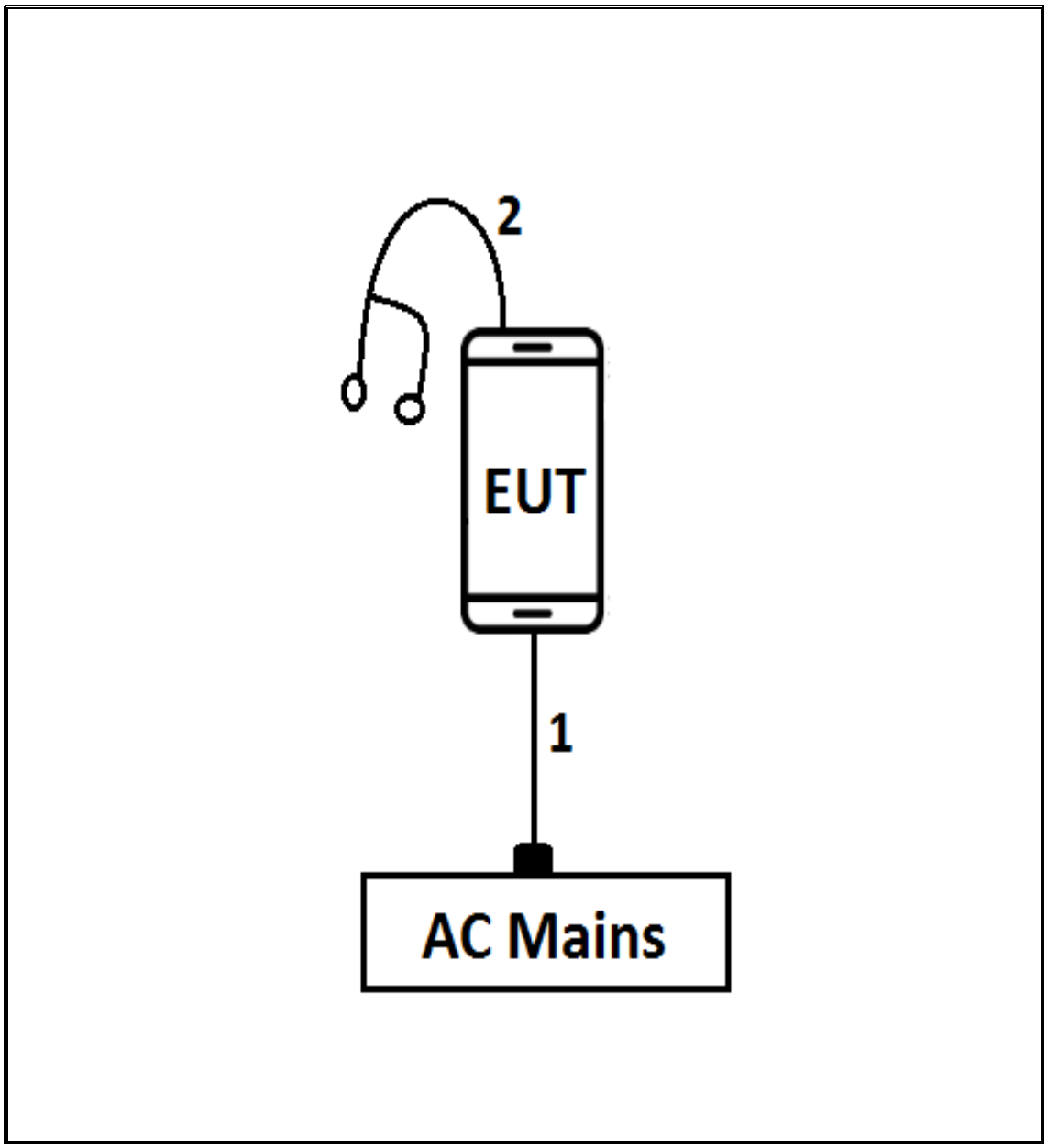
TEST SETUP

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:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Antenna, Broadband Hybrid, 30MHz to 2000MHz w/4dB Pad	Sunol Sciences Corp.	JB3	T477	06/22/2018
Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T1683	02/17/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T712	01/30/2018
Antenna, Horn 18-26.5GHz	ARA	MWH-1826/B	T449	06/12/2018
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1264	07/08/2017
Power Sensor, P – series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T413	06/20/2018
Amplifier, 1-26.5GHz	MITEQ	AFS42-00101800-25-S-42	T1165	08/01/2017
Amplifier, 1-26.5GHz	Agilent (Keysight) Technologies	8449B	T404	07/05/2017
Amplifier, 10kHz-1GHz	Agilent (Keysight) Technologies	8447D	T15	08/26/2017
Amplifier, 1-8 GHz	MITEQ	AMF-4D-01000800-30-29P	T1170	04/28/2018
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Agilent (Keysight) Technologies	E4440A	T199	07/22/2017
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Agilent (Keysight) Technologies	E4440A	T908	04/13/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T907	01/23/2018
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Agilent (Keysight) Technologies	E9030A	T905	01/11/2018
LISN	FISCHER	FCC-LISN-50/250-25-2-01	T1310	06/08/2018

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, Apr 26, 2016
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
Antenna Port Software	UL	UL RF	Ver 5.1.1, July 15, 2016

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

NOTE: *testing is completed before equipment calibration expiration date.

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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	12.22	12.33	0.99	99.11%	0.00	0.01
802.11g	2.03	2.15	0.94	94.47%	0.25	0.49
802.11n HT20 CDD	2.51	2.63	0.96	95.62%	0.19	0.40

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

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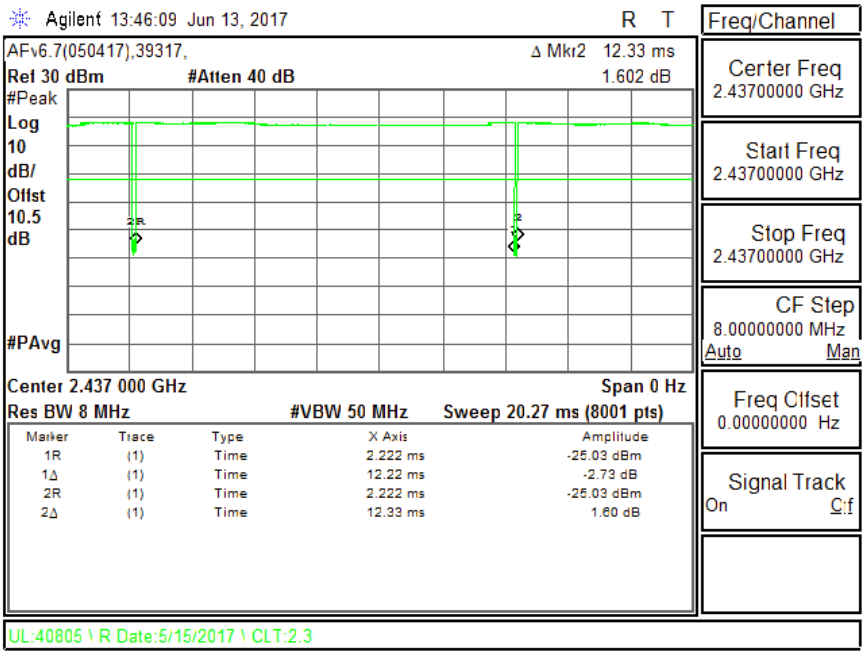
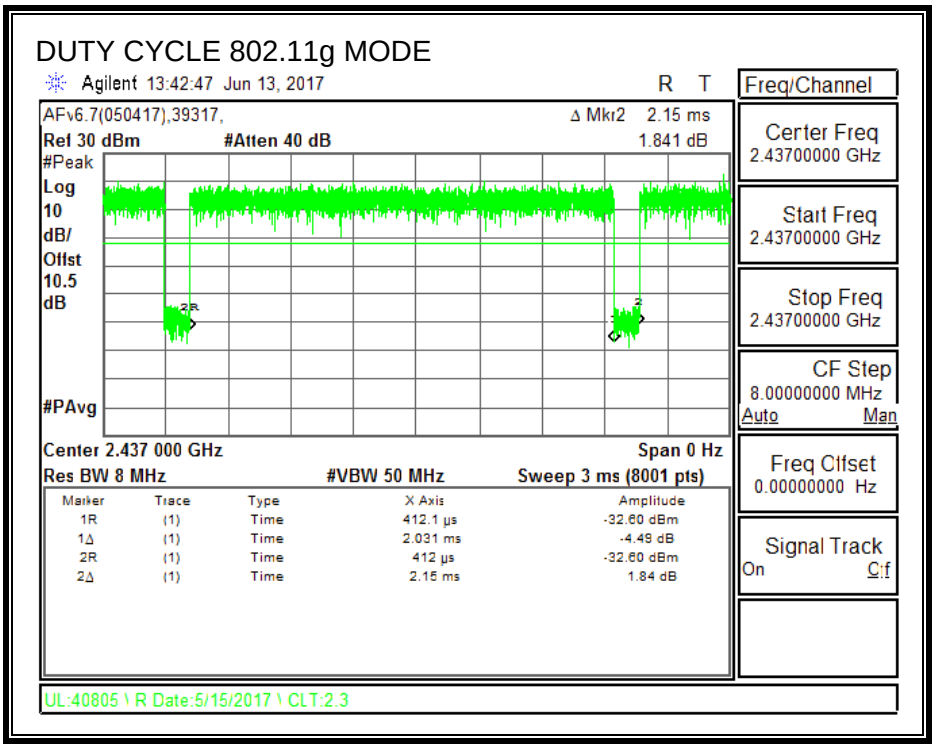
DUTY CYCLE PLOTS

DUTY CYCLE 802.11b MODE



DUTY CYCLE 802.11g MODE



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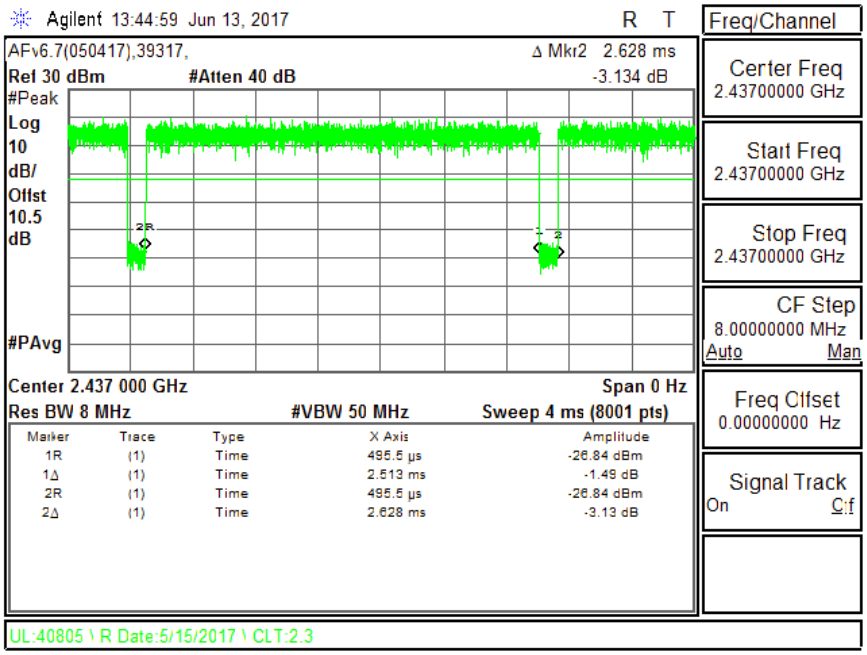
DUTY CYCLE 802.11n HT20 CDD MODE



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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	9.56	9.60	0.5
CH6	2437	9.52	9.12	0.5
CH11	2462	9.56	9.60	0.5
CH12	2467	9.56	9.56	0.5
CH13	2472	9.60	9.96	0.5

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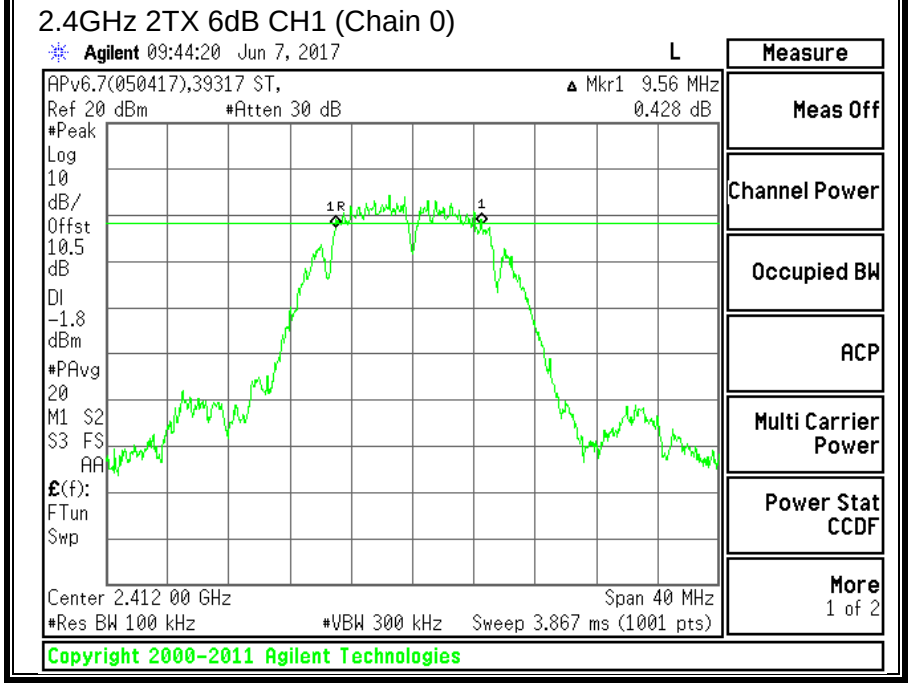
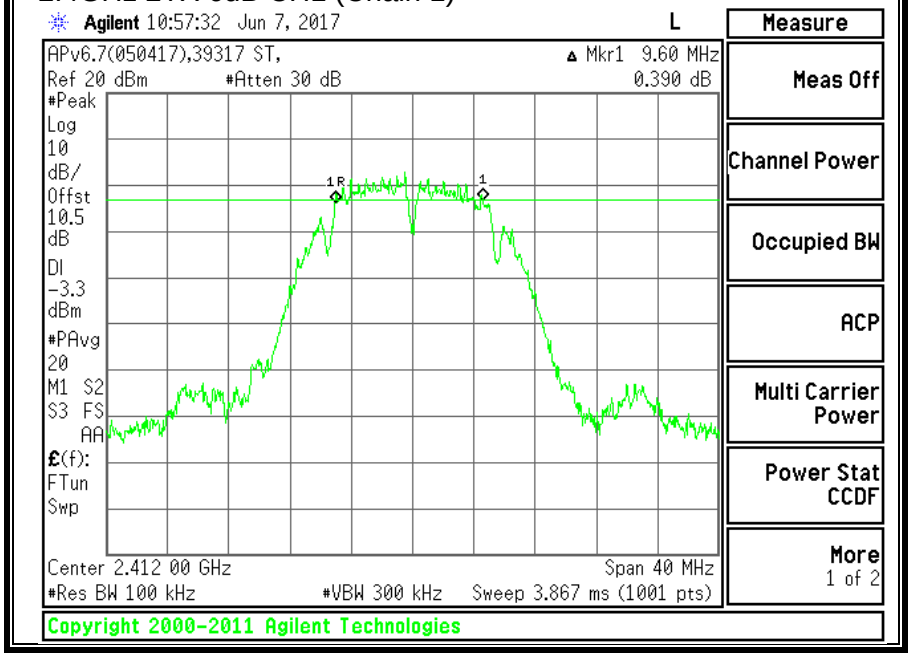
2.4GHz 2TX 6dB CH1 (Chain 0)



2.4GHz 2TX 6dB CH1 (Chain 1)



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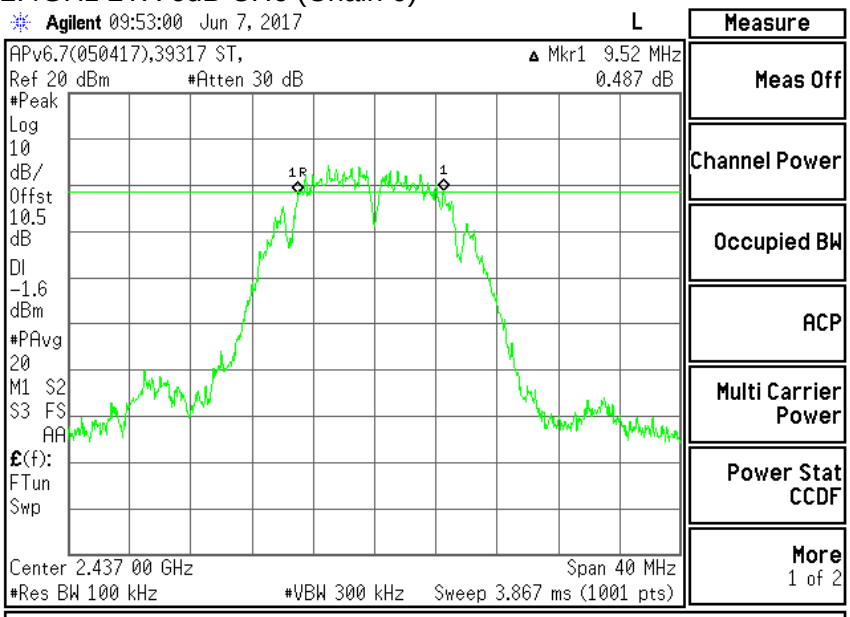
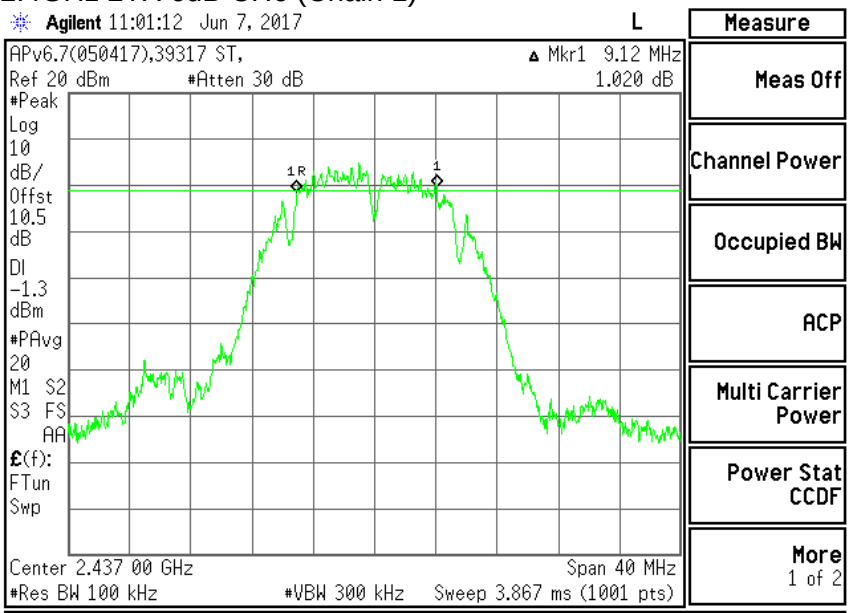
2.4GHz 2TX 6dB CH6 (Chain 0)



2.4GHz 2TX 6dB CH6 (Chain 1)



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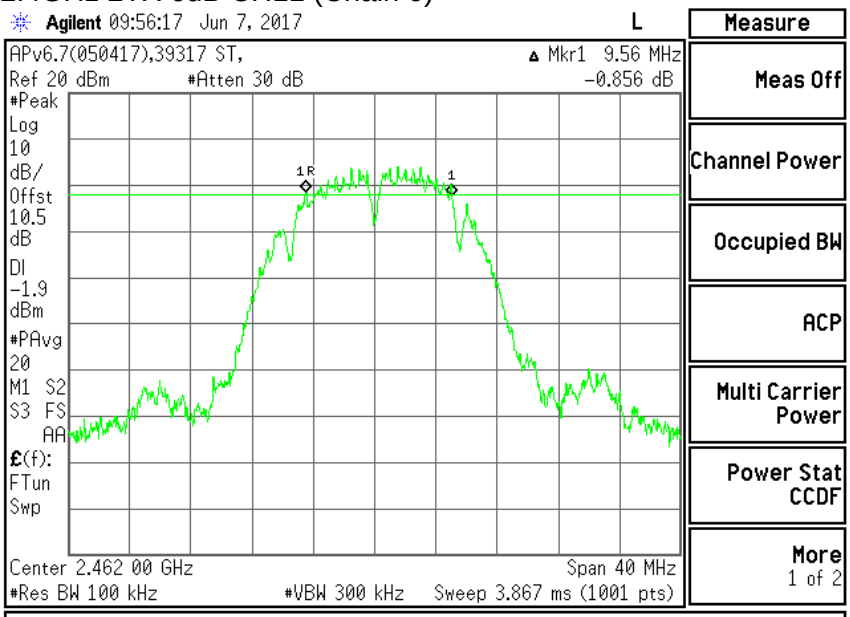
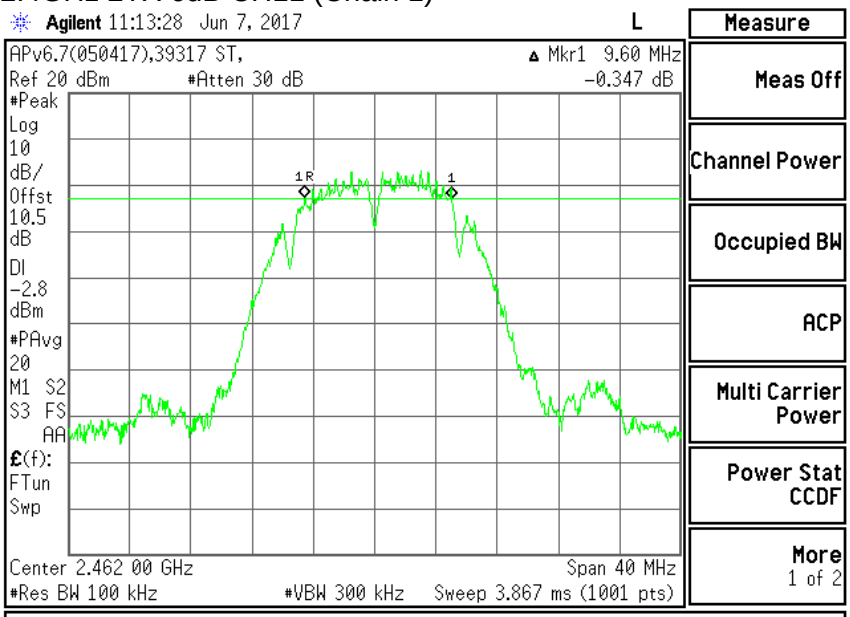
2.4GHz 2TX 6dB CH11 (Chain 0)



2.4GHz 2TX 6dB CH11 (Chain 1)



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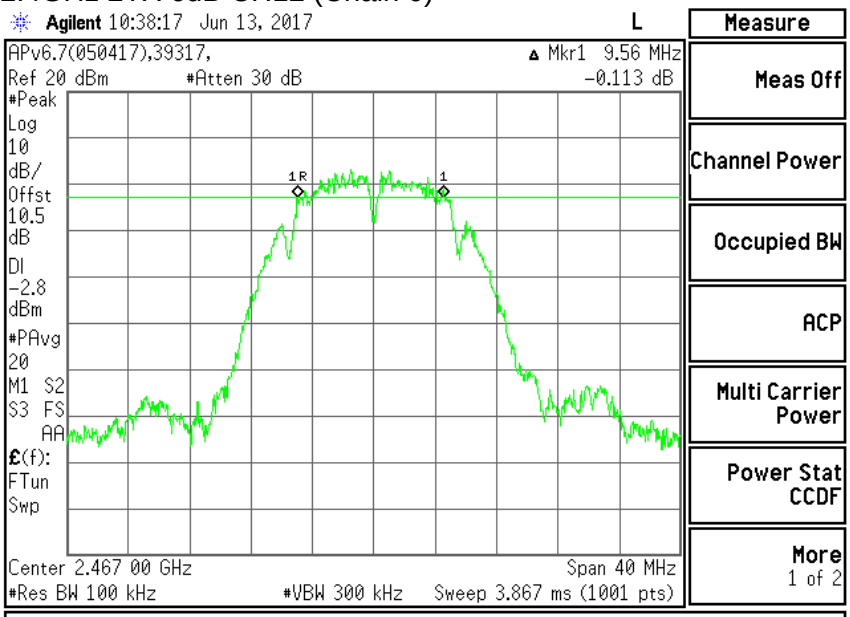
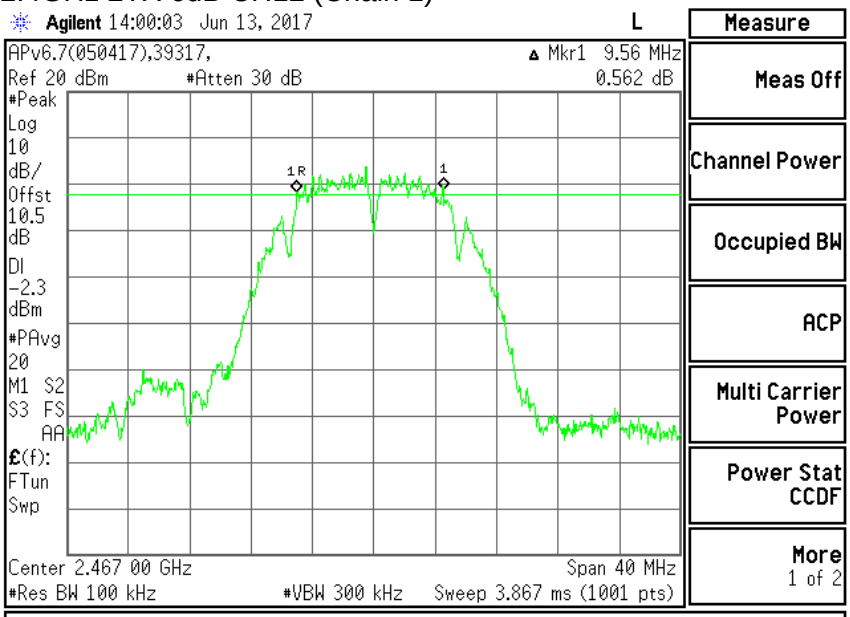
2.4GHz 2TX 6dB CH12 (Chain 0)



2.4GHz 2TX 6dB CH12 (Chain 1)



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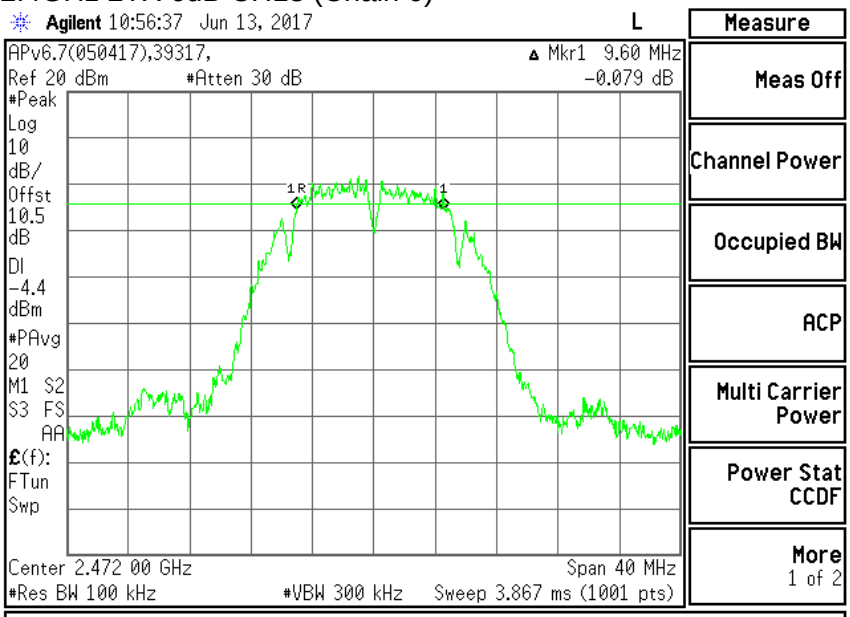
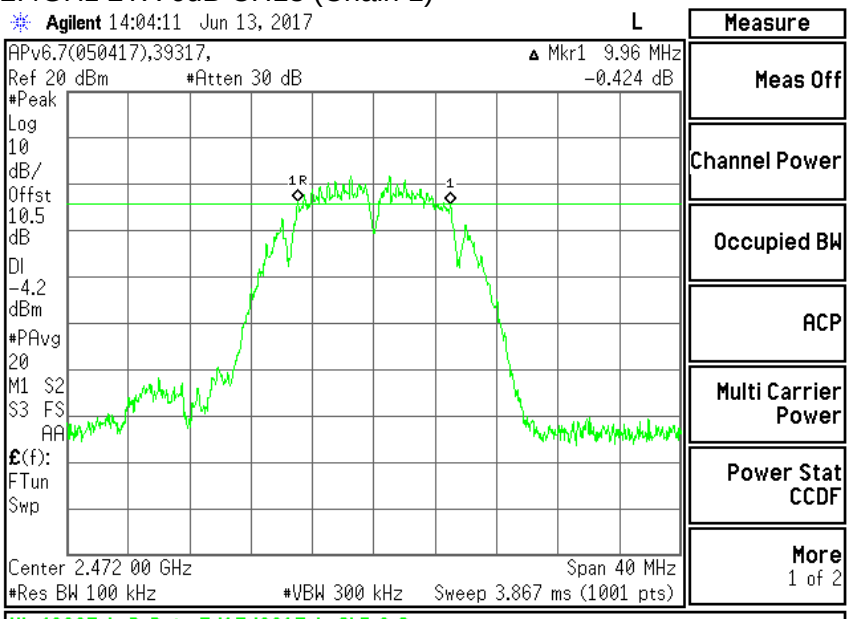
2.4GHz 2TX 6dB CH13 (Chain 0)



2.4GHz 2TX 6dB CH13 (Chain 1)



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9.2.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
CH1	2412	12.82	12.94
CH6	2437	12.65	12.73
CH11	2462	12.79	12.71
CH12	2467	12.59	12.81
CH13	2472	13.00	12.87

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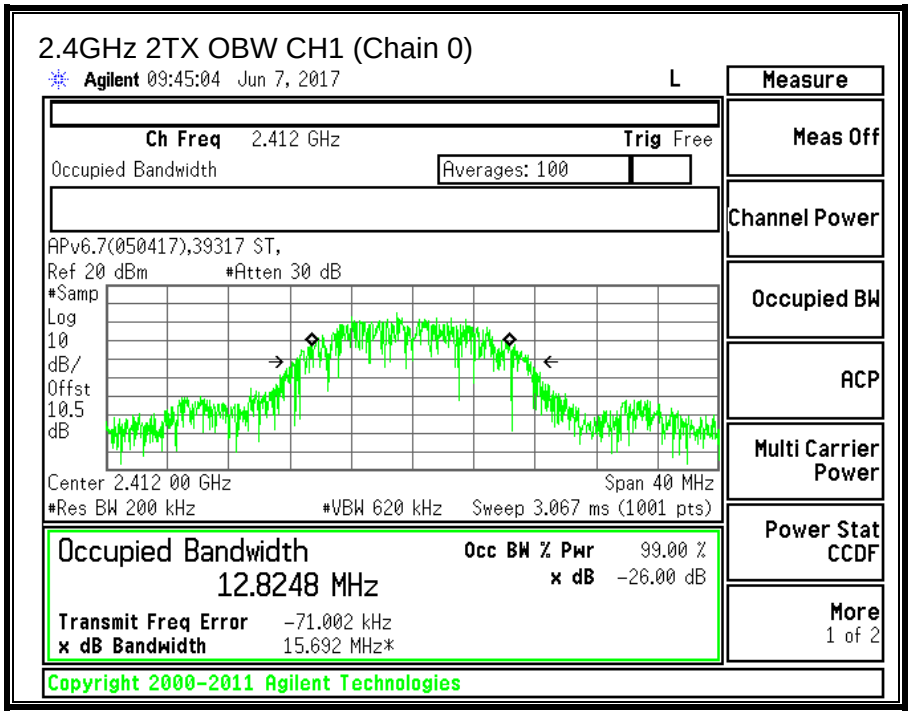
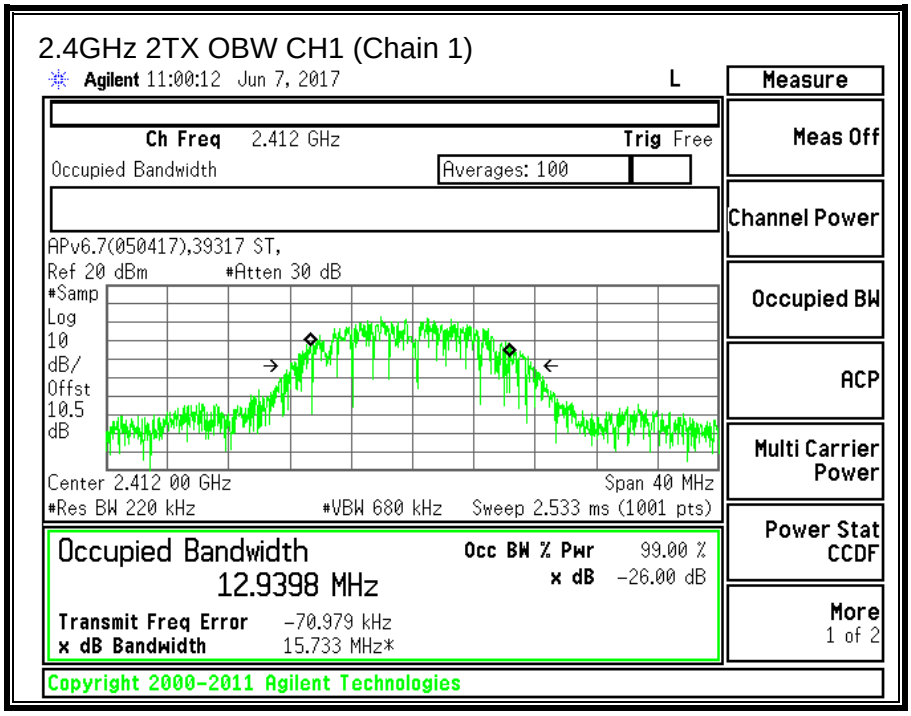
2.4GHz 2TX OBW CH1 (Chain 0)



2.4GHz 2TX OBW CH1 (Chain 1)



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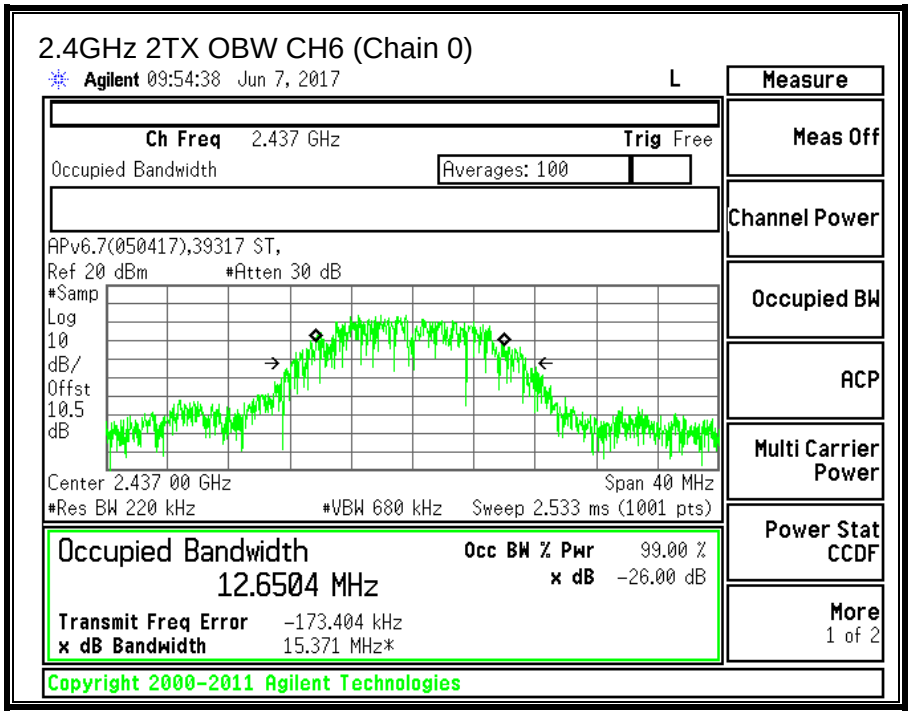
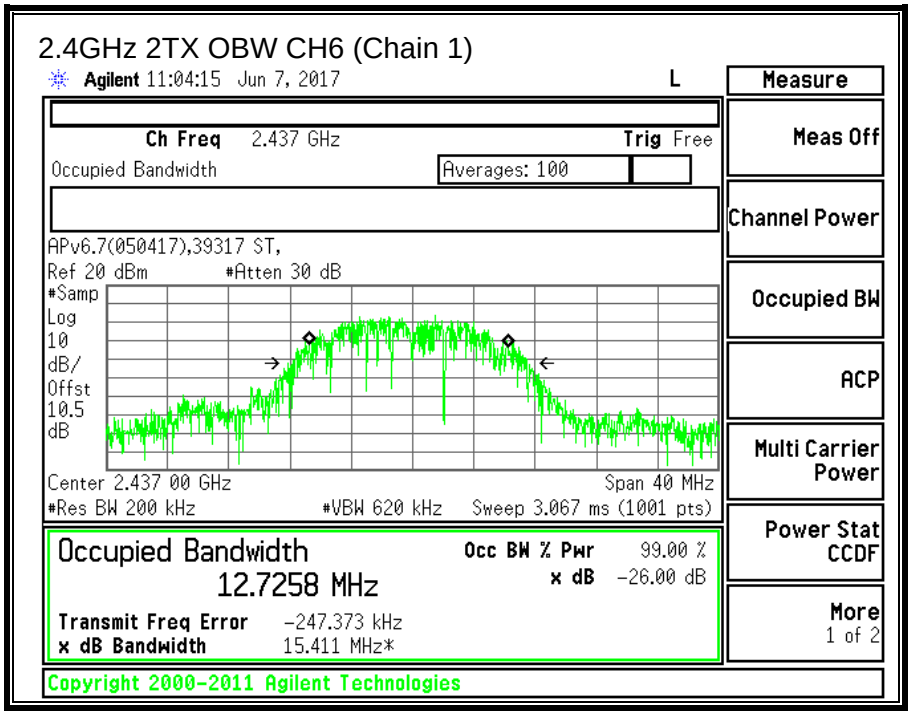
2.4GHz 2TX OBW CH6 (Chain 0)



2.4GHz 2TX OBW CH6 (Chain 1)



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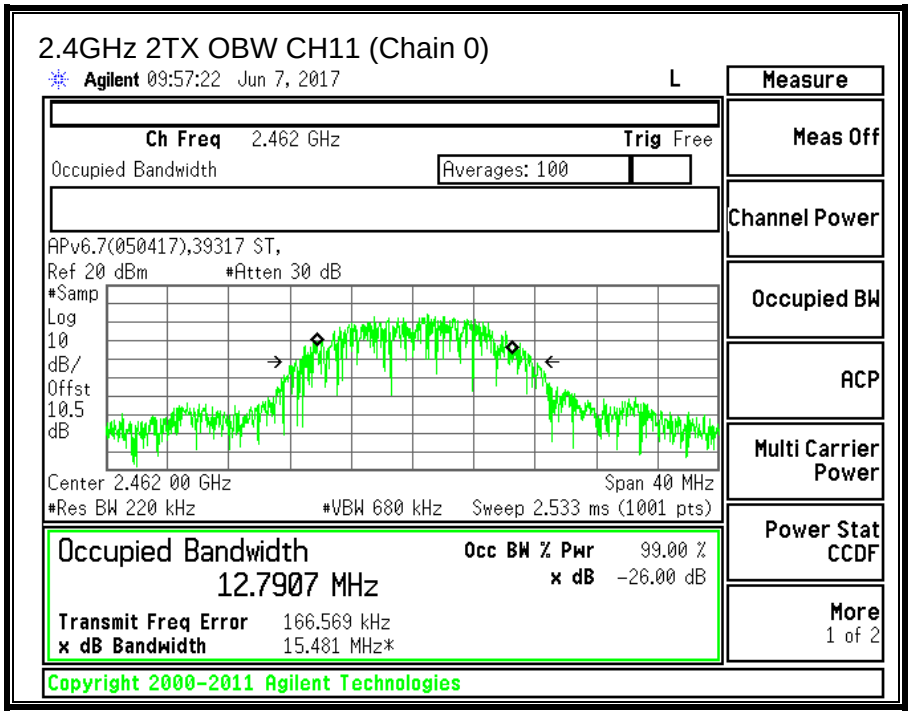
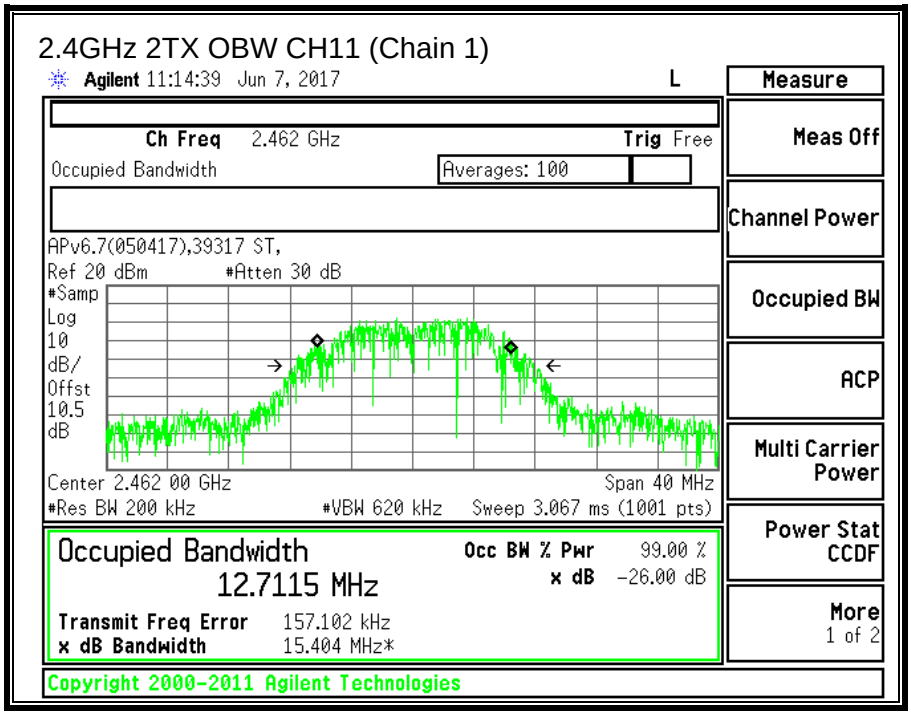
2.4GHz 2TX OBW CH11 (Chain 0)



2.4GHz 2TX OBW CH11 (Chain 1)



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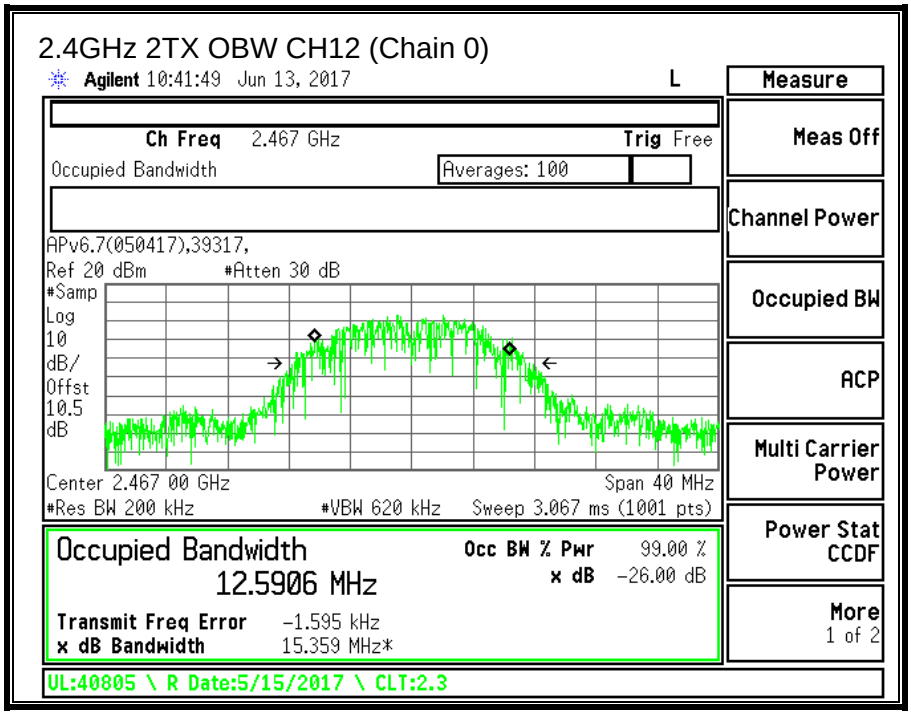
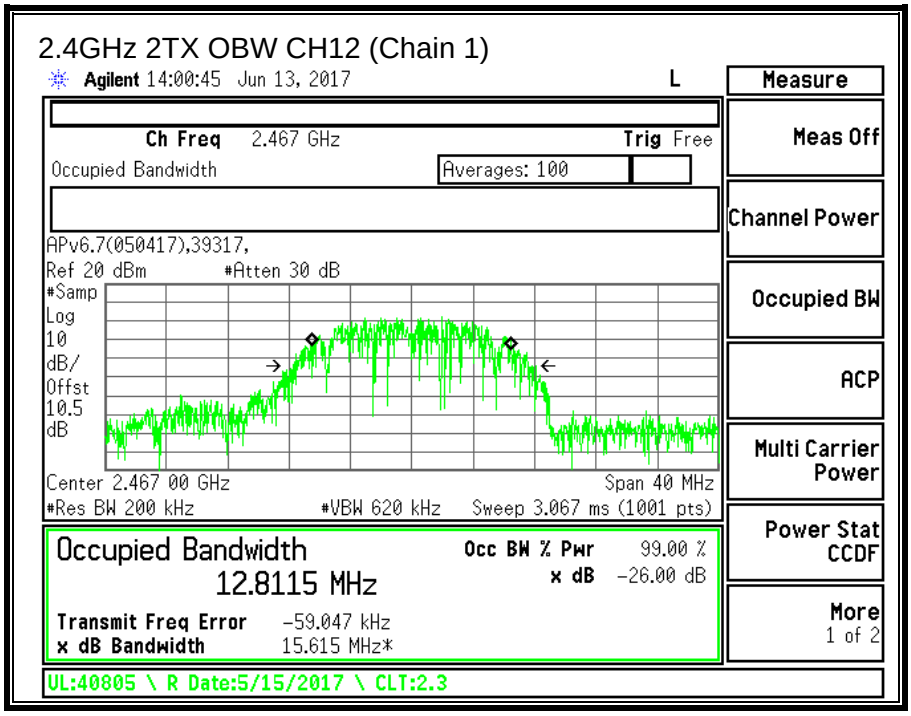
2.4GHz 2TX OBW CH12 (Chain 0)



2.4GHz 2TX OBW CH12 (Chain 1)



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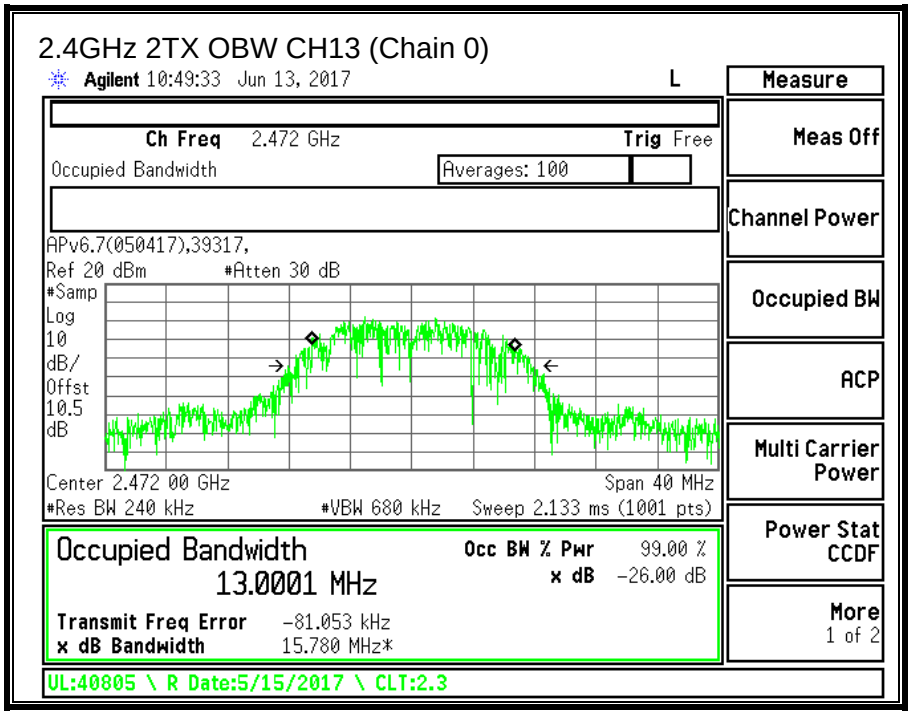
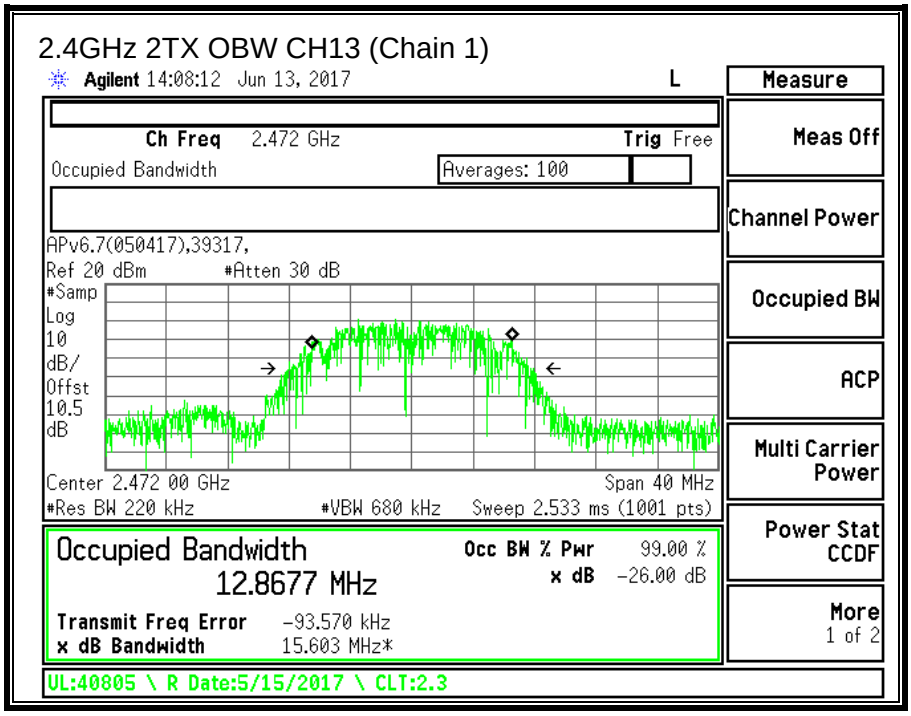
2.4GHz 2TX OBW CH13 (Chain 0)



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)
-2.80	-7.00	-4.41

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RESULTS

ID:	39703	Date:	06/06/2017

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-4.41	30.00	30	36	30.00
CH6	2437	-4.41	30.00	30	36	30.00
CH11	2462	-4.41	30.00	30	36	30.00
CH12	2467	-4.41	30.00	30	36	30.00
CH13	2472	-4.41	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	13.19	13.63	16.43	30.00	-13.57
CH6	2437	13.15	13.25	16.21	30.00	-13.79
CH11	2462	13.44	13.51	16.49	30.00	-13.51
CH12	2467	13.56	13.34	16.46	30.00	-13.54
CH13	2472	11.23	11.07	14.16	30.00	-15.84

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	-9.326	-8.743	-6.01	8.0	-14.0
CH6	2437	-9.344	-9.431	-6.38	8.0	-14.4
CH11	2462	-9.000	-9.136	-6.06	8.0	-14.1
CH12	2467	-9.143	-10.339	-6.69	8.0	-14.7
CH13	2472	-11.610	-11.927	-8.76	8.0	-16.8

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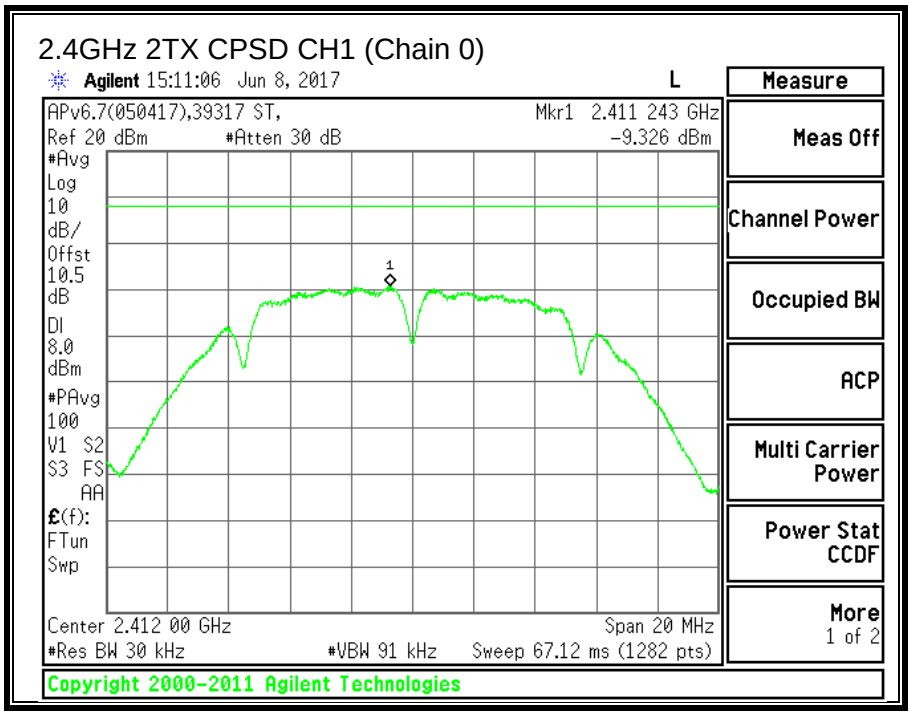
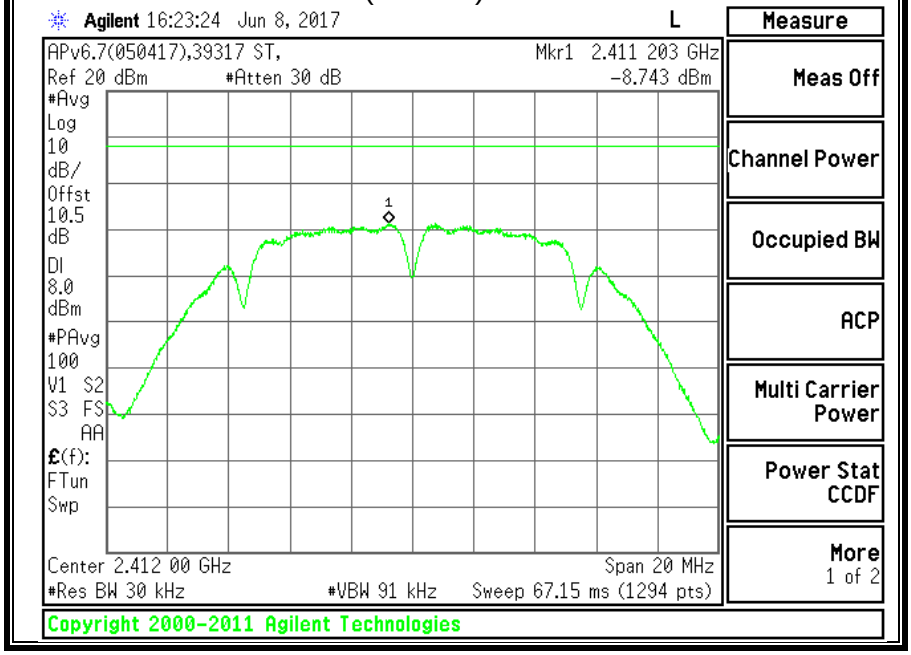
2.4GHz 2TX CPSD CH1 (Chain 0)



2.4GHz 2TX CPSD CH1 (Chain 1)



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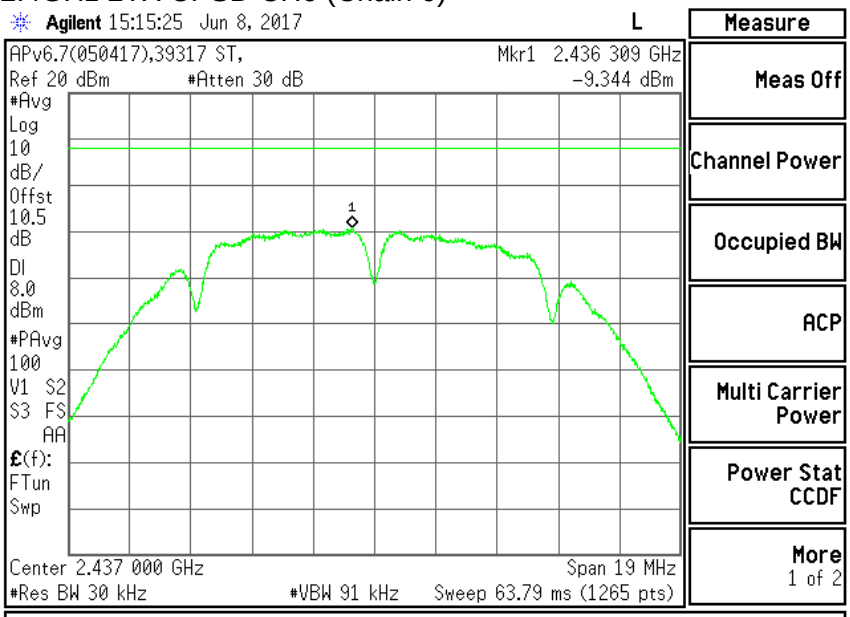
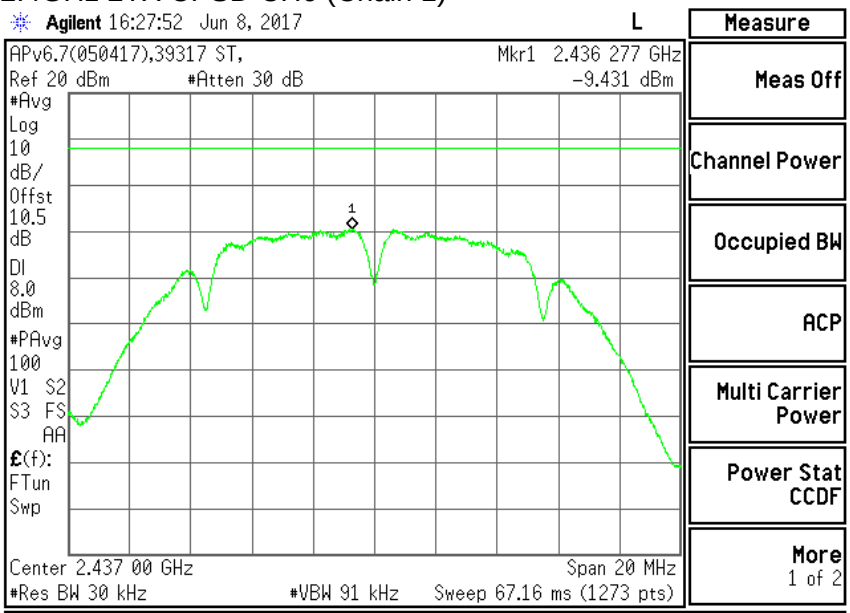
2.4GHz 2TX CPSD CH6 (Chain 0)



2.4GHz 2TX CPSD CH6 (Chain 1)



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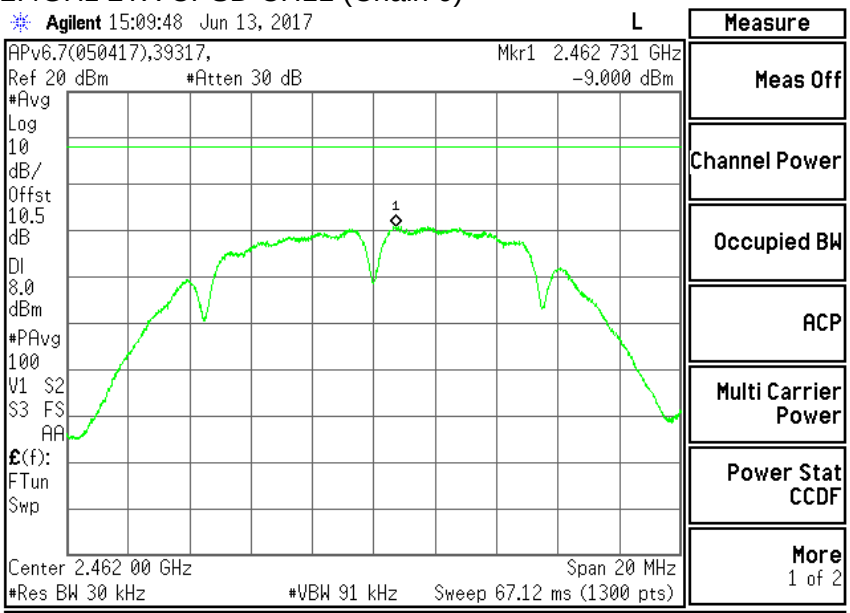
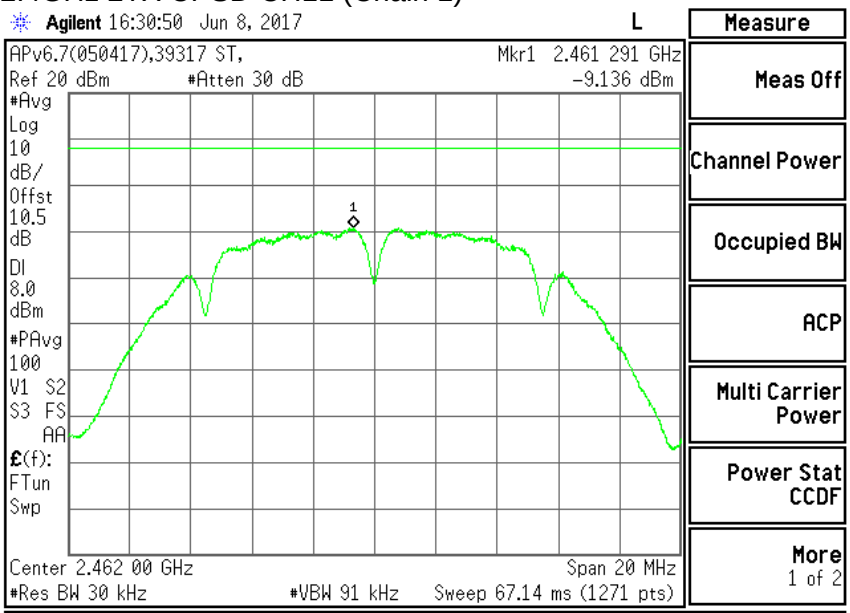
2.4GHz 2TX CPSD CH11 (Chain 0)



UL:40805 \ R Date:5/15/2017 \ CLT:2.3

2.4GHz 2TX CPSD CH11 (Chain 1)



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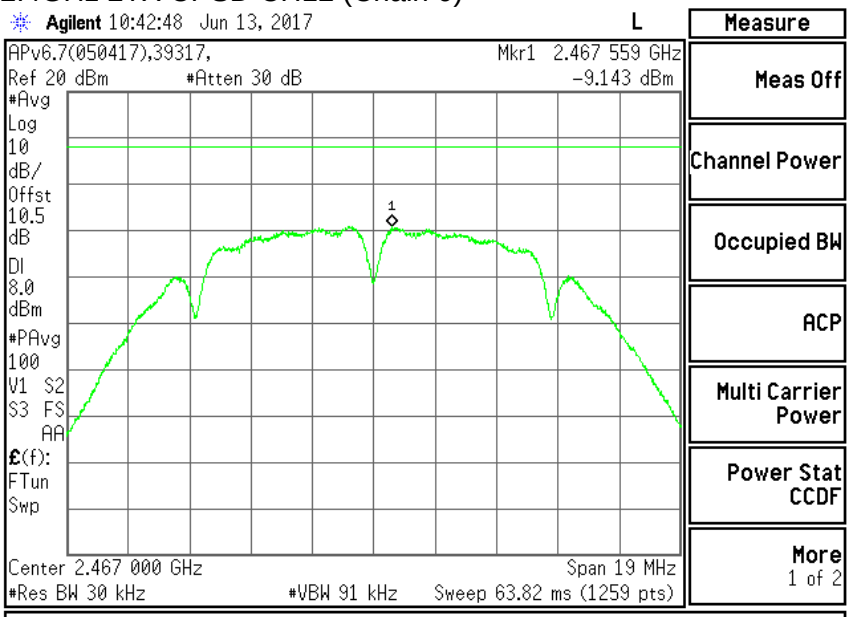
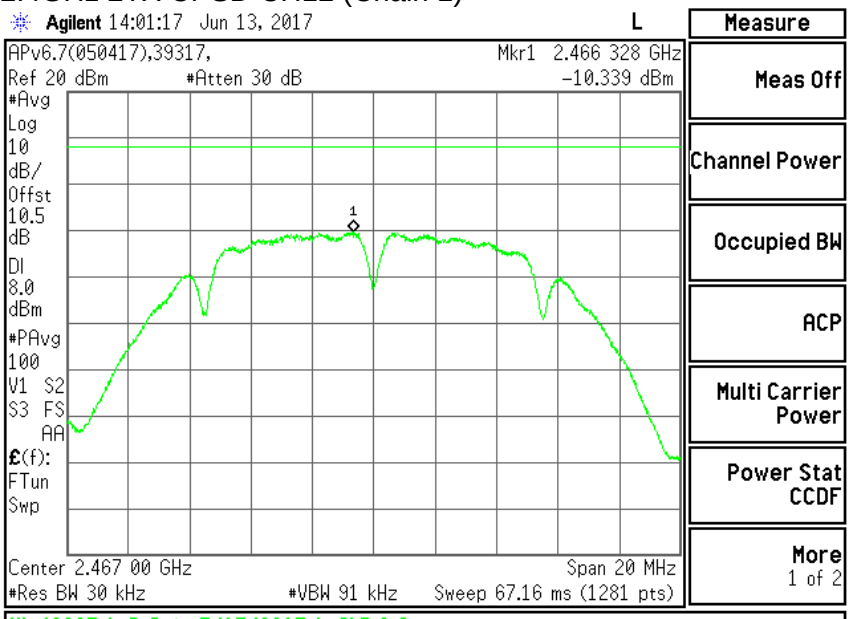
2.4GHz 2TX CPSD CH12 (Chain 0)



2.4GHz 2TX CPSD CH12 (Chain 1)



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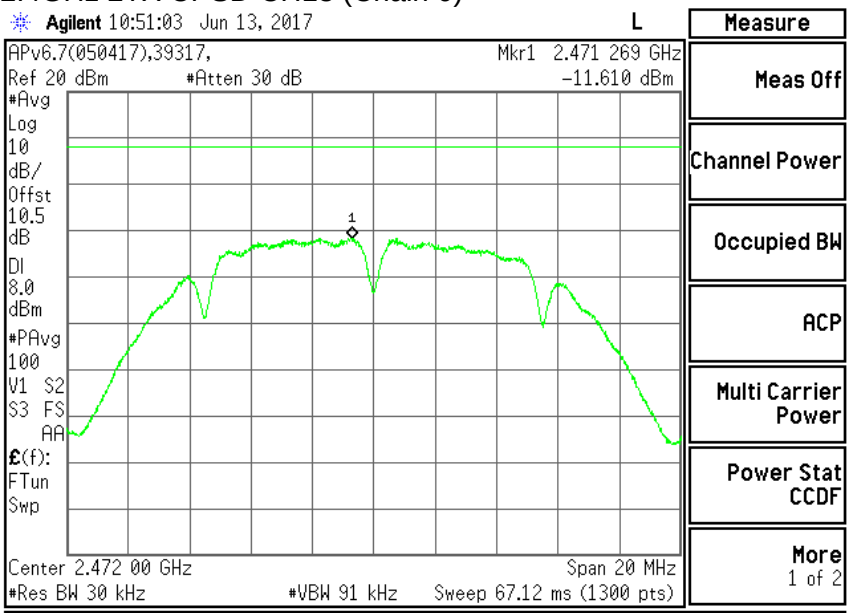
2.4GHz 2TX CPSD CH13 (Chain 0)



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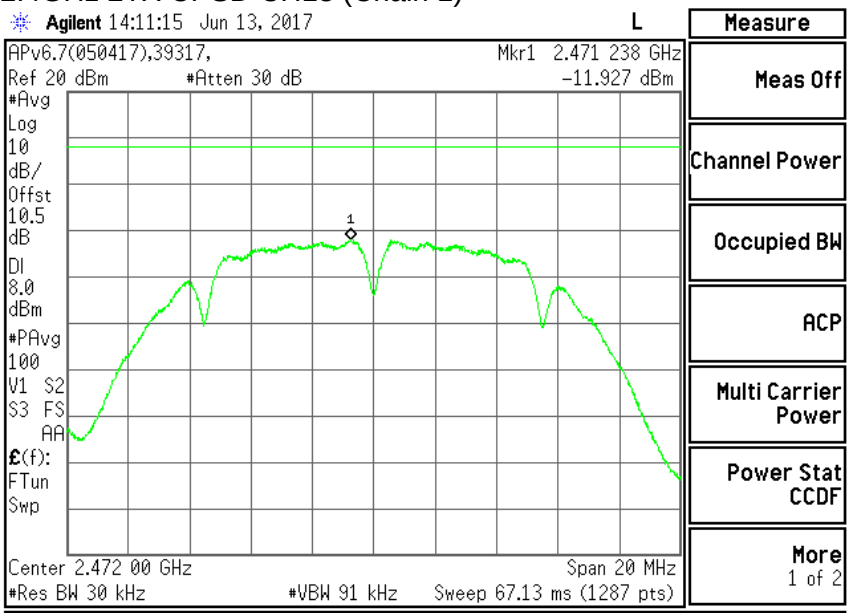

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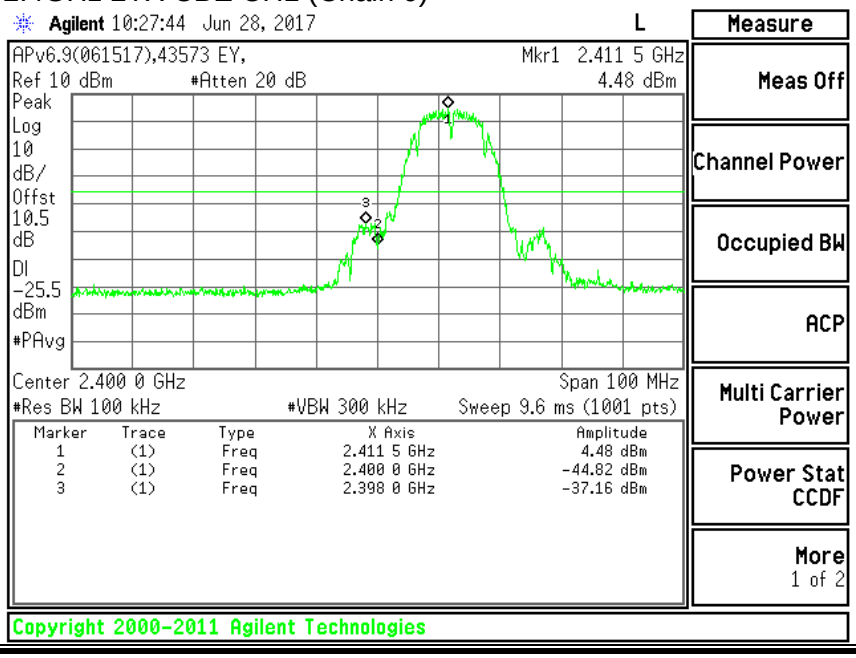
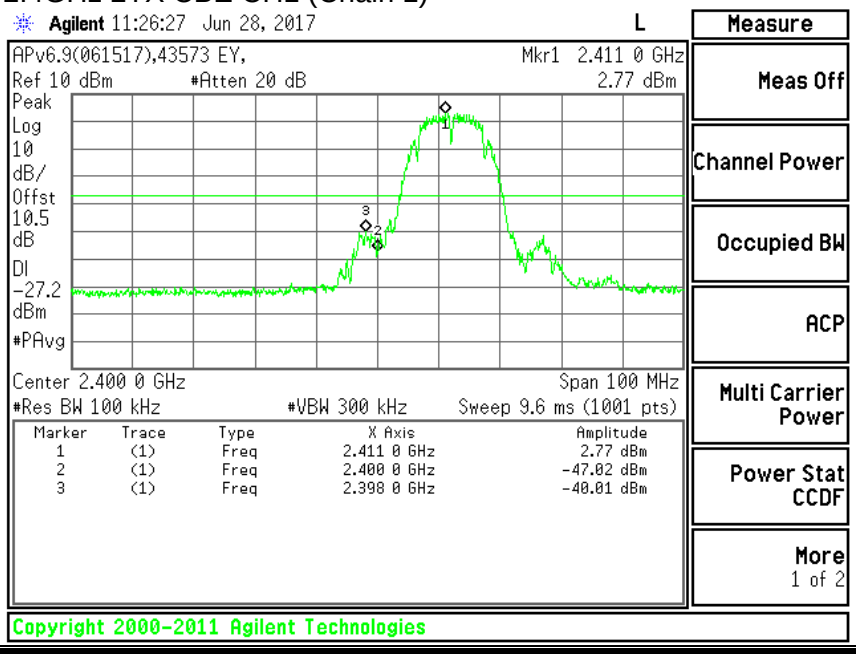
9.2.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

2.4GHz 2TX CBE CH1 (Chain 0)



2.4GHz 2TX CBE CH1 (Chain 1)



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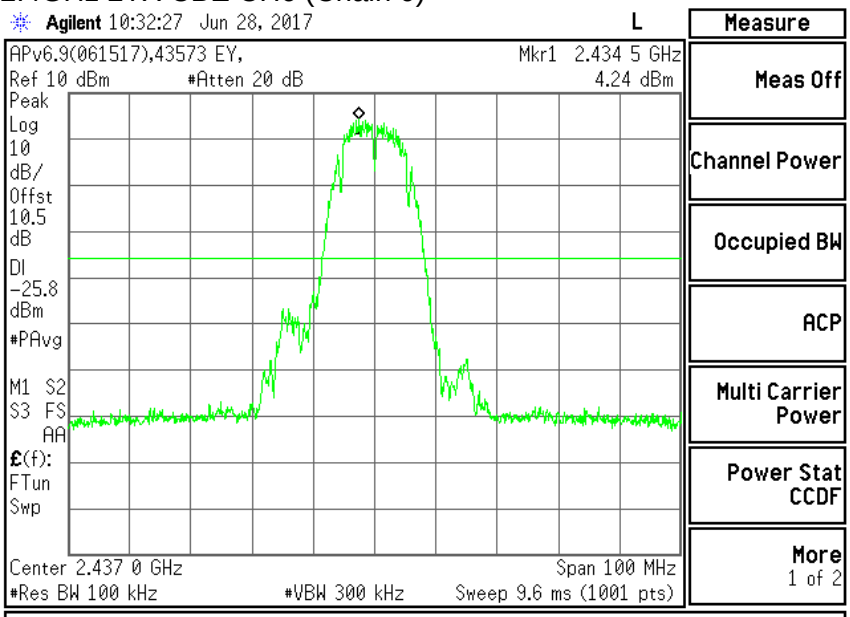
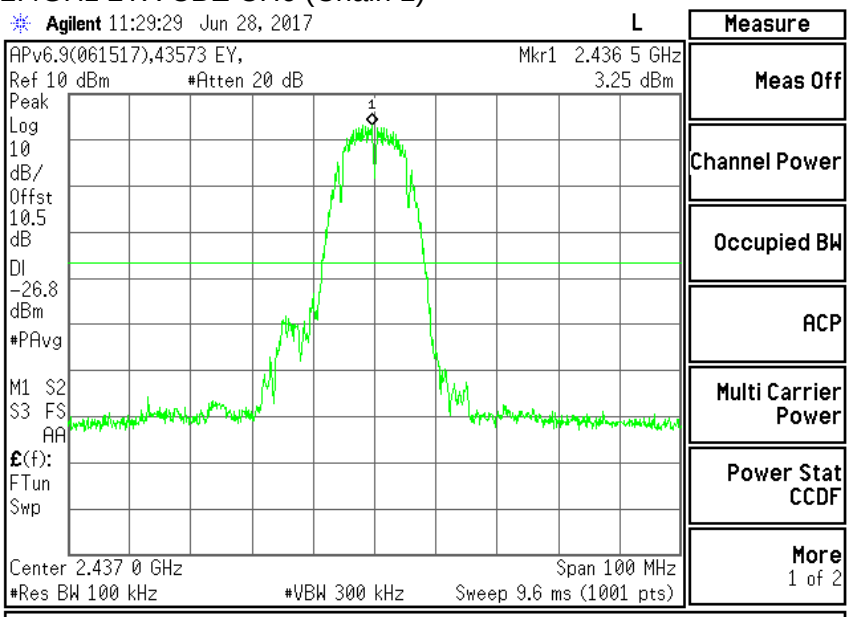
2.4GHz 2TX CBE CH6 (Chain 0)



2.4GHz 2TX CBE CH6 (Chain 1)



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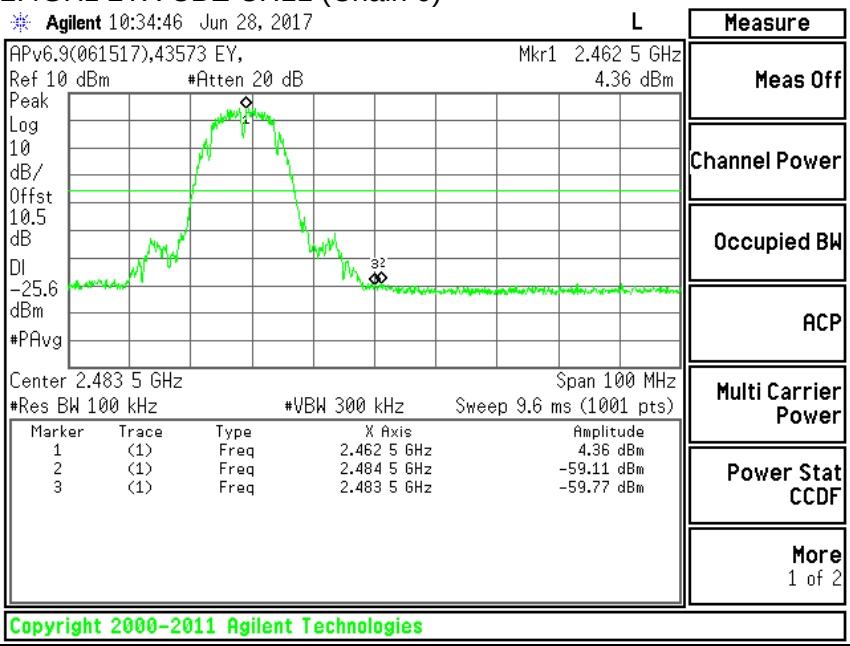
2.4GHz 2TX CBE CH11 (Chain 0)



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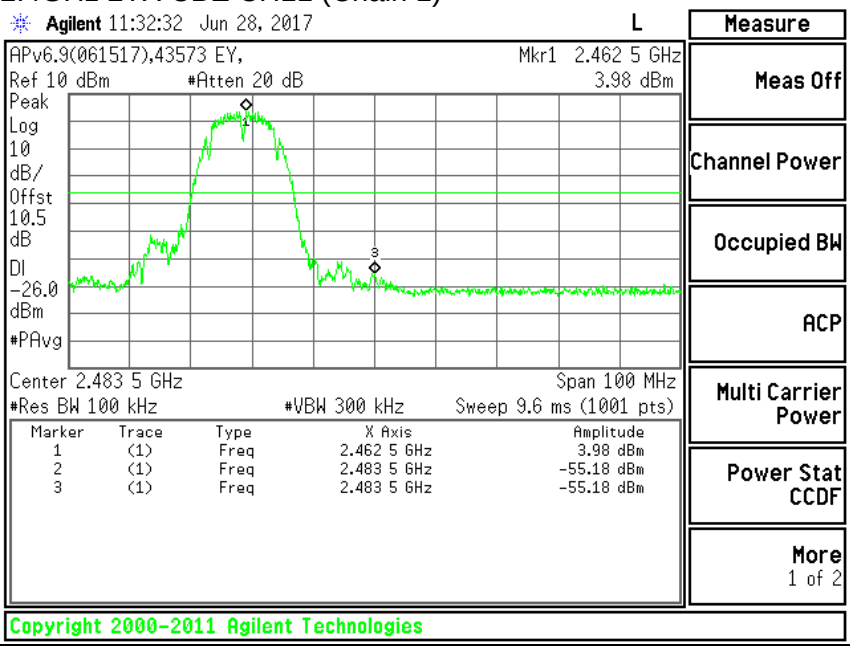

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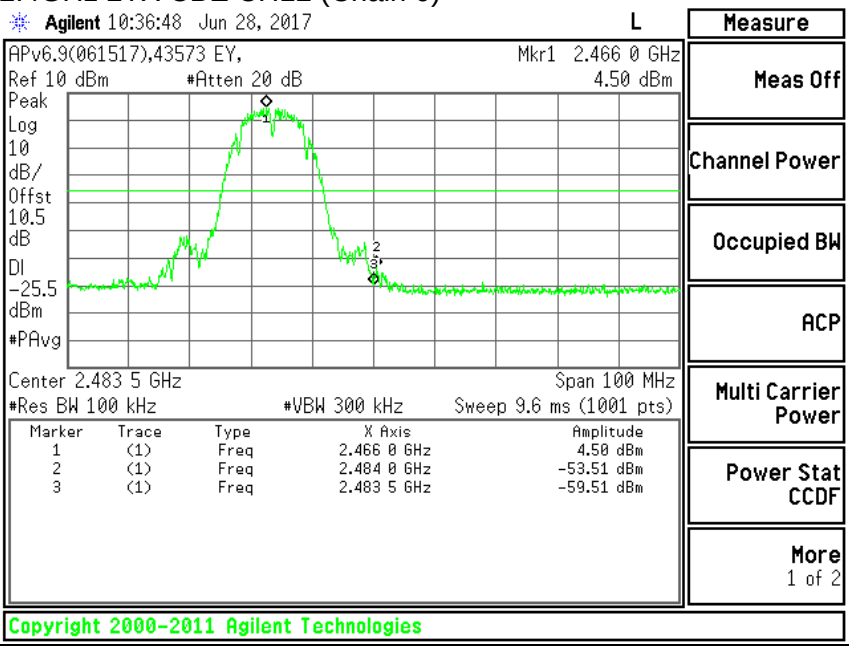
2.4GHz 2TX CBE CH12 (Chain 0)



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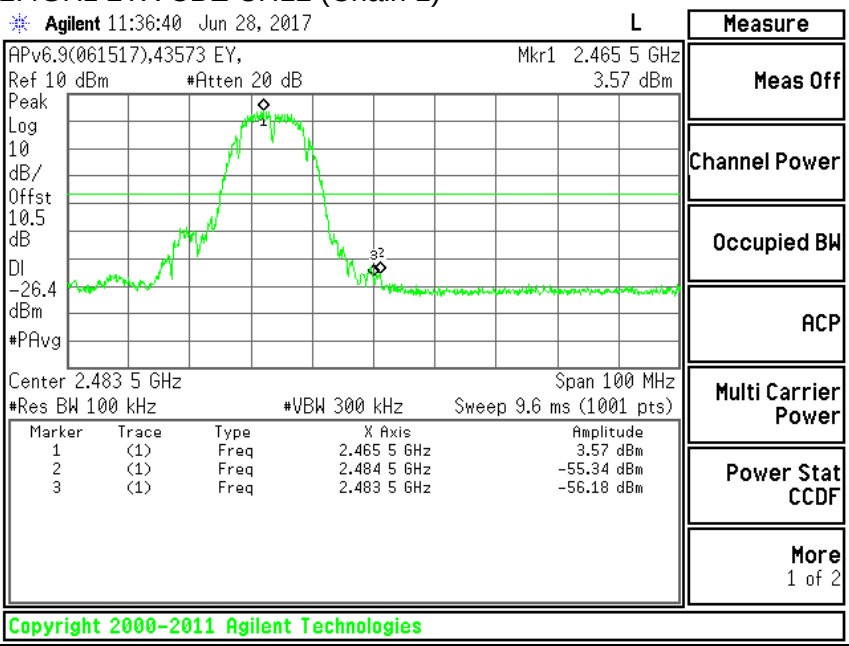

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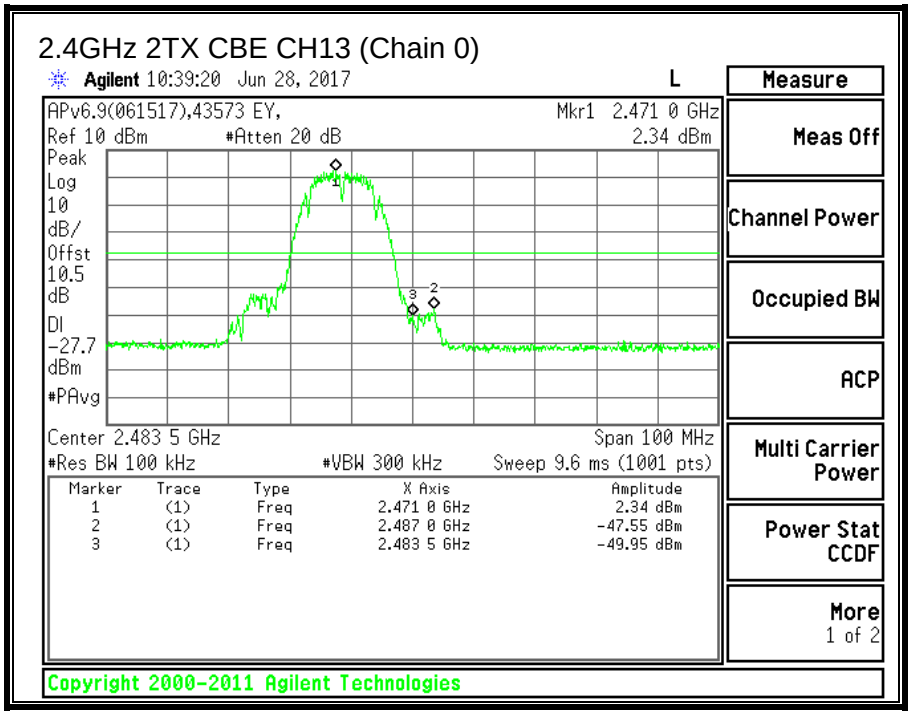
2.4GHz 2TX CBE CH13 (Chain 0)



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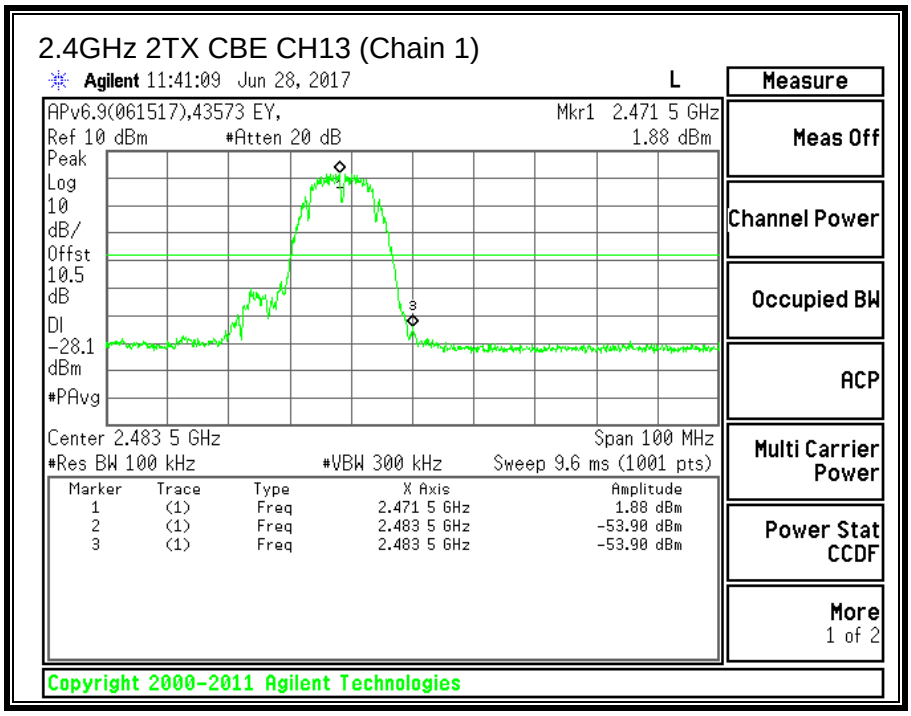

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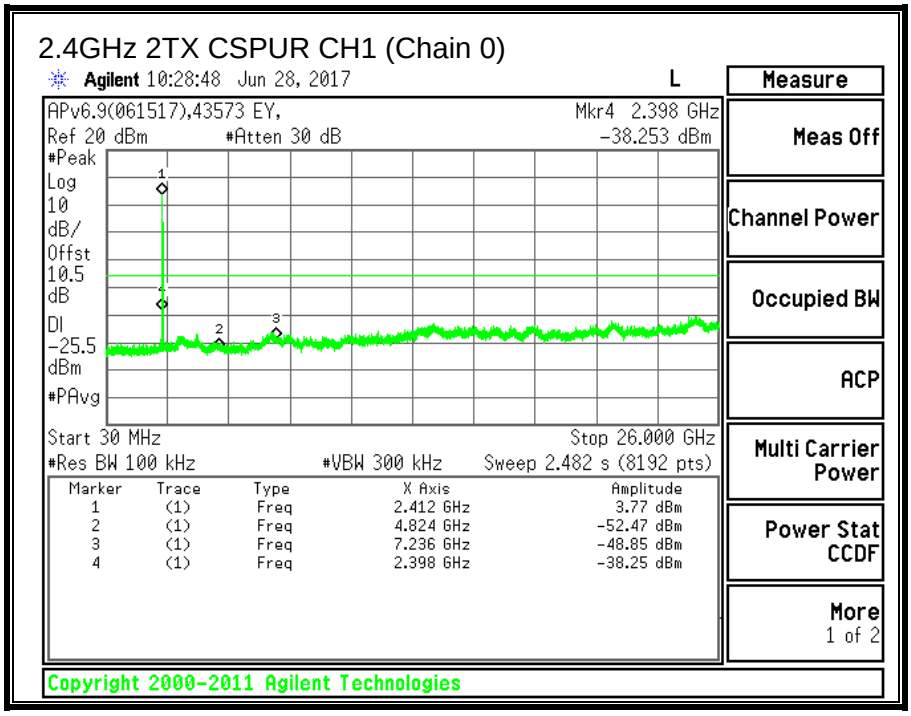
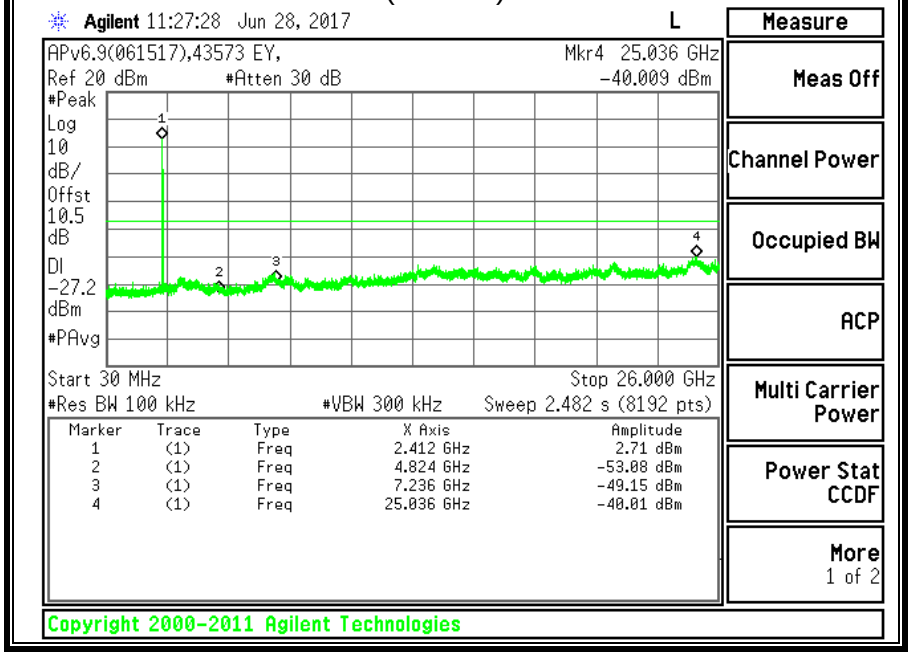
2.4GHz 2TX CSPUR CH1 (Chain 0)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.412 GHz	3.77 dBm
2	(1)	Freq	4.824 GHz	-52.47 dBm
3	(1)	Freq	7.236 GHz	-48.85 dBm
4	(1)	Freq	2.398 GHz	-38.25 dBm

2.4GHz 2TX CSPUR CH1 (Chain 1)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.412 GHz	2.71 dBm
2	(1)	Freq	4.824 GHz	-53.08 dBm
3	(1)	Freq	7.236 GHz	-49.15 dBm
4	(1)	Freq	25.036 GHz	-40.01 dBm

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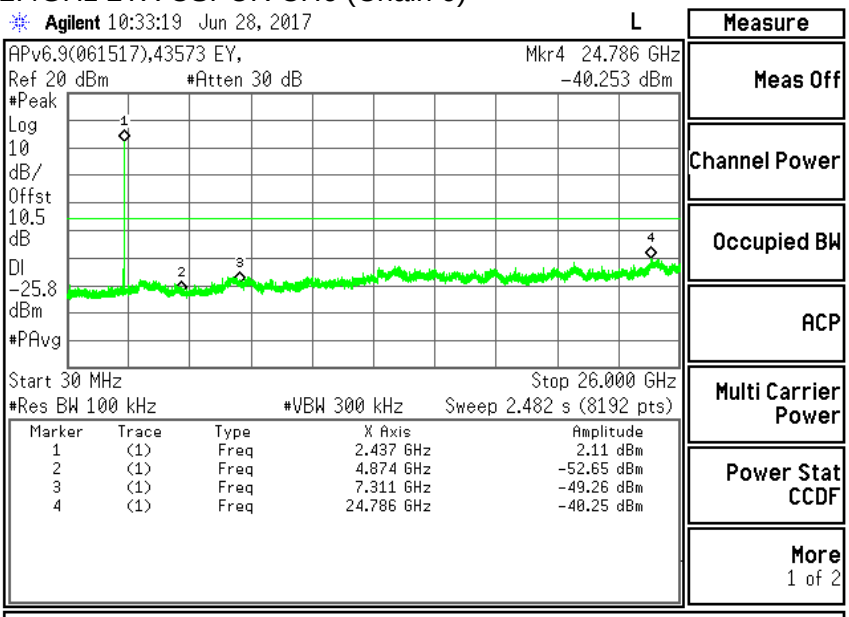
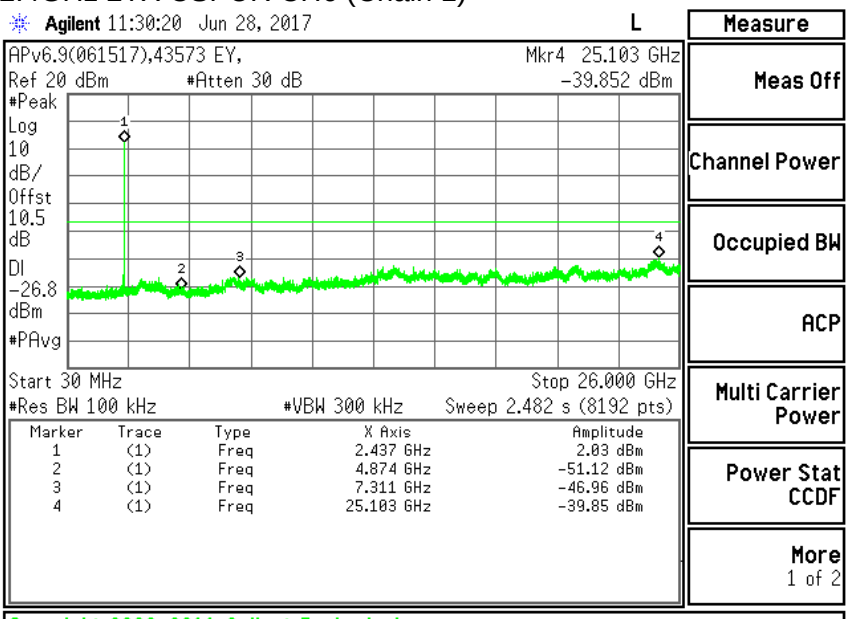
2.4GHz 2TX CSPUR CH6 (Chain 0)



2.4GHz 2TX CSPUR CH6 (Chain 1)



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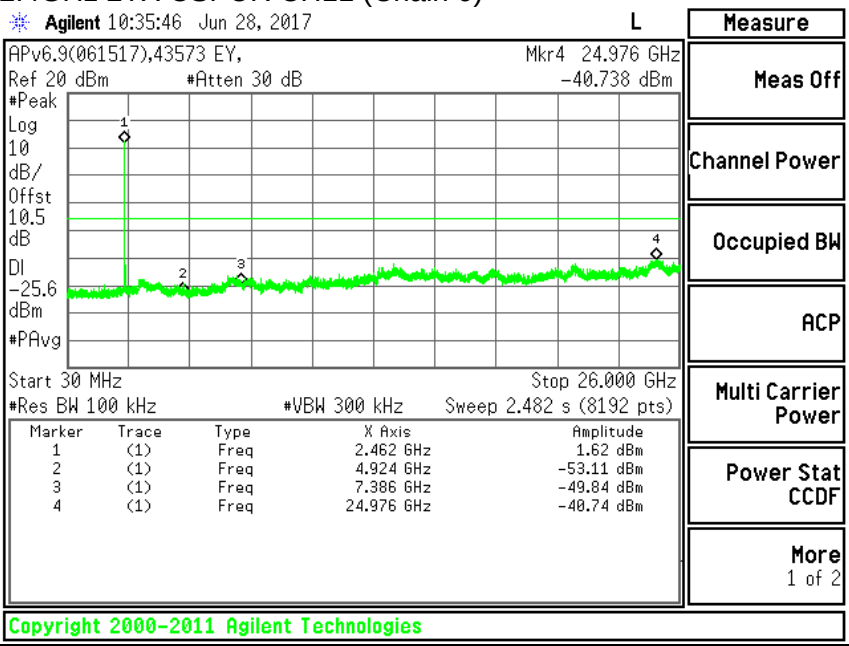
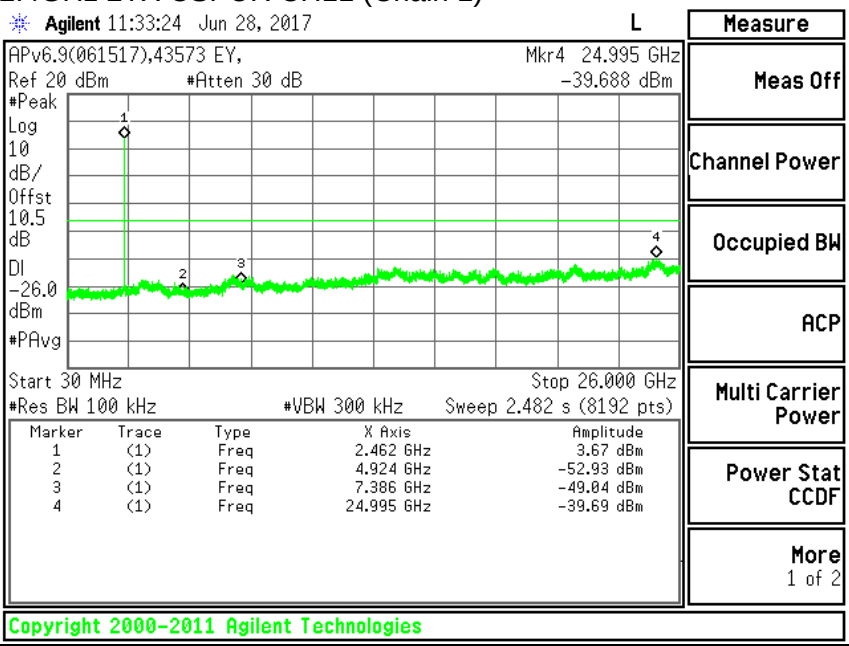
2.4GHz 2TX CSPUR CH11 (Chain 0)



2.4GHz 2TX CSPUR CH11 (Chain 1)



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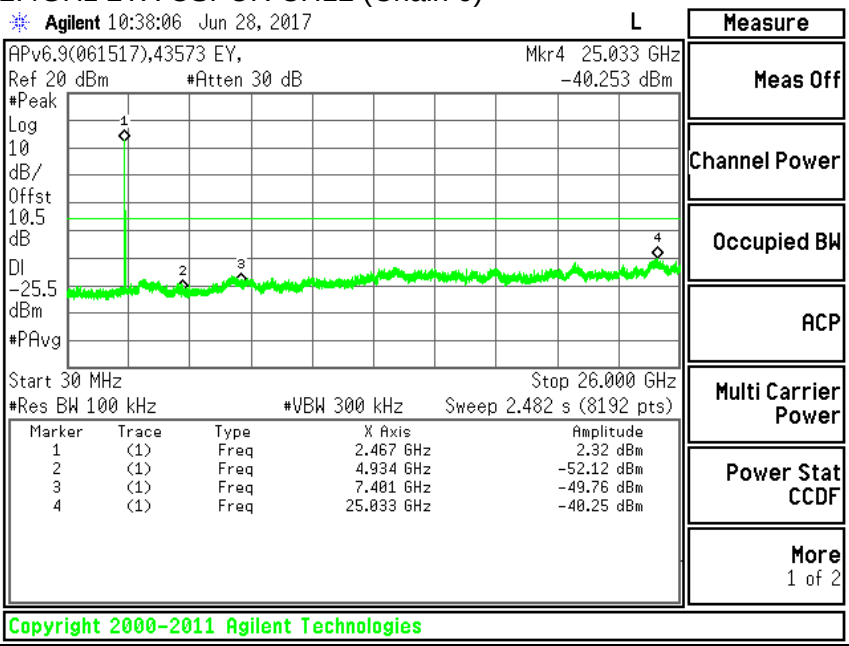
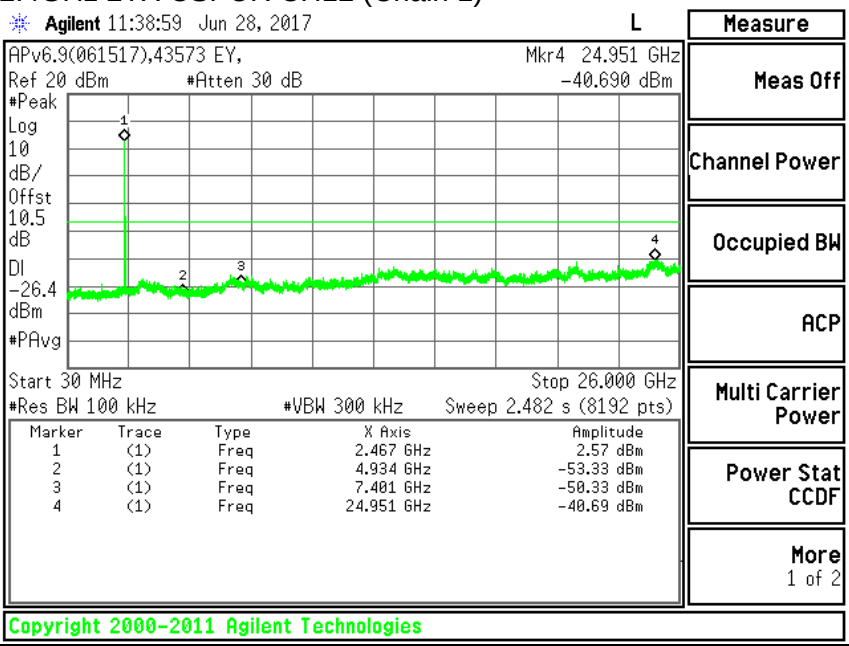
2.4GHz 2TX CSPUR CH12 (Chain 0)



2.4GHz 2TX CSPUR CH12 (Chain 1)



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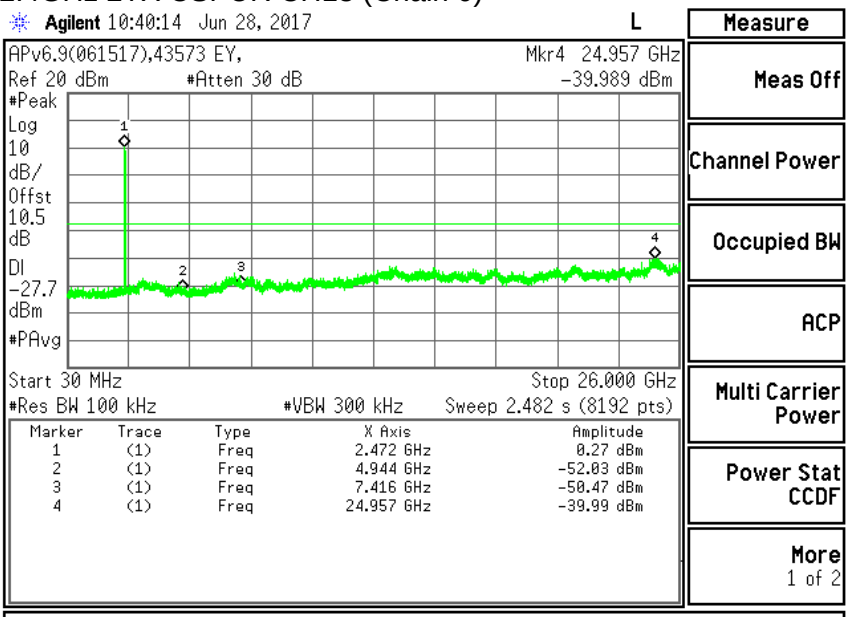
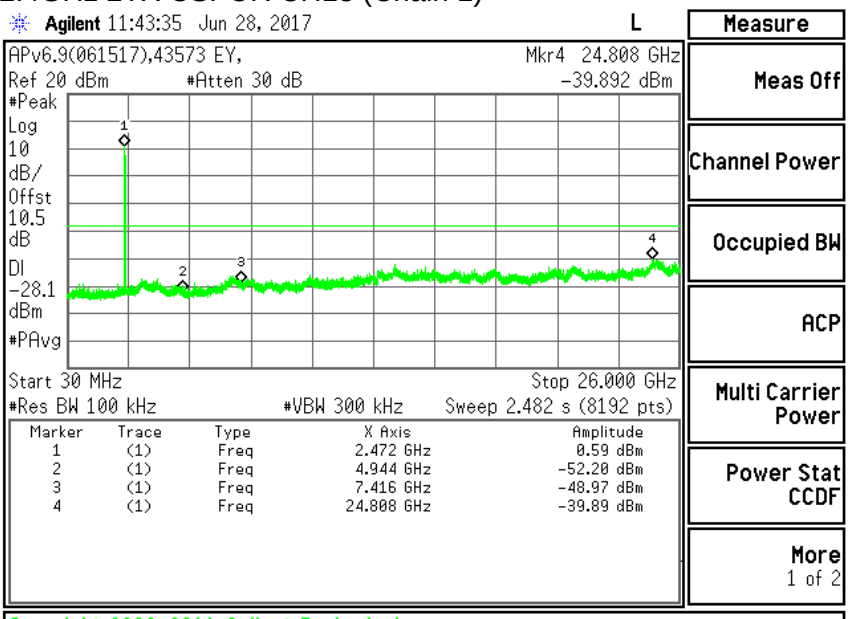
2.4GHz 2TX CSPUR CH13 (Chain 0)



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	16.36	16.36	0.5
CH2	2417	16.40	16.36	0.5
CH6	2437	16.44	15.68	0.5
CH11	2462	16.40	15.96	0.5
CH12	2467	16.32	16.40	0.5
CH13	2472	16.44	16.48	0.5

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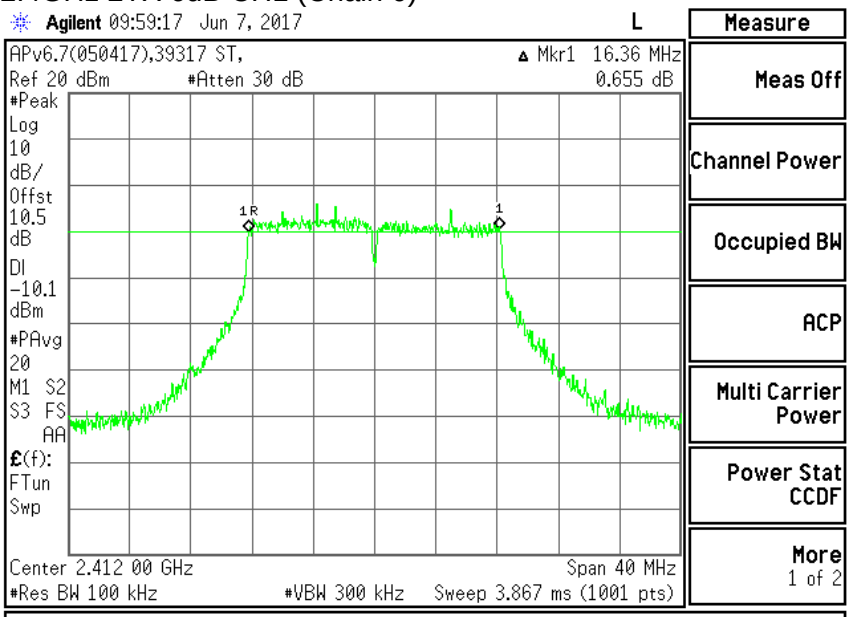
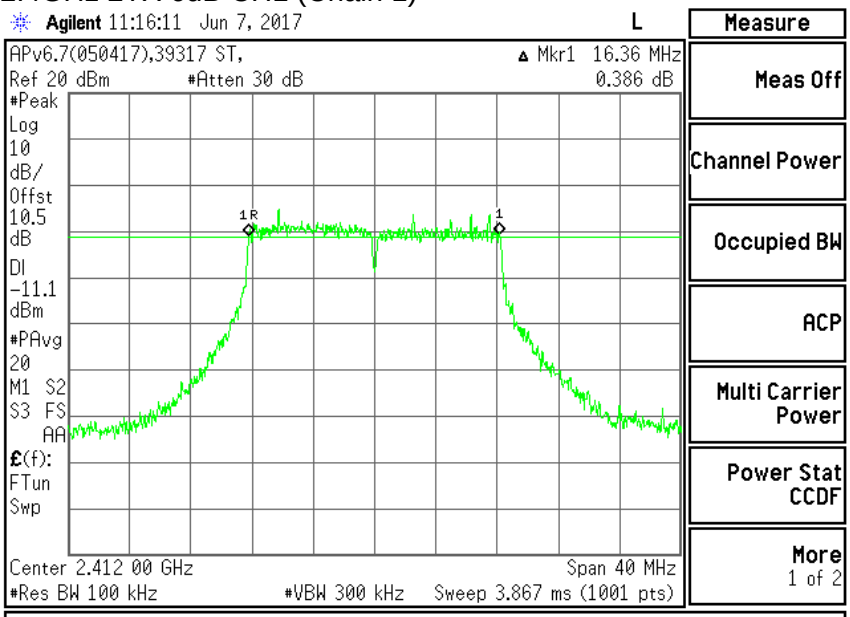
2.4GHz 2TX 6dB CH1 (Chain 0)



2.4GHz 2TX 6dB CH1 (Chain 1)



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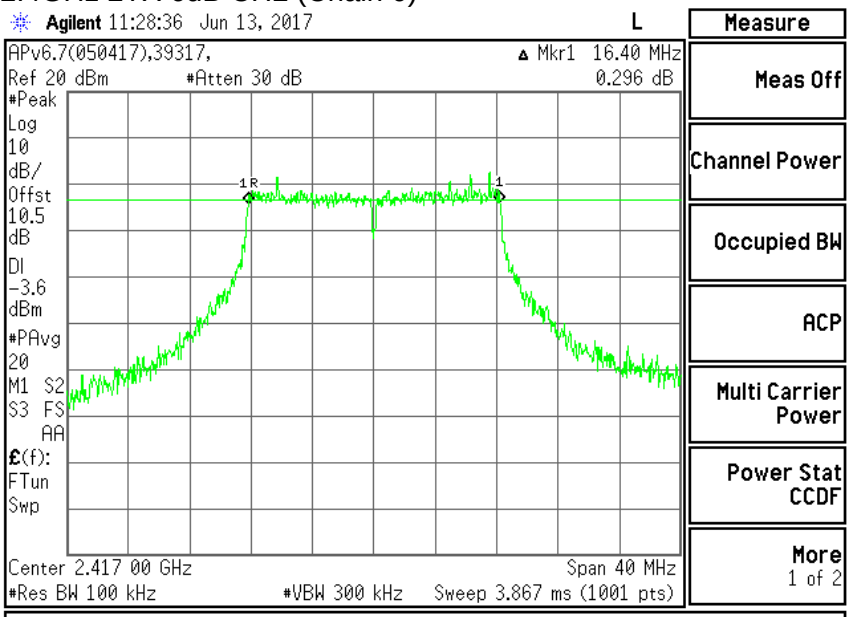
2.4GHz 2TX 6dB CH2 (Chain 0)



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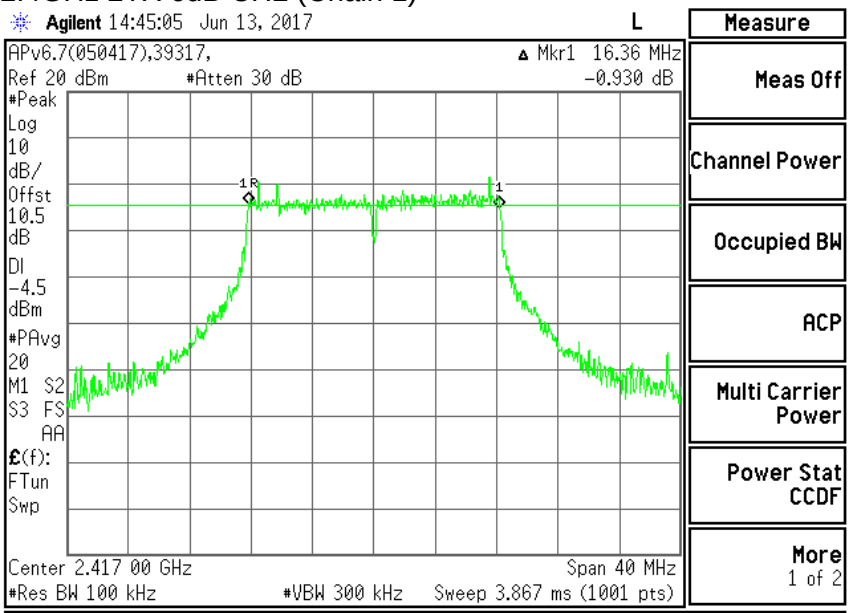
2.4GHz 2TX 6dB CH2 (Chain 1)



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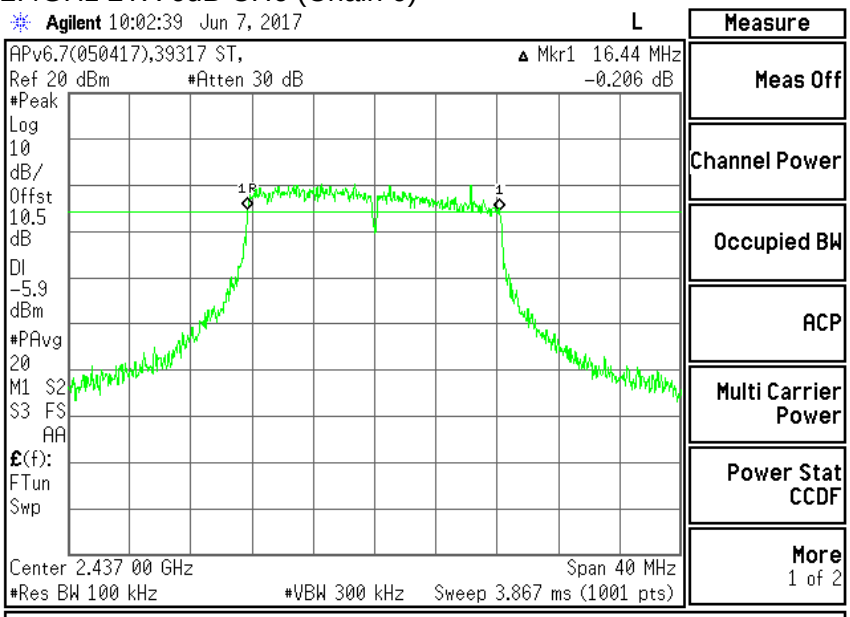
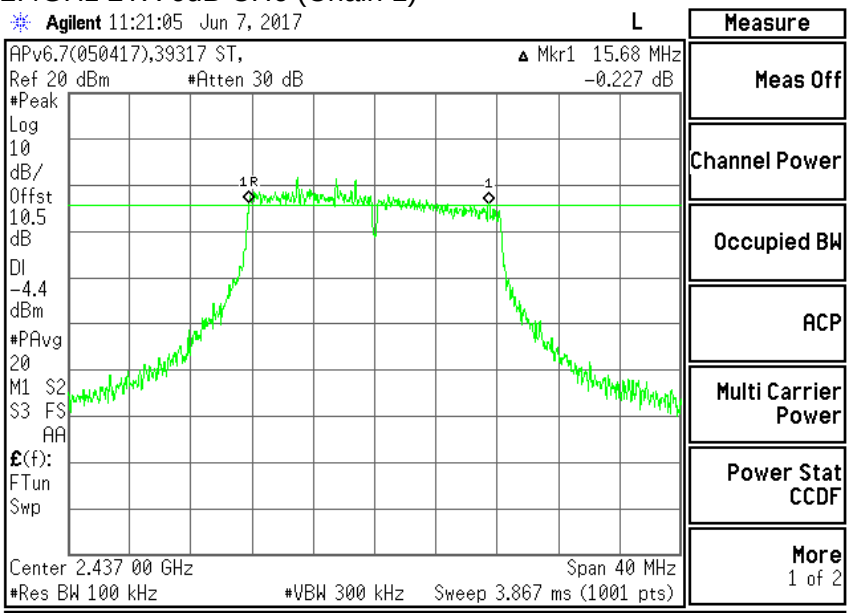
2.4GHz 2TX 6dB CH6 (Chain 0)



2.4GHz 2TX 6dB CH6 (Chain 1)



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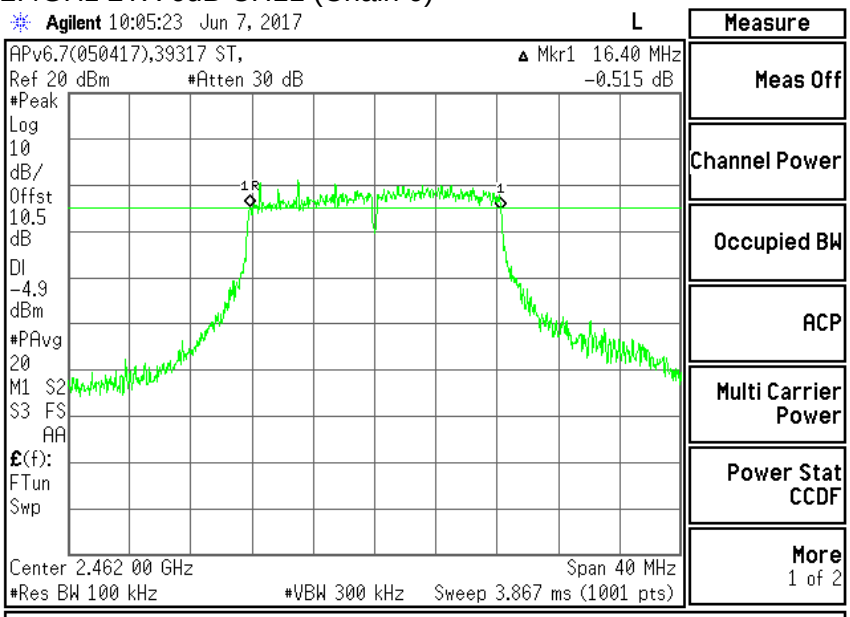
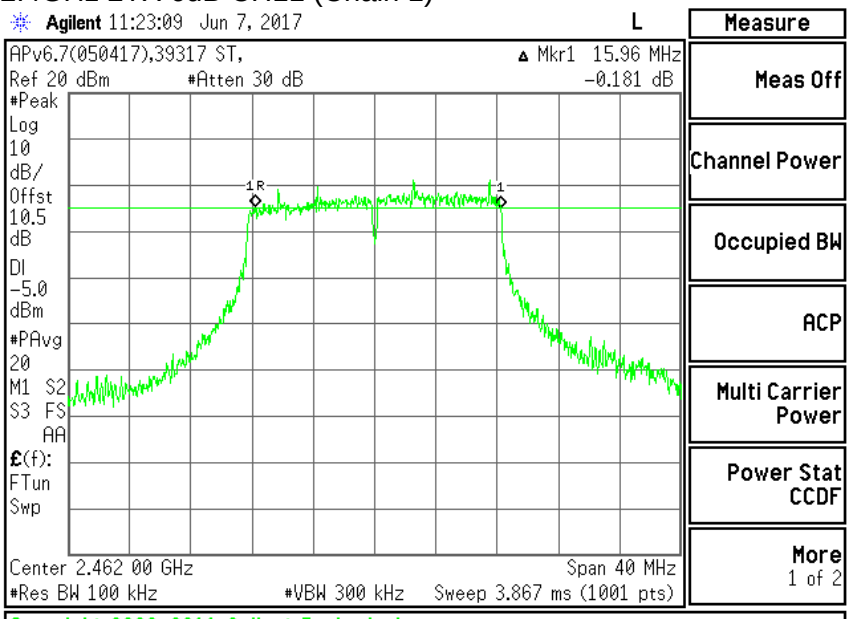
2.4GHz 2TX 6dB CH11 (Chain 0)



2.4GHz 2TX 6dB CH11 (Chain 1)



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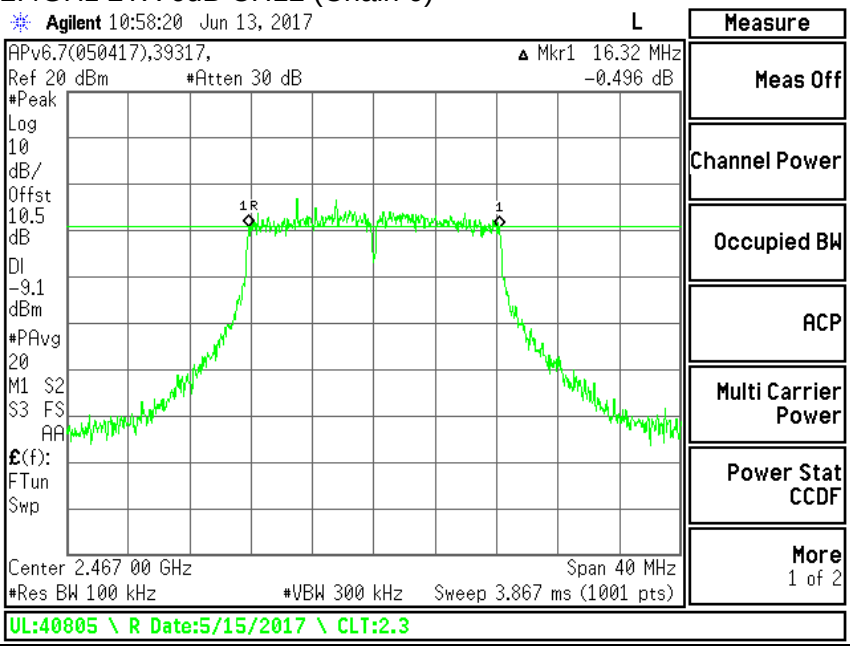
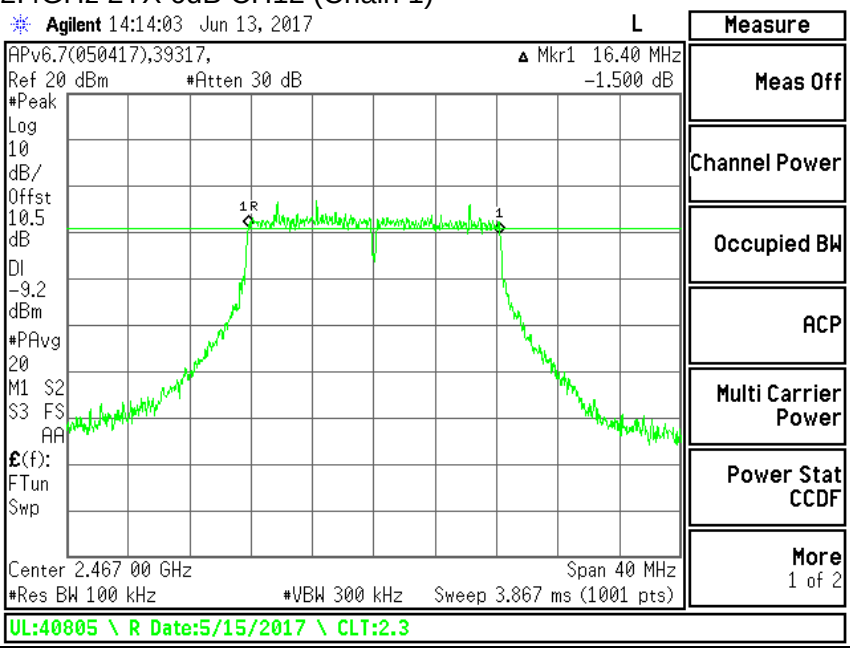
2.4GHz 2TX 6dB CH12 (Chain 0)



2.4GHz 2TX 6dB CH12 (Chain 1)



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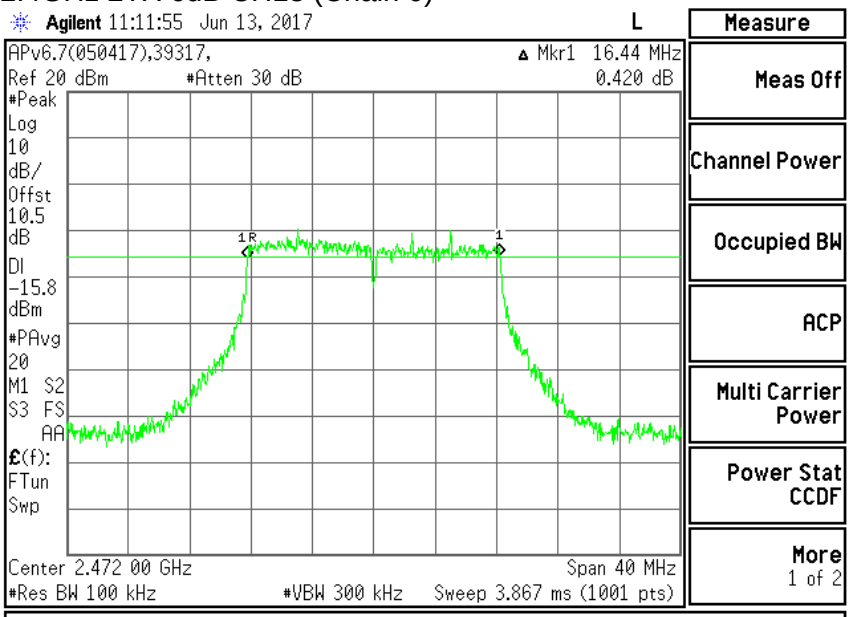
2.4GHz 2TX 6dB CH13 (Chain 0)



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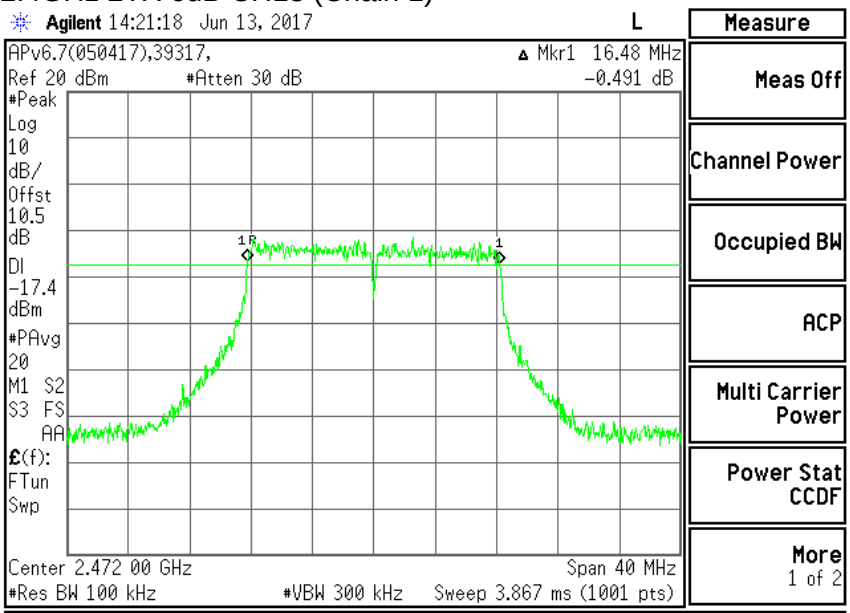
2.4GHz 2TX 6dB CH13 (Chain 1)



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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	16.26	16.21
CH2	2417	16.42	16.22
CH6	2437	16.20	16.09
CH11	2462	16.08	16.34
CH12	2467	16.29	16.37
CH13	2472	16.23	16.42

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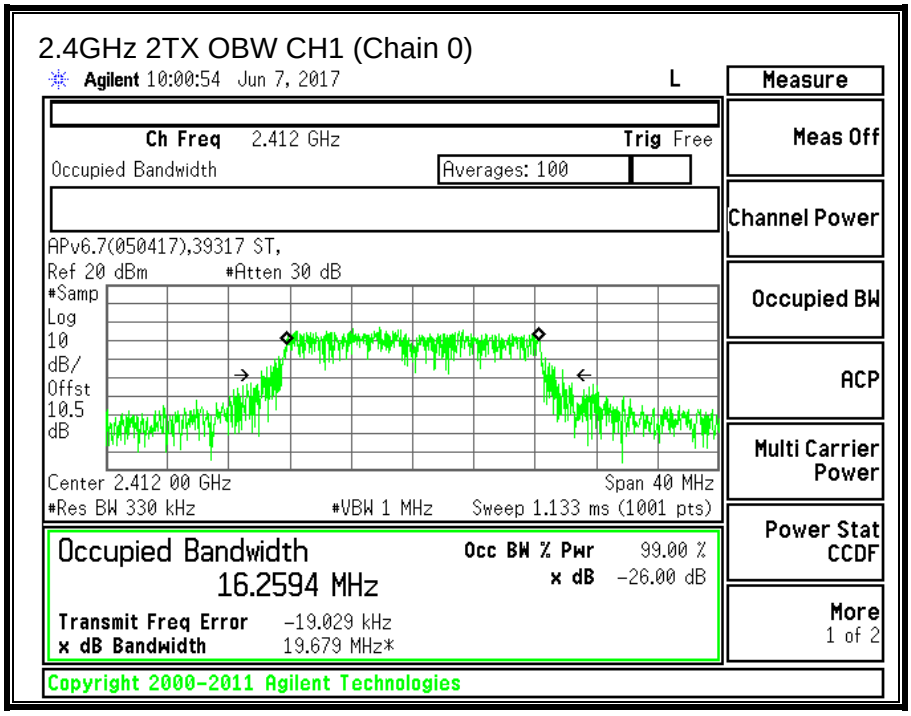
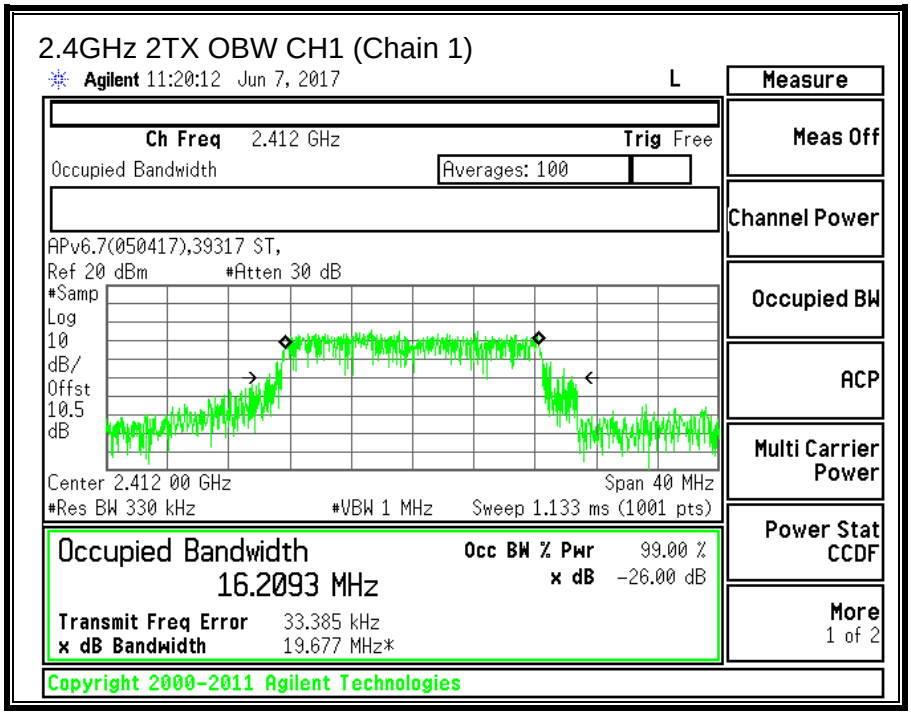
2.4GHz 2TX OBW CH1 (Chain 0)



2.4GHz 2TX OBW CH1 (Chain 1)



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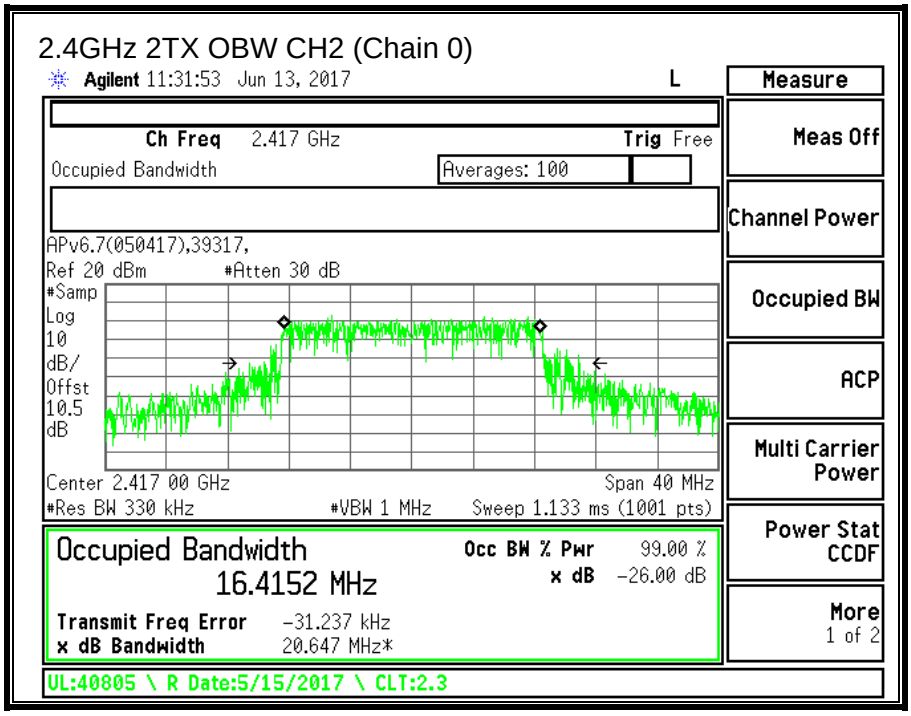
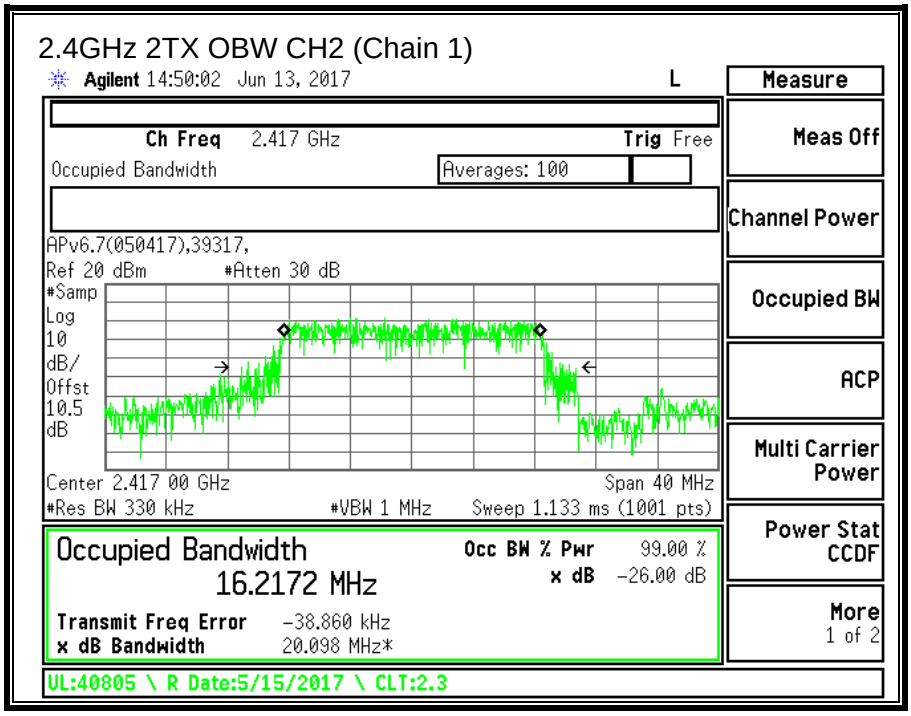
2.4GHz 2TX OBW CH2 (Chain 0)



2.4GHz 2TX OBW CH2 (Chain 1)



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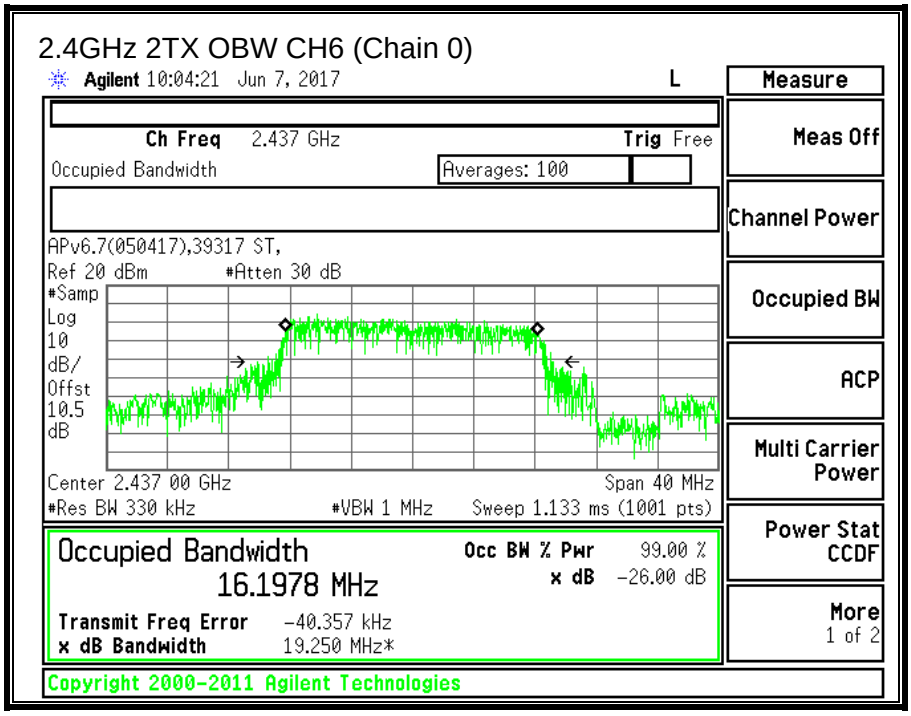
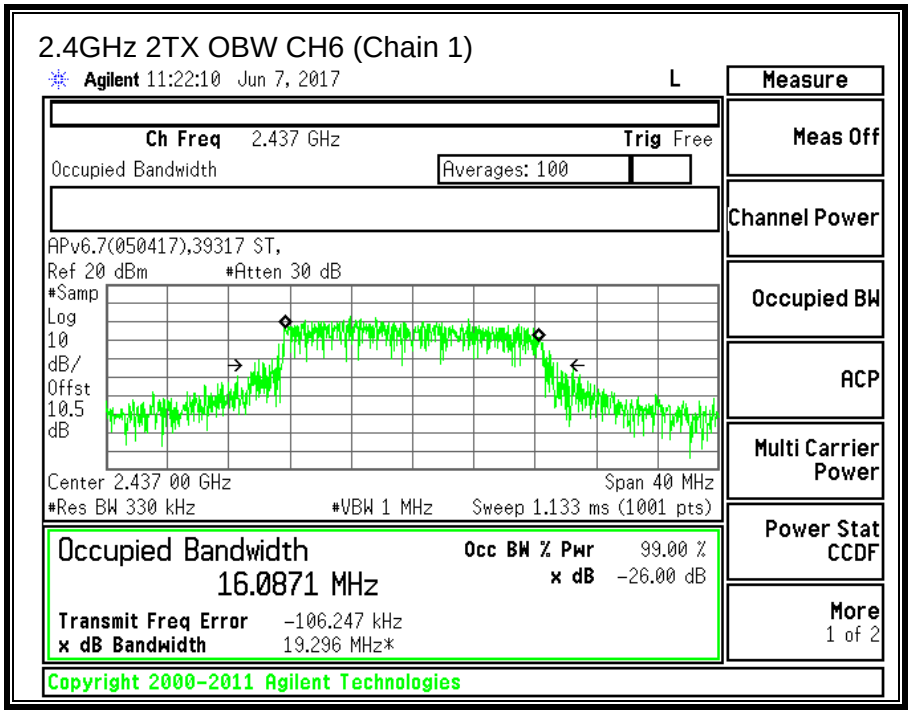
2.4GHz 2TX OBW CH6 (Chain 0)



2.4GHz 2TX OBW CH6 (Chain 1)



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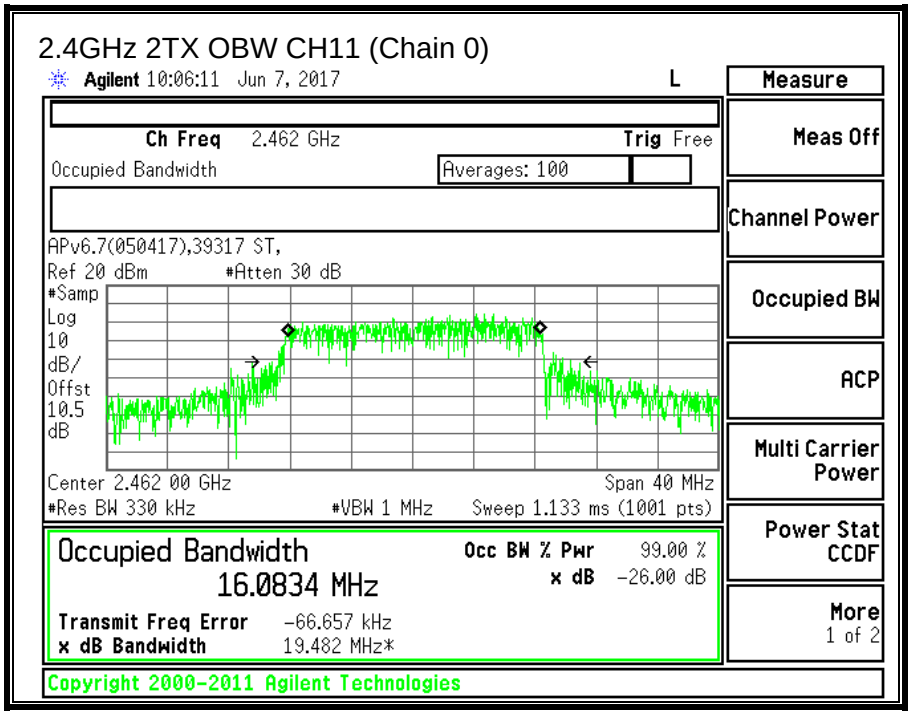
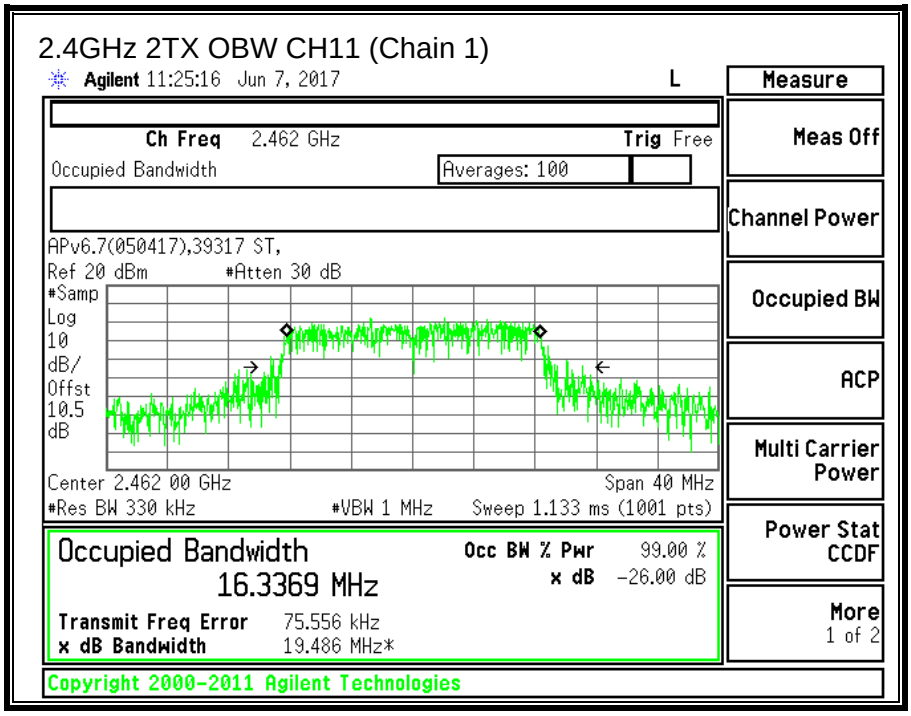
2.4GHz 2TX OBW CH11 (Chain 0)



2.4GHz 2TX OBW CH11 (Chain 1)



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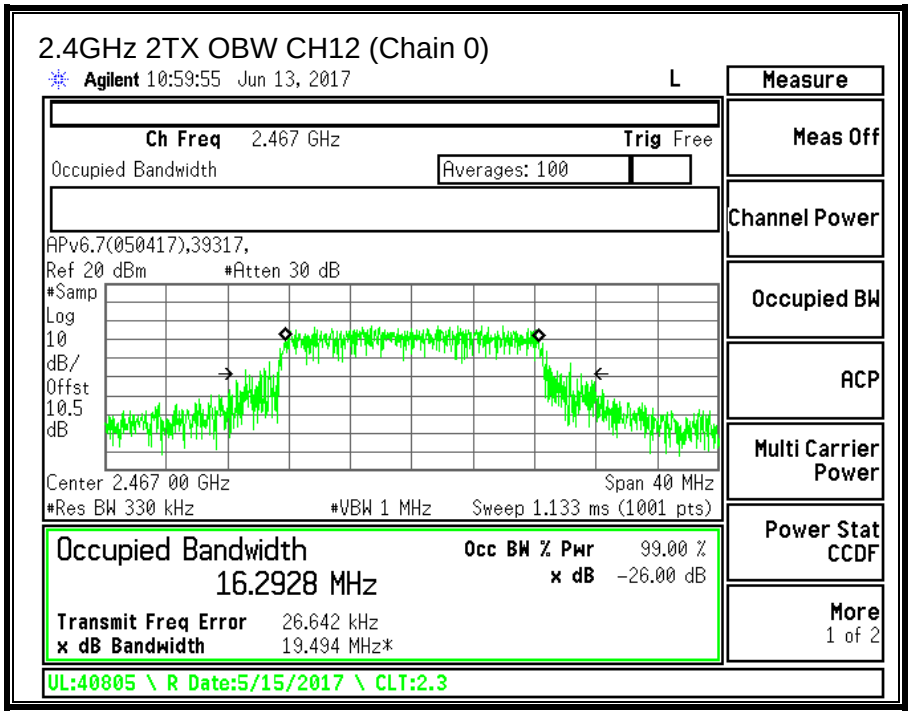
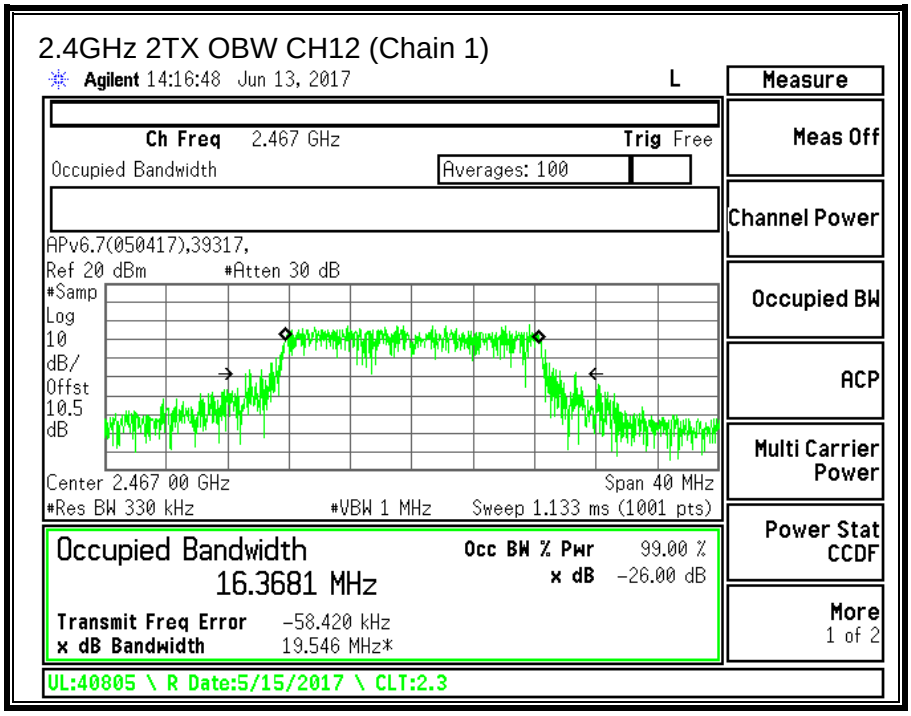
2.4GHz 2TX OBW CH12 (Chain 0)



2.4GHz 2TX OBW CH12 (Chain 1)



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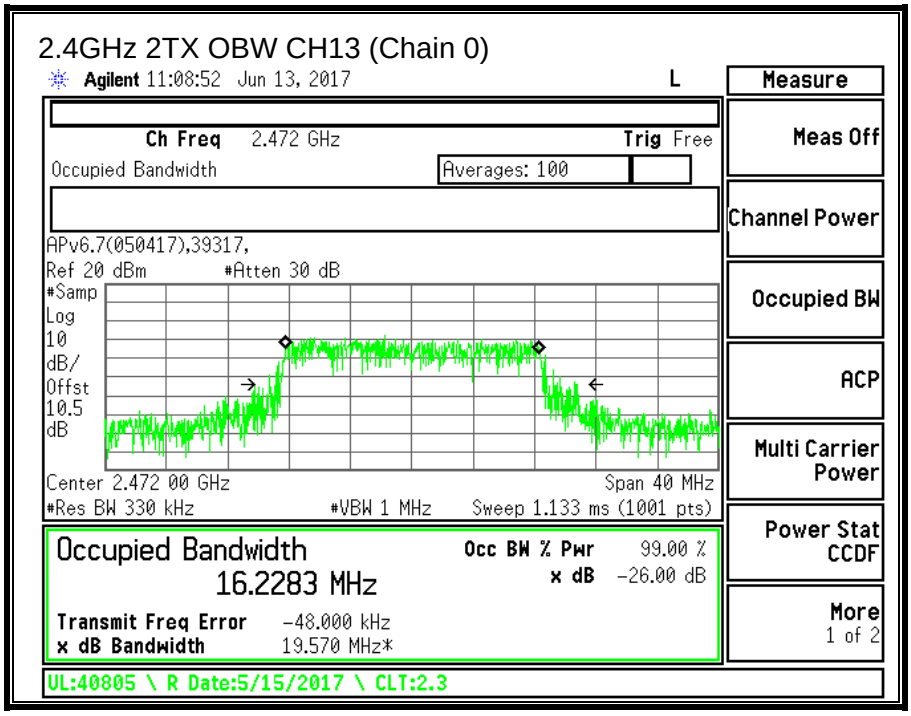
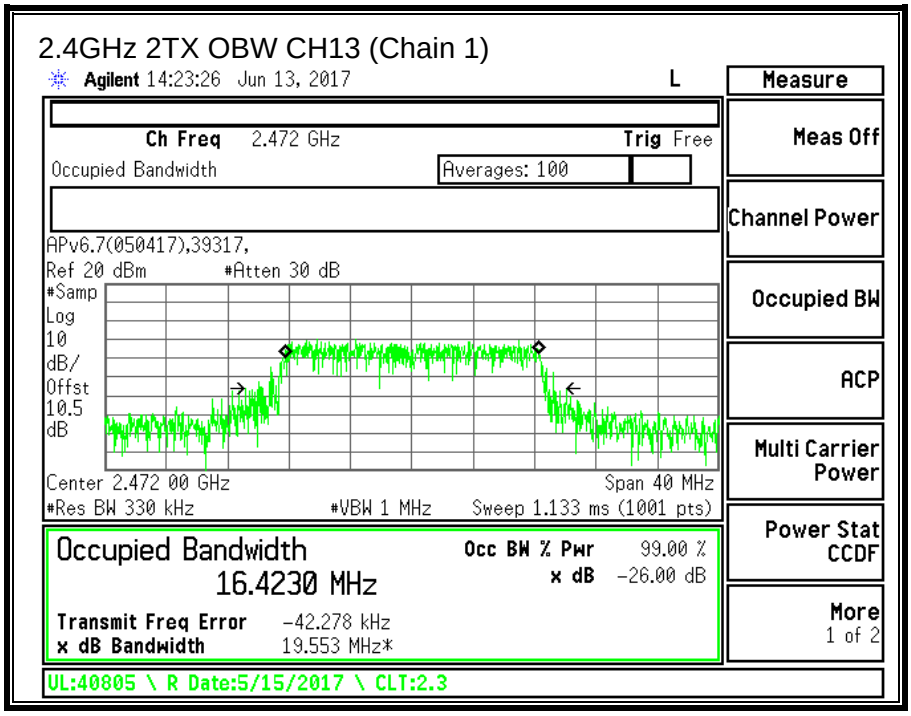
2.4GHz 2TX OBW CH13 (Chain 0)



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)
-2.80	-7.00	-4.41

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RESULTS

ID:	39703	Date:	06/06/2017

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-4.41	30.00	30	36	30.00
CH2	2417	-4.41	30.00	30	36	30.00
CH3	2422	-4.41	30.00	30	36	30.00
CH6	2437	-4.41	30.00	30	36	30.00
CH10	2457	-4.41	30.00	30	36	30.00
CH11	2462	-4.41	30.00	30	36	30.00
CH12	2467	-4.41	30.00	30	36	30.00
CH13	2472	-4.41	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	7.00	7.48	10.26	30.00	-19.74
CH2	2417	13.19	13.57	16.39	30.00	-13.61
CH3	2422	13.06	13.49	16.29	30.00	-13.71
CH6	2437	13.10	13.00	16.06	30.00	-13.94
CH10	2457	13.15	13.18	16.18	30.00	-13.82
CH11	2462	13.07	13.15	16.12	30.00	-13.88
CH12	2467	8.40	8.41	11.42	30.00	-18.58
CH13	2472	1.70	1.90	4.81	30.00	-25.19

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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9.3.4. 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)	0.25	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	-17.208	-16.881	-13.78	8.0	-21.8
CH2	2412	-11.040	-12.487	-8.44	8.0	-16.4
CH6	2437	-10.588	-10.650	-7.36	8.0	-15.4
CH11	2462	-10.836	-11.313	-7.81	8.0	-15.8
CH12	2467	-15.890	-16.386	-12.87	8.0	-20.9
CH13	2472	-21.757	-23.171	-19.15	8.0	-27.1

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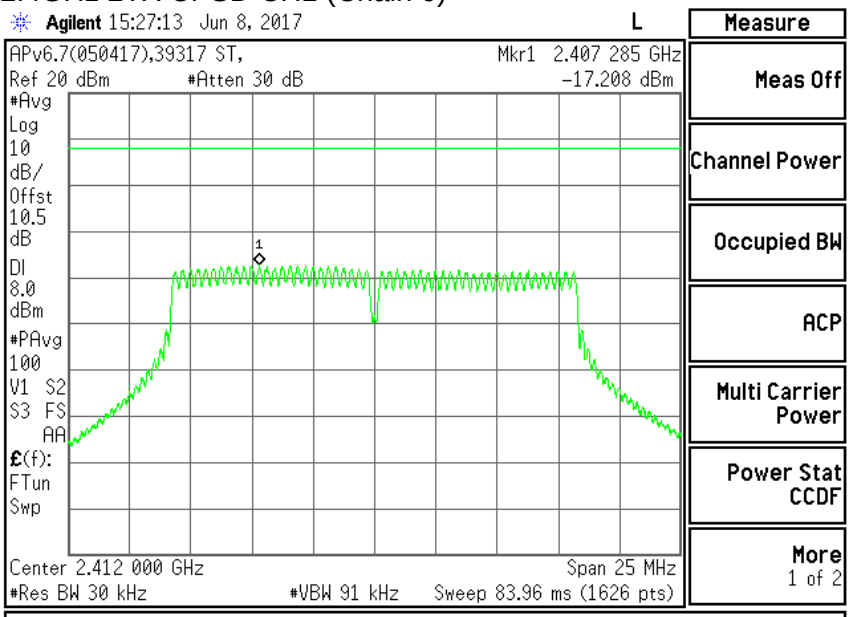
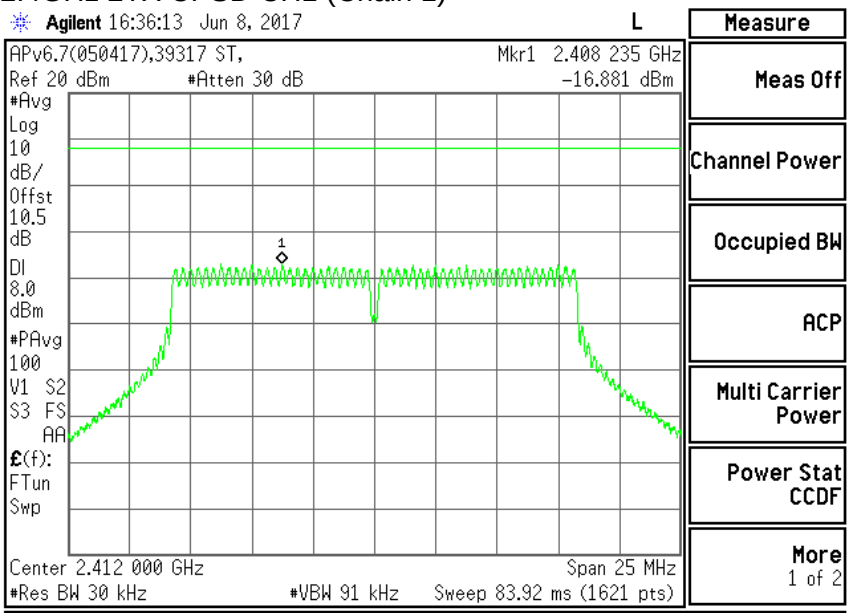
2.4GHz 2TX CPSD CH1 (Chain 0)



2.4GHz 2TX CPSD CH1 (Chain 1)



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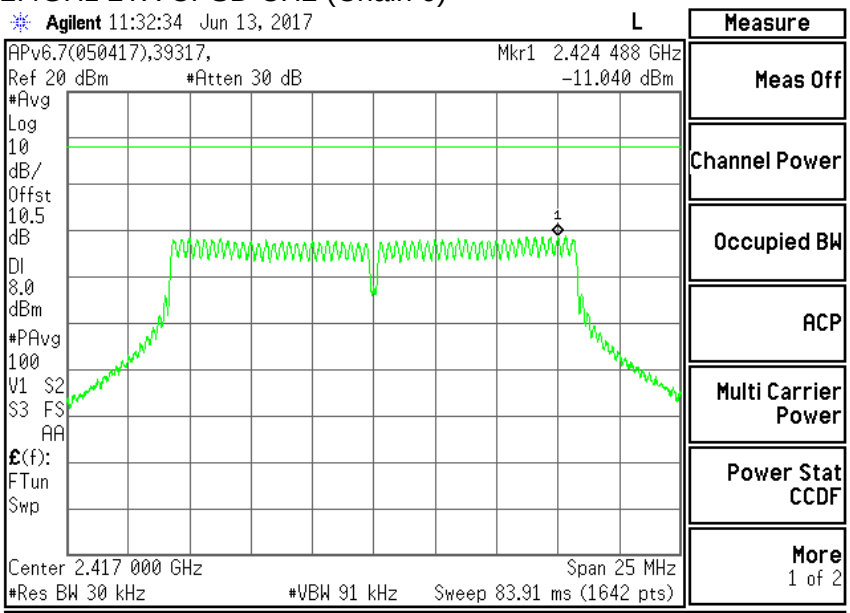
2.4GHz 2TX CPSD CH2 (Chain 0)



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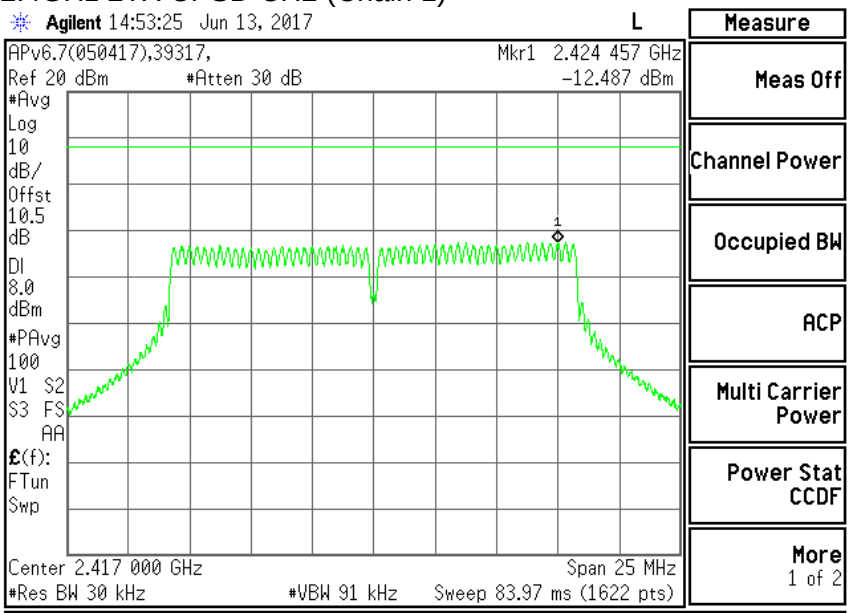
2.4GHz 2TX CPSD CH2 (Chain 1)



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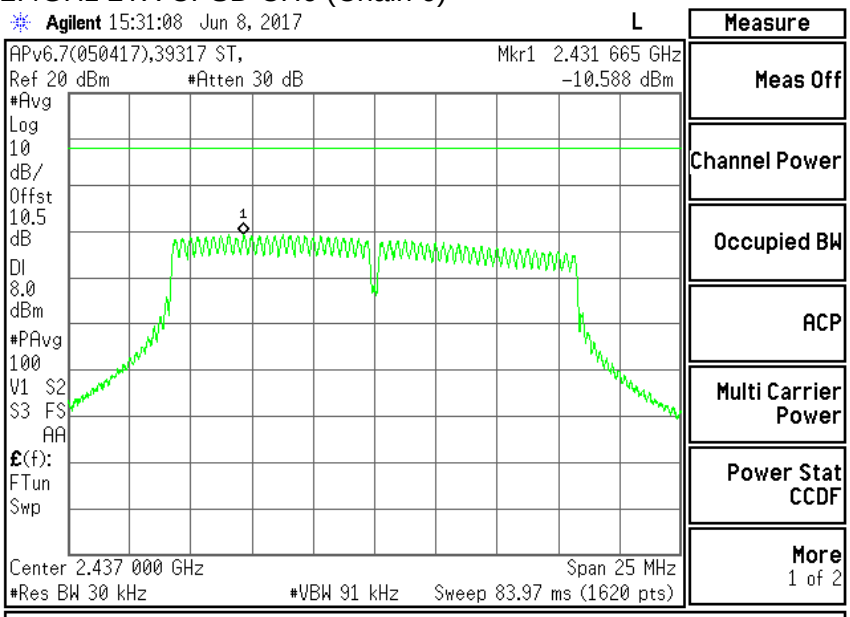
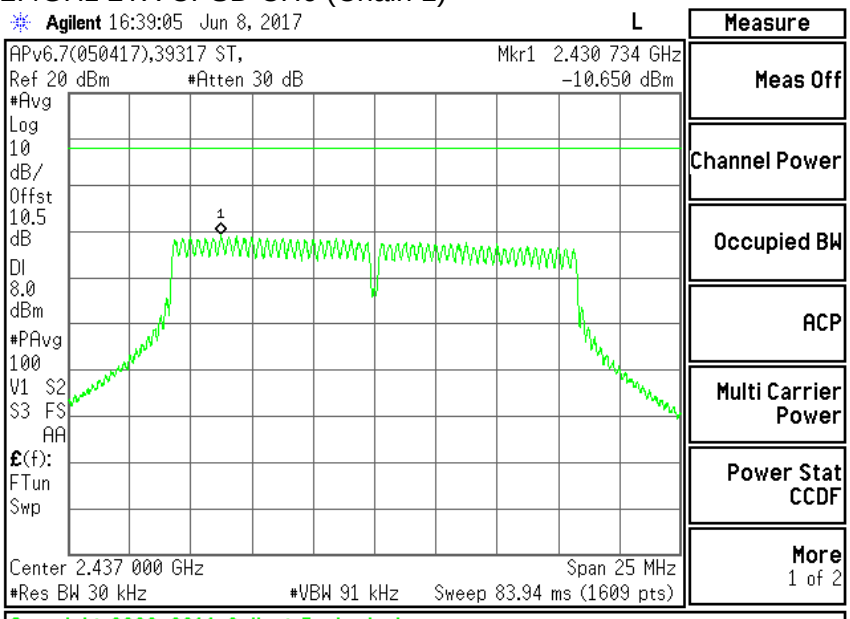
2.4GHz 2TX CPSD CH6 (Chain 0)



2.4GHz 2TX CPSD CH6 (Chain 1)



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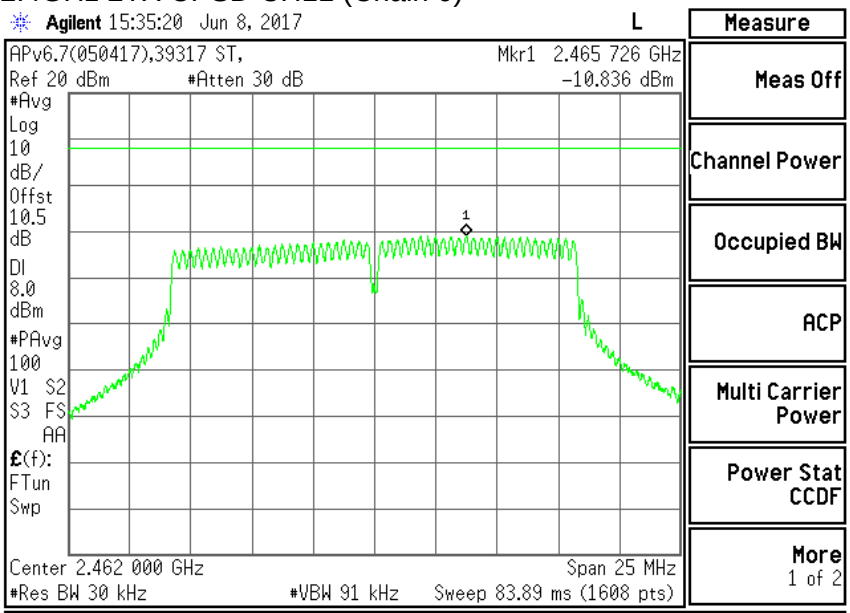
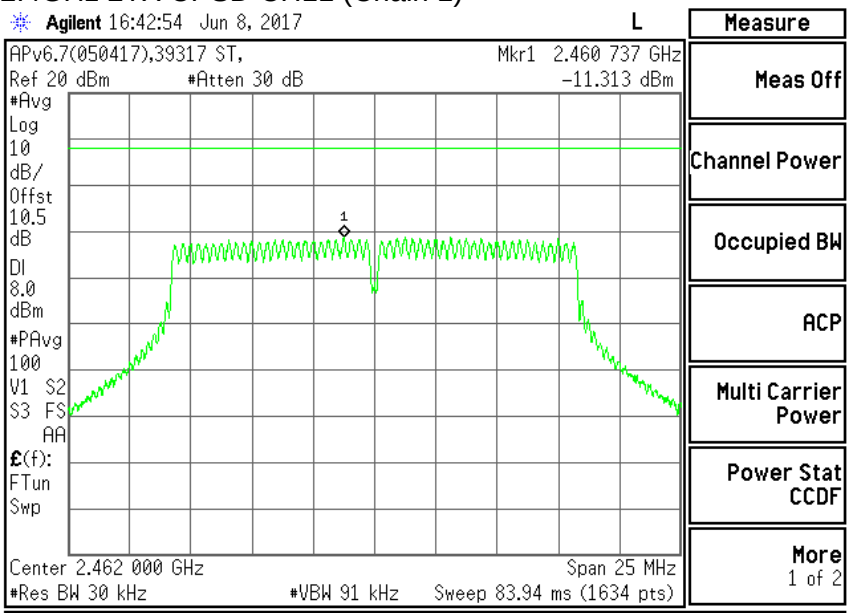
2.4GHz 2TX CPSD CH11 (Chain 0)



2.4GHz 2TX CPSD CH11 (Chain 1)



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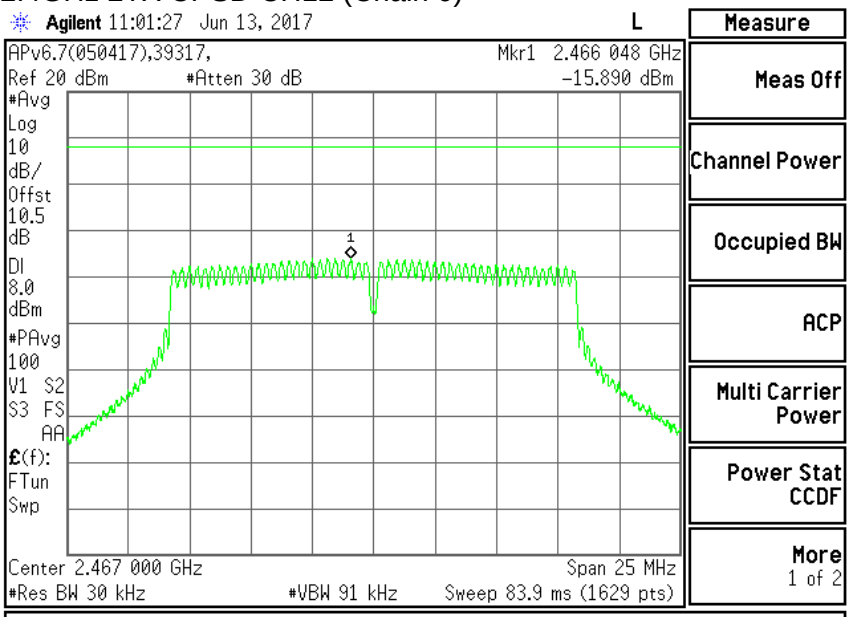
2.4GHz 2TX CPSD CH12 (Chain 0)



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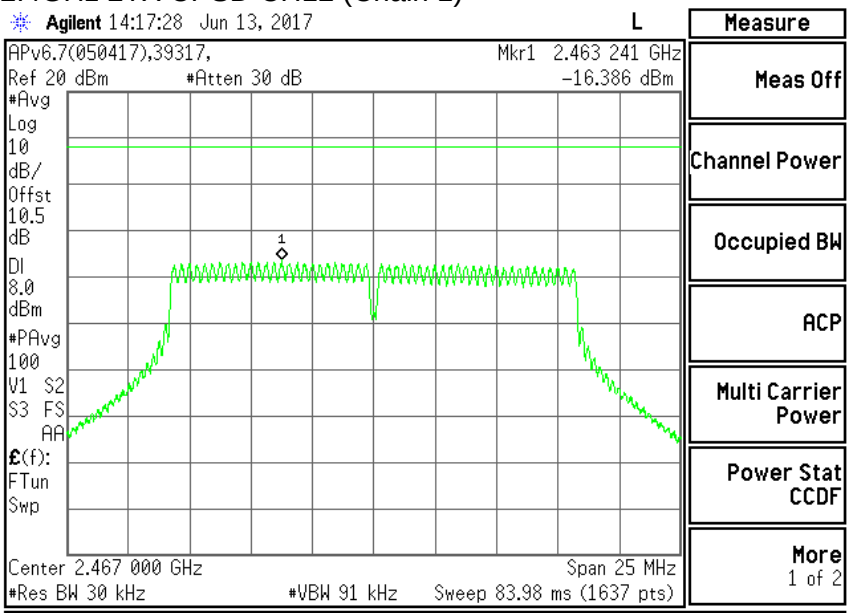
2.4GHz 2TX CPSD CH12 (Chain 1)



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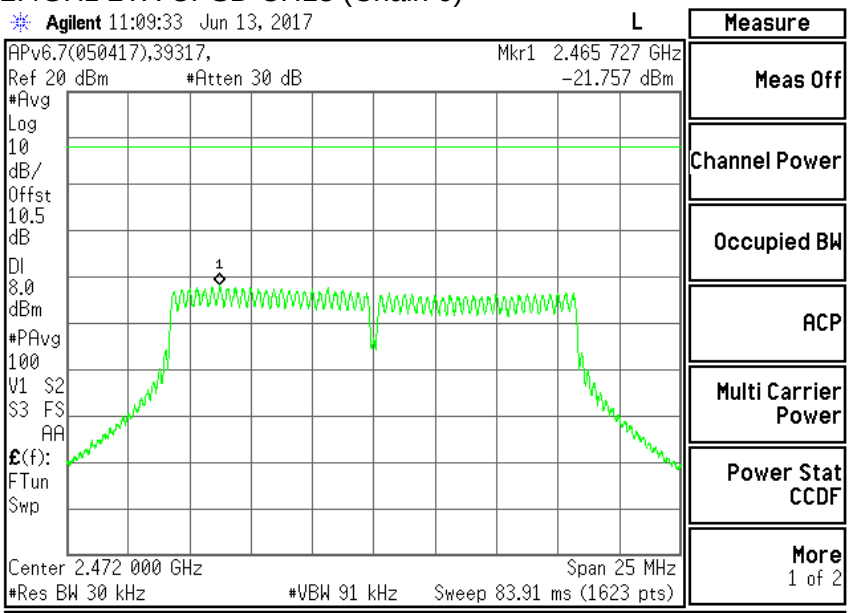
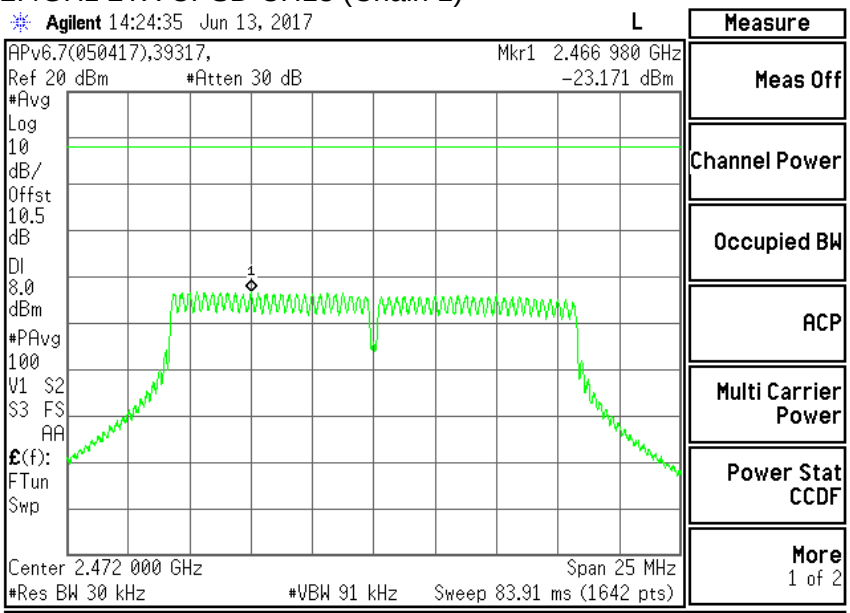
2.4GHz 2TX CPSD CH13 (Chain 0)



2.4GHz 2TX CPSD CH13 (Chain 1)



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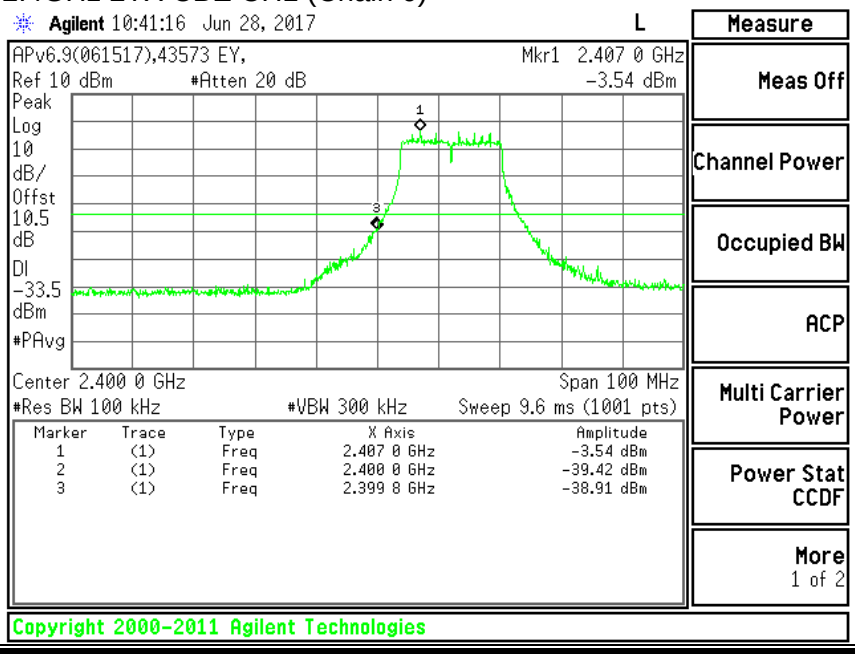
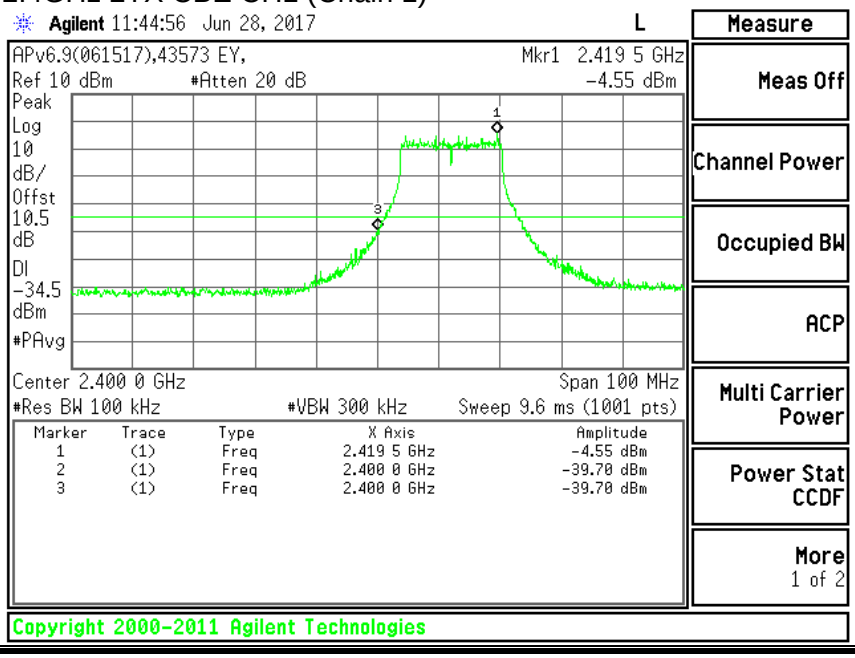
9.3.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

2.4GHz 2TX CBE CH1 (Chain 0)



2.4GHz 2TX CBE CH1 (Chain 1)



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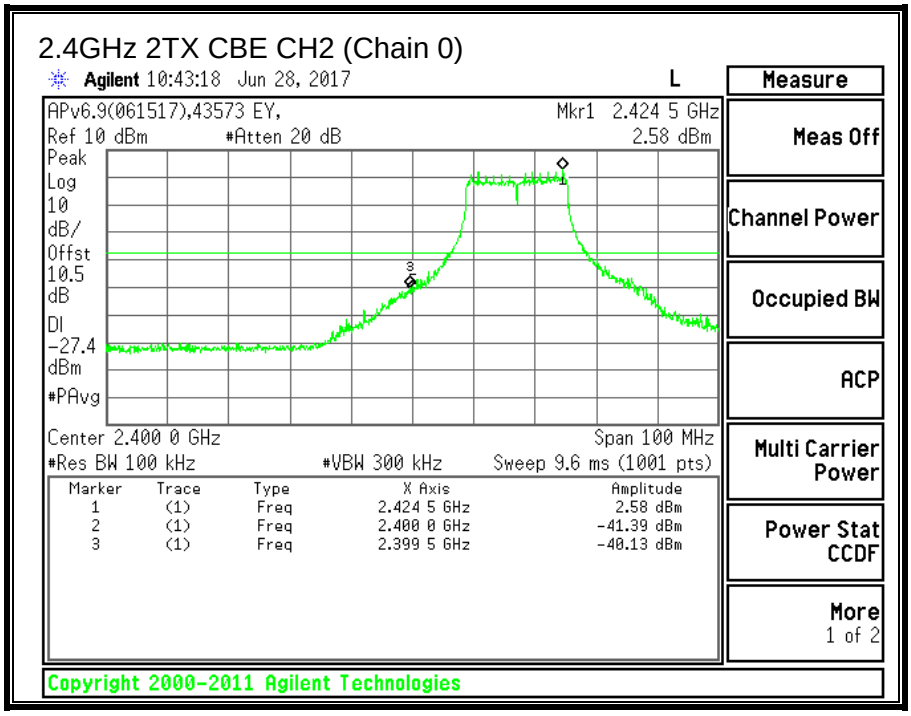
2.4GHz 2TX CBE CH2 (Chain 0)



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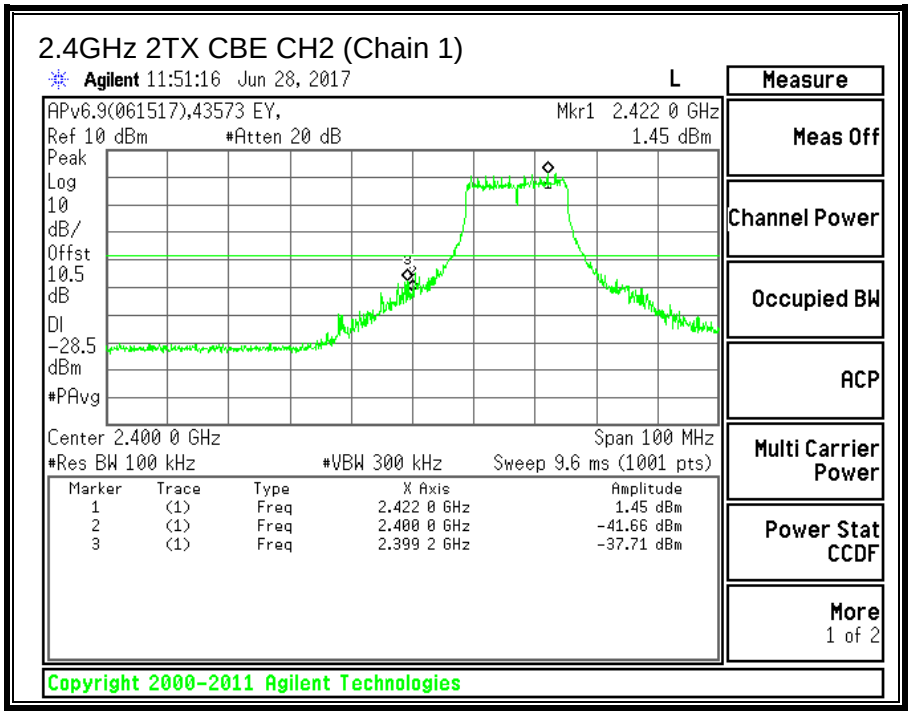

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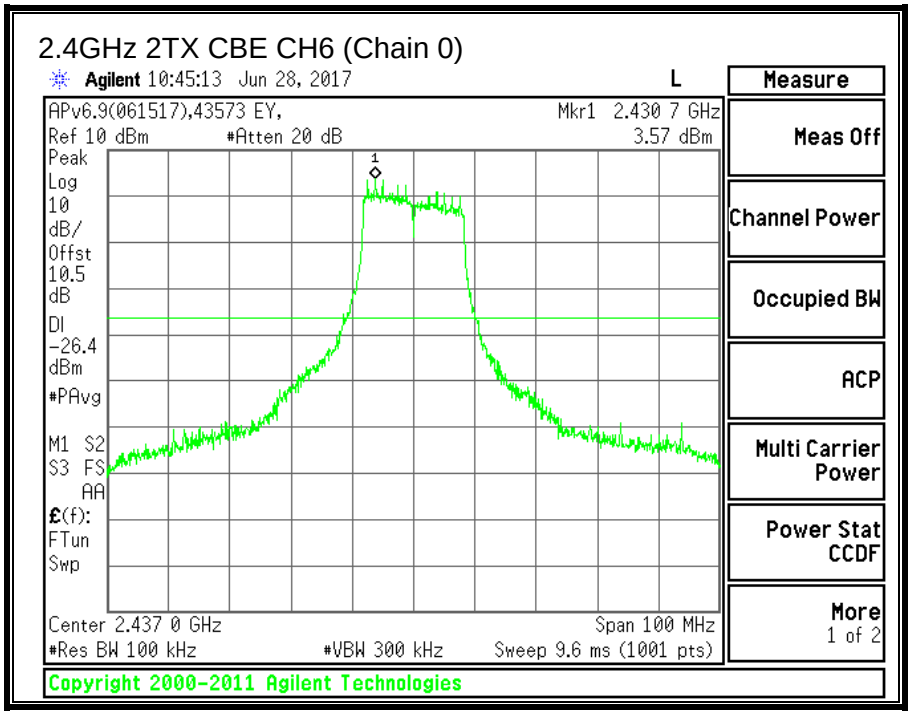
2.4GHz 2TX CBE CH6 (Chain 0)



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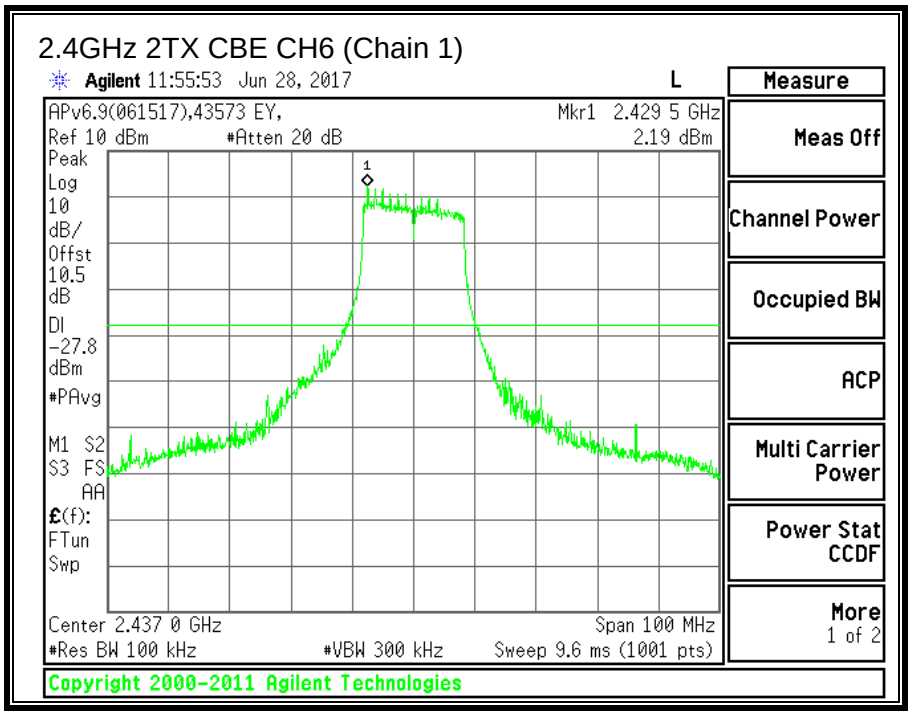

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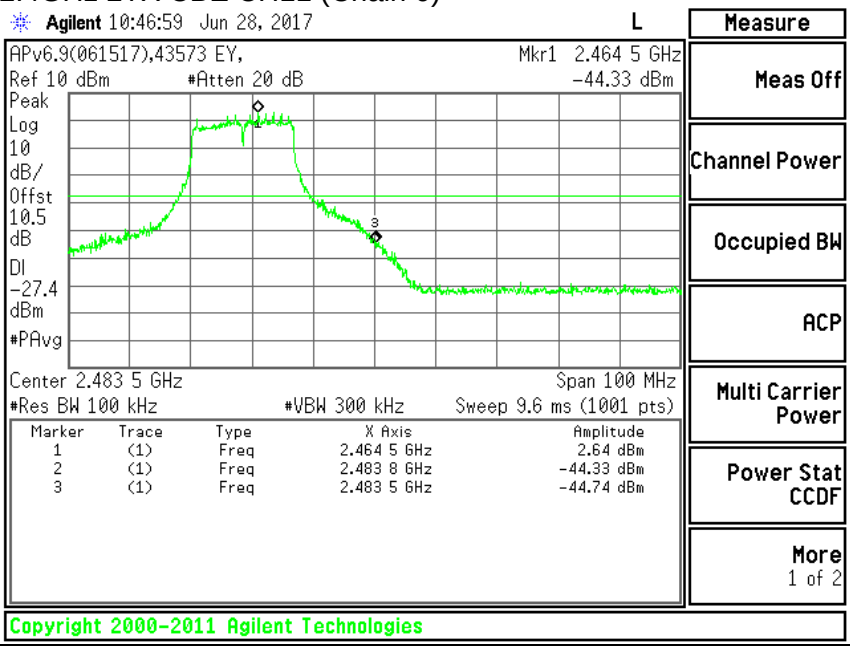
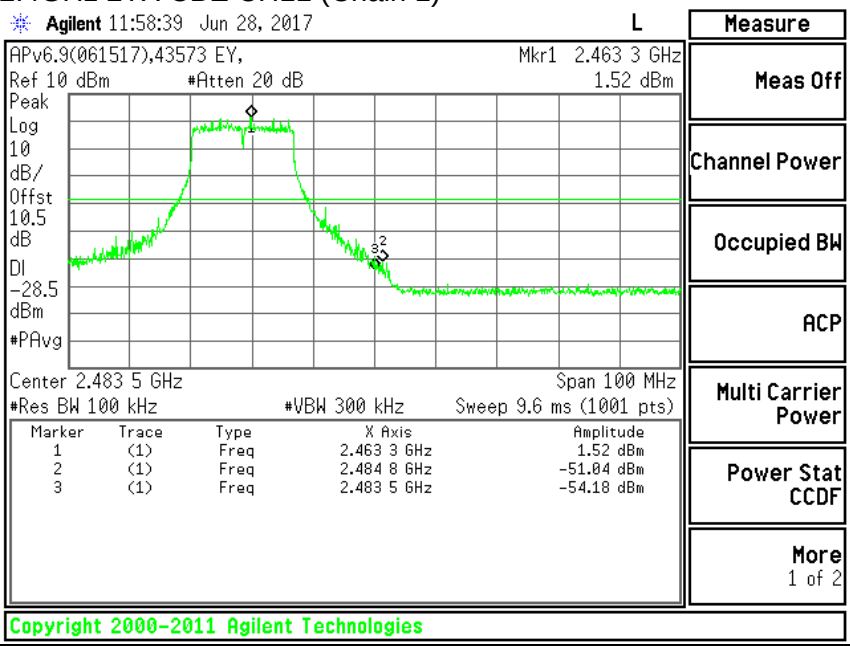
2.4GHz 2TX CBE CH11 (Chain 0)



2.4GHz 2TX CBE CH11 (Chain 1)



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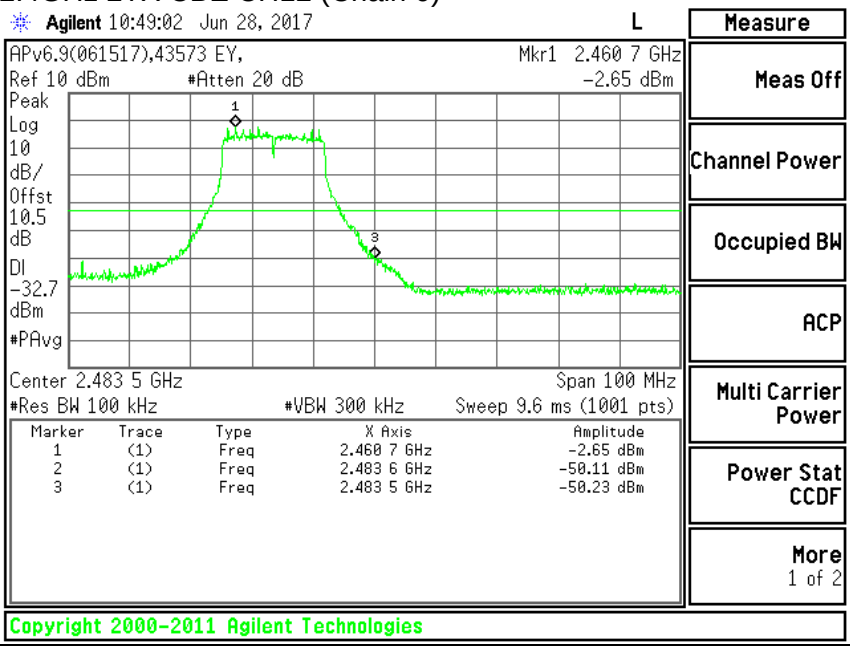
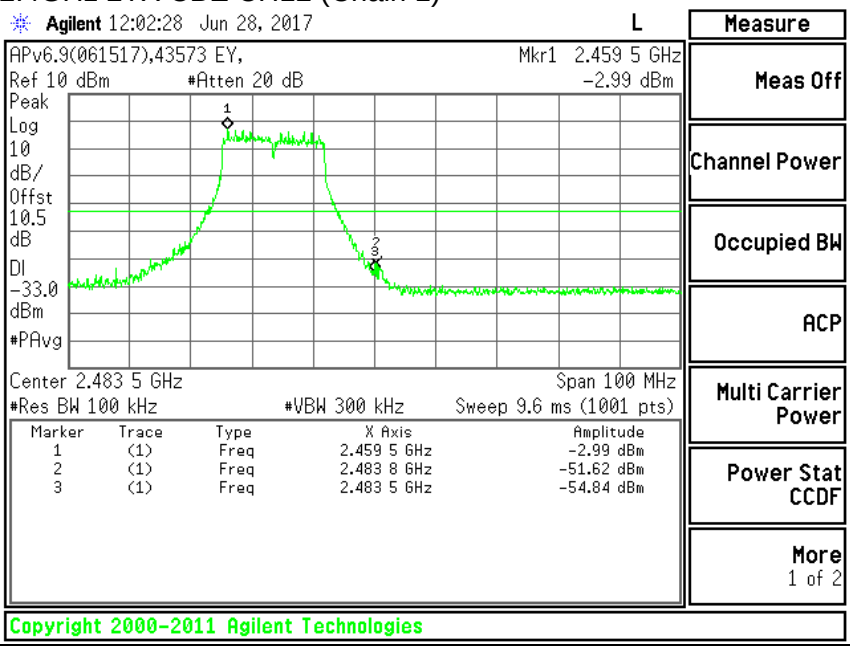
2.4GHz 2TX CBE CH12 (Chain 0)



2.4GHz 2TX CBE CH12 (Chain 1)



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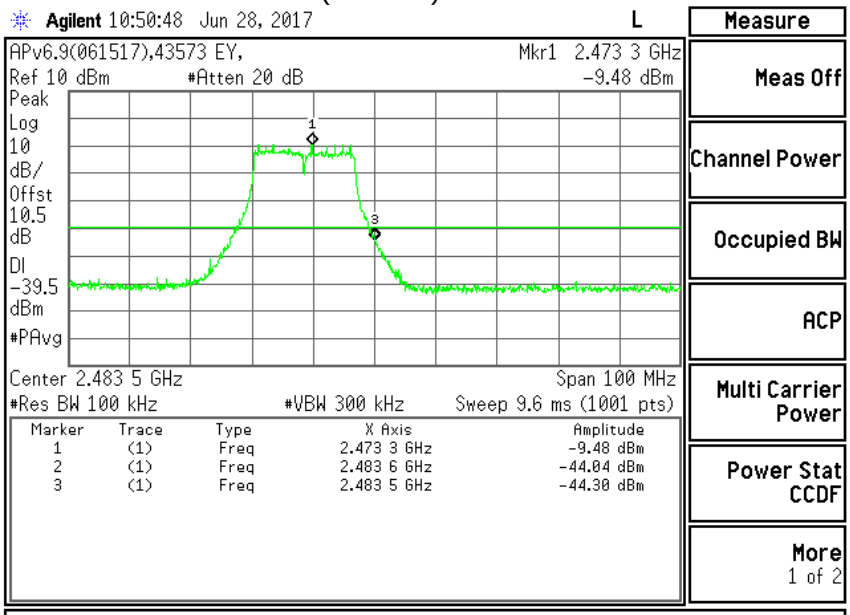
2.4GHz 2TX CBE CH13 (Chain 0)



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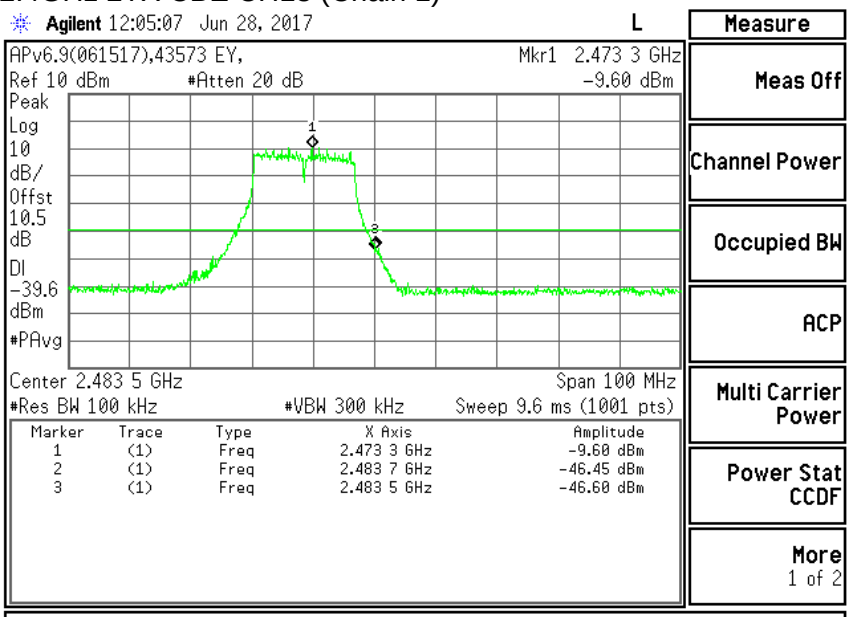

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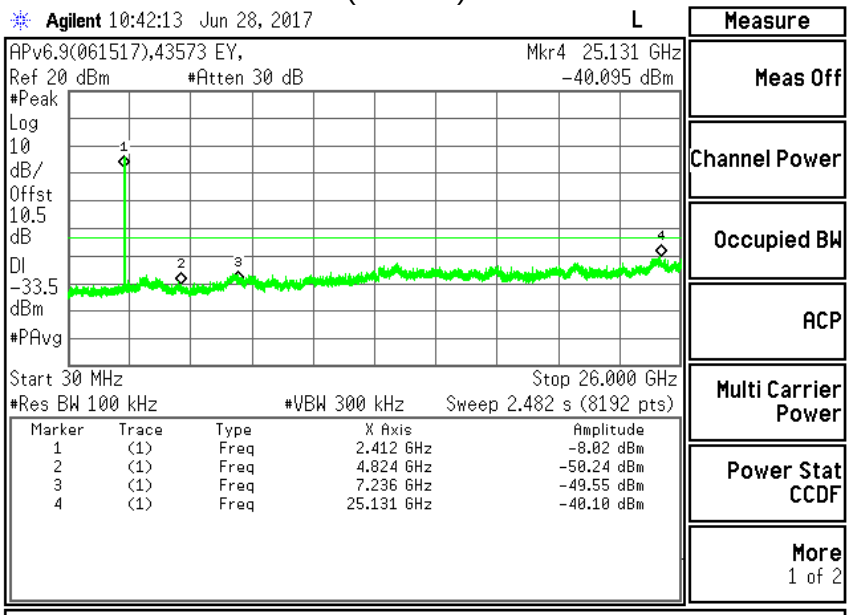
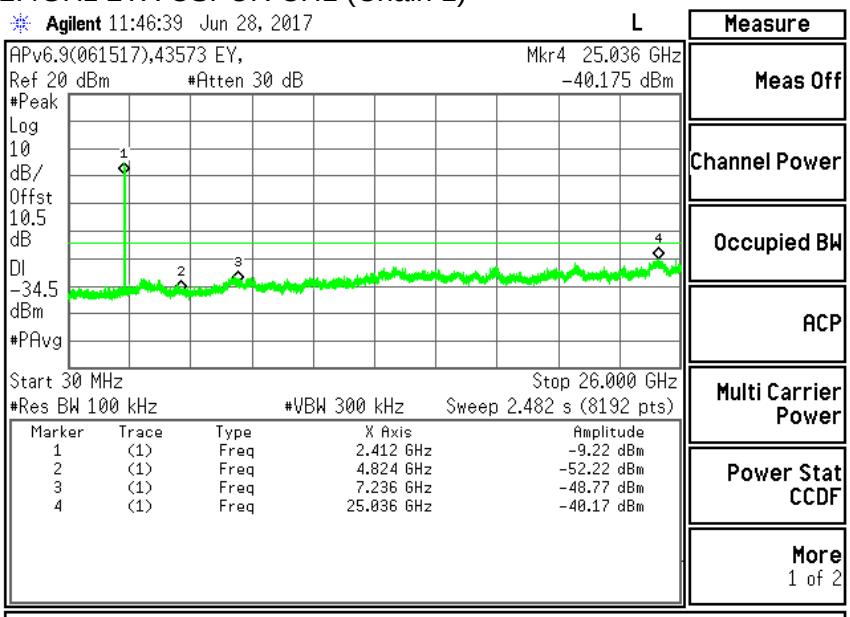
2.4GHz 2TX CSPUR CH1 (Chain 0)



2.4GHz 2TX CSPUR CH1 (Chain 1)



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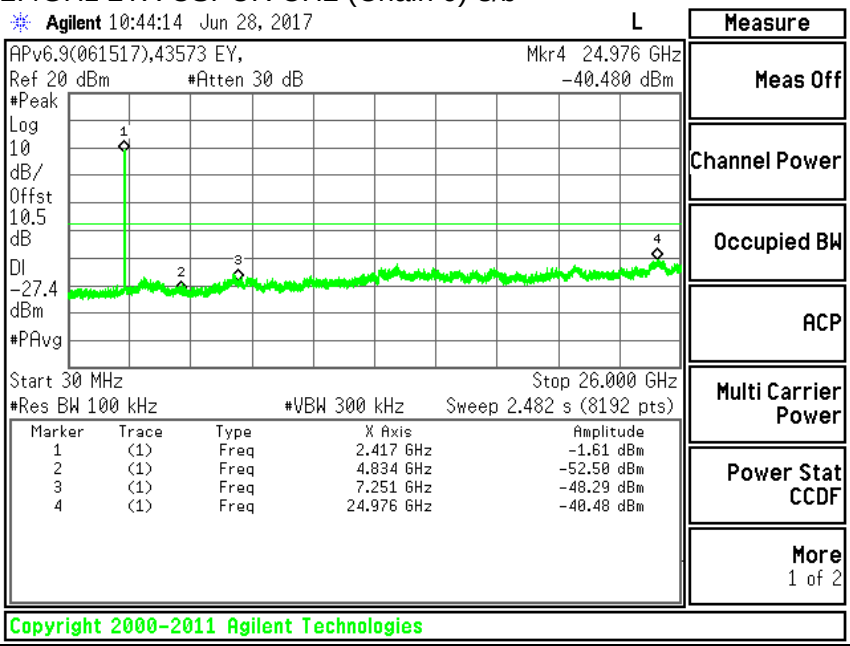
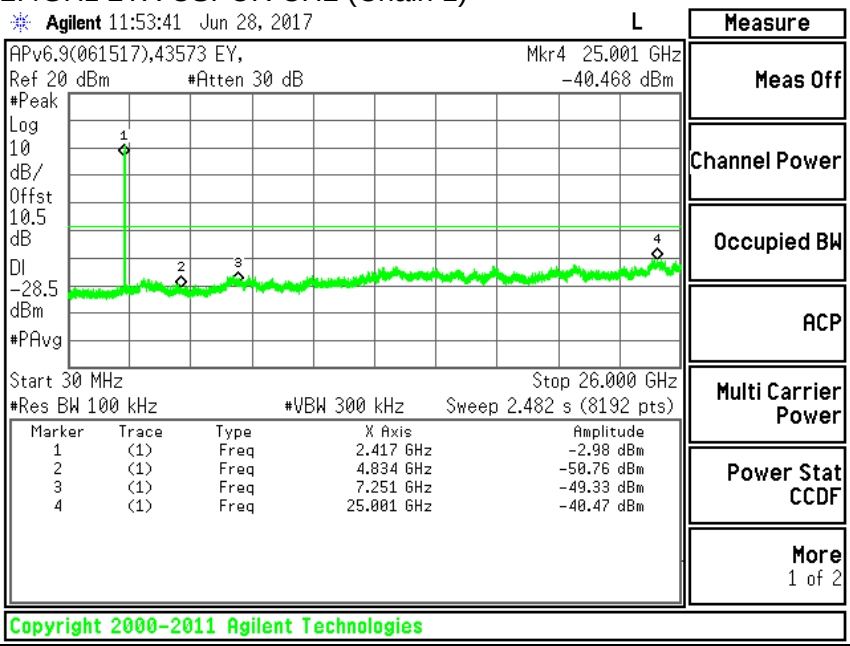
2.4GHz 2TX CSPUR CH2 (Chain 0)-s/b



2.4GHz 2TX CSPUR CH2 (Chain 1)



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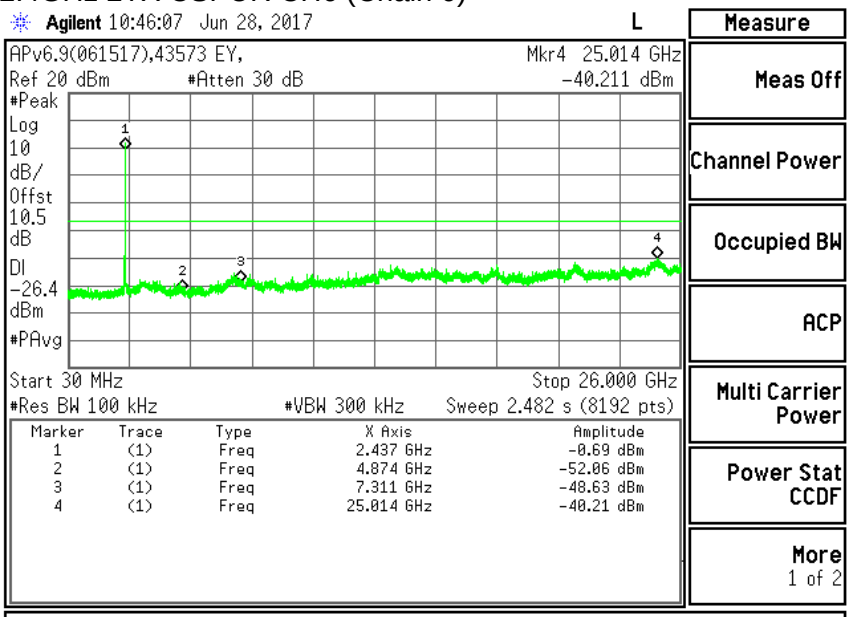
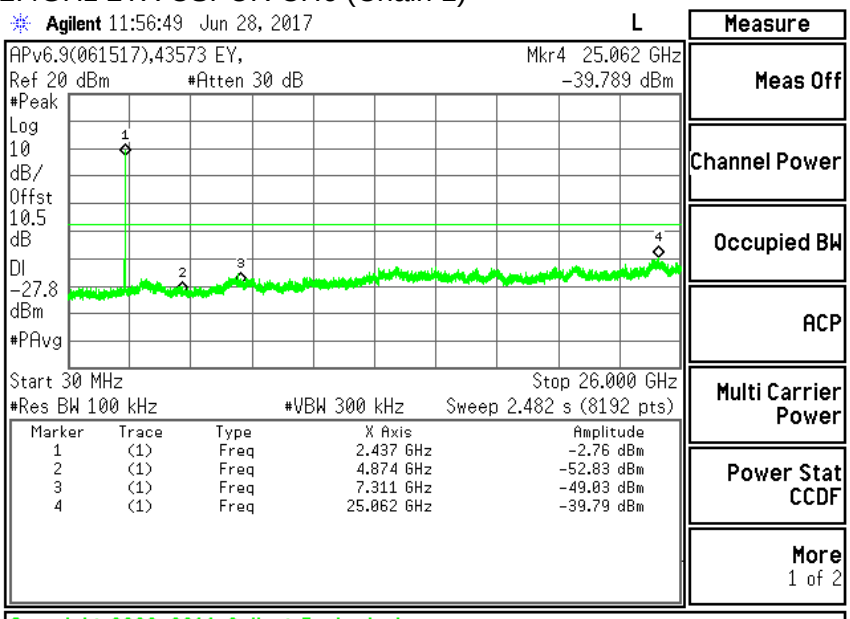
2.4GHz 2TX CSPUR CH6 (Chain 0)



2.4GHz 2TX CSPUR CH6 (Chain 1)



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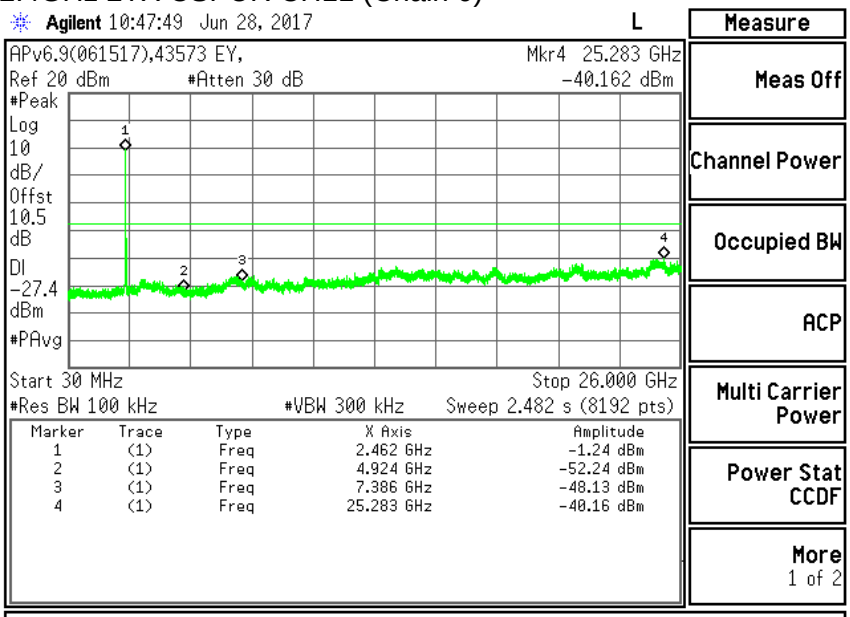
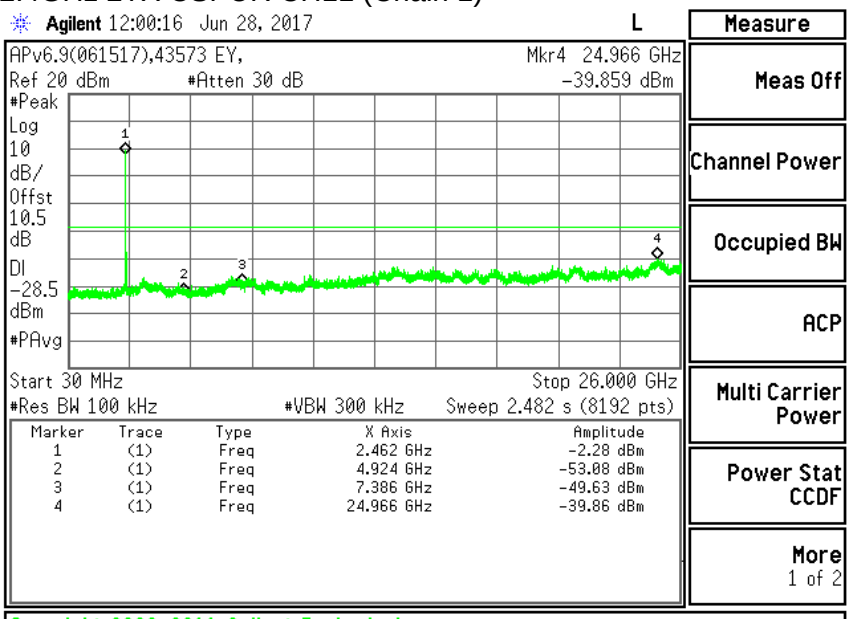
2.4GHz 2TX CSPUR CH11 (Chain 0)



2.4GHz 2TX CSPUR CH11 (Chain 1)



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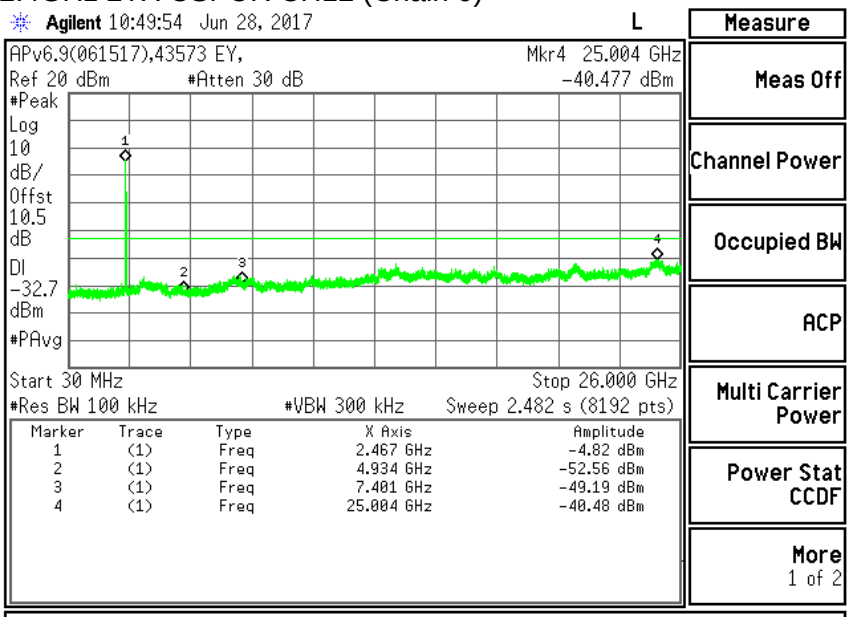
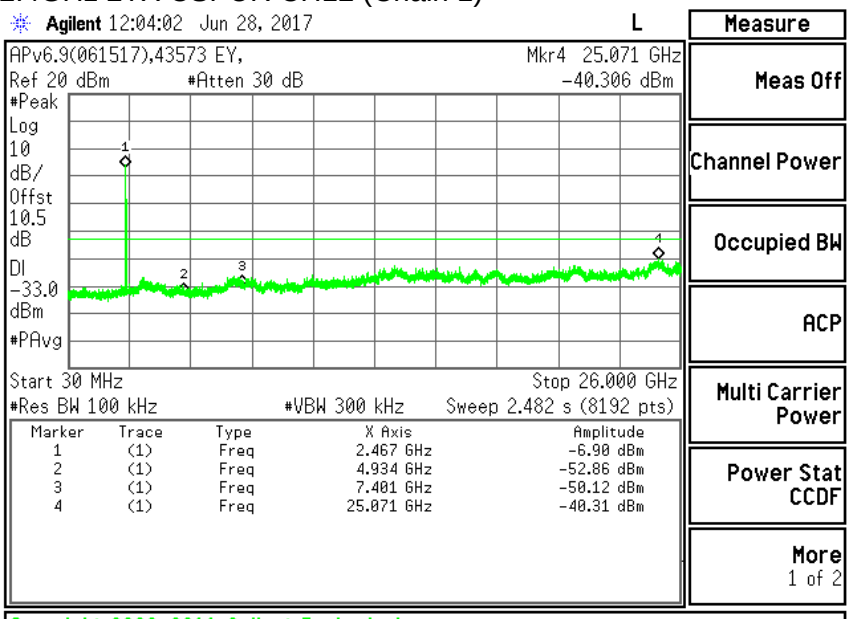
2.4GHz 2TX CSPUR CH12 (Chain 0)



2.4GHz 2TX CSPUR CH12 (Chain 1)



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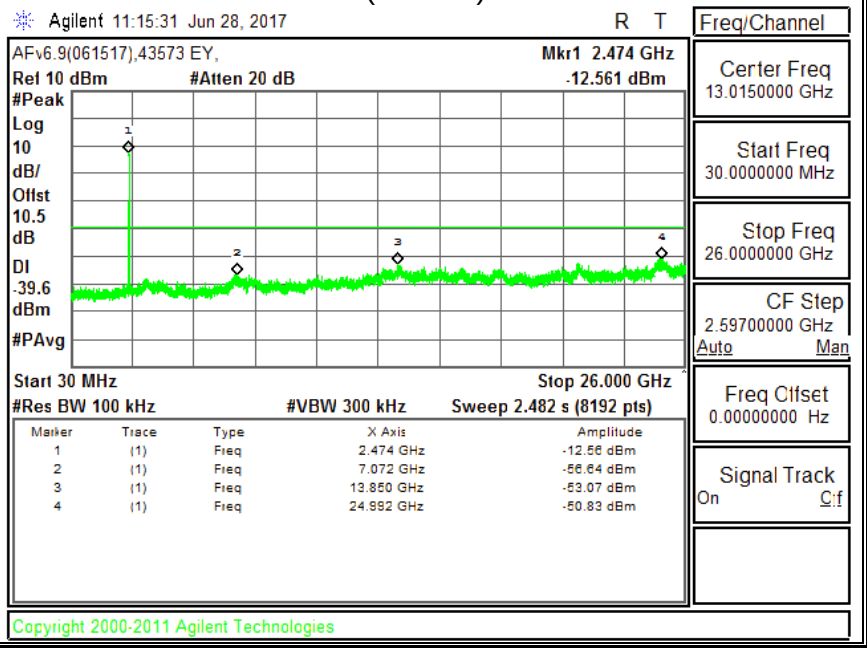
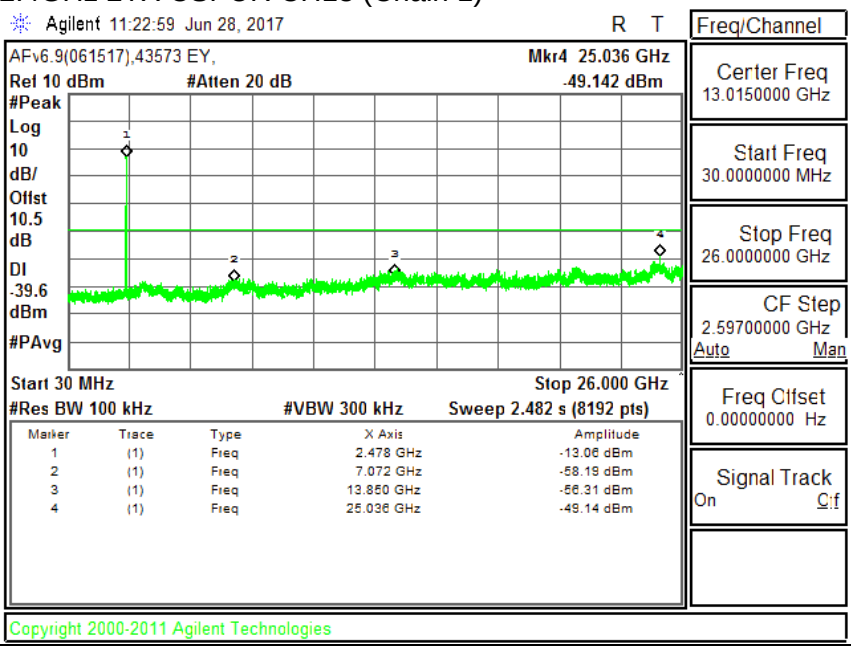
2.4GHz 2TX CSPUR CH13 (Chain 0)



2.4GHz 2TX CSPUR CH13 (Chain 1)



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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	17.64	17.60	0.5
CH2	2417	17.68	17.76	0.5
CH6	2437	17.08	17.00	0.5
CH11	2462	16.96	17.72	0.5
CH12	2467	17.56	17.60	0.5
CH13	2472	17.64	17.60	0.5

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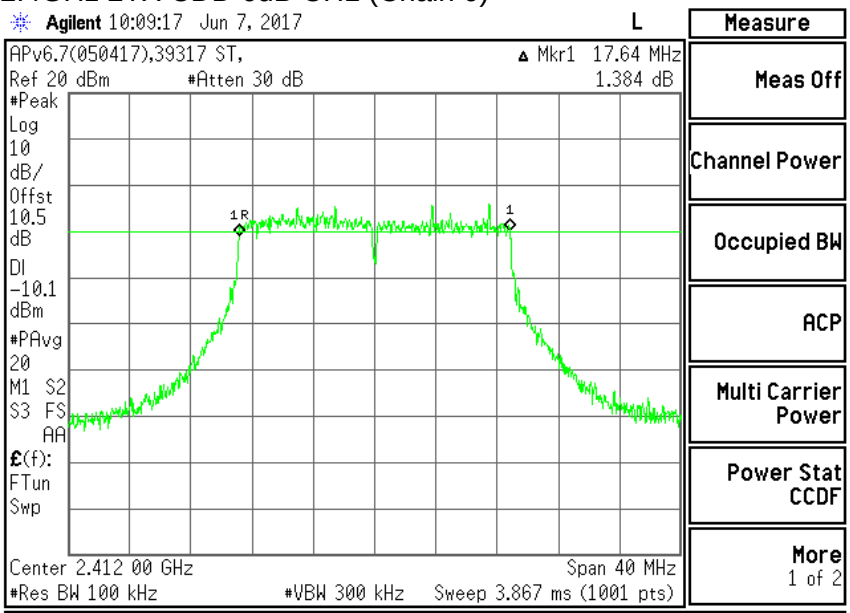
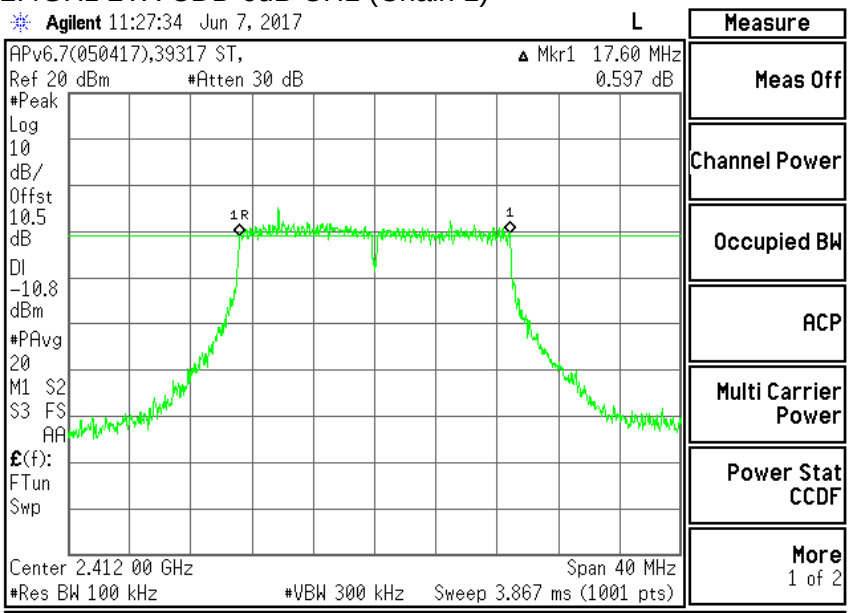
2.4GHz 2TX CDD 6dB CH1 (Chain 0)



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



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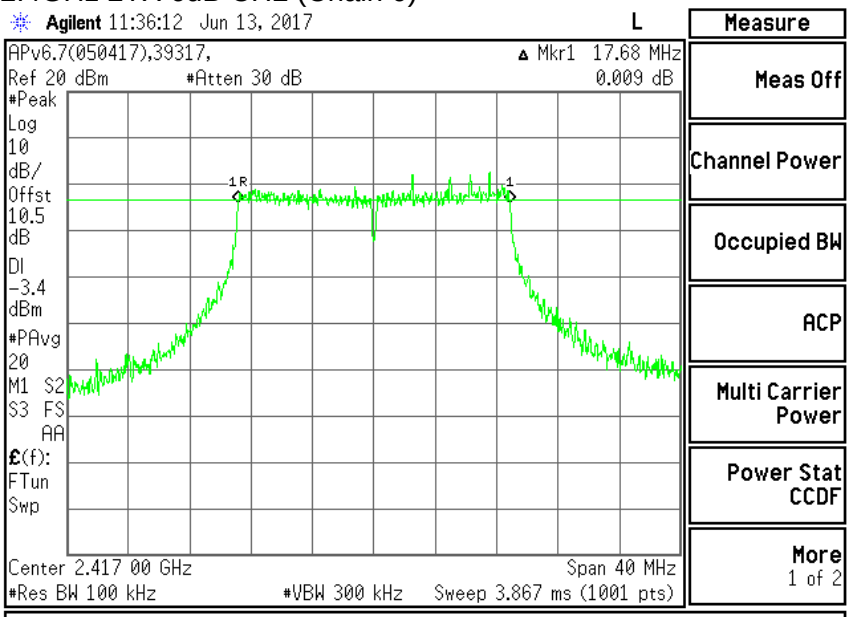
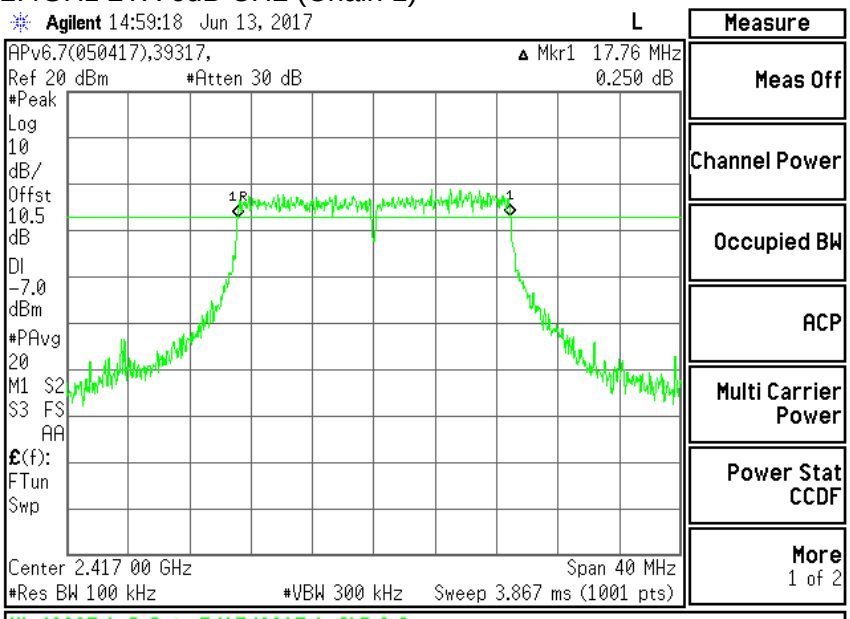
2.4GHz 2TX 6dB CH2 (Chain 0)



2.4GHz 2TX 6dB CH2 (Chain 1)



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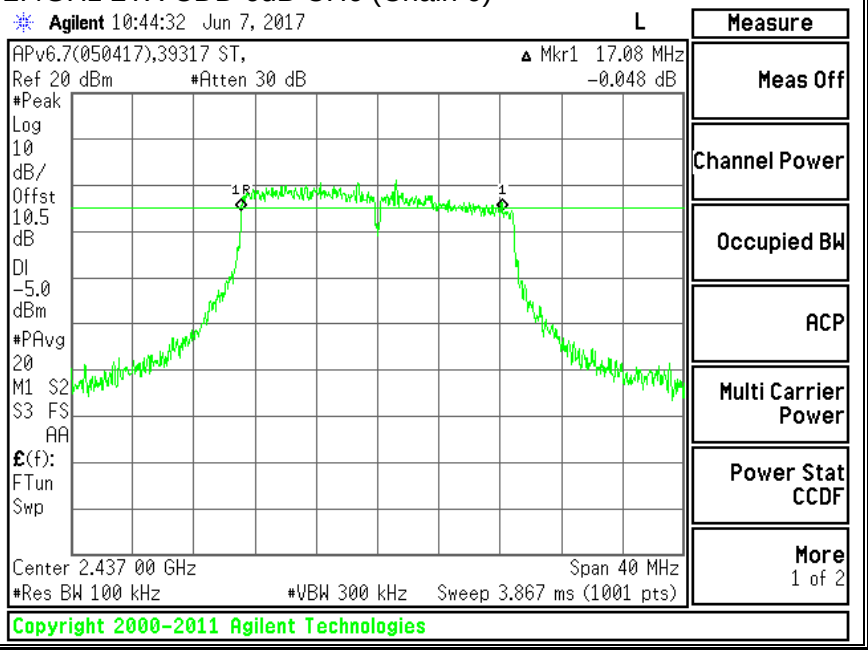
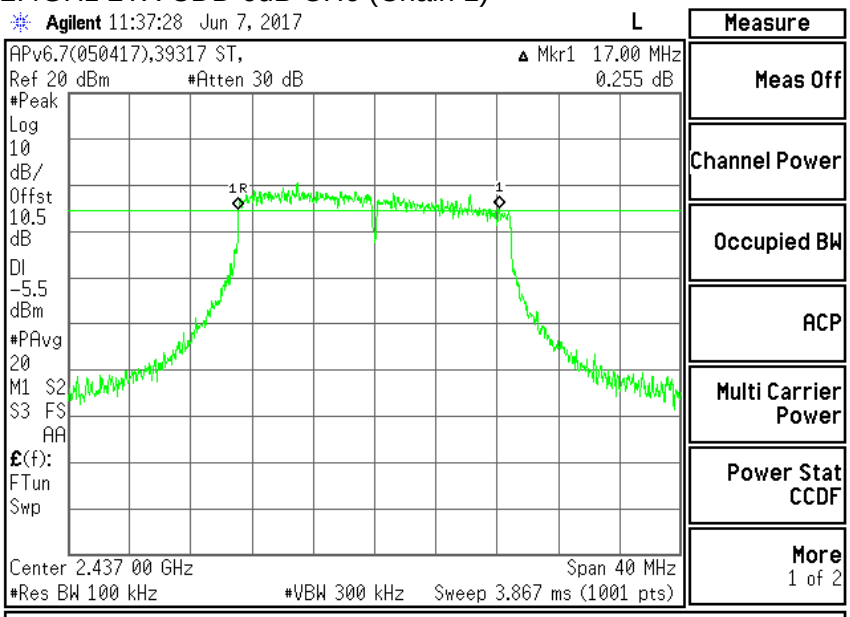
2.4GHz 2TX CDD 6dB CH6 (Chain 0)



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



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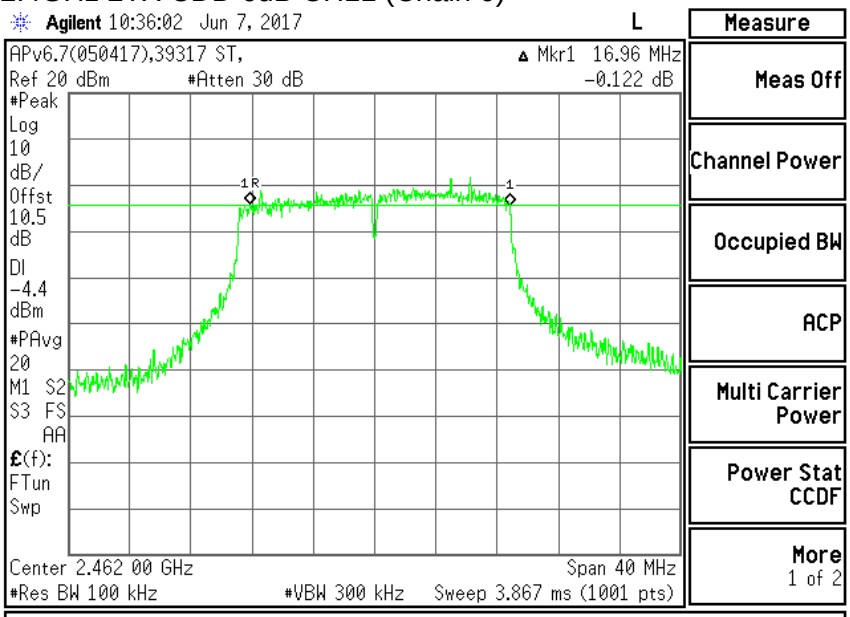
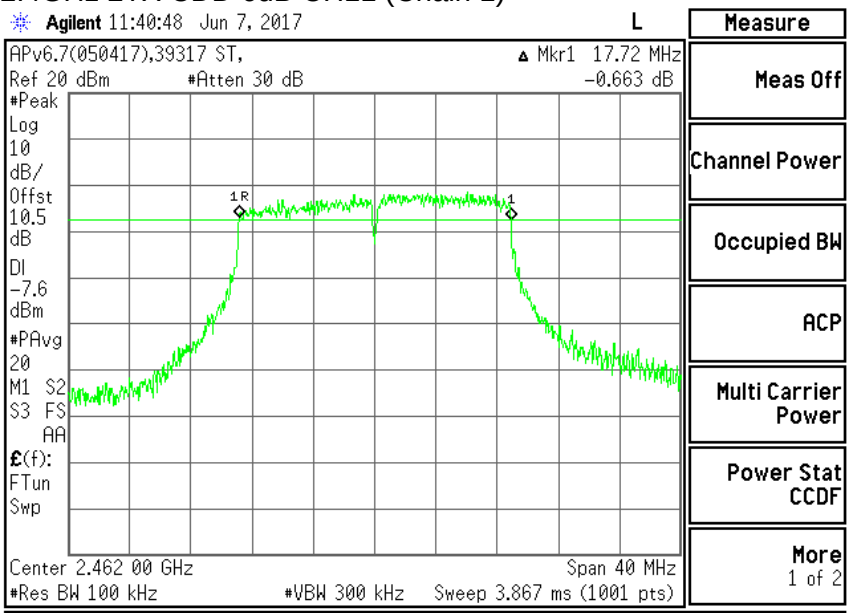
2.4GHz 2TX CDD 6dB CH11 (Chain 0)



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



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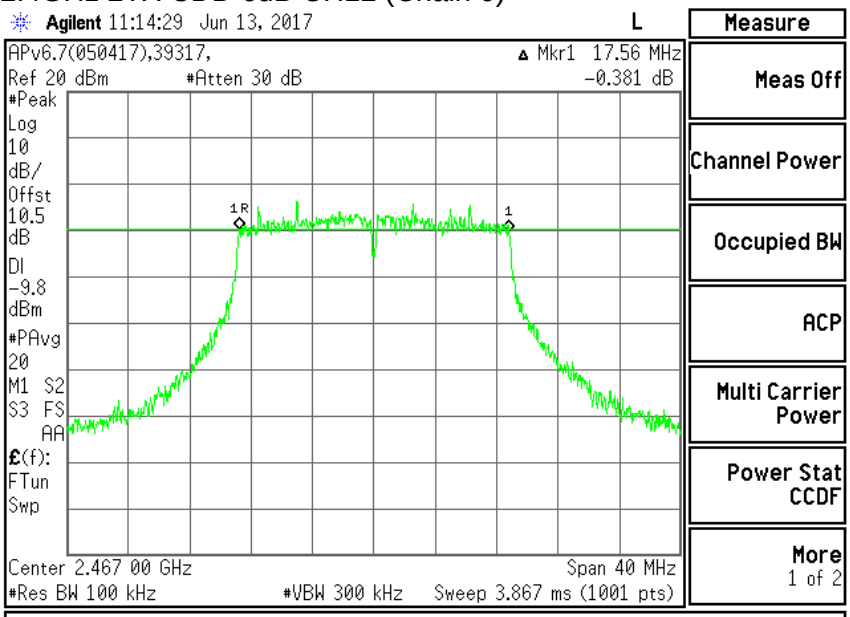
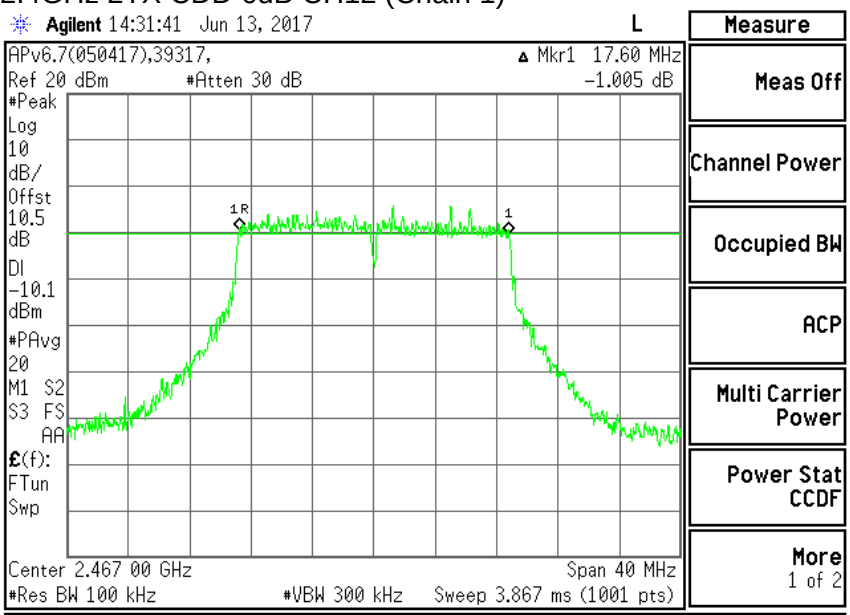
2.4GHz 2TX CDD 6dB CH12 (Chain 0)



UL:40805 \ R Date:5/15/2017 \ CLT:2.3

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



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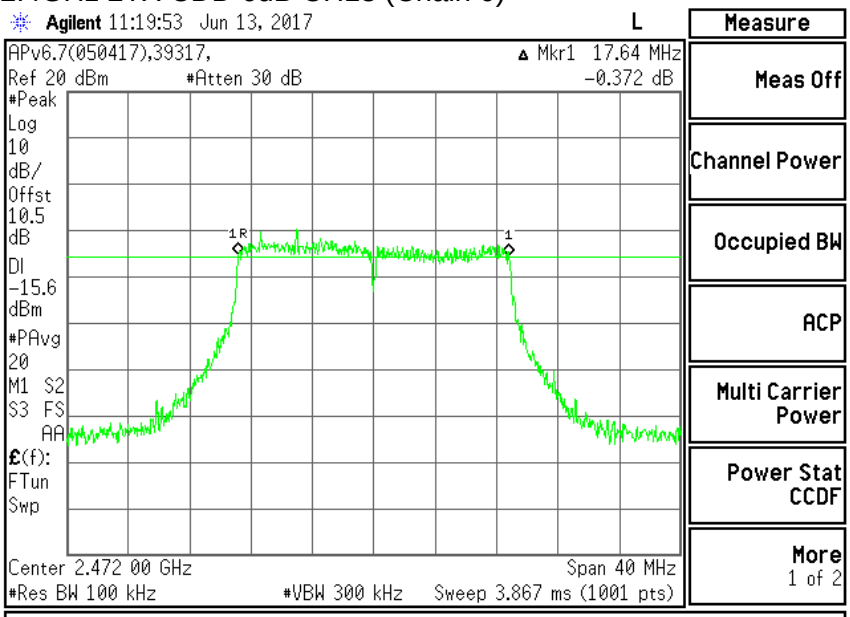
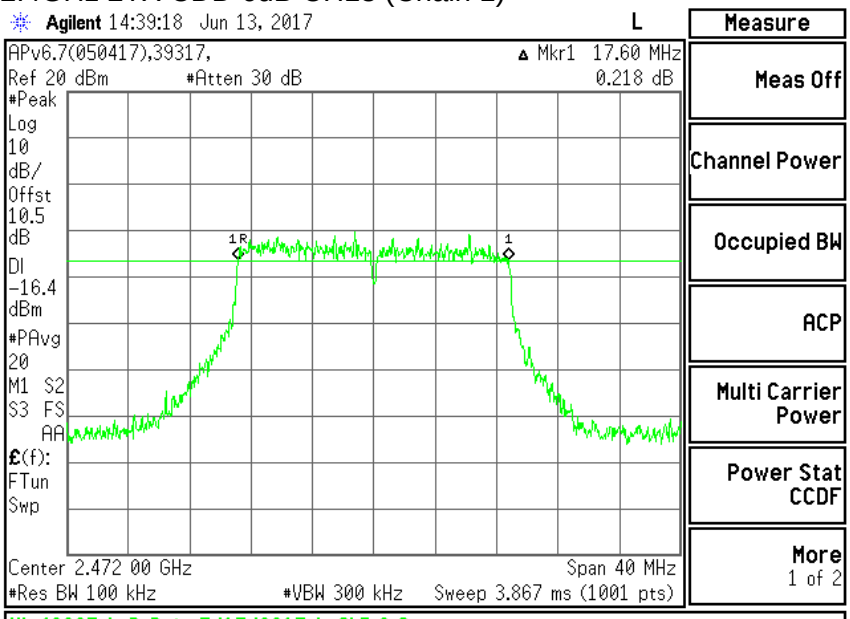
2.4GHz 2TX CDD 6dB CH13 (Chain 0)



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	17.55	17.36
CH2	2417	17.72	17.53
CH6	2437	17.45	17.40
CH11	2462	17.17	17.48
CH12	2467	17.33	17.50
CH13	2472	17.69	17.32

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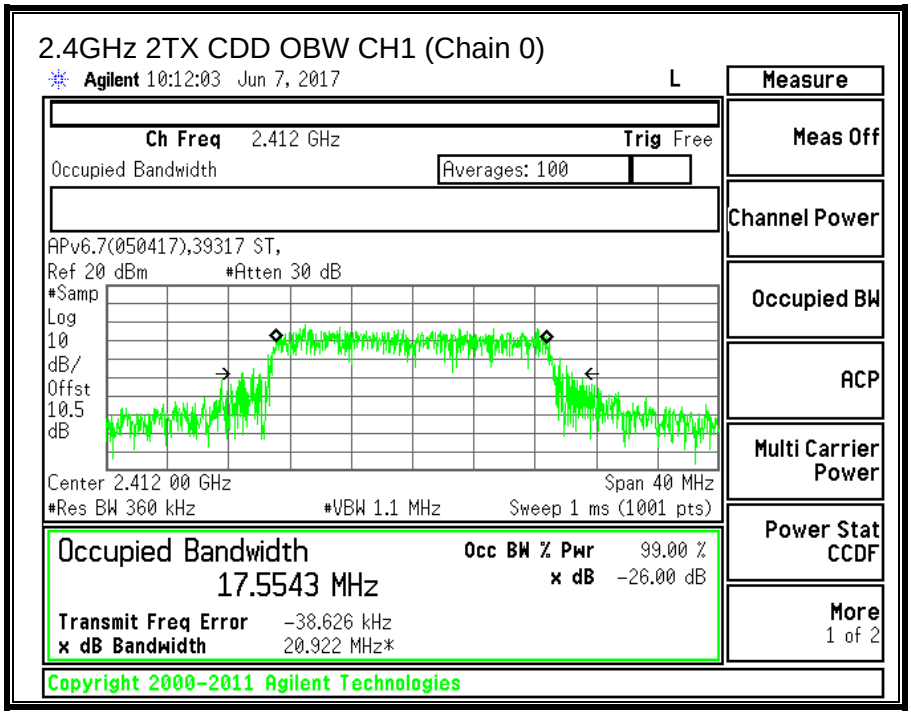
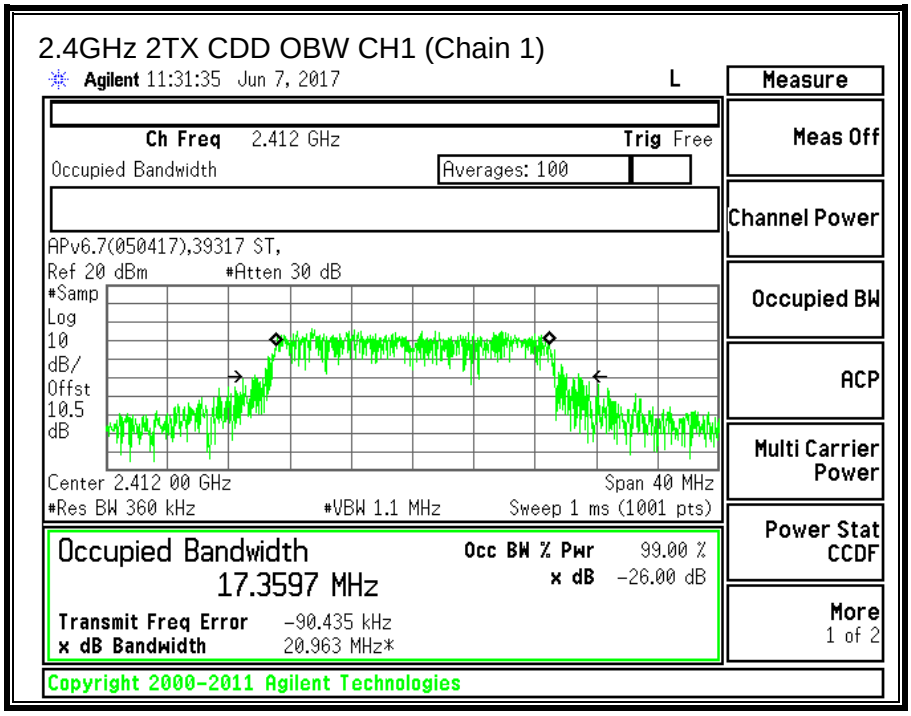
2.4GHz 2TX CDD OBW CH1 (Chain 0)



2.4GHz 2TX CDD OBW CH1 (Chain 1)



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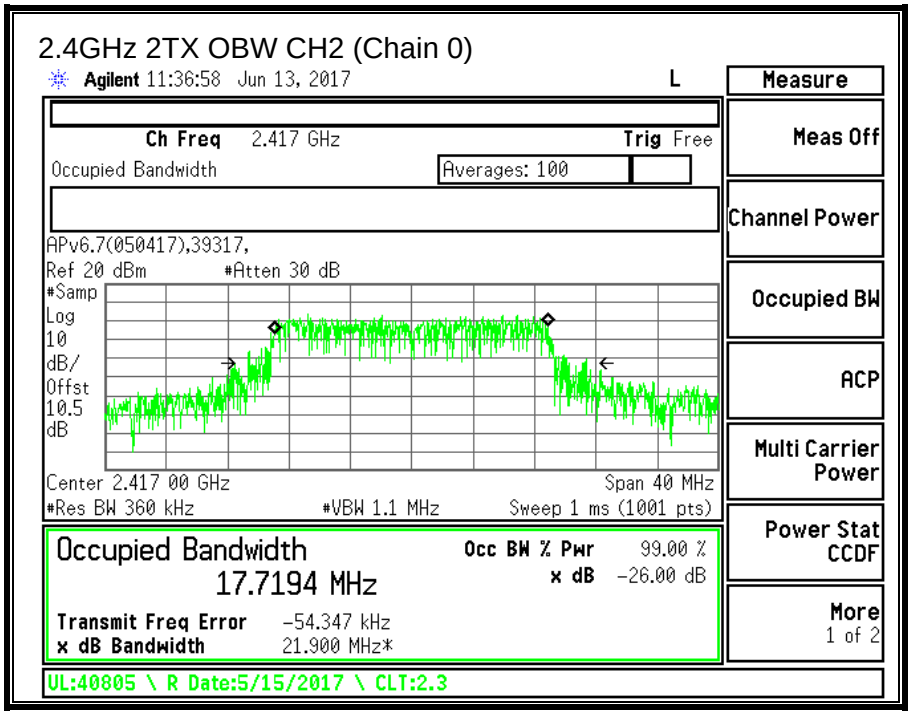
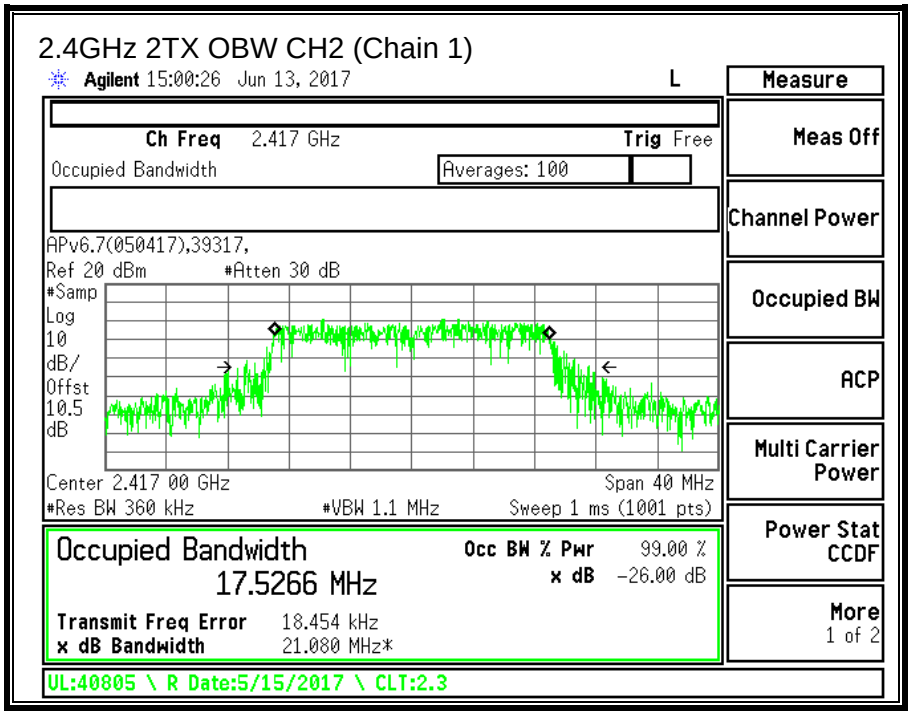
2.4GHz 2TX OBW CH2 (Chain 0)



2.4GHz 2TX OBW CH2 (Chain 1)



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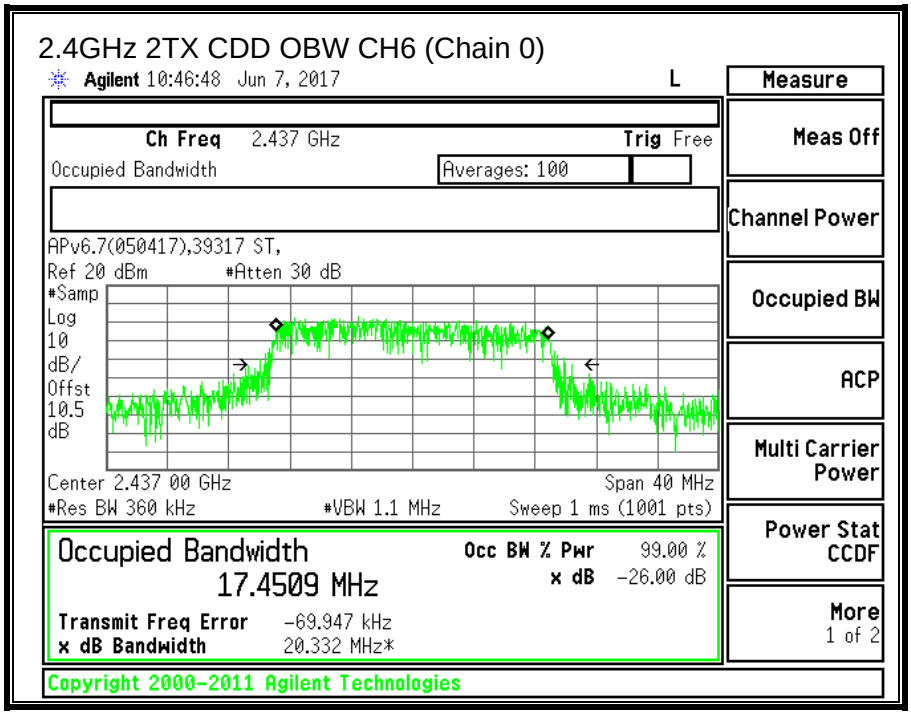

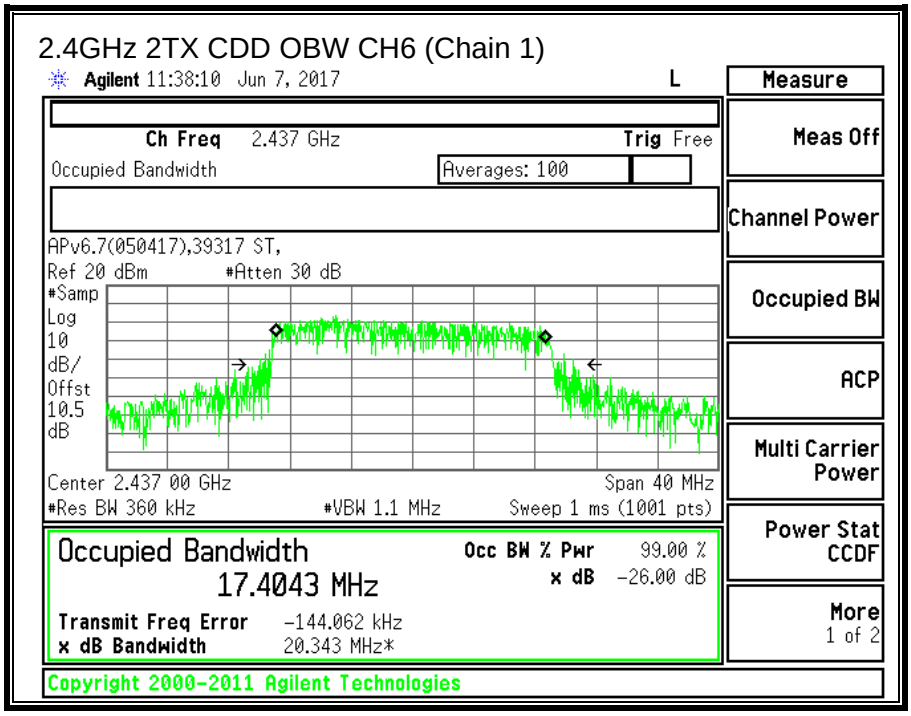

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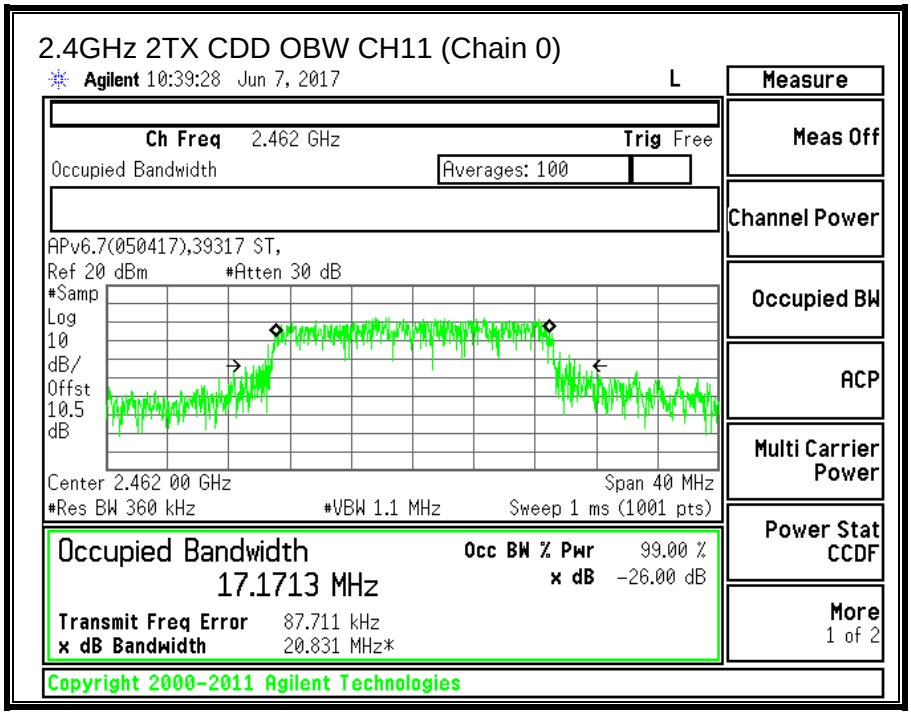
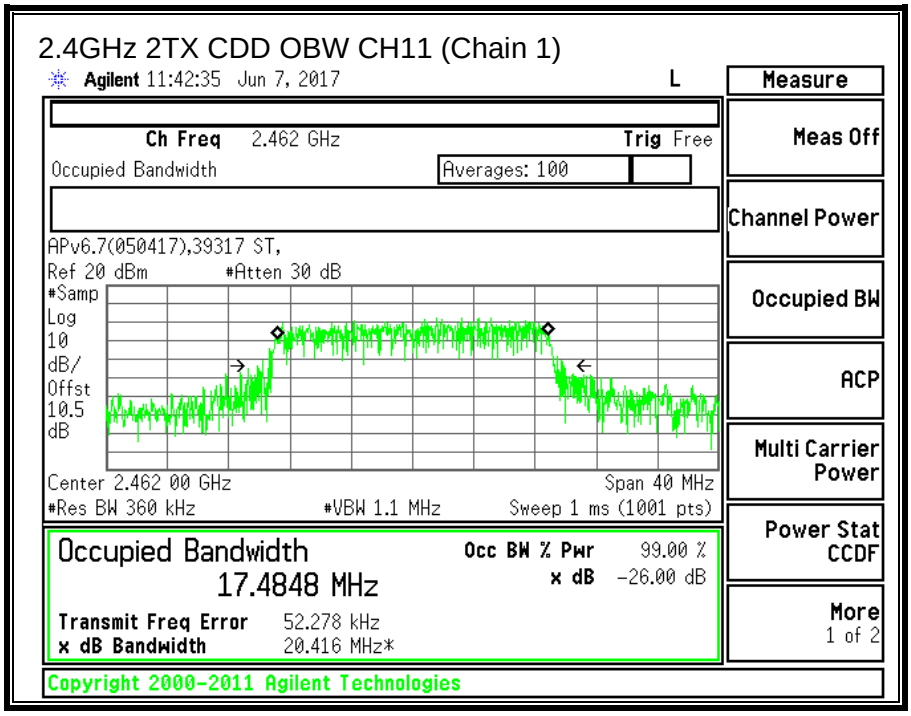
2.4GHz 2TX CDD OBW CH11 (Chain 0)



2.4GHz 2TX CDD OBW CH11 (Chain 1)



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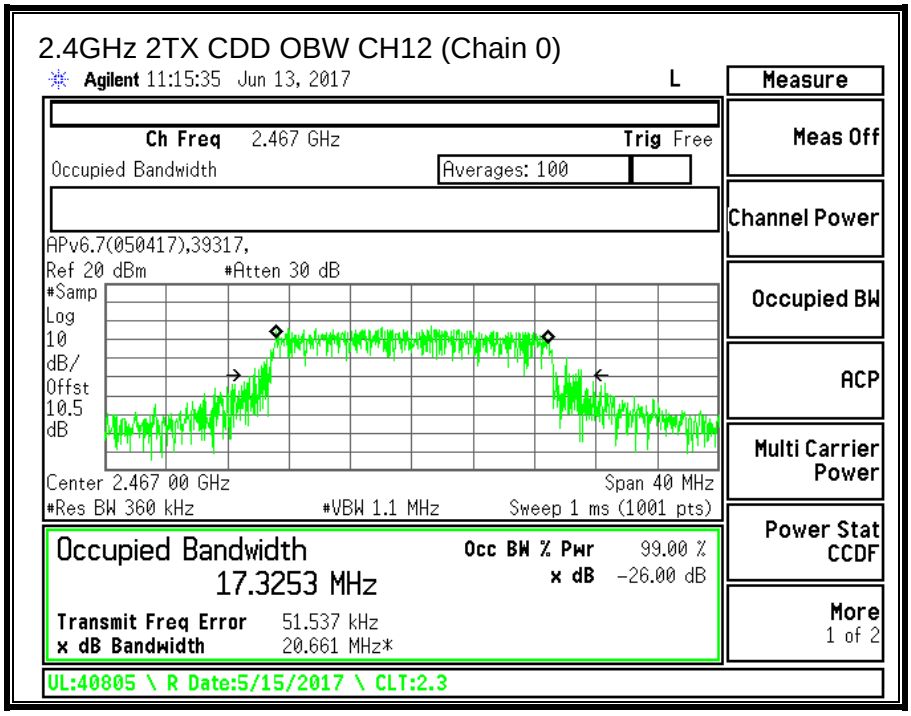

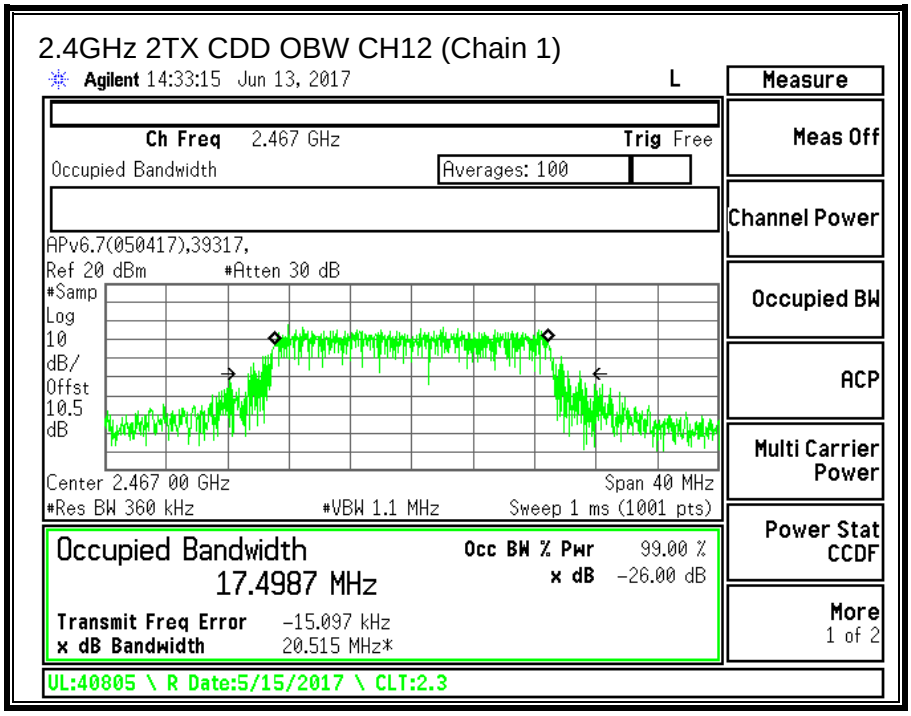

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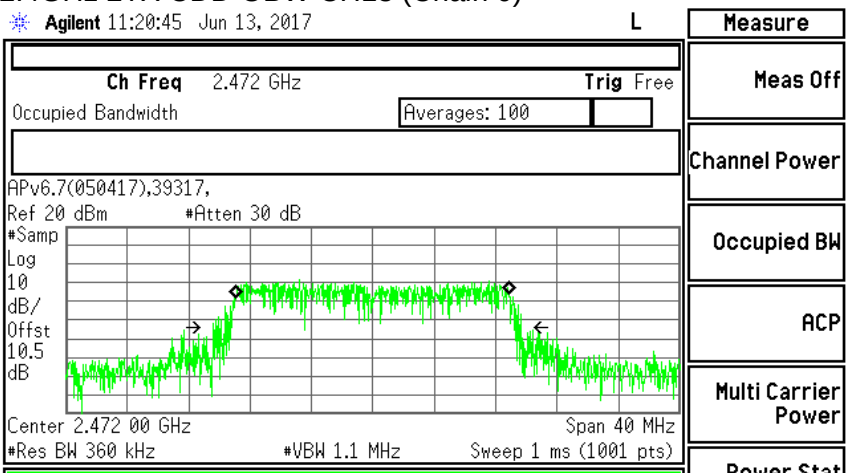
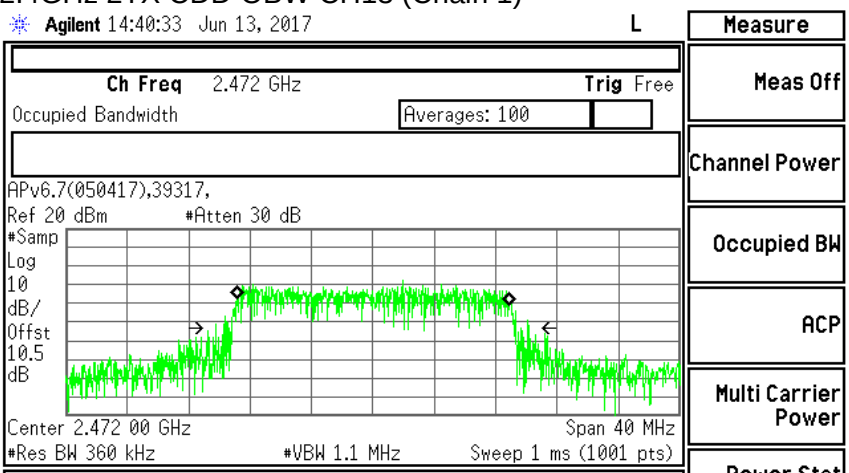
2.4GHz 2TX CDD OBW CH13 (Chain 0)



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)
-2.80	-7.00	-4.41

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RESULTS

ID:	39703	Date:	06/06/2017

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-4.41	30.00	30	36	30.00
CH2	2417	-4.41	30.00	30	36	30.00
CH3	2422	-4.41	30.00	30	36	30.00
CH6	2437	-4.41	30.00	30	36	30.00
CH10	2457	-4.41	30.00	30	36	30.00
CH11	2462	-4.41	30.00	30	36	30.00
CH12	2467	-4.41	30.00	30	36	30.00
CH13	2472	-4.41	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	7.48	8.20	10.87	30.00	-19.13
CH2	2417	13.11	13.47	16.30	30.00	-13.70
CH3	2422	13.12	13.29	16.22	30.00	-13.78
CH6	2437	13.03	13.05	16.05	30.00	-13.95
CH10	2457	13.10	13.08	16.10	30.00	-13.90
CH11	2462	13.18	13.24	16.22	30.00	-13.78
CH12	2467	7.82	7.84	10.84	30.00	-19.16
CH13	2472	1.79	1.82	4.82	30.00	-25.18

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)	0.19	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	-17.669	-17.515	-14.39	8.0	-22.4
CH2	2417	-11.110	-12.525	-8.56	8.0	-16.6
CH6	2437	-11.104	-11.011	-7.86	8.0	-15.9
CH11	2462	-11.021	-10.945	-7.78	8.0	-15.8
CH12	2467	-16.874	-17.778	-14.10	8.0	-22.1
CH13	2472	-22.846	-23.130	-19.79	8.0	-27.8

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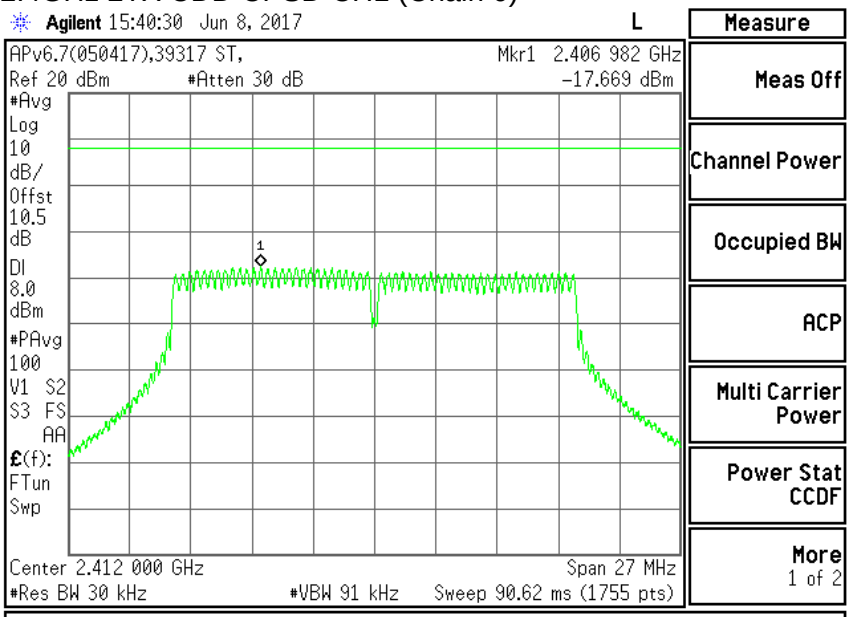
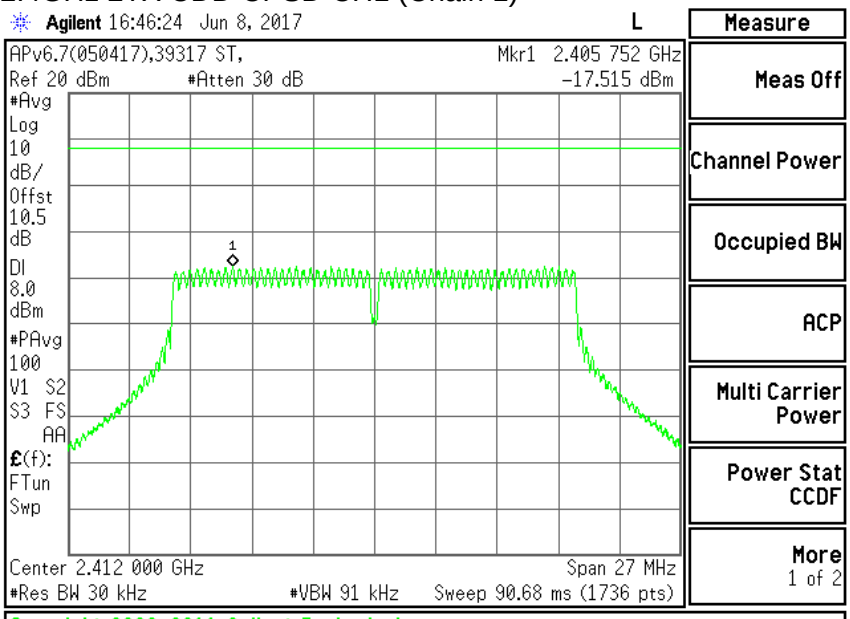
2.4GHz 2TX CDD CPSD CH1 (Chain 0)



2.4GHz 2TX CDD CPSD CH1 (Chain 1)



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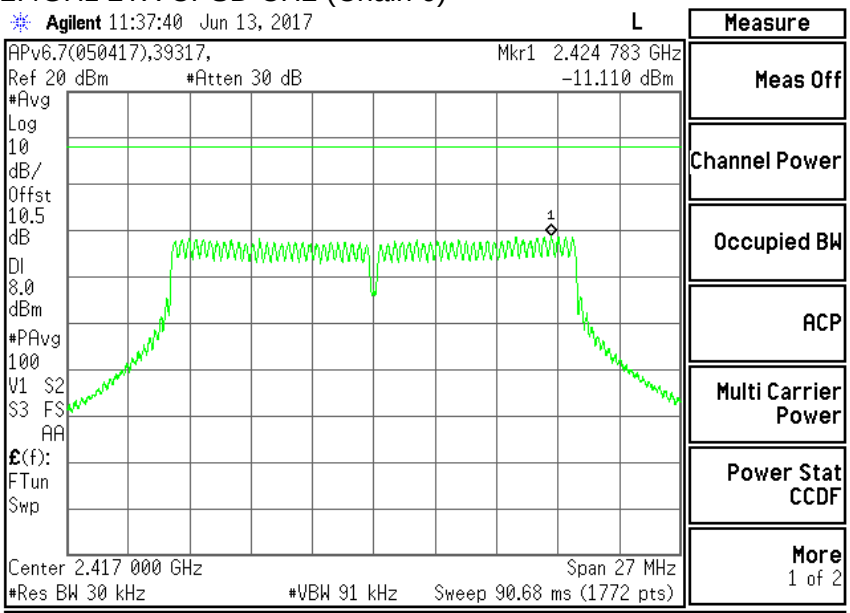
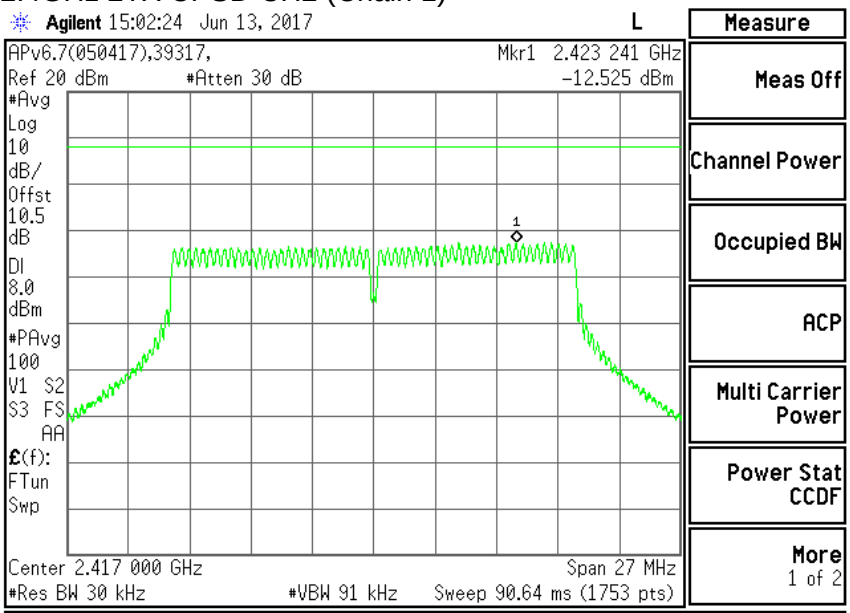
2.4GHz 2TX CPSD CH2 (Chain 0)



2.4GHz 2TX CPSD CH2 (Chain 1)



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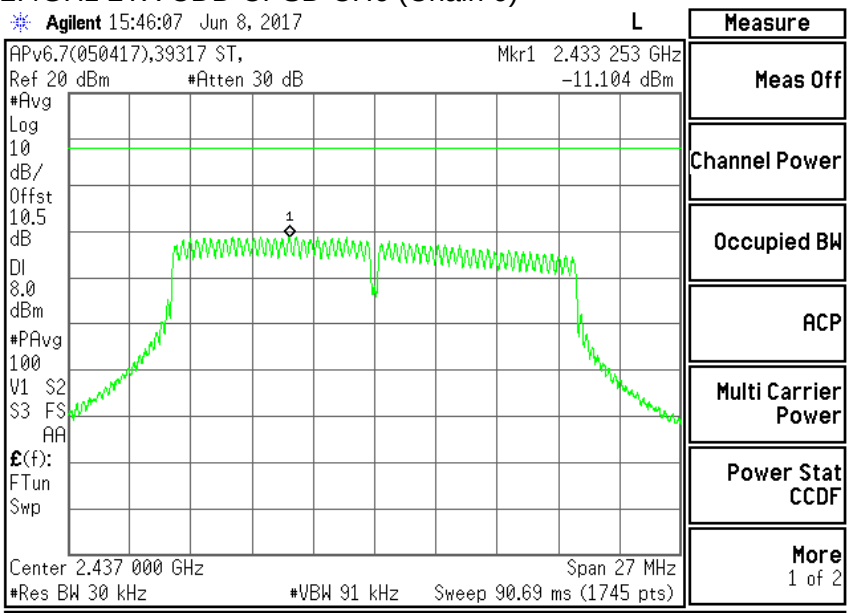
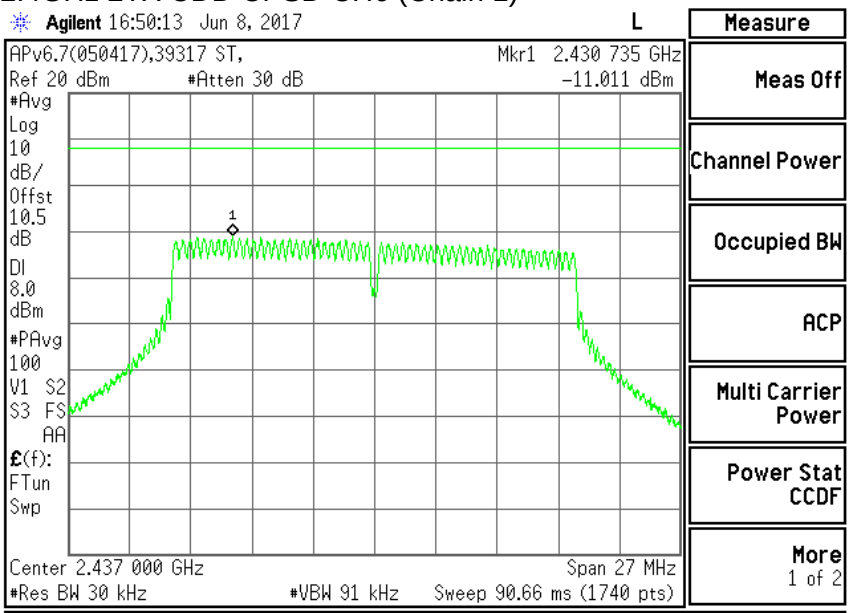
2.4GHz 2TX CDD CPSD CH6 (Chain 0)



2.4GHz 2TX CDD CPSD CH6 (Chain 1)



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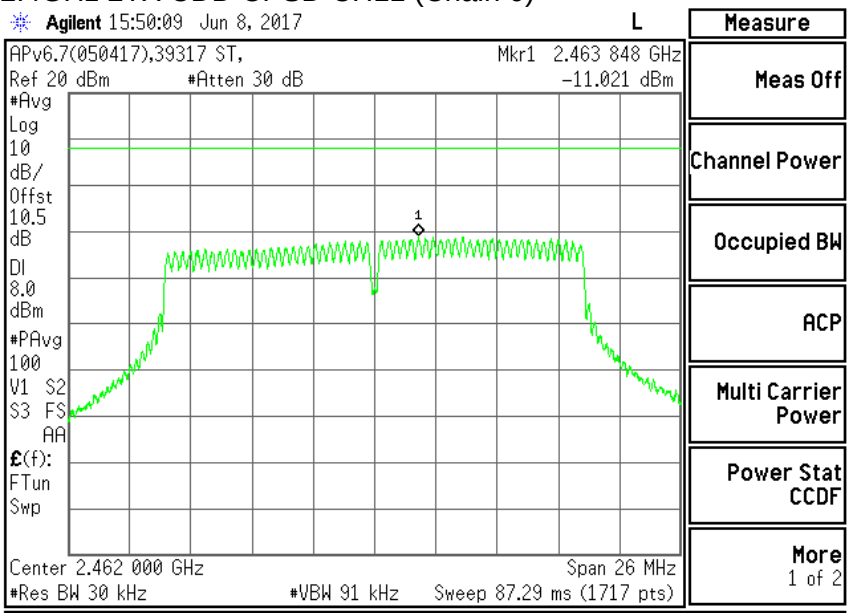
2.4GHz 2TX CDD CPSD CH11 (Chain 0)



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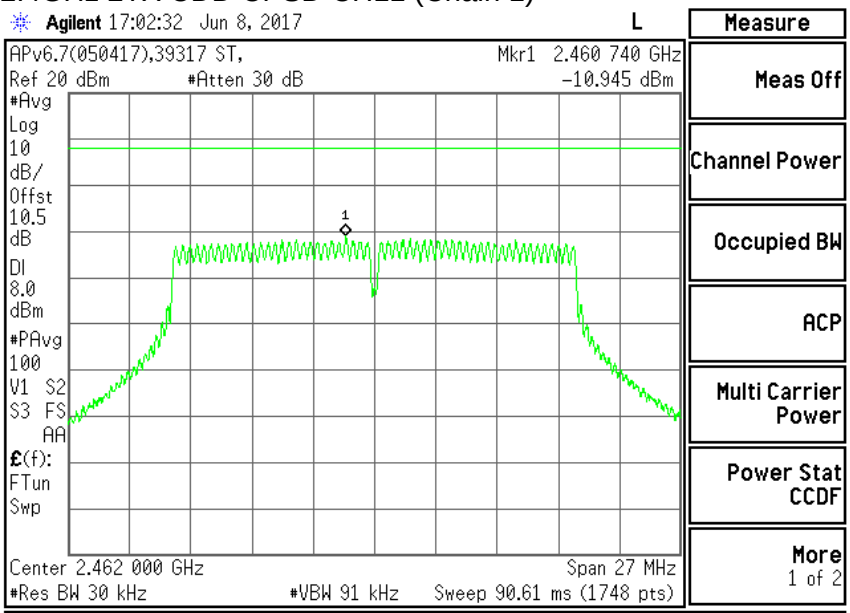

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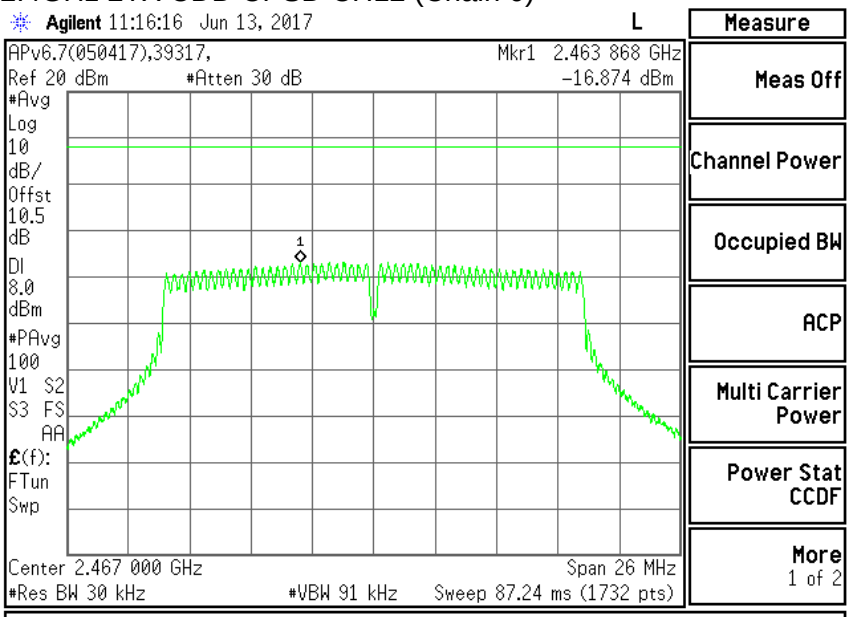
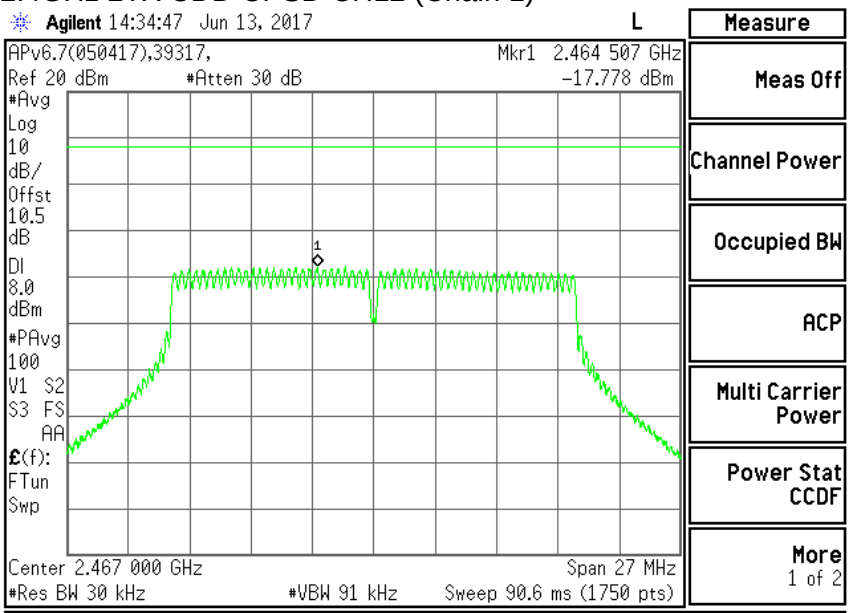
2.4GHz 2TX CDD CPSD CH12 (Chain 0)



UL:40805 \ R Date:5/15/2017 \ CLT:2.3

2.4GHz 2TX CDD CPSD CH12 (Chain 1)



UL:40805 \ R Date:5/15/2017 \ CLT:2.3

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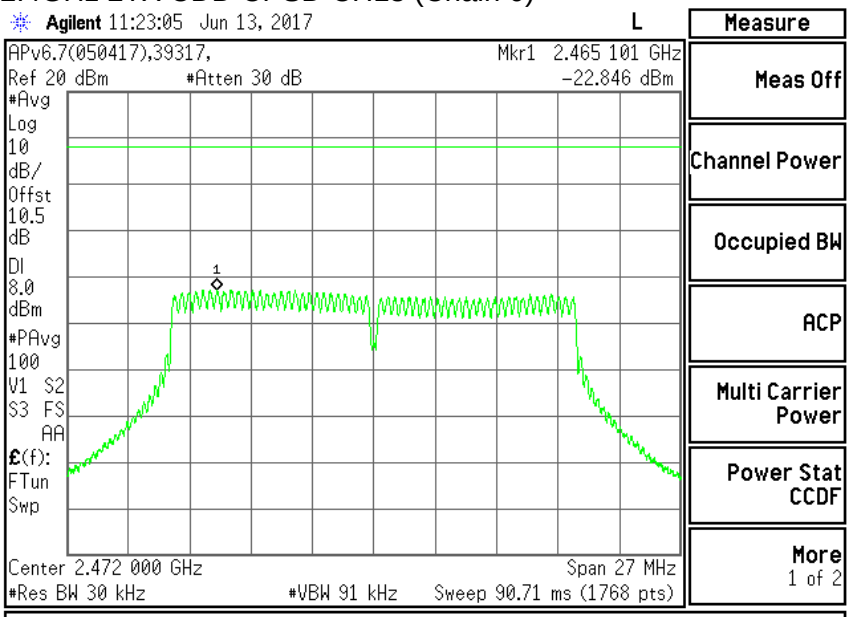
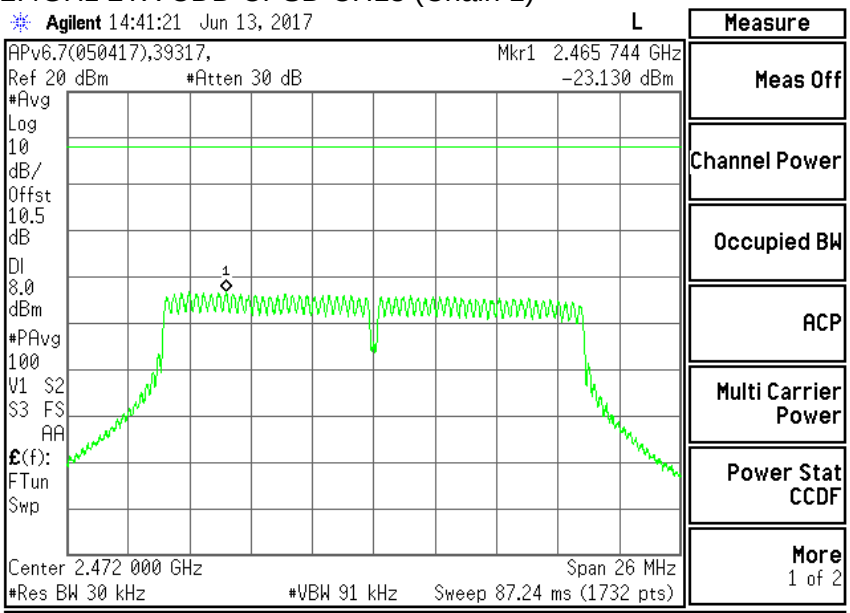
2.4GHz 2TX CDD CPSD CH13 (Chain 0)



UL:40805 \ R Date:5/15/2017 \ CLT:2.3

2.4GHz 2TX CDD CPSD CH13 (Chain 1)



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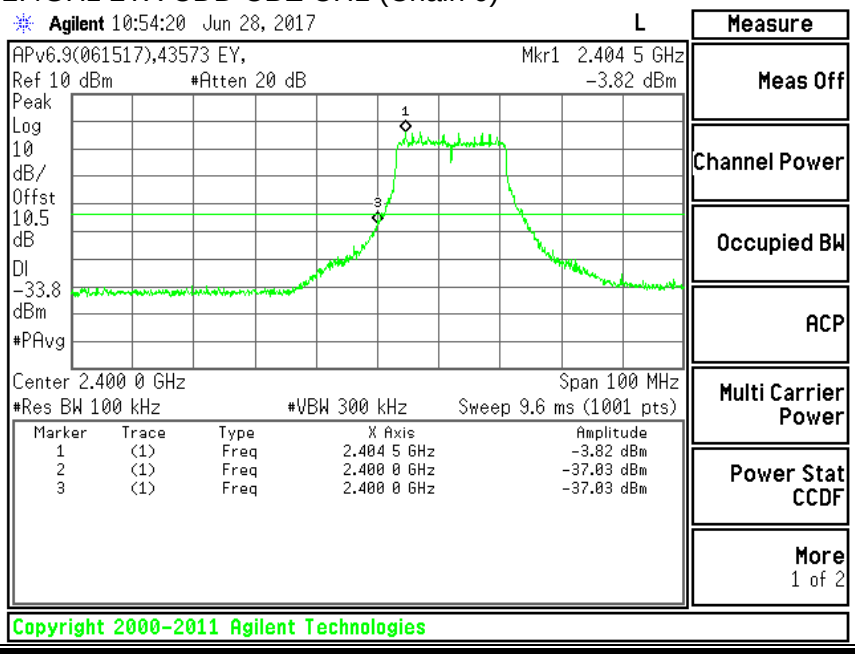
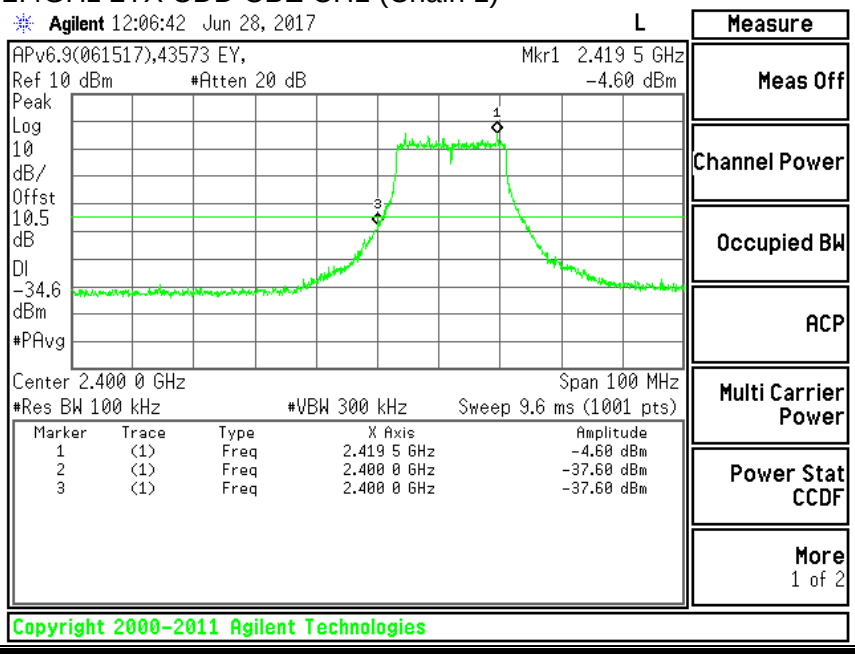
9.4.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

2.4GHz 2TX CDD CBE CH1 (Chain 0)



2.4GHz 2TX CDD CBE CH1 (Chain 1)



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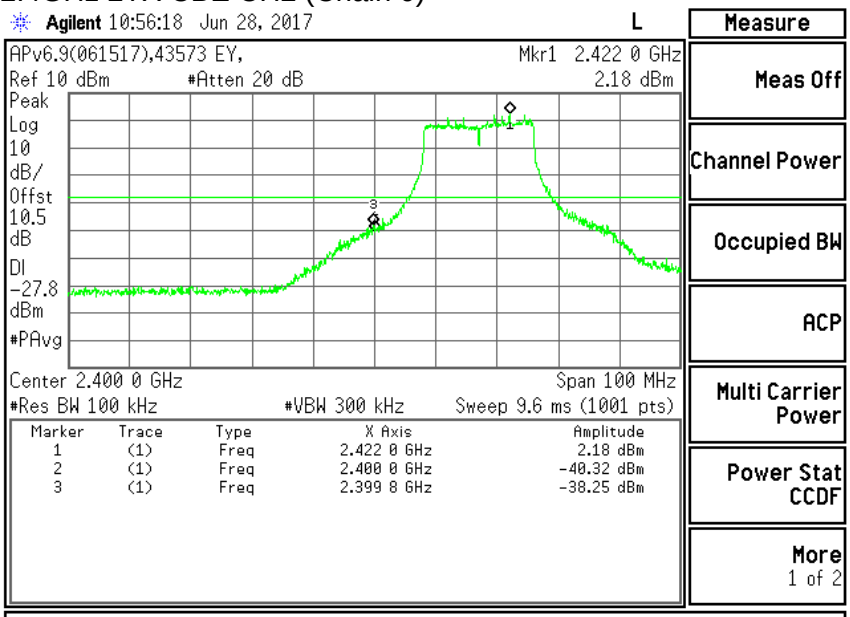
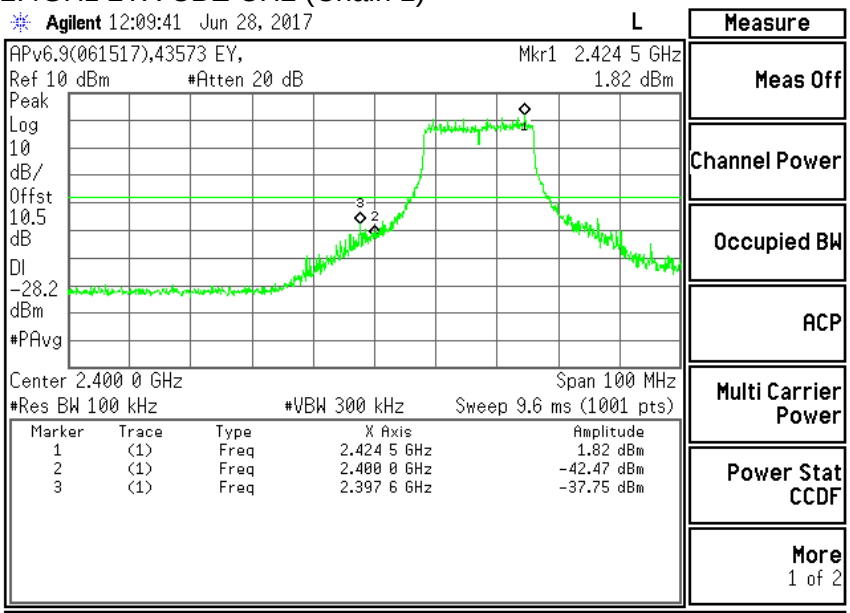
2.4GHz 2TX CBE CH2 (Chain 0)



2.4GHz 2TX CBE CH2 (Chain 1)



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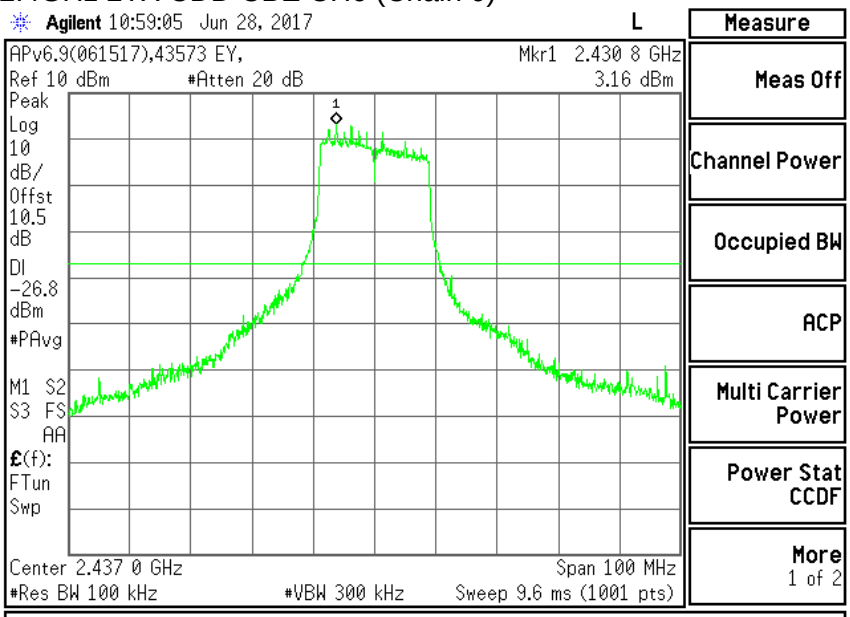
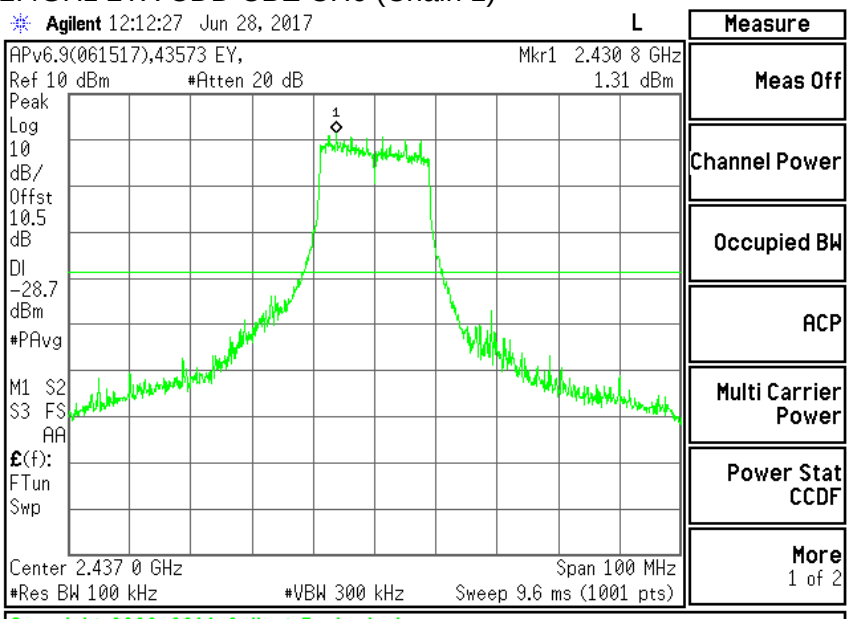
2.4GHz 2TX CDD CBE CH6 (Chain 0)



2.4GHz 2TX CDD CBE CH6 (Chain 1)



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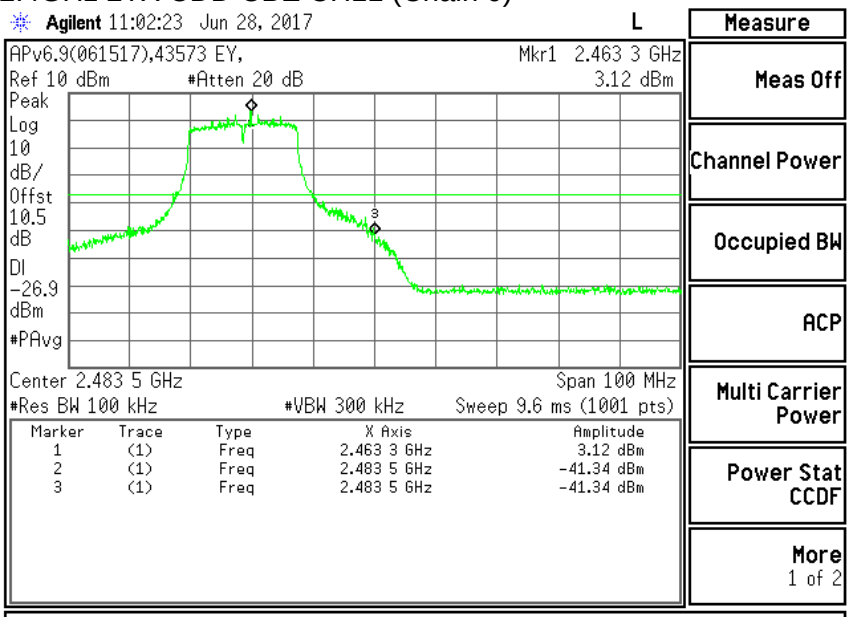
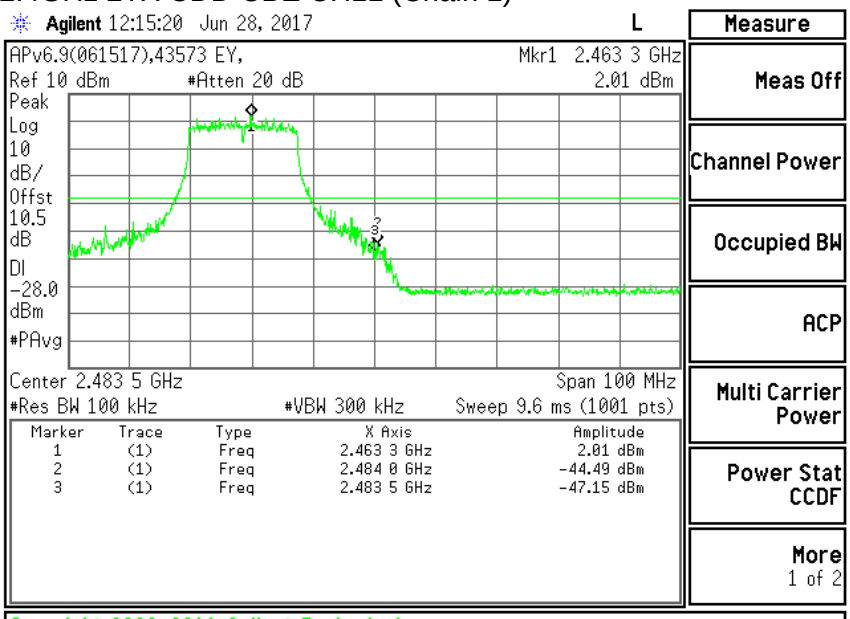
2.4GHz 2TX CDD CBE CH11 (Chain 0)



2.4GHz 2TX CDD CBE CH11 (Chain 1)



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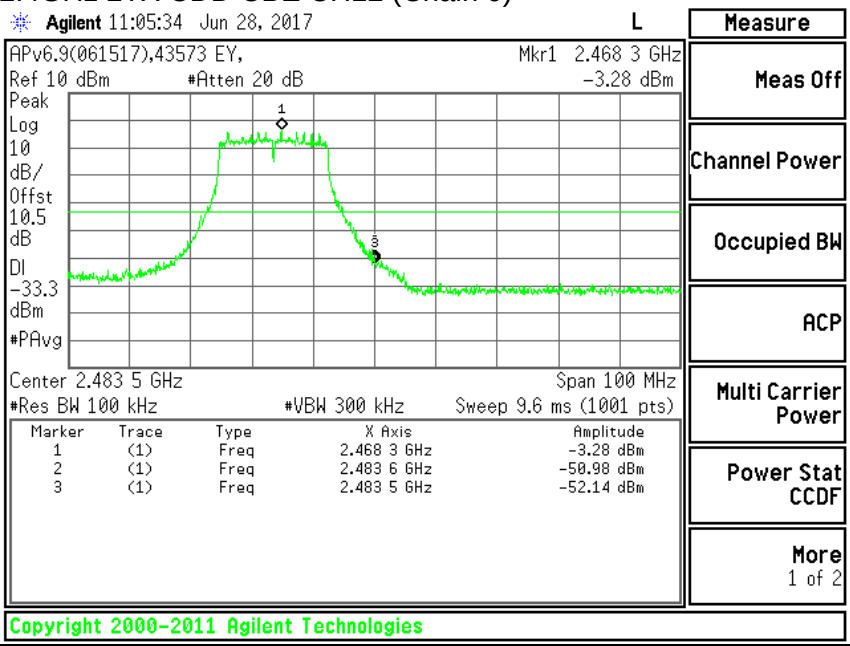
2.4GHz 2TX CDD CBE CH12 (Chain 0)



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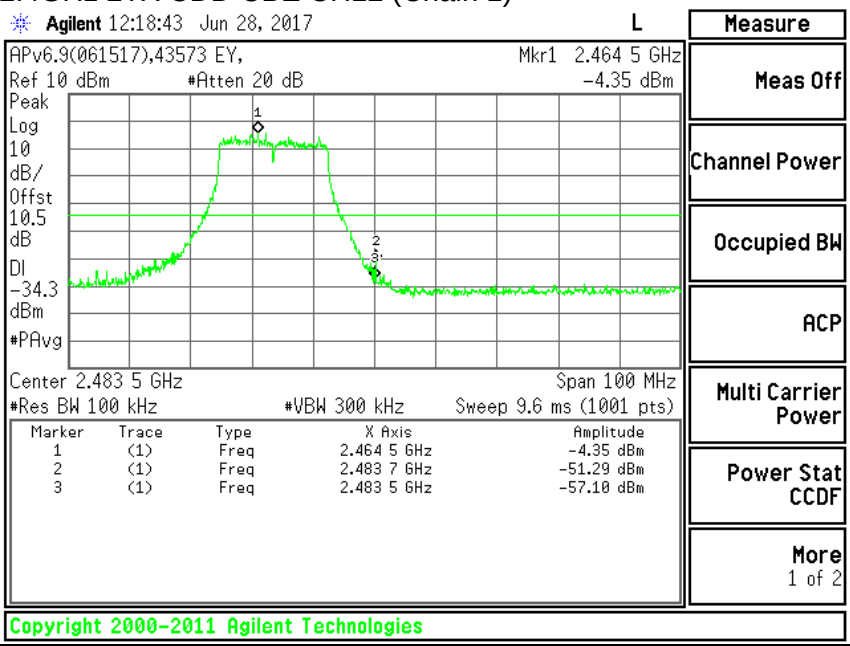

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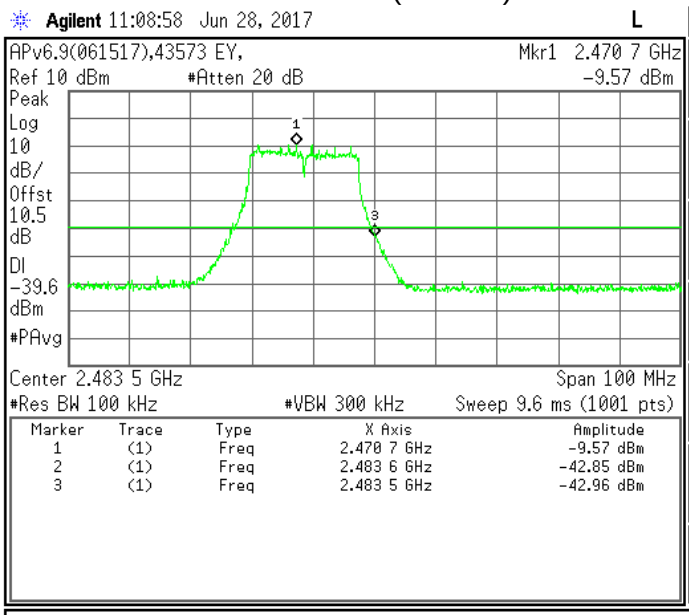
2.4GHz 2TX CDD CBE CH13 (Chain 0)



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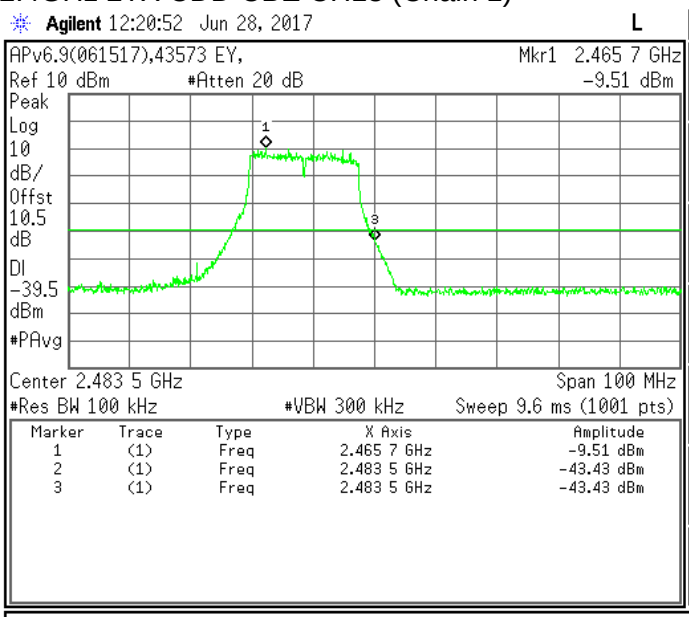

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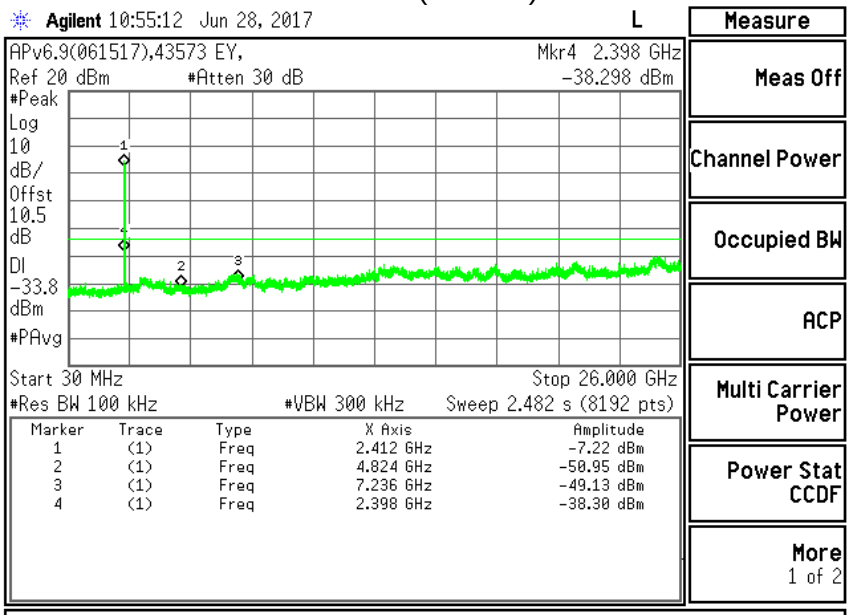
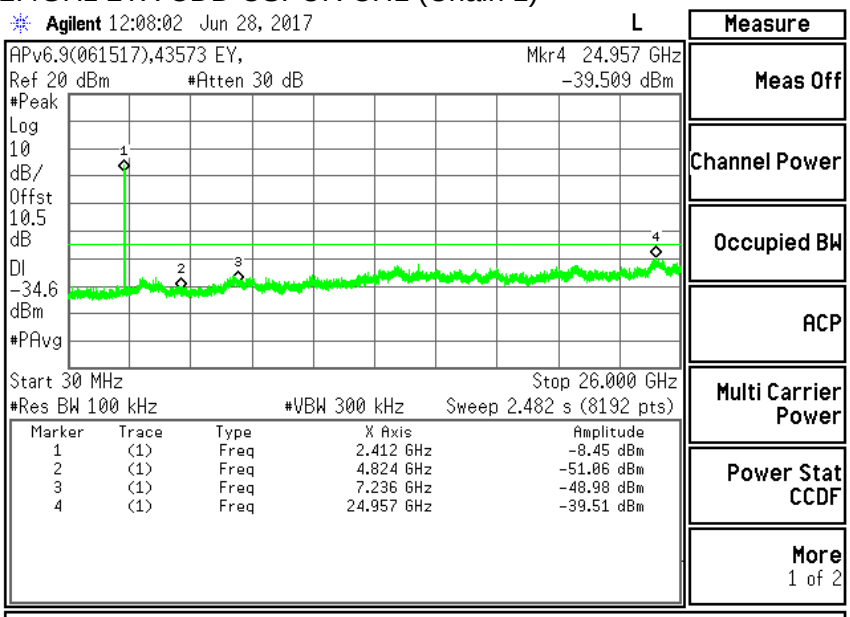
2.4GHz 2TX CDD CSPUR CH1 (Chain 0)



2.4GHz 2TX CDD CSPUR CH1 (Chain 1)



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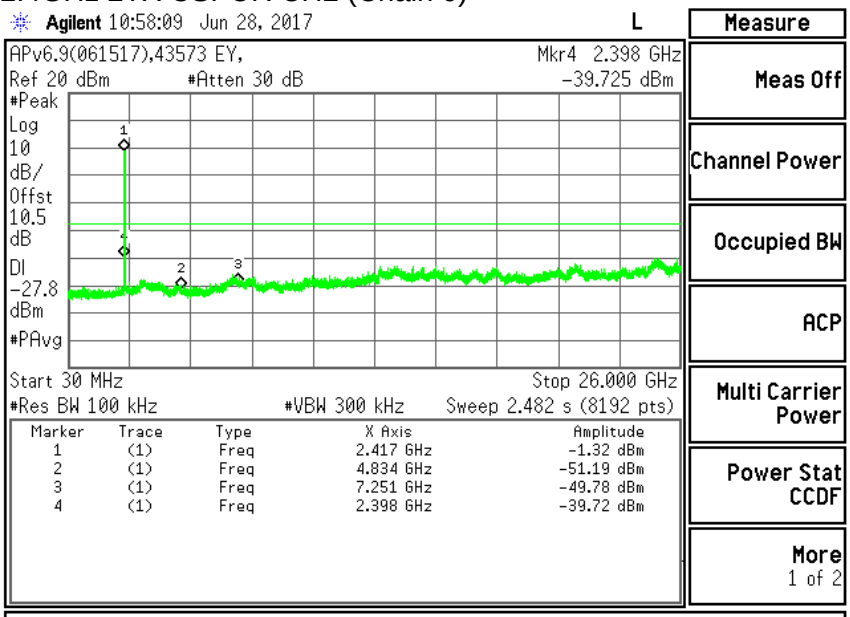
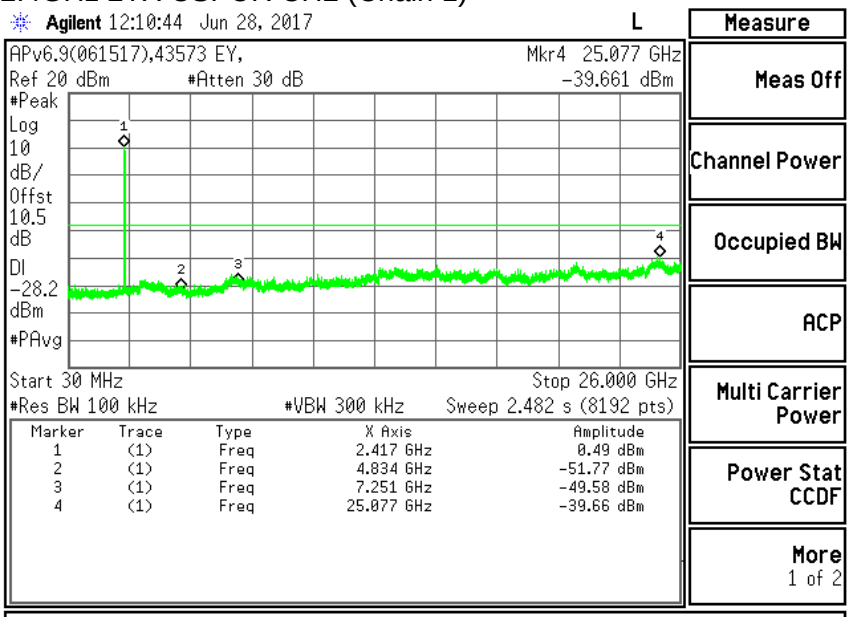
2.4GHz 2TX CSPUR CH2 (Chain 0)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.417 GHz	-1.32 dBm
2	(1)	Freq	4.834 GHz	-51.19 dBm
3	(1)	Freq	7.251 GHz	-49.78 dBm
4	(1)	Freq	2.398 GHz	-39.72 dBm

2.4GHz 2TX CSPUR CH2 (Chain 1)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.417 GHz	0.49 dBm
2	(1)	Freq	4.834 GHz	-51.77 dBm
3	(1)	Freq	7.251 GHz	-49.58 dBm
4	(1)	Freq	25.077 GHz	-39.66 dBm

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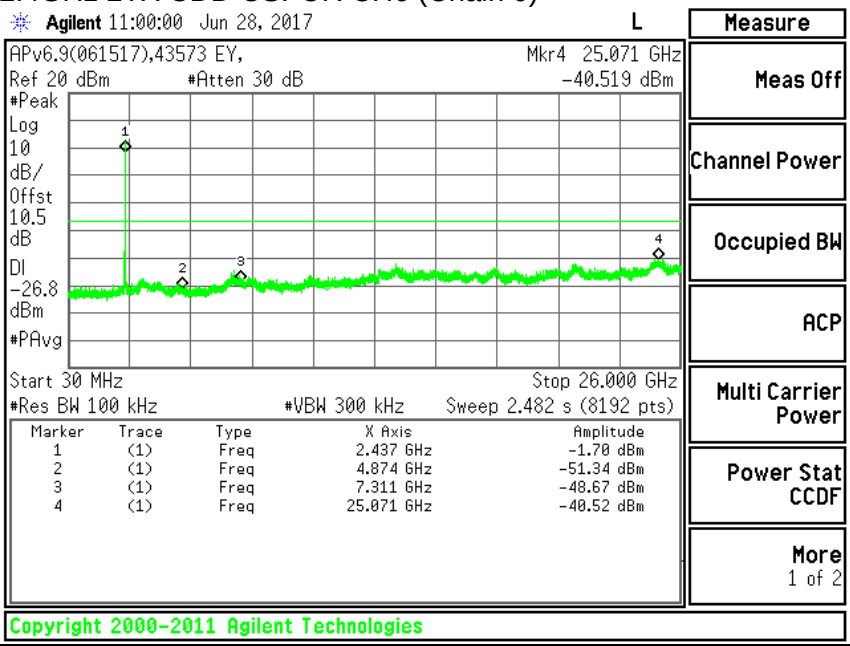
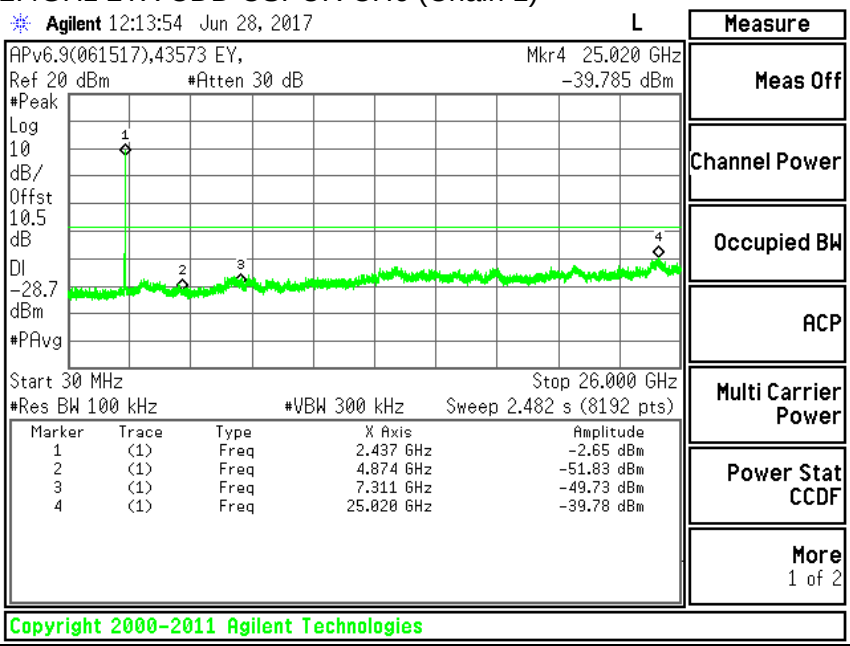
2.4GHz 2TX CDD CSPUR CH6 (Chain 0)



2.4GHz 2TX CDD CSPUR CH6 (Chain 1)



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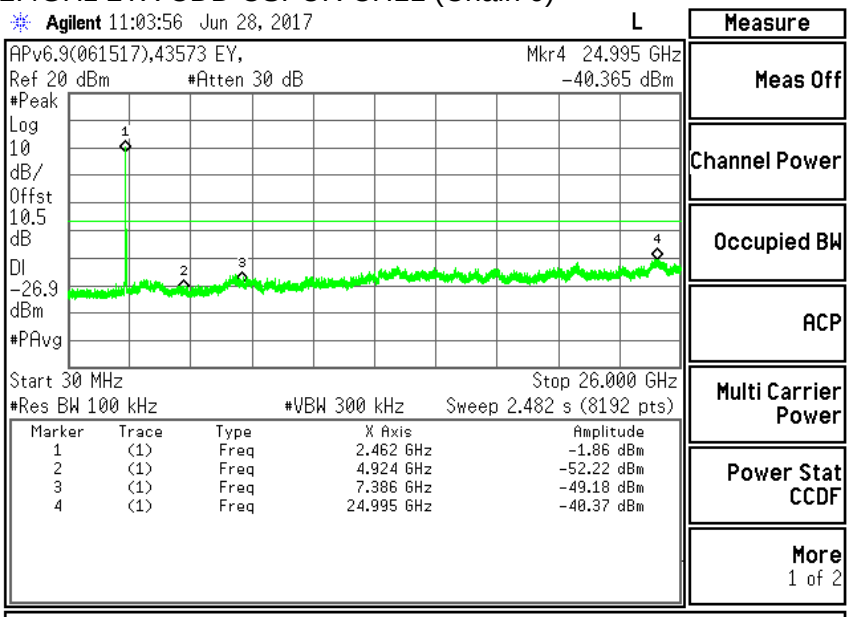
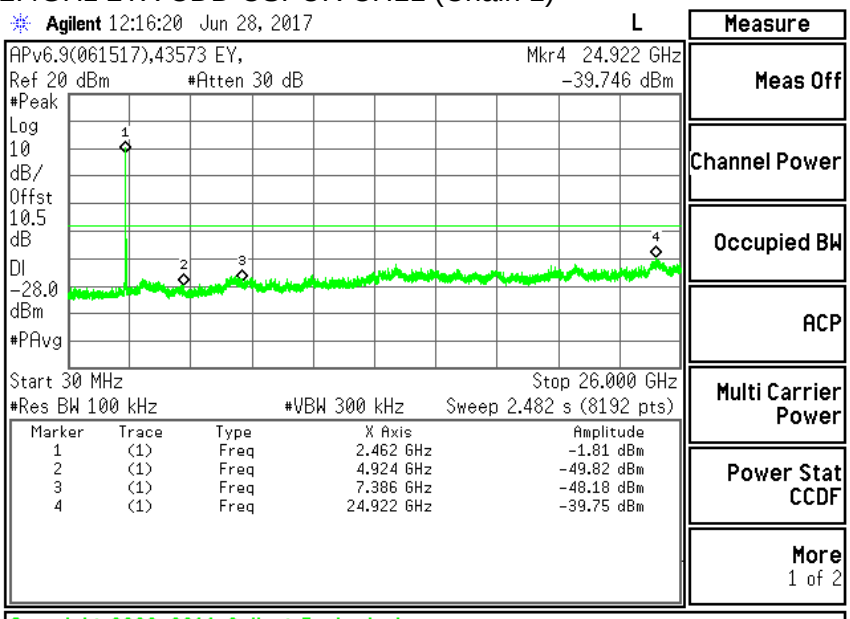
2.4GHz 2TX CDD CSPUR CH11 (Chain 0)



2.4GHz 2TX CDD CSPUR CH11 (Chain 1)



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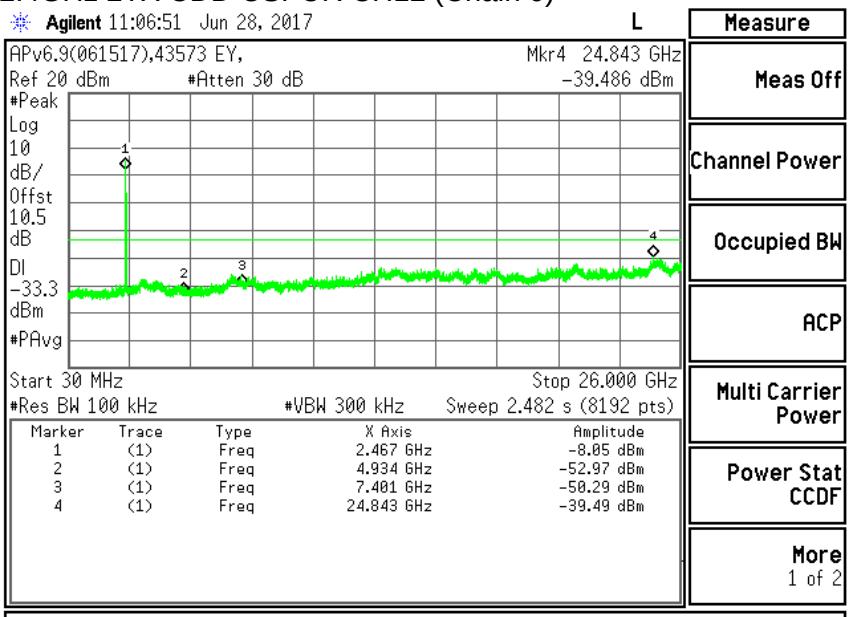
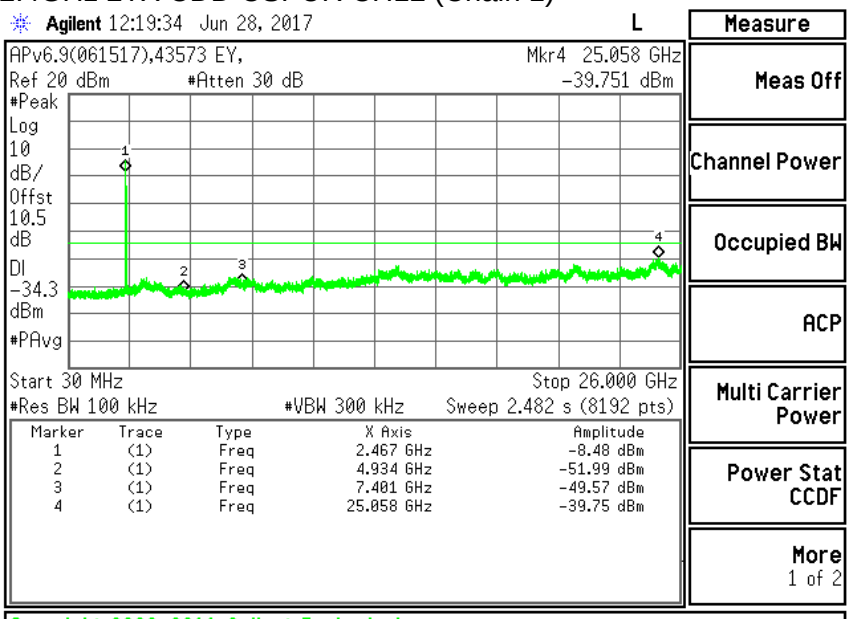
2.4GHz 2TX CDD CSPUR CH12 (Chain 0)



2.4GHz 2TX CDD CSPUR CH12 (Chain 1)



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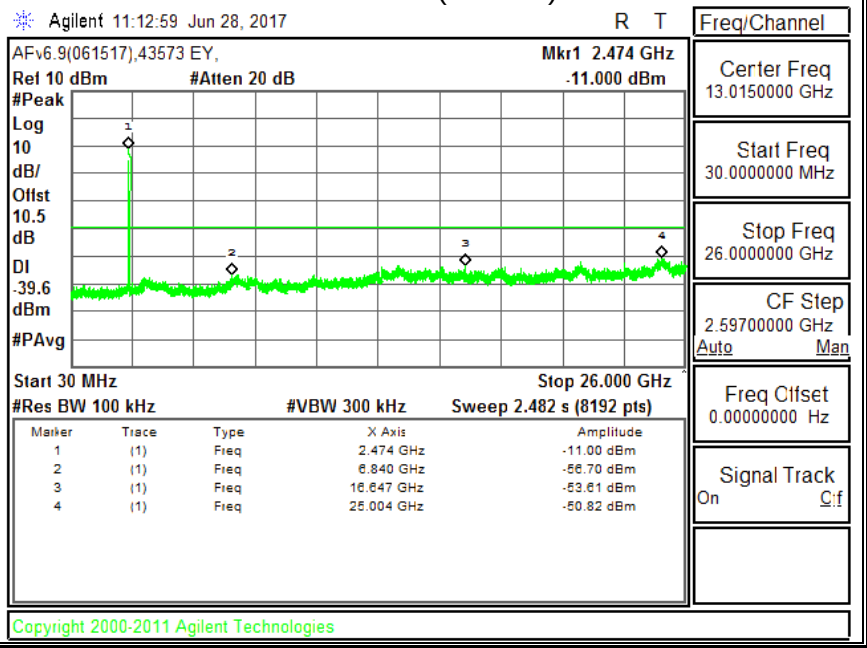
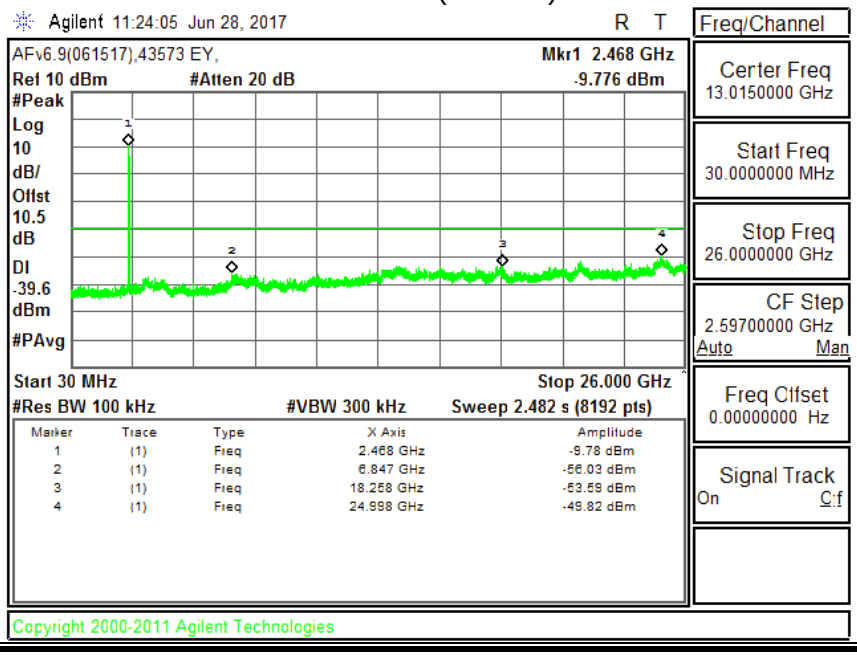
2.4GHz 2TX CDD CSPUR CH13 (Chain 0)



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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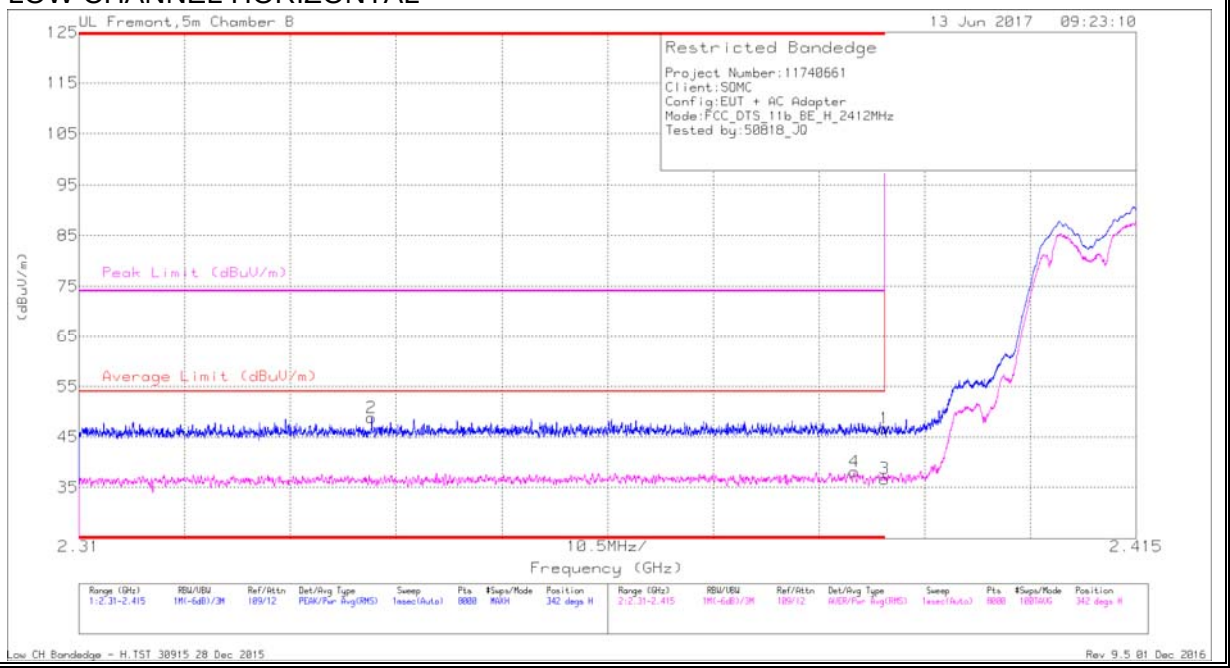
10.2. TRANSMITTER ABOVE 1 GHz

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 T346 (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	35.96	Pk	32	-21.3	46.66	-	-	74	-27.34	342	367	H
2	* 2.339	38.32	Pk	31.8	-21.3	48.82	-	-	74	-25.18	342	367	H
3	* 2.39	26	RMS	32	-21.3	36.7	54	-17.3	-	-	342	367	H
4	* 2.387	27.51	RMS	31.9	-21.3	38.11	54	-15.89	-	-	342	367	H

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

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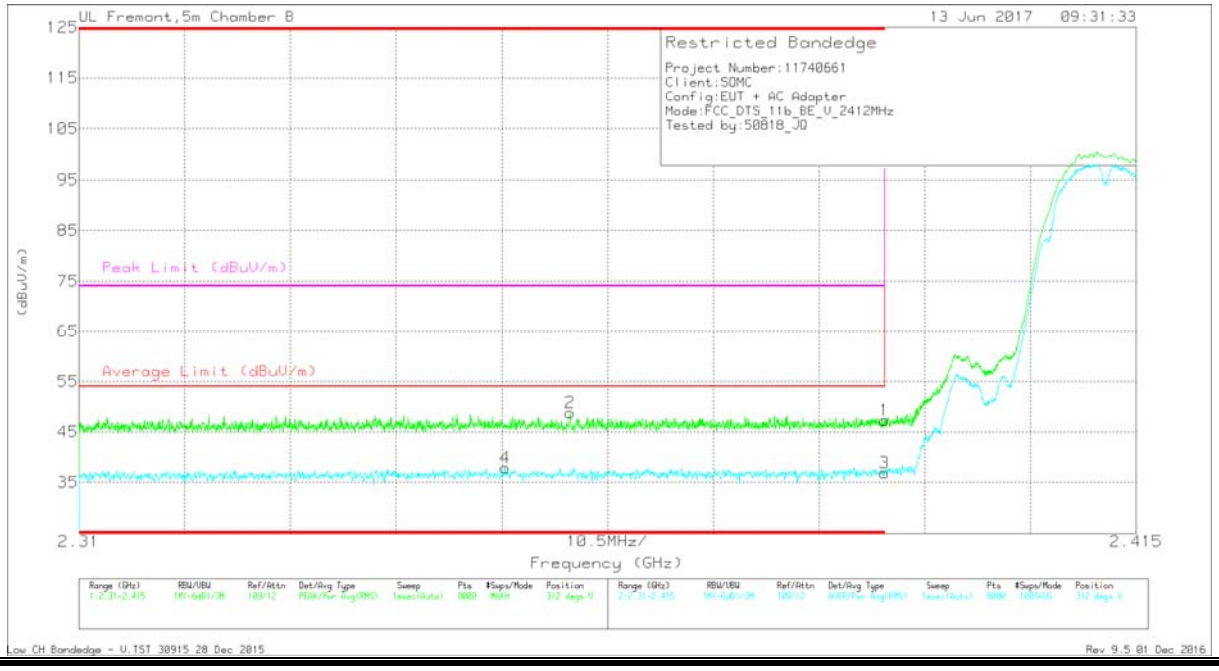
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
4	* 2.352	27.43	RMS	31.8	-21.3	37.93	54	-16.07	-	-	312	366	V
2	* 2.359	38.25	Pk	31.9	-21.3	48.85	-	-	74	-25.15	312	366	V
1	* 2.39	36.61	Pk	32	-21.3	47.31	-	-	74	-26.69	312	366	V
3	* 2.39	26.18	RMS	32	-21.3	36.88	54	-17.12	-	-	312	366	V

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

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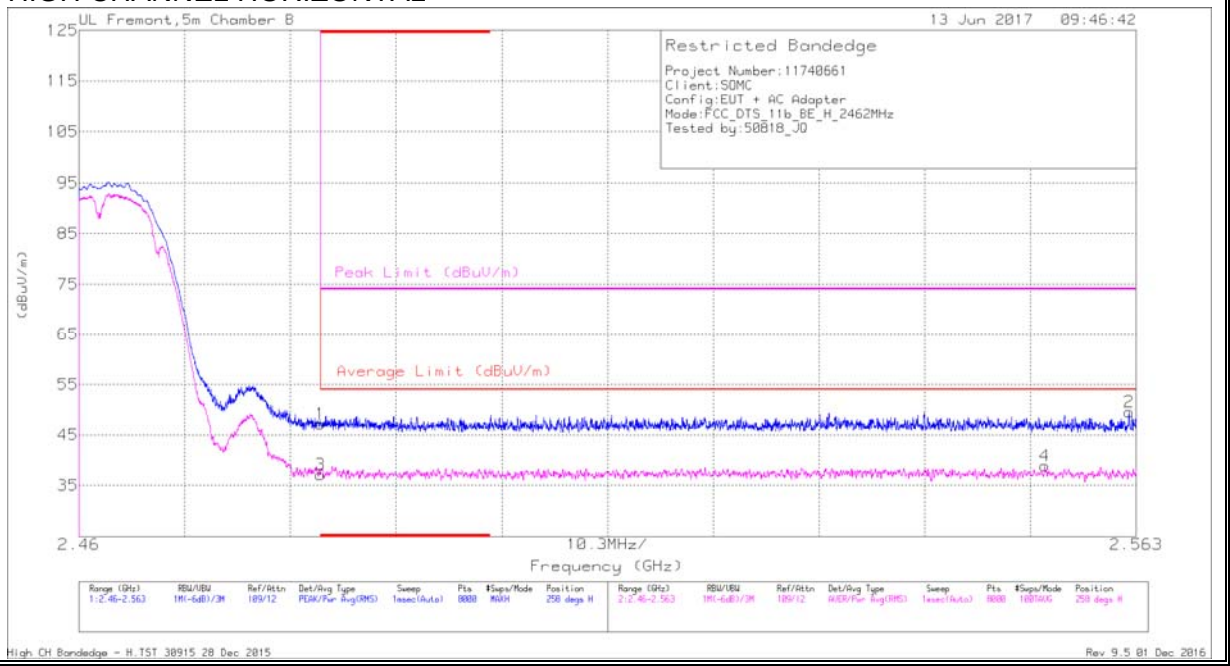
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	* 2.48436.32	Pk	32.1	-21.2	47.22	-	-	74	-26.78	258	366	H	2
* 2.484	26.18	RMS	32.1	-21.2	37.08	54	-16.92	-	-	258	366	H	4
2.554	27.82	RMS	32.1	-21.1	38.82	54	-15.18	-	-	258	366	H	
2.562	38.63	Pk	32.1	-21.2	49.53	-	-	74	-24.47	258	366	H	3

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

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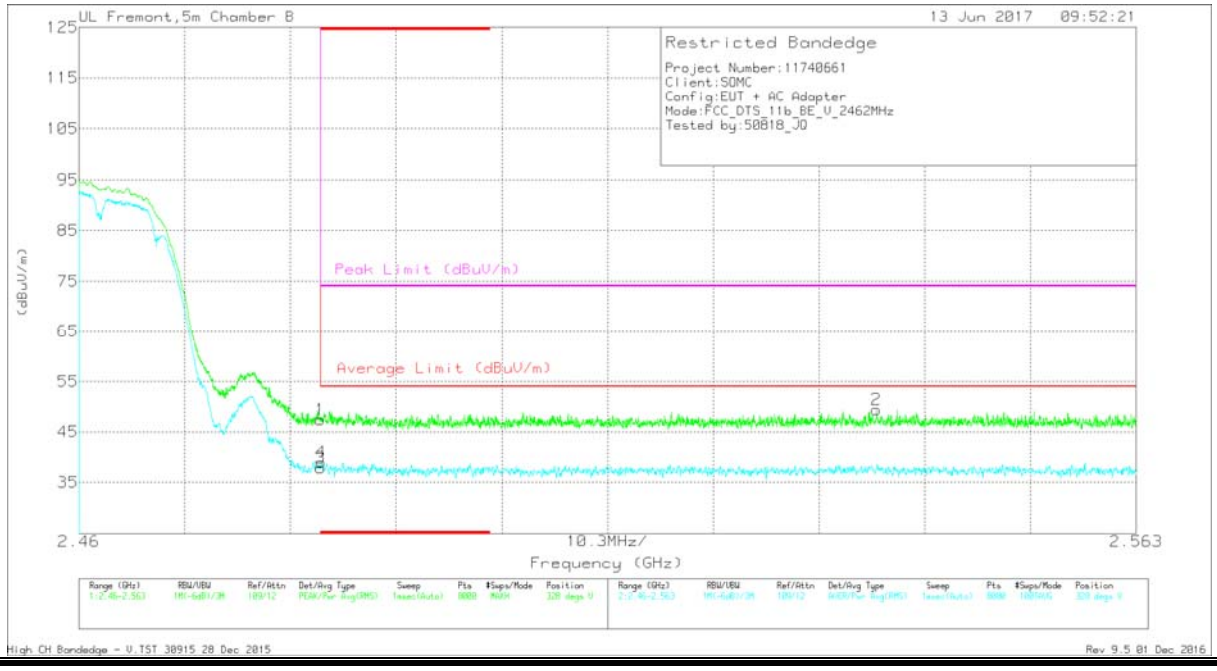
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	36.55	Pk	32.1	-21.2	47.45	-	-	74	-26.55	328	249	V
3	* 2.484	26.97	RMS	32.1	-21.2	37.87	54	-16.13	-	-	328	249	V
4	* 2.484	28.13	RMS	32.1	-21.2	39.03	54	-14.97	-	-	328	249	V
2	2.538	38.28	Pk	32.1	-21	49.38	-	-	74	-24.62	328	249	V

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

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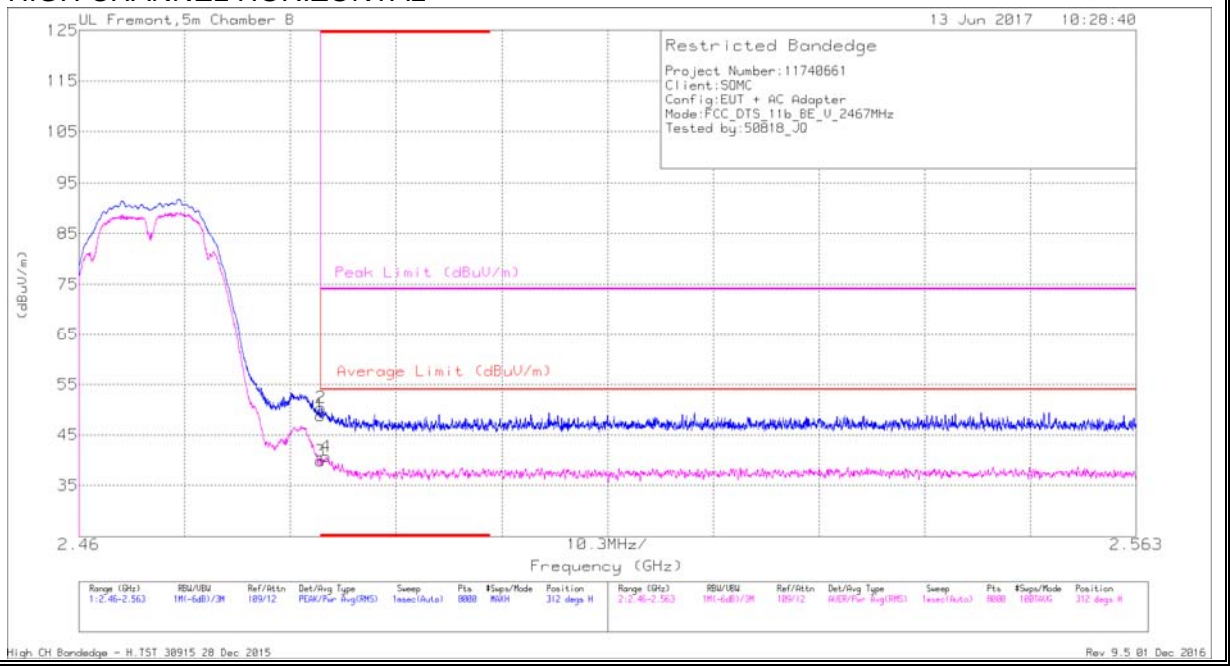
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 12)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	37.96	Pk	32.1	-21.2	48.86	-	-	74	-25.14	312	167	H
2	* 2.484	39.5	Pk	32.1	-21.2	50.4	-	-	74	-23.6	312	167	H
3	* 2.484	28.92	RMS	32.1	-21.2	39.82	54	-14.18	-	-	312	167	H
4	* 2.484	29.78	RMS	32.1	-21.2	40.68	54	-13.32	-	-	312	167	H

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

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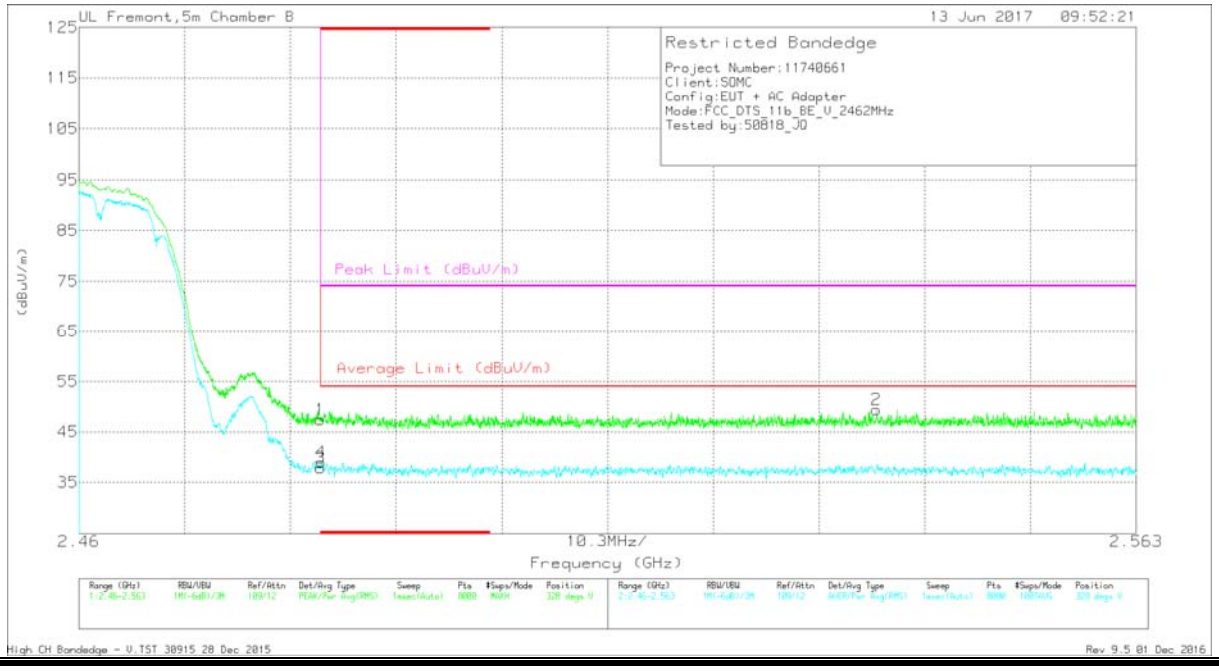
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	36.55	Pk	32.1	-21.2	47.45	-	-	74	-26.55	328	249	V
3	* 2.484	26.97	RMS	32.1	-21.2	37.87	54	-16.13	-	-	328	249	V
4	* 2.484	28.13	RMS	32.1	-21.2	39.03	54	-14.97	-	-	328	249	V
2	2.538	38.28	Pk	32.1	-21	49.38	-	-	74	-24.62	328	249	V

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

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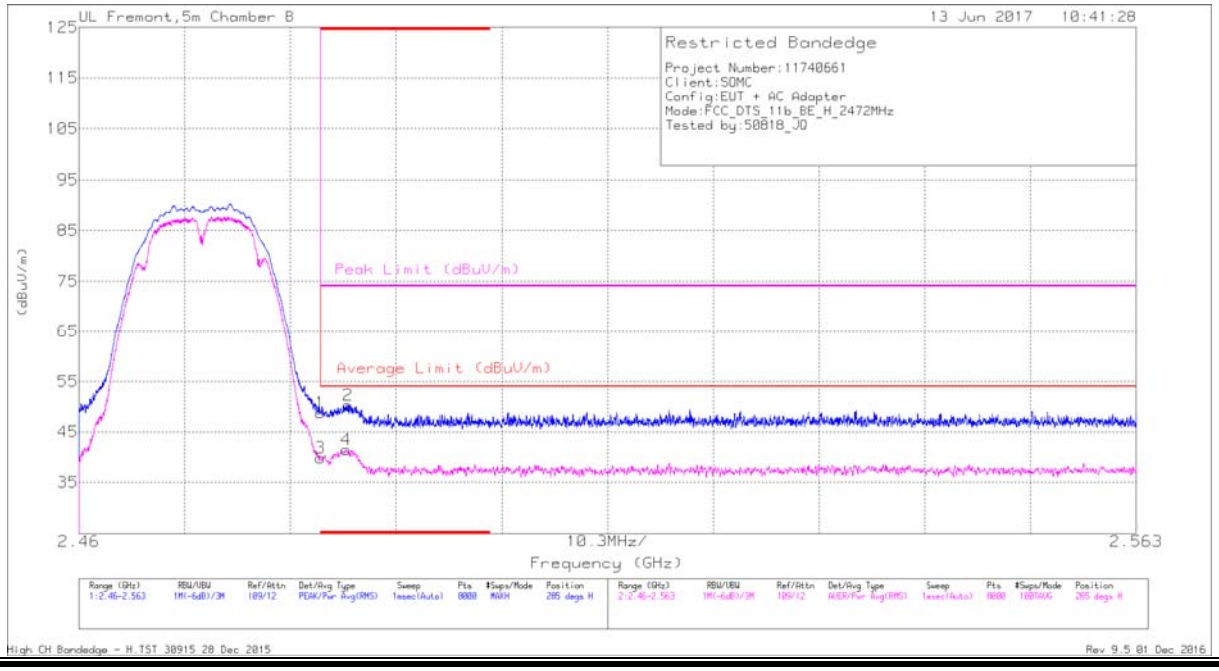
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 13)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	37.89	Pk	32.1	-21.2	48.79	-	-	74	-25.21	285	166	H
3	* 2.484	28.99	RMS	32.1	-21.2	39.89	54	-14.11	-	-	285	166	H
2	* 2.486	39.32	Pk	32.1	-21.1	50.32	-	-	74	-23.68	285	166	H
4	* 2.486	30.51	RMS	32.1	-21.1	41.51	54	-12.49	-	-	285	166	H

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

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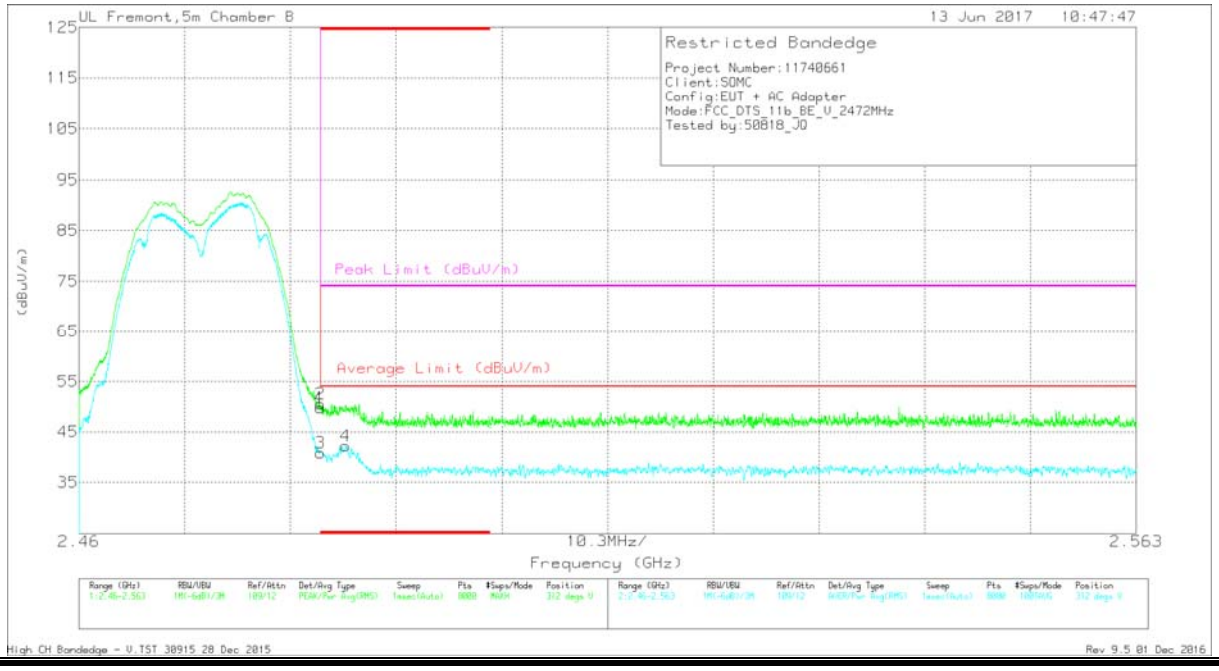
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	38.93	Pk	32.1	-21.2	49.83	-	-	74	-24.17	312	171	V
2	* 2.484	39.66	Pk	32.1	-21.2	50.56	-	-	74	-23.44	312	171	V
3	* 2.484	29.95	RMS	32.1	-21.2	40.85	54	-13.15	-	-	312	171	V
4	* 2.486	31.24	RMS	32.1	-21.1	42.24	54	-11.76	-	-	312	171	V

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

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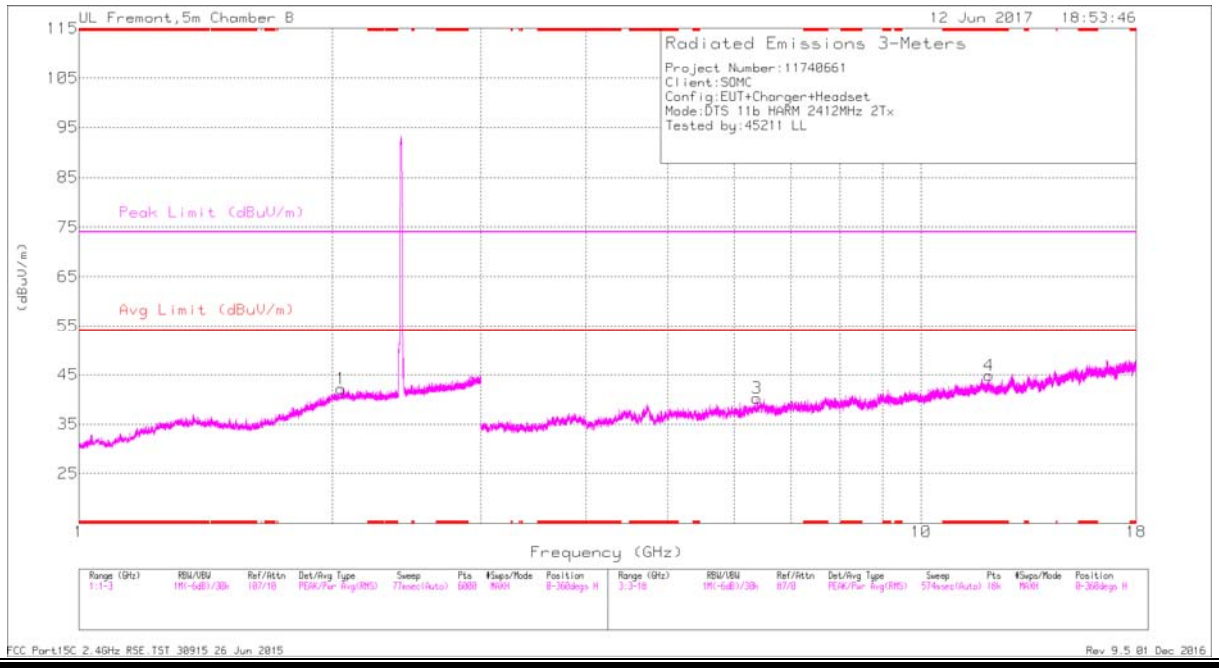
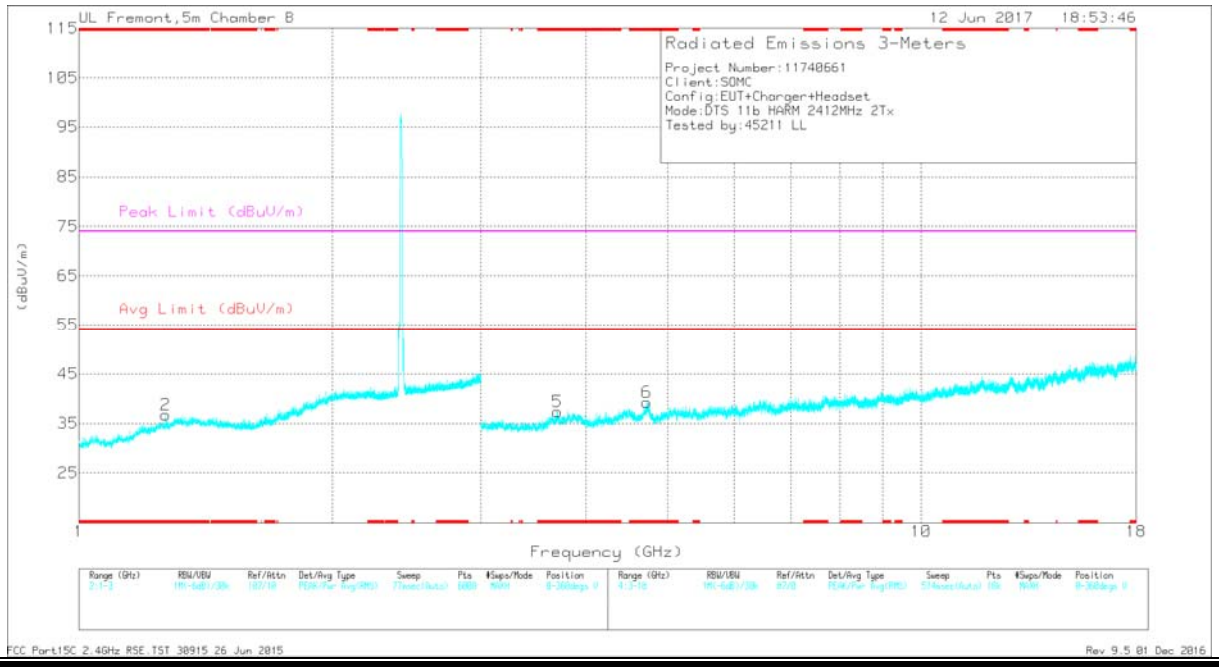
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.269	34.66	PK2	28.6	-21.9	0	41.36	-	-	74	-32.64	261	207	V
* 1.265	23.53	MAv1	28.6	-22.1	0	30.03	54	-23.97	-	-	261	207	V
* 12.034	33.17	PK2	39.6	-23.1	0	49.67	-	-	74	-24.33	214	186	H
* 12.034	22.25	MAv1	39.6	-23.1	0	38.75	54	-15.25	-	-	214	186	H
* 3.701	40.08	PK2	33.5	-30.5	0	43.08	-	-	74	-30.92	357	213	V
* 3.701	29.07	MAv1	33.5	-30.5	0	32.07	54	-21.93	-	-	357	213	V
* 4.72	39.23	PK2	34.4	-29	0	44.63	-	-	74	-29.37	301	143	V
* 4.719	28.42	MAv1	34.4	-29	0	33.82	54	-20.18	-	-	301	143	V
2.049	36.41	PK2	32.1	-21.2	0	47.31	-	-	-	-	302	127	H
6.385	38	PK2	36.2	-29	0	45.2	-	-	-	-	288	104	H

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

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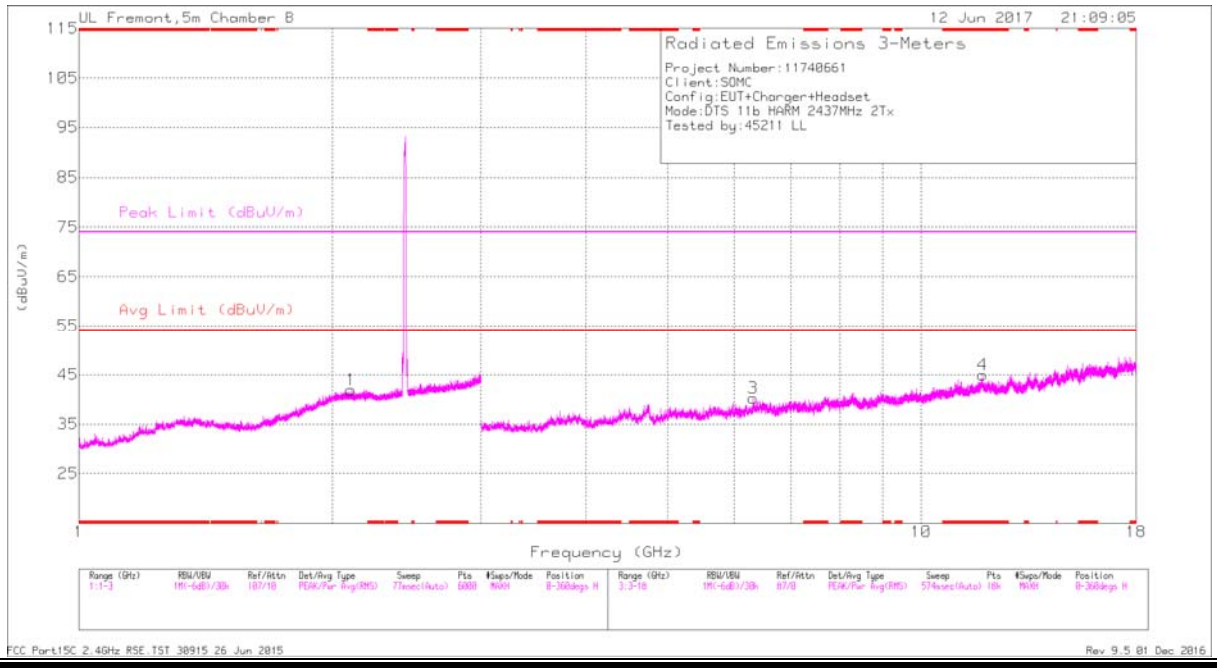
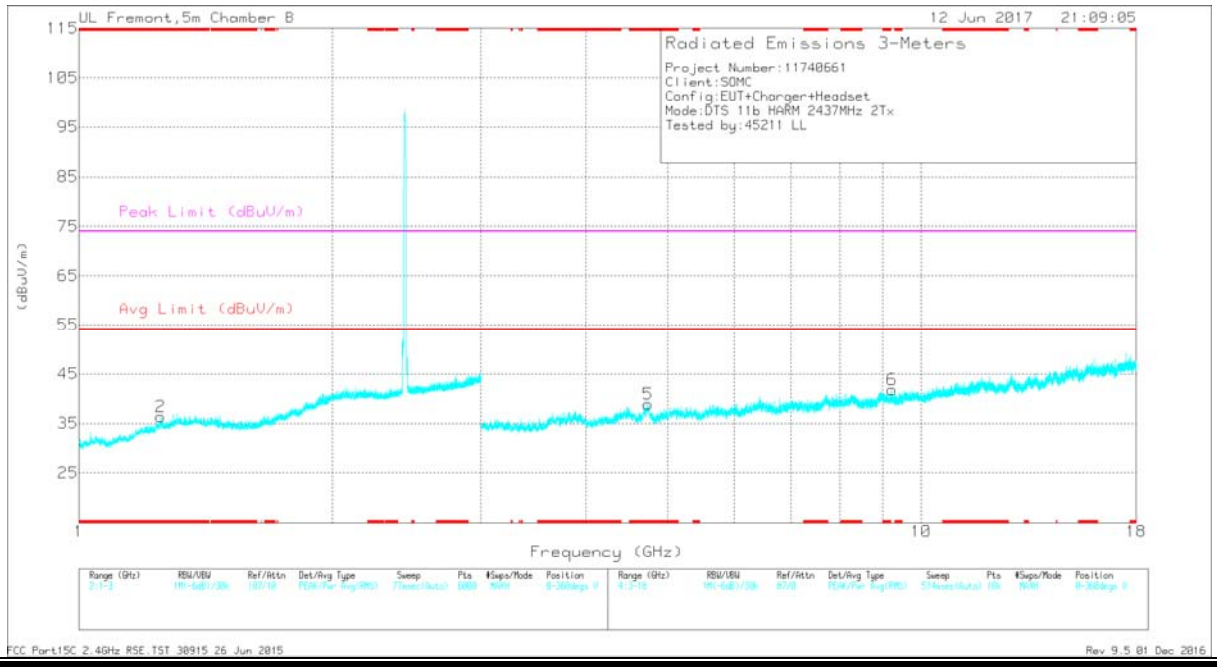
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.25	35.72	PK2	28.4	-22.2	0	41.92	-	-	74	-32.08	260	199	V
* 1.25	24.38	MAv1	28.4	-22.2	0	30.58	54	-23.42	-	-	260	199	V
* 11.825	33.23	PK2	39.4	-22.3	0	50.33	-	-	74	-23.67	201	179	H
* 11.826	22.02	MAv1	39.4	-22.3	0	39.12	54	-14.88	-	-	201	179	H
* 4.74	39.58	PK2	34.4	-28.6	0	45.38	-	-	74	-28.62	87	181	V
* 4.736	28.79	MAv1	34.4	-28.6	0	34.59	54	-19.41	-	-	87	181	V
2.105	36.44	PK2	32.1	-21.2	0	47.34	-	-	-	-	210	104	H
6.321	38.44	PK2	36	-28.6	0	45.84	-	-	-	-	269	211	H
9.235	34.7	PK2	37.2	-24.6	0	47.3	-	-	-	-	187	108	V

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

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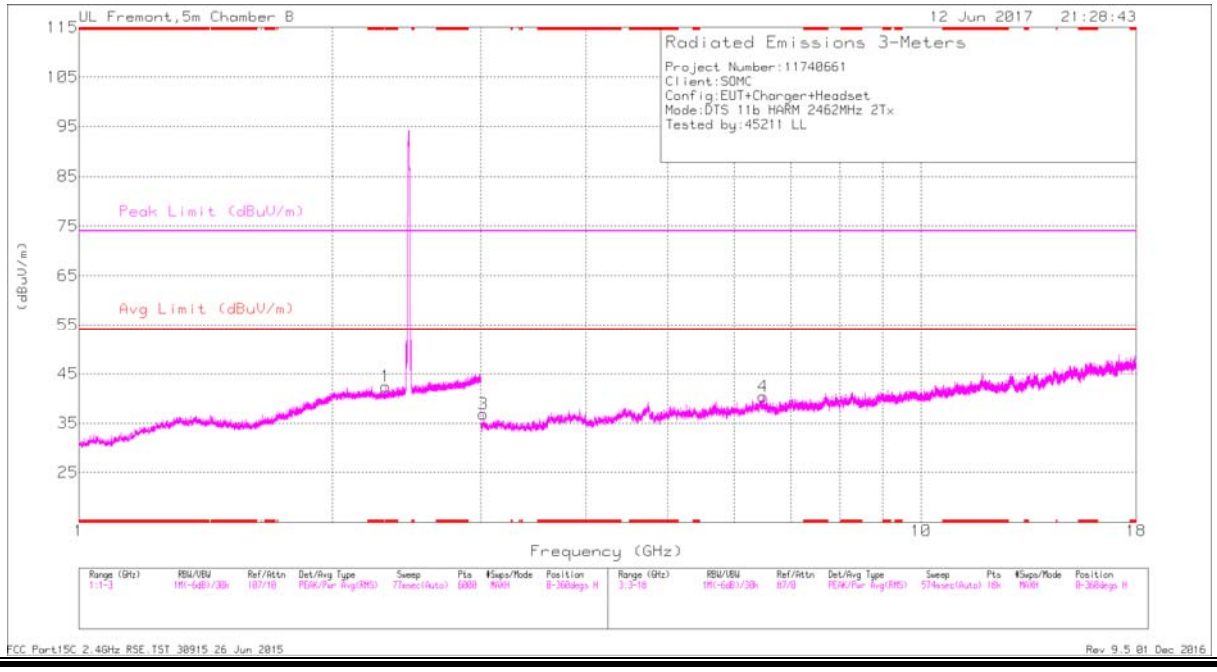
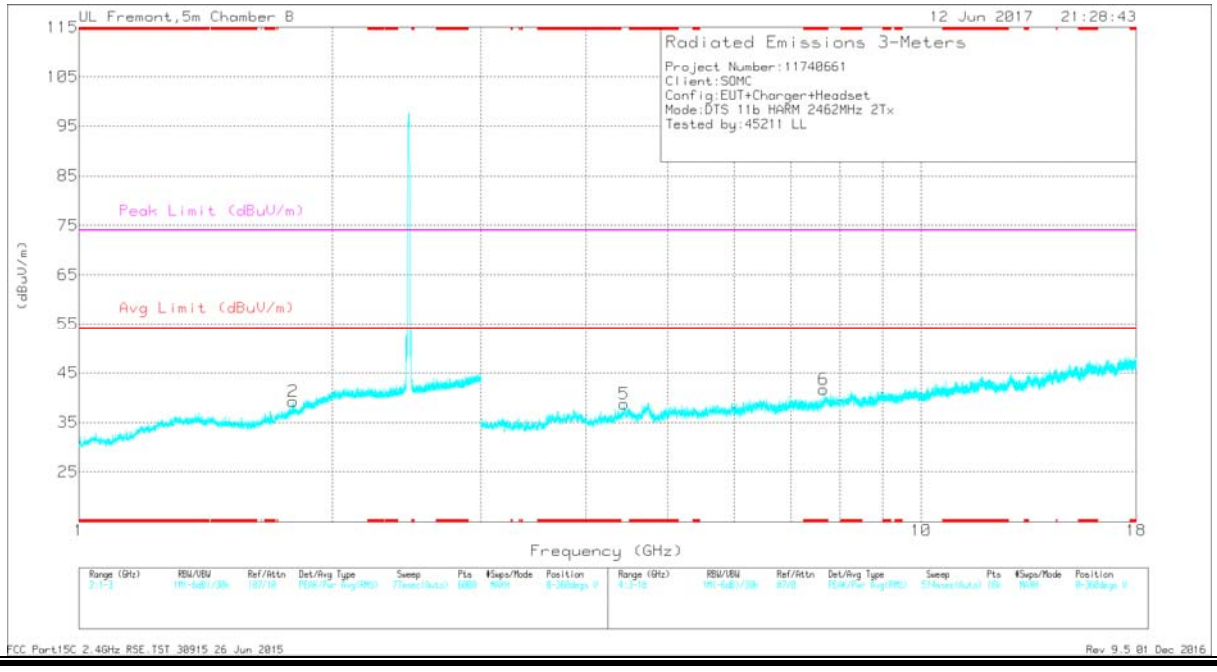
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 2.315	36.27	PK2	31.7	-21.2	0	46.77	-	-	74	-27.23	320	110	H
* 2.312	24.92	MAv1	31.7	-21.3	0	35.32	54	-18.68	-	-	320	110	H
* 7.662	36.69	PK2	36.4	-26.6	0	46.49	-	-	74	-27.51	131	195	V
* 7.66	25.37	MAv1	36.4	-26.6	0	35.17	54	-18.83	-	-	131	195	V
1.797	35.25	PK2	29.5	-20.9	0	43.85	-	-	-	-	236	104	V
3.024	39.96	PK2	32.9	-30.8	0	42.06	-	-	-	-	339	188	H
4.44	39.54	PK2	34.3	-28.5	0	45.34	-	-	-	-	97	222	V
6.497	37.74	PK2	36.1	-27.8	0	46.04	-	-	-	-	196	120	H

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

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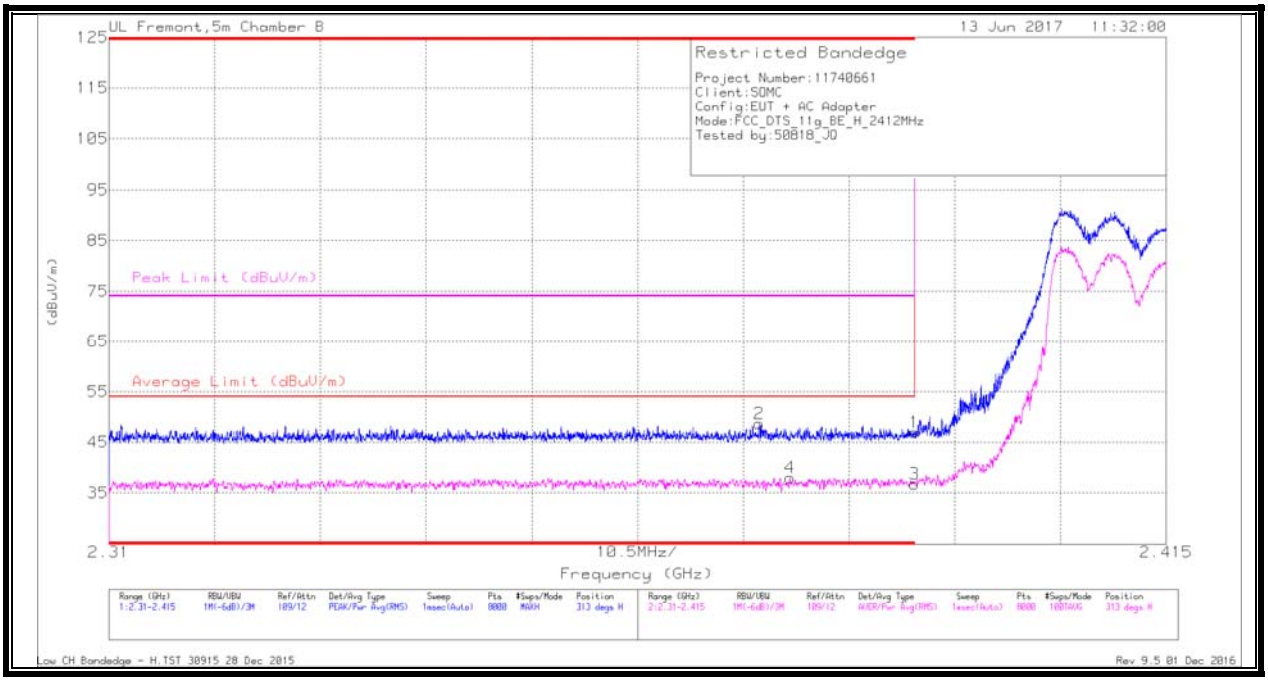
10.2.2 11g MIMO MODE IN THE 2.4GHz BAND

AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
2	* 2.375	38.03	Pk	31.9	-21.3	0	48.63	-	-	74	-25.37	313	173	H
4	* 2.378	27.1	RMS	31.9	-21.3	.25	37.95	54	-16.05	-	-	313	173	H
1	* 2.39	36.19	Pk	32	-21.3	0	46.89	-	-	74	-27.11	313	173	H
3	* 2.39	25.82	RMS	32	-21.3	.25	36.77	54	-17.23	-	-	313	173	H

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

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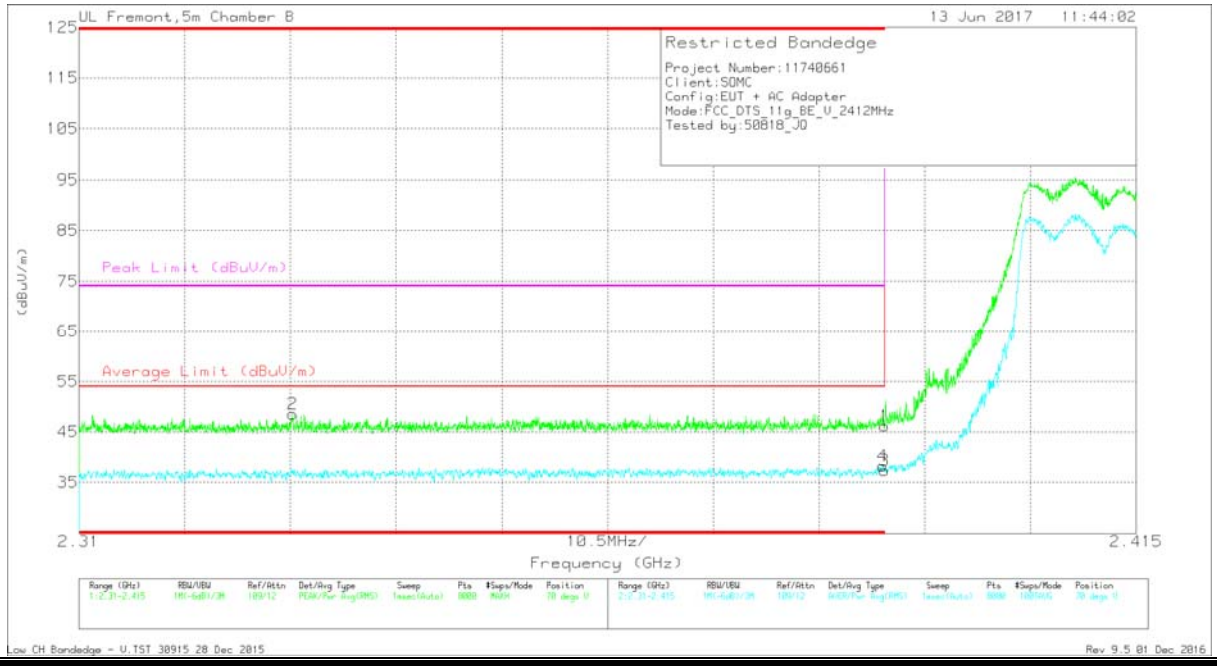
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
2	* 2.331	38.09	Pk	31.8	-21.3	0	48.59	-	-	74	-25.41	70	256	V
1	* 2.39	35.45	Pk	32	-21.3	0	46.15	-	-	74	-27.85	70	256	V
3	* 2.39	26.42	RMS	32	-21.3	.25	37.37	54	-16.63	-	-	70	256	V
4	* 2.39	27.31	RMS	32	-21.3	.25	38.26	54	-15.74	-	-	70	256	V

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

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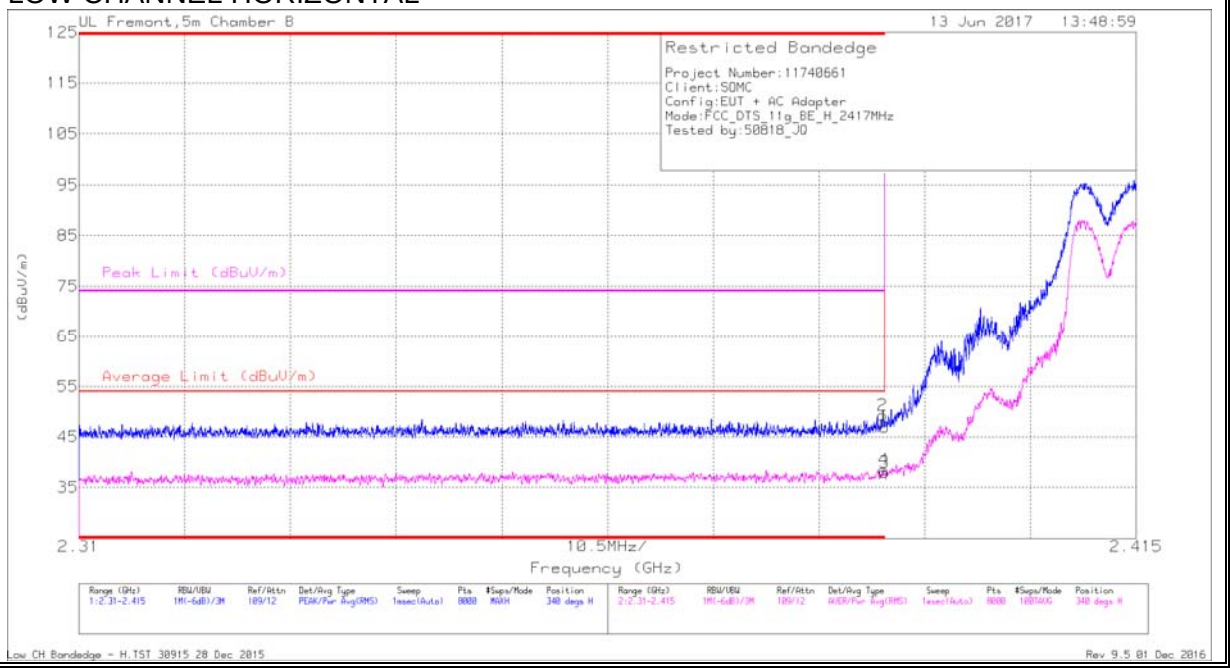
AUTHORIZED BANDEDGE (LOW CHANNEL, CH 2)

LOW CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	36.3	Pk	32	-21.3	0	47	-	-	74	-27	340	284	H
2	* 2.39	38.56	Pk	32	-21.3	0	49.26	-	-	74	-24.74	340	284	H
3	* 2.39	27.06	RMS	32	-21.3	.25	38.01	54	-15.99	-	-	340	284	H
4	* 2.39	27.57	RMS	32	-21.3	.25	38.52	54	-15.48	-	-	340	284	H

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

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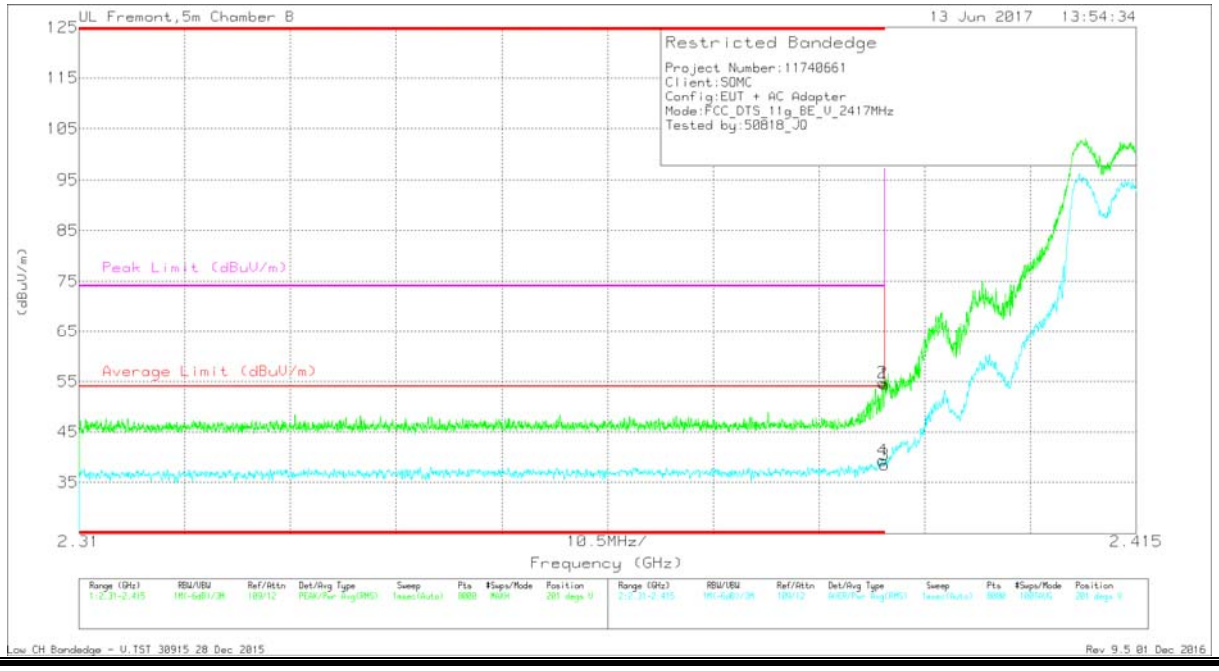
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	43.85	Pk	32	-21.3	0	54.55	-	-	74	-19.45	201	324	V
2	* 2.39	44.06	Pk	32	-21.3	0	54.76	-	-	74	-19.24	201	324	V
3	* 2.39	27.55	RMS	32	-21.3	.25	38.5	54	-15.5	-	-	201	324	V
4	* 2.39	28.41	RMS	32	-21.3	.25	39.36	54	-14.64	-	-	201	324	V

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

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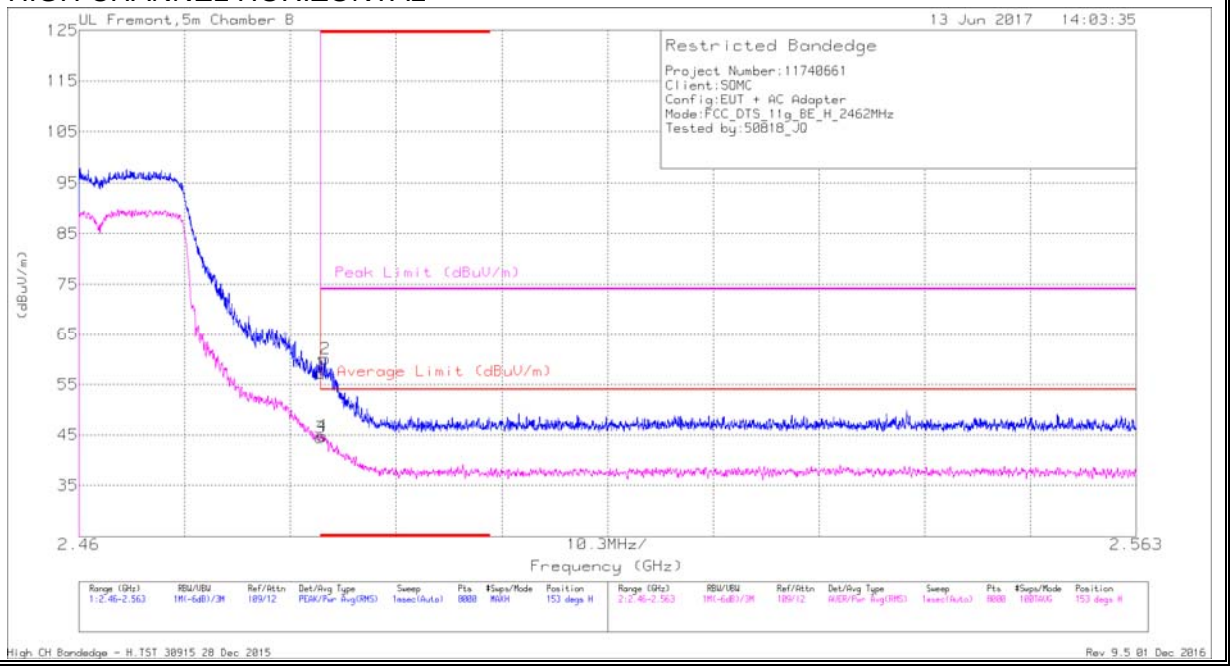
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	46.33	Pk	32.1	-21.2	0	57.23	-	-	74	-16.77	153	359	H
2	* 2.484	49.23	Pk	32.1	-21.2	0	60.13	-	-	74	-13.87	153	359	H
3	* 2.484	33.26	RMS	32.1	-21.2	.25	44.41	54	-9.59	-	-	153	359	H
4	* 2.484	33.68	RMS	32.1	-21.2	.25	44.83	54	-9.17	-	-	153	359	H

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

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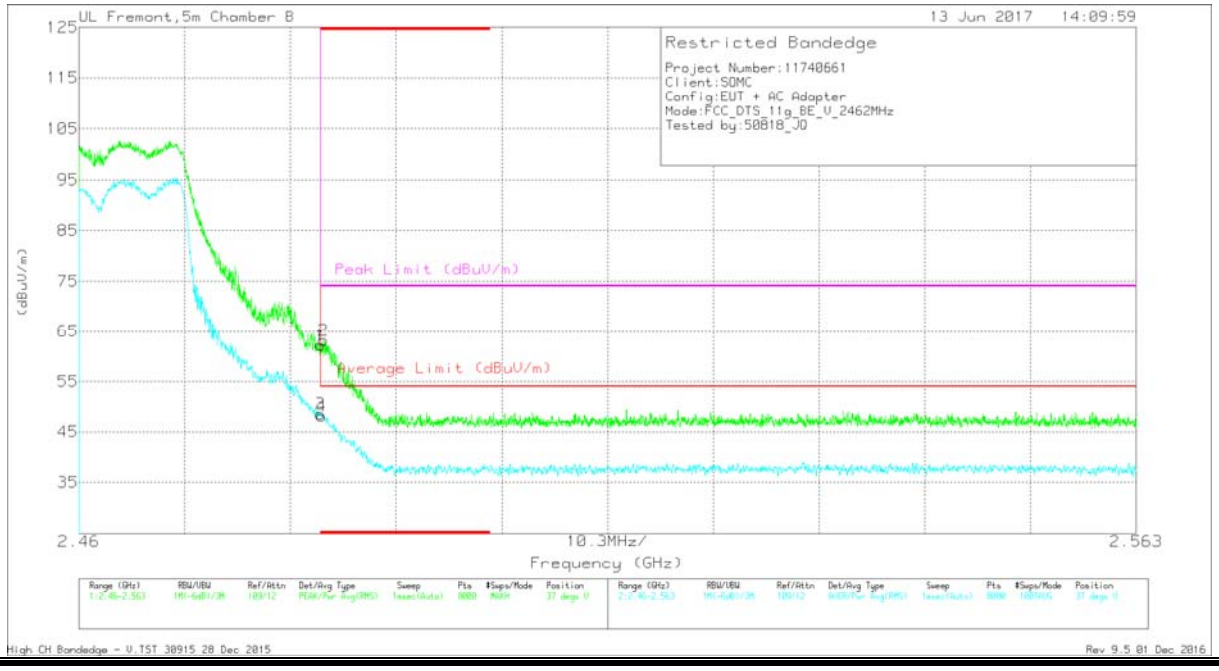
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	51.33	Pk	32.1	-21.2	0	62.23	-	-	74	-11.77	37	348	V
2	* 2.484	52.29	Pk	32.1	-21.2	0	63.19	-	-	74	-10.81	37	348	V
3	* 2.484	37.44	RMS	32.1	-21.2	.25	48.59	54	-5.41	-	-	37	348	V
4	* 2.484	36.99	RMS	32.1	-21.2	.25	48.14	54	-5.86	-	-	37	348	V

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

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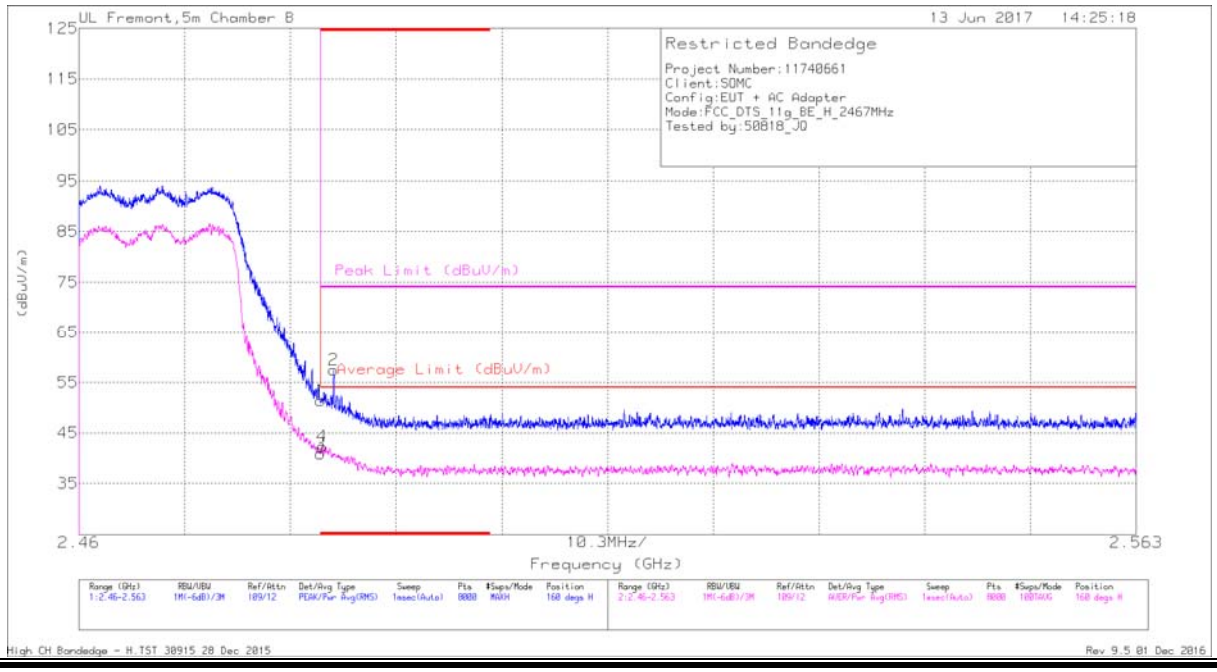
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 12)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	40.51	Pk	32.1	-21.2	0	51.41	-	-	74	-22.59	160	356	H
3	* 2.484	29.65	RMS	32.1	-21.2	.25	40.8	54	-13.2	-	-	160	356	H
4	* 2.484	31.19	RMS	32.1	-21.2	.25	42.34	54	-11.66	-	-	160	356	H
2	* 2.485	46.44	Pk	32.1	-21.1	0	57.44	-	-	74	-16.56	160	356	H

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

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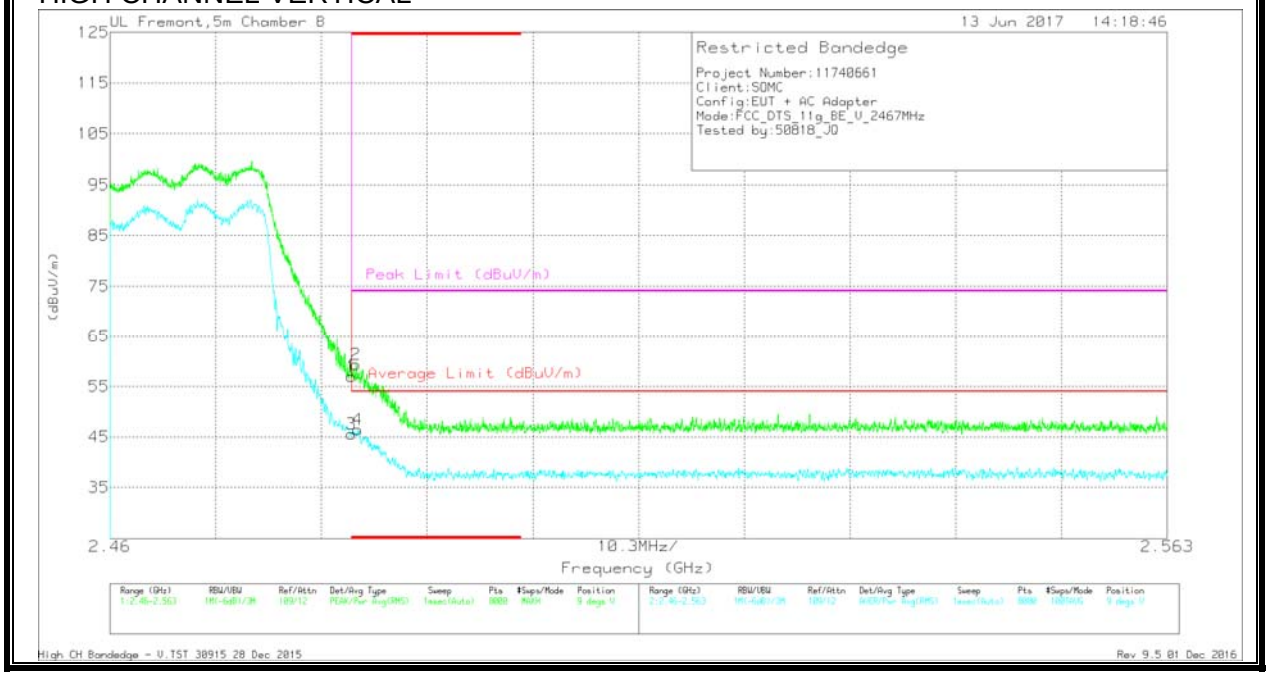
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	46.05	Pk	32.1	-21.2	0	56.95	-	-	74	-17.05	9	352	V
2	* 2.484	48.45	Pk	32.1	-21.2	0	59.35	-	-	74	-14.65	9	352	V
3	* 2.484	34.39	RMS	32.1	-21.2	.25	45.54	54	-8.46	-	-	9	352	V
4	* 2.484	35.27	RMS	32.1	-21.2	.25	46.42	54	-7.58	-	-	9	352	V

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

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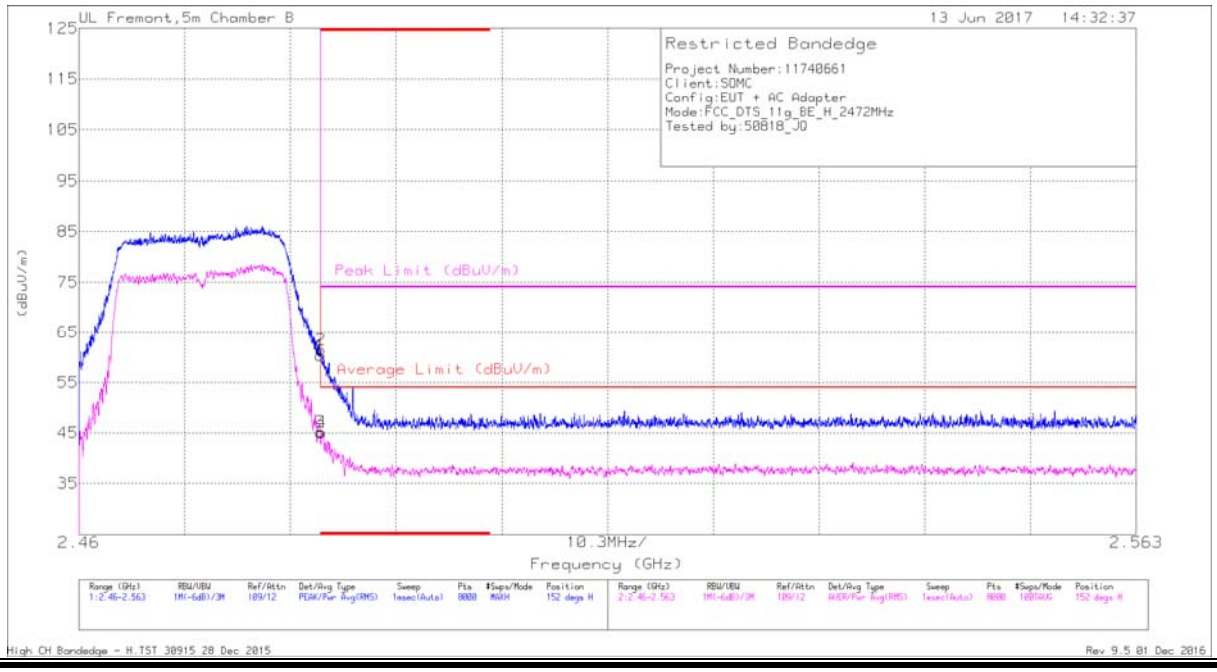
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 13)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	49.41	Pk	32.1	-21.2	0	60.31	-	-	74	-13.69	152	316	H
2	* 2.484	50.6	Pk	32.1	-21.2	0	61.5	-	-	74	-12.5	152	316	H
3	* 2.484	34.03	RMS	32.1	-21.2	.25	45.18	54	-8.82	-	-	152	316	H
4	* 2.484	33.97	RMS	32.1	-21.2	.25	45.12	54	-8.88	-	-	152	316	H

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

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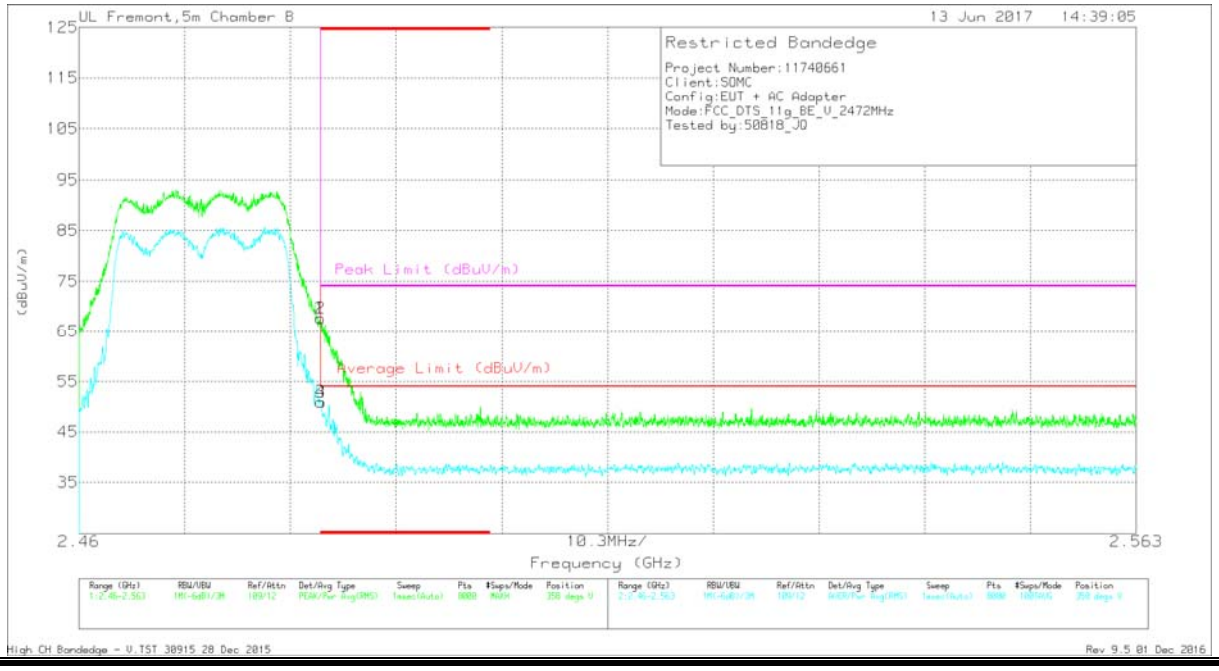
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	56.77	Pk	32.1	-21.2	0	67.67	-	-	74	-6.33	358	310	V
2	* 2.484	56.77	Pk	32.1	-21.2	0	67.67	-	-	74	-6.33	358	310	V
3	* 2.484	39.82	RMS	32.1	-21.2	.25	50.97	54	-3.03	-	-	358	310	V
4	* 2.484	39.8	RMS	32.1	-21.2	.25	50.95	54	-3.05	-	-	358	310	V

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

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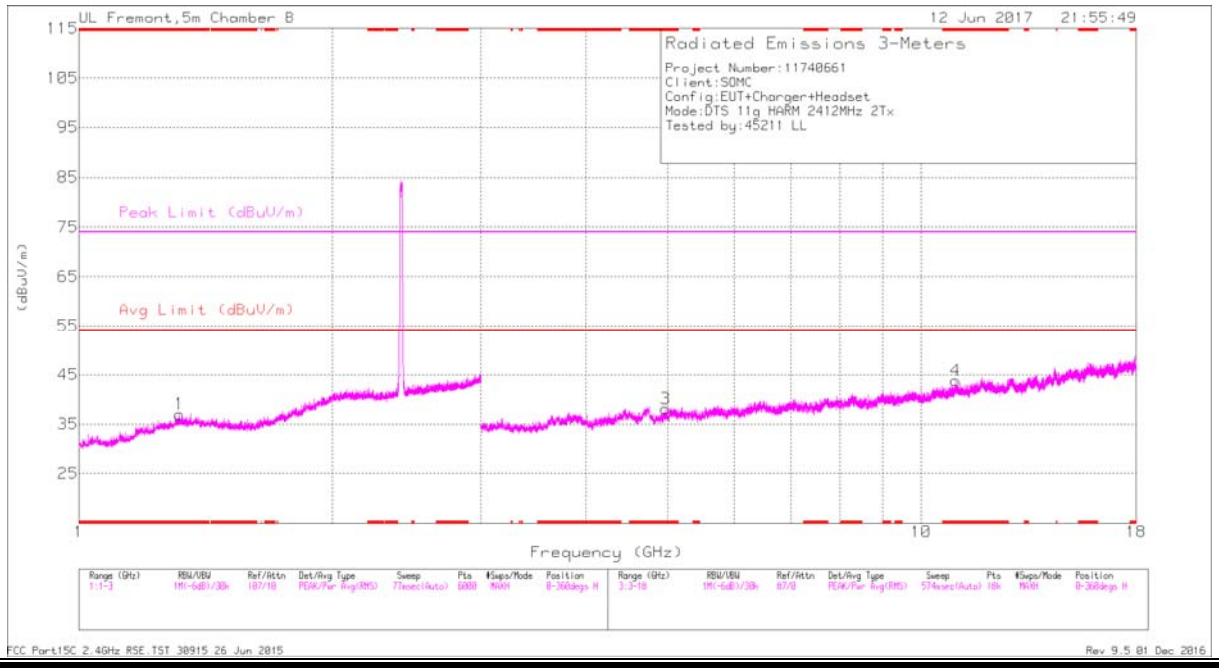
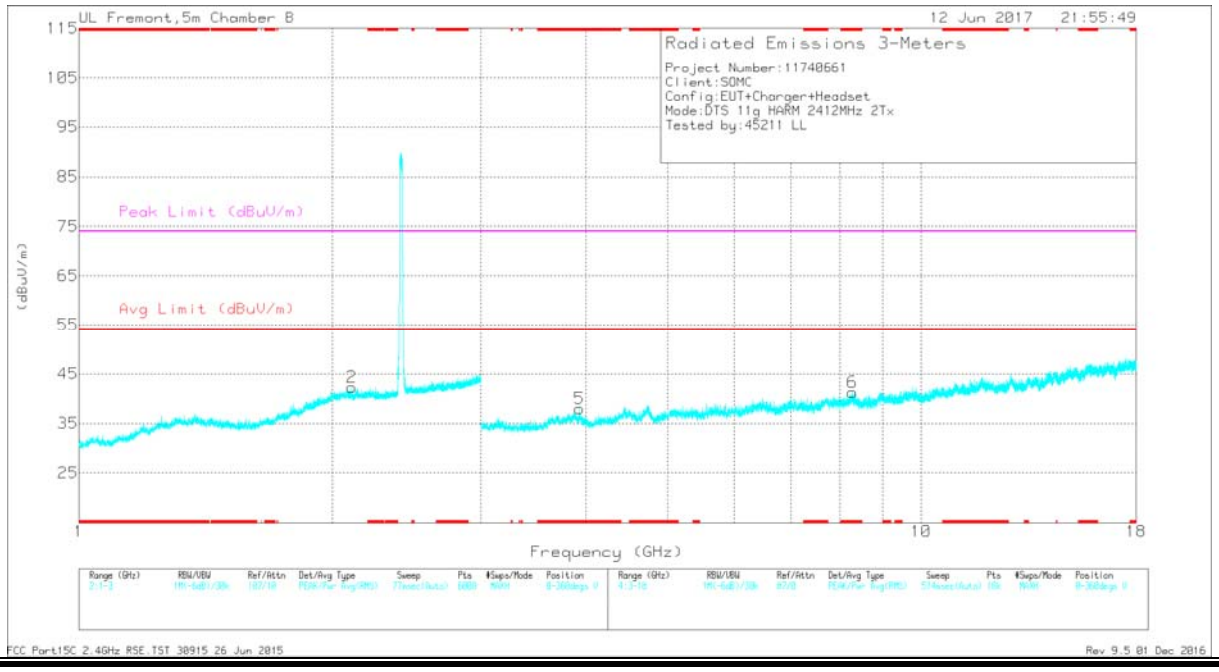
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.316	35.53	PK2	28.9	-22	0	42.43	-	-	74	-31.57	51	101	H
* 1.317	23.92	MAv1	28.9	-22	.25	31.07	54	-22.93	-	-	51	101	H
* 4.976	38.67	PK2	34.5	-29.4	0	43.77	-	-	74	-30.23	134	104	H
* 4.974	28.06	MAv1	34.5	-29.5	.25	33.31	54	-20.69	-	-	134	104	H
* 10.979	34.02	PK2	38.4	-22.8	0	49.62	-	-	74	-24.38	228	199	H
* 10.979	22.57	MAv1	38.4	-22.8	.25	38.42	54	-15.58	-	-	228	199	H
* 3.926	39.92	PK2	33.7	-30	0	43.62	-	-	74	-30.38	256	104	V
* 3.927	29	MAv1	33.7	-30	.25	32.95	54	-21.05	-	-	256	104	V
* 8.281	35.82	PK2	36.5	-25.3	0	47.02	-	-	74	-26.98	360	200	V
* 8.283	25.19	MAv1	36.5	-25.3	.25	36.64	54	-17.36	-	-	360	200	V
2.106	36.19	PK2	32.1	-21.3	0	46.99	-	-	-	-	73	208	V

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

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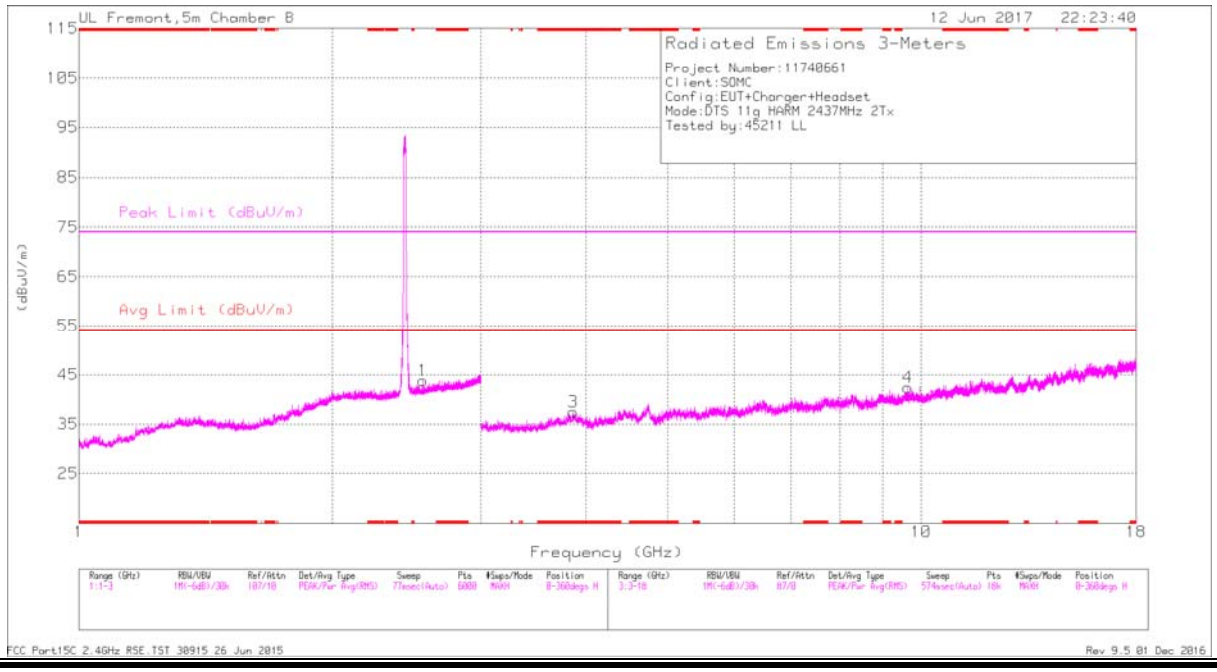
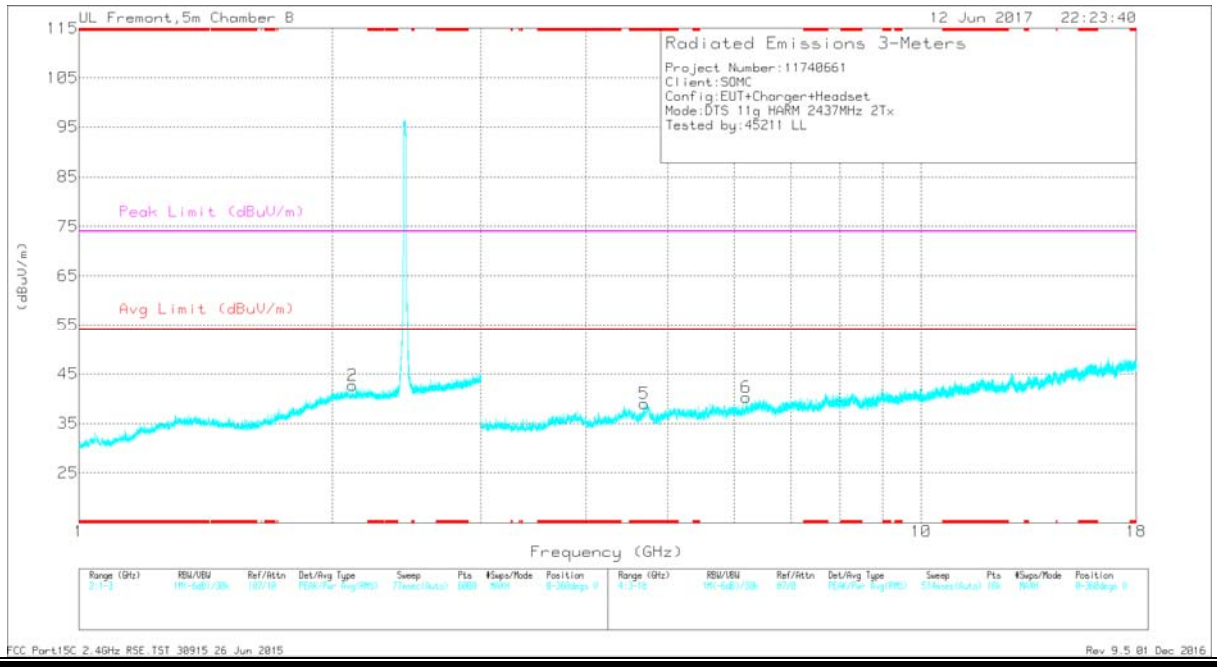
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 3.866	39.85	PK2	33.7	-29.6	0	43.95	-	-	74	-30.05	206	198	H
* 3.865	28.78	MAv1	33.7	-29.6	.25	33.13	54	-20.87	-	-	206	198	H
* 4.689	40.22	PK2	34.4	-29.7	0	44.92	-	-	74	-29.08	140	199	V
* 4.69	28.88	MAv1	34.4	-29.7	.25	33.83	54	-20.17	-	-	140	199	V
2.112	35.66	PK2	32.1	-21.1	0	46.66	-	-	-	-	233	207	V
2.561	36.85	PK2	32.1	-21.2	0	47.75	-	-	-	-	336	110	H
6.196	38.96	PK2	35.8	-28.7	0	46.06	-	-	-	-	61	128	V
9.632	35.2	PK2	37.3	-24.6	0	47.9	-	-	-	-	115	116	H

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

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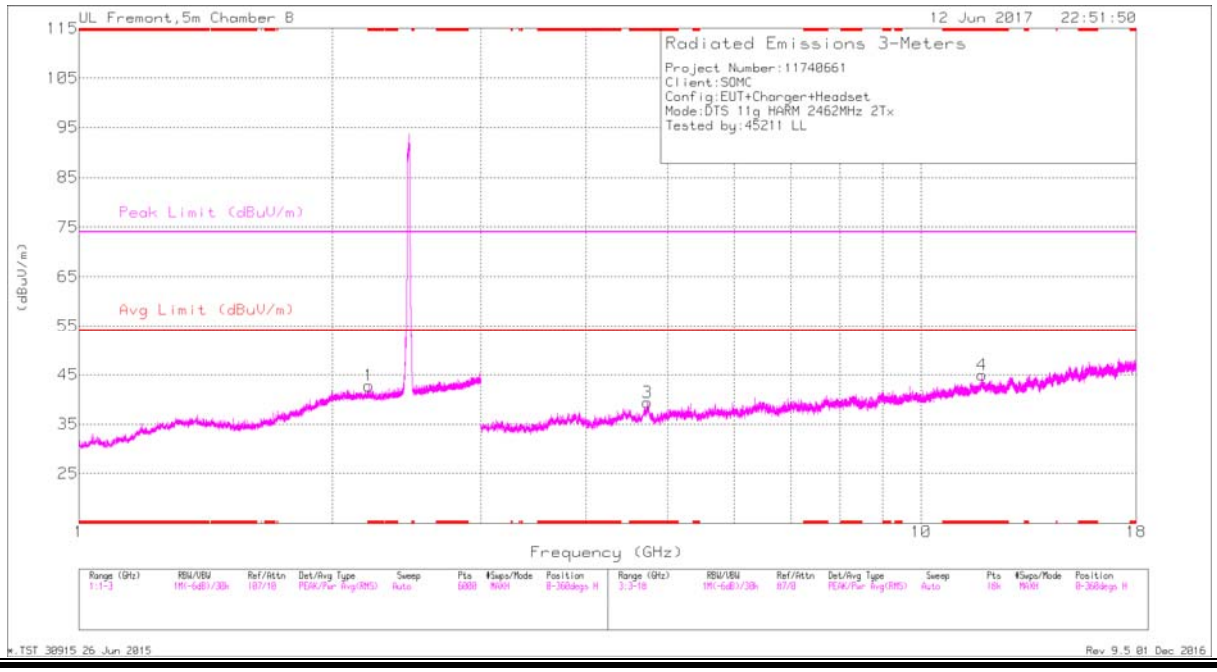
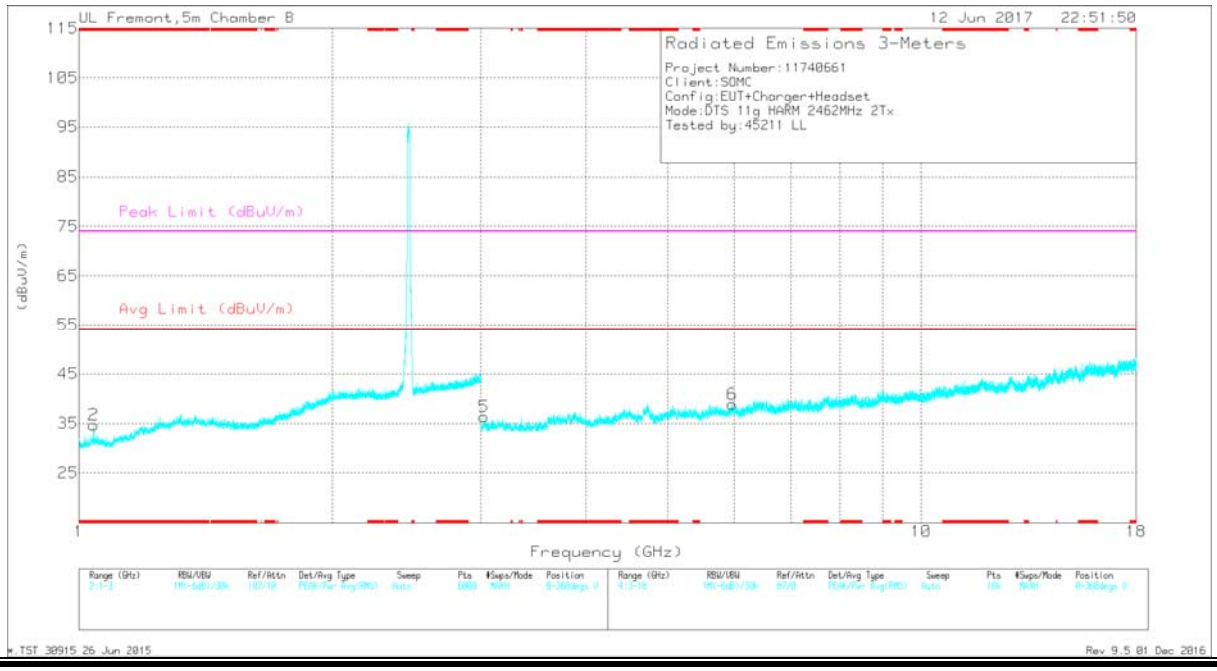
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 2.206	36.57	PK2	32.1	-21.2	0	47.47	-	-	74	-26.53	112	199	H
* 2.207	24.77	MAv1	32.1	-21.2	.25	35.92	54	-18.08	-	-	112	199	H
* 1.041	35.42	PK2	26.4	-23.5	0	38.32	-	-	74	-35.68	126	104	V
* 1.04	24.09	MAv1	26.4	-23.5	.25	27.24	54	-26.76	-	-	126	104	V
* 4.73	39.42	PK2	34.4	-28.7	0	45.12	-	-	74	-28.88	207	114	H
* 4.729	28.49	MAv1	34.4	-28.8	.25	34.34	54	-19.66	-	-	207	114	H
* 11.816	32.89	PK2	39.5	-22.1	0	50.29	-	-	74	-23.71	239	100	H
* 11.818	22.17	MAv1	39.5	-22.1	.25	39.82	54	-14.18	-	-	239	100	H
3.029	39.58	PK2	32.9	-30.8	0	41.68	-	-	-	-	281	195	V
5.971	38.02	PK2	35.3	-28.4	0	44.92	-	-	-	-	319	104	V

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

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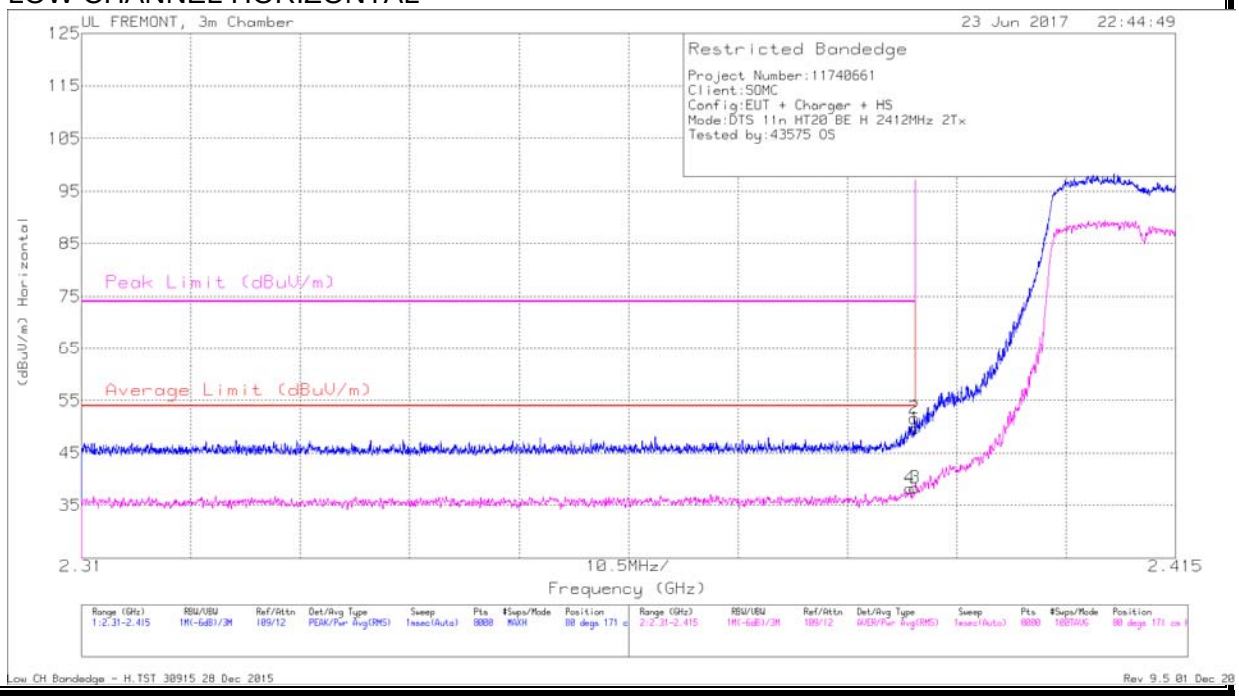
10.2.3 11n-HT20 MIMO MODE IN THE 2.4GHz BAND

AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (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
4	2.389	28.65	RMS	31.9	-22.5	.2	38.25	54	-15.75	-	-	80	171	H
1	2.39	40.39	Pk	31.9	-22.6	0	49.69	-	-	74	-24.31	80	171	H
2	2.39	42.3	Pk	31.9	-22.6	0	51.6	-	-	74	-22.4	80	171	H
3	2.39	28.87	RMS	31.9	-22.6	.2	38.37	54	-15.63	-	-	80	171	H

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

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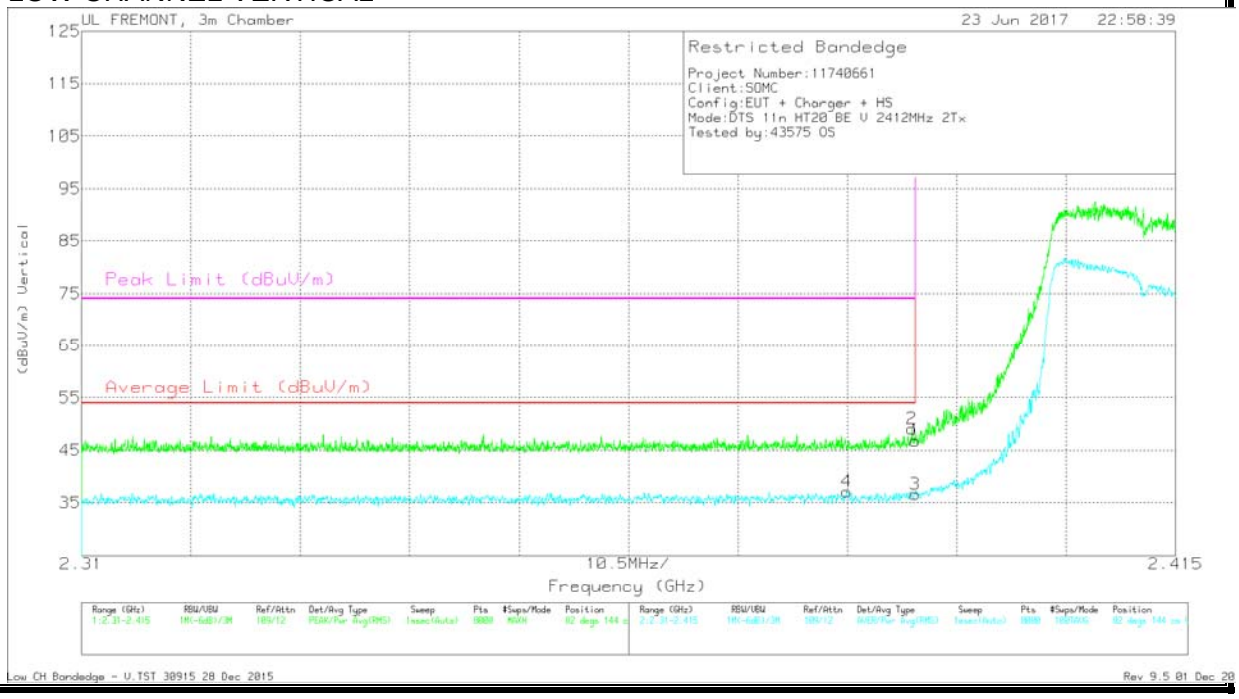
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (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
4	2.383	27.46	RMS	31.9	-22.4	.2	37.16	54	-16.84	-	-	82	144	V
1	2.39	37.54	Pk	31.9	-22.6	0	46.84	-	-	74	-27.16	82	144	V
2	2.39	39.6	Pk	31.9	-22.5	0	49	-	-	74	-25	82	144	V
3	2.39	27.15	RMS	31.9	-22.6	.2	36.65	54	-17.35	-	-	82	144	V

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

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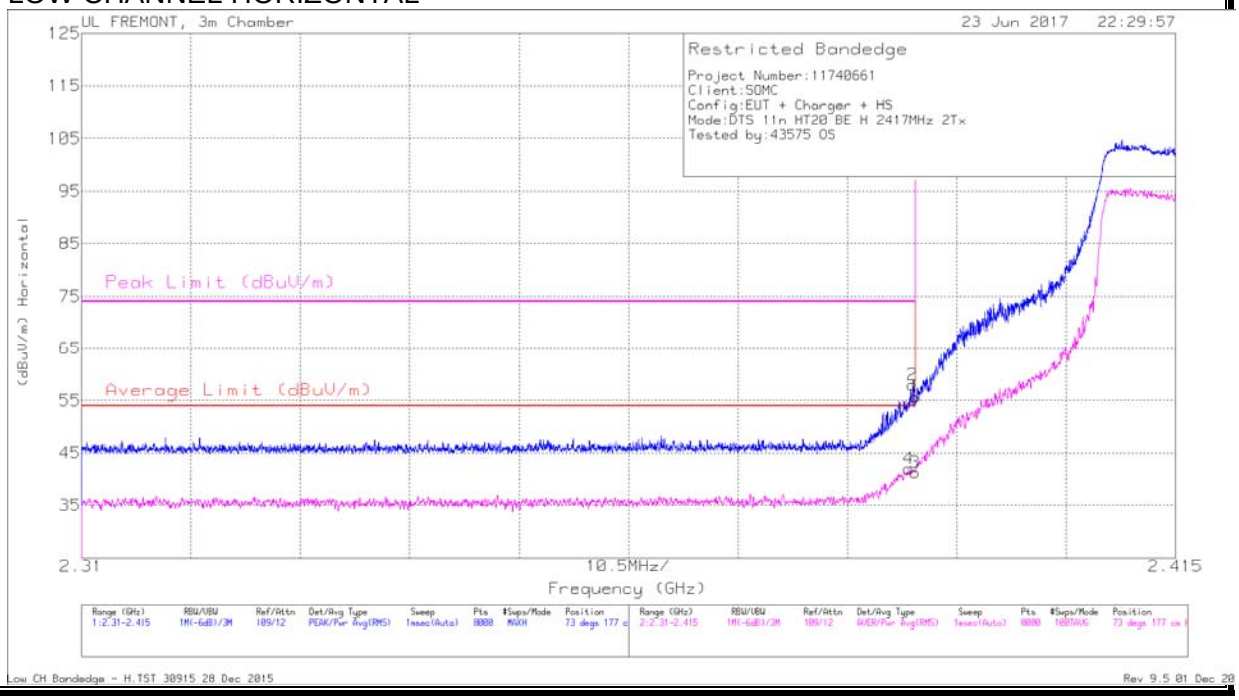
AUTHORIZED BANDEDGE (LOW CHANNEL, CH 2)

LOW CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (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
4	2.389	32.41	RMS	31.9	-22.5	.2	42.01	54	-11.99	-	-	73	177	H
1	2.39	46.29	Pk	31.9	-22.6	0	55.59	-	-	74	-18.41	73	177	H
2	2.39	48.61	Pk	31.9	-22.5	0	58.01	-	-	74	-15.99	73	177	H
3	2.39	31.69	RMS	31.9	-22.6	.2	41.19	54	-12.81	-	-	73	177	H

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

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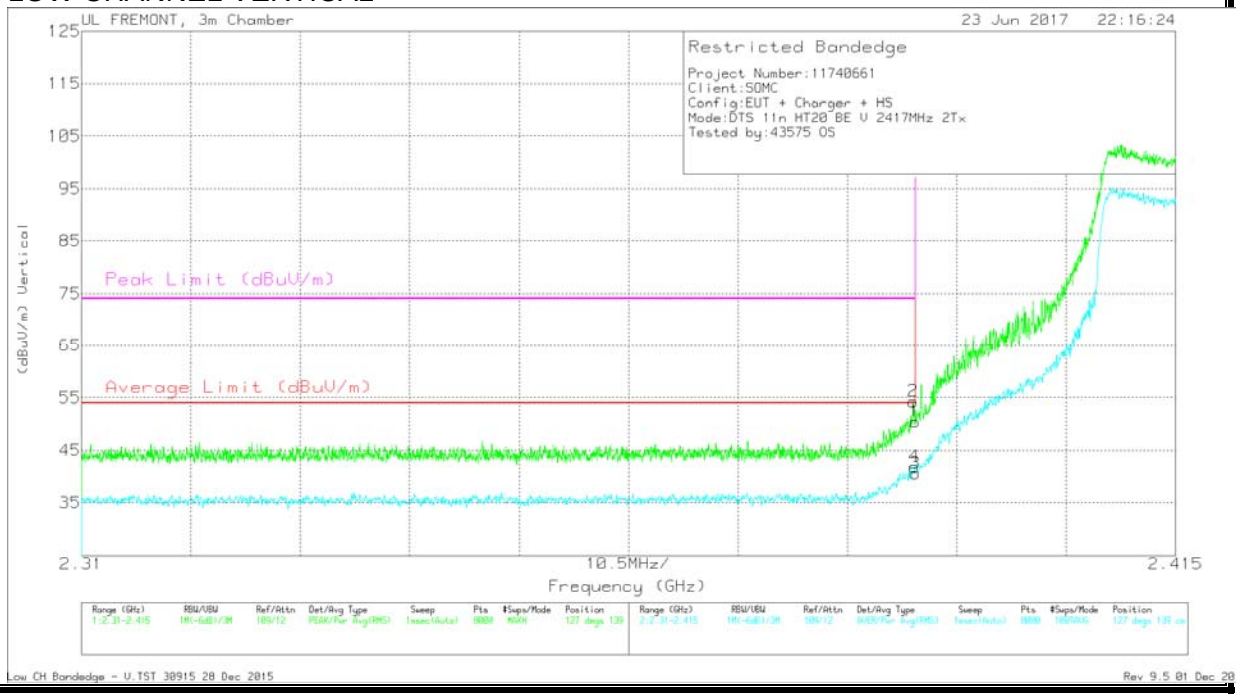
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (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	41.11	Pk	31.9	-22.6	0	50.41	-	-	74	-23.59	127	139	V
2	2.39	44.88	Pk	31.9	-22.5	0	54.28	-	-	74	-19.72	127	139	V
3	2.39	31.12	RMS	31.9	-22.6	.2	40.62	54	-13.38	-	-	127	139	V
4	2.39	32.19	RMS	31.9	-22.5	.2	41.79	54	-12.21	-	-	127	139	V

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

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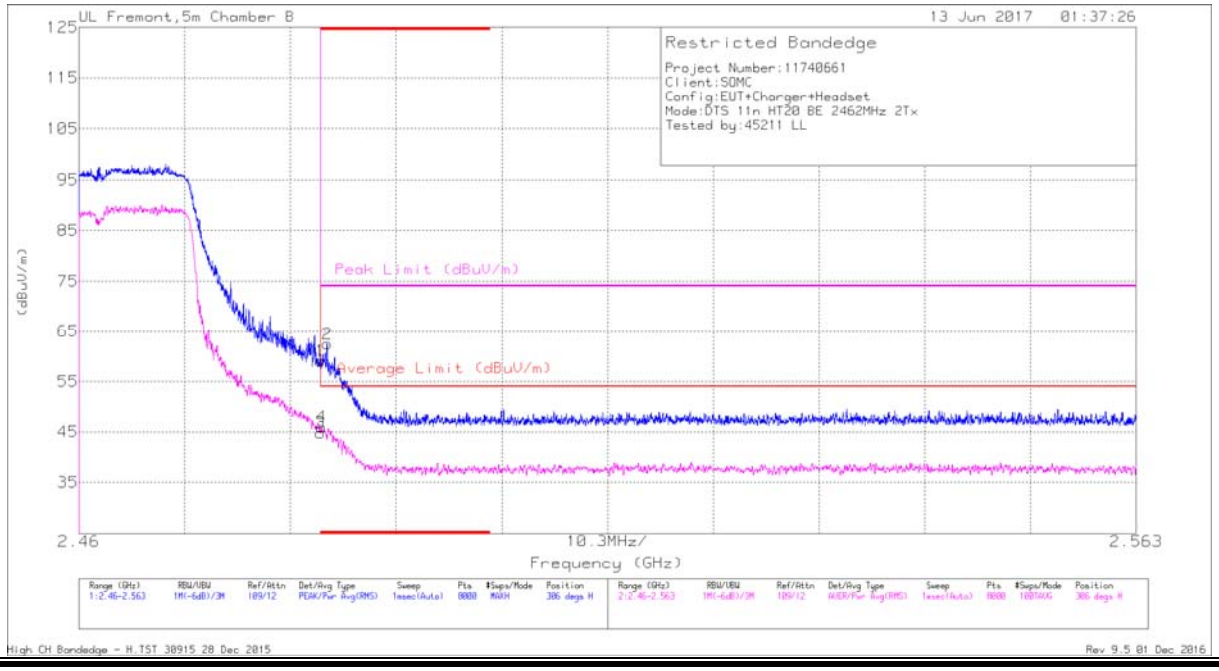
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	48.23	Pk	32.1	-21.2	0	59.13	-	-	74	-14.87	306	251	H
2	* 2.484	51.55	Pk	32.1	-21.2	0	62.45	-	-	74	-11.55	306	251	H
3	* 2.484	33.7	RMS	32.1	-21.2	.2	44.8	54	-9.2	-	-	306	251	H
4	* 2.484	34.81	RMS	32.1	-21.2	.2	45.91	54	-8.09	-	-	306	251	H

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

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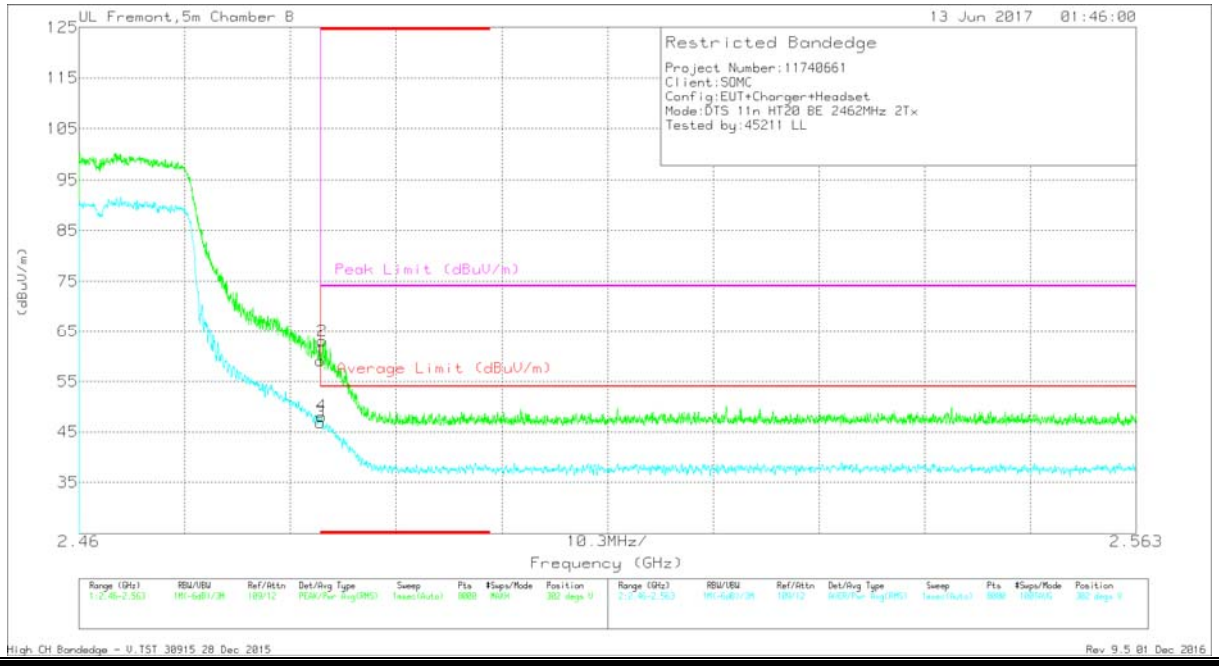
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	48.18	Pk	32.1	-21.2	0	59.08	-	-	74	-14.92	302	214	V
2	* 2.484	52.16	Pk	32.1	-21.2	0	63.06	-	-	74	-10.94	302	214	V
3	* 2.484	35.78	RMS	32.1	-21.2	.2	46.88	54	-7.12	-	-	302	214	V
4	* 2.484	37.02	RMS	32.1	-21.2	.2	48.12	54	-5.88	-	-	302	214	V

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

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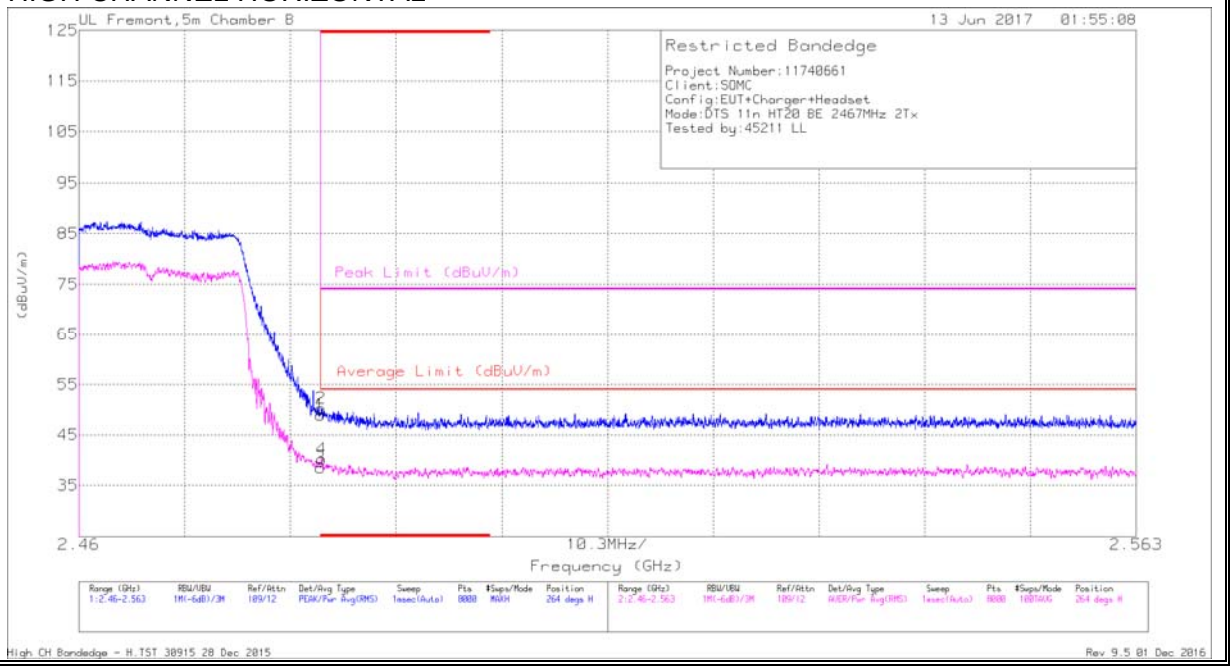
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 12)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	38.06	Pk	32.1	-21.2	0	48.96	-	-	74	-25.04	264	151	H
2	* 2.484	39.34	Pk	32.1	-21.2	0	50.24	-	-	74	-23.76	264	151	H
3	* 2.484	27.34	RMS	32.1	-21.2	.2	38.44	54	-15.56	-	-	264	151	H
4	* 2.484	29.15	RMS	32.1	-21.2	.2	40.25	54	-13.75	-	-	264	151	H

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

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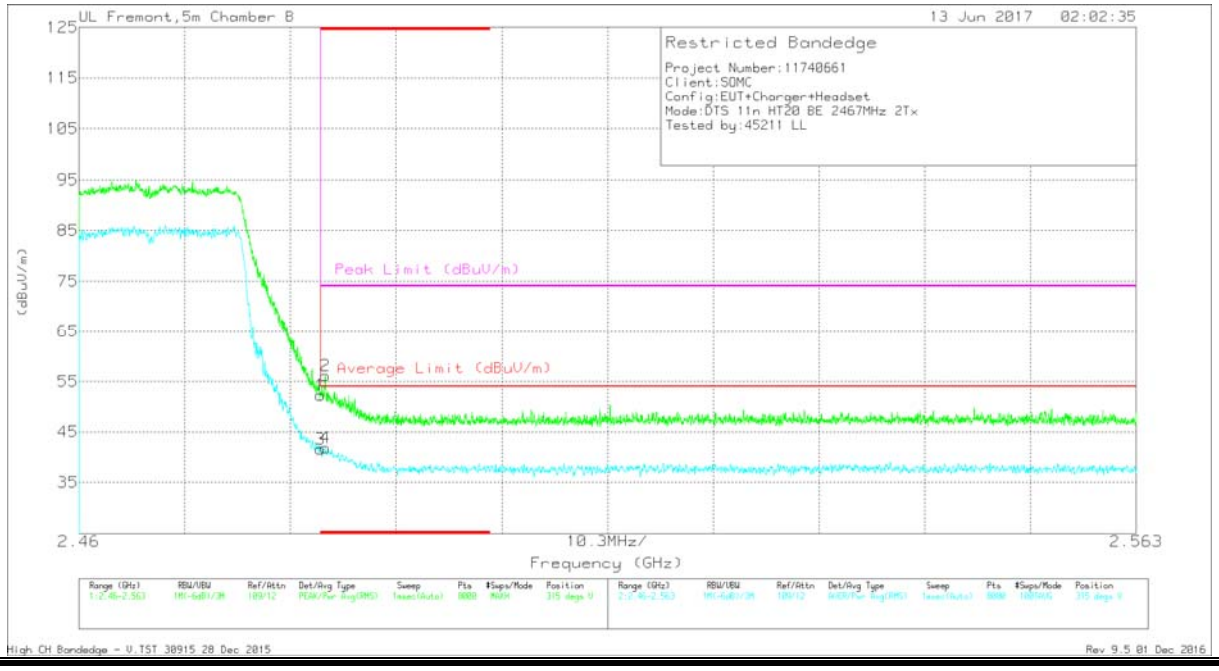
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	41.35	Pk	32.1	-21.2	0	52.25	-	-	74	-21.75	315	230	V
2	* 2.484	45.19	Pk	32.1	-21.2	0	56.09	-	-	74	-17.91	315	230	V
3	* 2.484	30.5	RMS	32.1	-21.2	.2	41.6	54	-12.4	-	-	315	230	V
4	* 2.484	30.7	RMS	32.1	-21.2	.2	41.8	54	-12.2	-	-	315	230	V

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

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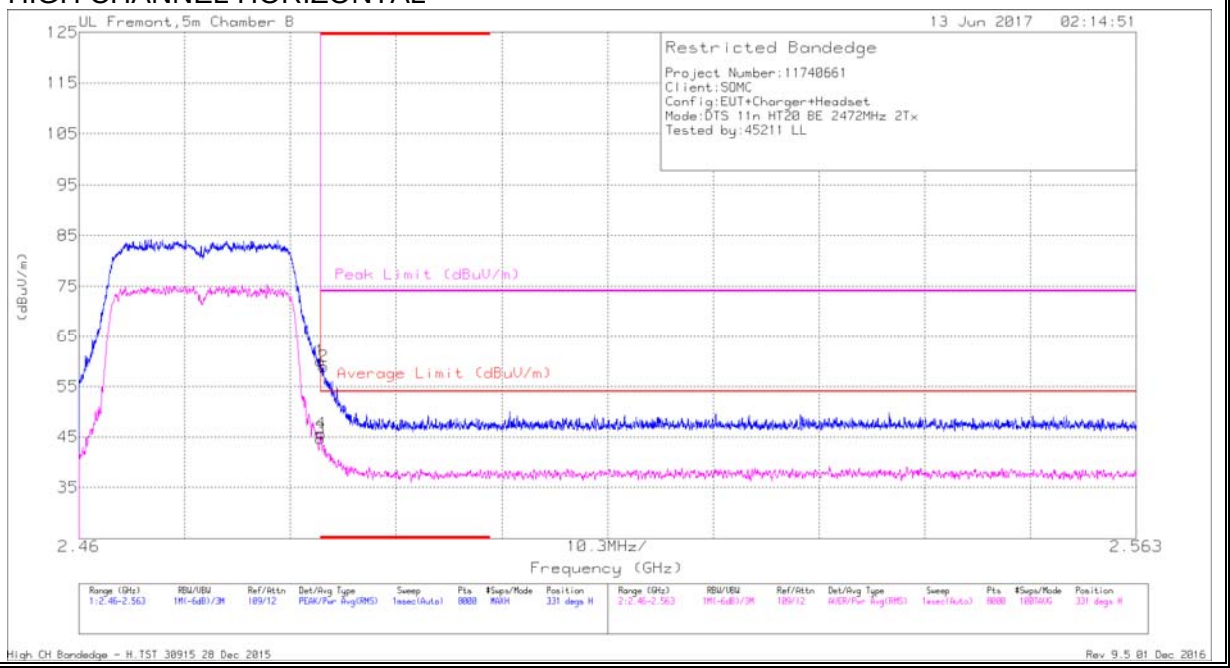
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 13)

HIGH CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	49.15	Pk	32.1	-21.2	0	60.05	-	-	74	-13.95	331	358	H
2	* 2.484	48.07	Pk	32.1	-21.2	0	58.97	-	-	74	-15.03	331	358	H
3	* 2.484	33.58	RMS	32.1	-21.2	.2	44.68	54	-9.32	-	-	331	358	H
4	* 2.484	34.64	RMS	32.1	-21.2	.2	45.74	54	-8.26	-	-	331	358	H

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

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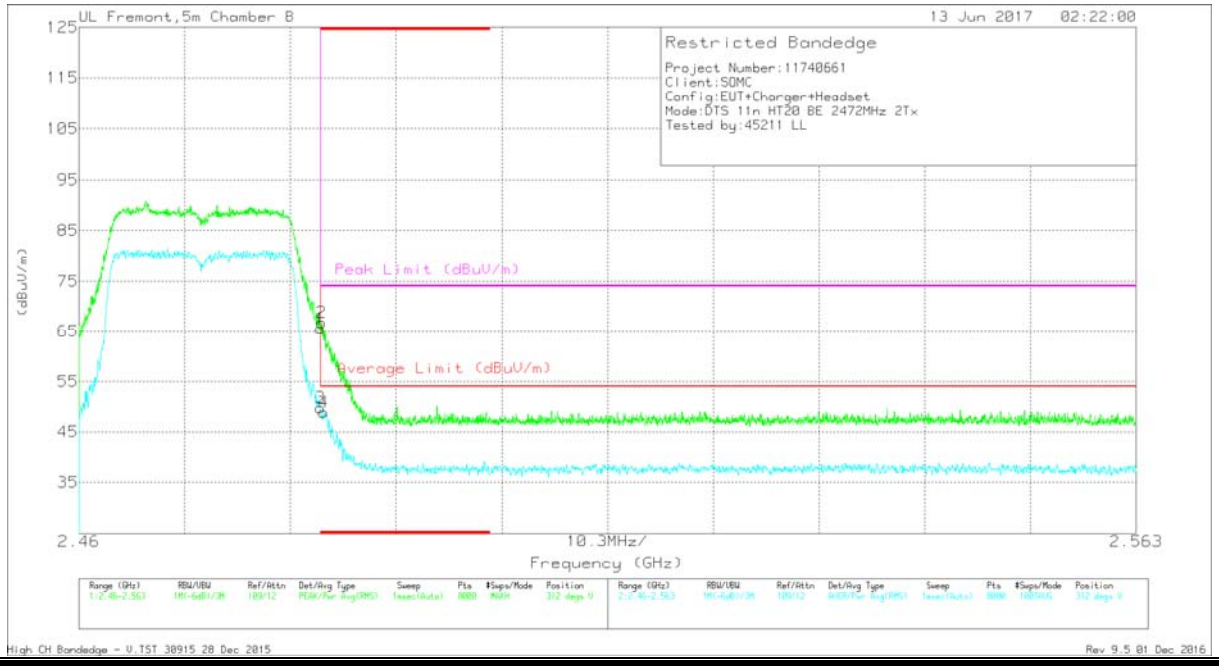
HIGH CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	54.7	Pk	32.1	-21.2	0	65.6	-	-	74	-8.4	312	382	V
2	* 2.484	55.88	Pk	32.1	-21.2	0	66.78	-	-	74	-7.22	312	382	V
3	* 2.484	38.72	RMS	32.1	-21.2	.2	49.82	54	-4.18	-	-	312	382	V
4	* 2.484	37.77	RMS	32.1	-21.2	.2	48.87	54	-5.13	-	-	312	382	V

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

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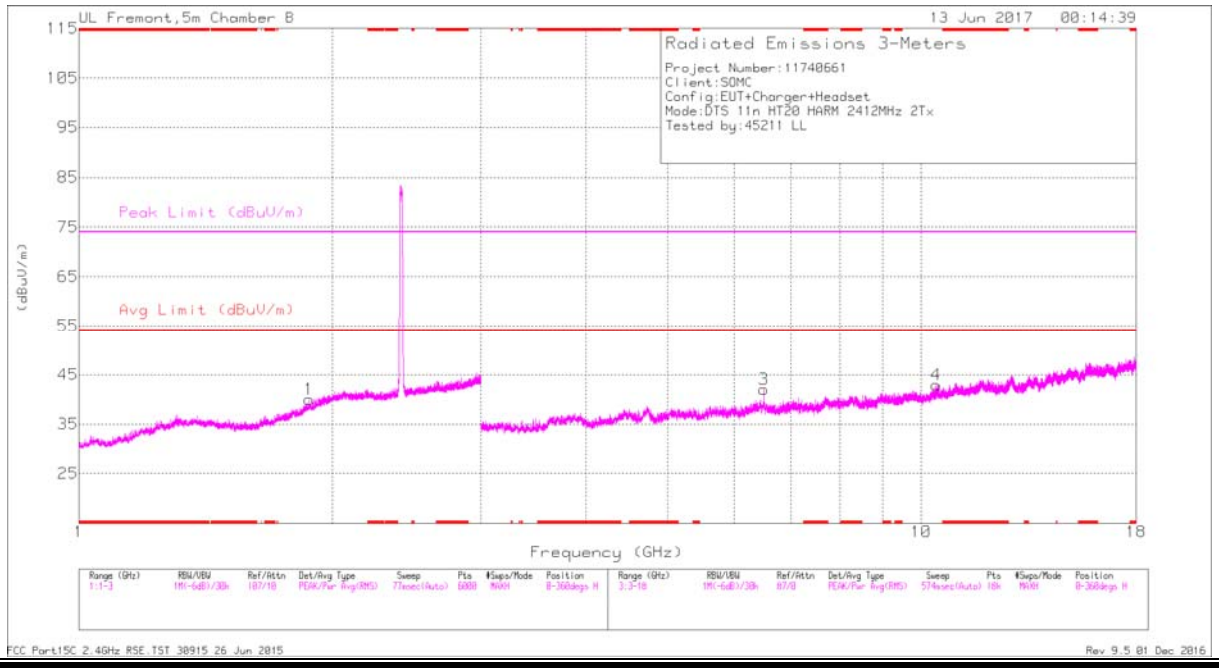
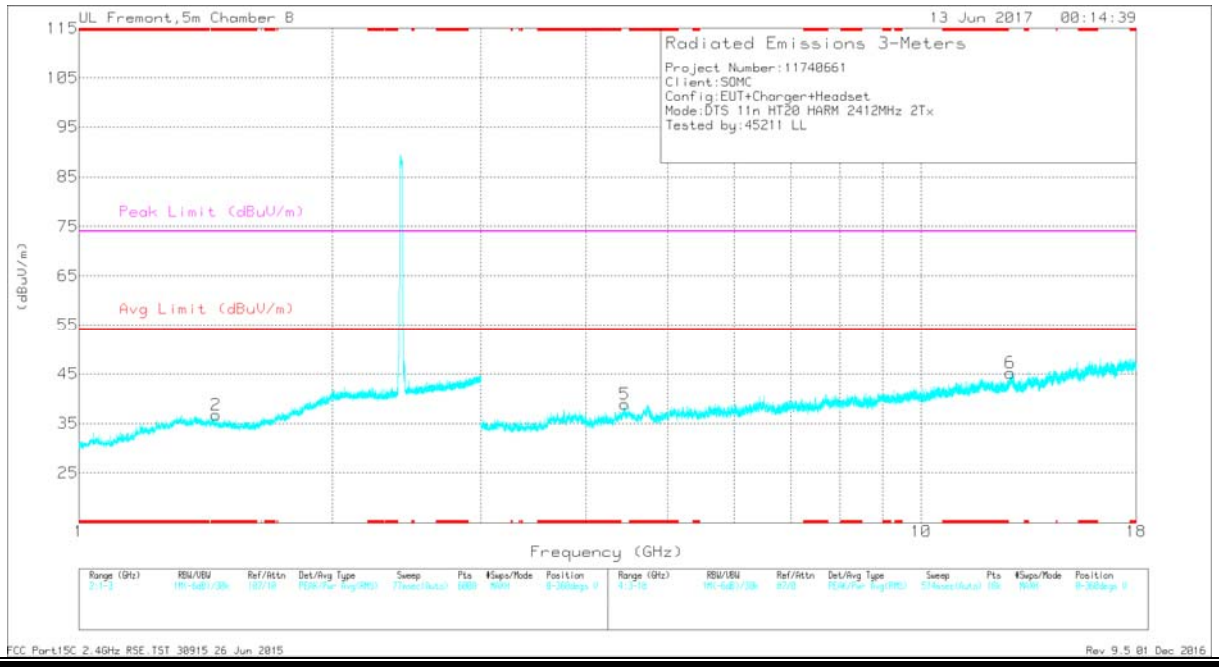
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.452	35.7	PK2	28.2	-21.5	0	42.4	-	-	74	-31.6	292	111	V
* 1.454	23.57	MAv1	28.1	-21.4	.2	30.47	54	-23.53	-	-	292	111	V
1.877	36.22	PK2	30.6	-20.8	0	46.02	-	-	-	-	334	102	H
4.446	39.28	PK2	34.3	-28.5	0	45.08	-	-	-	-	173	116	V
6.501	38.13	PK2	36.1	-27.7	0	46.53	-	-	-	-	267	115	H
10.421	34.01	PK2	37.8	-23.4	0	48.41	-	-	-	-	218	101	H
12.759	32.94	PK2	39.7	-22.2	0	50.44	-	-	-	-	284	199	V

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

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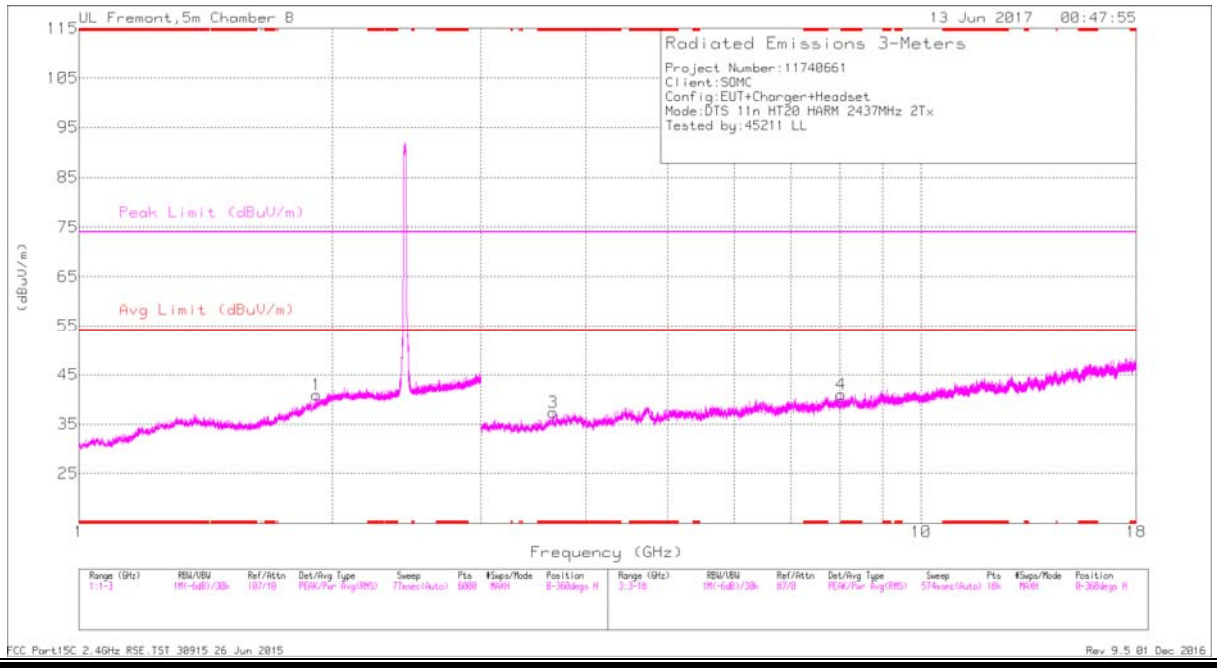
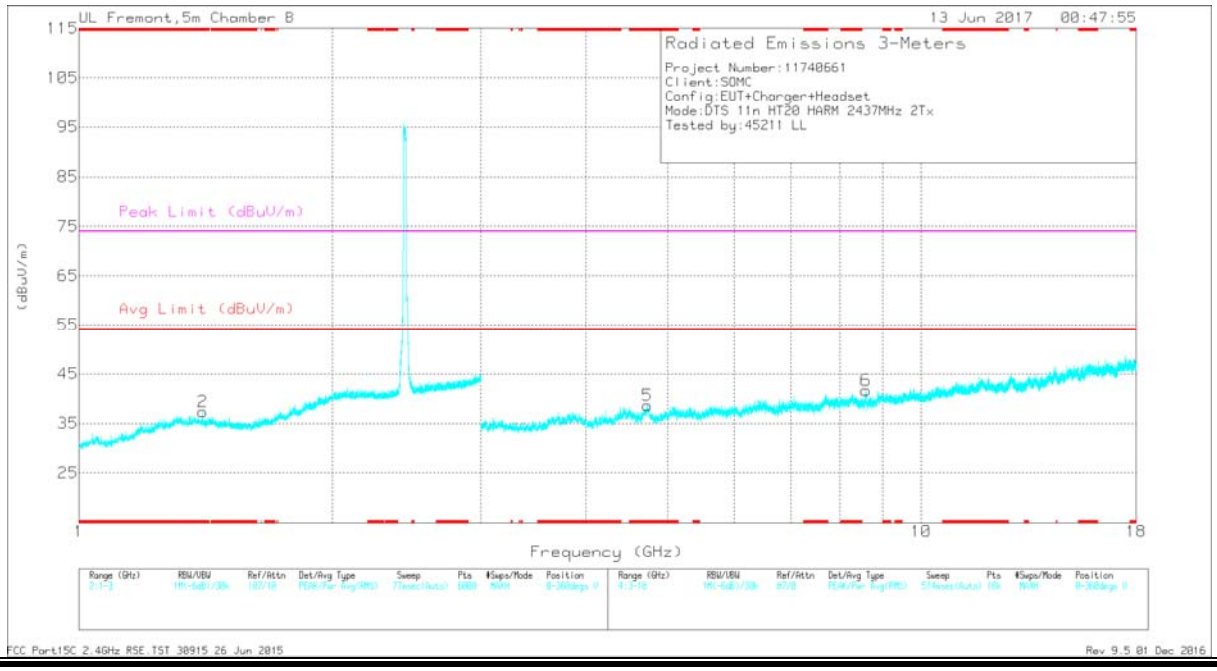
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.402	35.13	PK2	28.7	-21.6	0	42.23	-	-	74	-31.77	269	102	V
* 1.4	23.43	MAv1	28.8	-21.8	.2	30.63	54	-23.37	-	-	269	102	V
* 3.657	39.53	PK2	33.4	-30.5	0	42.43	-	-	74	-31.57	309	133	H
* 3.659	28.5	MAv1	33.4	-30.6	.2	31.5	54	-22.5	-	-	309	133	H
* 8.039	35.5	PK2	36.5	-26.1	0	45.9	-	-	74	-28.1	233	199	H
* 8.04	25.1	MAv1	36.5	-26.1	.2	35.7	54	-18.3	-	-	233	199	H
* 4.73	39.41	PK2	34.4	-28.8	0	45.01	-	-	74	-28.99	142	104	V
* 4.731	28.6	MAv1	34.4	-28.7	.2	34.5	54	-19.5	-	-	142	104	V
1.918	35.49	PK2	31.1	-21.1	0	45.49	-	-	-	-	276	117	H
8.6	35.34	PK2	36.6	-25.4	0	46.54	-	-	-	-	184	220	V

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

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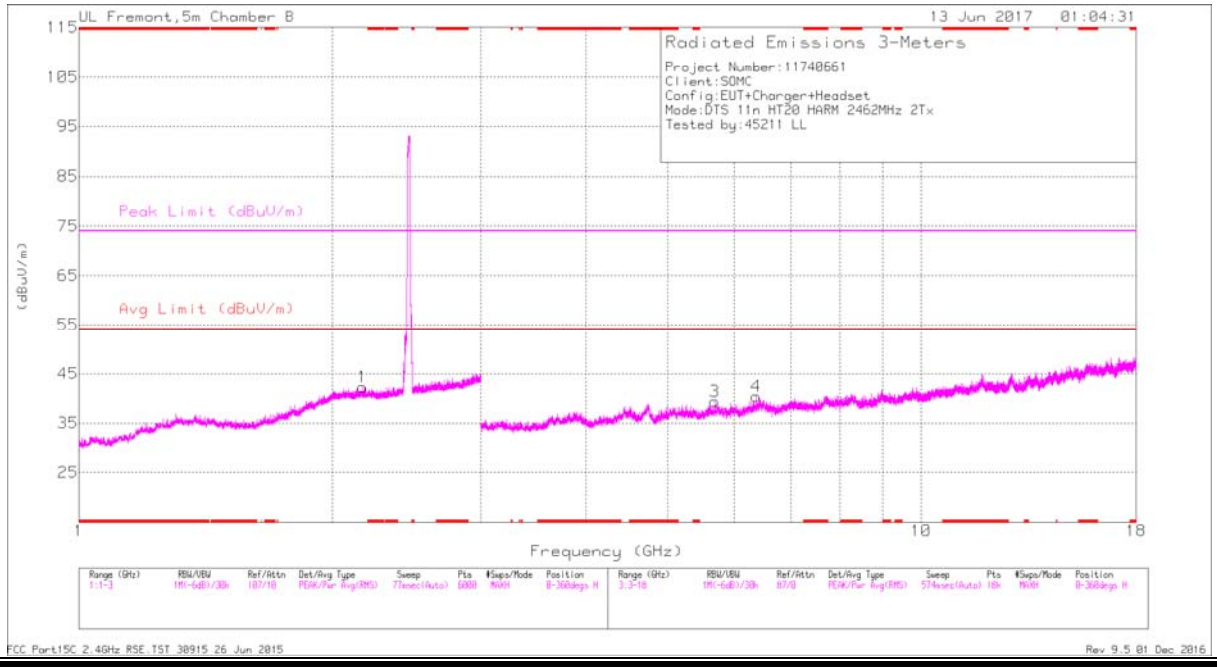
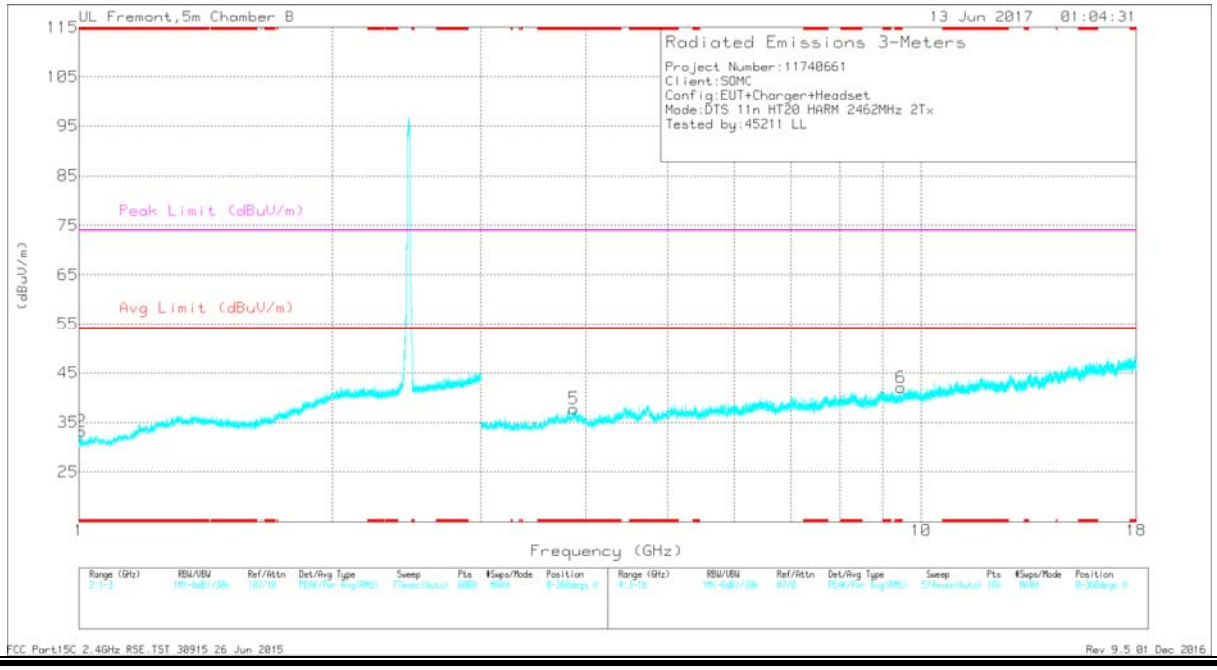
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.005	34.55	PK2	26.5	-23.6	0	37.45	-	-	74	-36.55	215	211	V
* 1.007	23.32	MAv1	26.5	-23.6	.2	26.42	54	-27.58	-	-	215	211	V
* 3.871	39.48	PK2	33.7	-29.5	0	43.68	-	-	74	-30.32	158	209	V
* 3.872	28.84	MAv1	33.7	-29.5	.2	33.24	54	-20.76	-	-	158	209	V
* 9.466	35.78	PK2	37.2	-25	0	47.98	-	-	74	-26.02	128	109	V
* 9.468	23.83	MAv1	37.2	-25	.2	36.23	54	-17.77	-	-	128	109	V
2.171	36.09	PK2	32.1	-21.3	0	46.89	-	-	-	-	192	199	H
5.687	38.65	PK2	35.1	-28.5	0	45.25	-	-	-	-	167	100	H
6.367	38.42	PK2	36.1	-29	0	45.52	-	-	-	-	139	183	H

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

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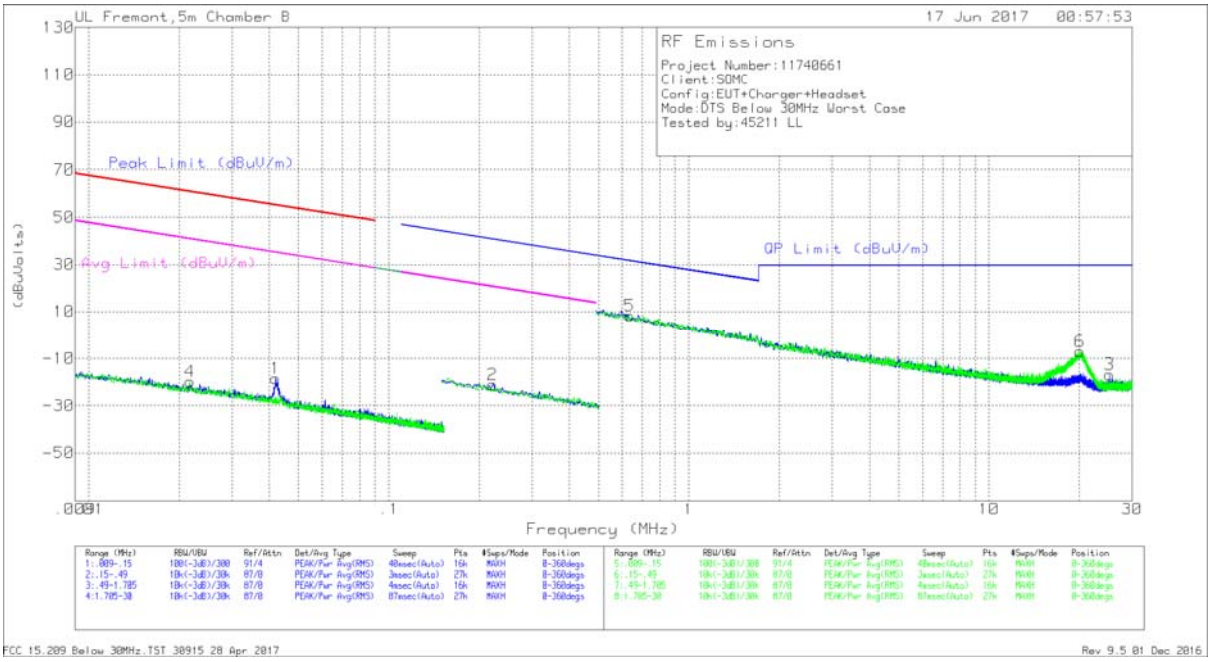
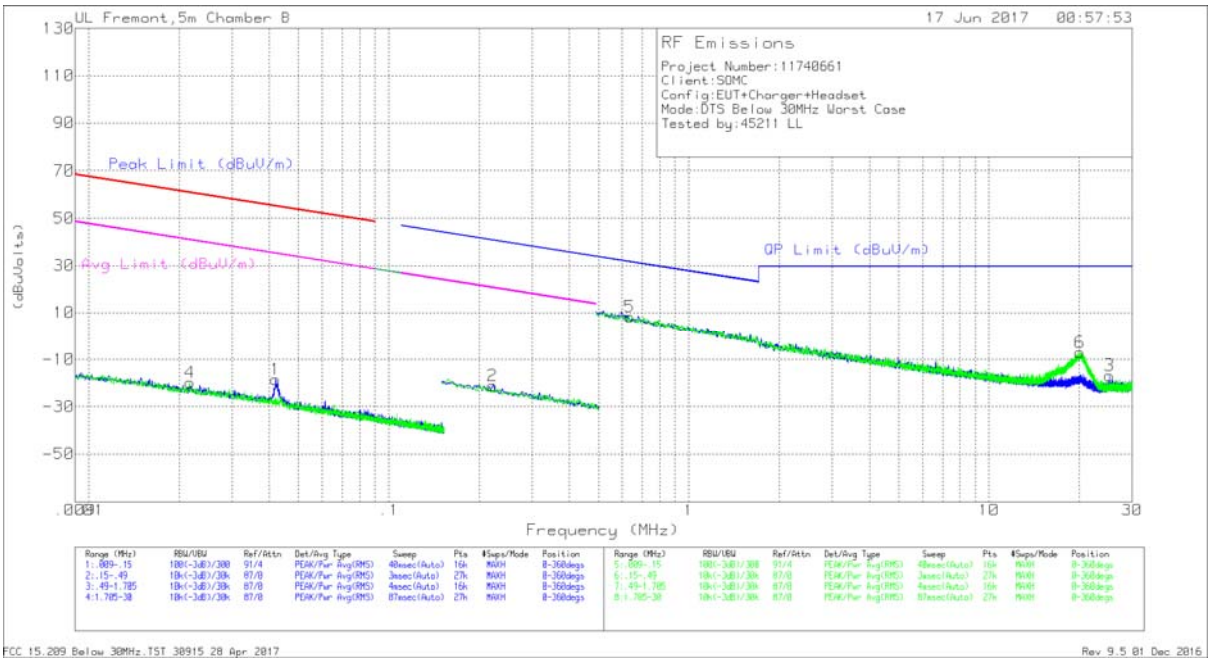
10.3 WORST-CASE BELOW 30 MHz

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.

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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)
4	.02174	43.56	Pk	15.1	1.4	-80	-19.94	60.84	-80.78	40.84	-60.78	-	-	-	-	0-360
1	.042	46.94	Pk	13.2	1.4	-80	-18.46	55.12	-73.58	35.12	-53.58	-	-	-	-	0-360
2	.22185	45.87	Pk	11.5	1.5	-80	-21.13	-	-	-	-	40.7	-61.83	20.7	-41.83	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.63296	35.25	Pk	11.5	1.5	-40	8.25	31.58	-23.33	0-360
6	20.12203	21.58	Pk	9.7	1.7	-40	-7.02	29.5	-36.52	0-360
3	25.18334	12.63	Pk	8.9	1.7	-40	-16.77	29.5	-46.27	0-360

Pk - Peak detector

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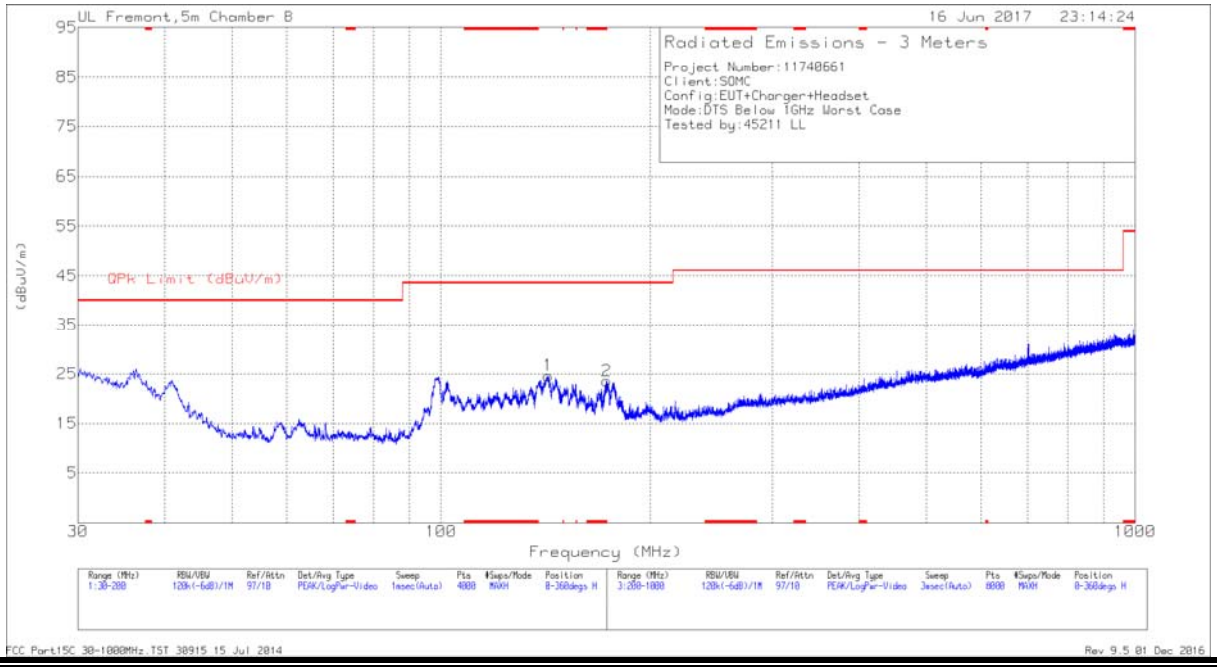
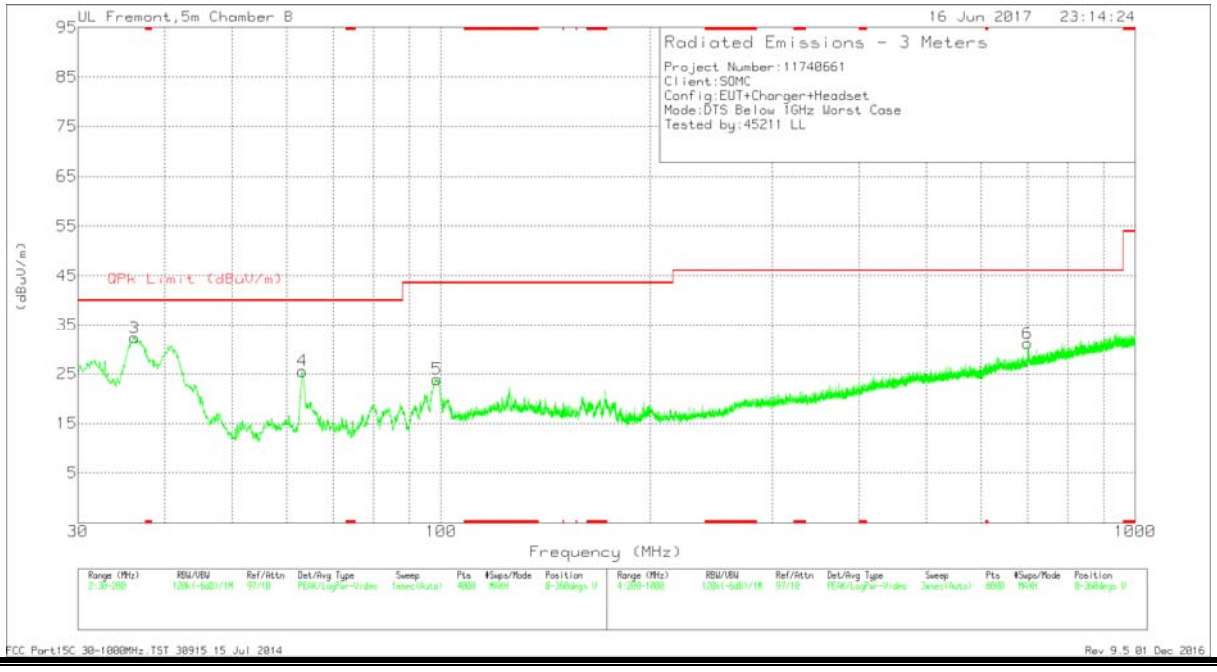
10.4 WORST-CASE BELOW 1 GHz

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 T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 173.177	35.15	Pk	15.5	-27.1	23.55	43.52	-19.97	0-360	100	H
3	36.1641	40.09	Pk	20.9	-28.7	32.29	40	-7.71	0-360	100	V
4	63.1586	42.24	Pk	11.6	-28.3	25.54	40	-14.46	0-360	100	V
5	98.634	37.89	Pk	13.9	-27.9	23.89	43.52	-19.63	0-360	100	V
1	142.8667	35.35	Pk	16.7	-27.4	24.65	43.52	-18.87	0-360	200	H
6	700.165	32.04	Pk	24.1	-25	31.14	46.02	-14.88	0-360	300	V

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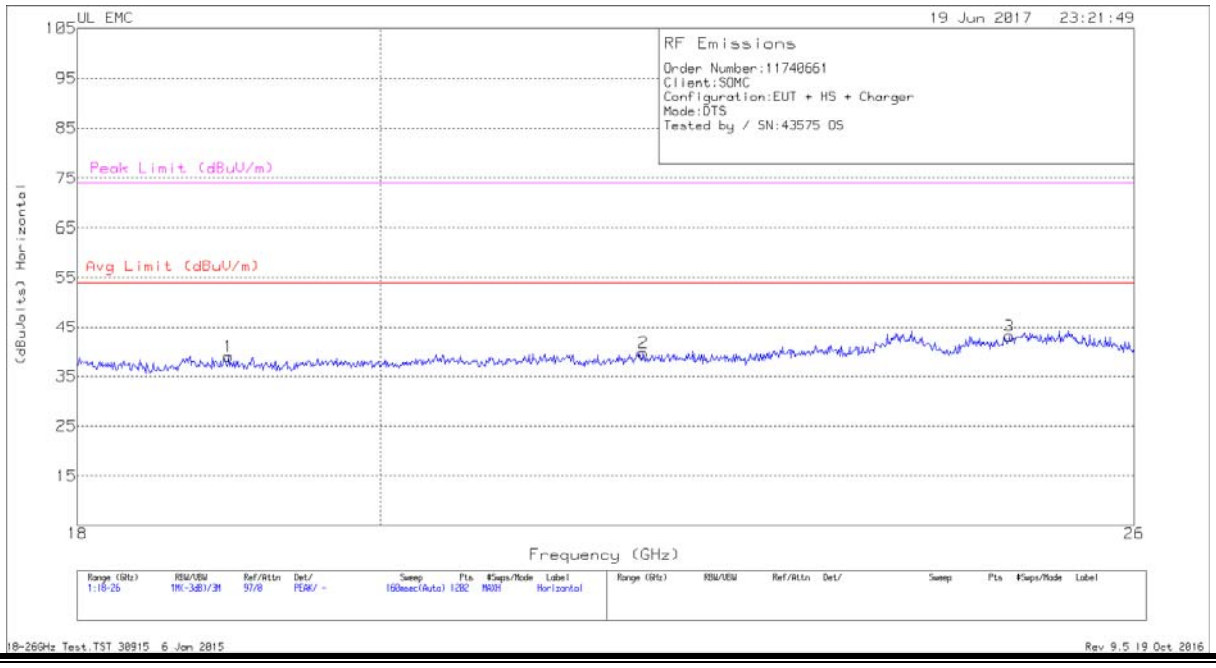
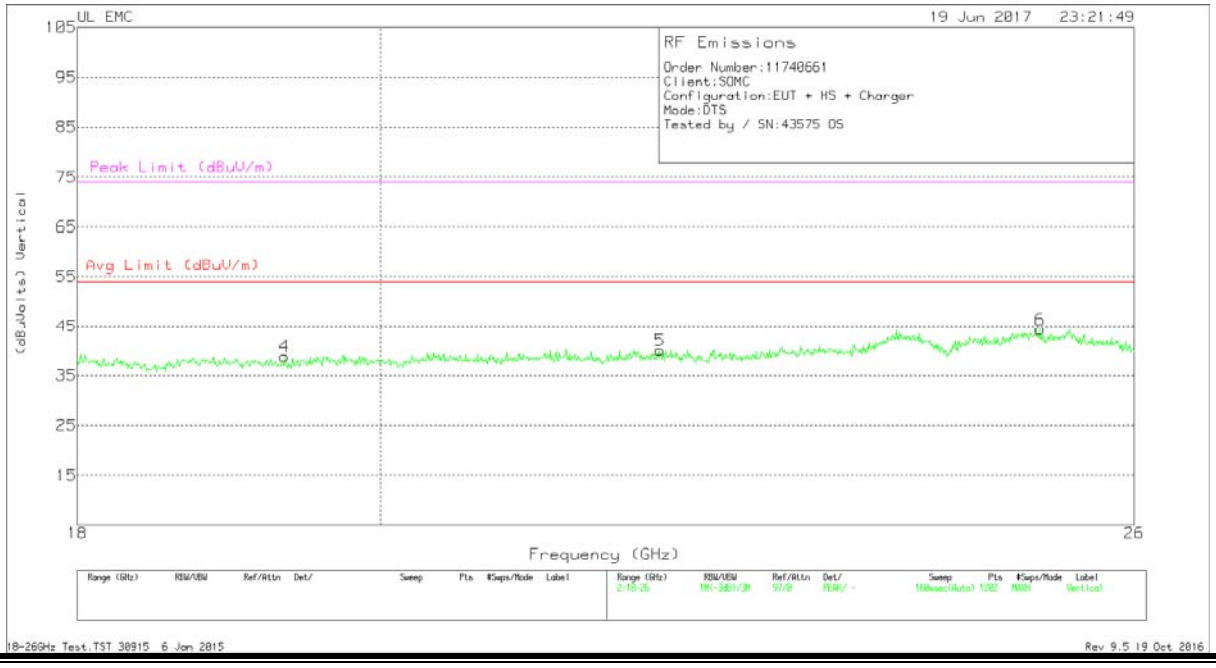
10.5. WORST-CASE 18 to 26 GHz

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	AF T449 (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	18.973	41.4	Pk	32.4	-25.3	-9.5	39	54	-15	74	-35
2	21.917	41.07	Pk	33.3	-25.2	-9.5	39.67	54	-14.33	74	-34.33
3	24.894	42.87	Pk	34.3	-24.5	-9.5	43.17	54	-10.83	74	-30.83
4	19.346	40.43	Pk	32.6	-24.7	-9.5	38.83	54	-15.17	74	-35.17
5	22.043	41.3	Pk	33.4	-25.2	-9.5	40	54	-14	74	-34
6	25.161	44.43	Pk	34.3	-24.9	-9.5	44.33	54	-9.67	74	-29.67

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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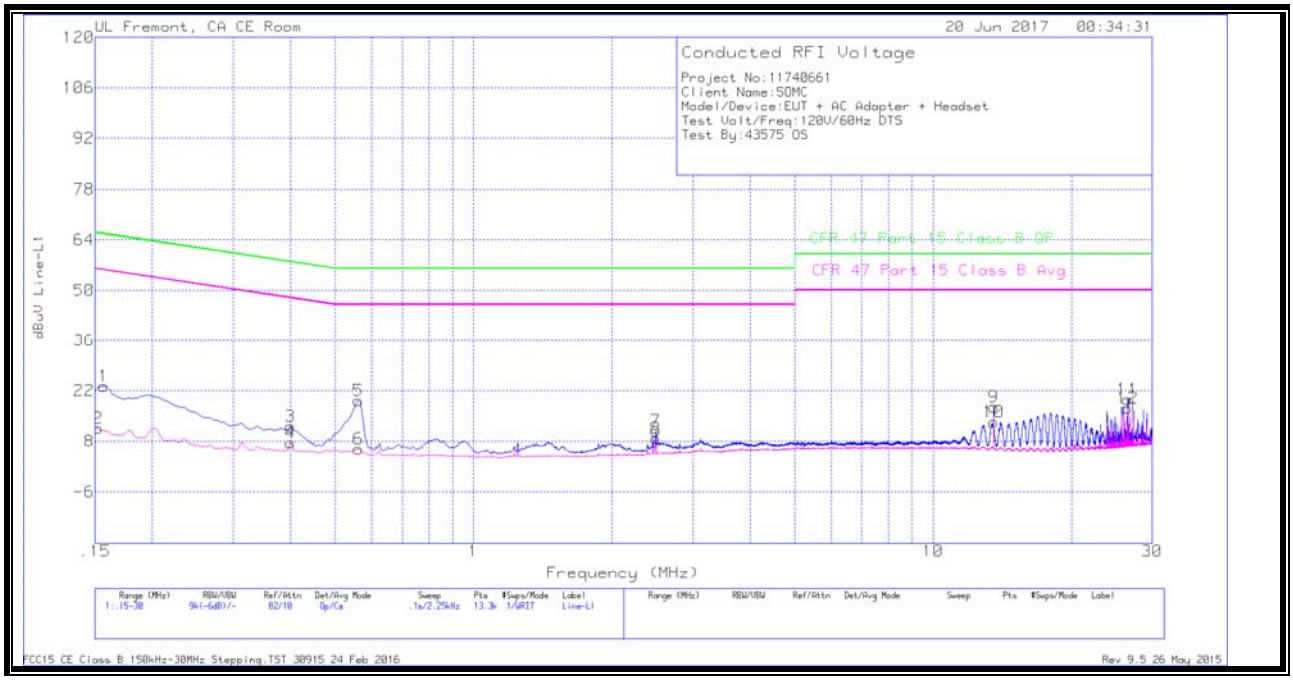
LINE 1 RESULTS



WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL 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	.15675	11.9	Qp	1.2	.1	10.1	23.3	65.63	-42.33	-	-
2	.15225	.06	Ca	1.3	.1	10.1	11.56	-	-	55.88	-44.32
3	.39975	1.58	Qp	.4	.1	10.1	12.18	57.86	-45.68	-	-
4	.39975	-3.04	Ca	.4	.1	10.1	7.56	-	-	47.86	-40.3
5	.56175	8.68	Qp	.3	.1	10.1	19.18	56	-36.82	-	-
6	.56175	-4.61	Ca	.3	.1	10.1	5.89	-	-	46	-40.11
7	2.4945	.52	Qp	.2	.1	10.1	10.92	56	-45.08	-	-
8	2.4945	-1.62	Ca	.2	.1	10.1	8.78	-	-	46	-37.22
9	13.56	6.95	Qp	.2	.2	10.2	17.55	60	-42.45	-	-
10	13.56	2.72	Ca	.2	.2	10.2	13.32	-	-	50	-36.68
11	26.5515	8.49	Qp	.3	.3	10.5	19.59	60	-40.41	-	-
12	26.5515	5.98	Ca	.3	.3	10.5	17.08	-	-	50	-32.92

Qp - Quasi-Peak detector
Ca - CISPR average detection

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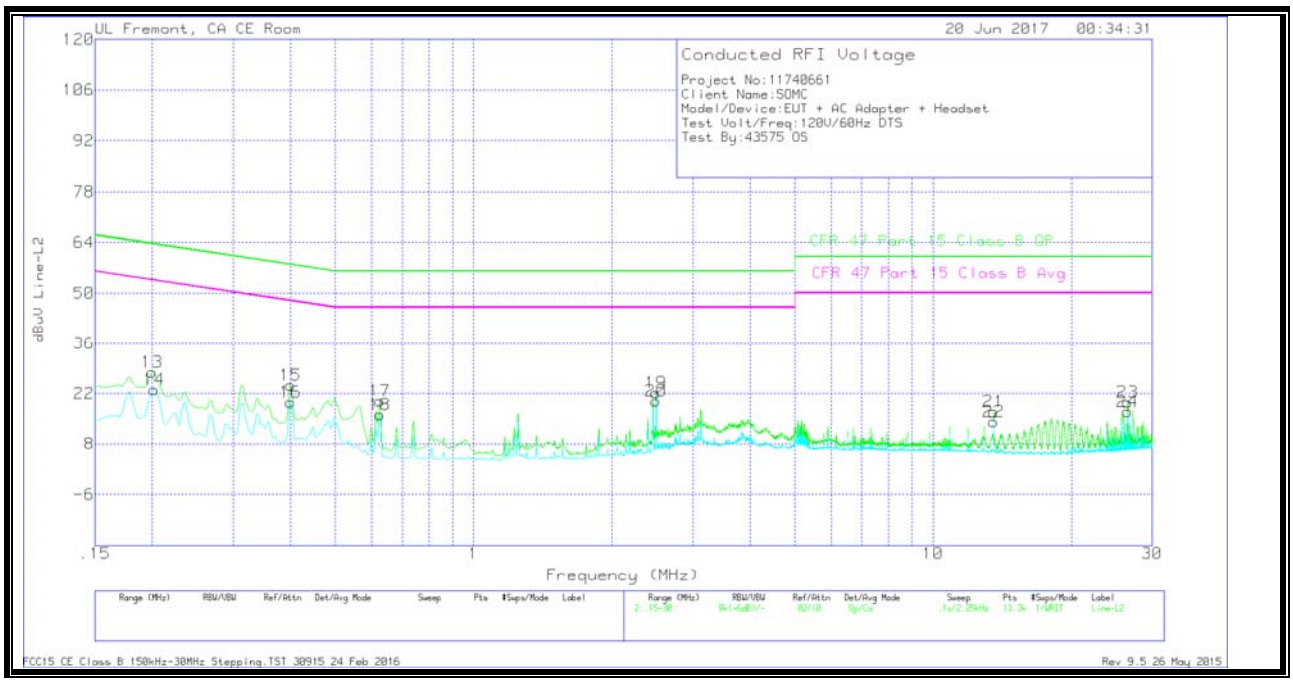
LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL 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	.1995	16.68	Qp	1	.1	10.1	27.88	63.63	-35.75	-	-
14	.20175	11.79	Ca	1	.1	10.1	22.99	-	-	53.54	-30.55
15	.39975	13.71	Qp	.4	.1	10.1	24.31	57.86	-33.55	-	-
16	.39975	8.98	Ca	.4	.1	10.1	19.58	-	-	47.86	-28.28
17	.62475	9.45	Qp	.3	.1	10.1	19.95	56	-36.05	-	-
18	.62475	5.55	Ca	.3	.1	10.1	16.05	-	-	46	-29.95
19	2.49675	11.82	Qp	.2	.1	10.1	22.22	56	-33.78	-	-
20	2.49675	9.51	Ca	.2	.1	10.1	19.91	-	-	46	-26.09
21	13.56	6.19	Qp	.3	.2	10.2	16.89	60	-43.11	-	-
22	13.56	3.52	Ca	.3	.2	10.2	14.22	-	-	50	-35.78
23	26.49075	8.42	Qp	.3	.3	10.5	19.52	60	-40.48	-	-
24	26.49075	5.87	Ca	.3	.3	10.5	16.97	-	-	50	-33.03

Qp - Quasi-Peak detector
Ca - CISPR average detection

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