CERTIFICATION TEST REPORT

Report Number. : 12563993-E4V2

Applicant : Samsung Electronics Co., Ltd.
129 Samsung-Ro, Yeongtong-Gu,
Suwon-Si, Gyeonggi-Do, 16677, Korea

Model : SM-G970N

FCC ID : A3LSMG970KOR

EUT Description : GSM/WCDMA/LTE phone with BT, DTS/UNII a/b/g/n/ac/11ax HE 20/40/80, ANT+ and NFC

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

Date Of Issue:
January 29, 2019

Prepared by:
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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	1/24/2019	Initial Issue	
V2	1/29/2019	Updated Section 2.1, 2.2, 2.3, add section 2.4	Dan Coronia

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Samsung Electronics Co., Ltd.
129 Samsung-Ro, Yeongtong-Gu,
Suwon-Si, Gyeonggi-Do, 16677, Korea

EUT DESCRIPTION: GSM/WCDMA/LTE phone with BT, DTS/UNII a/b/g/n/ac/11ax HE 20/40/80, ANT+ and NFC

MODEL: SM-G970N

SERIAL NUMBER: R38KA0H49TL (Conducted), R38KB05BJQB (Radiated) (Original)
R39KB0AHYCP, R39KB0AHYMF (Radiated) (Spot Check)

DATE TESTED: NOVEMBER 2, 2018 – JANUARY 23, 2018 (Original)
DECEMBER 13-14 & 19, 2018 (Spot Check)0

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

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

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

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

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2. INTRODUCTION OF TEST DATA REUSE

2.1. INTRODUCTION

According to the manufacturer, FCC ID: A3LSMG970F and FCC ID: A3LSMG970KOR non-licensed radios are electrically identical. The FCC ID: A3LSMG970F test data shall remain representative of FCC ID: A3LSMG970KOR.

The applicant takes full responsibility that the test data as referenced in this section represents compliance for this FCC ID.

2.2. DIFFERENCES

The FCC ID: A3LSMG970F, shares the same enclosure and circuit board as FCC ID: A3LSMG970KOR. The DTS WLAN antennas and surrounding circuitry and layout are identical between two models.

After confirming through preliminary radiated emissions that the performance of the FCC ID: A3LSMG970F remains representative of FCC ID: A3LSMG970KOR. The test data of FCC ID: A3LSMG970F being submitted for this application to cover DTS WLAN features.

2.3. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device A3LSMG970KOR for radiated harmonic spurious and radiated band-edge. The data from the application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the summary below.

A3LSMG970KOR SPOT CHECK RESULTS										
Technology	Mode	Test Item	Channel	Measured	Original model		Spot check model		Delta (dB)	
					SM-G970F		SM-G970N			
					A3LSMG970F		A3LSMG970KOR			
				Frequency	Peak	Ave	Peak	Ave	Peak	Ave
DTS	11n HT20	RBE	1	2488MHz	70.5	51.83	67.91	51.45	-2.59	-0.38
	11ax HT20 242T	RSE	11	12071MHz	51.33	40.74	49.4	39.28	-1.93	-1.46

Comparison of the models, upper deviation is within 3dB range and all test are under FCC Technical Limits.

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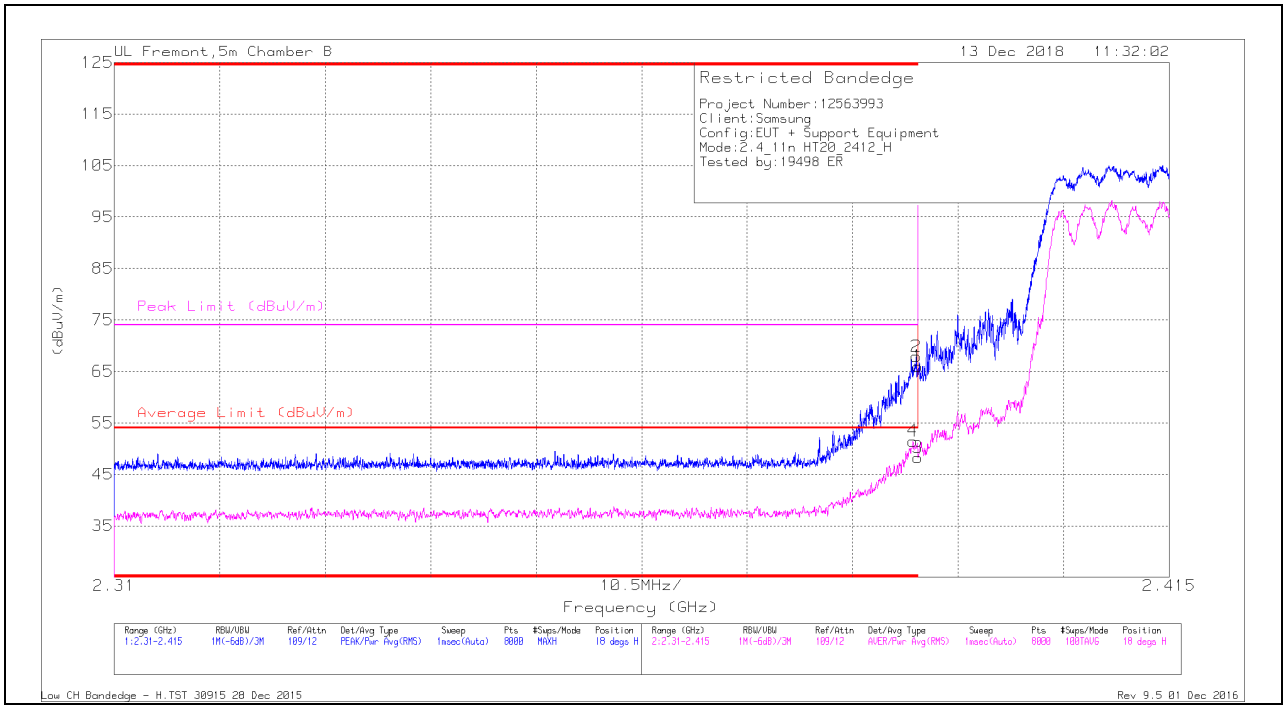
2.3.1. SPOT CHECK DATA

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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	54.4	Pk	32.3	-20.7	0	66	-	-	74	-8	18	170	H
2	* 2.39	56.31	Pk	32.3	-20.7	0	67.91	-	-	74	-6.09	18	170	H
3	* 2.39	36.35	RMS	32.3	-20.7	.31	48.26	54	-5.74	-	-	18	170	H
4	* 2.389	39.54	RMS	32.3	-20.7	.31	51.45	54	-2.55	-	-	18	170	H

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

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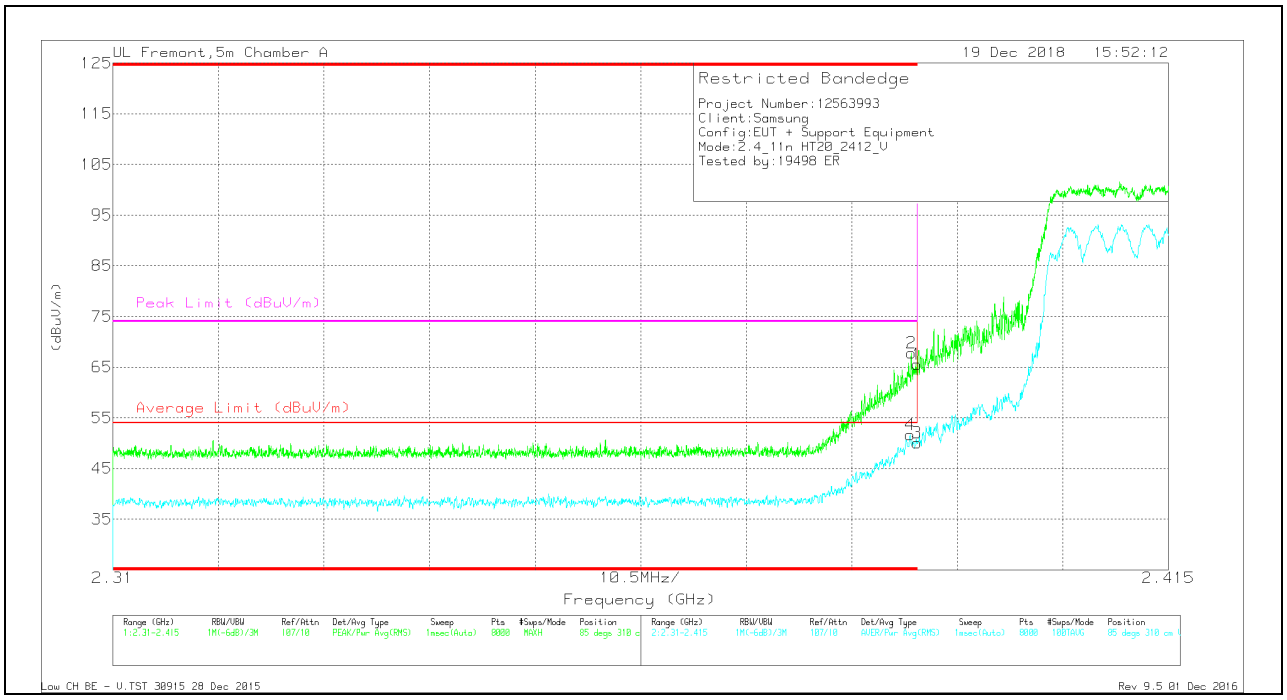
VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	55.55	Pk	32	-22	0	65.55	-	-	74	-8.45	85	310	V
2	* 2.389	57.85	Pk	32	-22	0	67.85	-	-	74	-6.15	85	310	V
3	* 2.39	39.7	RMS	32	-22	.31	50.01	54	-3.99	-	-	85	310	V
4	* 2.389	41.34	RMS	32	-22	.31	51.65	54	-2.35	-	-	85	310	V

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

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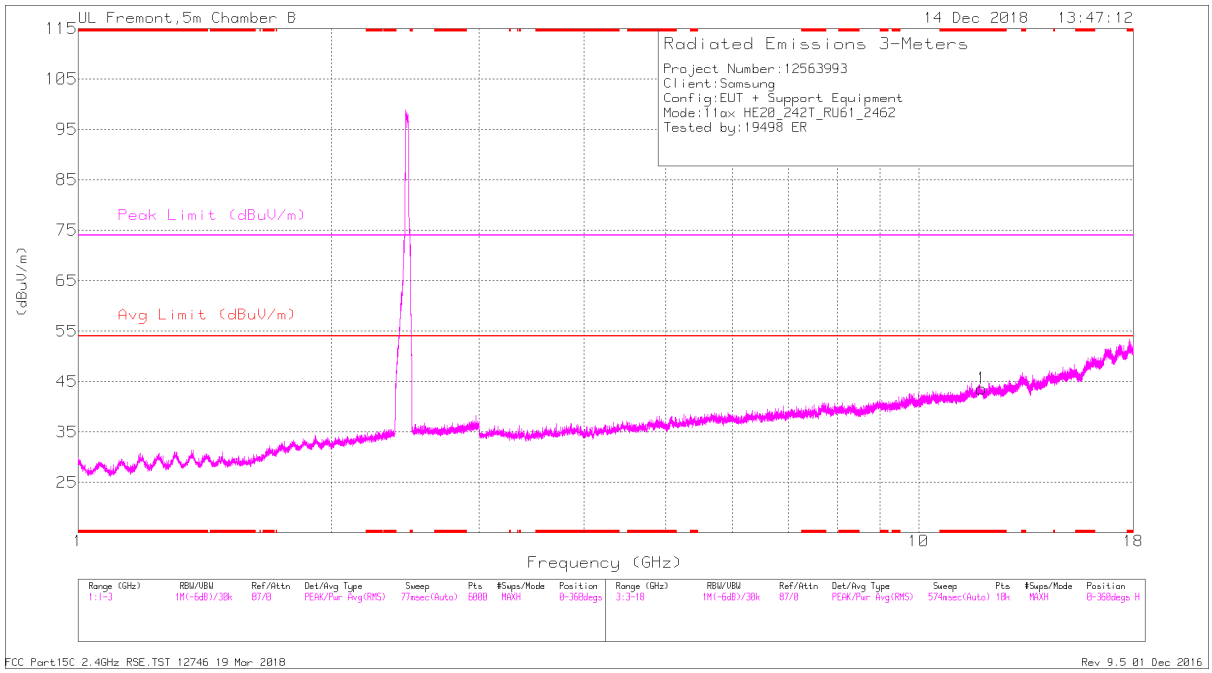
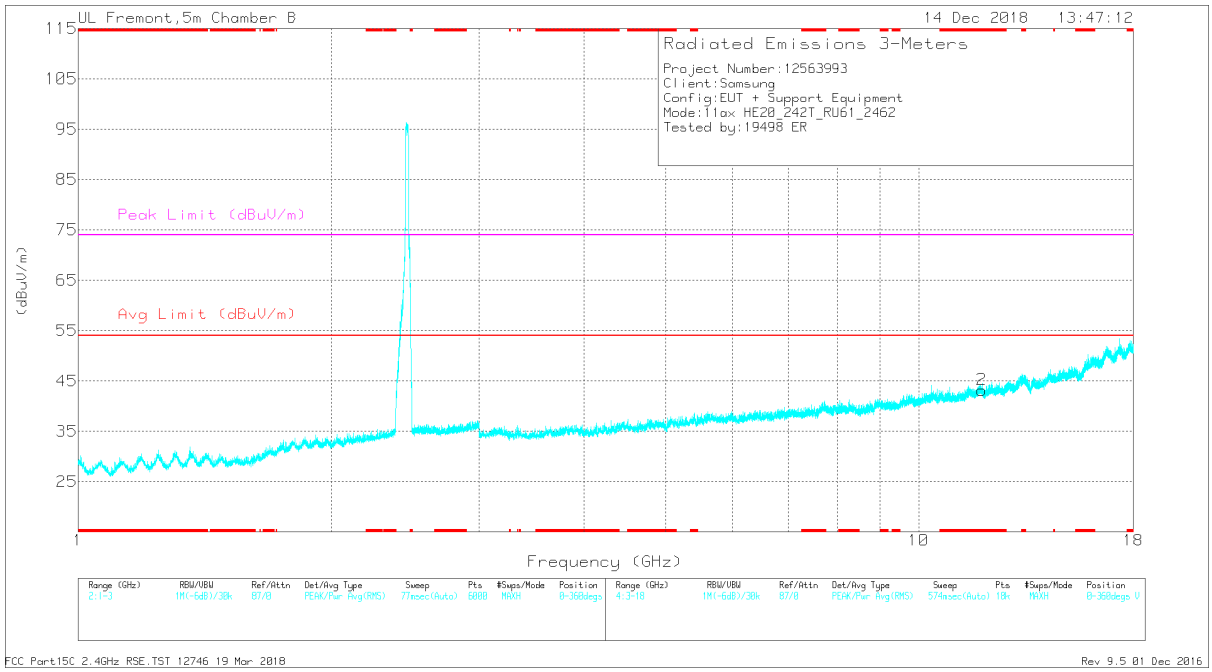
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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
* 11.877	32.63	PK2	39	-21.6	0	50.03	-	-	74	-23.97	181	226	H
* 11.879	21.25	MAv1	38.9	-21.6	.67	39.22	54	-14.78	-	-	181	226	H
* 11.88	32.2	PK2	38.9	-21.7	0	49.4	-	-	74	-24.6	0	250	V
* 11.879	21.41	MAv1	38.9	-21.7	.67	39.28	54	-14.72	-	-	0	250	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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2.4. REFERENCE DETAIL

Reference application that contains the reused reference data.

Equipment Class	Reference FCC ID	Type Grant/ Permissive Change	Reference Application	Folder Test/RF Exposure	Report Title/Section
PCE	A3LSMG970F	Grant	12563734-E1V6	Test	FCC Report WWAN / All sections except Appendix A
DSS	A3LSMG970F	Grant	12563734-E2V2	Test	FCC Report BT / All sections
DTS	**A3LSMG970F**	**Grant**	12563734-E3V3	Test	FCC Report BLE / All sections
			12563734-E4V4	**Test**	**FCC Report DTS WLAN / All sections**
NII	A3LSMG970F	Grant	12563734-E5V3	Test	FCC Report UNII WLAN / All sections except DFS
DXX	A3LSMG970F	Grant	12563734-E7V3	Test	FCC Report ANT+ / All sections
			12563734-E8V3	Test	FCC Report NFC / All sections
DCD	A3LSMG970F	Grant	12563734-E9V3	Test	FCC Report Wireless Charging / All sections

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3. TEST METHODOLOGY

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

4. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd
☒ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☐ Chamber I (ISED:2324A-5)
☒ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☐ Chamber J (ISED:2324A-6)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	☐ Chamber K (ISED:2324A-1)
	☐ Chamber G (ISED:22541-4)	☐ Chamber L (ISED:2324A-3)
	☐ Chamber H (ISED:22541-5)	

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

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

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5. CALIBRATION AND UNCERTAINTY

5.1. 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.

5.2. SAMPLE CALCULATION

RADIATED EMISSIONS
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

MAINS CONDUCTED EMISSIONS
Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

5.3. MEASUREMENT UNCERTAINTY

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

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

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE phone with BT, DTS/UNII a/b/g/n/ac/11ax HE 20/40/80, ANT+ and NFC. The test report addresses the DTS WLAN operational mode.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

2.4GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
SISO			
2412-2472	802.11b (Chain 0)	18.27	67.14
2412-2472	802.11b (Chain 1)	18.43	69.66
2412-2472	802.11g (Chain 0)	16.05	40.27
2412-2472	802.11g (Chain 1)	16.24	42.07
2412-2472	802.11n HT20 (Chain 0)	15.33	34.12
2412-2472	802.11n HT20 (Chain 1)	15.54	35.81
2412-2472	802.11ax HE20 (Chain 0) SU	15.42	34.83
2412-2472	802.11ax HE20 (Chain 1) SU	15.55	35.89
2412-2472	802.11ax HE20 (Chain 0) RU Size 242T	16.32	42.85
2412-2472	802.11ax HE20 (Chain 1) RU Size 242T	16.53	44.98
2412-2472	802.11ax HE20 (Chain 0) RU Size 106T	15.4	34.67
2412-2472	802.11ax HE20 (Chain 1) RU Size 106T	15.68	36.98
2412-2472	802.11ax HE20 (Chain 0) RU Size 52T	12.47	17.66
2412-2472	802.11ax HE20 (Chain 1) RU Size 52T	12.86	19.32
2412-2472	802.11ax HE20 (Chain 0) RU Size 26T	11.55	14.29
2412-2472	802.11ax HE20 (Chain 1) RU Size 26T	11.75	14.96

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Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2TX			
2412-2472	802.11g CDD	19.64	92.04
2412-2472	802.11n HT20 CDD	19.49	88.92
2412-2472	802.11ax HE20 SU Mode	19.33	85.70
2412-2472	802.11ax HE20 OFDMA, RU size 242T	19.64	92.04
2412-2472	802.11ax HE20 OFDMA, RU size 106T	18.63	72.95
2412-2472	802.11ax HE20 OFDMA, RU size 52T	15.78	37.84
2412-2472	802.11ax HE20 OFDMA, RU size 26T	14.78	30.06

Note: After investigated on the output power,
_The 11g SISO output power, chain 0 and chain 1, is lower or equal to 11g CDD. The 11g SISO is covered by the 11g CDD testing.
_The 11n HT20 SISO output power, chain 0 and chain 1, is lower or equal to 11n HT20 CDD. The 11n HT20 SISO is covered by the 11n HT20 CDD testing.
_The 11ax HE20 SISO output power, chain 0 and chain 1, is lower or equal to 11ax HE20 CDD. The 11ax HE20 SISO is covered by the to 11ax HE20 CDD testing.

In addition, the output power for 11ax SU Mode and 11ax Full Tones (242T) were investigated and the SU Mode is lower or equal to 11ax Full Tones (242T), therefore it will be covered by the 11ax Full Tones (242T) testing.

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6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of:

Frequency Band (GHz)	Chain 0	Chain 1
	Antenna Gain (dBi)	Antenna Gain (dBi)
2412-2472	-1.21	-4.41

Note:
Antenna #1 = Chain 0
Antenna #2-1 = Chain 1

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was G970N.001

6.5. WORST-CASE CONFIGURATION AND MODE

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

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

For SISO (Antenna, Chain 0), the fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

For SISO (Antenna, Chain 1), the fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

For MIMO, 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 X 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
802.11ax HE20mode: MCS0

All radios that can be transmitted simultaneously have been evaluated for radiated for all possible combinations of transmission and found to be in compliance.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	Samsung	EP-TA300	R3KB5B01S1SE3	N/A
USB Data Cabe	Samsung	N/A	N/A	N/A
Earphone	Samsung	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	Un-shielded	1	EUT to AC Mains

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	Type C	Shielded	1	N/A
2	Earphone	1	3.5mm	Un-shielded	1	N/A

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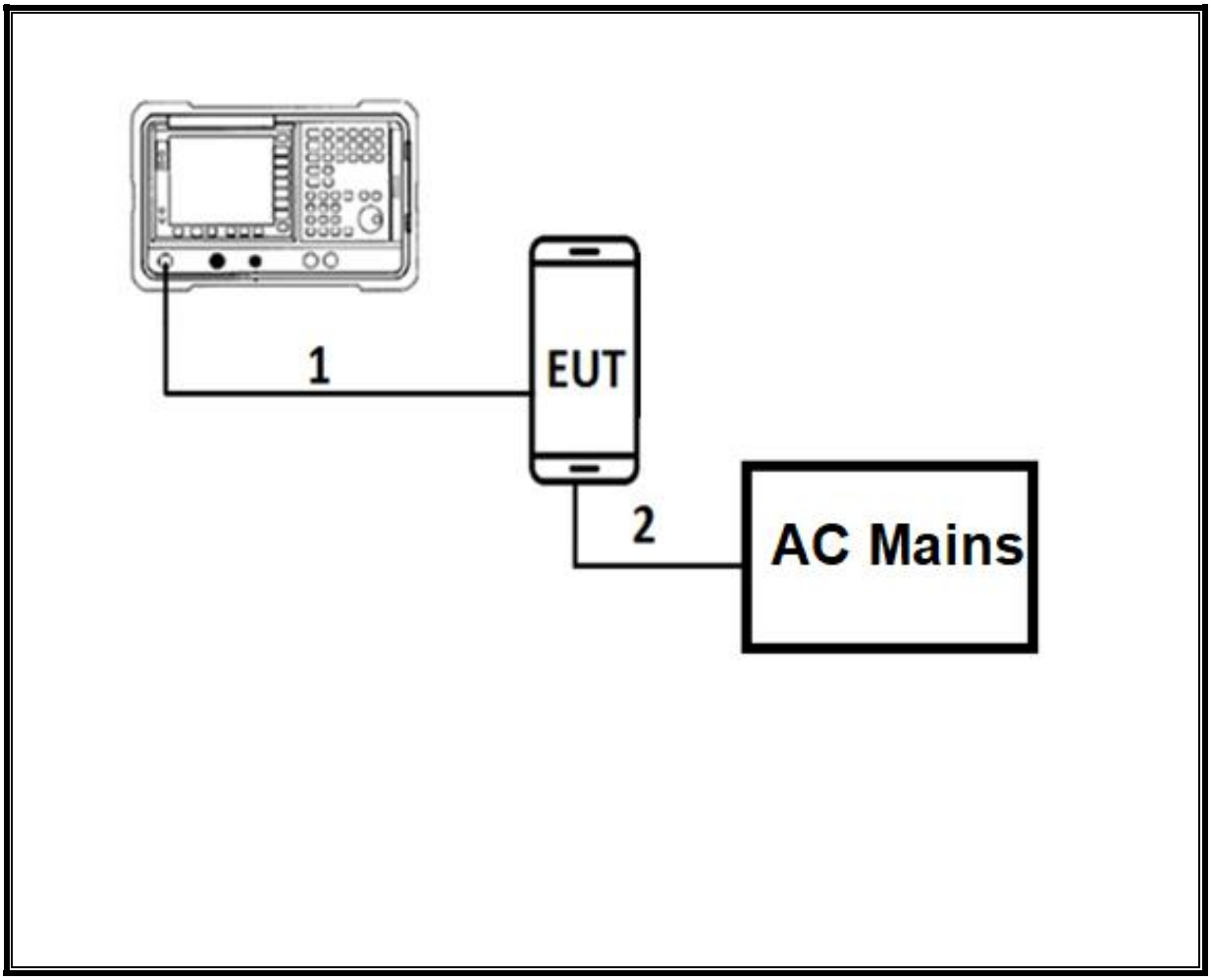
TEST SETUP

The EUT is a stand alone. Test software exercised the radio card.

CONDUCTED TEST SETUP DIAGRAM



TEST SETUP

For conducted tests: the EUT was Stand alone. The test software exercises the radio.

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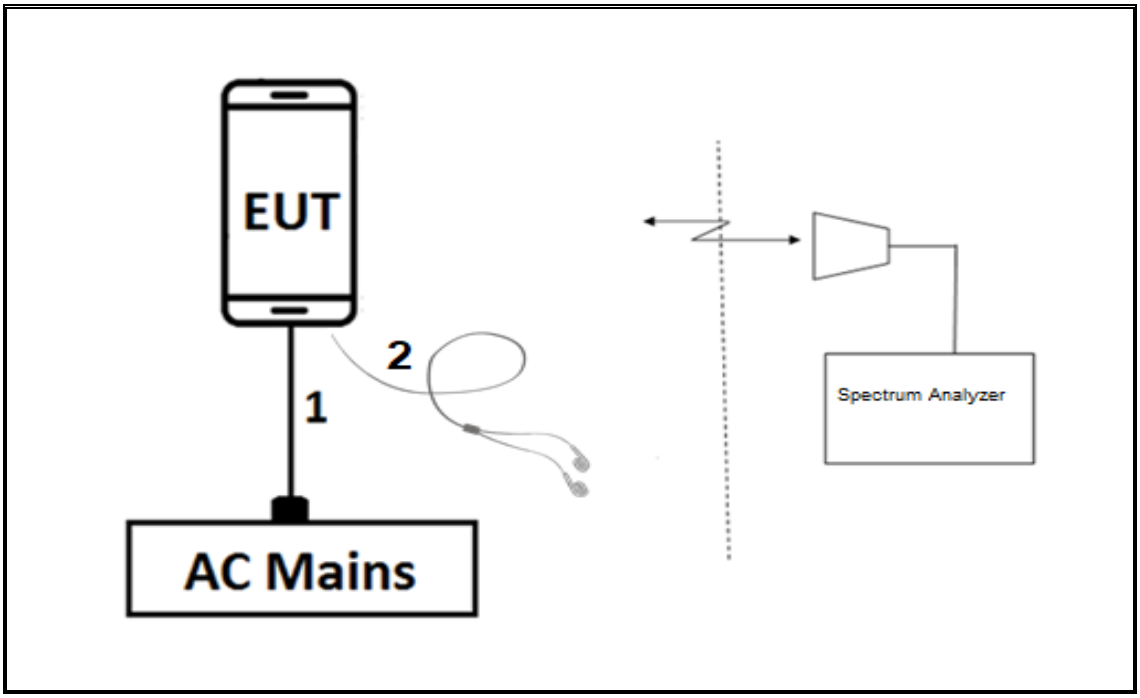
RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



TEST SETUP

For radiated tests: EUT has support equipment. The test software exercises the radio.

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7. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Amplifier, 100KHz to 1GHz,32dB	Agilent (Keysight) Technologies	8447D	T15	10/20/2019	10/20/2018
RF Amplifier	MITEQ	AFS42-00101800-25-S-42	T493	10/13/2019	10/13/2018
RF Amplifier, 1-18GHz	MITEQ	AFS42-00101800-25-S-42	T1165	10/20/2019	10/20/2018
Pre-Amp 1-26.5 GHz	Agilent	8449B	T404	03/09/2019	03/09/2018
Antenna, Broadband Hybrid, 30MHz to 3000MHz	Sunol Sciences Corp.	JB3	PRE0181574	08/01/2019	08/01/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T345	04/25/2019	04/25/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	06/21/2019	06/21/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	05/24/2019	05/24/2018
Antenna, Active Loop 9kHz-30MHz	Com-Power Corp.	AL-130R	PRE0165308	12/13/2018	12/13/2017
18 - 26.5 GHz Horn Antenna	ARA	MWH-1826/B	T477	06/16/2019	06/16/2018
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1271	07/26/2019	07/26/2018
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1224	10/09/2019	10/09/2018
EMI Reciever	Rohde & Schwarz	ESR	T1436	02/21/2019	02/21/2018
L.I.S.N.	FCC INC.	FCC LISN 50/250	T1310	06/15/2019	06/15/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018	12/21/2017
Spectrum Analyzer	Agilent (Keysight) Technologies	E4446A	T146	08/13/2019	08/13/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1466	04/16/2019	04/16/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019	01/08/2018

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, Dec 01, 2016
Antenna Port Software	UL	UL RF	Ver 9.0, Oct 31, 2018

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8. MEASUREMENT METHOD

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

6 dB BW: ANSI C63.10 Subclause -11.8.1 RBW ≥ DTS BW

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

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

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

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

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1

Conducted emissions in restricted frequency bands: ANSI C63.10 Subclause -11.12.2

Band-edge: ANSI C63.10 Subclause -11.13.3.2 Integration method -Peak detection

Band-edge: ANSI C63.10 Subclause -11.13.3.4 Integration method -Trace averaging across ON and OFF times DC correction

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

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b 1TX Chain 0	8.611	8.705	0.989	98.92%	0.00	0.010
802.11b 1TX Chain 1	8.604	8.702	0.989	98.87%	0.00	0.010
802.11g CDD MODE	1.430	1.527	0.936	93.65%	0.29	0.699
802.11n HT20 CDD MODE	1.338	1.436	0.932	93.18%	0.31	0.747
802.11ax HE20 OFDMA, RU size 242T	0.600	0.700	0.857	85.71%	0.67	1.667
802.11ax HE20 OFDMA, RU size 106T	1.284	1.384	0.928	92.77%	0.33	0.779
802.11ax HE20 OFDMA, RU size 52T	2.652	2.760	0.961	96.09%	0.17	0.377
802.11ax HE20 OFDMA, RU size 26T	5.220	5.328	0.980	97.97%	0.09	0.192

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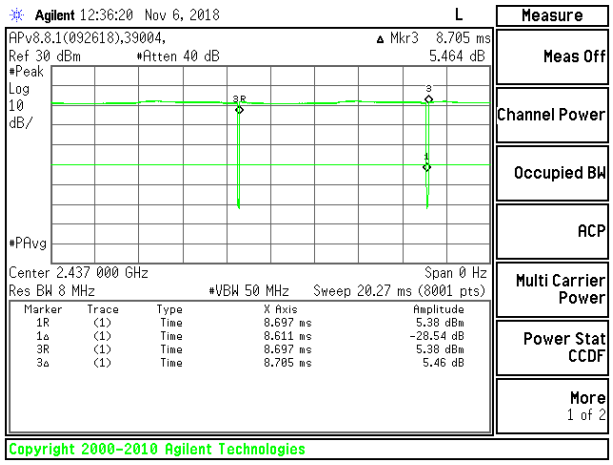
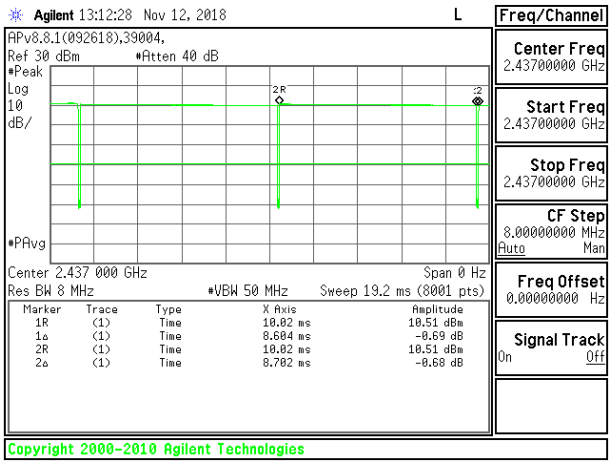
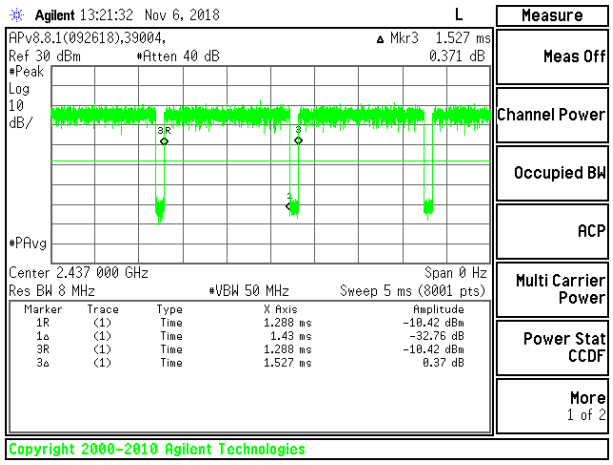
DUTY CYCLE PLOTS



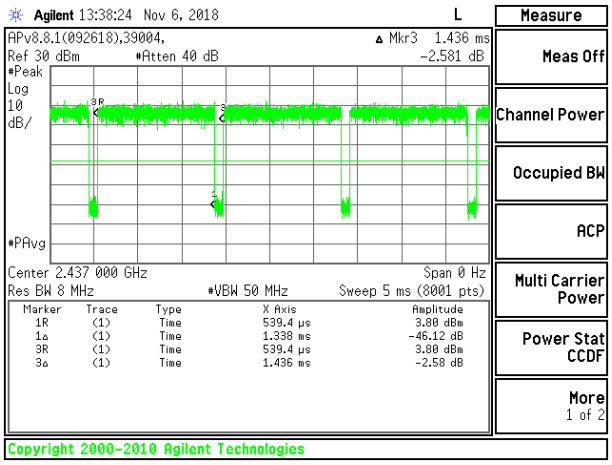
DUTY CYCLE 802.11b MODE Chain 0



DUTY CYCLE 802.11b MODE Chain 1



DUTY CYCLE 802.11g CDD MODE



DUTY CYCLE 802.11n HT20 CDD MODE

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802.11ax HE20 OFDMA, 242T MODE

802.11ax HE20 OFDMA, 106T MODE

802.11ax HE20 OFDMA, 52T MODE

802.11ax HE20 OFDMA, 26T MODE

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9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

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9.2.1. 802.11b MODE

1TX Chain 0 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	11.961
Mid 6	2437	12.068
High 11	2462	11.535
High 12	2467	10.9501
High 13	2472	11.5278

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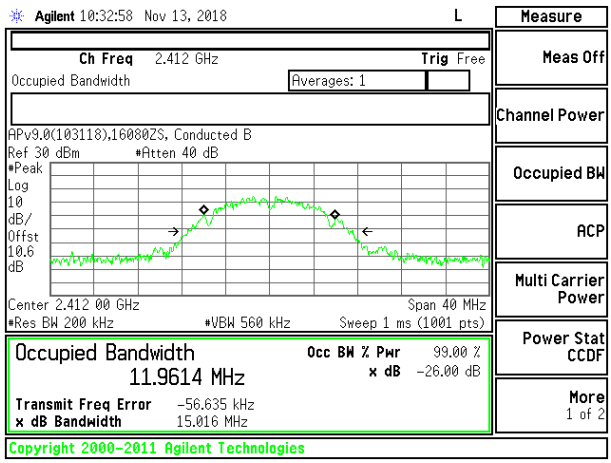
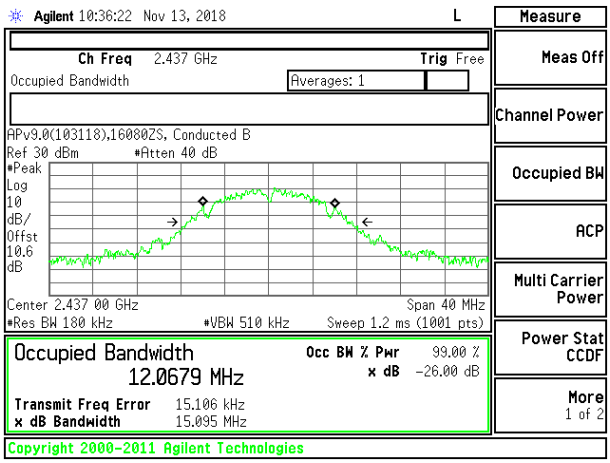
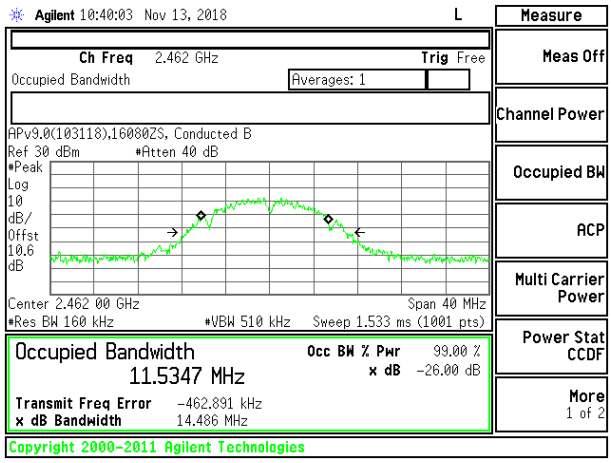


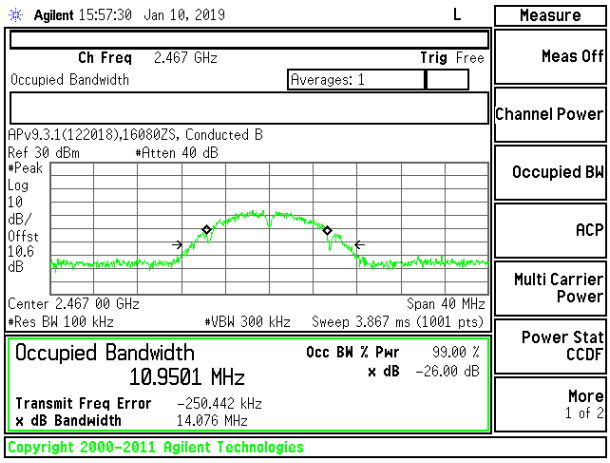
LOW CHANNEL 1



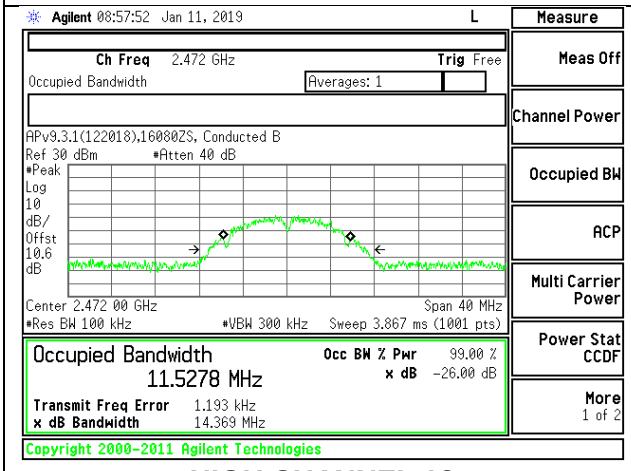
MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 12



HIGH CHANNEL 13

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1TX Chain 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	11.662
Mid 6	2437	11.923
High 11	2462	11.992
High 12	2467	10.9208
High 13	2472	11.7085

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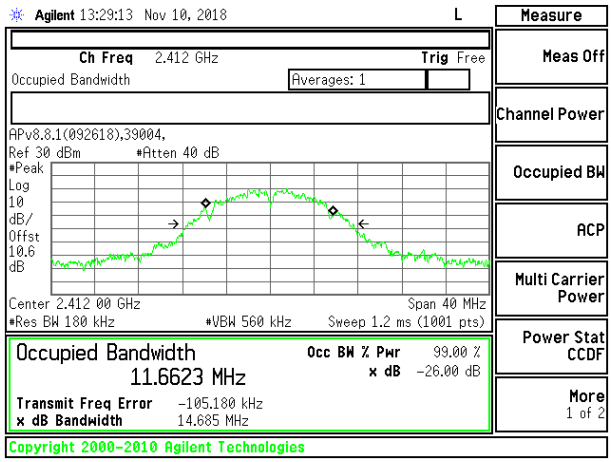
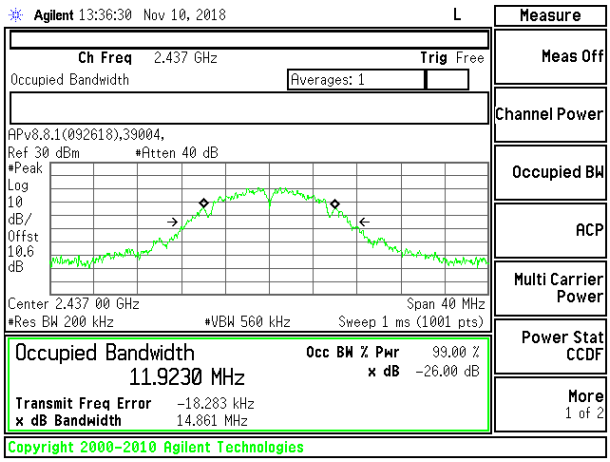
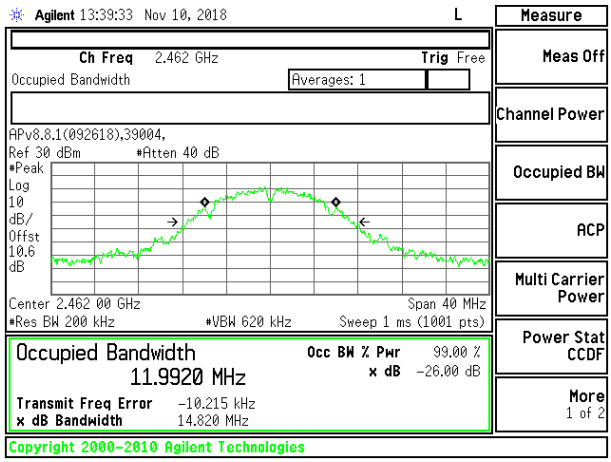


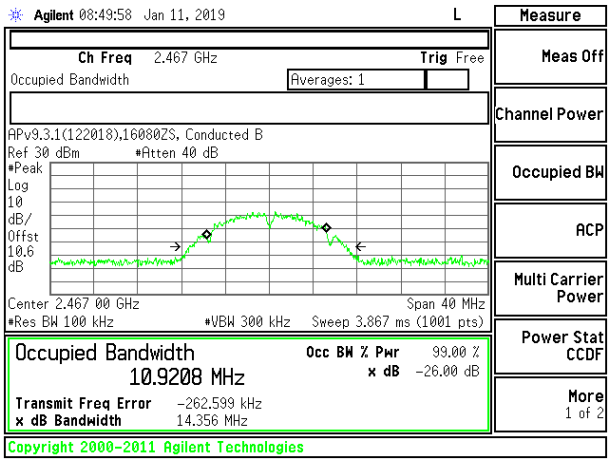
LOW CHANNEL 1



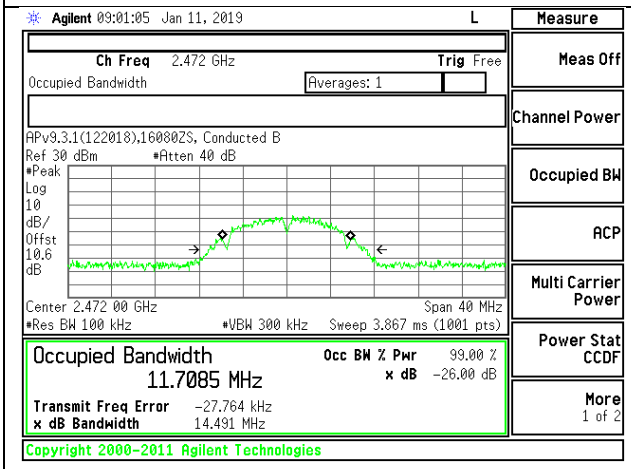
MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 12



HIGH CHANNEL 13

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9.2.2. 802.11g MODE

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	16.698	16.711
Mid 6	2437	16.825	16.736
High 11	2462	16.702	16.767
High 12	2467	16.4768	16.4672
High 13	2472	16.5896	16.5341

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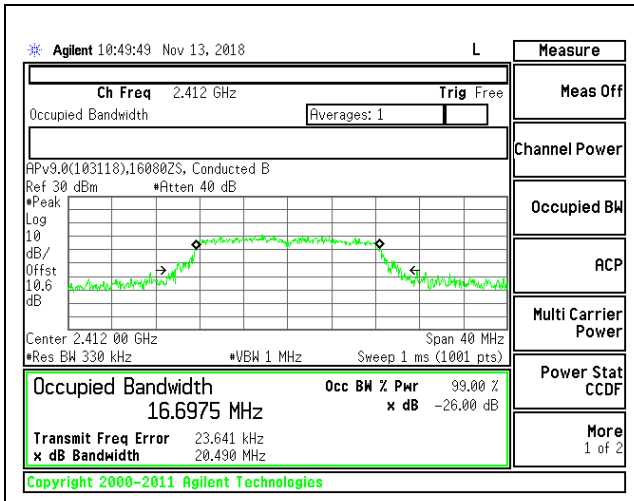
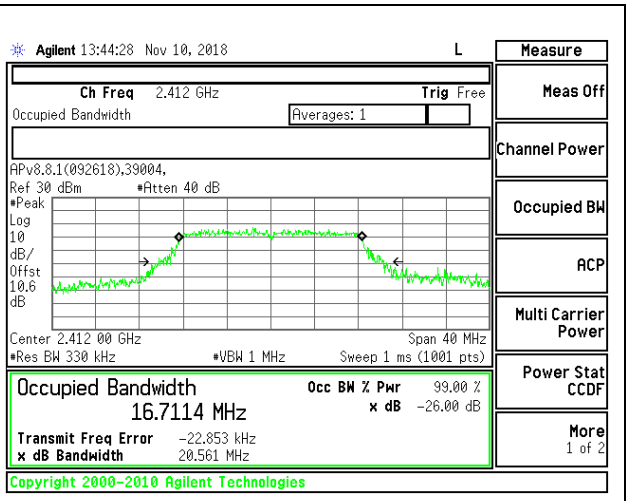
LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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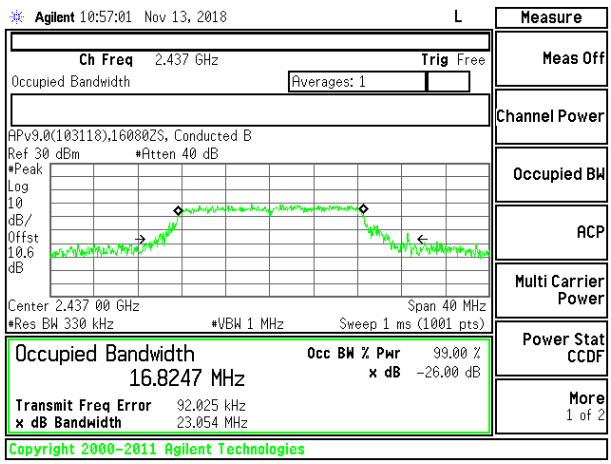
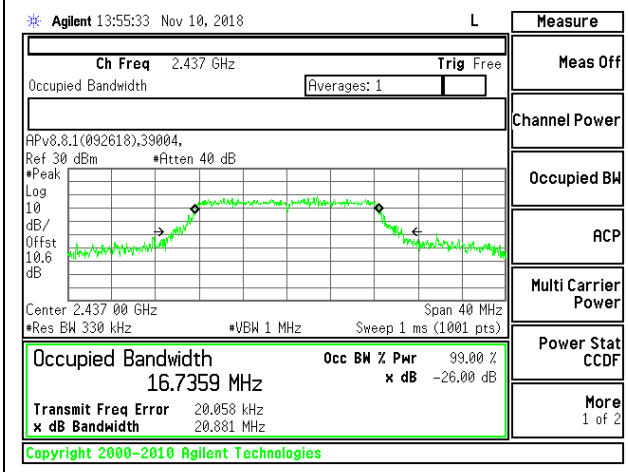
MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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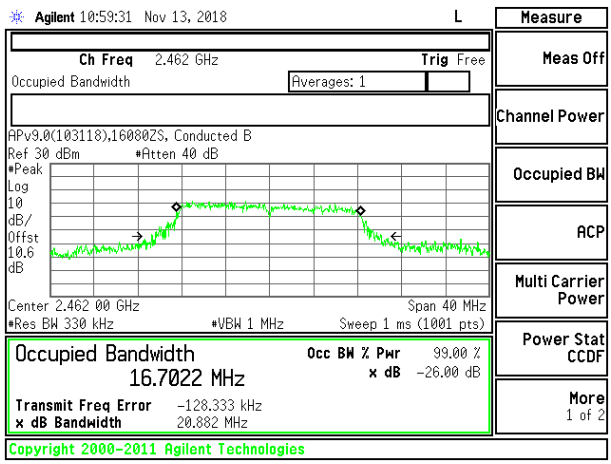
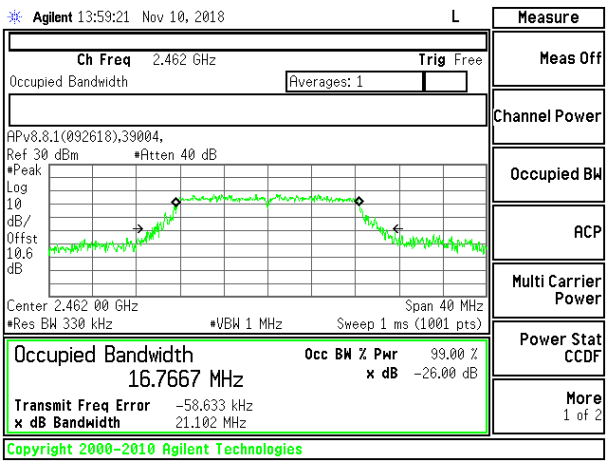
HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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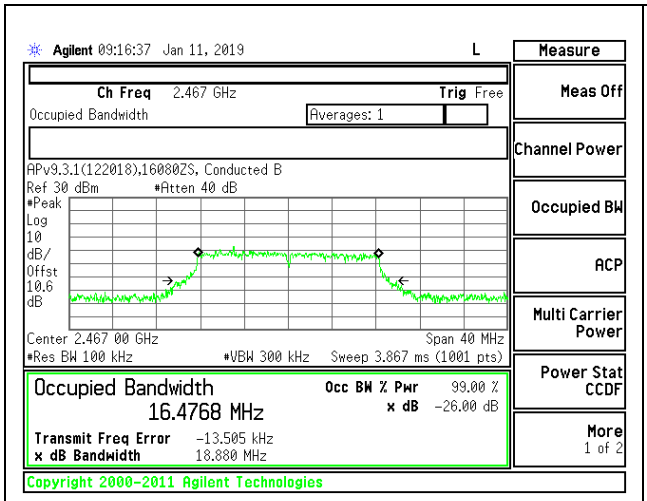
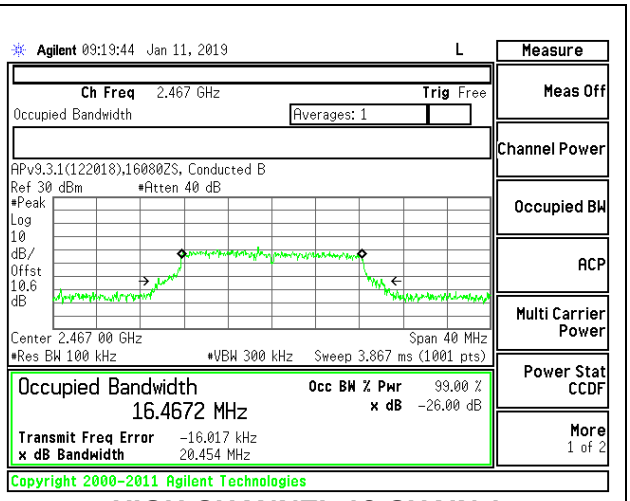
HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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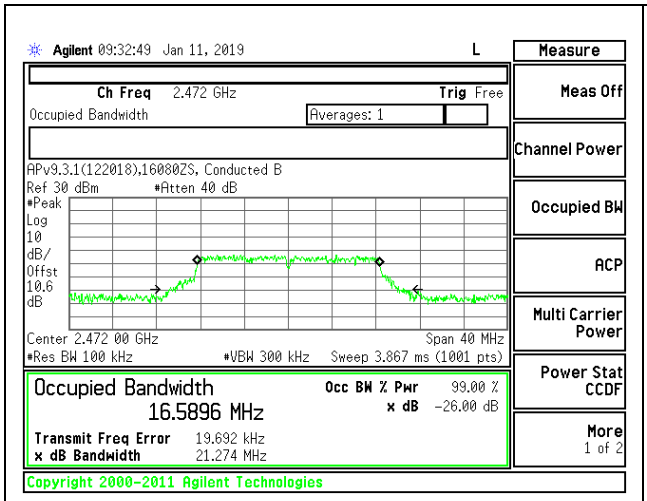
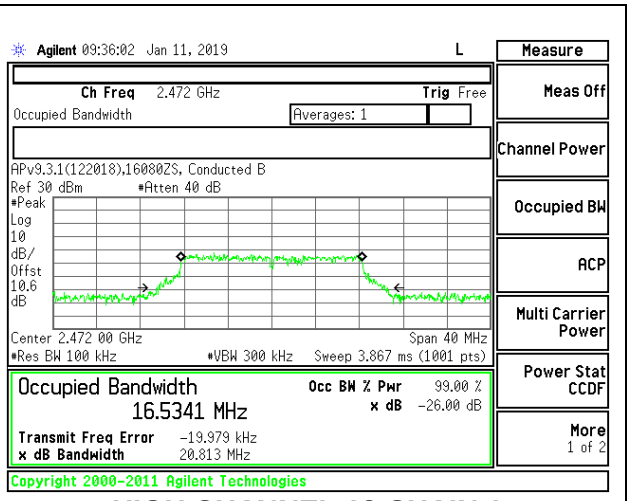
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.2.3. 802.11n HT20 MODE

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	17.818	17.810
Mid 6	2437	18.091	18.008
High 11	2462	17.996	17.864
High 12	2467	17.7081	17.7037
High 13	2472	17.7793	18.0632

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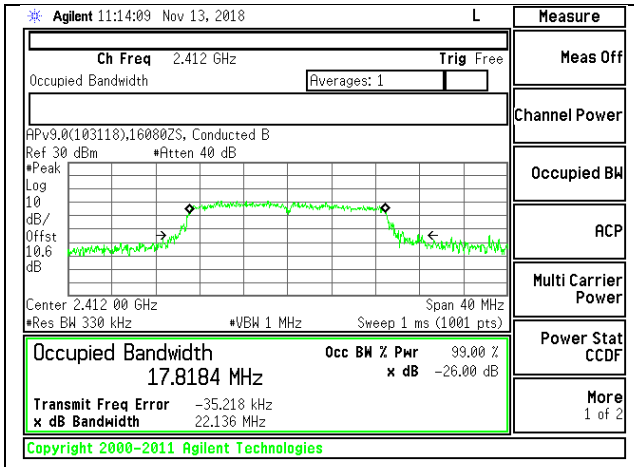
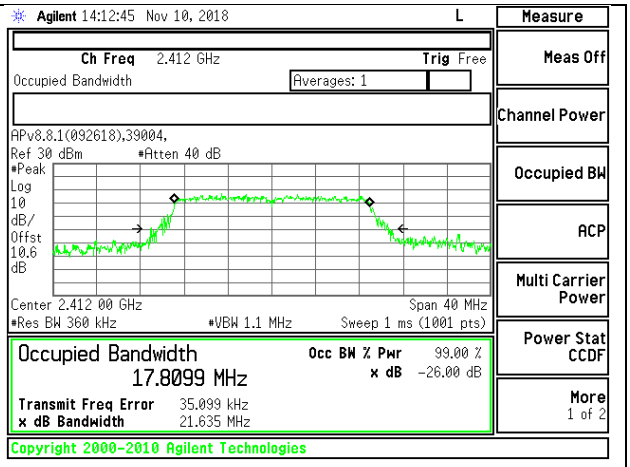
LOW CHANNEL 1

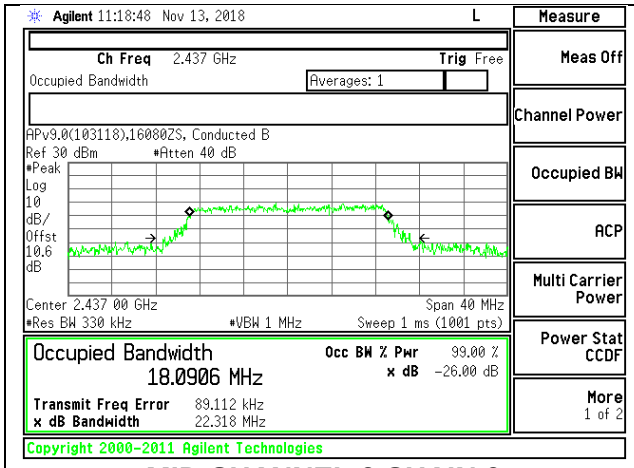


LOW CHANNEL 1 CHAIN 0

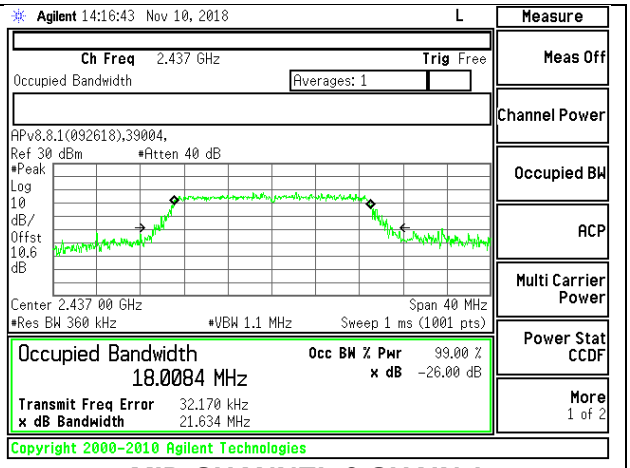


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

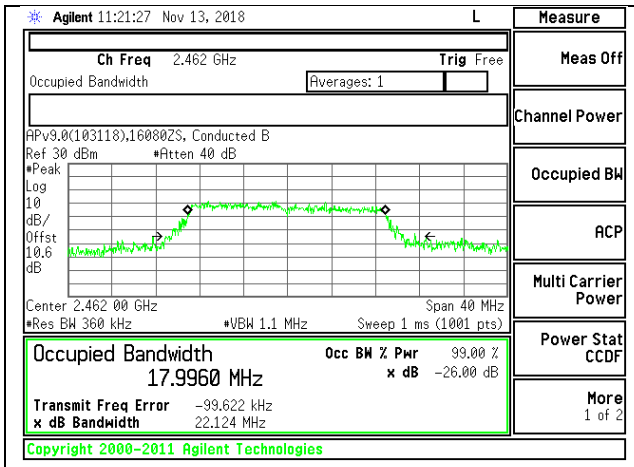


MID CHANNEL 6 CHAIN 0

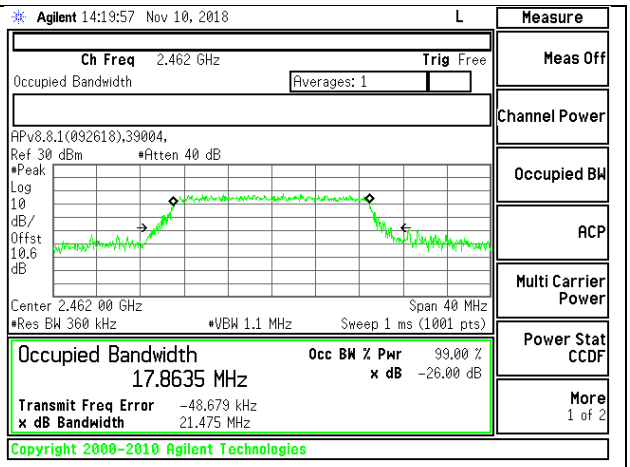


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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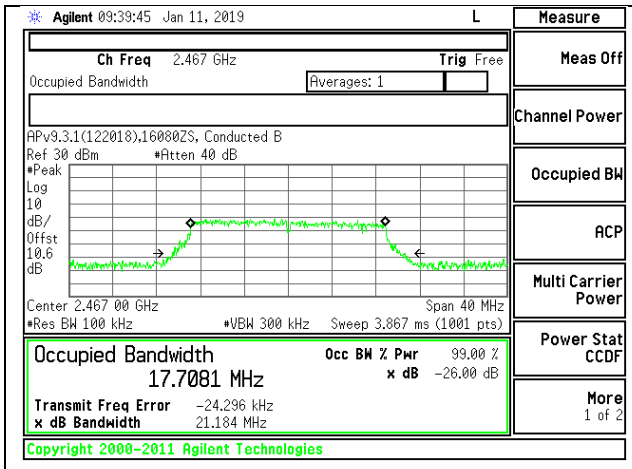
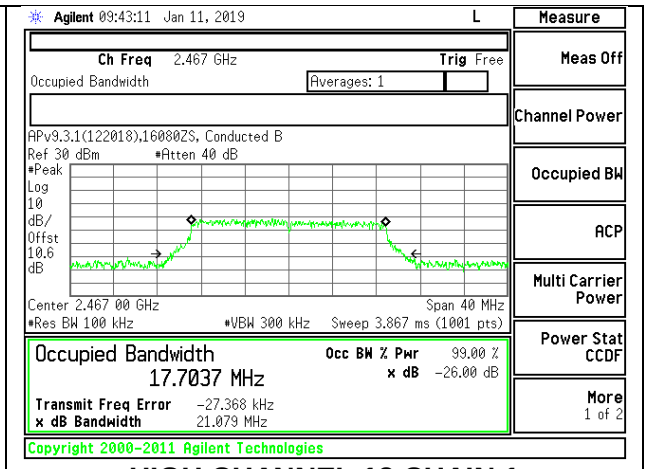
HIGH CHANNEL 12

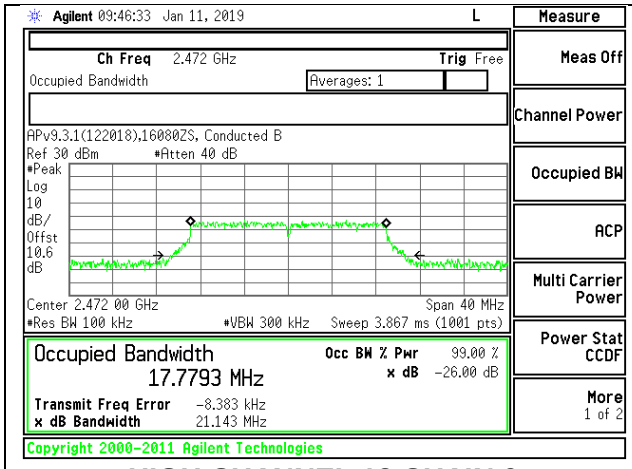


HIGH CHANNEL 12 CHAIN 0

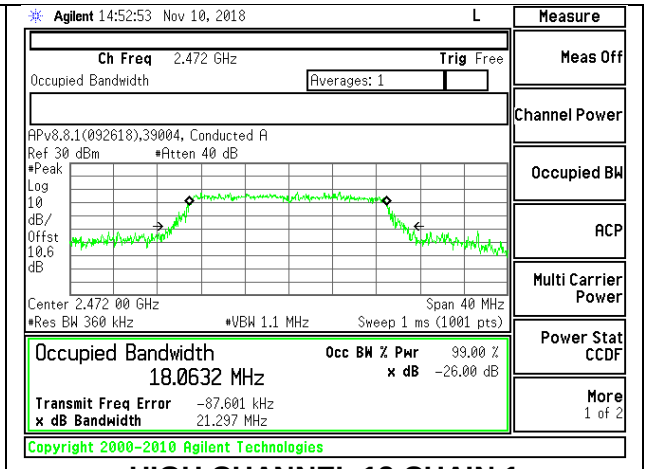


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.2.4. 802.11ax HE20 MODE

2TX Chain 0 + Chain 1 OFDMA MODE – 242-Tones, RU index 61

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	18.9432	18.9901
Mid 6	2437	18.9857	18.9335
High 11	2462	19.0309	19.0383
High 12	2467	18.8931	18.9201
High 13	2472	18.9504	18.9682

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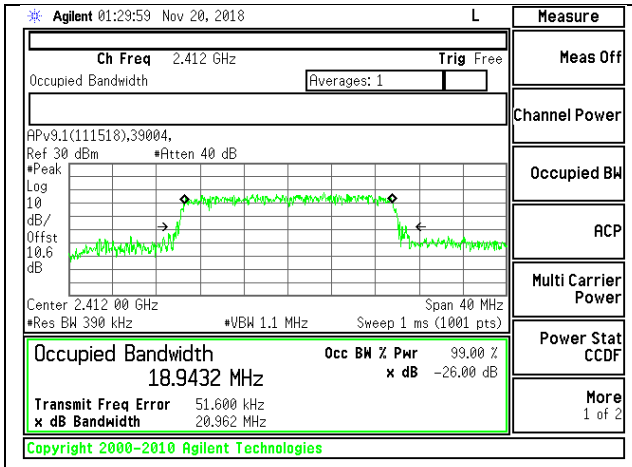
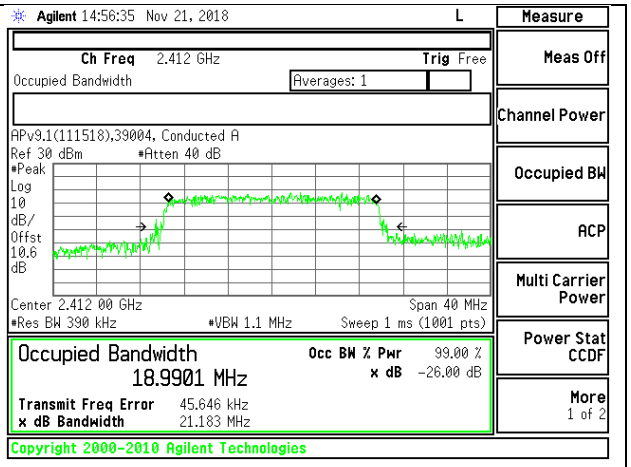
LOW CHANNEL 1

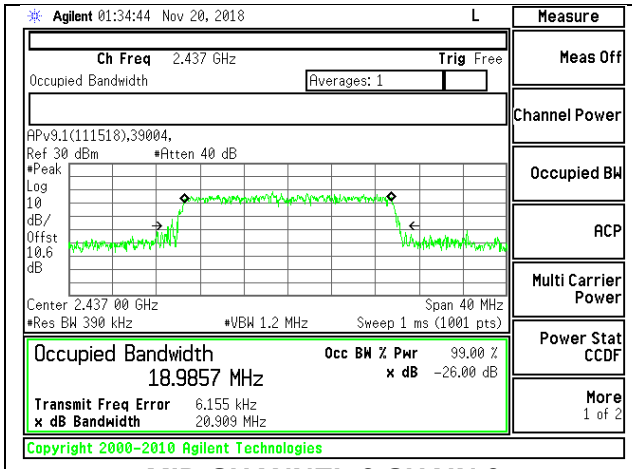


LOW CHANNEL 1 CHAIN 0

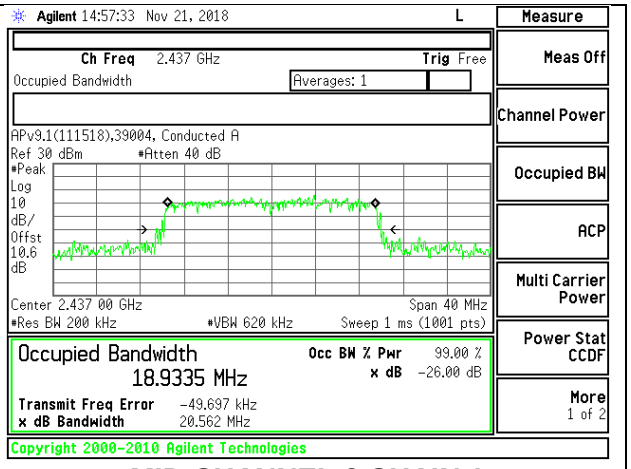


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

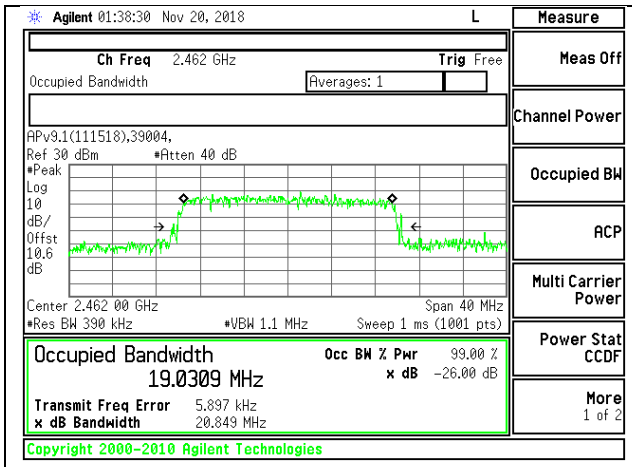


MID CHANNEL 6 CHAIN 0

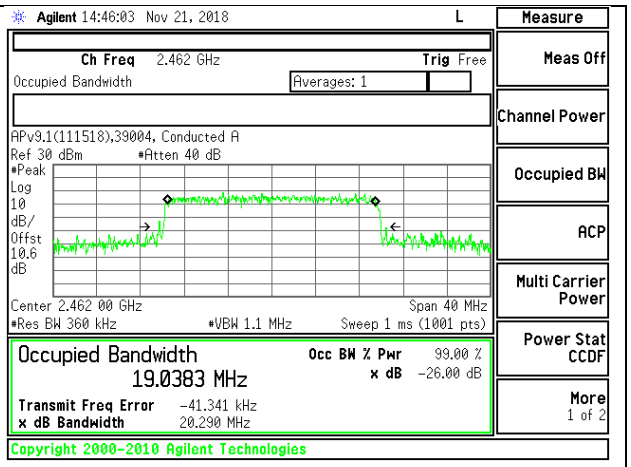


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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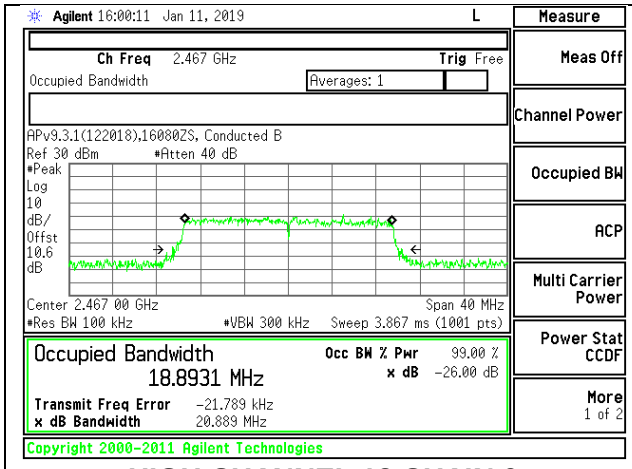
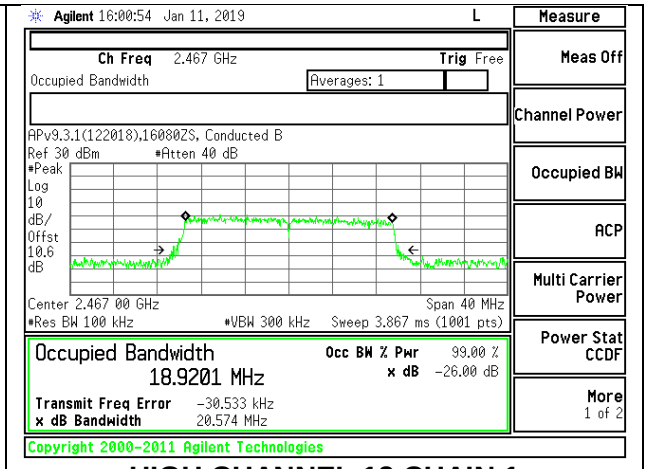
HIGH CHANNEL 12

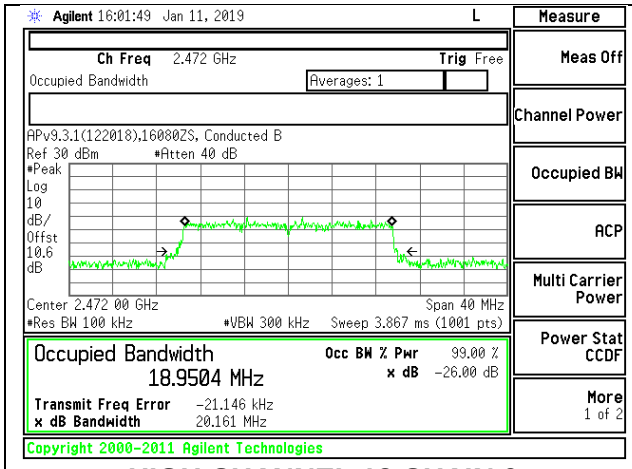


HIGH CHANNEL 12 CHAIN 0

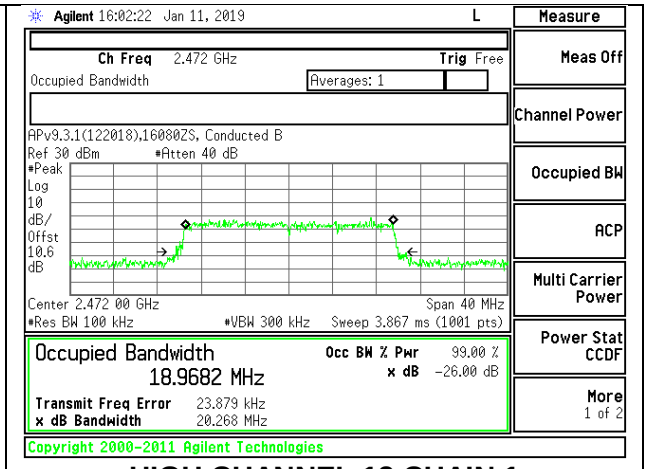


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

RESULTS

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9.3.1. 802.11b MODE

1TX Chain 0 MODE

	(MHz)	(MHz)	(MHz)
Low 1	2412	7.520	0.5
Mid 6	2437	7.560	0.5
High 11	2462	7.120	0.5
High 12	2467	7.080	0.5
High 13	2472	6.440	0.5

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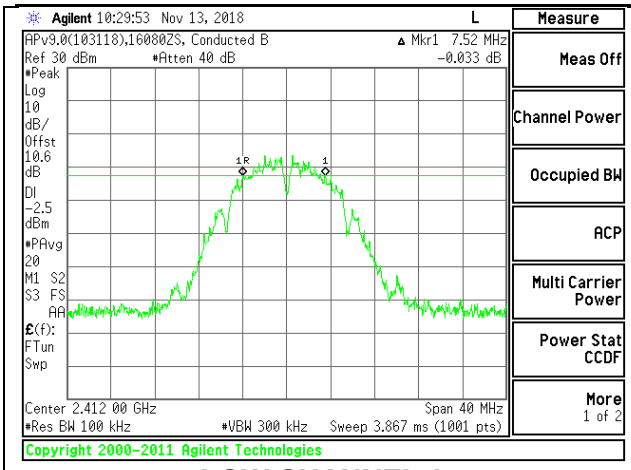
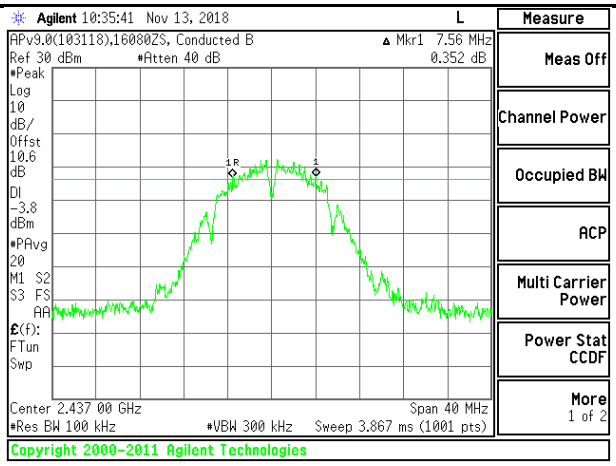
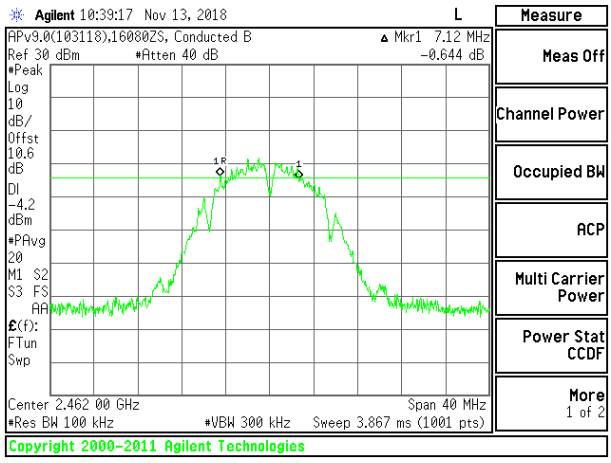


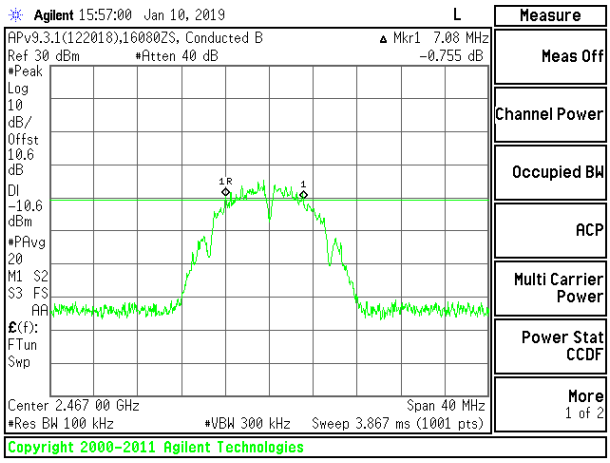
LOW CHANNEL 1



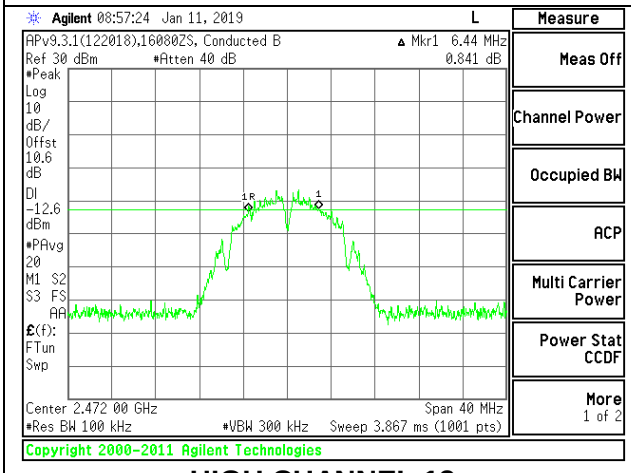
MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 12



HIGH CHANNEL 13

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1TX Chain 1 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	7.120	0.5
Mid 6	2437	7.080	0.5
High 11	2462	7.560	0.5
High 12	2467	7.080	0.5
High 13	2472	7.560	0.5

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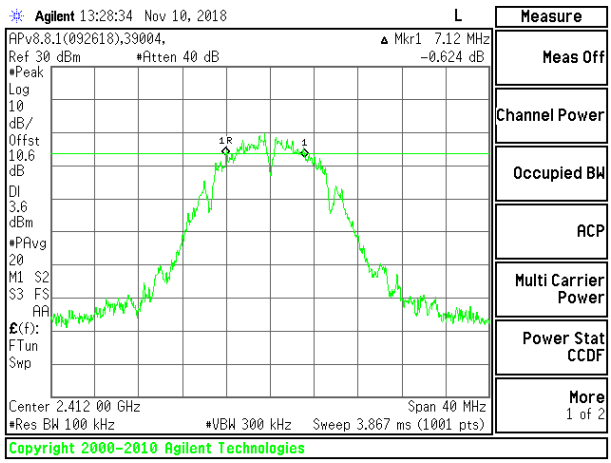
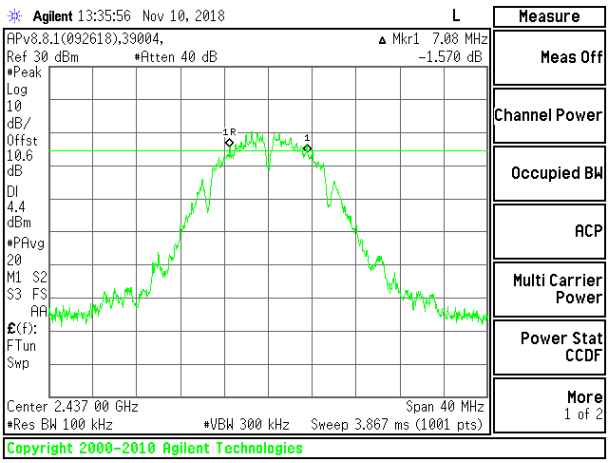
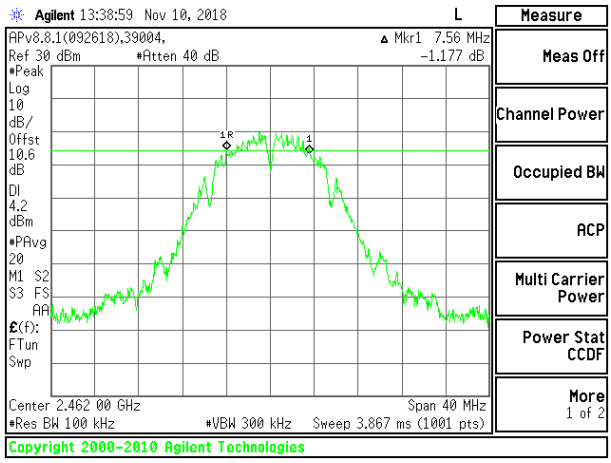


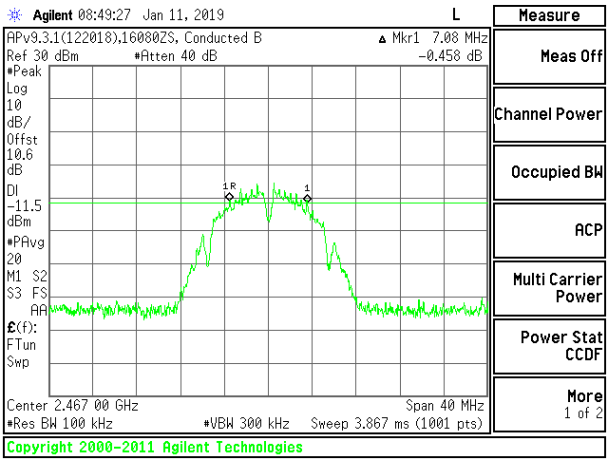
LOW CHANNEL 1



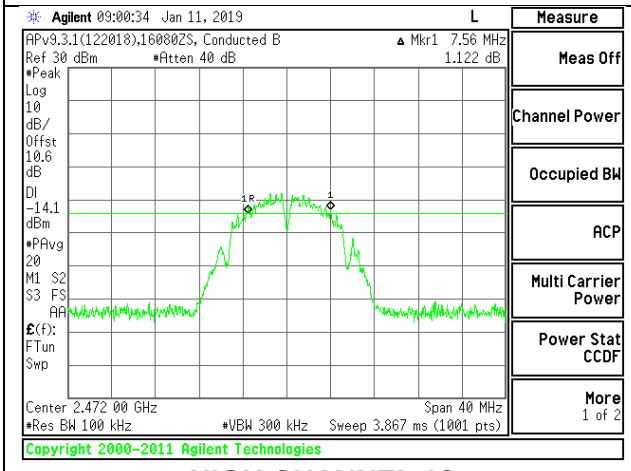
MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 12



HIGH CHANNEL 13

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9.3.2. 802.11g MODE

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	16.360	16.440	0.5
Mid 6	2437	16.400	16.320	0.5
High 11	2462	16.400	16.400	0.5
High 12	2467	16.360	16.360	0.5
High 13	2472	16.440	16.440	0.5

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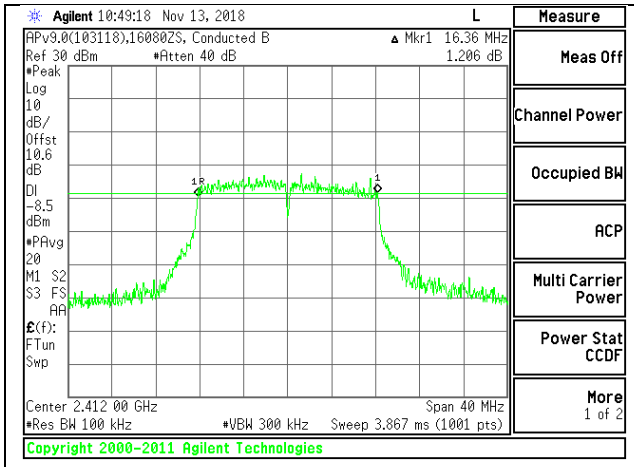
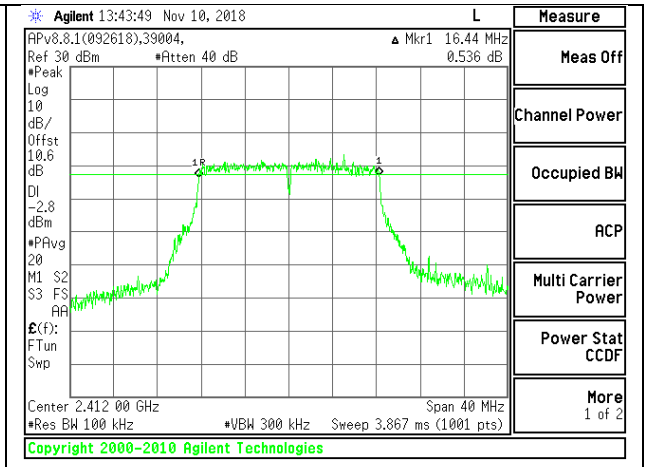
LOW CHANNEL 1

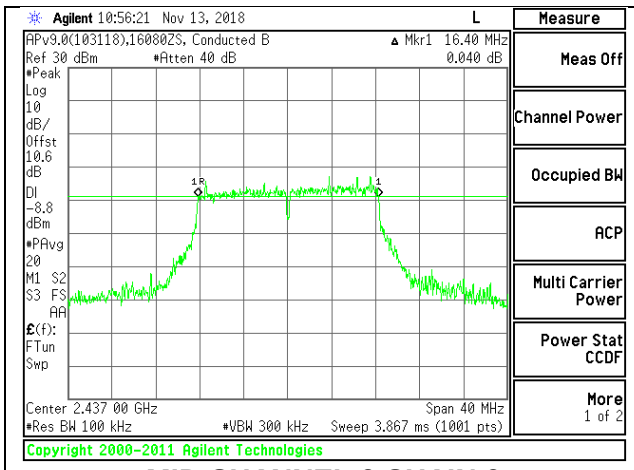


LOW CHANNEL 1 CHAIN 0

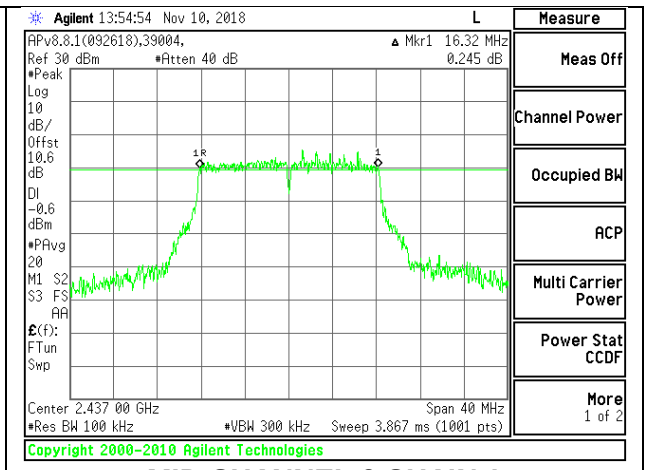


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

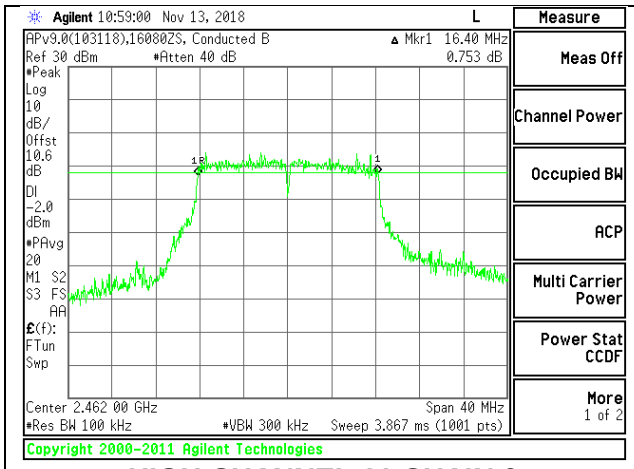


MID CHANNEL 6 CHAIN 0

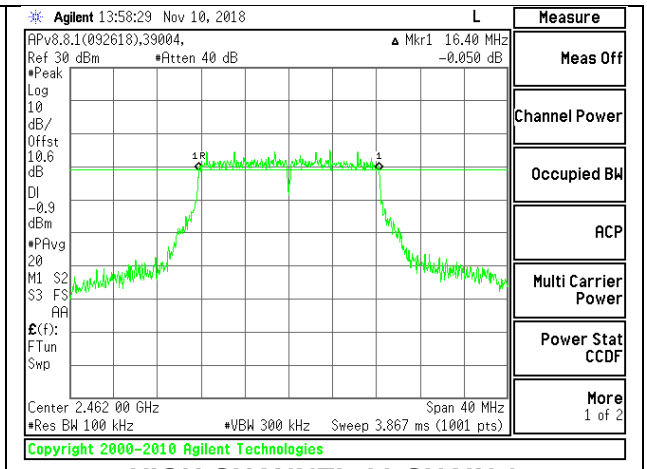


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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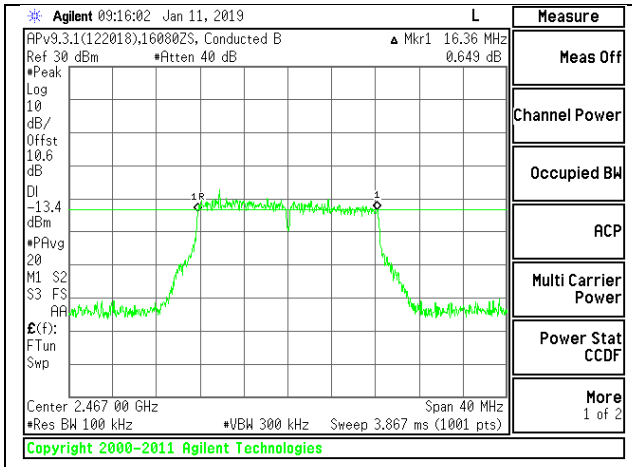
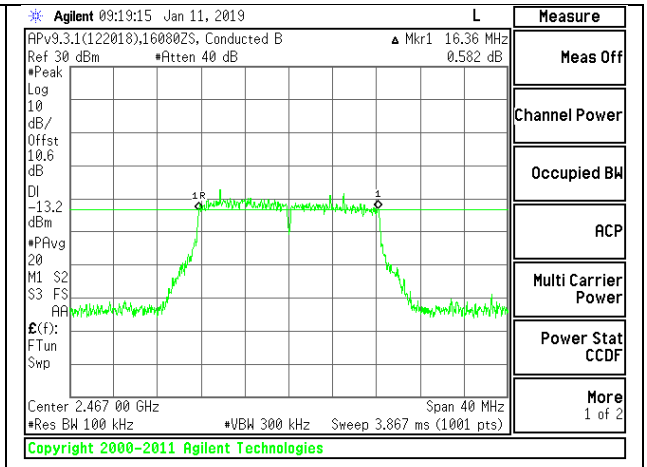
HIGH CHANNEL 12

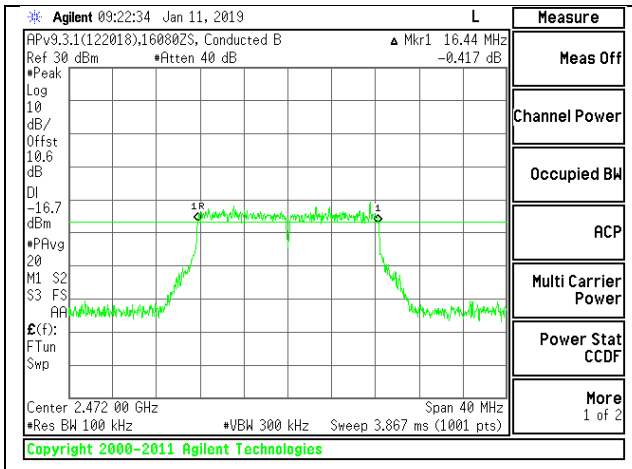


HIGH CHANNEL 12 CHAIN 0

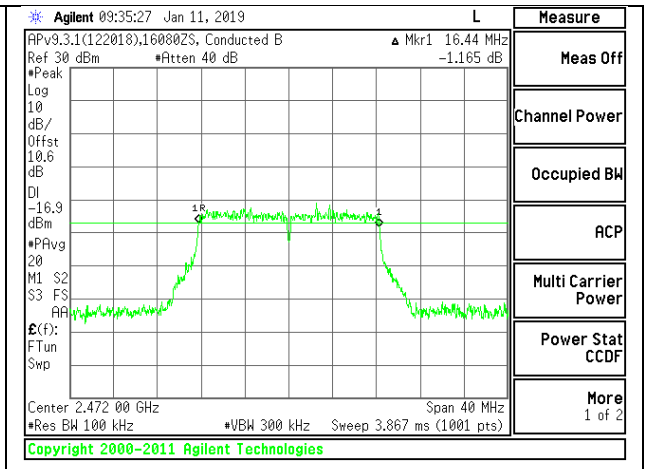


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.3.3. 802.11n HT20 MODE

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	16.6800	17.6000	0.5
Mid 6	2437	17.3200	17.5600	0.5
High 11	2462	16.6800	17.6000	0.5
High 12	2467	17.6400	17.7200	0.5
High 13	2472	17.8000	17.6000	0.5

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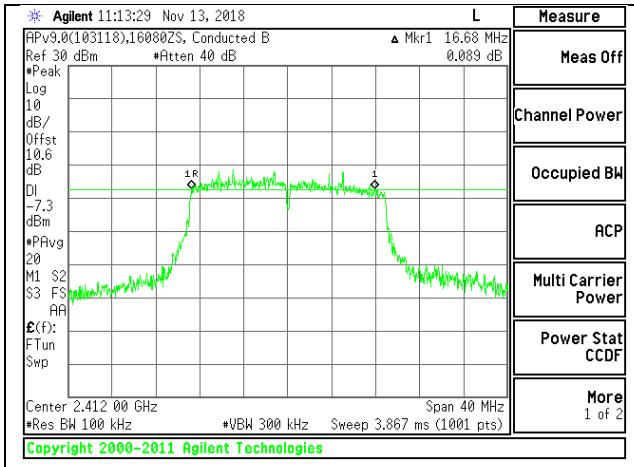
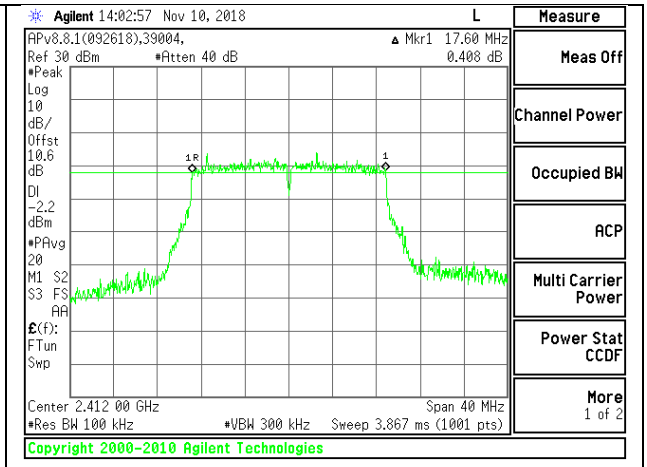
LOW CHANNEL 1

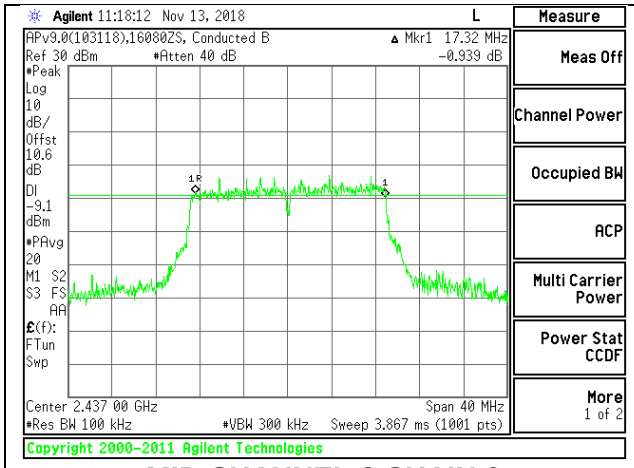


LOW CHANNEL 1 CHAIN 0

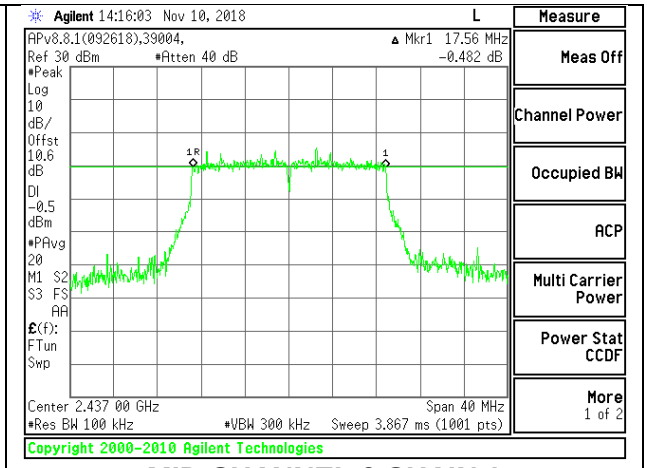


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

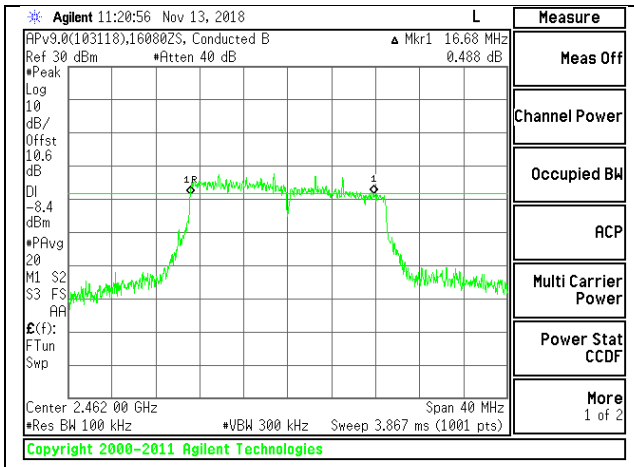


MID CHANNEL 6 CHAIN 0

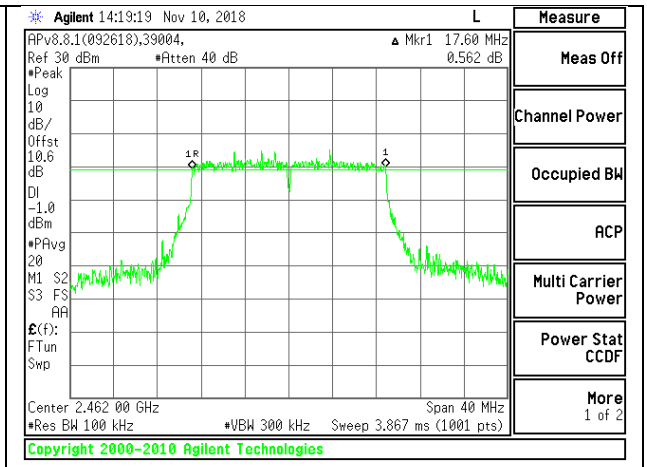


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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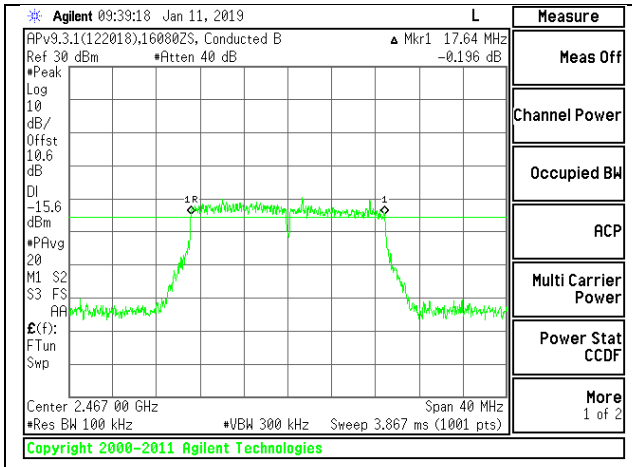
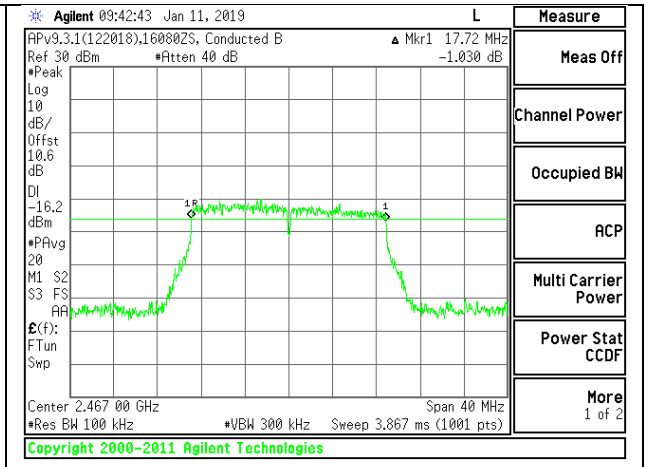
HIGH CHANNEL 12

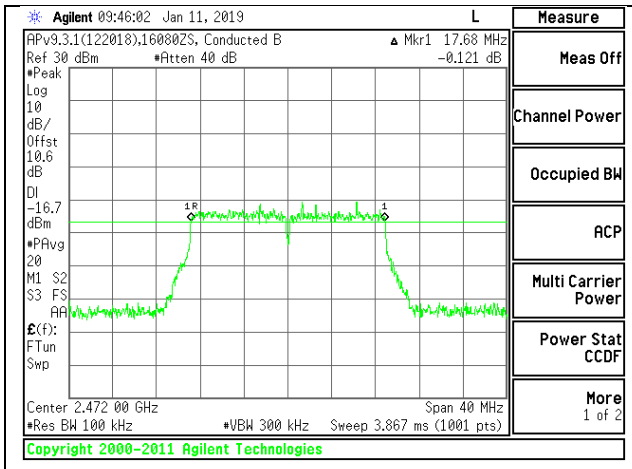


HIGH CHANNEL 12 CHAIN 0

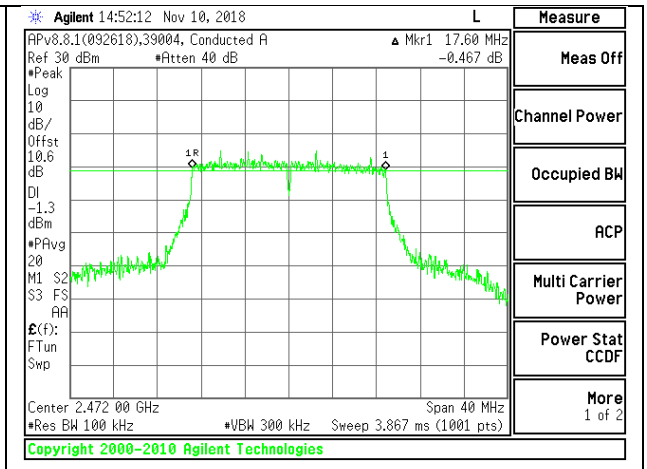


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.3.4. 802.11ax HE20 MODE

2TX Chain 0 + Chain 1 OFDMA MODE– 26-Tones, RU index 0

Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
2412	2.08	2.08	0.5
2437	2.04	2.04	0.5
2462	2.04	2.08	0.5
2467	2.12	2.16	0.5
2472	2.04	2.04	0.5

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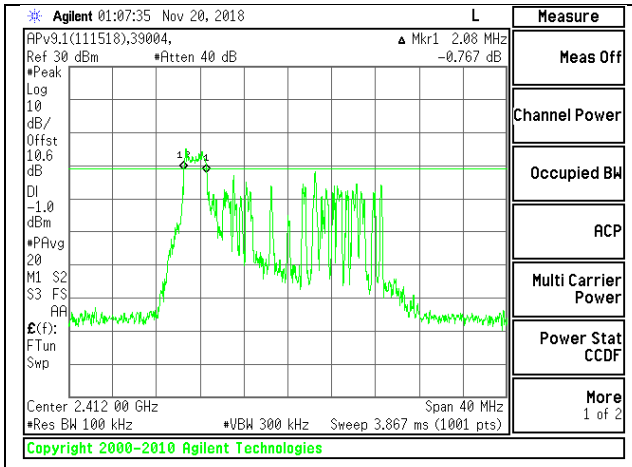
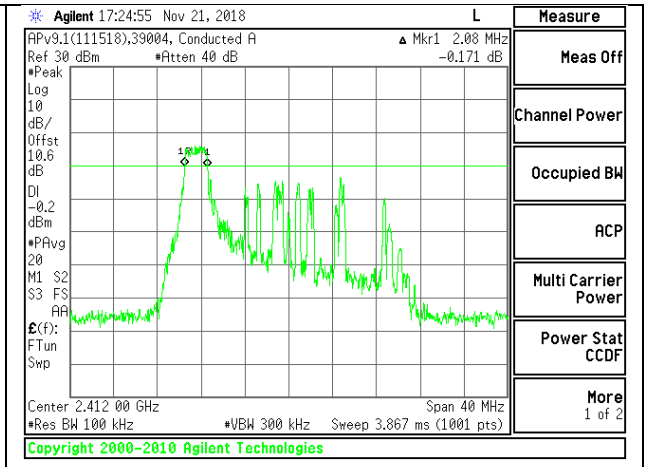
LOW CHANNEL 1

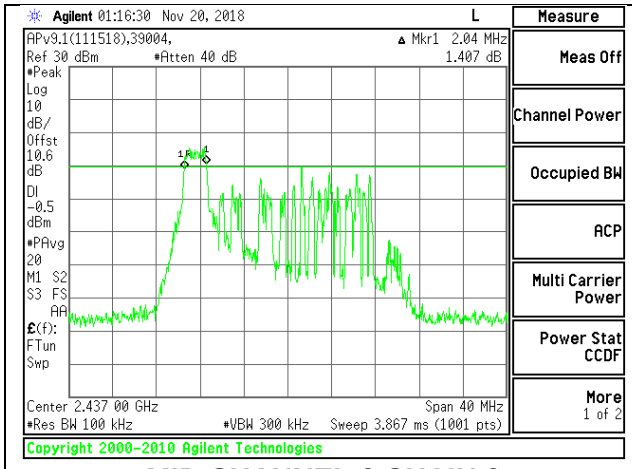


LOW CHANNEL 1 CHAIN 0

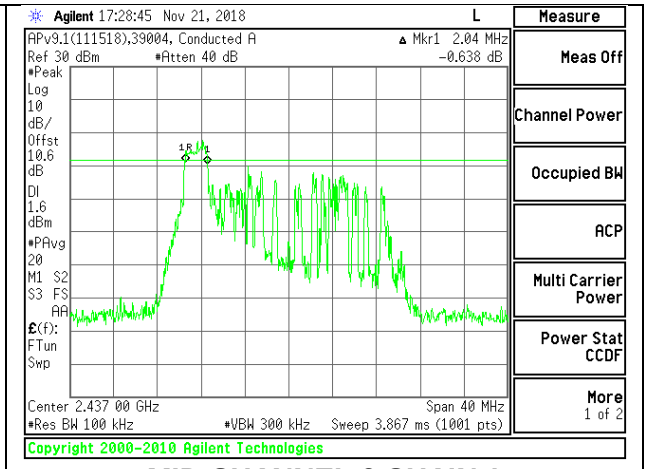


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

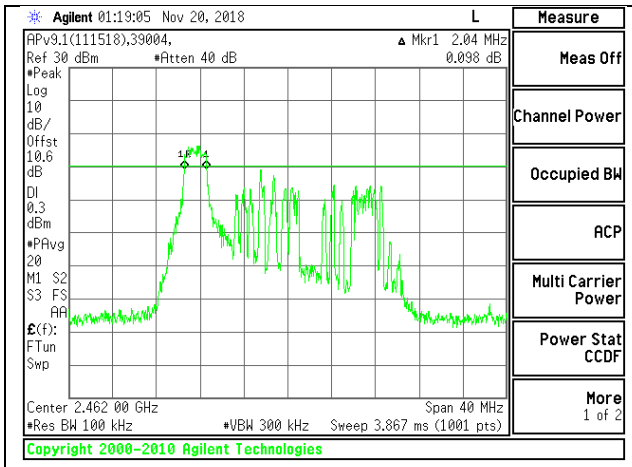


MID CHANNEL 6 CHAIN 0

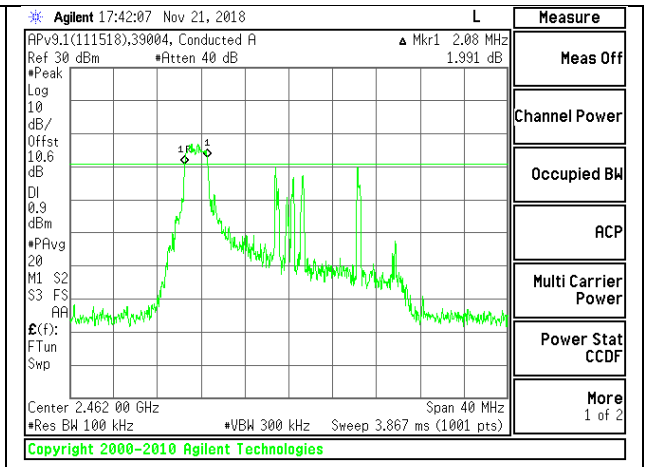


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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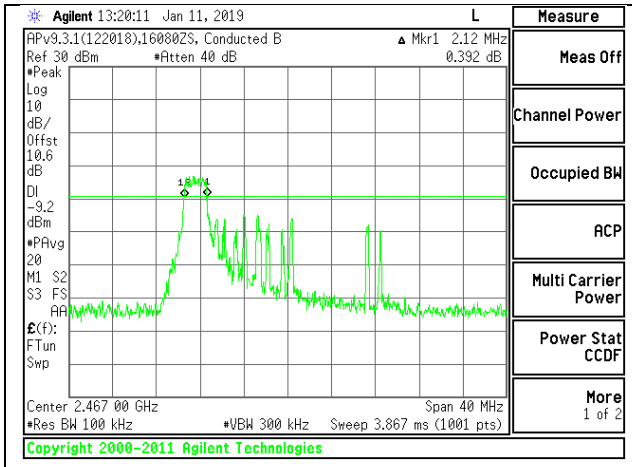
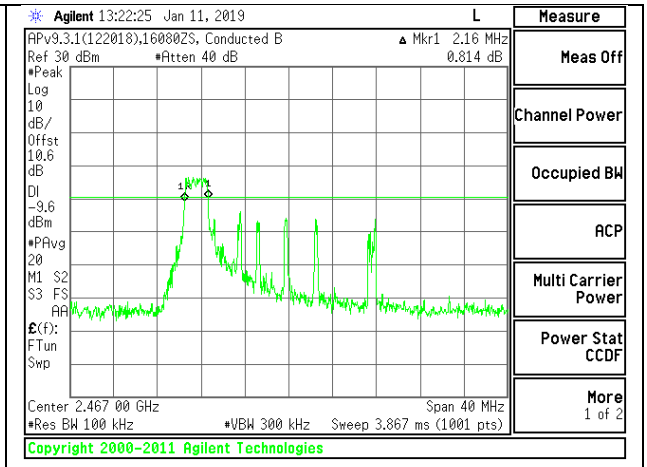
HIGH CHANNEL 12

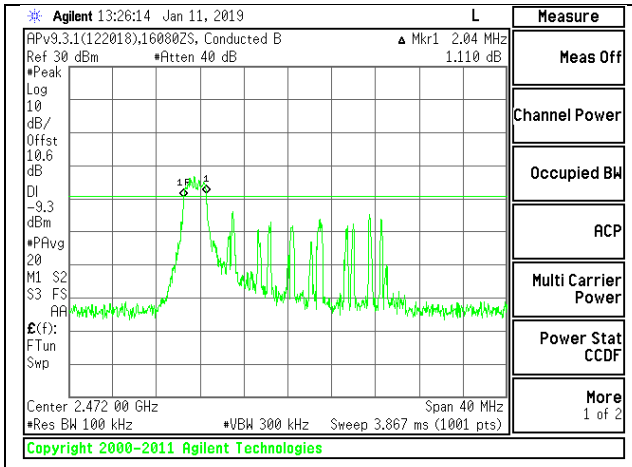


HIGH CHANNEL 12 CHAIN 0

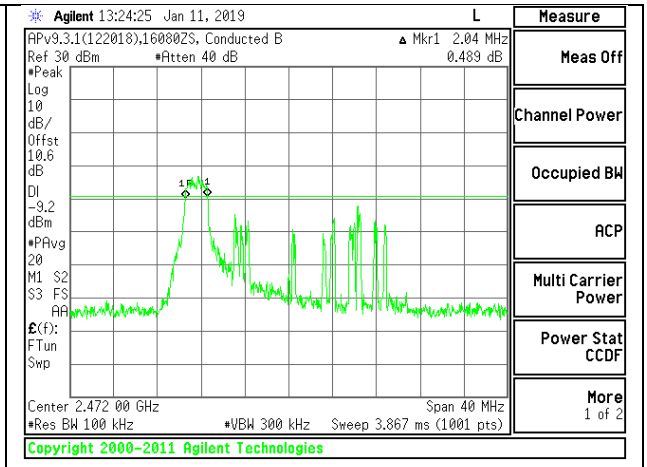


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

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

TEST PROCEDURE

The transmitter output is connected to a power meter. The cable assembly insertion loss was entered as an offset in the power meter to allow for a gated average reading of power.

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DIRECTIONAL ANTENNA GAIN

For 1 TX:
There is only one transmitter output therefore the directional gain is equal to the antenna gain.

For 2 TX:

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

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-1.21	-4.41	-2.52	0.35

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RESULTS

9.4.1. 802.11b MODE

1TX Chain 0 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	18.11	18.11	30.00	-11.89
Mid 6	2437	18.25	18.25	30.00	-11.75
High 11	2462	18.27	18.27	30.00	-11.73
High 12	2467	3.21	3.21	30.00	-26.79
High 13	2472	1.28	1.28	30.00	-28.72

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1TX Chain 1 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	18.25	18.25	30.00	-11.75
Mid 6	2437	18.43	18.43	30.00	-11.57
High 11	2462	18.36	18.36	30.00	-11.64
High 12	2467	3.42	3.42	30.00	-26.58
High 13	2472	1.31	1.31	30.00	-28.69

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9.4.2. 802.11g MODE

1TX Chain 0 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	14.32	14.32	30.00	-15.68
Mid 6	2437	16.05	16.05	30.00	-13.95
High 11	2462	13.83	13.83	30.00	-16.17
High 12	2467	3.14	3.14	30.00	-26.86
High 13	2472	1.18	1.18	30.00	-28.82

1TX Chain 1 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	14.43	14.43	30.00	-15.57
Mid 6	2437	16.24	16.24	30.00	-13.76

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2TX Chain 0 + Chain 1 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	14.34	15.20	17.80	30.00	-12.20
Mid 6	2437	16.25	16.97	19.64	30.00	-10.36
High 11	2462	13.85	15.12	17.54	30.00	-12.46
High 12	2467	3.20	3.46	6.34	30.00	-23.66
High 13	2472	1.28	1.02	4.16	30.00	-25.84

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9.4.3. 802.11n HT20 MODE

1TX Chain 0 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	14.78	14.78	30.00	-15.22
Mid 6	2437	15.33	15.33	30.00	-14.67
High 11	2462	13.47	13.47	30.00	-16.53
High 12	2467	3.09	3.09	30.00	-26.91
High 13	2472	1.21	1.21	30.00	-28.79

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1TX Chain 1 MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.03	15.03	30.00	-14.97
Mid 6	2437	15.54	15.54	30.00	-14.46
High 11	2462	13.72	13.72	30.00	-16.28
High 12	2467	3.21	3.21	30.00	-26.79
High 13	2472	1.31	1.31	30.00	-28.69

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2TX Chain 0 + Chain 1 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	14.80	15.14	17.98	30.00	-12.02
Mid 6	2437	16.27	16.68	19.49	30.00	-10.51
High 11	2462	13.52	14.62	17.12	30.00	-12.88
High 12	2467	3.12	3.26	6.20	30.00	-23.80
High 13	2472	1.24	1.40	4.33	30.00	-25.67

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9.4.4. 802.11ax HE20 MODE

1TX Chain 0 SU MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.37	13.37	30.00	-16.63
Mid 6	2437	15.42	15.42	30.00	-14.58
High 11	2462	13.85	13.85	30.00	-16.15
High 12	2467	3.31	3.31	30.00	-26.69
High 13	2472	1.02	1.02	30.00	-28.98

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1TX Chain 1 SU MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.48	13.48	30.00	-16.52
Mid 6	2437	15.55	15.55	30.00	-14.45
High 11	2462	14.06	14.06	30.00	-15.94
High 12	2467	3.41	3.41	30.00	-26.59
High 13	2472	1.33	1.33	30.00	-28.67

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2TX Chain 0 + Chain 1 SU MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	14.41	14.76	17.60	30.00	-12.40
Mid 6	2437	16.07	16.55	19.33	30.00	-10.67
High 11	2462	14.76	15.08	17.93	30.00	-12.07
High 12	2467	3.39	3.49	6.45	30.00	-23.55
High 13	2472	1.19	1.48	4.35	30.00	-25.65

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1TX Chain 0 OFDMA MODE – 242-Tones, RU index 61

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.02	15.02	30.00	-14.98
Mid 6	2437	16.32	16.32	30.00	-13.68
High 11	2462	14.78	14.78	30.00	-15.22
High 12	2467	3.21	3.21	30.00	-26.79
High 13	2472	1.24	1.24	30.00	-28.76

1TX Chain 1 OFDMA MODE – 242-Tones, RU index 61

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.05	15.05	30.00	-14.95
Mid 6	2437	16.53	16.53	30.00	-13.47
High 11	2462	14.96	14.96	30.00	-15.04
High 12	2467	3.33	3.33	30.00	-26.67
High 13	2472	1.22	1.22	30.00	-28.78

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2TX Chain 0 + Chain 1 OFDMA MODE – 242-Tones, RU index 61

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	15.05	15.08	18.08	30.00	-11.92
Mid 6	2437	16.48	16.78	19.64	30.00	-10.36
High 11	2462	14.86	15.09	17.99	30.00	-12.01
High 12	2467	3.32	3.41	6.38	30.00	-23.62
High 13	2472	1.37	1.31	4.35	30.00	-25.65

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1TX Chain 0 OFDMA MODE – 106-Tones, RU index 53

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.40	15.40	30.00	-14.60
Mid 6	2437	15.34	15.34	30.00	-14.66
High 11	2462	15.34	15.34	30.00	-14.66
High 12	2467	2.74	2.74	30.00	-27.26
High 13	2472	1.22	1.22	30.00	-28.78

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1TX Chain 1 OFDMA MODE – 106-Tones, RU index 53

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.68	15.68	30.00	-14.32
Mid 6	2437	15.61	15.61	30.00	-14.39
High 11	2462	15.40	15.40	30.00	-14.60
High 12	2467	2.77	2.77	30.00	-27.23
High 13	2472	1.27	1.27	30.00	-28.73

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2TX Chain 0 + Chain 1 OFDMA MODE – 106-Tones, RU index 53

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)
Low 1	2412	15.48	15.76	18.63	30.00	-11.37
Mid 6	2437	15.45	15.72	18.60	30.00	-11.40
High 11	2462	15.39	15.47	18.44	30.00	-11.56
High 12	2467	2.82	2.86	5.85	30.00	-24.15
High 13	2472	1.36	1.41	4.40	30.00	-25.60

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1TX Chain 0 OFDMA MODE – 106-Tones, RU index 54

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.37	15.37	30.00	-14.63
Mid 6	2437	15.25	15.25	30.00	-14.75
High 11	2462	15.39	15.39	30.00	-14.61
High 12	2467	3.21	3.21	30.00	-26.79
High 13	2472	0.72	0.72	30.00	-29.28

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1TX Chain 1 OFDMA MODE – 106-Tones, RU index 54

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.45	15.45	30.00	-14.55
Mid 6	2437	15.58	15.58	30.00	-14.42
High 11	2462	15.44	15.44	30.00	-14.56
High 12	2467	3.30	3.30	30.00	-26.70
High 13	2472	0.78	0.78	30.00	-29.22

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2TX Chain 0 + Chain 1 OFDMA MODE – 106-Tones, RU index 54

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)
Low 1	2412	15.45	15.67	18.57	30.00	-11.43
Mid 6	2437	15.51	15.72	18.63	30.00	-11.37
High 11	2462	15.42	15.48	18.46	30.00	-11.54
High 12	2467	3.33	3.43	6.39	30.00	-23.61
High 13	2472	0.84	0.93	3.90	30.00	-26.10

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1TX Chain 0 OFDMA MODE – 52-Tones, RU index 37

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	12.36	12.36	30.00	-17.64
Mid 6	2437	12.36	12.36	30.00	-17.64
High 11	2462	12.44	12.44	30.00	-17.56
High 12	2467	2.71	2.71	30.00	-27.29
High 13	2472	0.61	0.61	30.00	-29.39

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1TX Chain 1 OFDMA MODE – 52-Tones, RU index 37

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	12.66	12.66	30.00	-17.34
Mid 6	2437	12.59	12.59	30.00	-17.41
High 11	2462	12.63	12.63	30.00	-17.37
High 12	2467	3.30	3.30	30.00	-26.70
High 13	2472	0.74	0.74	30.00	-29.26

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2TX Chain 0 + Chain 1 OFDMA MODE – 52-Tones, RU index 37

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	12.45	12.75	15.61	30.00	-14.39
Mid 6	2437	12.40	12.68	15.55	30.00	-14.45
High 11	2462	12.52	12.71	15.63	30.00	-14.37
High 12	2467	2.80	3.42	6.13	30.00	-23.87
High 13	2472	0.78	0.80	3.80	30.00	-26.20

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1TX Chain 0 OFDMA MODE – 52-Tones, RU index 38/39

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	12.41	12.41	30.00	-17.59
Mid 6	2437	12.22	12.22	30.00	-17.78
High 11	2462	12.38	12.38	30.00	-17.62
High 12	2467	2.88	2.88	30.00	-27.12
High 13	2472	1.03	1.03	30.00	-28.97

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1TX Chain 1 OFDMA MODE – 52-Tones, RU index 38/39

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	12.80	12.80	30.00	-17.20
Mid 6	2437	12.65	12.65	30.00	-17.35
High 11	2462	12.63	12.63	30.00	-17.37
High 12	2467	2.92	2.92	30.00	-27.08
High 13	2472	1.15	1.15	30.00	-28.85

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2TX Chain 0 + Chain 1 OFDMA MODE – 52-Tones, RU index 38/39

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	12.45	12.97	15.73	30.00	-14.27
Mid 6	2437	12.37	12.86	15.63	30.00	-14.37
High 11	2462	12.43	12.75	15.60	30.00	-14.40
High 12	2467	3.00	3.05	6.04	30.00	-23.96
High 13	2472	1.09	1.28	4.20	30.00	-25.80

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1TX Chain 0 OFDMA MODE – 52-Tones, RU index 40

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	12.39	12.39	30.00	-17.61
Mid 6	2437	12.47	12.47	30.00	-17.53
High 11	2462	12.24	12.24	30.00	-17.76
High 12	2467	2.55	2.55	30.00	-27.45
High 13	2472	1.22	1.22	30.00	-28.78

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1TX Chain 1 OFDMA MODE – 52-Tones, RU index 40

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	12.60	12.60	30.00	-17.40
Mid 6	2437	12.86	12.86	30.00	-17.14
High 11	2462	12.38	12.38	30.00	-17.62
High 12	2467	2.71	2.71	30.00	-27.29
High 13	2472	1.24	1.24	30.00	-28.76

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2TX Chain 0 + Chain 1 OFDMA MODE – 52-Tones, RU index 40

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	12.45	12.78	15.63	30.00	-14.37
Mid 6	2437	12.58	12.96	15.78	30.00	-14.22
High 11	2462	12.35	12.50	15.44	30.00	-14.56
High 12	2467	2.65	2.89	5.78	30.00	-24.22
High 13	2472	1.26	1.30	4.29	30.00	-25.71

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1TX Chain 0 OFDMA MODE – 26-Tones, RU index 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.34	11.34	30.00	-18.66
Mid 6	2437	11.42	11.42	30.00	-18.58
High 11	2462	11.39	11.39	30.00	-18.61
High 12	2467	2.17	2.17	30.00	-27.83
High 13	2472	0.98	0.98	30.00	-29.02

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1TX Chain 1 OFDMA MODE – 26-Tones, RU index 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.40	11.40	30.00	-18.60
Mid 6	2437	11.75	11.75	30.00	-18.25
High 11	2462	11.53	11.53	30.00	-18.47
High 12	2467	2.36	2.36	30.00	-27.64
High 13	2472	0.91	0.91	30.00	-29.09

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2TX Chain 0 + Chain 1 OFDMA MODE – 26-Tones, RU index 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	11.36	11.56	14.47	30.00	-15.53
Mid 6	2437	11.48	11.82	14.66	30.00	-15.34
High 11	2462	11.46	11.65	14.57	30.00	-15.43
High 12	2467	2.24	2.56	5.41	30.00	-24.59
High 13	2472	1.08	0.93	4.02	30.00	-25.98

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1TX Chain 0 OFDMA MODE – 26-Tones, RU index 4

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.45	11.45	30.00	-18.55
Mid 6	2437	11.47	11.47	30.00	-18.53
High 11	2462	11.55	11.55	30.00	-18.45
High 12	2467	3.02	3.02	30.00	-26.98
High 13	2472	1.13	1.13	30.00	-28.87

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1TX Chain 1 OFDMA MODE – 26-Tones, RU index 4

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.58	11.58	30.00	-18.42
Mid 6	2437	11.62	11.62	30.00	-18.38
High 11	2462	11.70	11.70	30.00	-18.30
High 12	2467	2.96	2.96	30.00	-27.04
High 13	2472	1.20	1.20	30.00	-28.80

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2TX Chain 0 + Chain 1 OFDMA MODE – 26-Tones, RU index 4

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	11.48	11.86	14.68	30.00	-15.32
Mid 6	2437	11.51	11.80	14.67	30.00	-15.33
High 11	2462	11.62	11.92	14.78	30.00	-15.22
High 12	2467	3.16	3.23	6.21	30.00	-23.79
High 13	2472	1.22	1.33	4.29	30.00	-25.71

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1TX Chain 0 OFDMA MODE – 26-Tones, RU index 8

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.21	30.00	30	36	30.00
Mid 6	2437	-1.21	30.00	30	36	30.00
High 11	2462	-1.21	30.00	30	36	30.00
High 12	2467	-1.21	30.00	30	36	30.00
High 13	2472	-1.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.55	11.55	30.00	-18.45
Mid 6	2437	11.32	11.32	30.00	-18.68
High 11	2462	11.43	11.43	30.00	-18.57
High 12	2467	2.77	2.77	30.00	-27.23
High 13	2472	1.08	1.08	30.00	-28.92

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1TX Chain 1 OFDMA MODE – 26-Tones, RU index 8

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.41	30.00	30	36	30.00
Mid 6	2437	-4.41	30.00	30	36	30.00
High 11	2462	-4.41	30.00	30	36	30.00
High 12	2467	-4.41	30.00	30	36	30.00
High 13	2472	-4.41	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.67	11.67	30.00	-18.33
Mid 6	2437	11.68	11.68	30.00	-18.32
High 11	2462	11.70	11.70	30.00	-18.30
High 12	2467	2.89	2.89	30.00	-27.11
High 13	2472	1.21	1.21	30.00	-28.79

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2TX Chain 0 + Chain 1 OFDMA MODE – 26-Tones, RU index 8

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.52	30.00	36	30.00
Mid 6	2437	-2.52	30.00	36	30.00
High 11	2462	-2.52	30.00	36	30.00
High 12	2467	-2.52	30.00	36	30.00
High 13	2472	-2.52	30.00	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)	Margi (dB)
Low 1	2412	11.64	11.89	14.78	30.00	-15.22
Mid 6	2437	11.47	11.75	14.62	30.00	-15.38
High 11	2462	11.56	11.82	14.70	30.00	-15.30
High 12	2467	2.91	3.03	5.98	30.00	-24.02
High 13	2472	1.12	1.30	4.22	30.00	-25.78

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9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 30 kHz band during any time interval of continuous transmission.

RESULTS

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9.5.1. 802.11b MODE

1TX Chain 0 MODE

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-2.53	-2.53	8.0	-10.5
Mid 6	2437	-2.49	-2.49	8.0	-10.5
High 11	2462	-3.22	-3.22	8.0	-11.2
High 12	2467	-17.91	-17.91	8.0	-25.9
High 13	2472	-20.29	-20.29	8.0	-28.3

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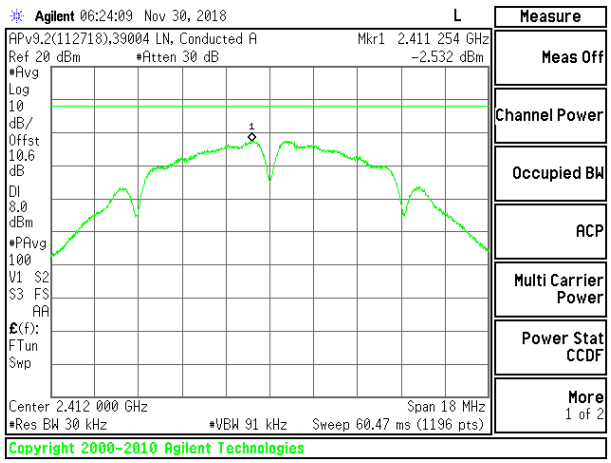
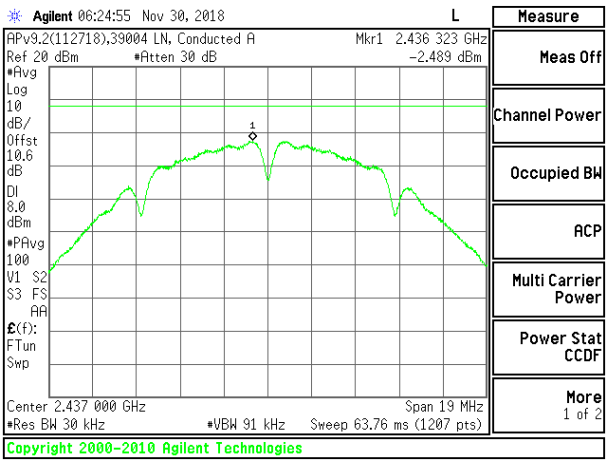
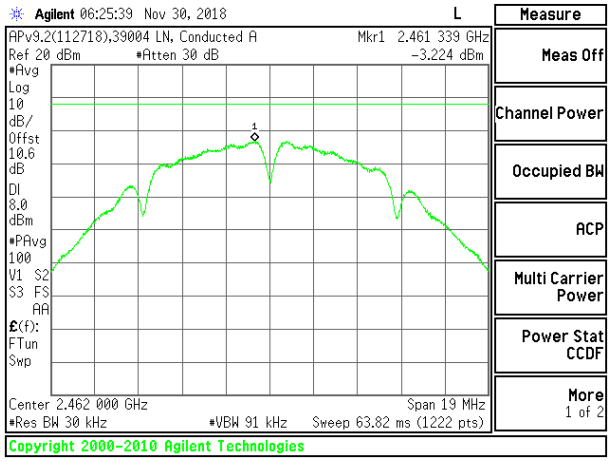


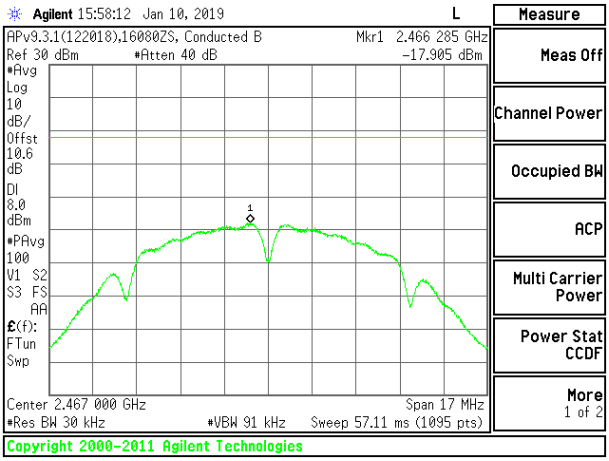
LOW CHANNEL 1



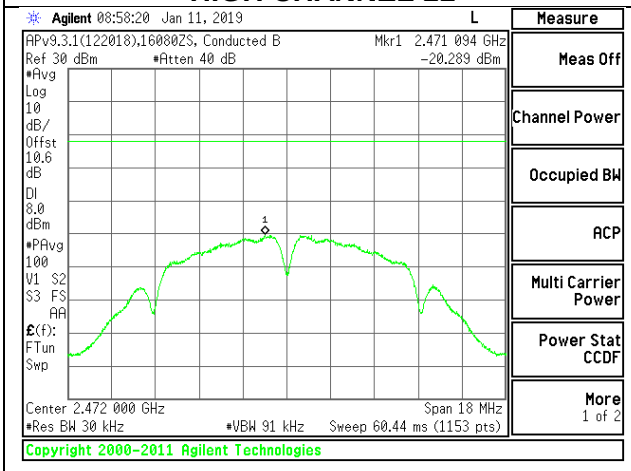
MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 12



HIGH CHANNEL 13

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1TX Chain 1 MODE

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-3.47	-3.47	8.0	-11.5
Mid 6	2437	-3.26	-3.26	8.0	-11.3
High 11	2462	-3.09	-3.09	8.0	-11.1
High 12	2467	-19.05	-19.05	8.0	-27.1
High 13	2472	-20.33	-20.33	8.0	-28.3

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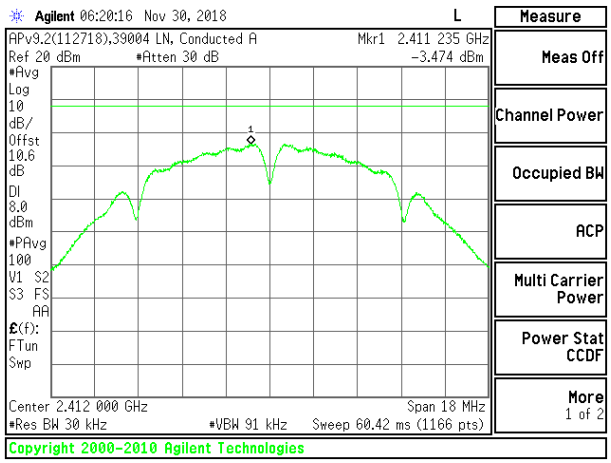
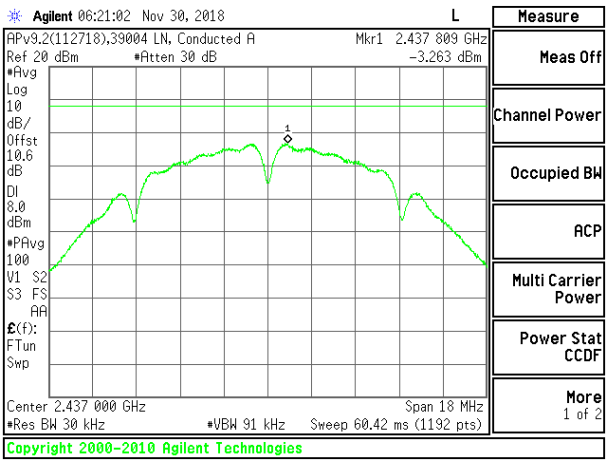


LOW CHANNEL 1



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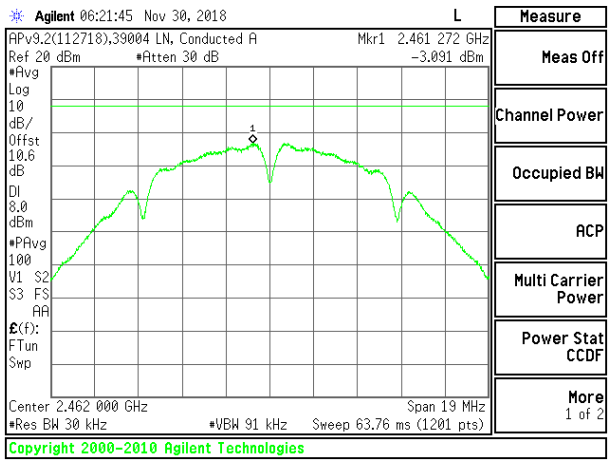
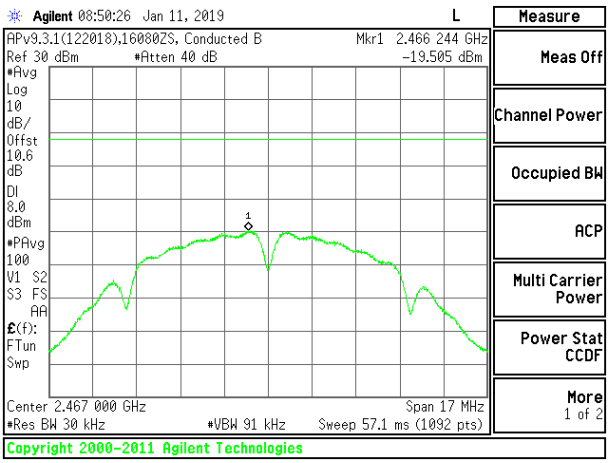
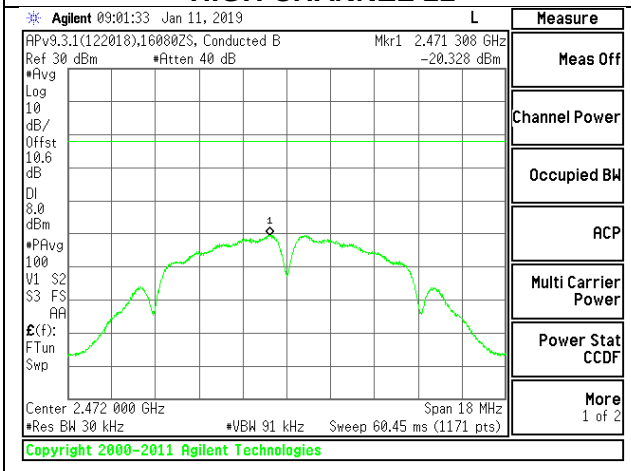


HIGH CHANNEL 11



HIGH CHANNEL 12



HIGH CHANNEL 13

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9.5.2. 802.11g MODE

2TX Chain 0 + Chain 1 CDD MODE

Duty Cycle CF (dB)	0.29	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-8.55	-8.24	-5.09	8.0	-13.1
Mid 6	2437	-9.65	-9.28	-6.16	8.0	-14.2
High 11	2462	-7.84	-8.27	-4.75	8.0	-12.8
High 12	2467	-20.13	-20.00	-16.77	8.0	-24.8
High 13	2472	-22.94	-23.25	-19.79	8.0	-27.8

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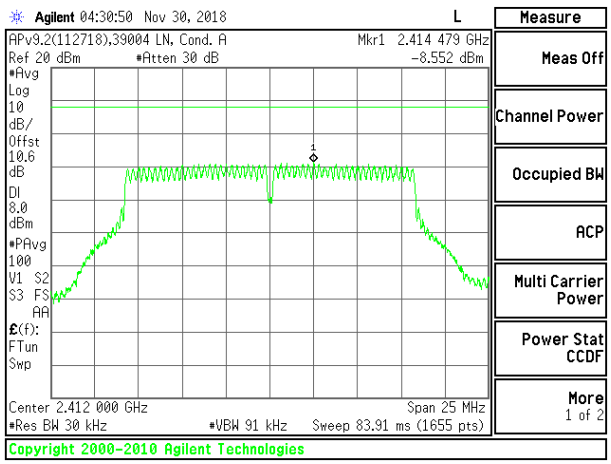
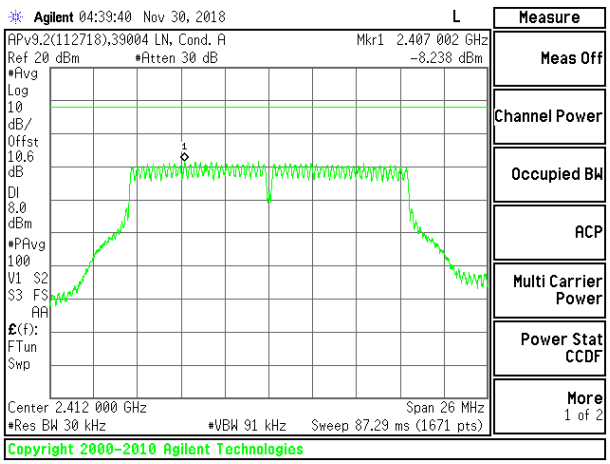
LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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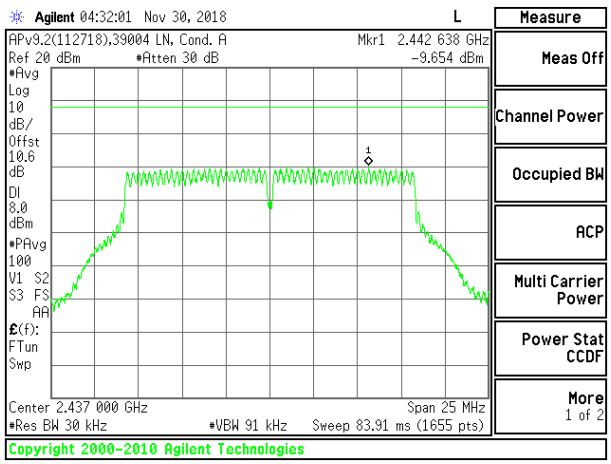
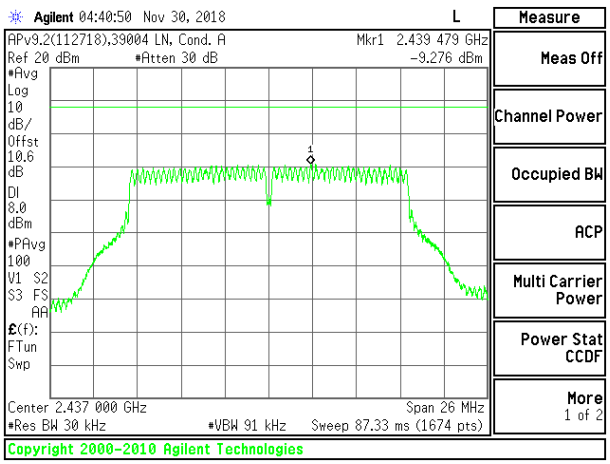
MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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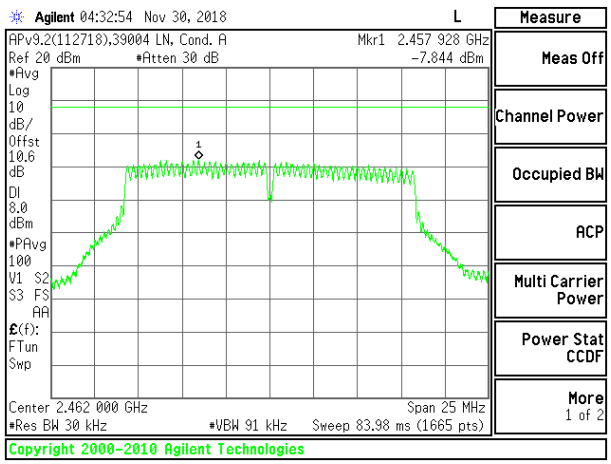
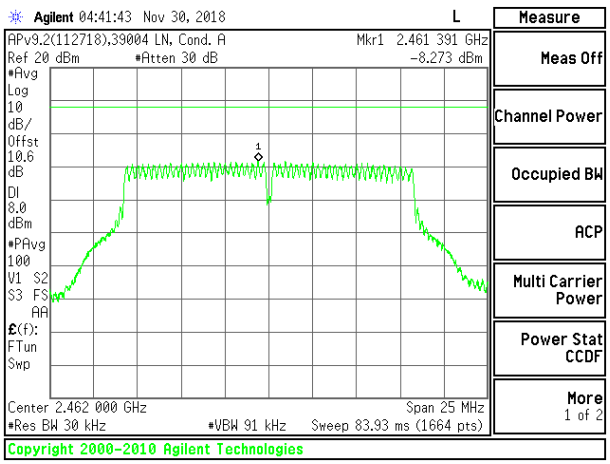
HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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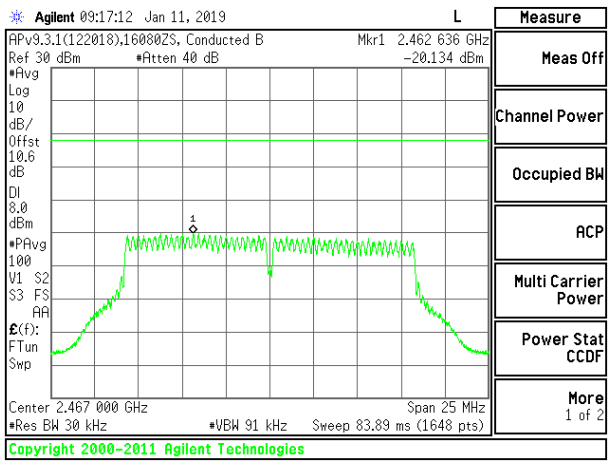
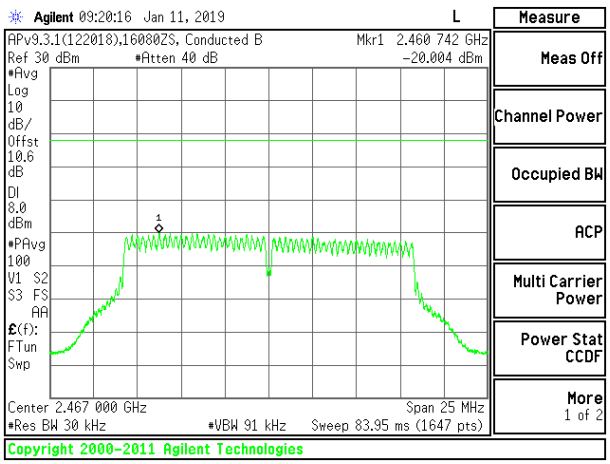
HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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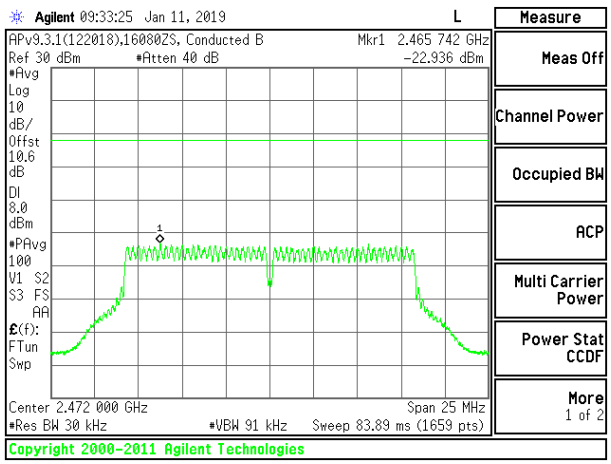
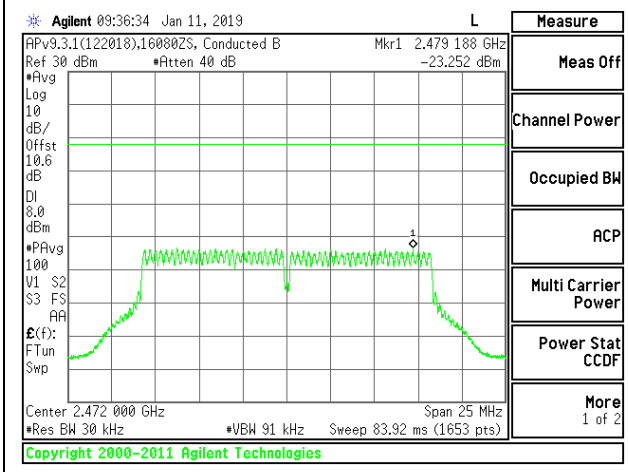
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.5.3. 802.11n HT20 MODE

2TX Chain 0 + Chain 1 CDD MODE

Duty Cycle CF (dB)	0.31	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-9.71	-9.33	-6.19	8.0	-14.2
Mid 6	2437	-9.45	-8.97	-5.88	8.0	-13.9
High 11	2462	-10.00	-10.09	-6.72	8.0	-14.7
High 12	2467	-21.75	-21.49	-18.30	8.0	-26.3
High 13	2472	-23.37	-9.23	-8.76	8.0	-16.8

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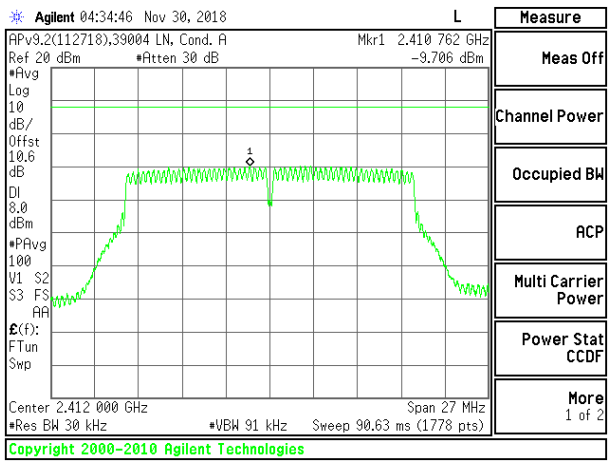
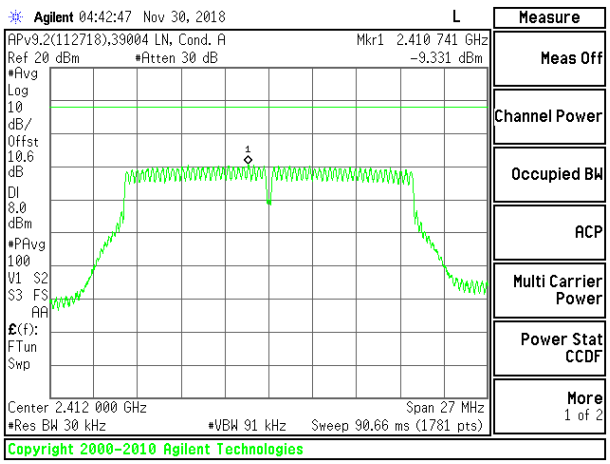
LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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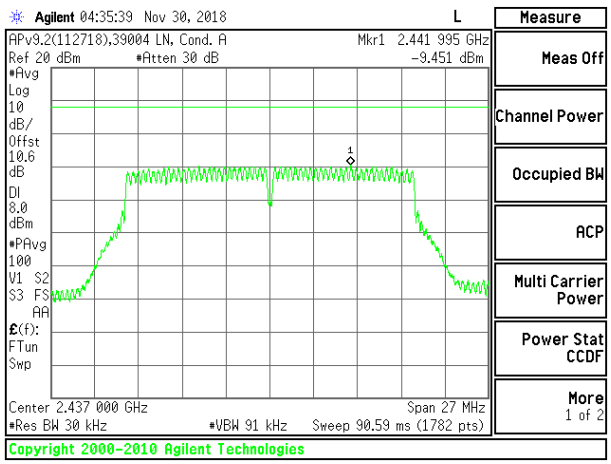
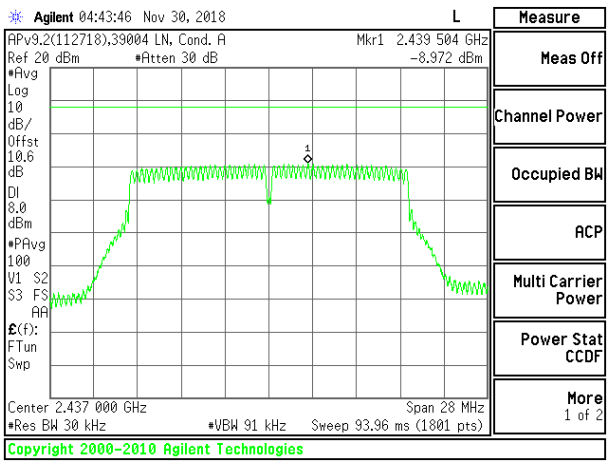
MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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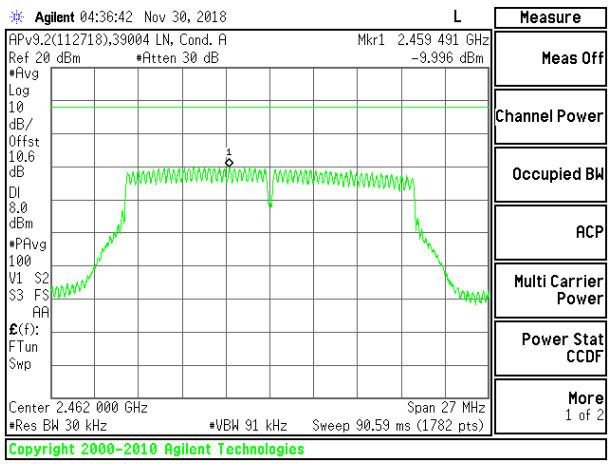
HIGH CHANNEL 11



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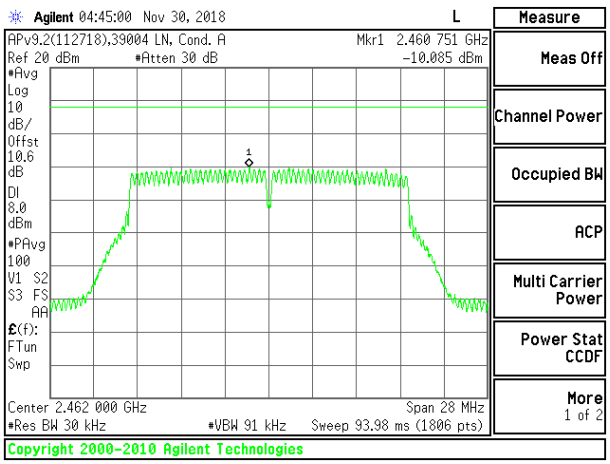

HIGH CHANNEL 11 CHAIN 1

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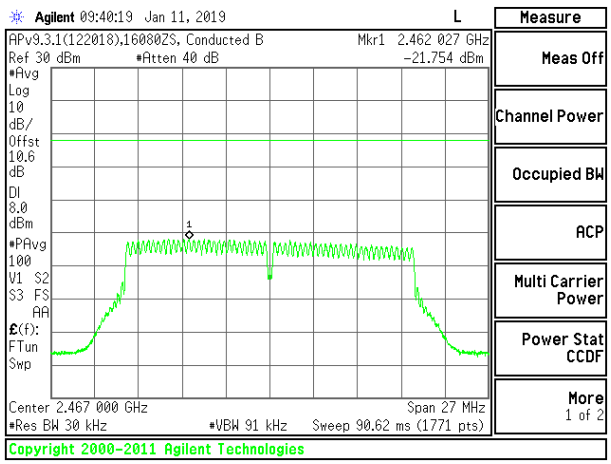
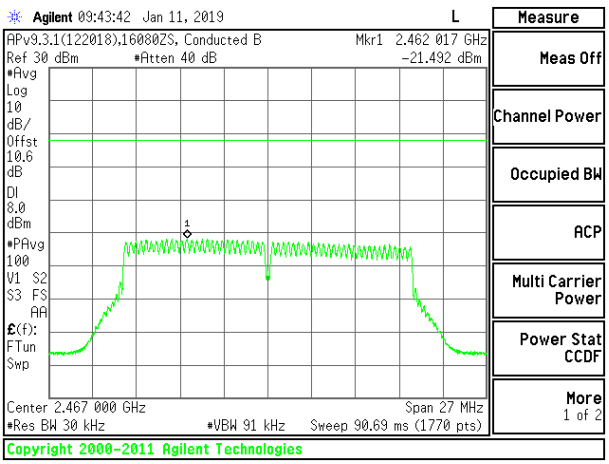
HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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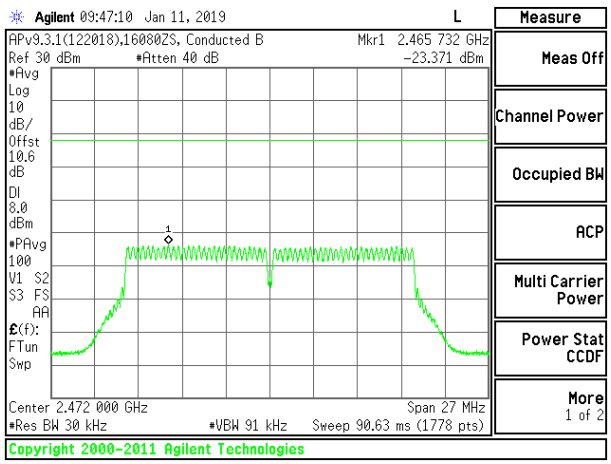
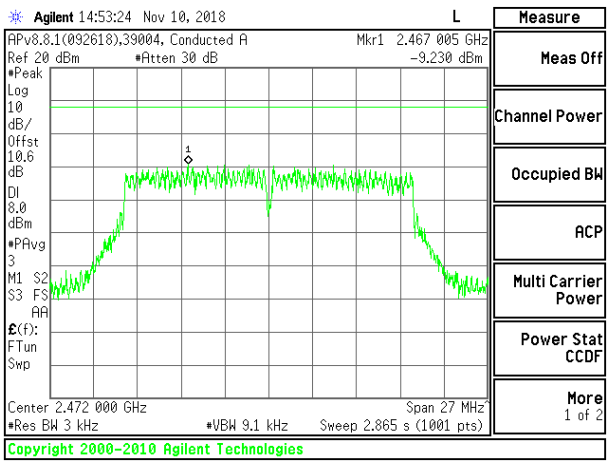
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.5.4. 802.11ax HE20 MODE

2TX Chain 0 + Chain 1 OFDMA MODE – 242-Tones, RU Index 61

Duty Cycle CF (dB)	0.67	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-11.682	-11.549	-7.93	8.0	-15.9
Mid 6	2437	-12.299	-10.945	-7.89	8.0	-15.9
High 11	2462	-11.632	-11.001	-7.62	8.0	-15.6
High 12	2467	-22.50	-21.26	-18.15	8.0	-26.2
High 13	2472	-24.03	-24.12	-20.39	8.0	-28.4

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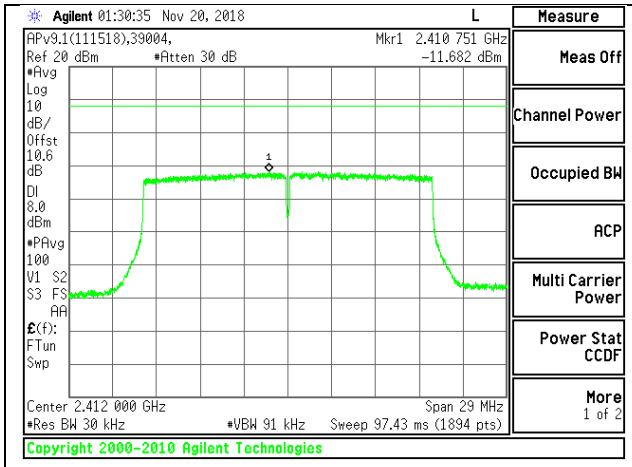
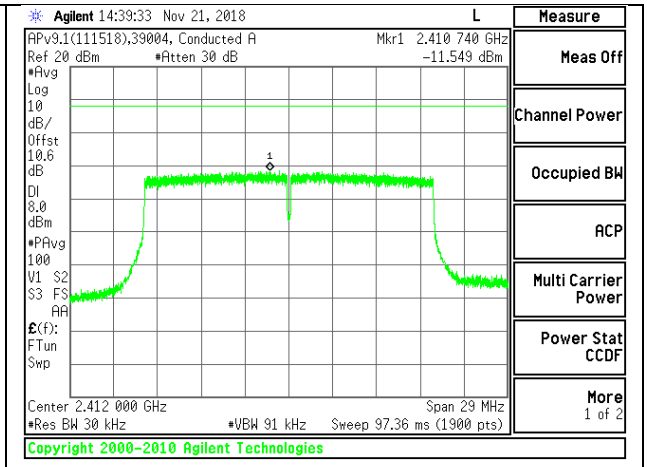
LOW CHANNEL 1

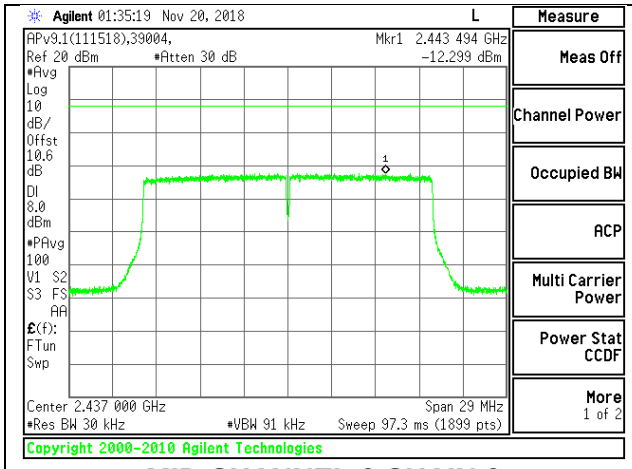


LOW CHANNEL 1 CHAIN 0

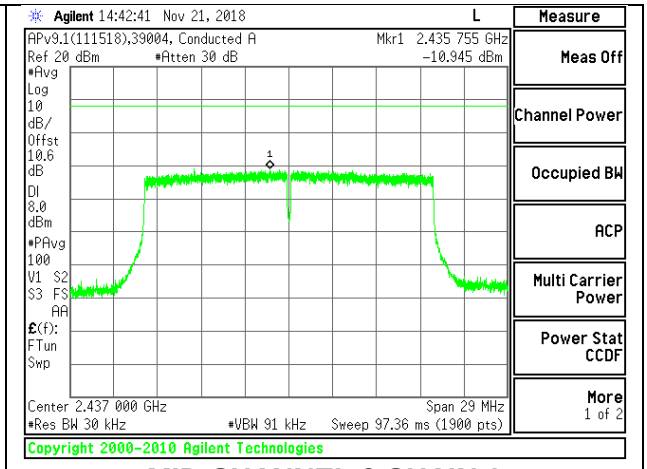


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

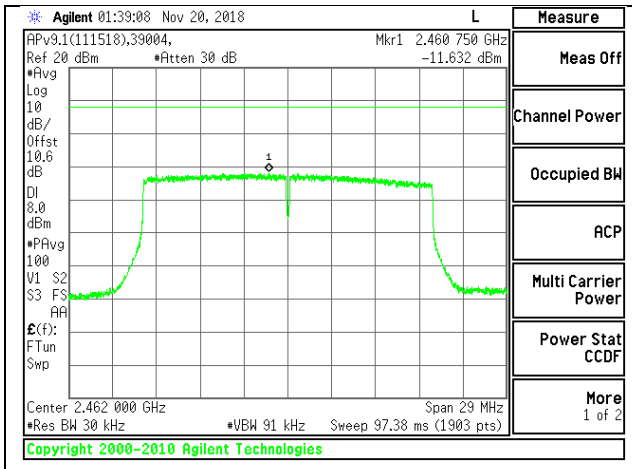


MID CHANNEL 6 CHAIN 0

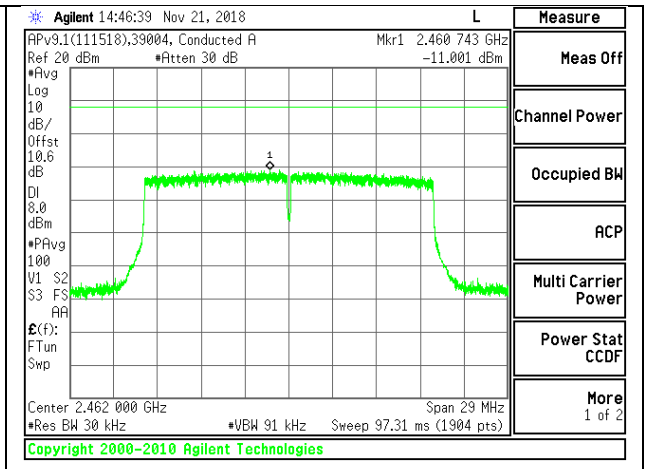


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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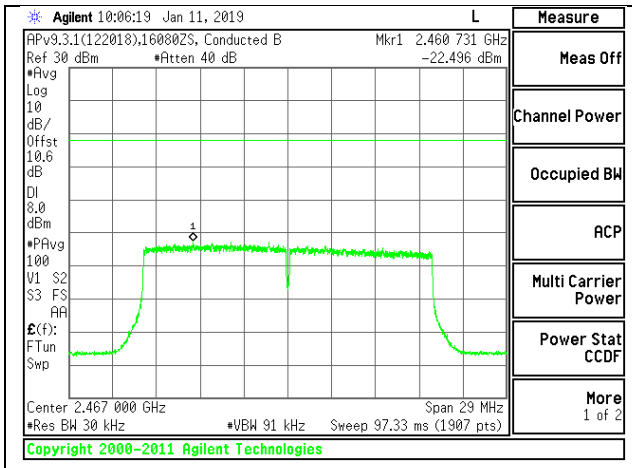
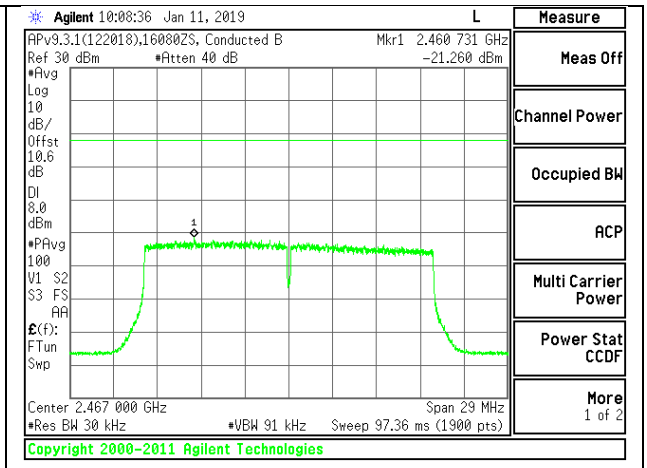
HIGH CHANNEL 12

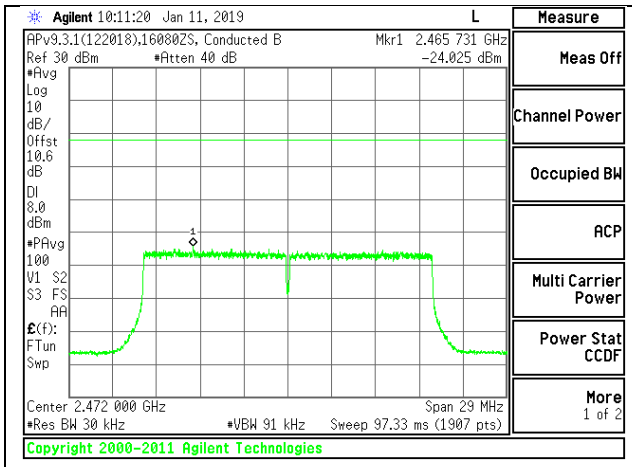


HIGH CHANNEL 12 CHAIN 0

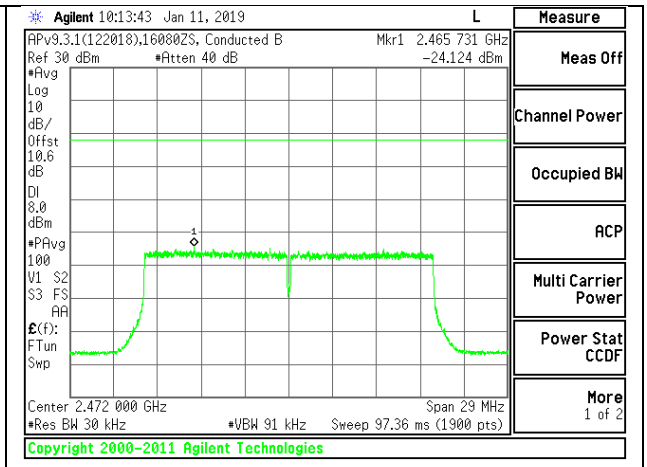


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 106-Tones, RU Index 53

Duty Cycle CF (dB)	0.33	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-9.551	-8.172	-5.47	8.0	-13.5
Mid 6	2437	-9.421	-8.280	-5.47	8.0	-13.5
High 11	2462	-9.412	-8.379	-5.52	8.0	-13.5
High 12	2467	-20.03	-20.00	-16.67	8.0	-24.7
High 13	2472	-22.27	-22.61	-19.10	8.0	-27.1

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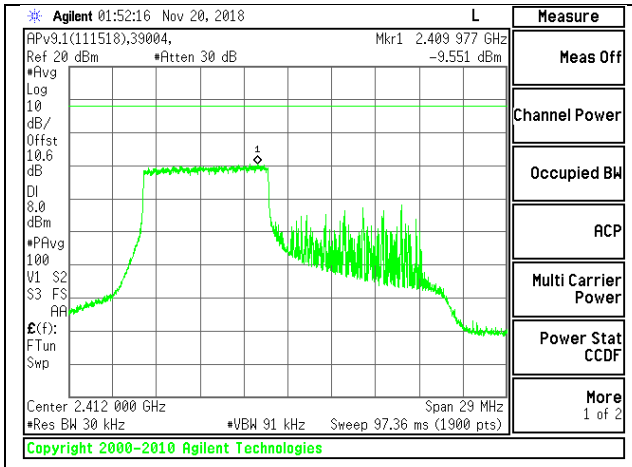
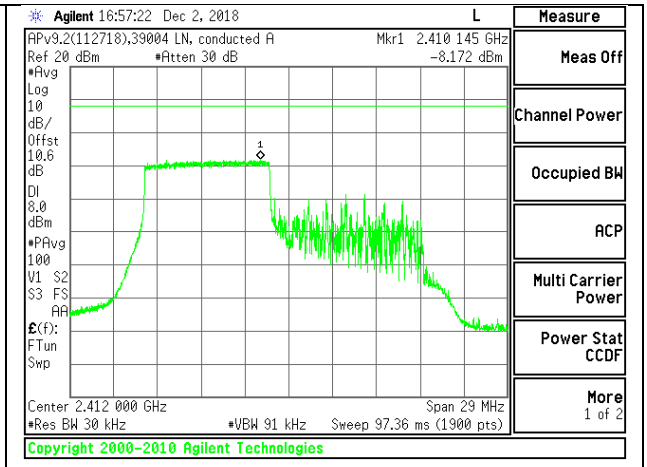
LOW CHANNEL 1

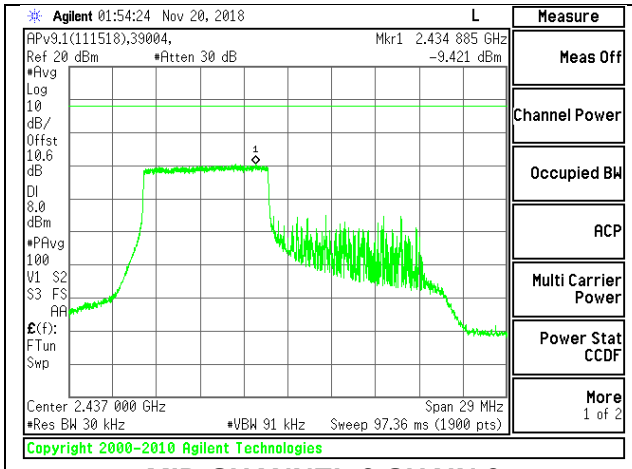


LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6



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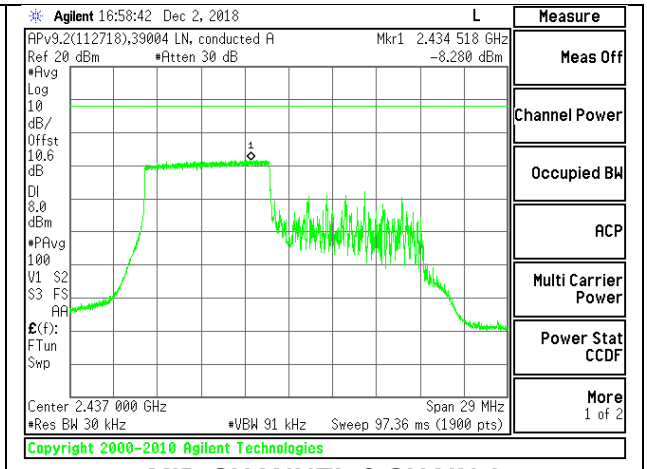
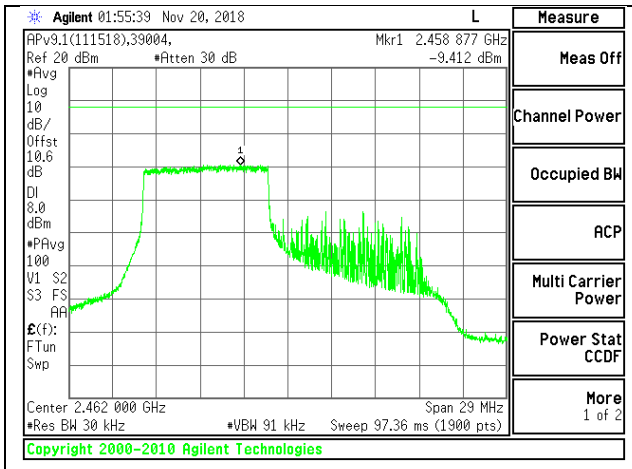
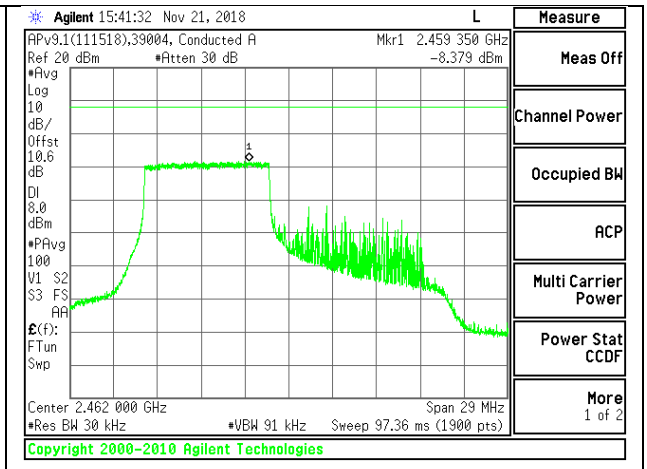


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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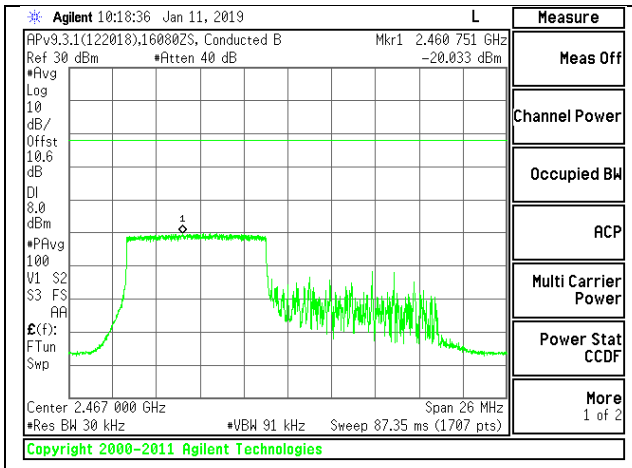
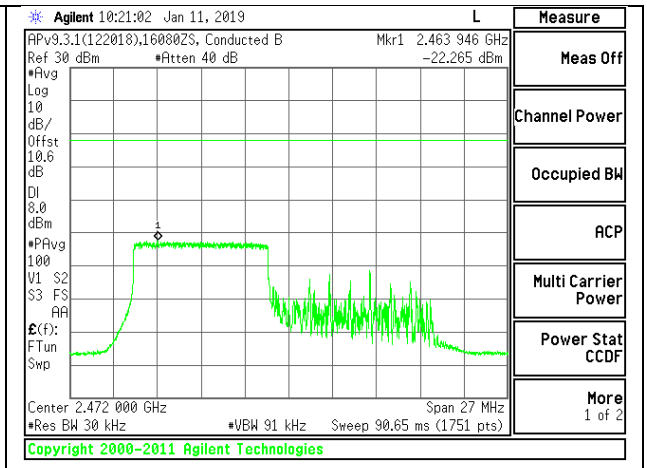
HIGH CHANNEL 12

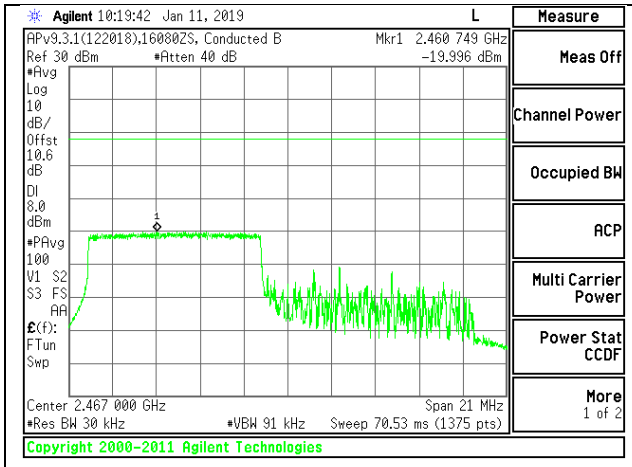


HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



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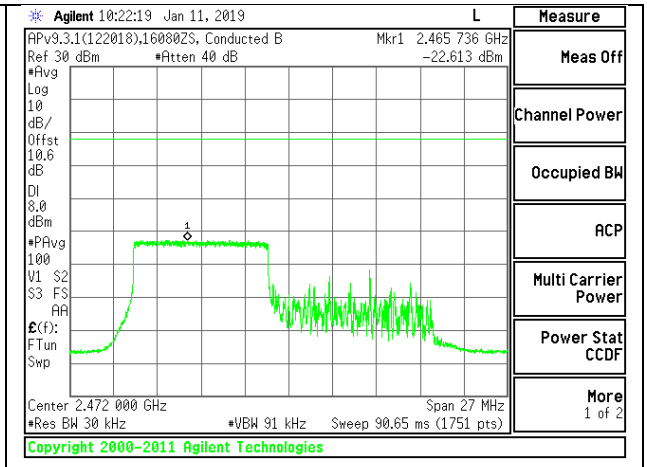

HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 106-Tones, RU Index 54

Duty Cycle CF (dB)	0.33	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-9.349	-8.597	-5.62	8.0	-13.6
Mid 6	2437	-9.285	-7.728	-5.10	8.0	-13.1
High 11	2462	-9.606	-8.244	-5.53	8.0	-13.5
High 12	2467	-20.19	-20.11	-16.81	8.0	-24.8
High 13	2472	-22.02	-21.85	-18.59	8.0	-26.6

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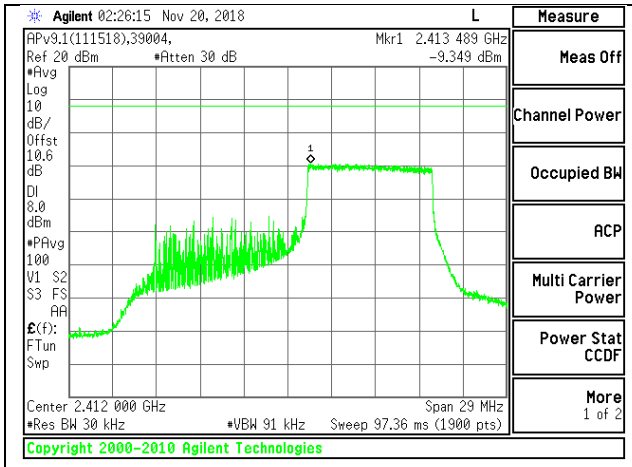
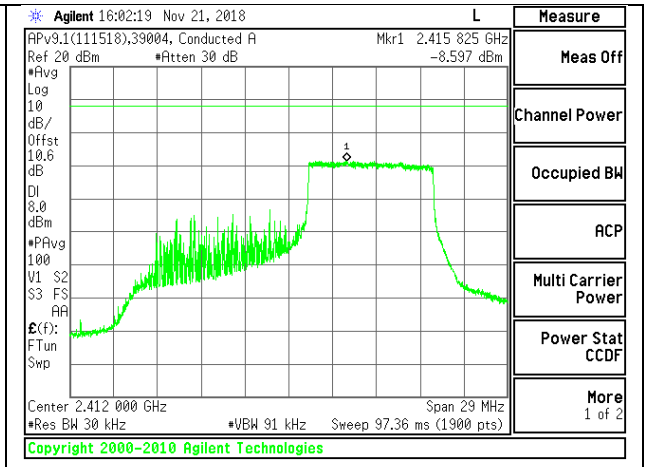
LOW CHANNEL 1

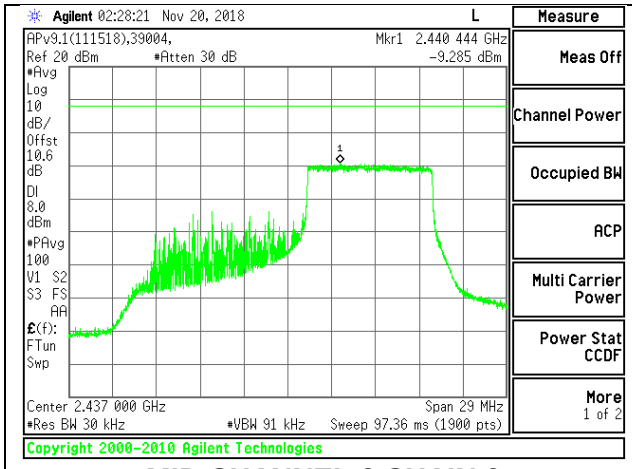


LOW CHANNEL 1 CHAIN 0

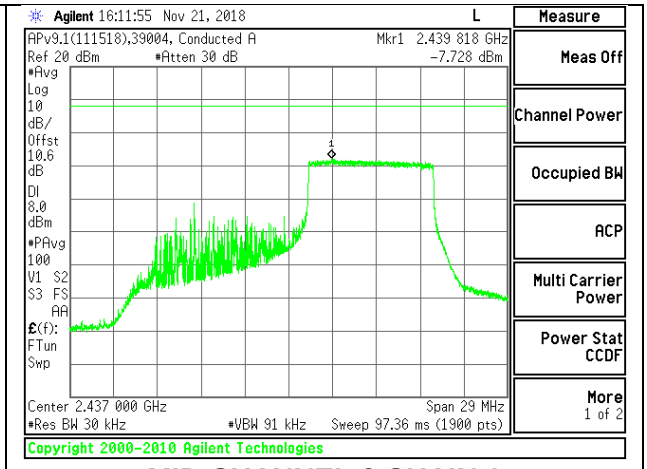


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

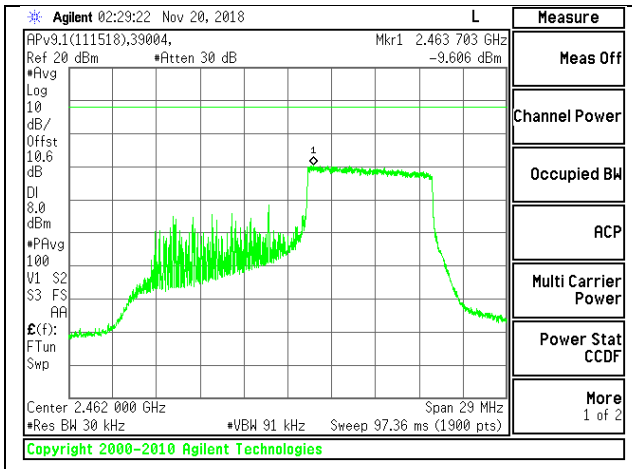


MID CHANNEL 6 CHAIN 0

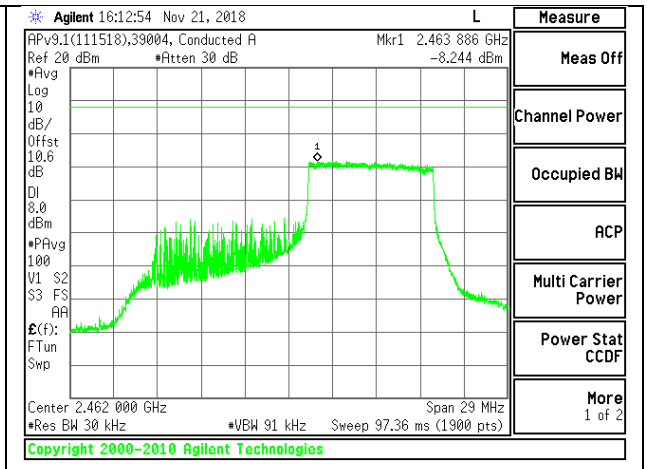


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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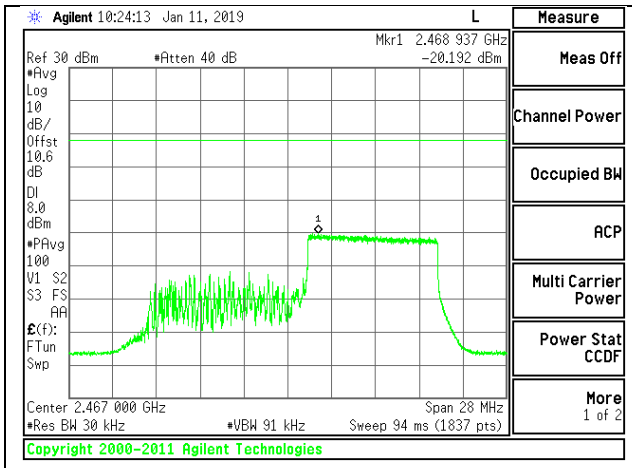
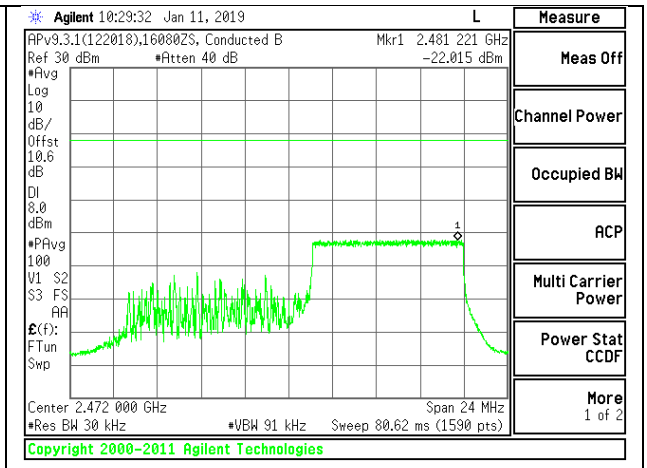
HIGH CHANNEL 12

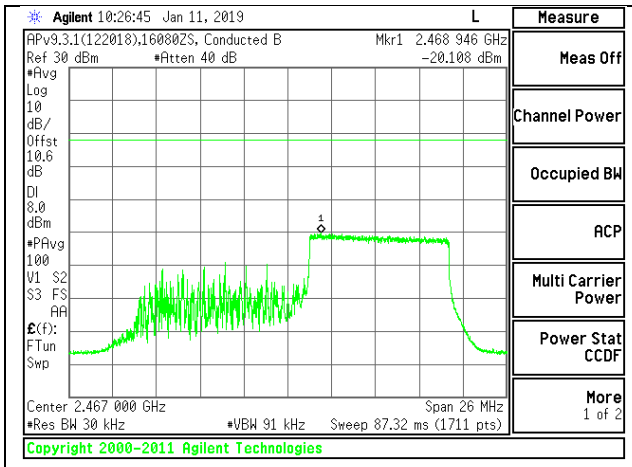


HIGH CHANNEL 12 CHAIN 0

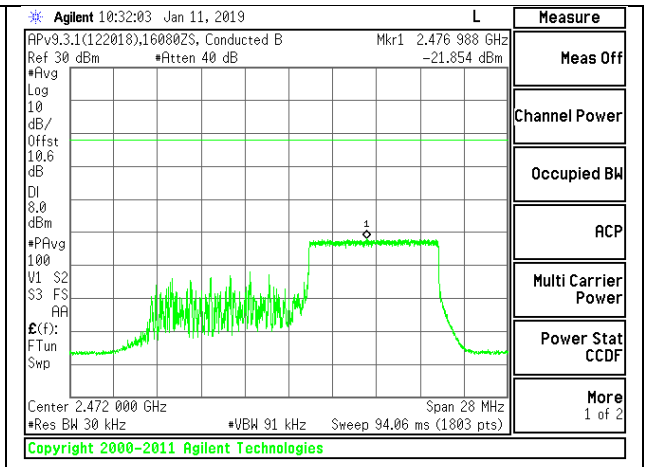


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 52-Tones, RU Index 37

Duty Cycle CF (dB)	0.17	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-9.372	-6.049	-4.22	8.0	-12.2
Mid 6	2437	-9.813	-5.801	-4.18	8.0	-12.2
High 11	2462	-9.810	-5.687	-4.10	8.0	-12.1
High 12	2467	-17.88	-17.84	-14.68	8.0	-22.7
High 13	2472	-19.24	-19.33	-16.10	8.0	-24.1

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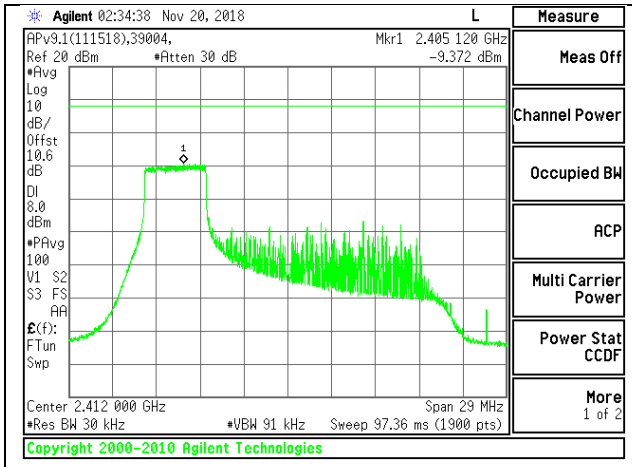
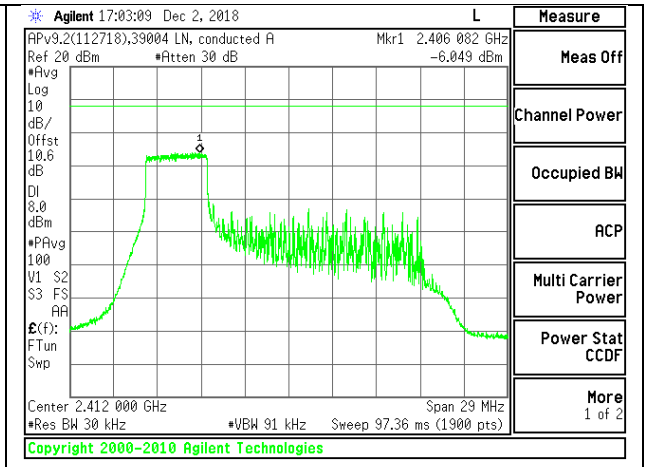
LOW CHANNEL 1

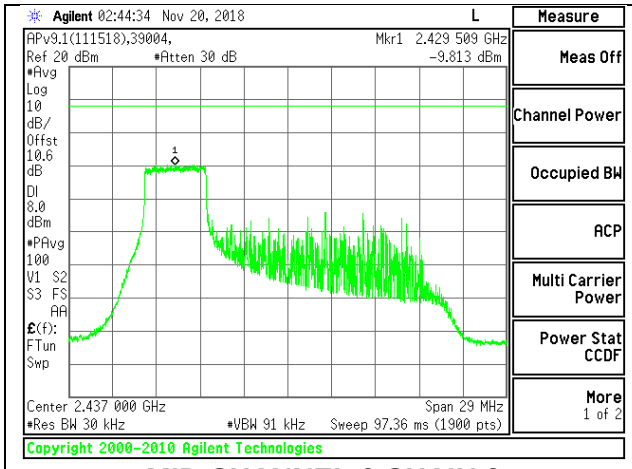


LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6



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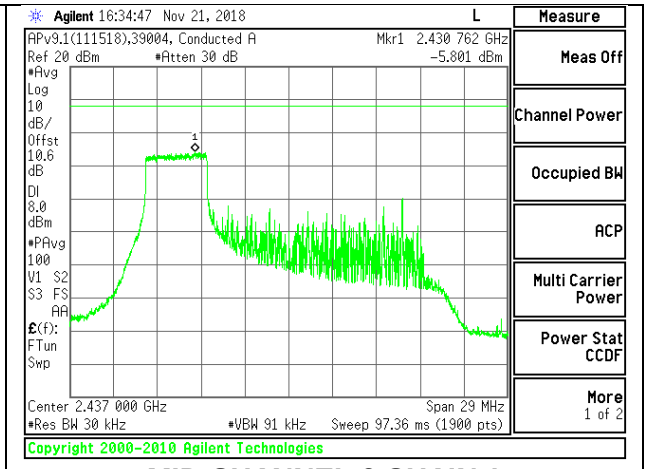
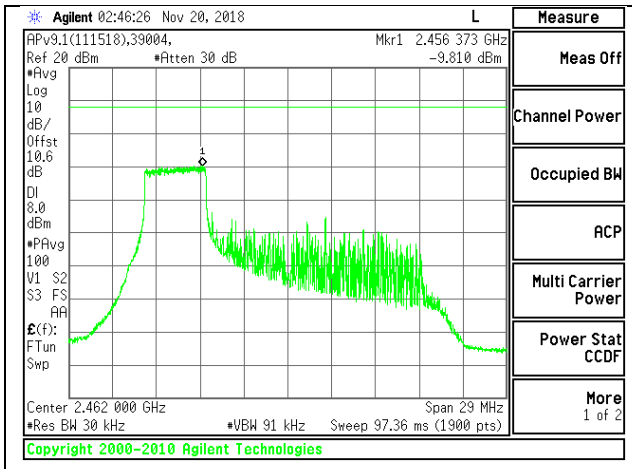
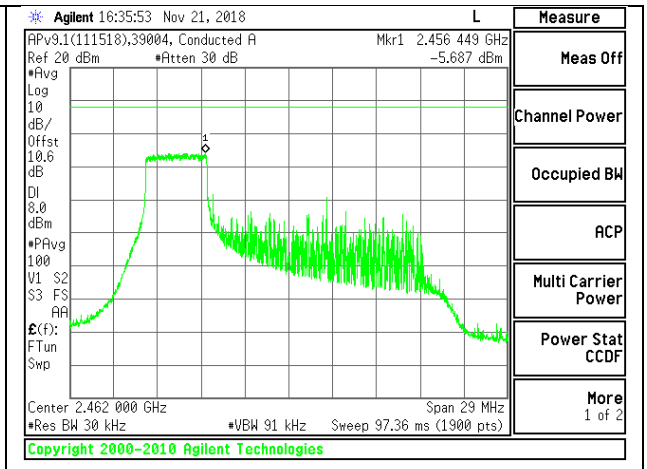


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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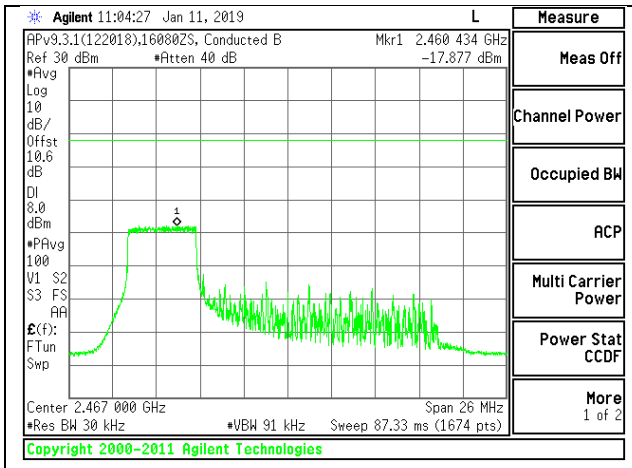
HIGH CHANNEL 12



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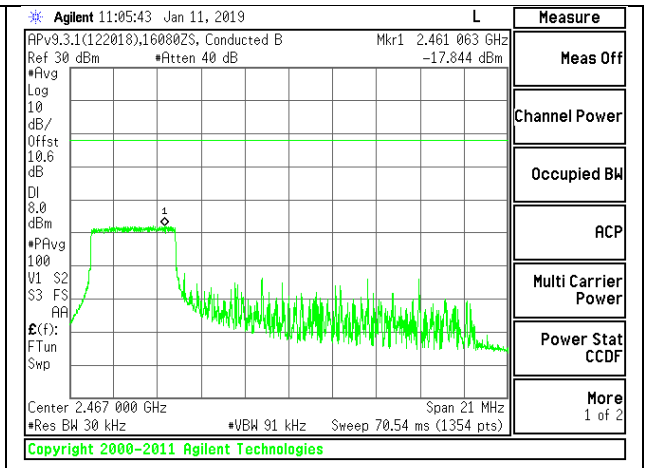
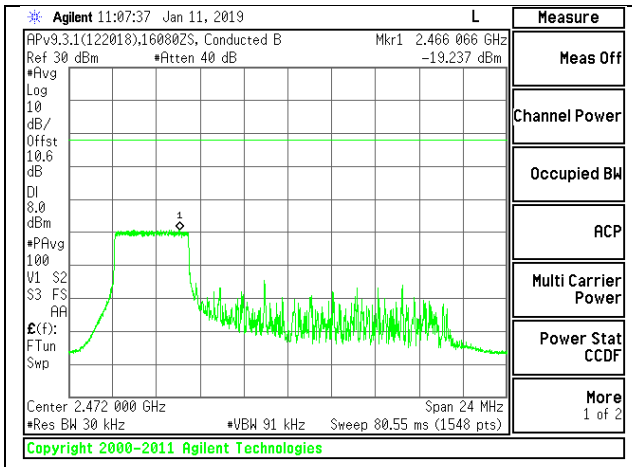


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



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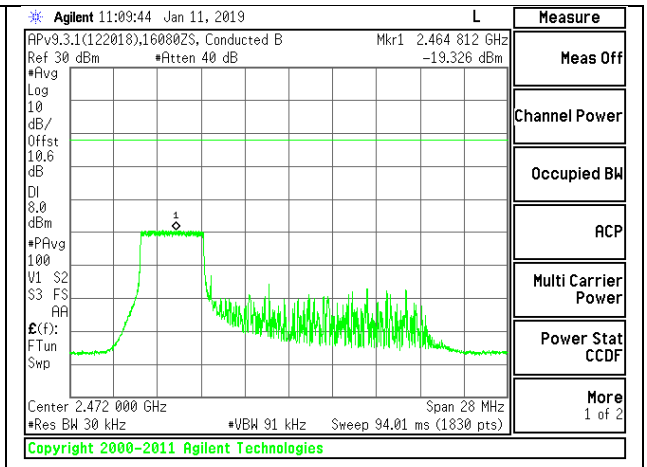

HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 52-Tones, RU Index 38

Duty Cycle CF (dB)	0.17	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-9.390	-7.692	-5.28	8.0	-13.3
Mid 6	2437	-9.519	-8.183	-5.62	8.0	-13.6
High 11	2462	-9.162	-7.455	-5.04	8.0	-13.0
High 12	2467	-16.51	-16.79	-13.47	8.0	-21.5
High 13	2472	-19.37	-19.38	-16.20	8.0	-24.2

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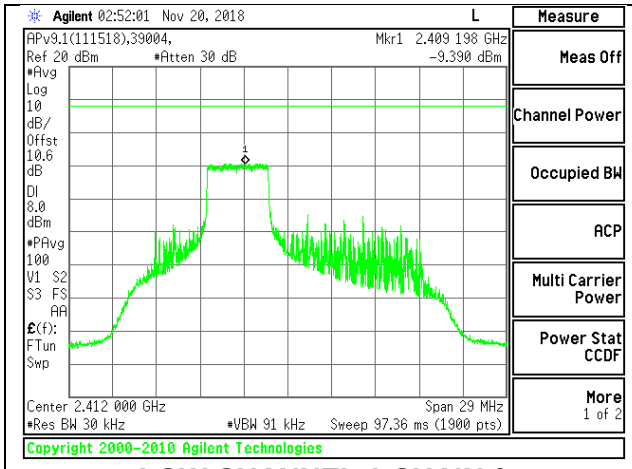
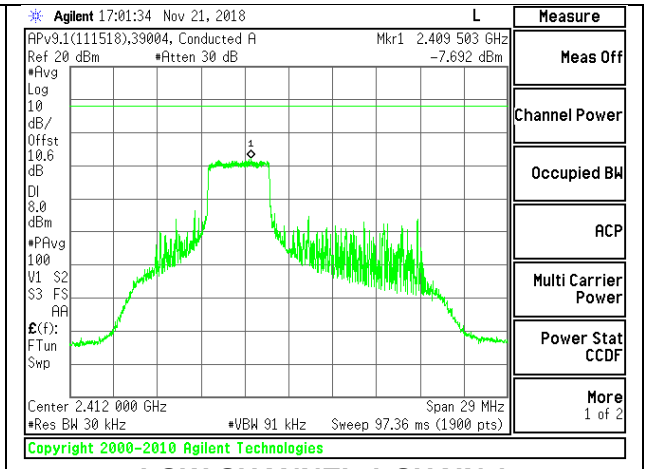
LOW CHANNEL 1

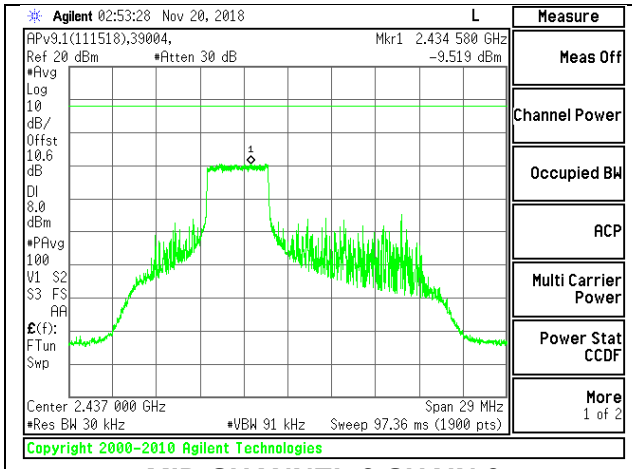


LOW CHANNEL 1 CHAIN 0

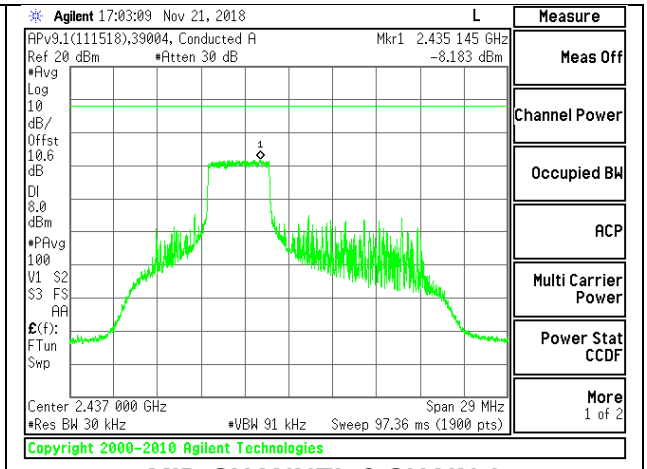


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

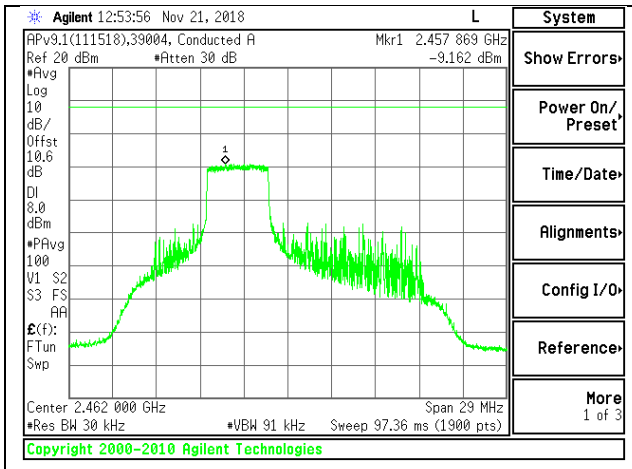


MID CHANNEL 6 CHAIN 0

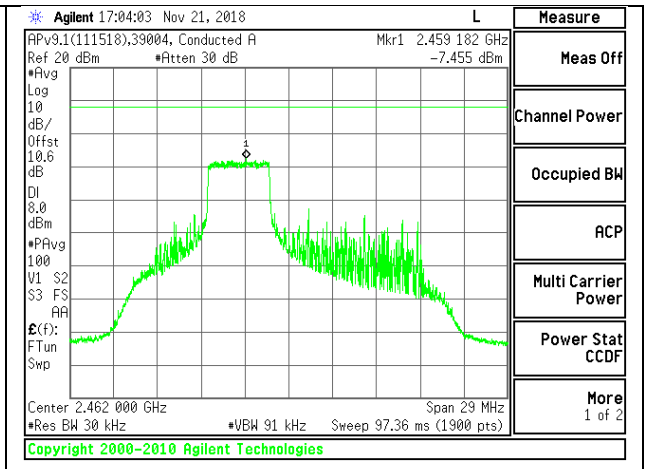


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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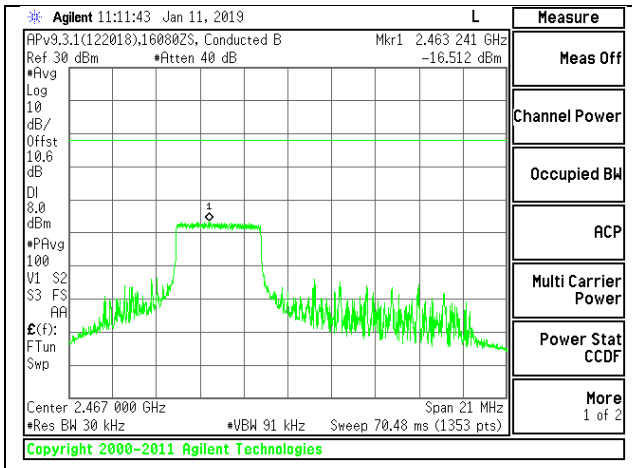
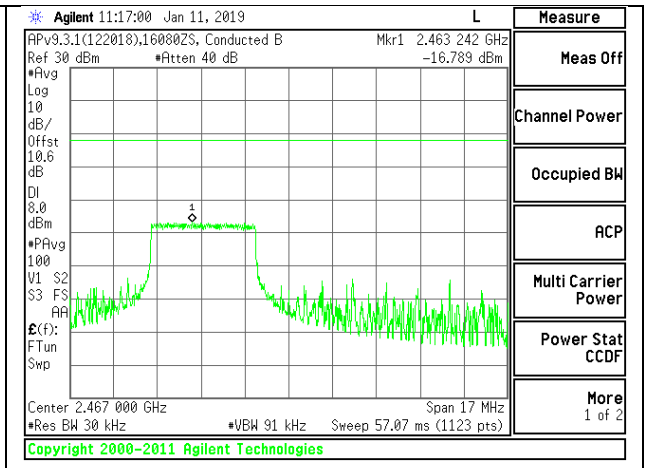
HIGH CHANNEL 12

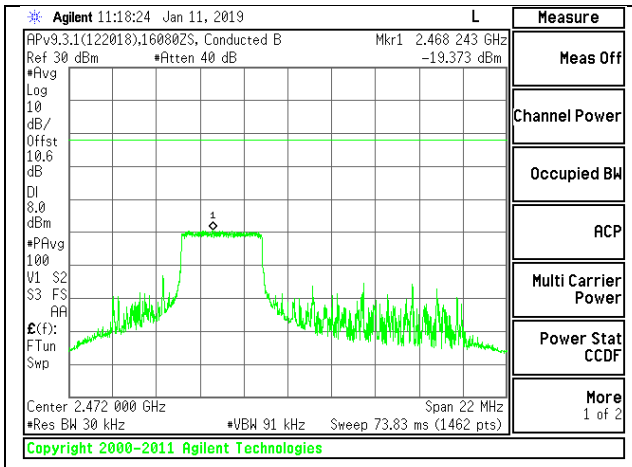


HIGH CHANNEL 12 CHAIN 0

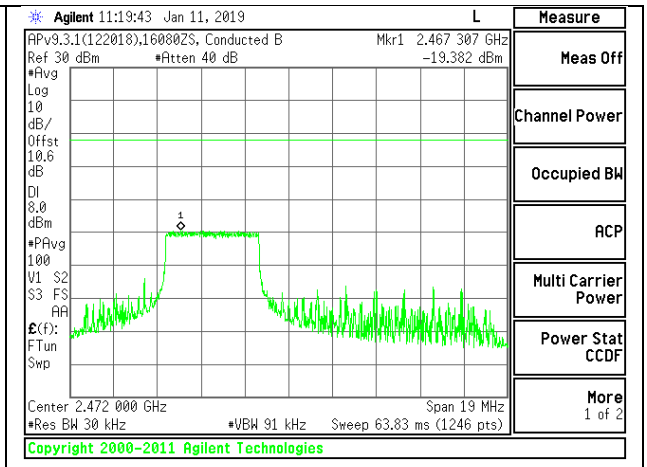


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 52-Tones, RU Index 40

Duty Cycle CF (dB)	0.17	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-8.959	-9.148	-5.87	8.0	-13.9
Mid 6	2437	-9.081	-8.156	-5.41	8.0	-13.4
High 11	2462	-10.425	-8.964	-6.45	8.0	-14.5
High 12	2467	-17.54	-17.78	-14.48	8.0	-22.5
High 13	2472	-18.98	-18.85	-15.73	8.0	-23.7

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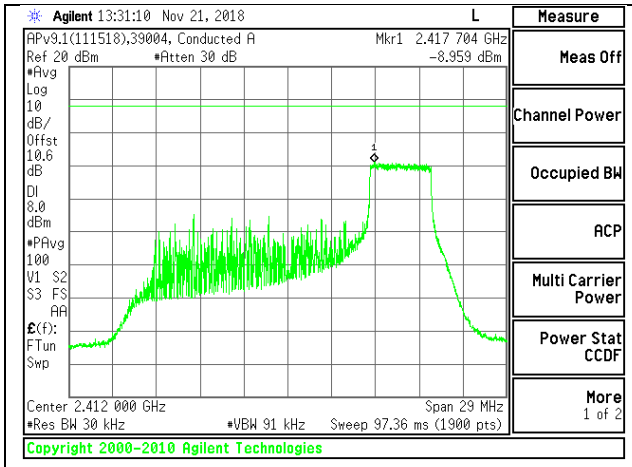
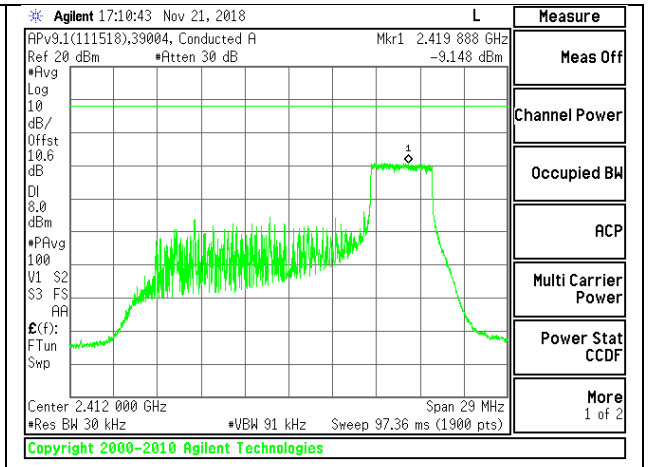
LOW CHANNEL 1

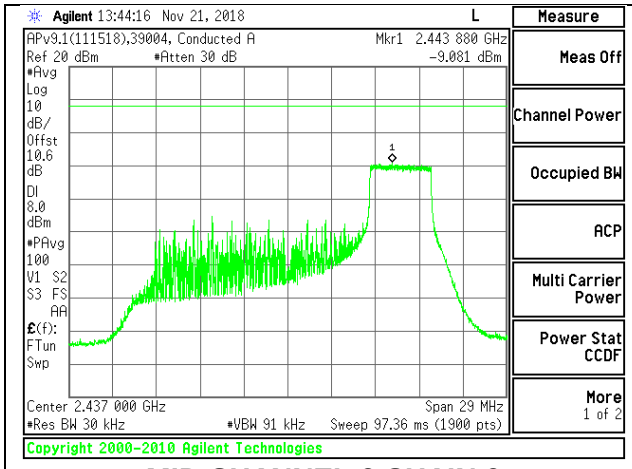


LOW CHANNEL 1 CHAIN 0

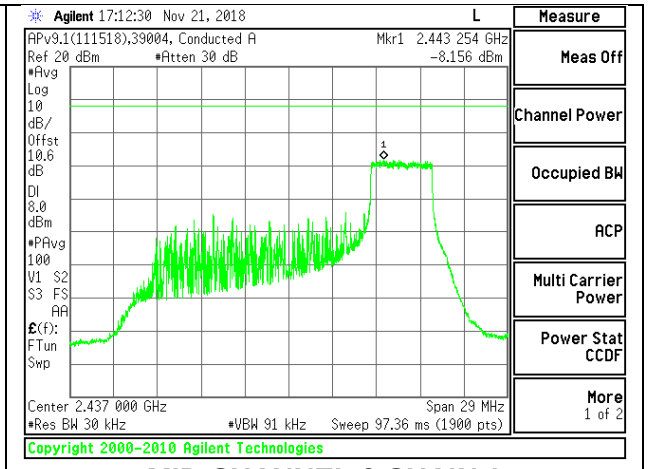


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

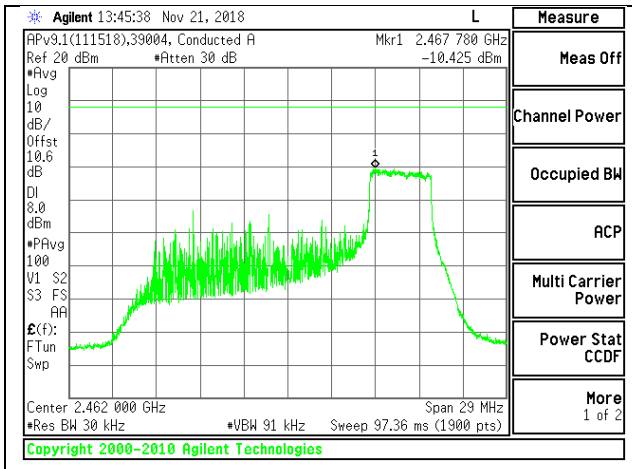


MID CHANNEL 6 CHAIN 0

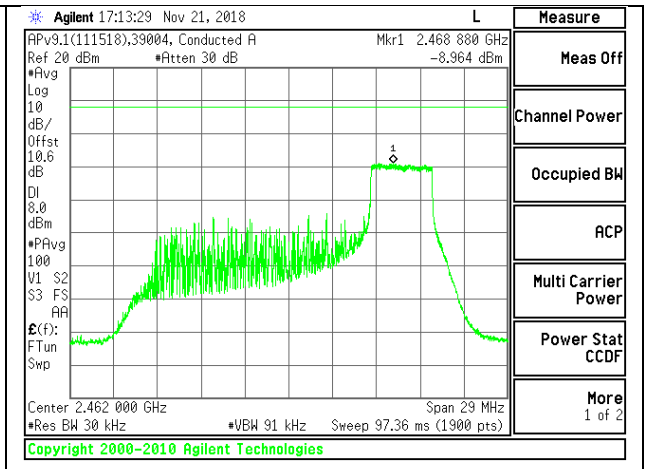


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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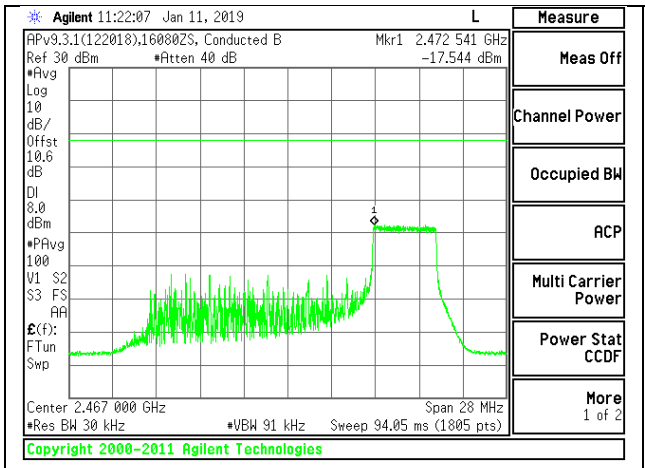
HIGH CHANNEL 12



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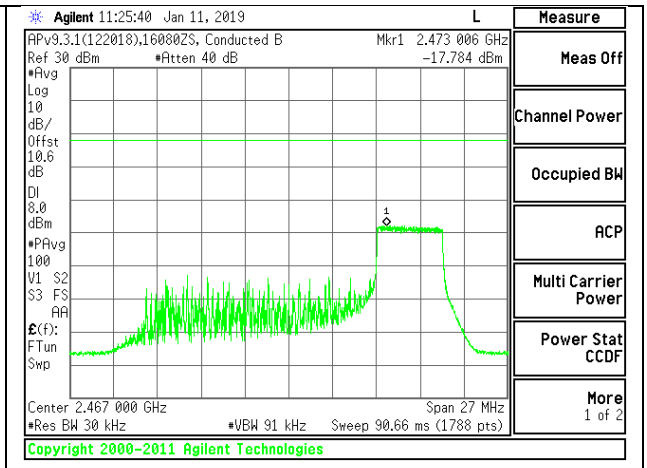
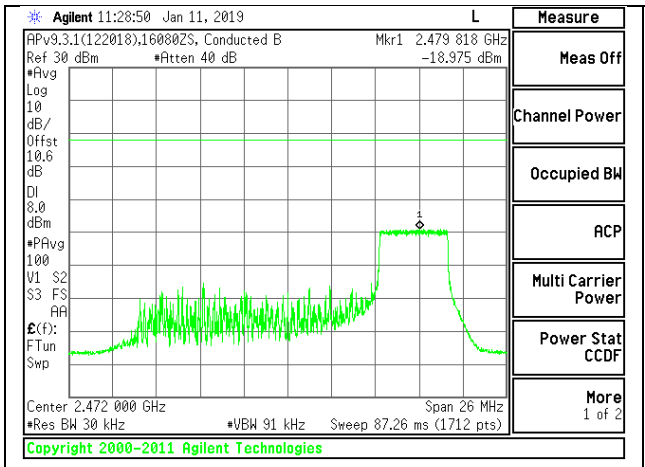


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



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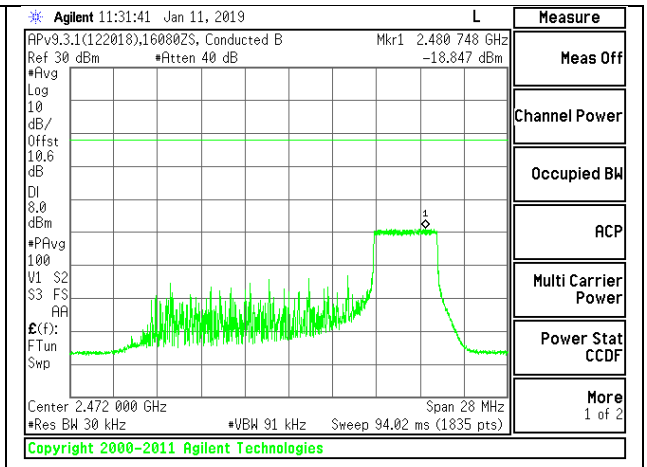

HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 26-Tones, RU Index 0

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-9.507	-7.354	-5.20	8.0	-13.2
Mid 6	2437	-8.952	-7.553	-5.10	8.0	-13.1
High 11	2462	-8.357	-6.171	-4.03	8.0	-12.0
High 12	2467	-15.11	-15.18	-12.04	8.0	-20.0
High 13	2472	-15.88	-15.70	-12.69	8.0	-20.7

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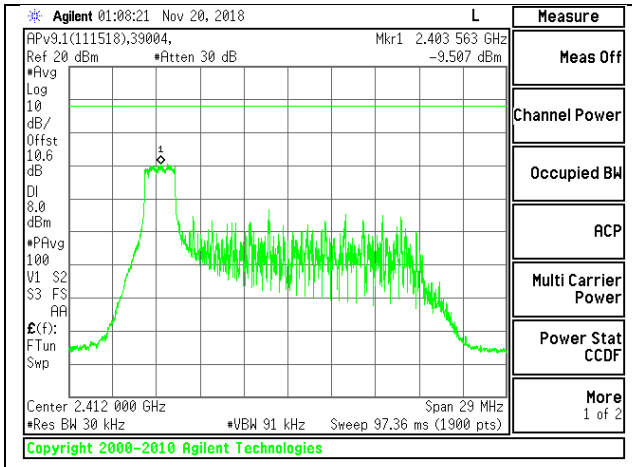
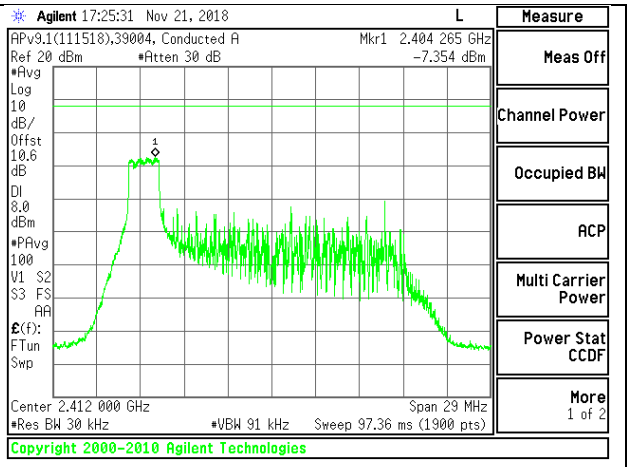
LOW CHANNEL 1

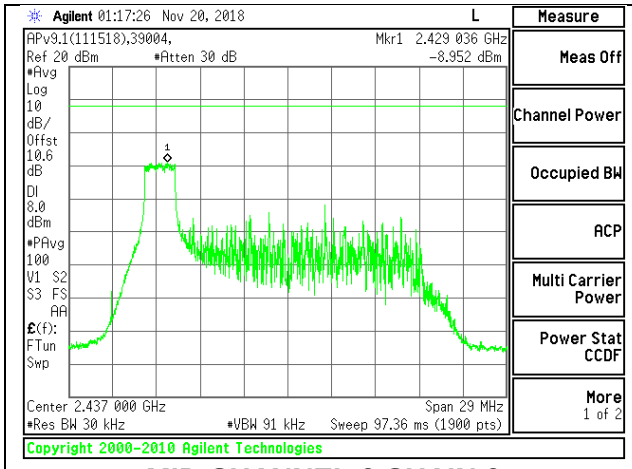


LOW CHANNEL 1 CHAIN 0

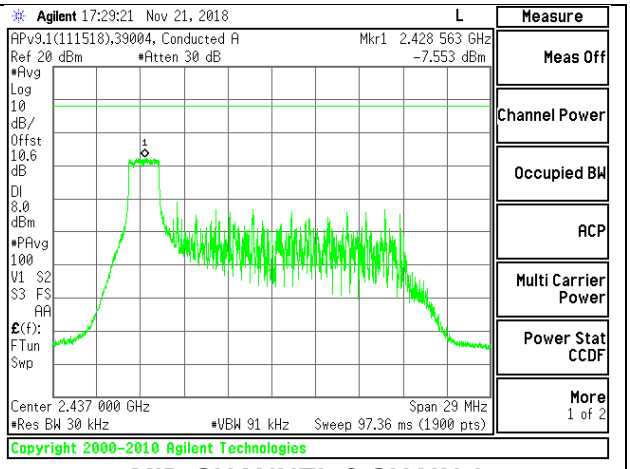


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

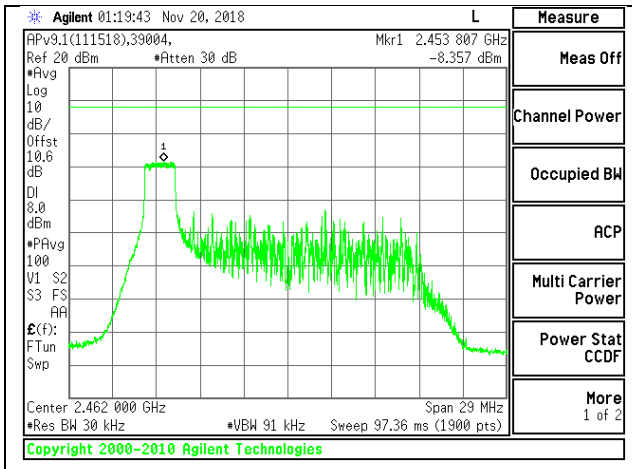


MID CHANNEL 6 CHAIN 0

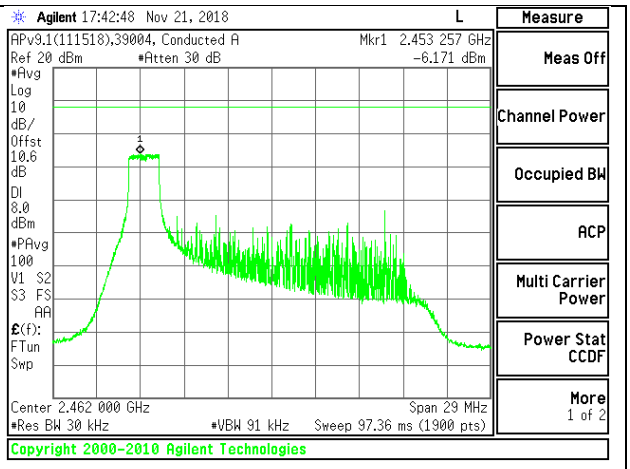


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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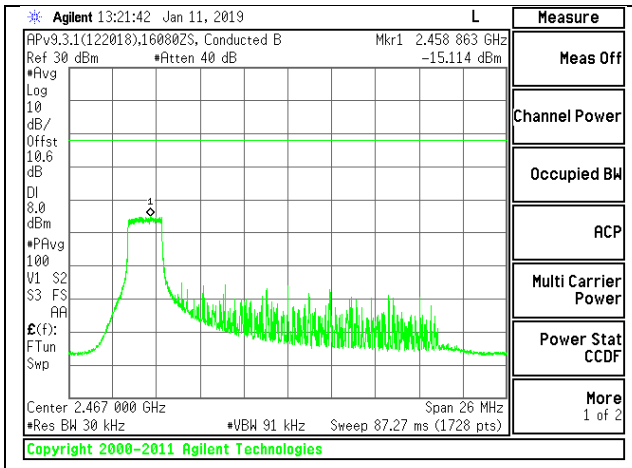
HIGH CHANNEL 12



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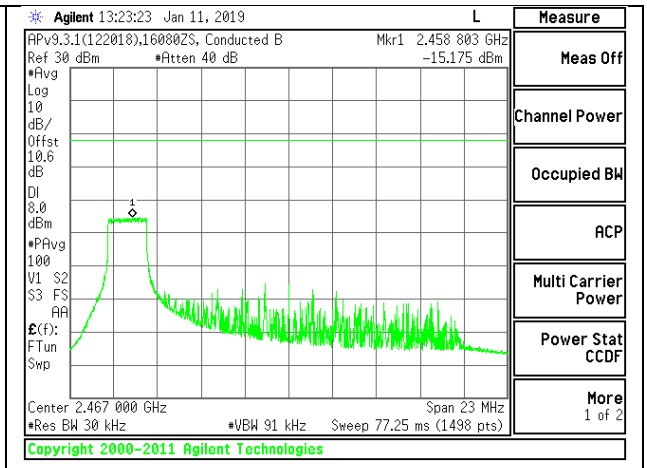
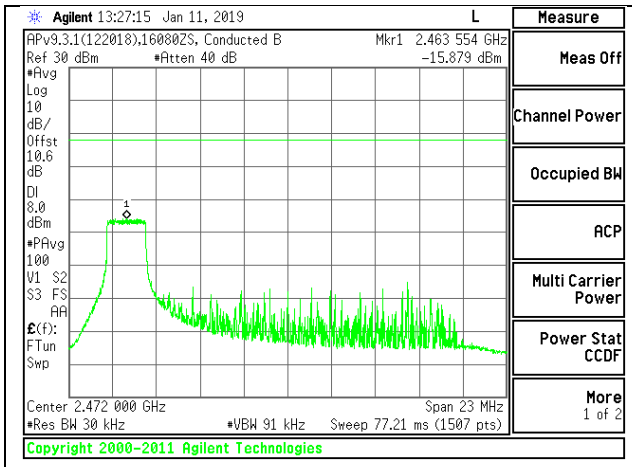
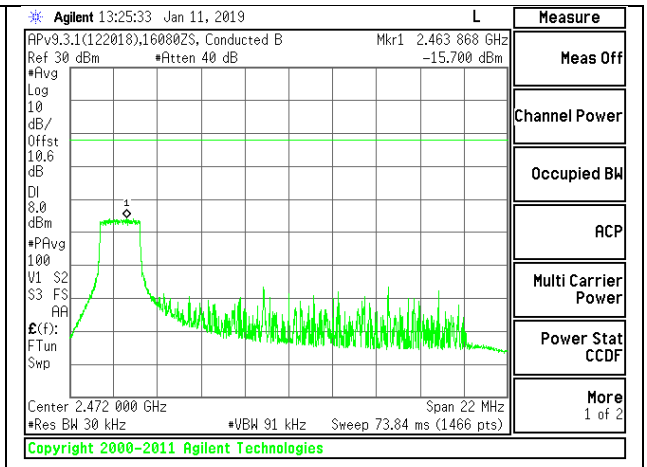


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 26-Tones, RU Index 4

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-8.397	-5.943	-3.90	8.0	-11.9
Mid 6	2437	-8.717	-5.608	-3.79	8.0	-11.8
High 11	2462	-7.795	-5.538	-3.42	8.0	-11.4
High 12	2467	-13.54	-13.74	-10.54	8.0	-18.5
High 13	2472	-16.89	-16.94	-13.81	8.0	-21.8

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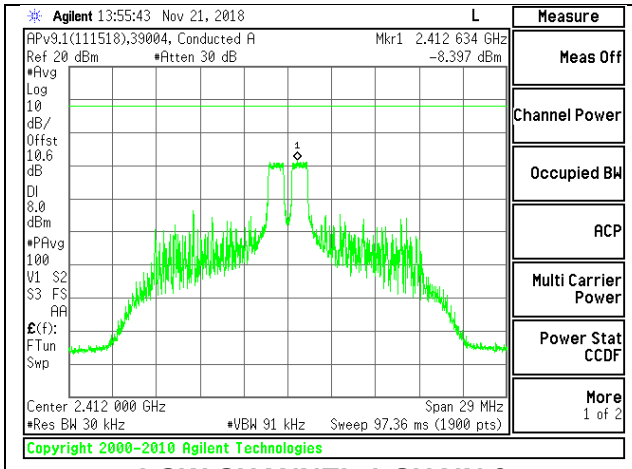
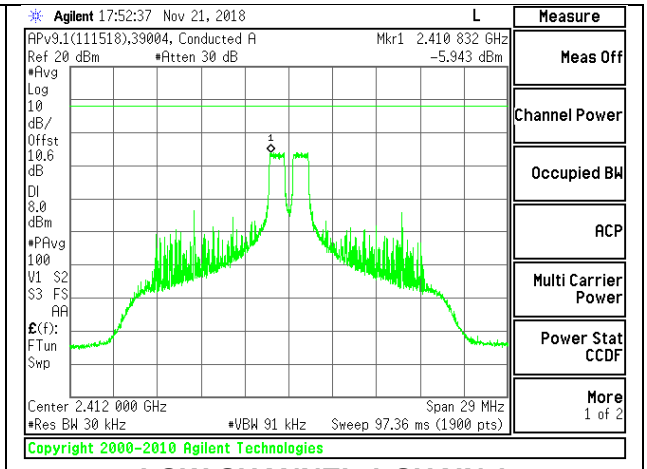
LOW CHANNEL 1

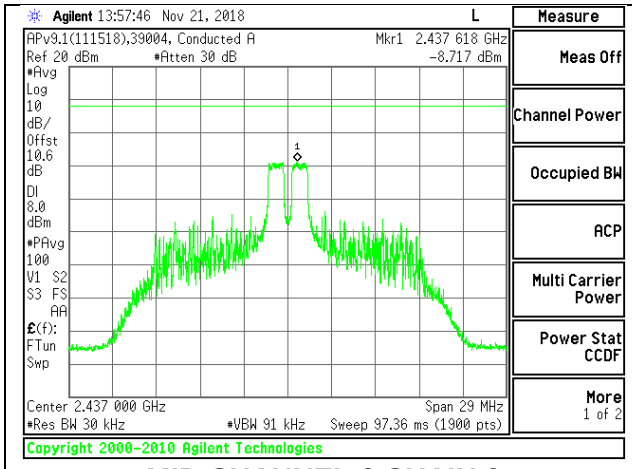


LOW CHANNEL 1 CHAIN 0

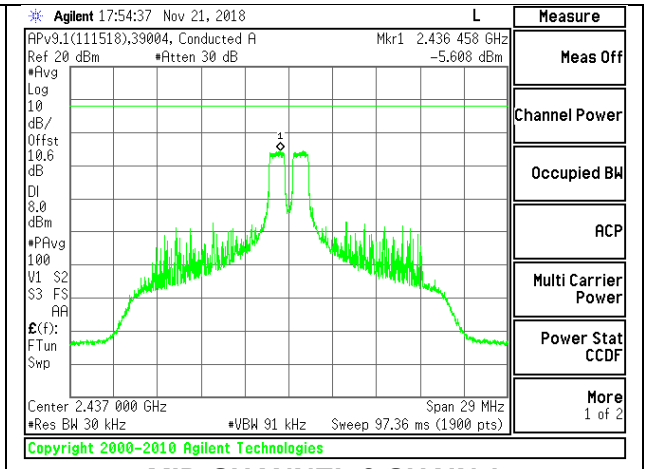


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

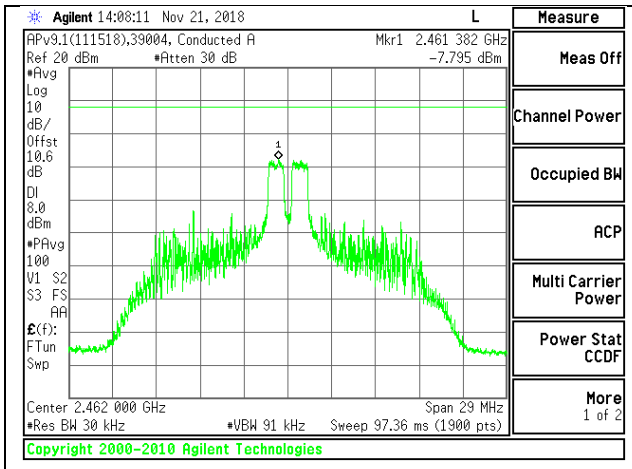


MID CHANNEL 6 CHAIN 0

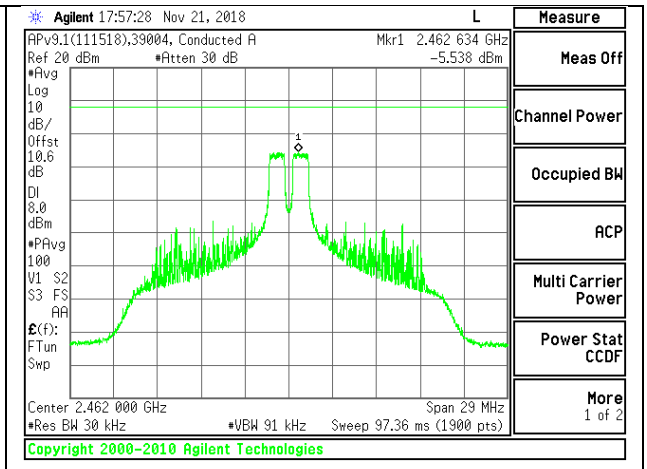


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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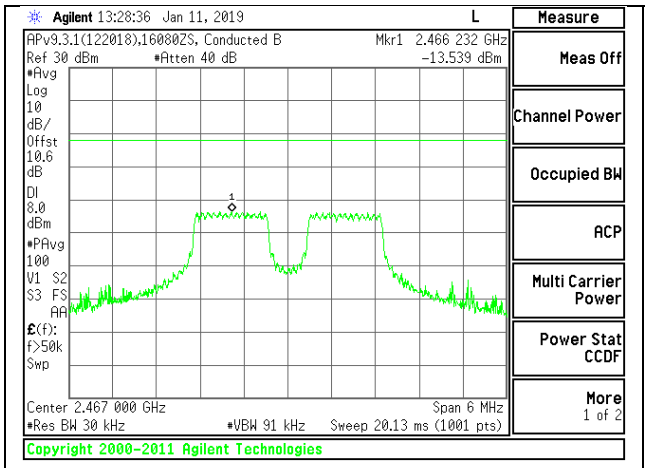
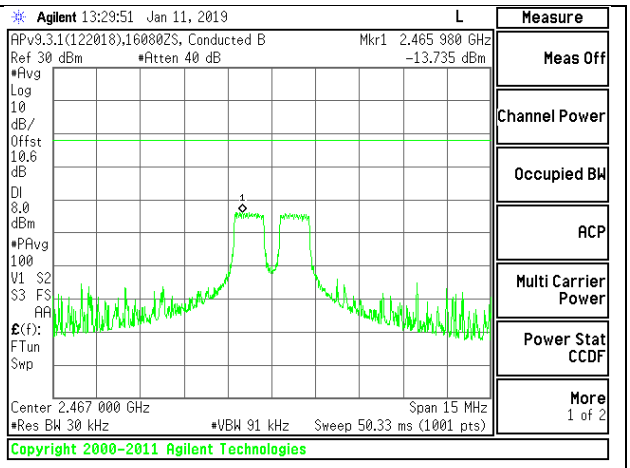
HIGH CHANNEL 12

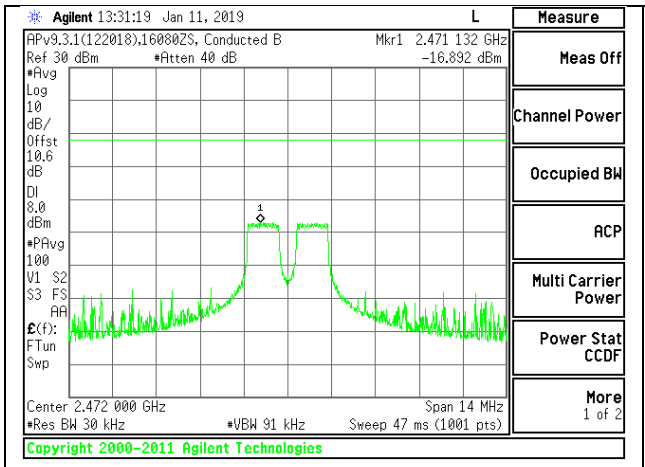


HIGH CHANNEL 12 CHAIN 0

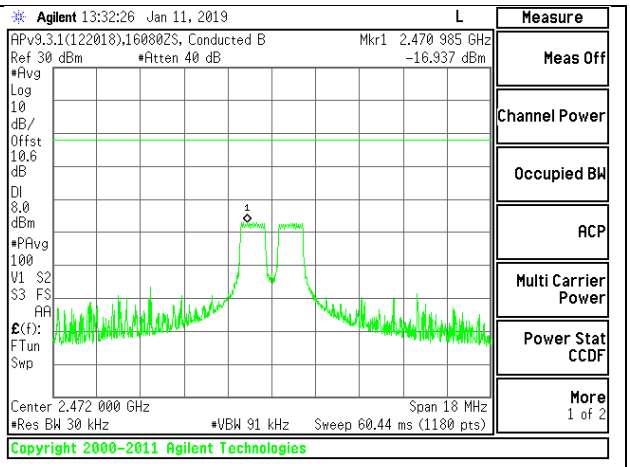


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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2TX Chain 0 + Chain 1 OFDMA MODE – 26-Tones, RU Index 8

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 30kHz)	Chain 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 30kHz)	Margin (dB)
Low 1	2412	-8.555	-6.320	-4.19	8.0	-12.2
Mid 6	2437	-8.970	-5.834	-4.02	8.0	-12.0
High 11	2462	-10.285	-6.579	-4.95	8.0	-12.9
High 12	2467	-13.919	-13.975	-10.85	8.0	-18.8
High 13	2472	-16.156	-16.307	-13.13	8.0	-21.1

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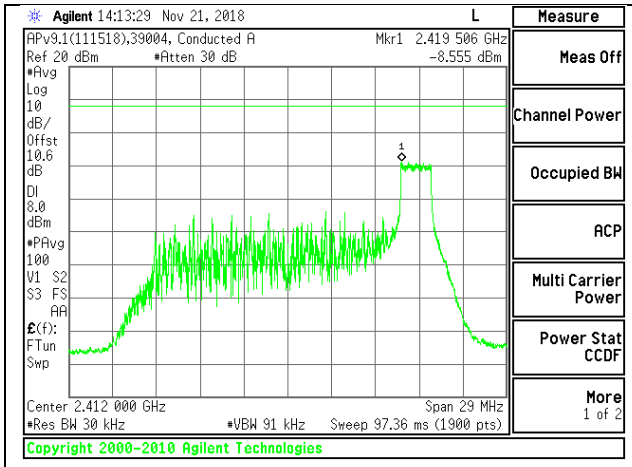
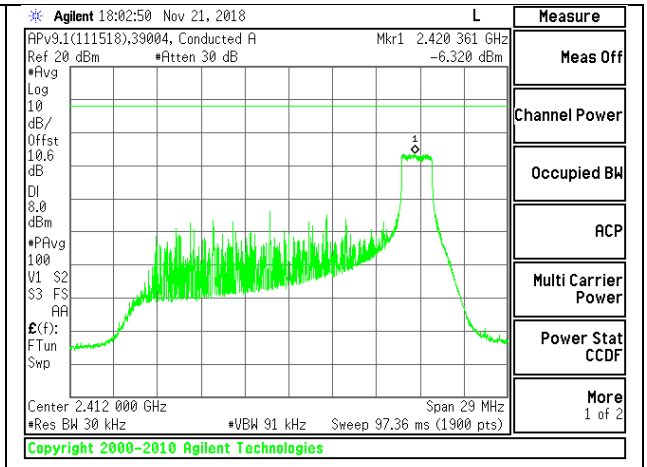
LOW CHANNEL 1

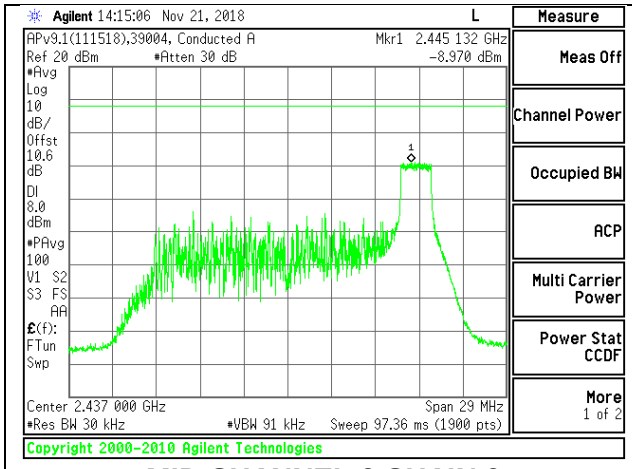


LOW CHANNEL 1 CHAIN 0

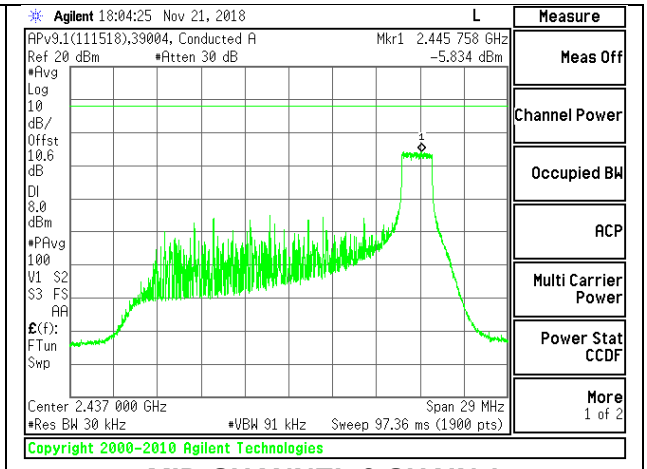


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

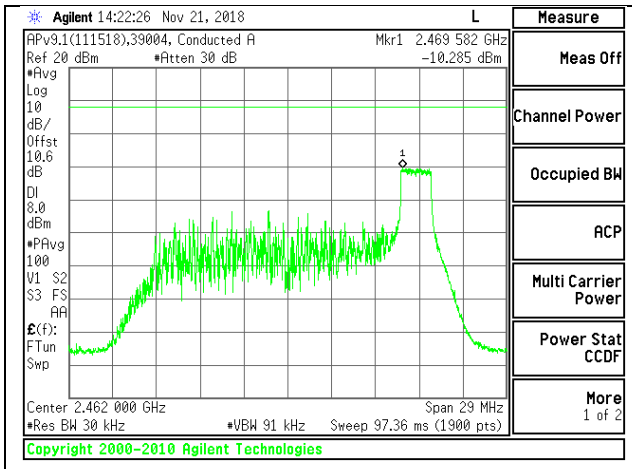


MID CHANNEL 6 CHAIN 0

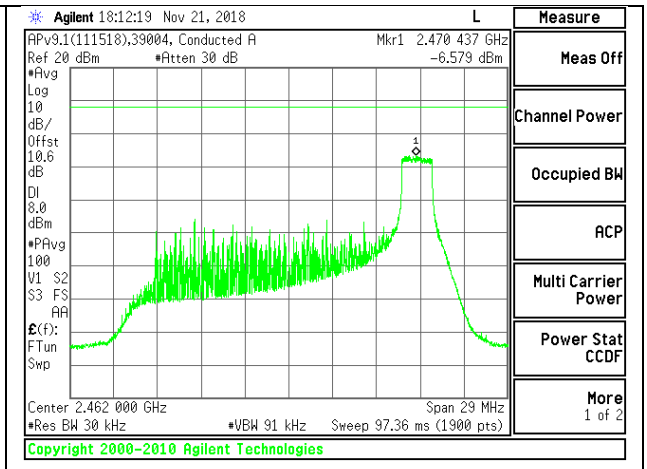


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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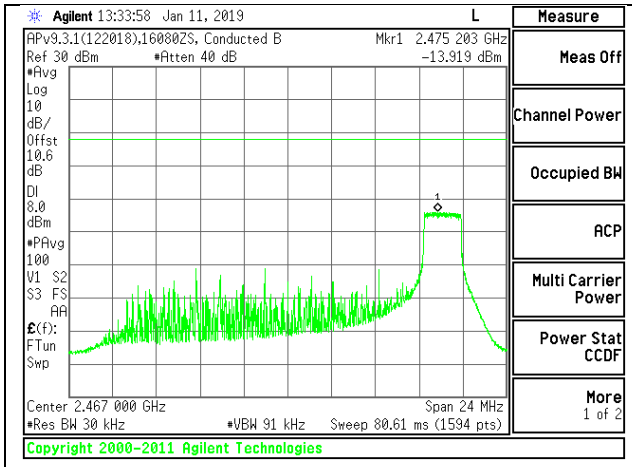
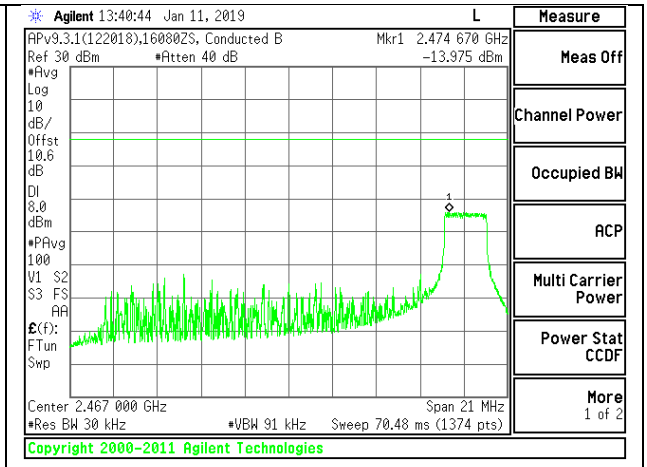
HIGH CHANNEL 12

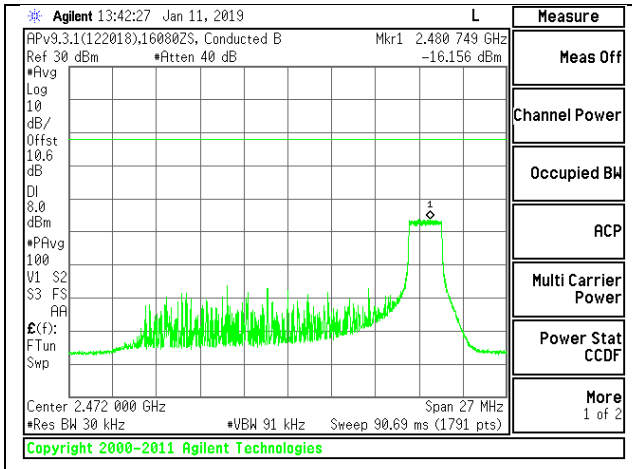


HIGH CHANNEL 12 CHAIN 0

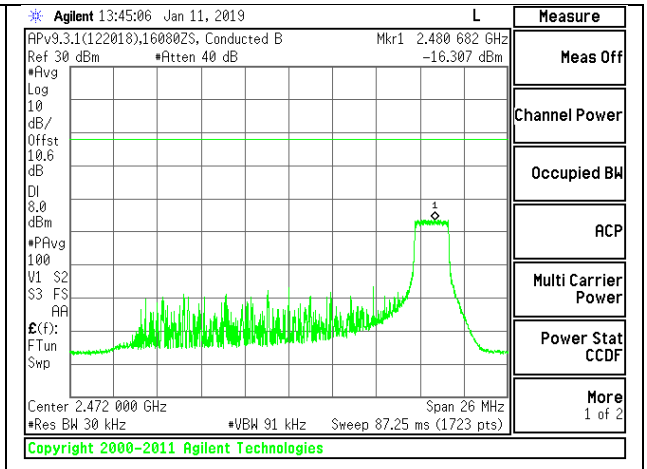


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

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

RESULTS

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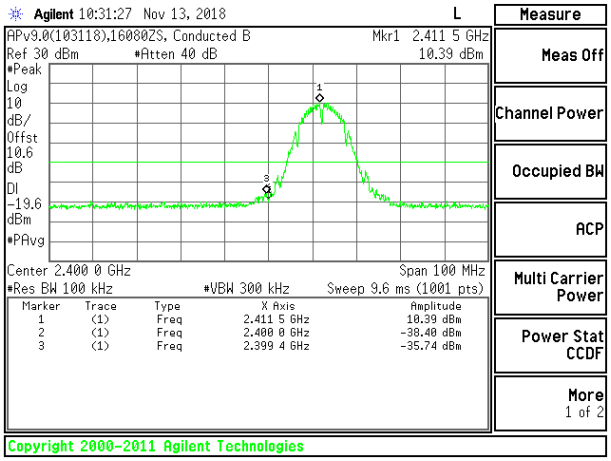
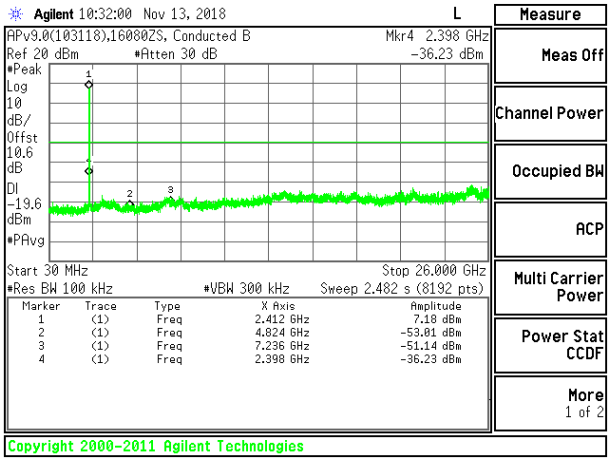
9.6.1. 802.11b MODE

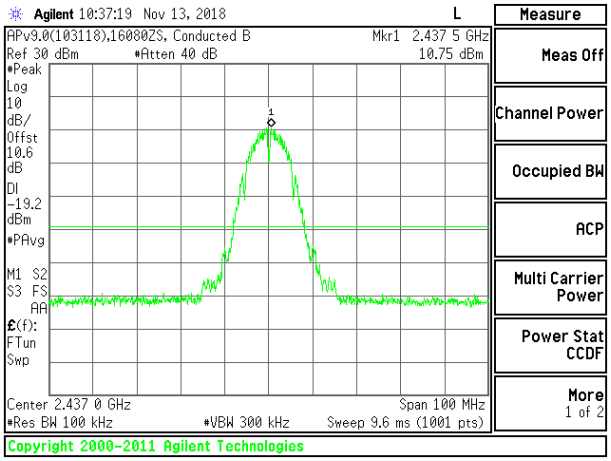
1TX Chain 0 MODE



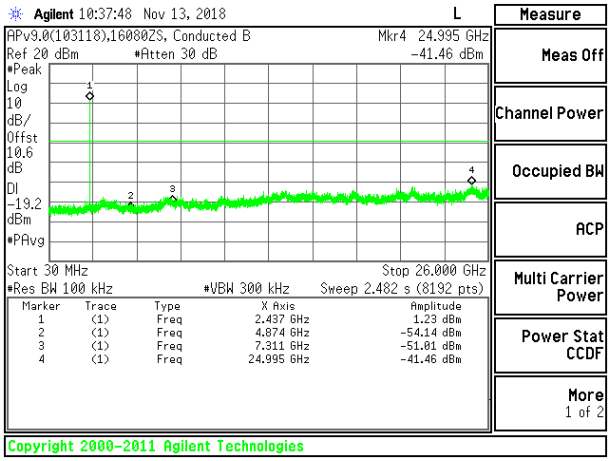
LOW CHANNEL 1 BANDEDGE



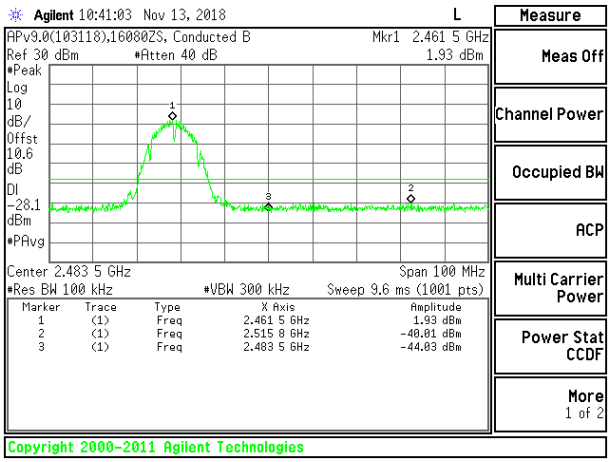
OUT-OF-BAND LOW CHANNEL 1



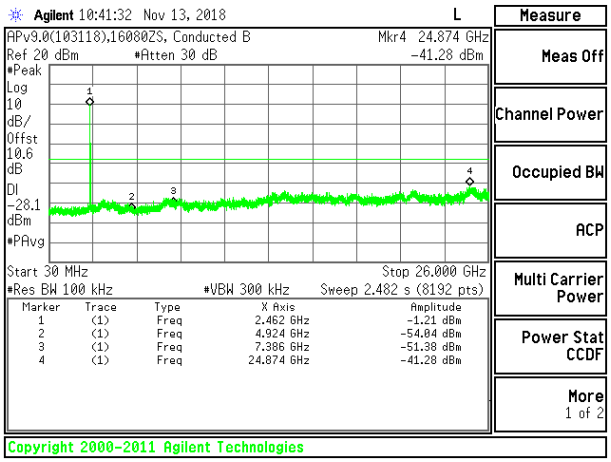
IN-BAND REFERNCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11

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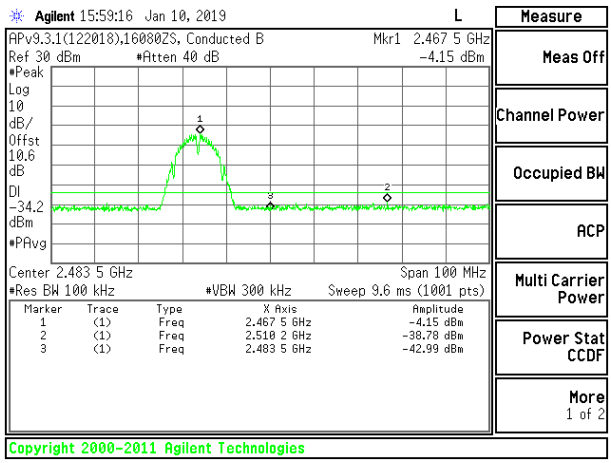
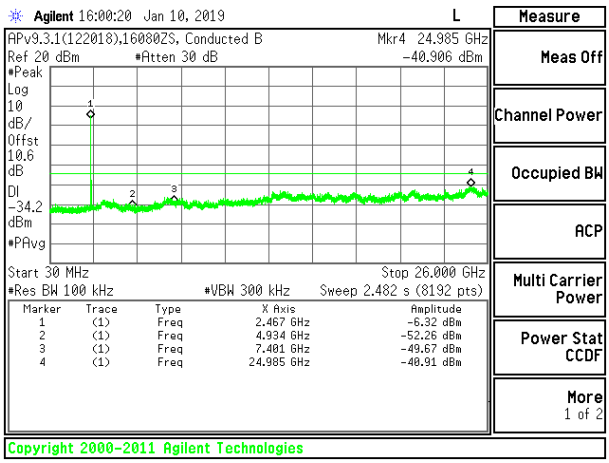
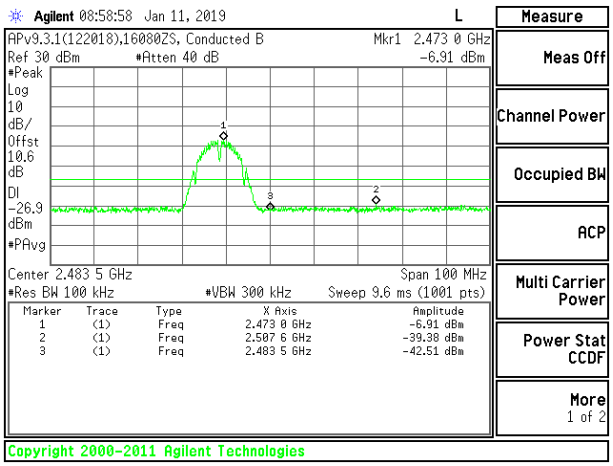


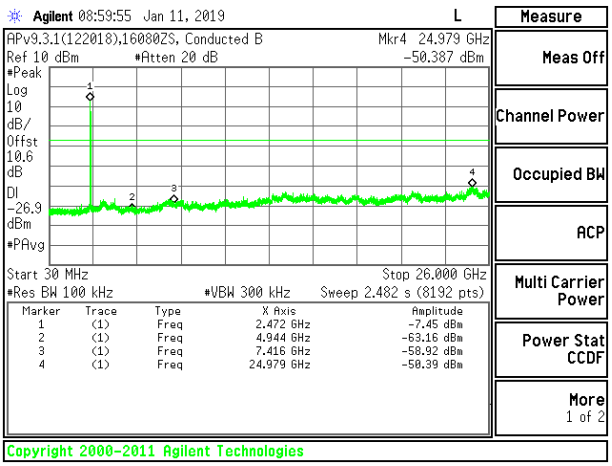
HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12



HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

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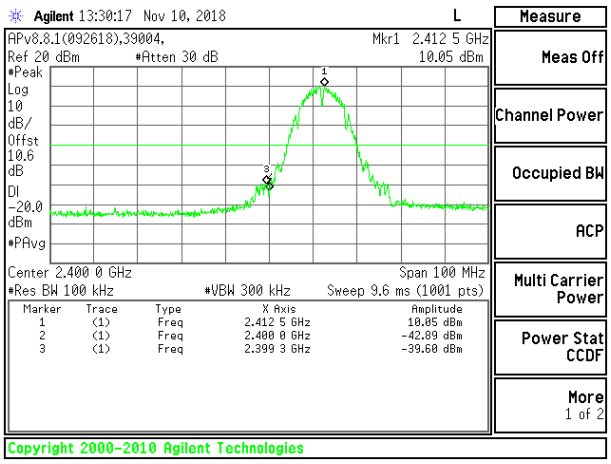
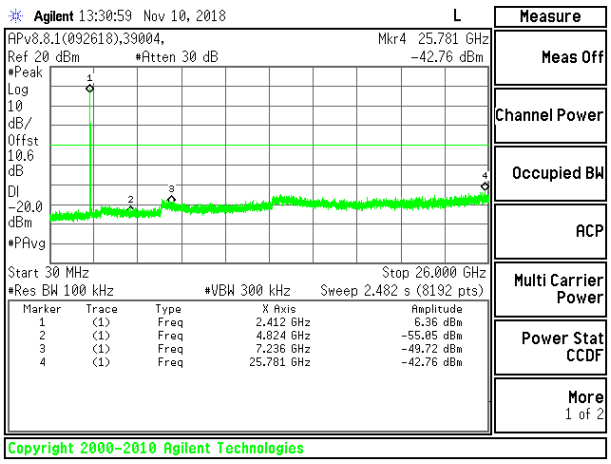
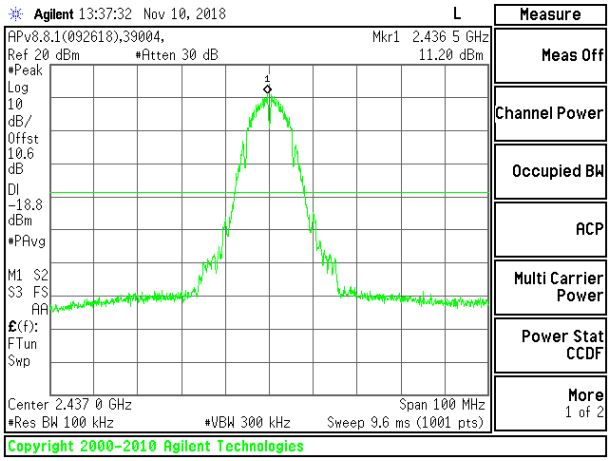
1TX Chain 1 MODE



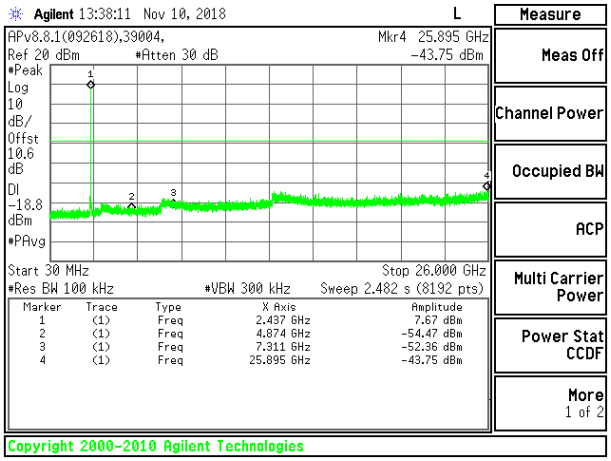
LOW CHANNEL 1 BANDEDGE



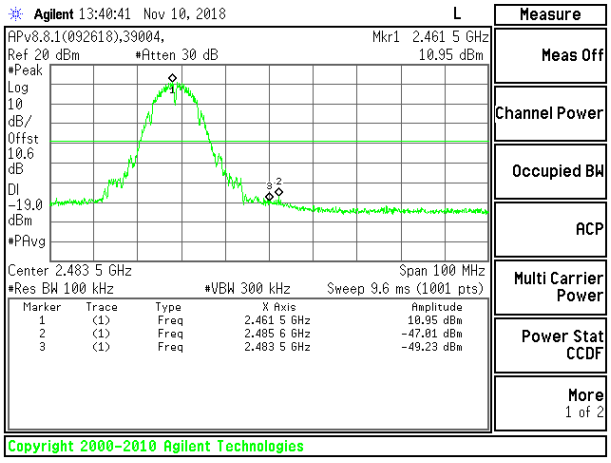
OUT-OF-BAND LOW CHANNEL 1



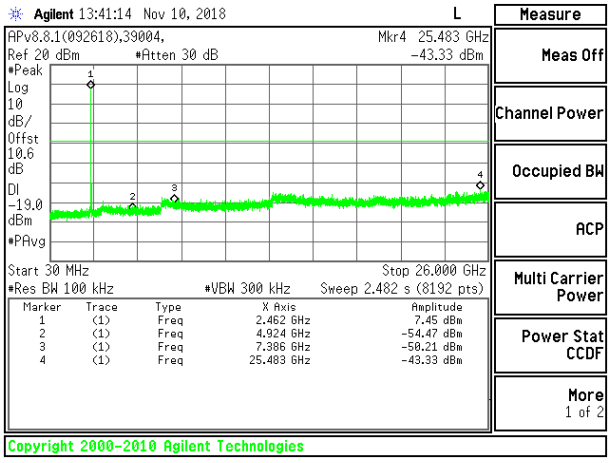
IN-BAND REFERNCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11

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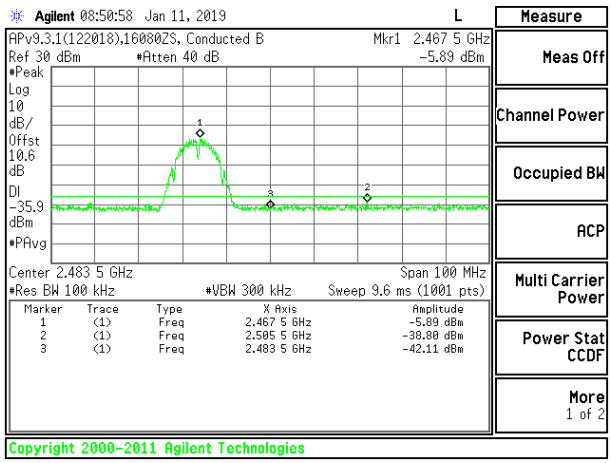
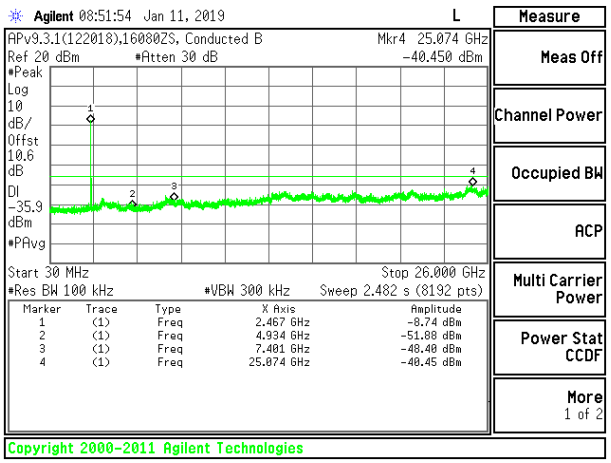
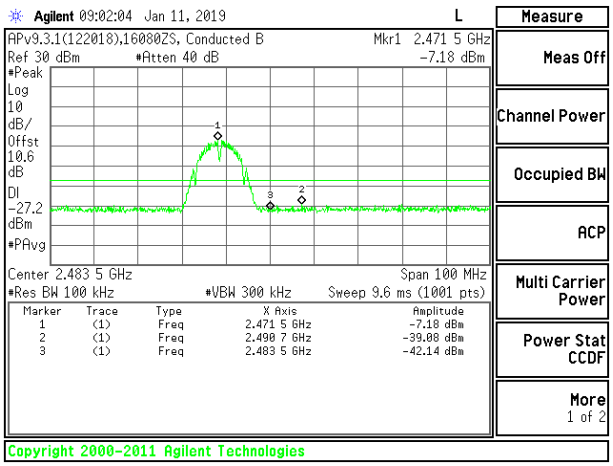


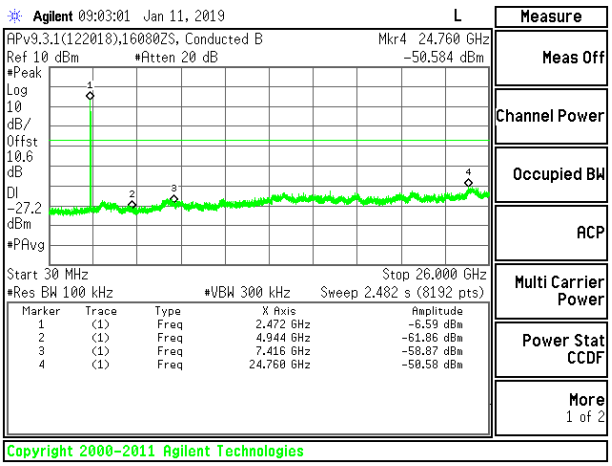
HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12



HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

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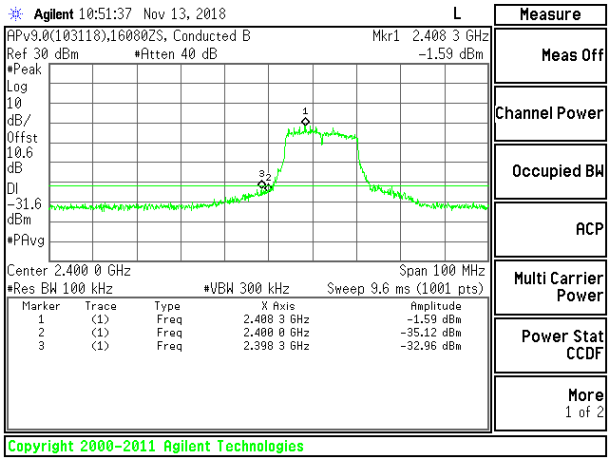
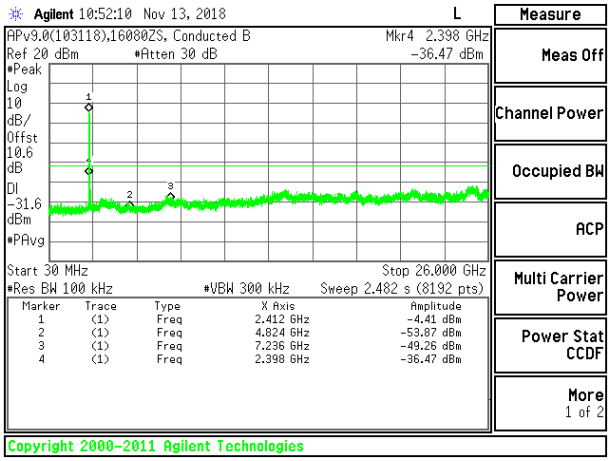
9.6.2. 802.11g MODE

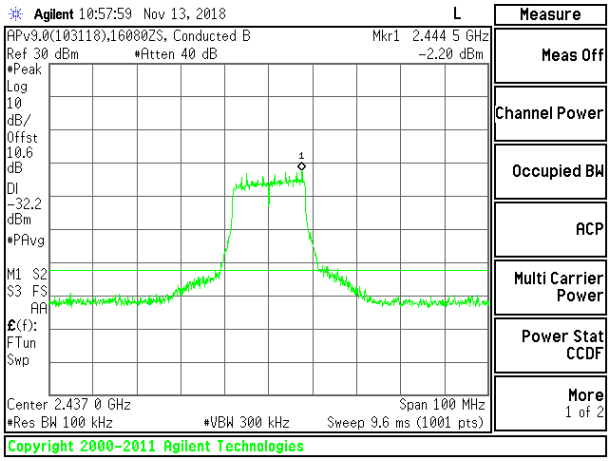
2TX Chain 0 + Chain 1 CDD MODE



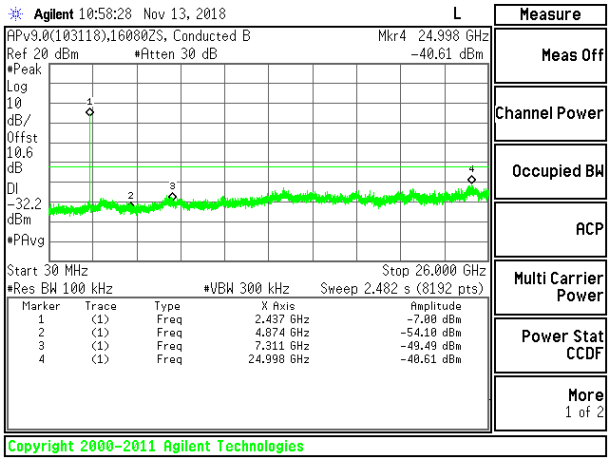
LOW CHANNEL 1 BANDEDGE CHAIN 0



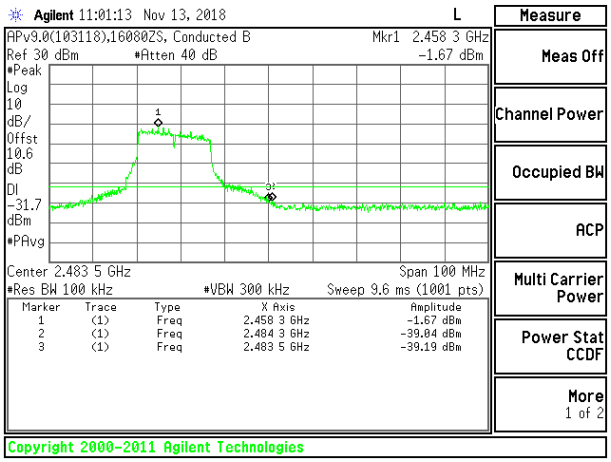
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



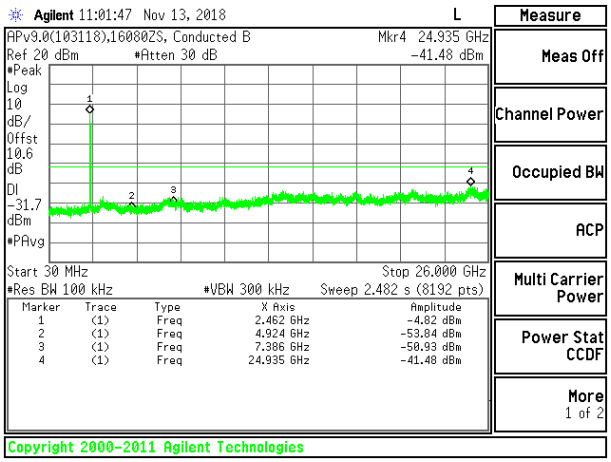
IN-BAND REFERENCE LEVEL CHAIN 0



OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 11 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0

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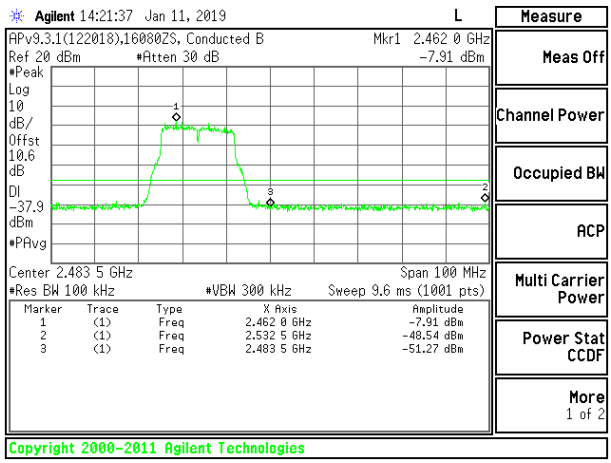

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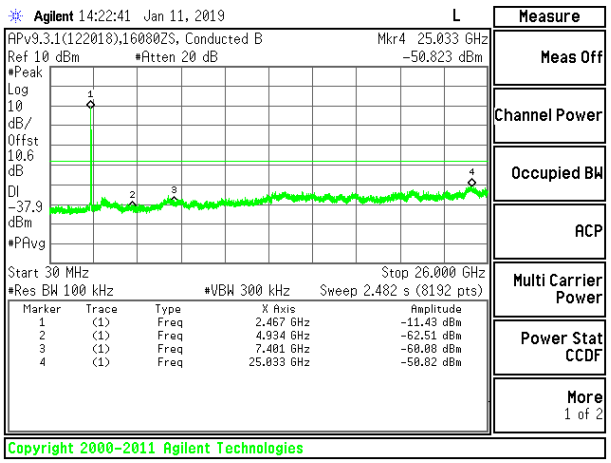

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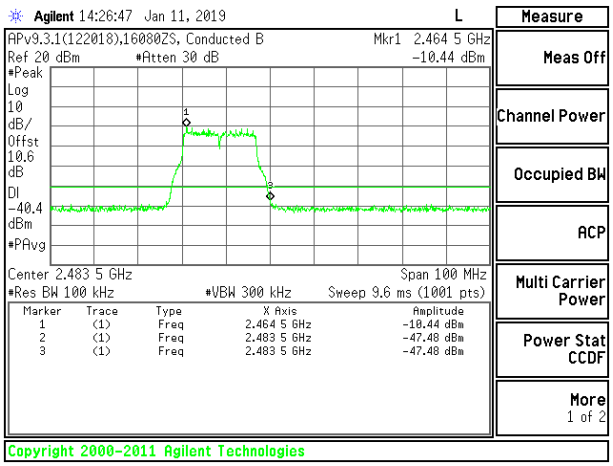

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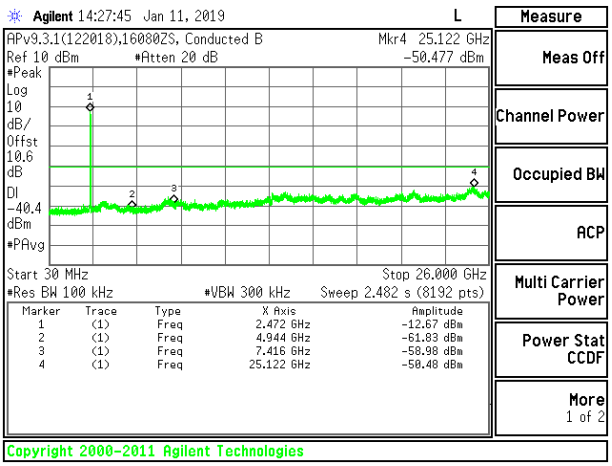

OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0

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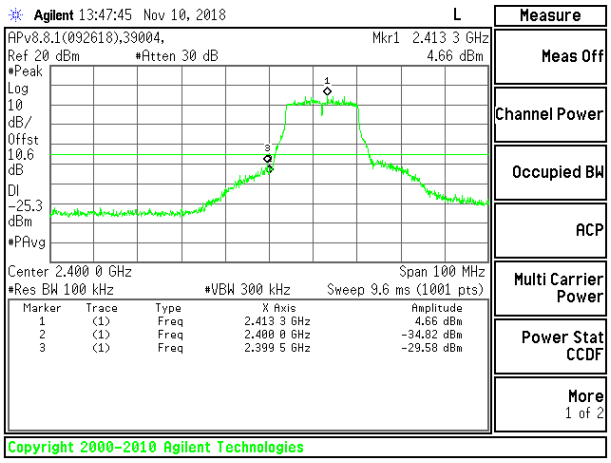
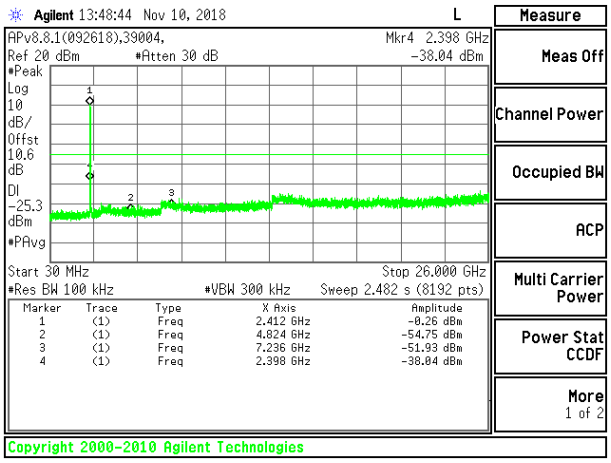
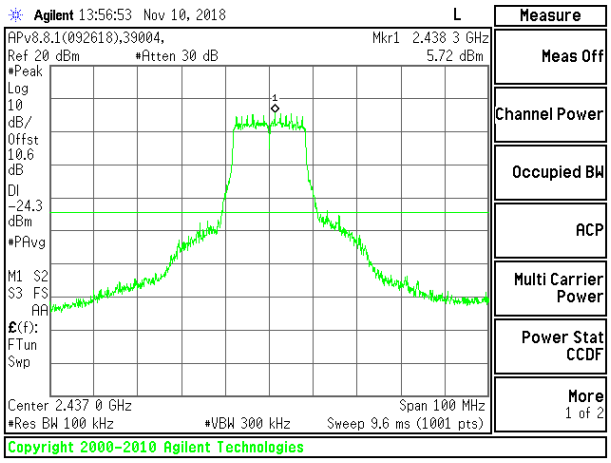


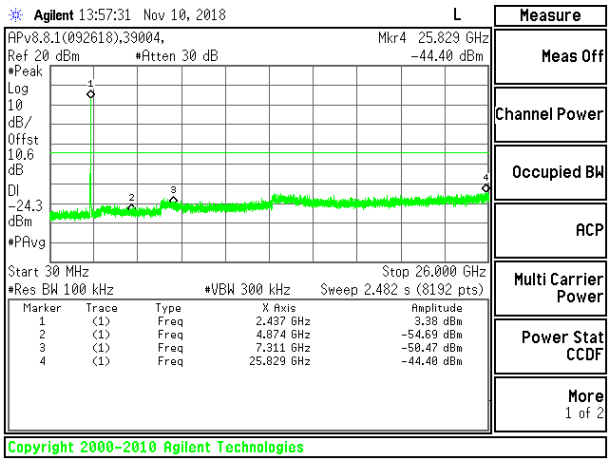
LOW CHANNEL 1 BANDEDGE CHAIN 1



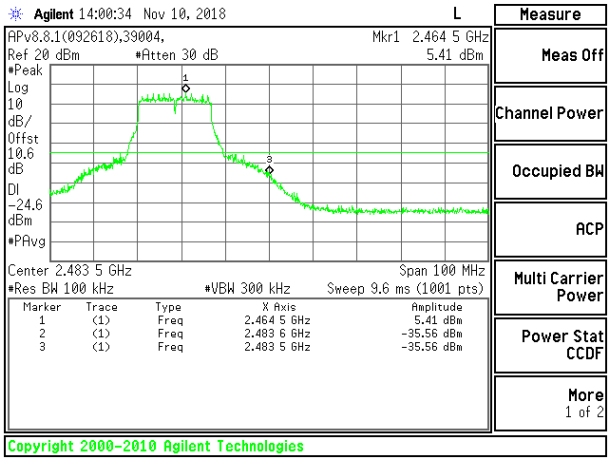
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



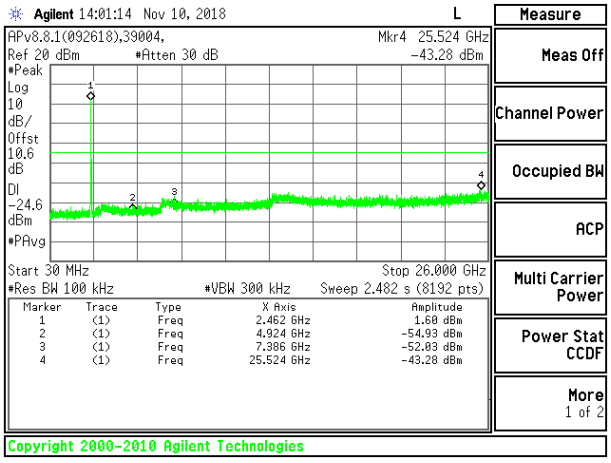
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 11 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1

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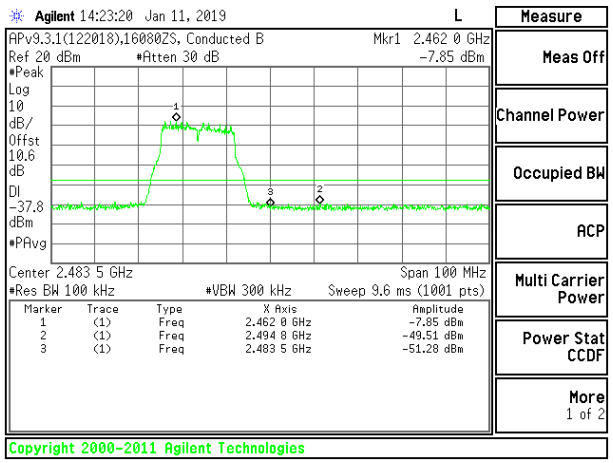
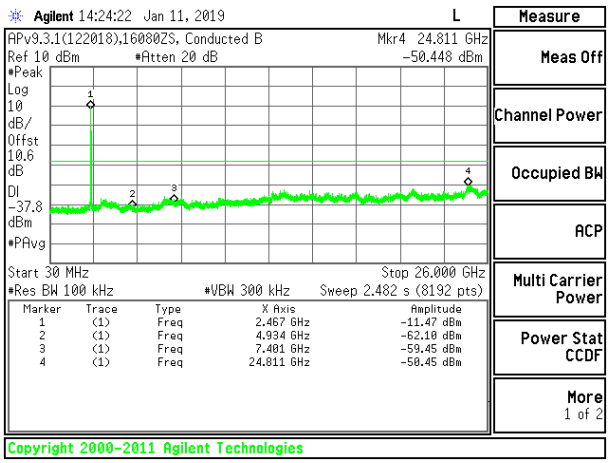
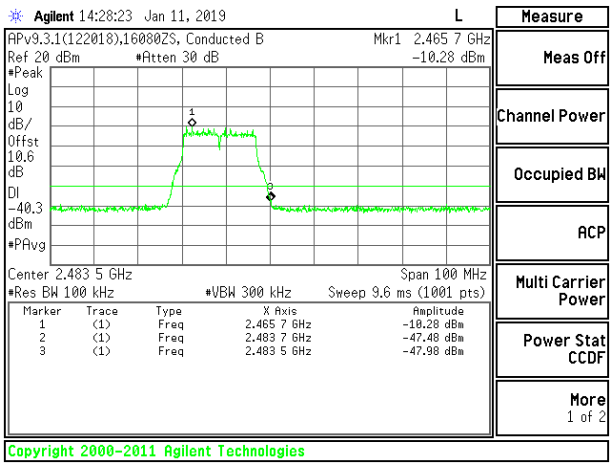


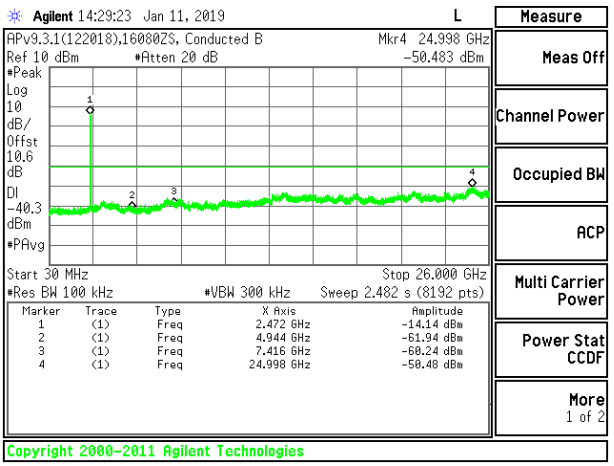
HIGH CHANNEL 12 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 12 CHAIN 1



HIGH CHANNEL 13 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

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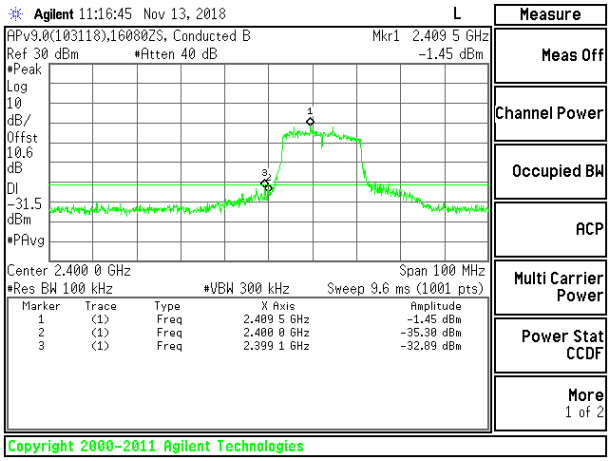
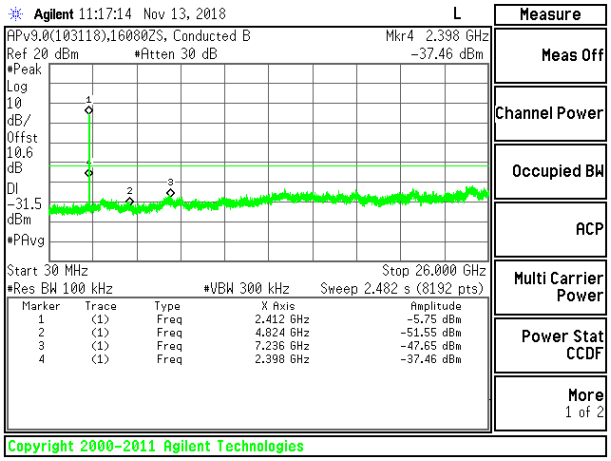
9.6.3. 802.11n HT20 MODE

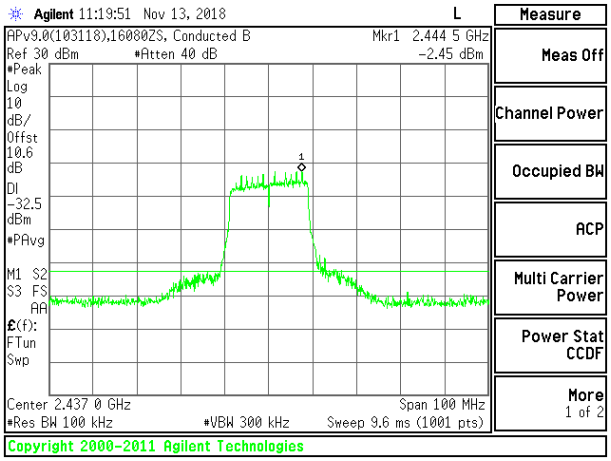
2TX Chain 0 + Chain 1 CDD MODE



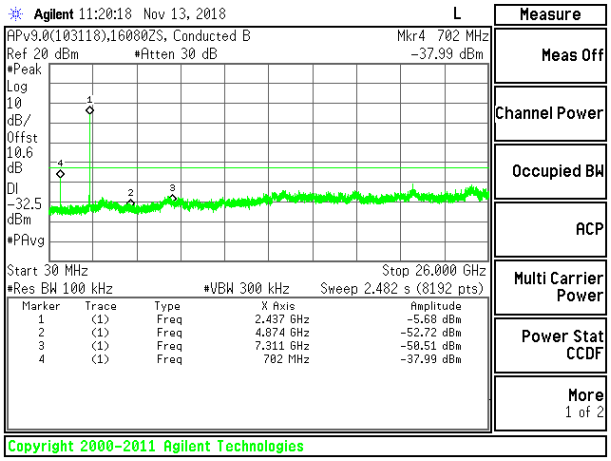
LOW CHANNEL 1 BANDEDGE CHAIN 0



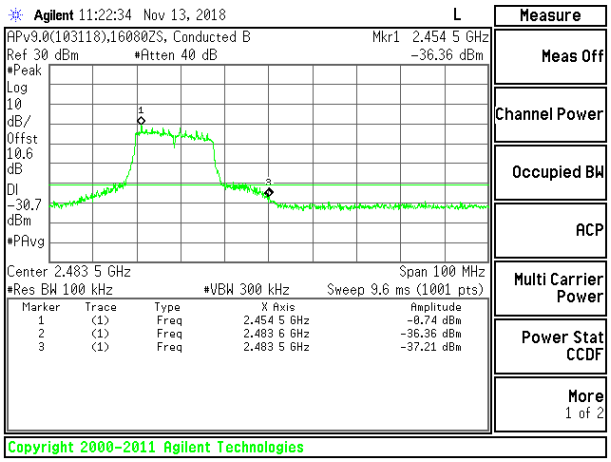
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



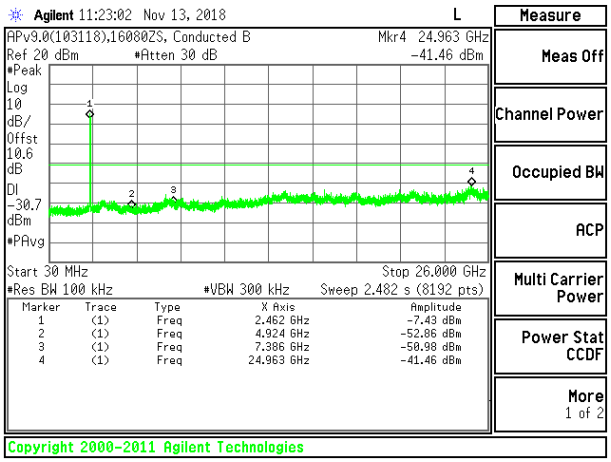
IN-BAND REFERENCE LEVEL CHAIN 0



OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 11 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0

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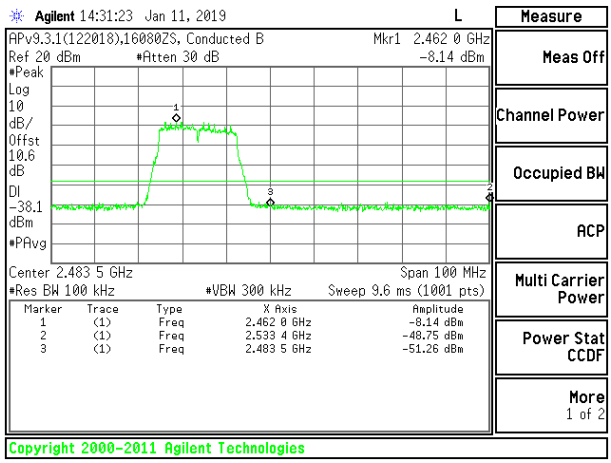
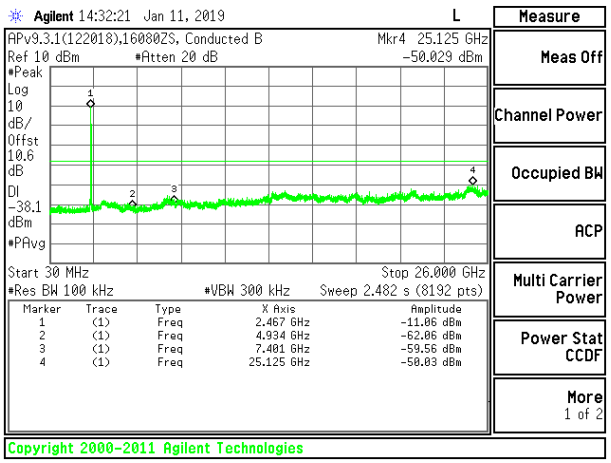
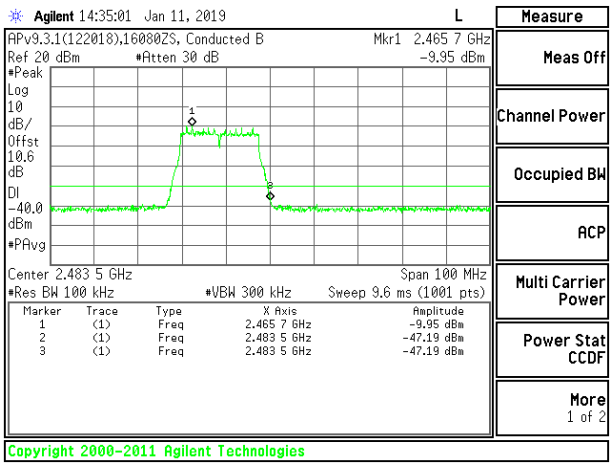


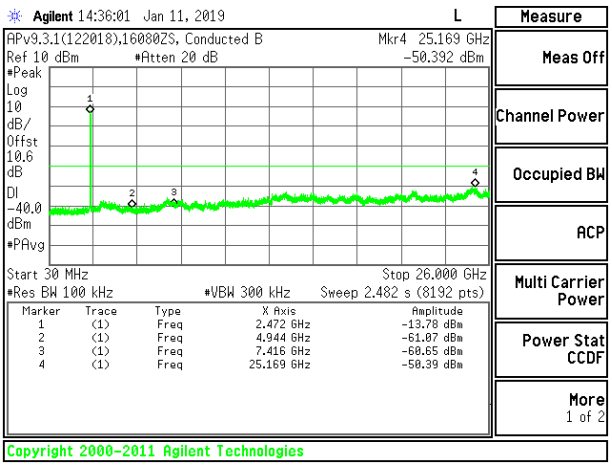
HIGH CHANNEL 12 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 13 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0

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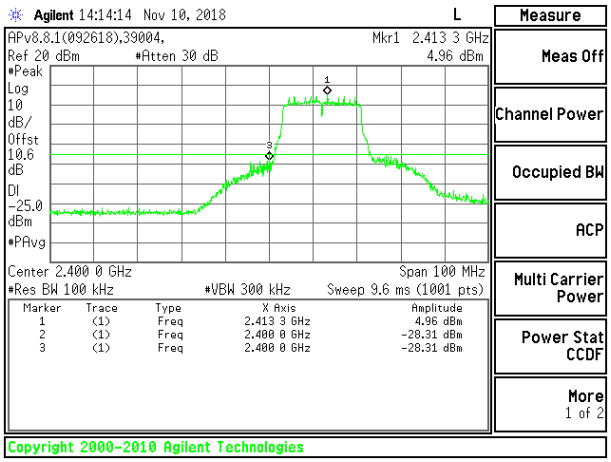
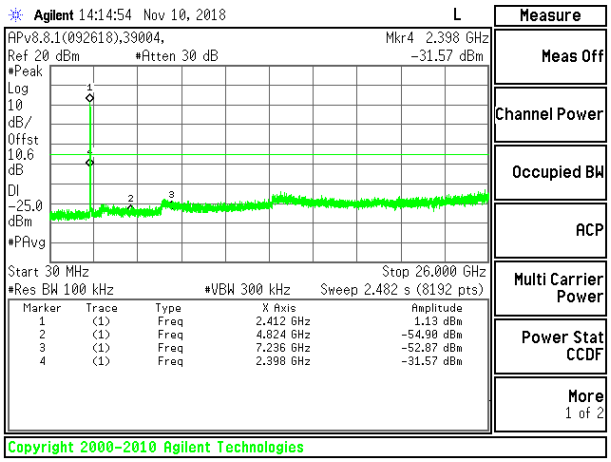
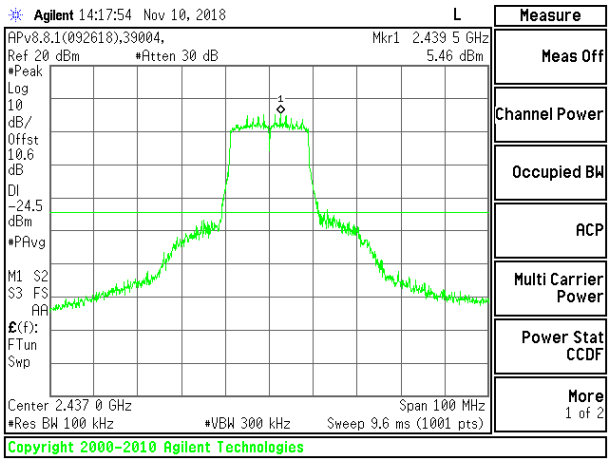


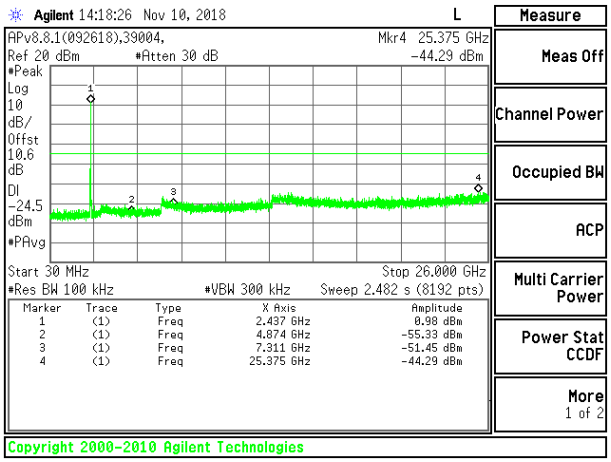
LOW CHANNEL 1 BANDEDGE CHAIN 1



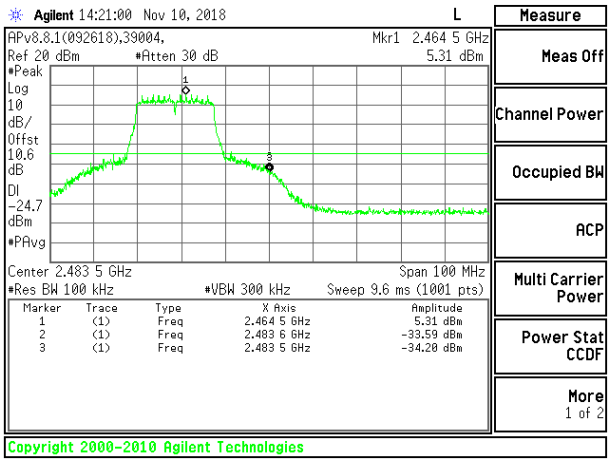
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



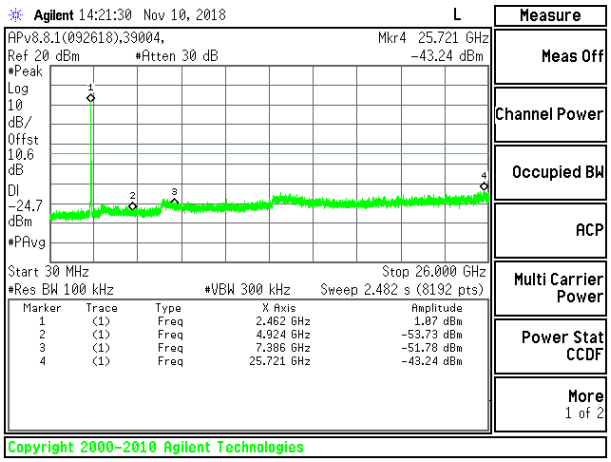
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 11 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1

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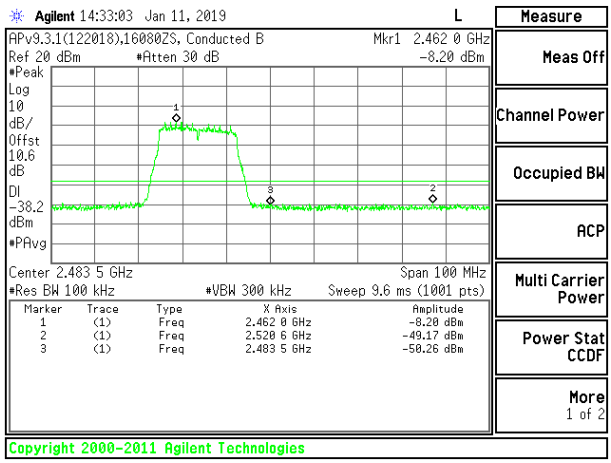
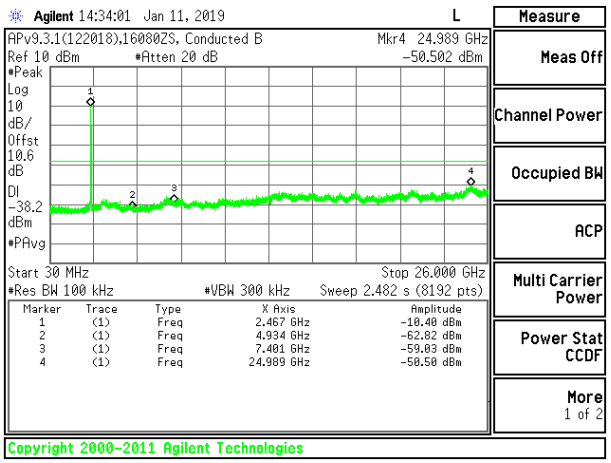
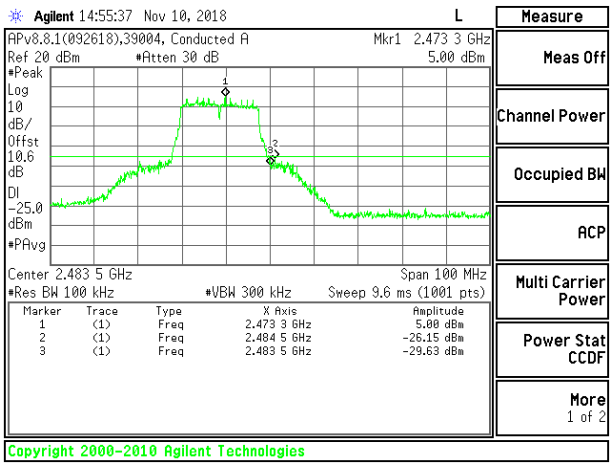


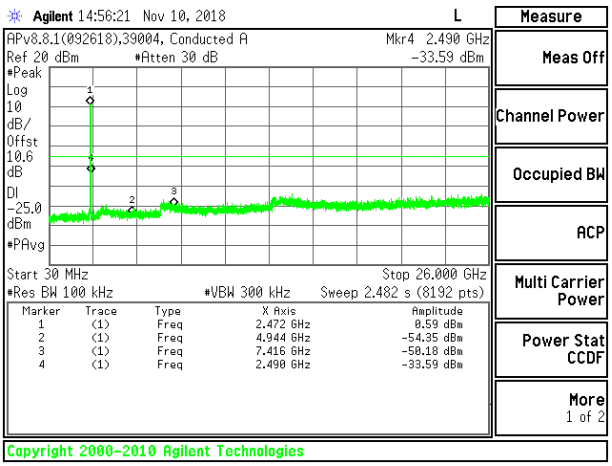
HIGH CHANNEL 12 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 12 CHAIN 1



HIGH CHANNEL 13 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

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