



CERTIFICATION TEST REPORT

Report Number. : 12380932-E5V1

Applicant : SONY MOBILE COMMUNICATIONS, INC.
4-12-3 HIGASHI-SHINAGAWA
SHINAGAWA-KU, TOKYO, 140-0002, JAPAN

FCC ID : PY7-12644J

EUT Description : GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC

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

Date Of Issue:

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REPORT REVISION HISTORY

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V1	7/20/2018	Initial Issue	

TABLE OF CONTENTS

REPORT REVISION HISTORY	2
TABLE OF CONTENTS	3
1. ATTESTATION OF TEST RESULTS	6
2. TEST METHODOLOGY	7
3. FACILITIES AND ACCREDITATION	7
4. CALIBRATION AND UNCERTAINTY	8
4.1. MEASURING INSTRUMENT CALIBRATION	8
4.2. SAMPLE CALCULATION	8
4.3. MEASUREMENT UNCERTAINTY.....	8
5. EQUIPMENT UNDER TEST	9
5.1. EUT DESCRIPTION	9
5.2. MAXIMUM OUTPUT POWER.....	10
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	11
5.4. SOFTWARE AND FIRMWARE.....	11
5.5. WORST-CASE CONFIGURATION AND MODE.....	12
5.6. DESCRIPTION OF TEST SETUP.....	13
6. MEASUREMENT METHOD.....	16
7. TEST AND MEASUREMENT EQUIPMENT	17
8. ANTENNA PORT TEST RESULTS	19
8.1. ON TIME AND DUTY CYCLE.....	19
8.2. 26 dB BANDWIDTH.....	21
8.2.1. 802.11a MODE IN THE 5.2 GHz BAND	22
8.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND	24
8.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND	26
8.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND	27
8.2.5. 802.11a MODE IN THE 5.3 GHz BAND	28
8.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND	30
8.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND	32
8.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND	33
8.2.9. 802.11a MODE IN THE 5.6 GHz BAND	34
8.2.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND	36
8.2.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND	38
8.2.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND	40
8.2.13. 802.11a MODE IN THE 5.8 GHz BAND	42
8.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND	44

8.2.15.	802.11n HT40 MODE IN THE 5.8 GHz BAND	46
8.2.16.	802.11ac VHT80 MODE IN THE 5.8 GHz BAND	47
8.3.	99% BANDWIDTH.....	48
8.3.1.	802.11a MODE IN THE 5.2 GHz BAND	49
8.3.2.	802.11n HT20 MODE IN THE 5.2 GHz BAND	51
8.3.3.	802.11n HT40 MODE IN THE 5.2 GHz BAND	53
8.3.4.	802.11ac VHT80 MODE IN THE 5.2 GHz BAND	54
8.3.5.	802.11a MODE IN THE 5.3 GHz BAND	55
8.3.6.	802.11n HT20 MODE IN THE 5.3 GHz BAND	57
8.3.7.	802.11n HT40 MODE IN THE 5.3 GHz BAND	59
8.3.8.	802.11ac VHT80 MODE IN THE 5.3 GHz BAND	60
8.3.9.	802.11a MODE IN THE 5.6 GHz BAND	61
8.3.10.	802.11n HT20 MODE IN THE 5.6 GHz BAND	63
8.3.11.	802.11n HT40 MODE IN THE 5.6 GHz BAND	65
8.3.12.	802.11ac VHT80 MODE IN THE 5.6 GHz BAND	67
8.3.13.	802.11a MODE IN THE 5.8 GHz BAND	69
8.3.14.	802.11n HT20 MODE IN THE 5.8 GHz BAND	71
8.3.15.	802.11n HT40 MODE IN THE 5.8 GHz BAND	73
8.3.16.	802.11ac VHT80 MODE IN THE 5.8 GHz BAND	74
8.4.	6 dB BANDWIDTH.....	75
8.4.1.	802.11a MODE IN THE 5.8 GHz BAND	76
8.4.2.	802.11n HT20 MODE IN THE 5.8 GHz BAND	78
8.4.3.	802.11n HT40 MODE IN THE 5.8 GHz BAND	80
8.4.4.	802.11ac VHT80 MODE IN THE 5.8 GHz BAND	82
8.5.	OUTPUT POWER AND PSD.....	83
8.5.1.	802.11a MODE IN THE 5.2 GHz BAND	87
8.5.2.	802.11n HT20 MODE IN THE 5.2 GHz BAND	89
8.5.3.	802.11n HT40 MODE IN THE 5.2 GHz BAND	91
8.5.4.	802.11ac VHT80 MODE IN THE 5.2 GHz BAND	93
8.5.5.	802.11a MODE IN THE 5.3 GHz BAND	95
8.5.6.	802.11n HT20 MODE IN THE 5.3 GHz BAND	97
8.5.7.	802.11n HT40 MODE IN THE 5.3 GHz BAND	99
8.5.8.	802.11ac VHT80 MODE IN THE 5.3 GHz BAND	101
8.5.9.	802.11a MODE IN THE 5.6 GHz BAND	103
8.5.10.	802.11n HT20 MODE IN THE 5.6 GHz BAND	106
8.5.11.	802.11n HT40 MODE IN THE 5.6 GHz BAND	109
8.5.12.	802.11ac VHT80 MODE IN THE 5.6 GHz BAND	112
8.5.13.	802.11a MODE IN THE 5.8 GHz BAND	114
8.5.14.	802.11n HT20 MODE IN THE 5.8 GHz BAND	116
8.5.15.	802.11n HT40 MODE IN THE 5.8 GHz BAND	118
8.5.16.	802.11ac VHT80 MODE IN THE 5.8 GHz BAND	120
9.	RADIATED TEST RESULTS.....	122
9.1.	TRANSMITTER ABOVE 1 GHz.....	123
9.1.1.	TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND	123
9.1.2.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND	131
9.1.3.	TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND	139
9.1.4.	TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.2 GHz BAND	145
9.1.5.	TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND	149
9.1.6.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND	157
9.1.7.	TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.3 GHz BAND	165

9.1.8.	TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.3 GHz BAND	171
9.1.9.	TX ABOVE 1 GHz 802.11a MODE IN THE 5.6 GHz BAND	175
9.1.10.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.6 GHz BAND.....	187
9.1.11.	TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.6 GHz BAND.....	199
9.1.12.	TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.6 GHz BAND	211
9.1.13.	TX ABOVE 1 GHz 802.11a MODE IN THE 5.8 GHz BAND	221
9.1.14.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND.....	231
9.1.15.	TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.8 GHz BAND.....	241
9.1.16.	TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.8 GHz BAND	249
9.2.	<i>Worst Case Below 30 MHz</i>	<i>255</i>
9.3.	<i>Worst Case Below 1 GHz</i>	<i>256</i>
9.4.	<i>Worst Case 18-26 GHz.....</i>	<i>258</i>
9.5.	<i>Worst Case 26-40 GHz.....</i>	<i>260</i>
10.	AC POWER LINE CONDUCTED EMISSIONS	262
10.1.1.	AC Power Line Norm	263
11.	SETUP PHOTOS.....	265

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONY MOBILE COMMUNICATIONS, INC.
4-12-3 HIGASHI-SHINAGAWA,
SHINAGAWA-KU, TOKYO, 140-0002, JAPAN

EUT DESCRIPTION: GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC

SERIAL NUMBER: BH93001DDB, BH93004YDB (Conducted),
BH930006D8, BH930043D8, BH930004D8 (Radiated)

DATE TESTED: JULY 7 – 18, 2018

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

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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 METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 14-30, FCC KDB 662911 D01 v02r01, FCC KDB 905462 D02 v02/D03 v01r02/D06 v02, FCC KDB 789033 D02 v02r01, FCC KDB 644545 D03 v01, ANSI C63.10-2013, FCC 06-96, and FCC KDB 905462 D02 and D03.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd
☒ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☐ Chamber K (ISED:2324A-1)
☒ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☒ Chamber L (ISED:2324A-3)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	
	☐ Chamber G (ISED:22541-4)	
	☐ Chamber H (ISED:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through C are covered under ISED company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under ISED company address code 22541 with site numbers 22541 -1 through 22541-5, respectively. Chambers K and L are covered under ISED company address code 2324A with site numbers 2324A-1 and 2324A-3, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

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

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC.

5.2. 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)	Uncorrelated Chains Directional Gain	Maximum EIRP (dBm)	Maximum EIRP (mW)
5.2 GHz band, 2TX						
5180-5240	802.11a CDD	16.60	45.71	-3.99	12.61	18.24
5180-5240	802.11n HT20 CDD	16.54	45.08	-3.99	12.55	17.99
5190-5230	802.11n HT40 CDD	16.75	47.32	-3.99	12.76	18.88
5210	802.11ac VHT80 CDD	13.98	25.00	-3.99	9.99	9.98

5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)	Uncorrelated Chains Directional	Maximum EIRP (dBm)	Maximum EIRP (mW)
5.3 GHz band, 2TX						
5260 - 5320	802.11a CDD	16.56	45.29	-3.99	12.57	18.07
5260 - 5320	802.11n HT20 CDD	16.61	45.81	-3.99	12.62	18.28
5270 - 5310	802.11n HT40 CDD	16.50	44.67	-3.99	12.51	17.82
5290	802.11ac VHT80 CDD	13.61	22.96	-3.99	9.62	9.16

5.6 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)	Uncorrelated Chains Directional	Maximum EIRP (dBm)	Maximum EIRP (mW)
5.6 GHz band, 2TX						
5500-5720	802.11a CDD	16.55	45.19	-2.64	13.91	24.60
5500-5720	802.11n HT20 CDD	16.66	46.34	-2.64	14.02	25.23
5510-5710	802.11n HT40 CDD	16.70	46.77	-2.64	14.06	25.47
5530-5690	802.11ac VHT80 CDD	17.22	52.72	-2.64	14.58	28.71

5.8 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)	Uncorrelated Chains Directional	Maximum EIRP (dBm)	Maximum EIRP (mW)
5.8 GHz band, 2TX						
5745-5825	802.11a CDD	16.41	43.75	-4.35	12.06	16.07
5745-5825	802.11n HT20 CDD	16.33	42.95	-4.35	11.98	15.78
5755-5795	802.11n HT40 CDD	16.46	44.26	-4.35	12.11	16.26
5775	802.11ac VHT80 CDD	13.61	22.96	-4.35	9.26	8.43

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes Loop Type antennas, with the following maximum gains:

Frequency (GHz)	Peak Antenna Gain (dBi)	
	Main (Chain 0)	Sub (Chain 1)
5180-5320	-4.30	-3.70
5500-5700	-4.20	-1.50
5725-5850	-4.50	-4.20

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was s_atp_0_00436_A_12_16.
The test utility software used during testing was Tera Term Ver 4.79

5.5. 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 Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation with AC/DC Adapter 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

802.11ac VHT20 and VHT40 mode are different from 802.11nHT20 and HT40 only in control messages and have the same power settings.

The simultaneous mode (SISO 2.4GHz Chain 0 and 5GHz chain 1) was checked and stand-alone (MIMO) 2.4 GHz / 5GHz remain worst case.

NOTE: SISO mode is covered by MIMO mode due to same maximum tune-up limit (power).

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	20B7S0A200	PC015REW	N/A
Desktop	Lenovo	ThinkCentre	MJ00QA59	N/A
AC Adapter	SONY	UCH20	3416W45305784	N/A
DC Power Supply	Ametek	XT 15-4	T463	N/A

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	RF	Shielded	0.2	To spectrum Analyzer
2	USB	1	USB Type C	Shielded	1	N/A
3	DC	1	DC	Shielded	0.3	N/A

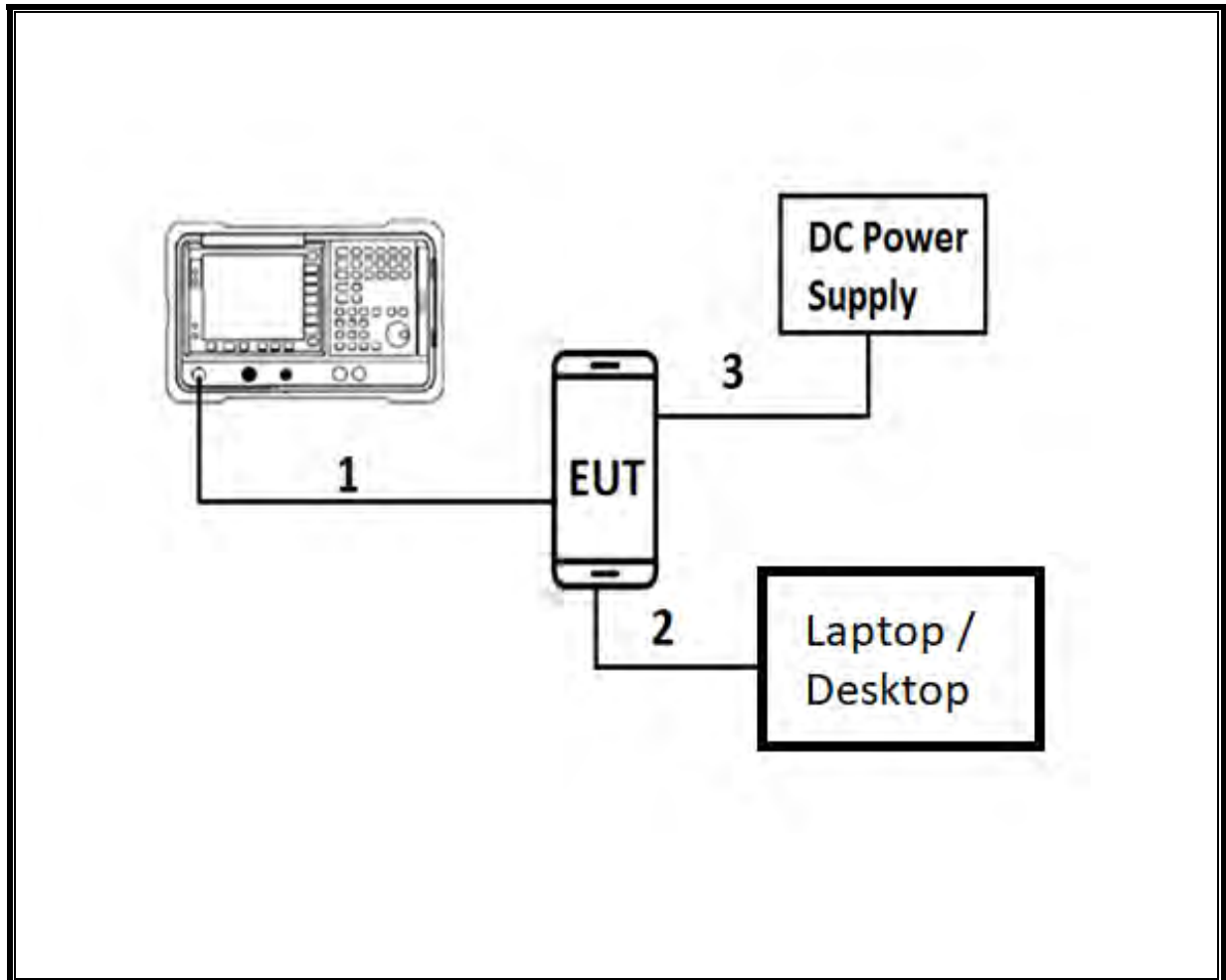
I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB Type C	Shielded	3	N/A

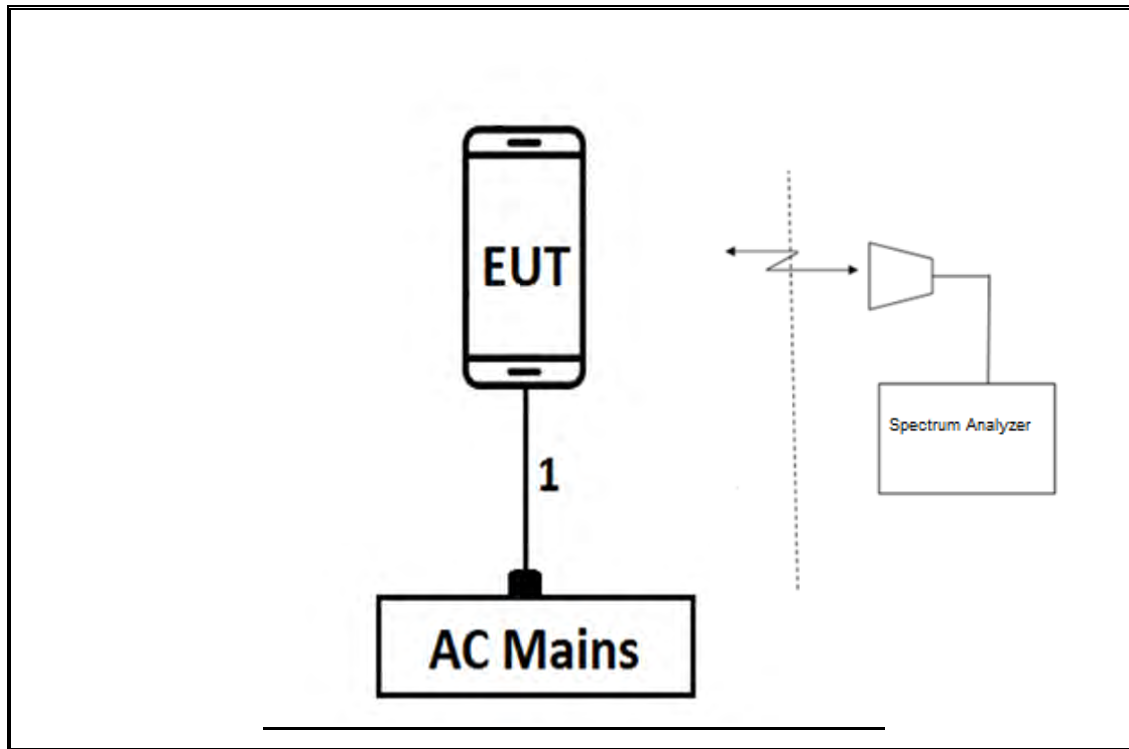
TEST SETUP

The EUT is connected to a test laptop/desktop during the tests. Test software exercised the radio card.

CONDCUTED TEST SETUP DIAGRAM



RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



6. 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.

7. 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
Amplifier, 100kHz to 1GHz, 32dB	Hewlet Packard	8447D	T15	08/14/2018
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB1	T130	10/16/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	06/21/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T345	04/25/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T4294	04/30/2019
RF Amplifier	MITEQ	AFS42-00101800-25-S-42	T1165	04/23/2019
RF Amplifier	MITEQ	AFS42-00101800-25-S-42	T1568	06/21/2019
RF Amplifier	MITEQ	AFS42-00101800-25-S-42	T493	04/03/2019
Amplifier, 1 to 8GHz, 35dB	Miteq Inc.	AMF-4D-01000800-30-29P	T1573	04/03/2019
Amplifier 1-8GHz 30dB gain	L3 Narda	AMF-4D-01000800-30-29P	167495	06/22/2019
Amplifier, 1 to 8GHz, 35dB	Miteq Inc.	AMF-4D-01000800-30-29P	T1156	04/03/2019
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179522	05/11/2019
Spectrum Analyzer, PSA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1466	04/16/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1450	02/05/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018
Spectrum Analyzer, PSA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019
Spectrum Analyzer, PSA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T146	07/18/2018
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1271	07/17/2018
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1225	04/10/2019
Filter, HPF 6.0GHz	MICRO-TRONICS	HPS17542	T1017	06/21/2019
Filter, HPF 6.0GHz	MICRO-TRONICS	HPS17542	T483	04/03/2019
Filter, HPF 6.0GHz	MICRO-TRONICS	HPS17542	T484	04/03/2019
Filter, LPF 5.0GHz	MICRO-TRONICS	LPS17541	T1020	06/21/2019
Filter, LPF 5.0GHz	MICRO-TRONICS	LPS17541	T482	04/03/2019
Filter, LPF 5.0GHz	MICRO-TRONICS	LPS17541	T481	04/03/2019
Antenna, Active Loop 9kHz-30MHz	Com-Power Corp.	AL-130R	T1866	10/10/2018
18 - 26.5 GHz Horn Antenna	Seavey Division	MWH-1826/B	T89	01/18/2019
26.5 - 40 GHz Horn Antenna	ARA	MWH-2640/B	T90	08/25/2018
Pre-Amp 1-26.5 GHz	Agilent	8449B	T404	03/09/2019
Pre-Amp, 26-40GHz	MITEQ	NSTTA2640-35-HG	T1864	03/09/2019
EMI Reciever	Rohde & Schwarz	ESR	T1436	02/21/2019
L.I.S.N.	FCC INC.	FCC LISN 50/250	T1310	06/15/2019
L.I.S.N.	FCC INC.	FCC LISN 50/250	T24	03/06/2019
Thermometer - Digital	Control Company	14-650-118	PRE0177862	02/22/2019

UL AUTOMATION SOFTWARE			
Radiated Software	UL	UL EMC	Ver 9.5, June 22, 2018
Antenna Port Software	UL	UL EMC	Ver 8.4, June 12, 2018

NOTE: *testing was completed before equipment calibration expiration date.

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

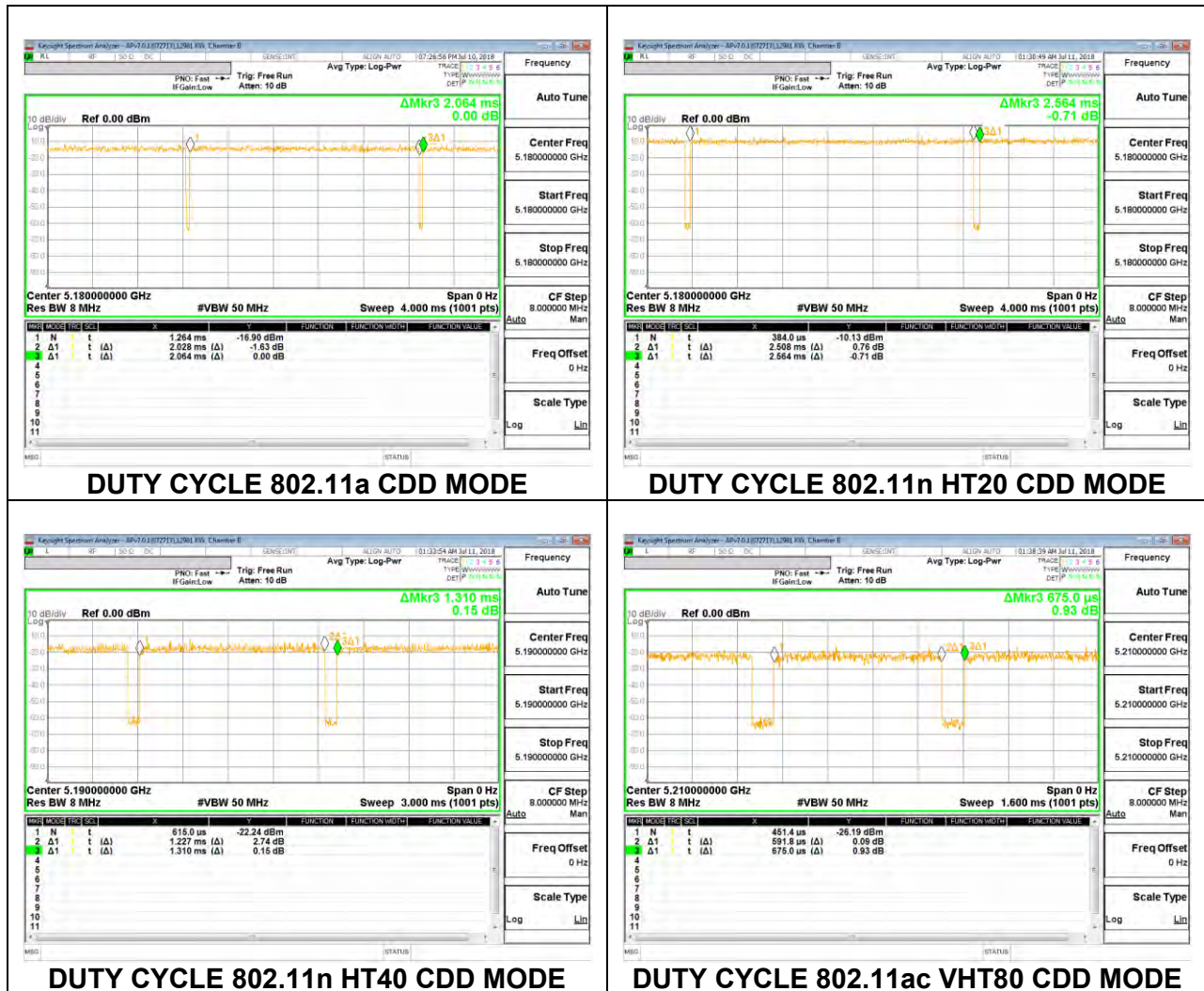
PROCEDURE

KDB 789033 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 CDD	2.028	2.064	0.983	98.26%	0.00	0.010
802.11n HT20 CDD	2.508	2.564	0.978	97.82%	0.10	0.399
802.11n HT40 CDD	1.227	1.310	0.937	93.66%	0.28	0.815
802.11ac VHT80 CDD	0.592	0.675	0.877	87.72%	0.57	1.689

DUTY CYCLE PLOTS



8.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

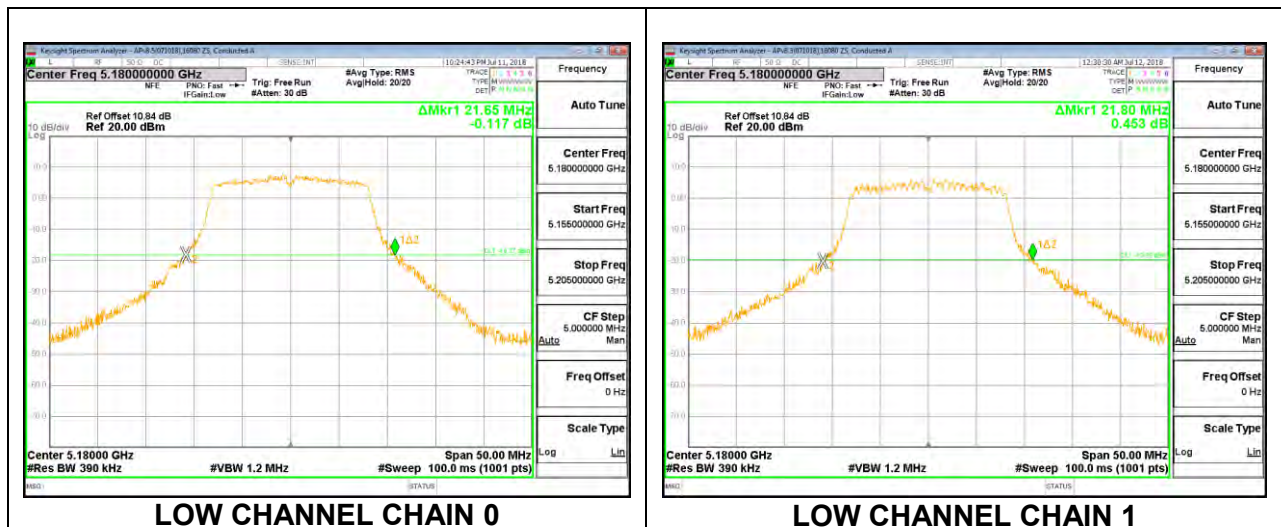
RESULTS

8.2.1. 802.11a MODE IN THE 5.2 GHz BAND

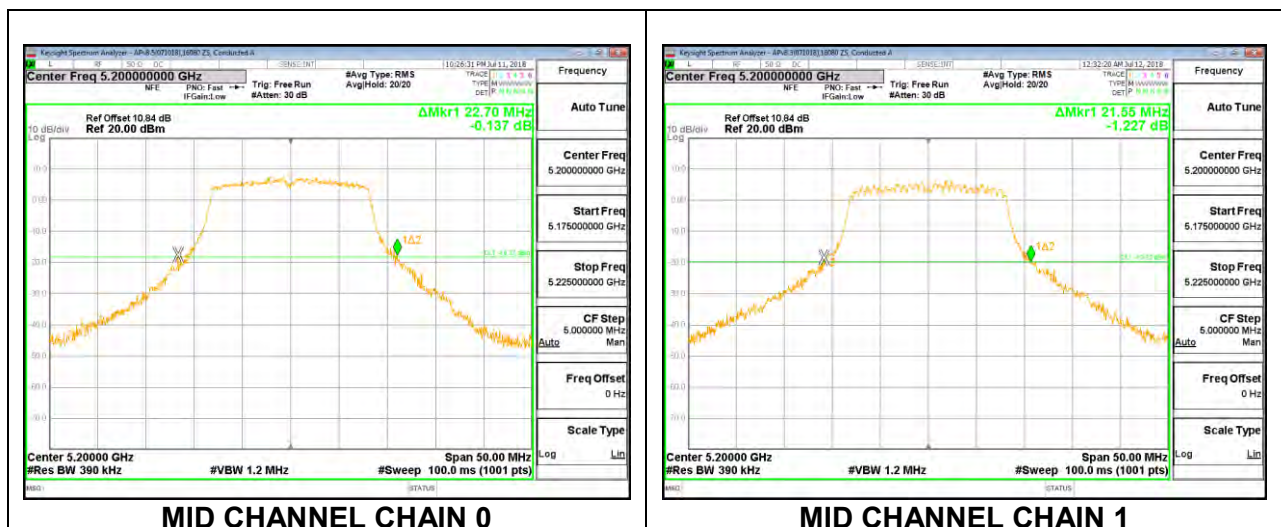
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	21.65	21.80
Mid	5200	22.70	21.55
High	5240	22.40	22.80

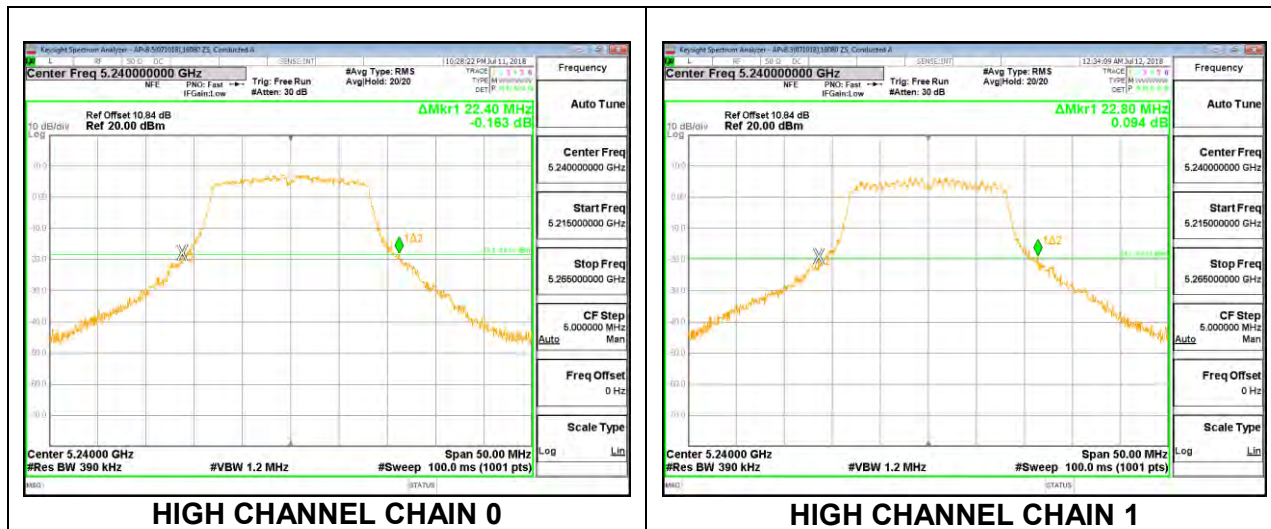
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

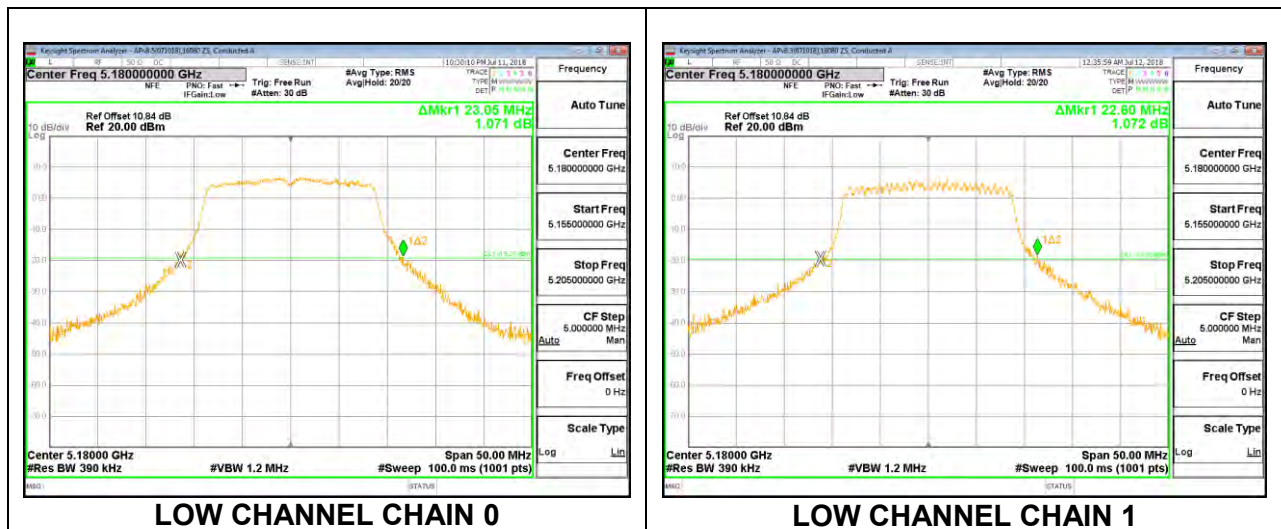


8.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

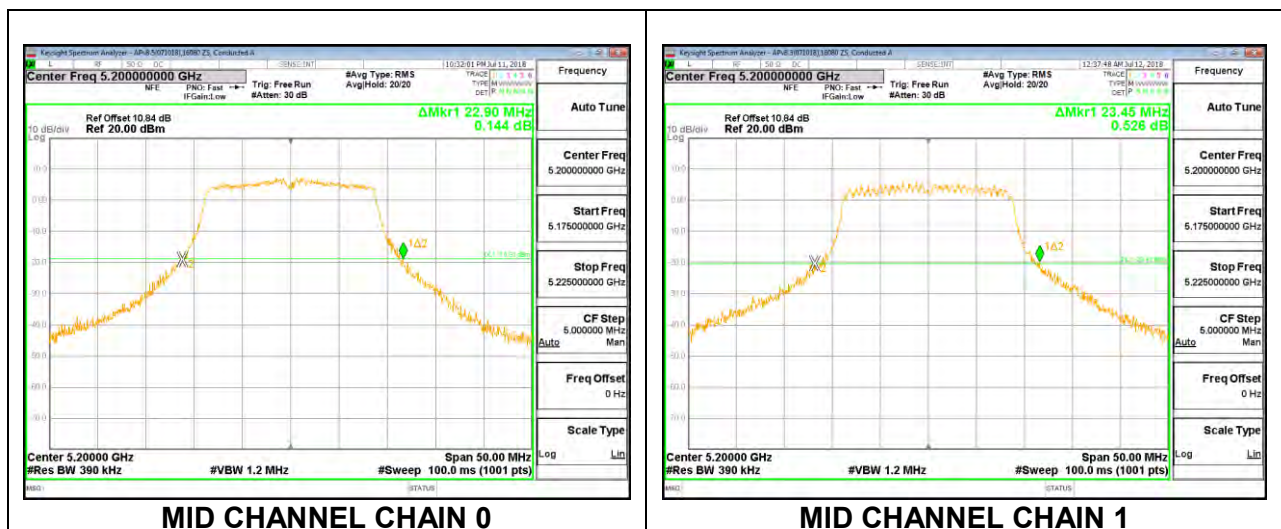
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	23.05	22.60
Mid	5200	22.90	23.45
High	5240	23.00	23.30

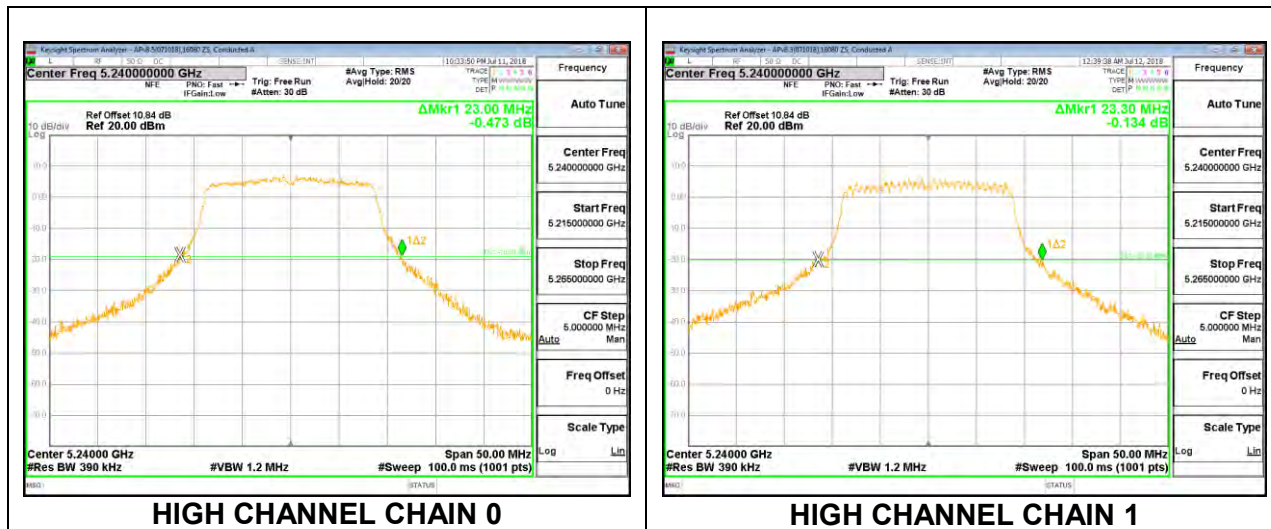
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

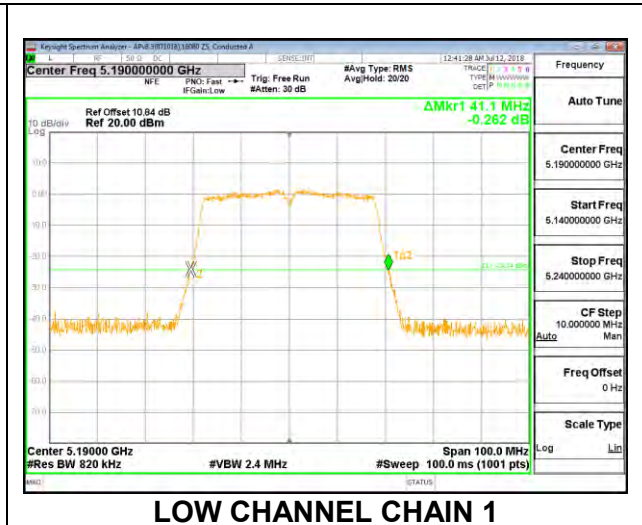
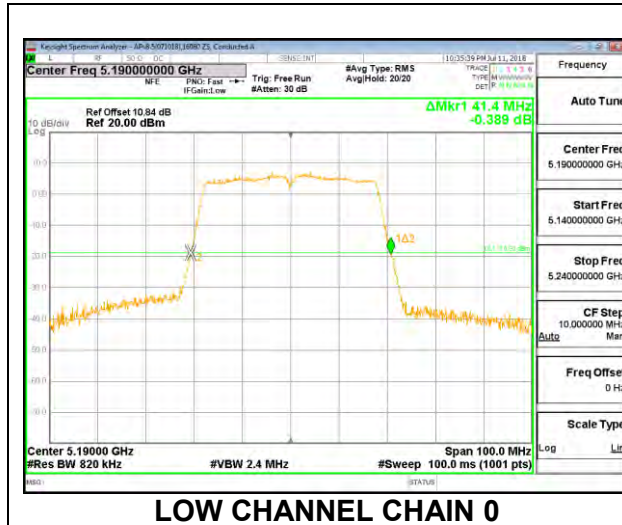


8.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

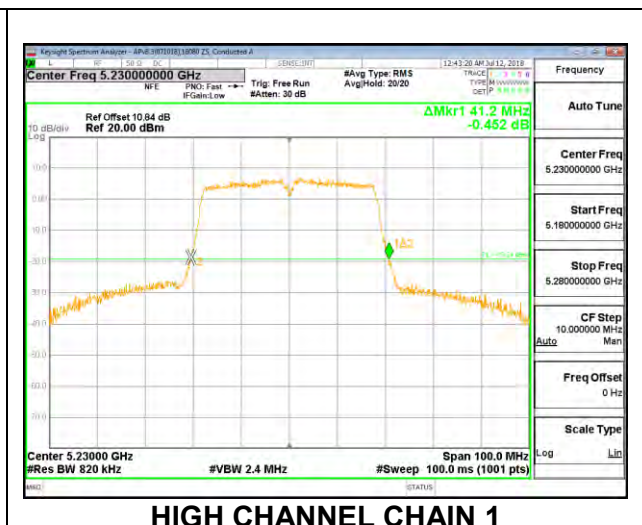
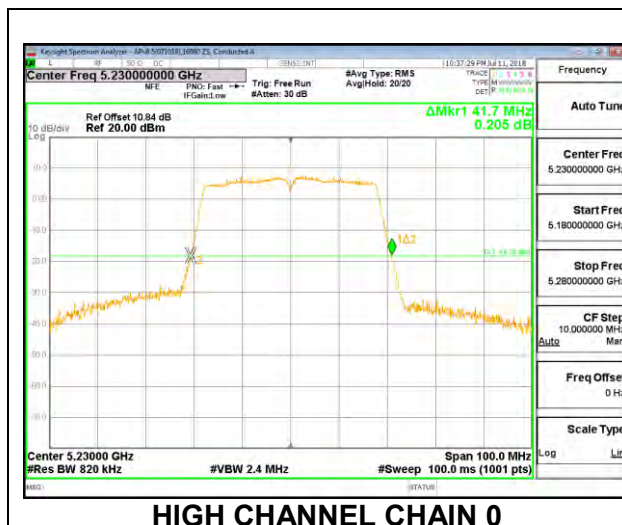
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	41.40	41.10
High	5230	41.70	41.20

LOW CHANNEL



HIGH CHANNEL

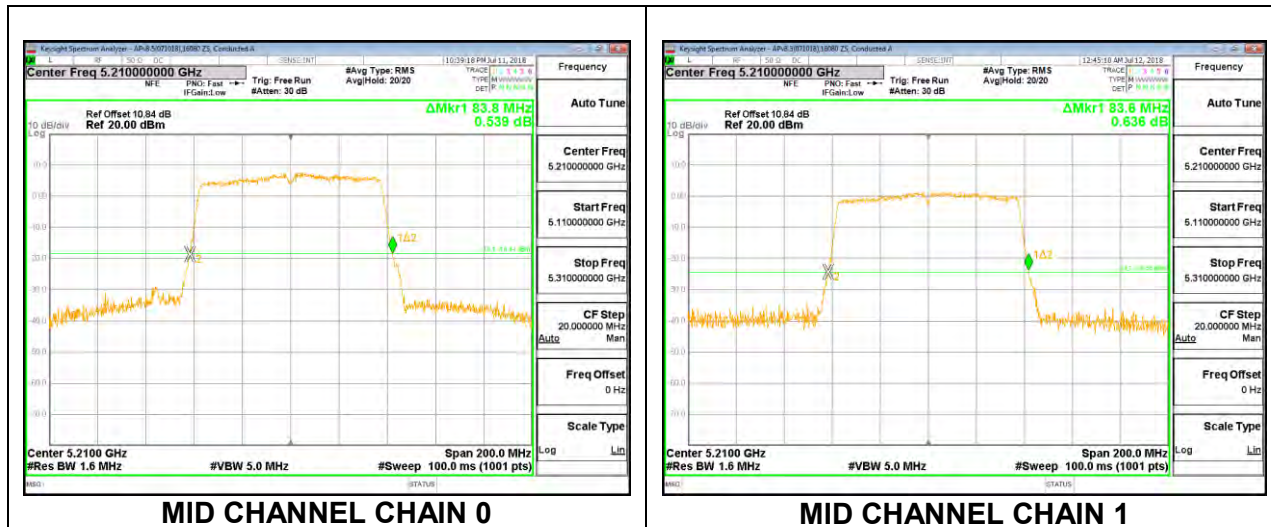


8.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5210	83.80	83.60

MID CHANNEL

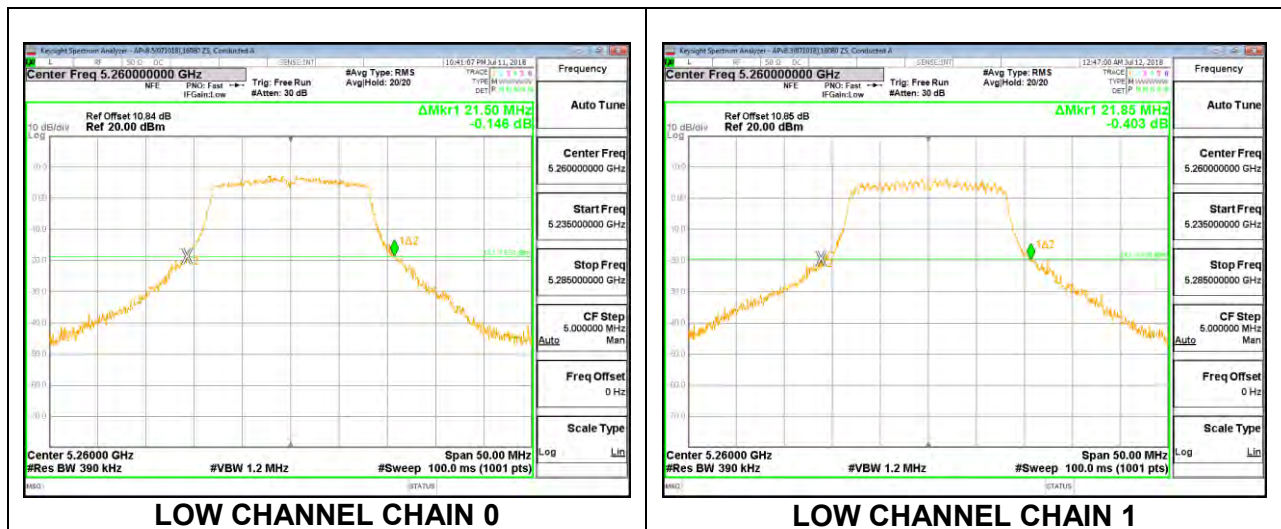


8.2.5. 802.11a MODE IN THE 5.3 GHz BAND

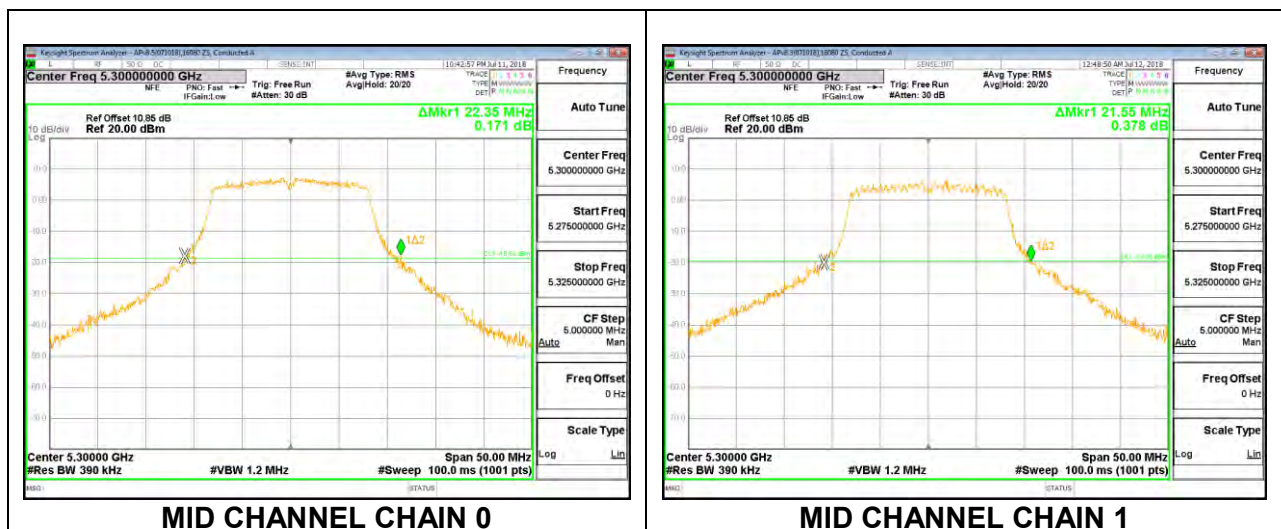
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	21.50	21.85
Mid	5300	22.35	21.55
High	5320	22.00	22.00

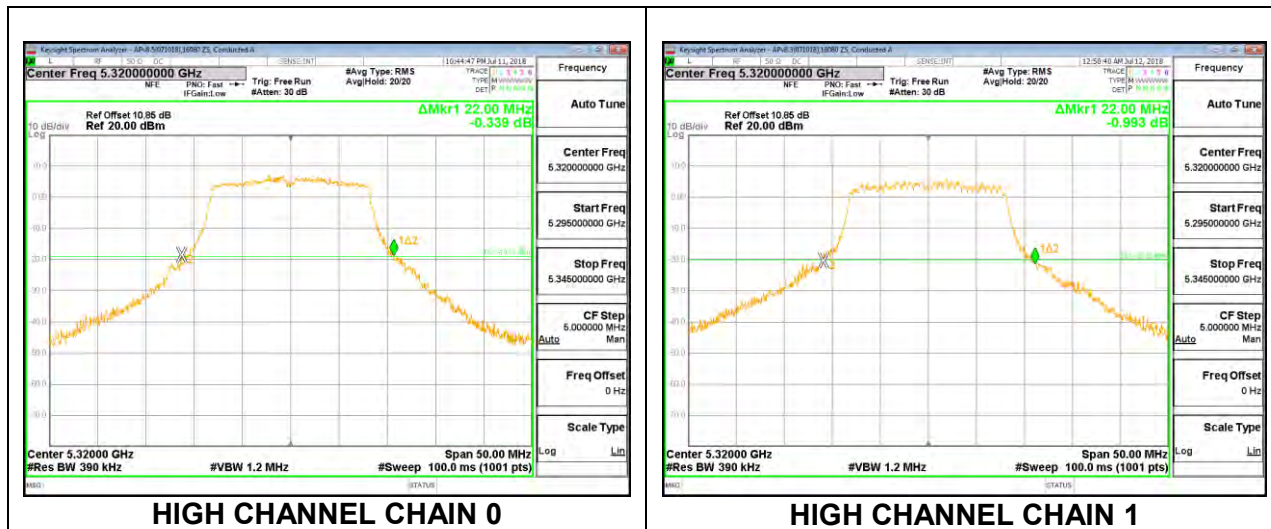
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

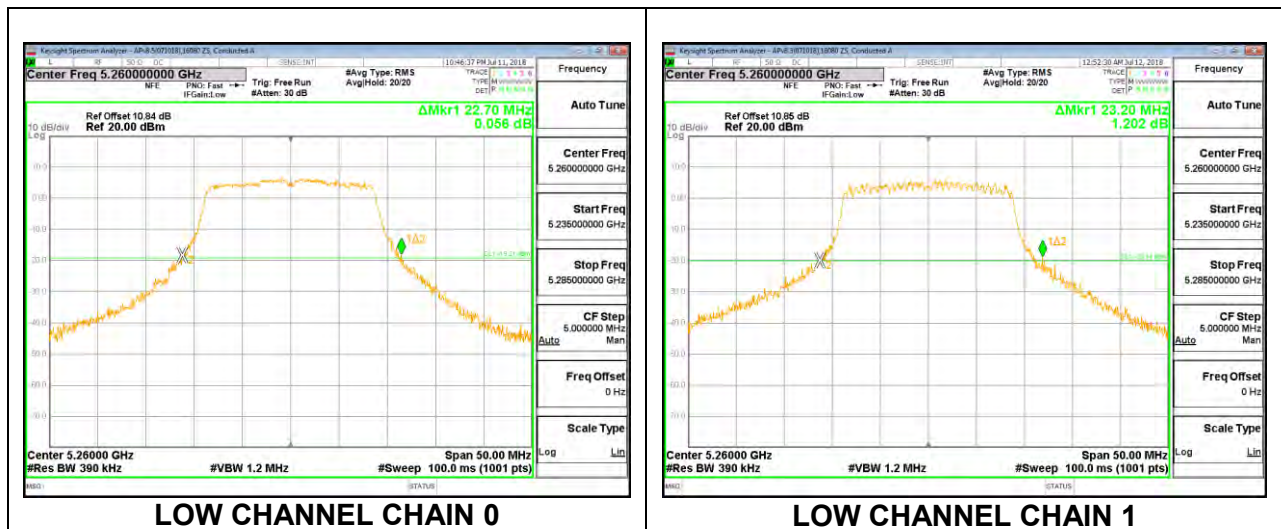


8.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

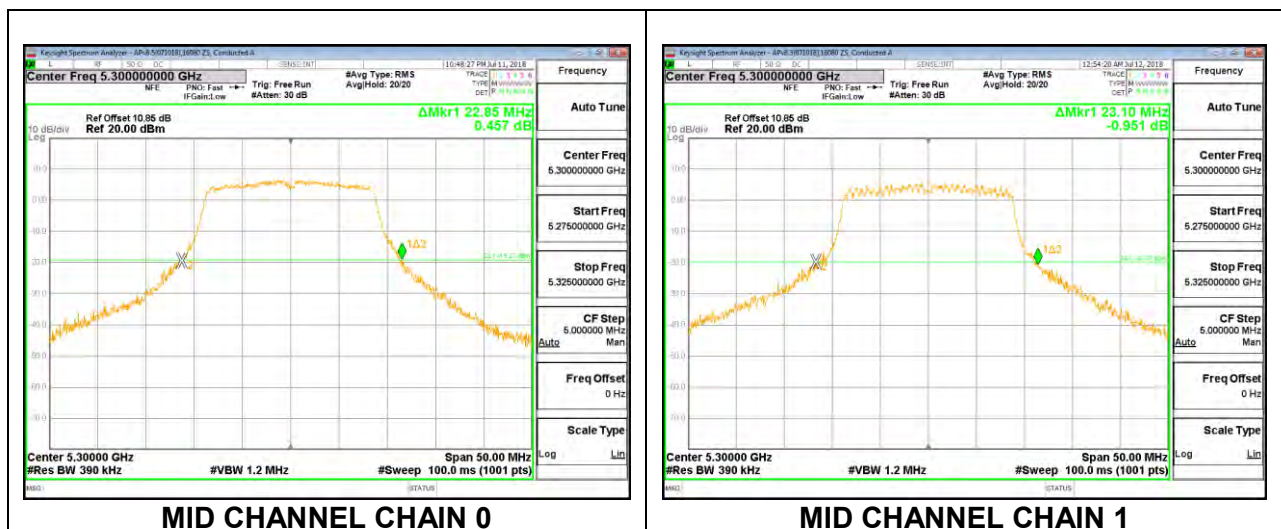
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	22.70	23.20
Mid	5300	22.85	23.10
High	5320	22.90	22.90

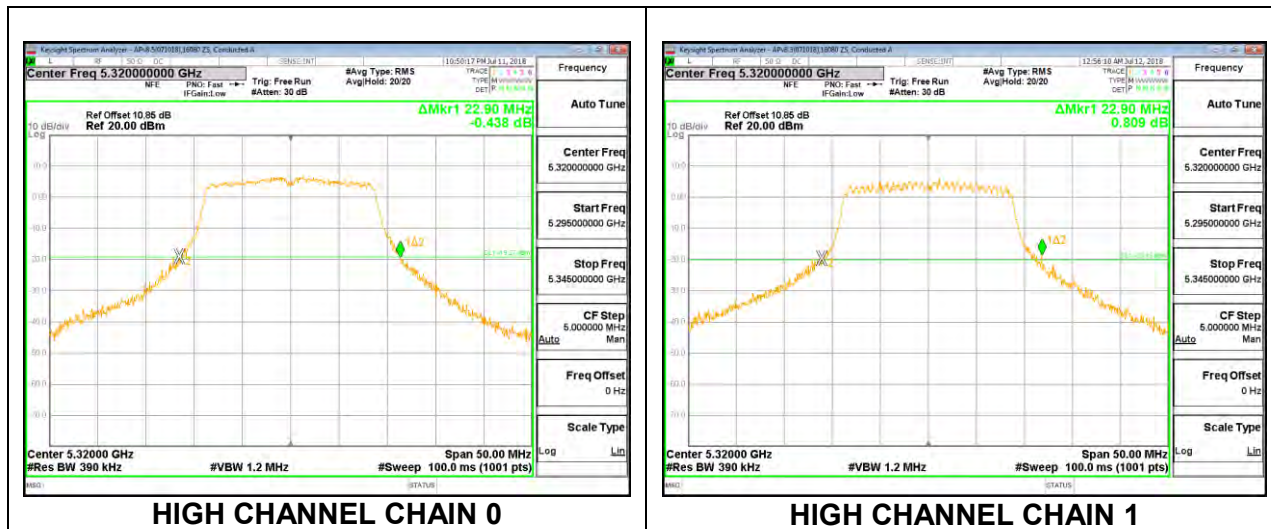
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

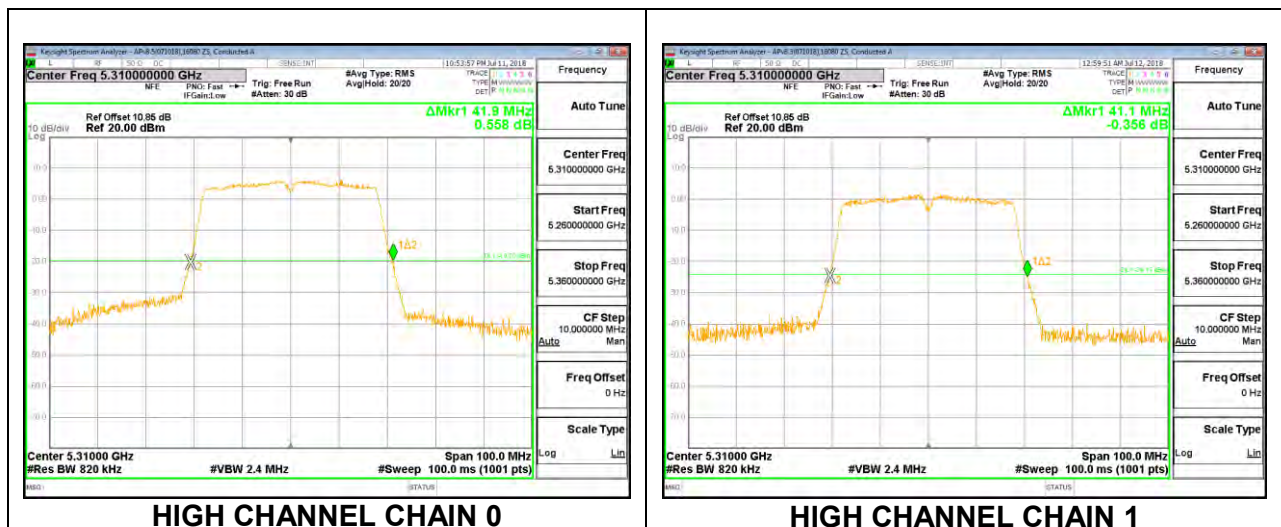
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5270	41.80	41.10
High	5310	41.90	41.10

LOW CHANNEL



HIGH CHANNEL

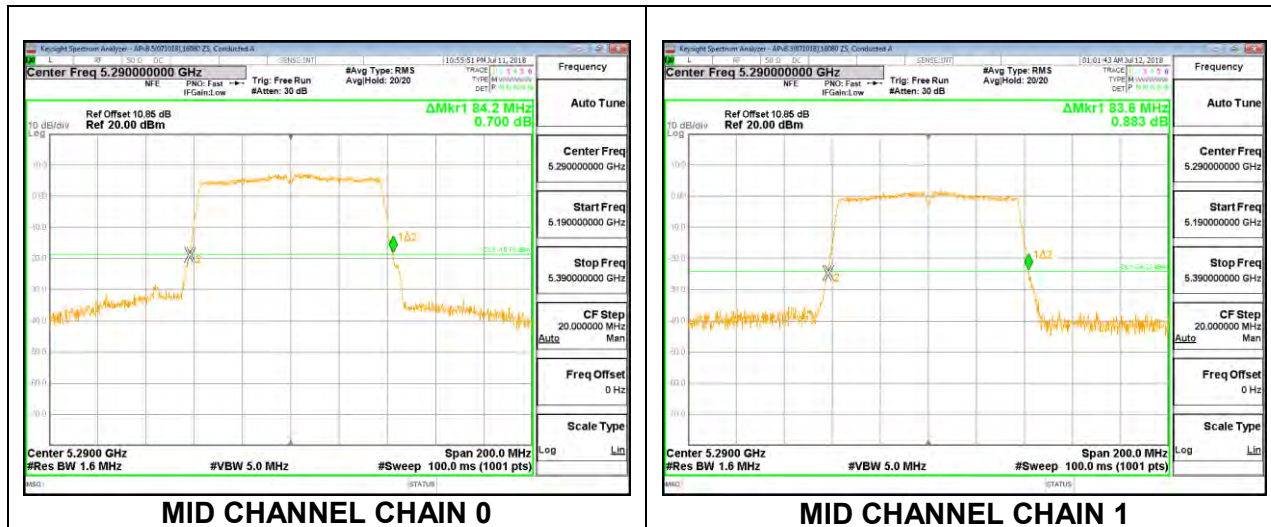


8.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	84.20	83.60

MID CHANNEL

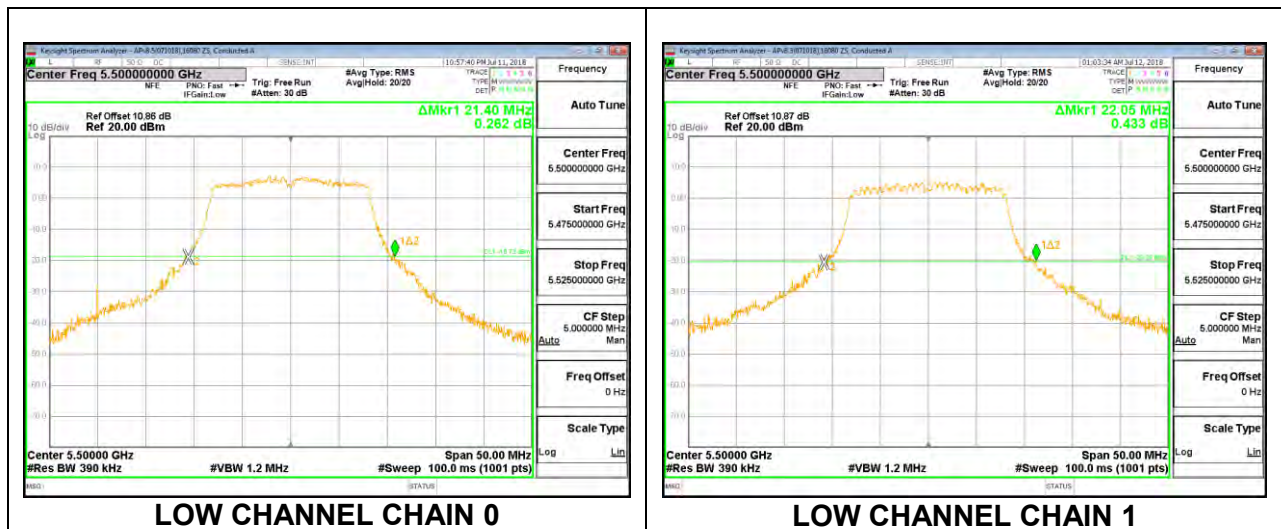


8.2.9. 802.11a MODE IN THE 5.6 GHz BAND

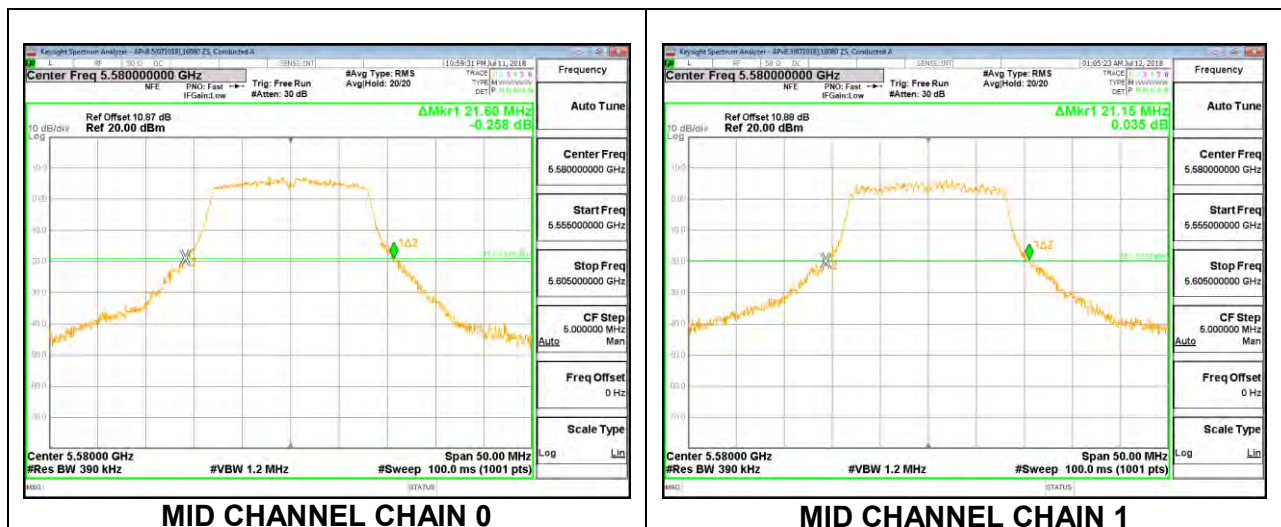
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5500	21.40	22.05
Mid	5580	21.60	21.15
High	5700	21.95	21.10
144	5720	22.05	22.40

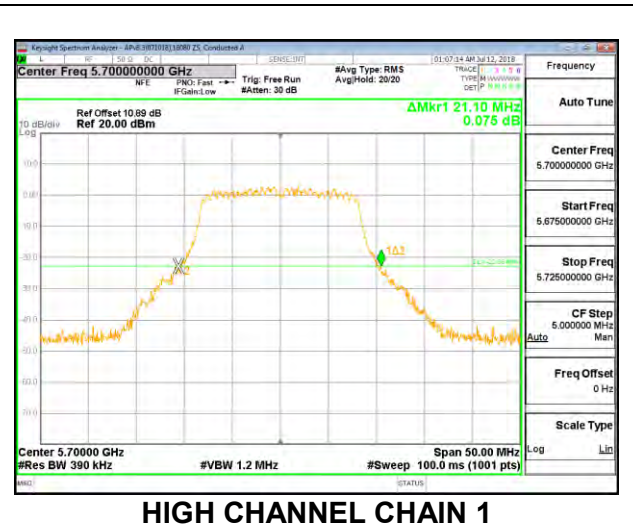
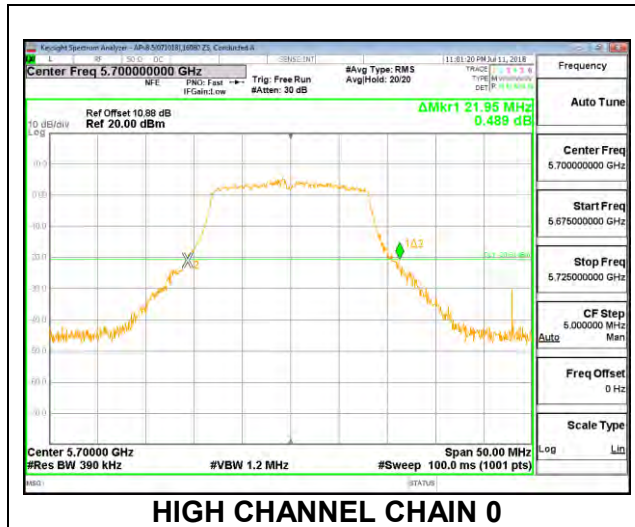
LOW CHANNEL



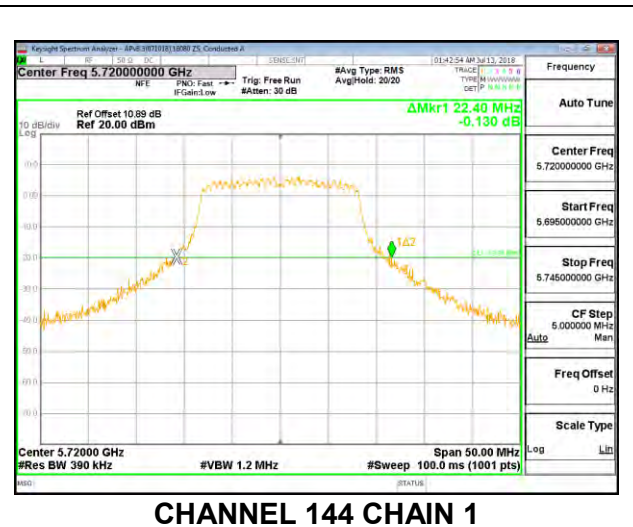
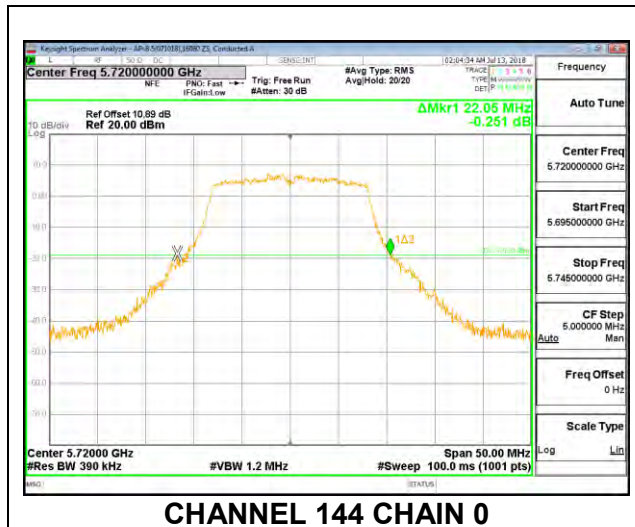
MID CHANNEL



HIGH CHANNEL



CHANNEL 144

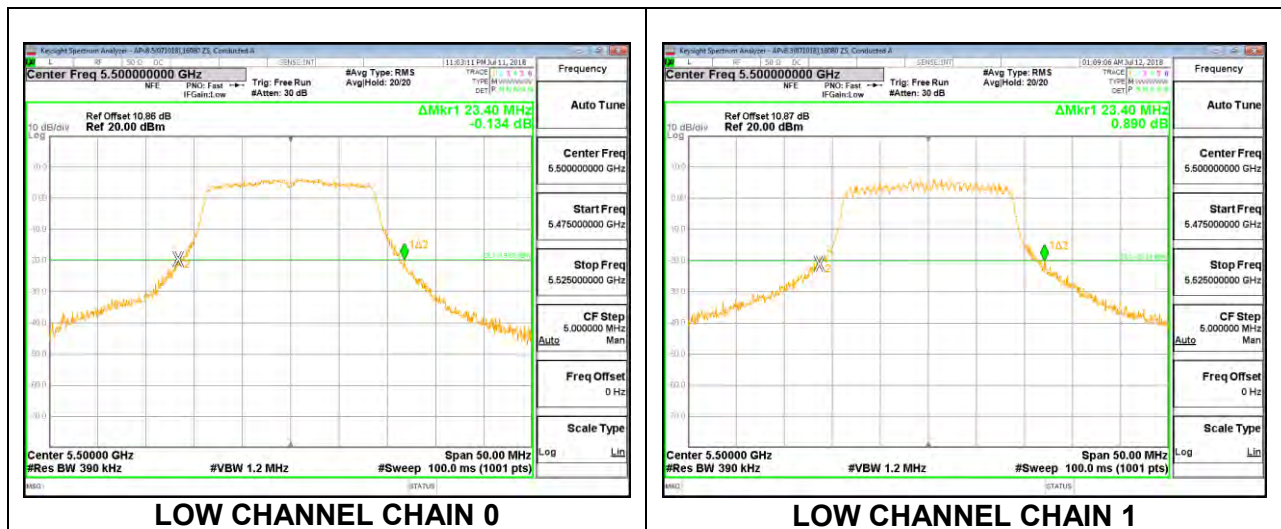


8.2.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

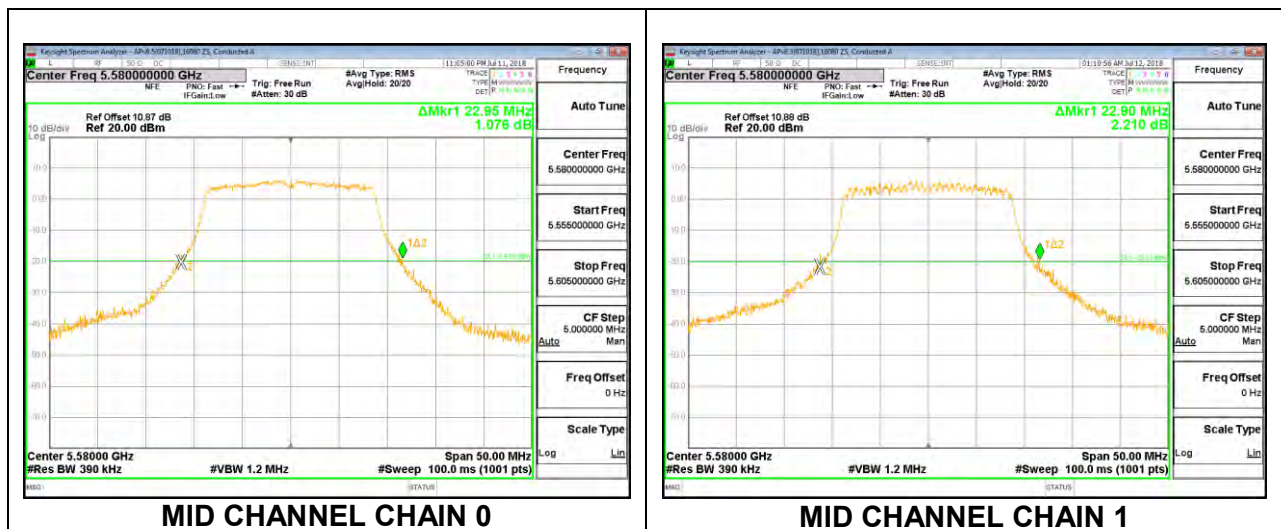
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5500	23.40	23.40
Mid	5580	22.95	22.90
High	5700	22.55	21.45
144	5720	23.20	23.25

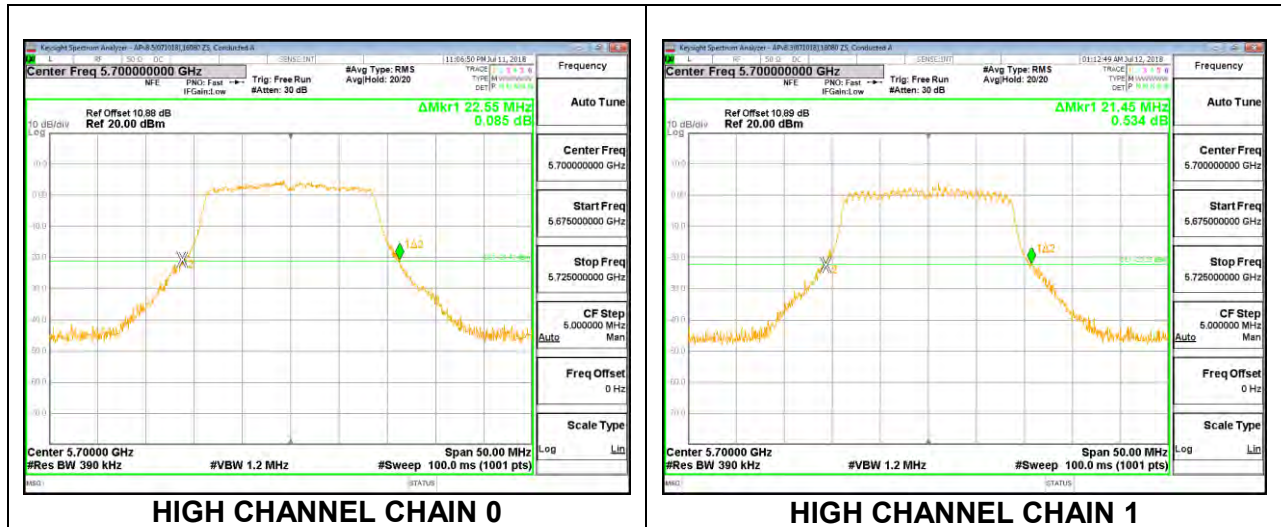
LOW CHANNEL



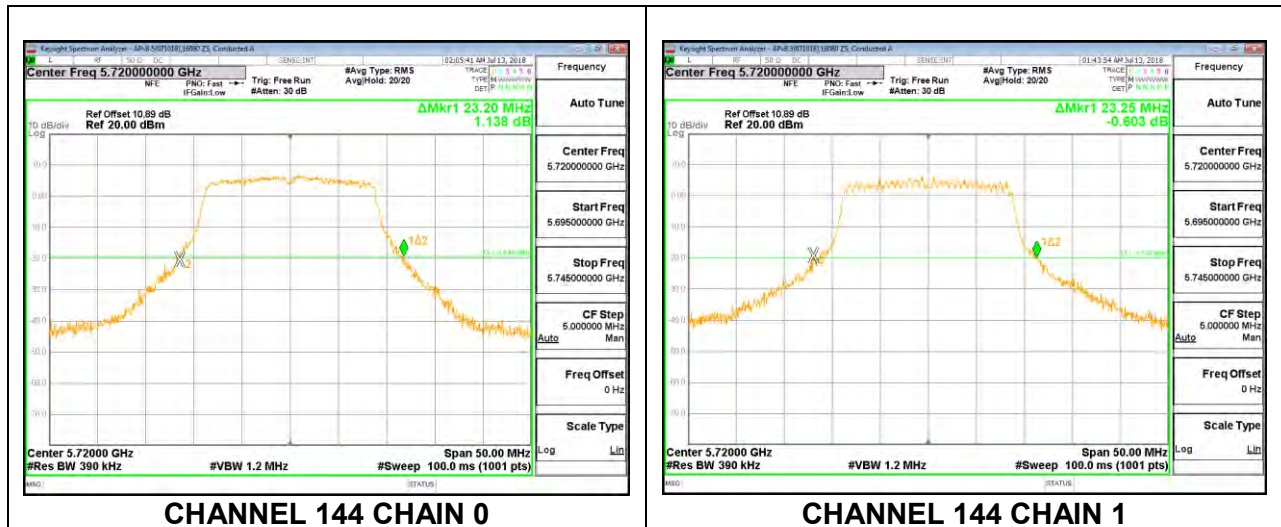
MID CHANNEL



HIGH CHANNEL



CHANNEL 144

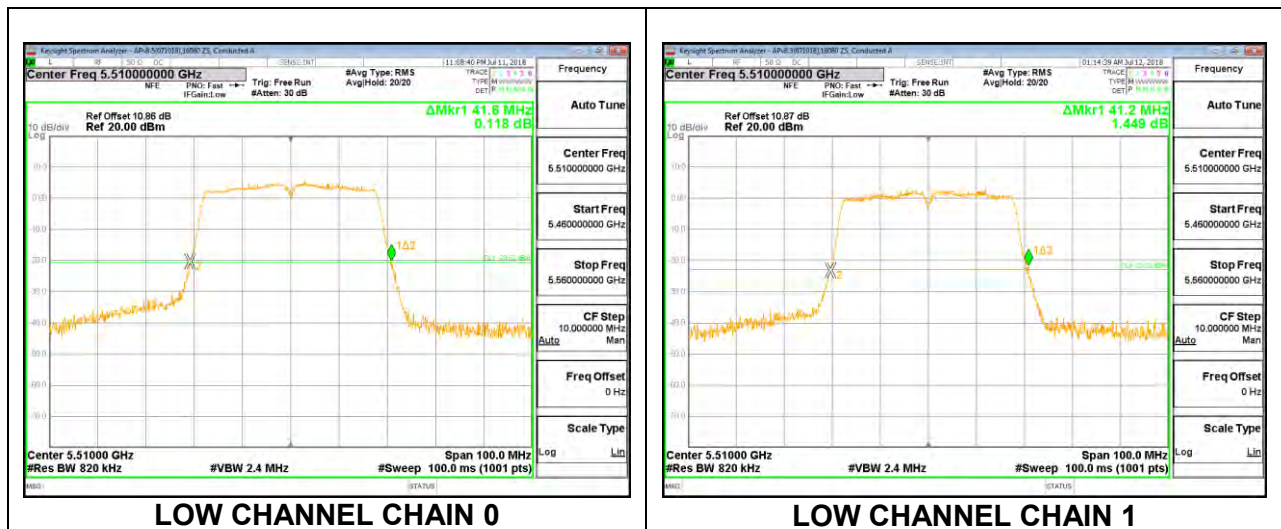


8.2.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

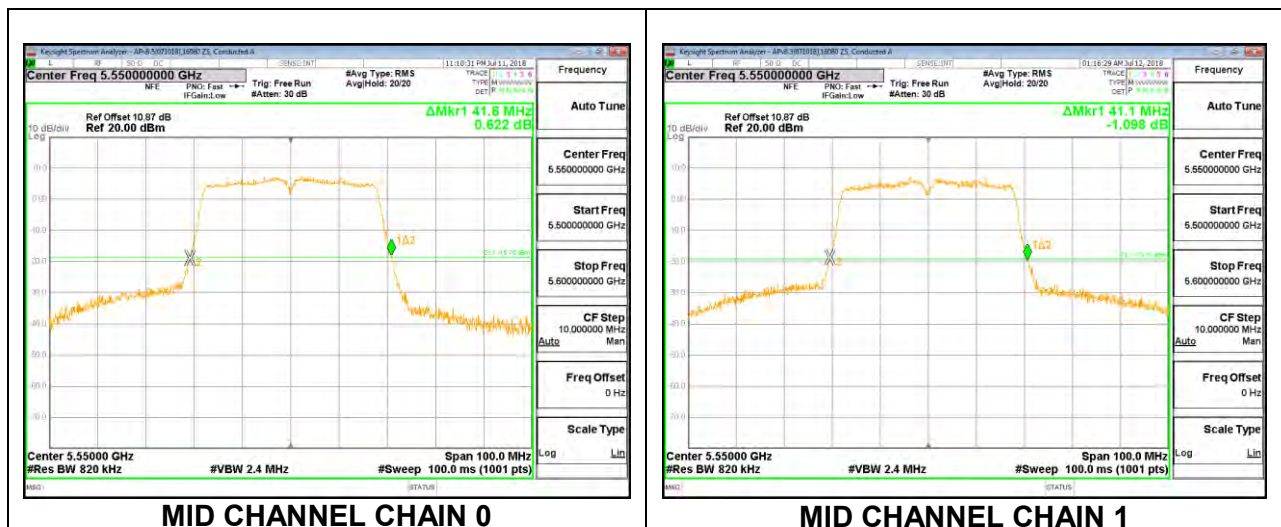
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5510	41.60	41.20
Mid	5550	41.60	41.10
High	5670	41.70	41.20
142	5710	41.60	41.20

LOW CHANNEL



MID CHANNEL



High Channel Chain 0

Center Freq 5.670000000 GHz
 Ref Offset 10.00 dB
 Ref 20.00 dBm
 Span 100.0 MHz
 #Res BW 50 kHz
 #VBW 2.4 MHz
 #Sweep 100.0 ms (1001 pts)

High Channel Chain 1

Center Freq 5.670000000 GHz
 Ref Offset 10.00 dB
 Ref 20.00 dBm
 Span 100.0 MHz
 #Res BW 50 kHz
 #VBW 2.4 MHz
 #Sweep 100.0 ms (1001 pts)

CHANNEL 142 CHAIN 0

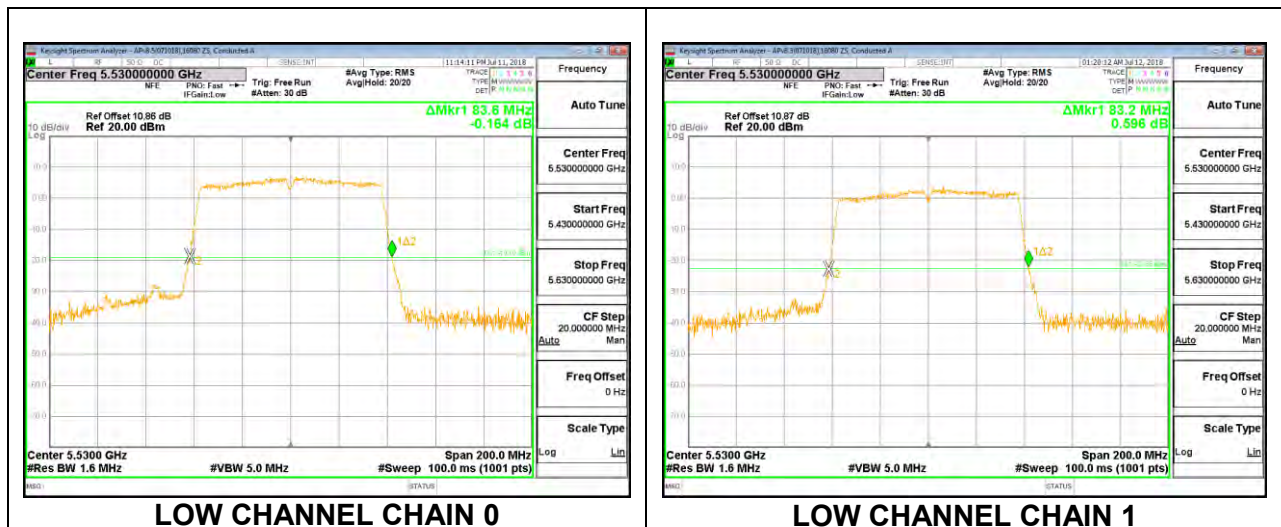
CHANNEL 142 CHAIN 1

8.2.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

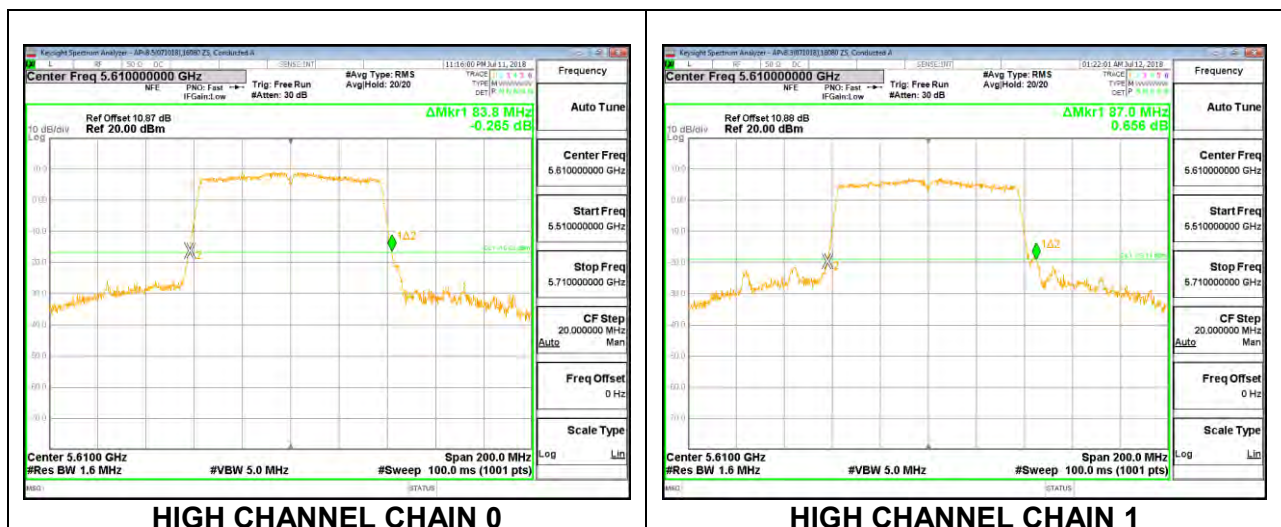
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5530	83.60	83.20
High	5610	83.80	87.00
138	5690	84.40	84.60

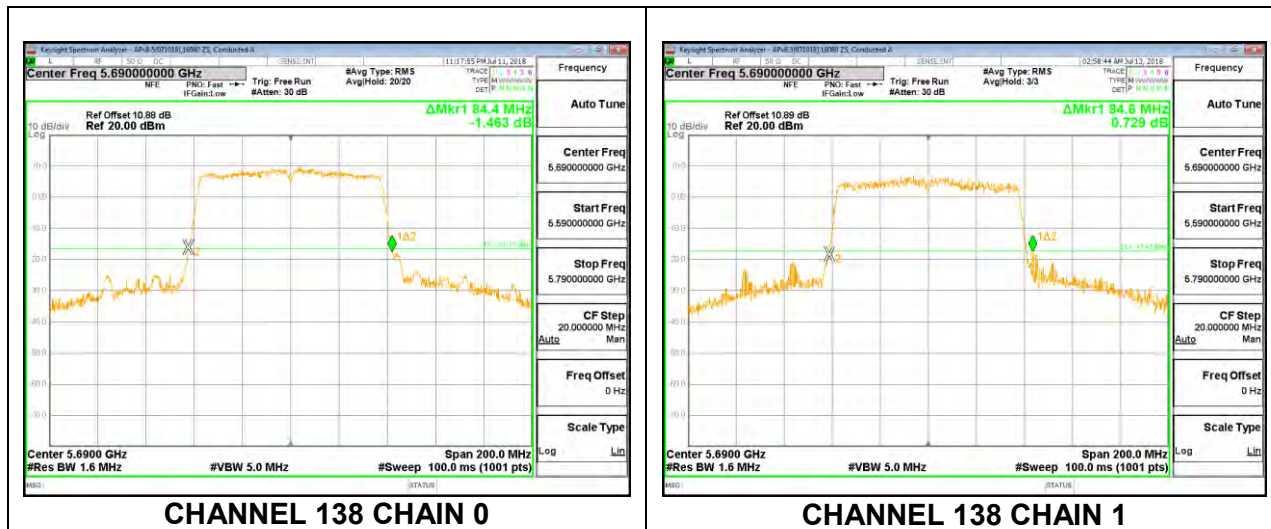
LOW CHANNEL



HIGH CHANNEL



CHANNEL 138

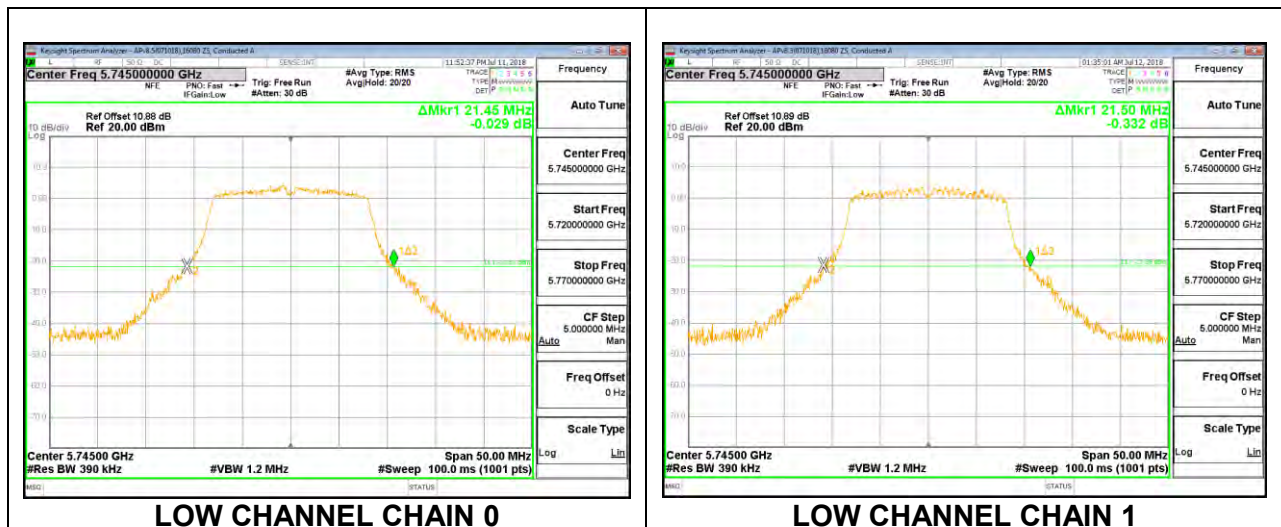


8.2.13. 802.11a MODE IN THE 5.8 GHz BAND

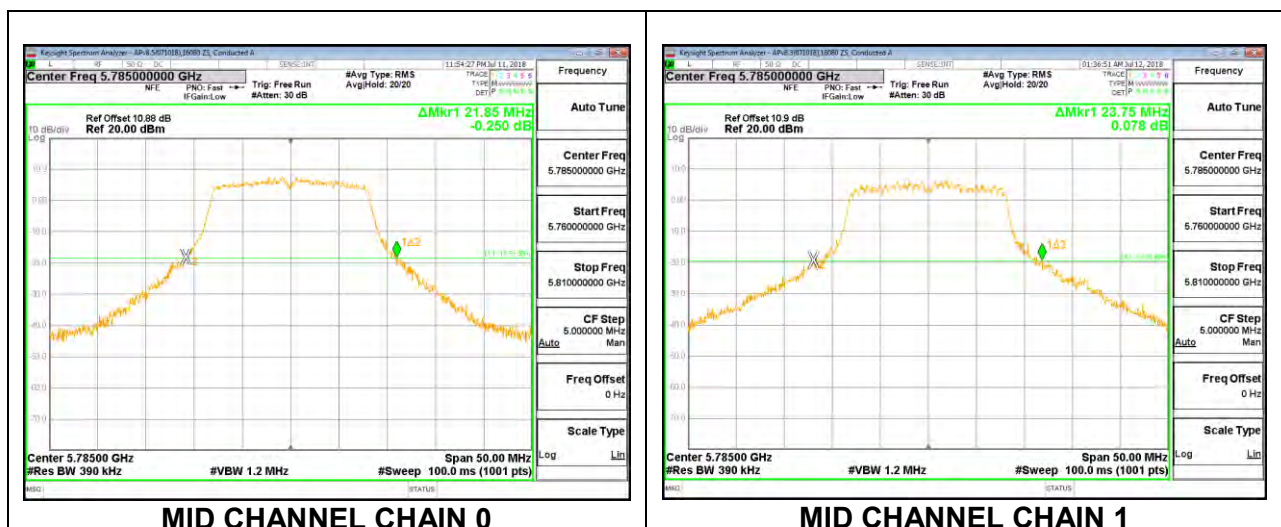
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5745	21.45	21.50
Mid	5785	21.85	23.75
High	5825	21.85	21.30

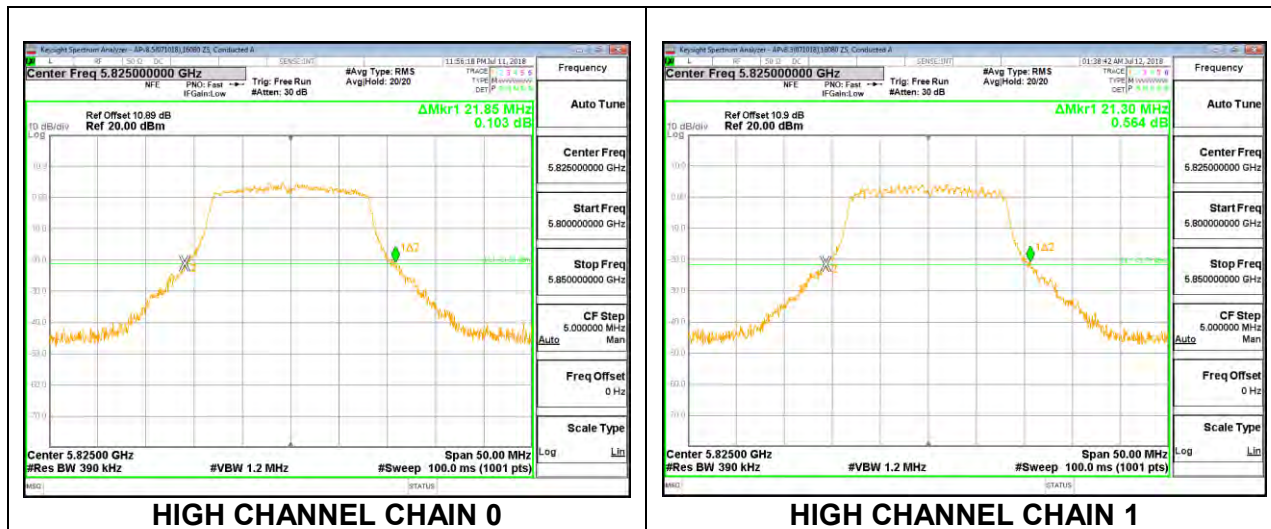
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

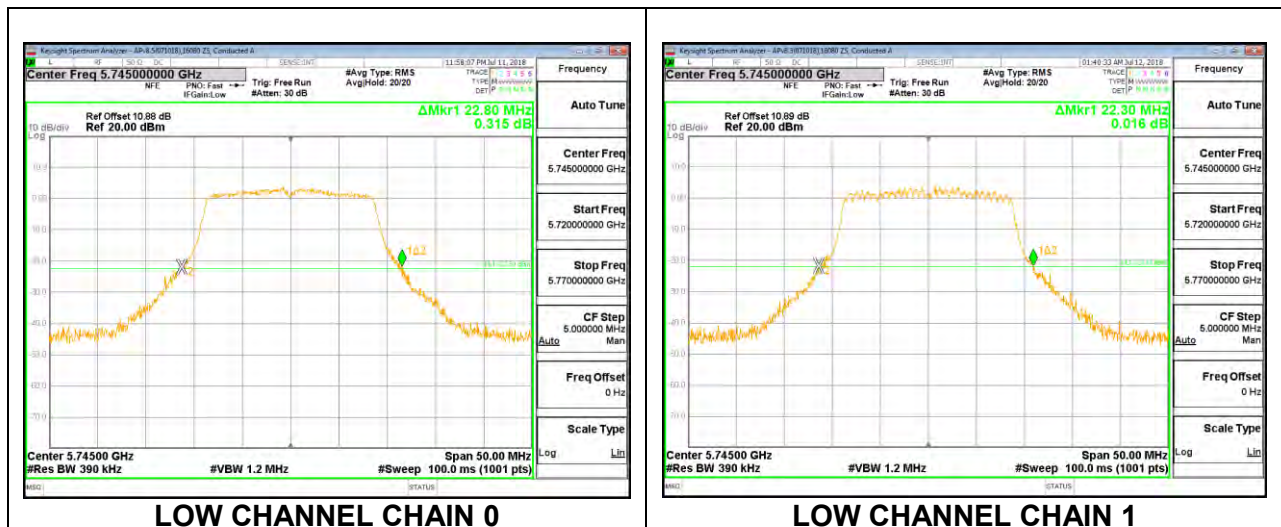


8.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

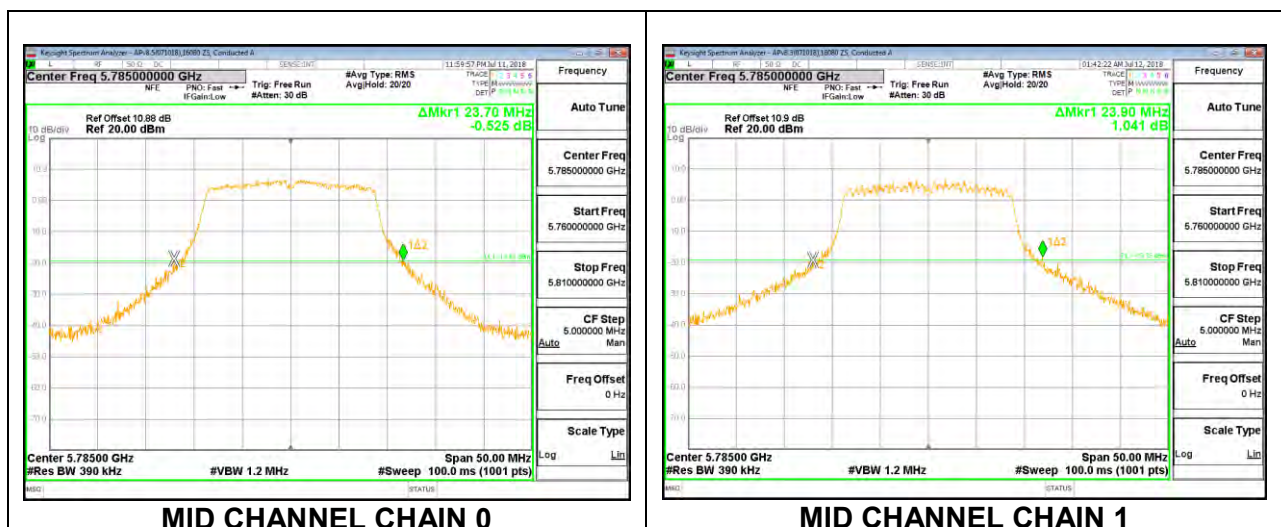
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5745	22.80	22.30
Mid	5785	23.70	23.90
High	5825	22.55	22.10

LOW CHANNEL



MID CHANNEL



The figure displays two side-by-side screenshots of a Keysight Spectrum Analyzer, showing the frequency response of two different channel chains, labeled 'HIGH CHANNEL CHAIN 0' and 'HIGH CHANNEL CHAIN 1'.

High Channel Chain 0 (Left Plot):

- Center Freq:** 5.825000000 GHz
- Span:** 50.00 MHz
- Res BW:** 390 kHz
- VBW:** 1.2 MHz
- Sweep:** 100.0 ms (1001 pts)
- Ref Offset:** 10.89 dB
- Ref:** 20.00 dBm
- ΔMkr1:** 22.55 MHz
- ΔMkr2:** 0.155 dB

High Channel Chain 1 (Right Plot):

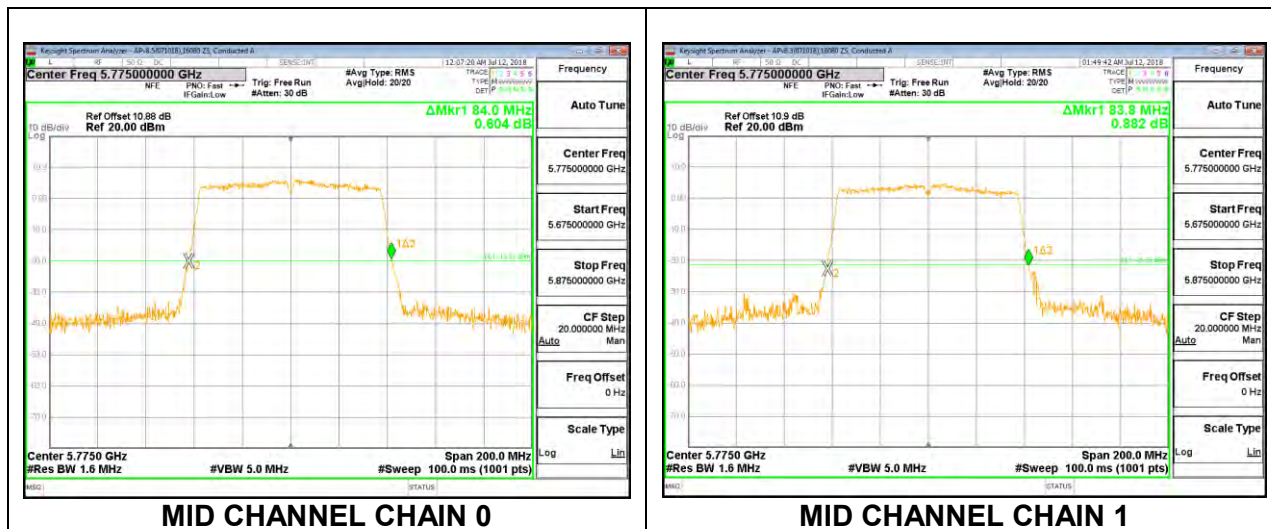
- Center Freq:** 5.825000000 GHz
- Span:** 50.00 MHz
- Res BW:** 390 kHz
- VBW:** 1.2 MHz
- Sweep:** 100.0 ms (1001 pts)
- Ref Offset:** 10.9 dB
- Ref:** 20.00 dBm
- ΔMkr1:** 22.10 MHz
- ΔMkr2:** -0.038 dB

8.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5775	84.00	83.80

MID CHANNEL



8.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

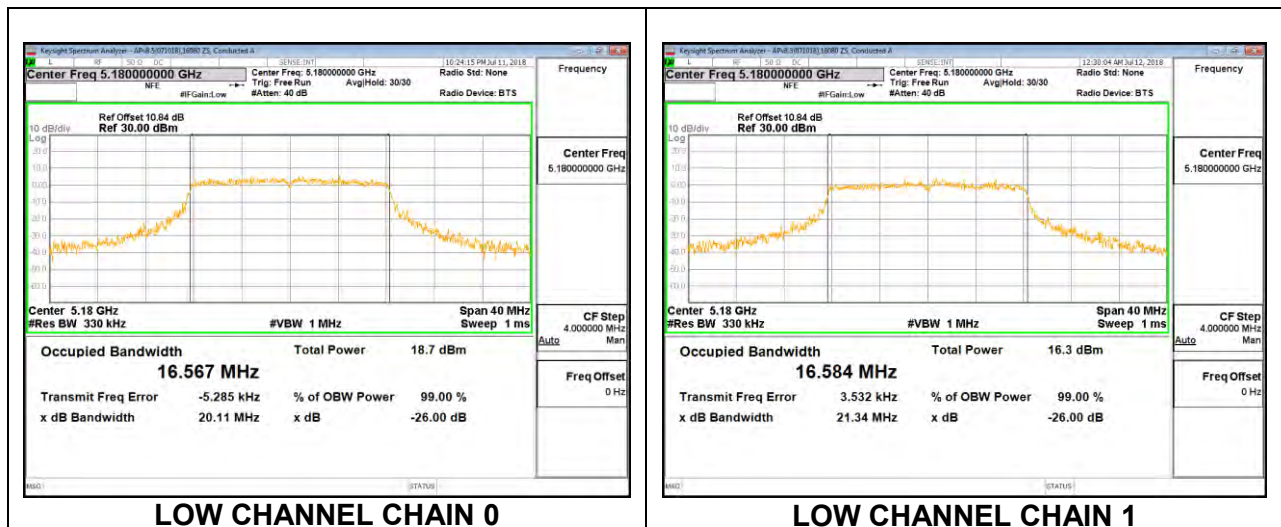
RESULTS

8.3.1. 802.11a MODE IN THE 5.2 GHz BAND

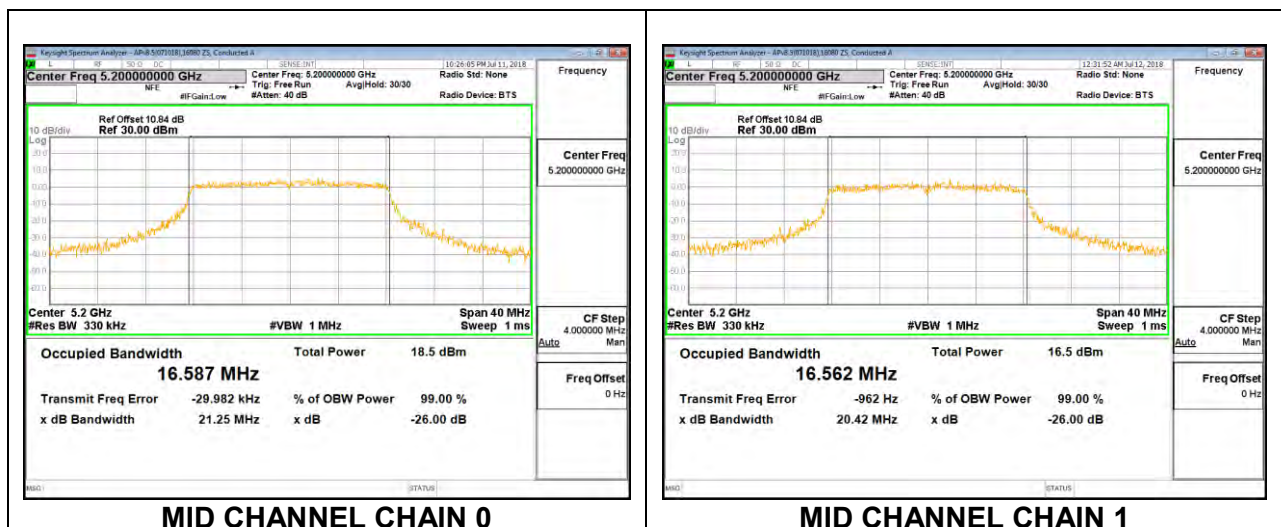
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5180	16.567	16.584
Mid	5200	16.587	16.562
High	5240	16.517	16.579

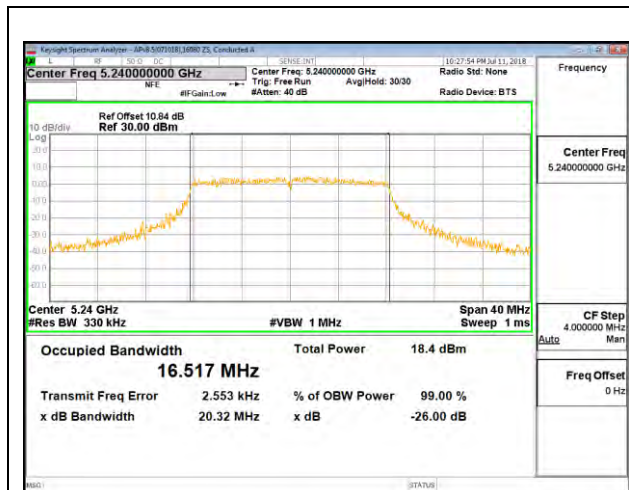
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



HIGH CHANNEL CHAIN 0



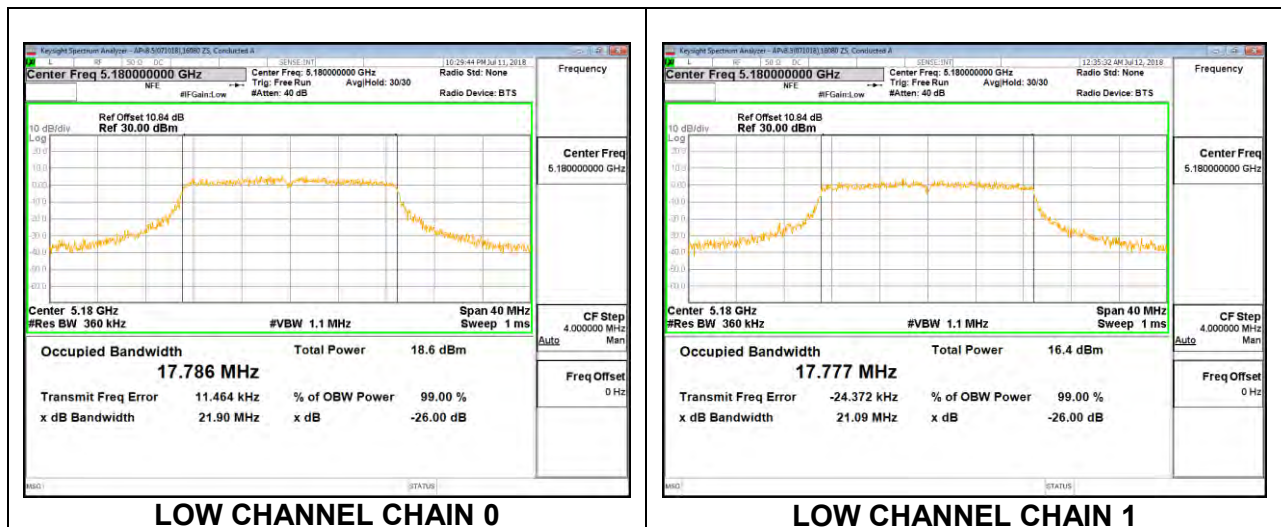
HIGH CHANNEL CHAIN 1

8.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

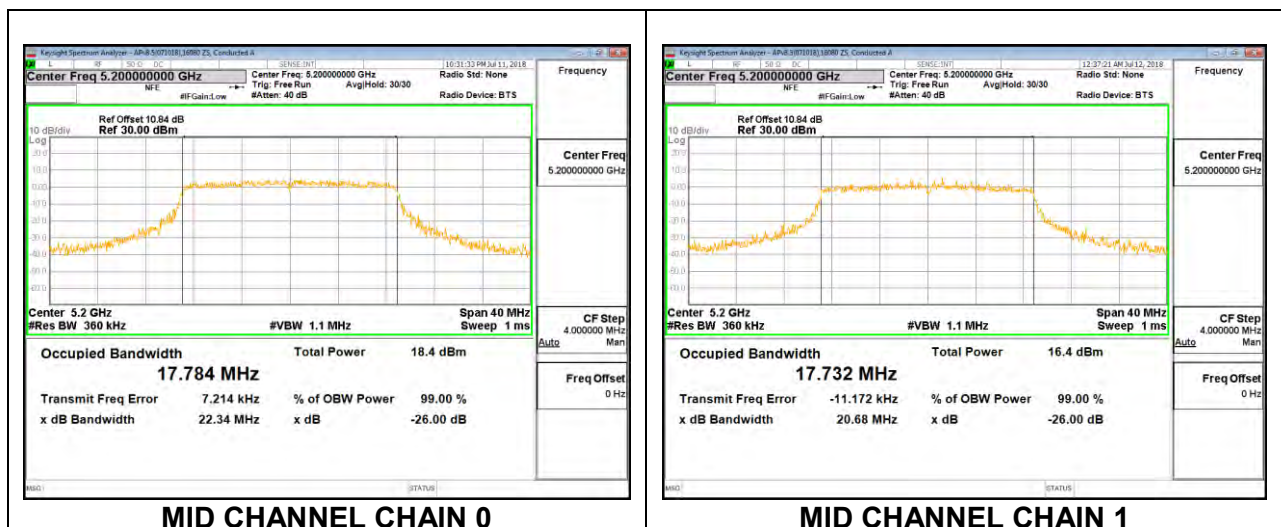
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5180	17.786	17.777
Mid	5200	17.784	17.732
High	5240	17.820	17.732

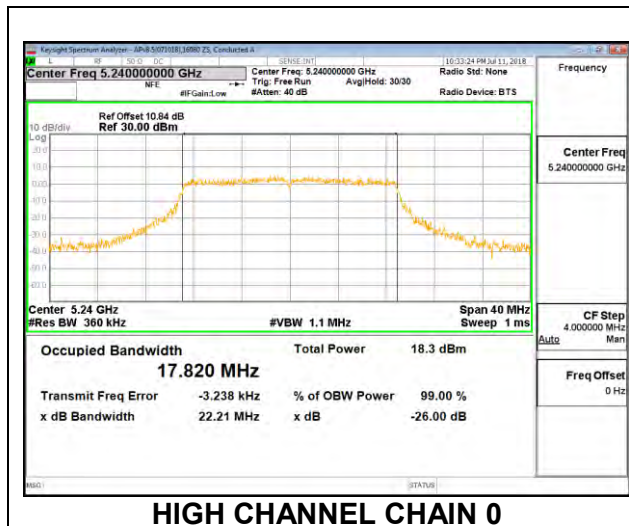
LOW CHANNEL



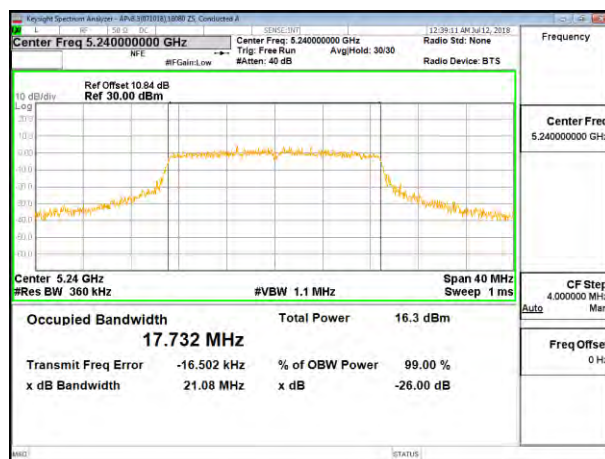
MID CHANNEL



HIGH CHANNEL



HIGH CHANNEL CHAIN 0



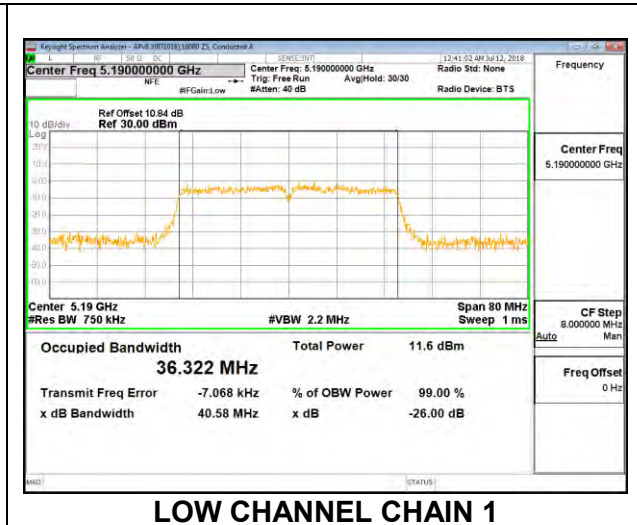
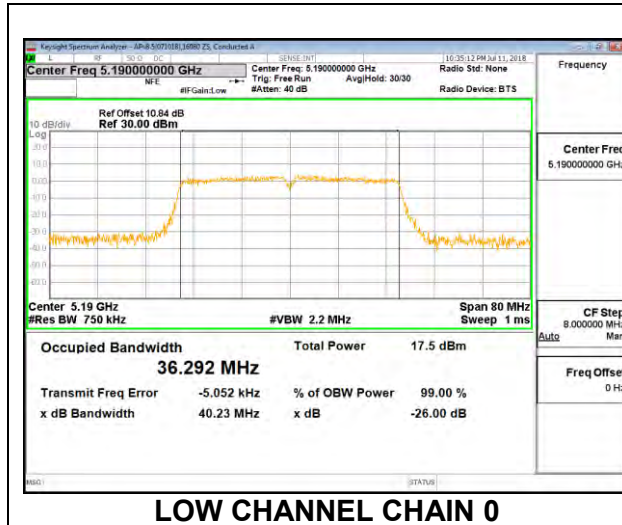
HIGH CHANNEL CHAIN 1

8.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

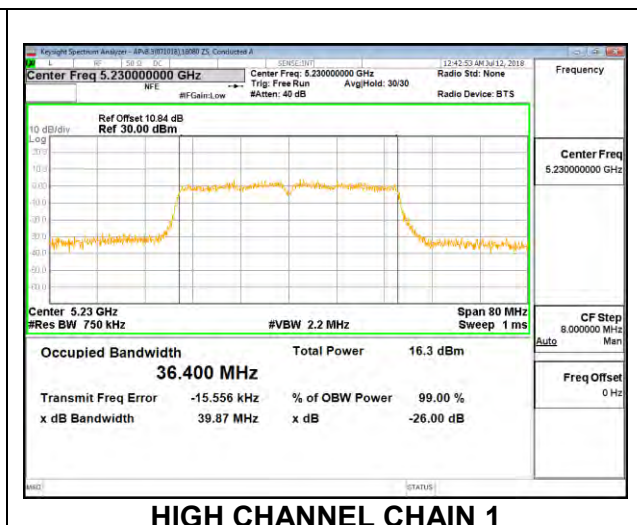
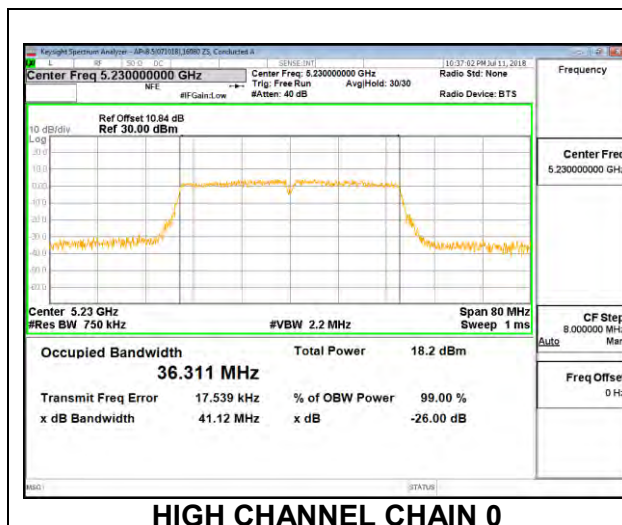
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5190	36.292	36.322
High	5230	36.311	36.400

LOW CHANNEL



HIGH CHANNEL

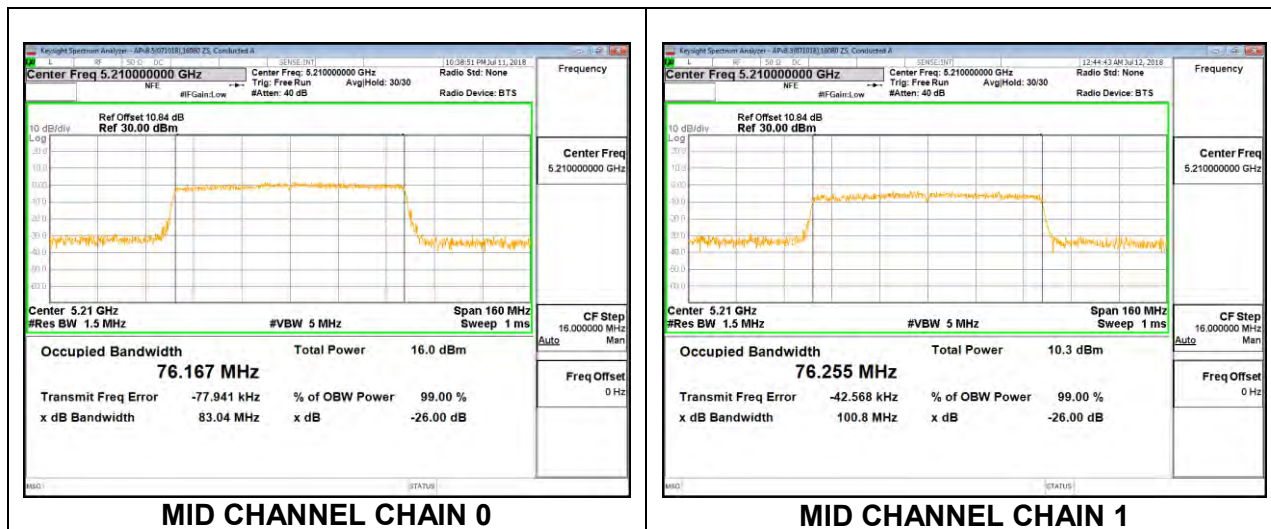


8.3.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Mid	5210	76.167	76.255

MID CHANNEL

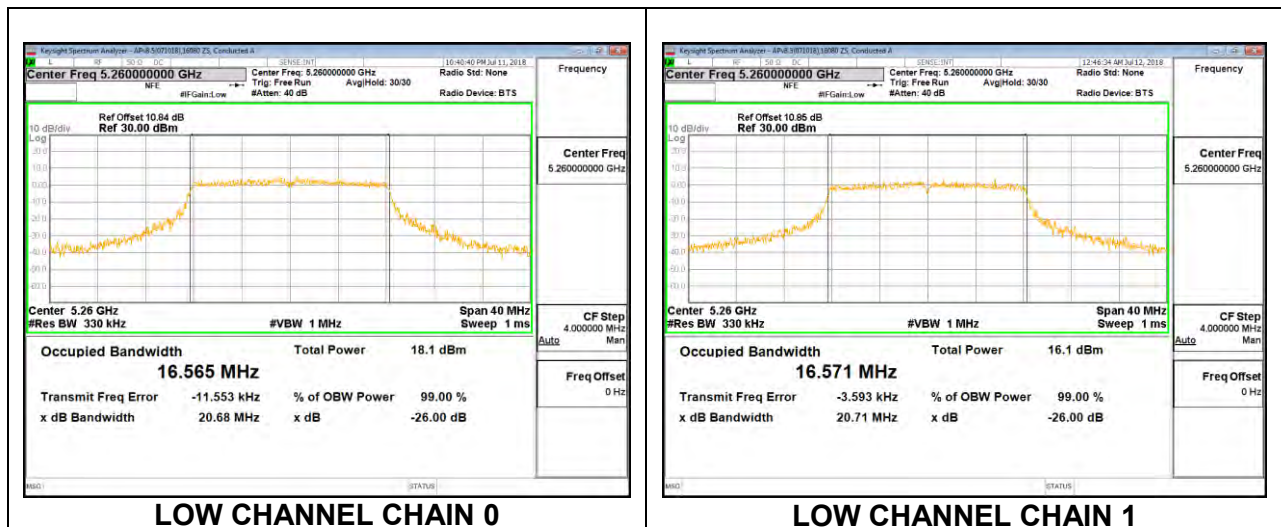


8.3.5. 802.11a MODE IN THE 5.3 GHz BAND

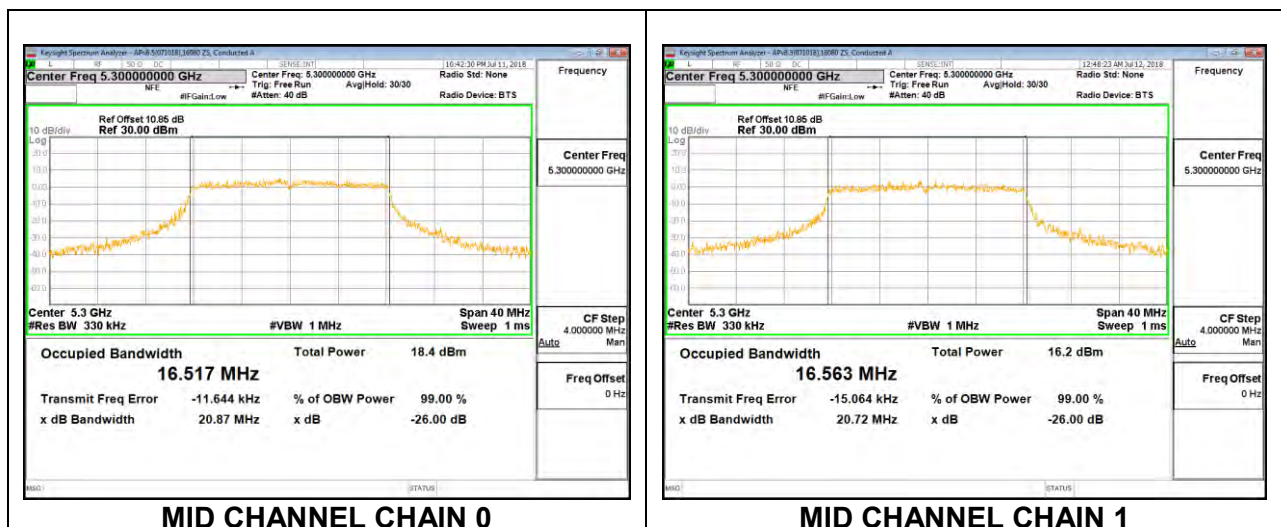
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5260	16.565	16.571
Mid	5300	16.517	16.563
High	5320	16.529	16.591

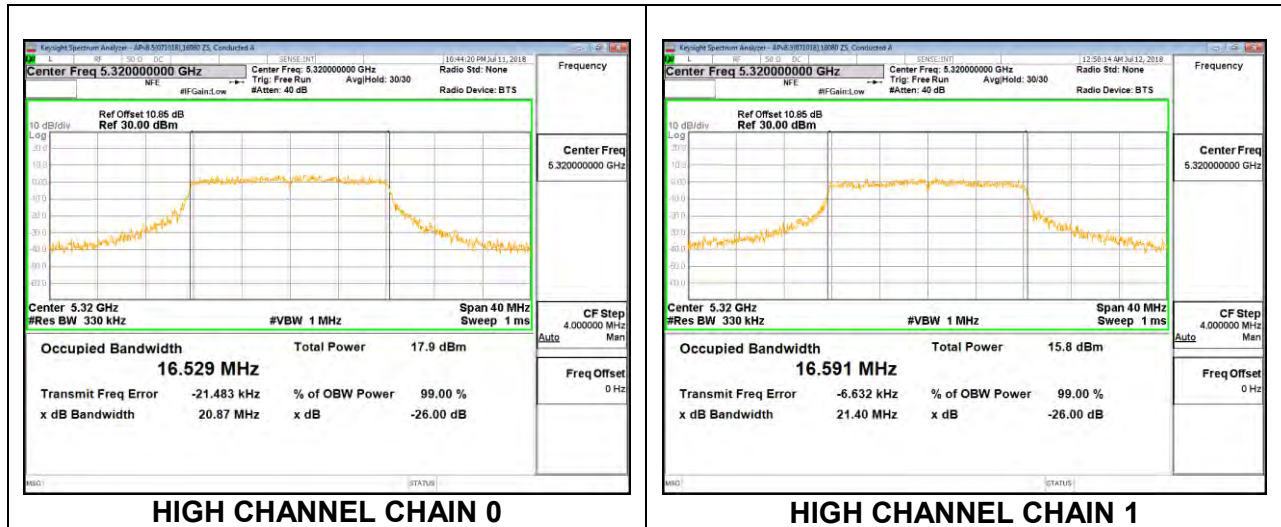
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

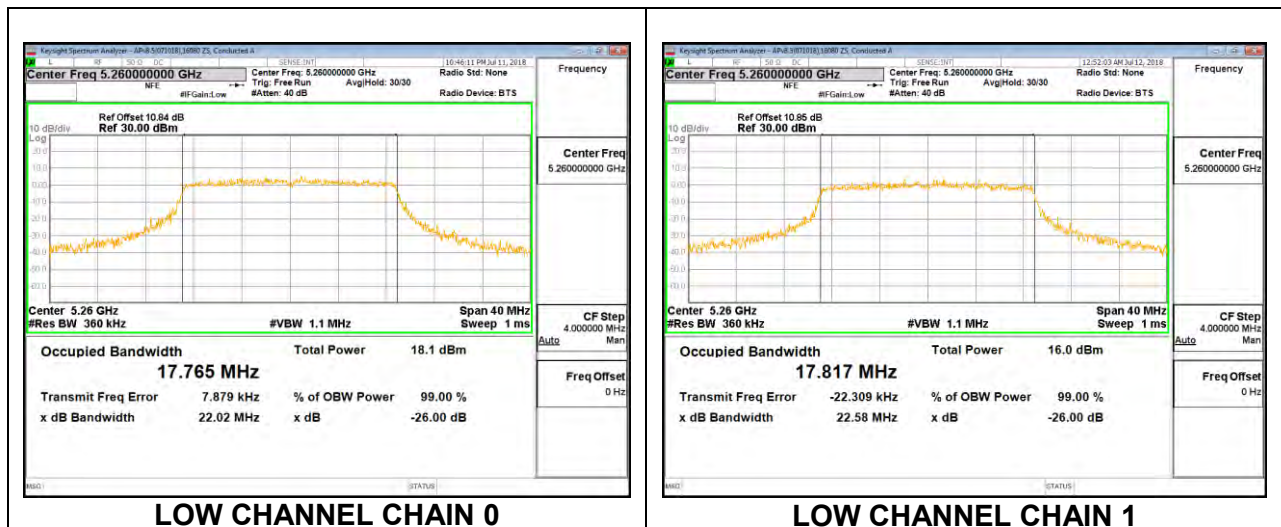


8.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

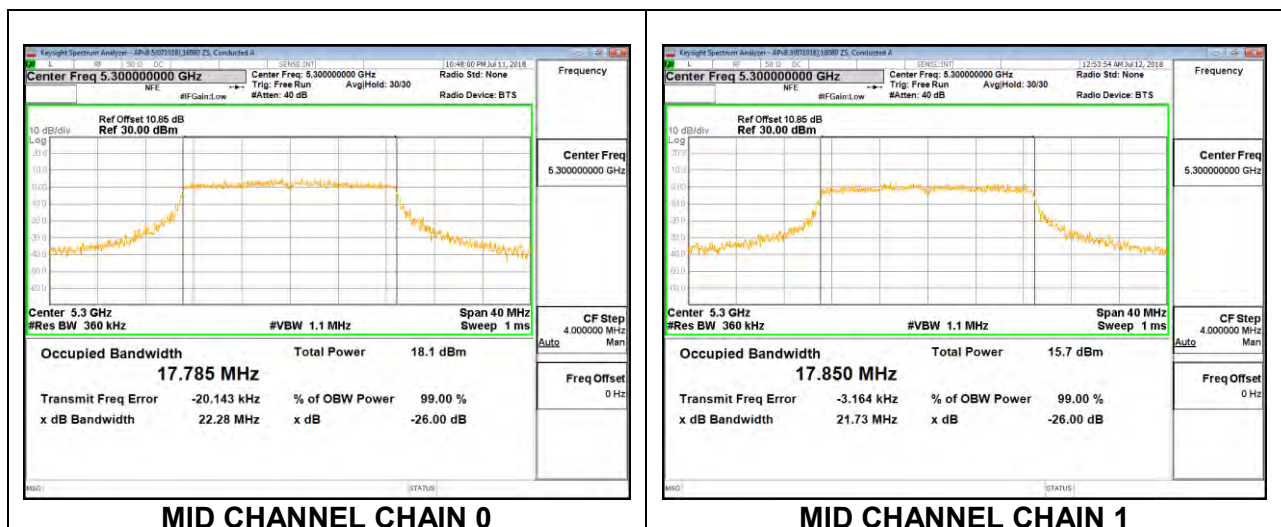
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5260	17.765	17.817
Mid	5300	17.785	17.850
High	5320	17.802	17.773

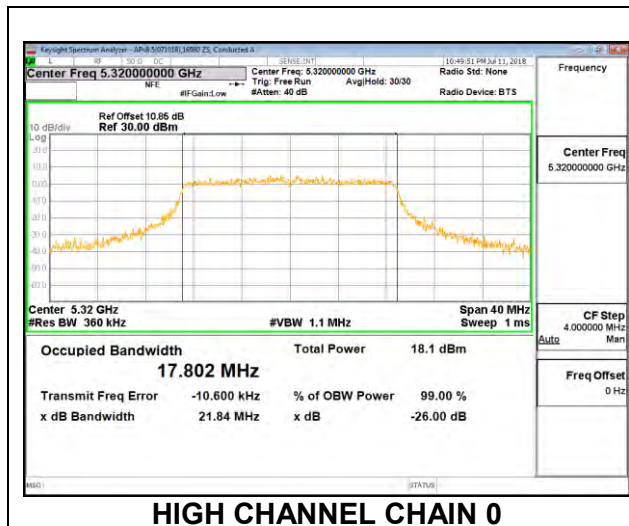
LOW CHANNEL



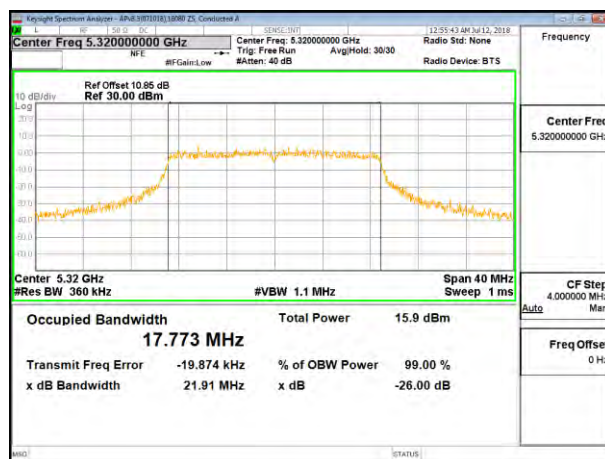
MID CHANNEL



HIGH CHANNEL



HIGH CHANNEL CHAIN 0



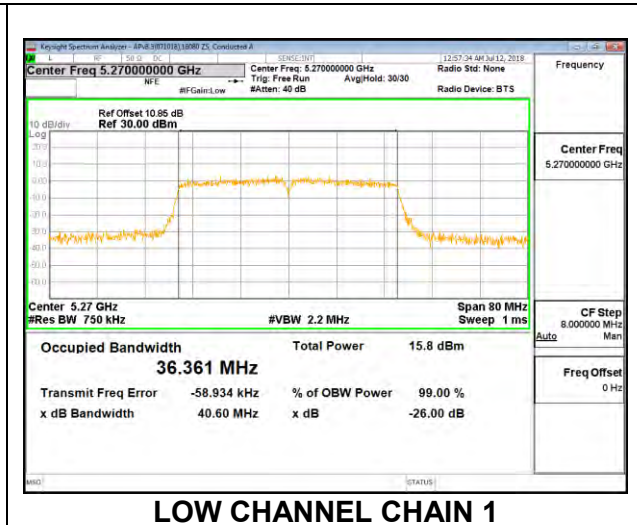
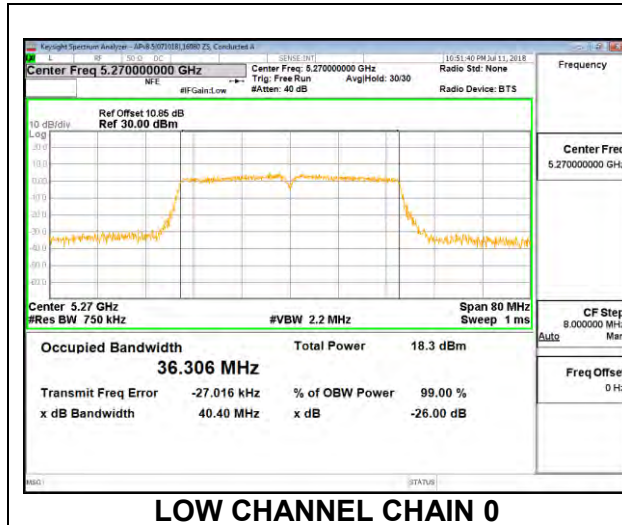
HIGH CHANNEL CHAIN 1

8.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

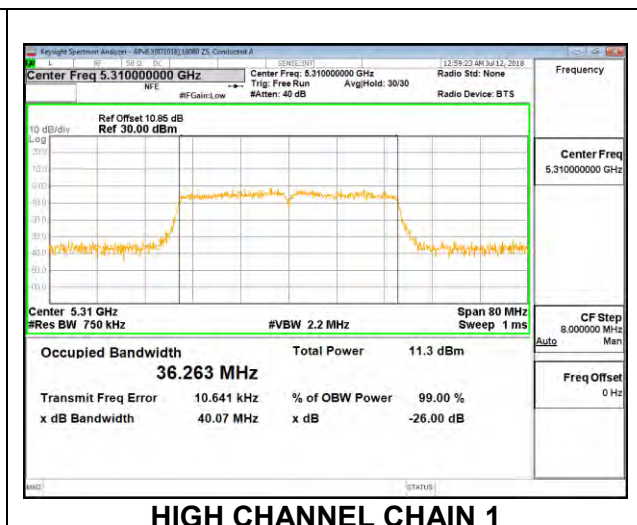
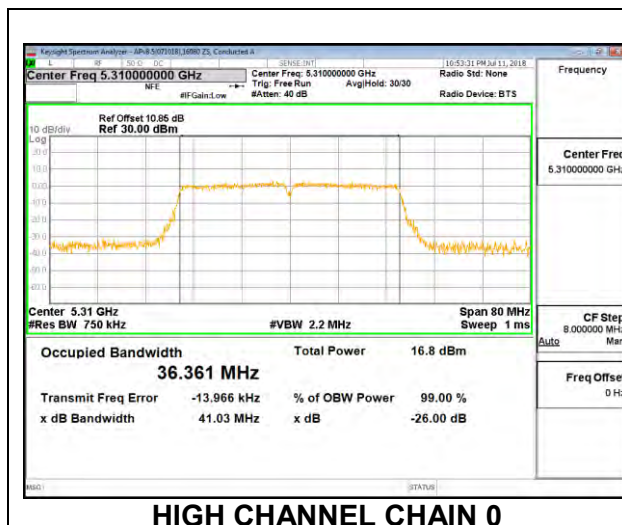
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5270	36.306	36.361
High	5310	36.361	36.263

LOW CHANNEL



HIGH CHANNEL

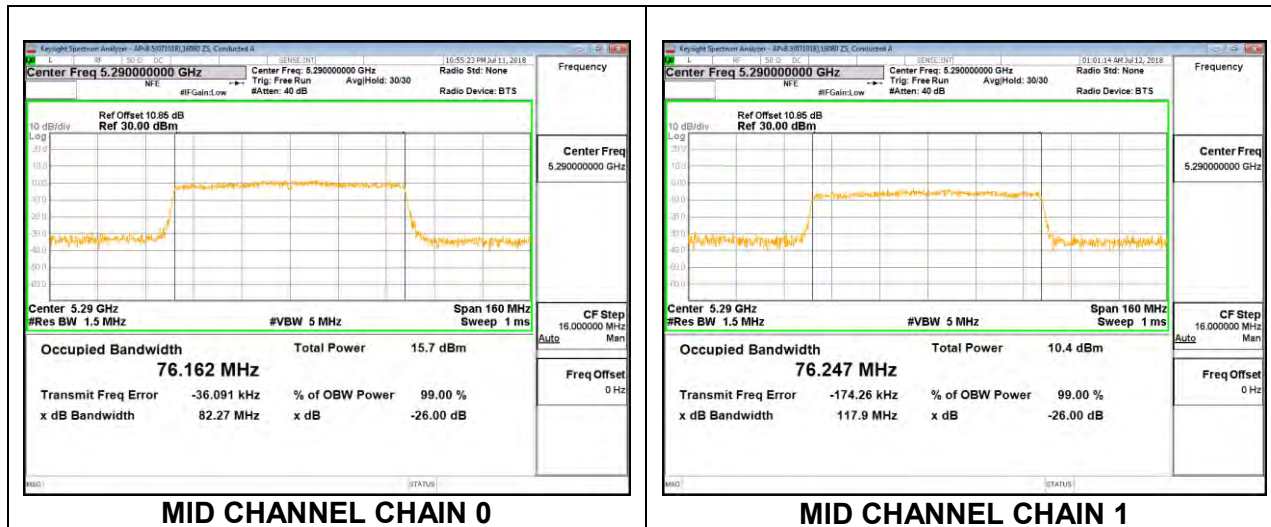


8.3.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Mid	5290	76.162	76.247

MID CHANNEL

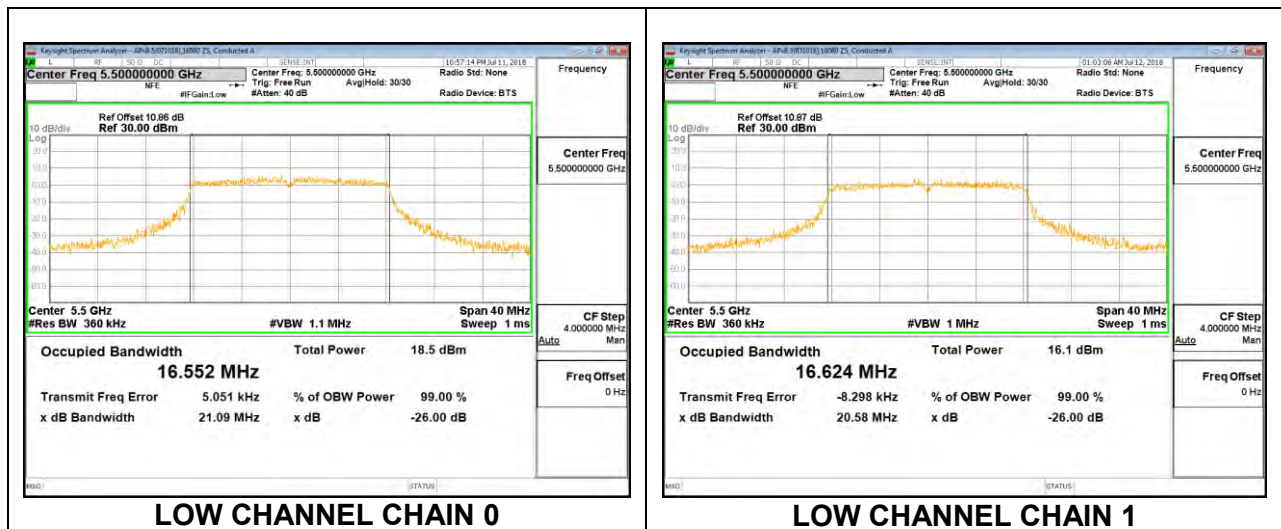


8.3.9. 802.11a MODE IN THE 5.6 GHz BAND

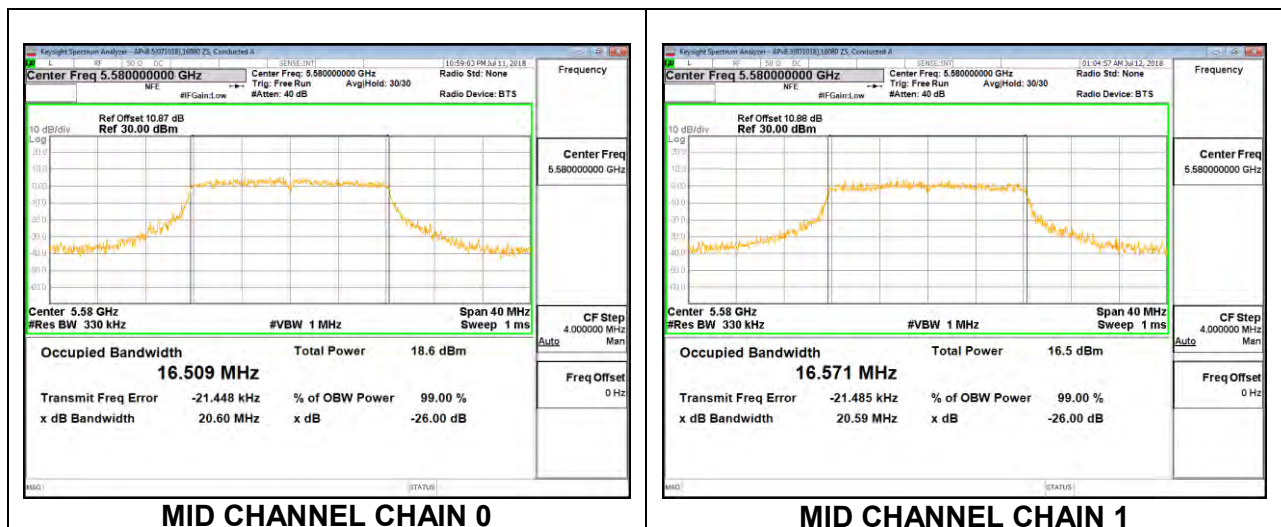
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5500	16.552	16.624
Mid	5580	16.509	16.571
High	5700	16.537	16.619
144	5720	16.660	16.586

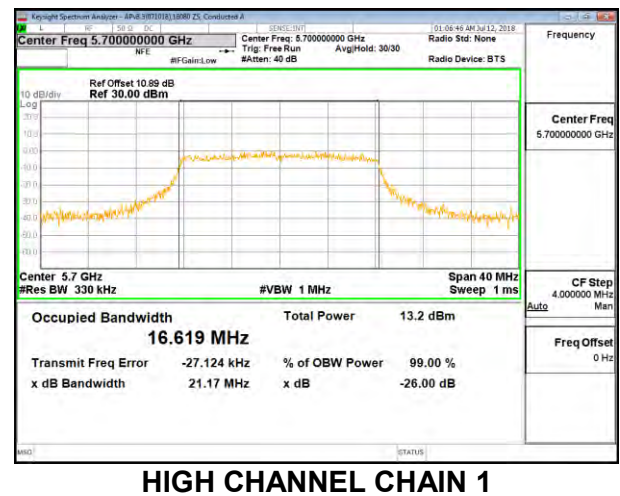
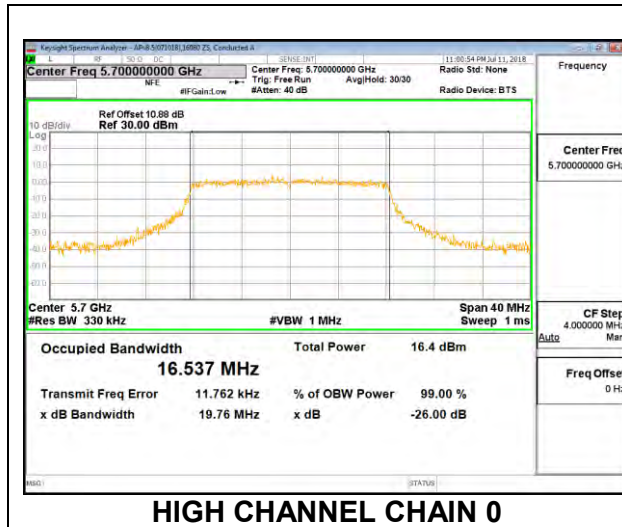
LOW CHANNEL



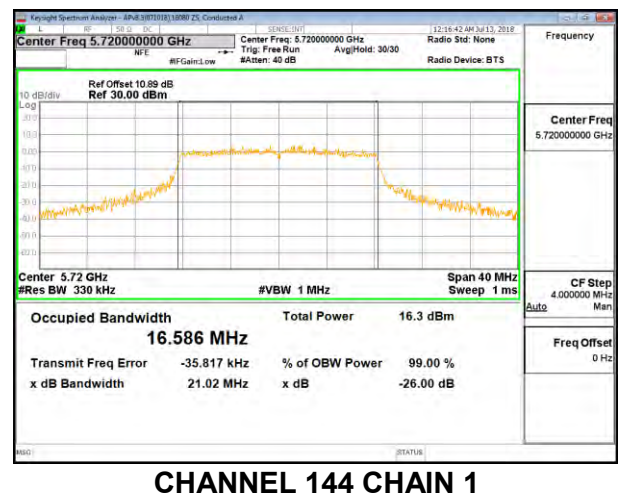
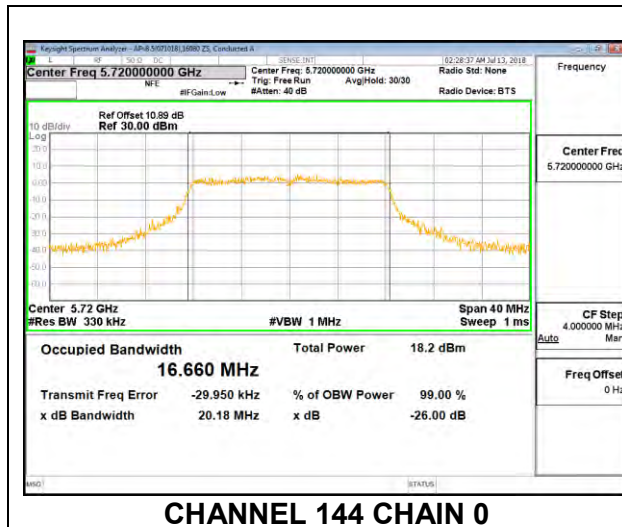
MID CHANNEL



HIGH CHANNEL



CHANNEL 144

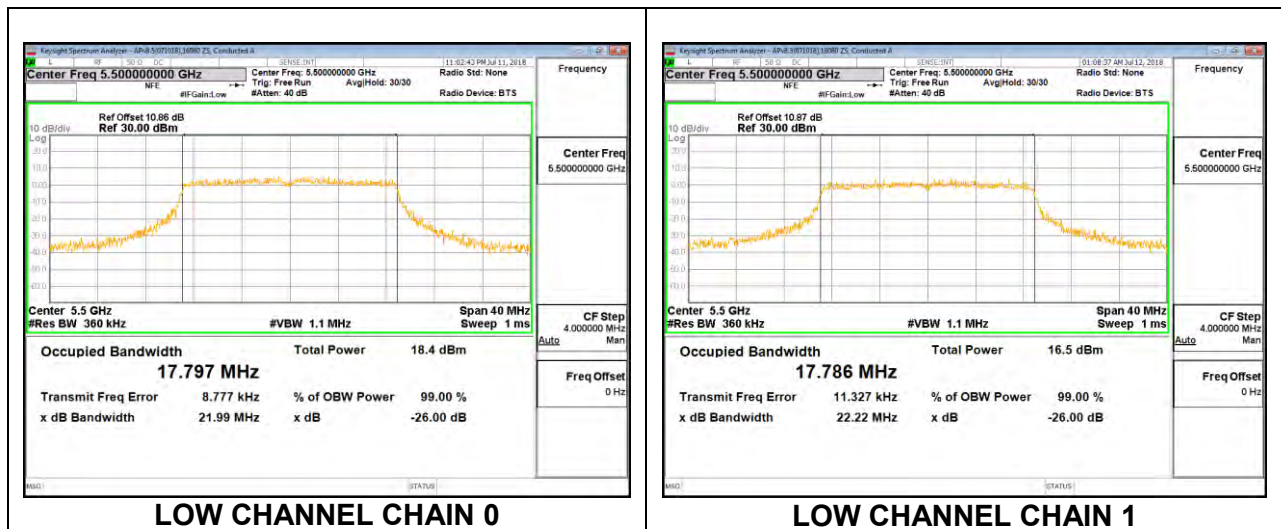


8.3.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

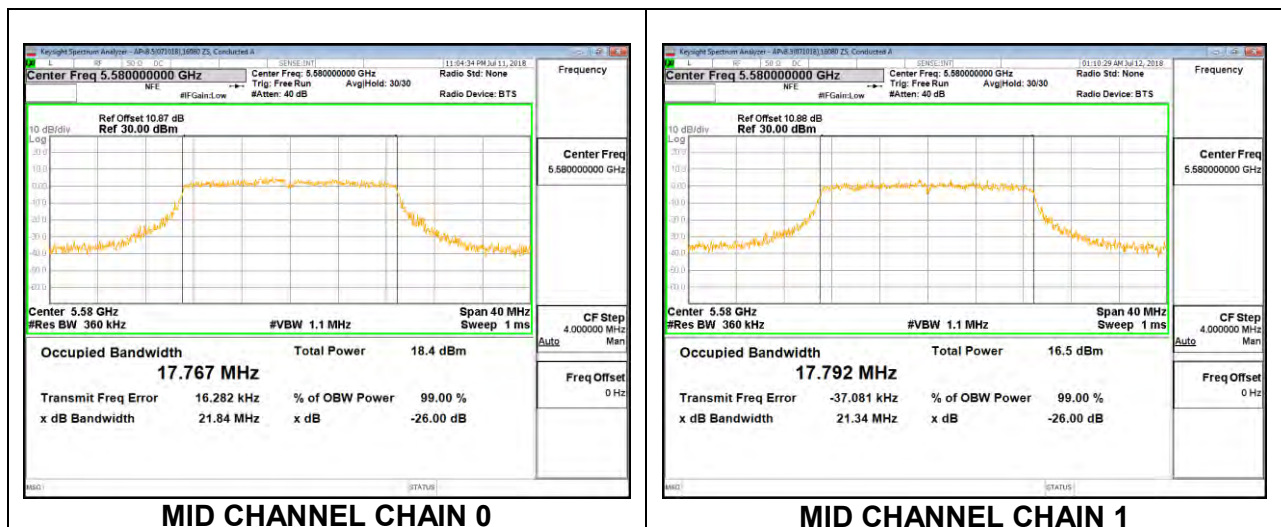
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5500	17.797	17.786
Mid	5580	17.767	17.792
High	5700	17.763	17.749
144	5720	17.792	17.808

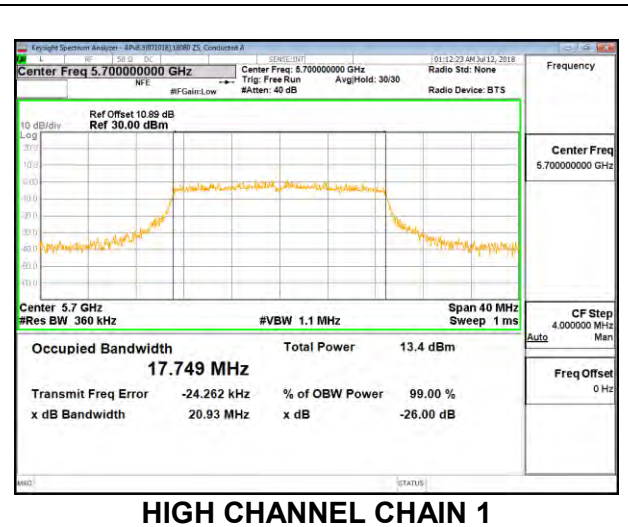
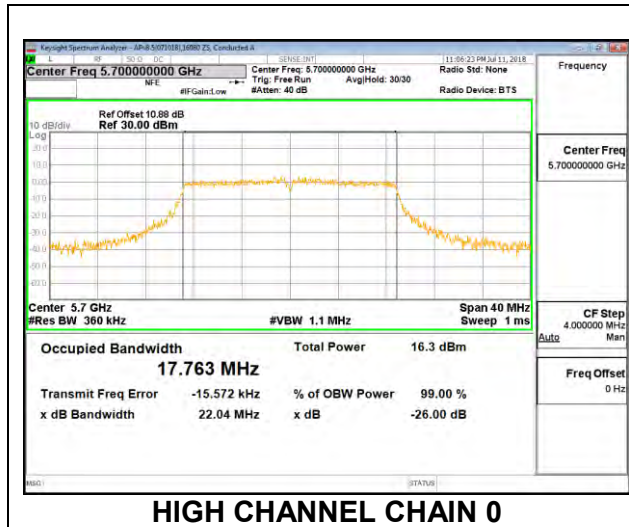
LOW CHANNEL



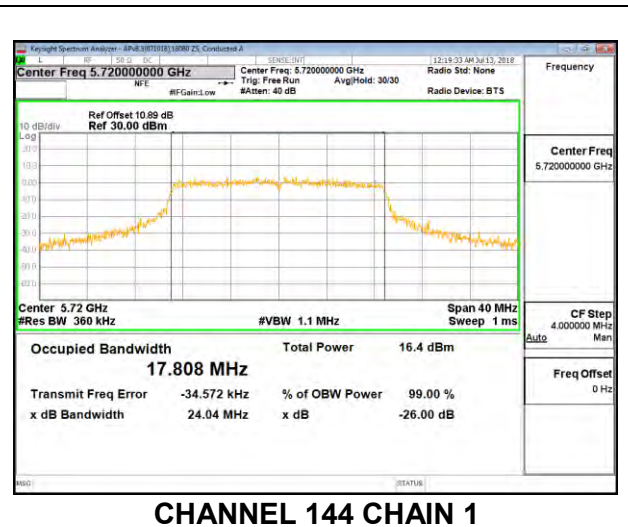
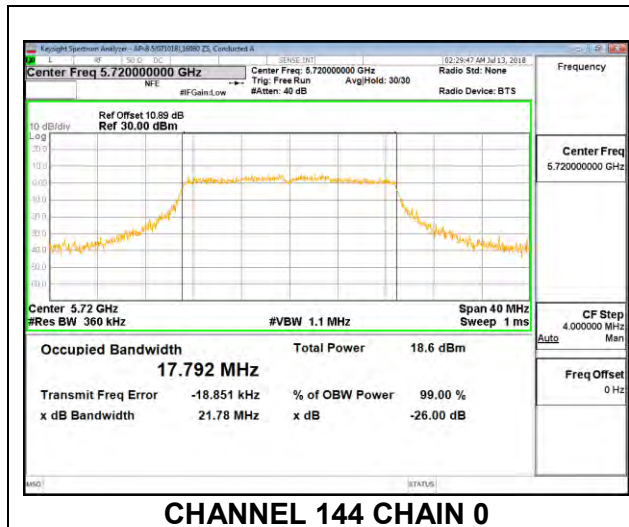
MID CHANNEL



HIGH CHANNEL



CHANNEL 144

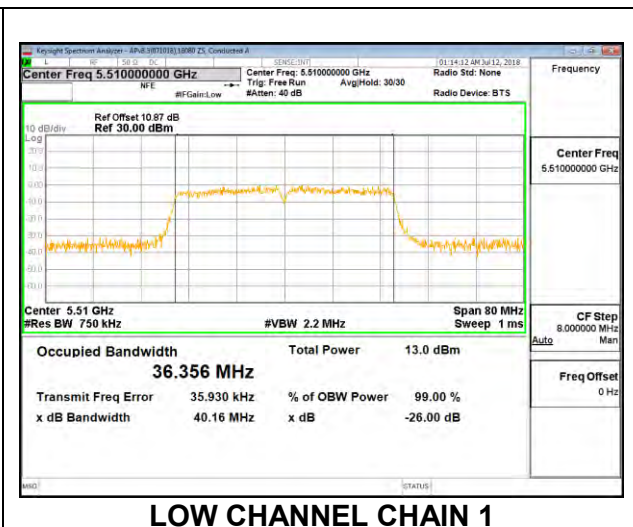
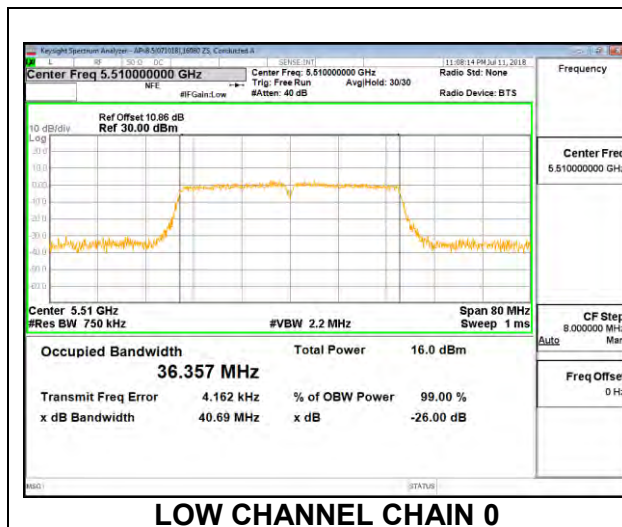


8.3.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

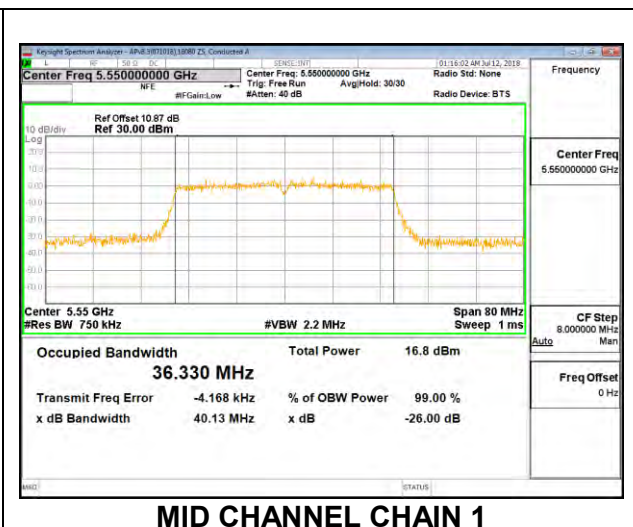
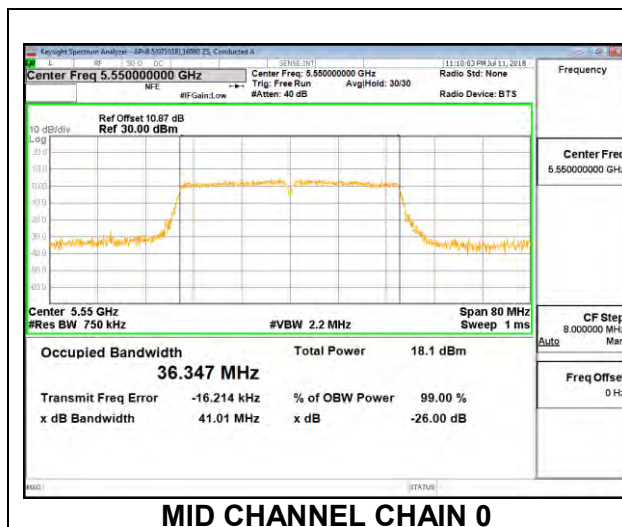
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5510	36.357	36.356
Mid	5550	36.347	36.330
High	5670	36.349	36.352
142	5710	36.296	36.374

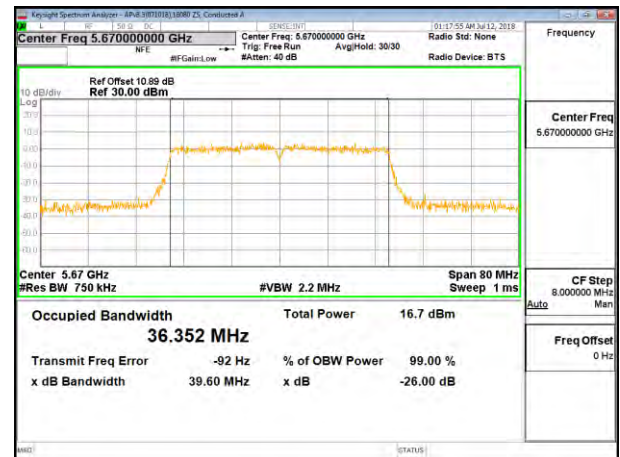
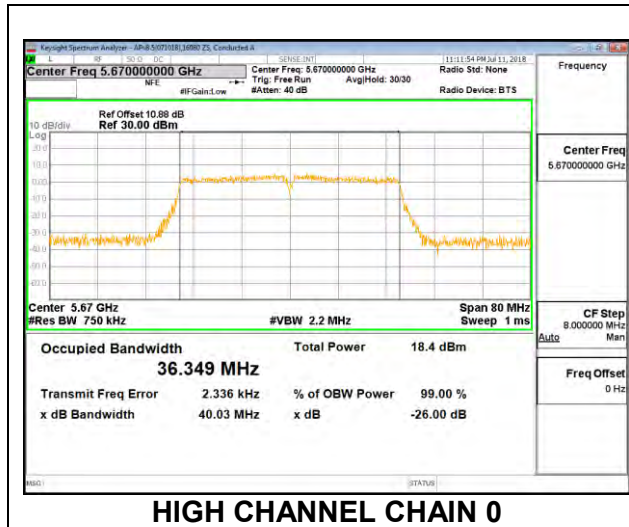
LOW CHANNEL



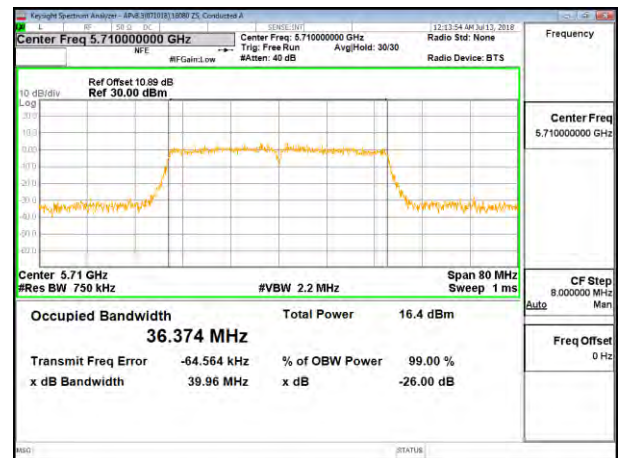
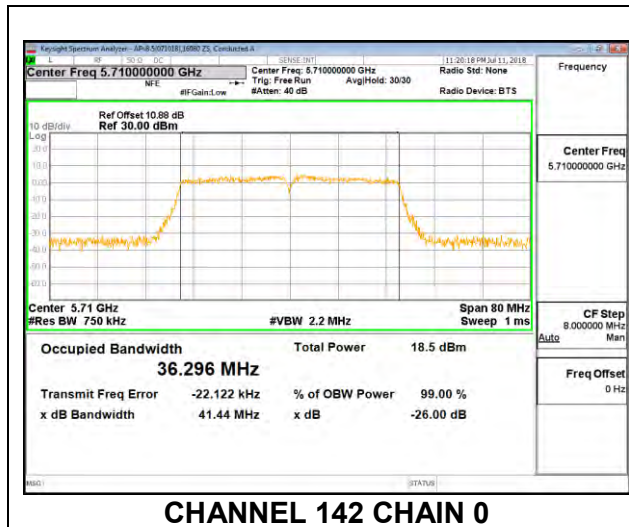
MID CHANNEL



HIGH CHANNEL



CHANNEL 142

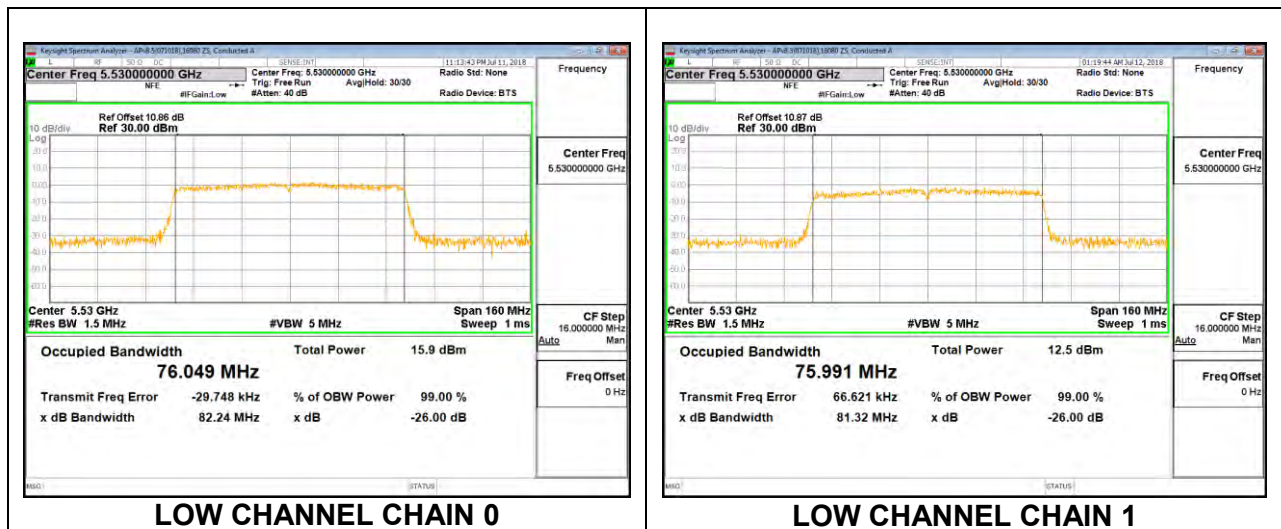


8.3.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

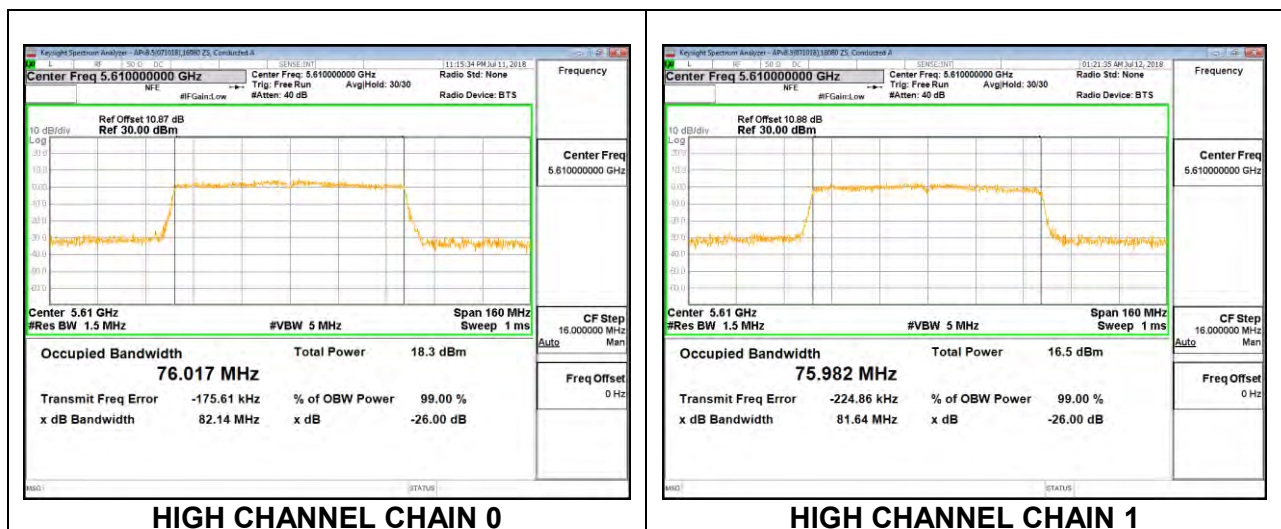
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5530	76.049	75.991
High	5610	76.017	75.982
138	5690	76.058	76.073

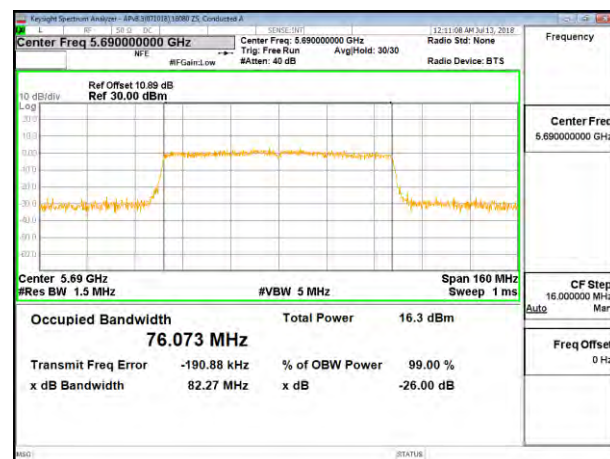
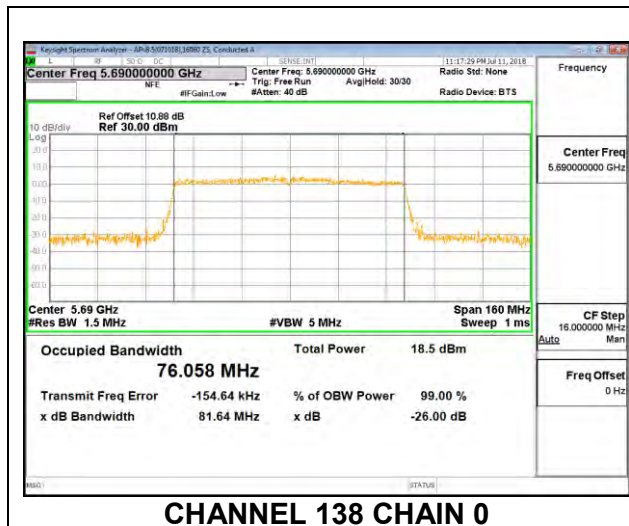
LOW CHANNEL



HIGH CHANNEL



CHANNEL 138

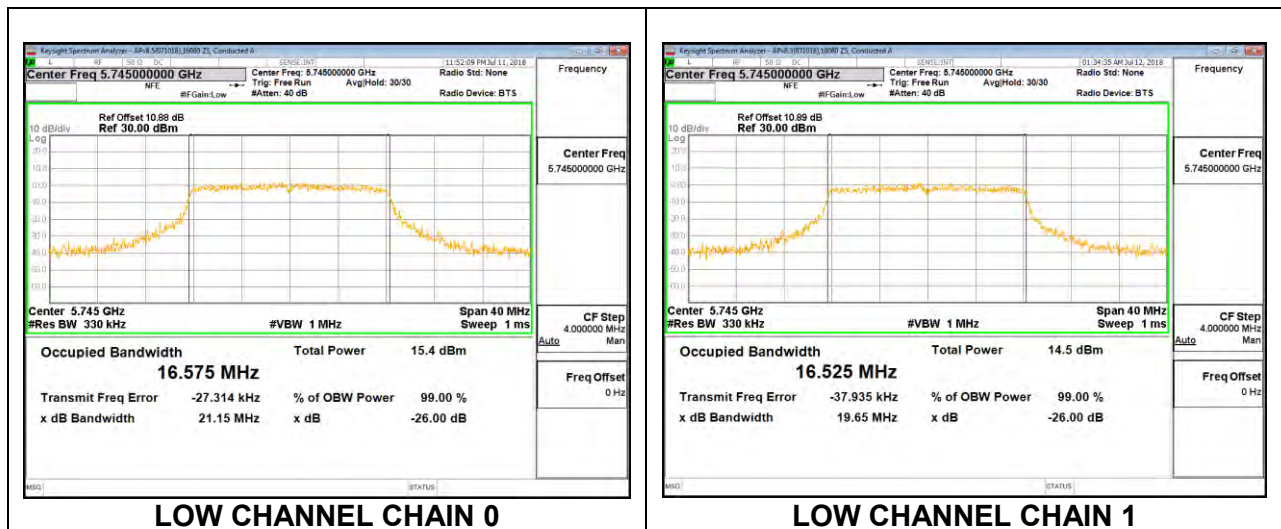


8.3.13. 802.11a MODE IN THE 5.8 GHz BAND

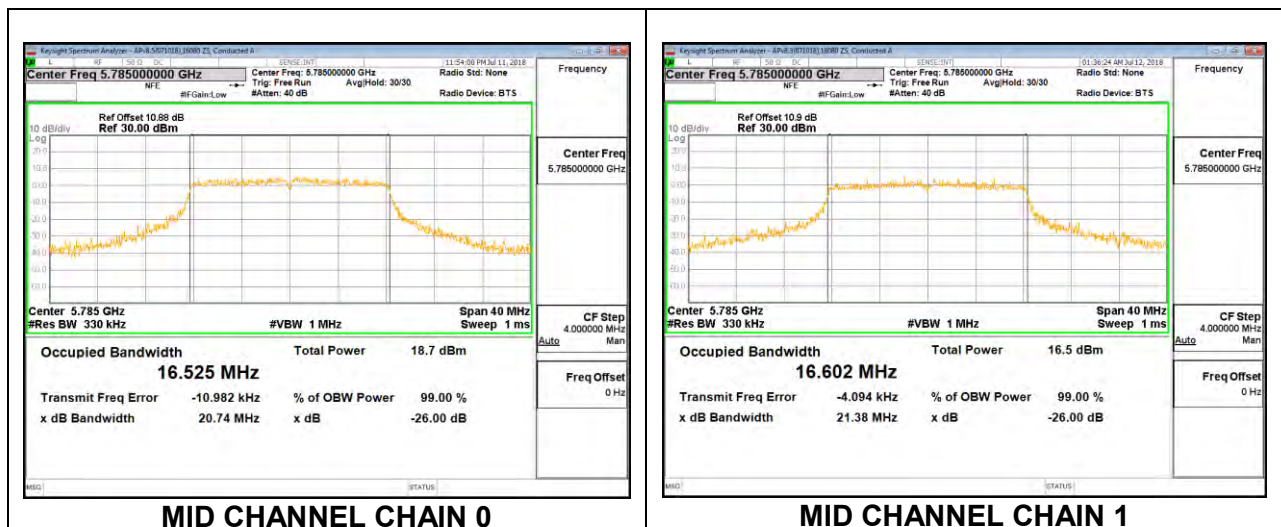
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low	5745	16.575	16.525
Mid	5785	16.525	16.602
High	5825	16.519	16.558

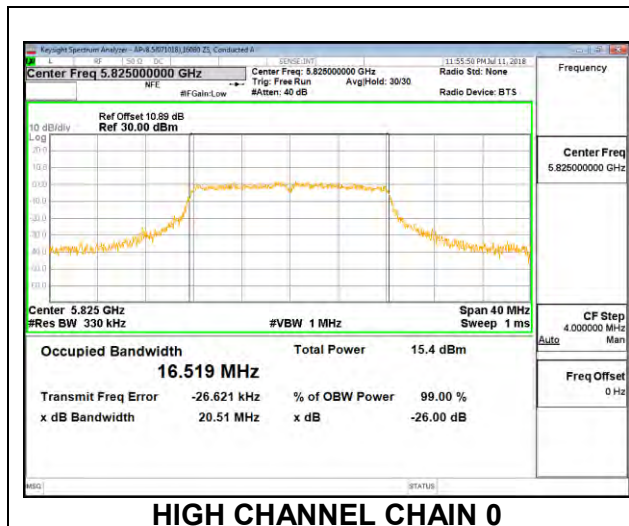
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1