TEST REPORT

Report Number : 13571601-E4V2

Applicant	:	APPLE, INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	:	A2483 (Parent Model, Full Test) A2640, A2636, A2638, A2639 (Variant Models)
FCC ID	:	BCG-E4000A (Parent Model) BCG-E4034A, BCG-E4002A, BCG-E4033A (Variant Models)
IC	:	579C-E4000A (Parent Model) 579C-E4034A, 579C-E4002A, 579C-E4033A (Variant Models)
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C ISED RSS-247 ISSUE 2 ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:
July 22, 2021

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

ilac-MRA
A2LA ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	6/25/2021	Initial Issue	Chin Pang
V2	7/22/2021	Address TCB's Question on Section 9.4	Chin Pang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
EUT DESCRIPTION:	SMARTPHONE
MODEL:	A2483 (PARENT MODEL) A2640, A2636, A2638, A2639 (VARIANT MODELS)
BRAND:	APPLE
FCC ID:	BCG-E4000A (PARENT MODEL) BCG-E4034A, BCG-E4002A, BCG-E4033A (VARIANT MODELS)
IC ID:	579C-E4000A (PRIMARY MODEL) 579C-E4034A, 579C-E4002A, 579C-E4033A (VARIANT MODELS)
SERIAL NUMBER:	G6TD800R0GLG, HXKPFXHXK2
SAMPLE RECEIPT DATE:	10/23/2020, 06/11/2021
DATE TESTED:	OCTOBER 26, 2020 – JULY 21, 2021

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 2	Complies
ISED RSS-GEN Issue 5 + A1 + A2	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 A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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Approved & Released For
UL Verification Services Inc. By:

Chin Pang
Senior Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:

Tony Li
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

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2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Complies	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Complies	None.
15.247 (e)	RSS-247 5.2 (b)	PSD	Complies	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Complies	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Complies	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Complies	None.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with;
- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- FCC KDB 558074 D01 v05r02 15.247 Meas Guidance
- ANSI C63.10-2013
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 2
- KDB 414788 D01 Radiated Test Site v01r01

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538	US0104	2324A	208313
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538	US0104	22541	208313
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538	US0104	2324B	208313

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5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U_{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

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

5.4. 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

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC and WPT. All models support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

The Model and FCC/IC ID covered by this report includes:

Parent Model: A2483, FCC ID: BCG-E4000A, IC ID: 579C-E4000A

Variant Models: A2640; FCC ID: BCG-E4034A, IC ID: 579C-E4034A
A2636; FCC ID: BCG-E4002A, IC ID: 579C-E4002A
A2638; FCC ID: BCG-E4033A, IC ID: 579C-E4033A
A2639; FCC ID: BCG-E4034A, IC ID: 579C-E4034A

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
1Tx			
2412 - 2472	802.11b	21.23	132.74
	802.11g	Covered by 802.11n HT20 1TX	
	802.11n HT20	21.16	130.62
	802.11ax HE20	21.04	127.06

2Tx			
2412 - 2472	802.11n HT20 CDD	24.11	257.63
	802.11g SDM/STBC	Covered by 802.11n HT20 2TX CDD	
	802.11ax HE20	24.13	258.82

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6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antennas gain and IFA type as provided by the manufacturer' are as follows:

Frequency Range (GHz)	ANT 4 (dBi)	ANT 3 (dBi)
2.4	-0.2	-0.2

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was WiFi FW Version: 20_10_745_15.

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6.5. WORST-CASE CONFIGURATION AND MODE

EUT was investigated in three orthogonal orientations X, Y and Z on ANT 4 (Core 0), ANT 3 (Core 1) and 2TX. It was determined that Y (Landscape) orientation was the worst-case orientation for ANT 4 and X (Flatbed) orientation was the worst case for both ANT 3 and 2TX.

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below 1GHz, 18-26GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario. There were no emissions found below 30MHz within 20dB of the limit.

For radiated harmonics spurious below 1GHz, 1-18GHz L/M/H channels, 18-26GHz, and power line conducted emissions were performed with the EUT set at the 2TX CDD mode among the CDD/SDM modes and 2TX HE mode with power setting equal or higher than SISO modes as worst-case scenario. G mode covered by HT20 mode since it has the same power as HT20.

Below 1GHz tests were performed with EUT connected to AC power adapter as the worst case; and for above 1GHz tests, the worst-case configuration reported was with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop.

The output power and psd for the 802.11 ax mode were investigated between all different tones, and we found that SU mode had the highest output power and the lowest tone had the highest PSD readings. And after investigation, antenna port conducted tests were performed on both SU and lowest tones; radiated spurious emission and radiated band edge tests were performed on full RU and lowest tones.

Low data rate was used to test on antenna port conducted tests and radiated spurious emissions since it has the highest maximum power. For radiated bandedge, following are the worst-case data rates set for test:

802.11b mode: 1 Mbps
802.11n HT20 mode: MCS 7
802.11ax HE20 mode: MCS 9
802.11ax HE20 FULL RU & RU26: MCS09

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The WiFi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT					
Description	**Manufacturer**	**Model**	**Serial Number**		**FCC ID/ DoC**
Laptop	Apple	Macbook Pro	C02YL3ZMJHC8		BCGA1989
Laptop AC/DC adapter	Liteon Technology	A1424	NSW25679		DoC
EUT AC/DC adapter	Apple	A1720	C3D8417A7R93KVPA8		DoC
I/O CABLES (RF CONDUCTED TEST)					
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Shielded	1.0	N/A
3	Antenna	1	SMA	Un-shielded	0.2	To spectrum Analyzer
I/O CABLES (RF RADIATED TEST)					
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Un-shielded	1	N/A

TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

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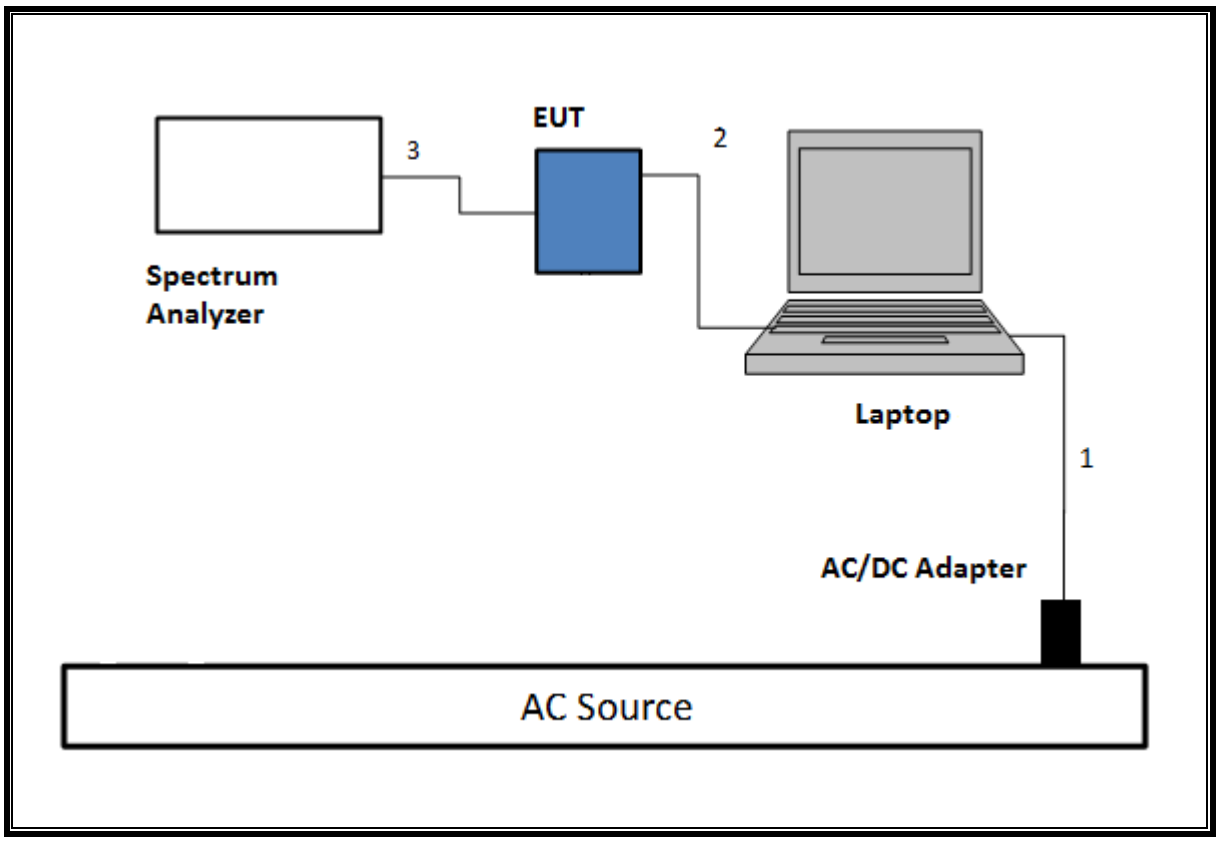
SETUP DIAGRAM FOR CONDUCTED TESTS



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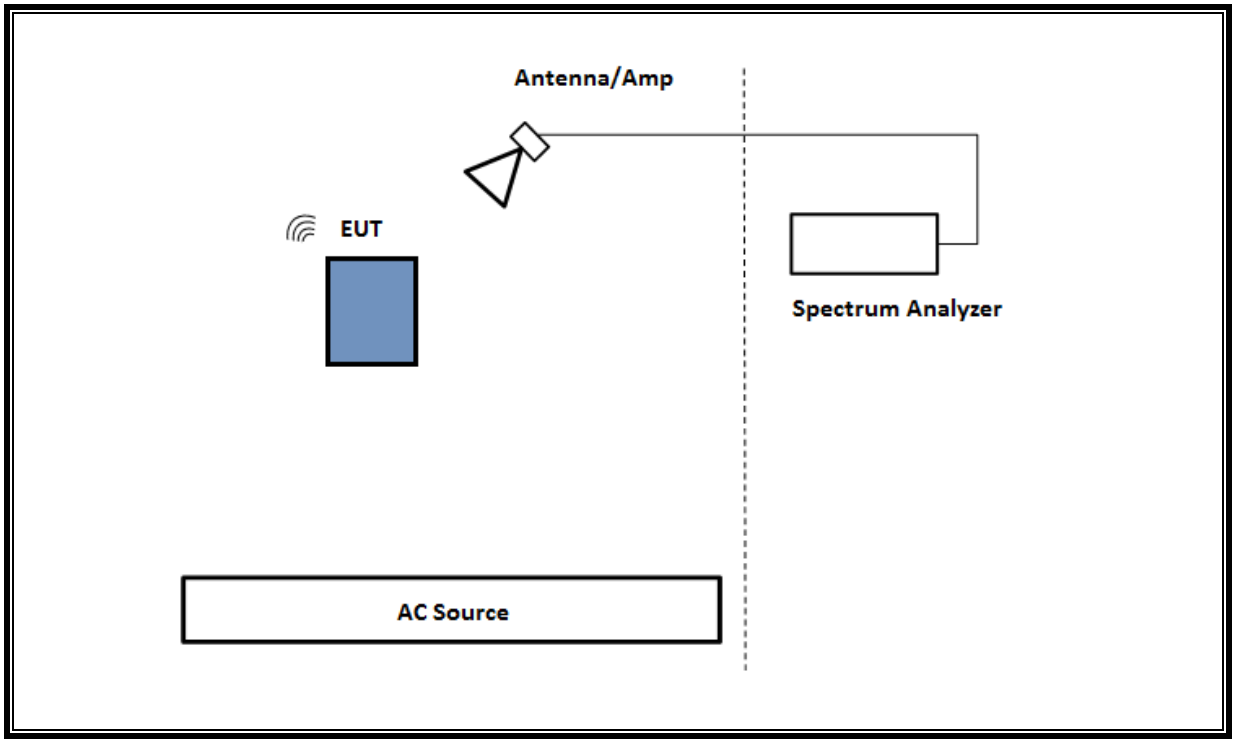
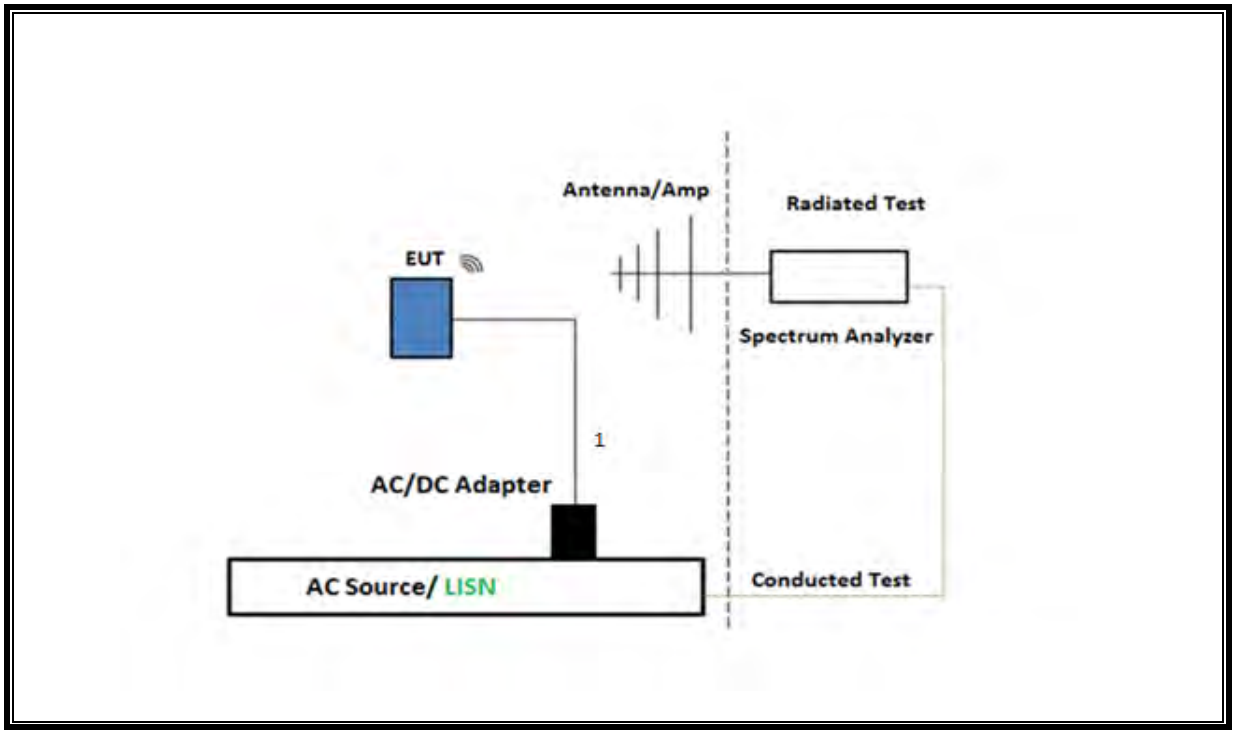
SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz



SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



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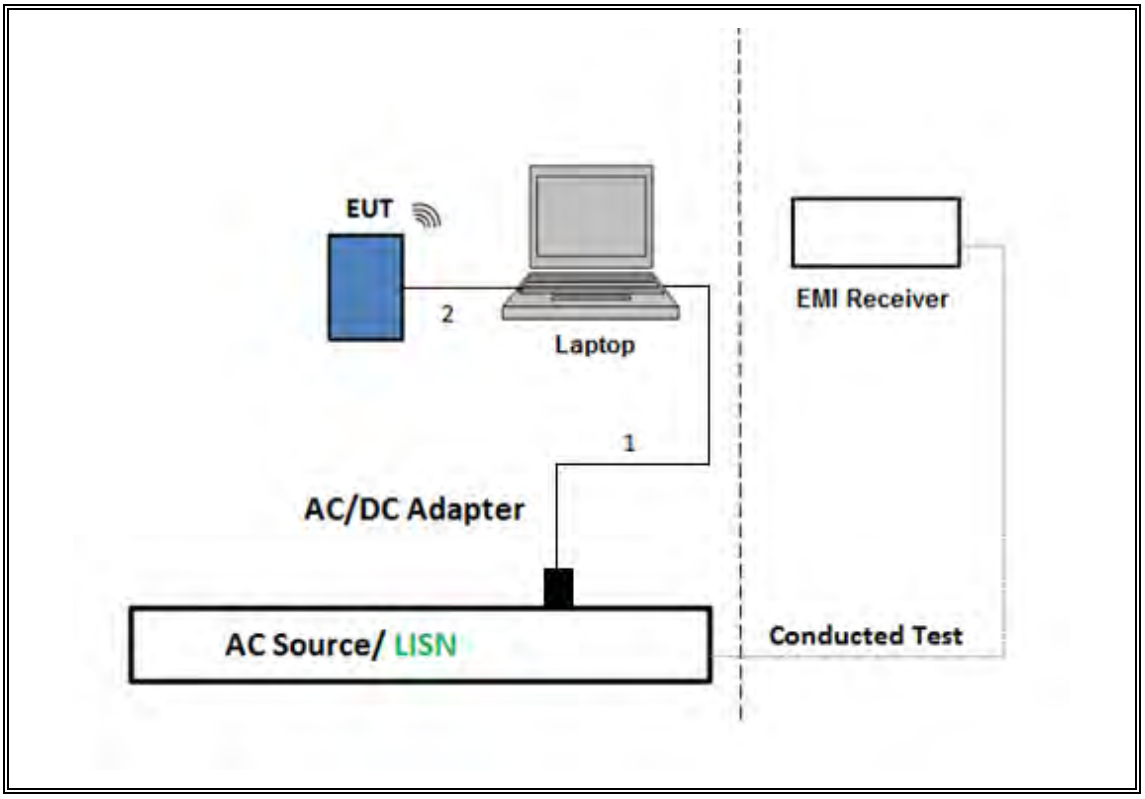
TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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7. MEASUREMENT METHOD

Test Item	Test Method
6 dB BW	ANSI C63.10 Subclause -11.8.1 RBW ≥ DTS BW
99% BW	ANSI C63.10-2013, Subclause 6.9.3.
Output Power	ANSI C63.10 Subclause -11.9.2.3.1 Method AVGPM (Measurement using an 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 & Clause 13
Radiated emissions restricted frequency bands	ANSI C63.10 Subclause -11.12.1 & Clause 13
Conducted emissions in restricted frequency bands	ANSI C63.10 Subclause -11.12.2
Band-edge	ANSI C63.10 Subclause -11.13.3.2 & Clause 13: Integration method -Peak detection
Band-edge	ANSI C63.10 Subclause -11.13.3.3 & Clause 13: Integration method -Trace averaging with continuous transmission at full power
Radiated Spurious Emissions Below 30MHz	ANSI C63.10-2013 Subclause 6.4 & Clause 13
AC Power Line Conducted Emissions	ANSI C63.10-2013, Subclause 6.2

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8. 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, Horn 1-18GHz	ETS-Lindgren	3117	PRE0100034	09/15/2021	09/15/2020
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1569	03/31/2022	03/31/2021
Antenna, Horn 1-18GHz	ETS Lindgren	3117	PRE0078107	03/01/2022	03/01/2021
Amplifier, 1 to 18GHz	Amplical	AMP1G18-35	138301	03/30/2022	03/30/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0213971	09/25/2021	09/25/2020
RF Amplifier, 1-18GHz	AMPLICAL	AMP0.1G18-47-20	190323	12/03/2021	12/03/2020
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	PRE0184052	11/12/2021	11/12/2020
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	PRE0180174	12/29/2021	12/29/2020
EMI Test Receiver	Rohde & Schwarz	ESW44	201500	11/19/2021	11/19/2020
Power Meter, P-series single channel	Keysight	N1912A	T1244	01/25/2022	01/25/2021
Power Sensor	Keysight	N19**2**1A	T1224	01/25/2022	01/25/2021
Antenna, Active Loop 9KHz to 30MHz	EMCO	6502	T35	11/23/2021	11/23/2020
*Antenna Horn, 18 to 26GHz	ARA	SWH-28	T125	04/17/2021	04/17/2020
*Pre-Amp 18-26GHz	Agilent Technology	8449B	T404	04/08/2021	04/08/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/27/2022	01/27/2021
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T906	07/20/2021	07/20/2020
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T757	11/12/2021	11/12/2020
EMI Receiver	Rohde & Schwarz	ESW44	201501	09/23/2021	09/23/2020
EMI Receiver	Rohde & Schwarz	ESW44	201502	09/17/2021	09/17/2020

AC Line Conducted					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	T1436	02/19/2022	02/19/2021
Power Cable, Line Conducted Emissions	UL	PR1	T861	10/27/2021	10/27/2020
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01	PRE0186446	01/20/2022	01/20/2021
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, Mar 6, 2020		
Conducted Software	UL	UL EMC	2020.2.26		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, February 21, 2020		

Note: *Testing is completed before equipment expiration date.

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time 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 1Mbps	1.000	1.000	1.000	100.00%	0.00	0.010
802.11n HT20 1Tx MCS0	1.920	1.941	0.989	98.92%	0.00	0.010
802.11n HT20 1Tx MCS7	0.227	0.250	0.911	91.11%	0.40	4.398
802.11n HT20 2Tx MCS0	1.920	1.941	0.989	98.92%	0.00	0.010
802.11n HT20 2Tx MCS7	0.228	0.250	0.913	91.35%	0.39	4.386
802.11ax HE20 1Tx MCS0	3.995	4.040	0.989	98.89%	0.00	0.010
802.11ax HE20 1Tx MCS9	1.560	1.581	0.987	98.67%	0.00	0.010
802.11ax HE20 2Tx MCS0	3.995	4.040	0.989	98.89%	0.00	0.010
802.11ax HE20 2Tx MCS9	1.560	1.581	0.987	98.67%	0.00	0.010

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DUTY CYCLE PLOTS

DUTY CYCLE 802.11b 1Mbps

DUTY CYCLE 802.11n HT20 1Tx MCS0

DUTY CYCLE 802.11n HT20 1Tx MCS7

DUTY CYCLE 802.11n HT20 2Tx MCS0

DUTY CYCLE 802.11n HT20 2Tx MCS7

DUTY CYCLE 802.11ax HE20 1Tx MCS0

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DUTY CYCLE 802.11ax HE20 1Tx MCS9

DUTY CYCLE 802.11ax HE20 2Tx MCS0

DUTY CYCLE 802.11ax HE20 2Tx MCS9

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9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

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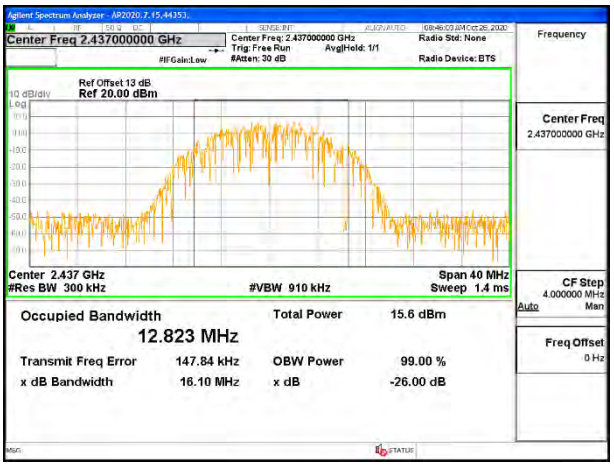
9.2.1. 802.11b MODE 1TX

1TX ANT 4 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	12.938
Low 2	2417	12.739
Mid 6	2437	12.823
High 9	2452	13.085
High 10	2457	12.932
High 11	2462	13.071
High 12	2467	12.936
High 13	2472	12.728



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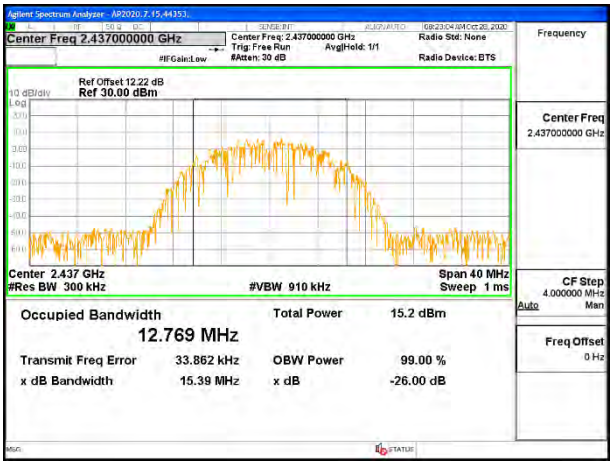
1TX ANT 3 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	12.856
Low 2	2417	13.052
Mid 6	2437	12.769
High 9	2452	12.988
High 10	2457	12.780
High 11	2462	12.787
High 12	2467	12.995
High 13	2472	12.729



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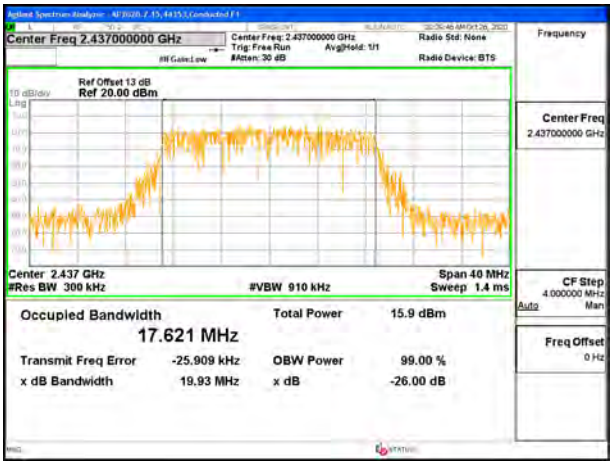
9.2.2. 802.11n HT20 MODE

1TX ANT 4MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.765
Low 2	2417	17.690
Low 3	2422	17.710
Mid 6	2437	17.621
High 9	2452	17.633
High 10	2457	17.679
High 11	2462	17.625
High 12	2467	17.683
High 13	2472	17.643



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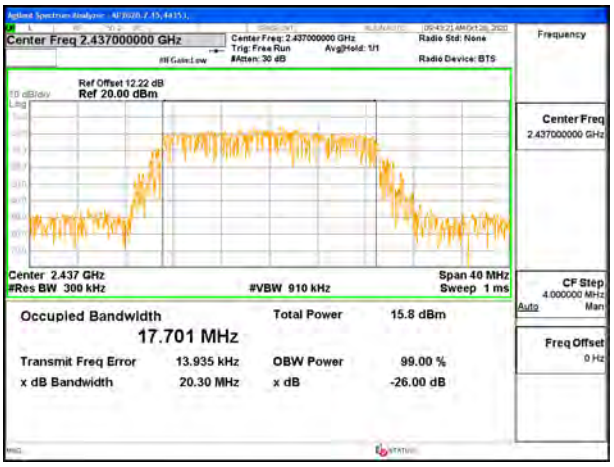
1TX ANT 3 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.779
Low 2	2417	17.676
Low 3	2422	17.802
Mid 6	2437	17.701
High 9	2452	17.771
High 10	2457	17.753
High 11	2462	17.559
High 12	2467	17.549
High 13	2472	17.549



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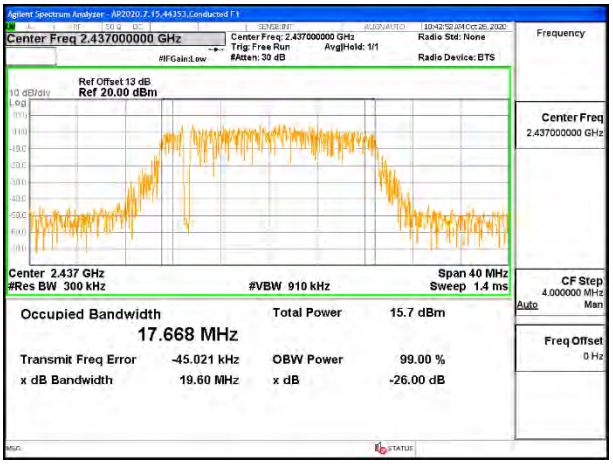
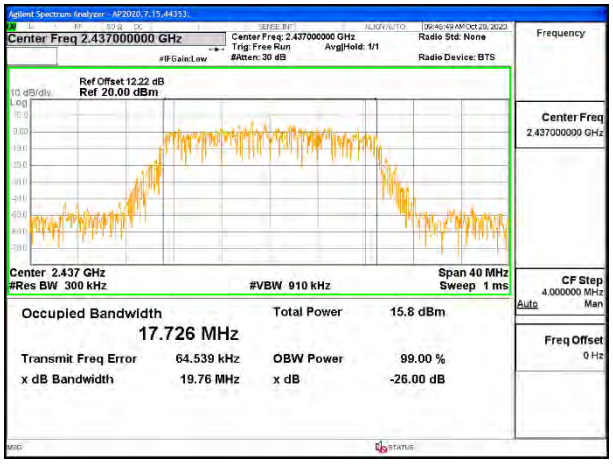
9.2.3. 802.11n HT20 CDD MODE

ANT 4+ ANT 3 2TX MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz) ANT 4	99% Bandwidth (MHz) ANT 3
Low 1	2412	17.657	17.571
Low 2	2417	17.714	17.576
Low 3	2422	17.668	17.660
Low 4	2427	17.771	17.760
Mid 6	2437	17.668	17.726
High 8	2447	17.669	17.726
High 9	2452	17.662	17.675
High 10	2457	17.682	17.811
High 11	2462	17.696	17.578
High 12	2467	17.701	17.594
High 13	2472	17.682	17.618



MID CHANNEL 6 ANT 4



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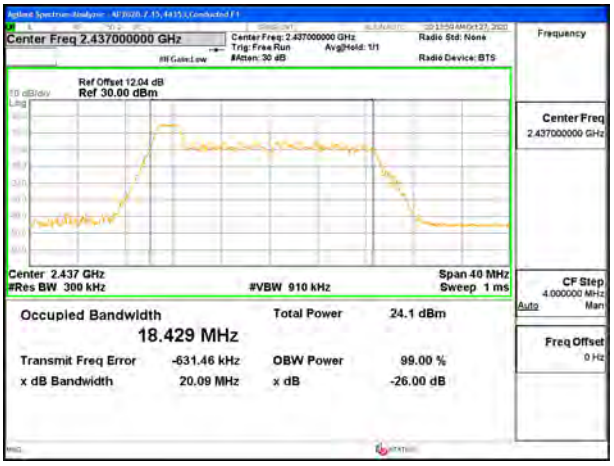
9.2.4. 802.11ax HE20 MODE

ANT 4 LEGACY SISO MODE: 26-Tones, RU index 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.760
Low 2	2417	18.441
Low 3	2422	18.500
Low 4	2427	18.440
Mid 6	2437	18.429
High 8	2447	18.345
High 9	2452	18.348
High 10	2457	18.372
High 11	2462	18.387
High 12	2467	18.415
High 13	2472	18.318



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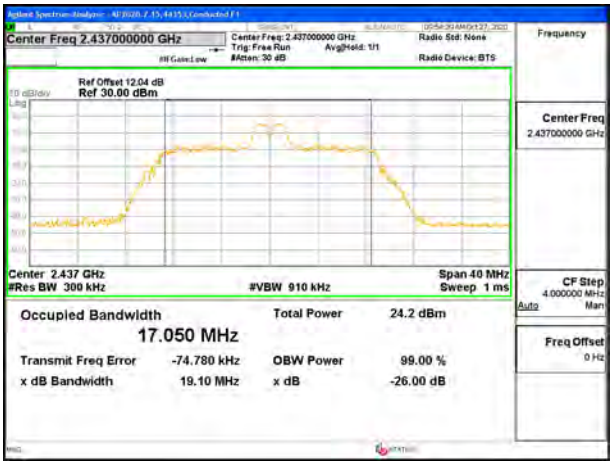
ANT 4 LEGACY SISO MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.169
Low 2	2417	17.166
Low 3	2422	17.167
Low 4	2427	17.139
Mid 6	2437	17.050
High 8	2447	17.199
High 9	2452	17.216
High 10	2457	17.135
High 11	2462	17.188
High 12	2467	17.165
High 13	2472	16.954



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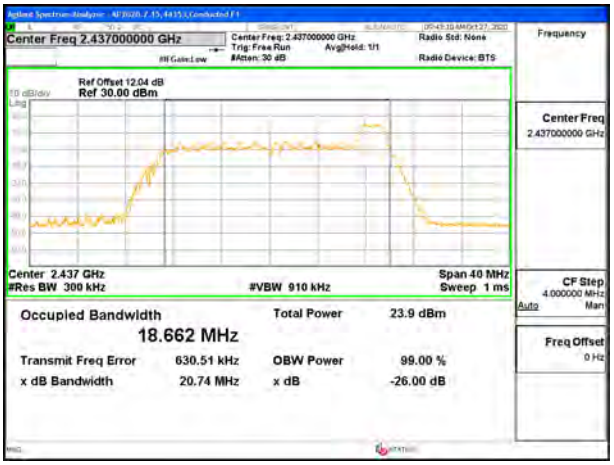
ANT 4 LEGACY SISO MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.760
Low 2	2417	18.586
Low 3	2422	18.520
Low 4	2427	18.417
Mid 6	2437	18.662
High 8	2447	18.806
High 9	2452	18.717
High 10	2457	18.846
High 11	2462	18.698
High 12	2467	18.617
High 13	2472	18.648



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ANT 4 LEGACY SISO MODE: SU Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.954
Low 2	2417	18.903
Low 3	2422	19.030
Low 4	2427	18.870
Mid 6	2437	18.934
High 8	2447	18.888
High 9	2452	18.820
High 10	2457	18.939
High 11	2462	18.801
High 12	2467	18.880
High 13	2472	18.903

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ANT 3 LEGACY SISO MODE: 26-Tones, RU Index 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.508
Low 2	2417	18.487
Low 3	2422	18.493
Low 4	2427	18.429
Mid 6	2437	18.307
High 8	2447	18.385
High 9	2452	18.383
High 10	2457	18.375
High 11	2462	18.312
High 12	2467	18.324
High 13	2472	18.127

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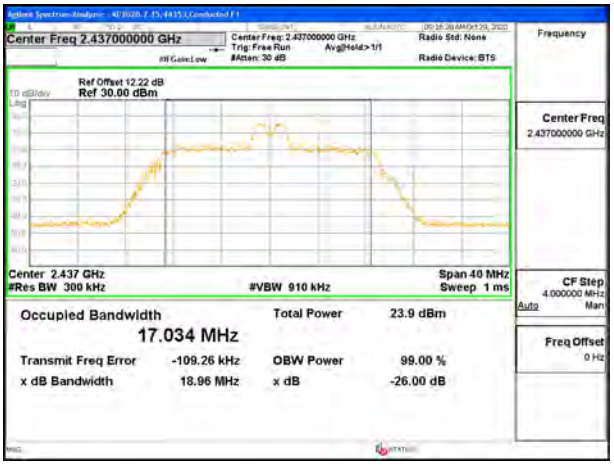
ANT 3 LEGACY SISO MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.160
Low 2	2417	17.140
Low 3	2422	17.078
Low 4	2427	17.047
Mid 6	2437	17.034
High 8	2447	17.166
High 9	2452	17.246
High 10	2457	17.139
High 11	2462	17.188
High 12	2467	16.970
High 13	2472	16.824



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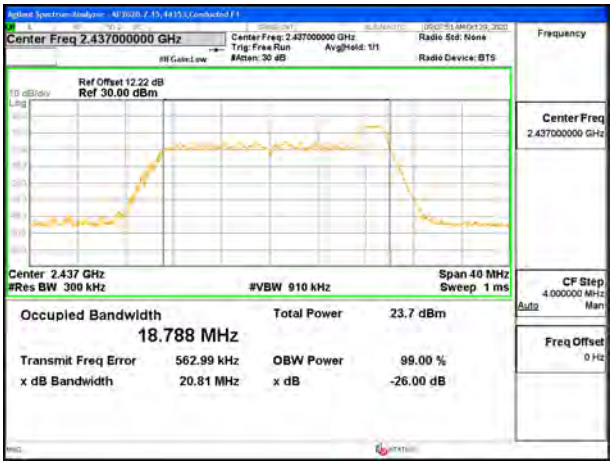
ANT 3 LEGACY SISO MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.538
Low 2	2417	18.572
Low 3	2422	18.585
Low 4	2427	18.605
Mid 6	2437	18.788
High 8	2447	18.858
High 9	2452	18.848
High 10	2457	18.672
High 11	2462	18.652
High 12	2467	18.703
High 13	2472	18.822



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ANT 3 LEGACY SISO MODE: SU Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	19.082
Low 2	2417	18.928
Low 3	2422	18.940
Low 4	2427	18.861
Mid 6	2437	18.786
High 8	2447	18.807
High 9	2452	18.966
High 10	2457	19.123
High 11	2462	18.929
High 12	2467	18.794
High 13	2472	18.814

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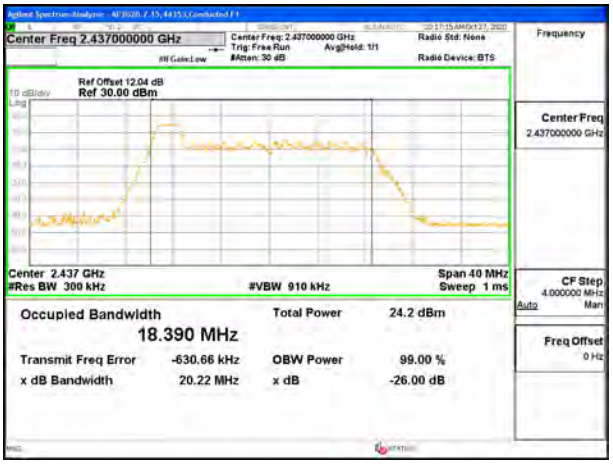
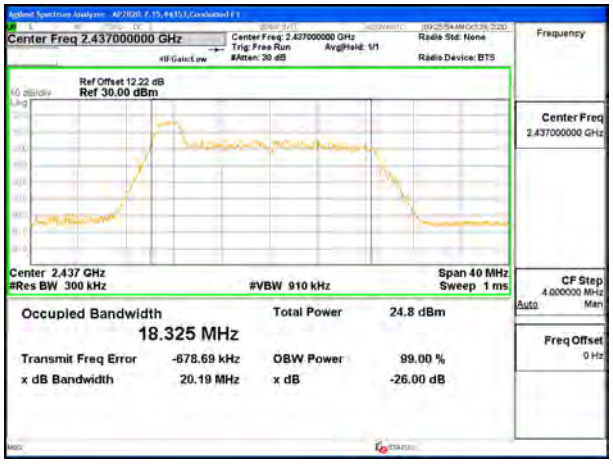
9.2.5. 802.11ax HE20 OFDMA MODE 2TX

ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 0

Channel	Frequency (MHz)	99% Bandwidth (MHz) ANT 4	99% Bandwidth (MHz) ANT 3
Low 1	2412	18.583	18.444
Low 2	2417	18.480	18.456
Low 3	2422	18.426	18.467
Low 4	2427	18.536	18.460
Mid 6	2437	18.390	18.325
High 8	2447	18.344	18.315
High 9	2452	18.325	18.455
High 10	2457	18.342	18.334
High 11	2462	18.473	18.407
High 12	2467	18.373	18.354
High 13	2472	18.231	18.147



MID CHANNEL 6 ANT 4



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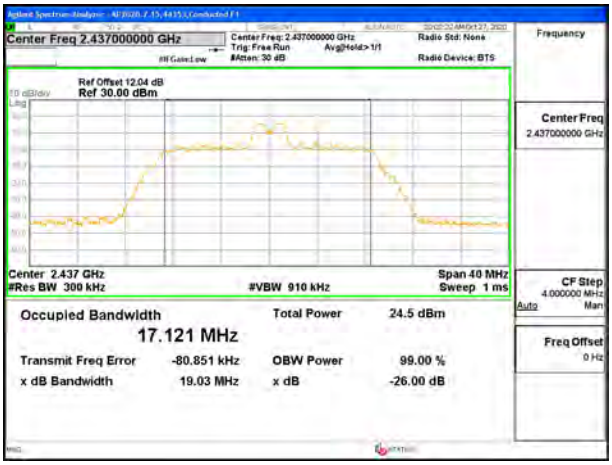
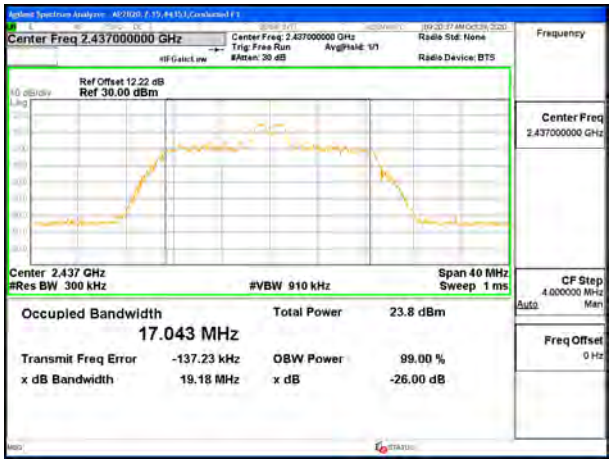
ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	99% Bandwidth (MHz) ANT 4	99% Bandwidth (MHz) ANT 3
Low 1	2412	17.235	17.183
Low 2	2417	17.223	17.110
Low 3	2422	17.157	17.087
Low 4	2427	17.113	17.023
Mid 6	2437	17.121	17.043
High 8	2447	17.119	17.281
High 9	2452	17.110	17.317
High 10	2457	17.132	17.158
High 11	2462	17.291	17.109
High 12	2467	17.201	17.006
High 13	2472	16.884	16.863



MID CHANNEL 6 ANT 4



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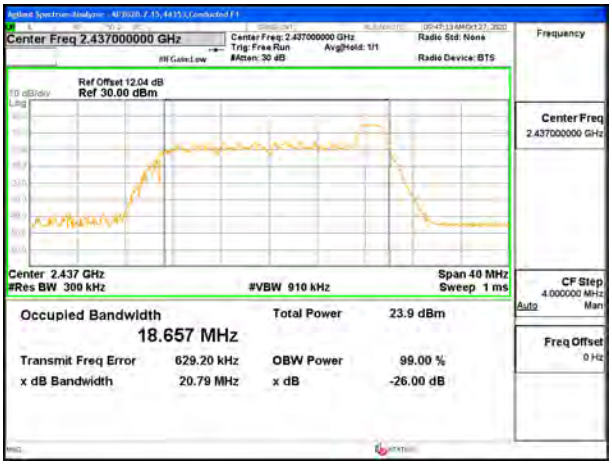
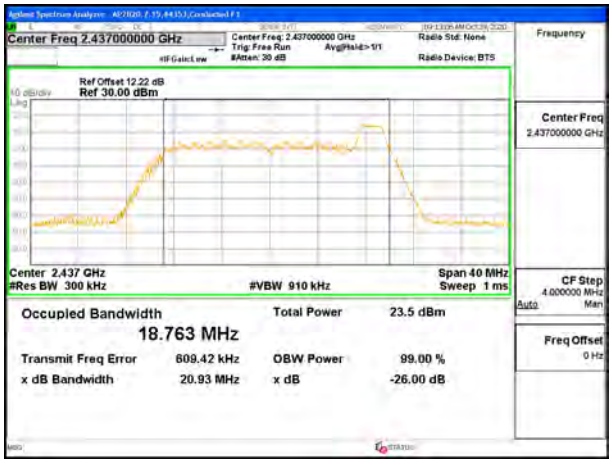
ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	99% Bandwidth (MHz) ANT 4	99% Bandwidth (MHz) ANT 3
Low 1	2412	18.583	18.575
Low 2	2417	18.609	18.713
Low 3	2422	18.590	18.508
Low 4	2427	18.528	18.587
Mid 6	2437	18.657	18.763
High 8	2447	18.739	18.850
High 9	2452	18.774	18.830
High 10	2457	18.747	18.757
High 11	2462	18.701	18.755
High 12	2467	18.747	18.786
High 13	2472	18.534	18.804



MID CHANNEL 6 ANT 4



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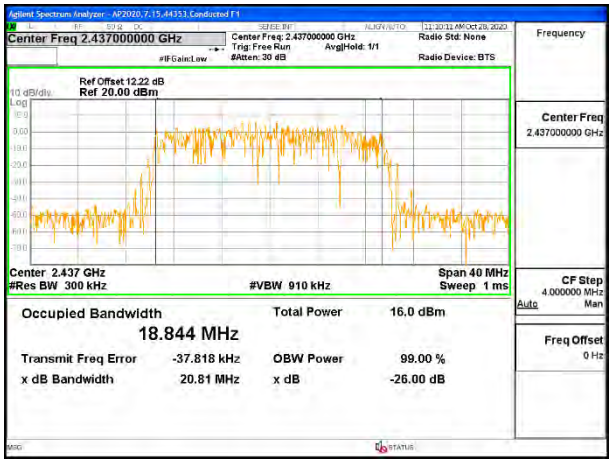
ANT 4+ ANT 3 2TX MODE: SU Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz) ANT 4	99% Bandwidth (MHz) ANT 3
Low 1	2412	18.812	18.909
Low 2	2417	18.943	18.855
Low 3	2422	18.969	18.815
Low 4	2427	18.885	18.895
Mid 6	2437	19.024	18.844
High 8	2447	18.818	18.874
High 9	2452	18.837	18.868
High 10	2457	19.019	18.911
High 11	2462	18.986	18.915
High 12	2467	18.922	18.803
High 13	2472	18.890	18.890

MID CHANNEL 6 ANT 4



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9.3. 6dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

RSS-247 5.2 (a)

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

RESULTS

The 6dB bandwidth was measured for the narrowest bandwidth mode, b Mode and ax HE20 Mode 26-Tones as worst case to demonstrate compliance with the minimum required bandwidth of 500 kHz to cover all OFDMA modes.

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

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9.3.1. 802.11b MODE 1TX

1TX ANT 4 MODE

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	6.72	0.5
Low 2	2417	7.32	0.5
Mid 6	2437	8.24	0.5
High 9	2452	8.16	0.5
High 10	2457	8.16	0.5
High 11	2462	8.68	0.5
High 12	2467	8.72	0.5
High 13	2472	7.16	0.5

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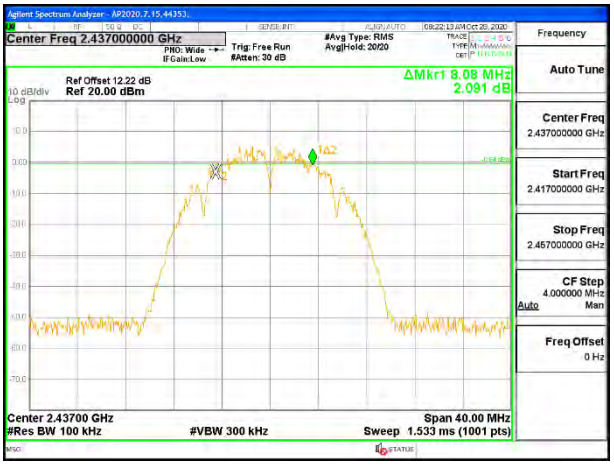
1TX ANT 3 MODE

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	7.24	0.5
Low 2	2417	7.76	0.5
Mid 6	2437	8.08	0.5
High 9	2452	8.68	0.5
High 10	2457	8.24	0.5
High 11	2462	8.16	0.5
High 12	2467	7.32	0.5
High 13	2472	7.64	0.5



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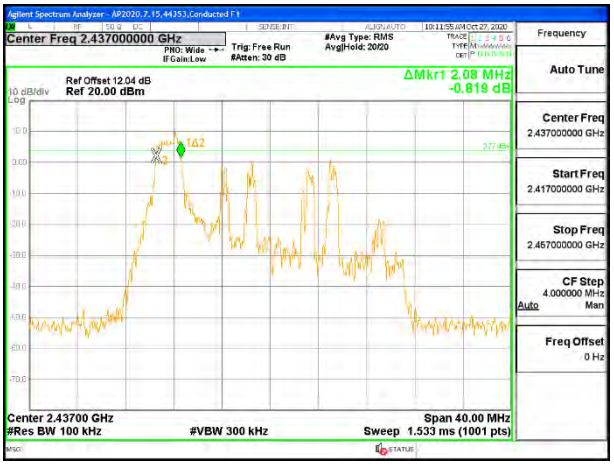
9.3.2. 802.11ax HE20 MODE

ANT 4 LEGACY SISO MODE: 26-Tones, RU index 0

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.08	0.5
Low 2	2417	2.08	0.5
Low 3	2422	2.16	0.5
Low 4	2427	2.16	0.5
Mid 6	2437	2.08	0.5
High 8	2447	2.12	0.5
High 9	2452	2.12	0.5
High 10	2457	2.16	0.5
High 11	2462	2.16	0.5
High 12	2467	2.12	0.5
High 13	2472	2.16	0.5



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ANT 4 LEGACY SISO MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.72	0.5
Low 2	2417	2.72	0.5
Low 3	2422	2.64	0.5
Low 4	2427	2.68	0.5
Mid 6	2437	2.72	0.5
High 8	2447	2.72	0.5
High 9	2452	2.68	0.5
High 10	2457	2.72	0.5
High 11	2462	2.68	0.5
High 12	2467	2.60	0.5
High 13	2472	2.68	0.5

MID CHANNEL 6

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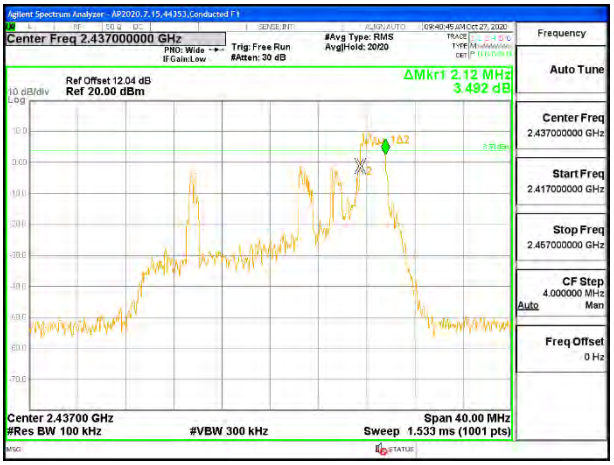
ANT 4 LEGACY SISO MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.12	0.5
Low 2	2417	2.16	0.5
Low 3	2422	2.08	0.5
Low 4	2427	2.16	0.5
Mid 6	2437	2.12	0.5
High 8	2447	2.16	0.5
High 9	2452	2.20	0.5
High 10	2457	2.12	0.5
High 11	2462	2.16	0.5
High 12	2467	2.12	0.5
High 13	2472	2.12	0.5



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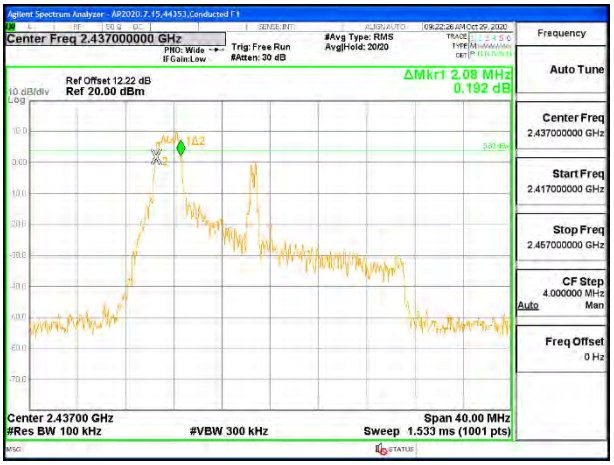
ANT 3 LEGACY SISO MODE: 26-Tones, RU Index 0

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.16	0.5
Low 2	2417	2.16	0.5
Low 3	2422	2.08	0.5
Low 4	2427	2.12	0.5
Mid 6	2437	2.08	0.5
High 8	2447	2.16	0.5
High 9	2452	2.08	0.5
High 10	2457	2.08	0.5
High 11	2462	2.20	0.5
High 12	2467	2.08	0.5
High 13	2472	2.12	0.5



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ANT 3 LEGACY SISO MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.68	0.5
Low 2	2417	2.64	0.5
Low 3	2422	2.64	0.5
Low 4	2427	2.68	0.5
Mid 6	2437	2.68	0.5
High 8	2447	2.68	0.5
High 9	2452	2.80	0.5
High 10	2457	2.72	0.5
High 11	2462	2.68	0.5
High 12	2467	2.68	0.5
High 13	2472	2.60	0.5

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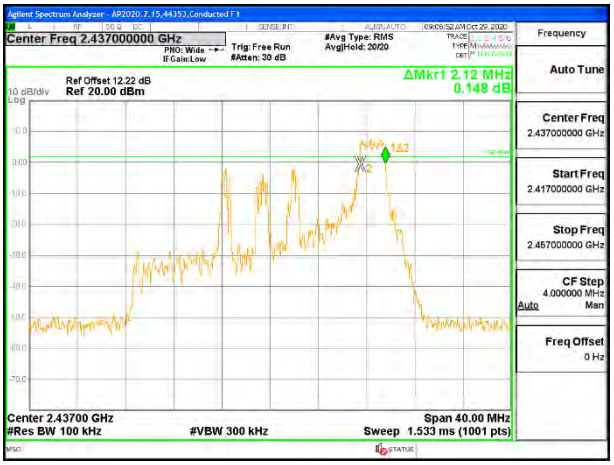
ANT 3 LEGACY SISO MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.12	0.5
Low 2	2417	2.08	0.5
Low 3	2422	2.16	0.5
Low 4	2427	2.08	0.5
Mid 6	2437	2.12	0.5
High 8	2447	2.12	0.5
High 9	2452	2.12	0.5
High 10	2457	2.12	0.5
High 11	2462	2.12	0.5
High 12	2467	2.20	0.5
High 13	2472	2.12	0.5



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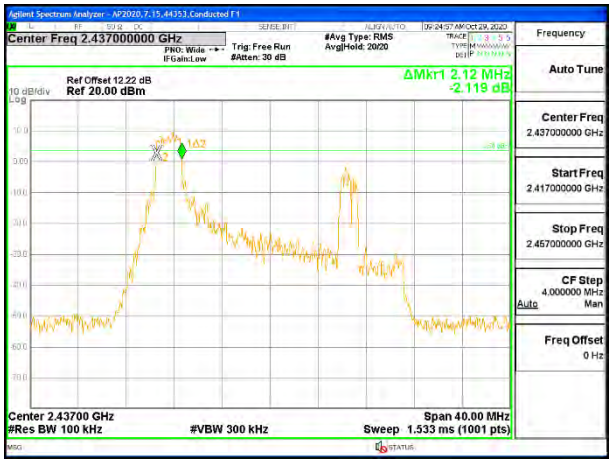
9.3.3. 802.11ax HE20 OFDMA MODE 2TX

ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 0

Channel	Frequency (MHz)	6dB BW(MHz) ANT 4	6dB BW (MHz) ANT 3	Minimum Limit (MHz)
Low 1	2412	2.04	2.08	0.5
Low 2	2417	2.12	2.08	0.5
Low 3	2422	2.08	2.12	0.5
Low 4	2427	2.12	2.16	0.5
Mid 6	2437	2.12	2.12	0.5
High 8	2447	2.08	2.16	0.5
High 9	2452	2.12	2.08	0.5
High 10	2457	2.12	2.16	0.5
High 11	2462	2.04	2.16	0.5
High 12	2467	2.12	2.12	0.5
High 13	2472	2.08	2.08	0.5

MID CHANNEL 6 ANT 4



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ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6dB BW(MHz) ANT 4	6dB BW (MHz) ANT 3	Minimum Limit (MHz)
Low 1	2412	2.64	2.72	0.5
Low 2	2417	2.60	2.64	0.5
Low 3	2422	2.68	2.72	0.5
Low 4	2427	2.68	2.60	0.5
Mid 6	2437	2.72	2.68	0.5
High 8	2447	2.64	2.68	0.5
High 9	2452	2.72	2.72	0.5
High 10	2457	2.72	2.72	0.5
High 11	2462	2.72	2.76	0.5
High 12	2467	2.64	2.64	0.5
High 13	2472	2.60	2.72	0.5

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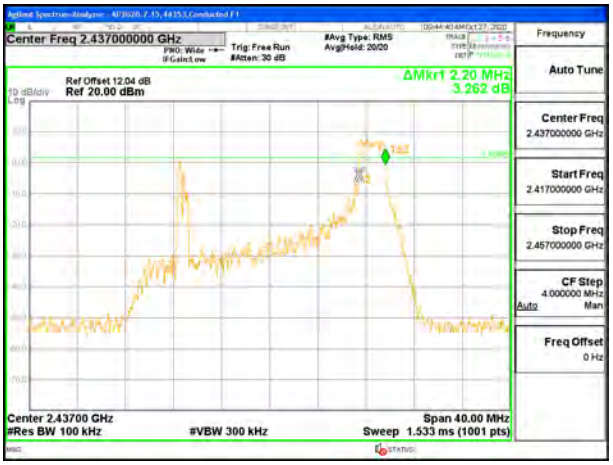
ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6dB BW(MHz) ANT 4	6dB BW (MHz) ANT 3	Minimum Limit (MHz)
Low 1	2412	2.04	2.08	0.5
Low 2	2417	2.08	2.12	0.5
Low 3	2422	2.16	2.08	0.5
Low 4	2427	2.12	2.16	0.5
Mid 6	2437	2.20	2.12	0.5
High 8	2447	2.08	2.12	0.5
High 9	2452	2.12	2.12	0.5
High 10	2457	2.12	2.16	0.5
High 11	2462	2.12	2.04	0.5
High 12	2467	2.12	2.12	0.5
High 13	2472	2.08	2.16	0.5



MID CHANNEL 6 ANT 4

MID CHANNEL 6 ANT 3

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9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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 power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband average power sensor. Gated average output power was read directly from power meter.

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)	ANT 4 Antenna Gain (dBi)	ANT 3 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-0.20	-0.20	-0.20	2.81

RESULTS

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9.4.1. 802.11b MODE 1TX

Test Engineer:	44353
Test Date:	6/18/2021 & 7/21/2021

1TX ANT 4 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	-0.20	30.00	30	36	30.00
Low 2	2417	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	20.22	20.22	30.00	-9.78
Low 2	2417	21.06	21.06	30.00	-8.94
Mid 6	2437	21.15	21.15	30.00	-8.85
High 11	2462	21.04	21.04	30.00	-8.96
High 12	2467	20.20	20.20	30.00	-9.80
High 13	2472	17.59	17.59	30.00	-12.41

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1TX ANT 3 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	-0.20	30.00	30	36	30.00
Low 2	2417	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	20.10	20.10	30.00	-9.90
Low 2	2417	21.05	21.05	30.00	-8.95
Mid 6	2437	21.23	21.23	30.00	-8.77
High 11	2462	21.09	21.09	30.00	-8.91
High 12	2467	20.19	20.19	30.00	-9.81
High 13	2472	17.51	17.51	30.00	-12.49

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9.4.2. 802.11n HT20 MODE

Test Engineer:	44353
Test Date:	6/4/2021

1TX ANT 4 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	-0.20	30.00	30	36	30.00
Low 2	2417	-0.20	30.00	30	36	30.00
Low 3	2422	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 9	2452	-0.20	30.00	30	36	30.00
High 10	2457	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	17.62	17.62	30.00	-12.38
Low 2	2417	19.15	19.15	30.00	-10.85
Low 3	2422	21.16	21.16	30.00	-8.84
Mid 6	2437	21.14	21.14	30.00	-8.86
High 9	2452	20.56	20.56	30.00	-9.44
High 10	2457	19.14	19.14	30.00	-10.86
High 11	2462	18.05	18.05	30.00	-11.95
High 12	2467	15.57	15.57	30.00	-14.43
High 13	2472	14.10	14.10	30.00	-15.90

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1TX ANT 3 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	-0.20	30.00	30	36	30.00
Low 2	2417	-0.20	30.00	30	36	30.00
Low 3	2422	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 9	2452	-0.20	30.00	30	36	30.00
High 10	2457	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	17.53	17.53	30.00	-12.47
Low 2	2417	19.18	19.18	30.00	-10.82
Low 3	2422	21.10	21.10	30.00	-8.90
Mid 6	2437	21.04	21.04	30.00	-8.96
High 9	2452	20.52	20.52	30.00	-9.48
High 10	2457	19.18	19.18	30.00	-10.82
High 11	2462	18.14	18.14	30.00	-11.86
High 12	2467	15.68	15.68	30.00	-14.32
High 13	2472	14.13	14.13	30.00	-15.87

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9.4.3. 802.11n HT20 CDD MODE 2TX

Test Engineer:	44353
Test Date:	6/4/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-0.20	30.00	36	30.00
Low 2	2417	-0.20	30.00	36	30.00
Low 3	2422	-0.20	30.00	36	30.00
Low 4	2427	-0.20	30.00	36	30.00
Mid 6	2437	-0.20	30.00	36	30.00
High 8	2447	-0.20	30.00	36	30.00
High 9	2452	-0.20	30.00	36	30.00
High 10	2457	-0.20	30.00	36	30.00
High 11	2462	-0.20	30.00	36	30.00
High 12	2467	-0.20	30.00	36	30.00
High 13	2472	-0.20	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.11	17.24	20.19	30.00	-9.81
Low 2	2417	18.18	18.19	21.20	30.00	-8.80
Low 3	2422	19.65	19.69	22.68	30.00	-7.32
Low 4	2427	21.10	21.08	24.10	30.00	-5.90
Mid 6	2437	21.07	21.11	24.10	30.00	-5.90
High 8	2447	21.09	21.10	24.11	30.00	-5.89
High 9	2452	19.07	19.08	22.09	30.00	-7.91
High 10	2457	18.21	18.23	21.23	30.00	-8.77
High 11	2462	17.06	17.03	20.06	30.00	-9.94
High 12	2467	14.61	14.67	17.65	30.00	-12.35
High 13	2472	13.92	13.95	16.95	30.00	-13.05

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9.4.4. 802.11ax HE20 MODE

Test Engineer:	44353
Test Date:	6/4/2021

1TX ANT 4 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	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	11.58	11.58	30.00	-18.42
High 11	2462	11.69	11.69	30.00	-18.31
High 12	2467	11.64	11.64	30.00	-18.36
High 13	2472	0.00	0.00	30.00	-30.00

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1TX ANT 4 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	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	11.56	11.56	30.00	-18.44
Mid 6	2437	11.66	11.66	30.00	-18.34
High 11	2462	11.65	11.65	30.00	-18.35
High 12	2467	11.59	11.59	30.00	-18.41
High 13	2472	-0.03	-0.03	30.00	-30.03

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1TX ANT 4 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	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	11.64	11.64	30.00	-18.36
Mid 6	2437	11.58	11.58	30.00	-18.42
High 11	2462	11.62	11.62	30.00	-18.38
High 12	2467	11.67	11.67	30.00	-18.33
High 13	2472	-0.06	-0.06	30.00	-30.06

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1TX ANT 4 MODE: 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	-0.20	30.00	30	36	30.00
Low 2	2417	-0.20	30.00	30	36	30.00
Low 3	2422	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 9	2452	-0.20	30.00	30	36	30.00
High 10	2457	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	16.65	16.65	30.00	-13.35
Low 2	2417	17.59	17.59	30.00	-12.41
Low 3	2422	21.03	21.03	30.00	-8.97
Mid 6	2437	21.02	21.02	30.00	-8.98
High 9	2452	21.03	21.03	30.00	-8.97
High 10	2457	17.70	17.70	30.00	-12.30
High 11	2462	16.62	16.62	30.00	-13.38
High 12	2467	14.63	14.63	30.00	-15.37
High 13	2472	9.67	9.67	30.00	-20.33

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1TX ANT 3 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	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	11.63	11.63	30.00	-18.37
Mid 6	2437	11.67	11.67	30.00	-18.33
High 11	2462	11.64	11.64	30.00	-18.36
High 12	2467	11.69	11.69	30.00	-18.31
High 13	2472	-0.07	-0.07	30.00	-30.07

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1TX ANT 3 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	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	11.68	11.68	30.00	-18.32
Mid 6	2437	11.64	11.64	30.00	-18.36
High 11	2462	11.65	11.65	30.00	-18.35
High 12	2467	11.57	11.57	30.00	-18.43
High 13	2472	-0.04	-0.04	30.00	-30.04

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1TX ANT 3 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	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	11.63	11.63	30.00	-18.37
Mid 6	2437	11.59	11.59	30.00	-18.41
High 11	2462	11.70	11.70	30.00	-18.30
High 12	2467	11.62	11.62	30.00	-18.38
High 13	2472	-0.09	-0.09	30.00	-30.09

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1TX ANT 3 MODE: 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	-0.20	30.00	30	36	30.00
Low 2	2417	-0.20	30.00	30	36	30.00
Low 3	2422	-0.20	30.00	30	36	30.00
Mid 6	2437	-0.20	30.00	30	36	30.00
High 9	2452	-0.20	30.00	30	36	30.00
High 10	2457	-0.20	30.00	30	36	30.00
High 11	2462	-0.20	30.00	30	36	30.00
High 12	2467	-0.20	30.00	30	36	30.00
High 13	2472	-0.20	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	16.59	16.59	30.00	-13.41
Low 2	2417	17.59	17.59	30.00	-12.41
Low 3	2422	21.04	21.04	30.00	-8.96
Mid 6	2437	21.03	21.03	30.00	-8.97
High 9	2452	21.03	21.03	30.00	-8.97
High 10	2457	17.58	17.58	30.00	-12.42
High 11	2462	16.72	16.72	30.00	-13.28
High 12	2467	14.57	14.57	30.00	-15.43
High 13	2472	9.62	9.62	30.00	-20.38

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9.4.5. 802.11ax HE20 OFDMA MODE 2TX

Test Engineer:	44353
Test Date:	6/4/2021

ANT 4+ ANT 3 2TX 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	-0.20	30.00	36	30.00
Mid 6	2437	-0.20	30.00	36	30.00
High 11	2462	-0.20	30.00	36	30.00
High 12	2467	-0.20	30.00	36	30.00
High 13	2472	-0.20	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.58	11.69	14.65	30.00	-15.35
Mid 6	2437	11.60	11.65	14.64	30.00	-15.36
High 11	2462	11.54	11.61	14.59	30.00	-15.41
High 12	2467	11.59	11.60	14.61	30.00	-15.39
High 13	2472	-0.07	-0.05	2.95	30.00	-27.05

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ANT 4+ ANT 3 2TX 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	-0.20	30.00	36	30.00
Mid 6	2437	-0.20	30.00	36	30.00
High 11	2462	-0.20	30.00	36	30.00
High 12	2467	-0.20	30.00	36	30.00
High 13	2472	-0.20	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.58	11.63	14.62	30.00	-15.38
Mid 6	2437	11.68	11.60	14.65	30.00	-15.35
High 11	2462	11.70	11.64	14.68	30.00	-15.32
High 12	2467	11.58	11.61	14.61	30.00	-15.39
High 13	2472	-0.08	-0.04	2.95	30.00	-27.05

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ANT 4+ ANT 3 2TX 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	-0.20	30.00	36	30.00
Mid 6	2437	-0.20	30.00	36	30.00
High 11	2462	-0.20	30.00	36	30.00
High 12	2467	-0.20	30.00	36	30.00
High 13	2472	-0.20	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.59	11.67	14.64	30.00	-15.36
Mid 6	2437	11.61	11.69	14.66	30.00	-15.34
High 11	2462	11.65	11.71	14.69	30.00	-15.31
High 12	2467	11.64	11.68	14.67	30.00	-15.33
High 13	2472	-0.06	-0.07	2.95	30.00	-27.05

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ANT 4+ ANT 3 2TX MODE: SU Mode

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-0.20	30.00	36	30.00
Low 2	2417	-0.20	30.00	36	30.00
Low 3	2422	-0.20	30.00	36	30.00
Low 4	2427	-0.20	30.00	36	30.00
Mid 6	2437	-0.20	30.00	36	30.00
High 8	2447	-0.20	30.00	36	30.00
High 9	2452	-0.20	30.00	36	30.00
High 10	2457	-0.20	30.00	36	30.00
High 11	2462	-0.20	30.00	36	30.00
High 12	2467	-0.20	30.00	36	30.00
High 13	2472	-0.20	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.67	15.64	18.67	30.00	-11.33
Low 2	2417	16.63	16.65	19.65	30.00	-10.35
Low 3	2422	18.55	18.59	21.58	30.00	-8.42
Low 4	2427	21.09	21.13	24.12	30.00	-5.88
Mid 6	2437	21.04	21.19	24.13	30.00	-5.87
High 8	2447	21.02	21.14	24.09	30.00	-5.91
High 9	2452	18.19	18.17	21.19	30.00	-8.81
High 10	2457	16.56	16.58	19.58	30.00	-10.42
High 11	2462	15.70	15.70	18.71	30.00	-11.29
High 12	2467	13.60	13.64	16.63	30.00	-13.37
High 13	2472	8.62	8.70	11.67	30.00	-18.33

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9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

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

RESULTS

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

Note: RBW setting is used greater than 3KHz on PSD measurement

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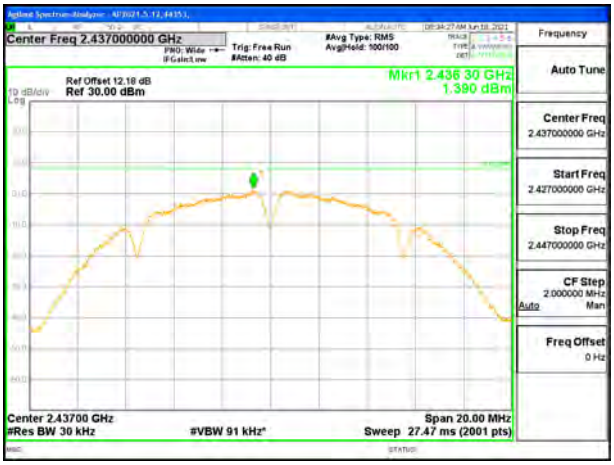
9.5.1. 802.11b MODE 1TX

1TX ANT 4MODE

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.10	-1.10	8.0	-9.1
Low 2	2417	0.00	0.00	8.0	-8.0
Mid 6	2437	1.39	1.39	8.0	-6.6
High 11	2462	-0.02	-0.02	8.0	-8.0
High 12	2467	-1.04	-1.04	8.0	-9.0
High 13	2472	-3.43	-3.43	8.0	-11.4



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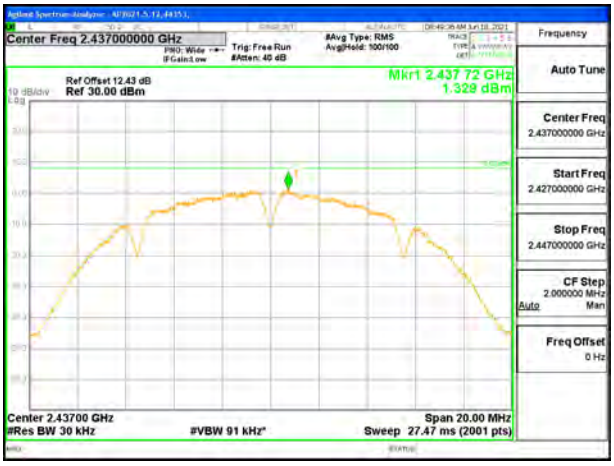
1TX ANT 3 MODE

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-0.93	-0.93	8.0	-8.9
Low 2	2417	-0.12	-0.12	8.0	-8.1
Mid 6	2437	1.33	1.33	8.0	-6.7
High 11	2462	-0.10	-0.10	8.0	-8.1
High 12	2467	-1.01	-1.01	8.0	-9.0
High 13	2472	-3.42	-3.42	8.0	-11.4



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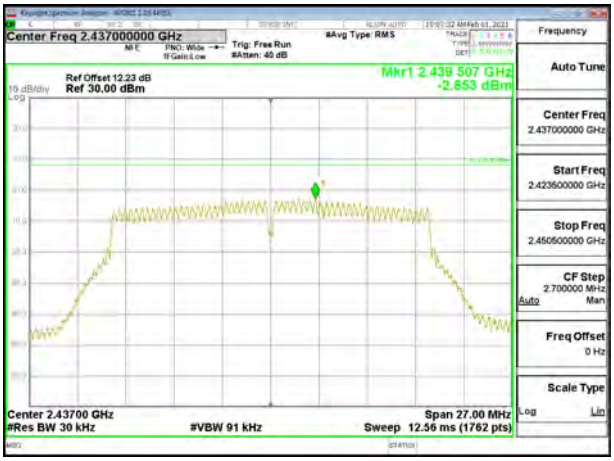
9.5.2. 802.11n HT20 MODE

1TX ANT 4 MODE

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-6.41	-6.41	8.0	-14.4
Low 2	2417	-4.83	-4.83	8.0	-12.8
Low 3	2422	-2.82	-2.82	8.0	-10.8
Mid 6	2437	-2.85	-2.85	8.0	-10.9
High 9	2452	-3.36	-3.36	8.0	-11.4
High 10	2457	-4.85	-4.85	8.0	-12.9
High 11	2462	-6.00	-6.00	8.0	-14.0
High 12	2467	-8.63	-8.63	8.0	-16.6
High 13	2472	-6.59	-6.59	8.0	-14.6



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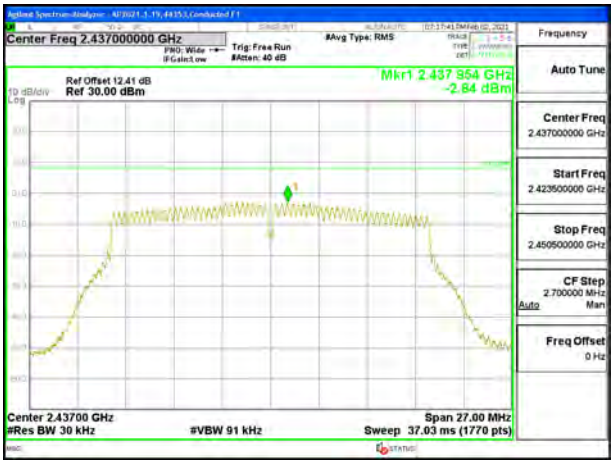
1TX ANT 3 MODE

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-6.52	-6.52	8.0	-14.5
Low 2	2417	-4.88	-4.88	8.0	-12.9
Low 3	2422	-3.05	-3.05	8.0	-11.1
Mid 6	2437	-2.84	-2.84	8.0	-10.8
High 9	2452	-3.61	-3.61	8.0	-11.6
High 10	2457	-5.13	-5.13	8.0	-13.1
High 11	2462	-5.95	-5.95	8.0	-14.0
High 12	2467	-8.40	-8.40	8.0	-16.4
High 13	2472	-6.59	-6.59	8.0	-14.6



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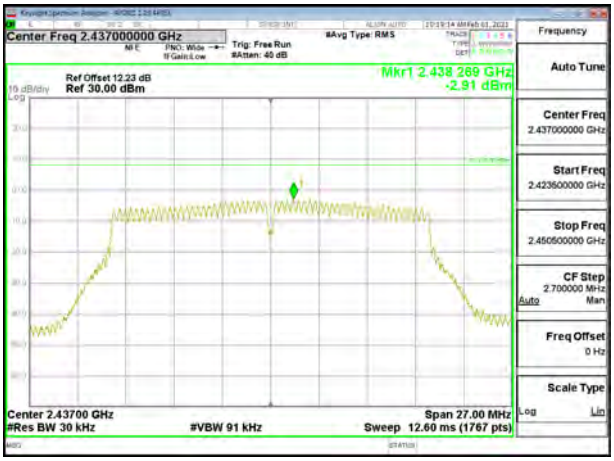
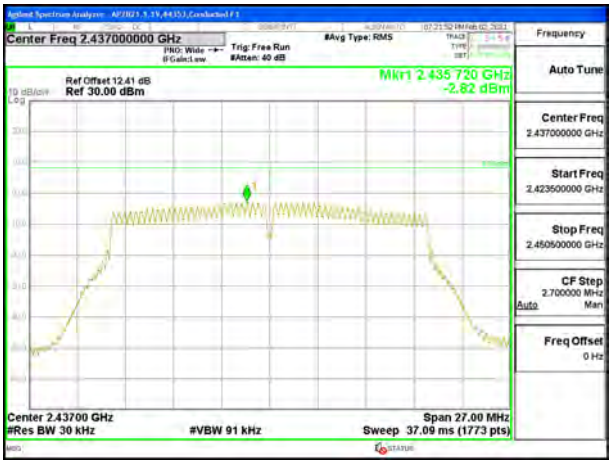
9.5.3. 802.11n HT20 CDD MODE 2TX

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD			
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-6.92	-7.31	-4.10	8.0	-12.1
Low 2	2417	-6.06	-5.80	-2.92	8.0	-10.9
Low 3	2422	-4.47	-4.38	-1.41	8.0	-9.4
Low 4	2427	-2.82	-2.96	0.12	8.0	-7.9
Mid 6	2437	-2.91	-2.82	0.15	8.0	-7.9
High 8	2447	-2.88	-2.86	0.14	8.0	-7.9
High 9	2452	-4.97	-5.12	-2.03	8.0	-10.0
High 10	2457	-5.80	-5.83	-2.80	8.0	-10.8
High 11	2462	-6.89	-6.66	-3.77	8.0	-11.8
High 12	2467	-9.43	-9.09	-6.25	8.0	-14.2
High 13	2472	-7.05	-6.76	-3.90	8.0	-11.9



MID CHANNEL 6 ANT 4



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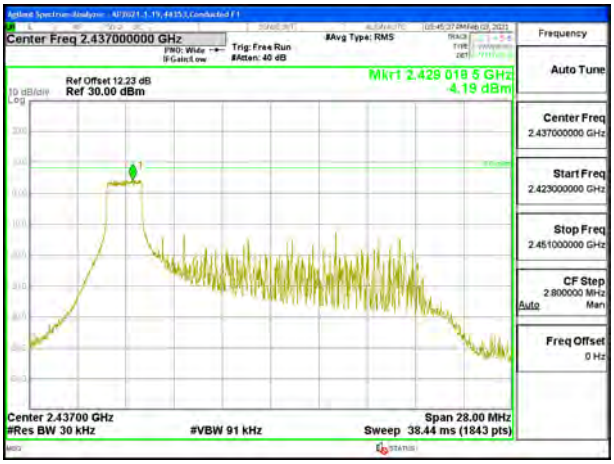
9.5.4. 802.11ax HE20 MODE

1TX ANT 4MODE , 26-Tone RU Index 0

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.40	-1.40	8.0	-9.4
Low 2	2417	0.86	0.86	8.0	-7.1
Low 3	2422	4.23	4.23	8.0	-3.8
Mid 6	2437	4.19	4.19	8.0	-3.8
High 9	2452	4.21	4.21	8.0	-3.8
High 10	2457	0.77	0.77	8.0	-7.2
High 11	2462	-1.28	-1.28	8.0	-9.3
High 12	2467	-3.41	-3.41	8.0	-11.4
High 13	2472	-17.80	-17.80	8.0	-25.8



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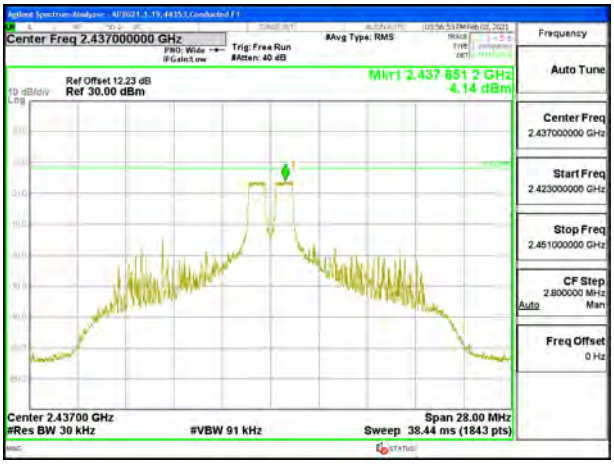
1TX ANT 4MODE , 26-Tone RU Index 4

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.39	-1.39	8.0	-9.4
Low 2	2417	0.83	0.83	8.0	-7.2
Low 3	2422	4.14	4.14	8.0	-3.9
Mid 6	2437	4.14	4.14	8.0	-3.9
High 9	2452	4.24	4.24	8.0	-3.8
High 10	2457	0.80	0.80	8.0	-7.2
High 11	2462	-1.39	-1.39	8.0	-9.4
High 12	2467	-3.37	-3.37	8.0	-11.4
High 13	2472	-17.13	-17.13	8.0	-25.1



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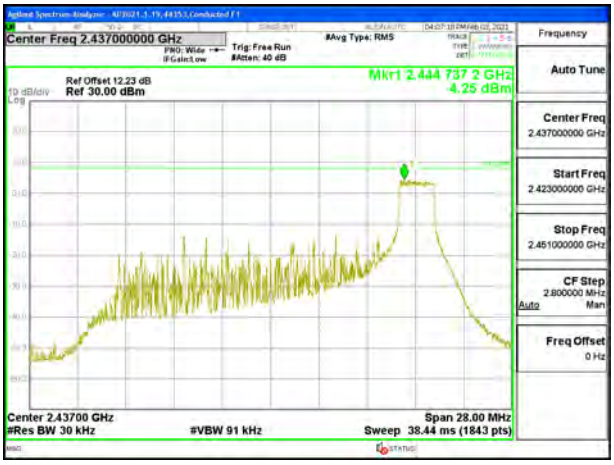
1TX ANT 4 MODE , 26-Tone RU Index 8

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.30	-1.30	8.0	-9.3
Low 2	2417	0.70	0.70	8.0	-7.3
Low 3	2422	4.23	4.23	8.0	-3.8
Mid 6	2437	4.25	4.25	8.0	-3.8
High 9	2452	4.33	4.33	8.0	-3.7
High 10	2457	0.72	0.72	8.0	-7.3
High 11	2462	-1.42	-1.42	8.0	-9.4
High 12	2467	-3.30	-3.30	8.0	-11.3
High 13	2472	-16.49	-16.49	8.0	-24.5



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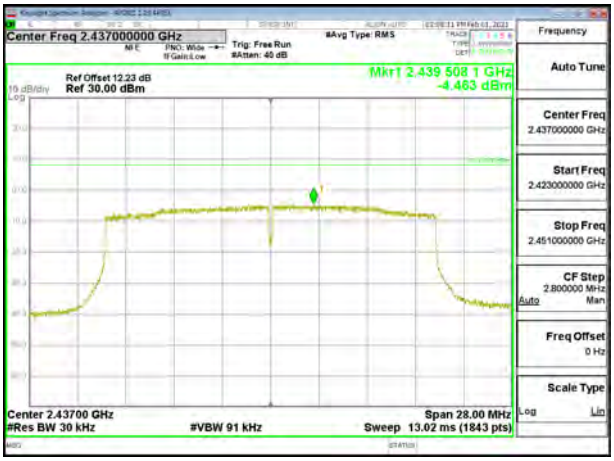
1TX ANT 4 MODE , SU Mode

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-8.80	-8.80	8.0	-16.8
Low 2	2417	-7.86	-7.86	8.0	-15.9
Low 3	2422	-4.32	-4.32	8.0	-12.3
Mid 6	2437	-4.46	-4.46	8.0	-12.5
High 9	2452	-4.47	-4.47	8.0	-12.5
High 10	2457	-8.05	-8.05	8.0	-16.1
High 11	2462	-8.72	-8.72	8.0	-16.7
High 12	2467	-10.87	-10.87	8.0	-18.9
High 13	2472	-14.64	-14.64	8.0	-22.6



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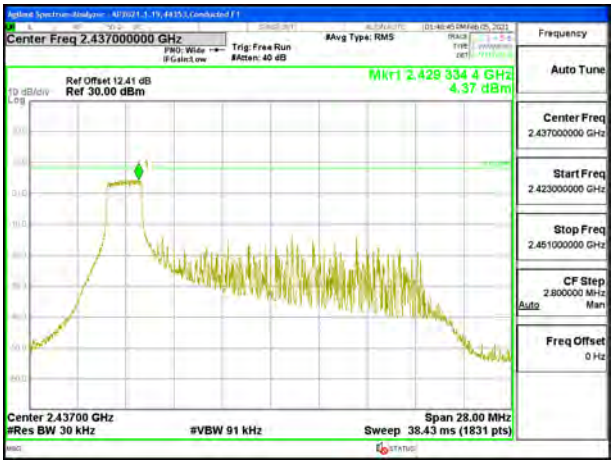
1TX ANT 3 MODE , 26-Tone RU Index 0

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.33	-1.33	8.0	-9.3
Low 2	2417	0.77	0.77	8.0	-7.2
Low 3	2422	4.23	4.23	8.0	-3.8
Mid 6	2437	4.37	4.37	8.0	-3.6
High 9	2452	4.32	4.32	8.0	-3.7
High 10	2457	0.68	0.68	8.0	-7.3
High 11	2462	-1.22	-1.22	8.0	-9.2
High 12	2467	-3.32	-3.32	8.0	-11.3
High 13	2472	-17.45	-17.45	8.0	-25.5



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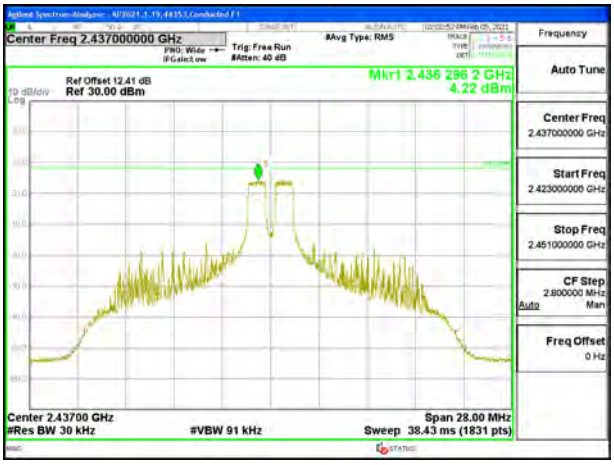
1TX ANT 3 MODE , 26-Tone RU Index 4

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.39	-1.39	8.0	-9.4
Low 2	2417	0.74	0.74	8.0	-7.3
Low 3	2422	4.21	4.21	8.0	-3.8
Mid 6	2437	4.22	4.22	8.0	-3.8
High 9	2452	4.23	4.23	8.0	-3.8
High 10	2457	0.45	0.45	8.0	-7.6
High 11	2462	-1.29	-1.29	8.0	-9.3
High 12	2467	-3.33	-3.33	8.0	-11.3
High 13	2472	-16.38	-16.38	8.0	-24.4



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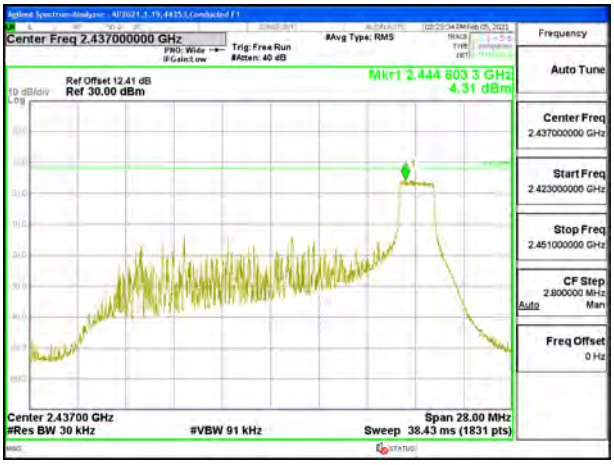
1TX ANT 3 MODE , 26-Tone RU Index 8

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.38	-1.38	8.0	-9.4
Low 2	2417	0.69	0.69	8.0	-7.3
Low 3	2422	4.24	4.24	8.0	-3.8
Mid 6	2437	4.31	4.31	8.0	-3.7
High 9	2452	4.19	4.19	8.0	-3.8
High 10	2457	0.75	0.75	8.0	-7.3
High 11	2462	-1.29	-1.29	8.0	-9.3
High 12	2467	-3.22	-3.22	8.0	-11.2
High 13	2472	-16.99	-16.99	8.0	-25.0



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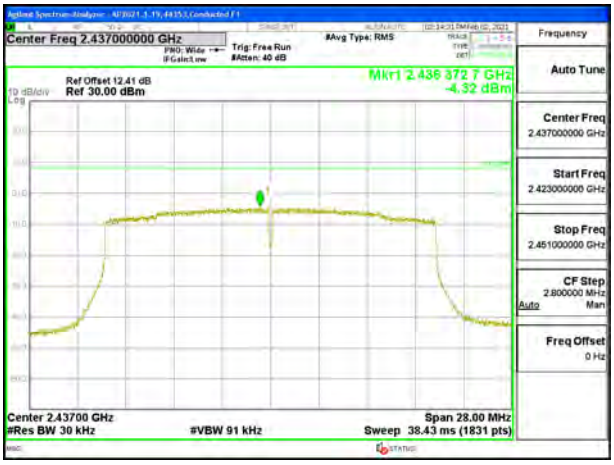
1TX ANT 3 MODE , SU Mode

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.39	-9.39	8.0	-17.4
Low 2	2417	-7.97	-7.97	8.0	-16.0
Low 3	2422	-4.57	-4.57	8.0	-12.6
Mid 6	2437	-4.32	-4.32	8.0	-12.3
High 9	2452	-4.33	-4.33	8.0	-12.3
High 10	2457	-7.84	-7.84	8.0	-15.8
High 11	2462	-9.69	-9.69	8.0	-17.7
High 12	2467	-11.44	-11.44	8.0	-19.4
High 13	2472	-14.42	-14.42	8.0	-22.4



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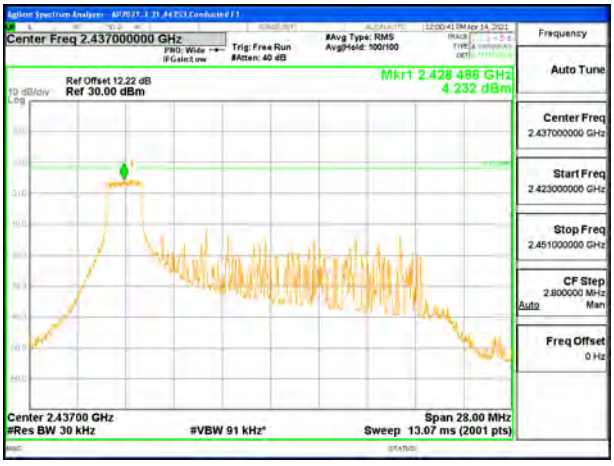
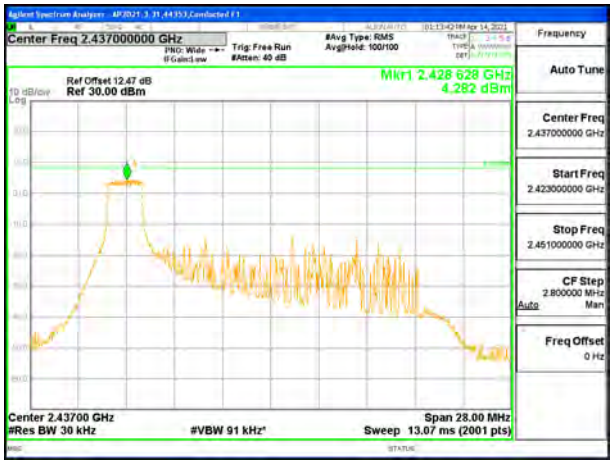
9.5.5. 802.11ax HE20 OFDMA MODE 2TX

ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 0

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD			
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-2.39	-2.28	0.67	8.0	-7.3
Low 2	2417	-0.42	-0.35	2.63	8.0	-5.4
Low 3	2422	1.80	1.70	4.76	8.0	-3.2
Low 4	2427	4.19	4.26	7.24	8.0	-0.8
Mid 6	2437	4.23	4.28	7.27	8.0	-0.7
High 8	2447	4.25	4.18	7.23	8.0	-0.8
High 9	2452	1.21	1.21	4.22	8.0	-3.8
High 10	2457	-0.31	-0.40	2.66	8.0	-5.3
High 11	2462	-2.30	-2.29	0.72	8.0	-7.3
High 12	2467	-4.27	-4.28	-1.26	8.0	-9.3
High 13	2472	-17.95	-17.44	-14.68	8.0	-22.7



MID CHANNEL 6 ANT 4



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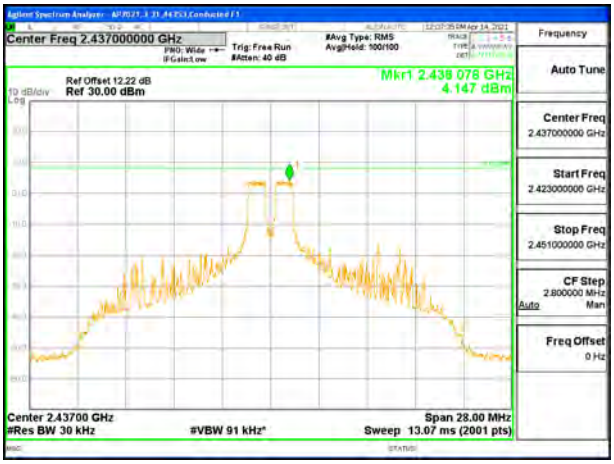
ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 4

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD			
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-2.46	-2.33	0.62	8.0	-7.4
Low 2	2417	-0.32	-0.41	2.65	8.0	-5.4
Low 3	2422	1.78	1.81	4.81	8.0	-3.2
Low 4	2427	4.23	4.29	7.27	8.0	-0.7
Mid 6	2437	4.15	4.26	7.21	8.0	-0.8
High 8	2447	4.19	4.20	7.20	8.0	-0.8
High 9	2452	1.21	1.27	4.25	8.0	-3.7
High 10	2457	-0.32	-0.30	2.70	8.0	-5.3
High 11	2462	-2.39	-2.32	0.66	8.0	-7.3
High 12	2467	-4.40	-4.33	-1.35	8.0	-9.4
High 13	2472	-17.29	-16.74	-14.00	8.0	-22.0



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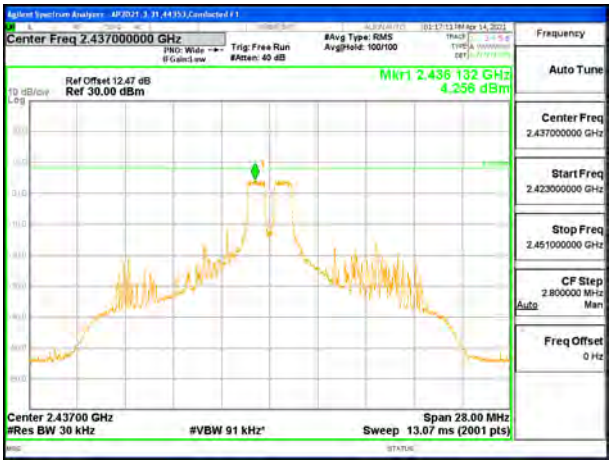

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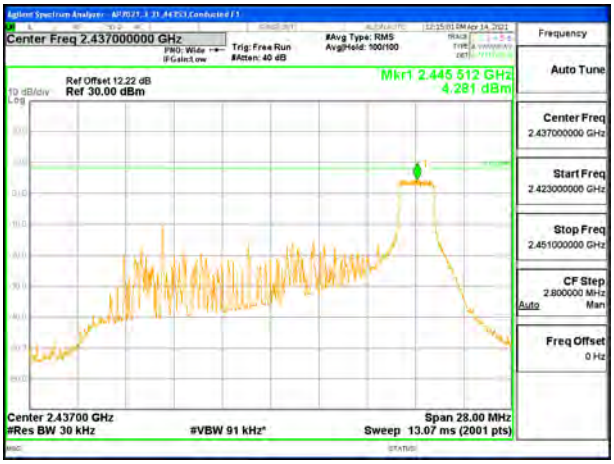
ANT 4+ ANT 3 2TX MODE: 26-Tones, RU Index 8

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD			
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-2.22	-2.43	0.69	8.0	-7.3
Low 2	2417	-0.41	-0.32	2.65	8.0	-5.4
Low 3	2422	1.77	1.81	4.80	8.0	-3.2
Low 4	2427	4.13	4.25	7.20	8.0	-0.8
Mid 6	2437	4.28	4.25	7.27	8.0	-0.7
High 8	2447	4.27	4.24	7.26	8.0	-0.7
High 9	2452	1.23	1.23	4.24	8.0	-3.8
High 10	2457	-0.33	-0.33	2.68	8.0	-5.3
High 11	2462	-2.41	-2.25	0.68	8.0	-7.3
High 12	2467	-4.28	-4.29	-1.27	8.0	-9.3
High 13	2472	-16.54	-16.89	-13.70	8.0	-21.7



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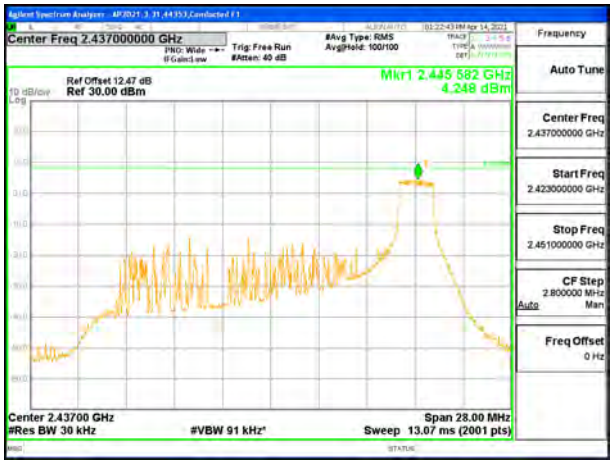

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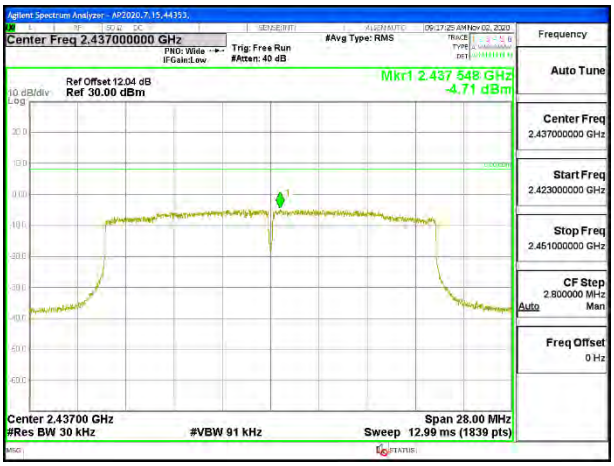
ANT 4+ ANT 3 2TX MODE: SU Mode

Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD			
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.78	-10.02	-6.89	8.0	-14.9
Low 2	2417	-8.77	-8.93	-5.84	8.0	-13.8
Low 3	2422	-6.95	-6.81	-3.87	8.0	-11.9
Low 4	2427	-4.43	-4.31	-1.36	8.0	-9.4
Mid 6	2437	-4.71	-4.45	-1.57	8.0	-9.6
High 8	2447	-4.38	-4.40	-1.38	8.0	-9.4
High 9	2452	-7.34	-7.39	-4.35	8.0	-12.4
High 10	2457	-8.86	-8.90	-5.87	8.0	-13.9
High 11	2462	-9.85	-9.78	-6.81	8.0	-14.8
High 12	2467	-11.98	-12.02	-8.99	8.0	-17.0
High 13	2472	-17.04	-16.90	-13.96	8.0	-22.0



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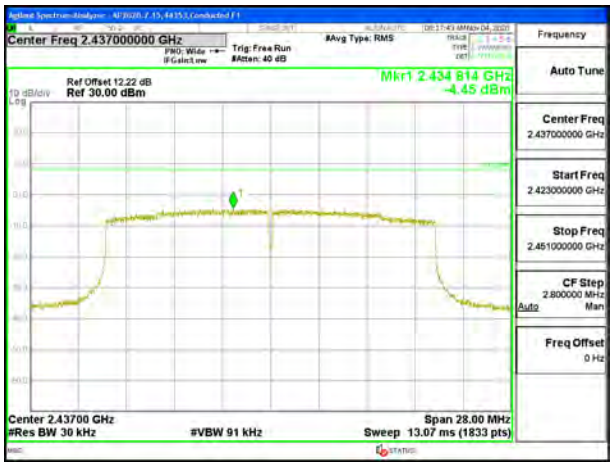

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9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

RESULTS

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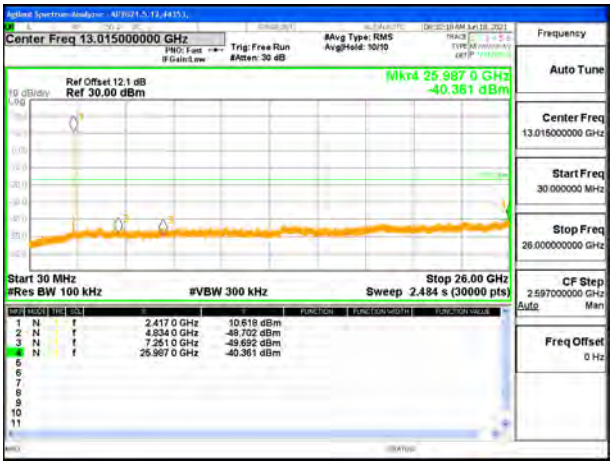
9.6.1. 802.11b MODE 1TX

1TX ANT 4 MODE

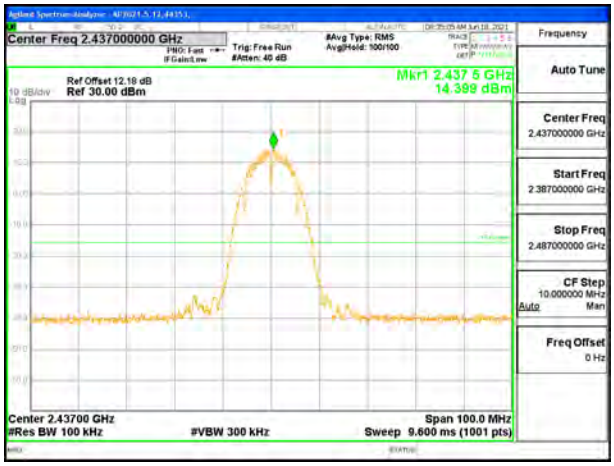
LOW CHANNEL 1 BANDEDGE

OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE



OUT-OF-BAND LOW CHANNEL 2



MID CHANNEL 6 BANDEDGE

OUT-OF-BAND MID CHANNEL 6

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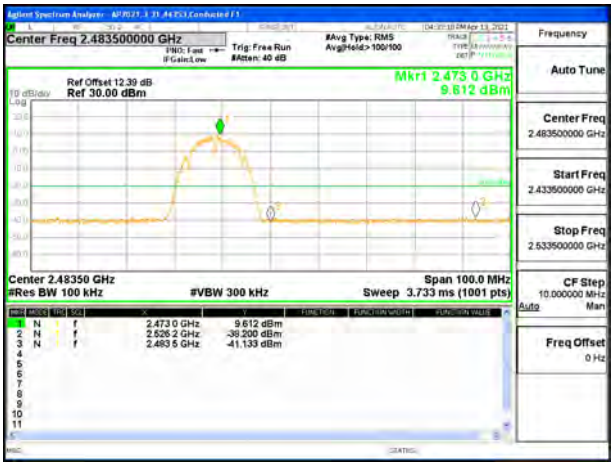
HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12



HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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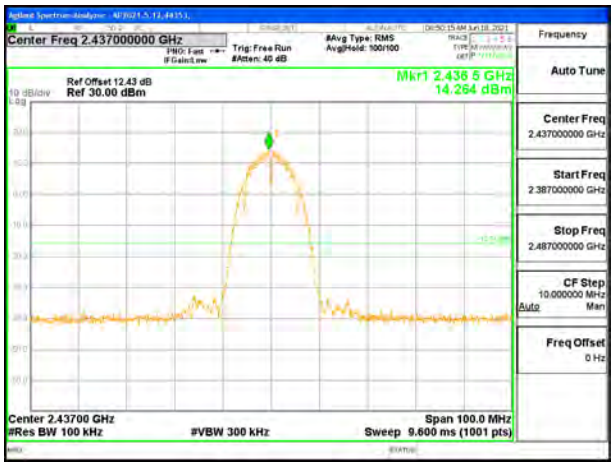
1TX ANT 3 MODE

LOW CHANNEL 1 BANDEDGE

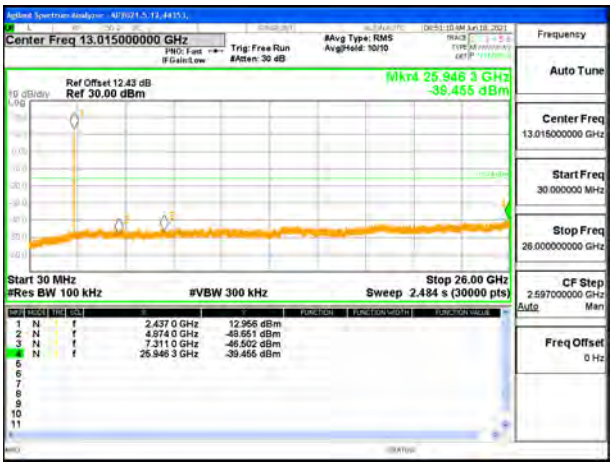
OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2



MID CHANNEL 6 BANDEDGE



OUT-OF-BAND MID CHANNEL 6

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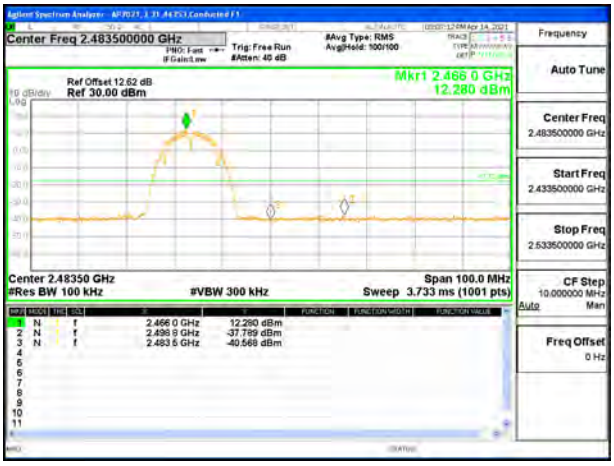
HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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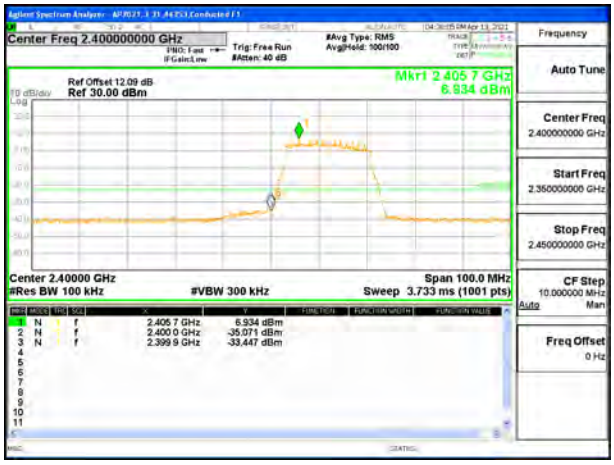
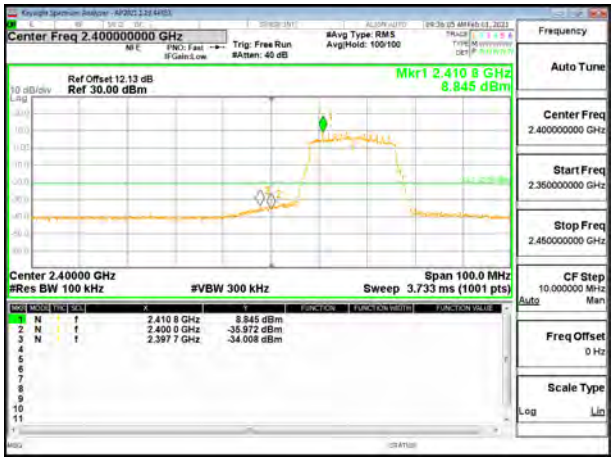
9.6.2. 802.11n HT20 MODE

1TX ANT 4 MODE



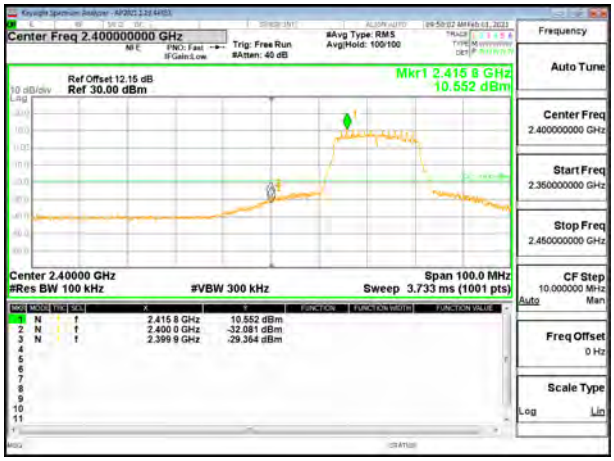
LOW CHANNEL 1 BANDEDGE

OUT-OF-BAND LOW CHANNEL 1



LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2



LOW CHANNEL 3 BANDEDGE

OUT-OF-BAND LOW CHANNEL 3

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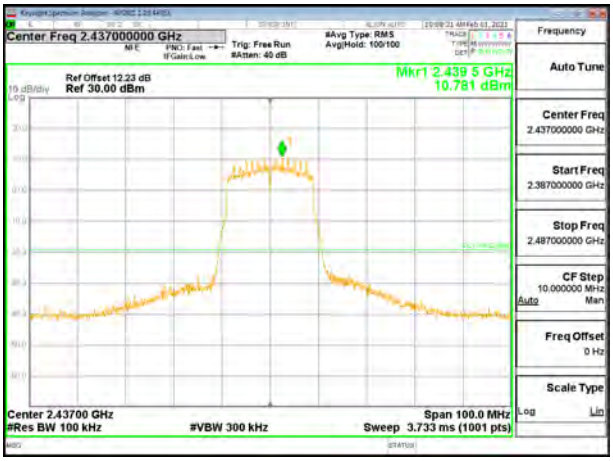
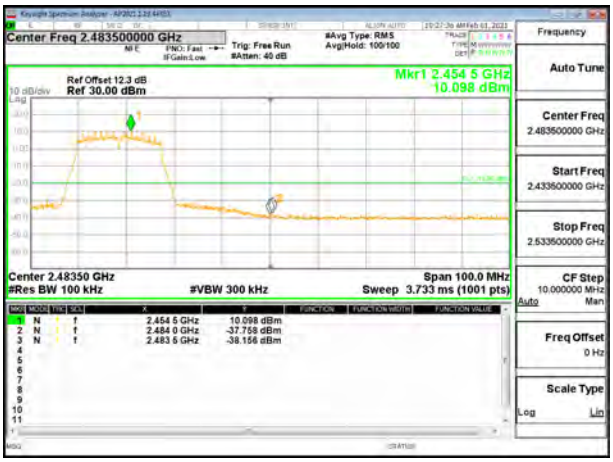


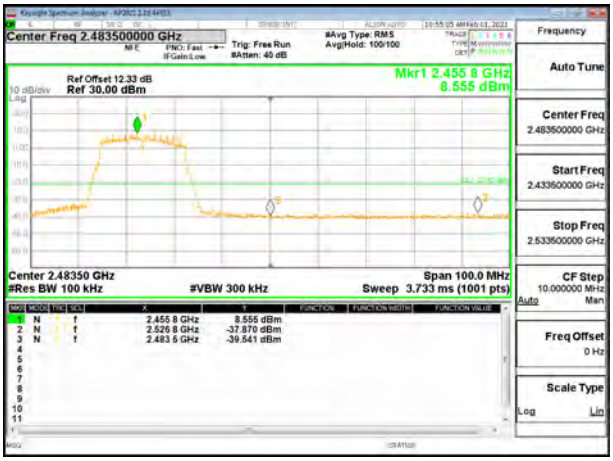
MID CHANNEL 6 BANDEDGE

OUT-OF-BAND MID 6 CHANNEL



HIGH CHANNEL 9 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 9



HIGH CHANNEL 10 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 10

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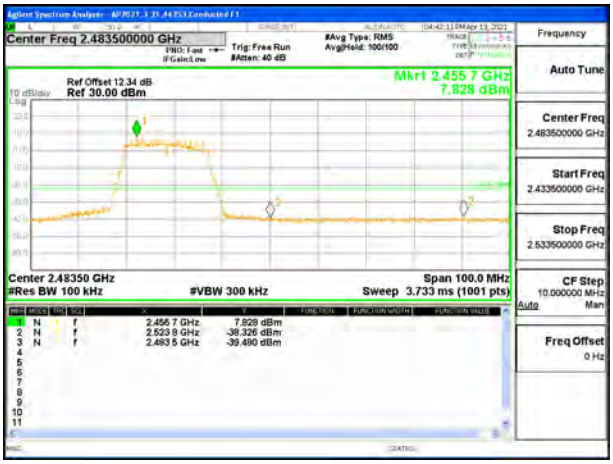

HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

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 ANT 3 MODE

LOW CHANNEL 1 BANDEDGE

OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE

OUT-OF-BAND LOW CHANNEL 3

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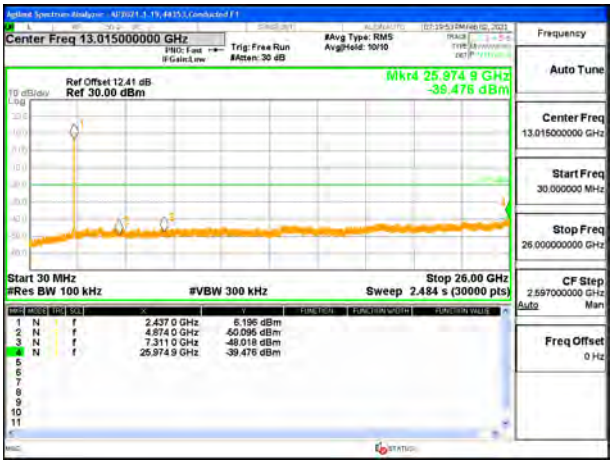
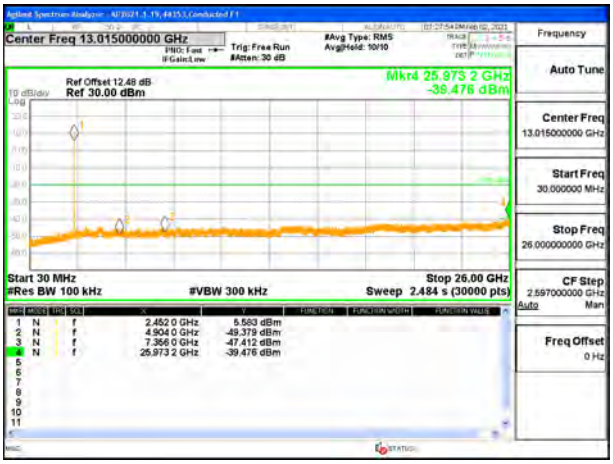
MID CHANNEL 6 BANDEDGE

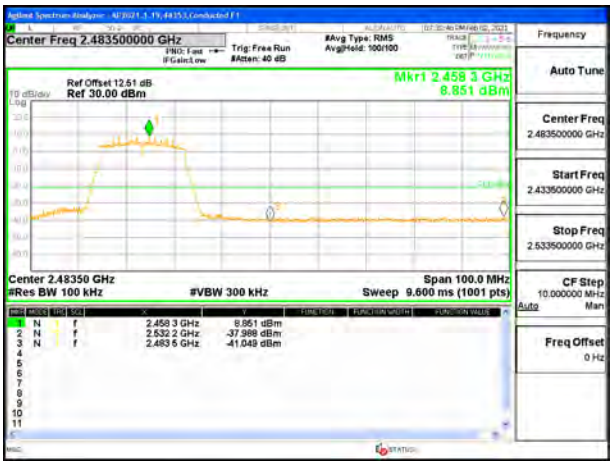


OUT-OF-BAND MID 6 CHANNEL

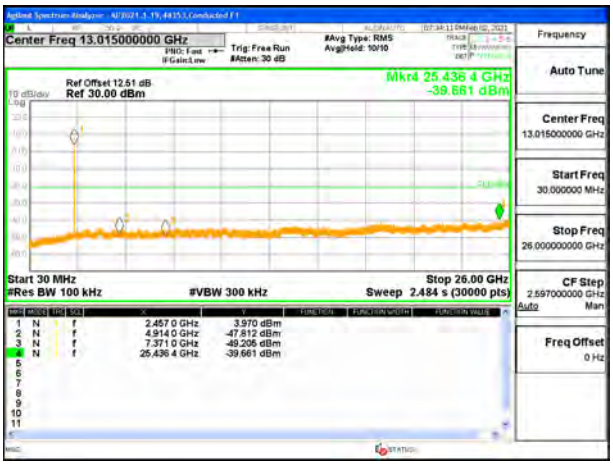
HIGH CHANNEL 9 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 9



HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10

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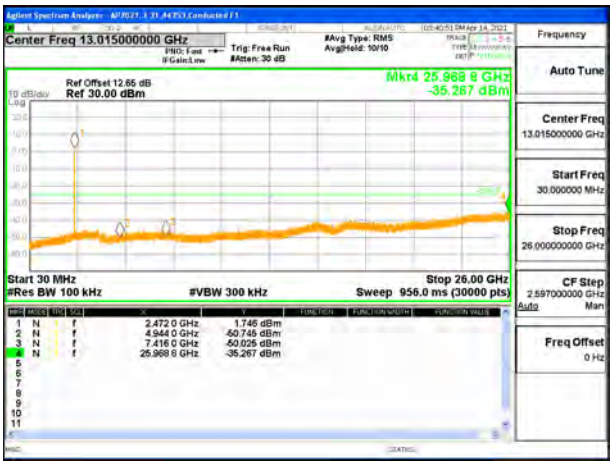
HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

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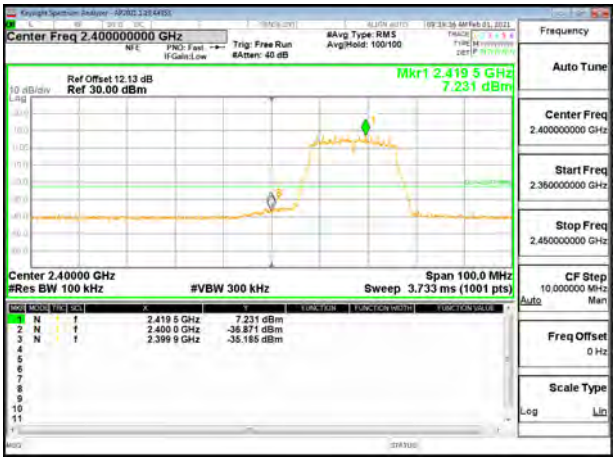
9.6.3. 802.11n HT20 MODE 2TX

2TX ANT 4+ ANT 3 CDD MODE

LOW CHANNEL 1 BANDEDGE ANT 4

OUT-OF-BAND LOW CHANNEL 1 ANT 4



LOW CHANNEL 2 BANDEDGE ANT 4

OUT-OF-BAND LOW CHANNEL 2 ANT 4

LOW CHANNEL 3 BANDEDGE ANT 4

OUT-OF-BAND LOW CHANNEL 3 ANT 4

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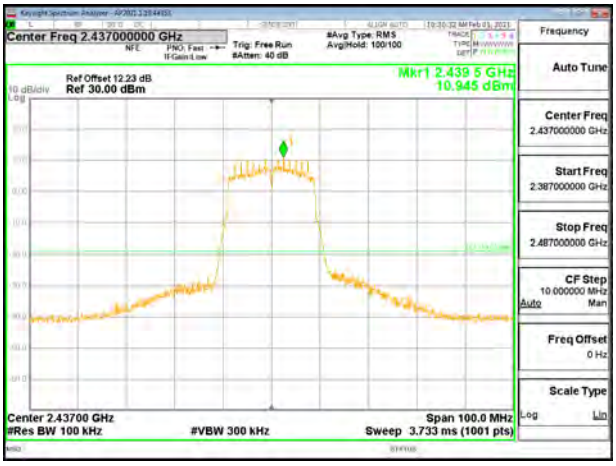
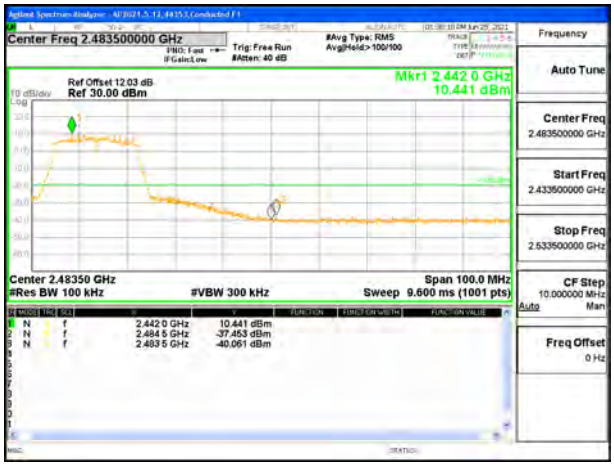
LOW CHANNEL 4 BANDEDGE ANT 4

OUT-OF-BAND LOW CHANNEL 4 ANT 4



MID CHANNEL 6 BANDEDGE ANT 4

OUT-OF-BAND MID CHANNEL 6 ANT 4



HIGH CHANNEL 8 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 8 ANT 4

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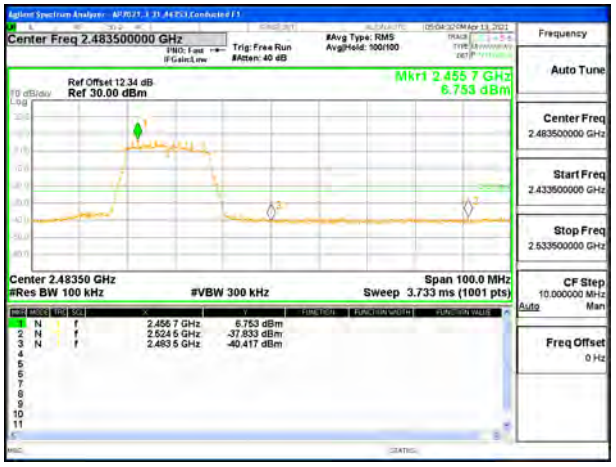
HIGH CHANNEL 9 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 9 ANT 4

HIGH CHANNEL 10 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 10 ANT 4



HIGH CHANNEL 11 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 11 ANT 4

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HIGH CHANNEL 12 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 12 ANT 4

HIGH CHANNEL 13 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 13 ANT 4

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LOW CHANNEL 1 BANDEDGE ANT 3

OUT-OF-BAND LOW CHANNEL 1 ANT 3

LOW CHANNEL 2 BANDEDGE ANT 3

OUT-OF-BAND LOW CHANNEL 2 ANT 3

LOW CHANNEL 3 BANDEDGE ANT 3

OUT-OF-BAND LOW CHANNEL 3 ANT 3

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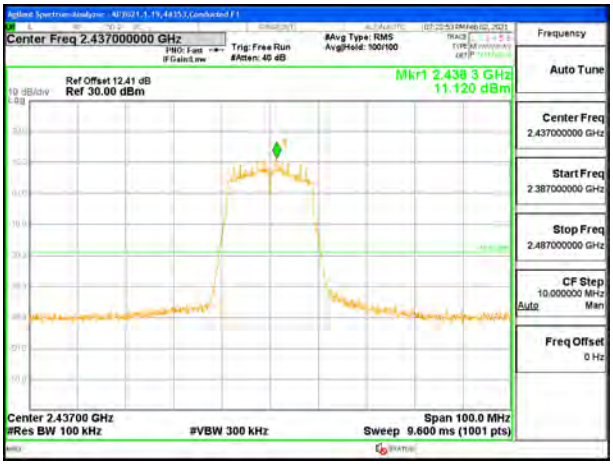
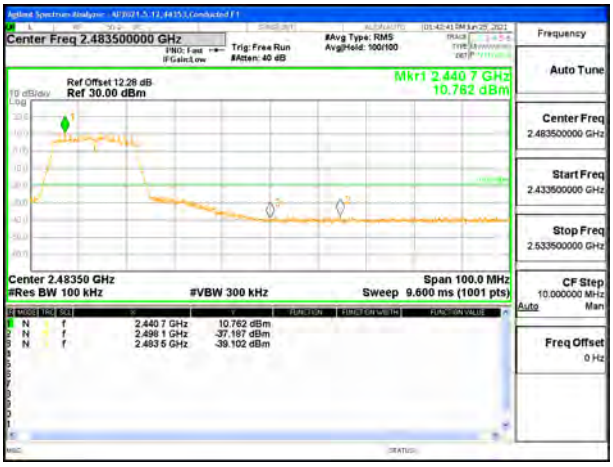
LOW CHANNEL 4 BANDEDGE ANT 3

OUT-OF-BAND LOW CHANNEL 4 ANT 3

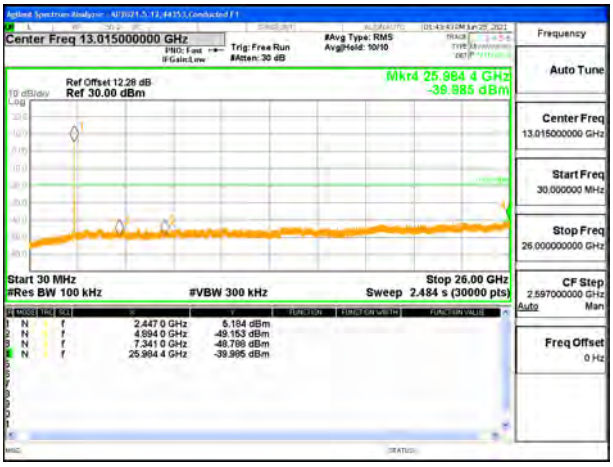


MID CHANNEL 6 BANDEDGE ANT 3

OUT-OF-BAND MID CHANNEL 6 ANT 3



HIGH CHANNEL 8 BANDEDGE ANT 3



OUT-OF-BAND HIGH CHANNEL 8 ANT 3

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HIGH CHANNEL 9 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 9 ANT 3

HIGH CHANNEL 10 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 10 ANT 3

HIGH CHANNEL 11 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 11 ANT 3

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HIGH CHANNEL 12 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 12 ANT 3

HIGH CHANNEL 13 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 13 ANT 3

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9.6.4. 802.11ax HE20 MODE

1TX ANT 4 MODE, 26-Tone RU Index 0

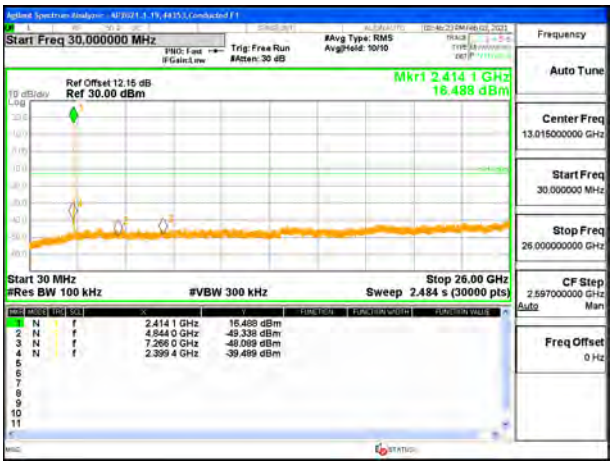
LOW CHANNEL 1 BANDEDGE

OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE



OUT-OF-BAND LOW CHANNEL 3

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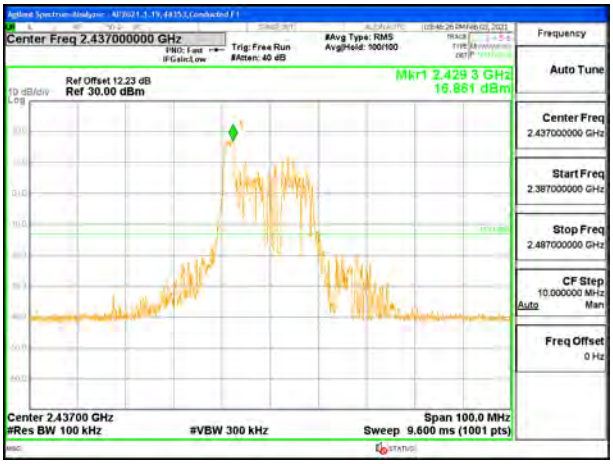
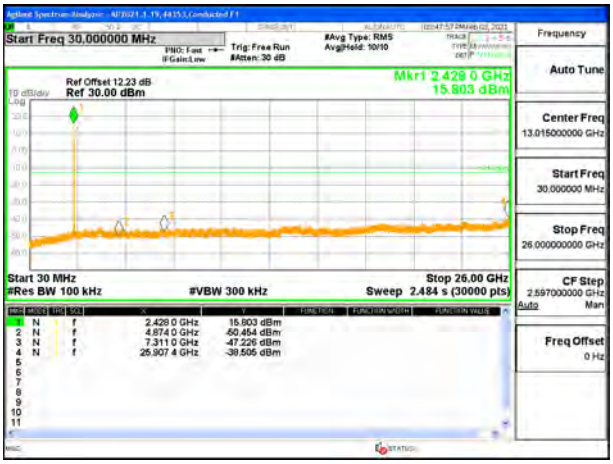
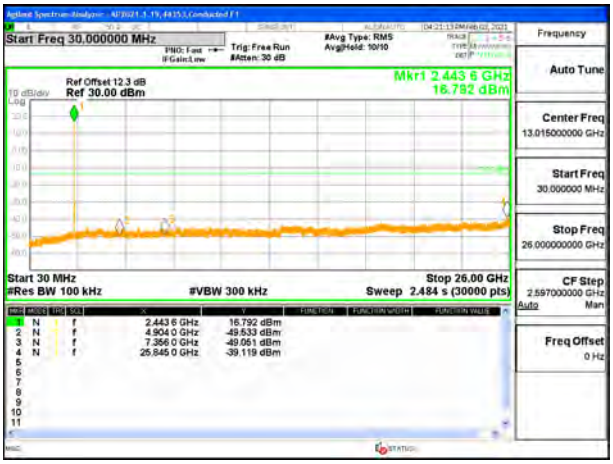


MID CHANNEL 6 BANDEDGE

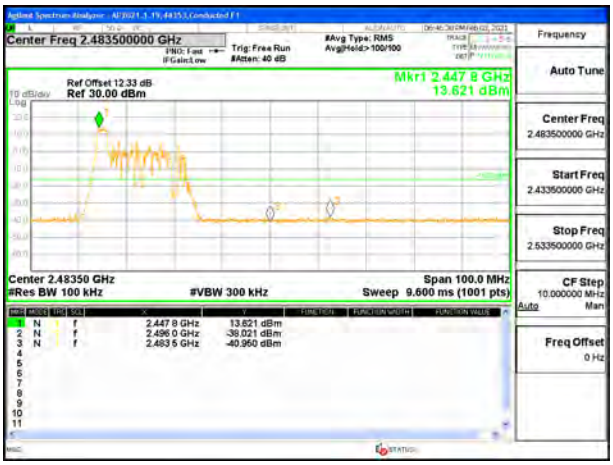


OUT-OF-BAND MID CHANNEL 6

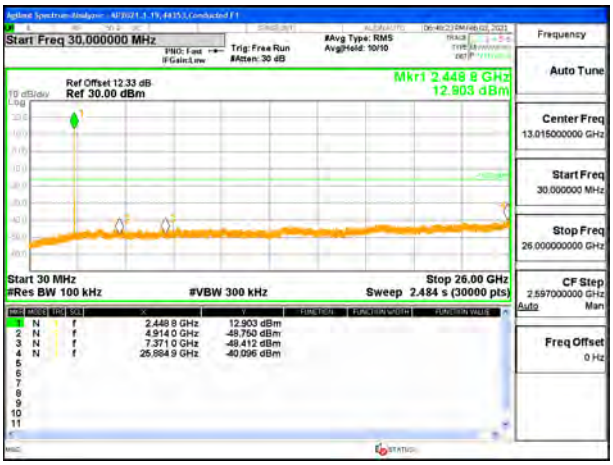
HIGH CHANNEL 9 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 9



HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10

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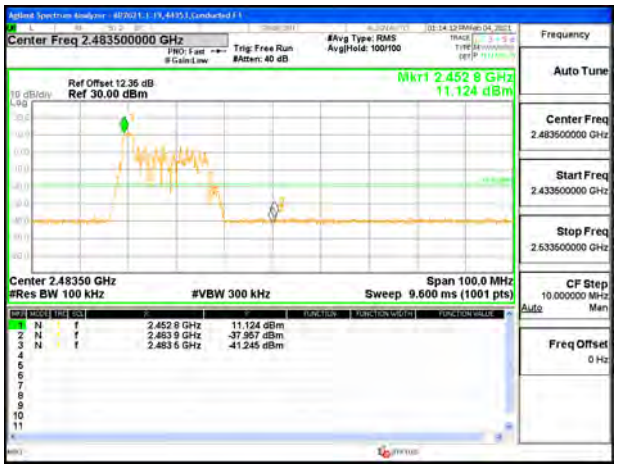
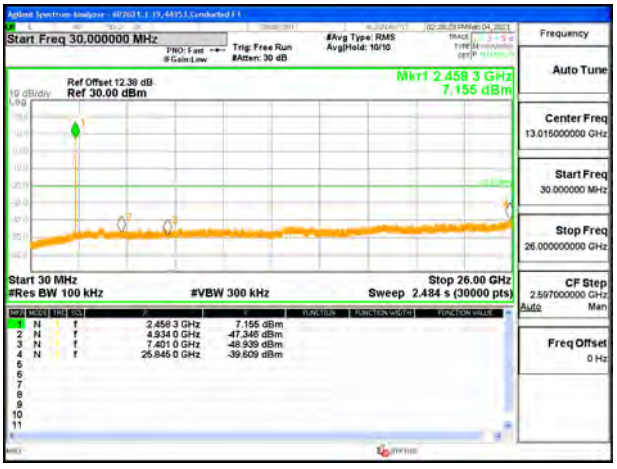


HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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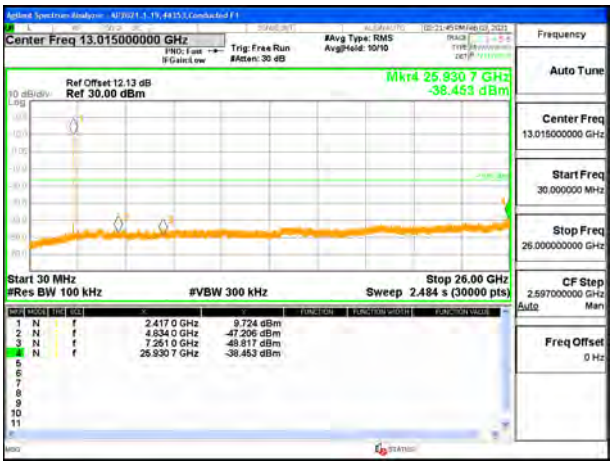
1TX ANT 4 MODE, 26-Tone RU Index 4

LOW CHANNEL 1 BANDEDGE

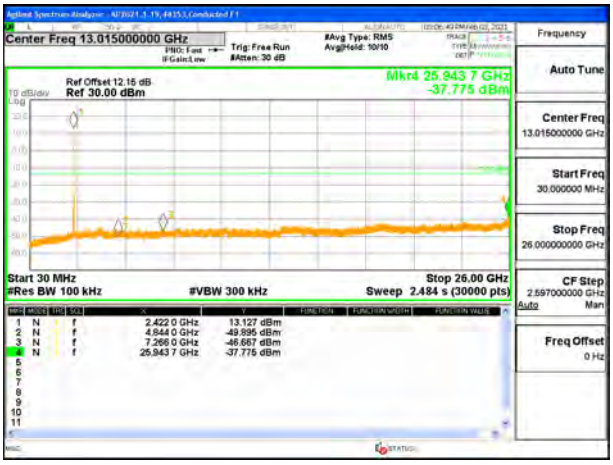
OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE



OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE



OUT-OF-BAND LOW CHANNEL 3

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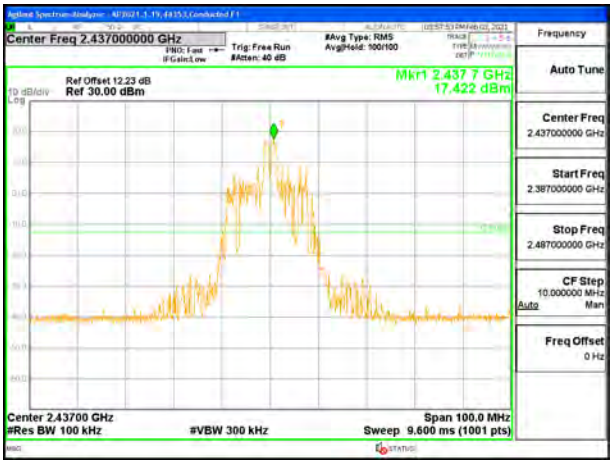
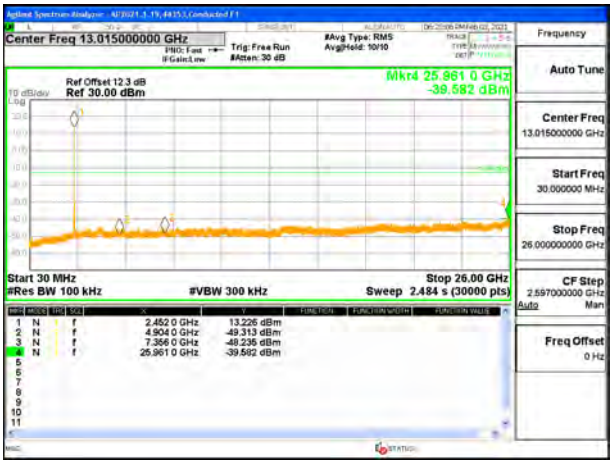


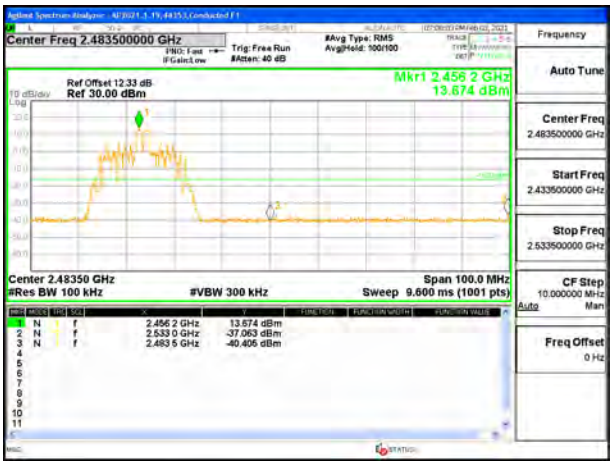
MID CHANNEL 6 BANDEDGE

OUT-OF-BAND MID CHANNEL 6

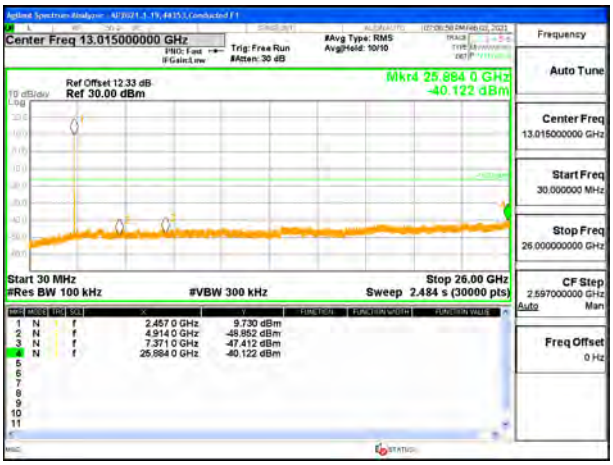
HIGH CHANNEL 9 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 9



HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10

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HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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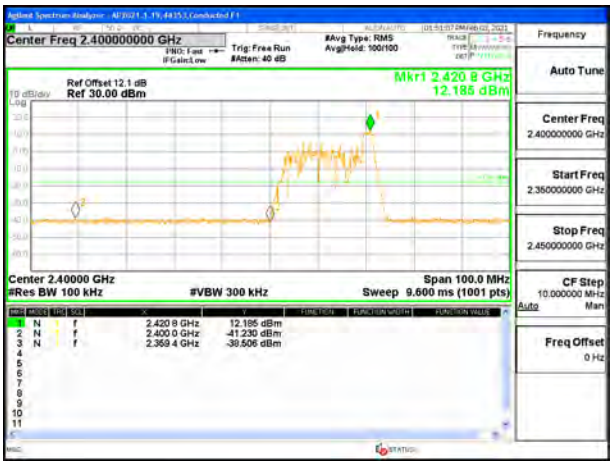
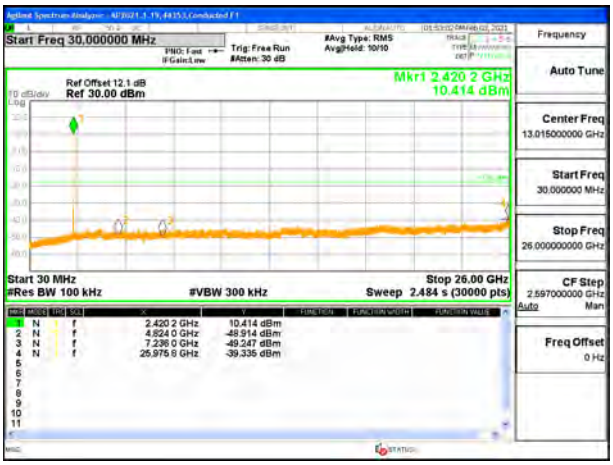
1TX ANT 4 MODE, 26-Tone RU Index 8

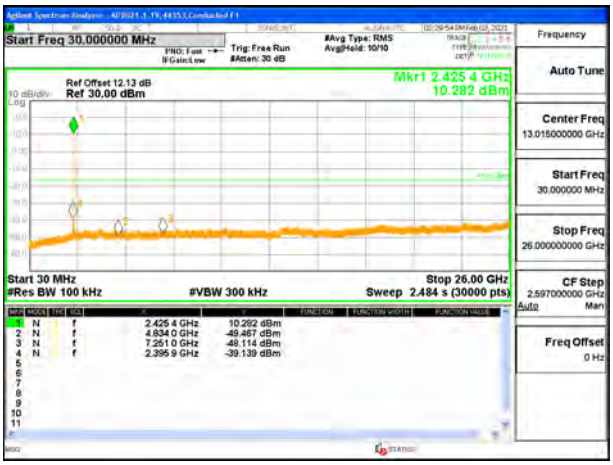


LOW CHANNEL 1 BANDEDGE



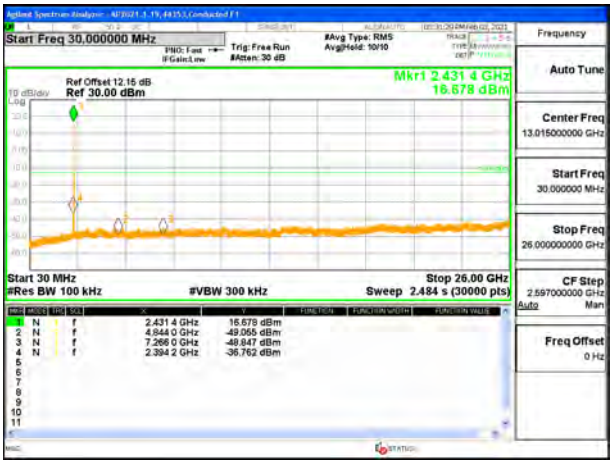
OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE



OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE



OUT-OF-BAND LOW CHANNEL 3

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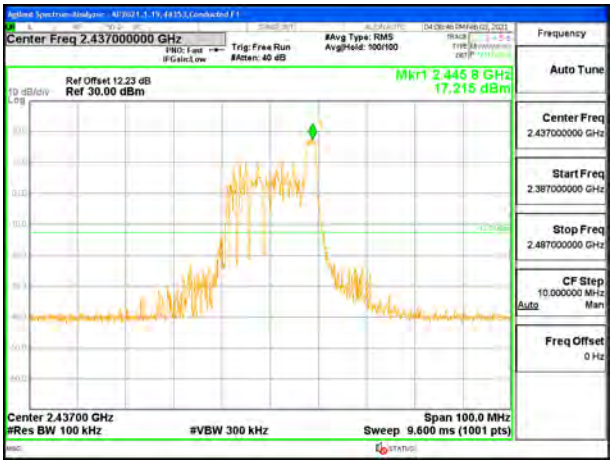
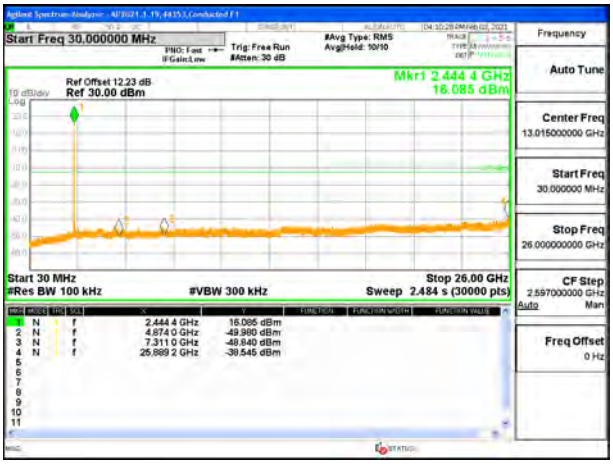


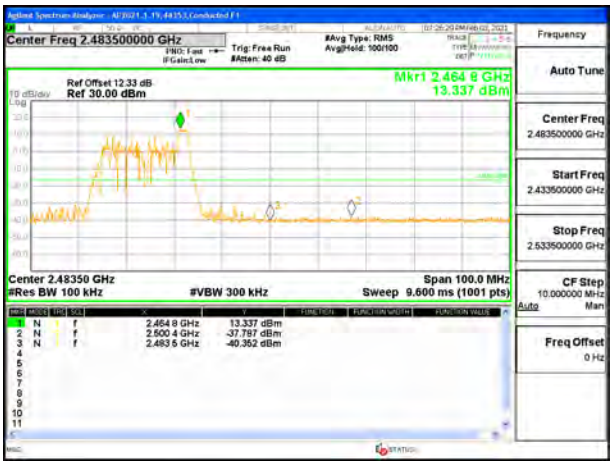
MID CHANNEL 6 BANDEDGE



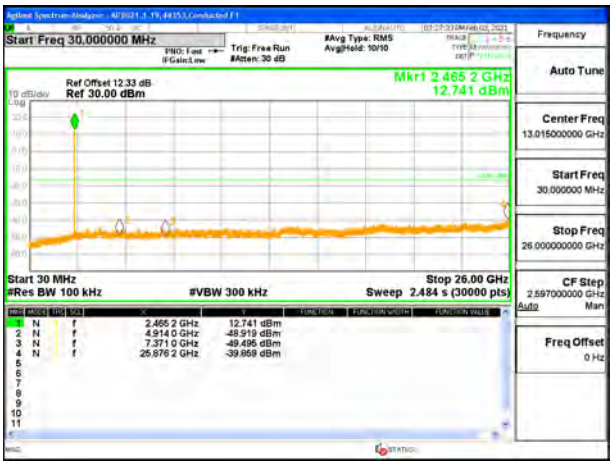
OUT-OF-BAND MID CHANNEL 6

HIGH CHANNEL 9 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 9



HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10

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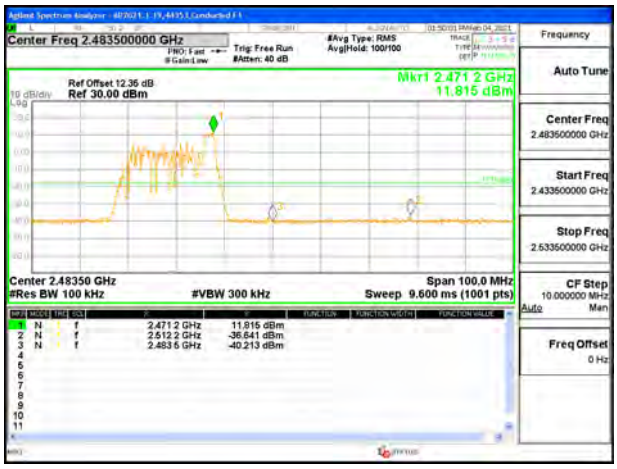

HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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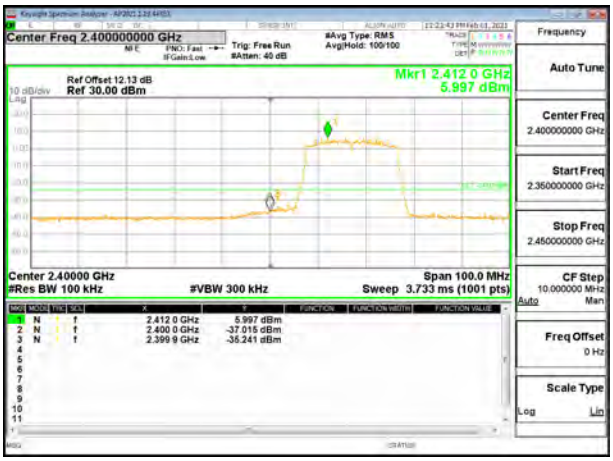
1TX ANT 4 MODE, SU Mode

LOW CHANNEL 1 BANDEDGE

OUT-OF-BAND LOW CHANNEL 1



LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE

OUT-OF-BAND LOW CHANNEL 3

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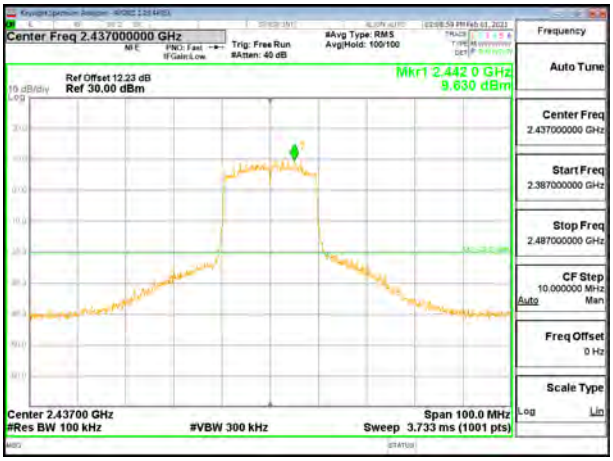
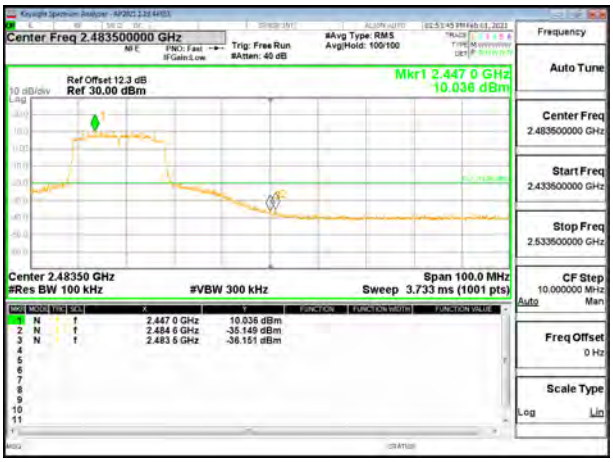


MID CHANNEL 6 BANDEDGE

OUT-OF-BAND MID CHANNEL 6



HIGH CHANNEL 9 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 9

HIGH CHANNEL 10 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 10

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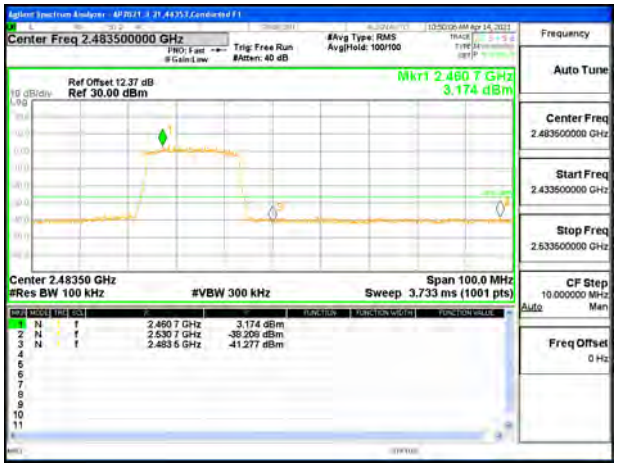
HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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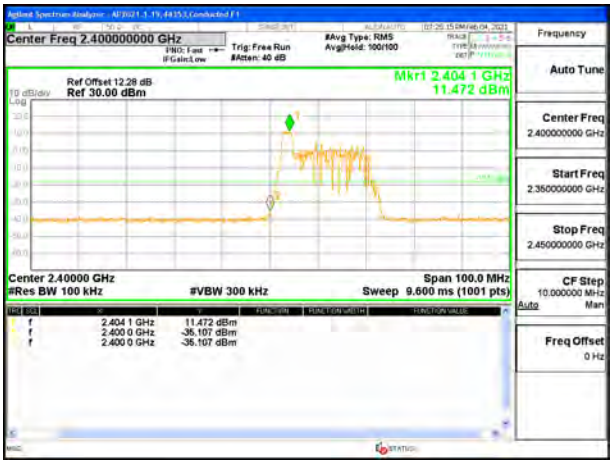
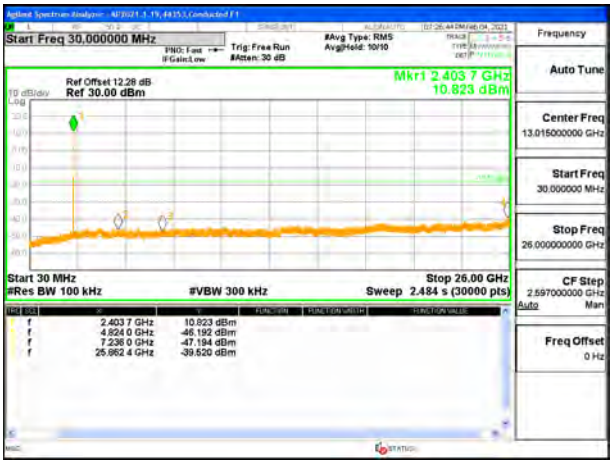
1TX ANT 3 MODE, 26-Tone RU Index 0



LOW CHANNEL 1 BANDEDGE

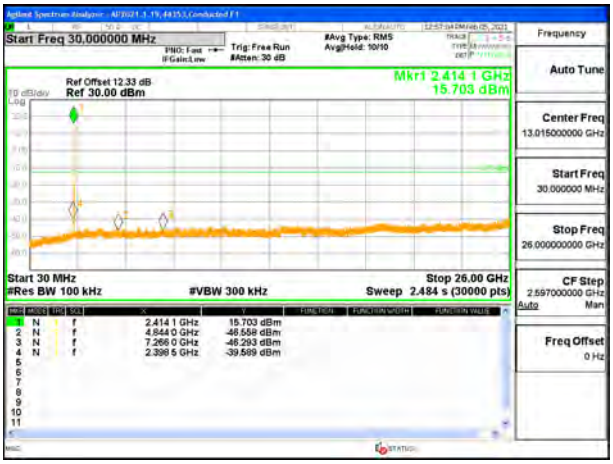


OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE



OUT-OF-BAND LOW CHANNEL 3

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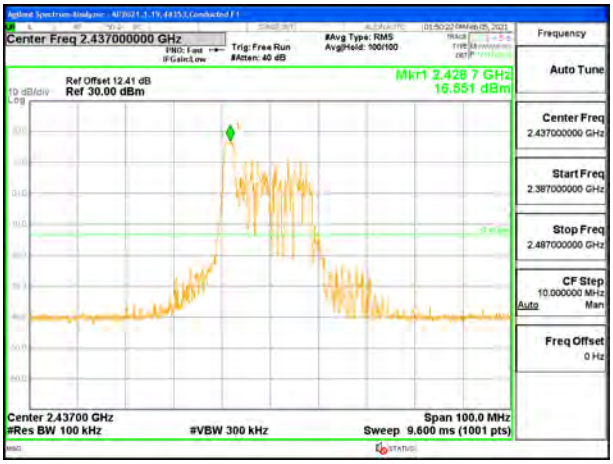
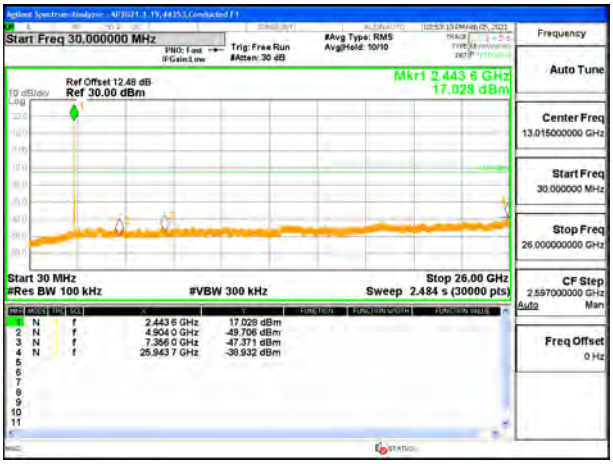


MID CHANNEL 6 BANDEDGE

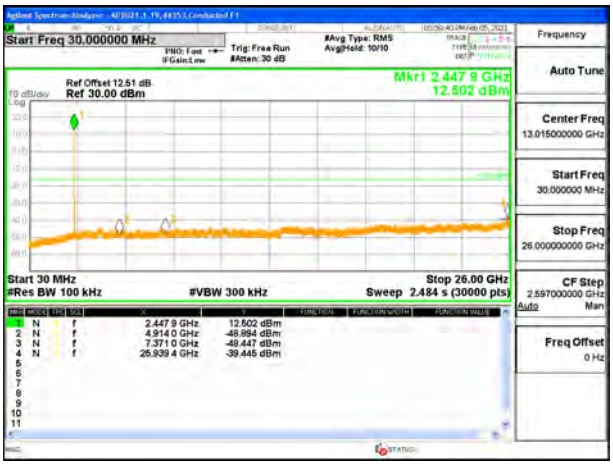
OUT-OF-BAND MID CHANNEL 6

HIGH CHANNEL 9 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 9

HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10

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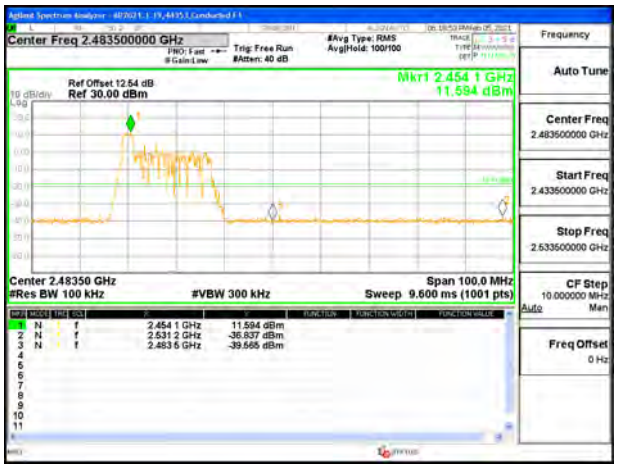
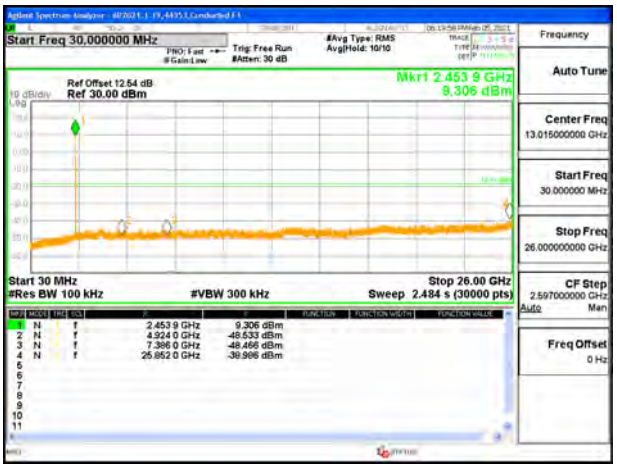


HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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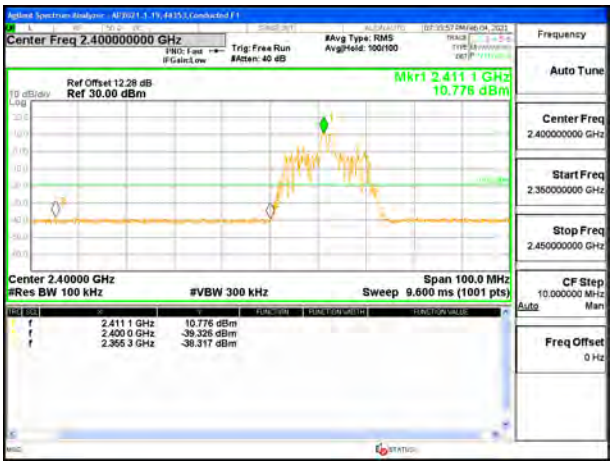
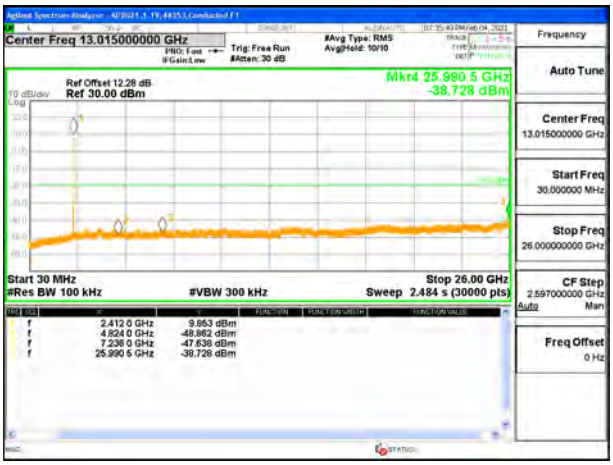
1TX ANT 3 MODE, 26-Tone RU Index 4



LOW CHANNEL 1 BANDEDGE

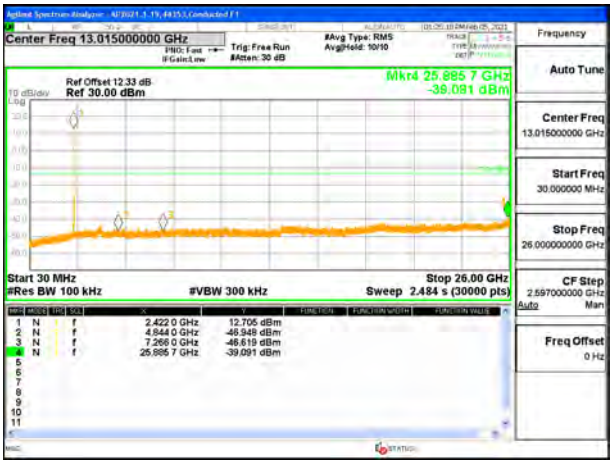


OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE



OUT-OF-BAND LOW CHANNEL 3

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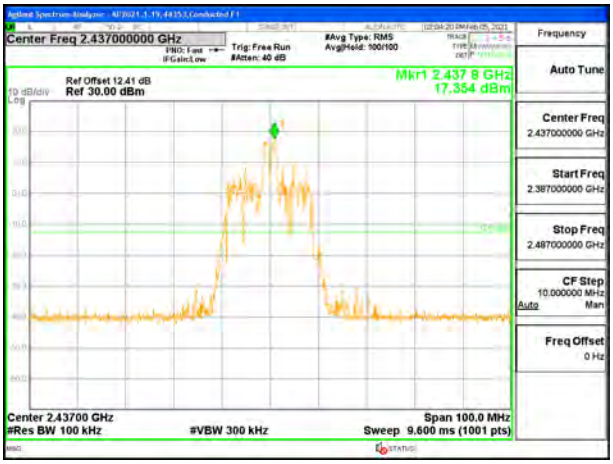


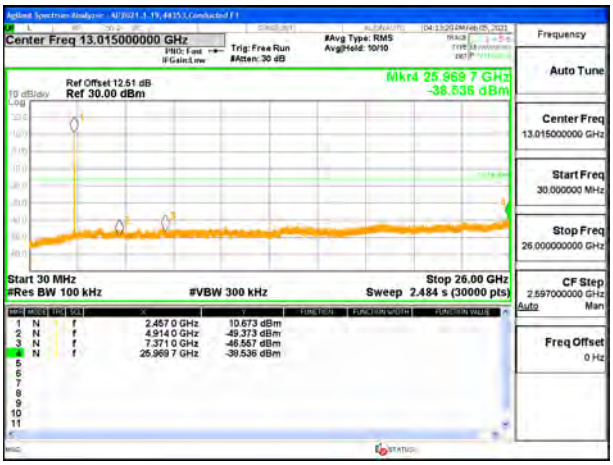
MID CHANNEL 6 BANDEDGE

OUT-OF-BAND MID CHANNEL 6

HIGH CHANNEL 9 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 9

HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10

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HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13

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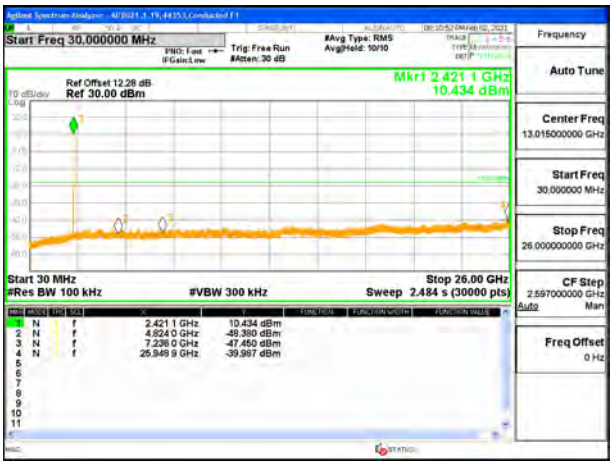
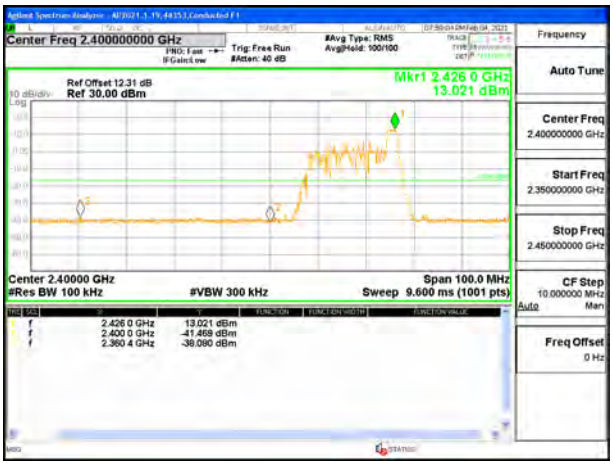
1TX ANT 3 MODE, 26-Tone RU Index 8

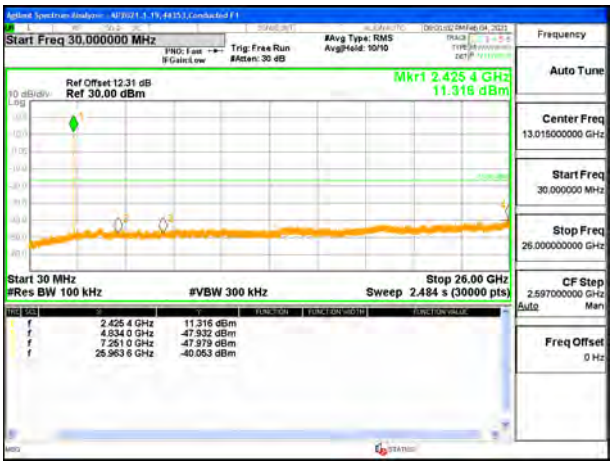
LOW CHANNEL 1 BANDEDGE



OUT-OF-BAND LOW CHANNEL 1

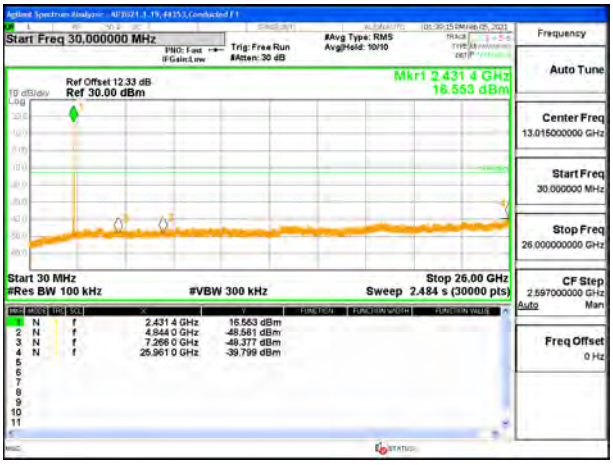


LOW CHANNEL 2 BANDEDGE



OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE



OUT-OF-BAND LOW CHANNEL 3

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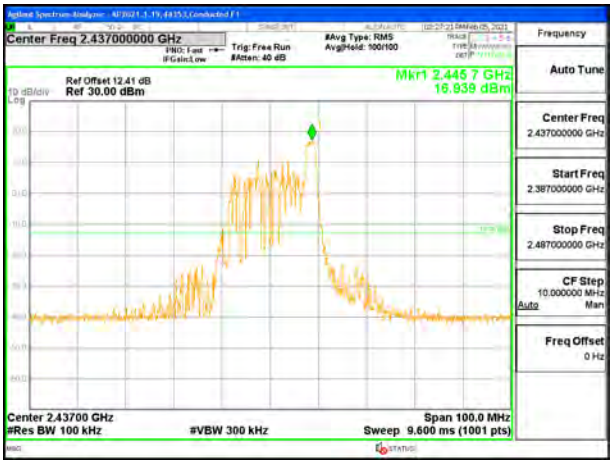


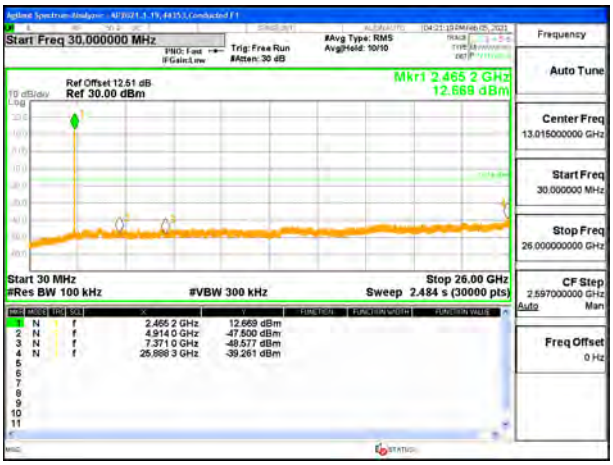
MID CHANNEL 6 BANDEDGE

OUT-OF-BAND MID CHANNEL 6

HIGH CHANNEL 9 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 9

HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10

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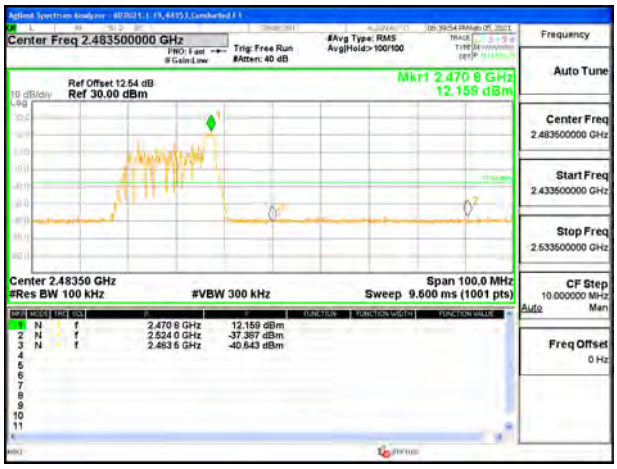
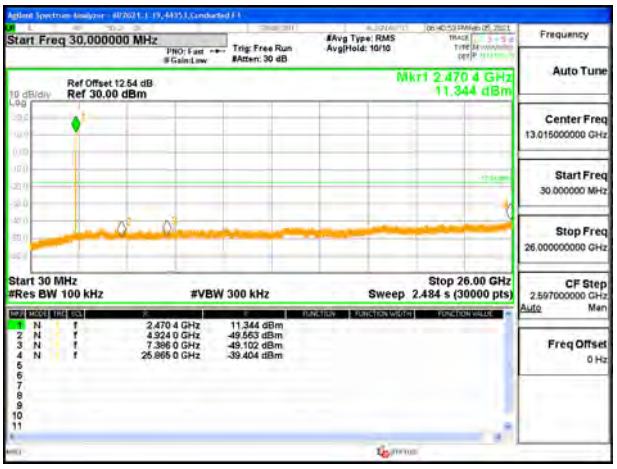


HIGH CHANNEL 11 BANDEDGE

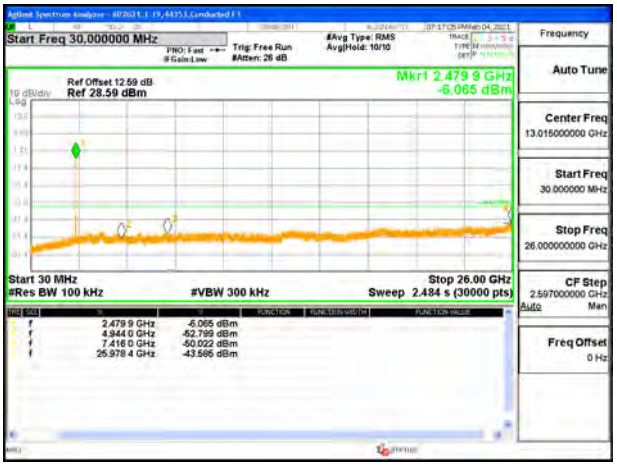


OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

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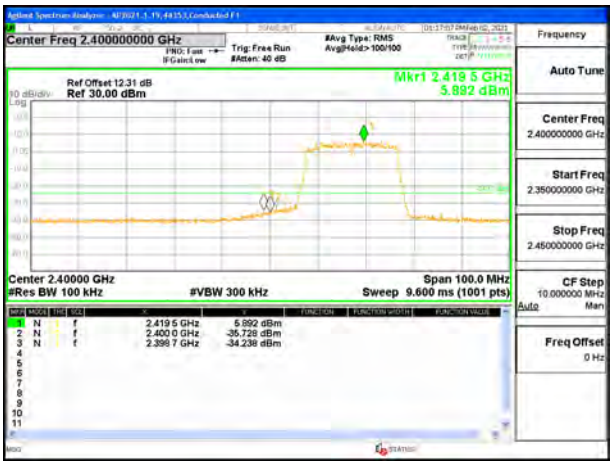
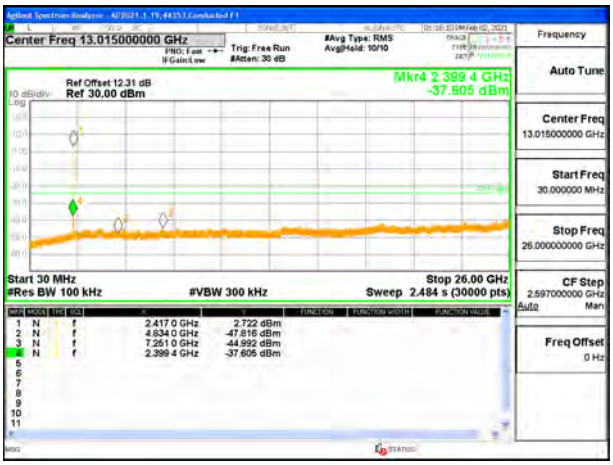
1TX ANT 3 MODE, SU Mode

LOW CHANNEL 1 BANDEDGE

OUT-OF-BAND LOW CHANNEL 1



LOW CHANNEL 2 BANDEDGE



OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE

OUT-OF-BAND LOW CHANNEL 3

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