TEST REPORT

Report Number: 14040868-E5V4

Applicant	:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	:	A2632 (Parent Model, Full Test) A2885, A2886, A2887, A2888 (Variant Models)
FCC ID	:	BCG-E8139A (Parent Model) BCG-E8146A, BCG-E8147A, BCG-E8148A (Variant Models)
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E

Date of Issue:
August 10, 2022

Prepared by:
UL LLC
47173 Benicia Street
Fremont, CA 94538 U.S.A.
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ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	7/25/2022	Initial Issue	Chris Xiong
V2	8/02/2022	Address TCB Questions	Francisco Guarnero
V3	8/04/2022	Address TCB Questions on page 25, 164	Chin Pang
V4	8/10/2022	Update test date to 8/10/2022 on retest page 241/242	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: A2632 (Parent Model, Full Test)
A2885, A2886, A2887, A2888 (Variant Models)

BRAND: APPLE

FCC ID: BCG-E8139A (Parent Model)
BCG-E8146A, BCG-E8147A, BCG-E8148A (Variant Models)

SERIAL NUMBER: KCF16NH2M0

SAMPLE RECEIPT DATE: MARCH 18, 2022

DATE TESTED: MARCH 23 – AUGUST 10, 2022

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

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Approved & Released For
UL LLC By:

Frank Ibrahim
Staff Engineer
Consumer Technology Division
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2. TEST RESULT 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	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
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	550739

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5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

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

5.2. DECISION RULES

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

5.3. MEASUREMENT UNCERTAINTY

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

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

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

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

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video),cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, 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.

Parent Model: A2632, FCC ID: BCG-E8139A

Variant Models: A2885, FCC ID: BCG-E8146A
A2886; FCC ID: BCG-E8147A
A2887 & A2888, FCC ID: BCG-E8148A

6.2. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna Type is IFA.

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

Frequency Range (GHz)	Antenna 6 (dBi)	Antenna 5 (dBi)
5150-5250	-4.60	-1.20
5250-5350	-5.20	-0.40
5500-5700	-2.70	-2.50
5725-5825	-3.70	-1.70

6.3. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was WiFi FW Version: 20.86.1.6.

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6.4. 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	19.24	83.95
5180-5240	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5190-5230	802.11n HT40	20.23	105.44
5190-5230	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5210	802.11ac VHT80	16.25	42.17
5180-5240	802.11ax HE20	19.45	88.10
5190-5230	802.11ax HE40	20.22	105.20
5210	802.11ax HE80	16.21	41.78
5.2 GHz band, 2TX			
5180-5240	802.11n HT20 CDD	19.21	83.37
5180-5240	802.11n HT20 SDM	Covered by 802.11n HT20 2TX CDD	
5190-5230	802.11n HT40 CDD	22.20	165.96
5190-5230	802.11n HT40 SDM	Covered by 802.11n HT40 2TX CDD	
5180-5240	802.11ac VHT20 SDM/CDD	Covered by 802.11n HT20 2TX CDD	
5190-5230	802.11ac VHT40 SDM/CDD	Covered by 802.11n HT40 2TX CDD	
5210	802.11ac VHT80 CDD	18.21	66.22
5210	802.11ac VHT80 SDM	Covered by 802.11ac VHT80 2TX CDD	
5180-5240	802.11ax HE20 OFDMA	19.31	85.31
5190-5230	802.11ax HE40 OFDMA	22.23	167.11
5210	802.11ax HE80 OFDMA	18.22	66.37

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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	19.22	83.56
5260 - 5320	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5270 - 5310	802.11n HT40	20.44	110.66
5270 - 5310	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5290	802.11ac VHT80	16.90	48.98
5260 - 5320	802.11ax HE20	19.45	88.10
5270 - 5310	802.11ax HE40	20.24	105.68
5290	802.11ax HE80	16.77	47.53
5.3 GHz band, 2TX			
5260 - 5320	802.11n HT20 CDD	19.23	83.75
5260 - 5320	802.11n HT20 SDM	Covered by 802.11n HT20 2TX CDD	
5270 - 5310	802.11n HT40 CDD	22.21	166.34
5270 - 5310	802.11n HT40 SDM	Covered by 802.11n HT40 2TX CDD	
5260 - 5320	802.11ac VHT20 SDM/CDD	Covered by 802.11n HT20 2TX CDD	
5270 - 5310	802.11ac VHT40 SDM/CDD	Covered by 802.11n HT40 2TX CDD	
5290	802.11ac VHT80 CDD	19.35	86.10
5290	802.11ac VHT80 SDM	Covered by 802.11ac VHT80 2TX CDD	
5260 - 5320	802.11ax HE20 OFDMA	19.23	83.75
5270 - 5310	802.11ax HE40 OFDMA	22.20	165.96
5290	802.11ax HE80 OFDMA	18.69	73.96

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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	19.25	84.14
5500-5720	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5510-5710	802.11n HT40	20.23	105.44
5510-5710	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5530-5690	802.11ac VHT80	20.30	107.15
5500-5720	802.11ax HE20	19.22	83.56
5510-5710	802.11ax HE40	20.22	105.20
5530-5690	802.11ax HE80	20.19	104.47
5.6 GHz band, 2TX			
5500-5720	802.11n HT20 CDD	19.23	83.75
5500-5720	802.11n HT20 SDM	Covered by 802.11n HT20 2TX CDD	
5510-5710	802.11n HT40 CDD	22.40	173.78
5510-5710	802.11n HT40 SDM	Covered by 802.11n HT40 2TX CDD	
5500-5720	802.11ac VHT20 SDM/CDD	Covered by 802.11n HT20 2TX CDD	
5510-5710	802.11ac VHT40 SDM/CDD	Covered by 802.11n HT40 2TX CDD	
5530-5690	802.11ac VHT80 CDD	22.61	182.39
5530-5690	802.11ac VHT80 SDM	Covered by 802.11ac VHT80 2TX CDD	
5500-5720	802.11ax HE20 OFDMA	19.42	87.50
5510-5710	802.11ax HE40 OFDMA	22.19	165.58
5530-5690	802.11ax HE80 OFDMA	22.66	184.50

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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	20.21	104.95
5745-5825	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5755-5795	802.11n HT40	20.22	105.20
5755-5795	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5775	802.11ac VHT80	20.14	103.28
5745-5825	802.11ax HE20	21.22	132.43
5755-5795	802.11ax HE40	20.15	103.51
5775	802.11ax HE80	20.29	106.91
5.8 GHz band, 2TX			
5745-5825	802.11n HT20 CDD	24.24	265.46
5745-5825	802.11n HT20 SDM	Covered by 802.11n HT20 2TX CDD	
5755-5795	802.11n HT40 CDD	23.21	209.41
5755-5795	802.11n HT40 SDM	Covered by 802.11n HT40 2TX CDD	
5745-5825	802.11ac VHT20 SDM/CDD	Covered by 802.11n HT20 2TX CDD	
5755-5795	802.11ac VHT40 SDM/CDD	Covered by 802.11n HT40 2TX CDD	
5775	802.11ac VHT80 CDD	23.23	210.38
5775	802.11ac VHT80 SDM	Covered by 802.11ac VHT80 2TX CDD	
5745-5825	802.11ax HE20 OFDMA	24.22	264.24
5755-5795	802.11ax HE40 OFDMA	23.21	209.41
5775	802.11ax HE80 OFDMA	22.63	183.23

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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, ANT 5 and 2TX. It was determined that Y (Landscape) orientation was the worst-case orientation for ANT 6 and Z (Portrait) orientation for ANT 5 and 2TX.

802.11n 2TX and 802.11ax 2TX modes were used to perform on radiated harmonic spurious final test to cover all SISO modes. Max power was tuned to maximum based on among all the modes. For testing purposes, 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 FCC conducted 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 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 baseline investigation SU mode had the highest output power and the lowest tone had the highest PSD readings. Therefore, antenna port conducted tests were performed on both SU and lowest tones; radiated spurious emission and radiated band edge tests were performed on SU and lowest tones.

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

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 band edge, the 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 RU 26 Tones and SU mode: MCS11.

There are three vendors of the Wi-Fi/Bluetooth radio modules: variant 1, 2 and 3. The WiFi/BT 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 three variants to determine the worst case on all conducted power and radiated emissions.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT					
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID/ DoC**	
Laptop	Apple	Macbook Pro	C02YL3ZMJHC8	BCGA1989	
Laptop AC/DC adapter	Liteon Technology	A1424	NSW25679	DoC	
EUT AC/DC adapter	Apple	A1720	C3D8417A7R93KVPA8	DoC	

I/O CABLES (RF CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Shielded	1.0	N/A
3	Antenna	1	SMA	Un-shielded	0.2	To spectrum Analyzer

I/O CABLES (RF RADIATED 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.

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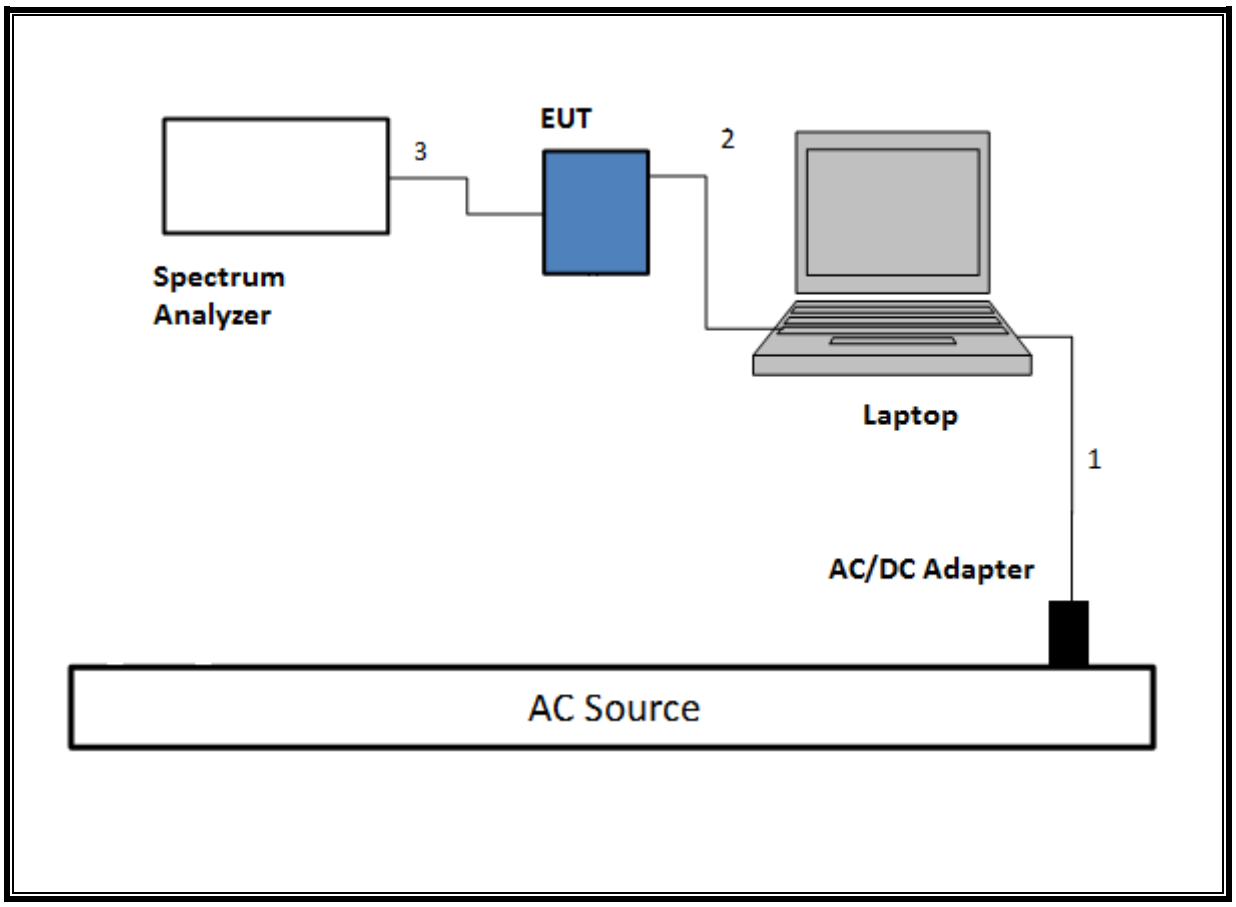
SETUP DIAGRAM FOR CONDUCTED TESTS



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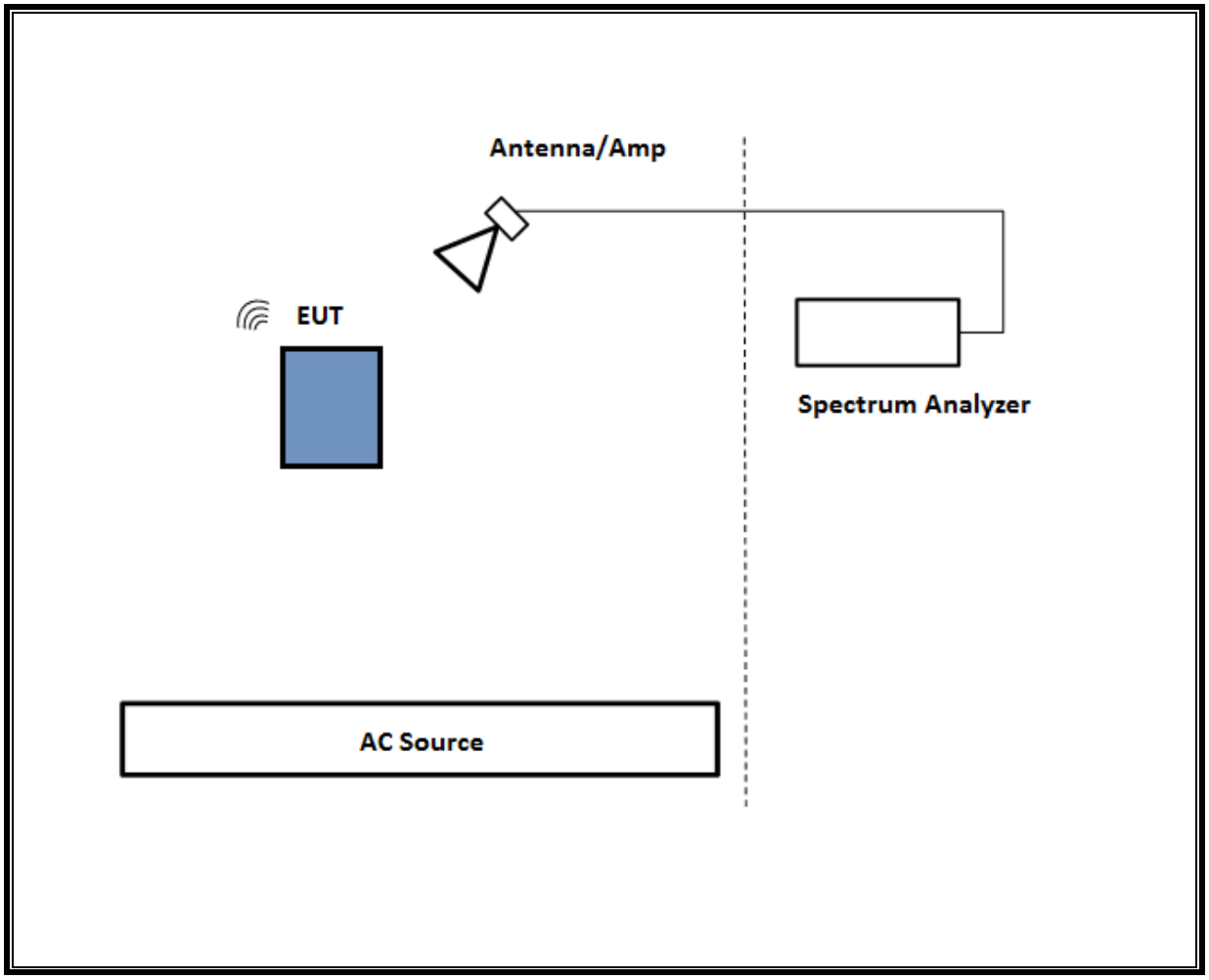
SETUP DIAGRAM FOR RADIATED TESTS ABOVE 1GHz



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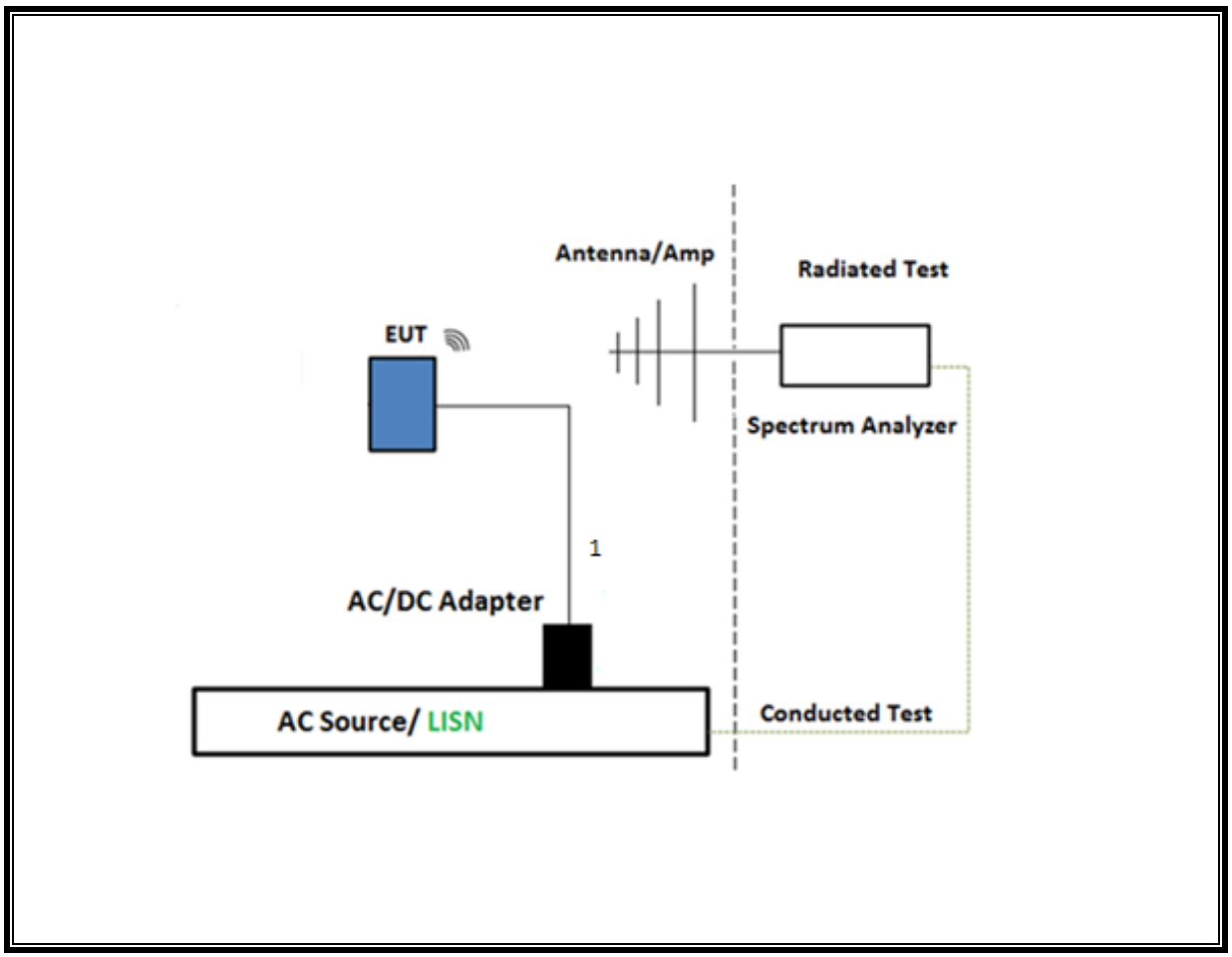
SETUP DIAGRAM FOR BELOW 1GHz and AC LINE CONDUCTED TEST



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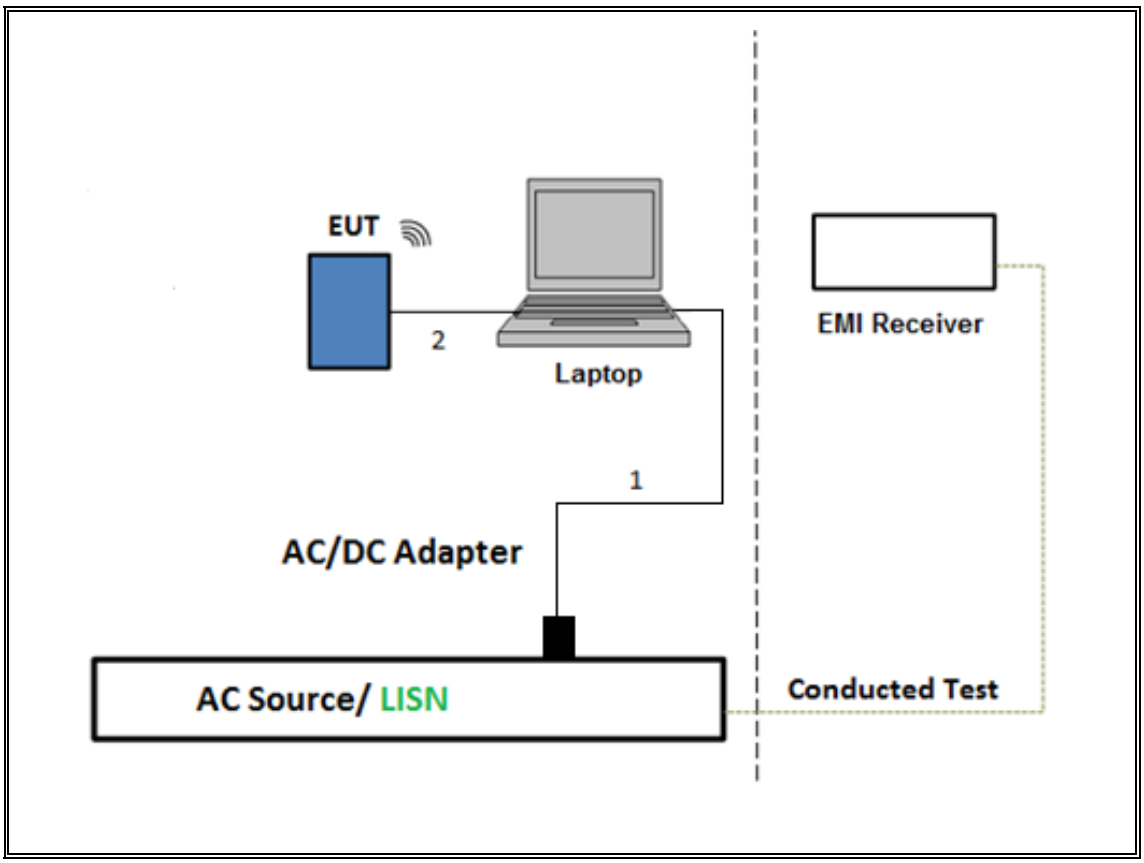
TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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7. MEASUREMENT METHOD

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

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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	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 1-18GHz	ETS-Lindgren	3117	41112	09/21/2022	09/21/2021
EMI Receiver	Rohde & Schwarz	ESW44	201497	02/18/2023	02/18/2022
RF Filter Box 1-18GHz	UL-FR1	SAC 6 Port rf Box	203984	02/12/2023	02/12/2022
RF Filter Box 1-18GHz	UL-FR1	NA	PRE0183530	11/17/2022	11/17/2021
Antenna, Horn 1-18GHz	ETS Lindgren	3117	200786	02/24/2023	02/24/2022
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	206415	03/17/2023	03/17/2022
Antenna, Horn 1-18GHz	ETS Lindgren	3117	200897	02/24/2023	02/24/2022
RF Filter Box	UL-FR1	NA	173233	10/23/2022	10/23/2021
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	125188	01/30/2023	01/30/2022
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	41112	09/21/2022	09/21/2021
EMI Receiver	Rohde & Schwarz	ESW44	201497	02/18/2023	02/18/2022
RF Filter Box 1-18GHz	UL-FR1	SAC 6 Port rf Box	203984	02/12/2023	02/12/2023
Antenna	ETS-Lindgren	3117	206806	09/22/2022	09/22/2022
EMI Test Receiver	Rohde & Schwarz	ESW44	201501	02/19/2023	02/19/2022
RF Filter Box, 1-18GHz	UL-FR1	N/A	171875	01/15/2023	01/15/2022
*Antenna, Horn 1-18GHz	ETS Lindgren	3117	206805	06/22/2022	06/22/2021
EMI Test Receiver	Rohde & Schwarz	ESW44	201497	02/18/2023	02/18/2022
RF Filter Box 1-18GHz	UL-FR	NA	171389	11/01/2022	11/01/2021
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	201501	02/19/2023	02/19/2022
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
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	206807	02/09/2023	02/09/2022
*RF Filter Box 1-18GHz	UL-FR	NA	206359	05/13/2022	05/13/2021
RF Filter Box 1-18GHz	UL-FR	NA	206359	05/13/2023	05/13/2022
EMI Receiver	Rohde & Schwarz	ESW44	201500	02/17/2023	02/17/2022
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	202301	11/22/2022	11/22/2022
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	202989	12/29/2022	12/29/2021
*Antenna Horn, 18 to 26GHz	ARA	SWH-28	81139	05/25/2022	05/25/2021
Amplifier 18-26.5GHz, +5Vdc, 60dB min	AMPLICAL	AMP18G26.5-60	215705	02/26/2023	02/26/2022
*Antenna, Horn 26.5 to 40GHz	ARA	MWH-2640/B	81105	05/25/2022	05/25/2021
*Amplifier, 26GHz to 40GHz	Miteq	TTA2640-35-HG	T1864	04/19/2022	04/19/2021
Power Meter, P-series single channel	Keysight	N1912A	T1244	01/24/2023	01/24/2022
Power sensor	Keysight	N1921A	80119	01/25/2023	01/25/2022
*Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T1683	05/24/2022	05/24/2021

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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, April 14, 2021		
Conducted Software	UL	UL EMC	21.4.21		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, July 07, 2020		

Note: *Testing is completed before equipment expiration date.

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
5GHz Band						
802.11n HT20 MCS0	0.983	1.006	0.977	97.70%	0.10	1.017
802.11n HT20 MCS7	0.136	0.157	0.866	86.62%	0.62	7.353
802.11n HT40 MCS0	0.496	0.516	0.961	96.12%	0.17	2.016
802.11n HT40 MCS7	0.088	0.108	0.815	81.46%	0.89	11.377
802.11ac VHT80 MCS0	0.256	0.280	0.912	91.22%	0.40	3.912
802.11ac VHT80 MCS9	0.060	0.080	0.750	75.00%	1.25	16.622
802.11ax HE20 RU26 OFDMA, MCS0	3.989	4.022	0.992	99.18%	0.00	0.010
802.11ax HE20 RU26 OFDMA, MCS11	0.293	0.326	0.899	89.86%	0.46	3.418
802.11ax HE40 RU26 OFDMA, MCS0	3.994	4.027	0.992	99.18%	0.00	0.010
802.11ax HE40 RU26 OFDMA, MCS11	0.293	0.325	0.902	90.20%	0.45	3.415
802.11ax HE80 RU26 OFDMA, MCS0	3.979	4.013	0.992	99.15%	0.00	0.010
802.11ax HE80 RU26 OFDMA, MCS11	0.292	0.325	0.899	89.90%	0.46	3.425

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						
802.11ax HE20 SU OFDMA, MCS0	1.487	1.512	0.983	98.35%	0.00	0.010
802.11ax HE20 SU OFDMA, MCS11	0.146	0.170	0.860	86.04%	0.65	6.845
802.11ax HE40 SU OFDMA, MCS0	0.772	0.796	0.970	97.01%	0.13	1.296
802.11ax HE40 SU OFDMA, MCS11	0.101	0.122	0.832	83.22%	0.80	9.881
802.11ax HE80 SU OFDMA, MCS0	0.401	0.423	0.948	94.80%	0.23	2.493
802.11ax HE80 SU OFDMA, MCS11	0.082	0.102	0.801	80.06%	0.97	12.210
802.11n HT20 SDM MCS0	0.982	1.006	0.977	97.65%	0.10	1.018
802.11n HT40 SDM MCS0	0.500	0.523	0.956	95.57%	0.20	2.000
802.11ac VHT80 SDM MCS0	0.256	0.278	0.920	92.03%	0.36	3.903
802.11ax HE20 RU26 SDM MCS0	3.995	4.028	0.992	99.18%	0.00	0.010
802.11ax HE40 RU26 SDM MCS0	3.990	4.023	0.992	99.18%	0.00	0.010
802.11ax HE80 RU26 SDM MCS0	3.990	4.023	0.992	99.18%	0.00	0.010
802.11ax HE20 SDM MCS0	0.779	0.802	0.970	97.03%	0.13	1.284
802.11ax HE40 SDM MCS0	0.422	0.442	0.953	95.30%	0.21	2.372
802.11ax HE80 SDM MCS0	0.239	0.261	0.916	91.58%	0.38	4.181

Note: There are same duty cycle factor on 1TX and 2TX

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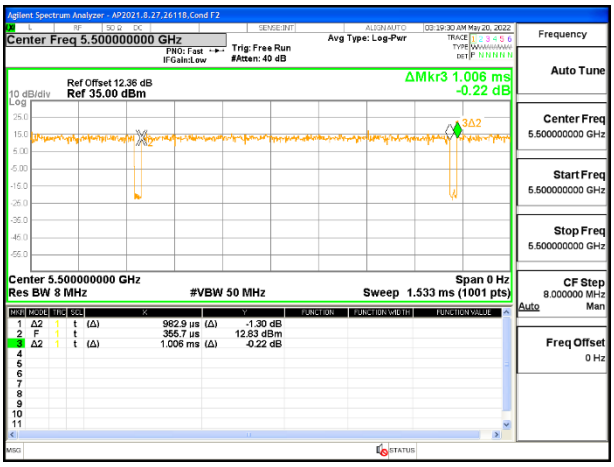
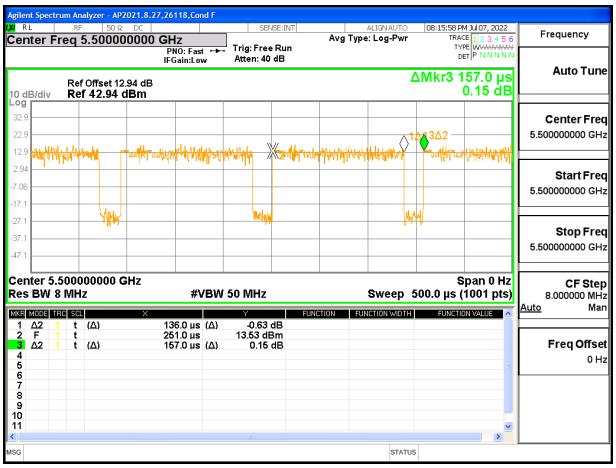
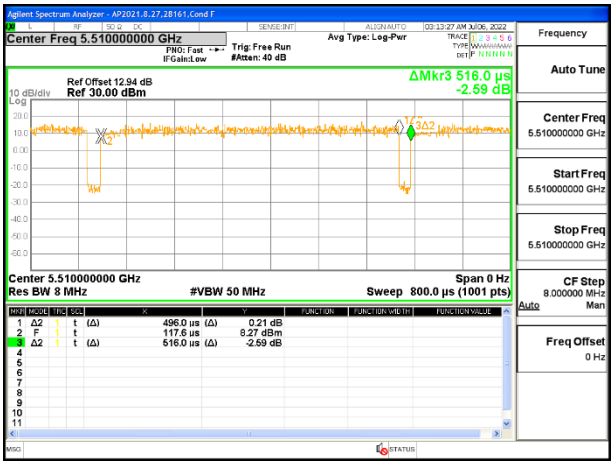
DUTY CYCLE PLOTS



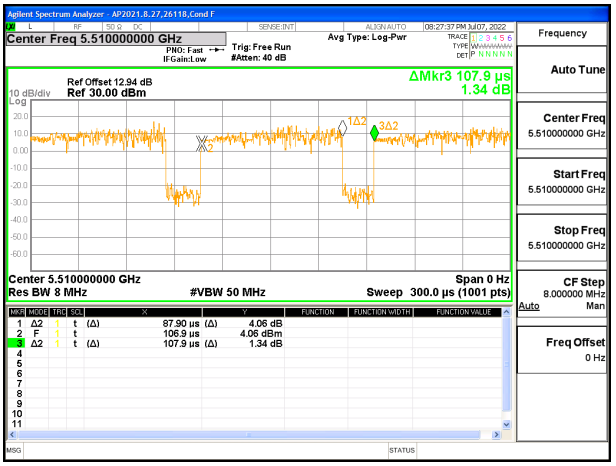
DUTY CYCLE 802.11n HT20 MCS0



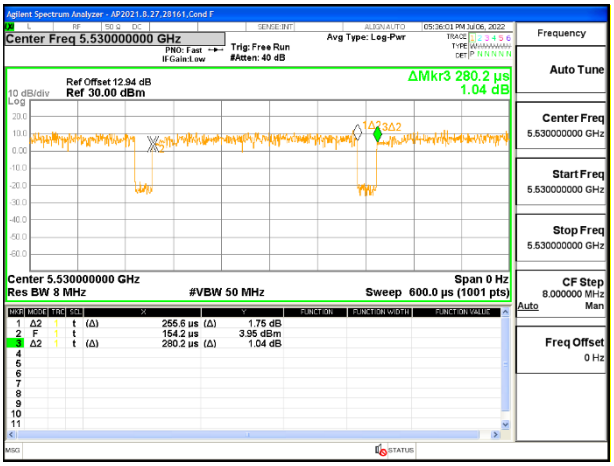
DUTY CYCLE 802.11n HT20 MCS7



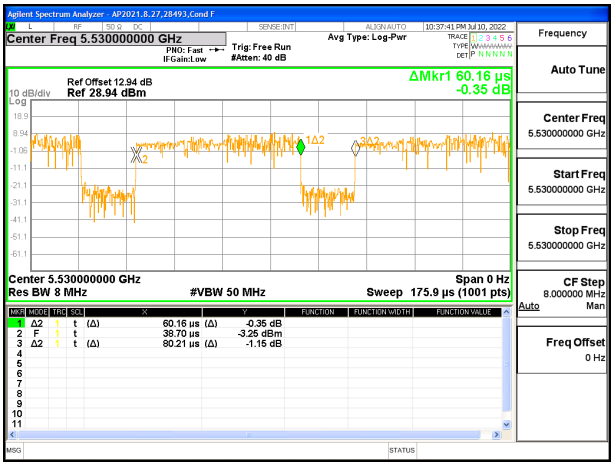
DUTY CYCLE 802.11n HT40 MCS0



DUTY CYCLE 802.11n HT40 MCS7



DUTY CYCLE 802.11ac VHT80 MCS0



DUTY CYCLE 802.11ac VHT80 MCS9

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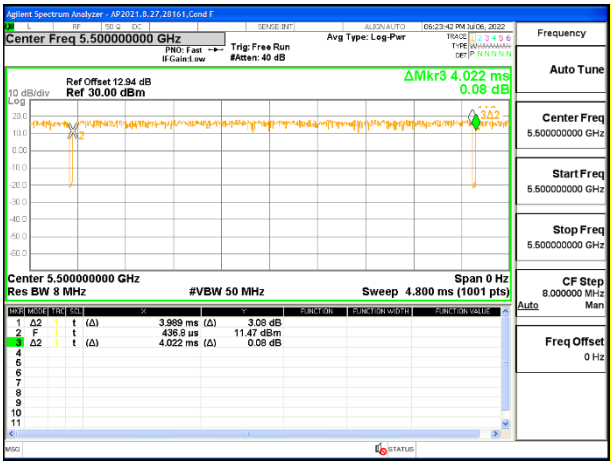
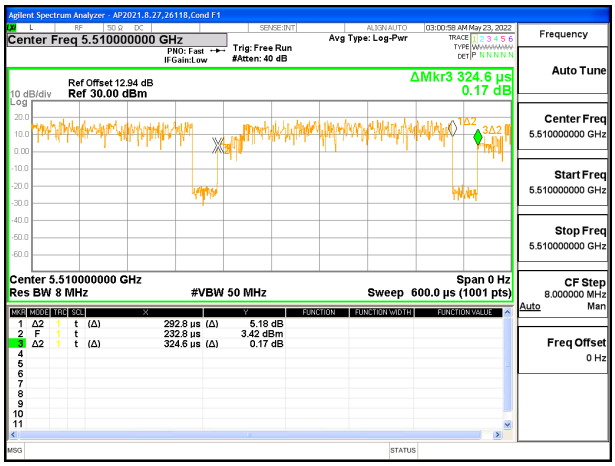


802.11ax HE20 RU26 OFDMA, MCS0

802.11ax HE20 RU26 OFDMA, MCS11

802.11ax HE40 RU26 OFDMA, MCS0



802.11ax HE40 RU26 OFDMA, MCS11

802.11ax HE80 RU26 OFDMA, MCS0

802.11ax HE80 RU26 OFDMA, MCS11

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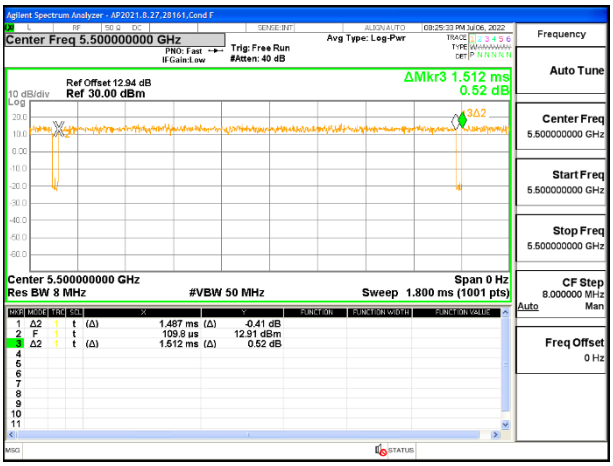
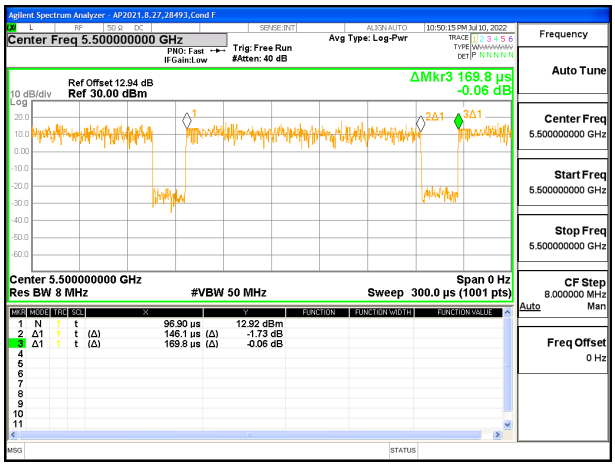
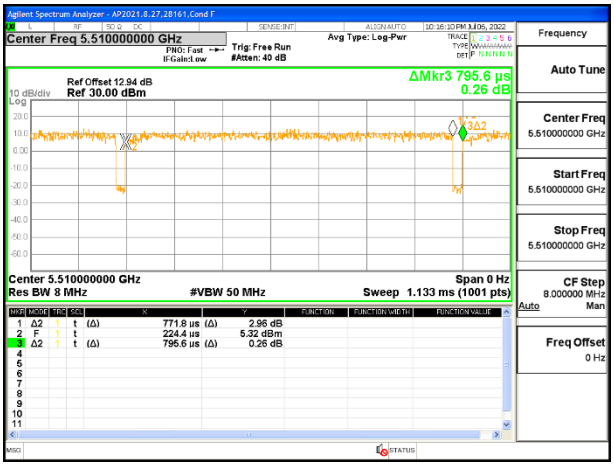


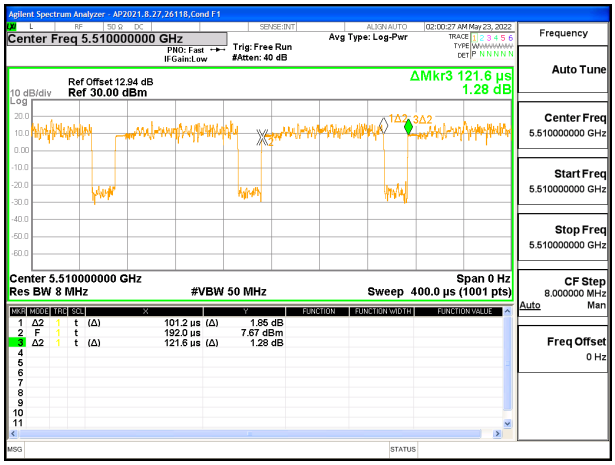
802.11ax HE20 SU OFDMA, MCS0



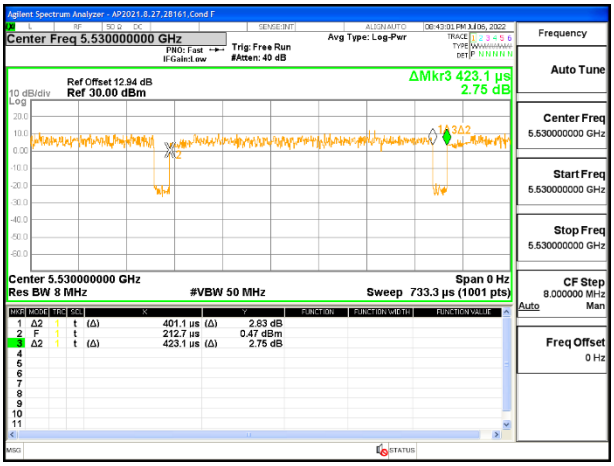
802.11ax HE20 SU OFDMA, MCS11



802.11ax HE40 SU OFDMA, MCS0



802.11ax HE40 SU OFDMA, MCS11



802.11ax HE80 SU OFDMA, MCS0

802.11ax HE80 SU OFDMA, MCS11

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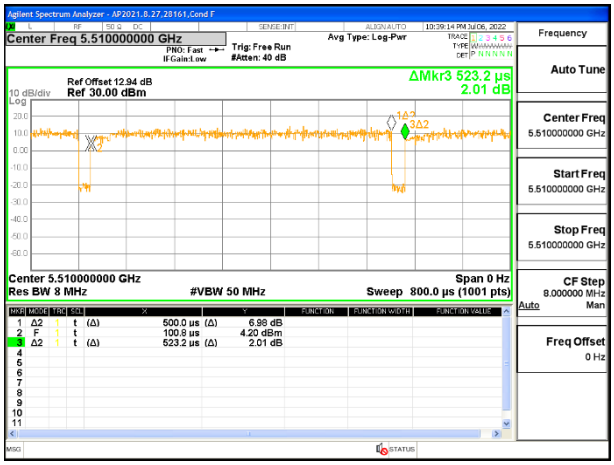
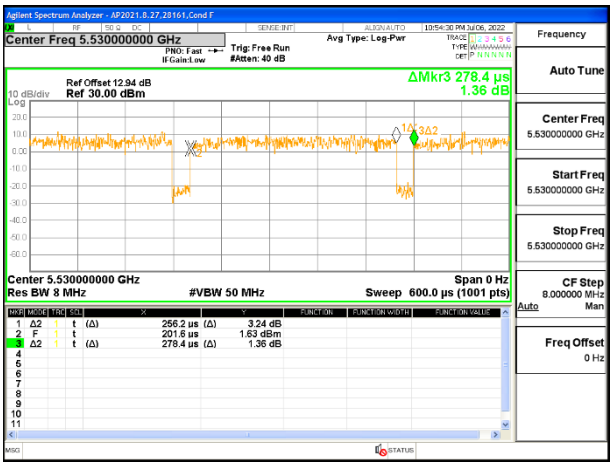
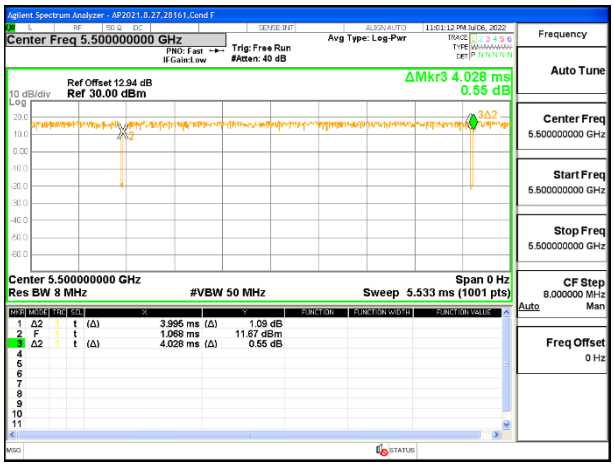
802.11n HT20 SDM MCS0



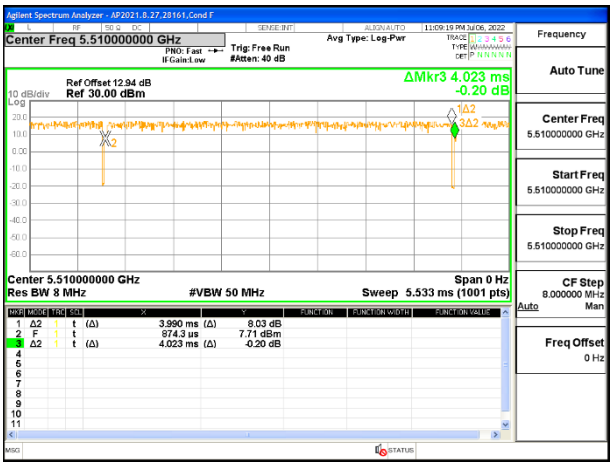
802.11n HT40 SDM MCS0



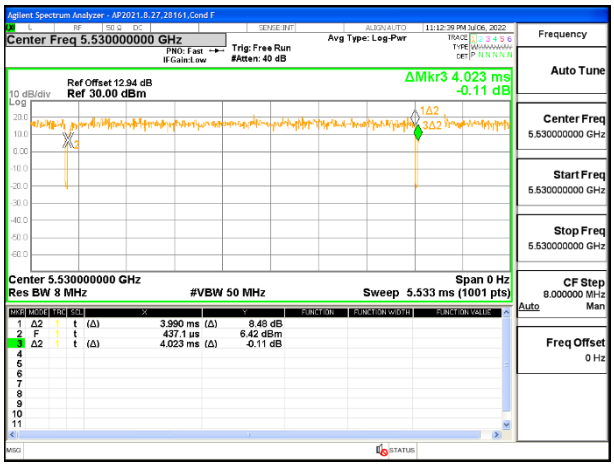
802.11ac VHT80 SDM MCS0



802.11ax HE20 RU26 SDM MCS0



802.11ax HE40 RU26 SDM MCS0



802.11ax HE80 RU26 SDM MCS0

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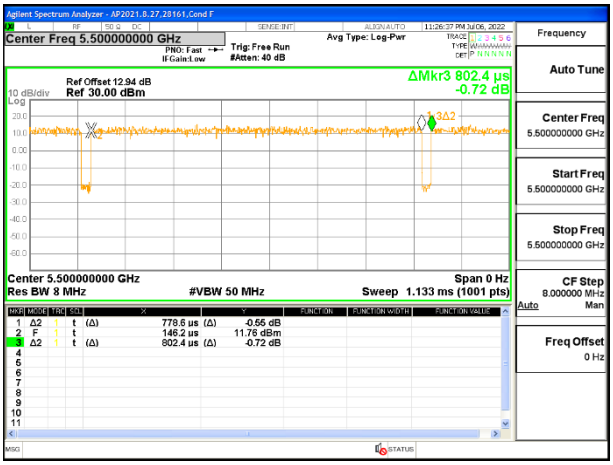
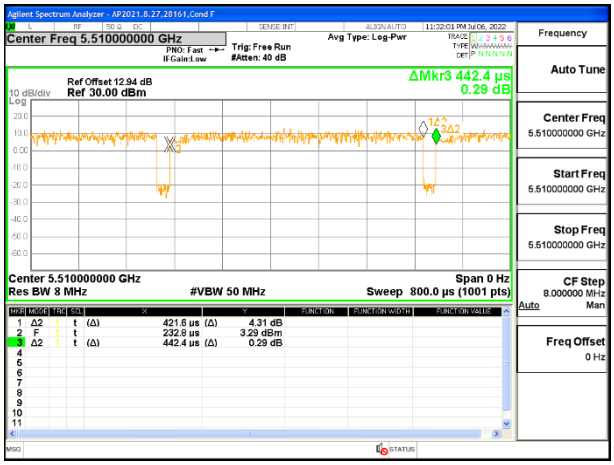


802.11ax HE20 SDM MCS0



802.11ax HE40 SDM MCS0

802.11ax HE80 SDM MCS0

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9.2. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

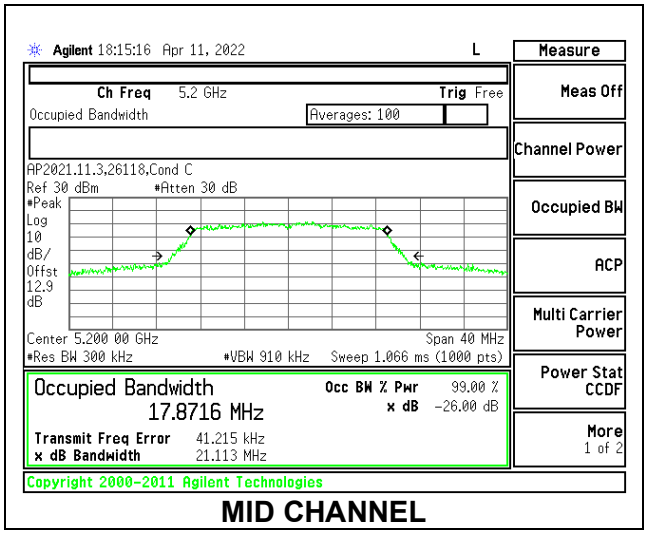
RESULTS

ID:	26118	Date:	04/11/22

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	21.21	17.852
Mid	5200	21.113	17.8716
High	5240	21.061	17.8826



MID CHANNEL

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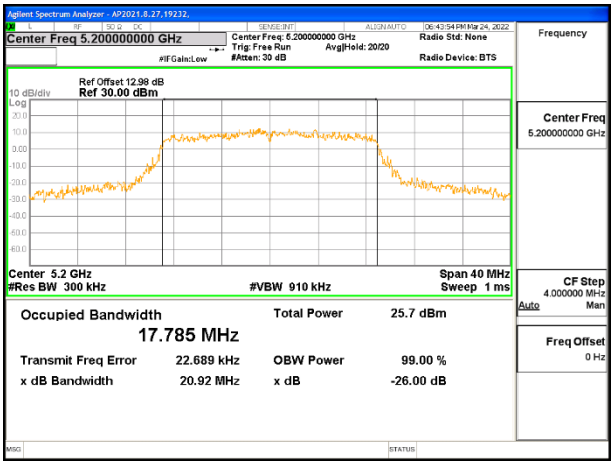
1TX Antenna 5 MODE

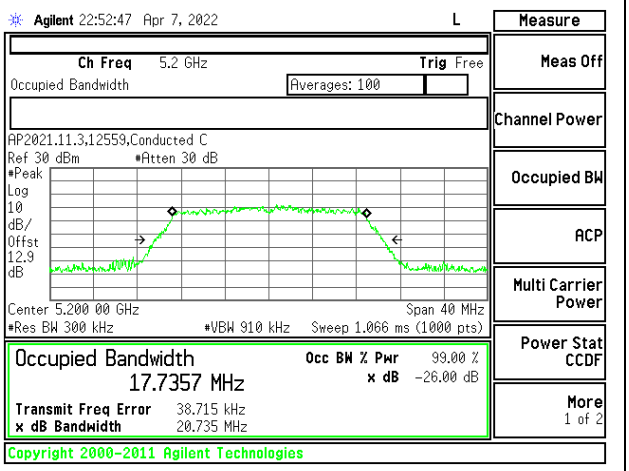
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	21.31	17.832
Mid	5200	20.92	17.785
High	5240	20.87	17.837



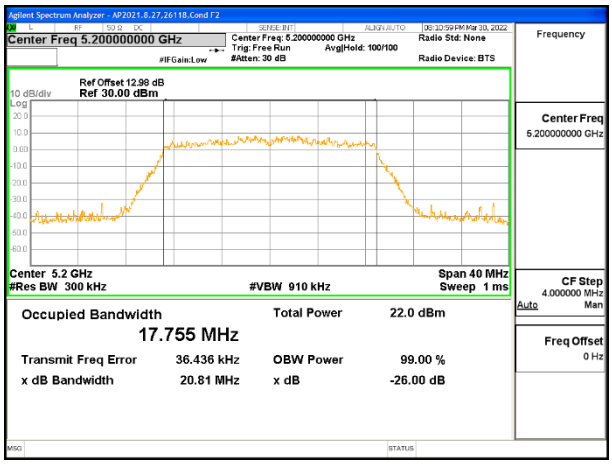
MID CHANNEL

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	21.492	22.260	17.8779	17.794
Mid	5200	20.735	20.810	17.7357	17.755
High	5240	20.737	20.880	17.7501	17.769



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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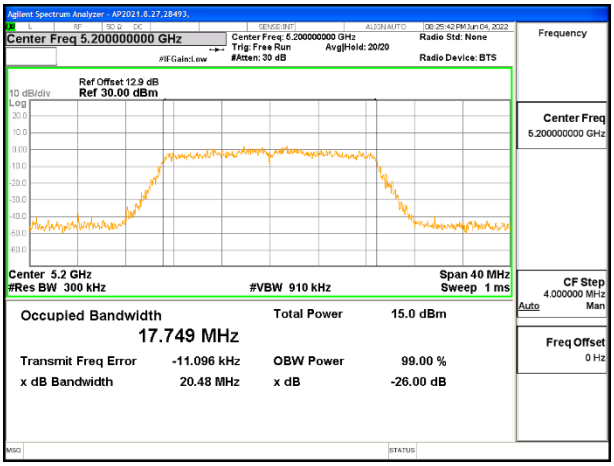
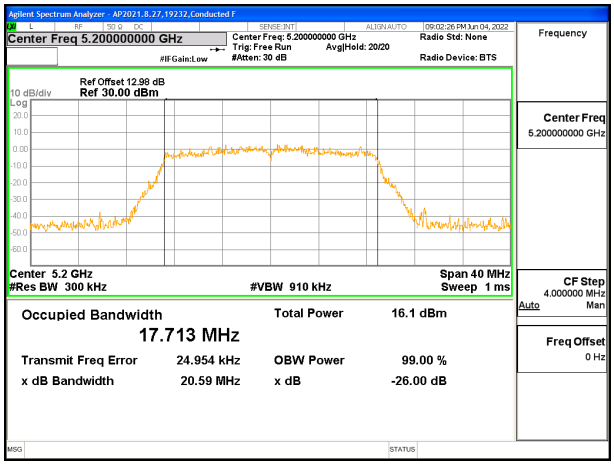
2TX Antenna 6 + Antenna 5 SDM MODE

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	21.63	21.04	17.873	17.770
Mid	5200	20.48	20.59	17.749	17.713
High	5240	20.99	20.44	17.717	17.697



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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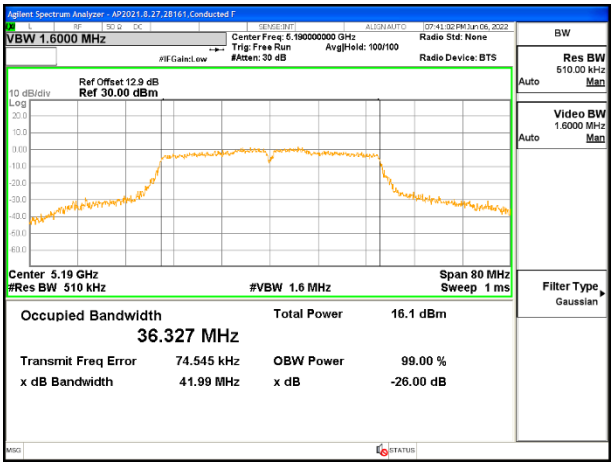
9.2.2. **802.11n HT40 MODE IN THE 5.2 GHz BAND**

1TX Antenna 6 MODE

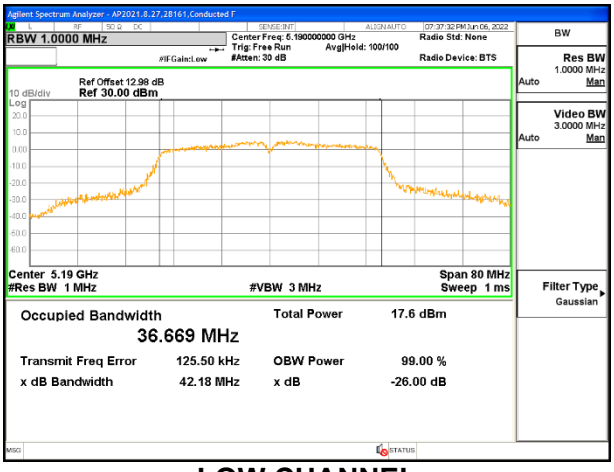
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	41.99	36.327
High	5230	41.622	36.3808



LOW CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	42.18	36.669
High	5230	41.75	36.608



LOW CHANNEL

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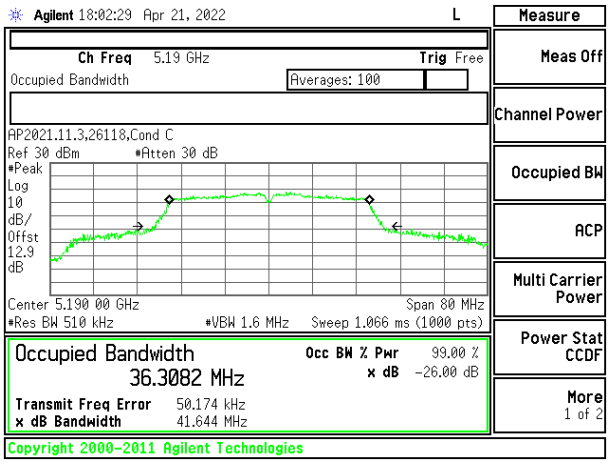
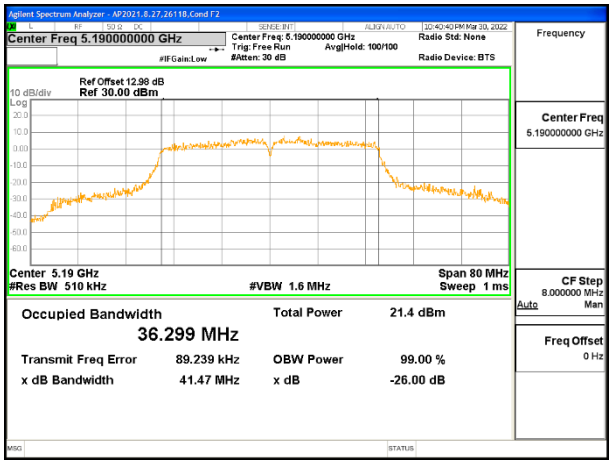
2TX Antenna 6 + Antenna 5 CDD MODE

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	41.644	41.47	36.3082	36.299
High	5230	40.976	40.63	36.2044	36.206



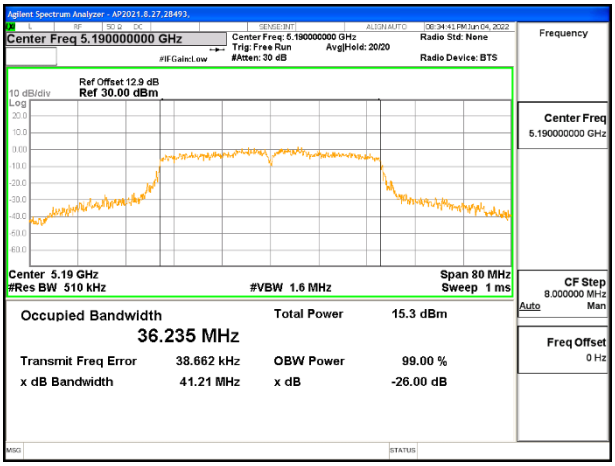
LOW CHANNEL [ANT 6]



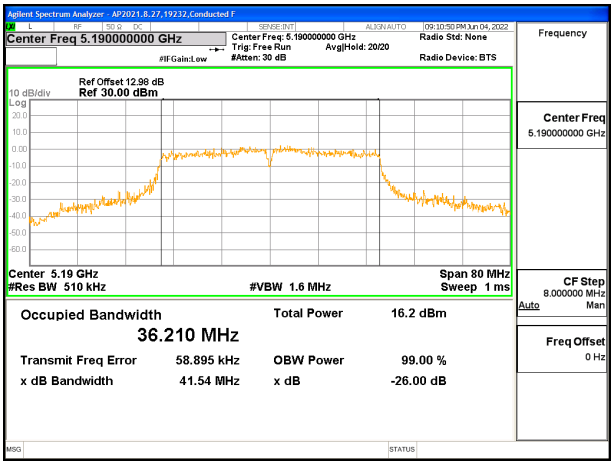
LOW CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 SDM 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	41.21	41.54	36.235	36.210
High	5230	40.89	40.28	36.162	36.126



LOW CHANNEL [ANT 6]



LOW CHANNEL [ANT 5]

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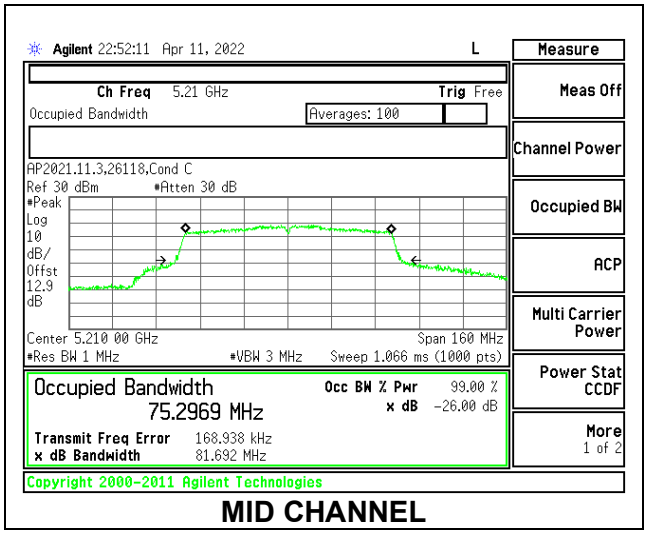
9.2.3. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 6 MODE

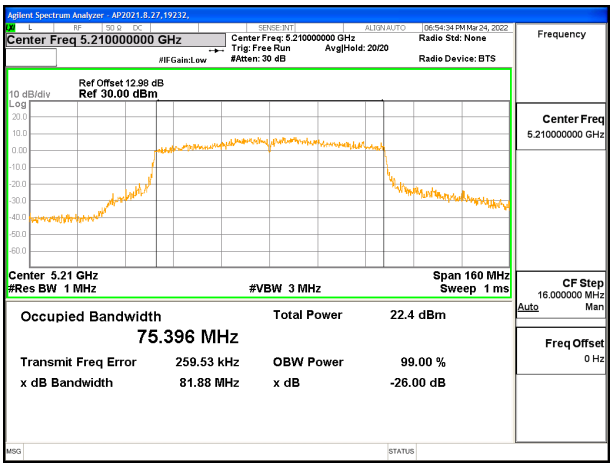
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	81.692	75.2969



MID CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	81.88	75.396



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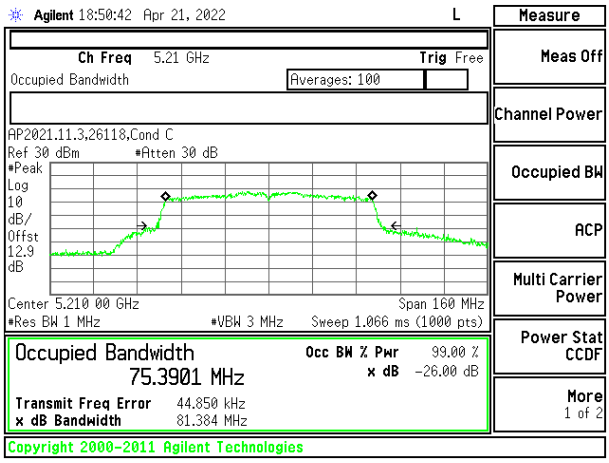
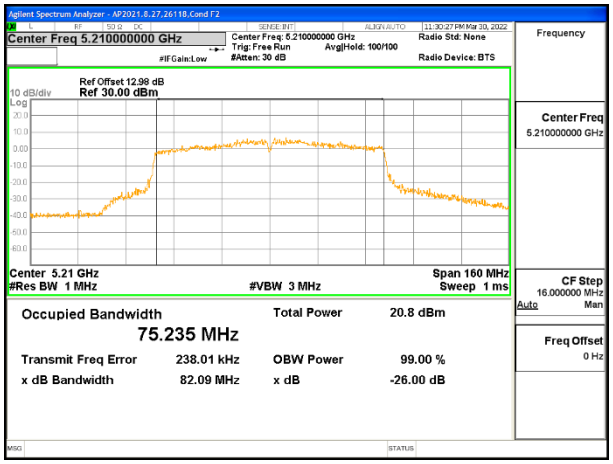
2TX Antenna 6 + Antenna 5 CDD MODE

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	81.384	82.09	75.3901	75.235



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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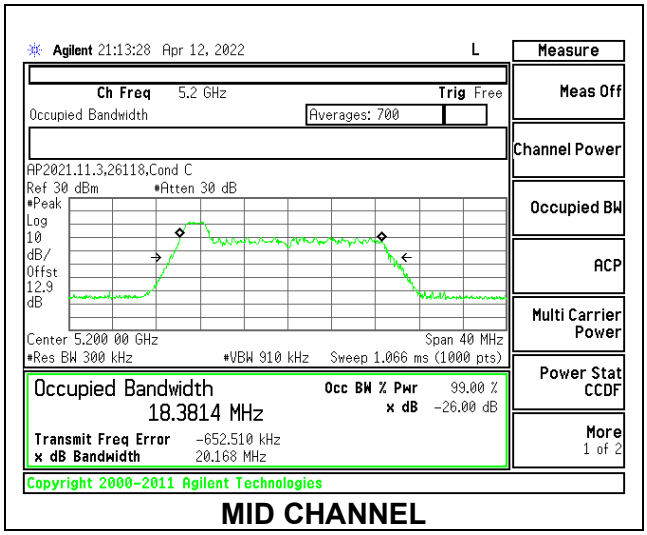
9.2.4. 802.11ax HE20 MODE IN THE 5.2 GHz BAND

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

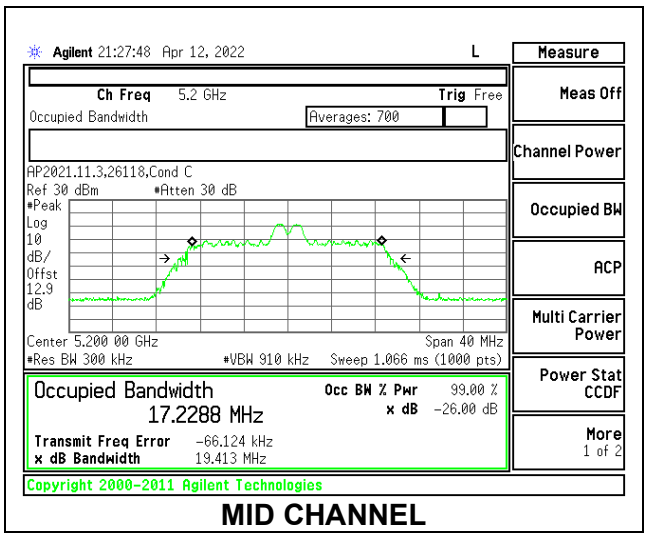
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.173	18.3928
Mid	5200	20.168	18.3814
High	5240	20.201	18.4064



MID CHANNEL

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

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.412	17.1187
Mid	5200	19.413	17.2288
High	5240	19.318	17.2172



MID CHANNEL

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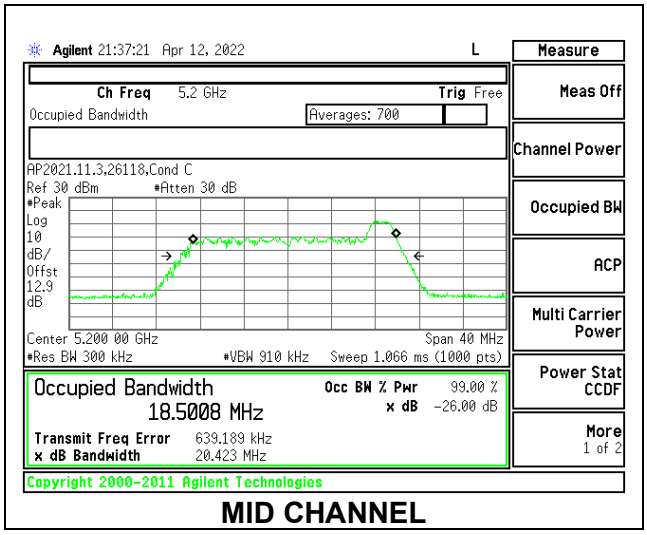
1TX Antenna 6 MODE: 26 Tones, RU Index 8

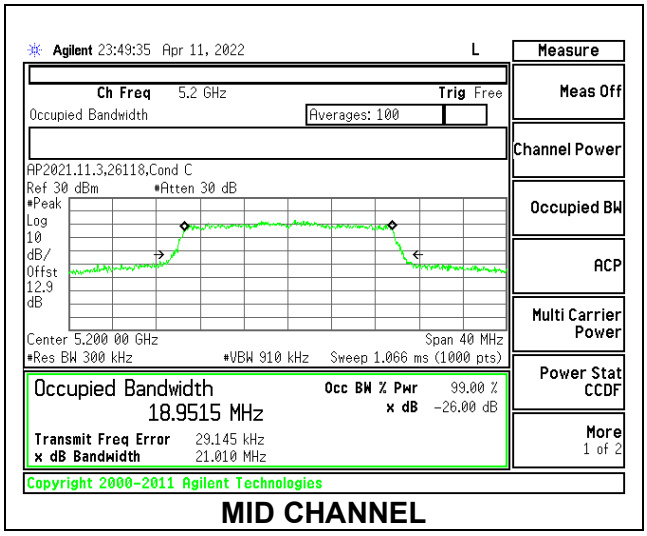
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.537	18.4670
Mid	5200	20.423	18.5008
High	5240	20.560	18.6261



MID CHANNEL

1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	22.883	19.0133
Mid	5200	21.010	18.9515
High	5240	20.998	18.9198



MID CHANNEL

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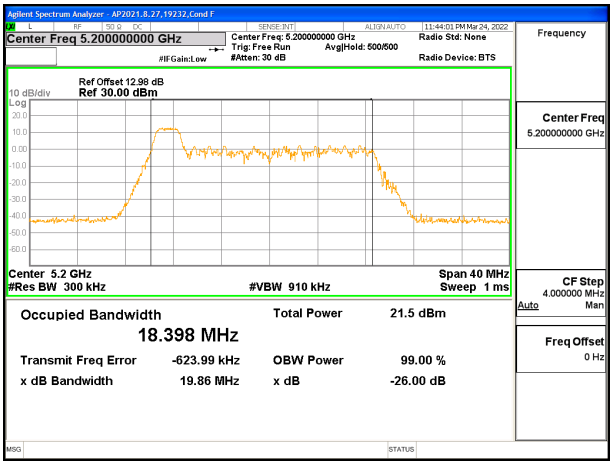
1TX Antenna 5 MODE: 26 Tones, RU Index 0

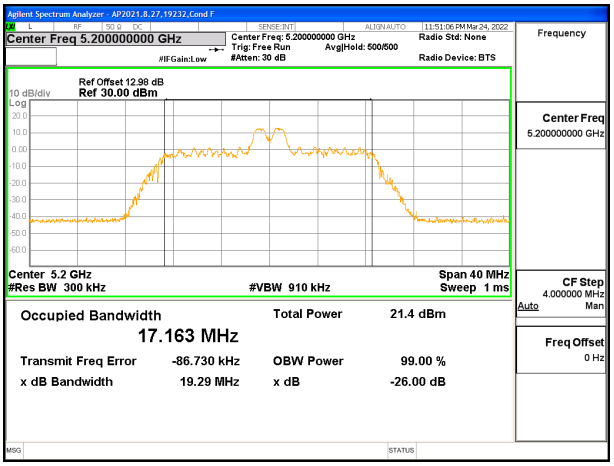
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.20	18.424
Mid	5200	19.86	18.398
High	5240	20.01	18.389



MID CHANNEL

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

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	18.97	17.056
Mid	5200	19.29	17.163
High	5240	19.22	17.149



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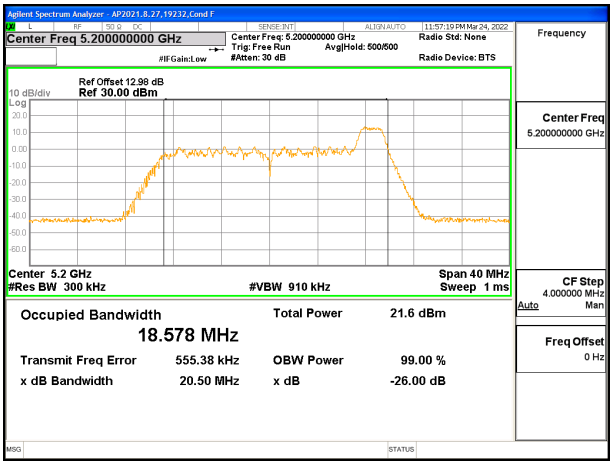
1TX Antenna 5 MODE: 26 Tones, RU Index 8

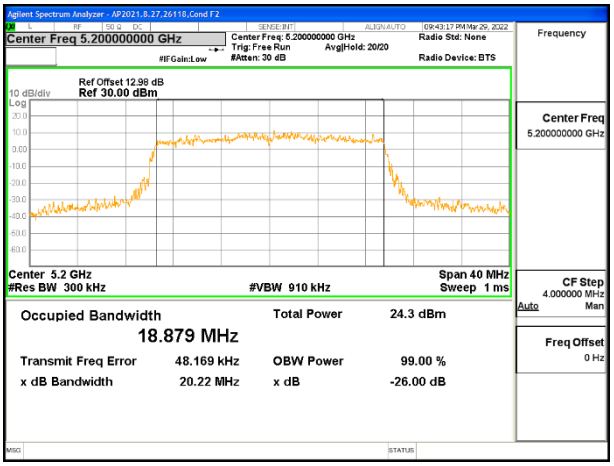
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.50	18.515
Mid	5200	20.50	18.578
High	5240	20.56	18.572



MID CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.80	18.921
Mid	5200	20.22	18.879
High	5240	20.72	18.960



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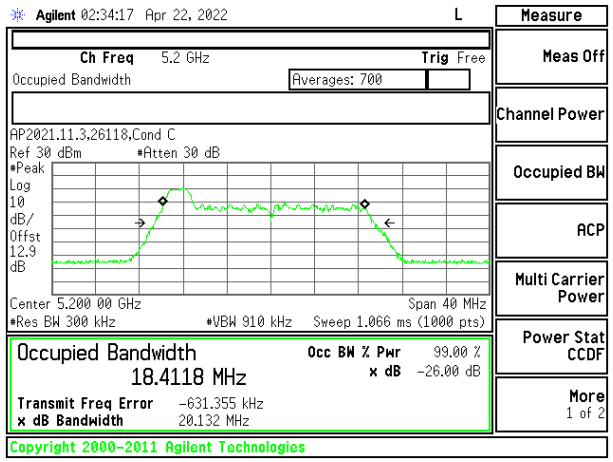
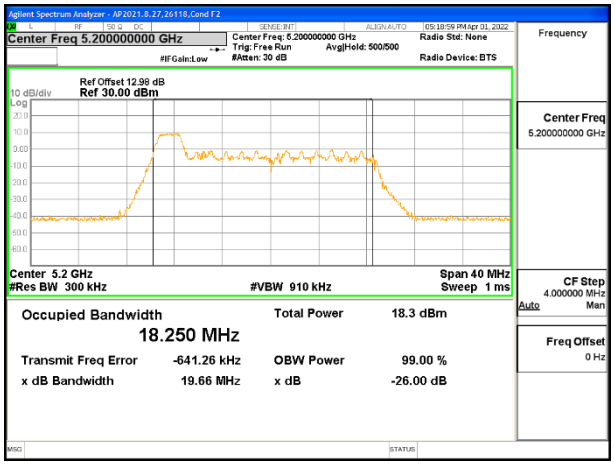
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

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	19.747	19.73	18.0699	18.407
Mid	5200	20.132	19.66	18.4118	18.250
High	5240	20.145	19.60	18.4466	18.356



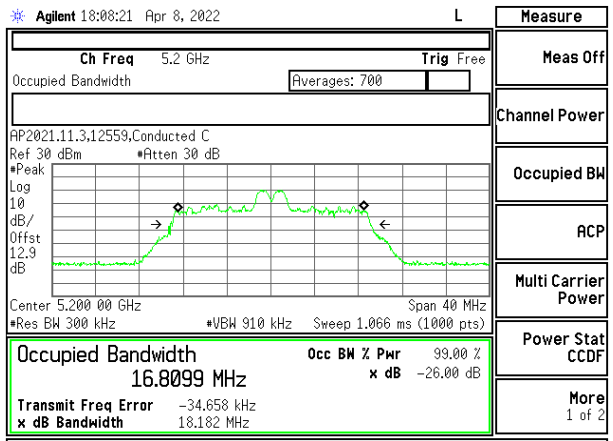
MID CHANNEL [ANT 6]



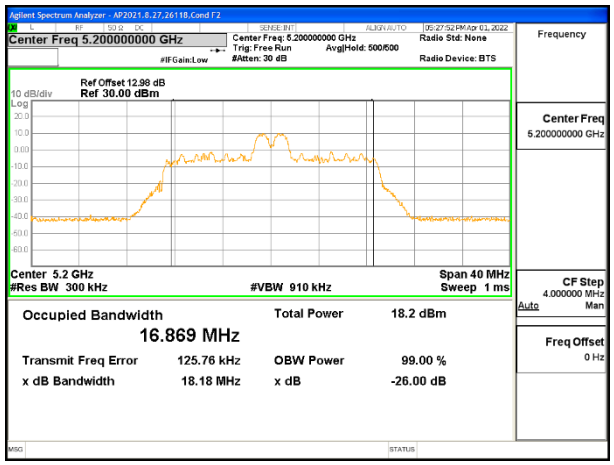
MID CHANNEL [ANT 5]

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

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	18.114	18.33	16.8983	17.045
Mid	5200	18.182	18.18	16.8099	16.869
High	5240	18.340	18.24	16.7694	16.970



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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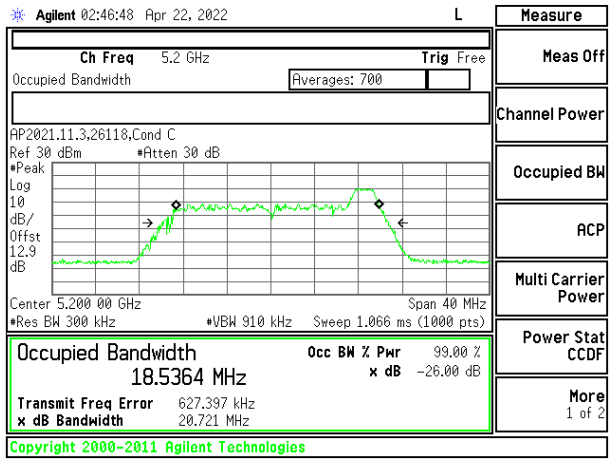
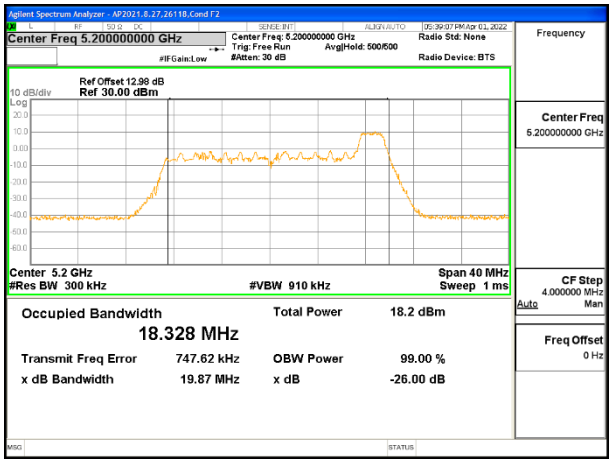
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 8

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	20.644	19.88	18.5773	18.260
Mid	5200	20.721	19.87	18.5364	18.328
High	5240	20.663	19.73	18.5770	18.357



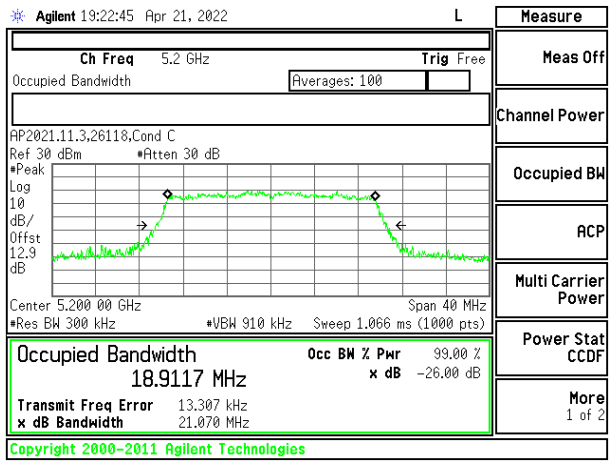
MID CHANNEL [ANT 6]



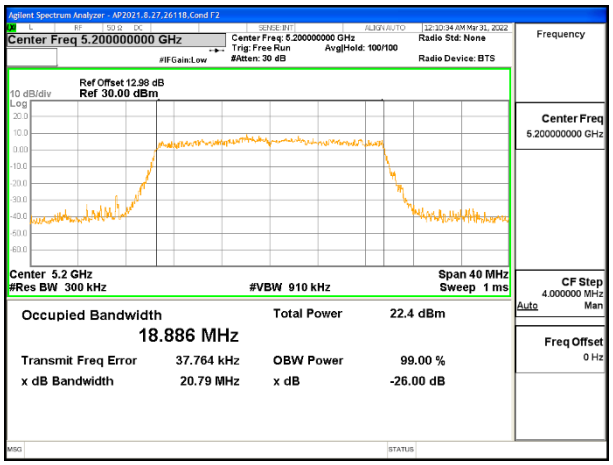
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 OFDMA MODE: SU 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	21.347	21.25	18.9744	18.998
Mid	5200	21.070	20.79	18.9117	18.886
High	5240	20.790	20.79	18.8768	18.952



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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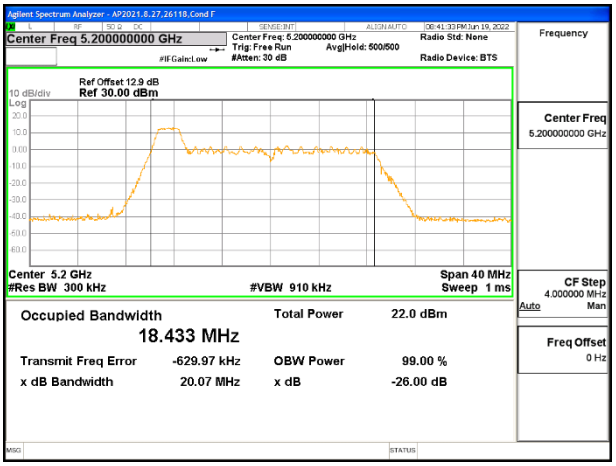
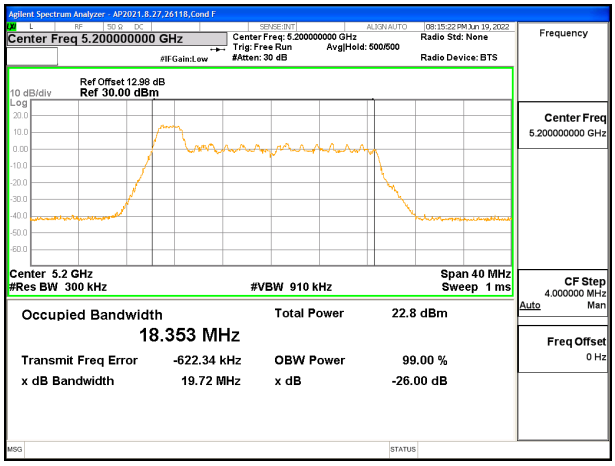
2TX Antenna 6 + Antenna 5 SDM MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (Mz)
Low	5180	19.75	19.57	18.288	18.353
Mid	5200	20.07	19.72	18.433	18.353
High	5240	20.00	19.60	18.371	18.213



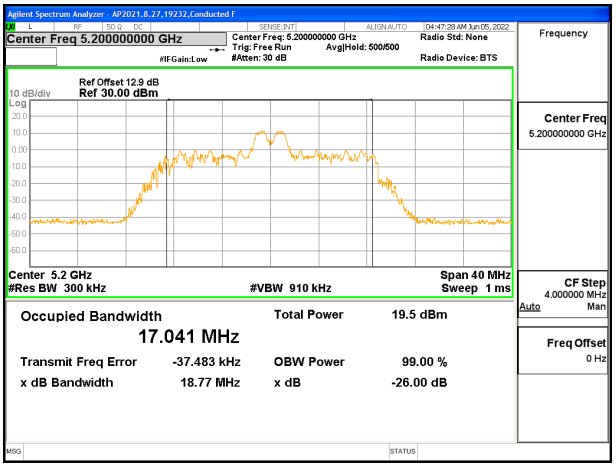
MID CHANNEL [ANT 6]



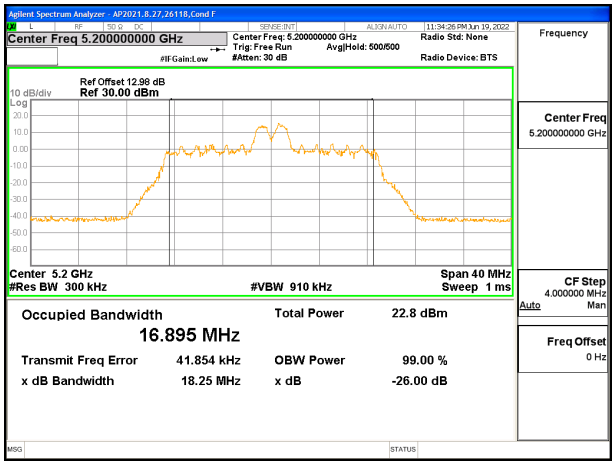
MID CHANNEL [ANT 5]

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

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	19.11	18.31	17.313	16.958
Mid	5200	18.77	18.25	17.041	16.895
High	5240	19.37	18.21	17.221	16.981



MID CHANNEL [ANT 6]



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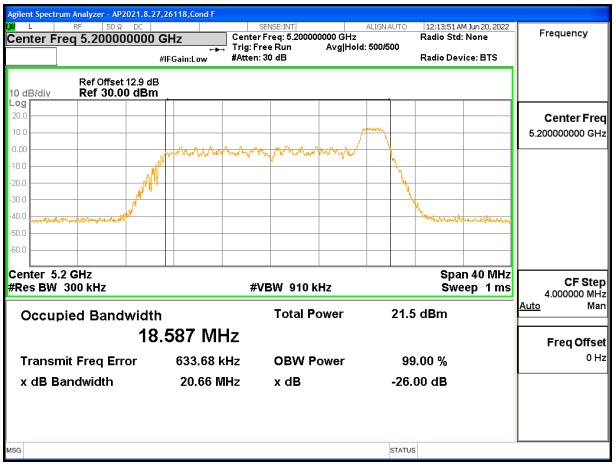
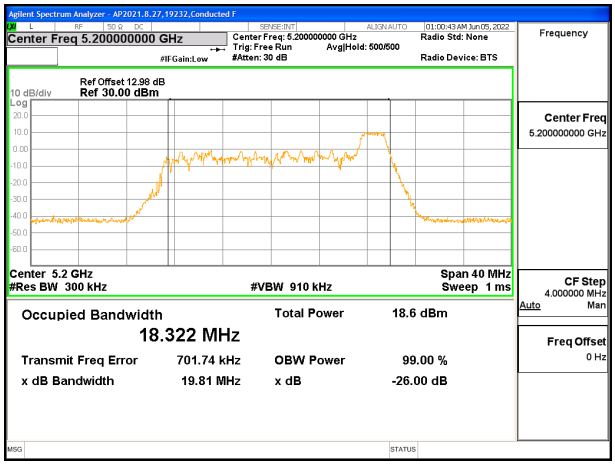
2TX Antenna 6 + Antenna 5 SDM MODE: 26 Tones, RU Index 8

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	20.55	19.65	18.633	18.237
Mid	5200	20.66	19.81	18.587	18.322
High	5240	20.63	19.72	18.668	18.348



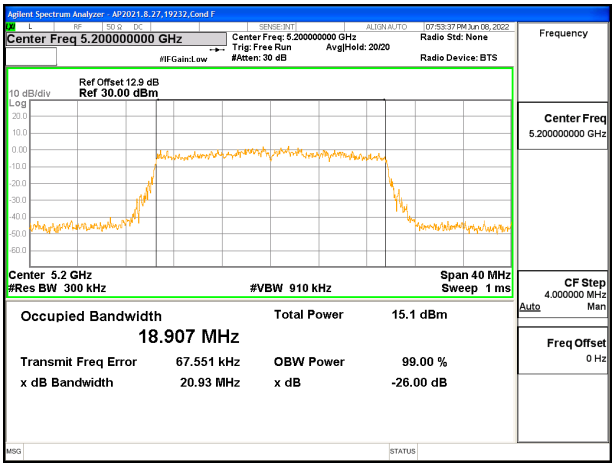
MID CHANNEL [ANT 6]



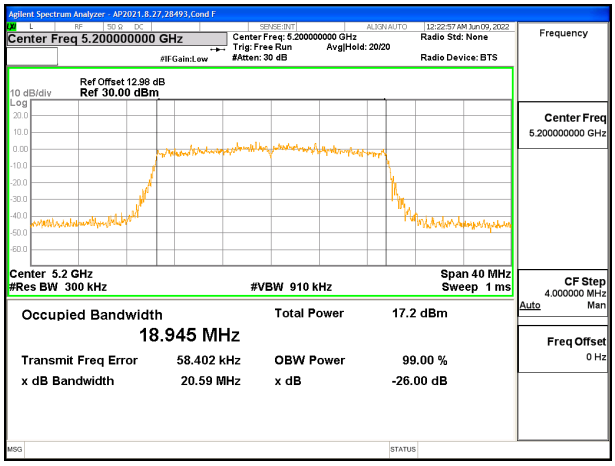
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 SDM MODE: SU 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	21.23	21.22	18.950	18.974
Mid	5200	20.93	20.59	18.907	18.945
High	5240	20.77	20.83	18.877	18.942



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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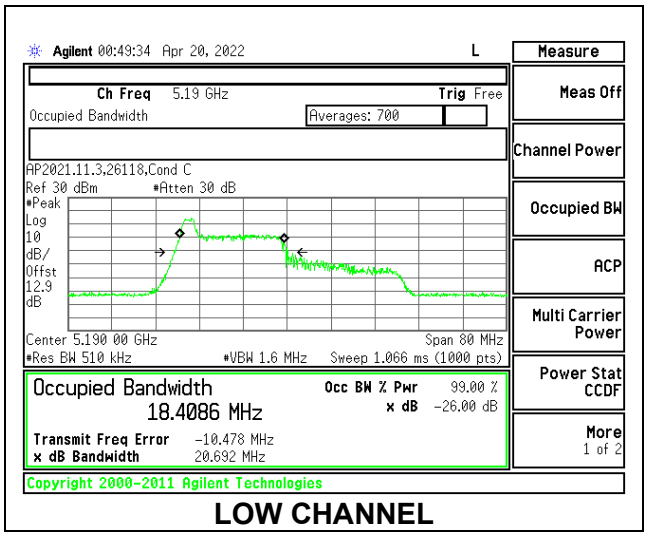
9.2.5. **802.11ax HE40 MODE IN THE 5.2 GHz BAND**

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

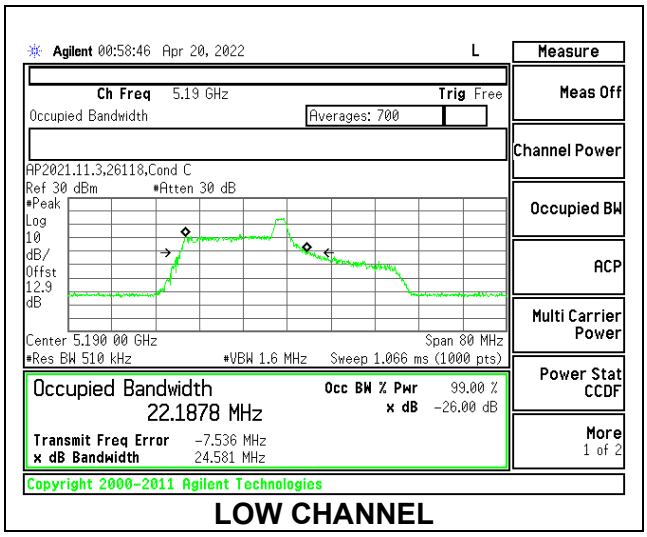
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.692	18.4086
High	5230	20.970	18.9041



LOW CHANNEL

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

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	24.581	22.1878
High	5230	24.015	22.0815



LOW CHANNEL

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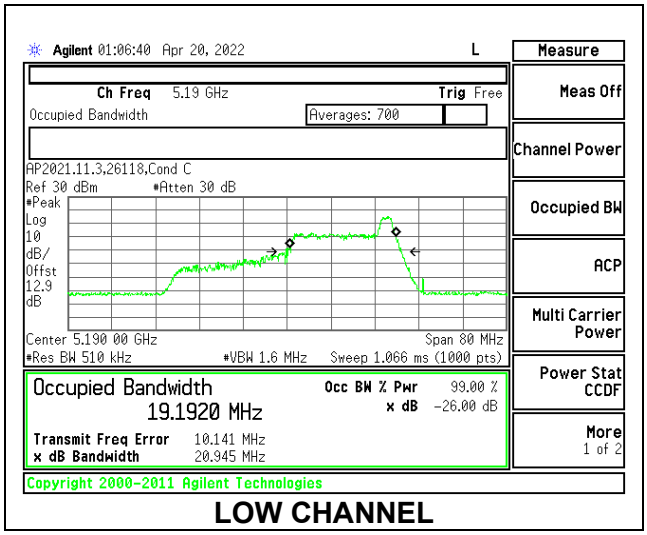
1TX Antenna 6 MODE: 26 Tones, RU Index 17

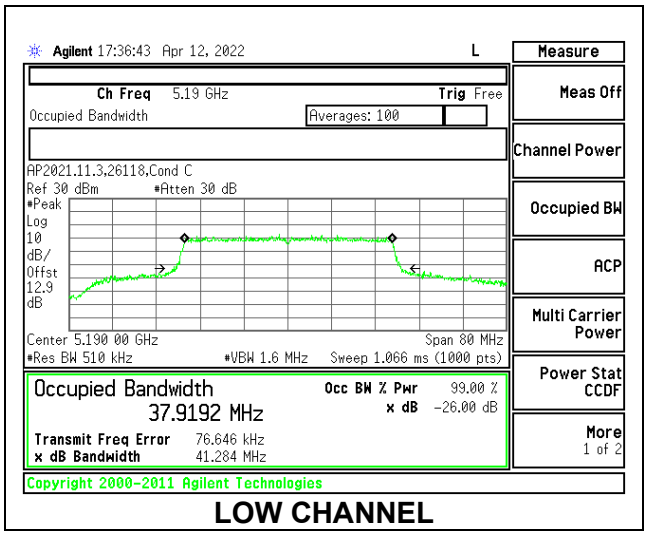
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.945	19.1920
High	5230	20.791	18.9717



LOW CHANNEL

1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	41.284	37.9192
High	5230	41.170	37.8757



LOW CHANNEL

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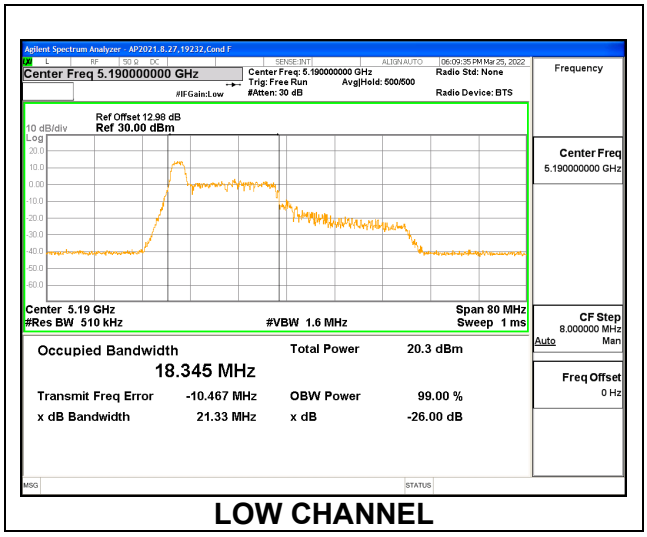
1TX Antenna 5 MODE: 26 Tones, RU Index 0

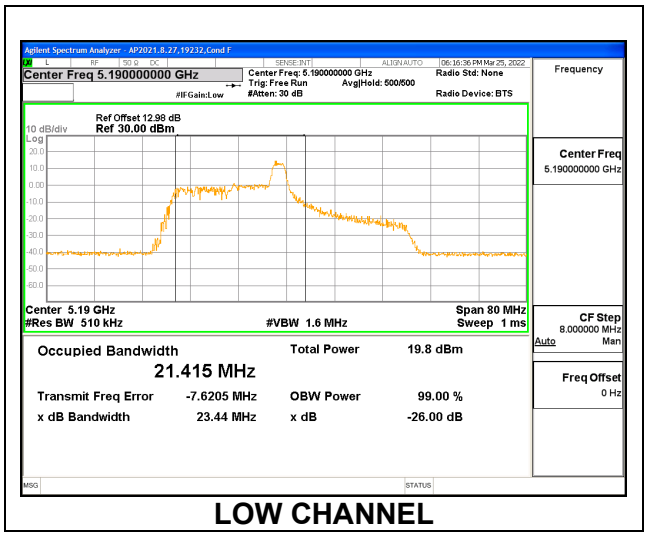
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	21.33	18.345
High	5230	20.36	18.557



LOW CHANNEL

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

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	23.44	21.415
High	5230	22.81	21.588



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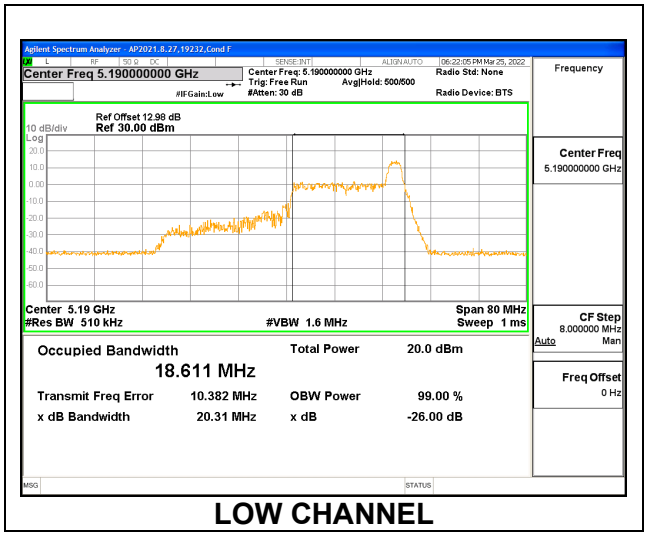
1TX Antenna 5 MODE: 26 Tones, RU Index 17

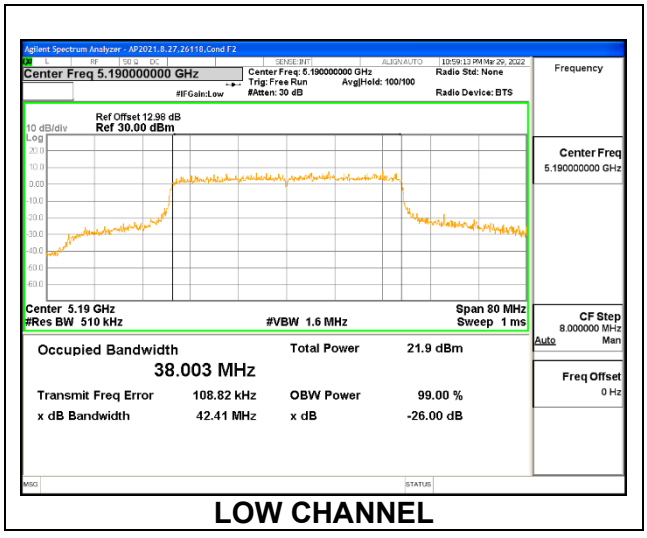
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.31	18.611
High	5230	20.54	18.668



LOW CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	42.41	38.003
High	5230	41.05	37.923



LOW CHANNEL

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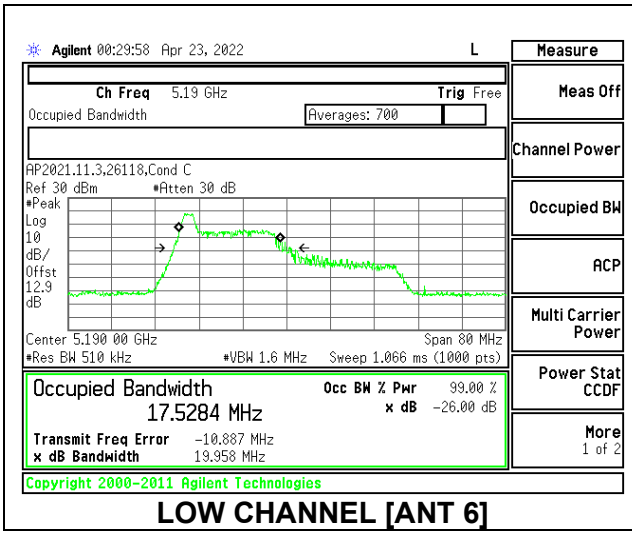
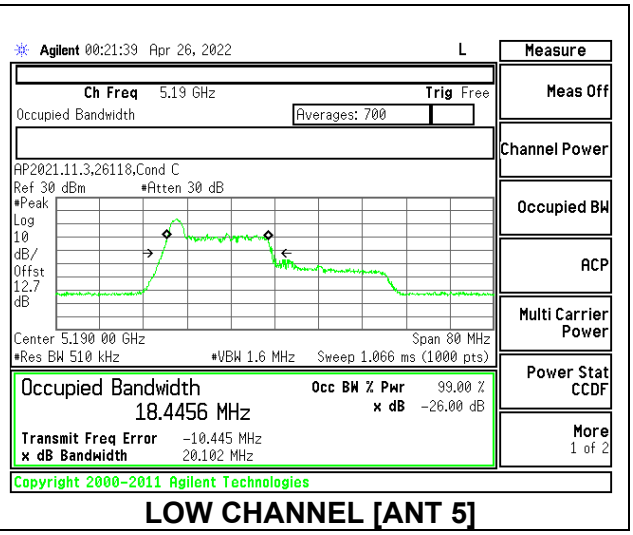
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

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	19.958	20.102	17.5284	18.4456
High	5230	20.108	20.194	18.2306	18.4725



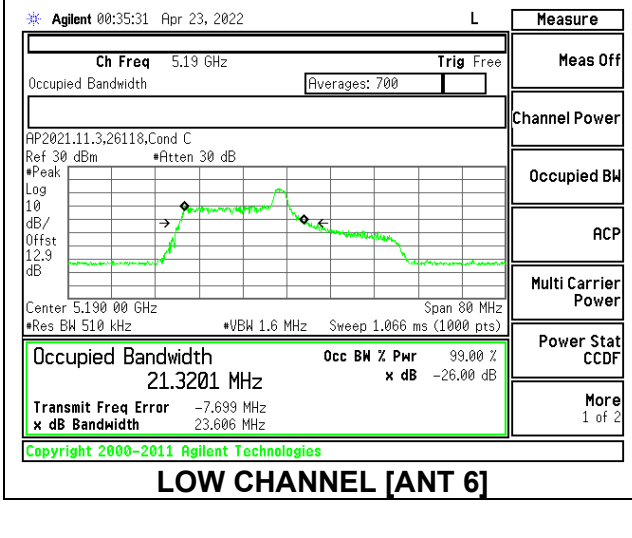
LOW CHANNEL [ANT 6]



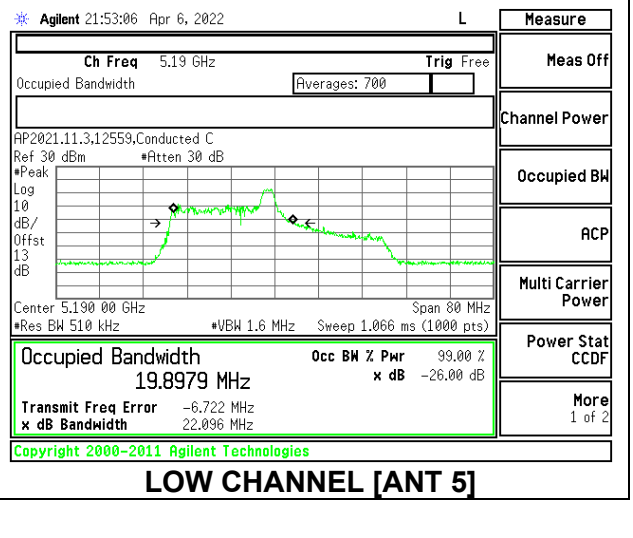
LOW CHANNEL [ANT 5]

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

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	23.606	22.096	21.3201	19.8979
High	5230	23.144	22.096	20.5954	21.6497



LOW CHANNEL [ANT 6]



LOW CHANNEL [ANT 5]

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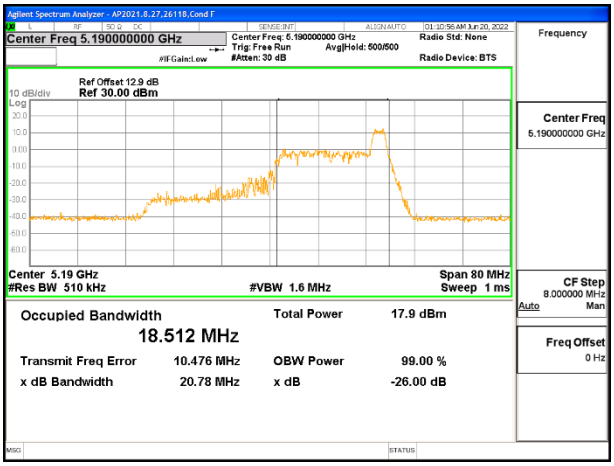
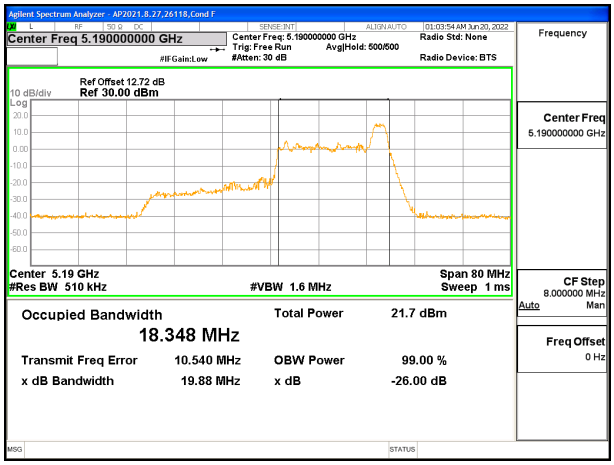
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 17

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	20.78	19.88	18.512	18.348
High	5230	20.874	19.973	18.8810	18.4343



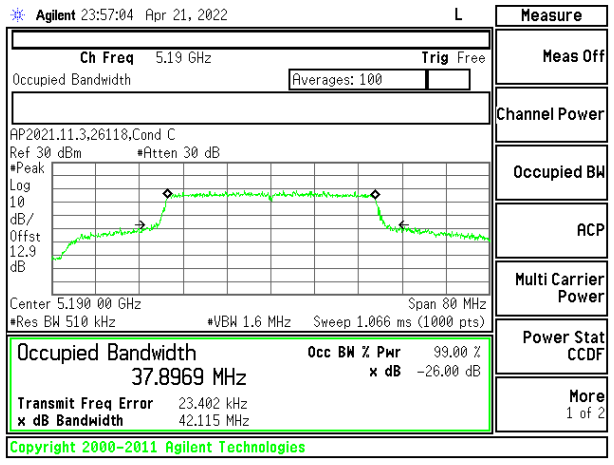
LOW CHANNEL [ANT 6]



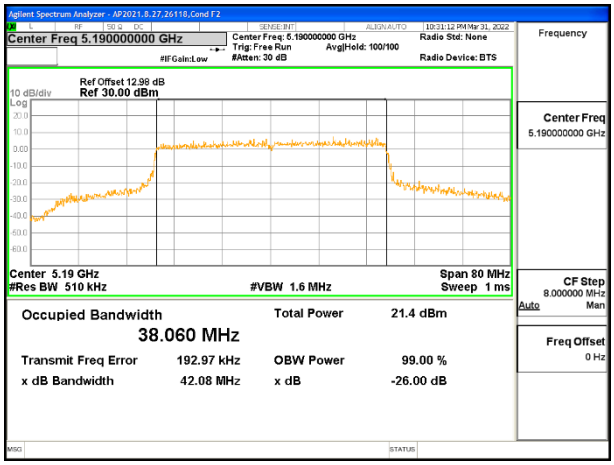
LOW CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 OFDMA MODE: SU 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	42.115	42.08	37.8969	38.060
High	5230	41.070	41.31	38.0031	38.073



LOW CHANNEL [ANT 6]



LOW CHANNEL [ANT 5]

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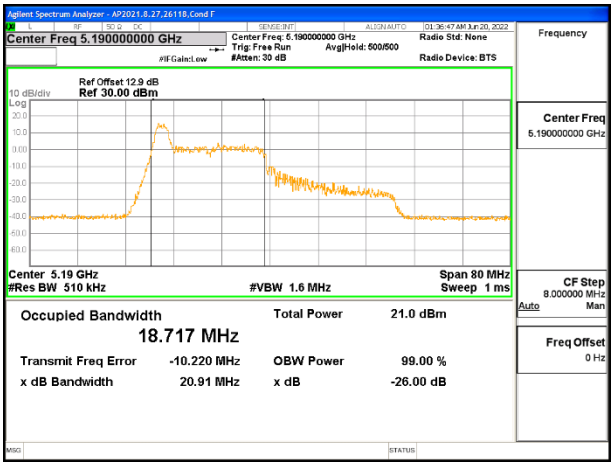
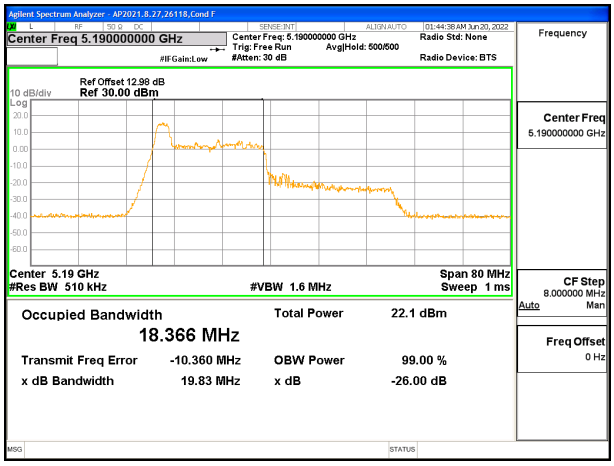
2TX Antenna 6 + Antenna 5 SDM MODE: 26 Tones, RU Index 0

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	20.91	19.83	18.717	18.366
High	5230	20.62	19.68	18.539	18.257



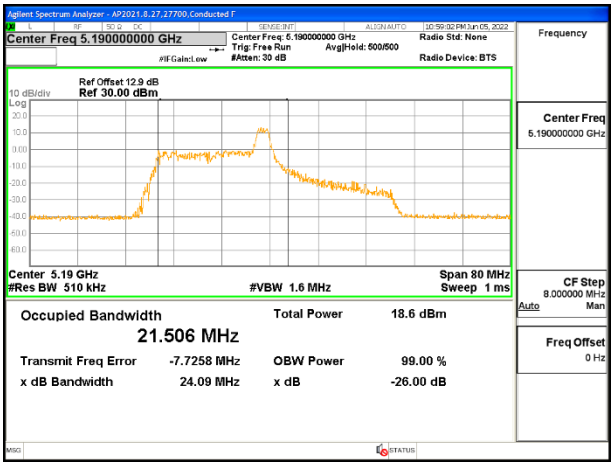
LOW CHANNEL [ANT 6]



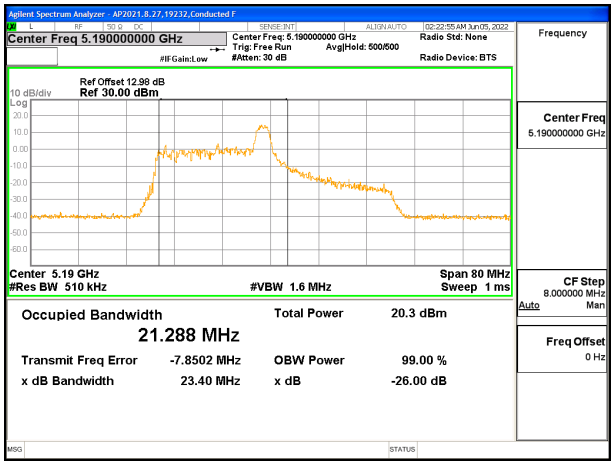
LOW CHANNEL [ANT 5]

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

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	24.09	23.40	21.506	21.288
High	5230	23.79	23.69	21.381	21.066



LOW CHANNEL [ANT 6]



LOW CHANNEL [ANT 5]

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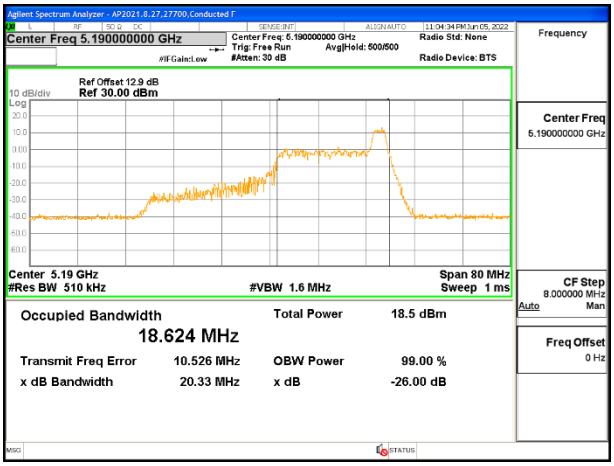
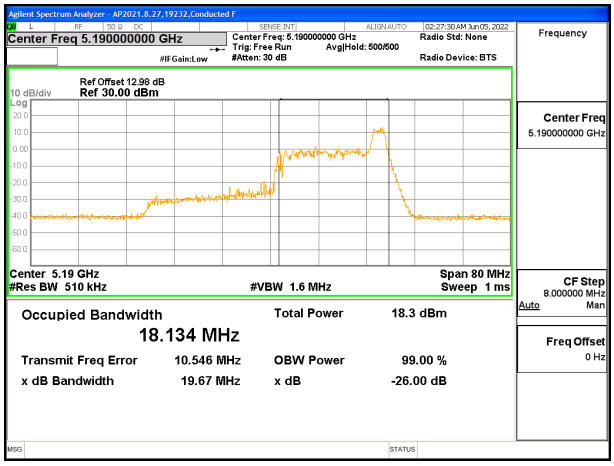
2TX Antenna 6 + Antenna 5 SDM MODE: 26 Tones, RU Index 17

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	20.33	19.67	18.624	18.134
High	5230	21.03	19.16	18.572	17.866



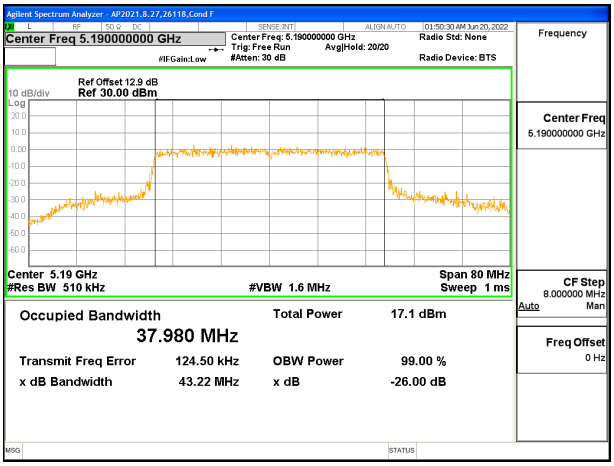
LOW CHANNEL [ANT 6]



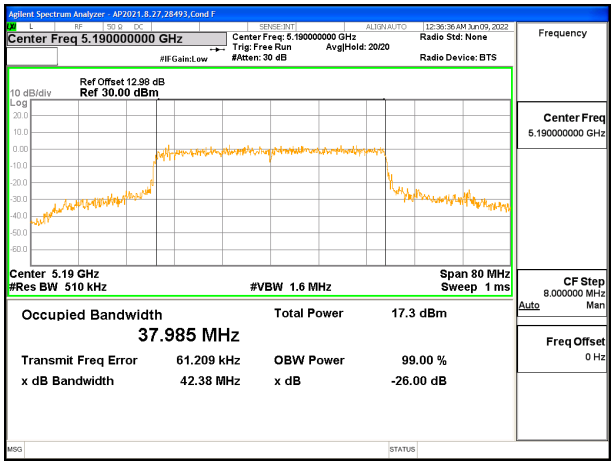
LOW CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 SDM MODE: SU 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	43.22	42.38	37.980	37.985
High	5230	40.54	41.07	37.845	37.797



LOW CHANNEL [ANT 6]



LOW CHANNEL [ANT 5]

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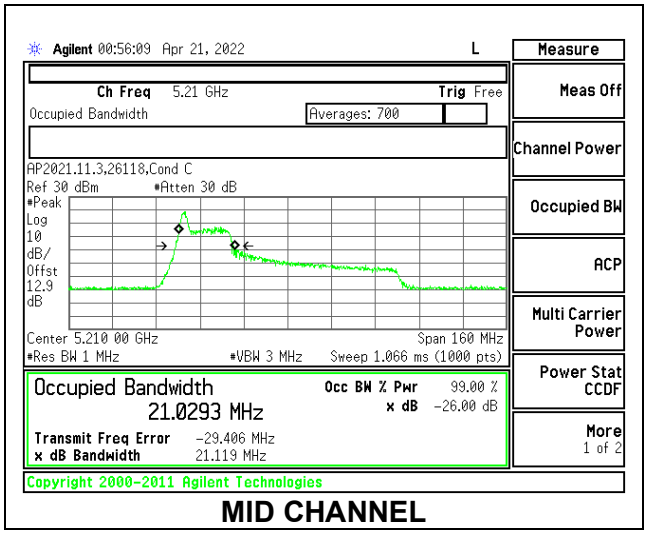
9.2.6. 802.11ax HE80 MODE IN THE 5.2 GHz BAND

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

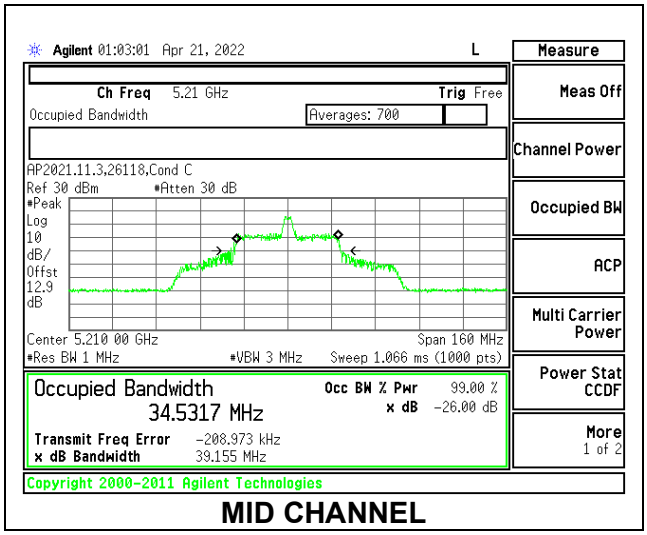
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	21.119	21.0293



MID CHANNEL

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

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	39.155	34.5317



MID CHANNEL

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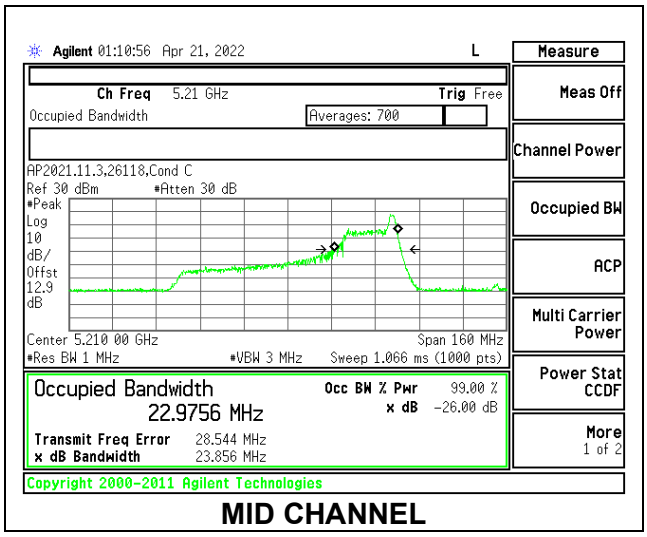
1TX Antenna 6 MODE: 26 Tones, RU Index 36

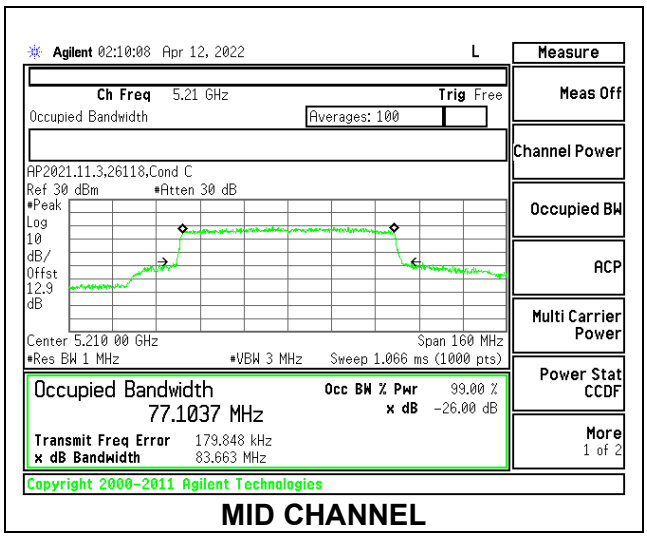
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	23.856	22.9756



MID CHANNEL

1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	83.663	77.1037



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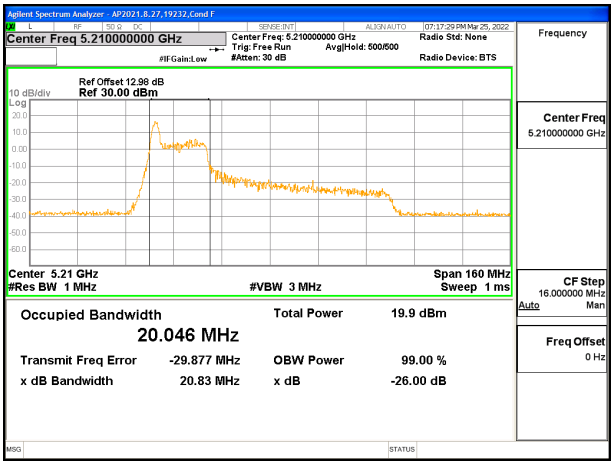
1TX Antenna 5 MODE: 26 Tones, RU Index 0

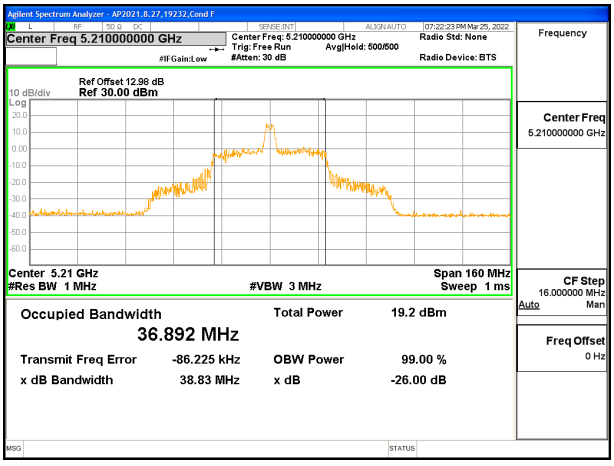
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	20.83	20.046



MID CHANNEL

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

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	38.83	36.892



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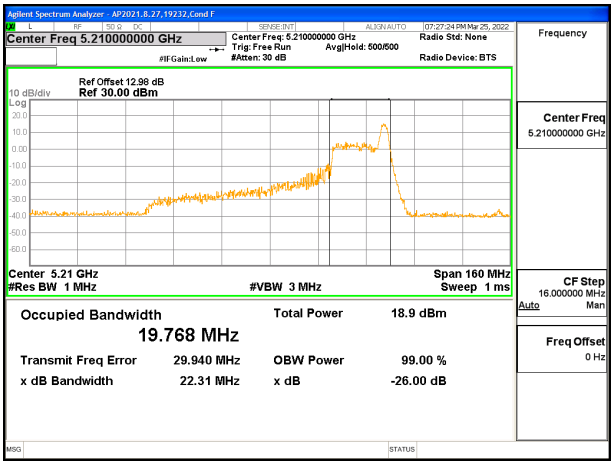
1TX Antenna 5 MODE: 26 Tones, RU Index 36

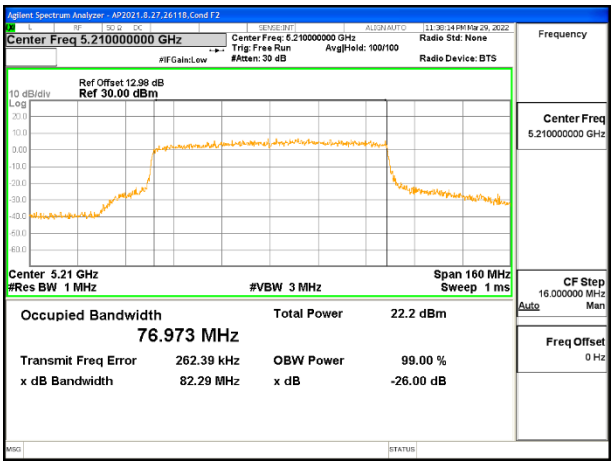
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	22.31	19.768



MID CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	82.29	76.973



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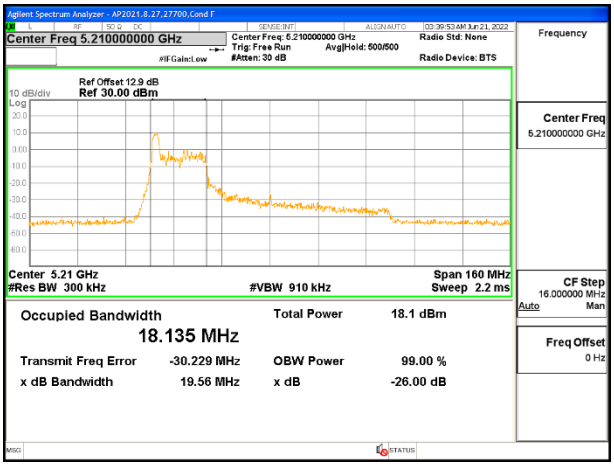
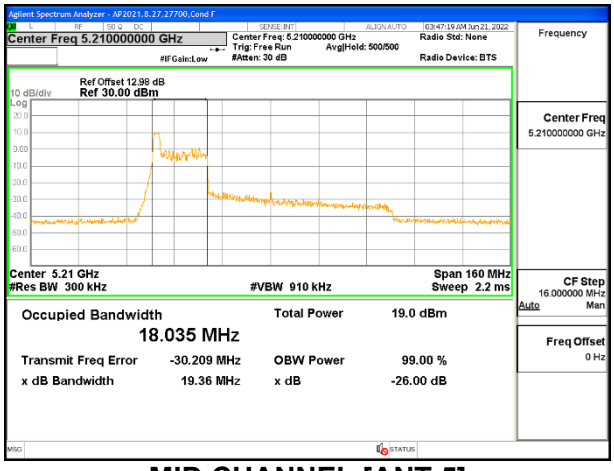
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 0

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	19.56	19.36	18.135	18.035



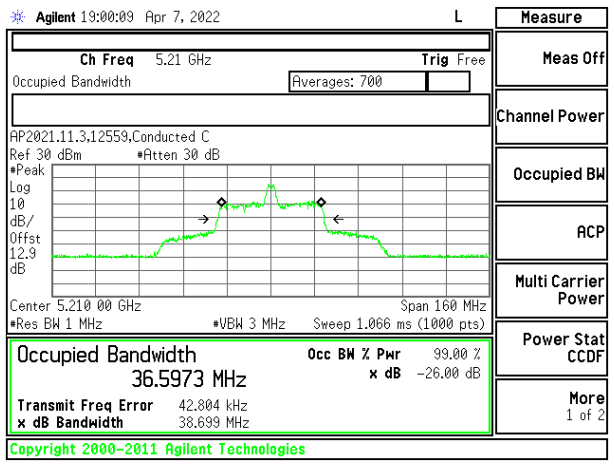
MID CHANNEL [ANT 6]



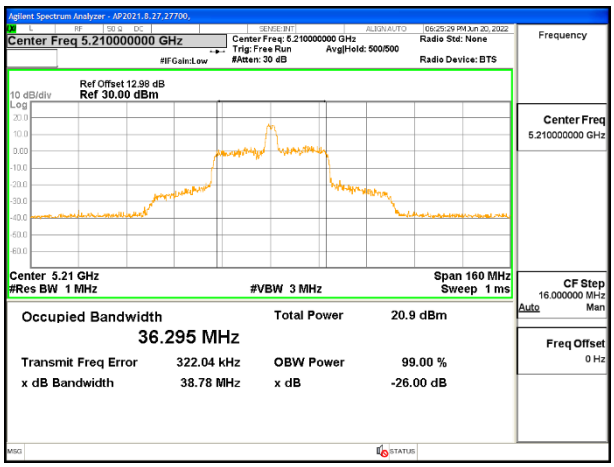
MID CHANNEL [ANT 5]

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

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	38.699	38.78	36.5973	36.295



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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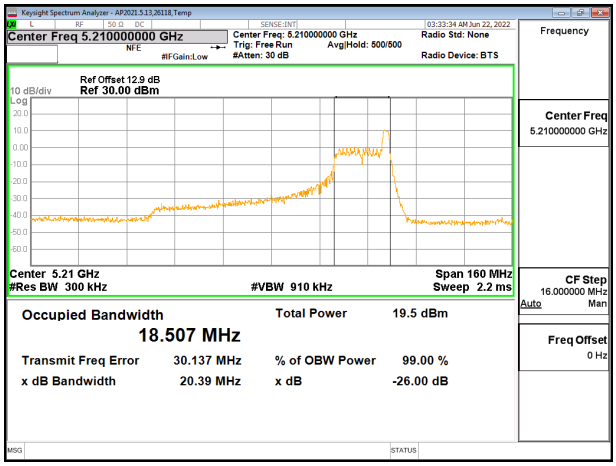
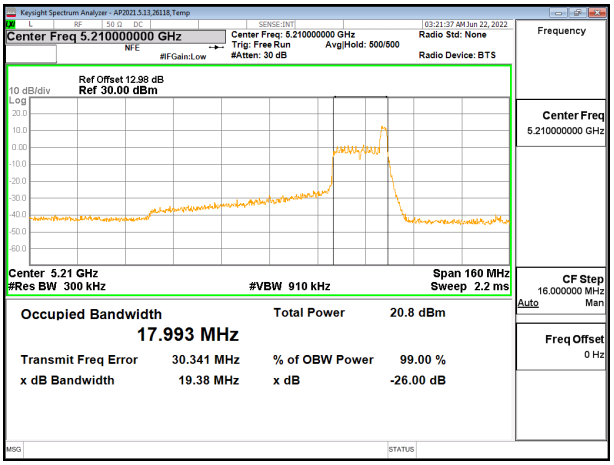
2TX Antenna 6 + Antenna 5 OFDMA MODE: 26 Tones, RU Index 36

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	20.39	19.38	18.507	17.993



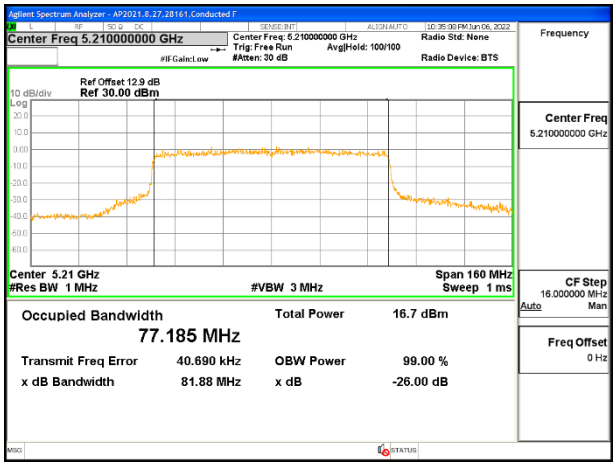
MID CHANNEL [ANT 6]



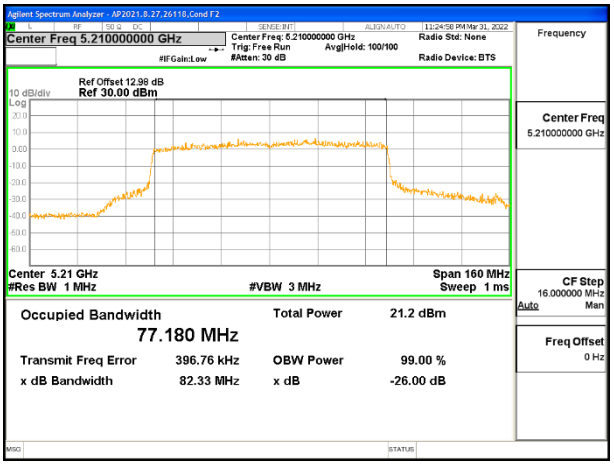
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 OFDMA MODE: SU 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	81.88	82.33	77.185	77.180



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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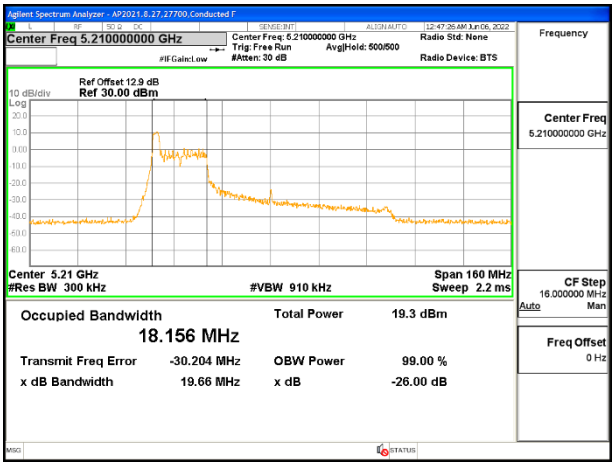
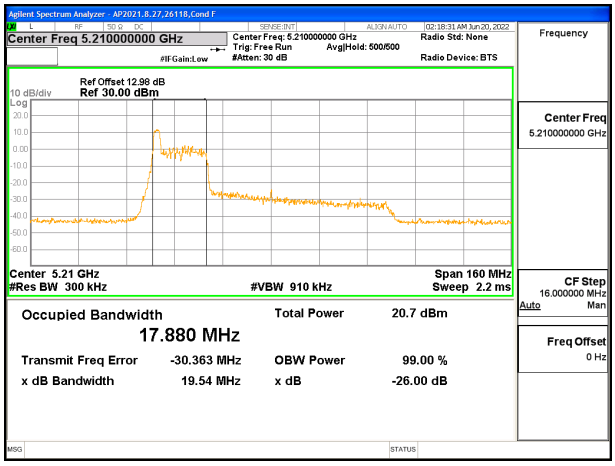
2TX Antenna 6 + Antenna 5 SDM MODE: 26 Tones, RU Index 0

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	19.66	19.54	18.156	17.880



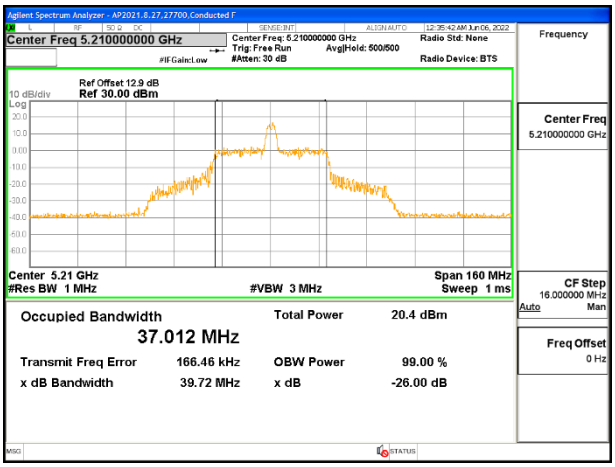
MID CHANNEL [ANT 6]



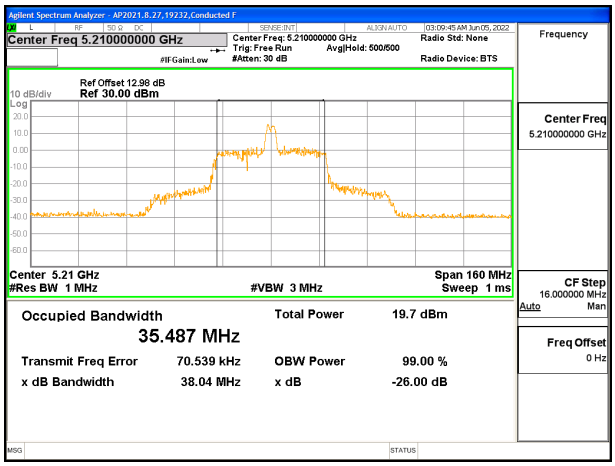
MID CHANNEL [ANT 5]

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

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	39.72	38.04	37.012	35.487



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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