CERTIFICATION TEST REPORT

Report Number. : 12857633-E3V3

Applicant	:	Microsoft Corporation One Microsoft Way Redmond, WA 98052-6399 USA
Model	:	1873
FCC ID	:	C3K1873
IC	:	3048A-1873
EUT Description	:	Portable Computing Device
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C ISED RSS-247 ISSUE 2 ISED RSS-GEN ISSUE 5

Date Of Issue:
September 26, 2019

Prepared by:
UL Verification Services Inc.
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NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	9/3/2019	Initial Issue	---
V2	9/16/2019	Section 2: Standard added Section 5.5: Statement added Section 7: Duplicate removed Section 8: Titles updated Section 8.4: Antennas Updated	Henry Lau
V3	9/26/19	Section 6: Statement Removed	Henry Lau

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399
USA

EUT DESCRIPTION: Portable Computing Device

MODEL: 1873

SERIAL NUMBER: 009075792757 (Conducted)
009060692757 (Radiated)
009059592757 (Radiated)

DATE TESTED: July 30, 2019 – August 20, 2019

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 2	Complies
ISED RSS-GEN Issue 5	Complies

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

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

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

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 662911 D01, RSS-GEN Issue 5, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street	47658 Kato Road
☐ Chamber A	☐ Chamber D	☒ Chamber I
☐ Chamber B	☐ Chamber E	☒ Chamber J
☐ Chamber C	☐ Chamber F	☒ Chamber K
	☐ Chamber G	☐ Chamber L
	☐ Chamber H	☐ Chamber M

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code: 2324A.

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

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

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

4.3. MEASUREMENT UNCERTAINTY

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

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

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

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a portable computing device.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum average conducted output power as follows:

2.4GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2Tx			
2412 - 2462	802.11b	21.27	133.97
2412 - 2462	802.11g	21.32	135.52
2412 - 2462	802.11n HT20 CDD	21.26	133.66
2422 - 2452	802.11n HT40 CDD	21.3	134.90

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two PIFA antennas, with a maximum gain of:

Frequency Band (MHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)
2412-2472	-2.2	2.2

NOTE:
Antenna 1 = Chain 0
Antenna 2 = Chain 1

5.4. SOFTWARE AND FIRMWARE

The operating system installed on the EUT is Windows 10 Pro build 18362.19h1_release.190318-1202.

The Driver installed on the EUT is version 12.0.0.835.

The test utility software used during testing was QRCT v4.0.00125

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5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 30MHz, 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 all modes, tests were performed with the EUT set at the 2Tx CDD mode with power setting equal to SISO modes as the worst case scenario thus MIMO is representative of SISO.

The EUT has one intended orientations, X; 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
802.11n HT40mode: MCS0

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC DC Adapter	Microsoft	1706	0CI30J0IZ9396	DoC
AC DC Adapter	Lenovo	ADLX45NDC2A	11S45N0291Z1ZS925 3E2N9	DoC
Laptop	Lenovo	E555	6449237	TX2-RTL8723BE
Mouse	Logitech	B100	1451HS05PX68	DoC
USB 3.0 Gigabit Ethernet Adapter	Linksys	1113	X821908-002	DoC
USB Type C to Audio Jack	SONY	A1-0231	N/A	DoC

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-Shielded	1	to AC/DC Adaptor
2	DC	1	DC	Shielded	1.2	to Laptop, to EUT
3	Antenna	1	SMA	Un-Shielded	0.2	to Analyzer
4	USB	1	TYPE A	Shielded	0.2	USB-A to RJ45 converter
5	Ethernet	1	RJ45	Un-Shielded	0.5	Support Laptop to Ethernet Adapter
6	AC	1	AC	Un-Shielded	1	to AC/DC Adaptor
7	DC	1	DC	Shielded	1.2	to Support Equipment

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	AC	1	AC	Un-shielded	1	to AC/DC Adapter
2	DC	1	DC	Shielded	1.2	to EUT
3	USB	1	TYPE A	Shielded	1.5	EUT to Mouse
4	USB	1	Type C	Shielded	0.1	USB-C to Audio Jack converter
5	Earphone	2	3.5mm	Un-shielded	1	EUT to earphone

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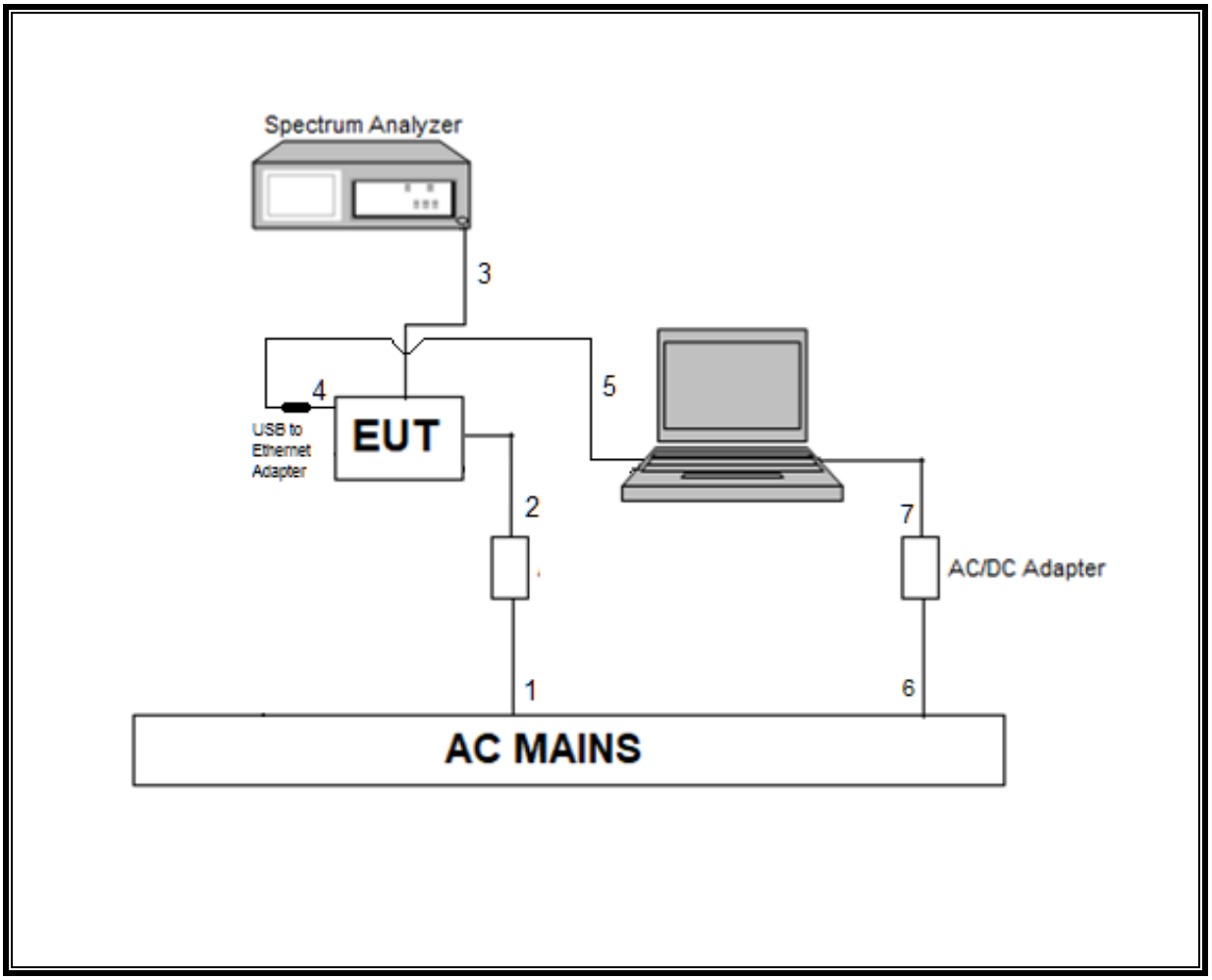
TEST SETUP

The EUT is connected to a test laptop during the tests. Test software exercised the radio card.

CONDUCTED TEST SETUP DIAGRAM



TEST SETUP

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

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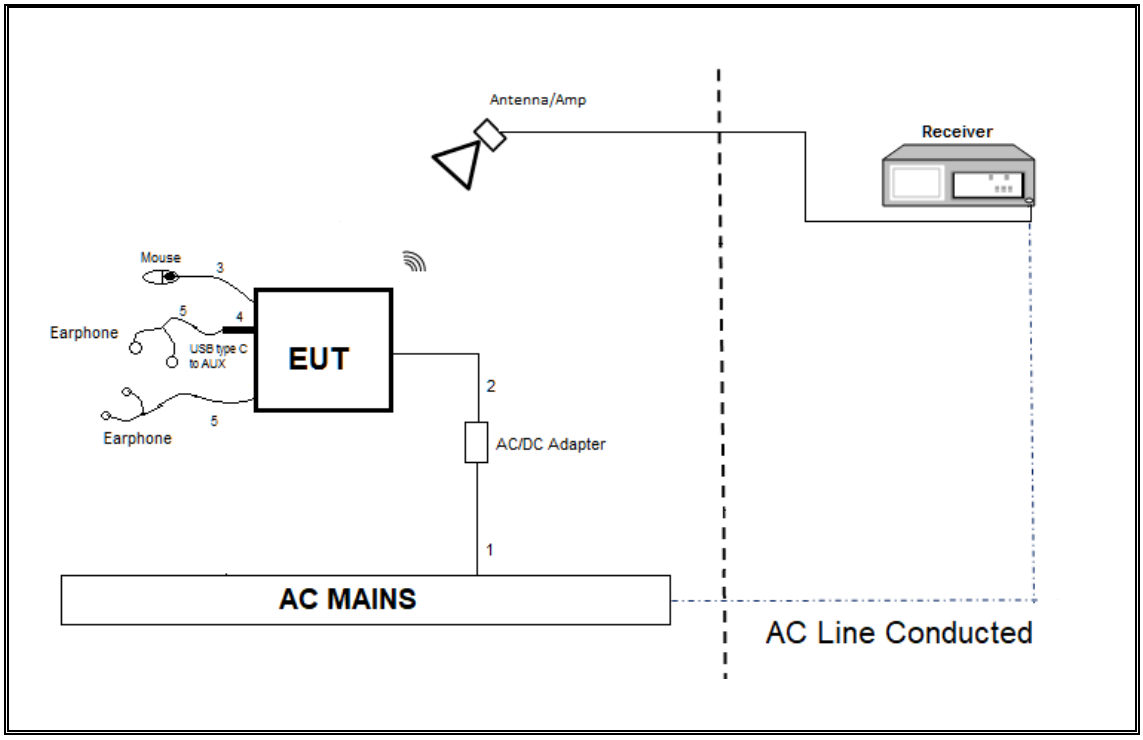
RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



TEST SETUP

For radiated tests and AC line conducted tests: EUT is connected to all support equipment. The test software exercises the radio. Support laptop was removed after EUT was configured.

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6. MEASUREMENT METHOD

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

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

6 dB BW: ANSI C63.10 Section 11.8.1

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

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

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

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

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

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

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

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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**
Antenna, Passive Loop 30Hz to 1MHz	ELETRO METRICS	EM-6871	PRE0179465	05/31/2020	05/31/2019
Antenna, Passive Loop 100kHz to 30MHz	ELETRO METRICS	EM-6872	PRE0179467	05/31/2020	05/31/2019
Amplifier, 9kHz to 1GHz, 32 dB	Sonoma Instrument	310	PRE0180175	06/29/2020	06/29/2019
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	PRE0184971	11/13/2019	11/13/2018
Amplifier, 9kHz to 1GHz, 32 dB	Sonoma Instrument	310	PRE0180174	06/01/2020	06/01/2019
Horn Antenna	AR	AMPL-ATH1G18	PRE0189055	04/20/2020	04/20/2018
Amplifier, 1 to18GHz	MITEQ	AFS42-00101800-25-S-42	PRE0181078	08/31/2019	08/01/2018
Amplifier, 1 to18GHz	MITEQ	AFS42-00101800-25-S-42	PRE0181078	08/24/2020	08/24/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	06/05/2020	06/05/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	EMC4294	06/14/2020	06/14/2019
Amplifier, 1 to18GHz	AMPLICAL	AMP1G18-35	T1569	06/04/2020	06/04/2019
Horn Antenna	AR	AMPL-ATH1G18	PRE0189055	04/20/2020	04/20/2018
Amplifier, 1 to18GHz	AMPLICAL	AMP1G18-35	T1571	05/28/2020	05/28/2019
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	PRE0182188	08/29/2019	08/29/2018
Rf Amplifier, 18-26.5GHz, 60dB gain	Amplical	AMP18G26.5-60	PRE0181238	05/01/2020	05/01/2019
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1265	01/29/2020	01/29/2019
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1227	02/05/2020	02/05/2019
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179367	05/16/2020	05/16/2019
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179372	02/16/2020	02/16/2019
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179367	05/16/2020	05/16/2019
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179376	02/14/2020	02/14/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T917	01/24/2020	01/24/2019
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Agilent (Keysight) Technologies	E4440A	T200	01/28/2020	01/28/2019
AC Line Conducted					
EMI Receiver	Rohde & Schwarz	ESR	T1436	02/14/2020	02/14/2019
LISN for Conducted Emissions CISPR-16	FCC INC.	FCC LISN 50/250	T1310	01/24/2020	01/24/2019
Test Software List					
Radiated Software	UL	UL EMC		Ver 9.5, June 15, 2019	
Antenna Port Software	UL	UL RF		Ver 10.0.1, July 23, 2019	
AC Line Conducted Software	UL	UL EMC		Ver 9.5, May 26, 2015	

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

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8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b	12.200	12.320	0.990	99.03%	0.00	0.010
802.11g	2.030	2.135	0.951	95.08%	0.22	0.493
802.11n HT20	1.885	1.990	0.947	94.72%	0.24	0.531
802.11n HT40	0.927	1.034	0.897	89.67%	0.47	1.079

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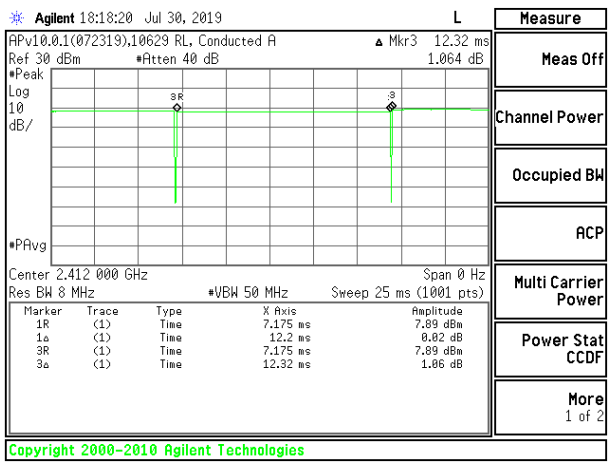
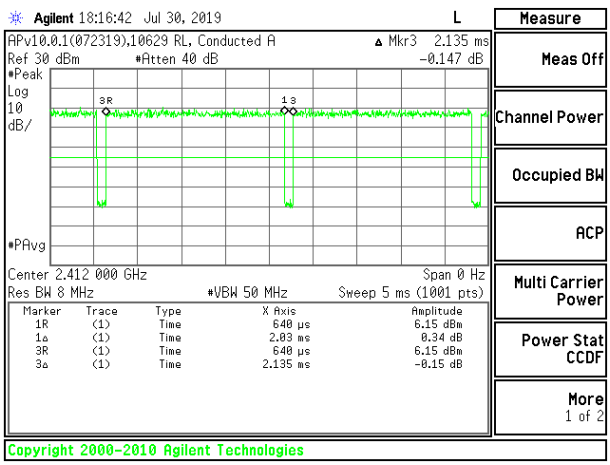
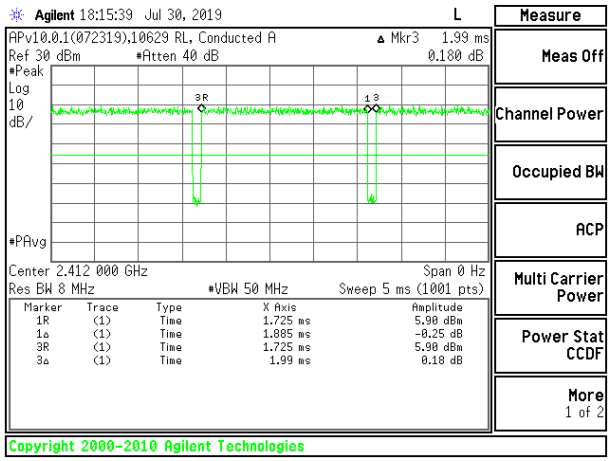
DUTY CYCLE PLOTS



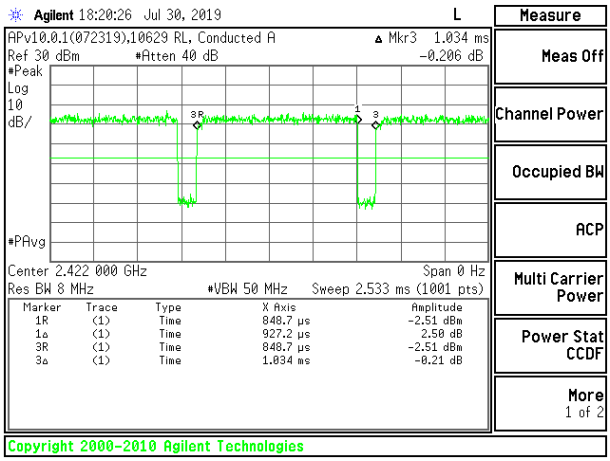
DUTY CYCLE 802.11b



DUTY CYCLE 802. 11g



DUTY CYCLE 802. 11n HT20



DUTY CYCLE 802. 11n HT40

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8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

8.2.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	13.4182	13.2174
Low 2	2417	13.3716	13.1738
Mid 6	2437	13.2569	13.1105
High 10	2457	13.3140	13.1372
High 11	2462	13.2223	13.2112
High 12	2467	13.3404	13.2146
High 13	2472	13.2636	13.2434

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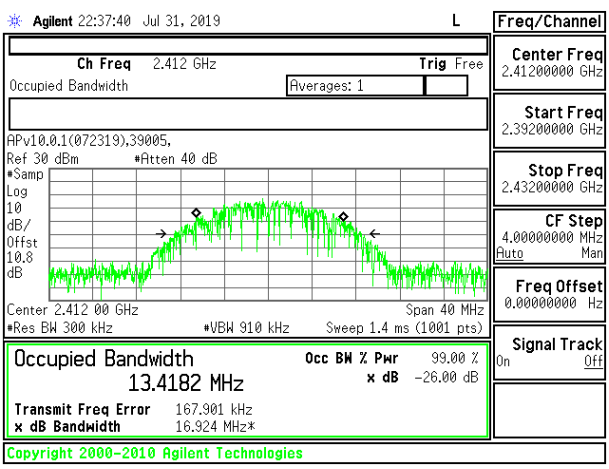
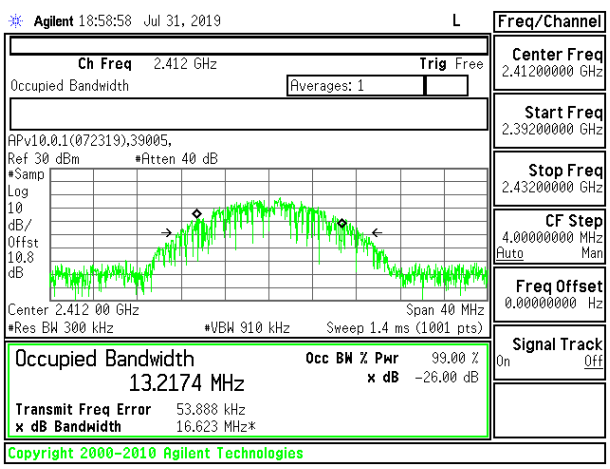
LOW CHANNEL 1

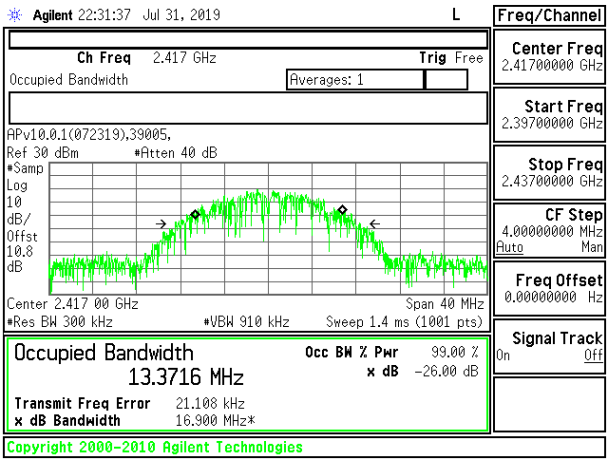


LOW CHANNEL 1 CHAIN 0

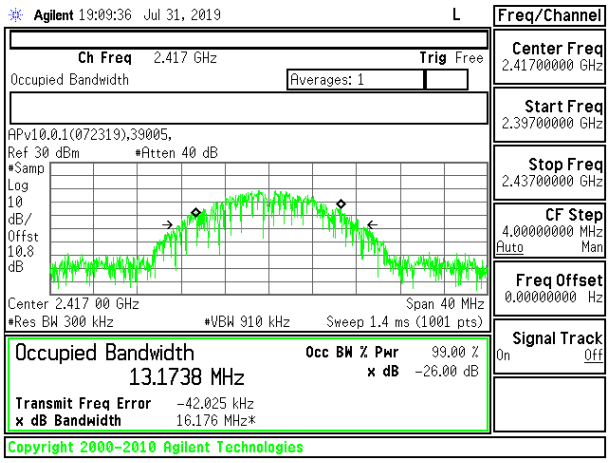


LOW CHANNEL 1 CHAIN 1

LOW CHANNEL 2



LOW CHANNEL 2 CHAIN 0



LOW CHANNEL 2 CHAIN 1

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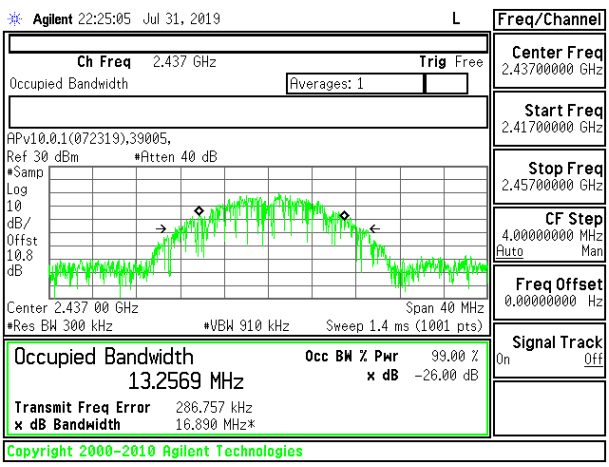
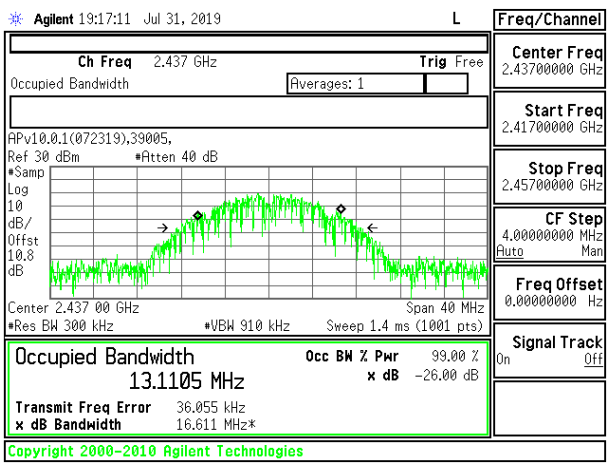
MID CHANNEL 6

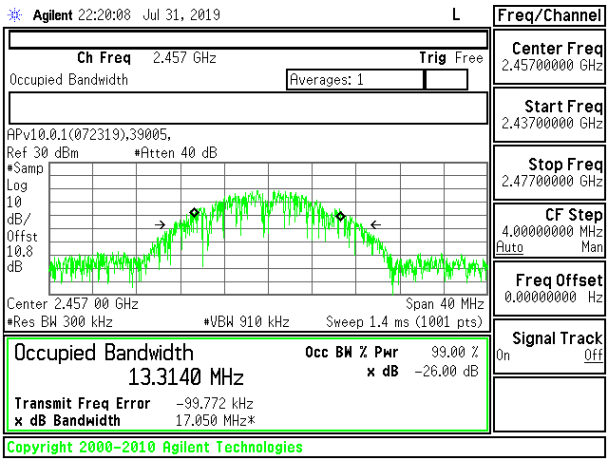


MID CHANNEL 6 CHAIN 0

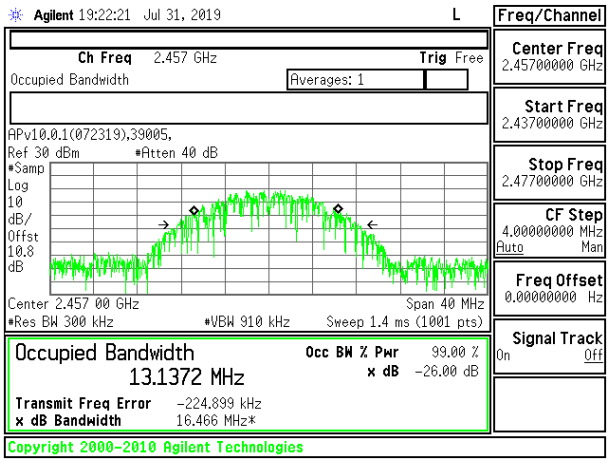


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 10



HIGH CHANNEL 10 CHAIN 0



HIGH CHANNEL 10 CHAIN 1

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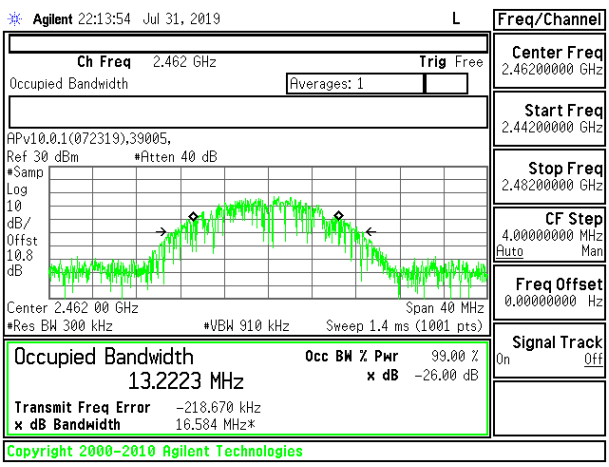
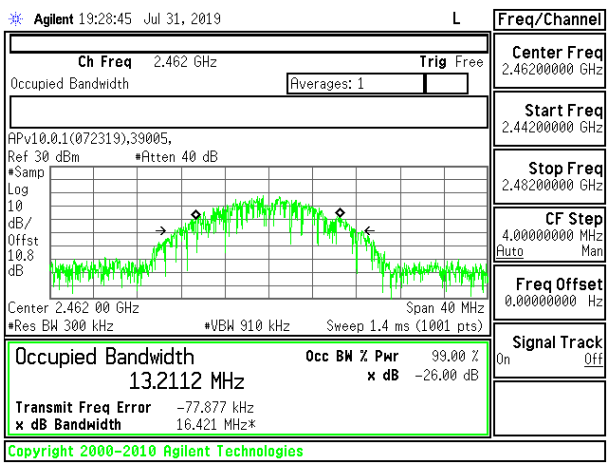
HIGH CHANNEL 11

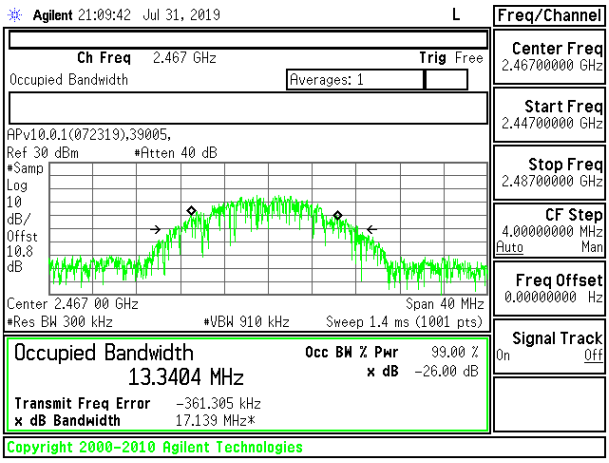


HIGH CHANNEL 11 CHAIN 0

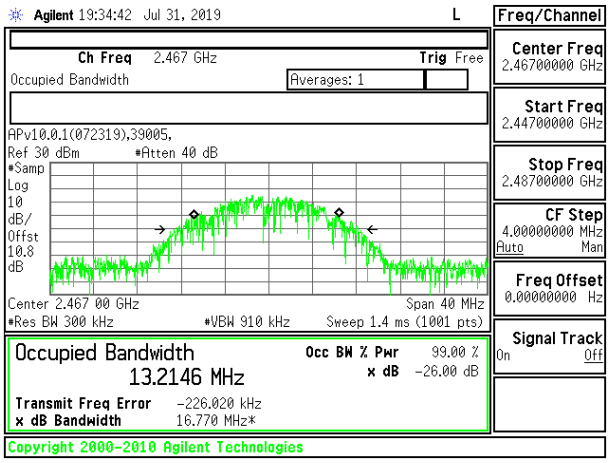


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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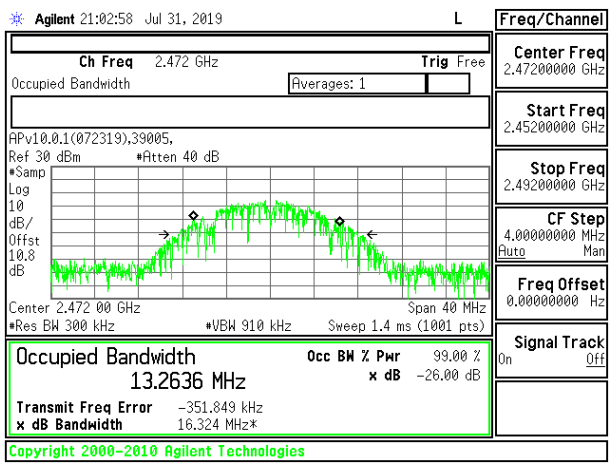
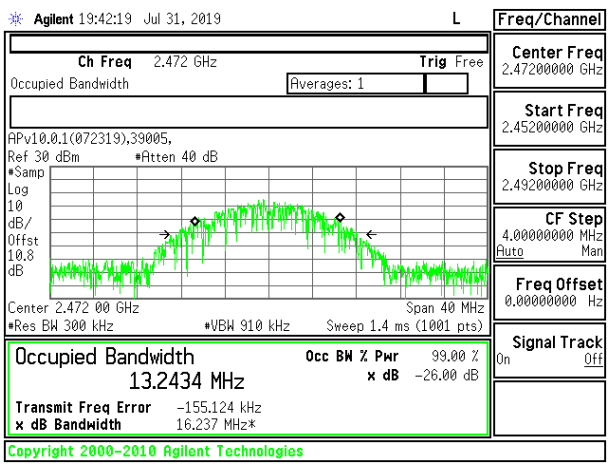
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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8.2.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	16.4619	16.4221
Low 2	2417	16.3955	16.4358
Mid 6	2437	16.5181	16.4094
High 10	2457	16.3648	16.4540
High 11	2462	16.3978	16.4460
High 12	2467	16.4077	16.4714
High 13	2472	16.4256	16.3627

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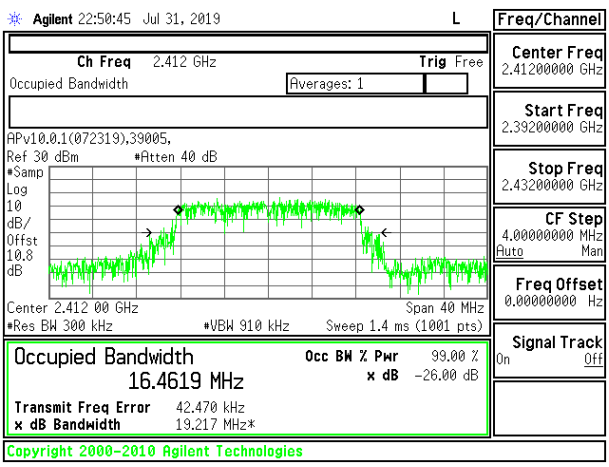
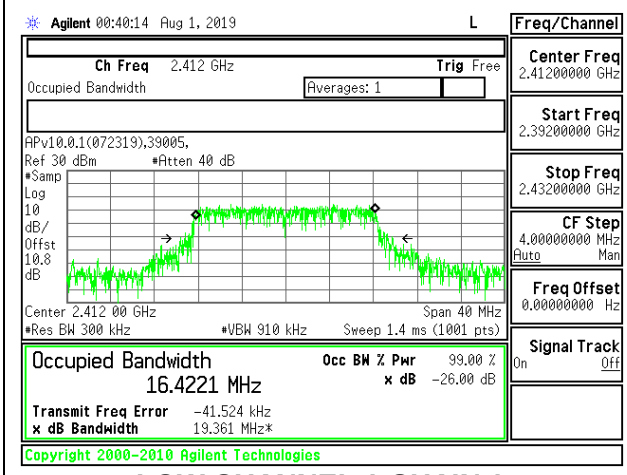
LOW CHANNEL 1

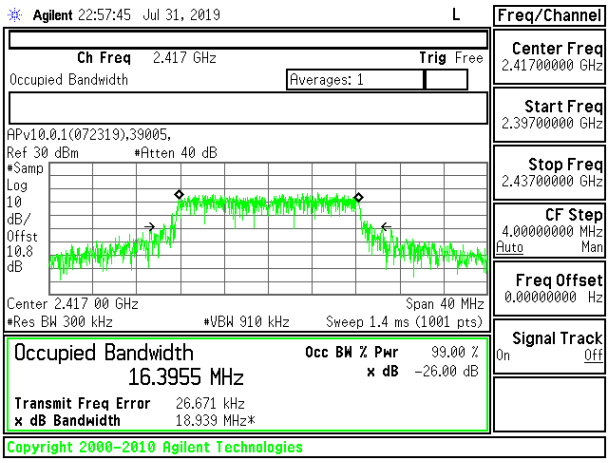


LOW CHANNEL 1 CHAIN 0

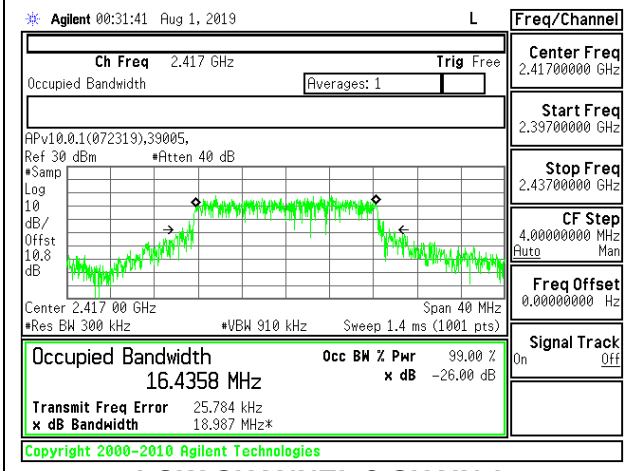


LOW CHANNEL 1 CHAIN 1

LOW CHANNEL 2



LOW CHANNEL 2 CHAIN 0



LOW CHANNEL 2 CHAIN 1

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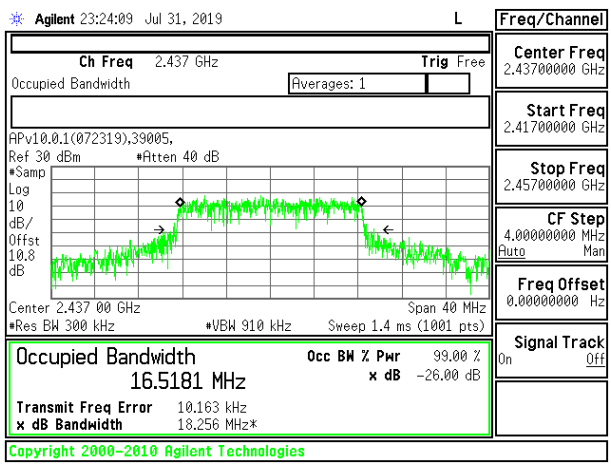
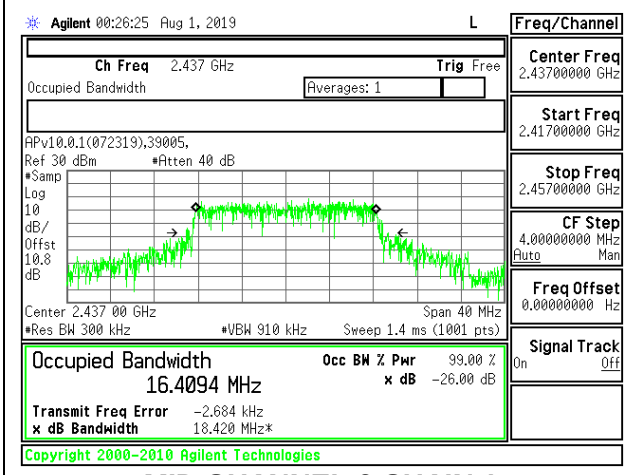
MID CHANNEL 6

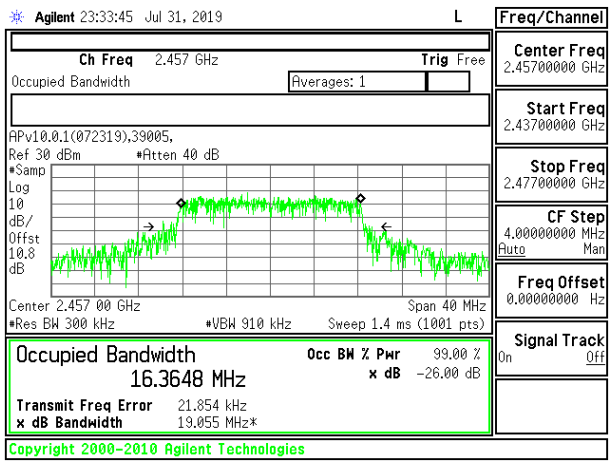


MID CHANNEL 6 CHAIN 0

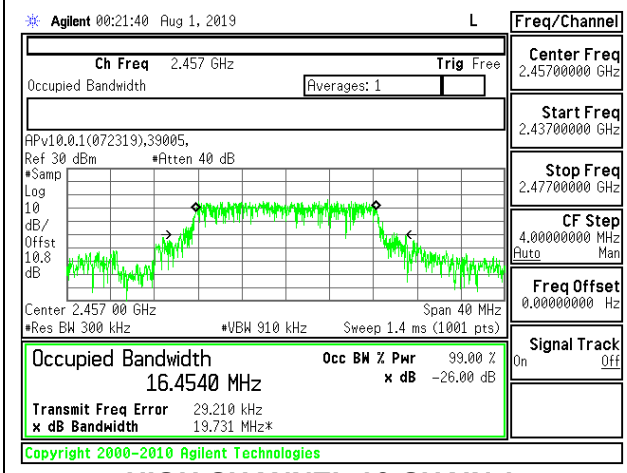


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 10



HIGH CHANNEL 10 CHAIN 0



HIGH CHANNEL 10 CHAIN 1

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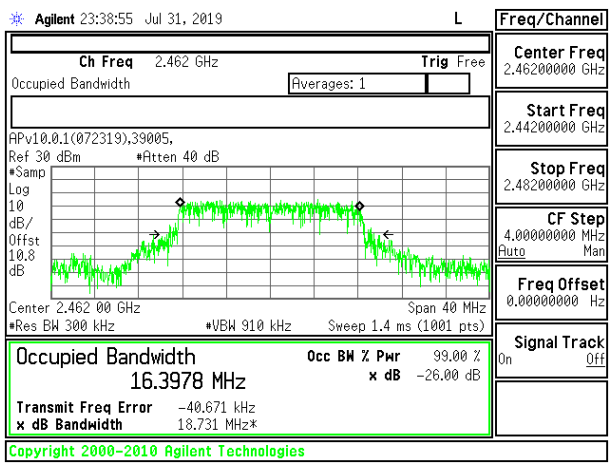
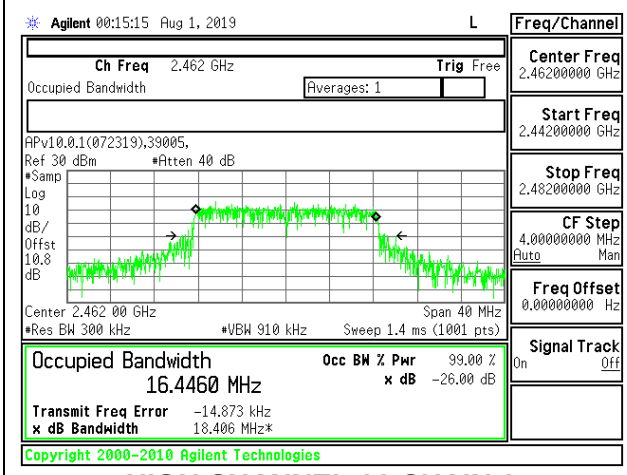
HIGH CHANNEL 11

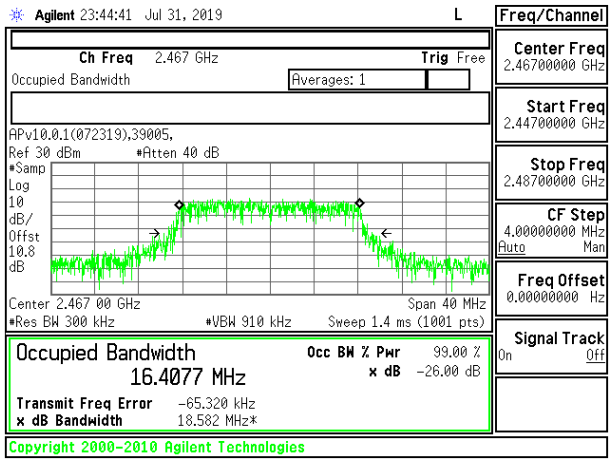


HIGH CHANNEL 11 CHAIN 0

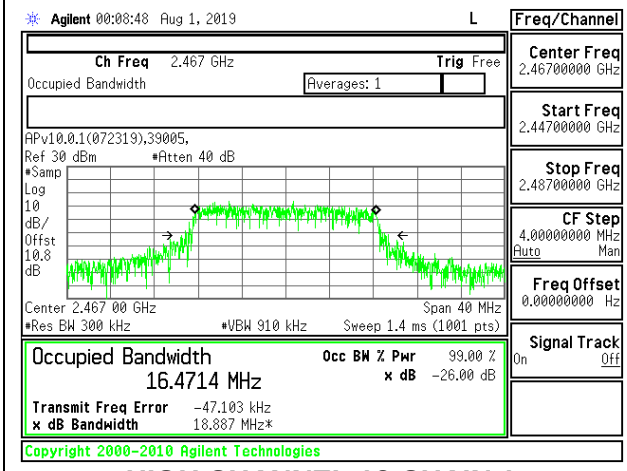


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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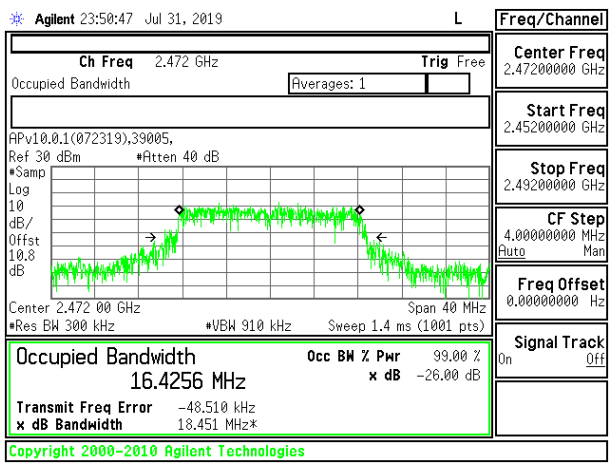
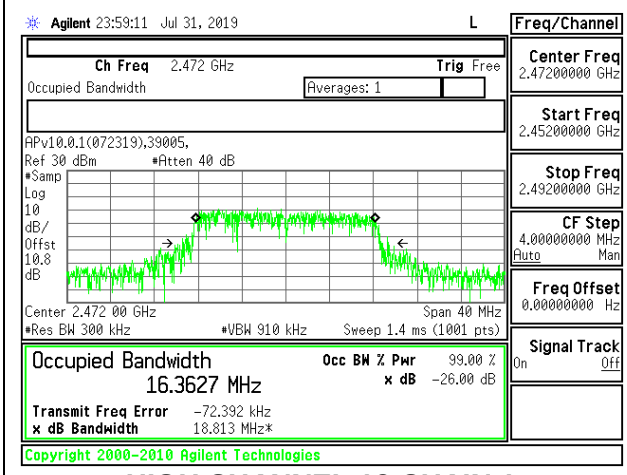
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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8.2.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	17.583	17.636
Low 2	2417	17.636	17.544
Mid 6	2437	17.670	17.613
High 10	2457	17.707	17.600
High 11	2462	17.576	17.572
High 12	2467	17.540	17.652
High 13	2472	17.693	17.641

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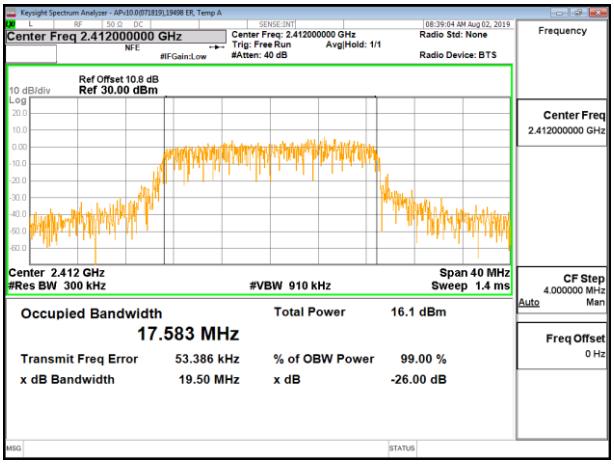
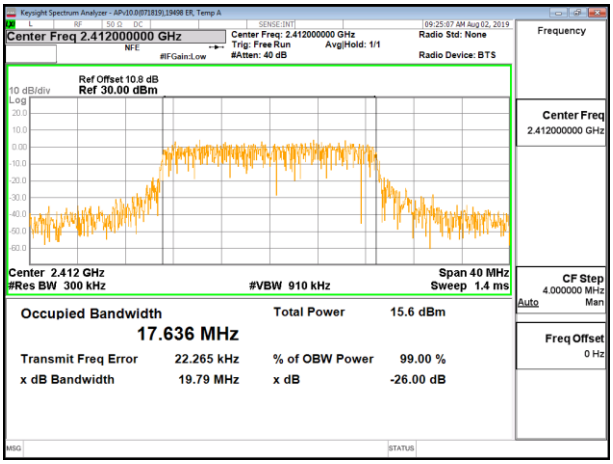
LOW CHANNEL 1

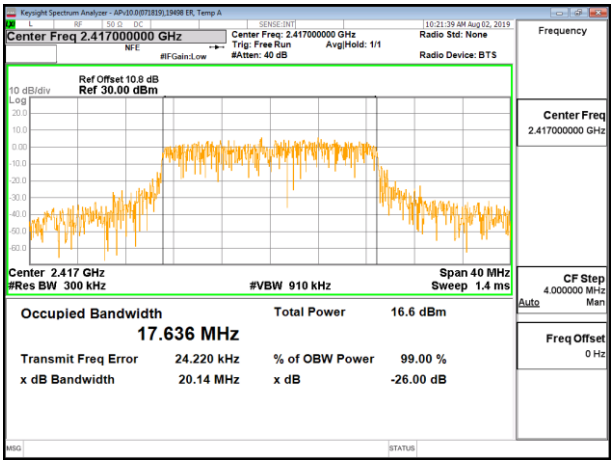


LOW CHANNEL 1 CHAIN 0

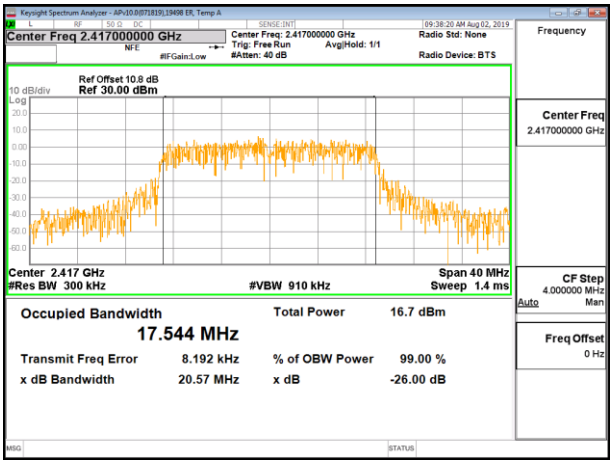


LOW CHANNEL 1 CHAIN 1

LOW CHANNEL 2



LOW CHANNEL 2 CHAIN 0



LOW CHANNEL 2 CHAIN 1

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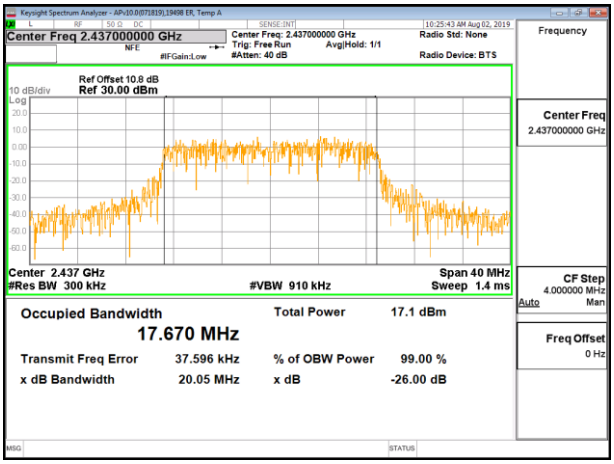
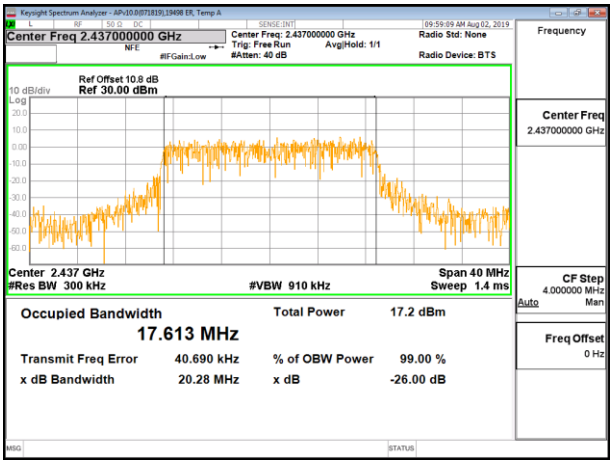
MID CHANNEL 6

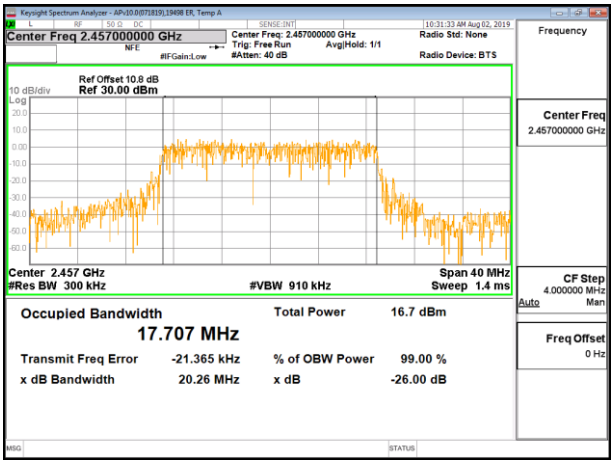


MID CHANNEL 6 CHAIN 0

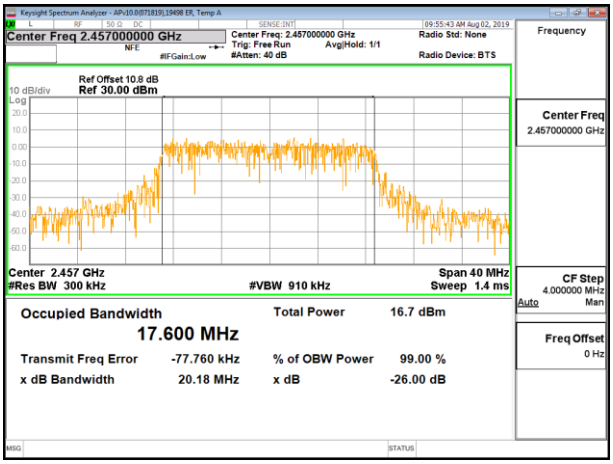


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 10



HIGH CHANNEL 10 CHAIN 0



HIGH CHANNEL 10 CHAIN 1

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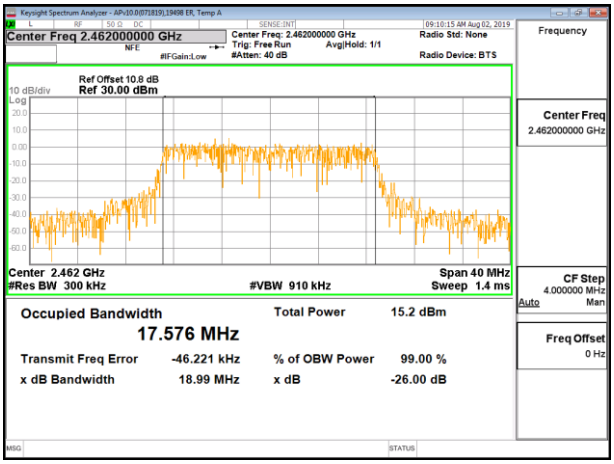
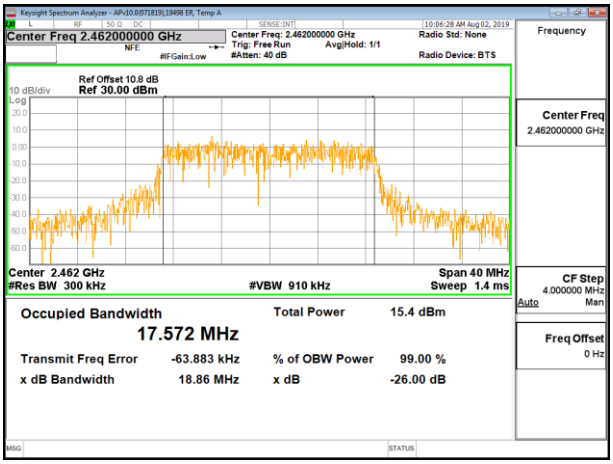
HIGH CHANNEL 11

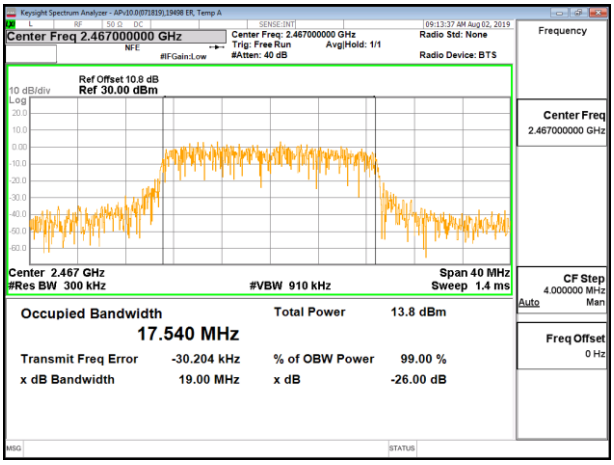


HIGH CHANNEL 11 CHAIN 0

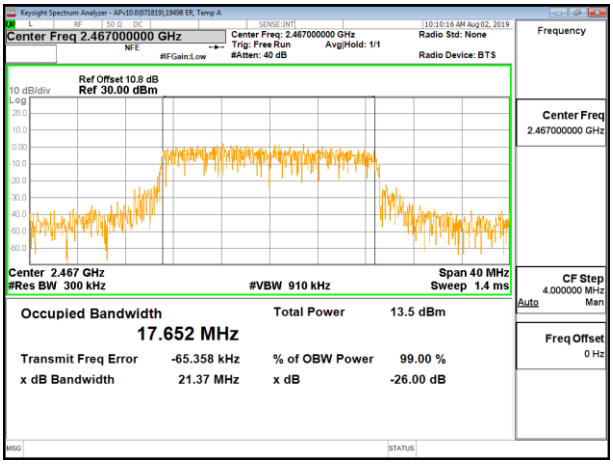


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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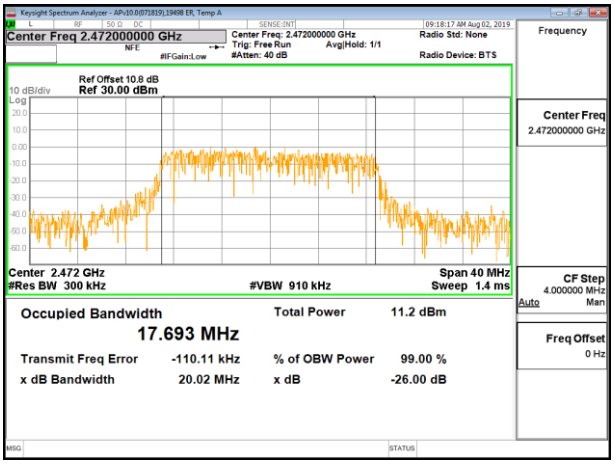
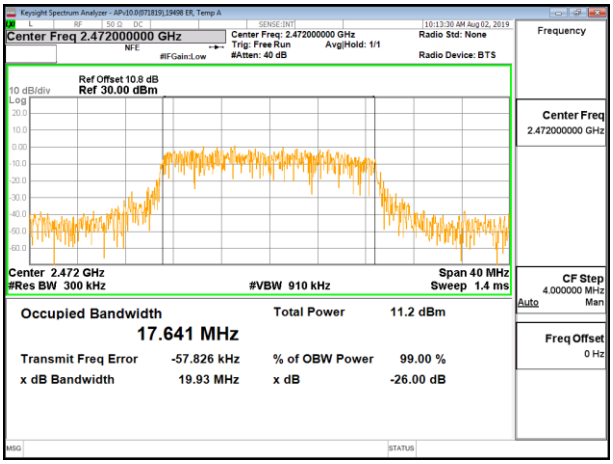
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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8.2.4. 802.11n HT40 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 3	2422	36.2250	36.3640
Mid 6	2437	36.0230	36.0650
High 9	2452	36.0013	35.8429
High 10	2457	36.0230	36.0430
High 11	2462	35.8780	36.0180

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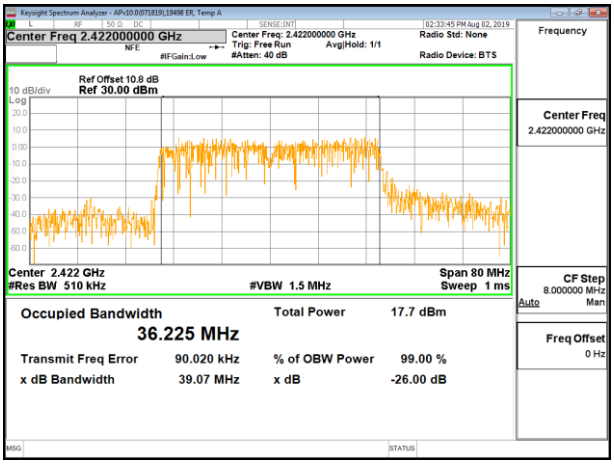
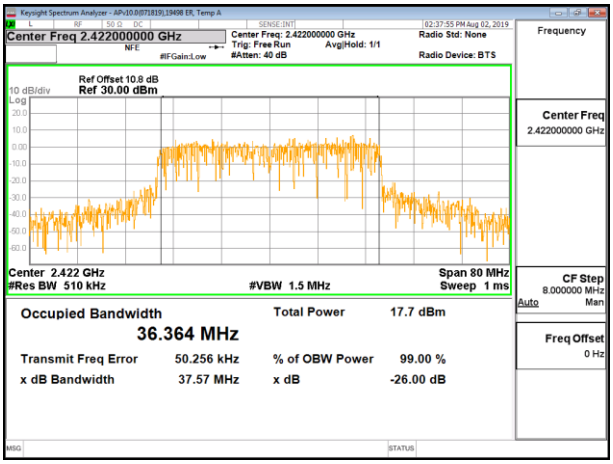
LOW CHANNEL 3

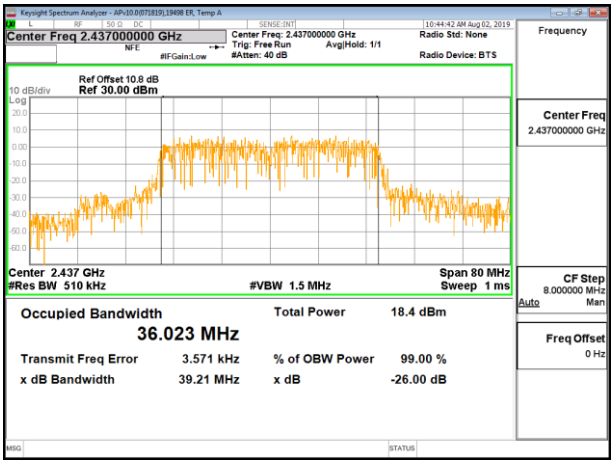


LOW CHANNEL 3 CHAIN 0

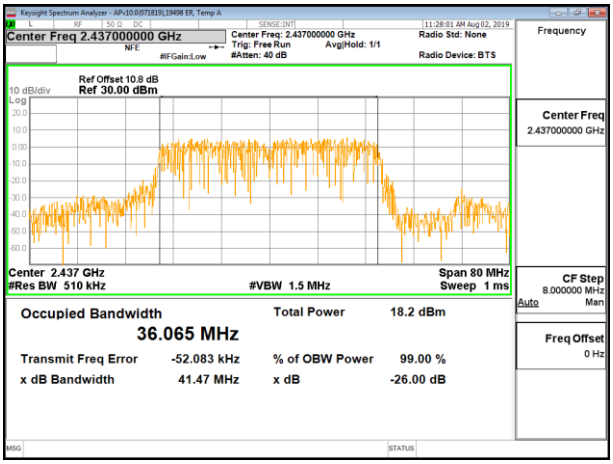


LOW CHANNEL 3 CHAIN 1

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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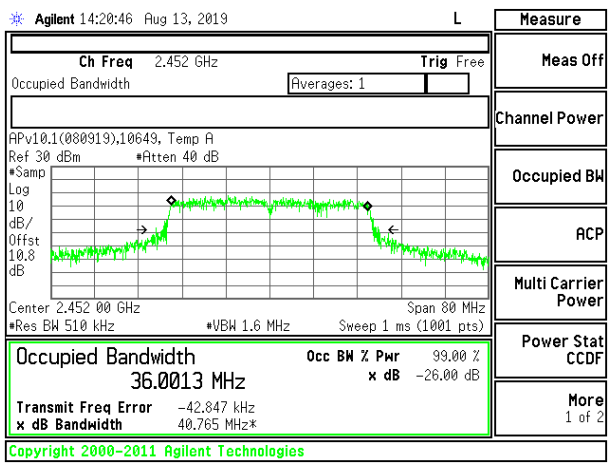
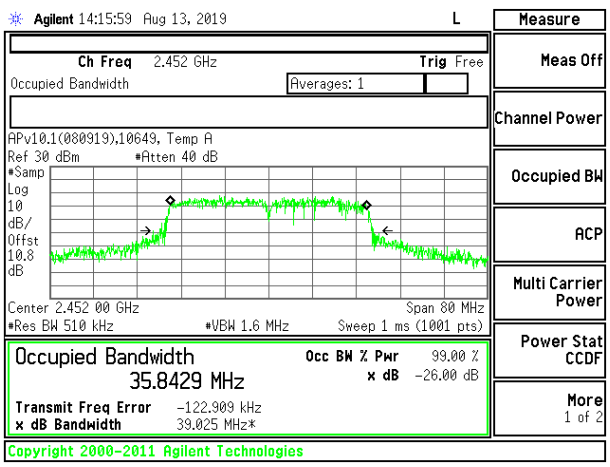
HIGH CHANNEL 9

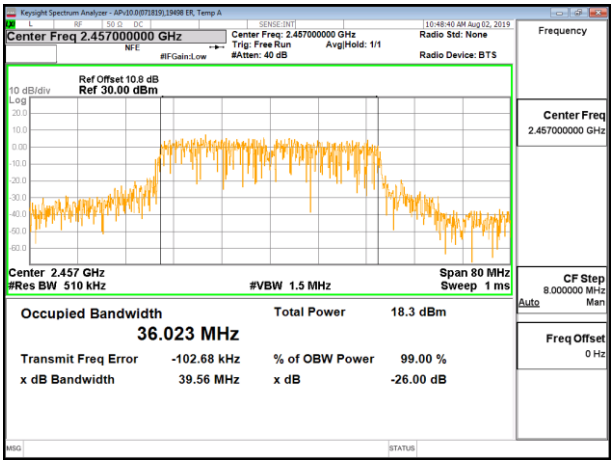


HIGH CHANNEL 9 CHAIN 0



HIGH CHANNEL 9 CHAIN 1

HIGH CHANNEL 10



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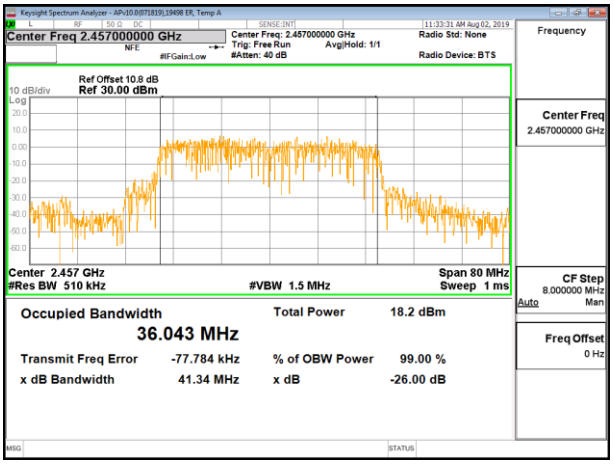

HIGH CHANNEL 10 CHAIN 1

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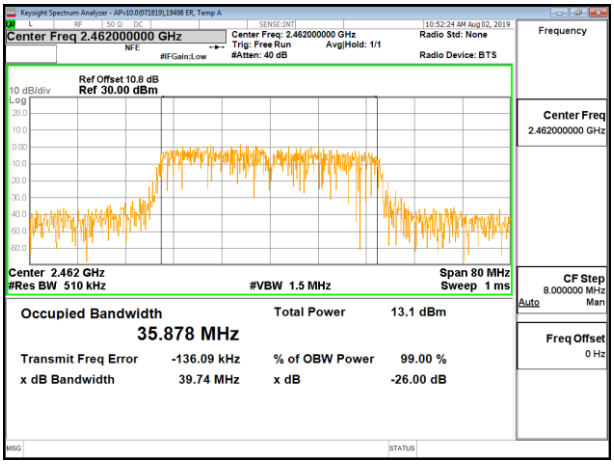
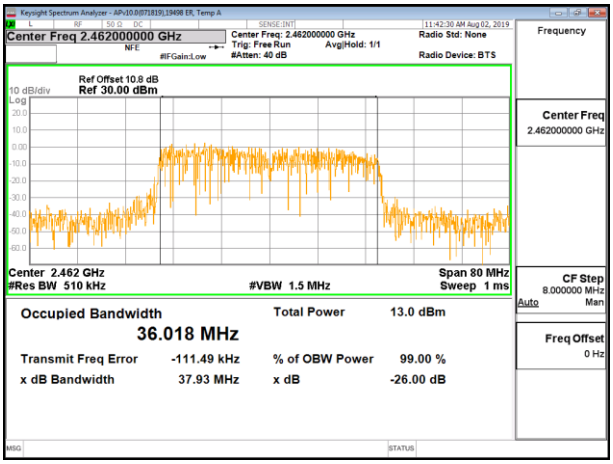
HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

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8.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

RSS-247 5.2 (a)

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

RESULTS

8.3.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	7.24	7.64	0.5
Low 2	2417	7.16	7.16	0.5
Mid 6	2437	7.20	7.72	0.5
High 10	2457	7.64	7.24	0.5
High 11	2462	7.64	7.44	0.5
High 12	2467	7.16	7.16	0.5
High 13	2472	7.20	7.16	0.5

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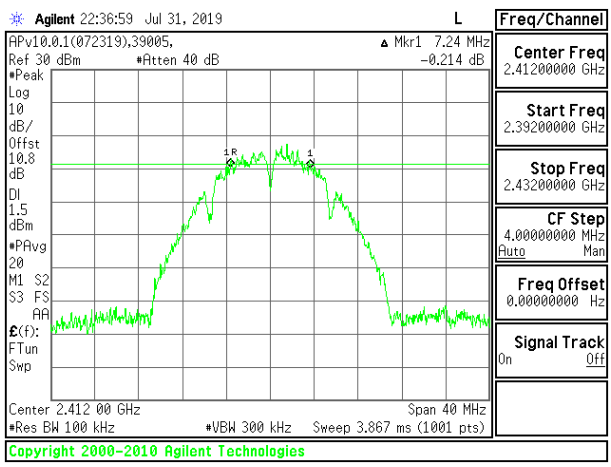
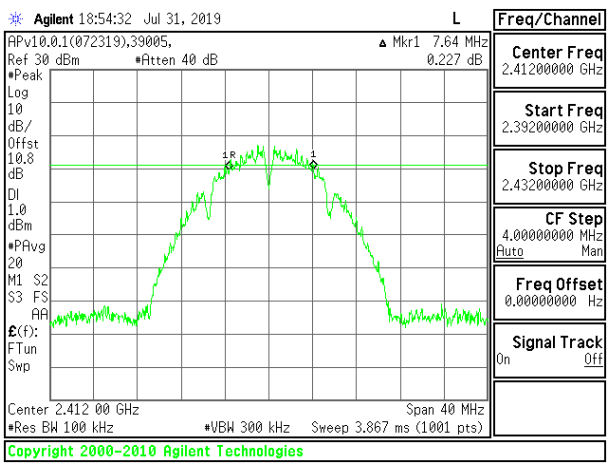
LOW CHANNEL 1

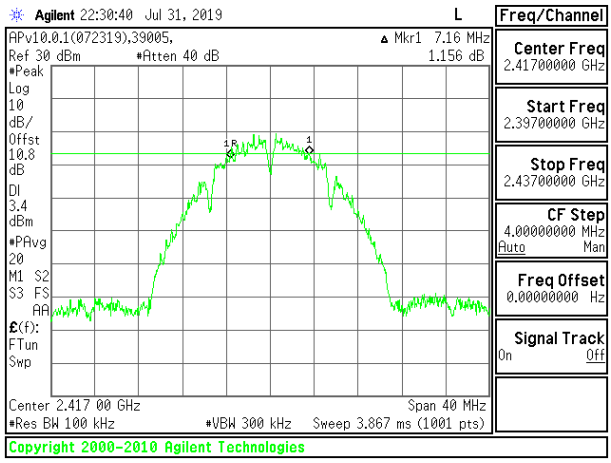


LOW CHANNEL 1 CHAIN 0

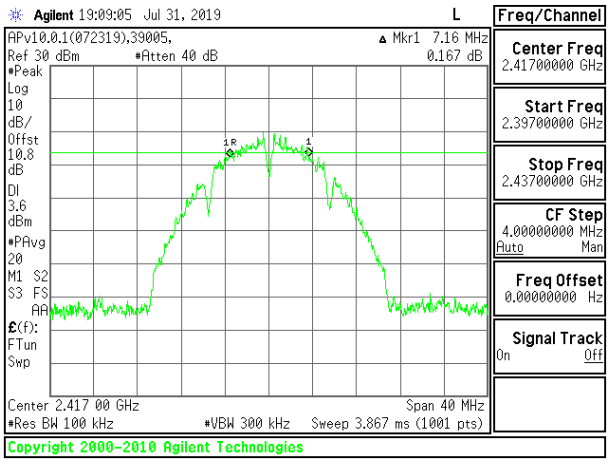


LOW CHANNEL 1 CHAIN 1

LOW CHANNEL 2



LOW CHANNEL 2 CHAIN 0



LOW CHANNEL 2 CHAIN 1

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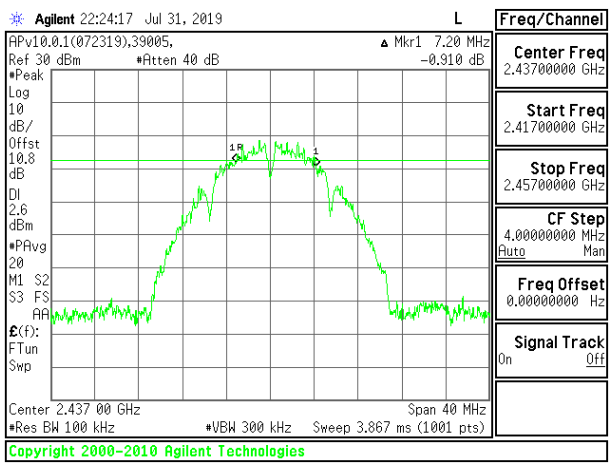
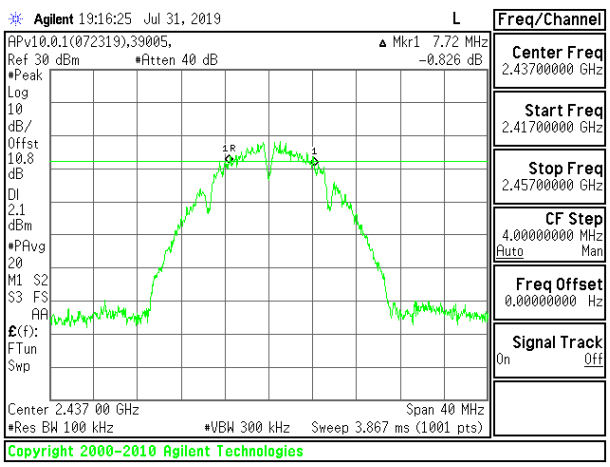
MID CHANNEL 6

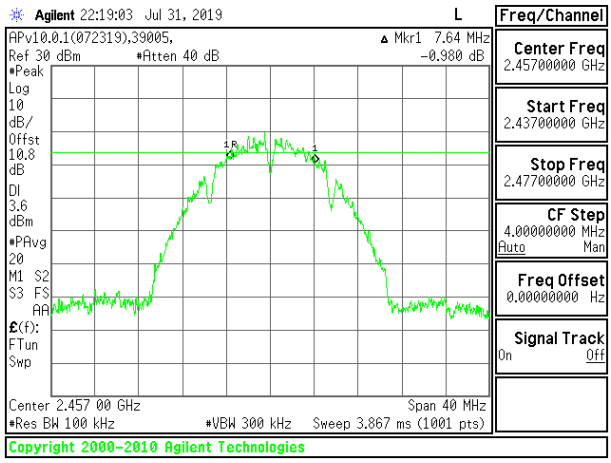


MID CHANNEL 6 CHAIN 0

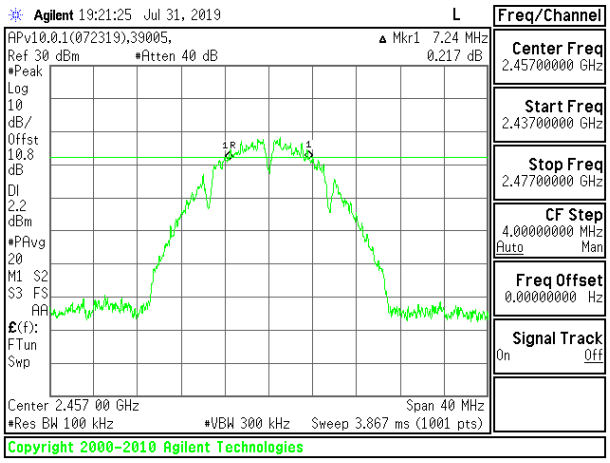


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 10



HIGH CHANNEL 10 CHAIN 0



HIGH CHANNEL 10 CHAIN 1

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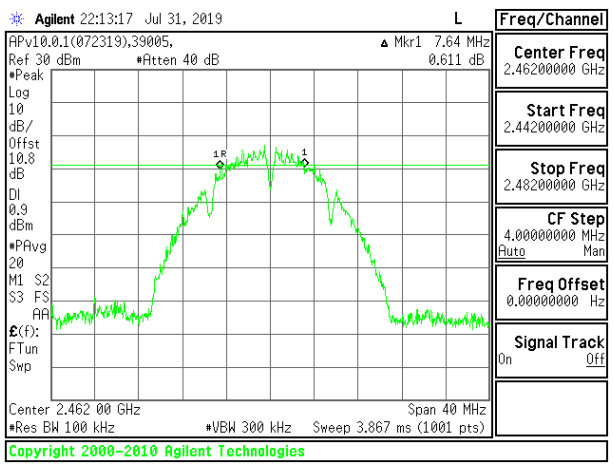
HIGH CHANNEL 11



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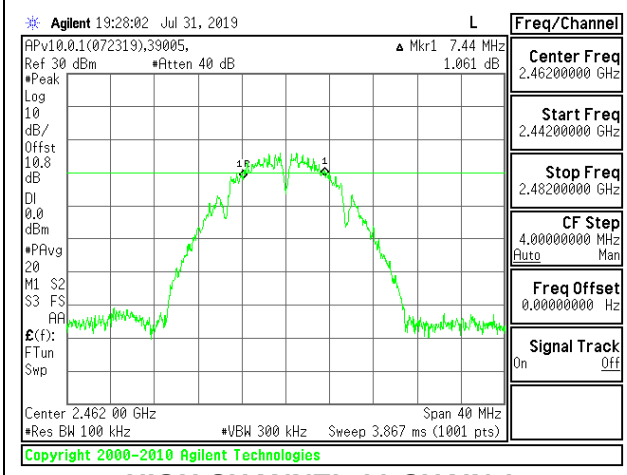
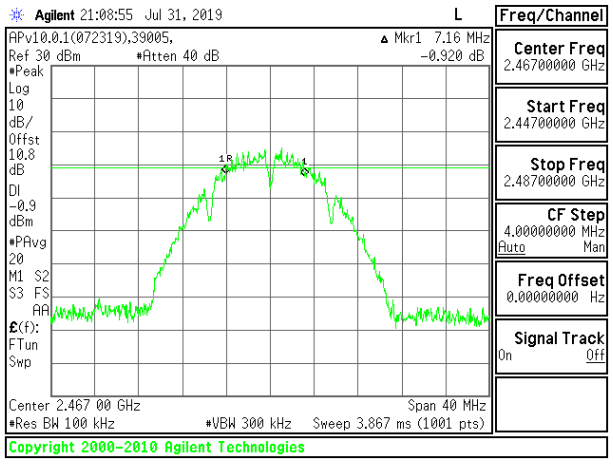
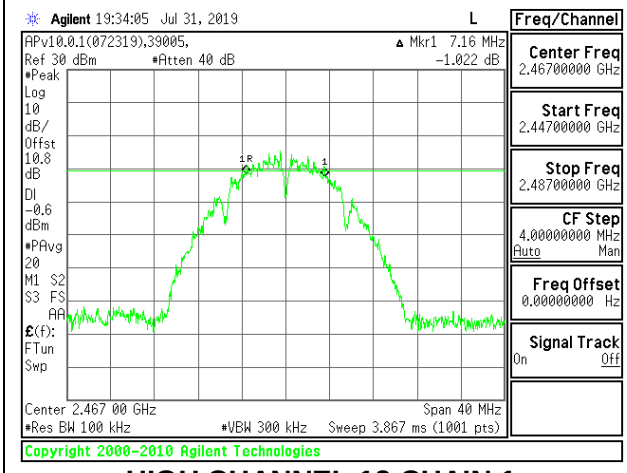


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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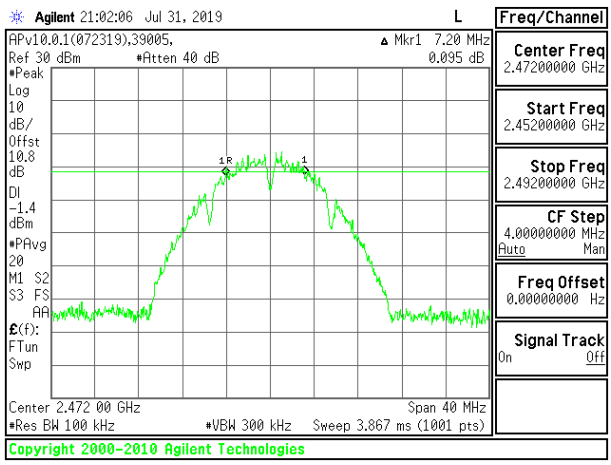
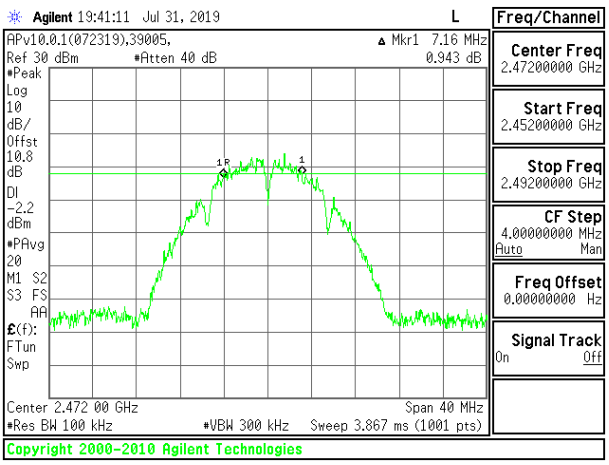
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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8.3.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	16.40	16.44	0.5
Low 2	2417	16.40	16.20	0.5
Mid 6	2437	16.44	16.12	0.5
High 10	2457	16.48	16.40	0.5
High 11	2462	16.20	16.44	0.5
High 12	2467	16.44	16.52	0.5
High 13	2472	16.44	16.48	0.5

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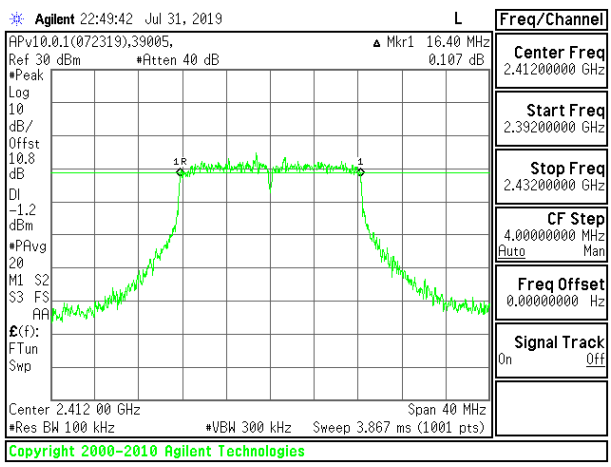
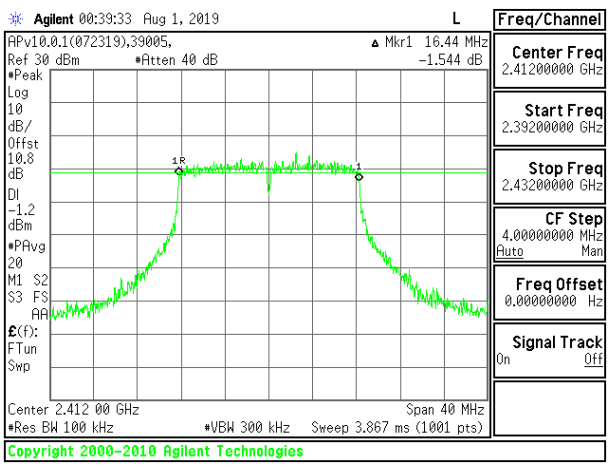
LOW CHANNEL 1

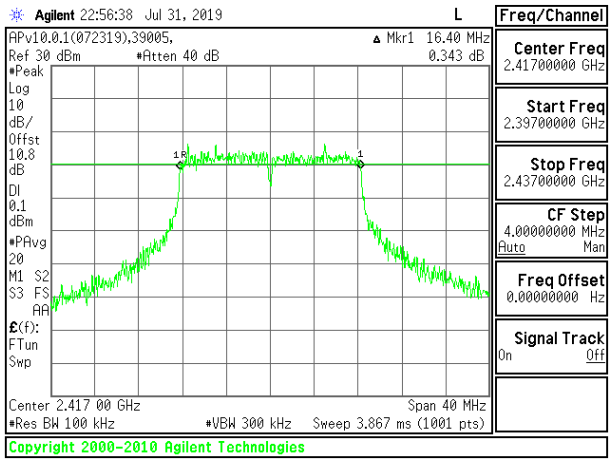


LOW CHANNEL 1 CHAIN 0

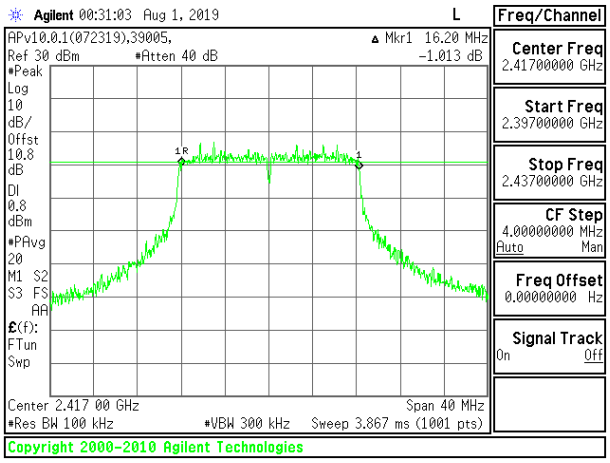


LOW CHANNEL 1 CHAIN 1

LOW CHANNEL 2



LOW CHANNEL 2 CHAIN 0



LOW CHANNEL 2 CHAIN 1

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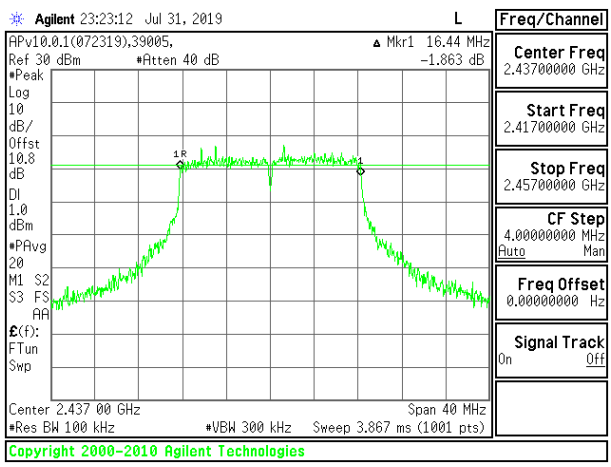
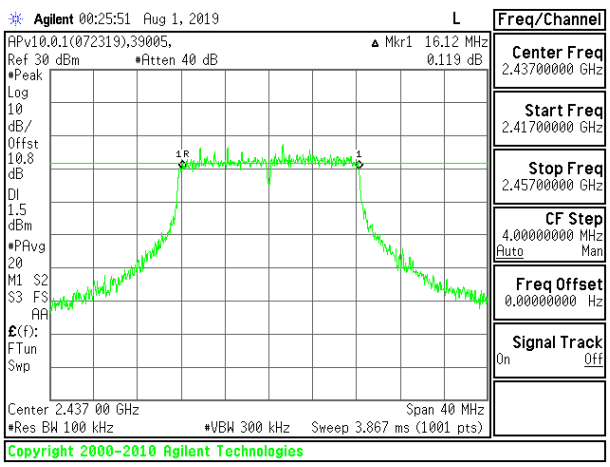
MID CHANNEL 6

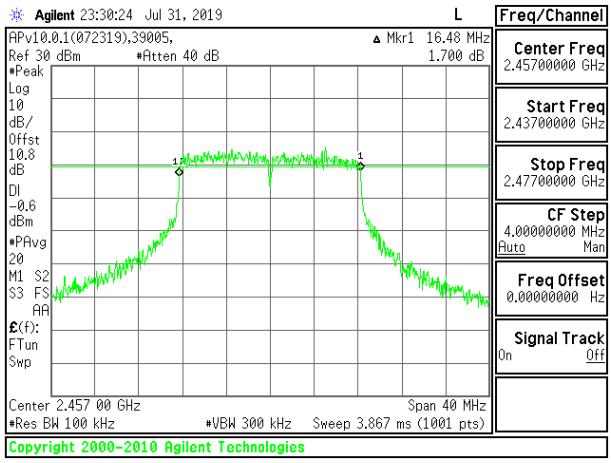


MID CHANNEL 6 CHAIN 0

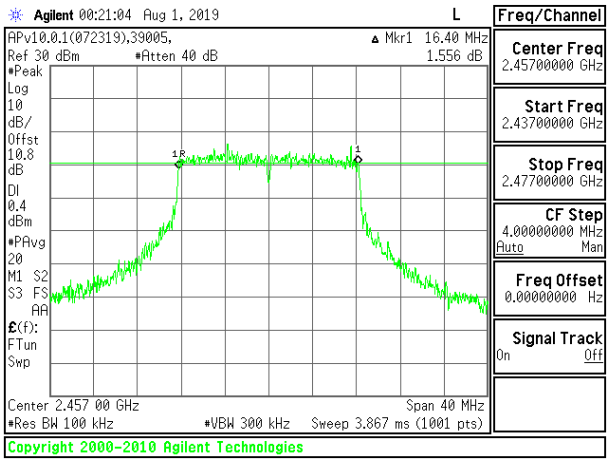


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 10



HIGH CHANNEL 10 CHAIN 0



HIGH CHANNEL 10 CHAIN 1

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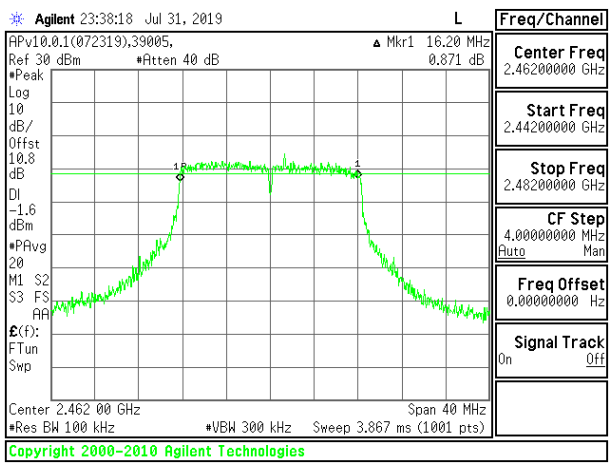
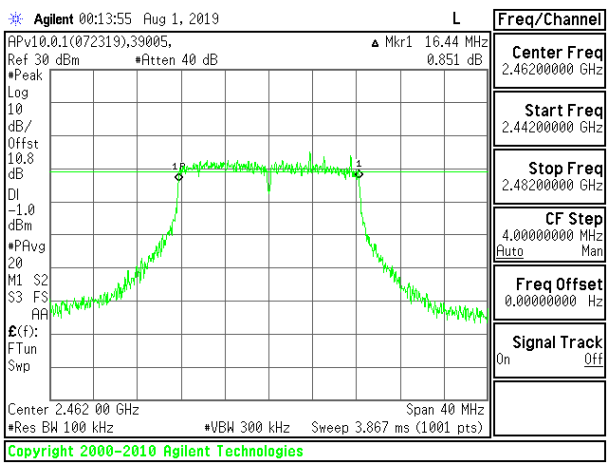
HIGH CHANNEL 11

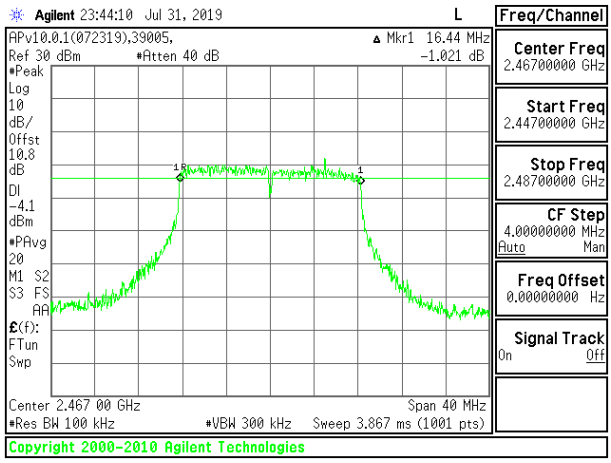


HIGH CHANNEL 11 CHAIN 0

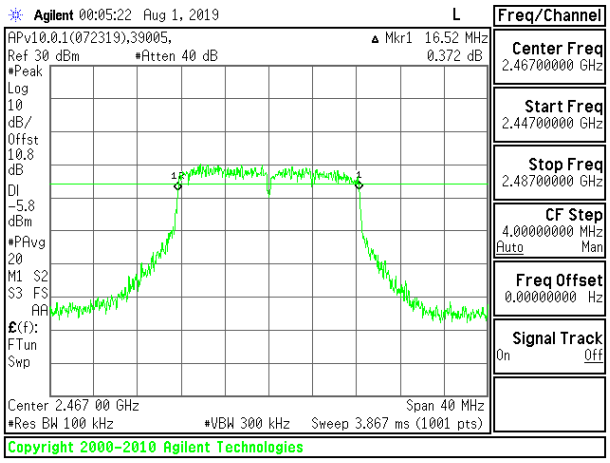


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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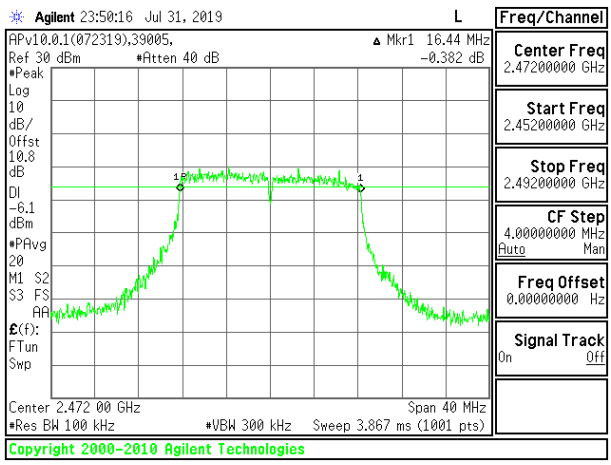
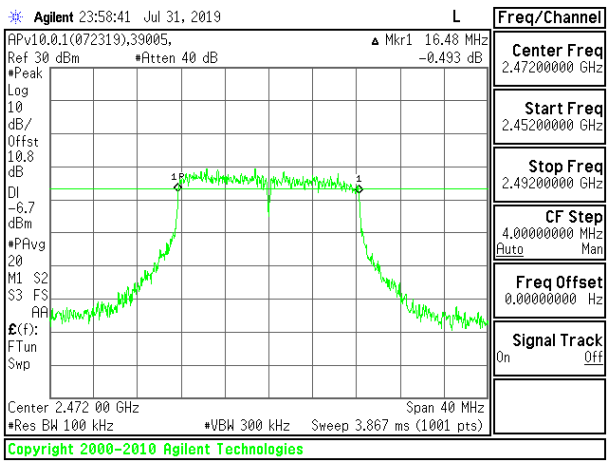
HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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8.3.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.24	17.68	0.5
Low 2	2417	17.72	17.76	0.5
Mid 6	2437	17.64	17.64	0.5
High 10	2457	17.72	17.72	0.5
High 11	2462	17.68	17.72	0.5
High 12	2467	17.72	17.72	0.5
High 13	2472	17.72	17.72	0.5

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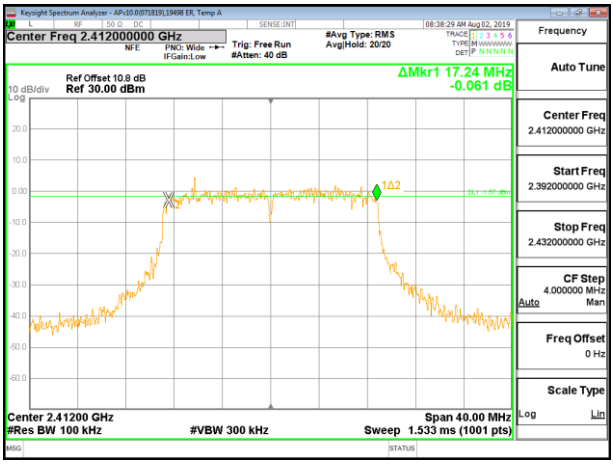
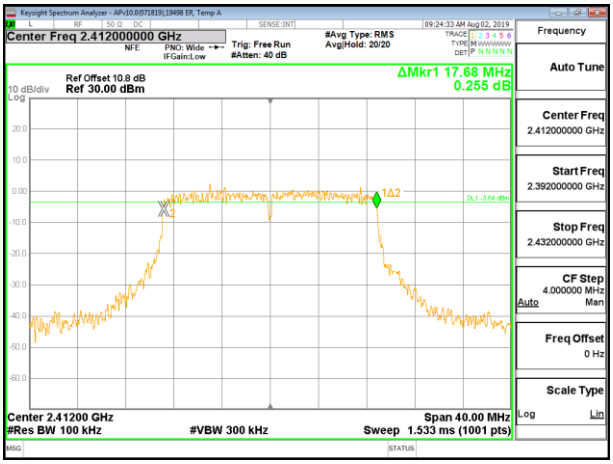
LOW CHANNEL 1

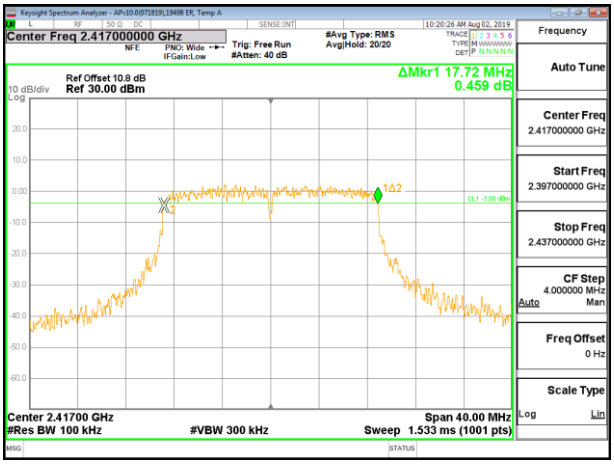


LOW CHANNEL 1 CHAIN 0

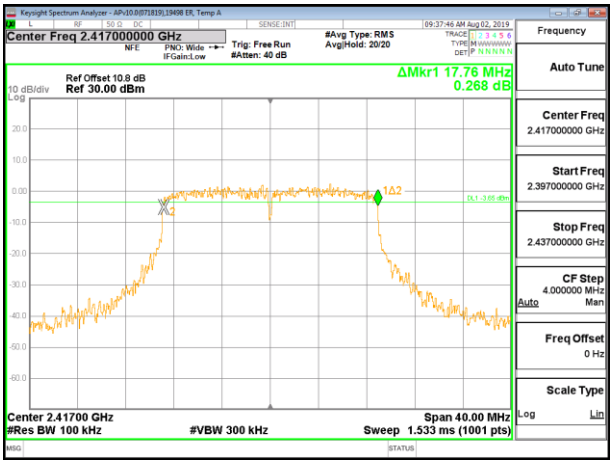


LOW CHANNEL 1 CHAIN 1

LOW CHANNEL 2



LOW CHANNEL 2 CHAIN 0



LOW CHANNEL 2 CHAIN 1

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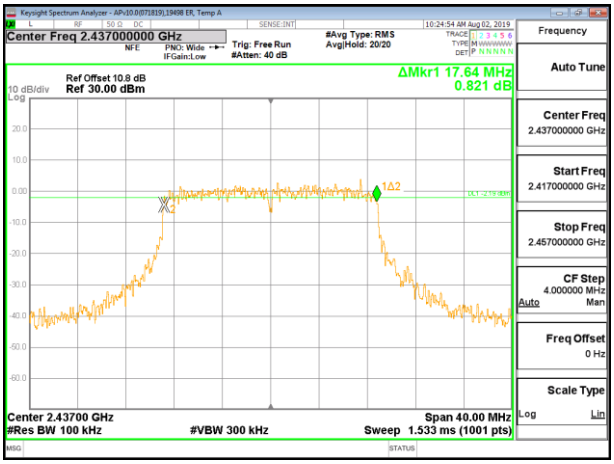
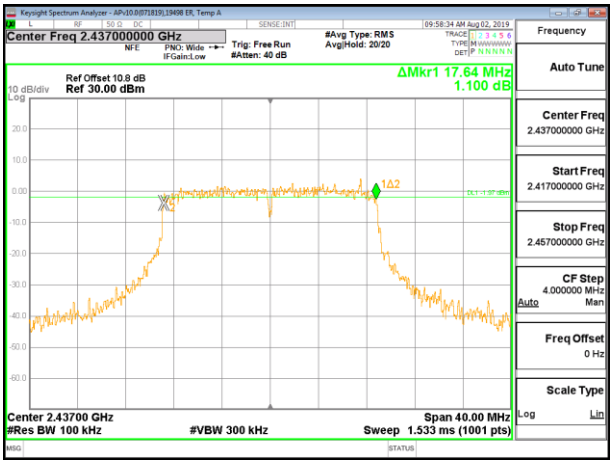
MID CHANNEL 6

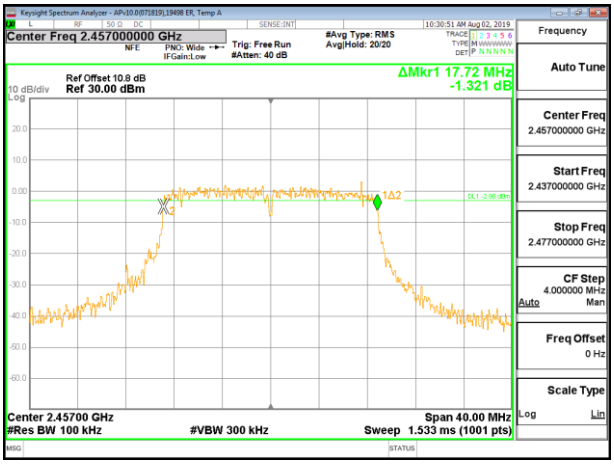


MID CHANNEL 6 CHAIN 0

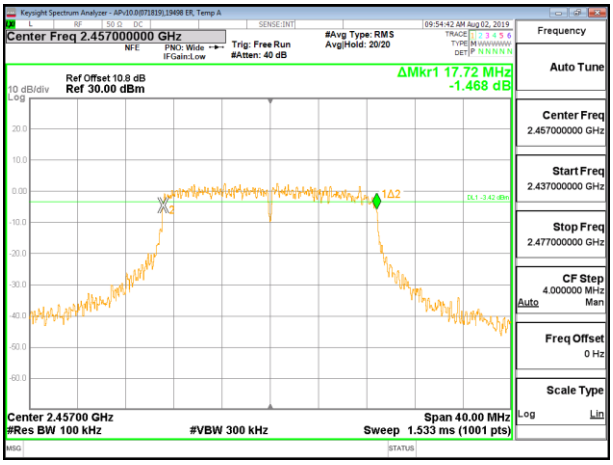


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 10



HIGH CHANNEL 10 CHAIN 0



HIGH CHANNEL 10 CHAIN 1

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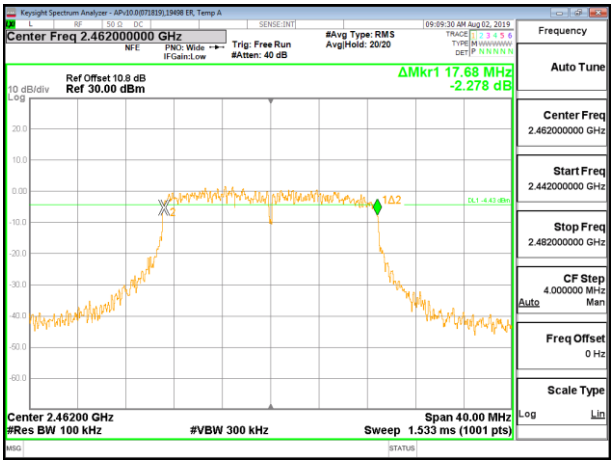
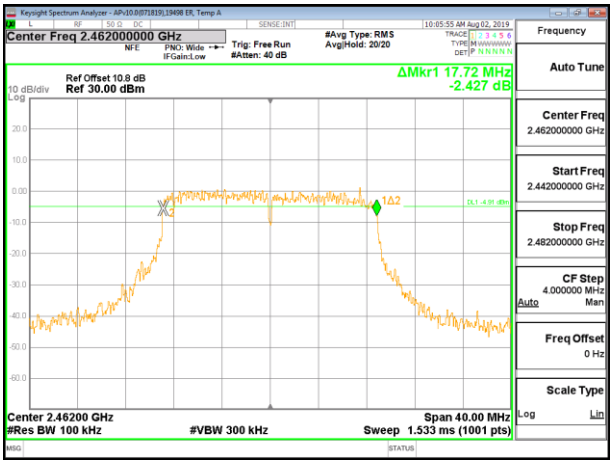
HIGH CHANNEL 11

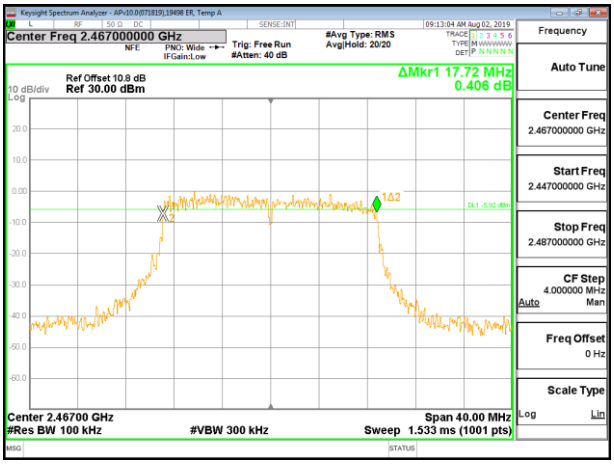


HIGH CHANNEL 11 CHAIN 0

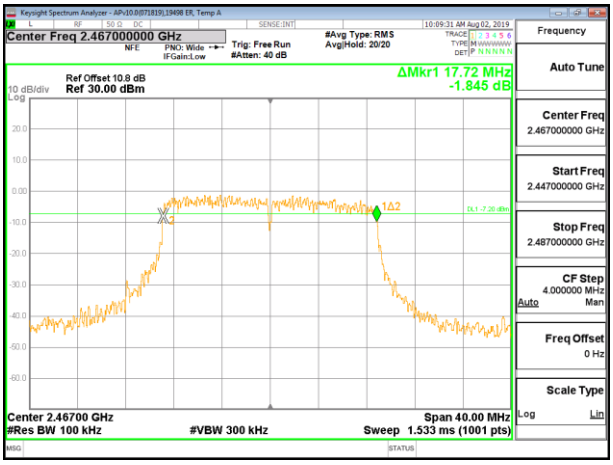


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

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