



TEST REPORT

Report Number: 14040867-E4V3

Applicant : APPLE, INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

Model : A2649 (Parent Model, Full Test)
A2881, A2882, A2883, A2884 (Variant Models)

FCC ID : BCG-E8138A (Parent Model)
BCG-E8142A, BCG-E8143A, BCG-E8144A
(Variant Models)

IC : 579C-E8138A (Parent Model)
579C-E8142A, 579C-E8143A, 579C-E8144A
(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:
August 08, 2022

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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	6/27/2022	Initial Issue	Frank Ibrahim
V2	7/6/2022	Addressed TCB Feedback on Sections 3, 7, 8, 9.4, 10.1	Tony X. Li
V3	8/8/2022	Addressed TCB Feedback on Section 10 Radiated Plot Labels	Alfonso Sanchez

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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: A2649 (Parent Model)
A2881, A2882, A2883, A2884 (Variant Models)

BRAND: APPLE

FCC ID: BCG-E8138A (Parent Model)
BCG-E8142A, BCG-E8143A, BCG-E8144A (Variant Models)

IC: 579C-E8138A (Parent Model)
579C-E8142A, 579C-E8143A, 579C-E8144A (Variant Models)

SERIAL NUMBER: V2V9KHF5W9

SAMPLE RECEIPT DATE: DECEMBER 15, 2021

DATE TESTED: DECEMBER 15, 2021 TO JULY 1, 2022

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 LLC. 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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC 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.

Approved & Released For
UL LLC By:

Prepared By:



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2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL LLC 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
- ANSI C63.10-2013
- KDB 558074 D01 15.247 Meas Guidance v05r02
- KDB 414788 D01 Radiated Test Site v01r01
- FCC KDB 662911 D01 v02r01
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 2

4. FACILITIES AND ACCREDITATION

UL LLC 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.

Location	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	550739

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:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Final Voltage (dBuV)} = \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \text{LISN Insertion Loss.}$$

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

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, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC and MSS. All models except reference model 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 IDs / ISED covered by this report includes:

Parent Model: A2649, FCC ID: BCG-E8138A, IC: 579C-E8138A

Variant Models: A2881, FCC ID: BCG-E8142A, IC: 579C-E8142A
 A2882; FCC ID: BCG-E8143A, IC: 579C-E8143A
 A2883 & A2884, FCC ID: BCG-E8144A, IC: 579C-E8144A

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	21.44	139.32
	802.11g	Covered by 802.11n HT20 1TX	
	802.11n HT20	21.44	139.32
	802.11ax HE20	21.48	140.60

2Tx			
2412 -2472	802.11n HT20 CDD	24.46	279.25
	802.11g SDM/STBC	Covered by 802.11n HT20 2TX CDD	
	802.11ax HE20	24.46	279.25

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antennas' gains, as provided by the manufacturer, are as follows:

Frequency Range (GHz)	ANT 4 (dBi)	ANT 3 (dBi)
2.4	-2	-0.8

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 20_94_1_15.

6.5. WORST-CASE CONFIGURATION AND MODE

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

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.

With same power on Full RU and SU higher data rate, investigation was performed on both bandedge to determine the worst case, and SU mode was determined to be the worst case.

The output power and psd for the 802.11 ax mode were investigated among all different tones; SU mode turned out to have the highest output power and the lowest tone had the highest PSD readings.

Lowest data rate for each mode was used to conduct antenna port testing and radiated spurious emissions since it has the highest maximum power.

802.11b mode: 1 Mbps
802.11n HT20 mode: MCS0
802.11ax RU26 HE20 mode: MCS0
802.11ax HE20 SU mode: MCS0

However, for radiated bandedge, the following data rates were used as worst-case data rates:

802.11b mode: 1 Mbps
802.11n HT20 mode: MCS7
802.11ax HE20 RU26 mode: MCS9
802.11ax HE20 SU mode: MCS9

There are three vendors of the WiFi/Bluetooth radio modules: variant 1, 2 and 3. 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.

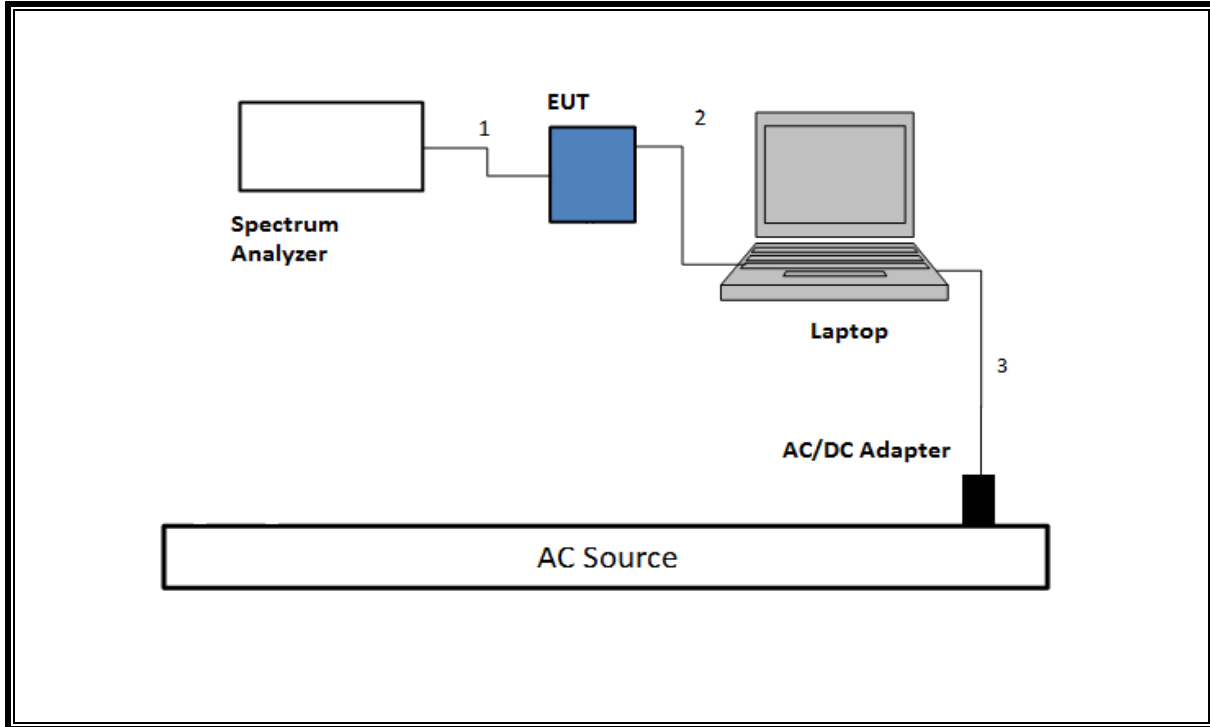
6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
Laptop	Apple	Macbook Pro	C02VD7SAHV22	BCGA1708		
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	Antenna	1	SMA	Un-shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Shielded	1.0	N/A
3	AC	1	AC	Un-shielded	2	N/A
I/O CABLES (RF RADIATED AND AC LINE 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	N/A

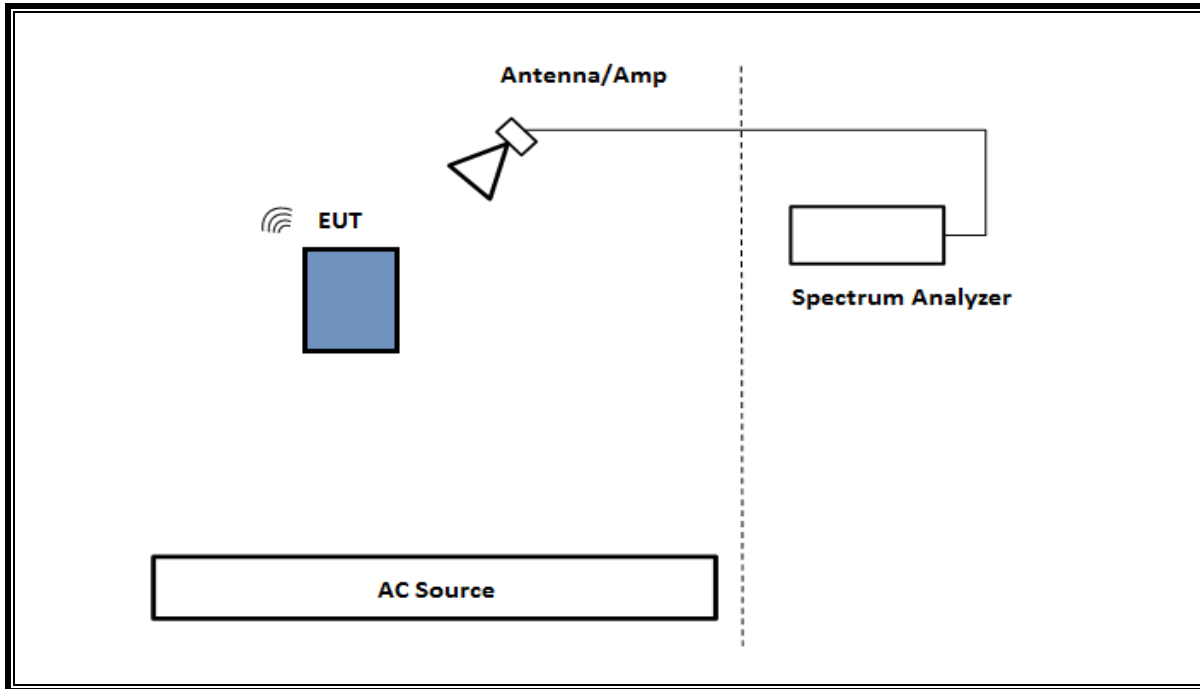
TEST SETUP

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

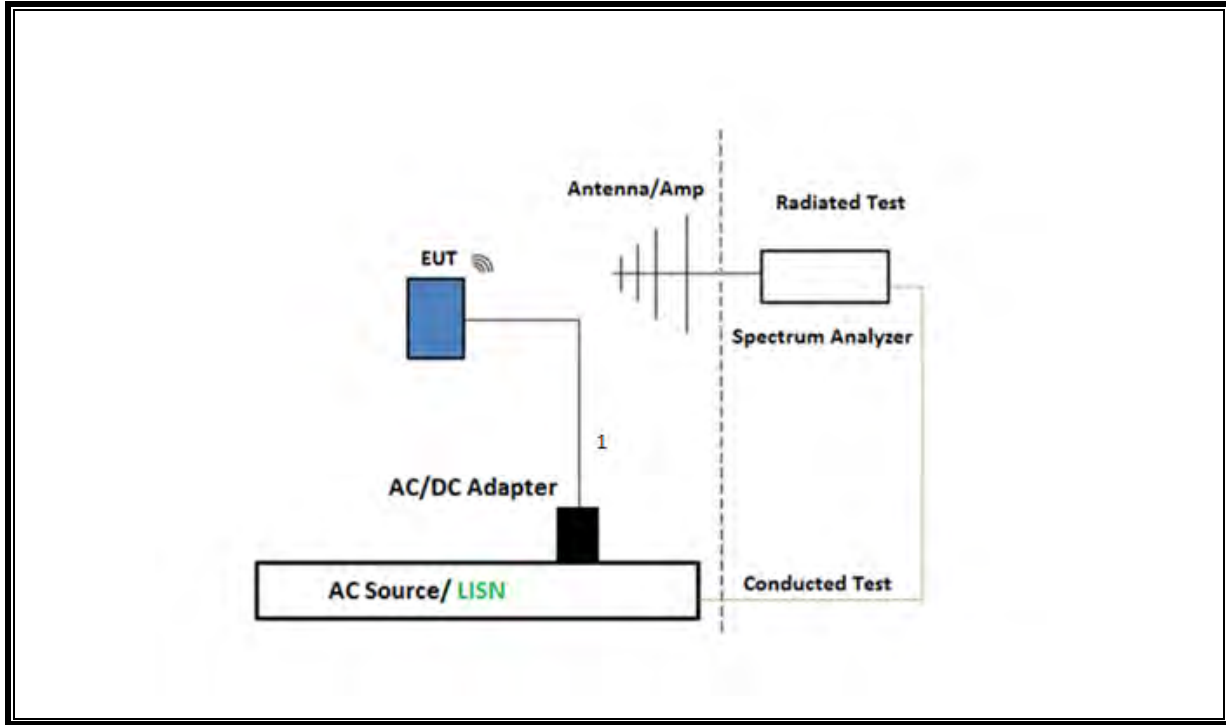
SETUP DIAGRAM FOR CONDUCTED TESTS



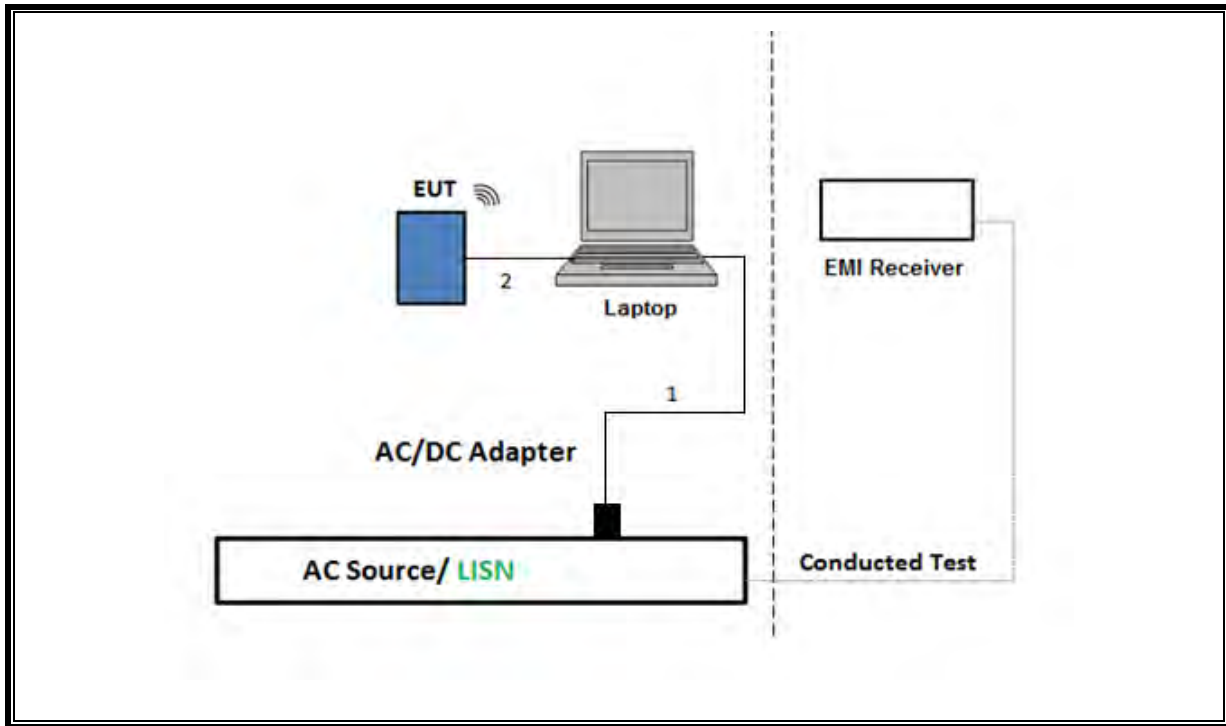
SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz



SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



7. MEASUREMENT METHOD

Test Item	Test Method
6 dB BW	ANSI C63.10: 2013 Subclause 11.8.1 (Option 1)
99% BW	ANSI C63.10: 2013 Subclause 6.9.3.
Output Power	ANSI C63.10: 2013 Subclause 11.9.2.3.2 (Method AVGPM-G: Measurement using a gated RF average power meter)
PSD	ANSI C63.10: 2013 Subclause 11.10.3 (Method AVGPSD-1) Subclause 11.10.5 (Method AVGPSD-2)
Conducted emissions in restricted frequency bands	ANSI C63.10: 2013 Subclause 11.12.2 (Antenna-port measurements)
Radiated emissions non-restricted frequency bands	ANSI C63.10: 2013 Subclause 11.11 & Clause 13
Radiated emissions restricted frequency bands	ANSI C63.10: 2013 Subclause 11.12.1 & Clause 13
Radiated Band-edge	ANSI C63.10: 2013 <ul style="list-style-type: none"> • Subclause 11.13.3.2 Peak Detection • Subclause 11.13.3.3 Trace averaging with continuous EUT transmission at full power • Subclause 11.13.3.4 Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
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

8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were 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 (Cedar Park, Texas)	3117	81887	03/16/2023	03/16/2022
Rf Filter Box	UL-FR1 (CTECH)	NA	173233	10/23/2022	10/23/2021
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191429	02/20/2023	02/20/2022
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	80430	07/21/2022	07/21/2021
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	NA	169334	04/15/2023	04/15/2022
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	85201	02/01/2023	02/01/2022
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	41112	09/21/2022	09/21/2021
RF Filter Box, 6 port, 1-18GHz	UL-FR1 (CTECH)	SAC 6 port rf box	203984	02/12/2023	02/12/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169936	02/22/2023	02/22/2022
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	200786	02/24/2023	02/24/2022
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	NA	173528	11/17/2022	11/17/2021
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191428	02/20/2023	02/20/2022
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	200897	02/24/2023	02/24/2022
RF Filter Box	UL-FR1 (CTECH)	NA	172938	03/30/2023	03/30/2022
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	125188	01/30/2023	01/30/2022
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	84796	09/15/2022	09/15/2021
Filter Box 1-18GHz	UL-FR	NA	217063	04/07/2023	04/07/2022
EMI Receiver	Rohde & Schwarz	ESW44	201502	02/22/2023	02/22/2022
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90754	01/24/2023	01/24/2022
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200785	10/13/2022	10/13/2021
RF Filter Box, 1-18GHz	UL-FR1	NA	207182	02/11/2023	02/11/2022
EMI Receiver	Rohde & Schwarz	ESW44	201499	02/17/2023	02/17/2022
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	81319	01/24/2023	01/24/2022
Antenna	ETS-Lindgren	3117	206806	09/22/2022	09/22/2021
RF Filter Box, 1-18GHz	UL-FR1	N/A	171875	01/15/2023	01/15/2022
EMI Test Receiver	Rohde & Schwarz	ESW44	201501	02/19/2023	02/19/2022
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200895	10/13/2022	10/13/2021
RF Filter 1-18GHz	UL-FR1	SAC 6 port rf box	203957	02/12/2023	02/12/2022
EMI Receiver	Rohde & Schwarz	ESW44	201498	02/20/2023	02/20/2022
*Antenna Horn, 18 to 26GHz	ARA	SWH-28	81139	05/25/2022	05/25/2021
*Pre-Amp 18-26GHz	Agilent Technology	8449B	80671	04/19/2022	04/19/2021
Thermometer - Digital	Control Company	14-650-118	175739	02/03/2023	02/03/2022
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	204044	01/31/2023	01/31/2022
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	79584	07/21/2022	07/21/2021
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T757	01/28/2023	01/28/2022

AC Line Conducted					
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	T1436	02/21/2023	02/21/2022
Power Cable, Line Conducted Emissions	UL	PR1	T861	10/27/2022	10/27/2021
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175765	01/26/2023	01/26/2022
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		

*Testing is completed before equipment expiration date

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.

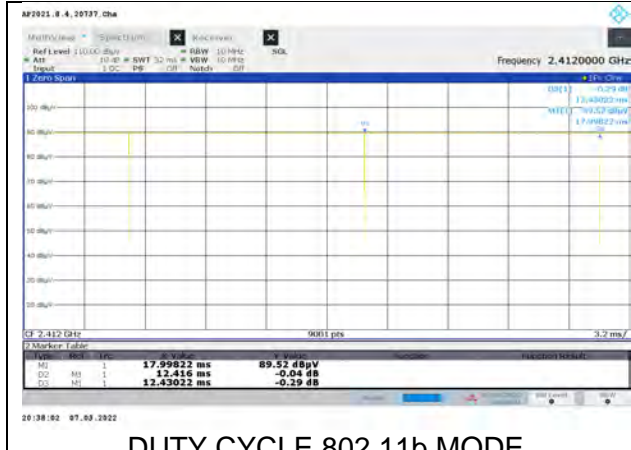
Test Engineer:	12559, 19232, 20737, 24489
Test Date:	4/25/2022

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b	12.416	12.430	0.999	99.89%	0.00	0.010
802.11n HT20 MCS0	0.984	1.005	0.979	97.91%	0.09	1.016
802.11n HT20 MCS7	0.228	0.249	0.913	91.33%	0.39	4.394
802.11ax 26 Tone HE20 MCS0	4.025	4.061	0.991	99.10%	0.00	0.010
802.11ax 26 Tone HE20 MCS9	0.349	0.394	0.886	88.56%	0.53	2.864
802.11ax HE20 SU MCS0	1.484	1.512	0.981	98.15%	0.00	0.010
802.11ax HE20 SU MCS9	0.168	0.190	0.886	88.62%	0.52	5.936

Duty cycle 2TX is the same as 1TX.

DUTY CYCLE PLOTS



DUTY CYCLE 802.11b MODE



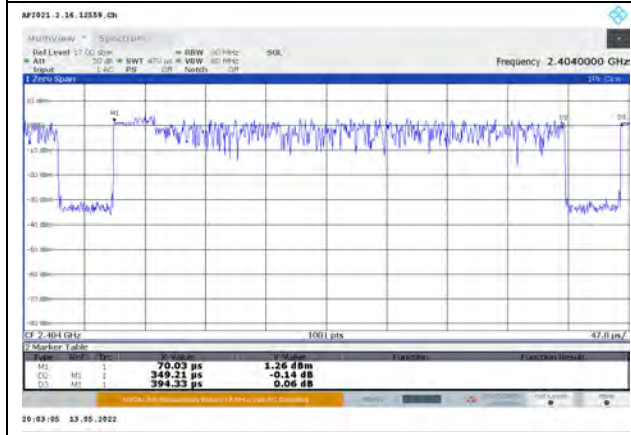
DUTY CYCLE 802.11n HT20 MCS0



DUTY CYCLE 802.11n HT20 MCS7



DUTY CYCLE 802.11ax HE20 MCS0



DUTY CYCLE 802.11ax HE20 MCS9



DUTY CYCLE 802.11ax HE20 SU MCS0



DUTY CYCLE 802.11ax HE20 SU MCS09

9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

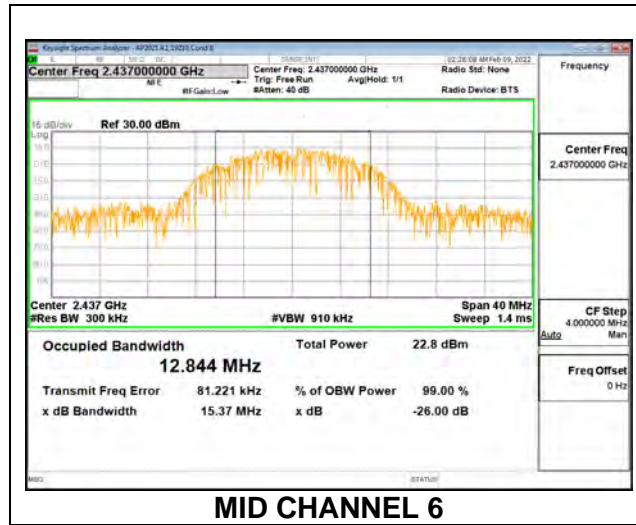
RESULTS

Only Mid channel plot is reported to show analyzer settings.

9.2.1. 802.11b MODE 1TX

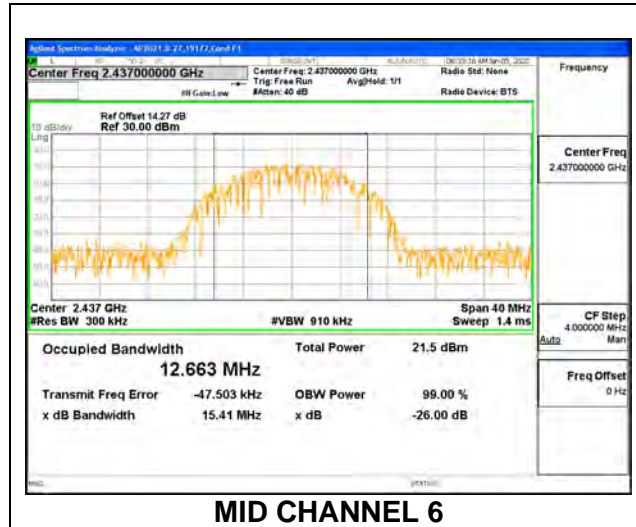
ANT 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	12.877
Mid 6	2437	12.844
High 11	2462	12.766
High 12	2467	12.847
High 13	2472	12.648



ANT3

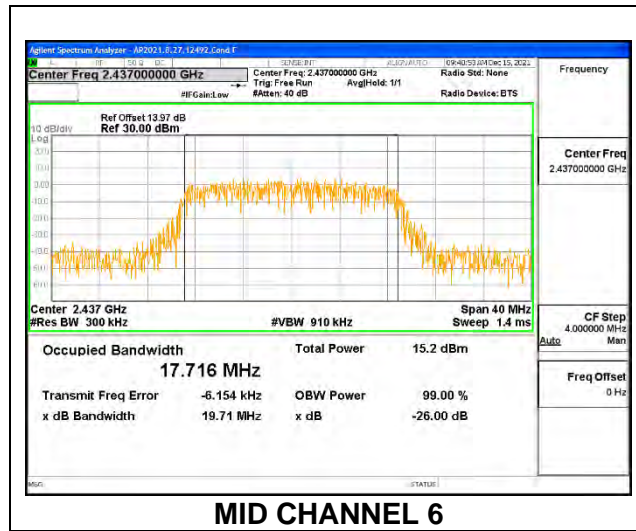
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	13.011
Mid 6	2437	12.663
High 11	2462	12.883
High 12	2467	12.725
High 13	2472	12.707



9.2.2. 802.11n HT20 MODE 1TX

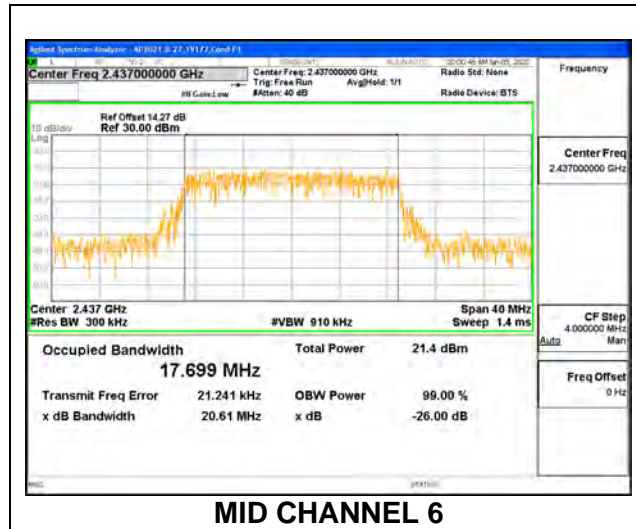
ANT 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.708
Low 2	2417	17.708
Low 3	2422	17.725
Mid 6	2437	17.716
High 9	2452	17.673
High 10	2457	17.706
High 11	2462	17.673
High 12	2467	17.658
High 13	2472	17.671



ANT3 MODE

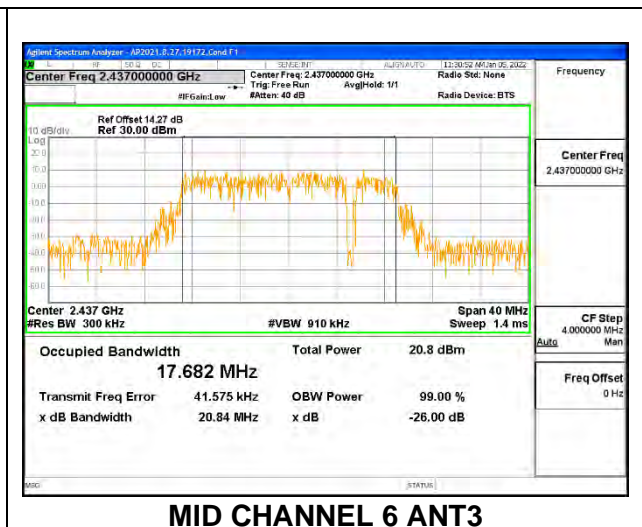
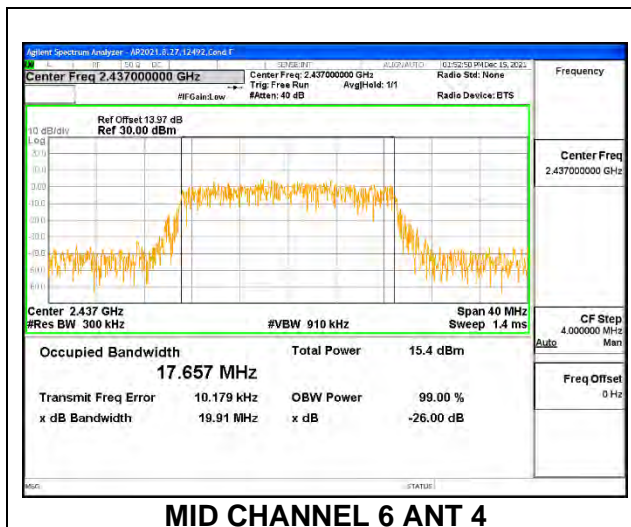
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.746
Low 2	2417	17.811
Low 3	2422	17.744
Mid 6	2437	17.699
High 9	2452	17.721
High 10	2457	17.702
High 11	2462	17.611
High 12	2467	17.663
High 13	2472	17.536



9.2.3. 802.11n HT20 CDD MODE 2TX

ANT 4 + ANT3

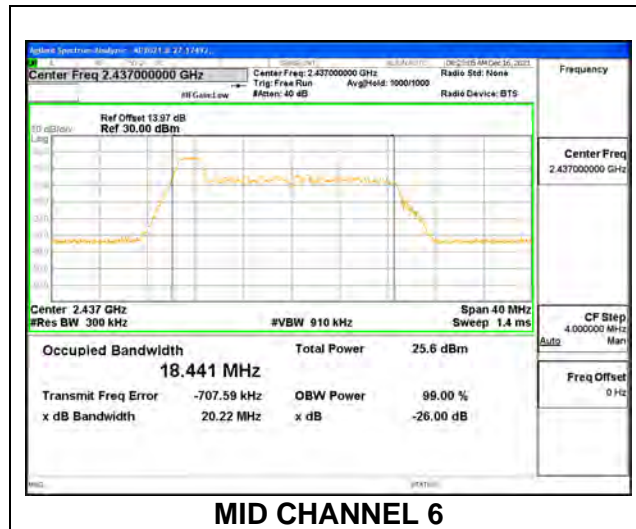
Channel	Frequency (MHz)	99% Bandwidth (MHz)	99% Bandwidth (MHz)
		ANT 4	ANT3
Low 1	2412	17.805	17.793
Low 2	2417	17.635	17.787
Low 3	2422	17.635	17.742
Low 4	2427	17.637	17.598
Mid 6	2437	17.657	17.682
High 8	2447	17.658	17.630
High 9	2452	17.768	17.701
High 10	2457	17.657	17.606
High 11	2462	17.704	17.699
High 12	2467	17.700	17.686
High 13	2472	17.498	17.610



9.2.4. 802.11ax HE20 MODE 1TX

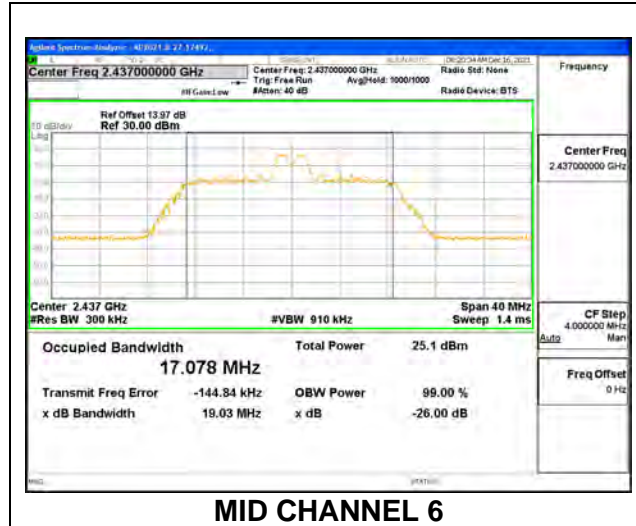
ANT 4: 26-Tones, RU index 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.386
Mid 6	2437	18.441
High 10	2457	18.313
High 11	2462	18.436
High 12	2467	18.364
High 13	2472	18.309



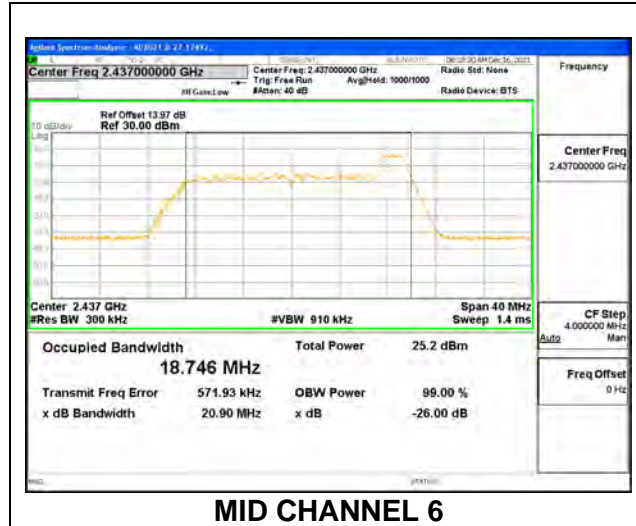
ANT 4: 26-Tones, RU Index 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.149
Mid 6	2437	17.078
High 11	2462	17.072
High 12	2467	17.024
High 13	2472	17.069



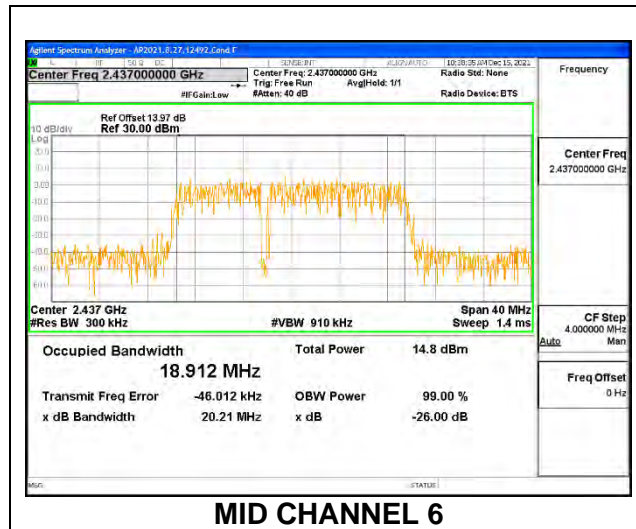
ANT 4: 26-Tones, RU Index 8

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.599
Mid 6	2437	18.746
High 11	2462	18.598
High 12	2467	18.674
High 13	2472	18.775



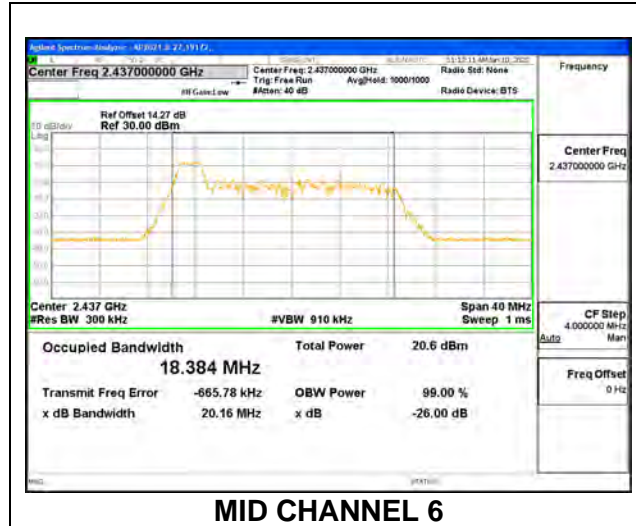
ANT 4: SU Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.916
Low 2	2417	18.842
Low 3	2422	18.978
Mid 6	2437	18.912
High 9	2452	18.976
High 10	2457	18.953
High 11	2462	18.840
High 12	2467	18.921
High 13	2472	18.723



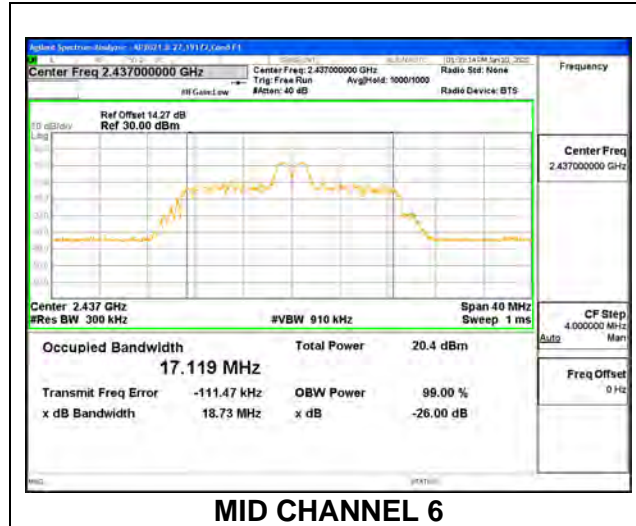
ANT3: 26-Tones, RU Index 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.344
Mid 6	2437	18.384
High 11	2462	18.332
High 12	2467	18.273
High 13	2472	18.111



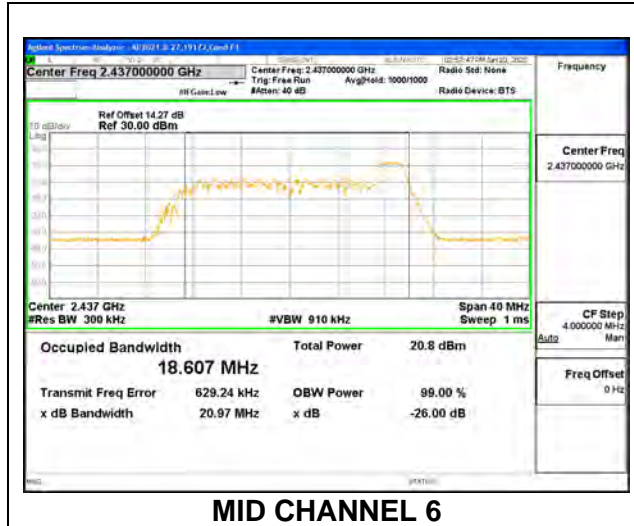
ANT3: 26-Tones, RU Index 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.065
Mid 6	2437	17.119
High 11	2462	17.033
High 12	2467	17.004
High 13	2472	16.817



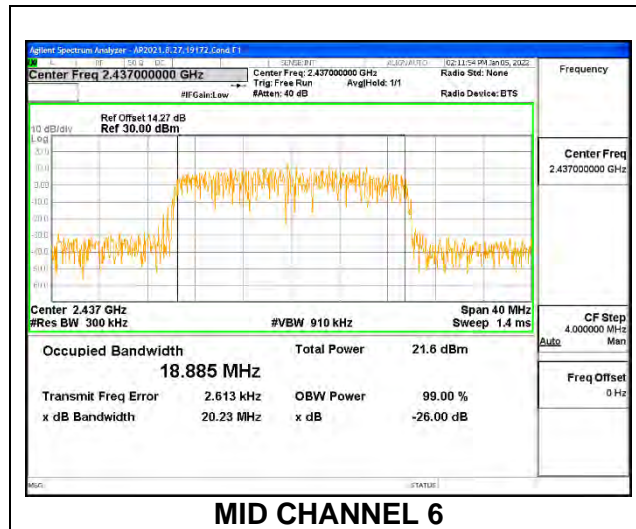
ANT3: 26-Tones, RU Index 8

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.252
Mid 6	2437	18.607
High 11	2462	18.596
High 12	2467	18.539
High 13	2472	18.601



ANT3: SU Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	19.016
Low 2	2417	18.857
Low 3	2422	18.863
Mid 6	2437	18.885
High 9	2452	18.975
High 10	2457	18.877
High 11	2462	18.953
High 12	2467	18.840
High 13	2472	18.889

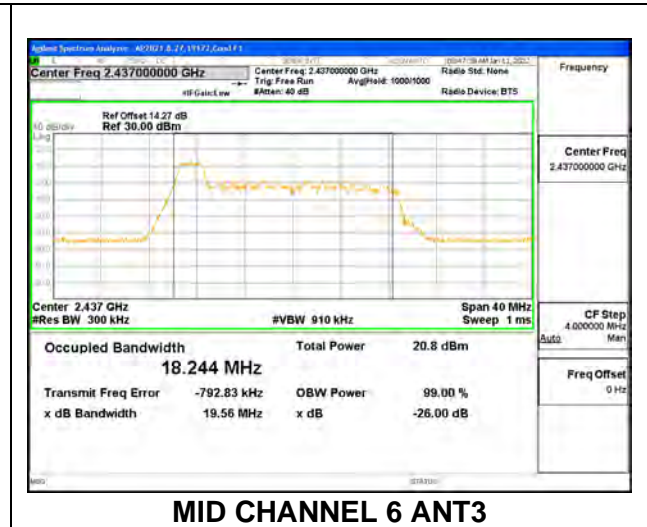
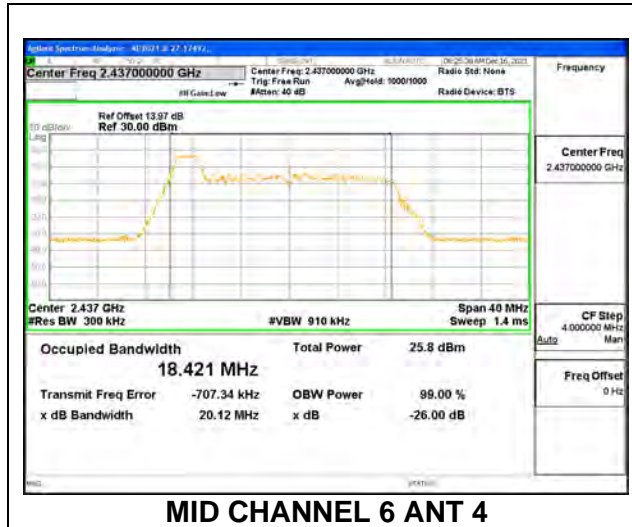


MID CHANNEL 6

9.2.5. 802.11ax HE20 OFDMA MODE 2TX

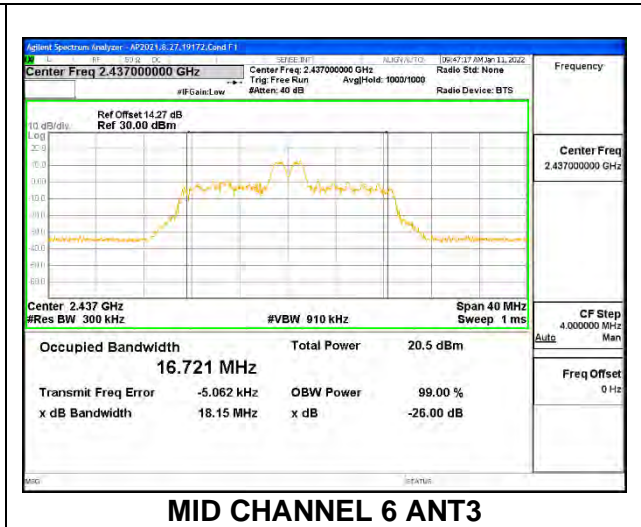
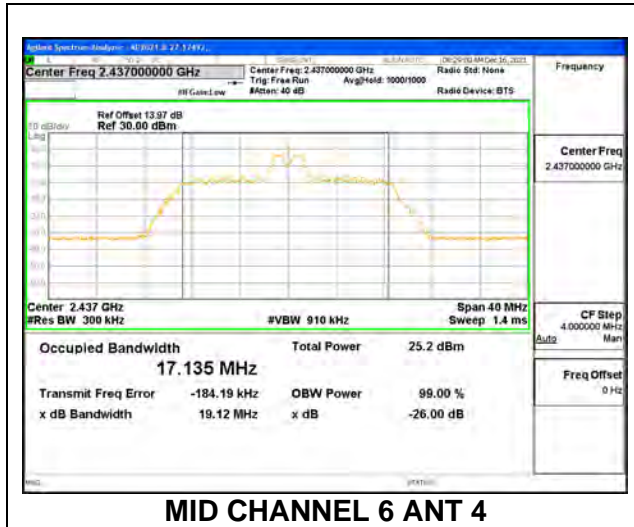
ANT 4 + ANT3: 26-Tones, RU Index 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)	99% Bandwidth (MHz)
		ANT 4	ANT3
Low 1	2412	18.428	18.444
Mid 6	2437	18.421	18.244
High 11	2462	18.361	18.309
High 12	2467	18.347	18.134
High 13	2472	18.301	17.976



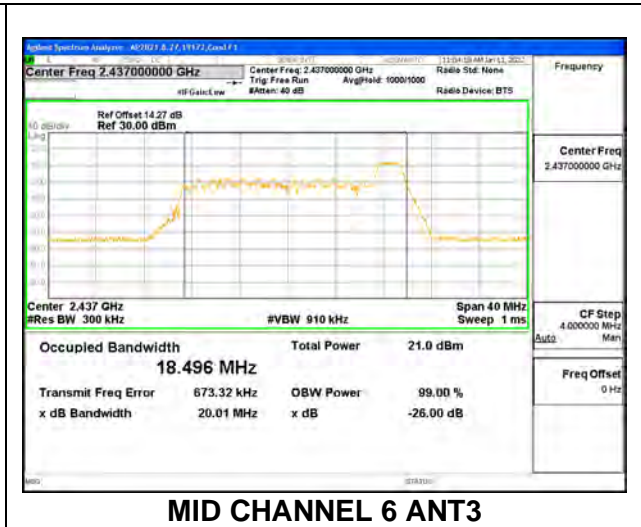
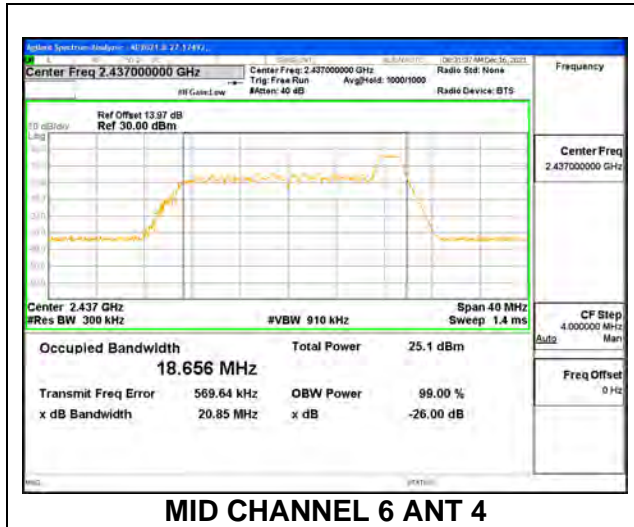
ANT 4 + ANT3: 26-Tones, RU Index 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)	99% Bandwidth (MHz)
		ANT 4	ANT3
Low 1	2412	17.162	16.815
Mid 6	2437	17.135	16.721
High 11	2462	17.101	16.769
High 12	2467	17.152	16.676
High 13	2472	17.005	16.507



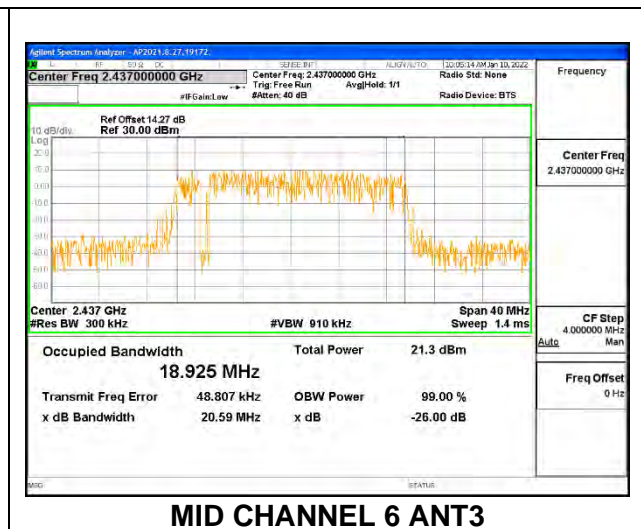
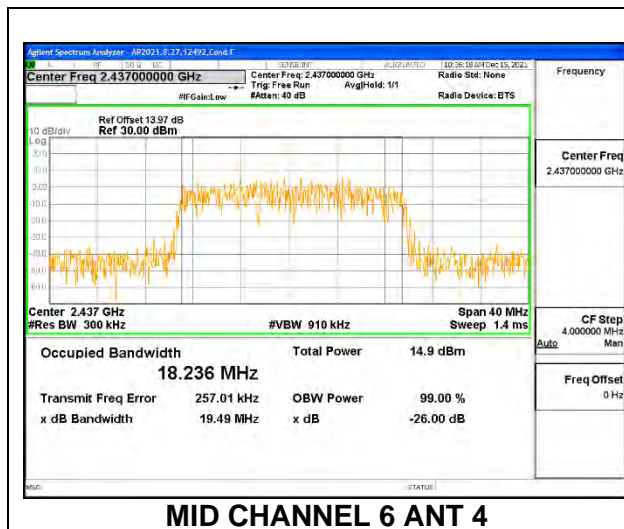
ANT 4 + ANT3: 26-Tones, RU Index 8

Channel	Frequency (MHz)	99% Bandwidth (MHz)	99% Bandwidth (MHz)
		ANT 4	ANT3
Low 1	2412	18.675	18.105
Mid 6	2437	18.656	18.496
High 11	2462	18.620	18.271
High 12	2467	18.577	18.380
High 13	2472	18.735	18.419



ANT 4 + ANT3 2TX MODE: SU Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz) ANT 4	99% Bandwidth (MHz) ANT3
Low 1	2412	18.883	18.944
Low 2	2417	18.870	18.824
Low 3	2422	18.940	18.934
Low 4	2427	18.917	18.833
Mid 6	2437	18.236	18.925
High 8	2447	18.896	18.863
High 9	2452	18.931	18.977
High 10	2457	18.948	18.973
High 11	2462	18.923	18.936
High 12	2467	18.955	18.819
High 13	2472	18.819	18.935



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

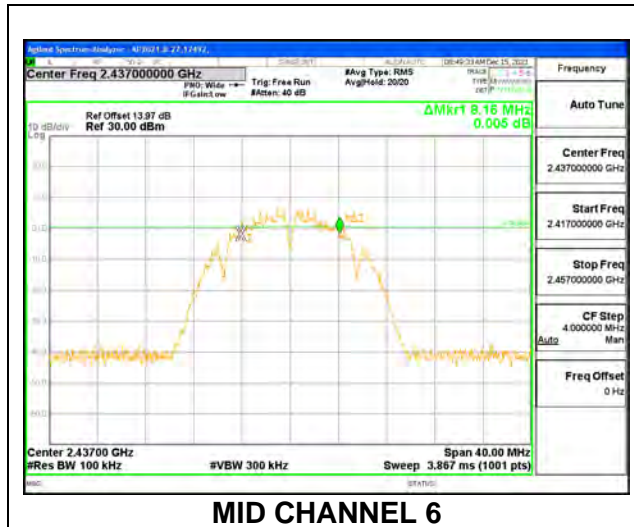
The 6dB bandwidth was measured for the narrowest bandwidth mode, b Mode and ax HE20 Mode 26-Tone as worst case to demonstrate compliance with the minimum required bandwidth of 500 kHz to cover all OFDMA modes.

Only Mid channel plot is reported to show analyzer setting.

9.3.1. 802.11b MODE 1TX

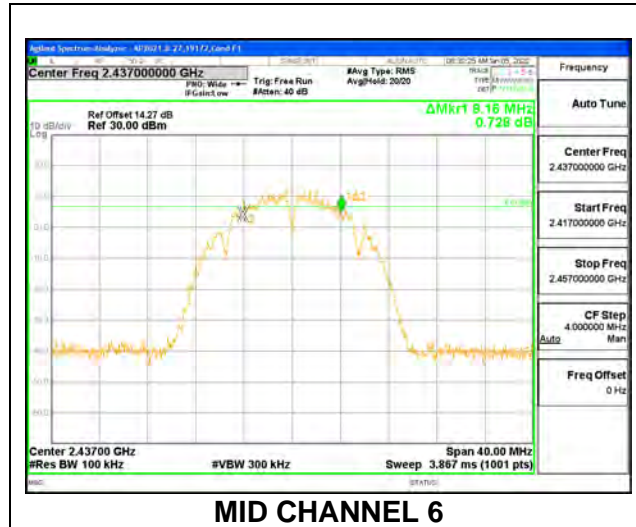
ANT 4

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	8.24	0.5
Mid 6	2437	8.16	0.5
High 11	2462	8.72	0.5
High 12	2467	8.64	0.5
High 13	2472	7.92	0.5



ANT3

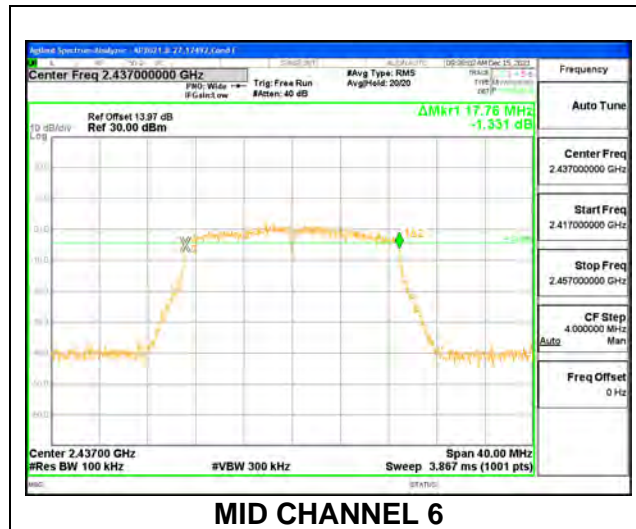
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	8.64	0.5
Mid 6	2437	8.16	0.5
High 11	2462	8.64	0.5
High 12	2467	8.40	0.5
High 13	2472	8.64	0.5



9.3.2. 802.11n HT20 MODE 1TX

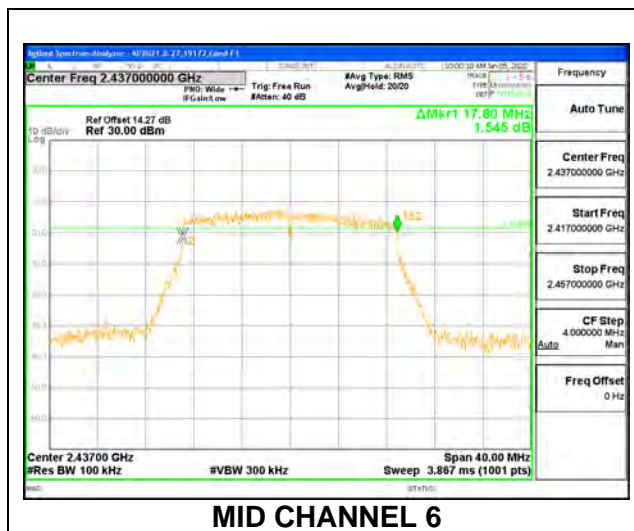
ANT 4

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.72	0.5
Low 2	2417	17.40	0.5
Low 3	2422	17.72	0.5
Mid 6	2437	17.76	0.5
High 9	2452	17.64	0.5
High 10	2457	17.72	0.5
High 11	2462	17.60	0.5
High 12	2467	17.72	0.5
High 13	2472	17.68	0.5



ANT 3

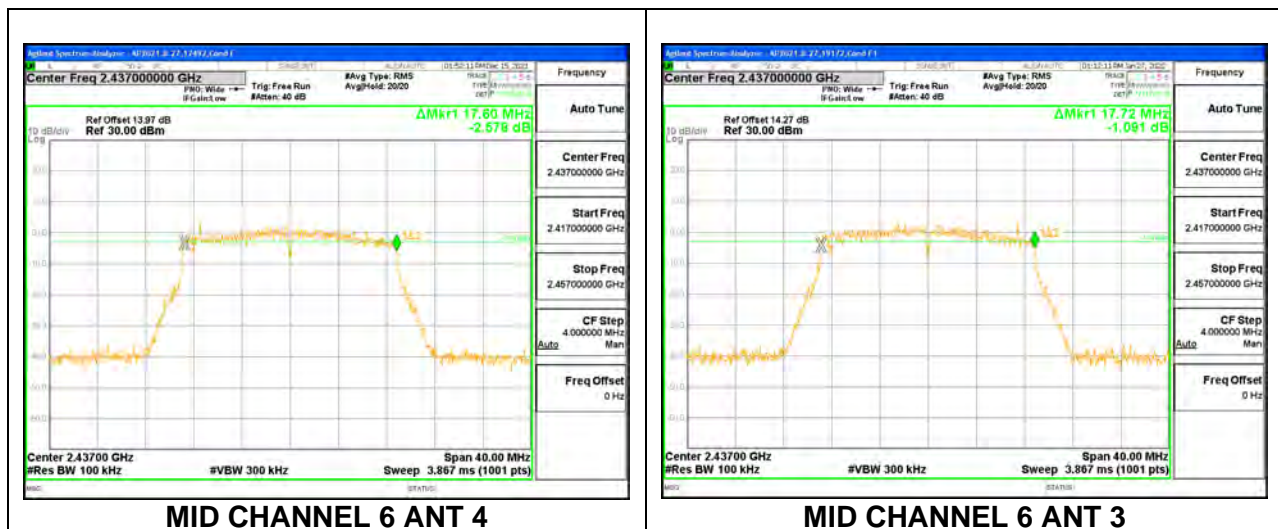
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.68	0.5
Low 2	2417	17.72	0.5
Low 3	2422	17.68	0.5
Mid 6	2437	17.80	0.5
High 9	2452	17.76	0.5
High 10	2457	17.68	0.5
High 11	2462	17.72	0.5
High 12	2467	17.72	0.5
High 13	2472	17.64	0.5



9.3.3. 802.11n HT20 CDD MODE 2TX

ANT 4 + ANT 3

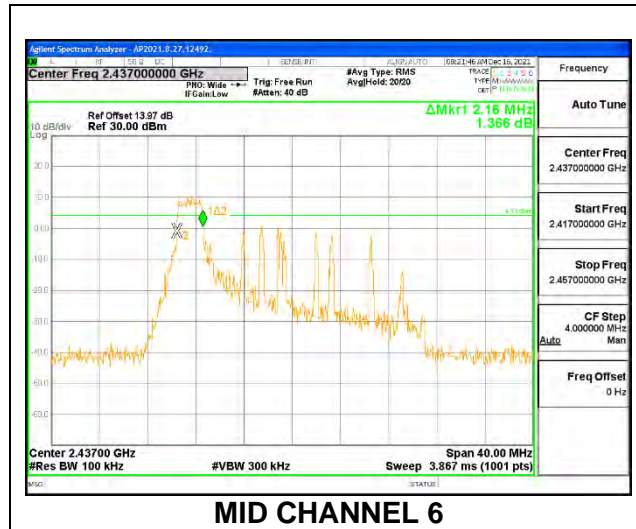
Channel	Frequency (MHz)	6 dB BW Antenna 4 (MHz)	6 dB BW Antenna 3 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.76	17.68	0.5
Low 2	2417	17.68	17.68	0.5
Low 3	2422	17.60	17.68	0.5
Mid 6	2437	17.60	17.72	0.5
High 8	2447	17.44	17.56	0.5
High 9	2452	17.72	17.72	0.5
High 10	2457	17.72	17.72	0.5
High 11	2462	17.68	17.68	0.5
High 12	2467	17.28	17.24	0.5
High 13	2472	17.68	17.64	0.5



9.3.4. 802.11ax HE20 MODE 1TX

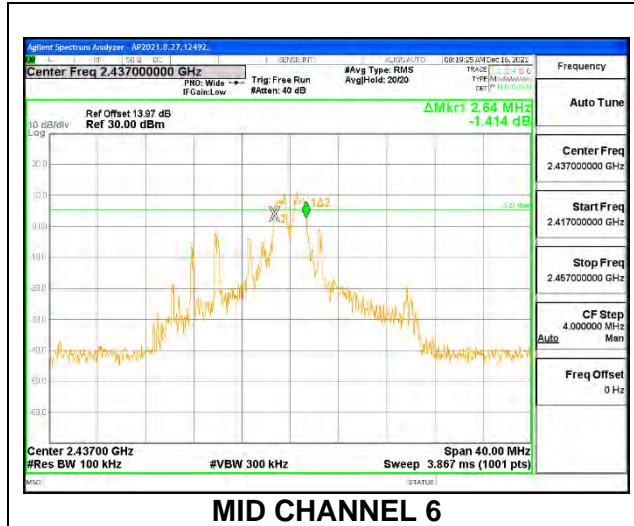
ANT 4: 26-Tones, RU index 0

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.08	0.5
Mid 6	2437	2.16	0.5
High 11	2462	2.16	0.5
High 12	2467	2.16	0.5
High 13	2472	2.16	0.5



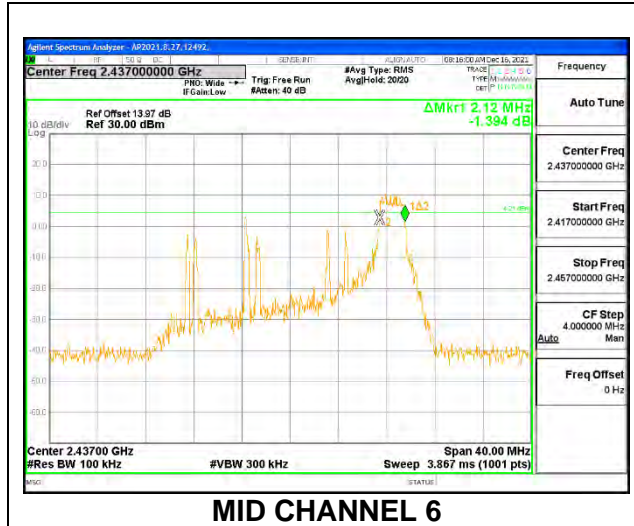
ANT 4: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.68	0.5
Mid 6	2437	2.64	0.5
High 11	2462	2.64	0.5
High 12	2467	2.64	0.5
High 13	2472	2.68	0.5



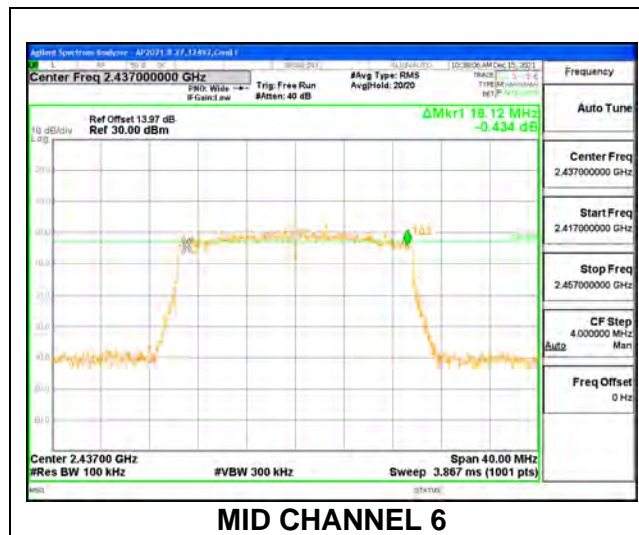
ANT 4: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.12	0.5
Mid 6	2437	2.12	0.5
High 11	2462	2.08	0.5
High 12	2467	2.08	0.5
High 13	2472	2.08	0.5



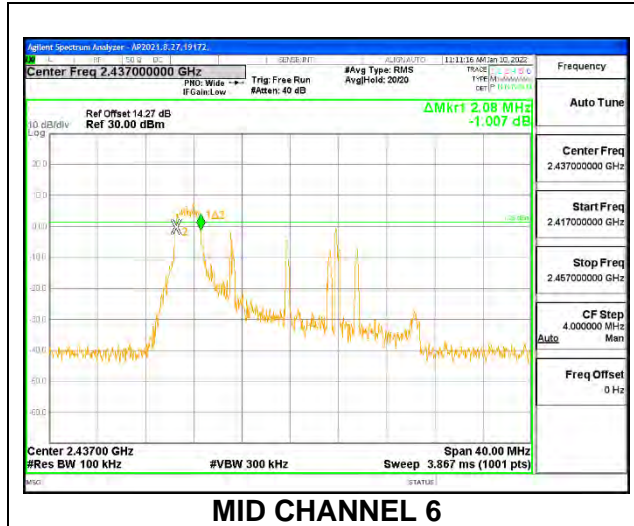
ANT 4: SU Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	18.88	0.5
Low 2	2417	18.64	0.5
Low 3	2422	18.08	0.5
Mid 6	2437	18.12	0.5
High 9	2452	18.60	0.5
High 10	2457	18.68	0.5
High 11	2462	18.56	0.5
High 12	2467	19.00	0.5
High 13	2472	18.52	0.5



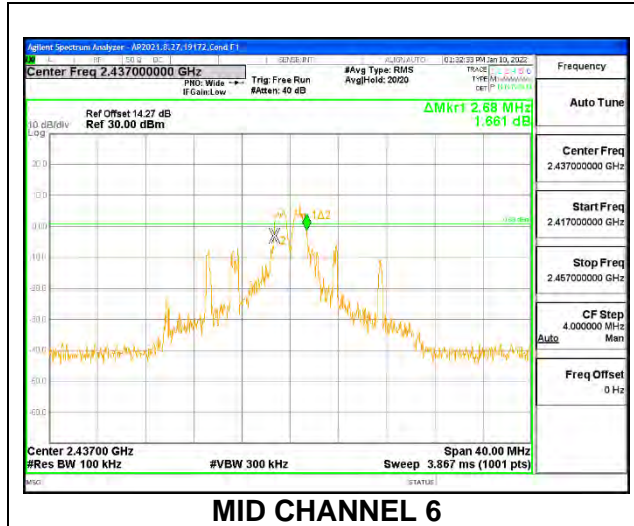
ANT3: 26-Tones, RU Index 0

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.08	0.5
Mid 6	2437	2.08	0.5
High 11	2462	2.16	0.5
High 12	2467	2.08	0.5
High 13	2472	2.16	0.5



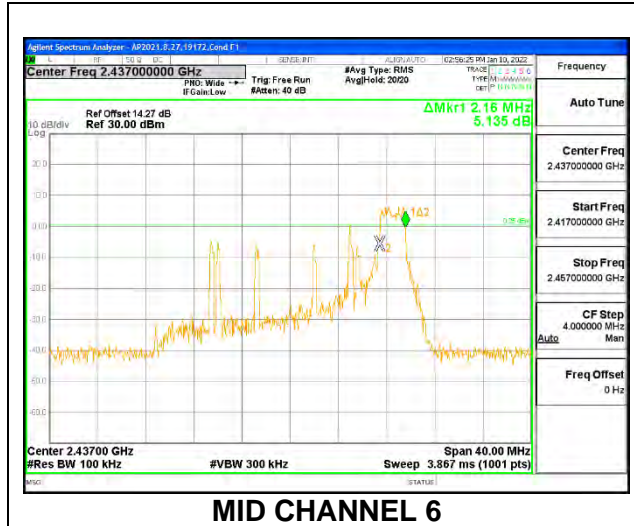
ANT3: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.68	0.5
Mid 6	2437	2.68	0.5
High 11	2462	2.60	0.5
High 12	2467	2.72	0.5
High 13	2472	2.72	0.5



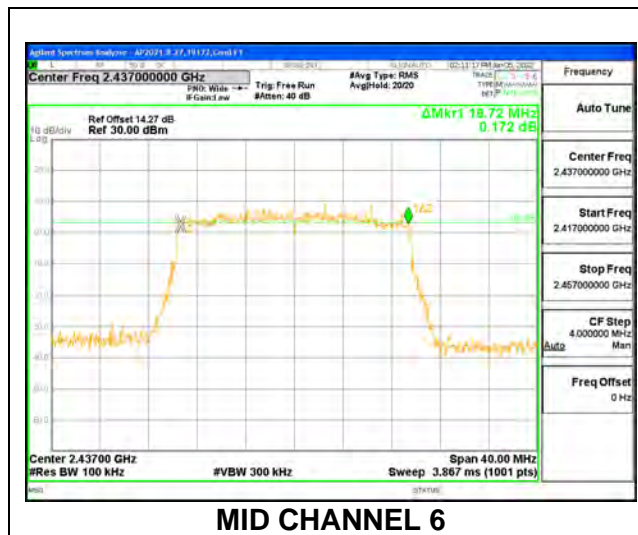
ANT3: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	2.12	0.5
Mid 6	2437	2.16	0.5
High 11	2462	2.08	0.5
High 12	2467	2.12	0.5
High 13	2472	2.12	0.5



ANT 3 : SU Mode

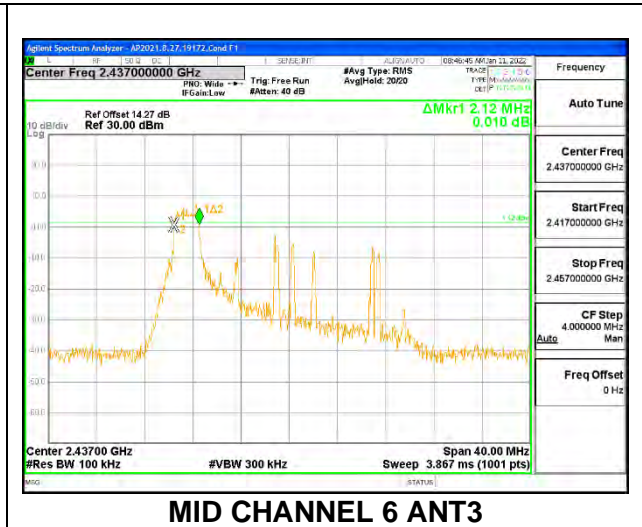
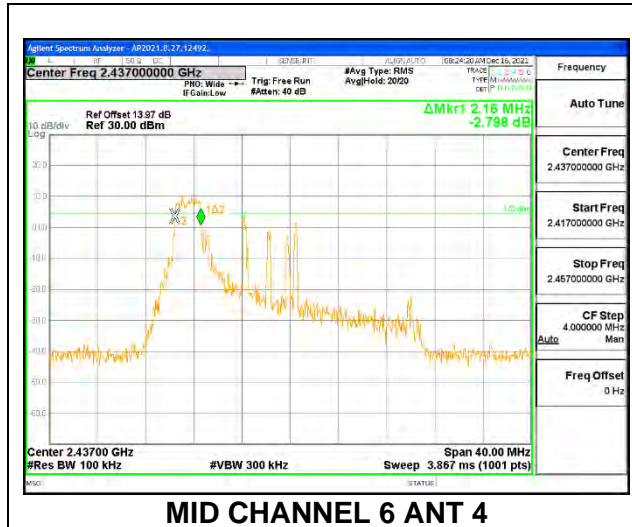
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	18.84	0.5
Low 2	2417	18.84	0.5
Low 3	2422	18.24	0.5
Mid 6	2437	18.72	0.5
High 9	2452	18.88	0.5
High 10	2457	19.00	0.5
High 11	2462	18.68	0.5
High 12	2467	18.44	0.5
High 13	2472	18.56	0.5



9.3.5. 802.11ax HE20 OFDMA MODE 2TX

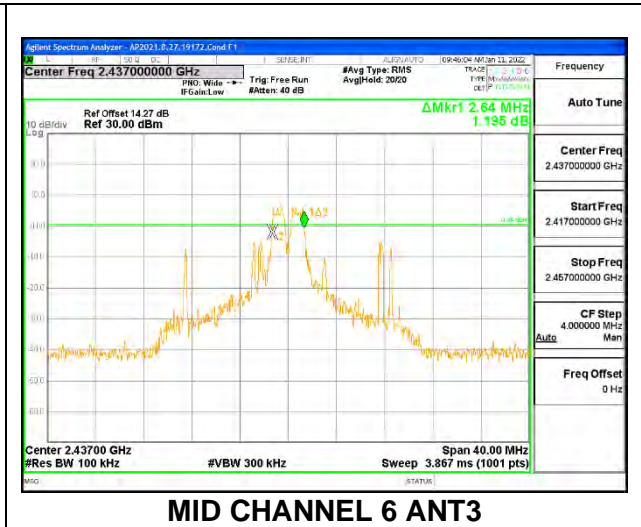
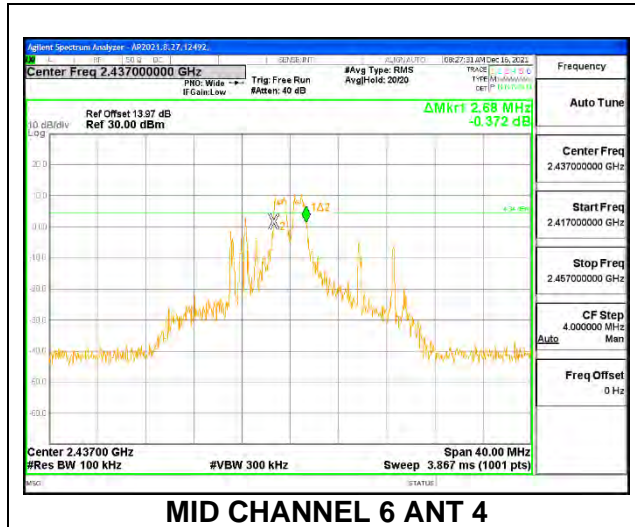
ANT 4 + ANT3: 26-Tones, RU Index 0

Channel	Frequency (MHz)	6dB BW(MHz) ANT 4	6dB BW (MHz) ANT3	Minimum Limit (MHz)
Low 1	2412	2.16	2.16	0.5
Mid 6	2437	2.16	2.12	0.5
High 11	2462	2.12	2.08	0.5
High 12	2467	2.12	2.16	0.5
High 13	2472	2.12	2.12	0.5



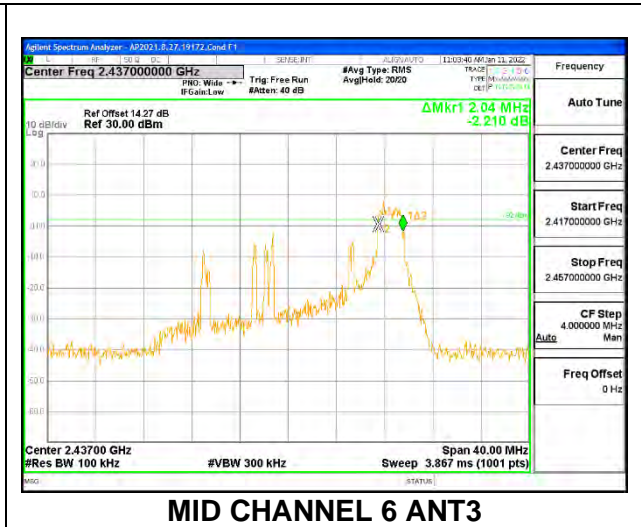
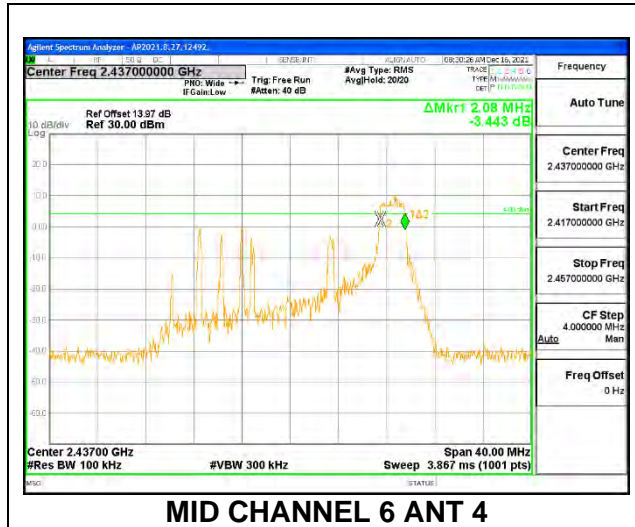
ANT 4 + ANT3: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6dB BW(MHz) ANT 4	6dB BW (MHz) ANT3	Minimum Limit (MHz)
Low 1	2412	2.68	2.64	0.5
Mid 6	2437	2.68	2.64	0.5
High 11	2462	2.68	2.60	0.5
High 12	2467	2.68	2.60	0.5
High 13	2472	2.64	2.68	0.5



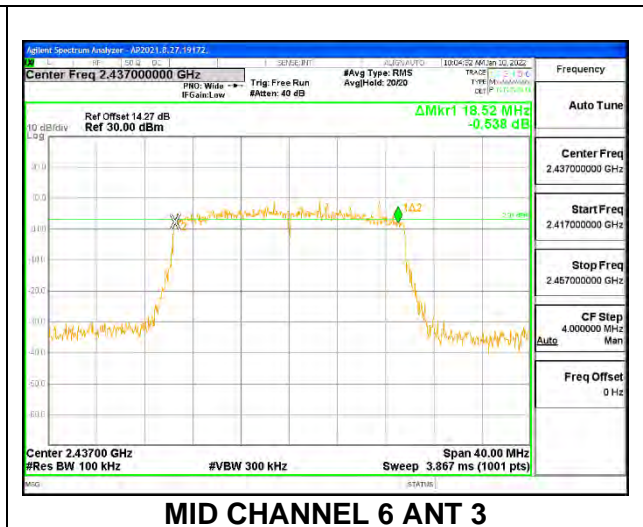
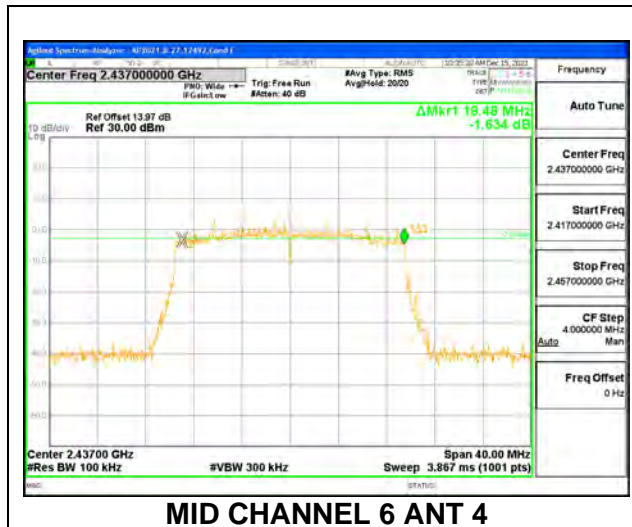
ANT 4 + ANT3: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6dB BW(MHz) ANT 4	6dB BW (MHz) ANT3	Minimum Limit (MHz)
Low 1	2412	2.12	2.08	0.5
Mid 6	2437	2.08	2.04	0.5
High 11	2462	2.12	2.12	0.5
High 12	2467	2.16	2.16	0.5
High 13	2472	2.12	2.12	0.5



ANT 4 + ANT3: SU Mode

Channel	Frequency (MHz)	6 dB BW Antenna 4 (MHz)	6 dB BW Antenna 3 (MHz)	Minimum Limit (MHz)
Low 1	2412	18.84	18.56	0.5
Low 2	2417	18.96	19.08	0.5
Low 3	2422	18.56	18.36	0.5
Low 4	2427	18.40	19.08	0.5
Mid 6	2437	18.48	18.52	0.5
High 8	2447	19.00	18.96	0.5
High 9	2452	18.20	19.04	0.5
High 10	2457	18.92	19.08	0.5
High 11	2462	18.72	18.60	0.5
High 12	2467	19.00	18.88	0.5
High 13	2472	18.92	18.68	0.5



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 transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

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)	ANT4 Gain (dBi)	ANT3 Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-2.00	-0.80	-1.36	1.63

DIRECTIONAL GAIN CALCULATION:

ANSI C63.10-2013 section 14.4.3

Uncorrelated directional gain= $10 \cdot \text{LOG}((10^{(\text{Ant1}/10)}+10^{(\text{Ant2}/10)})/2)$

Correlated directional Gain= $10 \cdot \text{LOG}(((10^{(\text{Ant1}/20)}+10^{(\text{Ant2}/20)})^2)/2)$

Sample Calculation:

Ant1=-2.0, Ant2=-0.8

Uncorrelated Antenna gain= $10 \log[(10^{(-2.0/10)}+10^{(-0.8/10)})/2]=-1.36$

Correlated Antenna gain= $10 \log[(10^{(-2.0/20)}+10^{(-0.8/20)})^2/2]=1.63$

RESULTS

9.4.1. 802.11b MODE 1TX

Test Engineer:	44366
Test Date:	6/8/2022

ANT 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	-2.00	30.00	30	36	30.00
Mid 6	2437	-2.00	30.00	30	36	30.00
High 11	2462	-2.00	30.00	30	36	30.00
High 12	2467	-2.00	30.00	30	36	30.00
High 13	2472	-2.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.34	20.34	30.00	-9.66
Mid 6	2437	21.42	21.42	30.00	-8.58
High 11	2462	21.41	21.41	30.00	-8.59
High 12	2467	20.40	20.40	30.00	-9.60
High 13	2472	17.90	17.90	30.00	-12.10

ANT3**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	-0.80	30.00	30	36	30.00
Mid 6	2437	-0.80	30.00	30	36	30.00
High 11	2462	-0.80	30.00	30	36	30.00
High 12	2467	-0.80	30.00	30	36	30.00
High 13	2472	-0.80	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.22	20.22	30.00	-9.78
Mid 6	2437	21.44	21.44	30.00	-8.56
High 11	2462	21.34	21.34	30.00	-8.66
High 12	2467	20.31	20.31	30.00	-9.69
High 13	2472	17.85	17.85	30.00	-12.15

9.4.2. 802.11n HT20 MODE 1TX

Test Engineer:	44366
Test Date:	6/8/2022

ANT 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	-2.00	30.00	30	36	30.00
Low 2	2417	-2.00	30.00	30	36	30.00
Low 3	2422	-2.00	30.00	30	36	30.00
Mid 6	2437	-2.00	30.00	30	36	30.00
High 9	2452	-2.00	30.00	30	36	30.00
High 10	2457	-2.00	30.00	30	36	30.00
High 11	2462	-2.00	30.00	30	36	30.00
High 12	2467	-2.00	30.00	30	36	30.00
High 13	2472	-2.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.98	17.98	30.00	-12.02
Low 2	2417	19.45	19.45	30.00	-10.55
Low 3	2422	21.30	21.30	30.00	-8.70
Mid 6	2437	21.37	21.37	30.00	-8.63
High 9	2452	20.90	20.90	30.00	-9.10
High 10	2457	19.40	19.40	30.00	-10.60
High 11	2462	18.46	18.46	30.00	-11.54
High 12	2467	15.88	15.88	30.00	-14.12
High 13	2472	12.86	12.86	30.00	-17.14

ANT3**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	-0.80	30.00	30	36	30.00
Low 2	2417	-0.80	30.00	30	36	30.00
Low 3	2422	-0.80	30.00	30	36	30.00
Mid 6	2437	-0.80	30.00	30	36	30.00
High 9	2452	-0.80	30.00	30	36	30.00
High 10	2457	-0.80	30.00	30	36	30.00
High 11	2462	-0.80	30.00	30	36	30.00
High 12	2467	-0.80	30.00	30	36	30.00
High 13	2472	-0.80	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.97	17.97	30.00	-12.03
Low 2	2417	19.48	19.48	30.00	-10.52
Low 3	2422	21.44	21.44	30.00	-8.56
Mid 6	2437	21.38	21.38	30.00	-8.62
High 9	2452	20.95	20.95	30.00	-9.05
High 10	2457	19.47	19.47	30.00	-10.53
High 11	2462	18.53	18.53	30.00	-11.47
High 12	2467	15.95	15.95	30.00	-14.05
High 13	2472	12.97	12.97	30.00	-17.03

9.4.3. 802.11n HT20 CDD MODE 2TX

Test Engineer:	44366
Test Date:	6/8/2022

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.36	30.00	36	30.00
Low 2	2417	-1.36	30.00	36	30.00
Low 3	2422	-1.36	30.00	36	30.00
Mid 6	2437	-1.36	30.00	36	30.00
High 8	2447	-1.36	30.00	36	30.00
High 9	2452	-1.36	30.00	36	30.00
High 10	2457	-1.36	30.00	36	30.00
High 11	2462	-1.36	30.00	36	30.00
High 12	2467	-1.36	30.00	36	30.00
High 13	2472	-1.36	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT4 Meas Power (dBm)	ANT3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.48	17.40	20.45	30.00	-9.55
Low 2	2417	18.34	18.35	21.36	30.00	-8.64
Low 3	2422	19.83	19.98	22.92	30.00	-7.08
Mid 6	2437	21.44	21.45	24.46	30.00	-5.54
High 8	2447	21.47	21.38	24.44	30.00	-5.56
High 9	2452	19.34	19.48	22.42	30.00	-7.58
High 10	2457	18.27	18.47	21.38	30.00	-8.62
High 11	2462	17.26	17.25	20.27	30.00	-9.73
High 12	2467	14.88	14.92	17.91	30.00	-12.09
High 13	2472	11.93	11.93	14.94	30.00	-15.06

9.4.4. 802.11ax HE20 MODE 1TX

Test Engineer:	44366
Test Date:	6/8/2022

ANT 4: 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	-2.00	30.00	30	36	30.00
Mid 6	2437	-2.00	30.00	30	36	30.00
High 11	2462	-2.00	30.00	30	36	30.00
High 12	2467	-2.00	30.00	30	36	30.00
High 13	2472	-2.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.95	11.95	30.00	-18.05
Mid 6	2437	11.93	11.93	30.00	-18.07
High 11	2462	11.90	11.90	30.00	-18.10
High 12	2467	11.93	11.93	30.00	-18.07
High 13	2472	-0.23	-0.23	30.00	-30.23

ANT 4: 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	-2.00	30.00	30	36	30.00
Mid 6	2437	-2.00	30.00	30	36	30.00
High 11	2462	-2.00	30.00	30	36	30.00
High 12	2467	-2.00	30.00	30	36	30.00
High 13	2472	-2.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.90	11.90	30.00	-18.10
Mid 6	2437	11.93	11.93	30.00	-18.07
High 11	2462	11.94	11.94	30.00	-18.06
High 12	2467	11.97	11.97	30.00	-18.03
High 13	2472	-0.07	-0.07	30.00	-30.07

ANT 4: 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	-2.00	30.00	30	36	30.00
Mid 6	2437	-2.00	30.00	30	36	30.00
High 11	2462	-2.00	30.00	30	36	30.00
High 12	2467	-2.00	30.00	30	36	30.00
High 13	2472	-2.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.89	11.89	30.00	-18.11
Mid 6	2437	11.93	11.93	30.00	-18.07
High 11	2462	11.88	11.88	30.00	-18.12
High 12	2467	11.94	11.94	30.00	-18.06
High 13	2472	-0.11	-0.11	30.00	-30.11

ANT 4: 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	-2.00	30.00	30	36	30.00
Low 2	2417	-2.00	30.00	30	36	30.00
Low 3	2422	-2.00	30.00	30	36	30.00
Mid 6	2437	-2.00	30.00	30	36	30.00
High 9	2452	-2.00	30.00	30	36	30.00
High 10	2457	-2.00	30.00	30	36	30.00
High 11	2462	-2.00	30.00	30	36	30.00
High 12	2467	-2.00	30.00	30	36	30.00
High 13	2472	-2.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	16.95	16.95	30.00	-13.05
Low 2	2417	17.91	17.91	30.00	-12.09
Low 3	2422	21.40	21.40	30.00	-8.60
Mid 6	2437	21.42	21.42	30.00	-8.58
High 9	2452	21.48	21.48	30.00	-8.52
High 10	2457	17.85	17.85	30.00	-12.15
High 11	2462	16.75	16.75	30.00	-13.25
High 12	2467	14.81	14.81	30.00	-15.19
High 13	2472	8.90	8.90	30.00	-21.10

ANT3: 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	-0.80	30.00	30	36	30.00
Mid 6	2437	-0.80	30.00	30	36	30.00
High 11	2462	-0.80	30.00	30	36	30.00
High 12	2467	-0.80	30.00	30	36	30.00
High 13	2472	-0.80	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.94	11.94	30.00	-18.06
Mid 6	2437	11.85	11.85	30.00	-18.15
High 11	2462	11.90	11.90	30.00	-18.10
High 12	2467	11.93	11.93	30.00	-18.07
High 13	2472	-0.14	-0.14	30.00	-30.14

ANT3: 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	-0.80	30.00	30	36	30.00
Mid 6	2437	-0.80	30.00	30	36	30.00
High 11	2462	-0.80	30.00	30	36	30.00
High 12	2467	-0.80	30.00	30	36	30.00
High 13	2472	-0.80	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.90	11.90	30.00	-18.10
Mid 6	2437	11.91	11.91	30.00	-18.09
High 11	2462	11.82	11.82	30.00	-18.18
High 12	2467	11.93	11.93	30.00	-18.07
High 13	2472	-0.14	-0.14	30.00	-30.14

ANT3: 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	-0.80	30.00	30	36	30.00
Mid 6	2437	-0.80	30.00	30	36	30.00
High 11	2462	-0.80	30.00	30	36	30.00
High 12	2467	-0.80	30.00	30	36	30.00
High 13	2472	-0.80	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.90	11.90	30.00	-18.10
Mid 6	2437	11.89	11.89	30.00	-18.11
High 11	2462	11.92	11.92	30.00	-18.08
High 12	2467	11.91	11.91	30.00	-18.09
High 13	2472	-0.18	-0.18	30.00	-30.18

ANT3: 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	-0.80	30.00	30	36	30.00
Low 2	2417	-0.80	30.00	30	36	30.00
Low 3	2422	-0.80	30.00	30	36	30.00
Mid 6	2437	-0.80	30.00	30	36	30.00
High 9	2452	-0.80	30.00	30	36	30.00
High 10	2457	-0.80	30.00	30	36	30.00
High 11	2462	-0.80	30.00	30	36	30.00
High 12	2467	-0.80	30.00	30	36	30.00
High 13	2472	-0.80	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	16.97	16.97	30.00	-13.03
Low 2	2417	17.95	17.95	30.00	-12.05
Low 3	2422	21.42	21.42	30.00	-8.58
Mid 6	2437	21.48	21.48	30.00	-8.52
High 9	2452	21.43	21.43	30.00	-8.57
High 10	2457	17.93	17.93	30.00	-12.07
High 11	2462	16.91	16.91	30.00	-13.09
High 12	2467	14.92	14.92	30.00	-15.08
High 13	2472	8.91	8.91	30.00	-21.09

9.4.5. 802.11ax HE20 OFDMA MODE 2TX

Test Engineer:	44366
Test Date:	6/8/2022

ANT 4 + ANT3: 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	-1.36	30.00	36	30.00
Mid 6	2437	-1.36	30.00	36	30.00
High 11	2462	-1.36	30.00	36	30.00
High 12	2467	-1.36	30.00	36	30.00
High 13	2472	-1.36	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT4 Meas Power (dBm)	ANT3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.96	11.93	14.96	30.00	-15.04
Mid 6	2437	11.95	11.95	14.96	30.00	-15.04
High 11	2462	11.93	11.92	14.94	30.00	-15.06
High 12	2467	11.85	11.90	14.89	30.00	-15.11
High 13	2472	-0.18	-0.08	2.88	30.00	-27.12

ANT 4 + ANT3: 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	-1.36	30.00	36	30.00
Mid 6	2437	-1.36	30.00	36	30.00
High 11	2462	-1.36	30.00	36	30.00
High 12	2467	-1.36	30.00	36	30.00
High 13	2472	-1.36	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT4 Meas Power (dBm)	ANT3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.92	11.92	14.93	30.00	-15.07
Mid 6	2437	11.91	11.95	14.94	30.00	-15.06
High 11	2462	11.94	11.95	14.96	30.00	-15.04
High 12	2467	11.93	11.93	14.94	30.00	-15.06
High 13	2472	-0.35	-0.12	2.78	30.00	-27.22

ANT 4 + ANT3: 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	-1.36	30.00	36	30.00
Mid 6	2437	-1.36	30.00	36	30.00
High 11	2462	-1.36	30.00	36	30.00
High 12	2467	-1.36	30.00	36	30.00
High 13	2472	-1.36	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT4 Meas Power (dBm)	ANT3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	11.93	11.89	14.92	30.00	-15.08
Mid 6	2437	11.94	11.91	14.94	30.00	-15.06
High 11	2462	11.96	11.92	14.95	30.00	-15.05
High 12	2467	11.92	11.85	14.90	30.00	-15.10
High 13	2472	-0.12	-0.17	2.87	30.00	-27.13

ANT 4 + ANT3: SU Mode**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-1.36	30.00	36	30.00
Low 2	2417	-1.36	30.00	36	30.00
Low 3	2422	-1.36	30.00	36	30.00
Low 4	2427	-1.36	30.00	36	30.00
Mid 6	2437	-1.36	30.00	36	30.00
High 8	2447	-1.36	30.00	36	30.00
High 9	2452	-1.36	30.00	36	30.00
High 10	2457	-1.36	30.00	36	30.00
High 11	2462	-1.36	30.00	36	30.00
High 12	2467	-1.36	30.00	36	30.00
High 13	2472	-1.36	30.00	36	30.00

Results

Channel	Frequency (MHz)	ANT4 Meas Power (dBm)	ANT3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	15.90	15.85	18.89	30.00	-11.11
Low 2	2417	16.93	16.89	19.92	30.00	-10.08
Low 3	2422	18.86	18.94	21.91	30.00	-8.09
Low 4	2427	21.40	21.43	24.43	30.00	-5.57
Mid 6	2437	21.43	21.46	24.46	30.00	-5.54
High 8	2447	21.37	21.35	24.37	30.00	-5.63
High 9	2452	18.47	18.48	21.49	30.00	-8.51
High 10	2457	16.81	16.75	19.79	30.00	-10.21
High 11	2462	15.94	15.96	18.96	30.00	-11.04
High 12	2467	13.98	13.95	16.98	30.00	-13.02
High 13	2472	8.41	8.35	11.39	30.00	-18.61

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

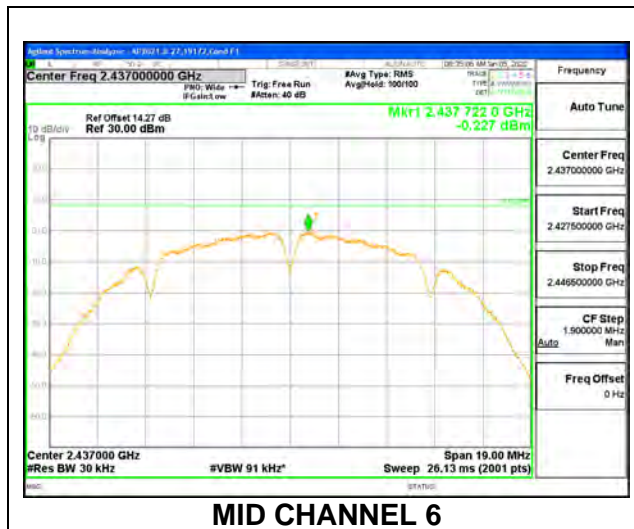
Only Mid channel plot is reported to show analyzer settings.

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

9.5.1. 802.11b MODE 1TX

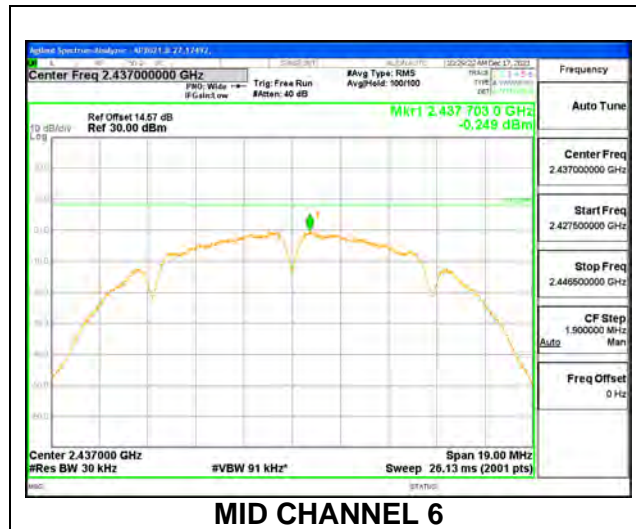
ANT 4

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	-1.224	-1.224	8.0	-9.2
Mid 6	2437	-0.227	-0.227	8.0	-8.2
High 11	2462	-0.237	-0.237	8.0	-8.2
High 12	2467	-1.150	-1.150	8.0	-9.2
High 13	2472	-3.541	-3.541	8.0	-11.5



ANT3

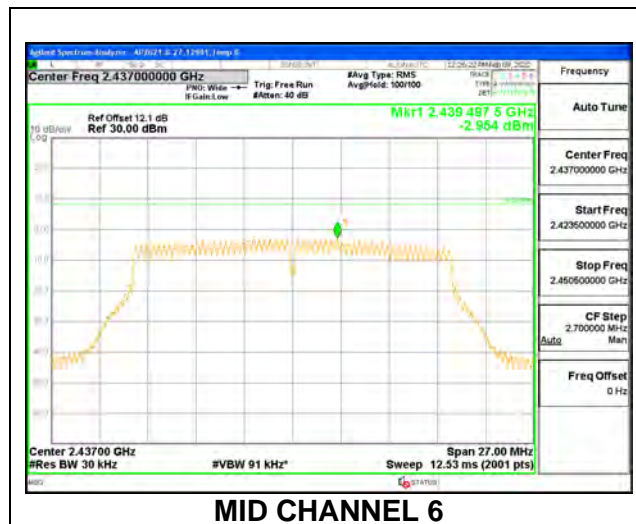
Duty Cycle CF (dB)		Included in Calculations of Corr'd PSD			
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-1.237	-1.237	8.0	-9.2
Mid 6	2437	-0.249	-0.249	8.0	-8.2
High 11	2462	-0.344	-0.344	8.0	-8.3
High 12	2467	-1.042	-1.042	8.0	-9.0
High 13	2472	-3.618	-3.618	8.0	-11.6



9.5.2. 802.11n HT20 MODE 1TX

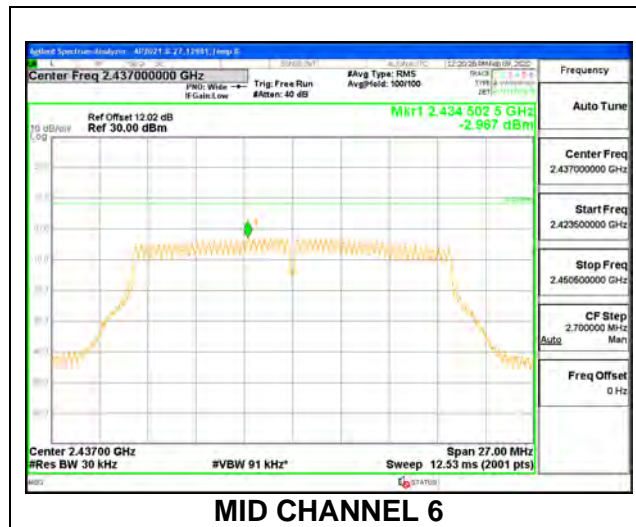
ANT 4

Duty Cycle CF (dB)		0.09	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	-6.938	-6.848	8.0	-14.8
Low 2	2417	-4.418	-4.328	8.0	-12.3
Low 3	2422	-3.006	-2.916	8.0	-10.9
Mid 6	2437	-2.954	-2.864	8.0	-10.9
High 9	2452	-3.257	-3.167	8.0	-11.2
High 10	2457	-4.530	-4.440	8.0	-12.4
High 11	2462	-5.508	-5.418	8.0	-13.4
High 12	2467	-8.297	-8.207	8.0	-16.2
High 13	2472	-10.290	-10.200	8.0	-18.2



ANT3

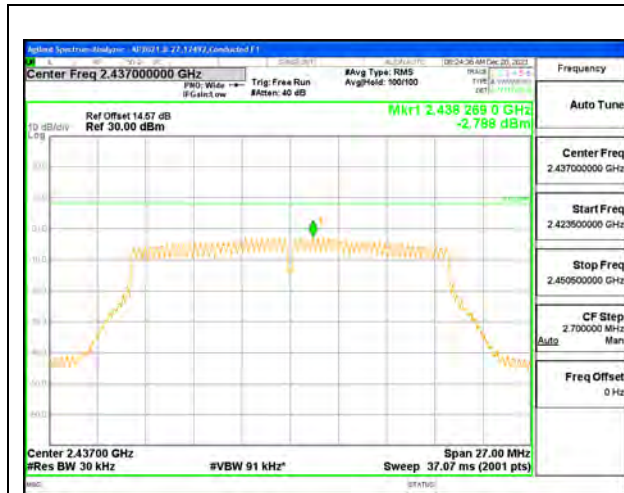
Duty Cycle CF (dB)		0.09	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-7.009	-7.081	8.0	-15.1
Low 2	2417	-4.439	-4.349	8.0	-12.3
Low 3	2422	-2.833	-2.743	8.0	-10.7
Mid 6	2437	-2.967	-2.877	8.0	-10.9
High 9	2452	-3.163	-3.073	8.0	-11.1
High 10	2457	-4.442	-4.352	8.0	-12.4
High 11	2462	-5.438	-5.348	8.0	-13.3
High 12	2467	-8.185	-8.095	8.0	-16.1
High 13	2472	-10.231	-10.141	8.0	-18.1



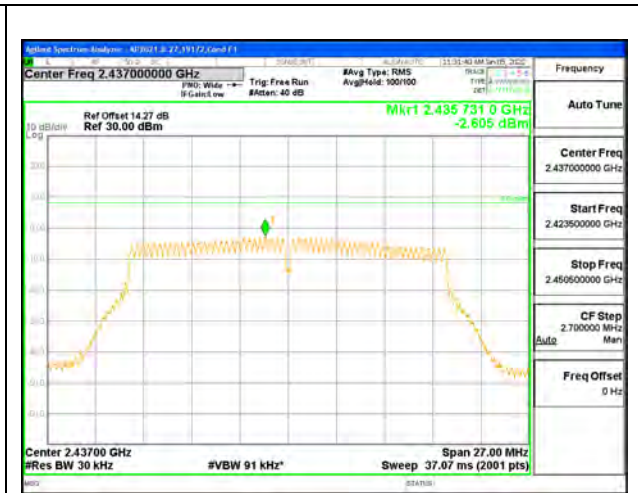
9.5.3. 802.11n HT20 CDD MODE 2TX

ANT 4 + ANT 3

Duty Cycle CF (dB)		0.09		Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	ANT4 Meas (dBm/ 3kHz)	ANT3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-7.361	-7.177	-4.168	8.0	-12.2
Low 2	2417	-5.740	5.611	6.008	8.0	-2.0
Low 3	2422	-4.150	-4.102	-1.026	8.0	-9.0
Mid 6	2437	-2.788	-2.605	0.405	8.0	-7.6
High 8	2447	-2.810	2.647	3.825	8.0	-4.2
High 9	2452	-4.672	-4.751	-1.611	8.0	-9.6
High 10	2457	-5.787	-5.618	-2.601	8.0	-10.6
High 11	2462	-6.668	-6.588	-3.528	8.0	-11.5
High 12	2467	-9.188	-9.060	-6.023	8.0	-14.0
High 13	2472	-11.376	-11.499	-8.337	8.0	-16.3



MID CHANNEL 6 ANT 4

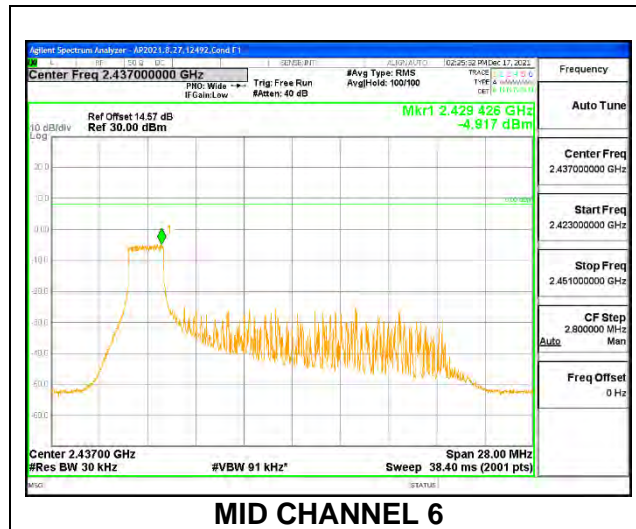


MID CHANNEL 6 ANT 3

9.5.4. 802.11ax HE20 MODE 1TX

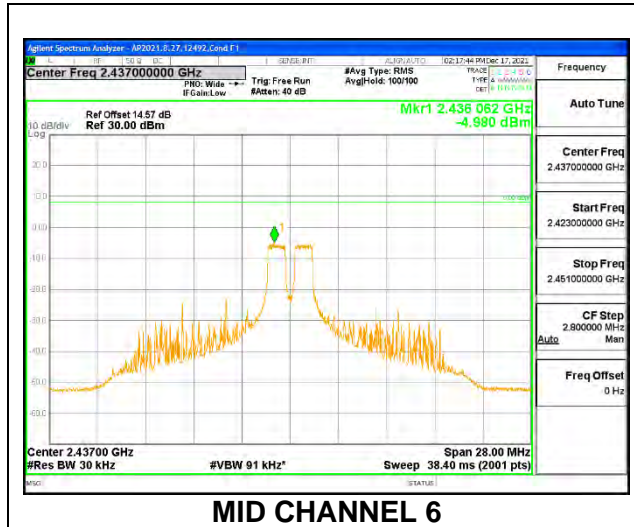
ANT 4 : 26-Tone RU Index 0

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	-4.971	-4.971	8.0	-13.0
Mid 6	2437	-4.917	-4.917	8.0	-12.9
High 11	2462	-5.176	-5.176	8.0	-13.2
High 12	2467	5.069	5.069	8.0	-2.9
High 13	2472	-15.515	-15.515	8.0	-23.5



ANT 4 : 26-Tone RU Index 4

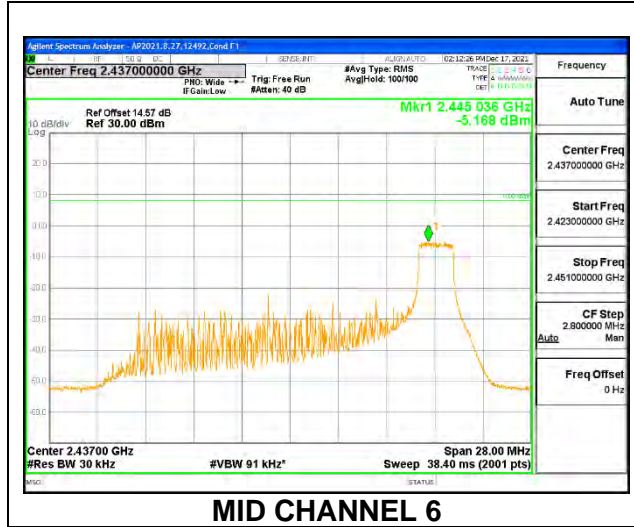
Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-5.103	-5.103	8.0	-13.1
Mid 6	2437	-4.980	-4.980	8.0	-13.0
High 11	2462	5.160	5.160	8.0	-2.8
High 12	2467	-5.160	-5.160	8.0	-13.2
High 13	2472	-15.545	-15.545	8.0	-23.5



MID CHANNEL 6

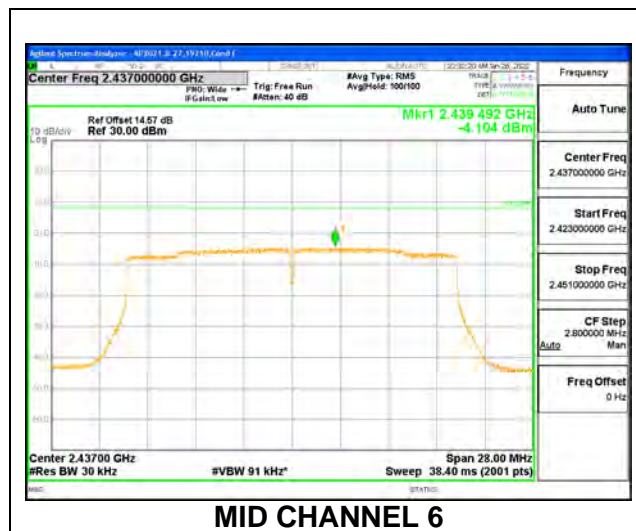
ANT 4 : 26-Tone RU Index 8

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	-5.197	-5.197	8.0	-13.2
Mid 6	2437	-5.168	-5.168	8.0	-13.2
High 11	2462	-5.141	-5.141	8.0	-13.1
High 12	2467	-5.189	-5.189	8.0	-13.2
High 13	2472	-15.445	-15.445	8.0	-23.4



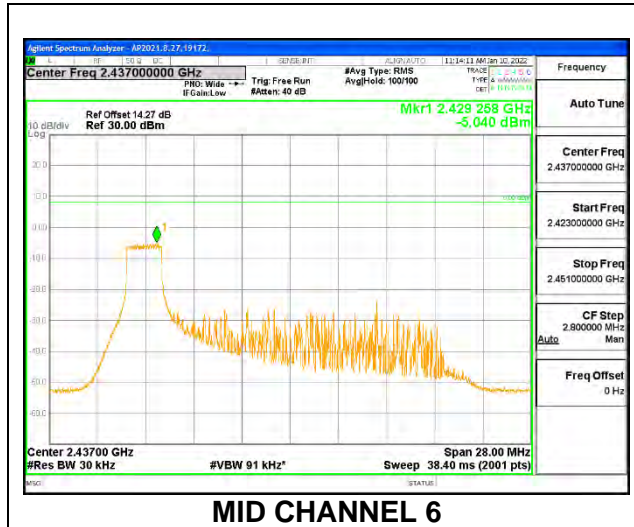
ANT 4 : SU Mode

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	-9.219	-9.219	8.0	-17.2
Low 2	2417	-7.551	-7.551	8.0	-15.6
Low 3	2422	-4.130	-4.130	8.0	-12.1
Mid 6	2437	-4.104	-4.104	8.0	-12.1
High 9	2452	-4.294	-4.294	8.0	-12.3
High 10	2457	-7.712	-7.712	8.0	-15.7
High 11	2462	-8.661	-8.661	8.0	-16.7
High 12	2467	-10.383	-10.383	8.0	-18.4
High 13	2472	-16.746	-16.746	8.0	-24.7



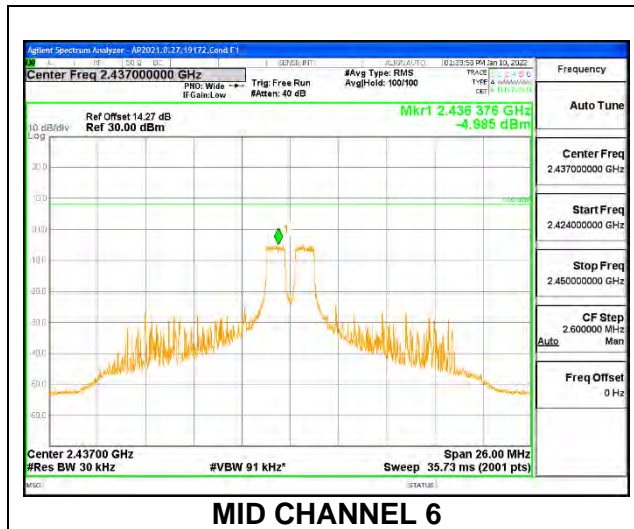
ANT3 : 26-Tone RU Index 0

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	-5.005	-5.005	8.0	-13.0
Mid 6	2437	-5.040	-5.040	8.0	-13.0
High 11	2462	-5.194	-5.194	8.0	-13.2
High 12	2467	-5.073	-5.073	8.0	-13.1
High 13	2472	-15.587	-15.587	8.0	-23.6



ANT3 : 26-Tone RU Index 4

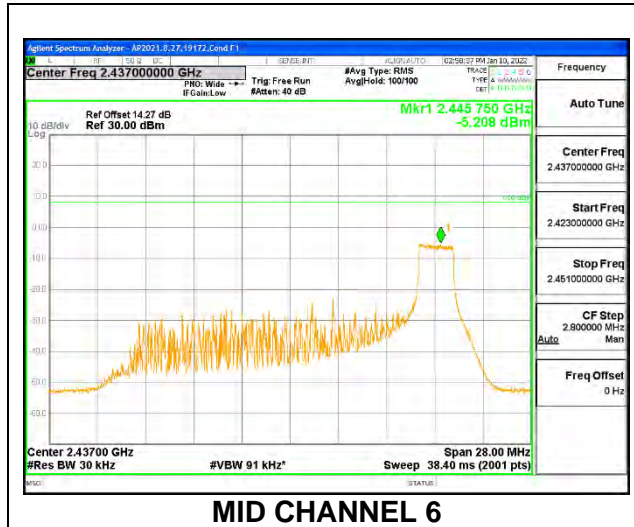
Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-5.100	-5.100	8.0	-13.1
Mid 6	2437	-4.985	-4.985	8.0	-13.0
High 11	2462	-5.187	-5.187	8.0	-13.2
High 12	2467	-5.129	-5.129	8.0	-13.1
High 13	2472	-15.549	-15.549	8.0	-23.5



MID CHANNEL 6

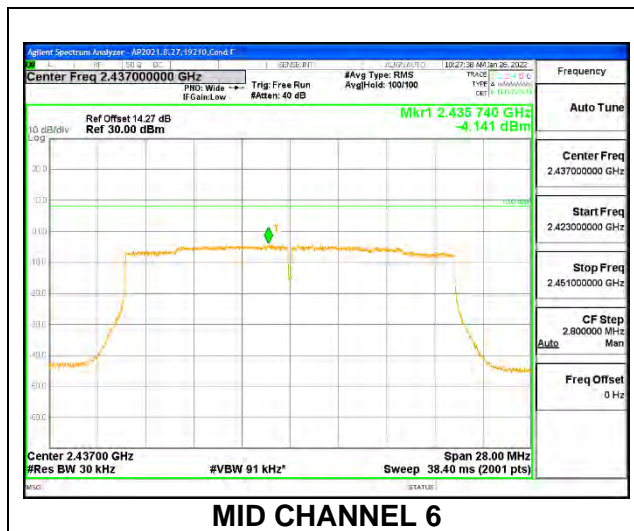
ANT3 : 26-Tone RU Index 8

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	-5.266	-5.266	8.0	-13.3
Mid 6	2437	-5.208	-5.208	8.0	-13.2
High 11	2462	-5.263	-5.263	8.0	-13.3
High 12	2467	-5.155	-5.155	8.0	-13.2
High 13	2472	-15.573	-15.573	8.0	-23.6



ANT3 : 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	-9.355	-9.355	8.0	-17.4
Low 2	2417	-7.526	-7.526	8.0	-15.5
Low 3	2422	-4.183	-4.183	8.0	-12.2
Mid 6	2437	-4.141	-4.141	8.0	-12.1
High 9	2452	-4.194	-4.194	8.0	-12.2
High 10	2457	-7.867	-7.867	8.0	-15.9
High 11	2462	-8.583	-8.583	8.0	-16.6
High 12	2467	-10.337	-10.337	8.0	-18.3
High 13	2472	-16.597	-16.597	8.0	-24.6

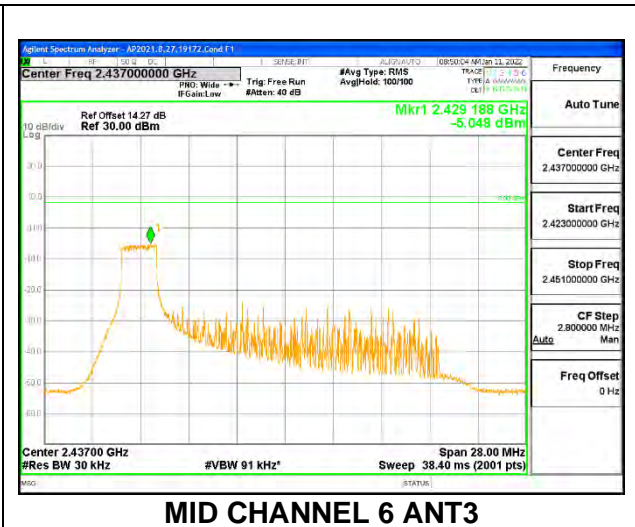
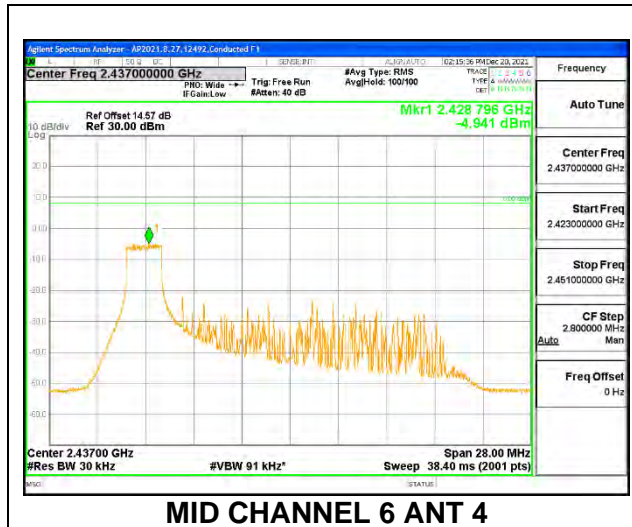


MID CHANNEL 6

9.5.5. 802.11ax HE20 OFDMA MODE 2TX

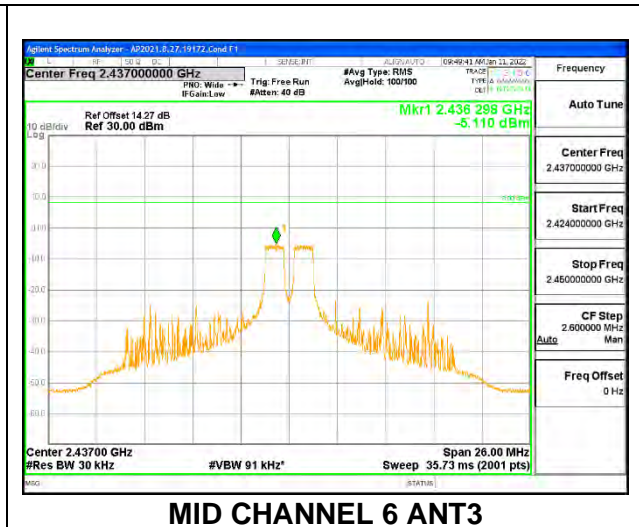
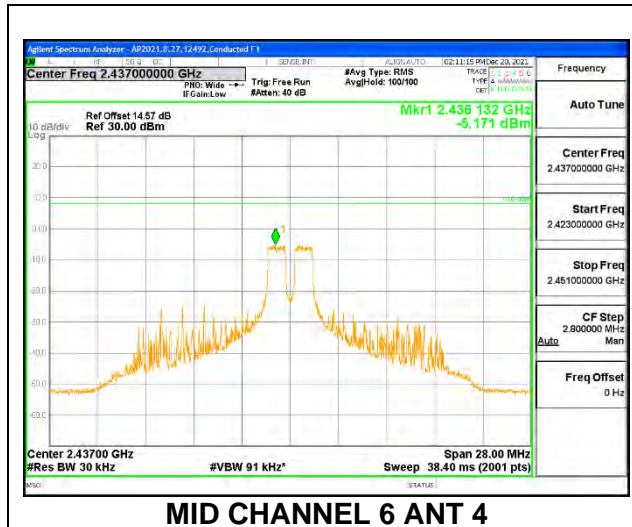
ANT 4 + ANT3: 26-Tones, RU Index 0

Duty Cycle CF (dB)		0.00		Included in Calculations of Corr'd PSD		
Channel	Frequency (MHz)	ANT4 Meas (dBm/ 3kHz)	ANT3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-5.093	-5.168	-2.120	8.0	-10.1
Mid 6	2437	-4.941	-5.048	-1.984	8.0	-10.0
High 11	2462	-4.991	-4.998	-1.984	8.0	-10.0
High 12	2467	-5.029	-5.091	-2.050	8.0	-10.0
High 13	2472	-15.524	-15.485	-12.494	8.0	-20.5



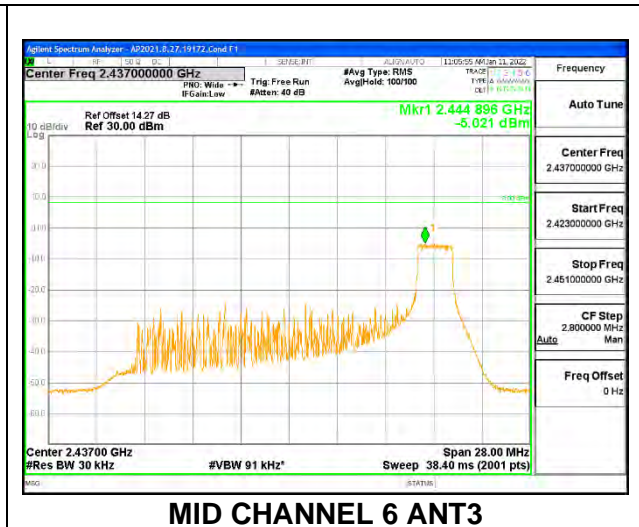
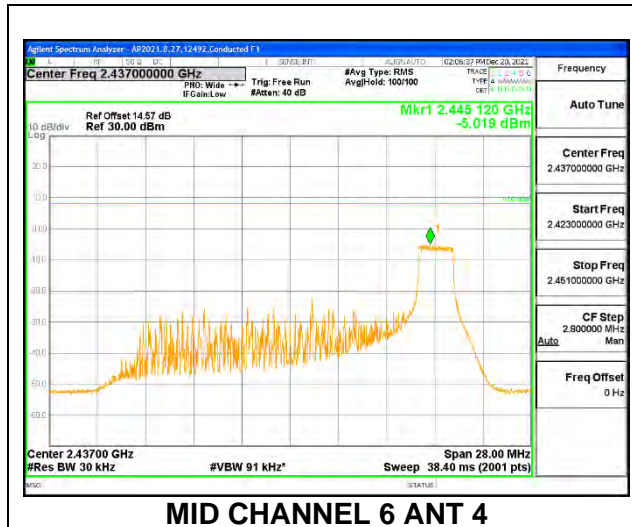
ANT 4 + ANT3: 26-Tones, RU Index 4

Duty Cycle CF (dB)		Included in Calculations of Corr'd PSD				
Channel	Frequency (MHz)	ANT4 Meas (dBm/ 3kHz)	ANT3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-5.308	-5.289	-2.288	8.0	-10.3
Mid 6	2437	-5.171	-5.110	-2.130	8.0	-10.1
High 11	2462	-5.192	-5.176	-2.174	8.0	-10.2
High 12	2467	-5.163	-5.128	-2.135	8.0	-10.1
High 13	2472	-15.509	-15.456	-12.472	8.0	-20.5



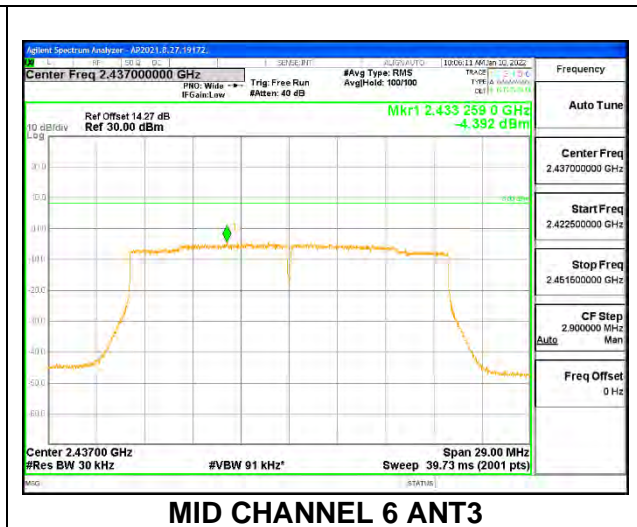
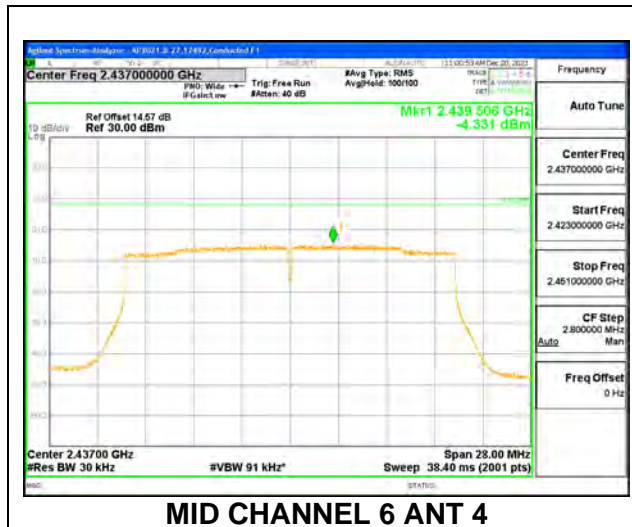
ANT 4 + ANT3: 26-Tones, RU Index 8

Duty Cycle CF (dB)		Included in Calculations of Corr'd PSD				
Channel	Frequency (MHz)	ANT4 Meas (dBm/ 3kHz)	ANT3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-4.923	-5.083	-1.992	8.0	-10.0
Mid 6	2437	-5.019	-5.021	-2.010	8.0	-10.0
High 11	2462	-5.075	-5.045	-2.050	8.0	-10.0
High 12	2467	-5.052	-5.061	-2.046	8.0	-10.0
High 13	2472	-15.566	-15.541	-12.543	8.0	-20.5



ANT 4 + ANT3: SU Mode

Duty Cycle CF (dB)		0.00				
Included in Calculations of Corr'd PSD						
Channel	Frequency (MHz)	ANT4 Meas (dBm/ 3kHz)	ANT3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.629	-9.505	-6.556	8.0	-14.6
Low 2	2417	-8.570	-8.644	-5.597	8.0	-13.6
Low 3	2422	-6.960	-7.002	-3.971	8.0	-12.0
Low 4	2427	-4.242	-4.268	-1.245	8.0	-9.2
Mid 6	2437	-4.331	-4.392	-1.351	8.0	-9.4
High 8	2447	-4.241	-4.324	-1.272	8.0	-9.3
High 9	2452	-7.286	-7.378	-4.321	8.0	-12.3
High 10	2457	-8.725	-8.812	-5.758	8.0	-13.8
High 11	2462	-11.385	-11.453	-8.409	8.0	-16.4
High 12	2467	-11.717	-11.678	-8.687	8.0	-16.7
High 13	2472	-17.574	-17.469	-14.511	8.0	-22.5



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)).

Attenuated by 30dB since average power was measured.

RESULTS

9.6.1. 802.11b MODE 1TX

ANT 4



LOW CHANNEL 1 BANDEDGE



OUT-OF-BAND LOW CHANNEL 1



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



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

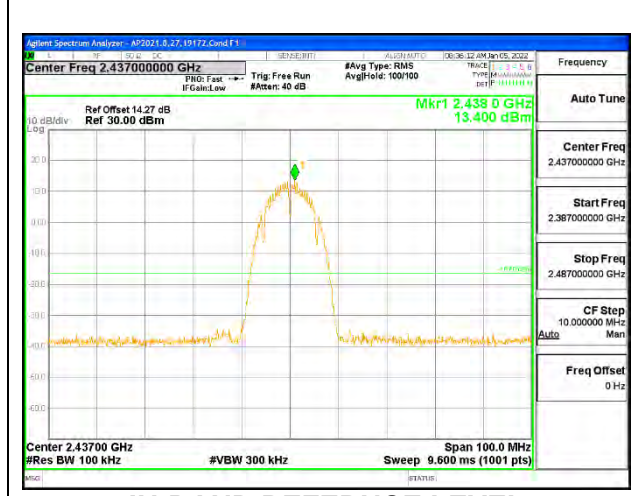
ANT3



LOW CHANNEL 1 BANDEDGE



OUT-OF-BAND LOW CHANNEL 1



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 11 BANDEDGE



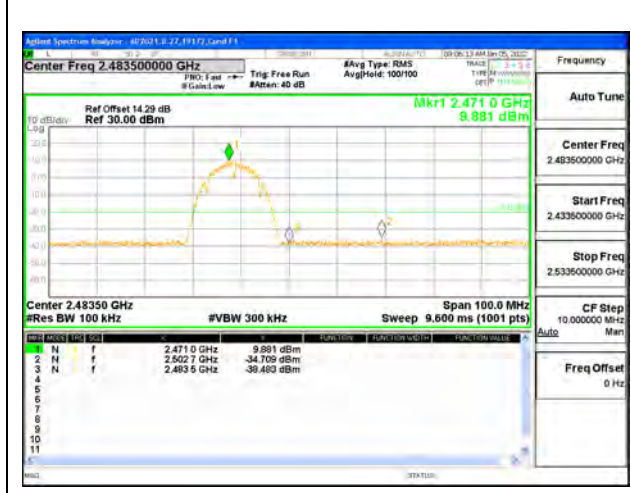
OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12



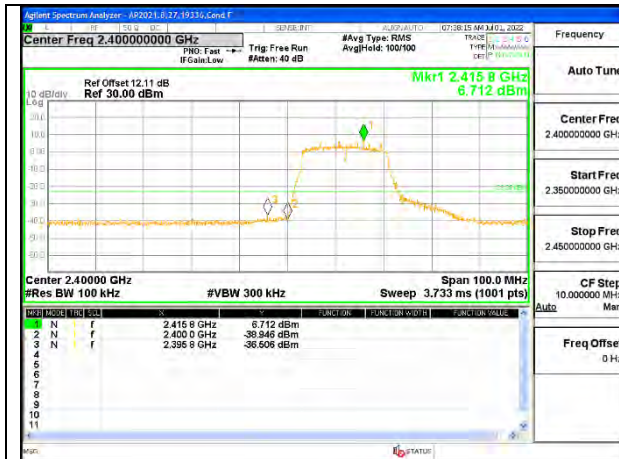
HIGH CHANNEL 13 BANDEDGE



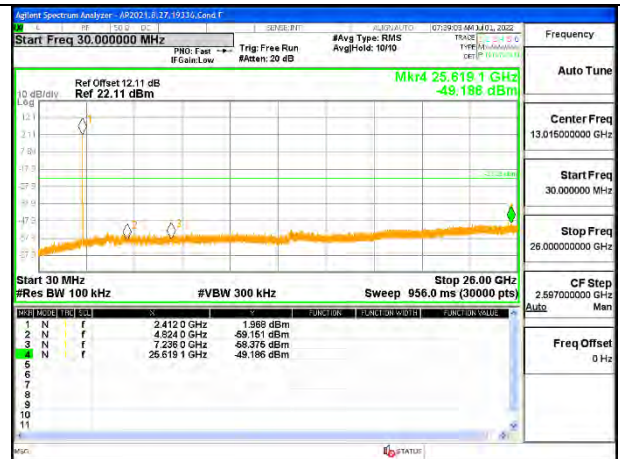
OUT-OF-BAND HIGH CHANNEL 13

9.6.2. 802.11n HT20 MODE 1TX

ANT 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



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 9 BANDEDGE



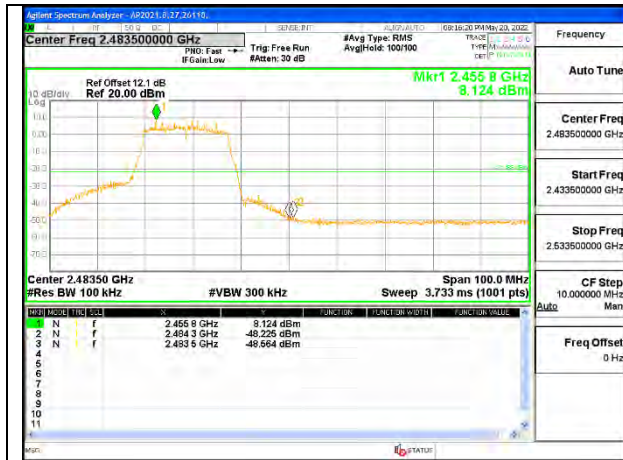
OUT-OF-BAND HIGH CHANNEL 9



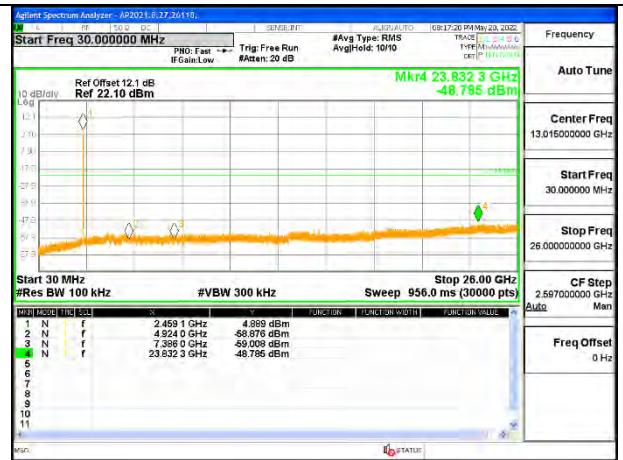
HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10



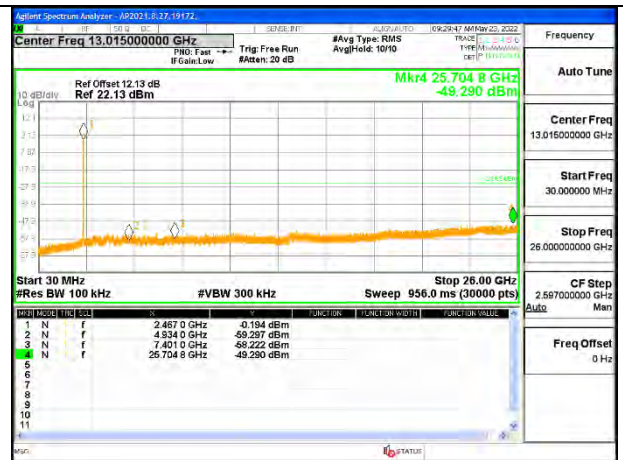
HIGH CHANNEL 11 BANDEDGE



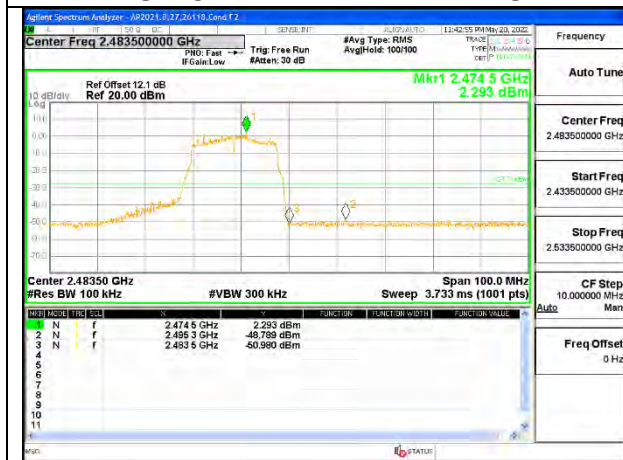
OUT-OF-BAND HIGH CHANNEL 11



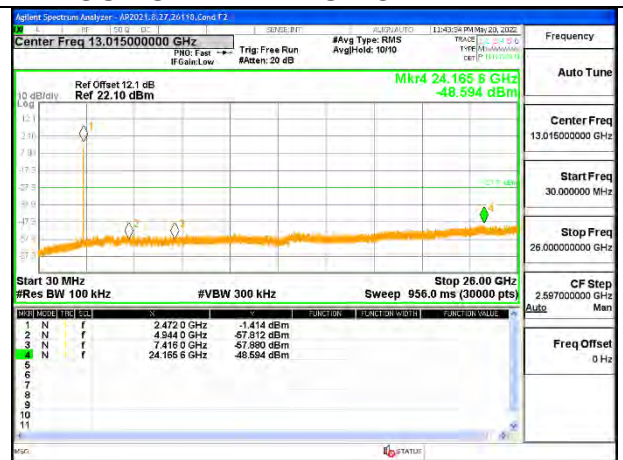
HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

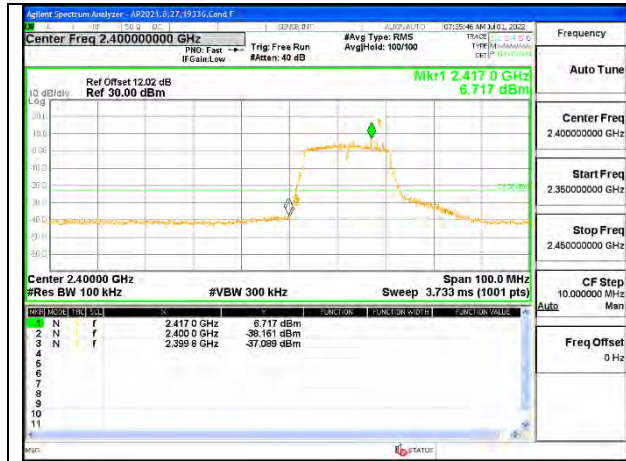


HIGH CHANNEL 13 BANDEDGE

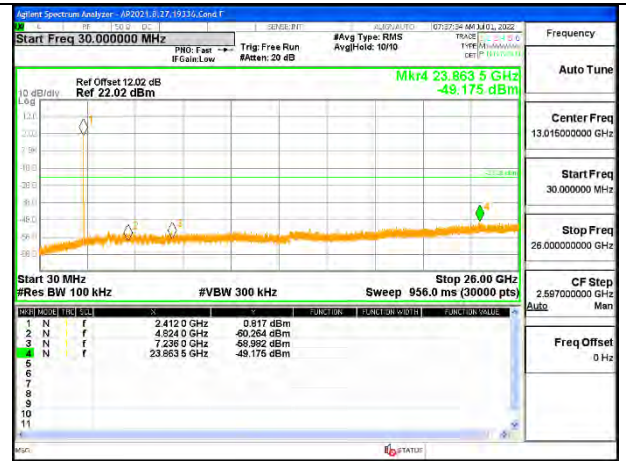


OUT-OF-BAND HIGH CHANNEL 13

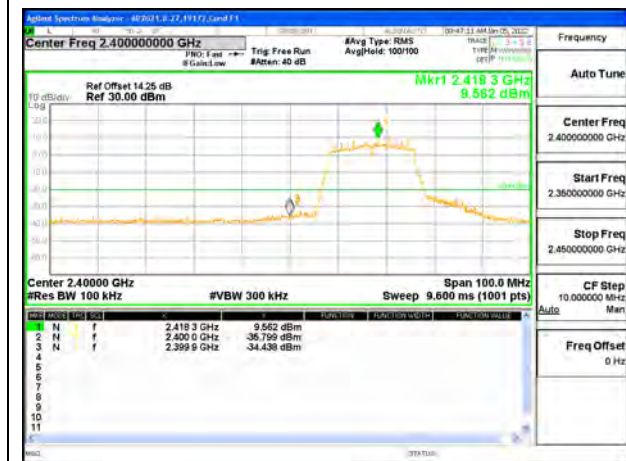
ANT3



LOW CHANNEL 1 BANDEDGE



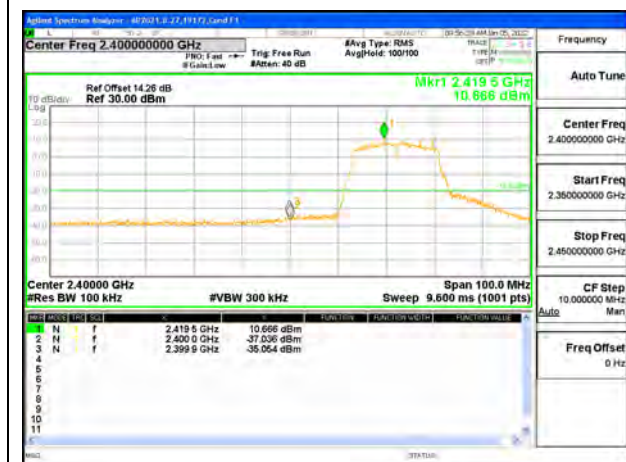
OUT-OF-BAND LOW CHANNEL 1



LOW CHANNEL 2 BANDEDGE



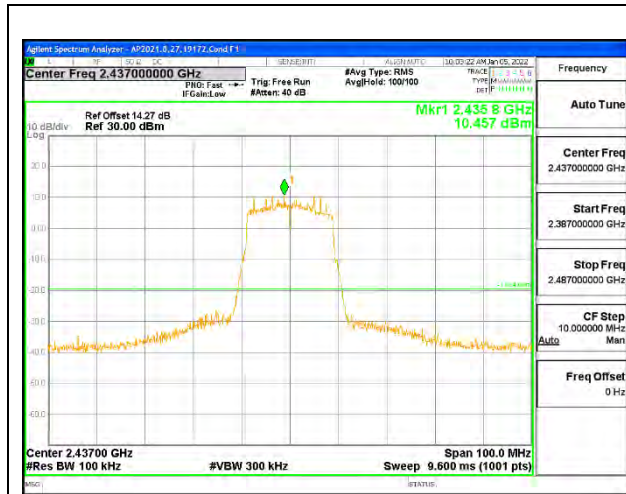
OUT-OF-BAND LOW CHANNEL 2



LOW CHANNEL 3 BANDEDGE



OUT-OF-BAND LOW CHANNEL 3



IN-BAND REFERENCE LEVEL



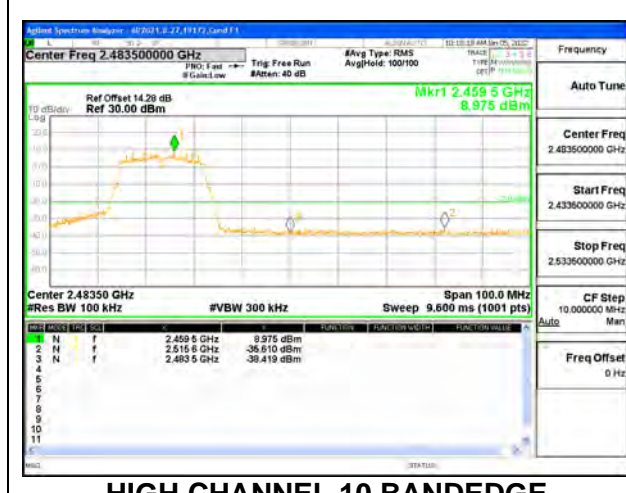
OUT-OF-BAND MID CHANNEL



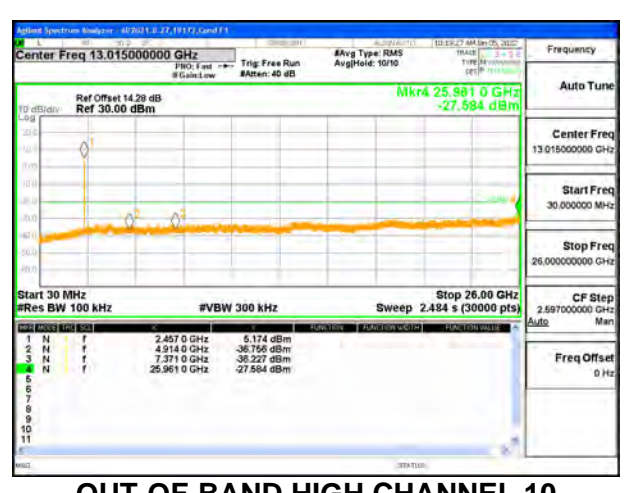
HIGH CHANNEL 9 BANDEDGE



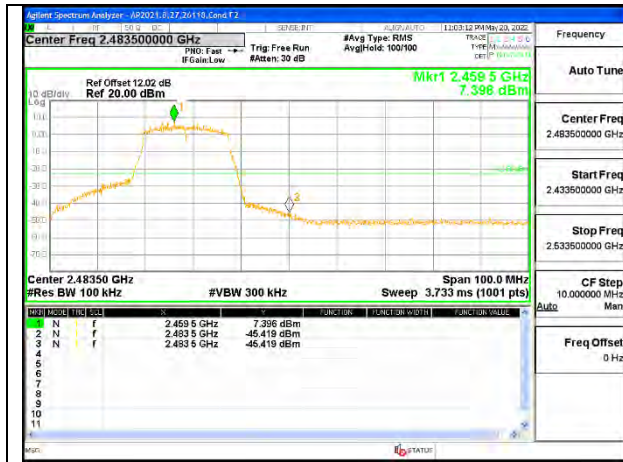
OUT-OF-BAND HIGH CHANNEL 9



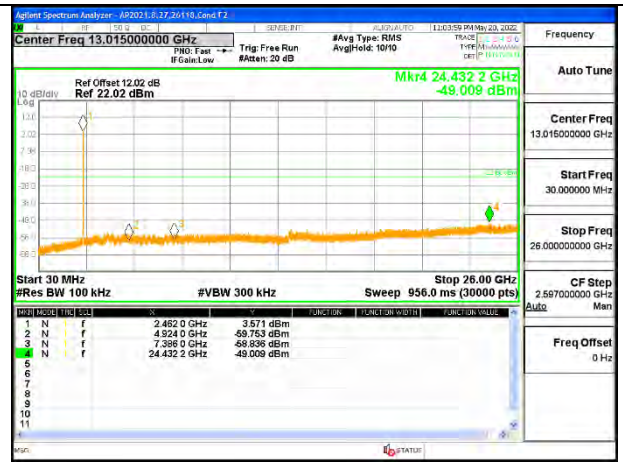
HIGH CHANNEL 10 BANDEDGE



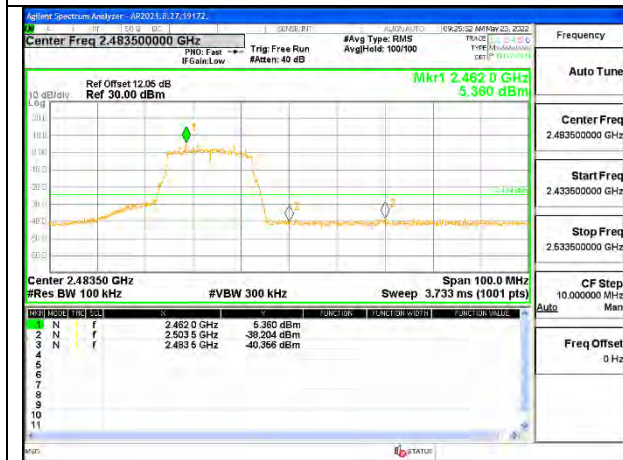
OUT-OF-BAND HIGH CHANNEL 10



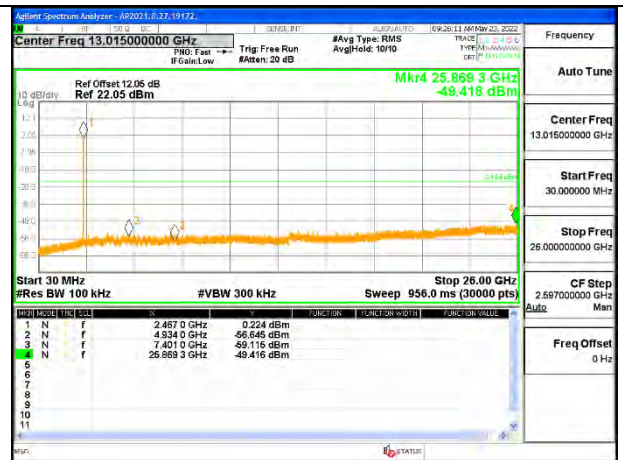
HIGH CHANNEL 11 BANDEDGE



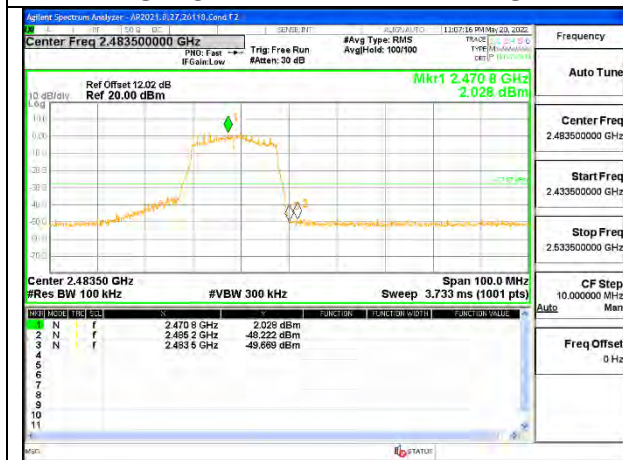
OUT-OF-BAND HIGH CHANNEL 11



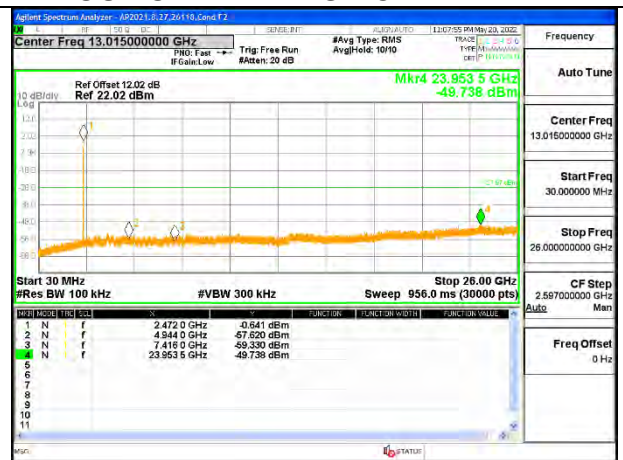
HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12



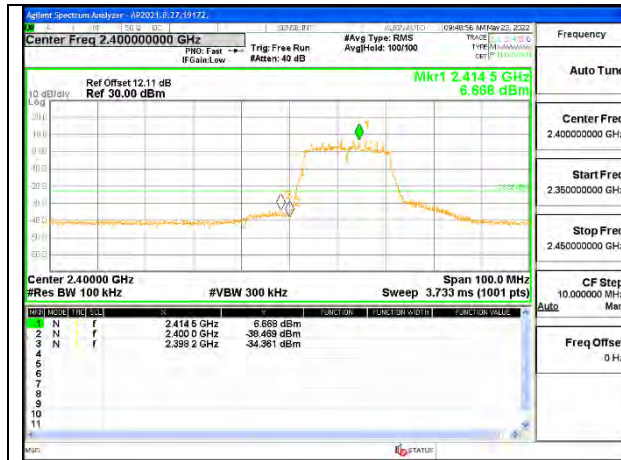
HIGH CHANNEL 13 BANDEDGE



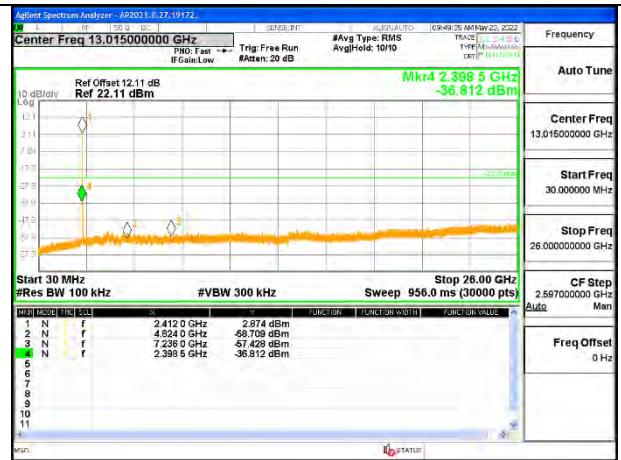
OUT-OF-BAND HIGH CHANNEL 13

9.6.3. 802.11n HT20 CDD MODE 2TX

ANT 4 + ANT3



LOW CHANNEL 1 BANDEDGE ANT 4



OUT-OF-BAND LOW CHANNEL 1 ANT 4



LOW CHANNEL 2 BANDEDGE ANT 4



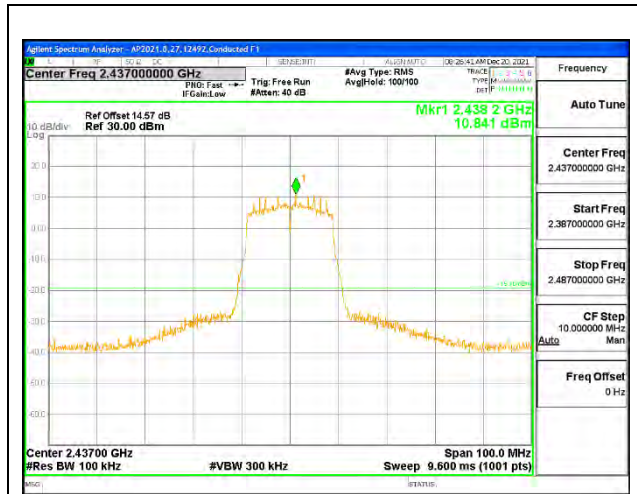
OUT-OF-BAND LOW CHANNEL 2 ANT 4



LOW CHANNEL 3 BANDEDGE ANT 4



OUT-OF-BAND LOW CHANNEL 3 ANT 4



IN-BAND REFERENCE LEVEL ANT 4



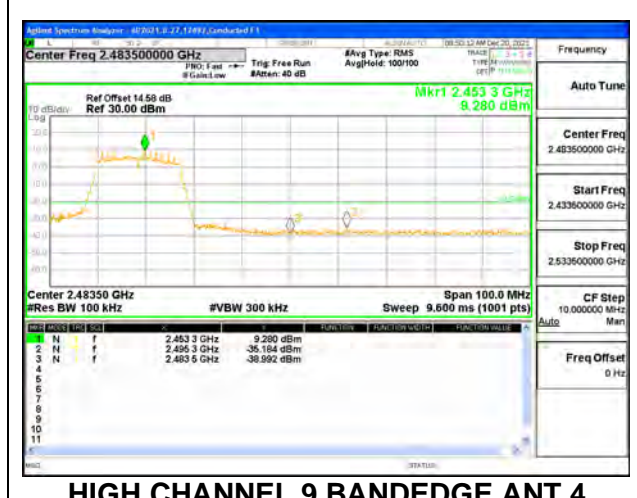
OUT-OF-BAND MID CHANNEL ANT 4



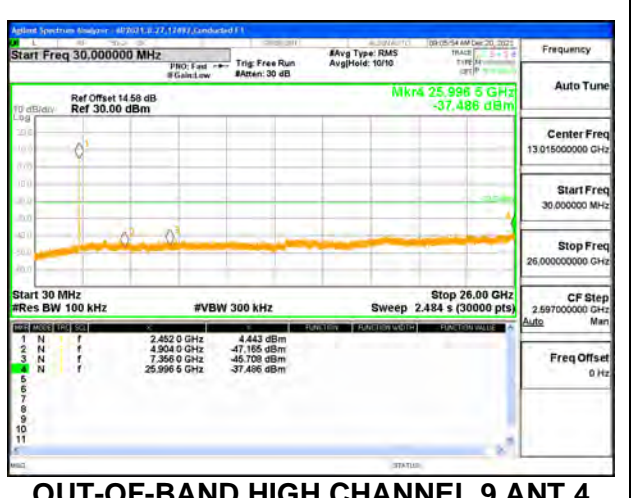
HIGH CHANNEL 8 BANDEDGE ANT 4



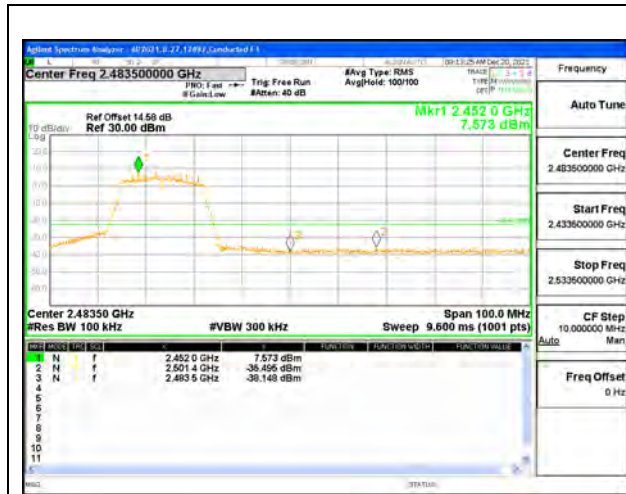
OUT-OF-BAND HIGH CHANNEL 8 ANT 4



HIGH CHANNEL 9 BANDEDGE ANT 4



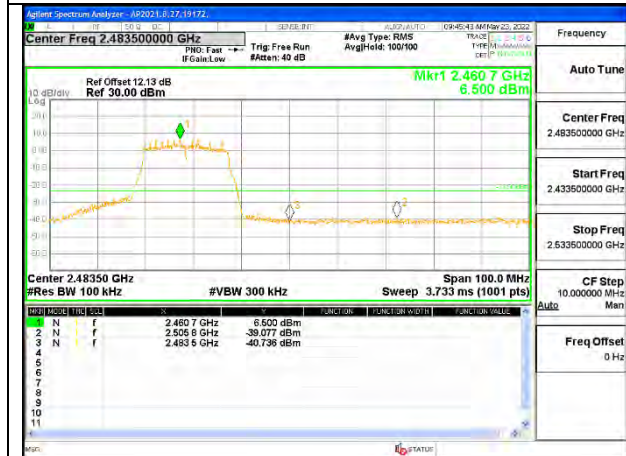
OUT-OF-BAND HIGH CHANNEL 9 ANT 4



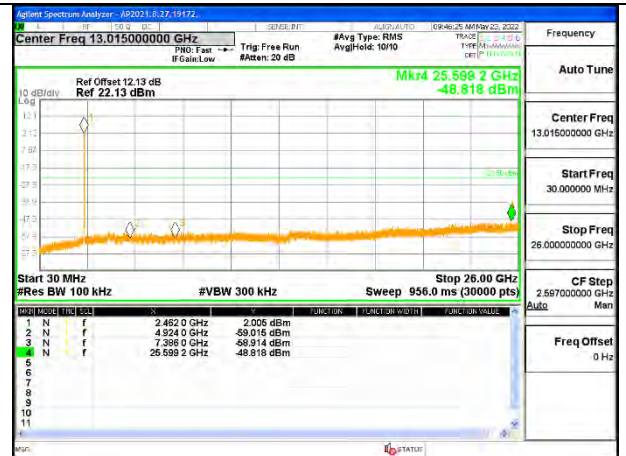
HIGH CHANNEL 10 BANDEDGE ANT 4



OUT-OF-BAND HIGH CHANNEL 10 ANT 4



HIGH CHANNEL 11 BANDEDGE ANT 4



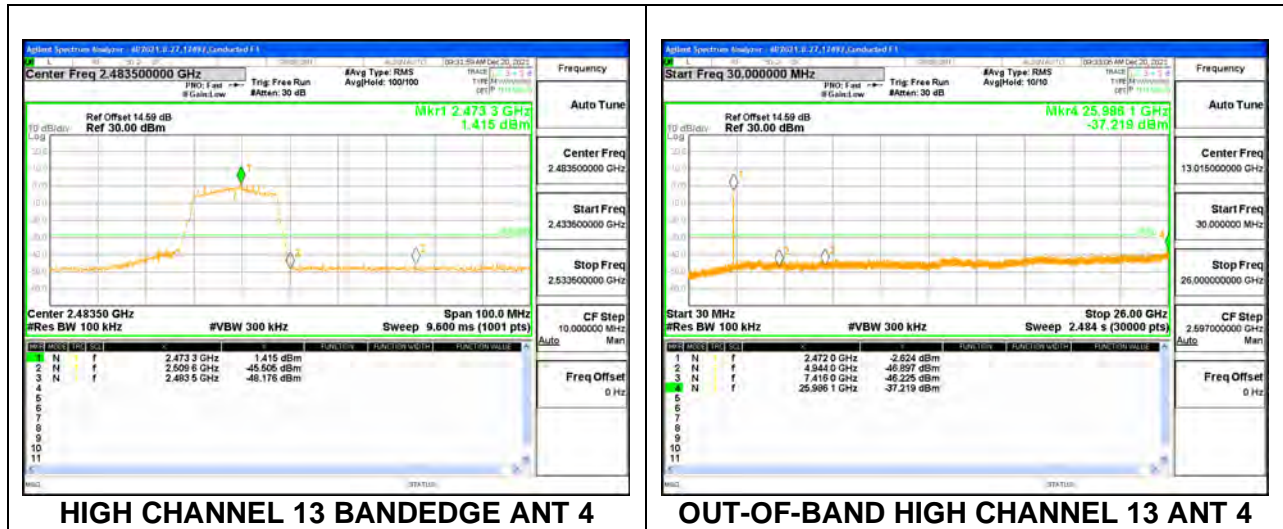
OUT-OF-BAND HIGH CHANNEL 11 ANT 4

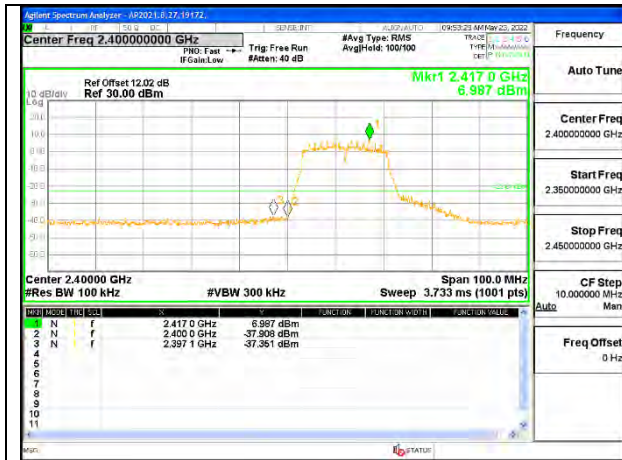


HIGH CHANNEL 12 BANDEDGE ANT 4

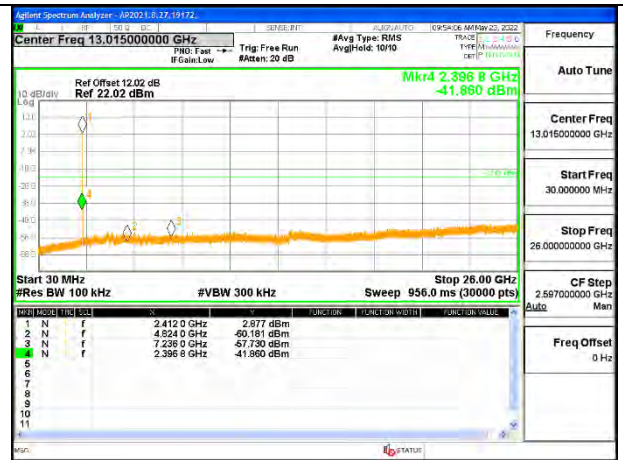


OUT-OF-BAND HIGH CHANNEL 12 ANT 4

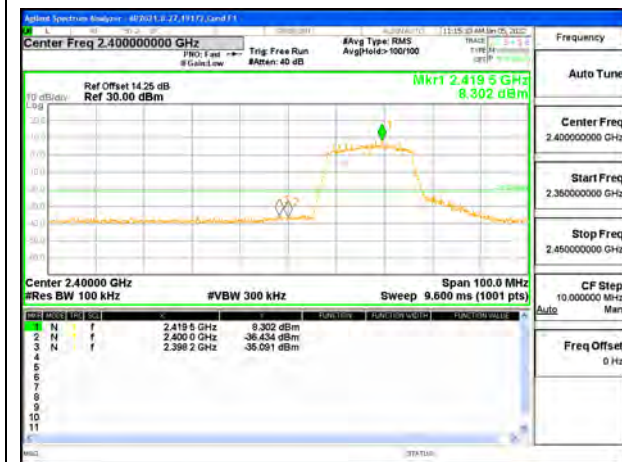




LOW CHANNEL 1 BANDEDGE ANT3



OUT-OF-BAND LOW CHANNEL 1 ANT3



LOW CHANNEL 2 BANDEDGE ANT3



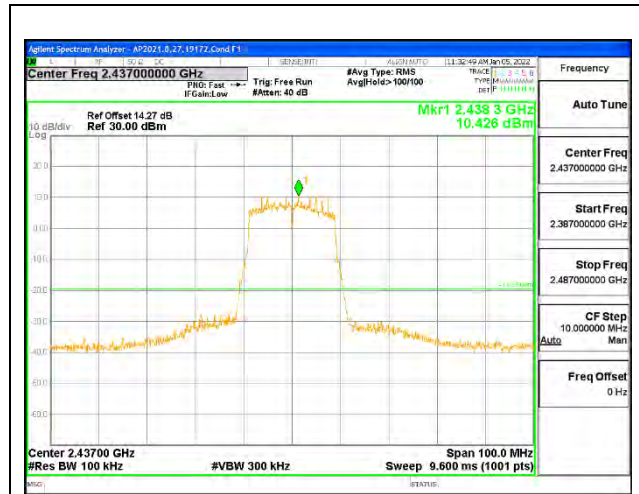
OUT-OF-BAND LOW CHANNEL 2 ANT3



LOW CHANNEL 3 BANDEDGE ANT3



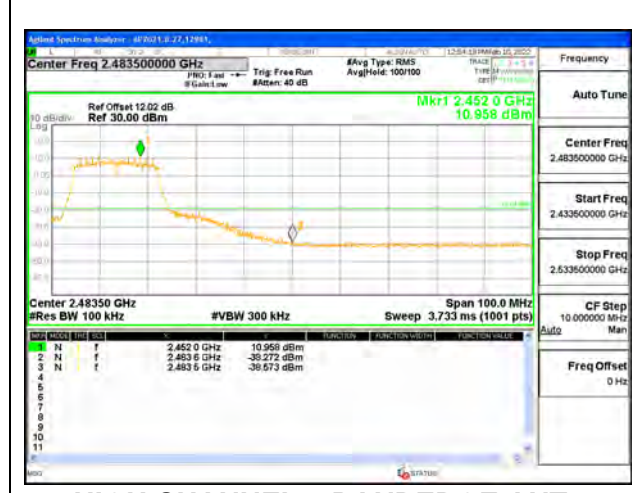
OUT-OF-BAND LOW CHANNEL 3 ANT3



IN-BAND REFERENCE LEVEL ANT3



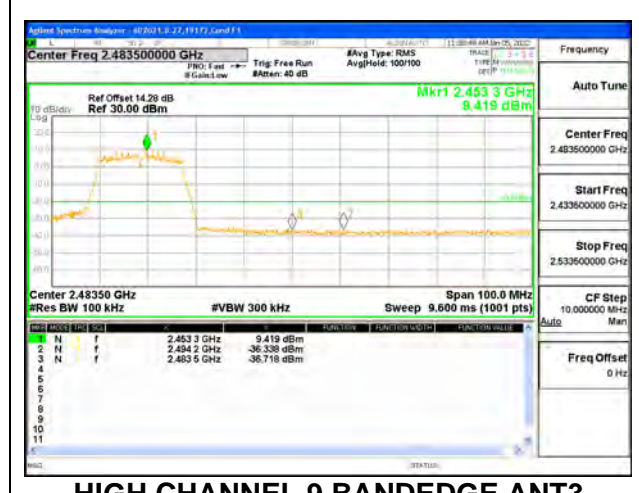
OUT-OF-BAND MID CHANNEL ANT3



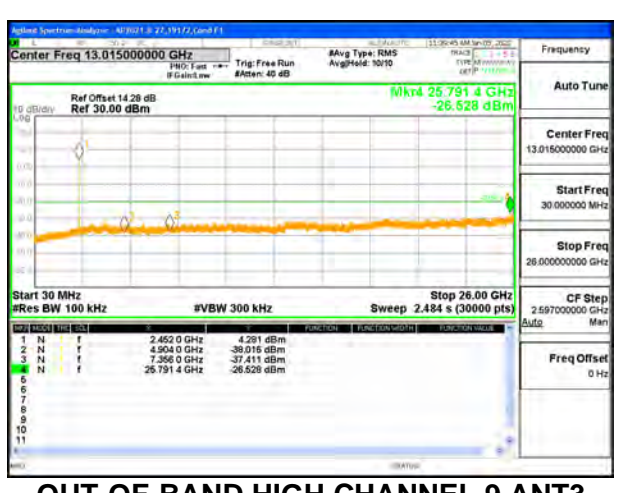
HIGH CHANNEL 8 BANDEDGE ANT3



OUT-OF-BAND HIGH CHANNEL 8 ANT3



HIGH CHANNEL 9 BANDEDGE ANT3



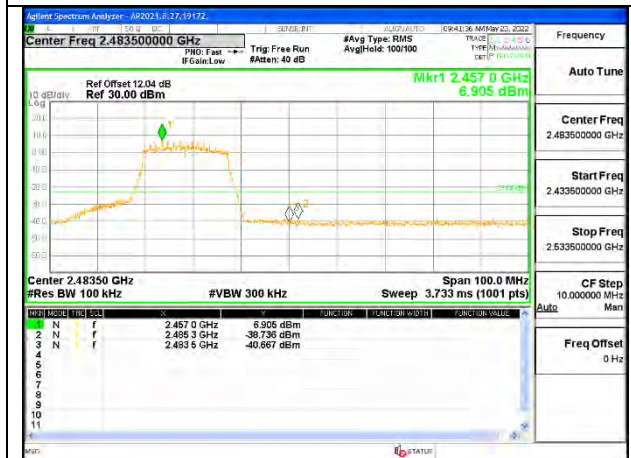
OUT-OF-BAND HIGH CHANNEL 9 ANT3



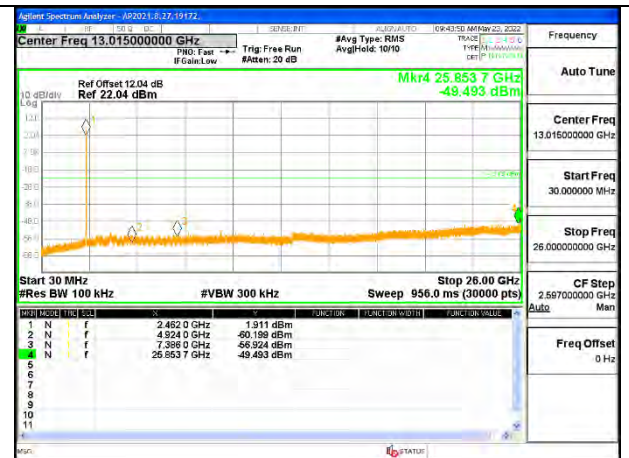
HIGH CHANNEL 10 BANDEDGE ANT3



OUT-OF-BAND HIGH CHANNEL 10 ANT3



HIGH CHANNEL 11 BANDEDGE ANT3



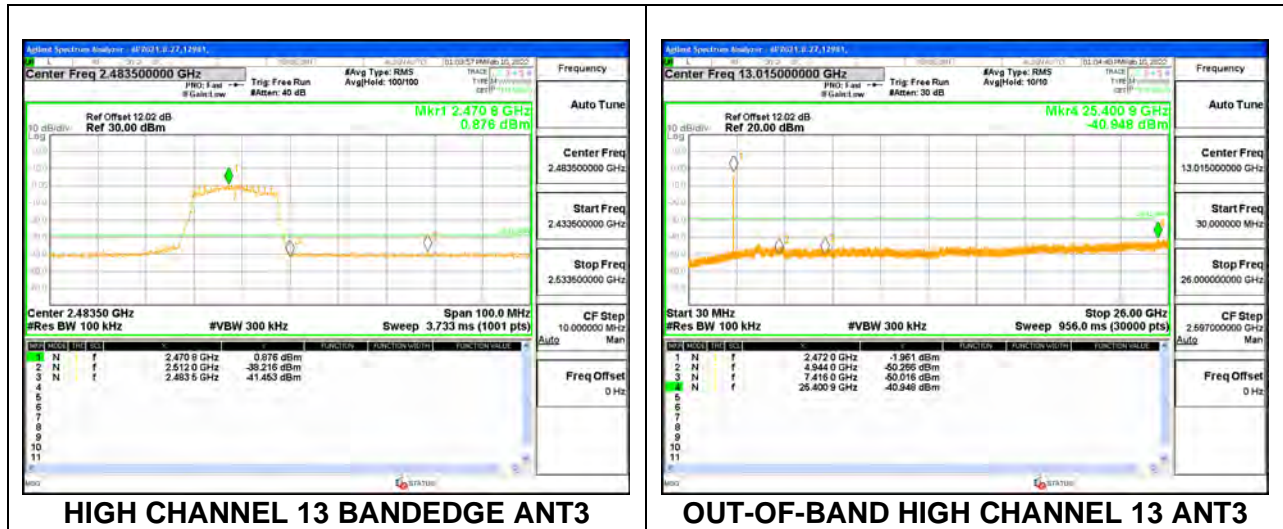
OUT-OF-BAND HIGH CHANNEL 11 ANT3



HIGH CHANNEL 12 BANDEDGE ANT3



OUT-OF-BAND HIGH CHANNEL 12 ANT3



9.6.4. 802.11ax HE20 MODE 1TX

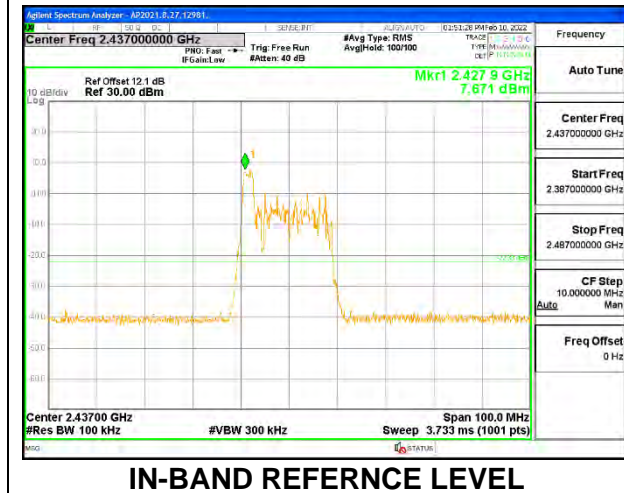
ANT 4 : 26-Tone RU Index 0



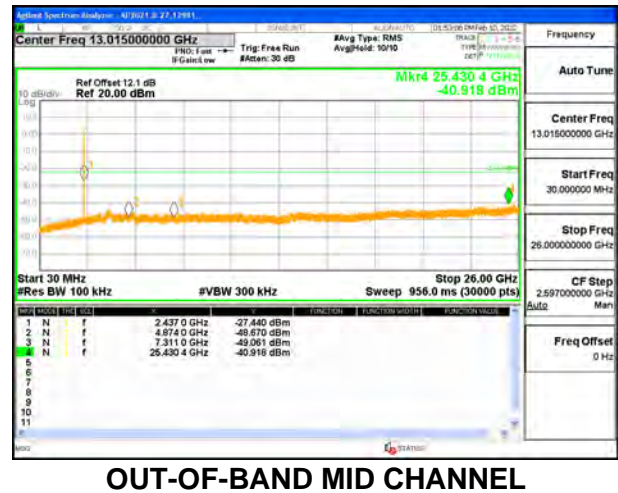
LOW CHANNEL 1 BANDEDGE



OUT-OF-BAND LOW CHANNEL 1



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

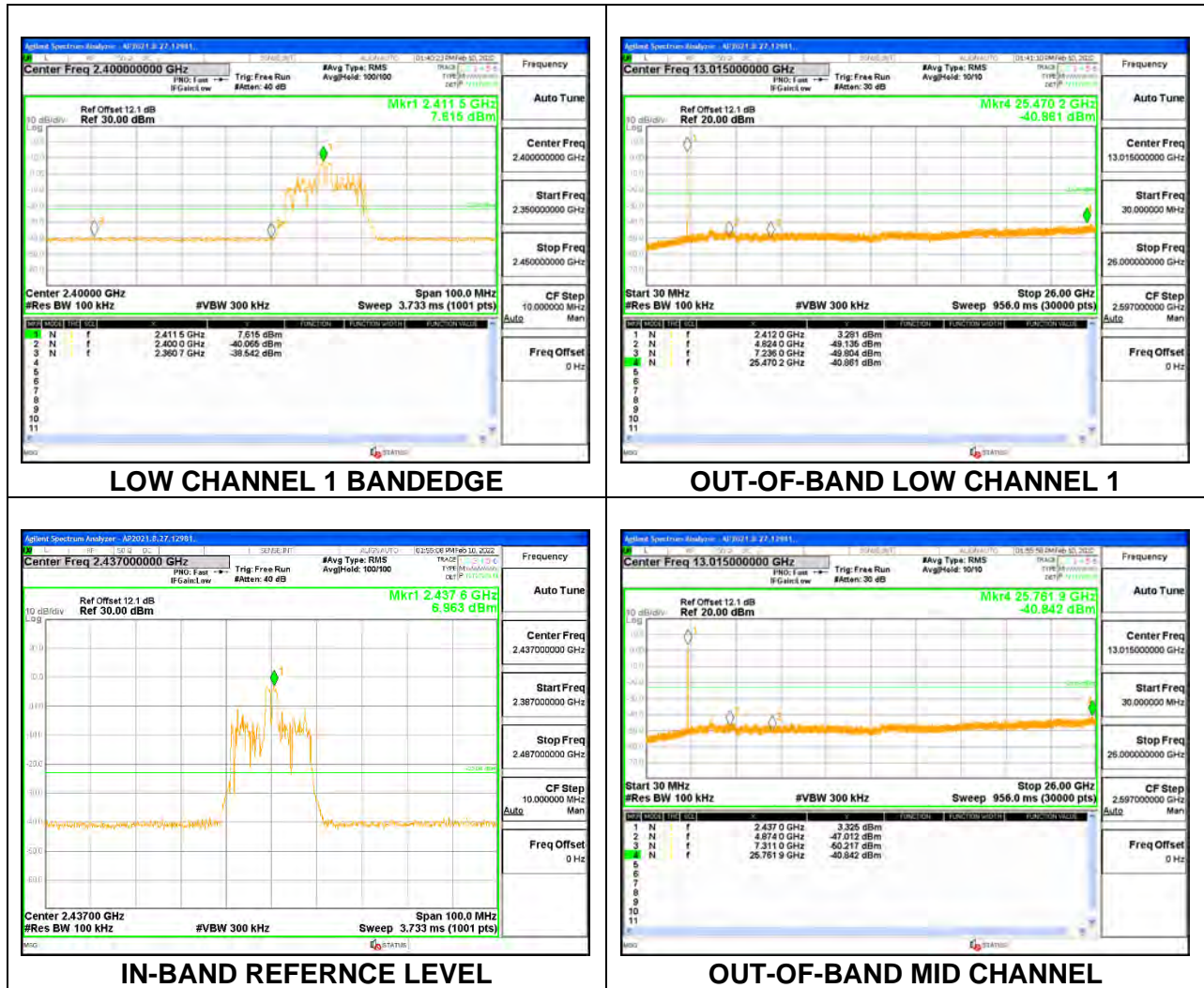


HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

ANT 4 : 26-Tone RU Index 4





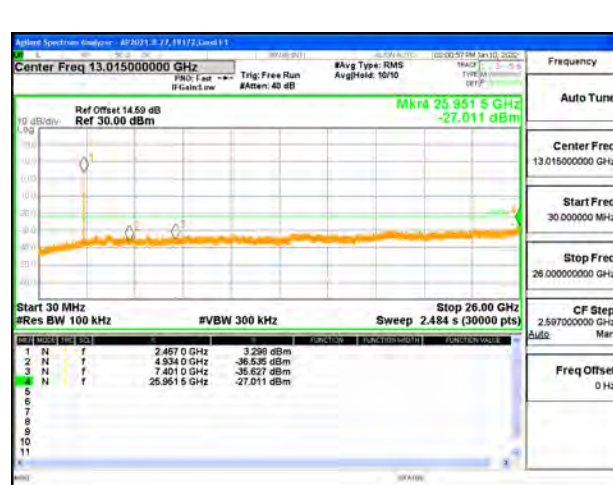
HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

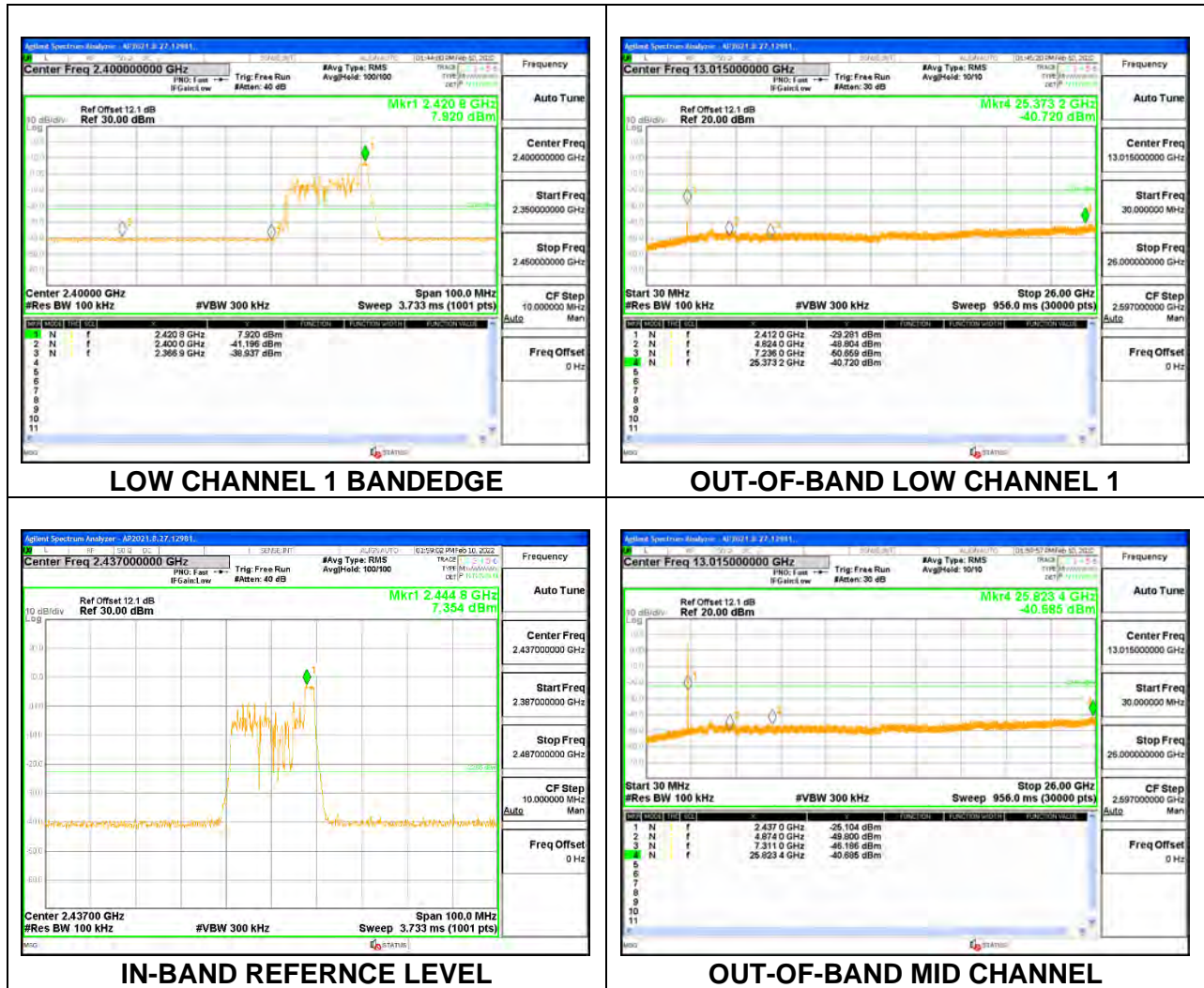


HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

ANT 4 : 26-Tone RU Index 8

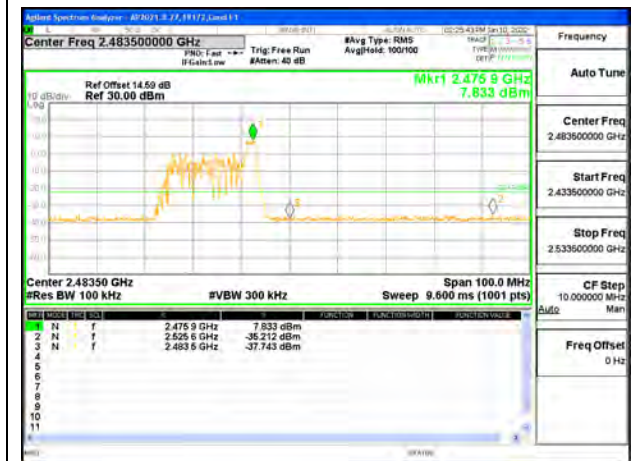




HIGH CHANNEL 11 BANDEDGE



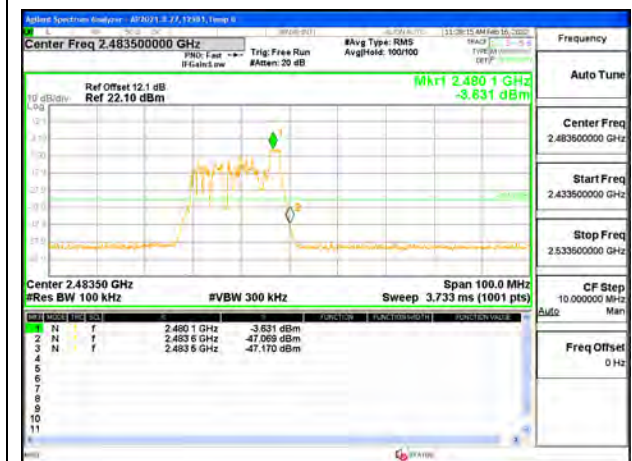
OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

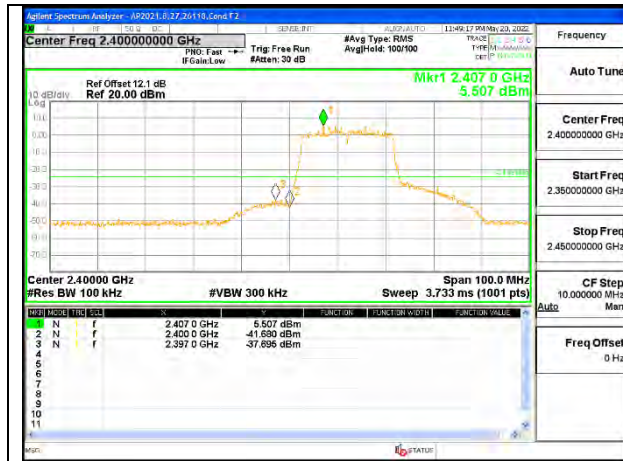


HIGH CHANNEL 13 BANDEDGE

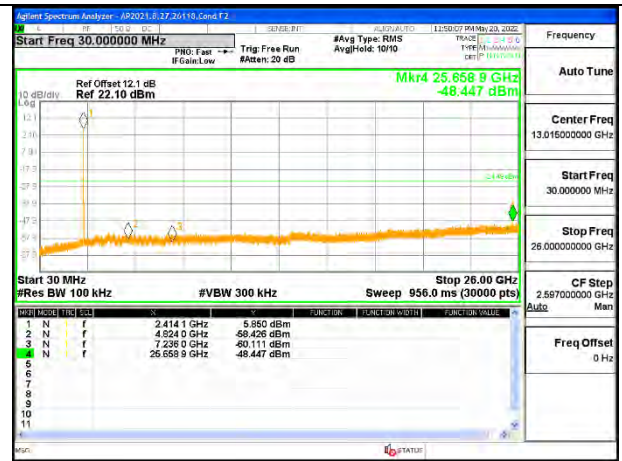


OUT-OF-BAND HIGH CHANNEL 13

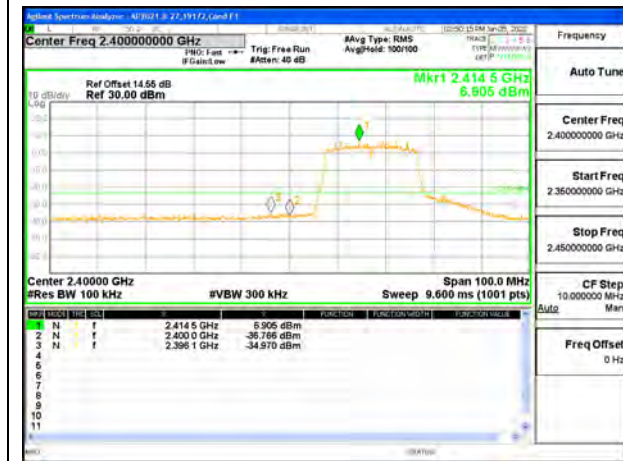
ANT 4: SU Mode



LOW CHANNEL 1 BANDEDGE



OUT-OF-BAND LOW CHANNEL 1



LOW CHANNEL 2 BANDEDGE



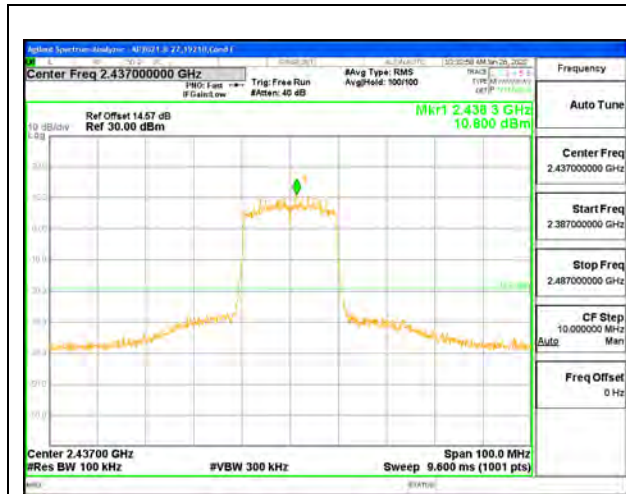
OUT-OF-BAND LOW CHANNEL 2



LOW CHANNEL 3 BANDEDGE



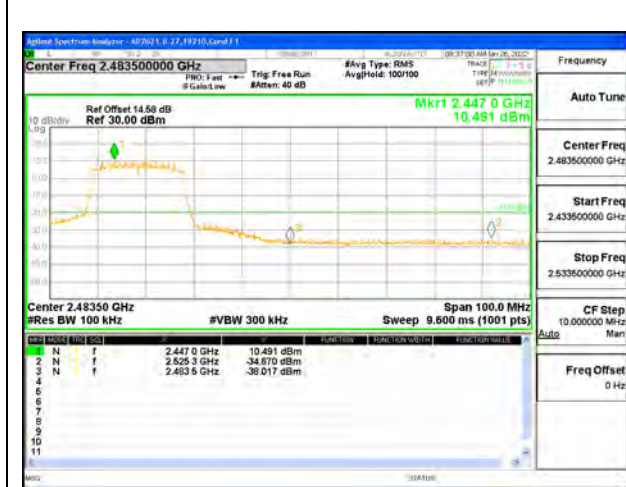
OUT-OF-BAND LOW CHANNEL 3



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 9 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 9



HIGH CHANNEL 10 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 10



HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

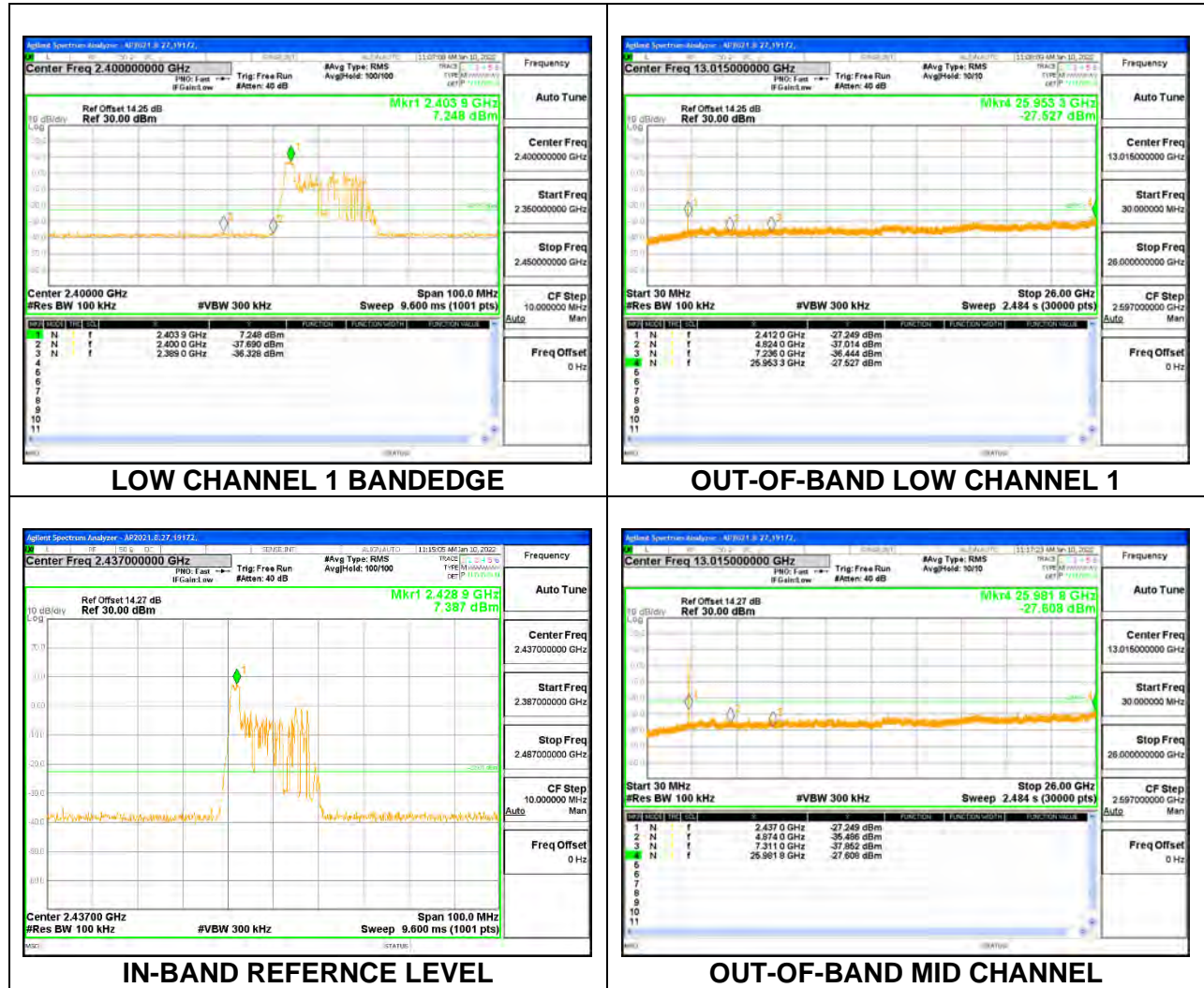


HIGH CHANNEL 13 BANDEDGE



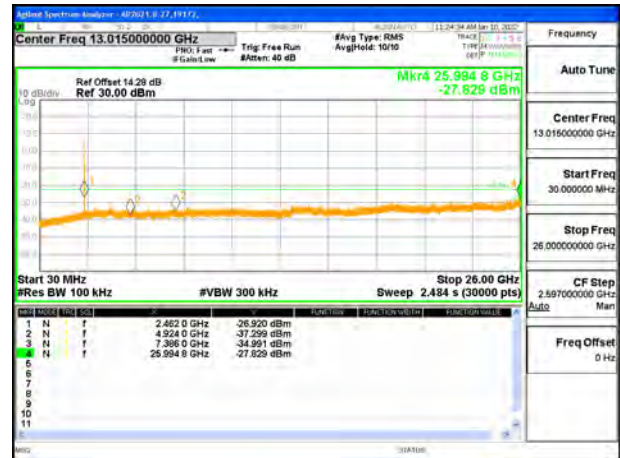
OUT-OF-BAND HIGH CHANNEL 13

ANT3 : 26-Tone RU Index 0





HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

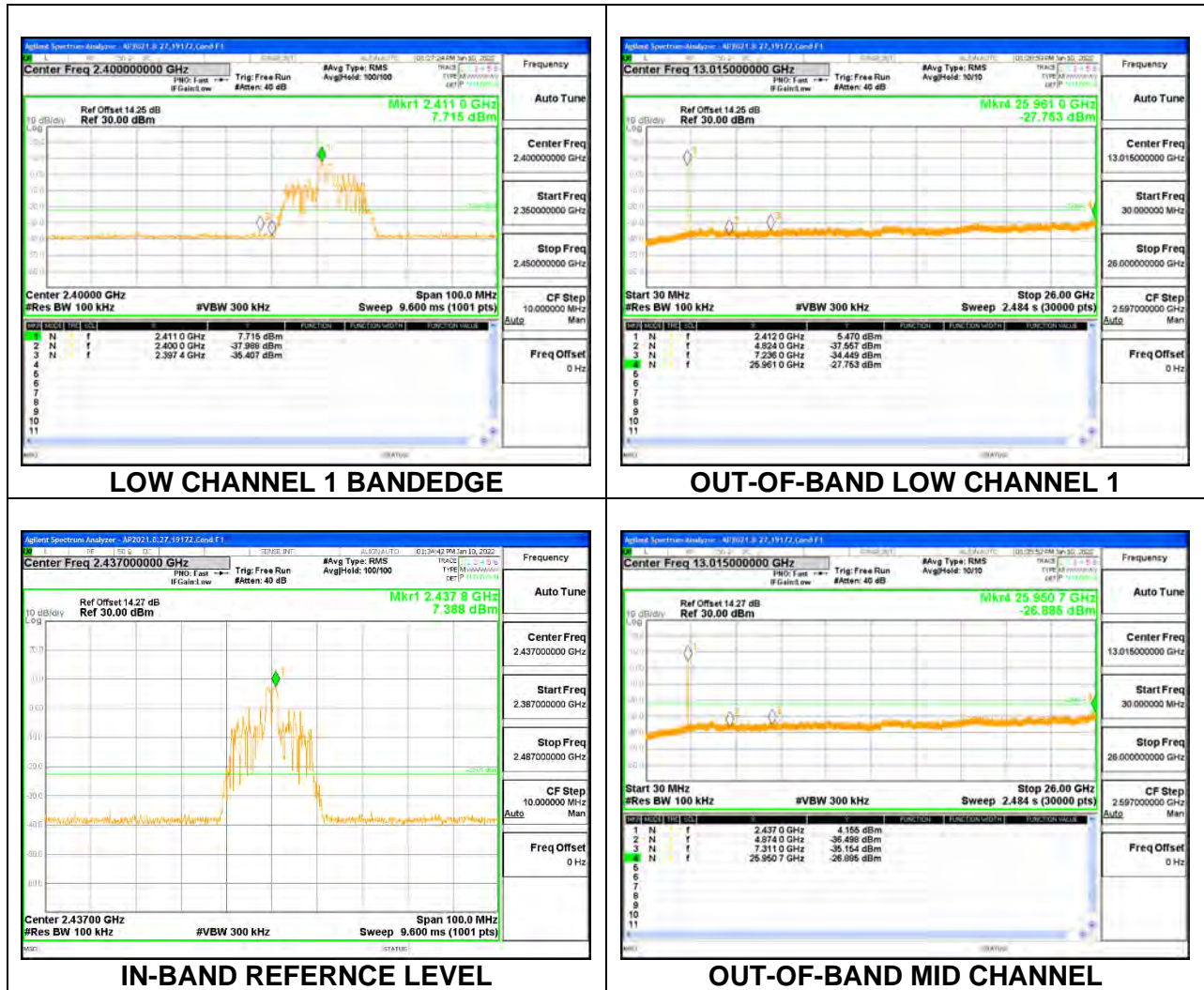


HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

ANT3 : 26-Tone RU Index 4





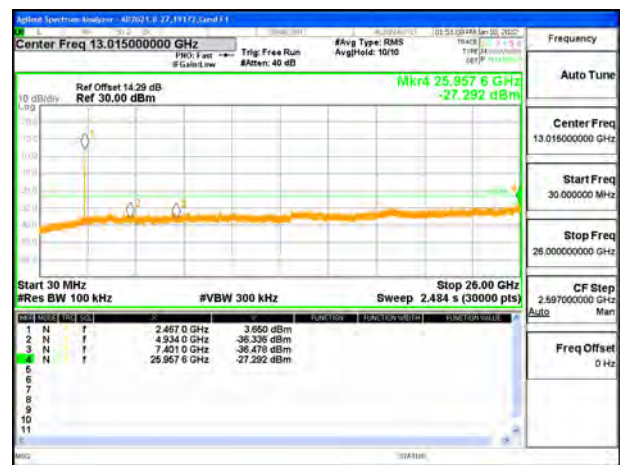
HIGH CHANNEL 11 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 12

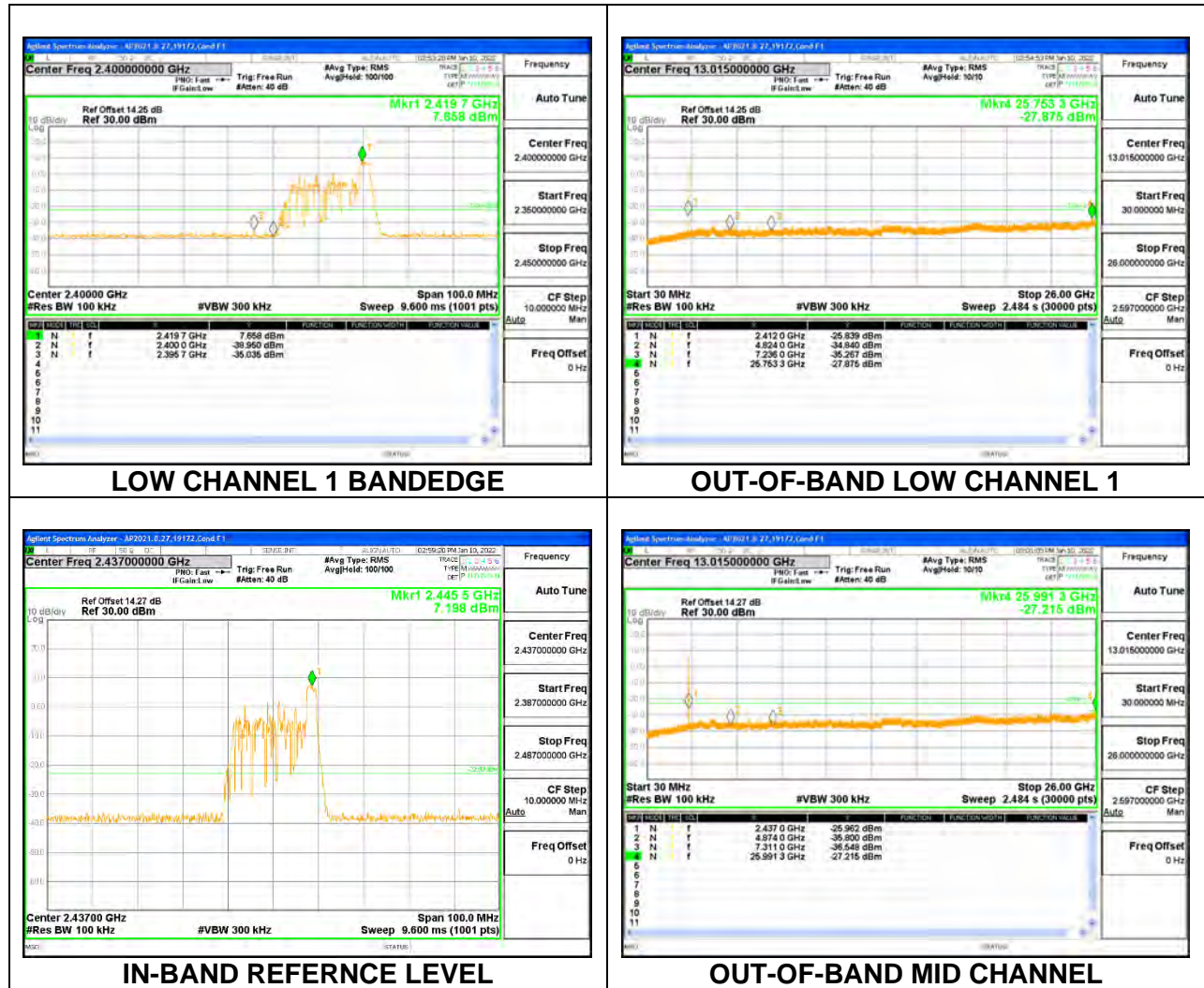


HIGH CHANNEL 13 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 13

1TX ANT3 MODE, 26-Tone RU Index 8





HIGH CHANNEL 11 BANDEGE



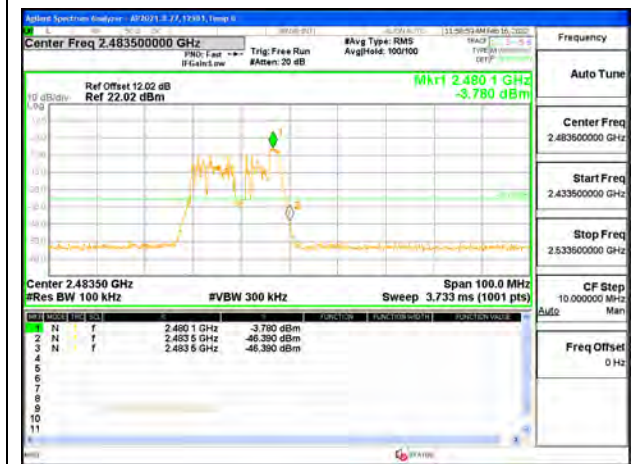
OUT-OF-BAND HIGH CHANNEL 11



HIGH CHANNEL 12 BANDEGE



OUT-OF-BAND HIGH CHANNEL 12



HIGH CHANNEL 13 BANDEGE



OUT-OF-BAND HIGH CHANNEL 13