



# **CERTIFICATION TEST REPORT**

**Report Number. :** 12440940-E5V2

**Applicant :** Samsung Electronics Co., Ltd.  
129 Samsung-Ro, Yeongtong-Gu,  
Suwon-Si, Gyeonggi-Do, 16677, Korea

**Models :** SM-A750N

**FCC ID :** A3LSMA750N

**EUT Description :** GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+  
and NFC

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

**Date Of Issue:**  
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## REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	9/6/2018	Initial Issue	
V2	9/12/2018	Updated Table Section 9.5.9	Steven Tran

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Samsung Electronics Co., Ltd.  
129 Samsung-Ro, Yeongtong-Gu,  
Suwon-Si, Gyeonggi-Do, 16677, Korea

**EUT DESCRIPTION:** GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC

**MODELS:** SM-A750N

**SERIAL NUMBER:** Conducted: R38K70KQF9N, R38K70KQGDH (Original)  
Radiated: R38K70KQFNY, R38K70KQFAH, R38K70KQF8A (Original)  
Conducted: R39K70AGZNA (Spot Check)  
Radiated: R39K70DSRLB, R39K70AH06N (Spot Check)

**DATE TESTED:** August 6 – 16, 2018 (Original)  
August 28 – 31, 2018 (Spot Check)

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. INTRODUCTION OF TEST DATA REUSE

### 2.1. INTRODUCTION

According to the manufacturer, the WLAN, Bluetooth, ANT+ and NFC hardware of A3LSMA750N are identical to A3LSMA750GN. In addition A3LSMA750N digital circuit is identical to A3LSMA750GN. Therefore the following report/data of A3LSMA750N may be represented from A3LSMA750GN along with the spot check verification data.

- WLAN
- Bluetooth
- ANT+
- NFC

### 2.2. DEVICES DIFFERENCES

Difference between A3LSMA750N and A3LSMA750GN:

Samsung Electronics Co., Ltd. hereby declares that between A3LSMA750N and A3LSMA750GN:

Hardware:

- Ant matching points are different.
- GSM850 / LTE B2 / B12 / B13 / B66 components are deleted.
- LTE B26 components are added.
- Only BT/WiFi parts are same.

Software:

- PROTOCOL PART is same.
- LTE B26 band SW enabled, GSM850, LTE B2/12/13/66 bands SW disabled.
- SW was updated to reflect the HW changes.

Therefore the WLAN, Bluetooth, ANT+, NFC report and data of A3LSMA750GN may represent for A3LSMA750N.

### 2.3. SPOT CHECK VERIFICATION RESULTS SUMMARY

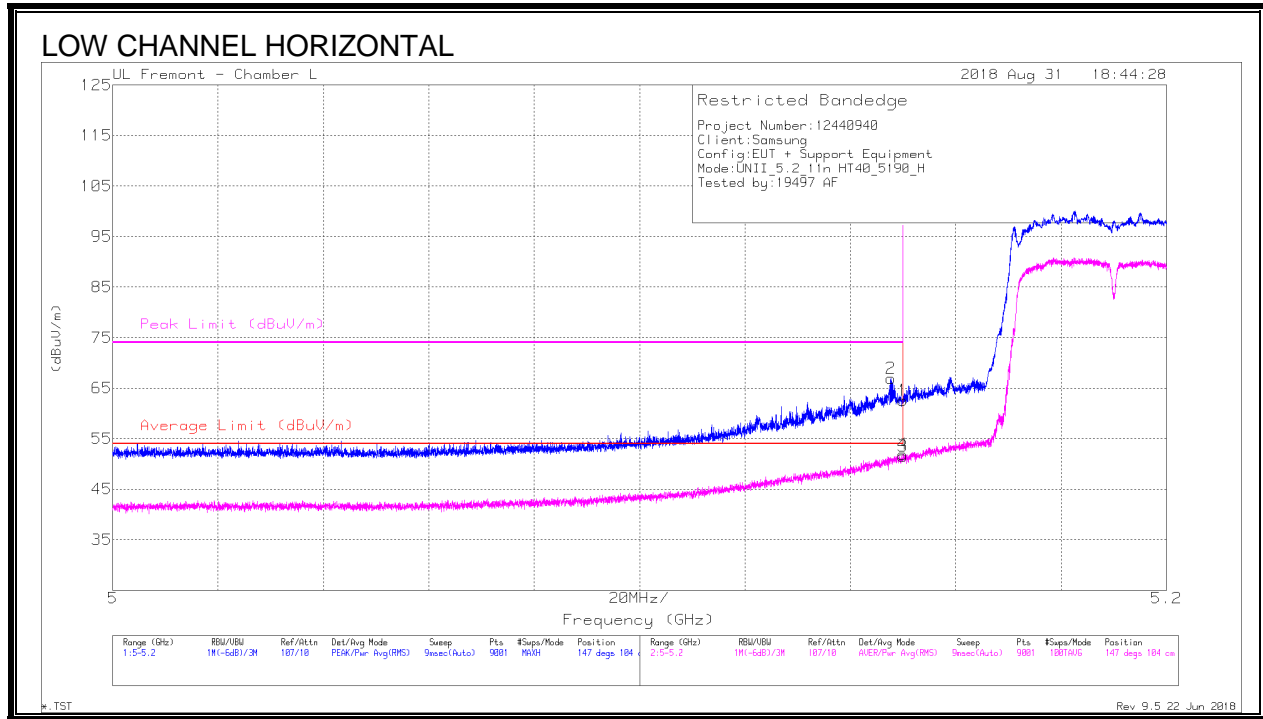
Spot check verification has been done on device A3LSMA750N for radiated harmonic spurious and radiated band-edge. The data from the application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the summary below.

SM-A750N SPOT CHECK RESULTS										
Technology	Mode	Test Item	Channel	Measured Frequency	SM-A750GN_DS		SM-A750N		Delta (dB)	
					Peak	Ave	Peak	Ave	Peak	Ave
UNII	11n HT40	RBE	38	5150MHz	66.61	51.69	66.98	51.89	0.37	0.2
	11ac VHT80	RSE	122	7480MHz	50.7	44.69	50.15	46.12	-0.55	1.43

Comparison of two models, higher deviation is within 3dB range and all test are under FCC Technical Limits.

### 2.3.1. SPOT CHECK DATA

#### 2.3.1. BANDEDGE (LOW CHANNEL)

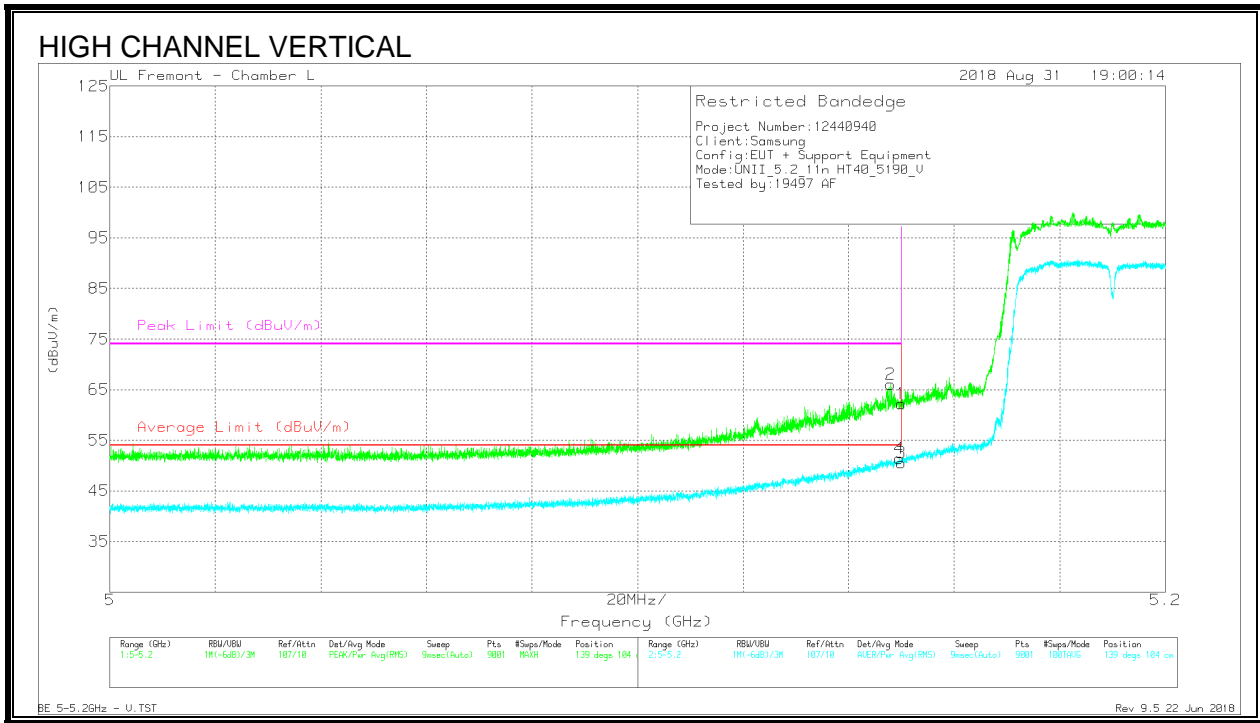


#### Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	47.39	Pk	34.4	-19.2	0	62.59	-	-	74	-11.41	147	104	H
2	* 5.148	51.78	Pk	34.4	-19.2	0	66.98	-	-	74	-7.02	147	104	H
3	* 5.15	36.21	RMS	34.4	-19.2	.17	51.58	54	-2.42	-	-	147	104	H
4	* 5.15	36.52	RMS	34.4	-19.2	.17	51.89	54	-2.11	-	-	147	104	H

\* - indicates frequency in CFR47 Pt 15 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection





Trace Markers

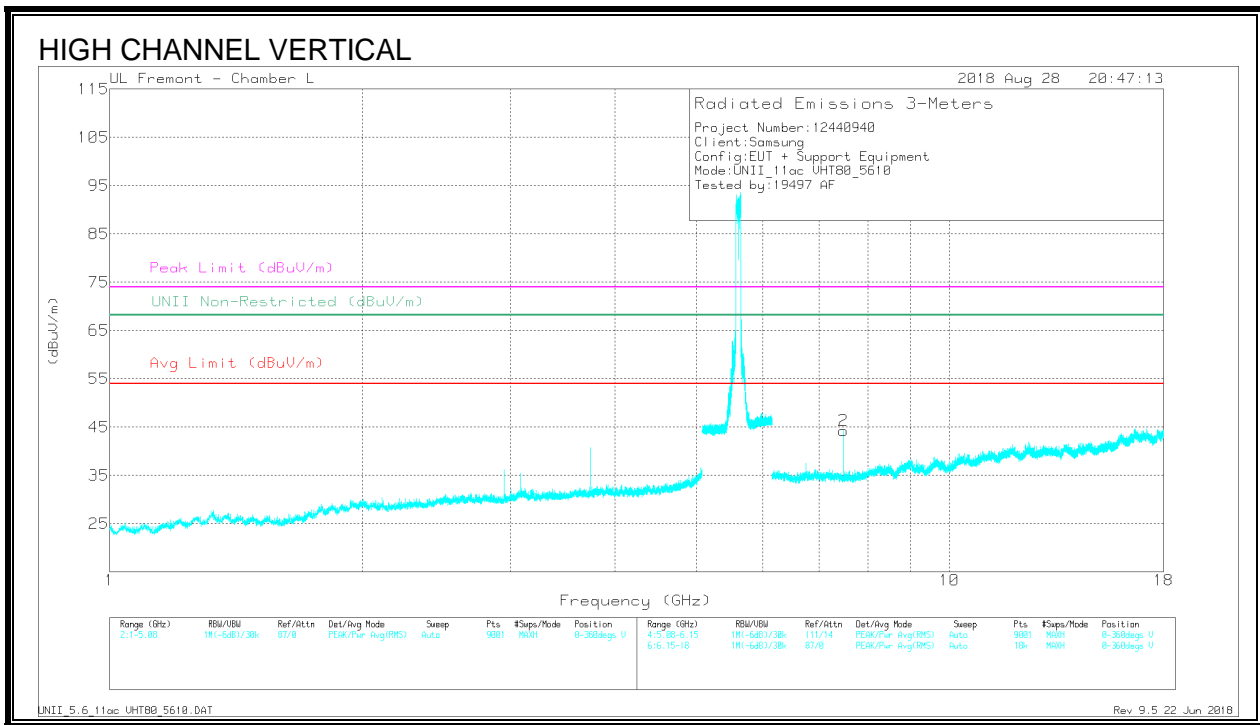
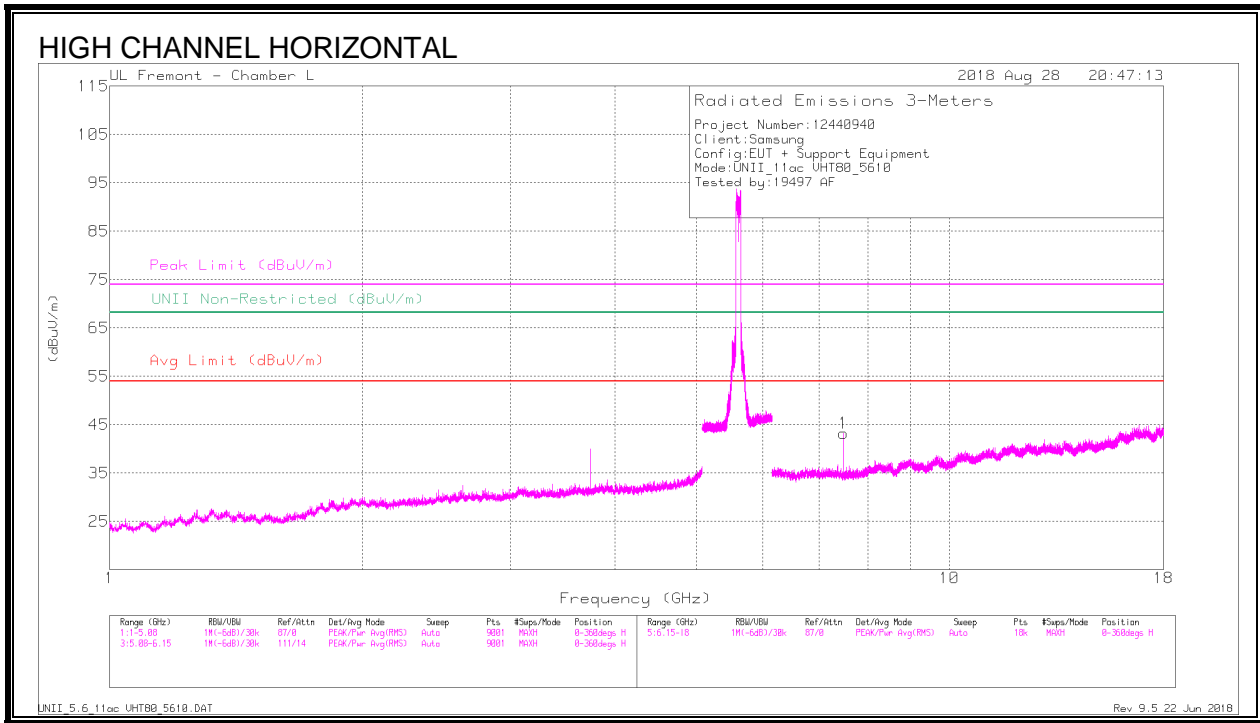
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	47.03	Pk	34.4	-19.2	0	62.23	-	-	74	-11.77	139	104	V
2	* 5.148	50.87	Pk	34.4	-19.2	0	66.07	-	-	74	-7.93	139	104	V
3	* 5.15	35.36	RMS	34.4	-19.2	.17	50.73	54	-3.27	-	-	139	104	V
4	* 5.15	36.23	RMS	34.4	-19.2	.17	51.6	54	-2.4	-	-	139	104	V

\* - indicates frequency in CFR47 Pt 15 Restricted Band

Pk - Peak detector

RMS - RMS detection

### 2.3.2. HARMONICS AND SPURIOUS EMISSIONS



**Radiated Emissions**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 7.48	39.55	PK-U	35.7	-25.1	0	50.15	-	-	74	-23.85	-	-	291	100	H
	* 7.48	35.19	ADR	35.7	-25.1	.33	46.12	54	-7.88	-	-	-	-	291	100	H
2	* 7.48	38.89	PK-U	35.7	-25.1	0	49.49	-	-	74	-24.51	-	-	290	127	V
	* 7.48	34.65	ADR	35.7	-25.1	.33	45.58	54	-8.42	-	-	-	-	290	127	V

\* - indicates frequency in CFR47 Pt 15 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

**2.4. REFERENCE DETAIL**

Equipment Class	Reference FCC ID	Report Title/Section
NII (UNII WLAN)	A3LSMA750GN	12440598-E5V1 FCC Report UNII WLAN

### 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 14-30, FCC KDB 905462 D06 v02, FCC KDB 789033 D02 v02r01, ANSI C63.10-2013, FCC 06-96, FCC KDB 905462 D02 and D03.

### 4. 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.
<input type="checkbox"/> Chamber A (IC:2324B-1)	<input type="checkbox"/> Chamber D (IC:22541-1)	<input type="checkbox"/> Chamber I (IC: 2324A-5)
<input type="checkbox"/> Chamber B (IC:2324B-2)	<input type="checkbox"/> Chamber E (IC:22541-2)	<input type="checkbox"/> Chamber J (IC: 2324A-6)
<input type="checkbox"/> Chamber C (IC:2324B-3)	<input type="checkbox"/> Chamber F (IC:22541-3)	<input type="checkbox"/> Chamber K (IC: 2324A-1)
	<input type="checkbox"/> Chamber G (IC:22541-4)	<input checked="" type="checkbox"/> Chamber L (IC: 2324A-3)
	<input type="checkbox"/> Chamber H (IC:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code.

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

## 5. CALIBRATION AND UNCERTAINTY

### 5.1. 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.

### 5.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

### 5.3. 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%.

## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC.

## 6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

### 5.2 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.2 GHz band, 1TX</b>			
5180-5240	802.11a	15.62	36.48
5180-5240	802.11n HT20	15.68	36.98
5190-5230	802.11n HT40	13.61	22.96
5210	802.11ac VHT80	10.44	11.07

### 5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.3 GHz band, 1TX</b>			
5260 - 5320	802.11a	14.95	31.26
5260 - 5320	802.11n HT20	14.79	30.13
5270 - 5310	802.11n HT40	13.86	24.32
5290	802.11ac VHT80	12.62	18.28

### 5.6 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.6 GHz band, 1TX</b>			
5500-5720	802.11a	15.12	32.51
5500-5720	802.11n HT20	15.01	31.70
5510-5710	802.11n HT40	13.88	24.43
5530-5690	802.11ac VHT80	13.27	21.23

### 5.8 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.8 GHz band, 1TX</b>			
5745-5825	802.11a	15.10	32.36
5745-5825	802.11n HT20	14.95	31.26
5755-5795	802.11n HT40	13.57	22.75
5775	802.11ac VHT80	12.81	19.10

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with the following maximum gains:

Frequency (GHz)	Peak Antenna Gain (dBi)
5180-5240	-6.90
5260-5320	-6.90
5500-5700	-4.31
5725-5850	-5.88

### 6.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was A750GN.001

### 6.5. WORST-CASE CONFIGURATION AND MODE

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

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

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

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

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

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



## 6.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	EP-TA50EWE	DW3J719AS/A-E	N/A
Earphone	Samsung	N/A	N/A	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	Un-shielded	1	EUT to AC Mains

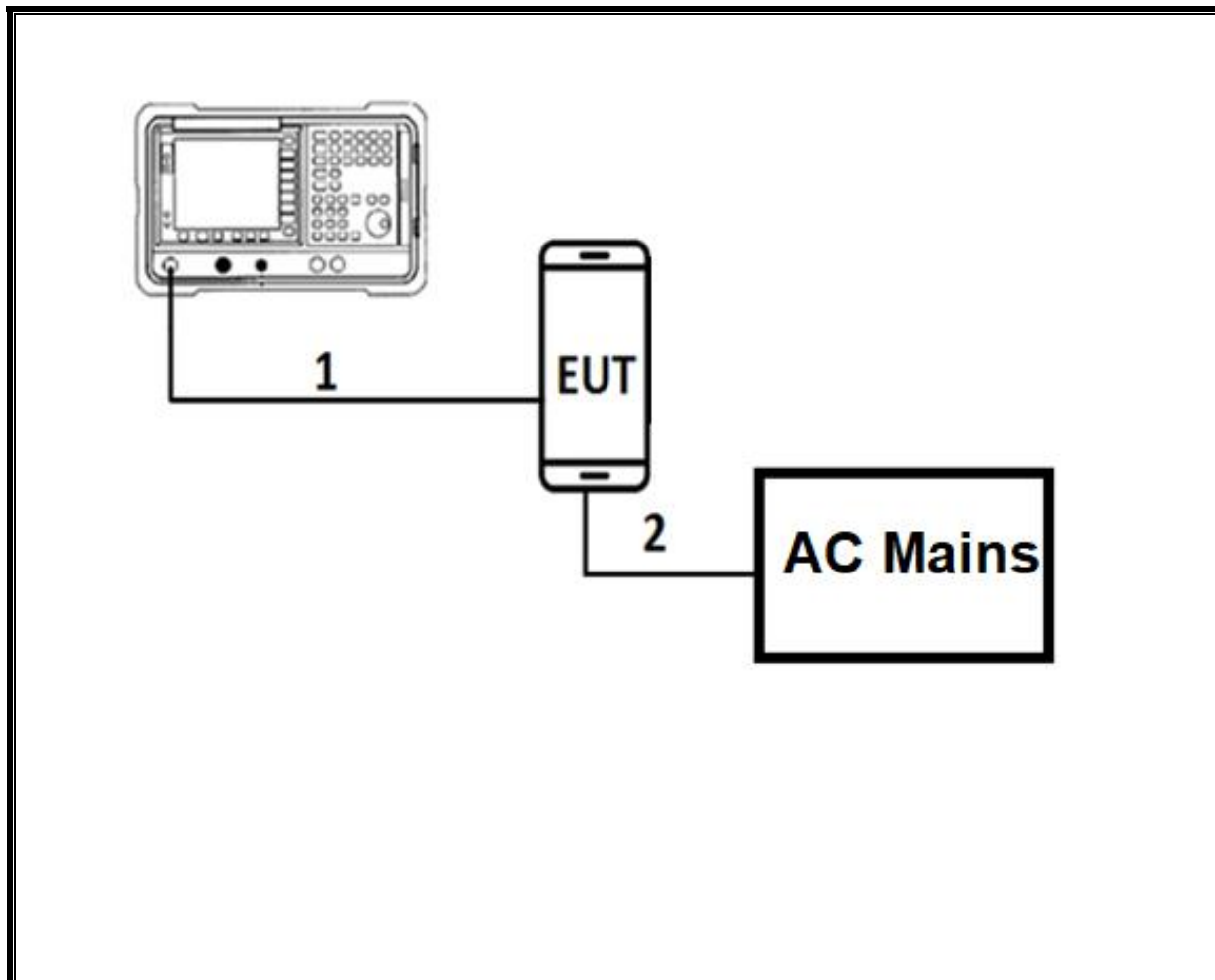
### I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB	Shielded	1	N/A
2	earphone	1	3.5mm	Un-shielded	1	N/A

### TEST SETUP

The EUT is a stand alone. Test software exercised the radio card.

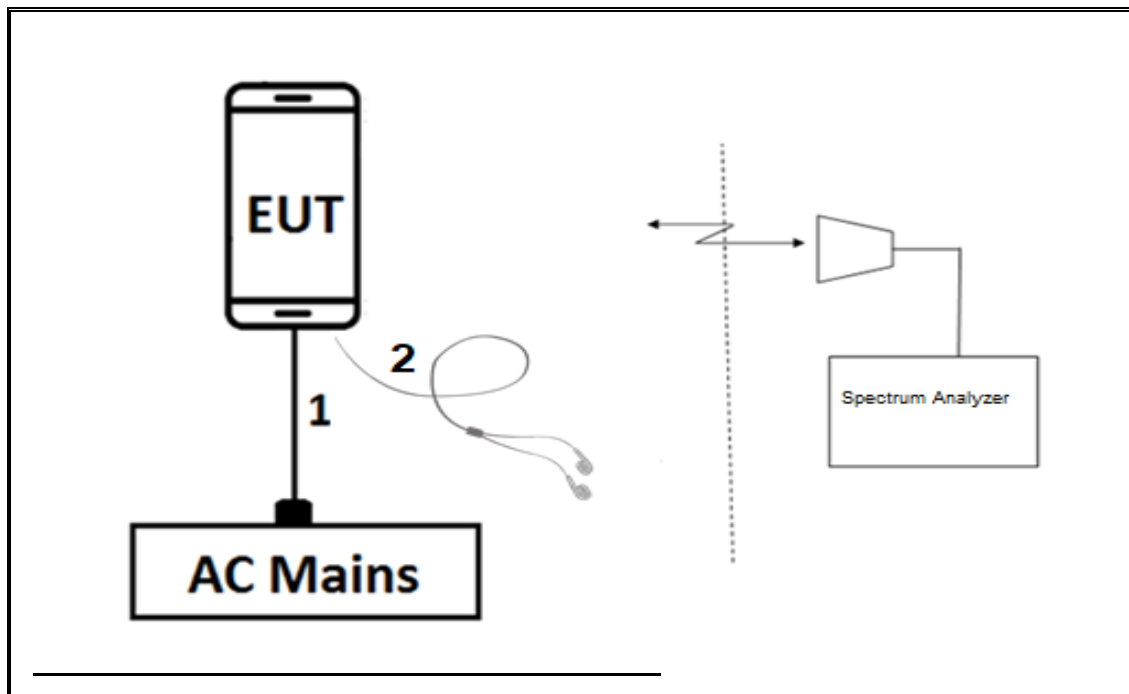
**CONDUCTED TEST SETUP DIAGRAM**



**TEST SETUP**

For conducted tests: the EUT was Stand alone. The test software exercises the radio.

**RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM**



**TEST SETUP**

For radiated tests: EUT is Stand alone. The test software exercises the radio.

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## 7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section B.

6 dB Emission BW: KDB 789033 D02 v02r01, Section C.2

26 dB Emission BW: KDB 789033 D02 v02r01, Section C.1

99% Occupied BW: KDB 789033 D02 v02r01, Section D.

Conducted Output Power: KDB 789033 D02 v02r01, Section E.3.b (Method PM-G) 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.

## 8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST (ORIGINAL)				
Description	Manufacturer	Model	ID Num	Cal Due
Amplifier, 100kHz to 1GHz, 32dB	Hewlet Packard	8447D	T10	02/14/2019
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB1	T407	05/10/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	05/24/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T345	04/25/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T344	04/30/2019
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1569	06/03/2019
RF Amplifier	MITEQ	AFS42-00101800-25-S-42	T1165	04/23/2019
RF Amplifier	MITEQ	AFS42-00101800-25-S-42	171460	08/01/2019
Amplifier, 1 to 7.0GHz, 20.0dB Gain minimum, 6dB NF	AMPLICAL	AMP1G7-20-27	T1563	06/03/2019
Amplifier, 1 to 7.0GHz, 20.0dB Gain minimum, 6dB NF	AMPLICAL	AMP1G7-20-27	T1370	06/12/2019
Amplifier 1-8GHz 30dB gain	L3 Narda	AMF-4D-01000800-30-29P	167494	08/01/2019
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179367	04/25/2019
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179377	05/03/2019
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	T200	11/18/2018
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1269	04/05/2019
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1225	04/10/2019
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 Receiver	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

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Rev 9.5, Jun 22, 2018
Antenna Port Software	UL	UL RF	Ver 8.7, Aug 9, 2018

<b>TEST EQUIPMENT LIST (SPOT CHECK)</b>				
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>ID Num</b>	<b>Cal Due</b>
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	EMC4294	04/17/2019
RF Amplifier, 1-18GHz	MITEQ Inc	AFS-00101800-25-S-42	T1568	06/21/2019
EMI Receiver	Rohde & Schwarz	ESR	T1436	02/21/2019

<b>Test Software List</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Version</b>
Radiated Software	UL	UL EMC	Ver 9.5, June 22, 2018

## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

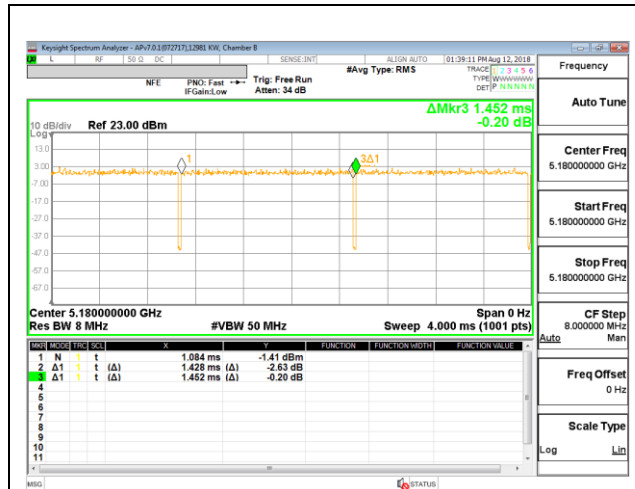
#### PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

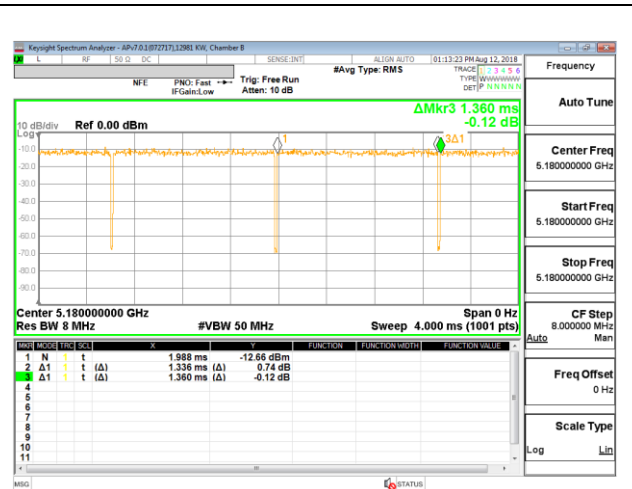
#### ON TIME AND DUTY CYCLE RESULTS

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	1.428	1.452	0.983	98.35%	0.00	0.010
802.11n HT20	1.336	1.360	0.982	98.24%	0.00	0.010
802.11n HT40	0.664	0.690	0.962	96.23%	0.17	1.506
802.11ac VHT80	0.332	0.358	0.927	92.74%	0.33	3.012

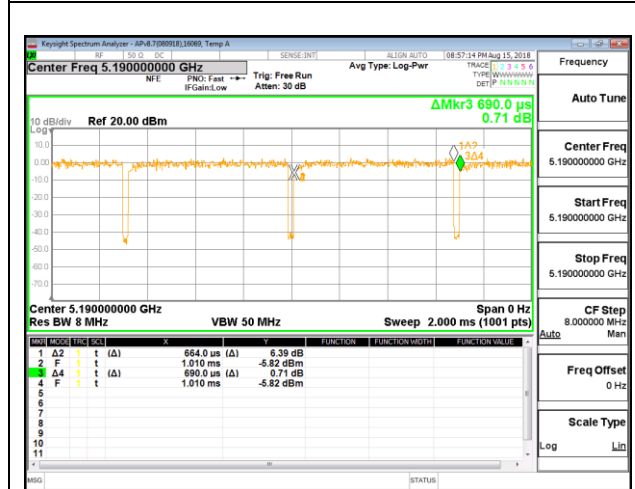
**DUTY CYCLE PLOTS**



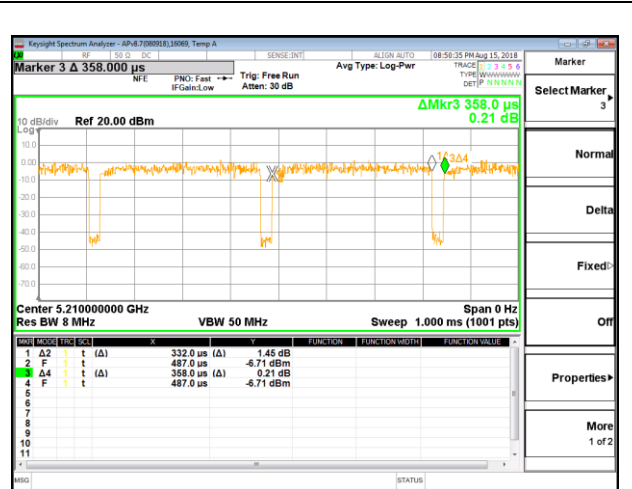
DUTY CYCLE 802.11a



DUTY CYCLE 802.11n HT20



DUTY CYCLE 802.11n HT40



DUTY CYCLE 802.11ac VHT80



## 9.2. 26 dB BANDWIDTH

### LIMITS

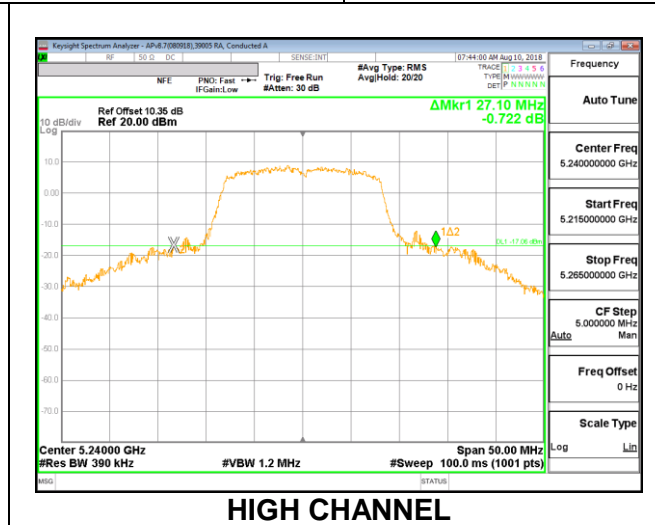
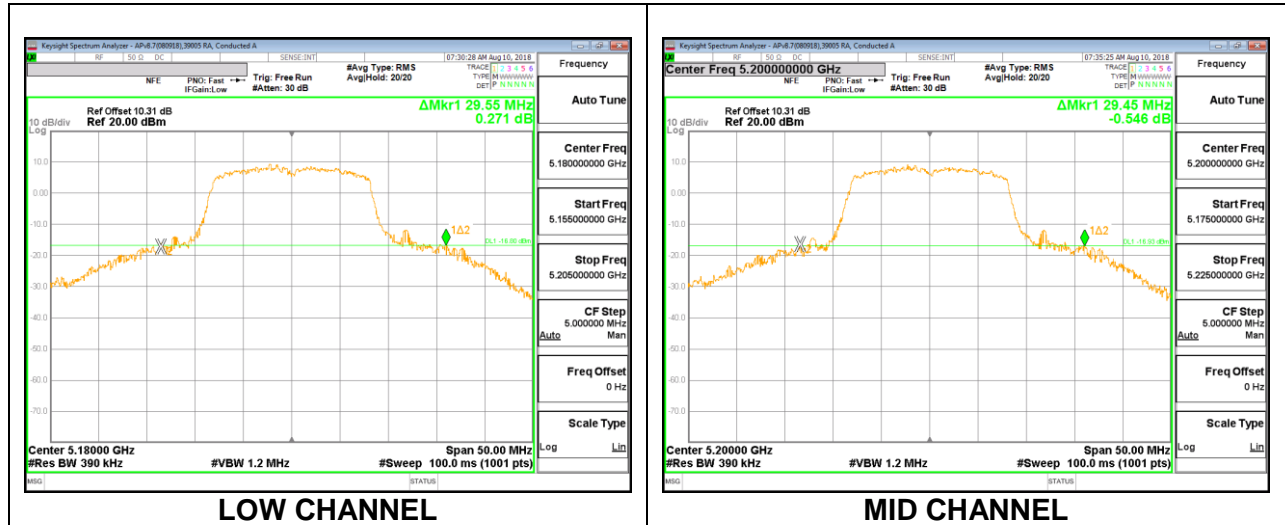
None; for reporting purposes only.

### RESULTS

### 9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

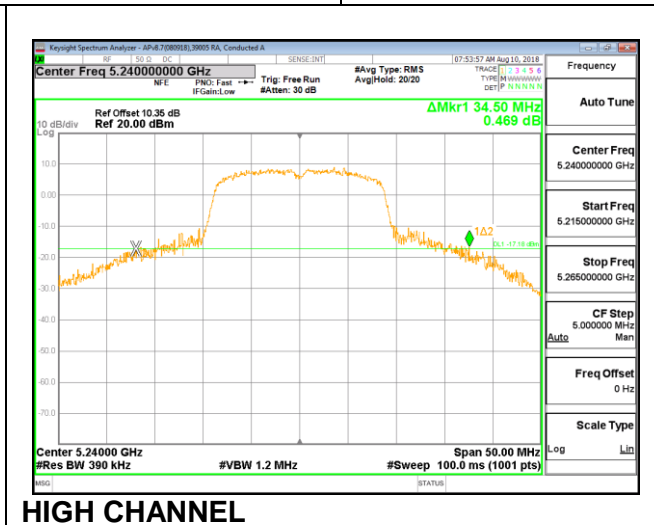
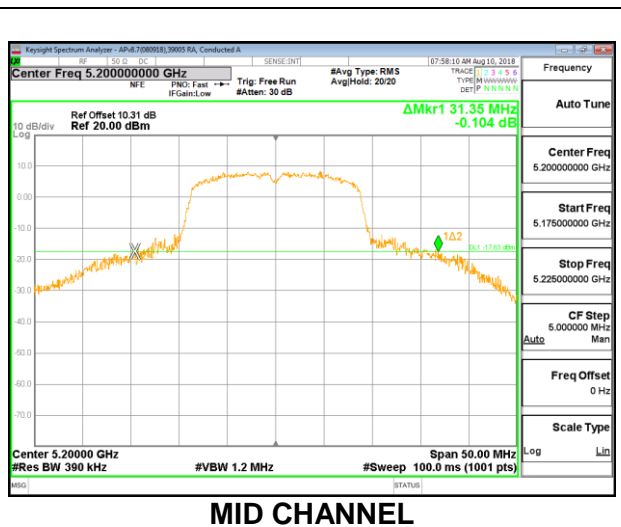
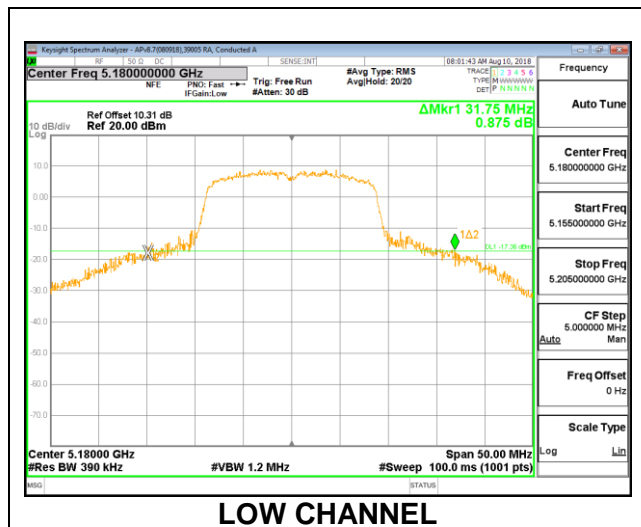
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	29.55
Mid	5200	29.45
High	5240	27.10



### 9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

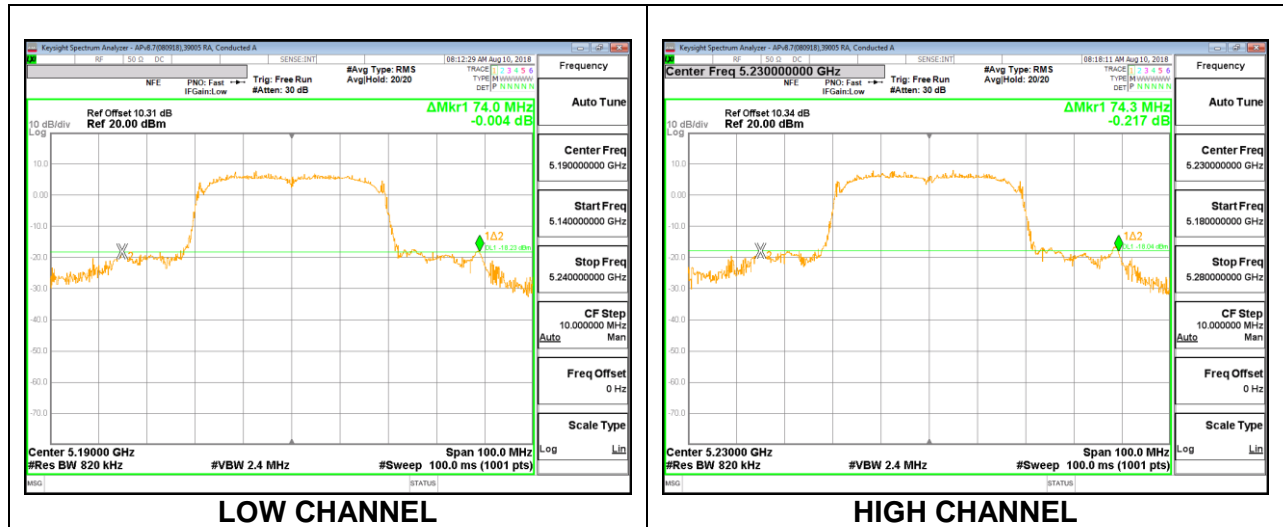
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	31.75
Mid	5200	31.35
High	5240	34.50



### 9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

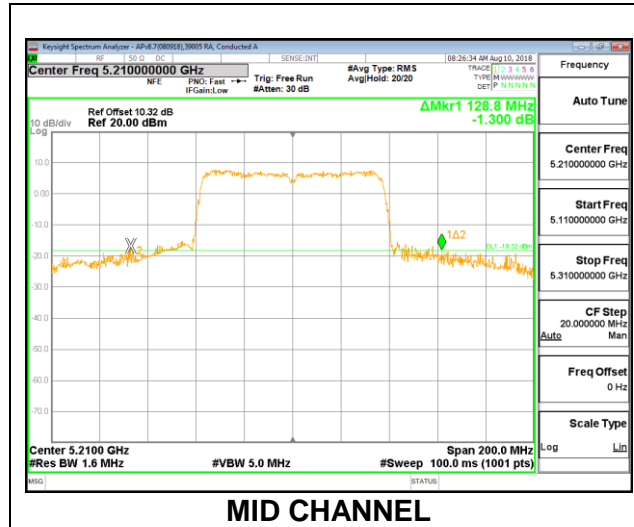
Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5190	74.00
High	5230	74.30



### 9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

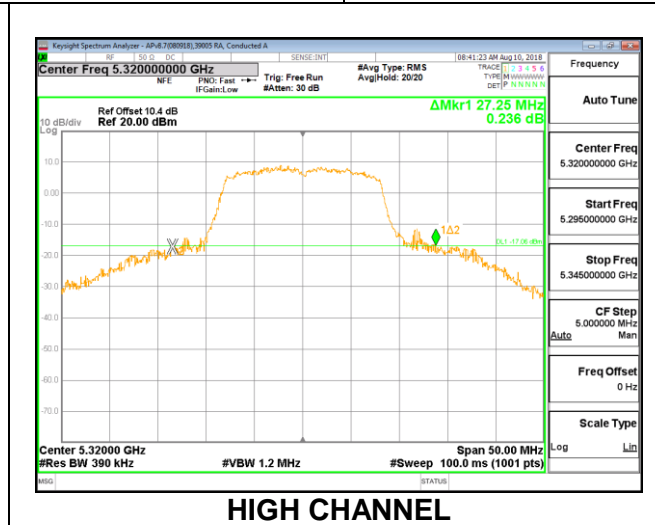
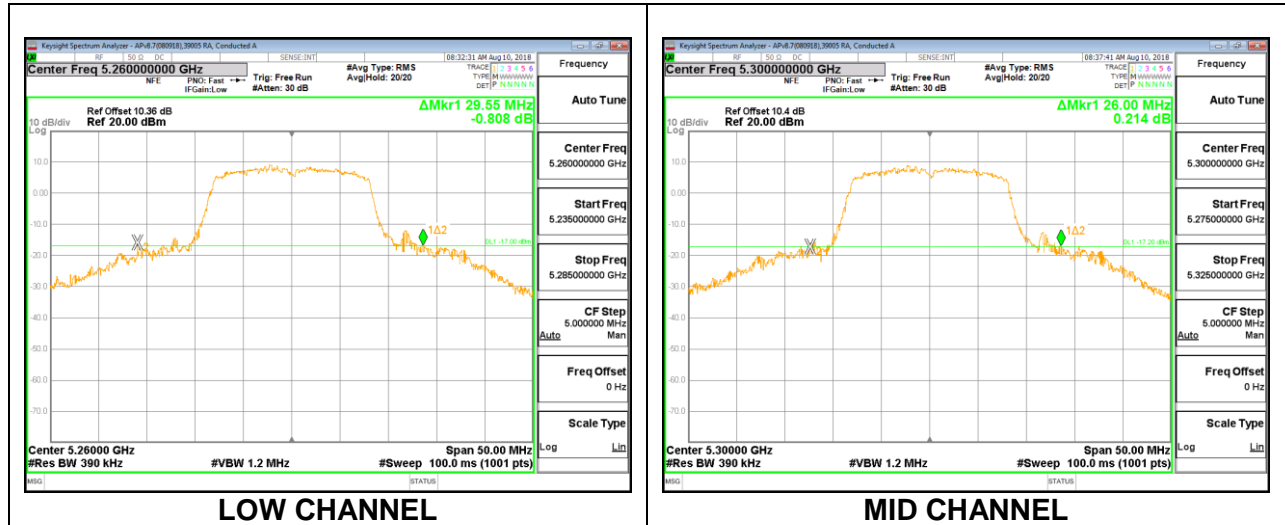
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	128.80



### 9.2.5. 802.11a MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

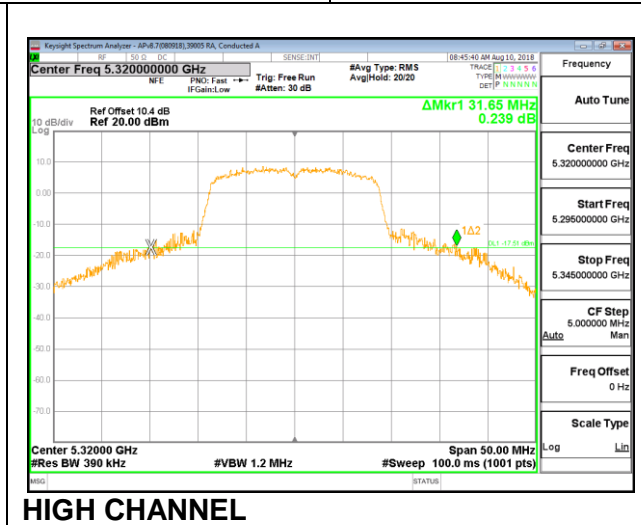
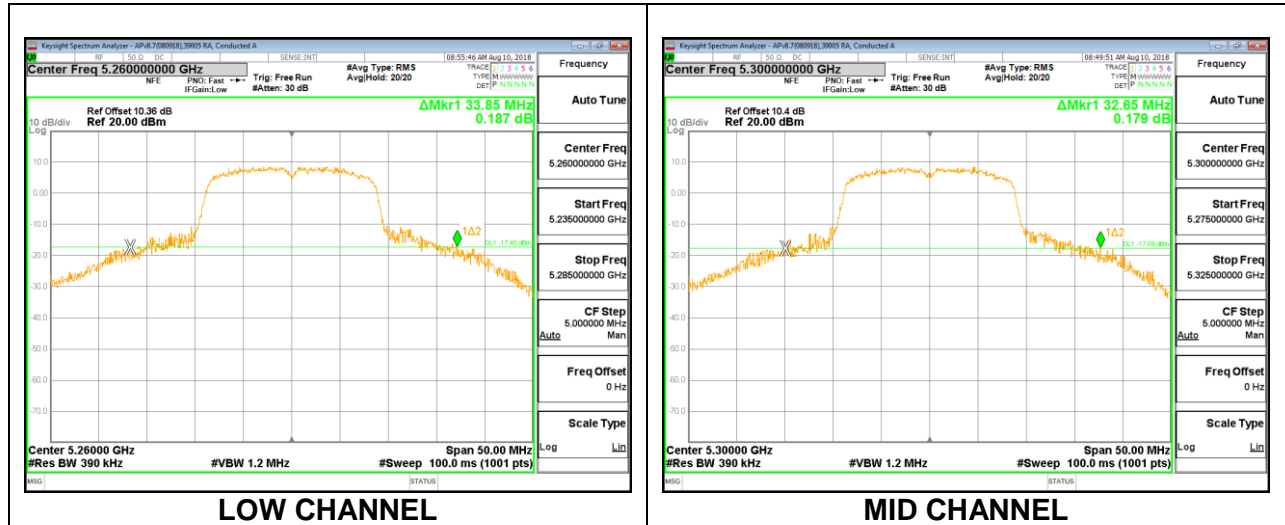
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	29.55
Mid	5300	26.00
High	5320	27.25



### 9.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

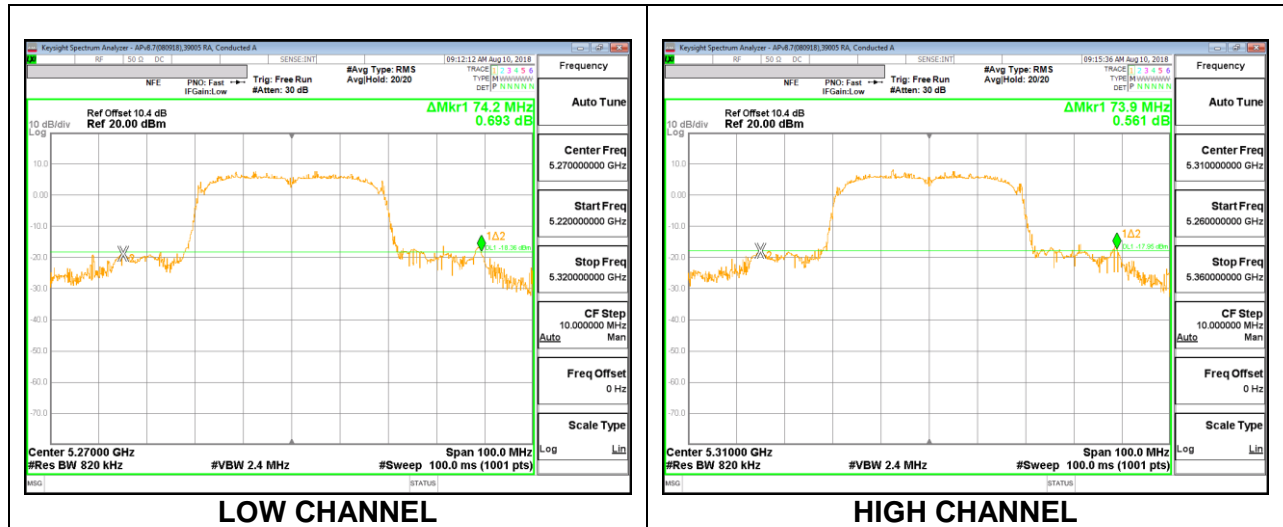
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	33.85
Mid	5300	32.65
High	5320	31.65



### 9.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5270	74.20
High	5310	73.90

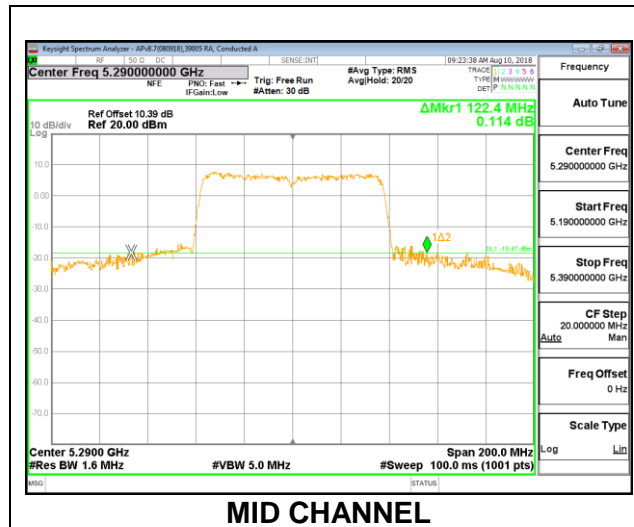




### 9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

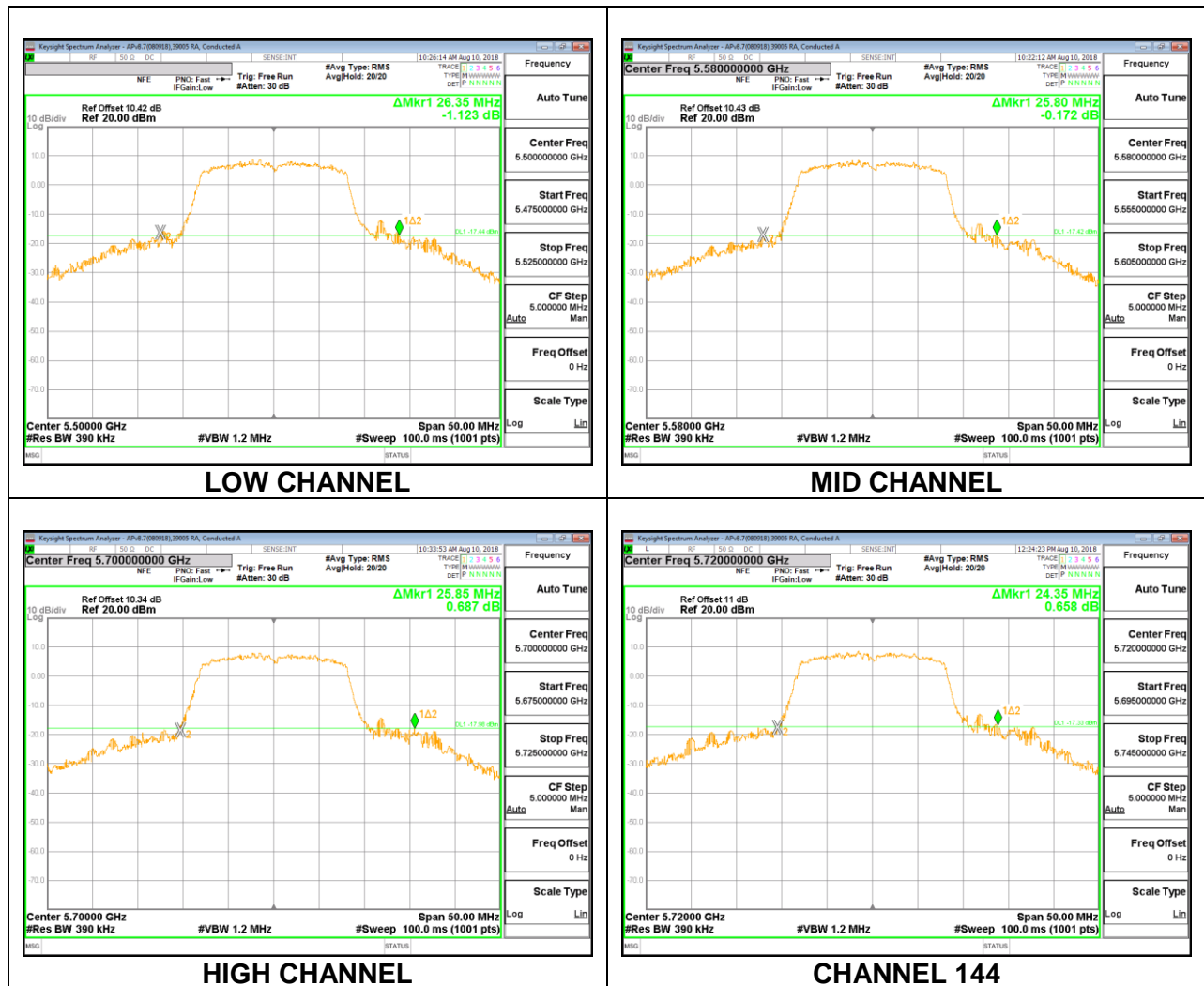
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5290	122.40



### 9.2.9. 802.11a MODE IN THE 5.6 GHz BAND

#### 1TX Antenna 1 MODE

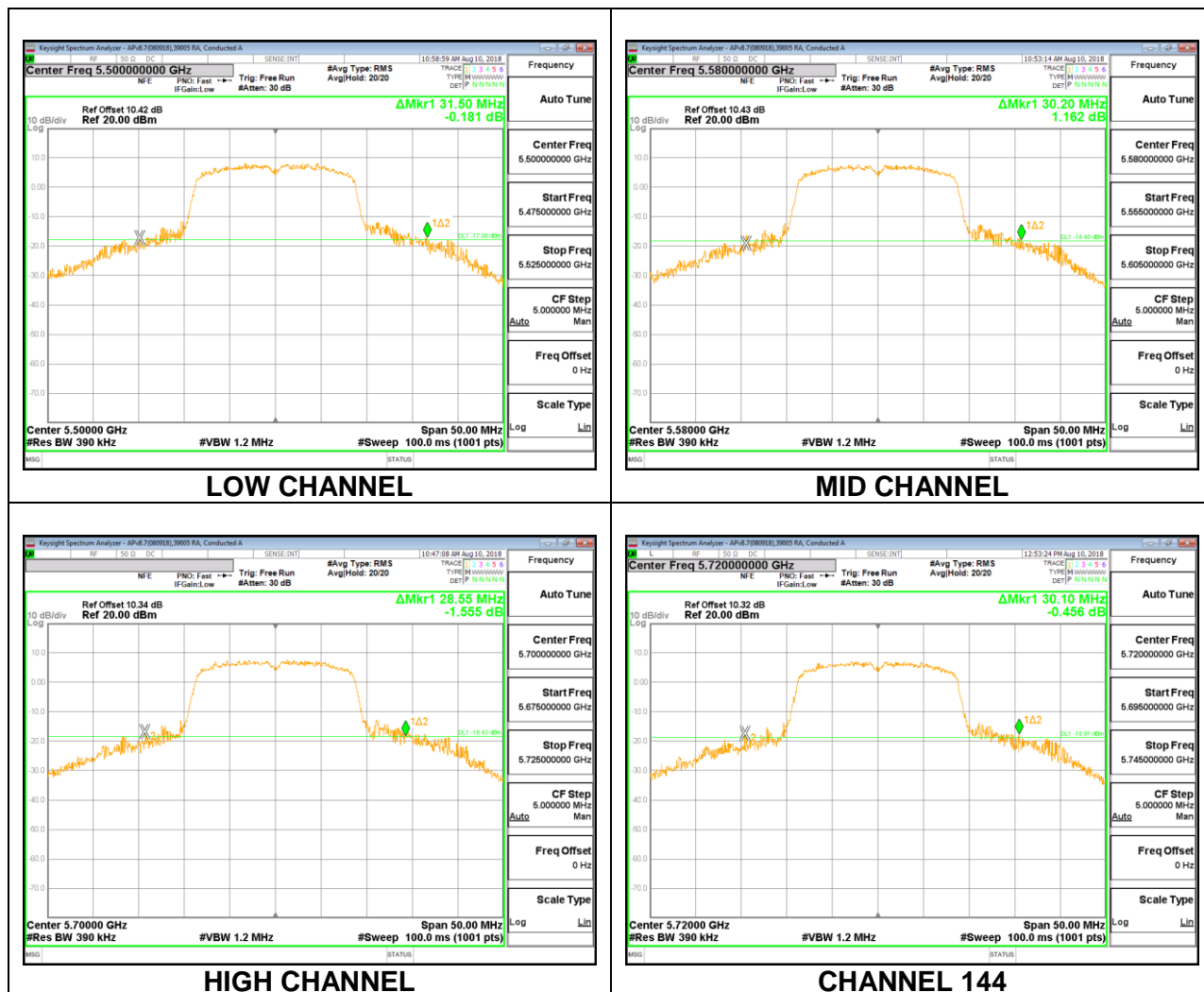
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	26.35
Mid	5580	25.80
High	5700	25.85
144	5720	24.35



### 9.2.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

#### 1TX Antenna 1 MODE

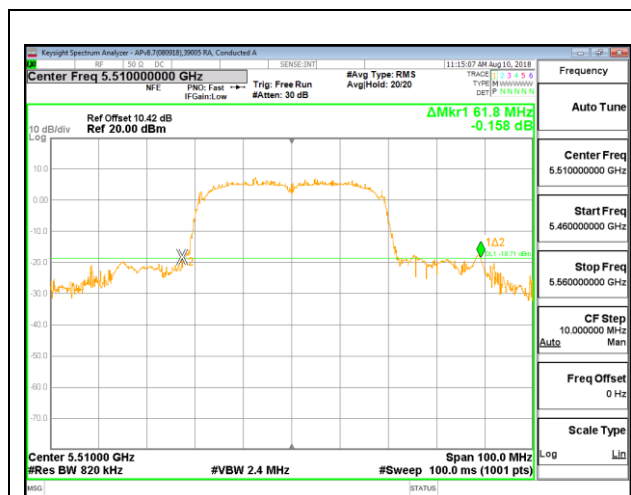
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	31.50
Mid	5580	30.20
High	5700	28.55
144	5720	30.10



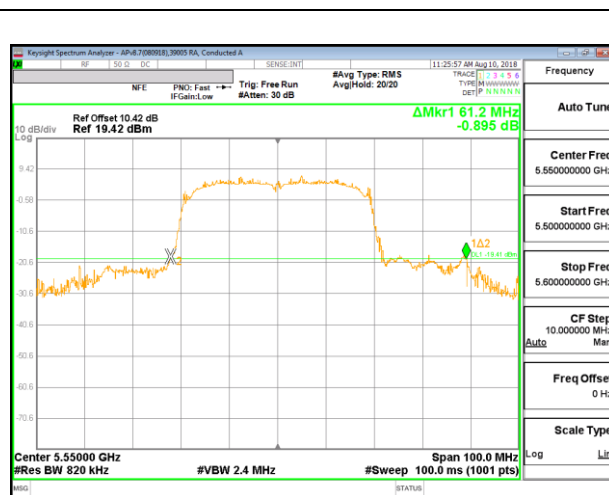
### 9.2.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

#### 1TX Antenna 1 MODE

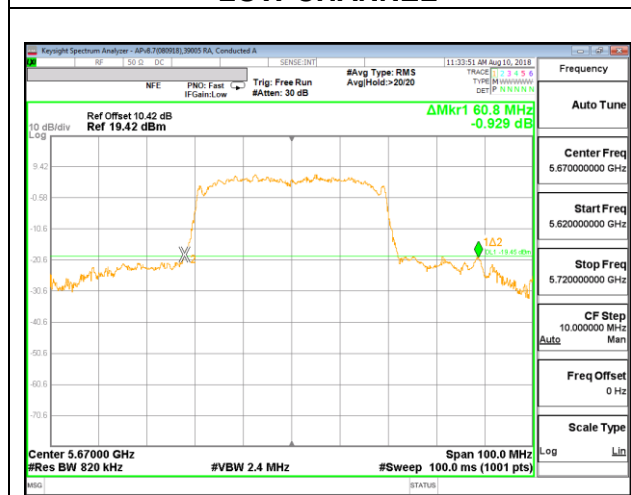
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	61.80
Mid	5550	61.20
High	5670	60.80
142	5710	44.20



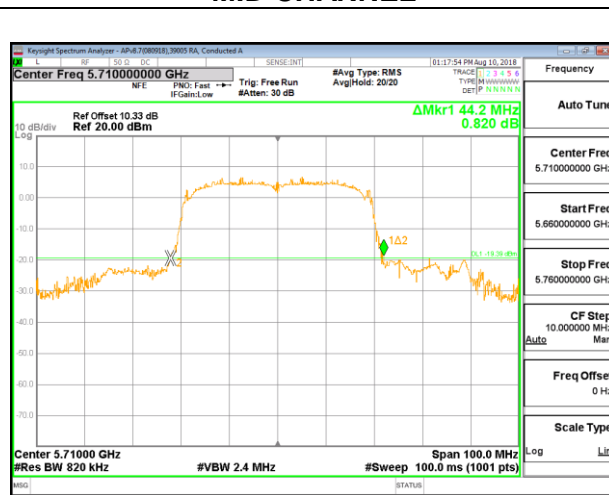
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

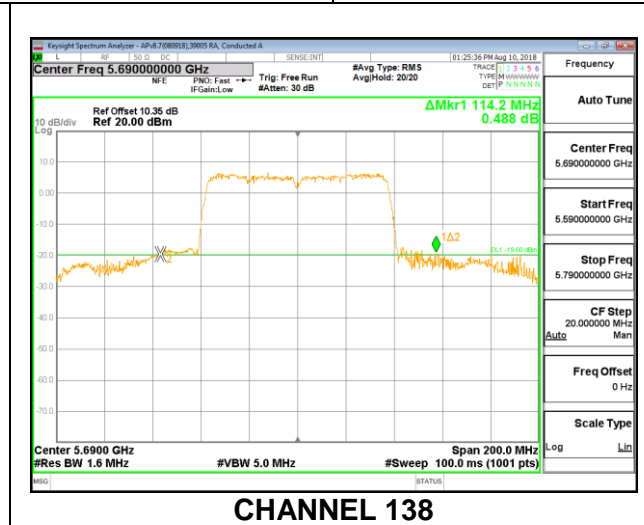
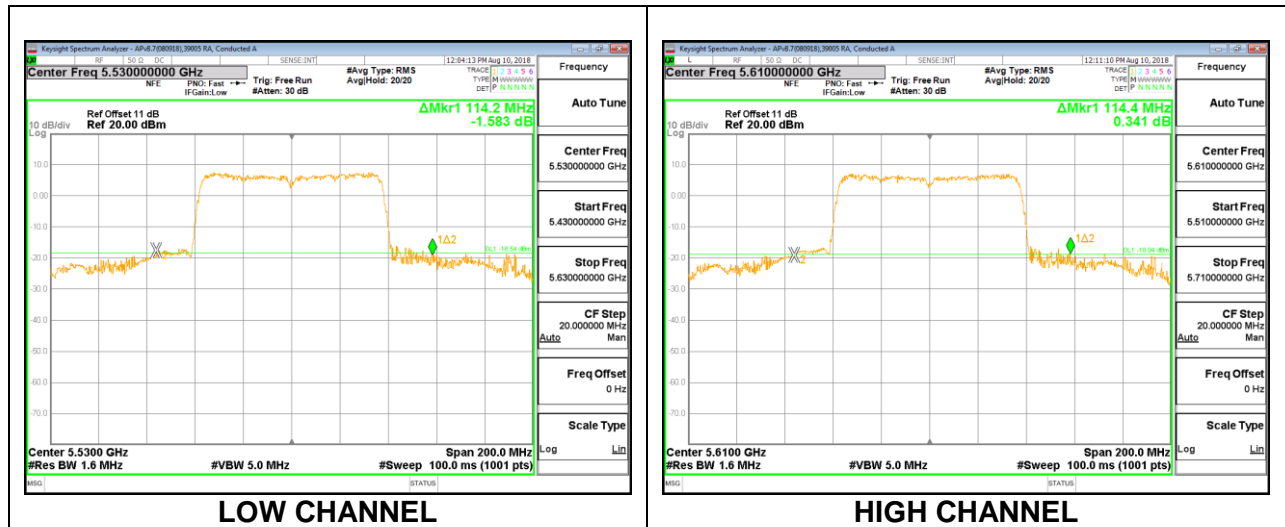


CHANNEL 142

### 9.2.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

#### 1TX Antenna 1 MODE

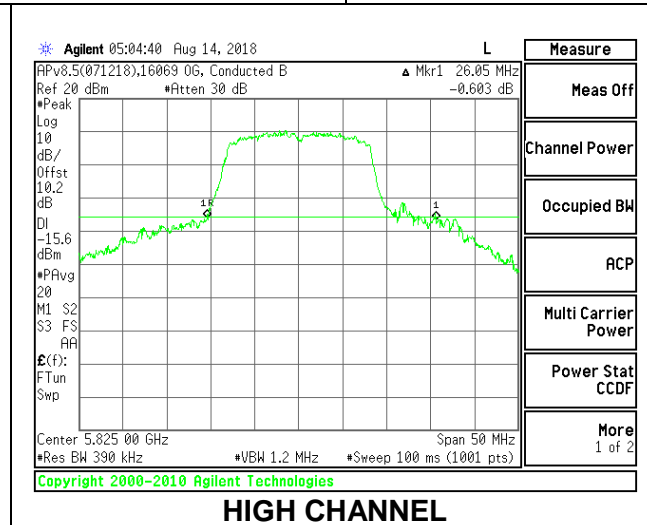
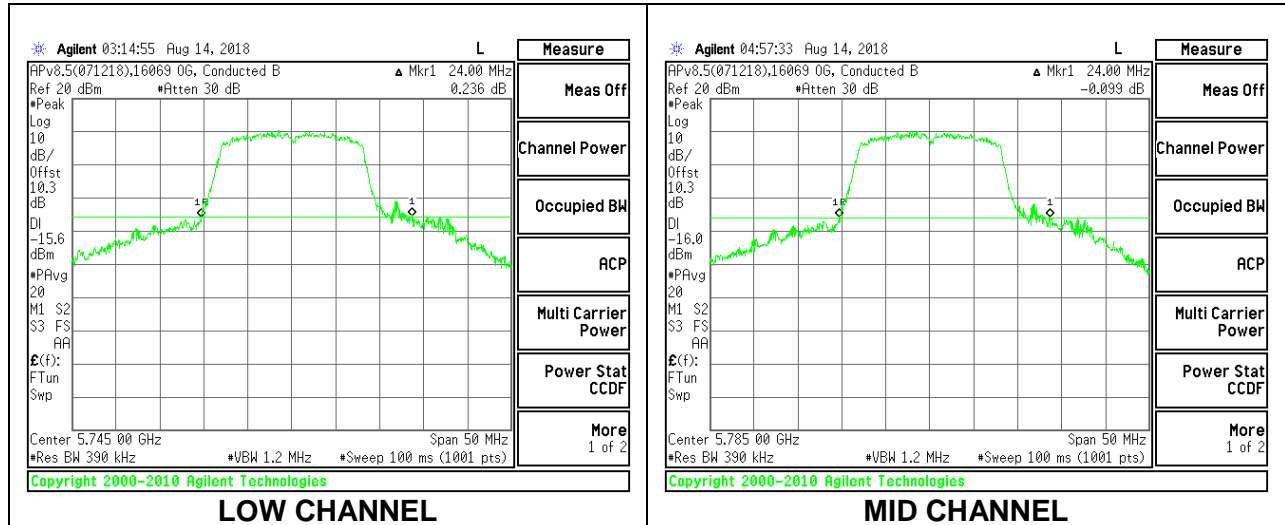
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5530	114.20
High	5610	114.40
138	5690	114.20



### 9.2.13. 802.11a MODE IN THE 5.8 GHz BAND

#### 1TX Antenna 1 MODE

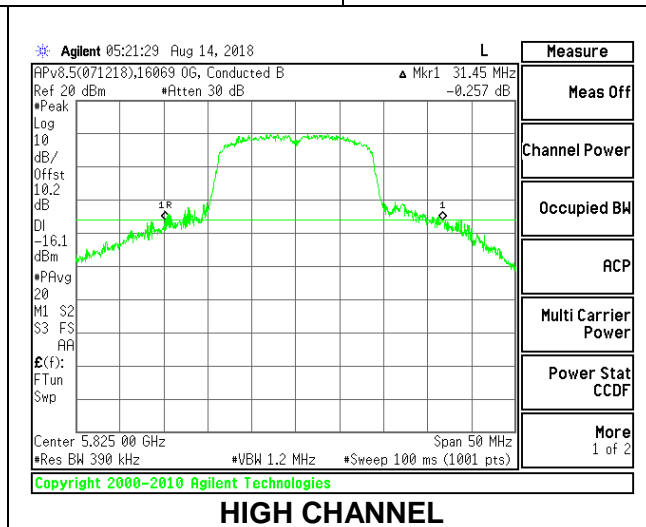
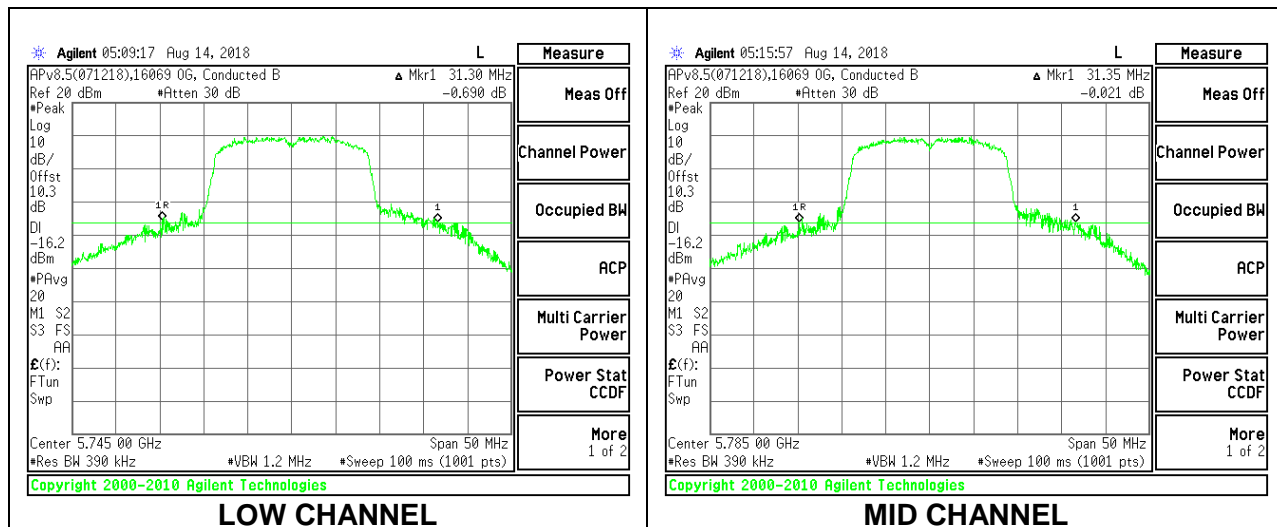
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	24.00
Mid	5785	24.00
High	5825	26.05



### 9.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

#### 1TX Antenna 1 MODE

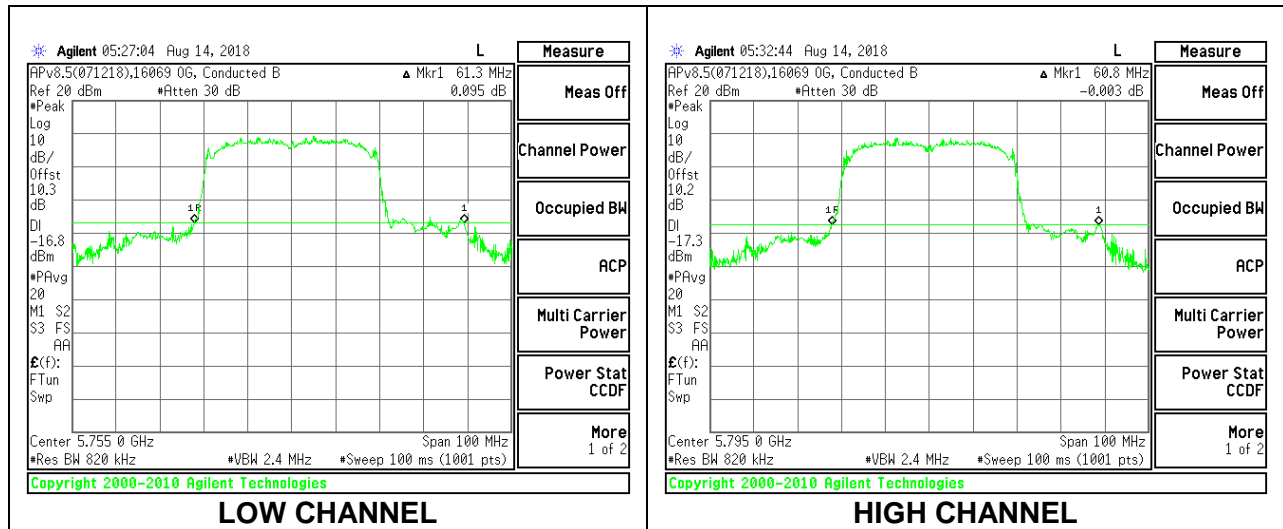
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	31.30
Mid	5785	31.35
High	5825	31.45



**9.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND**

**1TX Antenna 1 MODE**

Channel	Frequency	26dB Bandwidth
	(MHz)	(MHz)
Low	5755	61.30
High	5795	60.80

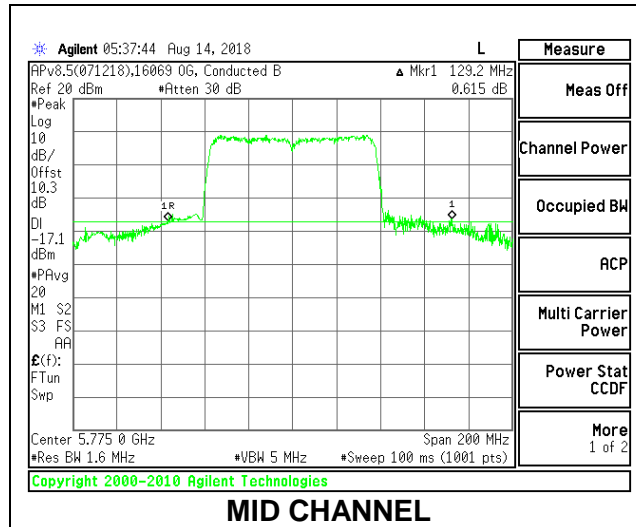




**9.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND**

**1TX Antenna 1 MODE**

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5775	129.20



### 9.3. 99% BANDWIDTH

#### **LIMITS**

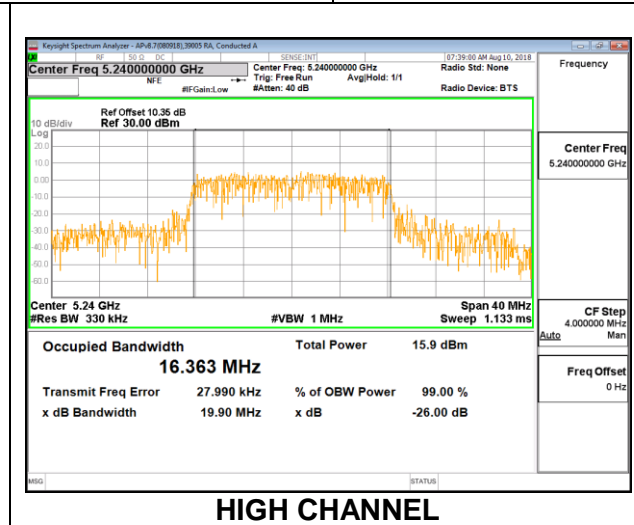
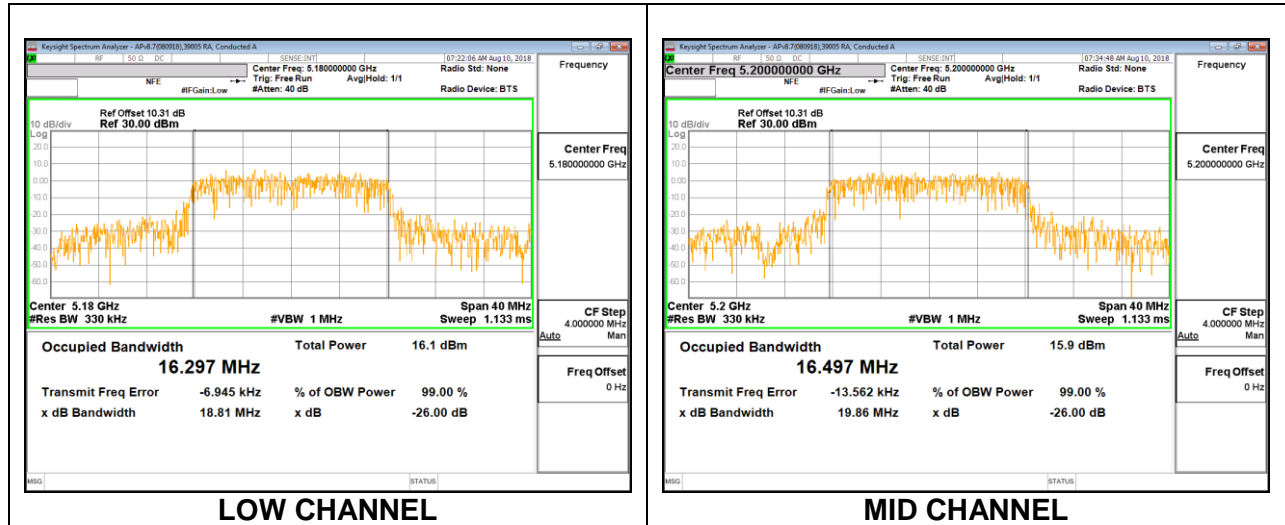
None; for reporting purposes only.

#### **RESULTS**

### 9.3.1. 802.11a MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

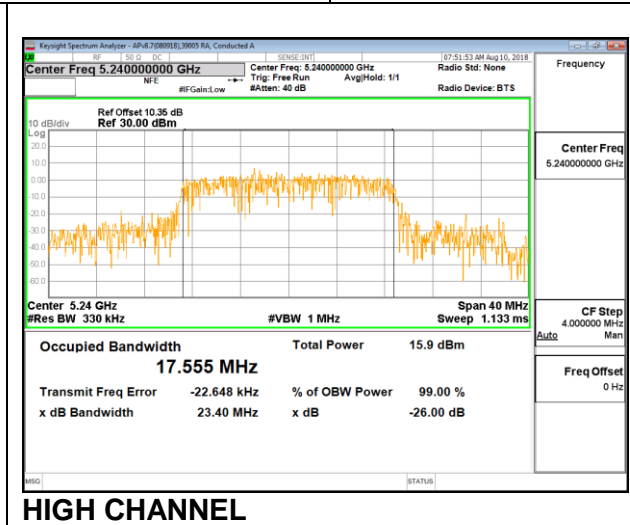
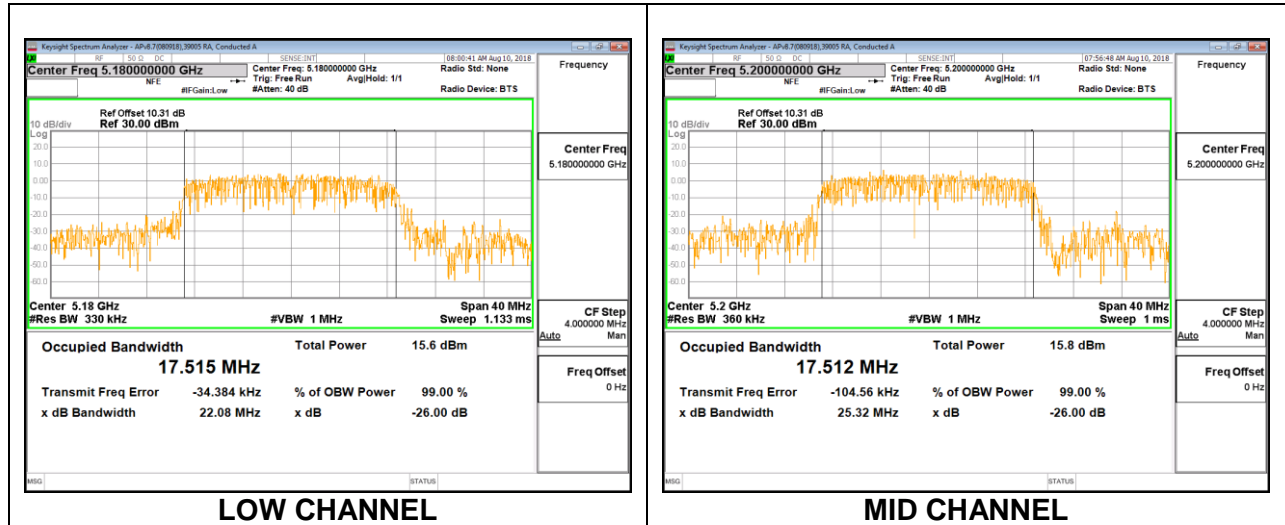
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.2970
Mid	5200	16.4970
High	5240	16.3630



### 9.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

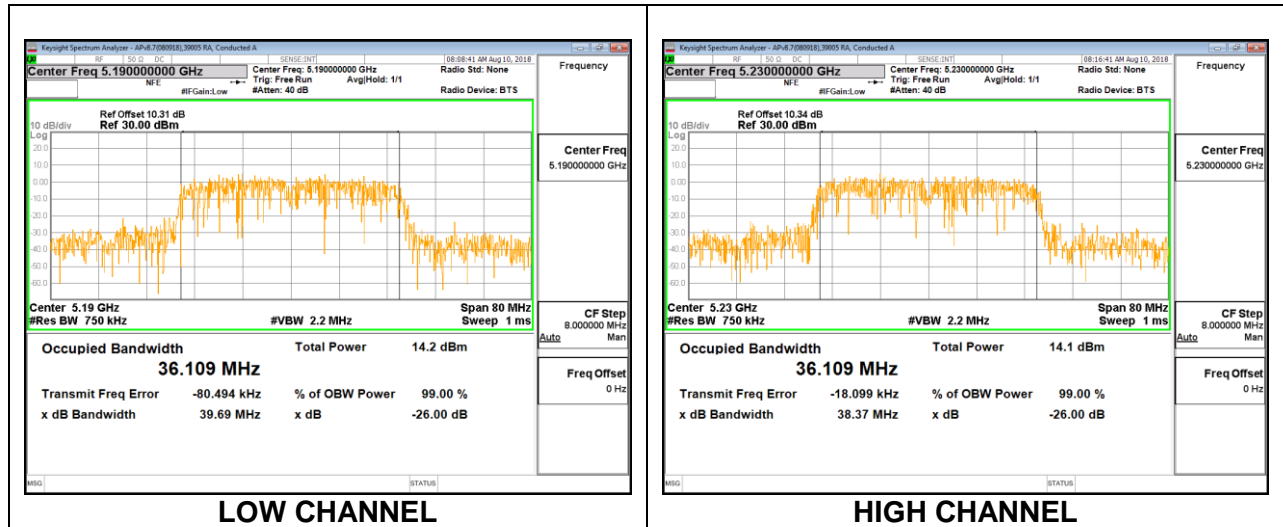
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.5150
Mid	5200	17.5120
High	5240	17.5550



### 9.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

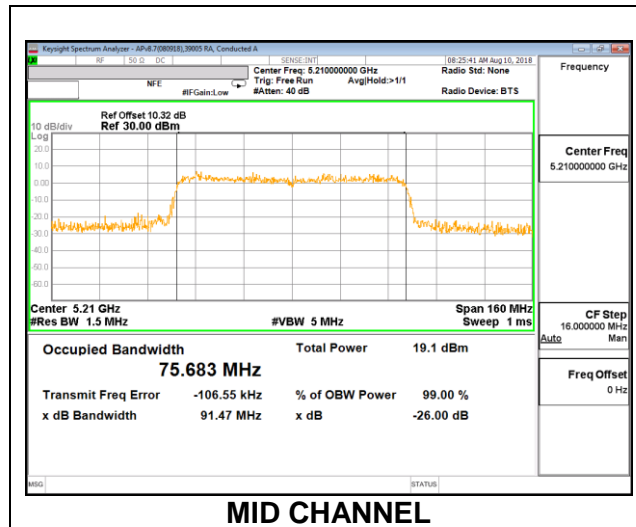
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.1090
High	5230	36.1090



### 9.3.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

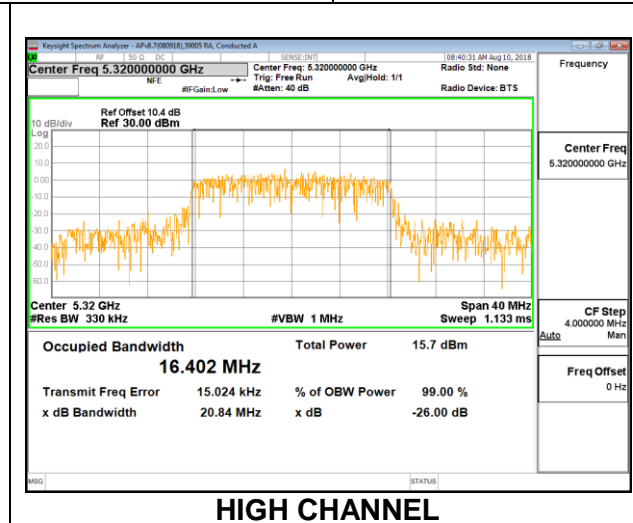
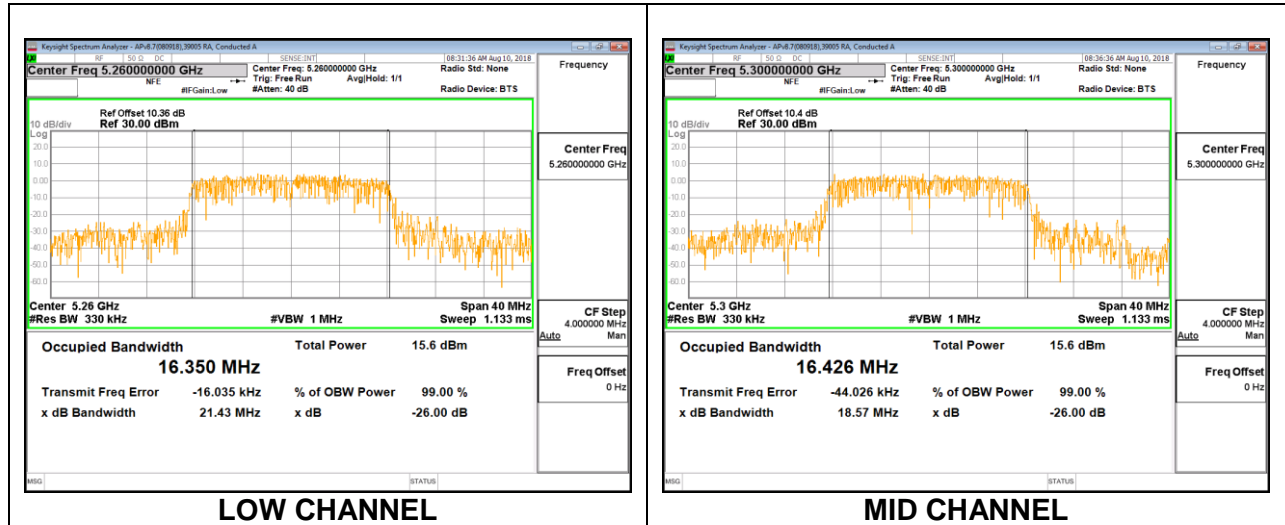
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5210	75.6830



### 9.3.5. 802.11a MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

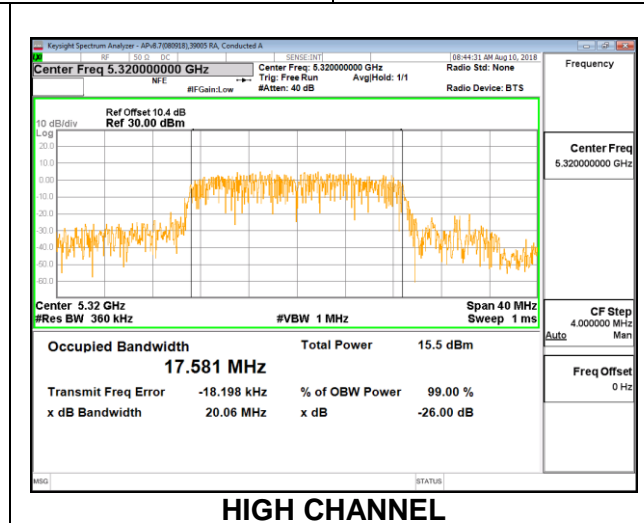
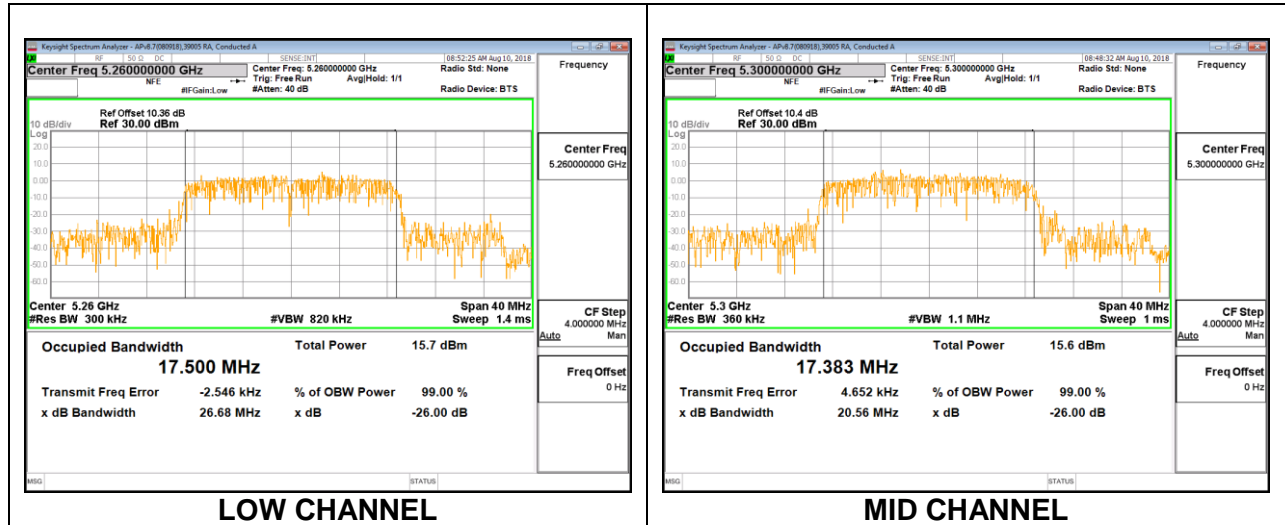
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.3500
Mid	5300	16.4260
High	5320	16.4020



### 9.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.5000
Mid	5300	17.3830
High	5320	17.5810

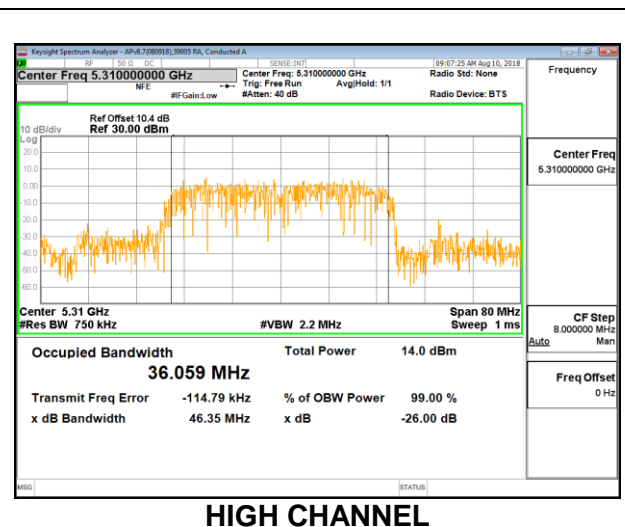
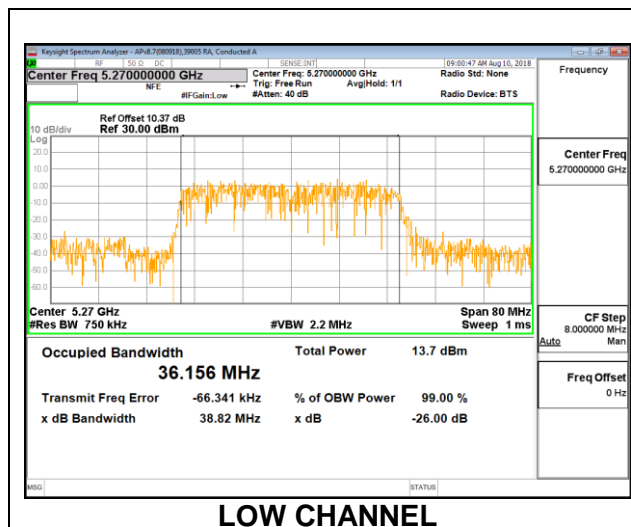




### 9.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.1560
High	5310	36.0590



### 9.3.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

#### 1TX Antenna 1 MODE

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5290	75.7540

