

TEST REPORT



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-04566
Page (1) / (91) Pages

1. Client

- Name : BIXOLON Co.,Ltd.
- Address : 7th~8th FL, Miraeasset Venture Tower, 20, Pangyoyeok-ro241beon-gil,
Bundang-gu Seongnam-si, Gyeonggi-do, Korea
- Date of Receipt : 2019-07-16

2. Manufacturer

- Name : BIXOLON Co.,Ltd.
- Address : 7th~8th FL, Miraeasset Venture Tower, 20, Pangyoyeok-ro241beon-gil,
Bundang-gu Seongnam-si, Gyeonggi-do, Korea

3. Use of Report : For FCC & ISED Certification

4. Test Sample / Model: Thermal Label Printer / FCC : XQ-84*x ISED : XQ-840

5. Date of Test : 2019-07-26 to 2019-11-19

6. Test Standard(method) used : FCC 47 CFR part 15 subpart E 15.407 RSS-247

7. Testing Environment: Temp.: (23 ± 1) °C, Humidity: (48 ± 5) % R.H.

8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by	Technical Manager
	Gwanyong Kim: (Signature)	Young-taek Lee: (Signature)

2019-11-20

Republic of KOREA **CTK Co., Ltd.**



CTK Co., Ltd.
(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-04566
Page (2) / (91) Pages

REPORT REVISION HISTORY

Date	Revision	Page No
2019-11-20	Issued (CTK-2019-04566)	all

This report shall not be reproduced except in full, without the written approval of CTK Co., Ltd. This document may be altered or revised by CTK Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by CTK Co., Ltd. will constitute fraud and shall nullify the document.

CONTENTS

1.0 General Product Description	4
1.1 Client Information	4
1.2 Product Information.....	4
1.3 Peripheral Devices	5
2.0 Facility and Accreditations	6
2.1 Test Facility	6
2.2 Laboratory Accreditations and Listings.....	6
2.3 Calibration Details of Equipment Used for Measurement.....	6
3.0 Test Specifications	7
3.1 Standards	7
3.2 Mode of operation during the test	8
3.3 Maximum Measurement Uncertainty	9
4.0 Technical Characteristic Test	10
4.1 26dB Bandwidth and 99 % Bandwidth	10
4.2 6dB Bandwidth	19
4.3 Maximum Conducted Output Power.....	28
4.4 Power Spectral Density	37
4.5 Frequency Stability.....	46
4.6 Unwanted Emissions	47
4.7 AC Conducted Emissions	86
APPENDIX A – Test Equipment Used For Tests	89

1.0 General Product Description

1.1 Client Information

Company	BIXOLON Co.,Ltd.
Contact Point	7th~8th FL, Miraeasset Venture Tower, 20, Pangyojeok-ro241beon-gil, Bundang-gu Seongnam-si, Gyeonggi-do, Korea
Contact Person	Name : Ji-Sung Shin E-mail : jsshin@bixolon.com Tel : +82-31-218-5582

1.2 Product Information

FCC ID	U5MXQ840
Certification Number ISED	7962A-XQ840
Product Description	THERMAL LABEL PRINTER
Basic model (HVIN)	FCC : XQ-84*x (*: Alphanumeric, x: blank or Alphanumeric) ISED : XQ-840
Variant model	XQ-843 differs from the basic model in printing resolution ▶ XQ-840 : 200 dpi ▶ XQ-843 : 300 dpi
Operating Frequency	UNII 1 : 5 180 MHz – 5 240 MHz (20 MHz_BW) 5 190 MHz – 5 230 MHz (40 MHz_BW) 5 210 MHz (80 MHz_BW) UNII 3 : 5 745 MHz – 5 825 MHz (20 MHz_BW) 5 755 MHz – 5 795 MHz (40 MHz_BW) 5 775 MHz (80 MHz_BW)
RF Output Power	UNII 1 802.11a : 9.22 dBm (8.36 mW) 802.11n(HT20) : 8.90 dBm (7.76 mW) 802.11n(HT40) : 8.39 dBm (6.90 mW) 802.11ac(VHT20) : 8.77 dBm (7.53 mW) 802.11ac(VHT40) : 8.38 dBm (6.89 mW) 802.11ac(VHT80) : 4.95 dBm (3.13 mW) UNII 3 802.11a : 9.90 dBm (9.77 mW) 802.11n(HT20) : 9.57 dBm (9.06 mW) 802.11n(HT40) : 9.15 dBm (8.22 mW) 802.11ac(VHT20) : 9.44 dBm (8.79 mW) 802.11ac(VHT40) : 9.17 dBm (8.26 mW) 802.11ac(VHT80) : 5.82 dBm (3.82 mW)
Antenna type	FPC Antenna
Antenna gain	3.41 dBi
Type of Modulation	OFDM
Power Source	DC 24 V (AC/DC Adapter)
FVIN	V01_00
Test Software(Version)	Ampak RFTTestTool, VER: 6.1
RF Power setting in Test SW	802.11a / n20 / n40 / ac20 / ac40 : 64 802.11ac80 : 50
S / N	STD000KS19050015

 CTK Co., Ltd. The Prime Leader of Global Regulatory Certification	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-04566 Page (5) / (91) Pages	
---	---	--	--

1.3 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Notebook Computer	HP	HP Probook 650	-
AC Adapter	HP	Series PPP019L-S	PA-1650-32HY

2.0 Facility and Accreditations

2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea.

2.2 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	8737A-2
KOREA	NRRA	KR0025

2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-04566 Page (7) / (91) Pages	
---	---	--	--

3.0 Test Specifications

3.1 Standards

Section in FCC	Section in RSS	Requirement(s)	Status (Note 1)	Test Condition
15.407(e)	RSS-Gen 6.6	6 dB Bandwidth	C	Conducted
15.407	RSS-Gen 6.6	26 dB Bandwidth and 99% Bandwidth	C	
15.407(a)(1)	RSS-247 6.2.1.1, 6.2.4.1	Conducted Output Power	C	
15.407(a)(1)	RSS-247 6.2.1.1, 6.2.4.1	Power Spectral Density	C	
15.407(g)	RSS-Gen 6.11	Frequency Stability	C	
15.407 (b)	RSS-247 6.2.1.2, 6.2.4.2	Undesirable emission	C	
15.209, 15.407 (b)(5),(6)	RSS-Gen 6.13	Radiated Spurious Emission	C	Radiated
15.207	RSS-Gen 8.8	AC Conducted Emissions	C	Line Conducted
<u>Note 1:</u> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable				
<u>Note 2:</u> The data in this test report are traceable to the national or international standards.				
<u>Note 3:</u> The sample was tested according to the following specification: FCC Part 15.247, ANSI C63.10-2013, RSS-247 Issue 2, RSS-GEN Issue 4				
<u>Note 4:</u> The tests were performed according to the method of measurements prescribed in KDB No.789033.				

3.2 Mode of operation during the test

The UUT is operated in a manner representative of the typical of the equipments.
During at testing, system components were manipulated within the confines of typical usage to maximize each emission. The results are only attached worst cases.

Test mode & Worst case

Mode	Worst case(Data rate)
802.11a	6 Mbps
802.11n(HT20)	MCS 0
802.11n(HT40)	MCS 0
802.11ac(VHT20)	MCS 0
802.11ac(VHT40)	MCS 0
802.11ac(VHT80)	MCS 0

Test Frequency

- 802.11a, 802.11n_HT20, 802.11ac_VHT20

Frequency Band	Lowest channel	Middle channel	Highest channel
UNII 1	5 180 MHz	5 200 MHz	5 240 MHz
UNII 3	5 745 MHz	5 785 MHz	5 825 MHz

- 802.11n_HT40, 802.11ac_VHT40

Frequency Band	Lowest channel	Middle channel	Highest channel
UNII 1	5 190 MHz	-	5 230 MHz
UNII 3	5 755 MHz	-	5 795 MHz

- 802.11ac_VHT80

Frequency Band	Lowest channel	Middle channel	Highest channel
UNII 1	5 210 MHz	-	-
UNII 3	5 775 MHz	-	-

Duty cycle

Mode	Duty cycle (%)	Mode	Duty cycle (%)
802.11a	97.1	802.11ac(VHT20)	96.9
802.11n(HT20)	96.9	802.11ac(VHT40)	94.1
802.11n(HT40)	94.0	802.11ac(VHT80)	88.4

3.3 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	± 0.19 dB
Power Spectral Density	± 1.5 dB
Occupied Bandwidth	± 0.02 KHz
Unwanted Emission(conducted)	± 3.0 dB
Radiated Emissions ($f \leq 1$ GHz)	± 4.38 dB
Radiated Emissions ($f > 1$ GHz)	± 5.12 dB
AC Conducted Emission	± 3.64 dB

	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-04566 Page (10) / (91) Pages	
---	---	---	--

4.0 Technical Characteristic Test

4.1 26dB Bandwidth and 99 % Bandwidth

Test Procedures(ANSI C63.10-2013 6.9.2)

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

Test Procedures(ANSI C63.10-2013 6.9.3)

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = approximately 1 % of the emission bandwidth
- b) VBW $\geq$ RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Limit :

NA

Test Data:

802.11a

Frequency Band	Channel	Frequency [MHz]	26 dB Bandwidth [MHz]	99 % Bandwidth [MHz]
UNII 1	Low	5 180	20.58	16.47
	Middle	5 200	20.76	16.48
	High	5 240	20.83	16.49
UNII 3	Low	5 745	21.71	17.21
	Middle	5 785	21.72	17.14
	High	5 825	21.47	17.18

802.11n(HT20)

Frequency Band	Channel	Frequency [MHz]	26 dB Bandwidth [MHz]	99 % Bandwidth [MHz]
UNII 1	Low	5 180	20.99	17.61
	Middle	5 200	21.13	17.64
	High	5 240	21.01	17.64
UNII 3	Low	5 745	21.64	18.20
	Middle	5 785	21.79	18.17
	High	5 825	21.83	18.17

802.11n(HT40)

Frequency Band	Channel	Frequency [MHz]	26 dB Bandwidth [MHz]	99 % Bandwidth [MHz]
UNII 1	Low	5 190	39.53	36.12
	High	5 230	39.70	36.05
UNII 3	Low	5 755	39.77	36.18
	High	5 795	39.90	36.07

802.11ac(VHT20)

Frequency Band	Channel	Frequency [MHz]	26 dB Bandwidth [MHz]	99 % Bandwidth [MHz]
UNII 1	Low	5 180	21.03	17.64
	Middle	5 200	21.01	17.64
	High	5 240	21.38	17.65
UNII 3	Low	5 745	21.88	18.26
	Middle	5 785	21.65	18.10
	High	5 825	21.71	18.18

802.11ac(VHT40)

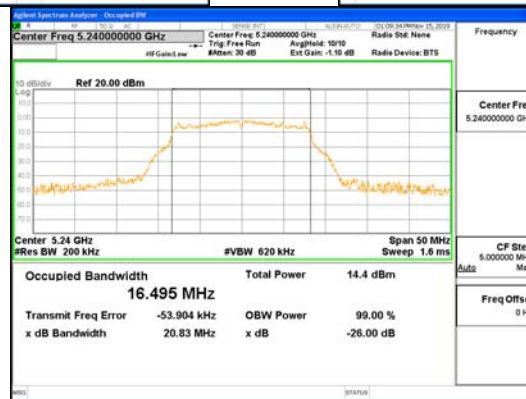
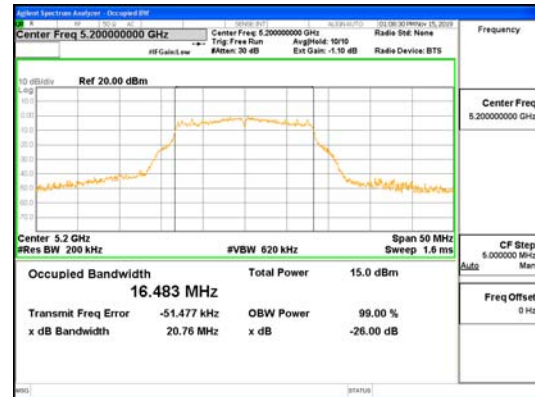
Frequency Band	Channel	Frequency [MHz]	26 dB Bandwidth [MHz]	99 % Bandwidth [MHz]
UNII 1	Low	5 190	39.46	36.13
	High	5 230	39.31	36.03
UNII 3	Low	5 755	39.73	36.17
	High	5 795	39.35	36.10

802.11ac(VHT80)

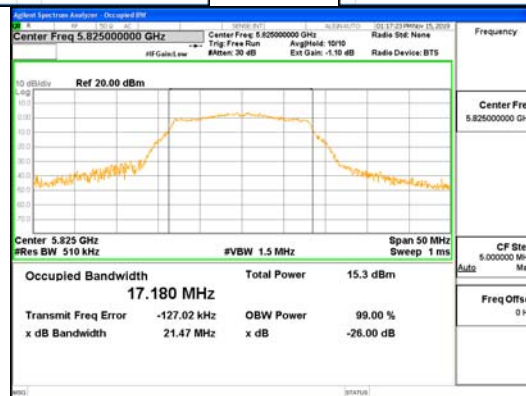
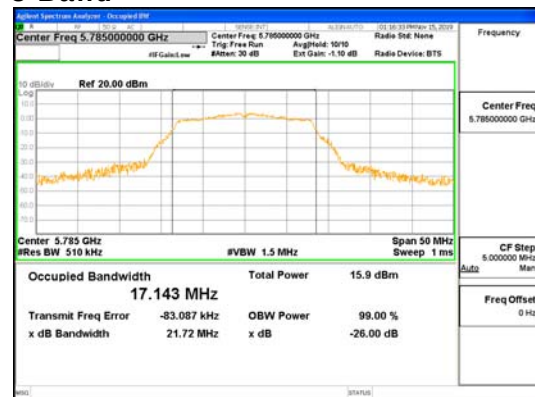
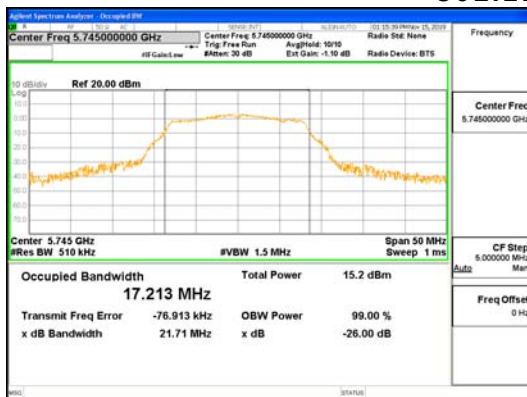
Frequency Band	Channel	Frequency [MHz]	26 dB Bandwidth [MHz]	99 % Bandwidth [MHz]
UNII 1	Low	5 210	80.51	75.44
UNII 3	Low	5 775	79.66	75.14

See next pages for actual measured spectrum plots.

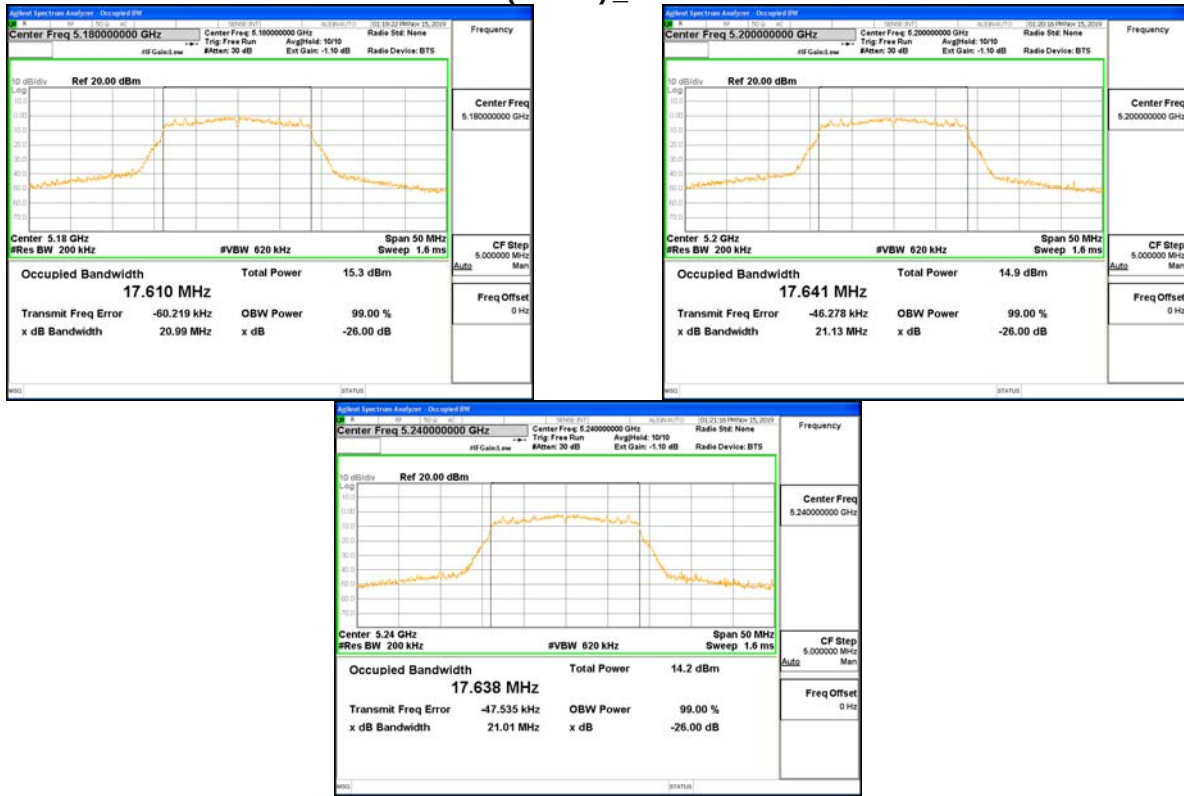
802.11a_UNII 1 Band



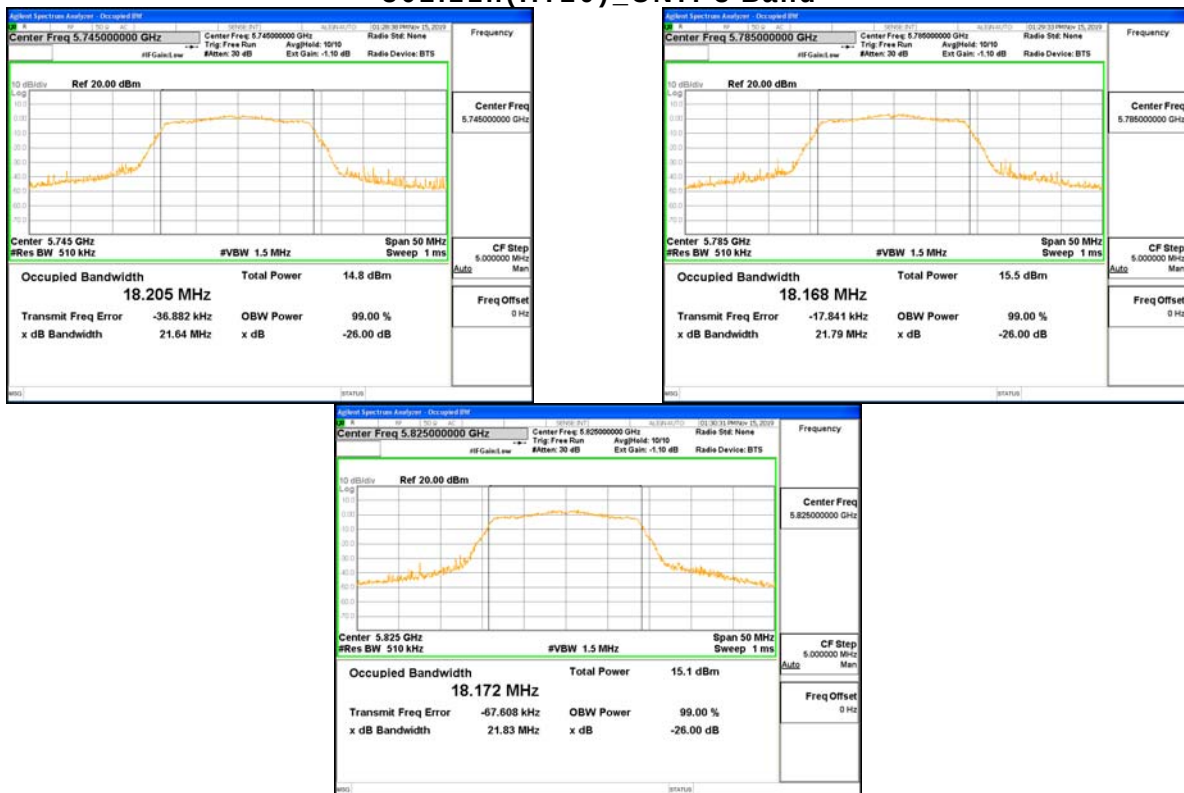
802.11a_UNII 3 Band



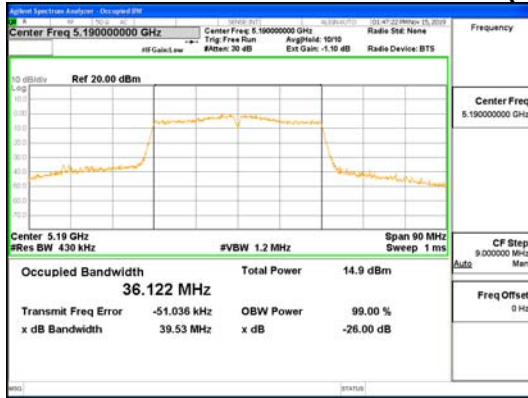
802.11n(HT20)_UNII 1 Band



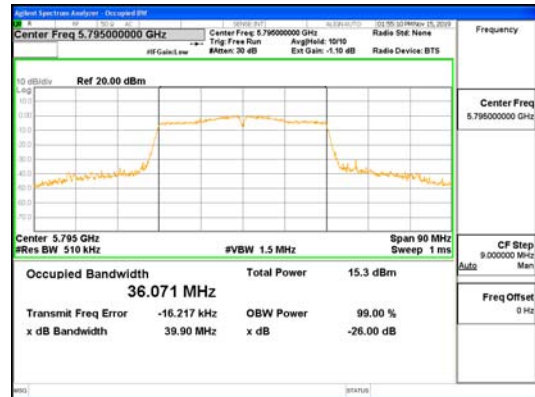
802.11n(HT20)_UNII 3 Band



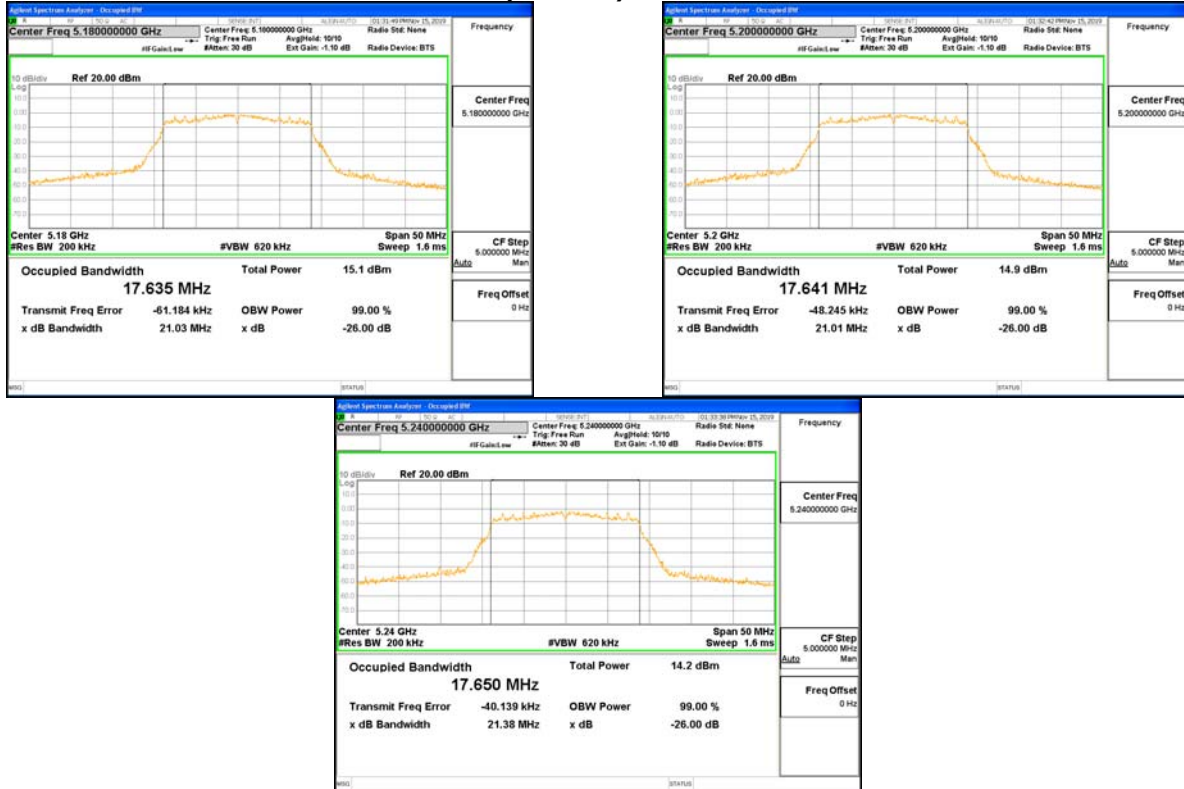
802.11n(HT40)_UNII 1 Band



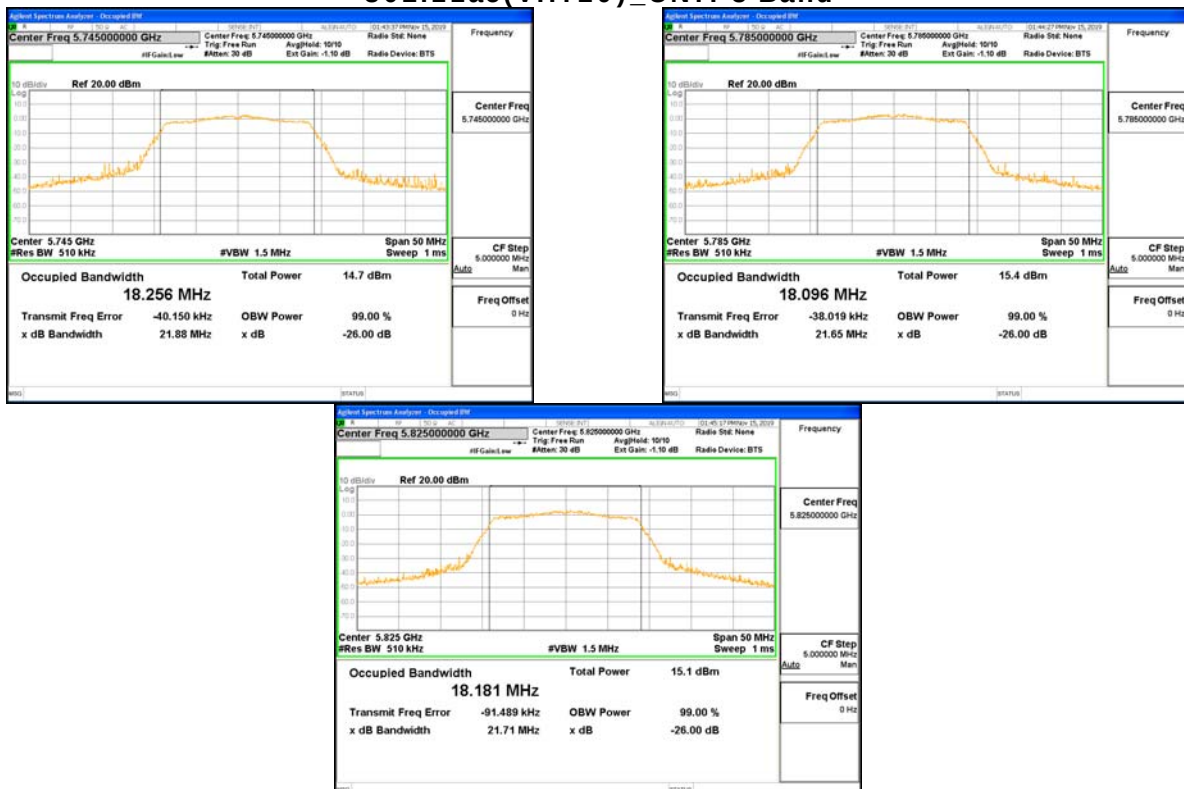
802.11n(HT40)_UNII 3 Band



802.11ac(VHT20)_UNII 1 Band



802.11ac(VHT20)_UNII 3 Band



802.11ac(VHT40)_UNII 1 Band



802.11ac(VHT40)_UNII 3 Band



802.11ac(VHT80)_UNII 1 Band



802.11ac(VHT80)_UNII 3 Band



	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-04566 Page (19) / (91) Pages	
---	---	---	--

4.2 6dB Bandwidth

Test Procedures(ANSI C63.10-2013 6.9.2)

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW $\geq 3 \times$ RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Sweep = auto couple
- f) Allow trace to fully stabilize
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Limit :

6 dB Bandwidth > 500kHz

Test Data:

802.11a

Frequency Band	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]
UNII 1	Low	5 180	16.31
	Middle	5 200	16.32
	High	5 240	16.31
UNII 3	Low	5 745	16.07
	Middle	5 785	16.34
	High	5 825	15.94

802.11n(HT20)

Frequency Band	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]
UNII 1	Low	5 180	17.18
	Middle	5 200	17.19
	High	5 240	17.52
UNII 3	Low	5 745	16.32
	Middle	5 785	16.92
	High	5 825	16.88

802.11n(HT40)

Frequency Band	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]
UNII 1	Low	5 190	35.36
	High	5 230	35.24
UNII 3	Low	5 755	35.68
	High	5 795	35.40

802.11ac(VHT20)

Frequency Band	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]
UNII 1	Low	5 180	15.47
	Middle	5 200	15.91
	High	5 240	17.00
UNII 3	Low	5 745	15.75
	Middle	5 785	16.92
	High	5 825	17.54

802.11ac(VHT40)

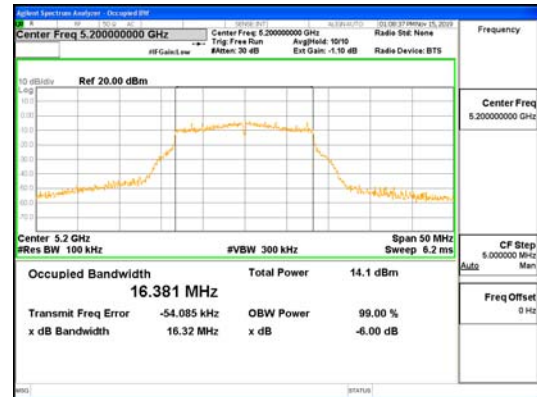
Frequency Band	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]
UNII 1	Low	5 190	35.24
	High	5 230	35.17
UNII 3	Low	5 755	35.49
	High	5 795	35.22

802.11ac(VHT80)

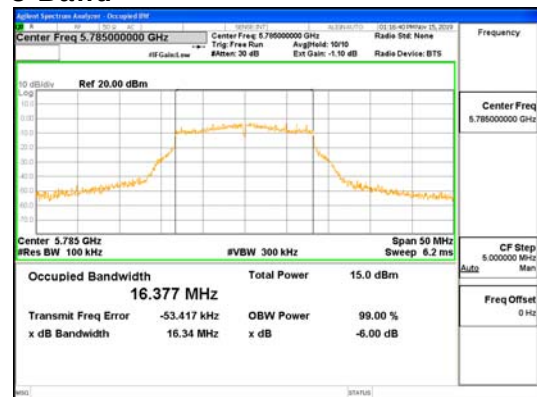
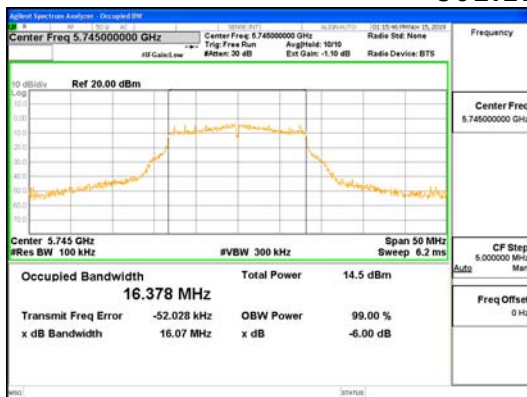
Frequency Band	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]
UNII 1	Low	5 210	75.24
UNII 3	Low	5 775	75.22

See next pages for actual measured spectrum plots.

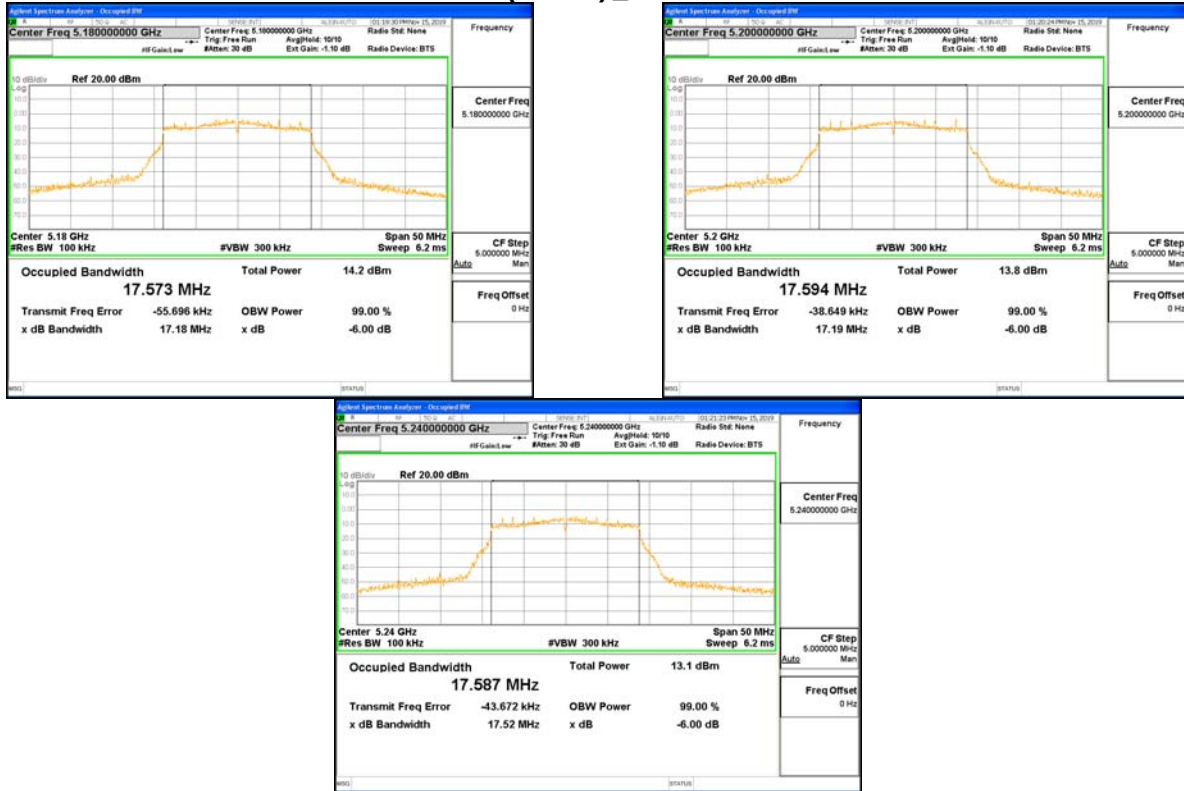
802.11a_UNII 1 Band



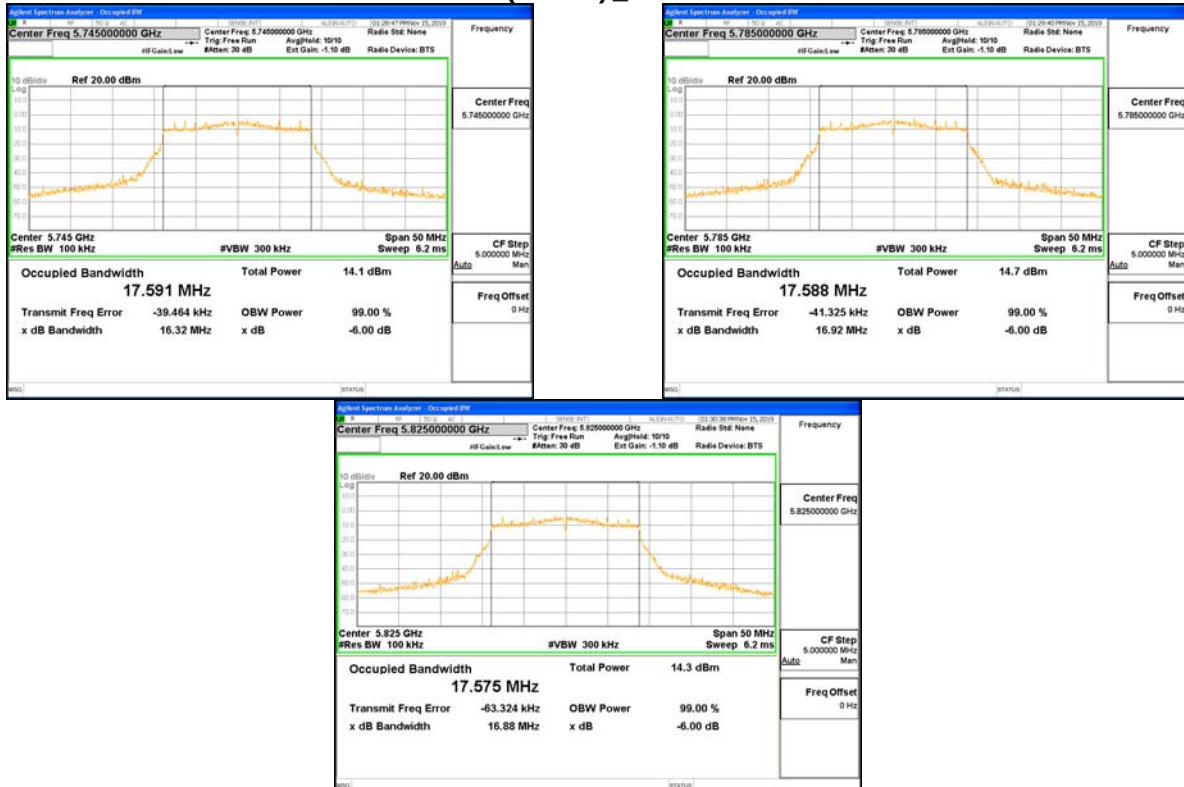
802.11a_UNII 3 Band



802.11n(HT20)_UNII 1 Band



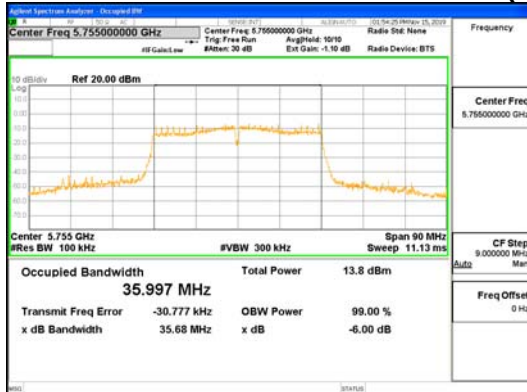
802.11n(HT20)_UNII 3 Band



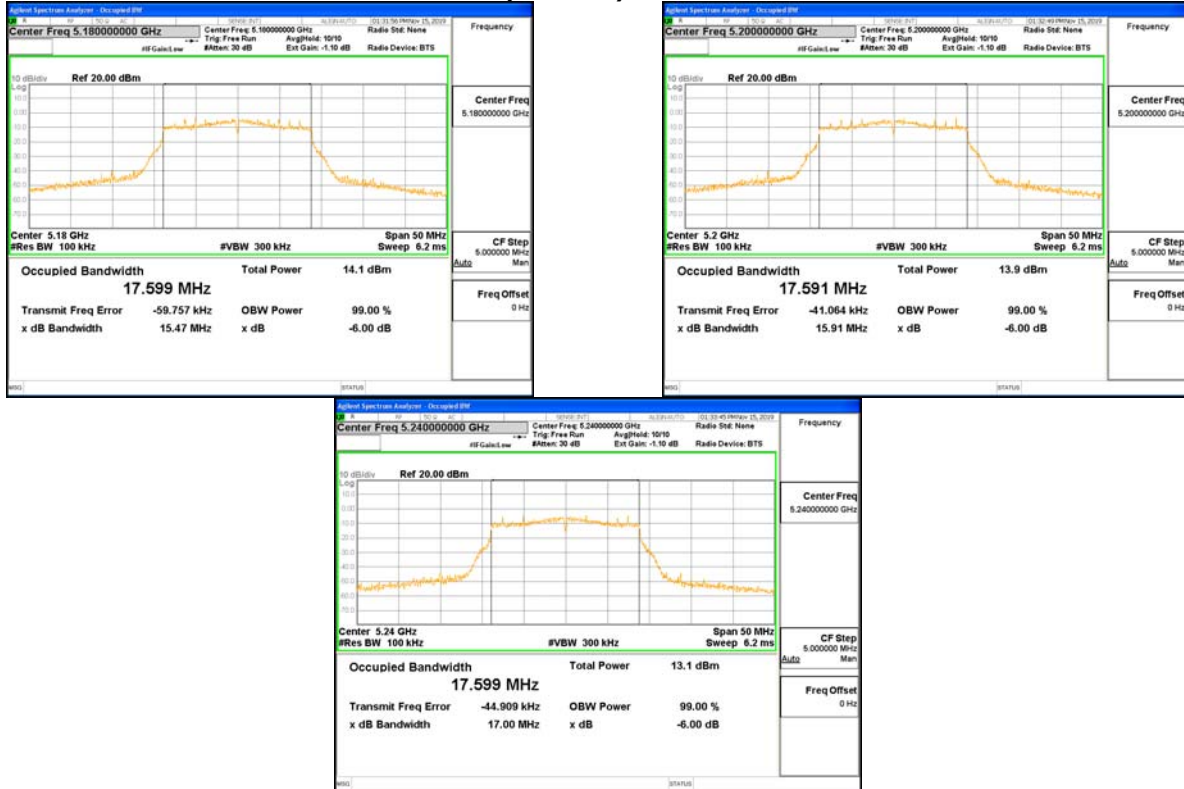
802.11n(HT40)_UNII 1 Band



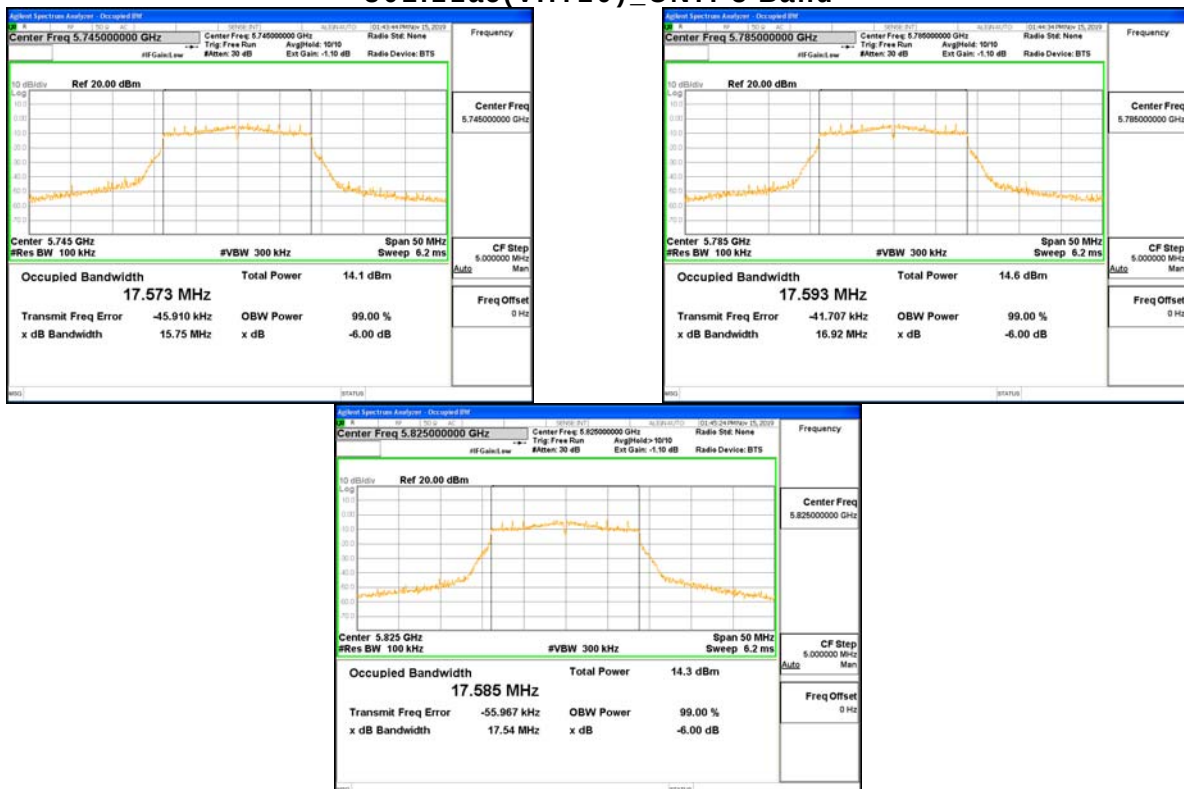
802.11n(HT40)_UNII 3 Band



802.11ac(VHT20)_UNII 1 Band



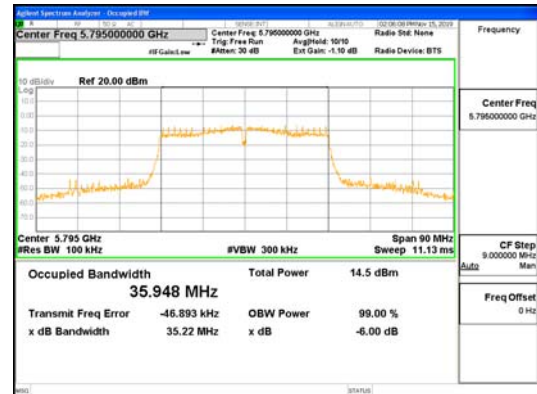
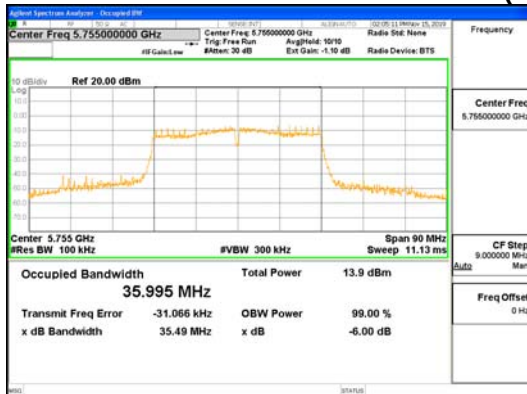
802.11ac(VHT20)_UNII 3 Band



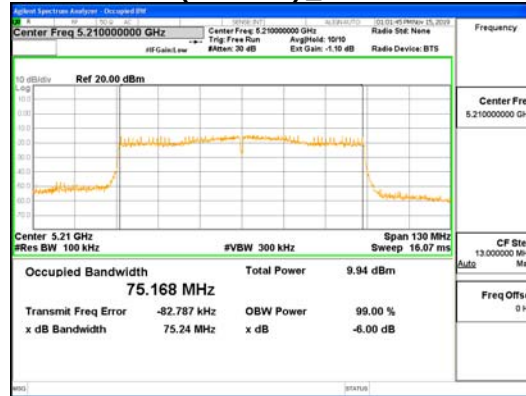
802.11ac(VHT40)_UNII 1 Band



802.11ac(VHT40)_UNII 3 Band



802.11ac(VHT80)_UNII 1 Band



802.11ac(VHT80)_UNII 3 Band

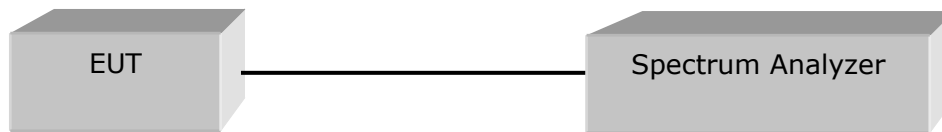


4.3 Maximum Conducted Output Power

Test Procedures

Maximum Conducted Output Power(KDB 789033, Method SA-1)

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.



Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 1 MHz
- b) VBW $\geq 3 \times$ RBW
- c) Sweep time = auto
- d) Detector = power averaging (rms)
- e) Trace mode = Average at least 100

Limit

For client devices in the 5.15-5.25 GHz band, the maximum e.i.r.p shall not exceed 200 mW.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

Test Data

802.11a

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 180	9.22	12.63	23	Complies
	Middle	5 200	8.96	12.37		
	High	5 240	8.05	11.46		
UNII 3	Low	5 745	9.24	-	30	Complies
	Middle	5 785	9.90			
	High	5 825	9.64			

802.11n(HT20)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 180	8.90	12.31	23	Complies
	Middle	5 200	8.42	11.83		
	High	5 240	7.68	11.09		
UNII 3	Low	5 745	8.79	-	30	Complies
	Middle	5 785	9.57			
	High	5 825	9.30			

802.11n(HT40)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 190	8.39	11.80	23	Complies
	High	5 230	8.23	11.64		
UNII 3	Low	5 755	8.66	-	30	Complies
	High	5 795	9.15			

802.11ac(VHT20)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 180	8.77	12.18	23	Complies
	Middle	5 200	8.39	11.80		
	High	5 240	7.74	11.15		
UNII 3	Low	5 745	8.73	-	30	Complies
	Middle	5 785	9.44			
	High	5 825	9.26			

802.11ac(VHT40)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 190	8.38	11.79	23	Complies
	High	5 230	7.91	11.32		
UNII 3	Low	5 755	8.65	-	30	Complies
	High	5 795	9.17			

802.11ac(VHT80)

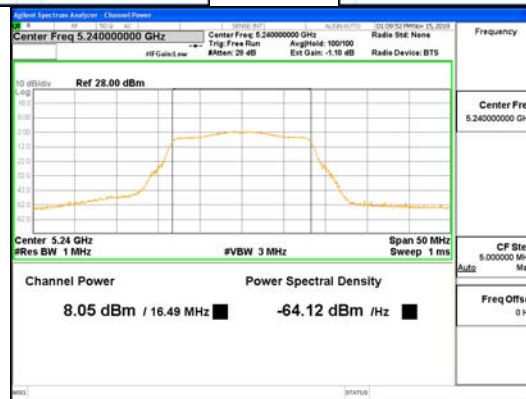
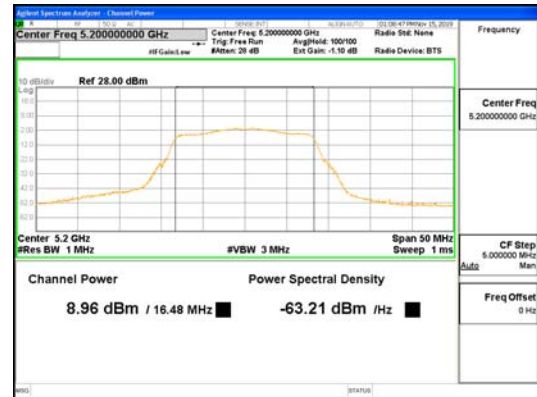
Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 210	4.95	8.36	23	Complies
UNII 3	Low	5 775	5.82	-	30	Complies

Remark

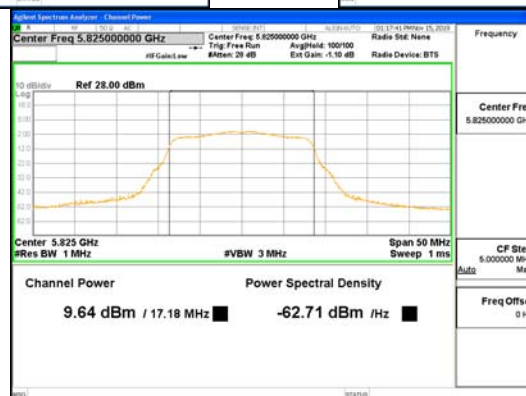
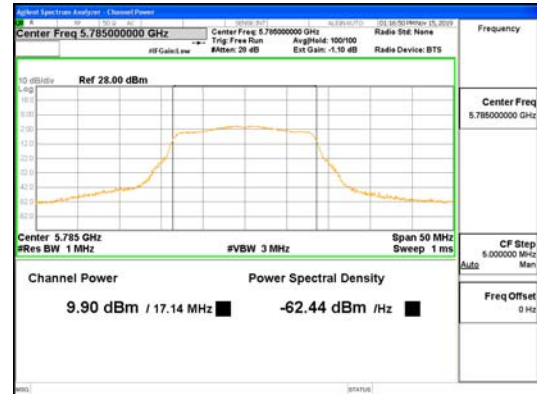
1. e.i.r.p.[dBm] = Conducted Power[dBm] + Antenna Gain[dBi]

See next pages for actual measured spectrum plots.

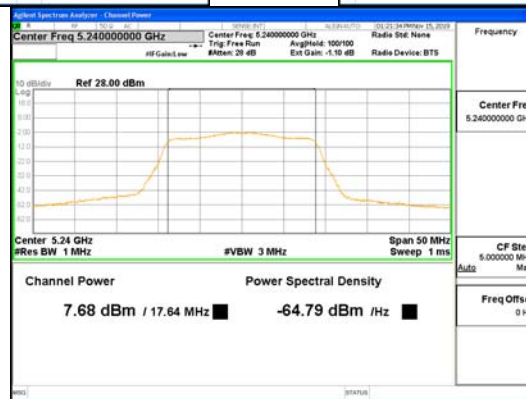
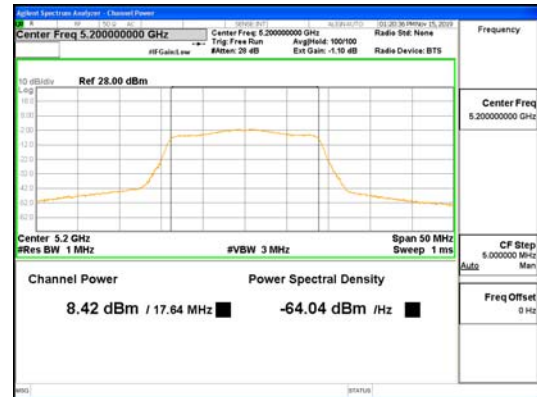
802.11a_UNII 1 Band



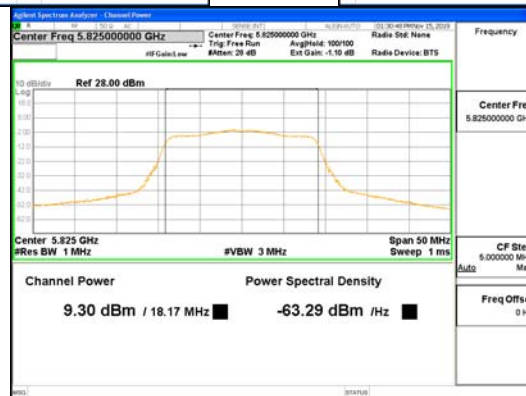
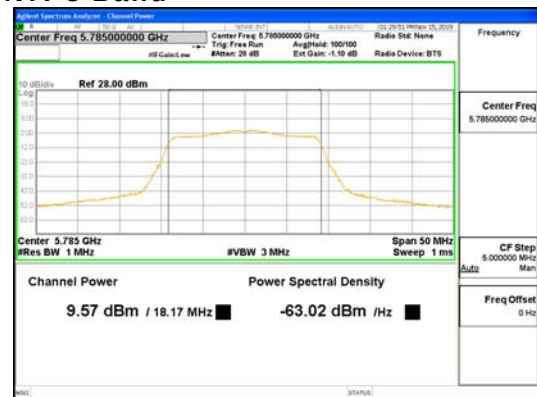
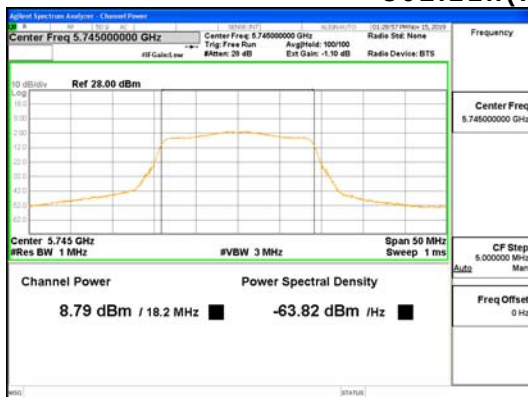
802.11a_UNII 3 Band



802.11n(HT20)_UNII 1 Band



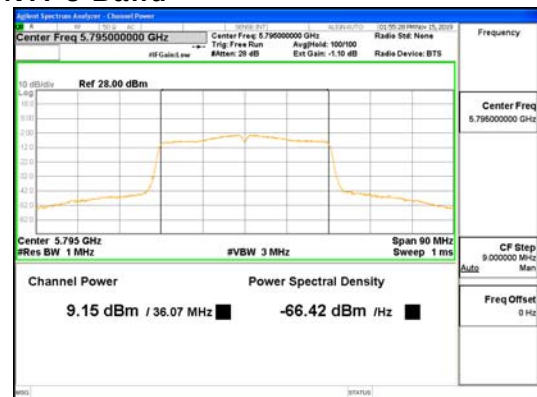
802.11n(HT20)_UNII 3 Band



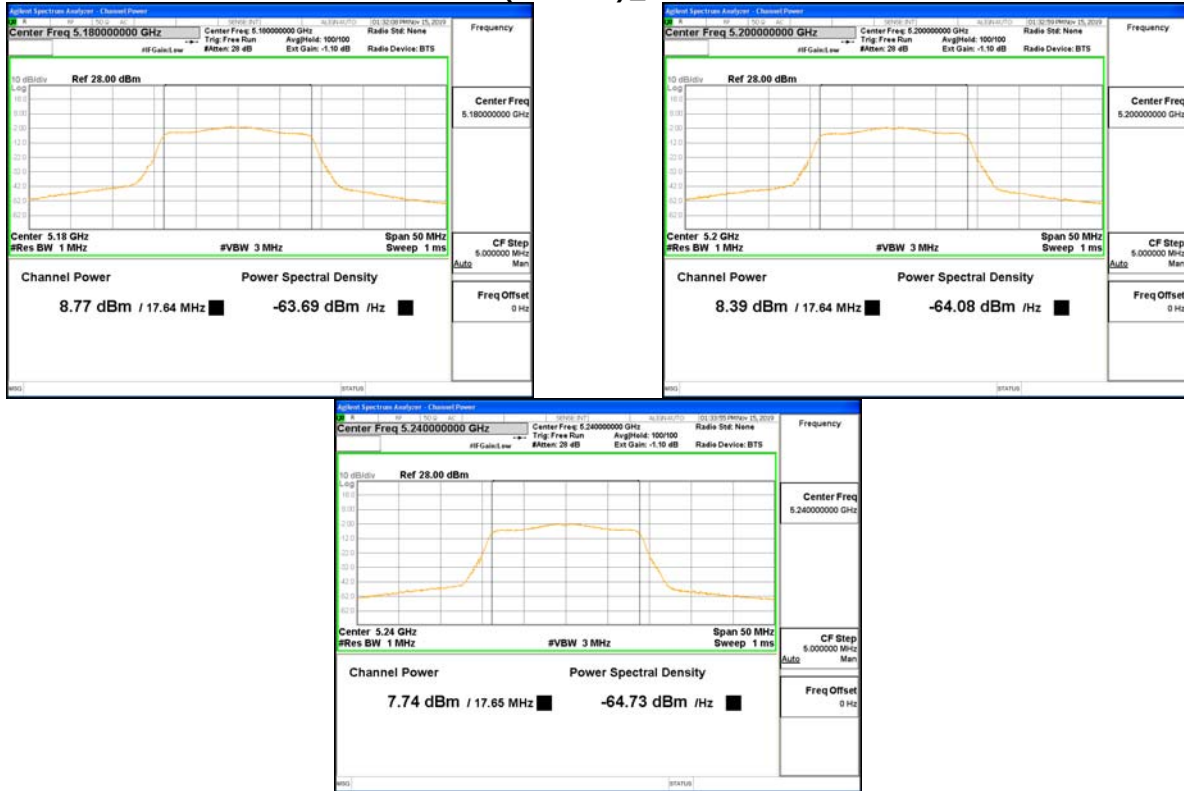
802.11n(HT40)_UNII 1 Band



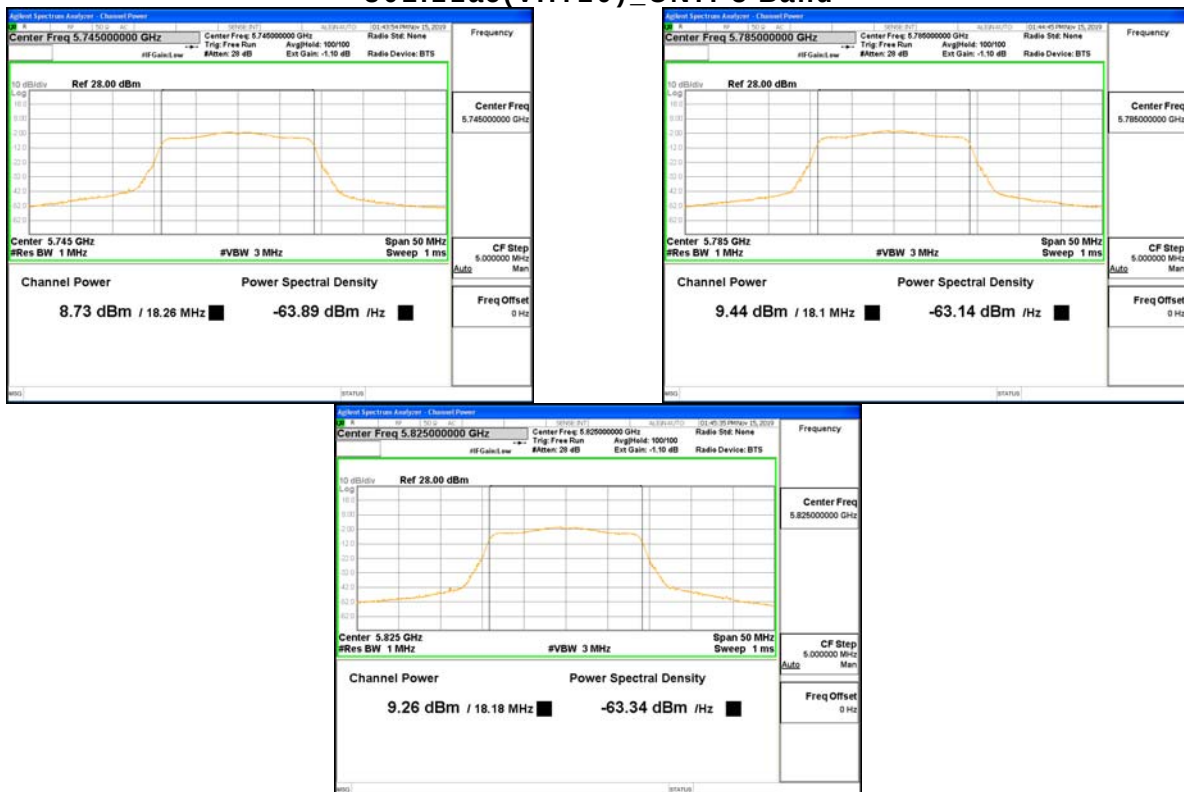
802.11n(HT40)_UNII 3 Band



802.11ac(VHT20)_UNII 1 Band



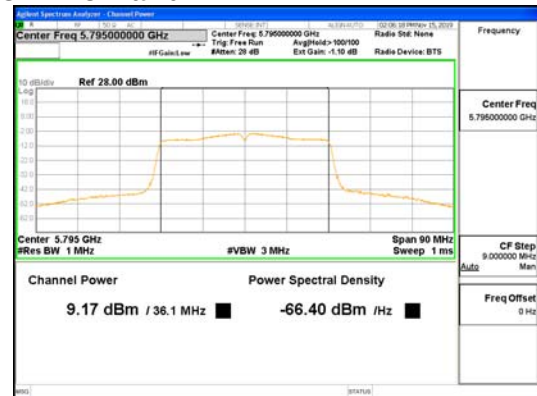
802.11ac(VHT20)_UNII 3 Band



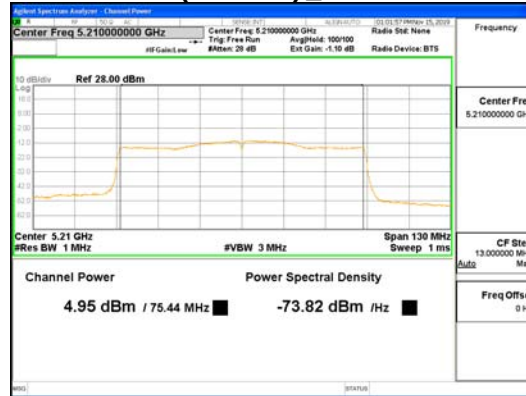
802.11ac(VHT40)_UNII 1 Band



802.11ac(VHT40)_UNII 3 Band



802.11ac(VHT80)_UNII 1 Band



802.11ac(VHT80)_UNII 3 Band



4.4 Power Spectral Density

Test Procedures

Maximum Power Spectral Density (KDB 789033, Method SA-1)

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 1 MHz, 500 KHz (UNII 3)
- b) VBW = 3 MHz, 1.5 MHz (UNII 3)
- c) Sweep time = auto
- d) Detector = power averaging (rms)
- e) Trace mode = Average at least 100

Limit

- UNII 1 band : the e.i.r.p spectral density shall not exceed 10 dBm in any 1 megahertz band.
- UNII 3 band : the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

Test Data

802.11a

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 180	-0.06	3.35	10	Complies
	Middle	5 200	-0.44	2.97		
	High	5 240	-1.20	2.21		
UNII 3	Low	5 745	-2.73	-	30	Complies
	Middle	5 785	-2.07			
	High	5 825	-2.22			

802.11n(HT20)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 180	-0.46	2.95	10	Complies
	Middle	5 200	-1.12	2.29		
	High	5 240	-1.97	1.44		
UNII 3	Low	5 745	-3.30	-	30	Complies
	Middle	5 785	-2.44			
	High	5 825	-2.67			

802.11n(HT40)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 190	-4.15	-0.74	10	Complies
	High	5 230	-4.24	-0.83		
UNII 3	Low	5 755	-6.81	-	30	Complies
	High	5 795	-5.97			

802.11ac(VHT20)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 180	-0.63	2.78	10	Complies
	Middle	5 200	-1.10	2.31		
	High	5 240	-1.89	1.52		
UNII 3	Low	5 745	-3.60	-	30	Complies
	Middle	5 785	-2.85			
	High	5 825	-3.02			

802.11ac(VHT40)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 190	-4.17	-0.76	10	Complies
	High	5 230	-4.43	-1.02		
UNII 3	Low	5 755	-6.41	-	30	Complies
	High	5 795	-5.80			

802.11ac(VHT80)

Frequency Band	Channel	Frequency [MHz]	Conducted Power [dBm]	e.i.r.p. [dBm]	Limit [dBm]	Result
UNII 1	Low	5 210	-10.09	-6.68	10	Complies
UNII 3	Low	5 775	-11.83	-	30	Complies

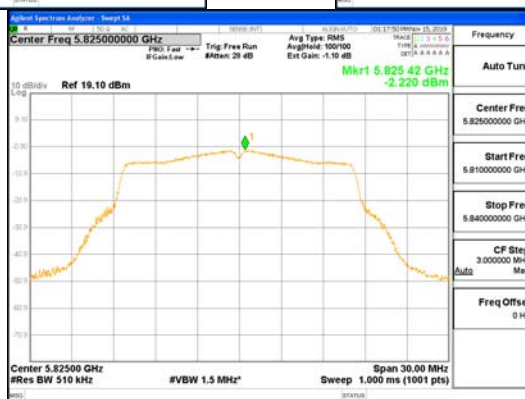
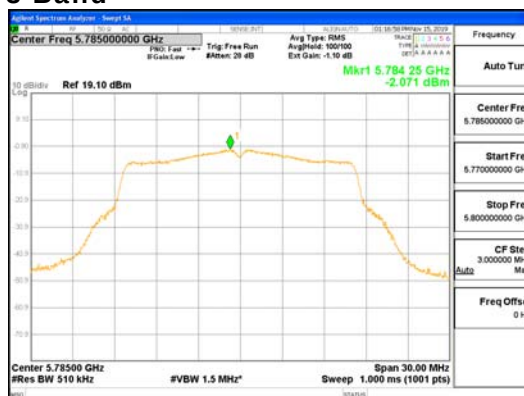
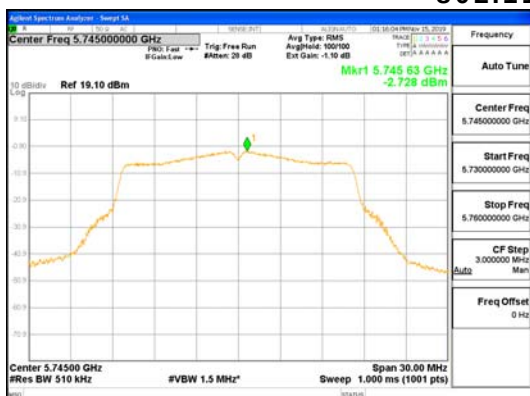
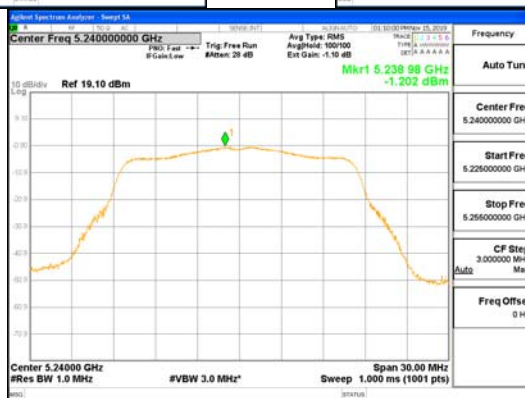
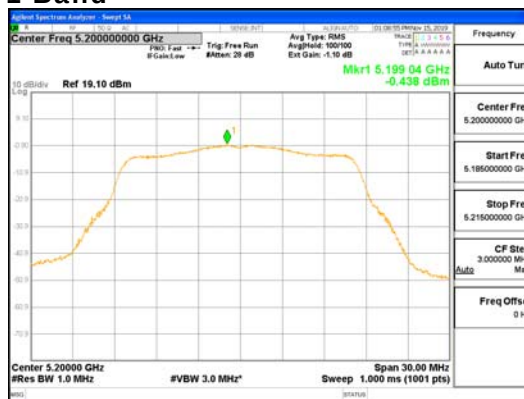
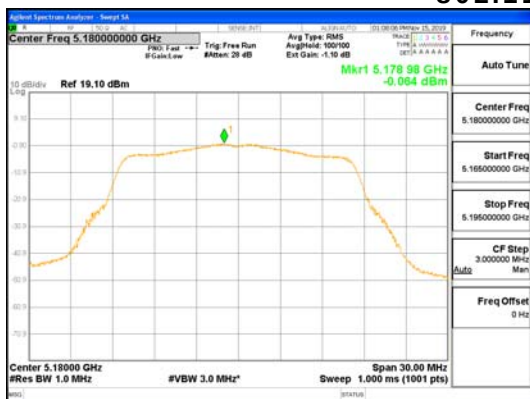
Remark

1. e.i.r.p.[dBm] = Conducted Power[dBm] + Antenna Gain[dBi]

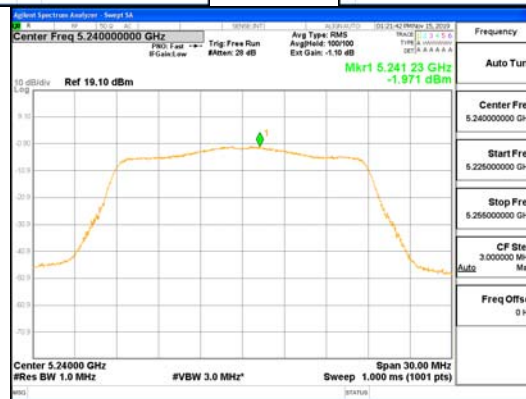
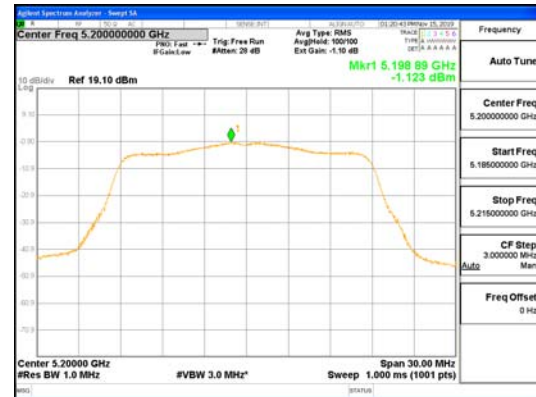
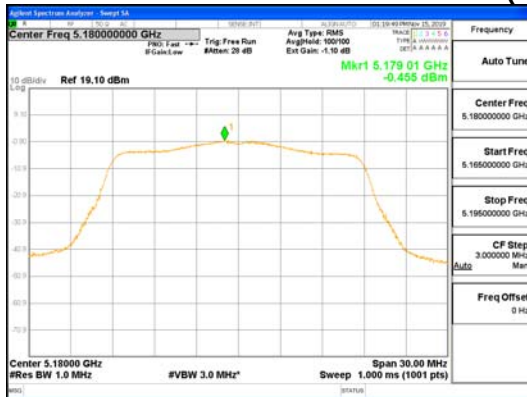
See next pages for actual measured spectrum plots.



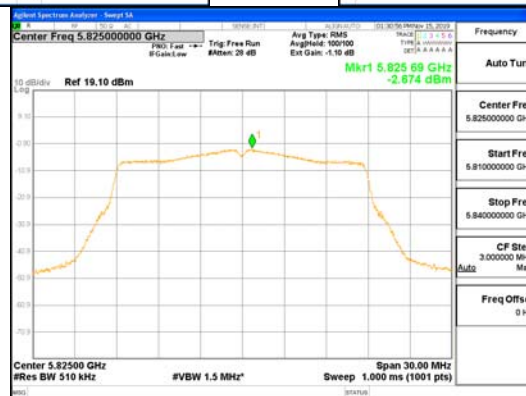
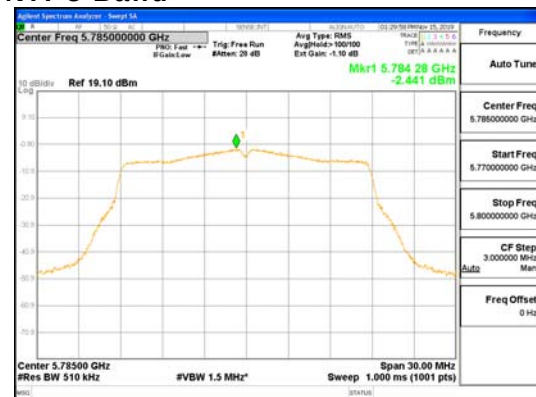
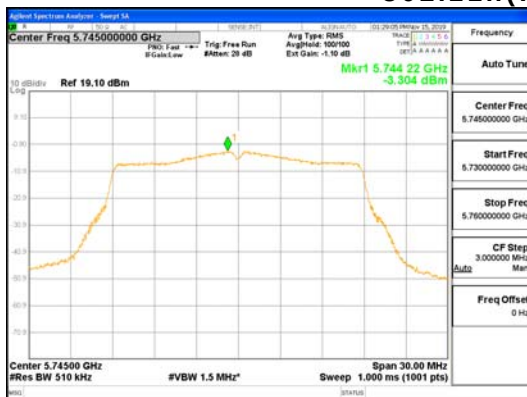
Report No.:
CTK-2019-04566
Page (40) / (91) Pages



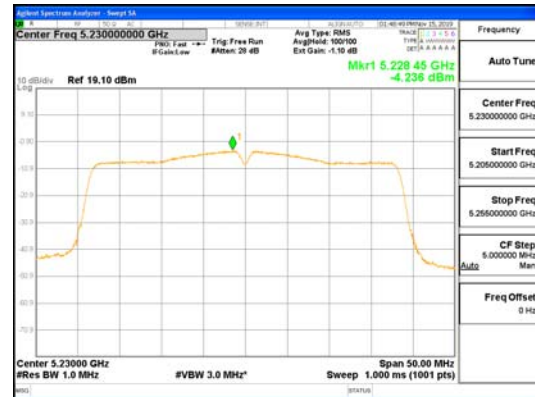
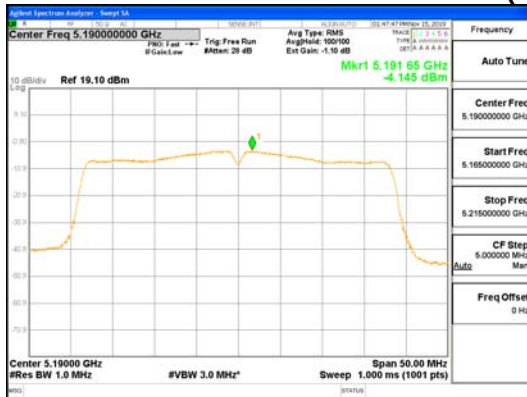
802.11n(HT20)_UNII 1 Band



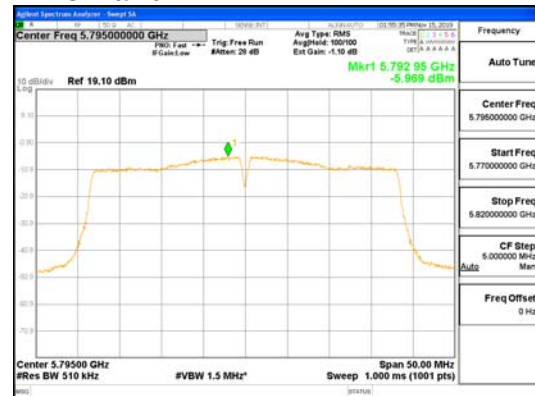
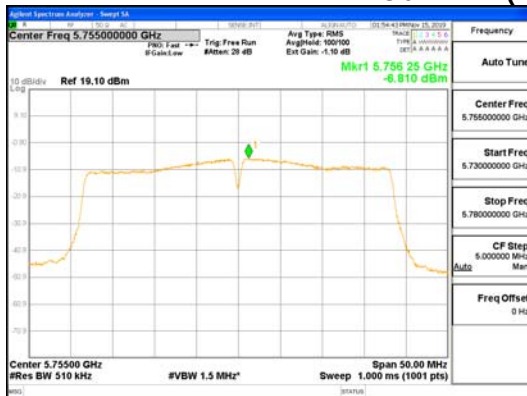
802.11n(HT20)_UNII 3 Band



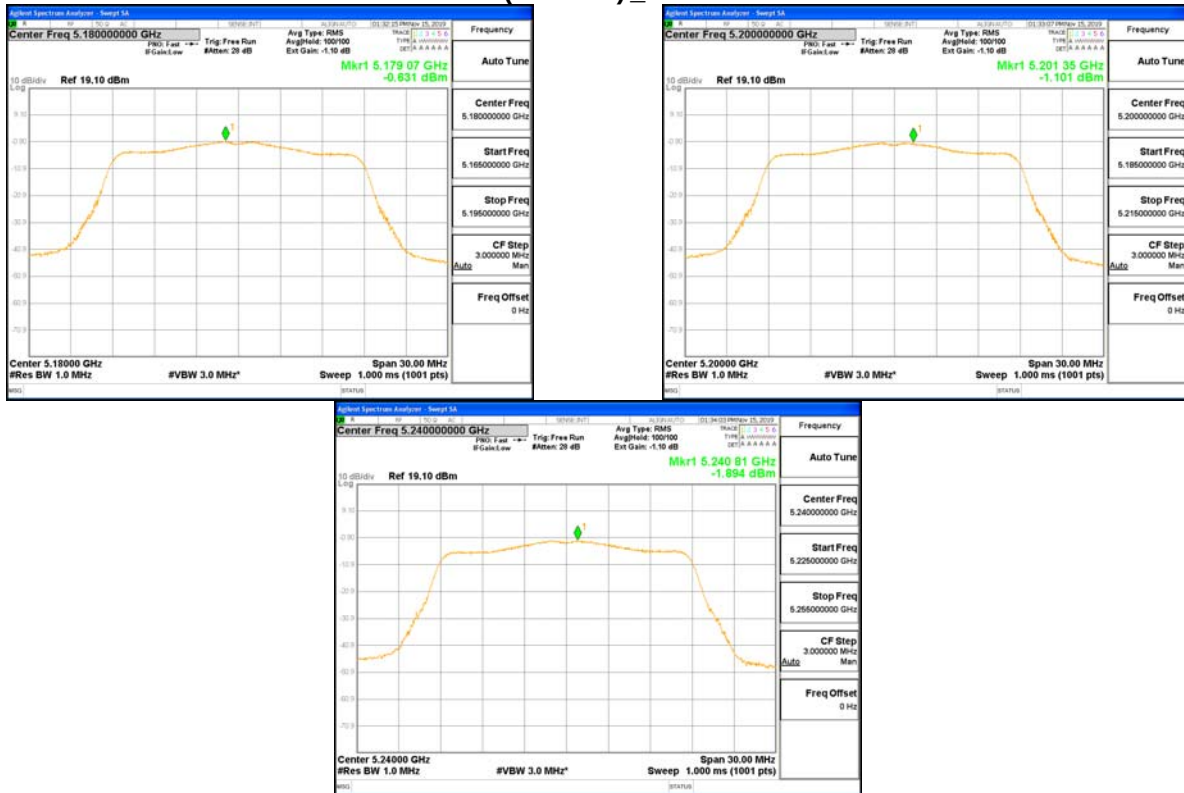
802.11n(HT40)_UNII 1 Band



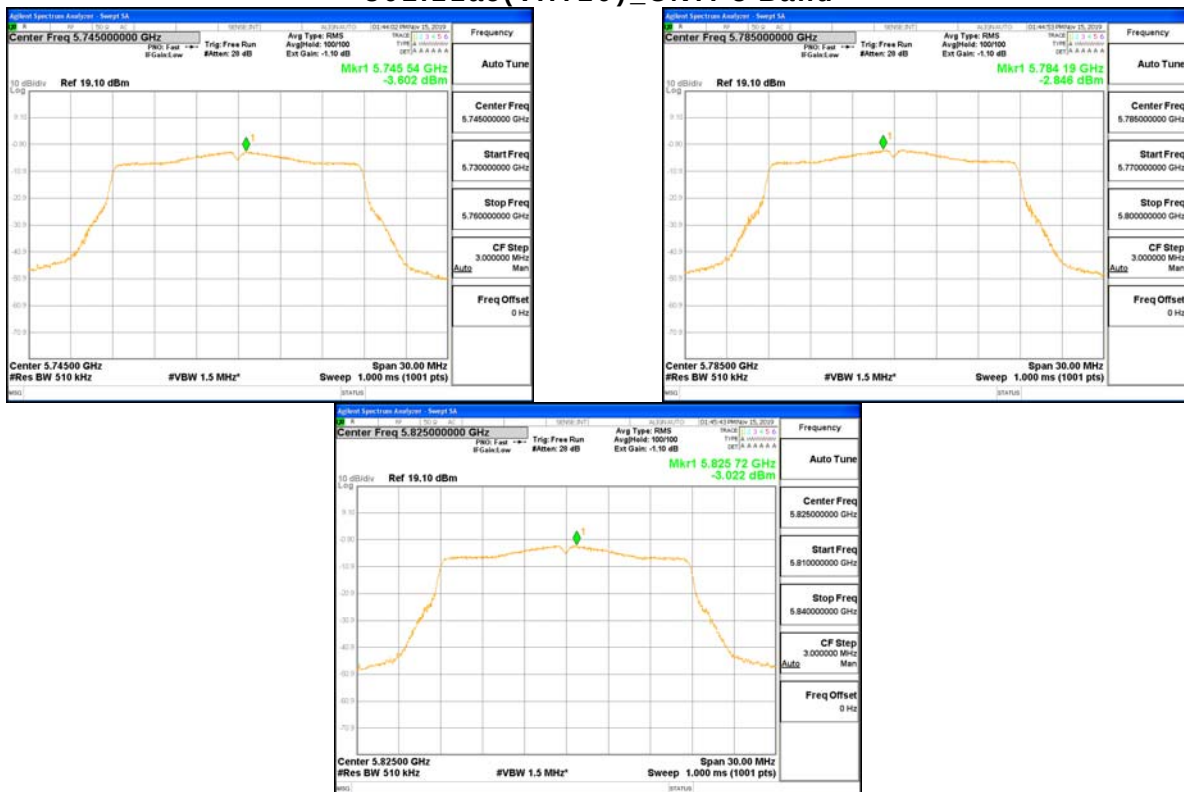
802.11n(HT40)_UNII 3 Band



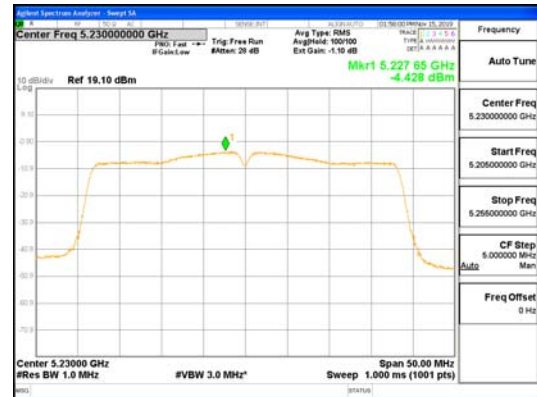
802.11ac(VHT20)_UNII 1 Band



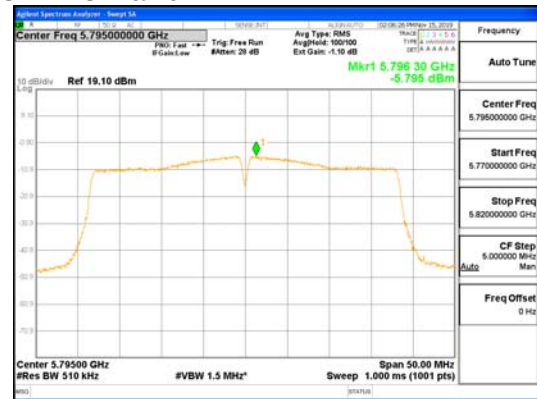
802.11ac(VHT20)_UNII 3 Band



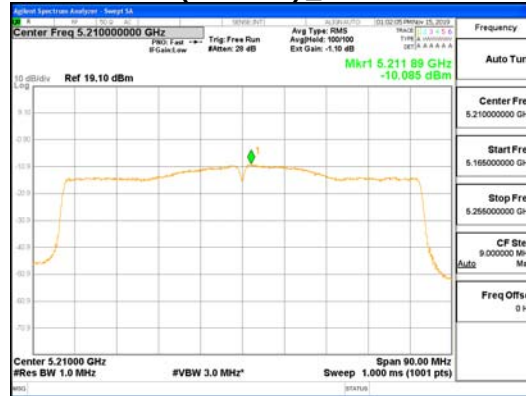
802.11ac(VHT40)_UNII 1 Band



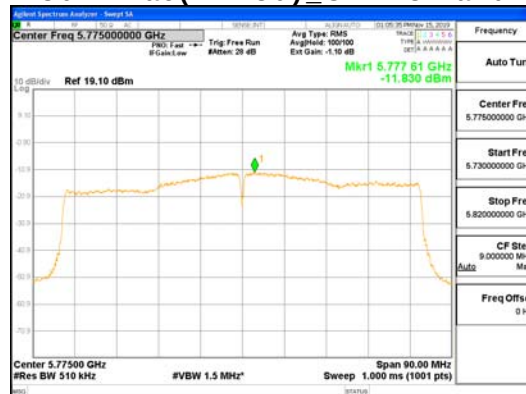
802.11ac(VHT40)_UNII 3 Band



802.11ac(VHT80)_UNII 1 Band



802.11ac(VHT80)_UNII 3 Band



4.5 Frequency Stability

Test Procedures

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 0 °C and +45 °C (Declaration by the Manufacturer). The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user manual.

Frequency Error (kHz)					
Frequency [MHz]	Temperature				
	0 °C	10 °C	20 °C	30 °C	40 °C
5 180	-8.024	-19.847	-19.781	-12.598	-6.614
5 200	-8.758	-20.053	-18.356	-12.910	-7.111
5 240	-9.291	-20.110	-18.287	-13.188	-7.269
5 745	-11.803	-21.649	-20.409	-16.118	-10.988
5 785	-11.932	-21.650	-20.677	-16.390	-11.183
5 825	-12.059	-21.735	-20.881	-16.655	-11.168

Note :

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature range as tested.