



TEST REPORT

Report Number. : 13268681-E4V4

Applicant : SONOS INC.
614 CHAPALA STREET
SANTA BARBARA, CA, 93101, U.S.A

Model : S27

FCC ID : SBVRM027

ISED : 5373A-RM027

EUT Description : 802.11 a/b/g/n/ac 2x2 Client Device with BT and BLE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART E (Exclude DFS)
ISED RSS-247 ISSUE 2
ISED RSS-GEN ISSUE 5

Date Of Issue:
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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	12/18/2020	Initial Issue	
V2	1/4/2021	Updated Section 6.5, 10.5 & 11 Added BT and BLE to EUT Description	Kiya Kedida
V3	1/21/2021	Updated Section 6.2 and 9.5, Section 10 added statement, Updated Section 4.	Glenn Escano
V4	1/22/2021	Updated Section 6.2	Glenn Escano

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONOS, INC.
614 CHAPALA STREET
SANTA BARBARA, CA 93101, U.S.A.

EUT DESCRIPTION: 802.11 a/b/g/n/ac 2x2 Client Device with BT and BLE

MODEL: S27

SERIAL NUMBER: A1002009W54-2A-1B-40-06-6E3 (Radiated Sample)
A1002009W54-2A-1B-B0-02-94D (Radiated Sample)
5CFFDD0001067 (Conducted Sample)

DATE TESTED: November 4 to November 18, 2020

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

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2. TEST RESULT SUMMARY

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		None.
15.407 (a) (1-4), (h) (1)	RSS-247 6.2	Output Power		None.
15.407 (a) (1-3, 5)	RSS-247 6.2	PSD		None.
15.209, 15.205, 15.407 (b)	RSS-GEN 8.9, 8.10, RSS-247 6.2	Radiated Emissions		None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions		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 905462 D02 v02/D03 v01r02/D06 v02, FCC KDB 789033 D02 v02r01, KDB 414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013, FCC 06-96, RSS-GEN Issue 5 and RSS-247 Issue 2.

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0, 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 type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, California 94538, USA	US0104	2324A	208313
<input type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, California 94538, USA	US0104	22541	208313
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, California 94538, USA	US0104	2324B	208313

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

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

5.2. DECISION RULES

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

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U _{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.4 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.84 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.84 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

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

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

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

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

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a 802.11 a/b/g/n/ac 2x2 Client Device with BT and BLE .

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

(FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2 GHz band, 2TX			
5180-5240	802.11a	16.27	42.36
5180-5240	802.11n HT20	16.34	43.05
5190-5230	802.11n HT40	16.66	46.34
5210	802.11ac VHT80	16.41	43.75
5.3 GHz band, 2TX			
5260-5320	802.11a	19.44	87.90
5260-5320	802.11n HT20	19.44	87.90
5270-5310	802.11n HT40	19.52	89.54
5290	802.11ac VHT80	13.38	21.78
5.6 GHz band, 2TX			
5500 - 5700	802.11a	20.78	119.67
5500 - 5700	802.11n HT20	20.67	116.68
5510 - 5670	802.11n HT40	18.97	78.89
5530 - 5610	802.11ac VHT80	20.51	112.46
5.8 GHz band, 2TX			
5745 - 5825	802.11a	20.79	119.95
5745 - 5825	802.11n HT20	20.75	118.85
5755 -5795	802.11n HT40	20.89	122.74
5775	802.11ac VHT80	20.58	114.29

(IC)

Frequency Range (MHz)	Mode	EIRP (dBm)	EIRP (mW)
5.2 GHz band, 2TX			
5180-5240	802.11a	17.91	61.80
5180-5240	802.11n HT20	17.51	56.36
5190-5230	802.11n HT40	16.39	43.55
5210	802.11ac VHT80	12.25	16.79

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes the following types of antennas, with a maximum gain per chain as follows.

Frequency Range (MHz)	EUT at Horizontal Orientation		EUT at Vertical Orientation	
	PCB Antenna Vertical Polarization	Stamped Metal Antenna Horizontal Polarization	PCB Antenna Horizontal Polarization	Stamped Metal Antenna Vertical Polarization
U-NII-1 (5180-5240)	Chain 0 / 2.7 dBi	Chain 1 / 2.2 dBi	Chain 0 / 2.5 dBi	Chain 1 / 2.6 dBi
U-NII-2 (5260-5320)	Chain 0 / 2.8 dBi	Chain 1 / 2 dBi	Chain 0 / 2.1 dBi	Chain 1 / 3.2 dBi
U-NII-2C (5500-5720)	Chain 0 / 2.3 dBi	Chain 1 / 1.9 dBi	Chain 0 / 2 dBi	Chain 1 / 3.5 dBi
U-NII-3 (5745-5825)	Chain 0 / 1.9 dBi	Chain 1 / 1.1 dBi	Chain 0 / 1.9 dBi	Chain 1 / 2.2 dBi

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was V13.0.

The test utility software used during testing was QRCT v3.0.264.0.

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 5 Configurations, it was determined that Configurations 4 was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Configurations 4 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

Note : 802.11ac VHT20 and VHT40 has the same 802.11n HT20 and 802.11n HT40 so 802.11n HT20 and 802.11n HT40 was test as worst case.

6.6. DESCRIPTION OF TEST SETUP

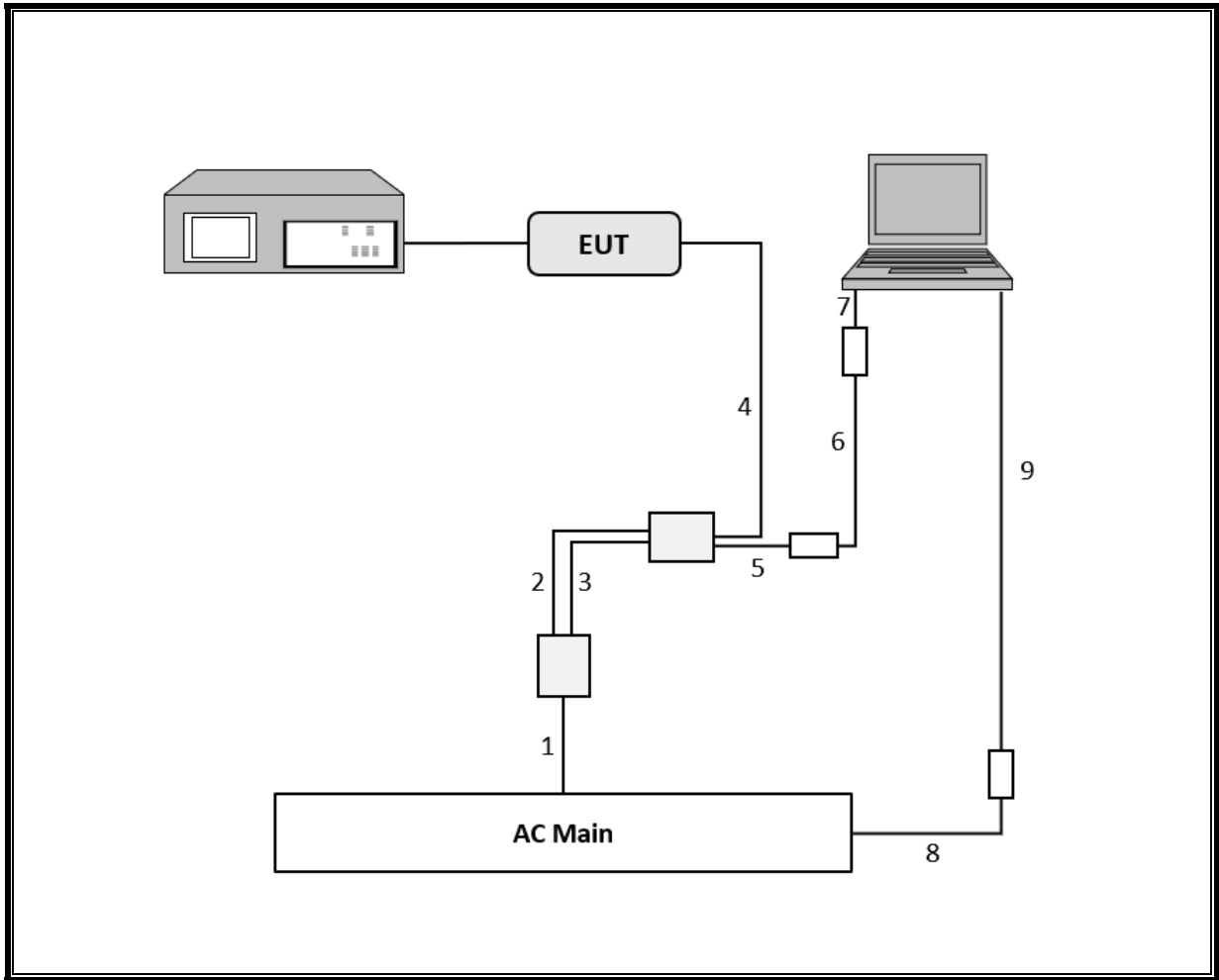
SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	X1 Carbon	R90HKAXY	N/A
AC Adaptor	Lenovo	ADLX45NCC2A	8SSA10E75794C1SG78H7210	N/A
Type-C Power Adapter	IIIIP	PDS75-4UT01	N/A	N/A

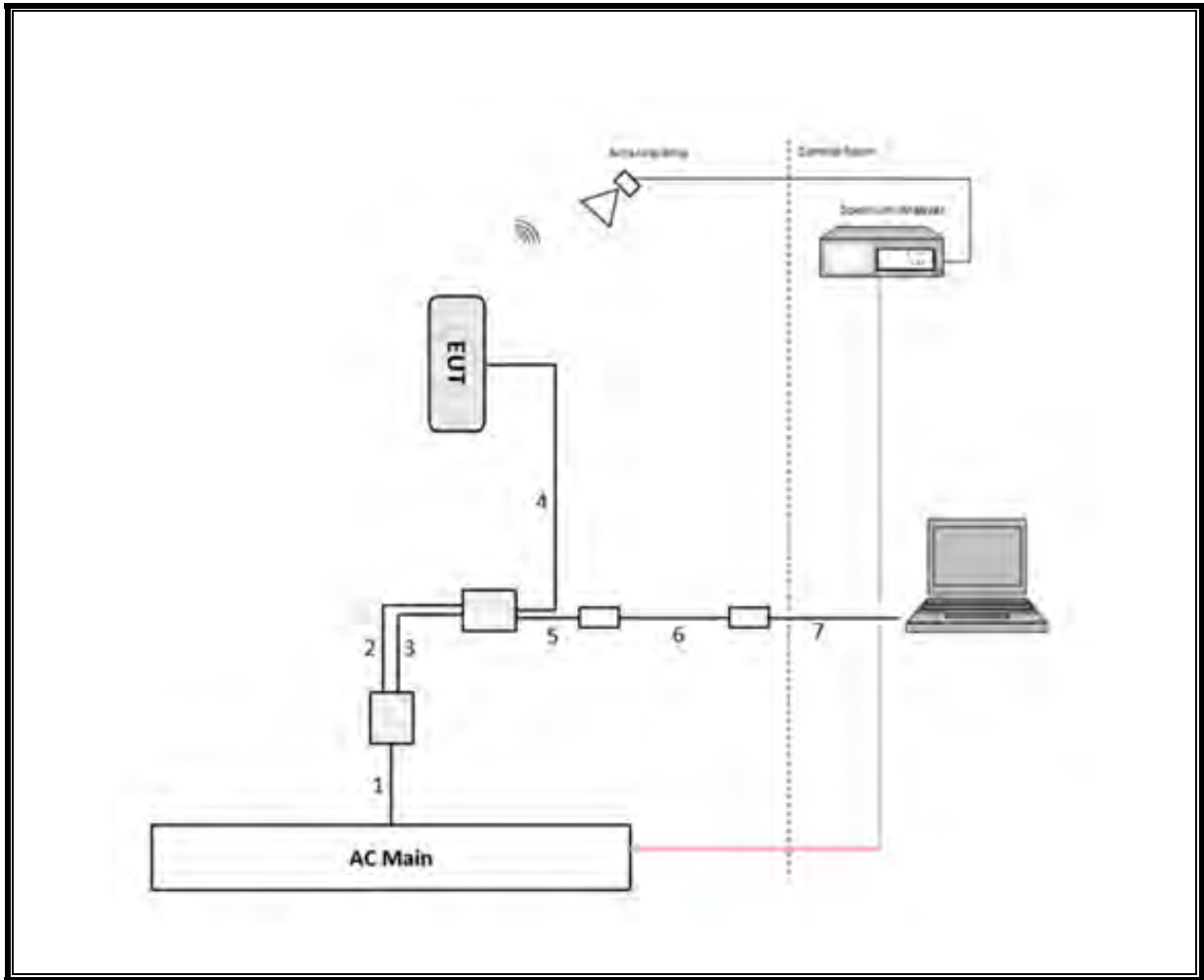
I/O CABLES

Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC Adapter	1	AC	Unshielded	1m	AC Mains to Power Adapter
2	Type-C	2	USB Type-C	Unshielded	2m	Power Adapter to Power-In Splitter
3	Type-A	1	USB Type-A/Mini-USB	Unshielded	2m	Power Adapter to Power-In Splitter
4	Type-C	2	USB Type-C	Unshielded	1.5m	Splitter Output to EUT
5	Ethernet Adapter	1	Type-A to RJ45	Unshielded	0.2m	Splitter Output to Ethernet Adapter
6	Ethernet	2	RJ45	Unshielded	1m	Ethernet Adapter to Ethernet Adapter
7	Ethernet Adapter	1	RJ45 to Type A	Unshielded	0.3m	Ethernet Adapter to Laptop
8	AC Power	1	AC	Unshielded	1m	AC Mains to Power Adapter
9	DC Power	1	DC	Unshielded	1m	Power Adapter to Laptop

CONDUCTED TEST SETUP DIAGRAM



RADIATED TEST 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
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0203383	02/18/2021	02/18/2020
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T477	09/24/2021	09/24/2020
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	175953	01/23/2021	01/23/2020
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	08/31/2021	08/31/2020
Amplifier, 100MHz-18GHz	AMPLICAL	AMP0.1G18-47-20	PRE0197319	05/04/2021	05/04/2020
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	PRE0179465	07/27/2021	07/27/2020
Antenna, Passive Loop 100kHz to 30MHz	ELECTRO-METRICS	EM-6872	PRE0179467	07/27/2021	07/27/2020
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	T447	09/24/2021	09/24/2020
Rf Amplifier, 18-26.5GHz, 60dB gain	AMPLICAL	AMP18G26.5-60	171590	06/07/2021	06/07/2020
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	T1264	01/21/2021	01/21/2020
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	T1223	04/10/2021	04/10/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	T341	07/29/2021	07/29/2020
AC Line Conducted					
EMI Receiver	Rohde & Schwarz	ESR	T1436	02/20/2021	02/20/2020
LISN for Conducted Emissions CISPR-16	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	PRE0186446	01/21/2021	01/21/2020
Test Software List					
Radiated Software	UL	UL EMC		Ver 9.5, April 30, 2020	
Antenna Port Software	UL	UL RF		Ver 2020.11.8	
AC Line Conducted Software	UL	UL EMC		Ver 9.5, July 7, 2020	

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	1.392	1.446	0.963	96.3%	0.16	0.718
802.11n HT20	1.300	1.354	0.960	96.00%	0.18	0.769
802.11n HT40	0.648	0.701	0.924	92.40%	0.34	1.544
802.11ac VHT80	0.324	0.377	0.859	85.9%	0.66	3.091

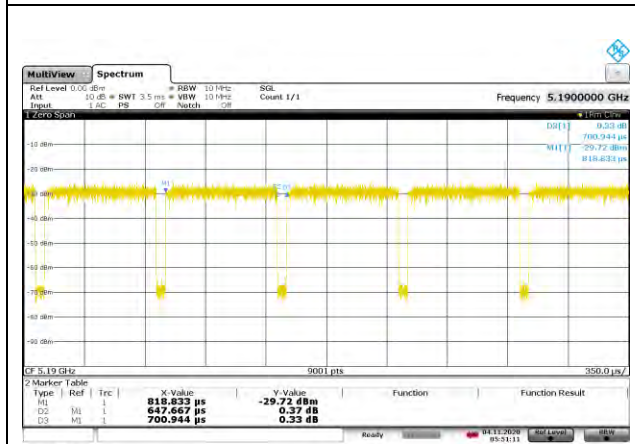
DUTY CYCLE PLOTS



DUTY CYCLE 802.11a



DUTY CYCLE 802.11n HT20



DUTY CYCLE 802.11n HT40



DUTY CYCLE 802.11ac VHT80

9.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

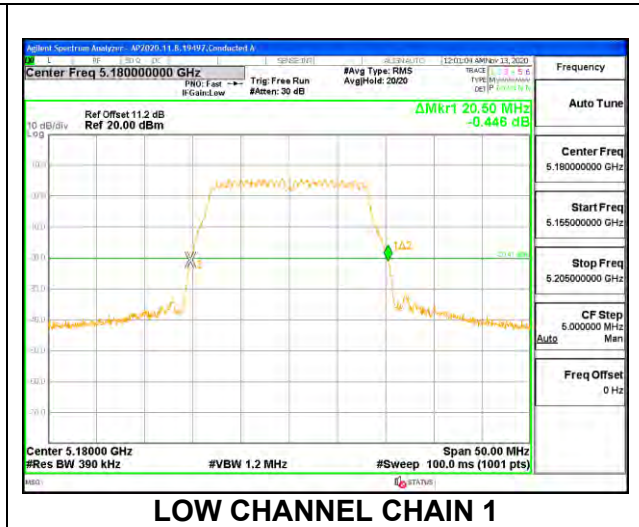
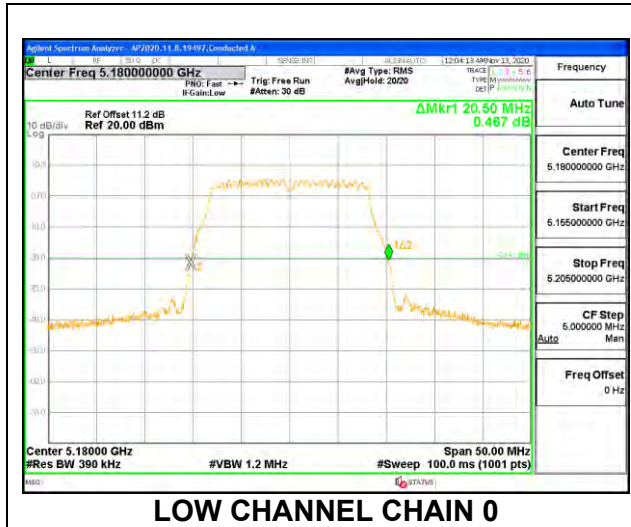
RESULTS

9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

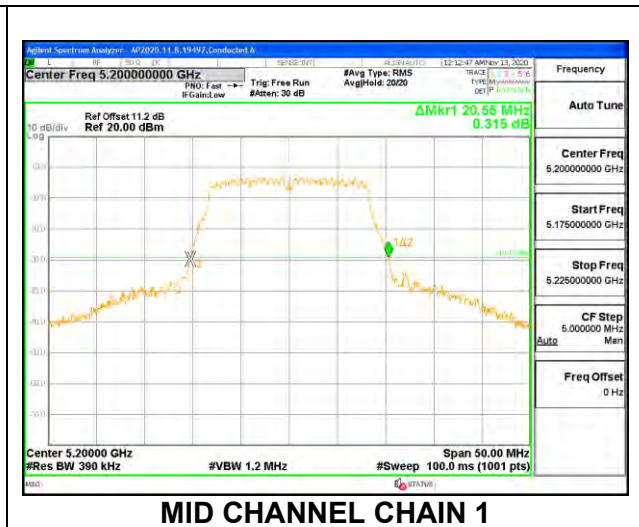
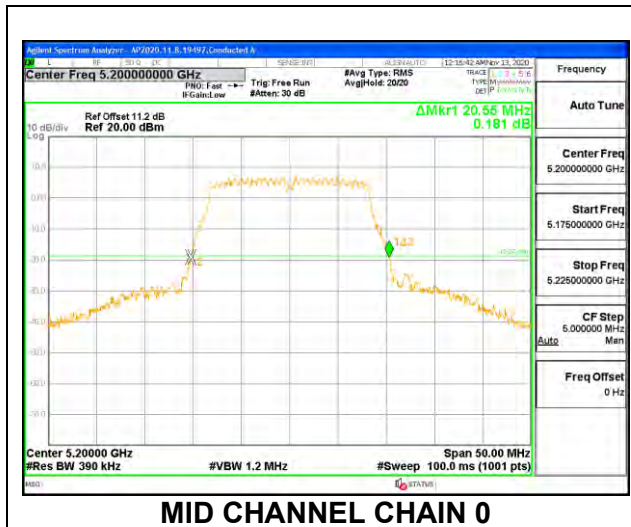
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	20.50	20.50
Mid	5200	20.55	20.55
High	5240	20.55	20.65

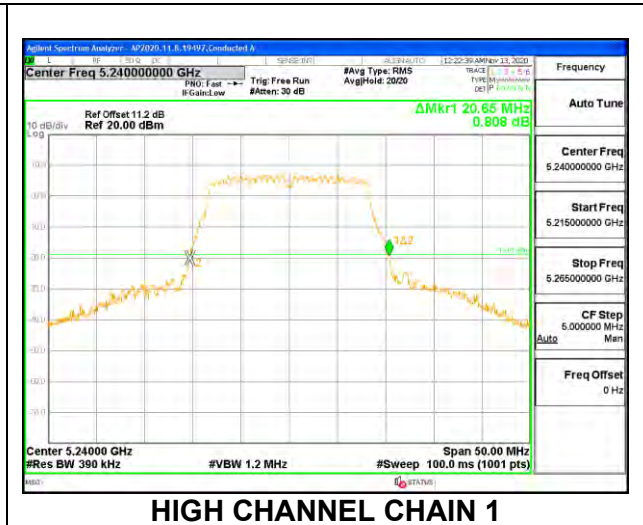
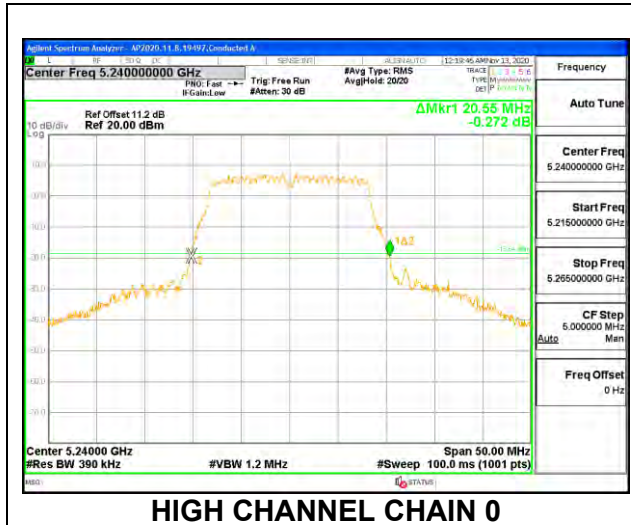
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

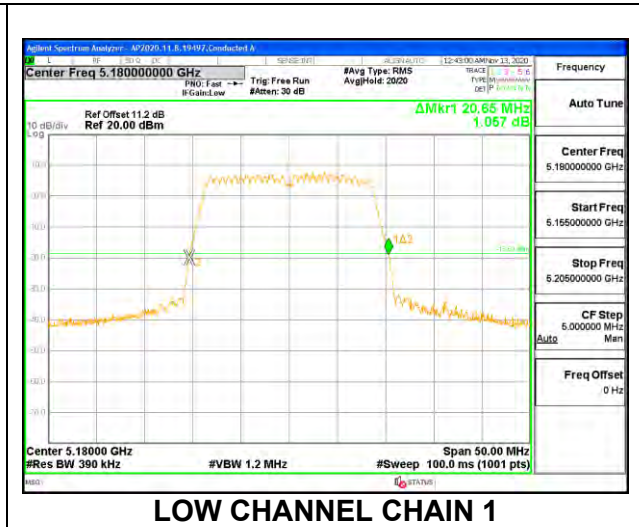
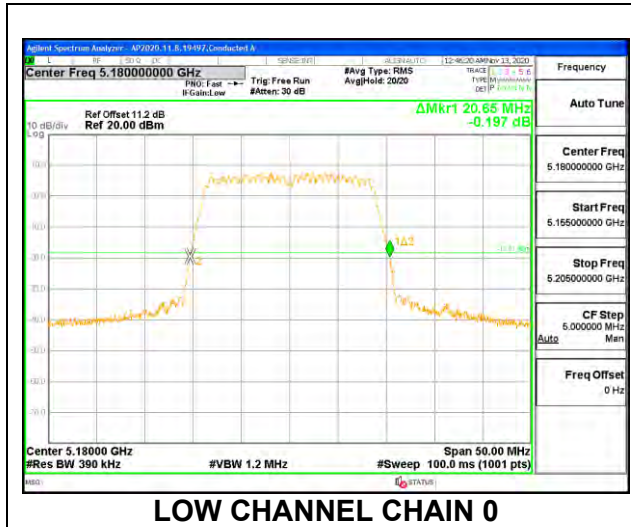


9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

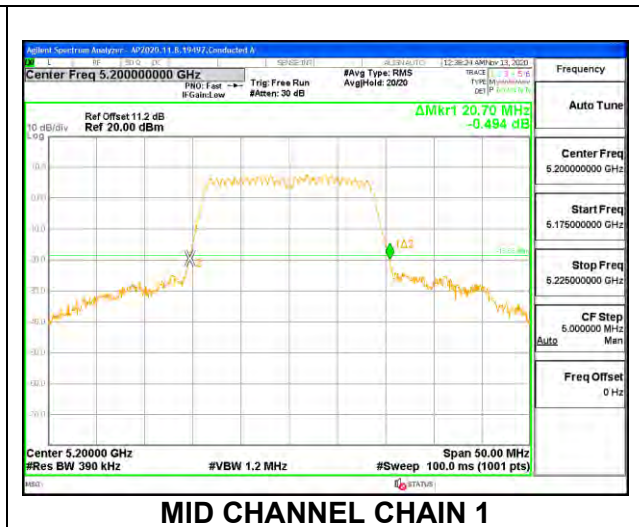
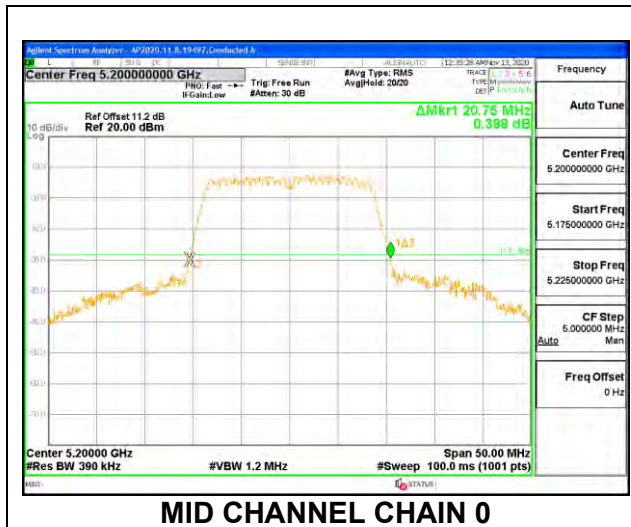
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	20.65	20.65
Mid	5200	20.75	20.70
High	5240	20.75	20.75

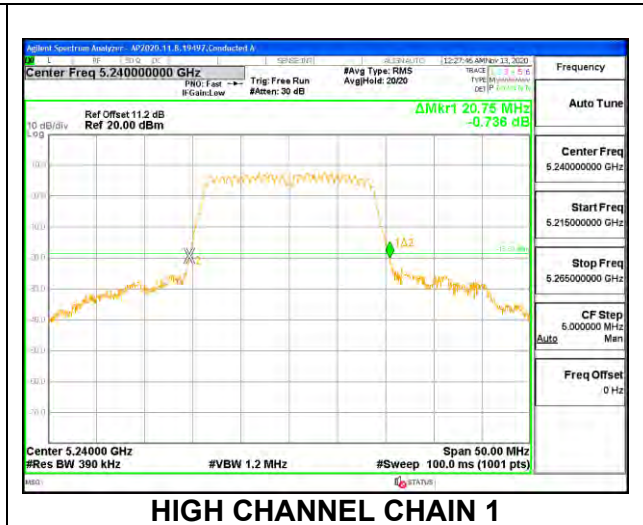
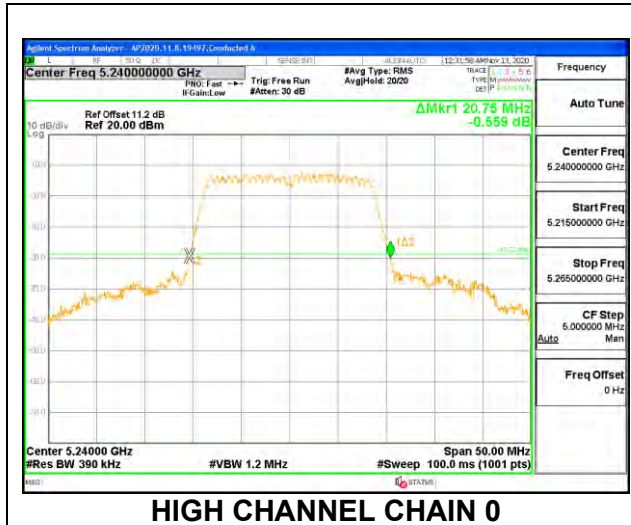
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

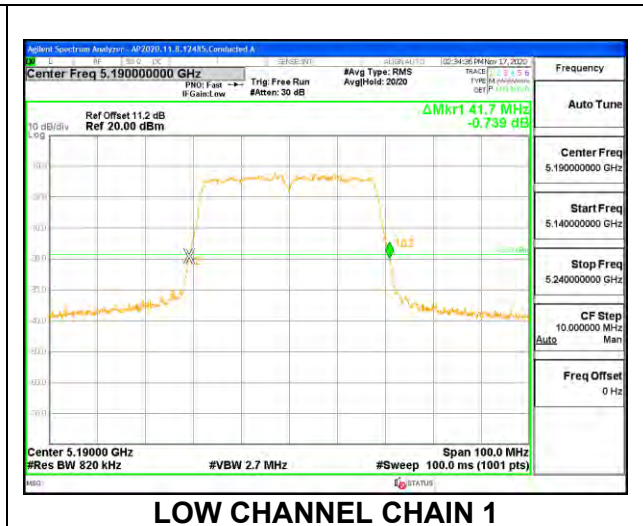
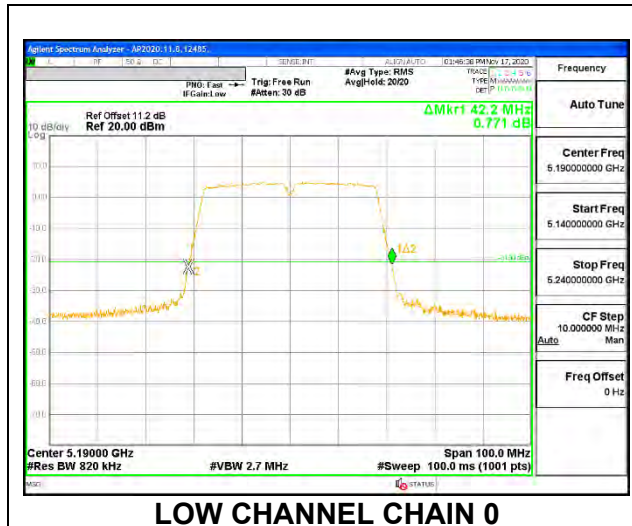


9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

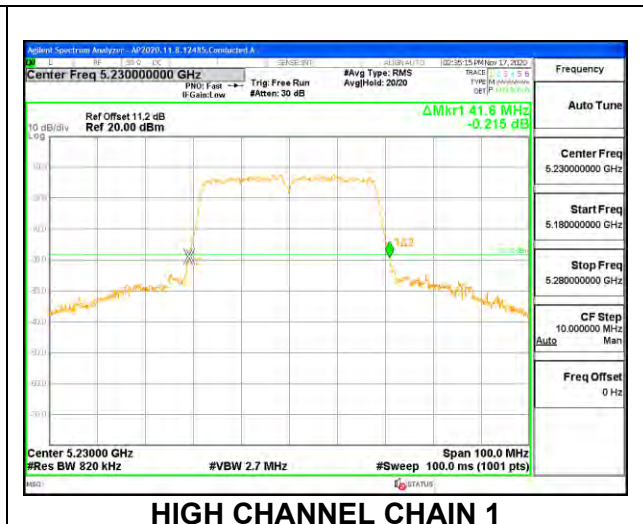
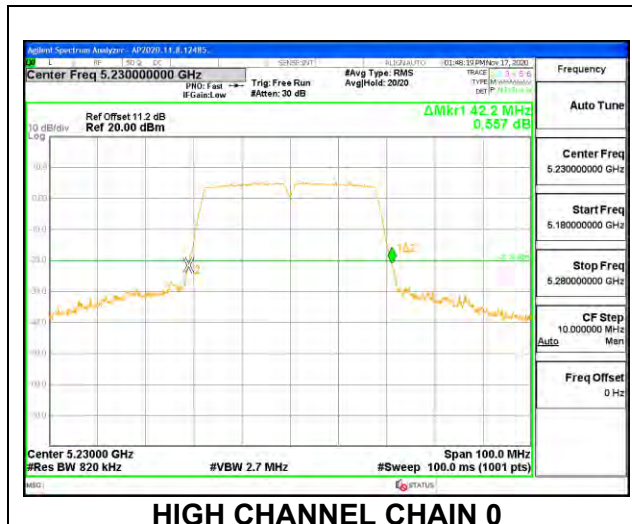
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	42.20	41.70
High	5230	42.20	41.60

LOW CHANNEL



HIGH CHANNEL

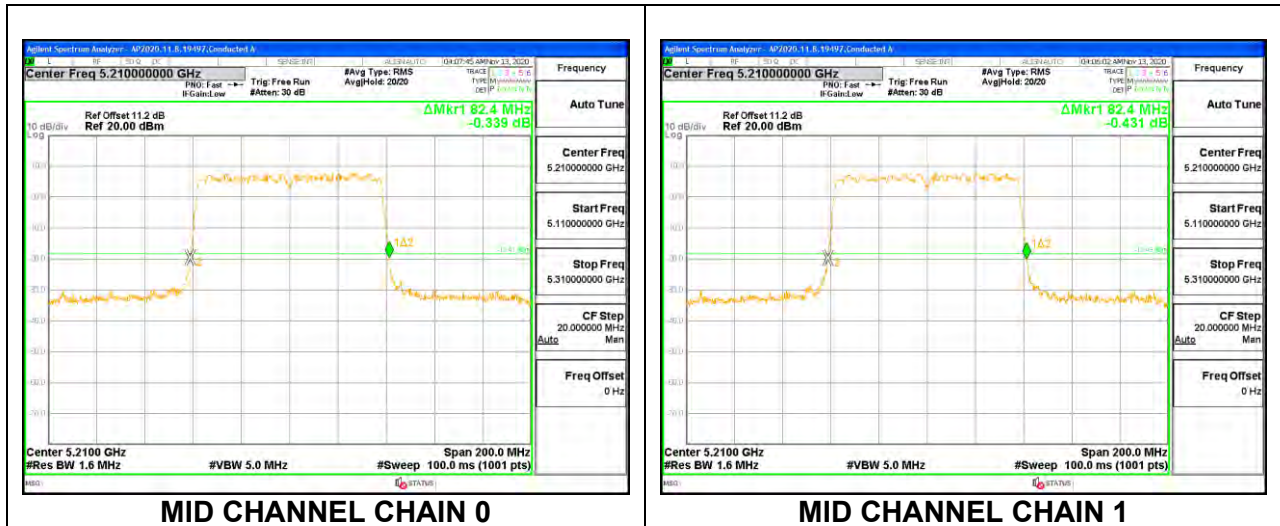


9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5210	82.40	82.40

MID CHANNEL

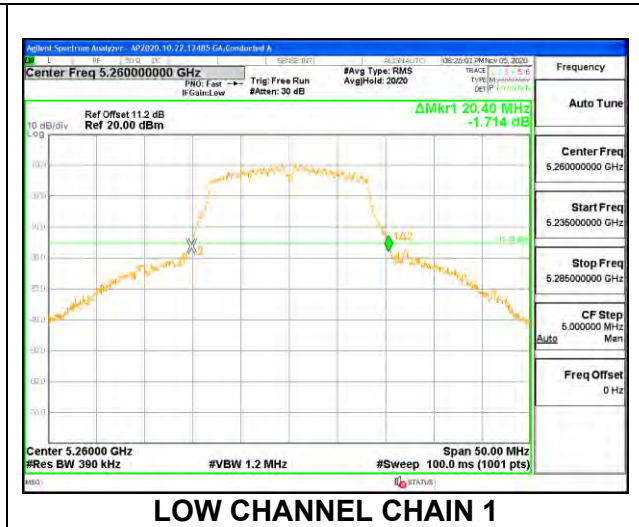
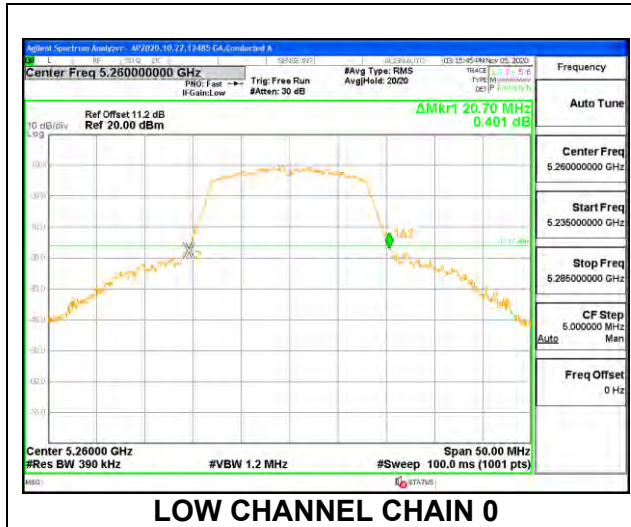


9.2.5. 802.11a MODE IN THE 5.3 GHz BAND

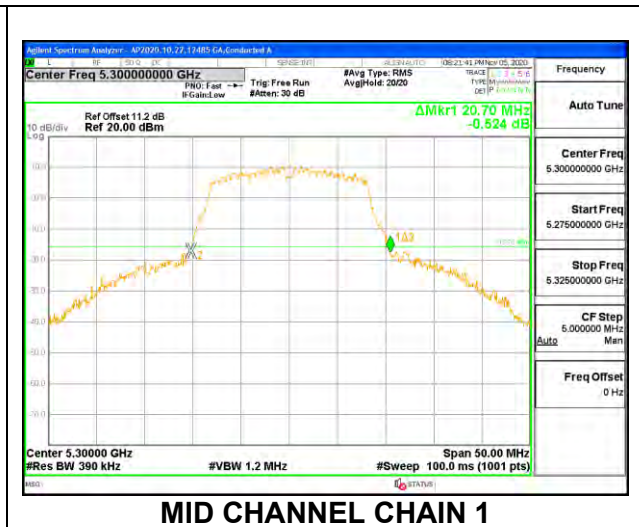
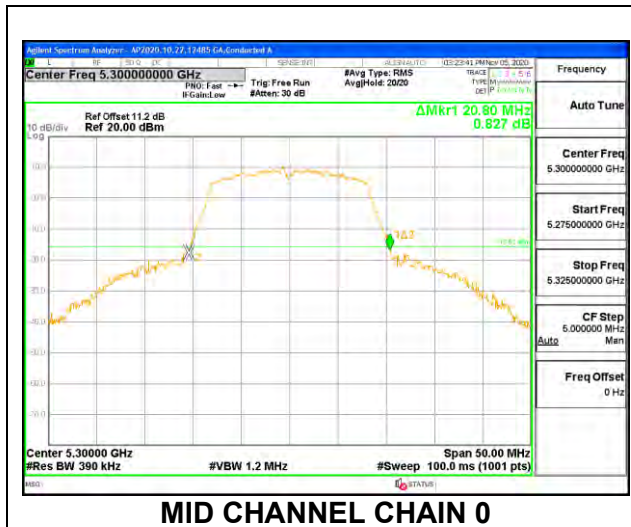
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	20.70	20.40
Mid	5300	20.80	20.70
High	5320	20.70	20.80

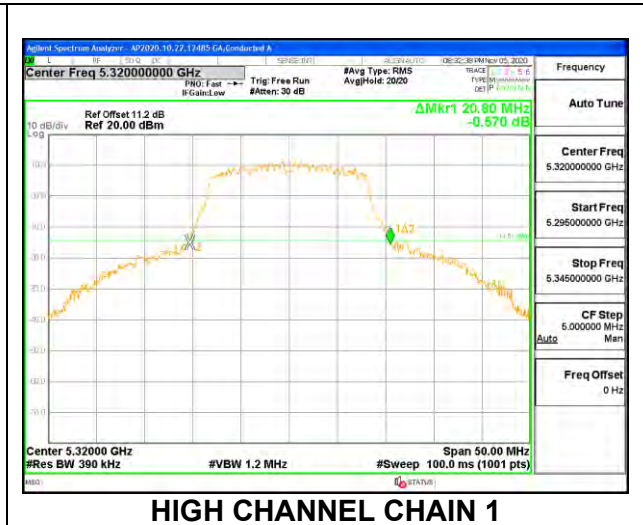
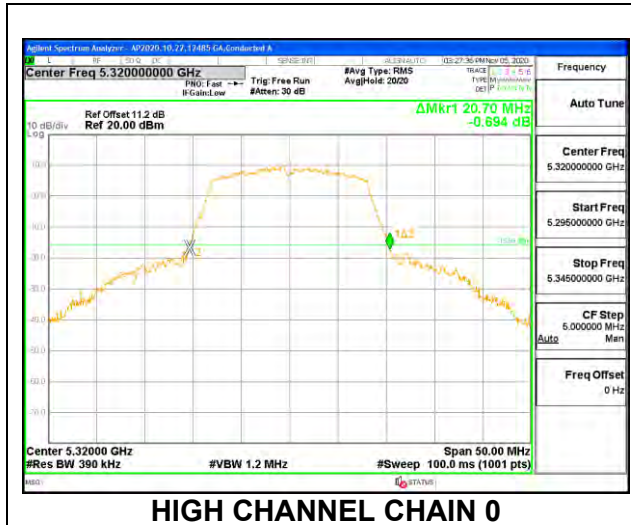
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

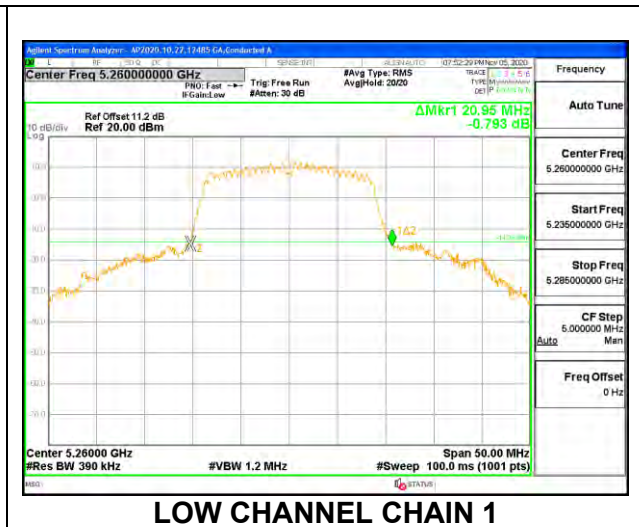
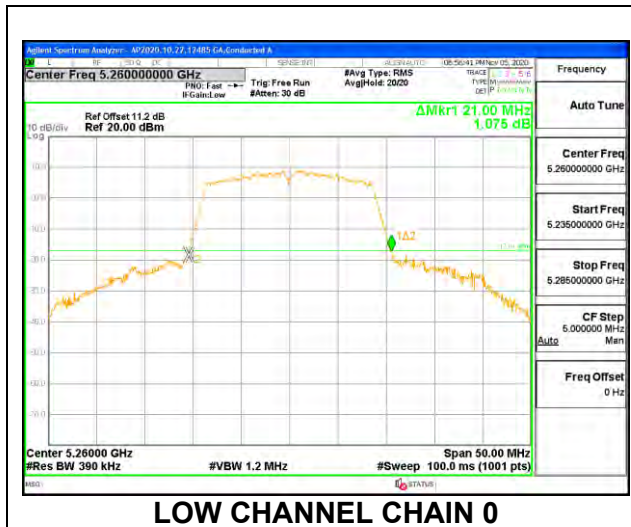


9.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

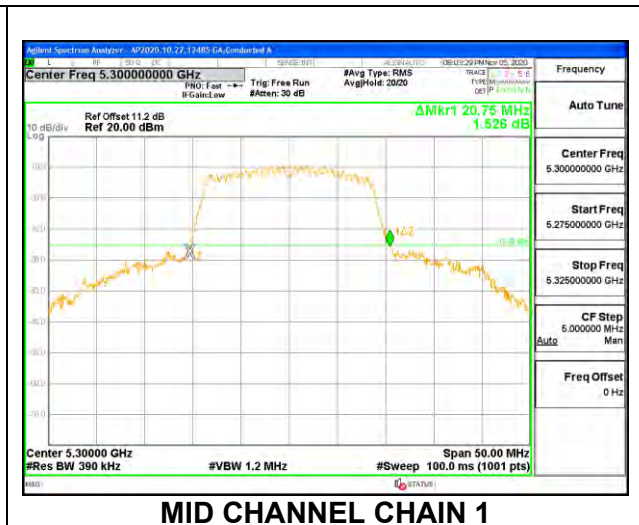
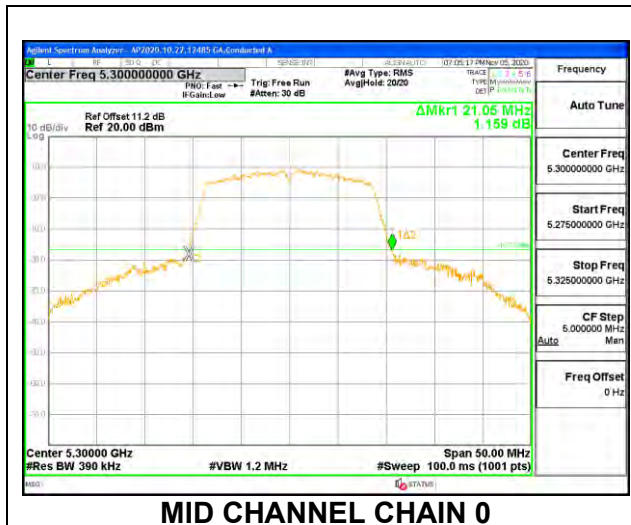
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	21.00	20.95
Mid	5300	21.05	20.75
High	5320	20.90	21.50

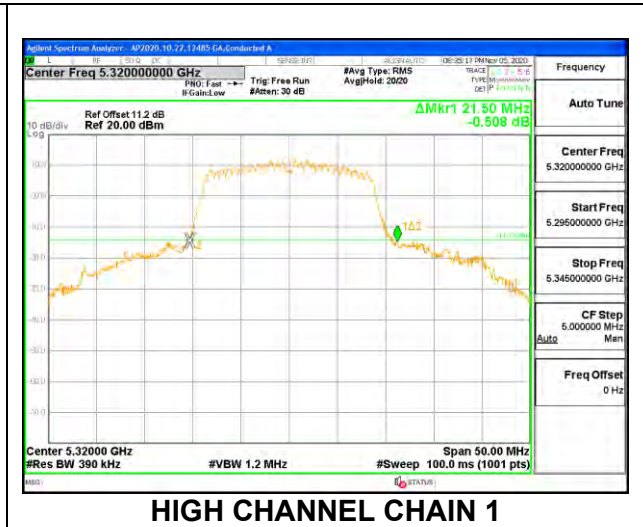
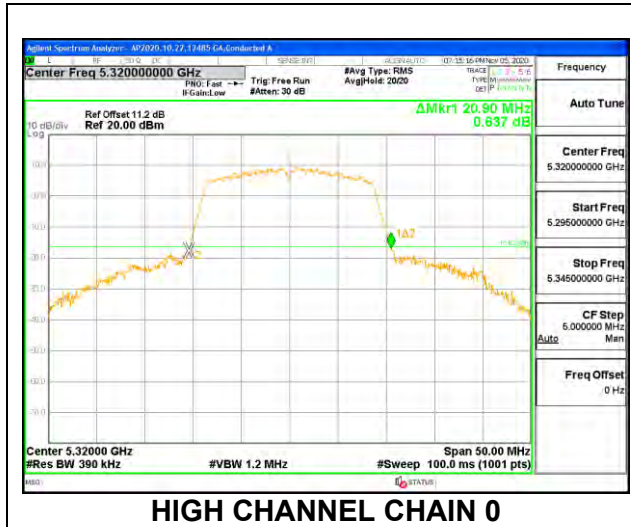
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

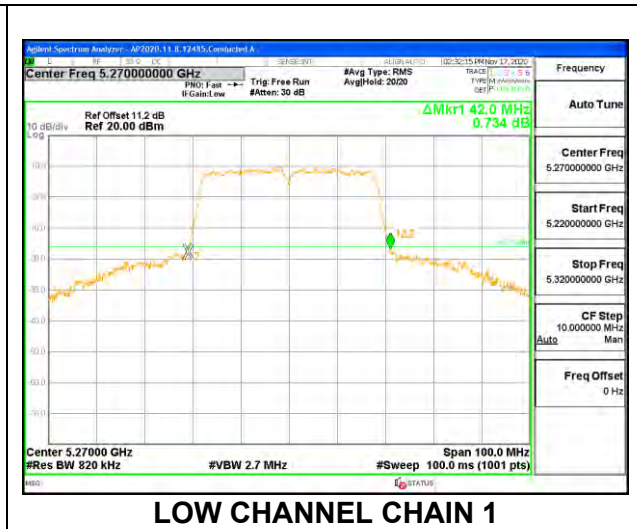
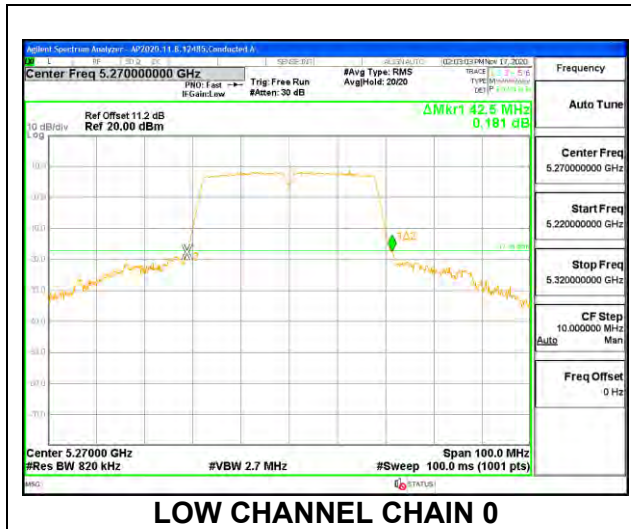


9.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

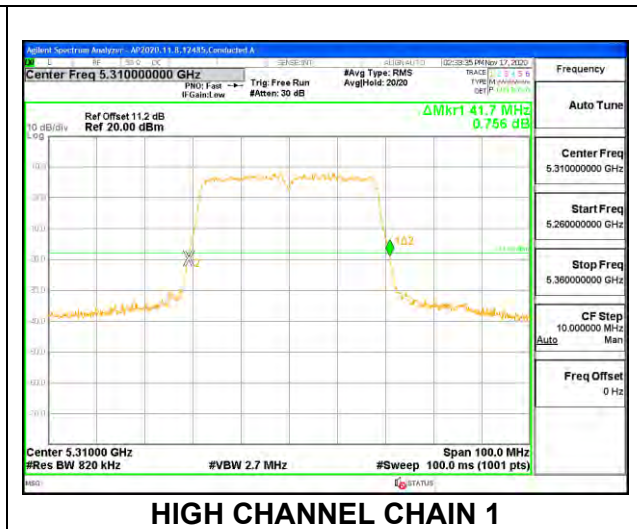
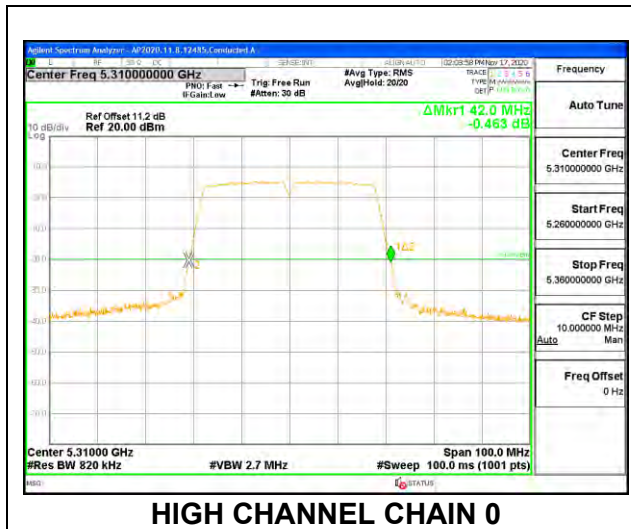
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5270	42.50	42.00
High	5310	42.00	41.70

LOW CHANNEL



HIGH CHANNEL

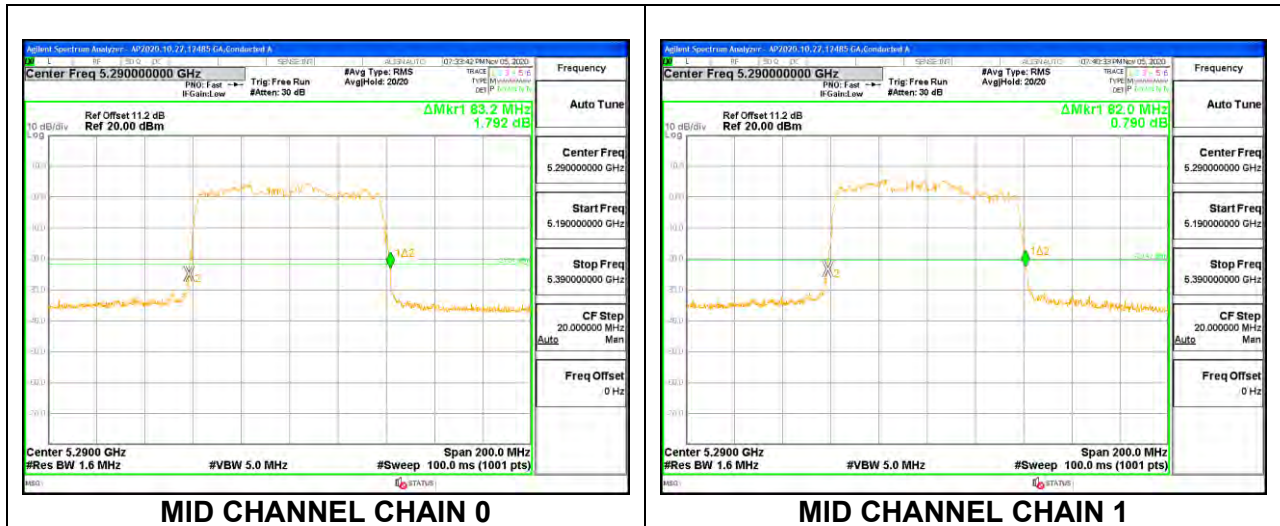


9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	83.20	82.00

MID CHANNEL

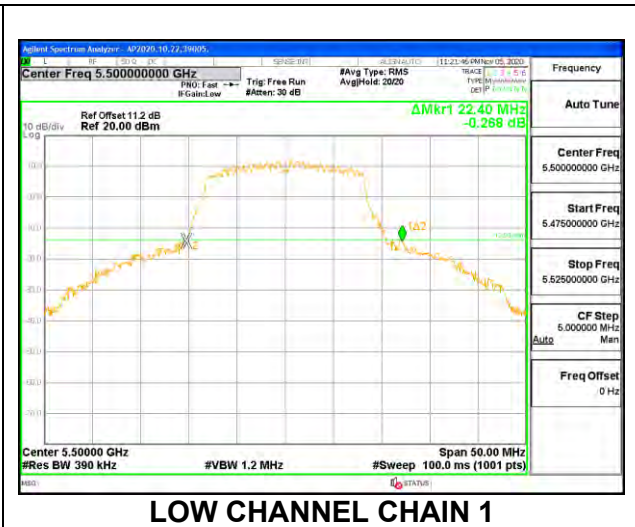
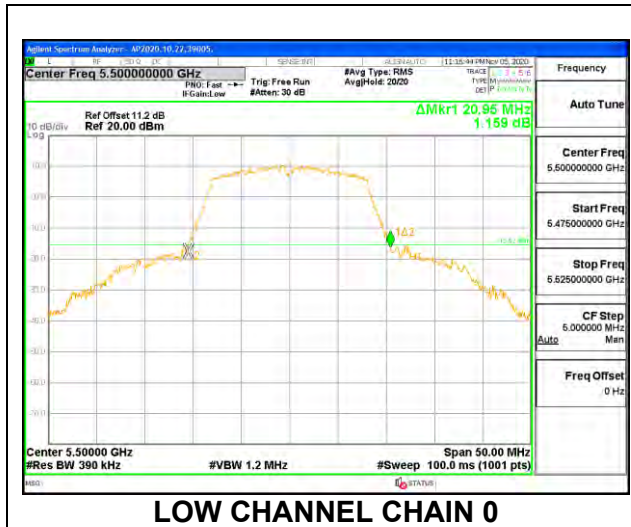


9.2.9. 802.11a MODE IN THE 5.6 GHz BAND

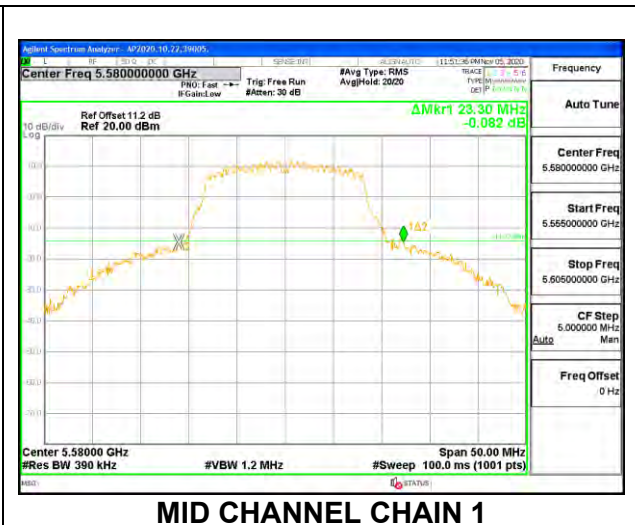
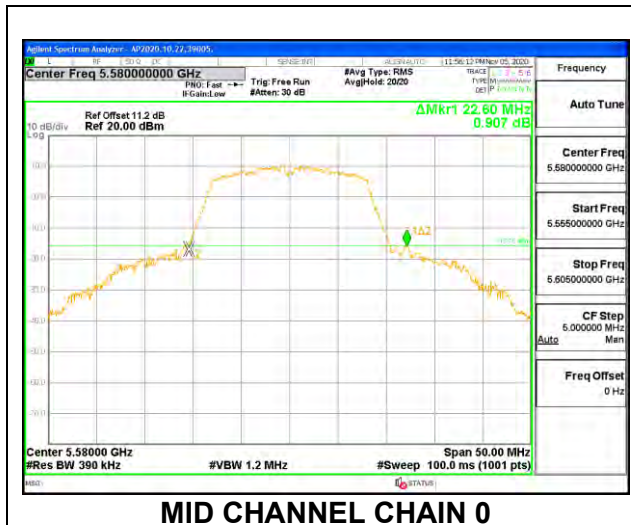
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5500	20.95	22.40
Mid	5580	22.60	23.30
High	5700	20.60	20.60

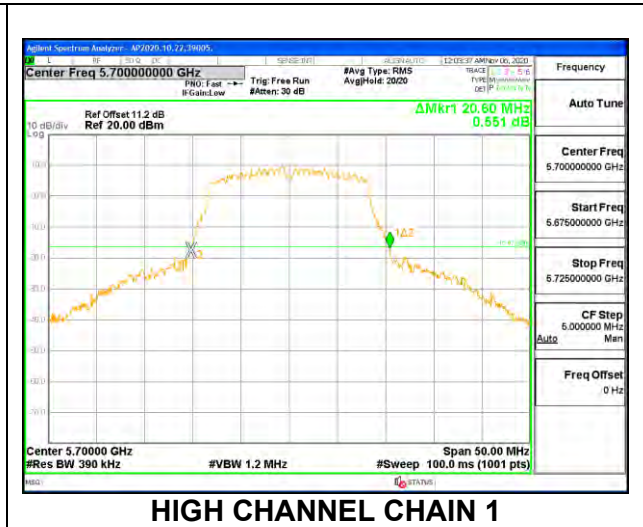
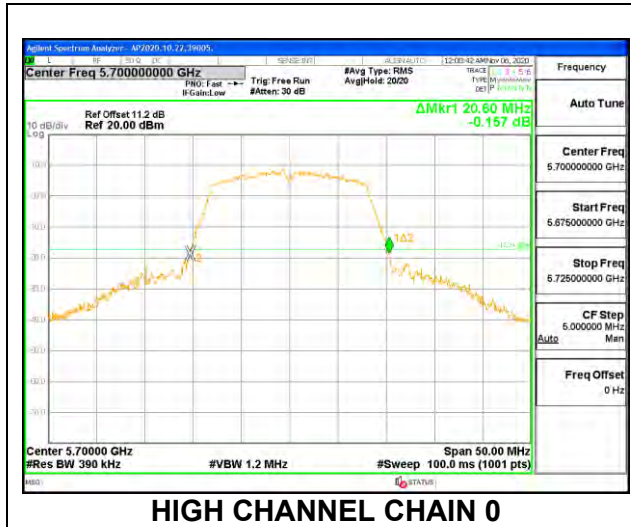
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

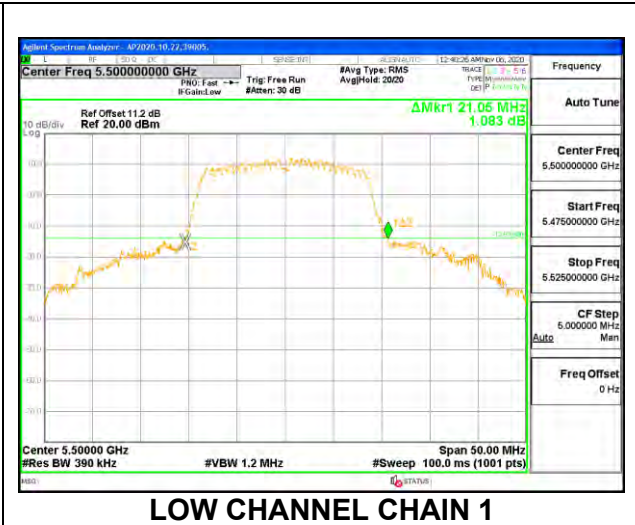
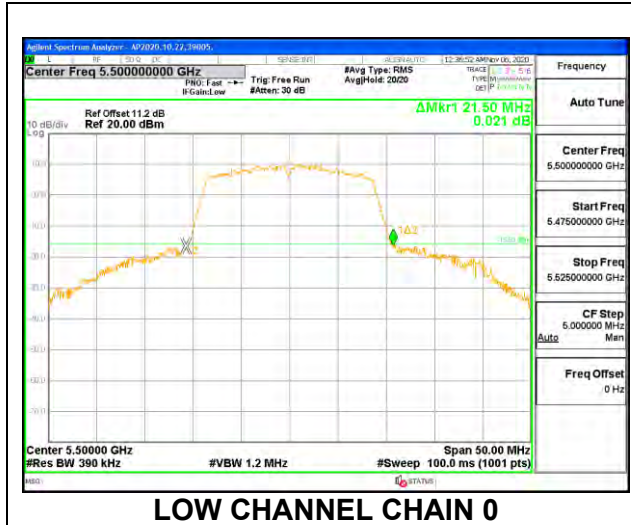


9.2.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

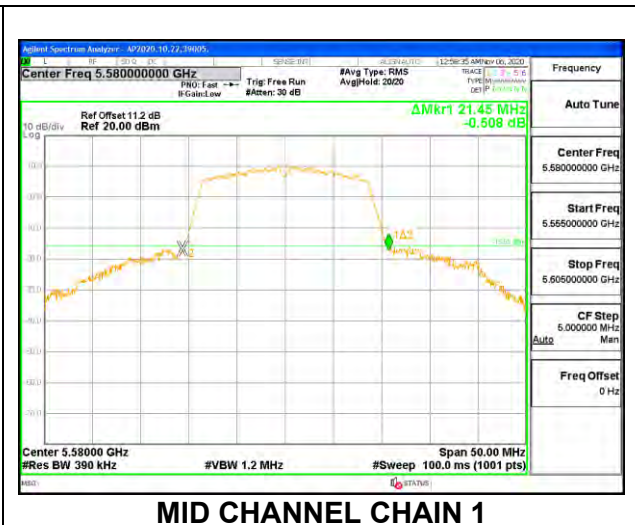
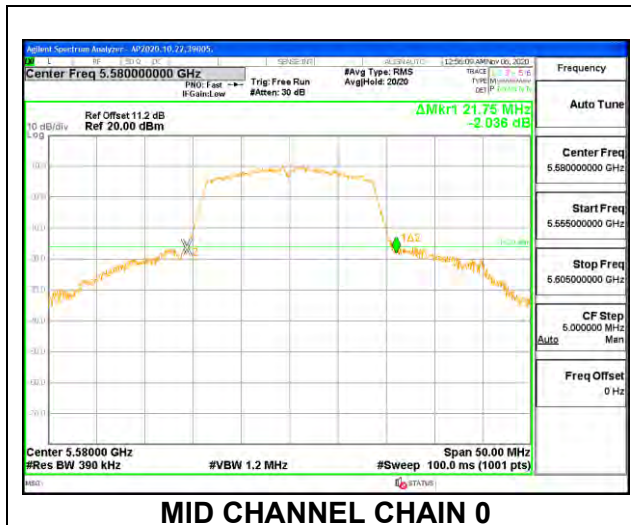
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5500	21.50	21.05
Mid	5580	21.75	21.45
High	5700	20.80	20.45

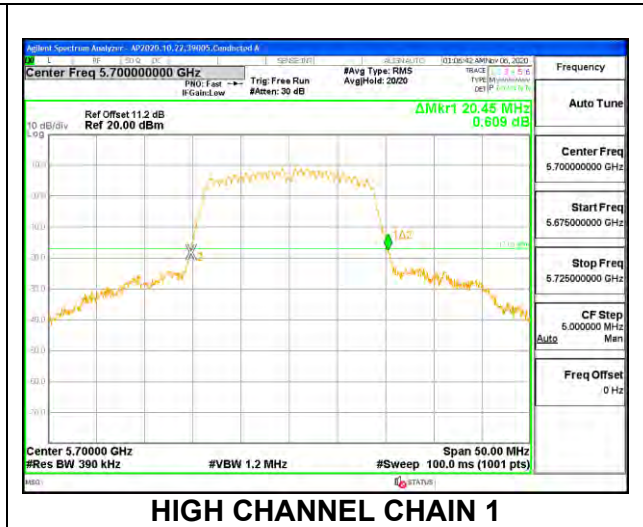
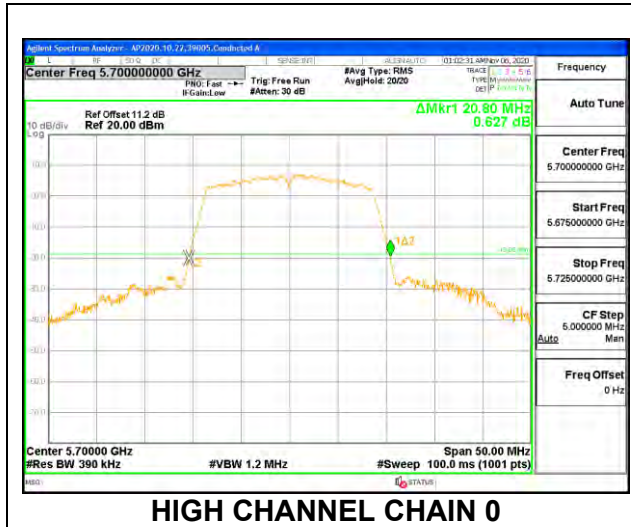
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

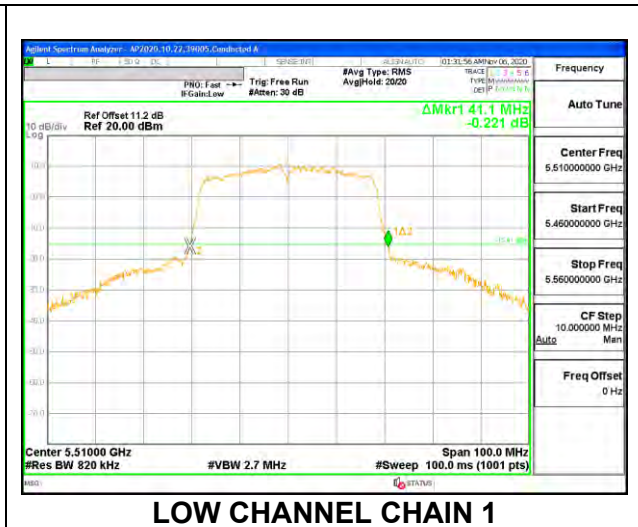
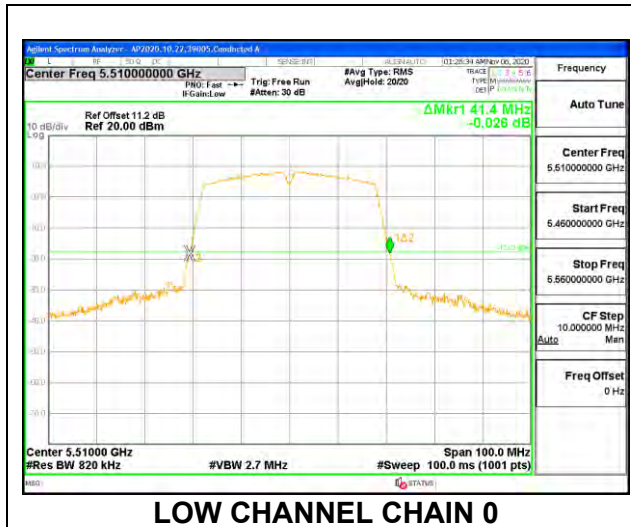


9.2.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

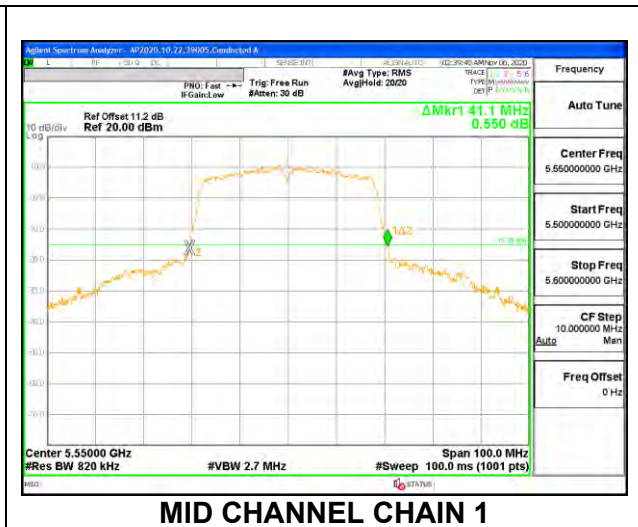
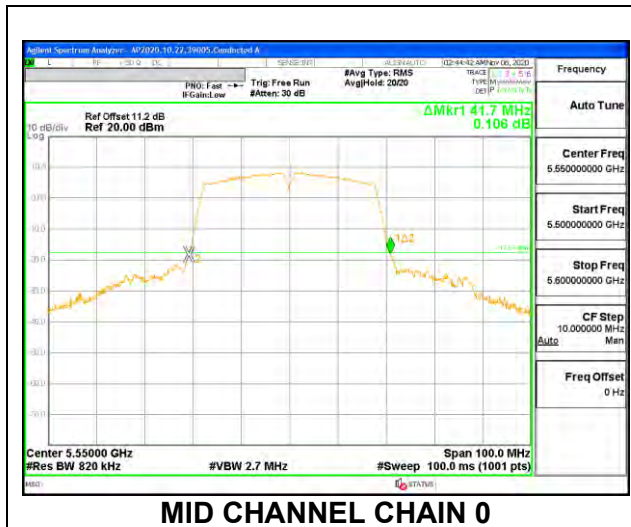
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5510	41.40	41.10
Mid	5550	41.70	41.10
High	5670	41.60	41.70

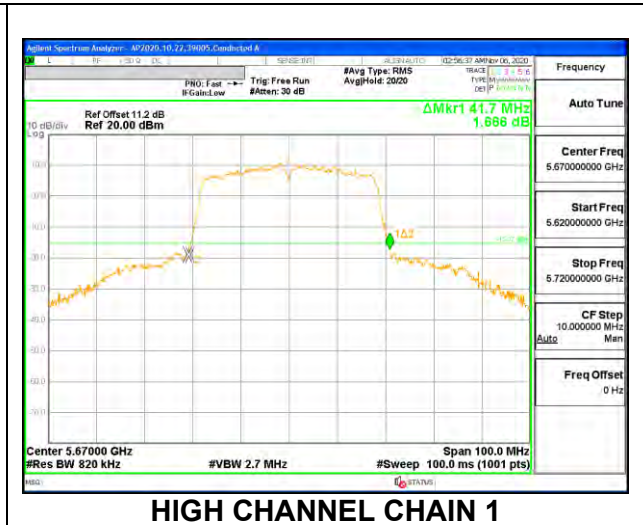
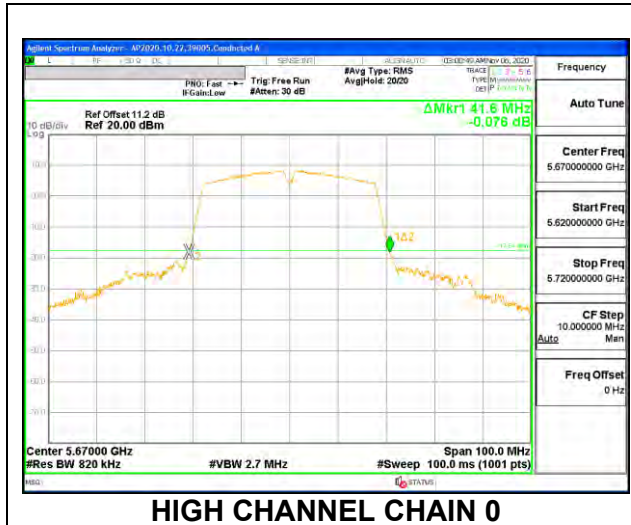
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

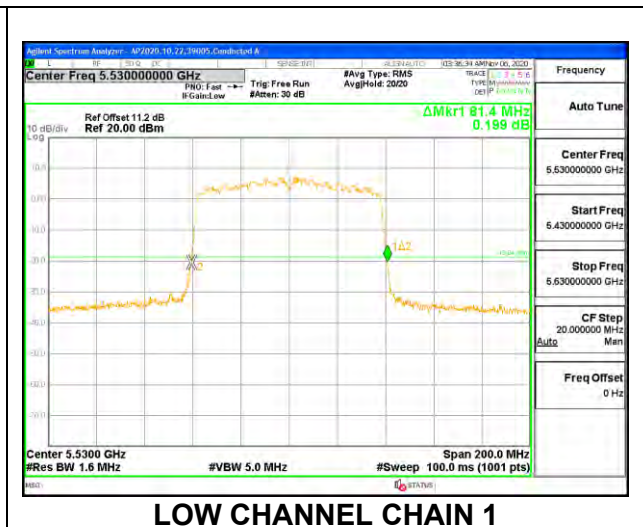
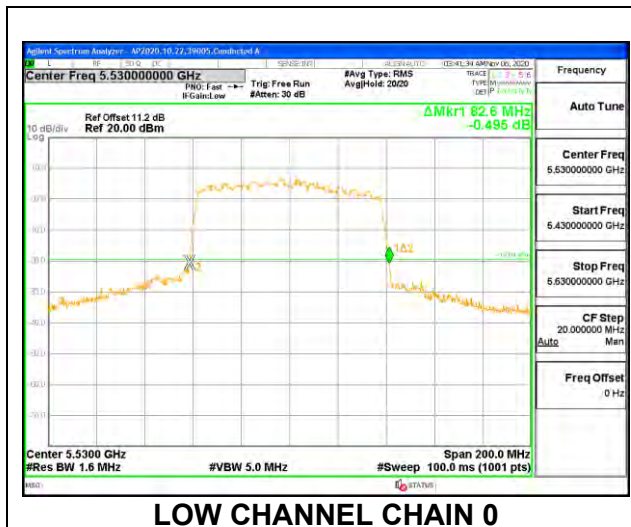


9.2.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

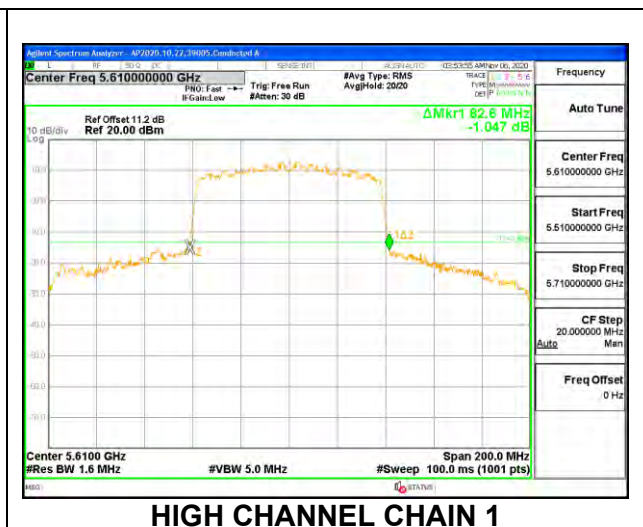
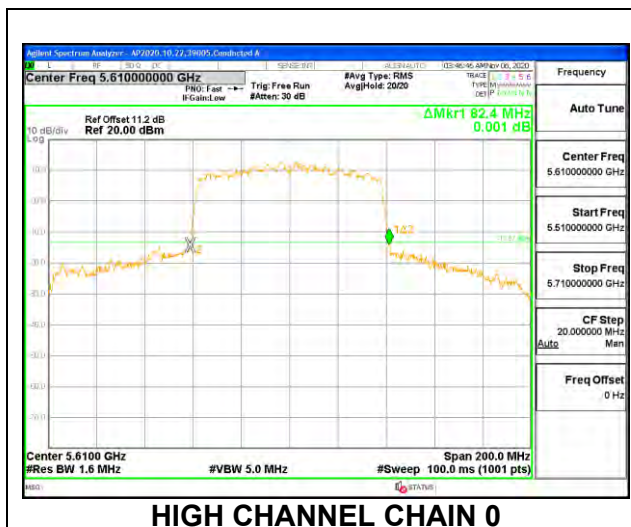
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5530	82.60	81.40
High	5610	82.40	82.60

LOW CHANNEL



HIGH CHANNEL

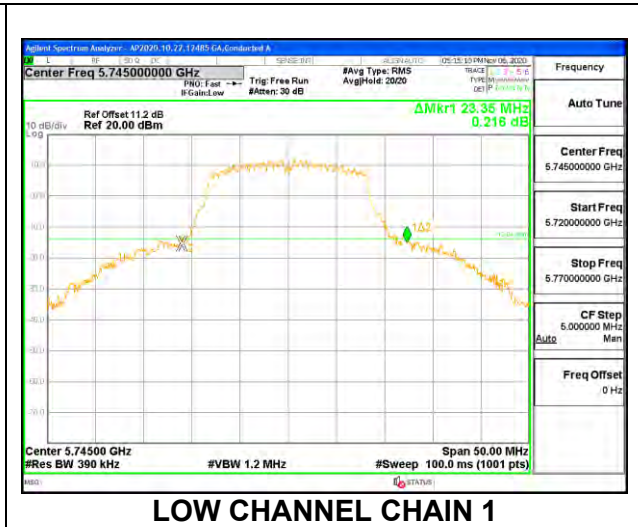
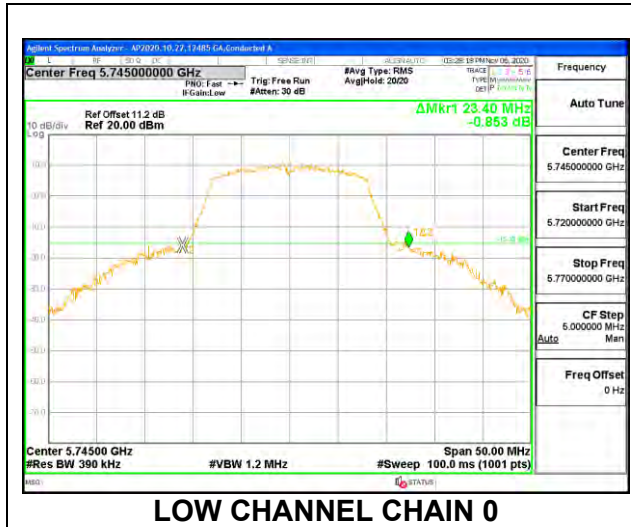


9.2.13. 802.11a MODE IN THE 5.8 GHz BAND

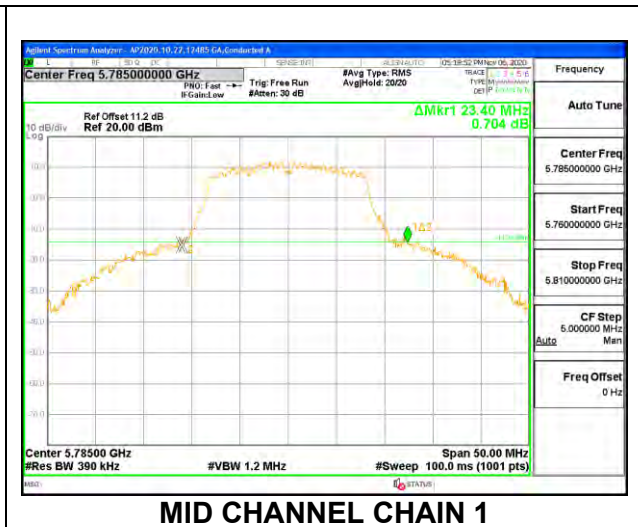
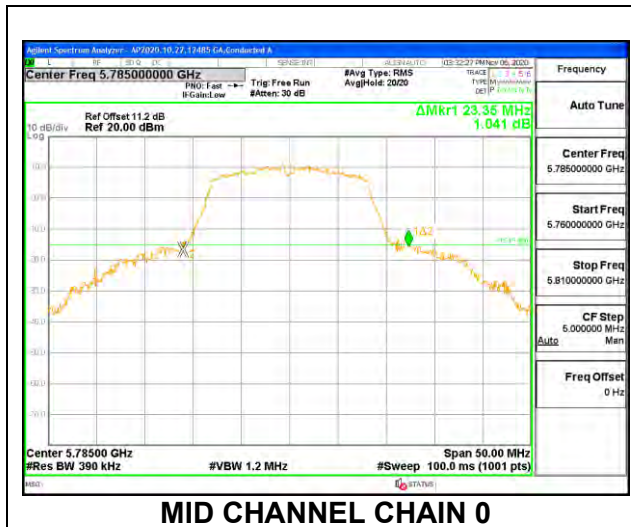
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5745	23.40	23.35
Mid	5785	23.35	23.40
High	5825	23.50	23.40

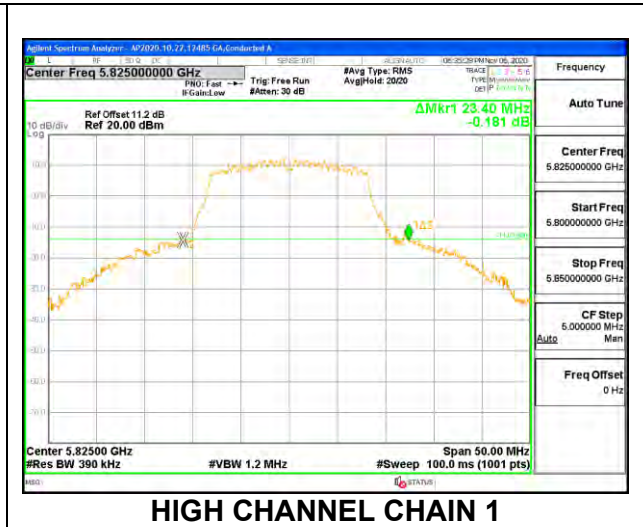
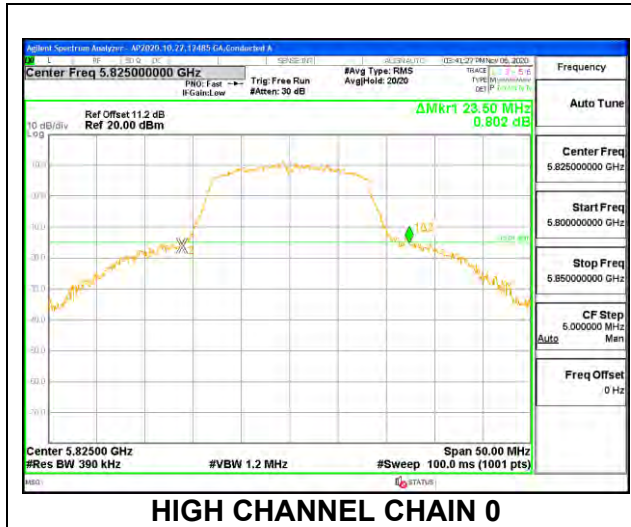
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

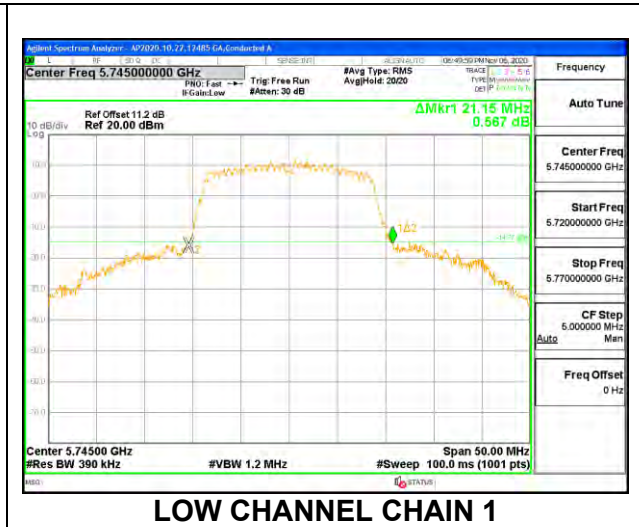
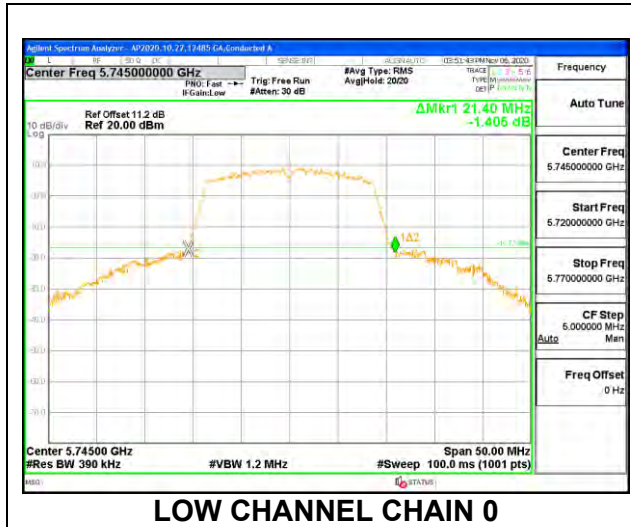


9.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

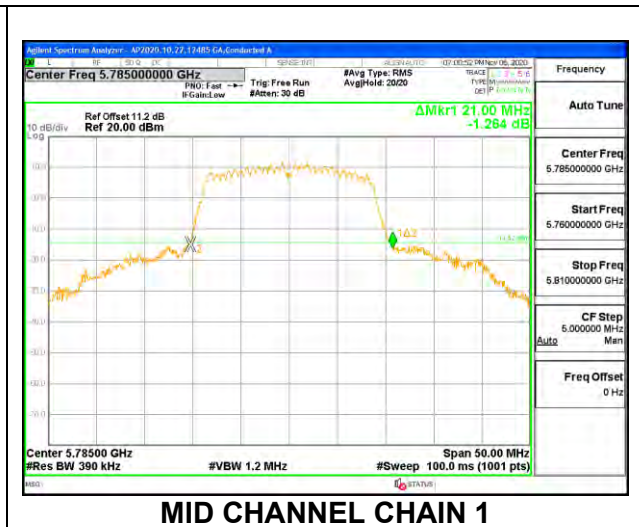
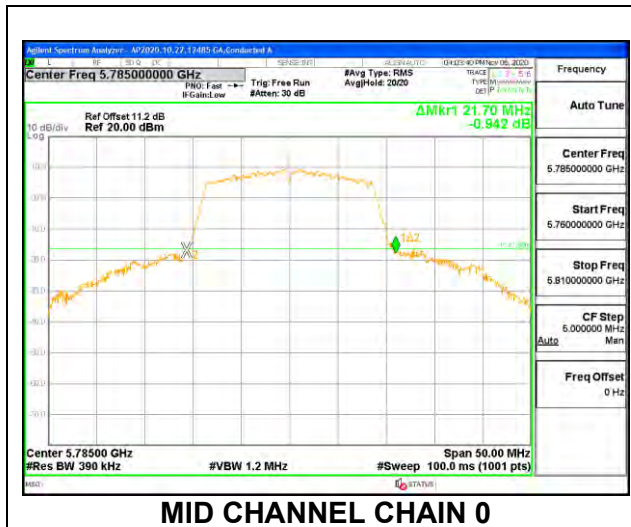
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5745	21.40	21.15
Mid	5785	21.70	21.00
High	5825	22.20	20.70

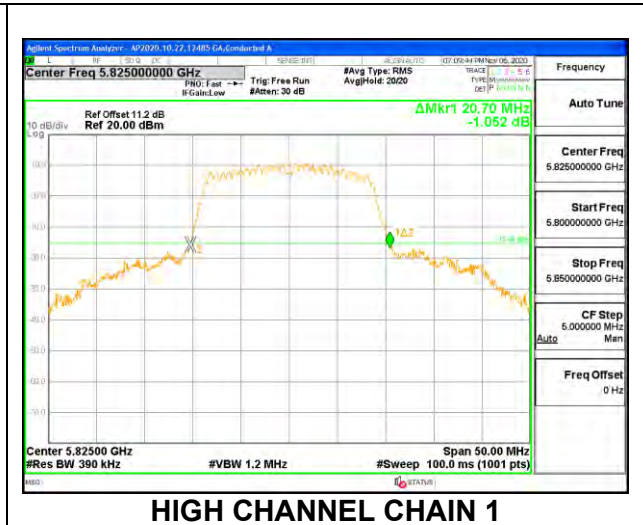
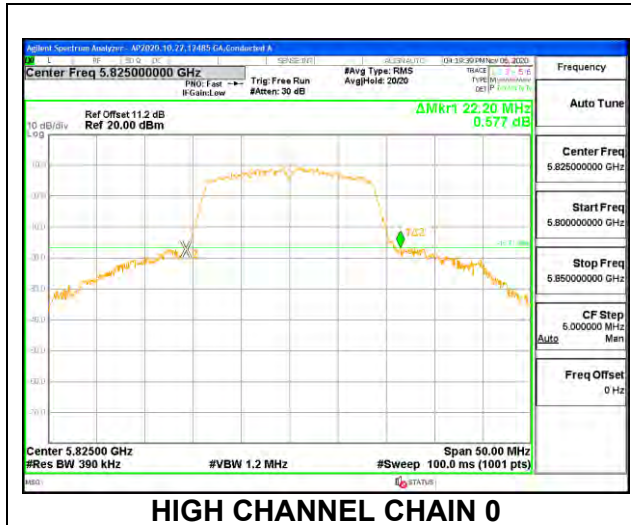
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

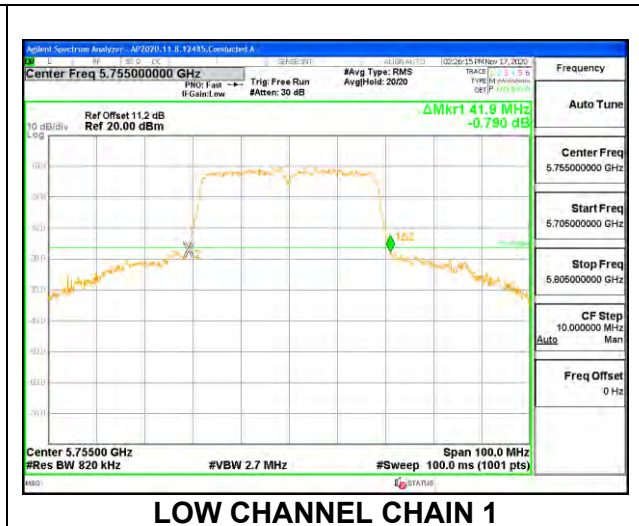
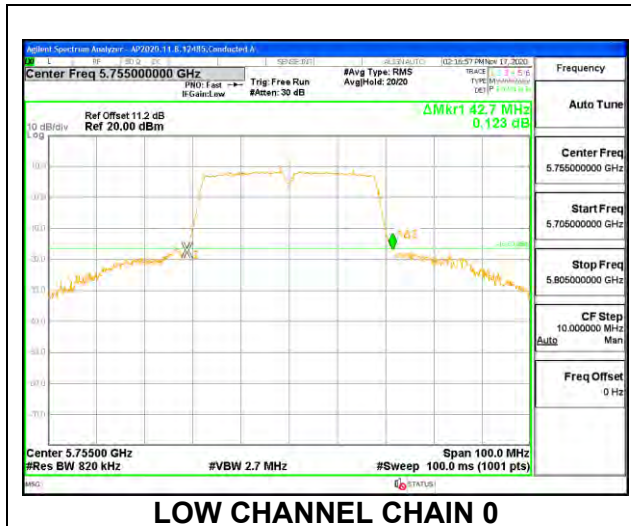


9.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

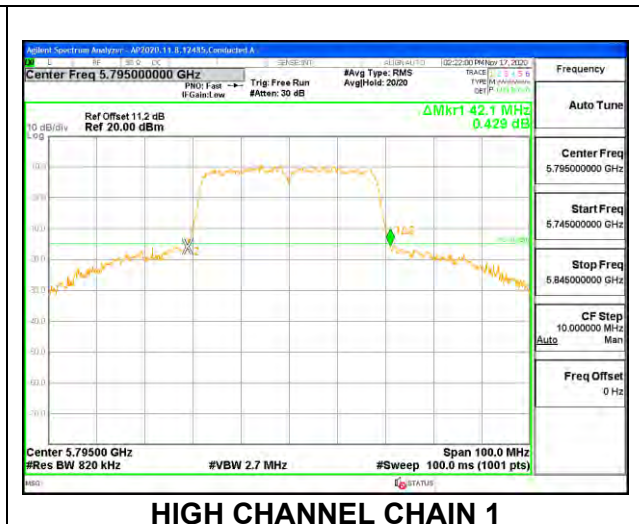
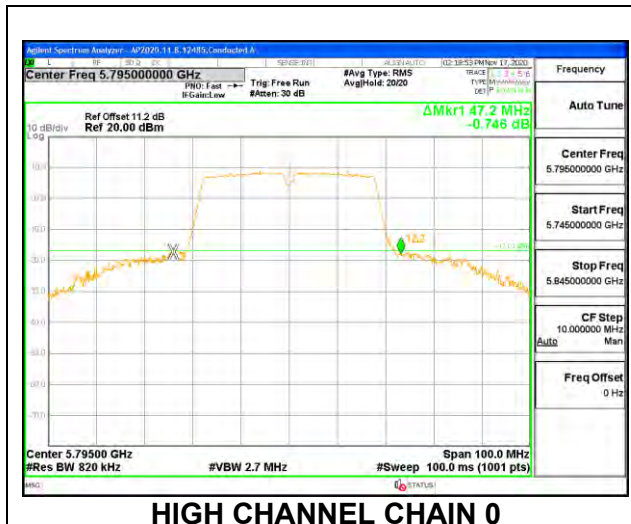
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5755	42.70	41.90
High	5795	47.20	42.10

LOW CHANNEL



HIGH CHANNEL

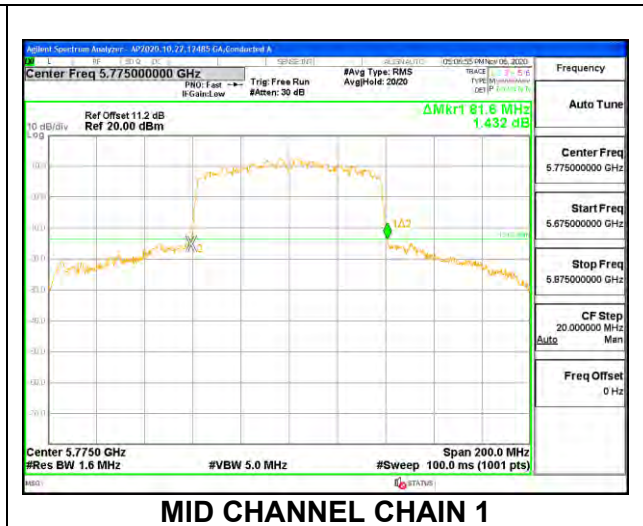
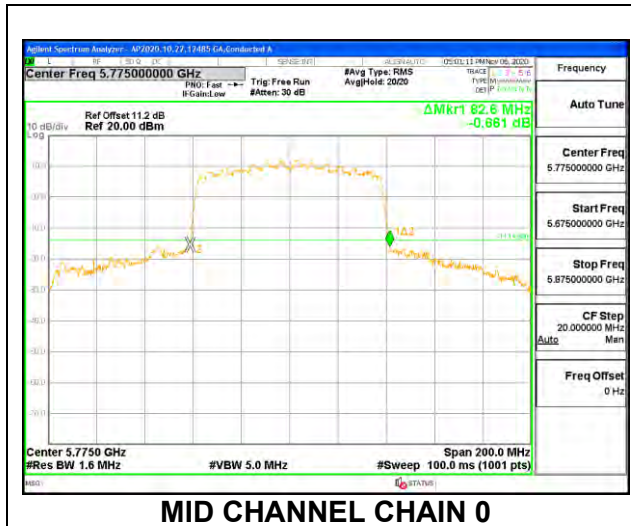


9.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5775	82.60	81.60

MID CHANNEL



9.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

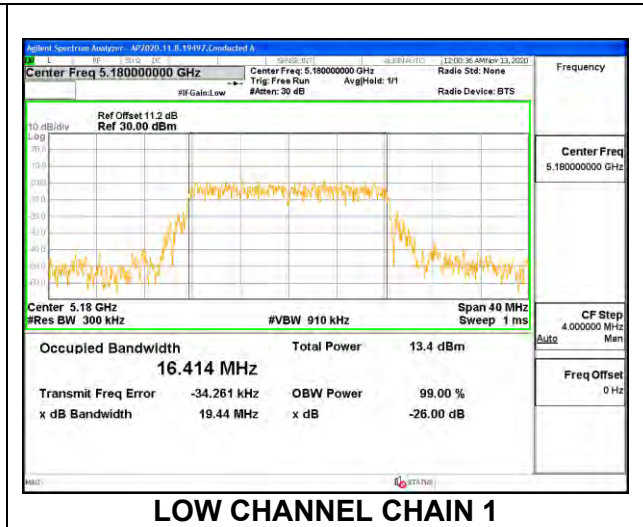
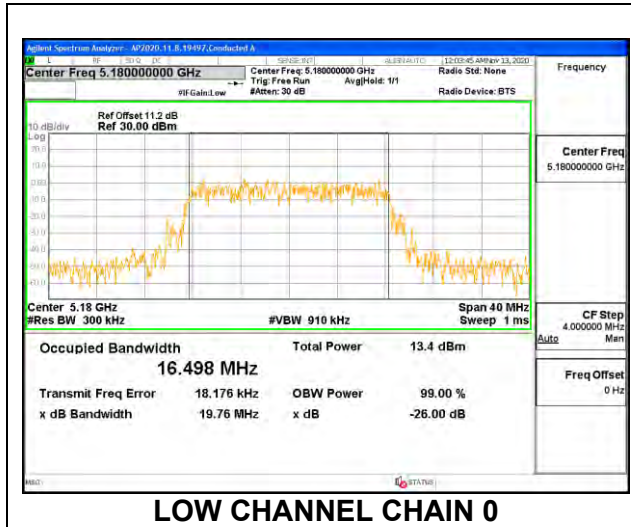
RESULTS

9.3.1. 802.11a MODE IN THE 5.2 GHz BAND

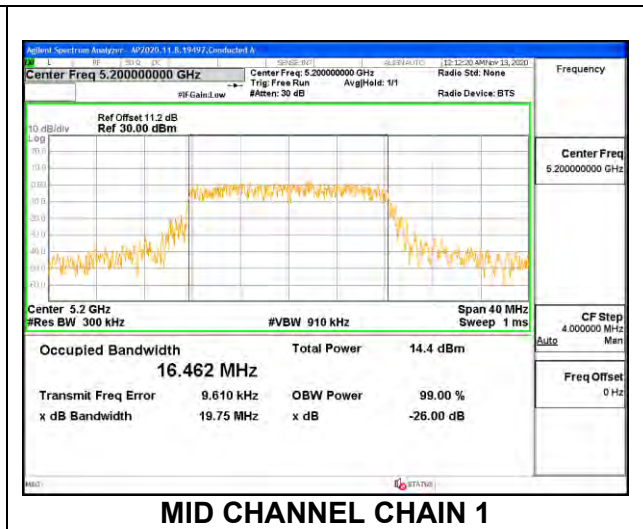
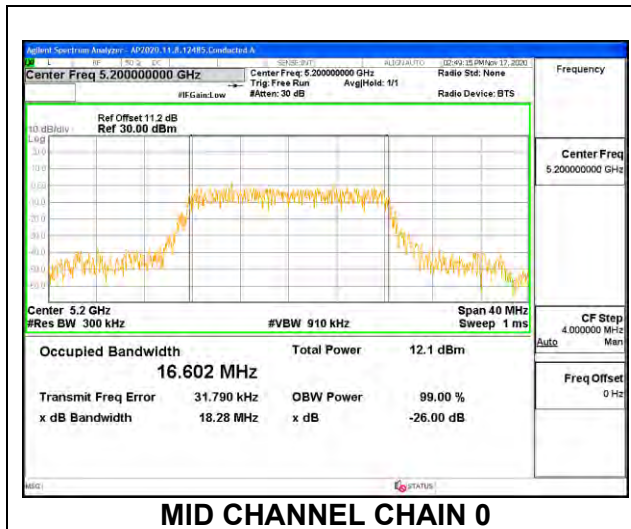
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5180	16.498	16.414
Mid	5200	16.602	16.462
High	5240	16.502	16.537

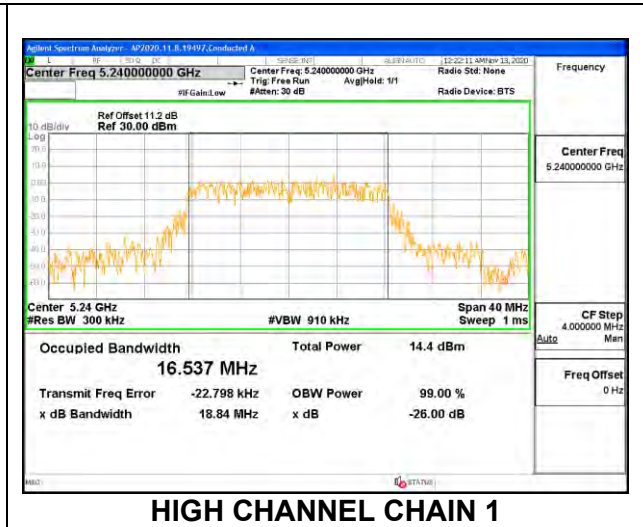
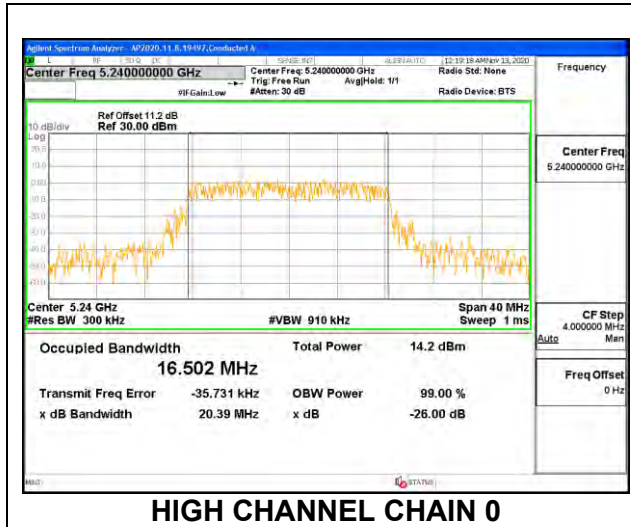
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

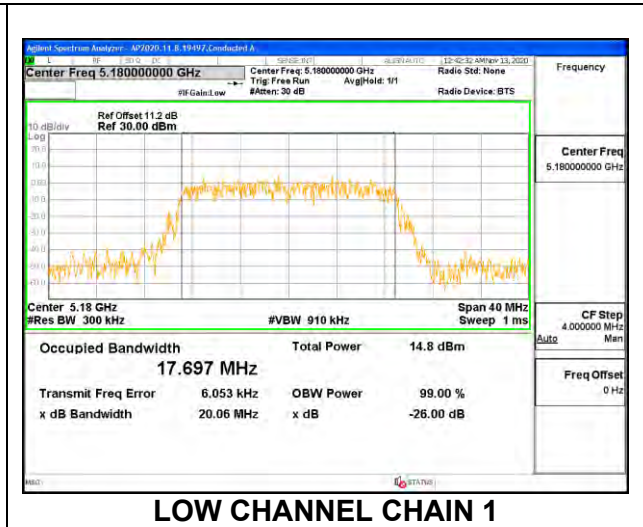
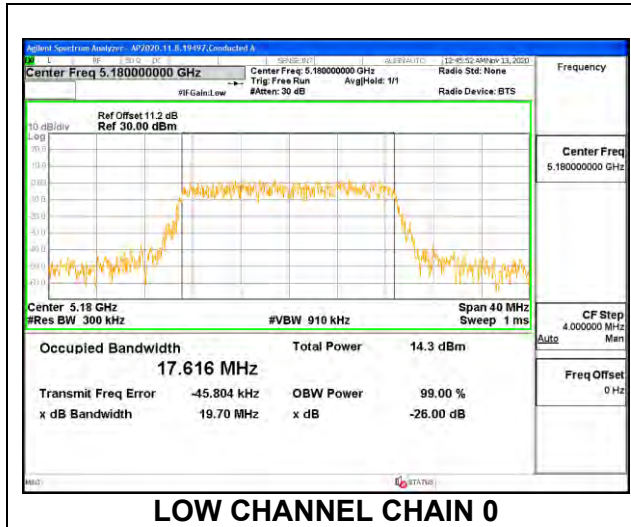


9.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

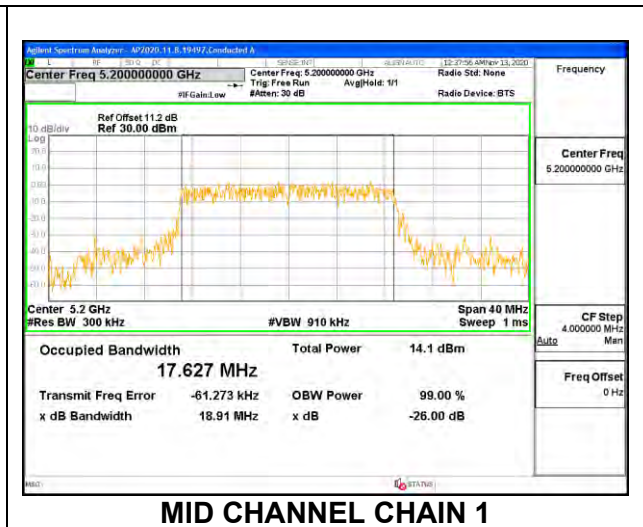
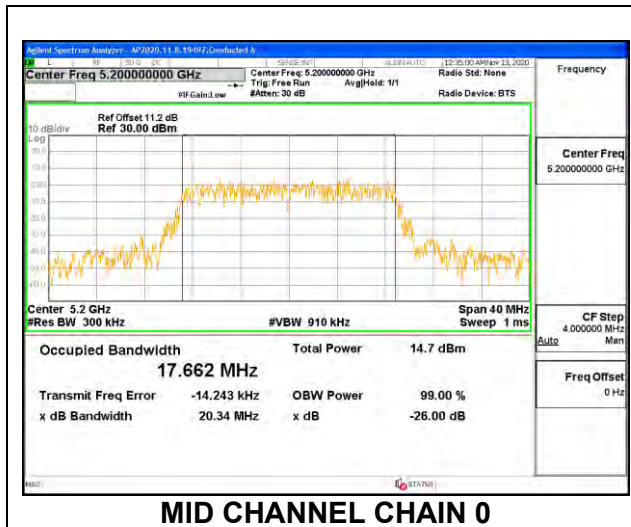
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5180	17.616	17.697
Mid	5200	17.662	17.627
High	5240	17.681	17.642

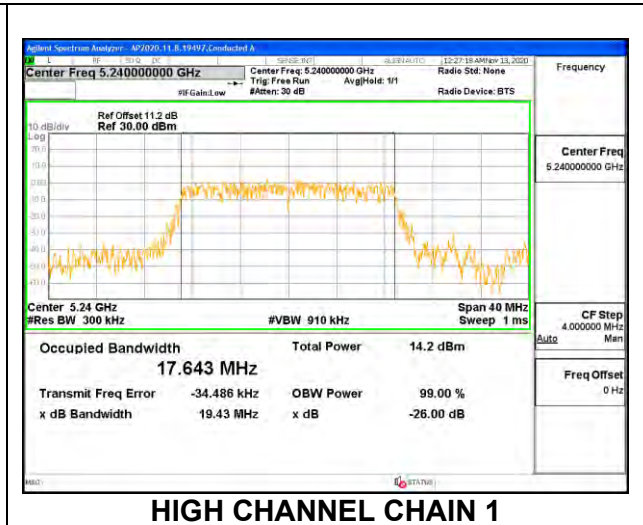
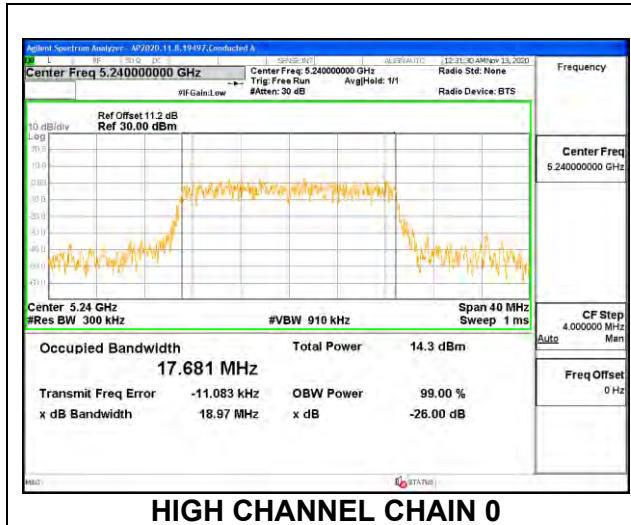
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

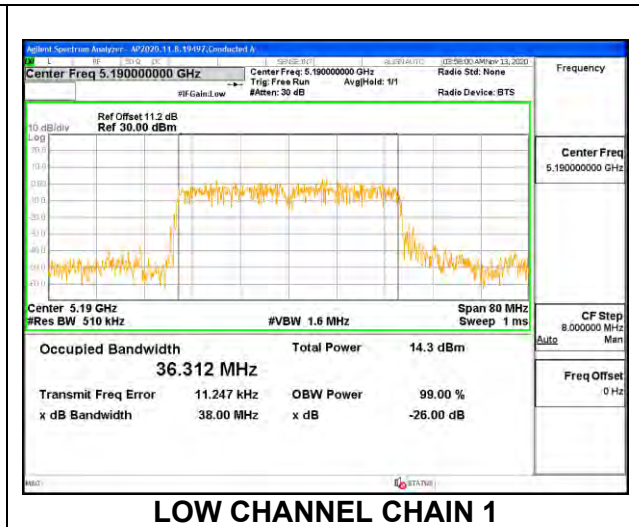
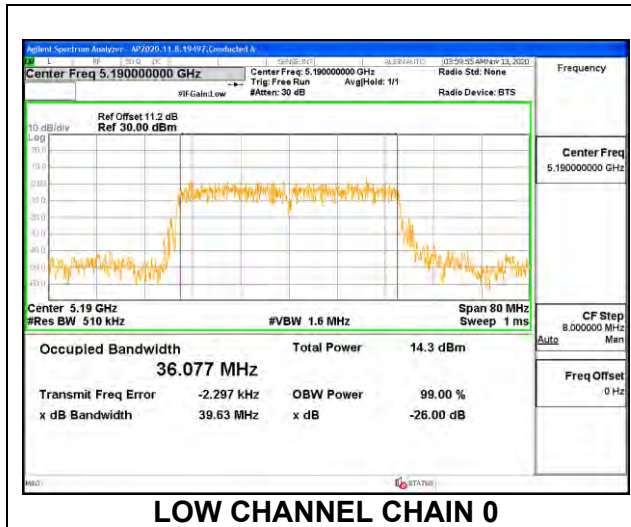


9.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

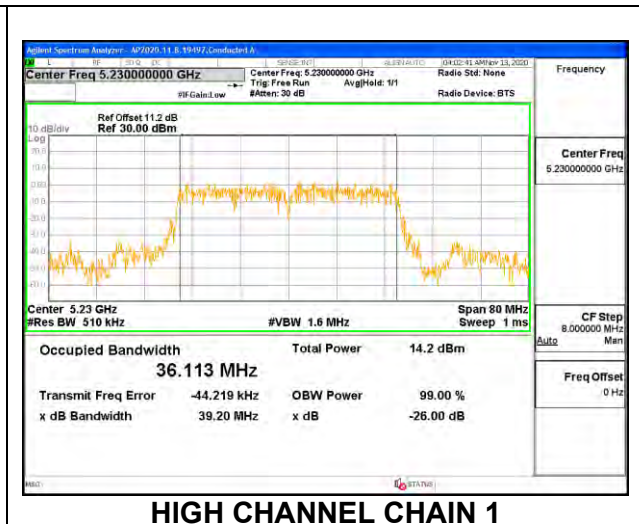
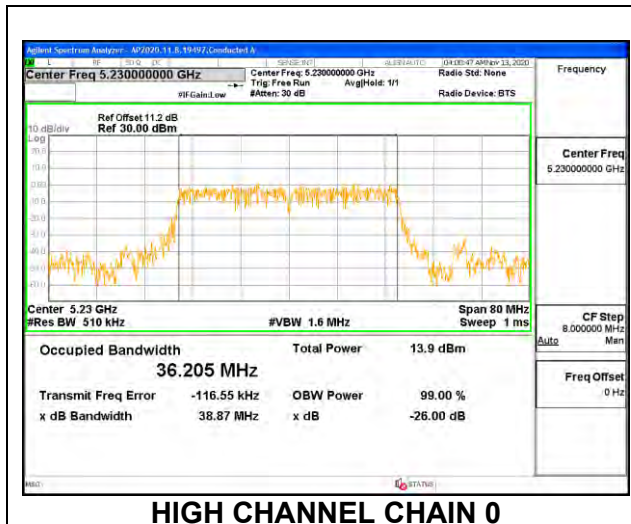
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5190	36.077	36.312
High	5230	36.205	36.113

LOW CHANNEL



HIGH CHANNEL

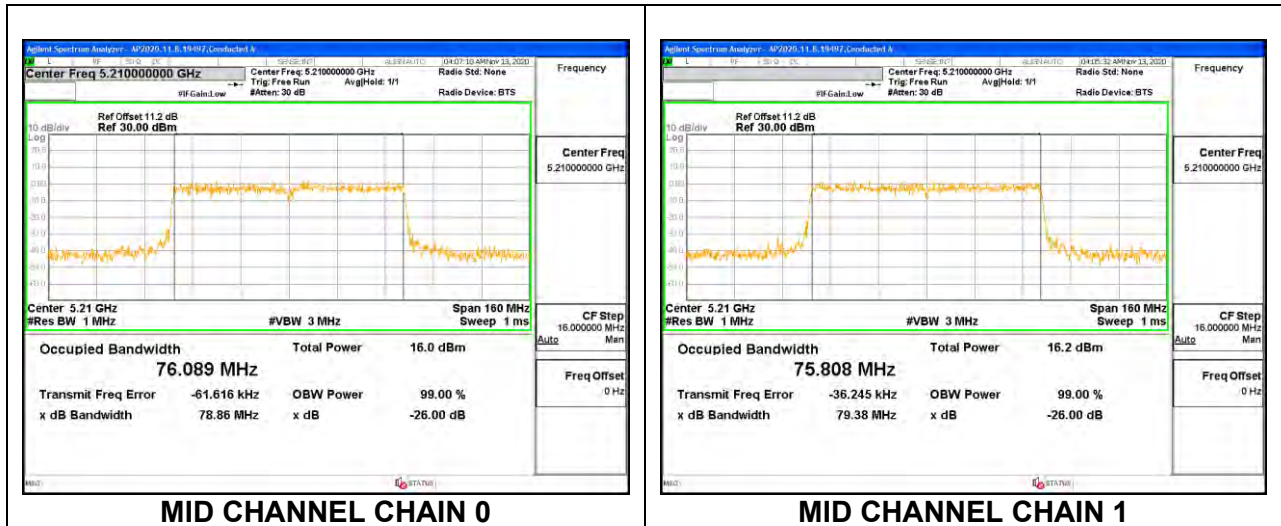


9.3.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Mid	5210	76.089	75.808

MID CHANNEL

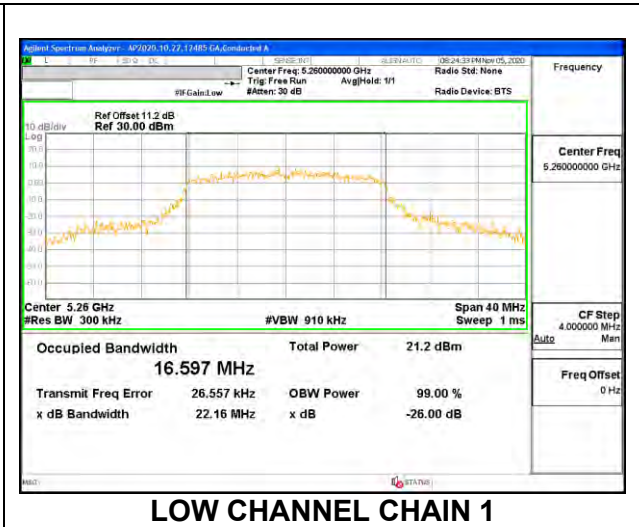
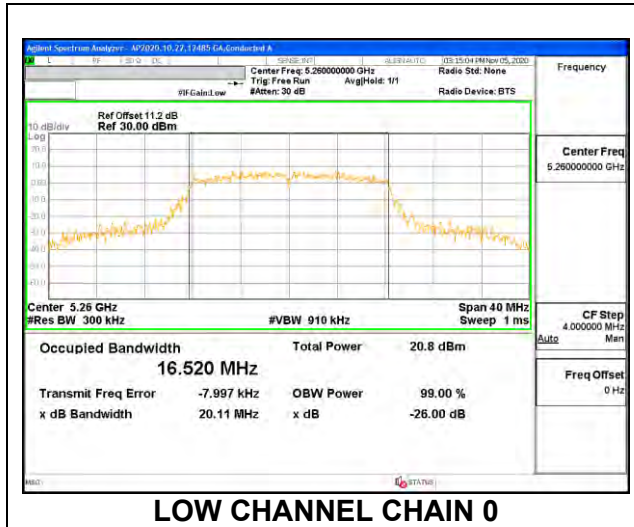


9.3.5. 802.11a MODE IN THE 5.3 GHz BAND

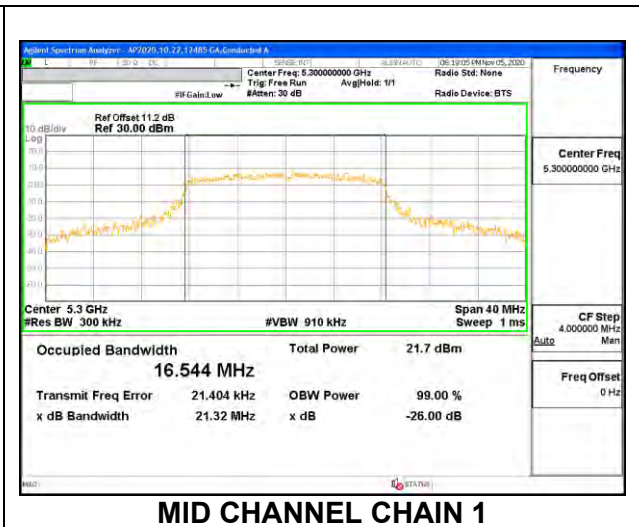
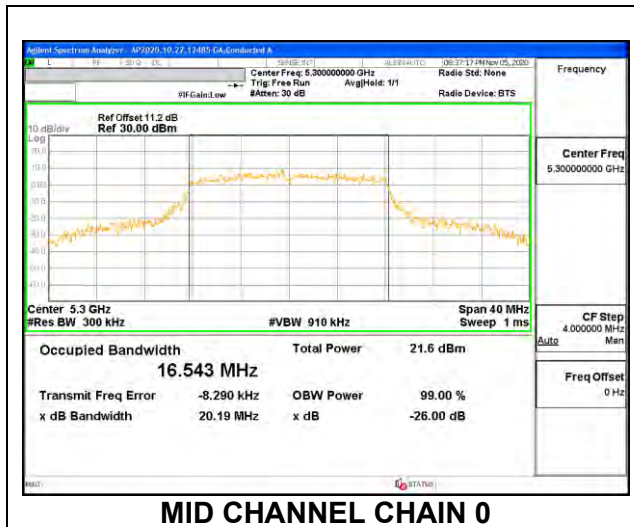
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5260	16.520	16.597
Mid	5300	16.543	16.544
High	5320	16.520	16.621

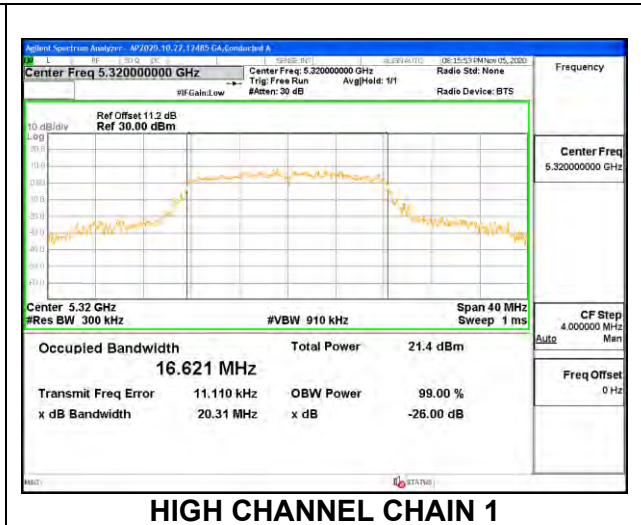
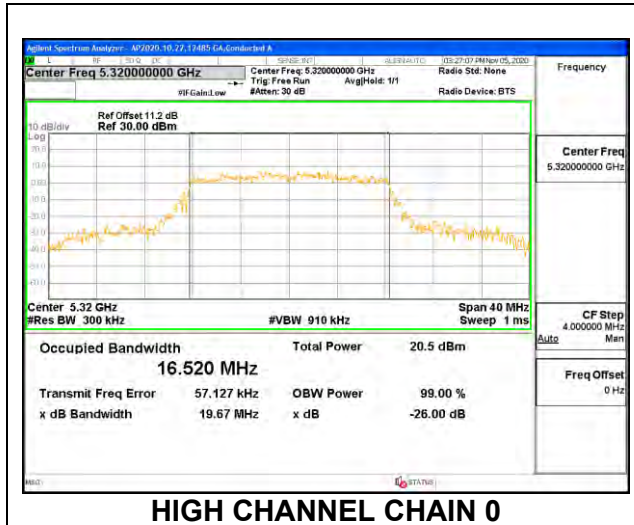
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

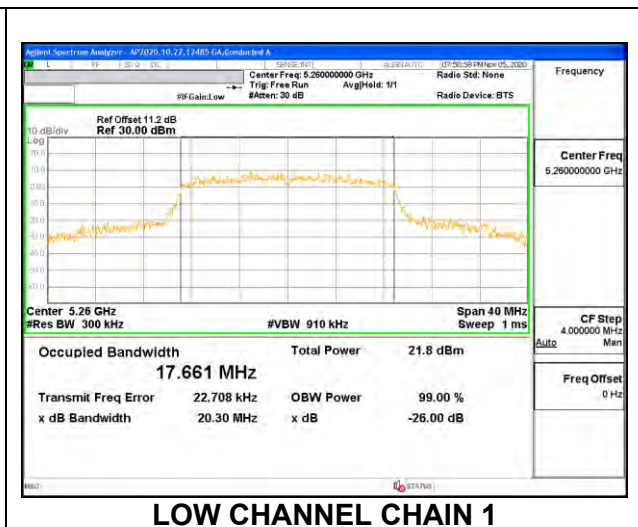
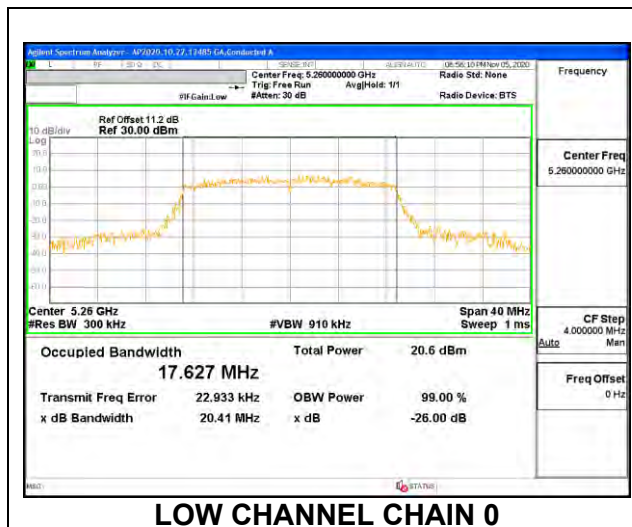


9.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

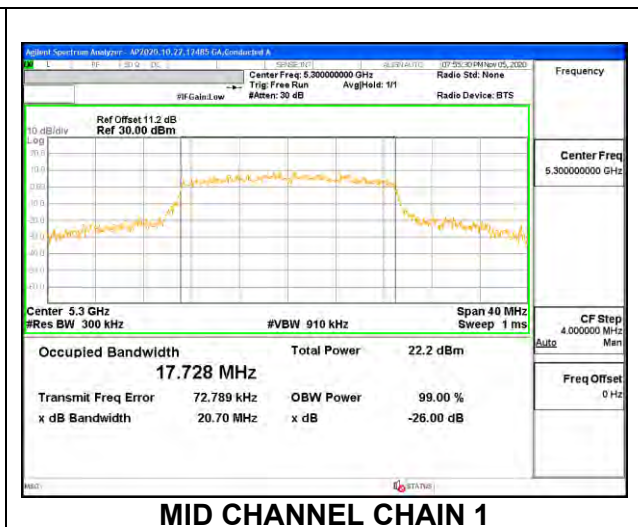
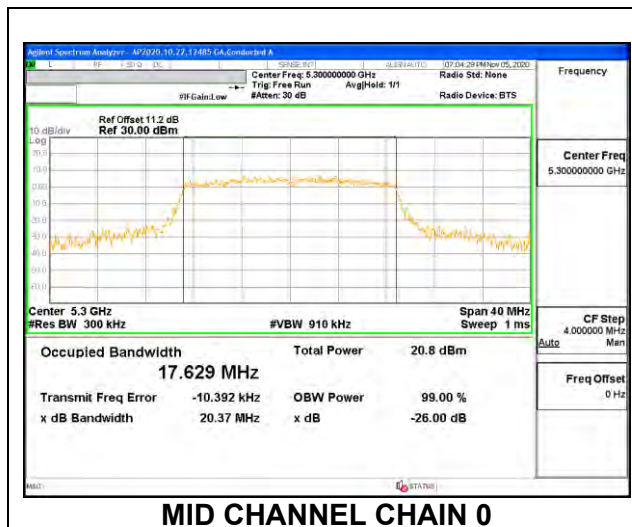
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5260	17.627	17.661
Mid	5300	17.629	17.728
High	5320	17.598	17.683

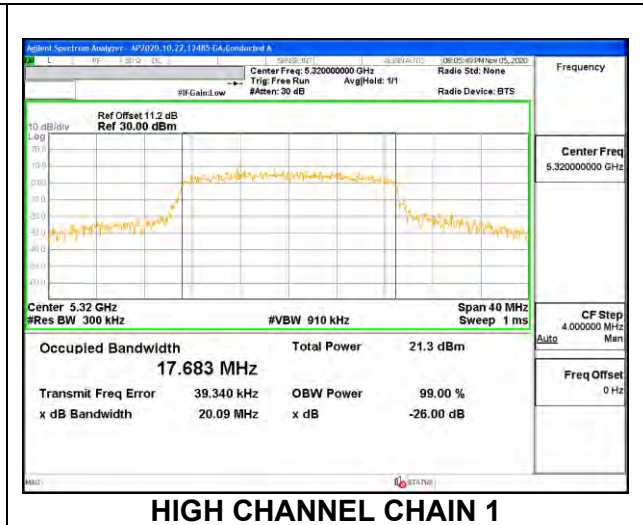
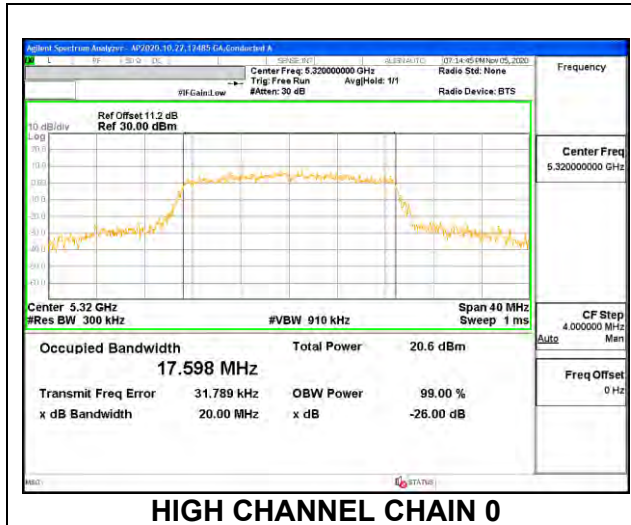
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

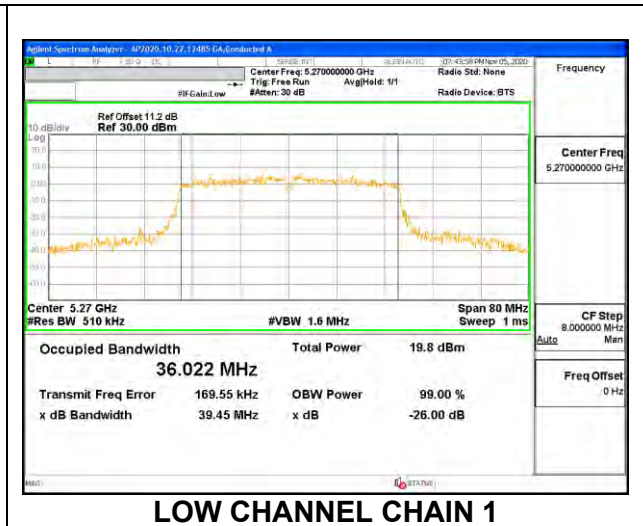
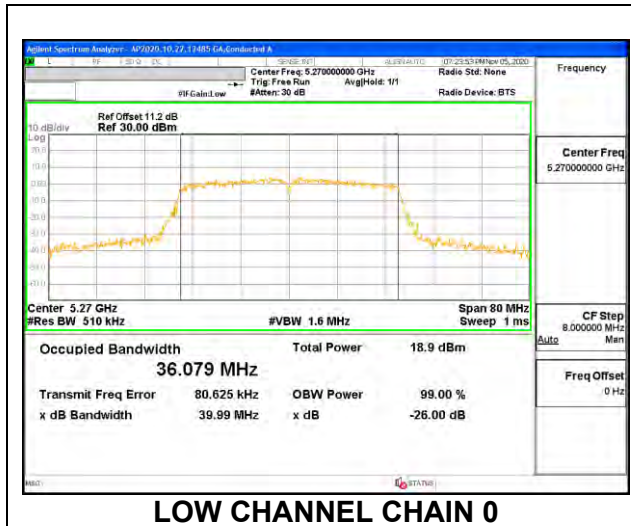


9.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

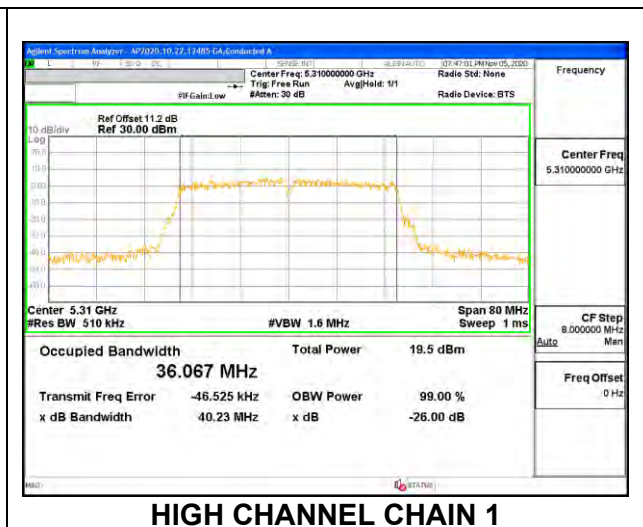
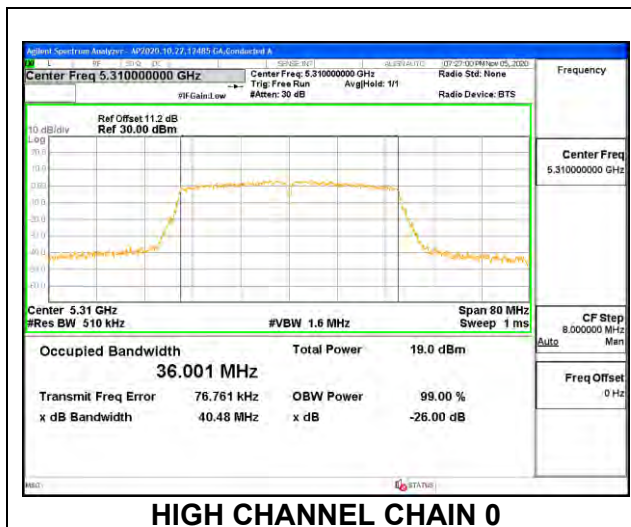
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5270	36.079	36.022
High	5310	36.001	36.067

LOW CHANNEL



HIGH CHANNEL

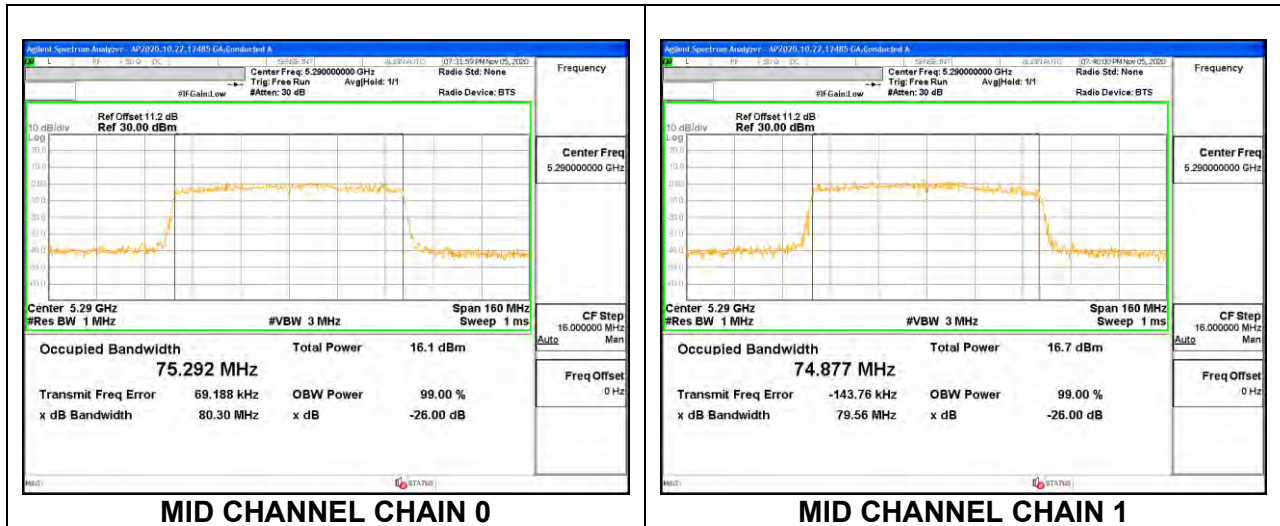


9.3.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Mid	5290	75.292	74.877

MID CHANNEL

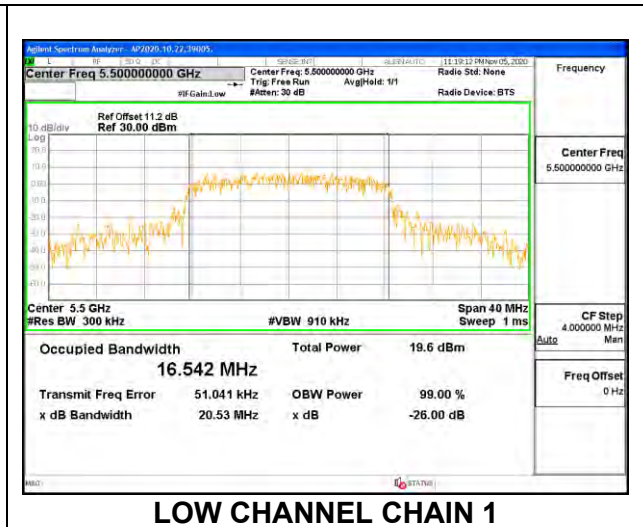
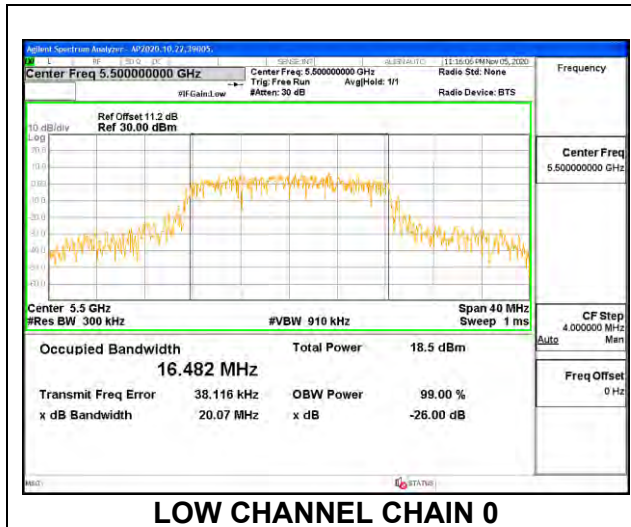


9.3.9. 802.11a MODE IN THE 5.6 GHz BAND

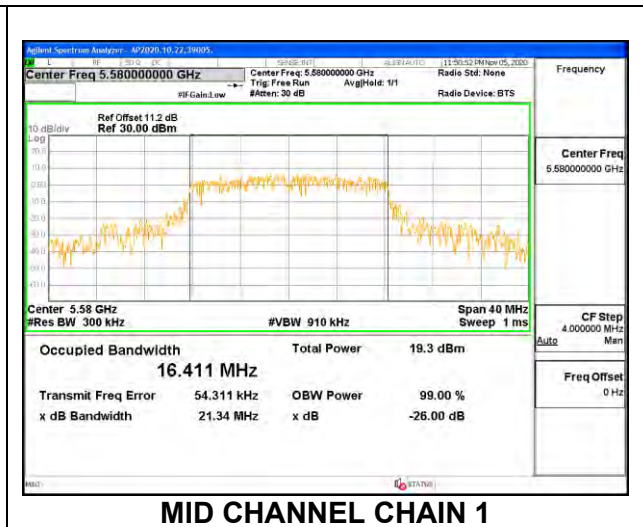
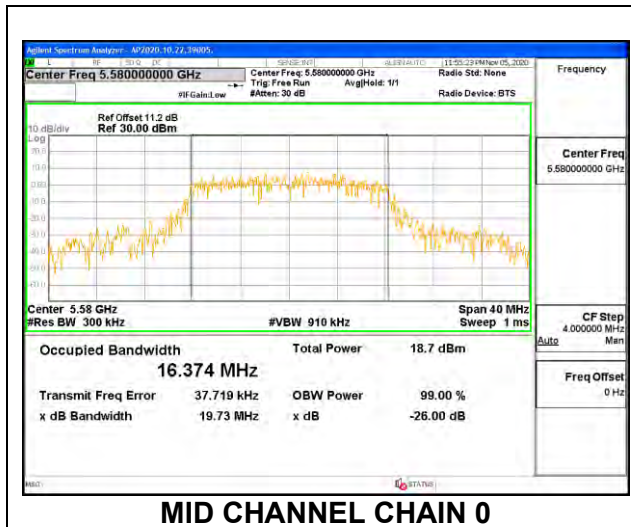
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5500	16.482	16.542
Mid	5580	16.374	16.411
High	5700	16.386	16.335

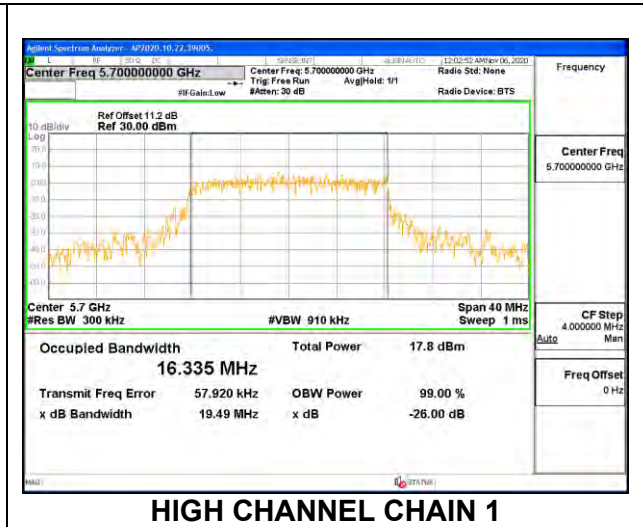
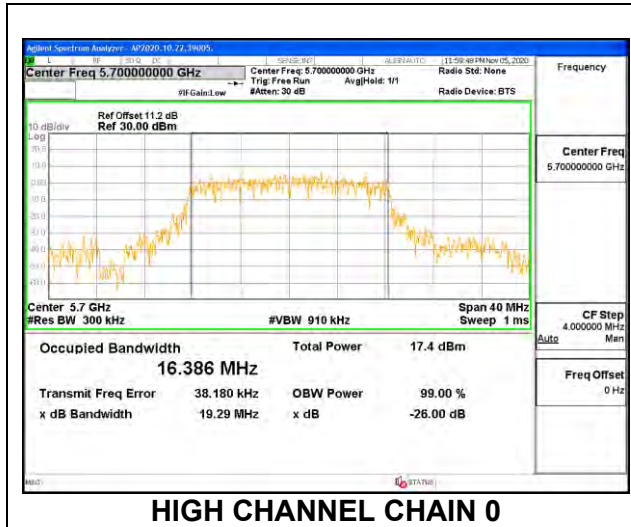
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

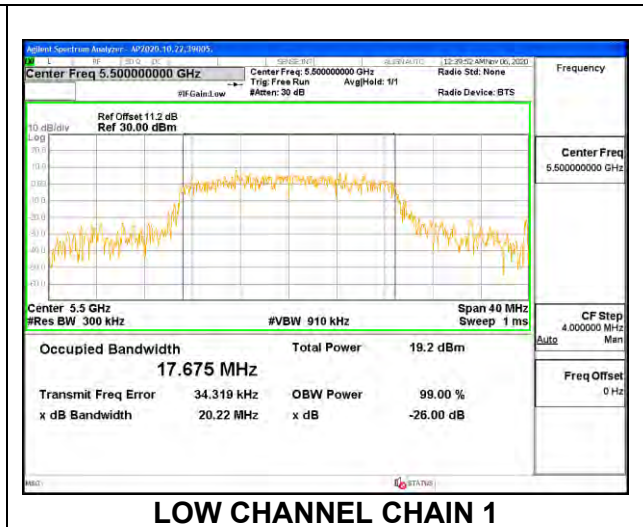
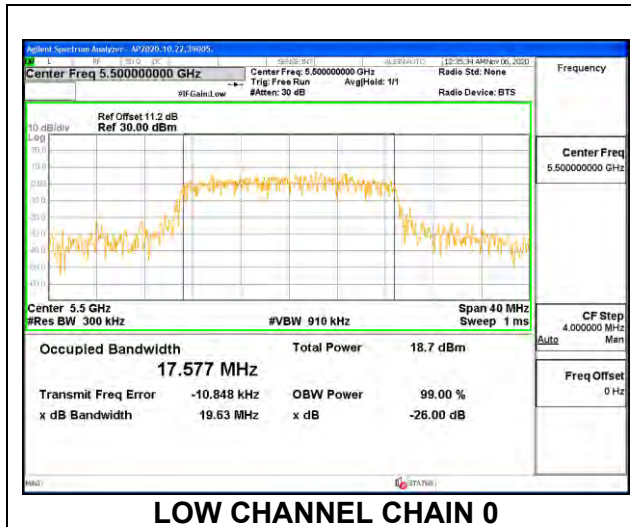


9.3.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

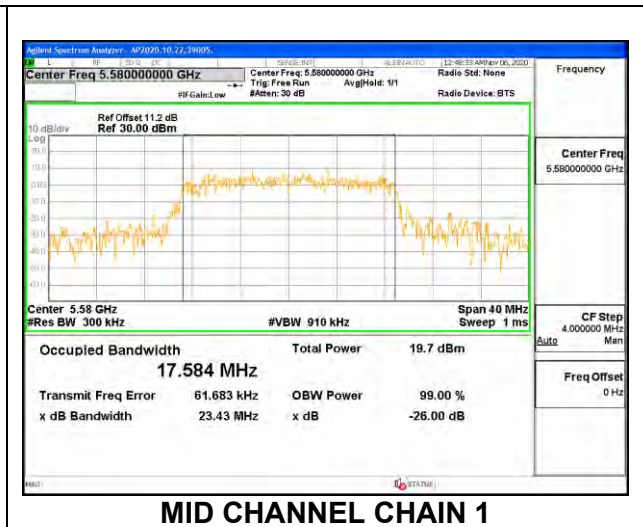
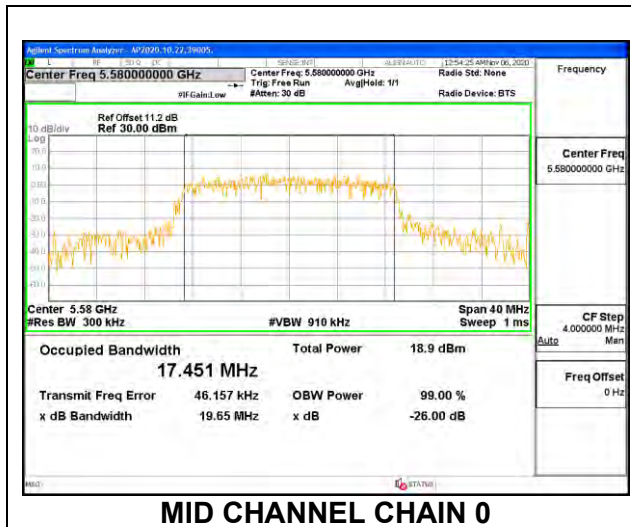
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5500	17.577	17.675
Mid	5580	17.451	17.584
High	5700	17.658	17.553

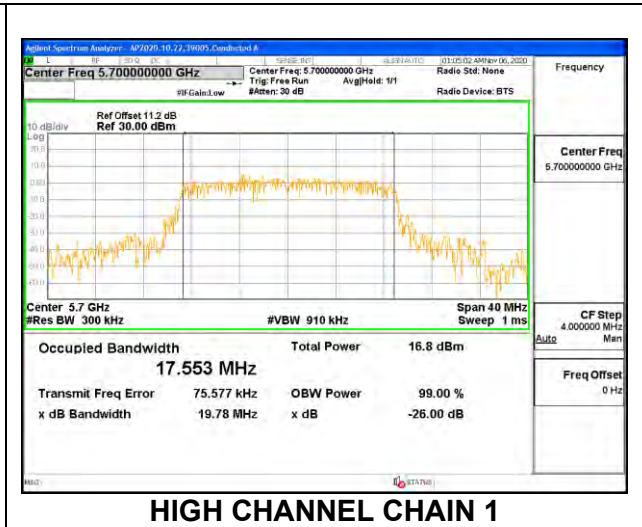
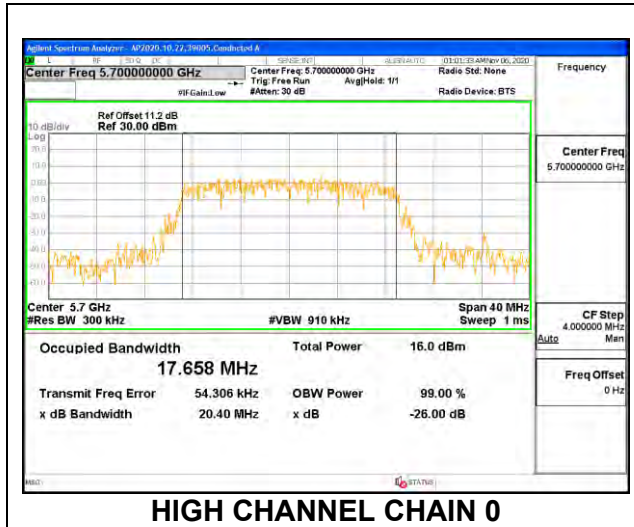
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

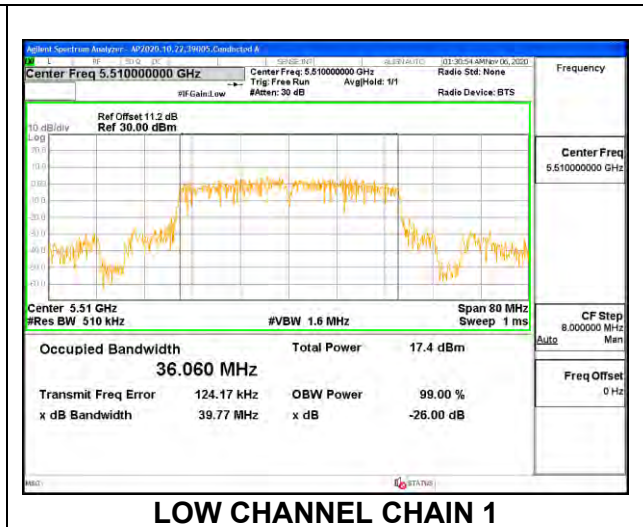
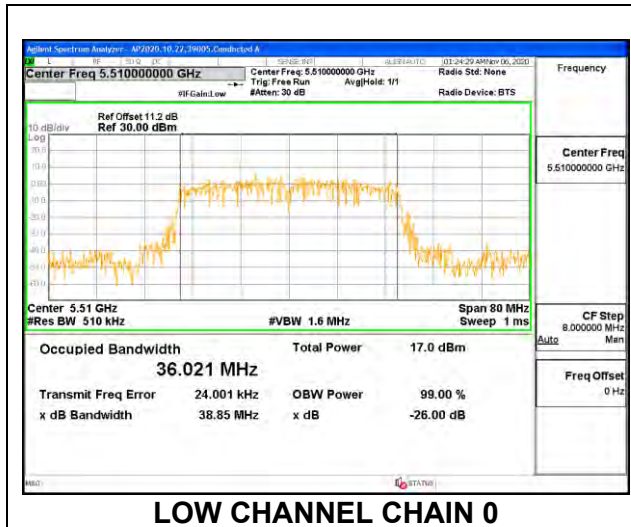


9.3.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

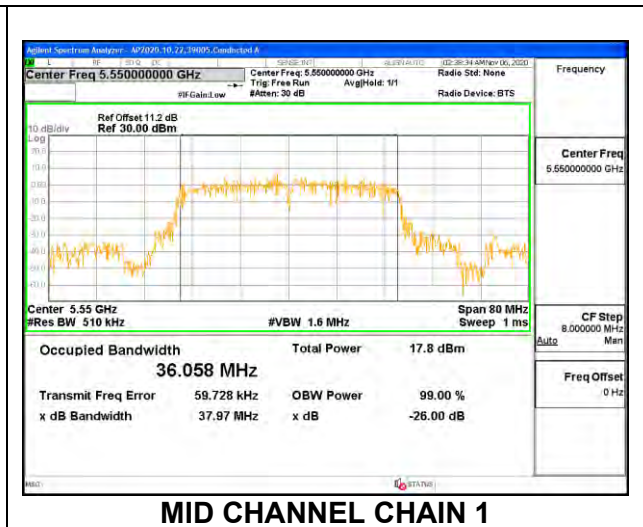
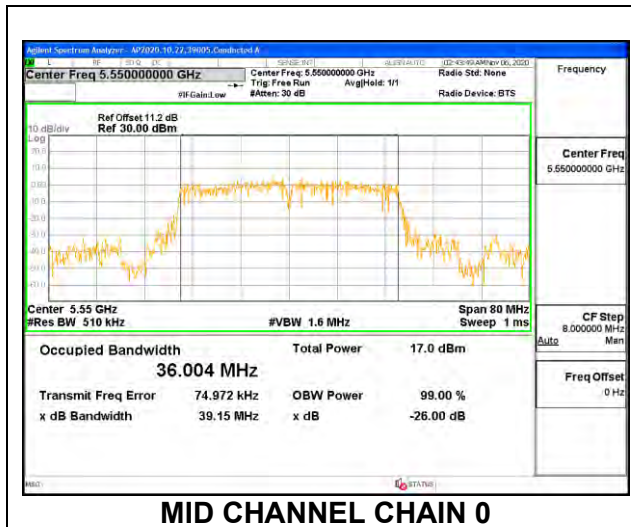
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5510	36.021	36.060
Mid	5550	36.004	36.058
High	5670	36.013	36.074

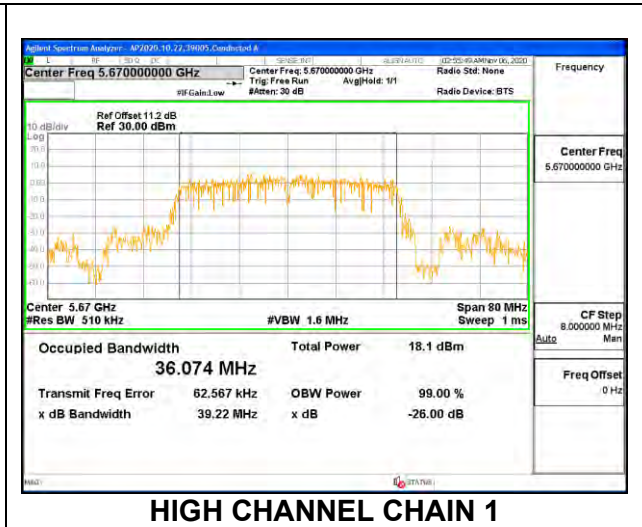
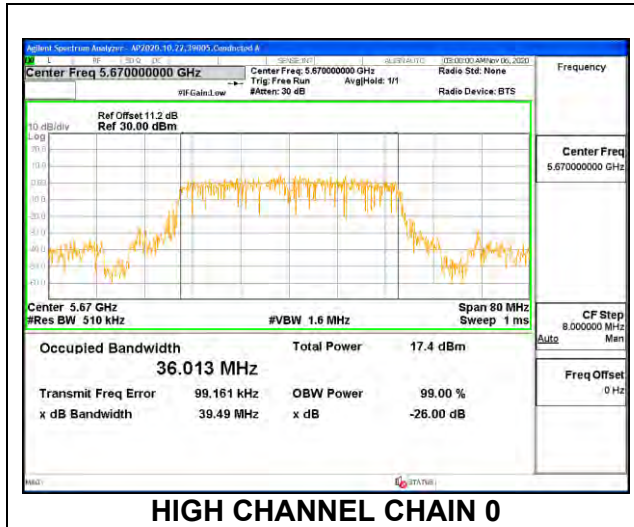
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

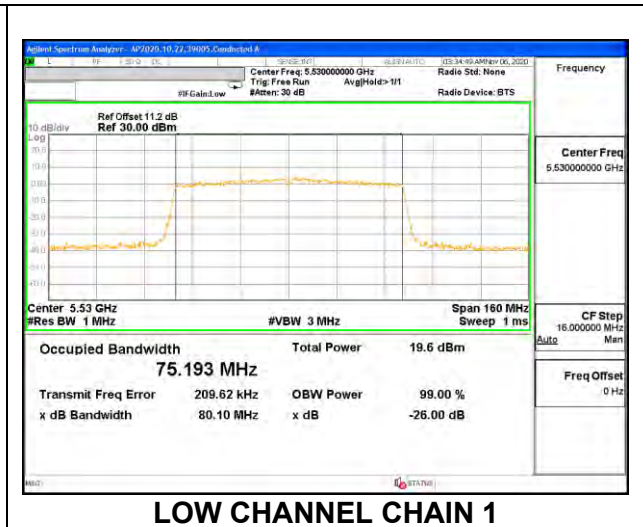
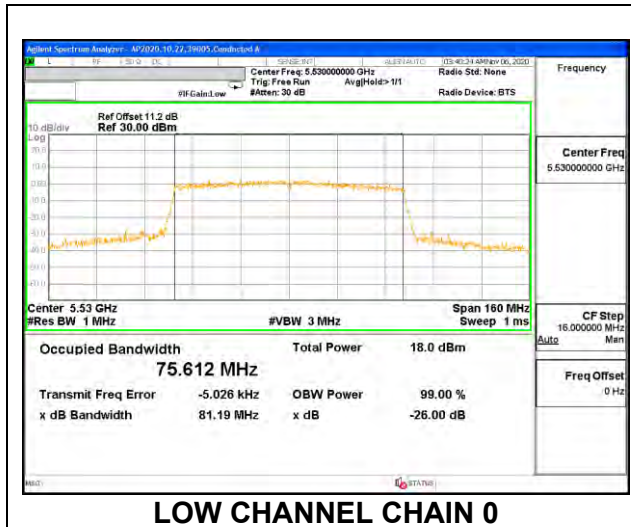


9.3.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

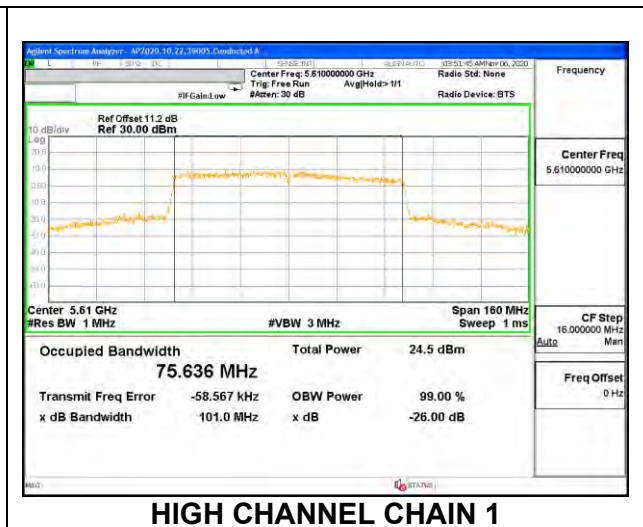
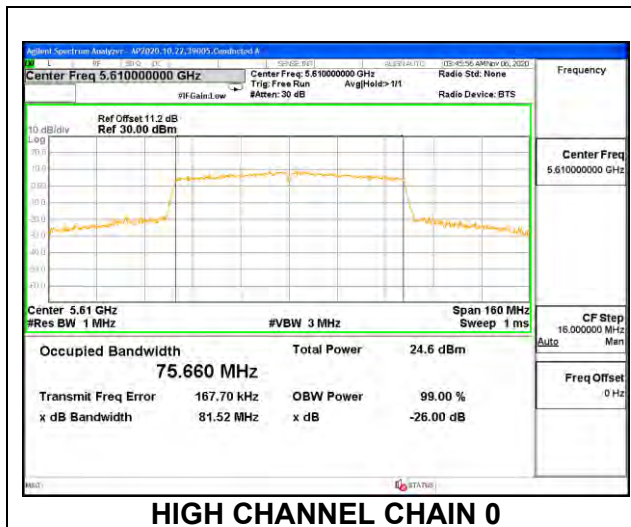
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5530	75.612	75.193
High	5610	75.660	75.636

LOW CHANNEL



HIGH CHANNEL

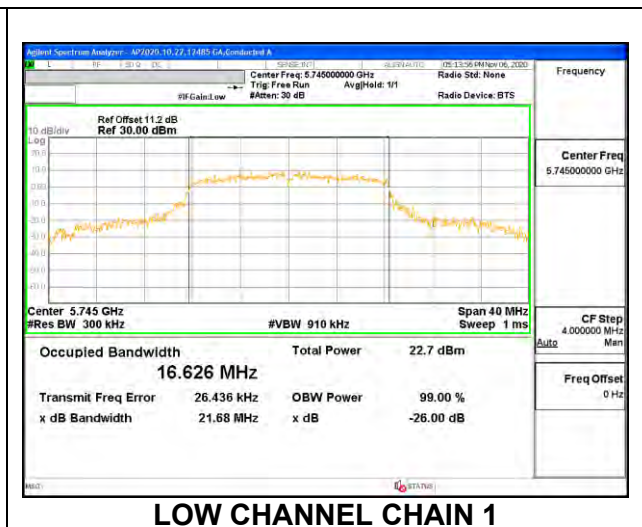
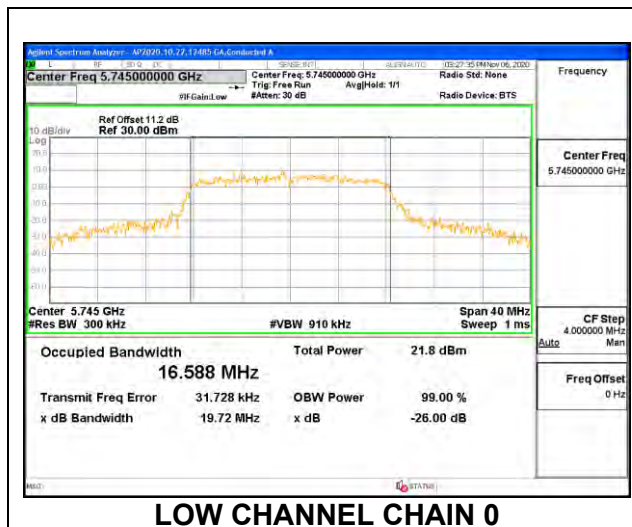


9.3.13. 802.11a MODE IN THE 5.8 GHz BAND

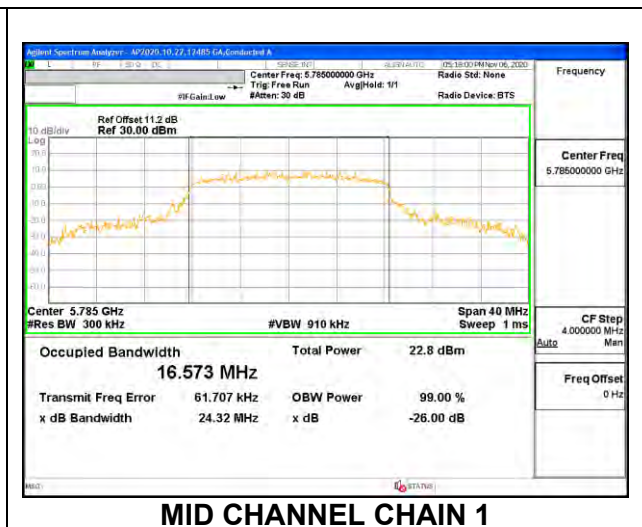
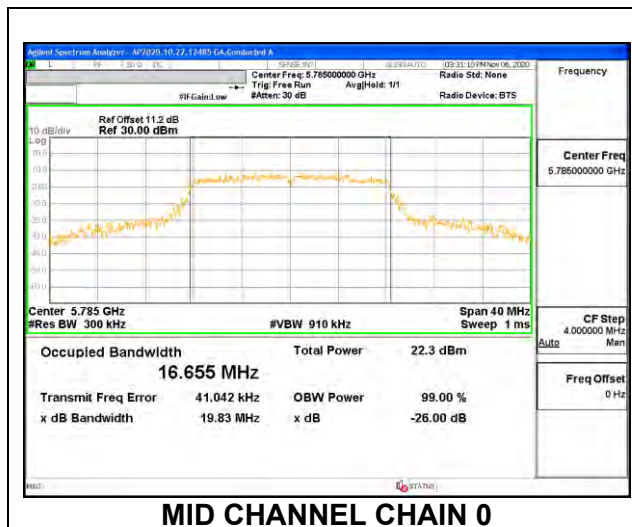
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5745	16.588	16.626
Mid	5785	16.655	16.573
High	5825	16.680	16.622

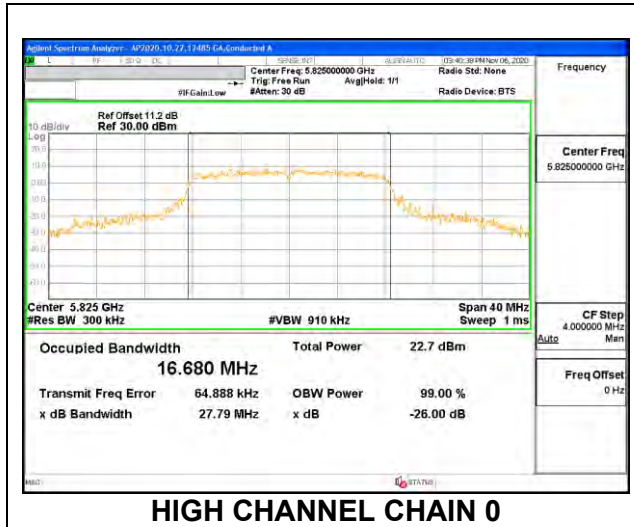
LOW CHANNEL



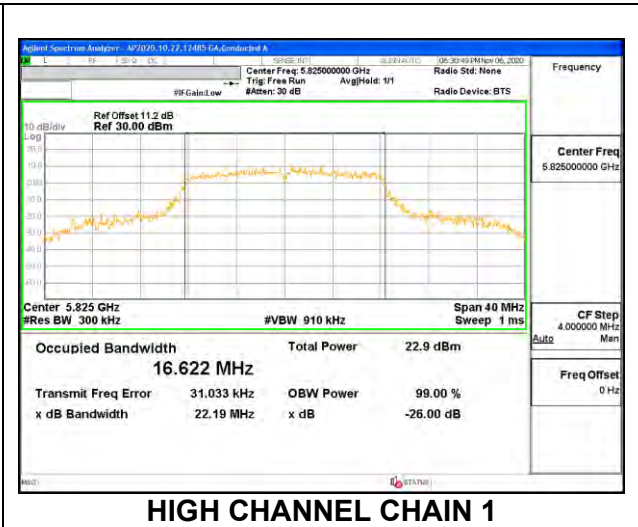
MID CHANNEL



HIGH CHANNEL



HIGH CHANNEL CHAIN 0



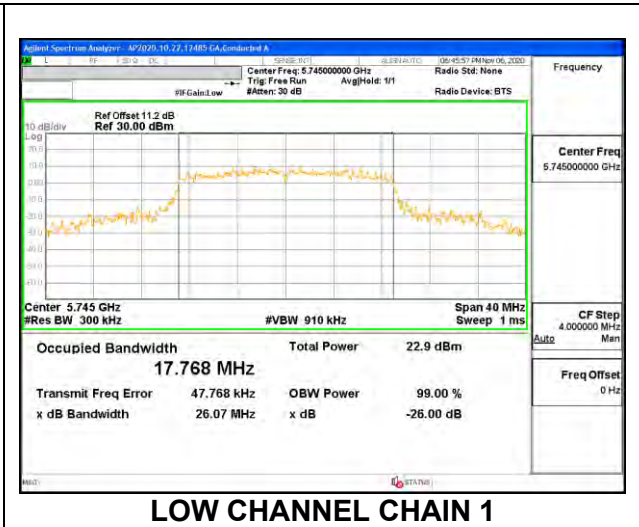
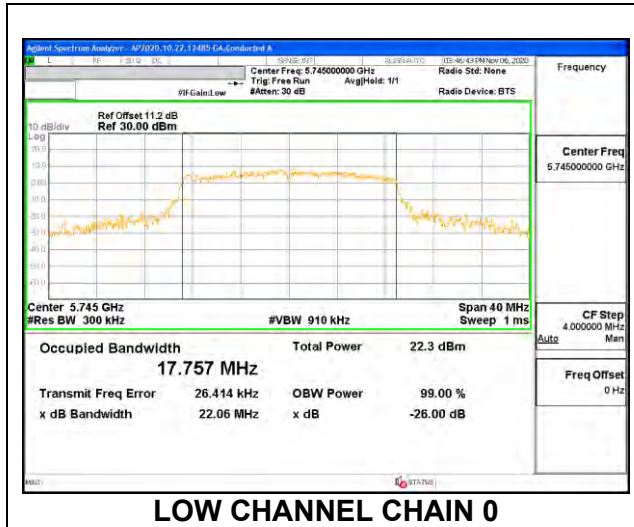
HIGH CHANNEL CHAIN 1

9.3.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

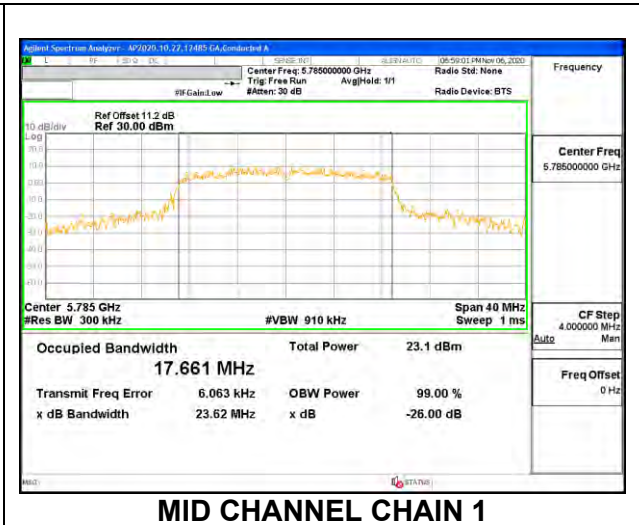
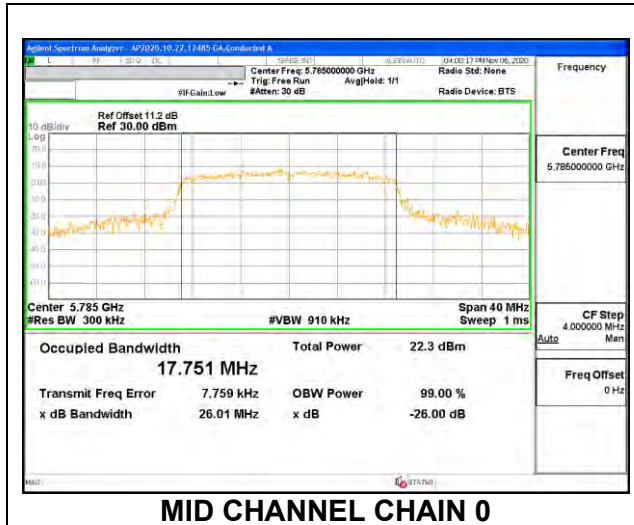
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5745	17.757	17.768
Mid	5785	17.751	17.661
High	5825	17.760	17.751

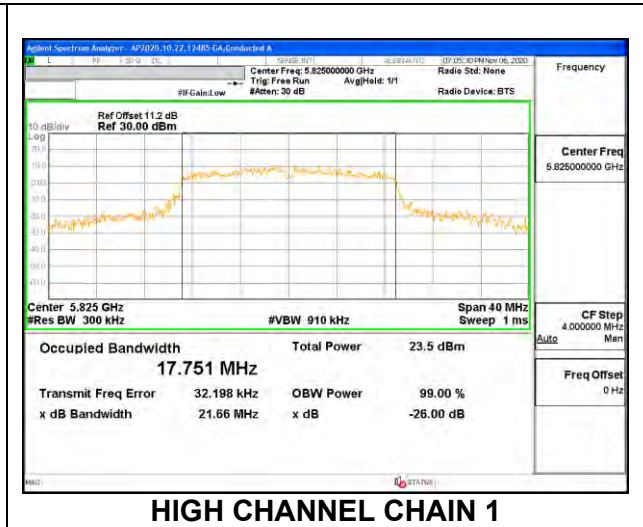
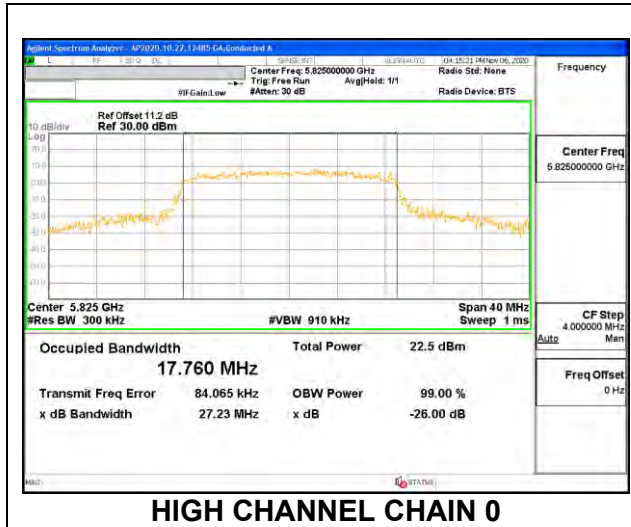
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

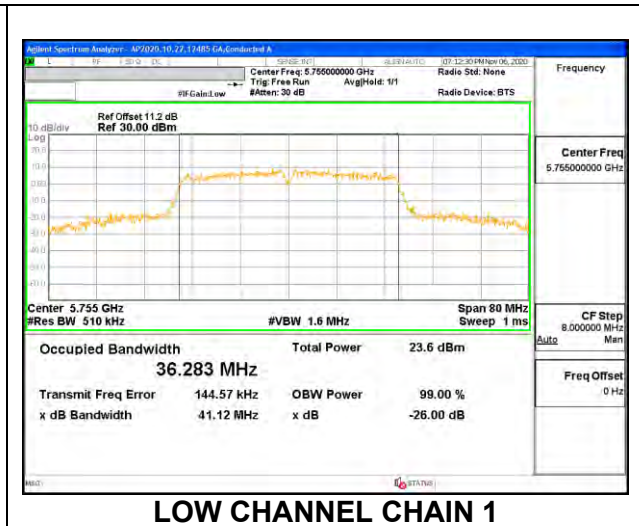
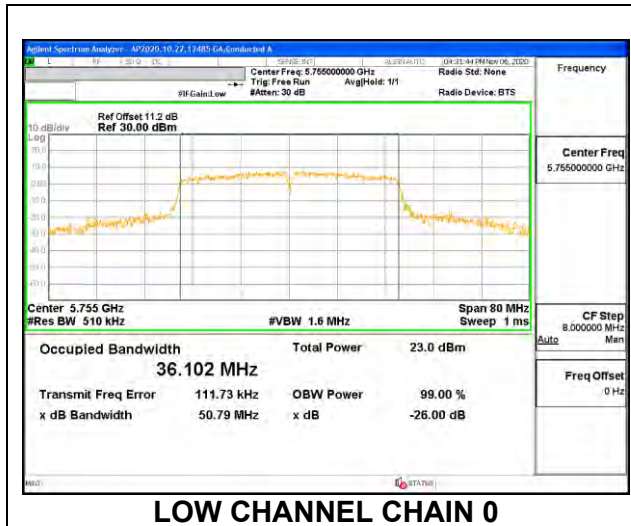


9.3.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

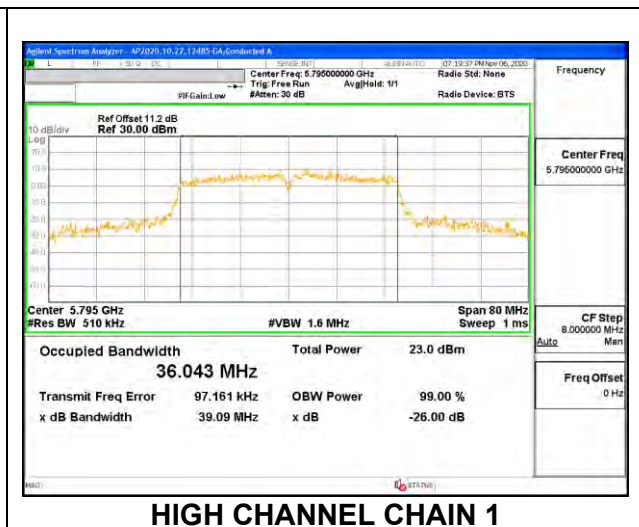
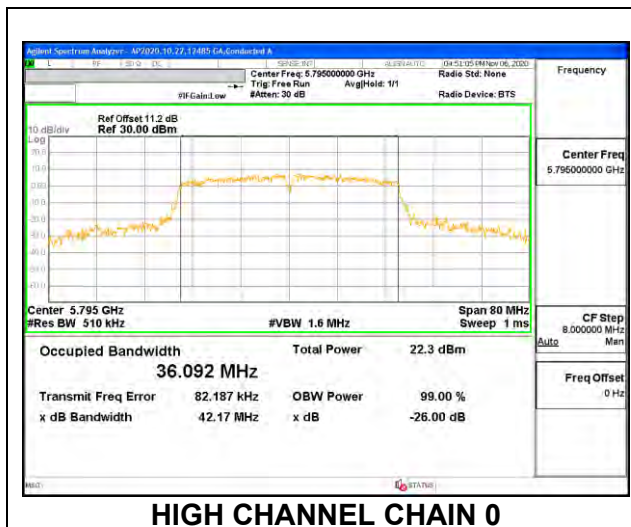
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5755	36.102	36.283
High	5795	36.092	36.043

LOW CHANNEL



HIGH CHANNEL

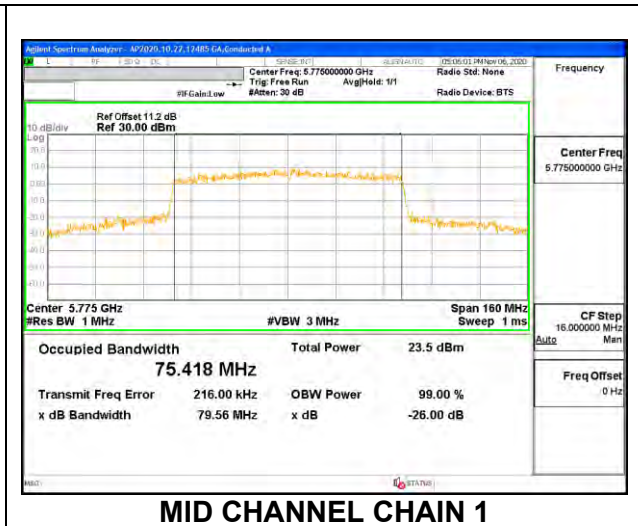
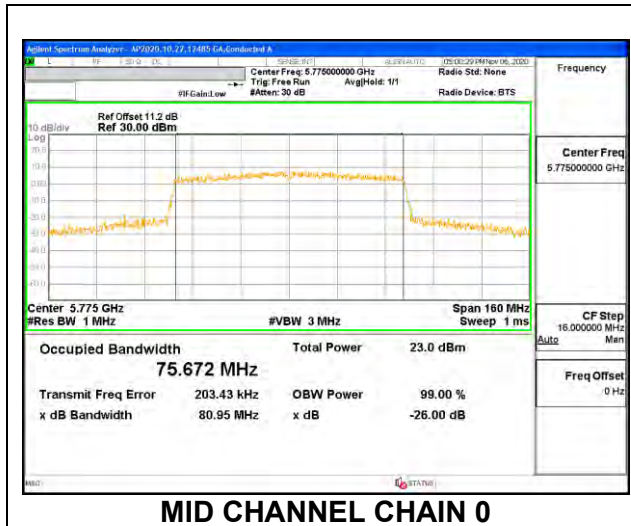


9.3.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Mid	5775	75.672	75.418

MID CHANNEL



9.4. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

RSS-247 6.2.4.1

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

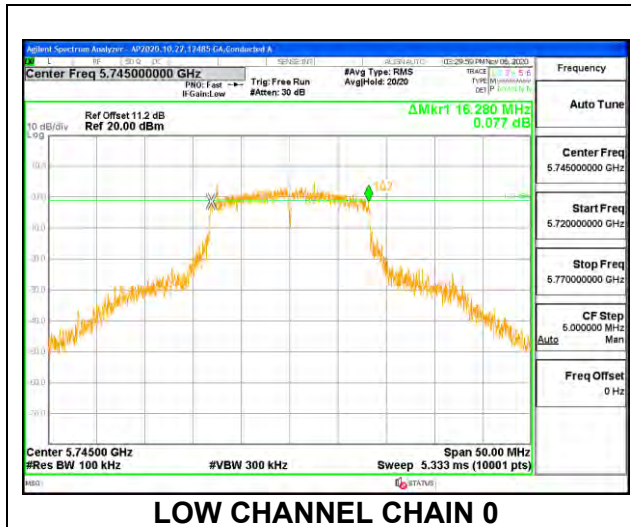
RESULTS

9.4.1. 802.11a MODE IN THE 5.8 GHz BAND

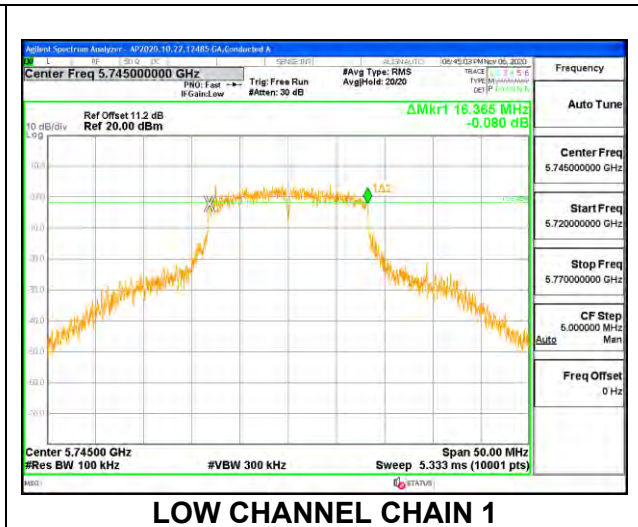
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	16.280	16.365	0.5
Mid	5785	16.295	16.275	0.5
High	5825	16.310	16.325	0.5

LOW CHANNEL

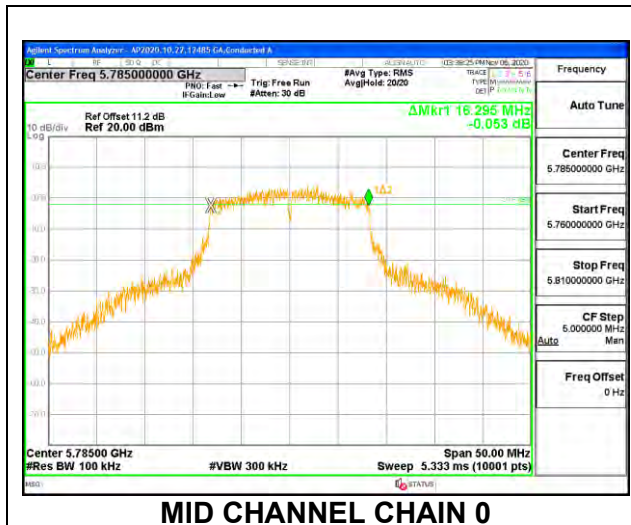


LOW CHANNEL CHAIN 0

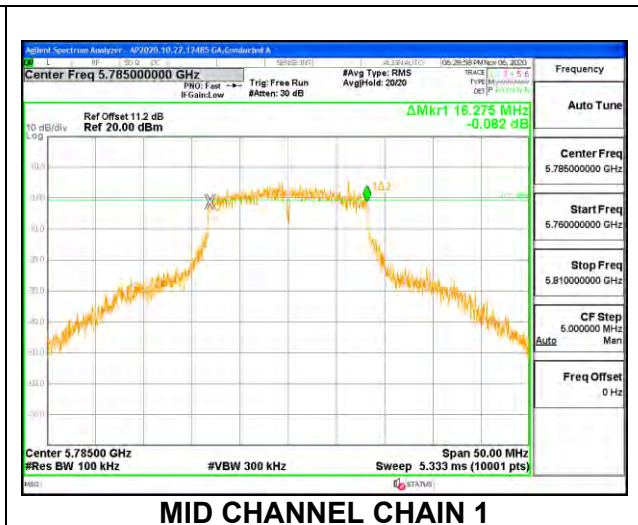


LOW CHANNEL CHAIN 1

MID CHANNEL

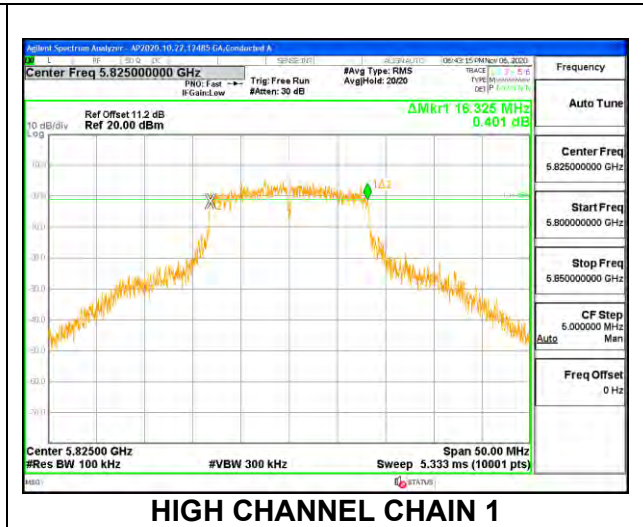
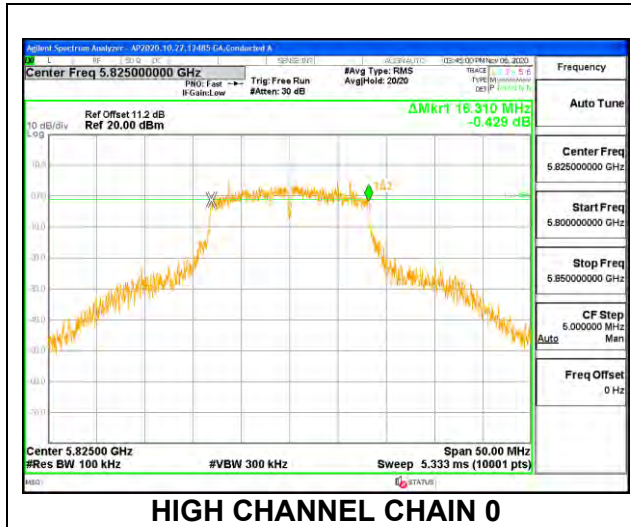


MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

HIGH CHANNEL

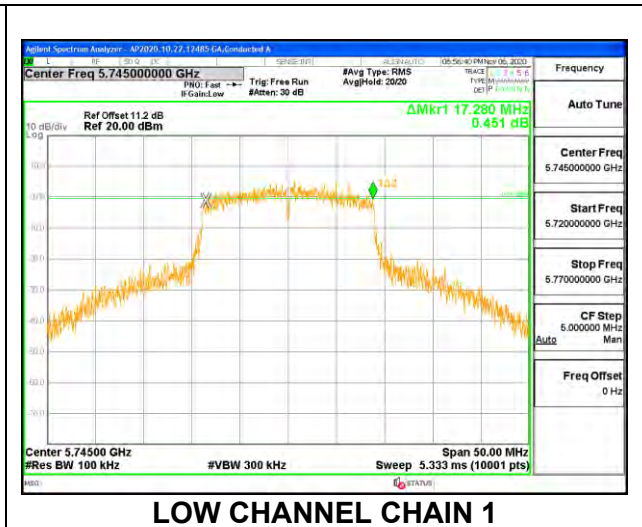
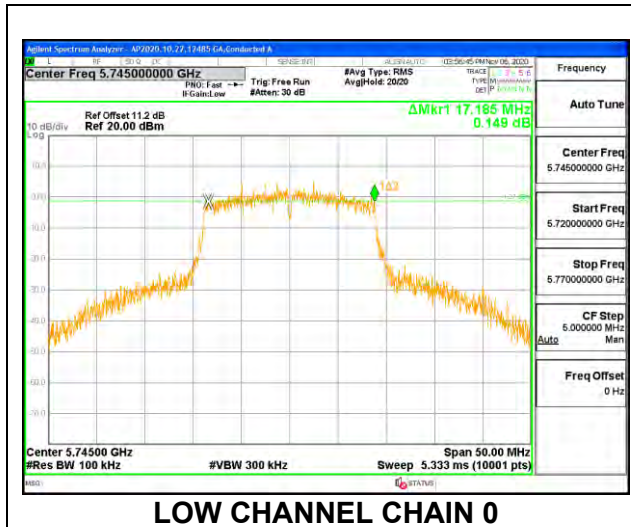


9.4.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

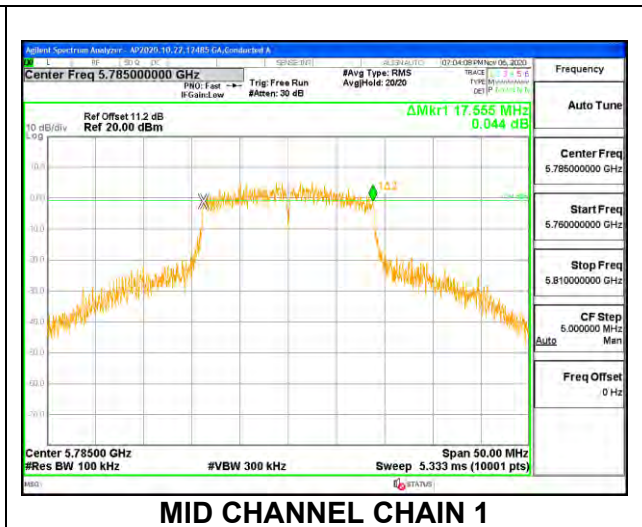
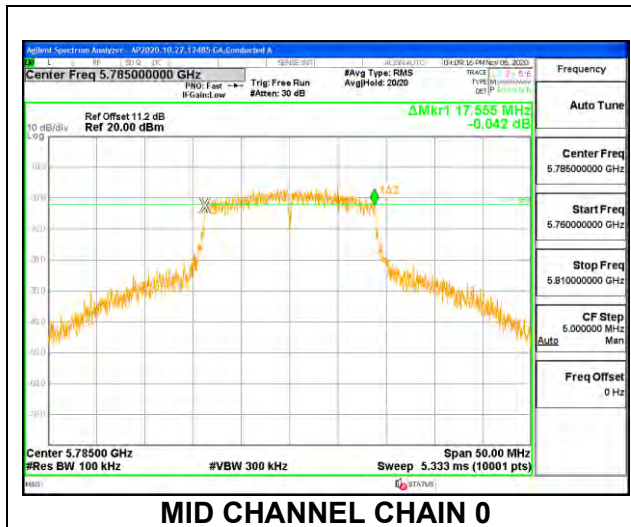
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	17.185	17.280	0.5
Mid	5785	17.555	17.555	0.5
High	5825	17.180	17.345	0.5

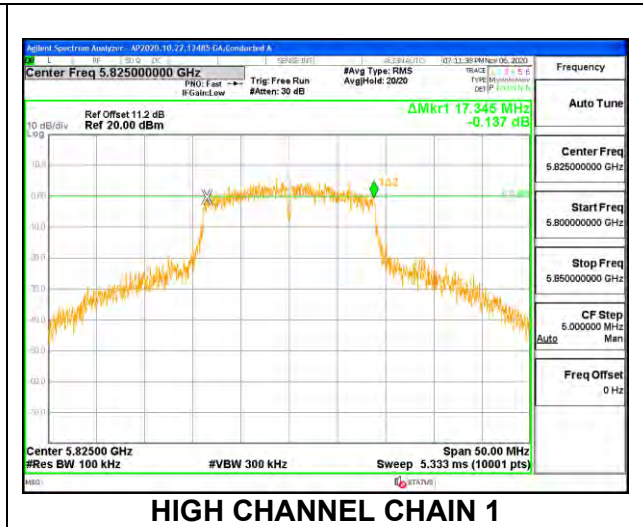
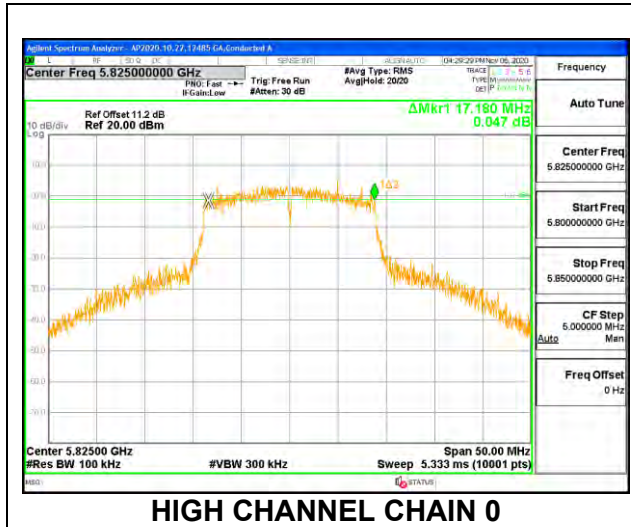
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

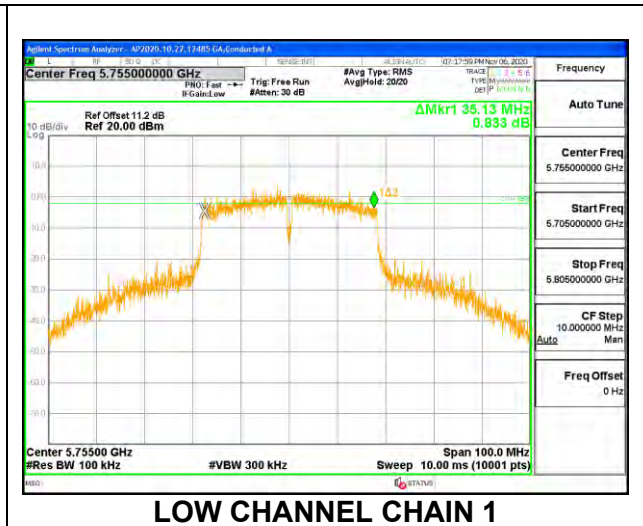
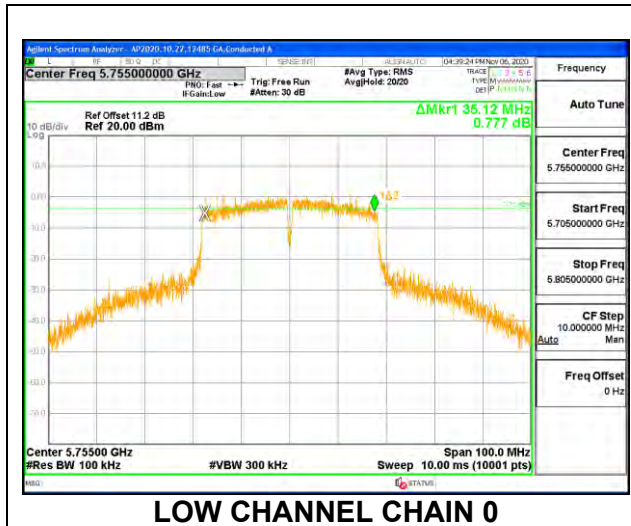


9.4.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

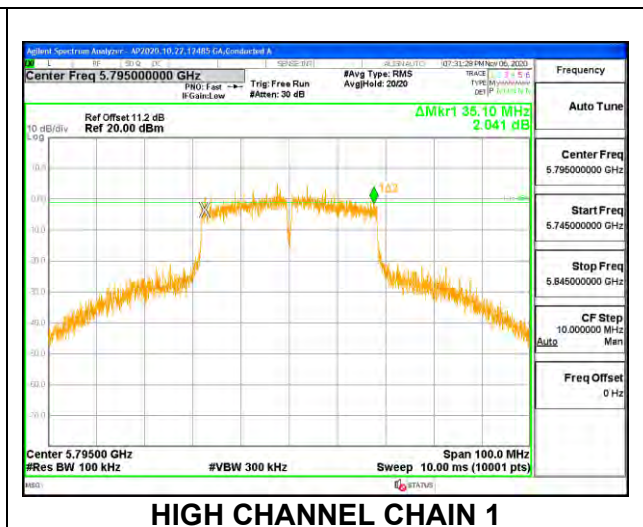
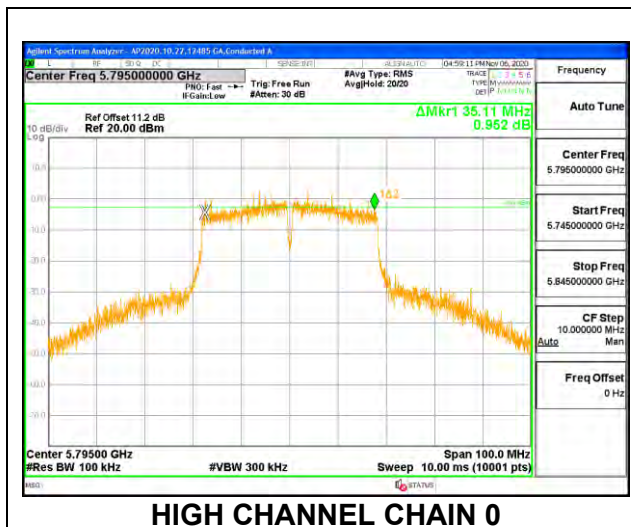
2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5755	35.12	35.13	0.5
High	5795	35.11	35.10	0.5

LOW CHANNEL



HIGH CHANNEL

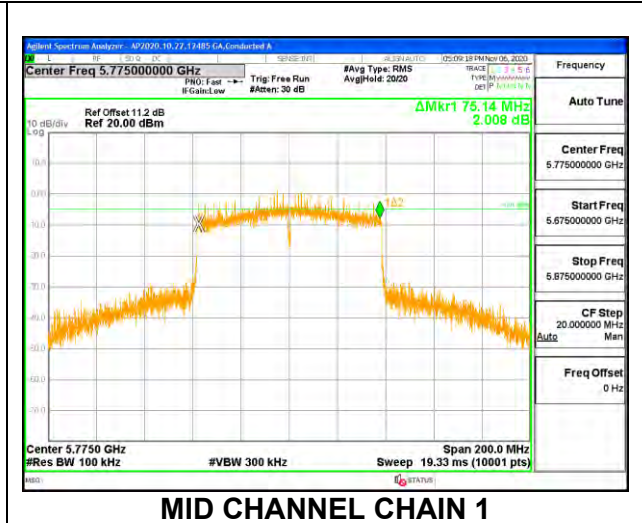
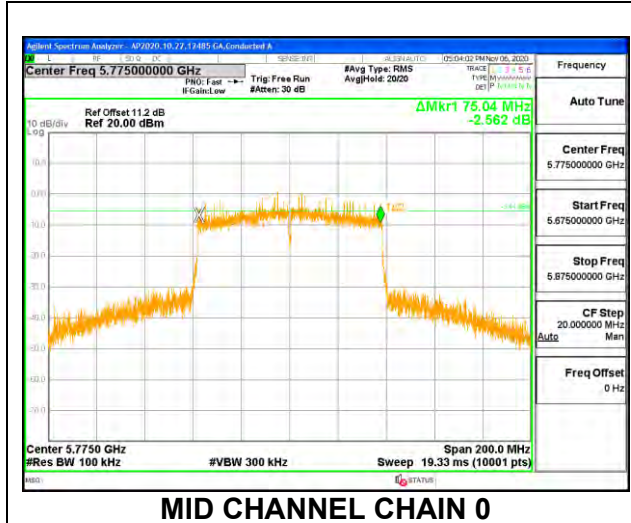


9.4.4. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

2TX CHAIN 0 + CHAIN 1

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Mid	5775	75.04	75.14	0.5

MID CHANNEL



9.5. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Bands 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Band 5.725-5.85 GHz

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

RSS-247

Band 5.15-5.25 GHz

The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10}B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

Band 5.25-5.35 GHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10}B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Bands 5.47-5.6 GHz and 5.65-5.725 GHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10}B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Band 5.725-5.85 GHz

The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

TEST PROCEDURE

The measurement method used for output power is KDB 789033 D02 v02r01, Section E.3.b (Method PM-G) and for straddles channels KDB 789033 D02 v02r01, Section E.2.b (Method SA-1) was used.

The measurement method used for power spectral density is KDB 789033 D02 v02r01, Section F

DIRECTIONAL ANTENNA GAIN

The directional gains at Vertical Orientation are as follows:

Vertical Polarization (Worst Case)

Band (GHz)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5.2	2.6	2.6	2.6
5.3	3.2	3.2	3.2
5.6	3.5	3.5	3.5
5.8	2.2	2.2	2.2

Horizontal Polarization

Band (GHz)	Chain 0 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5.2	2.5	2.5	2.5
5.3	2.1	2.1	2.1
5.6	2.0	2.0	2.0
5.8	1.9	1.9	1.9

NOTE: Highest antenna gain is used to represent worst-case results.

RESULTS

9.5.1. 802.11a MODE IN THE 5.2 GHz BAND

2TX CHAIN 0 + CHAIN 1 (FCC)

Test Engineer:	19497 AF
Test Date:	11/13/2020

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5180	2.60	2.60	24.00	11.00
Mid	5200	2.60	2.60	24.00	11.00
High	5240	2.60	2.60	24.00	11.00

Duty Cycle CF (dB)	0.16	Included in Calculations of Corr'd PSD
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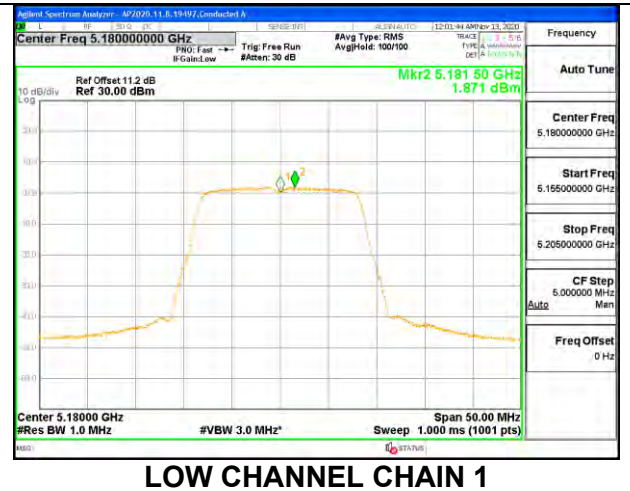
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	11.49	12.57	15.07	24.00	-8.93
Mid	5200	12.65	13.67	16.20	24.00	-7.80
High	5240	12.67	13.78	16.27	24.00	-7.73

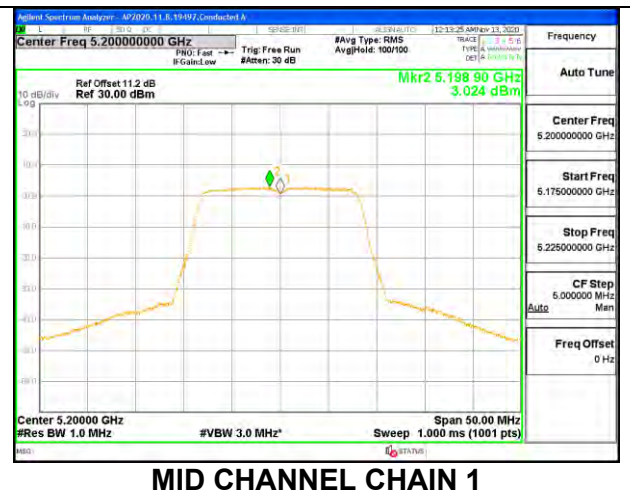
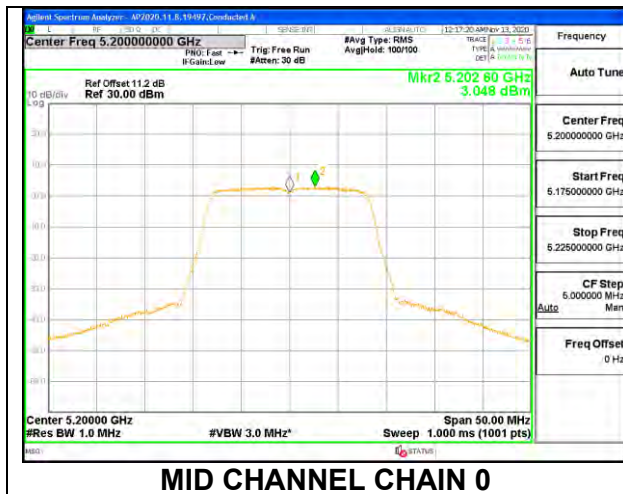
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5180	2.085	1.871	5.15	11.00	-5.85
Mid	5200	3.048	3.024	6.21	11.00	-4.79
High	5240	2.892	2.976	6.10	11.00	-4.90

LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



(IC)

Test Engineer:	45256 JB
Test Date:	11/04/2020

(Note: IC PSD was tested by radiated method)

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 99% BW (MHz)
Low	5180	16.414
Mid	5200	16.462
High	5240	16.502

Limits

Channel	Frequency (MHz)	ISED EIRP Limit (dBm)	ISED eirp PSD Limit (dBm/ 1MHz)
Low	5180	22.15	10.00
Mid	5200	22.16	10.00
High	5240	22.18	10.00

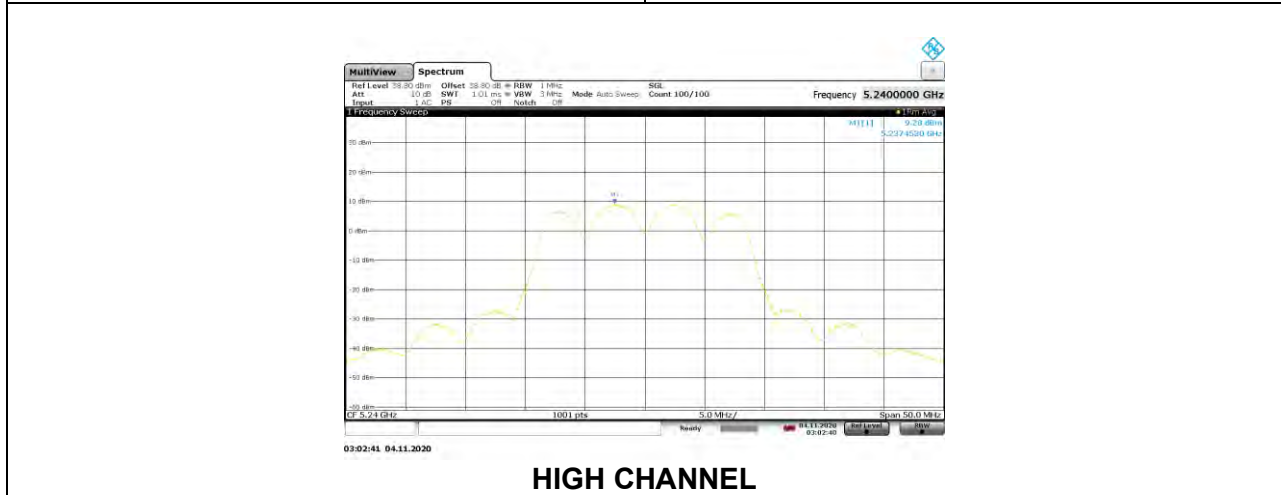
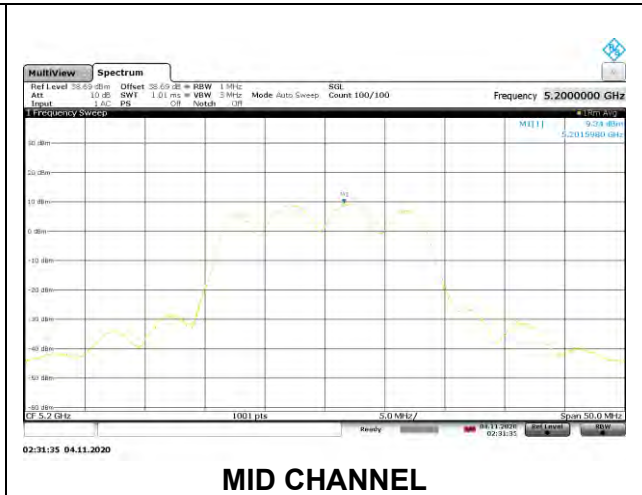
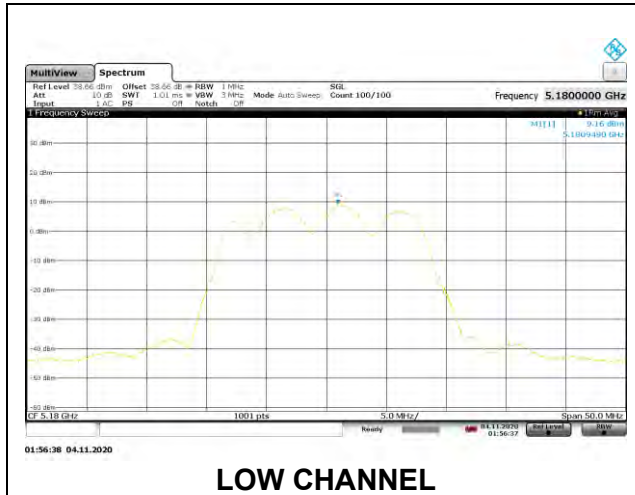
Duty Cycle CF (dB)	0.16	Included in Calculations of Corr'd PSD
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Output Power Results

Channel	Frequency (MHz)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	16.87	22.15	-5.28
Mid	5200	17.91	22.16	-4.25
High	5240	16.58	22.18	-5.60

PSD Results

Channel	Frequency (MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	9.32	10.00	-0.68
Mid	5200	9.50	10.00	-0.50
High	5240	9.44	10.00	-0.56



9.5.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX CHAIN 0 + CHAIN 1 (FCC)

Test Engineer:	19497 AF
Test Date:	11/13/2020

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	2.60	2.60	24.00	11.00
Mid	5200	2.60	2.60	24.00	11.00
High	5240	2.60	2.60	24.00	11.00

Duty Cycle CF (dB)	0.18	Included in Calculations of Corr'd PSD
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	12.80	13.81	16.34	24.00	-7.66
Mid	5200	12.62	13.69	16.20	24.00	-7.80
High	5240	12.82	13.76	16.33	24.00	-7.67

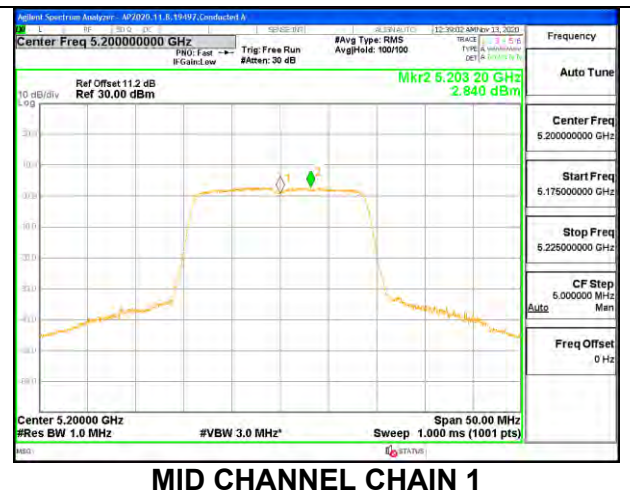
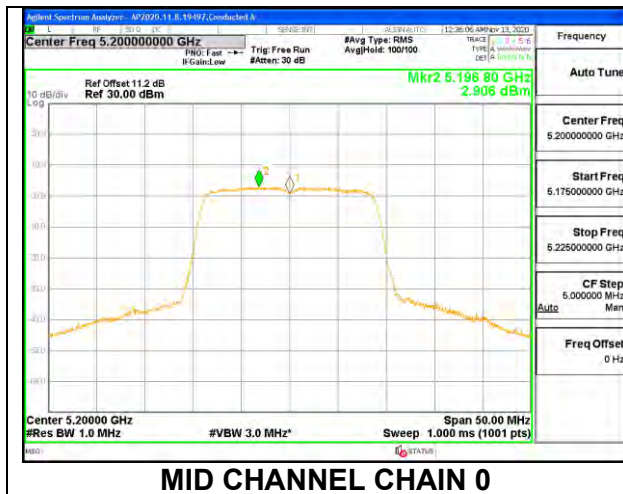
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	2.901	2.909	6.10	11.00	-4.90
Mid	5200	2.906	2.840	6.06	11.00	-4.94
High	5240	2.940	3.028	6.17	11.00	-4.83

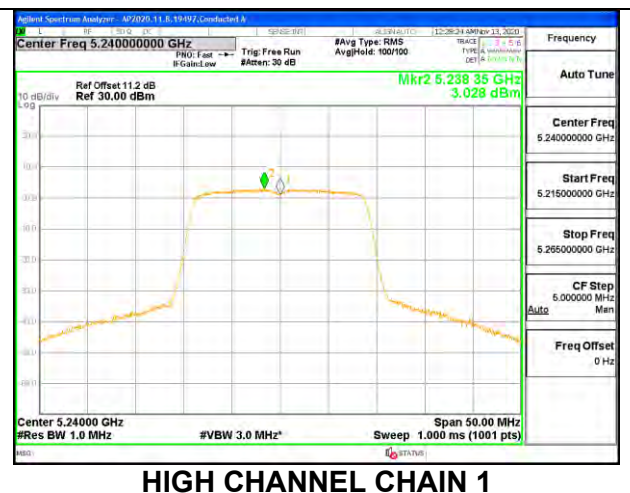
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



(IC)

Test Engineer:	45256 JB
Test Date:	11/04/2020

(Note: IC PSD was tested by radiated method)

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 99% BW (MHz)
Low	5180	17.616
Mid	5200	17.627
High	5240	17.642

Limits

Channel	Frequency (MHz)	ISED EIRP Limit (dBm)	ISED eirp PSD Limit (dBm/ 1MHz)
Low	5180	22.46	10.00
Mid	5200	22.46	10.00
High	5240	22.47	10.00

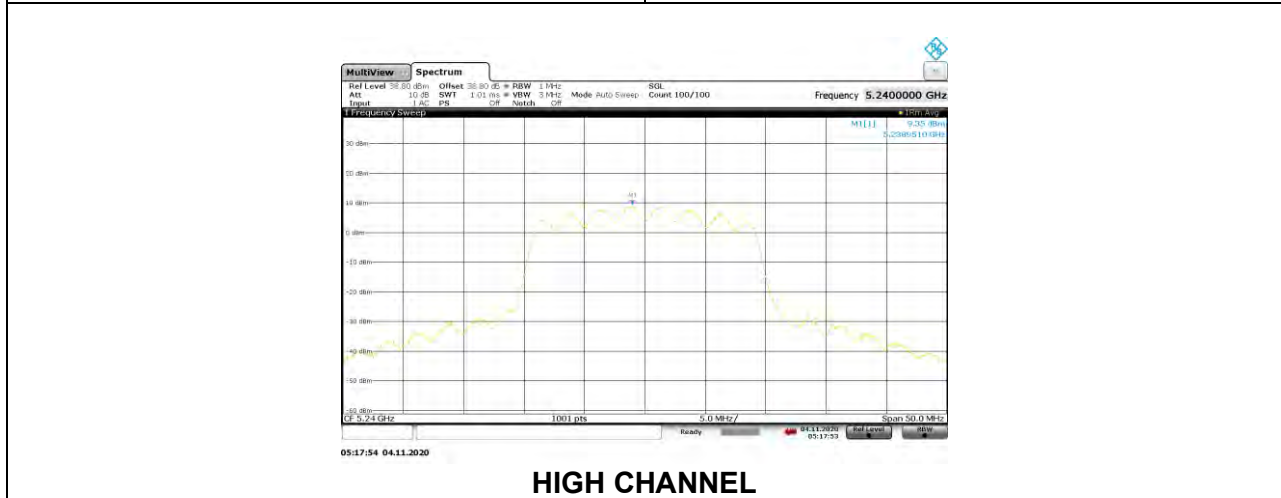
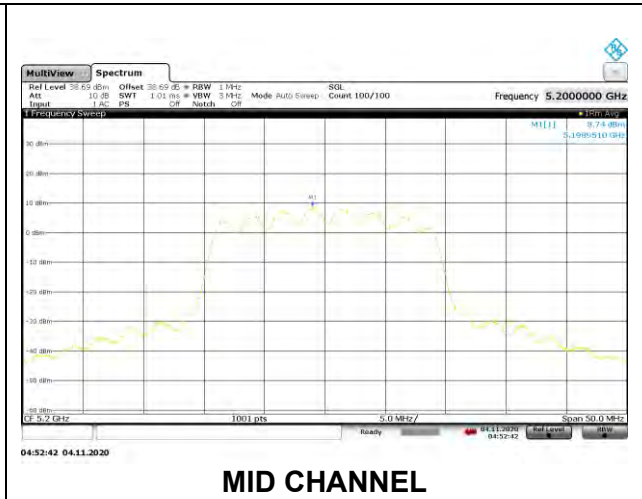
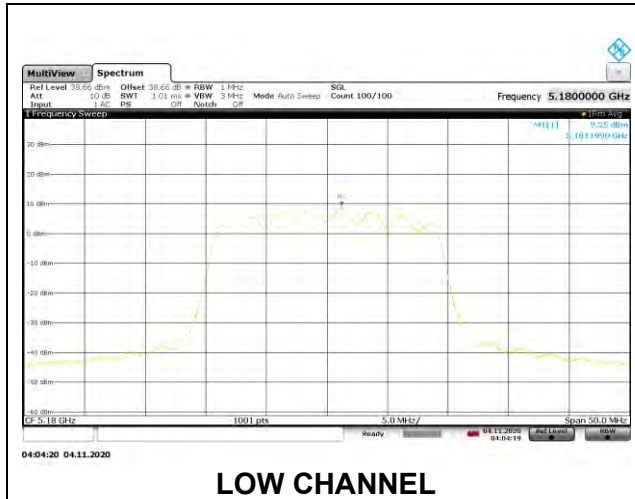
Duty Cycle CF (dB)	0.18	Included in Calculations of Corr'd PSD
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Output Power Results

Channel	Frequency (MHz)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	16.91	22.46	-5.55
Mid	5200	16.82	22.46	-5.64
High	5240	17.51	22.47	-4.96

PSD Results

Channel	Frequency (MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	9.43	10.00	-0.57
Mid	5200	8.92	10.00	-1.08
High	5240	9.53	10.00	-0.47



9.5.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX CHAIN 0 + CHAIN 1 (FCC)

Test Engineer:	19497 AF
Test Date:	11/13/2020

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5190	2.60	2.60	24.00	11.00
High	5230	2.60	2.60	24.00	11.00

Duty Cycle CF (dB)	0.34	Included in Calculations of Corr'd PSD
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	13.01	14.05	16.57	24.00	-7.43
High	5230	13.02	14.20	16.66	24.00	-7.34

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5190	3.423	3.329	6.73	11.00	-4.27
High	5230	2.142	2.334	5.59	11.00	-5.41