CERTIFICATION TEST REPORT

Report Number. : 12229692-E3V3

Applicant	:	MASIMO CORP 52 DISCOVERY IRVINE, CA 92618-1604, USA
Model	:	Radical-7
FCC ID	:	VFK-RAD7B
IC	:	7362A-RAD7B
EUT Description	:	Pulse CO-Oximeter
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E (EXCEPT DFS) ISED RSS-247 ISSUE 2 ISED RSS-GEN ISSUE 5

Date Of Issue:
February 26, 2019

Prepared by:
UL Verification Services Inc.
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NVLAP LAB CODE 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	5/3/2018	Initial Issue	
V2	2/26/2019	Updated per TCB review's comments (section 9.2, note)	Vien Tran

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UL VERIFICATION SERVICES INC.
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: MASIMO CORP
52 DISCOVERY
IRVINE, CA 92618-1604
USA

EUT DESCRIPTION: Pulse CO-Oximeter

MODEL: Radical-7

SERIAL NUMBER: 1000117295 (Radiated) & 1000117068 (Conducted)

DATE TESTED: April 11 –April 30, 2018

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.

Approved & Released For
UL Verification Services Inc. By:

DAN CORONIA
CONSUMER TECHNOLOGY DIVISION
OPERATIONS LEADER
UL Verification Services Inc.

Prepared By:

ERIC YU
CONSUMER TECHNOLOGY DIVISION
TEST ENGINEER
UL Verification Services Inc.

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 905462 D02 v02/D03 v01r02/D06 v02, FCC KDB 789033 D02 v02r01, ANSI C63.10-2013, FCC 06-96, FCC KDB 905462 D02 and D03, RSS-GEN Issue 5, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, 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
☐ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)
☒ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)
☒ 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.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://nist.gov/standards/scopes/2000650.htm.

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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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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%.

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a pulse CO-Oximeter.

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)
5.2 GHz band, 1TX			
5180-5240	802.11a	15.01	31.70
5180-5240	802.11n HT20	14.54	28.44
5190-5230	802.11n HT40	12.98	19.86

5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 1TX			
5260 - 5320	802.11a	15.82	38.19
5260 - 5320	802.11n HT20	15.71	37.24
5270 - 5310	802.11n HT40	13.38	21.78

5.6 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.6 GHz band, 1TX			
5500-5720	802.11a	15.61	36.39
5500-5720	802.11n HT20	15.76	37.67
5510-5710	802.11n HT40	13.33	21.53

5.8 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.8 GHz band, 1TX			
5745-5825	802.11a	15.17	32.89
5745-5825	802.11n HT20	14.92	31.05
5755-5795	802.11n HT40	12.77	18.92

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an Ethertronics (P/N- 18046) with gain as specified in table below:

Frequency	Peak Gain
2.390-2.490GHz	2dB
5.150-5.350GHz	5dB
5.35-5.90GHz	6dB

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was the following: iMX: E0847, MCU: 1064, MX: 7e23, WiFi: 7.45.100.7, Bluetooth:003.001.025.0143.0000.

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.

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

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

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Chaging Base	Masimo	RDS-1	291175	N/A
Debug Board	Masinmo	82444 REV A	1447700018	N/A
Laptop	Lenovo	T460	PC0C3DUA	N/A
AC Adaptor	Lenovo	ADLX65NCCZA	11S45N0263ZS9957G6W	N/A

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	AC	0.3	
2	AC	1	AC	AC	0.8	
3	USB	1	USB	unshielded	1	
4	Antenna	1	RF	Shielded	0.5	To spectrum Analyzer

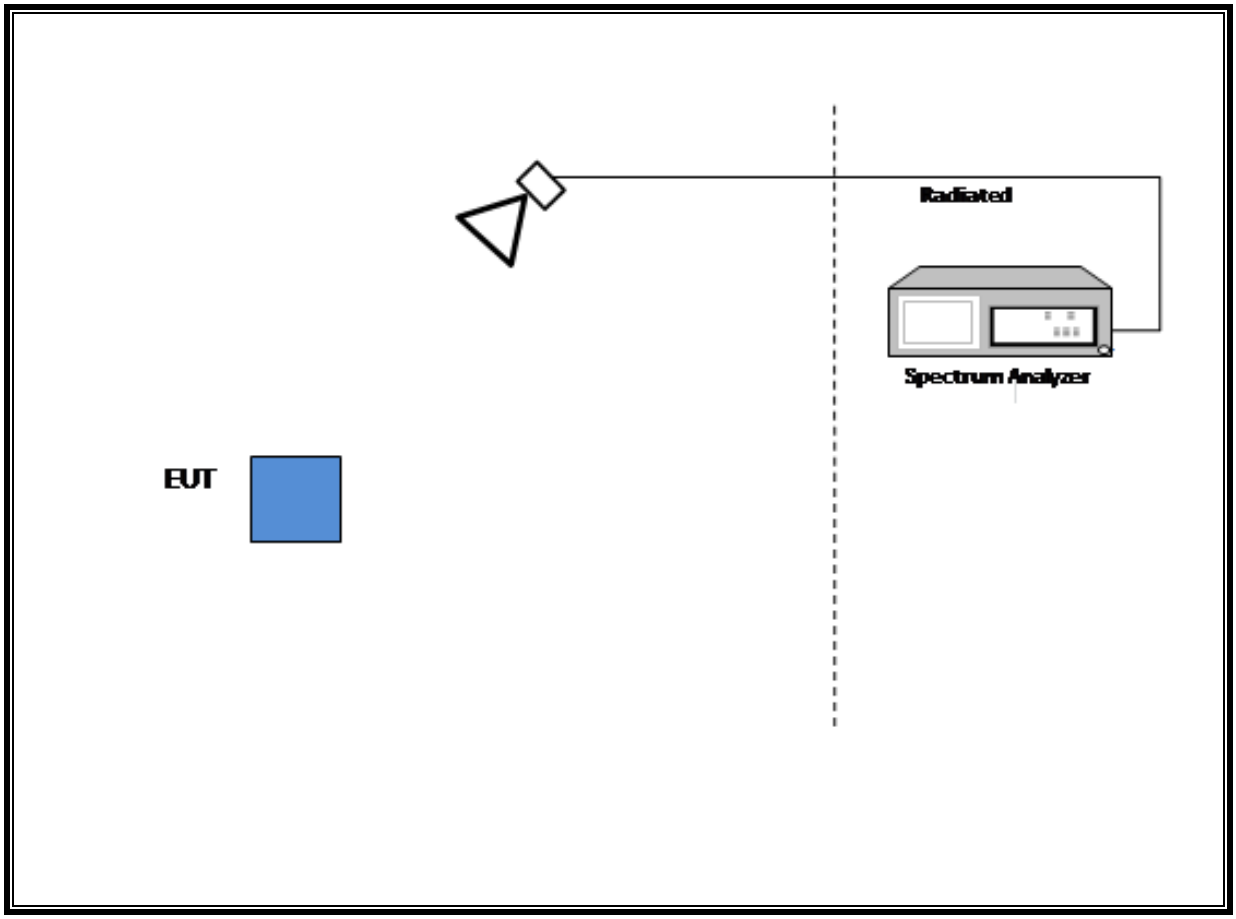
TEST SETUP

For conducted and AC Line tests: The EUT was docked on the charging base and connected to a host laptop via an USB cable, and a debug board for parameter setting purpose such as channel, output power...etc.

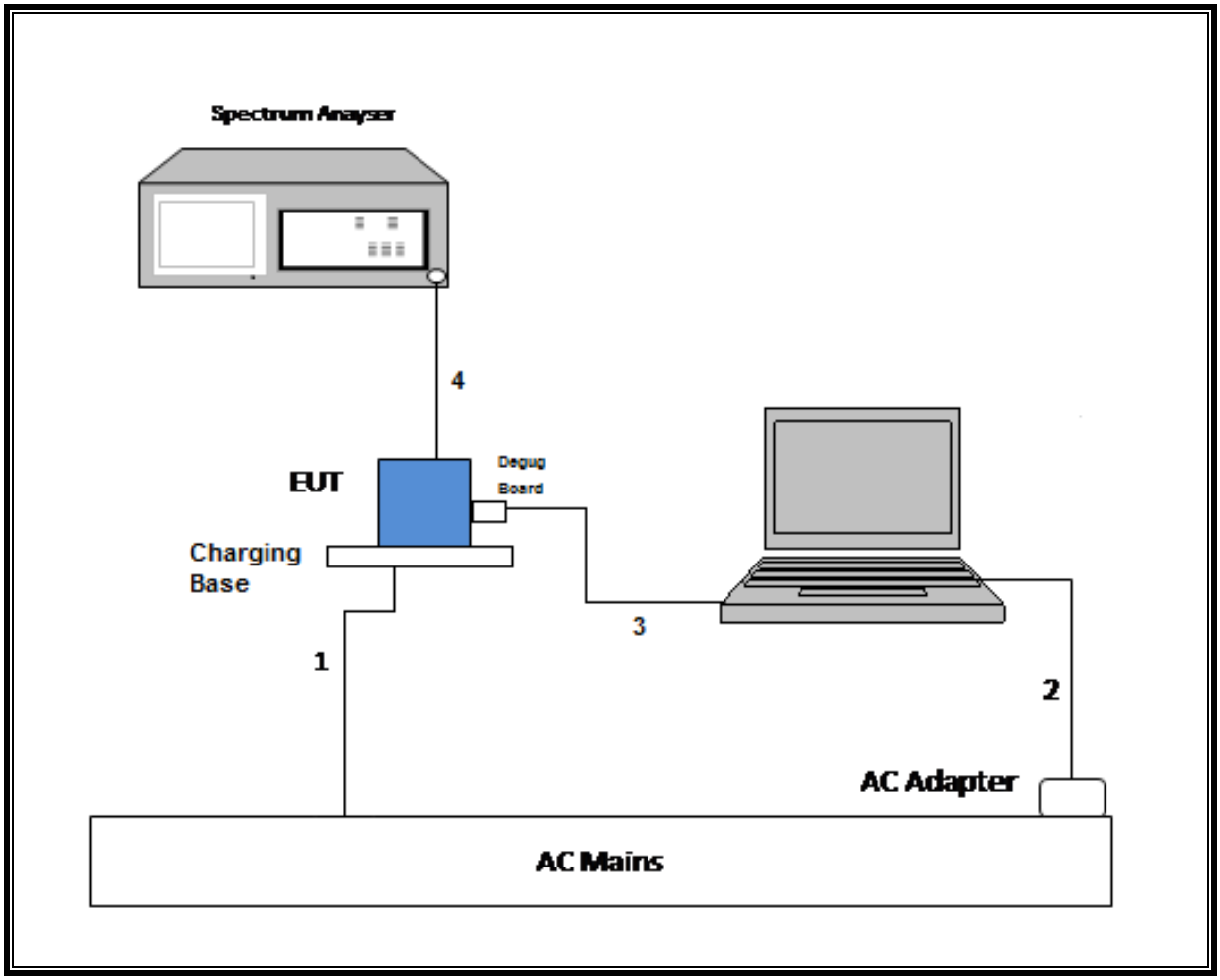
For radiated tests: All support equipment (charging base, host laptop, USB cable, and debug board) were removed after the EUT programmed.
The EUT was operated as stand-alone unit by 3.7VDC battery pack.

The test software exercises the radio.

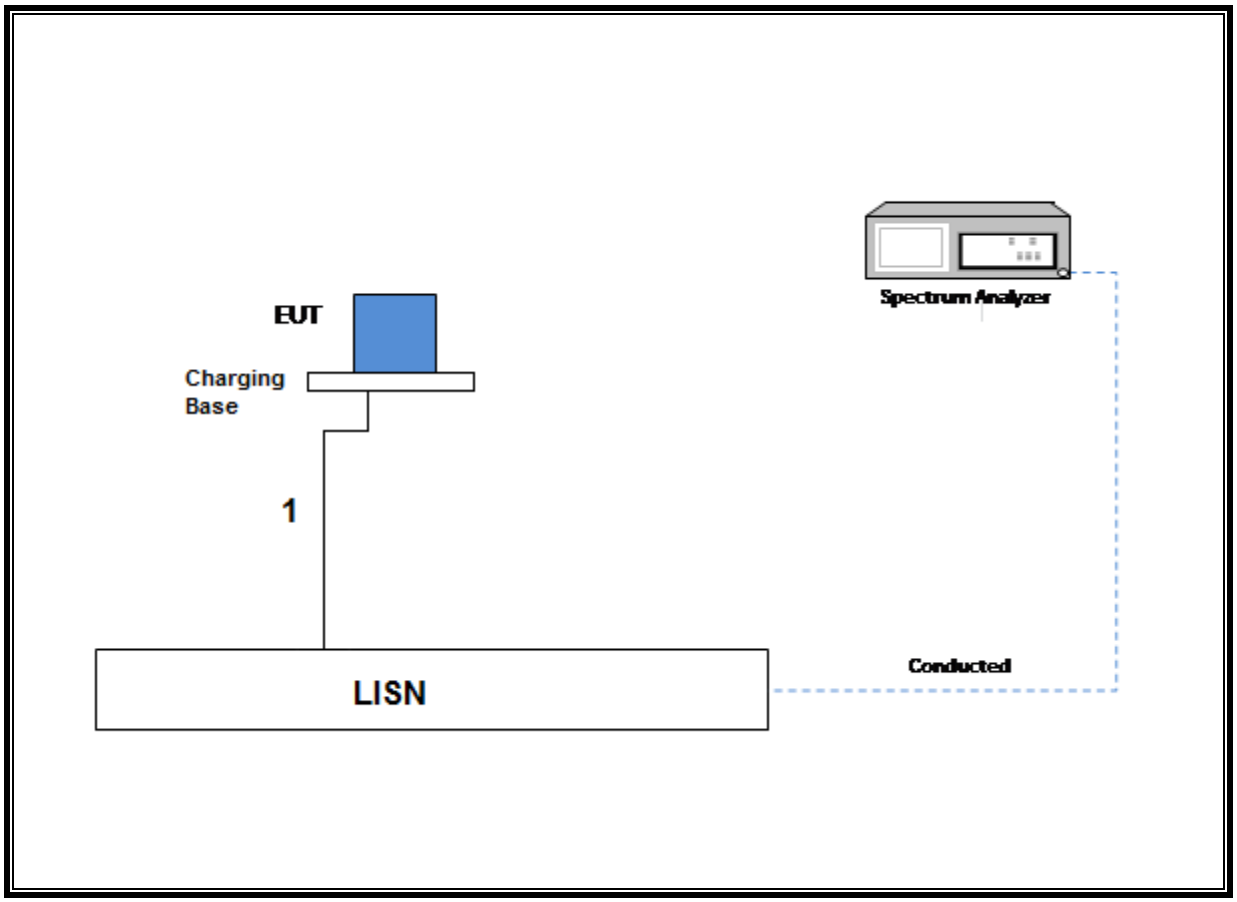
SETUP DIAGRAM FOR RADIATED



SETUP DIAGRAM FOR CONDUCTED TESTS



SETUP DIAGRAM FOR AC LC TESTS



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**	**Asset**	**Cal Due**
Amplifier, 10KHz to 1GHz, 32dB	Agilent (Keysight) Technologies	8447D	T15	08/14/2018
Amplifier, 1 - 18GHz	MITEQ	AFS42-00101800-25-S-42	T931	09/20/2018
Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T1165	11/25/2018
RF Preamplifier, 1 - 26GHz	Agilent	8449B	T404	07/23/2018
Amplifier- 26.5-40GHz	MIteq	NSP 4000 SP2	T88	04/29/2018
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T130	06/15/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	06/09/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	120	06/26/2018
Antenna Horn, 18 to 26GHz	ARA	MWH-1826/B	T449	06/12/2018
Antenna, Horn 26.5 - 40GHz	ARA	MWH-2640	T90	08/25/2018
Power Meter, P-series single channel	Keysight	N1912A	T1245	05/12/2018
Power Sensor	Keysight	N1921A	T413	06/22/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1466	04/16/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018
AC Line Conducted				
EMI Test Receiver 9Khz-7GHz	Rohde & Schwarz	ESCI7	T1124	11/07/2018
LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2-01	T1310	06/15/2018
Power Cable, Line Conducted Emissions	UL	PG1	T861	08/31/2018
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, Dec 01, 2016	
Antenna Port Software	UL	UL EMC	Ver 8.1, Feb 28, 2018	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015	

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 1TX	1.428	1.530	0.933	93.33%	0.30	0.700
802.11n HT20 1TX	1.340	1.441	0.930	92.99%	0.32	0.746
802.11n HT40 1TX	0.663	0.765	0.868	86.75%	0.62	1.507

DUTY CYCLE PLOTS

DUTY CYCLE 802.11a 1TX MODE

DUTY CYCLE 802.11n HT20 1TX MODE

DUTY CYCLE 802.11nHT40 1TX MODE

8.2. 26 dB BANDWIDTH

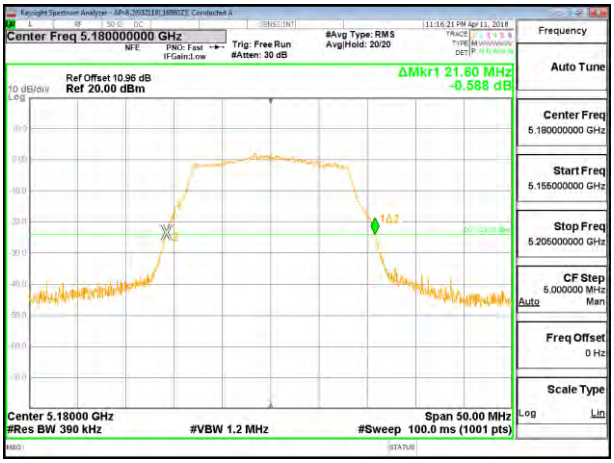
LIMITS

None; for reporting purposes only.

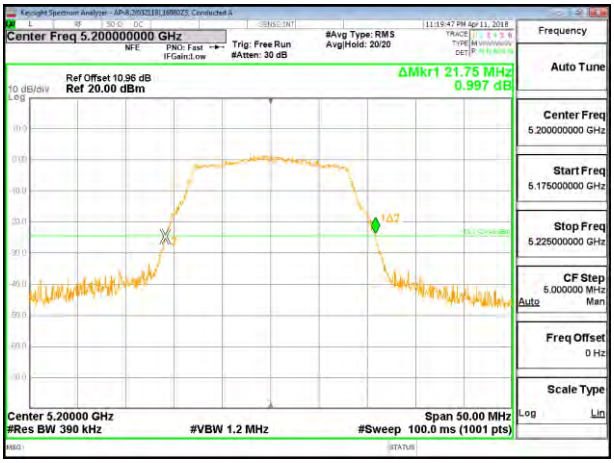
RESULTS

8.2.1. 802.11a MODE IN THE 5.2 GHz BAND

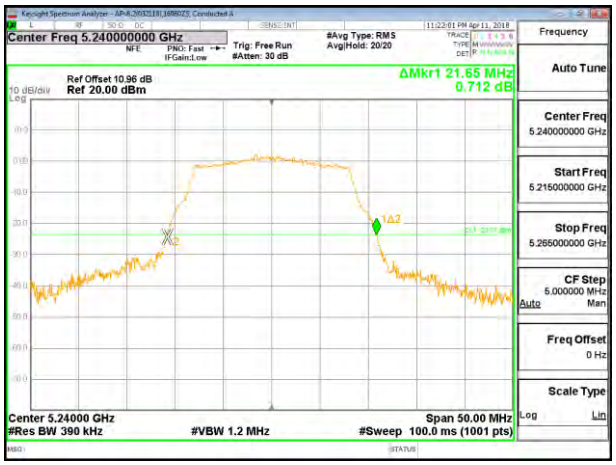
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	21.60
Mid	5200	21.75
High	5240	21.65



LOW CHANNEL



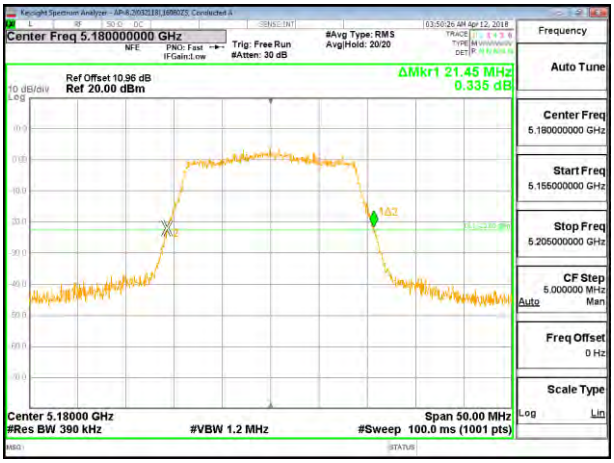
MID CHANNEL



HIGH CHANNEL

8.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	21.45
Mid	5200	21.50
High	5240	21.60



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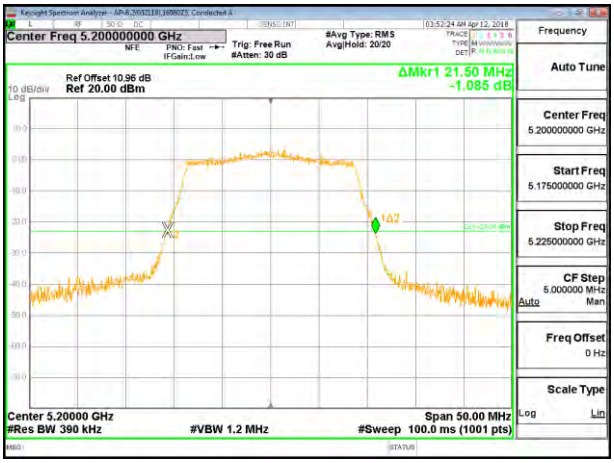

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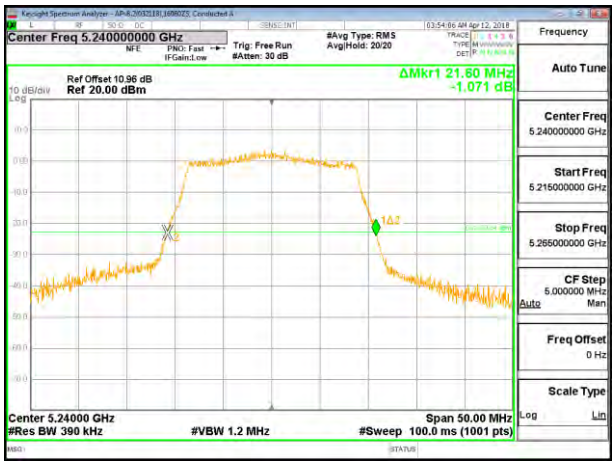


HIGH CHANNEL

8.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

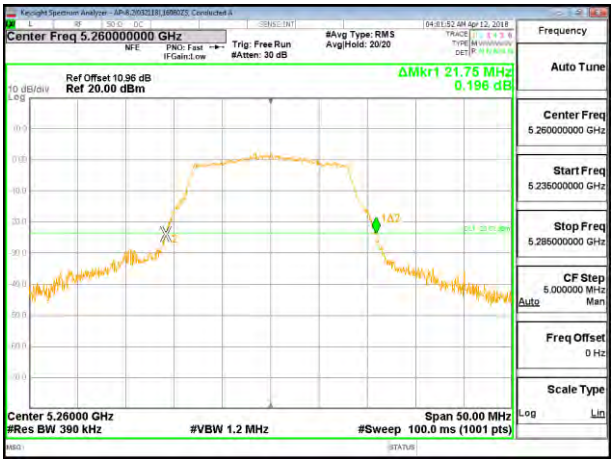
Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5190	40.70
High	5230	40.80

LOW CHANNEL

HIGH CHANNEL

8.2.4. 802.11a MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	21.75
Mid	5300	21.70
High	5320	21.75



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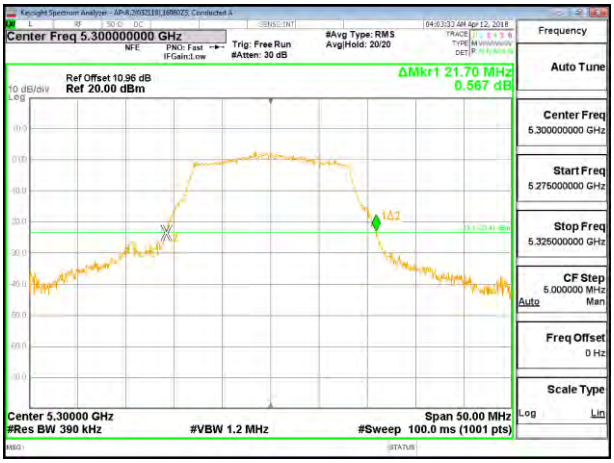

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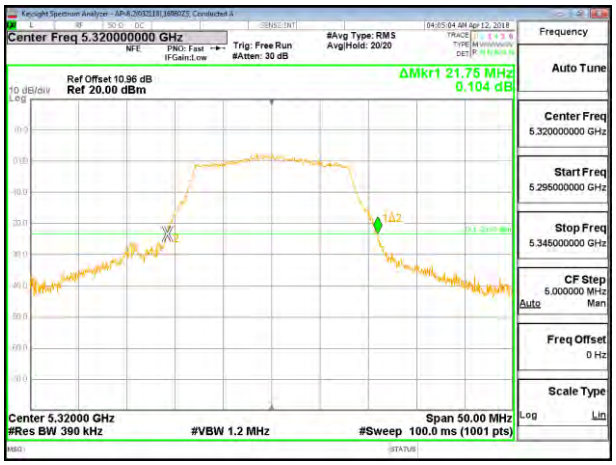
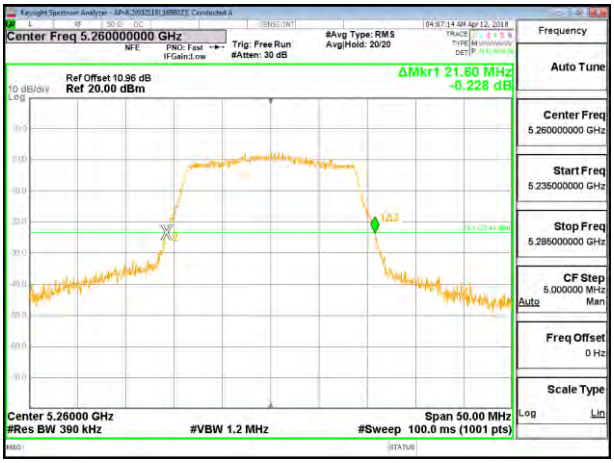


HIGH CHANNEL

8.2.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	21.60
Mid	5300	21.45
High	5320	21.50



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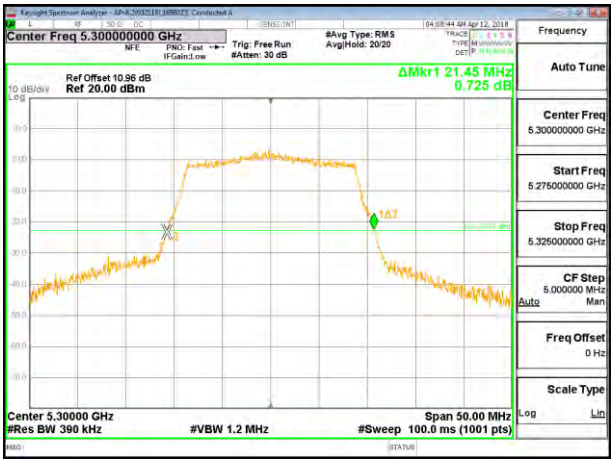

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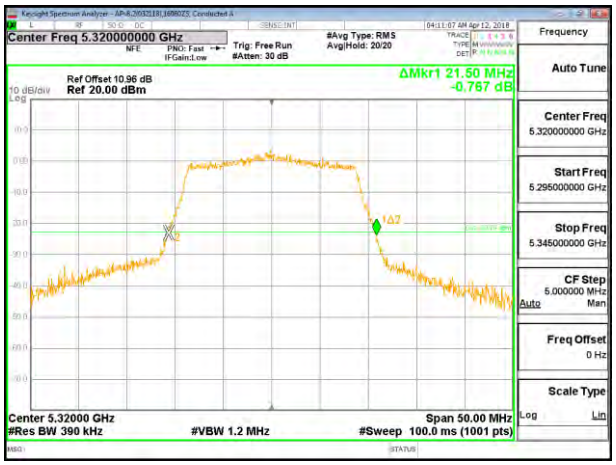
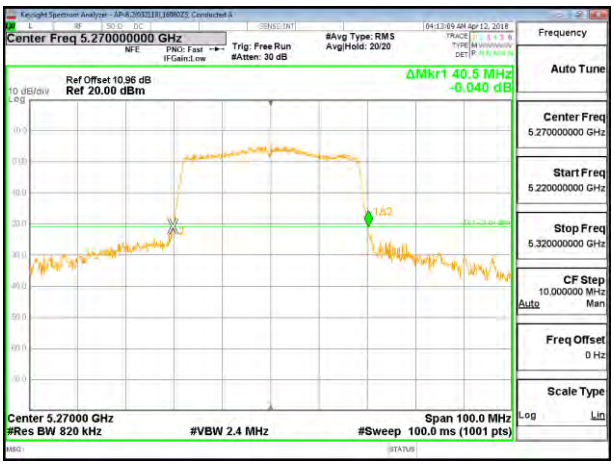


HIGH CHANNEL

8.2.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5270	40.50
High	5310	40.30

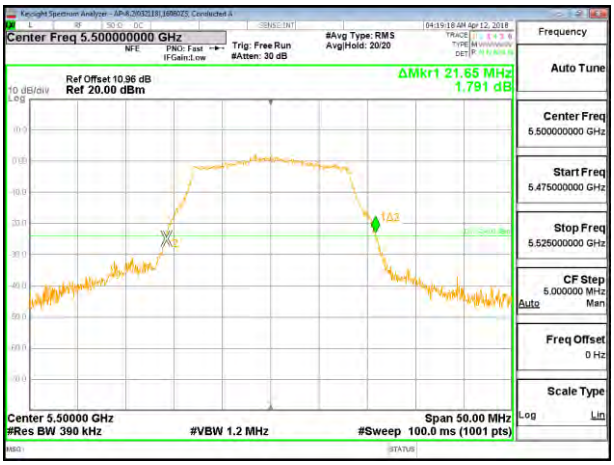


LOW CHANNEL

HIGH CHANNEL

8.2.7. 802.11a MODE IN THE 5.6 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	21.65
Mid	5580	21.75
High	5700	21.70
144	5720	21.85



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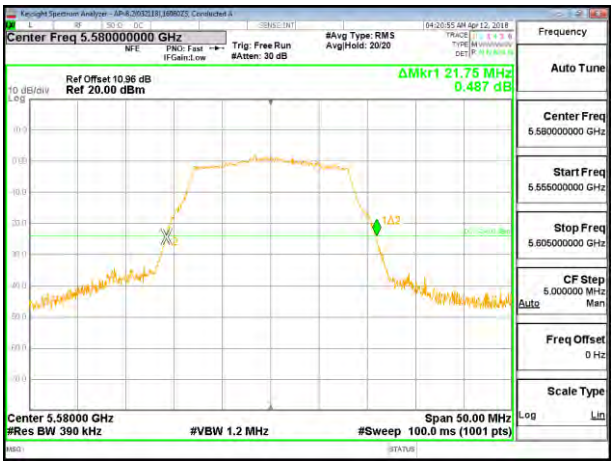

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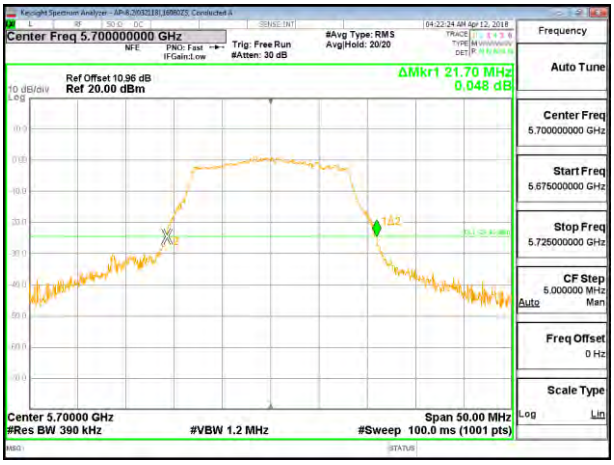
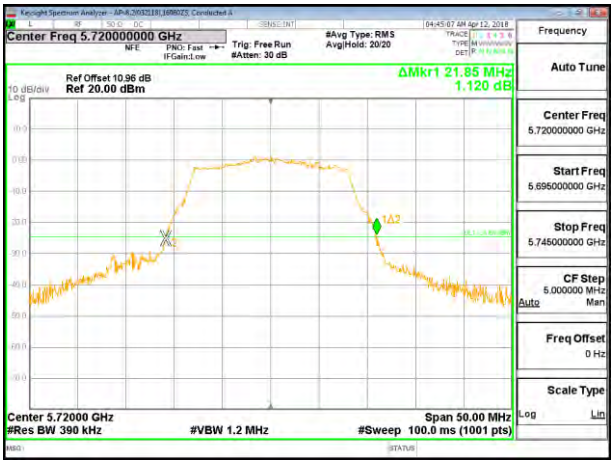


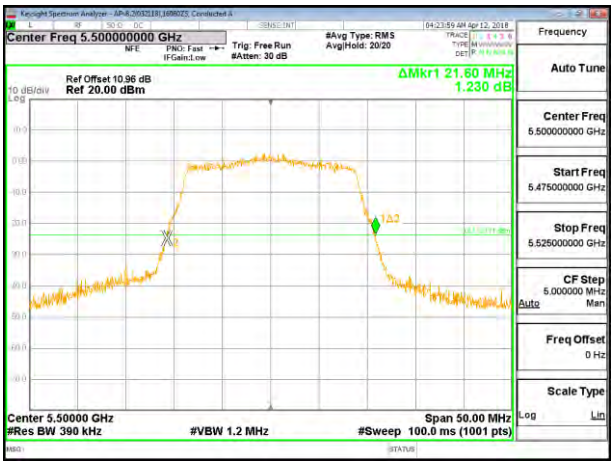
HIGH CHANNEL



CHANNEL 144

8.2.8. 802.11n HT20 MODE IN THE 5.6 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	21.60
Mid	5580	21.45
High	5700	21.60
144	5720	21.65



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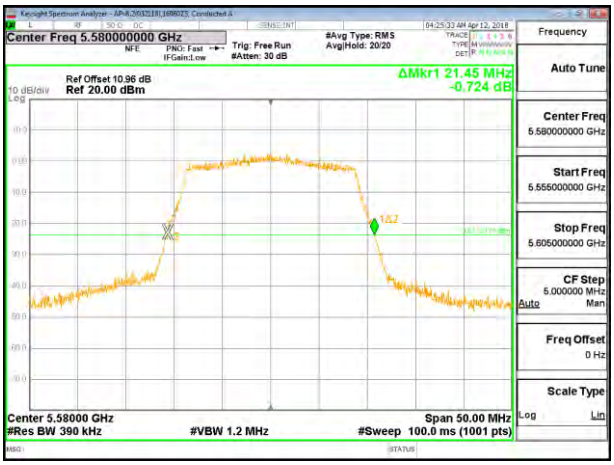

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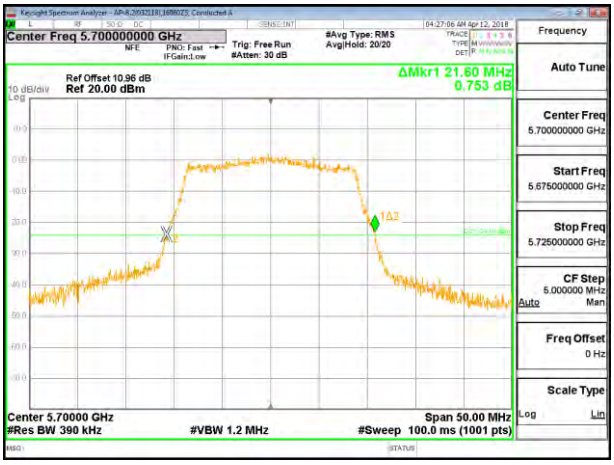
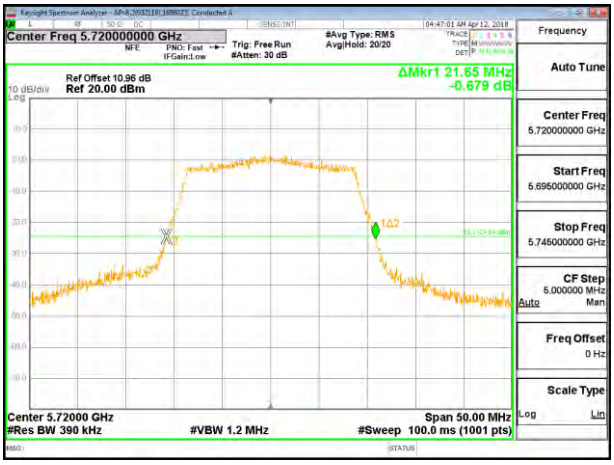


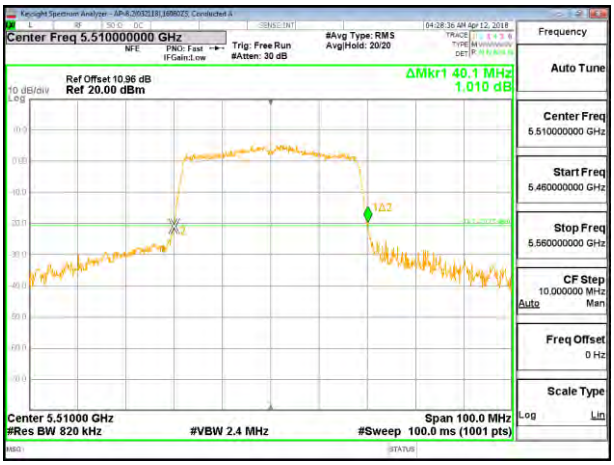
HIGH CHANNEL



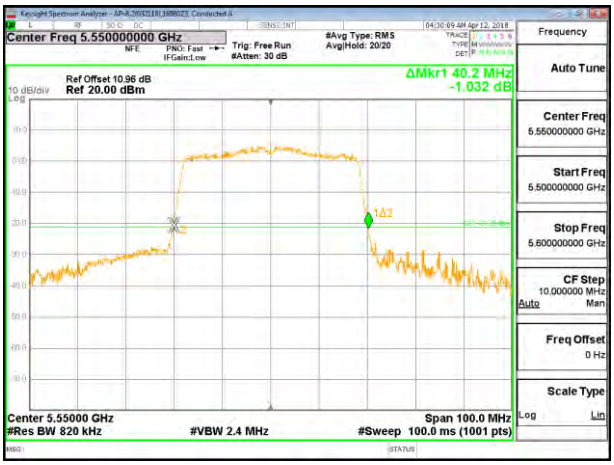
CHANNEL 144

8.2.9. 802.11n HT40 MODE IN THE 5.6 GHz BAND

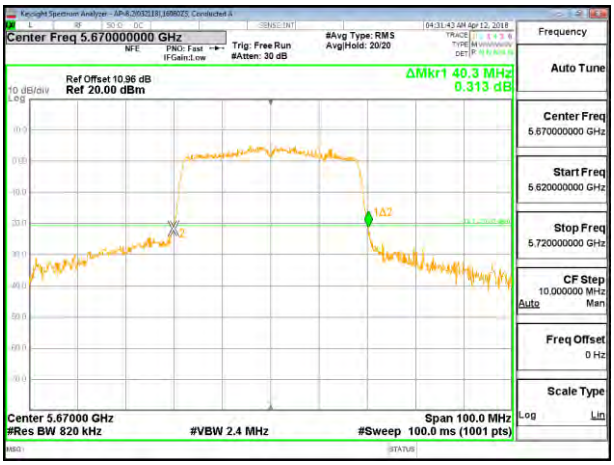
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	40.10
Mid	5550	40.20
High	5670	40.30
142	5710	40.20



LOW CHANNEL



MID CHANNEL

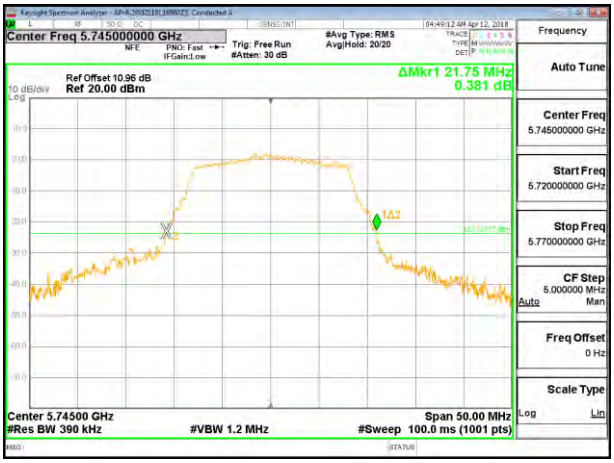


HIGH CHANNEL

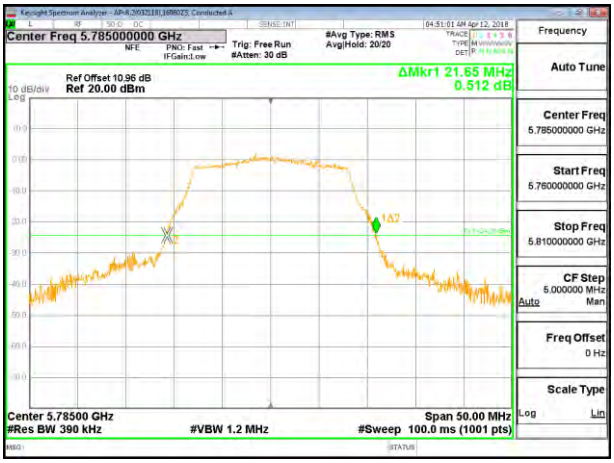
CHANNEL 142

8.2.10. 802.11a MODE IN THE 5.8 GHz BAND

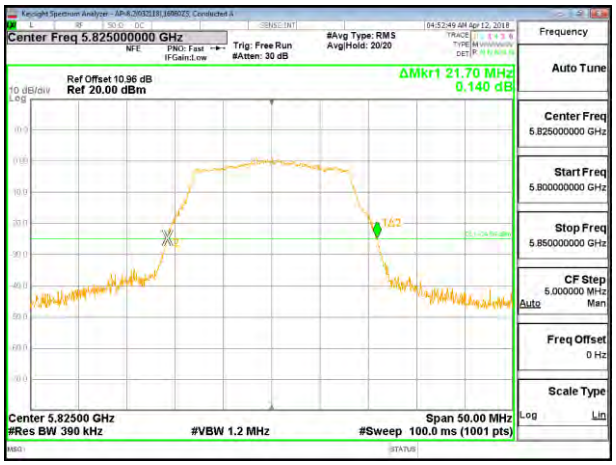
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	21.75
Mid	5785	21.65
High	5825	21.70



LOW CHANNEL



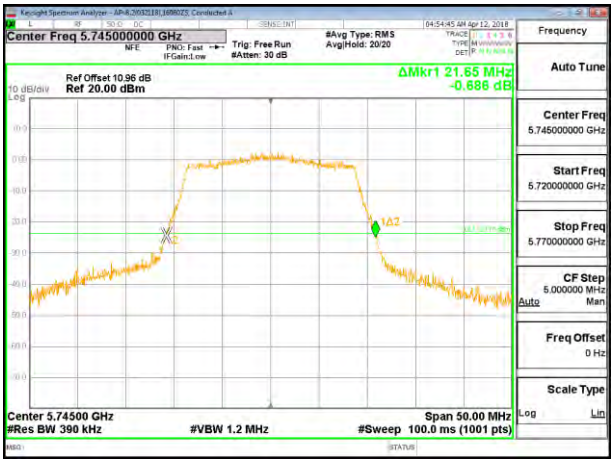
MID CHANNEL



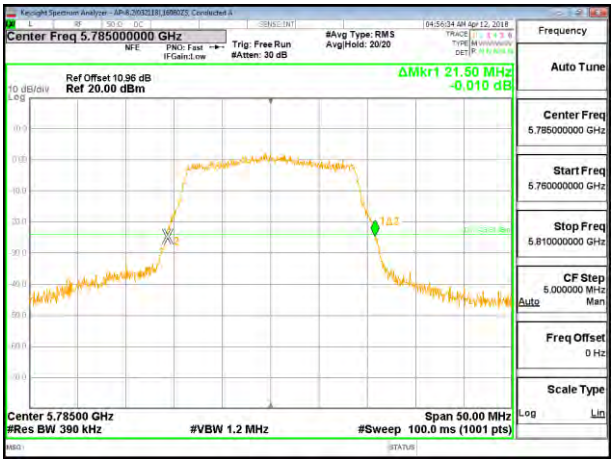
HIGH CHANNEL

8.2.11. 802.11n HT20 MODE IN THE 5.8 GHz BAND

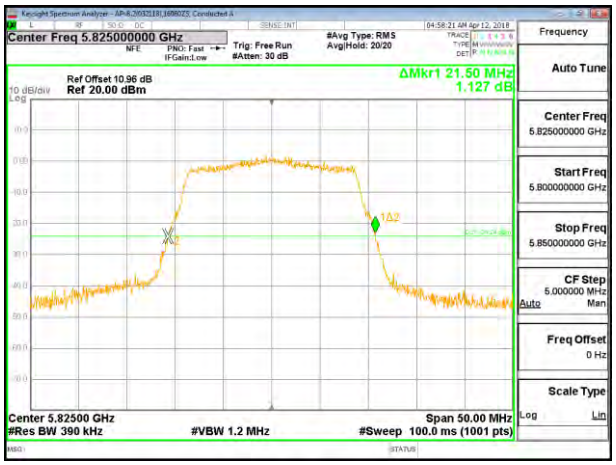
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	21.65
Mid	5785	21.50
High	5825	21.50



LOW CHANNEL



MID CHANNEL

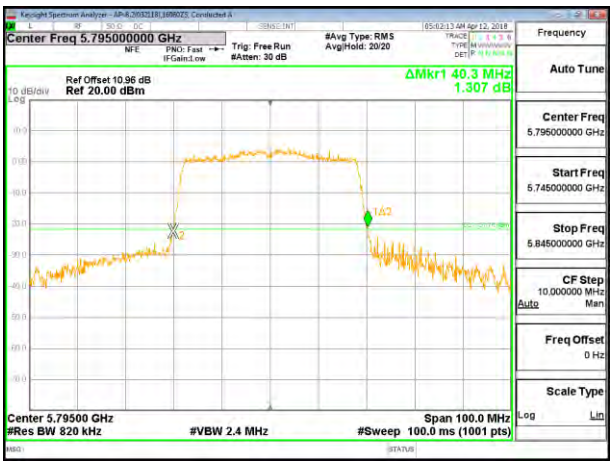


HIGH CHANNEL

8.2.12. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5755	40.40
High	5795	40.30

LOW CHANNEL



HIGH CHANNEL

8.3. 99% BANDWIDTH

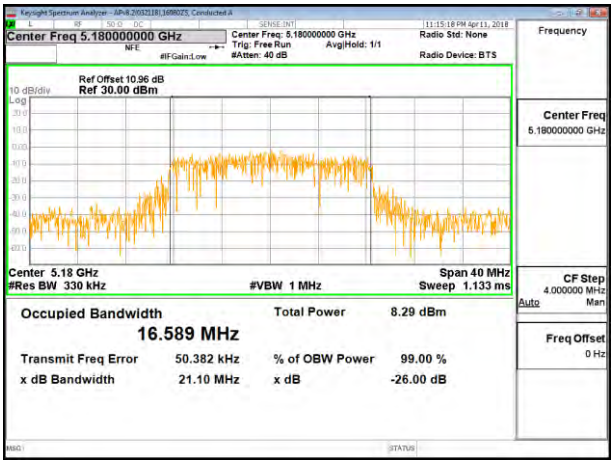
LIMITS

None; for reporting purposes only.

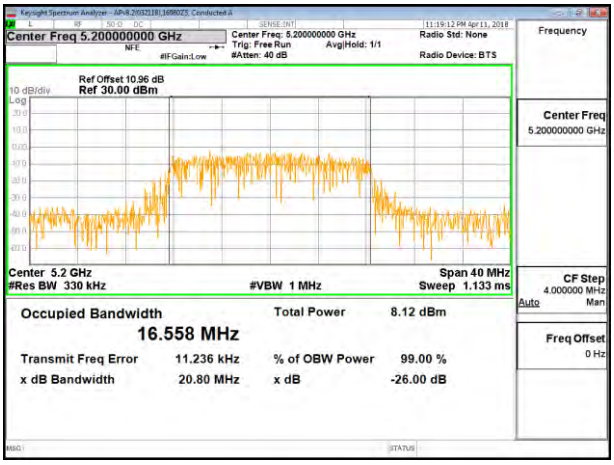
RESULTS

8.3.1. 802.11a MODE IN THE 5.2 GHz BAND

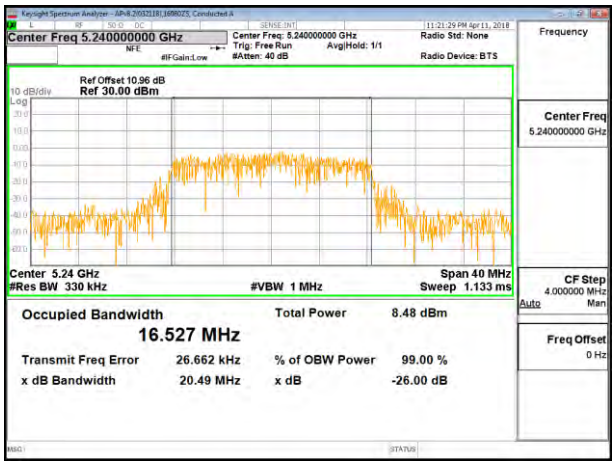
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.5890
Mid	5200	16.5580
High	5240	16.5270



LOW CHANNEL



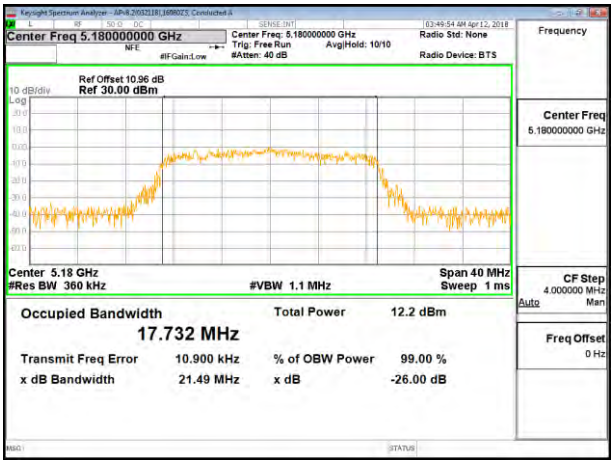
MID CHANNEL



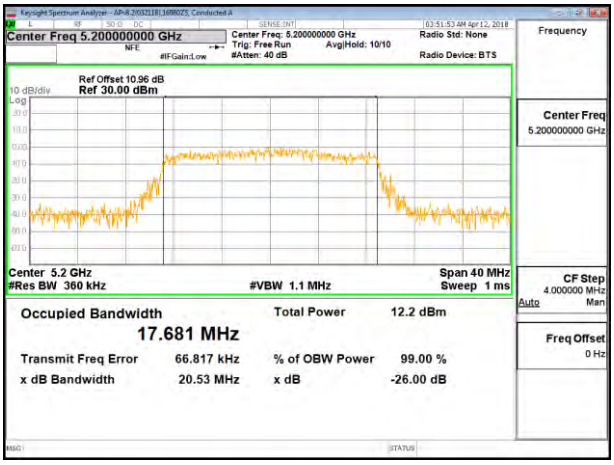
HIGH CHANNEL

8.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

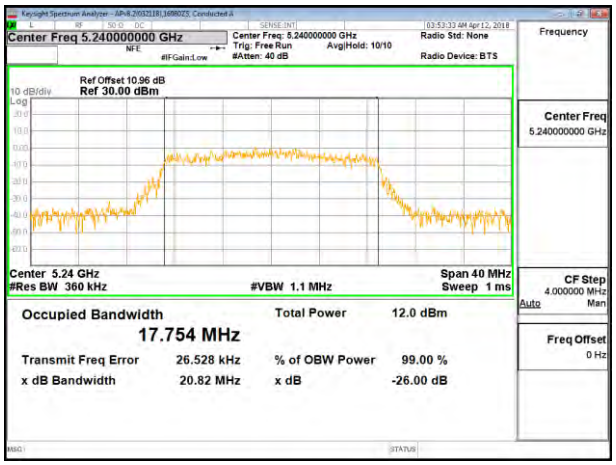
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.7320
Mid	5200	17.6810
High	5240	17.7540



LOW CHANNEL



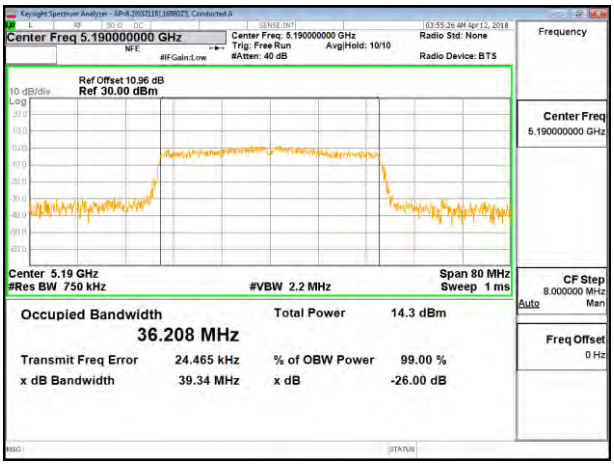
MID CHANNEL



HIGH CHANNEL

8.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.2080
High	5230	36.2990

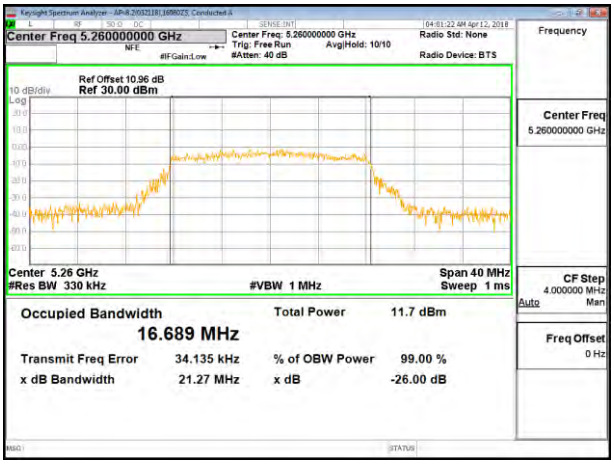


LOW CHANNEL

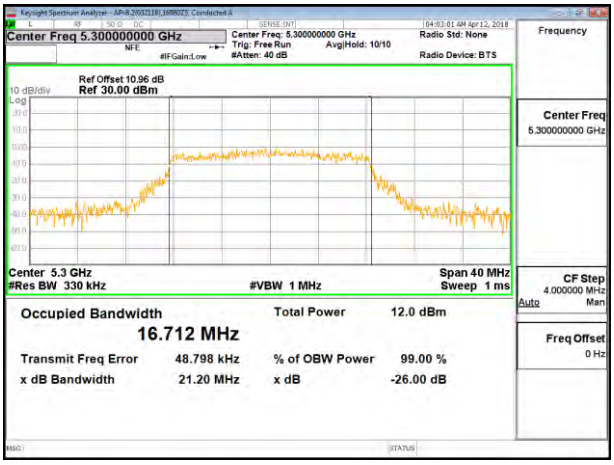
HIGH CHANNEL

8.3.4. 802.11a MODE IN THE 5.3 GHz BAND

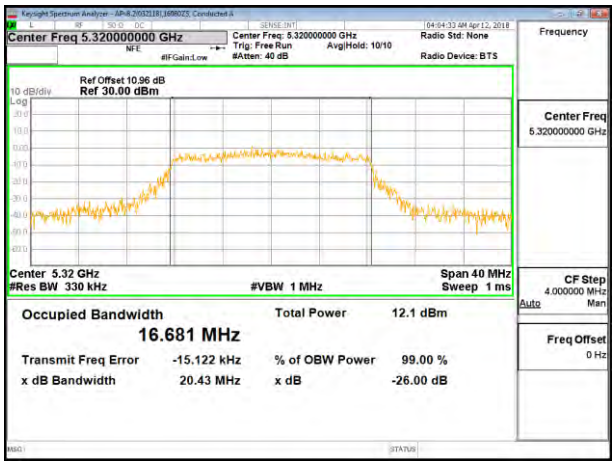
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.6890
Mid	5300	16.7120
High	5320	16.6810



LOW CHANNEL



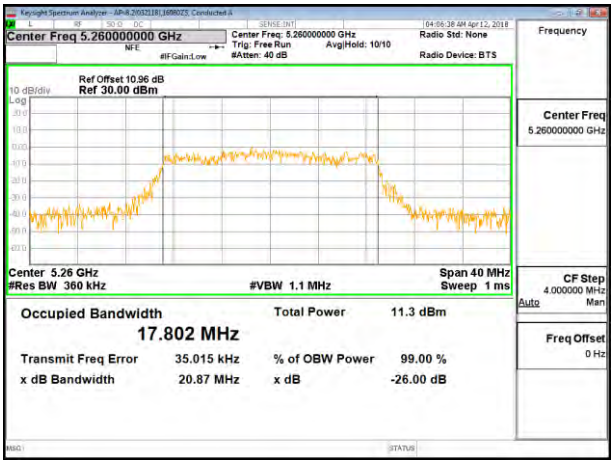
MID CHANNEL



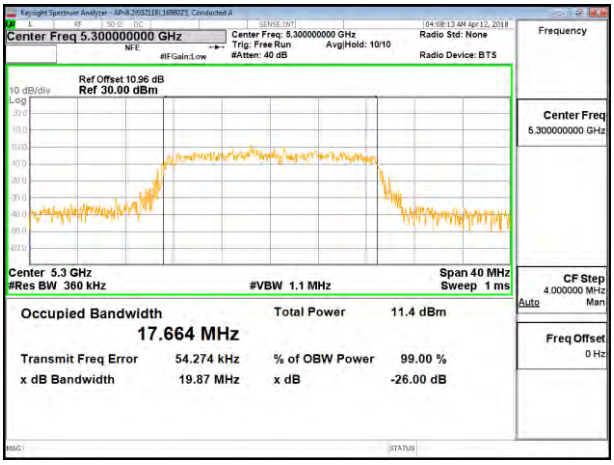
HIGH CHANNEL

8.3.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

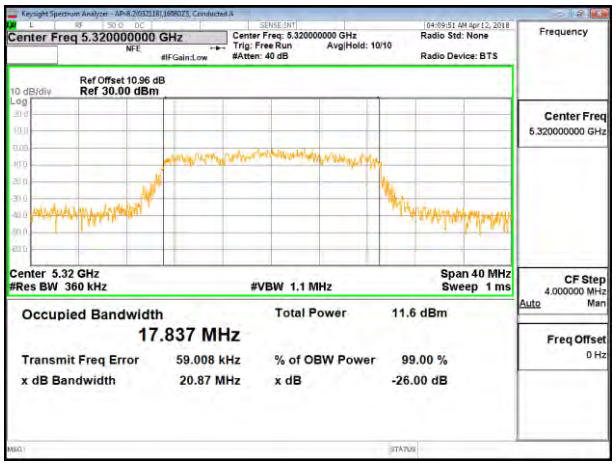
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.8020
Mid	5300	17.6640
High	5320	17.8370



LOW CHANNEL



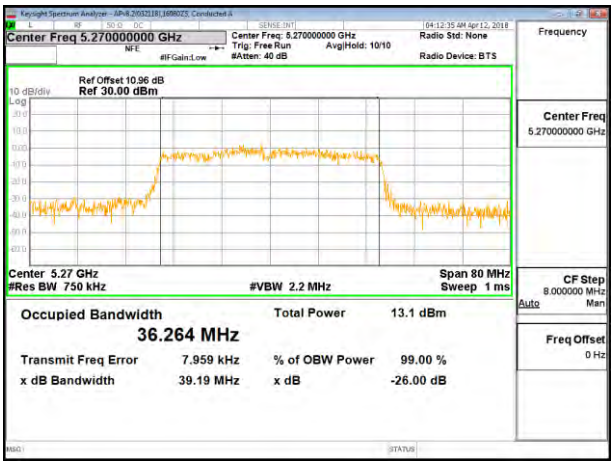
MID CHANNEL



HIGH CHANNEL

8.3.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.2640
High	5310	36.2200

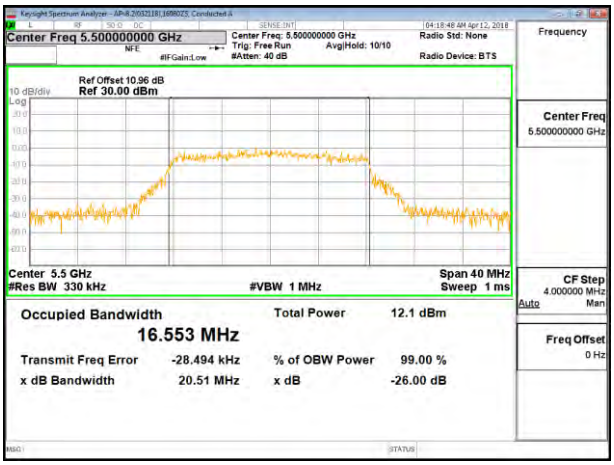


LOW CHANNEL

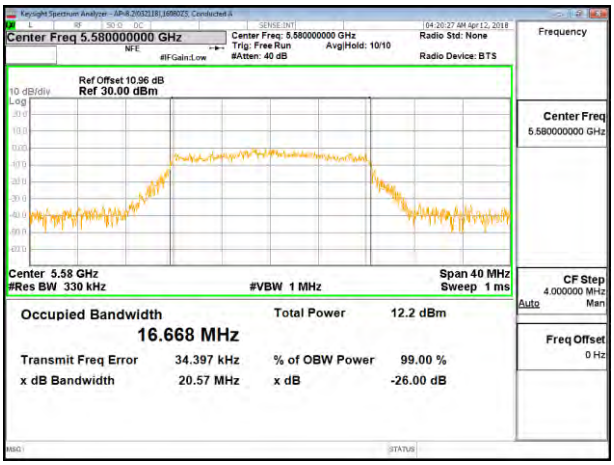
HIGH CHANNEL

8.3.7. 802.11a MODE IN THE 5.6 GHz BAND

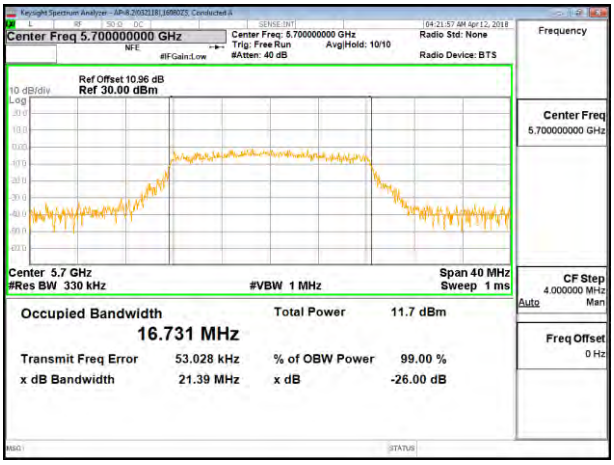
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.5530
Mid	5580	16.6680
High	5700	16.7310
144	5720	16.7180



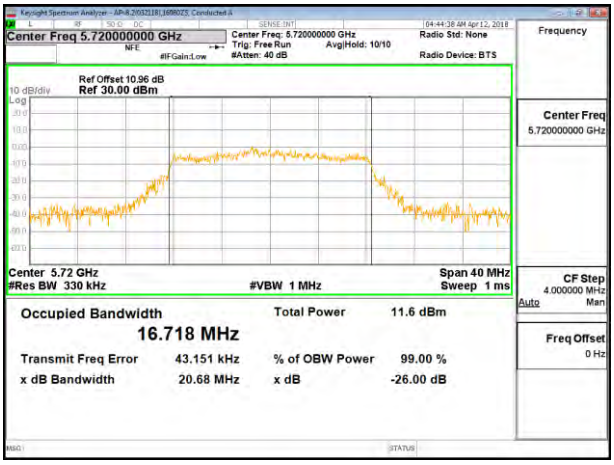
LOW CHANNEL



MID CHANNEL



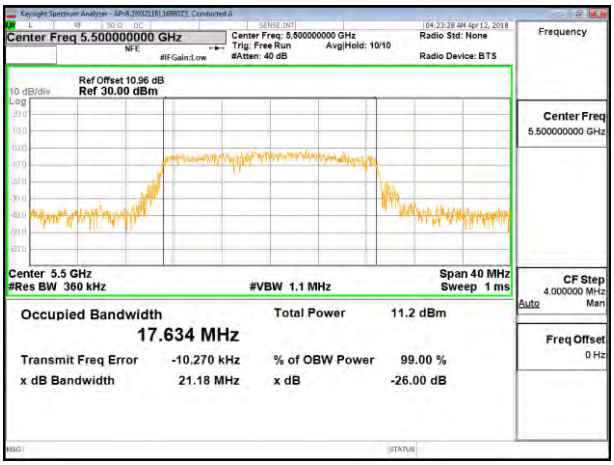
HIGH CHANNEL



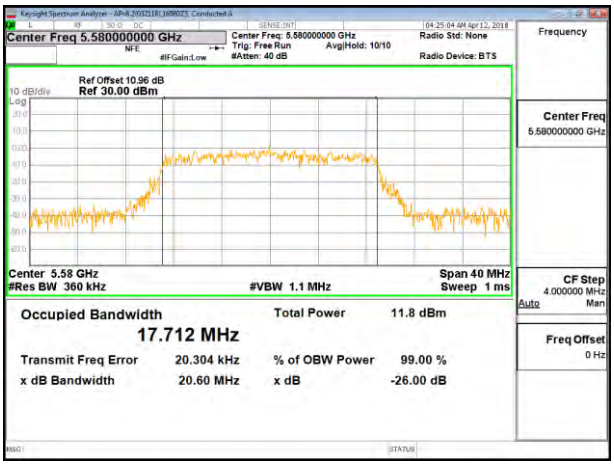
CHANNEL 144

8.3.8. 802.11n HT20 MODE IN THE 5.6 GHz BAND

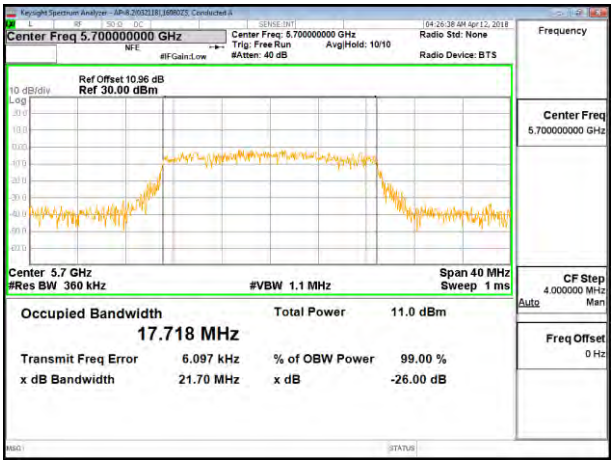
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	17.6340
Mid	5580	17.7120
High	5700	17.7180
144	5720	17.6810



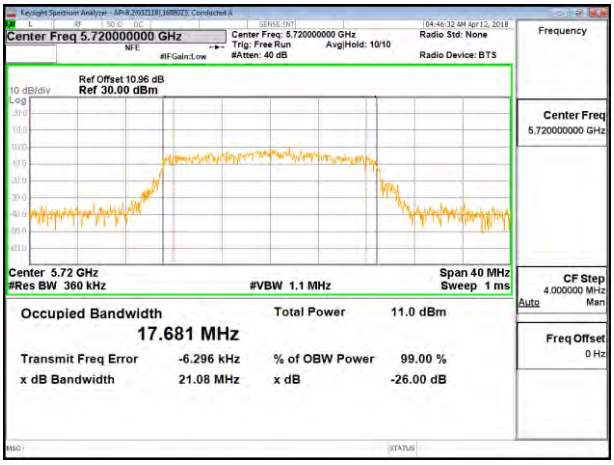
LOW CHANNEL



MID CHANNEL



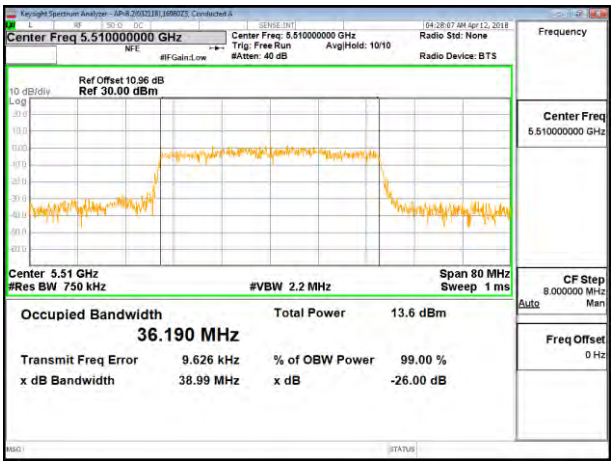
HIGH CHANNEL



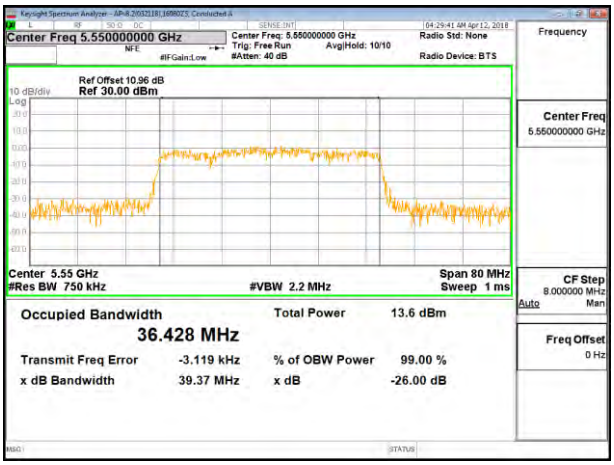
CHANNEL 144

8.3.9. 802.11n HT40 MODE IN THE 5.6 GHz BAND

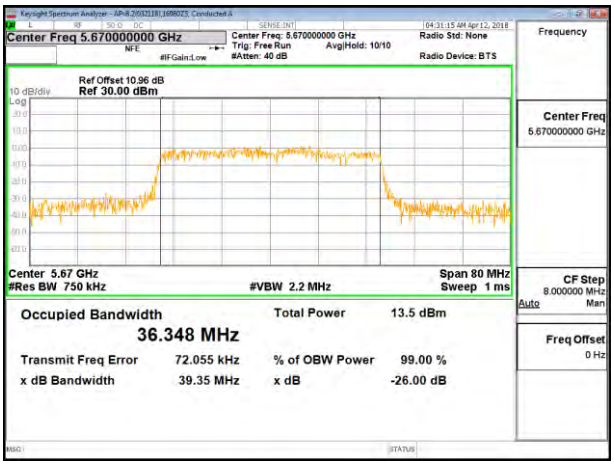
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.1900
Mid	5550	36.4280
High	5670	36.3480
142	5710	36.2730



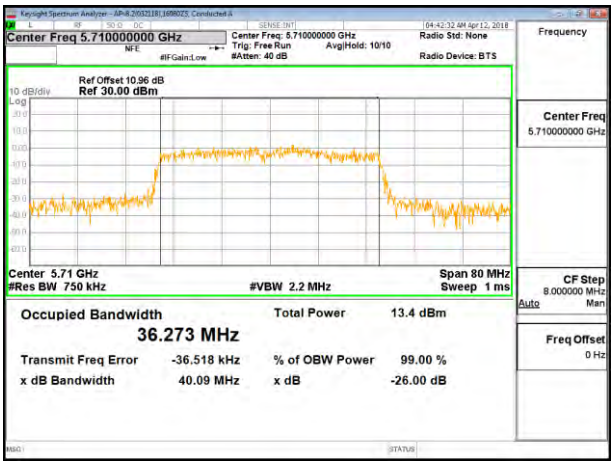
LOW CHANNEL



MID CHANNEL



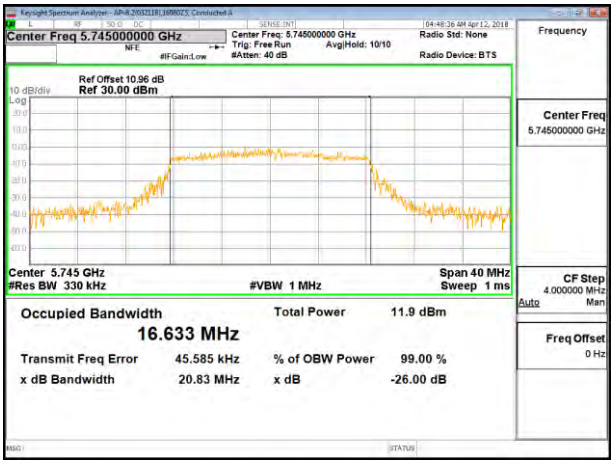
HIGH CHANNEL



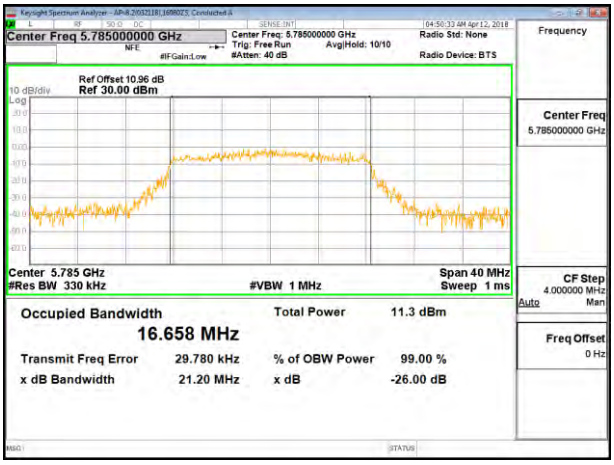
CHANNEL 142

8.3.10. 802.11a MODE IN THE 5.8 GHz BAND

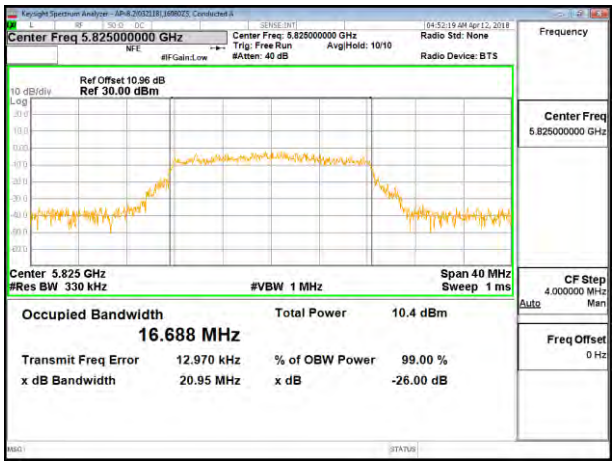
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.6330
Mid	5785	16.6580
High	5825	16.6880



LOW CHANNEL



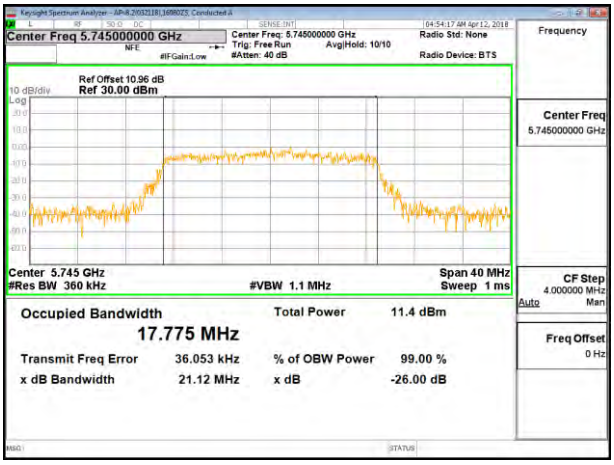
MID CHANNEL



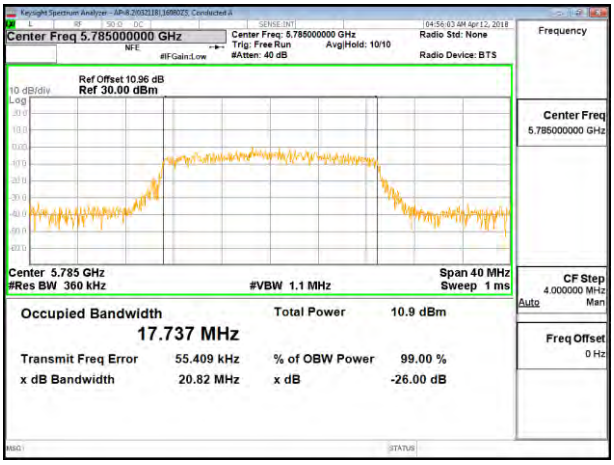
HIGH CHANNEL

8.3.11. 802.11n HT20 MODE IN THE 5.8 GHz BAND

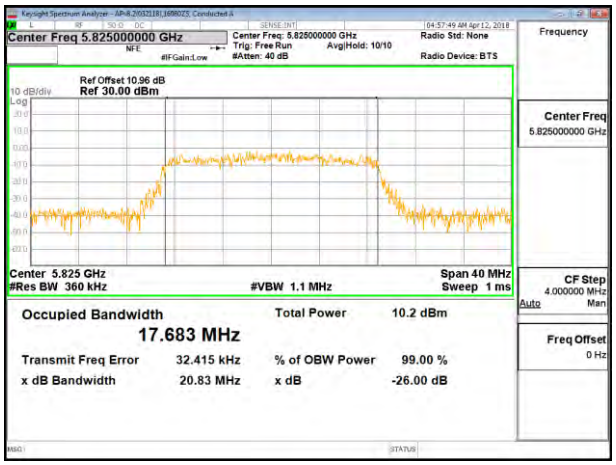
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.7750
Mid	5785	17.7370
High	5825	17.6830



LOW CHANNEL



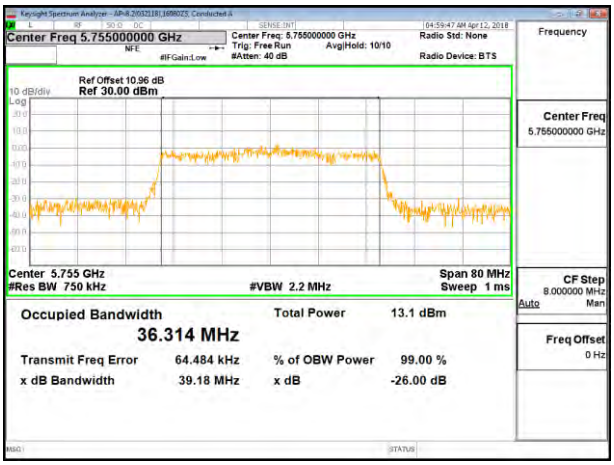
MID CHANNEL



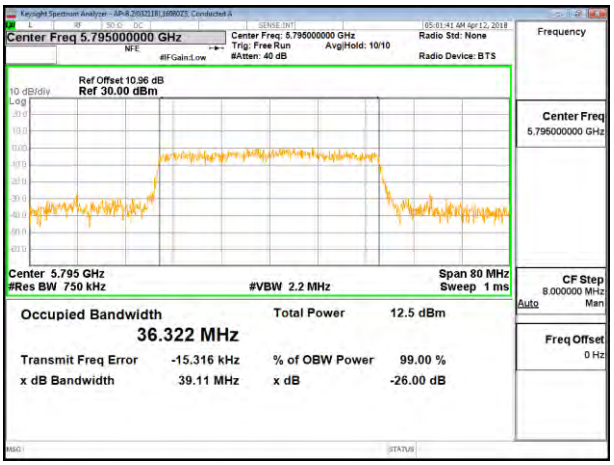
HIGH CHANNEL

8.3.12. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	36.3140
High	5795	36.3220



LOW CHANNEL



HIGH CHANNEL

8.4. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

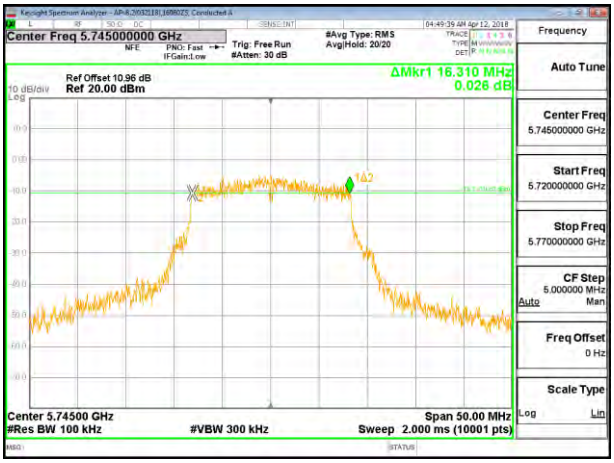
RSS-247 6.2.4.1

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

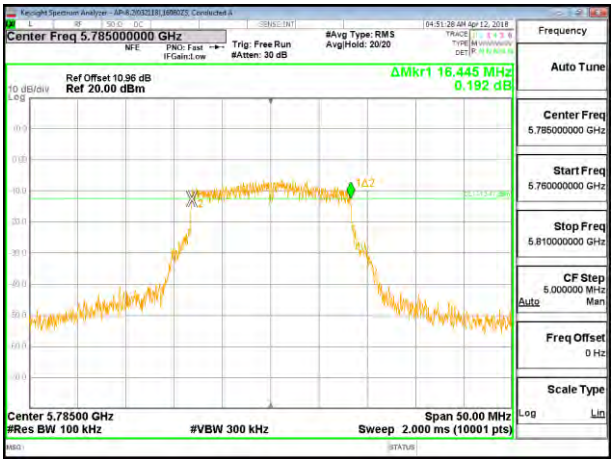
RESULTS

8.4.1. 802.11a MODE IN THE 5.8 GHz BAND

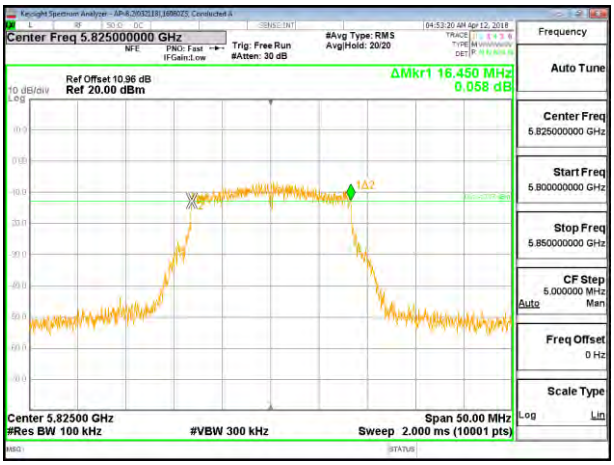
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.3100	0.5
Mid	5785	16.4450	0.5
High	5825	16.4500	0.5
144	5720	3.1800	0.5



LOW CHANNEL



MID CHANNEL

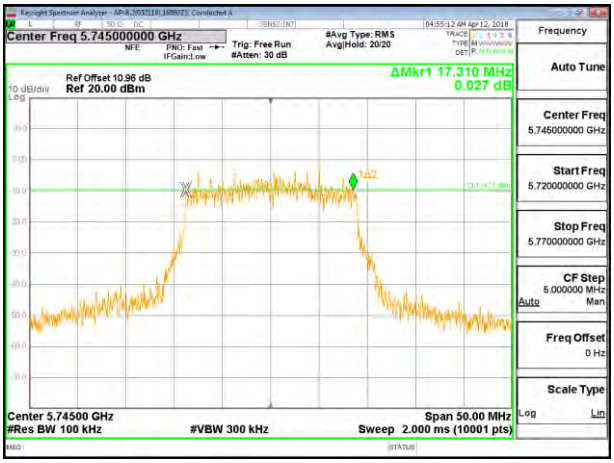


HIGH CHANNEL

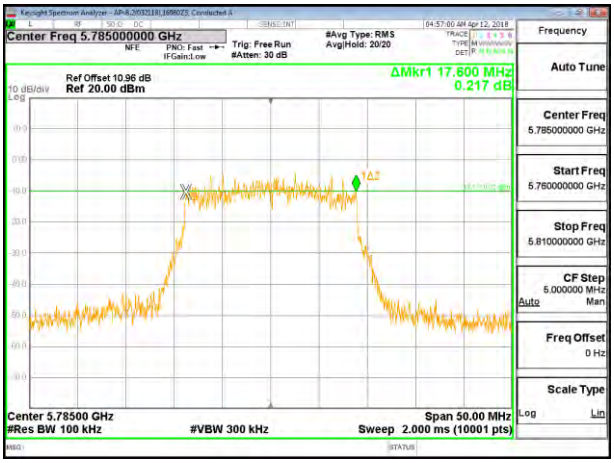
CHANNEL 144

8.4.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

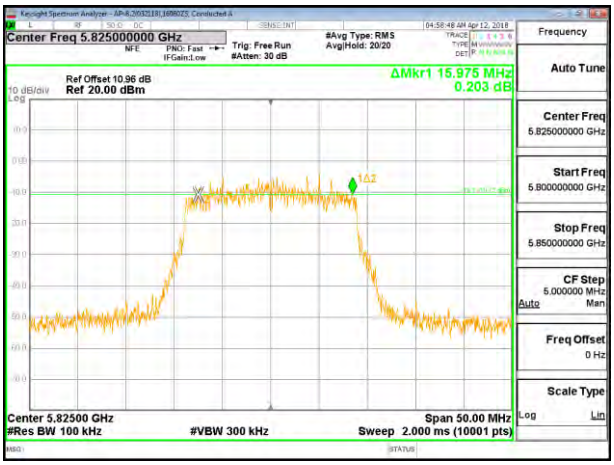
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.3100	0.5
Mid	5785	17.6000	0.5
High	5825	15.9750	0.5
144	5720	3.5050	0.5



LOW CHANNEL



MID CHANNEL

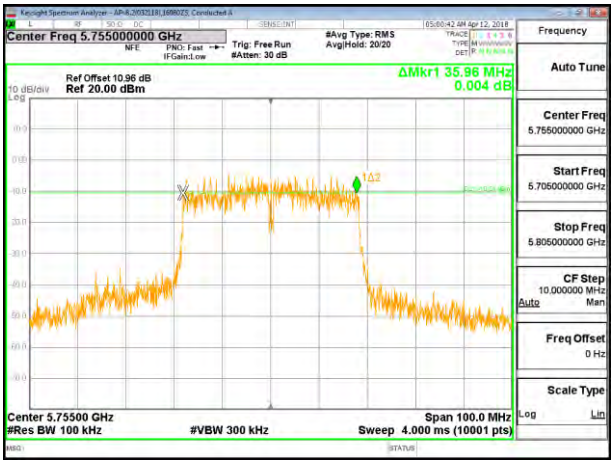


HIGH CHANNEL

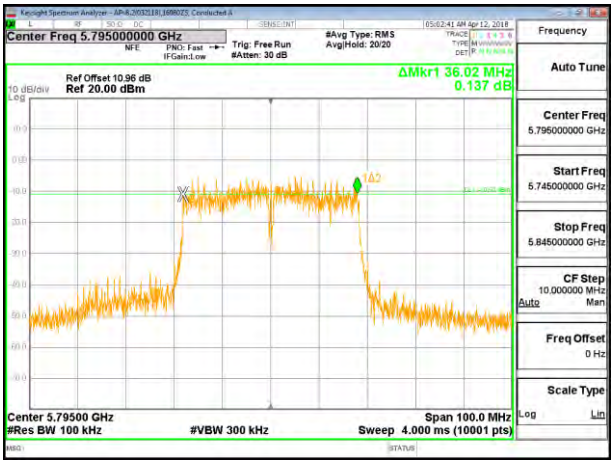
CHANNEL 144

8.4.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

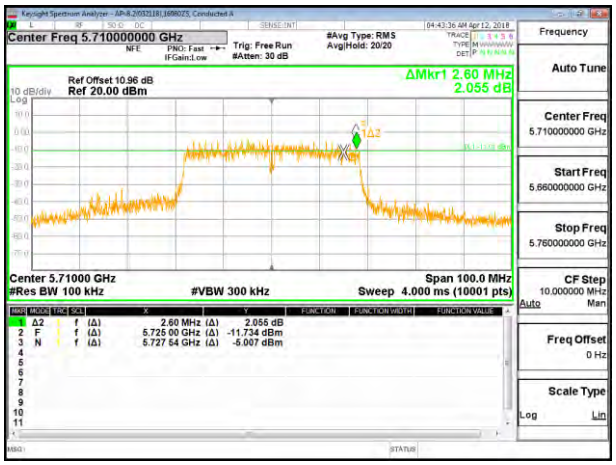
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	35.9600	0.5
High	5795	36.0200	0.5
142	5710	2.6000	0.5



LOW CHANNEL



HIGH CHANNEL



CHANNEL 142

8.5. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz (pick the section that applies to your product)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 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.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 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 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

(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 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.

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