



TEST REPORT

Report Number. : 13573771-E5V2

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

Model : A2484 (Parent Model, Full Test)
A2641, A2643, A2644, A2645 (Variant Models)

Brand : APPLE

FCC ID : BCG-E4003A (Parent Model)
BCG-E4005A, BCG-E4035A, BCG-E4036A (Variant Models)

EUT Description : SMARTPHONE

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

Date Of Issue:
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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	7/27/2021	Initial Issue	Chin Pang
V2	8/5/2021	Address TCB questions	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: A2484 (PARENT MODEL)
A2641, A2643, A2644, A2645 (VARIANT MODELS)

BRAND: APPLE

FCC IC: BCG-E4003A (PARENT MODEL)
BCG-E4005A, BCG-E4035A, BCG-E4036A (VARIANT MODELS)

SERIAL NUMBER: C070407005S0G3H1, Q7X92R9C06

SAMPLE RECEIPT DATE: 11/5/2020, 6/28/2021

DATE TESTED: November 12, 2020 – AUGUST 06, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	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.

Approved & Released For
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Prepared By:



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2. TEST RESULT 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	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 12.2.
See Comment	26dB BW/99% OBW	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2 and 6.9.3
15.407 (e)	6 dB BW	Complies	None.
15.407 (a) (1-4), (h) (1)	Output Power	Complies	None.
15.407 (a) (1-3, 5)	PSD	Complies	None.
15.209, 15.205, 15.407 (b)	Radiated Emissions	Complies	None.
15.207	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 662911 D01 v02r01
- FCC KDB 789033 D02 v02r01
- ANSI C63.10-2013
- KDB 414788 D01 Radiated Test Site v01r01

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.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input checked="" type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	208313
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	208313
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	208313

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)

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + 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, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS and NFC. 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 ID covered by this report includes:

Parent Model: A2484; FCC ID: BCG-E4003A

Variant Models: A2641; FCC ID: BCG-E4005A
 A2643; FCC ID: BCG-E4035A
 A2644; FCC ID: BCG-E4036A
 A2645; FCC ID: BCG-E4036A

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.2 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2 GHz band, 1TX			
5180-5240	802.11a	Covered by 802.11n HT20 1TX	
5180-5240	802.11n HT20	19.64	92.04
5190-5230	802.11n HT40	20.41	109.90
5180-5240	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5190-5230	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5210	802.11ac VHT80	16.44	44.06
5180-5240	802.11ax HE20	19.90	97.72
5190-5230	802.11ax HE40	20.46	111.17
5210	802.11ax HE80	16.29	42.56
5.2 GHz band, 2TX			
5180-5240	802.11n HT20 CDD	19.72	93.76
5180-5240	802.11n HT20 SDM/STBC	Covered by 802.11n HT20 2TX CDD	
5190-5230	802.11n HT40 CDD	22.35	171.79
5190-5230	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5180-5240	802.11ac VHT20 SDM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5190-5230	802.11ac VHT40 SDM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5210	802.11ac VHT80 CDD	18.29	67.45
5210	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5180-5240	802.11ax HE20 OFDMA	19.90	97.72
5190-5230	802.11ax HE40 OFDMA	22.30	169.82
5210	802.11ax HE80 OFDMA	18.36	68.55

5.3 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 1TX			
5260 - 5320	802.11a	Covered by 802.11n HT20 1TX	
5260 - 5320	802.11n HT20	19.66	92.47
5270 - 5310	802.11n HT40	20.43	110.41
5260 - 5320	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5270 - 5310	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5290	802.11ac VHT80	16.84	48.31
5260 - 5320	802.11ax HE20	19.91	97.95
5270 - 5310	802.11ax HE40	20.37	108.89
5290	802.11ax HE80	16.84	48.31
5.3 GHz band, 2TX			
5260 - 5320	802.11n HT20 CDD	19.60	91.20
5260 - 5320	802.11n HT20 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5270 - 5310	802.11n HT40 CDD	22.41	174.18
5270 - 5310	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5260 - 5320	802.11ac VHT20 SDM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5270 - 5310	802.11ac VHT40 SDM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5290	802.11ac VHT80 CDD	19.34	85.90
5290	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5260 - 5320	802.11n HT20 CDD MCS0	Covered by 802.11n HT20 2TX CDD	
5260 - 5320	802.11n HT20 STBC MCS0	Covered by 802.11n HT20 2TX CDD	
5270 - 5310	802.11n HT40 CDD MCS0	Covered by 802.11n HT40 2TX CDD	
5270 - 5310	802.11n HT40 STBC MCS0	Covered by 802.11n HT40 2TX CDD	
5260 - 5320	802.11ax HE20 OFDMA	19.89	97.50
5270 - 5310	802.11ax HE40 OFDMA	22.40	173.78
5290	802.11ax HE80 OFDMA	18.94	78.25

5.6 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.6 GHz band, 1TX			
5500-5720	802.11a	Covered by 802.11n HT20 1TX	
5500-5720	802.11n HT20	19.36	86.30
5510-5710	802.11n HT40	20.46	111.17
5500-5720	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5510-5710	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5530-5690	802.11ac VHT80	21.38	137.40
5500-5720	802.11ax HE20	19.90	97.72
5510-5710	802.11ax HE40	20.44	110.66
5530-5690	802.11ax HE80	21.35	136.46
5.6 GHz band, 2TX			
5500-5720	802.11n HT20 CDD	19.37	86.50
5500-5720	802.11n HT20 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5510-5710	802.11n HT40 CDD	22.44	175.39
5510-5710	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5500-5720	802.11ac VHT20 SDM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5510-5710	802.11ac VHT40 SDM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5530-5690	802.11ac VHT80 CDD	22.91	195.43
5530-5690	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5500-5720	802.11ax HE20 OFDMA	19.87	97.05
5510-5710	802.11ax HE40 OFDMA	22.44	175.39
5530-5690	802.11ax HE80 OFDMA	22.90	194.98

5.8 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.8 GHz band, 1TX			
5745-5825	802.11a	Covered by 802.11n HT20 1TX	
5745-5825	802.11n HT20	21.48	140.60
5755-5795	802.11n HT40	20.44	110.66
5745-5825	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5755-5795	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5775	802.11ac VHT80	21.30	134.90
5745-5825	802.11ax HE20	21.50	141.25
5755-5795	802.11ax HE40	20.35	108.39
5775	802.11ax HE80	21.31	135.21
5.8 GHz band, 2TX			
5745-5825	802.11n HT20 CDD	24.48	280.54
5745-5825	802.11n HT20 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5755-5795	802.11n HT40 CDD	23.39	218.27
5755-5795	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5745-5825	802.11ac VHT20 STM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5755-5795	802.11ac VHT40 STM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5775	802.11ac VHT80 CDD	23.35	216.27
5775	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5745-5825	802.11ax HE20 OFDMA	24.34	271.64
5755-5795	802.11ax HE40 OFDMA	23.39	218.27
5775	802.11ax HE80 OFDMA	22.80	190.55

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

Frequency Range	ANT 6 (Core 0)	ANT 5 (Core 1)
5180 - 5240	-3.2	-3.3
5260 – 5320	-2.8	-3.4
5500 - 5720	-3.5	-1.1
5745 - 5825	-1.2	-1.3

6.4. SOFTWARE AND FIRMWARE

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

6.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z on Ant 6 (Core 0), Ant 5 (Core 1) and 2TX. It was determined that Y (Flatbed) orientation was the worst-case orientation for Ant 6; and Y (Landscape) orientation was the worst case for both ANT 5 and 2TX.

IEEE 802.11 ax modes were used to perform on radiated harmonic spurious final test to cover all modes since it has widest bandwidth modulation, highest power density and power tuned to maximum based on among all the modes. For radiated harmonics spurious below 1GHz, 1-18GHz L/M/H channels, 18-40GHz, and power line conducted emissions were performed with the EUT set at the 2TX CDD mode among the CDD/SDM modes with power setting equal or higher than SISO modes as worst-case scenario.

For Radiated band edge test all test modes have been investigated with power setting equal or higher than FCC & IC conducted SISO modes as worst-case scenario.

Below 1GHz tests were performed with EUT connected to AC power adapter as the worst case; and for above 1GHz, the worst-case configuration reported was tested with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop. There were no emissions found below 30MHz within 20dB of the limit.

Simultaneous transmission with the Bluetooth was investigated, and no noticeable emission was found.

The output power and psd for the IEEE 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:

802.11n HT20 mode: MCS7

802.11n HT40 mode: MCS7

802.11ac VHT80 mode: MCS9

802.11ax HE20/HE40/HE80 FULL Tones RU & 26 Tones RU: MCS11

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.

6.6. DESCRIPTION OF TEST SETUP

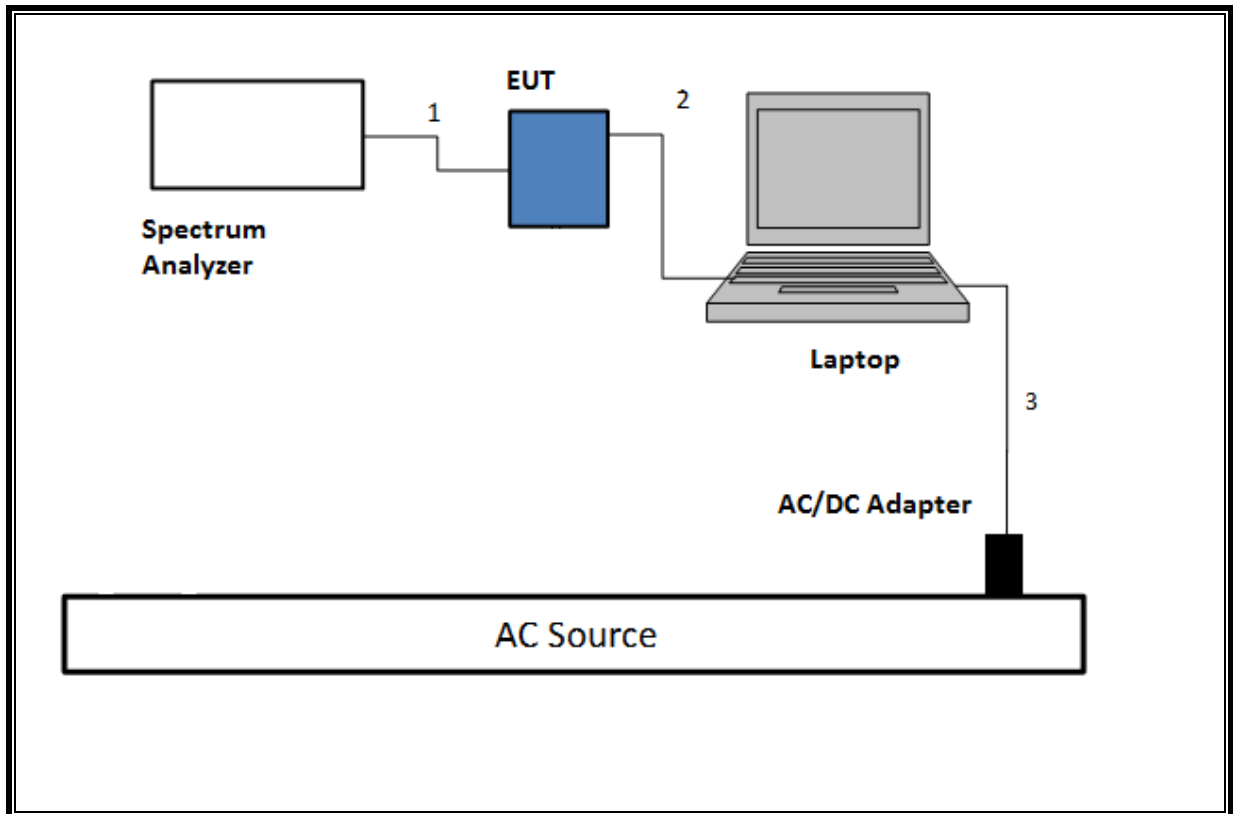
SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
Laptop	Apple	Macbook Pro	C02VD7SAHV22	BCGA1708		
Laptop AC/DC adapter	Liteon Technology	A1424	NSW25679	DoC		
EUT AC/DC adapter	Apple	A1720	C3D8417A7R93KVPA8	DoC		
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# 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 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

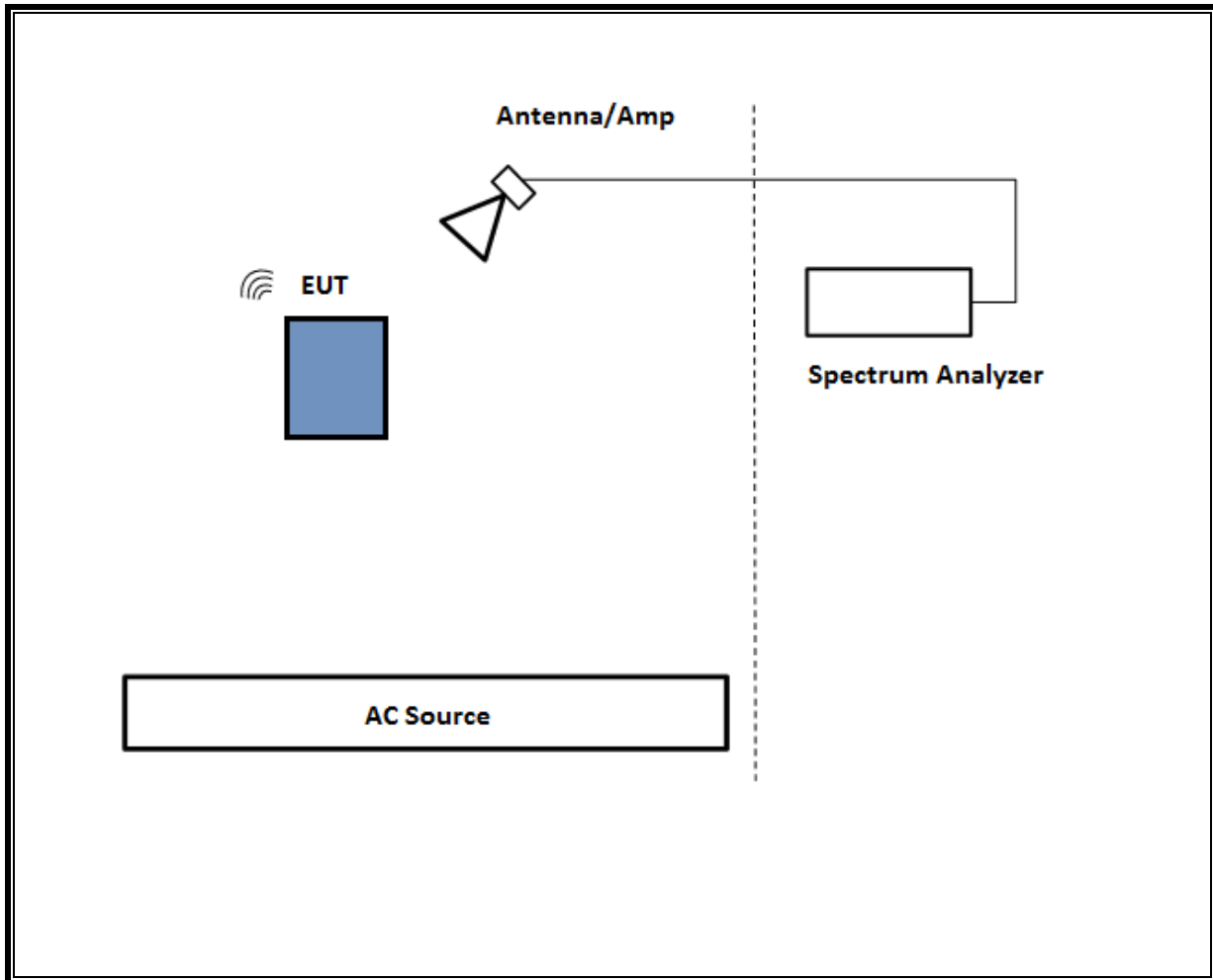
The EUT setup is shown as below. Test software exercised the radio card.

TEST SETUP - CONDUCTED TESTS

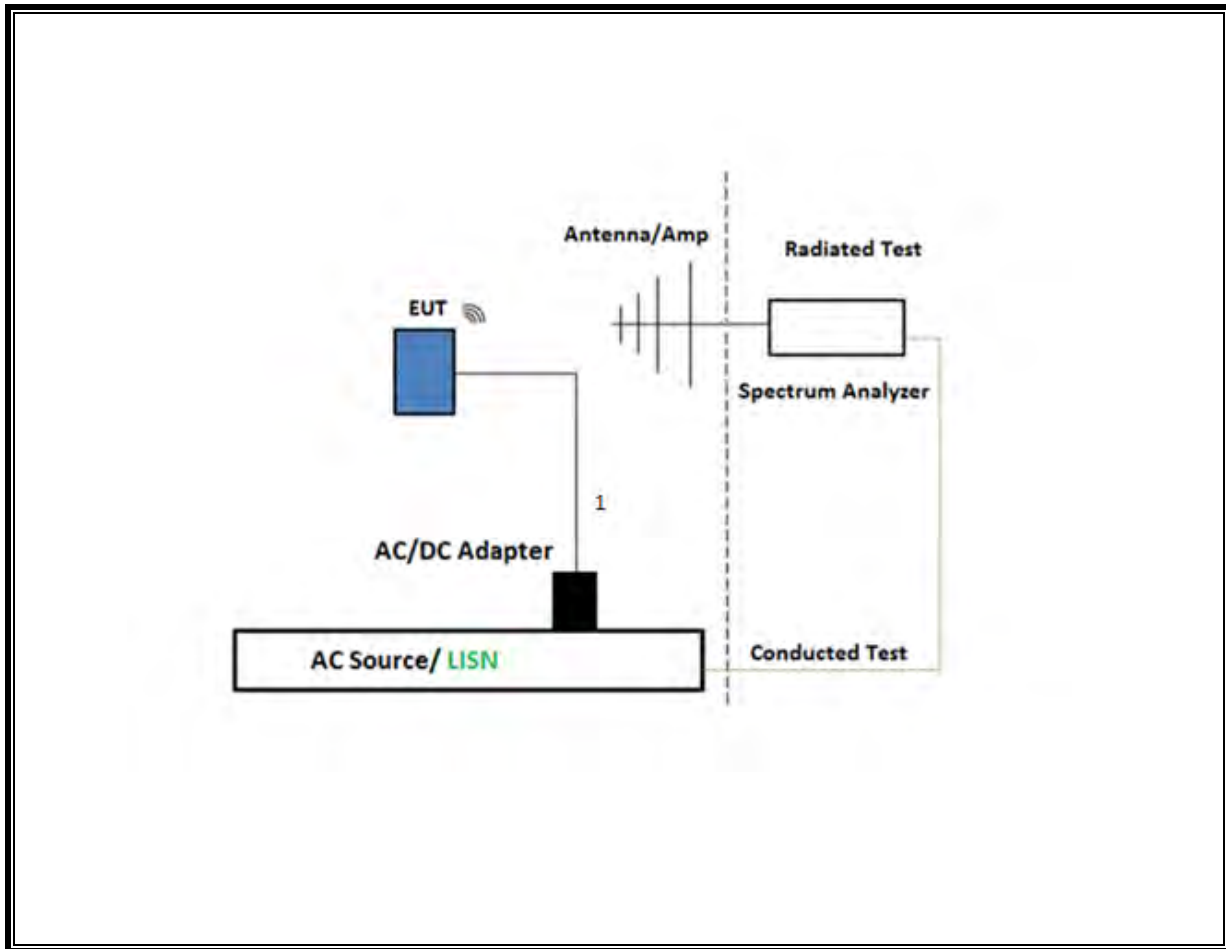
The EUT was tested connected to a host Laptop via USB cable adapter and spectrum analyzer to antenna port. Test software exercised the EUT.

SETUP DIAGRAM

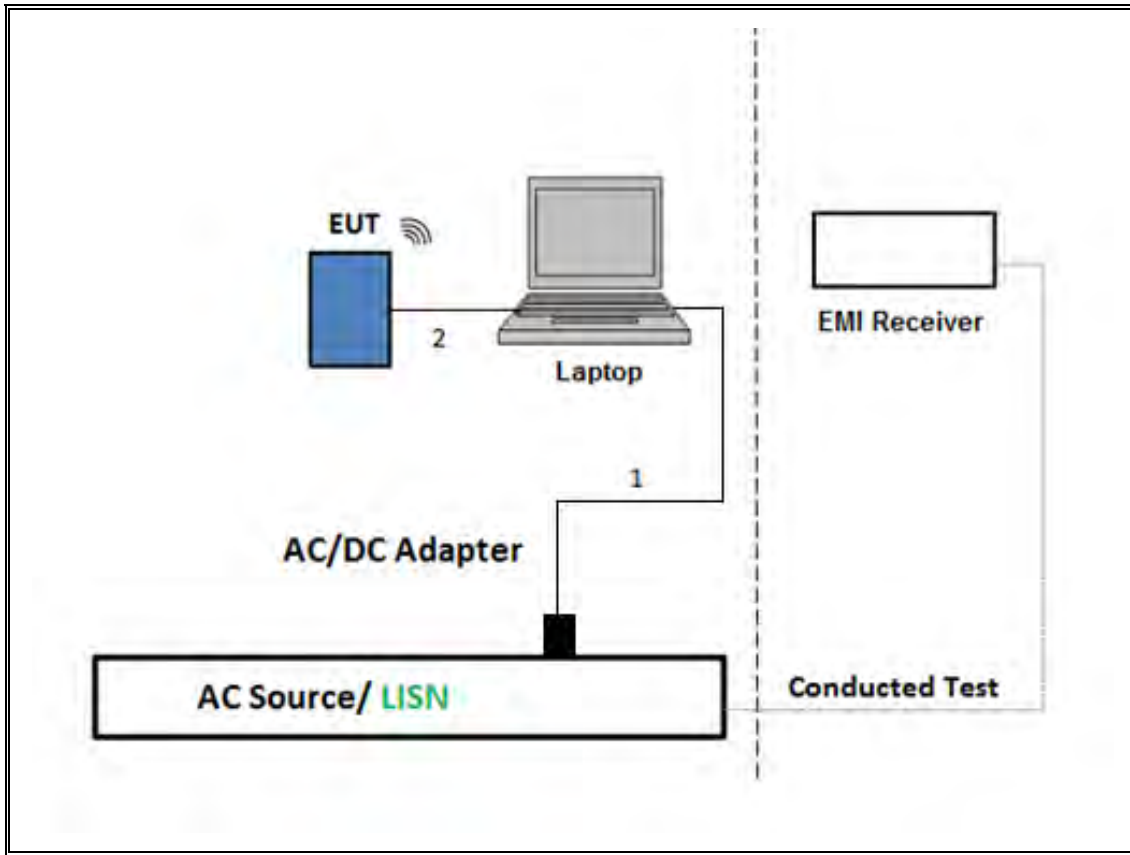
SETUP DIAGRAM FOR RADIATED TESTS Above 1GHz



SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



7. MEASUREMENT METHOD

Test Item	Test Method
On Time and Duty Cycle:	KDB 789033 D02 v02r01, Section B.
6 dB Emission BW:	KDB 789033 D02 v02r01, Section C.2
26 dB Emission BW	KDB 789033 D02 v02r01, Section C.1
99% Occupied BW	KDB 789033 D02 v02r01, Section D.
Conducted Output Power	KDB 789033 D02 v02r01, Section E.3.b (Method PM-G)
Power Spectral Density	KDB 789033 D02 v02r01, Section F
Unwanted emissions in restricted bands:	KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.
Unwanted emissions in non-restricted bands	KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.
AC Power Line Conducted Emissions	ANSI C63.10-2013, Section 6.2.
Radiated Spurious Emissions Below 30MHz	ANSI C63.10-2013 Section 6.4

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	PRE0078107	03/01/2022	03/01/2021
Amplifier, 1 to 18GHz	Amplical	AMP1G18-35	138301	03/30/2022	03/30/2021
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1466	01/25/2022	01/25/2021
Antenna, Horn 1-18GHz	ETS Lindgren	3117	PRE0100034	09/15/2021	09/15/2020
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1571	08/20/2021	08/20/2020
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179522	02/19/2022	02/19/2021
EMI Receiver	Rohde & Schwarz	ESW44	201500	02/26/2022	02/26/2021
RF Amplifier, 1-18GHz	AMPLICAL	AMP0.1G18-47-20	206055	05/13/2022	05/13/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0213833	02/16/2022	02/16/2021
*Antenna, Horn 1-18GHz	ETS Lindgren	3117	T136	07/07/2021	07/07/2020
*Amplifier, 1 to 18GHz, 35dB	Amplical	AFS42-00101800-25-S-42	T1568	04/14/2021	04/14/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T459	02/11/2022	02/11/2021
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	202992	11/22/2021	11/22/2020
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	202329	10/27/2021	10/27/2020
Antenna, Horn 26.5GHz to 40GHz	ARA	MWH-2640/B	T446	09/24/2021	09/24/2020
Antenna Horn, 18 to 26GHz	ARA	MWH-1826	T447	09/24/2021	09/24/2020
*Pre-Amp 18-26GHz	Agilent Technology	8449B	T404	04/08/2021	04/08/2020
Amplifier, 26GHz to 40GHz	Miteq	TTA2640-35-HG	T1864	04/19/2022	04/19/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0213832	09/25/2021	09/25/2020
RF Amplifier, 1-18GHz	AMPLICAL	AMP0.1G18-47-20	172124	12/09/2021	12/09/2020
EMI Receiver	Rohde & Schwarz	ESW44	201498	02/25/2022	02/25/2021
RF Amplifier, 1-18GHz	AMPLICAL	AMP0.1G18-47-20	172122	12/31/2021	12/31/2020
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0213831	12/03/2021	12/03/2020
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T757	11/12/2021	11/12/2020
Power Meter, P-series single channel	Keysight	N1912A	T1272	01/21/2022	01/21/2021
Power Sensor	Keysight	N1921A	T1225	01/28/2022	01/28/2021
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T339	12/17/2021	12/17/2020
EMI Receiver	Rohde & Schwarz	ESW44	201499	02/26/2022	02/26/2021
RF Amplifier, 1-18GHz	AMPLICAL	AMP0.1G18-47-20	207180	03/14/2022	03/14/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0213973	09/25/2021	09/25/2020

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.

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)
5GHz Band						
802.11n HT20 MCS0	1.917	1.938	0.989	98.92%	0.00	0.010
802.11n HT20 MCS7	0.227	0.250	0.911	91.11%	0.40	4.398
802.11n HT20 CDD MCS0	1.920	1.941	0.989	98.92%	0.00	0.010
802.11n HT20 CDD MCS7	0.228	0.250	0.913	91.35%	0.39	4.386
802.11n HT40 MCS0	0.944	0.964	0.979	97.93%	0.09	1.059
802.11n HT40 MCS7	0.128	0.148	0.868	86.79%	0.62	7.806
802.11n HT40 CDD MCS0	0.944	0.964	0.979	97.93%	0.09	1.059
802.11n HT40 CDD MCS7	0.128	0.148	0.866	86.61%	0.62	7.806
802.11ac VHT80 MCS0	0.460	0.480	0.958	95.83%	0.18	2.174
802.11ac VHT80 MCS9	0.072	0.092	0.783	78.26%	1.06	13.889
802.11ac VHT80 CDD MCS0	0.460	0.480	0.958	95.83%	0.18	2.174
802.11ac VHT80 CDD MCS9	0.072	0.092	0.783	78.26%	1.06	13.889
802.11ax HE20 MCS0	3.995	4.025	0.993	99.25%	0.00	0.010
802.11ax HE20 MCS11	3.990	4.025	0.991	99.13%	0.00	0.010
802.11ax HE20 OFDMA MCS0	1.560	1.582	0.986	98.61%	0.00	0.010
802.11ax HE20 OFDMA MCS11	3.990	4.025	0.991	99.13%	0.00	0.010
802.11ax HE40 MCS0	3.995	4.025	0.993	99.25%	0.00	0.010
802.11ax HE40 MCS11	3.995	4.030	0.991	99.13%	0.00	0.010
802.11ax HE40 OFDMA MCS0	3.995	4.025	0.993	99.25%	0.00	0.010
802.11ax HE40 OFDMA MCS11	3.995	4.030	0.991	99.13%	0.00	0.010
802.11ax HE80 MCS0	3.995	4.030	0.991	99.13%	0.00	0.010
802.11ax HE80 MCS11	3.990	4.025	0.991	99.13%	0.00	0.010
802.11ax HE80 OFDMA MCS0	3.995	4.030	0.991	99.13%	0.00	0.010
802.11ax HE80 OFDMA MCS11	3.990	4.025	0.991	99.13%	0.00	0.010

DUTY CYCLE PLOTS



802.11n HT20 1TX MODE MCS0



802.11n HT20 1TX MODE MCS7



802.11n HT20 CDD MODE MCS0



802.11n HT20 CDD MODE MCS7



802.11n HT40 1TX MODE MCS0



802.11n HT40 1TX MODE MCS7



802.11n HT40 CDD MODE MCS0



802.11n HT40 CDD MODE MCS7



802.11ac VHT80 1TX MODE MSC0



802.11ac VHT80 1TX MODE MSC9



802.11ac VHT80 CDD MODE MCS0



802.11ac VHT80 CDD MODE MCS9



802.11ax HE20 1Tx MCS0



802.11ax HE20 1Tx MCS11



802.11ax HE20 OFDMA MCS0



802.11ax HE20 OFDMA MCS11



802.11ax HE40 1Tx MCS0



802.11ax HE40 1Tx MCS11



802.11ax HE40 OFDMA MCS0



802.11ax HE40 OFDMA MCS11



802.11ax HE80 1Tx MCS0



802.11ax HE80 1Tx MCS11



802.11ax HE80 OFDMA MCS0



802.11ax HE80 OFDMA MCS11

9.2. 26 dB & 99% BANDWIDTHS

LIMITS

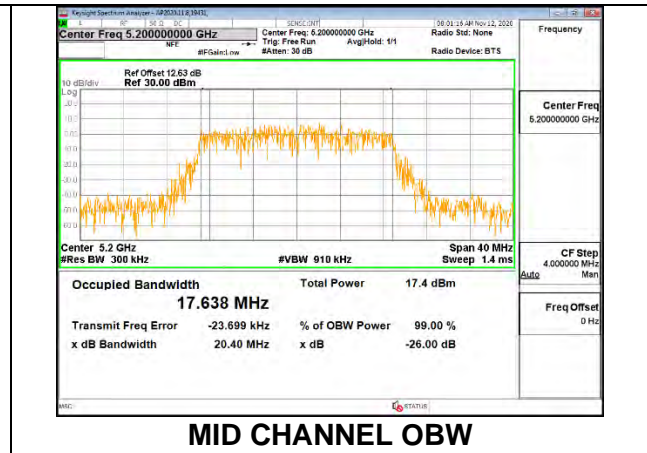
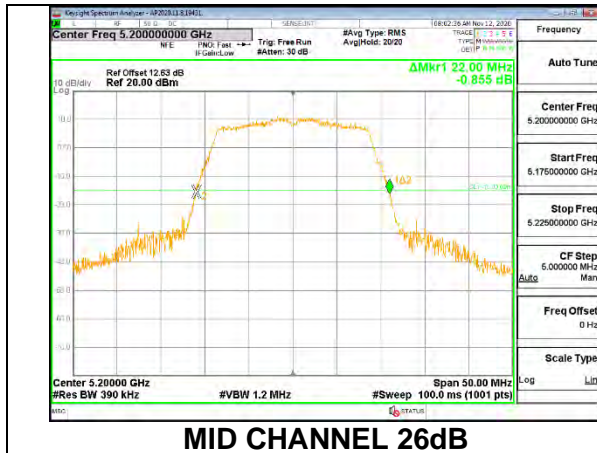
None; for reporting purposes only.

RESULTS

9.2.1. 802.11n HT20 MODE IN THE 5.2 GHz BAND

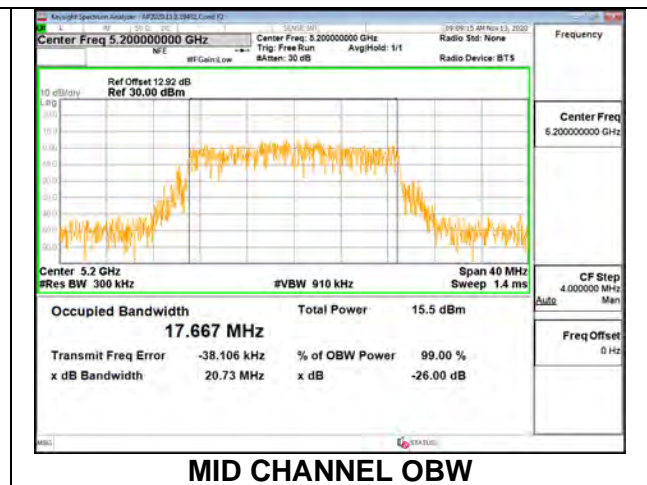
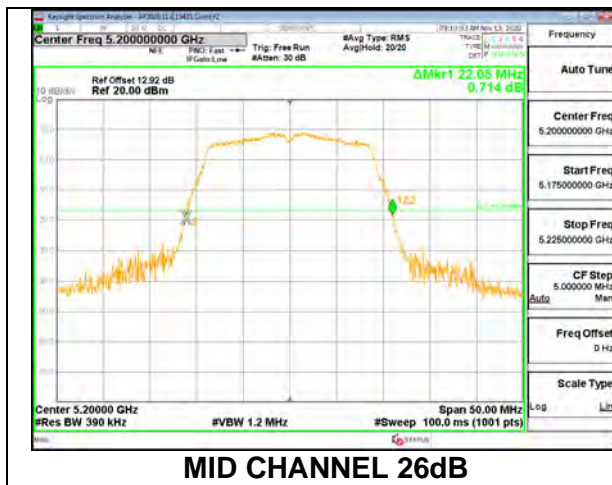
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	21.85	17.7160
Mid	5200	22.00	17.6380
High	5240	22.05	17.7750



1TX Antenna 5 MODE

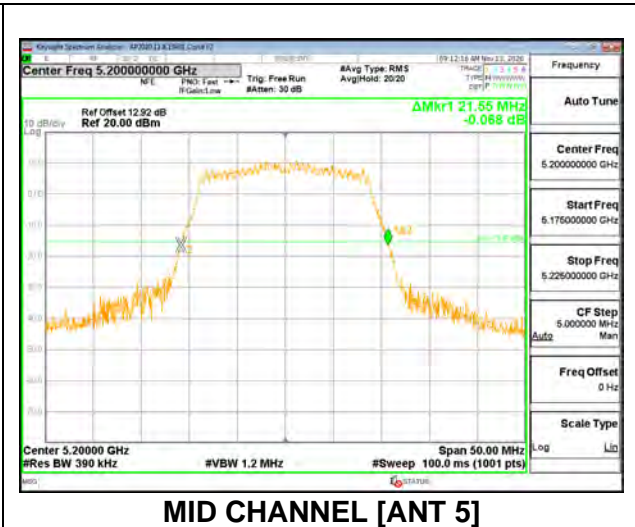
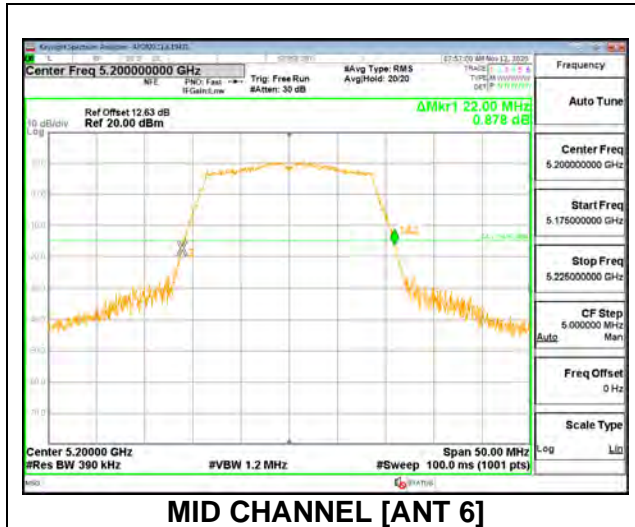
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	22.05	17.7360
Mid	5200	22.05	17.6670
High	5240	21.95	17.6500



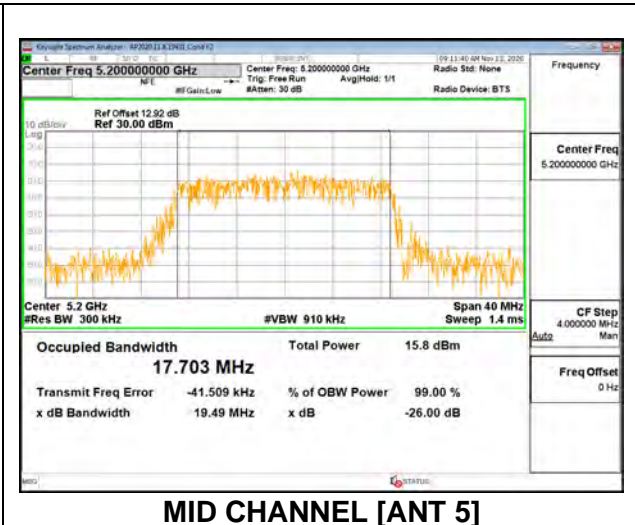
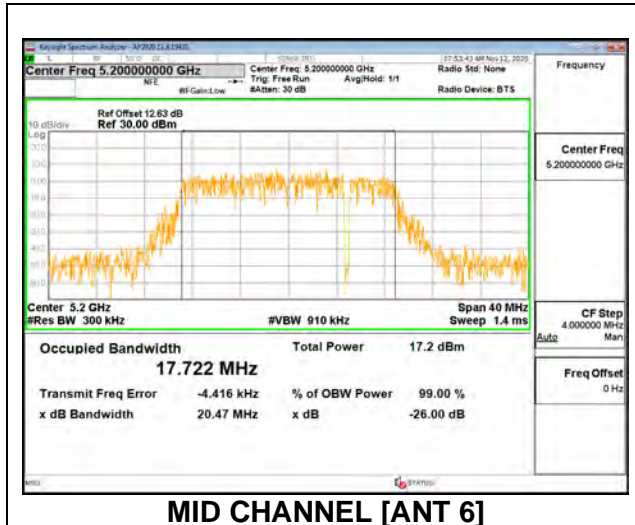
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	21.85	21.60	17.7220	17.6100
Mid	5200	22.00	21.55	17.7220	17.7030
High	5240	21.95	21.60	17.7020	17.7680

MID CHANNEL 26dB



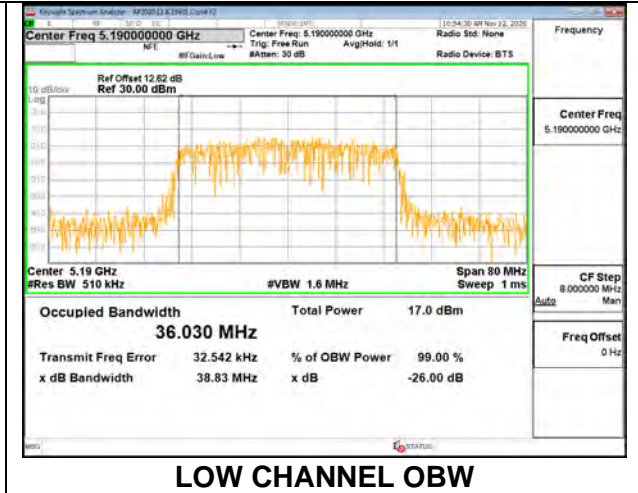
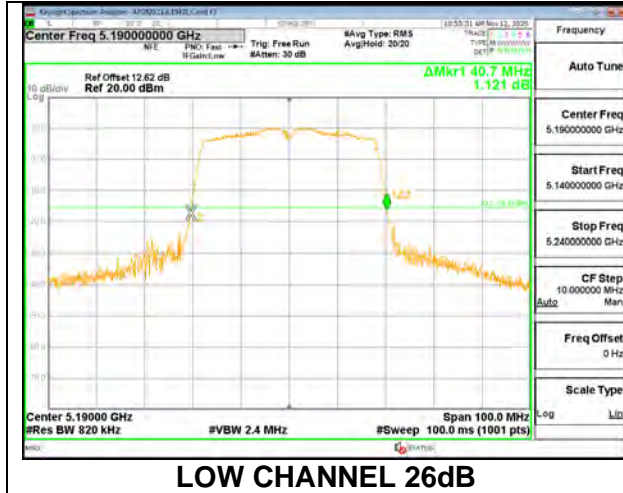
MID CHANNEL OBW



9.2.2. 802.11n HT40 MODE IN THE 5.2 GHz BAND

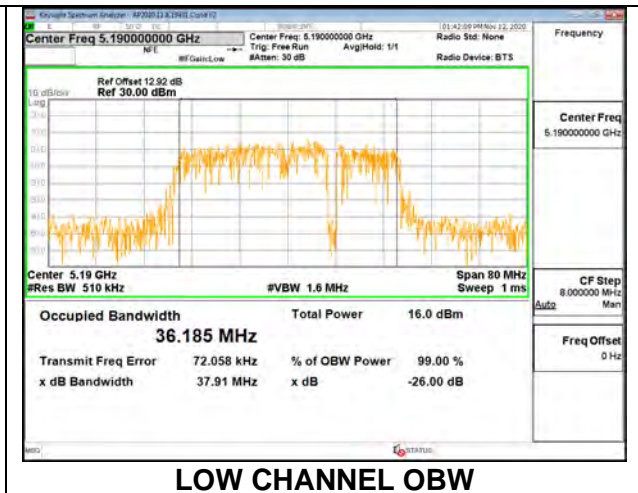
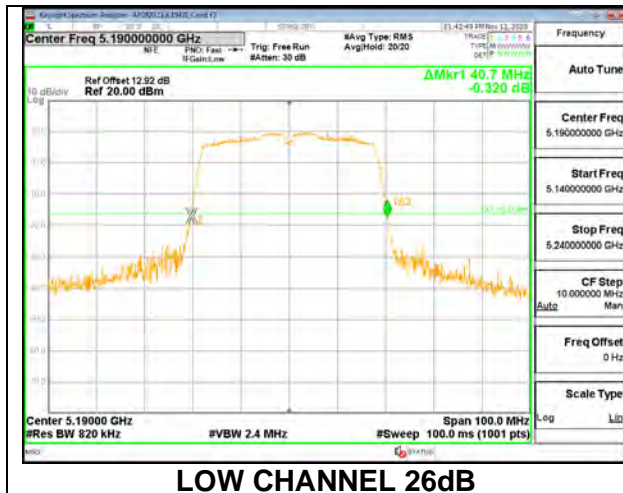
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	40.70	36.0300
High	5230	40.90	36.0170



1TX Antenna 5 MODE

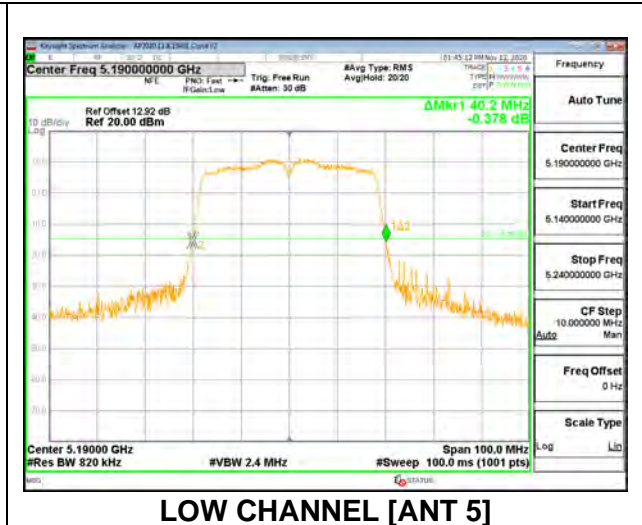
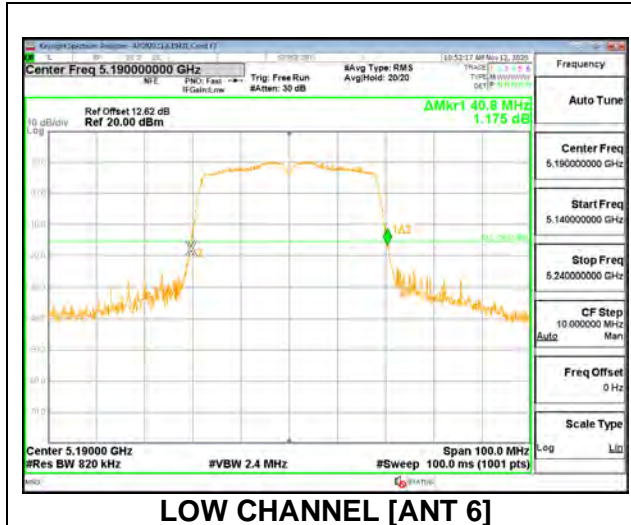
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	40.70	36.1850
High	5230	40.60	36.2310



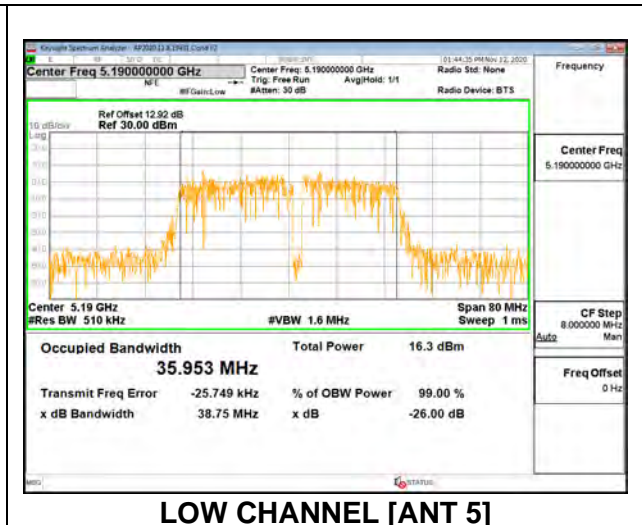
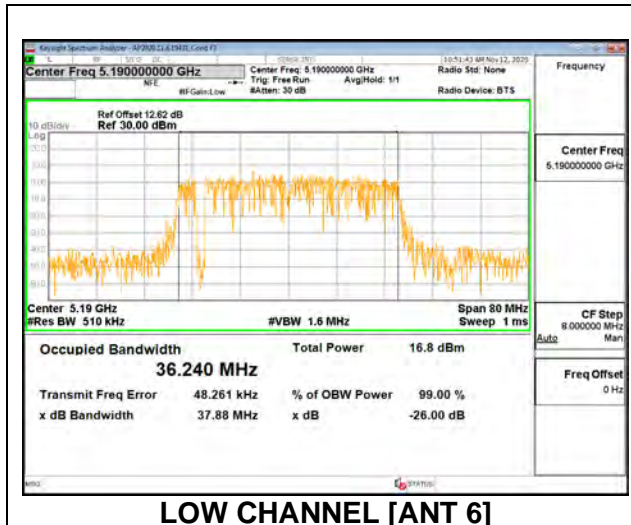
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	40.80	40.20	36.2400	35.9530
High	5230	40.40	40.30	36.1340	36.2160

LOW CHANNEL 26dB



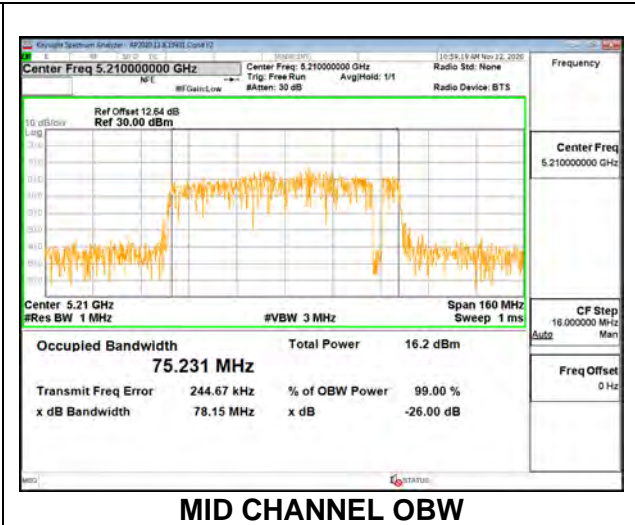
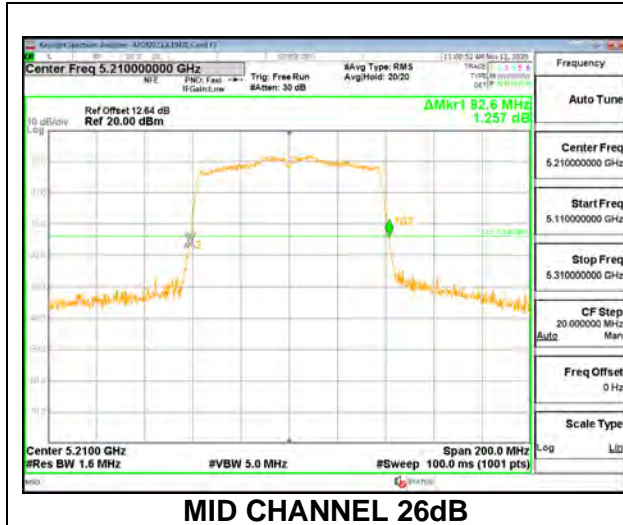
LOW CHANNEL OBW



9.2.3. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

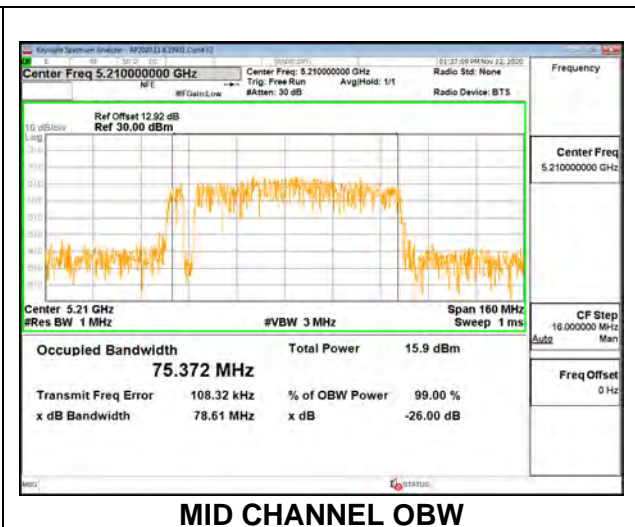
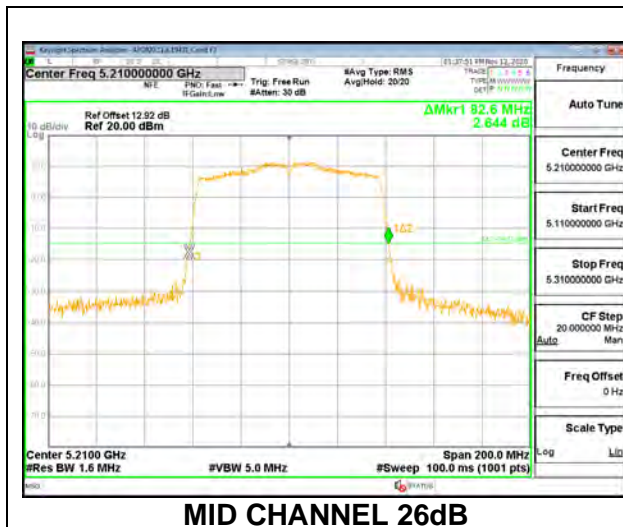
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	82.60	75.2310



1TX Antenna 5 MODE

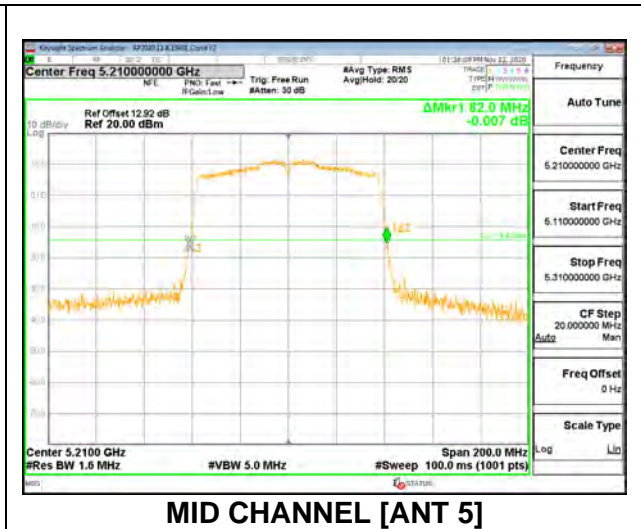
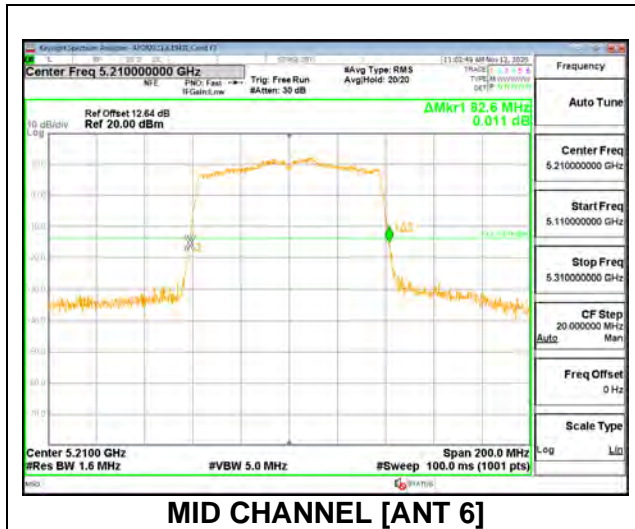
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	82.60	75.3720



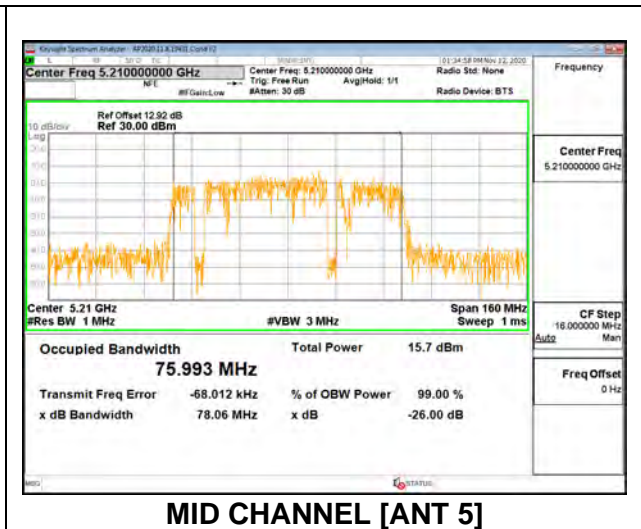
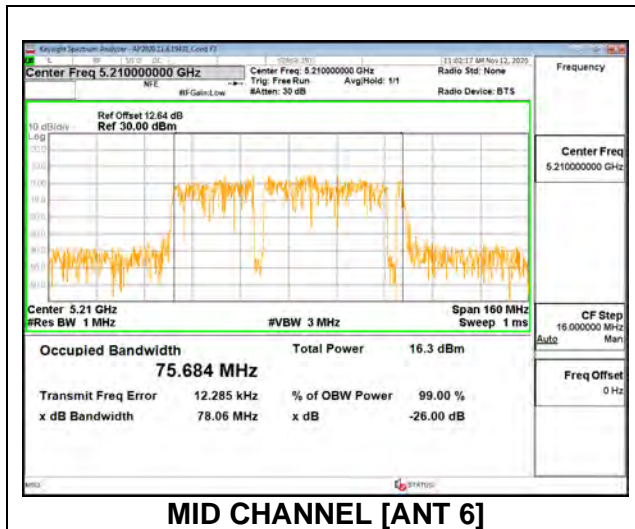
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	82.60	82.00	75.6840	75.9930

MID CHANNEL 26dB



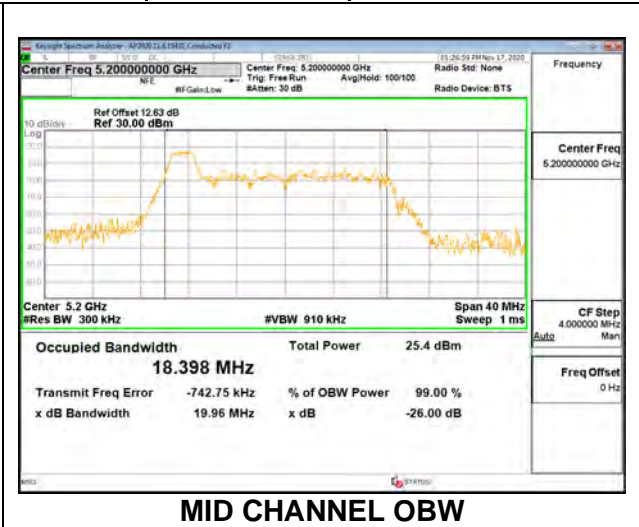
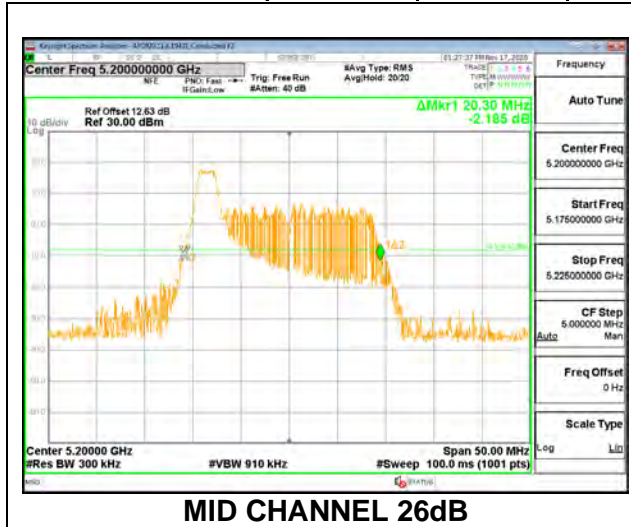
MID CHANNEL OBW



9.2.4. 802.11ax HE20 MODE IN THE 5.2 GHz BAND

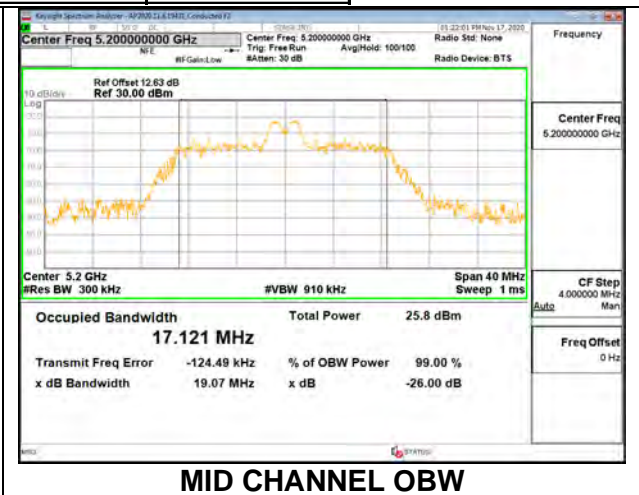
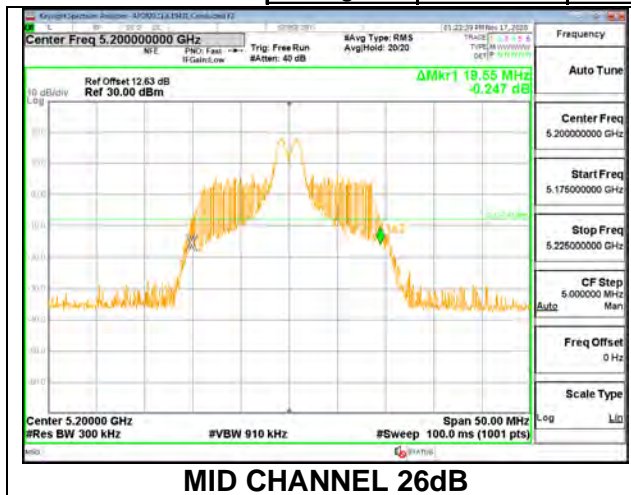
1TX Antenna 6 MODE: 26 Tones, RU Index 0

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	20.40	18.4250
Mid	5200	20.30	18.3980
High	5240	20.45	18.4470



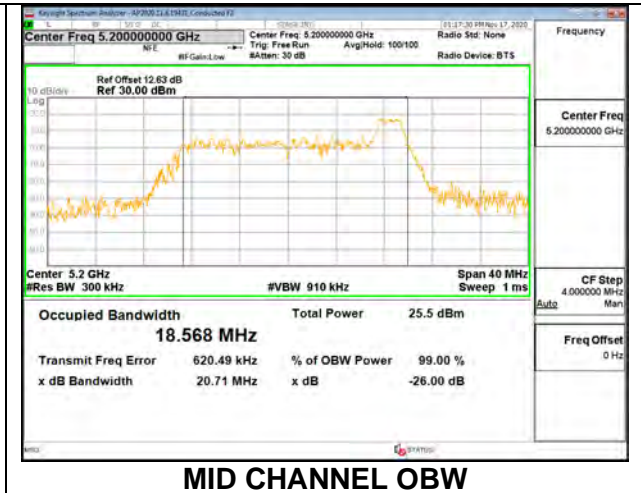
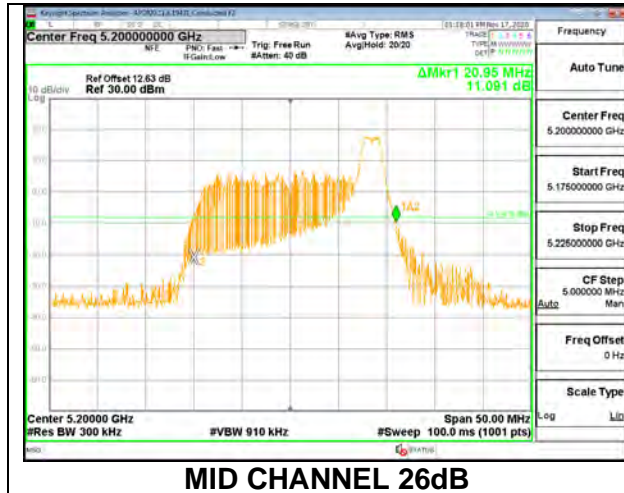
1TX Antenna 6 MODE: 26 Tones, RU Index 4

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	19.45	17.0550
Mid	5200	19.55	17.1210
High	5240	19.45	17.1600



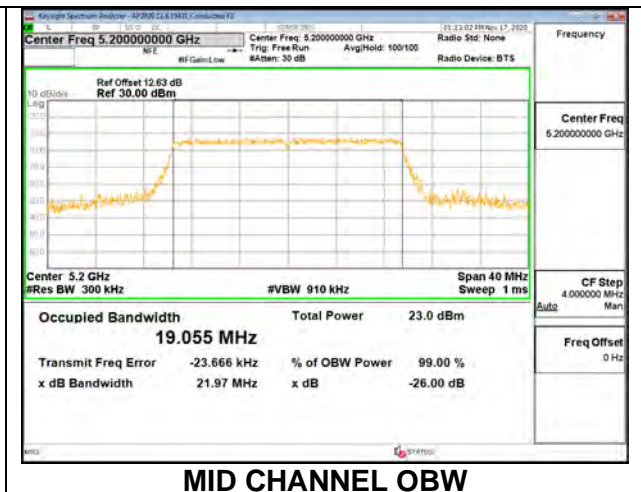
1TX Antenna 6 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.95	18.6030
Mid	5200	20.95	18.5680
High	5240	20.85	18.5610



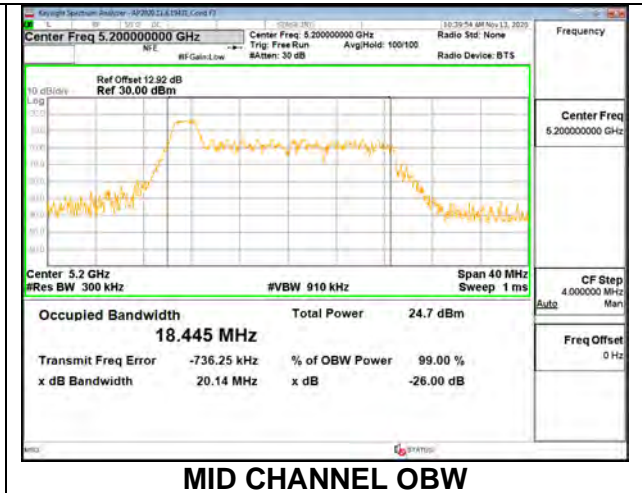
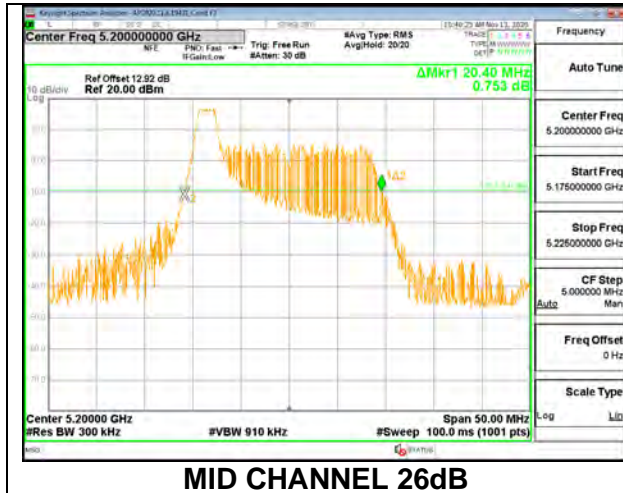
1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	22.05	19.0120
Mid	5200	22.85	19.0550
High	5240	22.40	19.0560



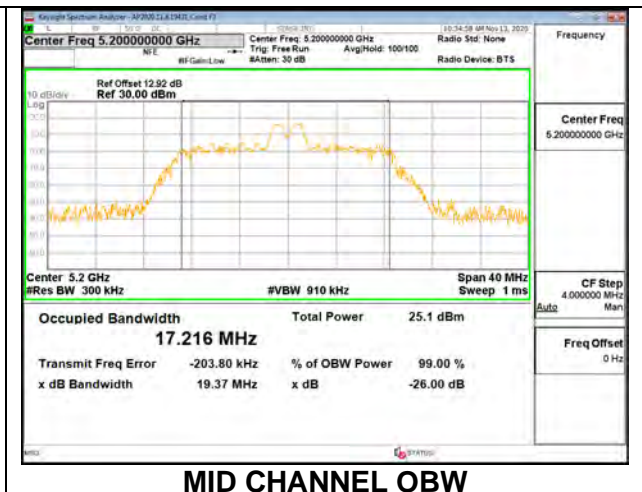
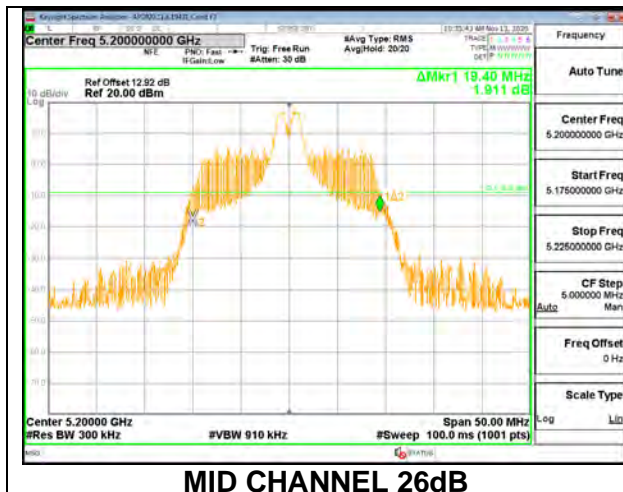
1TX Antenna 5 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.90	18.4450
Mid	5200	20.40	18.4450
High	5240	20.45	18.3910



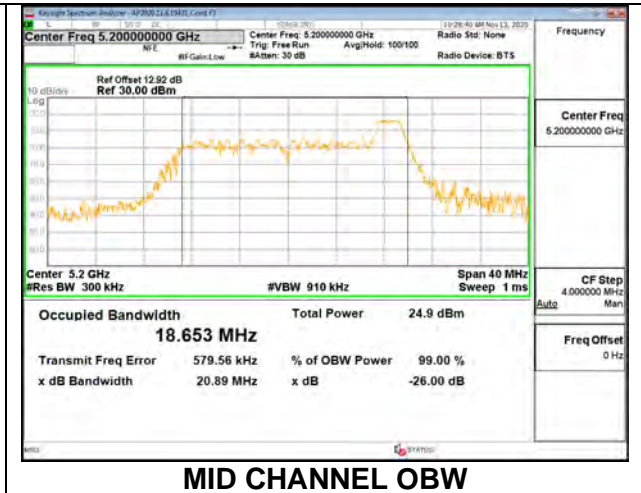
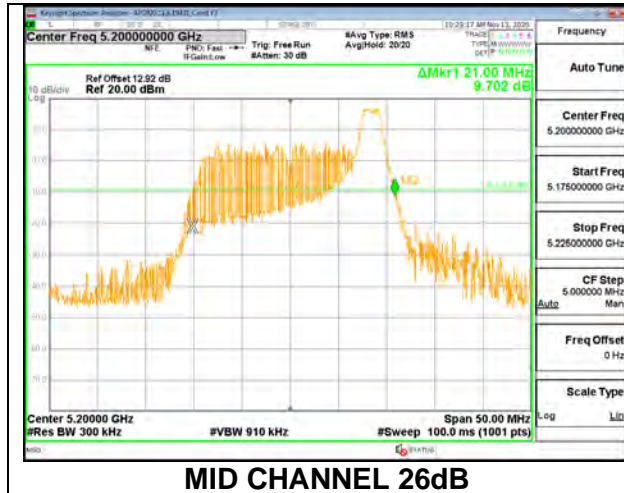
1TX Antenna 5 MODE: 26 Tones, RU Index 4

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.50	17.1430
Mid	5200	19.40	17.2160
High	5240	19.40	17.2020



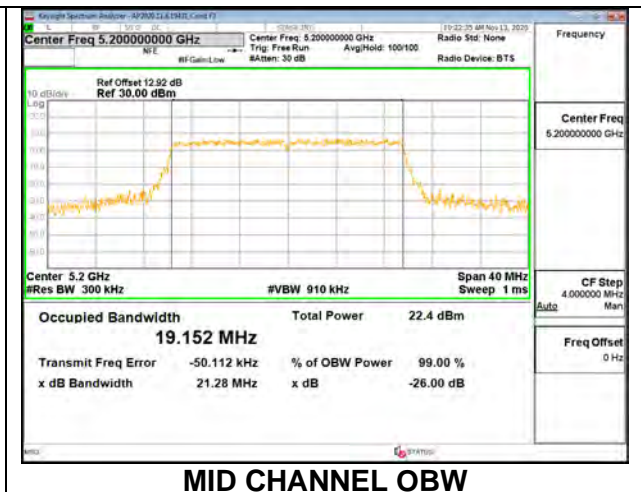
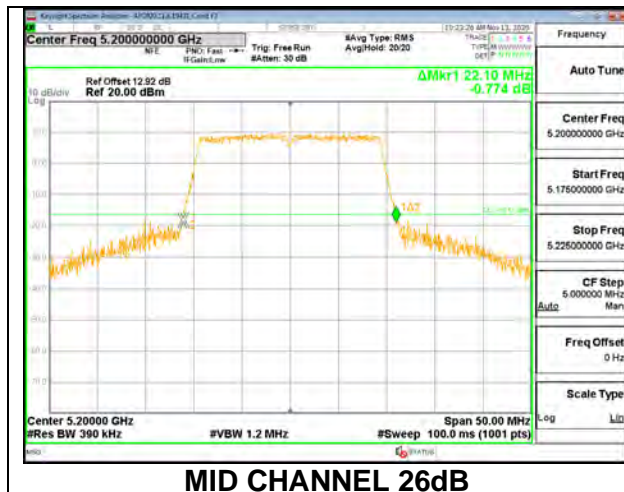
1TX Antenna 5 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.85	18.6580
Mid	5200	21.00	18.6530
High	5240	21.00	18.5560



1TX Antenna 5 MODE: SU Mode

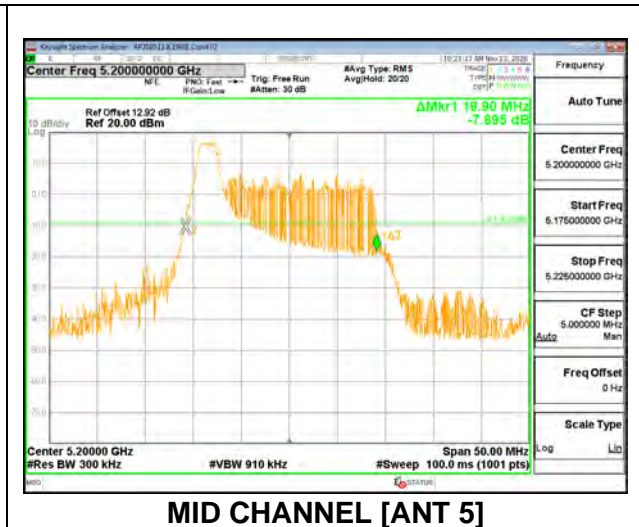
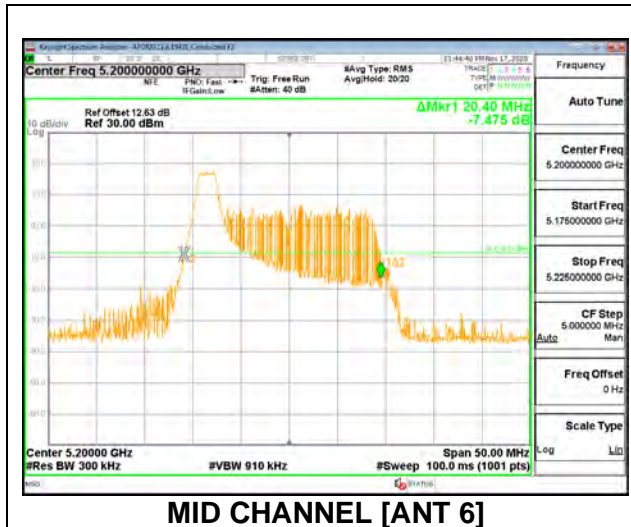
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	22.00	19.0510
Mid	5200	22.10	19.1520
High	5240	22.15	19.0820



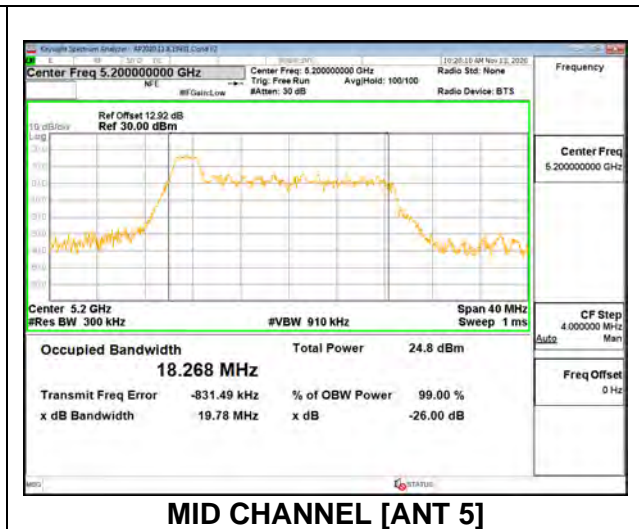
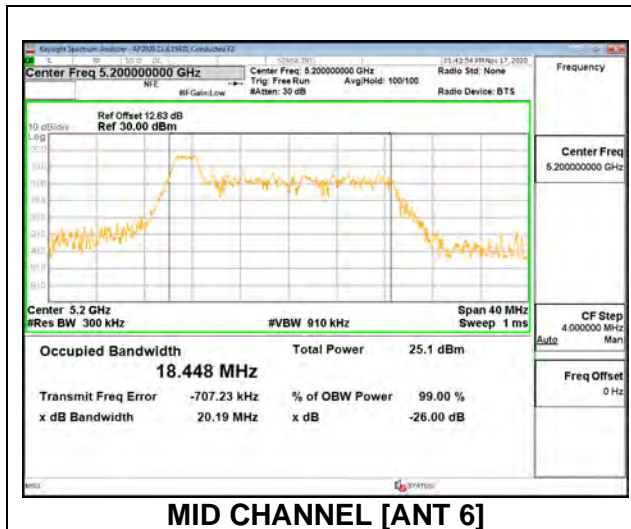
2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	20.30	19.90	18.4830	18.4000
Mid	5200	20.40	19.90	18.4480	18.2680
High	5240	20.40	19.85	18.3750	18.4100

MID CHANNEL 26dB



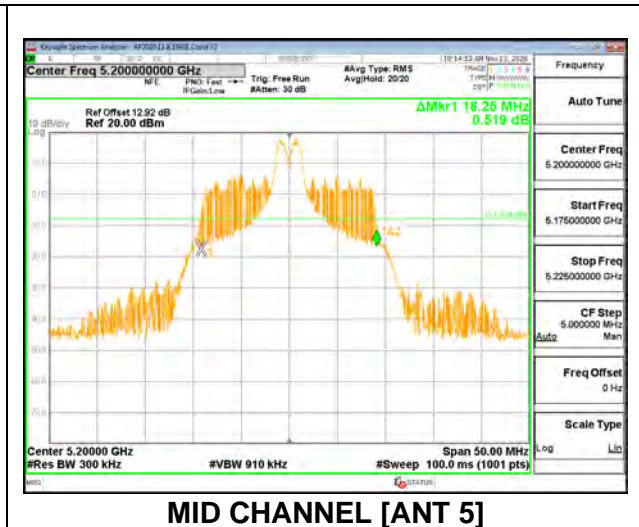
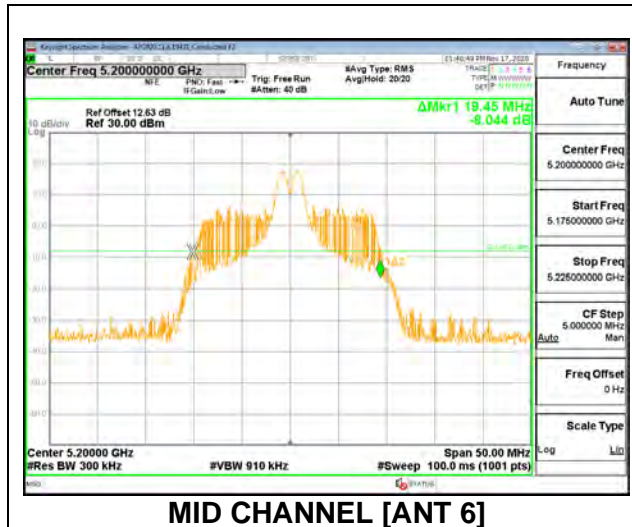
MID CHANNEL OBW



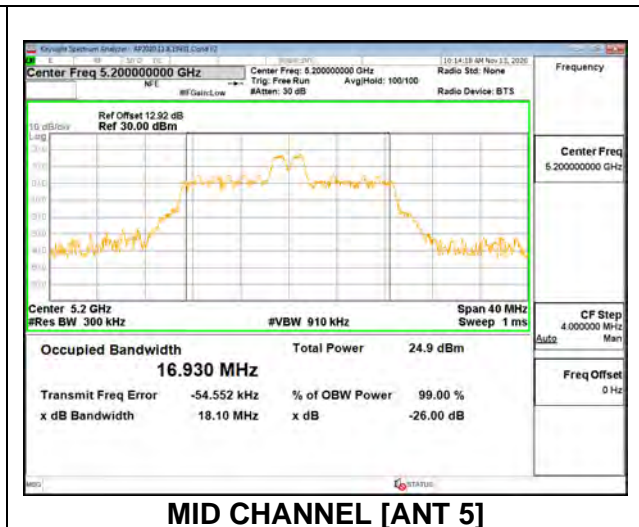
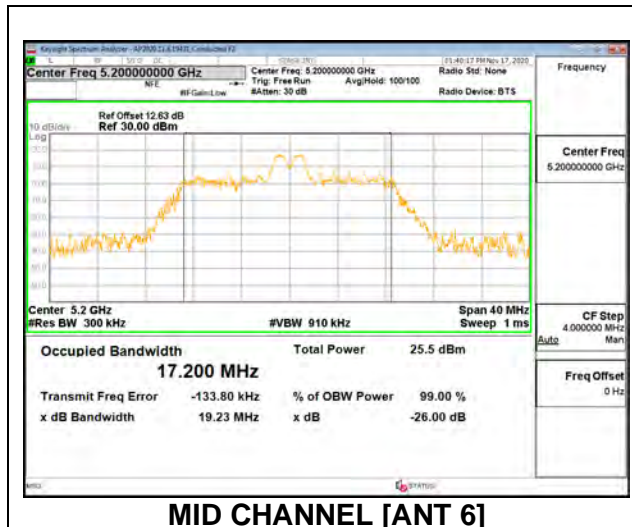
2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 4

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	19.40	18.30	17.2550	16.9050
Mid	5200	19.45	18.25	17.2000	16.9300
High	5240	19.40	18.20	17.2640	16.9220

MID CHANNEL 26dB



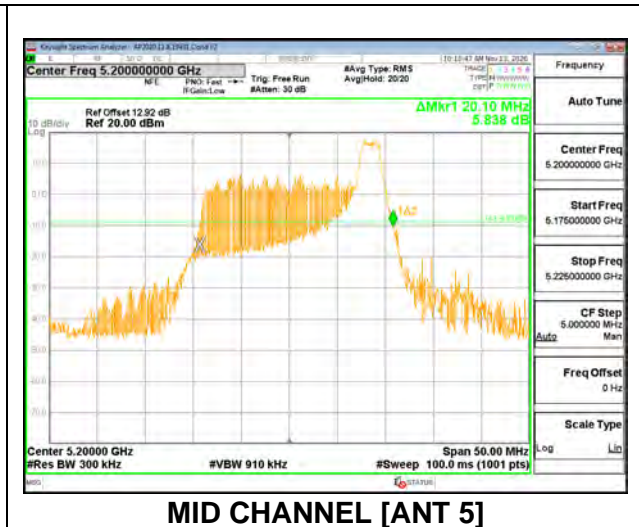
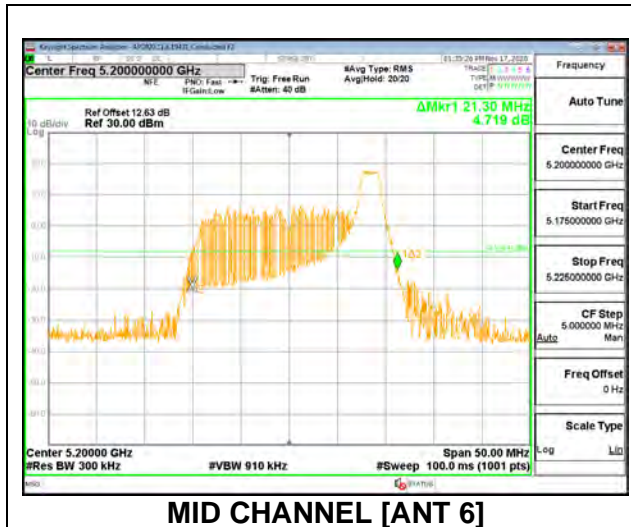
MID CHANNEL OBW



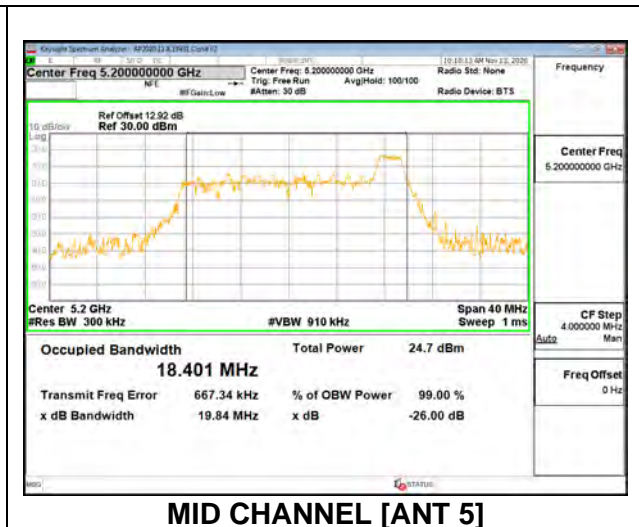
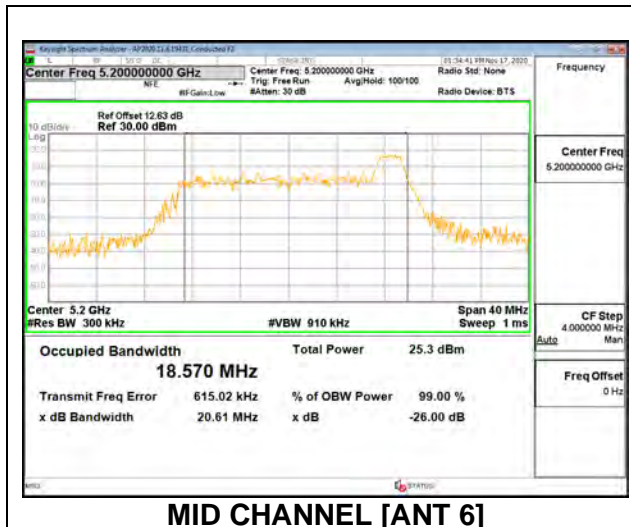
2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	20.95	20.10	18.7190	18.3470
Mid	5200	21.30	20.10	18.5700	18.4010
High	5240	20.85	20.15	18.5400	18.4420

MID CHANNEL 26dB



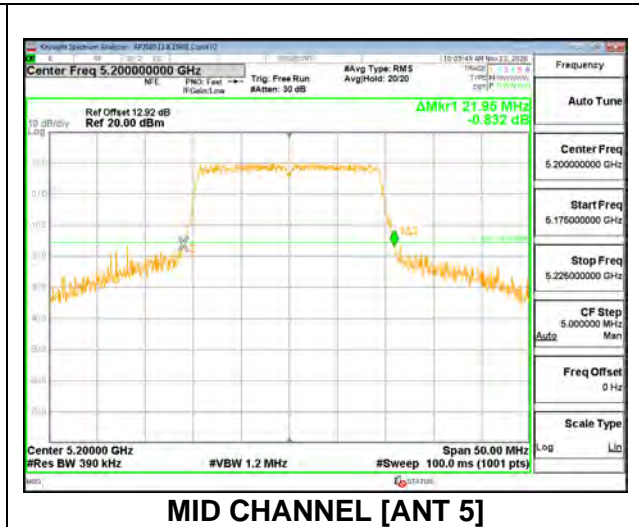
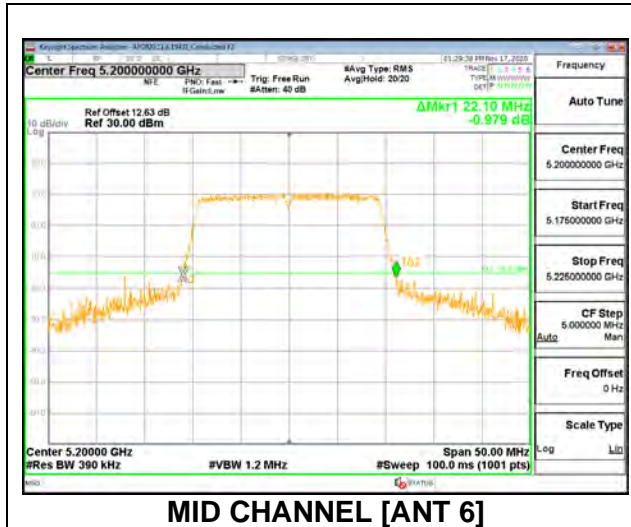
MID CHANNEL OBW



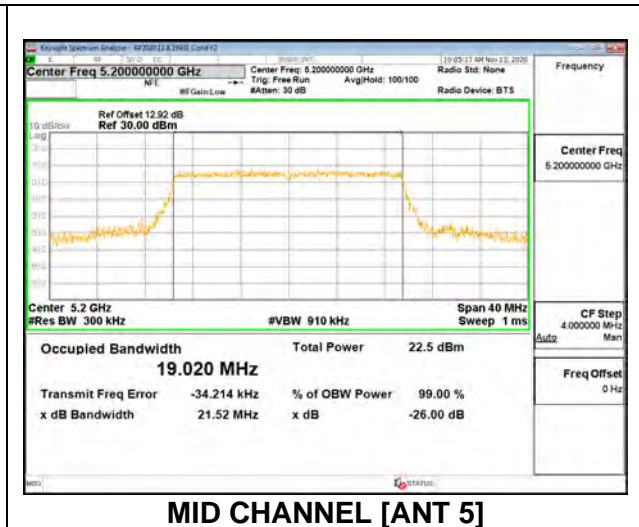
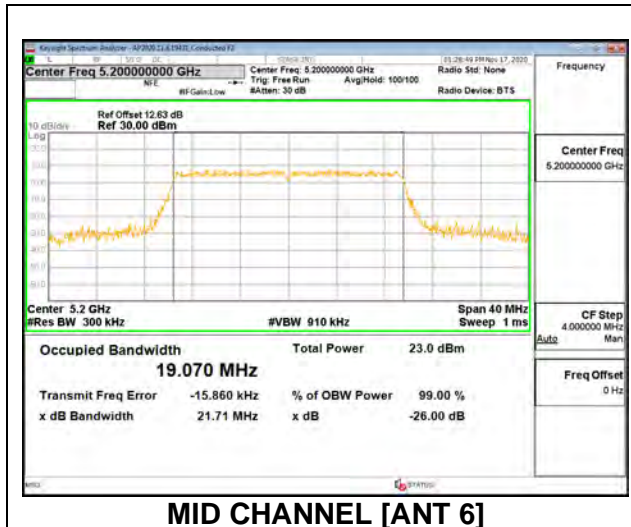
2TX Antenna 6 + Antenna 5 OFDMA MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	22.30	21.95	19.0680	19.0430
Mid	5200	22.10	21.95	19.0700	19.0200
High	5240	22.20	21.80	19.0270	19.0080

MID CHANNEL 26dB



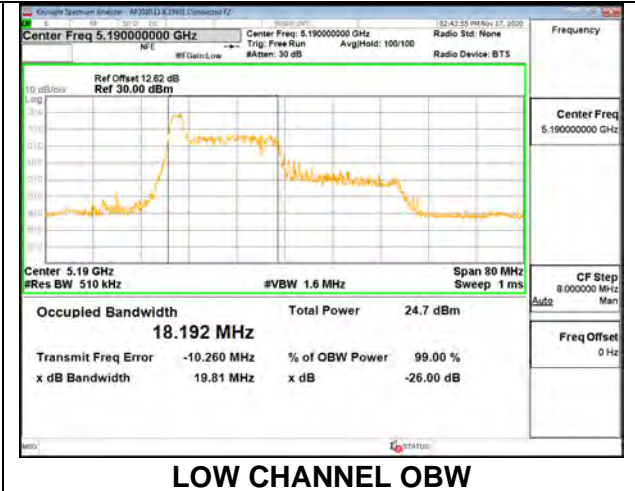
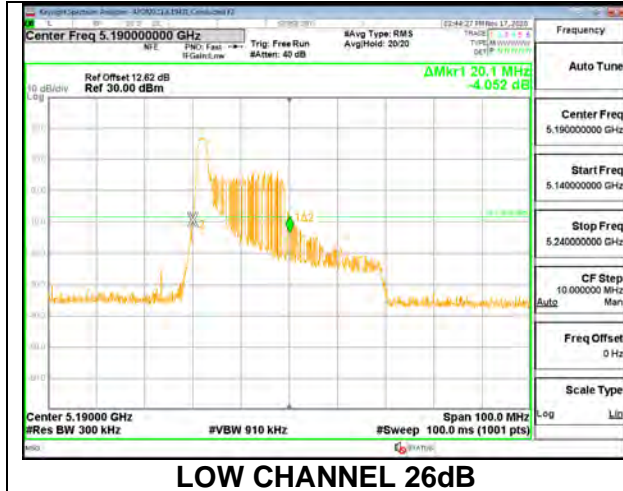
MID CHANNEL OBW



9.2.5. 802.11ax HE40 MODE IN THE 5.2 GHz BAND

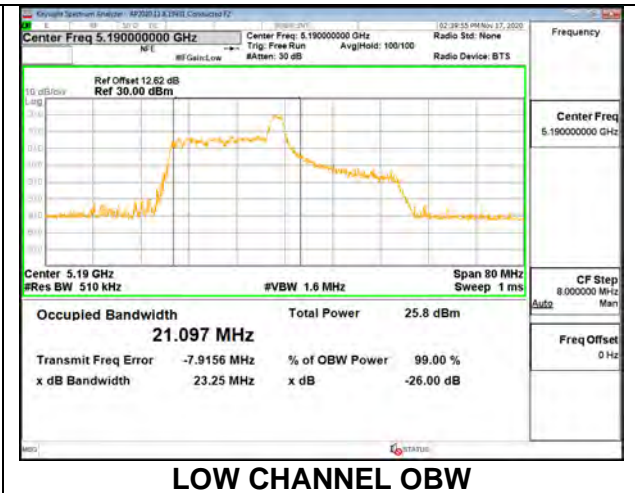
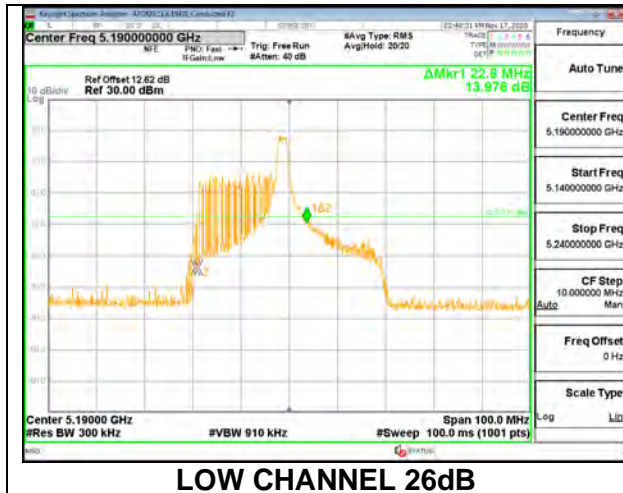
1TX Antenna 6 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.10	18.1920
High	5230	20.60	18.2440



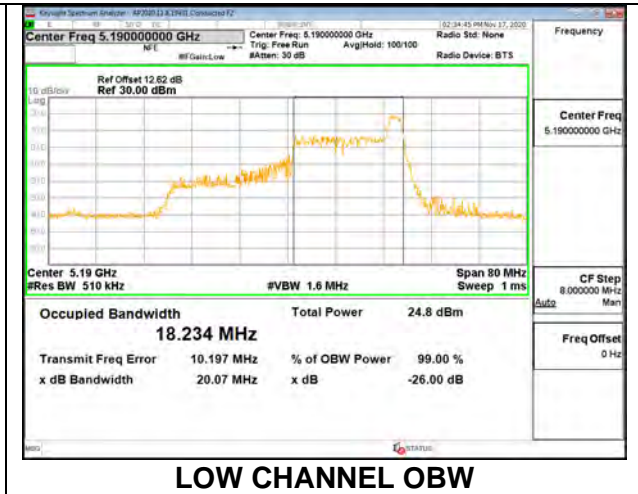
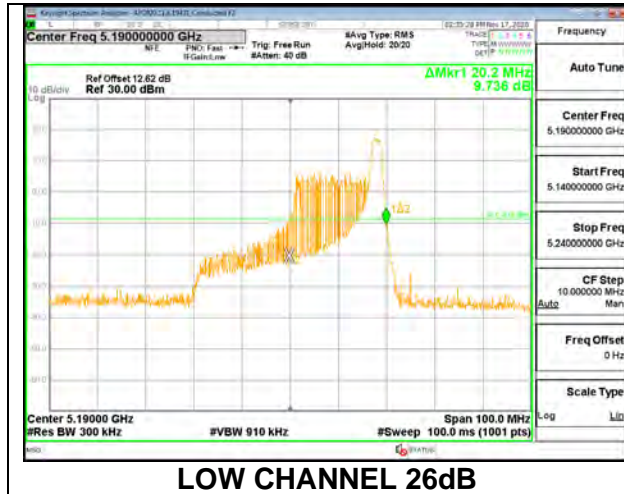
1TX Antenna 6 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	22.80	21.0970
High	5230	22.80	21.2730



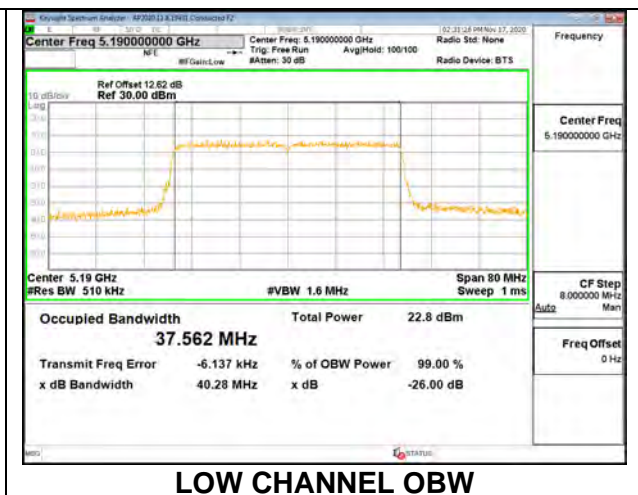
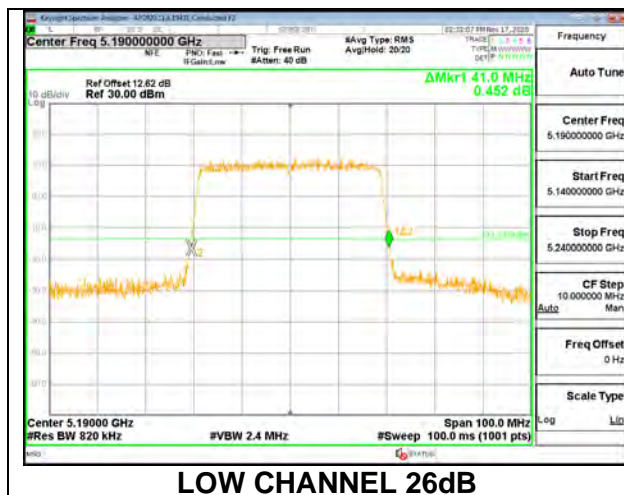
1TX Antenna 6 MODE: 26 Tones, RU Index 17

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.20	18.2340
High	5230	20.20	18.4220



1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	41.00	37.5620
High	5230	40.90	37.6510



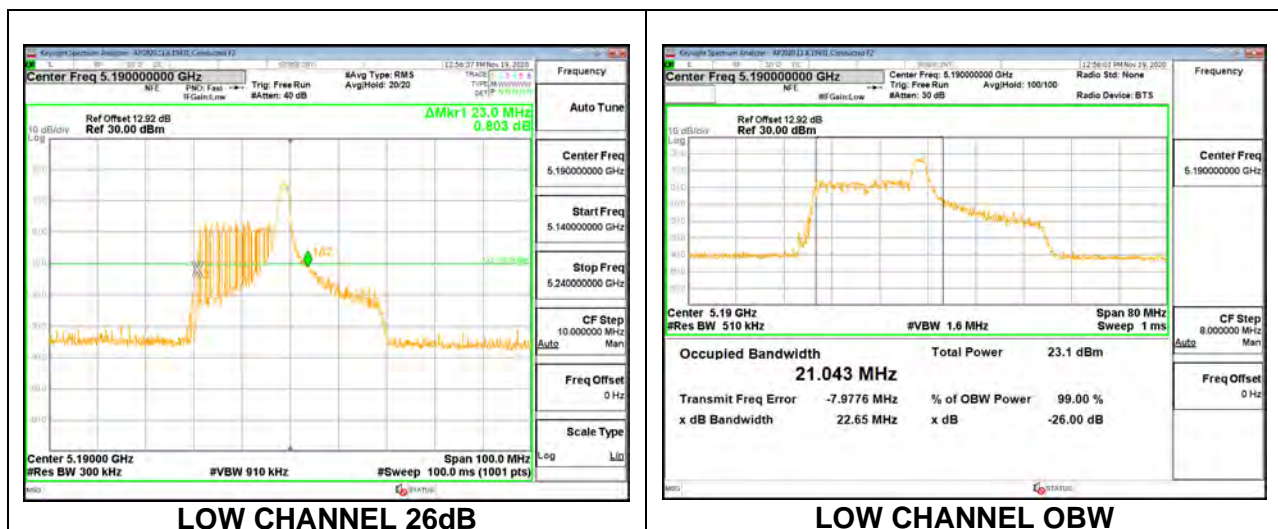
1TX Antenna 5 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.40	18.0770
High	5230	20.40	18.1600



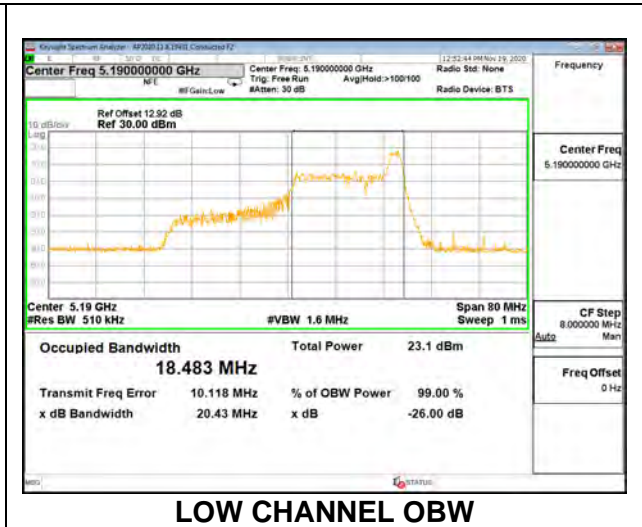
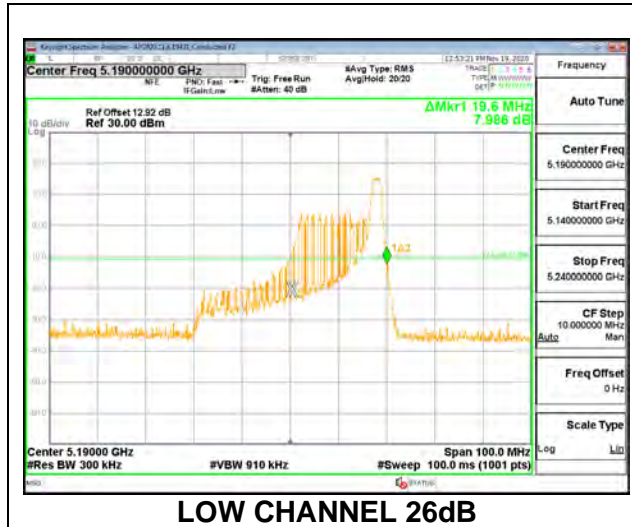
1TX Antenna 5 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	23.00	21.0430
High	5230	23.20	21.2030



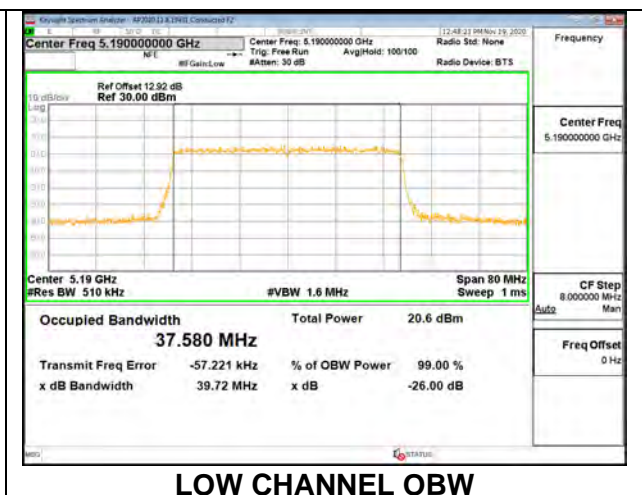
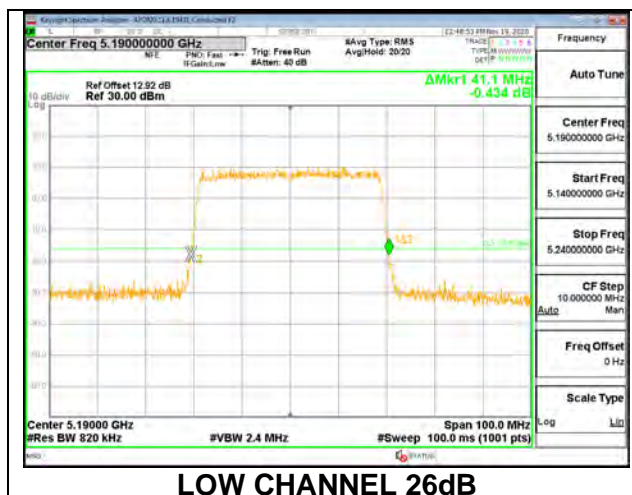
1TX Antenna 5 MODE: 26 Tones, RU Index 17

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	19.60	18.4830
High	5230	20.40	18.3400



1TX Antenna 5 MODE: SU Mode

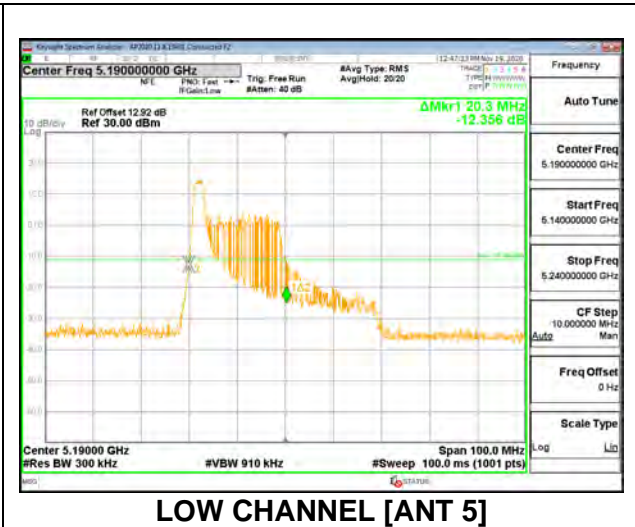
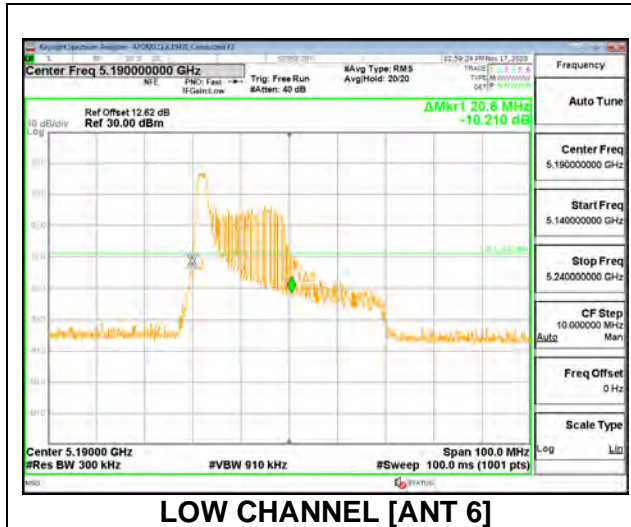
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	41.10	37.5800
High	5230	40.90	37.5730



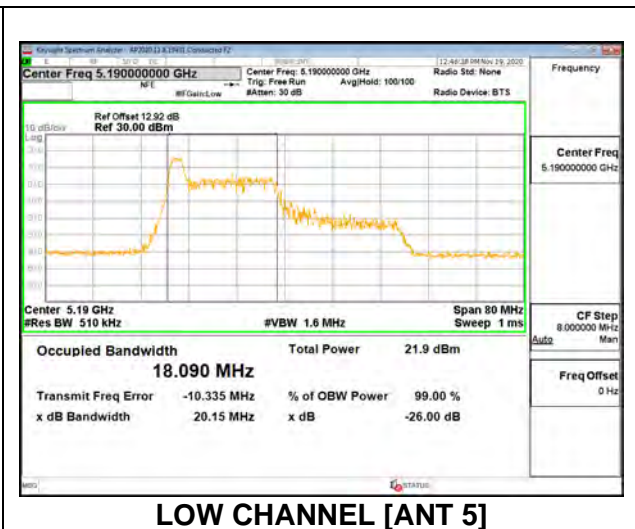
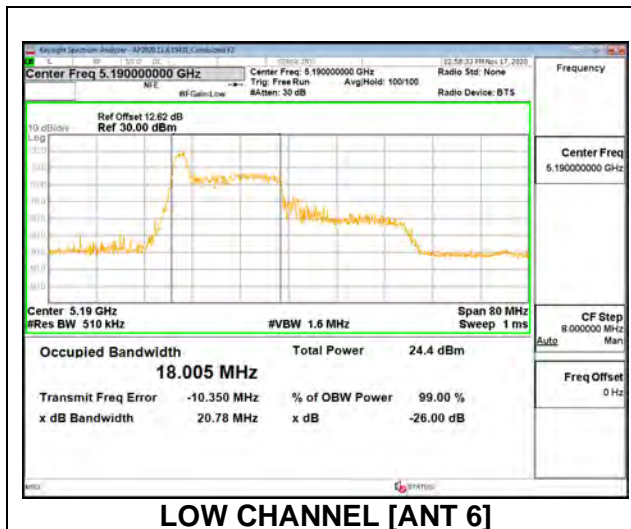
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	20.60	20.30	18.0050	18.0900
High	5230	20.60	19.20	18.2390	18.0790

LOW CHANNEL 26dB



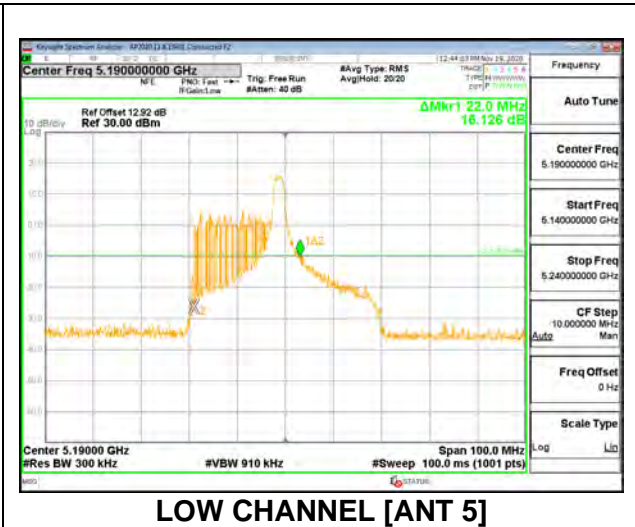
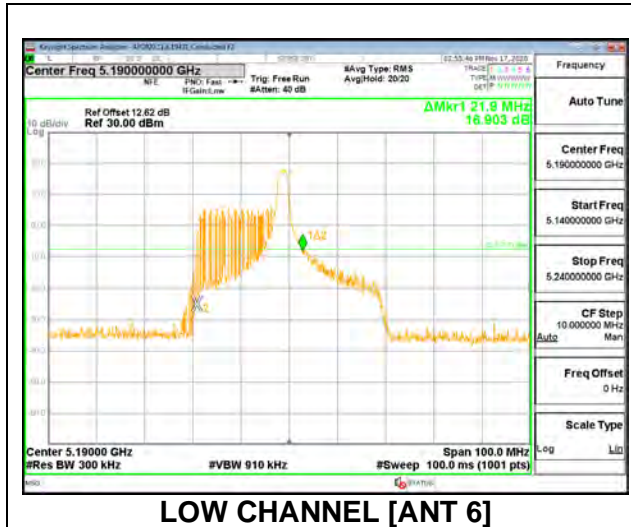
LOW CHANNEL OBW



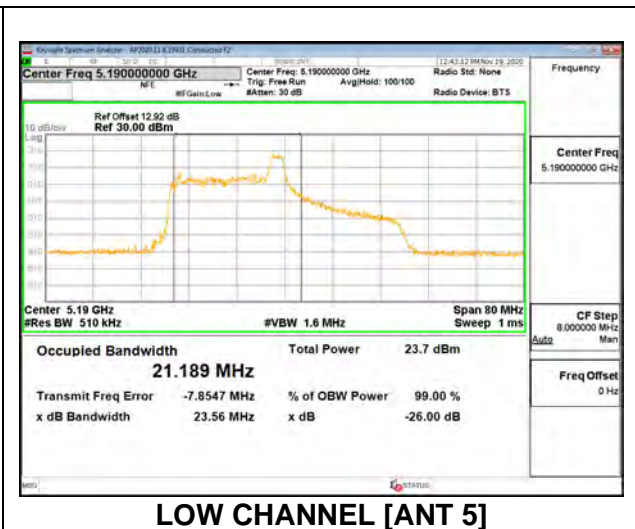
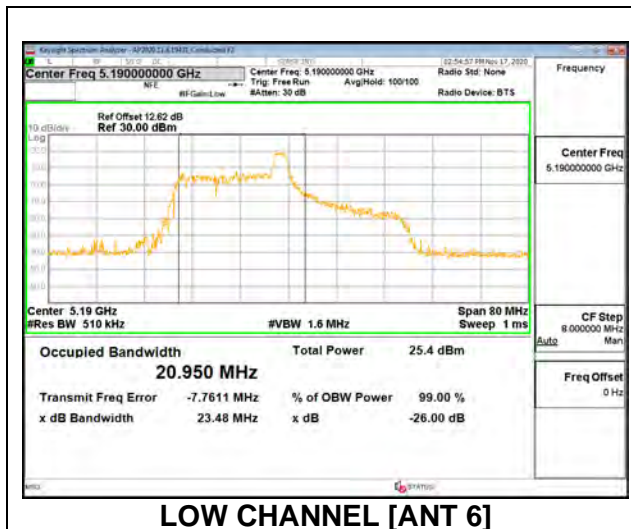
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	21.90	22.00	20.9500	21.1890
High	5230	22.60	22.50	21.4650	20.9160

LOW CHANNEL 26dB



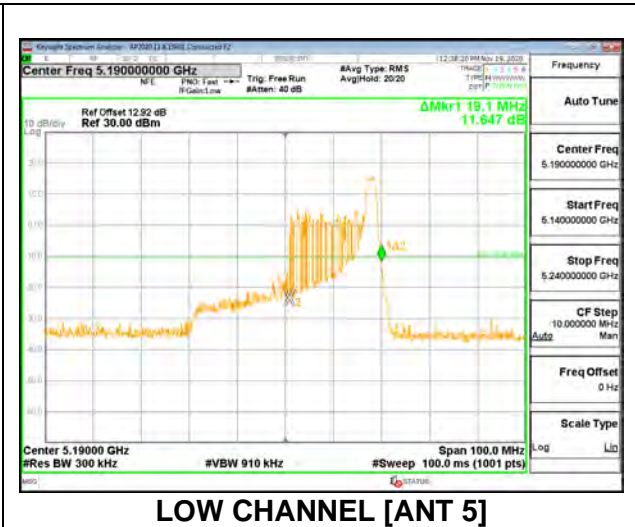
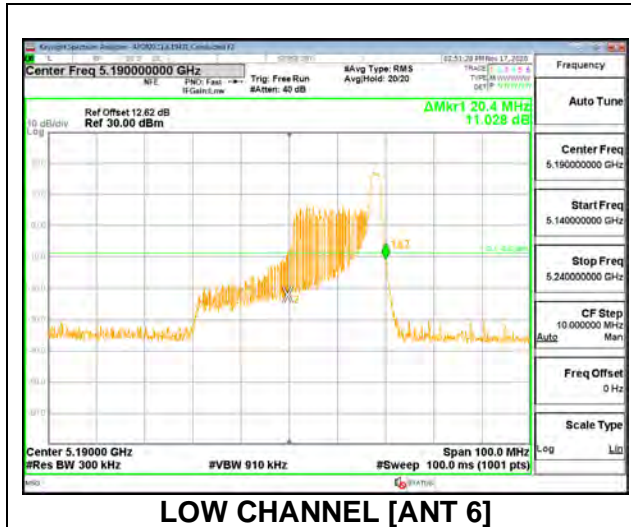
LOW CHANNEL OBW



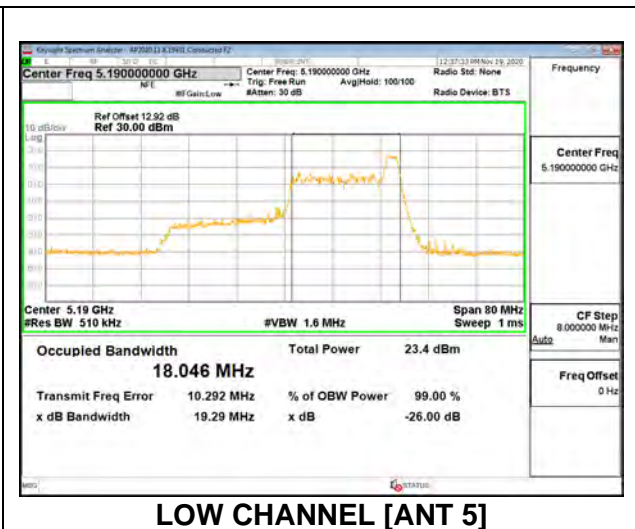
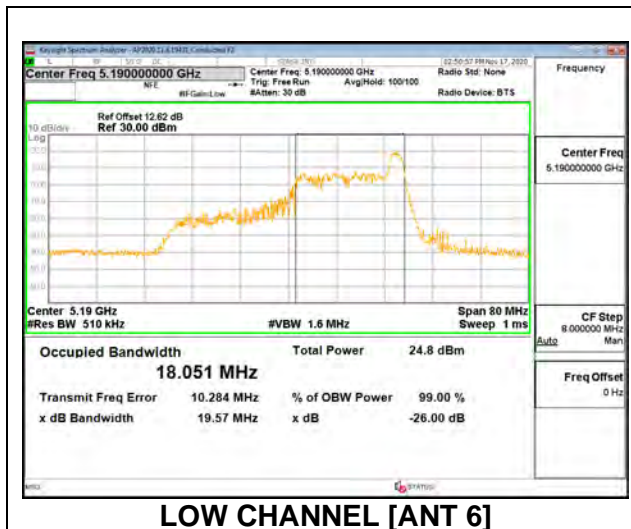
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 17

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	20.40	19.10	18.0510	18.0460
High	5230	20.00	19.00	18.3450	18.1120

LOW CHANNEL 26dB



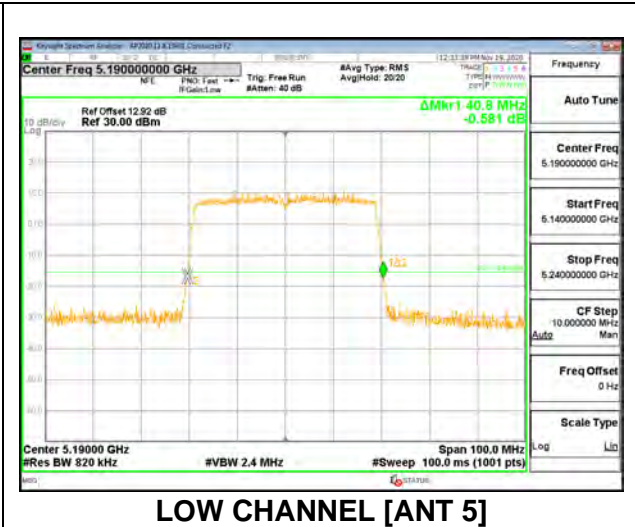
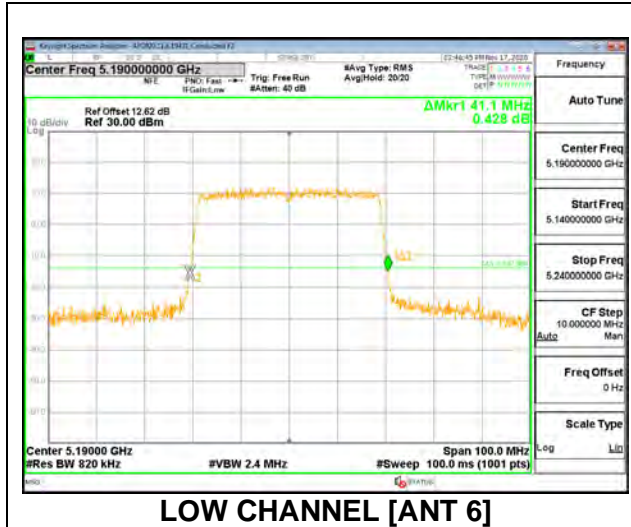
LOW CHANNEL OBW



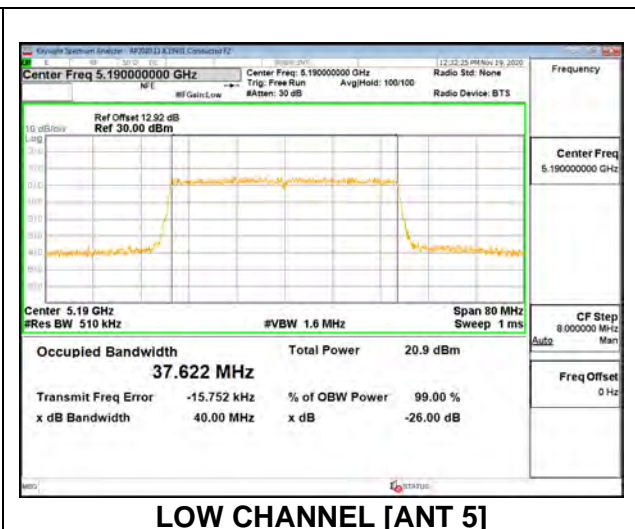
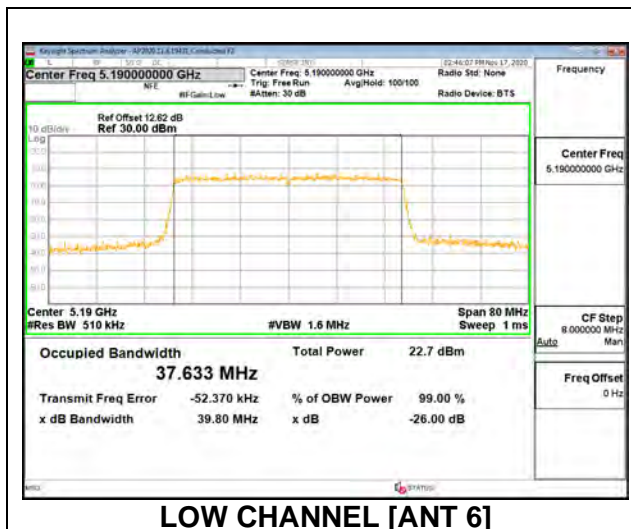
2TX Antenna 6 + Antenna 5 OFDMA MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	41.10	40.80	37.6330	37.6220
High	5230	40.90	40.90	37.5650	37.5440

LOW CHANNEL 26dB



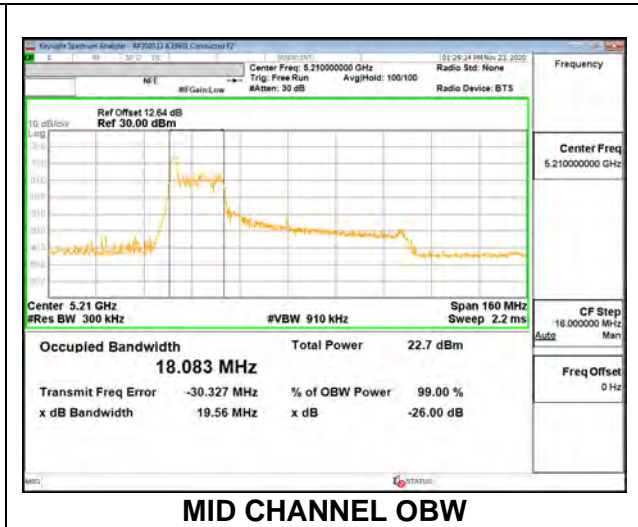
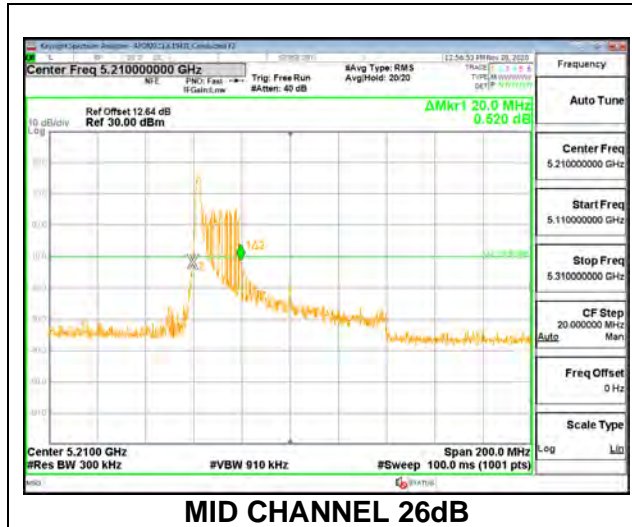
LOW CHANNEL OBW



9.2.6. 802.11ax HE80 MODE IN THE 5.2 GHz BAND

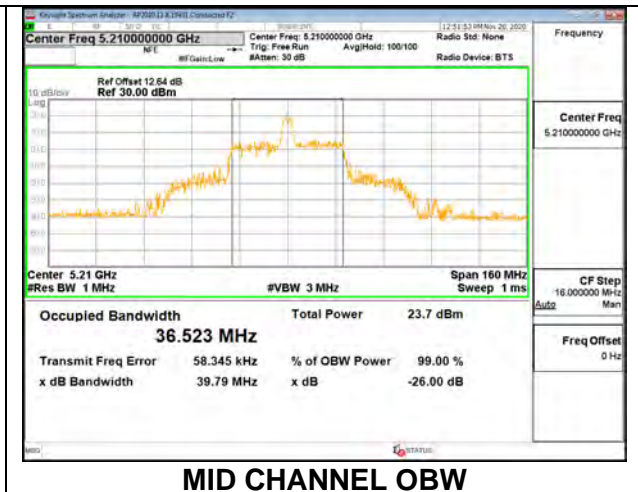
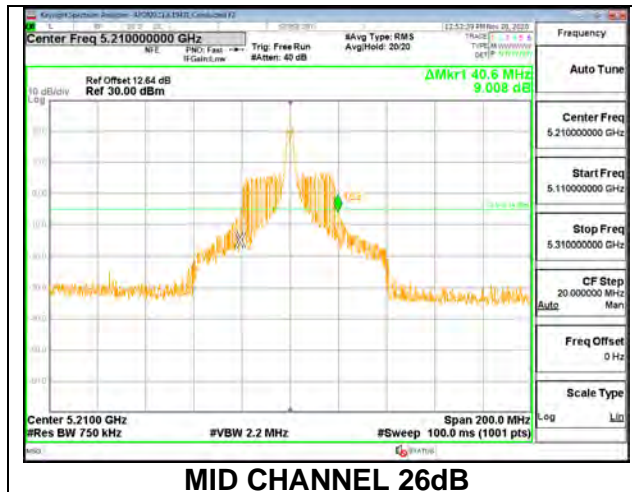
1TX Antenna 6 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	20.00	18.0830



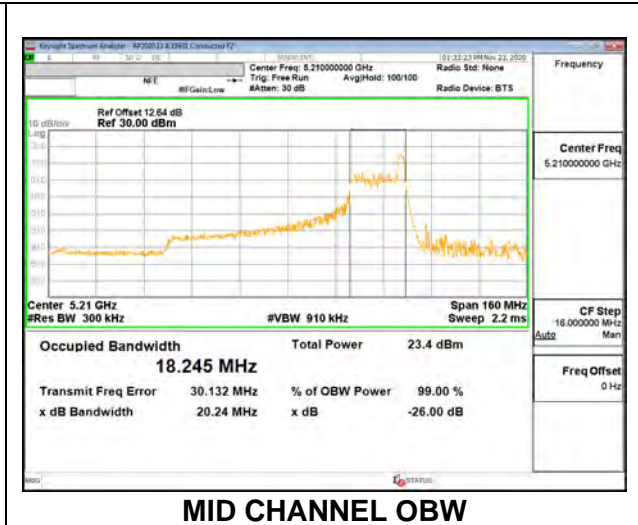
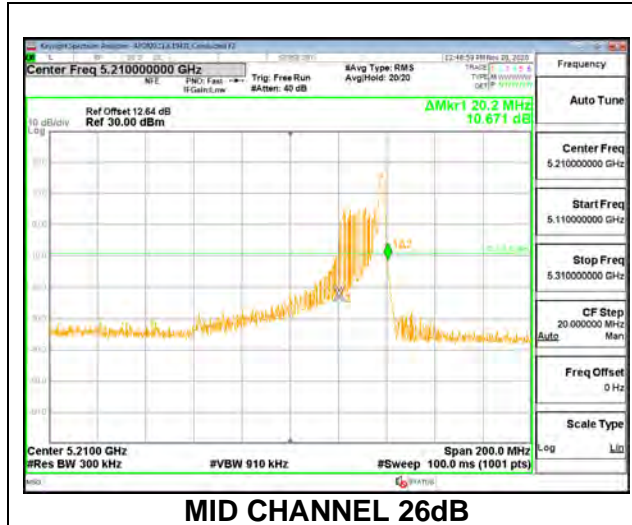
1TX Antenna 6 MODE: 26 Tones, RU Index 18

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	40.60	36.5230



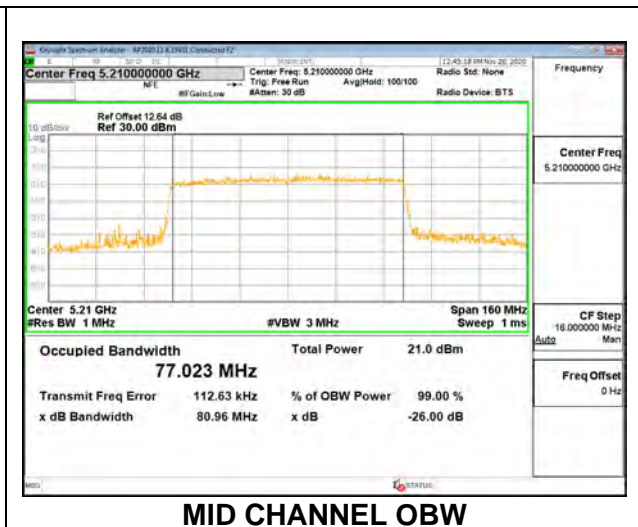
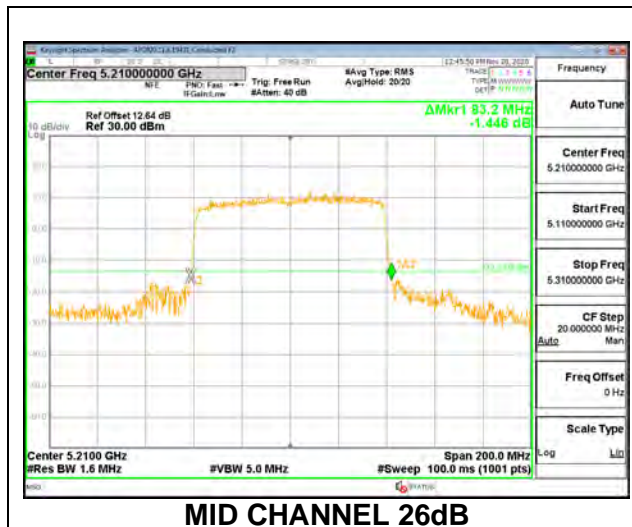
1TX Antenna 6 MODE: 26 Tones, RU Index 36

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	20.20	18.2450



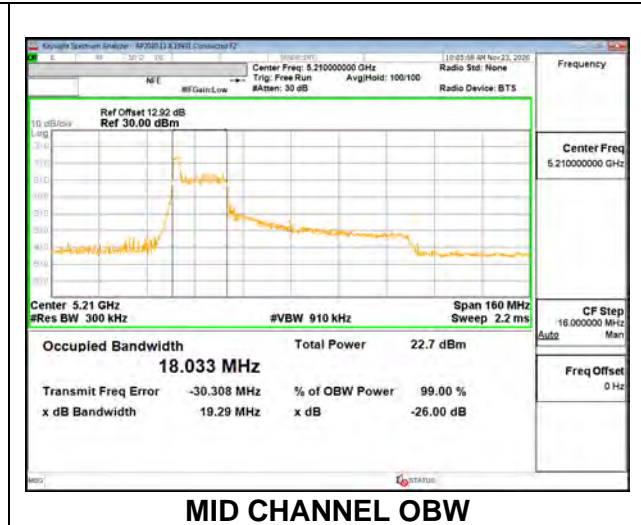
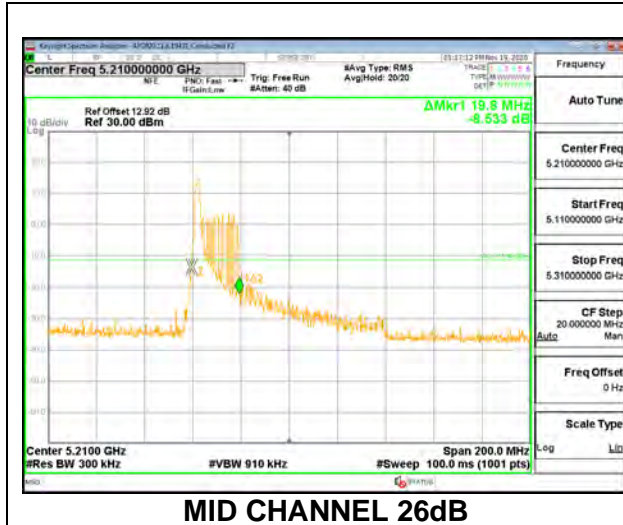
1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	83.20	77.0230



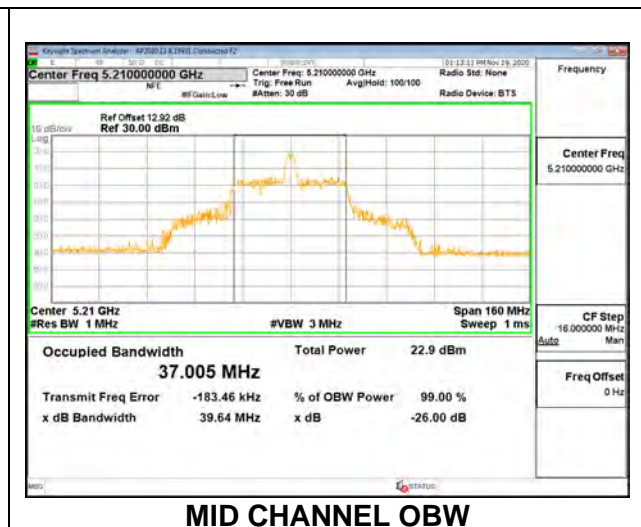
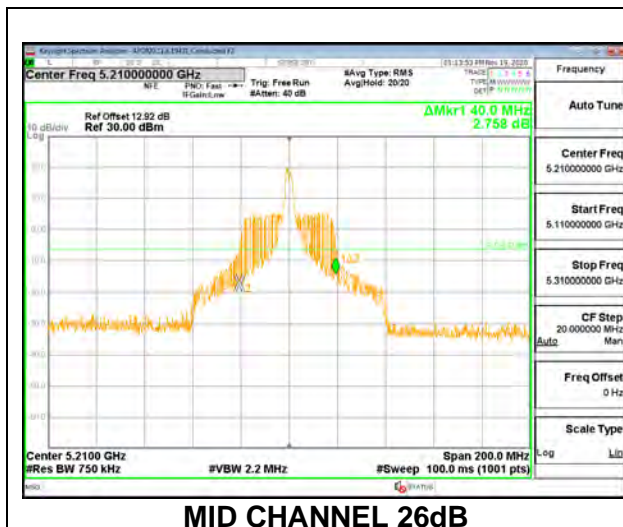
1TX Antenna 5 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	19.80	18.0330



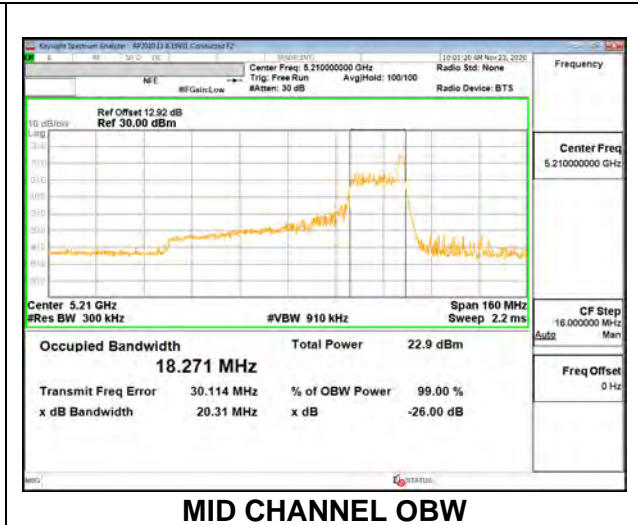
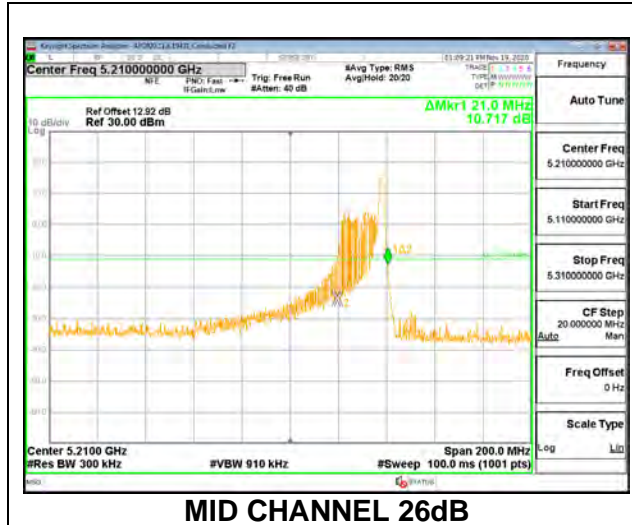
1TX Antenna 5 MODE: 26 Tones, RU Index 18

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	40.00	37.0050



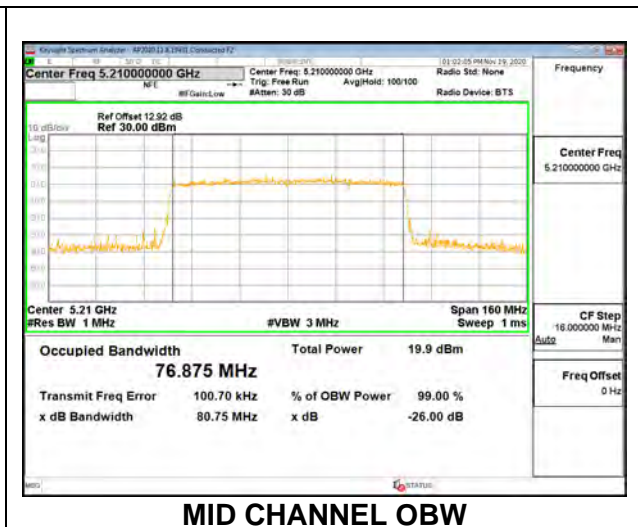
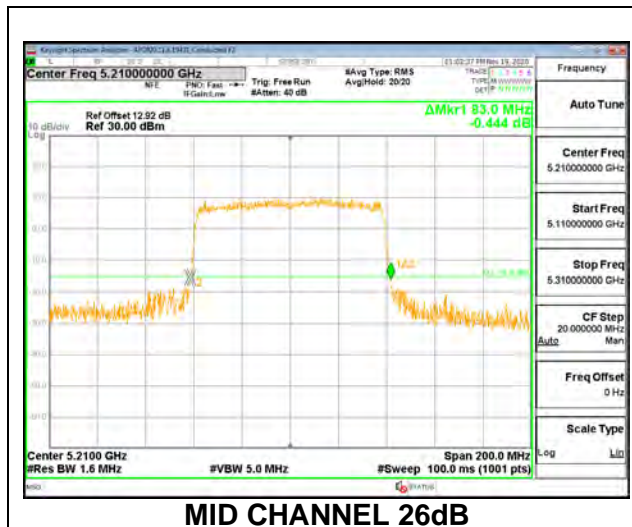
1TX Antenna 5 MODE: 26 Tones, RU Index 36

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	21.00	18.2710



1TX Antenna 5 MODE: SU Mode

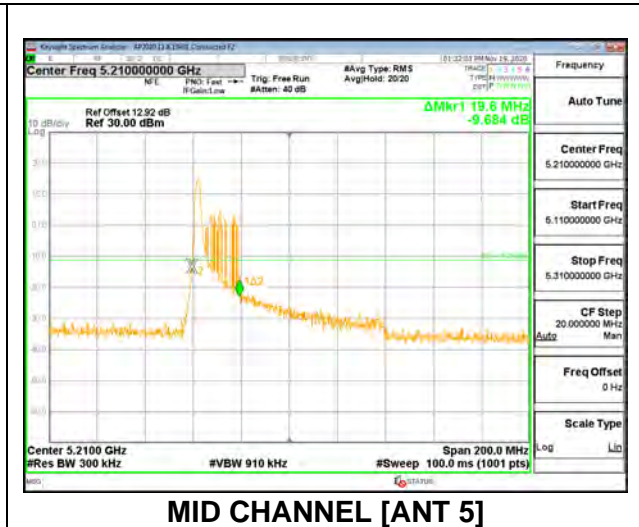
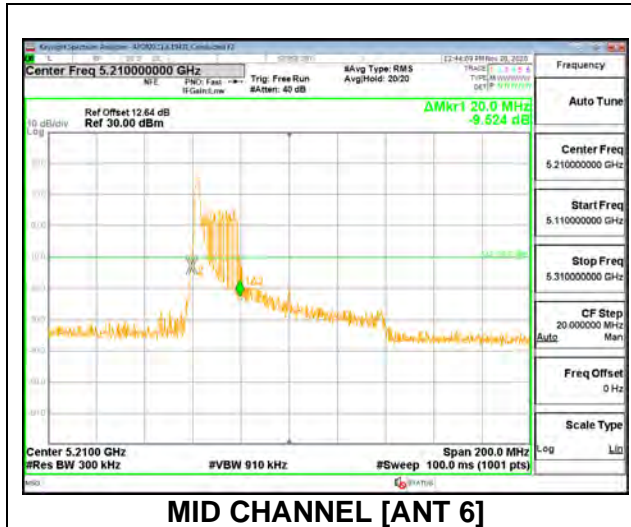
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	83.00	76.8750



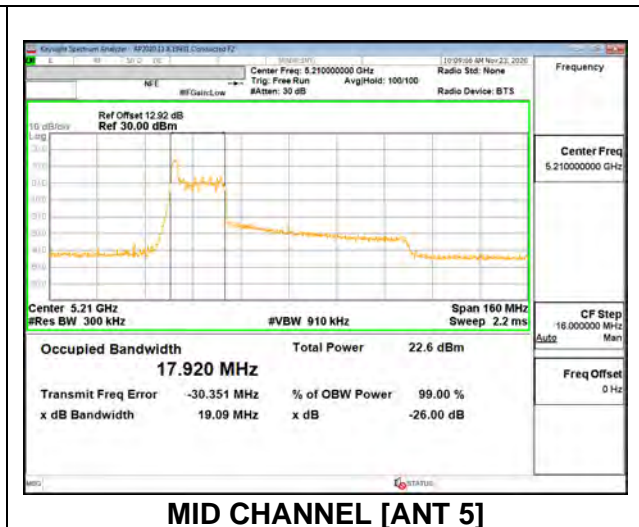
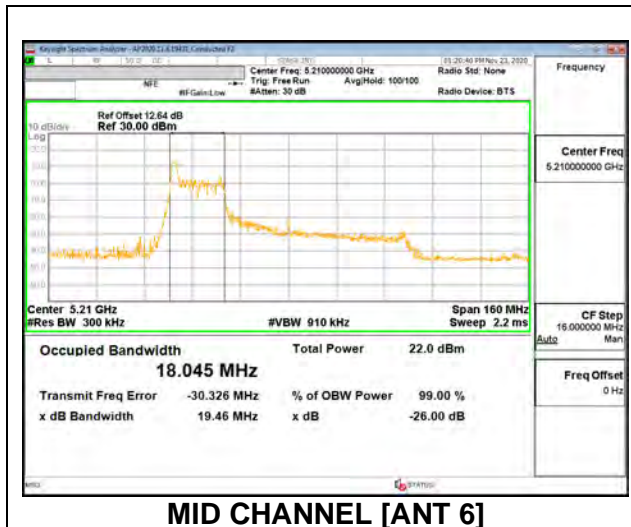
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

Channel	Frequency	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	20.00	19.60	18.0450	17.9200

MID CHANNEL 26dB



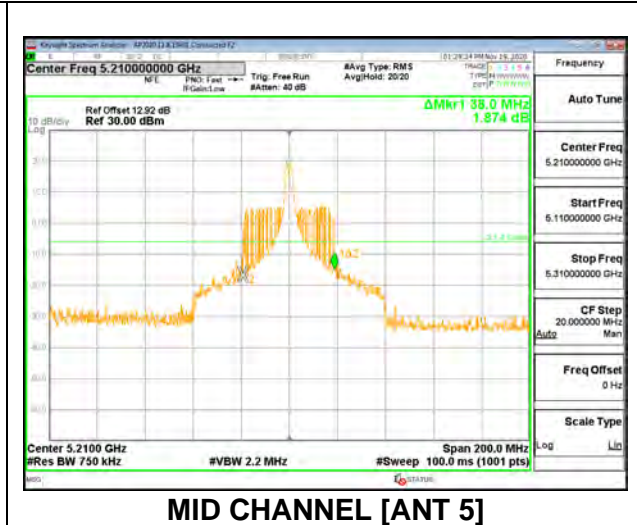
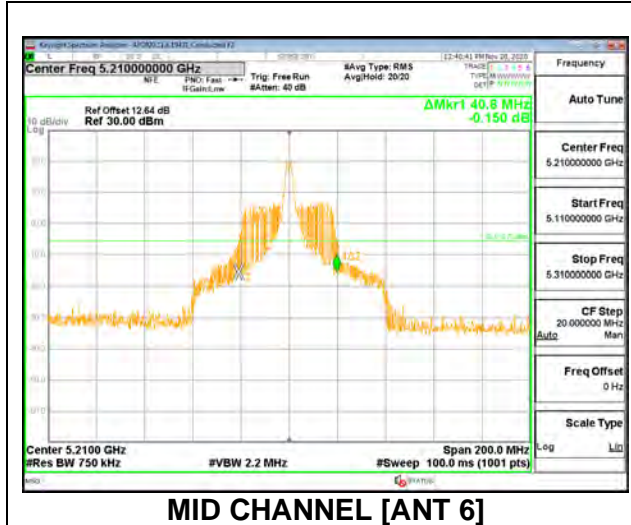
MID CHANNEL OBW



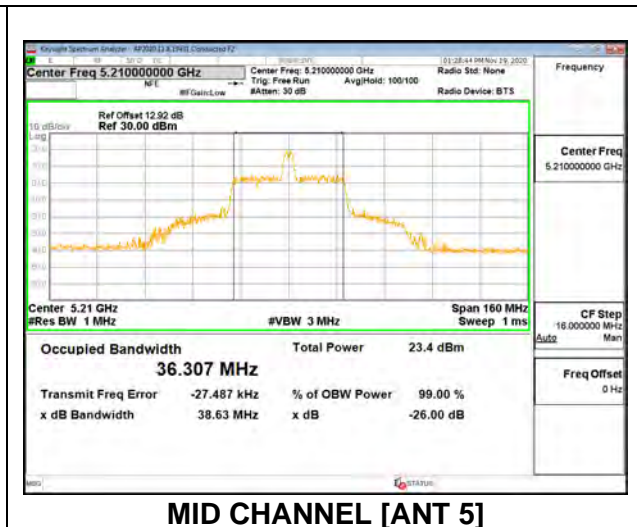
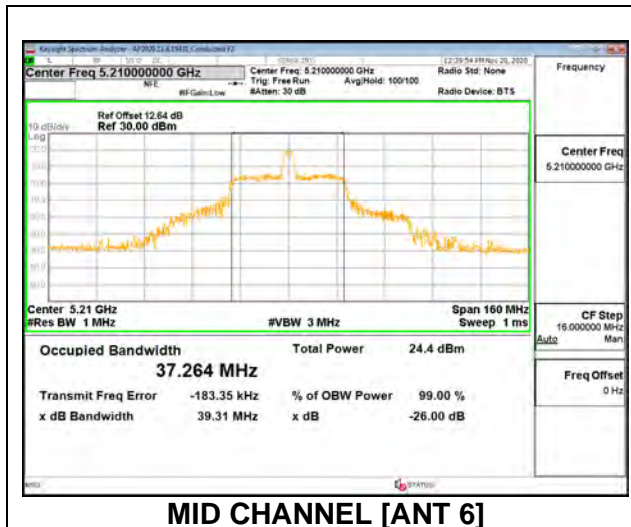
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 18

Channel	Frequency	26 dB Bandwidth Antenna 6	26 dB Bandwidth Antenna 5	99% Bandwidth Antenna 6	99% Bandwidth Antenna 5
	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
Mid	5210	40.80	38.00	37.2640	36.3070

MID CHANNEL 26dB



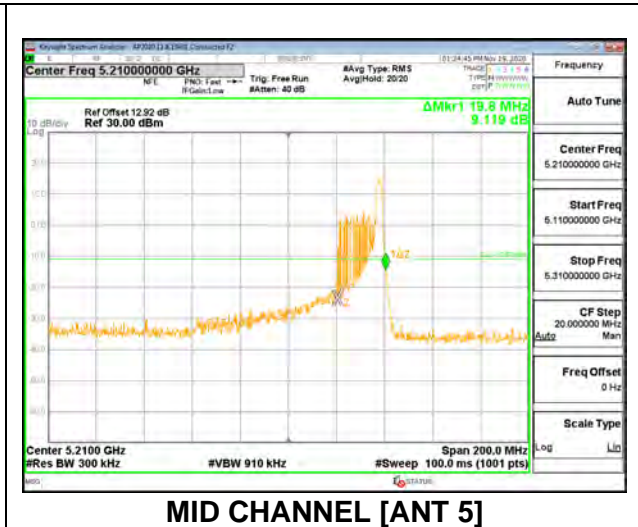
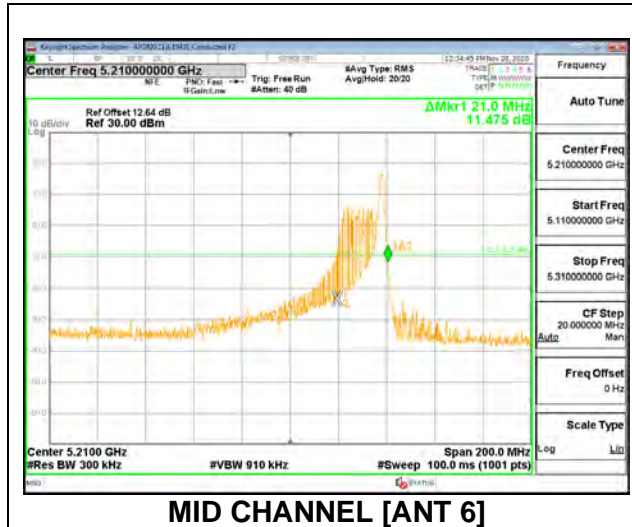
MID CHANNEL OBW



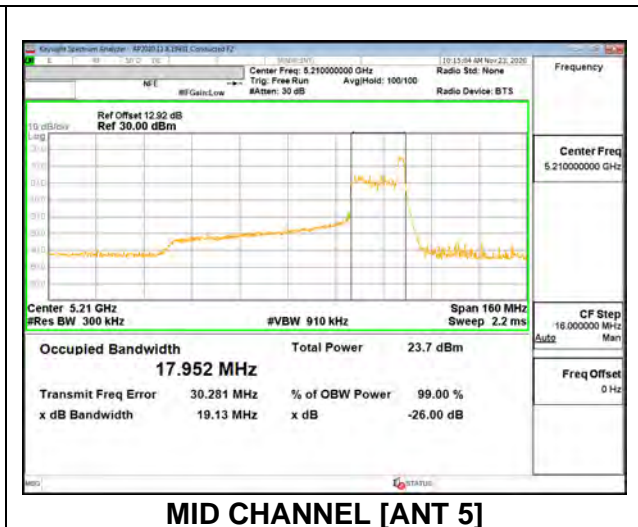
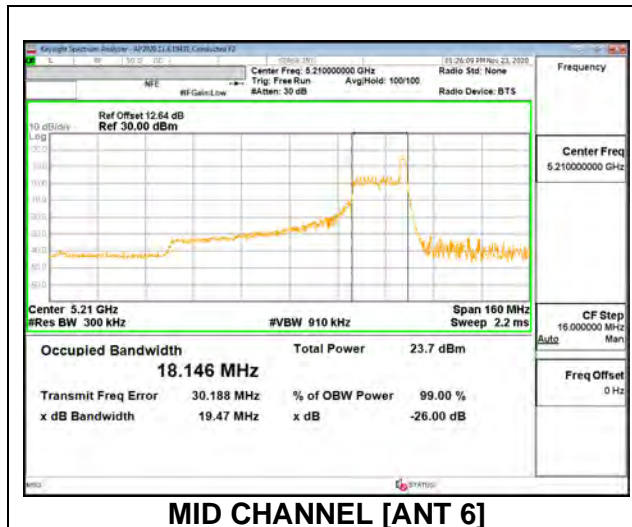
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 36

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	21.00	19.80	18.1460	17.9520

MID CHANNEL 26dB



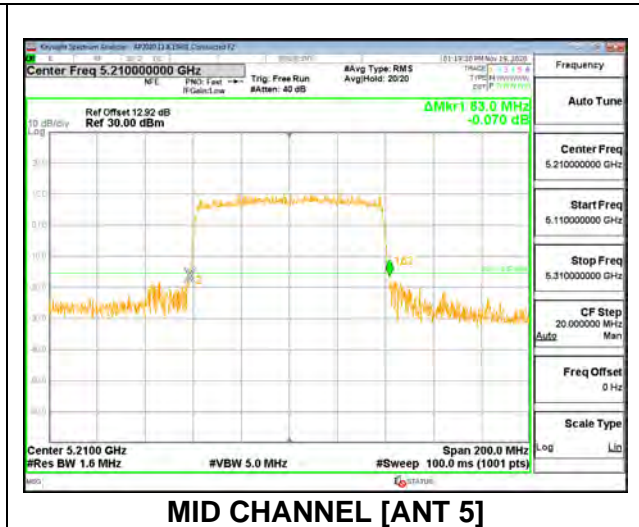
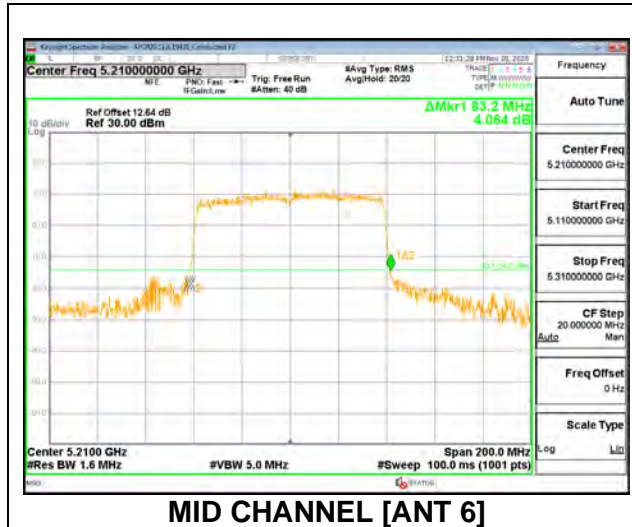
MID CHANNEL OBW



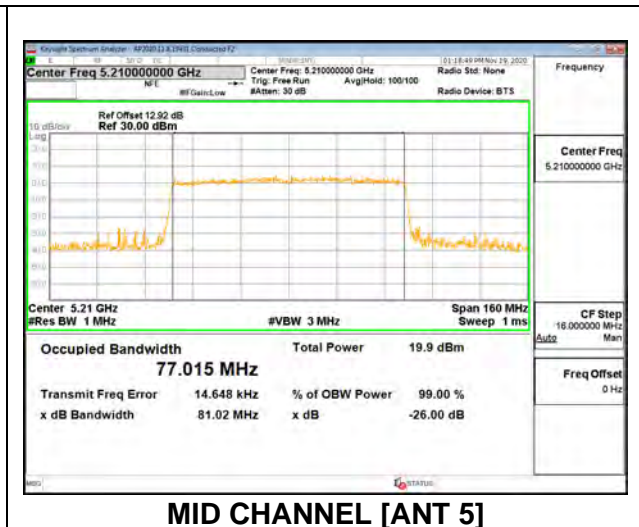
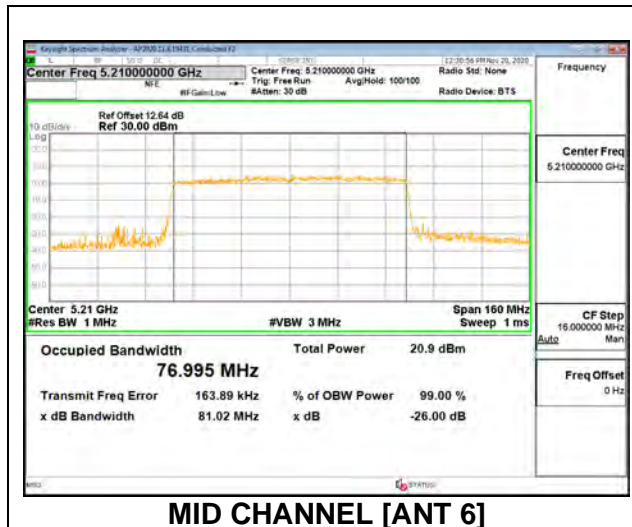
2TX Antenna 6 + Antenna 5 OFDMA MODE: SU Mode

Channel	Frequency	26 dB Bandwidth Antenna 6	26 dB Bandwidth Antenna 5	99% Bandwidth Antenna 6	99% Bandwidth Antenna 5
	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
Mid	5210	83.20	83.00	76.9950	77.0150

MID CHANNEL 26dB



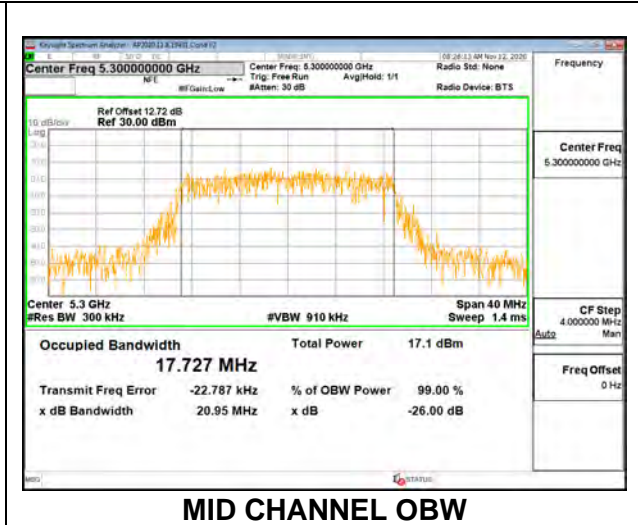
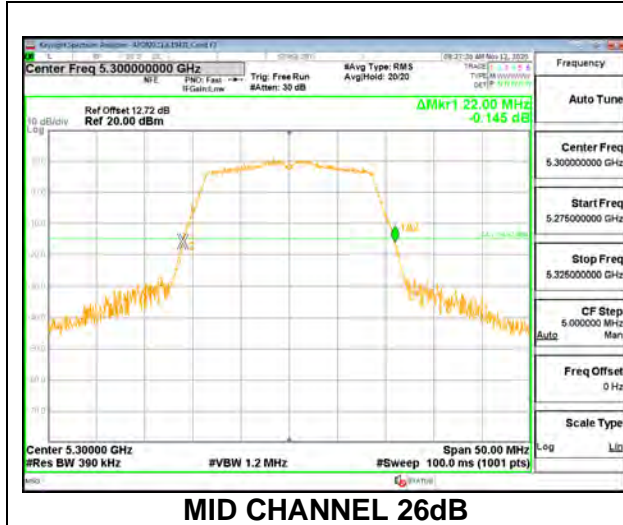
MID CHANNEL OBW



9.2.7. 802.11n HT20 MODE IN THE 5.3 GHz BAND

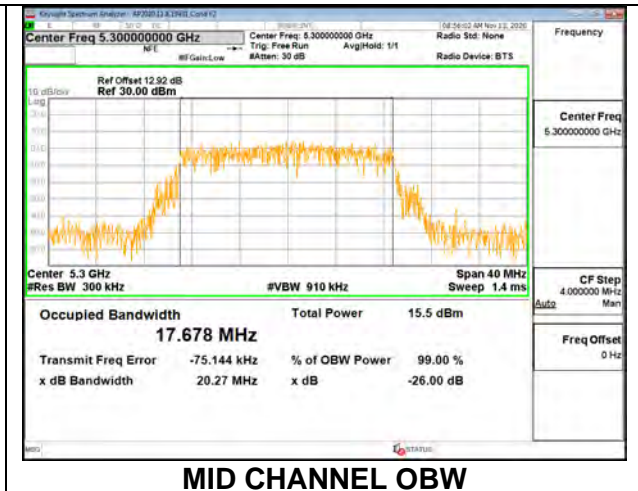
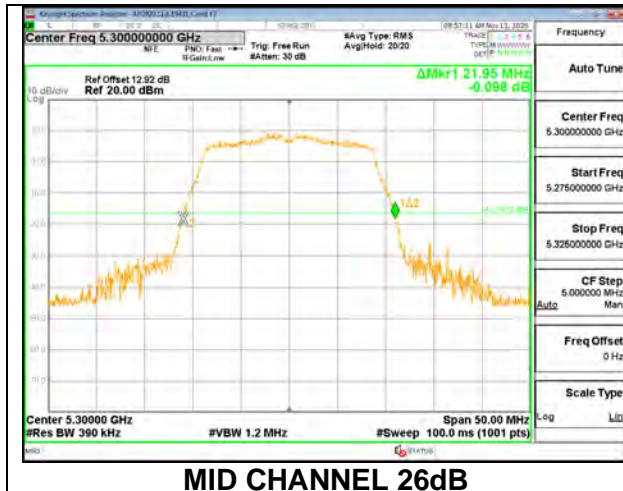
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	22.00	17.7270
Mid	5300	22.00	17.7270
High	5320	21.85	17.6690



1TX Antenna 5 MODE

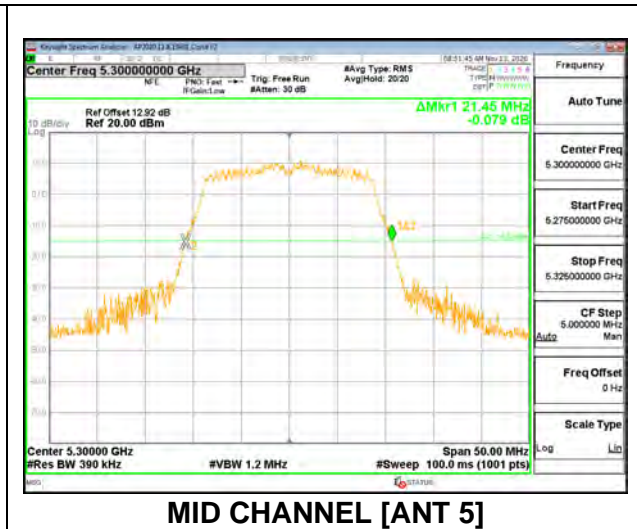
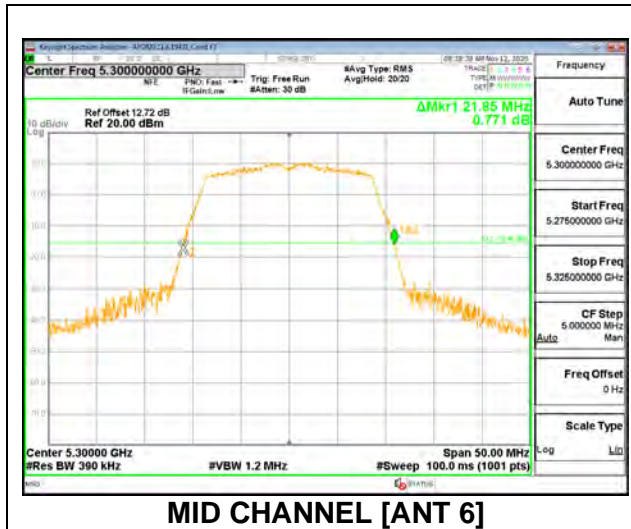
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	22.00	17.5900
Mid	5300	21.95	17.6780
High	5320	21.90	17.7030



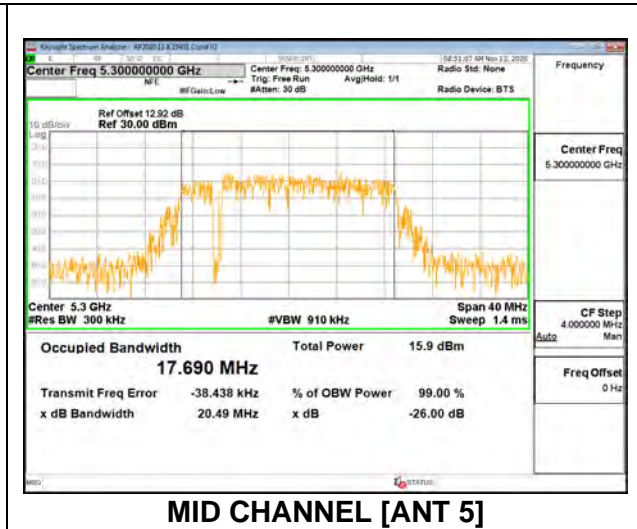
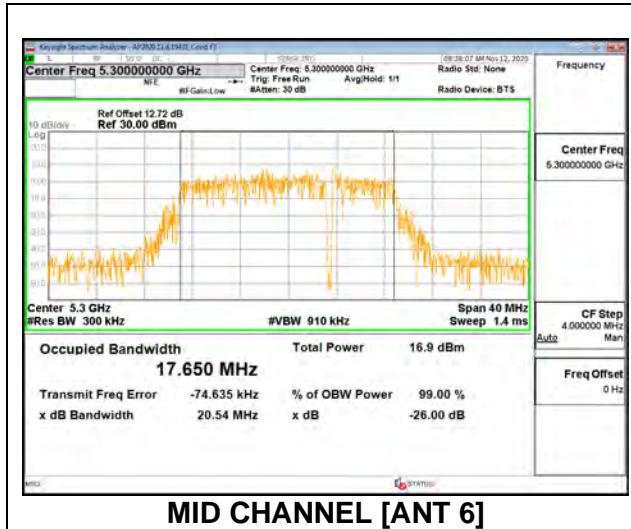
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	22.10	21.40	17.6440	17.6680
Mid	5300	21.85	21.45	17.6500	17.6900
High	5320	21.75	21.55	17.7940	17.6230

MID CHANNEL 26dB



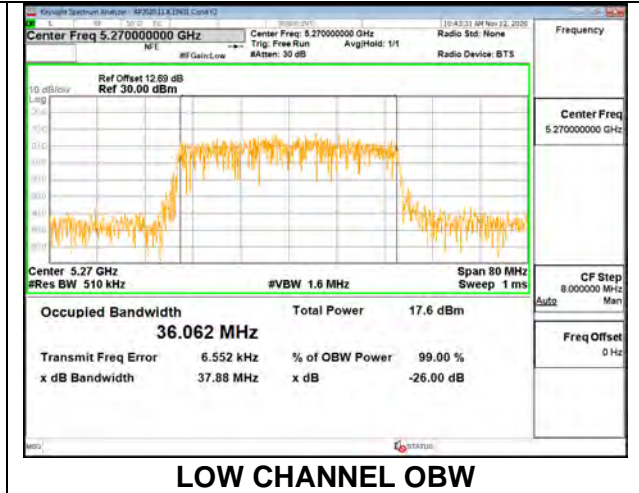
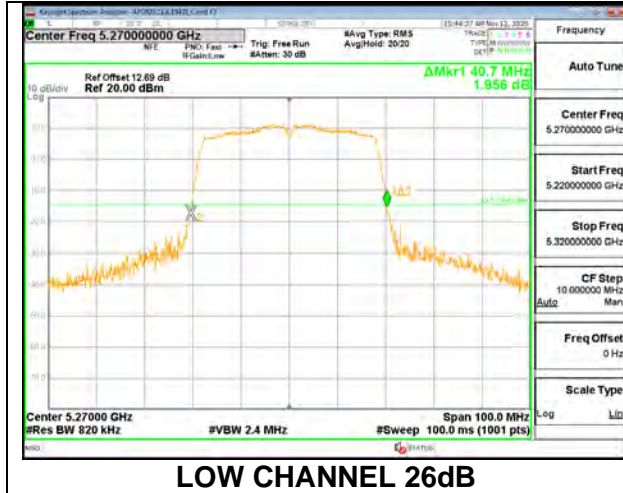
MID CHANNEL OBW



9.2.8. 802.11n HT40 MODE IN THE 5.3 GHz BAND

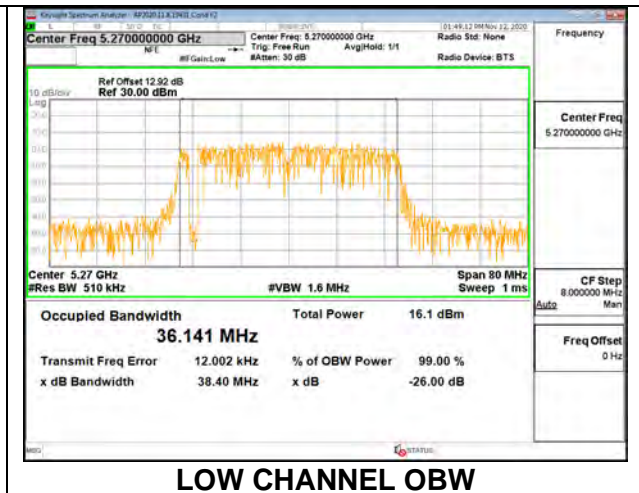
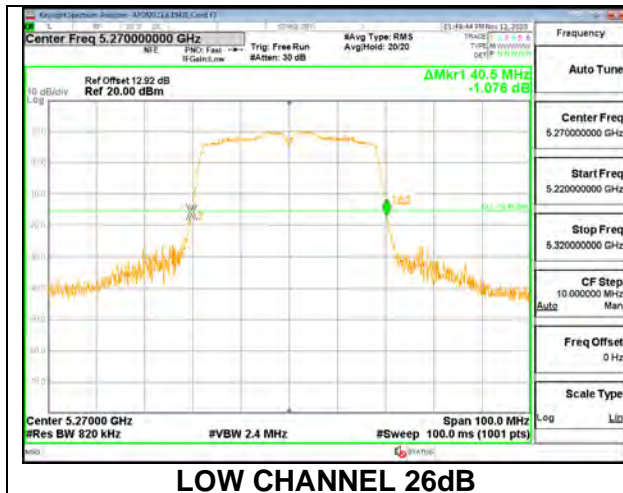
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	40.70	36.0620
High	5310	40.70	35.9250



1TX Antenna 5 MODE

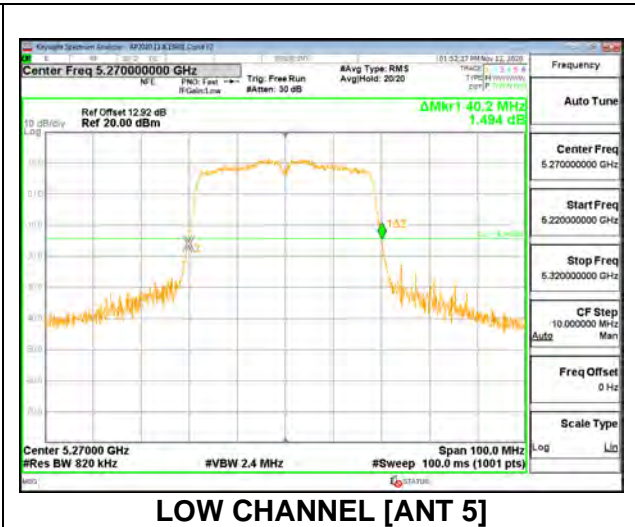
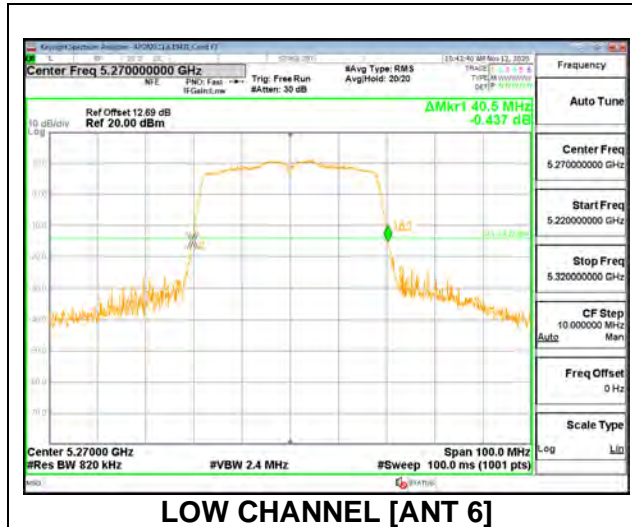
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	40.50	36.1410
High	5310	40.70	36.0470



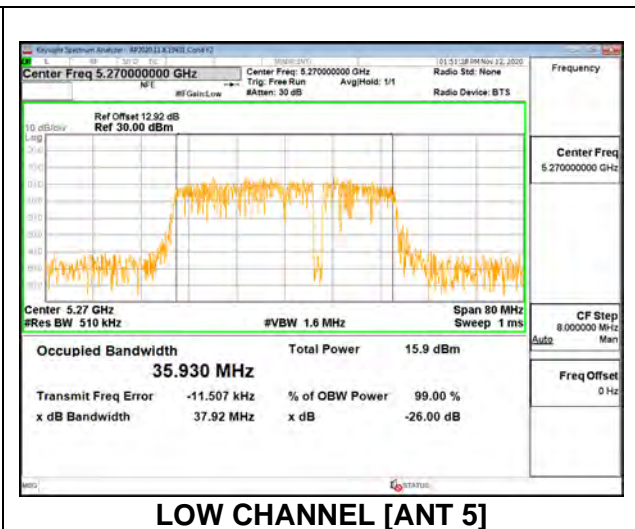
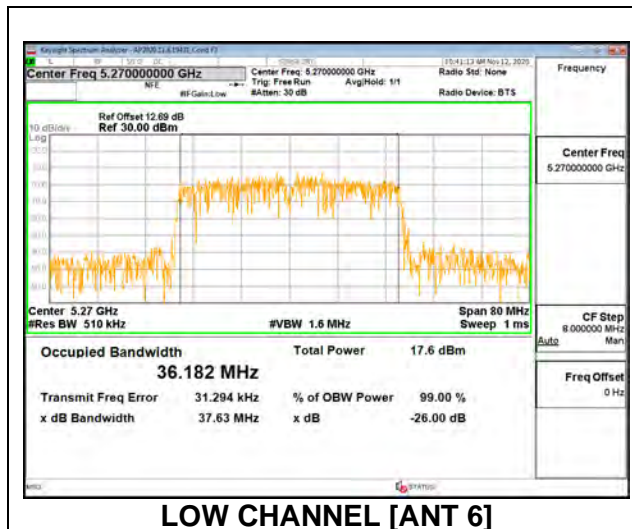
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	40.50	40.20	36.1820	35.9300
High	5310	40.60	40.20	36.1500	36.0560

LOW CHANNEL 26dB



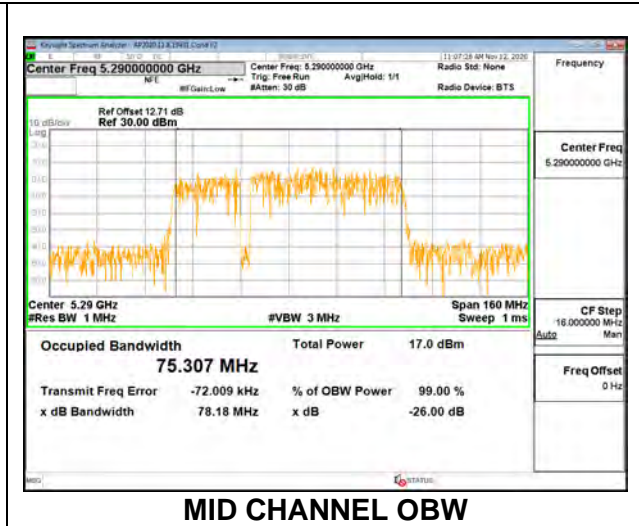
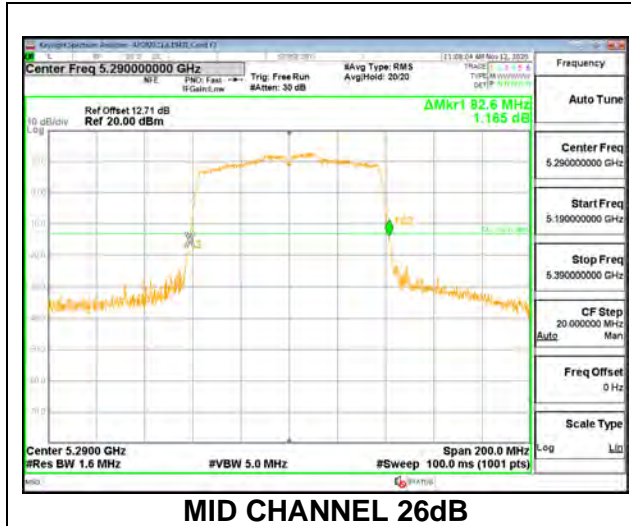
LOW CHANNEL OBW



9.2.9. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

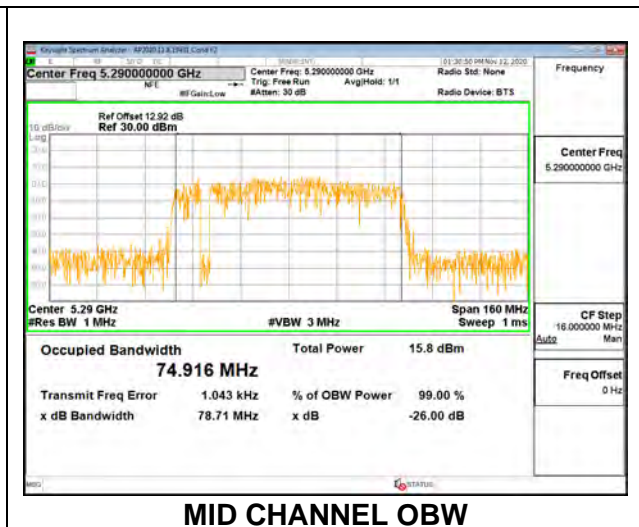
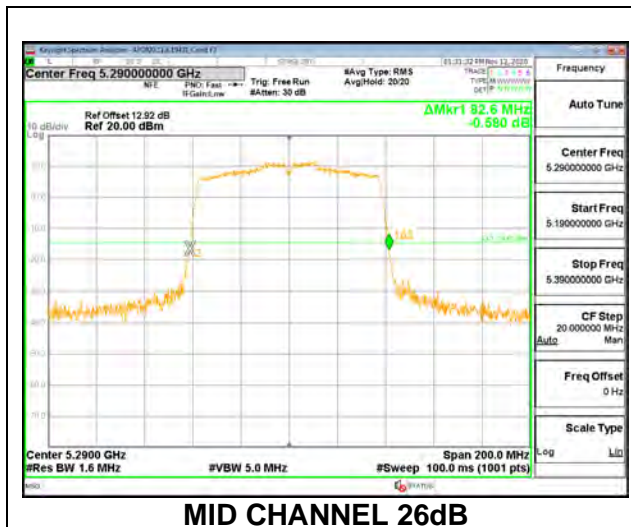
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	82.60	75.3070



1TX Antenna 5 MODE

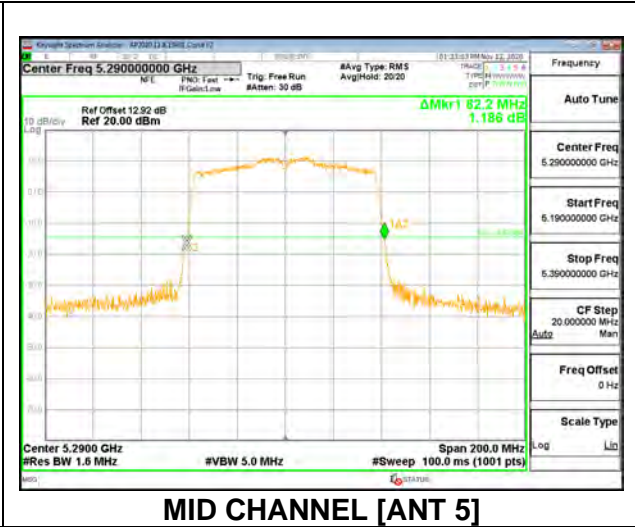
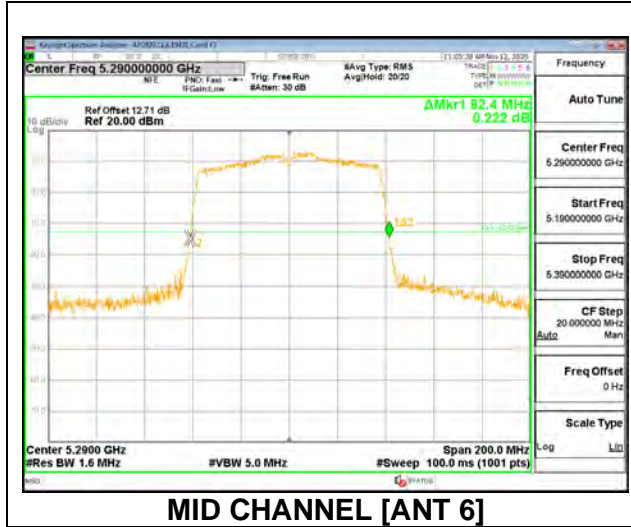
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	82.60	74.9160



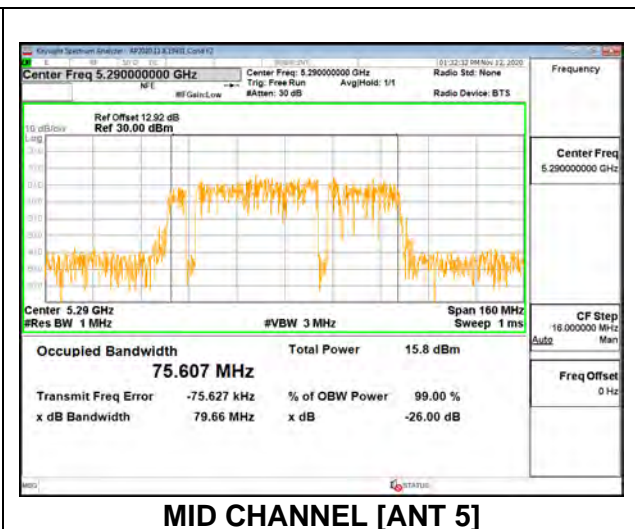
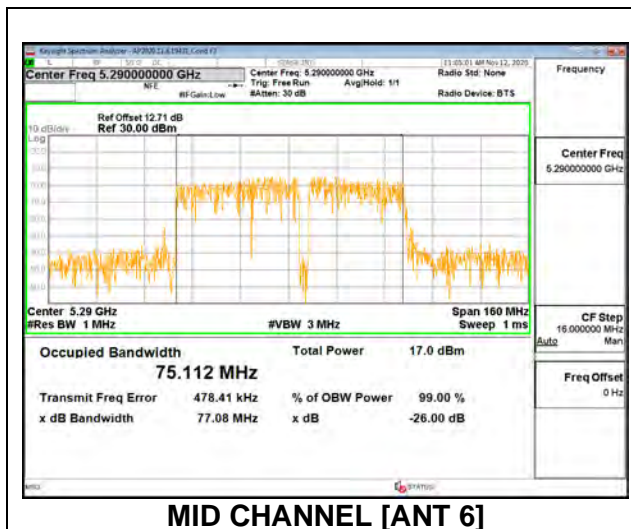
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency	26dB Bandwidth Antenna 6	26dB Bandwidth Antenna 5	99% Bandwidth Antenna 6	99% Bandwidth Antenna 5
Mid	5290	82.40	82.20	75.1120	75.6070

MID CHANNEL 26dB



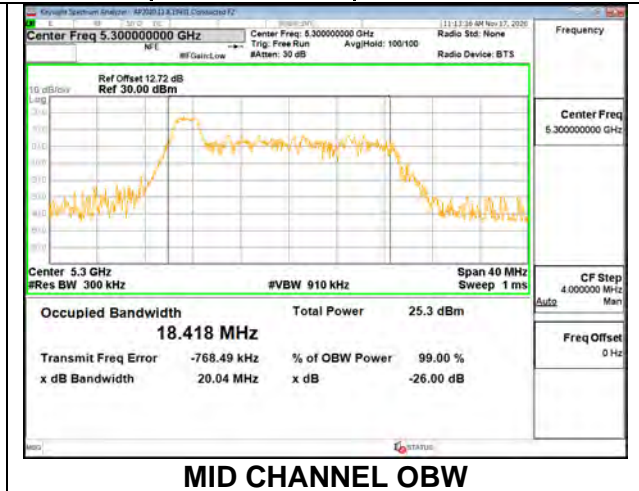
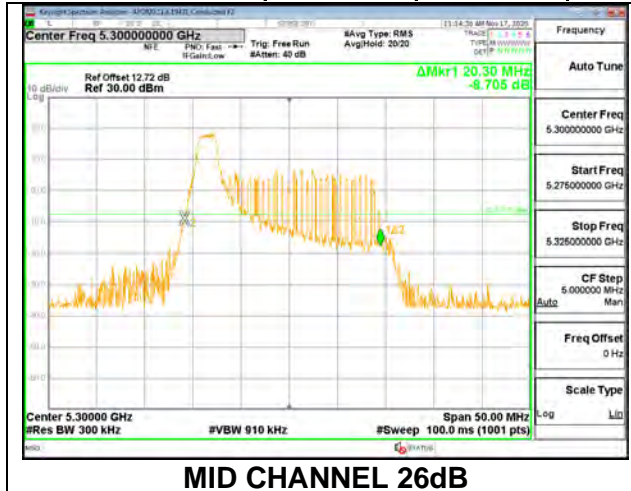
MID CHANNEL OBW



9.2.10. 802.11ax HE20 MODE IN THE 5.3 GHz BAND

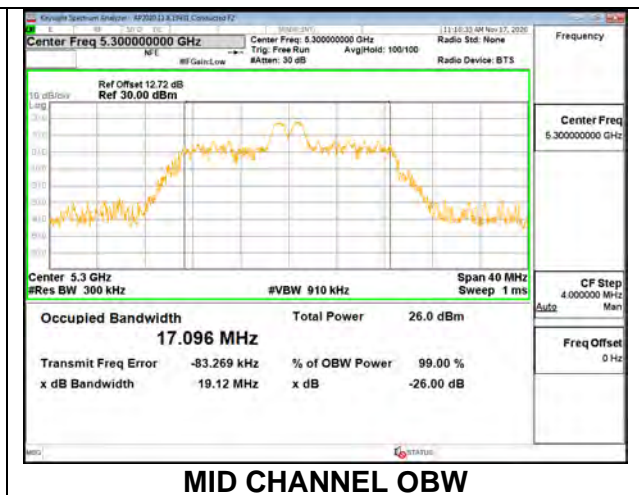
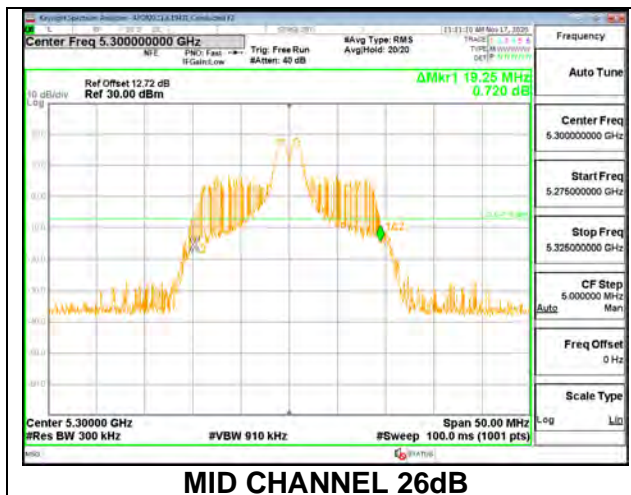
1TX Antenna 6 MODE: 26 Tones, RU Index 0

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5260	20.50	18.4190
Mid	5300	20.30	18.4180
High	5320	20.35	18.4800



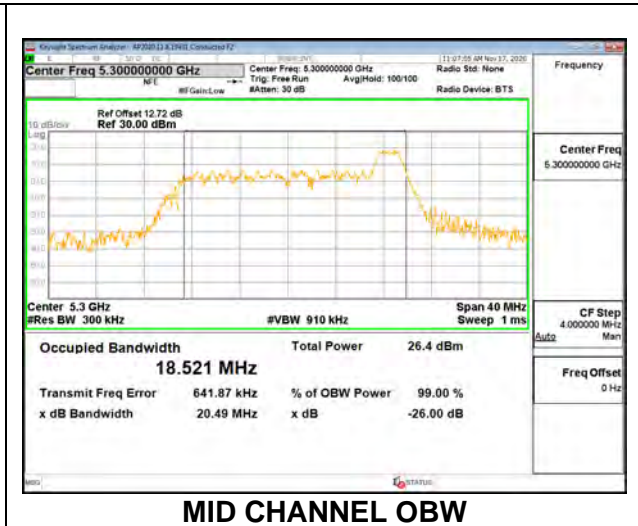
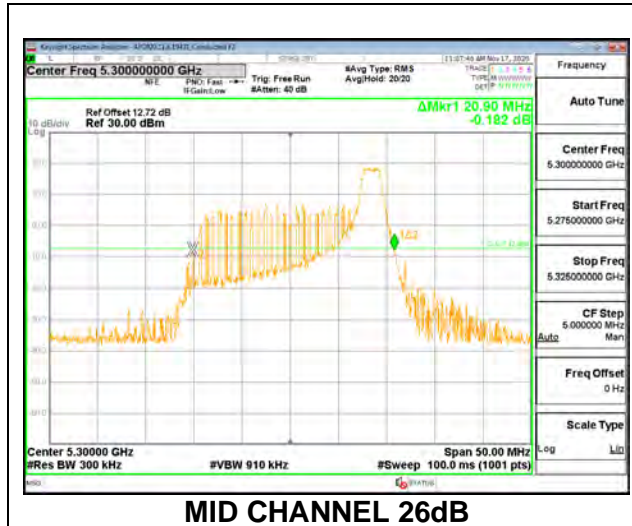
1TX Antenna 6 MODE: 26 Tones, RU Index 4

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5260	19.60	16.9440
Mid	5300	19.25	17.0960
High	5320	19.50	17.0980



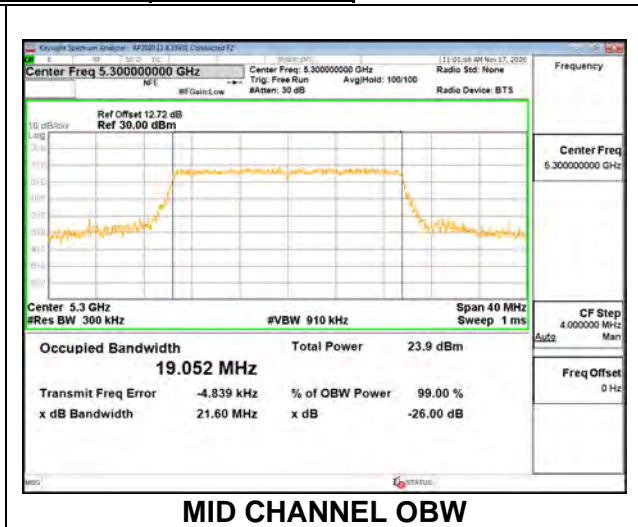
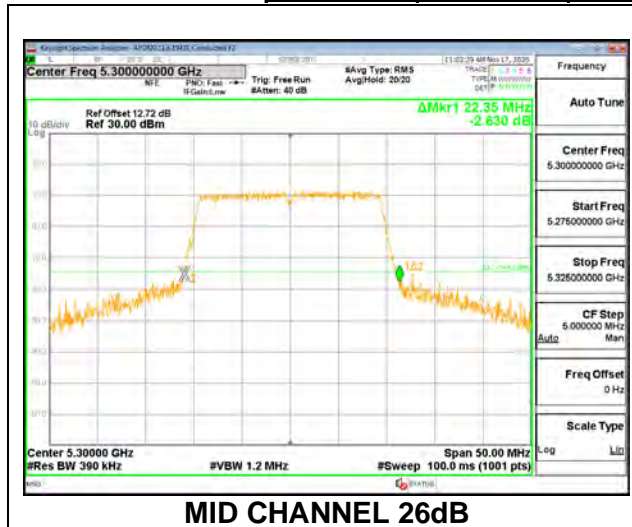
1TX Antenna 6 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	21.00	18.5510
Mid	5300	20.90	18.5210
High	5320	20.95	18.5770



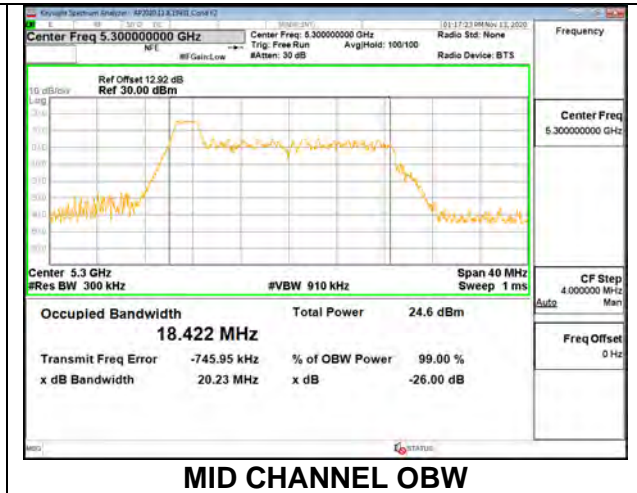
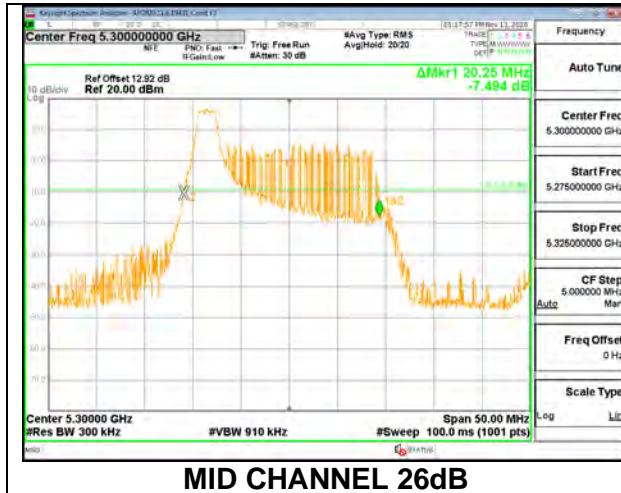
1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	22.35	19.0540
Mid	5300	22.35	19.0520
High	5320	22.05	19.0700



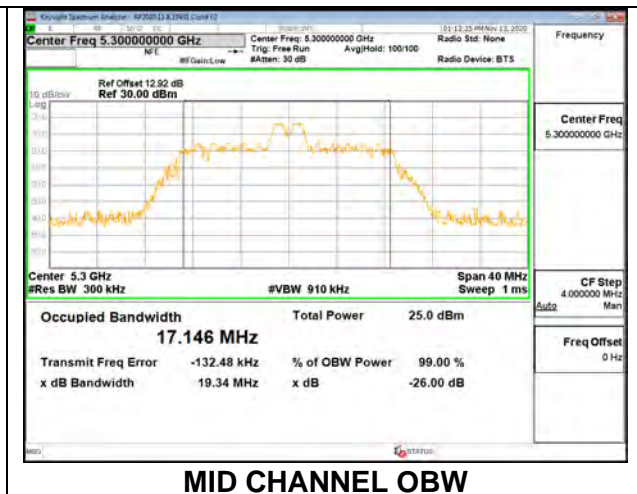
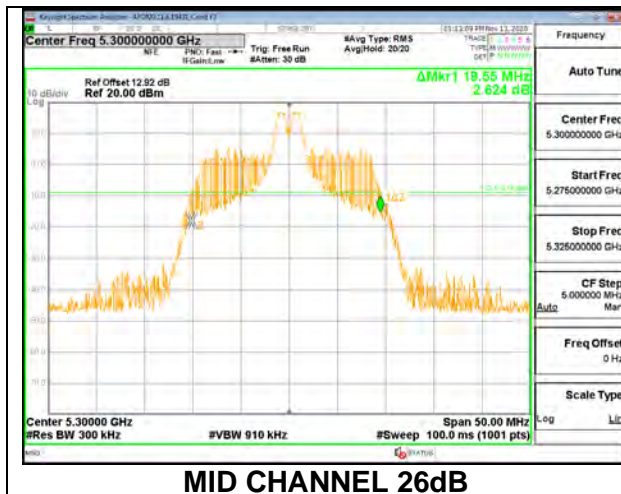
1TX Antenna 5 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	20.35	18.3830
Mid	5300	20.25	18.4220
High	5320	20.35	18.4020



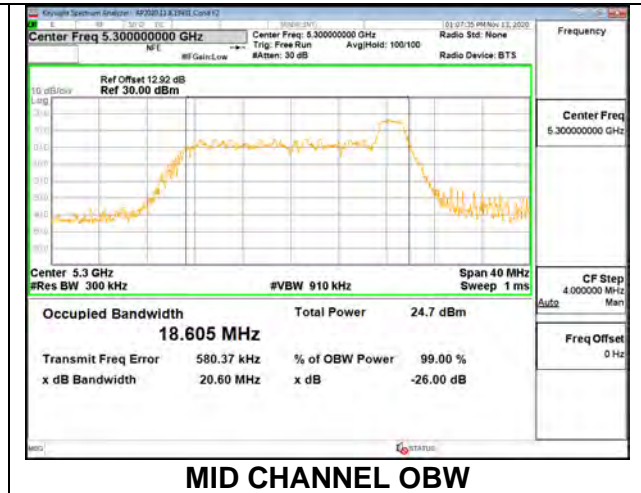
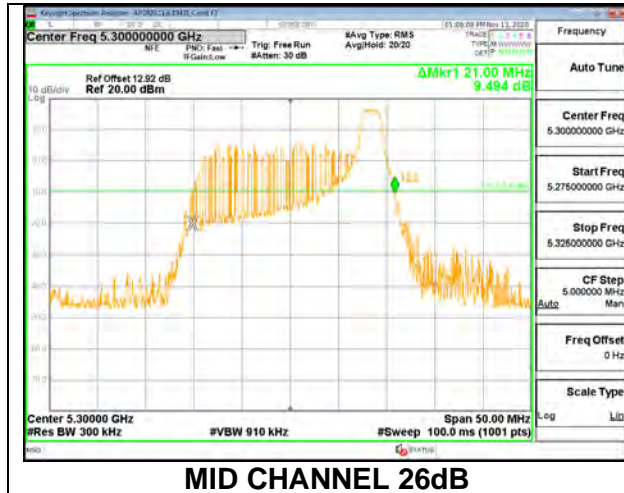
1TX Antenna 5 MODE: 26 Tones, RU Index 4

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.50	17.1720
Mid	5300	19.55	17.1460
High	5320	19.65	17.0850



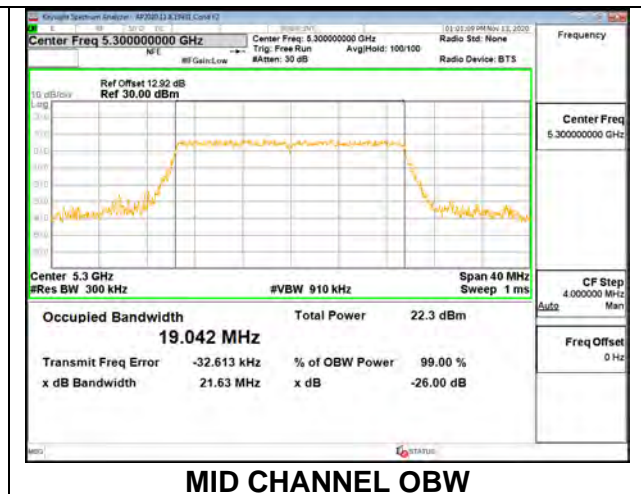
1TX Antenna 5 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	20.75	18.6460
Mid	5300	21.00	18.6050
High	5320	20.95	18.6520



1TX Antenna 5 MODE: SU Mode

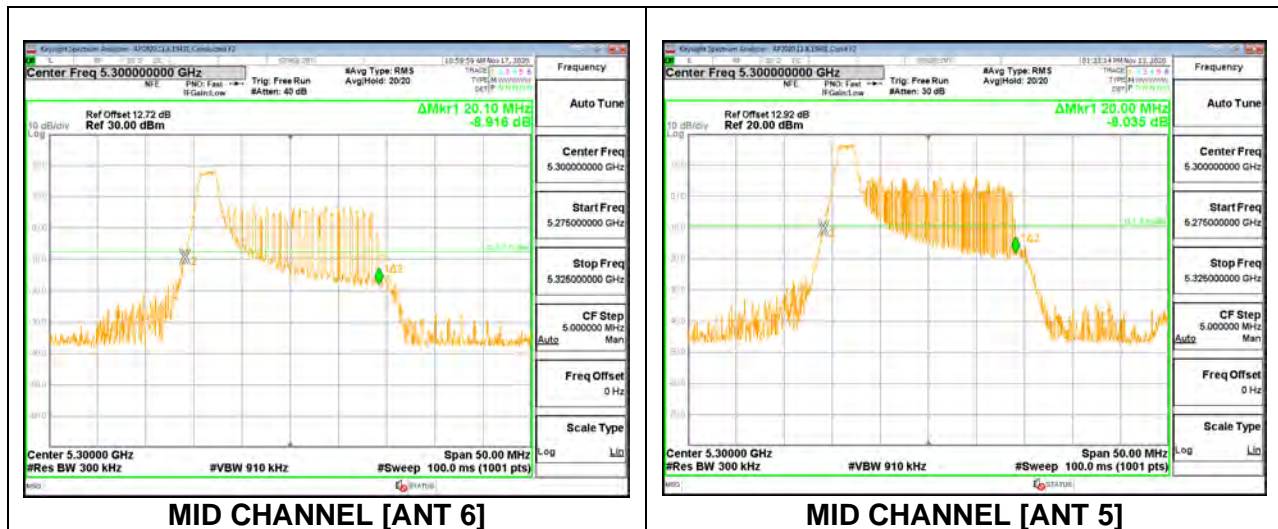
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	22.15	19.0810
Mid	5300	22.15	19.0420
High	5320	22.10	19.0370



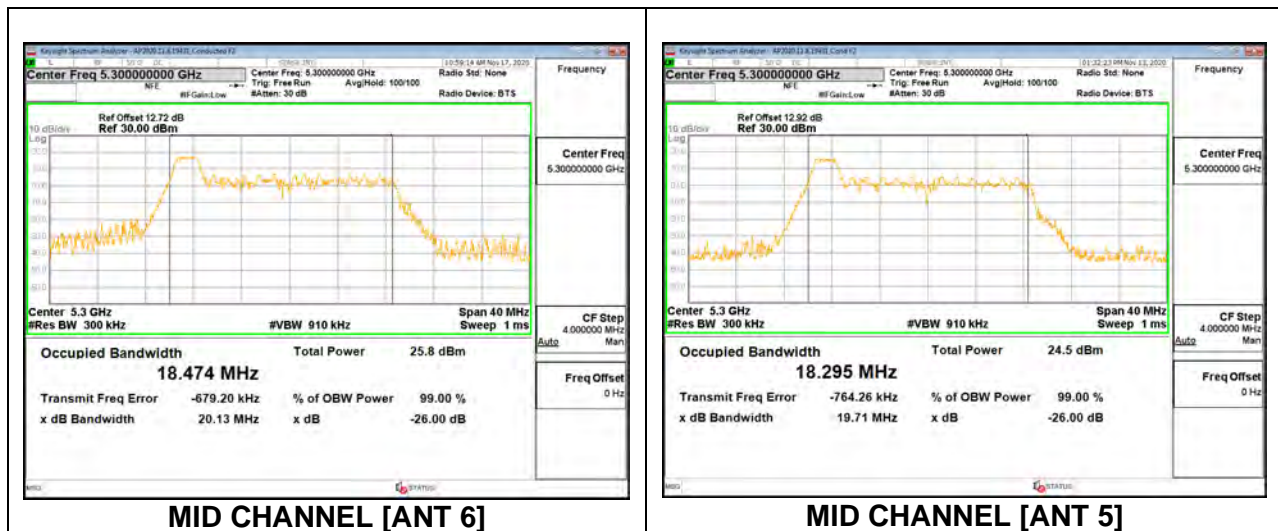
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	20.15	19.75	18.3110	18.4350
Mid	5300	20.10	20.00	18.4740	18.2950
High	5320	20.35	19.95	18.2710	18.3910

MID CHANNEL 26dB



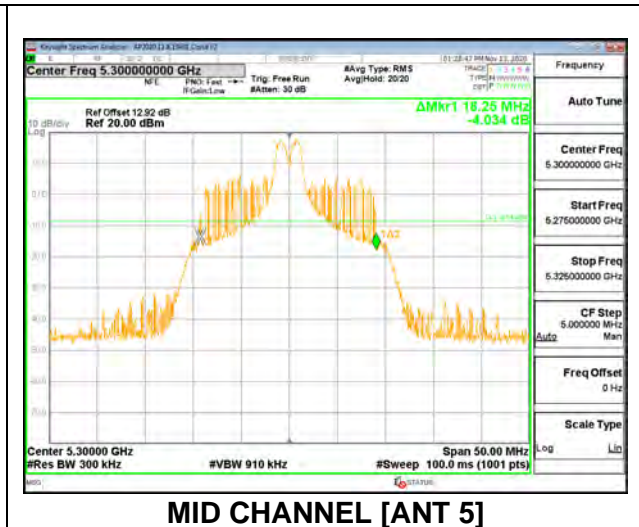
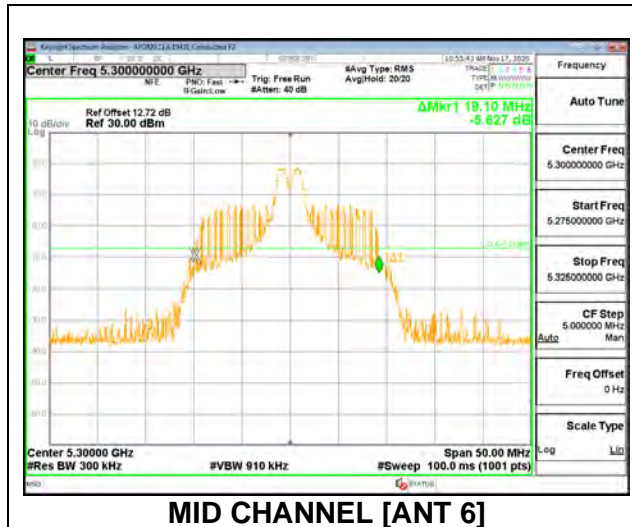
MID CHANNEL OBW



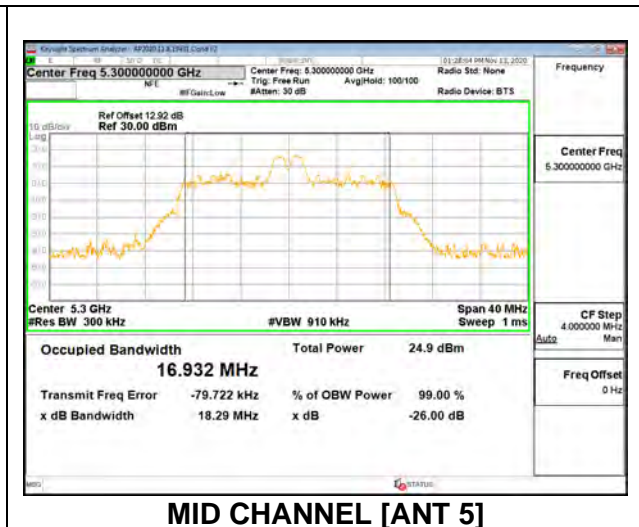
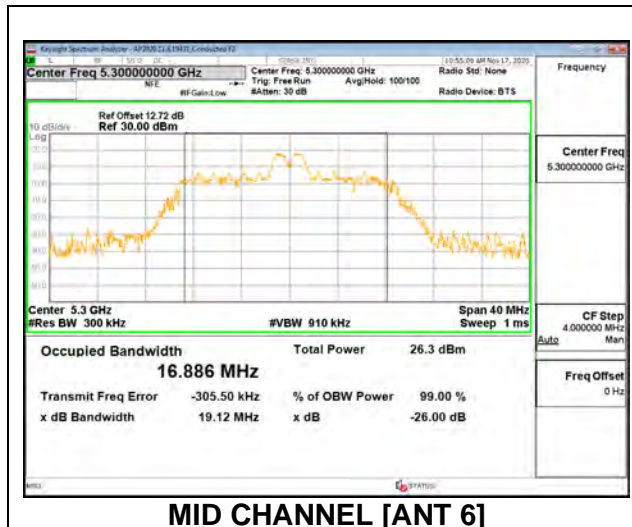
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 4

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	19.45	18.35	17.1060	16.9230
Mid	5300	19.10	18.25	16.8860	16.9320
High	5320	19.60	18.25	17.1680	16.9100

MID CHANNEL 26dB



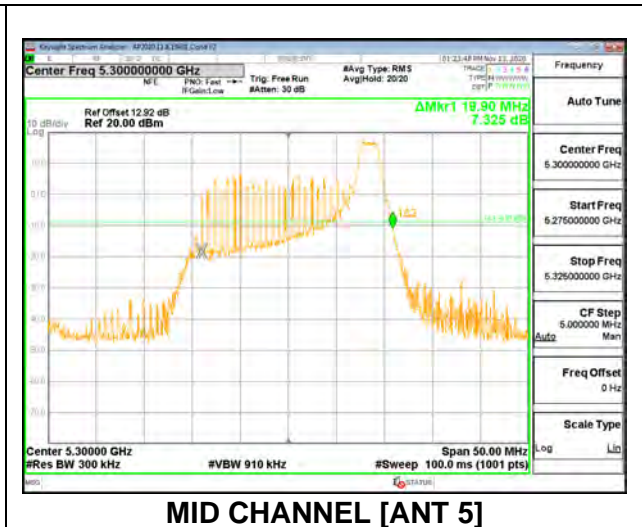
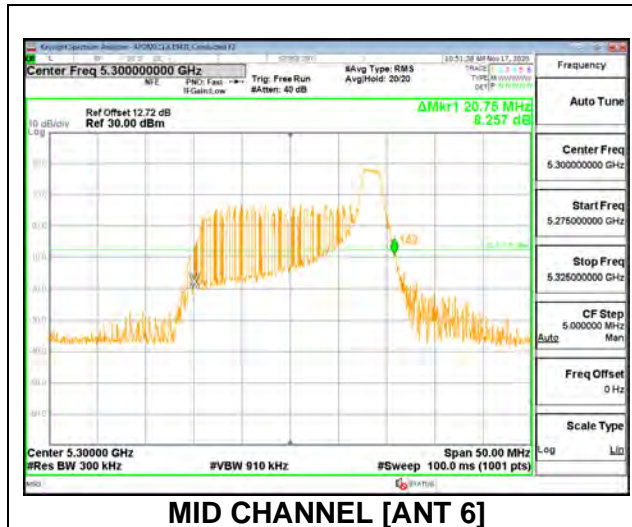
MID CHANNEL OBW



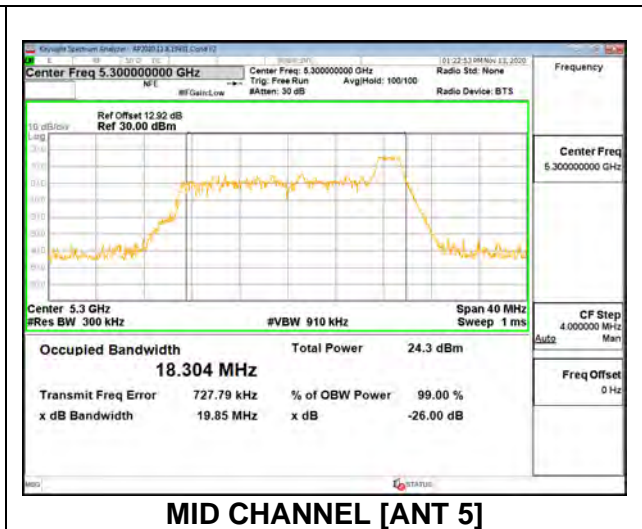
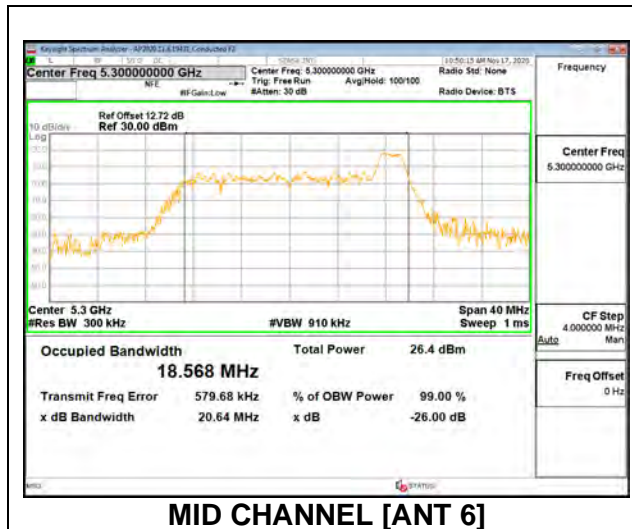
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	21.00	20.00	18.5340	18.4670
Mid	5300	20.75	19.90	18.5680	18.3040
High	5320	20.85	20.10	18.5290	18.3840

MID CHANNEL 26dB



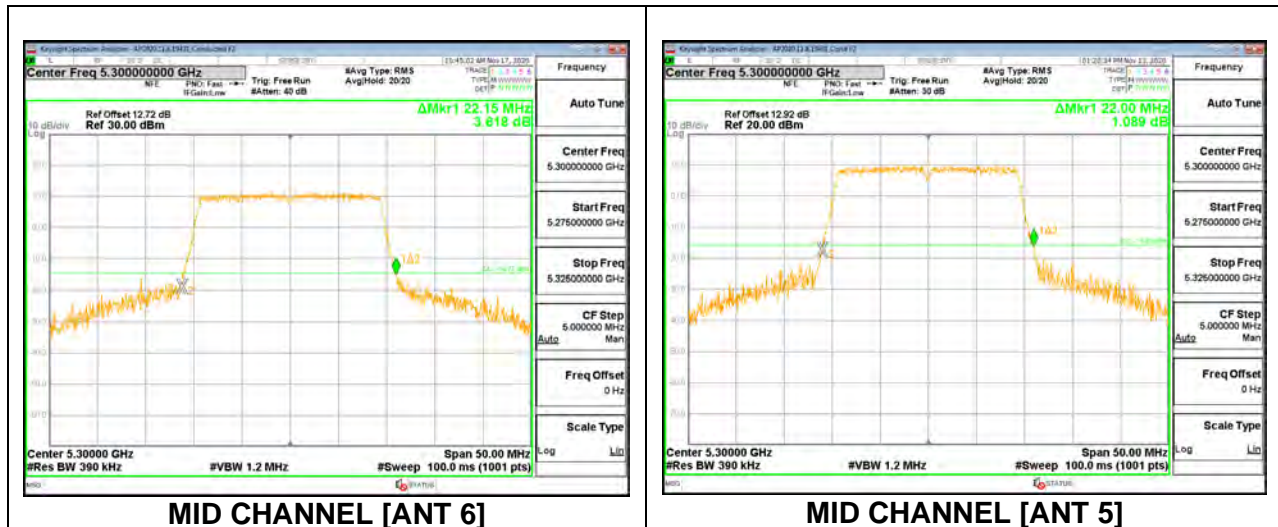
MID CHANNEL OBW



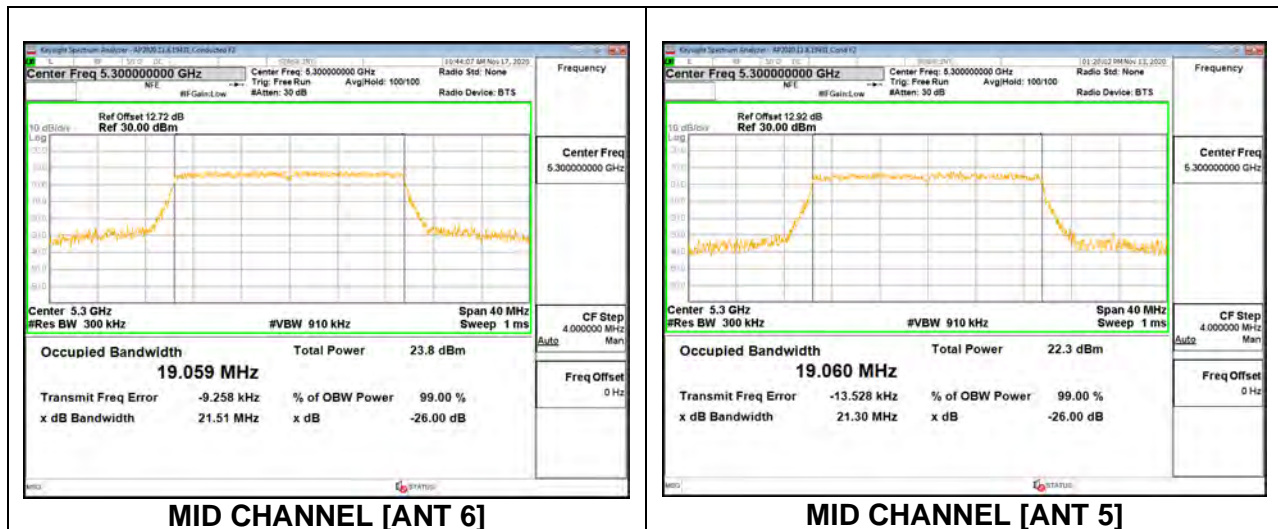
2TX Antenna 6 + Antenna 5 OFDMA MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	22.15	21.85	19.0580	19.0860
Mid	5300	22.15	22.00	19.0590	19.0600
High	5320	22.15	21.65	19.0310	19.0310

MID CHANNEL 26dB



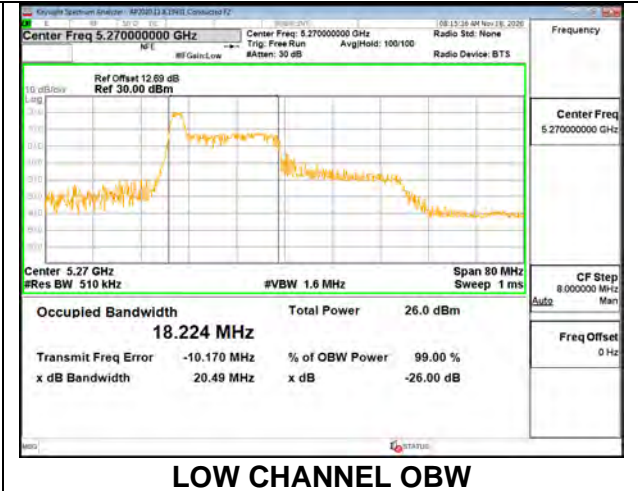
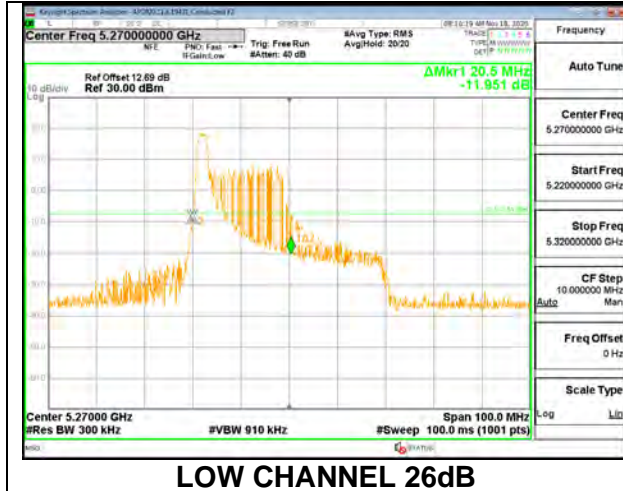
MID CHANNEL OBW



9.2.11. 802.11ax HE40 MODE IN THE 5.3 GHz BAND

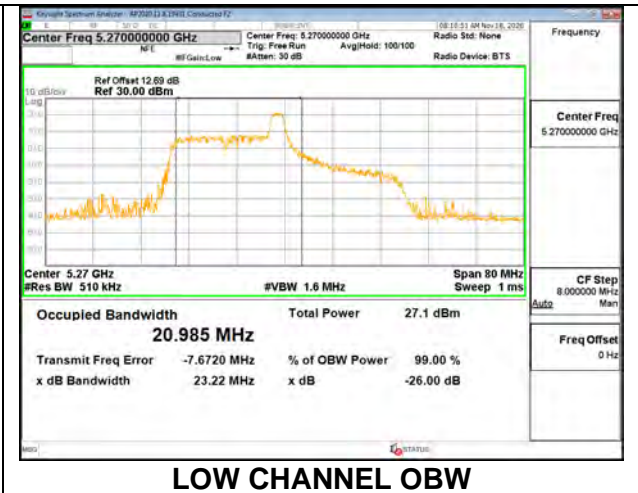
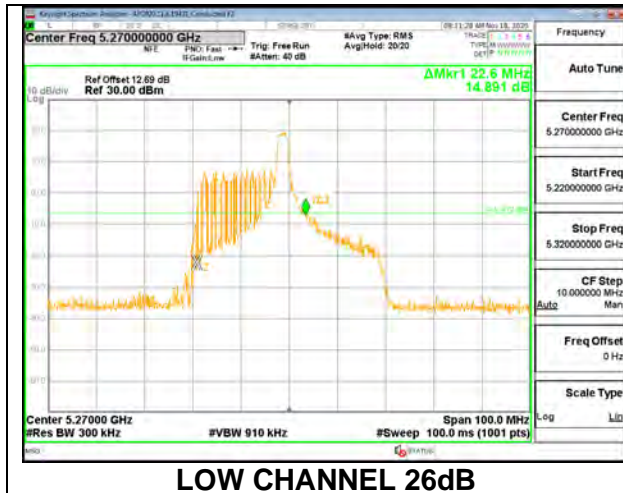
1TX Antenna 6 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.50	18.2240
High	5310	20.40	18.1600



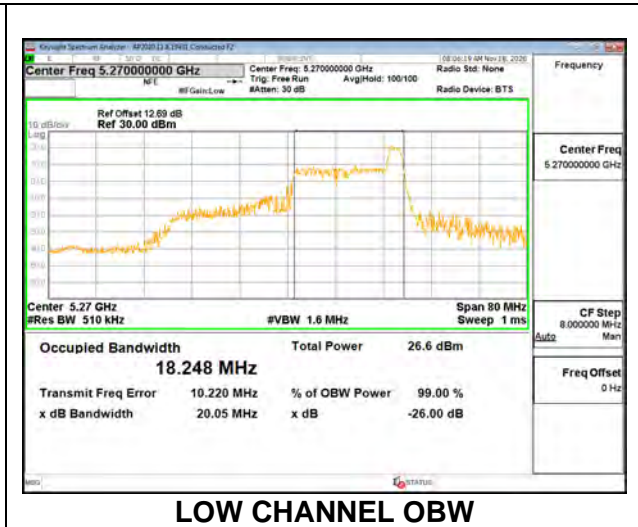
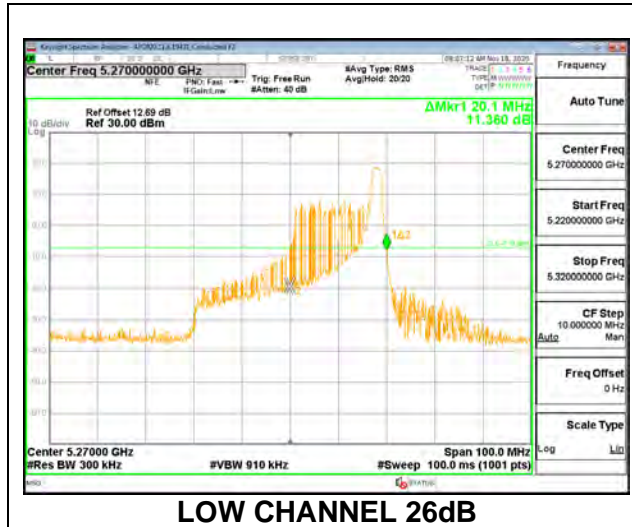
1TX Antenna 6 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	22.60	20.9850
High	5310	22.30	21.2470



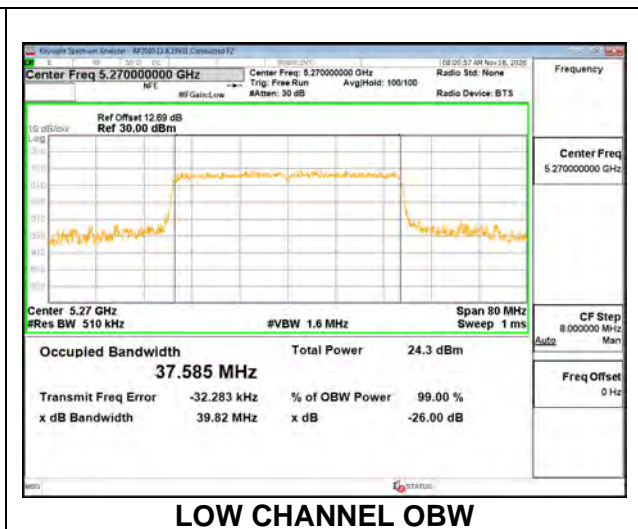
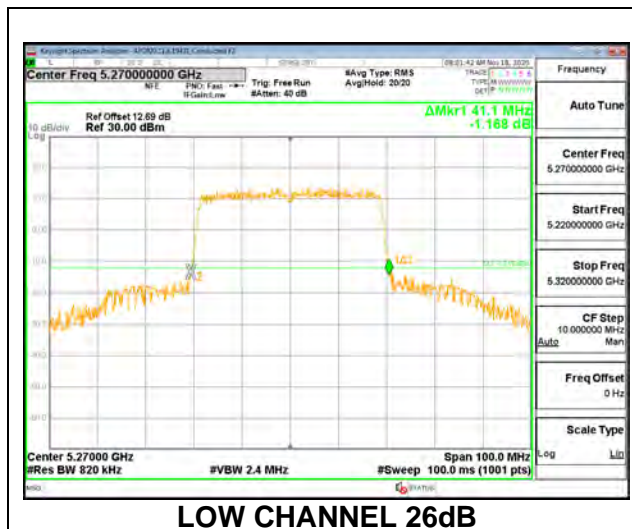
1TX Antenna 6 MODE: 26 Tones, RU Index 17

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.10	18.2480
High	5310	20.10	18.3680



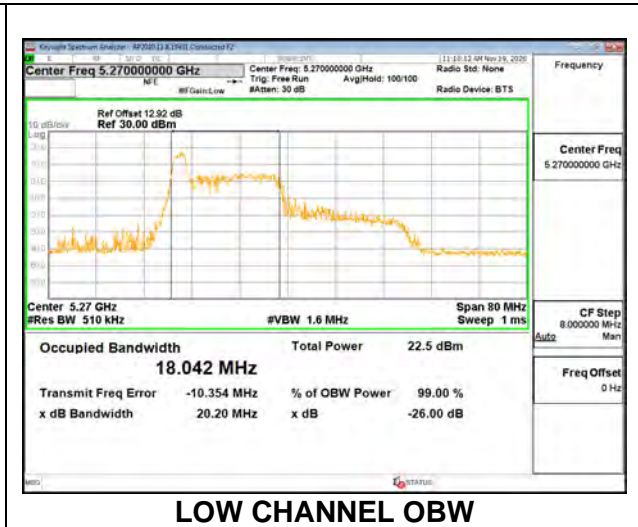
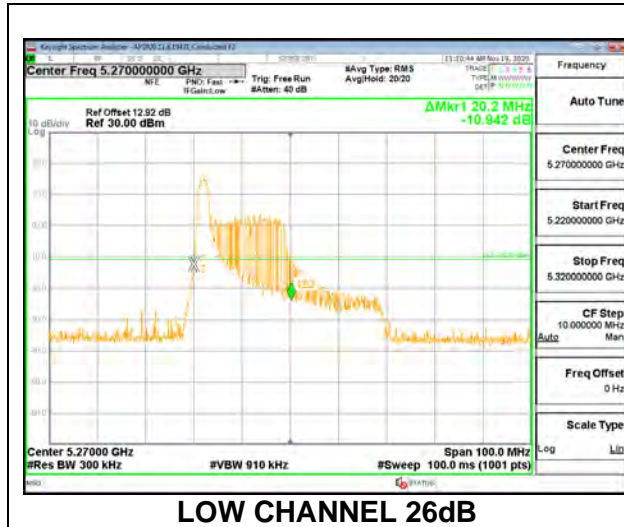
1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	41.10	37.5850
High	5310	40.90	37.5560



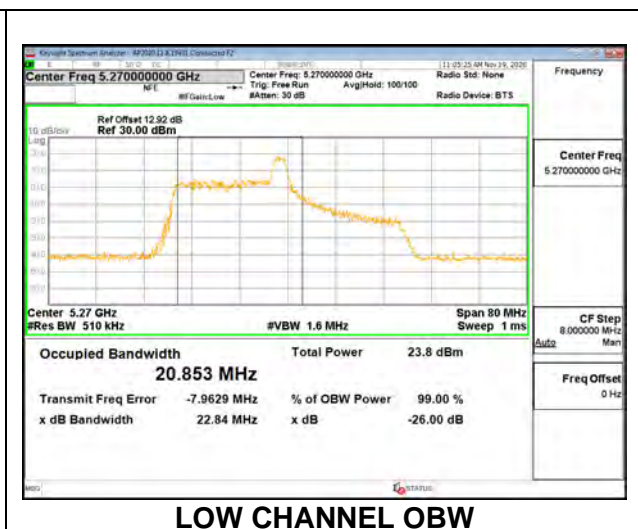
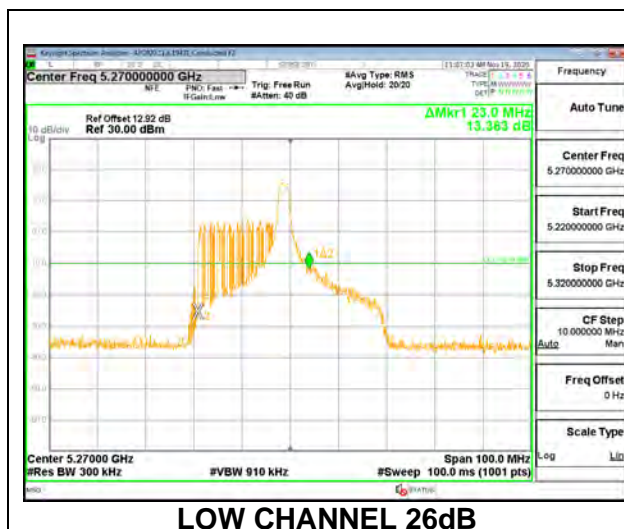
1TX Antenna 5 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.20	18.0420
High	5310	19.80	18.0290



1TX Antenna 5 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	23.00	20.8530
High	5310	25.20	21.0420



1TX Antenna 5 MODE: 26 Tones, RU Index 17

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.30	18.2660
High	5310	20.10	18.4830



1TX Antenna 5 MODE: SU Mode

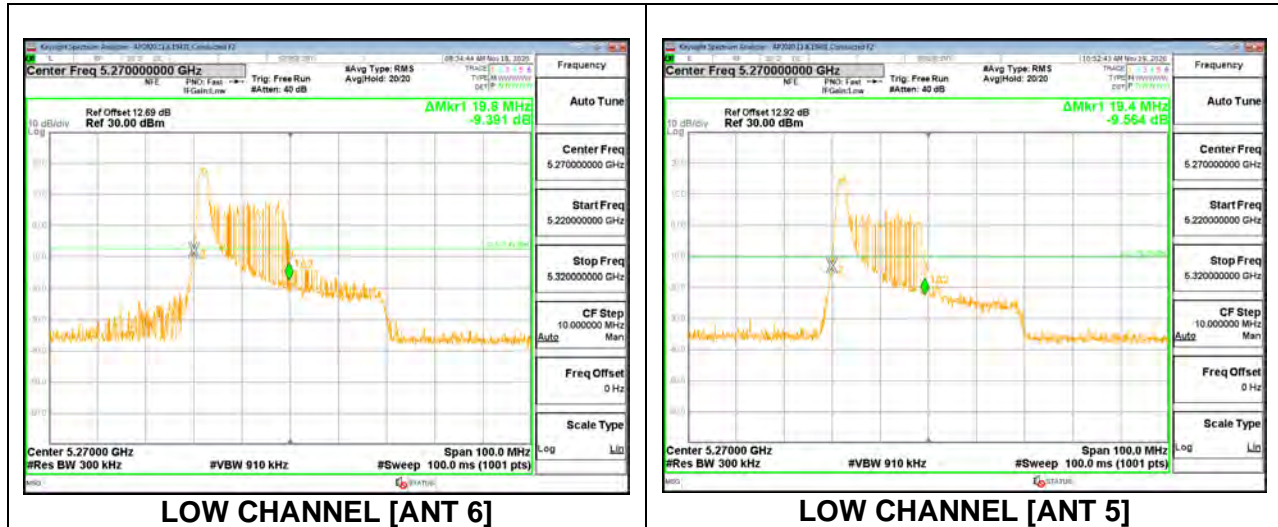
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	41.20	37.5370
High	5310	41.00	37.5990



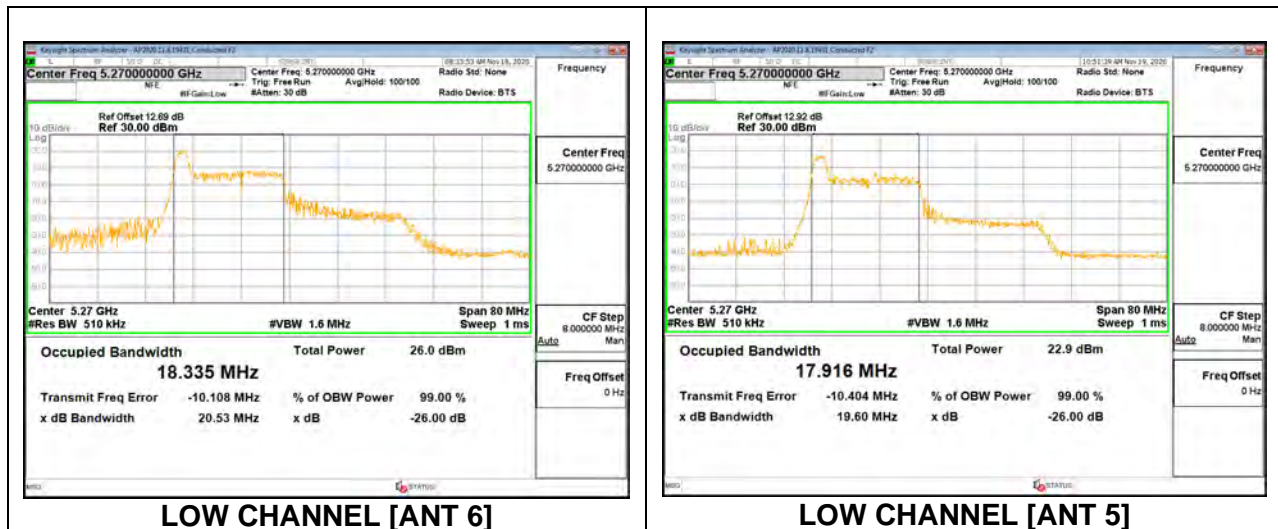
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	19.80	19.40	18.3350	17.9160
High	5310	20.30	19.40	18.3620	18.0410

LOW CHANNEL 26dB



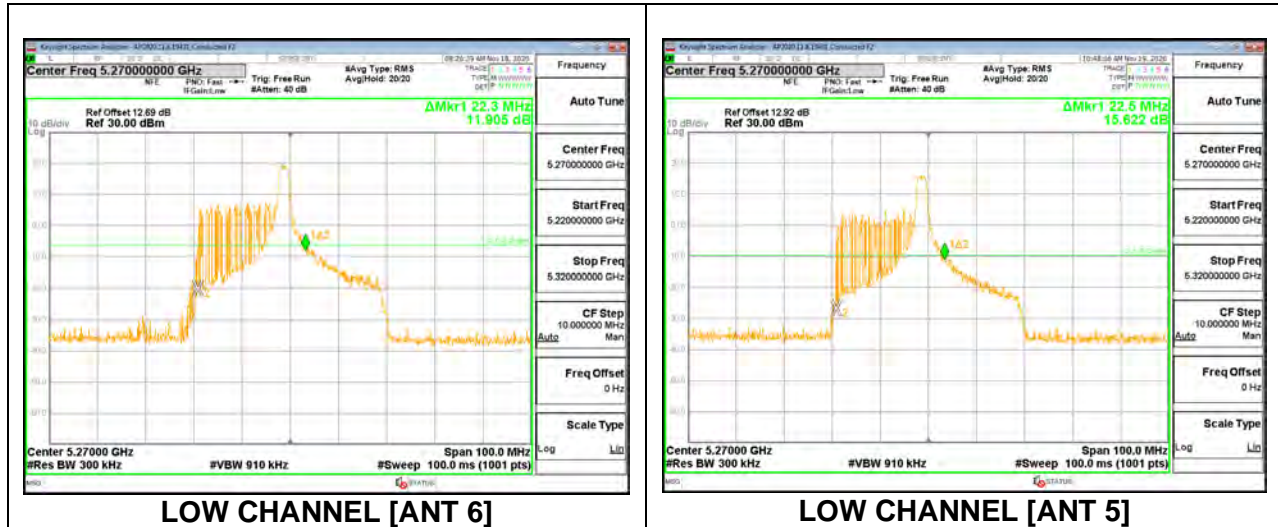
LOW CHANNEL OBW



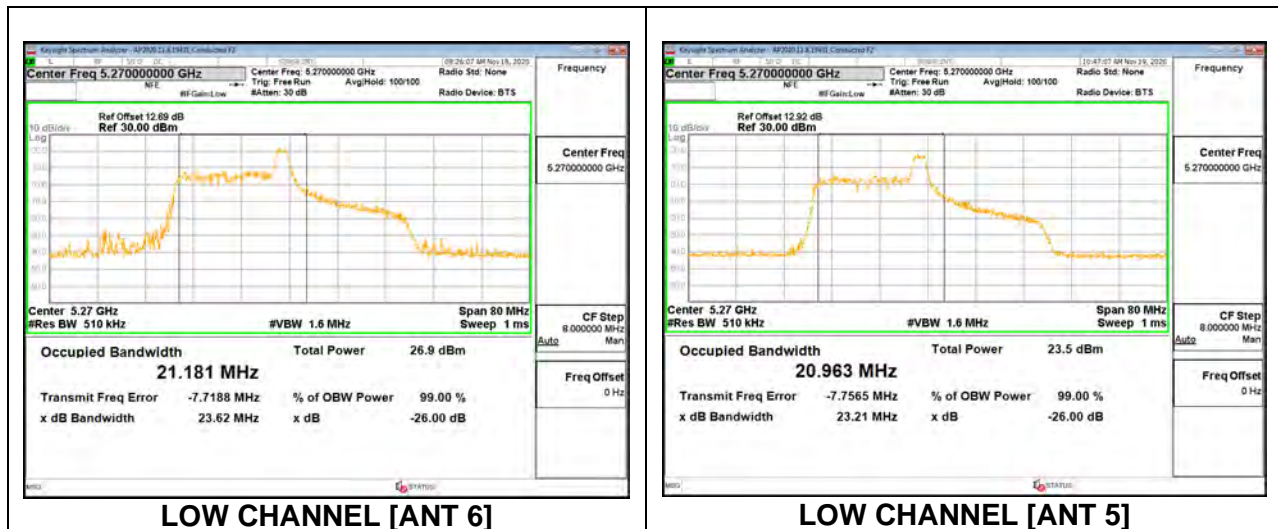
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	22.30	22.50	21.1810	20.9630
High	5310	22.40	23.10	21.1370	20.7830

LOW CHANNEL 26dB



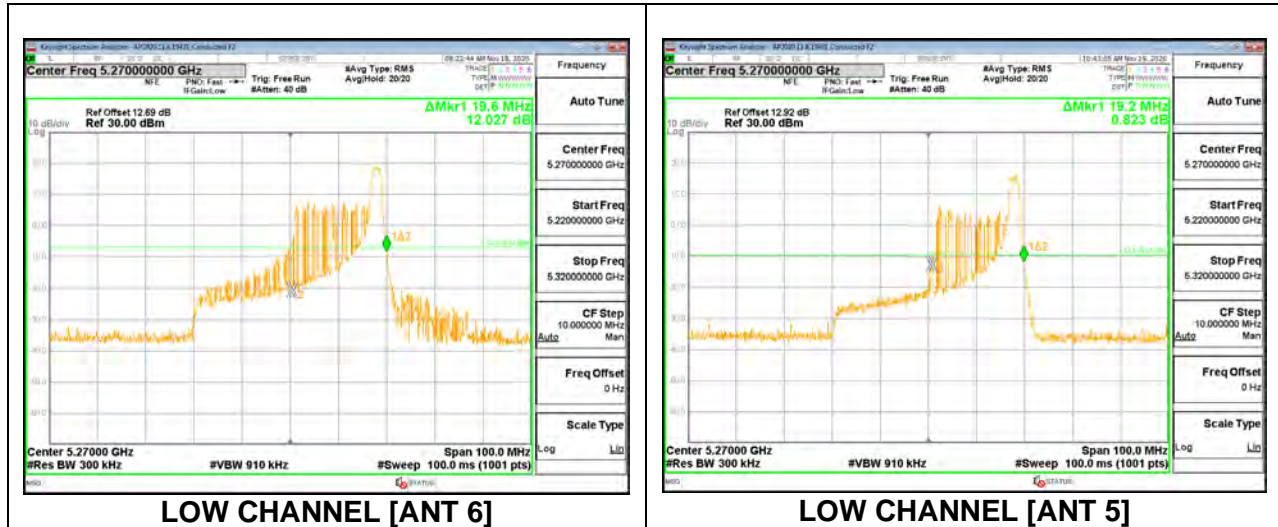
LOW CHANNEL OBW



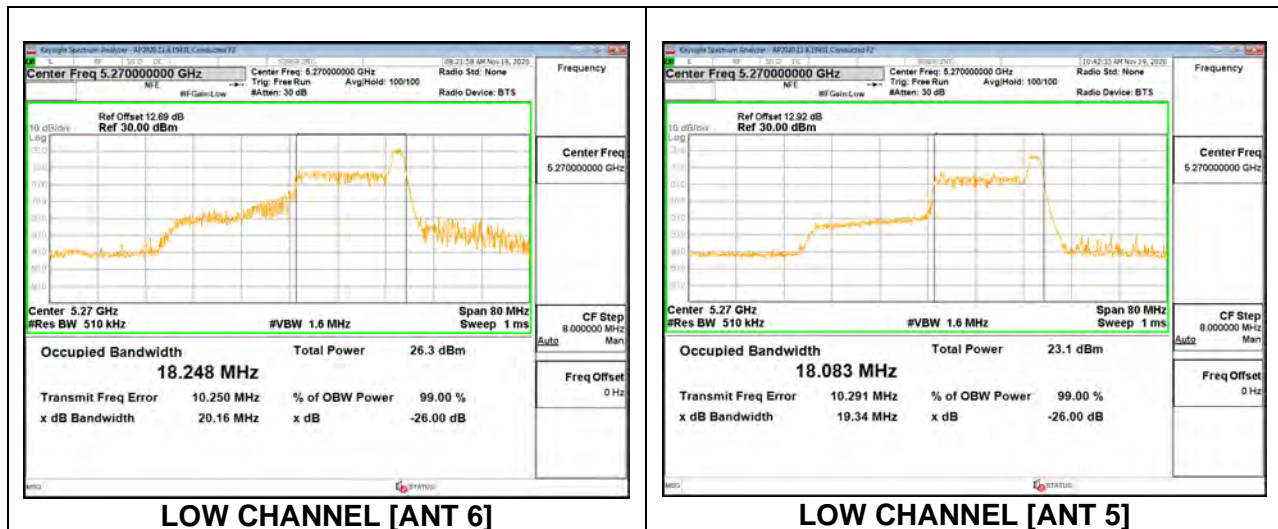
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 17

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	19.60	19.20	18.2480	18.0830
High	5310	20.20	19.10	18.4220	18.0010

LOW CHANNEL 26dB



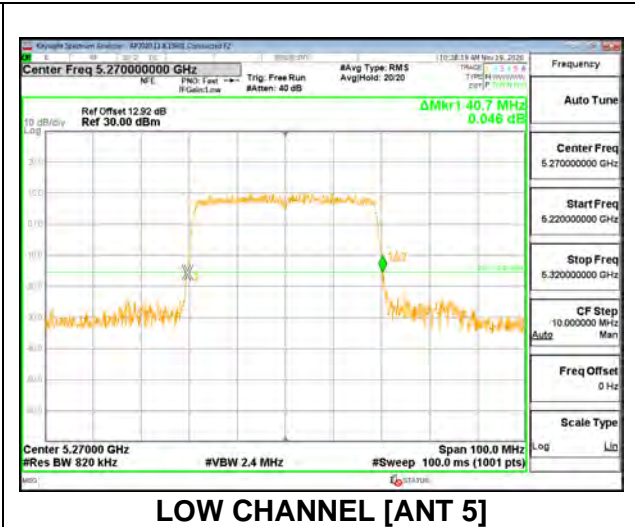
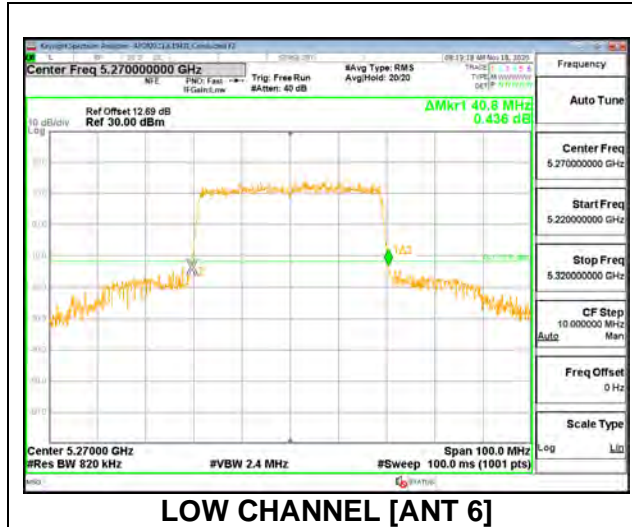
LOW CHANNEL OBW



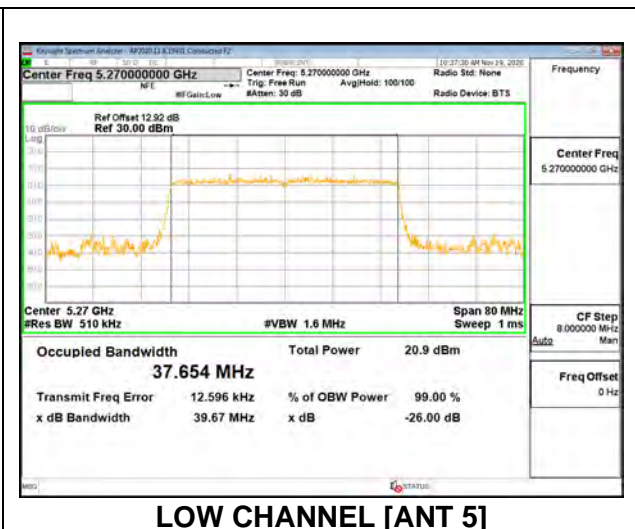
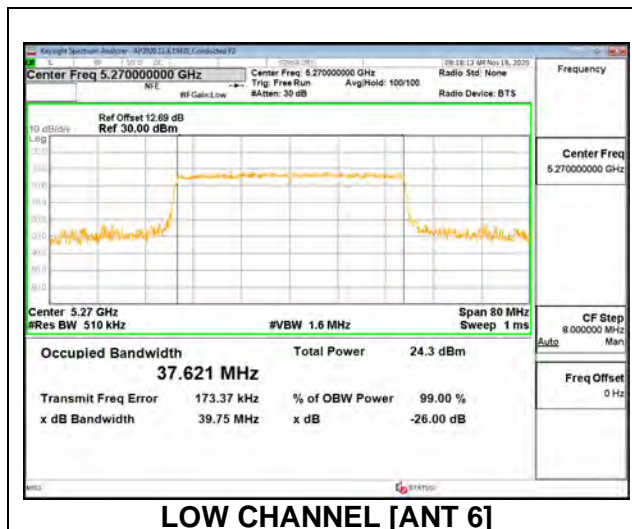
2TX Antenna 6 + Antenna 5 OFDMA MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	40.80	40.70	37.6210	37.6540
High	5310	41.00	40.80	37.5920	37.5950

LOW CHANNEL 26dB



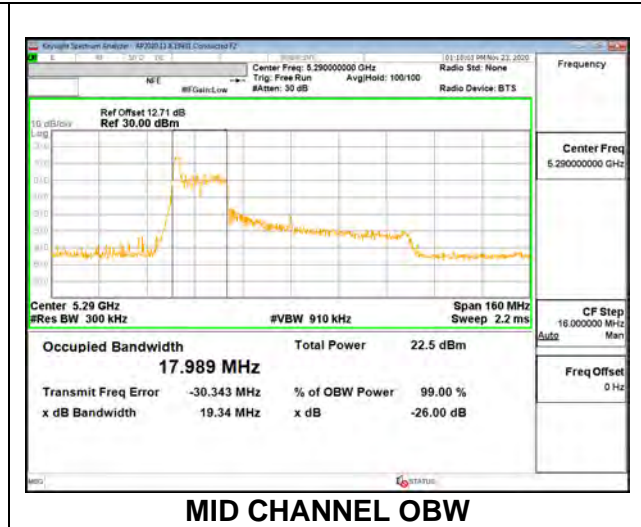
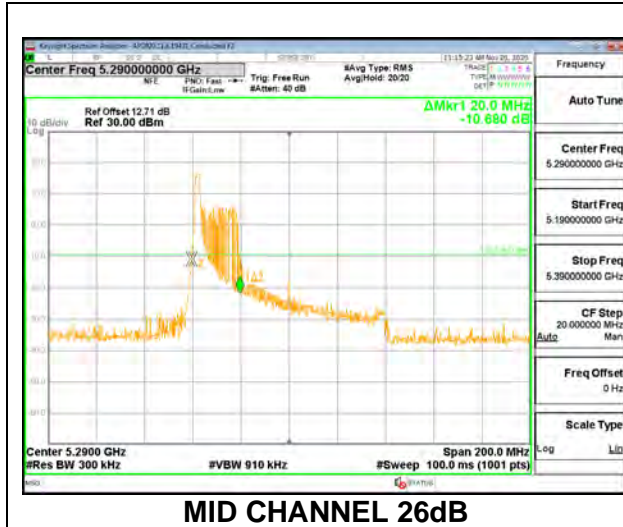
LOW CHANNEL OBW



9.2.12. 802.11ax HE80 MODE IN THE 5.3 GHz BAND

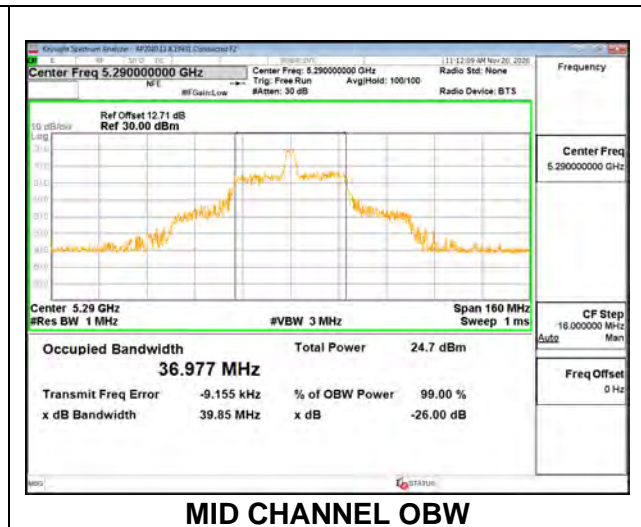
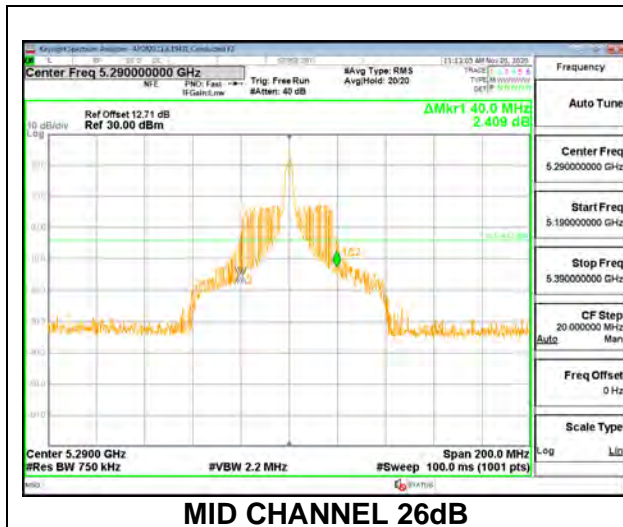
1TX Antenna 6 MODE: 26 Tones, RU Index 0

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Mid	5290	20.00	17.9890



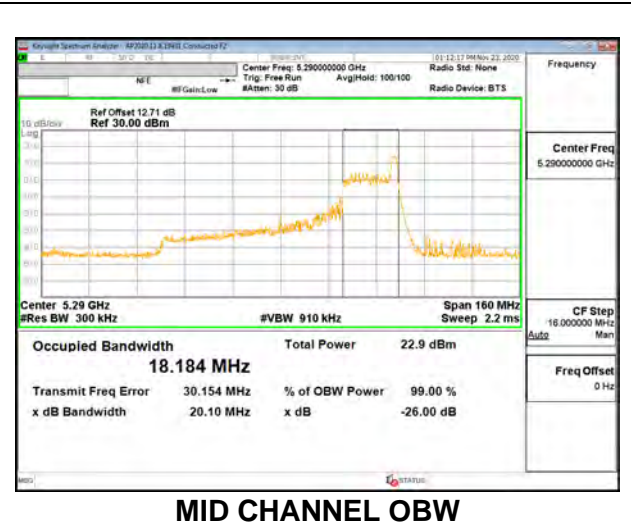
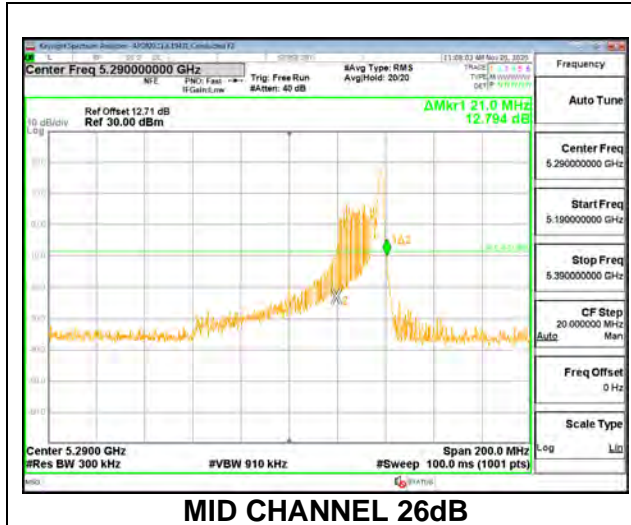
1TX Antenna 6 MODE: 26 Tones, RU Index 18

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Mid	5290	40.00	36.9770



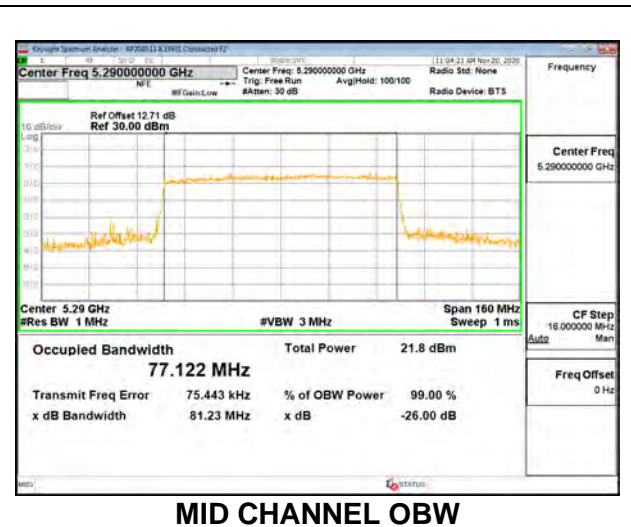
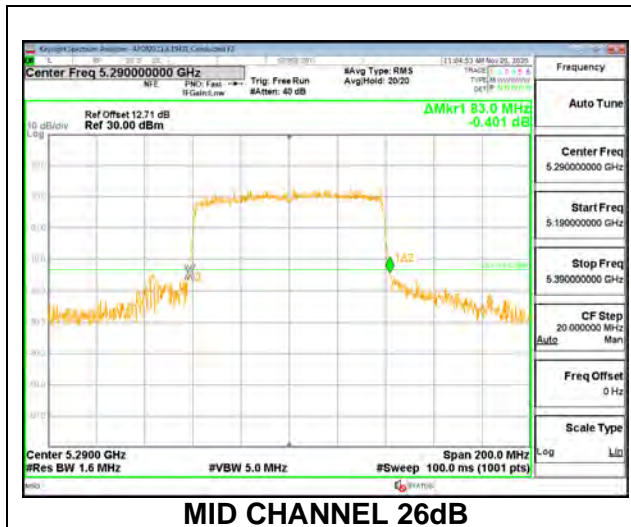
1TX Antenna 6 MODE: 26 Tones, RU Index 36

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	21.00	18.1840



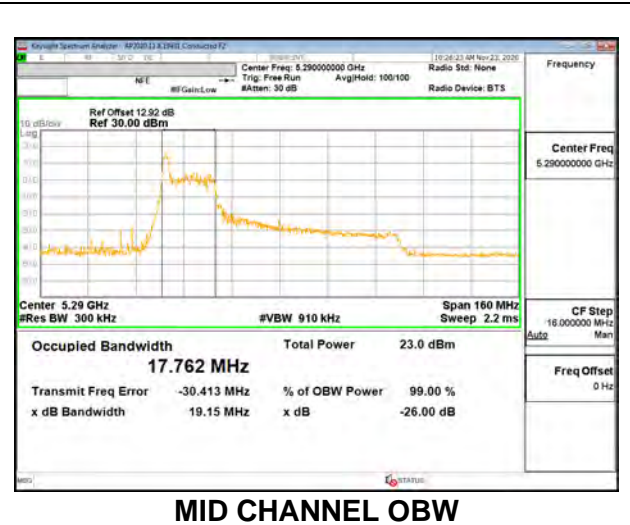
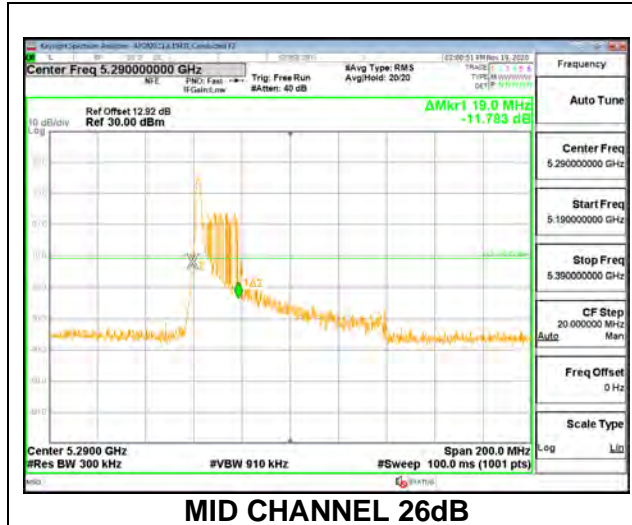
1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	83.00	77.1220



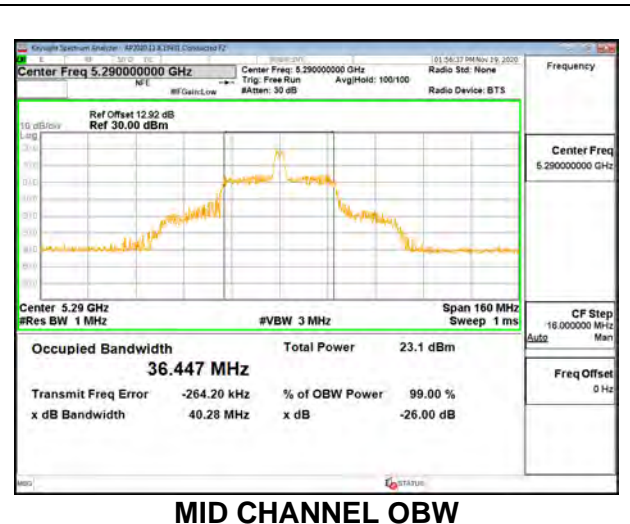
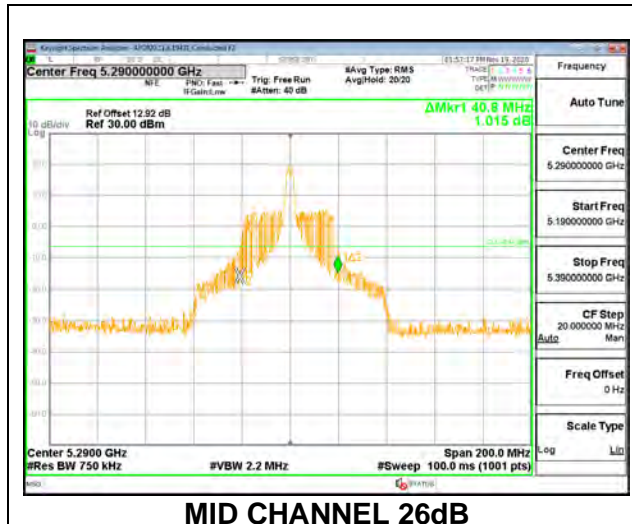
1TX Antenna 5 MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	19.00	17.7620



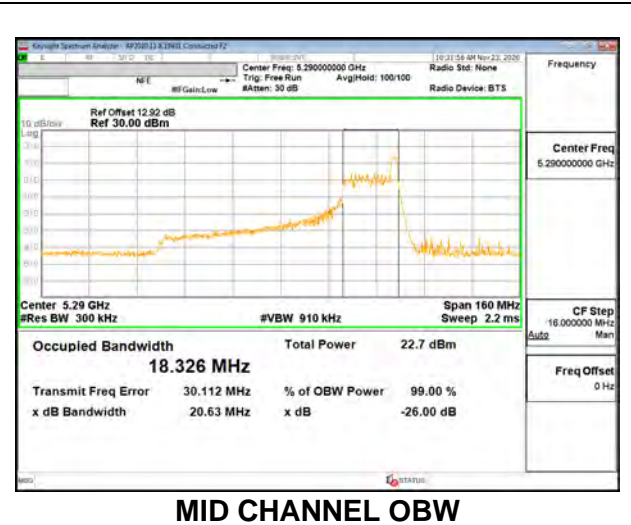
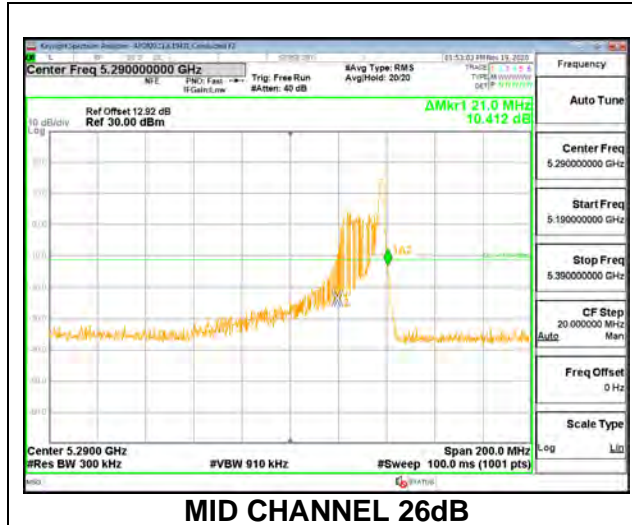
1TX Antenna 5 MODE: 26 Tones, RU Index 18

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	40.80	36.4470



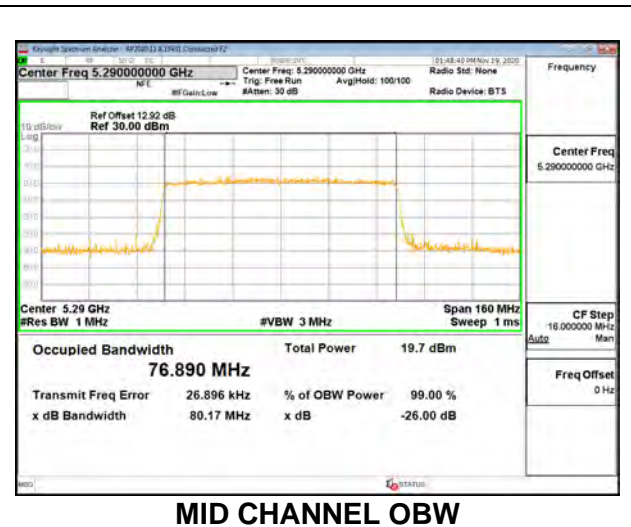
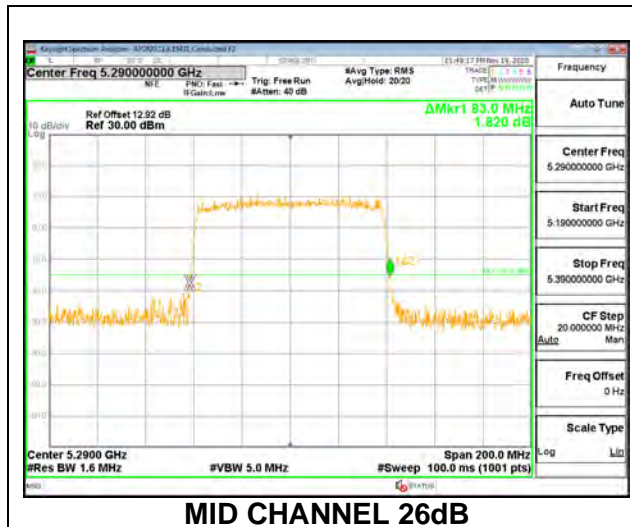
1TX Antenna 5 MODE: 26 Tones, RU Index 36

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	21.00	18.3260



1TX Antenna 5 MODE: SU Mode

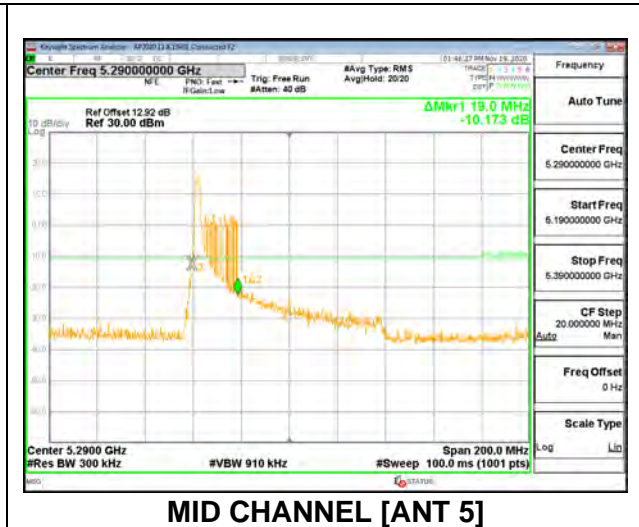
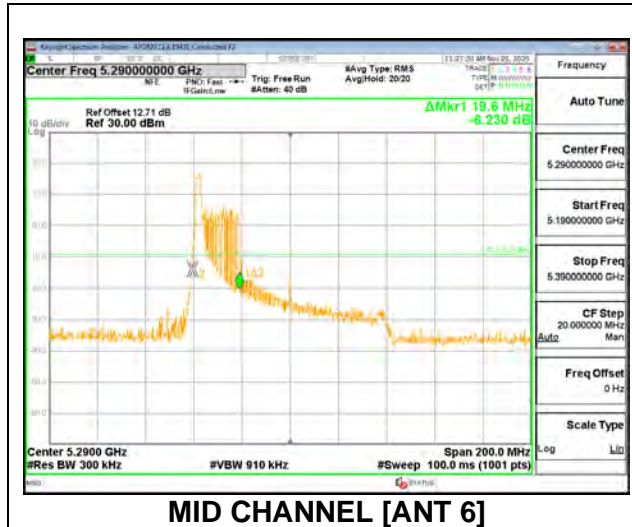
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	83.00	76.8900



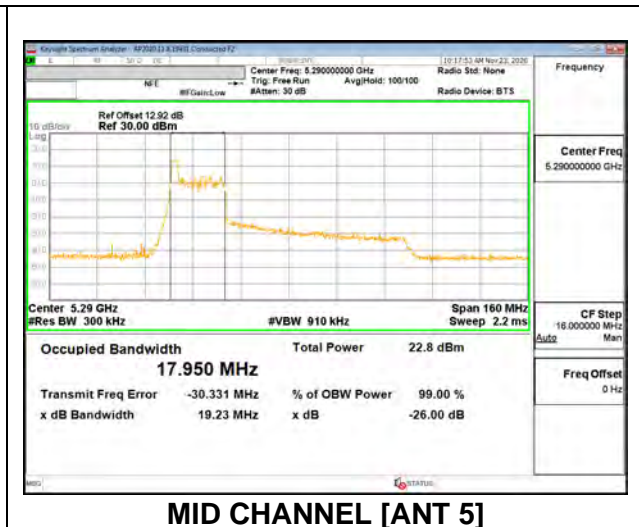
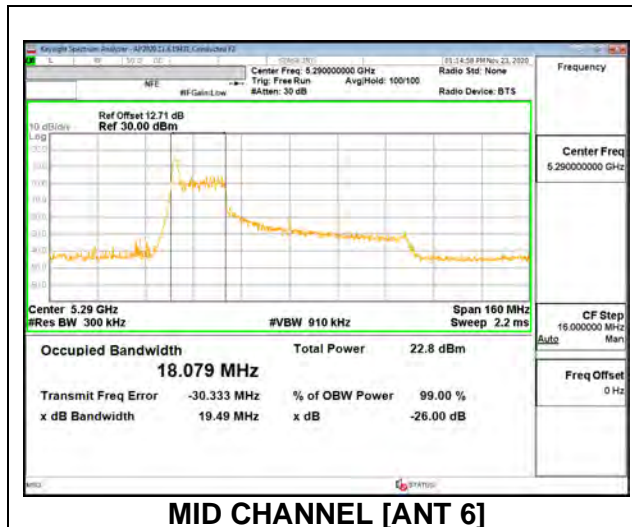
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	19.60	19.00	18.0790	17.9500

MID CHANNEL 26dB



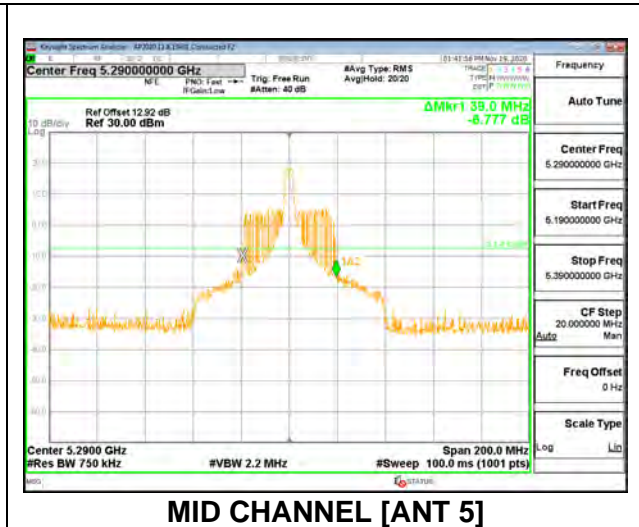
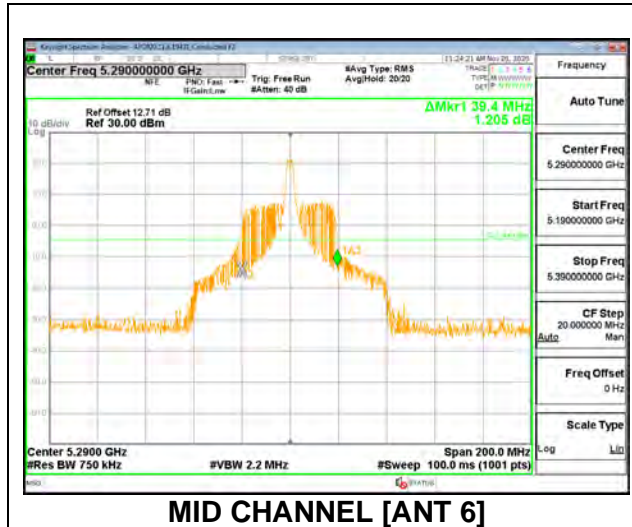
MID CHANNEL OBW



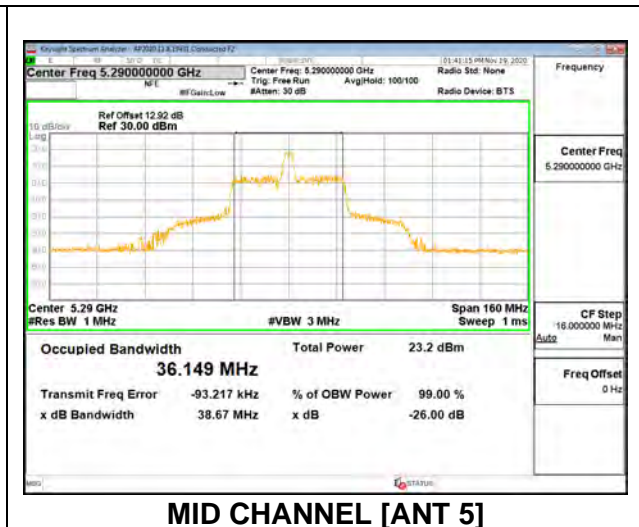
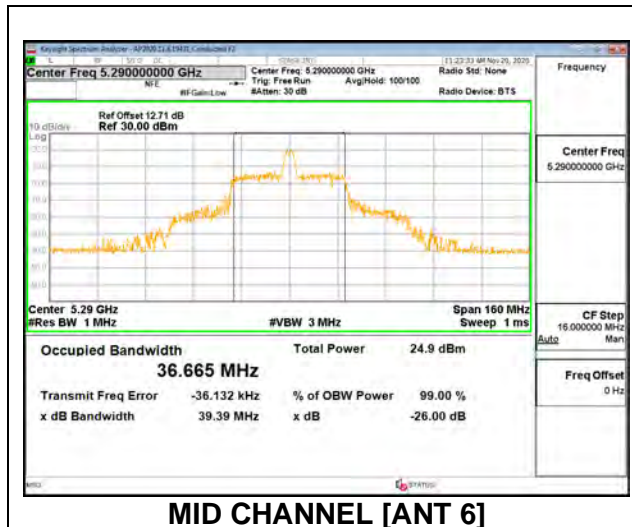
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 18

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	39.40	39.00	36.6650	36.1490

MID CHANNEL 26dB



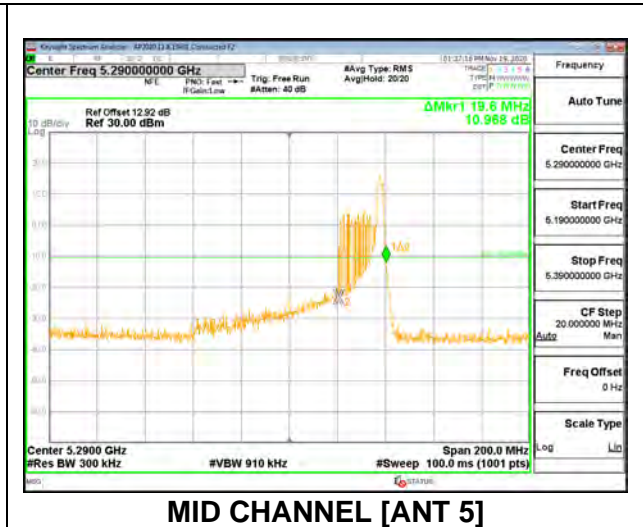
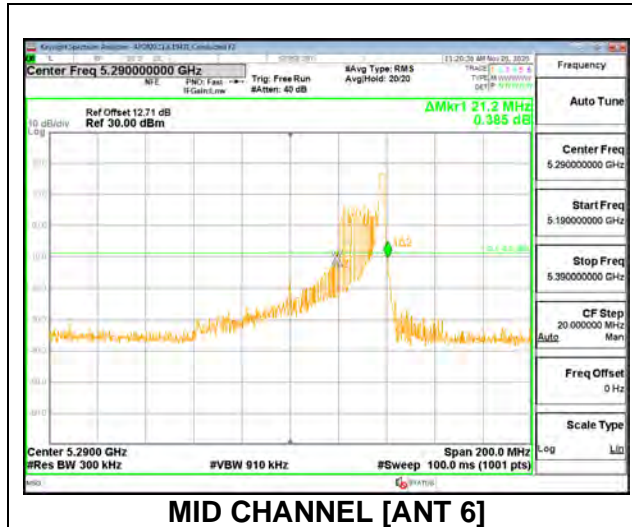
MID CHANNEL OBW



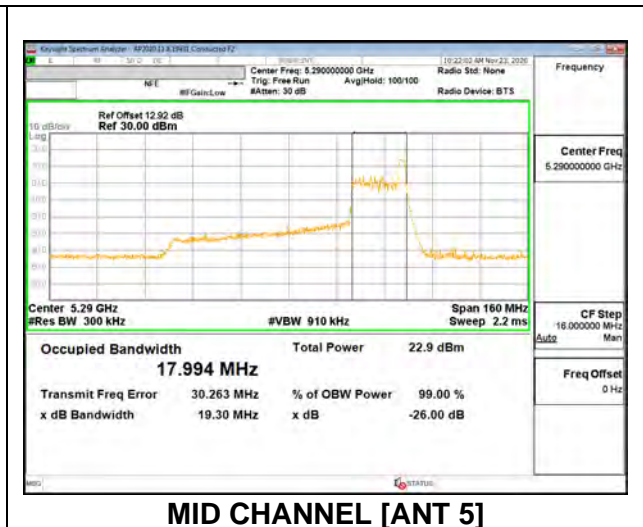
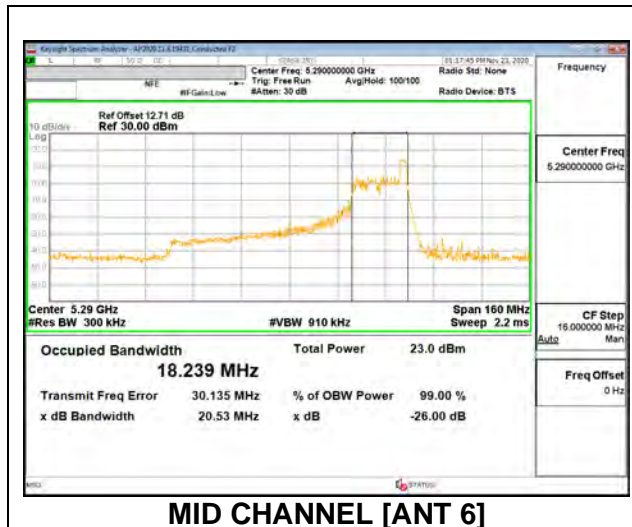
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 36

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	21.20	19.60	18.2390	17.9940

MID CHANNEL 26dB



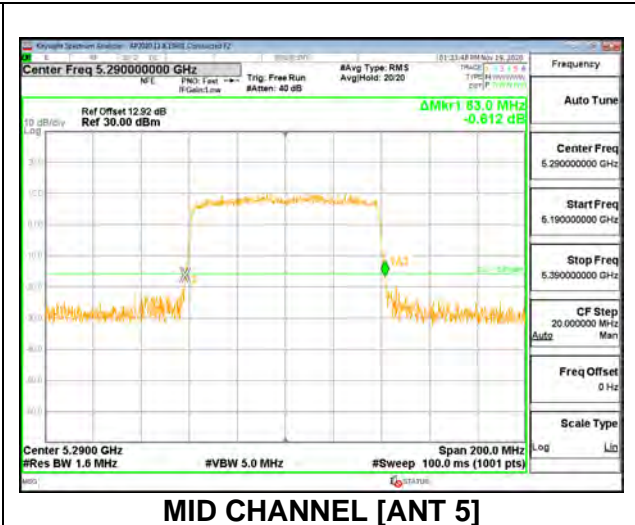
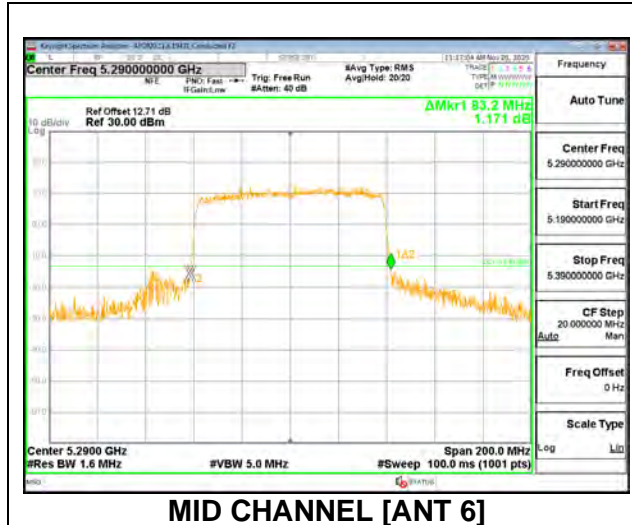
MID CHANNEL OBW



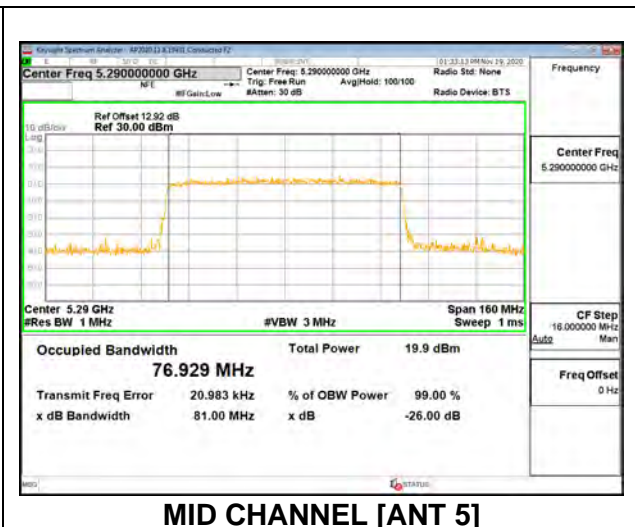
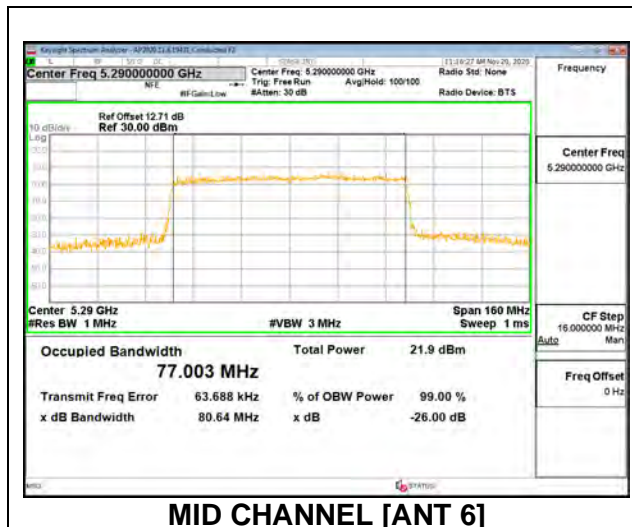
2TX Antenna 6 + Antenna 5 OFDMA MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	83.20	83.00	77.0030	76.9290

MID CHANNEL 26dB



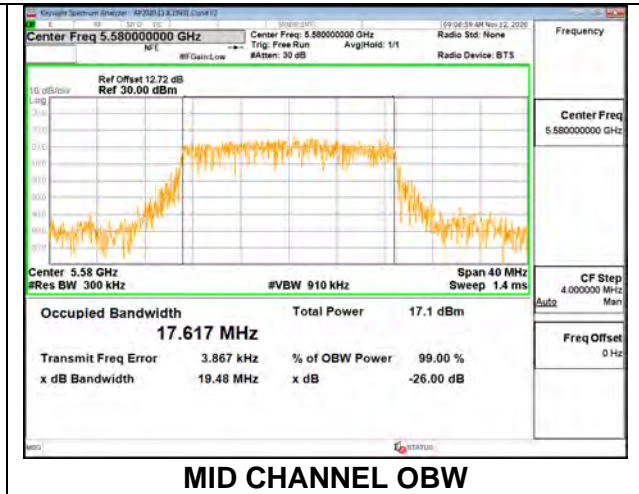
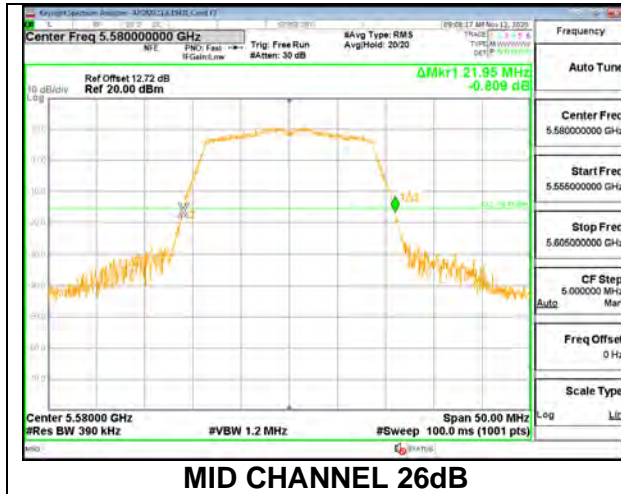
MID CHANNEL OBW



9.2.13. 802.11n HT20 MODE IN THE 5.6 GHz BAND

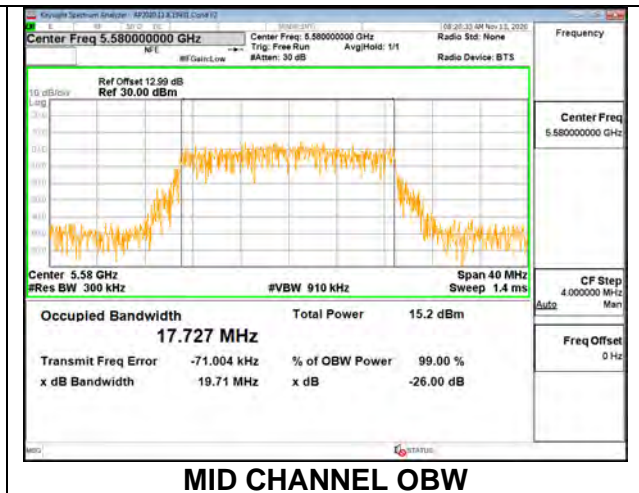
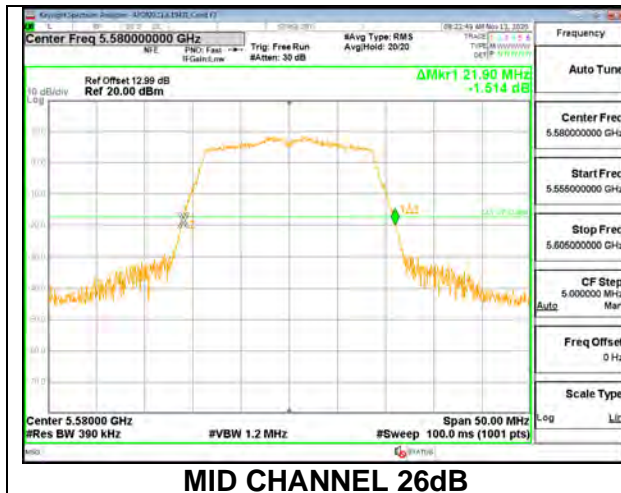
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	21.85	17.6620
Mid	5580	21.95	17.6170
High	5700	21.90	17.6800
144	5720	22.15	17.6940



1TX Antenna 5 MODE

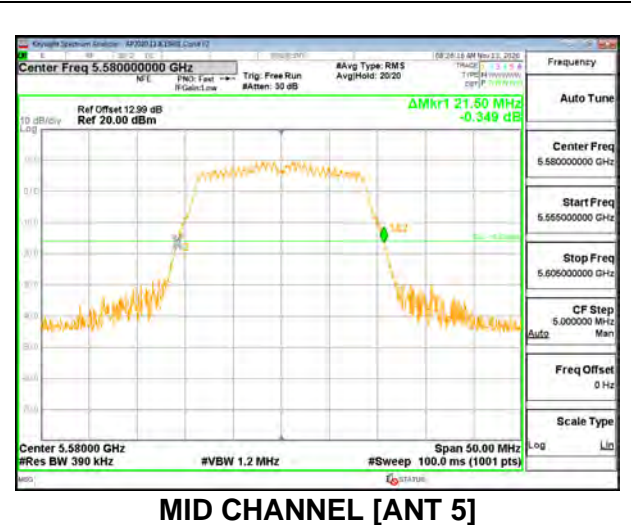
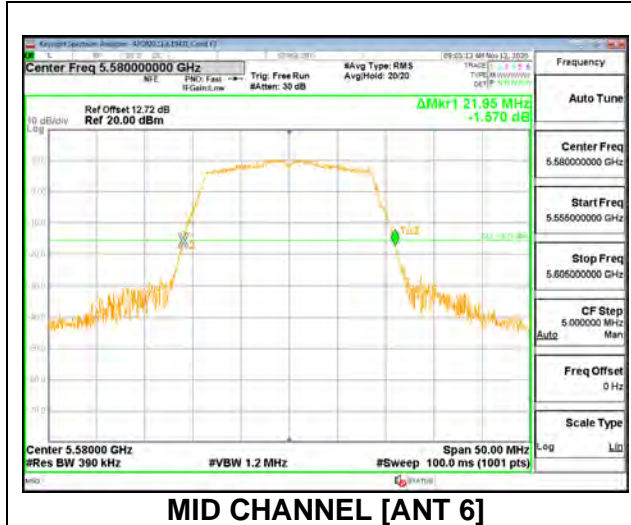
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	22.00	17.7040
Mid	5580	21.90	17.7270
High	5700	21.95	17.7490
144	5720	21.95	17.6600



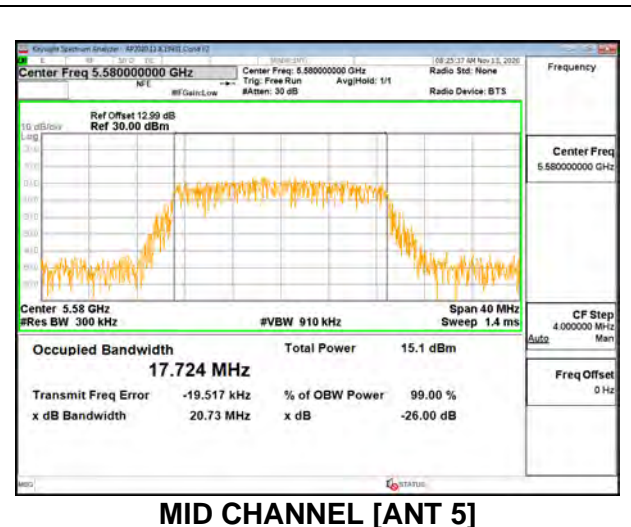
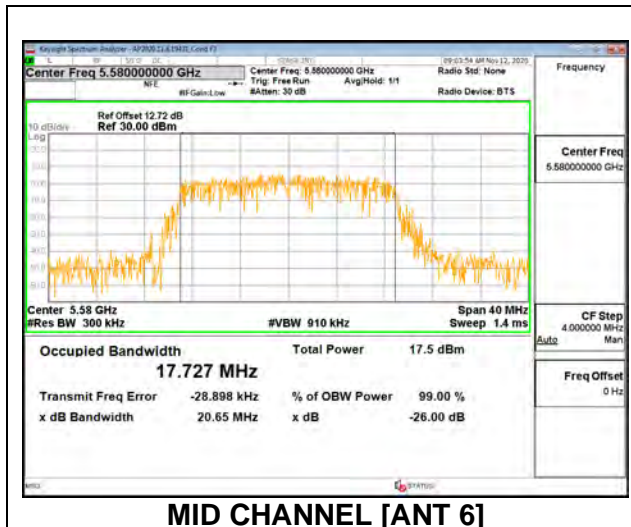
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5500	21.90	21.65	17.7600	17.6670
Mid	5580	21.95	21.50	17.7270	17.7240
High	5700	22.00	21.60	17.7430	17.7650
144	5720	21.85	21.65	17.6290	17.7330

MID CHANNEL 26dB



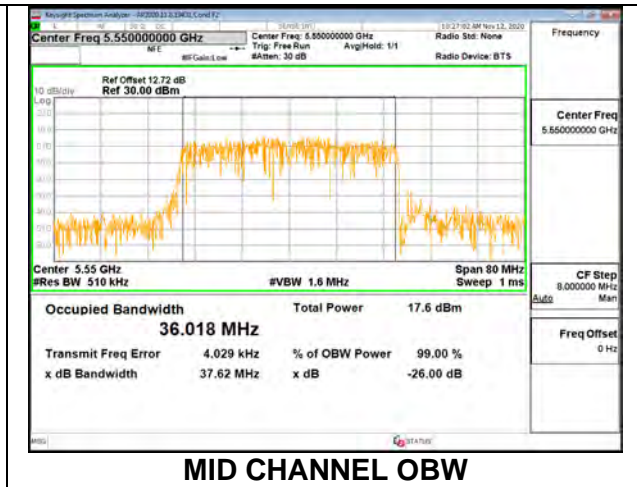
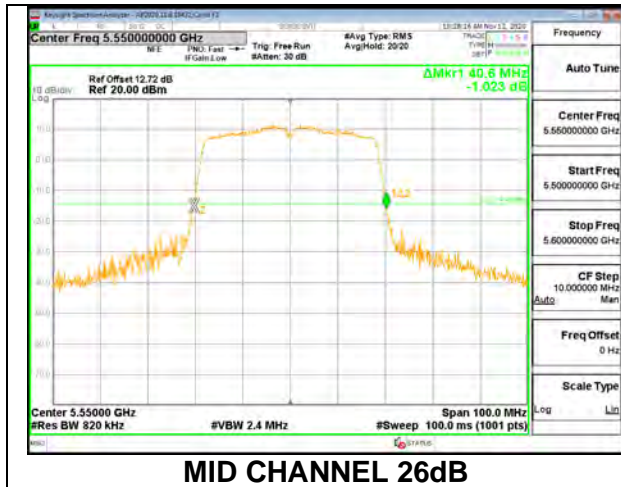
MID CHANNEL OBW



9.2.14. 802.11n HT40 MODE IN THE 5.6 GHz BAND

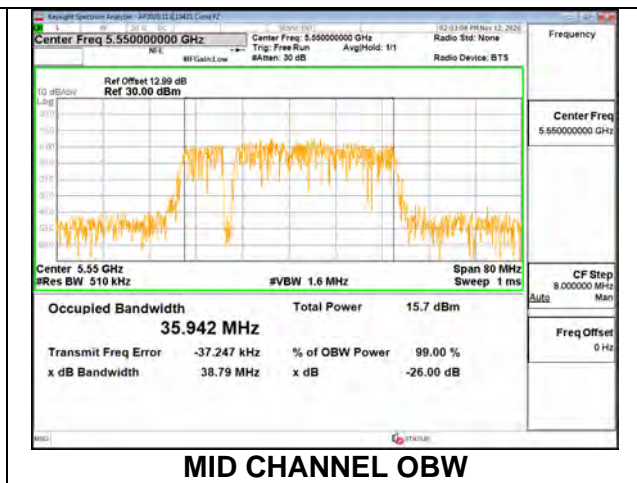
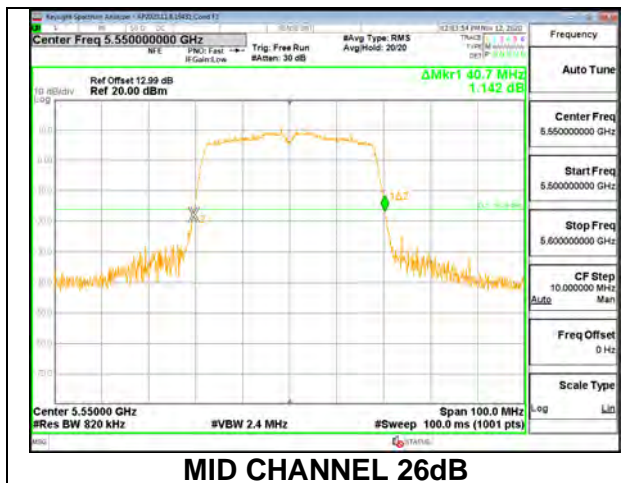
1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5510	40.70	35.9940
Mid	5550	40.60	36.0180
High	5670	40.70	35.9990
142	5710	40.60	36.2480



1TX Antenna 5 MODE

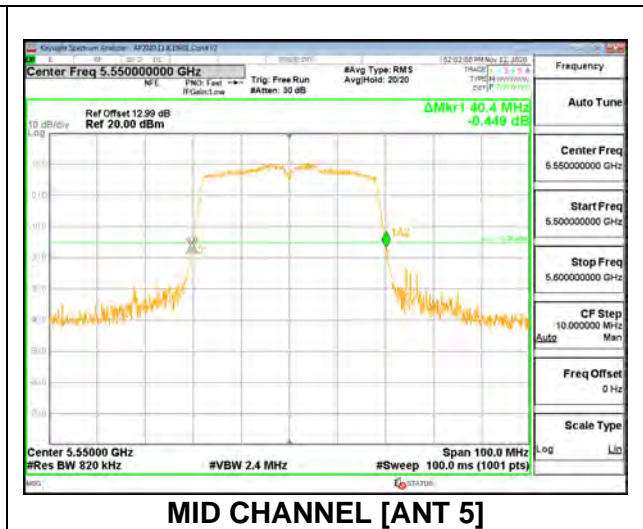
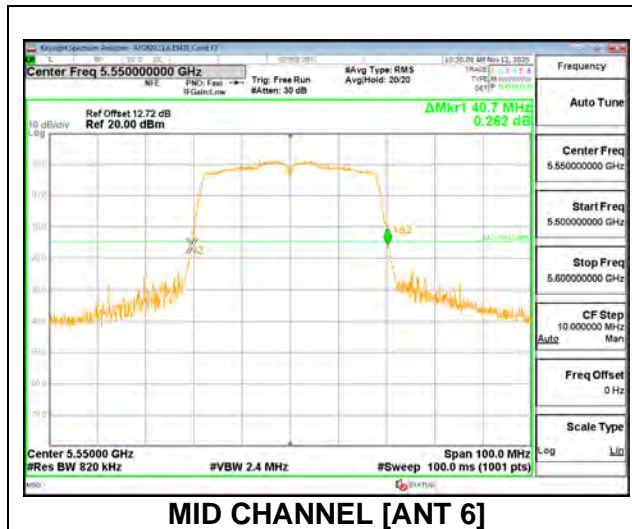
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5510	40.70	36.2100
Mid	5550	40.70	35.9420
High	5670	40.60	36.0550
142	5710	40.60	36.0730



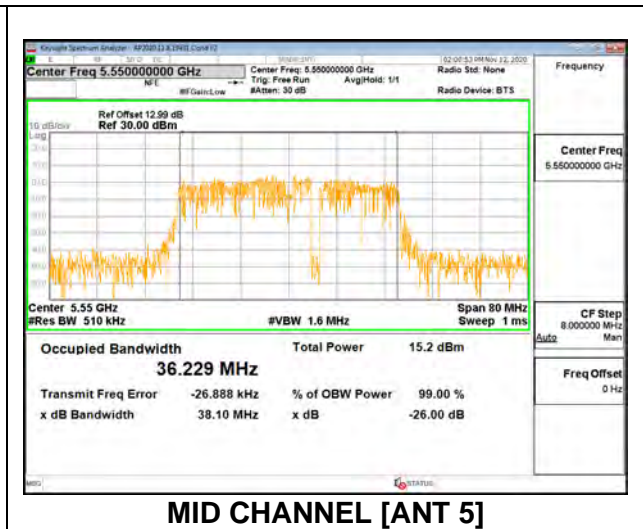
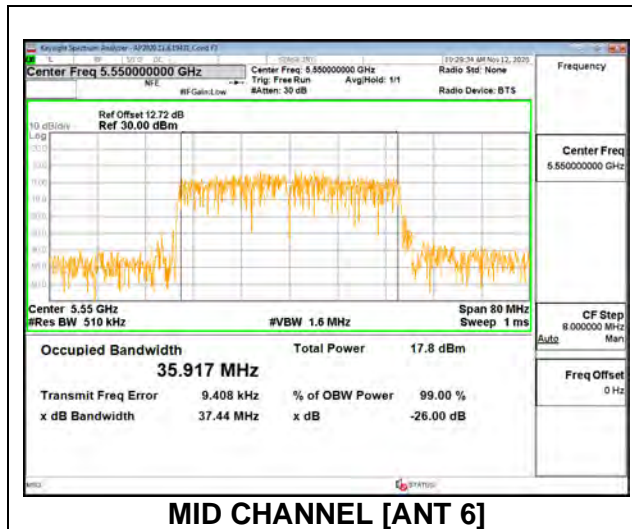
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5510	40.60	40.30	35.8910	36.0760
Mid	5550	40.70	40.40	35.9170	36.2290
High	5670	40.50	40.40	35.9800	36.0730
142	5710	40.70	40.40	36.1170	36.0420

MID CHANNEL 26dB



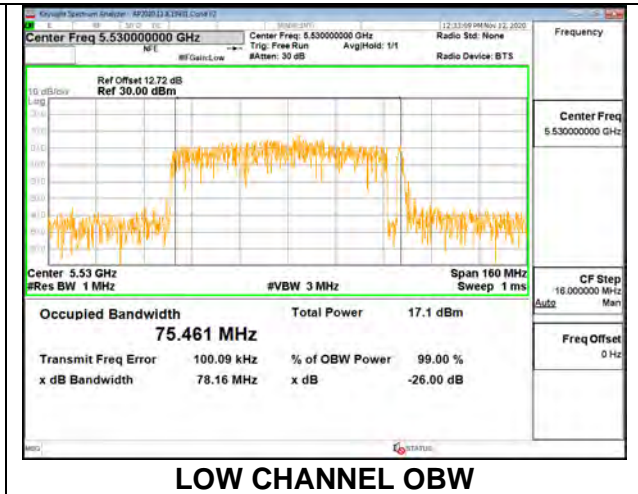
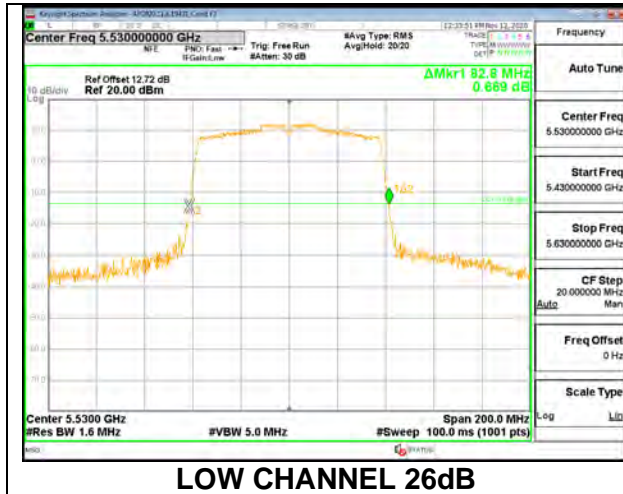
MID CHANNEL OBW



9.2.15. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5530	82.80	75.4610
High	5610	82.80	74.9000
138	5690	82.60	75.6850



1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5530	82.60	75.1720
High	5610	82.60	75.4480
138	5690	82.80	75.4200

