

TEST REPORT

Report Number: 14954500-E4V1

Applicant : SRAM LLC
1000 W Fulton Market 4th Floor
Chicago, IL 60607, United States

Model : 12300

Brand : SRAM

FCC ID : C90-HKB1

IC : 10161A-HKB1

EUT Description : Bicycle Head Unit

Test Standard(s) : FCC 47 CFR PART 15 SUBPART E
ISED RSS-247 ISSUE 3
ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:
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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2023-11-09	Initial Issue	

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SRAM LLC
1000 W Fulton Market 4th Floor
Chicago, IL 60607, United States

EUT DESCRIPTION: Bicycle Head Device

MODEL: 12300

BRAND: SRAM

SERIAL NUMBER: Radiated: 00416GA23270005 and 00416GA23270009
Conducted: 00413PA232960044 and 00413PA232960035

SAMPLE RECEIPT DATE: 2023-09-22 and 2023-09-28

DATE TESTED: 2023-09-27 to 2023-10-31

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR Part 15 Subpart E	Complies
ISED RSS-247 Issue 3	Complies
ISED RSS-GEN Issue 5 + A1 + A2	Complies

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

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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2. TEST RESULTS SUMMARY

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

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 12.2.
See Comment	RSS-GEN 6.7	26dB BW/99% OBW	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2 and 6.9.3
15.407 (e)	RSS-247 6.2.4.1	6 dB BW	Compliant	None.
15.407 (a) (1-4), (h) (1)	RSS-247 6.2	Output Power	Compliant	None.
15.407 (a) (1-3, 5)	RSS-247 6.2	PSD	Compliant	None.
15.209, 15.205, 15.407 (b)	RSS-GEN 8.9, 8.10, RSS-247 6.2	Radiated Emissions	Compliant	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Compliant	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,
- KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013,
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 3

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, Certificate Number 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, U.S.A	US0104	2324A	550739
<input type="checkbox"/>	Building 2: 47266 Benicia Street Fremont, CA 94538, U.S.A	US0104	2324A	550739
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd Fremont, CA 94538, U.S.A	US0104	2324A	550739

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

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

5.2. DECISION RULES

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

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U _{Lab}
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Power Spectral Density	2.47 dB
RF Power Measurement Direct Method Using Power Meter	1.3 dB (PK) / 0.45 dB (AV)
Unwanted Emissions, Conducted	1.94 dB
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
Time Domain Measurements	3.39%
Temperature	0.57°C
Humidity	3.39%
DC Supply Voltages	0.57%

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 EUT is a Bicycle Head Unit.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.2 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2 GHz band, 1TX			
5180-5240	802.11a	16.72	46.99
5180-5240	802.11n HT20	16.61	45.81
5190-5230	802.11n HT40	15.71	37.24
5210	802.11ac VHT80	13.66	23.23

5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 1TX			
5260 - 5320	802.11a	16.61	45.81
5260 - 5320	802.11n HT20	16.63	46.03
5270 - 5310	802.11n HT40	15.64	36.64
5290	802.11ac VHT80	8.95	7.85

5.6 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.6 GHz band, 1TX			
5500-5720	802.11a	16.58	45.50
5500-5720	802.11n HT20	15.59	36.22
5510-5710	802.11n HT40	15.72	37.33
5530-5690	802.11ac VHT80	15.61	36.39

5.8 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.8 GHz band, 1TX			
5745-5825	802.11a	16.61	45.81
5745-5825	802.11n HT20	15.65	36.73
5755-5795	802.11n HT40	15.71	37.24
5775	802.11ac VHT80	15.98	39.63

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

The Qualcomm Radio utilizes a PIFA antenna, with a maximum gain of:

Band (MHz)	Antenna Peak Gain (dBi)
5150-5250	0.71
5250-5320	1.07
5500-5700	1.07
5725-5850	1.21

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed, and the test utility software used during testing was FVIN: H-2.0.

6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle, and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Worst-case data rates as provided by the client were:

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0
802.11ac VHT80 mode: MCS0

6.6. DESCRIPTION OF TEST SETUP

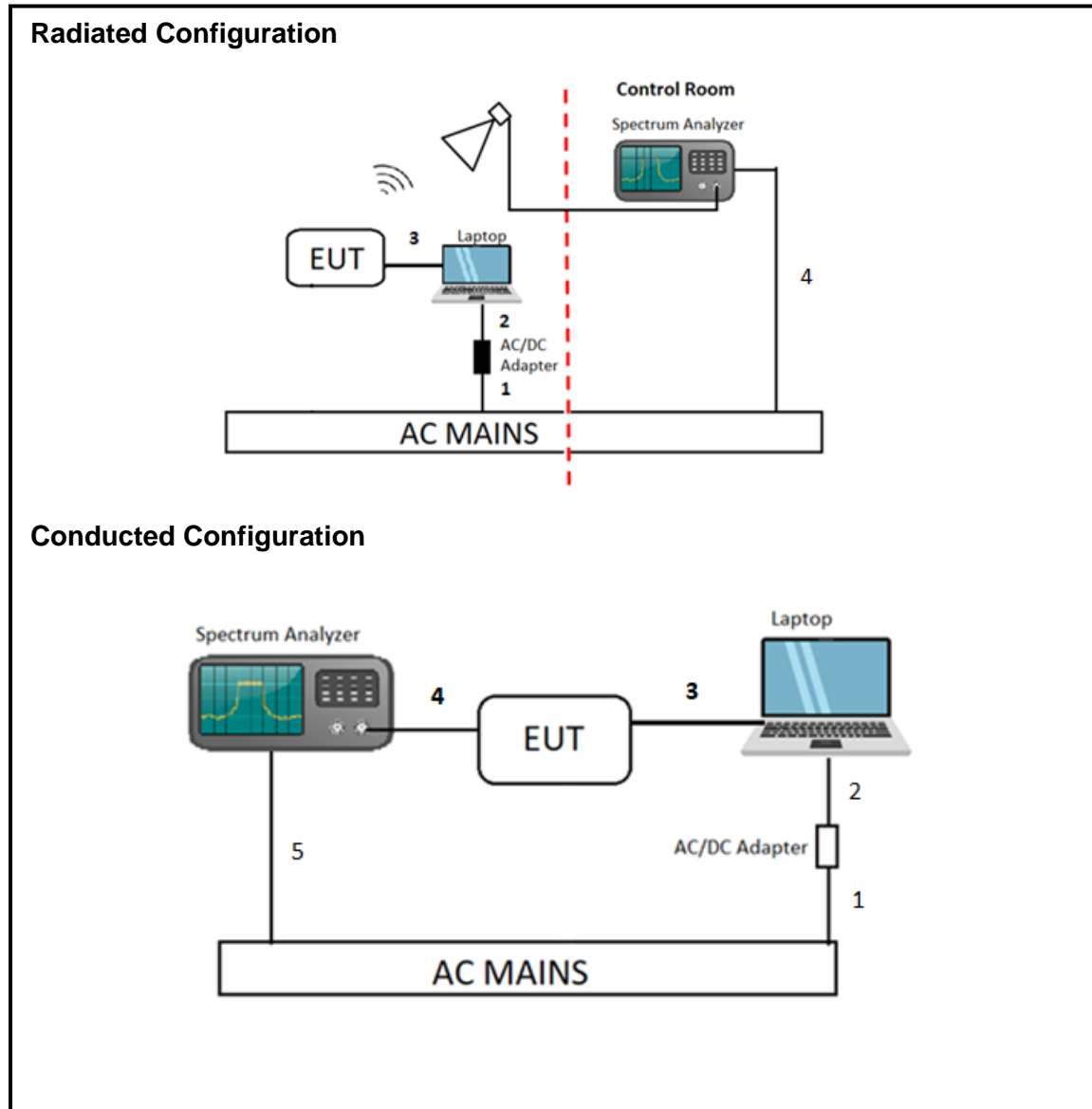
SUPPORT EQUIPMENT

SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
Laptop	Lenovo	ThinkPad P15s	F53D168E-F6F2-4FE5-92C6-008E22EB6B88	-		
Laptop AC/DC Adapter	Lenovo	ADLX65YCC2D	8SSA10R16875C2TJ	-		
I/O CABLES (CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	2-Prong	Un-shielded	1	AC Mains to LT AC/DC Adapter
2	DC	1	DC	Un-shielded	1.5	AC/DC Adapter to Laptop
3	USB	1	USB A to USB C	Un-shielded	1	Laptop to EUT
4	SMA	1	SMA	Un-shielded	0.1	EUT to Spectrum Analyzer
5	AC	1	3-Prong	Un-shielded	1.5	AC Mains to Spectrum Analyzer
I/O CABLES (RADIATED TEST EMISSIONS)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	2-Prong	Un-shielded	1	AC Mains to LT AC/DC Adapter
2	DC	1	DC	Un-shielded	1.5	AC/DC Adapter to Laptop
3	USB	1	USB A to USB C	Un-shielded	1	Laptop to EUT
4	AC	1	3-Prong	Un-shielded	1.5	AC Mains to Spectrum Analyzer

TEST SETUP

For the purposes of testing, the EUT is connected to a laptop via USB A to USB C for radiated emissions above 1GHz. The EUT is normally powered by a Li-Ion battery at 3.85V. The laptop is used for setting up purposes and was used during testing.

SETUP DIAGRAM



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) and KDB 789033 D02 v02r01, Section E.2.b (Method SA-1)

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, Broadband Hybrid, 30MHz to 3000MHz	Sunol Sciences Corp.	JB3	232075	2024-03-31	2023-03-13
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	175953	2024-03-31	2023-03-03
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	223083	2023-10-25	2022-10-25
RF Filter Box, 1-18GHz, 8 Port	UL-FR1	SAC 8 port rf box 1	197920	2024-05-31	2023-05-17
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	199659	2023-12-06	2022-02-06
Amplifier 18-26.5GHz, +5Vdc, 60dB min	AMPLICAL	AMP18G26.5-60	234683	2024-03-29	2023-03-18
Antenna, Horn 26.5 to 40GHz	A.R.A.	MWH-2640/B	199661	2023-12-06	2022-12-06
RF Amplifier Assembly, 26-40GHz, 60dB Gain	AMPLICAL	AMP26G40-60	234684	2024-03-29	2023-03-18
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	170013	2024-07-31	2023-07-28
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	170015	2024-07-31	2023-07-28
Spectrum Analyzer, PSA, 3Hz to 44GHz	Agilent Technologies	N9030A	80396	2024-01-31	2023-01-27
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	225688	2024-02-29	2023-02-14
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90754	2024-01-25	2023-01-25
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	81319	2024-01-31	2023-01-25
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	N/A	Verified	Verified
AC Line Conducted					
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	2024-02-29	2023-02-29
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175764	2024-01-31	2023-01-31
Transient Limiter	TE	TBFL1	207996	2024-08-31	2023-08-10
UL TEST SOFTWARE LIST					
Radiated Software	UL	UL EMC	Version 9.5, 2023-03-01		
Conducted Software	UL	UL EMC	2022-08-16		
AC Line Conducted Software	UL	UL EMC	Version 9.5, 2023-03-03		

NOTES:

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

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)
802.11a 1TX	2.064	2.101	0.982	98.24	0.00	0.010
802.11n HT20 1TX	1.924	1.961	0.981	98.11	0.00	0.010
802.11n HT40 1TX	0.948	0.984	0.963	96.29	0.16	1.055
802.11ac VHT80 1TX	0.464	0.500	0.927	92.70	0.33	2.157

DUTY CYCLE PLOTS



DUTY CYCLE 802.11a 1TX MODE



DUTY CYCLE 802.11n HT20 1TX MODE



DUTY CYCLE 802.11n HT40 1TX MODE



DUTY CYCLE 802.11ac VHT80 1TX MODE

9.2. 26 dB BANDWIDTH

LIMITS

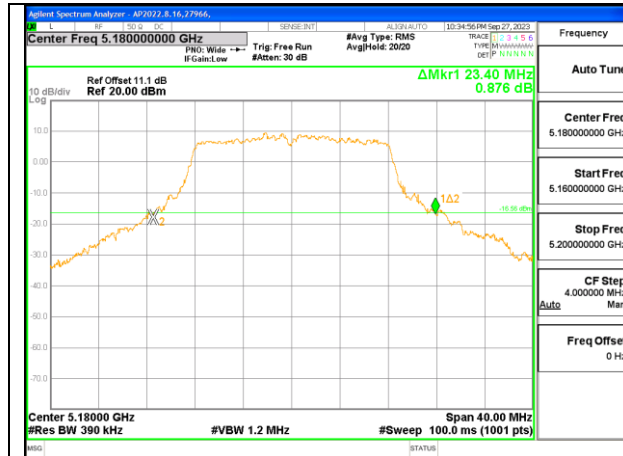
None; for reporting purposes only.

RESULTS

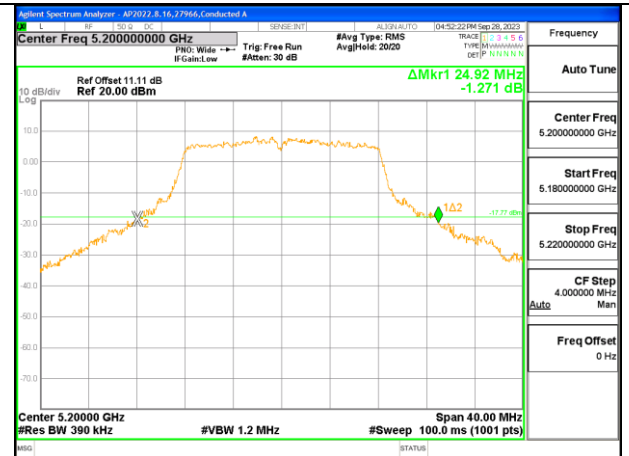
9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

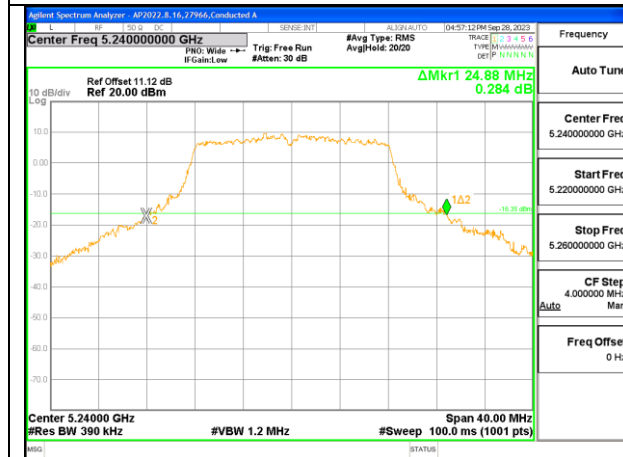
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	23.40
Mid	5200	24.92
High	5240	24.88



LOW CHANNEL



MID CHANNEL

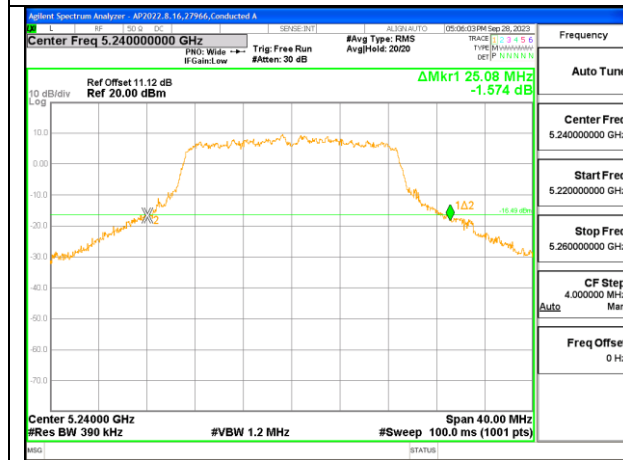
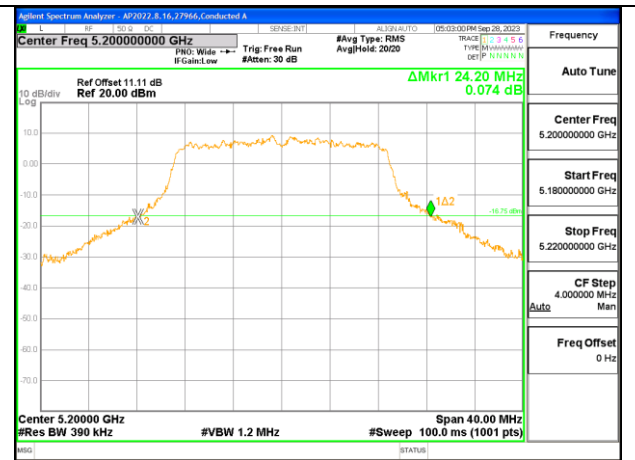
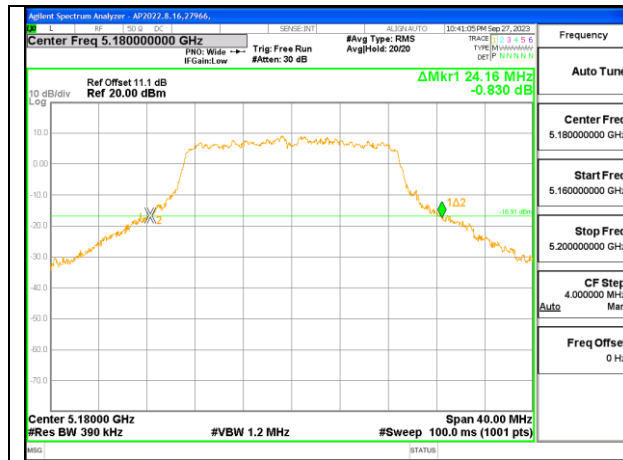


HIGH CHANNEL

9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

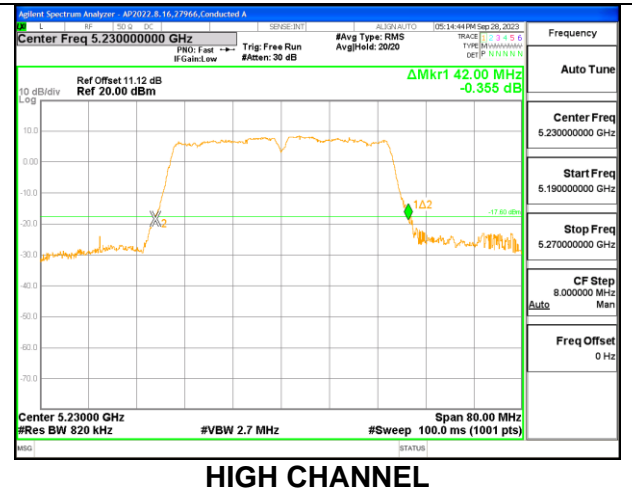
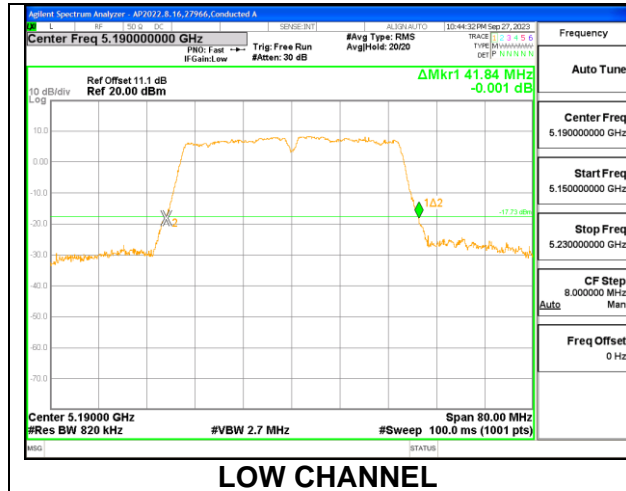
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	24.16
Mid	5200	24.20
High	5220	25.08



9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

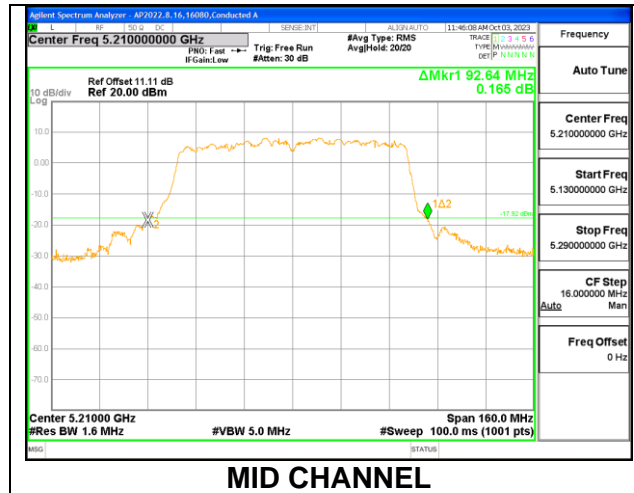
Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5190	41.84
High	5230	42.00



9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

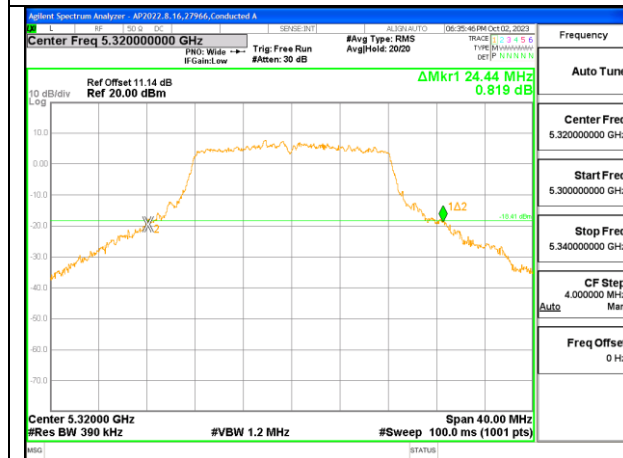
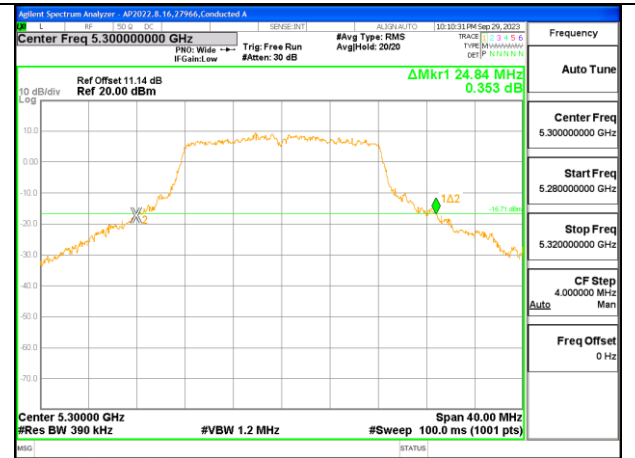
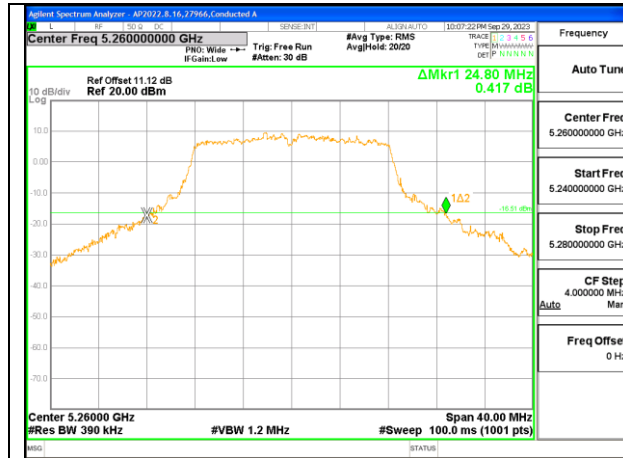
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	92.64



9.2.5. 802.11a MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

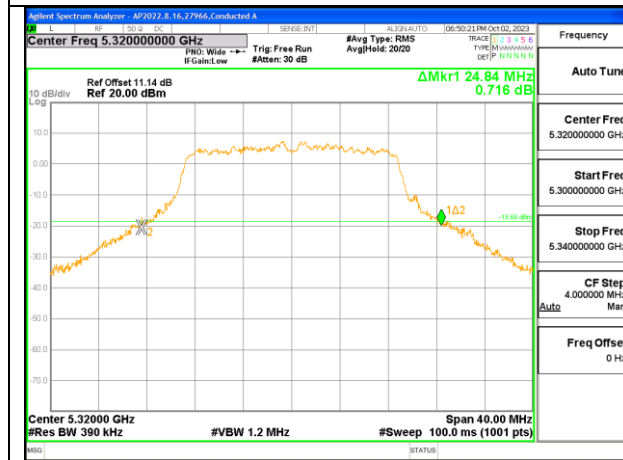
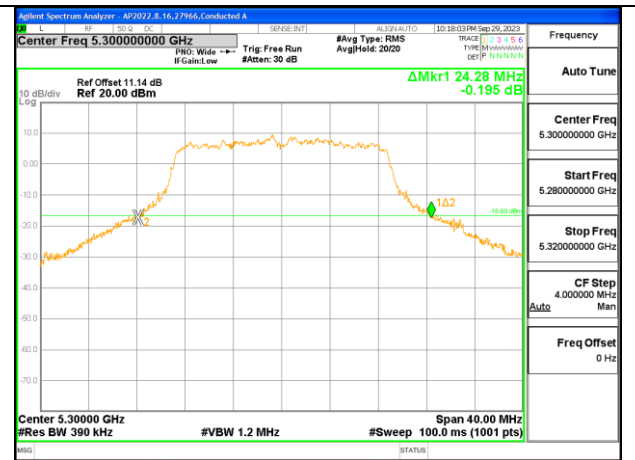
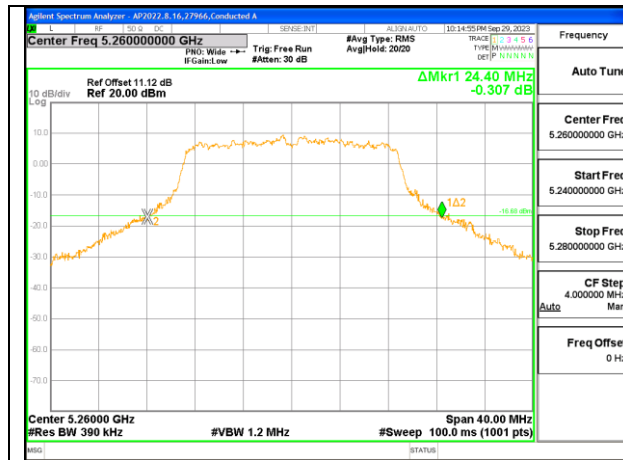
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	24.80
Mid	5300	24.84
High	5320	24.44



9.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

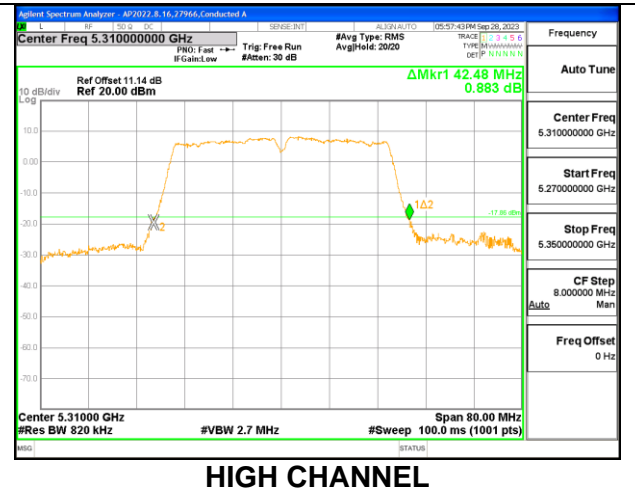
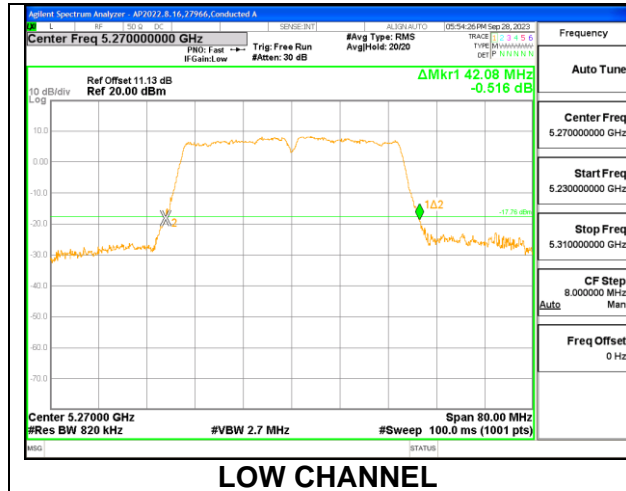
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	24.40
Mid	5300	24.28
High	5320	24.84



9.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

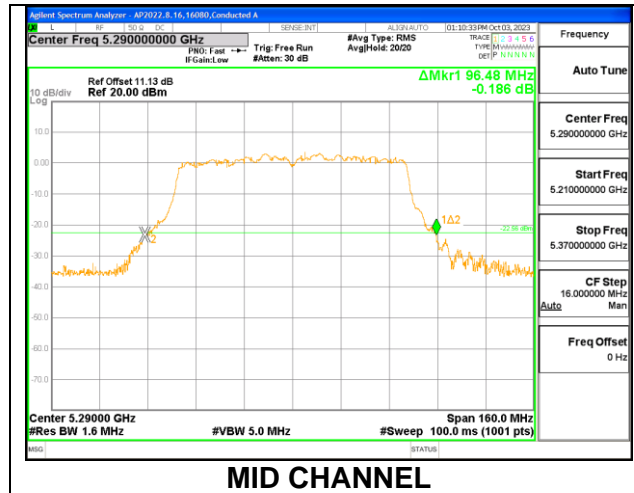
Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5270	42.08
High	5310	42.48



9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

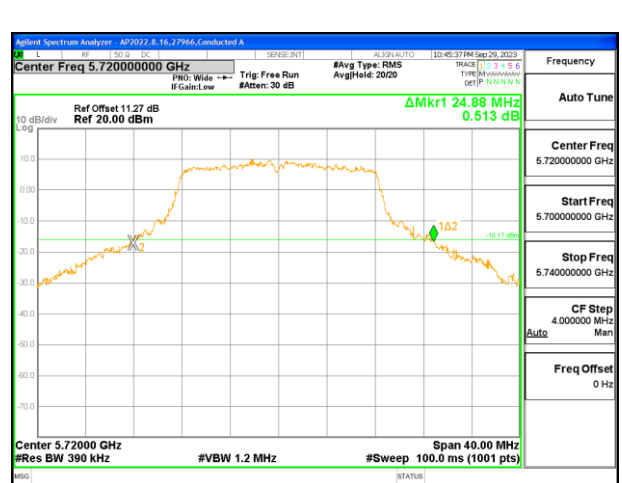
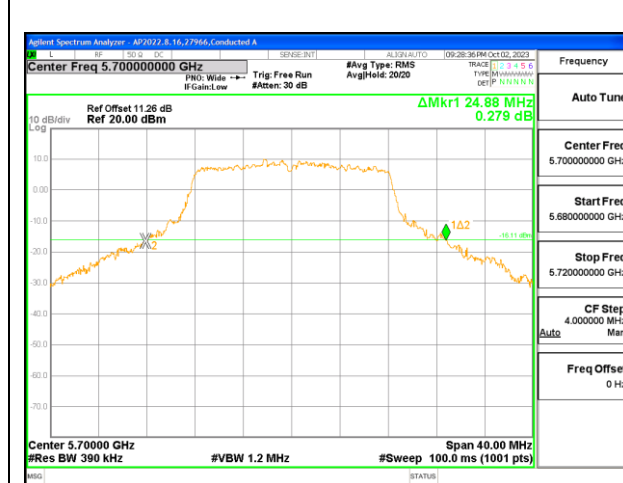
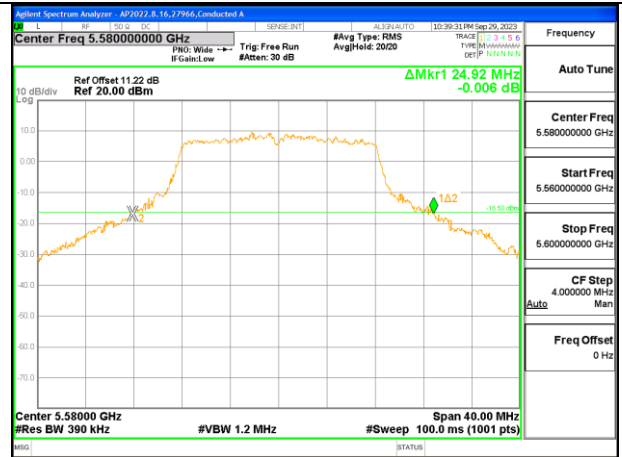
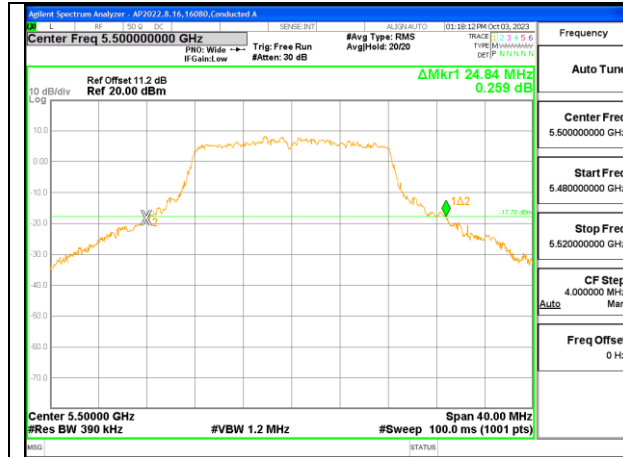
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5290	96.48



9.2.9. 802.11a MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

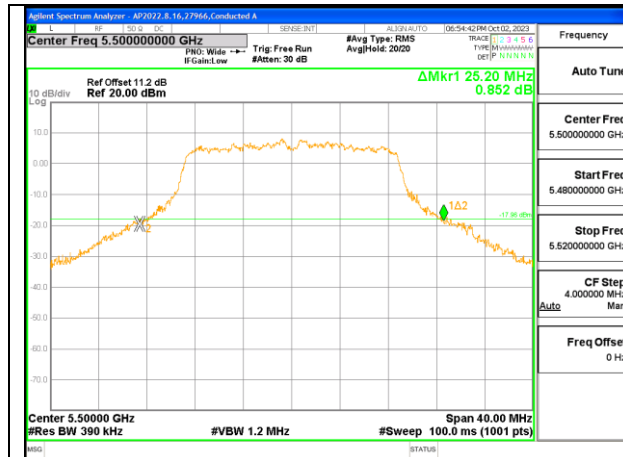
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	24.84
Mid	5580	24.92
High	5700	24.88
144	5720	24.88



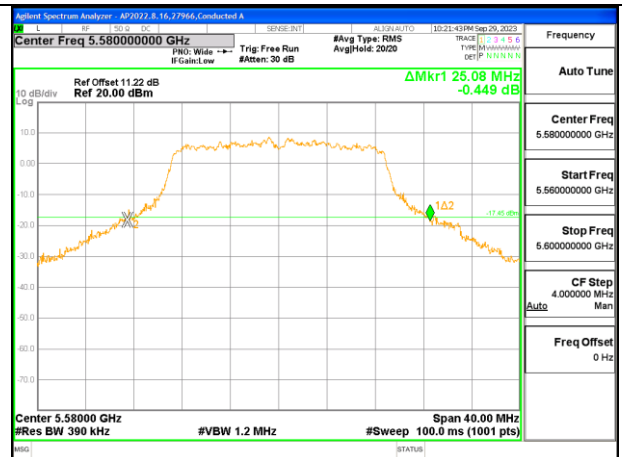
9.2.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

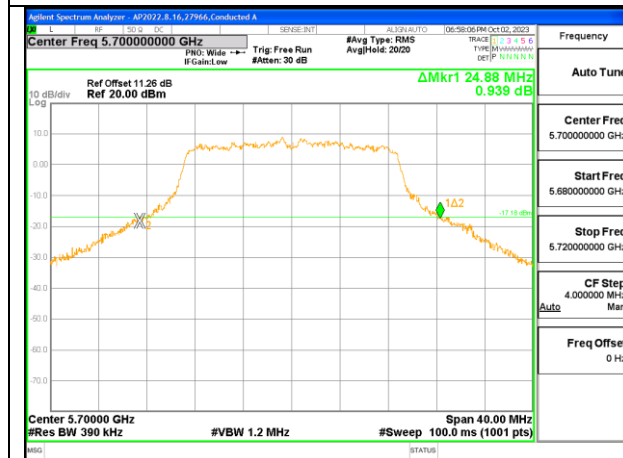
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	25.20
Mid	5580	25.08
High	5700	24.88
144	5720	25.00



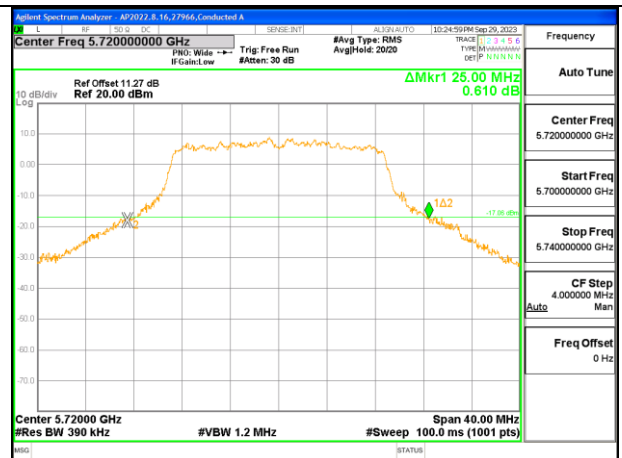
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

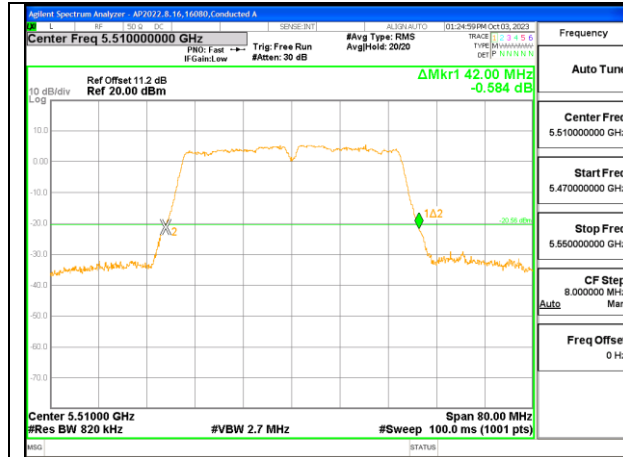


CHANNEL 144

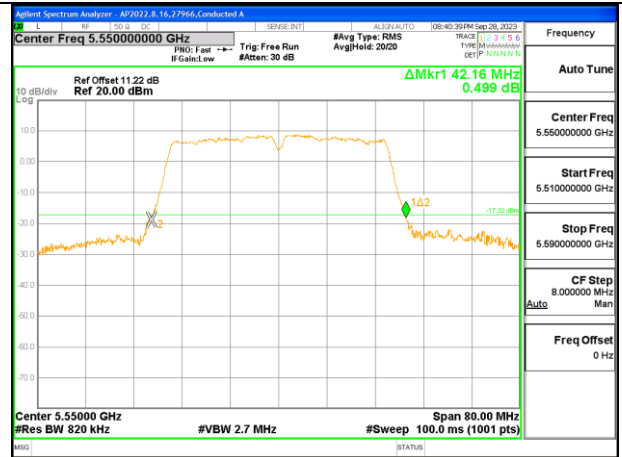
9.2.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

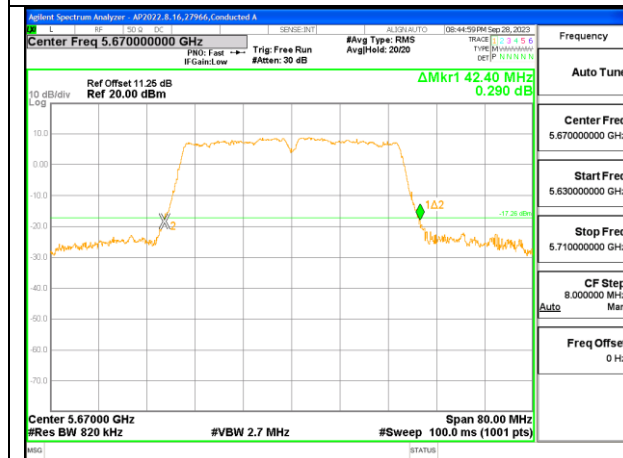
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	42.00
Mid	5550	42.16
High	5670	42.40
142	5710	42.40



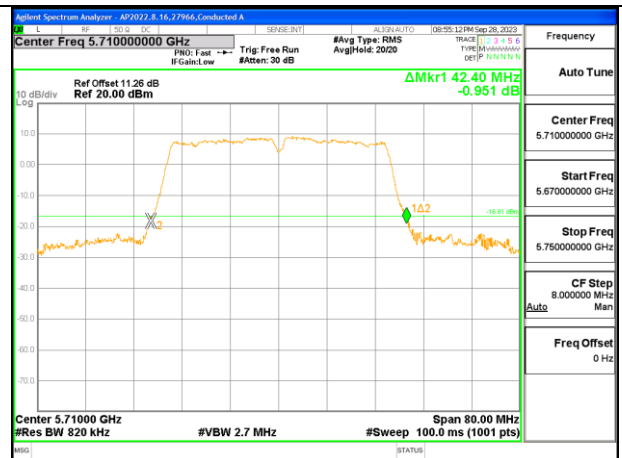
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

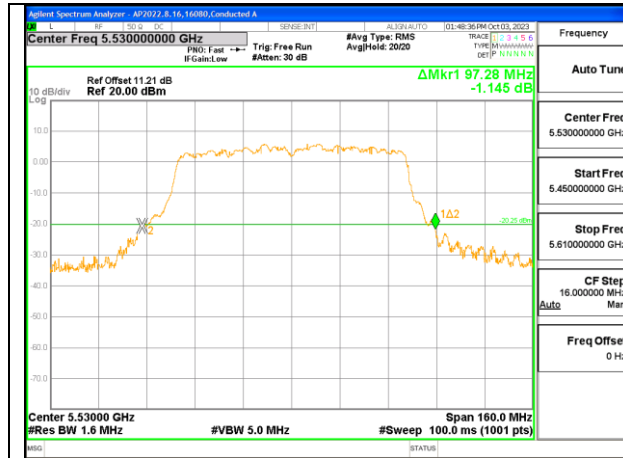


CHANNEL 142

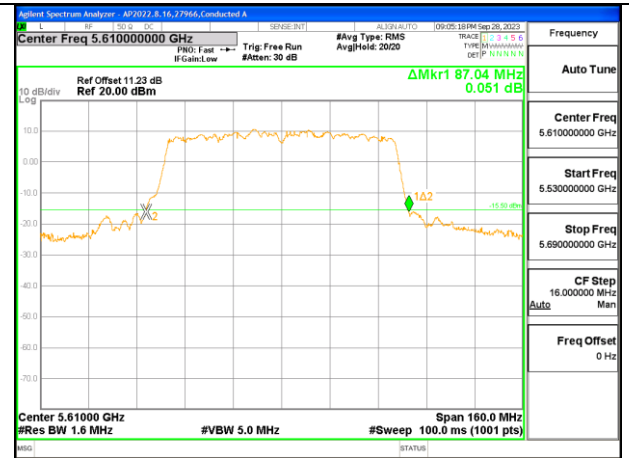
9.2.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

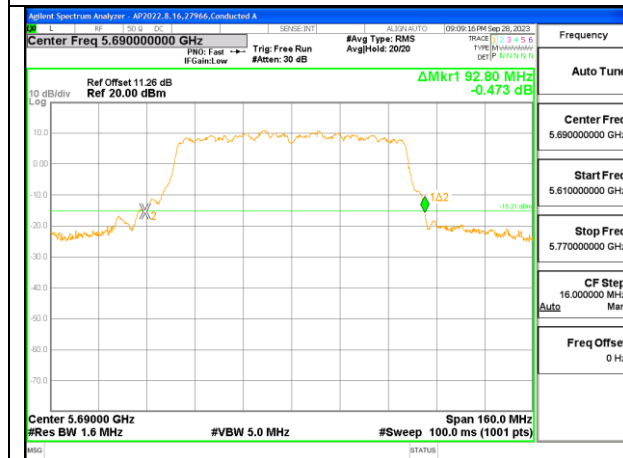
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5530	97.28
High	5610	87.04
138	5690	92.80



LOW CHANNEL



HIGH CHANNEL

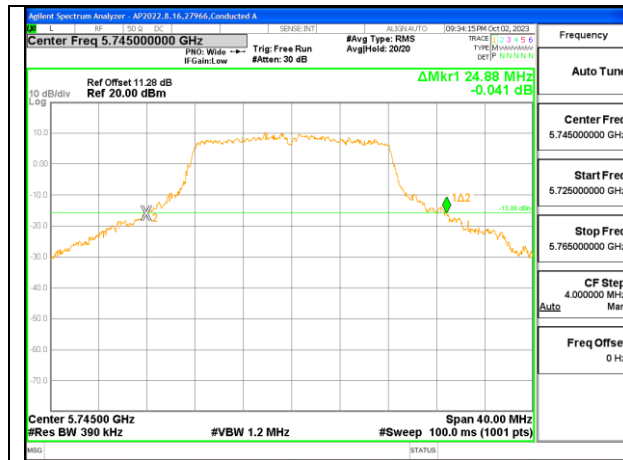


CHANNEL 138

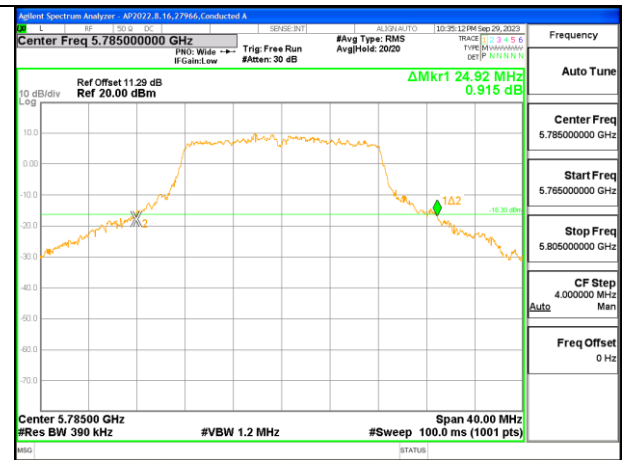
9.2.13. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

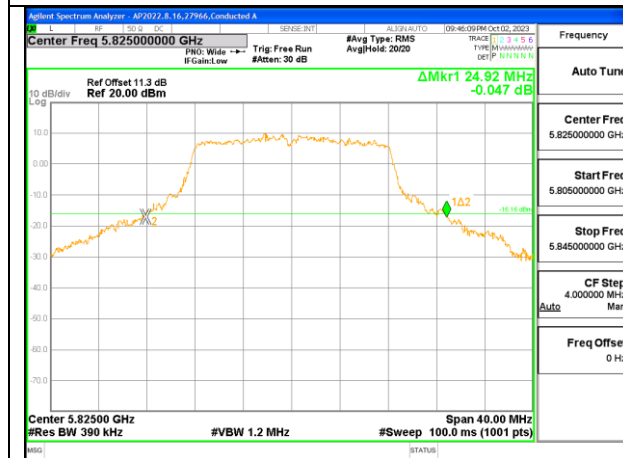
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	24.88
Mid	5785	24.92
High	5825	24.92



LOW CHANNEL



MID CHANNEL

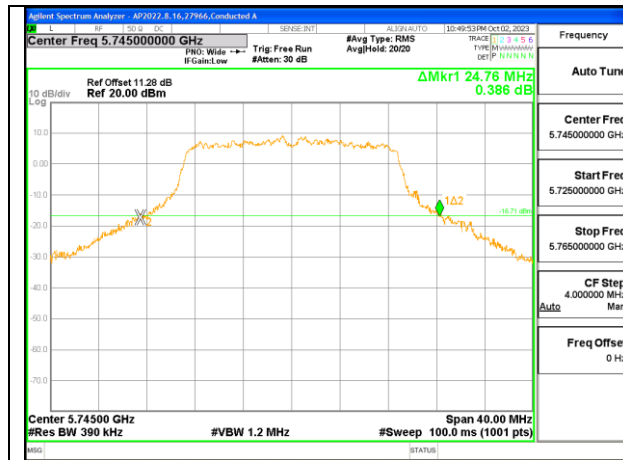


HIGH CHANNEL

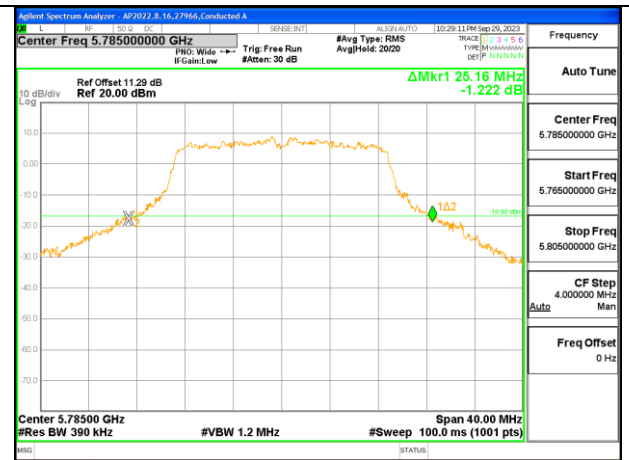
9.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

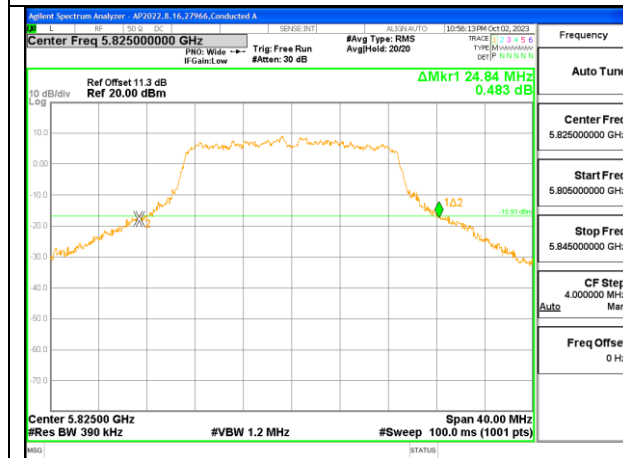
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	24.76
Mid	5785	25.16
High	5825	24.84



LOW CHANNEL



MID CHANNEL

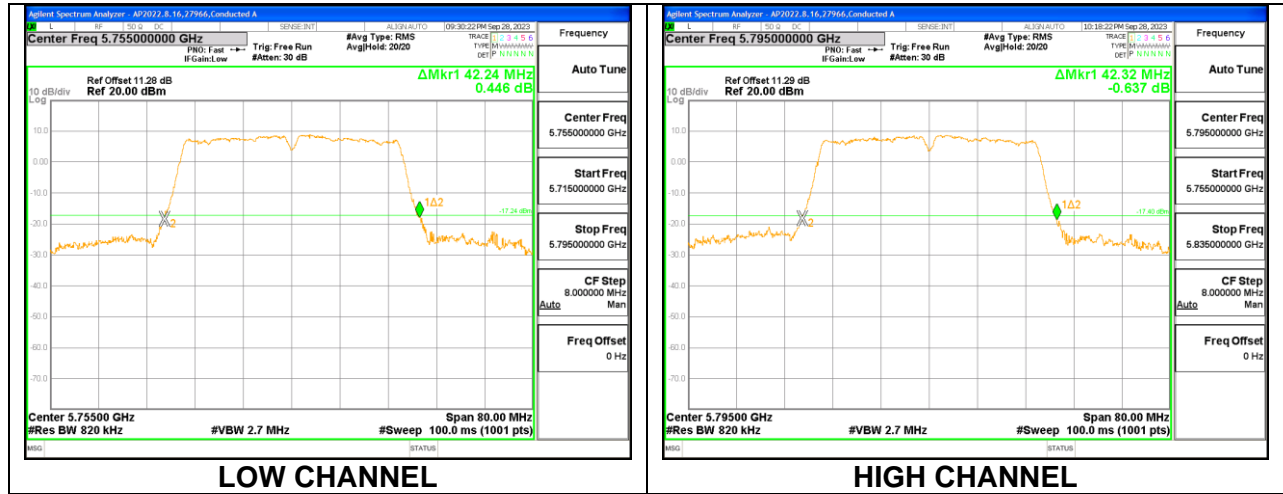


HIGH CHANNEL

9.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

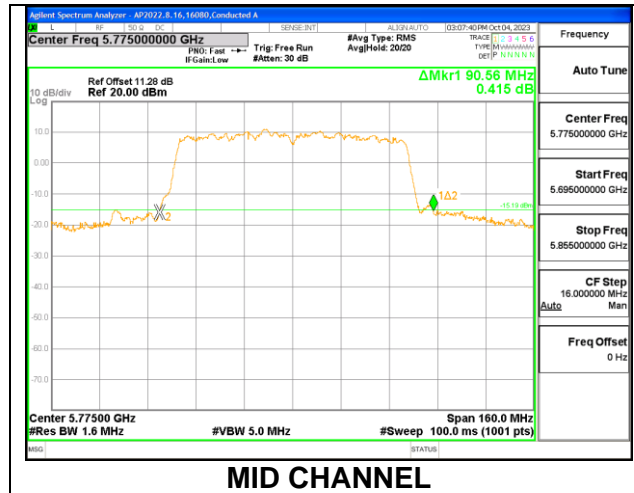
Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5755	42.24
High	5795	42.32



9.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5775	90.56



9.3. 99% BANDWIDTH

LIMITS

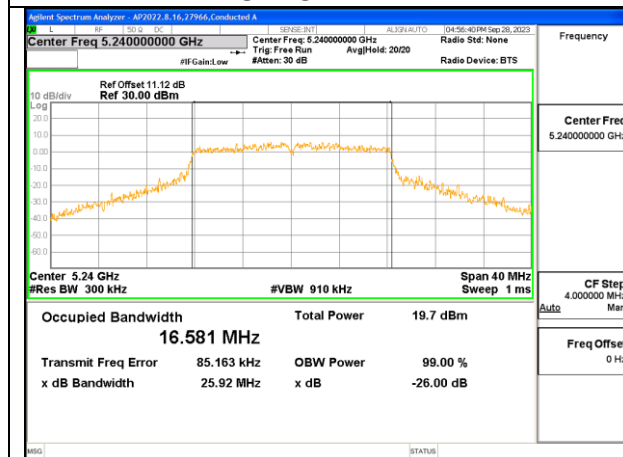
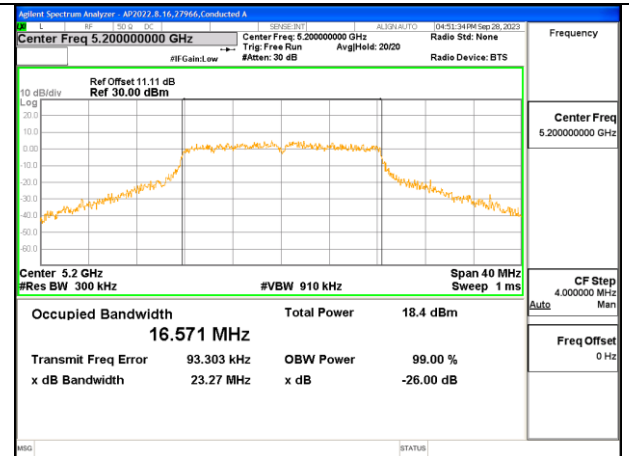
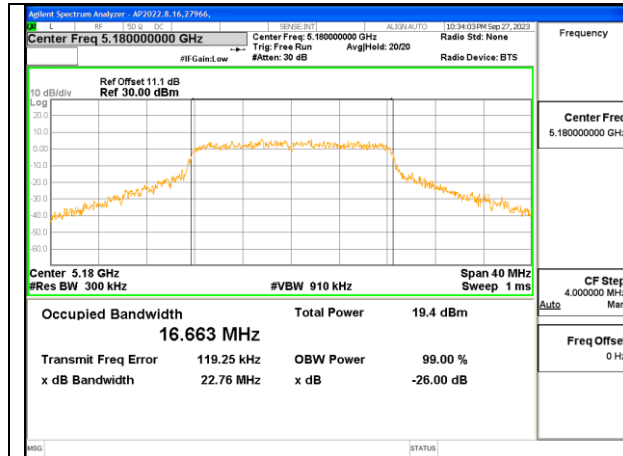
None; for reporting purposes only.

RESULTS

9.3.1. 802.11a MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

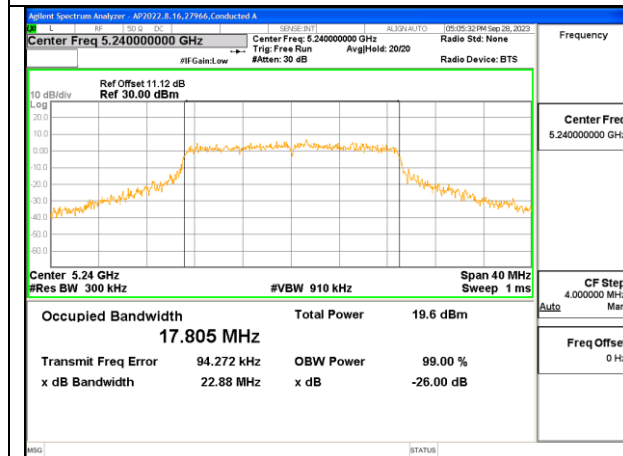
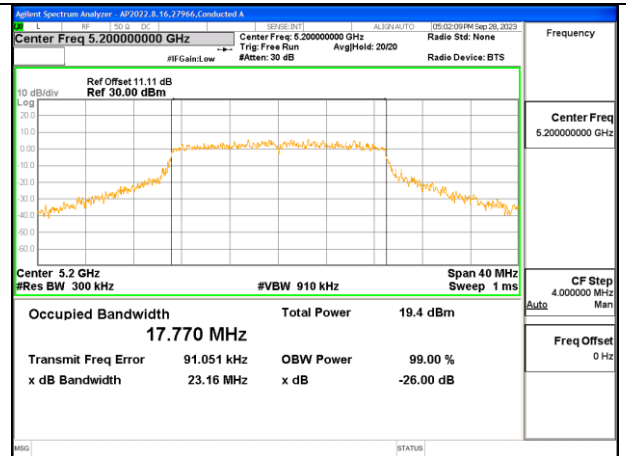
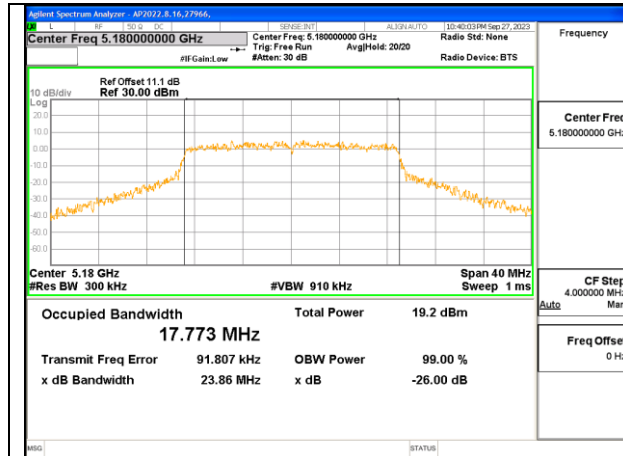
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.663
Mid	5200	16.571
High	5220	16.581



9.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

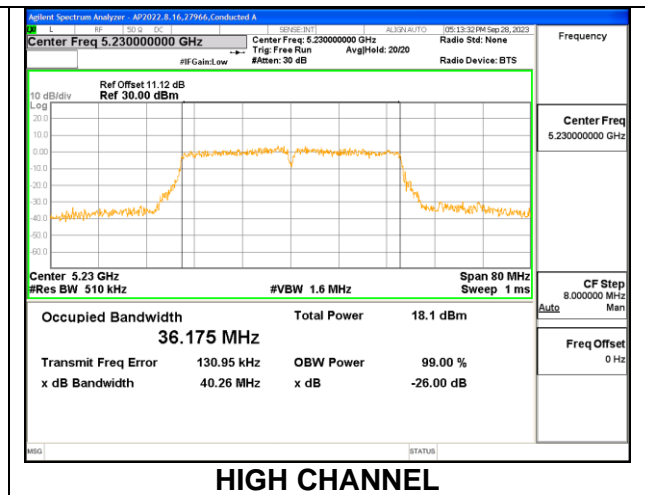
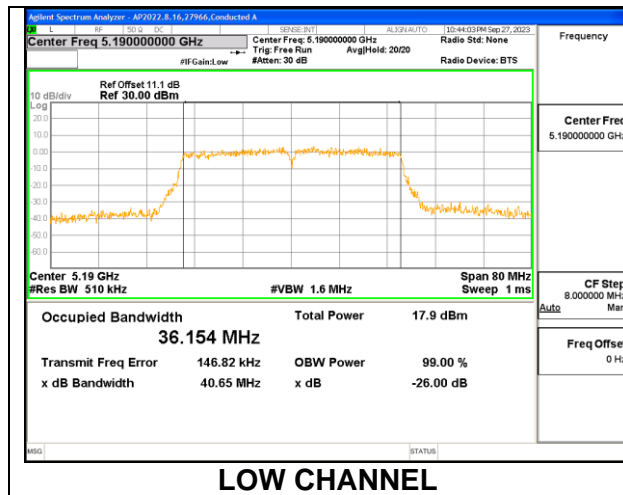
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.773
Mid	5200	17.770
High	5220	17.805



9.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

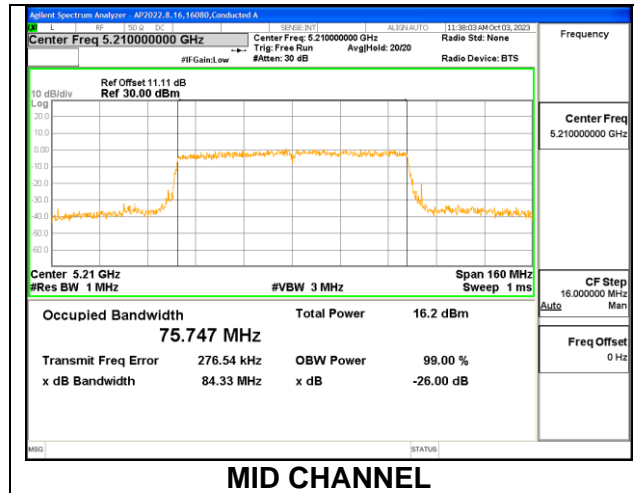
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.154
High	5230	36.175



9.3.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

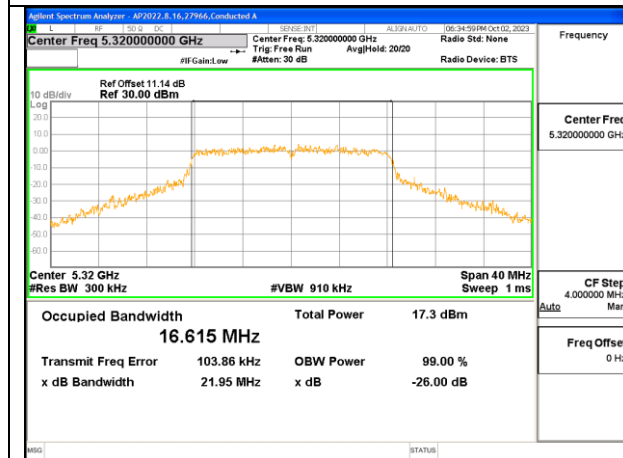
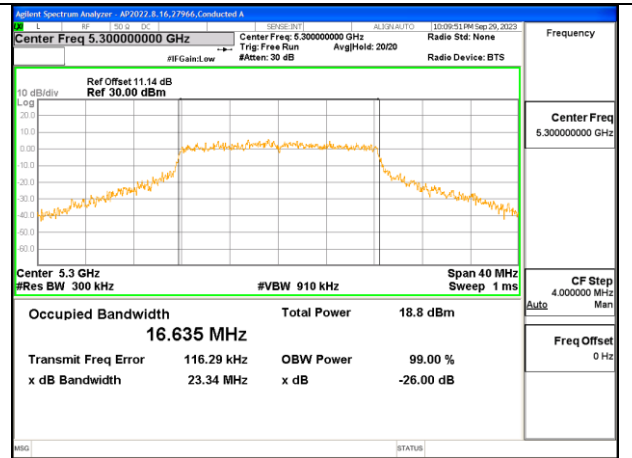
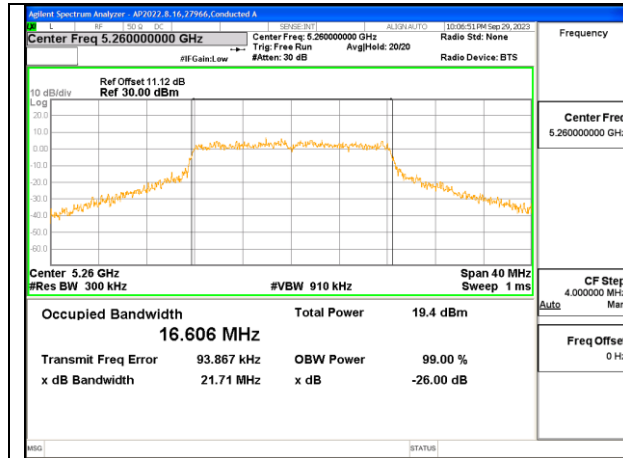
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	75.747



9.3.5. 802.11a MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

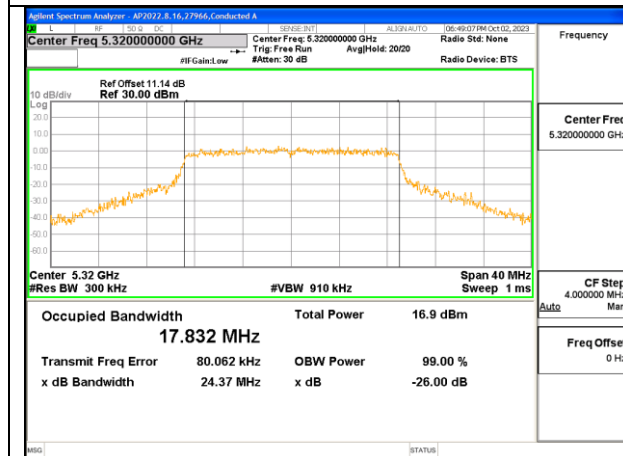
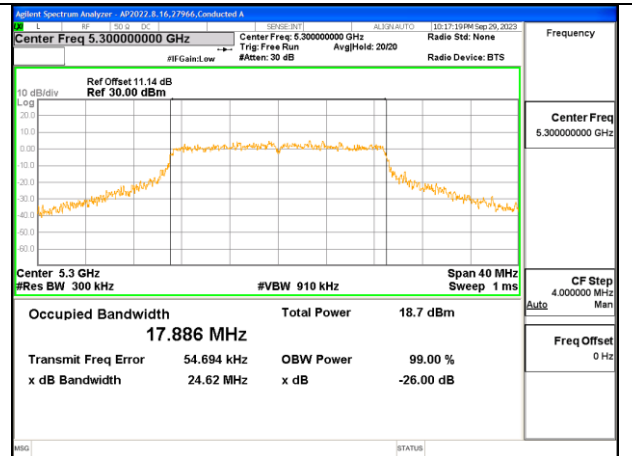
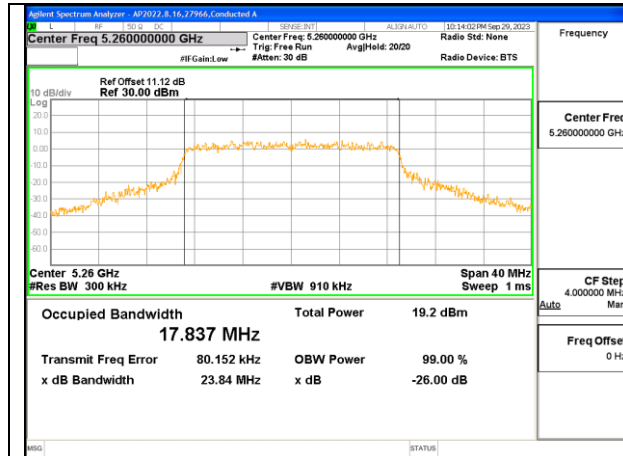
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.606
Mid	5300	16.635
High	5320	16.615



9.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

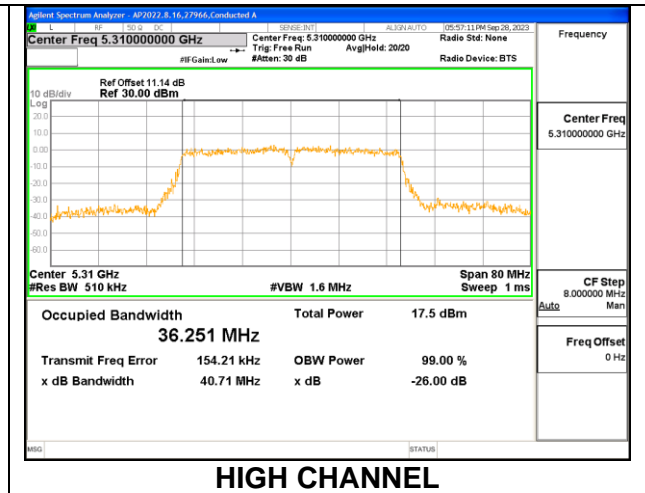
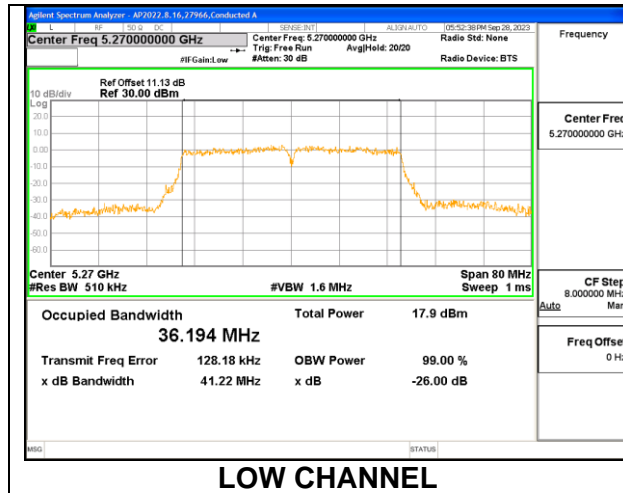
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.837
Mid	5300	17.886
High	5320	17.832



9.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

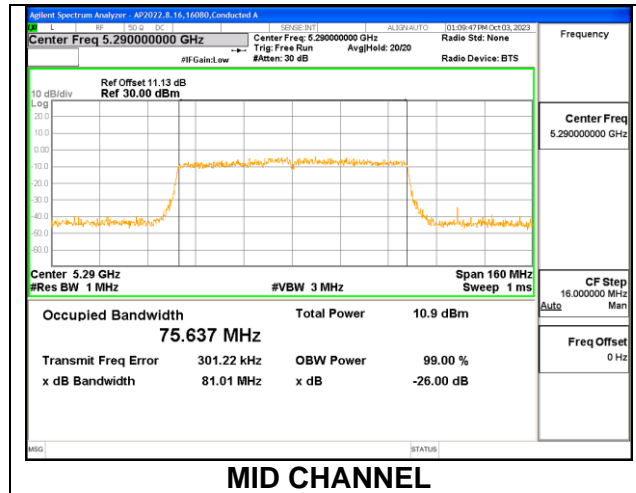
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.194
High	5310	36.251



9.3.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

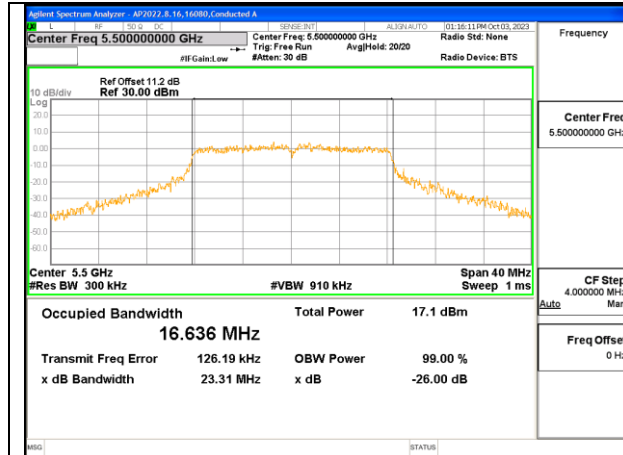
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5290	75.6370



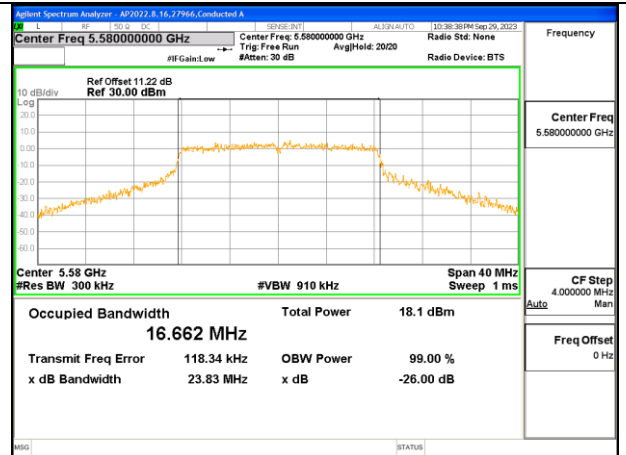
9.3.9. 802.11a MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

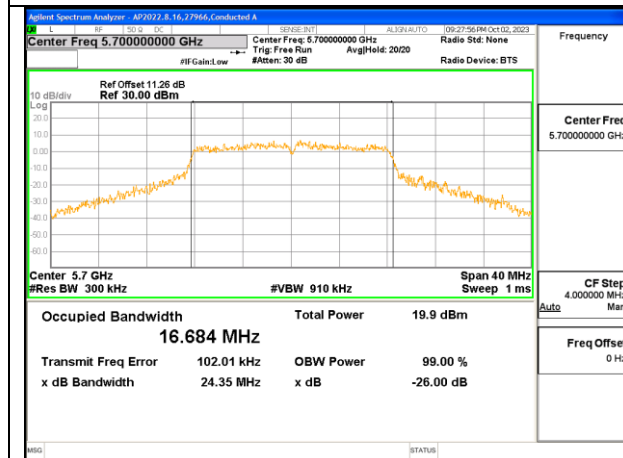
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.636
Mid	5580	16.662
High	5700	16.684
144	5720	16.615



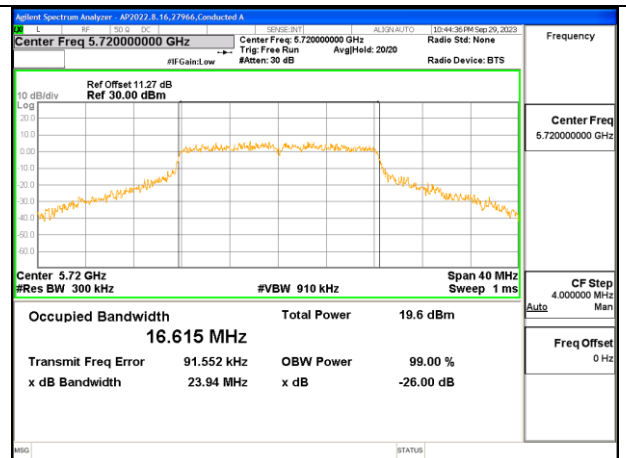
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

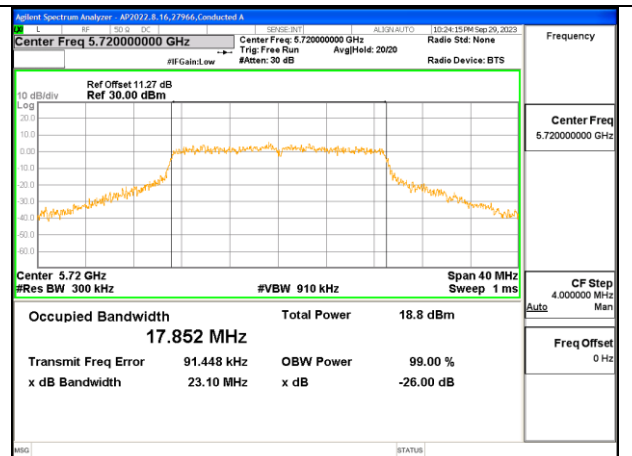
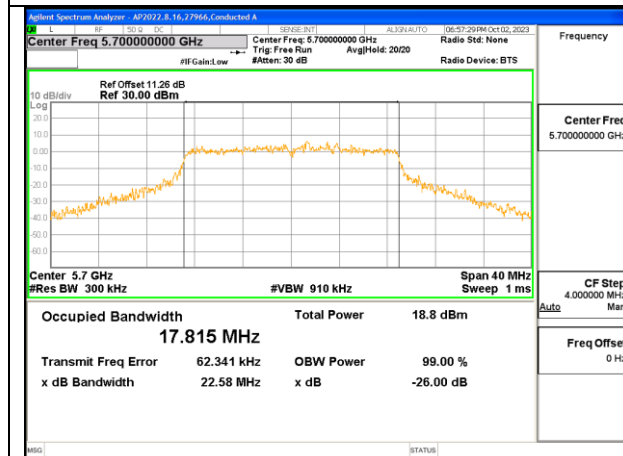
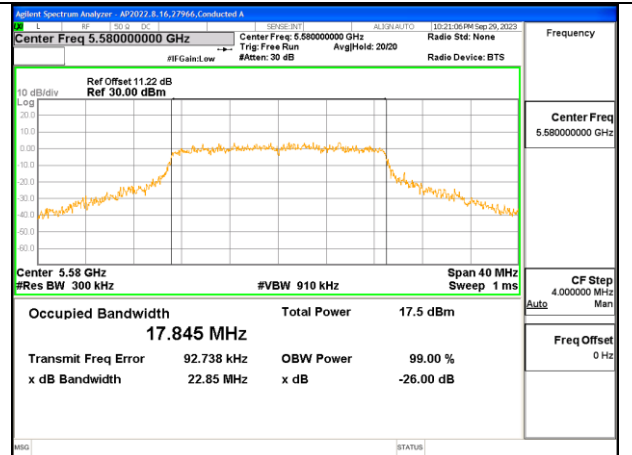
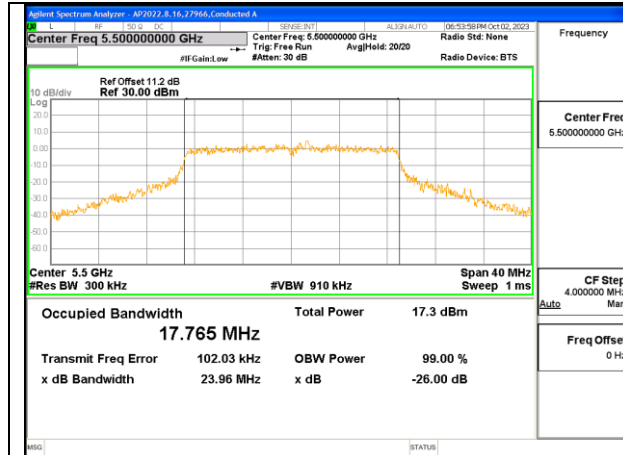


CHANNEL 144

9.3.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

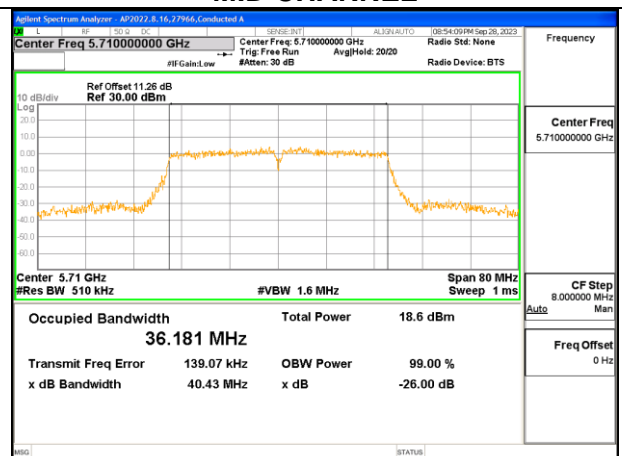
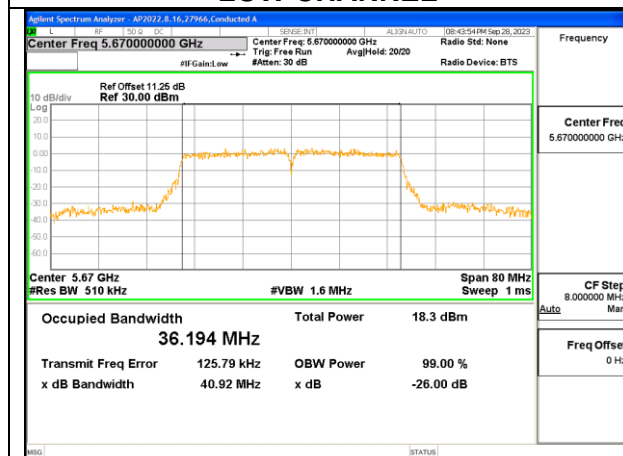
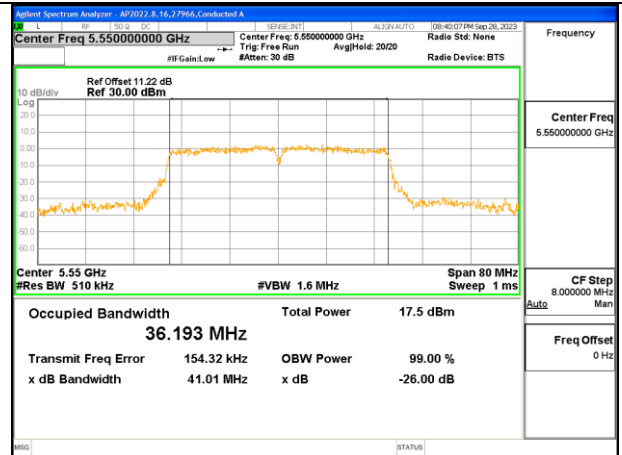
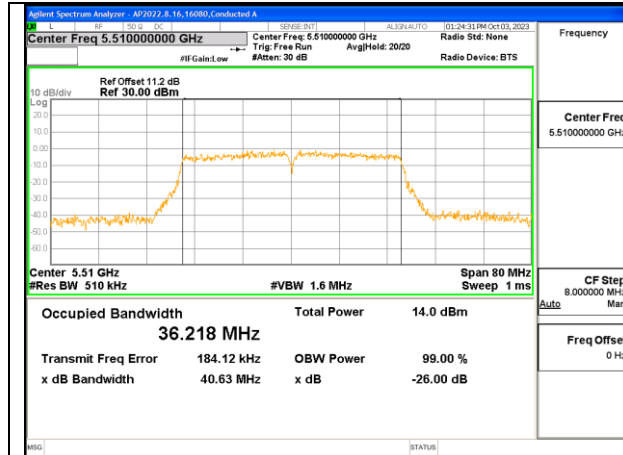
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	17.765
Mid	5580	17.845
High	5700	17.815
144	5720	17.852



9.3.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

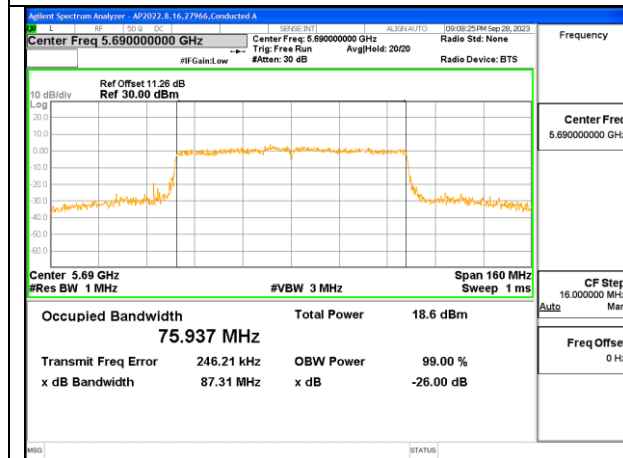
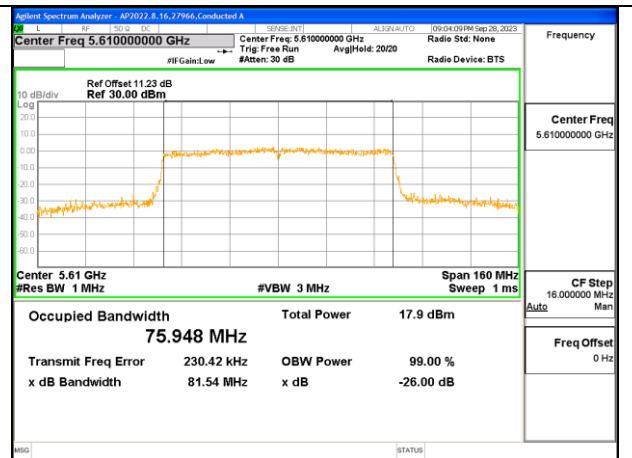
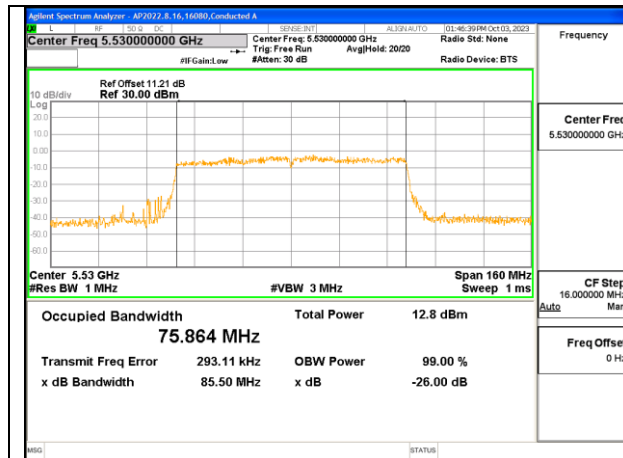
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.218
Mid	5550	26.193
High	5670	36.194
142	5710	36.181



9.3.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5530	75.864
High	5610	75.948
138	5690	75.937



9.3.13. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.662
Mid	5785	16.666
High	5825	16.705

